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(73) Titular/es:

SONY CORPORATION (100.0%)
1-7-1 Konan, Minato-ku
Tokyo 108-0075, JP

(72) Inventor/es:

LOGHIN, NABIL;
ZÖLLNER, JAN y
STADELMEIER, LOTHAR

(74) Agente/Representante:

ELZABURU, S.L.P

DESCRIPCIÓN

Aparato de codificación y modulación que usa constelación no uniforme

Antecedentes

Campo de la exposición

la presente exposición se refiere a un aparato y método de recepción. Aún más, la presente exposición se refiere a un programa informático y a un medio de grabación legible por ordenador no transitorio.

Descripción de la técnica relacionada

los sistemas de comunicaciones modernos típicamente emplean, entre otros elementos, un aparato de codificación y demodulación (como parte de un aparato de transmisión) y un aparato de decodificación y demodulación (como parte de un aparato de recepción). El aparato de codificación y modulación es a menudo parte de un así llamado aparato de BICM (Modulación Codificada con Bits Entrelazados), que generalmente comprende (en el lado del transmisor) una concatenación en serie de un codificador FEC (Corrección de Errores Hacia Adelante), un entrelazador de bits, y un modulador, que utiliza modulación eficiente espectral tal como una PAM (Modulación de Amplitud de Pulso) multinivel, una PSK (Modulación por Desplazamiento de Fase), o una QAM (Modulación de Amplitud en Cuadratura). Debería observarse que, en lo sucesivo, cada vez que se mencione QAM debería comprenderse generalmente como un término que cubre PAM, PSK y QAM.

BICM permite un buen rendimiento tanto sobre canales sin desvanecimiento como sobre canales de desvanecimiento debido al uso de un entrelazador y/o el codificador FEC. Tiene una complejidad de decodificación razonable en comparación con los esquemas de codificación multinivel (MLC) y se utiliza así frecuentemente en sistemas de comunicaciones, tal como en todos los sistemas DVB, comunicaciones sobre líneas eléctricas (por ejemplo, Homeplug AV, DAB, LTE, WiFi, etc.).

Generalmente la capacidad de codificación y modulación, tal como la capacidad de BICM en sistemas que utilizan un aparato de BICM, se considera como una función objetivo, y se desea encontrar puntos de constelación óptimos de tal manera que esta capacidad se maximiza, a menudo sujeta a una normalización de potencia, es decir, la potencia media de los puntos de constelación debería normalizarse por ejemplo a 1.

La descripción de los "antecedentes" proporcionada en la presente memoria es para el propósito de presentar generalmente el contexto de la exposición. El trabajo del actualmente así llamado inventor o inventores, en la medida en que se describe en esta sección de antecedentes, así como aspectos de la descripción que de otro modo no se puede calificar como técnica anterior en el momento de la presentación, no se admiten ni expresa ni implícitamente como técnica anterior contra la presente exposición.

El documento WO 2010/078472 A1 describe sistemas de comunicaciones que utilizan constelaciones de señal, que tienen puntos desigualmente espaciados (es decir, "geométricamente" conformados). En muchas realizaciones, los sistemas de comunicaciones utilizan constelaciones geométricas específicas que son capacidades optimizadas en un SNR específico. Además, los intervalos dentro de los cuales se pueden perturbar los puntos de constelación de una constelación de capacidad optimizada y son propensos a lograr un porcentaje dado del aumento de capacidad óptima comparado con una constelación que maximiza dm?n, son también descritos. Las medidas de capacidad que se utilizan en la selección de la ubicación de los puntos de constelación incluye, pero no está limitada a, capacidad de decodificación paralela (PD) Y capacidad de unión.

La técnica anterior adicional se puede encontrar en ZAISHAUANG LIU Y COL., “APSK Constellation with Gray Mappings” (Constelación con Asignación de Gris APSK), IEEE COMMUNICATIONS LETTERS, IEEE SERVICE CENTER, PISCATAWAY, NJ, US, (20111201), vol. 15, nº 12, 3 doi:10.1109/LCOMM.2011.101211.111825, ISSN 1089-7798, páginas 1271 – 1273, XP011389300.

Compendio

Es un objeto proporcionar un aparato y método de recepción que proporciona una capacidad de codificación y modulación aumentada o incluso maximizada. Es un objeto adicional proporcionar un programa informático correspondiente para implementar dichos métodos y un medio de grabación legible por ordenador no transitorio para implementar dichos métodos.

Según un aspecto se ha proporcionado un aparato de recepción que comprende:

- un receptor para recibir una o más corrientes de transmisión,
- un convertidor inverso para convertir de manera inversa la una o más corrientes de transmisión recibidas a valores de constelación, y
- un aparato de demodulación y decodificación para demodular valores de constelación de una constelación

a palabras de celda y para decodificar palabras de celda a palabras de datos de salida, en donde se utilizan dieciséis puntos de constelación de la constelación, definiendo los dieciséis puntos de constelación una posición sobre un sistema de coordenadas Cartesiano que representan números complejos con componentes reales sobre un primer eje y componentes imaginarios sobre un segundo eje, siendo los puntos de constelación:

0.5061+0.2474i

0.2474+0.5061i

1.2007+0.4909i

0.4909+1.2007i

0.5061-0.2474i

0.2474-0.5061i

1.2007-0.4909i

0.4909-1.2007i

-0.5061-0.2474i

-0.2474-0.5061i

-1.2007-0.4909i

-0.4909-1.2007i

-0.5061+0.2474i

-0.2474+0.5061i

-1.2007+0.4909i

-0.4909+1.2007i

y siendo asignado cada punto de constelación a una etiqueta de bit que representa una palabra de datos corregida hacia adelante.

Según un aspecto adicional se he proporcionado un aparato de recepción que comprende

- un receptor para la recepción de una o más corrientes de transmisión,
- un convertidor inverso para la conversión inversa de la una o más corrientes de transmisión recibidas a valores de constelación, y
- un aparato de demodulación y decodificación para la demodulación valores de constelación de una constelación a palabras de celda y para la decodificación de palabras de celda a palabras de datos de salida, en donde se utilizan dieciséis puntos de constelación de la constelación, definiendo los dieciséis puntos de constelación una posición sobre un sistema de coordenadas Cartesiano que representa números complejos con componentes reales sobre un primer eje y componentes imaginarios sobre un segundo eje, siendo los puntos de constelación:

0.2606+0.4718i

0.47 l8+0.2606i

0.4984+1.2088i

1.2088+0.4984i

0.2606-0.4718i

0.4718-0.2606i

0.4984-12088i

1.2088-0.4984i

-0.2606-0.4718i

-0.4718-0.2606i

-0.4984-1.2088i

-1.2088-0.4984i

-0.2606+0.4718i

-0.4718+0.2606i

-0.4984+1.2088i

-1.2088+0.4984i

y siendo asignado cada punto de constelación a una etiqueta de bit que representa una palabra de datos corregida hacia delante.

Según aún aspectos adicionales correspondientes a un programa informático que comprende medios de programa para hacer que un ordenador lleve a cabo las operaciones del método de codificación y modulación expuestas en la presente memoria, cuando dicho programa informático se lleva a cabo sobre un ordenador, así como un medio de grabación legible por ordenador no transitorio que almacena allí un producto de programa informático, que, cuando se ejecutan mediante un procesador, hace que el método de codificación y modulación expuesto en la presente memoria se realice son proporcionados.

Las realizaciones preferidas se definen en las reivindicaciones dependientes. Se comprenderá que los métodos reivindicados, el programa informático reivindicado y el medio de grabación legible por ordenador reivindicado tienen realizaciones preferidas similares y/o idénticas como el aparato reivindicado y como se define en las reivindicaciones dependientes.

Uno de los aspectos de la exposición es que los puntos de constelación de las constelaciones utilizadas no se ubican sobre una cuadrícula regular con símbolos equidistantes, sino más bien en ubicaciones optimizadas, dependientes de las características de canal, por ejemplo, probabilidades de transición de canal debido a AWGN (Ruido Gaussiano Blanco Aditivo), desvanecimiento, etc. Además, la constelación utilizada se selecciona (preferiblemente por adelantado, pero generalmente sobre la marcha en otras realizaciones) dependiente de la SNR (relación señal a ruido) y el número total deseado de puntos de constelación de la constelación utilizada. Se explicará a continuación un método como para encontrar y optimizar estas constelaciones no uniformes (en lo siguiente denominadas NUC).

Debería observarse que cada M-QAM, también se puede pensar en el sqrt(M)-PAM subyacente. Además, debería observarse que en otros aspectos el grupo de constelaciones definidas en las reivindicaciones comprende menos constelaciones, por ejemplo, solamente constelaciones para canales sin desvanecimiento, solamente constelaciones para canales de desvanecimiento, solamente constelaciones para valores seleccionados de M, solamente constelaciones para M-QAM o sqrt(M)-PAM y/o constelaciones para menos valores de SNR. En otras palabras, se pueden contener menos constelaciones en el grupo de constelaciones disponibles para selección y posterior uso por el modulador, es decir, el grupo de constelaciones disponibles para su uso por el modulador puede comprender una o más de las constelaciones definidas en las reivindicaciones. Por consiguiente, la presente exposición está dirigida también a un aparato y método de codificación y modulación que tiene un grupo más pequeño de constelaciones disponibles para su uso (como se ha explicado anteriormente) y/o están disponibles menos constelaciones para un valor particular de M.

Una asignación QAM que consiste de M puntos de constelación es indicado como M-QAM. Si una QAM (uniforme o no uniforme) permite separar codificación y descodificación de cada una de sus dos dimensiones ("en fase" y "fase de cuadratura" en la publicación), a continuación, esta QAM se denominará una N^2-QAM. Esto implica que la constelación puede designarse por dos constelaciones N-PAM, una para cada dimensión. N^2-QAM tiene complejidad de decodificación significativamente inferior para decodificación ML, cuando solamente los puntos de constelación N tienen que ser investigados, comparado con puntos N^2 para la M-QAM, cuando $M = N^2$, pero cuando las dos dimensiones no se pueden separar (como es normalmente el caso para N-PSK, por ejemplo, 8-PSK, donde 8 puntos están ubicados sobre un círculo unitario). Además de las constelaciones QAM que se definen completamente por un sólo cuadrante de la constelación se denominarán Q-QAM, siendo derivados los otros cuadrantes a partir del primer cuadrante. Por ejemplo, las constelaciones QAM cuadradas uniformes normales (UC) son también constelaciones Q-QAM, debido a sus simetrías.

Sin embargo, los puntos de constelación de las constelaciones QAM considerados en esta exposición no se ubican en una cuadrícula regular con símbolos equidistantes, sino más bien sobre ubicaciones optimizadas, dependientes de las características de canal, por ejemplo, probabilidades de transición de canal debido a AWGN, desvanecimiento, etc.

Debería observarse que el vector de posición w de la constelación como se define las reivindicaciones no debe contener necesariamente los puntos de constelación del primer cuadrante de la constelación, pero podría contener también los puntos de constelación de cualquiera de los cuatro cuadrantes (expresados por la definición "de un primer cuadrante" en las reivindicaciones). Debido a la simetría de cuadrantes esto conduce a constelaciones con una asignación diferente de bit, pero con rendimiento idéntico. El vector de posición w de constelación en las tablas definidas en la presente memoria debería considerarse por lo tanto como un ejemplo para todas las cuatro constelaciones simétricas con asignación diferente de bit, pero idéntico rendimiento.

Debería comprenderse que tanto la descripción general precedente de la exposición como la siguiente descripción detallada son ejemplares, pero no restrictivas, de la exposición.

Breve descripción de los dibujos

una apreciación más completa de la exposición y muchas de las ventajas relacionadas de la misma se obtendrán fácilmente cuando la misma se comprenda mejor por referencia a la siguiente descripción detallada cuando se considera en conexión con los dibujos adjuntos, en donde:

La fig. 1 muestra una realización de un aparato de codificación y modulación según la presente exposición,

La fig. 2 muestra una realización de un aparato de transmisión según la presente exposición,

La fig. 3 muestra una realización de un sistema de comunicaciones según la presente exposición,

La fig. 4 muestra una constelación 4-QAM regular con un ejemplo simple para una constelación,

La fig. 5 muestra diagramas que representan el integrante de la función de capacidad BCIM unidimensional a 10 dB y a 30 dB de SNR,

La fig. 6 muestra una constelación no uniforme de 8-PAM y una constelación no uniforme de 64-QAM,

La fig. 7 muestra una constelación para una constelación no uniformes de 64-QAM que define generalmente los puntos de constelación,

La fig. 8 muestra un diagrama que ilustra el rendimiento de constelaciones de 16-QQAM, de 32-QQAM, de 64-QQAM, de 256-QQAM y de 1024-QQAM no uniformes comparadas con constelaciones N^2-QAM no uniformes, y

La fig. 9 muestra una constelación de 16-QQAM no un informe.

Descripción de las realizaciones

con referencia ahora a los dibujos, en donde números de referencia similares designan partes idénticas o correspondientes a lo largo de las distintas vistas, la fig. 1 muestra una realización de un aparato 10 de codificación y modulación según la presente exposición. Comprende un codificador 11 que codifica los datos de entrada a palabras de celda, y un modulador 12 que modula dichas palabras de celda a valores de constelación de una constelación no uniforme. Dicho modulador 12 está configurado para utilizar, basándose en el número M total de puntos de constelación de la constelación y la relación señal a ruido SNR en dB (y, en algunas realizaciones, las características de canal), una constelación no uniforme desde un grupo de constelaciones que comprende constelaciones predeterminadas, en donde los puntos de constelación de los diferentes cuadrantes de una constelación se definen por un vector de posición $w_{0...b-1}$ de constelación, en donde b=M/4, en donde

los puntos de constelación $x_{0...b-1}$ de un primer cuadrante se definen como $x_{0...b-1} = w_{0...b-1}$,

los puntos de constelación $x_{b...2b-1}$ de un segundo cuadrante se definen como $x_{b...2b-1} = \text{conj}(w_{0...b-1})$,

los puntos de constelación $x_{3b...4b-1}$ de un tercer cuadrante se definen como $x_{3b...4b-1} = - w_{0...b-1}$,

los puntos de constelación $x_{2b...3b-1}$ de un cuarto cuadrante se definen como $x_{2b...3b-1} = -\text{conj}(w_{0...b-1})$,

en donde conj es la conjugada compleja, y

en donde los vectores de posición de constelación de las diferentes constelaciones del grupo de constelaciones se derivarán y mostrarán a continuación.

Debería observarse que el vector de posición w de constelación como se define en las reivindicaciones no debe contener necesariamente los puntos de constelación del primer cuadrante de la constelación, pero podría contener también los puntos de constelación de cualquiera de los cuatro cuadrantes (expresados por la definición "de un primer cuadrante" en las reivindicaciones). Debido a la simetría de cuadrantes esto conduce a constelaciones con una asignación diferente de bit, pero con idéntico rendimiento. El vector de posición w de constelación en las tablas definidas en la presente memoria debería considerarse por lo tanto como un ejemplo para todas las cuatro

constelaciones simétricas con asignación diferente de bit, pero idéntico rendimiento.

En otras realizaciones del aparato 10 de codificación y modulación se pueden proporcionar elementos adicionales, tales como un codificador BCH, un codificador LCPC, un entrelazador y/o demultiplexador de bit (para demultiplexar bits de datos codificados a palabras de celda). Algunos o todos estos elementos pueden separar elementos o pueden ser parte del codificador 11. Por ejemplo, un dispositivo de BCIM como se utiliza convencionalmente en el aparato de transmisión de un sistema DVB puede utilizarse como aparato 10 de codificación y modulación.

La fig. 2 muestra una realización de un aparato 20 de transmisión según la presente exposición que comprende un aparato 21 de codificación y modulación (referenciado por 10 en la fig. 1) como se propone en la presente memoria que codifica y modula datos de entra a valores de constelación, un convertidor 22 que convierte dichos valores de constelación a una o más corrientes de transmisión que se han de transmitir, y un transmisor 23 que transmite dicha una o más corrientes de transmisión. En una realización ejemplar el convertidor 22 puede comprender uno o más elementos como un entrelazador de tiempo, celda y/o frecuencia, un constructor de tramas, un modulador OFDM, etc., como, por ejemplo, se describe en los diversos estándares relacionados con DVB. Las constelaciones y los valores de constelaciones están generalmente predeterminados y por ejemplo se almacenan en un almacenamiento 24 de constelaciones o se recuperan de una fuente externa.

En otras realizaciones del aparato 20 de transmisión se pueden proporcionar elementos adicionales, tales como una unidad de procesamiento de entrada, una unidad de construcción de tramas y/o una unidad de generación OFDM como por ejemplo la utilizada convencionalmente en el aparato de transmisión de un sistema DVB.

La fig. 3 muestra una realización del sistema 30 de comunicaciones según la presente exposición que comprende un aparato (o más) 20 de transmisión (Tx) como se muestra en la fig. 2 y uno o más aparatos 40, 40' de recepción (Rx).

Un aparato 40 de recepción comprende generalmente un receptor 41 que recibe una o más corrientes de transmisión, un convertidor inverso 42 que convierte de manera inversa una o más de las corrientes de transmisión recibidas a valores de constelación, y un aparato 43 de demodulación y descodificación que demodula y decodifica dichos valores de constelación a datos de salida. El aparato 43 de demodulación y descodificación comprende un demodulador 44 para demodular valores de constelación de una constelación no uniforme a palabras de celda, y un decodificador 45 para decodificar palabras de celda a palabras de datos de salida, en donde basándose en el número total M de puntos de constelación de la constelación, la relación señal a ruido en dB y las características de canal, una constelación no un informe se selecciona a partir del grupo de constelaciones que comprende las mismas constelaciones predeterminadas que se han utilizado en el aparato 10 de codificación y modulación.

La demodulación y descodificación preferidas consideran valores intangibles como opuestos a valores tangibles decididos (0 y 1). Los valores intangibles representan los valores continuamente distribuidos recibidos (posiblemente después de la conversión A/D que incluye cuantización) por más de dos estados (como en el caso de decisión binaria (tangible)). La razón es que, para decisión tangible, los NUC no son generalmente óptimos. Hoy en día, los receptores de BICM son típicamente receptores intangibles de todos modos.

Generalmente, los datos (por ejemplo, datos de comunicaciones, datos de difusión, etc.) serán transmitidos desde un aparato 20 de transmisión a uno o más de dichos aparatos 40 de recepción a través de un canal 50, 50' de transmisión. El canal 50, 50' de transmisión puede ser un canal de unidifusión, un canal de multidifusión, un canal de difusión y se puede emplear como un canal unidireccional o bidireccional (es decir, que tiene un canal de retorno desde el aparato de recepción al aparato de transmisión).

En una realización el modulador 12 está configurado para utilizar una constelación no uniforme basándose en el número total M de puntos de constelación de la constelación, la relación señal a ruido SNR requerida para de codificación libre de errores en dB y las características de canal. En aplicaciones de difusión la constelación no se selecciona generalmente dependiendo de la SNR en el receptor, sino dependiendo de la SNR que se requiere para decodificación libre de errores con un código de canal utilizado (si se utiliza un código, por ejemplo, códigos LDPC en caso de sistemas de transmisión DVB de 2ª generación) para una característica de canal esperada, por ejemplo, recepción estática o desvanecimiento por trayectos múltiples.

El número total M de puntos de constelación se selecciona generalmente según el rendimiento de la carga útil deseada conjuntamente con la tasa de código del codificador FEC. La SNR para decodificación libre de errores para una característica de canal típica se conoce generalmente, por ejemplo, por simulación. En la difusión no se conocen las características de canal de los receptores, es decir, se selecciona un compromiso. Por ejemplo, en la difusión para cada tasa de código del codificador FEC se selecciona una constelación no uniforme, optimizada para una SNR que es un compromiso para todas las características de canal.

El transmisor apunta generalmente a un escenario determinado. Por ejemplo, una transmisión de difusión sobre cable o satélite considera que el canal es solamente un AWGN sin desvanecimiento (modelo de canal apropiado), mientras un difusor terrestre considera típicamente que el canal es un canal de desvanecimiento, por ejemplo, con distribución de Rayleigh, ya que normalmente se reciben diversos ecos.

En otra realización el modulador 12 está configurado para seleccionar de forma adaptativa una constelación no uniforme basándose en el número total M de puntos de constelación de la constelación, la relación señal a ruido SNR en dB y las características de canal, en donde dicha relación señal a ruido SNR en dB y características de canal se reciben desde un dispositivo 40 de recepción al cual se transmitirán los datos. Tal selección adaptativa de la constelación es solamente posible en general con un canal de retorno en entornos unidifusión. Una constelación no uniforme puede adaptarse, por ejemplo, en el dominio de tiempo y/o de frecuencia, por ejemplo, para diferentes subportadoras OFDM.

Dependiendo de la SNR se pueden seleccionar el valor óptimo para M y la tasa de código del codificador FEC, la cual ofrece el rendimiento más alto (y equivalente a C_B). En otras palabras, para una gran SNR se selecciona un valor alto de M que conduce a un rendimiento elevado de datos (y viceversa).

Las características de canal describen las propiedades estáticas del canal, por ejemplo, la extensión de la propagación de trayectos múltiples del canal de transmisión entre el transmisor y el receptor. Si el canal se caracteriza por la no propagación de trayectos múltiples, correspondiente al canal AWGN, la SNR requerida para decodificación libre de errores es relativamente baja, es decir la NUC ha de ser seleccionada por consiguiente para el rendimiento óptimo. Si el canal de transmisión se caracteriza por fuerte propagación de trayectos múltiples, la SNR requerida para recepción libre de errores es mayor comparada con un canal sin propagación de trayectos múltiples, es decir, se ha de utilizar una NUC optimizada para una SNR más alta. Además, las NUC deberían optimizarse teniendo en cuenta las características de desvanecimiento, como se expondrá a continuación.

Como se ha mencionado anteriormente, el número M de los puntos de constelación de las constelaciones se selecciona según el rendimiento de carga útil deseado. Los valores más grandes de M permiten rendimientos de datos más altos, por ejemplo, requieren una SNR más grande para recepción libre de errores. Esto está influenciado además por la tasa de código del codificador FEC, si se utiliza cualquier codificador FEC.

Otra explicación (que está estrechamente relacionada con la tarea de optimización) es que, para cada SNR, se proponen constelaciones optimizadas para diferentes M. El objetivo de optimización es la capacidad BICM. Para una SNR esperada, digamos 15 dB de SNR deberían garantizarse, se elige M, para lo cual las NUC optimizadas respectivas producen la capacidad BICM más grande. Como regla general mantiene que para una SNR baja se debería seleccionar un valor bajo de M y viceversa. Pero desde un punto de vista teórico, resulta que una M alta es generalmente óptima, por ejemplo, es preferido elegir M = 4096 o M = 1024, porque incluso para una SNR baja, la NUC optimizada "se verá como" una constelación con una M efectivamente más pequeña, ya que diversos puntos se solaparán. Sin embargo, la complejidad de la modulación y demodulación aumenta con el aumento de M, por lo que se ha de considerar una compensación.

Como se ha mencionado anteriormente los sistemas de comunicaciones conocidos a menudo emplean entre otros bloques un denominado aparato de BICM que puede utilizarse también como aparato de codificación y modulación según la presente exposición. La capacidad máxima posible sobre un aparato de BICM se describe por la capacidad BICM C_B:

$$C_B = \sum_{i=0}^{m-1} E_{b,r_k}\left[log_2 \frac{\sum_{x_l \in \mathbb{X}_b^i} p(r_k|s_k = x_l)}{p(r_k)}\right]$$

$$= \int_{r_k \in \mathbb{C}} \sum_{i=0}^{m-1} \sum_{b=0}^{1} \sum_{x_l \in \mathbb{X}_b^i} \frac{1}{M} \cdot p(r_k|s_k = x_l) log_2 \frac{\sum_{x_l \in \mathbb{X}_b^i} p(r_k|s_k = x_l)}{\frac{1}{M} \cdot \sum_{x'_l \in \mathbb{X}} p(r_k|s_k = x'_l)} dr_k \,, \qquad (1)$$

Donde I indica la etiqueta del bit i del punto de constelación, y m es el número total de bits / punto de símbolo QAM. En conjunto la constelación QAM consiste de $M = 2^m$ puntos de constelación, cada uno asignado a una etiqueta de bits particular (00…00, 00…01, …, 11…11). En (1), E[.] Indica un operador de expectativas, $p(r_k)$ es la función de densidad de probabilidad (pdf) de los símbolos recibidos, s_k es el símbolo transmitido según una etiqueta de bits particular, k es el tiempo discreto (o índice de subportadora en el caso de modulación OFDM), x_1 es un símbolo particular del conjunto de todos los símbolos de constelación, siendo indicado este conjunto por $\mathbb{X}$ (= alfabeto de símbolos, con cardinalidad $M = 2^m$).

$P(r_k|s_k=x_l)$ es la función de probabilidad (probabilidad de transición – definida por las características de canal) de que r_k se recibe dado el hecho de que se ha transmitido $s_k = x_l$. El subconjunto $\mathbb{X}_b^i$ incluye todos los símbolos de $\mathbb{X}$, donde la etiqueta de bits i-enésimos es b (ya sea b = 0 o bien b = 1).

Como se ve en (1), C_B es una integral bidimensional. Si solamente las constelaciones se consideran que pueden dividirse en dos 1-dim. Las constelaciones PAM, es fácil ver que

$$C_B(\text{2-dim.}) = 2 \times C_B(\text{1-dim.}) \quad (2)$$

Todos los canales investigados aquí incluyen un AWGN (solamente o después del canal de desvanecimiento). Esto puede describirse por la relación de señal a ruido SNR, típicamente en dB:

$$SNR = 10*\log_{10}(E_s/\sigma^2) \quad (3)$$

donde E_s es la potencia media del símbolo de la constelación QAM (típicamente normalizada a 1), y σ^2 es la diferencia (=potencia) del ruido Gaussiano blanco aditivo (que se supone que es de media cero).

En (2), la consideración unidimensional para C_B (1-dim.) utiliza una constelación N-PAM, que tiene solamente la mitad de la potencia de símbolo, si solamente se toma la proyección en la en fase o fase de cuadratura, respectivamente. Sin embargo, si se considera de nuevo una normalización de potencia a 1, se aumenta la diferencia de ruido por un factor de 2. Así, para ser más preciso, la función objetivo para el proceso de optimización considerado es dada por

$$C_B(\text{2-dim.at SNW x}) = 2 \times C_B(\text{1-dim. at SNR x/2}) \quad (4)$$

donde la PAM unidimensional tiene la potencia normalizada 1, así solamente la mitad de la SNR (aquí, en valores absolutos, es decir, no en dB) como se ha explicado anteriormente. La capacidad de BICM unidimensional es calculada también según (1), donde la integral bidimensional se convierte en una integral unidimensional siendo $r_k \in \Re, \Re$ el conjunto de números reales.

Esta ecuación (4) se optimiza, dados todos los grados de libertad, a saber, los puntos de constelación de la constelación 1-dim. subyacente, sujeta a la restricción de potencia, es decir

$$\mathcal{P}_x = E_{s_k}[|s_k|^2] = E_{x_l}[|x_l|^2] = \frac{1}{M}\sum_{l=0}^{M-1}|x_l|^2 \stackrel{!}{=} 1 \quad (5)$$

Por ejemplo, una 4-QAM regular consiste de puntos de constelación ($e^{i\pi/4}$, $e^{i7\pi/4}$, $e^{3\pi/4}$, $e^{i5\pi/4}$), como puede verse en la fig. 4. La potencia media de símbolo es 1 (todos los símbolos están ubicados en un círculo unitario aquí). El vector de símbolo anterior ($e^{i\pi/4}$, $e^{i7\pi/4}$, $e^{3\pi/4}$, $e^{i5\pi/4}$), se ha de comprender de tal manera que la primera entrada ($e^{i\pi/4}$) pertenece al vector de bit 00, la segunda entrada ($e^{i7\pi/4}$) a 01 y así sucesivamente, es decir, las entradas pertenecen a los vectores de bit con valores crecientes, donde la primera posición de bit es el bit más significativo (MSB) y la última el bit menos significativo (LSB). Esta 4-QAM es un caso particular de una N^2-QAM, con N = 2. Obsérvese que esta definición (de ser una N^2 QAM) no solamente requiere que N^2 sea un número cuadrado ($N^2 = 2^2$), sino que también la constelación es simétrica y puede describirse por dos constelaciones N-PAM independientes, aquí una 2-PAM: el componente en fase (parte real de los símbolos complejos) es una 2-PAM con vector de símbolo (1/sqrt(2), -1/sqrt(2)) y describe el primer bit del 4-QAM, mientras que el componente de fase de cuadratura (parte imaginaria de los símbolos complejos) es la misma 2-PAM, describiendo esta vez el segundo bit de la 4-QAM. Obsérvese además que la descomposición de la N^2-QAM a dos N-PAM es solamente posible si el etiquetado de bit está de acuerdo con una asignación de Gris binario reflejado, que se aplica típicamente (por ejemplo, en sistemas DVB).

El ejemplo anterior puede extenderse a N2-QAM de orden superior, siendo N>2. A continuación la N-PAM subyacente describe para un componente la etiqueta de bit 1ª, 3ª, 5ª y así sucesivamente, mientras que para otro componente describe la etiqueta 2ª, 4ª, 6ª y así sucesivamente.

Se conoce generalmente la conformación de constelación y tiene una larga historia. Solamente en los años recientes, las constelaciones se han investigado que maximiza la capacidad de BICM C_B. En [6], los autores proponen un enfoque heurístico para maximizar C_B forzando la PAM subyacente a acercarse a una forma similar a Gauss (como es bien conocido del teorema de capacidad de Shannon, la constelación óptima sobre el canal AWGN debería tener una distribución Gaussiana; obsérvese que esto significa que hay un número infinito de señales de entrada continuamente distribuidas, que tienen una distribución Gaussiana, es decir, símbolos con menor potencia deberían ocurrir de manera más frecuente que símbolos con mayor potencia). No hay prueba de que esto maximice C_B, en realidad estas NUC diseñadas según este método no maximizan C_B. Las NUC resultantes no son en general NUC N^2, es decir una NUC bidimensional se ha optimizado, no la PAM subyacente. Sin embargo, en N. Muhammad, "Coding and modulation for spectral efficient transmission" (Codificación y modulación para transmisión espectral eficaz), Ph.D. dissertation, Universität Stuttgart, Institut für Nachrichtenübertragung, Pfaffenwaldring 47, 70569 Stuttgart, Germany, junio de 2006, las primeras constelaciones de tiempo se han optimizado directamente con respecto a la función objetivo C_B. Para este método ocurren dos diferencias al método actual:

- se han propuesto M-NUC para M = 8, 16, y 32. No se han investigado NUC de orden superior, ya que la optimización lleva mucho tiempo y los algoritmos de optimización se vuelven numéricamente inestables.

- El algoritmo de optimización ha sido un algoritmo de búsqueda de gradiente escrito a mano, donde tanto la capacidad de BICM como el gradiente de la misma consiste en integrales impropias. No se han considerado cuidados especiales sobre bien la solución numérica de la integral impropia o bien los integrantes problemáticos.

Esta consideración de estos dos problemas es fundamental para obtener resultados para constelaciones de orden superior, tal como NUC de 1k (es decir, 1024).

Como se ha descrito anteriormente, los dos problemas surgen al resolver la optimización:

a) integral impropia: selección de límites de integración; e

b) integrante

Con respecto al problema a) (integral impropia: selección de límite de integración), como se ve en la ec. (1), la capacidad de BICM implica una integral desde – infinito a + infinito (=integral impropia). Cualquier solución numérica de esta integral tiene que considerar límites de integración finitos tales como desde –b hasta +b, siendo b suficientemente grande. Matlab proporciona diversas funciones para integración numérica, incluso para integrales impropias, tales como la función "quad", que optimiza internamente los límites b de integración apropiados. Sin embargo, se ha observado que incluso estas funciones producen inestabilidades numéricas y no terminan con la integral correcta.

Puede observarse que el integrante en (1) se acerca a 0 si la variable r_k es suficientemente grande (b -> Inf). Así un enfoque ingenuo sería aumentar gradualmente la variable r_k, hasta que la integrante cae por debajo de un umbral determinado (digamos 10-300 o si incluso se convierte exactamente en 0) y elige este valor para el límite b de integración. Sin embargo, se ha observado además que el integrante puede tomar valores muy pequeños incluso antes de converger a 0 para grandes variables, como puede verse en los dos ejemplos representados en las figs. 5A y 5B: el gráfico mostrado en la fig. 5B es el integrante de la función de capacidad de BICM unidimensional, si se utiliza un 32-PAM regular, a 10 db SNR, mientras se considera el gráfico mostrado en la fig. 5A de 30 db.

Obsérvese que para 30 db, ocurren muchos valores de integrante muy pequeños en el intervalo [-2,2] y cualquier límite de integración optimizado sería engañoso en este intervalo. Así se propone encontrar el límite b de integración óptimo (= numéricamente correcto) como sigue:

i) comenzar con un valor S positivo grande, reduce imperativamente el valor por reducciones D, calcula el integrante con este valor como variable rk, hasta que se calcula el primer valor distinto de cero del integrante. Si no se puede encontrar ningún integrante distinto de cero antes de que $r_k = 0$, comenzar de nuevo con un valor S inicial mayor (digamos 10 veces mayor que antes) y reducir D (digamos por un factor de 10) para tener un intervalo de búsqueda mayor y la granularidad más fina.

ii) Ya que la búsqueda consume mucho tiempo, se propone ajustar el valor S inicial y la reducción D según la SNR. Si σ^2 es la diferencia de ruido de la asignación unidimensional (véase ec.(3)), a continuación, se han elegido como un buen compromiso $S = 4000*\sigma^2$ y $D = 50*\sigma^2$.

Con respecto al problema b) (integrante) se ha observado además que el integrante de la integral de capacidad de BICM puede provocar inestabilidades numéricas para valores grandes de SNR. Como puede verse en la ec.(1), el integrante consiste en sumas, incluyendo términos tales como

$$x*\log(x), x*\log(1/x), \text{ o } x*1/\log(x).$$

El valor de x es, por ejemplo, la probabilidad de transición $p(r_k|s\_k = x_l)$, o un pdf o incluye partes de la misma. Los valores de x se vuelven cada vez más pequeños (incluso llegando a cero) si la SNR es muy grande, ya que los pdf corresponden típicamente a distribuciones Gaussianas. Así, pueden ocurrir los siguientes límites:

$$\lim_{\{x\to 0\}} x*\log(x),\ \lim_{\{x\to 0\}} x*\log(1/x),\ \text{or}\ \lim_{\{x\to 0\}} x*1/\log(x).$$

Obsérvese que, en teoría, cada límite converge a 0 (véase la regla del Hospital), pero en un cálculo numérico, ocurrirán valores tales como + o - infinito o NaN ("no un número"). Así, se propone lo siguiente: durante el cálculo de cada elemento (es decir, cada suma en el integrante de (1)), se ha de comprobar el valor si es finito (de lo contrario infinito o NaN), y reemplazarlo por 0 en caso de que no sea finito. Solamente de esta manera, se pueden obtener resultados de integración fiables.

La optimización presentada está basada preferiblemente en la función fmincon de Matlab para optimización no lineal restringida: la función objetivo es la capacidad de BICM, las restricciones son como sigue:

- Todos los dof (grados de libertad) > 0;
- Todos los dof necesitan cumplir con la normalización de potencia, cuando la N-PAM se crea basándose en ellos;
- Los dof deben ocurrir en orden creciente.

La función fmincon requiere un conjunto de dof inicial, donde los valores se han tomado de una constelación regular, es decir uniforme, pero se ha aplicado una mutación aleatoria sobre ellos. Se ha de observar que los valores

resultantes deberían ser aún en orden creciente, de lo contrario el etiquetado de bit en Gris ya no se cumple. Las NUC se describirán por sus grados de libertad, por ejemplo, una 64-NUC optimizada para el canal AWGN en SNR = 11.5 db produce los siguientes valores (grados de libertad optimizados):

2.2794 4.6229 7.5291

esto significa que los valores de constelación positivos son

1 2.2794 4.6229 7.5291

(el 1 era redundante, debido a la normalización de potencia, que se aplicará al final). La NUC 8-PAM 1-dim. subyacente es así descrita por el vector de símbolo

(1.6405 1.0073 0.2179 0.4967 -1.6405 -1.0073 -0.2179 -0.4967),

donde los valores ya se han normalizado a la unidad de potencia media.

Como se ha descrito anteriormente, la primera entrada (1.6405) corresponde a la etiqueta de bit 000, la siguiente (1.0073) a 001 y así sucesivamente. La 64-NUC 2-dim. se obtiene a continuación por simetría, donde tanto el componente en fase como en fase de cuadratura de la NUC se basan en la NUC 8-PAM.

La fig. 6 representa tanto la NUC 8-PAM (fig. 6A) como la NUC 64-QAM (fig. 6B). Las etiquetas de bit son dadas en números enteros (000 -> 0,0001 -> 1,010 -> 2 etc.).

La creación de la NUC 2-dim. basándose en los grados de libertad optimizados se explicará en más detalle a continuación.

Ya que el rendimiento de las NUC depende del valor de SNR se optimizan para, una selección minuciosa es preferiblemente llevada a cabo dependiendo de la tasa de código (FEC) para alcanzar un rendimiento óptimo. Si se conocen las características de canal, el valor de SNR requerido para la convergencia FEC puede determinarse por simulación. A continuación, se elige la NUC que se ha optimizado para este valor de SNR para un mejor rendimiento. Si la SNR en el receptor es inferior que este umbral de decodificación de SNR, la constelación no es óptima.

Sin embargo, esto no es un inconveniente, ya que la capacidad de BICM es muy baja para una decodificación con éxito de todos modos. Por otro lado, si la SNR en el receptor es claramente más alta que el umbral de decodificación, está disponible una cantidad suficiente de capacidad de BICM para decodificación con éxito, incluso aunque la NUC sea inferior a la óptima para este intervalo de SNR. Por lo tanto, la NUC necesita optimizarse para el valor de SNR en la región de cascada (es decir, umbral de decodificación para decodificación (casi) libre de errores) del FEC. Cuando el valor de SNR de la región de cascada depende de la tasa de código del FEC, se selecciona una NUC diferente para cada tasa de código.

El valor de SNR para la decodificación (casi) libre de errores depende también de las características de canal del receptor. Por ejemplo, la SNR requerida para la decodificación libre de errores del código DVB-T2 LDPC en el canal AWGN es 0.8 db, mientras que se requieren 2.5 db en el canal de trayectos múltiples P1 Rayleigh. La NUC seleccionada para cada tasa de código no es así óptima en todos los entornos de canal y es necesario una compensación en un entorno de difusión que se adapte a todos (o a la mayoría) de los usuarios en la red. En una red punto a punto con canal de retorno, la NUC óptima puede seleccionarse basándose en las características de canal en el receptor.

A continuación, se proporciona alguna explicación más con respecto a la definición de las constelaciones QAM no uniformes. Cada palabra de celda de entrada ($y_{0,q}…y_{m-1,q}$) (es decir, proporcionada al modulador) se modularán utilizando una constelación QAM no un informe para dar un punto de constelación z_q anterior a la normalización, donde m corresponde al número de bytes por símbolo QAM $m = \log_2(M)$. Debería observarse que el parámetro q utilizado aquí para un tiempo discreto o índice de subportadora corresponde al parámetro k como se ha utilizado anteriormente. Los valores exactos de los componentes real e imaginario $Re(z_q)$ e $Im(z_q)$ para cada combinación de los bits de entrada relevantes $y_{0…m-1,q}$ son dados en las siguientes tablas para los diversos tamaños de constelación dependiendo del lector de posición NUC.

A continuación, se describirá la optimización Q-NUC, es decir la optimización de una constelación bidimensional que se deriva de un sólo cuadrante. La optimización descrita anteriormente de una N^2-QAM requiere la optimización de sqrt(M)/2-1 grados de libertad. Ya que la optimización de una constelación QAM bidimensional tiene 2*M grados de libertad (parte real e imaginaria de cada punto de constelación) la optimización consume significativamente más tiempo. Esto es provocado también por la necesidad de calcular la capacidad de BICM durante la optimización del caso bidimensional en vez del caso unidimensional. Ya que las constelaciones 2D óptimas para el caso 16-QAM son simétricas con respecto a los diferentes cuadrantes de las constelaciones, las siguientes simplificaciones se pueden aplicar durante la optimización: solamente un cuadrante de la constelación se optimiza durante la constelación, reduciendo los grados de libertad durante la optimización de 2*M a M/2. A partir de este cuadrante los cuadrantes restantes pueden derivarse, conduciendo a una así llamada constelación QQAM. Sin embargo, se debe tener cuidado

de asegurar que se conservan las propiedades del etiquetado de bit de los puntos de constelación. Si el primer cuadrante es asignado en gris, ofreciendo una distancia Hamming máxima de 1, la misma debe asegurarse para los cuadrantes restantes de la constelación QQAM. Esto se asegura mediante el algoritmo definido a continuación.

Para definir de manera única un 16-QQAM solamente se requieren 8 valores reales, correspondientes a 4 valores complejos que representan los puntos de constelación del primer cuadrante. Basándose en el enfoque QQAM, se han utilizado las constelaciones 16-QQAM, 32-QQAM, 64-QQAM, 256-QQAM y 1024-QQAM, superando claramente las constelaciones N^2-QAM, especialmente en el régimen bajo de SNR. El rendimiento de las constelaciones 16-QQAM, 32-QQAM, 64-QQAM, 256-QQAM y 1024-QQAM se representa en la fig. 8. El enfoque de optimización QQAM presentado puede utilizarse para cualquier condición de canal, por ejemplo, para el canal AWGN así como para canales de desvanecimiento.

A continuación, se proporciona la definición de los vectores de posición NUC obtenidos por el uso del enfoque descrito anteriormente para obtener constelaciones QQAM. La relación señal a ruido (SNR) es siempre indicada en dB.

a) 16QQAM – canal AWGN

SNR / w	w0	w1	w2	w3
0	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i
0,5	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i
1	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i
1,5	0.6921+0.8373i	0.8373+0.6921i	0.5853+0.6908i	0.6908+0.5854i
2	0.5879+0.4053i	1.0566+0.6114i	0.4053+0.5879i	0.6114+1.0566i
2,5	0.5354+0.3507i	0.3507+0.5354i	1.1217+0.5763i	0.5763+1.1217i
3	0.5551+1.1571i	0.3189+0.5012i	1.1571+0.5551i	0.5012+0.3189i
3,5	0.5410+1.1789i	1.1789+0.5410i	0.2981+0.4781i	0.4781+0.2981i
4	0.5309+1.1928i	1.1928+0.5309i	0.2842+0.4633i	0.4633+0.2842i
4,5	0.2752+0.4551i	0.4551+0.2752i	0.5232+1.2014i	1.2014+0.5232i
5	0.2696+0.4521i	0.4521+0.2696i	0.5169+1.2065i	1.2065+0.5169i
5,5	1.2092+0.5115i	0.4530+0.2663i	0.5115+1.2092i	0.2663+0.4530i
6	0.2642+0.4570i	0.4570+0.2642i	0.5067+1.2102i	1.2102+0.5067i
6,5	0.4634+0.2626i	1.2100+0.5023i	0.2626+0.4634i	0.5023+1.2100i
7	0.2606+0.4718i	0.4718+0.2606i	0.4984+1.2088i	1.2088+0.4984i
7,5	0.4951+1.2068i	1.2068+0.4951i	0.2575+0.4819i	0.4819+0.2575i
8	0.4925+1.2040i	0.2530+0.4936i	1.2040+0.4925i	0.4936+0.2530i
8,5	0.5061+0.2474i	0.2474+0.5061i	1.2007+0.4909i	0.4909+1.2007i
9	0.2472+0.5461i	0.4910+0.2363i	0.5032+1.2019i	1.1908+0.4773i
9,5	0.6186+0.2544i	0.2213+0.4416i	1.2080+0.5377i	0.4487+1.1657i
10	0.2173+0.4189i	0.6578+0.2571i	0.4326+1.1445i	1.2088+0.5659i
10,5	0.9576+0.2881i	0.2881+0.2881i	0.9576+0.9576i	0.2881+0.9576i
11	0.2918+0.2918i	0.9565+0.2918i	0.2918+0.9565i	0.9565+0.9565i
11,5	0.2949-0.2949i	0.9555-0.2949i	0.2949-0.9555i	0.9555-0.9555i
12	0.2976-0.2976i	0.9547-0.2976i	0.2976-0.9547i	0.9547-0.9547i
12,5	0.2999-0.2999i	0.9540-0.2999i	0.2999-0.9540i	0.9540-0.9540i
13	0.3018-0.3018i	0.9534-0.3018i	0.3018-0.9534i	0.9534-0.9534i
13,5	0.3035-0.3035i	0.9528-0.3035i	0.3035-0.9528i	0.9528-0.9528i
14	0.3050-0.3050i	0.9523-0.3050i	0.3050-0.9523i	0.9523-0.9523i
14,5	0.3063-0.3063i	0.9519-0.3063i	0.3063-0.9519i	0.9519-0.9519i
15	0.9516+0.9512i	0.9516+0.3073i	0.3074+0.9519i	0.3075+0.3076i

b) 32QQAM – canal AWGN

SNR / w	w0	w1	w2	w3	w4	w5	w6	w7
0	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i
0,5	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i
1	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i
1,5	0.5852+0.6908i	0.6906+0.5853i	0.6919+0.8373i	0.8369+0.6921i	0.5856+0.6908i	0.6911+0.5854i	0.6923+0.8374i	0.8376+0.6922i
2	0.4053+0.5879i	0.5879+0.4054i	0.6114+1.0565i	1.0566+0.6114i	0.4053+0.5879i	0.5879+0.4053i	0.6114+1.0565i	1.0566+0.6114i
2,5	0.3507+0.5354i	0.5354+0.3507i	0.5763+1.1217i	1.1217+0.5763i	0.3507+0.5354i	0.5354+0.3507i	0.5763+1.1217i	1.1217+0.5763i
3	0.3189+0.5012i	0.5012+0.3189i	0.5551+1.1571i	1.1571+0.5551i	0.3189+0.5012i	0.5012+0.3189i	0.5551+1.1571i	1.1572+0.5551i
3,5	0.2981+0.4781i	0.4781+0.2981i	0.5410+1.1789i	1.1789+0.5410i	0.2980+0.4781i	0.4781+0.2981i	0.5410+1.1789i	1.1789+0.5410i
4	0.2842+0.4633i	0.4633+0.2842i	0.5309+1.1927i	1.1927+0.5309i	0.2842+0.4633i	0.4633+0.2842i	0.5310+1.1928i	1.1928+0.5310i
4,5	0.2752+0.4551i	0.4551+0.2752i	0.5232+1.2014i	1.2014+0.5232i	0.2752+0.4551i	0.4551+0.2752i	0.5232+1.2014i	1.2014+0.5232i
5	0.2696+0.4521i	0.4521+0.2696i	0.5170+1.2065i	1.2065+0.5169i	0.2696+0.4521i	0.4521+0.2696i	0.5169+1.2065i	1.2065+0.5170i
5,5	0.2663+0.4530i	0.4530+0.2663i	0.5115+1.2092i	1.2092+0.5115i	0.2663+0.4530i	0.4530+0.2663i	0.5115+1.2092i	1.2092+0.5115i
6	0.2642+0.4570i	0.4570+0.2642i	0.5067+1.2102i	1.2102+0.5067i	0.2642+0.4570i	0.4570+0.2642i	0.5067+1.2102i	1.2102+0.5067i
6,5	0.2553+0.4543i	0.4543+0.2553i	0.4305+1.2537i	1.2537+0.4305i	0.2699+0.4632i	0.4632+0.2699i	0.5752+1.1632i	1.1632+0.5752i
7	0.2470+0.4515i	0.4515+0.2470i	0.3595+1.2746i	1.2746+0.3595i	0.2734+0.4630i	0.4630+0.2734i	0.6396+1.1327i	1.1327+0.6395i
7,5	0.2410+0.4578i	0.4577+0.2410i	0.3211+1.2755i	1.2755+0.3211i	0.2728+0.4655i	0.4655+0.2728i	0.6715+1.1226i	1.1226+0.6715i
8	0.2351+0.4699i	0.4699+0.2351i	0.2957+1.2701i	1.2701+0.2957i	0.2695+0.4698i	0.4698+0.2695i	0.6913+1.1190i	1.1190+0.6913i
8,5	0.2270+0.3121i	0.6255+0.2091i	0.3173+1.3160i	1.3378+0.3422i	0.2428+0.4444i	0.5783+0.3109i	0.4151+1.0074i	1.0441+0.8436i
9	0.2117+0.2518i	0.6564+0.1984i	0.3463+1.3865i	1.3392+0.3470i	0.2317+0.4565i	0.6091+0.3434i	0.3354+0.9582i	0.9927+0.8356i
9,5	0.2014+0.2235i	0.6716+0.1924i	0.3533+1.4075i	1.3374+0.3431i	0.2276+0.4678i	0.6230+0.3674i	0.3047+0.9383i	0.9683+0.8393i
10	0.1946+0.2025i	0.6811+0.1872i	0.3555+1.4163i	1.3323+0.3370i	0.2266+0.4818i	0.6303+0.3928i	0.2860+0.9269i	0.9538+0.8460i
10,5	0.1917+0.1863i	0.6885+0.1824i	0.3554+1.4185i	1.3247+0.3312i	0.2273+0.4949i	0.6340+0.4191i	0.2729+0.9204i	0.9446+0.8543i
11	0.1929+0.1744i	0.6963+0.1782i	0.3541+1.4168i	1.3162+0.3270i	0.2283+0.5036i	0.6364+0.4437i	0.2627+0.9170i	0.9382+0.8637i
11,5	0.1978+0.1660i	0.7046+0.1752i	0.3521+1.4127i	1.3074+0.3244i	0.2287+0.5076i	0.6386+0.4654i	0.2546+0.9154i	0.9335+0.8738i
12	0.2047+0.1603i	0.7126+0.1738i	0.3499+1.4076i	1.2978+0.3226i	0.2280+0.5086i	0.6410+0.4845i	0.2485+0.9154i	0.9299+0.8841i
12,5	0.2121+0.1569i	0.7185+0.1739i	0.3478+1.4027i	1.2867+0.3209i	0.2258+0.5089i	0.6431+0.5018i	0.2443+0.9172i	0.9274+0.8949i
13	0.2187+0.1559i	0.7211+0.1755i	0.3459+1.3987i	1.2734+0.3186i	0.2225+0.5103i	0.6446+0.5183i	0.2415+0.9207i	0.9257+0.9059i
13,5	0.2234+0.1575i	0.7198+0.1782i	0.3442+1.3961i	1.2579+0.3156i	0.2189+0.5139i	0.6455+0.5346i	0.2398+0.9259i	0.9246+0.9174i
14	0.2261+0.1614i	0.7147+0.1816i	0.3425+1.3949i	1.2405+0.3119i	0.2157+0.5201i	0.6463+0.5505i	0.2389+0.9324i	0.9230+0.9294i
14,5	0.2113+0.1819i	0.6590+0.1934i	0.6163+1.2930i	1.1691+0.2524i	0.2042+0.5736i	0.6214+0.5984i	0.2154+1.0277i	1.0670+0.7825i
15	0.2082+0.1903i	0.6467+0.1971i	0.6624+1.2634i	1.1455+0.2430i	0.2028+0.5942i	0.6209+0.6087i	0.2221+1.0561i	1.0812+0.7572i

c) 64QQAM – canal AWGN

SNR / w	w0	w1	w2	w3	w4	w5	w6	w7
0	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i
0,5	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i
1	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i
1,5	0.8374+0.6919i	0.6909+0.5852i	0.8371+0.6921i	0.6907+0.5853i	0.8375+0.6921i	0.6910+0.5854i	0.8372+0.6923i	0.6908+0.5855i
2	1.0566+0.6114i	1.0566+0.6114i	0.5879+0.4053i	0.5879+0.4053i	0.6114+1.0566i	0.6114+1.0566i	0.4053+0.5879i	0.4053+0.5879i
2,5	1.1217+0.5763i	1.1217+0.5763i	1.1217+0.5763i	1.1217+0.5763i	0.5354+0.3507i	0.5354+0.3507i	0.5354+0.3507i	0.5354+0.3507i
3	0.5551+1.1571i	0.3189+0.5012i	1.1571+0.5551i	0.5012+0.3189i	0.5551+1.1571i	0.3189+0.5012i	1.1572+0.5551i	0.5012+0.3189i
3,5	1.1789+0.5410i	1.1789+0.5410i	1.1789+0.5410i	1.1789+0.5410i	0.4781+0.2981i	0.4781+0.2980i	0.4781+0.2981i	0.4781+0.2981i
4	0.2842+0.4633i	0.2842+0.4633i	0.5309+1.1928i	0.5309+1.1927i	0.2842+0.4633i	0.2842+0.4633i	0.5309+1.1928i	0.5309+1.1927i
4,5	0.5232+1.2014i	0.5232+1.2014i	0.5232+1.2014i	0.5232+1.2014i	1.2014+0.5232i	1.2014+0.5232i	1.2014+0.5232i	1.2014+0.5232i
5	1.2065+0.5170i	1.2065+0.5169i	1.2065+0.5169i	1.2066+0.5169i	0.5170+1.2065i	0.5169+1.2065i	0.5169+1.2065i	0.5169+1.2065i
5,5	1.2092+0.5115i	1.2092+0.5115i	1.2092+0.5115i	1.2092+0.5115i	0.4530+0.2663i	0.4530+0.2663i	0.4530+0.2663i	0.4530+0.2663i
6	0.2642+0.4570i	0.2642+0.4570i	0.2642+0.4570i	0.2642+0.4570i	0.4570+0.2642i	0.4570+0.2642i	0.4570+0.2642i	0.4570+0.2642i
6,5	0.5752+1.1632i	0.4305+1.2537i	0.5752+1.1632i	0.4305+1.2537i	1.1632+0.5752i	1.2537+0.4305i	1.1632+0.5752i	1.2537+0.4305i
7	0.3595+1.2746i	0.6396+1.1327i	0.3595+1.2746i	0.6396+1.1327i	1.2746+0.3595i	1.1327+0.6396i	1.2746+0.3595i	1.1327+0.6396i
7,5	0.7476+1.2181i	0.5961+1.0258i	0.3325+1.3887i	0.3069+1.1510i	1.2181+0.7475i	1.0258+0.5961i	1.3887+0.3325i	1.1510+0.3069i
8	0.3109+1.4253i	0.7943+1.2523i	0.2868+1.0998i	0.5786+0.9799i	1.4253+0.3109i	1.2523+0.7943i	1.0998+0.2868i	0.9799+0.5786i
8,5	1.6023+0.4387i	1.0881+0.8753i	0.4387+1.6023i	0.8753+1.0881i	0.9239+0.2202i	0.8454+0.3049i	0.7818+0.2019i	0.7540+0.2653i
9	0.4221+1.5951i	1.5951+0.4221i	0.8732+1.0971i	1.0971+0.8732i	0.7823+0.2020i	0.9288+0.2247i	0.7537+0.2686i	0.8479+0.3175i
9,5	0.8408+1.2670i	0.5485+0.9136i	0.2950+1.4844i	0.2548+1.0308i	1.2670+0.8407i	0.9136+0.5485i	1.4844+0.2950i	1.0308+0.2548i
10	1.2647+0.8443i	1.4891+0.2935i	0.9020+0.5498i	1.0230+0.2451i	0.3069+0.1750i	0.3075+0.1615i	0.5944+0.3252i	0.6401+0.2182i
10,5	0.2925+1.4892i	0.8449+1.2622i	0.2351+1.0196i	0.5555+0.8926i	1.4892+0.2925i	1.2622+0.8449i	1.0196+0.2351i	0.8926+0.5555i
11	0.8435+1.2594i	0.5630+0.8851i	0.2921+1.4867i	0.2255+1.0193i	1.2594+0.8435i	0.8851+0.5630i	1.4867+0.2921i	1.0193+0.2255i
11,5	0.2920+1.4827i	0.8411+1.2563i	0.2174+1.0211i	0.5702+0.8798i	1.4827+0.2920i	1.2563+0.8411i	1.0211+0.2174i	0.8798+0.5702i
12	0.2920+1.4781i	0.8380+1.2527i	0.2112+1.0242i	0.5763+0.8768i	1.4781+0.2920i	1.2527+0.8380i	1.0242+0.2112i	0.8768+0.5763i
12,5	0.2920+1.4732i	0.8348+1.2487i	0.2071+1.0283i	0.5811+0.8760i	1.4732+0.2920i	1.2487+0.8348i	1.0283+0.2071i	0.8760+0.5811i
13	0.2978+1.4669i	0.8421+1.2355i	0.2135+1.0389i	0.6055+0.8654i	1.4685+0.2859i	1.2516+0.8201i	1.0279+0.1981i	0.8857+0.5642i
13,5	1.4627+0.2996i	1.0469+0.2187i	1.2278+0.8422i	0.8605+0.6179i	0.4106+0.1299i	0.7441+0.1749i	0.3822+0.1824i	0.6160+0.4168i
14	0.2989+1.4602i	0.8389+1.2232i	0.2232+1.0534i	0.6245+0.8593i	1.4560+0.2819i	1.2434+0.8085i	1.0319+0.1914i	0.8945+0.5550i
14,5	0.2878+1.4388i	0.8133+1.2150i	0.2219+1.0386i	0.6145+0.8494i	1.4656+0.2931i	1.2278+0.8230i	1.0649+0.2069i	0.8971+0.5677i
15	0.9687-0.4488i	0.1261-0.4193i	0.6752-0.4269i	0.3896-0.4201i	1.0304-0.1506i	0.1248-0.1379i	0.6647-0.1295i	0.3769-0.1364i
15,5	0.9856-0.4661i	0.1264-0.4145i	0.6825-0.4329i	0.3948-0.4179i	1.0366-0.1534i	0.1272-0.1353i	0.6796-0.1340i	0.3877-0.1359i
16	1.0161-0.4912i	0.1287-0.4061i	0.6966-0.4427i	0.4025-0.4142i	1.0441-0.1581i	0.1321-0.1317i	0.6995-0.1411i	0.4035-0.1354i
16,5	1.0519-0.5188i	0.1325-0.3998i	0.7146-0.4532i	0.4122-0.4120i	1.0500-0.1642i	0.1374-0.1295i	0.7170-0.1473i	0.4185-0.1357i
17	1.0725-0.5328i	0.1361-0.4023i	0.7267-0.4592i	0.4198-0.4151i	1.0501-0.1676i	0.1398-0.1309i	0.7233-0.1496i	0.4246-0.1370i
17,5	1.0854-0.5394i	0.1392-0.4078i	0.7353-0.4623i	0.4262-0.4205i	1.0474-0.1695i	0.1407-0.1336i	0.7243-0.1504i	0.4265-0.1388i
18	1.0941-0.5424i	0.1418-0.4131i	0.7424-0.4645i	0.4318-0.4266i	1.0439-0.1707i	0.1411-0.1361i	0.7235-0.1509i	0.4269-0.1406i
18,5	1.0998-0.5430i	0.1439-0.4173i	0.7487-0.4666i	0.4370-0.4325i	1.0405-0.1713i	0.1414-0.1380i	0.7224-0.1517i	0.4269-0.1425i
19	1.1032-0.5410i	0.1458-0.4204i	0.7543-0.4691i	0.4418-0.4382i	1.0373-0.1716i	0.1414-0.1393i	0.7213-0.1527i	0.4267-0.1443i
19,5	1.1043-0.5346i	0.1473-0.4225i	0.7587-0.4731i	0.4459-0.4435i	1.0338-0.1710i	0.1414-0.1401i	0.7201-0.1544i	0.4264-0.1461i
20	1.1039-0.5232i	0.1486-0.4237i	0.7620-0.4802i	0.4492-0.4482i	1.0304-0.1696i	0.1413-0.1405i	0.7193-0.1572i	0.4263-0.1477i

SNR / w	w8	w9	w10	w11	w12	w13	w14	w15
0	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i
0,5	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i
1	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7071+0.7071i	0.7072+0.7071i
1,5	0.6922+0.8371i	0.5854+0.6907i	0.6920+0.8373i	0.5852+0.6908i	0.6923+0.8373i	0.5854+0.6908i	0.6920+0.8375i	0.5853+0.6910i
2	1.0565+0.6114i	1.0565+0.6114i	0.5879+0.4053i	0.5879+0.4053i	0.6114+1.0566i	0.6114+1.0566i	0.4053+0.5879i	0.4053+0.5879i
2,5	0.5763+1.1217i	0.5763+1.1217i	0.5763+1.1217i	0.5763+1.1217i	0.3507+0.5354i	0.3507+0.5354i	0.3507+0.5354i	0.3507+0.5354i
3	0.5551+1.1571i	0.3189+0.5012i	1.1571+0.5551i	0.5012+0.3189i	0.5551+1.1572i	0.3189+0.5012i	1.1571+0.5551i	0.5012+0.3189i
3,5	0.5410+1.1789i	0.5410+1.1789i	0.5410+1.1789i	0.5410+1.1789i	0.2980+0.4781i	0.2980+0.4781i	0.2980+0.4781i	0.2980+0.4781i
4	0.4633+0.2842i	0.4633+0.2842i	1.1927+0.5309i	1.1927+0.5309i	0.4633+0.2842i	0.4633+0.2842i	1.1928+0.5309i	1.1928+0.5309i
4,5	0.2752+0.4551i	0.2752+0.4551i	0.2752+0.4551i	0.2752+0.4551i	0.4551+0.2752i	0.4551+0.2752i	0.4551+0.2752i	0.4551+0.2752i
5	0.4521+0.2696i	0.4521+0.2696i	0.4521+0.2696i	0.4521+0.2696i	0.2696+0.4521i	0.2696+0.4521i	0.2696+0.4521i	0.2696+0.4521i
5,5	0.5115+1.2092i	0.5115+1.2092i	0.5115+1.2092i	0.5115+1.2092i	0.2663+0.4530i	0.2663+0.4530i	0.2663+0.4530i	0.2663+0.4530i
6	0.5067+1.2102i	0.5067+1.2102i	0.5067+1.2102i	0.5067+1.2102i	1.2102+0.5067i	1.2102+0.5067i	1.2102+0.5067i	1.2102+0.5067i
6,5	0.2699+0.4632i	0.2553+0.4543i	0.2699+0.4632i	0.2553+0.4543i	0.4632+0.2699i	0.4543+0.2553i	0.4632+0.2699i	0.4543+0.2553i
7	0.2470+0.4515i	0.2734+0.4630i	0.2470+0.4515i	0.2734+0.4630i	0.4515+0.2470i	0.4630+0.2734i	0.4515+0.2470i	0.4630+0.2734i
7,5	0.2486+0.4162i	0.2870+0.4969i	0.2266+0.4085i	0.2500+0.4969i	0.4162+0.2486i	0.4969+0.2870i	0.4084+0.2266i	0.4969+0.2500i
8	0.2104+0.3815i	0.2282+0.3849i	0.2478+0.5286i	0.2937+0.5184i	0.3815+0.2104i	0.3849+0.2282i	0.5286+0.2478i	0.5184+0.2937i
8,5	0.2019+0.7818i	0.2653+0.7540i	0.2202+0.9239i	0.3049+0.8454i	0.2479+0.2675i	0.2701+0.2890i	0.2675+0.2479i	0.2890+0.2701i
9	0.2247+0.9288i	0.2020+0.7823i	0.3175+0.8479i	0.2686+0.7537i	0.2676+0.2415i	0.2415+0.2676i	0.2913+0.2660i	0.2660+0.2913i
9,5	0.1821+0.3172i	0.3159+0.5815i	0.1695+0.3173i	0.2278+0.6176i	0.3172+0.1821i	0.5815+0.3159i	0.3173+0.1695i	0.6176+0.2278i
10	0.8443+1.2648i	0.2935+1.4891i	0.5498+0.9020i	0.2451+1.0230i	0.1750+0.3069i	0.1615+0.3075i	0.3252+0.5944i	0.2182+0.6401i
10,5	0.1558+0.3029i	0.1712+0.3021i	0.2075+0.6586i	0.3354+0.6030i	0.3029+0.1558i	0.3021+0.1712i	0.6586+0.2075i	0.6030+0.3354i
11	0.1697+0.3011i	0.3460+0.6087i	0.1514+0.3020i	0.1969+0.6737i	0.3011+0.1697i	0.6087+0.3460i	0.3020+0.1514i	0.6737+0.1969i
11,5	0.1475+0.3040i	0.1691+0.3028i	0.1871+0.6855i	0.3563+0.6126i	0.3040+0.1475i	0.3028+0.1691i	0.6855+0.1871i	0.6126+0.3563i
12	0.1436+0.3081i	0.1684+0.3059i	0.1789+0.6942i	0.3657+0.6155i	0.3081+0.1436i	0.3059+0.1684i	0.6942+0.1789i	0.6155+0.3657i
12,5	0.1393+0.3138i	0.1671+0.3094i	0.1720+0.7004i	0.3741+0.6174i	0.3138+0.1393i	0.3094+0.1671i	0.7004+0.1720i	0.6174+0.3741i
13	0.1338+0.3767i	0.1752+0.3563i	0.1756+0.7261i	0.4023+0.6180i	0.2713+0.1337i	0.2748+0.1572i	0.6840+0.1578i	0.6145+0.3555i
13,5	0.2831+1.4625i	0.1935+1.0296i	0.8124+1.2487i	0.5574+0.8909i	0.1287+0.2512i	0.1488+0.6759i	0.1538+0.2598i	0.3493+0.6111i
14	0.1266+0.4289i	0.1907+0.3970i	0.1717+0.7575i	0.4261+0.6136i	0.2362+0.1255i	0.2560+0.1549i	0.6735+0.1418i	0.6085+0.3483i
14,5	0.1177+0.4119i	0.2516+0.3998i	0.1559+0.7442i	0.4328+0.5954i	0.1678+0.1166i	0.3325+0.1582i	0.7408+0.1355i	0.6200+0.3227i
15	1.1704-0.7904i	0.1452-0.7405i	0.6932-0.8128i	0.4017-0.7221i	1.4580-0.2741i	0.1644-1.0798i	0.7344-1.2171i	0.2867-1.4419i
15,5	1.1580-0.8178i	0.1416-0.7330i	0.6913-0.8132i	0.4018-0.7177i	1.4529-0.2702i	0.1686-1.0718i	0.7097-1.2125i	0.2732-1.4375i
16	1.1306-0.8649i	0.1385-0.7199i	0.6874-0.8123i	0.4017-0.7107i	1.4516-0.2578i	0.1689-1.0567i	0.6750-1.2072i	0.2558-1.4247i
16,5	1.0952-0.9115i	0.1369-0.7073i	0.6868-0.8108i	0.4044-0.7057i	1.4480-0.2403i	0.1677-1.0405i	0.6406-1.1995i	0.2402-1.4087i
17	1.0771-0.9315i	0.1373-0.7043i	0.6956-0.8095i	0.4114-0.7109i	1.4380-0.2294i	0.1680-1.0338i	0.6220-1.1896i	0.2326-1.3986i
17,5	1.0693-0.9408i	0.1388-0.7057i	0.7092-0.8073i	0.4197-0.7206i	1.4261-0.2216i	0.1682-1.0316i	0.6106-1.1783i	0.2287-1.3914i
18	1.0666-0.9452i	0.1406-0.7083i	0.7229-0.8052i	0.4275-0.7307i	1.4143-0.2157i	0.1685-1.0310i	0.6029-1.1680i	0.2262-1.3855i
18,5	1.0673-0.9458i	0.1425-0.7109i	0.7349-0.8045i	0.4344-0.7399i	1.4036-0.2110i	0.1691-1.0309i	0.5971-1.1599i	0.2240-1.3805i
19	1.0720-0.9413i	0.1445-0.7131i	0.7452-0.8057i	0.4404-0.7481i	1.3941-0.2072i	0.1697-1.0309i	0.5918-1.1539i	0.2216-1.3761i
19,5	1.0847-0.9271i	0.1467-0.7148i	0.7552-0.8112i	0.4463-0.7557i	1.3857-0.2033i	0.1703-1.0305i	0.5851-1.1507i	0.2181-1.3721i
20	1.1043-0.9013i	0.1491-0.7159i	0.7655-0.8232i	0.4529-0.7625i	1.3785-0.1990i	0.1705-1.0293i	0.5745-1.1503i	0.2128-1.3684i

d) 256QQAM – canal AWGN

SNR / w	w0	w1	w2	w3	w4	w5	w6	w7
5	0.4521+0.2696i	0.4521+0.2696i	1.2065+0.5169i	1.2065+0.5169i	0.4521+0.2696i	0.4521+0.2696i	1.2065+0.5169i	1.2065+0.5169i
5,5	0.4530+0.2663i	0.4530+0.2663i	1.2092+0.5115i	1.2092+0.5115i	0.4530+0.2663i	0.4530+0.2663i	1.2092+0.5115i	1.2092+0.5115i
6	1.2102+0.5067i	1.2102+0.5067i	1.2102+0.5067i	1.2102+0.5066i	0.4570+0.2642i	0.4570+0.2642i	0.4570+0.2642i	0.4570+0.2642i
6,5	1.2537+0.4305i	1.2537+0.4304i	1.2537+0.4305i	1.2537+0.4305i	1.1632+0.5752i	1.1632+0.5752i	1.1632+0.5752i	1.1632+0.5752i
7	1.1322+0.6970i	1.0432+0.6178i	1.5234+1.0871i	1.1322+0.6970i	1.2925+0.3605i	1.1736+0.3521i	1.6996+0.3860i	1.2925+0.3605i
7,5	0.2741+0.4749i	0.2526+0.4285i	0.5864+1.0293i	0.6595+1.1198i	0.2951+0.5185i	0.2741+0.4749i	0.5525+0.9862i	0.5864+1.0293i
8	0.3565+1.7813i	0.3059+1.2626i	0.3059+1.2626i	0.2962+1.1484i	1.0099+1.5146i	0.6749+1.1091i	0.6749+1.1091i	0.6000+1.0201i
8,5	0.3488+1.7914i	0.2880+1.2587i	0.2880+1.2587i	0.2788+1.1468i	1.0152+1.5168i	0.6879+1.1023i	0.6879+1.1023i	0.6127+1.0130i

9	1.6414+0.6837i	0.9335+0.8803i	0.2681+1.4953i	0.7270+0.9501i	1.8682+0.2925i	0.8579+0.9067i	0.3433+1.4695i	0.6978+1.0003i
9,5	1.6327+0.6734i	0.9469+0.8771i	0.2526+1.4830i	0.7372+0.9369i	1.8490+0.2874i	0.8644+0.9027i	0.3370+1.4511i	0.7054+0.9892i
10	1.7476-0.3437i	1.4279-0.2830i	0.9979-0.2435i	1.0202-0.2443i	1.4280-0.2830i	1.3530-0.2686i	1.0202-0.2443i	1.0415-0.2449i
10,5	1.7549-0.3495i	1.4293-0.2804i	0.9857-0.2340i	1.0112-0.2349i	1.4293-0.2804i	1.3614-0.2635i	1.0112-0.2349i	1.0372-0.2356i
11	0.3538+1.7624i	0.2785+1.4265i	0.2791+1.4266i	0.2610+1.3647i	0.9952+1.4965i	0.8099+1.2071i	0.8097+1.2074i	0.7783+1.1510i
11,5	0.3289+1.4165i	0.3556+1.7714i	0.2605+1.3630i	0.2302+1.4276i	0.7692+1.2350i	1.0007+1.5057i	0.7800+1.1485i	0.8472+1.1728i
12	0.6800+1.6926i	0.3911+1.3645i	0.2191+1.7524i	0.2274+1.4208i	0.8678+1.2487i	0.7275+1.1667i	0.8747+1.0470i	0.7930+1.0406i
12,5	0.7085+1.6630i	0.4337+1.3632i	0.2265+1.7707i	0.2214+1.4346i	0.8829+1.2345i	0.7423+1.1546i	0.9077+1.0034i	0.8363+0.9971i
13	0.7232+1.6427i	0.4625+1.3572i	0.2367+1.7836i	0.2081+1.4453i	0.8955+1.2316i	0.7485+1.1494i	0.9349+0.9699i	0.8724+0.9626i
13,5	0.7280+1.6384i	0.4787+1.3492i	0.2417+1.7872i	0.1966+1.4478i	0.9185+1.2490i	0.7448+1.1524i	0.9536+0.9516i	0.8912+0.9461i
14	0.6852+1.6631i	0.4978+1.3396i	0.2241+1.7611i	0.1891+1.4343i	1.0300+1.3532i	0.7389+1.1771i	0.9797+0.9598i	0.8864+0.9798i
14,5	0.6850+1.6565i	0.5110+1.3346i	0.2284+1.7618i	0.1836+1.4363i	1.0485+1.3578i	0.7448+1.1781i	0.9923+0.9464i	0.9014+0.9717i
15	1.1831+1.3352i	1.5548+0.8930i	1.0563+0.9473i	1.1944+0.8535i	1.7139+0.2236i	1.4688+0.5085i	0.9846+0.6522i	1.0982+0.6252i
15,5	1.3333+1.1727i	0.9525+1.0450i	0.8764+1.5619i	0.8595+1.2191i	1.2665+0.7890i	1.0238+0.8157i	1.0119+0.5685i	1.0066+0.6087i
16	1.0693+1.3695i	1.6456+0.7233i	1.0401+0.9844i	1.3351+0.9489i	1.6696+0.1992i	1.4116+0.4773i	0.9912+0.6923i	1.1625+0.6341i
16,5	1.3185+1.1655i	1.0729+0.9416i	0.9781+1.3517i	0.9292+0.9707i	1.4986+0.8198i	1.2084+0.6881i	0.9265+0.5535i	0.9824+0.6211i
17	1.1514+1.3474i	1.3447+1.0136i	0.9323+1.1378i	0.9510+0.9427i	1.2112+0.5426i	1.2864+0.7311i	0.9873+0.5679i	0.9676+0.7289i
17,5	1.1159+1.3726i	1.3078+1.0458i	0.9051+1.1657i	0.9509+0.9581i	1.2112+0.5506i	1.3032+0.7544i	0.9969+0.5672i	0.9755+0.7547i
18	1.1058+1.3496i	1.2204+1.0180i	0.8713+1.1743i	0.9189+0.9604i	1.2283+0.6284i	1.4576+0.8033i	1.0010+0.6008i	0.9350+0.7635i
18,5	1.1022+1.3396i	1.2102+1.0122i	0.8669+1.1800i	0.9153+0.9665i	1.2205+0.6352i	1.4496+0.8012i	0.9972+0.5981i	0.9328+0.7745i
19	1.5817+0.4283i	1.4894+0.1404i	1.4735+0.7375i	1.2229+0.6531i	1.0586+0.3317i	1.2553+0.3125i	0.9114+0.4575i	1.0349+0.5768i
19,5	0.8375+1.4782i	1.3271+0.8728i	1.1494+1.1881i	1.0720+0.8655i	1.5541+0.6145i	1.2416+0.5886i	0.9113+0.4993i	1.0207+0.6225i
20	1.1577+1.2607i	1.2132+0.9665i	0.8650+1.2652i	0.9371+1.0167i	1.2341+0.6321i	1.4507+0.7875i	0.9999+0.6438i	0.9509+0.8111i
20,5	1.1623+1.2367i	1.2152+0.9464i	0.8671+1.2704i	0.9416+1.0203i	1.2263+0.6212i	1.4418+0.7638i	0.9979+0.6457i	0.9519+0.8158i
21	1.1584+1.2194i	1.2110+0.9332i	0.8614+1.2738i	0.9374+1.0274i	1.2218+0.6145i	1.4309+0.7504i	0.9986+0.6549i	0.9484+0.8261i
21,5	1.1541+1.1980i	1.2082+0.9192i	0.8523+1.2778i	0.9253+1.0390i	1.2200+0.6057i	1.4217+0.7371i	1.0021+0.6678i	0.9448+0.8412i
22	1.1564+1.1321i	1.2409+0.8772i	0.8304+1.2958i	0.8902+1.0738i	1.2195+0.5872i	1.4329+0.6862i	1.0077+0.6857i	0.9610+0.8761i
22,5	1.1672+1.0989i	1.2422+0.8522i	0.8024+1.2971i	0.8967+1.0878i	1.2134+0.5744i	1.4239+0.6620i	1.0091+0.6909i	0.9644+0.8828i
23	1.2322+1.0269i	1.4082+0.7080i	0.7782+1.3193i	0.9660+1.1333i	1.4427+0.4179i	1.1837+0.7680i	0.9625+0.7036i	0.9821+0.8987i
23,5	1.1616+1.0595i	1.2384+0.8218i	0.7696+1.2863i	0.8965+1.0947i	1.1989+0.5582i	1.4012+0.6249i	1.0129+0.6976i	0.9657+0.8860i
24	1.2424+0.9493i	1.2834+0.7245i	0.9545+1.2183i	1.0015+1.0002i	1.1739+0.5257i	1.3794+0.4917i	1.0065+0.6128i	1.0346+0.7930i
24,5	1.2328+0.9369i	1.2653+0.7160i	0.9349+1.2178i	0.9989+1.0051i	1.1766+0.5132i	1.3771+0.4884i	1.0162+0.6131i	1.0287+0.7970i
25	1.2245+0.9258i	1.2535+0.7077i	0.9208+1.2133i	0.9969+1.0052i	1.1757+0.5047i	1.3715+0.4846i	1.0198+0.6112i	1.0268+0.7962i
25,5	1.2171+0.9128i	1.2413+0.6969i	0.9105+1.2064i	0.9951+1.0017i	1.1707+0.4940i	1.3617+0.4870i	1.0203+0.6063i	1.0247+0.7923i
26	1.2103+0.9014i	1.2323+0.6874i	0.9022+1.1987i	0.9925+0.9967i	1.1677+0.4847i	1.3547+0.4862i	1.0215+0.6013i	1.0233+0.7878i
SNR / w	w8	w9	w10	w11	w12	w13	w14	w15
5	0.4521+0.2696i	0.4521+0.2696i	1.2065+0.5169i	1.2065+0.5169i	0.4521+0.2696i	0.4521+0.2696i	1.2065+0.5169i	1.2065+0.5169i
5,5	0.4530+0.2663i	0.4530+0.2663i	1.2092+0.5115i	1.2092+0.5115i	0.4530+0.2663i	0.4530+0.2663i	1.2092+0.5115i	1.2092+0.5115i
6	1.2102+0.5067i	1.2102+0.5067i	1.2102+0.5067i	1.2102+0.5067i	0.4570+0.2642i	0.4570+0.2642i	0.4570+0.2642i	0.4570+0.2642i
6,5	1.2538+0.4305i	1.2538+0.4304i	1.2538+0.4305i	1.2538+0.4305i	1.1632+0.5752i	1.1632+0.5752i	1.1632+0.5752i	1.1632+0.5752i
7	1.0432+0.6178i	0.9995+0.5797i	1.1321+0.6970i	1.0432+0.6178i	1.1735+0.3521i	1.1130+0.3476i	1.2925+0.3604i	1.1736+0.3521i
7,5	0.4749+0.2741i	0.4285+0.2526i	1.0293+0.5865i	1.1198+0.6595i	0.5185+0.2951i	0.4749+0.2741i	0.9862+0.5525i	1.0293+0.5865i
8	0.3059+1.2626i	0.2962+1.1484i	0.2962+1.1484i	0.2917+1.0949i	0.6749+1.1091i	0.6000+1.0201i	0.6000+1.0201i	0.5650+0.9791i
8,5	0.2880+1.2587i	0.2788+1.1468i	0.2788+1.1468i	0.2750+1.0951i	0.6879+1.1023i	0.6127+1.0130i	0.6127+1.0130i	0.5775+0.9727i
9	1.5505+1.0696i	0.9759+0.9428i	0.3350+1.5307i	0.7461+0.9896i	1.1886+1.6606i	0.8973+0.9758i	0.4528+1.5320i	0.7212+1.0496i
9,5	1.5654+1.1053i	0.9822+0.9424i	0.3199+1.5216i	0.7507+0.9792i	1.1323+1.6866i	0.8963+0.9732i	0.4510+1.5195i	0.7234+1.0425i
10	1.4799-0.9890i	1.2150-0.8088i	0.8831-0.5335i	0.8998-0.5486i	1.2150-0.8088i	1.1516-0.7656i	0.8998-0.5486i	0.9155-0.5630i
10,5	1.4880-0.9918i	1.2116-0.8109i	0.8680-0.5320i	0.8870-0.5496i	1.2116-0.8109i	1.1516-0.7744i	0.8870-0.5496i	0.9058-0.5674i
11	0.2244+0.9784i	0.2256+1.0058i	0.2257+1.0057i	0.2268+1.0350i	0.5343+0.8558i	0.5530+0.8761i	0.5530+0.8761i	0.5730+0.8975i
11,5	0.2281+0.9987i	0.2159+0.9723i	0.2194+1.0327i	0.2068+1.0040i	0.5478+0.8715i	0.5381+0.8437i	0.5789+0.8889i	0.5679+0.8596i
12	0.2098+0.9768i	0.2241+1.0454i	0.1858+0.9878i	0.1901+1.0659i	0.5547+0.8312i	0.5479+0.8651i	0.6073+0.8182i	0.5955+0.8420i
12,5	0.2230+0.9899i	0.2479+1.0582i	0.1802+1.0070i	0.1891+1.0869i	0.5702+0.8176i	0.5659+0.8534i	0.6329+0.7937i	0.6244+0.8161i
13	0.2408+0.9979i	0.2750+1.0662i	0.1741+1.0211i	0.1849+1.1031i	0.5789+0.8090i	0.5764+0.8491i	0.6515+0.7734i	0.6454+0.7958i

13,5	0.2553+0.9993i	0.2988+1.0689i	0.1656+1.0288i	0.1779+1.1140i	0.5802+0.8040i	0.5788+0.8534i	0.6616+0.7612i	0.6574+0.7871i
14	0.2659+0.9951i	0.3199+1.0652i	0.1586+1.0330i	0.1732+1.1198i	0.5806+0.7935i	0.5791+0.8600i	0.6672+0.7597i	0.6655+0.7988i
14,5	0.2918+0.9977i	0.3457+1.0677i	0.1513+1.0448i	0.1608+1.1366i	0.5795+0.7993i	0.5814+0.8684i	0.6777+0.7528i	0.6798+0.7908i
15	0.7901+1.2547i	0.5814+1.0118i	0.8074+1.0302i	0.6237+1.0012i	0.6052+0.6617i	0.5759+0.7150i	0.7056+0.6773i	0.6439+0.7138i
15,5	0.2231+1.7092i	0.6616+0.9740i	0.5030+1.4567i	0.6230+1.1163i	0.6633+0.6064i	0.6841+0.7162i	0.7194+0.5707i	0.7211+0.6351i
16	0.7189+1.2484i	0.5519+1.0360i	0.8125+0.9999i	0.6001+0.9735i	0.6062+0.6558i	0.5673+0.7044i	0.7357+0.7025i	0.6195+0.7364i
16,5	0.5954+1.6721i	0.6356+0.9282i	0.6612+1.3085i	0.6870+0.9890i	0.6139+0.5878i	0.6161+0.6843i	0.7069+0.5730i	0.6968+0.6615i
17	0.7916+1.5326i	0.5781+0.9103i	0.6737+1.2261i	0.6488+0.9682i	0.6008+0.5904i	0.5968+0.6937i	0.7280+0.5839i	0.7207+0.6853i
17,5	0.7546+1.5371i	0.5791+0.9008i	0.6529+1.2248i	0.6563+0.9619i	0.5998+0.5837i	0.5965+0.6939i	0.7601+0.5787i	0.7439+0.6985i
18	0.7460+1.5301i	0.5607+0.8951i	0.6305+1.2208i	0.6414+0.9625i	0.5848+0.5763i	0.5797+0.7001i	0.7518+0.5786i	0.7339+0.7041i
18,5	0.7388+1.5187i	0.5534+0.8948i	0.6245+1.2171i	0.6469+0.9671i	0.5816+0.5744i	0.5746+0.7125i	0.7634+0.5763i	0.7384+0.7224i
19	1.0419+1.2518i	0.8657+1.0272i	1.2891+1.0296i	1.0567+0.8727i	0.6260+0.6701i	0.7308+0.8371i	0.7597+0.5841i	0.8864+0.7205i
19,5	0.6600+1.2390i	0.6575+0.9736i	0.8905+1.1414i	0.8571+0.9152i	0.6106+0.5775i	0.6382+0.7572i	0.7620+0.5398i	0.8086+0.7221i
20	0.5458+1.2087i	0.5280+0.9935i	0.6621+1.4483i	0.7224+0.9905i	0.5909+0.6140i	0.5567+0.7928i	0.7623+0.6325i	0.7410+0.7994i
20,5	0.5495+1.2117i	0.5295+0.9994i	0.6564+1.4451i	0.7273+1.0021i	0.5962+0.6217i	0.5627+0.8030i	0.7674+0.6377i	0.7457+0.8086i
21	0.5460+1.2127i	0.5252+1.0028i	0.6465+1.4397i	0.7242+1.0131i	0.6013+0.6294i	0.5660+0.8106i	0.7730+0.6458i	0.7464+0.8190i
21,5	0.5373+1.2128i	0.5165+1.0048i	0.6343+1.4321i	0.7152+1.0245i	0.6073+0.6384i	0.5684+0.8175i	0.7801+0.6568i	0.7459+0.8311i
22	0.5187+1.2127i	0.4960+1.0047i	0.6102+1.4243i	0.6926+1.0375i	0.6194+0.6507i	0.5744+0.8249i	0.7952+0.6762i	0.7540+0.8498i
22,5	0.5099+1.2100i	0.4914+1.0072i	0.5898+1.4201i	0.6910+1.0470i	0.6271+0.6619i	0.5827+0.8346i	0.8016+0.6867i	0.7612+0.8629i
23	0.5427+1.2003i	0.5813+1.0089i	0.5291+1.4273i	0.7630+1.0578i	0.6294+0.6610i	0.6110+0.8310i	0.7906+0.6835i	0.7844+0.8645i
23,5	0.4976+1.2018i	0.4821+1.0103i	0.5648+1.4016i	0.6826+1.0558i	0.6404+0.6801i	0.5954+0.8500i	0.8128+0.7021i	0.7699+0.8797i
24	0.5286+1.2013i	0.6120+1.0209i	0.7270+1.2479i	0.7961+1.0299i	0.6617+0.6693i	0.6621+0.8401i	0.8310+0.6617i	0.8389+0.8357i
24,5	0.5158+1.1967i	0.6077+1.0231i	0.7117+1.2419i	0.7917+1.0319i	0.6714+0.6767i	0.6662+0.8463i	0.8411+0.6694i	0.8402+0.8434i
25	0.5056+1.1921i	0.6041+1.0245i	0.7005+1.2353i	0.7883+1.0319i	0.6790+0.6831i	0.6702+0.8514i	0.8475+0.6749i	0.8427+0.8479i
25,5	0.4973+1.1878i	0.6009+1.0255i	0.6921+1.2284i	0.7855+1.0302i	0.6850+0.6886i	0.6728+0.8554i	0.8517+0.6775i	0.8443+0.8495i
26	0.4905+1.1842i	0.5982+1.0262i	0.6854+1.2221i	0.7829+1.0274i	0.6911+0.6930i	0.6740+0.8584i	0.8561+0.6778i	0.8451+0.8492i
SNR / w	w16	w17	w18	w19	w20	w21	w22	w23
5	0.4521+0.2696i	0.4521+0.2696i	1.2066+0.5169i	1.2065+0.5169i	0.4521+0.2696i	0.4521+0.2696i	1.2065+0.5169i	1.2065+0.5169i
5,5	0.4530+0.2663i	0.4530+0.2663i	1.2092+0.5115i	1.2092+0.5115i	0.4530+0.2663i	0.4530+0.2663i	1.2092+0.5115i	1.2092+0.5115i
6	0.5067+1.2102i	0.5067+1.2102i	0.5067+1.2102i	0.5067+1.2102i	0.2642+0.4570i	0.2642+0.4570i	0.2642+0.4570i	0.2642+0.4570i
6,5	0.4543+0.2553i	0.4543+0.2553i	0.4543+0.2553i	0.4543+0.2553i	0.4632+0.2699i	0.4632+0.2699i	0.4632+0.2699i	0.4632+0.2699i
7	0.4447+0.2583i	0.4838+0.2760i	0.4059+0.2408i	0.4446+0.2583i	0.4489+0.2323i	0.4922+0.2439i	0.4072+0.2200i	0.4489+0.2323i
7,5	0.2526+0.4285i	0.2320+0.3831i	0.6595+1.1198i	0.9931+1.5130i	0.2741+0.4749i	0.2526+0.4285i	0.5864+1.0293i	0.6595+1.1198i
8	1.7813+0.3565i	1.2626+0.3059i	1.2626+0.3059i	1.1484+0.2962i	1.5146+1.0099i	1.1091+0.6749i	1.1091+0.6749i	1.0201+0.6000i
8,5	1.7914+0.3488i	1.2587+0.2880i	1.2587+0.2880i	1.1468+0.2788i	1.5168+1.0152i	1.1023+0.6879i	1.1023+0.6879i	1.0130+0.6127i
9	1.1513+0.2749i	0.9582+0.3853i	0.9263+0.2229i	0.8516+0.3197i	1.1613+0.2336i	0.9349+0.3518i	0.9192+0.2077i	0.8418+0.2979i
9,5	1.1819+0.2793i	0.9635+0.4036i	0.9172+0.2197i	0.8422+0.3264i	1.2076+0.2313i	0.9381+0.3697i	0.9115+0.2050i	0.8325+0.3045i
10	0.3155-0.1636i	0.3150-0.1635i	0.6148-0.2161i	0.6216-0.2169i	0.3150-0.1635i	0.3145-0.1634i	0.6216-0.2169i	0.6290-0.2176i
10,5	0.3085-0.1570i	0.3061-0.1564i	0.6354-0.2066i	0.6404-0.2071i	0.3061-0.1564i	0.3037-0.1557i	0.6404-0.2071i	0.6460-0.2075i
11	1.7631+0.3541i	1.4267+0.2786i	1.4265+0.2791i	1.3649+0.2609i	1.4961+0.9954i	1.2073+0.8102i	1.2072+0.8097i	1.1510+0.7784i
11,5	1.4190+0.3287i	1.7739+0.3559i	1.3649+0.2600i	1.4293+0.2298i	1.2376+0.7681i	1.5057+1.0025i	1.1507+0.7776i	1.1738+0.8449i
12	1.4070+0.1790i	1.7227+0.2900i	1.3246+0.2562i	1.3636+0.3654i	1.3708+1.2834i	1.6701+0.8403i	1.1614+0.7909i	1.2241+0.7367i
12,5	1.4067+0.1623i	1.7386+0.2869i	1.3213+0.2614i	1.3555+0.3818i	1.3728+1.2802i	1.6730+0.8349i	1.1629+0.7604i	1.2237+0.7169i
13	1.4076+0.1477i	1.7480+0.2870i	1.3169+0.2677i	1.3479+0.3950i	1.3698+1.2765i	1.6671+0.8318i	1.1603+0.7369i	1.2208+0.7017i
13,5	1.4079+0.1358i	1.7492+0.2856i	1.3108+0.2733i	1.3393+0.4031i	1.3733+1.2596i	1.6601+0.8198i	1.1559+0.7249i	1.2163+0.6897i
14	1.3832+0.1273i	1.7176+0.2506i	1.2890+0.2587i	1.3115+0.3882i	1.4490+1.1367i	1.6791+0.7233i	1.1637+0.7318i	1.2117+0.6596i
14,5	1.3830+0.1182i	1.7146+0.2469i	1.2824+0.2560i	1.3020+0.3885i	1.4514+1.1095i	1.6674+0.7048i	1.1614+0.7220i	1.2096+0.6442i
15	0.9695+0.1063i	0.9761+0.1132i	0.9155+0.1657i	0.9251+0.1710i	1.3276+0.1371i	1.2605+0.2607i	0.9657+0.4185i	1.0313+0.4086i
15,5	1.7803+0.2282i	1.4175+0.1304i	1.0142+0.1107i	1.0875+0.1106i	1.5669+0.6281i	1.3668+0.3723i	1.0160+0.3423i	1.0838+0.3367i
16	0.9716+0.1054i	0.9824+0.1194i	0.9073+0.1715i	0.9217+0.1835i	1.3198+0.1175i	1.2383+0.2709i	0.9483+0.4442i	1.0242+0.4164i
16,5	1.6501+0.1602i	1.3265+0.1294i	0.9609+0.1136i	1.0472+0.1153i	1.6046+0.4875i	1.2991+0.3994i	0.9506+0.3440i	1.0402+0.3427i
17	1.3221+0.1224i	1.6557+0.1780i	1.0381+0.1026i	0.9427+0.1024i	1.2802+0.3500i	1.5980+0.5501i	0.9903+0.3365i	0.9340+0.2929i
17,5	1.3275+0.1269i	1.6476+0.1778i	1.0687+0.1009i	0.9443+0.0988i	1.2837+0.3590i	1.5920+0.5468i	1.0024+0.3379i	0.9388+0.2809i

18	1.3214+0.1348i	1.6192+0.1568i	1.0864+0.1085i	0.9690+0.1136i	1.2847+0.3887i	1.5877+0.4787i	1.0252+0.3747i	0.9593+0.3085i
18,5	1.3267+0.1381i	1.6139+0.1586i	1.1074+0.1075i	0.9719+0.1124i	1.2798+0.3928i	1.5690+0.4783i	1.0323+0.3791i	0.9610+0.2983i
19	0.8818+0.0863i	0.8598+0.0671i	0.6659+0.0819i	0.6786+0.1287i	0.9883+0.2131i	1.1539+0.0898i	0.7883+0.3358i	0.7109+0.2753i
19,5	1.5486+0.1257i	1.2666+0.1072i	0.9028+0.1029i	1.0498+0.1027i	1.4788+0.3590i	1.2369+0.3451i	0.9051+0.3205i	1.0533+0.3050i
20	1.5281+0.1441i	1.2566+0.1120i	0.9743+0.0673i	1.0261+0.1720i	1.4715+0.4355i	1.2435+0.3351i	0.9816+0.4825i	1.0252+0.3371i
20,5	1.5048+0.1396i	1.2429+0.1109i	0.9704+0.0648i	1.0197+0.1762i	1.4594+0.4244i	1.2338+0.3332i	0.9790+0.4840i	1.0192+0.3364i
21	1.4884+0.1372i	1.2362+0.1109i	0.9743+0.0635i	1.0194+0.1825i	1.4526+0.4196i	1.2302+0.3337i	0.9804+0.4906i	1.0189+0.3404i
21,5	1.4742+0.1349i	1.2309+0.1105i	0.9796+0.0634i	1.0198+0.1891i	1.4461+0.4142i	1.2279+0.3323i	0.9827+0.4998i	1.0202+0.3467i
22	1.4534+0.1259i	1.2190+0.1086i	0.9789+0.0639i	1.0144+0.1947i	1.4356+0.3854i	1.2194+0.3249i	0.9844+0.5115i	1.0179+0.3535i
22,5	1.4370+0.1217i	1.2104+0.1069i	0.9794+0.0652i	1.0117+0.2003i	1.4268+0.3730i	1.2148+0.3198i	0.9818+0.5182i	1.0172+0.3596i
23	1.1919+0.0896i	1.4034+0.1266i	1.0017+0.0743i	0.9909+0.2196i	1.2082+0.5145i	1.2105+0.3132i	1.0055+0.5362i	1.0096+0.3698i
23,5	1.4070+0.1153i	1.1945+0.1045i	0.9784+0.0686i	1.0093+0.2102i	1.4123+0.3539i	1.2076+0.3137i	0.9768+0.5294i	1.0171+0.3701i
24	1.1265+0.0892i	1.3157+0.0959i	0.9524+0.0776i	0.9403+0.2321i	1.4948+0.2501i	1.2660+0.2959i	0.9649+0.4426i	1.0812+0.3131i
24,5	1.1278+0.0893i	1.3152+0.0946i	0.9556+0.0782i	0.9422+0.2341i	1.4851+0.2508i	1.2669+0.2917i	0.9719+0.4412i	1.0855+0.3077i
25	1.1316+0.0895i	1.3173+0.0939i	0.9608+0.0790i	0.9429+0.2357i	1.4766+0.2540i	1.2666+0.2886i	0.9763+0.4381i	1.0887+0.3028i
25,5	1.1477+0.0888i	1.3330+0.0946i	0.9772+0.0808i	0.9387+0.2361i	1.4686+0.2702i	1.2647+0.2863i	0.9779+0.4321i	1.0881+0.2935i
26	1.1595+0.0882i	1.3430+0.0950i	0.9894+0.0820i	0.9367+0.2358i	1.4613+0.2782i	1.2637+0.2839i	0.9800+0.4265i	1.0889+0.2858i
SNR / w	w24	w25	w26	w27	w28	w29	w30	w31
5	0.4521+0.2696i	0.4521+0.2696i	1.2066+0.5170i	1.2066+0.5169i	0.4521+0.2696i	0.4521+0.2696i	1.2065+0.5169i	1.2065+0.5169i
5,5	0.4530+0.2663i	0.4530+0.2663i	1.2092+0.5115i	1.2092+0.5115i	0.4530+0.2663i	0.4530+0.2663i	1.2092+0.5115i	1.2092+0.5115i
6	0.5067+1.2102i	0.5067+1.2102i	0.5067+1.2102i	0.5067+1.2102i	0.2642+0.4570i	0.2642+0.4570i	0.2642+0.4570i	0.2642+0.4570i
6,5	0.4543+0.2553i	0.4543+0.2553i	0.4543+0.2553i	0.4543+0.2553i	0.4632+0.2699i	0.4632+0.2699i	0.4632+0.2699i	0.4632+0.2699i
7	0.4838+0.2760i	0.5211+0.2931i	0.4447+0.2583i	0.4838+0.2760i	0.4922+0.2439i	0.5344+0.2543i	0.4489+0.2323i	0.4922+0.2439i
7,5	0.4285+0.2526i	0.3831+0.2320i	1.1198+0.6595i	1.5130+0.9931i	0.4749+0.2741i	0.4285+0.2526i	1.0293+0.5865i	1.1198+0.6595i
8	1.2626+0.3059i	1.1484+0.2962i	1.1484+0.2962i	1.0949+0.2917i	1.1091+0.6749i	1.0201+0.6000i	1.0201+0.6000i	0.9791+0.5650i
8,5	1.2587+0.2880i	1.1468+0.2788i	1.1468+0.2788i	1.0951+0.2750i	1.1023+0.6879i	1.0130+0.6127i	1.0130+0.6127i	0.9727+0.5775i
9	0.9975+0.2556i	0.9006+0.3666i	0.8710+0.2142i	0.8224+0.3027i	0.9862+0.2318i	0.8825+0.3368i	0.8657+0.2019i	0.8149+0.2834i
9,5	1.0053+0.2519i	0.8985+0.3753i	0.8625+0.2071i	0.8135+0.3017i	0.9978+0.2280i	0.8803+0.3458i	0.8585+0.1955i	0.8067+0.2829i
10	0.3146-0.1777i	0.3142-0.1775i	0.5742-0.3118i	0.5798-0.3157i	0.3142-0.1775i	0.3138-0.1773i	0.5798-0.3157i	0.5859-0.3199i
10,5	0.3073-0.1726i	0.3050-0.1716i	0.5854-0.3219i	0.5893-0.3250i	0.3050-0.1716i	0.3028-0.1707i	0.5893-0.3250i	0.5937-0.3285i
11	0.9785+0.2245i	1.0059+0.2256i	1.0059+0.2258i	1.0352+0.2267i	0.8559+0.5343i	0.8762+0.5531i	0.8762+0.5531i	0.8976+0.5730i
11,5	0.9987+0.2268i	0.9721+0.2149i	1.0331+0.2184i	1.0039+0.2063i	0.8726+0.5450i	0.8450+0.5352i	0.8906+0.5760i	0.8612+0.5648i
12	0.9769+0.1863i	0.9452+0.2057i	1.0100+0.2182i	0.9795+0.2417i	0.8241+0.4856i	0.8232+0.4837i	0.8799+0.5391i	0.8796+0.5356i
12,5	0.9683+0.1724i	0.9333+0.1897i	1.0041+0.2062i	0.9683+0.2269i	0.8178+0.4576i	0.8166+0.4551i	0.8733+0.5139i	0.8722+0.5104i
13	0.9630+0.1618i	0.9257+0.1770i	1.0010+0.1965i	0.9611+0.2140i	0.8118+0.4407i	0.8110+0.4367i	0.8663+0.4978i	0.8649+0.4934i
13,5	0.9601+0.1547i	0.9220+0.1683i	1.0004+0.1894i	0.9581+0.2045i	0.8067+0.4374i	0.8071+0.4310i	0.8603+0.4941i	0.8598+0.4876i
14	0.9469+0.1512i	0.9124+0.1673i	0.9890+0.1827i	0.9504+0.2018i	0.7985+0.4530i	0.8036+0.4426i	0.8538+0.5071i	0.8600+0.4961i
14,5	0.9396+0.1469i	0.9065+0.1618i	0.9886+0.1761i	0.9486+0.1944i	0.7983+0.4483i	0.8042+0.4365i	0.8518+0.5057i	0.8594+0.4926i
15	0.6332+0.1376i	0.6285+0.1371i	0.6534+0.1501i	0.6480+0.1483i	0.6046+0.4106i	0.5971+0.4001i	0.6631+0.4203i	0.6466+0.4063i
15,5	0.6340+0.1108i	0.6241+0.1086i	0.7380+0.1117i	0.7116+0.1105i	0.6382+0.3325i	0.6300+0.3171i	0.7230+0.3385i	0.7071+0.3272i
16	0.6360+0.1334i	0.6290+0.1387i	0.6599+0.1476i	0.6524+0.1515i	0.6101+0.4269i	0.5981+0.4118i	0.6844+0.4315i	0.6536+0.4074i
16,5	0.6045+0.1089i	0.5923+0.1112i	0.7207+0.1103i	0.6832+0.1122i	0.6014+0.3528i	0.5903+0.3283i	0.7010+0.3475i	0.6697+0.3280i
17	0.5830+0.1125i	0.5933+0.1207i	0.6682+0.1069i	0.7042+0.1111i	0.5954+0.3748i	0.5987+0.3416i	0.7073+0.3701i	0.7192+0.3275i
17,5	0.5819+0.1126i	0.5915+0.1279i	0.6742+0.1025i	0.7217+0.1106i	0.5959+0.3826i	0.5970+0.3410i	0.7339+0.3759i	0.7430+0.3188i
18	0.5961+0.1084i	0.5983+0.1324i	0.7244+0.0980i	0.7655+0.1162i	0.5947+0.3818i	0.5970+0.3304i	0.7535+0.3905i	0.7704+0.3249i
18,5	0.5961+0.1025i	0.5964+0.1417i	0.7314+0.0890i	0.7775+0.1184i	0.5953+0.3915i	0.5975+0.3225i	0.7649+0.4029i	0.7817+0.3156i
19	0.4061+0.0799i	0.4265+0.2175i	0.4641+0.0772i	0.4884+0.1954i	0.5409+0.5182i	0.4759+0.3755i	0.6422+0.4556i	0.5543+0.3409i
19,5	0.5082+0.0656i	0.5265+0.1285i	0.7398+0.0890i	0.6724+0.1233i	0.5700+0.4187i	0.5429+0.2967i	0.7319+0.3429i	0.6646+0.2744i
20	0.6423+0.0698i	0.6358+0.1904i	0.8003+0.0754i	0.8009+0.2018i	0.6132+0.4606i	0.6264+0.3286i	0.7906+0.4757i	0.8007+0.3342i
20,5	0.6384+0.0678i	0.6332+0.1948i	0.7968+0.0730i	0.8000+0.2036i	0.6160+0.4668i	0.6266+0.3299i	0.7913+0.4796i	0.8013+0.3338i
21	0.6429+0.0675i	0.6384+0.1981i	0.8011+0.0721i	0.8064+0.2059i	0.6220+0.4731i	0.6327+0.3327i	0.7953+0.4864i	0.8070+0.3371i
21,5	0.6501+0.0680i	0.6464+0.2016i	0.8075+0.0719i	0.8146+0.2088i	0.6296+0.4809i	0.6412+0.3374i	0.8008+0.4955i	0.8141+0.3431i
22	0.6546+0.0693i	0.6531+0.2062i	0.8096+0.0722i	0.8191+0.2122i	0.6400+0.4925i	0.6498+0.3451i	0.8073+0.5082i	0.8199+0.3516i

22,5	0.6581+0.0702i	0.6580+0.2095i	0.8121+0.0727i	0.8228+0.2154i	0.6452+0.5010i	0.6552+0.3508i	0.8087+0.5167i	0.8230+0.3582i
23	0.6613+0.0692i	0.6601+0.2094i	0.8231+0.0709i	0.8202+0.2164i	0.6479+0.5023i	0.6570+0.3532i	0.8160+0.5191i	0.8231+0.3662i
23,5	0.6618+0.0721i	0.6653+0.2161i	0.8148+0.0743i	0.8285+0.2219i	0.6524+0.5156i	0.6640+0.3620i	0.8099+0.5313i	0.8291+0.3705i
24	0.6277+0.0697i	0.6260+0.2109i	0.7852+0.0706i	0.7804+0.2127i	0.6444+0.5097i	0.6285+0.3572i	0.8056+0.5017i	0.7792+0.3548i
24,5	0.6341+0.0711i	0.6317+0.2150i	0.7905+0.0716i	0.7839+0.2154i	0.6537+0.5167i	0.6360+0.3632i	0.8156+0.5101i	0.7875+0.3608i
25	0.6408+0.0723i	0.6355+0.2186i	0.7969+0.0724i	0.7860+0.2176i	0.6614+0.5229i	0.6414+0.3685i	0.8234+0.5160i	0.7936+0.3653i
25,5	0.6523+0.0731i	0.6352+0.2218i	0.8115+0.0731i	0.7837+0.2189i	0.6674+0.5284i	0.6441+0.3734i	0.8292+0.5189i	0.7961+0.3682i
26	0.6622+0.0739i	0.6337+0.2246i	0.8231+0.0739i	0.7818+0.2196i	0.6739+0.5331i	0.6474+0.3777i	0.8353+0.5198i	0.7994+0.3695i
SNR / w	w32	w33	w34	w35	w36	w37	w38	w39
5	0.2696+0.4521i	0.2696+0.4521i	0.5169+1.2065i	0.5169+1.2065i	0.2696+0.4521i	0.2696+0.4521i	0.5169+1.2065i	0.5169+1.2065i
5,5	0.2663+0.4530i	0.2663+0.4530i	0.5115+1.2092i	0.5115+1.2092i	0.2663+0.4530i	0.2663+0.4530i	0.5115+1.2092i	0.5115+1.2092i
6	1.2102+0.5067i	1.2102+0.5067i	1.2102+0.5067i	1.2102+0.5066i	0.4570+0.2642i	0.4570+0.2642i	0.4570+0.2642i	0.4570+0.2642i
6,5	0.4304+1.2538i	0.4304+1.2538i	0.4305+1.2537i	0.4305+1.2537i	0.5752+1.1632i	0.5752+1.1632i	0.5752+1.1632i	0.5752+1.1632i
7	0.5818+1.1302i	0.5321+1.0488i	0.7162+1.3338i	0.5818+1.1302i	0.3631+1.2644i	0.3443+1.1417i	0.4291+1.7565i	0.3631+1.2644i
7,5	0.2435+0.4714i	0.2297+0.4213i	0.3175+1.1489i	0.3279+1.2665i	0.2555+0.5207i	0.2435+0.4714i	0.3124+1.0924i	0.3175+1.1489i
8	0.2078+0.3708i	0.2228+0.4230i	0.2228+0.4230i	0.2369+0.4792i	0.2257+0.3788i	0.2485+0.4288i	0.2485+0.4288i	0.2729+0.4799i
8,5	0.1998+0.3693i	0.2156+0.4280i	0.2156+0.4280i	0.2299+0.4909i	0.2178+0.3747i	0.2432+0.4300i	0.2432+0.4300i	0.2708+0.4861i
9	0.1831+0.6858i	0.2571+0.6818i	0.1879+0.8140i	0.2811+0.7667i	0.1851+0.6883i	0.2602+0.6851i	0.1916+0.8173i	0.2857+0.7722i
9,5	0.1794+0.6888i	0.2585+0.6798i	0.1875+0.8249i	0.2921+0.7656i	0.1820+0.6921i	0.2630+0.6841i	0.1926+0.8288i	0.2983+0.7729i
10	0.3437-1.7476i	0.2830-1.4280i	0.2435-0.9979i	0.2443-1.0202i	0.2830-1.4280i	0.2686-1.3530i	0.2443-1.0202i	0.2449-1.0415i
10,5	0.3495-1.7549i	0.2804-1.4293i	0.2340-0.9857i	0.2349-1.0112i	0.2804-1.4293i	0.2635-1.3614i	0.2349-1.0112i	0.2356-1.0372i
11	0.1519+0.3049i	0.1510+0.3016i	0.1510+0.3016i	0.1502+0.2983i	0.1699+0.3036i	0.1685+0.3005i	0.1685+0.3005i	0.1671+0.2974i
11,5	0.1463+0.3015i	0.1471+0.3053i	0.1453+0.2979i	0.1463+0.3015i	0.1666+0.2998i	0.1683+0.3032i	0.1650+0.2964i	0.1666+0.2998i
12	0.1376+0.3342i	0.1383+0.3292i	0.1363+0.3322i	0.1370+0.3273i	0.1655+0.3265i	0.1656+0.3227i	0.1634+0.3246i	0.1636+0.3208i
12,5	0.1305+0.3817i	0.1310+0.3772i	0.1295+0.3801i	0.1300+0.3756i	0.1670+0.3628i	0.1669+0.3598i	0.1652+0.3613i	0.1652+0.3583i
13	0.1255+0.4148i	0.1258+0.4110i	0.1246+0.4139i	0.1249+0.4100i	0.1693+0.3879i	0.1689+0.3856i	0.1679+0.3867i	0.1675+0.3844i
13,5	0.1222+0.4300i	0.1222+0.4272i	0.1213+0.4297i	0.1213+0.4269i	0.1716+0.3987i	0.1708+0.3972i	0.1707+0.3976i	0.1700+0.3962i
14	0.1189+0.4354i	0.1187+0.4342i	0.1181+0.4360i	0.1178+0.4348i	0.1722+0.4014i	0.1713+0.4009i	0.1720+0.4006i	0.1711+0.4002i
14,5	0.1162+0.4484i	0.1159+0.4493i	0.1156+0.4497i	0.1152+0.4507i	0.1751+0.4094i	0.1743+0.4102i	0.1765+0.4086i	0.1757+0.4095i
15	0.2366+1.7925i	0.1132+1.0217i	0.1343+1.4263i	0.1131+1.0934i	0.1130+0.6377i	0.1142+0.7348i	0.1100+0.6285i	0.1120+0.7126i
15,5	0.1057+0.9757i	0.1704+0.9162i	0.1155+0.9873i	0.1783+0.9299i	0.1349+0.6360i	0.1478+0.6586i	0.1365+0.6293i	0.1479+0.6511i
16	0.1430+1.4001i	0.1156+1.1081i	0.1884+1.7333i	0.1078+1.0066i	0.1071+0.6135i	0.1080+0.7000i	0.1069+0.6283i	0.1060+0.7438i
16,5	0.1053+1.2977i	0.1293+0.9737i	0.1785+1.2326i	0.1473+0.9932i	0.1149+0.6198i	0.1198+0.7262i	0.1195+0.6155i	0.1240+0.7155i
17	0.1490+1.6173i	0.1183+0.9591i	0.1303+1.3054i	0.1236+1.0413i	0.1061+0.6094i	0.1122+0.7387i	0.1133+0.5999i	0.1188+0.7034i
17,5	0.1411+1.5896i	0.1170+0.9512i	0.1278+1.2852i	0.1257+1.0327i	0.1004+0.5984i	0.1100+0.7473i	0.1141+0.5926i	0.1221+0.7136i
18	0.1396+1.5775i	0.1131+0.9418i	0.1242+1.2789i	0.1226+1.0347i	0.0938+0.5780i	0.1063+0.7507i	0.1145+0.5762i	0.1223+0.7129i
18,5	0.1401+1.5712i	0.1104+0.9411i	0.1233+1.2808i	0.1220+1.0474i	0.0863+0.5683i	0.1030+0.7613i	0.1177+0.5704i	0.1259+0.7175i
19	0.1202+1.4352i	0.0996+1.2052i	0.2171+1.6874i	0.2773+1.1812i	0.0839+0.8147i	0.0834+0.9964i	0.1971+0.8041i	0.2436+0.9839i
19,5	0.1542+1.5593i	0.0710+0.9899i	0.1176+1.2799i	0.1750+1.0404i	0.0755+0.6559i	0.0799+0.8133i	0.1865+0.6474i	0.2027+0.8117i
20	0.1167+1.2700i	0.0962+1.0708i	0.1297+1.5321i	0.0883+0.8994i	0.0749+0.5327i	0.0612+0.6589i	0.1829+0.5465i	0.1233+0.7216i
20,5	0.1161+1.2756i	0.0974+1.0790i	0.1295+1.5298i	0.0884+0.9064i	0.0720+0.5415i	0.0591+0.6728i	0.1883+0.5570i	0.1297+0.7318i
21	0.1140+1.2762i	0.0978+1.0812i	0.1280+1.5231i	0.0867+0.9060i	0.0704+0.5429i	0.0574+0.6772i	0.1921+0.5608i	0.1353+0.7334i
21,5	0.1108+1.2731i	0.0977+1.0794i	0.1256+1.5126i	0.0853+0.9029i	0.0694+0.5429i	0.0559+0.6795i	0.1945+0.5628i	0.1410+0.7326i
22	0.1045+1.2645i	0.0959+1.0725i	0.1201+1.4962i	0.0871+0.8987i	0.0687+0.5451i	0.0549+0.6836i	0.1961+0.5662i	0.1487+0.7336i
22,5	0.1015+1.2588i	0.0952+1.0704i	0.1161+1.4831i	0.0884+0.8992i	0.0685+0.5510i	0.0545+0.6912i	0.1980+0.5732i	0.1557+0.7375i
23	0.1141+1.4950i	0.0679+0.9023i	0.1059+1.2572i	0.1019+1.0664i	0.0653+0.5841i	0.0662+0.7419i	0.2015+0.5913i	0.1899+0.7378i
23,5	0.0985+1.2520i	0.0938+1.0710i	0.1114+1.4628i	0.0905+0.9054i	0.0693+0.5689i	0.0563+0.7102i	0.2034+0.5915i	0.1695+0.7506i
24	0.0901+1.1911i	0.0801+1.0038i	0.1106+1.4060i	0.2328+0.9654i	0.0680+0.6561i	0.0697+0.8236i	0.2070+0.6480i	0.2108+0.8051i
24,5	0.0894+1.1877i	0.0808+1.0036i	0.1074+1.3967i	0.2340+0.9604i	0.0695+0.6593i	0.0707+0.8259i	0.2118+0.6478i	0.2131+0.8017i
25	0.0890+1.1877i	0.0816+1.0065i	0.1053+1.3909i	0.2349+0.9570i	0.0709+0.6644i	0.0718+0.8309i	0.2160+0.6470i	0.2150+0.7989i
25,5	0.0889+1.1889i	0.0823+1.0105i	0.1037+1.3867i	0.2355+0.9547i	0.0721+0.6705i	0.0727+0.8369i	0.2196+0.6455i	0.2165+0.7966i
26	0.0888+1.1903i	0.0829+1.0145i	0.1023+1.3833i	0.2357+0.9536i	0.0732+0.6770i	0.0737+0.8430i	0.2228+0.6437i	0.2175+0.7949i
SNR / w	w40	w41	w42	w43	w44	w45	w46	w47

5	0.2696+0.4521i	0.2696+0.4521i	0.5170+1.2065i	0.5170+1.2065i	0.2696+0.4521i	0.2696+0.4521i	0.5169+1.2065i	0.5169+1.2065i
5,5	0.2663+0.4530i	0.2663+0.4530i	0.5115+1.2092i	0.5115+1.2092i	0.2663+0.4530i	0.2663+0.4530i	0.5115+1.2092i	0.5115+1.2092i
6	1.2102+0.5067i	1.2102+0.5067i	1.2102+0.5067i	1.2102+0.5067i	0.4570+0.2642i	0.4570+0.2642i	0.4570+0.2642i	0.4570+0.2642i
6,5	0.4304+1.2538i	0.4304+1.2538i	0.4304+1.2537i	0.4304+1.2537i	0.5752+1.1632i	0.5752+1.1632i	0.5752+1.1632i	0.5752+1.1632i
7	0.5321+1.0488i	0.5054+1.0028i	0.5818+1.1302i	0.5321+1.0488i	0.3443+1.1417i	0.3344+1.0806i	0.3631+1.2644i	0.3443+1.1417i
7,5	0.4714+0.2435i	0.4213+0.2297i	1.1489+0.3175i	1.2665+0.3279i	0.5207+0.2555i	0.4714+0.2435i	1.0924+0.3124i	1.1489+0.3175i
8	0.2228+0.4230i	0.2369+0.4792i	0.2369+0.4792i	0.2486+0.5341i	0.2485+0.4288i	0.2729+0.4799i	0.2729+0.4799i	0.2969+0.5272i
8,5	0.2156+0.4280i	0.2299+0.4909i	0.2299+0.4909i	0.2411+0.5508i	0.2432+0.4300i	0.2708+0.4861i	0.2708+0.4861i	0.2980+0.5370i
9	0.1856+0.6747i	0.2596+0.6730i	0.1922+0.7921i	0.2849+0.7548i	0.1875+0.6772i	0.2626+0.6762i	0.1956+0.7959i	0.2892+0.7605i
9,5	0.1819+0.6783i	0.2610+0.6715i	0.1923+0.8010i	0.2956+0.7536i	0.1845+0.6814i	0.2653+0.6756i	0.1970+0.8057i	0.3015+0.7610i
10	0.9890-1.4799i	0.8088-1.2150i	0.5335-0.8831i	0.5486-0.8998i	0.8088-1.2150i	0.7657-1.1516i	0.5486-0.8998i	0.5630-0.9155i
10,5	0.9918-1.4880i	0.8109-1.2116i	0.5320-0.8680i	0.5496-0.8870i	0.8109-1.2116i	0.7744-1.1516i	0.5496-0.8870i	0.5674-0.9058i
11	0.1967+0.6516i	0.1969+0.6552i	0.1969+0.6552i	0.1972+0.6592i	0.3323+0.5926i	0.3347+0.5953i	0.3347+0.5953i	0.3374+0.5982i
11,5	0.1885+0.6662i	0.1878+0.6638i	0.1877+0.6689i	0.1869+0.6663i	0.3440+0.5986i	0.3433+0.5965i	0.3466+0.5998i	0.3458+0.5975i
12	0.1779+0.6841i	0.1828+0.6845i	0.1745+0.6828i	0.1793+0.6829i	0.3547+0.6009i	0.3593+0.6011i	0.3576+0.5990i	0.3624+0.5994i
12,5	0.1792+0.7116i	0.1856+0.7087i	0.1709+0.7113i	0.1774+0.7076i	0.3740+0.6070i	0.3778+0.6065i	0.3777+0.6018i	0.3817+0.6013i
13	0.1817+0.7335i	0.1889+0.7276i	0.1660+0.7356i	0.1734+0.7283i	0.3879+0.6101i	0.3903+0.6093i	0.3925+0.6005i	0.3948+0.5996i
13,5	0.1825+0.7468i	0.1898+0.7378i	0.1588+0.7521i	0.1666+0.7410i	0.3967+0.6104i	0.3971+0.6093i	0.4022+0.5964i	0.4020+0.5952i
14	0.1826+0.7535i	0.1893+0.7416i	0.1516+0.7621i	0.1596+0.7470i	0.4024+0.6084i	0.3991+0.6069i	0.4059+0.5914i	0.4018+0.5896i
14,5	0.1878+0.7652i	0.1918+0.7501i	0.1441+0.7789i	0.1507+0.7597i	0.4094+0.6093i	0.4040+0.6061i	0.4153+0.5858i	0.4089+0.5826i
15	0.6334+1.5624i	0.3445+1.0222i	0.3767+1.3678i	0.3375+1.0864i	0.3311+0.6416i	0.3353+0.7232i	0.3182+0.6339i	0.3260+0.7097i
15,5	0.1266+1.3390i	0.4298+0.9537i	0.2698+1.2595i	0.4136+1.0326i	0.4146+0.6068i	0.4236+0.6703i	0.4011+0.5965i	0.4047+0.6466i
16	0.4307+1.3657i	0.3427+1.0736i	0.5886+1.6752i	0.3211+0.9921i	0.3296+0.6232i	0.3421+0.6984i	0.3115+0.6358i	0.3204+0.7350i
16,5	0.2029+1.6229i	0.4061+0.9419i	0.4138+1.2839i	0.3981+0.9966i	0.3744+0.6031i	0.3838+0.6977i	0.3484+0.6000i	0.3571+0.6873i
17	0.4551+1.5890i	0.3688+0.9394i	0.3994+1.2831i	0.3584+1.0296i	0.3706+0.5982i	0.3667+0.7052i	0.3292+0.5917i	0.3315+0.6797i
17,5	0.4310+1.5685i	0.3749+0.9291i	0.3899+1.2664i	0.3578+1.0211i	0.3781+0.5910i	0.3716+0.7091i	0.3216+0.5867i	0.3245+0.6863i
18	0.4257+1.5553i	0.3653+0.9212i	0.3793+1.2595i	0.3474+1.0247i	0.3805+0.5765i	0.3633+0.7147i	0.3133+0.5726i	0.3120+0.6868i
18,5	0.4244+1.5436i	0.3639+0.9208i	0.3774+1.2582i	0.3430+1.0368i	0.3915+0.5705i	0.3623+0.7269i	0.3080+0.5673i	0.3034+0.6934i
19	0.7690+1.4112i	0.6649+1.1380i	0.4761+1.4765i	0.4596+1.1970i	0.4764+0.7356i	0.5686+0.9186i	0.3592+0.7734i	0.4125+0.9576i
19,5	0.4619+1.4871i	0.4964+0.9866i	0.3490+1.2589i	0.3490+1.0371i	0.4558+0.6134i	0.4773+0.7891i	0.3323+0.6317i	0.3411+0.8066i
20	0.3324+1.2294i	0.3300+1.0062i	0.3879+1.4978i	0.2451+0.8999i	0.4353+0.5950i	0.4122+0.7607i	0.3109+0.5751i	0.2807+0.7485i
20,5	0.3324+1.2302i	0.3334+1.0155i	0.3846+1.4868i	0.2478+0.9074i	0.4435+0.6045i	0.4193+0.7714i	0.3125+0.5857i	0.2831+0.7571i
21	0.3284+1.2285i	0.3320+1.0206i	0.3786+1.4755i	0.2471+0.9090i	0.4494+0.6106i	0.4225+0.7777i	0.3144+0.5907i	0.2838+0.7596i
21,5	0.3217+1.2283i	0.3261+1.0269i	0.3716+1.4663i	0.2470+0.9085i	0.4549+0.6160i	0.4247+0.7818i	0.3170+0.5938i	0.2850+0.7600i
22	0.3100+1.2397i	0.3058+1.0469i	0.3607+1.4682i	0.2567+0.9079i	0.4631+0.6208i	0.4319+0.7888i	0.3205+0.5962i	0.2904+0.7595i
22,5	0.3044+1.2443i	0.3002+1.0568i	0.3505+1.4648i	0.2617+0.9117i	0.4705+0.6290i	0.4380+0.7857i	0.3259+0.6027i	0.2955+0.7625i
23	0.3452+1.1540i	0.4129+0.9793i	0.3125+1.3457i	0.2563+0.9501i	0.4782+0.6393i	0.4531+0.8051i	0.3394+0.6131i	0.3093+0.7816i
23,5	0.2993+1.2594i	0.2906+1.0772i	0.3403+1.4686i	0.2690+0.9234i	0.4846+0.6443i	0.4495+0.7999i	0.3381+0.6175i	0.3079+0.7726i
24	0.4884+1.4147i	0.4408+0.9883i	0.2990+1.3047i	0.3098+1.1123i	0.5034+0.6582i	0.5007+0.8232i	0.3521+0.6461i	0.3534+0.7992i
24,5	0.4818+1.4041i	0.4361+0.9895i	0.2934+1.3012i	0.3024+1.1113i	0.5119+0.6637i	0.5063+0.8279i	0.3591+0.6480i	0.3581+0.8012i
25	0.4778+1.3940i	0.4318+0.9909i	0.2896+1.2989i	0.2959+1.1112i	0.5190+0.6693i	0.5110+0.8331i	0.3652+0.6503i	0.3620+0.8038i
25,5	0.4747+1.3846i	0.4279+0.9924i	0.2865+1.2969i	0.2905+1.1114i	0.5249+0.6752i	0.5140+0.8384i	0.3704+0.6529i	0.3647+0.8068i
26	0.4711+1.3764i	0.4242+0.9942i	0.2836+1.2952i	0.2860+1.1119i	0.5308+0.6813i	0.5155+0.8438i	0.3755+0.6565i	0.3664+0.8105i
SNR / w	w48	w49	w50	w51	w52	w53	w54	w55
5	0.2696+0.4521i	0.2696+0.4521i	0.5170+1.2065i	0.5169+1.2065i	0.2696+0.4521i	0.2696+0.4521i	0.5169+1.2065i	0.5169+1.2065i
5,5	0.2663+0.4530i	0.2663+0.4530i	0.5115+1.2092i	0.5115+1.2092i	0.2663+0.4530i	0.2663+0.4530i	0.5115+1.2092i	0.5115+1.2092i
6	0.5067+1.2102i	0.5067+1.2102i	0.5067+1.2102i	0.5067+1.2102i	0.2642+0.4570i	0.2642+0.4570i	0.2642+0.4570i	0.2642+0.4570i
6,5	0.2553+0.4543i	0.2553+0.4543i	0.2553+0.4543i	0.2553+0.4543i	0.2699+0.4632i	0.2699+0.4632i	0.2699+0.4632i	0.2699+0.4632i
7	0.2570+0.4231i	0.2737+0.4610i	0.2407+0.3854i	0.2570+0.4231i	0.2424+0.4005i	0.2551+0.4393i	0.2293+0.3637i	0.2424+0.4005i
7,5	0.2297+0.4213i	0.2153+0.3744i	0.3279+1.2665i	0.3690+1.7569i	0.2435+0.4714i	0.2297+0.4213i	0.3175+1.1489i	0.3279+1.2665i
8	0.3708+0.2078i	0.4230+0.2228i	0.4230+0.2228i	0.4792+0.2369i	0.3788+0.2257i	0.4288+0.2485i	0.4288+0.2485i	0.4799+0.2729i
8,5	0.3693+0.1998i	0.4280+0.2156i	0.4280+0.2156i	0.4909+0.2299i	0.3747+0.2178i	0.4300+0.2432i	0.4300+0.2432i	0.4861+0.2708i
9	0.2427+0.2263i	0.2838+0.2486i	0.2831+0.2190i	0.3278+0.2440i	0.2459+0.2248i	0.2871+0.2468i	0.2869+0.2171i	0.3312+0.2418i

9,5	0.2335+0.2229i	0.2775+0.2471i	0.2850+0.2115i	0.3342+0.2392i	0.2370+0.2213i	0.2813+0.2455i	0.2895+0.2096i	0.3382+0.2371i
10	0.1636-0.3155i	0.1635-0.3150i	0.2161-0.6148i	0.2169-0.6216i	0.1635-0.3150i	0.1634-0.3145i	0.2169-0.6216i	0.2176-0.6290i
10,5	0.1570-0.3085i	0.1564-0.3061i	0.2066-0.6354i	0.2071-0.6404i	0.1564-0.3061i	0.1557-0.3037i	0.2071-0.6404i	0.2075-0.6460i
11	0.3051+0.1518i	0.3018+0.1510i	0.3018+0.1510i	0.2985+0.1501i	0.3037+0.1699i	0.3007+0.1685i	0.3007+0.1685i	0.2977+0.1671i
11,5	0.2979+0.1464i	0.3017+0.1473i	0.2941+0.1456i	0.2979+0.1465i	0.2972+0.1662i	0.3006+0.1678i	0.2937+0.1646i	0.2971+0.1662i
12	0.2697+0.1443i	0.2704+0.1433i	0.2644+0.1442i	0.2650+0.1432i	0.2763+0.1638i	0.2768+0.1626i	0.2715+0.1630i	0.2719+0.1618i
12,5	0.2423+0.1395i	0.2424+0.1389i	0.2387+0.1394i	0.2388+0.1389i	0.2516+0.1583i	0.2517+0.1576i	0.2482+0.1578i	0.2483+0.1571i
13	0.2256+0.1346i	0.2253+0.1344i	0.2241+0.1346i	0.2237+0.1345i	0.2350+0.1552i	0.2347+0.1549i	0.2335+0.1550i	0.2331+0.1547i
13,5	0.2177+0.1304i	0.2168+0.1304i	0.2184+0.1305i	0.2174+0.1306i	0.2264+0.1539i	0.2255+0.1538i	0.2269+0.1542i	0.2260+0.1541i
14	0.2139+0.1264i	0.2129+0.1265i	0.2177+0.1267i	0.2167+0.1268i	0.2205+0.1529i	0.2196+0.1529i	0.2239+0.1539i	0.2230+0.1539i
14,5	0.2048+0.1245i	0.2036+0.1246i	0.2137+0.1252i	0.2125+0.1253i	0.2114+0.1549i	0.2104+0.1549i	0.2194+0.1573i	0.2184+0.1573i
15	0.1245+0.1187i	0.1244+0.1173i	0.1239+0.1191i	0.1238+0.1176i	0.1179+0.3687i	0.1194+0.3492i	0.1158+0.3713i	0.1175+0.3517i
15,5	0.1162+0.1238i	0.1165+0.1240i	0.1164+0.1233i	0.1167+0.1236i	0.1232+0.3743i	0.1224+0.3681i	0.1248+0.3757i	0.1240+0.3695i
16	0.1246+0.1126i	0.1236+0.1147i	0.1260+0.1137i	0.1249+0.1158i	0.1145+0.3722i	0.1158+0.3451i	0.1155+0.3659i	0.1168+0.3397i
16,5	0.1108+0.1164i	0.1102+0.1224i	0.1146+0.1160i	0.1140+0.1221i	0.1117+0.3822i	0.1114+0.3519i	0.1161+0.3836i	0.1157+0.3531i
17	0.1115+0.1115i	0.1120+0.1205i	0.1194+0.1109i	0.1199+0.1199i	0.1072+0.3744i	0.1092+0.3378i	0.1154+0.3802i	0.1176+0.3422i
17,5	0.1091+0.1073i	0.1100+0.1219i	0.1238+0.1068i	0.1247+0.1214i	0.1034+0.3767i	0.1065+0.3301i	0.1187+0.3819i	0.1221+0.3339i
18	0.1029+0.1005i	0.1036+0.1205i	0.1336+0.1000i	0.1343+0.1201i	0.0984+0.3716i	0.1017+0.3147i	0.1253+0.3759i	0.1301+0.3177i
18,5	0.0939+0.0943i	0.0946+0.1241i	0.1446+0.0939i	0.1449+0.1242i	0.0911+0.3755i	0.0942+0.3061i	0.1336+0.3799i	0.1399+0.3092i
19	0.0784+0.0928i	0.0827+0.2753i	0.0788+0.0929i	0.0872+0.2754i	0.0877+0.6350i	0.0879+0.4564i	0.1446+0.6281i	0.1074+0.4545i
19,5	0.0788+0.0768i	0.0782+0.2154i	0.1113+0.0765i	0.1213+0.2125i	0.0760+0.5036i	0.0772+0.3648i	0.1642+0.4957i	0.1421+0.3594i
20	0.0713+0.0697i	0.0711+0.1478i	0.2060+0.0687i	0.2046+0.1520i	0.0715+0.3878i	0.0710+0.2879i	0.1957+0.3967i	0.2012+0.2903i
20,5	0.0696+0.0636i	0.0695+0.1639i	0.2051+0.0633i	0.2044+0.1665i	0.0700+0.4057i	0.0696+0.2929i	0.1995+0.4139i	0.2029+0.2955i
21	0.0696+0.0610i	0.0696+0.1698i	0.2077+0.0610i	0.2073+0.1721i	0.0698+0.4114i	0.0697+0.2939i	0.2034+0.4201i	0.2063+0.2971i
21,5	0.0707+0.0595i	0.0706+0.1722i	0.2119+0.0599i	0.2114+0.1748i	0.0701+0.4134i	0.0705+0.2935i	0.2066+0.4231i	0.2100+0.2979i
22	0.0723+0.0588i	0.0719+0.1737i	0.2166+0.0598i	0.2155+0.1775i	0.0704+0.4157i	0.0713+0.2939i	0.2086+0.4265i	0.2132+0.3001i
22,5	0.0730+0.0592i	0.0727+0.1768i	0.2188+0.0604i	0.2178+0.1809i	0.0710+0.4212i	0.0721+0.2976i	0.2107+0.4330i	0.2155+0.3047i
23	0.0720+0.0615i	0.0717+0.1851i	0.2162+0.0625i	0.2153+0.1881i	0.0692+0.4430i	0.0709+0.3116i	0.2088+0.4508i	0.2131+0.3169i
23,5	0.0735+0.0614i	0.0734+0.1846i	0.2204+0.0628i	0.2198+0.1888i	0.0720+0.4369i	0.0730+0.3094i	0.2145+0.4495i	0.2184+0.3170i
24	0.0668+0.0698i	0.0669+0.2101i	0.2012+0.0697i	0.2017+0.2100i	0.0675+0.5006i	0.0672+0.3530i	0.2047+0.4981i	0.2028+0.3524i
24,5	0.0679+0.0704i	0.0679+0.2120i	0.2045+0.0702i	0.2048+0.2113i	0.0689+0.5043i	0.0683+0.3561i	0.2088+0.4995i	0.2060+0.3542i
25	0.0687+0.0711i	0.0686+0.2143i	0.2073+0.0705i	0.2070+0.2122i	0.0701+0.5091i	0.0690+0.3598i	0.2121+0.5000i	0.2083+0.3552i
25,5	0.0699+0.0718i	0.0690+0.2167i	0.2111+0.0703i	0.2080+0.2118i	0.0711+0.5149i	0.0694+0.3642i	0.2146+0.4990i	0.2095+0.3547i
26	0.0711+0.0728i	0.0687+0.2202i	0.2153+0.0697i	0.2074+0.2103i	0.0722+0.5215i	0.0699+0.3698i	0.2171+0.4970i	0.2104+0.3528i
SNR / w	w56	w57	w58	w59	w60	w61	w62	w63
5	0.2696+0.4521i	0.2696+0.4521i	0.5170+1.2065i	0.5170+1.2065i	0.2696+0.4521i	0.2696+0.4521i	0.5170+1.2065i	0.5169+1.2065i
5,5	0.2663+0.4530i	0.2663+0.4530i	0.5115+1.2092i	0.5115+1.2092i	0.2663+0.4530i	0.2663+0.4530i	0.5115+1.2092i	0.5115+1.2092i
6	0.5067+1.2102i	0.5067+1.2102i	0.5067+1.2102i	0.5067+1.2102i	0.2642+0.4570i	0.2642+0.4570i	0.2642+0.4570i	0.2642+0.4570i
6,5	0.2553+0.4543i	0.2553+0.4543i	0.2553+0.4543i	0.2553+0.4543i	0.2699+0.4632i	0.2699+0.4632i	0.2699+0.4632i	0.2699+0.4632i
7	0.2737+0.4610i	0.2897+0.4968i	0.2571+0.4231i	0.2737+0.4610i	0.2551+0.4393i	0.2668+0.4777i	0.2424+0.4005i	0.2551+0.4393i
7,5	0.4213+0.2297i	0.3744+0.2153i	1.2665+0.3279i	1.7569+0.3690i	0.4714+0.2435i	0.4213+0.2297i	1.1489+0.3175i	1.2665+0.3279i
8	0.4230+0.2228i	0.4792+0.2369i	0.4792+0.2369i	0.5341+0.2486i	0.4288+0.2485i	0.4799+0.2729i	0.4799+0.2729i	0.5272+0.2969i
8,5	0.4280+0.2156i	0.4909+0.2299i	0.4909+0.2299i	0.5508+0.2411i	0.4300+0.2432i	0.4861+0.2708i	0.4861+0.2708i	0.5370+0.2980i
9	0.2535+0.2242i	0.2958+0.2464i	0.2959+0.2162i	0.3401+0.2408i	0.2568+0.2226i	0.2992+0.2445i	0.2999+0.2142i	0.3435+0.2384i
9,5	0.2466+0.2220i	0.2928+0.2463i	0.3019+0.2094i	0.3505+0.2369i	0.2504+0.2203i	0.2968+0.2446i	0.3066+0.2074i	0.3545+0.2345i
10	0.1777-0.3146i	0.1775-0.3142i	0.3118-0.5742i	0.3157-0.5798i	0.1775-0.3142i	0.1773-0.3138i	0.3157-0.5798i	0.3199-0.5859i
10,5	0.1726-0.3073i	0.1716-0.3050i	0.3219-0.5854i	0.3250-0.5893i	0.1716-0.3050i	0.1707-0.3028i	0.3250-0.5893i	0.3285-0.5937i
11	0.6517+0.1968i	0.6553+0.1969i	0.6553+0.1970i	0.6593+0.1971i	0.5926+0.3323i	0.5953+0.3347i	0.5953+0.3347i	0.5983+0.3373i
11,5	0.6651+0.1874i	0.6629+0.1867i	0.6676+0.1867i	0.6652+0.1860i	0.5987+0.3415i	0.5967+0.3408i	0.5999+0.3441i	0.5977+0.3433i
12	0.6488+0.1696i	0.6462+0.1706i	0.6456+0.1745i	0.6431+0.1753i	0.5854+0.3186i	0.5862+0.3167i	0.5864+0.3275i	0.5873+0.3254i
12,5	0.6316+0.1560i	0.6315+0.1561i	0.6247+0.1604i	0.6248+0.1604i	0.5783+0.3024i	0.5798+0.3002i	0.5773+0.3109i	0.5787+0.3085i
13	0.6170+0.1462i	0.6194+0.1456i	0.6069+0.1499i	0.6096+0.1493i	0.5711+0.2953i	0.5733+0.2925i	0.5681+0.3029i	0.5702+0.3000i
13,5	0.6100+0.1390i	0.6146+0.1379i	0.5973+0.1418i	0.6021+0.1407i	0.5671+0.2989i	0.5699+0.2952i	0.5622+0.3050i	0.5648+0.3012i

14	0.6083+0.1348i	0.6131+0.1340i	0.5937+0.1359i	0.5986+0.1351i	0.5634+0.3136i	0.5659+0.3081i	0.5560+0.3149i	0.5581+0.3094i
14,5	0.6021+0.1286i	0.6083+0.1281i	0.5829+0.1293i	0.5889+0.1287i	0.5602+0.3179i	0.5630+0.3124i	0.5492+0.3184i	0.5514+0.3131i
15	0.3704+0.1254i	0.3712+0.1251i	0.3655+0.1247i	0.3663+0.1243i	0.3507+0.3864i	0.3567+0.3730i	0.3413+0.3842i	0.3479+0.3703i
15,5	0.3691+0.1161i	0.3726+0.1149i	0.3462+0.1176i	0.3495+0.1166i	0.3880+0.3542i	0.3859+0.3426i	0.3721+0.3619i	0.3694+0.3510i
16	0.3798+0.1221i	0.3814+0.1262i	0.3718+0.1223i	0.3734+0.1263i	0.3551+0.3930i	0.3657+0.3748i	0.3422+0.3818i	0.3526+0.3629i
16,5	0.3595+0.1122i	0.3649+0.1166i	0.3317+0.1131i	0.3362+0.1181i	0.3658+0.3713i	0.3698+0.3435i	0.3402+0.3754i	0.3436+0.3473i
17	0.3728+0.1147i	0.3680+0.1240i	0.3411+0.1128i	0.3369+0.1221i	0.3747+0.3766i	0.3717+0.3453i	0.3348+0.3800i	0.3339+0.3472i
17,5	0.3820+0.1125i	0.3761+0.1279i	0.3399+0.1094i	0.3352+0.1245i	0.3834+0.3812i	0.3805+0.3416i	0.3287+0.3836i	0.3290+0.3417i
18	0.4034+0.1051i	0.3990+0.1268i	0.3351+0.1017i	0.3324+0.1227i	0.3940+0.3783i	0.3941+0.3266i	0.3224+0.3797i	0.3242+0.3257i
18,5	0.4172+0.0983i	0.4129+0.1333i	0.3295+0.0948i	0.3269+0.1276i	0.4055+0.3867i	0.4070+0.3192i	0.3165+0.3859i	0.3192+0.3168i
19	0.2459+0.0870i	0.2683+0.2541i	0.2324+0.0875i	0.2491+0.2574i	0.3841+0.5754i	0.3150+0.4197i	0.3139+0.6000i	0.2782+0.4299i
19,5	0.3357+0.0722i	0.3554+0.1787i	0.2645+0.0759i	0.2773+0.1974i	0.4211+0.4555i	0.3908+0.3235i	0.3141+0.4762i	0.2975+0.3417i
20	0.4915+0.0675i	0.4864+0.1749i	0.3507+0.0674i	0.3479+0.1618i	0.4601+0.4402i	0.4756+0.3132i	0.3316+0.4177i	0.3417+0.2995i
20,5	0.4886+0.0646i	0.4846+0.1827i	0.3469+0.0633i	0.3450+0.1729i	0.4639+0.4505i	0.4766+0.3165i	0.3324+0.4313i	0.3406+0.3039i
21	0.4930+0.0636i	0.4893+0.1869i	0.3495+0.0617i	0.3478+0.1777i	0.4697+0.4569i	0.4820+0.3193i	0.3355+0.4373i	0.3439+0.3060i
21,5	0.5002+0.0638i	0.4966+0.1905i	0.3552+0.0612i	0.3533+0.1810i	0.4764+0.4630i	0.4895+0.3231i	0.3397+0.4416i	0.3490+0.3083i
22	0.5063+0.0651i	0.5034+0.1956i	0.3611+0.0619i	0.3592+0.1852i	0.4850+0.4713i	0.4975+0.3302i	0.3439+0.4470i	0.3544+0.3131i
22,5	0.5098+0.0662i	0.5076+0.1992i	0.3641+0.0628i	0.3625+0.1888i	0.4912+0.4790i	0.5027+0.3358i	0.3482+0.4545i	0.3582+0.3185i
23	0.5089+0.0667i	0.5074+0.2012i	0.3614+0.0643i	0.3600+0.1938i	0.4951+0.4835i	0.5034+0.3391i	0.3505+0.4649i	0.3566+0.3265i
23,5	0.5134+0.0686i	0.5133+0.2063i	0.3668+0.0653i	0.3660+0.1965i	0.5011+0.4924i	0.5105+0.3465i	0.3558+0.4698i	0.3634+0.3304i
24	0.4796+0.0697i	0.4800+0.2104i	0.3382+0.0697i	0.3390+0.2100i	0.4925+0.5035i	0.4833+0.3548i	0.3463+0.4979i	0.3414+0.3526i
24,5	0.4861+0.0706i	0.4859+0.2131i	0.3435+0.0702i	0.3439+0.2114i	0.5003+0.5082i	0.4895+0.3586i	0.3523+0.4998i	0.3464+0.3545i
25	0.4922+0.0714i	0.4900+0.2154i	0.3482+0.0705i	0.3474+0.2123i	0.5068+0.5129i	0.4941+0.3621i	0.3574+0.5015i	0.3500+0.3558i
25,5	0.5014+0.0721i	0.4909+0.2174i	0.3548+0.0706i	0.3488+0.2127i	0.5120+0.5180i	0.4965+0.3657i	0.3613+0.5034i	0.3518+0.3569i
26	0.5101+0.0730i	0.4897+0.2198i	0.3616+0.0709i	0.3479+0.2135i	0.5175+0.5233i	0.4992+0.3698i	0.3655+0.5062i	0.3537+0.3587i

e) 1kQQAM – canal AWGN

SNR / w	w0	w1	w2	w3	w4	w5	w6	w7
7	1.2470+1.8367i	0.6834+1.2111i	0.4280+2.1615i	0.3795+1.3684i	0.6833+1.2110i	0.6203+1.1269i	0.3795+1.3684i	0.3664+1.2523i
7,5	1.2147+1.7841i	0.9775+1.4975i	0.4075+2.1185i	0.3773+1.7335i	0.6878+1.1557i	0.7109+1.1847i	0.3342+1.3132i	0.3396+1.3456i
8	0.3978+2.0885i	0.3528+1.7466i	0.3367+1.5749i	0.3329+1.5346i	1.1912+1.7585i	0.9886+1.4907i	0.8852+1.3630i	0.8567+1.3285i
8,5	0.3944+2.0732i	0.3348+1.7139i	0.3252+1.6265i	0.3149+1.5557i	1.1771+1.7502i	0.9699+1.4579i	0.9225+1.3957i	0.8771+1.3353i
9	2.0688+0.3931i	1.5220+0.3040i	1.5225+0.3041i	1.4127+0.2910i	1.5231+0.3042i	1.4130+0.2910i	1.4132+0.2910i	1.3607+0.2857i
9,5	2.0659+0.4001i	1.5258+0.3016i	1.5256+0.3015i	1.4332+0.2875i	1.5259+0.3016i	1.4334+0.2875i	1.4333+0.2875i	1.3888+0.2812i
10	2.0614+0.4082i	1.5254+0.3009i	1.5258+0.3010i	1.4439+0.2854i	1.5264+0.3011i	1.4443+0.2855i	1.4445+0.2855i	1.4049+0.2778i
10,5	2.0377+0.5960i	1.4175+0.2985i	1.8845+0.2992i	1.4546+0.2734i	1.5221+0.3248i	1.4068+0.2875i	1.5822+0.2893i	1.4462+0.2673i
11	2.0390+0.5892i	1.9449+0.9829i	2.1322+0.2257i	1.6928+1.3984i	0.6643+1.9775i	0.9378+1.8902i	0.2768+2.1985i	1.3588+1.7046i
11,5	2.0197+0.5915i	1.9273+0.9738i	2.1141+0.2170i	1.6778+1.3854i	0.6565+1.9726i	0.9379+1.8778i	0.2618+2.1756i	1.3509+1.6828i
12	1.9956+0.5790i	1.9068+0.9328i	2.0896+0.2054i	1.6925+1.3344i	0.6557+1.9767i	0.9827+1.8677i	0.2501+2.1554i	1.3795+1.6301i
12,5	2.1158+0.2551i	1.9736+0.7598i	1.2067+1.7622i	1.7509+1.2633i	0.4696+1.4431i	0.4534+1.4338i	0.5999+1.4947i	0.5550+1.4555i
13	1.1348+1.8042i	1.5056+1.4947i	1.8256+0.9213i	1.6326+1.1112i	1.6003+0.1353i	1.6516+0.1238i	2.0062+0.5266i	2.0128+0.1983i
13,5	2.1871+0.3000i	1.8533+0.9857i	1.1098+1.7333i	1.5930+1.5042i	0.5540+1.3961i	0.5317+1.3797i	0.6814+1.4935i	0.6040+1.4250i
14	1.2483+1.5217i	0.1461+1.4775i	1.0118+1.6410i	0.7721+1.8992i	0.5249+1.3438i	0.4741+1.3776i	0.6571+1.4190i	0.6040+1.4423i
14,5	1.3062+1.5059i	0.1503+1.4749i	1.0464+1.6055i	0.8162+1.8855i	0.5385+1.3224i	0.4757+1.3733i	0.7020+1.4249i	0.6369+1.4730i
15	1.4903+1.1383i	0.9110+1.4937i	1.4109+1.4171i	1.1243+1.6910i	1.0821+1.1204i	0.9502+1.2140i	1.0380+1.0923i	0.9559+1.1435i
15,5	1.3441+1.0864i	1.6500+1.0447i	1.3102+1.2118i	1.5763+1.4126i	0.9982+1.0732i	0.9271+1.0465i	0.9966+1.0776i	0.9241+1.0486i
16	1.3350+1.1084i	1.4475+0.9747i	1.5607+1.3993i	1.7541+1.0489i	1.0500+0.9792i	1.0135+0.9798i	0.9647+0.9464i	0.9496+0.9596i
16,5	1.2147+1.5219i	1.5401+1.3313i	1.1978+1.2058i	1.2559+1.1577i	1.8450+0.9334i	1.5494+0.9965i	1.1978+0.9549i	1.2537+0.9642i
17	1.2118+1.5215i	1.5329+1.3209i	1.1917+1.2081i	1.2568+1.1617i	1.8374+0.9409i	1.5357+0.9911i	1.1881+0.9512i	1.2485+0.9597i
17,5	1.2108+1.5244i	1.5290+1.3088i	1.1858+1.2120i	1.2645+1.1672i	1.8238+0.9430i	1.5237+0.9832i	1.1800+0.9524i	1.2475+0.9593i
18	1.2082+1.5168i	1.5240+1.3020i	1.1811+1.2092i	1.2761+1.1672i	1.8137+0.9371i	1.5194+0.9786i	1.1750+0.9549i	1.2506+0.9591i

18,5	1.7580+0.8556i	1.4723+0.8642i	1.6081+1.1548i	1.3616+0.9559i	1.6322+0.6294i	1.4250+0.6945i	1.1917+0.7017i	1.2482+0.7340i
19	1.7624+0.8434i	1.4961+0.8499i	1.5901+1.1466i	1.3710+0.9545i	1.6320+0.6089i	1.4335+0.6810i	1.2009+0.7014i	1.2596+0.7328i
19,5	1.7721+0.9602i	1.5439+0.8692i	1.5357+1.2087i	1.3865+0.9588i	1.4330+0.5782i	1.4962+0.6937i	1.2677+0.6543i	1.2934+0.7411i
20	1.1090+1.6424i	1.3041+1.4291i	0.8414+1.7420i	1.0620+1.3420i	1.3469+1.1420i	1.6140+1.1270i	1.1259+1.0802i	1.0687+1.1589i
20,5	1.5361+1.2929i	1.7337+0.8357i	1.2780+1.4499i	1.2622+1.2031i	1.4523+0.7959i	1.5055+0.9923i	1.2671+0.8392i	1.2824+1.0044i
21	1.1920+1.4825i	1.1801+1.2582i	1.4681+1.3237i	1.1055+1.1254i	1.5435+0.9938i	1.3407+1.0511i	1.1841+0.8772i	1.1708+0.9914i
21,5	1.3352+1.3968i	1.5544+1.1632i	1.1041+1.4991i	1.0921+1.2512i	1.3845+0.9402i	1.3310+1.1297i	1.2245+0.9236i	1.1581+1.0783i
22	1.1448+1.4301i	1.2314+1.2283i	1.3851+1.4301i	1.1791+1.0727i	1.5570+0.9357i	1.4463+1.1297i	1.3343+0.9131i	1.1627+0.9172i
22,5	1.3571+1.4599i	1.6063+1.1774i	1.1068+1.5873i	1.2491+1.2384i	1.5617+0.8881i	1.4366+1.0501i	1.2716+0.8875i	1.2361+1.0472i
23	1.2474+1.3969i	1.4038+1.1579i	1.0418+1.5521i	1.2120+1.1649i	1.3678+0.8860i	1.5336+0.9857i	1.2086+0.8597i	1.2130+1.0083i
23,5	1.3740+1.3412i	1.5419+1.1137i	1.0721+1.4824i	1.1453+1.2860i	1.3865+0.9633i	1.3170+1.1167i	1.1954+0.9088i	1.1762+1.0540i
24	1.3790+1.2726i	1.2140+1.1908i	1.1518+1.3905i	1.5627+1.0245i	1.3824+0.8840i	1.3211+1.0410i	1.1686+0.8903i	1.1570+1.0107i
24,5	1.2961+1.3306i	1.5578+1.0359i	0.8364+1.6008i	1.1053+1.2451i	1.3744+0.9233i	1.3731+1.1025i	1.2130+0.9446i	1.2096+1.1104i
25	1.2369+1.3509i	1.5739+0.9502i	0.8752+1.5743i	1.0781+1.2268i	1.3726+1.0001i	1.3629+1.1723i	1.2107+0.9621i	1.1961+1.1184i
25,5	1.1981+1.3312i	1.4448+1.0547i	1.0785+1.4777i	1.3216+0.9567i	1.5082+0.8231i	1.2653+1.1488i	1.1548+0.9162i	1.1687+1.0355i
26	1.3600+1.2363i	1.4725+1.0370i	0.8236+1.5404i	1.1012+1.2158i	1.3405+0.9099i	1.2954+1.0600i	1.2050+0.8913i	1.1575+1.0871i
26,5	1.2790+1.2022i	1.4224+1.0247i	0.8336+1.4661i	1.1191+1.1349i	1.3645+0.8540i	1.2671+1.0236i	1.2289+0.8713i	1.1326+0.9925i
27	1.3272+1.2196i	1.3559+1.0732i	1.0028+1.3882i	1.0375+1.2417i	1.4394+0.9027i	1.0528+1.0954i	1.2910+0.9298i	1.1738+1.1370i
27,5	1.2847+1.1501i	1.3344+1.0100i	0.9562+1.3726i	0.9853+1.2319i	1.5330+0.7517i	1.0098+1.0854i	1.1767+0.9824i	1.1243+1.1021i
28	1.2471+1.1326i	1.3598+1.0114i	0.9946+1.3891i	1.0600+1.1563i	1.4990+0.7151i	1.0049+1.0334i	1.2249+0.9302i	1.1234+1.0412i
SNR / w	w8	w9	w10	w11	w12	w13	w14	w15
7	0.6833+1.2110i	0.6203+1.1269i	0.3795+1.3684i	0.3664+1.2523i	0.6202+1.1268i	0.5879+1.0807i	0.3663+1.2523i	0.3587+1.1910i
7,5	0.6881+1.1562i	0.7117+1.1857i	0.3341+1.3147i	0.3395+1.3465i	0.6165+1.0681i	0.6321+1.0878i	0.3226+1.1998i	0.3264+1.2228i
8	0.3037+1.2547i	0.3062+1.2795i	0.3046+1.2544i	0.3068+1.2754i	0.6705+1.1024i	0.6865+1.1223i	0.6710+1.1036i	0.6846+1.1206i
8,5	0.2754+1.1162i	0.2761+1.1289i	0.2761+1.1273i	0.2768+1.1403i	0.5936+0.9870i	0.6017+0.9967i	0.6005+0.9956i	0.6088+1.0055i
9	1.5227+0.3041i	1.4128+0.2910i	1.4130+0.2910i	1.3605+0.2857i	1.4133+0.2910i	1.3607+0.2857i	1.3609+0.2857i	1.3276+0.2826i
9,5	1.5257+0.3016i	1.4333+0.2875i	1.4332+0.2875i	1.3887+0.2812i	1.4334+0.2875i	1.3888+0.2812i	1.3887+0.2812i	1.3603+0.2772i
10	1.5259+0.3010i	1.4440+0.2854i	1.4442+0.2855i	1.4047+0.2778i	1.4446+0.2855i	1.4050+0.2778i	1.4051+0.2779i	1.3798+0.2727i
10,5	1.4411+0.2995i	1.3746+0.2784i	1.4767+0.2749i	1.3984+0.2629i	1.4219+0.2840i	1.3753+0.2744i	1.4517+0.2754i	1.3959+0.2589i
11	0.2694+1.5131i	0.2666+1.4804i	0.2206+1.5281i	0.2221+1.4905i	0.3240+1.5996i	0.3139+1.5353i	0.2481+1.6183i	0.2508+1.5412i
11,5	0.2762+1.5039i	0.2735+1.4726i	0.2175+1.5226i	0.2194+1.4854i	0.3318+1.5889i	0.3211+1.5250i	0.2441+1.6117i	0.2476+1.5333i
12	0.2854+1.4955i	0.2803+1.4638i	0.2140+1.5186i	0.2152+1.4801i	0.3402+1.5829i	0.3241+1.5142i	0.2375+1.6120i	0.2398+1.5271i
12,5	0.1259+1.6593i	0.1270+1.7379i	0.7712+2.0048i	0.2871+2.1268i	0.3310+1.5330i	0.3195+1.5396i	0.5495+1.5637i	0.4968+1.5173i
13	1.4048+0.5351i	1.3890+0.5372i	1.4747+0.6396i	1.4392+0.6354i	1.4978+0.3564i	1.4931+0.3477i	1.5164+0.4919i	1.4763+0.4841i
13,5	0.1154+1.5910i	0.1145+1.6518i	0.7071+2.0121i	0.2331+2.0568i	0.3287+1.5262i	0.3248+1.5317i	0.5457+1.6384i	0.4754+1.5699i
14	0.1319+1.6053i	0.1497+1.5552i	0.1917+2.0093i	0.4128+1.8626i	0.4751+1.3603i	0.4232+1.4126i	0.5659+1.3830i	0.5277+1.4369i
14,5	0.1282+1.6465i	0.1597+1.5527i	0.1959+2.0115i	0.4545+1.8615i	0.5001+1.3385i	0.4346+1.4163i	0.5932+1.3889i	0.5460+1.4894i
15	0.1724+2.0081i	0.7788+1.5257i	0.5016+1.9561i	0.7186+1.7492i	0.9055+1.0616i	0.8665+1.1704i	0.9034+1.0402i	0.8738+1.1071i
15,5	1.0823+1.6174i	0.7196+1.5112i	0.8215+1.8773i	0.6957+1.5465i	0.9231+1.2709i	0.8160+1.2862i	0.9126+1.2412i	0.8126+1.2668i
16	1.1791+1.3117i	0.9549+1.3540i	1.1769+1.6347i	0.9200+1.4356i	0.9718+1.0622i	0.9278+1.1107i	0.9134+1.0069i	0.8947+1.0639i
16,5	0.9383+1.3523i	0.8697+1.2142i	0.9874+1.2241i	0.9264+1.1757i	0.8953+0.9296i	0.8826+0.9589i	0.9598+0.9439i	0.9383+0.9662i
17	0.9377+1.3662i	0.8598+1.2150i	0.9907+1.2238i	0.9170+1.1772i	0.8927+0.9249i	0.8786+0.9565i	0.9605+0.9419i	0.9339+0.9669i
17,5	0.9391+1.3812i	0.8495+1.2161i	0.9970+1.2255i	0.9056+1.1802i	0.8919+0.9238i	0.8751+0.9580i	0.9650+0.9445i	0.9298+0.9718i
18	0.9438+1.3828i	0.8433+1.2138i	1.0046+1.2199i	0.8973+1.1788i	0.8923+0.9236i	0.8728+0.9592i	0.9729+0.9487i	0.9271+0.9762i
18,5	1.1693+1.2798i	1.1128+1.0938i	1.3758+1.3185i	1.1973+1.0256i	0.9845+0.7965i	1.0167+0.8742i	1.0414+0.7718i	1.0742+0.8464i
19	1.1743+1.2715i	1.1163+1.0948i	1.3788+1.3352i	1.2168+1.0183i	0.9937+0.7969i	1.0293+0.8865i	1.0541+0.7706i	1.0917+0.8547i
19,5	1.2327+1.2807i	1.1357+1.0702i	1.2398+1.5594i	1.2320+0.9996i	1.0121+0.7959i	1.0506+0.8804i	1.0895+0.7549i	1.1392+0.8268i
20	0.6577+1.4430i	0.7012+1.2781i	0.8212+1.5008i	0.8660+1.3198i	0.8139+1.0062i	0.7661+1.1278i	0.8943+1.0255i	0.8877+1.1417i
20,5	0.9929+1.4515i	0.9693+1.2162i	0.9174+1.6990i	1.0885+1.1841i	0.9646+0.8840i	0.9671+1.0103i	1.0896+0.8706i	1.0906+1.0064i
21	0.9434+1.4728i	0.9500+1.2899i	0.9423+1.7074i	0.9504+1.1268i	0.9076+0.8486i	0.8989+0.9010i	1.0276+0.8623i	0.9660+0.9752i
21,5	0.8934+1.0735i	0.8717+1.1114i	0.9076+1.4446i	0.9079+1.2674i	0.8839+0.9212i	0.8915+0.9251i	1.0506+0.9108i	1.0442+0.9272i
22	0.9594+1.3673i	0.9220+1.1877i	0.9343+1.6326i	1.0387+1.1184i	0.8615+0.8877i	0.8791+1.0284i	0.9391+0.8804i	1.0097+0.9542i
22,5	0.8991+1.3062i	0.8949+1.1654i	1.0334+1.3983i	1.0685+1.1889i	0.9101+0.9127i	0.9056+1.0351i	1.0634+0.9074i	1.0737+1.0418i

23	0.8457+1.3352i	0.8766+1.1938i	1.0182+1.3610i	1.0395+1.2129i	0.9092+0.9223i	0.9015+1.0480i	1.0580+0.9038i	1.0534+1.0422i
23,5	0.8918+1.3385i	0.8706+1.1982i	0.8699+1.5126i	1.0232+1.1858i	0.8968+0.9242i	0.8841+1.0548i	1.0408+0.9107i	1.0278+1.0448i
24	0.9437+1.3080i	0.8750+1.1648i	0.9760+1.4721i	1.0245+1.1502i	0.8778+0.9006i	0.8693+1.0265i	1.0051+0.8991i	1.0075+1.0190i
24,5	0.9028+1.2861i	0.9293+1.1520i	0.8365+1.4219i	1.0395+1.4368i	1.0384+1.0284i	0.9141+1.0040i	1.0741+0.9112i	0.9432+0.8972i
25	0.8829+1.2606i	0.9138+1.1340i	0.8454+1.3942i	1.0180+1.3974i	1.0318+1.0219i	0.9035+0.9954i	1.0712+0.9074i	0.9395+0.8888i
25,5	0.7345+1.4935i	0.9225+1.1907i	0.8959+1.4840i	0.9694+1.3246i	0.9279+0.9107i	1.0693+1.1756i	1.0319+0.9222i	1.0107+1.0471i
26	0.8946+1.3593i	0.9389+1.2209i	1.0235+1.4279i	1.1745+1.3460i	1.0293+0.8852i	0.9361+0.9368i	1.1008+0.9458i	1.0205+1.0570i
26,5	0.8398+1.2923i	0.9326+1.1801i	0.9612+1.3780i	1.0603+1.2681i	1.0358+0.8637i	0.9582+0.9419i	1.1285+0.8265i	1.0066+1.0375i
27	0.8712+1.2714i	0.9051+1.1465i	0.8569+1.4350i	1.1634+1.3187i	1.0441+0.9494i	0.9580+1.0356i	1.1718+0.9809i	0.9066+0.9385i
27,5	0.8145+1.3026i	0.8485+1.1849i	0.7985+1.4488i	1.1193+1.2690i	1.1199+0.7168i	0.8978+1.0853i	1.0728+0.9252i	0.9727+0.9570i
28	0.9261+1.2557i	0.9064+1.1434i	0.8489+1.3711i	1.1138+1.2723i	1.1308+0.8070i	0.9002+1.0336i	1.1114+0.9086i	0.8336+0.9681i
SNR / w	w16	w17	w18	w19	w20	w21	w22	w23
7	0.6835+1.2112i	0.6203+1.1270i	0.3795+1.3686i	0.3664+1.2524i	0.6203+1.1269i	0.5879+1.0807i	0.3664+1.2524i	0.3587+1.1911i
7,5	0.6862+1.1539i	0.7100+1.1836i	0.3339+1.3122i	0.3393+1.3443i	0.6159+1.0671i	0.6314+1.0867i	0.3225+1.1985i	0.3262+1.2216i
8	0.3037+1.2546i	0.3062+1.2794i	0.3046+1.2542i	0.3068+1.2753i	0.6704+1.1023i	0.6864+1.1222i	0.6710+1.1036i	0.6845+1.1205i
8,5	0.2955+1.3378i	0.2962+1.3513i	0.2948+1.3341i	0.2954+1.3455i	0.7420+1.1682i	0.7490+1.1767i	0.7383+1.1638i	0.7445+1.1712i
9	1.0415+0.2618i	1.0473+0.2624i	1.0473+0.2624i	1.0526+0.2630i	1.0473+0.2624i	1.0526+0.2630i	1.0526+0.2630i	1.0574+0.2636i
9,5	1.0125+0.2524i	1.0217+0.2530i	1.0217+0.2530i	1.0306+0.2536i	1.0217+0.2530i	1.0306+0.2536i	1.0306+0.2536i	1.0391+0.2541i
10	0.9970+0.2433i	1.0075+0.2438i	1.0075+0.2438i	1.0179+0.2442i	1.0074+0.2438i	1.0178+0.2442i	1.0178+0.2442i	1.0281+0.2446i
10,5	0.9835+0.2342i	1.0056+0.2321i	0.9853+0.2330i	1.0065+0.2308i	0.9951+0.2336i	1.0160+0.2318i	0.9949+0.2332i	1.0161+0.2322i
11	0.8209+1.1647i	0.8603+1.2018i	0.8476+1.1522i	0.9045+1.1940i	0.8352+1.2130i	0.8916+1.2840i	0.8658+1.1940i	0.9532+1.2725i
11,5	0.8190+1.1650i	0.8577+1.2049i	0.8518+1.1493i	0.9105+1.1942i	0.8346+1.2137i	0.8940+1.2944i	0.8724+1.1908i	0.9695+1.2795i
12	0.8205+1.1674i	0.8616+1.2124i	0.8575+1.1454i	0.9208+1.1932i	0.8423+1.2188i	0.9156+1.3204i	0.8862+1.1870i	1.0082+1.2910i
12,5	1.0349+1.1222i	1.0575+1.1030i	1.1779+1.3115i	1.3201+1.2209i	0.8176+1.1730i	0.8075+1.1541i	0.8190+1.2572i	0.7967+1.2204i
13	1.0757+0.1961i	1.0733+0.2014i	1.0468+0.2094i	1.0453+0.2144i	1.1405+0.1564i	1.1353+0.1616i	1.0857+0.1762i	1.0828+0.1811i
13,5	1.1489+1.1197i	1.3661+1.0778i	1.1464+1.2789i	1.3152+1.1853i	0.8070+1.1957i	0.7685+1.1750i	0.8426+1.2622i	0.7882+1.2129i
14	1.1284+1.1433i	1.0592+1.0260i	1.0822+1.1063i	1.0403+1.0191i	0.7919+1.1415i	0.7855+1.1087i	0.8015+1.1742i	0.7901+1.1322i
14,5	1.1639+1.1492i	1.0902+1.0206i	1.1094+1.1262i	1.0703+1.0196i	0.7869+1.1355i	0.7891+1.1018i	0.8181+1.1797i	0.8094+1.1297i
15	1.3865+0.8444i	1.3175+0.7494i	1.2334+0.7081i	1.2326+0.6778i	1.1515+0.8590i	1.1372+0.8042i	1.1030+0.8243i	1.1126+0.7761i
15,5	1.2987+0.8102i	1.2995+0.7667i	1.2080+0.7457i	1.2075+0.7166i	1.0197+0.8347i	0.9995+0.8192i	1.0227+0.8236i	1.0064+0.8103i
16	1.2983+0.7167i	1.3470+0.7459i	1.2046+0.6199i	1.2079+0.6217i	1.0901+0.7575i	1.0927+0.7502i	1.0615+0.7257i	1.0661+0.7173i
16,5	1.4231+0.5506i	1.4207+0.5606i	1.2432+0.5821i	1.2493+0.5889i	1.6092+0.6786i	1.5059+0.7313i	1.2179+0.7344i	1.2443+0.7444i
17	1.4364+0.5434i	1.4296+0.5574i	1.2400+0.5753i	1.2472+0.5825i	1.6365+0.6778i	1.5001+0.7492i	1.2113+0.7399i	1.2434+0.7494i
17,5	1.4418+0.5395i	1.4326+0.5576i	1.2342+0.5705i	1.2422+0.5776i	1.6542+0.6753i	1.4909+0.7585i	1.2045+0.7465i	1.2417+0.7541i
18	1.4431+0.5367i	1.4307+0.5570i	1.2285+0.5660i	1.2370+0.5724i	1.6573+0.6715i	1.4814+0.7623i	1.1998+0.7521i	1.2414+0.7575i
18,5	1.3930+0.3640i	1.3485+0.3893i	1.1570+0.4271i	1.1803+0.4223i	1.5455+0.4576i	1.3962+0.5257i	1.1551+0.5306i	1.1835+0.5235i
19	1.3739+0.3510i	1.3309+0.3746i	1.1467+0.4140i	1.1679+0.4096i	1.5317+0.4427i	1.3896+0.5168i	1.1598+0.5415i	1.1880+0.5295i
19,5	1.3536+0.3475i	1.2950+0.3231i	1.1473+0.3971i	1.1516+0.3864i	1.4933+0.4426i	1.7116+0.5868i	1.1818+0.5280i	1.1608+0.5011i
20	1.7660+0.7375i	1.4962+0.6907i	1.2173+0.6961i	1.2519+0.6976i	1.3547+0.9559i	1.4932+0.8746i	1.1716+0.9087i	1.1490+0.8711i
20,5	1.4038+0.4647i	1.3690+0.4405i	1.1959+0.4712i	1.2023+0.4828i	1.4531+0.6314i	1.6329+0.5542i	1.2411+0.6786i	1.2092+0.6296i
21	1.4522+0.5679i	1.6057+0.5378i	1.3175+0.5452i	1.1940+0.5550i	1.4469+0.7784i	1.6981+0.7459i	1.2631+0.7452i	1.1908+0.6751i
21,5	1.4604+0.5935i	1.7875+0.3980i	1.2674+0.5839i	1.7463+0.6216i	1.4419+0.7605i	1.6376+0.8704i	1.2514+0.7312i	1.1983+0.7401i
22	1.4439+0.5853i	1.6108+0.5303i	1.3004+0.5868i	1.1846+0.5909i	1.4889+0.7419i	1.7240+0.7079i	1.3086+0.7519i	1.1714+0.7584i
22,5	1.5607+0.5647i	1.7514+0.6378i	1.1625+0.5397i	1.2356+0.5517i	1.4933+0.7257i	1.3820+0.6548i	1.2027+0.7601i	1.2562+0.6724i
23	1.6061+0.5652i	1.8194+0.5891i	1.1596+0.5779i	1.2454+0.5628i	1.5850+0.7789i	1.4301+0.6629i	1.1633+0.7212i	1.3024+0.6774i
23,5	1.2583+0.6069i	1.7469+0.5762i	1.1684+0.6129i	1.5785+0.4968i	1.6073+0.8302i	1.4743+0.6934i	1.1800+0.7580i	1.3289+0.7757i
24	1.3854+0.6727i	1.2630+0.5854i	1.2543+0.7381i	1.1484+0.5860i	1.5471+0.7468i	1.6867+0.5760i	1.1344+0.7766i	1.1028+0.6774i
24,5	1.1699+0.6085i	1.6812+0.6256i	1.1989+0.6932i	1.5850+0.4763i	1.5370+0.8085i	1.4838+0.6414i	1.2190+0.8012i	1.3611+0.7212i
25	1.2811+0.6537i	1.5886+0.4923i	1.1525+0.6181i	1.7297+0.3433i	1.6454+0.6927i	1.4737+0.6267i	1.3158+0.8304i	1.4511+0.7770i
25,5	1.4469+0.5411i	1.3690+0.6538i	1.3128+0.5092i	1.2090+0.5803i	1.5706+0.6441i	1.3251+0.7695i	1.1678+0.8071i	1.1961+0.6963i
26	1.4116+0.5752i	1.5736+0.6220i	1.1918+0.6209i	1.5623+0.4562i	1.5497+0.8311i	1.4238+0.7455i	1.1749+0.7608i	1.2959+0.7280i
26,5	1.5874+0.4394i	1.5767+0.6137i	1.1624+0.5760i	1.2819+0.5439i	1.5158+0.8040i	1.4253+0.6800i	1.2447+0.7358i	1.3051+0.6448i
27	1.5345+0.4449i	1.5144+0.5973i	1.2543+0.5426i	1.3709+0.5896i	1.4385+0.7521i	1.1966+0.7287i	1.3082+0.8079i	1.2925+0.6791i

27,5	1.4370+0.4627i	1.4958+0.5797i	1.2388+0.5368i	1.3470+0.5780i	1.4133+0.8583i	1.2565+0.6932i	1.2710+0.8408i	1.3720+0.7047i
28	1.5172+0.4779i	1.4228+0.5698i	1.2002+0.5259i	1.2996+0.5704i	1.4031+0.8380i	1.2168+0.6822i	1.2773+0.8086i	1.3336+0.6909i
SNR / w	w24	w25	w26	w27	w28	w29	w30	w31
7	0.6203+1.1269i	0.5879+1.0807i	0.3664+1.2524i	0.3587+1.1911i	0.5879+1.0807i	0.5665+1.0491i	0.3587+1.1911i	0.3534+1.1499i
7,5	0.6161+1.0675i	0.6316+1.0872i	0.3224+1.1992i	0.3262+1.2222i	0.5811+1.0233i	0.5919+1.0372i	0.3164+1.1415i	0.3191+1.1581i
8	0.2943+1.1463i	0.2957+1.1611i	0.2954+1.1529i	0.2968+1.1672i	0.5998+1.0173i	0.6091+1.0290i	0.6043+1.0232i	0.6133+1.0346i
8,5	0.2747+1.0937i	0.2752+1.1032i	0.2752+1.1026i	0.2758+1.1122i	0.5786+0.9704i	0.5847+0.9777i	0.5841+0.9773i	0.5903+0.9847i
9	1.0473+0.2624i	1.0526+0.2630i	1.0526+0.2630i	1.0574+0.2636i	1.0526+0.2630i	1.0574+0.2636i	1.0574+0.2636i	1.0618+0.2642i
9,5	1.0217+0.2530i	1.0306+0.2536i	1.0306+0.2536i	1.0392+0.2541i	1.0306+0.2536i	1.0391+0.2541i	1.0391+0.2541i	1.0473+0.2546i
10	1.0074+0.2438i	1.0179+0.2443i	1.0178+0.2442i	1.0281+0.2447i	1.0178+0.2442i	1.0281+0.2446i	1.0281+0.2446i	1.0382+0.2450i
10,5	1.0035+0.2319i	1.0243+0.2306i	1.0034+0.2330i	1.0238+0.2316i	1.0138+0.2325i	1.0349+0.2311i	1.0139+0.2333i	1.0345+0.2320i
11	0.7236+1.1946i	0.7368+1.2150i	0.7488+1.1658i	0.7657+1.1852i	0.7253+1.2394i	0.7446+1.2677i	0.7523+1.2006i	0.7753+1.2277i
11,5	0.7137+1.2023i	0.7230+1.2254i	0.7457+1.1655i	0.7590+1.1870i	0.7144+1.2482i	0.7308+1.2798i	0.7482+1.1998i	0.7681+1.2301i
12	0.6924+1.2241i	0.6967+1.2498i	0.7306+1.1738i	0.7368+1.1977i	0.6938+1.2732i	0.7079+1.3063i	0.7325+1.2081i	0.7461+1.2415i
12,5	0.9585+1.0486i	0.9622+1.0407i	0.9787+1.0880i	0.9834+1.0723i	0.8332+1.1067i	0.8292+1.0953i	0.8160+1.1675i	0.8087+1.1462i
13	1.1046+0.2758i	1.1041+0.2823i	1.0739+0.2844i	1.0744+0.2902i	1.1641+0.2297i	1.1603+0.2373i	1.1096+0.2493i	1.1082+0.2560i
13,5	0.9780+0.9801i	0.9712+0.9730i	0.9732+0.9900i	0.9637+0.9805i	0.8612+1.0447i	0.8398+1.0427i	0.8592+1.0665i	0.8375+1.0599i
14	0.9627+0.9228i	0.9667+0.9088i	0.9602+0.9256i	0.9644+0.9108i	0.7667+1.0764i	0.7757+1.0506i	0.7690+1.0941i	0.7759+1.0639i
14,5	0.9714+0.8889i	0.9815+0.8847i	0.9715+0.8930i	0.9810+0.8879i	0.7653+1.0721i	0.7807+1.0426i	0.7779+1.0881i	0.7904+1.0522i
15	0.9930+0.6070i	1.0020+0.5999i	1.0210+0.6066i	1.0325+0.5993i	0.9718+0.7193i	0.9818+0.6853i	0.9820+0.7216i	0.9964+0.6847i
15,5	0.9954+0.5712i	0.9969+0.5716i	1.0264+0.5733i	1.0286+0.5735i	0.9712+0.6227i	0.9712+0.6221i	0.9887+0.6211i	0.9891+0.6199i
16	0.9558+0.5317i	0.9547+0.5287i	0.9929+0.5319i	0.9916+0.5292i	0.9525+0.6047i	0.9525+0.5950i	0.9717+0.6040i	0.9728+0.5948i
16,5	0.9300+0.5951i	0.9284+0.5905i	0.9961+0.5965i	0.9931+0.5919i	0.9214+0.6902i	0.9208+0.6784i	0.9850+0.6987i	0.9826+0.6866i
17	0.9254+0.5912i	0.9234+0.5868i	0.9977+0.5914i	0.9934+0.5868i	0.9169+0.6986i	0.9156+0.6852i	0.9863+0.7059i	0.9820+0.6917i
17,5	0.9238+0.5863i	0.9213+0.5829i	1.0012+0.5858i	0.9957+0.5819i	0.9146+0.7116i	0.9125+0.6977i	0.9893+0.7180i	0.9827+0.7022i
18	0.9230+0.5805i	0.9203+0.5792i	1.0065+0.5798i	1.0003+0.5772i	0.9135+0.7246i	0.9105+0.7117i	0.9949+0.7304i	0.9857+0.7145i
18,5	0.8704+0.5043i	0.8654+0.5000i	0.9349+0.4878i	0.9235+0.4846i	0.9128+0.6119i	0.9005+0.5846i	0.9747+0.5858i	0.9613+0.5607i
19	0.8765+0.4892i	0.8730+0.4887i	0.9433+0.4700i	0.9333+0.4705i	0.9282+0.6231i	0.9148+0.5935i	0.9892+0.5958i	0.9748+0.5681i
19,5	0.8808+0.4836i	0.8815+0.4863i	0.9430+0.4595i	0.9429+0.4628i	0.9477+0.6399i	0.9358+0.6096i	1.0163+0.6040i	1.0042+0.5748i
20	0.9244+0.6479i	0.9228+0.6565i	1.0425+0.6633i	1.0275+0.6768i	0.8720+0.8422i	0.8881+0.8007i	0.9559+0.8772i	0.9855+0.8360i
20,5	0.9209+0.5357i	0.9236+0.5467i	1.0273+0.5058i	1.0294+0.5208i	0.9508+0.7322i	0.9459+0.6833i	1.0638+0.7179i	1.0587+0.6626i
21	0.8951+0.5626i	0.8918+0.5686i	0.9979+0.5557i	1.0380+0.5582i	0.9006+0.7223i	0.8935+0.7037i	1.0274+0.7211i	1.0515+0.6813i
21,5	0.9072+0.5858i	0.9097+0.5885i	1.0628+0.5825i	1.0458+0.5901i	0.8985+0.7503i	0.9006+0.7408i	1.0446+0.7454i	1.0526+0.7376i
22	0.8945+0.5666i	0.8829+0.5760i	1.0106+0.5766i	1.0532+0.5907i	0.8774+0.7307i	0.8698+0.6919i	0.9792+0.7557i	1.0444+0.7361i
22,5	0.8932+0.5737i	0.9001+0.5987i	1.0483+0.5684i	1.0223+0.6001i	0.9017+0.7879i	0.9044+0.7215i	1.0636+0.7751i	1.0312+0.7129i
23	0.8951+0.5381i	0.9020+0.5765i	1.0480+0.5500i	1.0052+0.5823i	0.9122+0.8113i	0.8977+0.7054i	1.0333+0.7739i	0.9929+0.6941i
23,5	0.8979+0.5389i	0.9021+0.5899i	1.0570+0.5654i	1.0095+0.5968i	0.8981+0.7978i	0.9002+0.7040i	1.0453+0.7856i	1.0004+0.7110i
24	0.8946+0.5174i	0.8865+0.5769i	0.9939+0.5077i	1.0334+0.5527i	0.8883+0.7796i	0.8934+0.6762i	0.9999+0.7892i	1.0024+0.6743i
24,5	1.0545+0.6208i	0.8992+0.5849i	1.0410+0.5398i	0.9570+0.5335i	1.0118+0.6978i	0.9039+0.7061i	1.0649+0.7904i	0.9378+0.8081i
25	0.8835+0.5791i	0.8749+0.6592i	1.0400+0.6364i	0.9662+0.6804i	1.1689+0.7806i	0.8574+0.7588i	1.0682+0.7758i	0.9493+0.7863i
25,5	0.9398+0.5123i	0.9446+0.5967i	1.0491+0.4947i	1.0814+0.5792i	0.9376+0.7957i	0.9469+0.6888i	1.0478+0.7966i	1.0645+0.6841i
26	1.0266+0.5732i	0.9271+0.6038i	1.0759+0.6299i	0.9204+0.6524i	1.0128+0.7985i	0.9004+0.8291i	1.0612+0.7235i	0.9050+0.7337i
26,5	1.0181+0.6445i	0.9222+0.6468i	1.0522+0.5581i	0.9366+0.5502i	1.0179+0.7432i	0.9097+0.7340i	1.1323+0.7123i	0.9024+0.8172i
27	1.0119+0.5802i	0.9632+0.6574i	1.1374+0.5920i	1.0660+0.6825i	1.0530+0.8275i	0.9525+0.7602i	1.1564+0.8642i	0.9247+0.8497i
27,5	1.1048+0.5047i	0.9732+0.6687i	1.1360+0.5830i	1.0261+0.6028i	1.0533+0.7823i	0.9559+0.7668i	1.1523+0.8406i	0.9478+0.8579i
28	1.0788+0.4957i	0.9727+0.6831i	1.1083+0.5853i	1.0158+0.6073i	1.0912+0.7187i	0.9908+0.7740i	1.0145+0.8889i	0.9211+0.9015i
SNR / w	w32	w33	w34	w35	w36	w37	w38	w39
7	0.6835+1.2113i	0.6204+1.1270i	0.3795+1.3687i	0.3664+1.2525i	0.6203+1.1270i	0.5879+1.0808i	0.3664+1.2525i	0.3587+1.1911i
7,5	0.6864+1.1545i	0.7102+1.1841i	0.3338+1.3127i	0.3392+1.3453i	0.6159+1.0673i	0.6313+1.0869i	0.3224+1.1989i	0.3261+1.2220i
8	0.3037+1.2548i	0.3062+1.2797i	0.3046+1.2545i	0.3069+1.2755i	0.6706+1.1025i	0.6866+1.1224i	0.6711+1.1037i	0.6847+1.1207i
8,5	0.2954+1.3376i	0.2962+1.3511i	0.2948+1.3339i	0.2954+1.3453i	0.7418+1.1680i	0.7489+1.1765i	0.7382+1.1636i	0.7444+1.1710i
9	1.7494+1.1716i	1.3082+0.8629i	1.3087+0.8633i	1.2187+0.7952i	1.3091+0.8635i	1.2189+0.7953i	1.2192+0.7955i	1.1765+0.7622i
9,5	1.7496+1.1695i	1.3032+0.8658i	1.3031+0.8657i	1.2261+0.8104i	1.3033+0.8658i	1.2262+0.8104i	1.2262+0.8104i	1.1893+0.7835i

10	1.7476+1.1668i	1.2961+0.8646i	1.2969+0.8652i	1.2275+0.8181i	1.2975+0.8657i	1.2278+0.8184i	1.2281+0.8186i	1.1943+0.7959i
10,5	1.6826+1.1762i	1.2429+0.8264i	1.3288+0.9046i	1.2059+0.8177i	1.2989+0.8614i	1.2092+0.8003i	1.2414+0.8429i	1.1844+0.8008i
11	0.2079+0.9846i	0.2028+0.9887i	0.2046+0.9839i	0.1995+0.9882i	0.2089+0.9774i	0.2039+0.9814i	0.2058+0.9768i	0.2007+0.9808i
11,5	0.1983+0.9853i	0.1940+0.9896i	0.1941+0.9849i	0.1898+0.9894i	0.1989+0.9775i	0.1948+0.9815i	0.1949+0.9770i	0.1907+0.9812i
12	0.1883+0.9853i	0.1849+0.9901i	0.1835+0.9853i	0.1800+0.9903i	0.1884+0.9766i	0.1851+0.9811i	0.1838+0.9765i	0.1805+0.9811i
12,5	0.1864+1.0764i	0.1903+1.0756i	0.2003+1.0451i	0.2041+1.0451i	0.2395+1.1251i	0.2451+1.1258i	0.2534+1.0860i	0.2585+1.0875i
13	1.0982+1.2299i	1.1688+1.2296i	1.1143+1.0869i	1.2060+1.1004i	0.9778+0.9583i	0.9878+0.9497i	0.9914+0.9513i	1.0052+0.9448i
13,5	0.2030+1.0880i	0.2154+1.0859i	0.2138+1.0537i	0.2250+1.0529i	0.2944+1.1170i	0.3111+1.1204i	0.2945+1.0775i	0.3096+1.0814i
14	0.1507+1.1097i	0.1370+1.1488i	0.1650+1.0556i	0.1555+1.0747i	0.3110+1.0766i	0.2991+1.0944i	0.3119+1.0405i	0.3040+1.0500i
14,5	0.1438+1.1317i	0.1293+1.1850i	0.1497+1.0731i	0.1409+1.0970i	0.3432+1.0802i	0.3308+1.0965i	0.3314+1.0407i	0.3232+1.0484i
15	0.1591+1.5394i	0.4955+1.3775i	0.2019+1.5174i	0.4551+1.3944i	0.6287+0.9915i	0.6163+1.0795i	0.6331+0.9823i	0.6182+1.0532i
15,5	0.1274+1.6424i	0.2983+1.5080i	0.1465+1.6140i	0.3069+1.5179i	0.6479+0.9759i	0.6526+0.9954i	0.6489+0.9765i	0.6538+0.9966i
16	0.3712+1.7894i	0.5775+1.3833i	0.5311+1.7286i	0.5825+1.4596i	0.6562+0.9352i	0.6470+0.9934i	0.6707+0.9278i	0.6627+0.9719i
16,5	0.9790+1.7611i	0.5672+1.2054i	0.6550+1.8625i	0.5592+1.2030i	0.5766+0.9151i	0.5741+0.9762i	0.5687+0.9166i	0.5658+0.9799i
17	0.9719+1.7576i	0.5678+1.2044i	0.6484+1.8669i	0.5586+1.2028i	0.5747+0.9113i	0.5737+0.9748i	0.5668+0.9128i	0.5650+0.9788i
17,5	0.9596+1.7576i	0.5677+1.2015i	0.6359+1.8638i	0.5578+1.2010i	0.5718+0.9078i	0.5724+0.9746i	0.5647+0.9090i	0.5640+0.9785i
18	0.9565+1.7467i	0.5644+1.1965i	0.6376+1.8550i	0.5550+1.1981i	0.5651+0.9077i	0.5671+0.9783i	0.5602+0.9083i	0.5605+0.9806i
18,5	0.8180+1.4853i	0.7467+1.2574i	0.8969+1.7495i	0.7299+1.1971i	0.6477+0.9216i	0.6665+0.9821i	0.6516+0.9280i	0.6737+1.0037i
19	0.8131+1.4757i	0.7498+1.2637i	0.8853+1.7279i	0.7348+1.1948i	0.6599+0.9186i	0.6785+0.9845i	0.6650+0.9244i	0.6873+1.0091i
19,5	0.8222+1.7689i	0.7329+1.2092i	0.7753+1.4943i	0.7495+1.2497i	0.6731+0.9265i	0.6933+1.0214i	0.6787+0.9226i	0.7019+1.0061i
20	0.5491+1.7035i	0.4164+1.1274i	0.3416+1.3191i	0.4000+1.1739i	0.4975+0.8965i	0.4710+0.9777i	0.5048+0.8943i	0.4812+0.9644i
20,5	0.5496+1.8328i	0.5969+1.1973i	0.5741+1.4423i	0.6003+1.2412i	0.6091+0.9159i	0.6053+1.0278i	0.6219+0.9146i	0.6226+1.0166i
21	0.5908+1.4191i	0.6104+1.2526i	0.4486+1.8391i	0.6140+1.1685i	0.5750+0.8994i	0.5844+1.0085i	0.5807+0.8966i	0.5989+1.0366i
21,5	0.5651+1.6424i	0.5819+1.1504i	0.5713+1.4458i	0.5849+1.2696i	0.5230+0.8818i	0.5536+1.0212i	0.5383+0.8832i	0.5512+0.9689i
22	0.6243+1.4649i	0.5939+1.3037i	0.4047+1.8156i	0.5830+1.2010i	0.5615+0.9026i	0.5564+1.0225i	0.5767+0.8978i	0.5732+1.0495i
22,5	0.6526+1.7382i	0.5201+1.1584i	0.5875+1.5167i	0.5606+1.2579i	0.5384+0.8854i	0.5343+1.0408i	0.5671+0.8932i	0.5685+1.0088i
23	0.6244+1.6853i	0.5396+1.1646i	0.5897+1.4912i	0.5627+1.2896i	0.5300+0.8893i	0.5385+1.0557i	0.5662+0.9004i	0.5719+1.0071i
23,5	0.5088+1.7163i	0.5473+1.1551i	0.5636+1.4803i	0.5544+1.2433i	0.5327+0.8892i	0.5348+1.0466i	0.5758+0.8987i	0.5771+1.0111i
24	0.6364+1.6353i	0.5959+1.1661i	0.6239+1.4562i	0.6065+1.3009i	0.5237+0.8675i	0.5685+1.0623i	0.5644+0.8873i	0.5725+0.9911i
24,5	0.6032+1.6635i	0.5024+1.1613i	0.6020+1.2960i	0.5939+1.1667i	0.5099+0.9139i	0.5036+1.0359i	0.5855+0.9120i	0.5903+1.0334i
25	0.6389+1.6546i	0.4853+1.1426i	0.5804+1.3364i	0.5604+1.2030i	0.4874+0.9257i	0.4845+1.0420i	0.5645+0.9258i	0.5744+1.0392i
25,5	0.5812+1.5932i	0.5105+1.2487i	0.5473+1.4117i	0.5765+1.1450i	0.5751+0.8885i	0.5696+0.9833i	0.6604+0.8996i	0.6267+1.0328i
26	0.4991+1.5686i	0.5486+1.1925i	0.6897+1.1182i	0.6481+1.2195i	0.6050+0.9119i	0.5370+0.9447i	0.6526+1.0254i	0.5772+1.0462i
26,5	0.5345+1.6138i	0.5130+1.1337i	0.6387+1.0936i	0.5568+1.2390i	0.6269+0.8981i	0.4851+1.0350i	0.6143+0.9936i	0.5184+0.9539i
27	0.4015+1.5842i	0.5558+1.2016i	0.6111+1.3403i	0.6382+1.1360i	0.5330+0.8941i	0.4820+1.1330i	0.6037+0.9226i	0.6160+1.0341i
27,5	0.4096+1.5974i	0.5213+1.2084i	0.5614+1.3474i	0.6135+1.1429i	0.5637+0.8891i	0.4831+1.1158i	0.6283+0.9257i	0.6504+1.0330i
28	0.4374+1.5965i	0.6091+1.1608i	0.5915+1.3566i	0.6593+1.2473i	0.5376+0.9041i	0.6008+1.0615i	0.6254+0.8954i	0.6315+0.9789i
SNR / w	w40	w41	w42	w43	w44	w45	w46	w47
7	0.6203+1.1270i	0.5879+1.0808i	0.3664+1.2525i	0.3587+1.1912i	0.5879+1.0807i	0.5665+1.0491i	0.3587+1.1911i	0.3534+1.1500i
7,5	0.6160+1.0677i	0.6315+1.0874i	0.3223+1.1997i	0.3260+1.2229i	0.5810+1.0235i	0.5919+1.0373i	0.3162+1.1419i	0.3190+1.1584i
8	0.2943+1.1465i	0.2957+1.1612i	0.2954+1.1530i	0.2968+1.1673i	0.5999+1.0174i	0.6092+1.0291i	0.6043+1.0233i	0.6134+1.0347i
8,5	0.2747+1.0937i	0.2752+1.1032i	0.2752+1.1025i	0.2758+1.1122i	0.5786+0.9704i	0.5847+0.9776i	0.5841+0.9772i	0.5903+0.9846i
9	1.3089+0.8634i	1.2188+0.7952i	1.2191+0.7955i	1.1764+0.7622i	1.2192+0.7956i	1.1765+0.7622i	1.1767+0.7624i	1.1499+0.7411i
9,5	1.3032+0.8658i	1.2262+0.8104i	1.2261+0.8104i	1.1892+0.7834i	1.2262+0.8104i	1.1893+0.7835i	1.1893+0.7835i	1.1658+0.7663i
10	1.2966+0.8649i	1.2274+0.8180i	1.2277+0.8183i	1.1940+0.7957i	1.2280+0.8185i	1.1943+0.7959i	1.1945+0.7960i	1.1727+0.7818i
10,5	1.2665+0.8425i	1.1992+0.7876i	1.2229+0.8291i	1.1768+0.7897i	1.2229+0.8074i	1.1824+0.7747i	1.1947+0.8072i	1.1643+0.7799i
11	0.1971+1.0824i	0.1920+1.0893i	0.1912+1.0832i	0.1860+1.0904i	0.2002+1.0699i	0.1951+1.0767i	0.1946+1.0701i	0.1895+1.0773i
11,5	0.1936+1.0812i	0.1890+1.0890i	0.1859+1.0826i	0.1812+1.0908i	0.1962+1.0666i	0.1917+1.0742i	0.1891+1.0672i	0.1845+1.0752i
12	0.1904+1.0795i	0.1862+1.0890i	0.1813+1.0815i	0.1769+1.0917i	0.1919+1.0626i	0.1879+1.0716i	0.1837+1.0637i	0.1795+1.0733i
12,5	0.1643+1.1071i	0.1682+1.1053i	0.1824+1.0628i	0.1862+1.0620i	0.2100+1.1615i	0.2160+1.1605i	0.2315+1.1050i	0.2369+1.1057i
13	1.1162+0.8112i	1.1363+0.8076i	1.1613+0.8196i	1.1853+0.8237i	1.0174+0.8429i	1.0343+0.8324i	1.0414+0.8399i	1.0615+0.8309i
13,5	0.1433+1.1627i	0.1554+1.1547i	0.1635+1.0951i	0.1741+1.0907i	0.2210+1.1755i	0.2398+1.1721i	0.2368+1.1062i	0.2536+1.1058i
14	0.1510+1.1181i	0.1370+1.1616i	0.1653+1.0597i	0.1557+1.0801i	0.3126+1.0849i	0.2999+1.1047i	0.3139+1.0462i	0.3057+1.0565i

14,5	0.1460+1.1337i	0.1319+1.1905i	0.1508+1.0737i	0.1424+1.0978i	0.3453+1.0858i	0.3322+1.1034i	0.3333+1.0446i	0.3248+1.0526i
15	0.1729+1.6258i	0.5301+1.4133i	0.2360+1.5834i	0.4835+1.4383i	0.6562+0.9931i	0.6402+1.0789i	0.6619+0.9836i	0.6440+1.0511i
15,5	0.1783+2.0138i	0.4786+1.4270i	0.4591+1.9026i	0.4793+1.4490i	0.6139+1.0570i	0.6090+1.1376i	0.6160+1.0557i	0.6117+1.1323i
16	0.1615+1.9642i	0.6491+1.3361i	0.8166+1.8585i	0.6677+1.3884i	0.6678+0.9640i	0.6648+1.0542i	0.6824+0.9524i	0.6765+1.0248i
16,5	0.7602+1.4834i	0.6457+1.2464i	0.6704+1.5226i	0.6234+1.2436i	0.6648+0.9147i	0.6592+0.9690i	0.6474+0.9162i	0.6428+0.9734i
17	0.7674+1.4916i	0.6480+1.2445i	0.6589+1.5275i	0.6222+1.2437i	0.6691+0.9104i	0.6658+0.9655i	0.6484+0.9120i	0.6467+0.9704i
17,5	0.7728+1.4984i	0.6519+1.2427i	0.6465+1.5284i	0.6233+1.2445i	0.6755+0.9070i	0.6746+0.9631i	0.6527+0.9083i	0.6539+0.9681i
18	0.7831+1.4978i	0.6594+1.2395i	0.6418+1.5205i	0.6278+1.2472i	0.6851+0.9061i	0.6860+0.9628i	0.6615+0.9070i	0.6657+0.9671i
18,5	1.0099+1.3939i	0.9240+1.1657i	1.1966+1.6143i	0.8847+1.1340i	0.8271+0.8592i	0.8521+0.9294i	0.8128+0.8692i	0.8357+0.9478i
19	1.0089+1.3854i	0.9317+1.1639i	1.1714+1.6030i	0.8884+1.1335i	0.8416+0.8560i	0.8693+0.9355i	0.8242+0.8659i	0.8475+0.9550i
19,5	1.0472+1.3158i	0.9601+1.1483i	0.9672+1.4659i	0.9033+1.1563i	0.8620+0.8605i	0.8955+0.9529i	0.8317+0.8718i	0.8608+0.9652i
20	0.5008+1.4978i	0.5599+1.2077i	0.4017+1.3861i	0.4910+1.2146i	0.6741+0.9583i	0.6244+1.0551i	0.6448+0.9428i	0.6008+1.0207i
20,5	0.8136+1.4139i	0.8016+1.2232i	0.6965+1.5705i	0.7525+1.2015i	0.8142+0.9002i	0.8183+1.0236i	0.7650+0.9052i	0.7689+1.0279i
21	0.7412+1.4650i	0.7761+1.2729i	0.6892+1.6914i	0.7846+1.1451i	0.7382+0.8775i	0.7685+0.9477i	0.7062+0.8840i	0.7561+1.0136i
21,5	0.7899+1.6946i	0.7179+1.1320i	0.7344+1.4506i	0.7296+1.2738i	0.7376+0.9029i	0.7043+0.9821i	0.6765+0.8832i	0.6698+0.9341i
22	0.7843+1.4333i	0.7705+1.2498i	0.7026+1.7278i	0.7003+1.1772i	0.7420+0.8972i	0.7590+1.0320i	0.7021+0.8941i	0.7000+1.0561i
22,5	0.7634+1.3802i	0.7514+1.1770i	0.8230+1.5535i	0.6680+1.2094i	0.7721+0.9026i	0.7530+1.0356i	0.6926+0.8983i	0.6827+1.0183i
23	0.7407+1.4100i	0.7168+1.1622i	0.8274+1.5617i	0.6629+1.2434i	0.7852+0.9095i	0.7666+1.0370i	0.6839+0.9059i	0.6837+1.0019i
23,5	0.6960+1.6848i	0.7272+1.1865i	0.7086+1.4468i	0.6649+1.2963i	0.7845+0.9168i	0.7512+1.0593i	0.6918+0.9051i	0.6794+1.0148i
24	0.8224+1.6271i	0.7310+1.1523i	0.7840+1.4334i	0.7347+1.2858i	0.7779+0.8837i	0.7423+1.0272i	0.6821+0.8793i	0.6766+0.9745i
24,5	0.6380+1.4769i	0.8075+1.1341i	0.7223+1.3126i	0.7056+1.1575i	0.7675+0.8980i	0.7992+1.0027i	0.6777+0.9081i	0.6881+1.0255i
25	0.6810+1.4782i	0.7864+1.1315i	0.7113+1.3095i	0.6760+1.1703i	0.7607+0.9150i	0.7845+1.0125i	0.6564+0.9256i	0.6660+1.0394i
25,5	0.7834+1.3291i	0.7989+1.1836i	0.6586+1.3212i	0.6790+1.1822i	0.8334+0.9240i	0.8389+1.0490i	0.7408+0.9196i	0.7235+1.0449i
26	0.6326+1.5030i	0.8468+1.1407i	0.7209+1.3784i	0.7653+1.2445i	0.6935+0.8959i	0.8740+1.0322i	0.7256+0.9768i	0.8038+0.9722i
26,5	0.6623+1.5103i	0.7938+1.1419i	0.6742+1.3558i	0.6837+1.2238i	0.7039+0.8883i	0.8594+1.0384i	0.7255+0.9867i	0.8205+0.9417i
27	0.6819+1.4965i	0.7875+1.1320i	0.7367+1.3484i	0.7100+1.2226i	0.7563+0.9153i	0.7455+1.0248i	0.6815+0.9082i	0.8338+1.0015i
27,5	0.6106+1.5039i	0.7463+1.1465i	0.6780+1.3719i	0.6672+1.2405i	0.7683+0.9391i	0.7867+1.0395i	0.7004+0.9076i	0.8788+0.9640i
28	0.6738+1.4981i	0.7958+1.1175i	0.7244+1.3669i	0.7701+1.2287i	0.7924+0.8491i	0.7061+1.0819i	0.7163+0.8855i	0.7346+0.9830i
SNR / w	w48	w49	w50	w51	w52	w53	w54	w55
7	0.6204+1.1271i	0.5879+1.0808i	0.3664+1.2526i	0.3587+1.1912i	0.5879+1.0808i	0.5666+1.0491i	0.3587+1.1912i	0.3534+1.1500i
7,5	0.6153+1.0667i	0.6308+1.0863i	0.3222+1.1984i	0.3259+1.2214i	0.5806+1.0228i	0.5914+1.0366i	0.3162+1.1410i	0.3190+1.1575i
8	0.2943+1.1464i	0.2957+1.1611i	0.2954+1.1529i	0.2968+1.1672i	0.5998+1.0173i	0.6092+1.0290i	0.6043+1.0233i	0.6134+1.0346i
8,5	0.2867+1.2312i	0.2877+1.2451i	0.2872+1.2391i	0.2881+1.2518i	0.6707+1.0818i	0.6793+1.0922i	0.6753+1.0878i	0.6832+1.0973i
9	0.9244+0.5517i	0.9293+0.5555i	0.9293+0.5555i	0.9338+0.5590i	0.9293+0.5555i	0.9338+0.5590i	0.9338+0.5590i	0.9380+0.5622i
9,5	0.8986+0.5373i	0.9058+0.5435i	0.9058+0.5435i	0.9128+0.5495i	0.9058+0.5435i	0.9128+0.5495i	0.9128+0.5495i	0.9194+0.5553i
10	0.8822+0.5326i	0.8901+0.5398i	0.8900+0.5397i	0.8979+0.5470i	0.8900+0.5397i	0.8978+0.5469i	0.8978+0.5469i	0.9055+0.5540i
10,5	0.8706+0.5312i	0.8842+0.5378i	0.8702+0.5417i	0.8835+0.5489i	0.8769+0.5399i	0.8907+0.5465i	0.8765+0.5507i	0.8899+0.5579i
11	0.5026+0.8978i	0.4941+0.8976i	0.5065+0.8934i	0.4979+0.8932i	0.4989+0.8945i	0.4904+0.8943i	0.5028+0.8903i	0.4942+0.8900i
11,5	0.5122+0.8890i	0.5030+0.8878i	0.5184+0.8839i	0.5090+0.8825i	0.5072+0.8849i	0.4980+0.8837i	0.5133+0.8799i	0.5039+0.8786i
12	0.5187+0.8834i	0.5076+0.8808i	0.5284+0.8785i	0.5170+0.8757i	0.5120+0.8775i	0.5012+0.8751i	0.5215+0.8728i	0.5103+0.8702i
12,5	0.5847+0.8321i	0.5825+0.8352i	0.5697+0.8346i	0.5676+0.8377i	0.5817+0.8811i	0.5796+0.8851i	0.5673+0.8844i	0.5656+0.8885i
13	0.7955+0.5977i	0.7985+0.5932i	0.7986+0.5927i	0.8018+0.5881i	0.7895+0.6341i	0.7914+0.6290i	0.7914+0.6296i	0.7935+0.6244i
13,5	0.5958+0.7962i	0.5893+0.8058i	0.5891+0.7978i	0.5826+0.8075i	0.5823+0.8654i	0.5773+0.8812i	0.5755+0.8650i	0.5708+0.8796i
14	0.6515+0.7293i	0.6581+0.7301i	0.6487+0.7301i	0.6554+0.7307i	0.5957+0.8221i	0.6027+0.8184i	0.5914+0.8240i	0.5985+0.8202i
14,5	0.6587+0.7155i	0.6637+0.7163i	0.6571+0.7139i	0.6620+0.7147i	0.5931+0.8332i	0.5997+0.8272i	0.5902+0.8270i	0.5968+0.8214i
15	0.6531+0.5959i	0.6533+0.5868i	0.6502+0.5989i	0.6502+0.5896i	0.6562+0.6802i	0.6542+0.6594i	0.6557+0.6872i	0.6530+0.6659i
15,5	0.6542+0.6077i	0.6559+0.6047i	0.6499+0.6083i	0.6513+0.6053i	0.6764+0.7184i	0.6806+0.7137i	0.6731+0.7191i	0.6772+0.7144i
16	0.6307+0.5825i	0.6305+0.5747i	0.6274+0.5867i	0.6268+0.5784i	0.6495+0.6761i	0.6474+0.6572i	0.6513+0.6860i	0.6482+0.6672i
16,5	0.5909+0.5917i	0.5916+0.5842i	0.5820+0.5912i	0.5827+0.5836i	0.5877+0.6823i	0.5895+0.6640i	0.5792+0.6809i	0.5808+0.6625i
17	0.5877+0.5886i	0.5884+0.5811i	0.5791+0.5880i	0.5796+0.5806i	0.5843+0.6880i	0.5864+0.6670i	0.5761+0.6862i	0.5778+0.6651i
17,5	0.5824+0.5832i	0.5829+0.5768i	0.5759+0.5827i	0.5762+0.5764i	0.5789+0.6948i	0.5810+0.6720i	0.5725+0.6928i	0.5743+0.6699i
18	0.5734+0.5756i	0.5735+0.5717i	0.5703+0.5755i	0.5703+0.5716i	0.5699+0.7062i	0.5716+0.6838i	0.5664+0.7047i	0.5682+0.6825i
18,5	0.5566+0.5936i	0.5568+0.5935i	0.5545+0.5939i	0.5548+0.5938i	0.5982+0.7556i	0.5920+0.7348i	0.5976+0.7525i	0.5911+0.7320i

19	0.5628+0.5887i	0.5635+0.5906i	0.5627+0.5886i	0.5635+0.5904i	0.6120+0.7579i	0.6043+0.7344i	0.6128+0.7543i	0.6049+0.7314i
19,5	0.5692+0.5900i	0.5707+0.5939i	0.5712+0.5892i	0.5727+0.5931i	0.6245+0.7629i	0.6152+0.7353i	0.6285+0.7642i	0.6188+0.7360i
20	0.5790+0.5737i	0.5786+0.5781i	0.5859+0.5748i	0.5854+0.5793i	0.5393+0.7435i	0.5457+0.7195i	0.5448+0.7480i	0.5513+0.7232i
20,5	0.5770+0.5784i	0.5781+0.5863i	0.5862+0.5779i	0.5875+0.5859i	0.5961+0.7637i	0.5917+0.7269i	0.6075+0.7644i	0.6027+0.7266i
21	0.5562+0.5582i	0.5558+0.5683i	0.5675+0.5585i	0.5669+0.5684i	0.5616+0.7484i	0.5584+0.7040i	0.5704+0.7456i	0.5682+0.7028i
21,5	0.5500+0.5685i	0.5490+0.5779i	0.5697+0.5701i	0.5688+0.5792i	0.5331+0.7428i	0.5381+0.7072i	0.5541+0.7458i	0.5596+0.7108i
22	0.5521+0.5488i	0.5521+0.5709i	0.5697+0.5486i	0.5694+0.5705i	0.5562+0.7635i	0.5539+0.6983i	0.5715+0.7633i	0.5693+0.6980i
22,5	0.5470+0.5539i	0.5476+0.5769i	0.5738+0.5571i	0.5742+0.5796i	0.5425+0.7656i	0.5443+0.7009i	0.5719+0.7641i	0.5718+0.7017i
23	0.5438+0.5498i	0.5380+0.5928i	0.5956+0.5500i	0.5895+0.5949i	0.5352+0.7741i	0.5370+0.6971i	0.5807+0.7810i	0.5873+0.6984i
23,5	0.5420+0.5404i	0.5426+0.5844i	0.5959+0.5394i	0.5992+0.5846i	0.5405+0.7778i	0.5435+0.6909i	0.5919+0.7808i	0.5973+0.6934i
24	0.5255+0.5297i	0.5242+0.5894i	0.5852+0.5291i	0.5854+0.5881i	0.5232+0.7731i	0.5221+0.6867i	0.5850+0.7703i	0.5860+0.6850i
24,5	0.5320+0.5316i	0.5261+0.6108i	0.5951+0.5356i	0.5905+0.6148i	0.5146+0.8039i	0.5192+0.7047i	0.5858+0.8006i	0.5865+0.7049i
25	0.5351+0.5313i	0.5235+0.6126i	0.6088+0.5413i	0.5929+0.6237i	0.4978+0.8117i	0.5101+0.7078i	0.5655+0.8168i	0.5769+0.7155i
25,5	0.5530+0.5469i	0.5591+0.6248i	0.6363+0.5402i	0.6435+0.6188i	0.5711+0.7972i	0.5652+0.7099i	0.6605+0.7964i	0.6520+0.7038i
26	0.5591+0.5670i	0.5177+0.6201i	0.6098+0.6293i	0.5253+0.6674i	0.6050+0.8173i	0.5282+0.8134i	0.6187+0.7290i	0.5315+0.7314i
26,5	0.5260+0.5793i	0.4902+0.6512i	0.5918+0.6233i	0.5219+0.6802i	0.6218+0.8082i	0.5542+0.8063i	0.6169+0.7217i	0.5205+0.7582i
27	0.5743+0.5517i	0.6712+0.5573i	0.5951+0.5922i	0.6584+0.6238i	0.5523+0.8038i	0.5626+0.7109i	0.6275+0.8020i	0.6357+0.7064i
27,5	0.5592+0.5829i	0.7089+0.5603i	0.6120+0.5818i	0.6742+0.6278i	0.5700+0.8032i	0.5742+0.7097i	0.6450+0.8012i	0.6522+0.7089i
28	0.5735+0.5443i	0.6544+0.5617i	0.5761+0.6045i	0.6223+0.6342i	0.5404+0.8158i	0.5418+0.7248i	0.6162+0.8123i	0.6016+0.7162i
SNR / w	w56	w57	w58	w59	w60	w61	w62	w63
7	0.5879+1.0808i	0.5666+1.0491i	0.3587+1.1912i	0.3534+1.1500i	0.5665+1.0491i	0.5510+1.0255i	0.3534+1.1500i	0.3494+1.1195i
7,5	0.5807+1.0231i	0.5915+1.0369i	0.3161+1.1415i	0.3189+1.1580i	0.5583+0.9946i	0.5665+1.0051i	0.3121+1.1042i	0.3143+1.1169i
8	0.2899+1.0940i	0.2909+1.1040i	0.2908+1.1001i	0.2918+1.1101i	0.5660+0.9770i	0.5723+0.9849i	0.5699+0.9822i	0.5762+0.9901i
8,5	0.2744+1.0784i	0.2749+1.0861i	0.2748+1.0858i	0.2753+1.0936i	0.5682+0.9593i	0.5732+0.9652i	0.5728+0.9651i	0.5778+0.9711i
9	0.9293+0.5555i	0.9338+0.5590i	0.9338+0.5590i	0.9380+0.5622i	0.9338+0.5590i	0.9379+0.5622i	0.9380+0.5622i	0.9417+0.5651i
9,5	0.9058+0.5435i	0.9128+0.5495i	0.9128+0.5495i	0.9194+0.5553i	0.9128+0.5495i	0.9194+0.5553i	0.9194+0.5553i	0.9257+0.5609i
10	0.8900+0.5398i	0.8979+0.5470i	0.8978+0.5469i	0.9055+0.5541i	0.8978+0.5469i	0.9055+0.5540i	0.9055+0.5540i	0.9130+0.5610i
10,5	0.8823+0.5370i	0.8962+0.5430i	0.8816+0.5479i	0.8952+0.5545i	0.8888+0.5454i	0.9028+0.5515i	0.8881+0.5566i	0.9016+0.5633i
11	0.4950+0.9372i	0.4865+0.9388i	0.4990+0.9303i	0.4903+0.9317i	0.4922+0.9340i	0.4836+0.9354i	0.4961+0.9271i	0.4873+0.9284i
11,5	0.5073+0.9274i	0.4982+0.9278i	0.5136+0.9189i	0.5042+0.9189i	0.5030+0.9230i	0.4939+0.9232i	0.5091+0.9146i	0.4998+0.9146i
12	0.5134+0.9245i	0.5027+0.9234i	0.5231+0.9151i	0.5120+0.9136i	0.5076+0.9175i	0.4971+0.9162i	0.5170+0.9085i	0.5061+0.9069i
12,5	0.6120+0.8293i	0.6094+0.8320i	0.5955+0.8300i	0.5930+0.8329i	0.6082+0.8737i	0.6058+0.8773i	0.5922+0.8762i	0.5900+0.8800i
13	0.8506+0.5924i	0.8558+0.5880i	0.8545+0.5876i	0.8597+0.5833i	0.8353+0.6297i	0.8393+0.6244i	0.8386+0.6250i	0.8427+0.6197i
13,5	0.6456+0.7877i	0.6381+0.7946i	0.6390+0.7872i	0.6314+0.7943i	0.6332+0.8403i	0.6259+0.8523i	0.6259+0.8396i	0.6187+0.8514i
14	0.6927+0.7417i	0.7024+0.7436i	0.6898+0.7419i	0.6997+0.7436i	0.6192+0.8296i	0.6280+0.8259i	0.6146+0.8311i	0.6236+0.8272i
14,5	0.7077+0.7312i	0.7158+0.7336i	0.7059+0.7292i	0.7140+0.7315i	0.6180+0.8427i	0.6269+0.8370i	0.6154+0.8364i	0.6243+0.8312i
15	0.7180+0.5951i	0.7201+0.5858i	0.7136+0.6001i	0.7153+0.5903i	0.7132+0.6820i	0.7146+0.6593i	0.7120+0.6914i	0.7124+0.6683i
15,5	0.7069+0.5759i	0.7093+0.5744i	0.6986+0.5785i	0.7011+0.5769i	0.7125+0.6432i	0.7168+0.6389i	0.7063+0.6467i	0.7107+0.6424i
16	0.6932+0.5639i	0.6946+0.5574i	0.6860+0.5707i	0.6871+0.5636i	0.7000+0.6432i	0.7027+0.6248i	0.6979+0.6575i	0.6996+0.6382i
16,5	0.6874+0.5936i	0.6890+0.5869i	0.6644+0.5933i	0.6659+0.5862i	0.6823+0.6852i	0.6861+0.6689i	0.6601+0.6848i	0.6638+0.6679i
17	0.6960+0.5906i	0.6978+0.5842i	0.6692+0.5901i	0.6711+0.5834i	0.6893+0.6917i	0.6941+0.6735i	0.6633+0.6909i	0.6679+0.6719i
17,5	0.7096+0.5857i	0.7114+0.5806i	0.6816+0.5851i	0.6835+0.5797i	0.6999+0.7005i	0.7059+0.6818i	0.6721+0.6991i	0.6780+0.6793i
18	0.7224+0.5789i	0.7238+0.5763i	0.6944+0.5781i	0.6957+0.5751i	0.7106+0.7122i	0.7172+0.6953i	0.6817+0.7109i	0.6885+0.6928i
18,5	0.6934+0.5559i	0.6939+0.5539i	0.6742+0.5616i	0.6748+0.5598i	0.7529+0.6939i	0.7419+0.6708i	0.7368+0.6996i	0.7257+0.6775i
19	0.7130+0.5419i	0.7146+0.5422i	0.6952+0.5481i	0.6969+0.5487i	0.7762+0.6961i	0.7646+0.6697i	0.7596+0.7017i	0.7481+0.6761i
19,5	0.7301+0.5375i	0.7318+0.5409i	0.7114+0.5438i	0.7132+0.5472i	0.7983+0.7050i	0.7854+0.6754i	0.7757+0.7137i	0.7639+0.6838i
20	0.7649+0.6161i	0.7647+0.6224i	0.7285+0.6074i	0.7279+0.6136i	0.7212+0.7993i	0.7274+0.7651i	0.6876+0.7938i	0.6932+0.7604i
20,5	0.7701+0.5595i	0.7716+0.5686i	0.7311+0.5644i	0.7325+0.5733i	0.7986+0.7490i	0.7922+0.7061i	0.7530+0.7531i	0.7483+0.7113i
21	0.7488+0.5601i	0.7471+0.5674i	0.7025+0.5594i	0.7018+0.5670i	0.7422+0.7346i	0.7472+0.7039i	0.6990+0.7343i	0.7011+0.7006i
21,5	0.7654+0.5836i	0.7634+0.5894i	0.7024+0.5802i	0.7010+0.5870i	0.7565+0.7484i	0.7593+0.7277i	0.6893+0.7521i	0.6917+0.7266i
22	0.7478+0.5524i	0.7477+0.5686i	0.6931+0.5490i	0.6930+0.5671i	0.7418+0.7491i	0.7413+0.6938i	0.6950+0.7561i	0.6917+0.6959i
22,5	0.7671+0.5696i	0.7648+0.5926i	0.6970+0.5663i	0.6951+0.5891i	0.7699+0.7757i	0.7684+0.7133i	0.6931+0.7729i	0.6933+0.7088i
23	0.7870+0.5451i	0.7912+0.6039i	0.7025+0.5494i	0.7033+0.6027i	0.7851+0.8112i	0.7935+0.7088i	0.6966+0.7929i	0.7030+0.7082i

23,5	0.7963+0.5341i	0.7903+0.5944i	0.7035+0.5353i	0.7033+0.5871i	0.7903+0.7972i	0.7922+0.6992i	0.6988+0.7924i	0.7016+0.6975i
24	0.7772+0.5242i	0.7811+0.5804i	0.6843+0.5275i	0.6854+0.5855i	0.7824+0.7742i	0.7823+0.6813i	0.6846+0.7745i	0.6870+0.6835i
24,5	0.7677+0.5362i	0.7985+0.5994i	0.6876+0.5405i	0.6898+0.6182i	0.7690+0.8026i	0.8002+0.7097i	0.6815+0.7942i	0.6898+0.7018i
25	0.7836+0.5649i	0.7723+0.6495i	0.6941+0.5537i	0.6818+0.6387i	0.7471+0.8318i	0.7654+0.7459i	0.6548+0.8214i	0.6666+0.7271i
25,5	0.8260+0.5243i	0.8354+0.6026i	0.7272+0.5323i	0.7357+0.6102i	0.8363+0.7982i	0.8396+0.6938i	0.7479+0.7978i	0.7438+0.6972i
26	0.7207+0.5888i	0.8167+0.5761i	0.6922+0.6311i	0.8130+0.6488i	0.7083+0.8179i	0.8062+0.8263i	0.7032+0.7252i	0.8007+0.7286i
26,5	0.7502+0.6146i	0.8241+0.6346i	0.6717+0.6243i	0.8549+0.5585i	0.7192+0.7846i	0.8042+0.7367i	0.6819+0.7074i	0.8326+0.8445i
27	0.8564+0.5757i	0.8744+0.6584i	0.7873+0.6025i	0.7483+0.6489i	0.7885+0.8284i	0.8377+0.7472i	0.7063+0.8058i	0.7323+0.7227i
27,5	0.8715+0.5878i	0.8831+0.6759i	0.8064+0.6168i	0.7632+0.6612i	0.8096+0.8448i	0.8499+0.7616i	0.7229+0.8172i	0.7483+0.7350i
28	0.8185+0.6598i	0.8890+0.6878i	0.7513+0.6619i	0.6922+0.6583i	0.7947+0.7648i	0.8894+0.7813i	0.7012+0.7888i	0.6735+0.7261i
SNR / w	w64	w65	w66	w67	w68	w69	w70	w71
7	1.8365+1.2473i	1.2111+0.6837i	2.1615+0.4280i	1.3685+0.3795i	1.2110+0.6836i	1.1269+0.6205i	1.3684+0.3795i	1.2524+0.3664i
7,5	1.7843+1.2148i	1.5010+0.9781i	2.1191+0.4071i	1.7374+0.3777i	1.1551+0.6861i	1.1857+0.7105i	1.3123+0.3338i	1.3468+0.3393i
8	2.0885+0.3978i	1.7466+0.3528i	1.5750+0.3367i	1.5346+0.3328i	1.7585+1.1911i	1.4907+0.9885i	1.3631+0.8851i	1.3286+0.8566i
8,5	2.0732+0.3944i	1.7141+0.3348i	1.6263+0.3252i	1.5557+0.3149i	1.7503+1.1771i	1.4580+0.9699i	1.3957+0.9225i	1.3353+0.8771i
9	0.3393+0.1828i	0.3435+0.1840i	0.3434+0.1840i	0.3477+0.1852i	0.3434+0.1840i	0.3477+0.1852i	0.3477+0.1852i	0.3521+0.1865i
9,5	0.3232+0.1714i	0.3242+0.1717i	0.3242+0.1717i	0.3253+0.1720i	0.3242+0.1717i	0.3253+0.1720i	0.3253+0.1720i	0.3264+0.1723i
10	0.3119+0.1627i	0.3115+0.1626i	0.3115+0.1626i	0.3111+0.1625i	0.3115+0.1626i	0.3111+0.1625i	0.3111+0.1625i	0.3107+0.1624i
10,5	0.3081+0.1565i	0.3068+0.1561i	0.3066+0.1565i	0.3051+0.1561i	0.3075+0.1562i	0.3065+0.1558i	0.3064+0.1561i	0.3050+0.1557i
11	1.5407+0.3365i	1.4255+0.3224i	1.5424+0.2759i	1.4191+0.2826i	1.3861+0.2896i	1.3389+0.2861i	1.3874+0.2600i	1.3389+0.2606i
11,5	1.5505+0.3455i	1.4293+0.3268i	1.5574+0.2658i	1.4239+0.2730i	1.3889+0.2915i	1.3422+0.2869i	1.3930+0.2500i	1.3441+0.2507i
12	1.5615+0.3581i	1.4382+0.3463i	1.5777+0.2407i	1.4295+0.2590i	1.3838+0.2941i	1.3406+0.2949i	1.3933+0.2286i	1.3447+0.2356i
12,5	1.6796+0.2609i	1.6231+0.3777i	1.4866+0.2567i	1.4695+0.3056i	1.3481+0.2491i	1.3458+0.2730i	1.3263+0.2454i	1.3245+0.2658i
13	0.4312+0.1209i	0.4312+0.1209i	0.4321+0.1208i	0.4322+0.1208i	0.4295+0.1204i	0.4296+0.1205i	0.4304+0.1203i	0.4304+0.1203i
13,5	1.7821+0.2022i	1.7069+0.6226i	1.6649+0.2207i	1.6075+0.4960i	1.5379+0.2267i	1.4666+0.3660i	1.5187+0.2429i	1.4635+0.3635i
14	1.5804+1.3865i	2.1260+0.2205i	1.8405+1.0633i	2.0446+0.6571i	1.6304+0.2123i	1.7090+0.2082i	1.6062+0.2504i	1.6575+0.2608i
14,5	1.6382+1.3165i	2.0902+0.1960i	1.8765+0.9757i	2.0346+0.5849i	1.6080+0.1998i	1.6865+0.1947i	1.5872+0.2316i	1.6395+0.2404i
15	1.8736+0.9301i	2.1142+0.3056i	1.3516+0.1178i	1.3478+0.1198i	1.7111+0.1507i	1.7593+0.1621i	1.4171+0.1208i	1.4104+0.1240i
15,5	1.6897+0.1409i	1.7447+0.1440i	1.4161+0.1190i	1.4047+0.1209i	1.9715+0.6222i	2.0540+0.2400i	1.3595+0.1257i	1.3535+0.1262i
16	1.6775+0.1331i	1.6321+0.1195i	1.3544+0.1155i	1.3591+0.1095i	1.9896+0.2026i	1.9730+0.5695i	1.3003+0.1165i	1.3024+0.1130i
16,5	1.4483+0.1058i	1.5082+0.1076i	1.2544+0.1058i	1.2478+0.1068i	2.0481+0.1978i	1.7457+0.1177i	1.1917+0.1085i	1.1866+0.1090i
17	1.4531+0.1045i	1.5085+0.1072i	1.2532+0.1043i	1.2435+0.1050i	2.0518+0.1917i	1.7527+0.1170i	1.1902+0.1093i	1.1846+0.1094i
17,5	1.4543+0.1049i	1.5074+0.1080i	1.2540+0.1026i	1.2417+0.1029i	2.0450+0.1840i	1.7515+0.1165i	1.1897+0.1107i	1.1837+0.1105i
18	1.4513+0.1053i	1.5036+0.1079i	1.2538+0.1005i	1.2393+0.1002i	2.0343+0.1812i	1.7462+0.1147i	1.1882+0.1127i	1.1817+0.1122i
18,5	1.4335+0.0772i	1.3407+0.0725i	1.1059+0.0808i	1.1384+0.0788i	1.6706+0.1002i	1.9444+0.1347i	1.0600+0.0831i	1.0732+0.0827i
19	1.4268+0.0758i	1.3215+0.0692i	1.0950+0.0758i	1.1342+0.0740i	1.6492+0.0990i	1.9145+0.1300i	1.0436+0.0779i	1.0576+0.0782i
19,5	1.4256+0.0701i	1.2941+0.0652i	1.0723+0.0704i	1.1247+0.0692i	1.6348+0.0961i	1.8944+0.1321i	1.0183+0.0729i	1.0342+0.0744i
20	1.9230+0.1724i	1.4387+0.0640i	1.2248+0.0751i	1.2729+0.0732i	1.6851+0.1131i	1.4739+0.1668i	1.2330+0.2173i	1.2857+0.2110i
20,5	1.4461+0.0954i	1.3740+0.1022i	1.2110+0.0728i	1.2392+0.0857i	1.6304+0.0979i	1.8780+0.1229i	1.1024+0.0845i	1.1048+0.0914i
21	1.3631+0.0520i	1.8339+0.1330i	1.1991+0.0634i	1.1476+0.0664i	1.4080+0.1199i	1.6121+0.0933i	1.2253+0.1727i	1.1607+0.1854i
21,5	1.6991+0.0948i	1.9089+0.1361i	1.1209+0.0616i	1.1513+0.0504i	1.5161+0.0821i	1.3698+0.0855i	1.1545+0.1540i	1.2377+0.1156i
22	1.3605+0.0520i	1.8286+0.1178i	1.2193+0.0642i	1.1598+0.0644i	1.4249+0.1170i	1.6056+0.0877i	1.2333+0.1806i	1.1693+0.1944i
22,5	1.6912+0.0798i	1.4055+0.0597i	1.1376+0.0545i	1.2506+0.0551i	1.5794+0.1910i	1.4051+0.1749i	1.1445+0.1725i	1.2429+0.1635i
23	1.7275+0.0857i	1.4188+0.0423i	1.1857+0.0607i	1.2751+0.0595i	1.5834+0.1747i	1.4232+0.1559i	1.1749+0.1749i	1.2918+0.1822i
23,5	1.4664+0.0626i	1.6566+0.0991i	1.3043+0.0474i	1.1711+0.0454i	1.4135+0.1717i	1.5496+0.2588i	1.2755+0.1587i	1.1759+0.1394i
24	1.5037+0.0710i	1.3591+0.0502i	1.1808+0.0443i	1.2467+0.0983i	1.5451+0.2150i	1.7164+0.1072i	1.3895+0.2257i	1.2198+0.1964i
24,5	1.5376+0.0755i	1.7254+0.0875i	1.3836+0.0522i	1.2524+0.0657i	1.5831+0.2354i	1.4320+0.2269i	1.1755+0.2097i	1.2871+0.1867i
25	1.5306+0.0744i	1.6915+0.1083i	1.3846+0.0555i	1.2679+0.0610i	1.4621+0.1953i	1.3400+0.2355i	1.1762+0.2323i	1.2439+0.1711i
25,5	1.5775+0.2201i	1.6203+0.0729i	1.1822+0.0559i	1.2916+0.0458i	1.4605+0.1876i	1.4494+0.0655i	1.1852+0.1643i	1.3065+0.1507i
26	1.4357+0.0696i	1.5824+0.0779i	1.3020+0.0505i	1.1807+0.0541i	1.3893+0.1877i	1.2727+0.2084i	1.1282+0.2339i	1.1761+0.1587i
26,5	1.4441+0.0577i	1.5851+0.0770i	1.3160+0.0502i	1.2061+0.0559i	1.4166+0.1663i	1.3051+0.2007i	1.1730+0.2374i	1.2080+0.1543i
27	1.4179+0.0644i	1.5639+0.0718i	1.2943+0.0443i	1.1861+0.0531i	1.4462+0.1886i	1.3139+0.1830i	1.5847+0.2617i	1.2070+0.1573i
27,5	1.4359+0.0589i	1.5791+0.0680i	1.3202+0.0508i	1.2143+0.0516i	1.4507+0.1735i	1.3288+0.1906i	1.5715+0.2387i	1.2136+0.1561i

28	1.3893+0.0618i	1.5163+0.0570i	1.2840+0.0506i	1.1933+0.0574i	1.4329+0.1769i	1.3157+0.1870i	1.5739+0.1994i	1.2085+0.1678i
SNR / w	w72	w73	w74	w75	w76	w77	w78	w79
7	1.2111+0.6836i	1.1269+0.6205i	1.3684+0.3795i	1.2524+0.3664i	1.1268+0.6204i	1.0807+0.5880i	1.2523+0.3664i	1.1911+0.3587i
7,5	1.1558+0.6868i	1.1863+0.7110i	1.3133+0.3339i	1.3473+0.3395i	1.0681+0.6156i	1.0882+0.6314i	1.1993+0.3223i	1.2233+0.3261i
8	1.2547+0.3037i	1.2795+0.3062i	1.2543+0.3046i	1.2754+0.3068i	1.1024+0.6704i	1.1223+0.6864i	1.1037+0.6709i	1.1206+0.6845i
8,5	1.1162+0.2754i	1.1288+0.2761i	1.1273+0.2760i	1.1402+0.2768i	0.9870+0.5936i	0.9966+0.6017i	0.9956+0.6005i	1.0055+0.6087i
9	0.3434+0.1840i	0.3477+0.1852i	0.3477+0.1852i	0.3521+0.1865i	0.3477+0.1852i	0.3521+0.1865i	0.3520+0.1865i	0.3566+0.1877i
9,5	0.3242+0.1717i	0.3253+0.1720i	0.3253+0.1720i	0.3264+0.1723i	0.3253+0.1720i	0.3264+0.1723i	0.3264+0.1723i	0.3275+0.1726i
10	0.3115+0.1626i	0.3111+0.1625i	0.3111+0.1625i	0.3107+0.1624i	0.3111+0.1625i	0.3107+0.1624i	0.3107+0.1624i	0.3103+0.1623i
10,5	0.3058+0.1562i	0.3045+0.1557i	0.3057+0.1561i	0.3044+0.1556i	0.3058+0.1558i	0.3045+0.1554i	0.3055+0.1557i	0.3042+0.1553i
11	1.3786+0.2935i	1.3336+0.2903i	1.3794+0.2647i	1.3333+0.2653i	1.3147+0.2720i	1.2897+0.2700i	1.3168+0.2502i	1.2911+0.2499i
11,5	1.3807+0.3017i	1.3368+0.2973i	1.3830+0.2608i	1.3374+0.2612i	1.3182+0.2771i	1.2950+0.2747i	1.3221+0.2450i	1.2978+0.2447i
12	1.3733+0.3193i	1.3344+0.3196i	1.3766+0.2535i	1.3339+0.2600i	1.3111+0.2892i	1.2920+0.2912i	1.3178+0.2359i	1.2962+0.2407i
12,5	1.3712+0.2039i	1.3574+0.2268i	1.3430+0.2021i	1.3340+0.2218i	1.2905+0.2058i	1.2856+0.2215i	1.2847+0.2047i	1.2805+0.2196i
13	0.4291+0.1208i	0.4291+0.1208i	0.4300+0.1207i	0.4300+0.1207i	0.4275+0.1203i	0.4275+0.1203i	0.4283+0.1202i	0.4283+0.1202i
13,5	1.2716+0.1419i	1.2458+0.1681i	1.2778+0.1479i	1.2512+0.1766i	1.2928+0.1696i	1.2681+0.2053i	1.2984+0.1774i	1.2741+0.2155i
14	1.2396+0.1416i	1.2342+0.1407i	1.2401+0.1435i	1.2347+0.1425i	1.3045+0.1827i	1.2951+0.1824i	1.3060+0.1863i	1.2966+0.1858i
14,5	1.2237+0.1364i	1.2177+0.1356i	1.2248+0.1374i	1.2187+0.1366i	1.2847+0.1815i	1.2737+0.1817i	1.2872+0.1835i	1.2762+0.1835i
15	1.0170+0.1179i	1.0171+0.1182i	1.0890+0.1185i	1.0891+0.1189i	1.0120+0.1157i	1.0121+0.1160i	1.0803+0.1174i	1.0805+0.1177i
15,5	0.9990+0.1123i	0.9991+0.1122i	1.0672+0.1136i	1.0681+0.1135i	1.0039+0.1109i	1.0046+0.1109i	1.0792+0.1117i	1.0800+0.1115i
16	0.9452+0.1049i	0.9453+0.1052i	1.0143+0.1060i	1.0147+0.1062i	0.9514+0.1032i	0.9516+0.1034i	1.0297+0.1035i	1.0303+0.1037i
16,5	0.9085+0.1102i	0.9089+0.1100i	0.9664+0.1097i	0.9669+0.1095i	0.9152+0.1139i	0.9156+0.1138i	0.9778+0.1127i	0.9781+0.1125i
17	0.9028+0.1080i	0.9035+0.1076i	0.9604+0.1071i	0.9617+0.1067i	0.9102+0.1155i	0.9109+0.1151i	0.9751+0.1137i	0.9764+0.1132i
17,5	0.9001+0.1048i	0.9010+0.1043i	0.9577+0.1034i	0.9598+0.1028i	0.9081+0.1176i	0.9091+0.1170i	0.9756+0.1149i	0.9777+0.1143i
18	0.9000+0.1003i	0.9010+0.0998i	0.9575+0.0980i	0.9606+0.0975i	0.9080+0.1215i	0.9094+0.1211i	0.9779+0.1175i	0.9807+0.1167i
18,5	0.7914+0.0927i	0.7889+0.0927i	0.8496+0.0890i	0.8430+0.0892i	0.7999+0.1087i	0.7971+0.1089i	0.8696+0.0989i	0.8628+0.0997i
19	0.7724+0.0835i	0.7700+0.0834i	0.8322+0.0796i	0.8250+0.0797i	0.7839+0.1087i	0.7811+0.1089i	0.8606+0.0944i	0.8526+0.0955i
19,5	0.7527+0.0751i	0.7500+0.0750i	0.8104+0.0712i	0.8013+0.0714i	0.7677+0.1126i	0.7644+0.1130i	0.8454+0.0933i	0.8352+0.0955i
20	0.9964+0.0740i	0.9909+0.0742i	1.0744+0.0748i	1.0572+0.0744i	0.9898+0.2146i	0.9846+0.2148i	1.0768+0.2182i	1.0565+0.2169i
20,5	0.8415+0.0674i	0.8389+0.0684i	0.8827+0.0563i	0.8780+0.0568i	0.8615+0.1532i	0.8605+0.1540i	0.9520+0.1131i	0.9463+0.1173i
21	0.8975+0.0634i	0.8976+0.0631i	0.9963+0.0649i	1.0165+0.0658i	0.8959+0.1797i	0.8954+0.1791i	0.9955+0.1822i	1.0207+0.1845i
21,5	0.8989+0.0684i	0.8974+0.0684i	0.9890+0.0680i	0.9749+0.0663i	0.9038+0.2028i	0.9029+0.2030i	1.0095+0.1899i	0.9885+0.1918i
22	0.9059+0.0627i	0.9025+0.0622i	1.0170+0.0646i	1.0368+0.0643i	0.9044+0.1860i	0.8999+0.1853i	1.0172+0.1896i	1.0422+0.1915i
22,5	0.8857+0.0610i	0.8914+0.0639i	1.0235+0.0603i	0.9860+0.0649i	0.8871+0.1882i	0.8926+0.1862i	1.0287+0.1810i	0.9915+0.1807i
23	0.8910+0.0618i	0.8953+0.0512i	1.0522+0.0581i	1.0206+0.0501i	0.8864+0.1655i	0.8952+0.1705i	1.0456+0.1748i	1.0122+0.1779i
23,5	0.9043+0.0601i	0.8964+0.0606i	1.0088+0.0553i	1.0449+0.0537i	0.9138+0.1795i	0.9045+0.1793i	1.0295+0.1733i	1.0590+0.1616i
24	0.9258+0.0608i	0.9254+0.0602i	1.0609+0.0650i	1.0478+0.0699i	0.9252+0.1819i	0.9088+0.1757i	1.0378+0.1928i	1.0895+0.1956i
24,5	0.9591+0.0547i	0.9357+0.0599i	1.0686+0.0690i	1.1345+0.0491i	0.9170+0.1776i	0.9298+0.1782i	1.0723+0.1843i	1.0268+0.2010i
25	0.9630+0.0520i	0.9218+0.0598i	1.0488+0.0488i	1.1469+0.0461i	0.9571+0.1742i	0.9240+0.1503i	1.0655+0.1717i	1.1358+0.1228i
25,5	0.8699+0.0500i	0.9203+0.0513i	1.0902+0.0567i	1.0070+0.0499i	0.8680+0.1530i	0.9206+0.1491i	1.0838+0.1610i	1.0009+0.1570i
26	0.9159+0.0417i	0.9301+0.0926i	1.0176+0.0319i	1.0715+0.0679i	0.9294+0.2082i	0.9297+0.1559i	1.0424+0.2248i	1.0467+0.1461i
26,5	0.9403+0.0431i	0.9115+0.0762i	1.0176+0.0326i	1.1072+0.0445i	0.9539+0.2438i	0.9401+0.1658i	1.0737+0.2562i	1.0389+0.1570i
27	0.9113+0.0415i	0.8658+0.0784i	0.9957+0.0565i	1.0840+0.0474i	0.9122+0.1735i	0.8662+0.1446i	1.0072+0.1528i	1.1002+0.1441i
27,5	0.9440+0.0418i	0.8706+0.0464i	1.0192+0.0503i	1.1107+0.0449i	0.9170+0.1714i	0.8778+0.1234i	1.0092+0.1421i	1.1104+0.1311i
28	0.8988+0.0380i	0.9745+0.0468i	1.0860+0.0321i	1.0493+0.0829i	0.9289+0.1655i	0.8389+0.2190i	1.0132+0.1785i	1.1095+0.1470i
SNR / w	w80	w81	w82	w83	w84	w85	w86	w87
7	1.2112+0.6837i	1.1269+0.6205i	1.3686+0.3795i	1.2525+0.3664i	1.1269+0.6205i	1.0807+0.5881i	1.2525+0.3664i	1.1912+0.3587i
7,5	1.1540+0.6854i	1.1846+0.7097i	1.3105+0.3337i	1.3450+0.3393i	1.0672+0.6149i	1.0871+0.6306i	1.1980+0.3222i	1.2219+0.3260i
8	1.2545+0.3037i	1.2793+0.3062i	1.2542+0.3046i	1.2753+0.3068i	1.1023+0.6703i	1.1222+0.6864i	1.1036+0.6709i	1.1205+0.6844i
8,5	1.3379+0.2955i	1.3514+0.2963i	1.3341+0.2948i	1.3456+0.2954i	1.1682+0.7419i	1.1767+0.7490i	1.1638+0.7383i	1.1712+0.7445i
9	0.5567+0.2312i	0.5636+0.2323i	0.5636+0.2323i	0.5708+0.2334i	0.5636+0.2323i	0.5707+0.2334i	0.5707+0.2334i	0.5780+0.2344i
9,5	0.5925+0.2250i	0.5968+0.2255i	0.5968+0.2255i	0.6012+0.2261i	0.5968+0.2255i	0.6012+0.2261i	0.6012+0.2261i	0.6058+0.2267i
10	0.6197+0.2165i	0.6228+0.2168i	0.6227+0.2168i	0.6259+0.2172i	0.6227+0.2168i	0.6259+0.2172i	0.6259+0.2172i	0.6292+0.2175i

10,5	0.6392+0.2077i	0.6460+0.2057i	0.6370+0.2089i	0.6423+0.2087i	0.6409+0.2072i	0.6466+0.2063i	0.6378+0.2092i	0.6431+0.2090i
11	1.1624+0.7818i	1.1959+0.8017i	1.1462+0.8018i	1.1797+0.8257i	1.1351+0.7695i	1.1585+0.7844i	1.1230+0.7887i	1.1472+0.8071i
11,5	1.1690+0.7842i	1.2056+0.8024i	1.1458+0.8117i	1.1823+0.8348i	1.1427+0.7717i	1.1681+0.7847i	1.1251+0.7984i	1.1513+0.8158i
12	1.1652+0.7852i	1.2122+0.7997i	1.1325+0.8255i	1.1781+0.8474i	1.1413+0.7745i	1.1741+0.7847i	1.1163+0.8146i	1.1499+0.8320i
12,5	1.2227+0.7247i	1.3007+0.7448i	1.2398+0.7205i	1.3131+0.7557i	1.1658+0.6445i	1.1970+0.6499i	1.1757+0.6324i	1.2063+0.6398i
13	0.7634+0.1673i	0.7634+0.1682i	0.7674+0.1676i	0.7674+0.1686i	0.7602+0.1620i	0.7600+0.1629i	0.7643+0.1622i	0.7642+0.1631i
13,5	1.1992+0.7044i	1.3555+0.7570i	1.1832+0.6735i	1.3044+0.7014i	1.1692+0.6038i	1.2469+0.6074i	1.1704+0.5902i	1.2419+0.5888i
14	1.3895+0.9370i	1.3184+0.8344i	1.4268+0.9110i	1.3348+0.8289i	1.4755+0.5825i	1.4725+0.5840i	1.5066+0.5883i	1.5099+0.5849i
14,5	1.4191+0.9375i	1.3358+0.8331i	1.4455+0.8881i	1.3474+0.8198i	1.4831+0.5552i	1.4786+0.5586i	1.5097+0.5625i	1.5087+0.5607i
15	1.6166+0.6733i	1.5327+0.5881i	1.3344+0.4056i	1.3372+0.4255i	1.6440+0.4469i	1.6360+0.4324i	1.3806+0.3499i	1.3795+0.3645i
15,5	1.4949+0.5621i	1.4771+0.5677i	1.3463+0.3922i	1.3447+0.4029i	1.6403+0.5309i	1.5852+0.5183i	1.3436+0.3520i	1.3426+0.3587i
16	1.4894+0.4824i	1.5041+0.5324i	1.3116+0.3681i	1.3023+0.3650i	1.5903+0.4644i	1.6566+0.5241i	1.2913+0.3268i	1.2837+0.3227i
16,5	1.4385+0.3455i	1.4852+0.3323i	1.2415+0.3376i	1.2372+0.3386i	1.8518+0.4951i	1.6966+0.3427i	1.1890+0.3054i	1.1851+0.3056i
17	1.4458+0.3440i	1.4918+0.3307i	1.2384+0.3408i	1.2321+0.3419i	1.8705+0.5044i	1.7104+0.3345i	1.1873+0.3028i	1.1830+0.3028i
17,5	1.4472+0.3429i	1.4936+0.3303i	1.2359+0.3440i	1.2280+0.3454i	1.8868+0.5097i	1.7156+0.3328i	1.1862+0.2999i	1.1816+0.2996i
18	1.4449+0.3401i	1.4915+0.3280i	1.2340+0.3464i	1.2248+0.3483i	1.8862+0.5096i	1.7134+0.3314i	1.1846+0.2958i	1.1796+0.2954i
18,5	1.4077+0.2179i	1.3384+0.2148i	1.1187+0.2595i	1.1404+0.2530i	1.6531+0.2935i	1.9314+0.4196i	1.0757+0.2398i	1.0862+0.2381i
19	1.3931+0.2132i	1.3188+0.2086i	1.1044+0.2532i	1.1283+0.2456i	1.6349+0.2879i	1.9151+0.4067i	1.0577+0.2202i	1.0688+0.2192i
19,5	1.3981+0.2090i	1.2948+0.1953i	1.0785+0.2426i	1.1091+0.2350i	1.5971+0.2809i	1.8304+0.3832i	1.0314+0.2037i	1.0450+0.2053i
20	1.7815+0.4751i	1.4947+0.5250i	1.2330+0.5211i	1.2924+0.5254i	1.6486+0.3169i	1.4854+0.3471i	1.2402+0.3648i	1.3024+0.3616i
20,5	1.4528+0.2817i	1.3601+0.2817i	1.1691+0.3120i	1.2009+0.2917i	1.6350+0.2881i	1.8444+0.4201i	1.1076+0.2296i	1.1141+0.2274i
21	1.9010+0.4585i	1.6938+0.3559i	1.2752+0.4149i	1.1803+0.4240i	1.4242+0.2749i	1.5512+0.2768i	1.2791+0.3004i	1.1734+0.3075i
21,5	1.5210+0.4295i	1.3922+0.3763i	1.2275+0.4595i	1.2578+0.4012i	1.5387+0.2494i	1.3855+0.2443i	1.1759+0.2690i	1.2344+0.2704i
22	1.8348+0.3993i	1.5329+0.3997i	1.3013+0.4349i	1.1899+0.4442i	1.4158+0.2489i	1.5984+0.2593i	1.2925+0.3015i	1.1810+0.3192i
22,5	1.5888+0.4053i	1.4083+0.4183i	1.1560+0.4261i	1.2651+0.4195i	1.8004+0.3093i	1.3843+0.2805i	1.1504+0.2971i	1.2457+0.2926i
23	1.6211+0.3847i	1.4209+0.4485i	1.1797+0.4135i	1.2791+0.4462i	1.7497+0.3033i	1.4218+0.3117i	1.1757+0.2963i	1.2821+0.2953i
23,5	1.3219+0.5378i	1.3808+0.4436i	1.1930+0.4695i	1.2166+0.4068i	1.7837+0.3062i	1.3978+0.3365i	1.2218+0.2650i	1.2151+0.3021i
24	1.4544+0.5247i	1.2839+0.5031i	1.3919+0.3970i	1.2020+0.4350i	1.5721+0.3834i	1.7484+0.3285i	1.3331+0.3099i	1.2153+0.3093i
24,5	1.2528+0.5442i	1.3771+0.4900i	1.1779+0.4401i	1.2795+0.4047i	1.7543+0.3201i	1.4294+0.3521i	1.1682+0.3125i	1.2881+0.3079i
25	1.2983+0.5282i	1.4160+0.4599i	1.1643+0.5224i	1.1475+0.4397i	1.5155+0.3070i	1.3432+0.3541i	1.1465+0.2989i	1.2191+0.3646i
25,5	1.2159+0.4133i	1.5064+0.3808i	1.1497+0.3852i	1.3705+0.3603i	1.7393+0.2807i	1.6490+0.4561i	1.1846+0.2701i	1.3033+0.2639i
26	1.2978+0.5029i	1.3930+0.4106i	1.1805+0.5049i	1.1527+0.4078i	1.6859+0.2482i	1.3072+0.3236i	1.5221+0.2723i	1.1975+0.3375i
26,5	1.4481+0.5040i	1.3937+0.4028i	1.1626+0.4656i	1.2689+0.4386i	1.6732+0.2462i	1.3551+0.3008i	1.5213+0.2743i	1.2473+0.3399i
27	1.3902+0.4354i	1.2902+0.3800i	1.1890+0.4695i	1.1811+0.3714i	1.4284+0.3107i	1.2970+0.2793i	1.0892+0.2786i	1.1782+0.2634i
27,5	1.3263+0.4151i	1.4095+0.3204i	1.2199+0.4281i	1.1604+0.3543i	1.5775+0.4006i	1.2854+0.2866i	1.0929+0.2569i	1.1834+0.2541i
28	1.3867+0.4311i	1.4607+0.3299i	1.2745+0.4347i	1.1818+0.3938i	1.6162+0.3509i	1.3455+0.2946i	1.1478+0.2771i	1.2386+0.2982i
SNR / w	w88	w89	w90	w91	w92	w93	w94	w95
7	1.1269+0.6205i	1.0807+0.5881i	1.2525+0.3664i	1.1912+0.3588i	1.0807+0.5880i	1.0491+0.5667i	1.1911+0.3587i	1.1500+0.3534i
7,5	1.0675+0.6151i	1.0875+0.6309i	1.1983+0.3223i	1.2222+0.3261i	1.0234+0.5801i	1.0375+0.5912i	1.1411+0.3161i	1.1582+0.3189i
8	1.1463+0.2942i	1.1610+0.2957i	1.1529+0.2954i	1.1671+0.2968i	1.0173+0.5997i	1.0290+0.6091i	1.0232+0.6042i	1.0346+0.6133i
8,5	1.0937+0.2747i	1.1032+0.2752i	1.1025+0.2752i	1.1122+0.2758i	0.9704+0.5786i	0.9777+0.5847i	0.9773+0.5841i	0.9847+0.5903i
9	0.5636+0.2323i	0.5707+0.2334i	0.5707+0.2334i	0.5780+0.2344i	0.5707+0.2334i	0.5780+0.2344i	0.5780+0.2344i	0.5854+0.2355i
9,5	0.5968+0.2255i	0.6012+0.2261i	0.6012+0.2261i	0.6059+0.2267i	0.6012+0.2261i	0.6058+0.2267i	0.6059+0.2267i	0.6106+0.2273i
10	0.6227+0.2168i	0.6259+0.2172i	0.6259+0.2172i	0.6292+0.2176i	0.6259+0.2172i	0.6291+0.2175i	0.6291+0.2175i	0.6326+0.2179i
10,5	0.6418+0.2077i	0.6476+0.2072i	0.6404+0.2091i	0.6456+0.2089i	0.6433+0.2075i	0.6481+0.2077i	0.6414+0.2091i	0.6468+0.2089i
11	1.1247+0.7404i	1.1447+0.7487i	1.1110+0.7560i	1.1310+0.7655i	1.1082+0.7292i	1.1241+0.7352i	1.0969+0.7444i	1.1130+0.7516i
11,5	1.1362+0.7382i	1.1578+0.7444i	1.1157+0.7599i	1.1373+0.7672i	1.1202+0.7271i	1.1373+0.7309i	1.1031+0.7481i	1.1204+0.7530i
12	1.1426+0.7277i	1.1700+0.7305i	1.1110+0.7594i	1.1381+0.7627i	1.1269+0.7178i	1.1484+0.7184i	1.1005+0.7487i	1.1223+0.7499i
12,5	1.1331+0.7163i	1.1603+0.7237i	1.1464+0.7012i	1.1764+0.7112i	1.1144+0.6491i	1.1309+0.6495i	1.1250+0.6328i	1.1419+0.6337i
13	0.7550+0.1791i	0.7551+0.1800i	0.7594+0.1796i	0.7596+0.1805i	0.7504+0.1738i	0.7504+0.1746i	0.7550+0.1740i	0.7551+0.1749i
13,5	1.0890+0.6867i	1.1207+0.6838i	1.0879+0.6679i	1.1180+0.6598i	1.0962+0.6051i	1.1285+0.5871i	1.1014+0.5902i	1.1343+0.5717i
14	1.1381+0.6297i	1.1391+0.6502i	1.1375+0.6274i	1.1383+0.6482i	1.2261+0.5016i	1.2224+0.5141i	1.2286+0.4990i	1.2246+0.5114i
14,5	1.1288+0.6188i	1.1336+0.6433i	1.1285+0.6183i	1.1333+0.6428i	1.2165+0.4859i	1.2154+0.4980i	1.2180+0.4847i	1.2167+0.4968i

15	1.0127+0.3520i	1.0146+0.3584i	1.0749+0.3554i	1.0778+0.3633i	1.0077+0.3323i	1.0090+0.3383i	1.0679+0.3346i	1.0700+0.3417i
15,5	0.9997+0.3446i	1.0005+0.3460i	1.0642+0.3496i	1.0660+0.3516i	0.9998+0.3318i	1.0005+0.3331i	1.0648+0.3319i	1.0659+0.3335i
16	0.9503+0.3178i	0.9501+0.3193i	1.0163+0.3211i	1.0157+0.3221i	0.9533+0.3041i	0.9531+0.3056i	1.0230+0.3042i	1.0224+0.3053i
16,5	0.9220+0.3698i	0.9216+0.3715i	0.9844+0.3653i	0.9832+0.3663i	0.9233+0.3407i	0.9230+0.3422i	0.9860+0.3329i	0.9852+0.3338i
17	0.9165+0.3725i	0.9163+0.3747i	0.9819+0.3690i	0.9811+0.3702i	0.9180+0.3366i	0.9180+0.3383i	0.9850+0.3293i	0.9848+0.3302i
17,5	0.9142+0.3757i	0.9141+0.3781i	0.9817+0.3734i	0.9813+0.3746i	0.9154+0.3298i	0.9157+0.3313i	0.9858+0.3233i	0.9863+0.3240i
18	0.9138+0.3822i	0.9144+0.3842i	0.9841+0.3804i	0.9845+0.3809i	0.9148+0.3221i	0.9154+0.3230i	0.9879+0.3164i	0.9893+0.3166i
18,5	0.8251+0.3261i	0.8233+0.3295i	0.8905+0.3124i	0.8840+0.3165i	0.8225+0.2848i	0.8203+0.2870i	0.8966+0.2737i	0.8904+0.2767i
19	0.8222+0.3229i	0.8207+0.3256i	0.8900+0.3084i	0.8836+0.3122i	0.8120+0.2675i	0.8097+0.2688i	0.8901+0.2542i	0.8837+0.2565i
19,5	0.8206+0.3293i	0.8193+0.3306i	0.8858+0.3108i	0.8812+0.3143i	0.8003+0.2579i	0.7978+0.2583i	0.8767+0.2412i	0.8701+0.2436i
20	0.9539+0.5011i	0.9519+0.4998i	1.0693+0.5130i	1.0495+0.5116i	0.9756+0.3596i	0.9716+0.3593i	1.0786+0.3657i	1.0560+0.3643i
20,5	0.8948+0.3945i	0.8934+0.3928i	0.9902+0.3771i	0.9832+0.3771i	0.8770+0.2774i	0.8761+0.2767i	0.9740+0.2604i	0.9693+0.2595i
21	0.8935+0.4269i	0.8908+0.4260i	0.9966+0.4266i	1.0364+0.4264i	0.8943+0.3054i	0.8927+0.3044i	0.9947+0.3071i	1.0286+0.3083i
21,5	0.9090+0.4531i	0.9132+0.4519i	1.0760+0.4526i	1.0560+0.4480i	0.9090+0.3316i	0.9115+0.3320i	1.0507+0.3110i	1.0342+0.3202i
22	0.8987+0.4376i	0.8903+0.4347i	1.0147+0.4454i	1.0566+0.4440i	0.9023+0.3107i	0.8960+0.3097i	1.0146+0.3155i	1.0502+0.3176i
22,5	0.8899+0.4514i	0.8957+0.4429i	1.0333+0.4413i	0.9986+0.4359i	0.8881+0.3104i	0.8946+0.3136i	1.0329+0.3081i	0.9965+0.3137i
23	0.9020+0.4280i	0.9107+0.4169i	1.0477+0.4197i	1.0225+0.4080i	0.8871+0.2956i	0.8975+0.2912i	1.0507+0.2866i	1.0098+0.2870i
23,5	0.9127+0.4335i	0.9265+0.4155i	1.0590+0.4526i	1.0475+0.4190i	0.9211+0.2931i	0.9205+0.3010i	1.0587+0.2866i	1.0664+0.3012i
24	0.8972+0.4131i	0.8745+0.3937i	1.0109+0.4143i	1.0972+0.4234i	0.9184+0.2920i	0.8887+0.2934i	1.0221+0.3073i	1.1006+0.3080i
24,5	0.8620+0.4205i	0.8885+0.4188i	1.0696+0.4404i	0.9798+0.4306i	0.8874+0.2941i	0.9092+0.3033i	1.0686+0.3238i	1.0059+0.3162i
25	0.9102+0.5075i	0.9170+0.4303i	1.0241+0.5303i	1.0328+0.4412i	0.9443+0.2680i	0.9308+0.3404i	1.0467+0.2771i	1.0251+0.3580i
25,5	0.9146+0.4349i	0.9045+0.3595i	1.0466+0.3967i	0.9891+0.3453i	0.8628+0.2351i	0.8976+0.2659i	1.0804+0.2637i	0.9941+0.2617i
26	1.0272+0.4905i	1.0257+0.4280i	0.9434+0.4788i	0.9114+0.4552i	0.9236+0.2785i	0.8965+0.3421i	1.0143+0.3002i	0.9068+0.3854i
26,5	0.9902+0.3600i	0.9588+0.3951i	1.0628+0.4448i	0.9496+0.4697i	0.8975+0.2987i	0.8675+0.3774i	1.1092+0.3451i	0.8734+0.4346i
27	1.0478+0.5049i	1.0616+0.4245i	0.9563+0.4822i	0.9741+0.4130i	0.9128+0.2490i	0.9100+0.3284i	1.0094+0.2429i	0.9848+0.3374i
27,5	1.0559+0.4504i	1.0285+0.3785i	0.9708+0.5009i	0.9399+0.4335i	0.9282+0.2534i	0.9606+0.3233i	1.0203+0.2262i	0.9167+0.3776i
28	0.9950+0.4764i	0.9740+0.4084i	0.9094+0.5124i	0.9401+0.5713i	1.0045+0.2913i	1.0508+0.3677i	1.0666+0.2494i	0.8323+0.4476i
SNR / w	w96	w97	w98	w99	w100	w101	w102	w103
7	1.2113+0.6838i	1.1270+0.6205i	1.3688+0.3795i	1.2525+0.3664i	1.1270+0.6205i	1.0807+0.5881i	1.2525+0.3664i	1.1912+0.3588i
7,5	1.1537+0.6849i	1.1842+0.7091i	1.3107+0.3335i	1.3451+0.3391i	1.0671+0.6146i	1.0871+0.6303i	1.1980+0.3220i	1.2219+0.3258i
8	1.2548+0.3037i	1.2796+0.3062i	1.2544+0.3046i	1.2755+0.3068i	1.1025+0.6705i	1.1224+0.6865i	1.1038+0.6710i	1.1207+0.6846i
8,5	1.3377+0.2954i	1.3512+0.2962i	1.3339+0.2948i	1.3454+0.2954i	1.1680+0.7418i	1.1765+0.7488i	1.1636+0.7382i	1.1711+0.7444i
9	0.3407+0.1966i	0.3447+0.1984i	0.3447+0.1984i	0.3489+0.2002i	0.3447+0.1984i	0.3489+0.2002i	0.3488+0.2002i	0.3531+0.2020i
9,5	0.3232+0.1845i	0.3242+0.1850i	0.3242+0.1850i	0.3253+0.1854i	0.3242+0.1850i	0.3252+0.1854i	0.3252+0.1854i	0.3263+0.1859i
10	0.3111+0.1764i	0.3108+0.1762i	0.3108+0.1762i	0.3104+0.1761i	0.3108+0.1762i	0.3104+0.1761i	0.3104+0.1761i	0.3101+0.1759i
10,5	0.3055+0.1723i	0.3041+0.1716i	0.3056+0.1722i	0.3042+0.1715i	0.3054+0.1719i	0.3038+0.1712i	0.3054+0.1718i	0.3040+0.1712i
11	0.9598+0.2292i	0.9656+0.2252i	0.9614+0.2245i	0.9673+0.2204i	0.9696+0.2243i	0.9752+0.2204i	0.9714+0.2194i	0.9770+0.2155i
11,5	0.9515+0.2186i	0.9582+0.2154i	0.9537+0.2119i	0.9606+0.2086i	0.9634+0.2146i	0.9701+0.2114i	0.9660+0.2076i	0.9729+0.2044i
12	0.9462+0.2105i	0.9527+0.2092i	0.9503+0.1993i	0.9570+0.1979i	0.9602+0.2070i	0.9670+0.2057i	0.9651+0.1952i	0.9720+0.1938i
12,5	0.9013+0.1778i	0.9002+0.1778i	0.9065+0.1772i	0.9054+0.1773i	0.9243+0.1814i	0.9232+0.1816i	0.9303+0.1809i	0.9291+0.1811i
13	0.4068+0.1632i	0.4068+0.1632i	0.4072+0.1631i	0.4073+0.1631i	0.4055+0.1622i	0.4056+0.1622i	0.4060+0.1621i	0.4060+0.1621i
13,5	0.8701+0.1562i	0.8708+0.1567i	0.8703+0.1581i	0.8710+0.1586i	0.8731+0.1646i	0.8739+0.1651i	0.8735+0.1667i	0.8744+0.1672i
14	0.8548+0.1513i	0.8553+0.1506i	0.8548+0.1514i	0.8553+0.1508i	0.8507+0.1570i	0.8511+0.1563i	0.8507+0.1572i	0.8511+0.1565i
14,5	0.8431+0.1434i	0.8436+0.1427i	0.8429+0.1435i	0.8433+0.1427i	0.8388+0.1513i	0.8392+0.1506i	0.8386+0.1513i	0.8390+0.1506i
15	0.6429+0.1145i	0.6427+0.1149i	0.6341+0.1143i	0.6339+0.1146i	0.6442+0.1116i	0.6440+0.1120i	0.6353+0.1114i	0.6350+0.1118i
15,5	0.6326+0.1105i	0.6325+0.1105i	0.6224+0.1102i	0.6223+0.1102i	0.6324+0.1086i	0.6322+0.1086i	0.6223+0.1083i	0.6221+0.1083i
16	0.5920+0.1103i	0.5921+0.1104i	0.5817+0.1103i	0.5817+0.1103i	0.5909+0.1099i	0.5909+0.1100i	0.5807+0.1099i	0.5808+0.1100i
16,5	0.5940+0.1142i	0.5940+0.1139i	0.5859+0.1144i	0.5860+0.1141i	0.5933+0.1173i	0.5934+0.1170i	0.5853+0.1175i	0.5855+0.1172i
17	0.5899+0.1125i	0.5899+0.1118i	0.5822+0.1127i	0.5822+0.1120i	0.5890+0.1191i	0.5890+0.1185i	0.5815+0.1193i	0.5815+0.1187i
17,5	0.5844+0.1101i	0.5843+0.1092i	0.5782+0.1103i	0.5781+0.1094i	0.5836+0.1220i	0.5835+0.1210i	0.5775+0.1222i	0.5774+0.1212i
18	0.5770+0.1046i	0.5769+0.1040i	0.5735+0.1049i	0.5734+0.1042i	0.5765+0.1256i	0.5764+0.1247i	0.5731+0.1257i	0.5730+0.1248i
18,5	0.5025+0.0926i	0.5029+0.0925i	0.4964+0.0926i	0.4968+0.0924i	0.5031+0.1450i	0.5034+0.1446i	0.4973+0.1458i	0.4976+0.1454i
19	0.4815+0.0819i	0.4818+0.0819i	0.4772+0.0818i	0.4774+0.0817i	0.4859+0.1636i	0.4861+0.1635i	0.4819+0.1642i	0.4821+0.1641i

19,5	0.4664+0.0749i	0.4666+0.0749i	0.4638+0.0749i	0.4640+0.0749i	0.4747+0.1798i	0.4749+0.1797i	0.4726+0.1802i	0.4727+0.1801i
20	0.6590+0.0694i	0.6586+0.0693i	0.6639+0.0695i	0.6635+0.0695i	0.6508+0.1706i	0.6504+0.1706i	0.6560+0.1719i	0.6557+0.1718i
20,5	0.5367+0.0649i	0.5365+0.0649i	0.5388+0.0652i	0.5386+0.0652i	0.5408+0.1813i	0.5406+0.1813i	0.5439+0.1821i	0.5436+0.1821i
21	0.5599+0.0610i	0.5601+0.0610i	0.5714+0.0610i	0.5716+0.0610i	0.5593+0.1727i	0.5595+0.1728i	0.5706+0.1727i	0.5708+0.1728i
21,5	0.5851+0.0617i	0.5849+0.0617i	0.5958+0.0622i	0.5955+0.0622i	0.5791+0.1814i	0.5790+0.1815i	0.5914+0.1828i	0.5912+0.1828i
22	0.5592+0.0583i	0.5591+0.0583i	0.5836+0.0583i	0.5835+0.0582i	0.5575+0.1732i	0.5576+0.1733i	0.5809+0.1737i	0.5810+0.1737i
22,5	0.5585+0.0577i	0.5606+0.0593i	0.5829+0.0589i	0.5855+0.0608i	0.5599+0.1812i	0.5595+0.1803i	0.5837+0.1811i	0.5834+0.1802i
23	0.5561+0.0636i	0.5536+0.0609i	0.5850+0.0633i	0.5795+0.0554i	0.5463+0.1728i	0.5490+0.1726i	0.5844+0.1763i	0.5868+0.1740i
23,5	0.5464+0.0575i	0.5463+0.0584i	0.5972+0.0577i	0.5974+0.0585i	0.5452+0.1752i	0.5450+0.1739i	0.5956+0.1765i	0.5951+0.1749i
24	0.5319+0.0546i	0.5320+0.0556i	0.5978+0.0543i	0.5980+0.0551i	0.5321+0.1688i	0.5320+0.1658i	0.5958+0.1679i	0.5958+0.1648i
24,5	0.5336+0.0518i	0.5336+0.0543i	0.6137+0.0512i	0.6138+0.0536i	0.5352+0.1645i	0.5350+0.1572i	0.6122+0.1635i	0.6124+0.1559i
25	0.5578+0.0522i	0.5579+0.0603i	0.6376+0.0520i	0.6378+0.0621i	0.5575+0.1766i	0.5575+0.1624i	0.6391+0.1800i	0.6390+0.1629i
25,5	0.5118+0.0433i	0.5128+0.0705i	0.5870+0.0440i	0.5879+0.0655i	0.5211+0.1908i	0.5175+0.1547i	0.5970+0.1831i	0.5933+0.1507i
26	0.5288+0.0400i	0.5857+0.0687i	0.4820+0.0208i	0.6310+0.0929i	0.5798+0.2126i	0.5801+0.1655i	0.6572+0.2101i	0.6463+0.1533i
26,5	0.5532+0.0309i	0.5478+0.0912i	0.6447+0.0402i	0.6376+0.0755i	0.5674+0.2153i	0.5589+0.1584i	0.6549+0.1897i	0.6259+0.1463i
27	0.5645+0.0293i	0.5775+0.0917i	0.4290+0.0211i	0.6367+0.1004i	0.5594+0.2218i	0.5685+0.1676i	0.6391+0.2359i	0.6415+0.1699i
27,5	0.5689+0.0303i	0.5769+0.0968i	0.4319+0.0218i	0.6371+0.1067i	0.5690+0.2288i	0.5706+0.1684i	0.6484+0.2299i	0.6440+0.1694i
28	0.5612+0.0506i	0.5718+0.1142i	0.4988+0.0234i	0.6505+0.1199i	0.5646+0.2390i	0.5722+0.1799i	0.6434+0.2525i	0.6497+0.1851i
SNR / w	w104	w105	w106	w107	w108	w109	w110	w111
7	1.1270+0.6205i	1.0807+0.5881i	1.2525+0.3664i	1.1912+0.3588i	1.0807+0.5880i	1.0491+0.5667i	1.1912+0.3587i	1.1500+0.3534i
7,5	1.0674+0.6149i	1.0875+0.6306i	1.1983+0.3222i	1.2222+0.3259i	1.0234+0.5799i	1.0375+0.5910i	1.1411+0.3160i	1.1582+0.3188i
8	1.1464+0.2943i	1.1612+0.2957i	1.1530+0.2954i	1.1673+0.2968i	1.0174+0.5998i	1.0291+0.6091i	1.0233+0.6043i	1.0347+0.6133i
8,5	1.0937+0.2747i	1.1031+0.2752i	1.1025+0.2752i	1.1122+0.2758i	0.9704+0.5786i	0.9776+0.5847i	0.9772+0.5840i	0.9846+0.5902i
9	0.3447+0.1984i	0.3489+0.2002i	0.3488+0.2002i	0.3531+0.2020i	0.3488+0.2002i	0.3531+0.2020i	0.3531+0.2020i	0.3575+0.2040i
9,5	0.3242+0.1850i	0.3252+0.1854i	0.3253+0.1854i	0.3263+0.1859i	0.3252+0.1854i	0.3263+0.1859i	0.3263+0.1859i	0.3274+0.1863i
10	0.3108+0.1762i	0.3104+0.1761i	0.3104+0.1761i	0.3101+0.1759i	0.3104+0.1761i	0.3101+0.1759i	0.3101+0.1759i	0.3097+0.1758i
10,5	0.3048+0.1718i	0.3035+0.1712i	0.3048+0.1717i	0.3034+0.1711i	0.3047+0.1715i	0.3031+0.1708i	0.3046+0.1714i	0.3031+0.1707i
11	0.9706+0.2266i	0.9761+0.2227i	0.9723+0.2218i	0.9778+0.2178i	0.9799+0.2217i	0.9851+0.2179i	0.9817+0.2167i	0.9870+0.2129i
11,5	0.9644+0.2189i	0.9711+0.2157i	0.9668+0.2118i	0.9736+0.2086i	0.9761+0.2148i	0.9827+0.2116i	0.9788+0.2074i	0.9854+0.2043i
12	0.9610+0.2154i	0.9677+0.2142i	0.9651+0.2034i	0.9720+0.2020i	0.9751+0.2118i	0.9819+0.2105i	0.9800+0.1991i	0.9869+0.1978i
12,5	0.9229+0.1736i	0.9217+0.1739i	0.9290+0.1728i	0.9277+0.1732i	0.9483+0.1765i	0.9470+0.1770i	0.9551+0.1758i	0.9537+0.1764i
13	0.4055+0.1623i	0.4055+0.1623i	0.4059+0.1623i	0.4059+0.1623i	0.4042+0.1614i	0.4043+0.1614i	0.4046+0.1613i	0.4047+0.1613i
13,5	0.9359+0.1466i	0.9362+0.1480i	0.9360+0.1491i	0.9364+0.1505i	0.9403+0.1581i	0.9409+0.1596i	0.9409+0.1609i	0.9416+0.1624i
14	0.9466+0.1514i	0.9473+0.1504i	0.9465+0.1518i	0.9472+0.1507i	0.9398+0.1633i	0.9404+0.1623i	0.9399+0.1637i	0.9405+0.1627i
14,5	0.9378+0.1450i	0.9385+0.1438i	0.9372+0.1452i	0.9380+0.1440i	0.9293+0.1599i	0.9300+0.1587i	0.9288+0.1600i	0.9295+0.1588i
15	0.7372+0.1154i	0.7366+0.1158i	0.7172+0.1156i	0.7167+0.1160i	0.7394+0.1123i	0.7388+0.1127i	0.7195+0.1125i	0.7190+0.1129i
15,5	0.7319+0.1116i	0.7314+0.1117i	0.7068+0.1121i	0.7063+0.1122i	0.7308+0.1101i	0.7303+0.1102i	0.7057+0.1104i	0.7052+0.1105i
16	0.6884+0.1083i	0.6886+0.1084i	0.6616+0.1092i	0.6618+0.1093i	0.6855+0.1077i	0.6857+0.1079i	0.6588+0.1086i	0.6590+0.1088i
16,5	0.6864+0.1137i	0.6864+0.1134i	0.6676+0.1138i	0.6677+0.1136i	0.6853+0.1171i	0.6854+0.1169i	0.6663+0.1172i	0.6664+0.1170i
17	0.6923+0.1121i	0.6922+0.1115i	0.6712+0.1121i	0.6711+0.1115i	0.6905+0.1192i	0.6904+0.1186i	0.6691+0.1190i	0.6690+0.1185i
17,5	0.7012+0.1095i	0.7009+0.1087i	0.6792+0.1095i	0.6788+0.1087i	0.6990+0.1220i	0.6987+0.1212i	0.6767+0.1218i	0.6764+0.1210i
18	0.7129+0.1045i	0.7123+0.1039i	0.6923+0.1045i	0.6917+0.1037i	0.7111+0.1264i	0.7106+0.1258i	0.6902+0.1260i	0.6895+0.1252i
18,5	0.6075+0.0947i	0.6088+0.0945i	0.5844+0.0941i	0.5859+0.0939i	0.6059+0.1341i	0.6074+0.1336i	0.5826+0.1363i	0.5841+0.1358i
19	0.5966+0.0838i	0.5980+0.0837i	0.5718+0.0828i	0.5731+0.0828i	0.5998+0.1438i	0.6010+0.1434i	0.5752+0.1475i	0.5764+0.1471i
19,5	0.5846+0.0749i	0.5864+0.0749i	0.5618+0.0743i	0.5635+0.0743i	0.5946+0.1547i	0.5961+0.1542i	0.5720+0.1591i	0.5734+0.1586i
20	0.8384+0.0712i	0.8412+0.0712i	0.8149+0.0705i	0.8173+0.0705i	0.8311+0.1975i	0.8339+0.1979i	0.8052+0.1934i	0.8073+0.1937i
20,5	0.6890+0.0662i	0.6902+0.0664i	0.6754+0.0651i	0.6764+0.0652i	0.6972+0.1729i	0.6985+0.1730i	0.6793+0.1737i	0.6803+0.1738i
21	0.7544+0.0616i	0.7531+0.0616i	0.7101+0.0612i	0.7097+0.0613i	0.7525+0.1748i	0.7511+0.1748i	0.7084+0.1738i	0.7079+0.1738i
21,5	0.7653+0.0663i	0.7669+0.0663i	0.7308+0.0656i	0.7317+0.0656i	0.7665+0.1950i	0.7678+0.1949i	0.7256+0.1919i	0.7261+0.1919i
22	0.7744+0.0603i	0.7754+0.0604i	0.7103+0.0595i	0.7107+0.0598i	0.7712+0.1790i	0.7719+0.1794i	0.7081+0.1766i	0.7086+0.1768i
22,5	0.7679+0.0612i	0.7657+0.0626i	0.7064+0.0606i	0.7057+0.0614i	0.7654+0.1868i	0.7644+0.1843i	0.7049+0.1846i	0.7033+0.1833i
23	0.7657+0.0597i	0.7696+0.0557i	0.6939+0.0621i	0.7016+0.0587i	0.7756+0.1681i	0.7749+0.1807i	0.6970+0.1762i	0.6982+0.1790i
23,5	0.7900+0.0597i	0.7910+0.0603i	0.7021+0.0593i	0.7027+0.0598i	0.7914+0.1813i	0.7928+0.1803i	0.7010+0.1787i	0.7013+0.1778i

24	0.8051+0.0552i	0.8065+0.0566i	0.7009+0.0542i	0.7004+0.0547i	0.7953+0.1687i	0.8004+0.1678i	0.6967+0.1661i	0.6962+0.1632i
24,5	0.8200+0.0532i	0.8255+0.0540i	0.7143+0.0511i	0.7132+0.0536i	0.8118+0.1686i	0.8115+0.1610i	0.7093+0.1637i	0.7099+0.1570i
25	0.8167+0.0476i	0.8301+0.0596i	0.7280+0.0514i	0.7263+0.0640i	0.8267+0.1863i	0.8324+0.1581i	0.7321+0.1829i	0.7299+0.1621i
25,5	0.7861+0.0463i	0.7641+0.0537i	0.6712+0.0428i	0.6775+0.0570i	0.7796+0.1574i	0.7610+0.1390i	0.6803+0.1757i	0.6806+0.1462i
26	0.8256+0.0420i	0.6508+0.0265i	0.7670+0.0378i	0.7001+0.0587i	0.8174+0.1879i	0.8223+0.1559i	0.7337+0.1934i	0.7270+0.1387i
26,5	0.8065+0.0845i	0.8269+0.0473i	0.7329+0.0868i	0.7278+0.0424i	0.8099+0.1836i	0.8587+0.1711i	0.7310+0.1812i	1.0723+0.1473i
27	0.7854+0.0273i	0.7838+0.0820i	0.6971+0.0252i	0.6977+0.0837i	0.7918+0.2254i	0.7850+0.1575i	0.7135+0.2418i	0.7115+0.1638i
27,5	0.7633+0.0268i	0.7892+0.0699i	0.6869+0.0273i	0.6979+0.0911i	0.8189+0.2114i	0.8022+0.1410i	0.7337+0.2230i	0.7228+0.1574i
28	0.8172+0.0455i	0.7772+0.1040i	0.7246+0.0275i	0.7114+0.0993i	0.8716+0.1301i	0.8012+0.1702i	0.7245+0.2595i	0.7276+0.1914i
SNR / w	w112	w113	w114	w115	w116	w117	w118	w119
7	1.1271+0.6205i	1.0808+0.5881i	1.2526+0.3664i	1.1913+0.3588i	1.0808+0.5881i	1.0491+0.5667i	1.1913+0.3587i	1.1501+0.3534i
7,5	1.0665+0.6142i	1.0864+0.6299i	1.1971+0.3221i	1.2209+0.3258i	1.0228+0.5795i	1.0368+0.5905i	1.1403+0.3159i	1.1573+0.3187i
8	1.1464+0.2943i	1.1611+0.2957i	1.1529+0.2954i	1.1672+0.2968i	1.0173+0.5998i	1.0290+0.6091i	1.0233+0.6042i	1.0347+0.6133i
8,5	1.2312+0.2867i	1.2451+0.2877i	1.2391+0.2872i	1.2519+0.2881i	1.0818+0.6707i	1.0923+0.6793i	1.0878+0.6753i	1.0973+0.6832i
9	0.5353+0.2922i	0.5413+0.2956i	0.5413+0.2956i	0.5474+0.2991i	0.5413+0.2956i	0.5473+0.2991i	0.5473+0.2991i	0.5535+0.3027i
9,5	0.5607+0.3037i	0.5644+0.3060i	0.5644+0.3060i	0.5681+0.3084i	0.5644+0.3060i	0.5681+0.3084i	0.5681+0.3084i	0.5720+0.3109i
10	0.5781+0.3144i	0.5806+0.3161i	0.5806+0.3161i	0.5832+0.3180i	0.5805+0.3161i	0.5831+0.3180i	0.5831+0.3179i	0.5858+0.3199i
10,5	0.5888+0.3260i	0.5924+0.3278i	0.5887+0.3284i	0.5924+0.3304i	0.5897+0.3267i	0.5933+0.3287i	0.5896+0.3292i	0.5933+0.3313i
11	0.8362+0.5682i	0.8396+0.5605i	0.8338+0.5733i	0.8370+0.5656i	0.8407+0.5616i	0.8443+0.5539i	0.8380+0.5665i	0.8415+0.5587i
11,5	0.8262+0.5716i	0.8288+0.5633i	0.8228+0.5791i	0.8251+0.5706i	0.8312+0.5658i	0.8340+0.5575i	0.8274+0.5731i	0.8301+0.5647i
12	0.8158+0.5811i	0.8175+0.5713i	0.8109+0.5929i	0.8120+0.5827i	0.8208+0.5758i	0.8228+0.5662i	0.8153+0.5873i	0.8168+0.5773i
12,5	0.8160+0.5091i	0.8140+0.5060i	0.8170+0.5003i	0.8151+0.4972i	0.8328+0.5009i	0.8310+0.4977i	0.8348+0.4922i	0.8331+0.4891i
13	0.6223+0.3855i	0.6230+0.3847i	0.6258+0.3838i	0.6266+0.3830i	0.6167+0.3885i	0.6174+0.3877i	0.6199+0.3868i	0.6207+0.3860i
13,5	0.8010+0.4716i	0.7981+0.4631i	0.8032+0.4694i	0.8004+0.4609i	0.8150+0.4579i	0.8124+0.4496i	0.8178+0.4560i	0.8152+0.4479i
14	0.7987+0.4468i	0.7994+0.4500i	0.7989+0.4460i	0.7995+0.4492i	0.8002+0.4139i	0.8004+0.4163i	0.8004+0.4133i	0.8007+0.4156i
14,5	0.7899+0.4426i	0.7897+0.4445i	0.7895+0.4425i	0.7894+0.4444i	0.7939+0.4038i	0.7936+0.4049i	0.7937+0.4038i	0.7933+0.4049i
15	0.6482+0.3385i	0.6485+0.3406i	0.6408+0.3379i	0.6411+0.3399i	0.6471+0.3248i	0.6473+0.3270i	0.6396+0.3242i	0.6398+0.3264i
15,5	0.6364+0.3307i	0.6364+0.3312i	0.6280+0.3306i	0.6280+0.3310i	0.6363+0.3155i	0.6363+0.3160i	0.6276+0.3154i	0.6276+0.3158i
16	0.6024+0.3411i	0.6029+0.3433i	0.5938+0.3407i	0.5943+0.3429i	0.6008+0.3226i	0.6013+0.3247i	0.5920+0.3221i	0.5925+0.3242i
16,5	0.5946+0.3627i	0.5945+0.3655i	0.5859+0.3627i	0.5859+0.3655i	0.5942+0.3404i	0.5942+0.3430i	0.5857+0.3404i	0.5857+0.3430i
17	0.5905+0.3659i	0.5905+0.3693i	0.5822+0.3661i	0.5821+0.3695i	0.5900+0.3378i	0.5899+0.3407i	0.5819+0.3380i	0.5818+0.3409i
17,5	0.5844+0.3706i	0.5843+0.3741i	0.5781+0.3710i	0.5780+0.3745i	0.5839+0.3342i	0.5838+0.3368i	0.5778+0.3346i	0.5777+0.3372i
18	0.5758+0.3767i	0.5758+0.3795i	0.5729+0.3774i	0.5727+0.3801i	0.5761+0.3265i	0.5759+0.3281i	0.5730+0.3269i	0.5729+0.3284i
18,5	0.5265+0.4134i	0.5272+0.4148i	0.5224+0.4146i	0.5232+0.4160i	0.5135+0.3275i	0.5139+0.3278i	0.5088+0.3282i	0.5092+0.3285i
19	0.5245+0.4303i	0.5250+0.4311i	0.5231+0.4307i	0.5235+0.4315i	0.5030+0.3257i	0.5031+0.3257i	0.5006+0.3262i	0.5007+0.3262i
19,5	0.5260+0.4439i	0.5262+0.4443i	0.5265+0.4436i	0.5267+0.4440i	0.4975+0.3267i	0.4974+0.3265i	0.4968+0.3268i	0.4967+0.3266i
20	0.6102+0.4287i	0.6098+0.4287i	0.6168+0.4307i	0.6164+0.4307i	0.6323+0.3097i	0.6321+0.3096i	0.6383+0.3111i	0.6381+0.3109i
20,5	0.5630+0.4391i	0.5628+0.4386i	0.5703+0.4388i	0.5701+0.4383i	0.5506+0.3133i	0.5504+0.3132i	0.5559+0.3138i	0.5557+0.3137i
21	0.5566+0.4235i	0.5569+0.4223i	0.5678+0.4236i	0.5682+0.4224i	0.5580+0.2987i	0.5581+0.2985i	0.5692+0.2987i	0.5694+0.2985i
21,5	0.5599+0.4356i	0.5604+0.4340i	0.5771+0.4373i	0.5776+0.4358i	0.5700+0.3071i	0.5700+0.3072i	0.5846+0.3087i	0.5845+0.3087i
22	0.5524+0.4223i	0.5523+0.4171i	0.5726+0.4218i	0.5725+0.4167i	0.5552+0.2931i	0.5549+0.2938i	0.5770+0.2941i	0.5765+0.2947i
22,5	0.5501+0.4327i	0.5505+0.4273i	0.5776+0.4340i	0.5797+0.4290i	0.5554+0.3038i	0.5546+0.3048i	0.5808+0.3053i	0.5808+0.3059i
23	0.5419+0.4334i	0.5491+0.4208i	0.5902+0.4367i	0.5845+0.4207i	0.5479+0.2974i	0.5495+0.3006i	0.5887+0.2964i	0.5873+0.2996i
23,5	0.5420+0.4303i	0.5423+0.4132i	0.5947+0.4316i	0.5945+0.4140i	0.5432+0.2928i	0.5435+0.2980i	0.5939+0.2937i	0.5940+0.2990i
24	0.5281+0.4273i	0.5287+0.3983i	0.5871+0.4265i	0.5877+0.3978i	0.5310+0.2798i	0.5310+0.2903i	0.5922+0.2794i	0.5917+0.2898i
24,5	0.5365+0.4381i	0.5382+0.3853i	0.5982+0.4418i	0.6015+0.3864i	0.5370+0.2654i	0.5375+0.2877i	0.6082+0.2642i	0.6073+0.2878i
25	0.5453+0.4454i	0.5502+0.3898i	0.6234+0.4539i	0.6307+0.3941i	0.5562+0.2716i	0.5549+0.3013i	0.6389+0.2737i	0.6372+0.3073i
25,5	0.5461+0.4689i	0.5406+0.4028i	0.6279+0.4619i	0.6209+0.3959i	0.5286+0.2713i	0.5338+0.3241i	0.6051+0.2663i	0.6111+0.3180i
26	0.5698+0.4829i	0.5665+0.4039i	0.6267+0.4766i	0.6435+0.4035i	0.5791+0.2819i	0.5732+0.3319i	0.6629+0.2838i	0.6557+0.3430i
26,5	0.5542+0.5035i	0.5680+0.4220i	0.6136+0.5202i	0.6338+0.4274i	0.5765+0.2788i	0.5763+0.3431i	0.6576+0.2694i	0.6479+0.3478i
27	0.5772+0.4729i	0.6966+0.5064i	0.6313+0.4262i	0.6900+0.4641i	0.5461+0.2809i	0.5401+0.3444i	0.6216+0.3057i	0.5842+0.3465i
27,5	0.5441+0.4997i	0.7312+0.5058i	0.6103+0.4784i	0.6785+0.4286i	0.5678+0.2914i	0.5691+0.3548i	0.6493+0.2928i	0.6423+0.3564i
28	0.5732+0.4753i	0.7131+0.5308i	0.6412+0.4359i	0.6970+0.4732i	0.5488+0.2953i	0.5454+0.3628i	0.6317+0.3194i	0.5938+0.3612i

SNR / w	w120	w121	w122	w123	w124	w125	w126	w127
7	1.0808+0.5881i	1.0491+0.5667i	1.1913+0.3587i	1.1501+0.3534i	1.0491+0.5667i	1.0254+0.5511i	1.1501+0.3534i	1.1196+0.3494i
7,5	1.0230+0.5797i	1.0371+0.5907i	1.1405+0.3160i	1.1576+0.3188i	0.9947+0.5573i	1.0053+0.5656i	1.1037+0.3118i	1.1167+0.3141i
8	1.0940+0.2899i	1.1040+0.2908i	1.1001+0.2908i	1.1101+0.2918i	0.9770+0.5659i	0.9849+0.5722i	0.9822+0.5699i	0.9902+0.5761i
8,5	1.0784+0.2744i	1.0861+0.2749i	1.0858+0.2748i	1.0936+0.2753i	0.9593+0.5682i	0.9652+0.5731i	0.9651+0.5727i	0.9711+0.5778i
9	0.5413+0.2956i	0.5474+0.2991i	0.5473+0.2991i	0.5535+0.3027i	0.5473+0.2991i	0.5535+0.3027i	0.5535+0.3027i	0.5598+0.3064i
9,5	0.5644+0.3060i	0.5681+0.3084i	0.5681+0.3084i	0.5720+0.3109i	0.5681+0.3084i	0.5720+0.3108i	0.5720+0.3108i	0.5760+0.3134i
10	0.5806+0.3161i	0.5832+0.3180i	0.5831+0.3180i	0.5859+0.3199i	0.5831+0.3179i	0.5858+0.3199i	0.5858+0.3199i	0.5887+0.3219i
10,5	0.5913+0.3270i	0.5950+0.3290i	0.5911+0.3295i	0.5950+0.3315i	0.5920+0.3278i	0.5959+0.3298i	0.5920+0.3303i	0.5958+0.3324i
11	0.8443+0.5601i	0.8480+0.5524i	0.8415+0.5651i	0.8452+0.5572i	0.8489+0.5533i	0.8529+0.5456i	0.8460+0.5582i	0.8499+0.5503i
11,5	0.8363+0.5641i	0.8394+0.5559i	0.8323+0.5715i	0.8352+0.5630i	0.8416+0.5583i	0.8450+0.5501i	0.8374+0.5654i	0.8405+0.5570i
12	0.8293+0.5710i	0.8318+0.5615i	0.8231+0.5824i	0.8251+0.5725i	0.8349+0.5657i	0.8377+0.5564i	0.8282+0.5769i	0.8306+0.5671i
12,5	0.8267+0.5267i	0.8246+0.5236i	0.8275+0.5167i	0.8255+0.5135i	0.8430+0.5170i	0.8413+0.5138i	0.8450+0.5071i	0.8434+0.5039i
13	0.6274+0.3840i	0.6283+0.3833i	0.6312+0.3825i	0.6321+0.3817i	0.6214+0.3868i	0.6222+0.3860i	0.6249+0.3853i	0.6257+0.3845i
13,5	0.8242+0.5023i	0.8205+0.4921i	0.8269+0.4990i	0.8233+0.4889i	0.8404+0.4843i	0.8376+0.4743i	0.8438+0.4813i	0.8413+0.4715i
14	0.8712+0.4811i	0.8729+0.4867i	0.8713+0.4801i	0.8730+0.4856i	0.8755+0.4382i	0.8763+0.4418i	0.8758+0.4374i	0.8766+0.4409i
14,5	0.8682+0.4800i	0.8686+0.4839i	0.8676+0.4796i	0.8679+0.4835i	0.8762+0.4289i	0.8756+0.4308i	0.8755+0.4287i	0.8749+0.4306i
15	0.7345+0.3408i	0.7347+0.3433i	0.7199+0.3420i	0.7202+0.3445i	0.7346+0.3257i	0.7346+0.3283i	0.7193+0.3270i	0.7195+0.3297i
15,5	0.7191+0.3378i	0.7191+0.3385i	0.7002+0.3402i	0.7002+0.3409i	0.7226+0.3239i	0.7225+0.3246i	0.7028+0.3259i	0.7028+0.3266i
16	0.6878+0.3344i	0.6881+0.3366i	0.6675+0.3375i	0.6681+0.3398i	0.6876+0.3177i	0.6880+0.3200i	0.6666+0.3203i	0.6672+0.3226i
16,5	0.6909+0.3639i	0.6910+0.3666i	0.6696+0.3629i	0.6697+0.3657i	0.6898+0.3412i	0.6898+0.3437i	0.6688+0.3403i	0.6688+0.3429i
17	0.6985+0.3671i	0.6986+0.3705i	0.6741+0.3660i	0.6741+0.3694i	0.6963+0.3383i	0.6964+0.3411i	0.6723+0.3376i	0.6724+0.3404i
17,5	0.7101+0.3713i	0.7102+0.3748i	0.6848+0.3703i	0.6848+0.3739i	0.7068+0.3336i	0.7068+0.3362i	0.6820+0.3332i	0.6819+0.3358i
18	0.7225+0.3783i	0.7224+0.3812i	0.6978+0.3773i	0.6976+0.3802i	0.7190+0.3261i	0.7188+0.3279i	0.6952+0.3258i	0.6949+0.3275i
18,5	0.6455+0.3772i	0.6481+0.3787i	0.6230+0.3842i	0.6255+0.3855i	0.6262+0.3121i	0.6283+0.3127i	0.6018+0.3152i	0.6039+0.3156i
19	0.6603+0.3804i	0.6622+0.3812i	0.6392+0.3891i	0.6412+0.3899i	0.6291+0.3011i	0.6306+0.3011i	0.6052+0.3058i	0.6065+0.3057i
19,5	0.6720+0.3896i	0.6730+0.3895i	0.6528+0.3983i	0.6538+0.3984i	0.6318+0.2959i	0.6327+0.2955i	0.6099+0.3013i	0.6107+0.3008i
20	0.7951+0.4711i	0.7968+0.4708i	0.7604+0.4631i	0.7614+0.4629i	0.8152+0.3382i	0.8178+0.3382i	0.7845+0.3329i	0.7862+0.3328i
20,5	0.7474+0.4196i	0.7475+0.4185i	0.7127+0.4246i	0.7128+0.4238i	0.7230+0.2996i	0.7239+0.2992i	0.6939+0.3019i	0.6944+0.3016i
21	0.7489+0.4249i	0.7477+0.4241i	0.7038+0.4243i	0.7036+0.4235i	0.7501+0.3007i	0.7486+0.3006i	0.7057+0.2998i	0.7053+0.2996i
21,5	0.7659+0.4492i	0.7653+0.4481i	0.7088+0.4469i	0.7087+0.4459i	0.7665+0.3225i	0.7666+0.3222i	0.7166+0.3187i	0.7166+0.3187i
22	0.7592+0.4279i	0.7613+0.4253i	0.6981+0.4242i	0.6993+0.4208i	0.7662+0.3017i	0.7669+0.3019i	0.7039+0.2985i	0.7043+0.2987i
22,5	0.7685+0.4465i	0.7656+0.4385i	0.7007+0.4413i	0.6994+0.4354i	0.7660+0.3091i	0.7667+0.3123i	0.7023+0.3090i	0.7027+0.3113i
23	0.7782+0.4301i	0.7839+0.4157i	0.6975+0.4436i	0.7082+0.4208i	0.7769+0.2994i	0.7743+0.2977i	0.7007+0.2978i	0.6927+0.2994i
23,5	0.7984+0.4234i	0.7931+0.4034i	0.7006+0.4317i	0.7002+0.4120i	0.7957+0.2964i	0.7948+0.3000i	0.6978+0.2933i	0.6983+0.2990i
24	0.7750+0.4250i	0.7798+0.3969i	0.6858+0.4247i	0.6867+0.3966i	0.7814+0.2774i	0.7870+0.2866i	0.6913+0.2777i	0.6908+0.2880i
24,5	0.7755+0.4408i	0.7713+0.3997i	0.6867+0.4431i	0.6891+0.3906i	0.7962+0.2783i	0.7862+0.2937i	0.7010+0.2666i	0.6990+0.2890i
25	0.7995+0.4820i	0.8171+0.4128i	0.7102+0.4660i	0.7219+0.4003i	0.8339+0.2736i	0.8318+0.3245i	0.7325+0.2751i	0.7307+0.3150i
25,5	0.8154+0.4444i	0.8041+0.3748i	0.7181+0.4538i	0.7090+0.3874i	0.7836+0.2479i	0.7852+0.2984i	0.6906+0.2579i	0.6979+0.3074i
26	0.7109+0.5267i	0.7933+0.4911i	0.6853+0.4989i	0.7434+0.4295i	0.8119+0.2687i	0.8144+0.3360i	0.7394+0.2759i	0.7571+0.3617i
26,5	0.7330+0.5364i	0.7626+0.4705i	0.6735+0.5353i	0.7029+0.4406i	0.8089+0.2759i	0.7900+0.3695i	0.7325+0.2706i	0.7251+0.3586i
27	0.8413+0.5029i	0.8110+0.4476i	0.6888+0.3768i	0.7429+0.4148i	0.8225+0.2737i	0.8412+0.3609i	0.7112+0.3146i	0.7703+0.3556i
27,5	0.8444+0.5124i	0.7991+0.4492i	0.6182+0.4719i	0.7216+0.4137i	0.8351+0.2795i	0.8172+0.3610i	0.7372+0.2864i	0.7394+0.3488i
28	0.8115+0.5747i	0.9164+0.3766i	0.7047+0.3807i	0.7428+0.4237i	0.9347+0.2772i	0.8627+0.3189i	0.7327+0.3199i	0.8033+0.3671i
SNR / w	w128	w129	w130	w131	w132	w133	w134	w135
7	0.2432+0.4011i	0.2525+0.4221i	0.2272+0.3910i	0.2342+0.4126i	0.2525+0.4221i	0.2619+0.4435i	0.2342+0.4126i	0.2412+0.4349i
7,5	0.2367+0.3922i	0.2339+0.3863i	0.2184+0.3826i	0.2164+0.3766i	0.2511+0.4241i	0.2483+0.4180i	0.2285+0.4157i	0.2265+0.4092i
8	0.2099+0.3771i	0.2085+0.3725i	0.2104+0.3787i	0.2090+0.3740i	0.2288+0.3849i	0.2268+0.3805i	0.2295+0.3865i	0.2275+0.3821i
8,5	0.1990+0.3669i	0.1982+0.3643i	0.1989+0.3665i	0.1981+0.3639i	0.2164+0.3714i	0.2153+0.3689i	0.2162+0.3711i	0.2151+0.3686i
9	0.3931+2.0687i	0.3040+1.5215i	0.3041+1.5229i	0.2910+1.4126i	0.3041+1.5228i	0.2910+1.4125i	0.2910+1.4132i	0.2856+1.3605i
9,5	0.4001+2.0659i	0.3016+1.5257i	0.3016+1.5258i	0.2875+1.4332i	0.3016+1.5258i	0.2875+1.4333i	0.2875+1.4333i	0.2812+1.3887i
10	0.4076+2.0613i	0.3008+1.5251i	0.3009+1.5260i	0.2854+1.4439i	0.3010+1.5264i	0.2854+1.4441i	0.2855+1.4446i	0.2778+1.4049i
10,5	0.4367+2.0633i	0.3005+1.5094i	0.3029+1.5315i	0.2844+1.4518i	0.3040+1.5269i	0.2846+1.4477i	0.2859+1.4594i	0.2751+1.4187i

11	0.1494+0.2794i	0.1491+0.2793i	0.1494+0.2796i	0.1492+0.2795i	0.1491+0.2800i	0.1489+0.2799i	0.1492+0.2802i	0.1489+0.2801i
11,5	0.1448+0.2782i	0.1446+0.2783i	0.1448+0.2784i	0.1446+0.2784i	0.1444+0.2788i	0.1443+0.2789i	0.1445+0.2790i	0.1443+0.2790i
12	0.1409+0.2742i	0.1408+0.2744i	0.1409+0.2742i	0.1409+0.2743i	0.1406+0.2747i	0.1405+0.2749i	0.1406+0.2747i	0.1405+0.2748i
12,5	0.1266+0.3806i	0.1266+0.3807i	0.1265+0.3813i	0.1265+0.3816i	0.1262+0.3776i	0.1263+0.3776i	0.1261+0.3785i	0.1262+0.3785i
13	0.7072+1.7916i	0.3938+1.5314i	0.5480+1.7046i	0.3789+1.5583i	0.1788+1.2746i	0.2019+1.3171i	0.1788+1.2821i	0.2017+1.3295i
13,5	0.1168+0.4370i	0.1167+0.4372i	0.1167+0.4370i	0.1167+0.4373i	0.1170+0.4368i	0.1167+0.4371i	0.1169+0.4369i	0.1167+0.4372i
14	0.1145+0.4656i	0.1144+0.4656i	0.1144+0.4659i	0.1144+0.4659i	0.1159+0.4649i	0.1158+0.4647i	0.1158+0.4652i	0.1158+0.4650i
14,5	0.1109+0.4810i	0.1109+0.4814i	0.1108+0.4802i	0.1108+0.4806i	0.1131+0.4803i	0.1131+0.4806i	0.1130+0.4795i	0.1130+0.4799i
15	0.1056+0.9359i	0.1124+0.9319i	0.1059+0.9343i	0.1126+0.9306i	0.1535+0.8799i	0.1588+0.8829i	0.1539+0.8792i	0.1591+0.8822i
15,5	0.1056+0.9315i	0.1084+0.9228i	0.1058+0.9329i	0.1081+0.9234i	0.1623+0.8851i	0.1624+0.8825i	0.1617+0.8853i	0.1619+0.8828i
16	0.1058+1.1536i	0.1425+1.1390i	0.1046+1.1774i	0.1441+1.1547i	0.1505+0.9551i	0.1644+0.9651i	0.1525+0.9539i	0.1662+0.9643i
16,5	0.0972+1.5339i	0.1106+1.2543i	0.1342+1.7892i	0.1133+1.2044i	0.1131+0.9179i	0.1140+0.9832i	0.1125+0.9230i	0.1130+0.9917i
17	0.0983+1.5325i	0.1103+1.2481i	0.1311+1.7918i	0.1113+1.1997i	0.1114+0.9132i	0.1127+0.9800i	0.1106+0.9189i	0.1114+0.9914i
17,5	0.0987+1.5243i	0.1100+1.2413i	0.1257+1.7839i	0.1102+1.1944i	0.1094+0.9108i	0.1113+0.9793i	0.1084+0.9168i	0.1100+0.9928i
18	0.1006+1.5247i	0.1086+1.2380i	0.1242+1.7780i	0.1086+1.1943i	0.1047+0.9115i	0.1072+0.9814i	0.1036+0.9168i	0.1055+0.9946i
18,5	0.0767+1.5118i	0.0870+1.3422i	0.1944+2.0287i	0.0901+1.2929i	0.0882+1.0338i	0.0871+1.1051i	0.0880+1.0401i	0.0878+1.1201i
19	0.0744+1.4981i	0.0851+1.3326i	0.1794+2.0056i	0.0874+1.2840i	0.0808+1.0377i	0.0815+1.1045i	0.0808+1.0442i	0.0824+1.1207i
19,5	0.0752+1.5337i	0.0911+1.3077i	0.1184+1.4863i	0.0999+1.3236i	0.0762+1.0493i	0.0807+1.1327i	0.0762+1.0466i	0.0799+1.1251i
20	0.1316+1.8965i	0.0695+1.0750i	0.0714+1.3185i	0.0721+1.1636i	0.0702+0.7887i	0.0676+0.8645i	0.0704+0.7833i	0.0683+0.8425i
20,5	0.0626+1.4912i	0.0683+1.1894i	0.0906+1.3933i	0.0705+1.2277i	0.0649+0.9392i	0.0669+1.0314i	0.0652+0.9365i	0.0665+1.0198i
21	0.0566+1.3765i	0.0634+1.2157i	0.1312+1.8435i	0.0646+1.1619i	0.0641+0.9098i	0.0643+1.0069i	0.0640+0.9105i	0.0645+1.0250i
21,5	0.0769+1.6079i	0.0600+1.1808i	0.0696+1.4311i	0.0605+1.2664i	0.0589+0.8932i	0.0594+1.0467i	0.0589+0.8984i	0.0594+1.0150i
22	0.0510+1.3552i	0.0609+1.2217i	0.1064+1.8045i	0.0551+1.1486i	0.0635+0.8941i	0.0605+0.9972i	0.0633+0.8921i	0.0583+1.0193i
22,5	0.0791+1.6235i	0.0595+1.1619i	0.0601+1.4463i	0.0547+1.2748i	0.0584+0.8865i	0.0596+1.0378i	0.0616+0.8930i	0.0611+0.9993i
23	0.0749+1.6355i	0.0569+1.1877i	0.0706+1.4379i	0.0637+1.3045i	0.0532+0.8809i	0.0510+1.0772i	0.0502+0.9016i	0.0557+1.0136i
23,5	0.0477+1.8317i	0.0474+1.1599i	0.0728+1.4375i	0.0610+1.3181i	0.0574+0.8705i	0.0537+1.0431i	0.0579+0.8886i	0.0564+0.9856i
24	0.0878+1.7221i	0.0632+1.2393i	0.0735+1.5241i	0.0421+1.3702i	0.0570+0.9140i	0.0611+1.1293i	0.0580+0.9491i	0.0593+1.0507i
24,5	0.0895+1.7536i	0.0613+1.3638i	0.0760+1.5470i	0.0501+1.2243i	0.0488+0.9067i	0.0467+1.0086i	0.0503+0.8690i	0.0466+1.1053i
25	0.0931+1.7166i	0.0566+1.3482i	0.0751+1.5225i	0.0462+1.2117i	0.0474+0.9022i	0.0455+0.9995i	0.0493+0.8602i	0.0444+1.0970i
25,5	0.0758+1.6507i	0.0505+1.3310i	0.0710+1.4902i	0.0549+1.2097i	0.0438+0.9415i	0.0377+1.0346i	0.0846+0.9291i	0.0622+1.1023i
26	0.0601+1.4639i	0.0558+1.3274i	0.1068+1.6195i	0.0328+1.1706i	0.0577+0.8856i	0.0286+0.8791i	0.0642+0.9670i	0.0431+1.0429i
26,5	0.0683+1.5203i	0.0701+1.3841i	0.0850+1.6726i	0.0362+1.2588i	0.0544+0.9100i	0.0513+0.9841i	0.0324+1.1232i	0.0576+1.0610i
27	0.0637+1.4870i	0.0530+1.3497i	0.0764+1.6418i	0.0536+1.2353i	0.0420+0.9016i	0.0378+0.9756i	0.0444+1.1113i	0.0805+1.0397i
27,5	0.0628+1.3974i	0.0561+1.2894i	0.0641+1.5359i	0.1283+1.2196i	0.0408+0.9054i	0.0369+0.9810i	0.0341+1.1435i	0.0589+1.0577i
28	0.0586+1.3727i	0.1555+1.3034i	0.0663+1.5122i	0.1473+1.1900i	0.0359+0.9236i	0.0375+1.0235i	0.0402+1.2339i	0.0477+1.1266i
SNR / w	w136	w137	w138	w139	w140	w141	w142	w143
7	0.2525+0.4221i	0.2619+0.4435i	0.2342+0.4126i	0.2412+0.4349i	0.2619+0.4435i	0.2713+0.4647i	0.2412+0.4349i	0.2480+0.4575i
7,5	0.2511+0.4239i	0.2483+0.4178i	0.2284+0.4154i	0.2265+0.4091i	0.2660+0.4564i	0.2632+0.4504i	0.2382+0.4502i	0.2364+0.4437i
8	0.2240+0.4267i	0.2227+0.4217i	0.2245+0.4286i	0.2232+0.4237i	0.2505+0.4321i	0.2484+0.4275i	0.2514+0.4340i	0.2493+0.4294i
8,5	0.2304+0.4931i	0.2299+0.4905i	0.2304+0.4932i	0.2299+0.4907i	0.2713+0.4866i	0.2703+0.4845i	0.2715+0.4869i	0.2704+0.4847i
9	0.3041+1.5230i	0.2910+1.4126i	0.2910+1.4133i	0.2856+1.3605i	0.2910+1.4133i	0.2856+1.3605i	0.2857+1.3610i	0.2826+1.3275i
9,5	0.3016+1.5258i	0.2875+1.4333i	0.2875+1.4333i	0.2812+1.3887i	0.2875+1.4334i	0.2812+1.3887i	0.2812+1.3888i	0.2772+1.3604i
10	0.3009+1.5258i	0.2854+1.4438i	0.2854+1.4442i	0.2778+1.4046i	0.2855+1.4445i	0.2778+1.4048i	0.2778+1.4051i	0.2727+1.3797i
10,5	0.3088+1.5285i	0.2879+1.4482i	0.2887+1.4599i	0.2777+1.4184i	0.2897+1.4565i	0.2785+1.4165i	0.2789+1.4242i	0.2710+1.3975i
11	0.1491+0.2739i	0.1489+0.2738i	0.1492+0.2741i	0.1489+0.2739i	0.1489+0.2745i	0.1487+0.2743i	0.1489+0.2746i	0.1487+0.2745i
11,5	0.1444+0.2735i	0.1443+0.2735i	0.1445+0.2736i	0.1443+0.2736i	0.1441+0.2740i	0.1439+0.2741i	0.1442+0.2742i	0.1440+0.2742i
12	0.1405+0.2707i	0.1404+0.2708i	0.1405+0.2707i	0.1405+0.2708i	0.1402+0.2711i	0.1401+0.2713i	0.1402+0.2711i	0.1401+0.2713i
12,5	0.1262+0.3796i	0.1262+0.3797i	0.1263+0.3804i	0.1261+0.3806i	0.1257+0.3766i	0.1258+0.3767i	0.1256+0.3775i	0.1258+0.3775i
13	0.2783+2.0929i	0.2668+1.5463i	0.2047+1.8160i	0.2333+1.6150i	0.1672+1.2855i	0.1823+1.3309i	0.1657+1.2954i	0.1790+1.3480i
13,5	0.1163+0.4358i	0.1164+0.4362i	0.1163+0.4360i	0.1161+0.4363i	0.1165+0.4359i	0.1164+0.4362i	0.1166+0.4360i	0.1164+0.4362i
14	0.1149+0.4656i	0.1147+0.4660i	0.1147+0.4660i	0.1145+0.4663i	0.1161+0.4654i	0.1160+0.4652i	0.1160+0.4657i	0.1160+0.4655i
14,5	0.1119+0.4818i	0.1118+0.4822i	0.1118+0.4811i	0.1117+0.4815i	0.1141+0.4811i	0.1141+0.4815i	0.1140+0.4804i	0.1140+0.4807i
15	0.1053+0.9370i	0.1119+0.9327i	0.1054+0.9355i	0.1121+0.9316i	0.1523+0.8806i	0.1575+0.8834i	0.1526+0.8799i	0.1578+0.8827i

15,5	0.1090+0.9477i	0.1117+0.9380i	0.1081+0.9489i	0.1115+0.9387i	0.1648+0.8964i	0.1651+0.8938i	0.1642+0.8964i	0.1648+0.8940i
16	0.1060+1.1603i	0.1451+1.1426i	0.1035+1.1864i	0.1458+1.1581i	0.1532+0.9560i	0.1675+0.9668i	0.1551+0.9549i	0.1692+0.9660i
16,5	0.1003+1.4730i	0.1093+1.2631i	0.2016+2.0694i	0.1121+1.2101i	0.1144+0.9162i	0.1144+0.9798i	0.1137+0.9212i	0.1134+0.9885i
17	0.0998+1.4730i	0.1102+1.2591i	0.2013+2.0723i	0.1118+1.2060i	0.1155+0.9112i	0.1159+0.9756i	0.1146+0.9168i	0.1146+0.9873i
17,5	0.0988+1.4659i	0.1118+1.2543i	0.1973+2.0632i	0.1132+1.2013i	0.1179+0.9087i	0.1187+0.9742i	0.1168+0.9145i	0.1171+0.9879i
18	0.0991+1.4625i	0.1137+1.2538i	0.1977+2.0538i	0.1157+1.2020i	0.1198+0.9092i	0.1211+0.9760i	0.1187+0.9144i	0.1191+0.9891i
18,5	0.1910+1.5579i	0.2343+1.3492i	0.1431+1.7701i	0.2372+1.2959i	0.1903+1.0249i	0.2028+1.0935i	0.1913+1.0317i	0.2073+1.1122i
19	0.2005+1.5419i	0.2412+1.3402i	0.1377+1.7502i	0.2448+1.2861i	0.2102+1.0261i	0.2201+1.0924i	0.2112+1.0332i	0.2243+1.1127i
19,5	0.1545+1.7181i	0.2624+1.2819i	0.2850+1.5423i	0.2677+1.3192i	0.2188+1.0340i	0.2341+1.1147i	0.2183+1.0300i	0.2300+1.1024i
20	0.0990+1.6597i	0.0805+1.0463i	0.0744+1.4636i	0.0837+1.0822i	0.1213+0.7996i	0.1017+0.8881i	0.1224+0.7937i	0.1070+0.8657i
20,5	0.1248+1.6210i	0.1954+1.1793i	0.2104+1.4066i	0.1960+1.2212i	0.1870+0.9338i	0.1923+1.0261i	0.1871+0.9310i	0.1910+1.0110i
21	0.1464+1.4100i	0.1799+1.2274i	0.0916+1.6132i	0.1856+1.1690i	0.1854+0.9091i	0.1864+1.0088i	0.1851+0.9093i	0.1871+1.0292i
21,5	0.1329+1.8110i	0.1785+1.1792i	0.1881+1.4135i	0.1836+1.2632i	0.1683+0.8921i	0.1728+1.0462i	0.1686+0.8974i	0.1721+1.0147i
22	0.0760+1.4947i	0.1660+1.1960i	0.1932+1.6270i	0.1685+1.1538i	0.1859+0.8977i	0.1821+1.0141i	0.1865+0.8951i	0.1795+1.0305i
22,5	0.1993+1.7519i	0.1777+1.1663i	0.1733+1.4310i	0.1704+1.2820i	0.1786+0.8829i	0.1775+1.0391i	0.1776+0.8916i	0.1776+0.9980i
23	0.0964+1.7933i	0.1763+1.1862i	0.1993+1.4336i	0.1869+1.2930i	0.1572+0.8847i	0.1678+1.0712i	0.1582+0.9015i	0.1592+1.0127i
23,5	0.2224+1.7477i	0.1587+1.1598i	0.0786+1.6259i	0.1644+1.2701i	0.1723+0.8716i	0.1654+1.0555i	0.1712+0.8911i	0.1690+0.9911i
24	0.2059+1.3214i	0.1962+1.2278i	0.2073+1.4403i	0.2541+1.5814i	0.1734+0.9105i	0.1853+1.1204i	0.1736+0.9440i	0.1790+1.0453i
24,5	0.3255+1.7591i	0.1702+1.3294i	0.2212+1.6117i	0.1562+1.2055i	0.1514+0.9059i	0.1398+1.0100i	0.1508+0.8749i	0.1427+1.0977i
25	0.3472+1.7040i	0.1573+1.3131i	0.2161+1.5686i	0.1468+1.1983i	0.1475+0.9016i	0.1353+1.0028i	0.1463+0.8662i	0.1358+1.0939i
25,5	0.2337+1.6652i	0.2321+1.1730i	0.2083+1.5062i	0.1547+1.2132i	0.2051+0.9488i	0.2157+1.0645i	0.1608+0.9436i	0.1497+1.0697i
26	0.3076+1.5930i	0.1352+1.2642i	0.2100+1.4742i	0.1117+1.1707i	0.1697+0.9111i	0.1855+1.0551i	0.1491+0.9425i	0.1223+1.0684i
26,5	0.2675+1.6286i	0.1335+1.3004i	0.2245+1.4893i	0.1429+1.2032i	0.1579+0.9322i	0.1592+1.0119i	0.1815+0.8811i	0.1547+1.1064i
27	0.2178+1.5591i	0.1947+1.1461i	0.1887+1.4107i	0.1532+1.2458i	0.2220+0.9109i	0.2132+1.0386i	0.1577+0.9120i	0.1514+1.0025i
27,5	0.2076+1.6180i	0.2354+1.1287i	0.1770+1.4782i	0.1619+1.1335i	0.2094+0.9195i	0.2160+1.0223i	0.1473+0.9211i	0.1402+1.0282i
28	0.2491+1.5678i	0.2319+1.0829i	0.1797+1.4545i	0.1551+1.0959i	0.2134+0.9134i	0.2284+0.9984i	0.1399+0.9185i	0.1422+1.0060i
SNR / w	w144	w145	w146	w147	w148	w149	w150	w151
7	0.2525+0.4221i	0.2619+0.4435i	0.2342+0.4126i	0.2412+0.4348i	0.2619+0.4435i	0.2713+0.4647i	0.2412+0.4348i	0.2479+0.4574i
7,5	0.2513+0.4244i	0.2484+0.4183i	0.2286+0.4160i	0.2266+0.4095i	0.2662+0.4568i	0.2634+0.4509i	0.2383+0.4507i	0.2365+0.4442i
8	0.2240+0.4267i	0.2227+0.4218i	0.2245+0.4287i	0.2232+0.4237i	0.2505+0.4321i	0.2484+0.4276i	0.2514+0.4340i	0.2493+0.4295i
8,5	0.2064+0.3933i	0.2057+0.3906i	0.2064+0.3930i	0.2056+0.3903i	0.2278+0.3968i	0.2267+0.3942i	0.2277+0.3965i	0.2266+0.3939i
9	0.2618+1.0415i	0.2624+1.0473i	0.2624+1.0473i	0.2630+1.0525i	0.2624+1.0473i	0.2630+1.0525i	0.2630+1.0525i	0.2636+1.0574i
9,5	0.2524+1.0125i	0.2530+1.0217i	0.2530+1.0217i	0.2536+1.0306i	0.2530+1.0217i	0.2536+1.0306i	0.2536+1.0306i	0.2541+1.0391i
10	0.2433+0.9970i	0.2438+1.0074i	0.2438+1.0074i	0.2442+1.0178i	0.2437+1.0074i	0.2442+1.0178i	0.2442+1.0177i	0.2446+1.0280i
10,5	0.2311+0.9897i	0.2322+1.0020i	0.2318+0.9994i	0.2329+1.0119i	0.2311+1.0009i	0.2323+1.0133i	0.2318+1.0108i	0.2329+1.0234i
11	0.1607+0.2901i	0.1604+0.2899i	0.1608+0.2903i	0.1605+0.2901i	0.1605+0.2906i	0.1602+0.2904i	0.1605+0.2908i	0.1602+0.2906i
11,5	0.1583+0.2884i	0.1581+0.2884i	0.1584+0.2886i	0.1581+0.2886i	0.1580+0.2889i	0.1577+0.2889i	0.1580+0.2891i	0.1578+0.2891i
12	0.1562+0.2844i	0.1561+0.2845i	0.1562+0.2844i	0.1562+0.2845i	0.1559+0.2848i	0.1558+0.2849i	0.1559+0.2848i	0.1558+0.2849i
12,5	0.1580+0.3710i	0.1581+0.3711i	0.1580+0.3717i	0.1581+0.3718i	0.1567+0.3687i	0.1569+0.3688i	0.1567+0.3694i	0.1569+0.3694i
13	0.1601+0.8827i	0.1636+0.8806i	0.1610+0.8820i	0.1644+0.8799i	0.1512+0.9526i	0.1562+0.9507i	0.1525+0.9512i	0.1575+0.9493i
13,5	0.1620+0.4114i	0.1620+0.4112i	0.1619+0.4113i	0.1619+0.4112i	0.1612+0.4108i	0.1611+0.4108i	0.1611+0.4108i	0.1610+0.4107i
14	0.1673+0.4232i	0.1673+0.4233i	0.1671+0.4231i	0.1671+0.4232i	0.1678+0.4238i	0.1678+0.4239i	0.1676+0.4238i	0.1676+0.4239i
14,5	0.1680+0.4311i	0.1681+0.4314i	0.1676+0.4303i	0.1678+0.4306i	0.1689+0.4325i	0.1690+0.4328i	0.1685+0.4317i	0.1686+0.4320i
15	0.1381+0.6099i	0.1379+0.6086i	0.1381+0.6103i	0.1380+0.6090i	0.1481+0.6282i	0.1476+0.6267i	0.1482+0.6286i	0.1478+0.6271i
15,5	0.1372+0.6177i	0.1367+0.6175i	0.1370+0.6175i	0.1365+0.6173i	0.1488+0.6354i	0.1480+0.6350i	0.1486+0.6352i	0.1478+0.6347i
16	0.1223+0.6329i	0.1225+0.6298i	0.1224+0.6329i	0.1226+0.6297i	0.1296+0.7103i	0.1294+0.7052i	0.1301+0.7098i	0.1299+0.7047i
16,5	0.1108+0.5909i	0.1107+0.5818i	0.1105+0.5901i	0.1104+0.5812i	0.1109+0.6863i	0.1109+0.6635i	0.1106+0.6847i	0.1106+0.6619i
17	0.1091+0.5877i	0.1090+0.5791i	0.1083+0.5868i	0.1083+0.5784i	0.1090+0.6939i	0.1092+0.6686i	0.1084+0.6916i	0.1085+0.6661i
17,5	0.1062+0.5825i	0.1062+0.5758i	0.1053+0.5817i	0.1053+0.5752i	0.1064+0.7053i	0.1065+0.6793i	0.1055+0.7026i	0.1056+0.6765i
18	0.1019+0.5736i	0.1018+0.5702i	0.1010+0.5731i	0.1011+0.5699i	0.1017+0.7168i	0.1020+0.6919i	0.1011+0.7146i	0.1013+0.6897i
18,5	0.0947+0.6528i	0.0946+0.6558i	0.0943+0.6532i	0.0942+0.6561i	0.0922+0.8528i	0.0923+0.8295i	0.0917+0.8499i	0.0918+0.8270i
19	0.0847+0.6717i	0.0847+0.6751i	0.0845+0.6722i	0.0845+0.6756i	0.0813+0.8687i	0.0813+0.8470i	0.0812+0.8654i	0.0812+0.8441i
19,5	0.0757+0.6851i	0.0756+0.6901i	0.0757+0.6848i	0.0756+0.6898i	0.0735+0.8794i	0.0737+0.8534i	0.0737+0.8809i	0.0738+0.8547i

20	0.0686+0.4781i	0.0686+0.4794i	0.0686+0.4778i	0.0686+0.4791i	0.0682+0.6251i	0.0678+0.6017i	0.0683+0.6286i	0.0678+0.6045i
20,5	0.0632+0.6006i	0.0633+0.6066i	0.0633+0.6007i	0.0634+0.6067i	0.0637+0.7844i	0.0634+0.7543i	0.0639+0.7852i	0.0636+0.7551i
21	0.0611+0.5724i	0.0612+0.5842i	0.0611+0.5727i	0.0613+0.5845i	0.0626+0.7680i	0.0622+0.7244i	0.0626+0.7665i	0.0622+0.7238i
21,5	0.0581+0.5423i	0.0579+0.5609i	0.0581+0.5424i	0.0579+0.5612i	0.0579+0.7552i	0.0575+0.6953i	0.0579+0.7545i	0.0575+0.6947i
22	0.0596+0.5614i	0.0598+0.5810i	0.0590+0.5615i	0.0592+0.5812i	0.0620+0.7657i	0.0612+0.7080i	0.0614+0.7649i	0.0606+0.7080i
22,5	0.0584+0.5488i	0.0584+0.5743i	0.0591+0.5489i	0.0586+0.5732i	0.0587+0.7669i	0.0581+0.6974i	0.0607+0.7647i	0.0597+0.6962i
23	0.0586+0.5292i	0.0581+0.5612i	0.0598+0.5274i	0.0563+0.5591i	0.0536+0.7603i	0.0550+0.6782i	0.0510+0.7607i	0.0511+0.6758i
23,5	0.0581+0.5297i	0.0584+0.5731i	0.0577+0.5298i	0.0580+0.5727i	0.0574+0.7665i	0.0573+0.6810i	0.0572+0.7620i	0.0569+0.6795i
24	0.0547+0.5332i	0.0548+0.6013i	0.0555+0.5329i	0.0556+0.6011i	0.0559+0.8129i	0.0551+0.7019i	0.0566+0.8015i	0.0559+0.7038i
24,5	0.0572+0.5231i	0.0570+0.5849i	0.0605+0.5230i	0.0600+0.5847i	0.0535+0.7638i	0.0565+0.6783i	0.0545+0.7749i	0.0591+0.6771i
25	0.0525+0.5122i	0.0529+0.5825i	0.0624+0.5123i	0.0612+0.5826i	0.0515+0.7571i	0.0540+0.6722i	0.0541+0.7704i	0.0600+0.6700i
25,5	0.0438+0.5661i	0.0416+0.6480i	0.0669+0.5658i	0.0677+0.6466i	0.0422+0.8329i	0.0420+0.7408i	0.0806+0.8359i	0.0735+0.7378i
26	0.0362+0.5516i	0.0352+0.6211i	0.0930+0.5503i	0.0944+0.6214i	0.0501+0.7778i	0.0354+0.7025i	0.0941+0.7686i	0.0950+0.6968i
26,5	0.0319+0.5344i	0.0328+0.6243i	0.0702+0.5348i	0.0709+0.6199i	0.0401+0.8246i	0.0334+0.7183i	0.0928+0.7983i	0.0787+0.7149i
27	0.0308+0.5613i	0.0315+0.6418i	0.0874+0.5600i	0.0899+0.6395i	0.0368+0.8194i	0.0314+0.7259i	0.0953+0.8062i	0.0929+0.7245i
27,5	0.0313+0.5647i	0.0315+0.6436i	0.0920+0.5643i	0.0922+0.6441i	0.0347+0.8220i	0.0302+0.7280i	0.0933+0.8100i	0.0920+0.7282i
28	0.0301+0.5655i	0.0298+0.6462i	0.0886+0.5661i	0.0881+0.6466i	0.0319+0.8305i	0.0282+0.7314i	0.0870+0.8145i	0.0878+0.7323i
SNR / w	w152	w153	w154	w155	w156	w157	w158	w159
7	0.2619+0.4435i	0.2713+0.4647i	0.2412+0.4348i	0.2479+0.4574i	0.2713+0.4647i	0.2806+0.4854i	0.2480+0.4574i	0.2544+0.4799i
7,5	0.2662+0.4566i	0.2633+0.4507i	0.2383+0.4505i	0.2365+0.4440i	0.2811+0.4883i	0.2784+0.4828i	0.2473+0.4856i	0.2457+0.4793i
8	0.2370+0.4793i	0.2359+0.4745i	0.2376+0.4816i	0.2365+0.4767i	0.2733+0.4797i	0.2713+0.4755i	0.2744+0.4818i	0.2724+0.4776i
8,5	0.2361+0.5224i	0.2357+0.5201i	0.2362+0.5228i	0.2358+0.5204i	0.2846+0.5120i	0.2837+0.5101i	0.2849+0.5124i	0.2839+0.5105i
9	0.2624+1.0473i	0.2630+1.0525i	0.2630+1.0525i	0.2636+1.0574i	0.2630+1.0525i	0.2636+1.0574i	0.2636+1.0574i	0.2641+1.0618i
9,5	0.2530+1.0217i	0.2536+1.0306i	0.2536+1.0306i	0.2541+1.0391i	0.2536+1.0306i	0.2541+1.0391i	0.2541+1.0391i	0.2546+1.0473i
10	0.2438+1.0074i	0.2442+1.0178i	0.2442+1.0178i	0.2446+1.0281i	0.2442+1.0177i	0.2446+1.0280i	0.2446+1.0280i	0.2450+1.0381i
10,5	0.2319+1.0008i	0.2332+1.0132i	0.2327+1.0107i	0.2338+1.0233i	0.2320+1.0123i	0.2332+1.0248i	0.2327+1.0223i	0.2338+1.0348i
11	0.1599+0.2848i	0.1596+0.2846i	0.1599+0.2849i	0.1596+0.2848i	0.1596+0.2853i	0.1594+0.2851i	0.1597+0.2854i	0.1594+0.2853i
11,5	0.1573+0.2839i	0.1571+0.2839i	0.1574+0.2840i	0.1572+0.2840i	0.1570+0.2844i	0.1568+0.2844i	0.1571+0.2845i	0.1569+0.2845i
12	0.1553+0.2810i	0.1552+0.2811i	0.1553+0.2810i	0.1552+0.2811i	0.1549+0.2814i	0.1548+0.2815i	0.1550+0.2814i	0.1549+0.2815i
12,5	0.1571+0.3702i	0.1573+0.3702i	0.1571+0.3709i	0.1573+0.3709i	0.1559+0.3679i	0.1560+0.3679i	0.1559+0.3685i	0.1560+0.3686i
13	0.1633+0.8858i	0.1669+0.8838i	0.1642+0.8851i	0.1678+0.8832i	0.1550+0.9567i	0.1603+0.9551i	0.1563+0.9553i	0.1616+0.9537i
13,5	0.1615+0.4108i	0.1615+0.4106i	0.1614+0.4107i	0.1614+0.4106i	0.1607+0.4102i	0.1606+0.4102i	0.1606+0.4102i	0.1605+0.4101i
14	0.1678+0.4230i	0.1678+0.4231i	0.1676+0.4230i	0.1676+0.4231i	0.1683+0.4237i	0.1682+0.4238i	0.1681+0.4236i	0.1680+0.4237i
14,5	0.1701+0.4313i	0.1702+0.4316i	0.1698+0.4306i	0.1699+0.4308i	0.1709+0.4328i	0.1710+0.4331i	0.1706+0.4320i	0.1707+0.4323i
15	0.1373+0.6092i	0.1372+0.6080i	0.1373+0.6096i	0.1372+0.6083i	0.1469+0.6274i	0.1465+0.6259i	0.1471+0.6278i	0.1466+0.6263i
15,5	0.1384+0.6125i	0.1380+0.6123i	0.1382+0.6123i	0.1378+0.6121i	0.1489+0.6298i	0.1482+0.6293i	0.1487+0.6295i	0.1480+0.6291i
16	0.1241+0.6313i	0.1243+0.6282i	0.1242+0.6313i	0.1244+0.6282i	0.1312+0.7076i	0.1310+0.7024i	0.1317+0.7071i	0.1315+0.7020i
16,5	0.1134+0.5912i	0.1133+0.5821i	0.1131+0.5905i	0.1130+0.5815i	0.1133+0.6869i	0.1135+0.6643i	0.1130+0.6853i	0.1132+0.6626i
17	0.1149+0.5881i	0.1148+0.5794i	0.1142+0.5871i	0.1141+0.5787i	0.1146+0.6946i	0.1149+0.6695i	0.1140+0.6924i	0.1142+0.6670i
17,5	0.1169+0.5827i	0.1169+0.5761i	0.1160+0.5819i	0.1160+0.5754i	0.1168+0.7059i	0.1170+0.6801i	0.1159+0.7033i	0.1161+0.6773i
18	0.1201+0.5738i	0.1203+0.5704i	0.1194+0.5733i	0.1194+0.5701i	0.1194+0.7174i	0.1198+0.6926i	0.1185+0.7151i	0.1190+0.6905i
18,5	0.1261+0.6514i	0.1263+0.6542i	0.1257+0.6518i	0.1258+0.6545i	0.1534+0.8468i	0.1490+0.8240i	0.1522+0.8438i	0.1480+0.8214i
19	0.1413+0.6673i	0.1419+0.6706i	0.1411+0.6679i	0.1417+0.6711i	0.1774+0.8589i	0.1727+0.8373i	0.1765+0.8556i	0.1719+0.8344i
19,5	0.1567+0.6782i	0.1576+0.6830i	0.1566+0.6780i	0.1574+0.6828i	0.1909+0.8673i	0.1867+0.8427i	0.1916+0.8693i	0.1872+0.8443i
20	0.1757+0.4875i	0.1755+0.4889i	0.1759+0.4872i	0.1755+0.4887i	0.1519+0.6347i	0.1556+0.6115i	0.1513+0.6382i	0.1552+0.6142i
20,5	0.1739+0.5993i	0.1742+0.6054i	0.1739+0.5993i	0.1742+0.6055i	0.1808+0.7804i	0.1800+0.7512i	0.1811+0.7818i	0.1802+0.7521i
21	0.1726+0.5702i	0.1731+0.5822i	0.1727+0.5704i	0.1731+0.5824i	0.1790+0.7664i	0.1772+0.7218i	0.1791+0.7650i	0.1773+0.7213i
21,5	0.1683+0.5442i	0.1675+0.5618i	0.1684+0.5444i	0.1676+0.5620i	0.1651+0.7531i	0.1644+0.6953i	0.1652+0.7523i	0.1645+0.6947i
22	0.1765+0.5584i	0.1768+0.5788i	0.1767+0.5582i	0.1772+0.5786i	0.1816+0.7648i	0.1800+0.7050i	0.1821+0.7650i	0.1803+0.7052i
22,5	0.1729+0.5462i	0.1731+0.5689i	0.1726+0.5474i	0.1727+0.5693i	0.1751+0.7579i	0.1723+0.6943i	0.1733+0.7570i	0.1705+0.6941i
23	0.1722+0.5345i	0.1685+0.5741i	0.1700+0.5329i	0.1707+0.5712i	0.1661+0.7700i	0.1682+0.6855i	0.1665+0.7688i	0.1708+0.6849i
23,5	0.1764+0.5322i	0.1757+0.5752i	0.1749+0.5326i	0.1740+0.5753i	0.1734+0.7666i	0.1748+0.6823i	0.1720+0.7634i	0.1728+0.6825i
24	0.1680+0.5324i	0.1679+0.5984i	0.1651+0.5324i	0.1652+0.5983i	0.1701+0.8091i	0.1686+0.6995i	0.1680+0.7988i	0.1663+0.7015i

24,5	0.1802+0.5229i	0.1785+0.5882i	0.1734+0.5229i	0.1723+0.5880i	0.1686+0.7746i	0.1738+0.6831i	0.1623+0.7828i	0.1688+0.6814i
25	0.1816+0.5127i	0.1789+0.5856i	0.1653+0.5129i	0.1653+0.5854i	0.1672+0.7680i	0.1731+0.6769i	0.1580+0.7784i	0.1632+0.6743i
25,5	0.1867+0.5642i	0.1899+0.6415i	0.1514+0.5651i	0.1527+0.6436i	0.2004+0.8274i	0.1939+0.7293i	0.1615+0.8311i	0.1553+0.7315i
26	0.2234+0.5457i	0.2245+0.6191i	0.1645+0.5475i	0.1657+0.6192i	0.1857+0.8119i	0.2191+0.7001i	0.1638+0.7891i	0.1706+0.6989i
26,5	0.1889+0.5296i	0.1889+0.6067i	0.1371+0.5320i	0.1410+0.6135i	0.2034+0.7668i	0.1936+0.6930i	0.1697+0.8030i	0.1474+0.6948i
27	0.2121+0.5552i	0.2127+0.6337i	0.1515+0.5573i	0.1534+0.6358i	0.2191+0.8143i	0.2146+0.7189i	0.1560+0.8180i	0.1570+0.7210i
27,5	0.2181+0.5647i	0.2174+0.6442i	0.1553+0.5644i	0.1553+0.6440i	0.2141+0.8228i	0.2166+0.7312i	0.1515+0.8243i	0.1561+0.7276i
28	0.2101+0.5674i	0.2108+0.6469i	0.1492+0.5671i	0.1491+0.6469i	0.2083+0.8201i	0.2103+0.7318i	0.1448+0.8276i	0.1494+0.7302i
SNR / w	w160	w161	w162	w163	w164	w165	w166	w167
7	0.2525+0.4221i	0.2619+0.4435i	0.2342+0.4126i	0.2412+0.4348i	0.2619+0.4435i	0.2713+0.4647i	0.2412+0.4348i	0.2479+0.4574i
7,5	0.2513+0.4243i	0.2485+0.4182i	0.2286+0.4159i	0.2266+0.4094i	0.2663+0.4567i	0.2634+0.4508i	0.2384+0.4506i	0.2365+0.4440i
8	0.2240+0.4267i	0.2227+0.4217i	0.2245+0.4286i	0.2232+0.4236i	0.2505+0.4321i	0.2483+0.4275i	0.2514+0.4340i	0.2492+0.4294i
8,5	0.2065+0.3934i	0.2057+0.3906i	0.2064+0.3931i	0.2057+0.3903i	0.2278+0.3968i	0.2267+0.3942i	0.2277+0.3966i	0.2266+0.3940i
9	1.1715+1.7495i	0.8627+1.3080i	0.8633+1.3089i	0.7951+1.2187i	0.8634+1.3090i	0.7952+1.2188i	0.7955+1.2192i	0.7621+1.1765i
9,5	1.1695+1.7496i	0.8657+1.3031i	0.8657+1.3031i	0.8103+1.2261i	0.8658+1.3033i	0.8104+1.2262i	0.8104+1.2262i	0.7834+1.1893i
10	1.1664+1.7479i	0.8645+1.2962i	0.8650+1.2969i	0.8180+1.2275i	0.8656+1.2977i	0.8182+1.2279i	0.8185+1.2282i	0.7958+1.1944i
10,5	1.1809+1.7123i	0.8481+1.2650i	0.8882+1.3009i	0.8207+1.2141i	0.8705+1.2926i	0.8124+1.2139i	0.8339+1.2290i	0.8014+1.1879i
11	0.1849+0.6438i	0.1832+0.6445i	0.1851+0.6436i	0.1834+0.6443i	0.1840+0.6437i	0.1823+0.6444i	0.1842+0.6435i	0.1825+0.6442i
11,5	0.1751+0.6584i	0.1739+0.6589i	0.1753+0.6580i	0.1741+0.6585i	0.1742+0.6587i	0.1730+0.6593i	0.1744+0.6584i	0.1732+0.6589i
12	0.1650+0.6665i	0.1645+0.6667i	0.1653+0.6660i	0.1647+0.6663i	0.1642+0.6674i	0.1637+0.6677i	0.1645+0.6670i	0.1639+0.6673i
12,5	0.1657+0.7373i	0.1664+0.7371i	0.1659+0.7415i	0.1665+0.7414i	0.1730+0.7293i	0.1734+0.7294i	0.1731+0.7342i	0.1736+0.7342i
13	0.7692+1.3337i	0.6988+1.2828i	0.7182+1.2796i	0.6679+1.2607i	0.6659+1.1379i	0.6326+1.1480i	0.6532+1.1323i	0.6218+1.1450i
13,5	0.1622+0.7730i	0.1641+0.7721i	0.1622+0.7802i	0.1641+0.7792i	0.1748+0.7628i	0.1766+0.7625i	0.1752+0.7705i	0.1770+0.7704i
14	0.1586+0.7792i	0.1581+0.7762i	0.1577+0.7868i	0.1570+0.7842i	0.1972+0.7688i	0.1959+0.7655i	0.1972+0.7766i	0.1959+0.7735i
14,5	0.1510+0.7940i	0.1511+0.7895i	0.1476+0.8065i	0.1477+0.8022i	0.2035+0.7802i	0.2025+0.7758i	0.2024+0.7910i	0.2013+0.7866i
15	0.1501+1.2522i	0.2587+1.1907i	0.1554+1.2559i	0.2589+1.1981i	0.4017+0.9534i	0.3990+0.9943i	0.4031+0.9503i	0.3992+0.9902i
15,5	0.1257+1.2731i	0.1875+1.2747i	0.1228+1.2749i	0.1841+1.2766i	0.4128+0.9511i	0.4095+0.9686i	0.4134+0.9504i	0.4102+0.9676i
16	0.1921+1.5489i	0.3864+1.3049i	0.2042+1.4748i	0.3684+1.3253i	0.4254+0.9408i	0.4268+0.9886i	0.4252+0.9353i	0.4242+0.9783i
16,5	0.2958+1.5189i	0.3464+1.2494i	0.3869+1.6973i	0.3623+1.2204i	0.3504+0.9145i	0.3515+0.9774i	0.3525+0.9180i	0.3529+0.9844i
17	0.2880+1.5187i	0.3469+1.2449i	0.3847+1.7131i	0.3630+1.2154i	0.3535+0.9107i	0.3537+0.9752i	0.3564+0.9146i	0.3557+0.9841i
17,5	0.2810+1.5145i	0.3489+1.2391i	0.3774+1.7181i	0.3651+1.2097i	0.3588+0.9078i	0.3578+0.9748i	0.3622+0.9120i	0.3599+0.9853i
18	0.2793+1.5139i	0.3515+1.2341i	0.3797+1.7225i	0.3661+1.2067i	0.3630+0.9083i	0.3612+0.9766i	0.3661+0.9121i	0.3631+0.9861i
18,5	0.6224+1.5379i	0.5759+1.3142i	0.6038+1.8517i	0.5605+1.2517i	0.4794+0.9742i	0.5006+1.0392i	0.4827+0.9819i	0.5083+1.0631i
19	0.6136+1.5287i	0.5785+1.3124i	0.6082+1.8229i	0.5656+1.2442i	0.5024+0.9694i	0.5206+1.0374i	0.5048+0.9772i	0.5276+1.0642i
19,5	0.5093+1.8272i	0.5718+1.2403i	0.5904+1.5365i	0.5797+1.3019i	0.5194+0.9720i	0.5389+1.0616i	0.5176+0.9666i	0.5341+1.0394i
20	0.3901+1.8592i	0.2655+1.0853i	0.2151+1.3209i	0.2464+1.1466i	0.3479+0.8465i	0.3266+0.9221i	0.3489+0.8418i	0.3316+0.9053i
20,5	0.3779+1.6732i	0.4566+1.1811i	0.4323+1.4599i	0.4535+1.2331i	0.4626+0.9226i	0.4625+1.0226i	0.4602+0.9198i	0.4607+1.0041i
21	0.4425+1.4246i	0.4497+1.2508i	0.4339+1.6179i	0.4486+1.1809i	0.4409+0.9051i	0.4459+1.0172i	0.4398+0.9033i	0.4455+1.0429i
21,5	0.4335+1.8289i	0.4421+1.1662i	0.4338+1.4210i	0.4422+1.2638i	0.4036+0.8851i	0.4226+1.0373i	0.4030+0.8909i	0.4137+1.0009i
22	0.4811+1.5692i	0.4285+1.2414i	0.4113+1.4351i	0.4373+1.2159i	0.4323+0.9018i	0.4341+1.0375i	0.4284+0.8977i	0.4339+1.0572i
22,5	0.4404+1.7644i	0.4091+1.1667i	0.4579+1.4331i	0.4310+1.2944i	0.4199+0.8806i	0.4141+1.0322i	0.4123+0.8894i	0.4086+0.9927i
23	0.4242+1.7554i	0.4248+1.1691i	0.4472+1.4475i	0.4330+1.2938i	0.4215+0.8941i	0.4122+1.0484i	0.4042+0.9066i	0.3988+1.0072i
23,5	0.3933+1.5893i	0.4100+1.1638i	0.4356+1.4074i	0.4278+1.2731i	0.4283+0.8857i	0.4150+1.0457i	0.4074+0.8987i	0.3988+1.0007i
24	0.4643+1.6633i	0.4653+1.1815i	0.4746+1.4795i	0.4874+1.3073i	0.4237+0.8868i	0.4439+1.0768i	0.4137+0.9183i	0.4296+1.0142i
24,5	0.4614+1.3869i	0.4192+1.2422i	0.4295+1.5513i	0.3583+1.1597i	0.4108+0.9173i	0.4097+1.0235i	0.3699+0.9056i	0.3567+1.0552i
25	0.5062+1.5466i	0.3909+1.1806i	0.4561+1.3999i	0.4328+1.2778i	0.3985+0.9191i	0.3847+1.0408i	0.3554+0.9098i	0.3375+1.0392i
25,5	0.4109+1.6213i	0.4201+1.1814i	0.4176+1.4698i	0.4725+1.1133i	0.4845+0.8904i	0.4948+0.9831i	0.4139+0.8984i	0.4391+1.0220i
26	0.5441+1.3586i	0.4659+1.1498i	0.4319+1.4062i	0.4167+1.2626i	0.4195+0.9309i	0.4592+1.0189i	0.3573+0.9441i	0.3828+1.0426i
26,5	0.5122+1.4464i	0.4081+1.1447i	0.4495+1.3429i	0.4100+1.2413i	0.3605+0.9756i	0.3812+1.0530i	0.3762+0.9043i	0.4593+0.9010i
27	0.5155+1.4738i	0.4056+1.2349i	0.4154+1.4035i	0.4713+1.3098i	0.4513+0.9439i	0.4491+1.0353i	0.4185+0.8835i	0.5363+1.0313i
27,5	0.4528+1.4608i	0.3983+1.2179i	0.3506+1.3699i	0.4330+1.3116i	0.4947+0.9196i	0.4801+1.0177i	0.4268+0.9033i	0.5624+1.0275i
28	0.5059+1.4670i	0.5266+1.2312i	0.4108+1.2036i	0.4382+1.3162i	0.4826+1.1077i	0.5122+1.0210i	0.4263+0.9068i	0.4319+0.9952i
SNR / w	w168	w169	w170	w171	w172	w173	w174	w175

7	0.2619+0.4435i	0.2713+0.4647i	0.2412+0.4348i	0.2479+0.4574i	0.2713+0.4647i	0.2806+0.4854i	0.2479+0.4574i	0.2544+0.4799i
7,5	0.2662+0.4565i	0.2634+0.4506i	0.2383+0.4503i	0.2365+0.4438i	0.2811+0.4882i	0.2784+0.4827i	0.2474+0.4854i	0.2458+0.4791i
8	0.2370+0.4792i	0.2359+0.4744i	0.2375+0.4815i	0.2364+0.4766i	0.2733+0.4796i	0.2713+0.4754i	0.2744+0.4817i	0.2723+0.4775i
8,5	0.2361+0.5225i	0.2357+0.5201i	0.2362+0.5228i	0.2358+0.5205i	0.2847+0.5120i	0.2837+0.5101i	0.2849+0.5124i	0.2839+0.5105i
9	0.8634+1.3090i	0.7952+1.2188i	0.7955+1.2192i	0.7621+1.1765i	0.7955+1.2192i	0.7622+1.1765i	0.7624+1.1768i	0.7410+1.1499i
9,5	0.8658+1.3032i	0.8104+1.2262i	0.8104+1.2262i	0.7834+1.1893i	0.8104+1.2262i	0.7834+1.1893i	0.7834+1.1893i	0.7662+1.1658i
10	0.8648+1.2967i	0.8179+1.2274i	0.8181+1.2277i	0.7956+1.1941i	0.8184+1.2281i	0.7957+1.1943i	0.7959+1.1946i	0.7816+1.1728i
10,5	0.8665+1.2986i	0.8085+1.2166i	0.8296+1.2319i	0.7976+1.1890i	0.8193+1.2303i	0.7910+1.1899i	0.8065+1.1994i	0.7855+1.1714i
11	0.1861+0.6426i	0.1844+0.6434i	0.1863+0.6424i	0.1846+0.6431i	0.1852+0.6425i	0.1835+0.6433i	0.1854+0.6423i	0.1837+0.6430i
11,5	0.1771+0.6550i	0.1759+0.6555i	0.1774+0.6546i	0.1762+0.6551i	0.1762+0.6554i	0.1750+0.6559i	0.1764+0.6550i	0.1752+0.6556i
12	0.1675+0.6603i	0.1670+0.6606i	0.1678+0.6598i	0.1673+0.6601i	0.1667+0.6614i	0.1662+0.6617i	0.1670+0.6609i	0.1664+0.6612i
12,5	0.1643+0.7338i	0.1643+0.7348i	0.1639+0.7391i	0.1644+0.7391i	0.1710+0.7264i	0.1715+0.7264i	0.1710+0.7313i	0.1715+0.7314i
13	0.6468+1.1775i	0.6200+1.1863i	0.6352+1.1684i	0.6111+1.1803i	0.6175+1.1079i	0.5934+1.1223i	0.6106+1.1071i	0.5875+1.1220i
13,5	0.1517+0.7725i	0.1545+0.7698i	0.1520+0.7790i	0.1540+0.7775i	0.1651+0.7592i	0.1668+0.7587i	0.1651+0.7670i	0.1669+0.7665i
14	0.1569+0.7776i	0.1563+0.7748i	0.1558+0.7856i	0.1552+0.7829i	0.1944+0.7671i	0.1932+0.7638i	0.1944+0.7750i	0.1931+0.7719i
14,5	0.1491+0.7930i	0.1493+0.7885i	0.1458+0.8056i	0.1459+0.8012i	0.2002+0.7788i	0.1992+0.7743i	0.1992+0.7896i	0.1982+0.7852i
15	0.1550+1.2316i	0.2548+1.1786i	0.1590+1.2356i	0.2552+1.1854i	0.3986+0.9545i	0.3965+0.9938i	0.4000+0.9515i	0.3967+0.9899i
15,5	0.1953+1.1916i	0.2559+1.2146i	0.1919+1.1913i	0.2529+1.2144i	0.3968+0.9983i	0.3991+1.0306i	0.3971+0.9972i	0.3993+1.0293i
16	0.1202+1.5524i	0.3902+1.2699i	0.1458+1.4668i	0.3679+1.2863i	0.4206+0.9517i	0.4279+1.0067i	0.4195+0.9457i	0.4236+0.9953i
16,5	0.3396+1.4835i	0.3411+1.2758i	0.4480+1.5575i	0.3577+1.2417i	0.3299+0.9123i	0.3314+0.9729i	0.3319+0.9159i	0.3329+0.9801i
17	0.3338+1.4825i	0.3376+1.2735i	0.4573+1.5560i	0.3534+1.2359i	0.3285+0.9084i	0.3294+0.9696i	0.3312+0.9124i	0.3314+0.9788i
17,5	0.3287+1.4767i	0.3347+1.2698i	0.4622+1.5494i	0.3496+1.2297i	0.3271+0.9055i	0.3274+0.9683i	0.3299+0.9098i	0.3294+0.9792i
18	0.3273+1.4723i	0.3301+1.2672i	0.4716+1.5416i	0.3419+1.2255i	0.3202+0.9062i	0.3203+0.9707i	0.3223+0.9102i	0.3219+0.9805i
18,5	0.4160+1.5551i	0.4079+1.3496i	0.3930+1.7342i	0.4025+1.2867i	0.3596+1.0023i	0.3708+1.0708i	0.3607+1.0104i	0.3752+1.0942i
19	0.4096+1.5434i	0.4091+1.3422i	0.3868+1.7355i	0.4051+1.2765i	0.3662+1.0014i	0.3772+1.0686i	0.3672+1.0093i	0.3819+1.0940i
19,5	0.1896+1.9476i	0.4173+1.2630i	0.4293+1.5290i	0.4215+1.3193i	0.3722+1.0063i	0.3894+1.0902i	0.3712+1.0007i	0.3841+1.0703i
20	0.2891+1.6189i	0.2191+1.0576i	0.2287+1.4492i	0.2175+1.0907i	0.2614+0.8240i	0.2469+0.9073i	0.2617+0.8185i	0.2501+0.8885i
20,5	0.1559+1.8551i	0.3285+1.1781i	0.3245+1.4116i	0.3282+1.2302i	0.3234+0.9274i	0.3269+1.0213i	0.3234+0.9241i	0.3259+1.0022i
21	0.2900+1.4178i	0.3085+1.2507i	0.2645+1.6046i	0.3133+1.1795i	0.3144+0.9078i	0.3155+1.0127i	0.3140+0.9070i	0.3156+1.0365i
21,5	0.3087+1.6359i	0.3076+1.1747i	0.3096+1.4426i	0.3112+1.2557i	0.2871+0.8893i	0.2967+1.0444i	0.2874+0.8949i	0.2940+1.0120i
22	0.2306+1.3849i	0.2809+1.2390i	0.2905+1.4691i	0.2945+1.1903i	0.3077+0.9017i	0.3084+1.0287i	0.3077+0.8983i	0.3070+1.0448i
22,5	0.3278+1.6041i	0.2970+1.1686i	0.3037+1.4425i	0.2970+1.2912i	0.2937+0.8770i	0.2944+1.0396i	0.2950+0.8870i	0.2951+0.9957i
23	0.2943+1.6238i	0.2952+1.1812i	0.3204+1.4563i	0.3158+1.2876i	0.2767+0.8910i	0.2822+1.0584i	0.2840+0.9009i	0.2794+1.0101i
23,5	0.2662+1.5264i	0.2867+1.1635i	0.2847+1.3880i	0.2871+1.2790i	0.2863+0.8736i	0.2818+1.0582i	0.2905+0.8919i	0.2853+0.9967i
24	0.3157+1.8053i	0.3327+1.2080i	0.3481+1.4263i	0.3796+1.3103i	0.2893+0.9032i	0.3123+1.1027i	0.2959+0.9319i	0.3029+1.0334i
24,5	0.3338+1.3906i	0.2893+1.2934i	0.2719+1.4925i	0.2628+1.1826i	0.2548+0.9166i	0.2364+1.0101i	0.2759+0.8967i	0.2549+1.0649i
25	0.2741+1.3971i	0.2823+1.2733i	0.3404+1.4960i	0.2496+1.1769i	0.2423+0.9140i	0.2246+1.0063i	0.2679+0.8905i	0.2459+1.0740i
25,5	0.3610+1.3165i	0.3191+1.2022i	0.2929+1.4100i	0.2095+1.3211i	0.2809+0.9302i	0.3045+1.0609i	0.3388+0.9217i	0.3581+1.0225i
26	0.2562+1.3168i	0.2416+1.2052i	0.3169+1.4056i	0.3353+1.1847i	0.2478+0.9328i	0.2466+1.0790i	0.2813+0.9406i	0.3161+1.0751i
26,5	0.3891+1.5208i	0.2212+1.3291i	0.3380+1.3952i	0.2946+1.2451i	0.2695+0.9684i	0.2704+1.0530i	0.2713+0.8960i	0.2536+1.1406i
27	0.2908+1.3146i	0.2866+1.2128i	0.3054+1.4311i	0.3265+1.1340i	0.2959+0.9159i	0.3072+1.0000i	0.3513+0.8854i	0.3357+1.0591i
27,5	0.2183+1.3371i	0.2840+1.2244i	0.2932+1.4680i	0.3445+1.1098i	0.2843+0.9156i	0.2866+1.0054i	0.3594+0.9169i	0.3648+1.0180i
28	0.2888+1.3750i	0.2811+1.1589i	0.3632+1.4529i	0.3464+1.0908i	0.2807+0.8996i	0.2837+1.2544i	0.3472+0.9117i	0.3452+1.0021i
SNR / w	w176	w177	w178	w179	w180	w181	w182	w183
7	0.2619+0.4434i	0.2713+0.4647i	0.2412+0.4348i	0.2479+0.4574i	0.2713+0.4647i	0.2806+0.4854i	0.2479+0.4574i	0.2544+0.4799i
7,5	0.2664+0.4570i	0.2636+0.4511i	0.2384+0.4509i	0.2366+0.4443i	0.2813+0.4886i	0.2786+0.4831i	0.2475+0.4859i	0.2459+0.4796i
8	0.2370+0.4792i	0.2359+0.4744i	0.2375+0.4815i	0.2365+0.4767i	0.2733+0.4796i	0.2713+0.4754i	0.2744+0.4818i	0.2724+0.4776i
8,5	0.2140+0.4221i	0.2133+0.4192i	0.2139+0.4219i	0.2132+0.4190i	0.2403+0.4237i	0.2391+0.4211i	0.2402+0.4236i	0.2390+0.4210i
9	0.5517+0.9244i	0.5555+0.9293i	0.5555+0.9293i	0.5590+0.9338i	0.5555+0.9293i	0.5590+0.9338i	0.5590+0.9338i	0.5622+0.9380i
9,5	0.5372+0.8986i	0.5435+0.9058i	0.5435+0.9058i	0.5495+0.9128i	0.5435+0.9058i	0.5495+0.9128i	0.5495+0.9128i	0.5553+0.9194i
10	0.5325+0.8822i	0.5397+0.8901i	0.5397+0.8900i	0.5469+0.8979i	0.5396+0.8900i	0.5468+0.8978i	0.5468+0.8978i	0.5539+0.9055i
10,5	0.5268+0.8717i	0.5361+0.8812i	0.5351+0.8781i	0.5447+0.8876i	0.5340+0.8798i	0.5435+0.8893i	0.5425+0.8862i	0.5520+0.8958i
11	0.2981+0.6050i	0.2952+0.6044i	0.2987+0.6050i	0.2959+0.6043i	0.2965+0.6047i	0.2937+0.6041i	0.2972+0.6047i	0.2943+0.6040i

11,5	0.3089+0.6095i	0.3065+0.6088i	0.3100+0.6094i	0.3076+0.6088i	0.3071+0.6096i	0.3047+0.6089i	0.3082+0.6095i	0.3058+0.6088i
12	0.3154+0.6110i	0.3136+0.6104i	0.3171+0.6110i	0.3153+0.6104i	0.3137+0.6116i	0.3120+0.6109i	0.3154+0.6115i	0.3136+0.6109i
12,5	0.3632+0.6294i	0.3630+0.6299i	0.3604+0.6334i	0.3603+0.6339i	0.3630+0.6305i	0.3628+0.6309i	0.3604+0.6346i	0.3602+0.6350i
13	0.4580+0.8115i	0.4550+0.8134i	0.4568+0.8130i	0.4539+0.8150i	0.4787+0.8362i	0.4747+0.8390i	0.4771+0.8381i	0.4732+0.8410i
13,5	0.3891+0.6244i	0.3879+0.6258i	0.3877+0.6287i	0.3865+0.6302i	0.3833+0.6298i	0.3823+0.6314i	0.3820+0.6347i	0.3810+0.6363i
14	0.4177+0.5936i	0.4181+0.5920i	0.4168+0.5965i	0.4172+0.5948i	0.4075+0.6169i	0.4079+0.6147i	0.4066+0.6211i	0.4070+0.6188i
14,5	0.4264+0.5882i	0.4265+0.5869i	0.4270+0.5902i	0.4271+0.5888i	0.4112+0.6193i	0.4113+0.6171i	0.4115+0.6227i	0.4116+0.6203i
15	0.4077+0.5907i	0.4064+0.5859i	0.4086+0.5913i	0.4072+0.5865i	0.4151+0.6449i	0.4114+0.6359i	0.4163+0.6464i	0.4125+0.6373i
15,5	0.4122+0.5996i	0.4107+0.5966i	0.4136+0.5990i	0.4122+0.5960i	0.4190+0.6599i	0.4160+0.6534i	0.4200+0.6590i	0.4171+0.6526i
16	0.3857+0.6045i	0.3840+0.5992i	0.3870+0.6050i	0.3853+0.5996i	0.3960+0.6869i	0.3914+0.6754i	0.3977+0.6883i	0.3930+0.6768i
16,5	0.3562+0.5904i	0.3560+0.5819i	0.3597+0.5898i	0.3595+0.5814i	0.3550+0.6831i	0.3556+0.6620i	0.3585+0.6815i	0.3591+0.6604i
17	0.3592+0.5876i	0.3587+0.5794i	0.3634+0.5869i	0.3630+0.5788i	0.3580+0.6900i	0.3584+0.6662i	0.3624+0.6879i	0.3628+0.6641i
17,5	0.3633+0.5827i	0.3627+0.5759i	0.3675+0.5821i	0.3668+0.5754i	0.3630+0.6989i	0.3631+0.6738i	0.3674+0.6966i	0.3675+0.6715i
18	0.3686+0.5746i	0.3680+0.5708i	0.3718+0.5743i	0.3712+0.5706i	0.3678+0.7114i	0.3678+0.6873i	0.3716+0.7096i	0.3712+0.6857i
18,5	0.3727+0.6257i	0.3729+0.6272i	0.3747+0.6253i	0.3748+0.6269i	0.4213+0.8029i	0.4146+0.7814i	0.4212+0.7989i	0.4146+0.7778i
19	0.3961+0.6291i	0.3970+0.6316i	0.3972+0.6289i	0.3981+0.6314i	0.4525+0.8056i	0.4452+0.7831i	0.4518+0.8016i	0.4447+0.7797i
19,5	0.4160+0.6331i	0.4175+0.6369i	0.4163+0.6324i	0.4178+0.6363i	0.4728+0.8075i	0.4647+0.7830i	0.4734+0.8100i	0.4653+0.7849i
20	0.4347+0.5371i	0.4342+0.5398i	0.4346+0.5368i	0.4340+0.5394i	0.3935+0.6954i	0.4002+0.6734i	0.3922+0.6980i	0.3992+0.6756i
20,5	0.4336+0.5886i	0.4348+0.5955i	0.4325+0.5884i	0.4337+0.5953i	0.4513+0.7703i	0.4482+0.7385i	0.4494+0.7719i	0.4465+0.7396i
21	0.4216+0.5612i	0.4219+0.5730i	0.4204+0.5615i	0.4207+0.5733i	0.4300+0.7574i	0.4269+0.7104i	0.4292+0.7567i	0.4261+0.7103i
21,5	0.4178+0.5572i	0.4161+0.5694i	0.4137+0.5565i	0.4119+0.5689i	0.4055+0.7444i	0.4068+0.6986i	0.4022+0.7450i	0.4027+0.6983i
22	0.4261+0.5507i	0.4265+0.5734i	0.4221+0.5510i	0.4225+0.5738i	0.4295+0.7653i	0.4287+0.6999i	0.4259+0.7659i	0.4252+0.7003i
22,5	0.4242+0.5509i	0.4246+0.5727i	0.4159+0.5515i	0.4157+0.5732i	0.4206+0.7539i	0.4231+0.6946i	0.4125+0.7506i	0.4151+0.6929i
23	0.4301+0.5423i	0.4270+0.5846i	0.4101+0.5411i	0.4102+0.5829i	0.4195+0.7786i	0.4203+0.6926i	0.4015+0.7826i	0.4017+0.6936i
23,5	0.4342+0.5380i	0.4337+0.5823i	0.4125+0.5369i	0.4121+0.5813i	0.4306+0.7737i	0.4345+0.6883i	0.4114+0.7705i	0.4132+0.6878i
24	0.4240+0.5305i	0.4224+0.5909i	0.3960+0.5305i	0.3944+0.5911i	0.4145+0.7848i	0.4190+0.6893i	0.3922+0.7799i	0.3915+0.6903i
24,5	0.4394+0.5271i	0.4335+0.6041i	0.4041+0.5255i	0.3995+0.6013i	0.4210+0.8001i	0.4255+0.7005i	0.3823+0.8003i	0.3916+0.6976i
25	0.4499+0.5230i	0.4394+0.6025i	0.3970+0.5187i	0.3924+0.5977i	0.4127+0.8016i	0.4248+0.6985i	0.3717+0.7989i	0.3841+0.6928i
25,5	0.4713+0.5531i	0.4766+0.6300i	0.4019+0.5558i	0.4036+0.6329i	0.4825+0.7991i	0.4804+0.7133i	0.4063+0.8041i	0.4045+0.7167i
26	0.4704+0.5396i	0.4557+0.6111i	0.4115+0.5347i	0.4241+0.6454i	0.4123+0.8520i	0.4554+0.8028i	0.3640+0.8375i	0.4184+0.7393i
26,5	0.4616+0.5519i	0.4251+0.6479i	0.3986+0.5420i	0.3877+0.6124i	0.3594+0.7678i	0.3969+0.7243i	0.3707+0.8267i	0.4482+0.8030i
27	0.4932+0.5555i	0.4800+0.6280i	0.4144+0.5520i	0.4124+0.6261i	0.4851+0.7848i	0.4912+0.6997i	0.4214+0.7951i	0.4128+0.7066i
27,5	0.4887+0.5809i	0.4812+0.6491i	0.4174+0.5692i	0.4122+0.6478i	0.4949+0.8030i	0.4972+0.7169i	0.4243+0.8140i	0.4168+0.7278i
28	0.4885+0.5615i	0.4738+0.6399i	0.4131+0.5615i	0.4096+0.6374i	0.4750+0.8030i	0.4772+0.7164i	0.4136+0.8164i	0.4073+0.7216i
SNR / w	w184	w185	w186	w187	w188	w189	w190	w191
7	0.2713+0.4647i	0.2806+0.4854i	0.2479+0.4574i	0.2544+0.4799i	0.2806+0.4854i	0.2896+0.5053i	0.2544+0.4799i	0.2604+0.5019i
7,5	0.2812+0.4884i	0.2786+0.4829i	0.2474+0.4858i	0.2458+0.4794i	0.2955+0.5181i	0.2931+0.5132i	0.2554+0.5197i	0.2541+0.5139i
8	0.2479+0.5301i	0.2471+0.5259i	0.2484+0.5327i	0.2476+0.5284i	0.2956+0.5235i	0.2938+0.5200i	0.2968+0.5258i	0.2951+0.5223i
8,5	0.2413+0.5512i	0.2410+0.5491i	0.2414+0.5518i	0.2411+0.5497i	0.2979+0.5364i	0.2971+0.5347i	0.2983+0.5370i	0.2974+0.5353i
9	0.5555+0.9293i	0.5590+0.9338i	0.5590+0.9338i	0.5622+0.9380i	0.5590+0.9338i	0.5622+0.9380i	0.5622+0.9380i	0.5650+0.9417i
9,5	0.5435+0.9058i	0.5495+0.9128i	0.5495+0.9128i	0.5553+0.9194i	0.5495+0.9128i	0.5553+0.9194i	0.5553+0.9194i	0.5608+0.9257i
10	0.5397+0.8900i	0.5469+0.8979i	0.5468+0.8978i	0.5540+0.9055i	0.5468+0.8978i	0.5539+0.9055i	0.5539+0.9055i	0.5609+0.9130i
10,5	0.5329+0.8801i	0.5425+0.8896i	0.5416+0.8865i	0.5512+0.8961i	0.5404+0.8882i	0.5497+0.8978i	0.5488+0.8947i	0.5583+0.9042i
11	0.2998+0.6028i	0.2969+0.6020i	0.3005+0.6028i	0.2976+0.6020i	0.2982+0.6025i	0.2954+0.6017i	0.2989+0.6024i	0.2960+0.6017i
11,5	0.3108+0.6061i	0.3084+0.6054i	0.3119+0.6061i	0.3095+0.6053i	0.3090+0.6062i	0.3066+0.6055i	0.3101+0.6062i	0.3077+0.6054i
12	0.3165+0.6063i	0.3147+0.6056i	0.3182+0.6064i	0.3164+0.6057i	0.3149+0.6069i	0.3131+0.6062i	0.3165+0.6069i	0.3147+0.6062i
12,5	0.3656+0.6266i	0.3654+0.6270i	0.3627+0.6305i	0.3626+0.6309i	0.3652+0.6276i	0.3650+0.6280i	0.3625+0.6315i	0.3624+0.6320i
13	0.4562+0.8224i	0.4534+0.8246i	0.4551+0.8240i	0.4523+0.8262i	0.4758+0.8486i	0.4719+0.8518i	0.4744+0.8506i	0.4706+0.8539i
13,5	0.3924+0.6164i	0.3911+0.6176i	0.3910+0.6203i	0.3898+0.6216i	0.3860+0.6210i	0.3849+0.6224i	0.3848+0.6254i	0.3837+0.6269i
14	0.4111+0.5935i	0.4113+0.5918i	0.4103+0.5966i	0.4106+0.5948i	0.4021+0.6167i	0.4023+0.6144i	0.4013+0.6210i	0.4016+0.6186i
14,5	0.4171+0.5874i	0.4171+0.5860i	0.4178+0.5895i	0.4178+0.5880i	0.4038+0.6183i	0.4038+0.6160i	0.4042+0.6218i	0.4042+0.6194i
15	0.3970+0.5923i	0.3955+0.5876i	0.3980+0.5929i	0.3964+0.5882i	0.4065+0.6461i	0.4024+0.6373i	0.4078+0.6477i	0.4036+0.6388i
15,5	0.4019+0.5913i	0.4006+0.5888i	0.4035+0.5907i	0.4022+0.5882i	0.4046+0.6408i	0.4021+0.6356i	0.4058+0.6401i	0.4034+0.6348i

16	0.3702+0.6049i	0.3686+0.5999i	0.3715+0.6053i	0.3698+0.6003i	0.3804+0.6848i	0.3759+0.6738i	0.3820+0.6862i	0.3775+0.6751i
16,5	0.3326+0.5909i	0.3324+0.5822i	0.3358+0.5903i	0.3355+0.5817i	0.3320+0.6846i	0.3324+0.6633i	0.3352+0.6830i	0.3356+0.6617i
17	0.3296+0.5883i	0.3292+0.5798i	0.3331+0.5875i	0.3327+0.5792i	0.3295+0.6921i	0.3297+0.6682i	0.3332+0.6901i	0.3332+0.6661i
17,5	0.3243+0.5833i	0.3238+0.5764i	0.3272+0.5827i	0.3267+0.5759i	0.3257+0.7021i	0.3253+0.6769i	0.3289+0.6999i	0.3284+0.6747i
18	0.3168+0.5747i	0.3166+0.5710i	0.3185+0.5745i	0.3182+0.5708i	0.3185+0.7143i	0.3177+0.6904i	0.3204+0.7125i	0.3198+0.6885i
18,5	0.3096+0.6362i	0.3097+0.6383i	0.3106+0.6363i	0.3106+0.6383i	0.3321+0.8252i	0.3289+0.8027i	0.3318+0.8217i	0.3287+0.7995i
19	0.3089+0.6488i	0.3094+0.6516i	0.3092+0.6492i	0.3097+0.6519i	0.3372+0.8347i	0.3330+0.8123i	0.3364+0.8311i	0.3324+0.8092i
19,5	0.3088+0.6585i	0.3095+0.6626i	0.3087+0.6582i	0.3094+0.6623i	0.3401+0.8400i	0.3354+0.8162i	0.3406+0.8427i	0.3357+0.8184i
20	0.3129+0.5095i	0.3125+0.5114i	0.3127+0.5091i	0.3123+0.5111i	0.2873+0.6626i	0.2914+0.6399i	0.2864+0.6656i	0.2907+0.6423i
20,5	0.3059+0.5952i	0.3064+0.6016i	0.3058+0.5953i	0.3063+0.6016i	0.3158+0.7752i	0.3144+0.7460i	0.3158+0.7771i	0.3143+0.7472i
21	0.2980+0.5660i	0.2985+0.5781i	0.2977+0.5661i	0.2982+0.5783i	0.3059+0.7630i	0.3035+0.7167i	0.3057+0.7619i	0.3032+0.7163i
21,5	0.2899+0.5487i	0.2888+0.5640i	0.2900+0.5488i	0.2889+0.5641i	0.2841+0.7493i	0.2838+0.6960i	0.2840+0.7486i	0.2837+0.6954i
22	0.2985+0.5543i	0.2990+0.5760i	0.2988+0.5541i	0.2993+0.5756i	0.3035+0.7637i	0.3022+0.7017i	0.3039+0.7644i	0.3025+0.7020i
22,5	0.2914+0.5479i	0.2905+0.5690i	0.2946+0.5478i	0.2933+0.5687i	0.2916+0.7523i	0.2897+0.6925i	0.2946+0.7487i	0.2929+0.6914i
23	0.2886+0.5361i	0.2888+0.5750i	0.2904+0.5351i	0.2906+0.5778i	0.2842+0.7776i	0.2850+0.6884i	0.2860+0.7767i	0.2917+0.6899i
23,5	0.2930+0.5343i	0.2920+0.5790i	0.2993+0.5345i	0.2986+0.5791i	0.2919+0.7703i	0.2914+0.6852i	0.2982+0.7678i	0.2982+0.6845i
24	0.2788+0.5315i	0.2779+0.5941i	0.2886+0.5314i	0.2875+0.5938i	0.2824+0.8027i	0.2766+0.6945i	0.2887+0.7921i	0.2849+0.6955i
24,5	0.2883+0.5234i	0.2856+0.5937i	0.3044+0.5238i	0.3004+0.5947i	0.2707+0.7847i	0.2797+0.6898i	0.2836+0.7930i	0.2941+0.6900i
25	0.2775+0.5141i	0.2762+0.5902i	0.3082+0.5152i	0.3024+0.5920i	0.2637+0.7785i	0.2724+0.6839i	0.2799+0.7900i	0.2944+0.6840i
25,5	0.2691+0.5602i	0.2701+0.6365i	0.3232+0.5582i	0.3244+0.6346i	0.2749+0.8226i	0.2718+0.7235i	0.3274+0.8149i	0.3244+0.7213i
26	0.2972+0.5451i	0.2990+0.6252i	0.3472+0.5423i	0.3491+0.6333i	0.2628+0.8162i	0.2862+0.7117i	0.2961+0.8194i	0.3367+0.7232i
26,5	0.2596+0.5290i	0.2589+0.5985i	0.3256+0.5326i	0.3154+0.6039i	0.2797+0.7660i	0.2774+0.6887i	0.2816+0.8277i	0.2975+0.6671i
27	0.2766+0.5536i	0.2777+0.6319i	0.3404+0.5532i	0.3419+0.6283i	0.2818+0.8033i	0.2795+0.7152i	0.3469+0.7986i	0.3449+0.7116i
27,5	0.2828+0.5653i	0.2811+0.6456i	0.3483+0.5665i	0.3451+0.6465i	0.2821+0.8240i	0.2808+0.7321i	0.3509+0.8188i	0.3469+0.7317i
28	0.2732+0.5668i	0.2746+0.6455i	0.3392+0.5659i	0.3408+0.6410i	0.2773+0.8163i	0.2760+0.7294i	0.3462+0.8141i	0.3422+0.7259i
SNR / w	w192	w193	w194	w195	w196	w197	w198	w199
7	0.4011+0.2432i	0.4222+0.2525i	0.3911+0.2271i	0.4127+0.2342i	0.4222+0.2525i	0.4436+0.2619i	0.4127+0.2342i	0.4350+0.2412i
7,5	0.3917+0.2367i	0.3856+0.2340i	0.3820+0.2185i	0.3757+0.2165i	0.4236+0.2511i	0.4173+0.2484i	0.4150+0.2286i	0.4083+0.2267i
8	0.3770+0.2099i	0.3724+0.2085i	0.3786+0.2104i	0.3740+0.2090i	0.3849+0.2288i	0.3805+0.2268i	0.3865+0.2295i	0.3820+0.2275i
8,5	0.3668+0.1990i	0.3643+0.1982i	0.3665+0.1989i	0.3639+0.1981i	0.3714+0.2164i	0.3689+0.2153i	0.3711+0.2162i	0.3686+0.2151i
9	0.1828+0.3392i	0.1840+0.3434i	0.1840+0.3434i	0.1852+0.3477i	0.1840+0.3434i	0.1852+0.3477i	0.1852+0.3476i	0.1865+0.3521i
9,5	0.1714+0.3232i	0.1717+0.3242i	0.1717+0.3242i	0.1720+0.3253i	0.1717+0.3242i	0.1720+0.3253i	0.1720+0.3253i	0.1723+0.3263i
10	0.1627+0.3118i	0.1626+0.3114i	0.1626+0.3114i	0.1625+0.3110i	0.1626+0.3114i	0.1625+0.3110i	0.1625+0.3110i	0.1624+0.3106i
10,5	0.1566+0.3029i	0.1561+0.3014i	0.1568+0.3020i	0.1562+0.3006i	0.1565+0.3018i	0.1560+0.3002i	0.1566+0.3009i	0.1561+0.2993i
11	0.3235+0.1537i	0.3234+0.1534i	0.3234+0.1538i	0.3234+0.1535i	0.3234+0.1537i	0.3234+0.1535i	0.3234+0.1538i	0.3234+0.1535i
11,5	0.3203+0.1485i	0.3202+0.1484i	0.3203+0.1486i	0.3201+0.1484i	0.3197+0.1486i	0.3196+0.1485i	0.3197+0.1487i	0.3195+0.1486i
12	0.3266+0.1436i	0.3265+0.1437i	0.3265+0.1436i	0.3263+0.1437i	0.3257+0.1438i	0.3256+0.1438i	0.3255+0.1438i	0.3254+0.1438i
12,5	0.2503+0.1427i	0.2508+0.1426i	0.2504+0.1426i	0.2509+0.1425i	0.2479+0.1423i	0.2485+0.1422i	0.2480+0.1422i	0.2486+0.1421i
13	0.1378+0.2226i	0.1377+0.2227i	0.1376+0.2226i	0.1375+0.2227i	0.1380+0.2202i	0.1379+0.2203i	0.1378+0.2202i	0.1378+0.2203i
13,5	0.2211+0.1336i	0.2211+0.1336i	0.2209+0.1334i	0.2209+0.1334i	0.2210+0.1334i	0.2211+0.1334i	0.2210+0.1332i	0.2209+0.1332i
14	0.2008+0.1322i	0.2007+0.1323i	0.2006+0.1321i	0.2006+0.1321i	0.2010+0.1315i	0.2009+0.1315i	0.2008+0.1313i	0.2008+0.1313i
14,5	0.1933+0.1309i	0.1934+0.1309i	0.1928+0.1308i	0.1930+0.1309i	0.1937+0.1301i	0.1939+0.1301i	0.1933+0.1300i	0.1935+0.1300i
15	0.1209+0.1212i	0.1210+0.1213i	0.1211+0.1212i	0.1211+0.1213i	0.1210+0.1202i	0.1210+0.1203i	0.1212+0.1202i	0.1212+0.1203i
15,5	0.1171+0.1210i	0.1171+0.1212i	0.1171+0.1211i	0.1171+0.1213i	0.1175+0.1209i	0.1175+0.1210i	0.1175+0.1209i	0.1175+0.1211i
16	0.1098+0.1221i	0.1098+0.1218i	0.1098+0.1221i	0.1099+0.1219i	0.1099+0.1246i	0.1099+0.1244i	0.1099+0.1247i	0.1099+0.1244i
16,5	0.1133+0.1113i	0.1133+0.1110i	0.1128+0.1113i	0.1128+0.1110i	0.1132+0.1140i	0.1132+0.1137i	0.1128+0.1139i	0.1128+0.1137i
17	0.1114+0.1096i	0.1114+0.1089i	0.1107+0.1096i	0.1107+0.1088i	0.1113+0.1156i	0.1113+0.1148i	0.1105+0.1155i	0.1106+0.1148i
17,5	0.1088+0.1069i	0.1088+0.1060i	0.1078+0.1068i	0.1078+0.1058i	0.1085+0.1179i	0.1085+0.1169i	0.1076+0.1177i	0.1076+0.1168i
18	0.1035+0.1024i	0.1035+0.1014i	0.1027+0.1022i	0.1028+0.1015i	0.1033+0.1213i	0.1034+0.1204i	0.1026+0.1212i	0.1025+0.1204i
18,5	0.0924+0.0854i	0.0927+0.0854i	0.0919+0.0853i	0.0920+0.0854i	0.0930+0.1782i	0.0932+0.1781i	0.0924+0.1781i	0.0925+0.1780i
19	0.0872+0.0769i	0.0873+0.0769i	0.0866+0.0769i	0.0867+0.0769i	0.0878+0.2029i	0.0879+0.2029i	0.0871+0.2030i	0.0872+0.2029i
19,5	0.0833+0.0748i	0.0833+0.0749i	0.0829+0.0748i	0.0829+0.0749i	0.0835+0.2158i	0.0835+0.2159i	0.0831+0.2159i	0.0831+0.2159i
20	0.0723+0.0768i	0.0722+0.0767i	0.0722+0.0769i	0.0723+0.0766i	0.0721+0.1103i	0.0721+0.1101i	0.0721+0.1103i	0.0721+0.1101i

20,5	0.0636+0.0660i	0.0636+0.0660i	0.0636+0.0660i	0.0636+0.0661i	0.0638+0.1877i	0.0637+0.1878i	0.0639+0.1877i	0.0637+0.1878i
21	0.0606+0.0613i	0.0606+0.0613i	0.0606+0.0613i	0.0606+0.0613i	0.0605+0.1754i	0.0605+0.1755i	0.0605+0.1754i	0.0605+0.1755i
21,5	0.0624+0.0575i	0.0624+0.0575i	0.0624+0.0575i	0.0624+0.0575i	0.0620+0.1650i	0.0619+0.1652i	0.0619+0.1650i	0.0619+0.1652i
22	0.0582+0.0593i	0.0583+0.0588i	0.0583+0.0593i	0.0583+0.0589i	0.0584+0.1757i	0.0583+0.1760i	0.0582+0.1759i	0.0582+0.1760i
22,5	0.0585+0.0597i	0.0588+0.0591i	0.0599+0.0592i	0.0600+0.0587i	0.0601+0.1728i	0.0598+0.1745i	0.0617+0.1728i	0.0628+0.1740i
23	0.0593+0.0508i	0.0615+0.0560i	0.0577+0.0555i	0.0602+0.0560i	0.0617+0.1654i	0.0617+0.1638i	0.0595+0.1630i	0.0526+0.1647i
23,5	0.0580+0.0576i	0.0579+0.0559i	0.0579+0.0572i	0.0579+0.0553i	0.0580+0.1703i	0.0581+0.1710i	0.0589+0.1708i	0.0588+0.1718i
24	0.0562+0.0560i	0.0563+0.0570i	0.0573+0.0559i	0.0574+0.0570i	0.0561+0.1720i	0.0562+0.1685i	0.0571+0.1721i	0.0573+0.1687i
24,5	0.0546+0.0557i	0.0545+0.0581i	0.0578+0.0558i	0.0577+0.0581i	0.0549+0.1741i	0.0548+0.1688i	0.0582+0.1740i	0.0581+0.1688i
25	0.0497+0.0520i	0.0497+0.0561i	0.0650+0.0521i	0.0650+0.0562i	0.0500+0.1679i	0.0498+0.1590i	0.0647+0.1678i	0.0646+0.1589i
25,5	0.0472+0.0398i	0.0463+0.0822i	0.0606+0.0403i	0.0589+0.0822i	0.0479+0.2088i	0.0464+0.1618i	0.0617+0.2076i	0.0602+0.1623i
26	0.0344+0.0341i	0.0353+0.0840i	0.0901+0.0333i	0.0896+0.0834i	0.0350+0.2090i	0.0359+0.1529i	0.0840+0.2107i	0.0864+0.1532i
26,5	0.0350+0.0336i	0.0344+0.0721i	0.0994+0.0336i	0.0982+0.0745i	0.0332+0.1857i	0.0337+0.1391i	0.0949+0.1879i	0.0967+0.1405i
27	0.0312+0.0312i	0.0315+0.0893i	0.0899+0.0311i	0.0893+0.0896i	0.0313+0.2132i	0.0316+0.1532i	0.0877+0.2140i	0.0886+0.1536i
27,5	0.0321+0.0316i	0.0320+0.0923i	0.0944+0.0317i	0.0944+0.0924i	0.0316+0.2186i	0.0319+0.1557i	0.0930+0.2195i	0.0936+0.1565i
28	0.0325+0.0301i	0.0319+0.0893i	0.0962+0.0306i	0.0959+0.0901i	0.0317+0.2134i	0.0317+0.1511i	0.0943+0.2132i	0.0949+0.1513i
SNR / w	w200	w201	w202	w203	w204	w205	w206	w207
7	0.4222+0.2525i	0.4436+0.2619i	0.4127+0.2342i	0.4350+0.2412i	0.4436+0.2619i	0.4648+0.2714i	0.4350+0.2412i	0.4576+0.2479i
7,5	0.4235+0.2511i	0.4172+0.2483i	0.4149+0.2285i	0.4082+0.2266i	0.4559+0.2660i	0.4498+0.2633i	0.4496+0.2383i	0.4428+0.2365i
8	0.4267+0.2240i	0.4217+0.2227i	0.4286+0.2245i	0.4236+0.2232i	0.4321+0.2505i	0.4275+0.2484i	0.4340+0.2514i	0.4294+0.2493i
8,5	0.4931+0.2304i	0.4905+0.2299i	0.4932+0.2304i	0.4907+0.2299i	0.4867+0.2713i	0.4845+0.2703i	0.4869+0.2715i	0.4847+0.2704i
9	0.1840+0.3434i	0.1852+0.3477i	0.1852+0.3476i	0.1865+0.3521i	0.1852+0.3476i	0.1865+0.3520i	0.1865+0.3520i	0.1877+0.3565i
9,5	0.1717+0.3242i	0.1720+0.3253i	0.1720+0.3253i	0.1723+0.3263i	0.1720+0.3253i	0.1723+0.3263i	0.1723+0.3263i	0.1726+0.3274i
10	0.1626+0.3114i	0.1625+0.3110i	0.1625+0.3110i	0.1624+0.3106i	0.1625+0.3110i	0.1624+0.3106i	0.1624+0.3106i	0.1623+0.3102i
10,5	0.1564+0.3012i	0.1559+0.2998i	0.1565+0.3004i	0.1560+0.2988i	0.1563+0.3003i	0.1557+0.2986i	0.1564+0.2994i	0.1559+0.2977i
11	0.3228+0.1520i	0.3228+0.1518i	0.3228+0.1521i	0.3228+0.1518i	0.3228+0.1521i	0.3228+0.1518i	0.3228+0.1522i	0.3228+0.1519i
11,5	0.3188+0.1473i	0.3187+0.1472i	0.3188+0.1474i	0.3187+0.1473i	0.3182+0.1474i	0.3181+0.1473i	0.3182+0.1475i	0.3180+0.1474i
12	0.3247+0.1430i	0.3246+0.1430i	0.3246+0.1430i	0.3244+0.1430i	0.3238+0.1431i	0.3236+0.1432i	0.3236+0.1431i	0.3235+0.1432i
12,5	0.2477+0.1427i	0.2482+0.1427i	0.2479+0.1426i	0.2485+0.1426i	0.2454+0.1423i	0.2459+0.1423i	0.2455+0.1422i	0.2462+0.1422i
13	0.1374+0.2220i	0.1374+0.2220i	0.1372+0.2220i	0.1372+0.2221i	0.1376+0.2196i	0.1376+0.2197i	0.1374+0.2196i	0.1374+0.2197i
13,5	0.2200+0.1339i	0.2199+0.1339i	0.2199+0.1337i	0.2199+0.1336i	0.2200+0.1337i	0.2200+0.1337i	0.2199+0.1335i	0.2199+0.1335i
14	0.2050+0.1322i	0.2050+0.1322i	0.2049+0.1320i	0.2048+0.1321i	0.2052+0.1314i	0.2052+0.1314i	0.2051+0.1312i	0.2050+0.1312i
14,5	0.2019+0.1310i	0.2020+0.1310i	0.2014+0.1309i	0.2016+0.1310i	0.2024+0.1301i	0.2026+0.1301i	0.2020+0.1301i	0.2022+0.1301i
15	0.1200+0.1211i	0.1200+0.1211i	0.1202+0.1211i	0.1202+0.1212i	0.1201+0.1201i	0.1201+0.1201i	0.1202+0.1201i	0.1203+0.1202i
15,5	0.1172+0.1207i	0.1173+0.1208i	0.1172+0.1208i	0.1172+0.1210i	0.1176+0.1205i	0.1176+0.1207i	0.1175+0.1206i	0.1175+0.1207i
16	0.1098+0.1217i	0.1098+0.1215i	0.1099+0.1218i	0.1099+0.1215i	0.1099+0.1243i	0.1099+0.1241i	0.1099+0.1243i	0.1099+0.1241i
16,5	0.1164+0.1114i	0.1163+0.1111i	0.1160+0.1114i	0.1160+0.1110i	0.1164+0.1140i	0.1163+0.1137i	0.1159+0.1140i	0.1160+0.1137i
17	0.1179+0.1097i	0.1180+0.1090i	0.1172+0.1097i	0.1172+0.1089i	0.1178+0.1157i	0.1178+0.1150i	0.1171+0.1156i	0.1171+0.1149i
17,5	0.1206+0.1071i	0.1206+0.1062i	0.1196+0.1070i	0.1196+0.1060i	0.1203+0.1181i	0.1203+0.1171i	0.1193+0.1180i	0.1193+0.1170i
18	0.1239+0.1024i	0.1240+0.1015i	0.1233+0.1022i	0.1233+0.1014i	0.1237+0.1213i	0.1237+0.1205i	0.1231+0.1213i	0.1230+0.1205i
18,5	0.1002+0.0855i	0.1003+0.0854i	0.0996+0.0854i	0.0997+0.0854i	0.1016+0.1779i	0.1018+0.1779i	0.1010+0.1780i	0.1010+0.1779i
19	0.0976+0.0770i	0.0977+0.0770i	0.0970+0.0770i	0.0970+0.0770i	0.1004+0.2026i	0.1004+0.2026i	0.0997+0.2026i	0.0998+0.2027i
19,5	0.0980+0.0748i	0.0980+0.0748i	0.0976+0.0748i	0.0975+0.0749i	0.1024+0.2155i	0.1024+0.2155i	0.1019+0.2155i	0.1019+0.2155i
20	0.2103+0.0757i	0.2103+0.0756i	0.2104+0.0757i	0.2104+0.0756i	0.2094+0.1155i	0.2094+0.1153i	0.2094+0.1156i	0.2094+0.1153i
20,5	0.1593+0.0656i	0.1593+0.0657i	0.1593+0.0656i	0.1592+0.0658i	0.1613+0.1873i	0.1613+0.1874i	0.1613+0.1873i	0.1613+0.1873i
21	0.1707+0.0612i	0.1707+0.0613i	0.1708+0.0612i	0.1708+0.0613i	0.1705+0.1750i	0.1705+0.1751i	0.1706+0.1750i	0.1706+0.1751i
21,5	0.1849+0.0578i	0.1849+0.0579i	0.1850+0.0578i	0.1850+0.0578i	0.1832+0.1666i	0.1832+0.1668i	0.1832+0.1666i	0.1832+0.1668i
22	0.1739+0.0588i	0.1739+0.0587i	0.1740+0.0587i	0.1740+0.0587i	0.1737+0.1750i	0.1738+0.1750i	0.1739+0.1749i	0.1741+0.1749i
22,5	0.1798+0.0575i	0.1808+0.0562i	0.1788+0.0574i	0.1798+0.0563i	0.1802+0.1731i	0.1806+0.1741i	0.1789+0.1732i	0.1789+0.1743i
23	0.1763+0.0560i	0.1727+0.0580i	0.1778+0.0555i	0.1745+0.0571i	0.1733+0.1675i	0.1735+0.1644i	0.1752+0.1675i	0.1765+0.1626i
23,5	0.1757+0.0570i	0.1760+0.0564i	0.1741+0.0572i	0.1746+0.0562i	0.1766+0.1710i	0.1767+0.1708i	0.1745+0.1711i	0.1745+0.1706i
24	0.1728+0.0561i	0.1728+0.0570i	0.1694+0.0560i	0.1693+0.0570i	0.1726+0.1723i	0.1726+0.1689i	0.1692+0.1724i	0.1692+0.1691i
24,5	0.1728+0.0555i	0.1729+0.0580i	0.1656+0.0556i	0.1656+0.0580i	0.1741+0.1737i	0.1740+0.1682i	0.1667+0.1737i	0.1666+0.1683i

25	0.1877+0.0515i	0.1879+0.0560i	0.1620+0.0516i	0.1621+0.0559i	0.1868+0.1673i	0.1870+0.1579i	0.1622+0.1673i	0.1621+0.1579i
25,5	0.1715+0.0412i	0.1727+0.0826i	0.1516+0.0410i	0.1518+0.0833i	0.1745+0.2087i	0.1743+0.1629i	0.1532+0.2079i	0.1527+0.1612i
26	0.2200+0.0335i	0.2157+0.0862i	0.1605+0.0334i	0.1594+0.0842i	0.2057+0.2111i	0.2090+0.1567i	0.1533+0.2109i	0.1556+0.1545i
26,5	0.2312+0.0326i	0.2301+0.0822i	0.1675+0.0333i	0.1669+0.0781i	0.2213+0.2007i	0.2267+0.1480i	0.1613+0.1940i	0.1643+0.1434i
27	0.2133+0.0321i	0.2124+0.0917i	0.1539+0.0316i	0.1528+0.0907i	0.2111+0.2173i	0.2112+0.1563i	0.1511+0.2158i	0.1520+0.1548i
27,5	0.2220+0.0325i	0.2205+0.0962i	0.1593+0.0316i	0.1585+0.0936i	0.2186+0.2223i	0.2194+0.1603i	0.1562+0.2208i	0.1568+0.1579i
28	0.2272+0.0295i	0.2268+0.0890i	0.1609+0.0303i	0.1613+0.0901i	0.2228+0.2150i	0.2255+0.1519i	0.1587+0.2135i	0.1605+0.1517i
SNR / w	w208	w209	w210	w211	w212	w213	w214	w215
7	0.4222+0.2525i	0.4435+0.2619i	0.4127+0.2342i	0.4349+0.2412i	0.4435+0.2619i	0.4648+0.2713i	0.4349+0.2412i	0.4575+0.2479i
7,5	0.4239+0.2513i	0.4176+0.2485i	0.4153+0.2287i	0.4086+0.2268i	0.4563+0.2662i	0.4502+0.2635i	0.4500+0.2384i	0.4432+0.2367i
8	0.4267+0.2240i	0.4217+0.2227i	0.4286+0.2245i	0.4236+0.2232i	0.4321+0.2505i	0.4276+0.2484i	0.4340+0.2514i	0.4294+0.2493i
8,5	0.3933+0.2064i	0.3905+0.2057i	0.3930+0.2064i	0.3902+0.2056i	0.3967+0.2278i	0.3941+0.2267i	0.3965+0.2277i	0.3939+0.2266i
9	0.2312+0.5566i	0.2323+0.5636i	0.2323+0.5636i	0.2334+0.5707i	0.2323+0.5636i	0.2334+0.5707i	0.2334+0.5707i	0.2344+0.5780i
9,5	0.2250+0.5925i	0.2255+0.5968i	0.2255+0.5968i	0.2261+0.6012i	0.2255+0.5968i	0.2261+0.6012i	0.2261+0.6012i	0.2267+0.6058i
10	0.2165+0.6197i	0.2168+0.6227i	0.2168+0.6227i	0.2172+0.6258i	0.2168+0.6227i	0.2172+0.6258i	0.2172+0.6258i	0.2175+0.6291i
10,5	0.2060+0.6393i	0.2063+0.6419i	0.2071+0.6405i	0.2074+0.6432i	0.2064+0.6412i	0.2066+0.6438i	0.2076+0.6423i	0.2078+0.6453i
11	0.3113+0.1772i	0.3111+0.1769i	0.3113+0.1773i	0.3111+0.1770i	0.3112+0.1773i	0.3110+0.1769i	0.3112+0.1774i	0.3110+0.1771i
11,5	0.3070+0.1749i	0.3068+0.1747i	0.3070+0.1750i	0.3068+0.1748i	0.3064+0.1750i	0.3062+0.1748i	0.3064+0.1751i	0.3062+0.1749i
12	0.3102+0.1741i	0.3101+0.1741i	0.3101+0.1741i	0.3100+0.1741i	0.3095+0.1741i	0.3093+0.1742i	0.3094+0.1741i	0.3092+0.1742i
12,5	0.2470+0.1670i	0.2475+0.1670i	0.2471+0.1669i	0.2475+0.1669i	0.2448+0.1660i	0.2453+0.1661i	0.2448+0.1659i	0.2453+0.1660i
13	0.1493+0.5930i	0.1495+0.5928i	0.1491+0.5932i	0.1492+0.5930i	0.1519+0.5877i	0.1520+0.5875i	0.1516+0.5879i	0.1517+0.5877i
13,5	0.2168+0.1598i	0.2169+0.1597i	0.2167+0.1595i	0.2167+0.1594i	0.2166+0.1595i	0.2166+0.1594i	0.2164+0.1591i	0.2164+0.1591i
14	0.2020+0.1619i	0.2020+0.1619i	0.2018+0.1616i	0.2018+0.1616i	0.2018+0.1608i	0.2018+0.1608i	0.2016+0.1605i	0.2016+0.1605i
14,5	0.1918+0.1658i	0.1920+0.1658i	0.1914+0.1655i	0.1915+0.1656i	0.1918+0.1647i	0.1920+0.1648i	0.1914+0.1645i	0.1916+0.1646i
15	0.1271+0.3555i	0.1274+0.3560i	0.1271+0.3555i	0.1274+0.3560i	0.1261+0.3516i	0.1264+0.3521i	0.1262+0.3516i	0.1264+0.3521i
15,5	0.1244+0.3630i	0.1245+0.3635i	0.1242+0.3632i	0.1243+0.3636i	0.1237+0.3583i	0.1239+0.3588i	0.1236+0.3584i	0.1238+0.3589i
16	0.1139+0.3858i	0.1142+0.3871i	0.1137+0.3859i	0.1140+0.3872i	0.1133+0.3658i	0.1136+0.3670i	0.1132+0.3658i	0.1135+0.3671i
16,5	0.1120+0.3565i	0.1119+0.3601i	0.1116+0.3568i	0.1115+0.3603i	0.1122+0.3334i	0.1121+0.3367i	0.1118+0.3337i	0.1117+0.3368i
17	0.1101+0.3598i	0.1100+0.3640i	0.1093+0.3601i	0.1093+0.3643i	0.1103+0.3308i	0.1103+0.3343i	0.1095+0.3311i	0.1095+0.3346i
17,5	0.1071+0.3645i	0.1071+0.3687i	0.1062+0.3649i	0.1062+0.3691i	0.1074+0.3263i	0.1074+0.3292i	0.1064+0.3266i	0.1064+0.3295i
18	0.1022+0.3704i	0.1023+0.3736i	0.1017+0.3706i	0.1016+0.3737i	0.1025+0.3188i	0.1025+0.3204i	0.1018+0.3188i	0.1018+0.3205i
18,5	0.0951+0.4748i	0.0953+0.4751i	0.0945+0.4750i	0.0946+0.4753i	0.0939+0.3489i	0.0940+0.3487i	0.0932+0.3489i	0.0933+0.3488i
19	0.0882+0.5037i	0.0883+0.5037i	0.0877+0.5038i	0.0878+0.5038i	0.0885+0.3593i	0.0886+0.3592i	0.0879+0.3594i	0.0880+0.3592i
19,5	0.0798+0.5210i	0.0798+0.5207i	0.0796+0.5211i	0.0797+0.5207i	0.0827+0.3687i	0.0827+0.3686i	0.0824+0.3688i	0.0824+0.3687i
20	0.0700+0.3240i	0.0701+0.3249i	0.0701+0.3239i	0.0700+0.3248i	0.0714+0.2589i	0.0714+0.2590i	0.0714+0.2588i	0.0714+0.2591i
20,5	0.0632+0.4555i	0.0631+0.4548i	0.0631+0.4554i	0.0632+0.4547i	0.0635+0.3221i	0.0635+0.3220i	0.0634+0.3221i	0.0635+0.3221i
21	0.0606+0.4328i	0.0606+0.4308i	0.0607+0.4328i	0.0606+0.4308i	0.0605+0.3029i	0.0605+0.3028i	0.0605+0.3029i	0.0605+0.3028i
21,5	0.0595+0.4102i	0.0596+0.4065i	0.0595+0.4101i	0.0596+0.4064i	0.0610+0.2851i	0.0609+0.2852i	0.0610+0.2851i	0.0609+0.2852i
22	0.0590+0.4306i	0.0589+0.4262i	0.0586+0.4310i	0.0584+0.4265i	0.0592+0.2996i	0.0591+0.3001i	0.0585+0.2994i	0.0584+0.2999i
22,5	0.0572+0.4222i	0.0575+0.4168i	0.0573+0.4213i	0.0574+0.4181i	0.0577+0.2928i	0.0589+0.2918i	0.0594+0.2935i	0.0605+0.2918i
23	0.0568+0.4093i	0.0551+0.4031i	0.0580+0.4115i	0.0509+0.4023i	0.0648+0.2789i	0.0577+0.2819i	0.0598+0.2788i	0.0521+0.2840i
23,5	0.0583+0.4202i	0.0588+0.4056i	0.0582+0.4220i	0.0586+0.4060i	0.0582+0.2873i	0.0582+0.2911i	0.0592+0.2875i	0.0588+0.2913i
24	0.0552+0.4320i	0.0553+0.3996i	0.0561+0.4321i	0.0563+0.3997i	0.0558+0.2826i	0.0558+0.2942i	0.0569+0.2824i	0.0569+0.2940i
24,5	0.0566+0.4292i	0.0563+0.3964i	0.0601+0.4291i	0.0598+0.3962i	0.0554+0.2816i	0.0554+0.2955i	0.0589+0.2816i	0.0589+0.2955i
25	0.0517+0.4253i	0.0513+0.3805i	0.0633+0.4254i	0.0636+0.3805i	0.0504+0.2667i	0.0503+0.2885i	0.0643+0.2665i	0.0640+0.2883i
25,5	0.0466+0.4869i	0.0440+0.4196i	0.0662+0.4850i	0.0621+0.4191i	0.0480+0.2858i	0.0460+0.3408i	0.0637+0.2864i	0.0637+0.3406i
26	0.0351+0.4808i	0.0342+0.4146i	0.0899+0.4781i	0.0857+0.4137i	0.0349+0.2807i	0.0346+0.3432i	0.0827+0.2816i	0.0843+0.3431i
26,5	0.0318+0.4522i	0.0321+0.3789i	0.0739+0.4533i	0.0796+0.3824i	0.0325+0.2516i	0.0330+0.3088i	0.0908+0.2538i	0.0850+0.3119i
27	0.0308+0.4850i	0.0311+0.4144i	0.0873+0.4850i	0.0875+0.4142i	0.0307+0.2794i	0.0310+0.3456i	0.0863+0.2798i	0.0866+0.3448i
27,5	0.0311+0.4893i	0.0313+0.4189i	0.0920+0.4897i	0.0921+0.4194i	0.0314+0.2837i	0.0311+0.3499i	0.0926+0.2848i	0.0919+0.3507i
28	0.0302+0.4887i	0.0304+0.4150i	0.0892+0.4889i	0.0900+0.4153i	0.0313+0.2777i	0.0307+0.3444i	0.0933+0.2782i	0.0916+0.3449i
SNR / w	w216	w217	w218	w219	w220	w221	w222	w223
7	0.4435+0.2619i	0.4648+0.2713i	0.4349+0.2412i	0.4575+0.2479i	0.4648+0.2713i	0.4855+0.2806i	0.4575+0.2479i	0.4800+0.2544i

7,5	0.4562+0.2661i	0.4500+0.2634i	0.4499+0.2384i	0.4431+0.2366i	0.4879+0.2810i	0.4822+0.2785i	0.4849+0.2474i	0.4784+0.2459i
8	0.4793+0.2370i	0.4744+0.2359i	0.4815+0.2376i	0.4767+0.2365i	0.4796+0.2733i	0.4755+0.2713i	0.4818+0.2744i	0.4776+0.2724i
8,5	0.5224+0.2361i	0.5201+0.2357i	0.5228+0.2362i	0.5204+0.2358i	0.5120+0.2846i	0.5101+0.2836i	0.5124+0.2849i	0.5105+0.2839i
9	0.2323+0.5636i	0.2334+0.5707i	0.2334+0.5706i	0.2344+0.5780i	0.2334+0.5706i	0.2344+0.5780i	0.2344+0.5779i	0.2355+0.5854i
9,5	0.2255+0.5968i	0.2261+0.6012i	0.2261+0.6012i	0.2267+0.6058i	0.2261+0.6012i	0.2267+0.6058i	0.2267+0.6058i	0.2273+0.6106i
10	0.2168+0.6227i	0.2172+0.6258i	0.2172+0.6258i	0.2175+0.6291i	0.2172+0.6258i	0.2175+0.6291i	0.2175+0.6291i	0.2179+0.6325i
10,5	0.2064+0.6413i	0.2067+0.6440i	0.2075+0.6427i	0.2078+0.6454i	0.2068+0.6431i	0.2070+0.6461i	0.2078+0.6446i	0.2080+0.6479i
11	0.3103+0.1749i	0.3101+0.1746i	0.3103+0.1751i	0.3102+0.1747i	0.3102+0.1750i	0.3101+0.1747i	0.3103+0.1751i	0.3101+0.1748i
11,5	0.3054+0.1731i	0.3052+0.1729i	0.3054+0.1732i	0.3052+0.1730i	0.3049+0.1731i	0.3047+0.1730i	0.3049+0.1732i	0.3047+0.1731i
12	0.3085+0.1728i	0.3084+0.1728i	0.3084+0.1728i	0.3082+0.1728i	0.3077+0.1728i	0.3076+0.1729i	0.3076+0.1728i	0.3075+0.1729i
12,5	0.2449+0.1666i	0.2453+0.1667i	0.2450+0.1665i	0.2455+0.1666i	0.2426+0.1657i	0.2431+0.1657i	0.2427+0.1656i	0.2432+0.1656i
13	0.1482+0.5930i	0.1483+0.5927i	0.1479+0.5932i	0.1481+0.5929i	0.1507+0.5877i	0.1508+0.5874i	0.1504+0.5879i	0.1505+0.5876i
13,5	0.2160+0.1601i	0.2160+0.1600i	0.2159+0.1597i	0.2159+0.1597i	0.2159+0.1597i	0.2158+0.1597i	0.2157+0.1594i	0.2157+0.1593i
14	0.2058+0.1626i	0.2057+0.1626i	0.2056+0.1623i	0.2055+0.1623i	0.2056+0.1614i	0.2055+0.1615i	0.2053+0.1611i	0.2053+0.1612i
14,5	0.1995+0.1675i	0.1997+0.1676i	0.1991+0.1673i	0.1992+0.1673i	0.1995+0.1664i	0.1997+0.1664i	0.1991+0.1661i	0.1993+0.1662i
15	0.1263+0.3550i	0.1266+0.3555i	0.1263+0.3550i	0.1266+0.3555i	0.1254+0.3511i	0.1256+0.3516i	0.1254+0.3510i	0.1257+0.3516i
15,5	0.1255+0.3637i	0.1257+0.3642i	0.1254+0.3638i	0.1255+0.3643i	0.1249+0.3590i	0.1251+0.3594i	0.1248+0.3591i	0.1249+0.3596i
16	0.1149+0.3862i	0.1152+0.3875i	0.1147+0.3863i	0.1151+0.3876i	0.1142+0.3661i	0.1145+0.3673i	0.1141+0.3662i	0.1144+0.3674i
16,5	0.1148+0.3565i	0.1148+0.3600i	0.1145+0.3567i	0.1144+0.3602i	0.1151+0.3334i	0.1150+0.3366i	0.1147+0.3336i	0.1147+0.3368i
17	0.1163+0.3597i	0.1163+0.3639i	0.1156+0.3600i	0.1155+0.3642i	0.1166+0.3308i	0.1166+0.3342i	0.1158+0.3311i	0.1158+0.3345i
17,5	0.1185+0.3644i	0.1185+0.3686i	0.1176+0.3649i	0.1176+0.3690i	0.1189+0.3264i	0.1189+0.3293i	0.1179+0.3267i	0.1179+0.3296i
18	0.1220+0.3704i	0.1219+0.3737i	0.1213+0.3706i	0.1213+0.3739i	0.1225+0.3189i	0.1226+0.3206i	0.1218+0.3191i	0.1218+0.3208i
18,5	0.1120+0.4743i	0.1121+0.4747i	0.1114+0.4745i	0.1115+0.4747i	0.1057+0.3488i	0.1058+0.3487i	0.1051+0.3488i	0.1052+0.3487i
19	0.1197+0.5019i	0.1198+0.5020i	0.1192+0.5020i	0.1193+0.5021i	0.1078+0.3588i	0.1079+0.3587i	0.1072+0.3589i	0.1072+0.3587i
19,5	0.1299+0.5177i	0.1299+0.5174i	0.1297+0.5177i	0.1297+0.5174i	0.1128+0.3677i	0.1128+0.3676i	0.1125+0.3678i	0.1125+0.3677i
20	0.1950+0.3350i	0.1949+0.3358i	0.1951+0.3350i	0.1950+0.3358i	0.2030+0.2636i	0.2030+0.2637i	0.2030+0.2637i	0.2031+0.2637i
20,5	0.1681+0.4548i	0.1681+0.4542i	0.1682+0.4547i	0.1681+0.4540i	0.1645+0.3218i	0.1644+0.3217i	0.1644+0.3218i	0.1644+0.3217i
21	0.1707+0.4313i	0.1706+0.4294i	0.1708+0.4313i	0.1707+0.4293i	0.1702+0.3021i	0.1702+0.3020i	0.1703+0.3021i	0.1703+0.3020i
21,5	0.1739+0.4126i	0.1743+0.4093i	0.1740+0.4126i	0.1744+0.4092i	0.1794+0.2874i	0.1794+0.2874i	0.1795+0.2874i	0.1795+0.2874i
22	0.1747+0.4293i	0.1747+0.4245i	0.1751+0.4295i	0.1751+0.4248i	0.1735+0.2980i	0.1737+0.2985i	0.1739+0.2977i	0.1741+0.2982i
22,5	0.1743+0.4210i	0.1747+0.4171i	0.1741+0.4202i	0.1747+0.4158i	0.1787+0.2934i	0.1781+0.2923i	0.1768+0.2941i	0.1771+0.2931i
23	0.1682+0.4147i	0.1726+0.4047i	0.1736+0.4144i	0.1710+0.4071i	0.1706+0.2821i	0.1744+0.2911i	0.1736+0.2853i	0.1776+0.2863i
23,5	0.1763+0.4224i	0.1766+0.4068i	0.1747+0.4225i	0.1750+0.4067i	0.1772+0.2879i	0.1772+0.2918i	0.1755+0.2877i	0.1748+0.2921i
24	0.1699+0.4314i	0.1705+0.4002i	0.1669+0.4317i	0.1674+0.4004i	0.1719+0.2832i	0.1717+0.2944i	0.1686+0.2831i	0.1685+0.2943i
24,5	0.1798+0.4291i	0.1790+0.3946i	0.1723+0.4292i	0.1713+0.3949i	0.1762+0.2805i	0.1767+0.2950i	0.1685+0.2807i	0.1689+0.2951i
25	0.1829+0.4260i	0.1836+0.3794i	0.1638+0.4261i	0.1632+0.3797i	0.1852+0.2652i	0.1851+0.2880i	0.1620+0.2653i	0.1622+0.2879i
25,5	0.1841+0.4843i	0.1829+0.4186i	0.1522+0.4849i	0.1542+0.4185i	0.1779+0.2862i	0.1807+0.3418i	0.1534+0.2865i	0.1548+0.3424i
26	0.2196+0.4716i	0.2157+0.4087i	0.1610+0.4748i	0.1570+0.4119i	0.2054+0.2809i	0.2094+0.3380i	0.1524+0.2824i	0.1543+0.3418i
26,5	0.1932+0.4577i	0.1997+0.3933i	0.1389+0.4551i	0.1435+0.3873i	0.2147+0.2666i	0.2083+0.3257i	0.1555+0.2607i	0.1493+0.3184i
27	0.2118+0.4809i	0.2110+0.4119i	0.1507+0.4836i	0.1502+0.4134i	0.2109+0.2819i	0.2107+0.3441i	0.1498+0.2809i	0.1497+0.3442i
27,5	0.2186+0.4902i	0.2189+0.4202i	0.1557+0.4902i	0.1557+0.4197i	0.2185+0.2872i	0.2190+0.3526i	0.1559+0.2865i	0.1554+0.3519i
28	0.2101+0.4919i	0.2114+0.4198i	0.1496+0.4906i	0.1510+0.4173i	0.2183+0.2814i	0.2142+0.3497i	0.1566+0.2788i	0.1537+0.3467i
SNR / w	w224	w225	w226	w227	w228	w229	w230	w231
7	0.4221+0.2525i	0.4435+0.2619i	0.4127+0.2342i	0.4349+0.2412i	0.4435+0.2619i	0.4647+0.2713i	0.4349+0.2412i	0.4575+0.2479i
7,5	0.4240+0.2512i	0.4177+0.2485i	0.4154+0.2286i	0.4088+0.2267i	0.4564+0.2661i	0.4503+0.2634i	0.4502+0.2383i	0.4434+0.2366i
8	0.4266+0.2240i	0.4216+0.2227i	0.4285+0.2245i	0.4235+0.2232i	0.4320+0.2504i	0.4275+0.2483i	0.4339+0.2514i	0.4293+0.2492i
8,5	0.3934+0.2065i	0.3906+0.2057i	0.3931+0.2064i	0.3903+0.2057i	0.3968+0.2278i	0.3942+0.2267i	0.3965+0.2277i	0.3939+0.2266i
9	0.1966+0.3406i	0.1984+0.3447i	0.1984+0.3447i	0.2002+0.3488i	0.1984+0.3447i	0.2002+0.3488i	0.2002+0.3488i	0.2020+0.3531i
9,5	0.1845+0.3232i	0.1850+0.3242i	0.1850+0.3242i	0.1854+0.3252i	0.1850+0.3242i	0.1854+0.3252i	0.1854+0.3252i	0.1859+0.3263i
10	0.1764+0.3110i	0.1762+0.3107i	0.1762+0.3107i	0.1761+0.3103i	0.1762+0.3107i	0.1761+0.3103i	0.1761+0.3103i	0.1759+0.3100i
10,5	0.1715+0.3031i	0.1707+0.3016i	0.1716+0.3021i	0.1708+0.3007i	0.1713+0.3021i	0.1704+0.3006i	0.1713+0.3013i	0.1705+0.2996i
11	0.6250+0.2110i	0.6274+0.2088i	0.6250+0.2108i	0.6274+0.2087i	0.6292+0.2096i	0.6317+0.2074i	0.6292+0.2094i	0.6317+0.2072i
11,5	0.6416+0.1990i	0.6435+0.1976i	0.6415+0.1985i	0.6435+0.1971i	0.6450+0.1982i	0.6470+0.1968i	0.6450+0.1977i	0.6471+0.1963i

12	0.6552+0.1897i	0.6565+0.1892i	0.6554+0.1882i	0.6567+0.1878i	0.6580+0.1894i	0.6594+0.1890i	0.6582+0.1879i	0.6596+0.1875i
12,5	0.6139+0.1638i	0.6138+0.1635i	0.6145+0.1635i	0.6144+0.1633i	0.6155+0.1638i	0.6154+0.1636i	0.6162+0.1636i	0.6161+0.1634i
13	0.1617+0.2233i	0.1616+0.2233i	0.1614+0.2232i	0.1614+0.2233i	0.1615+0.2211i	0.1615+0.2212i	0.1613+0.2211i	0.1613+0.2212i
13,5	0.5891+0.1455i	0.5897+0.1456i	0.5892+0.1455i	0.5898+0.1455i	0.5889+0.1449i	0.5895+0.1449i	0.5890+0.1448i	0.5896+0.1449i
14	0.5761+0.1396i	0.5758+0.1395i	0.5762+0.1394i	0.5759+0.1394i	0.5780+0.1376i	0.5778+0.1375i	0.5781+0.1374i	0.5778+0.1373i
14,5	0.5668+0.1343i	0.5666+0.1343i	0.5671+0.1343i	0.5669+0.1342i	0.5691+0.1325i	0.5689+0.1325i	0.5694+0.1325i	0.5692+0.1324i
15	0.3782+0.1166i	0.3782+0.1169i	0.3807+0.1164i	0.3807+0.1167i	0.3781+0.1147i	0.3781+0.1149i	0.3806+0.1145i	0.3806+0.1147i
15,5	0.3698+0.1144i	0.3700+0.1145i	0.3733+0.1142i	0.3734+0.1143i	0.3700+0.1133i	0.3701+0.1134i	0.3734+0.1131i	0.3735+0.1132i
16	0.3459+0.1168i	0.3458+0.1166i	0.3495+0.1165i	0.3494+0.1164i	0.3462+0.1180i	0.3460+0.1179i	0.3498+0.1177i	0.3497+0.1176i
16,5	0.3622+0.1129i	0.3622+0.1125i	0.3653+0.1130i	0.3653+0.1126i	0.3622+0.1156i	0.3623+0.1153i	0.3654+0.1157i	0.3654+0.1153i
17	0.3648+0.1112i	0.3649+0.1104i	0.3685+0.1112i	0.3686+0.1105i	0.3650+0.1173i	0.3650+0.1166i	0.3687+0.1174i	0.3688+0.1166i
17,5	0.3692+0.1087i	0.3693+0.1077i	0.3730+0.1087i	0.3730+0.1077i	0.3694+0.1200i	0.3695+0.1190i	0.3732+0.1200i	0.3733+0.1190i
18	0.3757+0.1035i	0.3756+0.1029i	0.3784+0.1036i	0.3784+0.1027i	0.3754+0.1233i	0.3756+0.1224i	0.3784+0.1233i	0.3784+0.1223i
18,5	0.3121+0.0880i	0.3118+0.0879i	0.3154+0.0880i	0.3151+0.0880i	0.3154+0.1651i	0.3151+0.1650i	0.3188+0.1648i	0.3184+0.1647i
19	0.3031+0.0779i	0.3030+0.0779i	0.3064+0.0778i	0.3062+0.0779i	0.3100+0.1882i	0.3098+0.1882i	0.3130+0.1877i	0.3128+0.1877i
19,5	0.3004+0.0738i	0.3003+0.0738i	0.3028+0.0738i	0.3027+0.0738i	0.3100+0.2021i	0.3099+0.2021i	0.3122+0.2017i	0.3121+0.2018i
20	0.5051+0.0708i	0.5051+0.0708i	0.5046+0.0708i	0.5046+0.0708i	0.4996+0.1472i	0.4995+0.1471i	0.4991+0.1471i	0.4992+0.1471i
20,5	0.4002+0.0654i	0.4002+0.0654i	0.4001+0.0653i	0.4001+0.0654i	0.4036+0.1848i	0.4034+0.1848i	0.4035+0.1847i	0.4034+0.1848i
21	0.4225+0.0611i	0.4225+0.0611i	0.4208+0.0611i	0.4207+0.0611i	0.4221+0.1732i	0.4220+0.1733i	0.4204+0.1732i	0.4204+0.1733i
21,5	0.4472+0.0598i	0.4472+0.0598i	0.4448+0.0597i	0.4448+0.0597i	0.4436+0.1749i	0.4436+0.1750i	0.4411+0.1746i	0.4411+0.1747i
22	0.4286+0.0584i	0.4287+0.0584i	0.4222+0.0584i	0.4223+0.0584i	0.4279+0.1719i	0.4278+0.1719i	0.4219+0.1722i	0.4217+0.1723i
22,5	0.4362+0.0591i	0.4355+0.0603i	0.4278+0.0600i	0.4267+0.0612i	0.4356+0.1770i	0.4364+0.1764i	0.4281+0.1757i	0.4295+0.1756i
23	0.4339+0.0555i	0.4336+0.0551i	0.4242+0.0527i	0.4290+0.0527i	0.4334+0.1740i	0.4299+0.1755i	0.4215+0.1769i	0.4172+0.1762i
23,5	0.4371+0.0574i	0.4368+0.0577i	0.4157+0.0568i	0.4156+0.0571i	0.4357+0.1732i	0.4367+0.1719i	0.4151+0.1732i	0.4156+0.1718i
24	0.4313+0.0556i	0.4311+0.0566i	0.4004+0.0558i	0.4003+0.0568i	0.4310+0.1709i	0.4309+0.1678i	0.4005+0.1714i	0.4005+0.1683i
24,5	0.4390+0.0530i	0.4391+0.0558i	0.3936+0.0537i	0.3937+0.0564i	0.4414+0.1678i	0.4409+0.1610i	0.3966+0.1693i	0.3960+0.1627i
25	0.4741+0.0522i	0.4741+0.0587i	0.4095+0.0523i	0.4097+0.0580i	0.4731+0.1733i	0.4733+0.1614i	0.4082+0.1712i	0.4080+0.1602i
25,5	0.4328+0.0417i	0.4336+0.0744i	0.3744+0.0411i	0.3745+0.0772i	0.4411+0.1978i	0.4377+0.1570i	0.3822+0.2018i	0.3792+0.1581i
26	0.4870+0.0884i	0.4896+0.1188i	0.4269+0.0476i	0.4149+0.1052i	0.4977+0.2069i	0.4981+0.1758i	0.4158+0.2122i	0.4119+0.1755i
26,5	0.4824+0.0289i	0.4857+0.0919i	0.4205+0.0350i	0.4205+0.0961i	0.4899+0.2242i	0.4866+0.1642i	0.4194+0.2229i	0.4216+0.1624i
27	0.5079+0.0438i	0.5036+0.1009i	0.4218+0.0434i	0.4167+0.1021i	0.4840+0.2135i	0.4940+0.1581i	0.4139+0.2120i	0.4156+0.1554i
27,5	0.5112+0.0414i	0.5049+0.1036i	0.4247+0.0447i	0.4231+0.1059i	0.4951+0.2253i	0.4990+0.1631i	0.4241+0.2243i	0.4237+0.1622i
28	0.6043+0.0218i	0.5006+0.1245i	0.4388+0.0377i	0.4351+0.1002i	0.4847+0.2316i	0.4930+0.1739i	0.4142+0.2270i	0.4205+0.1632i
SNR / w	w232	w233	w234	w235	w236	w237	w238	w239
7	0.4435+0.2619i	0.4647+0.2713i	0.4349+0.2412i	0.4575+0.2479i	0.4648+0.2713i	0.4855+0.2806i	0.4575+0.2479i	0.4800+0.2544i
7,5	0.4563+0.2660i	0.4501+0.2633i	0.4500+0.2383i	0.4432+0.2366i	0.4880+0.2809i	0.4822+0.2784i	0.4851+0.2473i	0.4785+0.2458i
8	0.4792+0.2370i	0.4743+0.2359i	0.4815+0.2375i	0.4766+0.2365i	0.4796+0.2733i	0.4754+0.2713i	0.4817+0.2744i	0.4775+0.2723i
8,5	0.5225+0.2361i	0.5201+0.2357i	0.5228+0.2362i	0.5205+0.2358i	0.5120+0.2846i	0.5101+0.2837i	0.5125+0.2849i	0.5105+0.2839i
9	0.1984+0.3447i	0.2002+0.3488i	0.2002+0.3488i	0.2020+0.3531i	0.2002+0.3488i	0.2020+0.3531i	0.2020+0.3530i	0.2040+0.3574i
9,5	0.1850+0.3242i	0.1854+0.3252i	0.1854+0.3252i	0.1859+0.3263i	0.1854+0.3252i	0.1859+0.3263i	0.1859+0.3263i	0.1863+0.3274i
10	0.1762+0.3107i	0.1761+0.3103i	0.1761+0.3103i	0.1759+0.3100i	0.1761+0.3103i	0.1759+0.3100i	0.1759+0.3100i	0.1758+0.3096i
10,5	0.1710+0.3018i	0.1702+0.3004i	0.1710+0.3009i	0.1702+0.2994i	0.1707+0.3010i	0.1699+0.2993i	0.1708+0.2999i	0.1700+0.2984i
11	0.6308+0.2080i	0.6332+0.2059i	0.6308+0.2078i	0.6333+0.2057i	0.6352+0.2066i	0.6378+0.2045i	0.6352+0.2064i	0.6378+0.2043i
11,5	0.6460+0.1976i	0.6480+0.1962i	0.6460+0.1970i	0.6480+0.1957i	0.6496+0.1968i	0.6518+0.1954i	0.6496+0.1962i	0.6518+0.1948i
12	0.6586+0.1898i	0.6601+0.1894i	0.6589+0.1884i	0.6603+0.1879i	0.6617+0.1896i	0.6631+0.1891i	0.6619+0.1881i	0.6634+0.1876i
12,5	0.6143+0.1644i	0.6142+0.1642i	0.6150+0.1641i	0.6149+0.1640i	0.6160+0.1644i	0.6159+0.1643i	0.6168+0.1642i	0.6166+0.1640i
13	0.1611+0.2225i	0.1610+0.2226i	0.1608+0.2225i	0.1608+0.2226i	0.1610+0.2204i	0.1609+0.2205i	0.1607+0.2204i	0.1607+0.2204i
13,5	0.5821+0.1478i	0.5826+0.1477i	0.5821+0.1477i	0.5827+0.1477i	0.5819+0.1470i	0.5824+0.1470i	0.5820+0.1469i	0.5825+0.1469i
14	0.5586+0.1393i	0.5583+0.1393i	0.5587+0.1391i	0.5584+0.1391i	0.5607+0.1372i	0.5603+0.1371i	0.5607+0.1370i	0.5604+0.1369i
14,5	0.5445+0.1338i	0.5443+0.1337i	0.5447+0.1337i	0.5445+0.1337i	0.5468+0.1318i	0.5466+0.1317i	0.5470+0.1317i	0.5468+0.1317i
15	0.3586+0.1172i	0.3586+0.1175i	0.3611+0.1171i	0.3611+0.1173i	0.3585+0.1154i	0.3585+0.1156i	0.3610+0.1152i	0.3610+0.1154i
15,5	0.3485+0.1157i	0.3485+0.1158i	0.3518+0.1156i	0.3518+0.1157i	0.3486+0.1147i	0.3487+0.1148i	0.3518+0.1146i	0.3519+0.1147i
16	0.3254+0.1175i	0.3252+0.1174i	0.3288+0.1173i	0.3287+0.1172i	0.3256+0.1189i	0.3255+0.1188i	0.3291+0.1187i	0.3289+0.1186i

16,5	0.3391+0.1126i	0.3391+0.1122i	0.3419+0.1126i	0.3420+0.1123i	0.3392+0.1153i	0.3392+0.1149i	0.3420+0.1153i	0.3420+0.1150i
17	0.3359+0.1108i	0.3359+0.1101i	0.3390+0.1108i	0.3390+0.1101i	0.3360+0.1169i	0.3360+0.1162i	0.3391+0.1169i	0.3391+0.1162i
17,5	0.3313+0.1083i	0.3314+0.1073i	0.3340+0.1082i	0.3341+0.1073i	0.3314+0.1195i	0.3315+0.1185i	0.3341+0.1194i	0.3342+0.1184i
18	0.3237+0.1032i	0.3236+0.1023i	0.3252+0.1032i	0.3252+0.1023i	0.3234+0.1226i	0.3234+0.1219i	0.3251+0.1226i	0.3252+0.1216i
18,5	0.2810+0.0875i	0.2807+0.0874i	0.2835+0.0876i	0.2832+0.0875i	0.2833+0.1677i	0.2830+0.1676i	0.2858+0.1675i	0.2855+0.1673i
19	0.2671+0.0777i	0.2670+0.0777i	0.2692+0.0776i	0.2690+0.0776i	0.2711+0.1923i	0.2709+0.1924i	0.2729+0.1920i	0.2728+0.1920i
19,5	0.2592+0.0741i	0.2591+0.0742i	0.2605+0.0741i	0.2604+0.0741i	0.2635+0.2071i	0.2635+0.2072i	0.2647+0.2069i	0.2646+0.2069i
20	0.3583+0.0733i	0.3584+0.0733i	0.3583+0.0733i	0.3582+0.0732i	0.3557+0.1282i	0.3558+0.1281i	0.3557+0.1281i	0.3556+0.1280i
20,5	0.2886+0.0655i	0.2886+0.0655i	0.2885+0.0656i	0.2885+0.0655i	0.2903+0.1864i	0.2903+0.1864i	0.2902+0.1863i	0.2902+0.1864i
21	0.2964+0.0612i	0.2964+0.0612i	0.2963+0.0612i	0.2963+0.0612i	0.2962+0.1741i	0.2962+0.1742i	0.2960+0.1741i	0.2960+0.1742i
21,5	0.3134+0.0587i	0.3135+0.0586i	0.3136+0.0587i	0.3137+0.0587i	0.3108+0.1701i	0.3108+0.1702i	0.3110+0.1701i	0.3110+0.1702i
22	0.2962+0.0583i	0.2962+0.0585i	0.2968+0.0582i	0.2968+0.0584i	0.2959+0.1738i	0.2957+0.1740i	0.2964+0.1740i	0.2962+0.1741i
22,5	0.3032+0.0589i	0.3027+0.0582i	0.3062+0.0585i	0.3053+0.0585i	0.3018+0.1745i	0.3007+0.1748i	0.3038+0.1742i	0.3026+0.1738i
23	0.3003+0.0547i	0.3008+0.0596i	0.2981+0.0518i	0.3015+0.0576i	0.2974+0.1688i	0.3016+0.1636i	0.3004+0.1706i	0.3038+0.1687i
23,5	0.2935+0.0571i	0.2934+0.0559i	0.3003+0.0571i	0.3001+0.0559i	0.2938+0.1716i	0.2934+0.1709i	0.3007+0.1715i	0.3004+0.1709i
24	0.2835+0.0560i	0.2836+0.0570i	0.2947+0.0560i	0.2947+0.0570i	0.2833+0.1722i	0.2834+0.1690i	0.2942+0.1722i	0.2943+0.1689i
24,5	0.2767+0.0549i	0.2766+0.0575i	0.2962+0.0547i	0.2962+0.0574i	0.2788+0.1723i	0.2784+0.1665i	0.2984+0.1718i	0.2980+0.1659i
25	0.2792+0.0514i	0.2794+0.0563i	0.3243+0.0517i	0.3242+0.0569i	0.2785+0.1682i	0.2782+0.1581i	0.3224+0.1691i	0.3224+0.1588i
25,5	0.2565+0.0404i	0.2580+0.0815i	0.2933+0.0406i	0.2942+0.0808i	0.2624+0.2089i	0.2607+0.1620i	0.3016+0.2071i	0.2979+0.1608i
26	0.2912+0.0349i	0.2858+0.0896i	0.3531+0.0375i	0.3456+0.0944i	0.2776+0.2130i	0.2797+0.1616i	0.3388+0.2141i	0.3395+0.1659i
26,5	0.2981+0.0330i	0.2963+0.0873i	0.3583+0.0345i	0.3569+0.0932i	0.2863+0.2090i	0.2920+0.1540i	0.3512+0.2175i	0.3553+0.1593i
27	0.2788+0.0329i	0.2765+0.0939i	0.3366+0.0360i	0.3386+0.0968i	0.2771+0.2176i	0.2758+0.1577i	0.3431+0.2153i	0.3406+0.1566i
27,5	0.2859+0.0343i	0.2847+0.0994i	0.3429+0.0370i	0.3476+0.1015i	0.2852+0.2242i	0.2849+0.1629i	0.3535+0.2247i	0.3513+0.1631i
28	0.2966+0.0296i	0.2938+0.0892i	0.3680+0.0313i	0.3621+0.0922i	0.2866+0.2178i	0.2907+0.1527i	0.3496+0.2221i	0.3560+0.1554i
SNR / w	w240	w241	w242	w243	w244	w245	w246	w247
7	0.4435+0.2619i	0.4647+0.2713i	0.4349+0.2412i	0.4575+0.2479i	0.4647+0.2713i	0.4855+0.2806i	0.4575+0.2479i	0.4800+0.2544i
7,5	0.4567+0.2663i	0.4506+0.2636i	0.4505+0.2384i	0.4437+0.2367i	0.4883+0.2811i	0.4826+0.2786i	0.4855+0.2474i	0.4789+0.2460i
8	0.4792+0.2370i	0.4744+0.2359i	0.4815+0.2375i	0.4766+0.2365i	0.4796+0.2733i	0.4754+0.2713i	0.4817+0.2744i	0.4775+0.2724i
8,5	0.4220+0.2140i	0.4192+0.2133i	0.4218+0.2139i	0.4189+0.2132i	0.4237+0.2403i	0.4211+0.2391i	0.4236+0.2402i	0.4209+0.2390i
9	0.2922+0.5353i	0.2956+0.5413i	0.2956+0.5412i	0.2991+0.5474i	0.2956+0.5412i	0.2991+0.5473i	0.2991+0.5473i	0.3027+0.5535i
9,5	0.3037+0.5607i	0.3060+0.5644i	0.3060+0.5644i	0.3084+0.5681i	0.3060+0.5644i	0.3084+0.5681i	0.3084+0.5681i	0.3108+0.5720i
10	0.3143+0.5780i	0.3161+0.5805i	0.3161+0.5805i	0.3179+0.5831i	0.3161+0.5805i	0.3179+0.5831i	0.3179+0.5831i	0.3198+0.5858i
10,5	0.3218+0.5907i	0.3233+0.5931i	0.3242+0.5920i	0.3258+0.5944i	0.3233+0.5922i	0.3249+0.5947i	0.3257+0.5936i	0.3275+0.5961i
11	0.5697+0.3592i	0.5699+0.3563i	0.5695+0.3600i	0.5696+0.3571i	0.5715+0.3585i	0.5717+0.3556i	0.5712+0.3593i	0.5714+0.3564i
11,5	0.5764+0.3696i	0.5763+0.3673i	0.5759+0.3709i	0.5758+0.3685i	0.5776+0.3694i	0.5776+0.3671i	0.5771+0.3707i	0.5771+0.3683i
12	0.5799+0.3822i	0.5797+0.3804i	0.5790+0.3839i	0.5787+0.3821i	0.5807+0.3825i	0.5805+0.3807i	0.5797+0.3842i	0.5795+0.3824i
12,5	0.5683+0.3416i	0.5680+0.3406i	0.5683+0.3403i	0.5679+0.3393i	0.5691+0.3390i	0.5688+0.3381i	0.5690+0.3377i	0.5687+0.3368i
13	0.3128+0.5593i	0.3121+0.5593i	0.3120+0.5594i	0.3113+0.5594i	0.3184+0.5569i	0.3177+0.5568i	0.3176+0.5569i	0.3169+0.5569i
13,5	0.5552+0.3279i	0.5551+0.3264i	0.5554+0.3272i	0.5554+0.3256i	0.5543+0.3209i	0.5543+0.3195i	0.5545+0.3202i	0.5545+0.3188i
14	0.5472+0.3116i	0.5469+0.3117i	0.5472+0.3111i	0.5470+0.3112i	0.5461+0.3010i	0.5458+0.3011i	0.5462+0.3005i	0.5459+0.3006i
14,5	0.5418+0.3194i	0.5416+0.3195i	0.5422+0.3195i	0.5420+0.3196i	0.5405+0.3060i	0.5402+0.3062i	0.5409+0.3060i	0.5406+0.3062i
15	0.3909+0.3431i	0.3915+0.3441i	0.3925+0.3423i	0.3930+0.3434i	0.3873+0.3355i	0.3878+0.3366i	0.3889+0.3347i	0.3894+0.3358i
15,5	0.3878+0.3462i	0.3878+0.3467i	0.3905+0.3457i	0.3904+0.3461i	0.3830+0.3363i	0.3830+0.3368i	0.3858+0.3356i	0.3857+0.3361i
16	0.3606+0.3677i	0.3608+0.3695i	0.3630+0.3666i	0.3633+0.3683i	0.3581+0.3483i	0.3583+0.3500i	0.3606+0.3471i	0.3609+0.3488i
16,5	0.3594+0.3591i	0.3592+0.3623i	0.3628+0.3594i	0.3626+0.3627i	0.3600+0.3366i	0.3598+0.3396i	0.3633+0.3369i	0.3631+0.3400i
17	0.3622+0.3624i	0.3619+0.3662i	0.3662+0.3629i	0.3659+0.3667i	0.3630+0.3342i	0.3629+0.3375i	0.3670+0.3347i	0.3669+0.3379i
17,5	0.3664+0.3671i	0.3662+0.3711i	0.3703+0.3676i	0.3702+0.3716i	0.3677+0.3305i	0.3676+0.3334i	0.3716+0.3308i	0.3716+0.3338i
18	0.3726+0.3728i	0.3725+0.3758i	0.3754+0.3734i	0.3753+0.3763i	0.3739+0.3225i	0.3739+0.3243i	0.3769+0.3229i	0.3768+0.3245i
18,5	0.3399+0.4506i	0.3400+0.4512i	0.3428+0.4499i	0.3428+0.4508i	0.3255+0.3402i	0.3251+0.3402i	0.3286+0.3399i	0.3284+0.3399i
19	0.3519+0.4717i	0.3520+0.4721i	0.3539+0.4711i	0.3540+0.4716i	0.3273+0.3445i	0.3271+0.3444i	0.3298+0.3441i	0.3296+0.3440i
19,5	0.3676+0.4840i	0.3676+0.4841i	0.3685+0.4835i	0.3686+0.4836i	0.3338+0.3495i	0.3336+0.3494i	0.3354+0.3492i	0.3353+0.3490i
20	0.4659+0.3915i	0.4657+0.3919i	0.4658+0.3915i	0.4655+0.3918i	0.4848+0.2896i	0.4848+0.2894i	0.4844+0.2895i	0.4845+0.2894i
20,5	0.4212+0.4475i	0.4211+0.4470i	0.4205+0.4473i	0.4204+0.4467i	0.4112+0.3184i	0.4110+0.3183i	0.4110+0.3182i	0.4109+0.3180i

21	0.4205+0.4253i	0.4206+0.4237i	0.4190+0.4253i	0.4191+0.4237i	0.4212+0.2993i	0.4211+0.2991i	0.4196+0.2993i	0.4195+0.2991i
21,5	0.4276+0.4259i	0.4279+0.4238i	0.4241+0.4254i	0.4245+0.4233i	0.4367+0.2987i	0.4366+0.2988i	0.4338+0.2984i	0.4337+0.2984i
22	0.4252+0.4231i	0.4255+0.4176i	0.4206+0.4230i	0.4209+0.4175i	0.4262+0.2937i	0.4265+0.2943i	0.4210+0.2941i	0.4214+0.2948i
22,5	0.4281+0.4281i	0.4277+0.4222i	0.4185+0.4281i	0.4176+0.4220i	0.4313+0.2981i	0.4314+0.2994i	0.4228+0.2986i	0.4235+0.2985i
23	0.4272+0.4284i	0.4282+0.4143i	0.4136+0.4260i	0.4153+0.4120i	0.4369+0.2885i	0.4323+0.2939i	0.4201+0.2884i	0.4169+0.2947i
23,5	0.4341+0.4277i	0.4342+0.4101i	0.4135+0.4270i	0.4137+0.4098i	0.4352+0.2901i	0.4351+0.2956i	0.4146+0.2895i	0.4145+0.2948i
24	0.4266+0.4286i	0.4273+0.3997i	0.3987+0.4288i	0.3992+0.3999i	0.4297+0.2819i	0.4296+0.2923i	0.4004+0.2823i	0.4005+0.2927i
24,5	0.4441+0.4330i	0.4456+0.3871i	0.4061+0.4315i	0.4061+0.3880i	0.4435+0.2703i	0.4444+0.2897i	0.4008+0.2724i	0.4020+0.2908i
25	0.4605+0.4369i	0.4656+0.3853i	0.4012+0.4314i	0.4034+0.3820i	0.4711+0.2693i	0.4704+0.2957i	0.4060+0.2680i	0.4057+0.2929i
25,5	0.4659+0.4740i	0.4613+0.4078i	0.3989+0.4774i	0.3958+0.4114i	0.4488+0.2770i	0.4545+0.3309i	0.3879+0.2805i	0.3914+0.3357i
26	0.4896+0.4720i	0.4932+0.4049i	0.4193+0.4606i	0.4242+0.4025i	0.4987+0.2781i	0.4969+0.3245i	0.4217+0.2807i	0.4195+0.3226i
26,5	0.4795+0.4819i	0.4925+0.4148i	0.4080+0.4687i	0.4168+0.4091i	0.4942+0.2865i	0.4967+0.3440i	0.4169+0.2892i	0.4181+0.3435i
27	0.4961+0.4776i	0.4761+0.4203i	0.4122+0.4857i	0.4125+0.4173i	0.4776+0.2777i	0.4790+0.3514i	0.4145+0.2787i	0.4149+0.3453i
27,5	0.4894+0.4920i	0.4859+0.4203i	0.4207+0.4950i	0.4201+0.4209i	0.4953+0.2912i	0.5006+0.3617i	0.4249+0.2903i	0.4218+0.3534i
28	0.4912+0.4863i	0.4759+0.4288i	0.4092+0.4951i	0.4078+0.4275i	0.4796+0.2942i	0.4808+0.3655i	0.4118+0.2932i	0.4092+0.3590i
SNR / w	w248	w249	w250	w251	w252	w253	w254	w255
7	0.4647+0.2713i	0.4854+0.2806i	0.4575+0.2479i	0.4800+0.2544i	0.4855+0.2806i	0.5053+0.2896i	0.4800+0.2544i	0.5020+0.2604i
7,5	0.4882+0.2811i	0.4825+0.2785i	0.4854+0.2474i	0.4788+0.2459i	0.5179+0.2954i	0.5128+0.2931i	0.5193+0.2554i	0.5133+0.2542i
8	0.5301+0.2479i	0.5259+0.2471i	0.5326+0.2484i	0.5284+0.2476i	0.5235+0.2956i	0.5200+0.2938i	0.5257+0.2968i	0.5223+0.2950i
8,5	0.5511+0.2413i	0.5491+0.2410i	0.5517+0.2414i	0.5497+0.2411i	0.5364+0.2979i	0.5347+0.2971i	0.5370+0.2983i	0.5353+0.2974i
9	0.2956+0.5412i	0.2991+0.5473i	0.2991+0.5473i	0.3027+0.5535i	0.2991+0.5473i	0.3027+0.5535i	0.3027+0.5535i	0.3064+0.5598i
9,5	0.3060+0.5644i	0.3084+0.5681i	0.3084+0.5681i	0.3108+0.5720i	0.3084+0.5681i	0.3108+0.5720i	0.3108+0.5720i	0.3134+0.5760i
10	0.3161+0.5805i	0.3179+0.5831i	0.3179+0.5831i	0.3199+0.5858i	0.3179+0.5831i	0.3198+0.5858i	0.3198+0.5858i	0.3219+0.5886i
10,5	0.3232+0.5924i	0.3250+0.5949i	0.3258+0.5938i	0.3275+0.5964i	0.3248+0.5940i	0.3267+0.5966i	0.3274+0.5954i	0.3294+0.5981i
11	0.5735+0.3551i	0.5737+0.3522i	0.5733+0.3559i	0.5735+0.3530i	0.5754+0.3544i	0.5757+0.3515i	0.5751+0.3552i	0.5754+0.3523i
11,5	0.5795+0.3665i	0.5795+0.3642i	0.5790+0.3677i	0.5790+0.3654i	0.5808+0.3663i	0.5808+0.3640i	0.5803+0.3675i	0.5803+0.3652i
12	0.5828+0.3792i	0.5826+0.3775i	0.5818+0.3808i	0.5815+0.3791i	0.5836+0.3795i	0.5834+0.3778i	0.5826+0.3811i	0.5823+0.3794i
12,5	0.5692+0.3454i	0.5688+0.3443i	0.5690+0.3440i	0.5686+0.3430i	0.5699+0.3428i	0.5696+0.3417i	0.5698+0.3414i	0.5694+0.3404i
13	0.3084+0.5587i	0.3078+0.5587i	0.3077+0.5589i	0.3070+0.5589i	0.3139+0.5561i	0.3133+0.5560i	0.3132+0.5562i	0.3125+0.5562i
13,5	0.5519+0.3338i	0.5517+0.3322i	0.5521+0.3330i	0.5519+0.3314i	0.5506+0.3264i	0.5506+0.3249i	0.5508+0.3257i	0.5508+0.3242i
14	0.5335+0.3062i	0.5332+0.3063i	0.5336+0.3056i	0.5333+0.3058i	0.5321+0.2958i	0.5318+0.2960i	0.5322+0.2953i	0.5319+0.2955i
14,5	0.5240+0.3109i	0.5238+0.3110i	0.5244+0.3109i	0.5241+0.3110i	0.5222+0.2982i	0.5219+0.2983i	0.5225+0.2982i	0.5223+0.2983i
15	0.3744+0.3449i	0.3749+0.3459i	0.3760+0.3442i	0.3766+0.3452i	0.3705+0.3376i	0.3710+0.3387i	0.3722+0.3369i	0.3727+0.3380i
15,5	0.3732+0.3528i	0.3732+0.3532i	0.3758+0.3524i	0.3758+0.3528i	0.3677+0.3432i	0.3678+0.3437i	0.3704+0.3428i	0.3705+0.3433i
16	0.3427+0.3720i	0.3430+0.3737i	0.3450+0.3710i	0.3453+0.3727i	0.3399+0.3524i	0.3401+0.3541i	0.3423+0.3515i	0.3426+0.3531i
16,5	0.3356+0.3584i	0.3354+0.3617i	0.3386+0.3587i	0.3384+0.3620i	0.3362+0.3359i	0.3360+0.3389i	0.3392+0.3362i	0.3390+0.3392i
17	0.3323+0.3615i	0.3321+0.3654i	0.3356+0.3619i	0.3353+0.3658i	0.3332+0.3333i	0.3330+0.3365i	0.3364+0.3337i	0.3363+0.3369i
17,5	0.3270+0.3659i	0.3269+0.3699i	0.3297+0.3663i	0.3296+0.3703i	0.3283+0.3291i	0.3282+0.3320i	0.3310+0.3294i	0.3310+0.3323i
18	0.3196+0.3715i	0.3195+0.3745i	0.3211+0.3718i	0.3210+0.3748i	0.3209+0.3209i	0.3210+0.3227i	0.3225+0.3211i	0.3226+0.3228i
18,5	0.2955+0.4576i	0.2955+0.4582i	0.2972+0.4573i	0.2973+0.4578i	0.2879+0.3423i	0.2877+0.3423i	0.2900+0.3421i	0.2898+0.3420i
19	0.2900+0.4850i	0.2901+0.4854i	0.2908+0.4848i	0.2909+0.4852i	0.2789+0.3494i	0.2788+0.3493i	0.2802+0.3492i	0.2801+0.3491i
19,5	0.2874+0.5021i	0.2874+0.5021i	0.2876+0.5020i	0.2877+0.5020i	0.2733+0.3579i	0.2732+0.3578i	0.2739+0.3578i	0.2738+0.3577i
20	0.3344+0.3598i	0.3343+0.3604i	0.3344+0.3597i	0.3340+0.3603i	0.3465+0.2744i	0.3465+0.2743i	0.3463+0.2743i	0.3464+0.2743i
20,5	0.2986+0.4522i	0.2984+0.4516i	0.2984+0.4522i	0.2984+0.4514i	0.2938+0.3207i	0.2938+0.3206i	0.2936+0.3207i	0.2937+0.3207i
21	0.2959+0.4283i	0.2959+0.4265i	0.2957+0.4282i	0.2957+0.4264i	0.2958+0.3006i	0.2957+0.3005i	0.2956+0.3006i	0.2955+0.3005i
21,5	0.2979+0.4177i	0.2983+0.4149i	0.2981+0.4178i	0.2985+0.4150i	0.3055+0.2919i	0.3054+0.2919i	0.3056+0.2919i	0.3056+0.2920i
22	0.2966+0.4260i	0.2962+0.4208i	0.2972+0.4259i	0.2967+0.4209i	0.2958+0.2955i	0.2956+0.2959i	0.2964+0.2954i	0.2962+0.2957i
22,5	0.2940+0.4236i	0.2939+0.4181i	0.2974+0.4232i	0.2971+0.4183i	0.3005+0.2934i	0.2994+0.2941i	0.3021+0.2942i	0.3012+0.2946i
23	0.2935+0.4210i	0.2962+0.4088i	0.2951+0.4219i	0.2986+0.4074i	0.2899+0.2906i	0.2947+0.2910i	0.2943+0.2875i	0.2966+0.2922i
23,5	0.2933+0.4248i	0.2932+0.4078i	0.2997+0.4250i	0.2994+0.4080i	0.2935+0.2878i	0.2935+0.2929i	0.2998+0.2881i	0.3002+0.2931i
24	0.2813+0.4303i	0.2816+0.4007i	0.2913+0.4304i	0.2918+0.4007i	0.2830+0.2835i	0.2828+0.2942i	0.2936+0.2832i	0.2935+0.2939i
24,5	0.2876+0.4295i	0.2869+0.3918i	0.3057+0.4296i	0.3056+0.3912i	0.2822+0.2778i	0.2830+0.2935i	0.3018+0.2769i	0.3025+0.2928i
25	0.2771+0.4268i	0.2768+0.3791i	0.3135+0.4278i	0.3155+0.3799i	0.2772+0.2653i	0.2769+0.2887i	0.3198+0.2662i	0.3190+0.2899i

25,5	0.2679+0.4831i	0.2671+0.4177i	0.3196+0.4813i	0.3153+0.4153i	0.2642+0.2859i	0.2656+0.3405i	0.3076+0.2846i	0.3109+0.3393i
26	0.2901+0.4652i	0.2841+0.4025i	0.3477+0.4578i	0.3484+0.3989i	0.2773+0.2828i	0.2787+0.3328i	0.3433+0.2843i	0.3468+0.3291i
26,5	0.2625+0.4607i	0.2678+0.3993i	0.3331+0.4633i	0.3357+0.4044i	0.2800+0.2739i	0.2750+0.3327i	0.3456+0.2833i	0.3396+0.3394i
27	0.2775+0.4791i	0.2786+0.4104i	0.3419+0.4815i	0.3447+0.4116i	0.2784+0.2816i	0.2788+0.3435i	0.3453+0.2801i	0.3462+0.3431i
27,5	0.2845+0.4908i	0.2855+0.4209i	0.3510+0.4925i	0.3519+0.4213i	0.2848+0.2876i	0.2849+0.3525i	0.3530+0.2885i	0.3520+0.3524i
28	0.2735+0.4926i	0.2751+0.4223i	0.3391+0.4945i	0.3402+0.4252i	0.2814+0.2854i	0.2775+0.3535i	0.3445+0.2894i	0.3418+0.3566i

A continuación, se proporcionará una definición de la constelación QQAM. Cada palabra de celda de entrada (y_0, …, y_{m-1}) se modulará utilizando unas constelaciones QQAM no uniformes para dar un punto de constelación zq anterior a la normalización, donde m corresponde al número de bits por símbolo QAM m = $\log_2(M)$. El vector de los puntos de constelación complejos $x_{0 \ldots M-1}$ para todas las combinaciones de los bits de entrada $y_{0\ldots m-1}$ (correspondiente a los valores decimales 0 a M-1) son dados en las tablas mostradas anteriormente para los diversos tamaños de constelación dependiendo del vector de posición QQAM $w_{0\ldots b-1}$, que define las posiciones del punto de constelación de un primer cuadrante de la constelación no uniforme. La longitud b del vector de posición w QQAM se define por b = M/4. El vector de posición QQAM define un primer cuadrante de la constelación (por ejemplo, representando el primer cuadrante de un sistema de coordenadas cartesiano según el cual se orienta la constelación), a saber, los puntos de constelación con los valores decimales 0 (por ejemplo, $y_{0\ldots m}$ = 0000 en caso de un 16QQAM) a b-1 (por ejemplo, $y_{0\ldots m}$ = 0011 en cado de un 16-QQAM), mientras los puntos de constelación de los cuadrantes restantes se derivan como sigue:

$X_{0\ldots b-1} = w_{0\ldots b-1}$ (1. Cuadrante I)

$X_{b\ldots 2b-1} = \text{conj}(w_{0\ldots b-1})$ (2. Cuadrante II)

$X_{2b\ldots 3b-1} = -\text{conj}(w_{0\ldots b-1})$ (3. Cuadrante IV)

$X_{3b\ldots 4b-1} = -w_{0\ldots b-1}$ (4. Cuadrante III)

Siendo conj la conjugada compleja. Por ejemplo, para SNR = 2dB, el punto de constelación z_q correspondiente para una 16-QQAM definida por el vector de posición QQAM (w0…3) = (0.5879 + 0.4053i, 1.0566 + 0.6114i, 0.4053 + 0.5879i, 0.6114 + 1.0566i) y la palabra de celda de entrada ($y_0..y_{m-1}$) = (1100) es $x_{12} = -w_0$ = -0.5879 – 0.4053i. La constelación completa para este vector de posición NUC para SNR = 2dB para 16-QQAM se muestra en la fig. 9 con todas las palabras de celda de entrada marcadas en los puntos de constelación correspondientes.

Como se ha mencionado anteriormente el vector de posición w de constelación como se define en la presente memoria no contiene necesariamente los puntos de constelación del primer cuadrante de la constelación, pero podría contener también los puntos de constelación de cualquiera de los cuatro cuadrantes. Debido a la simetría de los cuadrantes esto conduce a constelaciones con una asignación de bit diferente, pero con idéntico rendimiento. El vector de posición w de constelación en las tablas definidas en la presente memoria debería por lo tanto considerarse como un ejemplo para que todas las cuatro constelaciones simétricas con una asignación de bit diferente pero idéntico rendimiento.

Obviamente, son posibles un gran número de modificaciones y variaciones de la presente exposición a la luz de las enseñanzas anteriores. Por lo tanto, se ha de comprender que, dentro del alcance de las reivindicaciones adjuntas, la exposición puede practicarse de una manera distinta a la descrita específicamente en la presente memoria (por ejemplo, si los vectores de posición NUC están rodeados por un número menor de dígitos).

En la medida en que las realizaciones de la exposición se han descrito como implementadas, al menos en parte, por un aparato de procesamiento de datos controlado por software, se apreciará que un medio legible por máquina no transitorio que lleva tal software, tal como un disco óptico, un disco magnético, una memoria semiconductora o similar, también se considera que representa una realización de la presente exposición. Además, tal software también se puede distribuir de otras maneras, tal como mediante Internet u otros sistemas de telecomunicaciones con cables o inalámbricos.

Un circuito que se puede utilizar para implementar uno o más de los elementos del aparato reivindicado es un ensamblaje estructural de componentes electrónicos que incluyen elementos de circuito convencionales, circuitos integrados que incluyen circuitos integrados específicos de aplicación, circuitos integrados estándares, productos estándares específicos de aplicación, y matrices de puertas lógicas programables en campo. Además, un circuito incluye unidades de procesamiento central, unidades de procesamiento de gráficos, y microprocesadores que están programados o configurados según un código de software. Un circuito no incluye software puro, aunque un circuito incluye el software de ejecución de hardware descrito anteriormente.

Cualesquiera signos de referencia las reivindicaciones no deberían construirse como limitativos del alcance.

REIVINDICACIONES

1.- Un aparato de recepción que comprende:

- un receptor (41) para recibir una o más corrientes de transmisión,

- un convertidor inverso (42) para convertir de manera inversa la una o más corrientes de transmisión a valores de constelación, y

- un aparato (43) de demodulación y descodificación para demodular valores de constelación de una constelación a palabras de celda y para decodificar palabras de celda a palabras de datos de salida, en donde se utilizan dieciséis puntos de constelación de la constelación, definiendo los dieciséis puntos de constelación una posición sobre un sistema de coordenadas Cartesiano que representa números complejos con componentes reales sobre un primer eje y componentes imaginarios sobre un segundo eje, siendo los puntos de constelación:

0.5061+0.2474i

0.2474+0.5061i

1.2007+0.4909i

0.4909+1.2007i

0.5061-0.2474i

0.2474-0.5061i

1.2007-0.4909i

0.4909-1.2007i

-0.5061-0.2474i

-0.2474-0.5061i

-1.2007-0.4909i

-0.4909-1.2007i

-0.5061+0.2474i

-0.2474+0.5061i

-1.2007+0.4909i

-0.4909+1.2007i

y siendo asignado cada punto de constelación a una etiqueta de bit que representa una palabra de datos corregida hacia adelante.

2.- Un método de recepción que comprende:

- la recepción de una o más corrientes de transmisión

- la conversión inversa de la una o más corrientes de transmisión recibidas a valores de constelación, y

- la demodulación de valores de constelación de una constelación a palabras de celda y la decodificación de palabras de celda a palabras de datos de salida, en donde se utilizan dieciséis puntos de constelación de la constelación, definiendo los dieciséis puntos de constelación una posición sobre un sistema de coordenadas Cartesiano que representa números complejos con componentes reales sobre un primer eje y componentes imaginarios sobre un segundo eje, siendo los puntos de constelación:

0.5061+0.2474i

0.2474+0.5061i

1.2007+0.4909i

0.4909+1.2007i

0.5061-0.2474i

0.2474-0.5061i

1.2007-0.4909i

0.4909-1.2007i

-0.5061-0.2474i

-0.2474-0.5061i

-1.2007-0.4909i

-0.4909-1.2007i

-0.5061+0.2474i

-0.2474+0.5061i

-1.2007+0.4909i

-0.4909+1.2007i

y siendo asignado cada punto de constelación a una etiqueta de bit que representa una palabra de datos corregida hacia adelante.

3.- El aparato de recepción según la reivindicación 1 o el método de recepción según la reivindicación 2, en donde el punto de constelación

0.5061+0.2474i representa los bits 0000

0.2474+0.5061i representa los bits 0001

1.2007+0.4909i representa los bits 0010

0.4909+1.2007i representa los bits 0011

0.5061-0.2474i representa los bits 0100

0.2474-0.5061i representa los bits 0101

1.2007-0.4909i representa los bits 0110

0.4909-1.2007i representa los bits 0111

-0.5061-0.2474i representa los bits 1000

-0.2474-0.5061i representa los bits 1001

-1.2007-0.4909i representa los bits 1010

-0.4909-1.2007i representa los bits 1011

-0.5061+0.2474i representa los bits 1100

-0.2474+0.5061i representa los bits 1101

-1.2007+0.4909i representa los bits 1110

-0.4909+1.2007i representa los bits 1111

4.- Un aparato de recepción que comprende:

- un receptor (41) para recibir una o más corrientes de transmisión,

- un convertidor inverso (42) para convertir de manera inversa la una o más corrientes de transmisión a valores de constelación, y

- un aparato (43) de demodulación y descodificación para demodular valores de constelación de una constelación a palabras de celda y para decodificar palabras de celda a palabras de datos de salida, en donde se utilizan dieciséis puntos de constelación de la constelación, definiendo los dieciséis puntos de constelación una posición sobre un sistema de coordenadas Cartesiano que representa números complejos con componentes reales sobre un primer eje y componentes imaginarios sobre un segundo eje, siendo los puntos de constelación:

0.2606+0.4718i

0.4718+0.2606i

0.4984+1.2088i

1.2088+0.4984i

0.2606-0.4718i

0.4718-0.2606i

0.4984-12088i

1.2088-0.4984i

-0.2606-0.4718i

-0.4718-0.2606i

-0.4984-1.2088i

-1.2088-0.4984i

-0.2606+0.4718i

-0.4718+0.2606i

-0.4984+1.2088i

-1.2088+0.4984i

y siendo asignado cada punto de constelación a una etiqueta de bit que representa una palabra de datos corregida hacia delante.

5.- Un método de recepción que comprende:

- la recepción de una o más corrientes de transmisión

- la conversión inversa de la una o más corrientes de transmisión recibidas a valores de constelación, y

- la demodulación de valores de constelación de una constelación a palabras de celda y la decodificación de palabras de celda a palabras de datos de salida, en donde se utilizan dieciséis puntos de constelación de la constelación, definiendo los dieciséis puntos de constelación una posición sobre un sistema de coordenadas Cartesiano que representa números complejos con componentes reales sobre un primer eje y componentes imaginarios sobre un segundo eje, siendo los puntos de constelación:

0.2606+0.4718i

0.4718+0.2606i

0.4984+1.2088i

1.2088+0.4984i

0.2606-0.4718i

0.4718-0.2606i

0.4984-12088i

1.2088-0.4984i

-0.2606-0.4718i

-0.4718-0.2606i

-0.4984-1.2088i

-1.2088-0.4984i

-0.2606+0.4718i

-0.4718+0.2606i

-0.4984+1.2088i

-1.2088+0.4984i

y siendo asignado cada punto de constelación a una etiqueta de bit que representa una palabra de datos corregida hacia delante.

6.- El aparato de recepción según la reivindicación 4 o el método de recepción según la reivindicación 5, en donde el punto de constelación

0.2606+0.4718i representa los bits 0000

0.4718+0.2606i representa los bits 0001

0.4984+1.2088i representa los bits 0010

1.2088+0.4984i representa los bits 0011

0.2606-0.4718i representa los bits 0100

0.4718-0.2606i representa los bits 0101

0.4984-12088i representa los bits 0110

1.2088-0.4984i representa los bits 0111

-0.2606-0.4718i representa los bits 1000

-0.4718-0.2606i representa los bits 1001

-0.4984-1.2088i representa los bits 1010

-1.2088-0.4984i representa los bits 1011

-0.2606+0.4718i representa los bits 1100

-0.4718+0.2606i representa los bits 1101

-0.4984+1.2088i representa los bits 1110

-1.2088+0.4984i representa los bits 1111

7.- El aparato de recepción según cualquiera de las reivindicaciones 1, 3, 4 o 6 o el método de recepción según cualquiera de las reivindicaciones 2, 3, 5 o 6, en donde cada etiqueta de bit representa 4 bits.

8.- El aparato de recepción según cualquiera de las reivindicaciones 1, 3, 4, 6 o 7 o el método de recepción según cualquiera de las reivindicaciones 2, 3, 5, 6 o 7, en donde los puntos de constelación dentro de un cuadrante del sistema de coordenadas Cartesiano están dispuestos a distancias distintas entre sí.

9.- El aparato de recepción según cualquiera de las reivindicaciones 1, 3, 4 o 6 a 8 o el método de recepción según cualquiera de las reivindicaciones 2, 3 o 5 a 8, siendo el receptor un receptor de transmisión satélite.

10.- El aparato de recepción según cualquiera de las reivindicaciones 1, 3, 4 o 6 a 9 o el método de recepción según cualquiera de las reivindicaciones 2, 3 o 5 a 9, siendo las corrientes de transmisión una señal que tiene características de canal de Ruido Gaussiano Blanco Aditivo.

11.- El aparato de recepción según cualquiera de las reivindicaciones 1, 3, 4 o 6 a 10, en donde el aparato (43) de demodulación y descodificación está configurado para decodificar palabras de celda con respecto a los puntos de constelación considerando de valores intangibles.

12.- El método de recepción según cualquiera de las reivindicaciones 2, 3 o 5 a 10, en donde la decodificación está configurada para decodificar palabras de celdas con respecto a los puntos de constelación considerando valores intangibles.

13.- Un programa informático que comprende medios de código de programa para hacer que un ordenador lleve a cabo las operaciones del método como se ha reivindicado en cualquiera de las reivindicaciones 2, 3, 5 a 10 o 12 cuando dicho programa informático es llevado a cabo en el ordenador.

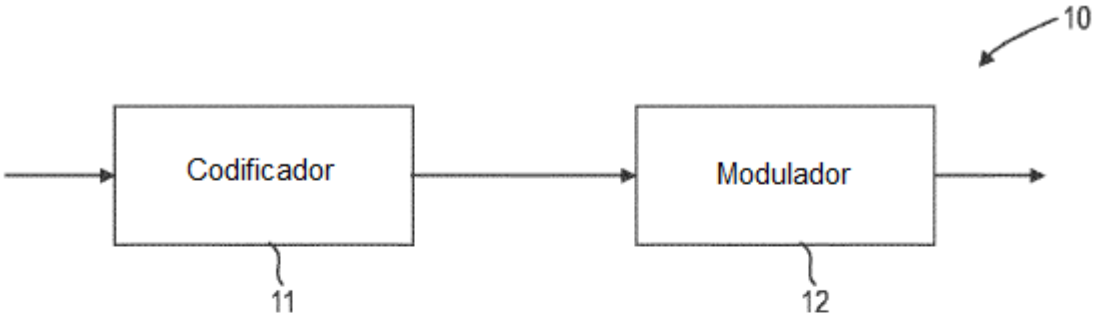

Fig. 1

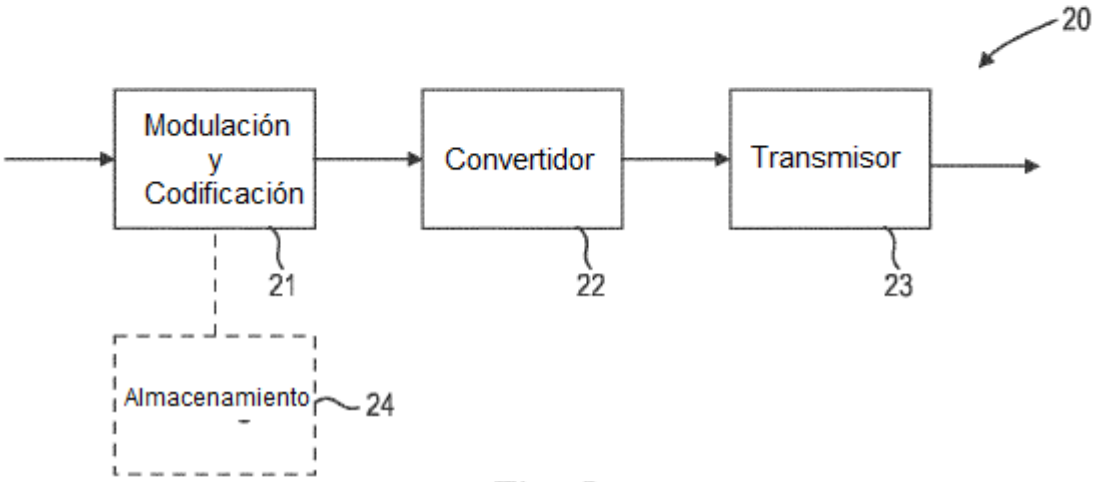

Fig. 2

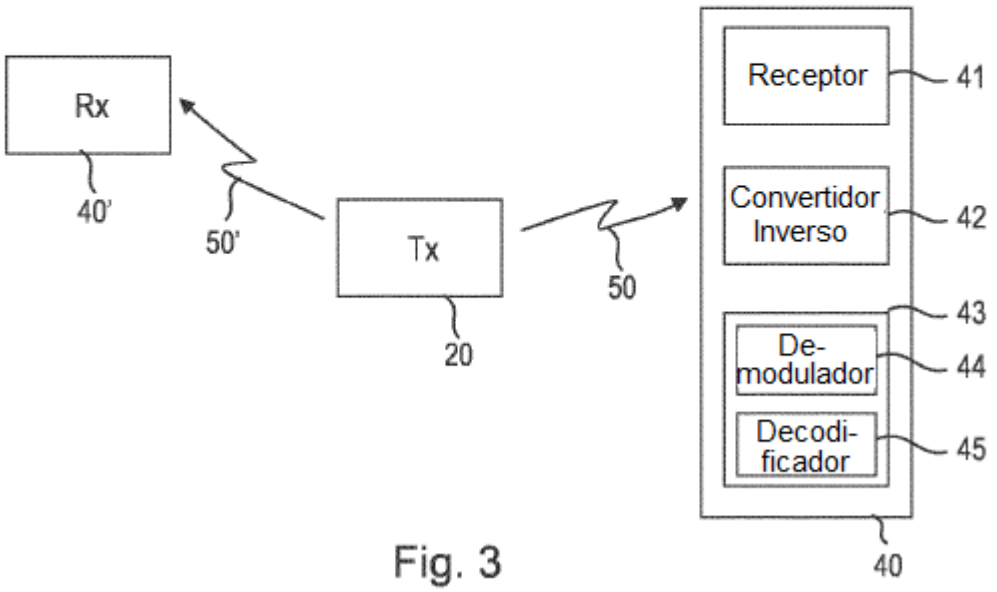

Fig. 3

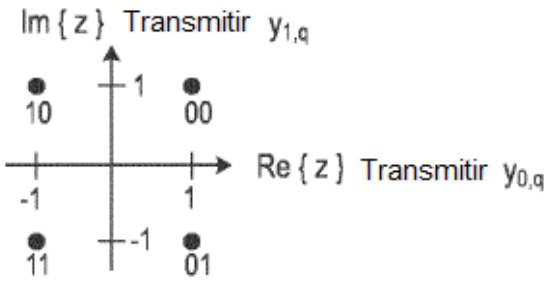

Fig. 4

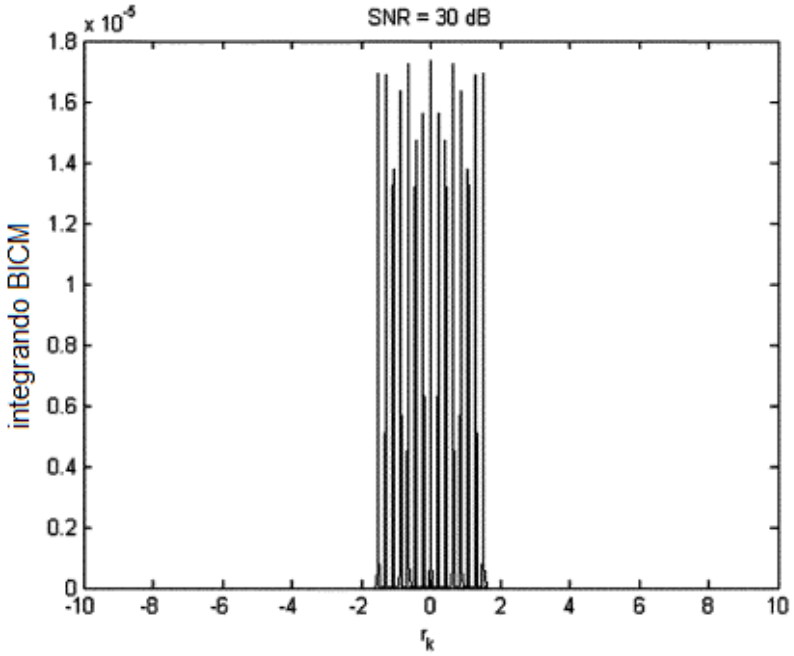

Fig. 5A

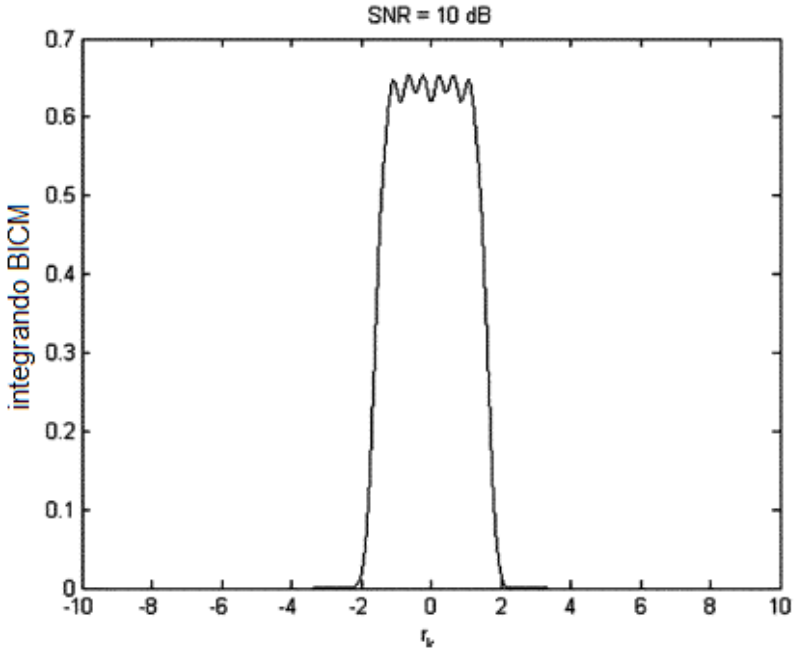

Fig. 5B

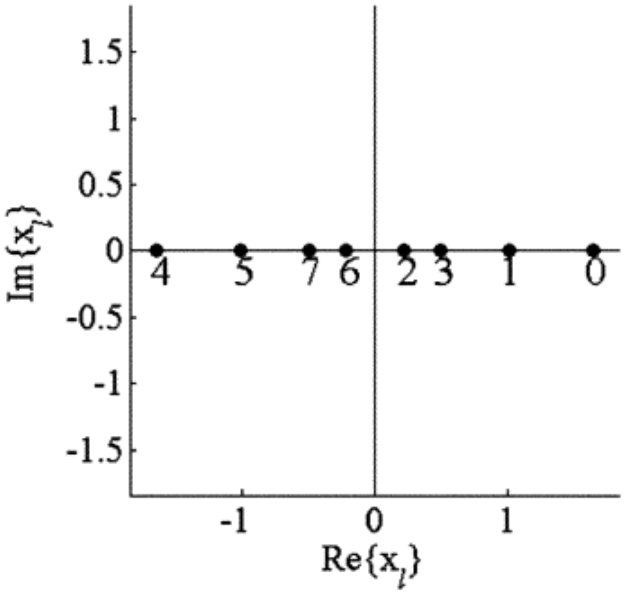
1.5
1
0.5
0
-0.5
-1
-1.5
Im{x_l}
4 5 7 6 2 3 1 0
-1
0
1
Re{x_l}

Fig. 6A

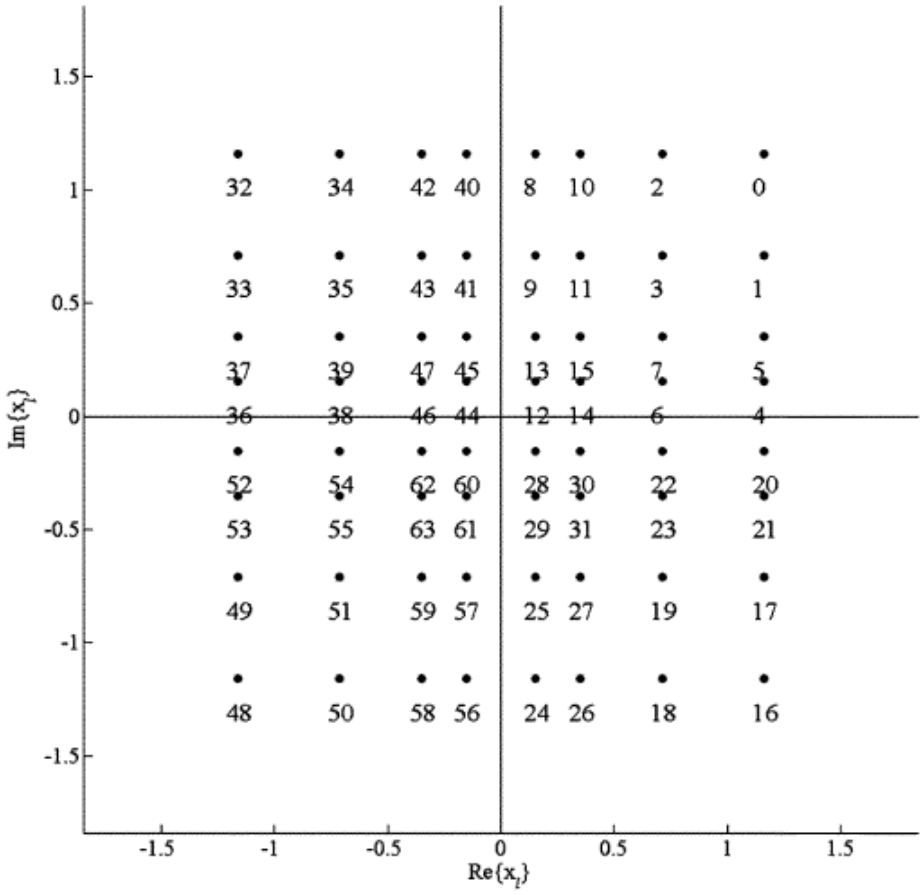
1.5
1
0.5
0
-0.5
-1
-1.5
Im{x_l}
32 34 42 40 8 10 2 0
33 35 43 41 9 11 3 1
37 39 47 45 13 15 7 5
36 38 46 44 12 14 6 4
52 54 62 60 28 30 22 20
53 55 63 61 29 31 23 21
49 51 59 57 25 27 19 17
48 50 58 56 24 26 18 16
-1.5 -1 -0.5 0 0.5 1 1.5
Re{x_l}

Fig. 6B

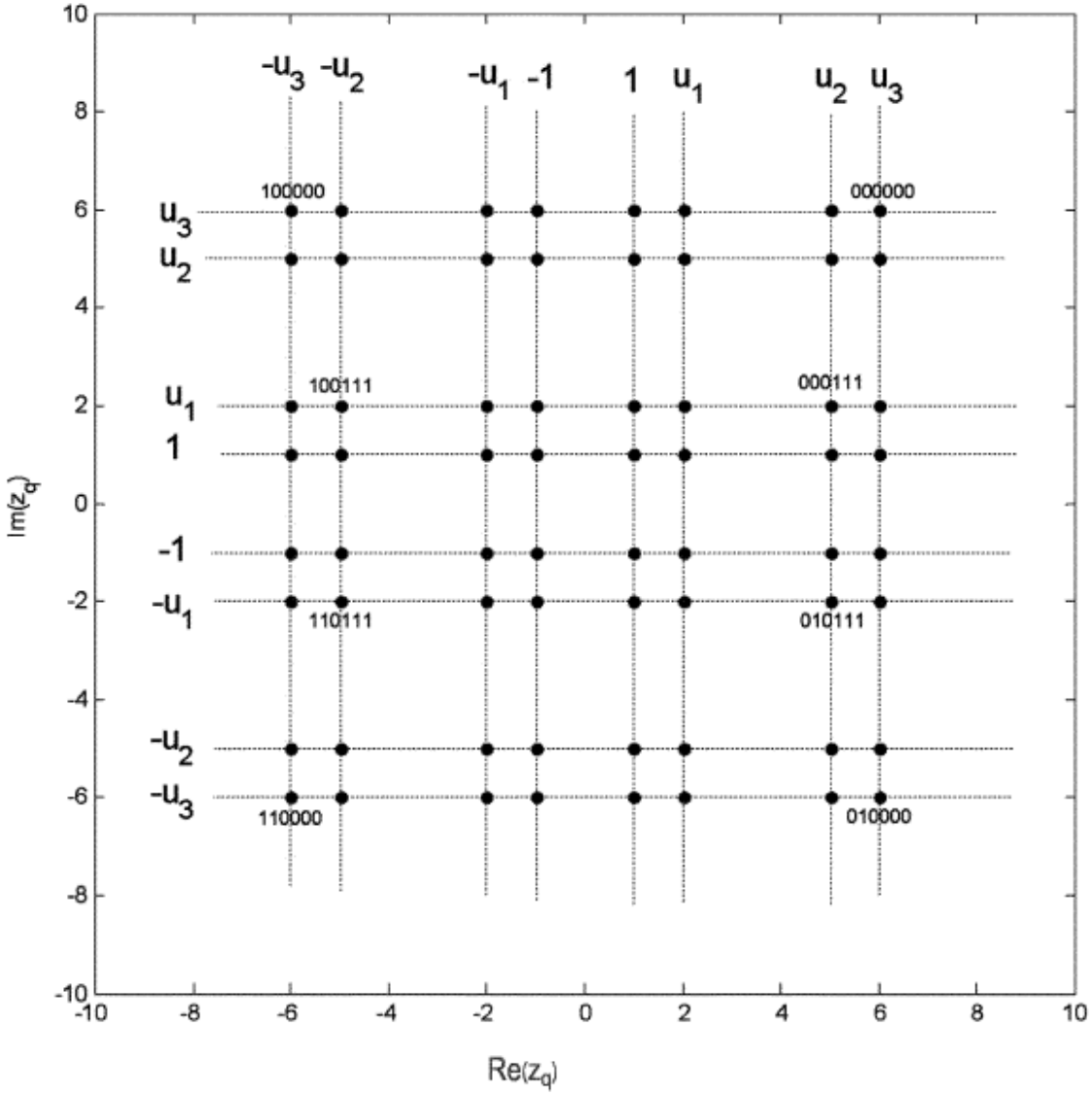
-u3 -u2
-u1 -1
1 u1
u2 u3
100000
000000
u3
u2
100111
000111
u1
1
-1
-u1
110111
010111
-u2
-u3
110000
010000
Im(zq)
Re(zq)

Fig. 7

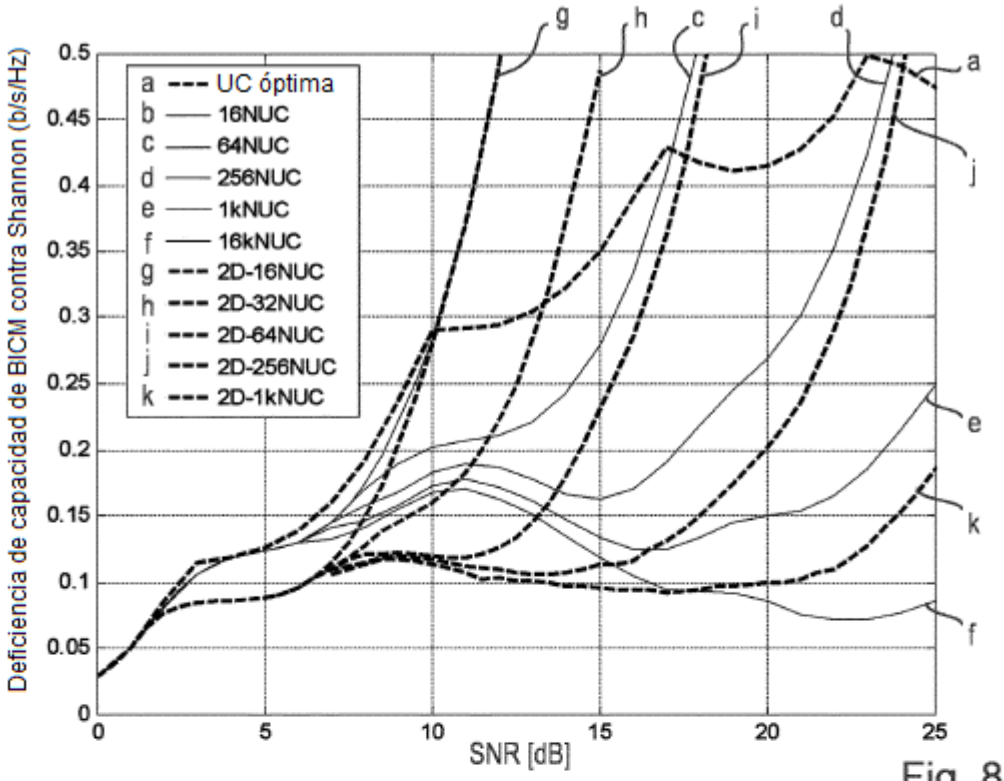
Deficiencia de capacidad de BICM contra Shannon (b/s/Hz)
SNR [dB]
a --- UC óptima
b — 16NUC
c — 64NUC
d — 256NUC
e — 1kNUC
f — 16kNUC
g --- 2D-16NUC
h --- 2D-32NUC
i --- 2D-64NUC
j --- 2D-256NUC
k --- 2D-1kNUC
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0
5
10
15
20
25

Fig. 8

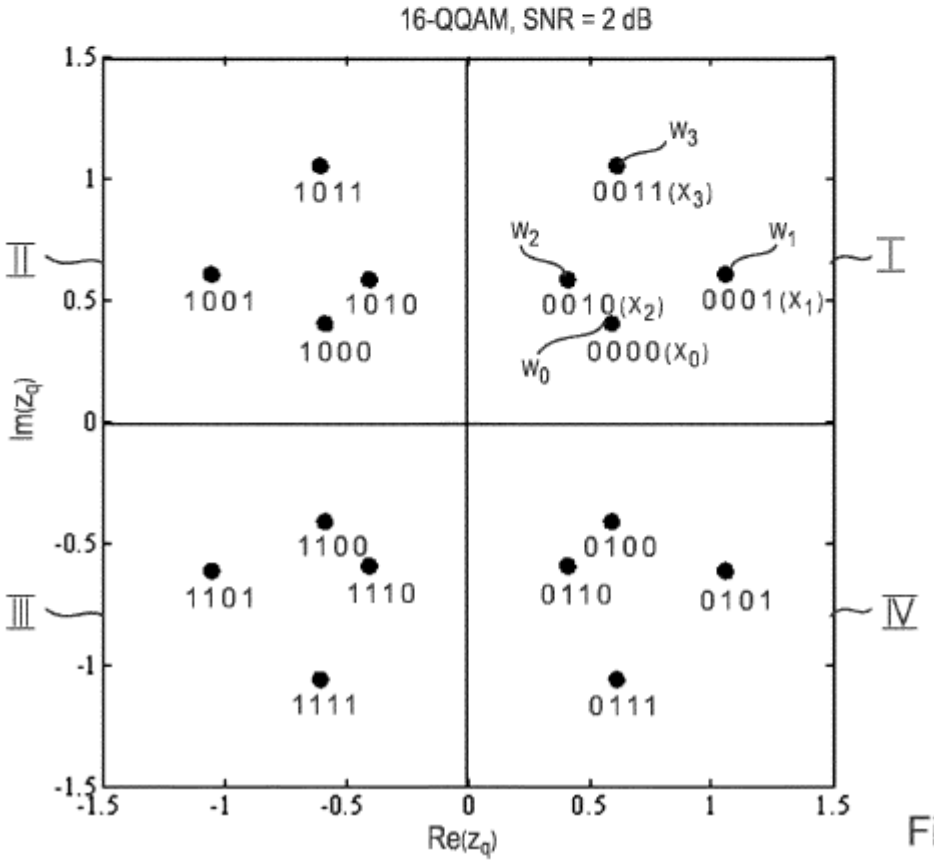
16-QQAM, SNR = 2 dB
Im(z_q)
Re(z_q)
1011
1001
1010
1000
1100
1101
1110
1111
0100
0110
0101
0111
W3
0011(X3)
W2
W1
0010(X2)
0001(X1)
W0
0000(X0)
I
II
III
IV
1.5
1
0.5
0
-0.5
-1
-1.5

Fig. 9