IEEE P802.15
Wireless Personal Area Networks

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Title	**Examples of 802.15.4 PHY encodings**	
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Abstract	[This document contains examples of modulated frames for IEEE Std 802.15.4. If it has been approved by the IEEE 802.15 WG, the introduction will contain the date of the approval. All other versions of the document are unofficial drafts.]	
Purpose	[The information in the document is an informative supplement to the standard and is intended to assist implementers in correctly implementing the standard..]	
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Release	The contributor acknowledges and accepts that this contribution becomes the property of IEEE and may be made publicly available by P802.15.	

1. Introduction

This document contains example frame encodings for some of the PHYs in IEEE Std 802.15.4.

This document has not been approved by IEEE 802.15.

2. UWB PHY example packet encoding

2.1 Channel used in the example

This is one example of how the PHY would encode a short sample PSDU received from the MAC sublayer. In the example, the PHY transmits at 850 kb/s on channel 3 using preamble code index 6. The example shows how the data are changed by the PHY encoding steps that eventually lead to bursts of pulses for transmission.

2.2 Encoding progression

2.2.1 Transmit PSDU

In this example, the MAC sublayer presents a sample PSDU to the PHY via the PHY service access point (SAP). The sample that will be encoded is the following 17-octet PSDU:

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converted from ASCII to decimal as follows:

85 87 66 32 119 101 108 99 111 109 101 115 32 73 69 69 69

which, in hexadecimal, is as follows:

55 57 42 20 77 65 6C 63 6F 6D 65 73 20 49 45 45 45

Note that the MAC sublayer would not usually present such a PSDU to the PHY because it does not contain a valid cyclic redundancy check (CRC). The purpose of this example is to help the reader to understand the PHY encoding process, not the MAC sublayer.

2.2.2 PSDU bits

For the rest of this , the ternary +, –, 0 notation will be used where + represents a one, 0 represents a zero, and – represents a –1.

The sample PSDU is converted to binary, LSB first and starting with the first bit in time first as follows:

+0+0+0+0+++0+0+00+0000+000000+00+++0+++0+0+00++000++0++0++000++0++++0++0+0++0++0+
0+00++0++00+++000000+00+00+00+0+0+000+0+0+000+0+0+000+0+0+000+0

2.2.3 Reed-Solomon encoded bits

Reed-Solomon encoding is then applied to these bits to give the following bits:

+0+0+0+0+++0+0+00+0000+000000+00+++0+++0+0+00++000++0++0++000++0++++0++0+0++0++0+
0+00++0++00+++000000+00+00+00+0+0+000+0+0+000+0+0+000+000++0++000+++00+0++++0+00+
++++++00+++0+++00+0+00

2.2.4 Convolutional encoder input bits

The next step is to prepend the PHR to this Reed-Solomon encoded data for input to the convolutional coder. Because of the data rate and length of PSDU, the PHR is as follows in Table 1.

Table 1—Example PHR

Rt1	Rt0	L6	L5	L4	L3	L2	L1	L0	Rng	Ext	Pr1	Pr0	C5	C4	C3	C2	C1	C0
0	1	0	0	1	0	0	0	1	0	0	0	1	1	1	0	0	1	1

Prepending this to the PSDU gives the following bit stream:

0+00+000+000+++00+++0+0+0+0+++0+0+00+0000+000000+00+++0+++0+0+00++000++0++0++000+
+0++++0++0+0++0++0+0+00++0++00+++000000+00+00+00+0+0+000+0+0+000+0+0+000+000++0++
000+++00+0++++0+00++++++++00+++0+++00+0+00

2.2.5 Convolutional encoder output bits

Two tail bits are appended to the input bits, and they are input to the convolutional encoder. The convolutional encoder produces two types of output bit: position encoding bits, denoted g_0, and sign or parity bits, denoted g_1.

For this example, the position bits g_0 will be simply a delayed version of the previous bit stream with a zero tail bit or as follows:

00+00+000+000+++00+++0+0+0+0+++0+0+00+0000+000000+00+++0+++0+0+00++000++0++0++000
++0++++0++0+0++0++0+0+00++0++00+++000000+00+00+00+0+0+000+0+0+000+0+0+000+000++0+
+000+++00+0++++0+00++++++++00+++0+++00+0+000

The sign bits g_1 will be as follows:

0+0++0+0+0+0++0++++0+0000000+0+0000++0+00+0+0000+0+++0+0+0+0000+++++0+++0++0+++0+
++0+00+0++000++0++0000++++0++++++0++0000+0++0++0++00000+0+00000+0+00000+0+0+0+++0+
++0++0+++00+00+00+++00000++++0+0+0+++000+00

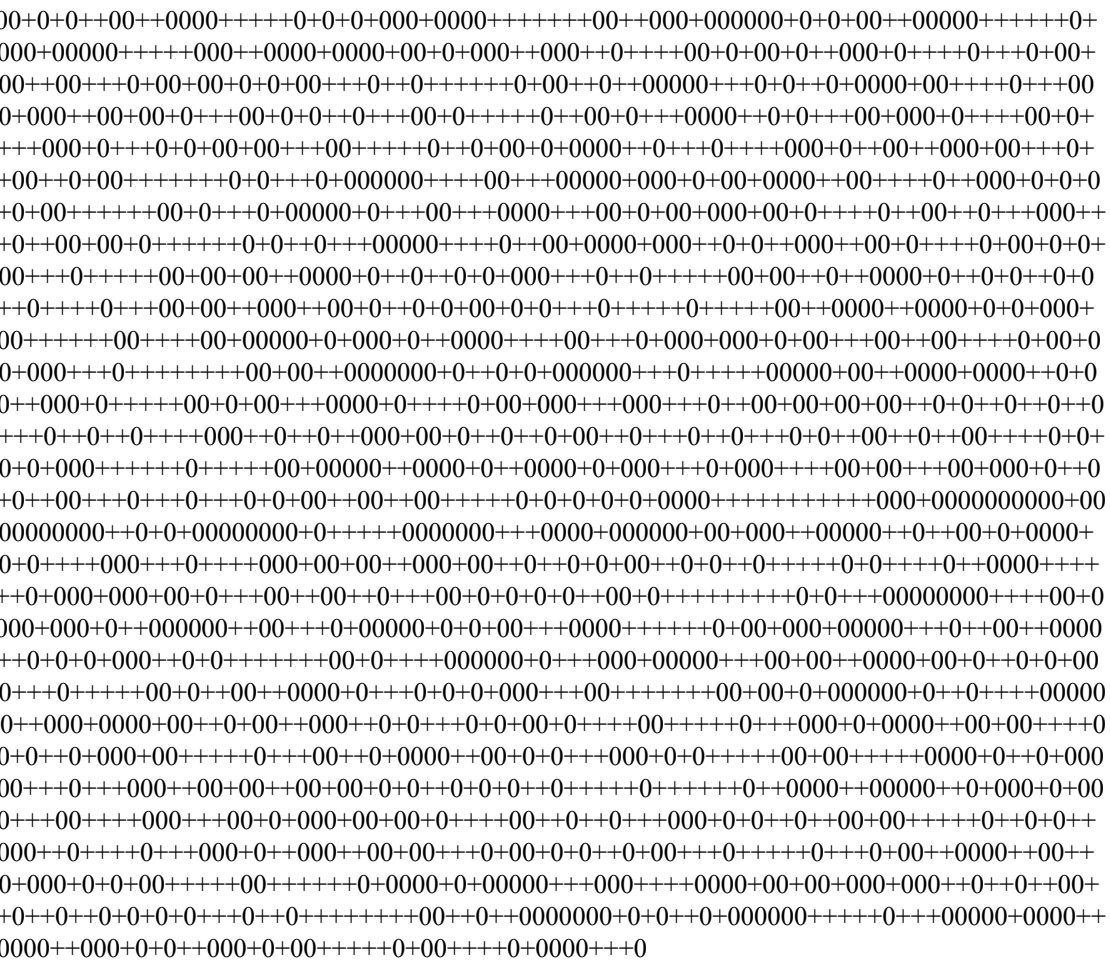
2.2.6 Scrambler output bits

The scrambler is now enlisted to help with the encoding process. For this complex channel, the scrambler initializer, starting at s_{-15} and going to s_{-1}, is as follows:

1 1 1 0 0 0 1 0 1 1 0 1 1 0 1

Since there are 205 of each type of convolutional bits, there will be 205 symbols. Each symbol produces a burst of length 16 so the scrambler provides 3280 bits, which are as follows:

00+00+++0++0+++0++0+00++0++00++0+++0+0++0+0+0++00++++0++++++0+0+000++00000+++++0
0+0+0000+0000+0++++000++000+++000+00+0+00+00+00++0++++0++0++0+0++000++0++0++++0+0
0+0++0++000+++0+++0++0+00+00++00++0+++0++0+0+0+0++00++0+++++++++0+0+0++0000000+++
+++0+000000+00000+++00000++0000+00+0000+0+000++0++000++++00+0++0+00+000+0+++0+++0
++00+++00++00++0+0+00+0+0+0+0+++++0+++++++++0000++00000000+000+0+0000000++00++++0
00000+0+0+000+00000++++++00++0000+00000+0+0+000++0000++++++00+0+000+00000+0++++00+
+0000+++000+0+0+000+00+00++++++00++0++0+00000+0+0++0+++0000+++++0++00+000+0000++0
+0++00++000+0++++0+0+0+00+++000++++++++0+00+00+000000+++0++0++00000+00++0++0+0000+
+0+0++0+++000+0++++0++00+00+++000++0+0++0+00+00+0++++0+++0++0+++000++00++0++00+0
0+0+0+0++0+0++0++++++++0++++0++000000++000++0+00000+0+00+0+++0000++++0+++00+000+00
0++00+0++00++00+0+0+++0+0+0+0+++++00++++++++0000+0+0000000+000++++000000++00+000+



2.2.7 Ternary output symbols

These convolutional encoder and scrambler outputs are used to generate the ternary pulses. In this example, each symbol consists of 512 chips. During each symbol, the 512 chips are silent except for a train of 16 pulses. Table 2 and Table 3 give the chip position of the first pulse and show the signs of the burst of pulses, starting with the first in time. The chip positions in this example can range from 0, the first chip position, to 511, the final chip position. Each symbol is also numbered from 0 to 204.

Table 2—Example ternary output symbols 1

Symbol number	Burst Chip Position	Burst	Symbol number	Burst Chip Position	Burst
0	64	++−++−−−+−−+−−−+	51	16	+−−++−−+−+−+++−+
1	48	++−+−−++−++−−++−	52	288	−+−+−+++++−−++++
2	368	−−−+−+−−+−+−+−−+	53	368	−−−−++++−+−+++++
3	96	−++++−++++++−+−+	54	320	−−+−−−+++++−−−−−
4	0	−−−++−−−−−+++++−	55	48	−−++−+++−+++++−+
5	288	+−+−++++−++++−+−	56	336	+−++−−++−−−++++
6	112	+++−−−++−−−+++−−	57	336	−+−+−+−+++−++++−
7	32	+−++−+−++−++−++−	58	368	++++++−−++−−−+−−
8	80	+−++++−++−++−+−+	59	0	++++−+−+−++−−+++
9	272	−+++−−+−−+−−−+−	60	320	++−−−−−+−+−++++
10	64	−−+−++−++−−−+++−	61	16	−+++++−−−−−+++−−
11	112	−−−+−−+−++−++−−+	62	256	++++−++++−++−+−+
12	96	−++−+++−++−+−+−+	63	64	−−++−−−++−++++−−
13	352	−++−−++−++++++++	64	80	+−+−−+−++−−−+−++
14	288	+−+−+−−++++++−−−	65	304	++−+++−+−−+++−−−
15	368	++++−+−−−−−+−−−	66	304	++−−+++−+−−+−−+−
16	64	−−+++−−−−−++−−−−	67	80	+−+−−+++−++−++++
17	16	+−−+−−−−+−+−−−++	68	48	−−+−++−−+−−+++++
18	352	−++−−−++++−−+−++	69	112	+++−+−++−+−−−−+−
19	288	+−++−+++−+−−−+−−	70	352	−++++−+++−−−++−+
20	336	+−++−−+++−−++−−+	71	256	−−−++−−+−−+−+++−
21	80	−+−+−++−+−+−+−+−	72	32	+−+−+−−+−−−++−+−
22	368	−−−−+−−−−−−−−++	73	368	++++−++−−+−+++−−
23	64	++−−++++++++−+++	74	320	−−++−+−+++−−+−−−
24	336	−+−+++++++−−++−−	75	80	−+−−−−++−+−−++−−
25	48	−−++++++−+−+−+++	76	272	+−−−+−+++−+−+−−+
26	272	−+++++−−−−−−++−−	77	320	−−+++−−+++++−++−
27	0	++++−+++++−+−+−+	78	16	+−−+−+−−−−++−+++
28	320	−−++−−−−−++++++−−	79	96	+−−−−+++−+−−++−−
29	336	−+−+++−+++++−+−−	80	0	−−−+−−+++−+−+−+−
30	304	++−−++−−−−+++−−−	81	352	−++−+−−++++++++
31	80	−+−+−+++−++−++−−	82	352	−++++−+−−−−−++++
32	368	−−−−++−−+−−+−+++	83	64	++−−−+++++−+++−+
33	64	++−+−+−−+−−−++++	84	272	+−−+−−−−++−−++++
34	368	−−−−−+−−++−+++−+	85	352	+−−+++−+−+−+++−−
35	0	−−−++−+−++−−++−−	86	288	+−++−−−−−++−+−−−
36	32	−+−++++−+−+−+−−+	87	336	+−+−−−−+−+++−−+
37	304	−−+++−−−−−−+−++	88	48	−−++++−−−++−+−++
38	16	+−−+−−−−−+++−++	89	272	+−−−+−−+−++++−++
39	96	+−−+++++−++−−+−−	90	320	−−++−+++−−−++−+−
40	32	+−+++++−+−+−−+−−	91	80	−+−−++−++−+−−−−−
41	16	+−−−+−++++−++−−+	92	336	−+−+−−+−−−+++++−
42	320	++−−−+++−−+−+−−+	93	112	−−−+−−++−++++−++
43	16	+−−+−−+−++++−+++	94	352	−++−+−++−−−++−−+
44	96	+−−+−−−+++−−++−−	95	352	−++++−+−−+−+−+++
45	96	+−−++−++−+−+−+−−	96	0	+++−−−+−−−−−++−+
46	32	+−+−−+−−−−−−+−−−	97	288	−+−−++−−−−+−++−+
47	48	−−+−−++++++−−+++	98	336	+−+−+−−−+++−++−+
48	48	++−+−−−−+−+−−+−	99	112	−−−−++−++−−+−−++
49	368	−−−+++−−−−+−−−+	100	320	++−+−−+−+−−+−+++
50	32	−+−−−+−−−++−−+−+	101	112	−−−+−−−−+−−−++−+

Table 3—Example ternary output symbols 2

Symbol number	Burst Chip Position	Burst
102	352	+−−+++−−++−+−−+−
103	32	−+−−+−+−+++−++++
104	80	+−+++++−−++−−−−+
105	272	+−−−−+−+−+−−−+−+
106	256	−−−++++++−−++++−
107	32	+−+++++−+−+++−+−
108	272	+−−−−++++−−+++−+
109	256	−−−+−−−+−+−−+++−
110	96	−++−−++++−+−−+−+
111	32	−+−+−−−+++−+++++
112	368	+++−−+−−++−−−−−−
113	288	+−+−−+−+−++++++−
114	304	++−+++++−−−−−+−−
115	48	++−−−−+−−−−++−+−
116	16	−+++−−+++−+−−−−−
117	64	++−+−++−−−++++−+
118	112	−−−−+−++−+++−−−+
119	64	++−−−+−−++−++−++
120	16	+−−++−+−++−++−++
121	288	+−+−−−−+−−+−−+−−
122	48	++−−−++−++−++−−−
123	16	+−−+−++−++−+−−++
124	352	+−−−+−−+−−−+−+−−
125	64	−−++−++−−++++−+−
126	80	+−++−+−+−−−+++++
127	336	−+−−−−−++−++++−
128	16	+−−−−+−++−−−−+−+
129	0	−−−+++−+−−−++++−
130	288	+−++−−−++−+++−+−
131	80	−+−++−+−−++−−−+−
132	304	−−+−−−+−+−++−−++
133	48	−−++−−−−−+−+−+−+
134	336	−+−++++−−−−−−−−−
135	48	++−−−+−−−−−−−−−
136	16	−++−−++++++++−−−
137	32	−+−+−−−−−−−−+−++
138	368	−−−+++++++−−−+++
139	32	+−++++++−++−+++−
140	272	−++++−−+−−++−+−
141	0	++++−+−−+−+−−−−+
142	320	++−−−+−−−−+++−++
143	16	+−−++−−−+−−++−++
144	32	+−+−++−−+−+−−+−−
145	112	+++−+−++++−++−−−
146	352	+−−−−+++−−+−+++−
147	0	+++−++−+−−−++−−+
148	352	+−−+−−−++−+−+−+−
149	96	+−−++−+−−−−−−−−−
150	288	+−+−−−+++++++−−−
151	48	++−−+−−−−−−+−−−
152	80	−+−−++++++−−++−−

Symbol number	Burst Chip Position	Burst
153	80	+−+−−−−−+−+−+−−+
154	304	−−++++−−−−−−+−++
155	16	+−−−+−−−−−+++−++
156	64	++−−++++−++−−+−+
157	80	+−+−−−++−+−+++++
158	304	++−−+−++++−−−−−−
159	336	+−+++−−−+−−−−−++
160	16	−++−++−−++++−++−
161	352	−++−+−+−−−++−+++
162	352	−+++++−−+−++−−++
163	0	−−−−+−+++−+−+−+−
164	64	++−−−++−−−−−−++
165	16	+−−+−+−−−−−+−++
166	352	−++++−−−−−+++−++
167	256	+++−++++−++−−+−+
168	352	−++−−−++−+−+++−+
169	32	−+−−+−++++−−++++
170	80	+−+++−−−+−+−−−−+
171	272	−++−++−−−−+++−+−
172	96	+−−+−+++−++−−−−−
173	352	−+++−−++−+−−−−++
174	320	++−+−+−−−+++−+−+
175	368	−−−−−++−++−−−−−+
176	256	−−−+−++−+−−−−+−−
177	96	+−−−+−−−+++−−++−
178	320	++−−++−++−+−+−−+
179	80	+−+−++−+++++−+++
180	112	+++−++−−−−++−−−−
181	352	−++−+−−−+−+−−−−+
182	352	+−−−++−−−−+++−−−
183	320	++−+−+++−++−++−+
184	368	−−−−++−−+−−+−−−+
185	320	++−+−+−−+−−++−++
186	368	−−−−−+−−+−+−−+−+
187	256	−−−++−++++−+++−−
188	32	−+−++−−−++−−+−−+
189	48	++−+−−+−+−++−+−−
190	368	+++−++++−+++−+−
191	352	+−−++++−−++−−−+−
192	288	−+−−−+−+−+−−++++
193	16	−++−−−−−−+−++++−
194	288	−+−−−−−+++−−−+++
195	272	−++++−++−++−+++−
196	256	−−−++−++−++−−++−
197	32	−+−++−++−+−+−+−+
198	48	++−++−++++++++−−
199	304	−−+−−+++++++−+−+
200	48	−−+−++++++−−−−−+
201	368	−−−+++++−++++−−+
202	32	−+−−−−++−−−+−+−+
203	16	−+++−+−++−−−−−+−
204	64	++−−−−+−++++−−−+

3. MR-FSK PHY example packet encoding

3.1 Introduction

This section provides six examples of how the MR-FSK PHY would encode a sample PSDU received from the MAC sublayer. The list of examples with parameters is given in Table 4. For additional examples, see "Examples of encoding a packet for the MR-FSK PHY– Part 1" [B1] and "Examples of encoding a packet for the MR-FSK PHY– Part 2" [B2]; reference the most recent versions of these documents.

Table 4—Encoding examples for MR-FSK PHY

Example	Modulation	Data whitening	FEC	Interleaving	phyMRFSKSFD	Subclause number
1	Filtered 2FSK	Disabled	Disabled	Disabled	0	3.2
2	Filtered 2FSK	Enabled	Disabled	Disabled	0	3.3
3	Filtered 2FSK	Enabled	RSC	Enabled	0	3.4
4	Filtered 2FSK	Disabled	NRNSC	Enabled	1	3.5
5	Filtered 4FSK	Disabled	Disabled	Disabled	1	3.6
6	Filtered 4FSK	Enabled	RSC	Enabled	0	3.7

In all examples, the message encoded is a PSDU that is 7 octets in length. The message constitutes an acknowledgment frame with a 3-octet MHR and a 4-octet FCS. The bit sequence of the example PSDU is: 0100 0000 0000 0000 0101 0110 0101 1101 0010 1001 1111 1010 0010 1000.

The encoding illustration goes through the following stages:

a) Generating the bit sequence of the SHR
a) Generating the bit sequence of the PHR
a) Concatenating the PHR, PSDU, and when FEC is enabled, tail bits and pad bits
a) Encoding of the concatenated bit sequence with the specified FEC code when FEC is enabled
a) Interleaving of the code-bit sequence when interleaving is enabled (requires FEC also enabled)
a) Data whitening of the PSDU when data whitening is enabled
a) Concatenation to form the PPDU

For each example, the settings of the PIB attributes are also shown.

3.2 Example 1

3.2.1 Settings

For this example, selected PIB attributes are set as follows:

— *phyFSKPreambleLength* = 4
— *phyMRFSKSFD* = 0
— *phyFSKFECEnabled* = FALSE

— *phyFSKFECScheme* = N/A

— *phyFSKScramblePSDU* = FALSE

3.2.2 Generation of the SHR

The bit sequence of the SHR, consisting of four preamble octets and two SFD octets, is given as:

0101 0101 0101 0101 0101 0101 0101 0101 1001 0000 0100 1110

3.2.3 Generation of the PHR

The Mode Switch field is set to zero (no mode switch), the reserved field entries are both set to zero, the FCS Type field is set to zero corresponding to a 4-octet FCS, the Data Whitening field is set to zero (data whitening is not used), and the Frame Length field entries are set to the binary representation of 7, corresponding to the PSDU length of the packet. The complete PHR field is shown in Figure 1.

Bit string index	**0**	**1–2**	**3**	**4**	**5–15**
Field name	Mode Switch	Reserved	FCS Type	Data Whitening	Frame Length
Value	0	0 0	0	0	0 0 0 0 0 0 0 0 1 1 1

Figure 1—PHR for the MR-FSK PHY packet when data whitening is disabled

3.2.4 Concatenating the SHR with the PHR and PSDU

The bit sequence for the PPDU is given as:

0101 0101 0101 0101 0101 0101 0101 0101 1001 0000 0100 1110 0000 0000 0000 0111 0100 0000 0000 0000 0101 0110 0101 1101 0010 1001 1111 1010 0010 1000

3.3 Example 2

3.3.1 Settings

For this example, selected PIB attributes are set as follows:

— *phyFSKPreambleLength* = 4

— *phyMRFSKSFD* = 0

— *phyFSKFECEnabled* = FALSE

— *phyFSKFECScheme* = N/A

— *phyFSKScramblePSDU* = TRUE

3.3.2 Generation of the SHR

The bit sequence of the SHR, consisting of four preamble octets and two SFD octets, is given as:

0101 0101 0101 0101 0101 0101 0101 0101 1001 0000 0100 1110

3.3.3 Generation of the PHR

The Mode Switch field is set to zero (no mode switch), the reserved field entries are both set to zero, the FCS Type field is set to zero corresponding to a 4-octet FCS, the Data Whitening field is set to one (data whitening is used), and the Frame Length field entries are set to the binary representation of 7, corresponding to the PSDU length of the packet. The complete PHR field is shown in Figure 2.

Bit string index	**0**	**1–2**	**3**	**4**	**5–15**
Field name	Mode Switch	Reserved	FCS Type	Data Whitening	Frame Length
Value	0	0 0	0	1	0 0 0 0 0 0 0 0 1 1 1

Figure 2—PHR for the MR-FSK PHY packet when data whitening is enabled

3.3.4 Bit sequence after data whitening of the PSDU and concatenation with PHR

The bit sequence of the PHR and PSDU after data whitening is given as:

0000 1000 0000 0111 0100 1111 0111 0000 1110 0101 0011 0010 0110 1010 0110 0010 0110 0000

3.3.5 Concatenating the SHR with the PHR and PSDU

The bit sequence for the PPDU is given as:

0101 0101 0101 0101 0101 0101 0101 0101 1001 0000 0100 1110 0000 1000 0000 0111 0100 1111 0111 0000 1110 0101 0011 0010 0110 1010 0110 0010 0110 0000

3.4 Example 3

3.4.1 Settings

For these examples, selected PIB attributes are set as follows:

— *phyFSKPreambleLength* = 4
— *phyMRFSKSFD* = 0
— *phyFSKFECEnabled* = TRUE
— *phyFSKFECScheme* = 1
— *phyFSKScramblePSDU* = TRUE
— *phyFSKFECInterleavingRSC* = TRUE

3.4.2 Generation of the SHR

The bit sequence of the SHR, consisting of four preamble octets and two SFD octets, is given as:

0101 0101 0101 0101 0101 0101 0101 0101 0110 1111 0100 1110

3.4.3 Generation of the PHR

The bit sequence of the PHR is generated as in Figure 2 and is:

0000 1000 0000 0111

3.4.4 Concatenating the PHR, PSDU, tail bits, and pad bits

After concatenation of the PHR, PSDU, tail bits, and pad bits, the bit sequence is given as:

0000 1000 0000 0111 0100 0000 0000 0000 0101 0110 0101 1101 0010 1001 1111 1010 0010 1000 0100 1011

3.4.5 Encoding of the bit sequence

The bit sequence after convolutional coding is given as:

0000 0000 1110 1000 0010 1000 0001 1111 0011 1010 0000 1010 0000 1010 0000 1010 0011 0011 1001 0100 0001 0001 0101 0011 0000 1110 0110 1001 1101 0101 1110 1100 1010 1110 1100 1010 0011 0000 1110 0101

3.4.6 Interleaving of the bit sequence

The bit sequence after interleaving is given as:

1100 0000 1110 1000 0110 1000 0000 1100 1010 1010 1010 1010 0000 0011 0000 0000 1101 0011 0000 0100 0101 0111 0100 1000 0001 0110 1101 1011 1001 1000 1111 0100 0100 1010 0100 1011 1011 0010 1100 1110

3.4.7 Bit sequence after data whitening of the PSDU

The bit sequence after data whitening is given as:

1100 0000 1110 1000 0110 1000 0000 1100 1010 0101 1101 1010 1011 0000 0110 1111 1001 0000 1001 1100 0001 1111 1110 0110 1010 1010 0100 1100 1010 0000 1110 1001 1001 1001 1001 1111 0001 0010 1001 1011

3.4.8 Concatenating the SHR with the PHR and PSDU

The bit sequence for the PPDU is given as:

0101 0101 0101 0101 0101 0101 0101 0101 0110 1111 0100 1110 1100 0000 1110 1000 0110 1000 0000 1100 1010 0101 1101 1010 1011 0000 0110 1111 1001 0000 1001 1100 0001 1111 1110 0110 1010 1010 0100 1100 1010 0000 1110 1001 1001 1001 1001 1111 0001 0010 1001 1011

3.5 Example 4

For this example, selected PIB attributes are set as follows:

- *phyFSKFECEnabled* = TRUE
- *phyFSKFECScheme* = 0
- *phyFSKScramblePSDU* = FALSE
- *phyMRFSKSFD* = 1

3.5.1 Generation of the SHR

The bit sequence of the SHR, consisting of four preamble octets and two SFD octets, is given as:

0101 0101 0101 0101 0101 0101 0101 0101 0110 0011 0010 1101

3.5.2 Generation of the PHR

The bit sequence of the PHR is generated as in Figure 1 and is:

0000 0000 0000 0111

3.5.3 Concatenating the PHR, PSDU, tail bits, and pad bits

After concatenation of the PHR, PSDU, tail bits, and pad bits, the bit sequence is given as:

0000 0000 0000 0111 0100 0000 0000 0000 0101 0110 0101 1101 0010 1001 1111 1010 0010 1000 0000 1011

3.5.4 Encoding of the bit sequence

The bit sequence after convolutional coding is given as:

1111 1111 1111 1111 1111 1111 1100 0110 1000 0100 0011 1111 1111 1111 1111 1111 1100 1011 0111 1001 1111 1011 1010 1000 0100 1110 1101 0011 0110 0101 0110 0001 0000 0010 1101 0000 1111 1111 0010 1110

3.5.5 Interleaving of the bit sequence

The bit sequence after interleaving is given as:

1011 1111 0111 1111 0011 1111 1111 1111 1111 1100 1111 1101 1111 1100 1111 0010 0011 0111 1010 1010 1011 1100 1011 0111 0101 1110 0001 0011 1010 0100 0101 1101 1011 0010 1111 0000 1011 0100 0011 1100

3.5.6 Concatenating the SHR with the PHR and PSDU

The bit sequence for the PPDU is given as:

0101 0101 0101 0101 0101 0101 0101 0101 0110 0011 0010 1101 1011 1111 0111 1111 0011 1111 1111 1111 1111 1100 1111 1101 1111 1100 1111 0010 0011 0111 1010 1010 1011 1100 1011 0111 0101 1110 0001 0011 1010 0100 0101 1101 1011 0010 1111 0000 1011 0100 0011 1100

3.6 Example 5

For this example, selected PIB attributes are set as follows:

- *phyFSKFECEnabled* = FALSE
- *phyFSKFECScheme* = 0
- *phyFSKScramblePSDU* = FALSE
- *phyMRFSKSFD* = 1

3.6.1 Generation of the SHR

The preamble consists of *phyFSKPreambleLength* (which is four in these examples) multiples of the 16-bit sequence:

0111 0111 0111 0111

The SFD bit sequence is:

0111 1111 1101 1101 0101 0101 1111 1101

The bit sequence of the SHR is given as:

0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 1111 1101 1101 0101 0101 1111 1101

3.6.2 Generation of the PHR

The bit sequence of the PHR is generated as in Figure 1 and is:

0000 0000 0000 0111

3.6.3 Generation of the PSDU

The bit sequence of the PSDU is:

0100 0000 0000 0000 0101 0110 0101 1101 0010 1001 1111 1010 0010 1000

3.6.4 Concatenating the SHR with the PHR and PSDU

The bit sequence for the PPDU is given as:

0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 1111 1101 1101 0101 0101 1111 1101 0000 0000 0000 0111 0100 0000 0000 0000 0101 0110 0101 1101 0010 1001 1111 1010 0010 1000

3.7 Example 6

3.7.1 Settings

For this example, selected PIB attributes are set as follows:

- *phyFSKPreambleLength* = 4
- *phyMRFSKSFD* = 0
- *phyFSKFECEnabled* = TRUE
- *phyFSKFECScheme* = 1
- *phyFSKScramblePSDU* = TRUE
- *phyFSKFECInterleavingRSC* = TRUE

3.7.2 Generation of the SHR

The bit sequence of the SHR, consisting of eight preamble octets and four SFD octets, is given as:

0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 1101 1111 1111 0111 0101 1111 1101

3.7.3 Generation of the PHR

The bit sequence of the PHR is generated as in Figure 2 and is:

0000 1000 0000 0111

3.7.4 Concatenating the PHR, PSDU, tail bits, and pad bits

After concatenation of the PHR, PSDU, tail bits, and pad bits, the bit sequence is given as:

0000 1000 0000 0111 0100 0000 0000 0000 0101 0110 0101 1101 0010 1001 1111 1010 0010 1000 0100 1011

3.7.5 Encoding of the bit sequence

The bit sequence after convolutional coding is given as:

0000 0000 1110 1000 0010 1000 0001 1111 0011 1010 0000 1010 0000 1010 0000 1010 0011 0011 1001 0100 0001 0001 0101 0011 0000 1110 0110 1001 1101 0101 1110 1100 1010 1110 1100 1010 0011 0000 1110 0101

3.7.6 Interleaving of the bit sequence

The bit sequence after interleaving is given as:

1100 0000 1110 1000 0110 1000 0000 1100 1010 1010 1010 1010 0000 0011 0000 0000 1101 0011 0000 0100 0101 0111 0100 1000 0001 0110 1101 1011 1001 1000 1111 0100 0100 1010 0100 1011 1011 0010 1100 1110

3.7.7 Bit sequence after data whitening of the PSDU

The bit sequence after data whitening is given as:

1100 0000 1110 1000 0110 1000 0000 1100 1010 0101 1101 1010 1011 0000 0110 1111 1001 0000 1001 1100 0001 1111 1110 0110 1010 1010 0100 1100 1010 0000 1110 1001 1001 1001 1001 1111 0001 0010 1001 1011

3.7.8 Concatenating the SHR with the PHR and PSDU

The bit sequence for the PPDU is given as:

0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 0111 1101 1111 1111 0111 0101 1111 1101 1100 0000 1110 1000 0110 1000 0000 1100 1010 0101 1101 1010 1011 0000 0110 1111 1001 0000 1001 1100 0001 1111 1110 0110 1010 1010 0100 1100 1010 0000 1110 1001 1001 1001 1001 1111 0001 0010 1001 1011

4. MR-O-QPSK PHY example packet encoding

4.1 Introduction

The purpose of this example is to show the encoding of a packet for the MR-O-QPSK PHY. In particular, generation of the PPDU chip sequence, c_{PPDU}, is described in detail.

The frequency band used in this example is the 470 MHz band, implying a chip rate of 100 kchip/s. This example uses RateMode zero, which corresponds to a PSDU data rate of 6.25 kb/s.

The encoding illustration goes through the following stages:

a) Generating the bit sequence of the SHR
b) Applying BDE to the bit sequence
c) Applying $(32,1)_0$-DSSS to the bit sequence to obtain the chip sequences c_{SHR}
d) Generating the bit sequence of the PHR
e) Extending the bit sequence by appending six, zero bits
f) Encoding the bit sequence of the PHR with a rate 1/2 convolutional encoder
g) Interleaving of the code-bit sequence
h) Applying BDE to the code-bit sequence
i) Applying $(8,1)_{0/1}$-DSSS to the code-bit sequence to obtain c_{PHR}
j) Generating the bit sequence of the PSDU
k) Extending the bit sequence by appending six, zero bits and pad bits
l) Encoding the bit sequence of the PSDU with a rate 1/2 convolutional encoder
m) Interleaving of the code-bit sequence
n) Applying BDE to the code-bit sequence
o) Applying $(8,1)_{0/1}$-DSSS to the code-bit sequence
p) Insertion of pilot sequences to the chip sequence of the PSDU section, obtaining the chip sequence c_{PSDU}
q) Concatenation $c_{PPDU} = \{c_{SHR}, c_{PHR}, c_{PSDU}\}$

In this example, all binary sequences of length n are treated as bit strings:

$b_0\ b_1\ \ldots\ b_{n-1}$

The corresponding entries are processed b_0 first to b_{n-1} last.

4.2 The message

The example payload of 7 octets is shown in Table 5. It constitutes an acknowledgment frame with a 3-octet MHR and a 4-octet FCS.

4.3 Generation of the SHR

The fixed bit sequence of the SHR, consisting of four, zero preamble octets and two SFD octets, is given as

0000 0000 0000 0000 0000 0000 0000 0000 1110 1011 0110 0010

Table 5—The message

Octet #	Value (Hex)	Octet #	Value (Hex)	Octet #	Value (Hex)	Octet #	Value (Hex)
0	02	2	6A	4	94	6	14
1	00	3	BA	5	5F		

After BDE, this sequence changes to the following:

b_{SHR}^{BDE} = 0000 0000 0000 0000 0000 0000 0000 0000 1011 0010 0100 0011

Each bit of the sequence b_{SHR}^{BDE} is mapped to the corresponding chip sequence with regard to $(32,1)_0$-DSSS. The final sequence of chips, c_{SHR}, is shown in Table 6.

Table 6—Chip sequence c_{SHR}

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
0	1	384	1	768	1	1152	1
1	1	385	1	769	1	1153	1
2	0	386	0	770	0	1154	0
3	1	387	1	771	1	1155	1
4	1	388	1	772	1	1156	1
5	1	389	1	773	1	1157	1
6	1	390	1	774	1	1158	1
7	0	391	0	775	0	1159	0
8	1	392	1	776	1	1160	1
9	0	393	0	777	0	1161	0
10	1	394	1	778	1	1162	1
11	0	395	0	779	0	1163	0
12	0	396	0	780	0	1164	0
13	0	397	0	781	0	1165	0
14	1	398	1	782	1	1166	1
15	0	399	0	783	0	1167	0
16	0	400	0	784	0	1168	0
17	1	401	1	785	1	1169	1
18	1	402	1	786	1	1170	1
19	1	403	1	787	1	1171	1

Table 6—Chip sequence c_{SHR} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
20	0	404	0	788	0	1172	0
21	0	405	0	789	0	1173	0
22	0	406	0	790	0	1174	0
23	0	407	0	791	0	1175	0
24	0	408	0	792	0	1176	0
25	1	409	1	793	1	1177	1
26	1	410	1	794	1	1178	1
27	0	411	0	795	0	1179	0
28	0	412	0	796	0	1180	0
29	1	413	1	797	1	1181	1
30	0	414	0	798	0	1182	0
31	1	415	1	799	1	1183	1
32	1	416	1	800	1	1184	1
33	1	417	1	801	1	1185	1
34	0	418	0	802	0	1186	0
35	1	419	1	803	1	1187	1
36	1	420	1	804	1	1188	1
37	1	421	1	805	1	1189	1
38	1	422	1	806	1	1190	1
39	0	423	0	807	0	1191	0
40	1	424	1	808	1	1192	1
41	0	425	0	809	0	1193	0
42	1	426	1	810	1	1194	1
43	0	427	0	811	0	1195	0
44	0	428	0	812	0	1196	0
45	0	429	0	813	0	1197	0
46	1	430	1	814	1	1198	1
47	0	431	0	815	0	1199	0
48	0	432	0	816	0	1200	0
49	1	433	1	817	1	1201	1
50	1	434	1	818	1	1202	1
51	1	435	1	819	1	1203	1
52	0	436	0	820	0	1204	0

Table 6—Chip sequence c_{SHR} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
53	0	437	0	821	0	1205	0
54	0	438	0	822	0	1206	0
55	0	439	0	823	0	1207	0
56	0	440	0	824	0	1208	0
57	1	441	1	825	1	1209	1
58	1	442	1	826	1	1210	1
59	0	443	0	827	0	1211	0
60	0	444	0	828	0	1212	0
61	1	445	1	829	1	1213	1
62	0	446	0	830	0	1214	0
63	1	447	1	831	1	1215	1
64	1	448	1	832	1	1216	0
65	1	449	1	833	1	1217	0
66	0	450	0	834	0	1218	1
67	1	451	1	835	1	1219	0
68	1	452	1	836	1	1220	0
69	1	453	1	837	1	1221	0
70	1	454	1	838	1	1222	0
71	0	455	0	839	0	1223	1
72	1	456	1	840	1	1224	0
73	0	457	0	841	0	1225	1
74	1	458	1	842	1	1226	0
75	0	459	0	843	0	1227	1
76	0	460	0	844	0	1228	1
77	0	461	0	845	0	1229	1
78	1	462	1	846	1	1230	0
79	0	463	0	847	0	1231	1
80	0	464	0	848	0	1232	1
81	1	465	1	849	1	1233	0
82	1	466	1	850	1	1234	0
83	1	467	1	851	1	1235	0
84	0	468	0	852	0	1236	1
85	0	469	0	853	0	1237	1

Table 6—Chip sequence c_{SHR} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
86	0	470	0	854	0	1238	1
87	0	471	0	855	0	1239	1
88	0	472	0	856	0	1240	1
89	1	473	1	857	1	1241	0
90	1	474	1	858	1	1242	0
91	0	475	0	859	0	1243	1
92	0	476	0	860	0	1244	1
93	1	477	1	861	1	1245	0
94	0	478	0	862	0	1246	1
95	1	479	1	863	1	1247	0
96	1	480	1	864	1	1248	1
97	1	481	1	865	1	1249	1
98	0	482	0	866	0	1250	0
99	1	483	1	867	1	1251	1
100	1	484	1	868	1	1252	1
101	1	485	1	869	1	1253	1
102	1	486	1	870	1	1254	1
103	0	487	0	871	0	1255	0
104	1	488	1	872	1	1256	1
105	0	489	0	873	0	1257	0
106	1	490	1	874	1	1258	1
107	0	491	0	875	0	1259	0
108	0	492	0	876	0	1260	0
109	0	493	0	877	0	1261	0
110	1	494	1	878	1	1262	1
111	0	495	0	879	0	1263	0
112	0	496	0	880	0	1264	0
113	1	497	1	881	1	1265	1
114	1	498	1	882	1	1266	1
115	1	499	1	883	1	1267	1
116	0	500	0	884	0	1268	0
117	0	501	0	885	0	1269	0
118	0	502	0	886	0	1270	0

Table 6—Chip sequence c_{SHR} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
119	0	503	0	887	0	1271	0
120	0	504	0	888	0	1272	0
121	1	505	1	889	1	1273	1
122	1	506	1	890	1	1274	1
123	0	507	0	891	0	1275	0
124	0	508	0	892	0	1276	0
125	1	509	1	893	1	1277	1
126	0	510	0	894	0	1278	0
127	1	511	1	895	1	1279	1
128	1	512	1	896	1	1280	1
129	1	513	1	897	1	1281	1
130	0	514	0	898	0	1282	0
131	1	515	1	899	1	1283	1
132	1	516	1	900	1	1284	1
133	1	517	1	901	1	1285	1
134	1	518	1	902	1	1286	1
135	0	519	0	903	0	1287	0
136	1	520	1	904	1	1288	1
137	0	521	0	905	0	1289	0
138	1	522	1	906	1	1290	1
139	0	523	0	907	0	1291	0
140	0	524	0	908	0	1292	0
141	0	525	0	909	0	1293	0
142	1	526	1	910	1	1294	1
143	0	527	0	911	0	1295	0
144	0	528	0	912	0	1296	0
145	1	529	1	913	1	1297	1
146	1	530	1	914	1	1298	1
147	1	531	1	915	1	1299	1
148	0	532	0	916	0	1300	0
149	0	533	0	917	0	1301	0
150	0	534	0	918	0	1302	0
151	0	535	0	919	0	1303	0

Table 6—Chip sequence c_{SHR} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
152	0	536	0	920	0	1304	0
153	1	537	1	921	1	1305	1
154	1	538	1	922	1	1306	1
155	0	539	0	923	0	1307	0
156	0	540	0	924	0	1308	0
157	1	541	1	925	1	1309	1
158	0	542	0	926	0	1310	0
159	1	543	1	927	1	1311	1
160	1	544	1	928	1	1312	0
161	1	545	1	929	1	1313	0
162	0	546	0	930	0	1314	1
163	1	547	1	931	1	1315	0
164	1	548	1	932	1	1316	0
165	1	549	1	933	1	1317	0
166	1	550	1	934	1	1318	0
167	0	551	0	935	0	1319	1
168	1	552	1	936	1	1320	0
169	0	553	0	937	0	1321	1
170	1	554	1	938	1	1322	0
171	0	555	0	939	0	1323	1
172	0	556	0	940	0	1324	1
173	0	557	0	941	0	1325	1
174	1	558	1	942	1	1326	0
175	0	559	0	943	0	1327	1
176	0	560	0	944	0	1328	1
177	1	561	1	945	1	1329	0
178	1	562	1	946	1	1330	0
179	1	563	1	947	1	1331	0
180	0	564	0	948	0	1332	1
181	0	565	0	949	0	1333	1
182	0	566	0	950	0	1334	1
183	0	567	0	951	0	1335	1
184	0	568	0	952	0	1336	1

Table 6—Chip sequence c_{SHR} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
185	1	569	1	953	1	1337	0
186	1	570	1	954	1	1338	0
187	0	571	0	955	0	1339	1
188	0	572	0	956	0	1340	1
189	1	573	1	957	1	1341	0
190	0	574	0	958	0	1342	1
191	1	575	1	959	1	1343	0
192	1	576	1	960	1	1344	1
193	1	577	1	961	1	1345	1
194	0	578	0	962	0	1346	0
195	1	579	1	963	1	1347	1
196	1	580	1	964	1	1348	1
197	1	581	1	965	1	1349	1
198	1	582	1	966	1	1350	1
199	0	583	0	967	0	1351	0
200	1	584	1	968	1	1352	1
201	0	585	0	969	0	1353	0
202	1	586	1	970	1	1354	1
203	0	587	0	971	0	1355	0
204	0	588	0	972	0	1356	0
205	0	589	0	973	0	1357	0
206	1	590	1	974	1	1358	1
207	0	591	0	975	0	1359	0
208	0	592	0	976	0	1360	0
209	1	593	1	977	1	1361	1
210	1	594	1	978	1	1362	1
211	1	595	1	979	1	1363	1
212	0	596	0	980	0	1364	0
213	0	597	0	981	0	1365	0
214	0	598	0	982	0	1366	0
215	0	599	0	983	0	1367	0
216	0	600	0	984	0	1368	0
217	1	601	1	985	1	1369	1

Table 6—Chip sequence c_{SHR} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
218	1	602	1	986	1	1370	1
219	0	603	0	987	0	1371	0
220	0	604	0	988	0	1372	0
221	1	605	1	989	1	1373	1
222	0	606	0	990	0	1374	0
223	1	607	1	991	1	1375	1
224	1	608	1	992	1	1376	1
225	1	609	1	993	1	1377	1
226	0	610	0	994	0	1378	0
227	1	611	1	995	1	1379	1
228	1	612	1	996	1	1380	1
229	1	613	1	997	1	1381	1
230	1	614	1	998	1	1382	1
231	0	615	0	999	0	1383	0
232	1	616	1	1000	1	1384	1
233	0	617	0	1001	0	1385	0
234	1	618	1	1002	1	1386	1
235	0	619	0	1003	0	1387	0
236	0	620	0	1004	0	1388	0
237	0	621	0	1005	0	1389	0
238	1	622	1	1006	1	1390	1
239	0	623	0	1007	0	1391	0
240	0	624	0	1008	0	1392	0
241	1	625	1	1009	1	1393	1
242	1	626	1	1010	1	1394	1
243	1	627	1	1011	1	1395	1
244	0	628	0	1012	0	1396	0
245	0	629	0	1013	0	1397	0
246	0	630	0	1014	0	1398	0
247	0	631	0	1015	0	1399	0
248	0	632	0	1016	0	1400	0
249	1	633	1	1017	1	1401	1
250	1	634	1	1018	1	1402	1

Table 6—Chip sequence c_{SHR} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
251	0	635	0	1019	0	1403	0
252	0	636	0	1020	0	1404	0
253	1	637	1	1021	1	1405	1
254	0	638	0	1022	0	1406	0
255	1	639	1	1023	1	1407	1
256	1	640	1	1024	0	1408	1
257	1	641	1	1025	0	1409	1
258	0	642	0	1026	1	1410	0
259	1	643	1	1027	0	1411	1
260	1	644	1	1028	0	1412	1
261	1	645	1	1029	0	1413	1
262	1	646	1	1030	0	1414	1
263	0	647	0	1031	1	1415	0
264	1	648	1	1032	0	1416	1
265	0	649	0	1033	1	1417	0
266	1	650	1	1034	0	1418	1
267	0	651	0	1035	1	1419	0
268	0	652	0	1036	1	1420	0
269	0	653	0	1037	1	1421	0
270	1	654	1	1038	0	1422	1
271	0	655	0	1039	1	1423	0
272	0	656	0	1040	1	1424	0
273	1	657	1	1041	0	1425	1
274	1	658	1	1042	0	1426	1
275	1	659	1	1043	0	1427	1
276	0	660	0	1044	1	1428	0
277	0	661	0	1045	1	1429	0
278	0	662	0	1046	1	1430	0
279	0	663	0	1047	1	1431	0
280	0	664	0	1048	1	1432	0
281	1	665	1	1049	0	1433	1
282	1	666	1	1050	0	1434	1
283	0	667	0	1051	1	1435	0

Table 6—Chip sequence c_{SHR} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
284	0	668	0	1052	1	1436	0
285	1	669	1	1053	0	1437	1
286	0	670	0	1054	1	1438	0
287	1	671	1	1055	0	1439	1
288	1	672	1	1056	1	1440	1
289	1	673	1	1057	1	1441	1
290	0	674	0	1058	0	1442	0
291	1	675	1	1059	1	1443	1
292	1	676	1	1060	1	1444	1
293	1	677	1	1061	1	1445	1
294	1	678	1	1062	1	1446	1
295	0	679	0	1063	0	1447	0
296	1	680	1	1064	1	1448	1
297	0	681	0	1065	0	1449	0
298	1	682	1	1066	1	1450	1
299	0	683	0	1067	0	1451	0
300	0	684	0	1068	0	1452	0
301	0	685	0	1069	0	1453	0
302	1	686	1	1070	1	1454	1
303	0	687	0	1071	0	1455	0
304	0	688	0	1072	0	1456	0
305	1	689	1	1073	1	1457	1
306	1	690	1	1074	1	1458	1
307	1	691	1	1075	1	1459	1
308	0	692	0	1076	0	1460	0
309	0	693	0	1077	0	1461	0
310	0	694	0	1078	0	1462	0
311	0	695	0	1079	0	1463	0
312	0	696	0	1080	0	1464	0
313	1	697	1	1081	1	1465	1
314	1	698	1	1082	1	1466	1
315	0	699	0	1083	0	1467	0
316	0	700	0	1084	0	1468	0

Table 6—Chip sequence c_{SHR} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
317	1	701	1	1085	1	1469	1
318	0	702	0	1086	0	1470	0
319	1	703	1	1087	1	1471	1
320	1	704	1	1088	0	1472	0
321	1	705	1	1089	0	1473	0
322	0	706	0	1090	1	1474	1
323	1	707	1	1091	0	1475	0
324	1	708	1	1092	0	1476	0
325	1	709	1	1093	0	1477	0
326	1	710	1	1094	0	1478	0
327	0	711	0	1095	1	1479	1
328	1	712	1	1096	0	1480	0
329	0	713	0	1097	1	1481	1
330	1	714	1	1098	0	1482	0
331	0	715	0	1099	1	1483	1
332	0	716	0	1100	1	1484	1
333	0	717	0	1101	1	1485	1
334	1	718	1	1102	0	1486	0
335	0	719	0	1103	1	1487	1
336	0	720	0	1104	1	1488	1
337	1	721	1	1105	0	1489	0
338	1	722	1	1106	0	1490	0
339	1	723	1	1107	0	1491	0
340	0	724	0	1108	1	1492	1
341	0	725	0	1109	1	1493	1
342	0	726	0	1110	1	1494	1
343	0	727	0	1111	1	1495	1
344	0	728	0	1112	1	1496	1
345	1	729	1	1113	0	1497	0
346	1	730	1	1114	0	1498	0
347	0	731	0	1115	1	1499	1
348	0	732	0	1116	1	1500	1
349	1	733	1	1117	0	1501	0

Table 6—Chip sequence c_{SHR} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
350	0	734	0	1118	1	1502	1
351	1	735	1	1119	0	1503	0
352	1	736	1	1120	0	1504	0
353	1	737	1	1121	0	1505	0
354	0	738	0	1122	1	1506	1
355	1	739	1	1123	0	1507	0
356	1	740	1	1124	0	1508	0
357	1	741	1	1125	0	1509	0
358	1	742	1	1126	0	1510	0
359	0	743	0	1127	1	1511	1
360	1	744	1	1128	0	1512	0
361	0	745	0	1129	1	1513	1
362	1	746	1	1130	0	1514	0
363	0	747	0	1131	1	1515	1
364	0	748	0	1132	1	1516	1
365	0	749	0	1133	1	1517	1
366	1	750	1	1134	0	1518	0
367	0	751	0	1135	1	1519	1
368	0	752	0	1136	1	1520	1
369	1	753	1	1137	0	1521	0
370	1	754	1	1138	0	1522	0
371	1	755	1	1139	0	1523	0
372	0	756	0	1140	1	1524	1
373	0	757	0	1141	1	1525	1
374	0	758	0	1142	1	1526	1
375	0	759	0	1143	1	1527	1
376	0	760	0	1144	1	1528	1
377	1	761	1	1145	0	1529	0
378	1	762	1	1146	0	1530	0
379	0	763	0	1147	1	1531	1

Table 6—Chip sequence c_{SHR} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
380	0	764	0	1148	1	1532	1
381	1	765	1	1149	0	1533	0
382	0	766	0	1150	1	1534	1
383	1	767	1	1151	0	1535	0

4.4 Generation of the PHR

The Spreading Mode field is set to zero (DSSS applied to the PSDU), the Rate Mode field is set to (0,0) corresponding to RateMode zero, the Reserved field entries are set to (0,0), and the Length field entries are set to the binary representation of seven, corresponding to the PSDU length of the frame. The complete PHR field including the HCS field is shown in Table 7.

Table 7—PHR for MR-O-QPSK

Bit #	0	1	2	3	4	5–15	16–23
value	0	0	0	0	0	0 0 0 0 0 0 0 0 1 1 1	00010101

After padding the 24 information bits by 6 additional zero termination bits, the sequence of the 60 code-bits at the output of convolutional encoding is given as follows:

0000 0000 0000 0000 0000 0000 0011 1001 0100 0110 0011 1000 0000 0111 1011

The sequences after 10×6 interleaving is given as

1000 0010 1100 0011 0010 0100 1000 0011 0000 1110 0001 0000 0010 0000 0000

After BDE, the code-bit sequence changes to

0000 0011 0111 1101 1100 0111 0000 0010 0000 1011 1110 0000 0011 1111 1111

Note that for bit-differential encoding of the PHR code-bits, the first reference value is the last sample of b_{SHR}^{BDE}, which is equal to one.

Each bit of the code-bit sequence is mapped to the corresponding chip sequence with regard to $(8,1)_{0/1}$-DSSS. The final PHR chip sequence, c_{PHR}, is shown in Table 8.

4.5 Generation of the PSDU

The bit sequence of the example PSDU is

b_{PSDU} = 0100 0000 0000 0000 0101 0110 0101 1101 0010 1001 1111 1010 0010 1000

Table 8—Chip sequence c_{PHR}

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
0	1	120	1	240	0	360	0
1	0	121	0	241	1	361	1
2	1	122	0	242	0	362	1
3	1	123	1	243	0	363	0
4	0	124	1	244	1	364	0
5	0	125	1	245	1	365	0
6	0	126	0	246	1	366	1
7	1	127	0	247	0	367	1
8	0	128	0	248	0	368	1
9	1	129	1	249	1	369	0
10	1	130	0	250	1	370	1
11	0	131	0	251	0	371	1
12	0	132	1	252	0	372	0
13	0	133	1	253	0	373	0
14	1	134	1	254	1	374	0
15	1	135	0	255	1	375	1
16	1	136	1	256	1	376	0
17	0	137	0	257	0	377	1
18	1	138	0	258	1	378	1
19	1	139	1	259	1	379	0
20	0	140	1	260	0	380	0
21	0	141	1	261	0	381	0
22	0	142	0	262	0	382	1
23	1	143	0	263	1	383	1
24	0	144	1	264	0	384	1
25	1	145	0	265	1	385	0
26	1	146	1	266	1	386	1
27	0	147	1	267	0	387	1
28	0	148	0	268	0	388	0
29	0	149	0	269	0	389	0
30	1	150	0	270	1	390	0
31	1	151	1	271	1	391	1
32	1	152	0	272	1	392	0

Table 8—Chip sequence c_{PHR} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
33	0	153	1	273	0	393	1
34	1	154	1	274	1	394	1
35	1	155	0	275	1	395	0
36	0	156	0	276	0	396	0
37	0	157	0	277	0	397	0
38	0	158	1	278	0	398	1
39	1	159	1	279	1	399	1
40	0	160	1	280	0	400	0
41	1	161	0	281	1	401	1
42	1	162	1	282	1	402	0
43	0	163	1	283	0	403	0
44	0	164	0	284	0	404	1
45	0	165	0	285	0	405	1
46	1	166	0	286	1	406	1
47	1	167	1	287	1	407	0
48	0	168	1	288	0	408	1
49	1	169	0	289	1	409	0
50	0	170	0	290	0	410	0
51	0	171	1	291	0	411	1
52	1	172	1	292	1	412	1
53	1	173	1	293	1	413	1
54	1	174	0	294	1	414	0
55	0	175	0	295	0	415	0
56	1	176	0	296	0	416	0
57	0	177	1	297	1	417	1
58	0	178	0	298	1	418	0
59	1	179	0	299	0	419	0
60	1	180	1	300	0	420	1
61	1	181	1	301	0	421	1
62	0	182	1	302	1	422	1
63	0	183	0	303	1	423	0
64	1	184	1	304	0	424	1
65	0	185	0	305	1	425	0

Table 8—Chip sequence c_{PHR} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
66	1	186	0	306	0	426	0
67	1	187	1	307	0	427	1
68	0	188	1	308	1	428	1
69	0	189	1	309	1	429	1
70	0	190	0	310	1	430	0
71	1	191	0	311	0	431	0
72	1	192	1	312	1	432	0
73	0	193	0	313	0	433	1
74	0	194	1	314	0	434	0
75	1	195	1	315	1	435	0
76	1	196	0	316	1	436	1
77	1	197	0	317	1	437	1
78	0	198	0	318	0	438	1
79	0	199	1	319	0	439	0
80	0	200	0	320	0	440	1
81	1	201	1	321	1	441	0
82	0	202	1	322	0	442	0
83	0	203	0	323	0	443	1
84	1	204	0	324	1	444	1
85	1	205	0	325	1	445	1
86	1	206	1	326	1	446	0
87	0	207	1	327	0	447	0
88	1	208	1	328	1	448	0
89	0	209	0	329	0	449	1
90	0	210	1	330	0	450	0
91	1	211	1	331	1	451	0
92	1	212	0	332	1	452	1
93	1	213	0	333	1	453	1
94	0	214	0	334	0	454	1
95	0	215	1	335	0	455	0
96	0	216	0	336	0	456	1
97	1	217	1	337	1	457	0
98	0	218	1	338	0	458	0

Table 8—Chip sequence c_{PHR} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
99	0	219	0	339	0	459	1
100	1	220	0	340	1	460	1
101	1	221	0	341	1	461	1
102	1	222	1	342	1	462	0
103	0	223	1	343	0	463	0
104	1	224	1	344	0	464	0
105	0	225	0	345	1	465	1
106	0	226	1	346	1	466	0
107	1	227	1	347	0	467	0
108	1	228	0	348	0	468	1
109	1	229	0	349	0	469	1
110	0	230	0	350	1	470	1
111	0	231	1	351	1	471	0
112	1	232	0	352	1	472	1
113	0	233	1	353	0	473	0
114	1	234	1	354	1	474	0
115	1	235	0	355	1	475	1
116	0	236	0	356	0	476	1
117	0	237	0	357	0	477	1
118	0	238	1	358	0	478	0
119	1	239	1	359	1	479	0

Note that for each message octet given in Table 5, the least significant bit is processed first in time.

Prior to convolutional encoding, this bit sequence needs to be extended by six, zero termination bits and one additional zero pad bit, such that the overall length is $N_{INTRLV}/2 = 63$.

b^{ext}_{PSDU} = 0100 0000 0000 0000 0101 0110 0101 1101 0010 1001 1111 1010 0010 1000 0000 000

The corresponding sequence of 126 code-bits would be the following:

0011 0111 1100 1011 0000 0000 0000 0000 0011 0100 1000 1101 1011 1101 1001 1100 0010 0110 1001 1110 0111 0110 0000 1011 1010 0011 1110 1101 1110 1100 0000 00

The sequences after 18 × 7 interleaving is

0000 1100 1011 1001 0110 1011 0101 0110 0000 1011 0100 1010 0001 0000 1010 1011 1001 0100 0100
1111 1001 1111 0011 1101 0010 1000 1010 1001 1001 1001 0100 00

For BDE, computation of M is required. For the example, this yields $M = 512/8 = 64$. Hence, the reference value is zero for the computation of E_n at index $n = 0$ and $n = 64$, and E_{n-1} for all other indices. Accordingly, the bit-differentially encoded code-bit sequence is

0000 1000 1101 0001 1011 0010 0110 0100 0000 1101 1000 1100 0001 1111 0011 0010 1110 0111 1000
1010 1110 1010 0010 1001 1100 1111 0011 0001 0001 0001 1000 00

Each bit of the code-bit sequence needs to be mapped to the corresponding chip sequence with regard to $(8,1)_{0/1}$-DSSS, delivering a chip sequence $u = \{u_0, \ldots, u_{126 \times 8 - 1}\}$. In order to obtain the final PSDU chip sequence, $L = \text{ceil}(126/M) = 2$ instances of the pilot sequence

1101 1110 1010 0010 0111 0000 0110 0101

need to be inserted into the sequence u. The first pilot instance is preceding sample u_0, and the second instance is to be inserted between samples u_{511} and u_{512}. The PSDU chip sequence including the pilots, c_{PSDU}, is shown in Table 9.

Table 9—Chip sequence c_{PSDU}

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
0	1	268	1	536	0	804	1
1	1	269	1	537	1	805	1
2	0	270	0	538	1	806	1
3	1	271	0	539	0	807	0
4	1	272	1	540	0	808	0
5	1	273	0	541	0	809	1
6	1	274	1	542	1	810	1
7	0	275	1	543	1	811	0
8	1	276	0	544	1	812	0
9	0	277	0	545	1	813	0
10	1	278	0	546	0	814	1
11	0	279	1	547	1	815	1
12	0	280	0	548	1	816	1
13	0	281	1	549	1	817	0
14	1	282	1	550	1	818	1
15	0	283	0	551	0	819	1
16	0	284	0	552	1	820	0
17	1	285	0	553	0	821	0
18	1	286	1	554	1	822	0

Table 9—Chip sequence c_{PSDU} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
19	1	287	1	555	0	823	1
20	0	288	1	556	0	824	1
21	0	289	0	557	0	825	0
22	0	290	1	558	1	826	0
23	0	291	1	559	0	827	1
24	0	292	0	560	0	828	1
25	1	293	0	561	1	829	1
26	1	294	0	562	1	830	0
27	0	295	1	563	1	831	0
28	0	296	0	564	0	832	0
29	1	297	1	565	0	833	1
30	0	298	1	566	0	834	0
31	1	299	0	567	0	835	0
32	1	300	0	568	0	836	1
33	0	301	0	569	1	837	1
34	1	302	1	570	1	838	1
35	1	303	1	571	0	839	0
36	0	304	1	572	0	840	1
37	0	305	0	573	1	841	0
38	0	306	1	574	0	842	0
39	1	307	1	575	1	843	1
40	0	308	0	576	0	844	1
41	1	309	0	577	1	845	1
42	1	310	0	578	0	846	0
43	0	311	1	579	0	847	0
44	0	312	0	580	1	848	1
45	0	313	1	581	1	849	0
46	1	314	1	582	1	850	1
47	1	315	0	583	0	851	1
48	1	316	0	584	1	852	0
49	0	317	0	585	0	853	0
50	1	318	1	586	0	854	0
51	1	319	1	587	1	855	1

Table 9—Chip sequence c_{PSDU} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
52	0	320	0	588	1	856	0
53	0	321	1	589	1	857	1
54	0	322	0	590	0	858	1
55	1	323	0	591	0	859	0
56	0	324	1	592	0	860	0
57	1	325	1	593	1	861	0
58	1	326	1	594	0	862	1
59	0	327	0	595	0	863	1
60	0	328	1	596	1	864	0
61	0	329	0	597	1	865	1
62	1	330	0	598	1	866	0
63	1	331	1	599	0	867	0
64	0	332	1	600	0	868	1
65	1	333	1	601	1	869	1
66	0	334	0	602	1	870	1
67	0	335	0	603	0	871	0
68	1	336	1	604	0	872	1
69	1	337	0	605	0	873	0
70	1	338	1	606	1	874	0
71	0	339	1	607	1	875	1
72	0	340	0	608	1	876	1
73	1	341	0	609	0	877	1
74	1	342	0	610	1	878	0
75	0	343	1	611	1	879	0
76	0	344	1	612	0	880	0
77	0	345	0	613	0	881	1
78	1	346	0	614	0	882	0
79	1	347	1	615	1	883	0
80	1	348	1	616	1	884	1
81	0	349	1	617	0	885	1
82	1	350	0	618	0	886	1
83	1	351	0	619	1	887	0
84	0	352	0	620	1	888	1

Table 9—Chip sequence c_{PSDU} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
85	0	353	1	621	1	889	0
86	0	354	0	622	0	890	0
87	1	355	0	623	0	891	1
88	0	356	1	624	0	892	1
89	1	357	1	625	1	893	1
90	1	358	1	626	0	894	0
91	0	359	0	627	0	895	0
92	0	360	0	628	1	896	1
93	0	361	1	629	1	897	0
94	1	362	1	630	1	898	1
95	1	363	0	631	0	899	1
96	0	364	0	632	1	900	0
97	1	365	0	633	0	901	0
98	0	366	1	634	0	902	0
99	0	367	1	635	1	903	1
100	1	368	1	636	1	904	0
101	1	369	0	637	1	905	1
102	1	370	1	638	0	906	1
103	0	371	1	639	0	907	0
104	1	372	0	640	0	908	0
105	0	373	0	641	1	909	0
106	0	374	0	642	0	910	1
107	1	375	1	643	0	911	1
108	1	376	0	644	1	912	0
109	1	377	1	645	1	913	1
110	0	378	1	646	1	914	0
111	0	379	0	647	0	915	0
112	1	380	0	648	0	916	1
113	0	381	0	649	1	917	1
114	1	382	1	650	1	918	1
115	1	383	1	651	0	919	0
116	0	384	0	652	0	920	1
117	0	385	1	653	0	921	0

Table 9—Chip sequence c_{PSDU} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
118	0	386	0	654	1	922	0
119	1	387	0	655	1	923	1
120	1	388	1	656	1	924	1
121	0	389	1	657	0	925	1
122	0	390	1	658	1	926	0
123	1	391	0	659	1	927	0
124	1	392	1	660	0	928	1
125	1	393	0	661	0	929	0
126	0	394	0	662	0	930	1
127	0	395	1	663	1	931	1
128	1	396	1	664	0	932	0
129	0	397	1	665	1	933	0
130	1	398	0	666	1	934	0
131	1	399	0	667	0	935	1
132	0	400	1	668	0	936	0
133	0	401	0	669	0	937	1
134	0	402	1	670	1	938	1
135	1	403	1	671	1	939	0
136	0	404	0	672	0	940	0
137	1	405	0	673	1	941	0
138	1	406	0	674	0	942	1
139	0	407	1	675	0	943	1
140	0	408	0	676	1	944	1
141	0	409	1	677	1	945	0
142	1	410	1	678	1	946	1
143	1	411	0	679	0	947	1
144	1	412	0	680	0	948	0
145	0	413	0	681	1	949	0
146	1	414	1	682	1	950	0
147	1	415	1	683	0	951	1
148	0	416	1	684	0	952	1
149	0	417	0	685	0	953	0
150	0	418	1	686	1	954	0

Table 9—Chip sequence c_{PSDU} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
151	1	419	1	687	1	955	1
152	1	420	0	688	0	956	1
153	0	421	0	689	1	957	1
154	0	422	0	690	0	958	0
155	1	423	1	691	0	959	0
156	1	424	0	692	1	960	1
157	1	425	1	693	1	961	0
158	0	426	1	694	1	962	1
159	0	427	0	695	0	963	1
160	0	428	0	696	0	964	0
161	1	429	0	697	1	965	0
162	0	430	1	698	1	966	0
163	0	431	1	699	0	967	1
164	1	432	1	700	0	968	0
165	1	433	0	701	0	969	1
166	1	434	1	702	1	970	1
167	0	435	1	703	1	971	0
168	0	436	0	704	0	972	0
169	1	437	0	705	1	973	0
170	1	438	0	706	0	974	1
171	0	439	1	707	0	975	1
172	0	440	1	708	1	976	1
173	0	441	0	709	1	977	0
174	1	442	0	710	1	978	1
175	1	443	1	711	0	979	1
176	0	444	1	712	1	980	0
177	1	445	1	713	0	981	0
178	0	446	0	714	0	982	0
179	0	447	0	715	1	983	1
180	1	448	0	716	1	984	1
181	1	449	1	717	1	985	0
182	1	450	0	718	0	986	0
183	0	451	0	719	0	987	1

Table 9—Chip sequence c_{PSDU} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
184	1	452	1	720	0	988	1
185	0	453	1	721	1	989	1
186	0	454	1	722	0	990	0
187	1	455	0	723	0	991	0
188	1	456	1	724	1	992	1
189	1	457	0	725	1	993	0
190	0	458	0	726	1	994	1
191	0	459	1	727	0	995	1
192	1	460	1	728	0	996	0
193	0	461	1	729	1	997	0
194	1	462	0	730	1	998	0
195	1	463	0	731	0	999	1
196	0	464	0	732	0	1000	0
197	0	465	1	733	0	1001	1
198	0	466	0	734	1	1002	1
199	1	467	0	735	1	1003	0
200	0	468	1	736	0	1004	0
201	1	469	1	737	1	1005	0
202	1	470	1	738	0	1006	1
203	0	471	0	739	0	1007	1
204	0	472	1	740	1	1008	1
205	0	473	0	741	1	1009	0
206	1	474	0	742	1	1010	1
207	1	475	1	743	0	1011	1
208	0	476	1	744	0	1012	0
209	1	477	1	745	1	1013	0
210	0	478	0	746	1	1014	0
211	0	479	0	747	0	1015	1
212	1	480	1	748	0	1016	1
213	1	481	0	749	0	1017	0
214	1	482	1	750	1	1018	0
215	0	483	1	751	1	1019	1
216	0	484	0	752	0	1020	1

Table 9—Chip sequence c_{PSDU} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
217	1	485	0	753	1	1021	1
218	1	486	0	754	0	1022	0
219	0	487	1	755	0	1023	0
220	0	488	0	756	1	1024	0
221	0	489	1	757	1	1025	1
222	1	490	1	758	1	1026	0
223	1	491	0	759	0	1027	0
224	1	492	0	760	0	1028	1
225	0	493	0	761	1	1029	1
226	1	494	1	762	1	1030	1
227	1	495	1	763	0	1031	0
228	0	496	0	764	0	1032	0
229	0	497	1	765	0	1033	1
230	0	498	0	766	1	1034	1
231	1	499	0	767	1	1035	0
232	1	500	1	768	1	1036	0
233	0	501	1	769	0	1037	0
234	0	502	1	770	1	1038	1
235	1	503	0	771	1	1039	1
236	1	504	1	772	0	1040	1
237	1	505	0	773	0	1041	0
238	0	506	0	774	0	1042	1
239	0	507	1	775	1	1043	1
240	0	508	1	776	0	1044	0
241	1	509	1	777	1	1045	0
242	0	510	0	778	1	1046	0
243	0	511	0	779	0	1047	1
244	1	512	1	780	0	1048	0
245	1	513	0	781	0	1049	1
246	1	514	1	782	1	1050	1
247	0	515	1	783	1	1051	0
248	0	516	0	784	0	1052	0
249	1	517	0	785	1	1053	0

Table 9—Chip sequence c_{PSDU} *(continued)*

Chip #	Chip value	Chip #	Chip value	Chip #	Chip value	Chip #	Chip value
250	1	518	0	786	0	1054	1
251	0	519	1	787	0	1055	1
252	0	520	0	788	1	1056	1
253	0	521	1	789	1	1057	0
254	1	522	1	790	1	1058	1
255	1	523	0	791	0	1059	1
256	1	524	0	792	0	1060	0
257	0	525	0	793	1	1061	0
258	1	526	1	794	1	1062	0
259	1	527	1	795	0	1063	1
260	0	528	0	796	0	1064	0
261	0	529	1	797	0	1065	1
262	0	530	0	798	1	1066	1
263	1	531	0	799	1	1067	0
264	1	532	1	800	0	1068	0
265	0	533	1	801	1	1069	0
266	0	534	1	802	0	1070	1
267	1	535	0	803	0	1071	1

5. MR-OFDM PHY with *phyOFDMInterleaving* equal to zero example packet encoding

5.1 Introduction

The purpose of this example is to show the encoding of a packet for the MR-OFDM PHY. This example covers all the encoding details defined by this standard. The encoding illustration goes through the following stages:

a) Generating the short training sequence section of the preamble.
b) Generating the long preamble sequence section of the preamble.
c) Generating the OFDM header and the corresponding HCS.
d) Setting the six tail bits to zeros.
e) Encoding the header with a convolutional encoder and puncturing.
f) Interleaving the header.
g) The PSDU from the MAC should already contain an FCS, which is assumed to be four bytes here. Six tail bits and PAD bits are appended to form the data field.
h) Scrambling the data field.
i) Resetting the six tail bits back to zeros.
j) Encoding the data with a convolutional encoder and puncturing.
k) Interleaving the data field.
l) Mapping into complex symbols.
m) Frequency spreading.
n) Concatenating the preamble, the OFDM header, and the data field.
o) Pilot, guard, and DC tone insertion.
p) Transforming from frequency to time domain using the IFFT and adding a circular prefix.
q) Concatenating the OFDM symbols into a single, time-domain signal.

In the description of time domain waveforms, a complex baseband signal at 666.666 ksample/s is used. This example uses the 400 kb/s data rate (QPSK 1/2-rate modulation), which corresponds to OFDM Option 2 and MCS level 3, and a message of 72 octets. The OFDM Header uses the 50 kb/s data rate (BPSK 1/2-rate coded with 4x frequency repetition), which corresponds to MCS level 0. This example also sets the PIB attribute value of *phyOFDMInterleaving* to zero.

5.2 The message

The message being encoded consists of the first 72 characters of the well-known poem “Ode to Joy” (“*An die Freude*”) by F. Schiller, in its original version (in German).

Freude, schöner Götterfunken,
Tochter aus Elysium,
Wir betreten feuertrunken,
Himmlische dein Heiligtum.

The message is converted to ASCII and a CRC32 is added.

Note that the MAC header will not be included. It is assumed to be part of the message in this example.

The resulting 76 octet PSDU is shown in Table 10.

Table 10—The message[a]

Octet #	Value (Hex)	Octet #	Value (Hex)	Octet #	Value (Hex)	Octet #	Value (Hex)
1	46	21	65	41	73	61	74
2	72	22	72	42	20	62	65
3	65	23	66	43	45	63	6E
4	75	24	75	44	6C	64	20
5	64	25	6E	45	79	65	66
6	65	26	6B	46	73	66	65
7	2C	27	65	47	69	67	75
8	20	28	6E	48	75	68	65
9	73	29	2C	49	6D	69	72
10	63	30	A	50	2C	70	74
11	68	31	54	51	A	71	72
12	F6	32	6F	52	57	72	75
13	6E	33	63	53	69	73	33
14	65	34	68	54	72	74	3C
15	72	35	74	55	20	75	69
16	20	36	65	56	62	76	7C
17	47	37	72	57	65	—	—
18	F6	38	20	58	74	—	—
19	74	39	61	59	72	—	—
20	74	40	75	60	65	—	—

[a]To extract the bit stream, the octet is read LSB first.

5.3 Generation of the OFDM header

5.3.1 HCS and PAD bits insertion

In this example, the payload data has a size of 76 octets, and it will be encoded using QPSK modulation, 1/2-rate coding. The scrambler index will be the first one.

The corresponding OFDM header, including the HCS, is represented in Table 11.

In this configuration, no extra PAD bit is necessary. The size of the header will fill up exactly six OFDM symbols.

Table 11—OFDM Header

Field Name	Bit #	Bit Value		Field Name	Bit #	Bit Value
Rate	1	0		Scrambler	20	0
	2	0			21	0
	3	0		RFU	22	0
	4	1		HCS	23	1
	5	1			24	1
RFU	6	0			25	1
Length	7	0			26	1
	8	0			27	1
	9	0			28	1
	10	0			29	0
	11	1			30	1
	12	0		Tail	31	0
	13	0			32	0
	14	1			33	0
	15	1			34	0
	16	0			35	0
	17	0			36	0
RFU	18	0			—	—
	19	0			—	—

5.3.2 Convolutional encoding

After convolutional encoding of the OFDM header, the size is now doubled and the corresponding bits are represented in Table 12. No puncturing is applied in this configuration.

Table 12—OFDM Header after convolutional encoding

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
1	0	19	0	37	1	55	0
2	0	20	1	38	0	56	0
3	0	21	0	39	0	57	0
4	0	22	0	40	1	58	0
5	0	23	0	41	1	59	1
6	0	24	1	42	1	60	0

Table 12—OFDM Header after convolutional encoding *(continued)*

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
7	1	25	1	43	0	61	1
8	1	26	1	44	0	62	1
9	1	27	0	45	1	63	1
10	0	28	0	46	1	64	0
11	1	29	1	47	1	65	1
12	0	30	0	48	0	66	0
13	0	31	0	49	0	67	1
14	0	32	0	50	1	68	1
15	1	33	1	51	1	69	1
16	1	34	1	52	0	70	0
17	1	35	1	53	1	71	1
18	0	36	1	54	0	72	1

5.3.3 Interleaving

After the two-step interleaver is applied to the data, the resulting data is represented in Table 13.

Table 13—OFDM Header after interleaving

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
1	0	19	1	37	1	55	0
2	0	20	0	38	1	56	1
3	1	21	1	39	0	57	1
4	0	22	0	40	1	58	0
5	0	23	0	41	0	59	0
6	0	24	1	42	1	60	0
7	1	25	1	43	0	61	1
8	1	26	0	44	1	62	0
9	0	27	0	45	0	63	1
10	0	28	1	46	1	64	0
11	1	29	1	47	1	65	1
12	0	30	1	48	0	66	1
13	0	31	0	49	0	67	1
14	1	32	1	50	0	68	1

Table 13—OFDM Header after interleaving *(continued)*

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
15	0	33	0	51	0	69	1
16	0	34	0	52	0	70	0
17	0	35	1	53	1	71	1
18	1	36	1	54	1	72	1

5.3.4 Bit mapping

The 72 bits are split into six OFDM symbols. The bit mapping for the OFDM header in this example is BPSK. Therefore, Q is always zero. The I value is mapped as defined in Table 14.

Table 14—Bit mapping for the OFDM Header

	Symbol 1		Symbol 2		Symbol 3		Symbol 4		Symbol 5		Symbol 6	
	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q
1	–1	0	–1	0	1	0	1	0	–1	0	1	0
2	–1	0	1	0	–1	0	1	0	–1	0	–1	0
3	1	0	–1	0	–1	0	–1	0	–1	0	1	0
4	–1	0	–1	0	1	0	1	0	–1	0	–1	0
5	–1	0	–1	0	1	0	–1	0	1	0	1	0
6	–1	0	1	0	1	0	1	0	1	0	1	0
7	1	0	1	0	–1	0	–1	0	–1	0	1	0
8	1	0	–1	0	1	0	1	0	1	0	1	0
9	–1	0	1	0	–1	0	–1	0	1	0	1	0
10	–1	0	–1	0	–1	0	1	0	–1	0	–1	0
11	1	0	–1	0	1	0	1	0	–1	0	1	0
12	–1	0	1	0	1	0	–1	0	–1	0	1	0

5.3.5 Frequency spreading

In this example, a frequency spreading of four is applied to the OFDM header. The original 12 bits in each symbol (Bin # 25 through 36 in Table 15) are duplicated within the same symbol. The resulting symbols have 48 data bits each. The duplicated bits have a phase rotation,.

Table 15—OFDM Header in the frequency domain

	Symbol 1		Symbol 2		Symbol 3		Symbol 4		Symbol 5		Symbol 6	
	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q
1	0	–1	0	–1	0	1	0	1	0	–1	0	1
2	0	1	0	–1	0	1	0	–1	0	1	0	1
3	0	1	0	–1	0	–1	0	–1	0	–1	0	1
4	0	1	0	1	0	–1	0	–1	0	1	0	1
5	0	–1	0	–1	0	1	0	–1	0	1	0	1
6	0	1	0	–1	0	–1	0	–1	0	–1	0	–1
7	0	1	0	1	0	–1	0	–1	0	–1	0	1
8	0	–1	0	1	0	–1	0	–1	0	–1	0	–1
9	0	–1	0	1	0	–1	0	–1	0	1	0	1
10	0	1	0	1	0	1	0	–1	0	1	0	1
11	0	1	0	–1	0	1	0	1	0	–1	0	1
12	0	1	0	–1	0	–1	0	1	0	1	0	–1
13	1	0	1	0	–1	0	–1	0	1	0	–1	0
14	0	–1	0	1	0	–1	0	1	0	–1	0	–1
15	1	0	–1	0	–1	0	–1	0	–1	0	1	0
16	0	1	0	1	0	–1	0	–1	0	1	0	1
17	1	0	1	0	–1	0	1	0	–1	0	–1	0
18	0	–1	0	1	0	1	0	1	0	1	0	1
19	1	0	1	0	–1	0	–1	0	–1	0	1	0
20	0	–1	0	1	0	–1	0	–1	0	–1	0	–1
21	1	0	–1	0	1	0	1	0	–1	0	–1	0
22	0	–1	0	–1	0	–1	0	1	0	–1	0	–1
23	1	0	–1	0	1	0	1	0	–1	0	1	0
24	0	1	0	–1	0	–1	0	1	0	1	0	–1
25	–1	0	–1	0	1	0	1	0	–1	0	1	0
26	–1	0	1	0	–1	0	1	0	–1	0	–1	0
27	1	0	–1	0	–1	0	–1	0	–1	0	1	0
28	–1	0	–1	0	1	0	1	0	–1	0	–1	0
29	–1	0	–1	0	1	0	–1	0	1	0	1	0
30	–1	0	1	0	1	0	1	0	1	0	1	0
31	1	0	1	0	–1	0	–1	0	–1	0	1	0
32	1	0	–1	0	1	0	1	0	1	0	1	0

Table 15—OFDM Header in the frequency domain *(continued)*

	Symbol 1		Symbol 2		Symbol 3		Symbol 4		Symbol 5		Symbol 6	
	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q
33	–1	0	1	0	–1	0	–1	0	1	0	1	0
34	–1	0	–1	0	–1	0	1	0	–1	0	–1	0
35	1	0	–1	0	1	0	1	0	–1	0	1	0
36	–1	0	1	0	1	0	–1	0	–1	0	1	0
37	–1	0	–1	0	1	0	1	0	–1	0	1	0
38	0	–1	0	1	0	–1	0	1	0	–1	0	–1
39	–1	0	1	0	1	0	1	0	1	0	–1	0
40	0	1	0	1	0	–1	0	–1	0	1	0	1
41	–1	0	–1	0	1	0	–1	0	1	0	1	0
42	0	–1	0	1	0	1	0	1	0	1	0	1
43	–1	0	–1	0	1	0	1	0	1	0	–1	0
44	0	–1	0	1	0	–1	0	–1	0	–1	0	–1
45	–1	0	1	0	–1	0	–1	0	1	0	1	0
46	0	–1	0	–1	0	–1	0	1	0	–1	0	–1
47	–1	0	1	0	–1	0	–1	0	1	0	–1	0
48	0	1	0	–1	0	–1	0	1	0	1	0	–1

5.4 Generation of the data symbols

5.4.1 PAD insertion and data scrambling

The original 76 octets of data, as defined in Table 10, are concatenated with six zero tail bits and 10 pad bits. The six tail bits are forced to zero after scrambling. The first and last 48 bits of the resulting 624 bits are represented in Table 16.

Table 16—First and last 48 bits after pad insertion and scrambling

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
1	1	25	0	577	0	601	1
2	0	26	0	578	0	602	0
3	0	27	0	579	1	603	0
4	0	28	0	580	0	604	0
5	0	29	0	581	0	605	0
6	1	30	0	582	1	606	0

Table 16—First and last 48 bits after pad insertion and scrambling *(continued)*

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
7	0	31	0	583	1	607	0
8	0	32	1	584	0	608	0
9	0	33	0	585	0	609	0
10	1	34	0	586	1	610	0
11	0	35	0	587	1	611	0
12	1	36	0	588	0	612	0
13	1	37	0	589	1	613	0
14	1	38	0	590	1	614	0
15	0	39	1	591	0	615	0
16	0	40	1	592	0	616	0
17	1	41	0	593	1	617	0
18	0	42	1	594	0	618	0
19	0	43	1	595	1	619	0
20	0	44	0	596	1	620	1
21	1	45	1	597	1	621	1
22	1	46	0	598	1	622	0
23	0	47	0	599	0	623	1
24	1	48	0	600	0	624	1

5.4.2 Convolutional encoding and puncturing

After convolutional encoding of the payload, the size is now doubled and the corresponding bits are represented in Table 17. No puncturing is applied in this configuration.

Table 17—First and last 48 bits after convolutional encoding

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
1	1	25	0	1201	0	1225	0
2	1	26	1	1202	1	1226	0
3	0	27	0	1203	0	1227	0
4	1	28	1	1204	0	1228	0
5	1	29	1	1205	1	1229	0
6	1	30	1	1206	0	1230	0
7	1	31	1	1207	0	1231	0

Table 17—First and last 48 bits after convolutional encoding *(continued)*

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
8	1	32	1	1208	0	1232	0
9	0	33	1	1209	0	1233	0
10	0	34	0	1210	0	1234	0
11	0	35	0	1211	1	1235	0
12	1	36	0	1212	0	1236	0
13	1	37	1	1213	1	1237	0
14	0	38	0	1214	1	1238	0
15	1	39	0	1215	0	1239	1
16	1	40	0	1216	0	1240	1
17	1	41	1	1217	0	1241	1
18	1	42	1	1218	0	1242	0
19	1	43	0	1219	0	1243	1
20	1	44	0	1220	0	1244	0
21	1	45	0	1221	0	1245	1
22	1	46	1	1222	0	1246	1
23	1	47	1	1223	0	1247	0
24	1	48	1	1224	0	1248	1

5.4.3 Interleaving

After the two-step interleaver is applied to the data, the resulting data (first and last 48 bits only) is represented in Table 18.

Table 18—First and last 48 bits after interleaving

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
1	1	25	1	1201	0	1225	0
2	1	26	1	1202	0	1226	0
3	0	27	1	1203	0	1227	1
4	1	28	0	1204	0	1228	0
5	1	29	1	1205	0	1229	0
6	0	30	1	1206	0	1230	0
7	1	31	1	1207	0	1231	0
8	0	32	0	1208	1	1232	1

Table 18—First and last 48 bits after interleaving *(continued)*

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
9	1	33	1	1209	0	1233	1
10	0	34	1	1210	0	1234	1
11	1	35	1	1211	1	1235	1
12	0	36	1	1212	0	1236	1
13	0	37	1	1213	0	1237	1
14	0	38	0	1214	0	1238	0
15	0	39	1	1215	0	1239	0
16	1	40	1	1216	0	1240	0
17	0	41	1	1217	1	1241	1
18	1	42	1	1218	0	1242	1
19	0	43	1	1219	1	1243	1
20	0	44	1	1220	1	1244	0
21	0	45	0	1221	0	1245	0
22	1	46	1	1222	0	1246	0
23	1	47	1	1223	0	1247	0
24	0	48	0	1224	1	1248	1

5.4.4 Bit mapping

The bit mapping for the OFDM header in this example is QPSK (two data bits per vector). The first two and last two symbols of the resulting data is presented in Table 19.

Table 19—Bit mapping for the OFDM payload

Vector #	I	Q	Vector #	I	Q	Vector #	I	Q	Vector #	I	Q
1	0.707	0.707	49	0.707	–0.707	529	–0.707	–0.707	577	–0.707	0.707
2	–0.707	0.707	50	–0.707	0.707	530	–0.707	0.707	578	–0.707	–0.707
3	0.707	–0.707	51	–0.707	–0.707	531	–0.707	0.707	579	–0.707	0.707
4	0.707	–0.707	52	0.707	–0.707	532	–0.707	–0.707	580	–0.707	–0.707
5	0.707	–0.707	53	0.707	–0.707	533	–0.707	0.707	581	0.707	–0.707
6	0.707	–0.707	54	–0.707	0.707	534	–0.707	0.707	582	–0.707	0.707
7	–0.707	–0.707	55	–0.707	–0.707	535	0.707	0.707	583	0.707	0.707
8	–0.707	0.707	56	0.707	–0.707	536	–0.707	0.707	584	–0.707	–0.707
9	–0.707	0.707	57	0.707	–0.707	537	–0.707	–0.707	585	–0.707	–0.707

Table 19—Bit mapping for the OFDM payload *(continued)*

Vector #	I	Q	Vector #	I	Q	Vector #	I	Q	Vector #	I	Q
10	–0.707	–0.707	58	0.707	0.707	538	–0.707	–0.707	586	–0.707	0.707
11	–0.707	0.707	59	0.707	–0.707	539	0.707	0.707	587	–0.707	–0.707
12	0.707	–0.707	60	–0.707	–0.707	540	–0.707	0.707	588	–0.707	0.707
13	0.707	0.707	61	–0.707	–0.707	541	0.707	0.707	589	–0.707	–0.707
14	0.707	–0.707	62	0.707	–0.707	542	–0.707	–0.707	590	0.707	–0.707
15	0.707	0.707	63	0.707	–0.707	543	–0.707	0.707	591	–0.707	–0.707
16	0.707	–0.707	64	–0.707	–0.707	544	–0.707	0.707	592	–0.707	0.707
17	0.707	0.707	65	–0.707	0.707	545	–0.707	0.707	593	0.707	0.707
18	0.707	0.707	66	–0.707	–0.707	546	–0.707	–0.707	594	–0.707	–0.707
19	0.707	–0.707	67	–0.707	0.707	547	–0.707	0.707	595	0.707	–0.707
20	0.707	0.707	68	0.707	0.707	548	0.707	0.707	596	–0.707	0.707
21	0.707	0.707	69	–0.707	0.707	549	0.707	0.707	597	–0.707	0.707
22	0.707	0.707	70	0.707	0.707	550	0.707	–0.707	598	–0.707	0.707
23	–0.707	0.707	71	0.707	0.707	551	0.707	–0.707	599	–0.707	–0.707
24	0.707	–0.707	72	0.707	0.707	552	–0.707	0.707	600	–0.707	–0.707
25	0.707	0.707	73	0.707	–0.707	553	–0.707	–0.707	601	–0.707	–0.707
26	0.707	–0.707	74	–0.707	–0.707	554	0.707	0.707	602	–0.707	–0.707
27	0.707	0.707	75	0.707	–0.707	555	0.707	0.707	603	–0.707	–0.707
28	0.707	–0.707	76	0.707	0.707	556	0.707	0.707	604	–0.707	0.707
29	0.707	0.707	77	–0.707	–0.707	557	–0.707	–0.707	605	–0.707	–0.707
30	0.707	–0.707	78	0.707	0.707	558	–0.707	0.707	606	0.707	–0.707
31	0.707	0.707	79	0.707	0.707	559	–0.707	0.707	607	–0.707	–0.707
32	–0.707	0.707	80	–0.707	0.707	560	0.707	0.707	608	–0.707	–0.707
33	–0.707	0.707	81	0.707	–0.707	561	–0.707	–0.707	609	0.707	–0.707
34	0.707	–0.707	82	–0.707	0.707	562	–0.707	–0.707	610	0.707	0.707
35	0.707	0.707	83	0.707	–0.707	563	–0.707	–0.707	611	–0.707	–0.707
36	0.707	–0.707	84	0.707	0.707	564	–0.707	–0.707	612	–0.707	0.707
37	–0.707	0.707	85	–0.707	0.707	565	0.707	0.707	613	–0.707	–0.707
38	–0.707	0.707	86	0.707	0.707	566	0.707	0.707	614	0.707	–0.707
39	–0.707	0.707	87	–0.707	0.707	567	–0.707	0.707	615	–0.707	–0.707
40	–0.707	0.707	88	–0.707	0.707	568	–0.707	–0.707	616	–0.707	0.707
41	–0.707	0.707	89	–0.707	0.707	569	0.707	0.707	617	0.707	0.707
42	–0.707	0.707	90	0.707	0.707	570	–0.707	–0.707	618	0.707	0.707
43	0.707	–0.707	91	–0.707	–0.707	571	–0.707	–0.707	619	0.707	–0.707

Table 19—Bit mapping for the OFDM payload *(continued)*

Vector #	I	Q	Vector #	I	Q	Vector #	I	Q	Vector #	I	Q
44	0.707	0.707	92	–0.707	0.707	572	0.707	0.707	620	–0.707	–0.707
45	0.707	0.707	93	–0.707	0.707	573	0.707	–0.707	621	0.707	0.707
46	–0.707	0.707	94	0.707	0.707	574	0.707	–0.707	622	0.707	–0.707
47	0.707	–0.707	95	–0.707	0.707	575	0.707	0.707	623	–0.707	–0.707
48	0.707	–0.707	96	–0.707	–0.707	576	0.707	–0.707	624	–0.707	0.707

5.4.5 Frequency spreading

In this example, no frequency spreading is applied to the OFDM payload. The vectors from Table 19 are mapped directly into the frequency domain. The next paragraphs illustrate the mapping in the frequency domain, taking into account the pilot tones, the DC tone, and the guard tones.

5.5 Conversion from frequency domain to time domain

5.5.1 Pilot, DC, and guard tone insertion

The following steps are applied to both the OFDM header and the OFDM payload. Before going to the next steps, Table 15 and Table 19 should be appended, resulting in 19 symbols of 48 bins in the frequency domain. The 48 bins are mapped in the frequency domain by inserting pilot tones, guard tones, and a DC tone and the first and last three symbols of the complete packet in the frequency domain are given in Table 20.

Table 20—First and last three symbols of the packet in the frequency domain

Subcarrier	Symbol 1	Symbol 2	Symbol 3	Symbol 17	Symbol 18	Symbol 19
–32	0 + 0i	0 + 0i	0 + 0i	0 + 0i	0 + 0i	0 + 0i
–31	0 + 0i	0 + 0i	0 + 0i	0 + 0i	0 + 0i	0 + 0i
–30	0 + 0i	0 + 0i	0 + 0i	0 + 0i	0 + 0i	0 + 0i
–29	0 + 0i	0 + 0i	0 + 0i	0 + 0i	0 + 0i	0 + 0i
–28	0 + 0i	0 + 0i	0 + 0i	0 + 0i	0 + 0i	0 + 0i
–27	0 + 0i	0 + 0i	0 + 0i	0 + 0i	0 + 0i	0 + 0i
–26	0 – 1i	0 – 1i	0 + 1i	–0.707 + 0.707i	**1 + 0i**	–0.707 + 0.707i
–25	0 + 1i	0 –1i	0 + 1i	–0.707 – 0.707i	–0.707 – 0.707i	–0.707 – 0.707i
–24	0 + 1i	0 – 1i	0 – 1i	0.707 + 0.707i	–0.707 + 0.707i	–0.707 + 0.707i
–23	0 + 1i	0 + 1i	0 – 1i	0.707 – 0.707i	–0.707 + 0.707i	–0.707 – 0.707i
–22	0 – 1i	**1 + 0i**	0 + 1i	0.707 – 0.707i	–0.707 – 0.707i	**1 + 0i**
–21	0 + 1i	0 – 1i	0 – 1i	0.707 – 0.707i	–0.707 + 0.707i	0.707 – 0.707i

Table 20—First and last three symbols of the packet in the frequency domain *(continued)*

Subcarrier	Symbol 1	Symbol 2	Symbol 3	Symbol 17	Symbol 18	Symbol 19
–20	0 + 1i	0 – 1i	0 – 1i	–0.707 – 0.707i	–0.707 + 0.707i	–0.707 + 0.707i
–19	0 – 1i	0 + 1i	0 – 1i	–0.707 – 0.707i	0.707 + 0.707i	0.707 + 0.707i
–18	0 – 1i	0 + 1i	**–1 + 0i**	**1 + 0i**	–0.707 + 0.707i	–0.707 – 0.707i
–17	0 + 1i	0 + 1i	0 – 1i	0.707 + 0.707i	–0.707 – 0.707i	–0.707 – 0.707i
–16	0 + 1i	0 + 1i	0 + 1i	–0.707 – 0.707i	–0.707 – 0.707i	–0.707 + 0.707i
–15	0 + 1i	0 – 1i	0 + 1i	0.707 + 0.707i	0.707 + 0.707i	–0.707 – 0.707i
–14	**–1 + 0i**	0 – 1i	0 – 1i	0.707 – 0.707i	**1 + 0i**	–0.707 + 0.707i
–13	1 + 0i	1 + 0i	–1 + 0i	–0.707 – 0.707i	–0.707 + 0.707i	–0.707 – 0.707i
–12	0 – 1i	0 + 1i	0 – 1i	–0.707 + 0.707i	0.707 + 0.707i	0.707 – 0.707i
–11	1 + 0i	–1 + 0i	–1 + 0i	–0.707 – 0.707i	–0.707 – 0.707i	–0.707 – 0.707i
–10	0 + 1i	**1 + 0i**	0 – 1i	0.707 + 0.707i	–0.707 + 0.707i	**–1 + 0i**
–9	1 + 0i	0 + 1i	–1 + 0i	–0.707 – 0.707i	–0.707 + 0.707i	–0.707 + 0.707i
–8	0 – 1i	1 + 0i	0 + 1i	0.707 + 0.707i	–0.707 + 0.707i	0.707 + 0.707i
–7	1 + 0i	0 + 1i	–1 + 0i	0.707 + 0.707i	–0.707 – 0.707i	–0.707 – 0.707i
–6	0 – 1i	1 + 0i	**1 + 0i**	**–1 + 0i**	–0.707 + 0.707i	0.707 – 0.707i
–5	1 + 0i	0 + 1i	0 – 1i	0.707 + 0.707i	0.707 + 0.707i	–0.707 + 0.707i
–4	0 – 1i	–1 + 0i	1 + 0i	–0.707 + 0.707i	0.707 + 0.707i	–0.707 + 0.707i
–3	1 + 0i	0 – 1i	0 – 1i	0.707 – 0.707i	0.707 – 0.707i	–0.707 + 0.707i
–2	**–1 + 0i**	–1 + 0i	1 + 0i	0.707 – 0.707i	**–1 + 0i**	–0.707 – 0.707i
–1	0 + 1i	0 – 1i	0 – 1i	0.707 + 0.707i	0.707 – 0.707i	–0.707 – 0.707i
0	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*
1	–1 + 0i	–1 + 0i	1 + 0i	–0.707 + 0.707i	–0.707 + 0.707i	–0.707 – 0.707i
2	–1 + 0i	**1 + 0i**	–1 + 0i	0.707 – 0.707i	–0.707 – 0.707i	–0.707 – 0.707i
3	1 + 0i	1 + 0i	–1 + 0i	0.707 + 0.707i	0.707 + 0.707i	–0.707 – 0.707i
4	–1 + 0i	–1 + 0i	1 + 0i	–0.707 + 0.707i	0.707 + 0.707i	–0.707 + 0.707i
5	–1 + 0i	–1 + 0i	1 + 0i	–0.707 – 0.707i	0.707 + 0.707i	–0.707 – 0.707i
6	–1 + 0i	–1 + 0i	**1 + 0i**	**1 + 0i**	–0.707 – 0.707i	0.707 – 0.707i
7	1 + 0i	1 + 0i	1 + 0i	0.707 + 0.707i	–0.707 + 0.707i	–0.707 – 0.707i
8	1 + 0i	1 + 0i	–1 + 0i	–0.707 – 0.707i	–0.707 + 0.707i	–0.707 – 0.707i
9	–1 + 0i	–1 + 0i	1 + 0i	–0.707 – 0.707i	0.707 + 0.707i	0.707 – 0.707i
10	**–1 + 0i**	1 + 0i	–1 + 0i	0.707 + 0.707i	0.707 – 0.707i	**–1 + 0i**
11	–1 + 0i	–1 + 0i	–1 + 0i	0.707 – 0.707i	–0.707 – 0.707i	0.707 + 0.707i
12	1 + 0i	–1 + 0i	1 + 0i	–0.707 – 0.707i	–0.707 – 0.707i	–0.707 – 0.707i

Table 20—First and last three symbols of the packet in the frequency domain *(continued)*

Subcarrier	Symbol 1	Symbol 2	Symbol 3	Symbol 17	Symbol 18	Symbol 19
13	–1 + 0i	1 + 0i	1 + 0i	0.707 – 0.707i	–0.707 – 0.707i	–0.707 + 0.707i
14	–1 + 0i	**1 + 0i**	1 + 0i	0.707 + 0.707i	0.707 + 0.707i	–0.707 – 0.707i
15	0 – 1i	–1 + 0i	0 – 1i	0.707 + 0.707i	0.707 +0.707i	0.707 – 0.707i
16	–1 + 0i	0 + 1i	1 + 0i	0.707 + 0.707i	–0.707 + 0.707i	–0.707 – 0.707i
17	0 + 1i	1 + 0i	0 – 1i	0.707 – 0.707i	–0.707 – 0.707i	–0.707 + 0.707i
18	–1 + 0i	0 + 1i	**1 + 0i**	**1 + 0i**	0.707 + 0.707i	0.707 + 0.707i
19	0 – 1i	–1 + 0i	1 + 0i	–0.707 +0.707i	–0.707 – 0.707i	0.707 + 0.707i
20	–1 + 0i	0 + 1i	0 + 1i	0.707 – 0.707i	–0.707 – 0.707i	0.707 – 0.707i
21	0 – 1i	–1 + 0i	1 + 0i	–0.707 – 0.707i	0.707 + 0.707i	–0.707 – 0.707i
22	**–1 + 0i**	0 + 1i	0 – 1i	–0.707 – 0.707i	0.707 – 0.707i	**1 + 0i**
23	–1 + 0i	1 + 0i	–1 + 0i	0.707 + 0.707i	0.707 – 0.707i	0.707 + 0.707i
24	0 – 1i	0 – 1i	0 – 1i	0.707 – 0.707i	0.707 + 0.707i	0.707 – 0.707i
25	–1 + 0i	1 + 0i	–1 + 0i	0.707 + 0.707i	0.707 – 0.707i	–0.707 – 0.707i
26	0 + 1i	0 – 1i	0 – 1i	–0.707 + 0.707i	**–1 + 0i**	–0.707 + 0.707i
27	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*
28	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*
29	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*
30	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*
31	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*	*0 + 0i*

NOTE—In Table 20, the pilot tones are represented in **bold text** and the DC/guard tones are represented in *italic text*.

5.5.2 Time domain OFDM header and payload

The data from Table 20 is converted by an IFFT of size 64. Most IFFTs require a reordering of the data. Typically, the order of the frequencies within each symbol should be as follows:

0, 1, 2, … 31, –32, –31, …, –1

After the IFFT, each symbol is extended by a CP of 16 samples. Each OFDM symbol then has a size of 80 samples (64 + 16).

The resulting data in the time domain has 1520 samples (19 × 80) and is represented in 5.7 (complete packet).

5.6 Generation of the preamble

5.6.1 Generation of the STF

The STF consists of 4 symbols. The resulting STF is equivalent to 20 repetitions of the 16-sample time domain pattern given in Table 21.

Table 21—STF time domain pattern

Sample #	I	Q
1	0.6505	0
2	1.0989	0.6505
3	0.46	–1.301
4	–0.9531	–0.6505
5	0	0
6	0.9531	0.6505
7	–0.46	1.301
8	–1.0989	–0.6505
9	–0.6505	0
10	–1.0989	0.6505
11	–0.46	–1.301
12	0.9531	–0.6505
13	0	0
14	–0.9531	0.6505
15	0.46	1.301
16	1.0989	–0.6505

NOTE—The last 2 repetitions are negated.

5.6.2 Generation of the LTF

The LTF consists of the time domain pattern given in Table 22.

The samples 1 through 32 are part of the CP for the LTF. They are simply a copy of samples 65 through 96. The samples 97 through 160 are a repetition of samples 33 through 96.

5.7 The entire packet

The complete packet in the time domain is represented in Table 23. The STF is from sample 1 to 320. The LTF is from sample 321 to 480. The OFDM header and payload are from sample 481 to 2000.

Table 22—LTF in time domain

Sample #	I	Q	Sample #	I	Q
33	–0.75	0	65	1.25	0
34	0.5069	–0.5395	66	–0.3216	–0.5171
35	0.147	0.178	67	–0.564	–0.4328
36	–0.5541	0.4205	68	0.8594	0.5478
37	0.2817	–0.9077	69	0.0111	–0.4458
38	–0.5326	0.3518	70	–0.9756	–0.4563
39	–0.3165	1.0258	71	–1.1903	0.3727
40	–0.5391	0.207	72	–0.7761	–0.0741
41	–0.6036	1.1339	73	0.1036	–0.6339
42	0.8113	0.6423	74	0.2871	–1.2165
43	–0.6222	–0.3373	75	0.4219	–0.6784
44	–0.4653	–0.3832	76	0.8836	–0.4284
45	1.1802	0.4189	77	0.5269	0.2276
46	0.0015	1.1597	78	–0.6312	0.5158
47	0.4623	0.2948	79	–0.3382	–0.9638
48	1.0998	–0.4827	80	0.3459	0.1333
49	0.25	–1.25	81	0.25	1.25
50	0.3459	–0.1333	82	1.0998	0.4827
51	–0.3382	0.9638	83	0.4623	–0.2948
52	–0.6312	–0.5158	84	0.0015	–1.1597
53	0.5269	–0.2276	85	1.1802	–0.4189
54	0.8836	0.4284	86	–0.4653	0.3832
55	0.4219	0.6784	87	–0.6222	0.3373
56	0.2871	1.2165	88	0.8113	–0.6423
57	0.1036	0.6339	89	–0.6036	–1.1339
58	–0.7761	0.0741	90	–0.5391	–0.207
59	–1.1903	–0.3727	91	–0.3165	–1.0258
60	–0.9756	0.4563	92	–0.5326	–0.3518
61	0.0111	0.4458	93	0.2817	0.9077
62	0.8594	–0.5478	94	–0.5541	–0.4205
63	–0.564	0.4328	95	0.147	–0.178
64	–0.3216	0.5171	96	0.5069	0.5395

Table 23—Complete packet

Sample	I	Q	Sample	I	Q	Sample	I	Q
1	0.6505	0	668	–0.1808	–0.1731	1335	–1.3648	2.0945
2	1.0989	0.6505	669	0.3092	0.347	1336	–1.0836	0.0399
3	0.46	–1.301	670	0.7407	–0.2839	1337	1.1036	–0.8839
4	–0.9531	–0.6505	671	–0.4095	–0.6668	1338	0.4514	0.2075
5	0	0	672	0.324	0.6626	1339	–0.3796	0.1194
6	0.9531	0.6505	673	0	0.75	1340	–0.7208	–0.5982
7	–0.46	1.301	674	–0.8544	0.7334	1341	–0.5869	–1.1363
8	–1.0989	–0.6505	675	0.5255	0.2195	1342	–0.0839	–0.5959
9	–0.6505	0	676	–0.2896	–0.4108	1343	0.2974	–0.1812
10	–1.0989	0.6505	677	–0.5814	0.384	1344	0.2389	–0.7964
11	–0.46	–1.301	678	0.7117	0.4746	1345	0.1768	–0.1768
12	0.9531	–0.6505	679	–0.2389	0.6096	1346	1.1994	–0.1394
13	0	0	680	–0.8804	0.3611	1347	0.7883	–0.8558
14	–0.9531	0.6505	681	–0.375	0.0214	1348	0.1254	0.2224
15	0.46	1.301	682	–0.8699	0.7716	1349	0.4199	0.2061
16	1.0989	–0.6505	683	–0.5328	–0.715	1350	–0.3473	–0.5966
17	0.6505	0	684	0.5481	–1.3786	1351	–0.5288	0.0012
18	1.0989	0.6505	685	–0.8493	0.7693	1352	0.125	–0.0038
19	0.46	–1.301	686	–1.1144	1.3178	1353	0.6036	0.0732
20	–0.9531	–0.6505	687	0.374	1.0109	1354	0.5678	0.2475
21	0	0	688	0.1823	0.6881	1355	–0.2018	–0.1097
22	0.9531	0.6505	689	0.75	0.5	1356	–1.002	0.4166
23	–0.46	1.301	690	0.3684	0.0626	1357	–0.3908	–0.0597
24	–1.0989	–0.6505	691	–0.4985	–1.1002	1358	0.7756	–1.0674
25	–0.6505	0	692	0.5538	–0.1209	1359	–0.0966	–0.7552
26	–1.0989	0.6505	693	0.6564	0.4236	1360	0.0332	–1.0148
27	–0.46	–1.301	694	0.3707	–0.3974	1361	–0.1036	–0.1768
28	0.9531	–0.6505	695	–0.4976	0.2228	1362	–0.5071	1.4348
29	0	0	696	–0.9433	–0.0313	1363	–0.2218	0.3474
30	–0.9531	0.6505	697	–0.1982	0.0518	1364	–0.4394	–0.5773
31	0.46	1.301	698	–0.2538	0.1013	1365	0.1678	–0.3457
32	1.0989	–0.6505	699	–0.1261	–1.4557	1366	–0.0687	–0.7158
33	0.6505	0	700	0.0817	–0.4166	1367	0.1659	–0.3205

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
34	1.0989	0.6505	701	0.7944	0.403	1368	0.4969	–0.1672
35	0.46	–1.301	702	–0.0791	–0.8272	1369	–0.2803	0.0732
36	–0.9531	–0.6505	703	–1.397	–0.1778	1370	–0.4692	0.361
37	0	0	704	0.2378	0.0857	1371	–0.5611	–0.1364
38	0.9531	0.6505	705	0.25	–0.5	1372	–0.4332	–0.3624
39	–0.46	1.301	706	0.403	–0.2371	1373	0.4743	–0.5845
40	–1.0989	–0.6505	707	1.0226	–0.1746	1374	0.4699	–0.1637
41	–0.6505	0	708	–0.1153	0.1551	1375	–0.4154	–0.188
42	–1.0989	0.6505	709	0.4778	–0.134	1376	–0.1374	–0.3935
43	–0.46	–1.301	710	0.4828	–0.8943	1377	–0.25	0.5303
44	0.9531	–0.6505	711	0.2801	0.123	1378	–0.8872	0.0904
45	0	0	712	–0.0148	1.1609	1379	0.1095	–0.6144
46	–0.9531	0.6505	713	–0.375	0.7286	1380	0.1946	–0.3511
47	0.46	1.301	714	0.7524	0.5096	1381	–0.0558	0.1274
48	1.0989	–0.6505	715	–0.8567	0.3234	1382	0.7378	1.0306
49	0.6505	0	716	–0.7367	–0.2166	1383	0.1524	0.7855
50	1.0989	0.6505	717	1.2458	–0.0193	1384	–0.7686	–0.1897
51	0.46	–1.301	718	0.2994	0.2395	1385	–1.0303	–0.0732
52	–0.9531	–0.6505	719	0.4325	–0.1663	1386	–0.9171	0.8333
53	0	0	720	0.5498	–1.1755	1387	–0.3681	1.1834
54	0.9531	0.6505	721	1.25	0.25	1388	–0.1581	0.2614
55	–0.46	1.301	722	0.5896	–0.4771	1389	–0.6118	–0.6114
56	–1.0989	–0.6505	723	0.2416	–0.9515	1390	–0.1488	0.3559
57	–0.6505	0	724	–0.3164	–0.4676	1391	1.1808	0.7177
58	–1.0989	0.6505	725	–0.1213	–0.4968	1392	0.3623	–1.1271
59	–0.46	–1.301	726	–0.3094	–0.3462	1393	0.25	–0.8839
60	0.9531	–0.6505	727	–0.6124	0.3067	1394	1.396	–0.5758
61	0	0	728	0.6017	0.2498	1395	0.1183	–1.1766
62	–0.9531	0.6505	729	0.0518	0.0518	1396	–1.0588	0.6119
63	0.46	1.301	730	0.0178	–0.737	1397	–1.5214	–0.1543
64	1.0989	–0.6505	731	–0.0622	–0.5425	1398	–0.3341	–0.3884
65	0.6505	0	732	–0.5637	0.8328	1399	0.9788	1.7396
66	1.0989	0.6505	733	1.3807	0.4445	1400	–0.6621	–0.1632

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
67	0.46	–1.301	734	–0.006	–0.3219	1401	–0.7803	–0.9268
68	–0.9531	–0.6505	735	–0.6906	0.0269	1402	–0.8951	0.2553
69	0	0	736	1.3586	0.0224	1403	–0.9663	0.1538
70	0.9531	0.6505	737	–0.25	–0.25	1404	0.9929	0.0152
71	–0.46	1.301	738	–0.2619	0.8775	1405	0.5864	–0.1226
72	–1.0989	–0.6505	739	1.06	1.1668	1406	0.0592	0.814
73	–0.6505	0	740	0.1949	–0.9882	1407	–0.4049	–0.4701
74	–1.0989	0.6505	741	–0.2424	–0.2928	1408	–0.8584	–1.1959
75	–0.46	–1.301	742	–0.0352	1.424	1409	0.8107	0.5303
76	0.9531	–0.6505	743	0.426	0.1328	1410	0.5755	–0.5129
77	0	0	744	0.2041	0.185	1411	–0.213	–0.0564
78	–0.9531	0.6505	745	–0.125	0.2286	1412	0.6503	0.7214
79	0.46	1.301	746	–0.1434	–0.1718	1413	1.4093	–0.3345
80	1.0989	–0.6505	747	–0.1389	0.8722	1414	0.7772	0.1274
81	0.6505	0	748	–0.2277	–0.2568	1415	–0.0901	–0.2903
82	1.0989	0.6505	749	–0.0731	–0.5227	1416	0.6632	0.3901
83	0.46	–1.301	750	0.4728	1.0489	1417	–0.0303	0.9268
84	–0.9531	–0.6505	751	–1.0327	0.1196	1418	–0.2958	–0.4719
85	0	0	752	–0.7737	–1.0561	1419	0.6884	0.2991
86	0.9531	0.6505	753	1	–0.5	1420	0.2517	0.2667
87	–0.46	1.301	754	–0.6231	0.6482	1421	0.9654	–0.8028
88	–1.0989	–0.6505	755	–0.7036	–0.0845	1422	0.5076	0.3542
89	–0.6505	0	756	0.2741	–1.1065	1423	–0.1534	0.8546
90	–1.0989	0.6505	757	–0.3358	0.1004	1424	0.9041	–0.5678
91	–0.46	–1.301	758	–0.3413	–0.6247	1425	–0.1036	–0.1768
92	0.9531	–0.6505	759	0.0041	–1.0841	1426	–0.5071	1.4348
93	0	0	760	0.4098	0.3478	1427	–0.2218	0.3474
94	–0.9531	0.6505	761	–0.3018	–0.3018	1428	–0.4394	–0.5773
95	0.46	1.301	762	–0.3041	–0.3038	1429	0.1678	–0.3457
96	1.0989	–0.6505	763	0.2536	–0.6519	1430	–0.0687	–0.7158
97	0.6505	0	764	0.1863	–1.3532	1431	0.1659	–0.3205
98	1.0989	0.6505	765	0.7835	0.6591	1432	0.4969	–0.1672
99	0.46	–1.301	766	–0.1615	1.0382	1433	–0.2803	0.0732

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
100	–0.9531	–0.6505	767	–0.3543	0.444	1434	–0.4692	0.361
101	0	0	768	–0.2568	0.0816	1435	–0.5611	–0.1364
102	0.9531	0.6505	769	–1.5	–1	1436	–0.4332	–0.3624
103	–0.46	1.301	770	–0.8579	–0.0613	1437	0.4743	–0.5845
104	–1.0989	–0.6505	771	–0.5981	–0.1308	1438	0.4699	–0.1637
105	–0.6505	0	772	0.2936	–1.3118	1439	–0.4154	–0.188
106	–1.0989	0.6505	773	1.1995	–0.8108	1440	–0.1374	–0.3935
107	–0.46	–1.301	774	–0.0847	–0.282	1441	0.0732	0.7071
108	0.9531	–0.6505	775	–0.1105	0.9376	1442	–0.1505	0.1106
109	0	0	776	–0.279	0.9434	1443	0.7487	–0.2539
110	–0.9531	0.6505	777	–0.125	–0.4786	1444	0.5702	–0.3195
111	0.46	1.301	778	0.583	–0.1889	1445	0.2407	–0.4889
112	1.0989	–0.6505	779	–0.0524	0.3223	1446	1.4049	0.235
113	0.6505	0	780	–0.2553	0.8228	1447	0.267	0.8823
114	1.0989	0.6505	781	–0.5911	0.9192	1448	–0.1098	0.5457
115	0.46	–1.301	782	–0.5347	0.4778	1449	0	0.4571
116	–0.9531	–0.6505	783	0.3705	1.1166	1450	–1.0648	0.1166
117	0	0	784	1.1496	1.0545	1451	–0.1968	0.4275
118	0.9531	0.6505	785	1.25	0.25	1452	–0.2262	0.5005
119	–0.46	1.301	786	0.5896	–0.4771	1453	–0.1371	–0.9889
120	–1.0989	–0.6505	787	0.2416	–0.9515	1454	0.9962	–0.8207
121	–0.6505	0	788	–0.3164	–0.4676	1455	0.7019	0.0296
122	–1.0989	0.6505	789	–0.1213	–0.4968	1456	–0.2743	0.2598
123	–0.46	–1.301	790	–0.3094	–0.3462	1457	–0.7803	0.3536
124	0.9531	–0.6505	791	–0.6124	0.3067	1458	0.2517	–0.5182
125	0	0	792	0.6017	0.2498	1459	–0.5378	–0.1761
126	–0.9531	0.6505	793	0.0518	0.0518	1460	–1.694	–0.1293
127	0.46	1.301	794	0.0178	–0.737	1461	–0.4844	–0.6802
128	1.0989	–0.6505	795	–0.0622	–0.5425	1462	–0.9842	0.2458
129	0.6505	0	796	–0.5637	0.8328	1463	–1.1416	–0.1229
130	1.0989	0.6505	797	1.3807	0.4445	1464	–0.0986	0.3233
131	0.46	–1.301	798	–0.006	–0.3219	1465	–0.25	0.6036
132	–0.9531	–0.6505	799	–0.6906	0.0269	1466	–0.5928	–1.5937

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
133	0	0	800	1.3586	0.0224	1467	–0.1564	–0.3116
134	0.9531	0.6505	801	–0.75	–0.5	1468	0.4498	1.6195
135	–0.46	1.301	802	0.6925	0.3787	1469	–0.0273	0.4731
136	–1.0989	–0.6505	803	0.49	–0.5588	1470	0.5568	–0.6178
137	–0.6505	0	804	0.0296	–0.6947	1471	0.3324	–0.8678
138	–1.0989	0.6505	805	0.1239	0.7468	1472	–0.7073	0.476
139	–0.46	–1.301	806	0.4302	0.821	1473	0.4268	0
140	0.9531	–0.6505	807	–0.7965	0.3	1474	–0.4977	–0.9329
141	0	0	808	–0.7702	–0.1656	1475	–0.6901	1.2402
142	–0.9531	0.6505	809	1.4053	0.4053	1476	0.7908	0.7534
143	0.46	1.301	810	0.3555	1.2629	1477	0.32	–0.2183
144	1.0989	–0.6505	811	–0.3756	1.0032	1478	1.0434	0.7155
145	0.6505	0	812	–0.1669	0.606	1479	0.4069	–0.0239
146	1.0989	0.6505	813	–0.3919	–0.4857	1480	–1.1428	0.3316
147	0.46	–1.301	814	0.4783	–0.7561	1481	0	0.4571
148	–0.9531	–0.6505	815	–0.8041	–0.0645	1482	0.7672	–0.3292
149	0	0	816	–1.2097	–0.5419	1483	0.1381	–0.0534
150	0.9531	0.6505	817	–0.25	0	1484	–0.4874	–0.8099
151	–0.46	1.301	818	–1.1991	0.684	1485	–0.2164	–0.7183
152	–1.0989	–0.6505	819	–0.5867	0.0665	1486	–0.243	–0.2394
153	–0.6505	0	820	0.5047	0.4712	1487	–0.1813	–0.2886
154	–1.0989	0.6505	821	–0.7581	0.5428	1488	–0.3657	0.4548
155	–0.46	–1.301	822	–1.1718	–0.626	1489	–1.1339	–0.3536
156	0.9531	–0.6505	823	0.1328	–1.1049	1490	0.3331	–0.3613
157	0	0	824	–0.2339	–0.215	1491	0.9791	0.397
158	–0.9531	0.6505	825	–0.125	1.0821	1492	0.7792	–0.7507
159	0.46	1.301	826	1.4165	0.6882	1493	0.6308	–0.0269
160	1.0989	–0.6505	827	0.4663	–0.5682	1494	–0.9103	1.0976
161	0.6505	0	828	–0.1519	–0.5003	1495	–0.0323	0.0574
162	1.0989	0.6505	829	0.5462	–0.2839	1496	0.4147	–0.264
163	0.46	–1.301	830	0.65	–0.3209	1497	0.25	0.6036
164	–0.9531	–0.6505	831	0.7639	0.6421	1498	1.3681	1.0939
165	0	0	832	0.444	0.8517	1499	–0.2849	0.1445

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
166	0.9531	0.6505	833	0.5	–0.25	1500	–0.5966	–0.4497
167	–0.46	1.301	834	–0.4142	–0.2127	1501	1.0879	–0.1802
168	–1.0989	–0.6505	835	–1.0935	0.0763	1502	0.5504	–1.0303
169	–0.6505	0	836	0.3203	0.1346	1503	–0.353	–1.0804
170	–1.0989	0.6505	837	0.8332	0.1496	1504	–0.1305	0.2871
171	–0.46	–1.301	838	0.6291	–1.301	1505	0.0732	0.7071
172	0.9531	–0.6505	839	0.3588	–0.9125	1506	–0.1505	0.1106
173	0	0	840	0.3187	0.544	1507	0.7487	–0.2539
174	–0.9531	0.6505	841	0.3447	–0.6553	1508	0.5702	–0.3195
175	0.46	1.301	842	0.5711	–0.6582	1509	0.2407	–0.4889
176	1.0989	–0.6505	843	0.4791	0.0914	1510	1.4049	0.235
177	0.6505	0	844	–1.2386	–0.0474	1511	0.267	0.8823
178	1.0989	0.6505	845	–0.0652	0.3821	1512	–0.1098	0.5457
179	0.46	–1.301	846	0.6937	–0.5667	1513	0	0.4571
180	–0.9531	–0.6505	847	–1.1061	–0.7109	1514	–1.0648	0.1166
181	0	0	848	0.1804	–0.3041	1515	–0.1968	0.4275
182	0.9531	0.6505	849	0	–0.75	1516	–0.2262	0.5005
183	–0.46	1.301	850	–0.8096	1.0641	1517	–0.1371	–0.9889
184	–1.0989	–0.6505	851	–0.0168	0.916	1518	0.9962	–0.8207
185	–0.6505	0	852	–0.4307	–0.4111	1519	0.7019	0.0296
186	–1.0989	0.6505	853	0.301	1.0608	1520	–0.2743	0.2598
187	–0.46	–1.301	854	0.4539	0.1917	1521	0.6036	0
188	0.9531	–0.6505	855	0.5119	–1.1968	1522	–0.7102	0.0582
189	0	0	856	0.5681	–0.6634	1523	–0.8069	0.0666
190	–0.9531	0.6505	857	–0.125	–0.3321	1524	0.7677	0.5468
191	0.46	1.301	858	0.3873	0.6213	1525	0.2524	0.3515
192	1.0989	–0.6505	859	–0.3628	–0.0264	1526	0.0091	1.0895
193	0.6505	0	860	0.1335	–0.5583	1527	–0.0781	1.2938
194	1.0989	0.6505	861	0.4109	0.8874	1528	0.2749	0.1756
195	0.46	–1.301	862	–1.1636	0.7296	1529	0.4268	–0.7071
196	–0.9531	–0.6505	863	–0.0609	0.0475	1530	–0.6077	–1.4293
197	0	0	864	–0.2974	–0.5057	1531	0.563	–0.6991
198	0.9531	0.6505	865	–0.75	–0.5	1532	0.8327	–0.8248

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
199	–0.46	1.301	866	0.6925	0.3787	1533	–0.4415	–1.0406
200	–1.0989	–0.6505	867	0.49	–0.5588	1534	–0.1301	–0.7419
201	–0.6505	0	868	0.0296	–0.6947	1535	–0.196	–1.2772
202	–1.0989	0.6505	869	0.1239	0.7468	1536	0.6182	0.3049
203	–0.46	–1.301	870	0.4302	0.821	1537	0.8107	0.3536
204	0.9531	–0.6505	871	–0.7965	0.3	1538	–0.257	–1.3845
205	0	0	872	–0.7702	–0.1656	1539	0.5271	–0.5753
206	–0.9531	0.6505	873	1.4053	0.4053	1540	–0.0303	0.2553
207	0.46	1.301	874	0.3555	1.2629	1541	–0.6329	–0.3224
208	1.0989	–0.6505	875	–0.3756	1.0032	1542	0.3853	–0.5783
209	0.6505	0	876	–0.1669	0.606	1543	0.2062	1.2063
210	1.0989	0.6505	877	–0.3919	–0.4857	1544	0.5346	1.3008
211	0.46	–1.301	878	0.4783	–0.7561	1545	0.7803	–0.3964
212	–0.9531	–0.6505	879	–0.8041	–0.0645	1546	0.1151	0.3834
213	0	0	880	–1.2097	–0.5419	1547	–0.634	0.429
214	0.9531	0.6505	881	0	0	1548	–0.6766	0.0394
215	–0.46	1.301	882	–0.7224	–1.061	1549	0.7144	0.1713
216	–1.0989	–0.6505	883	0.0986	–0.2501	1550	–0.0891	–0.0131
217	–0.6505	0	884	–0.6047	1.2378	1551	–0.4727	0.2019
218	–1.0989	0.6505	885	–0.3547	–0.028	1552	1.1123	–0.8002
219	–0.46	–1.301	886	0.4239	–0.645	1553	–0.1036	–0.3536
220	0.9531	–0.6505	887	0.3278	–0.6477	1554	0.1428	0.8731
221	0	0	888	–0.3022	–0.2338	1555	0.6424	0.5755
222	–0.9531	0.6505	889	0.4053	1.0089	1556	–1.5436	0.1857
223	0.46	1.301	890	1.3666	0.6059	1557	–0.2095	–0.9551
224	1.0989	–0.6505	891	0.1337	–0.0563	1558	0.6815	–0.8154
225	0.6505	0	892	0.882	–0.3037	1559	–0.7935	0.195
226	1.0989	0.6505	893	0.4167	–0.2635	1560	0.0674	0.3238
227	0.46	–1.301	894	–0.7497	–0.0026	1561	–0.0732	–0.2071
228	–0.9531	–0.6505	895	0.8389	–1.3511	1562	–0.3058	–0.3181
229	0	0	896	–0.0407	–1.4127	1563	1.041	1.3381
230	0.9531	0.6505	897	0.75	0.25	1564	0.2113	0.5691
231	–0.46	1.301	898	1.3445	0.4739	1565	–1.0156	–0.77

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
232	–1.0989	–0.6505	899	–0.8199	0.3431	1566	–0.5914	–0.0458
233	–0.6505	0	900	–0.0429	0.0252	1567	–0.4842	–0.3492
234	–1.0989	0.6505	901	–0.5296	–0.3943	1568	–0.6408	0.3395
235	–0.46	–1.301	902	–0.1959	–0.2655	1569	0.1036	0.7071
236	0.9531	–0.6505	903	0.7708	–0.1596	1570	0.8656	–0.1366
237	0	0	904	–1.1196	0.2988	1571	0.3444	–0.3598
238	–0.9531	0.6505	905	0.4786	0.2286	1572	–1.0004	–0.398
239	0.46	1.301	906	1.8203	–0.2119	1573	–0.8242	0.2188
240	1.0989	–0.6505	907	0.0559	0.1768	1574	0.7306	0.0209
241	0.6505	0	908	–0.7192	0.4991	1575	–0.0417	0.0119
242	1.0989	0.6505	909	–0.6297	–0.1409	1576	–0.9181	0.3307
243	0.46	–1.301	910	0.2035	–0.9139	1577	0.2803	0.6036
244	–0.9531	–0.6505	911	–0.3151	0.0227	1578	–0.2429	1.5395
245	0	0	912	–1.3792	0.8238	1579	–0.263	0.6391
246	0.9531	0.6505	913	–0.25	0.25	1580	0.4391	0.0407
247	–0.46	1.301	914	0.6563	0.5325	1581	–0.6715	–0.482
248	–1.0989	–0.6505	915	–0.3756	0.2564	1582	0.004	–1.3302
249	–0.6505	0	916	–0.6222	–0.3347	1583	0.4458	0.1316
250	–1.0989	0.6505	917	0.3547	0.028	1584	–0.0485	0.4391
251	–0.46	–1.301	918	–0.1308	0.2017	1585	0.6036	0
252	0.9531	–0.6505	919	–0.7871	1.1608	1586	–0.7102	0.0582
253	0	0	920	–0.7915	0.6192	1587	–0.8069	0.0666
254	–0.9531	0.6505	921	–0.6553	–0.7589	1588	0.7677	0.5468
255	0.46	1.301	922	–0.3077	0.685	1589	0.2524	0.3515
256	1.0989	–0.6505	923	0.1051	0.4707	1590	0.0091	1.0895
257	0.6505	0	924	0.765	–1.2526	1591	–0.0781	1.2938
258	1.0989	0.6505	925	–0.5632	–0.5901	1592	0.2749	0.1756
259	0.46	–1.301	926	–0.9437	–0.1152	1593	0.4268	–0.7071
260	–0.9531	–0.6505	927	0.4703	–0.3946	1594	–0.6077	–1.4293
261	0	0	928	–0.1704	–0.2313	1595	0.563	–0.6991
262	0.9531	0.6505	929	0.5	0.5	1596	0.8327	–0.8248
263	–0.46	1.301	930	0.8652	1.0323	1597	–0.4415	–1.0406
264	–1.0989	–0.6505	931	–0.1102	0.8577	1598	–0.1301	–0.7419

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
265	–0.6505	0	932	0.7064	1.19	1599	–0.196	–1.2772
266	–1.0989	0.6505	933	0.5296	0.3943	1600	0.6182	0.3049
267	–0.46	–1.301	934	0.1419	–0.6515	1601	0.3536	0.7071
268	0.9531	–0.6505	935	0.1885	0.5606	1602	–0.3547	0.6356
269	0	0	936	–0.1471	0.7344	1603	0.0026	–0.5089
270	–0.9531	0.6505	937	–0.2286	–0.4786	1604	0.4591	–0.9793
271	0.46	1.301	938	–0.1944	–0.6425	1605	0.0269	–0.2041
272	1.0989	–0.6505	939	–0.0877	–0.7983	1606	–1.055	0.1967
273	0.6505	0	940	–0.95	–1.0612	1607	0.5081	0.1146
274	1.0989	0.6505	941	–0.2238	–0.0056	1608	1.3278	–0.1783
275	0.46	–1.301	942	0.4224	0.9778	1609	–0.7803	–0.6036
276	–0.9531	–0.6505	943	–0.494	–0.1912	1610	0.0162	–0.7913
277	0	0	944	0.5364	–0.5984	1611	–0.0462	–0.069
278	0.9531	0.6505	945	0	0	1612	0.1889	0.9928
279	–0.46	1.301	946	–0.7224	–1.061	1613	0.9413	0.1226
280	–1.0989	–0.6505	947	0.0986	–0.2501	1614	–1.4154	–0.4991
281	–0.6505	0	948	–0.6047	1.2378	1615	–0.5254	0.8781
282	–1.0989	0.6505	949	–0.3547	–0.028	1616	–0.0592	0.0519
283	–0.46	–1.301	950	0.4239	–0.645	1617	–0.3536	–1.4142
284	0.9531	–0.6505	951	0.3278	–0.6477	1618	1.2199	–0.1272
285	0	0	952	–0.3022	–0.2338	1619	–0.1617	0.5988
286	–0.9531	0.6505	953	0.4053	1.0089	1620	0.1019	0.3871
287	0.46	1.301	954	1.3666	0.6059	1621	0.4889	0.3932
288	1.0989	–0.6505	955	0.1337	–0.0563	1622	–0.3196	0.2501
289	–0.6505	0	956	0.882	–0.3037	1623	0.4854	0.711
290	–1.0989	–0.6505	957	0.4167	–0.2635	1624	–0.6103	0.0647
291	–0.46	1.301	958	–0.7497	–0.0026	1625	–0.6768	–0.6036
292	0.9531	0.6505	959	0.8389	–1.3511	1626	–0.1627	0.5331
293	0	0	960	–0.0407	–1.4127	1627	–0.4069	0.0439
294	–0.9531	–0.6505	961	–0.8839	0.3536	1628	0.1342	–0.7233
295	0.46	–1.301	962	–0.0336	0.8687	1629	–0.2881	0.4492
296	1.0989	0.6505	963	–0.7799	0.1728	1630	0.4181	0.5584
297	0.6505	0	964	0.1891	–0.6159	1631	0.8552	0.0761

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
298	1.0989	–0.6505	965	0.6734	–0.4006	1632	0.3919	–0.0307
299	0.46	1.301	966	0.2461	0.05	1633	0.7071	–0.7071
300	–0.9531	0.6505	967	1.184	0.4273	1634	0.2109	–1.4097
301	0	0	968	0.4654	0.1181	1635	0.268	–1.4598
302	0.9531	–0.6505	969	–1.5089	–0.125	1636	0.9103	0.0464
303	–0.46	–1.301	970	–0.2443	–0.146	1637	0.6802	0.9112
304	–1.0989	0.6505	971	0.7714	–0.6208	1638	–0.5451	–0.4129
305	–0.6505	0	972	–0.6118	–0.675	1639	–0.2787	–0.9936
306	–1.0989	–0.6505	973	–0.8753	–0.5169	1640	1.0654	–1.368
307	–0.46	1.301	974	–0.5449	–0.4082	1641	–0.2803	–1.1036
308	0.9531	0.6505	975	0.4193	0.2374	1642	–0.6351	1.079
309	0	0	976	1.6786	0.8281	1643	0.3168	0.6773
310	–0.9531	–0.6505	977	1.4142	0.8839	1644	0.2175	–0.7115
311	0.46	–1.301	978	0.5174	0.1582	1645	0.5587	0.5845
312	1.0989	0.6505	979	0.9204	–0.7007	1646	–0.004	0.698
313	0.6505	0	980	0.9337	–0.233	1647	–0.2452	–0.1038
314	1.0989	–0.6505	981	–1.1459	0.74	1648	–0.2382	0.1114
315	0.46	1.301	982	0.0935	0.3738	1649	–0.7071	0
316	–0.9531	0.6505	983	1.4272	–0.6626	1650	0.0234	0.1846
317	0	0	984	–0.8333	–0.0067	1651	–0.1089	–0.3372
318	0.9531	–0.6505	985	–0.1553	1.0821	1652	–0.4989	–1.0441
319	–0.46	–1.301	986	–0.1296	–0.1823	1653	0.2183	0.3139
320	–1.0989	0.6505	987	–0.6472	–1.0287	1654	0.1714	0.7904
321	1.25	0	988	0.8176	–0.0763	1655	0.2852	–0.1249
322	–0.3216	–0.5171	989	0.0201	–0.0676	1656	1.272	0.3506
323	–0.564	–0.4328	990	0.0225	0.0677	1657	0.3232	0.8964
324	0.8594	0.5478	991	–0.0539	0.6489	1658	–0.7321	0.3101
325	0.0111	–0.4458	992	–0.2031	0.0917	1659	0.1363	–0.3594
326	–0.9756	–0.4563	993	0.5303	–0.3536	1660	–1.0988	–0.3824
327	–1.1903	0.3727	994	–0.4082	–0.3206	1661	–1.2119	0.2579
328	–0.7761	–0.0741	995	0.4178	0.0615	1662	0.3354	0.8325
329	0.1036	–0.6339	996	0.3409	0.0797	1663	–1.0846	0.8567
330	0.2871	–1.2165	997	–0.8805	–0.8065	1664	–0.7351	0.5842

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
331	0.4219	–0.6784	998	–0.2006	–0.1009	1665	0.3536	0.7071
332	0.8836	–0.4284	999	–0.0355	0.8364	1666	–0.3547	0.6356
333	0.5269	0.2276	1000	0.3413	0.0992	1667	0.0026	–0.5089
334	–0.6312	0.5158	1001	–0.2589	0.125	1668	0.4591	–0.9793
335	–0.3382	–0.9638	1002	0.0957	–0.0742	1669	0.0269	–0.2041
336	0.3459	0.1333	1003	1.3264	–0.645	1670	–1.055	0.1967
337	0.25	1.25	1004	0.3176	–0.1546	1671	0.5081	0.1146
338	1.0998	0.4827	1005	0.3753	–0.1902	1672	1.3278	–0.1783
339	0.4623	–0.2948	1006	0.1755	0.693	1673	–0.7803	–0.6036
340	0.0015	–1.1597	1007	–0.1535	1.4903	1674	0.0162	–0.7913
341	1.1802	–0.4189	1008	0.2928	–0.4478	1675	–0.0462	–0.069
342	–0.4653	0.3832	1009	0.3536	–0.8839	1676	0.1889	0.9928
343	–0.6222	0.3373	1010	0.3706	0.447	1677	0.9413	0.1226
344	0.8113	–0.6423	1011	–1.0583	0.5522	1678	–1.4154	–0.4991
345	–0.6036	–1.1339	1012	0.014	0.5397	1679	–0.5254	0.8781
346	–0.5391	–0.207	1013	0.6459	–0.24	1680	–0.0592	0.0519
347	–0.3165	–1.0258	1014	–1.6167	–1.0935	1681	–0.6036	–1.0607
348	–0.5326	–0.3518	1015	–0.6615	–0.6868	1682	–0.1873	1.0237
349	0.2817	0.9077	1016	–0.4196	–0.3639	1683	0.8265	–0.1228
350	–0.5541	–0.4205	1017	–0.9053	0.3321	1684	0.222	–0.2516
351	0.147	–0.178	1018	–0.5822	0.2493	1685	–0.5957	1.0412
352	0.5069	0.5395	1019	–0.9506	–0.6197	1686	–0.63	–0.2629
353	–0.75	0	1020	0.4131	0.1353	1687	–0.7386	–0.1001
354	0.5069	–0.5395	1021	–0.2272	0.0676	1688	–0.468	–0.2202
355	0.147	0.178	1022	–0.5896	–0.5819	1689	–0.1036	–0.2803
356	–0.5541	0.4205	1023	0.7024	0.5376	1690	0.2743	0.6838
357	0.2817	–0.9077	1024	–0.9078	0.6814	1691	–0.2272	0.1516
358	–0.5326	0.3518	1025	–0.8839	0.3536	1692	–0.5012	0.4163
359	–0.3165	1.0258	1026	–0.0336	0.8687	1693	0.3932	–0.3853
360	–0.5391	0.207	1027	–0.7799	0.1728	1694	0.1315	–1.2505
361	–0.6036	1.1339	1028	0.1891	–0.6159	1695	–0.5593	0.524
362	0.8113	0.6423	1029	0.6734	–0.4006	1696	–0.7824	0.5917
363	–0.6222	–0.3373	1030	0.2461	0.05	1697	–0.1036	–0.7071

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
364	–0.4653	–0.3832	1031	1.184	0.4273	1698	0.139	–0.4854
365	1.1802	0.4189	1032	0.4654	0.1181	1699	–0.4307	0.0293
366	0.0015	1.1597	1033	–1.5089	–0.125	1700	0.9426	0.3115
367	0.4623	0.2948	1034	–0.2443	–0.146	1701	0.3774	1.1601
368	1.0998	–0.4827	1035	0.7714	–0.6208	1702	–0.9614	0.8328
369	0.25	–1.25	1036	–0.6118	–0.675	1703	0.323	–0.0744
370	0.3459	–0.1333	1037	–0.8753	–0.5169	1704	–0.0895	0.6163
371	–0.3382	0.9638	1038	–0.5449	–0.4082	1705	–0.6036	0.8232
372	–0.6312	–0.5158	1039	0.4193	0.2374	1706	–0.2894	1.1625
373	0.5269	–0.2276	1040	1.6786	0.8281	1707	–0.1444	1.1149
374	0.8836	0.4284	1041	–1.3839	–0.1768	1708	0.3446	0.0746
375	0.4219	0.6784	1042	–0.6704	0.5355	1709	0.1495	0.9302
376	0.2871	1.2165	1043	0.5092	–0.4634	1710	0.2154	0.3807
377	0.1036	0.6339	1044	–0.9994	0.5225	1711	–0.7559	–1.4073
378	–0.7761	0.0741	1045	0.1117	0.5856	1712	–0.5459	–1.1724
379	–1.1903	–0.3727	1046	0.6351	0.1888	1713	0.8107	–0.7071
380	–0.9756	0.4563	1047	–0.6357	–0.2362	1714	–0.2192	–0.0629
381	0.0111	0.4458	1048	–0.1339	0.1905	1715	0.3062	–0.1527
382	0.8594	–0.5478	1049	–0.7286	0.9786	1716	0.5388	–0.5619
383	–0.564	0.4328	1050	–0.7351	–0.3456	1717	–0.4043	–0.0412
384	–0.3216	0.5171	1051	0.1451	–0.4809	1718	0.4096	–0.0019
385	1.25	0	1052	–0.1864	0.2875	1719	0.3353	0.2709
386	–0.3216	–0.5171	1053	0.0341	0.222	1720	0.0644	–0.1024
387	–0.564	–0.4328	1054	–0.7802	–0.3408	1721	–0.6036	–1.2803
388	0.8594	0.5478	1055	–0.2768	–0.5178	1722	–0.8985	–0.4891
389	0.0111	–0.4458	1056	1.9581	0.5282	1723	–0.1401	–0.0391
390	–0.9756	–0.4563	1057	0.5	0.3536	1724	–0.4531	–1.2599
391	–1.1903	0.3727	1058	–0.7115	0.0462	1725	0.3139	–0.1147
392	–0.7761	–0.0741	1059	0.7485	0.6712	1726	0.6945	1.0481
393	0.1036	–0.6339	1060	1.0929	0.5474	1727	0.5799	0.3413
394	0.2871	–1.2165	1061	1.014	–0.4339	1728	1.0788	0.9706
395	0.4219	–0.6784	1062	0.7941	–1.4585	1729	–0.1036	–0.3536
396	0.8836	–0.4284	1063	0.2306	–1.0711	1730	–0.1203	–0.9216

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
397	0.5269	0.2276	1064	0.234	–0.4601	1731	0.798	1.1604
398	–0.6312	0.5158	1065	0.0214	–0.125	1732	0.3737	–0.9757
399	–0.3382	–0.9638	1066	–0.3034	0.1486	1733	–0.0845	–1.453
400	0.3459	0.1333	1067	0.1528	0.2707	1734	0.1046	0.9097
401	0.25	1.25	1068	0.3789	0.3591	1735	0.5803	0.4036
402	1.0998	0.4827	1069	–0.2942	–0.6443	1736	–0.119	0.1525
403	0.4623	–0.2948	1070	–0.142	–0.377	1737	–0.1036	–0.6768
404	0.0015	–1.1597	1071	0.2126	0.3483	1738	0.3015	–0.4968
405	1.1802	–0.4189	1072	–0.2751	0.0058	1739	–0.9883	0.6868
406	–0.4653	0.3832	1073	0.3839	0.1768	1740	–0.4675	–0.1675
407	–0.6222	0.3373	1074	0.7601	–0.1322	1741	1.2647	0.2769
408	0.8113	–0.6423	1075	–0.3385	0.5893	1742	1.0357	0.7582
409	–0.6036	–1.1339	1076	–0.1832	0.437	1743	0.2353	0.042
410	–0.5391	–0.207	1077	0.7418	–0.5856	1744	–0.1384	–1.2503
411	–0.3165	–1.0258	1078	0.3944	1.0648	1745	–0.6036	–1.0607
412	–0.5326	–0.3518	1079	–0.0763	1.0342	1746	–0.1873	1.0237
413	0.2817	0.9077	1080	0.6077	–0.1183	1747	0.8265	–0.1228
414	–0.5541	–0.4205	1081	0.0214	–0.2714	1748	0.222	–0.2516
415	0.147	–0.178	1082	–1.594	–0.9907	1749	–0.5957	1.0412
416	0.5069	0.5395	1083	–0.5865	–0.3521	1750	–0.63	–0.2629
417	–0.75	0	1084	0.2947	0.8838	1751	–0.7386	–0.1001
418	0.5069	–0.5395	1085	–0.1805	0.278	1752	–0.468	–0.2202
419	0.147	0.178	1086	0.4864	–0.6731	1753	–0.1036	–0.2803
420	–0.5541	0.4205	1087	0.3354	0.9681	1754	0.2743	0.6838
421	0.2817	–0.9077	1088	0.206	0.9803	1755	–0.2272	0.1516
422	–0.5326	0.3518	1089	0.5	–1.0607	1756	–0.5012	0.4163
423	–0.3165	1.0258	1090	–0.3908	–0.0033	1757	0.3932	–0.3853
424	–0.5391	0.207	1091	–0.4192	–0.0042	1758	0.1315	–1.2505
425	–0.6036	1.1339	1092	–0.7392	–0.0292	1759	–0.5593	0.524
426	0.8113	0.6423	1093	–1.1604	0.4339	1760	–0.7824	0.5917
427	–0.6222	–0.3373	1094	0.0053	–1.2729	1761	–1.4874	0.3536
428	–0.4653	–0.3832	1095	–0.0186	–0.5198	1762	–0.8989	0.4187
429	1.1802	0.4189	1096	–0.6952	–0.0583	1763	0.2643	–0.3137

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
430	0.0015	1.1597	1097	–0.7286	0.125	1764	–0.5084	0.1167
431	0.4623	0.2948	1098	–0.769	0.3274	1765	–1.0687	0.403
432	1.0998	–0.4827	1099	–0.2115	–1.6448	1766	0.4622	–0.2318
433	0.25	–1.25	1100	0.756	–0.5939	1767	–0.2149	0.7697
434	0.3459	–0.1333	1101	1.1477	0.1443	1768	0.2876	0.3284
435	–0.3382	0.9638	1102	0.1926	0.4544	1769	0.9786	0.4482
436	–0.6312	–0.5158	1103	0.2288	1.4085	1770	–0.2033	0.4965
437	0.5269	–0.2276	1104	0.5126	–0.6539	1771	0.1658	–1.2037
438	0.8836	0.4284	1105	–1.3839	–0.1768	1772	0.3518	–0.0415
439	0.4219	0.6784	1106	–0.6704	0.5355	1773	0.5608	0.7043
440	0.2871	1.2165	1107	0.5092	–0.4634	1774	0.1553	0.1143
441	0.1036	0.6339	1108	–0.9994	0.5225	1775	–0.9012	0.4369
442	–0.7761	0.0741	1109	0.1117	0.5856	1776	0.328	–0.1142
443	–1.1903	–0.3727	1110	0.6351	0.1888	1777	0.9571	–0.1768
444	–0.9756	0.4563	1111	–0.6357	–0.2362	1778	0.0343	0.6611
445	0.0111	0.4458	1112	–0.1339	0.1905	1779	0.132	0.6966
446	0.8594	–0.5478	1113	–0.7286	0.9786	1780	0.6536	–0.5701
447	–0.564	0.4328	1114	–0.7351	–0.3456	1781	0.2659	–0.4157
448	–0.3216	0.5171	1115	0.1451	–0.4809	1782	–0.2429	0.4121
449	1.25	0	1116	–0.1864	0.2875	1783	–0.6262	–0.9135
450	–0.3216	–0.5171	1117	0.0341	0.222	1784	–0.4221	–0.1994
451	–0.564	–0.4328	1118	–0.7802	–0.3408	1785	0.8321	0.8018
452	0.8594	0.5478	1119	–0.2768	–0.5178	1786	–0.1098	–0.7883
453	0.0111	–0.4458	1120	1.9581	0.5282	1787	–1.0394	–0.4287
454	–0.9756	–0.4563	1121	1.3107	0.7071	1788	0.2617	0.396
455	–1.1903	0.3727	1122	0.4326	0.6513	1789	–0.0032	0.0409
456	–0.7761	–0.0741	1123	–1.0584	0.2543	1790	–0.1526	0.7973
457	0.1036	–0.6339	1124	0.0874	0.4525	1791	–0.4093	0.7031
458	0.2871	–1.2165	1125	1.3684	0.2468	1792	–1.1569	–0.862
459	0.4219	–0.6784	1126	0.3107	0.0857	1793	–0.0732	–0.3536
460	0.8836	–0.4284	1127	–0.3262	0.6729	1794	0.1982	0.7375
461	0.5269	0.2276	1128	–0.4839	0.6139	1795	0.8536	–0.3871
462	–0.6312	0.5158	1129	–1.125	1.2286	1796	1.4144	–0.5498

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
463	–0.3382	–0.9638	1130	–0.324	–0.0743	1797	–0.742	0.347
464	0.3459	0.1333	1131	0.4623	–0.8069	1798	–0.9928	0.1588
465	0.25	1.25	1132	–0.1397	1.1748	1799	0.3296	–0.3776
466	1.0998	0.4827	1133	–0.7499	–0.6194	1800	–0.2746	–0.6705
467	0.4623	–0.2948	1134	–0.1972	–0.7251	1801	–0.2714	–0.3018
468	0.0015	–1.1597	1135	0.9637	0.5971	1802	0.4763	0.146
469	1.1802	–0.4189	1136	0.4623	–0.5046	1803	0.3728	0.4649
470	–0.4653	0.3832	1137	0.2803	1.2374	1804	0.689	–0.3914
471	–0.6222	0.3373	1138	1.0275	0.5272	1805	0.0428	–1.6614
472	0.8113	–0.6423	1139	0.0113	–0.9355	1806	–0.7666	–0.9068
473	–0.6036	–1.1339	1140	–0.6204	0.7613	1807	0.0539	–0.3132
474	–0.5391	–0.207	1141	–0.89	0.3108	1808	–0.3577	–0.0858
475	–0.3165	–1.0258	1142	–1.2452	–0.4992	1809	–0.1036	0.1768
476	–0.5326	–0.3518	1143	–0.3086	–1.0016	1810	0.1887	–0.0331
477	0.2817	0.9077	1144	–0.1656	–0.5035	1811	–0.7499	–0.2029
478	–0.5541	–0.4205	1145	0.2714	0.625	1812	0.7596	–0.8572
479	0.147	–0.178	1146	0.4795	0.083	1813	0.1306	0.3728
480	0.5069	0.5395	1147	–0.6645	–0.1462	1814	–1.0869	0.9801
481	0.75	0.75	1148	–0.0025	–0.0595	1815	1.0115	–0.2715
482	0.7478	0.8804	1149	–0.1067	0.7151	1816	1.1933	0.0638
483	–1.8473	0.0292	1150	–0.852	0.3955	1817	0.5821	–0.9482
484	–1.0324	0.3448	1151	0.5795	–0.6363	1818	–0.0997	–1.2243
485	0.1609	0.3108	1152	0.8012	0.0835	1819	0.0008	–0.0396
486	0.1388	–0.4451	1153	0.25	0.3536	1820	0.7925	–0.5169
487	–0.106	–1.0522	1154	0.3127	0.5918	1821	–0.6004	0.2091
488	–0.8661	–0.2156	1155	0.4818	–0.2727	1822	0.2101	1.0901
489	0.125	0.8321	1156	0.6819	–0.8599	1823	0.7565	1.3804
490	0.1346	0.4	1157	–0.2648	–0.3504	1824	–1.1835	1.1254
491	–0.5951	0.2595	1158	–0.2811	–1.3707	1825	–1.4874	0.3536
492	–0.1195	0.4088	1159	0.148	–0.1343	1826	–0.8989	0.4187
493	–0.5779	0.5428	1160	0.0583	0.9129	1827	0.2643	–0.3137
494	–0.255	0.5079	1161	1.125	–0.0214	1828	–0.5084	0.1167
495	0.9598	0.3728	1162	0.6191	–0.3148	1829	–1.0687	0.403

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
496	–0.313	1.1997	1163	–0.077	–1.3215	1830	0.4622	–0.2318
497	–1	0	1164	0.1305	–0.7331	1831	–0.2149	0.7697
498	0.6711	–1.687	1165	–1.2679	–0.4841	1832	0.2876	0.3284
499	–0.2918	–0.4937	1166	–0.4491	–0.5243	1833	0.9786	0.4482
500	–1.2035	–0.2092	1167	0.8201	0.9034	1834	–0.2033	0.4965
501	–0.3152	–0.0032	1168	–0.92	–0.1987	1835	0.1658	–1.2037
502	–0.7019	0.7465	1169	–1.1339	–0.1768	1836	0.3518	–0.0415
503	0.3034	–0.3115	1170	–0.1195	1.1895	1837	0.5608	0.7043
504	0.2617	–0.0489	1171	0.0654	0.0396	1838	0.1553	0.1143
505	–0.4053	0.6553	1172	0.1217	–0.6245	1839	–0.9012	0.4369
506	0.9183	–0.0648	1173	–0.2135	–0.2072	1840	0.328	–0.1142
507	0.4545	0.023	1174	–0.0551	–0.0275	1841	0	0.1768
508	–0.1544	0.4795	1175	0.4011	–0.037	1842	–0.0727	0.2687
509	–0.865	0.7468	1176	–0.0622	–0.37	1843	0.7228	0.96
510	–0.4766	0.1583	1177	–0.9786	–1.125	1844	1.0263	1.2571
511	0.7769	–0.9179	1178	–0.4279	–0.6538	1845	–0.2117	–0.4154
512	–0.3158	–0.6323	1179	0.7792	0.3604	1846	–0.7483	–0.1364
513	1	–0.5	1180	–0.259	–0.1115	1847	0.1785	0.1946
514	1.1294	–0.9673	1181	–0.7039	0.3885	1848	0.7065	–0.5663
515	–0.475	–0.0292	1182	0.7688	0.6657	1849	–0.4053	0.4786
516	0.7496	1.1095	1183	0.5509	–0.3642	1850	–1.661	–0.0392
517	0.2962	–0.2072	1184	0.3098	–0.0335	1851	–0.4411	–0.4487
518	0.61	–1.2555	1185	1.3107	0.7071	1852	1.1159	0.2276
519	0.9438	0.2525	1186	0.4326	0.6513	1853	0.5193	–0.6912
520	–0.3988	0.1504	1187	–1.0584	0.2543	1854	0.4769	–0.3546
521	0.125	–0.5821	1188	0.0874	0.4525	1855	0.6412	0.4537
522	0.2185	0.1985	1189	1.3684	0.2468	1856	–0.8383	–0.039
523	0.723	–0.2595	1190	0.3107	0.0857	1857	–0.8839	0.7071
524	0.7028	0.3073	1191	–0.3262	0.6729	1858	0.4013	0.8995
525	–0.1721	1.0608	1192	–0.4839	0.6139	1859	0.3356	–0.6632
526	0.1245	–0.6063	1193	–1.125	1.2286	1860	0.2511	0.149
527	–0.0681	–0.9558	1194	–0.324	–0.0743	1861	0.3074	0.3488
528	0.0339	–0.7114	1195	0.4623	–0.8069	1862	–0.4222	–1.3687

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
529	–1.25	–0.75	1196	–0.1397	1.1748	1863	–0.667	–0.3525
530	–1.6118	0.2379	1197	–0.7499	–0.6194	1864	–0.4294	–0.4603
531	0.1999	0.4937	1198	–0.1972	–0.7251	1865	–0.5518	–0.375
532	–0.5909	0.2326	1199	0.9637	0.5971	1866	–0.8671	1.2446
533	–0.6419	–0.6004	1200	0.4623	–0.5046	1867	–0.8479	–0.3663
534	0.3993	–0.7404	1201	0.5303	0.7071	1868	–0.3676	–1.0043
535	0.1517	0.8183	1202	0.5446	–0.1371	1869	–0.153	–0.4651
536	0.3911	0.5603	1203	–0.3343	–0.8645	1870	0.4652	0.0878
537	0.6553	–0.4053	1204	–0.2946	–1.1975	1871	1.4612	0.7954
538	0.2064	0.0022	1205	–0.6705	–1.132	1872	0.6684	0.2049
539	–0.1681	–0.023	1206	–0.1481	–1.0283	1873	0	0.8839
540	0.6483	–0.2591	1207	0.131	0.3293	1874	1.0586	–0.3127
541	0.115	0.1496	1208	–0.7444	1.1245	1875	0.2661	–0.7956
542	–0.2533	0.6345	1209	–0.7803	–0.5303	1876	–1.3694	0.2729
543	1.0385	–0.2063	1210	–0.5906	0.1619	1877	–0.5383	–1.3953
544	0.207	–0.7164	1211	–0.055	1.2353	1878	0.399	0.2903
545	0.75	0.75	1212	0.1562	–0.4363	1879	0.2723	0.6389
546	0.7478	0.8804	1213	0.0415	–0.8234	1880	0.0775	–1.3992
547	–1.8473	0.0292	1214	0.1156	0.2344	1881	–0.6553	0.2286
548	–1.0324	0.3448	1215	0.7563	0.3465	1882	–0.7675	0.0927
549	0.1609	0.3108	1216	0.7471	–0.388	1883	0.2387	–0.1194
550	0.1388	–0.4451	1217	–0.8839	–0.3536	1884	0.5741	–0.1968
551	–0.106	–1.0522	1218	0.6253	0.7563	1885	–0.2693	–0.8265
552	–0.8661	–0.2156	1219	1.4158	0.9756	1886	–1.3383	0.3229
553	0.125	0.8321	1220	–1.0077	–0.2102	1887	–1.2295	–0.1181
554	0.1346	0.4	1221	–0.0912	–0.6343	1888	–0.4267	0.1254
555	–0.5951	0.2595	1222	0.776	–0.2064	1889	–0.5303	0.3536
556	–0.1195	0.4088	1223	0.7189	–0.2537	1890	–0.3639	–0.3556
557	–0.5779	0.5428	1224	0.8175	0.1801	1891	0.3827	–0.2084
558	–0.255	0.5079	1225	–0.6339	–0.0732	1892	0.3752	–0.6378
559	0.9598	0.3728	1226	–0.0827	–0.1695	1893	0.4426	0.7547
560	–0.313	1.1997	1227	0.7858	1.0051	1894	0.4059	0.7148
561	–0.5	0.5	1228	0.751	0.3911	1895	–0.0767	–0.7739

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
562	–0.0269	0.5835	1229	0.5034	0.1723	1896	0.2352	0.6192
563	0.3762	0.8987	1230	0.1235	0.1924	1897	0.1982	0.375
564	–0.3916	–0.3543	1231	0.8943	–0.8946	1898	–0.142	–0.7982
565	–1.6311	0.0394	1232	0.212	0.0454	1899	0.7575	0.2273
566	–0.1295	0.5707	1233	–0.1768	0.3536	1900	0.8086	0.9322
567	0.8723	–0.5243	1234	–0.1183	–0.3198	1901	–0.097	–0.1385
568	0.4785	–0.803	1235	–0.6102	0.1182	1902	0.3477	–0.5561
569	0.7286	–0.625	1236	0.9278	–0.0763	1903	0.8342	0.5761
570	0.4153	0.5426	1237	0.524	–0.7822	1904	0.421	0.5152
571	0.4098	–0.5751	1238	–0.3646	–0.0952	1905	0	0.1768
572	0.3124	–1.6609	1239	0.3261	1.6188	1906	–0.0727	0.2687
573	–0.2547	0.4696	1240	–0.7508	0.5659	1907	0.7228	0.96
574	–0.4437	–0.331	1241	–0.2803	–0.5303	1908	1.0263	1.2571
575	–0.8561	–0.5979	1242	0.289	0.222	1909	–0.2117	–0.4154
576	–0.1274	0.6406	1243	–1.2309	–0.5937	1910	–0.7483	–0.1364
577	0.25	0.25	1244	–0.7569	–0.1461	1911	0.1785	0.1946
578	–0.3854	0.0544	1245	0.3121	–0.0908	1912	0.7065	–0.5663
579	0.2915	–1.0776	1246	0.4104	–0.9669	1913	–0.4053	0.4786
580	–0.1043	–0.2086	1247	0.2008	–0.5516	1914	–1.661	–0.0392
581	–0.7177	0.1911	1248	–0.9587	–1.3755	1915	–0.4411	–0.4487
582	0.0456	–0.867	1249	–0.8839	0	1916	1.1159	0.2276
583	–0.6118	0.5262	1250	0.1017	0.8539	1917	0.5193	–0.6912
584	–0.5278	0.3099	1251	0.0287	–1.0222	1918	0.4769	–0.3546
585	1.0518	0.5518	1252	1.1451	0.1721	1919	0.6412	0.4537
586	0.4187	0.5543	1253	0.9448	1.1343	1920	–0.8383	–0.039
587	–0.9184	–0.3628	1254	–1.0338	0.5594	1921	–0.1768	0.7071
588	–0.2459	1.5139	1255	–0.2618	0.5126	1922	0.0188	0.0162
589	–0.1882	0.3201	1256	–0.4757	0.5893	1923	–0.0149	0.0996
590	–1.2673	–1.1614	1257	–1.1339	0.4268	1924	0.0536	0.6254
591	–0.1584	0.0777	1258	0.231	–0.3677	1925	1.2606	0.0549
592	0.4695	–0.3782	1259	0.0001	0.5604	1926	0.5406	–0.1999
593	–0.75	–0.25	1260	0.079	0.5031	1927	–0.6483	0.1982
594	–0.1427	–0.3528	1261	–0.1499	–0.6723	1928	0.4289	–1.1884

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
595	0.36	–1.2903	1262	–0.879	0.3107	1929	–0.0214	–0.8018
596	0.3983	–0.2296	1263	0.0628	0.3068	1930	0.2803	0.4548
597	0.7346	1.2106	1264	0.1529	0.2583	1931	0.7002	–0.3675
598	–0.5309	–0.1371	1265	0.5303	0.7071	1932	–1.0376	–0.2012
599	–0.4358	–1.3615	1266	0.5446	–0.1371	1933	–0.8039	–0.074
600	0.3291	–0.1385	1267	–0.3343	–0.8645	1934	–0.3884	0.1453
601	0.0214	–0.625	1268	–0.2946	–1.1975	1935	–0.6539	0.3117
602	0.7796	–0.5223	1269	–0.6705	–1.132	1936	–1.1651	–1.1555
603	0.1606	0.2373	1270	–0.1481	–1.0283	1937	–1.7678	–0.8839
604	–0.6509	–0.4224	1271	0.131	0.3293	1938	–0.7176	0.0897
605	0.1512	0.9875	1272	–0.7444	1.1245	1939	0.1292	–0.3738
606	–0.5091	0.6844	1273	–0.7803	–0.5303	1940	0.8451	–0.1536
607	–0.5042	–0.4761	1274	–0.5906	0.1619	1941	–0.0497	0.0946
608	0.795	0.3131	1275	–0.055	1.2353	1942	–0.8163	–0.3697
609	0.5	0	1276	0.1562	–0.4363	1943	0.712	–0.1527
610	–0.315	0.1515	1277	0.0415	–0.8234	1944	–0.2692	0.0432
611	–0.3206	–0.2379	1278	0.1156	0.2344	1945	–0.4786	–0.1982
612	–0.3389	–0.1851	1279	0.7563	0.3465	1946	0.9743	–0.3294
613	–0.8858	1.0589	1280	0.7471	–0.388	1947	0.9417	–0.7351
614	0.0198	0.3796	1281	0.1768	–0.1768	1948	0.5535	–0.3754
615	1.5895	0.3596	1282	1.1994	–0.1394	1949	–1.1141	–0.4582
616	1.0805	0.6855	1283	0.7883	–0.8558	1950	–0.3284	–0.1895
617	0.6982	0.1982	1284	0.1254	0.2224	1951	0.7145	1.911
618	0.6706	0.4031	1285	0.4199	0.2061	1952	–1.0893	0.7769
619	–0.359	0.4077	1286	–0.3473	–0.5966	1953	0.1768	–0.3536
620	–0.3933	0.1329	1287	–0.5288	0.0012	1954	1.2181	0.7631
621	0.7917	–0.2772	1288	0.125	–0.0038	1955	–0.4021	–0.3447
622	1.4009	–0.5524	1289	0.6036	0.0732	1956	–0.923	0.2865
623	0.1046	–0.0037	1290	0.5678	0.2475	1957	–0.2606	0.6522
624	–1.0834	0.785	1291	–0.2018	–0.1097	1958	0.692	–0.9556
625	–0.5	0.5	1292	–1.002	0.4166	1959	0.3486	–0.0292
626	–0.0269	0.5835	1293	–0.3908	–0.0597	1960	0.3173	0.7422
627	0.3762	0.8987	1294	0.7756	–1.0674	1961	0.7286	0.4482

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
628	–0.3916	–0.3543	1295	–0.0966	–0.7552	1962	–0.3733	–0.2533
629	–1.6311	0.0394	1296	0.0332	–1.0148	1963	–0.4999	–0.1482
630	–0.1295	0.5707	1297	0.1768	–0.5303	1964	0.0756	0.04
631	0.8723	–0.5243	1298	–1.6795	0.7331	1965	0.0968	–1.1331
632	0.4785	–0.803	1299	–0.4548	0.078	1966	0.9873	0.4546
633	0.7286	–0.625	1300	0.7439	–0.3402	1967	0.7369	1.2041
634	0.4153	0.5426	1301	–0.6905	0.2827	1968	–0.7251	0.0654
635	0.4098	–0.5751	1302	–0.4462	0.4112	1969	0.3536	0.5303
636	0.3124	–1.6609	1303	0.7675	0.3631	1970	1.1877	–0.4863
637	–0.2547	0.4696	1304	0.4473	–0.4132	1971	–0.005	–0.7952
638	–0.4437	–0.331	1305	–0.3964	–0.8839	1972	–0.224	0.1656
639	–0.8561	–0.5979	1306	–0.1079	0.2809	1973	–0.9503	0.6125
640	–0.1274	0.6406	1307	–0.1765	0.7073	1974	–0.7091	0.6012
641	0.25	–0.5	1308	0.3647	–0.481	1975	0.2949	–0.6021
642	0.403	–0.2371	1309	0.3369	–0.6744	1976	–0.8776	0.0204
643	1.0226	–0.1746	1310	–1.3011	0.5666	1977	–0.2286	0.5518
644	–0.1153	0.1551	1311	–0.1621	0.5236	1978	0.8257	–0.2548
645	0.4778	–0.134	1312	–0.0199	–0.1658	1979	0.5651	–0.1633
646	0.4828	–0.8943	1313	0.1768	0.8839	1980	1.2426	–0.3872
647	0.2801	0.123	1314	1.8818	1.1359	1981	0.407	0.2511
648	–0.0148	1.1609	1315	0.1176	–0.1622	1982	–0.5633	0.5135
649	–0.375	0.7286	1316	0.3212	–0.0358	1983	–0.0903	–0.0125
650	0.7524	0.5096	1317	0.0372	0.3974	1984	–0.0342	0.6959
651	–0.8567	0.3234	1318	–1.2523	–0.096	1985	–0.1768	0.7071
652	–0.7367	–0.2166	1319	1.1261	–0.0446	1986	0.0188	0.0162
653	1.2458	–0.0193	1320	0.5525	0.0939	1987	–0.0149	0.0996
654	0.2994	0.2395	1321	0.1036	–0.4268	1988	0.0536	0.6254
655	0.4325	–0.1663	1322	0.5888	–0.4527	1989	1.2606	0.0549
656	0.5498	–1.1755	1323	–0.2422	0.2831	1990	0.5406	–0.1999
657	0.5	–1.25	1324	0.5516	0.0729	1991	–0.6483	0.1982
658	0.3124	0.9187	1325	–0.7734	–0.251	1992	0.4289	–1.1884
659	–0.3425	0.7625	1326	–0.8906	0.9211	1993	–0.0214	–0.8018
660	0.5529	–1.2669	1327	–0.0387	0.827	1994	0.2803	0.4548

Table 23—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
661	–0.0529	–0.1736	1328	–1.2934	–0.1539	1995	0.7002	–0.3675
662	–0.4119	–0.0433	1329	–0.5303	0.5303	1996	–1.0376	–0.2012
663	–0.5436	–0.9554	1330	0.0983	0.4014	1997	–0.8039	–0.074
664	–1.8697	0.0768	1331	0.5489	–0.06	1998	–0.3884	0.1453
665	–0.5518	–0.3018	1332	0.6161	0.3291	1999	–0.6539	0.3117
666	1.1419	–0.446	1333	0.2334	–0.1792	2000	–1.1651	–1.1555
667	0.8086	0.1402	1334	0.5457	0.8712			

6. MR-OFDM PHY packet when *phyOFDMInterleaving* is one example packet encoding

6.1 Introduction

The purpose of this example is to show the encoding of a packet for the MR-OFDM PHY. This example covers all the encoding details defined by this standard. The encoding illustration is outlined in 5.1.

In the description of time domain waveforms, a complex baseband signal at 666.666 ksample/s is used. This example uses the 400 kb/s data rate (QPSK 1/2-rate modulation), which corresponds to OFDM Option 2 and MCS level 3, and a message of 72 octets. The OFDM Header uses the 50 kb/s data rate (BPSK 1/2-rate coded with 4x frequency repetition), which corresponds to MCS level 0. This example also sets the PIB attribute value of *phyOFDMInterleaving* to one.

6.2 The message

The message being encoded is given in 5.2.

6.3 Generation of the OFDM header

6.3.1 HCS and PAD bits insertion

In this example, the payload data has a size of 76 octets, and it will be encoded using QPSK modulation, 1/4-rate coding (Rate field value = 3). The scrambler index will be the first one (Scrambler ID = 0).

The corresponding OFDM header, including the HCS, is represented in Table 24.

In this configuration, 12 PAD bit are necessary. The size of the header will fill up exactly eight OFDM symbols.

6.3.2 Convolutional encoding

After convolutional encoding of the OFDM header, the size is now doubled and the corresponding bits are represented in Table 25. No puncturing is applied in this configuration.

6.3.3 Interleaving

A two-step interleaver is applied to the data. In this case, N_{cbps} is defined as 48 and N_{row} is 3. The corresponding bits are represented in Table 26.

6.3.4 Bit mapping

The 96 bits are split into eight OFDM symbols. The bit mapping for the OFDM header in this example is BPSK. Therefore, Q is always zero. The I value is mapped as defined in Table 27.

6.3.5 Frequency spreading

In this example, a frequency spreading of four is applied to the OFDM header. The original 12 bits in each symbol (Bin # 25 through 36 in Table 28) are duplicated within the same symbol. The resulting symbols have 48 data bits each. The duplicated bits have a phase rotation.

Table 24—OFDM Header

Field Name	Bit #	Bit Value		Field Name	Bit #	Bit Value
Rate	1	0		HCS	23	1
	2	0			24	1
	3	0			25	1
	4	1			26	1
	5	1			27	1
RFU	6	0			28	1
Length	7	0			29	0
	8	0			30	1
	9	0		Tail	31	0
	10	0			32	0
	11	1			33	0
	12	0			34	0
	13	0			35	0
	14	1			36	0
	15	1		Pad	37	0
	16	0			38	0
	17	0			39	0
RFU	18	0			40	0
	19	0			41	0
Scrambler	20	0			42	0
	21	0			43	0
RFU	22	0			44	0
					45	0
					46	0
					47	0
					48	0

6.4 Generation of the data symbols

6.4.1 PAD insertion and data scrambling

The original 76 octets of data, as defined in Table 10, are concatenated with six zero tail bits and 10 pad bits. The six tail bits are forced to zero after scrambling. The resulting 624 bits are represented in Table 29 (first and last 48 bits only).

Table 25—OFDM Header after convolutional encoding

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
1	0	25	1	49	0	73	0
2	0	26	1	50	1	74	0
3	0	27	0	51	1	75	0
4	0	28	0	52	0	76	0
5	0	29	1	53	1	77	0
6	0	30	0	54	0	78	0
7	1	31	0	55	0	79	0
8	1	32	0	56	0	80	0
9	1	33	1	57	0	81	0
10	0	34	1	58	0	82	0
11	1	35	1	59	1	83	0
12	0	36	1	60	0	84	0
13	0	37	1	61	1	85	0
14	0	38	0	62	1	86	0
15	1	39	0	63	1	87	0
16	1	40	1	64	0	88	0
17	1	41	1	65	1	89	0
18	0	42	1	66	0	90	0
19	0	43	0	67	1	91	0
20	1	44	0	68	1	92	0
21	0	45	1	69	1	93	0
22	0	46	1	70	0	94	0
23	0	47	1	71	1	95	0
24	1	48	0	72	1	96	0

Table 26—OFDM Header after interleaving

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
1	0	25	1	49	0	73	0
2	0	26	1	50	0	74	0
3	1	27	0	51	0	75	0
4	0	28	1	52	0	76	0
5	0	29	0	53	1	77	0

Table 26—OFDM Header after interleaving *(continued)*

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
6	1	30	1	54	0	78	0
7	0	31	0	55	1	79	0
8	0	32	1	56	0	80	0
9	1	33	0	57	0	81	1
10	0	34	0	58	0	82	0
11	0	35	1	59	0	83	0
12	1	36	0	60	0	84	0
13	1	37	1	61	0	85	1
14	1	38	0	62	0	86	0
15	0	39	0	63	0	87	1
16	1	40	1	64	0	88	1
17	0	41	0	65	1	89	0
18	0	42	0	66	1	90	0
19	1	43	1	67	0	91	0
20	1	44	1	68	1	92	0
21	0	45	0	69	1	93	0
22	1	46	1	70	1	94	0
23	1	47	1	71	1	95	0
24	0	48	0	72	1	96	0

Table 27—Bit mapping for the OFDM Header

	Symbol 1		Symbol 2		Symbol 3		Symbol 4		Symbol 5		Symbol 6		Symbol 7		Symbol 8	
	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q
1	–1	0	1	0	1	0	1	0	–1	0	–1	0	–1	0	1	0
2	–1	0	1	0	1	0	–1	0	–1	0	–1	0	–1	0	–1	0
3	1	0	–1	0	–1	0	–1	0	–1	0	–1	0	–1	0	1	0
4	–1	0	1	0	1	0	1	0	–1	0	–1	0	–1	0	1	0
5	–1	0	–1	0	–1	0	–1	0	1	0	1	0	–1	0	–1	0
6	1	0	–1	0	1	0	–1	0	–1	0	1	0	–1	0	–1	0
7	–1	0	1	0	–1	0	1	0	1	0	–1	0	–1	0	–1	0
8	–1	0	1	0	1	0	1	0	–1	0	1	0	–1	0	–1	0

Table 27—Bit mapping for the OFDM Header *(continued)*

	Symbol 1		Symbol 2		Symbol 3		Symbol 4		Symbol 5		Symbol 6		Symbol 7		Symbol 8	
	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q
9	1	0	–1	0	–1	0	–1	0	–1	0	1	0	1	0	–1	0
10	–1	0	1	0	–1	0	1	0	–1	0	1	0	–1	0	–1	0
11	–1	0	1	0	1	0	1	0	–1	0	1	0	–1	0	–1	0
12	1	0	–1	0	–1	0	–1	0	–1	0	1	0	–1	0	–1	0

Table 28—OFDM Header in the frequency domain

	Symbol 1		Symbol 2		Symbol 3		Symbol 4		Symbol 5		Symbol 6		Symbol 7		Symbol 8	
	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q
1	0	–1	0	1	0	1	0	1	0	–1	0	–1	0	–1	0	1
2	0	1	0	–1	0	–1	0	1	0	1	0	1	0	1	0	1
3	0	1	0	–1	0	–1	0	–1	0	–1	0	–1	0	–1	0	1
4	0	1	0	–1	0	–1	0	–1	0	1	0	1	0	1	0	–1
5	0	–1	0	–1	0	–1	0	–1	0	1	0	1	0	–1	0	–1
6	0	–1	0	1	0	–1	0	1	0	1	0	–1	0	1	0	1
7	0	–1	0	1	0	–1	0	1	0	1	0	–1	0	–1	0	–1
8	0	1	0	–1	0	–1	0	–1	0	1	0	–1	0	1	0	1
9	0	1	0	–1	0	–1	0	–1	0	–1	0	1	0	1	0	–1
10	0	1	0	–1	0	1	0	–1	0	1	0	–1	0	1	0	1
11	0	–1	0	1	0	1	0	1	0	–1	0	1	0	–1	0	–1
12	0	–1	0	1	0	1	0	1	0	1	0	–1	0	1	0	1
13	1	0	–1	0	–1	0	–1	0	1	0	1	0	1	0	–1	0
14	0	–1	0	1	0	1	0	–1	0	–1	0	–1	0	–1	0	–1
15	1	0	–1	0	–1	0	–1	0	–1	0	–1	0	–1	0	1	0
16	0	1	0	–1	0	–1	0	–1	0	1	0	1	0	1	0	–1
17	1	0	1	0	1	0	1	0	–1	0	–1	0	1	0	1	0
18	0	1	0	–1	0	1	0	–1	0	–1	0	1	0	–1	0	–1
19	–1	0	1	0	–1	0	1	0	1	0	–1	0	–1	0	–1	0
20	0	1	0	–1	0	–1	0	–1	0	1	0	–1	0	1	0	1
21	–1	0	1	0	1	0	1	0	1	0	–1	0	–1	0	1	0
22	0	–1	0	1	0	–1	0	1	0	–1	0	1	0	–1	0	–1
23	–1	0	1	0	1	0	1	0	–1	0	1	0	–1	0	–1	0

Table 28—OFDM Header in the frequency domain *(continued)*

	Symbol 1		Symbol 2		Symbol 3		Symbol 4		Symbol 5		Symbol 6		Symbol 7		Symbol 8	
	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q	I	Q
24	0	–1	0	1	0	1	0	1	0	1	0	–1	0	1	0	1
25	–1	0	1	0	1	0	1	0	–1	0	–1	0	–1	0	1	0
26	–1	0	1	0	1	0	–1	0	–1	0	–1	0	–1	0	–1	0
27	1	0	–1	0	–1	0	–1	0	–1	0	–1	0	–1	0	1	0
28	–1	0	1	0	1	0	1	0	–1	0	–1	0	–1	0	1	0
29	–1	0	–1	0	–1	0	–1	0	1	0	1	0	–1	0	–1	0
30	1	0	–1	0	1	0	–1	0	–1	0	1	0	–1	0	–1	0
31	–1	0	1	0	–1	0	1	0	1	0	–1	0	–1	0	–1	0
32	–1	0	1	0	1	0	1	0	–1	0	1	0	–1	0	–1	0
33	1	0	–1	0	–1	0	–1	0	–1	0	1	0	1	0	–1	0
34	–1	0	1	0	–1	0	1	0	–1	0	1	0	–1	0	–1	0
35	–1	0	1	0	1	0	1	0	–1	0	1	0	–1	0	–1	0
36	1	0	–1	0	–1	0	–1	0	–1	0	1	0	–1	0	–1	0
37	–1	0	1	0	1	0	1	0	–1	0	–1	0	–1	0	1	0
38	0	–1	0	1	0	1	0	–1	0	–1	0	–1	0	–1	0	–1
39	–1	0	1	0	1	0	1	0	1	0	1	0	1	0	–1	0
40	0	1	0	–1	0	–1	0	–1	0	1	0	1	0	1	0	–1
41	–1	0	–1	0	–1	0	–1	0	1	0	1	0	–1	0	–1	0
42	0	1	0	–1	0	1	0	–1	0	–1	0	1	0	–1	0	–1
43	1	0	–1	0	1	0	–1	0	–1	0	1	0	1	0	1	0
44	0	1	0	–1	0	–1	0	–1	0	1	0	–1	0	1	0	1
45	1	0	–1	0	–1	0	–1	0	–1	0	1	0	1	0	–1	0
46	0	–1	0	1	0	–1	0	1	0	–1	0	1	0	–1	0	–1
47	1	0	–1	0	–1	0	–1	0	1	0	–1	0	1	0	1	0
48	0	–1	0	1	0	1	0	1	0	1	0	–1	0	1	0	1

6.4.2 Convolutional encoding and puncturing

After convolutional encoding of the payload, the size is now doubled and the corresponding bits are represented in Table 30. No puncturing is applied in this configuration.

6.4.3 Interleaving

A two-step interleaver is applied to the data. In this case, N_{cbps} is defined as 96 and N_{row} is 12. The resulting data (first and last 48 bits only) is represented in Table 31.

Table 29—First and last 48 bits after pad insertion and scrambling

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
1	1	25	0	577	0	601	1
2	0	26	0	578	0	602	0
3	0	27	0	579	1	603	0
4	0	28	0	580	0	604	0
5	0	29	0	581	0	605	0
6	1	30	0	582	1	606	0
7	0	31	0	583	1	607	0
8	0	32	1	584	0	608	0
9	0	33	0	585	0	609	0
10	1	34	0	586	1	610	0
11	0	35	0	587	1	611	0
12	1	36	0	588	0	612	0
13	1	37	0	589	1	613	0
14	1	38	0	590	1	614	0
15	0	39	1	591	0	615	0
16	0	40	1	592	0	616	0
17	1	41	0	593	1	617	0
18	0	42	1	594	0	618	0
19	0	43	1	595	1	619	0
20	0	44	0	596	1	620	1
21	1	45	1	597	1	621	1
22	1	46	0	598	1	622	0
23	0	47	0	599	0	623	1
24	1	48	0	600	0	624	1

Table 30—First and last 48 bits after convolutional encoding

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
1	1	25	0	1201	0	1225	0
2	1	26	1	1202	1	1226	0
3	0	27	0	1203	0	1227	0
4	1	28	1	1204	0	1228	0
5	1	29	1	1205	1	1229	0

Table 30—First and last 48 bits after convolutional encoding *(continued)*

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
6	1	30	1	1206	0	1230	0
7	1	31	1	1207	0	1231	0
8	1	32	1	1208	0	1232	0
9	0	33	1	1209	0	1233	0
10	0	34	0	1210	0	1234	0
11	0	35	0	1211	1	1235	0
12	1	36	0	1212	0	1236	0
13	1	37	1	1213	1	1237	0
14	0	38	0	1214	1	1238	0
15	1	39	0	1215	0	1239	1
16	1	40	0	1216	0	1240	1
17	1	41	1	1217	0	1241	1
18	1	42	1	1218	0	1242	0
19	1	43	0	1219	0	1243	1
20	1	44	0	1220	0	1244	0
21	1	45	0	1221	0	1245	1
22	1	46	1	1222	0	1246	1
23	1	47	1	1223	0	1247	0
24	1	48	1	1224	0	1248	1

Table 31—First and last 48 bits after interleaving

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
1	1	25	1	**1201**	0	1225	0
2	1	26	1	**1202**	0	1226	0
3	0	27	1	**1203**	0	1227	1
4	1	28	0	**1204**	0	1228	0
5	1	29	1	**1205**	0	1229	0
6	0	30	1	**1206**	0	1230	0
7	1	31	1	**1207**	0	1231	0
8	0	32	0	**1208**	1	1232	1

Table 31—First and last 48 bits after interleaving *(continued)*

Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value	Bit #	Bit Value
9	1	33	1	**1209**	0	1233	1
10	0	34	1	**1210**	0	1234	1
11	1	35	1	**1211**	1	1235	1
12	0	36	1	**1212**	0	1236	1
13	0	37	1	**1213**	0	1237	1
14	0	38	0	**1214**	0	1238	0
15	0	39	1	**1215**	0	1239	0
16	1	40	1	**1216**	0	1240	0
17	0	41	1	**1217**	1	1241	1
18	1	42	1	**1218**	0	1242	1
19	0	43	1	**1219**	1	1243	1
20	0	44	1	**1220**	1	1244	0
21	0	45	0	**1221**	0	1245	0
22	1	46	1	**1222**	0	1246	0
23	1	47	1	**1223**	0	1247	0
24	0	48	0	**1224**	1	1248	1

6.4.4 Bit mapping

The bit mapping for the OFDM header in this example is QPSK (two data bits per vector). The first two and last two symbols of the resulting data are represented in Table 32.

Table 32—Bit mapping for the OFDM payload

Vector #	I	Q	Vector #	I	Q	Vector #	I	Q	Vector #	I	Q
1	0.707	0.707	49	0.707	–0.707	529	–0.707	–0.707	577	–0.707	0.707
2	–0.707	0.707	50	–0.707	0.707	530	–0.707	0.707	578	–0.707	–0.707
3	0.707	–0.707	51	–0.707	–0.707	531	–0.707	0.707	579	–0.707	0.707
4	0.707	–0.707	52	0.707	–0.707	532	–0.707	–0.707	580	–0.707	–0.707
5	0.707	–0.707	53	0.707	–0.707	533	–0.707	0.707	581	0.707	–0.707
6	0.707	–0.707	54	–0.707	0.707	534	–0.707	0.707	582	–0.707	0.707

Table 32—Bit mapping for the OFDM payload *(continued)*

Vector #	I	Q	Vector #	I	Q	Vector #	I	Q	Vector #	I	Q
7	–0.707	–0.707	55	–0.707	–0.707	535	0.707	0.707	583	0.707	0.707
8	–0.707	0.707	56	0.707	–0.707	536	–0.707	0.707	584	–0.707	–0.707
9	–0.707	0.707	57	0.707	–0.707	537	–0.707	–0.707	585	–0.707	–0.707
10	–0.707	–0.707	58	0.707	0.707	538	–0.707	–0.707	586	–0.707	0.707
11	–0.707	0.707	59	0.707	–0.707	539	0.707	0.707	587	–0.707	–0.707
12	0.707	–0.707	60	–0.707	–0.707	540	–0.707	0.707	588	–0.707	0.707
13	0.707	0.707	61	–0.707	–0.707	541	0.707	0.707	589	–0.707	–0.707
14	0.707	–0.707	62	0.707	–0.707	542	–0.707	–0.707	590	0.707	–0.707
15	0.707	0.707	63	0.707	–0.707	543	–0.707	0.707	591	–0.707	–0.707
16	0.707	–0.707	64	–0.707	–0.707	544	–0.707	0.707	592	–0.707	0.707
17	0.707	0.707	65	–0.707	0.707	545	–0.707	0.707	593	0.707	0.707
18	0.707	0.707	66	–0.707	–0.707	546	–0.707	–0.707	594	–0.707	–0.707
19	0.707	–0.707	67	–0.707	0.707	547	–0.707	0.707	595	0.707	–0.707
20	0.707	0.707	68	0.707	0.707	548	0.707	0.707	596	–0.707	0.707
21	0.707	0.707	69	–0.707	0.707	549	0.707	0.707	597	–0.707	0.707
22	0.707	0.707	70	0.707	0.707	550	0.707	–0.707	598	–0.707	0.707
23	–0.707	0.707	71	0.707	0.707	551	0.707	–0.707	599	–0.707	–0.707
24	0.707	–0.707	72	0.707	0.707	552	–0.707	0.707	600	–0.707	–0.707
25	0.707	0.707	73	0.707	–0.707	553	–0.707	–0.707	601	–0.707	–0.707
26	0.707	–0.707	74	–0.707	–0.707	554	0.707	0.707	602	–0.707	–0.707
27	0.707	0.707	75	0.707	–0.707	555	0.707	0.707	603	–0.707	–0.707
28	0.707	–0.707	76	0.707	0.707	556	0.707	0.707	604	–0.707	0.707
29	0.707	0.707	77	–0.707	–0.707	557	–0.707	–0.707	605	–0.707	–0.707
30	0.707	–0.707	78	0.707	0.707	558	–0.707	0.707	606	0.707	–0.707
31	0.707	0.707	79	0.707	0.707	559	–0.707	0.707	607	–0.707	–0.707
32	–0.707	0.707	80	–0.707	0.707	560	0.707	0.707	608	–0.707	–0.707
33	–0.707	0.707	81	0.707	–0.707	561	–0.707	–0.707	609	0.707	–0.707
34	0.707	–0.707	82	–0.707	0.707	562	–0.707	–0.707	610	0.707	0.707
35	0.707	0.707	83	0.707	–0.707	563	–0.707	–0.707	611	–0.707	–0.707
36	0.707	–0.707	84	0.707	0.707	564	–0.707	–0.707	612	–0.707	0.707
37	–0.707	0.707	85	–0.707	0.707	565	0.707	0.707	613	–0.707	–0.707
38	–0.707	0.707	86	0.707	0.707	566	0.707	0.707	614	0.707	–0.707
39	–0.707	0.707	87	–0.707	0.707	567	–0.707	0.707	615	–0.707	–0.707
40	–0.707	0.707	88	–0.707	0.707	568	–0.707	–0.707	616	–0.707	0.707

Table 32—Bit mapping for the OFDM payload *(continued)*

Vector #	I	Q	Vector #	I	Q	Vector #	I	Q	Vector #	I	Q
41	–0.707	0.707	89	–0.707	0.707	569	0.707	0.707	617	0.707	0.707
42	–0.707	0.707	90	0.707	0.707	570	–0.707	–0.707	618	0.707	0.707
43	0.707	–0.707	91	–0.707	–0.707	571	–0.707	–0.707	619	0.707	–0.707
44	0.707	0.707	92	–0.707	0.707	572	0.707	0.707	620	–0.707	–0.707
45	0.707	0.707	93	–0.707	0.707	573	0.707	–0.707	621	0.707	0.707
46	–0.707	0.707	94	0.707	0.707	574	0.707	–0.707	622	0.707	–0.707
47	0.707	–0.707	95	–0.707	0.707	575	0.707	0.707	623	–0.707	–0.707
48	0.707	–0.707	96	–0.707	–0.707	576	0.707	–0.707	624	–0.707	0.707

6.4.5 Frequency spreading

In this example, no frequency spreading is applied to the OFDM payload. The vectors from Table 32 are mapped directly into the frequency domain. The mapping in the frequency domain is described in 6.5 taking into account the pilot tones, the DC tone, and the guard tones.

6.5 Conversion from frequency domain to time domain

6.5.1 Pilot, DC, and guard tone insertion

The following steps are applied to both the OFDM header and the OFDM payload. Before going to the next steps, Table 28 and Table 32 should be appended, resulting in 21 symbols of 48 bins in the frequency domain. The 48 bins are mapped in the frequency domain by inserting pilot tones, guard tones, and a DC tone. The first and last three symbols of the complete packet in the frequency domain are given in Table 33.

6.5.2 Time domain OFDM header and payload

The data from Table 33 is converted by an IFFT of size 64. Most IFFTs require a reordering of the data. Typically, the order of the frequencies within each symbol should be as follows:

0, 1, 2, … 31, –32, –31, …, –1

Table 33—First and last three symbols of the Packet in the frequency domain

Subcarrier	Symbol 1	Symbol 2	Symbol 3	Symbol 19	Symbol 20	Symbol 21
–32	0	0	0	0	0	0
–31	0	0	0	0	0	0
–30	0	0	0	0	0	0
–29	0	0	0	0	0	0
–28	0	0	0	0	0	0

Table 33—First and last three symbols of the Packet in the frequency domain *(continued)*

Subcarrier	Symbol 1	Symbol 2	Symbol 3	Symbol 19	Symbol 20	Symbol 21
–27	0	0	0	0	0	0
–26	–0 – 1i	0 + 1i	0 + 1i	–0.707 + 0.707i	–0.707 – 0.707i	–1
–25	0 + 1i	–0 – 1i	–0 – 1i	–0.707 – 0.707i	–0.707 + 0.707i	–0.707 + 0.707i
–24	0 + 1i	–0 – 1i	–0 – 1i	0.707 + 0.707i	–0.707 + 0.707i	–0.707 – 0.707i
–23	0 + 1i	–0 – 1i	–0 – 1i	0.707 – 0.707i	–0.707 – 0.707i	–0.707 + 0.707i
–22	–0 – 1i	1	–0 – 1i	1	–0.707 + 0.707i	–0.707 – 0.707i
–21	–0 – 1i	–0 – 1i	–0 – 1i	0.707 – 0.707i	–0.707 + 0.707i	0.707 – 0.707i
–20	0 – 1i	0 + 1i	0 – 1i	0.707 – 0.707i	0.707 + 0.707i	–0.707 + 0.707i
–19	0 + 1i	–0 + 1i	–0 – 1i	–0.707 – 0.707i	–0.707 + 0.707i	0.707 + 0.707i
–18	–0 + 1i	–0 – 1i	–1	–0.707 – 0.707i	–1	–0.707 – 0.707i
–17	0 + 1i	0 – 1i	0 – 1i	0.707 + 0.707i	–0.707 – 0.707i	–0.707 – 0.707i
–16	0 – 1i	–0 – 1i	0 + 1i	–0.707 – 0.707i	–0.707 – 0.707i	–0.707 + 0.707i
–15	–0 – 1i	–0 + 1i	–0 + 1i	0.707 + 0.707i	0.707 + 0.707i	–0.707 – 0.707i
–14	–1	0 + 1i	0 + 1i	0.707 – 0.707i	–0.707 + 0.707i	–0.707 + 0.707i
–13	1 – 0i	–1 + 0i	–1 + 0i	–0.707 – 0.707i	0.707 + 0.707i	–0.707 – 0.707i
–12	–0 – 1i	0 + 1i	0 + 1i	–0.707 + 0.707i	–0.707 – 0.707i	0.707 – 0.707i
–11	1 – 0i	–1 + 0i	–1 + 0i	–0.707 – 0.707i	–0.707 + 0.707i	–0.707 – 0.707i
–10	0 + 1i	1	–0 – 1i	–1	–0.707 + 0.707i	–0.707 + 0.707i
–9	1 – 0i	–0 – 1i	1 – 0i	0.707 + 0.707i	–0.707 + 0.707i	0.707 + 0.707i
–8	–0 + 1i	1 – 0i	–0 + 1i	–0.707 – 0.707i	–0.707 – 0.707i	–0.707 – 0.707i
–7	–1 + 0i	0 – 1i	–1 + 0i	0.707 + 0.707i	–0.707 + 0.707i	0.707 – 0.707i
–6	0 + 1i	1 – 0i	1	0.707 + 0.707i	1	–0.707 + 0.707i
–5	–1 – 0i	–0 – 1i	–0 – 1i	0.707 + 0.707i	0.707 + 0.707i	–0.707 + 0.707i
–4	0 – 1i	1 + 0i	1 + 0i	–0.707 + 0.707i	0.707 + 0.707i	–0.707 + 0.707i
–3	–1 + 0i	–0 + 1i	0 – 1i	0.707 – 0.707i	0.707 – 0.707i	–0.707 – 0.707i
–2	–1	1 – 0i	1 – 0i	0.707 – 0.707i	0.707 – 0.707i	–0.707 – 0.707i
–1	–0 – 1i	0 + 1i	0 + 1i	0.707 + 0.707i	–0.707 + 0.707i	–0.707 – 0.707i
0	0	0	0	0	0	0
1	–1	1	1	–0.707 + 0.707i	–0.707 – 0.707i	–0.707 – 0.707i
2	–1	1	1	0.707 – 0.707i	1	–0.707 – 0.707i
3	1	1	–1	0.707 + 0.707i	0.707 + 0.707i	–0.707 + 0.707i
4	–1	–1	1	–0.707 + 0.707i	0.707 + 0.707i	–0.707 – 0.707i

Table 33—First and last three symbols of the Packet in the frequency domain *(continued)*

Subcarrier	Symbol 1	Symbol 2	Symbol 3	Symbol 19	Symbol 20	Symbol 21
5	–1	1	–1	–0.707 – 0.707i	0.707 + 0.707i	0.707 – 0.707i
6	1	–1	1	0.707 + 0.707i	–0.707 – 0.707i	–1
7	–1	–1	1	–0.707 – 0.707i	–0.707 + 0.707i	–0.707 – 0.707i
8	–1	1	–1	–0.707 – 0.707i	–0.707 + 0.707i	–0.707 – 0.707i
9	1	1	1	0.707 + 0.707i	0.707 + 0.707i	0.707 – 0.707i
10	–1	–1	–1	–1	–0.707 – 0.707i	0.707 + 0.707i
11	–1	1	–1	0.707 – 0.707i	–0.707 – 0.707i	–0.707 – 0.707i
12	–1	1	1	–0.707 – 0.707i	–0.707 – 0.707i	–0.707 + 0.707i
13	1	–1	–1	0.707 – 0.707i	–0.707 – 0.707i	–0.707 – 0.707i
14	–1	1	1	0.707 + 0.707i	1	0.707 – 0.707i
15	–0 – 1i	1	0 + 1i	0.707 + 0.707i	0.707 + 0.707i	–0.707 – 0.707i
16	–1 + 0i	0 + 1i	1 – 0i	0.707 + 0.707i	0.707 + 0.707i	–0.707 + 0.707i
17	0 + 1i	1 – 0i	–0 – 1i	0.707 – 0.707i	–0.707 + 0.707i	0.707 + 0.707i
18	–1 + 0i	–0 – 1i	1	–0.707 + 0.707i	–0.707 – 0.707i	1
19	0 + 1i	–1 + 0i	–1 + 0i	0.707 – 0.707i	0.707 + 0.707i	0.707 + 0.707i
20	1 – 0i	–0 – 1i	0 + 1i	–0.707 – 0.707i	–0.707 – 0.707i	0.707 – 0.707i
21	0 + 1i	–1 + 0i	1 – 0i	–0.707 – 0.707i	–0.707 – 0.707i	–0.707 – 0.707i
22	–1	–0 – 1i	–0 – 1i	1	0.707 + 0.707i	0.707 + 0.707i
23	1 – 0i	–1 + 0i	–1 + 0i	0.707 + 0.707i	0.707 – 0.707i	0.707 – 0.707i
24	–0 – 1i	0 + 1i	–0 – 1i	0.707 – 0.707i	0.707 – 0.707i	–0.707 – 0.707i
25	1 – 0i	–1 + 0i	–1 + 0i	0.707 + 0.707i	0.707 + 0.707i	–0.707 + 0.707i
26	–0 – 1i	0 + 1i	0 + 1i	–0.707 + 0.707i	0.707 – 0.707i	1
27	0	0	0	0	0	0
28	0	0	0	0	0	0
29	0	0	0	0	0	0
30	0	0	0	0	0	0
31	0	0	0	0	0	0

After the IFFT, each symbol is extended by a CP of 16 samples. Each OFDM symbol then has a size of 80 samples.

The resulting data in the time domain has 1680 samples.

6.6 The entire packet

The complete packet in the time domain is represented in Table 34. The STF is from sample 1 to 320. The LTF is from sample 321 to 480. The OFDM header and payload are from sample 481 to 2160.

Table 34—Complete packet

Sample	I	Q	Sample	I	Q	Sample	I	Q
1	0.6505	0.0000	721	1.2500	0.2500	1441	0.2500	–0.3536
2	1.0989	0.6505	722	0.8614	–0.4695	1442	0.1638	0.5643
3	0.4600	–1.3010	723	–0.2908	–0.2253	1443	0.7775	0.6229
4	–0.9531	–0.6505	724	0.5001	0.3738	1444	0.9942	0.7243
5	0.0000	0.0000	725	1.1311	–0.9157	1445	0.6081	1.1384
6	0.9531	0.6505	726	–0.4053	–0.2634	1446	0.3631	0.0038
7	–0.4600	1.3010	727	–0.6643	0.4820	1447	–0.4662	0.1814
8	–1.0989	–0.6505	728	1.0328	–0.5564	1448	0.2806	0.4162
9	–0.6505	0.0000	729	0.3750	–0.3750	1449	0.9053	0.0947
10	–1.0989	0.6505	730	–0.0528	–0.5851	1450	0.2529	0.6731
11	–0.4600	–1.3010	731	–0.1631	–0.2493	1451	0.1342	0.4139
12	0.9531	–0.6505	732	–0.8028	1.0475	1452	–1.1735	0.4862
13	0.0000	0.0000	733	0.3377	1.0436	1453	–0.6809	0.1824
14	–0.9531	0.6505	734	0.1681	0.9115	1454	0.8025	–0.7485
15	0.4600	1.3010	735	0.4341	0.3737	1455	0.0997	–0.3608
16	1.0989	–0.6505	736	0.6505	–0.1614	1456	0.3491	–0.7509
17	0.6505	0.0000	737	–0.5000	–0.5000	1457	–0.0732	–0.5303
18	1.0989	0.6505	738	0.5418	–0.1548	1458	–1.3972	0.5182
19	0.4600	–1.3010	739	–0.0330	1.1371	1459	–0.2265	–0.3269
20	–0.9531	–0.6505	740	–0.9736	–0.5277	1460	0.6019	–0.3736
21	0.0000	0.0000	741	0.2177	–1.2005	1461	–0.9452	0.2922
22	0.9531	0.6505	742	0.2514	1.0265	1462	–0.5092	–0.0185
23	–0.4600	1.3010	743	0.0867	0.3962	1463	0.7862	–0.2370
24	–1.0989	–0.6505	744	0.3458	–0.0062	1464	–0.3930	–0.6599
25	–0.6505	0.0000	745	0.5518	0.3018	1465	–0.2589	–0.3018
26	–1.0989	0.6505	746	–0.1912	0.0665	1466	–0.2738	0.5548
27	–0.4600	–1.3010	747	0.0960	1.0100	1467	–0.3484	–0.1781
28	0.9531	–0.6505	748	0.8195	–0.5387	1468	0.9250	–0.9967
29	0.0000	0.0000	749	–0.8187	–1.0658	1469	–0.6667	–0.0867

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
30	–0.9531	0.6505	750	–0.2341	0.9365	1470	–0.9835	0.5927
31	0.4600	1.3010	751	0.4301	0.0436	1471	–0.2062	–0.1478
32	1.0989	–0.6505	752	–0.4539	–0.3529	1472	–0.0100	–0.1180
33	0.6505	0.0000	753	0.5000	0.5000	1473	1.3107	0.0000
34	1.0989	0.6505	754	0.0498	0.2651	1474	–0.4684	–0.4770
35	0.4600	–1.3010	755	–0.8625	0.1513	1475	–0.6153	0.7666
36	–0.9531	–0.6505	756	–1.0981	–0.0971	1476	0.4219	1.2002
37	0.0000	0.0000	757	–1.2346	–0.1272	1477	–0.7545	–0.2242
38	0.9531	0.6505	758	–0.1915	–0.8806	1478	0.7262	0.0117
39	–0.4600	1.3010	759	0.3108	–1.2437	1479	0.9370	0.1976
40	–1.0989	–0.6505	760	0.5270	–0.2394	1480	0.2246	–1.4293
41	–0.6505	0.0000	761	0.3750	–0.3750	1481	0.1553	–1.6553
42	–1.0989	0.6505	762	–0.4575	–0.2182	1482	–0.5419	–0.0881
43	–0.4600	–1.3010	763	–0.6075	–0.6365	1483	0.4107	–0.0603
44	0.9531	–0.6505	764	0.5883	–1.4165	1484	–0.3997	–0.6063
45	0.0000	0.0000	765	0.4730	0.4135	1485	–1.0868	0.3176
46	–0.9531	0.6505	766	–1.4108	0.5658	1486	–0.3842	0.3305
47	0.4600	1.3010	767	–0.0805	–0.6480	1487	–0.5168	0.1986
48	1.0989	–0.6505	768	0.5965	0.1067	1488	0.0383	0.4729
49	0.6505	0.0000	769	–0.7500	0.2500	1489	–0.7803	–0.5303
50	1.0989	0.6505	770	0.1145	0.0399	1490	–0.8118	–0.4881
51	0.4600	–1.3010	771	0.1863	–0.0630	1491	0.7714	–0.3555
52	–0.9531	–0.6505	772	0.7113	–0.9023	1492	1.0368	–0.1270
53	0.0000	0.0000	773	0.3858	–1.2566	1493	0.3846	1.6220
54	0.9531	0.6505	774	–1.2982	–0.2526	1494	–0.2460	0.4268
55	–0.4600	1.3010	775	–0.4403	1.0725	1495	0.4500	–0.8491
56	–1.0989	–0.6505	776	–0.4279	0.5726	1496	–0.6705	0.7903
57	–0.6505	0.0000	777	0.1982	–0.0518	1497	–1.5089	0.4482
58	–1.0989	0.6505	778	0.9624	0.6417	1498	0.6622	–0.2571
59	–0.4600	–1.3010	779	–0.3254	0.8758	1499	0.5106	0.5316
60	0.9531	–0.6505	780	–0.1588	1.0610	1500	0.0076	0.6929
61	0.0000	0.0000	781	–0.4920	1.1086	1501	0.3132	–0.4133
62	–0.9531	0.6505	782	–0.7080	0.3704	1502	–0.1831	–1.5986

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
63	0.4600	1.3010	783	–0.0765	–0.4764	1503	0.3303	–0.3971
64	1.0989	–0.6505	784	0.1435	–0.3630	1504	0.5951	0.2786
65	0.6505	0.0000	785	1.2500	0.2500	1505	0.2500	–0.3536
66	1.0989	0.6505	786	0.8614	–0.4695	1506	0.1638	0.5643
67	0.4600	–1.3010	787	–0.2908	–0.2253	1507	0.7775	0.6229
68	–0.9531	–0.6505	788	0.5001	0.3738	1508	0.9942	0.7243
69	0.0000	0.0000	789	1.1311	–0.9157	1509	0.6081	1.1384
70	0.9531	0.6505	790	–0.4053	–0.2634	1510	0.3631	0.0038
71	–0.4600	1.3010	791	–0.6643	0.4820	1511	–0.4662	0.1814
72	–1.0989	–0.6505	792	1.0328	–0.5564	1512	0.2806	0.4162
73	–0.6505	0.0000	793	0.3750	–0.3750	1513	0.9053	0.0947
74	–1.0989	0.6505	794	–0.0528	–0.5851	1514	0.2529	0.6731
75	–0.4600	–1.3010	795	–0.1631	–0.2493	1515	0.1342	0.4139
76	0.9531	–0.6505	796	–0.8028	1.0475	1516	–1.1735	0.4862
77	0.0000	0.0000	797	0.3377	1.0436	1517	–0.6809	0.1824
78	–0.9531	0.6505	798	0.1681	0.9115	1518	0.8025	–0.7485
79	0.4600	1.3010	799	0.4341	0.3737	1519	0.0997	–0.3608
80	1.0989	–0.6505	800	0.6505	–0.1614	1520	0.3491	–0.7509
81	0.6505	0.0000	801	–0.5000	–0.2500	1521	–0.2803	–0.3536
82	1.0989	0.6505	802	–0.0317	0.8648	1522	–0.6641	0.9523
83	0.4600	–1.3010	803	–0.9607	0.0501	1523	–1.1246	–0.2387
84	–0.9531	–0.6505	804	0.7640	–0.2991	1524	0.2415	–0.5844
85	0.0000	0.0000	805	1.1961	0.6546	1525	0.5901	–0.5569
86	0.9531	0.6505	806	0.2388	0.2248	1526	–0.4015	–0.2023
87	–0.4600	1.3010	807	0.0467	0.4232	1527	0.5738	–0.7872
88	–1.0989	–0.6505	808	–0.0033	–0.2475	1528	0.7747	–0.7146
89	–0.6505	0.0000	809	0.3750	–0.8750	1529	–0.3018	0.7714
90	–1.0989	0.6505	810	–0.6716	1.0428	1530	–0.3357	–0.4211
91	–0.4600	–1.3010	811	–0.6920	1.1976	1531	–0.2209	–0.3889
92	0.9531	–0.6505	812	–0.3902	–0.1775	1532	–0.1251	0.0314
93	0.0000	0.0000	813	–0.6083	0.2576	1533	0.3591	–0.8211
94	–0.9531	0.6505	814	0.7307	0.7500	1534	0.1504	0.0247
95	0.4600	1.3010	815	0.0267	0.1909	1535	–0.3983	–0.2610

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
96	1.0989	–0.6505	816	–1.3111	0.2567	1536	–0.0178	–0.2952
97	0.6505	0.0000	817	–0.7500	0.5000	1537	–0.2500	0.5303
98	1.0989	0.6505	818	–0.4114	–0.5356	1538	–0.8138	0.0300
99	0.4600	–1.3010	819	–0.4178	–0.6116	1539	0.0210	–0.6510
100	–0.9531	–0.6505	820	0.0996	0.3420	1540	–0.0351	–0.6107
101	0.0000	0.0000	821	0.4202	–0.2297	1541	–0.1409	0.2153
102	0.9531	0.6505	822	–0.8027	–0.7097	1542	1.2834	0.4578
103	–0.4600	1.3010	823	–1.0913	–0.4436	1543	1.0654	1.0381
104	–1.0989	–0.6505	824	–0.1646	–0.3029	1544	–0.2934	0.6271
105	–0.6505	0.0000	825	0.0518	0.4482	1545	–0.6553	–0.2286
106	–1.0989	0.6505	826	0.1405	0.6933	1546	–0.4317	1.7310
107	–0.4600	–1.3010	827	0.1632	–0.2845	1547	0.2617	1.7355
108	0.9531	–0.6505	828	0.8089	–0.6057	1548	0.6881	0.2490
109	0.0000	0.0000	829	0.1654	0.3787	1549	0.0901	0.1012
110	–0.9531	0.6505	830	–0.4424	0.8356	1550	–0.3210	–0.5197
111	0.4600	1.3010	831	1.4504	0.7296	1551	0.6630	–0.6271
112	1.0989	–0.6505	832	1.1508	0.7681	1552	0.1507	–0.7894
113	0.6505	0.0000	833	–0.2500	–0.5000	1553	–1.6945	–0.3536
114	1.0989	0.6505	834	0.5813	–1.2438	1554	–0.3474	–0.1794
115	0.4600	–1.3010	835	0.9020	–0.0004	1555	0.8746	–0.8199
116	–0.9531	–0.6505	836	–0.1068	0.2798	1556	0.1357	0.9088
117	0.0000	0.0000	837	0.4075	–0.4046	1557	0.2635	1.6175
118	0.9531	0.6505	838	0.9756	–0.4730	1558	–0.3064	0.1162
119	–0.4600	1.3010	839	–1.0831	–0.3735	1559	0.4625	0.1133
120	–1.0989	–0.6505	840	–0.8955	–0.8044	1560	1.6210	–0.0821
121	–0.6505	0.0000	841	0.3750	–0.8750	1561	–0.0518	–0.9786
122	–1.0989	0.6505	842	0.2269	–0.2881	1562	0.1806	0.3627
123	–0.4600	–1.3010	843	0.9039	–0.8235	1563	1.1242	0.9063
124	0.9531	–0.6505	844	–0.4775	–0.0295	1564	0.3398	–0.6203
125	0.0000	0.0000	845	–0.2024	1.6995	1565	0.4944	–0.0325
126	–0.9531	0.6505	846	1.1315	0.2718	1566	0.2677	–0.2664
127	0.4600	1.3010	847	–0.6849	–0.3580	1567	0.0108	–0.2596
128	1.0989	–0.6505	848	–0.3707	0.1709	1568	–0.1347	1.6860

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
129	0.6505	0.0000	849	0.0000	–0.2500	1569	–0.6036	0.1768
130	1.0989	0.6505	850	–0.3453	0.4325	1570	–0.0350	–0.9562
131	0.4600	–1.3010	851	–0.0236	–0.6453	1571	–0.2710	–0.7903
132	–0.9531	–0.6505	852	–0.5497	–1.1470	1572	–0.4057	–0.4843
133	0.0000	0.0000	853	0.4762	0.4797	1573	–0.0056	0.8454
134	0.9531	0.6505	854	0.7955	–0.7143	1574	–0.5120	–0.6011
135	–0.4600	1.3010	855	0.2134	–0.8132	1575	–0.1875	0.1358
136	–1.0989	–0.6505	856	–0.1436	0.6381	1576	–0.2419	1.3229
137	–0.6505	0.0000	857	–0.3018	0.8018	1577	–0.4053	–0.9786
138	–1.0989	0.6505	858	0.0971	1.4484	1578	0.0331	–0.5193
139	–0.4600	–1.3010	859	–0.8752	0.1175	1579	–0.6650	0.2471
140	0.9531	–0.6505	860	0.2660	–0.7771	1580	–0.4250	0.1105
141	0.0000	0.0000	861	1.1453	0.1642	1581	–0.2365	0.0452
142	–0.9531	0.6505	862	–0.2126	–0.5995	1582	–0.5748	–0.0093
143	0.4600	1.3010	863	0.1219	–0.3554	1583	0.6388	0.6477
144	1.0989	–0.6505	864	–0.6760	–0.0647	1584	0.5556	–0.7546
145	0.6505	0.0000	865	–0.5000	–0.2500	1585	–0.2803	–0.3536
146	1.0989	0.6505	866	–0.0317	0.8648	1586	–0.6641	0.9523
147	0.4600	–1.3010	867	–0.9607	0.0501	1587	–1.1246	–0.2387
148	–0.9531	–0.6505	868	0.7640	–0.2991	1588	0.2415	–0.5844
149	0.0000	0.0000	869	1.1961	0.6546	1589	0.5901	–0.5569
150	0.9531	0.6505	870	0.2388	0.2248	1590	–0.4015	–0.2023
151	–0.4600	1.3010	871	0.0467	0.4232	1591	0.5738	–0.7872
152	–1.0989	–0.6505	872	–0.0033	–0.2475	1592	0.7747	–0.7146
153	–0.6505	0.0000	873	0.3750	–0.8750	1593	–0.3018	0.7714
154	–1.0989	0.6505	874	–0.6716	1.0428	1594	–0.3357	–0.4211
155	–0.4600	–1.3010	875	–0.6920	1.1976	1595	–0.2209	–0.3889
156	0.9531	–0.6505	876	–0.3902	–0.1775	1596	–0.1251	0.0314
157	0.0000	0.0000	877	–0.6083	0.2576	1597	0.3591	–0.8211
158	–0.9531	0.6505	878	0.7307	0.7500	1598	0.1504	0.0247
159	0.4600	1.3010	879	0.0267	0.1909	1599	–0.3983	–0.2610
160	1.0989	–0.6505	880	–1.3111	0.2567	1600	–0.0178	–0.2952
161	0.6505	0.0000	881	–0.2500	0.2500	1601	–0.5303	0.3536

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
162	1.0989	0.6505	882	–0.4951	–0.6501	1602	0.0362	0.1951
163	0.4600	–1.3010	883	0.7030	0.1442	1603	1.5894	–0.2734
164	–0.9531	–0.6505	884	–0.6414	–0.3636	1604	1.1743	–0.7905
165	0.0000	0.0000	885	–0.4358	–1.3977	1605	0.0957	–0.2037
166	0.9531	0.6505	886	1.0506	0.2340	1606	0.7194	1.0870
167	–0.4600	1.3010	887	0.0779	–0.1987	1607	–0.4588	0.9484
168	–1.0989	–0.6505	888	–0.6380	–0.1150	1608	–0.7891	–0.1564
169	–0.6505	0.0000	889	–0.2286	0.4786	1609	–0.4268	–0.2197
170	–1.0989	0.6505	890	0.4263	–0.0201	1610	–1.0270	–0.3090
171	–0.4600	–1.3010	891	0.7092	0.9469	1611	0.0165	0.0962
172	0.9531	–0.6505	892	0.6284	0.5555	1612	0.1871	0.3372
173	0.0000	0.0000	893	0.5090	–0.1824	1613	0.3932	–0.8887
174	–0.9531	0.6505	894	–0.5295	0.0510	1614	0.9380	–0.8866
175	0.4600	1.3010	895	–1.0252	–0.5532	1615	0.2672	–0.2544
176	1.0989	–0.6505	896	–0.0839	–1.1538	1616	–0.2780	0.2540
177	0.6505	0.0000	897	0.2500	–0.2500	1617	–0.5303	0.3536
178	1.0989	0.6505	898	–0.5004	1.3005	1618	0.2614	–0.5484
179	0.4600	–1.3010	899	–0.5908	0.6231	1619	–0.8440	0.4400
180	–0.9531	–0.6505	900	0.0577	–0.2707	1620	–1.9533	0.4834
181	0.0000	0.0000	901	–0.1218	–0.4305	1621	–0.2310	–0.6656
182	0.9531	0.6505	902	0.3491	–1.1041	1622	–0.6724	0.7313
183	–0.4600	1.3010	903	0.9989	–0.6519	1623	–1.0910	0.6826
184	–1.0989	–0.6505	904	–0.4581	0.2200	1624	0.3620	0.3533
185	–0.6505	0.0000	905	–0.3018	0.4053	1625	0.0732	0.6768
186	–1.0989	0.6505	906	1.3908	–0.6853	1626	–1.2539	–0.9391
187	–0.4600	–1.3010	907	0.3587	–1.0781	1627	–0.4299	–0.3482
188	0.9531	–0.6505	908	–0.6375	0.0748	1628	1.1011	0.7877
189	0.0000	0.0000	909	–0.0486	–0.0867	1629	–0.2041	0.2646
190	–0.9531	0.6505	910	–0.6249	–0.0633	1630	–0.3363	0.0068
191	0.4600	1.3010	911	–1.0181	0.3954	1631	0.6177	–0.6401
192	1.0989	–0.6505	912	–0.2391	0.0433	1632	0.3011	0.0302
193	0.6505	0.0000	913	–1.0000	–0.5000	1633	0.1768	0.0000
194	1.0989	0.6505	914	–1.7777	–0.6477	1634	–1.5594	–0.5893

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
195	0.4600	–1.3010	915	–0.4418	0.0534	1635	–0.4155	0.6856
196	–0.9531	–0.6505	916	0.0513	0.0869	1636	1.9024	–0.2646
197	0.0000	0.0000	917	0.0822	0.0442	1637	–0.0957	–0.8570
198	0.9531	0.6505	918	0.2833	0.1666	1638	–0.2773	–0.1770
199	–0.4600	1.3010	919	–0.6388	0.5428	1639	0.3621	–1.1312
200	–1.0989	–0.6505	920	–0.0179	0.7491	1640	–0.4501	–0.2002
201	–0.6505	0.0000	921	0.4786	–0.2286	1641	0.0732	0.2803
202	–1.0989	0.6505	922	–0.4198	0.6797	1642	0.3684	–0.1857
203	–0.4600	–1.3010	923	0.7210	–0.0705	1643	–0.2665	0.8520
204	0.9531	–0.6505	924	1.2626	–2.0318	1644	–0.3789	0.4118
205	0.0000	0.0000	925	–0.0090	–0.3176	1645	0.3139	0.0352
206	–0.9531	0.6505	926	–0.4956	0.0872	1646	–0.2635	–0.1559
207	0.4600	1.3010	927	0.1654	0.3233	1647	–0.1704	–0.1578
208	1.0989	–0.6505	928	1.0042	0.6618	1648	0.9103	1.4900
209	0.6505	0.0000	929	0.0000	–0.5000	1649	0.1768	0.7071
210	1.0989	0.6505	930	–0.0522	0.2679	1650	0.1668	–0.3766
211	0.4600	–1.3010	931	1.1226	0.3863	1651	0.1701	0.3549
212	–0.9531	–0.6505	932	0.2618	0.1109	1652	0.3542	–0.2571
213	0.0000	0.0000	933	0.4754	–0.2159	1653	0.2310	–0.3950
214	0.9531	0.6505	934	0.4427	0.0502	1654	–1.5540	–0.2712
215	–0.4600	1.3010	935	–0.5238	1.8078	1655	–0.3123	–0.7069
216	–1.0989	–0.6505	936	0.4607	0.5063	1656	0.4310	0.0159
217	–0.6505	0.0000	937	0.0518	–0.6553	1657	–0.4268	0.6768
218	–1.0989	0.6505	938	0.0141	–0.2449	1658	0.5933	0.3388
219	–0.4600	–1.3010	939	0.4182	–0.0054	1659	0.1799	–0.3929
220	0.9531	–0.6505	940	–0.9829	0.4238	1660	0.0273	–0.2936
221	0.0000	0.0000	941	0.5486	–0.4133	1661	0.9112	–0.1181
222	–0.9531	0.6505	942	0.9385	0.5784	1662	1.0318	–0.7486
223	0.4600	1.3010	943	–1.0362	1.3345	1663	0.7856	–0.1548
224	1.0989	–0.6505	944	–0.0279	0.5026	1664	–0.0730	0.6274
225	0.6505	0.0000	945	–0.2500	0.2500	1665	–0.5303	0.3536
226	1.0989	0.6505	946	–0.4951	–0.6501	1666	0.0362	0.1951
227	0.4600	–1.3010	947	0.7030	0.1442	1667	1.5894	–0.2734

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
228	–0.9531	–0.6505	948	–0.6414	–0.3636	1668	1.1743	–0.7905
229	0.0000	0.0000	949	–0.4358	–1.3977	1669	0.0957	–0.2037
230	0.9531	0.6505	950	1.0506	0.2340	1670	0.7194	1.0870
231	–0.4600	1.3010	951	0.0779	–0.1987	1671	–0.4588	0.9484
232	–1.0989	–0.6505	952	–0.6380	–0.1150	1672	–0.7891	–0.1564
233	–0.6505	0.0000	953	–0.2286	0.4786	1673	–0.4268	–0.2197
234	–1.0989	0.6505	954	0.4263	–0.0201	1674	–1.0270	–0.3090
235	–0.4600	–1.3010	955	0.7092	0.9469	1675	0.0165	0.0962
236	0.9531	–0.6505	956	0.6284	0.5555	1676	0.1871	0.3372
237	0.0000	0.0000	957	0.5090	–0.1824	1677	0.3932	–0.8887
238	–0.9531	0.6505	958	–0.5295	0.0510	1678	0.9380	–0.8866
239	0.4600	1.3010	959	–1.0252	–0.5532	1679	0.2672	–0.2544
240	1.0989	–0.6505	960	–0.0839	–1.1538	1680	–0.2780	0.2540
241	0.6505	0.0000	961	0.2500	0.0000	1681	0.1036	0.3536
242	1.0989	0.6505	962	–1.1885	–0.0517	1682	0.0422	0.3606
243	0.4600	–1.3010	963	0.1997	–1.4317	1683	–1.2262	0.7068
244	–0.9531	–0.6505	964	0.9695	–0.3270	1684	0.1929	–0.2507
245	0.0000	0.0000	965	–0.9360	0.8515	1685	0.8657	–1.2428
246	0.9531	0.6505	966	–0.2959	0.2999	1686	0.7129	–0.2952
247	–0.4600	1.3010	967	–0.1250	–0.3056	1687	1.0229	0.8315
248	–1.0989	–0.6505	968	0.4167	–0.1605	1688	0.4230	0.3020
249	–0.6505	0.0000	969	0.4268	0.7500	1689	0.3232	–0.8536
250	–1.0989	0.6505	970	–0.1728	0.7154	1690	–0.7755	–0.8068
251	–0.4600	–1.3010	971	0.3569	0.0708	1691	–0.3816	–0.4457
252	0.9531	–0.6505	972	–0.7639	0.0450	1692	0.0679	–0.9573
253	0.0000	0.0000	973	–0.2207	–0.2286	1693	–1.1094	–0.9405
254	–0.9531	0.6505	974	0.5312	0.1754	1694	–0.4555	–0.9108
255	0.4600	1.3010	975	–1.0181	0.6869	1695	–0.3856	–1.1829
256	1.0989	–0.6505	976	–1.4411	0.1403	1696	0.7023	0.1252
257	0.6505	0.0000	977	–1.2500	0.2500	1697	1.3107	0.3536
258	1.0989	0.6505	978	–0.9559	–0.0985	1698	0.0255	–1.3087
259	0.4600	–1.3010	979	–0.8175	–0.9460	1699	0.7765	–0.4359
260	–0.9531	–0.6505	980	–0.2337	0.1601	1700	–0.0586	0.7280

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
261	0.0000	0.0000	981	0.1268	0.8224	1701	–0.7558	–0.4427
262	0.9531	0.6505	982	–0.2803	–0.2552	1702	0.1002	0.0806
263	–0.4600	1.3010	983	0.0969	–0.5384	1703	–0.2591	1.4714
264	–1.0989	–0.6505	984	–0.0805	–0.1178	1704	0.0863	0.9655
265	–0.6505	0.0000	985	0.5303	0.0000	1705	0.3232	0.3964
266	–1.0989	0.6505	986	0.8753	–0.1257	1706	–0.2649	0.0028
267	–0.4600	–1.3010	987	–0.3567	–0.3233	1707	–1.1503	–0.1233
268	0.9531	–0.6505	988	–0.0433	0.0131	1708	0.0217	0.5336
269	0.0000	0.0000	989	0.1060	0.4786	1709	0.5121	0.3163
270	–0.9531	0.6505	990	0.3252	0.1889	1710	–1.3346	–0.1750
271	0.4600	1.3010	991	1.3422	0.0824	1711	0.9100	–0.0053
272	1.0989	–0.6505	992	0.8683	0.2341	1712	1.0668	0.1259
273	0.6505	0.0000	993	–0.2500	–1.0000	1713	–1.3107	0.7071
274	1.0989	0.6505	994	–1.0738	–1.5594	1714	0.0408	0.5515
275	0.4600	–1.3010	995	–1.2715	0.2426	1715	–0.2901	–0.5218
276	–0.9531	–0.6505	996	–0.6137	0.6195	1716	0.2180	0.0159
277	0.0000	0.0000	997	0.8325	–0.4551	1717	0.9450	0.4928
278	0.9531	0.6505	998	1.0492	–0.2092	1718	–0.6200	–0.4164
279	–0.4600	1.3010	999	–0.1345	0.0873	1719	0.5315	–0.0546
280	–1.0989	–0.6505	1000	0.0236	0.4803	1720	0.5828	0.5182
281	–0.6505	0.0000	1001	0.0732	0.7500	1721	–0.6768	–0.3536
282	–1.0989	0.6505	1002	–0.4676	0.1059	1722	–0.3057	–0.4615
283	–0.4600	–1.3010	1003	–0.4764	0.2335	1723	0.0217	0.3982
284	0.9531	–0.6505	1004	–0.3806	–0.1207	1724	0.4884	0.4527
285	0.0000	0.0000	1005	–0.0293	–0.2286	1725	0.0058	–0.0166
286	–0.9531	0.6505	1006	0.8367	1.1749	1726	0.0099	0.1568
287	0.4600	1.3010	1007	0.8917	–0.0067	1727	0.8659	0.6512
288	1.0989	–0.6505	1008	–0.5262	–0.7515	1728	–0.3226	0.4648
289	–0.6505	–0.0000	1009	0.7500	1.2500	1729	–0.8107	0.0000
290	–1.0989	–0.6505	1010	1.4752	–0.0334	1730	0.4962	–0.5399
291	–0.4600	1.3010	1011	–0.5249	–1.2791	1731	–0.1744	–0.9562
292	0.9531	0.6505	1012	0.8557	0.5252	1732	–0.7985	0.3671
293	0.0000	–0.0000	1013	0.4767	0.2812	1733	0.3594	1.8998

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
294	–0.9531	–0.6505	1014	–0.9603	–0.3229	1734	0.5597	1.0772
295	0.4600	–1.3010	1015	0.4555	0.0495	1735	0.6190	–0.0412
296	1.0989	0.6505	1016	–0.4136	–0.2559	1736	–0.1555	–0.3080
297	0.6505	0.0000	1017	–0.5303	–0.0000	1737	–0.6768	–0.6036
298	1.0989	–0.6505	1018	0.0939	–0.3668	1738	0.3272	–0.2122
299	0.4600	1.3010	1019	0.8905	–0.5668	1739	–0.4040	–0.0363
300	–0.9531	0.6505	1020	1.6244	0.4992	1740	0.2824	–0.4751
301	0.0000	–0.0000	1021	–0.3560	0.4786	1741	0.5914	–0.0663
302	0.9531	–0.6505	1022	0.2086	0.3624	1742	–1.3867	0.0687
303	–0.4600	–1.3010	1023	0.4913	–0.0555	1743	–0.4761	–0.2558
304	–1.0989	0.6505	1024	–0.2614	–0.9833	1744	0.0312	0.2206
305	–0.6505	–0.0000	1025	0.2500	0.0000	1745	0.1036	0.3536
306	–1.0989	–0.6505	1026	–1.1885	–0.0517	1746	0.0422	0.3606
307	–0.4600	1.3010	1027	0.1997	–1.4317	1747	–1.2262	0.7068
308	0.9531	0.6505	1028	0.9695	–0.3270	1748	0.1929	–0.2507
309	0.0000	–0.0000	1029	–0.9360	0.8515	1749	0.8657	–1.2428
310	–0.9531	–0.6505	1030	–0.2959	0.2999	1750	0.7129	–0.2952
311	0.4600	–1.3010	1031	–0.1250	–0.3056	1751	1.0229	0.8315
312	1.0989	0.6505	1032	0.4167	–0.1605	1752	0.4230	0.3020
313	0.6505	0.0000	1033	0.4268	0.7500	1753	0.3232	–0.8536
314	1.0989	–0.6505	1034	–0.1728	0.7154	1754	–0.7755	–0.8068
315	0.4600	1.3010	1035	0.3569	0.0708	1755	–0.3816	–0.4457
316	–0.9531	0.6505	1036	–0.7639	0.0450	1756	0.0679	–0.9573
317	0.0000	–0.0000	1037	–0.2207	–0.2286	1757	–1.1094	–0.9405
318	0.9531	–0.6505	1038	0.5312	0.1754	1758	–0.4555	–0.9108
319	–0.4600	–1.3010	1039	–1.0181	0.6869	1759	–0.3856	–1.1829
320	–1.0989	0.6505	1040	–1.4411	0.1403	1760	0.7023	0.1252
321	1.2500	0.0000	1041	–0.5000	–0.5000	1761	0.1036	–0.0000
322	–0.3216	–0.5171	1042	0.0433	0.7037	1762	0.4724	–0.3751
323	–0.5640	–0.4328	1043	–0.5993	–0.3057	1763	0.4547	–0.3261
324	0.8594	0.5478	1044	0.9108	0.4501	1764	–0.7287	–1.4610
325	0.0111	–0.4458	1045	0.4606	1.1643	1765	–0.3515	–1.0093
326	–0.9756	–0.4563	1046	–1.5315	–0.4208	1766	–0.6190	0.7051

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
327	–1.1903	0.3727	1047	–0.2740	0.3948	1767	0.1962	0.3589
328	–0.7761	–0.0741	1048	–0.3143	0.3605	1768	0.9643	–0.2994
329	0.1036	–0.6339	1049	–0.4786	0.0214	1769	–0.9268	0.3964
330	0.2871	–1.2165	1050	0.7603	–0.2186	1770	–0.1563	0.0105
331	0.4219	–0.6784	1051	0.2119	–0.6767	1771	0.0111	–0.3584
332	0.8836	–0.4284	1052	–0.1467	0.2008	1772	0.1242	0.6776
333	0.5269	0.2276	1053	0.1926	–0.4572	1773	1.0518	0.0182
334	–0.6312	0.5158	1054	0.7408	0.3306	1774	–0.8214	–0.4763
335	–0.3382	–0.9638	1055	0.6994	1.4749	1775	–0.3751	0.9155
336	0.3459	0.1333	1056	–0.4134	0.3684	1776	–0.1545	–0.1655
337	0.2500	1.2500	1057	–0.2500	–0.2500	1777	–0.1036	–1.4142
338	1.0998	0.4827	1058	–0.1028	–0.9568	1778	1.1645	0.1040
339	0.4623	–0.2948	1059	–0.1297	–0.2738	1779	–0.2115	0.6640
340	0.0015	–1.1597	1060	0.3845	0.2946	1780	0.6315	0.6276
341	1.1802	–0.4189	1061	0.3089	0.1433	1781	0.6759	0.6535
342	–0.4653	0.3832	1062	1.0026	0.5946	1782	–0.7752	0.1427
343	–0.6222	0.3373	1063	0.5689	0.1112	1783	0.2895	0.4695
344	0.8113	–0.6423	1064	–0.7639	0.4389	1784	–0.1689	–0.4675
345	–0.6036	–1.1339	1065	–0.0947	0.0518	1785	–0.2197	–1.3536
346	–0.5391	–0.2070	1066	–0.1534	0.1638	1786	–0.2627	0.1115
347	–0.3165	–1.0258	1067	–0.6016	1.1947	1787	–0.4182	–0.0851
348	–0.5326	–0.3518	1068	–0.1063	–0.3402	1788	0.3393	–0.5796
349	0.2817	0.9077	1069	0.2883	–0.2532	1789	–1.0518	0.5245
350	–0.5541	–0.4205	1070	1.3605	0.0830	1790	–0.6281	0.0242
351	0.1470	–0.1780	1071	1.3150	–0.8342	1791	0.8118	–0.1118
352	0.5069	0.5395	1072	0.0962	–0.1351	1792	0.1943	0.5782
353	–0.7500	0.0000	1073	–0.2500	–0.7500	1793	0.1036	–0.3536
354	0.5069	–0.5395	1074	–0.2277	–1.2176	1794	0.2662	–0.9852
355	0.1470	0.1780	1075	0.2906	–0.0769	1795	0.0390	–0.5212
356	–0.5541	0.4205	1076	0.2231	0.2429	1796	0.1288	0.4527
357	0.2817	–0.9077	1077	–0.7106	0.6463	1797	0.9551	0.7593
358	–0.5326	0.3518	1078	–0.5849	1.4918	1798	0.5840	–0.5119
359	–0.3165	1.0258	1079	0.1879	0.9461	1799	0.4888	–1.0148

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
360	–0.5391	0.2070	1080	0.6471	0.2784	1800	1.6653	–0.9633
361	–0.6036	1.1339	1081	0.2286	0.7286	1801	0.5732	–0.6036
362	0.8113	0.6423	1082	–0.6522	–0.4000	1802	–0.1919	0.9974
363	–0.6222	–0.3373	1083	–0.2499	–0.2472	1803	–0.4793	0.4731
364	–0.4653	–0.3832	1084	0.7008	1.4607	1804	–0.6392	–0.9603
365	1.1802	0.4189	1085	0.0574	0.0608	1805	1.0518	–0.0611
366	0.0015	1.1597	1086	–1.1170	–0.4262	1806	0.1206	–0.0270
367	0.4623	0.2948	1087	–0.1905	0.4146	1807	–1.2084	–0.6095
368	1.0998	–0.4827	1088	1.3676	–0.5382	1808	0.1610	0.2443
369	0.2500	–1.2500	1089	0.5000	–1.0000	1809	0.6036	0.3536
370	0.3459	–0.1333	1090	–1.2488	–0.0071	1810	–0.0330	–0.3208
371	–0.3382	0.9638	1091	–0.5616	0.6565	1811	–0.4893	–0.3168
372	–0.6312	–0.5158	1092	0.7246	–0.2170	1812	–0.2124	0.2686
373	0.5269	–0.2276	1093	–0.5589	–0.4539	1813	0.1347	0.3036
374	0.8836	0.4284	1094	–0.5808	–0.8052	1814	–0.7848	–0.4480
375	0.4219	0.6784	1095	0.8101	–1.1592	1815	–1.1817	–0.3136
376	0.2871	1.2165	1096	–0.9704	0.0755	1816	0.8236	0.1532
377	0.1036	0.6339	1097	–1.1553	–0.3018	1817	1.2803	0.1464
378	–0.7761	0.0741	1098	0.5812	–0.4817	1818	–0.6734	0.4578
379	–1.1903	–0.3727	1099	–0.3604	–0.2708	1819	–0.3207	0.4704
380	–0.9756	0.4563	1100	–0.2767	–1.0919	1820	–0.2293	0.9744
381	0.0111	0.4458	1101	–0.0383	–0.8504	1821	–1.0518	1.6397
382	0.8594	–0.5478	1102	–0.2899	–0.4336	1822	–0.4903	0.5912
383	–0.5640	0.4328	1103	0.8831	0.6518	1823	–0.4354	0.3058
384	–0.3216	0.5171	1104	–0.0630	0.1516	1824	–0.0709	0.9201
385	1.2500	0.0000	1105	–0.5000	–0.5000	1825	0.1036	–0.0000
386	–0.3216	–0.5171	1106	0.0433	0.7037	1826	0.4724	–0.3751
387	–0.5640	–0.4328	1107	–0.5993	–0.3057	1827	0.4547	–0.3261
388	0.8594	0.5478	1108	0.9108	0.4501	1828	–0.7287	–1.4610
389	0.0111	–0.4458	1109	0.4606	1.1643	1829	–0.3515	–1.0093
390	–0.9756	–0.4563	1110	–1.5315	–0.4208	1830	–0.6190	0.7051
391	–1.1903	0.3727	1111	–0.2740	0.3948	1831	0.1962	0.3589
392	–0.7761	–0.0741	1112	–0.3143	0.3605	1832	0.9643	–0.2994

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
393	0.1036	–0.6339	1113	–0.4786	0.0214	1833	–0.9268	0.3964
394	0.2871	–1.2165	1114	0.7603	–0.2186	1834	–0.1563	0.0105
395	0.4219	–0.6784	1115	0.2119	–0.6767	1835	0.0111	–0.3584
396	0.8836	–0.4284	1116	–0.1467	0.2008	1836	0.1242	0.6776
397	0.5269	0.2276	1117	0.1926	–0.4572	1837	1.0518	0.0182
398	–0.6312	0.5158	1118	0.7408	0.3306	1838	–0.8214	–0.4763
399	–0.3382	–0.9638	1119	0.6994	1.4749	1839	–0.3751	0.9155
400	0.3459	0.1333	1120	–0.4134	0.3684	1840	–0.1545	–0.1655
401	0.2500	1.2500	1121	0.4268	0.0000	1841	–0.1768	–0.1768
402	1.0998	0.4827	1122	0.9942	0.2744	1842	0.2057	0.2223
403	0.4623	–0.2948	1123	0.8211	0.9934	1843	1.2373	–0.9499
404	0.0015	–1.1597	1124	–0.5579	–0.7145	1844	0.2553	0.7366
405	1.1802	–0.4189	1125	0.5426	–0.8084	1845	–0.7106	0.7312
406	–0.4653	0.3832	1126	0.0999	0.2365	1846	–0.2716	0.5028
407	–0.6222	0.3373	1127	0.6684	–0.2380	1847	0.0209	0.2484
408	0.8113	–0.6423	1128	0.9068	–0.3356	1848	–0.2528	–0.9689
409	–0.6036	–1.1339	1129	–1.0089	0.6250	1849	0.0214	0.4786
410	–0.5391	–0.2070	1130	–0.6357	0.4815	1850	0.3021	0.5310
411	–0.3165	–1.0258	1131	–0.0194	–0.6036	1851	–0.5490	0.3853
412	–0.5326	–0.3518	1132	–0.3315	–0.4134	1852	–0.2408	0.9165
413	0.2817	0.9077	1133	–1.1746	–0.0325	1853	0.6625	–0.6419
414	–0.5541	–0.4205	1134	–1.1141	–0.1848	1854	–0.1478	–0.8287
415	0.1470	–0.1780	1135	0.4767	0.3437	1855	–0.8396	0.4183
416	0.5069	0.5395	1136	1.4635	0.9359	1856	–0.9431	0.5037
417	–0.7500	0.0000	1137	1.1642	0.8839	1857	–0.3536	–0.7071
418	0.5069	–0.5395	1138	0.2222	–0.1226	1858	–0.0471	–0.4611
419	0.1470	0.1780	1139	1.2852	–0.7261	1859	–0.8091	0.2708
420	–0.5541	0.4205	1140	0.2144	0.1598	1860	0.2917	–0.0909
421	0.2817	–0.9077	1141	–1.8866	0.4675	1861	0.5589	1.0515
422	–0.5326	0.3518	1142	0.8386	–0.0904	1862	–1.0034	0.7154
423	–0.3165	1.0258	1143	0.8794	–0.2545	1863	–0.4469	–0.3087
424	–0.5391	0.2070	1144	–0.9852	0.0991	1864	–0.3645	0.5322
425	–0.6036	1.1339	1145	–0.4482	0.1250	1865	–0.8321	0.6250

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
426	0.8113	0.6423	1146	–0.3526	–0.6340	1866	–0.0434	1.0456
427	–0.6222	–0.3373	1147	0.5120	–0.6626	1867	0.0346	0.9160
428	–0.4653	–0.3832	1148	0.3663	–0.0058	1868	–0.1049	0.0397
429	1.1802	0.4189	1149	0.1012	0.3988	1869	–0.1071	0.4109
430	0.0015	1.1597	1150	0.0250	0.1928	1870	0.4521	0.3763
431	0.4623	0.2948	1151	–1.0216	–0.4521	1871	0.2505	–0.8598
432	1.0998	–0.4827	1152	0.2780	–0.0794	1872	–0.9069	–1.6128
433	0.2500	–1.2500	1153	0.4268	0.0000	1873	0.5303	–0.8839
434	0.3459	–0.1333	1154	–0.8237	0.0886	1874	0.9339	–0.2754
435	–0.3382	0.9638	1155	0.2687	0.9754	1875	–0.0903	0.4024
436	–0.6312	–0.5158	1156	0.9688	–0.2707	1876	1.1442	0.0882
437	0.5269	–0.2276	1157	0.1039	–0.7523	1877	0.4606	–0.9812
438	0.8836	0.4284	1158	–0.4116	0.4042	1878	–0.3106	0.5294
439	0.4219	0.6784	1159	–0.2857	–0.3069	1879	1.1006	0.4852
440	0.2871	1.2165	1160	–0.9435	–0.3838	1880	0.3853	–0.4966
441	0.1036	0.6339	1161	–0.7589	–0.1250	1881	–0.7286	0.2286
442	–0.7761	0.0741	1162	0.2256	0.0617	1882	–0.6466	–0.9123
443	–1.1903	–0.3727	1163	–0.1973	0.9191	1883	–0.1899	–0.8948
444	–0.9756	0.4563	1164	–0.2651	–0.4020	1884	0.1959	0.1607
445	0.0111	0.4458	1165	–0.3860	–0.8211	1885	–0.2054	–0.3152
446	0.8594	–0.5478	1166	–0.5318	0.3122	1886	0.2126	0.4633
447	–0.5640	0.4328	1167	0.4471	0.1473	1887	0.6165	1.4357
448	–0.3216	0.5171	1168	0.6556	0.7202	1888	0.6900	0.4237
449	1.2500	0.0000	1169	–0.6036	0.5303	1889	0.7071	–0.3536
450	–0.3216	–0.5171	1170	–1.4825	–0.2403	1890	–0.7636	0.1854
451	–0.5640	–0.4328	1171	–0.9608	0.4645	1891	–0.5450	–0.9304
452	0.8594	0.5478	1172	–0.7596	0.3665	1892	0.6692	–1.0943
453	0.0111	–0.4458	1173	–0.1741	–0.3211	1893	–0.3089	0.6127
454	–0.9756	–0.4563	1174	–0.3101	–0.5504	1894	–0.3160	0.1540
455	–1.1903	0.3727	1175	–1.2621	0.0923	1895	0.5325	–0.2178
456	–0.7761	–0.0741	1176	0.4985	0.3137	1896	0.2097	–1.0443
457	0.1036	–0.6339	1177	0.8018	–0.6250	1897	–0.5821	–0.6250
458	0.2871	–1.2165	1178	0.4383	0.0908	1898	–1.3552	1.0788

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
459	0.4219	–0.6784	1179	1.1190	0.0542	1899	–0.5029	–0.6137
460	0.8836	–0.4284	1180	–0.2210	–0.7201	1900	1.2036	–0.1707
461	0.5269	0.2276	1181	0.0452	0.4548	1901	1.0642	0.5462
462	–0.6312	0.5158	1182	–0.0100	–0.3203	1902	–0.0295	–0.4982
463	–0.3382	–0.9638	1183	0.0977	–0.7461	1903	0.1797	0.2128
464	0.3459	0.1333	1184	1.5405	0.7300	1904	0.5965	–0.7512
465	0.2500	1.2500	1185	0.4268	0.0000	1905	–0.1768	–0.1768
466	1.0998	0.4827	1186	0.9942	0.2744	1906	0.2057	0.2223
467	0.4623	–0.2948	1187	0.8211	0.9934	1907	1.2373	–0.9499
468	0.0015	–1.1597	1188	–0.5579	–0.7145	1908	0.2553	0.7366
469	1.1802	–0.4189	1189	0.5426	–0.8084	1909	–0.7106	0.7312
470	–0.4653	0.3832	1190	0.0999	0.2365	1910	–0.2716	0.5028
471	–0.6222	0.3373	1191	0.6684	–0.2380	1911	0.0209	0.2484
472	0.8113	–0.6423	1192	0.9068	–0.3356	1912	–0.2528	–0.9689
473	–0.6036	–1.1339	1193	–1.0089	0.6250	1913	0.0214	0.4786
474	–0.5391	–0.2070	1194	–0.6357	0.4815	1914	0.3021	0.5310
475	–0.3165	–1.0258	1195	–0.0194	–0.6036	1915	–0.5490	0.3853
476	–0.5326	–0.3518	1196	–0.3315	–0.4134	1916	–0.2408	0.9165
477	0.2817	0.9077	1197	–1.1746	–0.0325	1917	0.6625	–0.6419
478	–0.5541	–0.4205	1198	–1.1141	–0.1848	1918	–0.1478	–0.8287
479	0.1470	–0.1780	1199	0.4767	0.3437	1919	–0.8396	0.4183
480	0.5069	0.5395	1200	1.4635	0.9359	1920	–0.9431	0.5037
481	0.7500	–0.2500	1201	–0.3536	0.3536	1921	–0.8839	–0.0000
482	0.0030	0.0383	1202	–0.6225	0.5404	1922	–0.5281	0.5001
483	–0.4024	0.3583	1203	–0.1716	–0.2718	1923	–0.0039	0.6801
484	1.1517	0.1295	1204	–1.1936	0.9375	1924	–0.5595	0.8308
485	–0.3571	–0.3694	1205	0.0378	0.0018	1925	–0.7917	0.7297
486	–0.7863	0.3638	1206	0.6464	–1.0822	1926	0.0089	–0.0110
487	1.0069	–0.1142	1207	–0.3420	–0.3460	1927	–0.3694	0.3613
488	–0.5347	–0.4360	1208	–0.1094	0.6579	1928	1.2119	–0.1508
489	–0.3750	0.6250	1209	–0.7071	0.9268	1929	0.9786	0.1982
490	1.1394	0.9180	1210	–0.5974	0.1001	1930	–0.9843	0.0442
491	0.4178	–0.2132	1211	–0.1627	0.0859	1931	0.3119	–1.3171

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
492	0.5319	–1.1776	1212	–0.4667	–0.1517	1932	0.4241	0.2268
493	–0.1049	–0.8631	1213	0.0621	–0.1260	1933	0.2341	0.8348
494	–0.7085	–0.4467	1214	–0.8100	–0.1574	1934	0.5149	0.4050
495	–0.2948	0.2850	1215	–0.1639	–0.7336	1935	–0.5881	0.7871
496	–0.9447	0.4838	1216	1.8775	0.1407	1936	0.1107	–0.0131
497	–1.0000	0.0000	1217	0.0000	0.3536	1937	0.7071	–0.1768
498	–0.9515	–0.5292	1218	–0.8706	0.3725	1938	–0.2172	0.4891
499	–0.2478	–0.8458	1219	0.7309	0.9490	1939	0.3772	0.5686
500	0.3843	0.4523	1220	0.9331	0.5853	1940	1.1447	–0.7164
501	–0.9125	0.2151	1221	1.2651	–0.0004	1941	0.1512	–0.9046
502	–0.1435	–0.6271	1222	1.0011	–0.8286	1942	–0.1850	0.3940
503	0.3474	0.3114	1223	0.1323	–1.1359	1943	–0.4407	–0.6066
504	–0.8656	0.3428	1224	0.4767	–0.4300	1944	–1.0693	–0.4243
505	0.3018	–0.0518	1225	0.3536	0.1768	1945	0.4786	1.1982
506	0.2228	–0.7921	1226	–0.1387	–0.3935	1946	0.2871	–0.0292
507	–0.5604	0.4037	1227	0.1789	–0.2136	1947	–1.0934	–0.9223
508	0.4847	1.2827	1228	0.1915	0.6976	1948	0.0522	0.1653
509	–0.1467	–1.2331	1229	0.1001	–0.5542	1949	0.2151	0.5092
510	–0.3911	–0.5139	1230	0.3944	–0.5866	1950	0.2336	0.1295
511	0.7517	0.6241	1231	–0.3075	0.0715	1951	0.0364	0.4178
512	0.6166	–0.4875	1232	–0.4025	–0.1733	1952	–1.0535	0.0147
513	0.0000	–0.5000	1233	1.0607	0.7071	1953	–0.1768	–0.7071
514	–0.9321	–0.9455	1234	0.5718	–0.3410	1954	–0.0343	0.0856
515	–1.0664	–0.7119	1235	–0.4817	–0.6970	1955	–0.4263	0.1259
516	0.4203	–0.4174	1236	–0.1156	0.7601	1956	0.3872	–0.6964
517	0.8142	–0.2341	1237	–0.3913	0.3517	1957	0.1882	0.0203
518	0.3200	–0.3035	1238	0.1652	0.3614	1958	0.0580	1.1376
519	0.6083	–0.3635	1239	0.8420	0.8783	1959	0.8377	0.1773
520	0.1902	1.3675	1240	–0.4186	0.5227	1960	0.8912	–1.1723
521	–0.3750	0.6250	1241	–0.7071	–0.5732	1961	–0.2714	–0.5518
522	0.2095	–0.1602	1242	0.4162	–0.5313	1962	–1.4707	–0.1450
523	–0.1435	0.5668	1243	0.4333	0.4464	1963	–0.7802	–0.2215
524	–0.8200	0.1545	1244	–0.5802	–0.0762	1964	0.9120	–0.4707

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
525	–0.3522	0.4667	1245	–0.2085	0.0653	1965	0.3694	–0.8777
526	0.1479	–0.5213	1246	0.6231	0.3207	1966	–0.1358	–0.4220
527	0.7156	0.2688	1247	–0.3361	–0.2352	1967	1.0183	–0.5932
528	–0.0925	1.3591	1248	–0.4128	–0.9630	1968	–0.0851	–0.1486
529	–1.2500	–0.7500	1249	0.0000	–0.7071	1969	–1.0607	0.1768
530	0.1279	0.2831	1250	–0.4614	1.0275	1970	–0.6981	–0.5970
531	1.0095	0.4922	1251	–0.0777	0.3126	1971	–0.1541	0.1253
532	0.6112	–1.0248	1252	–1.0066	0.7308	1972	1.3468	0.2628
533	–0.0446	–0.1115	1253	–1.6186	1.7681	1973	–0.2547	0.1546
534	–1.4091	–0.2039	1254	0.1112	–0.6989	1974	–0.7423	0.3398
535	–0.9626	–0.2479	1255	0.3677	–1.1035	1975	1.1795	–0.4320
536	0.0253	0.2034	1256	0.1275	–0.5023	1976	–0.2495	–1.0368
537	–0.0518	0.3018	1257	0.3536	0.1768	1977	0.2286	–1.5518
538	0.5953	0.1876	1258	–0.2974	–0.1890	1978	1.2315	0.0664
539	0.9932	–0.0501	1259	–0.4495	–2.0258	1979	0.3546	0.9608
540	1.0643	0.1866	1260	0.2381	–0.0692	1980	0.7067	–0.0164
541	1.1038	0.1295	1261	0.7534	–0.0923	1981	–0.1115	0.9479
542	0.5564	1.2525	1262	–0.1313	–0.7426	1982	–0.1665	0.4414
543	–0.1725	1.2363	1263	–0.1925	1.1902	1983	–0.2595	–0.1117
544	–0.2230	–0.4189	1264	0.8617	0.1615	1984	–1.3421	0.5170
545	0.7500	–0.2500	1265	–0.3536	0.3536	1985	–0.8839	–0.0000
546	0.0030	0.0383	1266	–0.6225	0.5404	1986	–0.5281	0.5001
547	–0.4024	0.3583	1267	–0.1716	–0.2718	1987	–0.0039	0.6801
548	1.1517	0.1295	1268	–1.1936	0.9375	1988	–0.5595	0.8308
549	–0.3571	–0.3694	1269	0.0378	0.0018	1989	–0.7917	0.7297
550	–0.7863	0.3638	1270	0.6464	–1.0822	1990	0.0089	–0.0110
551	1.0069	–0.1142	1271	–0.3420	–0.3460	1991	–0.3694	0.3613
552	–0.5347	–0.4360	1272	–0.1094	0.6579	1992	1.2119	–0.1508
553	–0.3750	0.6250	1273	–0.7071	0.9268	1993	0.9786	0.1982
554	1.1394	0.9180	1274	–0.5974	0.1001	1994	–0.9843	0.0442
555	0.4178	–0.2132	1275	–0.1627	0.0859	1995	0.3119	–1.3171
556	0.5319	–1.1776	1276	–0.4667	–0.1517	1996	0.4241	0.2268
557	–0.1049	–0.8631	1277	0.0621	–0.1260	1997	0.2341	0.8348

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
558	–0.7085	–0.4467	1278	–0.8100	–0.1574	1998	0.5149	0.4050
559	–0.2948	0.2850	1279	–0.1639	–0.7336	1999	–0.5881	0.7871
560	–0.9447	0.4838	1280	1.8775	0.1407	2000	0.1107	–0.0131
561	0.5000	0.0000	1281	0.8839	0.5303	2001	–0.4268	0.3536
562	–0.3085	–0.2892	1282	0.5424	–0.0022	2002	–1.0574	–0.1440
563	–0.1437	–0.2565	1283	–0.5860	–0.5003	2003	–0.7470	0.4266
564	–0.1802	0.2279	1284	0.4166	0.2304	2004	0.3722	1.3037
565	0.2839	–0.2244	1285	1.3276	–0.4516	2005	–0.1084	0.3042
566	–0.8160	–0.8546	1286	0.1451	–0.7357	2006	–1.1934	–0.5430
567	–1.6074	0.3079	1287	0.3228	0.1189	2007	–0.3996	–0.1660
568	0.7877	–0.1511	1288	–0.6096	0.6574	2008	0.6821	–0.6570
569	0.3750	–0.8321	1289	–1.0303	0.7071	2009	–0.1768	–0.3232
570	–0.9921	–0.2920	1290	0.1291	–1.0814	2010	–1.9805	0.3039
571	–0.0893	–0.4812	1291	0.2828	–0.7487	2011	–1.1431	–0.8739
572	–0.1895	0.4323	1292	–0.0971	0.7849	2012	1.0910	–0.3047
573	0.3314	1.4226	1293	–0.8863	–0.8433	2013	0.7119	0.0045
574	0.4784	0.5251	1294	0.2760	–0.4223	2014	0.5305	–0.1432
575	0.1954	–0.1440	1295	1.1043	0.1005	2015	1.1243	0.7097
576	1.1669	0.2835	1296	0.0984	–0.8117	2016	–0.4017	–0.5379
577	0.7500	–0.2500	1297	0.5303	1.2374	2017	–0.6339	0.7071
578	0.7536	0.0435	1298	0.6691	0.9030	2018	0.8179	1.2678
579	0.5296	0.7304	1299	0.0706	–0.6003	2019	0.7275	–1.0177
580	–0.6150	–1.1478	1300	–0.4665	0.5808	2020	0.4730	0.1557
581	0.4857	–0.2386	1301	–0.9180	0.2603	2021	0.1622	–0.3311
582	0.3202	1.5452	1302	–1.1723	–0.3012	2022	–0.6697	–0.8676
583	–0.0228	0.2686	1303	–0.9438	–0.5155	2023	–0.6594	0.1583
584	1.5213	0.2369	1304	–0.0858	–0.4900	2024	–0.4641	–0.8158
585	0.4053	0.0518	1305	0.0732	0.6464	2025	–0.6768	0.5732
586	–0.7148	0.3455	1306	0.4904	0.5272	2026	–0.8257	1.1738
587	0.0196	0.6050	1307	–0.3957	0.3213	2027	–0.6350	–0.2757
588	–0.0255	–0.6389	1308	–0.9791	0.1224	2028	–0.5510	–0.6712
589	–0.1971	0.1324	1309	0.3974	–0.0552	2029	–0.4413	–0.4395
590	–0.3794	0.3976	1310	–0.9349	0.8005	2030	0.8945	0.4371

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
591	0.1334	–0.3895	1311	–0.6716	0.3852	2031	1.3260	0.3028
592	0.3540	–0.6079	1312	1.0813	0.1325	2032	0.1681	0.5123
593	–0.7500	0.2500	1313	0.5303	0.5303	2033	0.2803	0.0000
594	–0.2563	1.2112	1314	0.8554	0.2168	2034	–0.1132	0.0082
595	0.2901	–0.0178	1315	–0.3734	–0.1593	2035	–1.0167	1.3556
596	–0.9078	0.3924	1316	–0.8737	–0.7140	2036	0.2982	–0.4010
597	–0.8874	0.1815	1317	0.4830	0.2016	2037	0.8155	–0.1577
598	–0.0706	–1.4117	1318	0.0811	0.1980	2038	0.2434	0.3889
599	0.4541	–0.2286	1319	0.2158	–1.1283	2039	0.8186	–1.3076
600	1.2821	0.3947	1320	–0.0028	0.3368	2040	0.4914	0.0773
601	0.3750	0.5821	1321	–0.0303	0.7071	2041	–0.1768	0.1768
602	–0.7421	–0.0435	1322	0.4445	0.1774	2042	0.3101	–0.5701
603	0.9429	–0.2804	1323	0.1025	0.5099	2043	0.4566	–0.3089
604	1.0435	0.7421	1324	0.4375	–1.5122	2044	–0.0392	–0.4203
605	–0.7278	–0.6726	1325	–0.4244	–1.1139	2045	–0.2119	0.8491
606	–0.2412	0.0818	1326	–1.4370	1.1767	2046	0.5225	0.9202
607	–0.4248	1.2592	1327	–0.5277	0.3932	2047	0.7947	0.2765
608	–0.6098	0.2982	1328	0.2555	0.4147	2048	0.0461	–0.4595
609	1.0000	0.5000	1329	–0.5303	1.2374	2049	0.0732	–1.0607
610	0.3883	–0.6949	1330	–0.7963	0.6254	2050	0.1815	–0.1955
611	–0.3832	–1.1632	1331	0.3888	0.0528	2051	0.1220	0.0283
612	0.2529	–1.0497	1332	–0.1884	–0.1511	2052	0.7169	–0.0711
613	–0.3821	–1.2185	1333	–0.1855	–0.0103	2053	0.5449	–0.5224
614	–0.5456	0.0679	1334	0.5994	0.3515	2054	0.2181	0.5755
615	0.1761	–0.3479	1335	–0.0948	0.3178	2055	0.1546	1.5224
616	0.0176	–0.5926	1336	0.1211	–0.9407	2056	–0.2317	–0.8476
617	–0.6553	–0.3018	1337	–0.4268	–1.3536	2057	0.3232	–0.4268
618	–0.1281	–0.2806	1338	–0.3345	0.0480	2058	0.2530	0.5701
619	0.8339	0.8637	1339	0.5104	–0.2895	2059	–0.5927	–0.7486
620	–0.2068	1.0417	1340	–0.2493	–0.7555	2060	0.0531	–0.0054
621	–0.9064	0.6176	1341	0.2061	0.5981	2061	–0.0587	0.2930
622	–0.7457	–0.3512	1342	0.4426	0.3467	2062	–0.9602	–0.3537
623	–0.9040	–0.7257	1343	0.5950	–1.0860	2063	–0.3308	–0.0820

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
624	0.3086	0.1382	1344	1.1419	–0.7133	2064	0.1240	0.3139
625	0.5000	0.0000	1345	0.8839	0.5303	2065	–0.4268	0.3536
626	–0.3085	–0.2892	1346	0.5424	–0.0022	2066	–1.0574	–0.1440
627	–0.1437	–0.2565	1347	–0.5860	–0.5003	2067	–0.7470	0.4266
628	–0.1802	0.2279	1348	0.4166	0.2304	2068	0.3722	1.3037
629	0.2839	–0.2244	1349	1.3276	–0.4516	2069	–0.1084	0.3042
630	–0.8160	–0.8546	1350	0.1451	–0.7357	2070	–1.1934	–0.5430
631	–1.6074	0.3079	1351	0.3228	0.1189	2071	–0.3996	–0.1660
632	0.7877	–0.1511	1352	–0.6096	0.6574	2072	0.6821	–0.6570
633	0.3750	–0.8321	1353	–1.0303	0.7071	2073	–0.1768	–0.3232
634	–0.9921	–0.2920	1354	0.1291	–1.0814	2074	–1.9805	0.3039
635	–0.0893	–0.4812	1355	0.2828	–0.7487	2075	–1.1431	–0.8739
636	–0.1895	0.4323	1356	–0.0971	0.7849	2076	1.0910	–0.3047
637	0.3314	1.4226	1357	–0.8863	–0.8433	2077	0.7119	0.0045
638	0.4784	0.5251	1358	0.2760	–0.4223	2078	0.5305	–0.1432
639	0.1954	–0.1440	1359	1.1043	0.1005	2079	1.1243	0.7097
640	1.1669	0.2835	1360	0.0984	–0.8117	2080	–0.4017	–0.5379
641	–0.2500	0.0000	1361	0.6036	0.1768	2081	–0.5303	–0.3536
642	0.0992	–0.0286	1362	0.3992	–1.0879	2082	–0.2412	–1.2369
643	0.2191	–0.0721	1363	–0.5504	–0.9586	2083	0.0325	0.1695
644	–0.0967	–0.3706	1364	–0.7227	–0.5638	2084	0.4862	1.0950
645	–0.3298	–0.5272	1365	–0.6228	–0.5814	2085	0.9334	0.8104
646	–0.5840	–1.1713	1366	0.1130	–0.5003	2086	0.0086	0.4289
647	–0.5644	0.3122	1367	0.2416	0.7555	2087	–0.1074	0.2087
648	0.1361	0.8877	1368	–0.4563	0.7879	2088	0.3809	–0.8744
649	0.4053	0.4053	1369	–0.8750	–1.1553	2089	0.1982	–0.6250
650	0.4374	0.4681	1370	–1.1105	–0.0629	2090	1.0224	0.4850
651	–0.4830	–0.3086	1371	–0.1102	0.8284	2091	0.4970	–0.5663
652	–0.6867	0.3758	1372	0.3078	–0.6422	2092	–0.6378	–0.5282
653	1.2357	0.8089	1373	0.1150	–0.2262	2093	–0.3108	–0.2804
654	0.7685	–0.3674	1374	0.4227	0.4172	2094	–0.6898	0.0300
655	–0.0880	–0.0741	1375	0.8959	0.2667	2095	–0.6495	0.5202
656	0.9866	0.1074	1376	0.5364	0.2204	2096	–1.0067	–1.4767

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
657	0.2500	–0.5000	1377	–1.1339	–0.3536	2097	–1.7678	–0.8839
658	0.2423	0.7199	1378	0.4379	0.1646	2098	–0.6350	0.3694
659	1.0962	0.1399	1379	1.5486	1.1206	2099	–0.0401	–0.7119
660	0.0096	–1.6950	1380	–0.7839	–0.2537	2100	0.3445	–0.1592
661	–0.3425	0.7375	1381	–0.1530	–1.0100	2101	0.1146	0.2084
662	0.0573	1.0281	1382	0.8392	0.0443	2102	–0.9477	–0.1312
663	–0.1529	–0.8073	1383	0.7233	–0.1368	2103	0.4526	–0.3851
664	–0.4811	0.2484	1384	0.5130	0.0888	2104	0.5693	–0.0263
665	0.0821	–0.1250	1385	–0.4786	–0.0518	2105	–0.9053	0.2714
666	0.9896	0.6340	1386	0.3072	–0.5150	2106	–0.1578	–0.6136
667	–0.0324	1.0040	1387	0.7393	1.2424	2107	0.3078	–0.5199
668	–0.1874	–0.4979	1388	0.6595	0.9815	2108	–0.1159	–0.4045
669	1.0339	0.9606	1389	0.2244	–0.1961	2109	–0.9539	0.0764
670	0.0446	0.6331	1390	–0.3663	0.4254	2110	–0.3503	0.3097
671	–0.5489	–0.5532	1391	0.9627	–0.3578	2111	1.8126	0.2959
672	0.2882	–0.0798	1392	0.5409	–1.1903	2112	0.7345	1.2949
673	0.0000	0.2500	1393	0.2500	–0.1768	2113	–0.1768	0.0000
674	–0.3759	0.6592	1394	0.6212	0.6789	2114	0.7882	–0.3846
675	0.1053	–0.3486	1395	–0.7450	–0.2470	2115	–0.3143	–0.2344
676	0.0885	0.0458	1396	–0.0148	–0.2338	2116	–0.0822	–0.2293
677	–0.2738	0.0701	1397	0.1657	0.4778	2117	0.8773	2.0609
678	0.6387	–0.2059	1398	–0.7455	–0.3693	2118	–0.1874	–0.0983
679	0.6885	1.4272	1399	–0.0076	0.6541	2119	–0.0570	–1.3096
680	–0.7073	–0.2506	1400	0.3384	0.9275	2120	0.2189	1.0353
681	–0.6553	–0.6553	1401	0.8750	–0.4053	2121	–0.5518	–0.3750
682	–0.9597	0.3345	1402	0.1610	0.0387	2122	–0.2132	–0.4174
683	–1.1480	–1.3066	1403	–1.4526	–0.3014	2123	0.3005	0.6567
684	0.2966	–0.9211	1404	–1.1354	–0.0623	2124	0.1283	0.5511
685	0.3679	–0.0589	1405	–0.8650	–0.1702	2125	0.2072	0.2375
686	0.0273	0.5144	1406	–0.1794	–1.4749	2126	0.1004	–0.7112
687	–0.1122	0.2945	1407	0.9121	–1.0485	2127	–0.2475	–0.0472
688	–0.0229	–0.5413	1408	–0.0716	–0.5569	2128	–0.1488	–0.0826
689	1.5000	0.7500	1409	–0.4268	0.3536	2129	–0.3536	0.5303

Table 34—Complete packet *(continued)*

Sample	I	Q	Sample	I	Q	Sample	I	Q
690	1.1877	0.5099	1410	0.4655	0.2444	2130	–0.2946	1.2521
691	–0.0064	–0.7191	1411	0.0398	–0.2079	2131	0.0289	–0.9302
692	0.3178	–0.5477	1412	0.1386	0.5101	2132	–0.3657	–0.7065
693	0.4461	0.2196	1413	–0.0970	–0.3007	2133	0.9032	0.4558
694	0.6586	0.4125	1414	–0.8240	0.8253	2134	2.0504	–0.1994
695	–0.2642	–0.2250	1415	0.1640	1.4343	2135	0.4189	–0.2211
696	–1.7320	0.2993	1416	–0.3190	–0.4976	2136	–0.2454	–0.1345
697	–1.3321	–0.1250	1417	–0.2286	0.1982	2137	–0.1553	0.0214
698	–0.6206	–0.8828	1418	0.7183	0.5393	2138	–0.2687	0.5459
699	0.2492	–0.3888	1419	–0.8835	–0.0622	2139	0.6018	0.7224
700	0.6725	–0.2177	1420	–0.4492	0.2642	2140	0.2427	0.3816
701	–0.1374	–0.2106	1421	–0.1815	0.5925	2141	–0.3567	0.6736
702	–0.6110	–1.2578	1422	–1.2597	0.6324	2142	0.0158	0.3715
703	–0.9579	–0.3743	1423	0.3506	–0.1533	2143	–0.2085	–0.4761
704	–0.8819	1.1574	1424	0.9181	0.2202	2144	–0.5029	0.2644
705	–0.2500	0.0000	1425	0.6036	0.1768	2145	–0.5303	–0.3536
706	0.0992	–0.0286	1426	0.3992	–1.0879	2146	–0.2412	–1.2369
707	0.2191	–0.0721	1427	–0.5504	–0.9586	2147	0.0325	0.1695
708	–0.0967	–0.3706	1428	–0.7227	–0.5638	2148	0.4862	1.0950
709	–0.3298	–0.5272	1429	–0.6228	–0.5814	2149	0.9334	0.8104
710	–0.5840	–1.1713	1430	0.1130	–0.5003	2150	0.0086	0.4289
711	–0.5644	0.3122	1431	0.2416	0.7555	2151	–0.1074	0.2087
712	0.1361	0.8877	1432	–0.4563	0.7879	2152	0.3809	–0.8744
713	0.4053	0.4053	1433	–0.8750	–1.1553	2153	0.1982	–0.6250
714	0.4374	0.4681	1434	–1.1105	–0.0629	2154	1.0224	0.4850
715	–0.4830	–0.3086	1435	–0.1102	0.8284	2155	0.4970	–0.5663
716	–0.6867	0.3758	1436	0.3078	–0.6422	2156	–0.6378	–0.5282
717	1.2357	0.8089	1437	0.1150	–0.2262	2157	–0.3108	–0.2804
718	0.7685	–0.3674	1438	0.4227	0.4172	2158	–0.6898	0.0300
719	–0.0880	–0.0741	1439	0.8959	0.2667	2159	–0.6495	0.5202
720	0.9866	0.1074	1440	0.5364	0.2204	2160	–1.0067	–1.4767

7. LECIM DSSS PHY 384 bit blocked interleaver example results

7.1 Introduction

The sequence of *N* is shown in Table 35.

Table 35—Sequence of *N* for 384-bit fragment size (pruned)

	Bit: 0	1	2	3	4	5	6	7
Octet: 0	000	256	128	064	320	192	032	288
1	160	096	352	224	016	272	144	080
2	336	208	048	304	176	112	368	240
3	008	264	136	072	328	200	040	296
4	168	104	360	232	024	280	152	088
5	344	216	056	312	184	120	376	248
6	004	260	132	068	324	196	036	292
7	164	100	356	228	020	276	148	084
8	340	212	052	308	180	116	372	244
9	012	268	140	076	332	204	044	300
10	172	108	364	236	028	284	156	092
11	348	220	060	316	188	124	380	252
12	002	258	130	066	322	194	034	290
13	162	098	354	226	018	274	146	082
14	338	210	050	306	178	114	370	242
15	010	266	138	074	330	202	042	298
16	170	106	362	234	026	282	154	090
17	346	218	058	314	186	122	378	250
18	006	262	134	070	326	198	038	294
19	166	102	358	230	022	278	150	086
20	342	214	054	310	182	118	374	246
21	014	270	142	078	334	206	046	302
22	174	110	366	238	030	286	158	094

Table 35—Sequence of *N* for 384-bit fragment size (pruned) *(continued)*

	Bit: 0	1	2	3	4	5	6	7
23	350	222	062	318	190	126	382	254
24	001	257	129	065	321	193	033	289
25	161	097	353	225	017	273	145	081
26	337	209	049	305	177	113	369	241
27	009	265	137	073	329	201	041	297
28	169	105	361	233	025	281	153	089
29	345	217	057	313	185	121	377	249
30	005	261	133	069	325	197	037	293
31	165	101	357	229	021	277	149	085
32	341	213	053	309	181	117	373	245
33	013	269	141	077	333	205	045	301
34	173	109	365	237	029	285	157	093
35	349	221	061	317	189	125	381	253
36	003	259	131	067	323	195	035	291
37	163	099	355	227	019	275	147	083
38	339	211	051	307	179	115	371	243
39	011	267	139	075	331	203	043	299
40	171	107	363	235	027	283	155	091
41	347	219	059	315	187	123	379	251
42	007	263	135	071	327	199	039	295
43	167	103	359	231	023	279	151	087
44	343	215	055	311	183	119	375	247
45	015	271	143	079	335	207	047	303
46	175	111	367	239	031	287	159	095
47	351	223	063	319	191	127	383	255

Annex A

(informative)

Bibliography

Bibliographical references are resources that provide additional or helpful material but do not need to be understood or used to implement this standard. Reference to these resources is made for informational use only.

[B1] Examples of encoding a packet for the MR-FSK PHY– Part 1, Doc. IEEE 15-11-0726-07-004g, Nov. 2011.[1]

[B2] Examples of encoding a packet for the MR-FSK PHY– Part 2, Doc. IEEE 15-11-0759-03-004g, Nov. 2011.

[1] IEEE publications are available from The Institute of Electrical and Electronics Engineers (http://standards.ieee.org/). This document is available at https://mentor.ieee.org/802.15/documents.