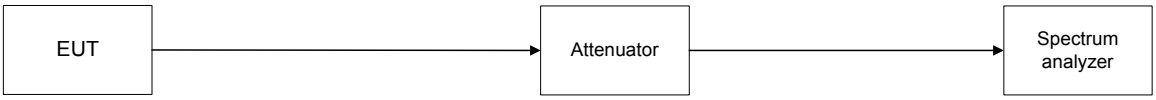
**MA850 part 15 tests**

## 1.1 Peak output power

**Figure 1.1.1 Peak output power test setup**




**Photograph 1.1.1 Peak output power test setup**

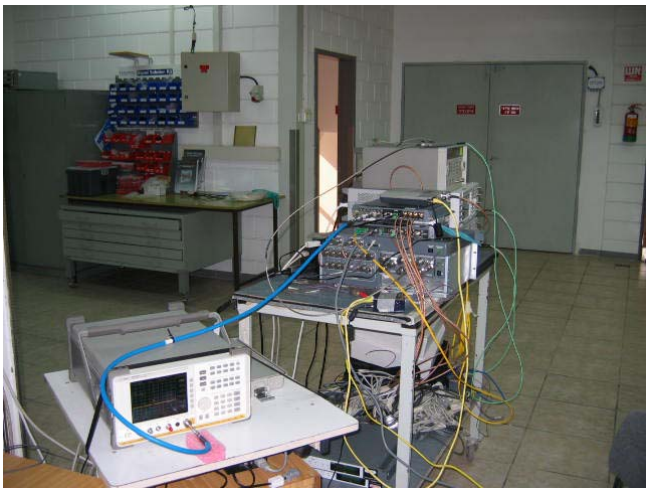


**Table 1.1.1 Peak output power test results**

| | |
|---|---|
| ASSIGNED FREQUENCY: | 2401 - 2473 MHz |
| ASSEMBLY | MA 850 |
| TRANSMITTER OUTPUT POWER SETTINGS: | Maximum |
| DETECTOR USED: | Peak |
| CHANNEL POWER BANDWIDTH | 50 MHz |
| RESOLUTION BANDWIDTH: | 100 kHz |
| VIDEO BANDWIDTH: | 300 kHz |

| Carrier frequency, MHz | Modulating signal | Bit rate, Mbps | Port | Peak output power, dBm | Limit, dBm | Margin*, dB | Verdict |
|---|---|---|---|---|---|---|---|
| | | | | | | | DSSS |
| 2412 | CCK | 5.5 | 2 | 26.0 | 30 | -4.0 | Pass |
| 2437 | | | | 26.3 | 30 | -3.7 | Pass |
| 2462 | | | | 25.8 | 30 | -4.2 | Pass |
| | | | | | | | OFDM |
| 2412 | BPSK | 6 | 2 | 20.1 | 30 | -9.9 | Pass |
| 2437 | | | | 20.2 | 30 | -9.8 | Pass |
| 2462 | | | | 20.1 | 30 | -9.9 | Pass |

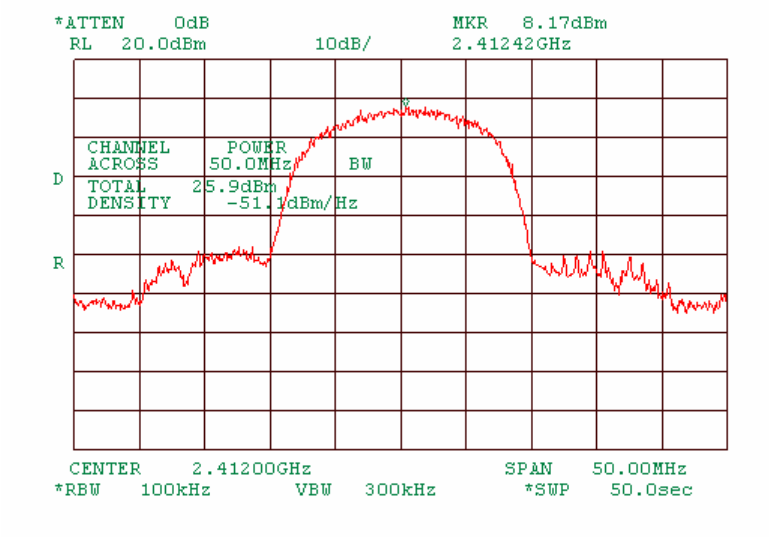
* - Margin = Peak output power – specification limit.

**Reference numbers of test equipment used**

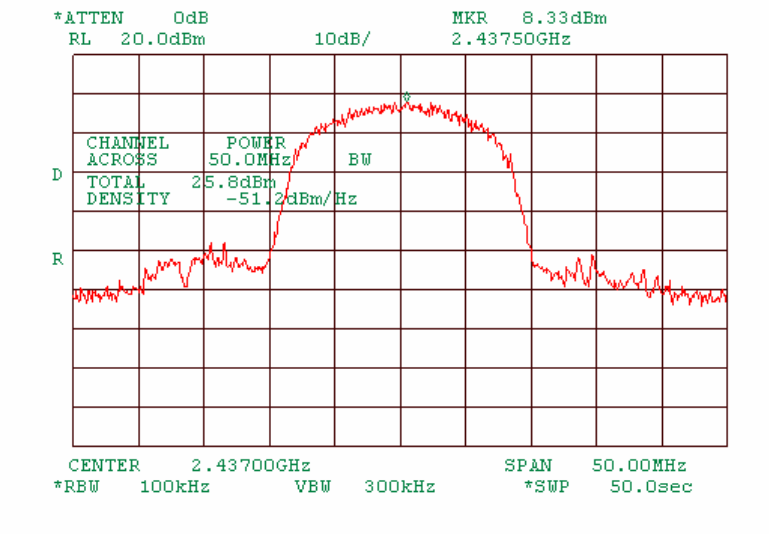
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| HL 1424 | HL 1651 | HL 2399 | | | | | |

Full description is given in Appendix A.

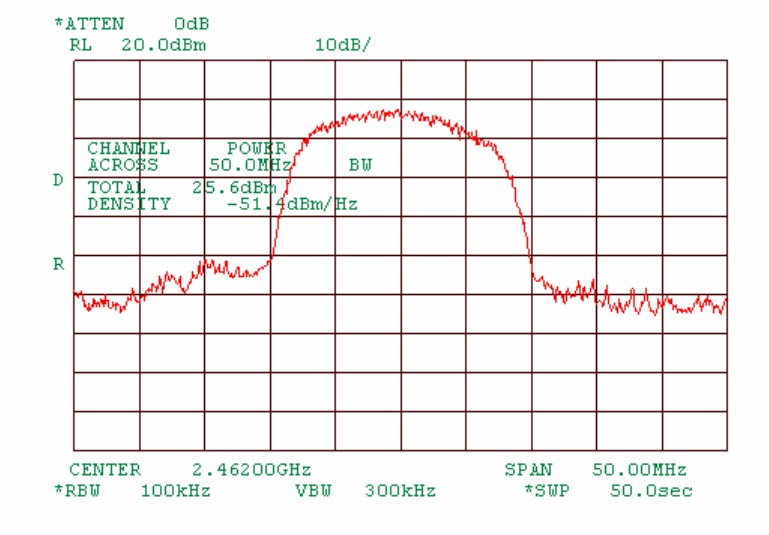
**Plot 1.1.1 Peak output power at low frequency of MA 850, port 1. At 5.5Mbps DSSS.**



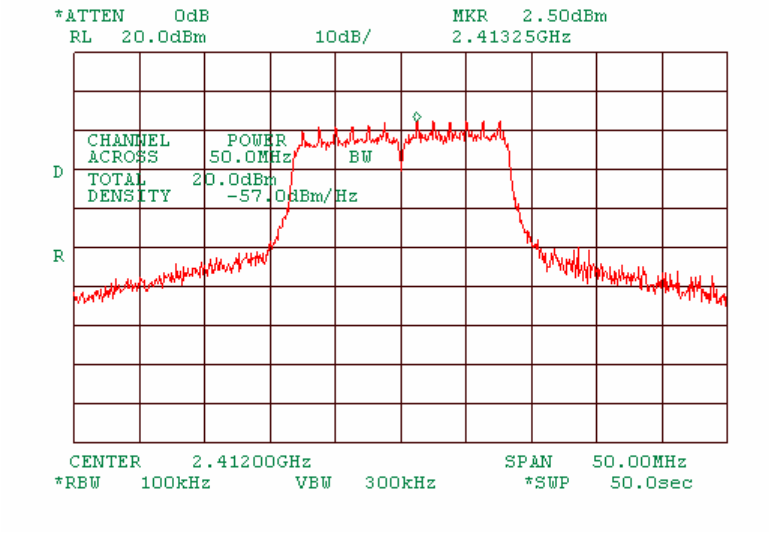

**Plot 1.1.2 Peak output power at mid frequency of MA 850, port 1. At 5.5Mbps DSSS.**



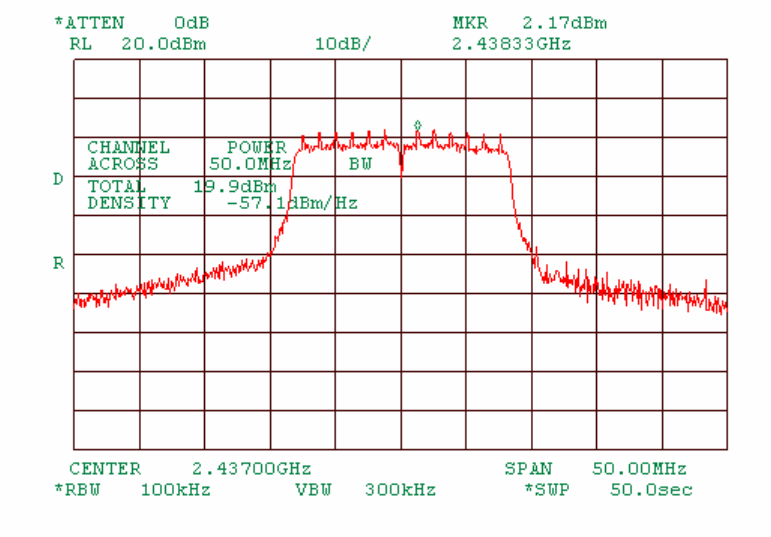
**Plot 1.1.3 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 1. At 5.5Mbps DSSS.**



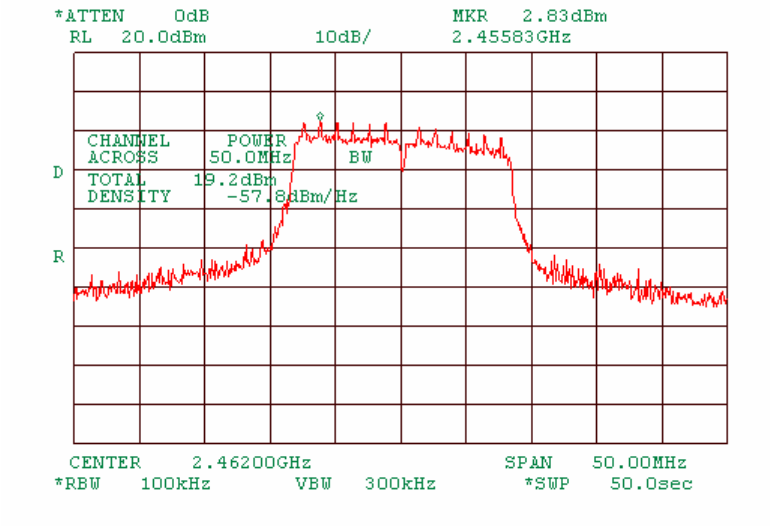

**Plot 1.1.4 Peak output power at low frequency of MA 850, port 1. At 6 Mbps OFDM.**



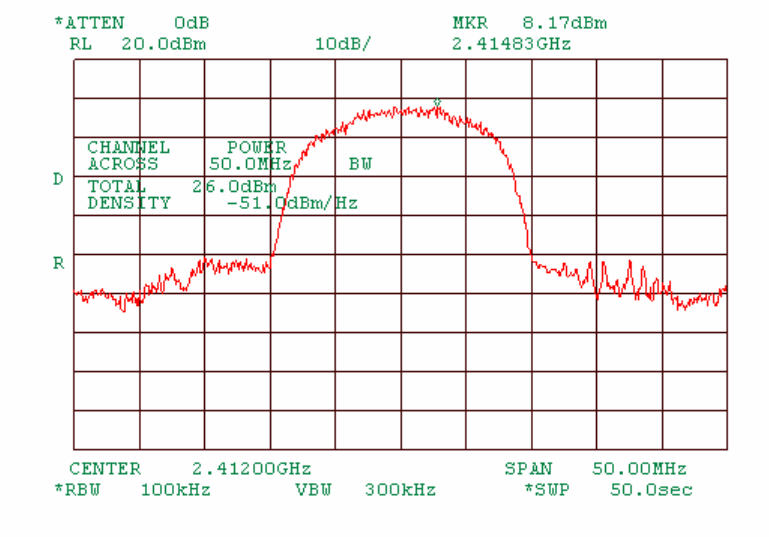
**Plot 1.1.5 Peak output power at mid frequency of MA 850, port 1. At 6Mbps OFDM.**



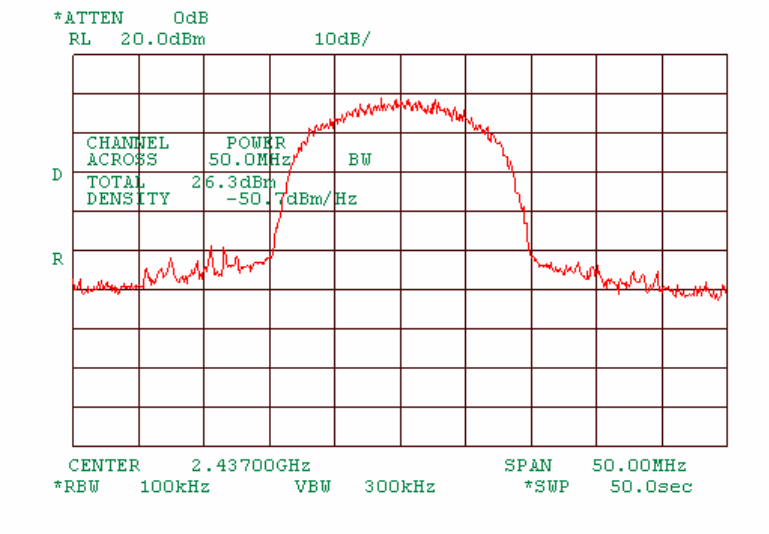

**Plot 1.1.6 Peak output power at high frequency of MA 850, port 1. At 6 Mbps OFDM.**



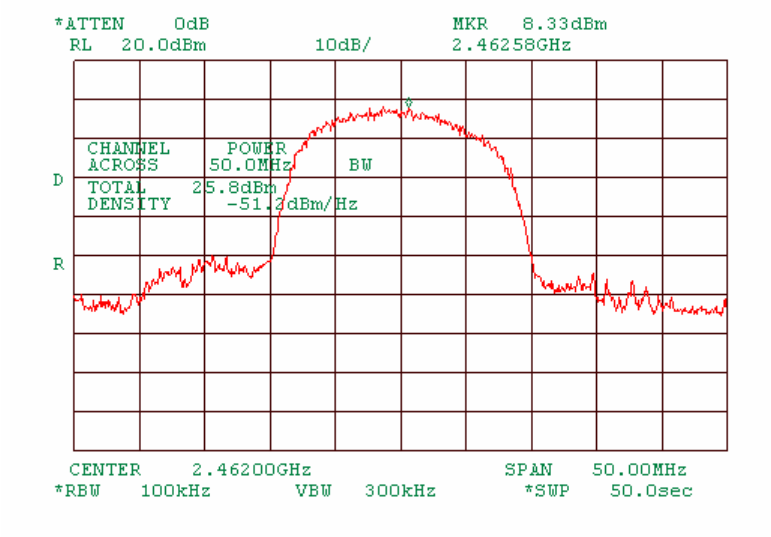
**Plot 1.1.7 Peak output power at low frequency of MA 850, port 2. At 5.5Mbps DSSS.**



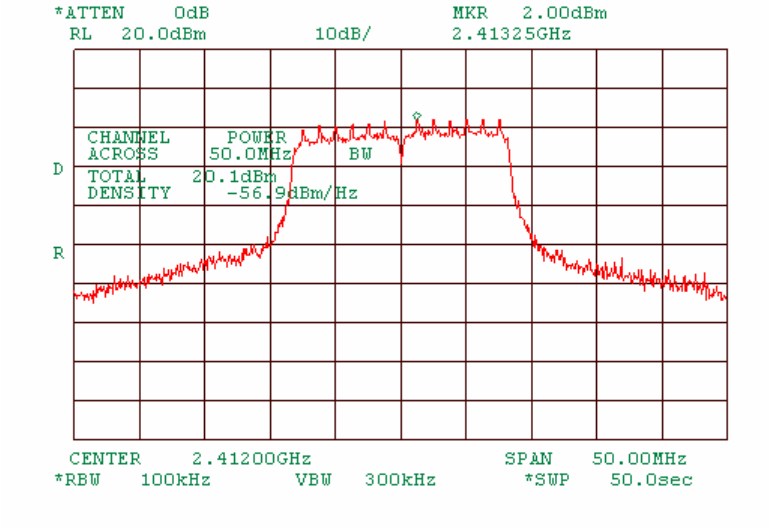

**Plot 1.1.8 Peak output power at mid frequency of MA 850, port 2. At 5.5Mbps DSSS.**



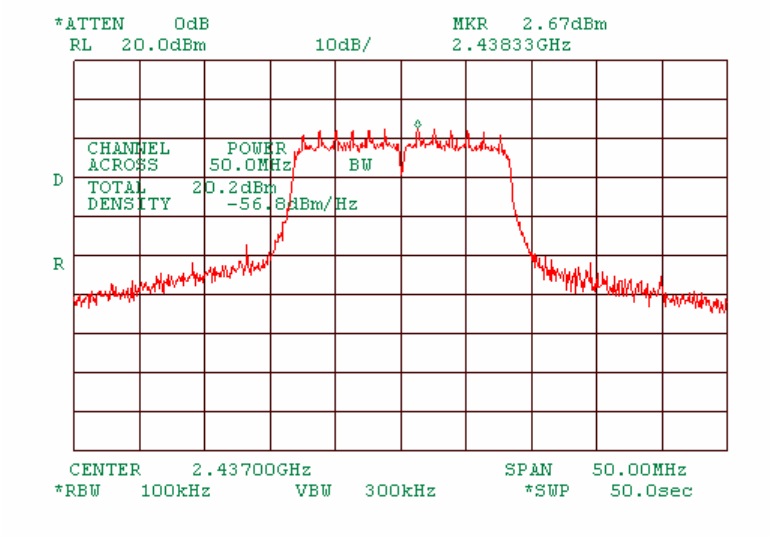
**Plot 1.1.9 Peak output power at high frequency of MA 850, port 2. At 5.5Mbps DSSS.**



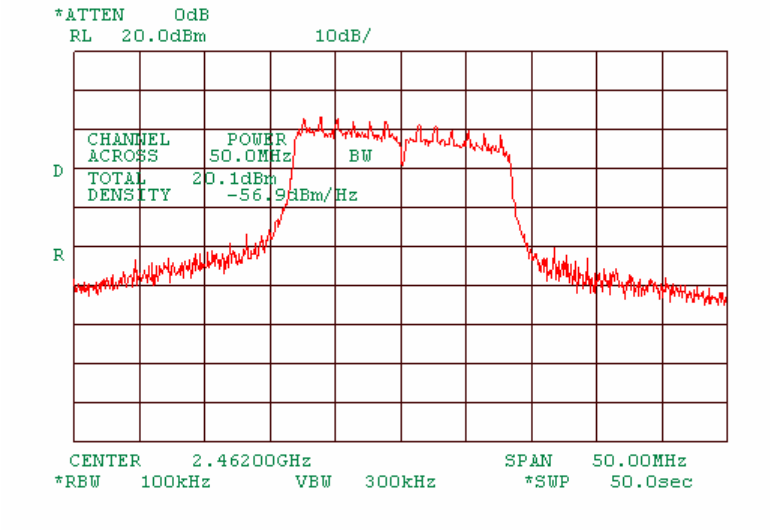

**Plot 1.1.10 Peak output power at low frequency of MA 850, port 2. At 6Mbps OFDM.**



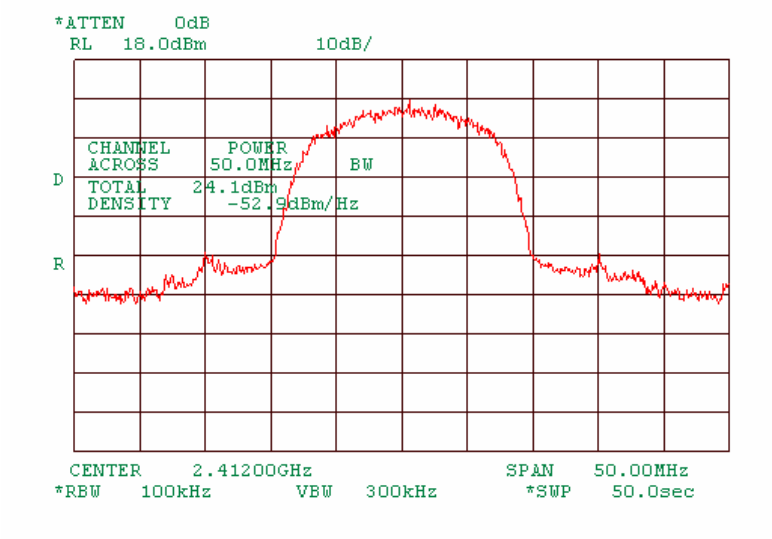
**Plot 1.1.11 Peak output power at mid frequency of MA 850, port 2. At 6Mbps OFDM.**



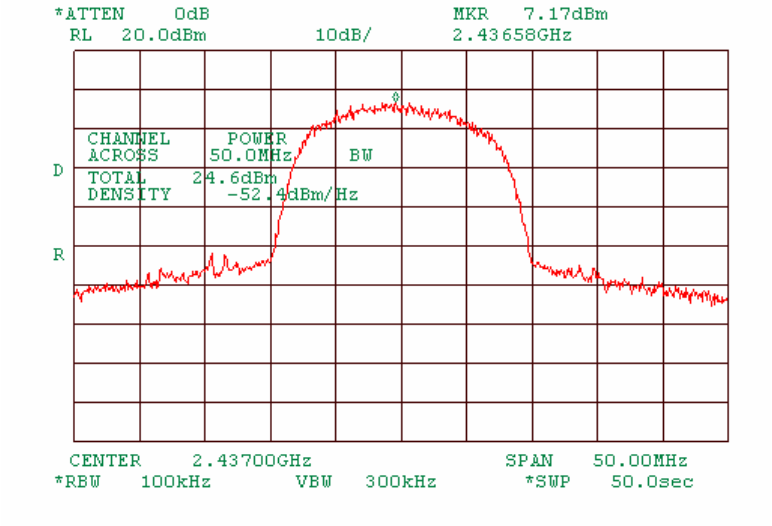

**Plot 1.1.12 Peak output power at high frequency of MA 850, port 2. At 6Mbps OFDM.**



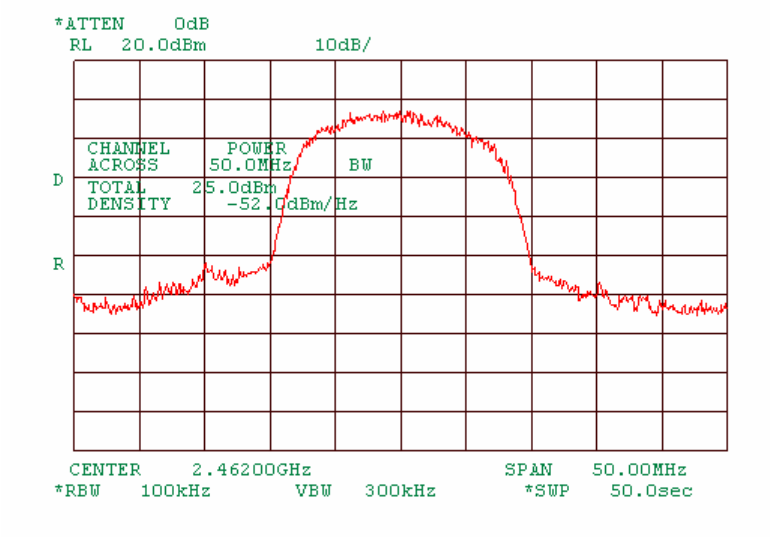
**Plot 1.1.13 Peak output power at low frequency of MA 850, port 3. At 5.5Mbps DSSS.**



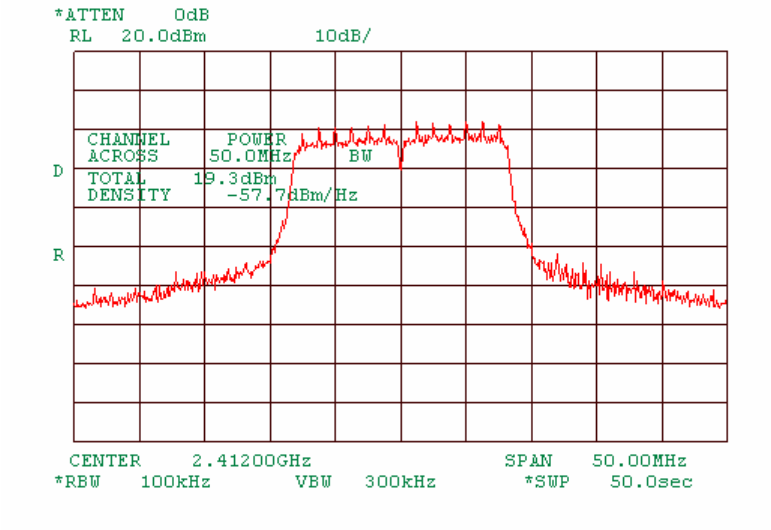

**Plot 1.1.14 Peak output power at mid frequency of MA 850, port 3. At 5.5 Mbps DSSS.**



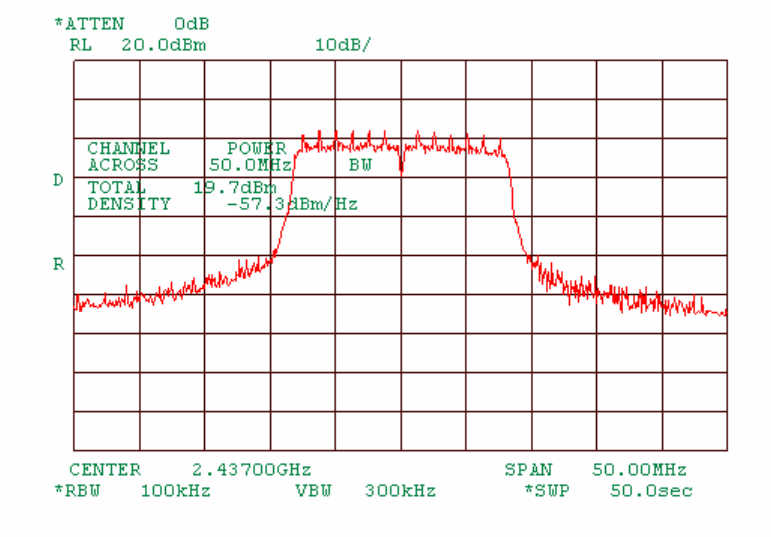
**Plot 1.1.15 Peak output power at high frequency of MA 850, port 3. At 5.5Mbps DSSS.**



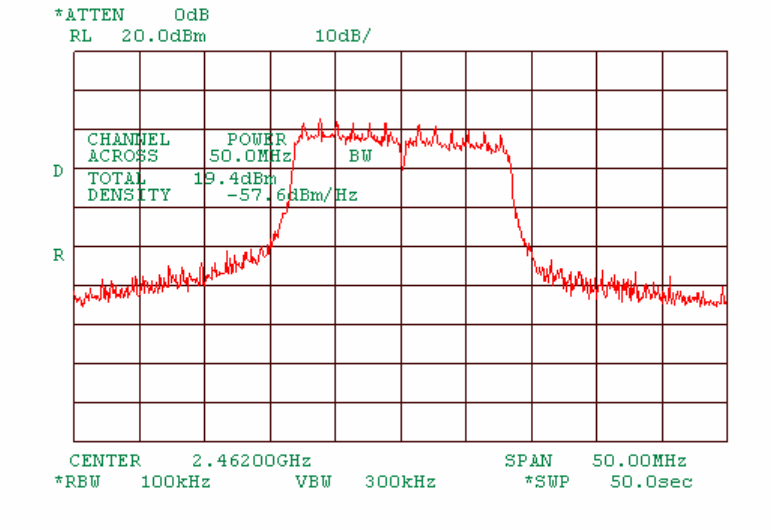

**Plot 1.1.16 Peak output power at low frequency of MA 850, port 3. At 6Mbps OFDM.**



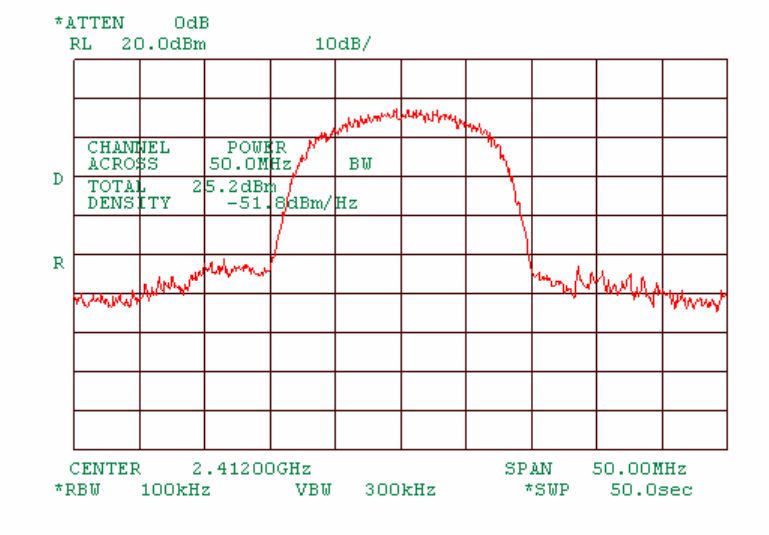
**Plot 1.1.17 Peak output power at mid frequency of MA 850, port 3. At 6Mbps OFDM.**



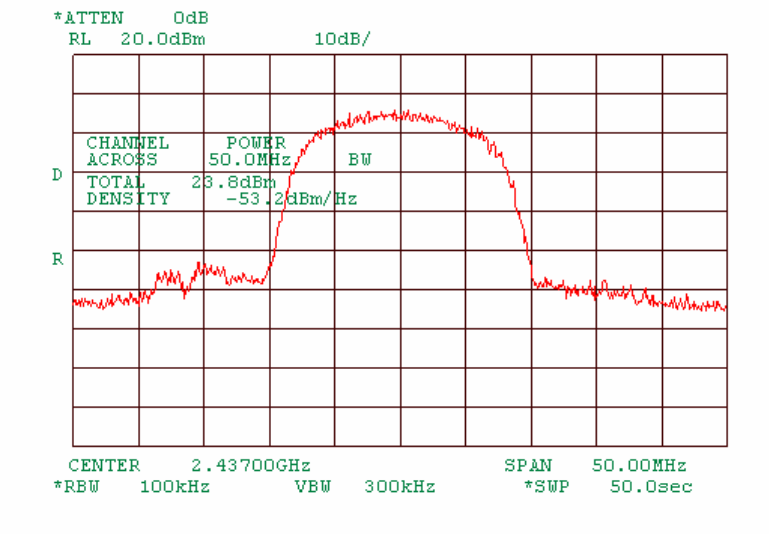

**Plot 1.1.18 Peak output power at high frequency of MA 850. At 6Mbps OFDM.**



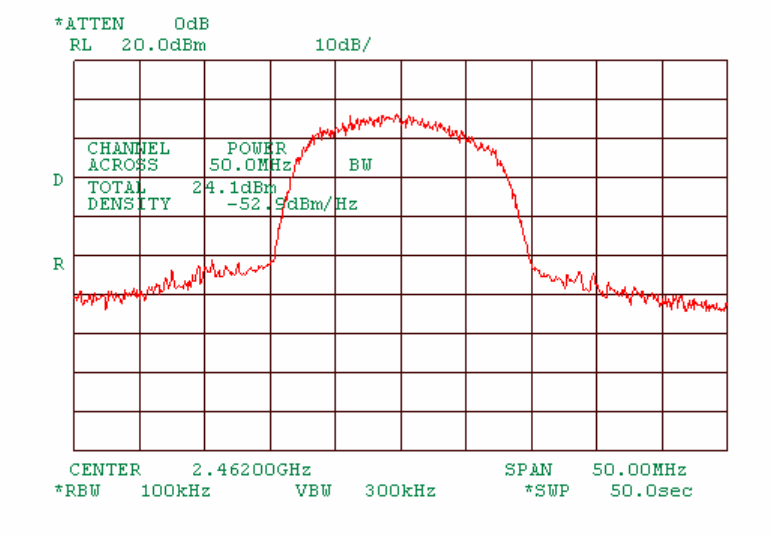
**Plot 1.1.19 Peak output power at low frequency of MA 850, port 4. At 5.5Mbps DSSS.**



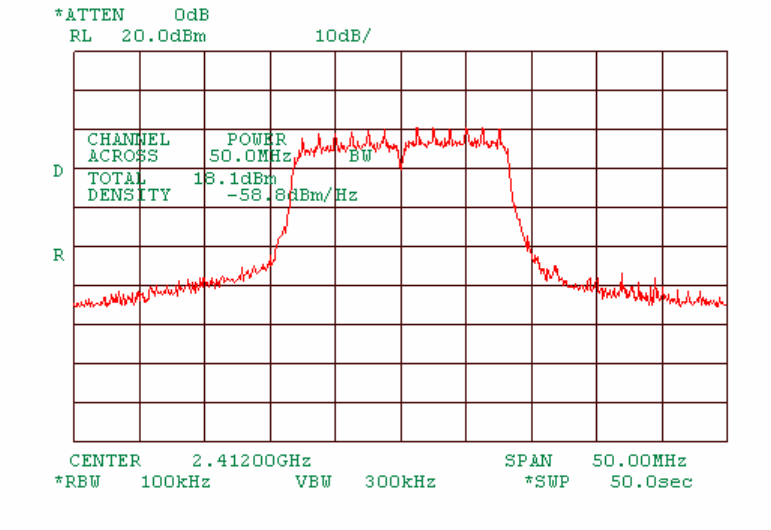

**Plot 1.1.20 Peak output power at mid frequency of MA 850, port 4. At 5.5Mbps DSSS.**



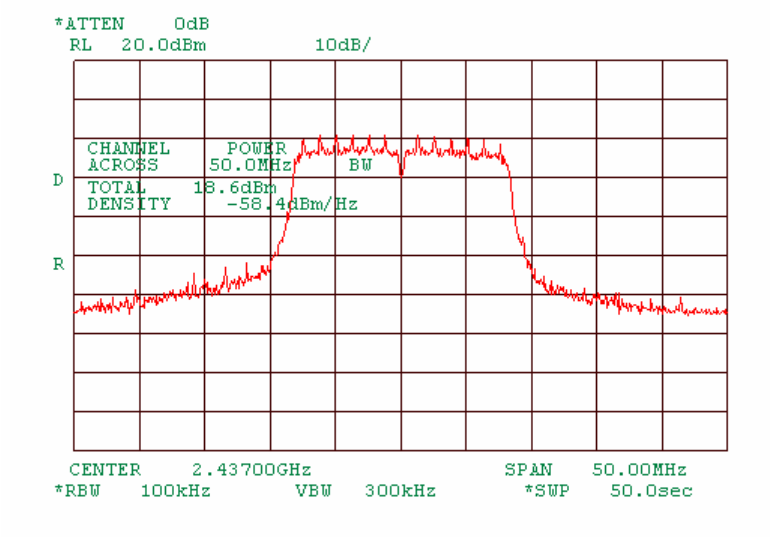
**Plot 1.1.21 Peak output power at high frequency of MA 850, port 4. At 5.5Mbps DSSS.**



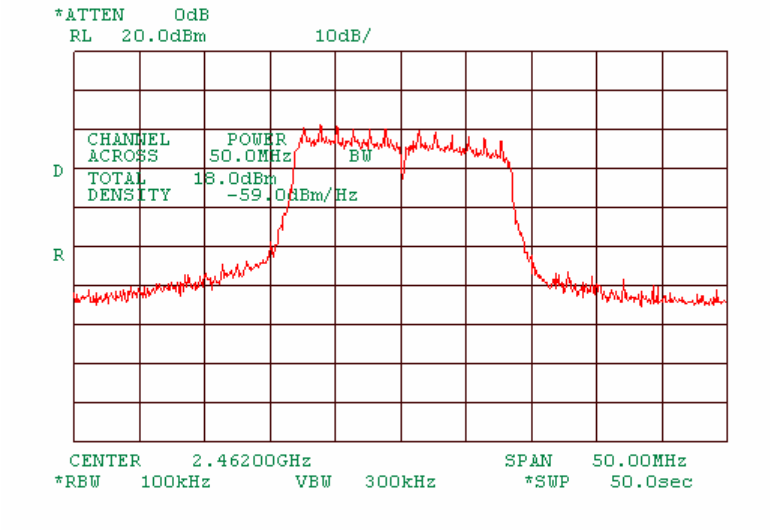

**Plot 1.1.22 Peak output power at low frequency of MA 850, port 4. At 6Mbps OFDM.**



**Plot 1.1.23 Peak output power at mid frequency of MA 850, port 4. At 6Mbps OFDM.**

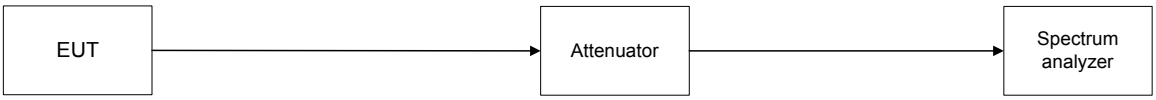



**Plot 1.1.24 Peak output power at high frequency of MA 850, port 4. At 6Mbps OFDM.**



## 1.2 Peak output power

**Figure 1.2.1 Peak output power test setup**




**Photograph 1.2.1 Peak output power test setup**

**Table 1.2.1 Peak output power test results**

| | |
|---|---|
| ASSIGNED FREQUENCY: | 2401 - 2473 MHz |
| ASSEMBLY | MA 850, MA 1000 (Cell 800 mode) |
| MA 1000 SETTINGS | Transmit at 869.0125 and 893.9875 MHz |
| TRANSMITTER OUTPUT POWER SETTINGS: | Maximum |
| DETECTOR USED: | Peak |
| CHANNEL POWER BANDWIDTH | 50 MHz |
| RESOLUTION BANDWIDTH: | 100 kHz |
| VIDEO BANDWIDTH: | 300 kHz |

| Carrier frequency, MHz | Modulating signal | Bit rate, Mbps | Port | Peak output power, dBm | Limit, dBm | Margin*, dB | Verdict |
|---|---|---|---|---|---|---|---|
| | | | | | | | DSSS |
| 2412 | CCK | 5.5 | 2 | 26.1 | 30 | -4.0 | Pass |
| 2437 | | | | 26.6 | 30 | -3.4 | Pass |
| 2462 | | | | 25.6 | 30 | -4.4 | Pass |
| | | | | | | | OFDM |
| 2412 | BPSK | 6 | 2 | 19.8 | 30 | -10.2 | Pass |
| 2437 | | | | 20.3 | 30 | -9.7 | Pass |
| 2462 | | | | 20.1 | 30 | -9.9 | Pass |

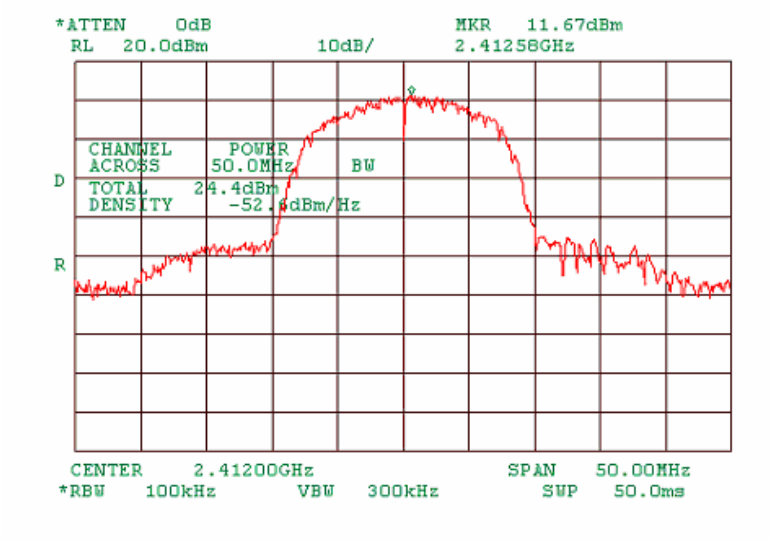
* - Margin = Peak output power – specification limit.

**Reference numbers of test equipment used**

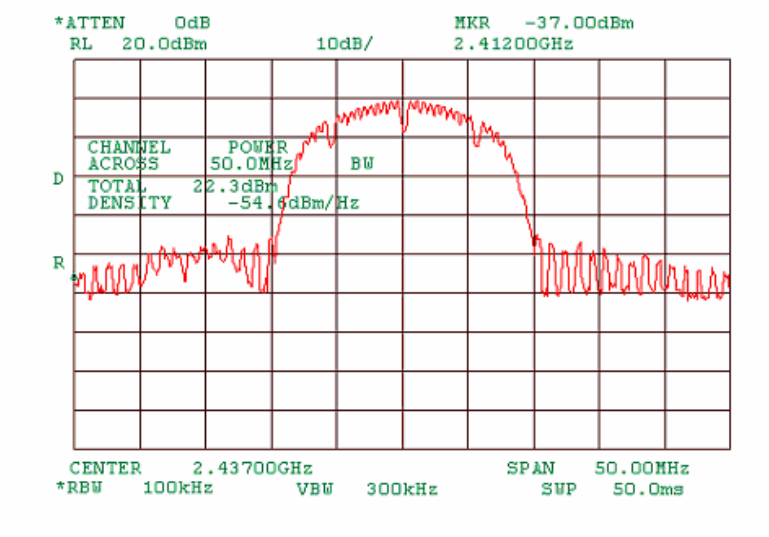
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| HL 1424 | HL 2399 | HL 2524 | | | | | |

Full description is given in Appendix A.

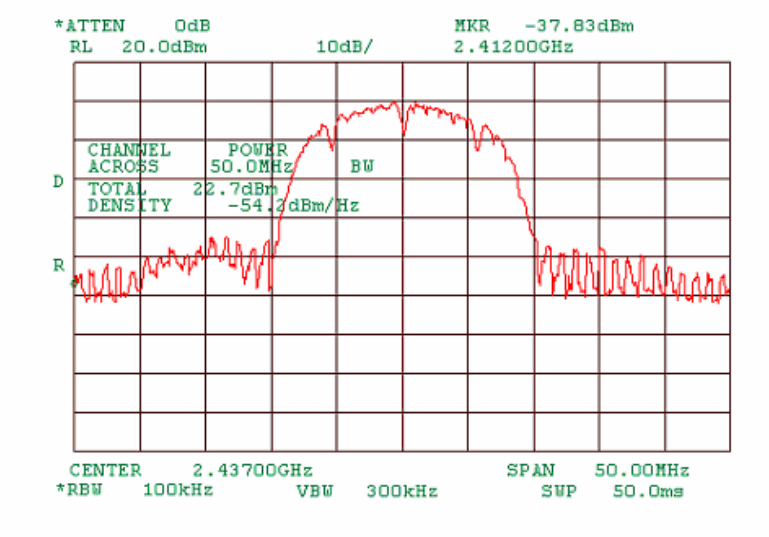
**Plot 1.2.1 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 1. At 5.5Mbps DSSS.**



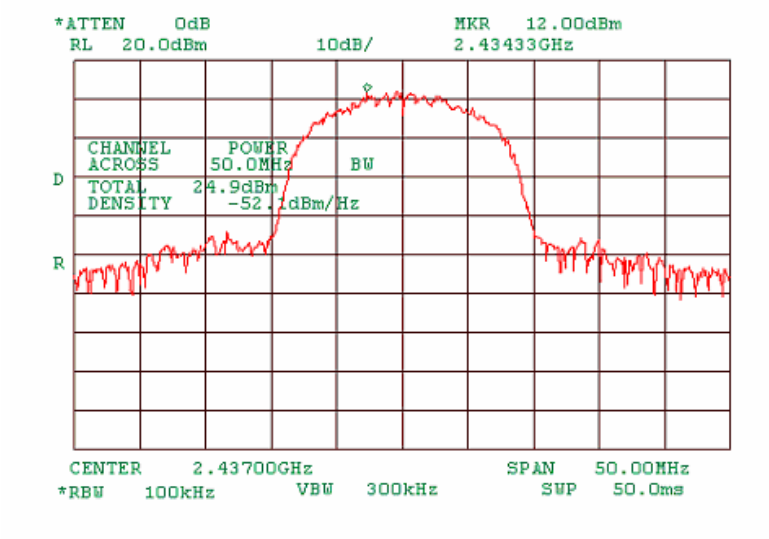
**Plot 1.2.2 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 1. At 1Mbps DSSS.**



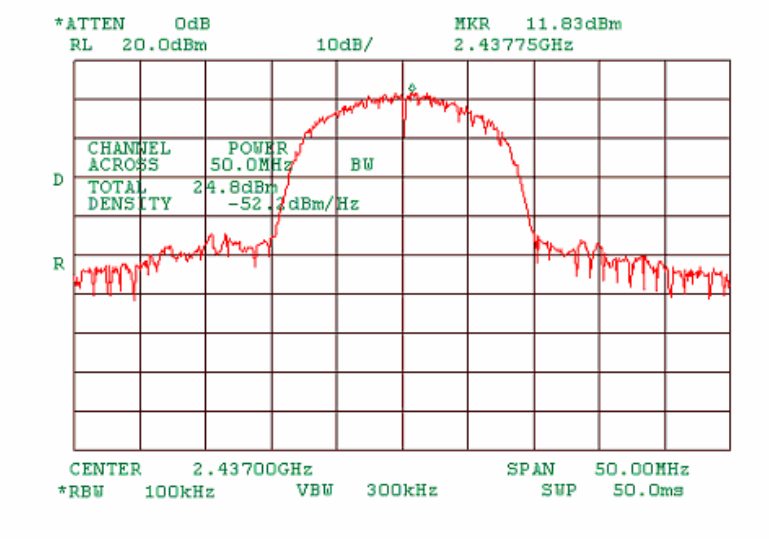

**Plot 1.2.3 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 1. At 2Mbps DSSS.**



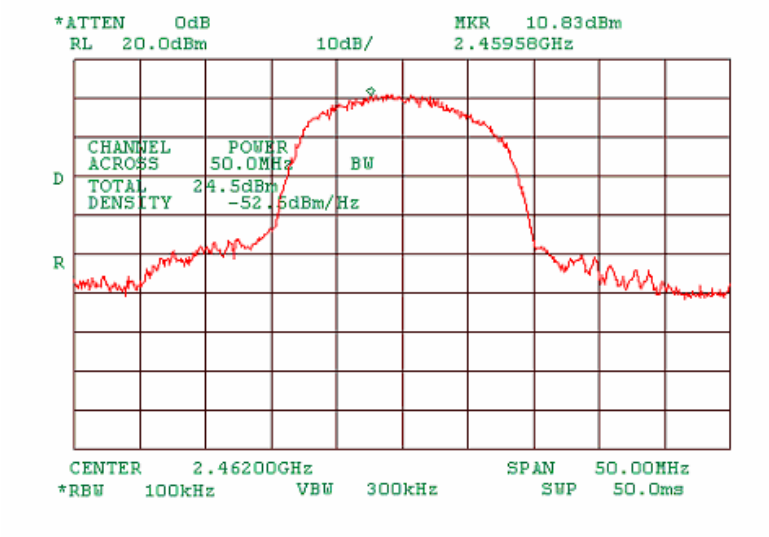
**Plot 1.2.4 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 1. At 5.5Mbps DSSS.**



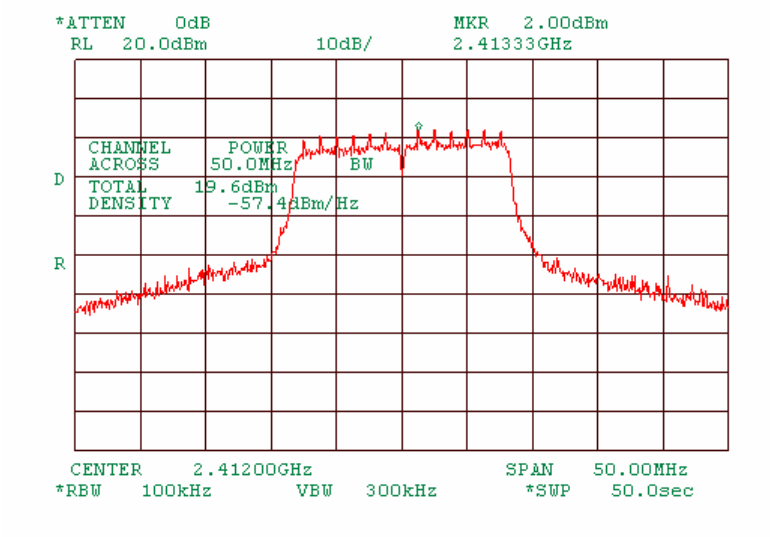

**Plot 1.2.5 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 1. At 11Mbps DSSS.**



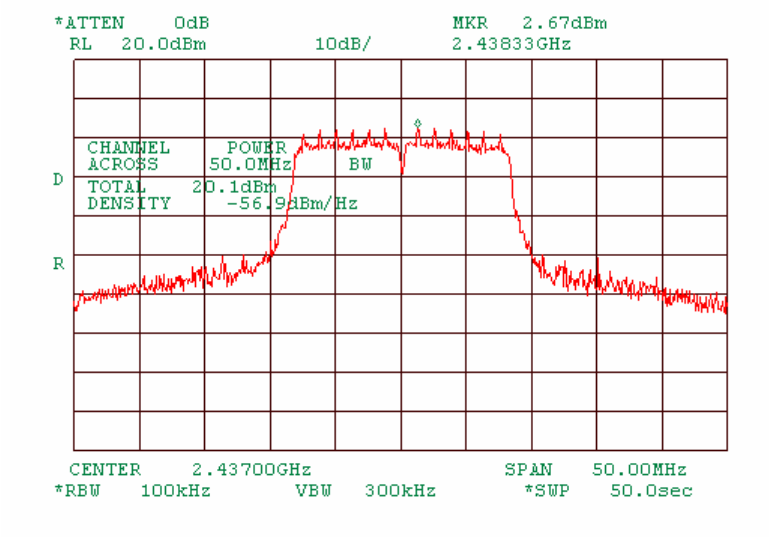
**Plot 1.2.6 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 1. At 5.5Mbps DSSS.**



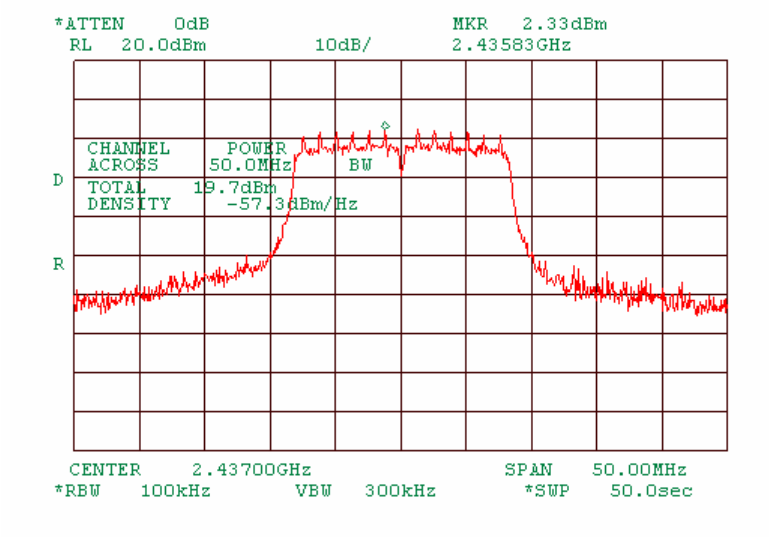
**Plot 1.2.7 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 1. At 6 Mbps OFDM.**



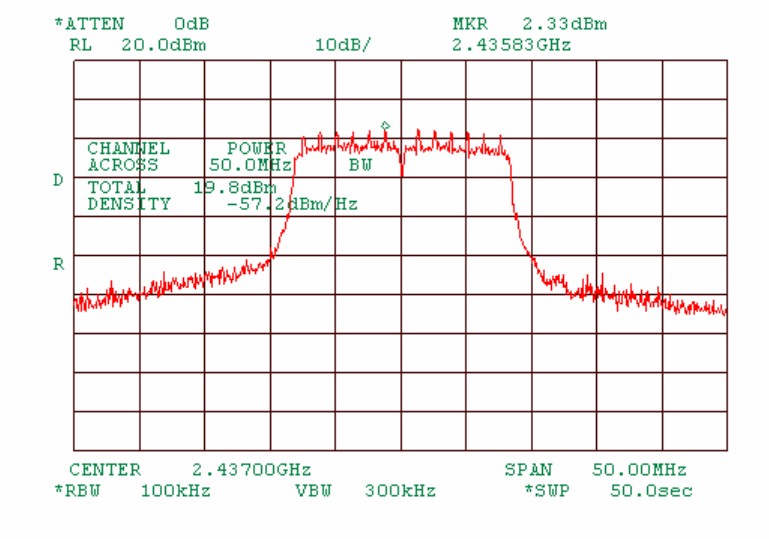
**Plot 1.2.8 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 1. At 6Mbps OFDM.**



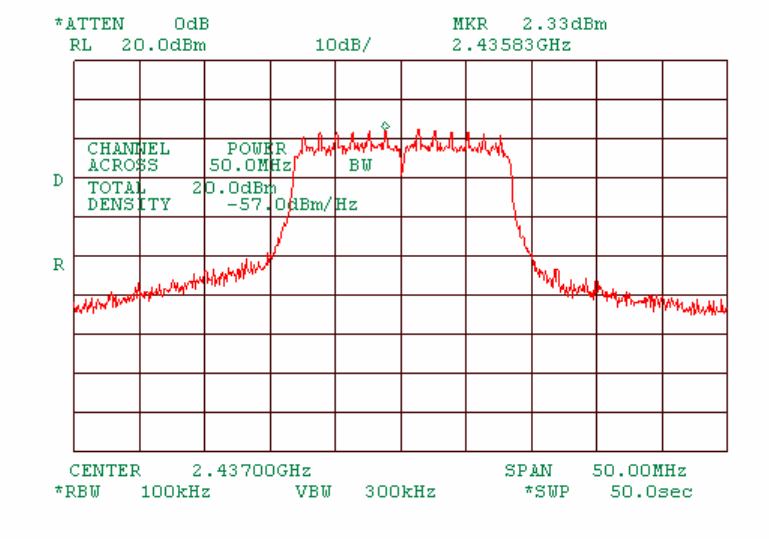

**Plot 1.2.9 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 1. At 9Mbps OFDM.**



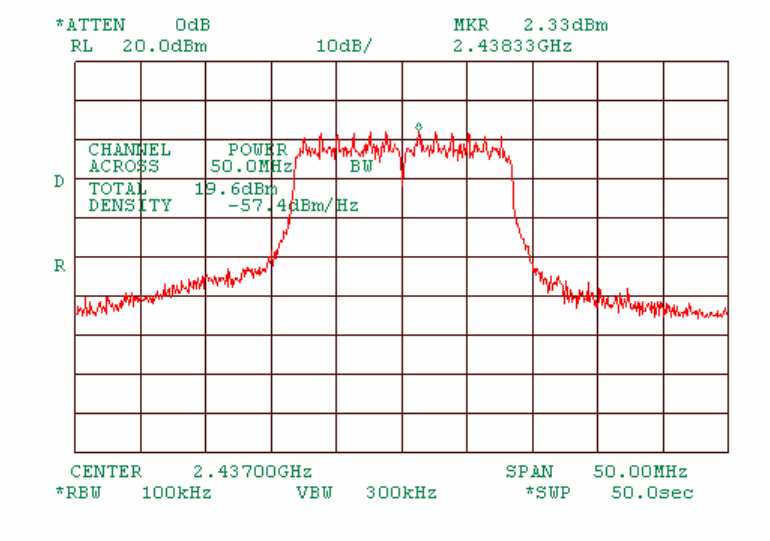
**Plot 1.2.10 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 1. At 12Mbps OFDM.**



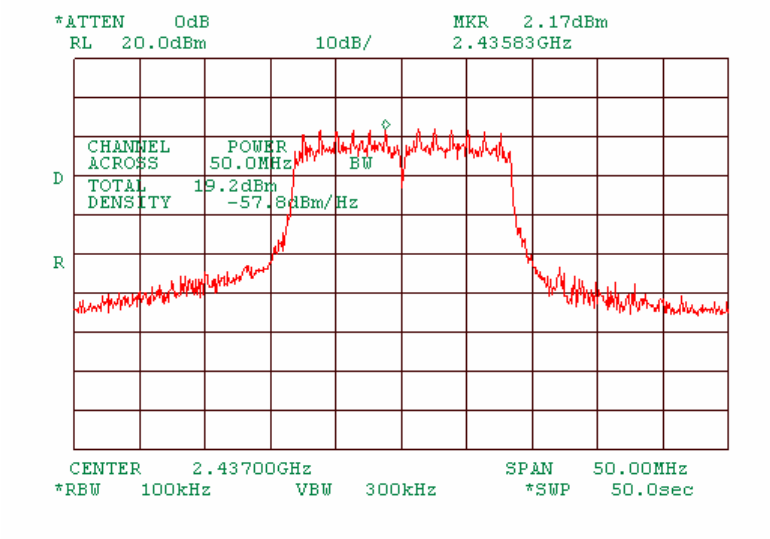

**Plot 1.2.11 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 1. At 18Mbps OFDM.**



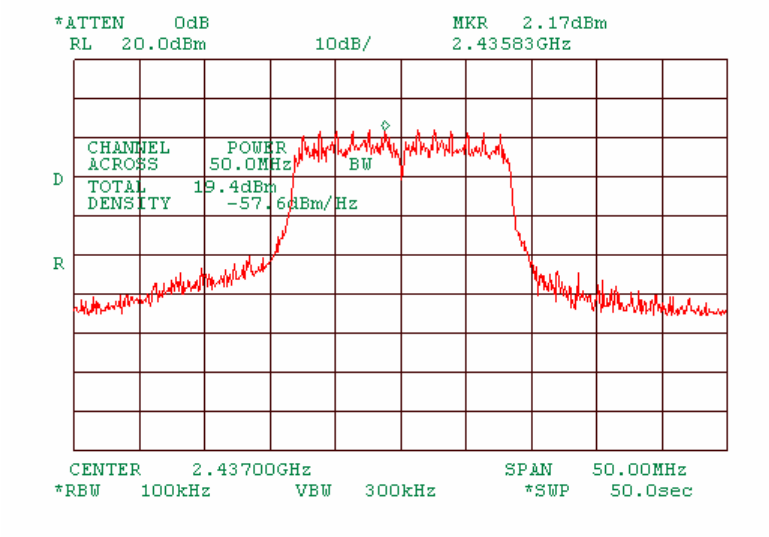
**Plot 1.2.12 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 1. At 24Mbps OFDM.**



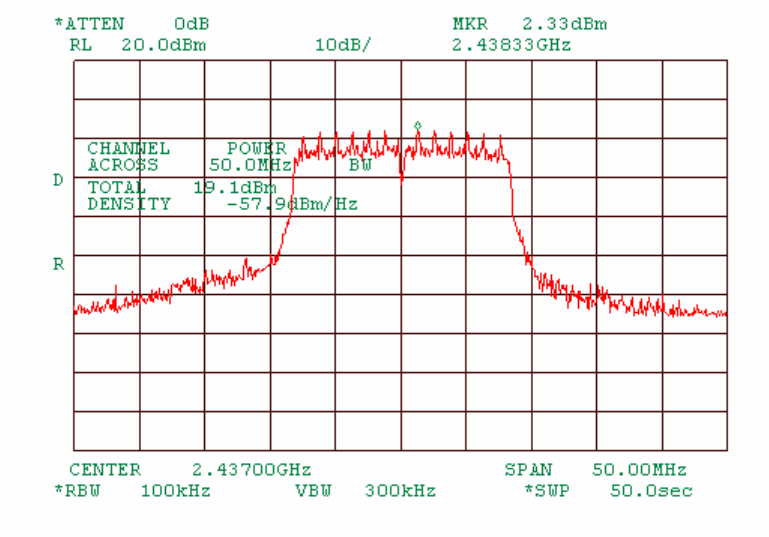

**Plot 1.2.13 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 1. At 36Mbps OFDM.**



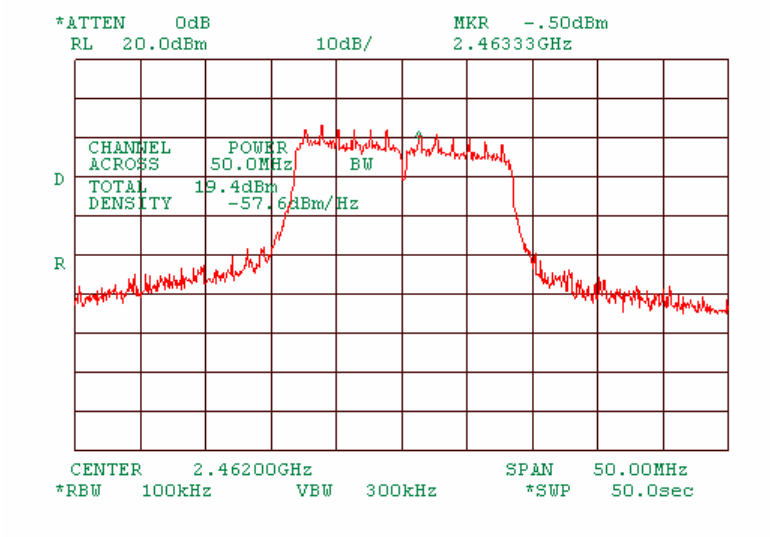
**Plot 1.2.14 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 1. At 48Mbps OFDM.**



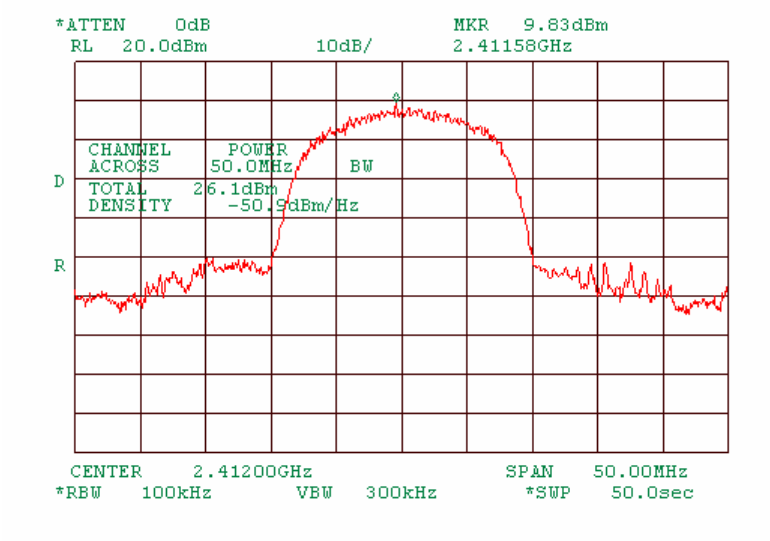

**Plot 1.2.15 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 1. At 54Mbps OFDM.**



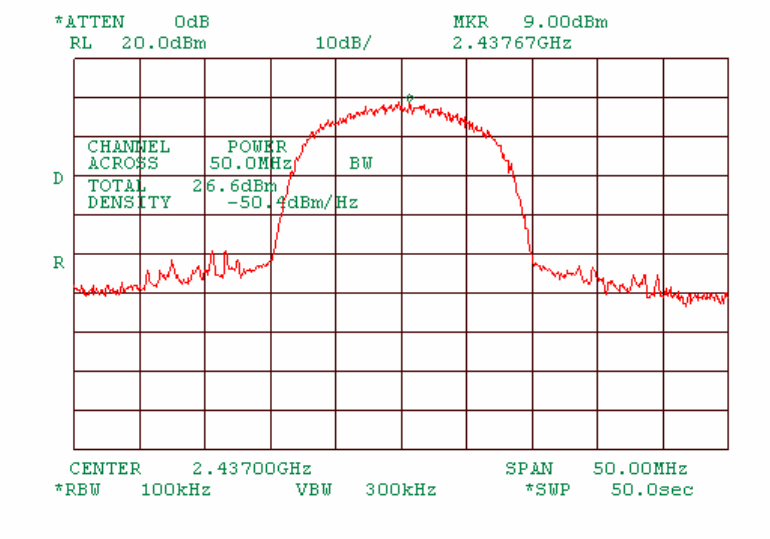
**Plot 1.2.16 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 1. At 6 Mbps OFDM.**



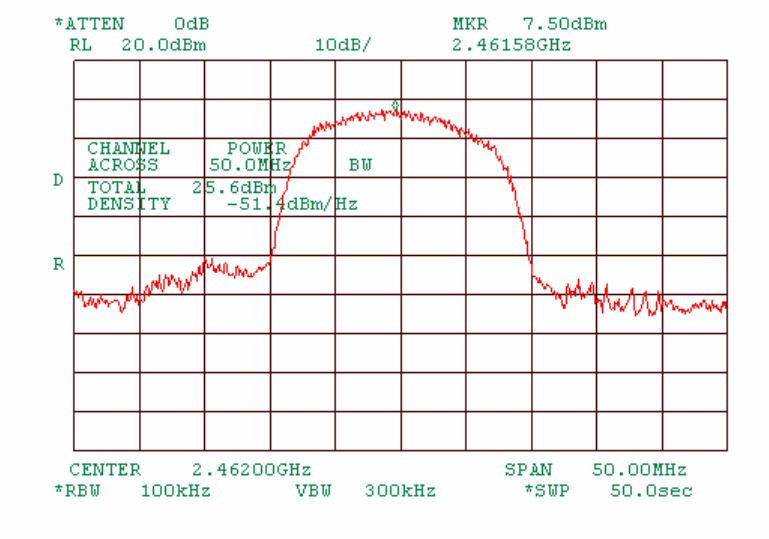
**Plot 1.2.17 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 2. At 5.5Mbps DSSS.**



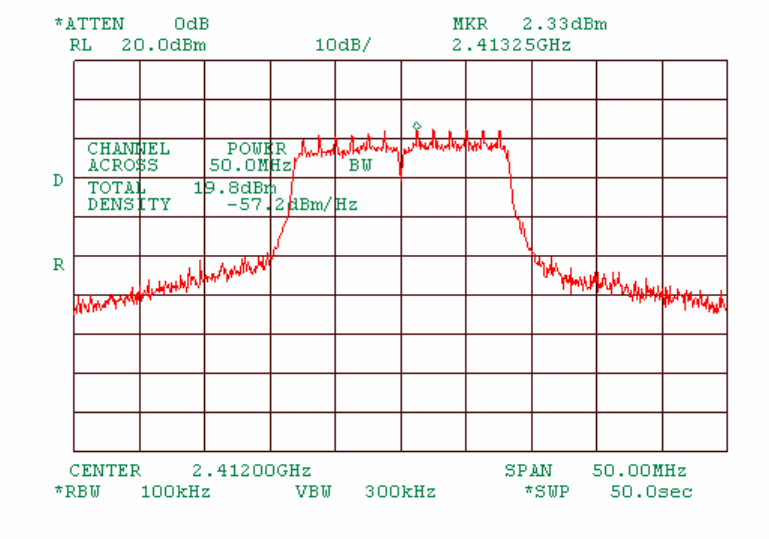

**Plot 1.2.18 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 2. At 5.5Mbps DSSS.**



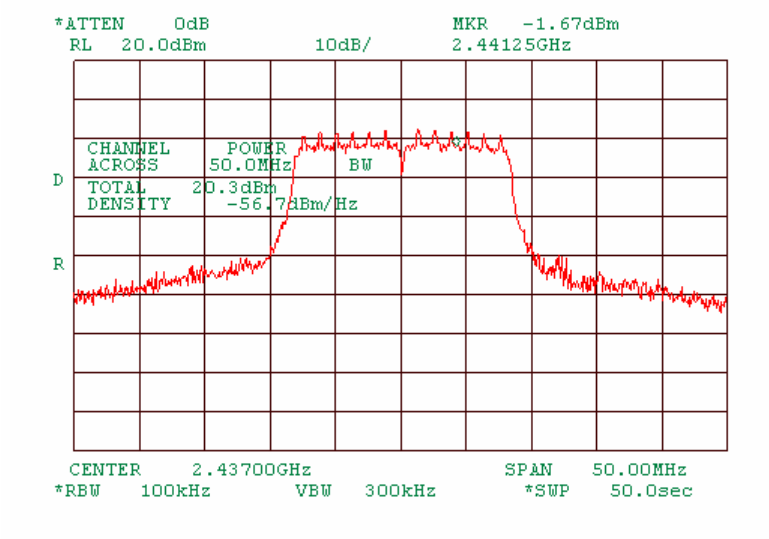
**Plot 1.2.19 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 2. At 5.5Mbps DSSS.**



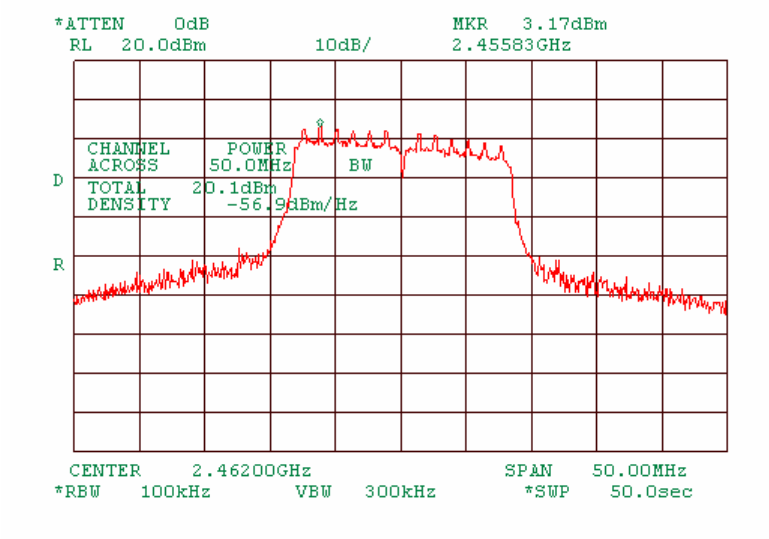

**Plot 1.2.20 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 2. At 6Mbps OFDM.**



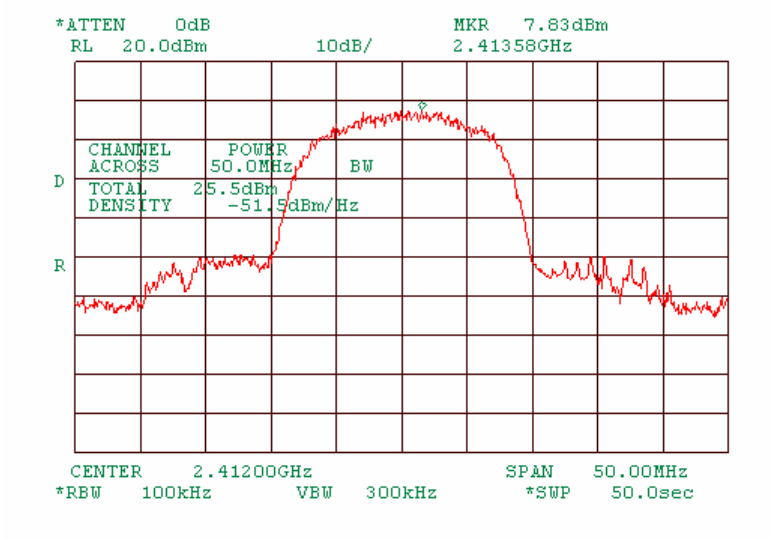
**Plot 1.2.21 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 2. At 6Mbps OFDM.**



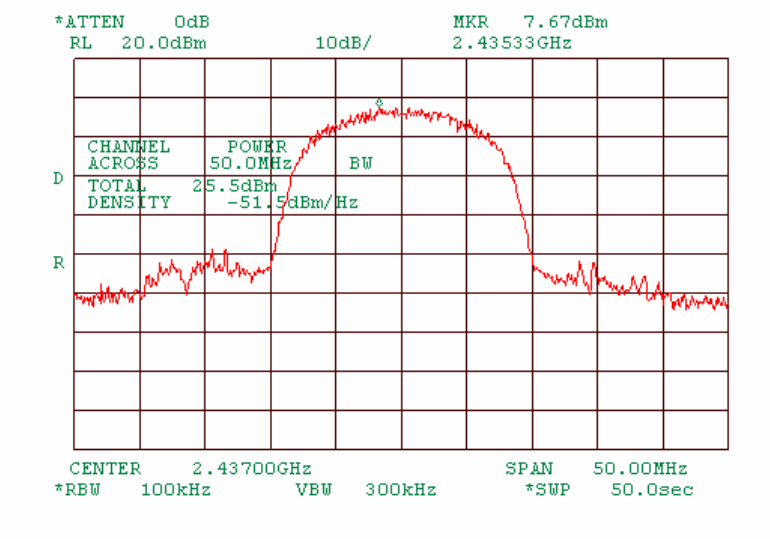

**Plot 1.2.22 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 2. At 6Mbps OFDM.**



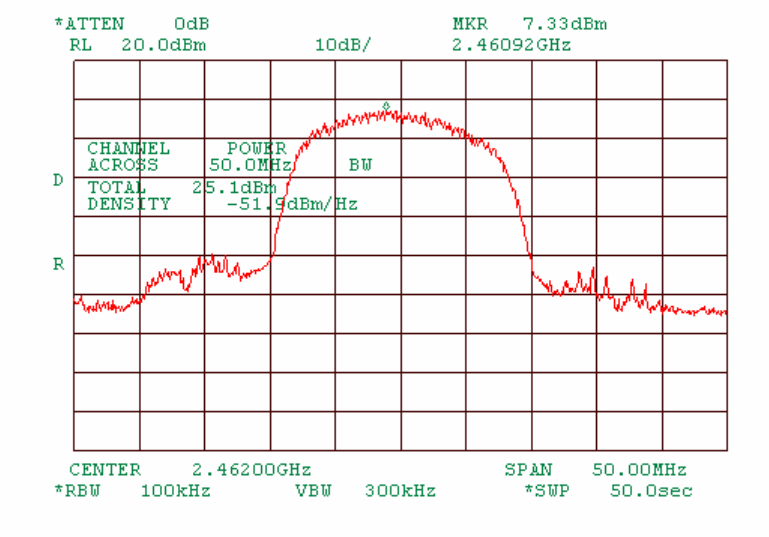
**Plot 1.2.23 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 3. At 5.5Mbps DSSS.**



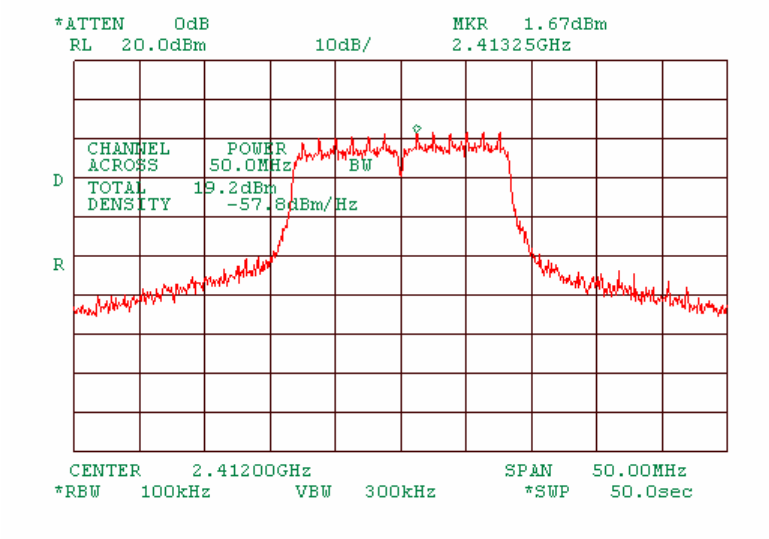

**Plot 1.2.24 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 3. At 5.5Mbps DSSS.**



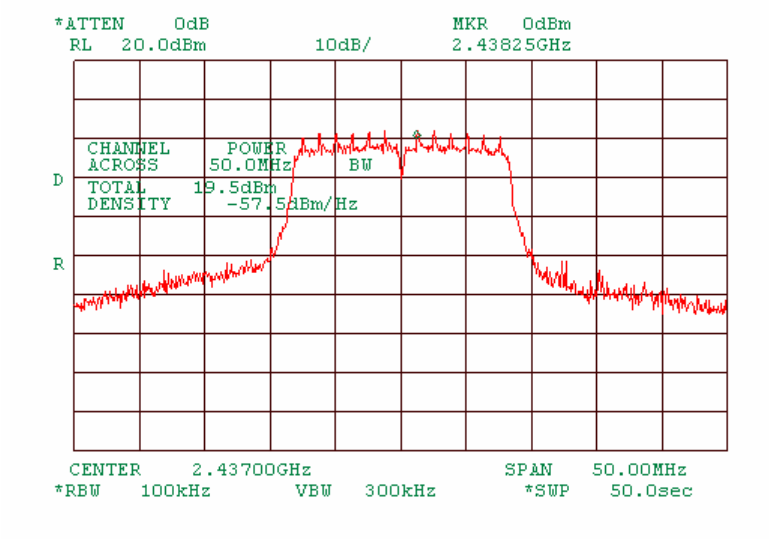
**Plot 1.2.25 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 3. At 5.5Mbps DSSS.**



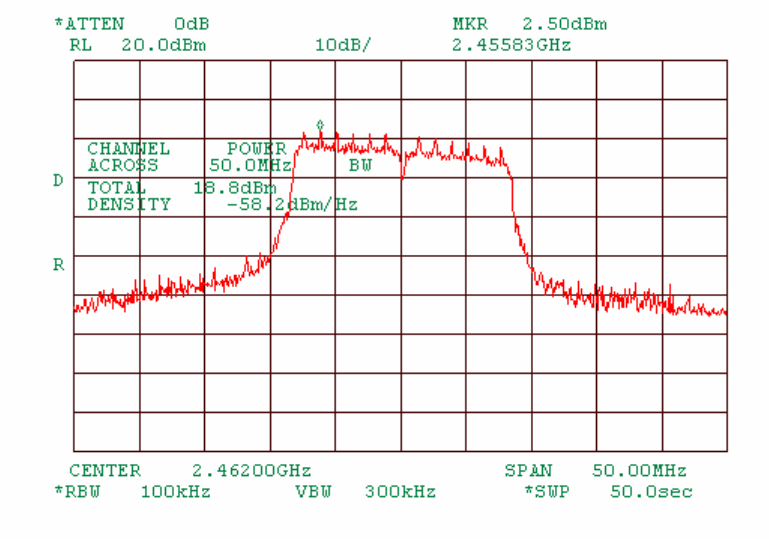

**Plot 1.2.26 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 3. At 6Mbps OFDM.**



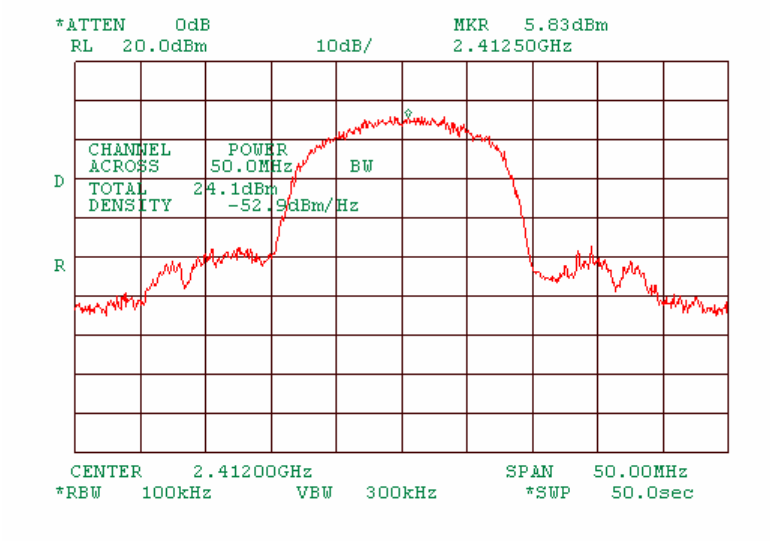
**Plot 1.2.27 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 3. At 6Mbps OFDM.**



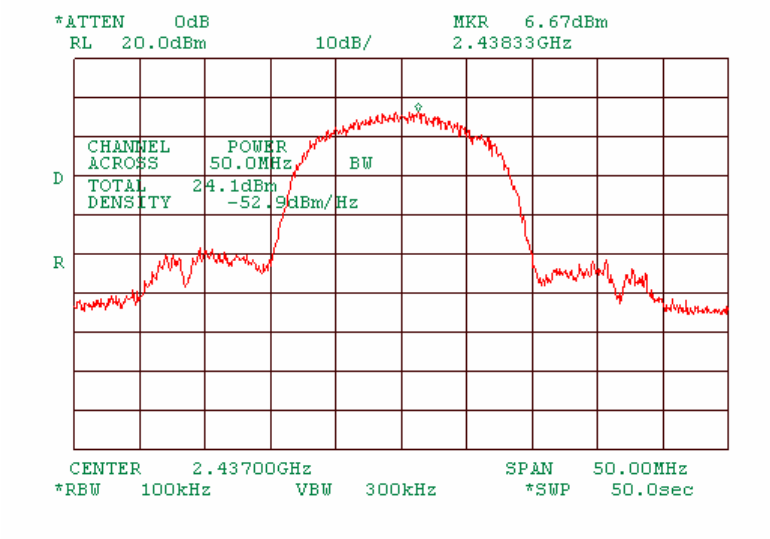

**Plot 1.2.28 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 3. At 6Mbps OFDM.**



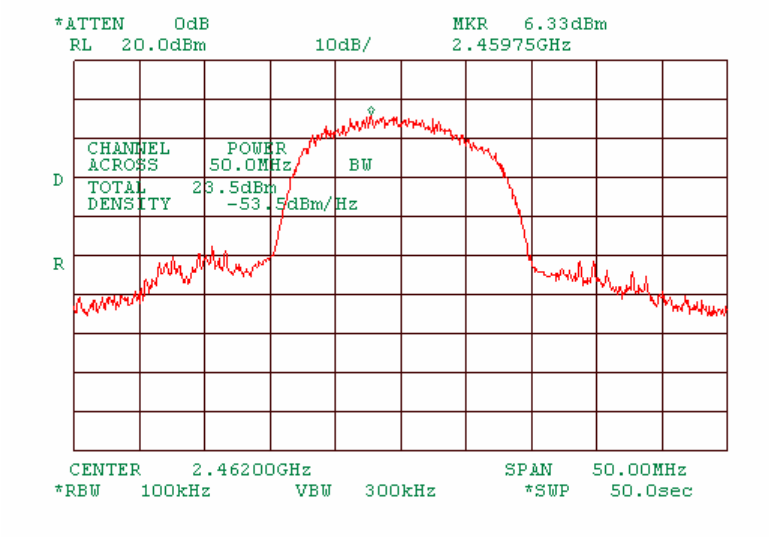
**Plot 1.2.29 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 4. At 5.5Mbps DSSS.**



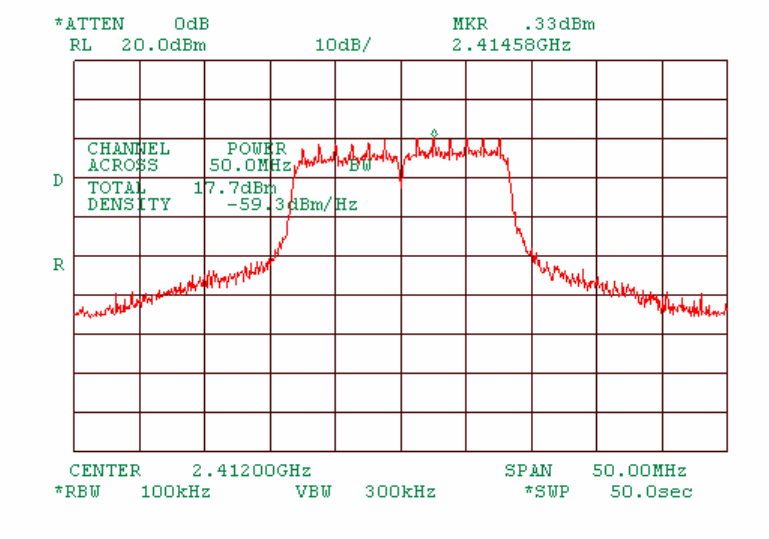

**Plot 1.2.30 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 4. At 5.5Mbps DSSS.**



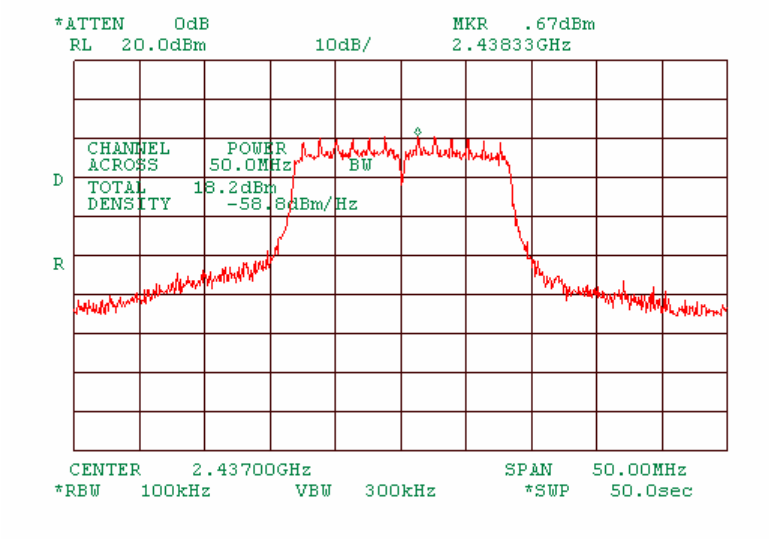
**Plot 1.2.31 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 4. At 5.5Mbps DSSS.**



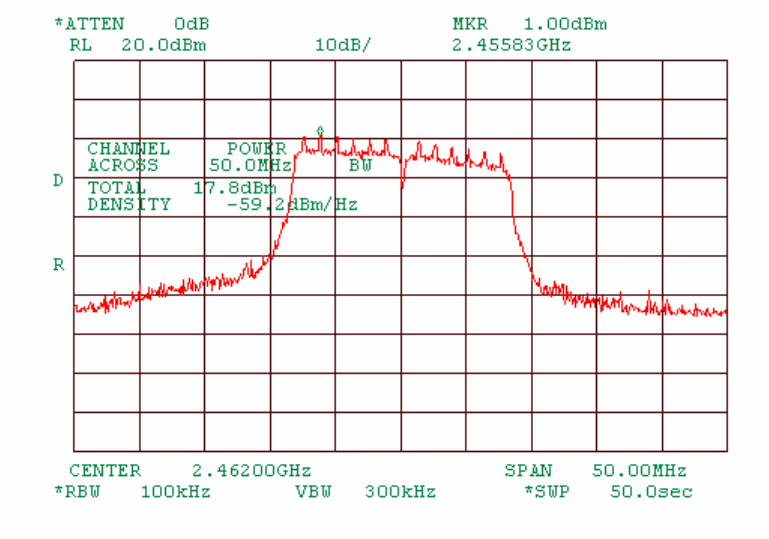

**Plot 1.2.32 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 4. At 6Mbps OFDM.**



**Plot 1.2.33 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 4. At 6Mbps OFDM.**

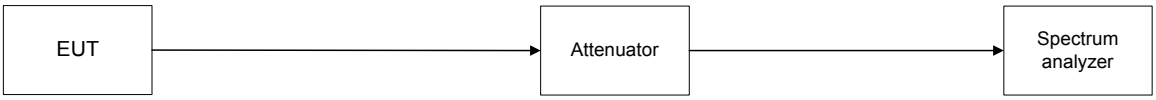



**Plot 1.2.34 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 4. At 6Mbps OFDM.**



## 1.3 Peak output power

**Figure 1.3.1 Peak output power test setup**




**Photograph 1.3.1 Peak output power test setup**

**Table 1.3.1 Peak output power test results**

| | |
|---|---|
| ASSIGNED FREQUENCY: | 2401 - 2473 MHz |
| ASSEMBLY | MA 850, MA 1000 (PCS 1900 mode) |
| MA 1000 SETTINGS | Transmit at 1930.0125 and 1989.9875 MHz |
| TRANSMITTER OUTPUT POWER SETTINGS: | Maximum |
| DETECTOR USED: | Peak |
| CHANNEL POWER BANDWIDTH | 50 MHz |
| RESOLUTION BANDWIDTH: | 100 kHz |
| VIDEO BANDWIDTH: | 300 kHz |

| Carrier frequency, MHz | Modulating signal | Bit rate, Mbps | Port | Peak output power, dBm | Limit, dBm | Margin*, dB | Verdict |
|---|---|---|---|---|---|---|---|
| | | | | | | | DSSS |
| 2412 | CCK | 5.5 | 2 | 26.6 | 30 | -3.4 | Pass |
| 2437 | | | | 25.2 | 30 | -4.8 | Pass |
| 2462 | | | | 26.4 | 30 | -3.6 | Pass |
| | | | | | | | OFDM |
| 2412 | BPSK | 6 | 2 | 19.9 | 30 | -10.1 | Pass |
| 2437 | | | | 20.2 | 30 | -9.8 | Pass |
| 2462 | | | | 19.3 | 30 | -10.7 | Pass |

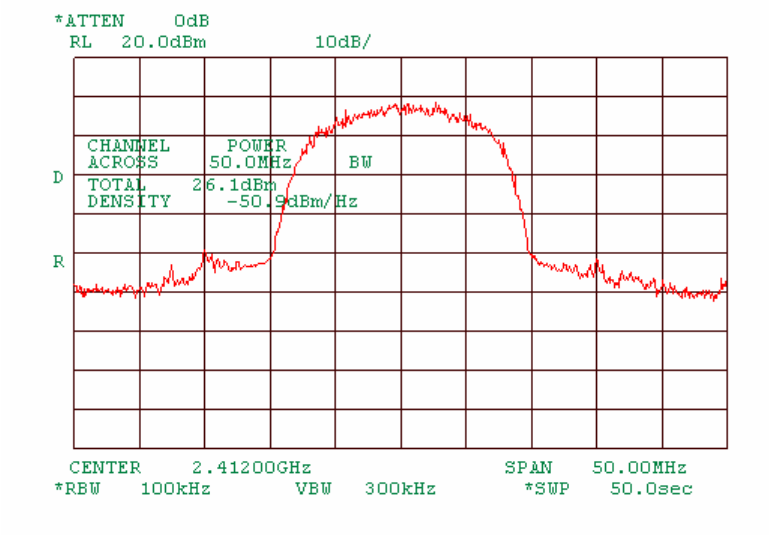
* - Margin = Peak output power – specification limit.

**Reference numbers of test equipment used**

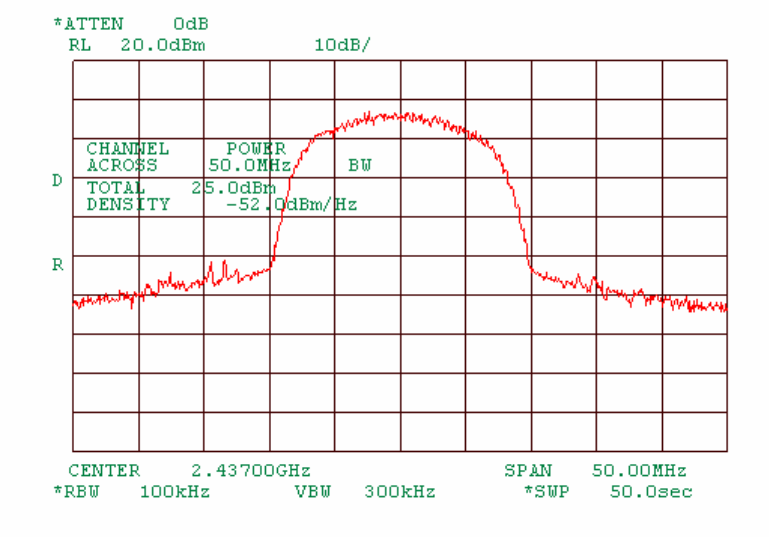
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| HL 1424 | HL 1651 | HL 2399 | | | | | |

Full description is given in Appendix A.

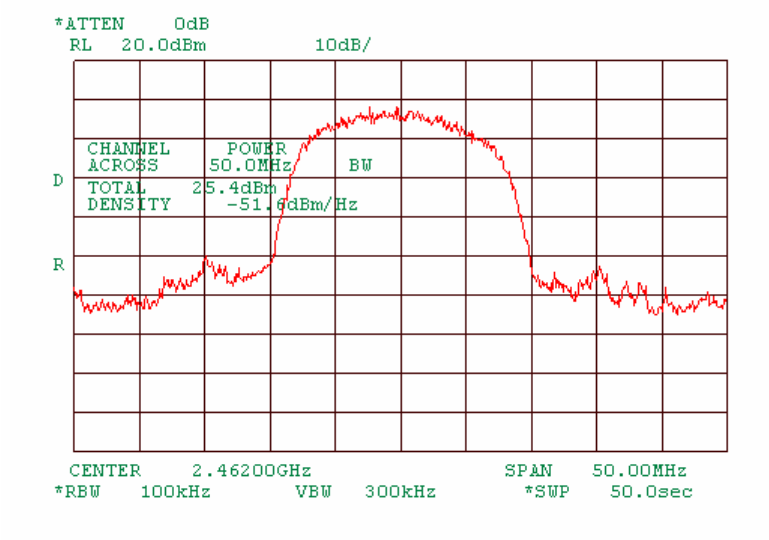
**Plot 1.3.1 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 1. At 5.5Mbps DSSS.**



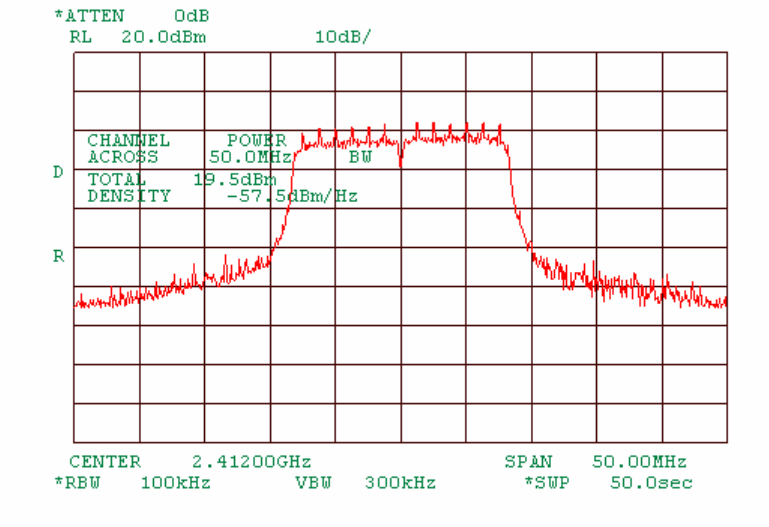

**Plot 1.3.2 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 1. At 5.5Mbps DSSS.**



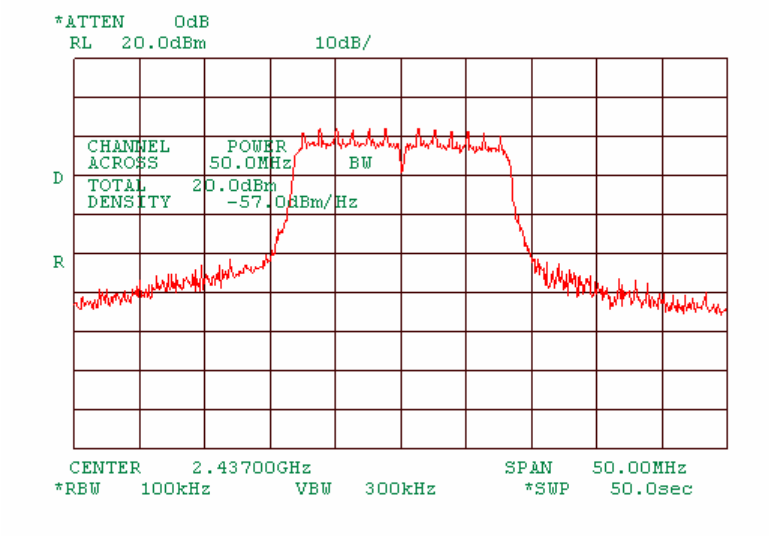
**Plot 1.3.3 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 1. At 5.5Mbps DSSS.**



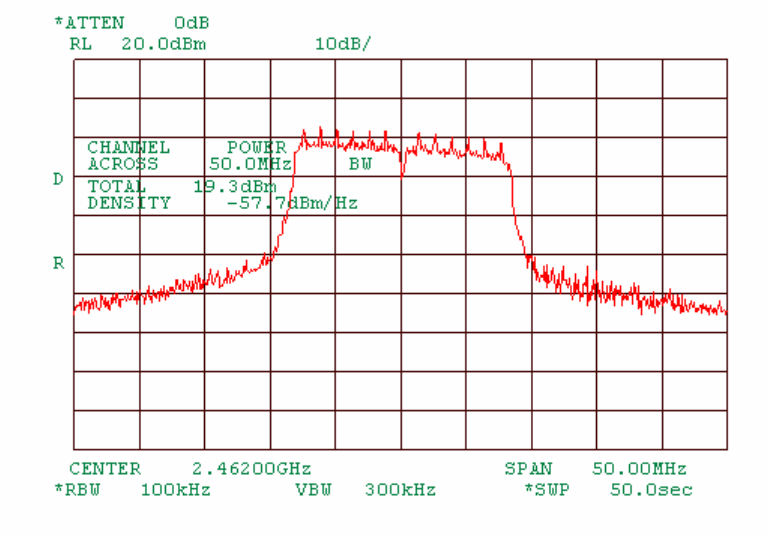

**Plot 1.3.4 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 1. At 6 Mbps OFDM.**



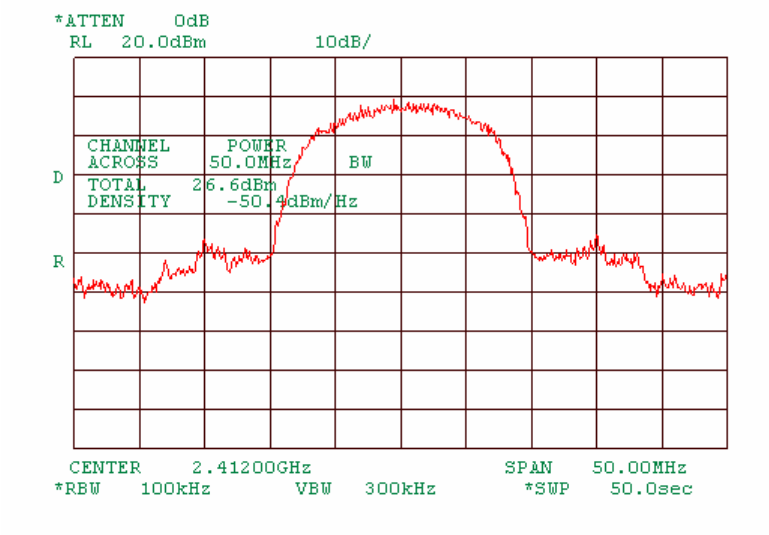
**Plot 1.3.5 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 1. At 6Mbps OFDM.**



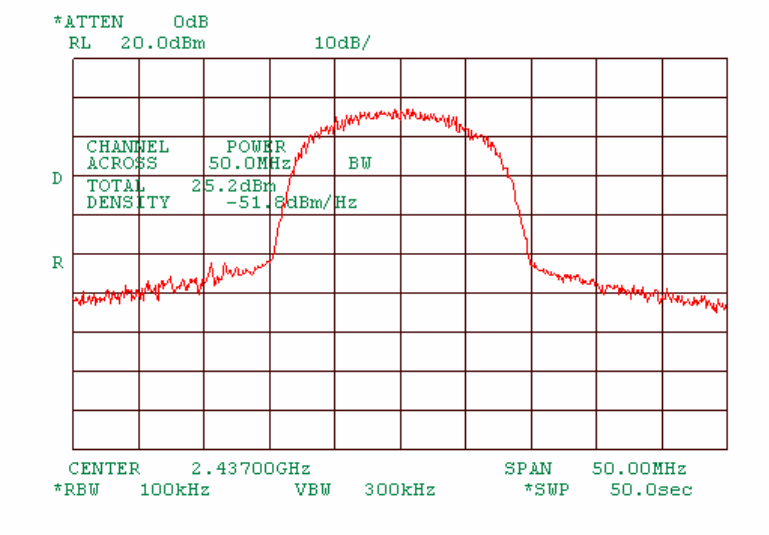

**Plot 1.3.6 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 1. At 6 Mbps OFDM.**



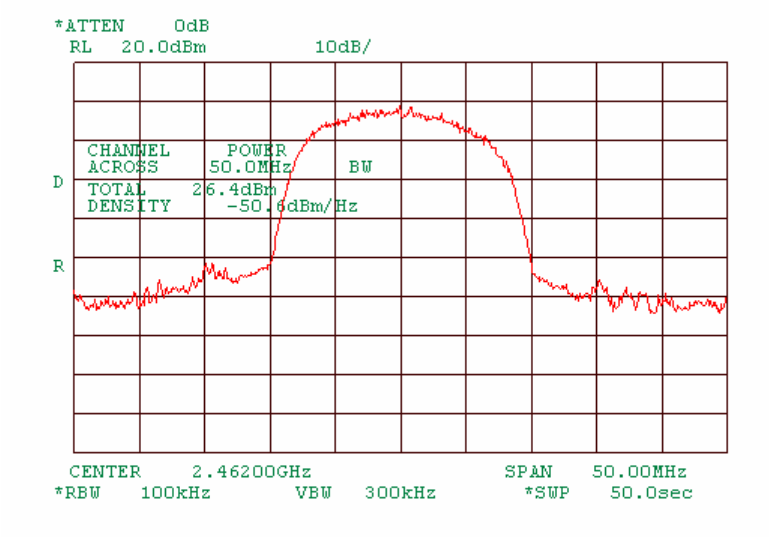
**Plot 1.3.7 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 2. At 5.5Mbps DSSS.**



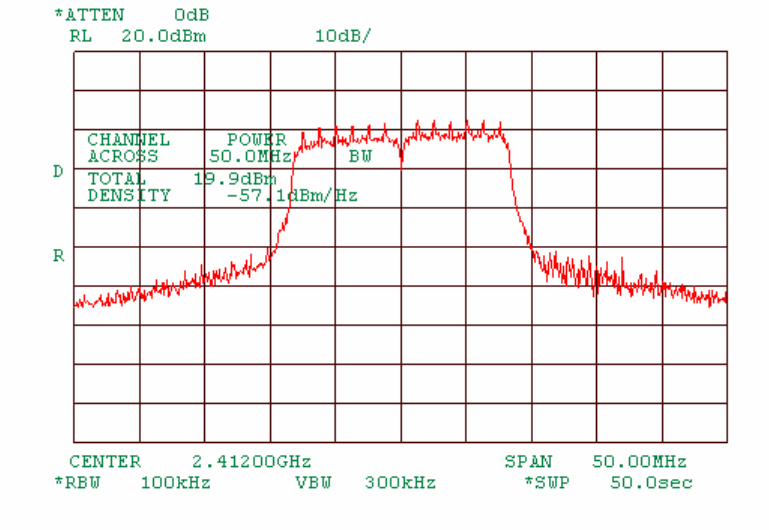

**Plot 1.3.8 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 2. At 5.5Mbps DSSS.**



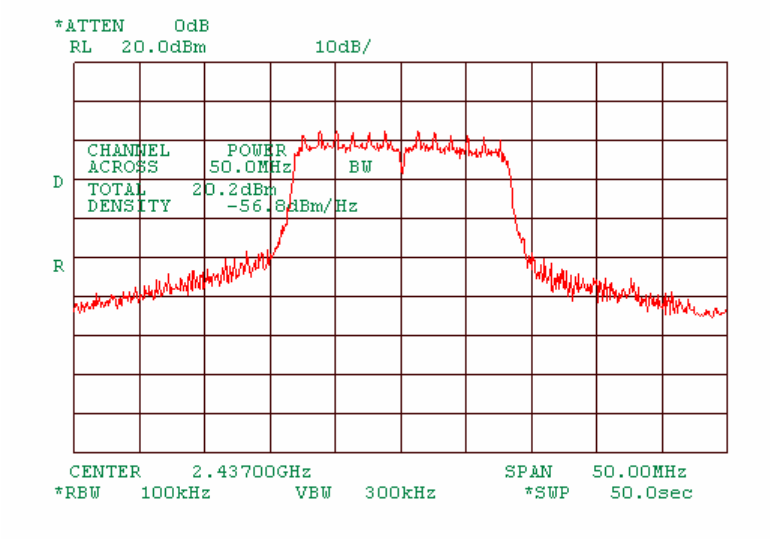
**Plot 1.3.9 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 2. At 5.5Mbps DSSS.**



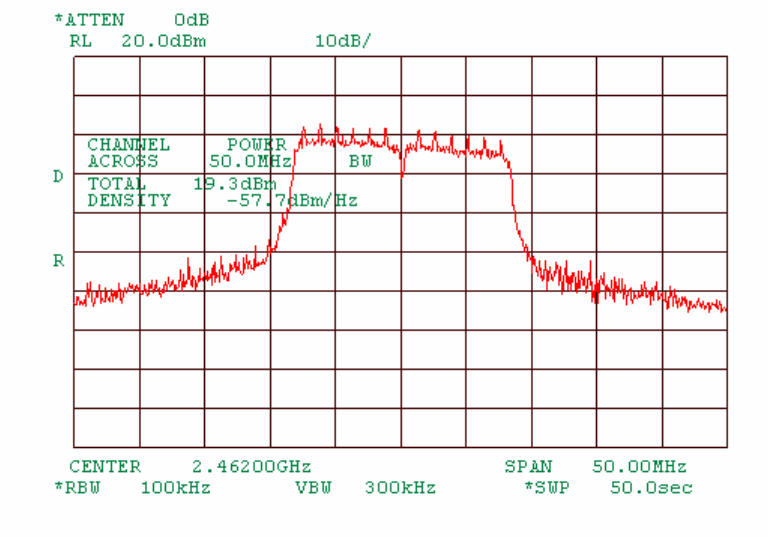

**Plot 1.3.10 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 2. At 6Mbps OFDM.**



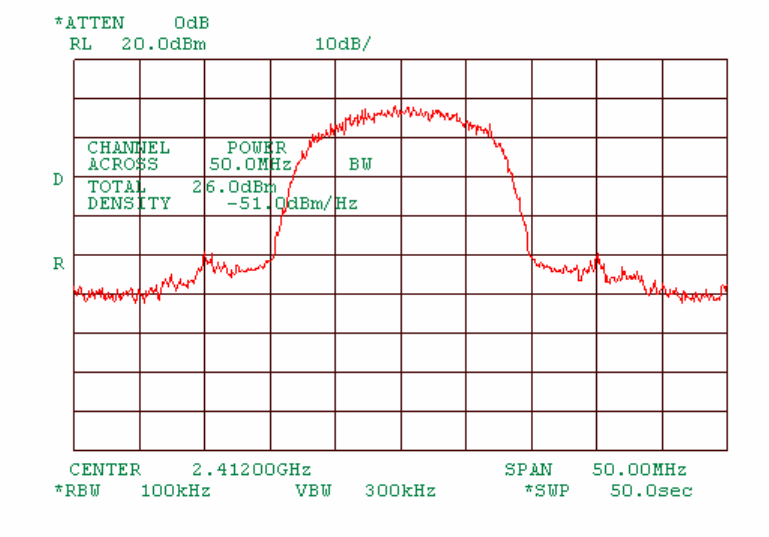
**Plot 1.3.11 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 2. At 6Mbps OFDM.**



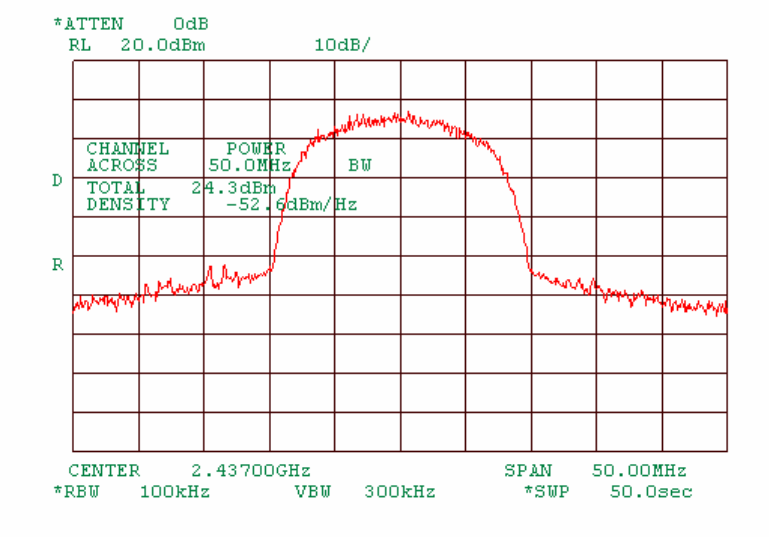

**Plot 1.3.12 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 2. At 6Mbps OFDM.**



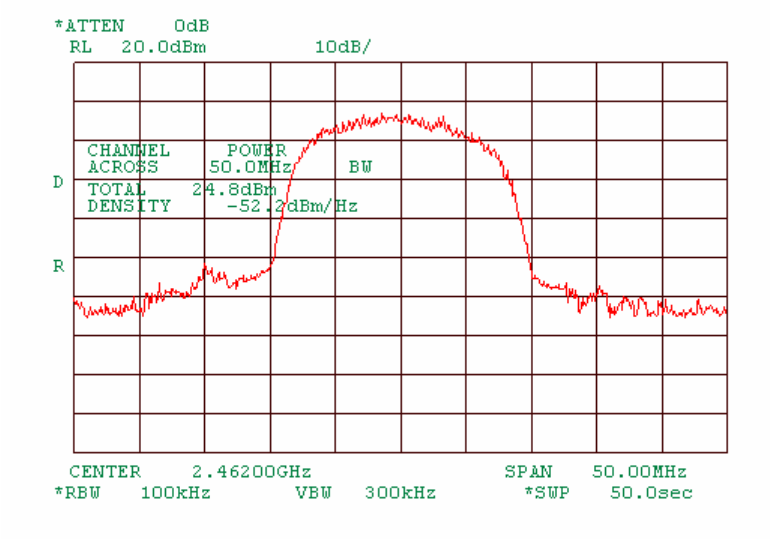
**Plot 1.3.13 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 3. At 5.5Mbps DSSS.**



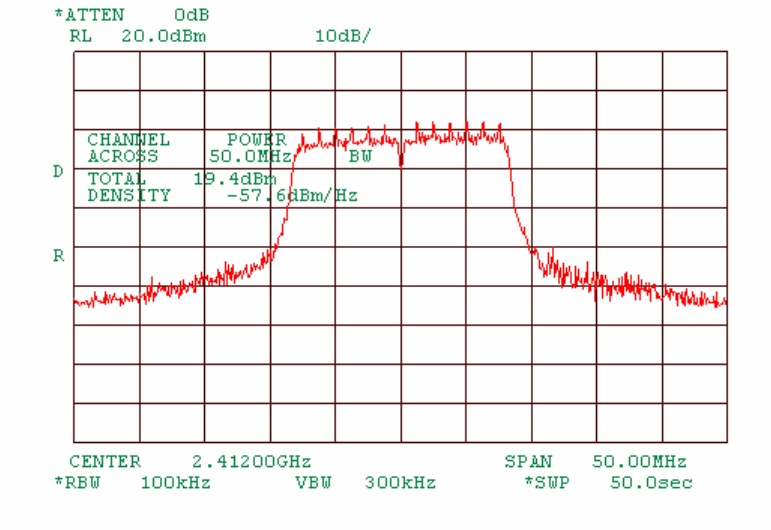

**Plot 1.3.14 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 3. At 5.5 Mbps DSSS.**



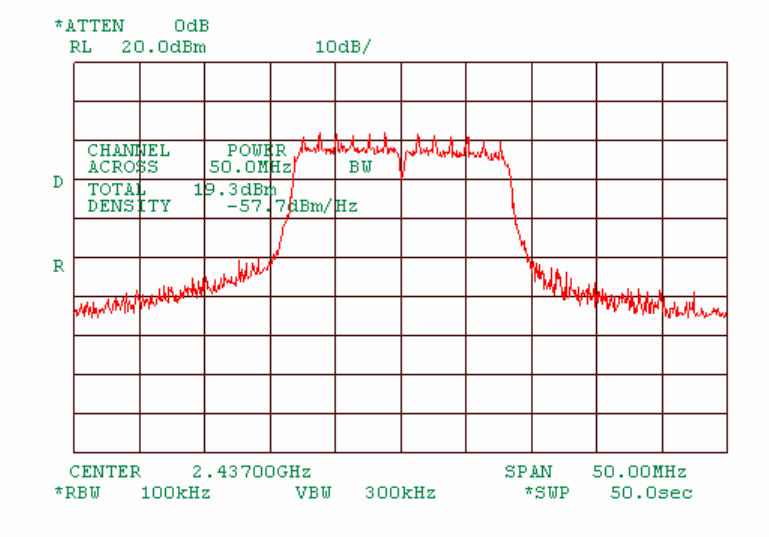
**Plot 1.3.15 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 3. At 5.5Mbps DSSS.**



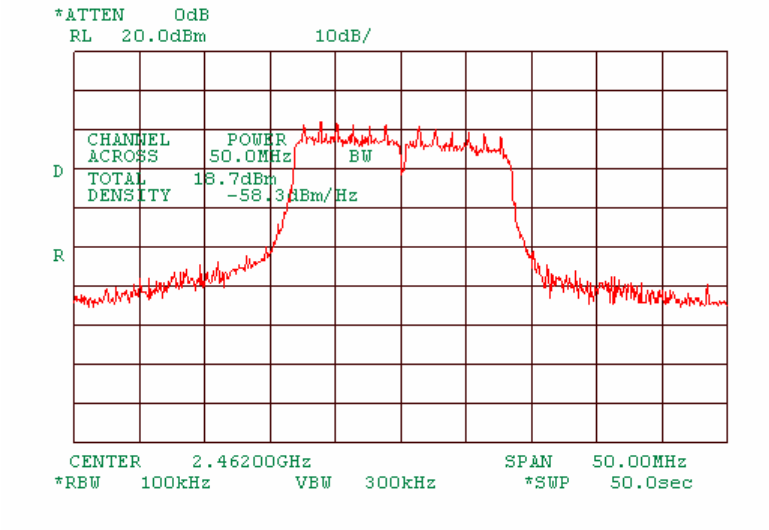

**Plot 1.3.16 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 3. At 6Mbps OFDM.**



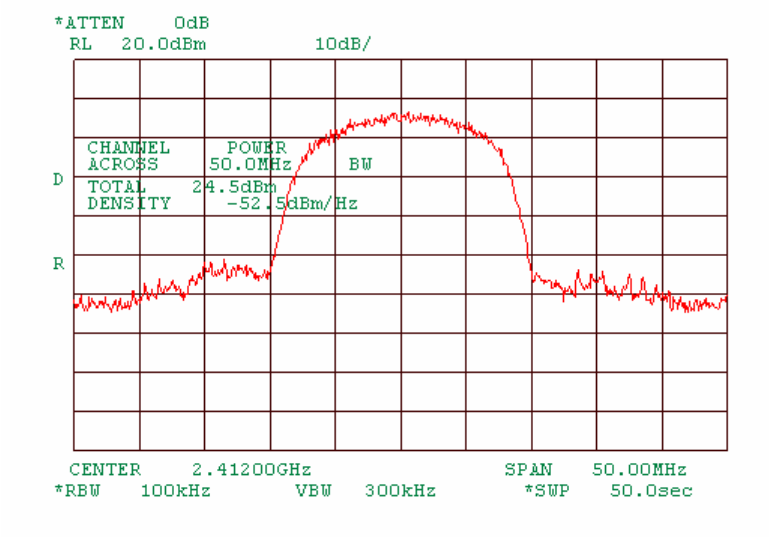
**Plot 1.3.17 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 3. At 6Mbps OFDM.**



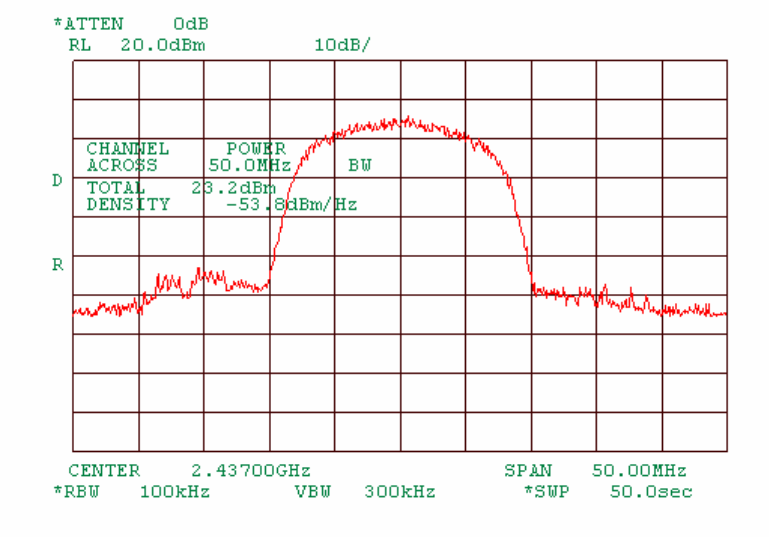

**Plot 1.3.18 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 3. At 6Mbps OFDM.**



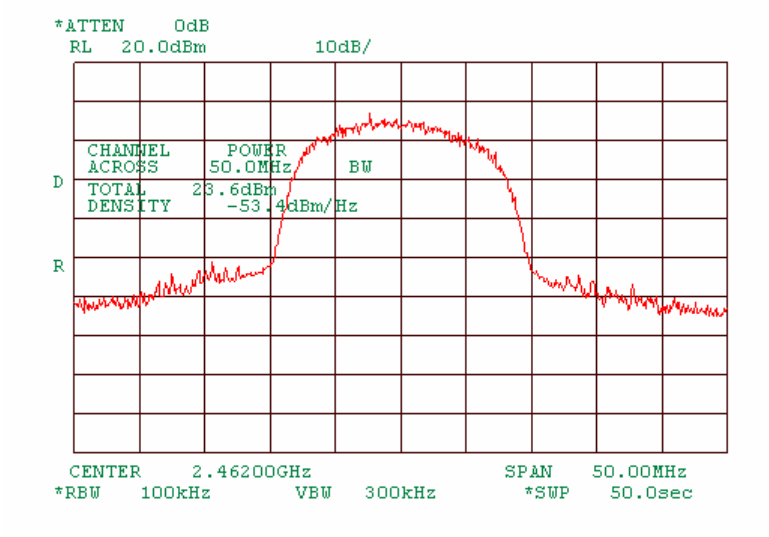
**Plot 1.3.19 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 4. At 5.5Mbps DSSS.**



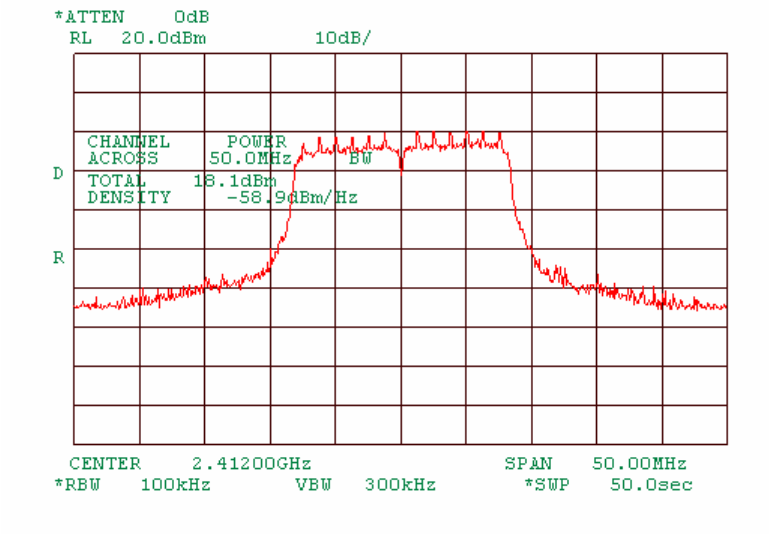

**Plot 1.3.20 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 4. At 5.5Mbps DSSS.**



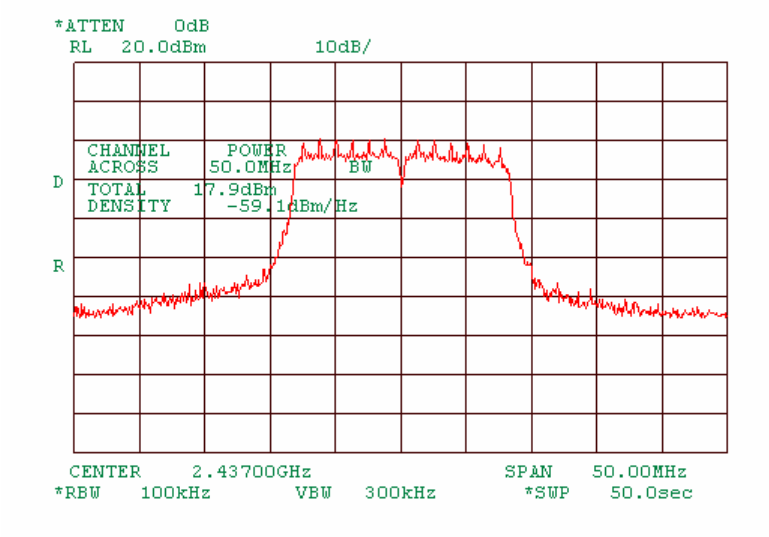
**Plot 1.3.21 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 4. At 5.5Mbps DSSS.**



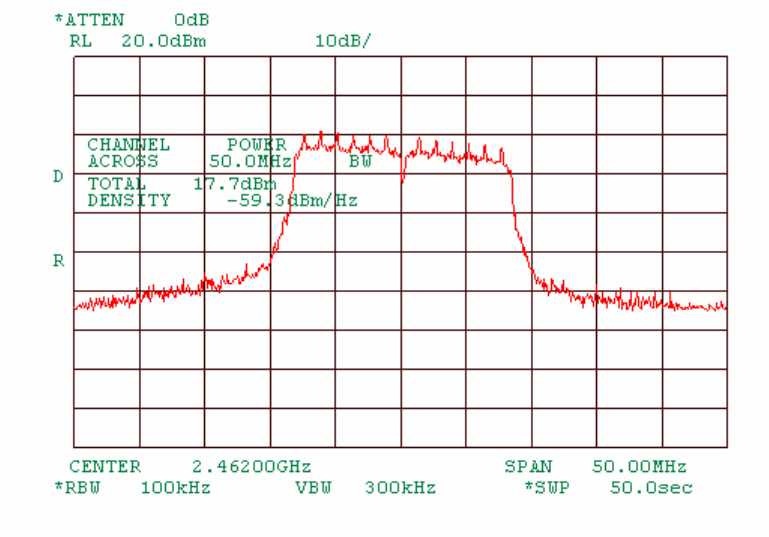

**Plot 1.3.22 Peak output power at low frequency of MA 850 and MA 1000 interconnected, port 4. At 6Mbps OFDM.**



**Plot 1.3.23 Peak output power at mid frequency of MA 850 and MA 1000 interconnected, port 4. At 6Mbps OFDM.**

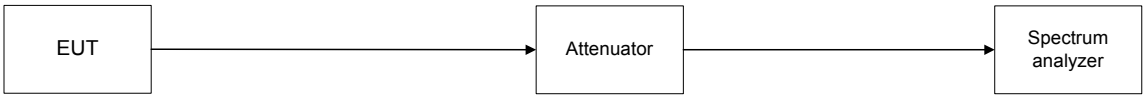



**Plot 1.3.24 Peak output power at high frequency of MA 850 and MA 1000 interconnected, port 4. At 6Mbps OFDM.**



## 2 Transmitter tests according to 47CFR part 15 subpart C requirements and 99% power bandwidth

**Figure 1: 6 dB bandwidth test setup**




**Photograph 1: 6 dB bandwidth test setup**

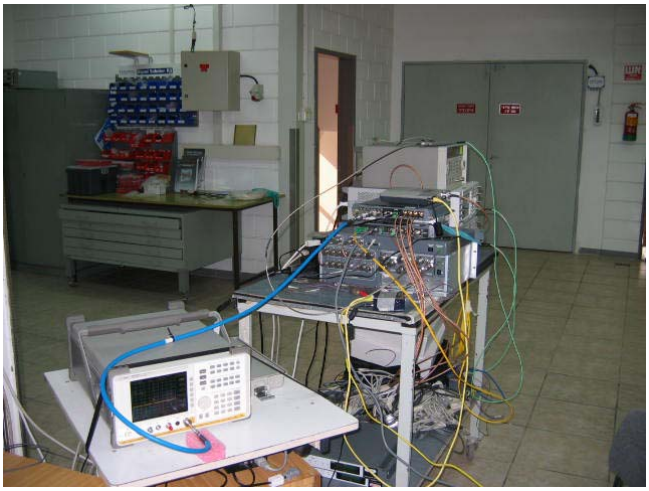


**Table 1: 6 dB bandwidth test results**

| | |
|---|---|
| ASSIGNED FREQUENCY BAND: | 2400 – 2483.5 MHz |
| ASSEMBLY | MA 850 |
| PORT: | 2 |
| DETECTOR USED: | Peak |
| SWEEP MODE: | Single |
| SWEEP TIME: | Auto |
| RESOLUTION BANDWIDTH: | 100 kHz |
| VIDEO BANDWIDTH: | 300 kHz |
| MODULATION ENVELOPE REFERENCE POINTS: | 6.0 dBc |
| MODULATION: | DSSS |
| MODULATING SIGNAL: | BPSK |
| BIT RATE: | 1, 11 Mbps |

| Carrier frequency, MHz | 6 dB bandwidth, MHz | Limit, kHz | Margin, kHz | Verdict |
|---|---|---|---|---|
| | | | | Low frequency |
| 2412.0 | 10.25 | >500 | 9.75 | Pass |
| | | | | Mid frequency |
| 2437.0 | 10.25 | >500 | 9.75 | Pass |
| | | | | High frequency |
| 2462.0 | 10.25 | >500 | 9.75 | Pass |

| | |
|---|---|
| MODULATION: | OFDM |
| MODULATING SIGNAL: | BPSK |
| BIT RATE: | 6, 54 Mbps |

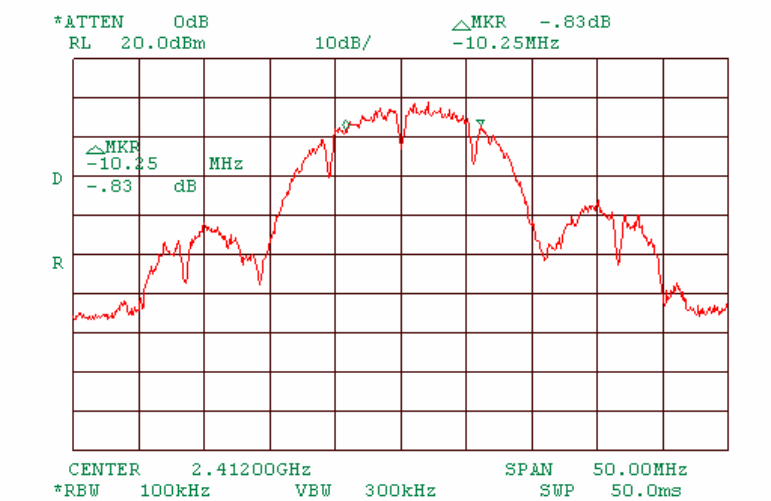
| Carrier frequency, MHz | 6 dB bandwidth, MHz | Limit, kHz | Margin, kHz | Verdict |
|---|---|---|---|---|
| | | | | Low frequency |
| 2412.0 | 16.08 | >500 | 15.58 | Pass |
| | | | | Mid frequency |
| 2437.0 | 16.42 | >500 | 15.92 | Pass |
| | | | | High frequency |
| 2462.0 | 15.92 | >500 | 15.42 | Pass |

**Reference numbers of test equipment used**

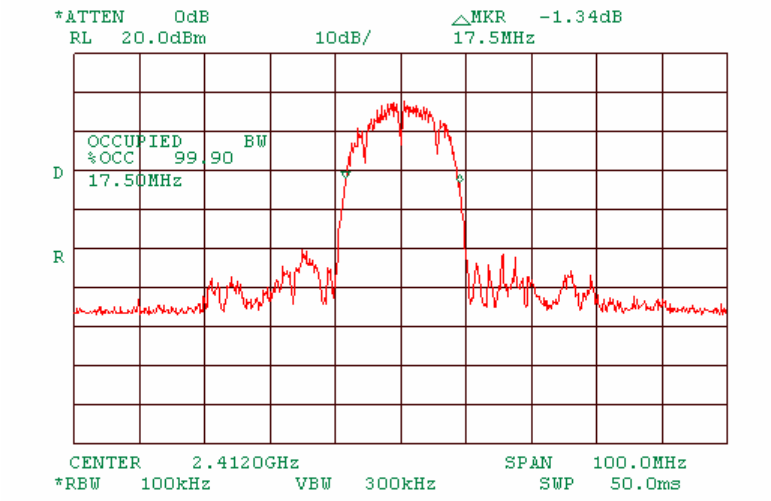
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HL 1424 | HL 1651 | HL 2399 | | | | | | |

Full description is given in Appendix A.

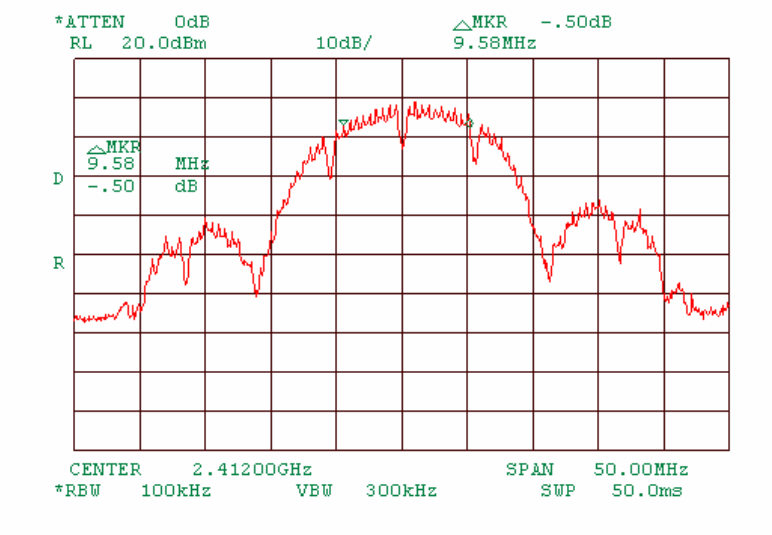
**Plot 1: 6 dB bandwidth test result at low frequency of MA 850 stands alone. At 1 Mbps DSSS.**



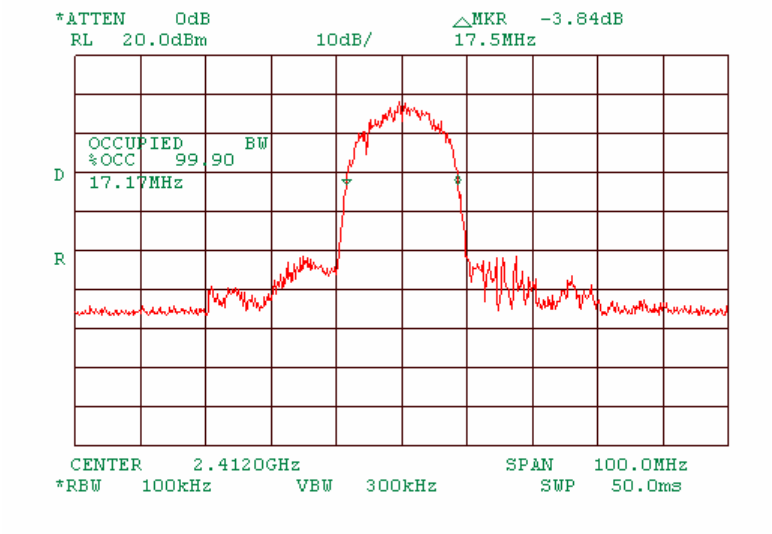

**Plot 2: 99% power bandwidth test result at low frequency of MA 850 stands alone. At 1 Mbps DSSS.**



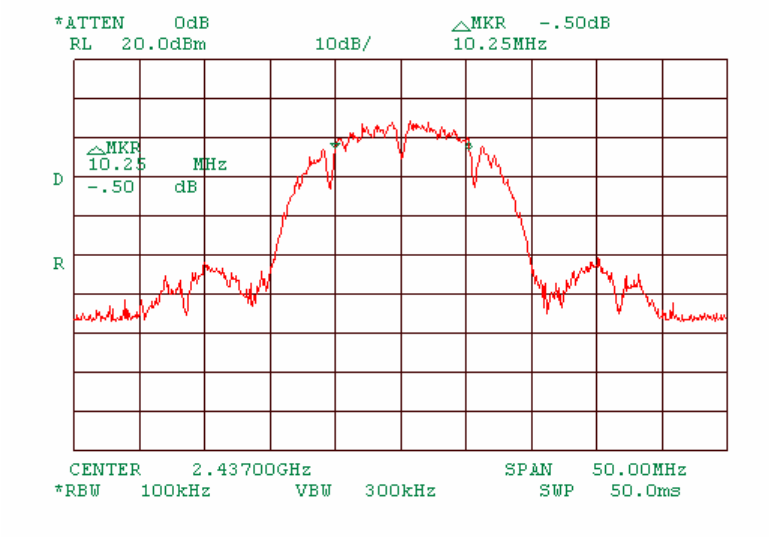
**Plot 3: 6 dB bandwidth test result at low frequency of MA 850 stands alone. At 11 Mbps DSSS.**



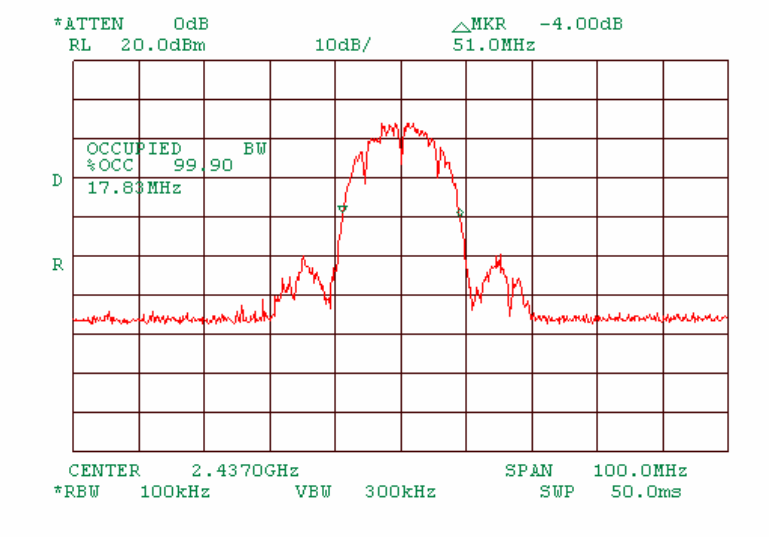

**Plot 4: 99% power bandwidth test result at low frequency of MA 850 stands alone. At 11 Mbps DSSS**



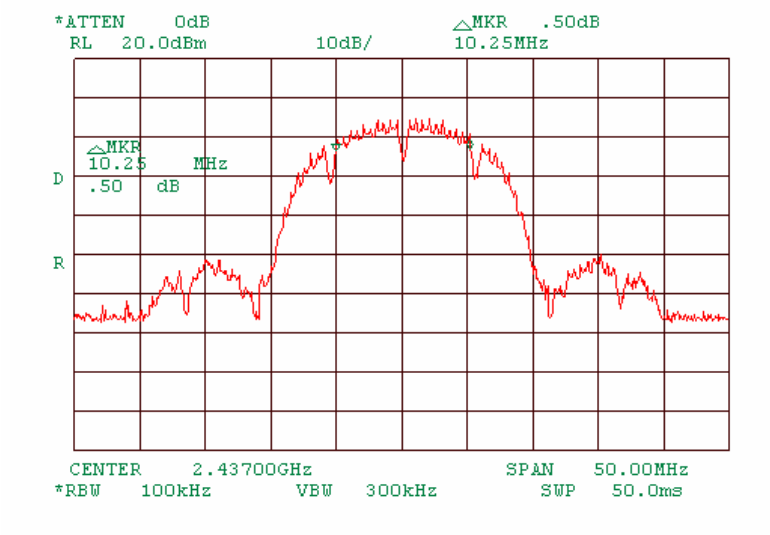
**Plot 5: 6 dB bandwidth test result at mid frequency of MA 850 stands alone. At 1 Mbps DSSS.**



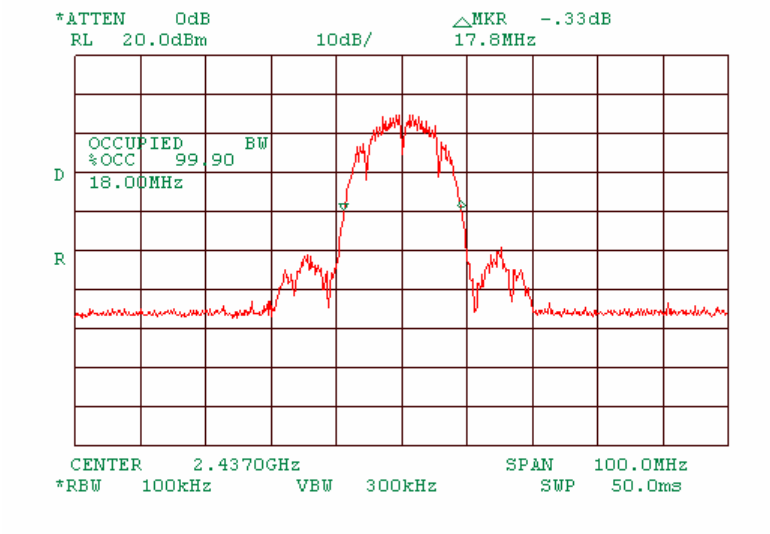

**Plot 6: 99% power bandwidth test result at mid frequency of MA 850 stands alone. At 1 Mbps DSSS**



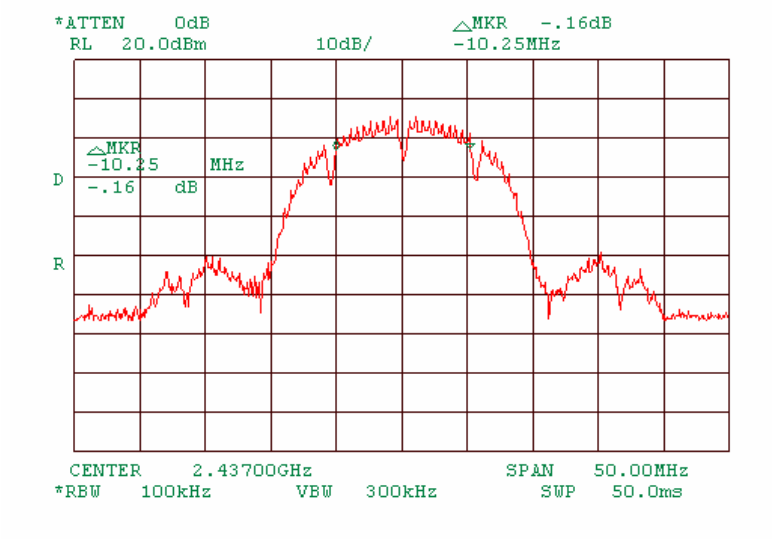
**Plot 7: 6 dB bandwidth test result at mid frequency of MA 850 stands alone. At 2 Mbps DSSS.**



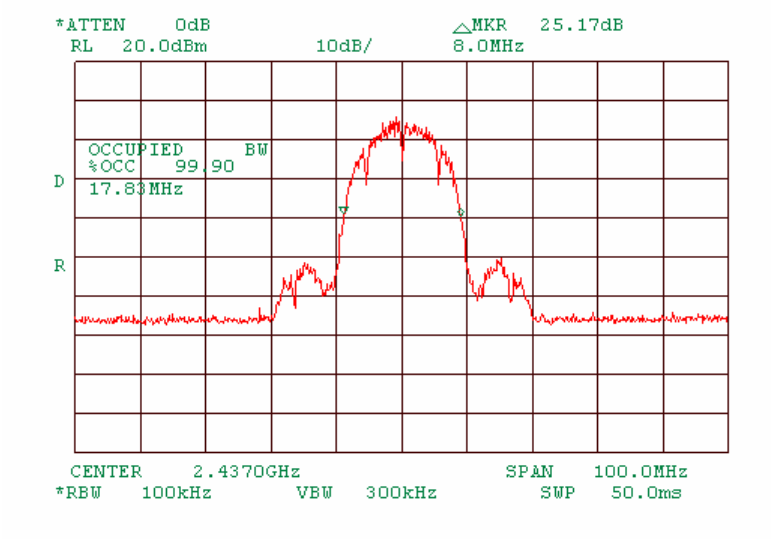

**Plot 8: 99% power bandwidth test result at mid frequency of MA 850 stands alone. At 2 Mbps DSSS**



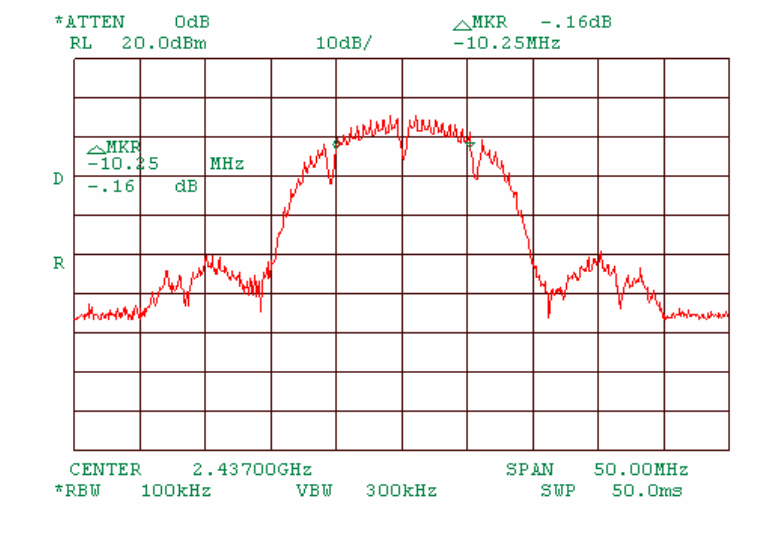
**Plot 9: 6 dB bandwidth test result at mid frequency of MA 850 stands alone. At 5.5 Mbps DSSS.**



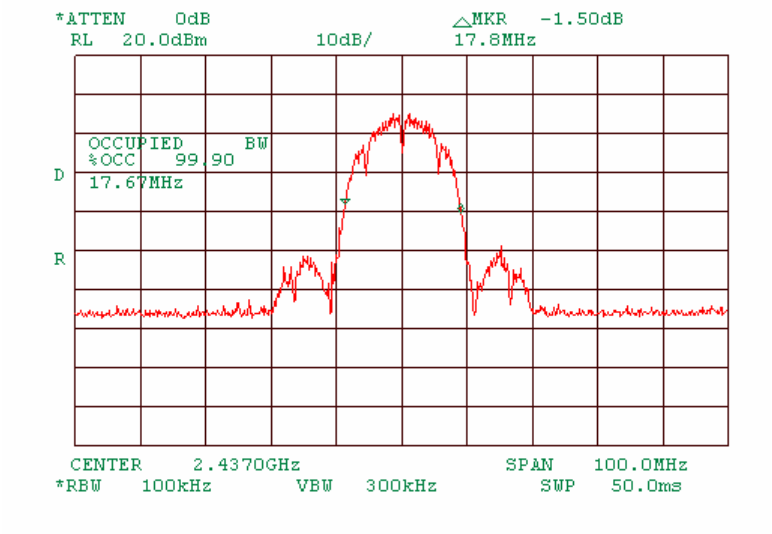

**Plot 10: 99% power bandwidth test result at mid frequency of MA 850 stands alone. At 5.5 Mbps DSSS**



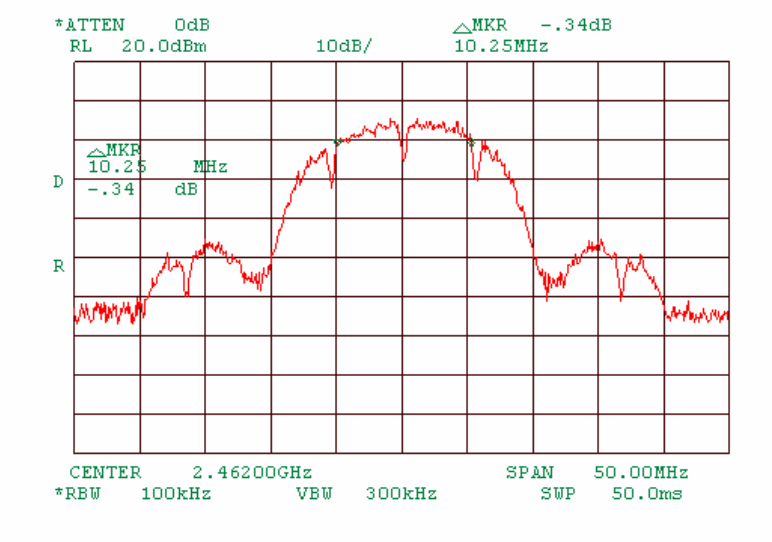
**Plot 11: 6 dB bandwidth test result at mid frequency of MA 850 stands alone. At 11 Mbps DSSS.**



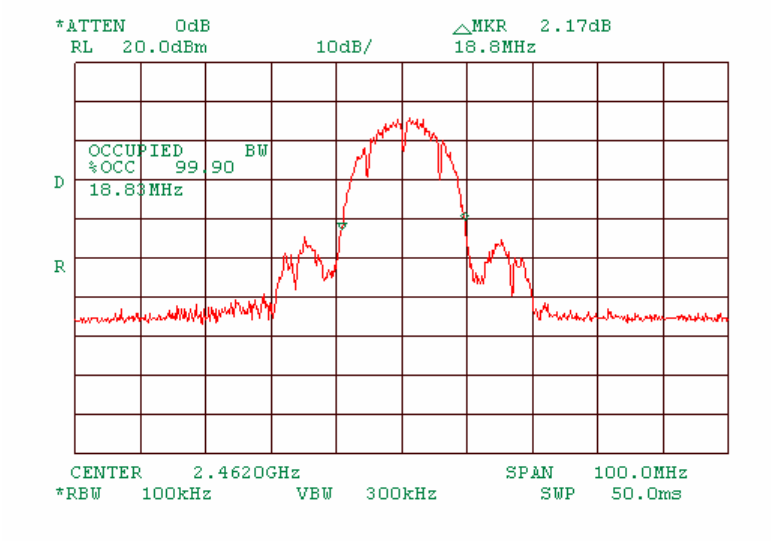

**Plot 12: 99% power bandwidth test result at mid frequency of MA 850 stands alone. At 11 Mbps DSSS**



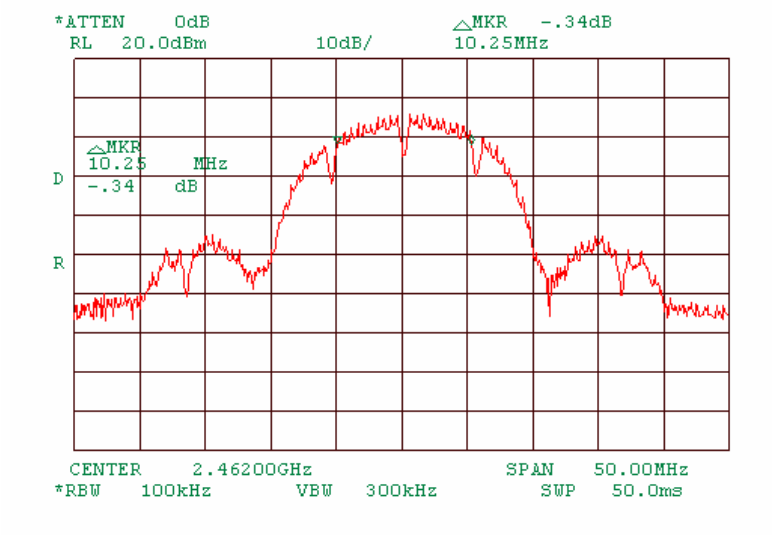
**Plot 13: 6 dB bandwidth test result at high frequency of MA 850 stands alone. At 1 Mbps DSSS.**



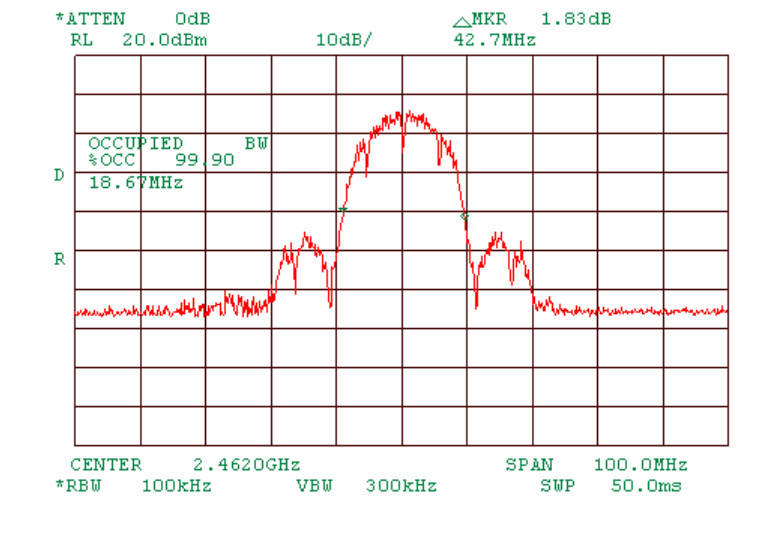

**Plot 14: 99% power bandwidth test result at high frequency of MA 850 stands alone. At 1 Mbps DSSS**



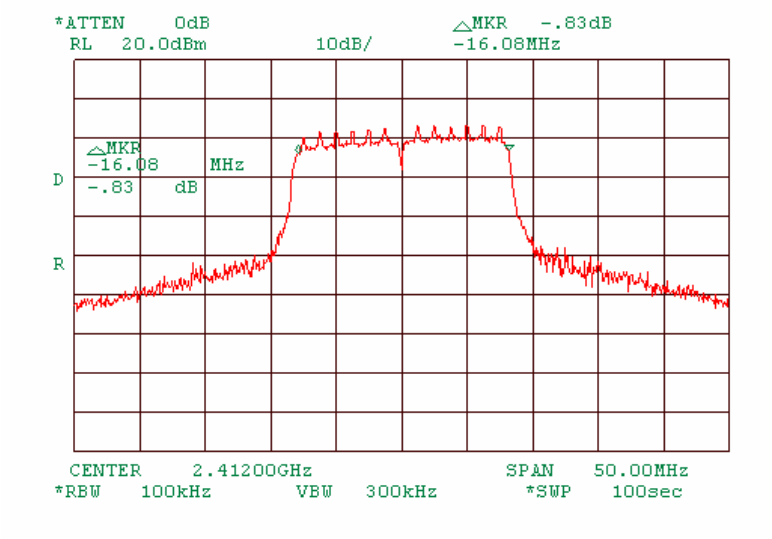
**Plot 15: 6 dB bandwidth test result at high frequency of MA 850 stands alone. At 11 Mbps DSSS.**



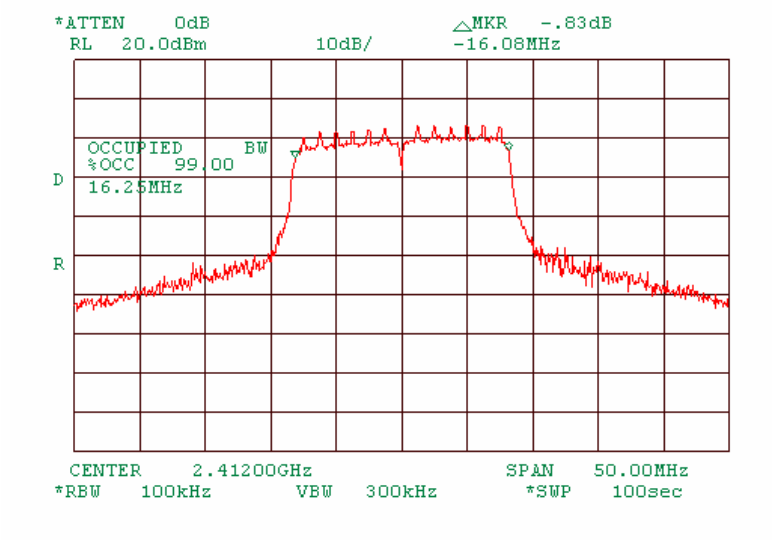

**Plot 16: 99% power bandwidth test result at high frequency of MA 850 stands alone. At 11 Mbps DSSS**



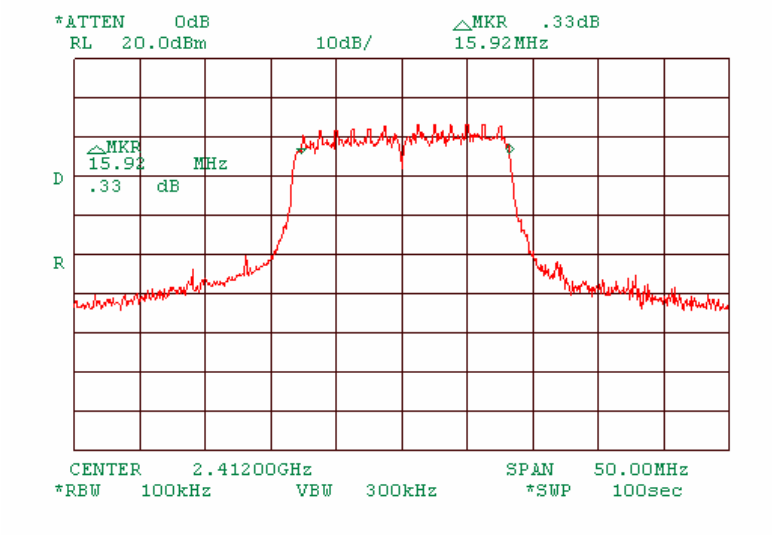
**Plot 17: 6 dB bandwidth test result at low frequency of MA 850 stands alone. At 6 Mbps OFDM.**



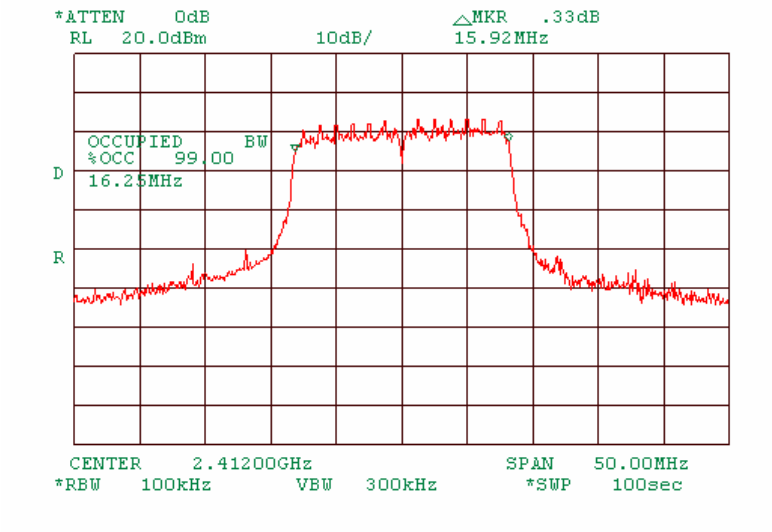

**Plot 18: 99% power bandwidth test result at low frequency of MA 850 stands alone. At 6 Mbps OFDM.**



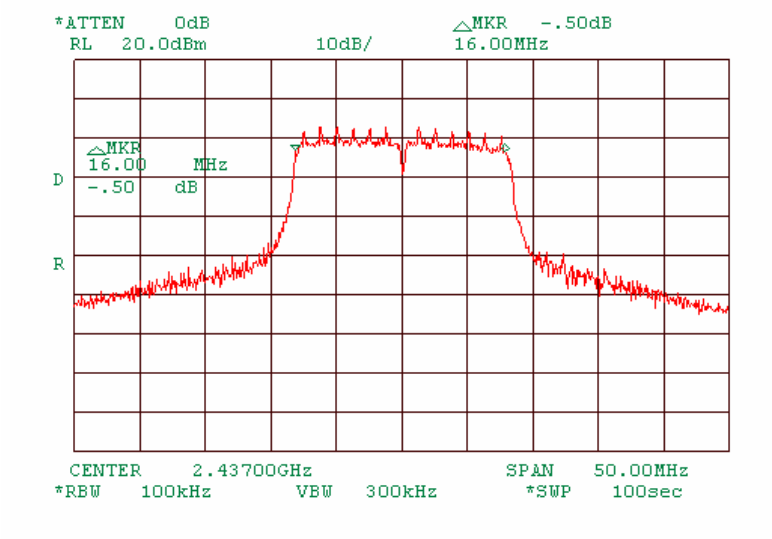
**Plot 19: 6 dB bandwidth test result at low frequency of MA 850 stands alone. At 54 Mbps OFDM.**



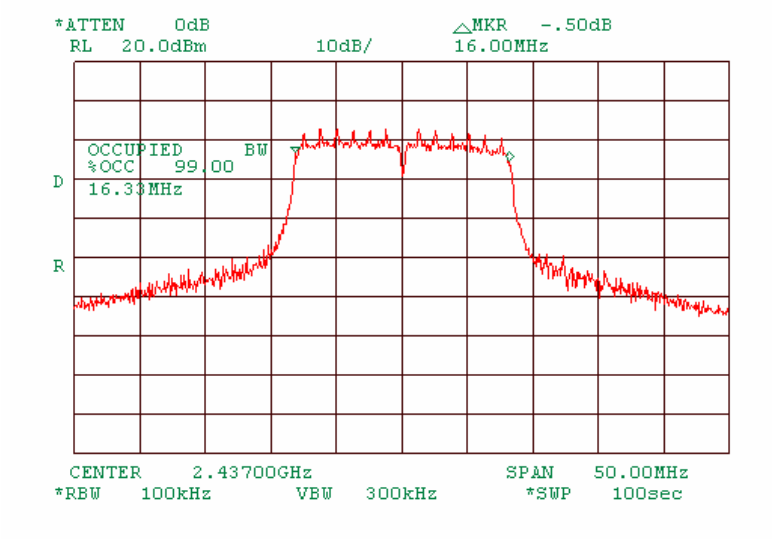

**Plot 20: 99% power bandwidth test result at low frequency of MA 850 stands alone. At 54 Mbps OFDM.**



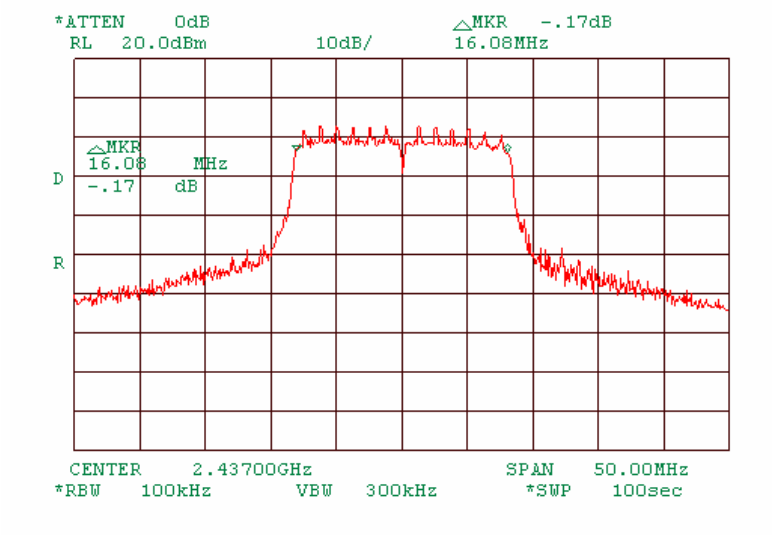
**Plot 21: 6 dB bandwidth test result at mid frequency of MA 850 stands alone. At 6 Mbps OFDM.**



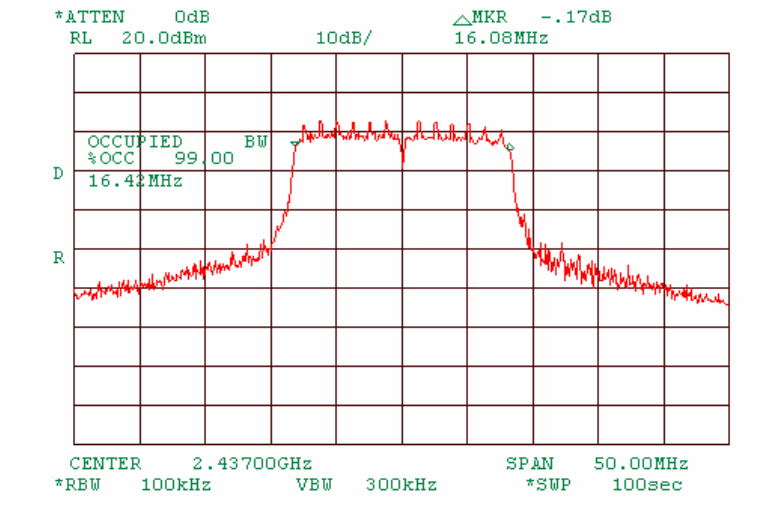

**Plot 22: 99% power bandwidth test result at mid frequency of MA 850 stands alone. At 6 Mbps OFDM.**



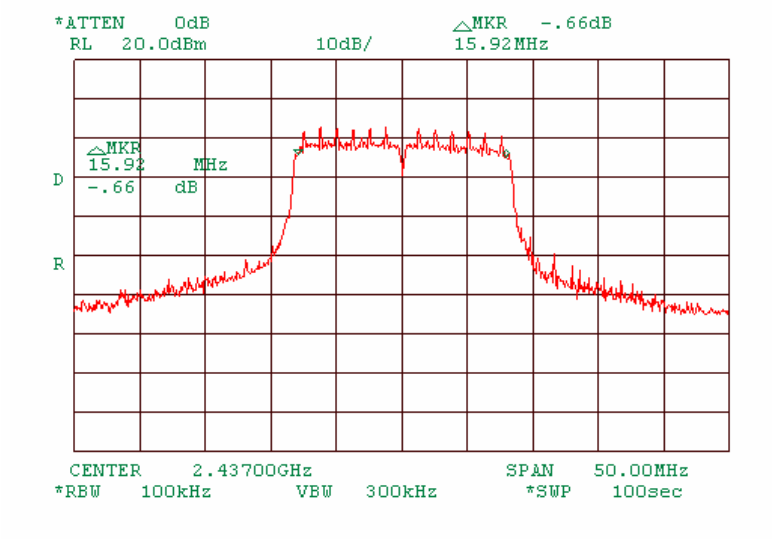
**Plot 23: 6 dB bandwidth test result at mid frequency of MA 850 stands alone. At 9 Mbps OFDM.**



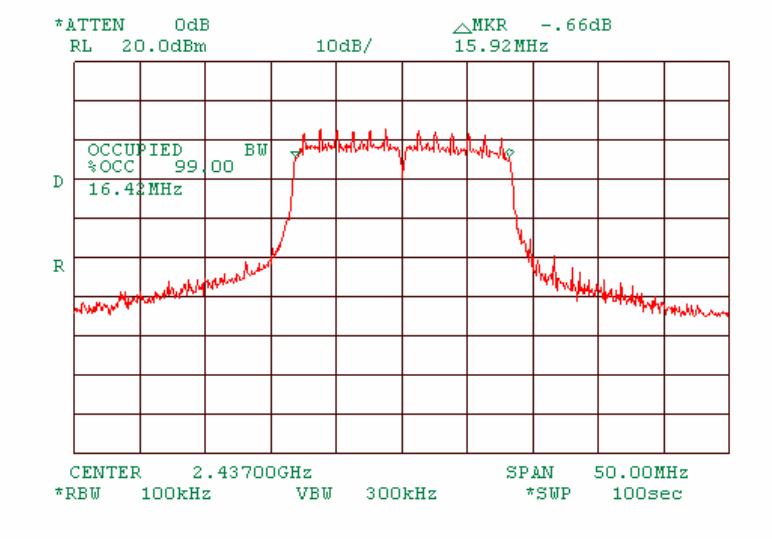

**Plot 24: 99% power bandwidth test result at mid frequency of MA 850 stands alone. At 9 Mbps OFDM.**



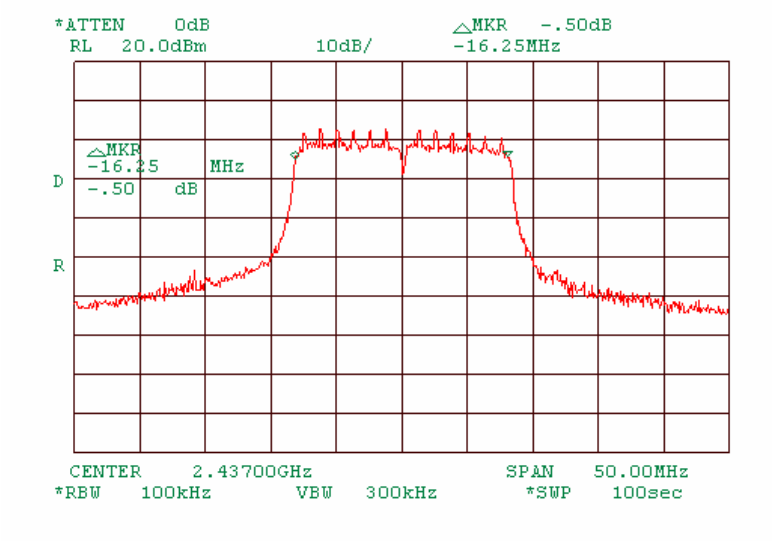
**Plot 25: 6 dB bandwidth test result at mid frequency of MA 850 stands alone. At 12 Mbps OFDM.**



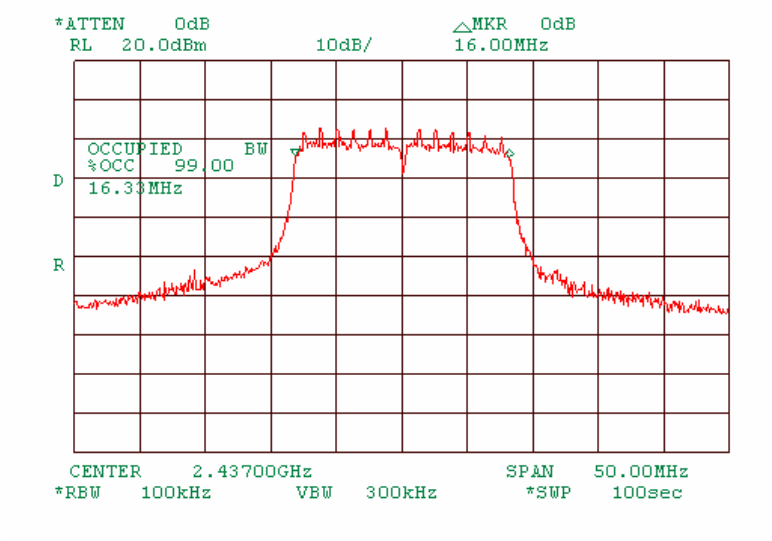

**Plot 26: 99% power bandwidth test result at mid frequency of MA 850 stands alone. At 12 Mbps OFDM.**



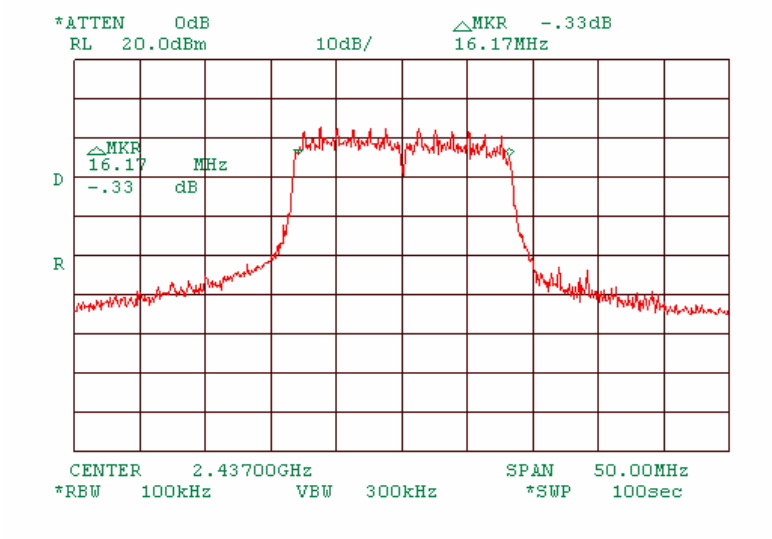
**Plot 27: 6 dB bandwidth test result at mid frequency of MA 850 stands alone. At 18 Mbps OFDM.**



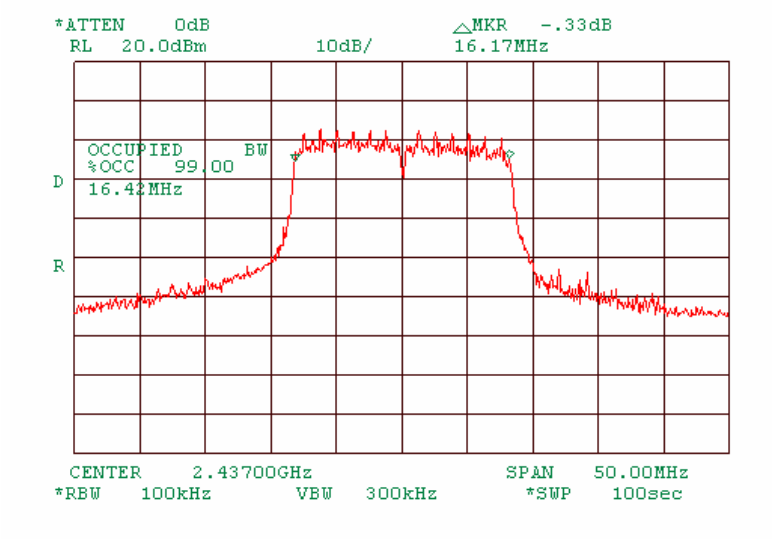

**Plot 28: 99% power bandwidth test result at mid frequency of MA 850 stands alone. At 18 Mbps OFDM.**



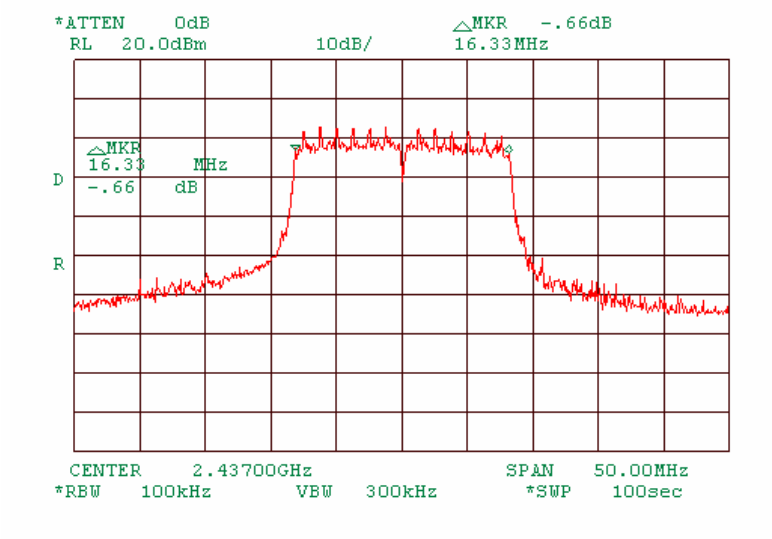
**Plot 29: 6 dB bandwidth test result at mid frequency of MA 850 stands alone. At 24 Mbps OFDM.**



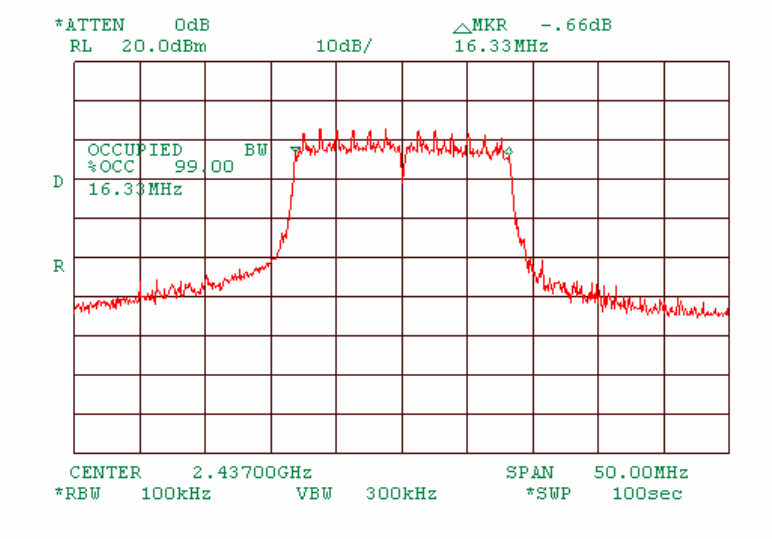

**Plot 30: 99% power bandwidth test result at mid frequency of MA 850 stands alone. At 24 Mbps OFDM.**



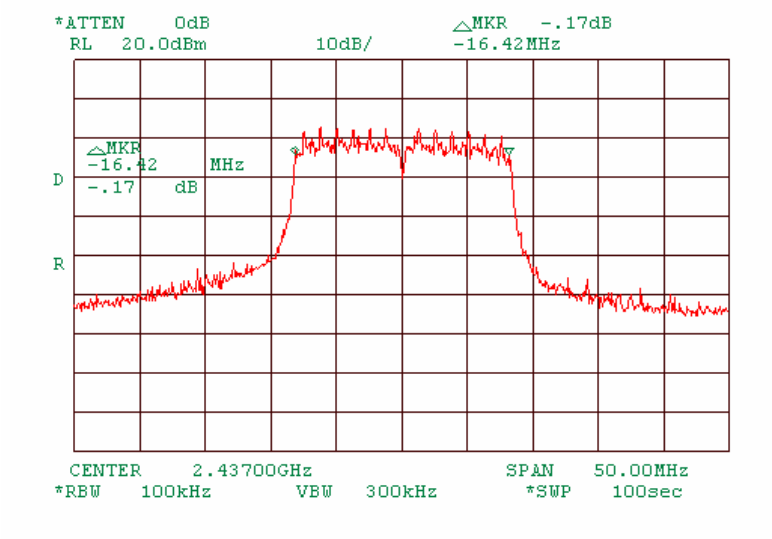
**Plot 31: 6 dB bandwidth test result at mid frequency of MA 850 stands alone. At 36 Mbps OFDM.**



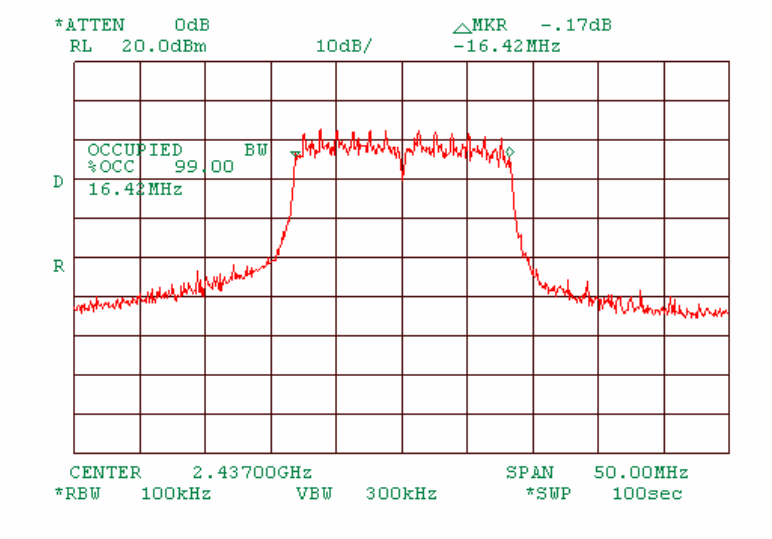

**Plot 32: 99% power bandwidth test result at mid frequency of MA 850 stands alone. At 36 Mbps OFDM.**



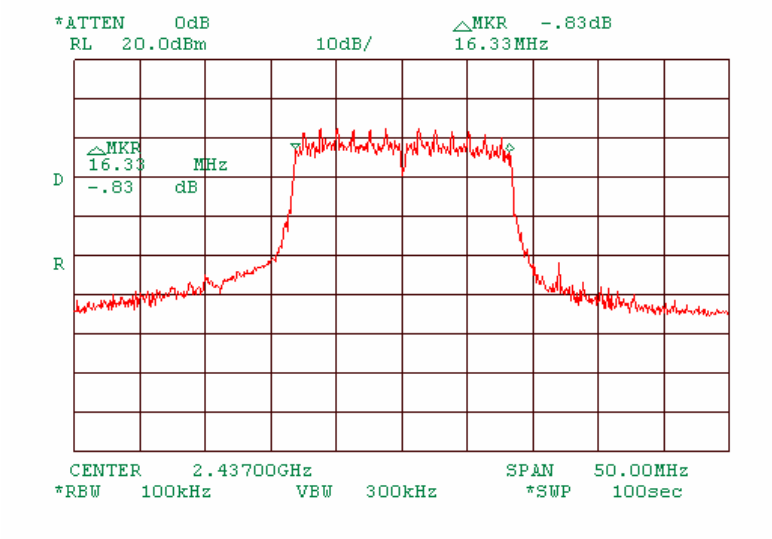
**Plot 33: 6 dB bandwidth test result at mid frequency of MA 850 stands alone. At 48 Mbps OFDM.**



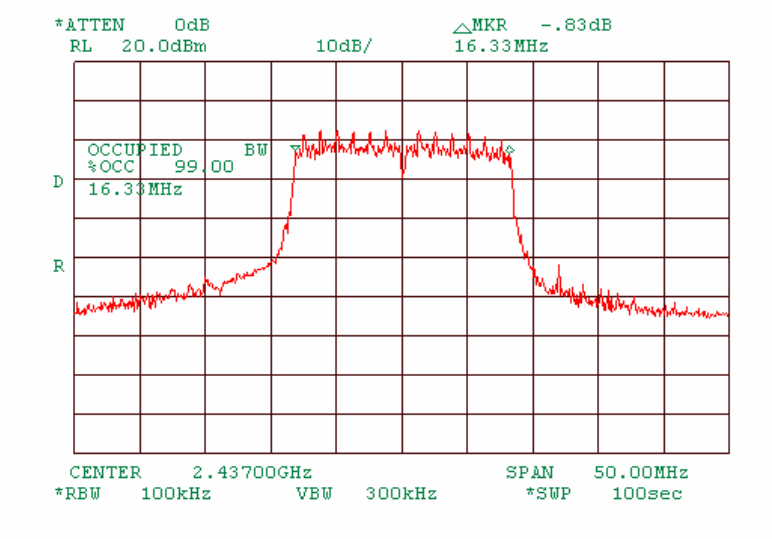

**Plot 34: 99% power bandwidth test result at mid frequency of MA 850 stands alone. At 48 Mbps OFDM.**



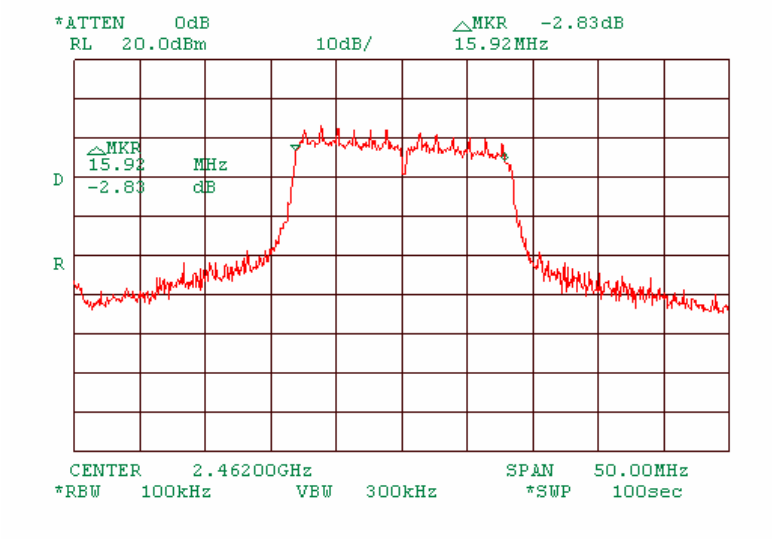
**Plot 35: 6 dB bandwidth test result at mid frequency of MA 850 stands alone. At 54 Mbps OFDM.**



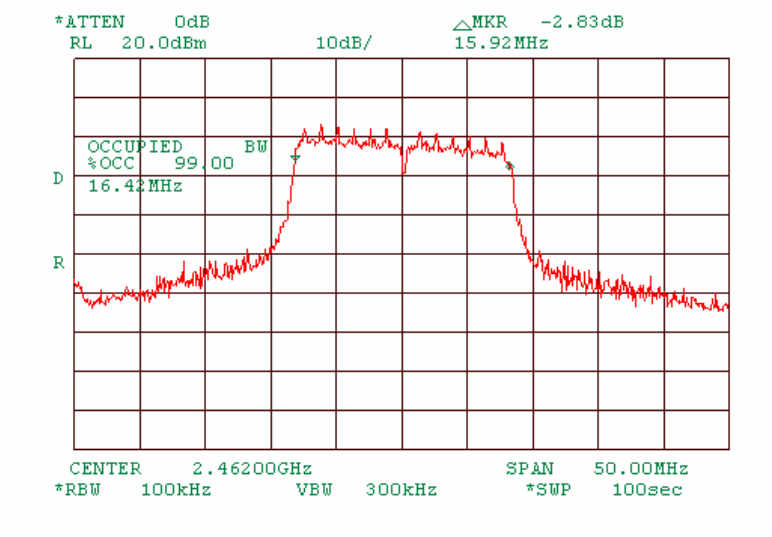

**Plot 36: 99% power bandwidth test result at mid frequency of MA 850 stands alone. At 54 Mbps OFDM.**



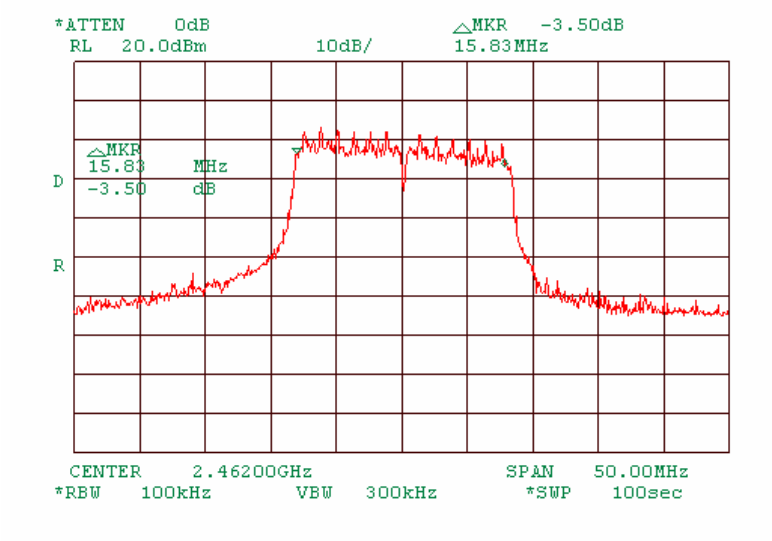
**Plot 37: 6 dB bandwidth test result at high frequency of MA 850 stands alone. At 6 Mbps OFDM.**



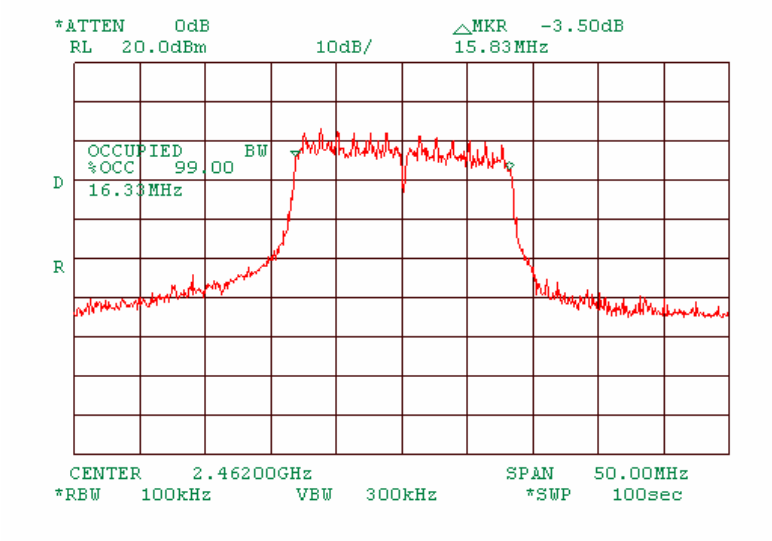

**Plot 38: 99% power bandwidth test result at high frequency of MA 850 stands alone. At 6 Mbps OFDM.**



**Plot 39: 6 dB bandwidth test result at high frequency of MA 850 stands alone. At 54 Mbps OFDM.**

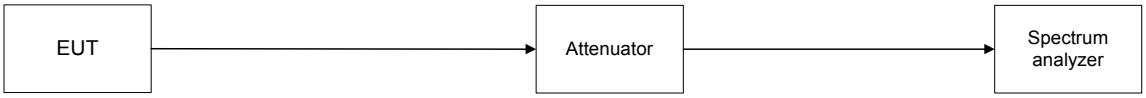



**Plot 40: 99 power bandwidth test result at high frequency of MA 850 stands alone. At 54 Mbps OFDM.**



# 3 Transmitter tests according to 47CFR part 15 subpart C requirements and 99% power bandwidth

**Figure 1: 6 dB bandwidth test setup**




**Photograph 1.31: 6 dB bandwidth test setup**

**Table 1.31: 6 dB bandwidth test results**

| | |
|---|---|
| ASSIGNED FREQUENCY BAND: | 2400 – 2483.5 MHz |
| ASSEMBLY | MA 850, MA 1000 (operated at Cell 850 mode) |
| MA 1000 SETTINGS: | Transmit at 869.0125 and 893.9875 MHz |
| PORT: | 2 |
| DETECTOR USED: | Peak |
| SWEEP MODE: | Single |
| SWEEP TIME: | Auto |
| RESOLUTION BANDWIDTH: | 100 kHz |
| VIDEO BANDWIDTH: | 300 kHz |
| MODULATION ENVELOPE REFERENCE POINTS: | 6.0 dBc |
| MODULATION: | DSSS |
| MODULATING SIGNAL: | DBPSK |
| BIT RATE: | 1, 11 Mbps |

| Carrier frequency, MHz | 6 dB bandwidth, MHz | Limit, kHz | Margin, kHz | Verdict |
|---|---|---|---|---|
| | | | | Low frequency |
| 2412 | 12.83 | >500 | 12.33 | Pass |
| | | | | Mid frequency |
| 2437 | 13.33 | >500 | 12.83 | Pass |
| | | | | High frequency |
| 2462 | 12.58 | >500 | 12.08 | Pass |

| | |
|---|---|
| MODULATION: | OFDM |
| MODULATING SIGNAL: | BPSK |
| BIT RATE: | 6, 54Mbps |

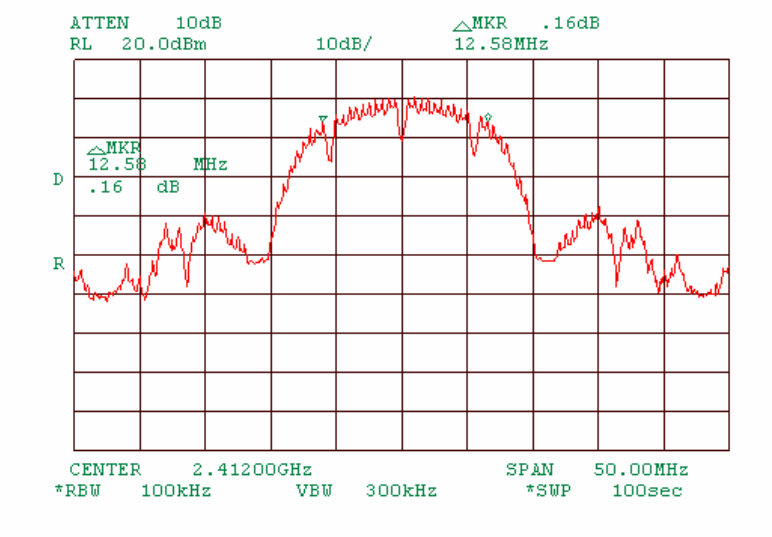
| Carrier frequency, MHz | 6 dB bandwidth, MHz | Limit, kHz | Margin, kHz | Verdict |
|---|---|---|---|---|
| | | | | Low frequency |
| 2412 | 16.00 | >500 | 15.50 | Pass |
| | | | | Mid frequency |
| 2437 | 16.42 | >500 | 15.92 | Pass |
| | | | | High frequency |
| 2462 | 15.92 | >500 | 15.42 | Pass |

**Reference numbers of test equipment used**

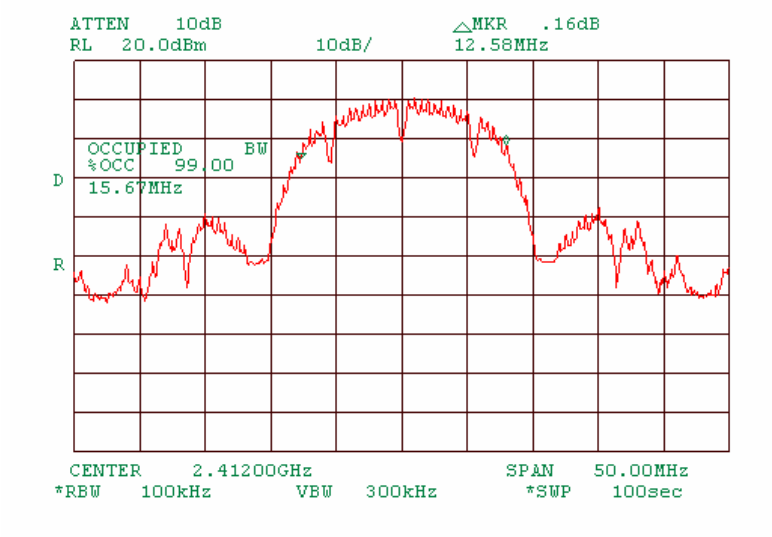
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HL 1424 | HL 1651 | HL 2399 | | | | | | |

Full description is given in Appendix A.

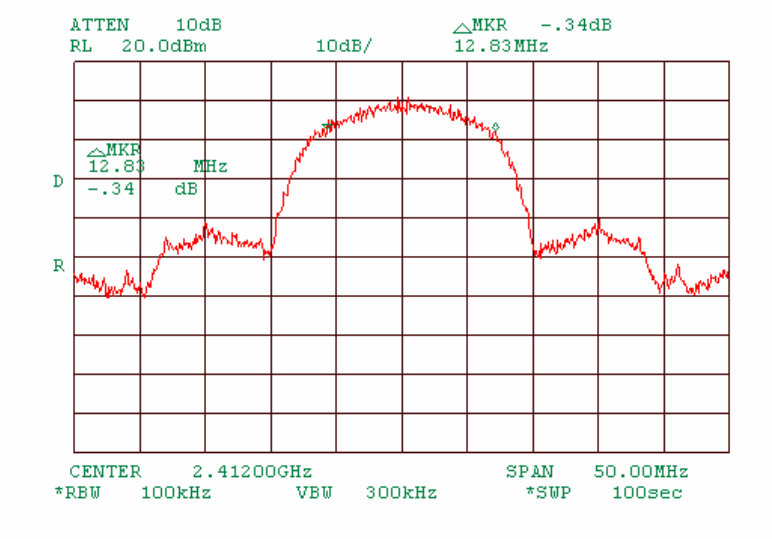
**Plot 1: 6 dB bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 1 Mbps DSSS.**



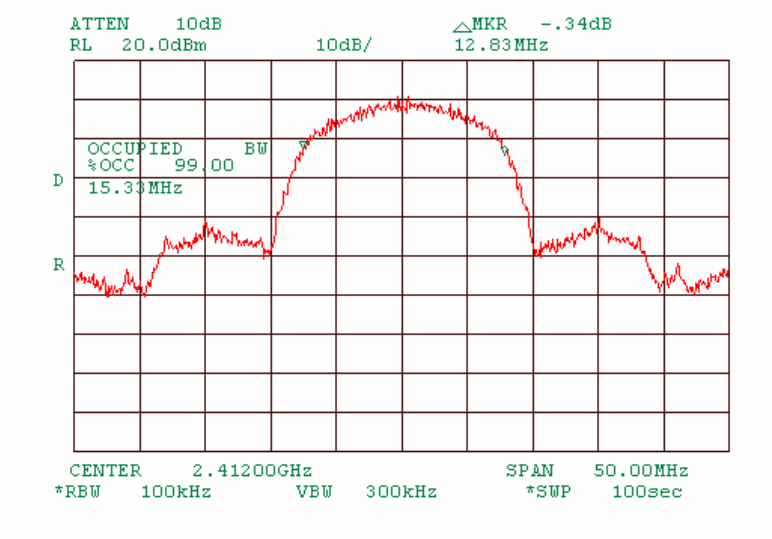

**Plot 2: 99% power bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 1 Mbps DSSS.**



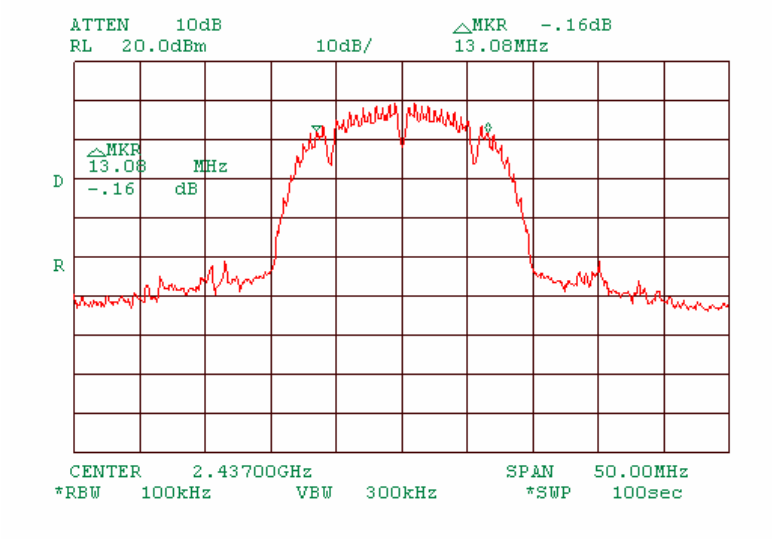
**Plot 3: 6 dB bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 11 Mbps DSSS.**



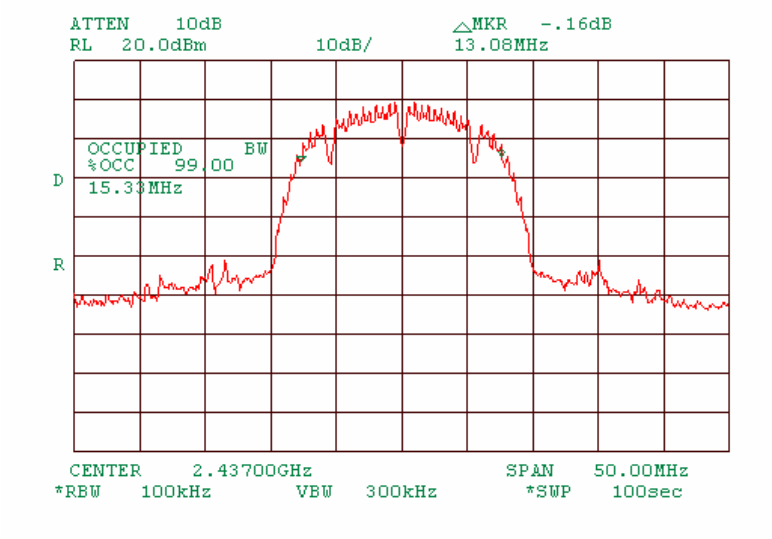

**Plot 4: 99% power bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 11 Mbps DSSS.**



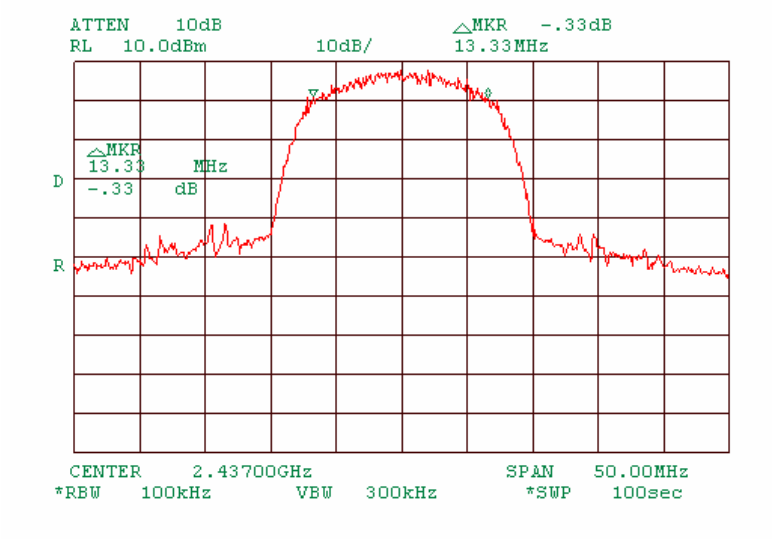
**Plot 5: 6 dB bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 1 Mbps DSSS.**



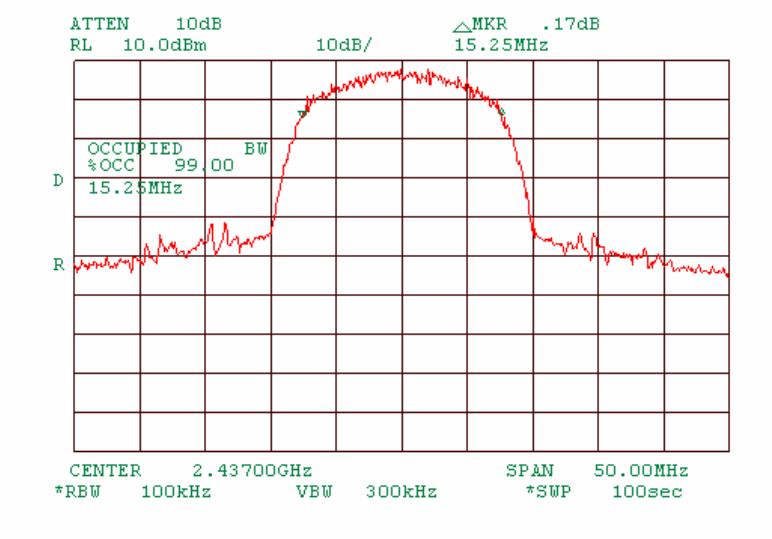

**Plot 6: 99% power bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 1 Mbps DSSS.**



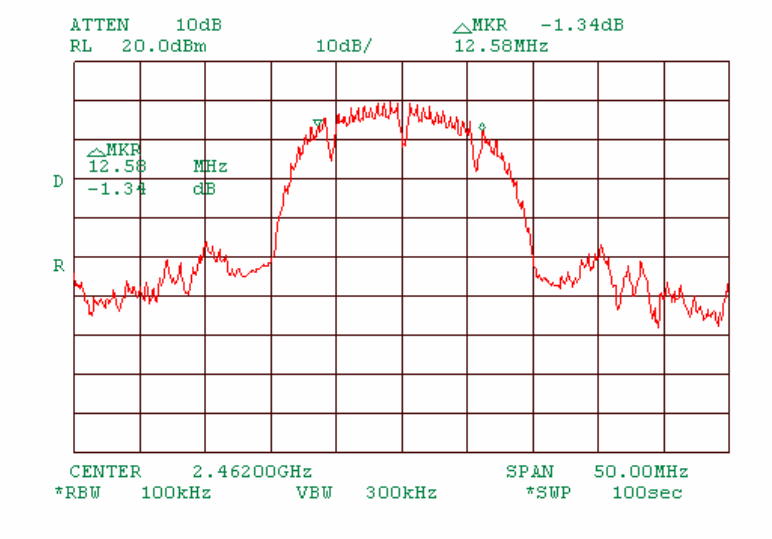
**Plot 7: 6 dB bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 11 Mbps DSSS.**



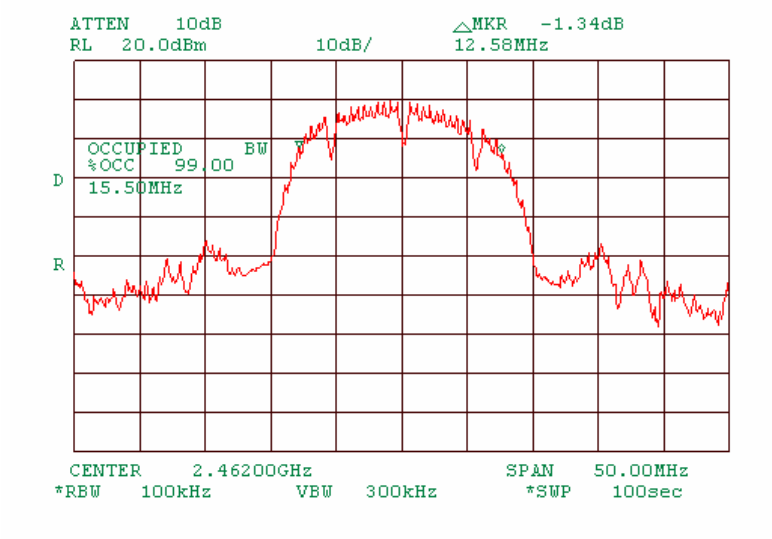

**Plot 8: 99% power bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 11 Mbps DSSS.**



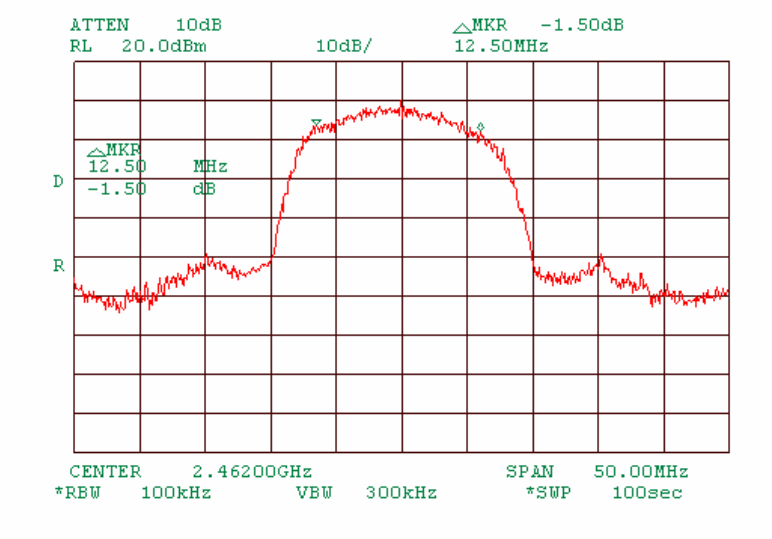
**Plot 9: 6 dB bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 1 Mbps DSSS.**



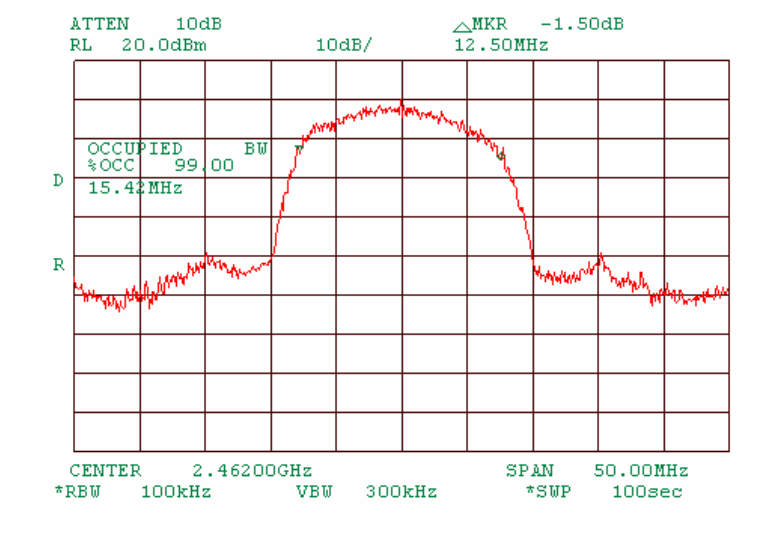

**Plot 10: 99% power bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 1 Mbps DSSS.**



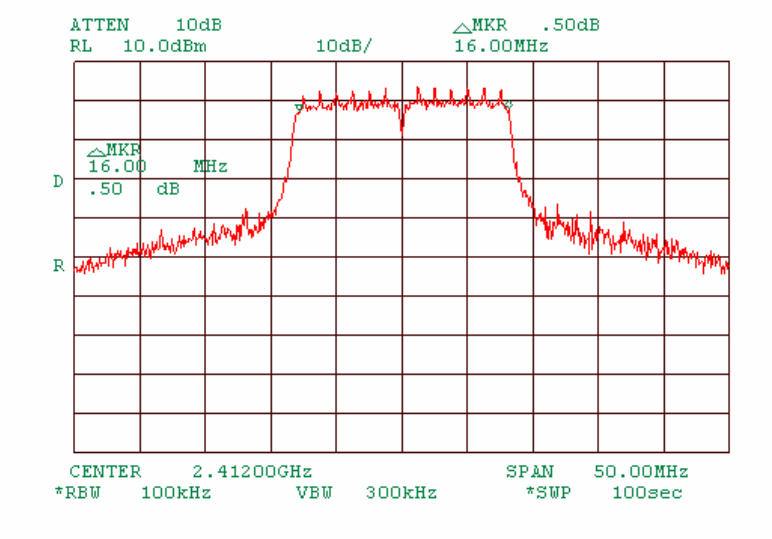
**Plot 11: 6 dB bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 11 Mbps DSSS.**



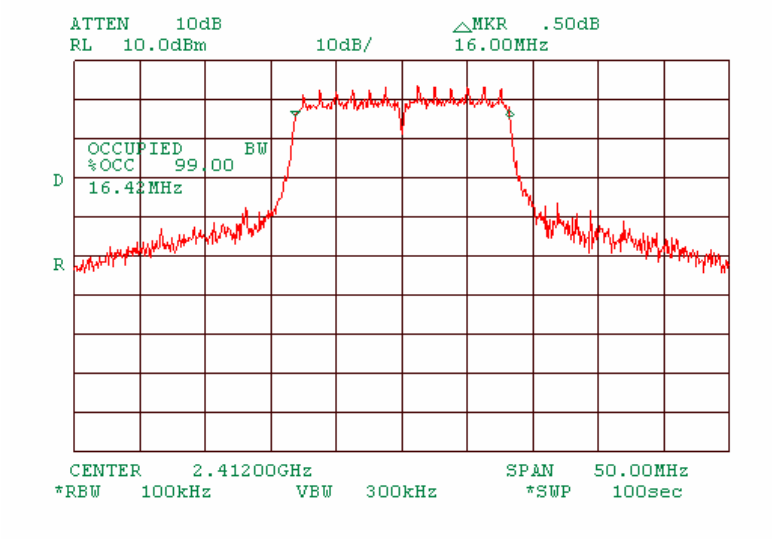

**Plot 12: 99% power bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 11 Mbps DSSS.**



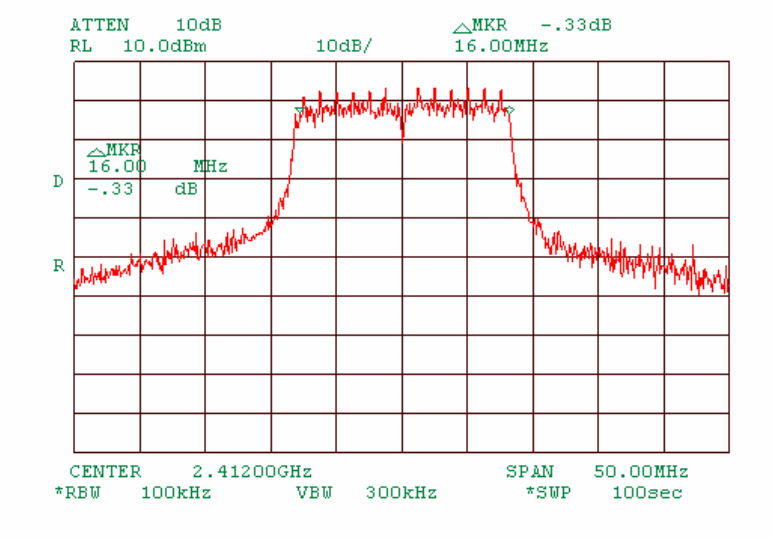
**Plot 13: 6 dB bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 6 Mbps OFDM.**



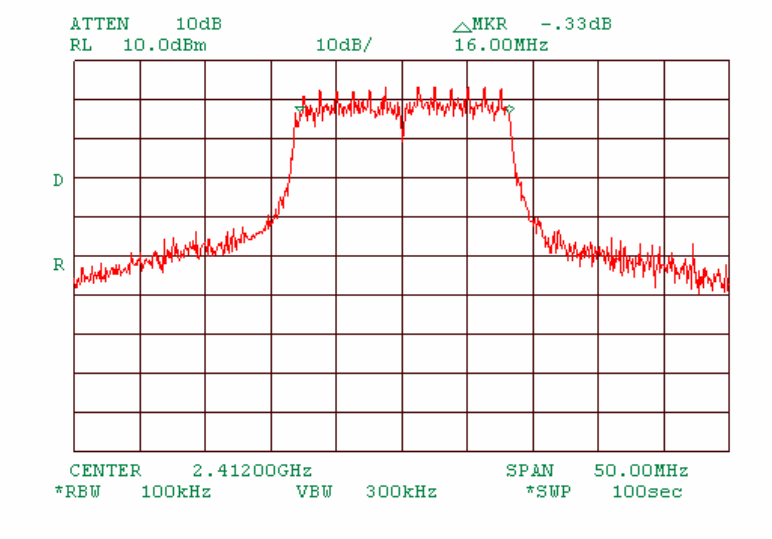

**Plot 14: 99% power bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 6 Mbps OFDM**



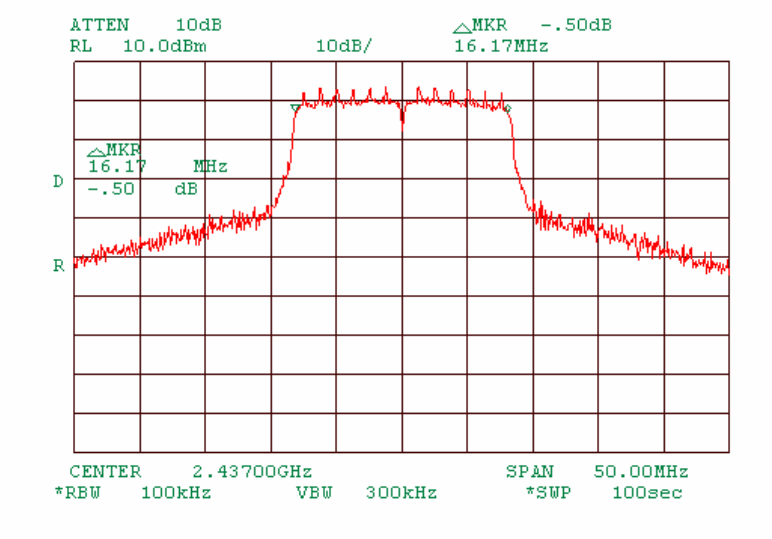
**Plot 15: 6 dB bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 54 Mbps OFDM.**



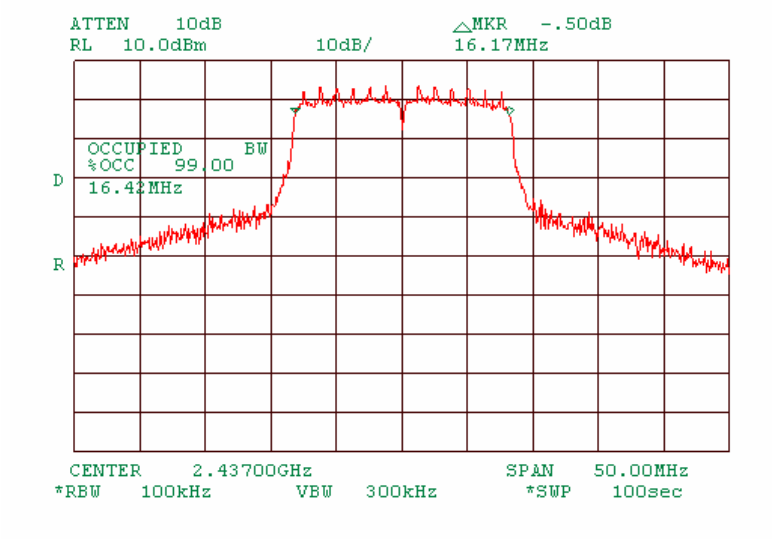

**Plot 16: 99% power bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 54 Mbps OFDM.**



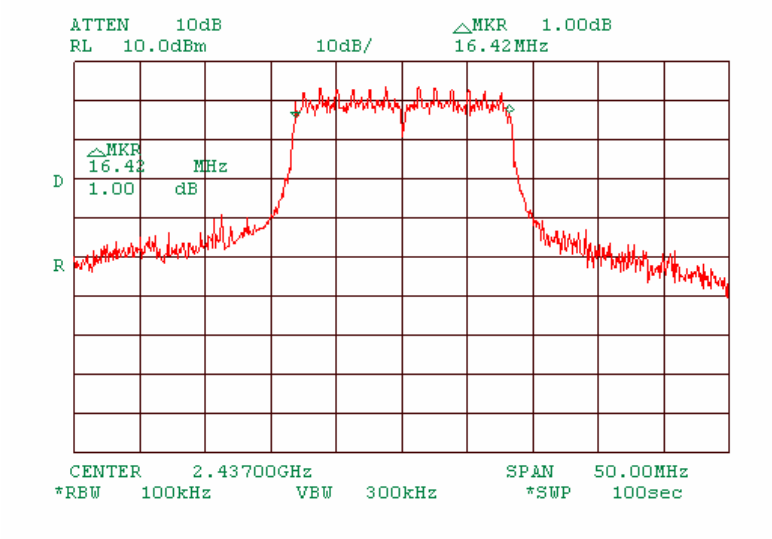
**Plot 17: 6 dB bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 6 Mbps OFDM.**



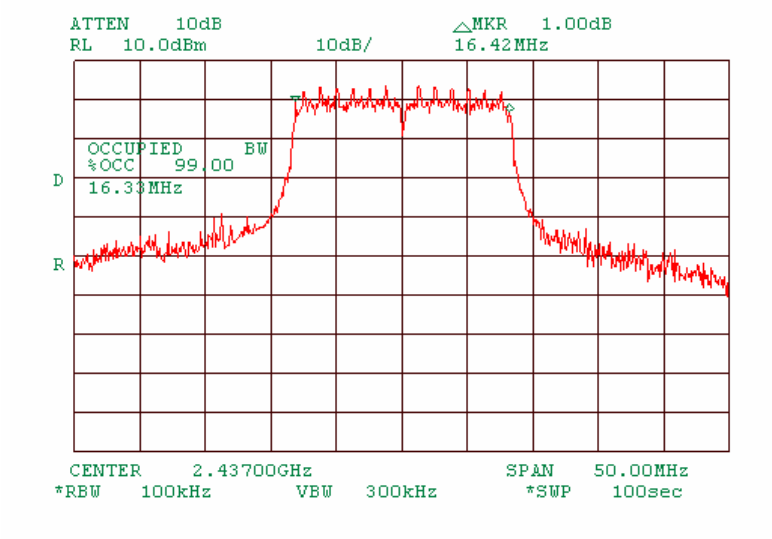

**Plot 18: 99% power bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 6 Mbps OFDM.**



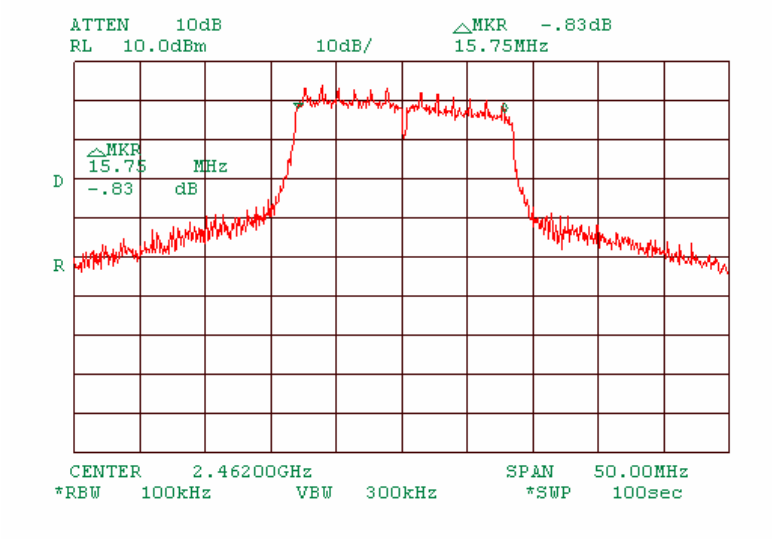
**Plot 19: 6 dB bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 54 Mbps OFDM.**



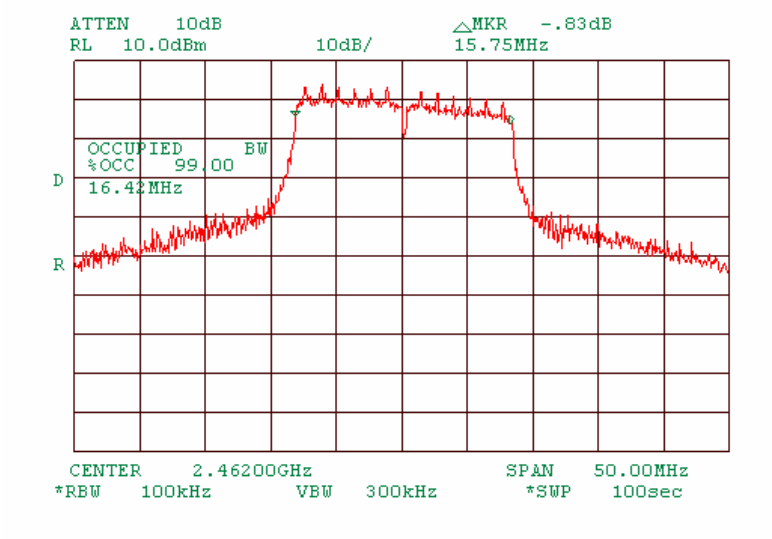

**Plot 20: 99% power bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 54 Mbps OFDM.**



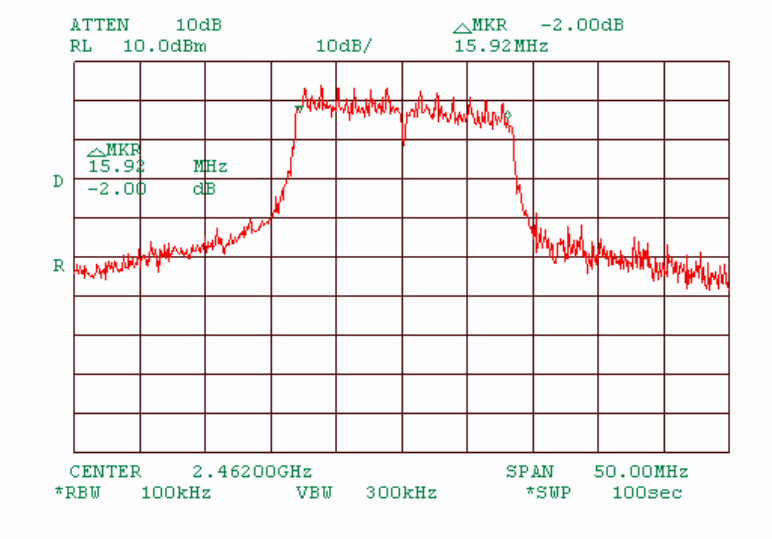
**Plot 21: 6 dB bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 6 Mbps OFDM.**



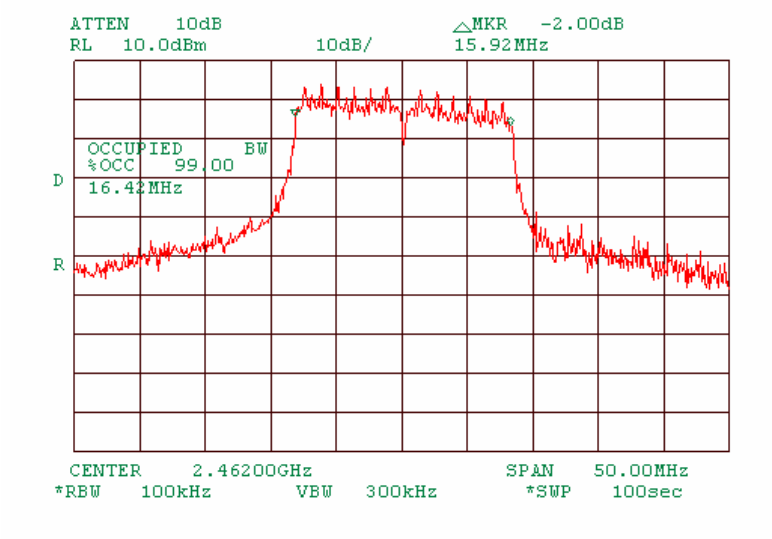

**Plot 22: 99% power bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 6 Mbps OFDM.**



**Plot 23: 6 dB bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 54 Mbps OFDM.**




**Plot 24: 99% power bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 54 Mbps OFDM.**



# 4 Transmitter tests according to 47CFR part 15 subpart C requirements and 99% power bandwidth

**Figure 1.3.1 6 dB bandwidth test setup**


**Photograph 1.3.1 6 dB bandwidth test setup**

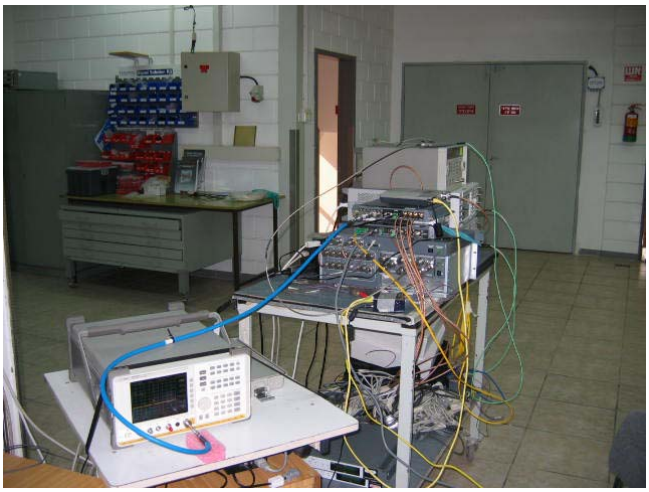


**Table 1: 6 dB bandwidth test results**

| | |
|---|---|
| ASSIGNED FREQUENCY BAND: | 2400 – 2483.5 MHz |
| ASSEMBLY | MA 850, MA 1000 (operated at PCS 1900 mode) |
| MA 1000 SETTINGS: | Transmit at 1930.0125 and 1989.9875 MHz |
| PORT: | 2 |
| DETECTOR USED: | Peak |
| SWEEP MODE: | Single |
| SWEEP TIME: | Auto |
| RESOLUTION BANDWIDTH: | 100 kHz |
| VIDEO BANDWIDTH: | 300 kHz |
| MODULATION ENVELOPE REFERENCE POINTS: | 6.0 dBc |
| MODULATION: | DSSS |
| MODULATING SIGNAL: | DBPSK |
| BIT RATE: | 1, 11 Mbps |

| Carrier frequency, MHz | 6 dB bandwidth, MHz | Limit, kHz | Margin, kHz | Verdict |
|---|---|---|---|---|
| | | | | Low frequency |
| 2412 | 12.75 | >500 | 12.25 | Pass |
| | | | | Mid frequency |
| 2437 | 12.67 | >500 | 12.17 | Pass |
| | | | | High frequency |
| 2462 | 13.50 | >500 | 13.00 | Pass |

| | |
|---|---|
| MODULATION: | OFDM |
| MODULATING SIGNAL: | BPSK |
| BIT RATE: | 6, 54Mbps |

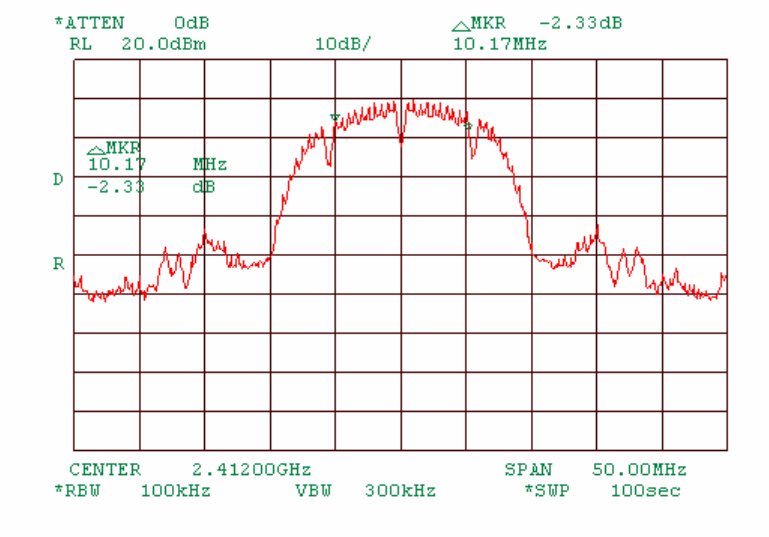
| Carrier frequency, MHz | 6 dB bandwidth, MHz | Limit, kHz | Margin, kHz | Verdict |
|---|---|---|---|---|
| | | | | Low frequency |
| 2412 | 16.00 | >500 | 15.50 | Pass |
| | | | | Mid frequency |
| 2437 | 15.83 | >500 | 15.33 | Pass |
| | | | | High frequency |
| 2462 | 15.75 | >500 | 15.25 | Pass |

**Reference numbers of test equipment used**

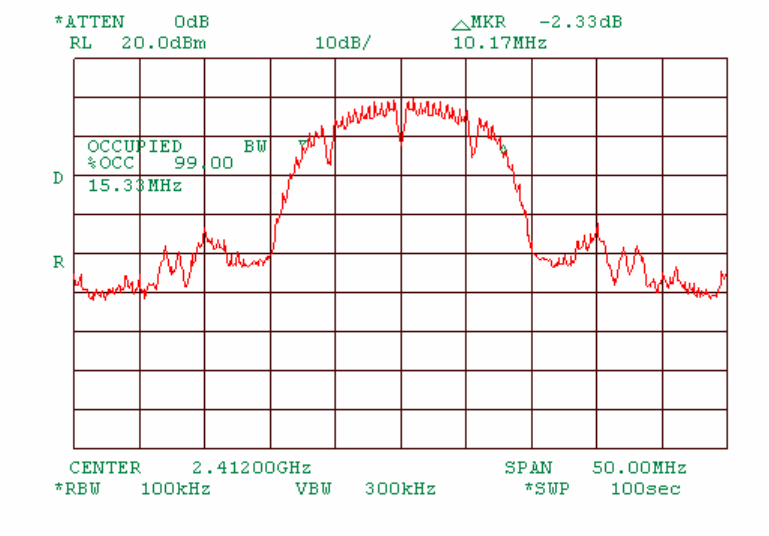
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| HL 1424 | HL 1651 | HL 2399 | | | | | | |

Full description is given in Appendix A.

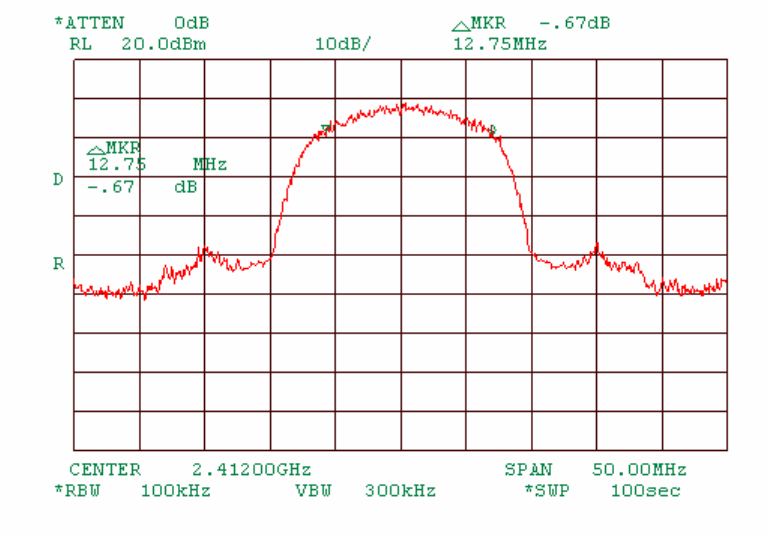
**Plot 1: 6 dB bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 1 Mbps DSSS.**



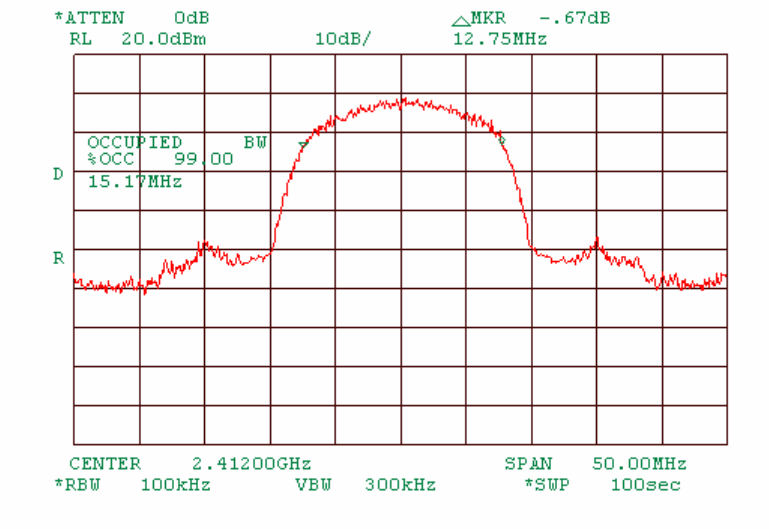

**Plot 2: 99% power bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 1 Mbps DSSS.**



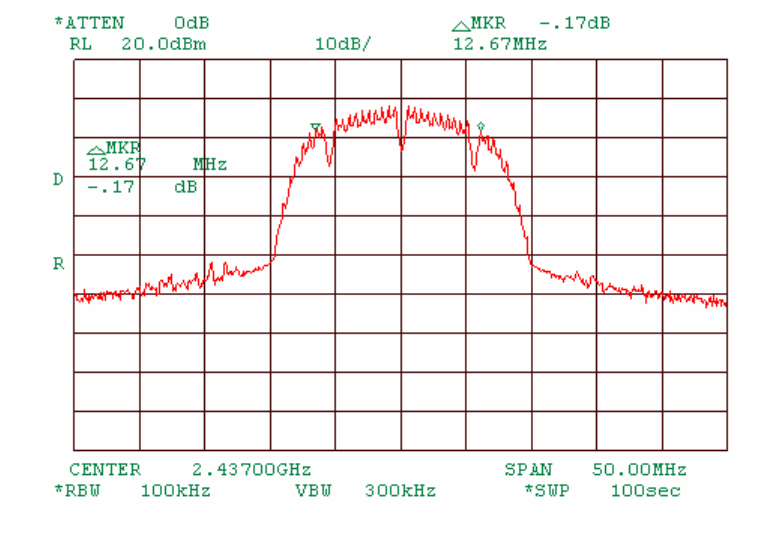
**Plot 3: 6 dB bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 11 Mbps DSSS.**



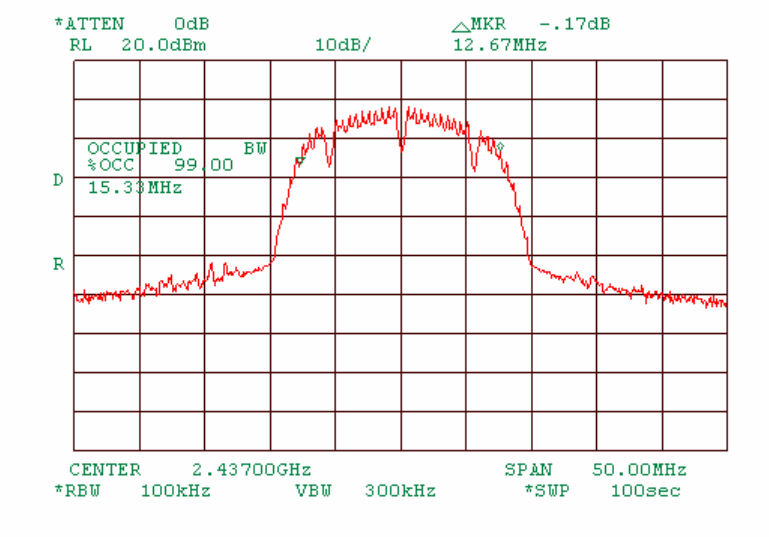

**Plot 4: 99% power bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 11 Mbps DSSS.**



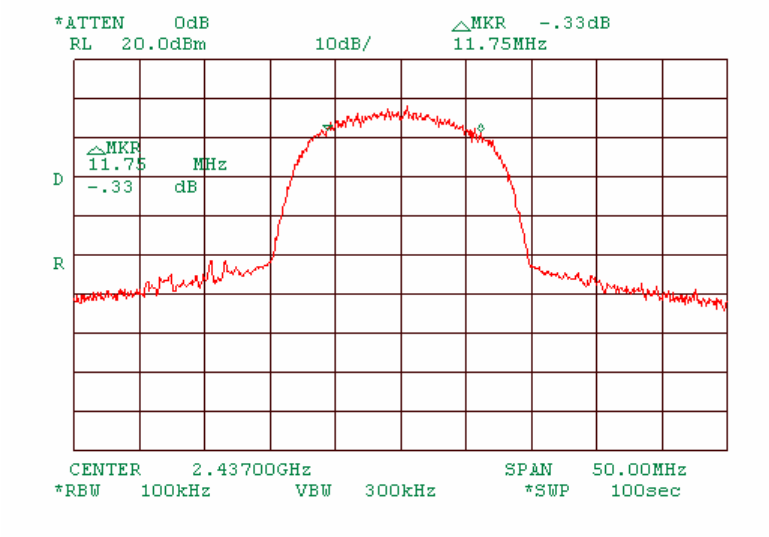
**Plot 5: 6 dB bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 1 Mbps DSSS.**



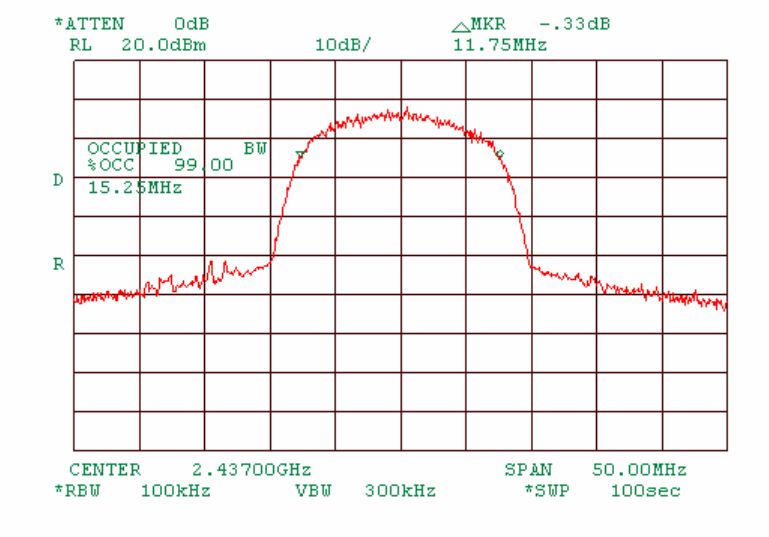

**Plot 6: 99% power bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 1 Mbps DSSS.**



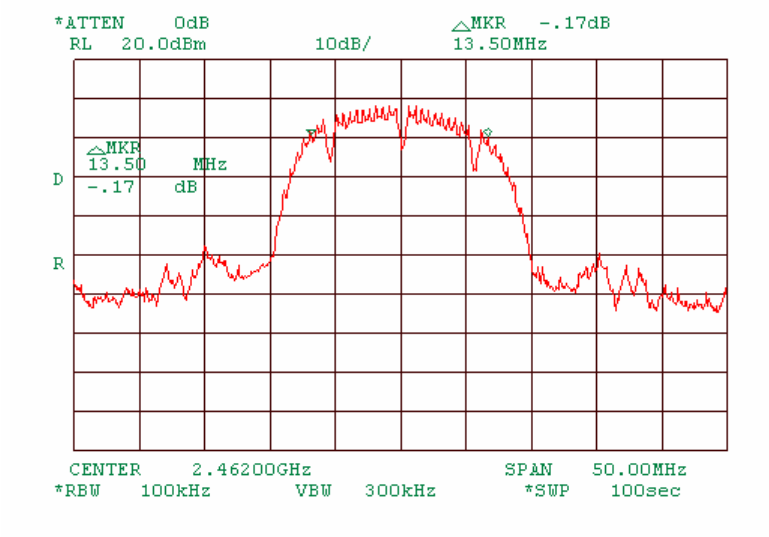
**Plot 7: 6 dB bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 11 Mbps DSSS.**



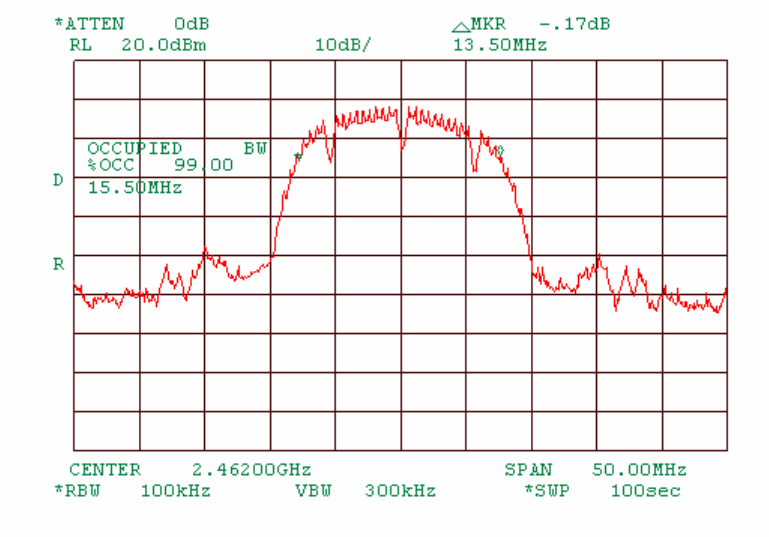

**Plot 8: 99% power bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 11 Mbps DSSS.**



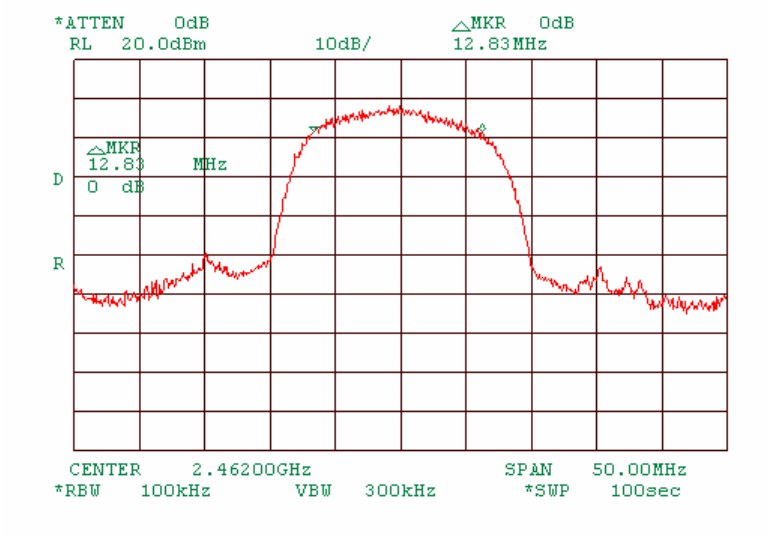
**Plot 9: 6 dB bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 1 Mbps DSSS.**



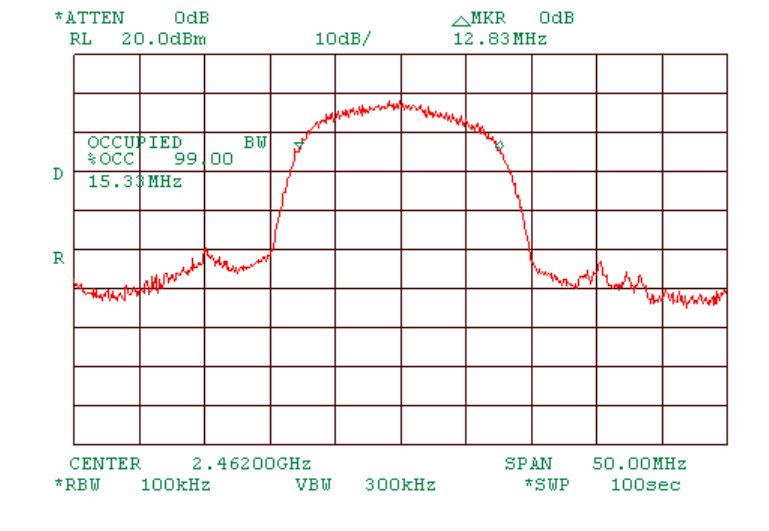

**Plot 10: 99% power bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 1 Mbps DSSS.**



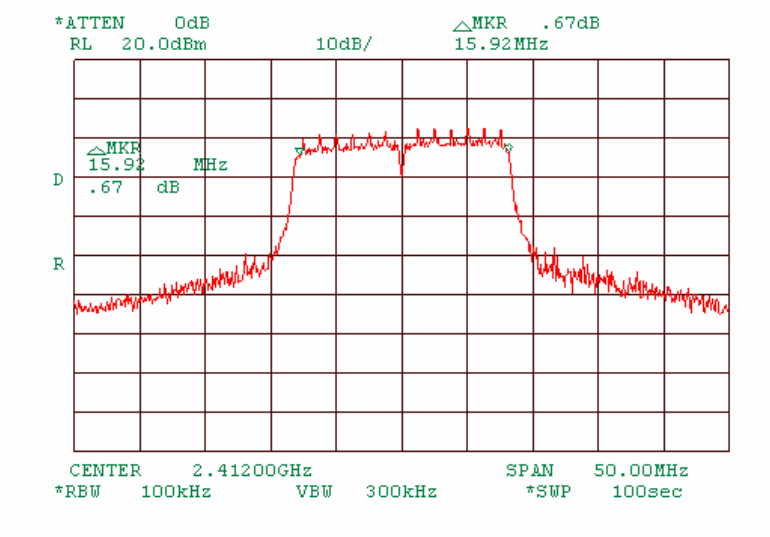
**Plot 11: 6 dB bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 11 Mbps DSSS.**



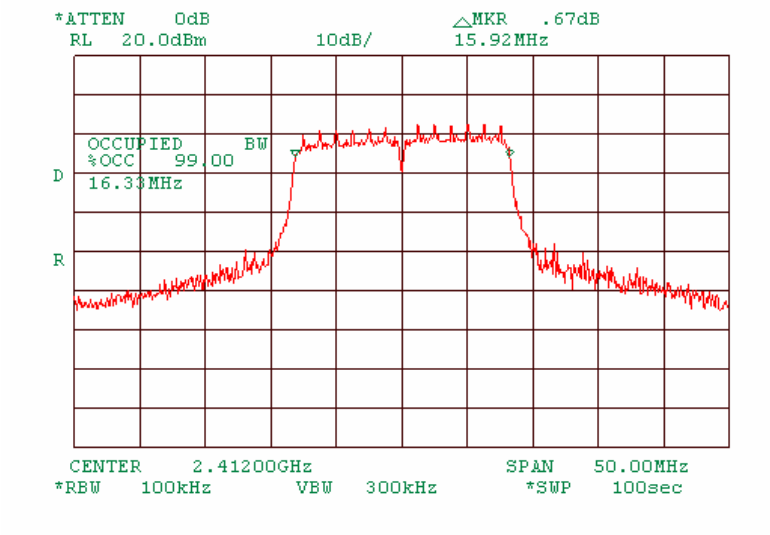

**Plot 12: 99% power bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 11 Mbps DSSS.**



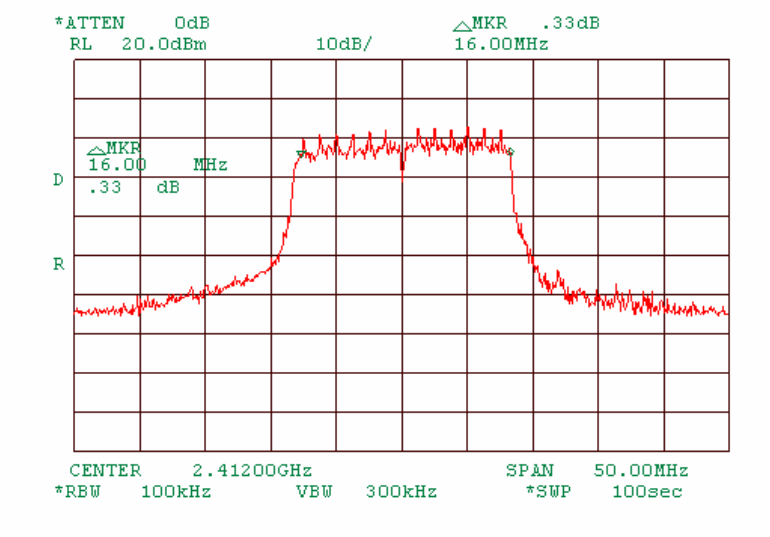
**Plot 13: 6 dB bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 6 Mbps OFDM.**



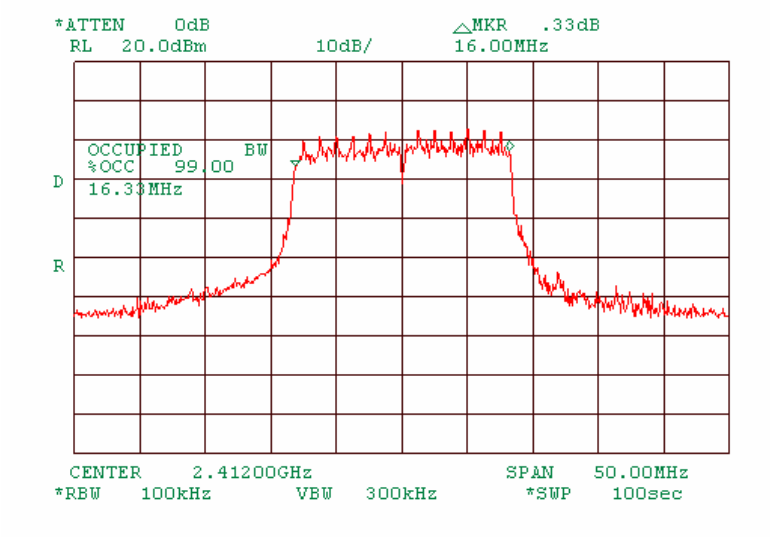

**Plot 14: 99% power bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 6 Mbps OFDM**



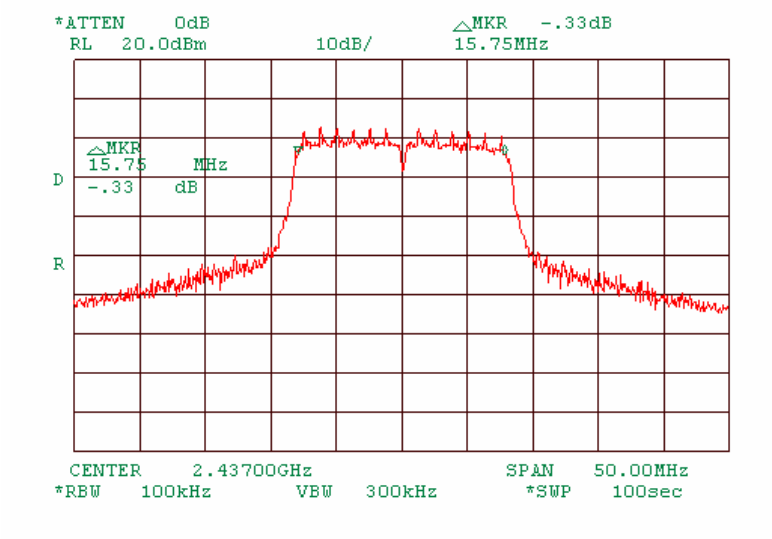
**Plot 15: 6 dB bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 54 Mbps OFDM.**



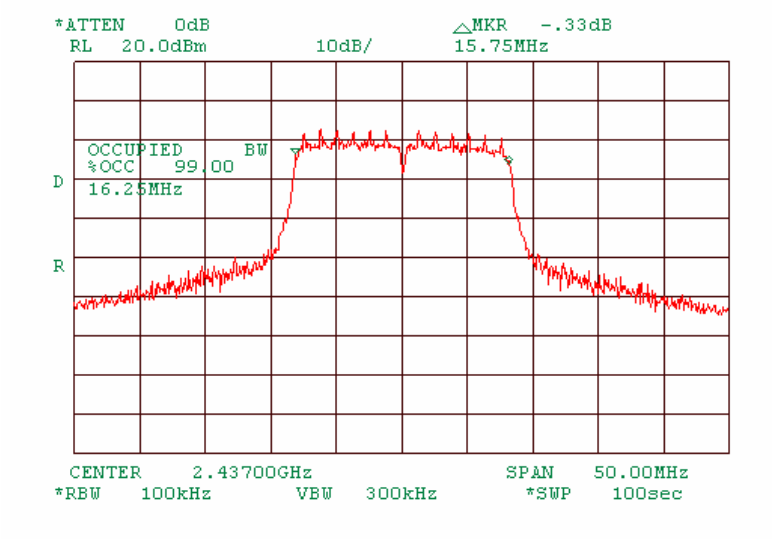

**Plot 16: 99% power bandwidth test result at low frequency with MA 850 and MA 1000 interconnected. At 54 Mbps OFDM.**



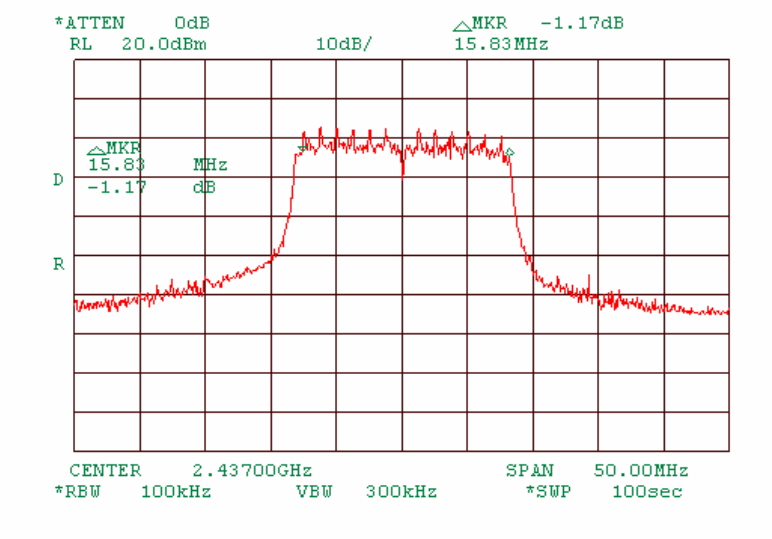
**Plot 17: 6 dB bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 6 Mbps OFDM.**



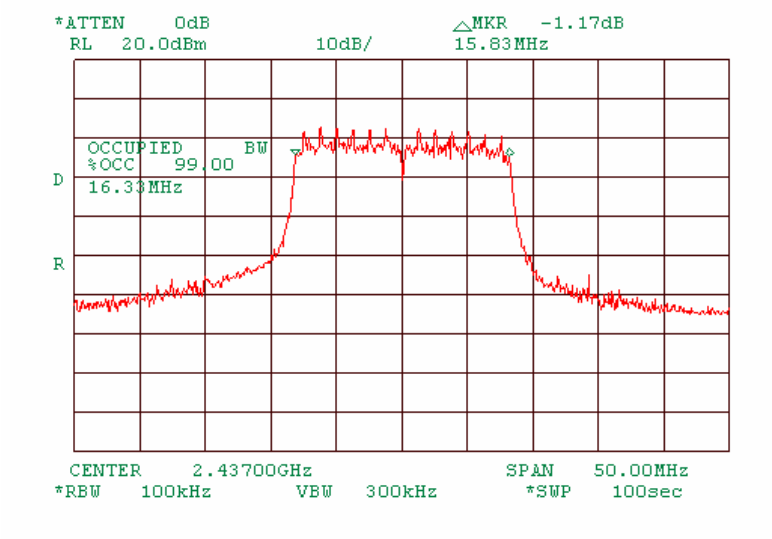

**Plot 18: 99% power bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 6 Mbps OFDM.**



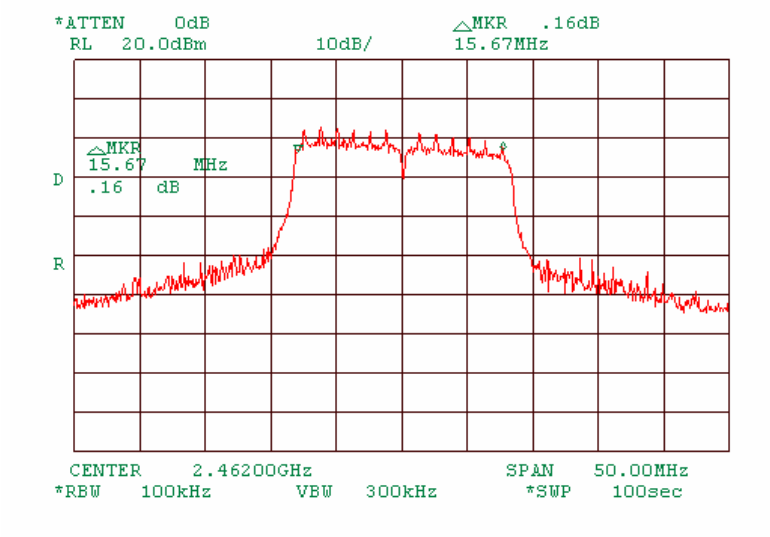
**Plot 19: 6 dB bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 54 Mbps OFDM.**



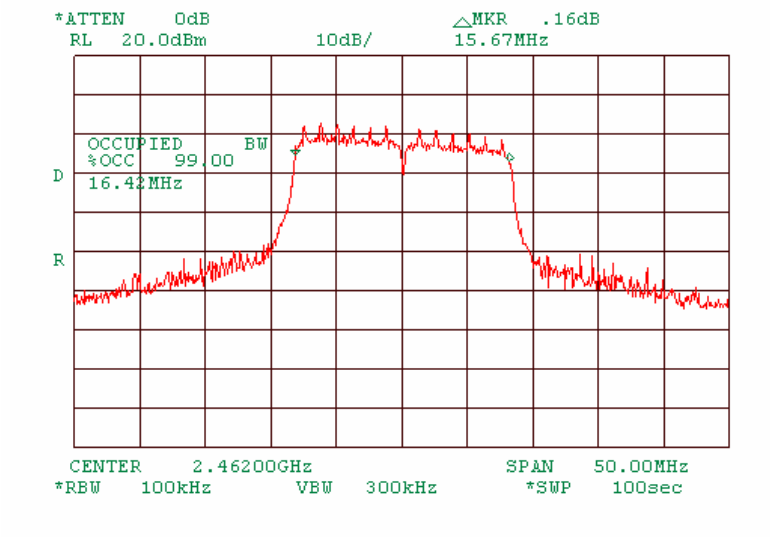

**Plot 20: 99% power bandwidth test result at mid frequency with MA 850 and MA 1000 interconnected. At 54 Mbps OFDM.**



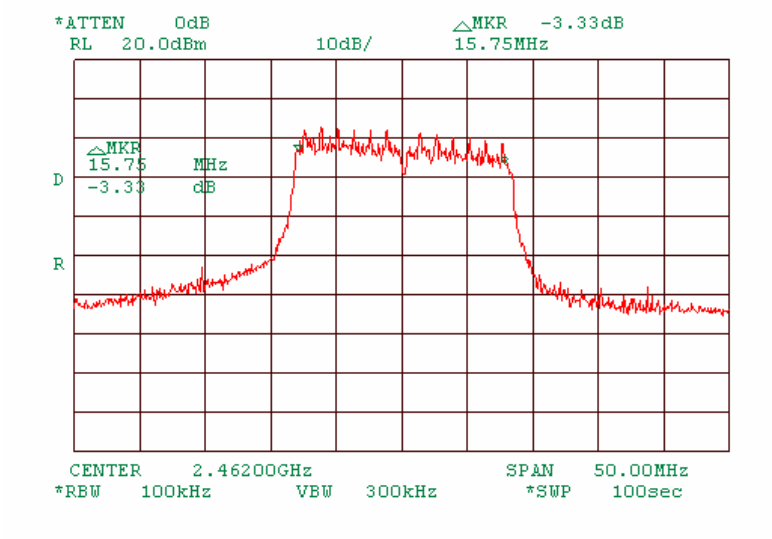
**Plot 21: 6 dB bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 6 Mbps OFDM.**




**Plot 22: 99% power bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 6 Mbps OFDM.**



**Plot 23: 6 dB bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 54 Mbps OFDM.**




**Plot 1.324: 99% power bandwidth test result at high frequency with MA 850 and MA 1000 interconnected. At 54 Mbps OFDM.**