

Transmitter Characteristic Tables

**Item 8. Emission Designators**

| Waveform Type | Modulation | Coding                 | Emission Designator at Channel Width |         |         |        |
|---------------|------------|------------------------|--------------------------------------|---------|---------|--------|
|               |            |                        | 5 MHz                                | 10 MHz  | 20 MHz  | 40 MHz |
| OFDM          | BPSK       | 1/2-rate Convolutional | 4M06D1D                              | 8M91D1D | 17M8D1D | N/A    |
| OFDM          | BPSK       | 3/4-rate Convolutional | 4M06D1D                              | 8M91D1D | 17M8D1D | N/A    |
| OFDM          | QPSK       | 1/2-rate Convolutional | 4M06D1D                              | 8M91D1D | 17M8D1D | N/A    |
| OFDM          | QPSK       | 3/4-rate Convolutional | 4M06D1D                              | 8M91D1D | 17M8D1D | N/A    |
| OFDM          | 16-QAM     | 1/2-rate Convolutional | 4M06D1D                              | 8M91D1D | 17M8D1D | N/A    |
| OFDM          | 16-QAM     | 3/4-rate Convolutional | 4M06D1D                              | 8M91D1D | 17M8D1D | N/A    |
| OFDM          | 64-QAM     | 2/3-rate Convolutional | 4M06D1D                              | 8M91D1D | 17M8D1D | N/A    |
| OFDM          | 64-QAM     | 3/4-rate Convolutional | 4M06D1D                              | 8M91D1D | 17M8D1D | N/A    |
| OFDM          | 64-QAM     | 5/6-rate Convolutional | 4M06D1D                              | 8M91D1D | 17M8D1D | N/A    |

**Table 1**

**Item 12. EMISSION BANDWIDTH (Measured in MHz) – RF-2150**

| Waveform Type | OFDM  |       |       |       | DSSS |       |       |       |
|---------------|-------|-------|-------|-------|------|-------|-------|-------|
|               | 5MHz  | 10MHz | 20MHz | 40MHz | 5MHz | 10MHz | 20MHz | 40MHz |
| Channel Width |       |       |       |       |      |       |       |       |
| -3 dB         | 4.43  | 8.81  | 17.61 | N/A   | N/A  | N/A   | N/A   | N/A   |
| -20 dB        | 5.12  | 9.5   | 19.95 | N/A   | N/A  | N/A   | N/A   | N/A   |
| -40 dB        | 14.22 | 25.81 | 51.88 | N/A   | N/A  | N/A   | N/A   | N/A   |
| -60 dB        | 35.63 | 63.1  | 133.6 | N/A   | N/A  | N/A   | N/A   | N/A   |
| OC-BW         | 5.0   | 9.3   | 19.1  | N/A   | N/A  | N/A   | N/A   | N/A   |

**Table 2**

Item 14: MODULATION TECHNIQUES AND CODING

| Protocol | Waveform Type | Modulation | Coding                 | Spatial Streams | Effective Data Rate (Mbps) at Channel Width |        |        |        |
|----------|---------------|------------|------------------------|-----------------|---------------------------------------------|--------|--------|--------|
|          |               |            |                        |                 | 5 MHz                                       | 10 MHz | 20 MHz | 40 MHz |
| 802.11g  | OFDM          | BPSK       | 1/2-rate Convolutional | N/A             | 1.50                                        | 3.0    | 6.0    | N/A    |
| 802.11g  | OFDM          | BPSK       | 3/4-rate Convolutional | N/A             | 2.25                                        | 4.5    | 9.0    | N/A    |
| 802.11g  | OFDM          | QPSK       | 1/2-rate Convolutional | N/A             | 3.00                                        | 6.0    | 12.0   | N/A    |
| 802.11g  | OFDM          | QPSK       | 3/4-rate Convolutional | N/A             | 4.50                                        | 9.0    | 18.0   | N/A    |
| 802.11g  | OFDM          | 16-QAM     | 1/2-rate Convolutional | N/A             | 6.00                                        | 12.0   | 24.0   | N/A    |
| 802.11g  | OFDM          | 16-QAM     | 3/4-rate Convolutional | N/A             | 9.00                                        | 18.0   | 36.0   | N/A    |
| 802.11g  | OFDM          | 64-QAM     | 2/3-rate Convolutional | N/A             | 12.00                                       | 24.0   | 48.0   | N/A    |
| 802.11g  | OFDM          | 64-QAM     | 3/4-rate Convolutional | N/A             | 13.50                                       | 27.0   | 54.0   | N/A    |
| 802.11n  | OFDM          | BPSK       | 1/2-rate Convolutional | 1               | 1.63                                        | 3.25   | 6.5    | N/A    |
| 802.11n  | OFDM          | QPSK       | 1/2-rate Convolutional | 1               | 3.25                                        | 6.5    | 13.0   | N/A    |
| 802.11n  | OFDM          | QPSK       | 3/4-rate Convolutional | 1               | 4.88                                        | 9.75   | 19.5   | N/A    |
| 802.11n  | OFDM          | 16-QAM     | 1/2-rate Convolutional | 1               | 6.5                                         | 13     | 26.0   | N/A    |
| 802.11n  | OFDM          | 16-QAM     | 3/4-rate Convolutional | 1               | 9.75                                        | 19.5   | 39.0   | N/A    |
| 802.11n  | OFDM          | 64-QAM     | 2/3-rate Convolutional | 1               | 13                                          | 26     | 52.0   | N/A    |
| 802.11n  | OFDM          | 64-QAM     | 3/4-rate Convolutional | 1               | 14.63                                       | 29.25  | 58.5   | N/A    |
| 802.11n  | OFDM          | 64-QAM     | 5/6-rate Convolutional | 1               | 16.25                                       | 32.5   | 65.0   | N/A    |
| 802.11n  | OFDM          | BPSK       | 1/2-rate Convolutional | 2               | 3.25                                        | 6.5    | 13     | N/A    |
| 802.11n  | OFDM          | QPSK       | 1/2-rate Convolutional | 2               | 6.5                                         | 13     | 26     | N/A    |
| 802.11n  | OFDM          | QPSK       | 3/4-rate Convolutional | 2               | 9.75                                        | 19.5   | 39     | N/A    |
| 802.11n  | OFDM          | 16-QAM     | 1/2-rate Convolutional | 2               | 13                                          | 26     | 52     | N/A    |
| 802.11n  | OFDM          | 16-QAM     | 3/4-rate Convolutional | 2               | 19.5                                        | 39     | 78     | N/A    |
| 802.11n  | OFDM          | 64-QAM     | 2/3-rate Convolutional | 2               | 26                                          | 52     | 104    | N/A    |
| 802.11n  | OFDM          | 64-QAM     | 3/4-rate Convolutional | 2               | 29.25                                       | 58.5   | 117    | N/A    |
| 802.11n  | OFDM          | 64-QAM     | 5/6-rate Convolutional | 2               | 32.5                                        | 65     | 130    | N/A    |
| 802.11n  | OFDM          | BPSK       | 1/2-rate Convolutional | 3               | 4.88                                        | 9.75   | 19.5   | N/A    |
| 802.11n  | OFDM          | QPSK       | 1/2-rate Convolutional | 3               | 9.75                                        | 19.5   | 39     | N/A    |
| 802.11n  | OFDM          | QPSK       | 3/4-rate Convolutional | 3               | 14.63                                       | 29.25  | 58.5   | N/A    |
| 802.11n  | OFDM          | 16-QAM     | 1/2-rate Convolutional | 3               | 19.5                                        | 39     | 78     | N/A    |
| 802.11n  | OFDM          | 16-QAM     | 3/4-rate Convolutional | 3               | 29.25                                       | 58.5   | 117    | N/A    |
| 802.11n  | OFDM          | 64-QAM     | 2/3-rate Convolutional | 3               | 39.75                                       | 79.5   | 156    | N/A    |
| 802.11n  | OFDM          | 64-QAM     | 3/4-rate Convolutional | 3               | 43.88                                       | 87.75  | 175.5  | N/A    |
| 802.11n  | OFDM          | 64-QAM     | 5/6-rate Convolutional | 3               | 48.75                                       | 97.5   | 195    | N/A    |

Table 3

Item 14. OFDM Characteristics

| Protocol | Channel Width (MHz) | Modulation | Coding                 | Spatial Streams | Emission Designator | Effective Data Rate (Mbps) | Transmission Bit Rate (Mbps) |
|----------|---------------------|------------|------------------------|-----------------|---------------------|----------------------------|------------------------------|
| 802.11g  | 5                   | BPSK       | 1/2-rate Convolutional | N/A             | 4M06D1D             | 1.50                       | 3.0                          |
| 802.11g  | 5                   | BPSK       | 3/4-rate Convolutional | N/A             | 4M06D1D             | 2.25                       | 3.0                          |
| 802.11g  | 5                   | QPSK       | 1/2-rate Convolutional | N/A             | 4M06D1D             | 3.00                       | 6.0                          |
| 802.11g  | 5                   | QPSK       | 3/4-rate Convolutional | N/A             | 4M06D1D             | 4.50                       | 6.0                          |
| 802.11g  | 5                   | 16-QAM     | 1/2-rate Convolutional | N/A             | 4M06D1D             | 6.00                       | 12.0                         |
| 802.11g  | 5                   | 16-QAM     | 3/4-rate Convolutional | N/A             | 4M06D1D             | 9.00                       | 12.0                         |
| 802.11g  | 5                   | 64-QAM     | 2/3-rate Convolutional | N/A             | 4M06D1D             | 12.00                      | 18.0                         |
| 802.11g  | 5                   | 64-QAM     | 3/4-rate Convolutional | N/A             | 4M06D1D             | 13.50                      | 18.0                         |
| 802.11n  | 5                   | BPSK       | 1/2-rate Convolutional | 1               | 4M06D1D             | 1.63                       | 3.26                         |
| 802.11n  | 5                   | QPSK       | 1/2-rate Convolutional | 1               | 4M06D1D             | 3.25                       | 6.5                          |
| 802.11n  | 5                   | QPSK       | 3/4-rate Convolutional | 1               | 4M06D1D             | 4.875                      | 6.5                          |
| 802.11n  | 5                   | 16-QAM     | 1/2-rate Convolutional | 1               | 4M06D1D             | 6.5                        | 13                           |
| 802.11n  | 5                   | 16-QAM     | 3/4-rate Convolutional | 1               | 4M06D1D             | 9.75                       | 13                           |
| 802.11n  | 5                   | 64-QAM     | 2/3-rate Convolutional | 1               | 4M06D1D             | 13                         | 19.5                         |
| 802.11n  | 5                   | 64-QAM     | 3/4-rate Convolutional | 1               | 4M06D1D             | 14.63                      | 19.5                         |
| 802.11n  | 5                   | 64-QAM     | 5/6-rate Convolutional | 1               | 4M06D1D             | 16.25                      | 19.5                         |
| 02.11n   | 5                   | BPSK       | 1/2-rate Convolutional | 2               | 4M06D1D             | 3.25                       | 6.5                          |
| 802.11n  | 5                   | QPSK       | 1/2-rate Convolutional | 2               | 4M06D1D             | 6.5                        | 13                           |
| 802.11n  | 5                   | QPSK       | 3/4-rate Convolutional | 2               | 4M06D1D             | 9.75                       | 13                           |
| 802.11n  | 5                   | 16-QAM     | 1/2-rate Convolutional | 2               | 4M06D1D             | 13                         | 26                           |
| 802.11n  | 5                   | 16-QAM     | 3/4-rate Convolutional | 2               | 4M06D1D             | 19.5                       | 26                           |
| 802.11n  | 5                   | 64-QAM     | 2/3-rate Convolutional | 2               | 4M06D1D             | 26                         | 39                           |
| 802.11n  | 5                   | 64-QAM     | 3/4-rate Convolutional | 2               | 4M06D1D             | 29.25                      | 39                           |
| 802.11n  | 5                   | 64-QAM     | 5/6-rate Convolutional | 2               | 4M06D1D             | 32.5                       | 39                           |
| 802.11n  | 5                   | BPSK       | 1/2-rate Convolutional | 3               | 4M06D1D             | 4.875                      | 9.75                         |
| 802.11n  | 5                   | QPSK       | 1/2-rate Convolutional | 3               | 4M06D1D             | 9.75                       | 19.5                         |
| 802.11n  | 5                   | QPSK       | 3/4-rate Convolutional | 3               | 4M06D1D             | 14.63                      | 19.5                         |
| 802.11n  | 5                   | 16-QAM     | 1/2-rate Convolutional | 3               | 4M06D1D             | 19.5                       | 39                           |
| 802.11n  | 5                   | 16-QAM     | 3/4-rate Convolutional | 3               | 4M06D1D             | 29.25                      | 39                           |
| 802.11n  | 5                   | 64-QAM     | 2/3-rate Convolutional | 3               | 4M06D1D             | 39                         | 58.5                         |
| 802.11n  | 5                   | 64-QAM     | 3/4-rate Convolutional | 3               | 4M06D1D             | 43.875                     | 58.5                         |
| 802.11n  | 5                   | 64-QAM     | 5/6-rate Convolutional | 3               | 4M06D1D             | 48.75                      | 58.5                         |
| 802.11g  | 10                  | BPSK       | 1/2-rate Convolutional | N/A             | 8M91D1D             | 3.0                        | 6.0                          |
| 802.11g  | 10                  | BPSK       | 3/4-rate Convolutional | N/A             | 8M91D1D             | 4.5                        | 6.0                          |
| 802.11g  | 10                  | QPSK       | 1/2-rate Convolutional | N/A             | 8M91D1D             | 6.0                        | 12.0                         |
| 802.11g  | 10                  | QPSK       | 3/4-rate Convolutional | N/A             | 8M91D1D             | 9.0                        | 12.0                         |
| 802.11g  | 10                  | 16-QAM     | 1/2-rate Convolutional | N/A             | 8M91D1D             | 12.0                       | 24.0                         |
| 802.11g  | 10                  | 16-QAM     | 3/4-rate Convolutional | N/A             | 8M91D1D             | 18.0                       | 24.0                         |
| 802.11g  | 10                  | 64-QAM     | 2/3-rate Convolutional | N/A             | 8M91D1D             | 24.0                       | 36.0                         |
| 802.11g  | 10                  | 64-QAM     | 3/4-rate Convolutional | N/A             | 8M91D1D             | 27.0                       | 36.0                         |
| 802.11n  | 10                  | BPSK       | 1/2-rate Convolutional | 1               | 8M91D1D             | 3.25                       | 6.5                          |
| 802.11n  | 10                  | QPSK       | 1/2-rate Convolutional | 1               | 8M91D1D             | 6.5                        | 13                           |
| 802.11n  | 10                  | QPSK       | 3/4-rate Convolutional | 1               | 8M91D1D             | 9.75                       | 13                           |
| 802.11n  | 10                  | 16-QAM     | 1/2-rate Convolutional | 1               | 8M91D1D             | 13                         | 26                           |
| 802.11n  | 10                  | 16-QAM     | 3/4-rate Convolutional | 1               | 8M91D1D             | 19.5                       | 26                           |
| 802.11n  | 10                  | 64-QAM     | 2/3-rate Convolutional | 1               | 8M91D1D             | 26                         | 39                           |
| 802.11n  | 10                  | 64-QAM     | 3/4-rate Convolutional | 1               | 8M91D1D             | 29.25                      | 39                           |
| 802.11n  | 10                  | 64-QAM     | 5/6-rate Convolutional | 1               | 8M91D1D             | 32.5                       | 39                           |
| 802.11n  | 10                  | BPSK       | 1/2-rate Convolutional | 2               | 8M91D1D             | 6.5                        | 13                           |
| 802.11n  | 10                  | QPSK       | 1/2-rate Convolutional | 2               | 8M91D1D             | 13                         | 26                           |
| 802.11n  | 10                  | QPSK       | 3/4-rate Convolutional | 2               | 8M91D1D             | 19.5                       | 26                           |
| 802.11n  | 10                  | 16-QAM     | 1/2-rate Convolutional | 2               | 8M91D1D             | 26                         | 52                           |

| Protocol | Channel Width (MHz) | Modulation | Coding                 | Spatial Streams | Emission Designator | Effective Data Rate (Mbps) | Transmission Bit Rate (Mbps) |
|----------|---------------------|------------|------------------------|-----------------|---------------------|----------------------------|------------------------------|
| 802.11n  | 10                  | 16-QAM     | 3/4-rate Convolutional | 2               | 8M91D1D             | 39                         | 52                           |
| 802.11n  | 10                  | 64-QAM     | 2/3-rate Convolutional | 2               | 8M91D1D             | 52                         | 78                           |
| 802.11n  | 10                  | 64-QAM     | 3/4-rate Convolutional | 2               | 8M91D1D             | 58.5                       | 78                           |
| 802.11n  | 10                  | 64-QAM     | 5/6-rate Convolutional | 2               | 8M91D1D             | 65                         | 78                           |
| 802.11n  | 10                  | BPSK       | 1/2-rate Convolutional | 3               | 8M91D1D             | 9.75                       | 19.5                         |
| 802.11n  | 10                  | QPSK       | 1/2-rate Convolutional | 3               | 8M91D1D             | 19.5                       | 39                           |
| 802.11n  | 10                  | QPSK       | 3/4-rate Convolutional | 3               | 8M91D1D             | 29.25                      | 39                           |
| 802.11n  | 10                  | 16-QAM     | 1/2-rate Convolutional | 3               | 8M91D1D             | 39                         | 78                           |
| 802.11n  | 10                  | 16-QAM     | 3/4-rate Convolutional | 3               | 8M91D1D             | 58.5                       | 78                           |
| 802.11n  | 10                  | 64-QAM     | 2/3-rate Convolutional | 3               | 8M91D1D             | 78                         | 117                          |
| 802.11n  | 10                  | 64-QAM     | 3/4-rate Convolutional | 3               | 8M91D1D             | 87.75                      | 117                          |
| 802.11n  | 10                  | 64-QAM     | 5/6-rate Convolutional | 3               | 8M91D1D             | 97.5                       | 117                          |
| 802.11g  | 20                  | BPSK       | 1/2-rate Convolutional | N/A             | 17M8D1D             | 6.0                        | 12.0                         |
| 802.11g  | 20                  | BPSK       | 3/4-rate Convolutional | N/A             | 17M8D1D             | 9.0                        | 12.0                         |
| 802.11g  | 20                  | QPSK       | 1/2-rate Convolutional | N/A             | 17M8D1D             | 12.0                       | 24.0                         |
| 802.11g  | 20                  | QPSK       | 3/4-rate Convolutional | N/A             | 17M8D1D             | 18.0                       | 24.0                         |
| 802.11g  | 20                  | 16-QAM     | 1/2-rate Convolutional | N/A             | 17M8D1D             | 24.0                       | 48.0                         |
| 802.11g  | 20                  | 16-QAM     | 3/4-rate Convolutional | N/A             | 17M8D1D             | 36.0                       | 48.0                         |
| 802.11g  | 20                  | 64-QAM     | 2/3-rate Convolutional | N/A             | 17M8D1D             | 48.0                       | 72.0                         |
| 802.11g  | 20                  | 64-QAM     | 3/4-rate Convolutional | N/A             | 17M8D1D             | 54.0                       | 72.0                         |
| 802.11n  | 20                  | BPSK       | 1/2-rate Convolutional | 1               | 17M8D1D             | 6.5                        | 13                           |
| 802.11n  | 20                  | QPSK       | 1/2-rate Convolutional | 1               | 17M8D1D             | 13                         | 26                           |
| 802.11n  | 20                  | QPSK       | 3/4-rate Convolutional | 1               | 17M8D1D             | 19.5                       | 26                           |
| 802.11n  | 20                  | 16-QAM     | 1/2-rate Convolutional | 1               | 17M8D1D             | 26.0                       | 52                           |
| 802.11n  | 20                  | 16-QAM     | 3/4-rate Convolutional | 1               | 17M8D1D             | 39.0                       | 52                           |
| 802.11n  | 20                  | 64-QAM     | 2/3-rate Convolutional | 1               | 17M8D1D             | 52.0                       | 78                           |
| 802.11n  | 20                  | 64-QAM     | 3/4-rate Convolutional | 1               | 17M8D1D             | 58.5                       | 78                           |
| 802.11n  | 20                  | 64-QAM     | 5/6-rate Convolutional | 1               | 17M8D1D             | 65.0                       | 78                           |
| 802.11n  | 20                  | BPSK       | 1/2-rate Convolutional | 2               | 17M8D1D             | 13                         | 26                           |
| 802.11n  | 20                  | QPSK       | 1/2-rate Convolutional | 2               | 17M8D1D             | 26                         | 52                           |
| 802.11n  | 20                  | QPSK       | 3/4-rate Convolutional | 2               | 17M8D1D             | 39                         | 52                           |
| 802.11n  | 20                  | 16-QAM     | 1/2-rate Convolutional | 2               | 17M8D1D             | 52                         | 104                          |
| 802.11n  | 20                  | 16-QAM     | 3/4-rate Convolutional | 2               | 17M8D1D             | 78                         | 104                          |
| 802.11n  | 20                  | 64-QAM     | 2/3-rate Convolutional | 2               | 17M8D1D             | 104                        | 156                          |
| 802.11n  | 20                  | 64-QAM     | 3/4-rate Convolutional | 2               | 17M8D1D             | 117                        | 156                          |
| 802.11n  | 20                  | 64-QAM     | 5/6-rate Convolutional | 2               | 17M8D1D             | 130                        | 156                          |
| 802.11n  | 20                  | BPSK       | 1/2-rate Convolutional | 3               | 17M8D1D             | 19.5                       | 39                           |
| 802.11n  | 20                  | QPSK       | 1/2-rate Convolutional | 3               | 17M8D1D             | 39                         | 78                           |
| 802.11n  | 20                  | QPSK       | 3/4-rate Convolutional | 3               | 17M8D1D             | 58.5                       | 78                           |
| 802.11n  | 20                  | 16-QAM     | 1/2-rate Convolutional | 3               | 17M8D1D             | 78                         | 156                          |
| 802.11n  | 20                  | 16-QAM     | 3/4-rate Convolutional | 3               | 17M8D1D             | 117                        | 156                          |
| 802.11n  | 20                  | 64-QAM     | 2/3-rate Convolutional | 3               | 17M8D1D             | 156                        | 234                          |
| 802.11n  | 20                  | 64-QAM     | 3/4-rate Convolutional | 3               | 17M8D1D             | 175.5                      | 234                          |
| 802.11n  | 20                  | 64-QAM     | 5/6-rate Convolutional | 3               | 17M8D1D             | 195                        | 234                          |

Table 4

Item 15: Modulation Frequency (Measured in MHz)

| Waveform Type | OFDM   |       |       |       | DSSS |       |       |       |
|---------------|--------|-------|-------|-------|------|-------|-------|-------|
|               | 5MHz   | 10MHz | 20MHz | 40MHz | 5MHz | 10MHz | 20MHz | 40MHz |
| Channel Width |        |       |       |       |      |       |       |       |
| Frequency     | 2.3875 | 4.775 | 9.55  | N/A   | N/A  | N/A   | N/A   | N/A   |

Table 5