5.2.6. Transmitter Peak Power Spectral Density

Test Summary:

Test Engineer:	Sarah Williams	**Test Dates:**	25 August 2012 & 27 August 2012
Test Sample Serial Number:	LK220202177		

FCC Reference:	Part 15.407(a)(1)
Test Method Used:	FCC KDB 789033 E) referencing KDB 789033 C)3)b), Method SA-1

Environmental Conditions:

Temperature (°C):	22 to 24
Relative Humidity (%):	56 to 61

Note(s):

1. Transmitter Peak Power Spectral Density tests were performed using a test receiver in accordance with FCC KDB 789033 D01 C)3)b) Method SA-1.
2. The EUT has three RF ports, P2401, P2403 and P2405. PPSD from all ports were measured and combined using the measure-and-sum method stated in FCC KDB 662911 D01.
3. The EUT was transmitting at >99% duty cycle.
4. The EUT was configured with a power setting of 8.5 dBm.
5. All supported modes and channel widths were initially investigated on one channel. The modes that produced the highest power and widest bandwidth for the 5.15-5.25 GHz band were:
    - 802.11a – 16QAM / 6 Mbps
    - 802.11n HT20 – BPSK / 6.5 Mbps / MCS0
    - 802.11n HT40 – BPSK / 13.5 Mbps / MCS0

    Measurements were performed on the relevant channels and ports for all tests.

5. The Customer declared that the transmit signals from all 3 ports are correlated. The Customer stated that the 3 antennas used have unequal antenna gains: G1 = 3.2 dBi, G2 = 3.4 dBi and G3 = 5.4 dBi. The directional gain was calculated in accordance with FCC KDB 662911 D01 Directional Gain Calculations:

$$10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2/3]$$

The total array gain was calculated as:

$$10 \log[(10^{3.2/20} + 10^{3.4/20} + 10^{5.4/20})^2/3] = 8.8 \text{ dBi}$$

In accordance with 15.407(a)(1), 8.8 dBi is 2.8 dB over the directional gain of 6 dBi therefore the PPSD limit of 4 dBm is reduced to 1.2 dBm.

Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) (continued)

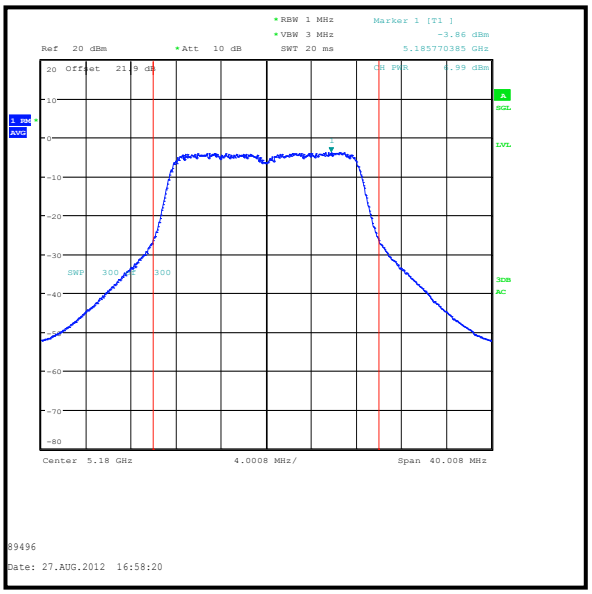
Results: 802.11a / 20 MHz / 6 Mbps / BPSK

Channel	Frequency (MHz)	PPSD P2401 (dBm /MHz)	PPSD P2403 (dBm /MHz)	PPSD P2405 (dBm /MHz)	Combined PPSD (dBm /MHz)
Bottom	5180	-3.9	-4.0	-4.5	0.6
Middle	5200	-3.6	-4.3	-4.8	0.6
Top	5240	-3.5	-3.3	-4.6	1.0

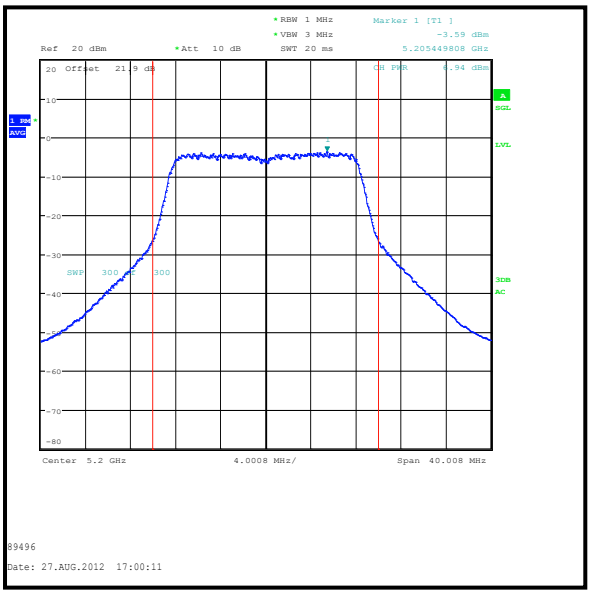
Channel	Frequency (MHz)	Combined PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5180	0.6	1.2	0.6	Complied
Middle	5200	0.6	1.2	0.6	Complied
Top	5240	1.0	1.2	0.2	Complied

Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) (continued)

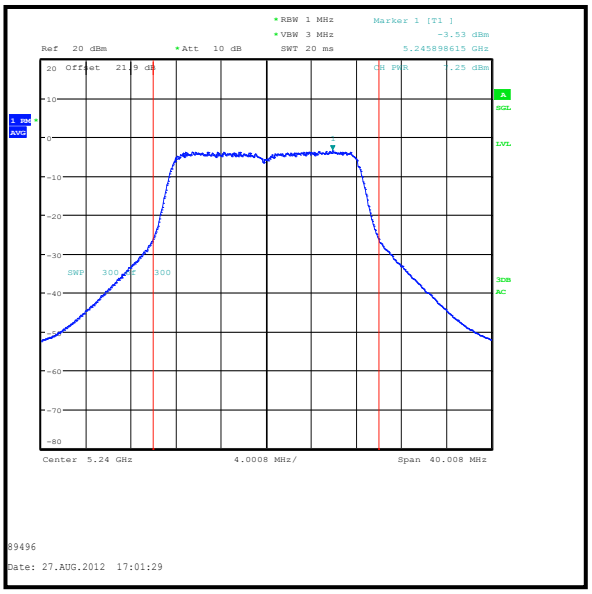
Results: 802.11a / 20 MHz / 6 Mbps / BPSK / Port 2401



Bottom Channel



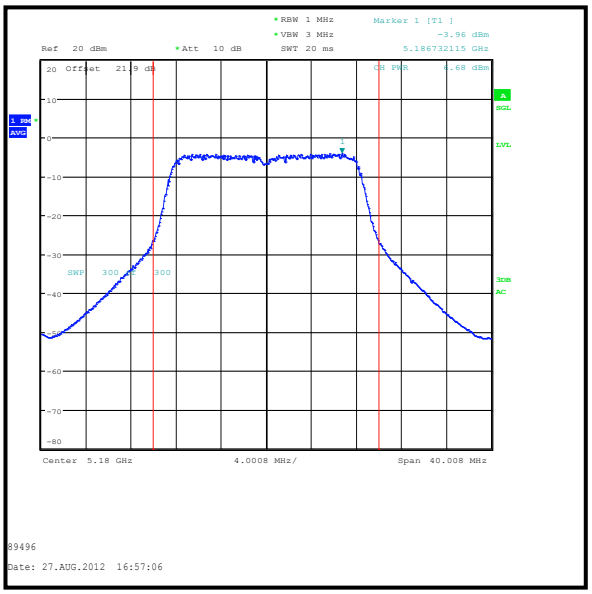
Middle Channel



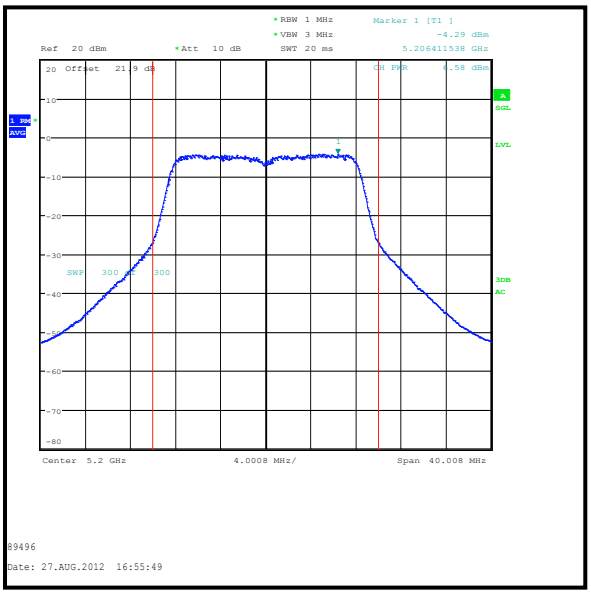
Top Channel

Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) (continued)

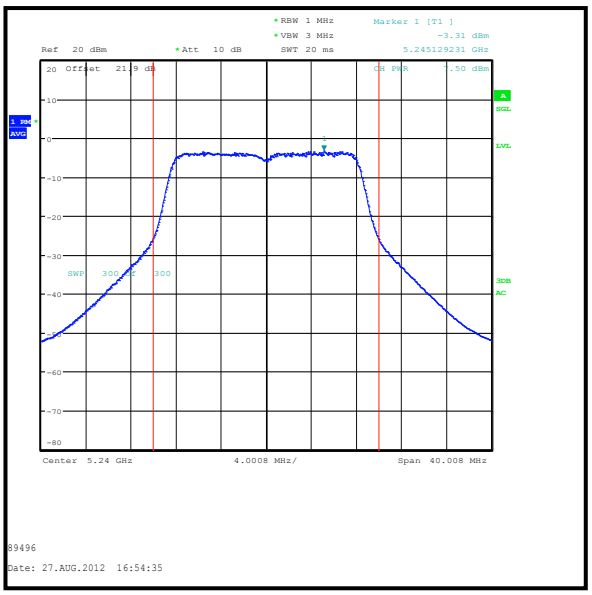
Results: 802.11a / 20 MHz / 6 Mbps / BPSK / Port 2403



Bottom Channel



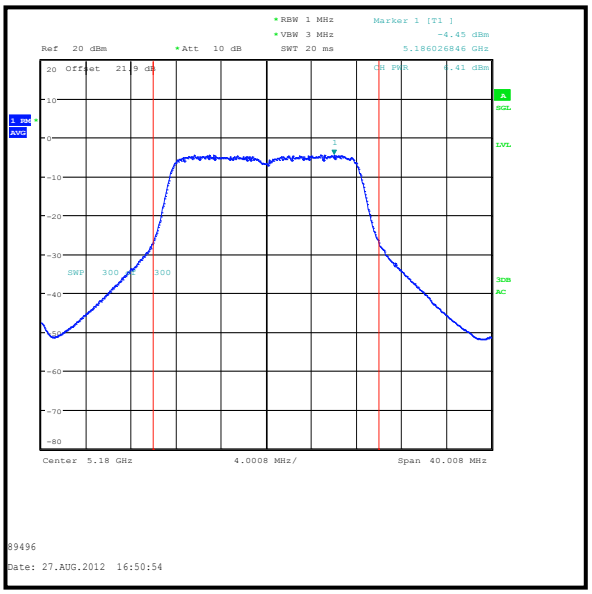
Middle Channel



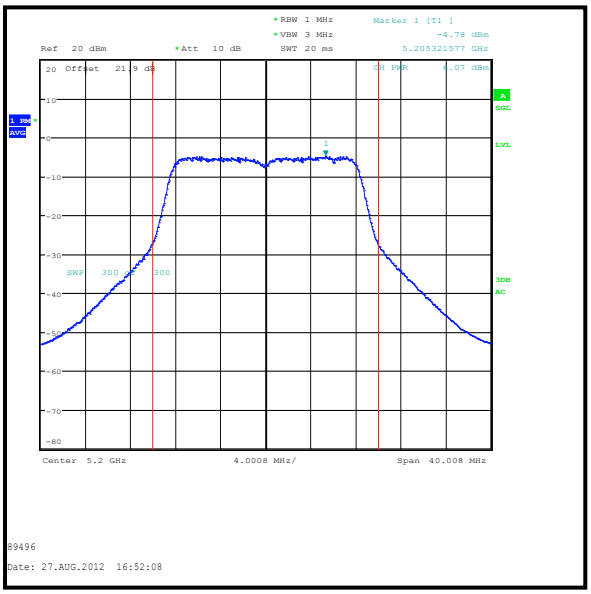
Top Channel

Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) (continued)

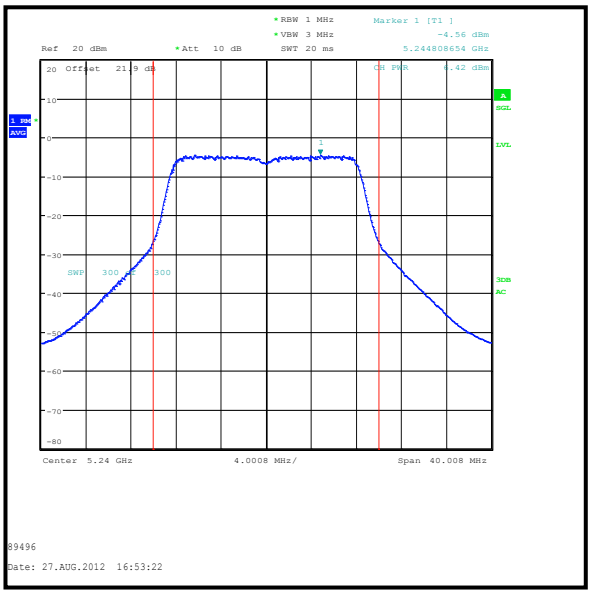
Results: 802.11a / 20 MHz / 6 Mbps / BPSK / Port 2405



Bottom Channel



Middle Channel



Top Channel

Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) (continued)

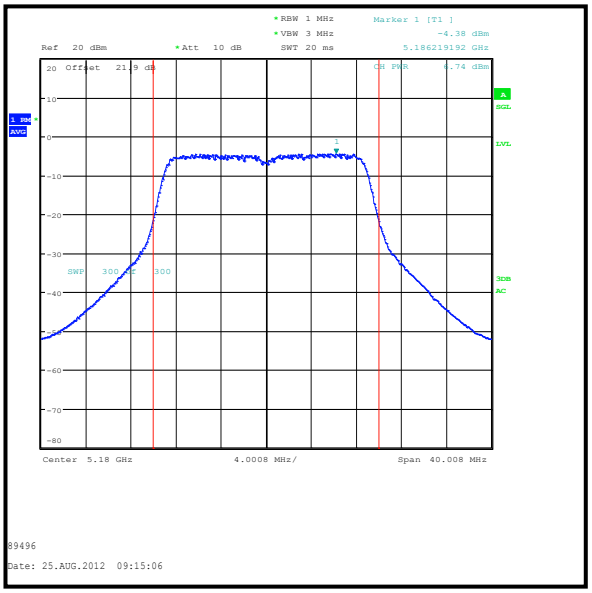
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK

Channel	Frequency (MHz)	PPSD P2401 (dBm /MHz)	PPSD P2403 (dBm /MHz)	PPSD P2405 (dBm /MHz)	Combined PPSD (dBm /MHz)
Bottom	5180	-4.4	-4.3	-4.9	0.2
Middle	5200	-4.2	-4.7	-5.1	0.1
Top	5240	-4.1	-3.6	-4.8	0.6

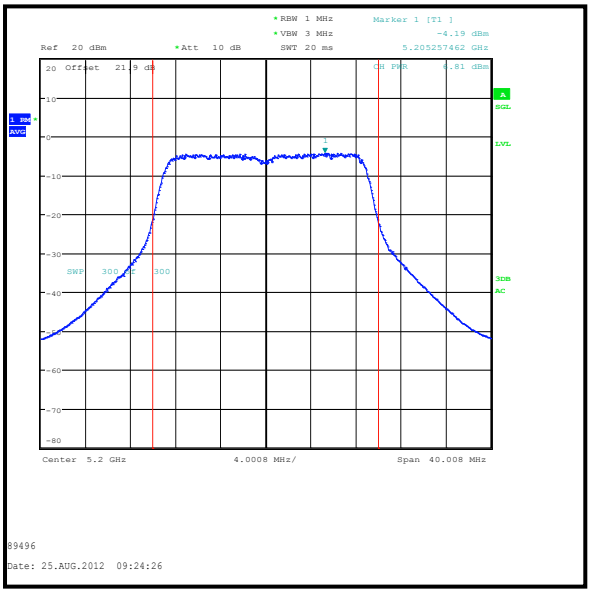
Channel	Frequency (MHz)	Combined PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5180	0.2	1.2	1.0	Complied
Middle	5200	0.1	1.2	1.1	Complied
Top	5240	0.6	1.2	0.6	Complied

Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) (continued)

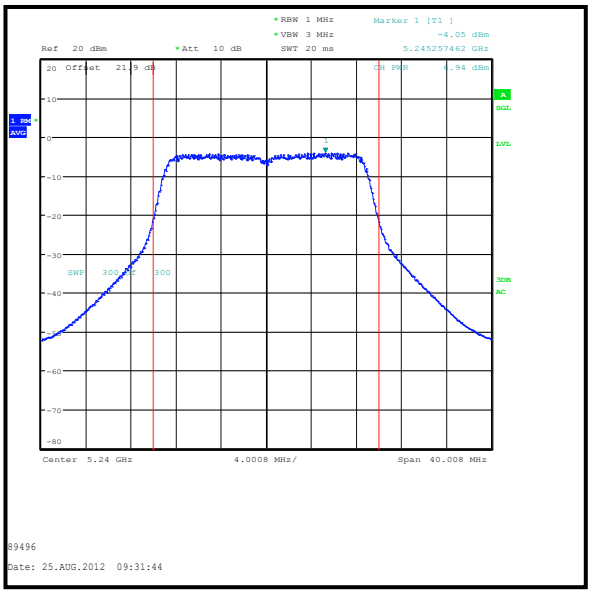
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2401



Bottom Channel



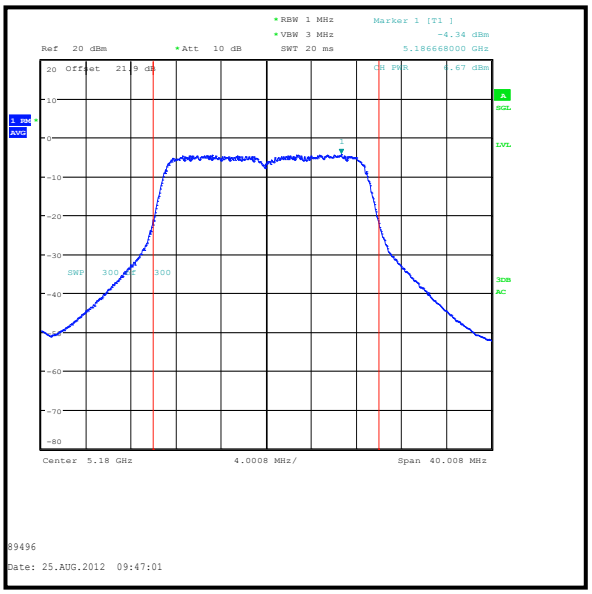
Middle Channel



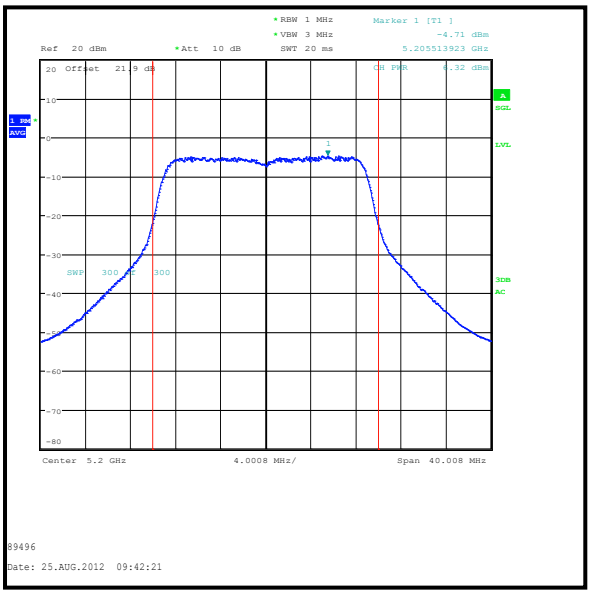
Top Channel

Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) (continued)

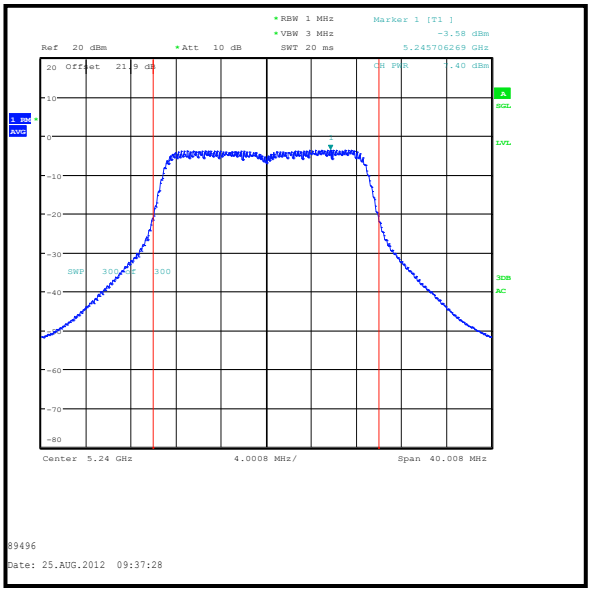
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2403



Bottom Channel



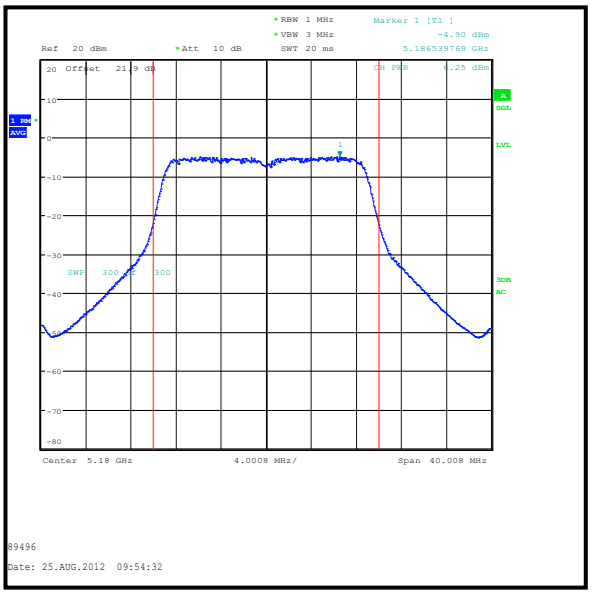
Middle Channel



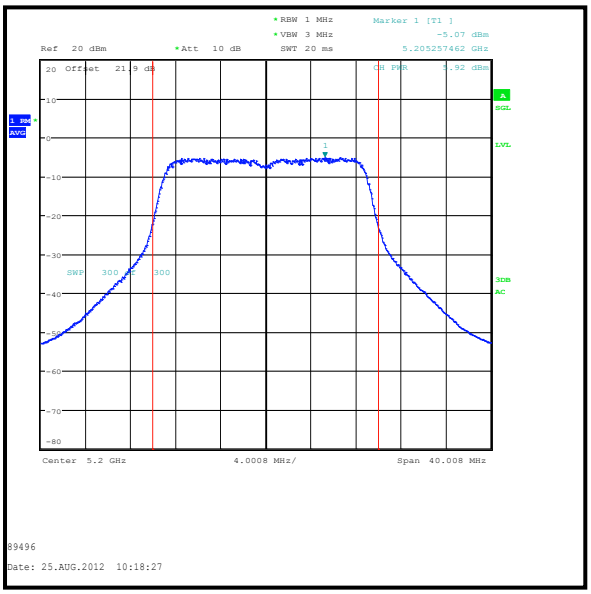
Top Channel

Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) (continued)

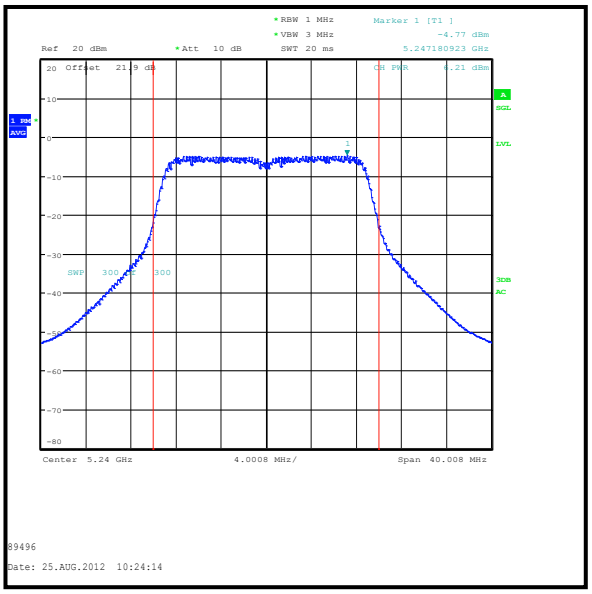
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2405



Bottom Channel



Middle Channel



Top Channel

Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) (continued)

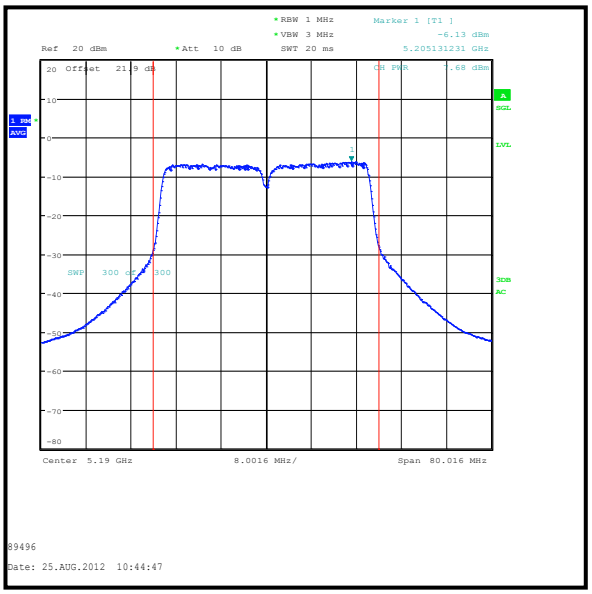
Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK

Channel	Frequency (MHz)	PPSD P2401 (dBm /MHz)	PPSD P2403 (dBm /MHz)	PPSD P2405 (dBm /MHz)	Combined PPSD (dBm /MHz)
Bottom	5190	-6.1	-6.7	-7.1	-1.9
Top	5230	-6.4	-6.6	-7.8	-2.1

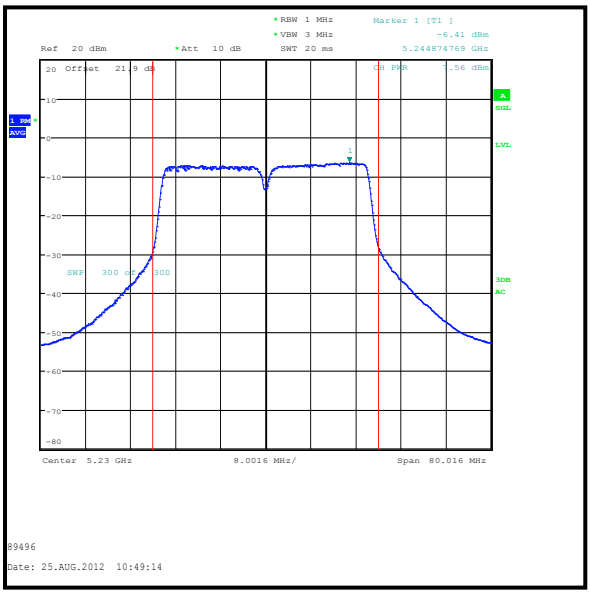
Channel	Frequency (MHz)	Combined PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5190	-1.9	1.2	3.1	Complied
Top	5230	-2.1	1.2	3.3	Complied

Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) (continued)

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK / Port 2401



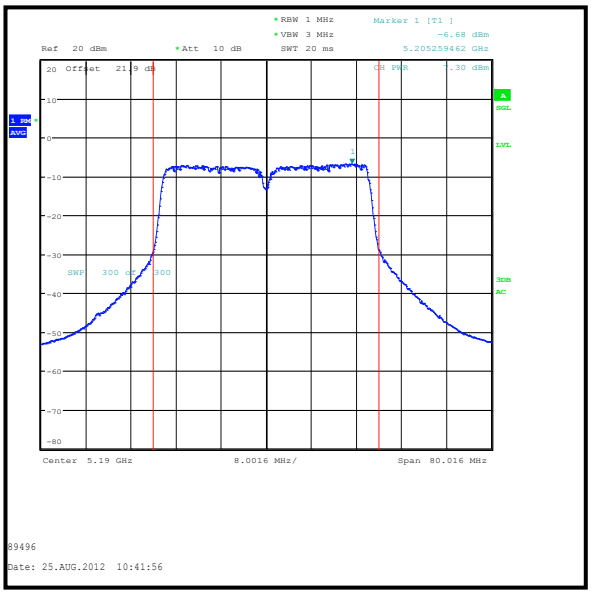
Bottom Channel



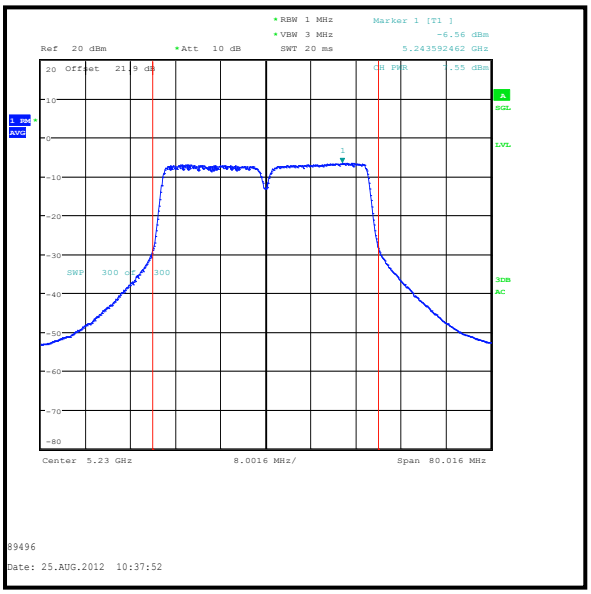
Top Channel

Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) (continued)

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK / Port 2403



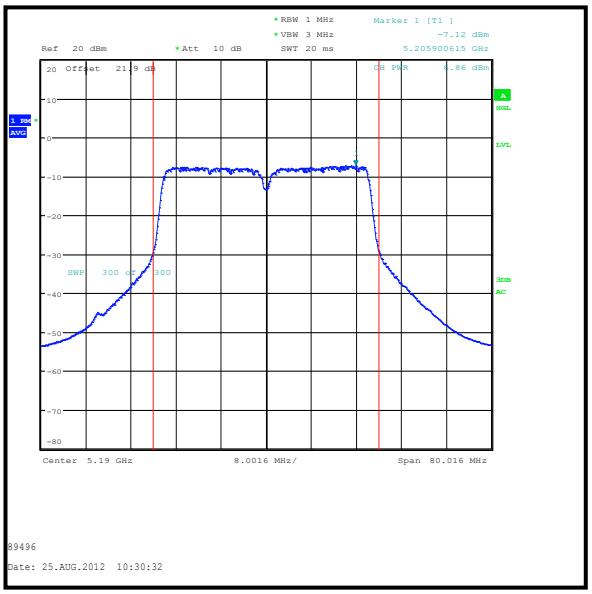
Bottom Channel



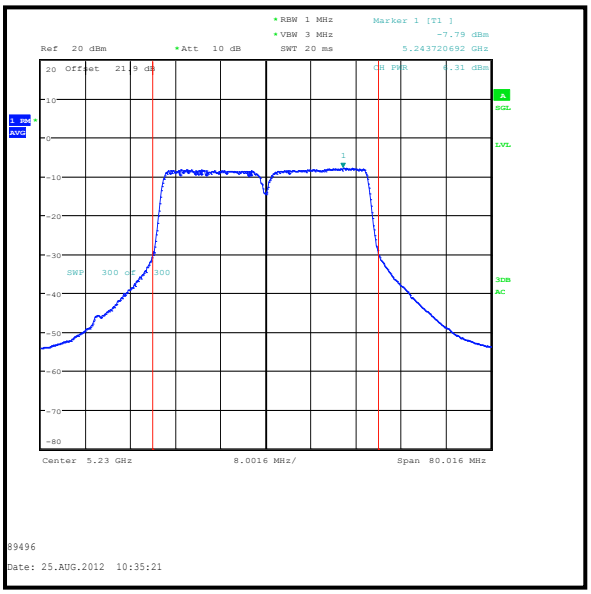
Top Channel

Transmitter Peak Power Spectral Density (5.15-5.25 GHz band) (continued)

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK / Port 2405



Bottom Channel



Top Channel

Transmitter Peak Power Spectral Density (5.25-5.35 GHz band)

Test Summary:

Test Engineer:	Sarah Williams	**Test Dates:**	17 September 2012
Test Sample Serial Number:	LK220202177		

FCC Reference:	Part 15.407(a)(2)
Test Method Used:	FCC KDB 789033 E) referencing KDB 789033 C)3)b), Method SA-1

Environmental Conditions:

Temperature (°C):	22
Relative Humidity (%):	41

Note(s):

1. All supported modes and channel widths were initially investigated on one channel. The modes that produced the highest power and widest bandwidth for the 5.25-5.35 GHz band were:
    - 802.11a – BPSK / 6 Mbps
    - 802.11n HT20 – BPSK / 6.5 Mbps / MCS0
    - 802.11n HT40 – BPSK / 13.5 Mbps / MCS0

    Measurements were performed on the relevant channels and ports for all tests.
2. The EUT was configured with a power setting of 14.0 dBm for all channels and channel bandwidths.
6. FCC Part 15.407(a)(2) limit for PPSD in the 5.25-5.35 GHz operating bands is <11 dBm/MHz. The Customer declared that the transmit signals from all 3 ports are correlated. The Customer stated that the 3 antennas used have unequal antenna gains: G1 = 3.2 dBi, G2 = 3.4 dBi and G3 = 5.4 dBi. The directional gain was calculated in accordance with FCC KDB 662911 D01 Directional Gain Calculations:

$$10\ log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2/3]$$

The total array gain was calculated as:

$$10\ log[(10^{3.2/20} + 10^{3.4/20} + 10^{5.4/20})^2/3] = 8.8\ dBi$$

In accordance with 15.407(a)(2), 8.8 dBi is 2.8 dB over the directional gain of 6 dBi therefore the PPSD limit of 11 dBm is reduced to 8.2 dBm.

Transmitter Peak Power Spectral Density (5.25-5.35 GHz band GHz bands) (continued)

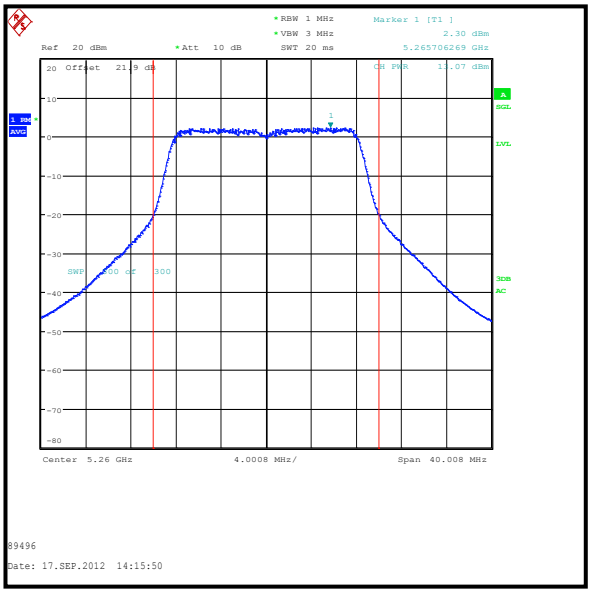
Results: 802.11a / 20 MHz / 6 Mbps / BPSK

Channel	Frequency (MHz)	PPSD P2401 (dBm /MHz)	PPSD P2403 (dBm /MHz)	PPSD P2405 (dBm /MHz)	Combined PPSD (dBm /MHz)
Bottom	5260	2.3	1.5	0.9	6.4
Middle	5280	2.2	1.9	0.7	6.4
Top	5320	2.1	2.0	0.4	6.3

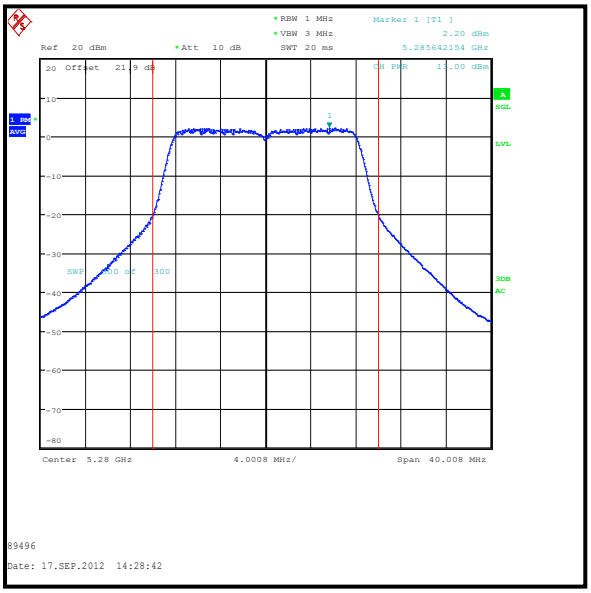
Channel	Frequency (MHz)	Combined PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5260	6.4	8.2	1.8	Complied
Middle	5280	6.4	8.2	1.8	Complied
Top	5320	6.3	8.2	1.9	Complied

Transmitter Peak Power Spectral Density (5.25-5.35 GHz band) (continued)

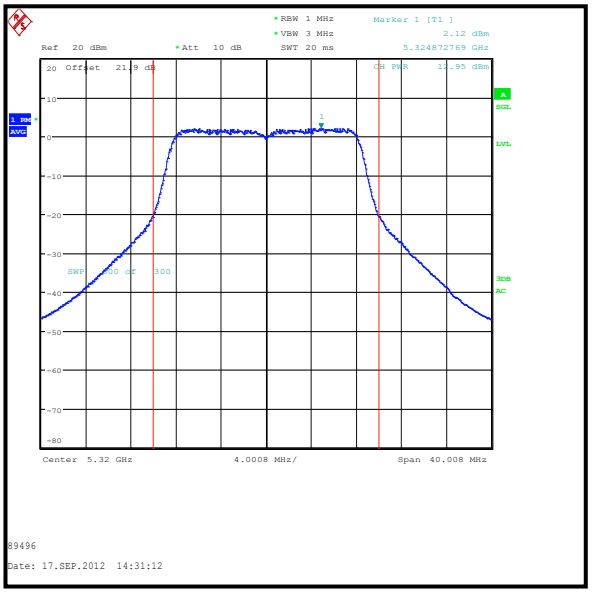
Results: 802.11a / 20 MHz / 6 Mbps / BPSK / Port 2401



Bottom Channel



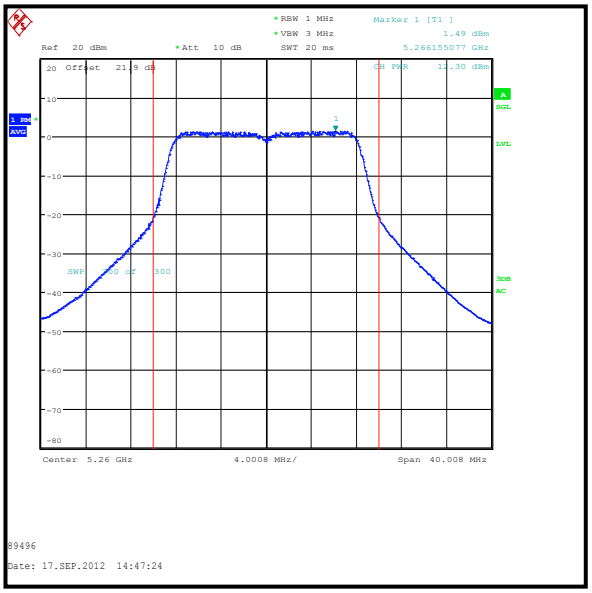
Middle Channel



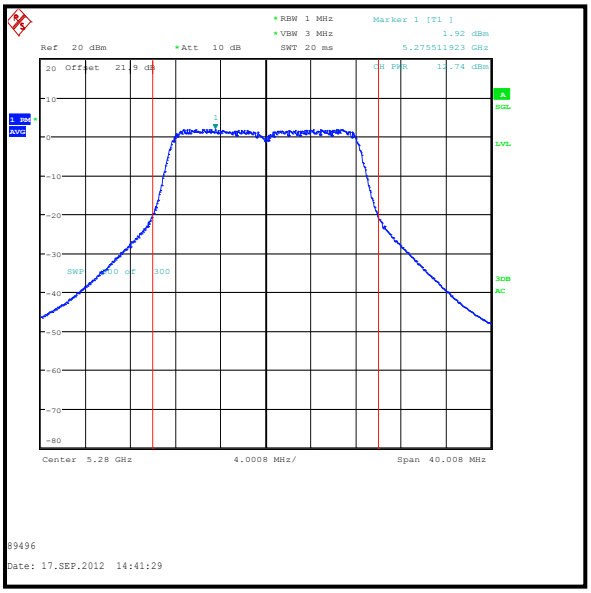
Top Channel

Transmitter Peak Power Spectral Density (5.25-5.35 GHz band) (continued)

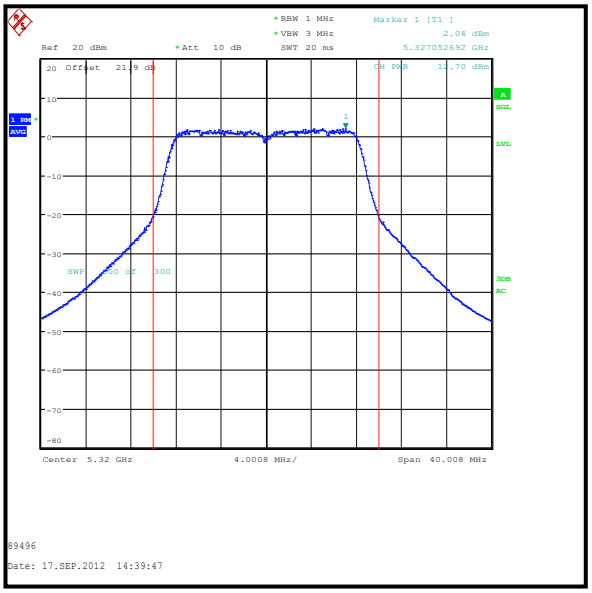
Results: 802.11a / 20 MHz / 6 Mbps / BPSK / Port 2403



Bottom Channel



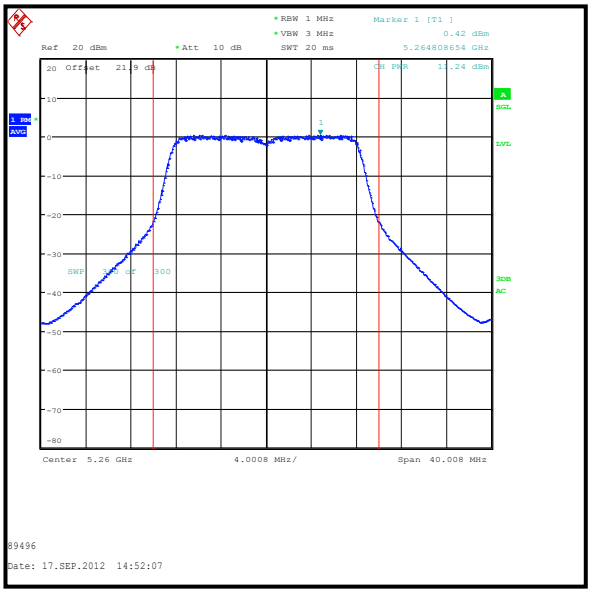
Middle Channel



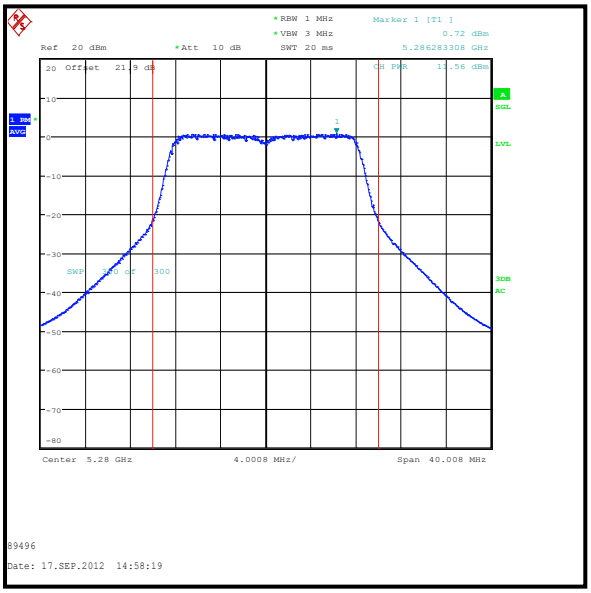
Top Channel

Transmitter Peak Power Spectral Density (5.25-5.35 GHz band) (continued)

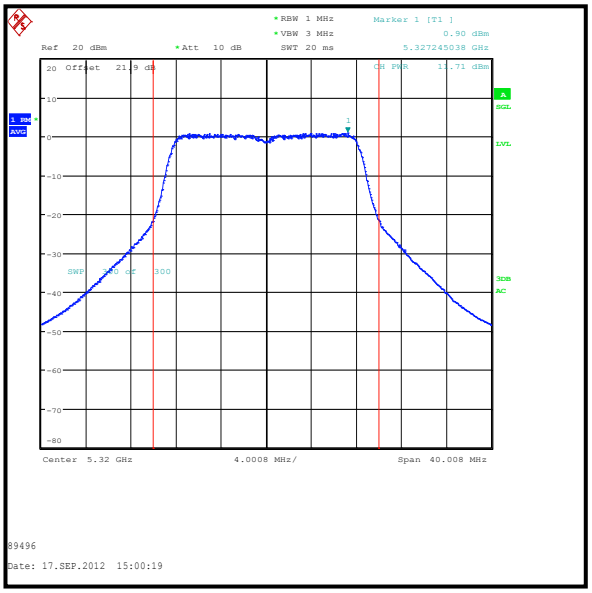
Results: 802.11a / 20 MHz / 6 Mbps / BPSK / Port 2405



Bottom Channel



Middle Channel



Top Channel

Transmitter Peak Power Spectral Density (5.25-5.35 GHz band) (continued)

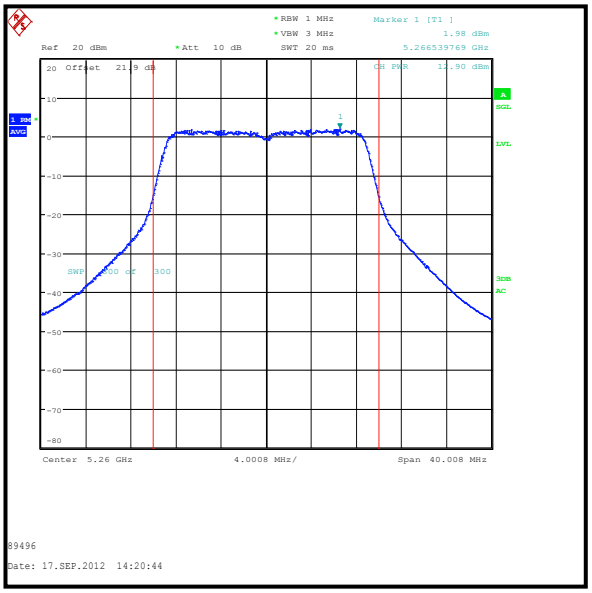
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK

Channel	Frequency (MHz)	PPSD P2401 (dBm /MHz)	PPSD P2403 (dBm /MHz)	PPSD P2405 (dBm /MHz)	Combined PPSD (dBm /MHz)
Bottom	5260	2.0	1.4	0.1	6.0
Middle	5280	1.7	1.7	0.4	6.1
Top	5320	2.2	1.9	0.7	6.4

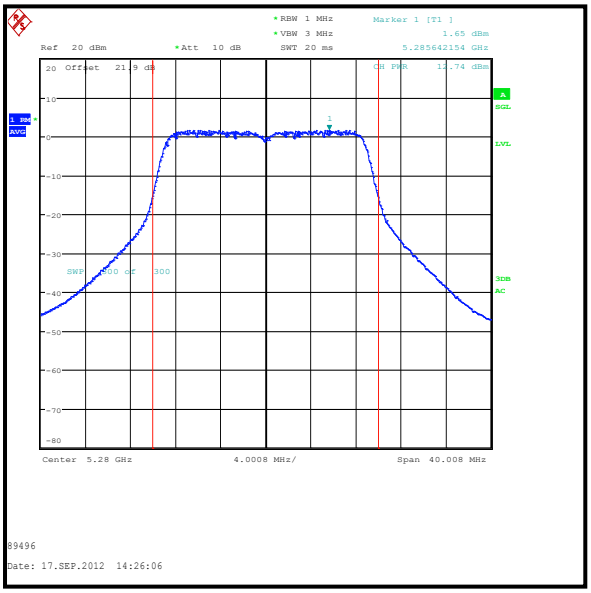
Channel	Frequency (MHz)	Combined PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5260	6.0	8.2	2.2	Complied
Middle	5280	6.1	8.2	2.1	Complied
Top	5320	6.4	8.2	1.8	Complied

Transmitter Peak Power Spectral Density (5.25-5.35 GHz band) (continued)

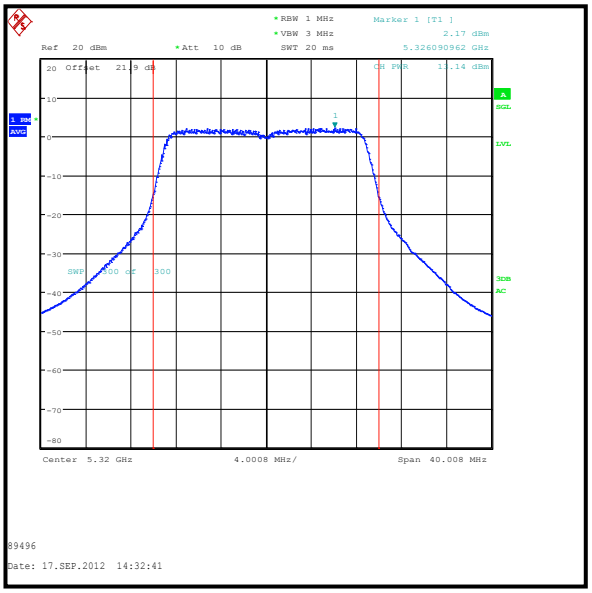
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2401



Bottom Channel



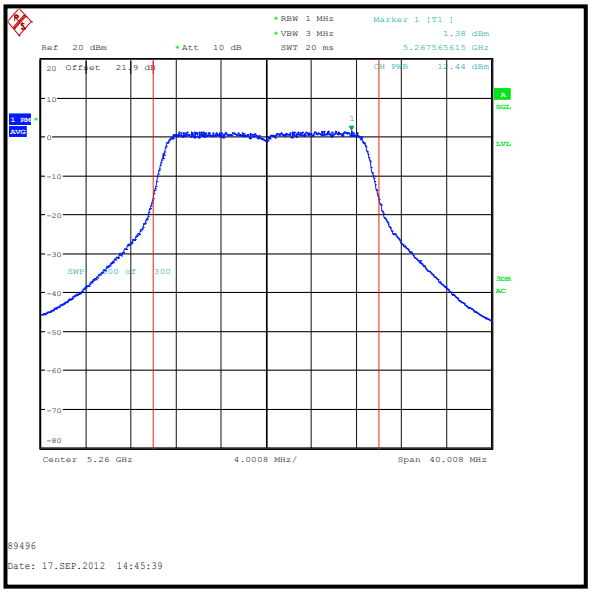
Middle Channel



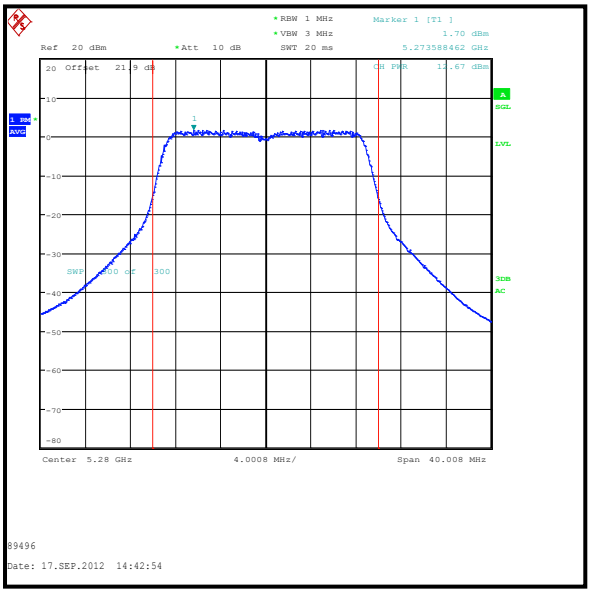
Top Channel

Transmitter Peak Power Spectral Density (5.25-5.35 GHz band) (continued)

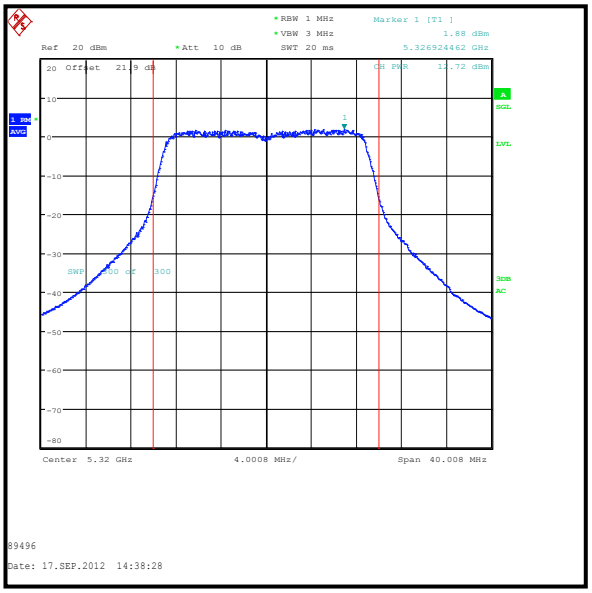
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2403



Bottom Channel



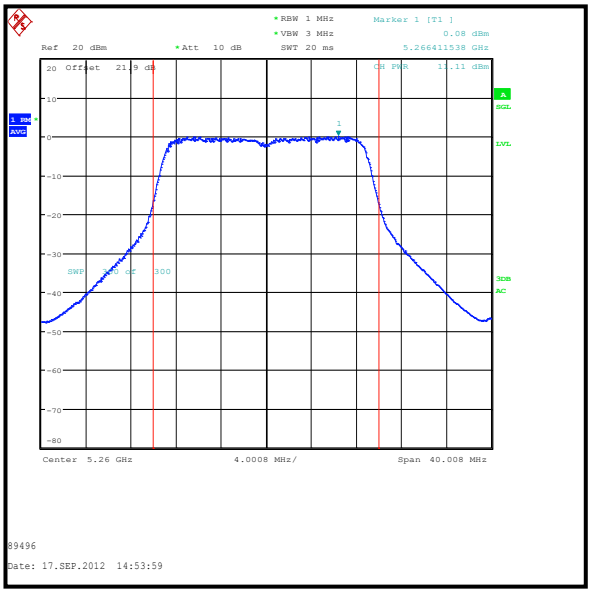
Middle Channel



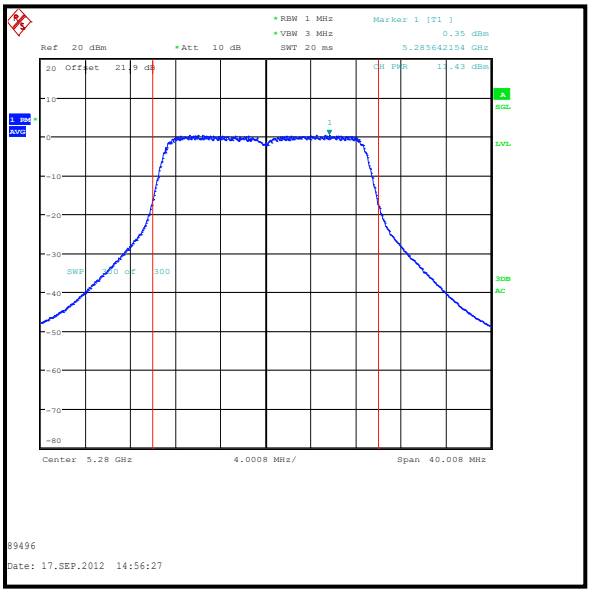
Top Channel

Transmitter Peak Power Spectral Density (5.25-5.35 GHz band) (continued)

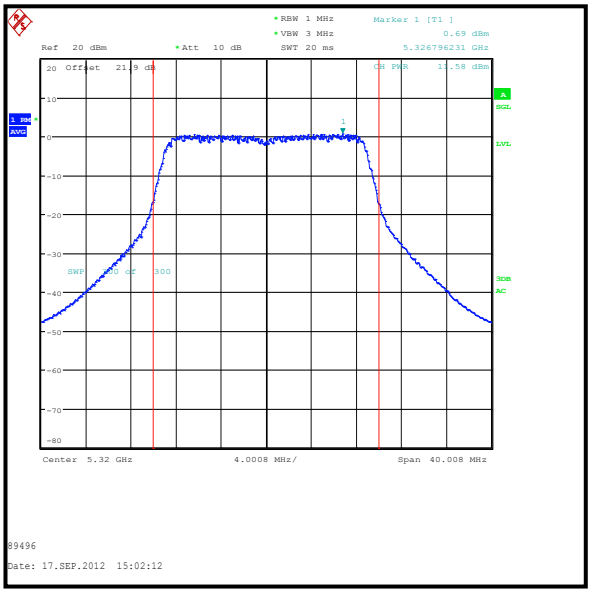
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2405



Bottom Channel



Middle Channel



Top Channel

Transmitter Peak Power Spectral Density (5.25-5.35 GHz band) (continued)

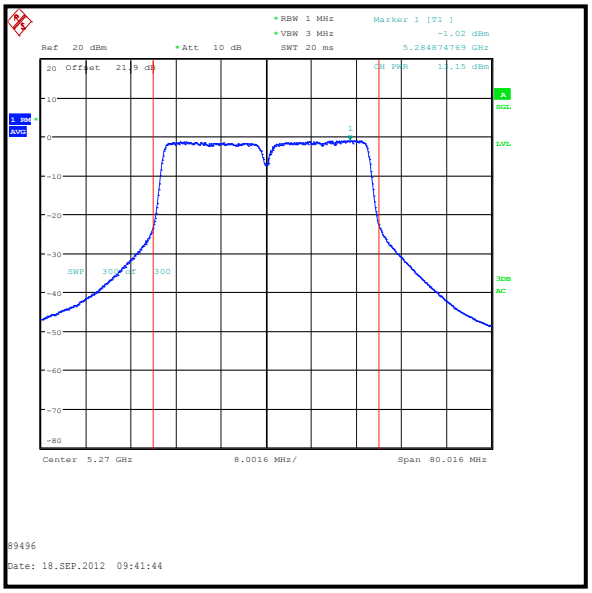
Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK

Channel	Frequency (MHz)	PPSD P2401 (dBm /MHz)	PPSD P2403 (dBm /MHz)	PPSD P2405 (dBm /MHz)	Combined PPSD (dBm /MHz)
Bottom	5270	-1.0	-1.7	-2.9	2.9
Top	5310	-0.8	-0.6	-1.9	3.7

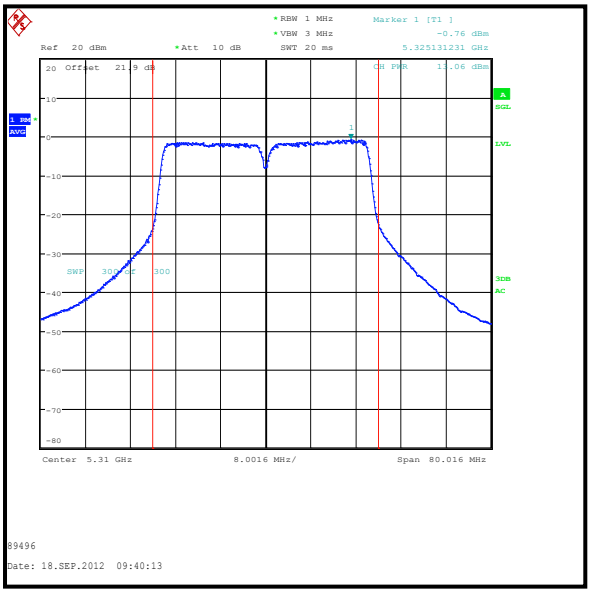
Channel	Frequency (MHz)	Combined PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5270	2.9	8.2	5.3	Complied
Top	5310	3.7	8.2	4.5	Complied

Transmitter Peak Power Spectral Density (5.25-5.35 GHz band) (continued)

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK / Port 2401



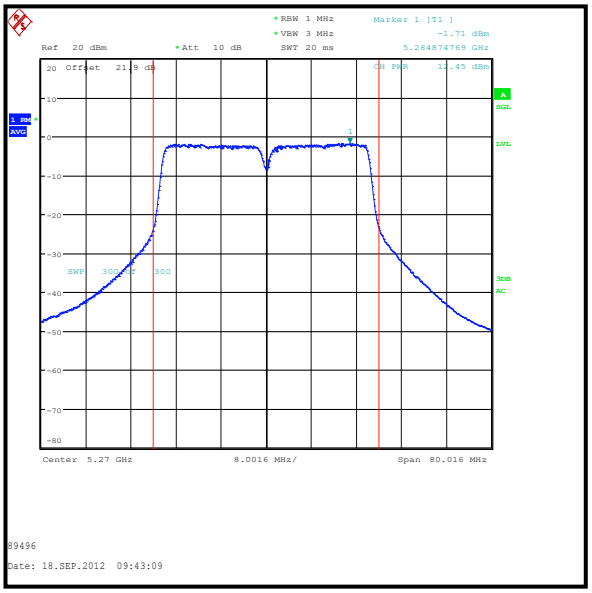
Bottom Channel



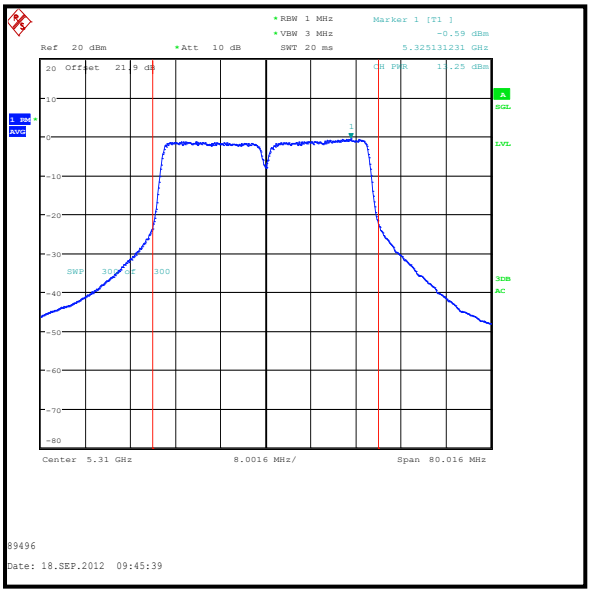
Top Channel

Transmitter Peak Power Spectral Density (5.25-5.35 GHz band) (continued)

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK / Port 2403



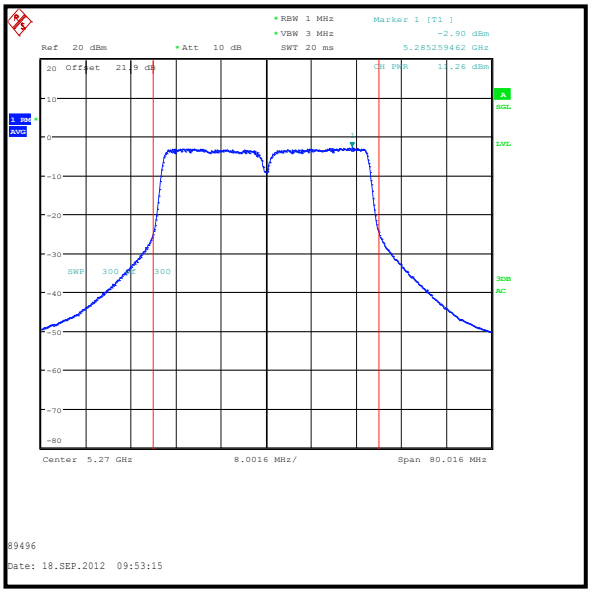
Bottom Channel



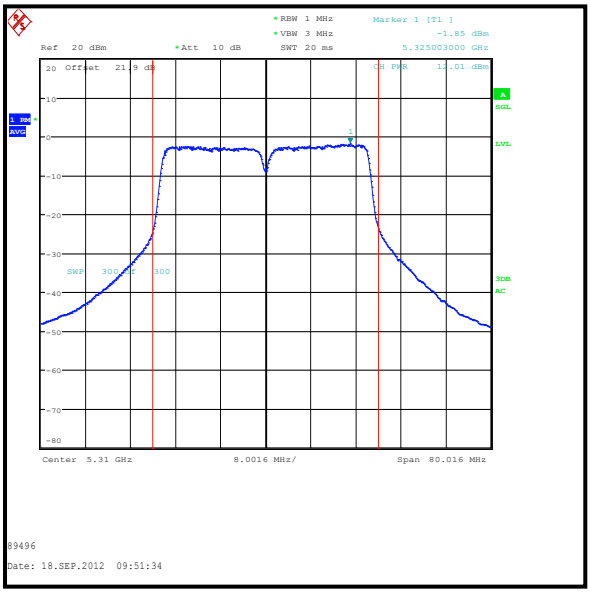
Top Channel

Transmitter Peak Power Spectral Density (5.25-5.35 GHz band) (continued)

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK / Port 2405



Bottom Channel



Top Channel

Transmitter Peak Power Spectral Density (5.47-5.725 GHz band)

Test Summary:

Test Engineer:	Sarah Williams	**Test Date:**	17 September 2012
Test Sample Serial Number:	LK220202177		

FCC Reference:	Part 15.407(a)(2)
Test Method Used:	FCC KDB 789033 E) referencing KDB 789033 C)3)b), Method SA-1

Environmental Conditions:

Temperature (°C):	22
Relative Humidity (%):	41

Note(s):

1. All supported modes and channel widths were initially investigated on one channel. The modes that produced the highest power and widest bandwidth for the 5.47-5.725 GHz band were:
    - 802.11a – BPSK / 6 Mbps
    - 802.11n HT20 – BPSK / 6.5 Mbps / MCS0
    - 802.11n HT40 – BPSK / 13.5 Mbps / MCS0

    Measurements were performed on the relevant channels and ports for all tests.
2. The EUT was configured with a power setting of 14.0 dBm for 20 MHz bottom and middle channels, 13.5 dBm for 20 MHz top channel, 12.0 dBm for 40 MHz bottom channel and 14.0 dBm for 40 MHz middle and top channels.
6. FCC Part 15.407(a)(2) limit for PPSD in the 5.47-5.725 GHz operating bands is <11 dBm/MHz. The Customer declared that the transmit signals from all 3 ports are correlated. The Customer stated that the 3 antennas used have unequal antenna gains: G1 = 5.1 dBi, G2 = 4.0 dBi and G3 = 5.7 dBi. The directional gain was calculated in accordance with FCC KDB 662911 D01 Directional Gain Calculations:

$$10\ log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2/3]$$

The total array gain was calculated as:

$$10\ log[(10^{5.1/20} + 10^{4.0/20} + 10^{5.7/20})^2/3] = 9.7\ dBi$$

In accordance with 15.407(a)(2), 9.7 dBi is 3.7 dB over the directional gain of 6 dBi therefore the PPSD limit of 11 dBm is reduced to 7.3 dBm.

Transmitter Peak Power Spectral Density (5.47-5.725 GHz band) (continued)

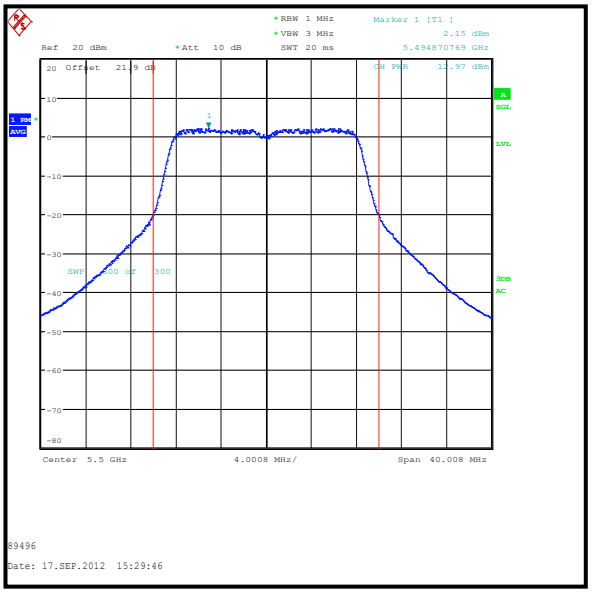
Results: 802.11a / 20 MHz / 6 Mbps / BPSK

Channel	Frequency (MHz)	PPSD P2401 (dBm /MHz)	PPSD P2403 (dBm /MHz)	PPSD P2405 (dBm /MHz)	Combined PPSD (dBm /MHz)
Bottom	5500	2.2	1.8	1.2	6.5
Middle	5580	1.4	1.9	0.4	6.0
Top	5700	0.1	0.7	0.2	5.1

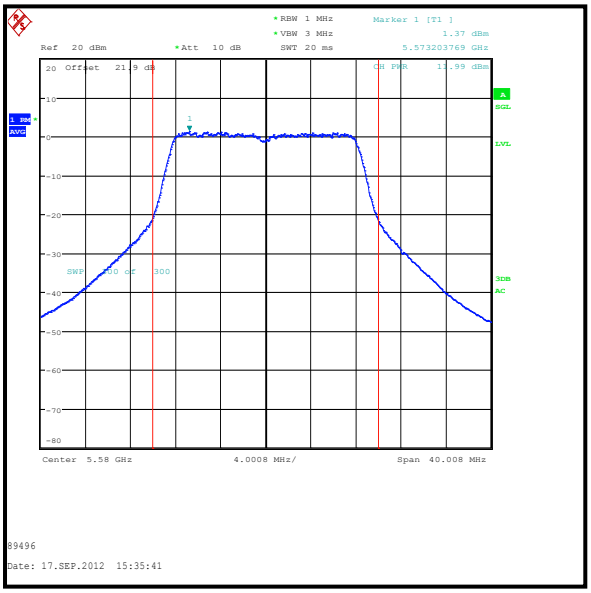
Channel	Frequency (MHz)	Combined PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5500	6.5	7.3	0.8	Complied
Middle	5580	6.0	7.3	1.3	Complied
Top	5700	5.1	7.3	2.2	Complied

Transmitter Peak Power Spectral Density (5.47-5.725 GHz band) (continued)

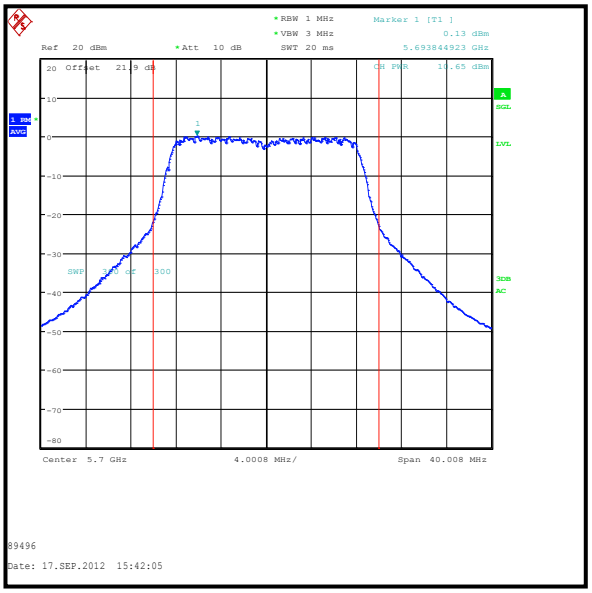
Results: 802.11a / 20 MHz / 6 Mbps / BPSK / Port 2401



Bottom Channel



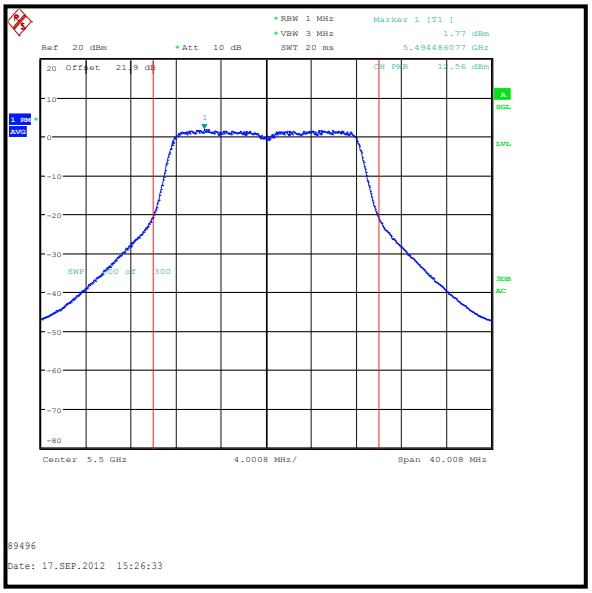
Middle Channel



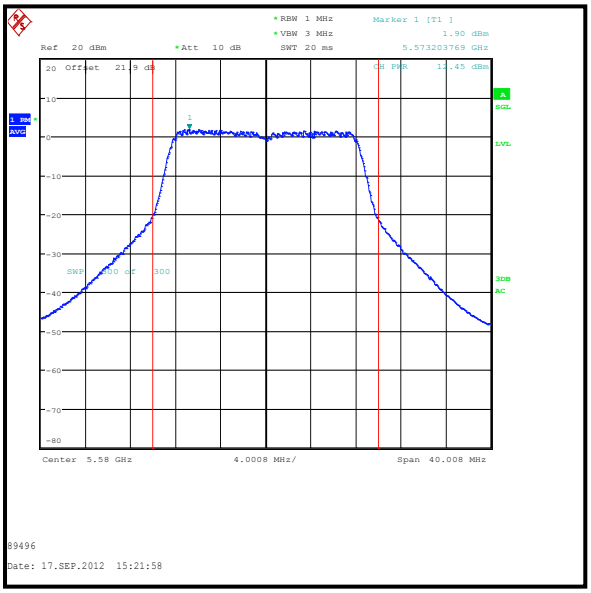
Top Channel

Transmitter Peak Power Spectral Density (5.47-5.725 GHz band) (continued)

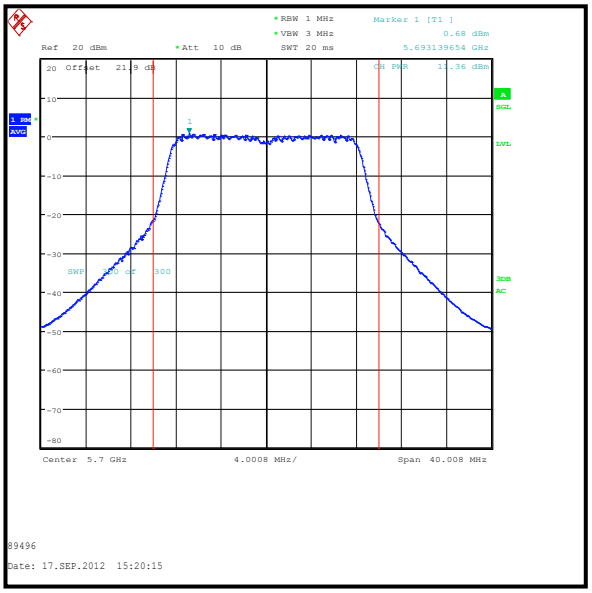
Results: 802.11a / 20 MHz / 6 Mbps / BPSK / Port 2403



Bottom Channel



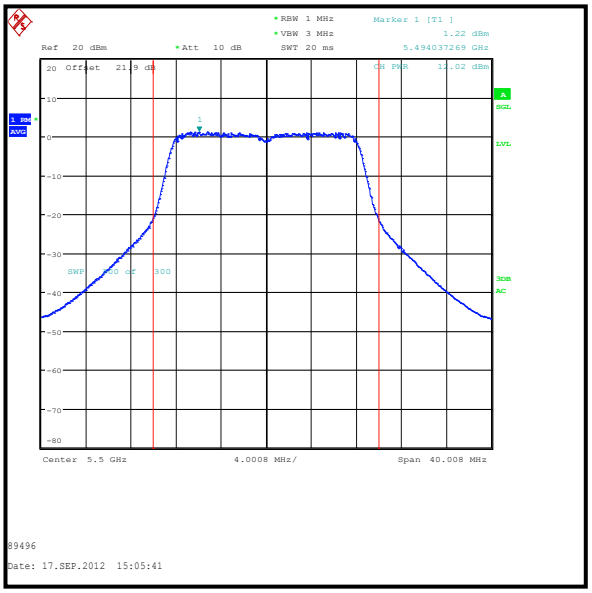
Middle Channel



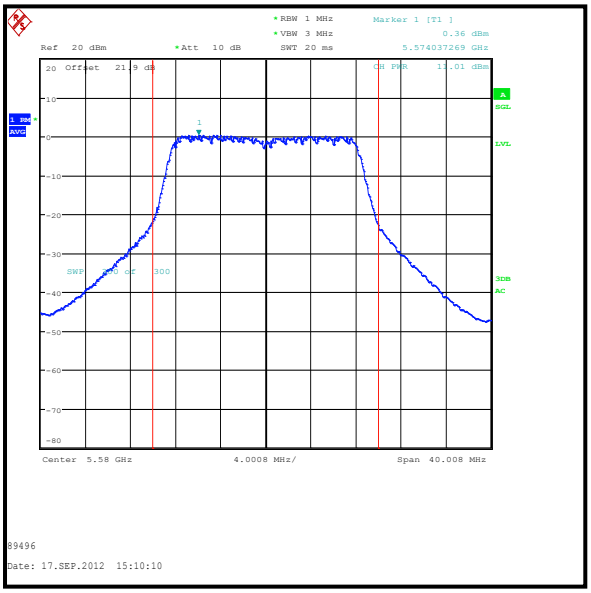
Top Channel

Transmitter Peak Power Spectral Density (5.47-5.725 GHz band) (continued)

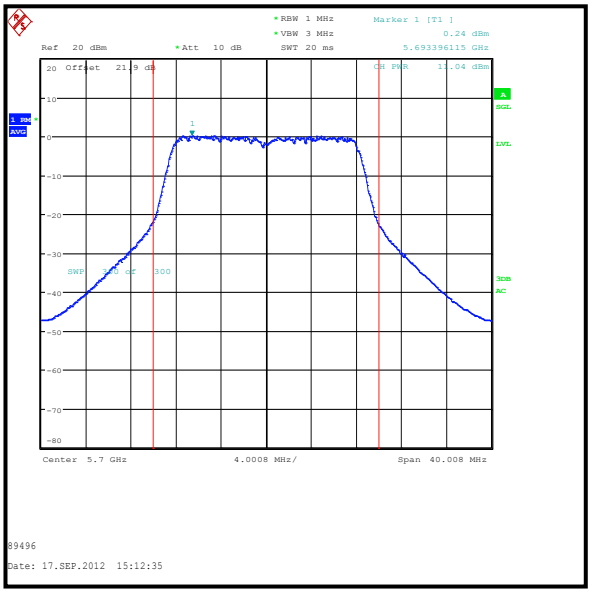
Results: 802.11a / 20 MHz / 6 Mbps / BPSK / Port 2405



Bottom Channel



Middle Channel



Top Channel

Transmitter Peak Power Spectral Density (5.47-5.725 GHz band) (continued)

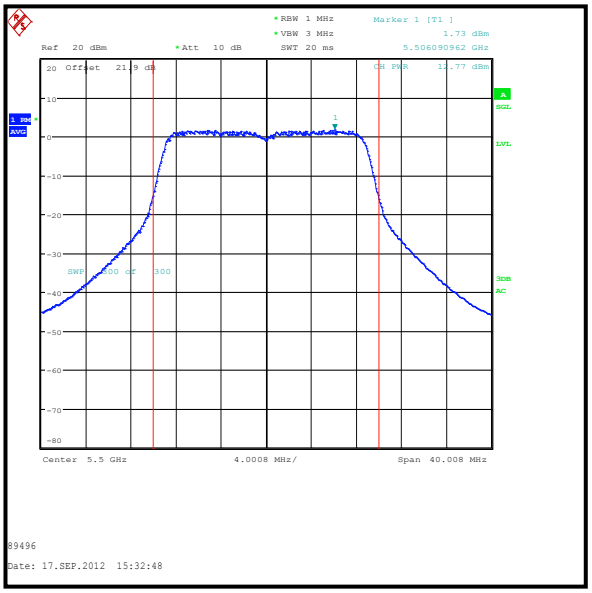
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK

Channel	Frequency (MHz)	PPSD P2401 (dBm /MHz)	PPSD P2403 (dBm /MHz)	PPSD P2405 (dBm /MHz)	Combined PPSD (dBm /MHz)
Bottom	5500	1.7	1.7	0.8	6.2
Middle	5580	1.1	1.7	0.2	5.8
Top	5700	-0.3	0.3	-0.1	4.7

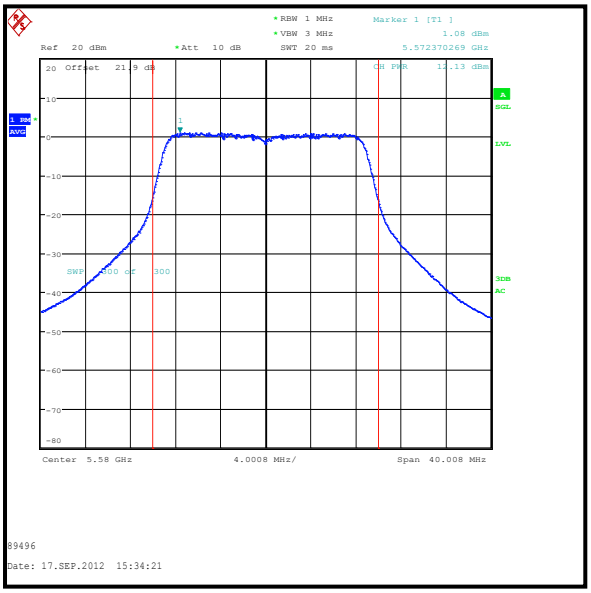
Channel	Frequency (MHz)	Combined PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5500	6.2	7.3	1.1	Complied
Middle	5580	5.8	7.3	1.5	Complied
Top	5700	4.7	7.3	2.6	Complied

Transmitter Peak Power Spectral Density (5.47-5.725 GHz band) (continued)

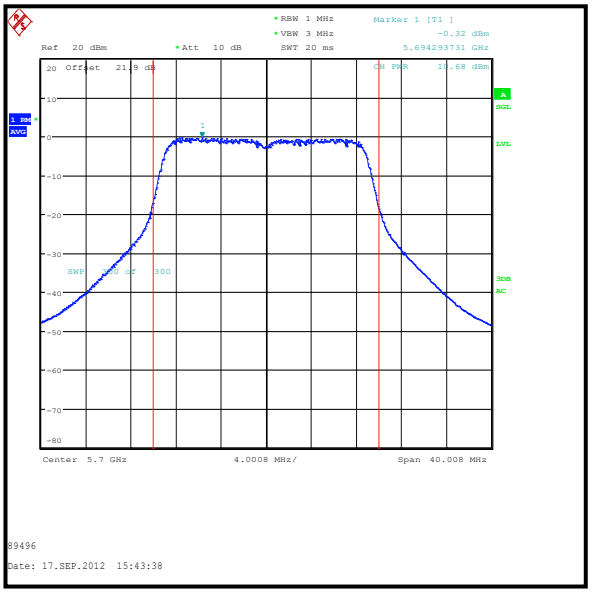
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2401



Bottom Channel



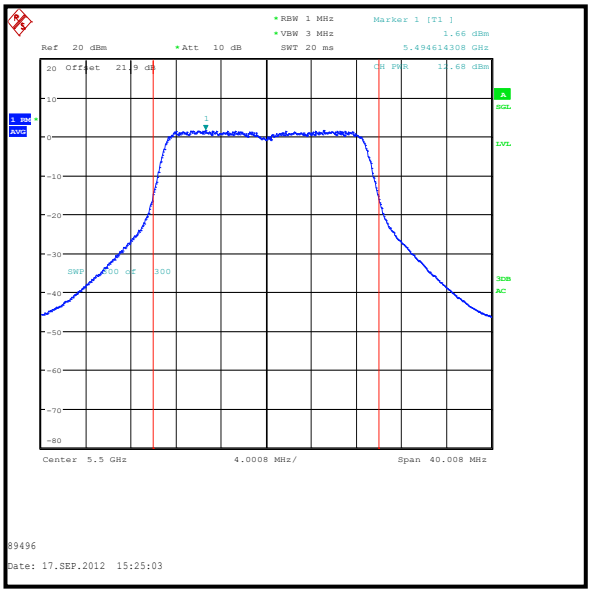
Middle Channel



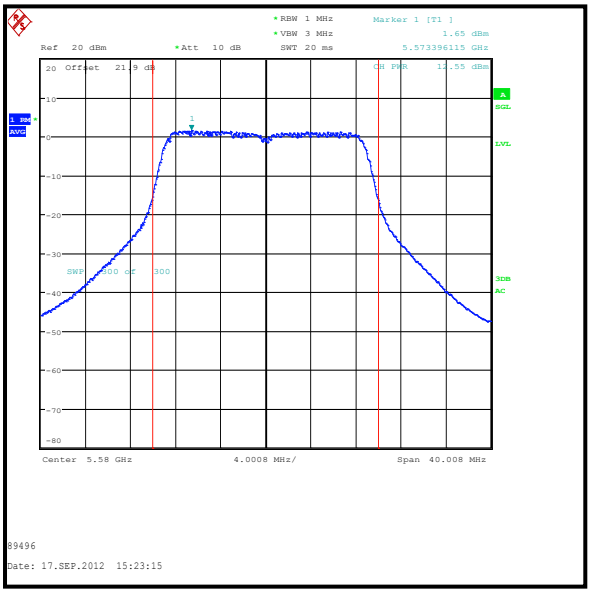
Top Channel

Transmitter Peak Power Spectral Density (5.47-5.725 GHz band) (continued)

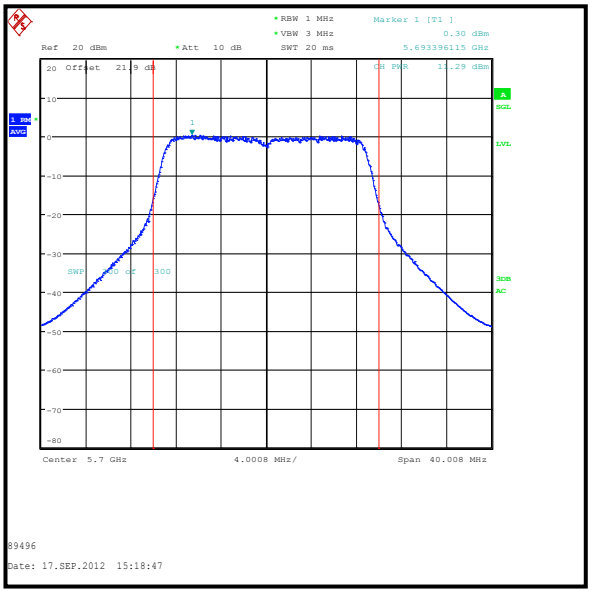
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2403



Bottom Channel



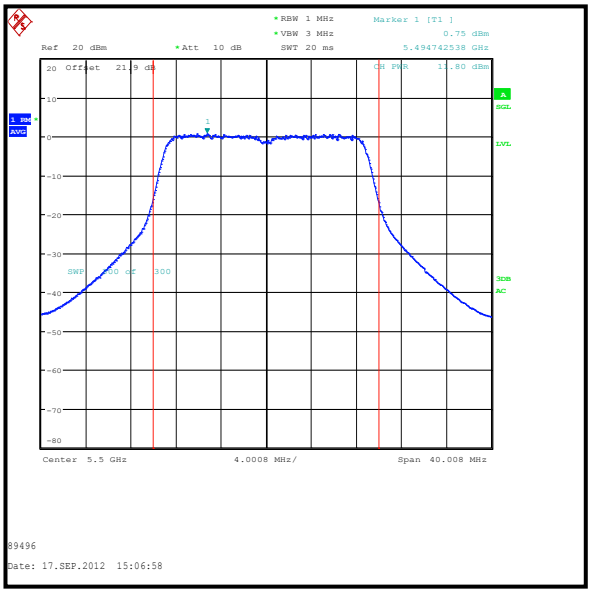
Middle Channel



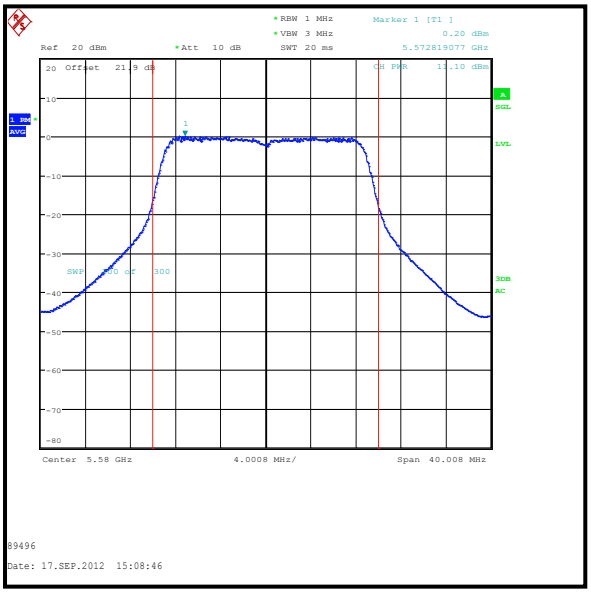
Top Channel

Transmitter Peak Power Spectral Density (5.47-5.725 GHz band) (continued)

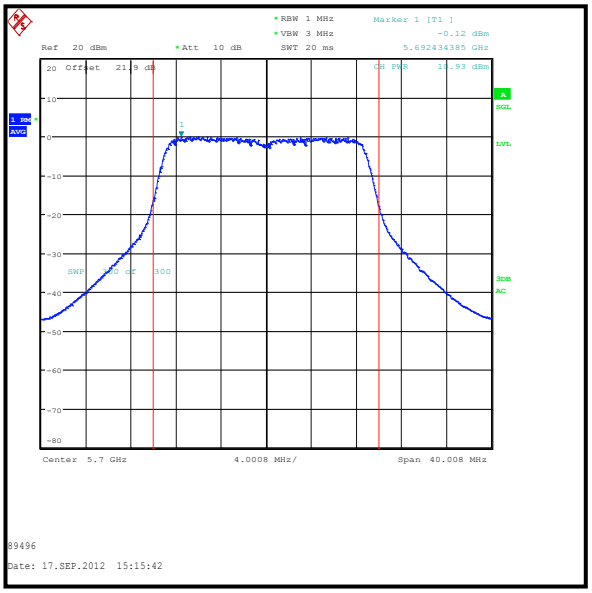
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2405



Bottom Channel



Middle Channel



Top Channel

Transmitter Peak Power Spectral Density (5.47-5.725 GHz band) (continued)

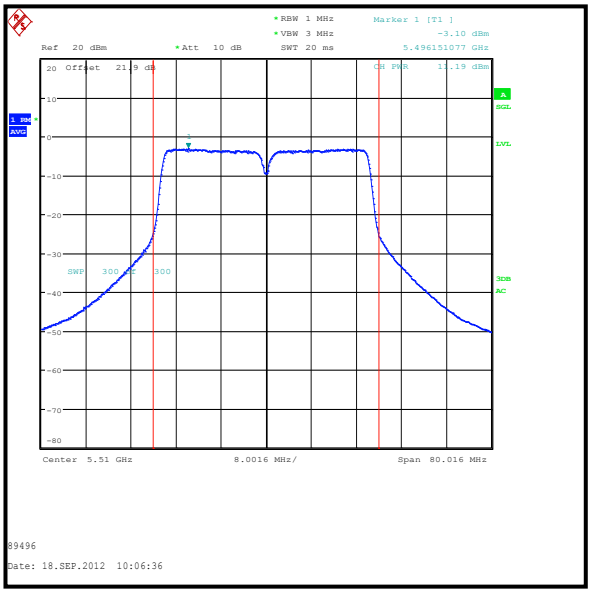
Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK

Channel	Frequency (MHz)	PPSD P2401 (dBm /MHz)	PPSD P2403 (dBm /MHz)	PPSD P2405 (dBm /MHz)	Combined PPSD (dBm /MHz)
Bottom	5510	-3.1	-3.6	-4.3	1.1
Middle	5550	-1.4	-1.1	-2.1	3.2
Top	5670	-2.9	-2.1	-2.9	2.1

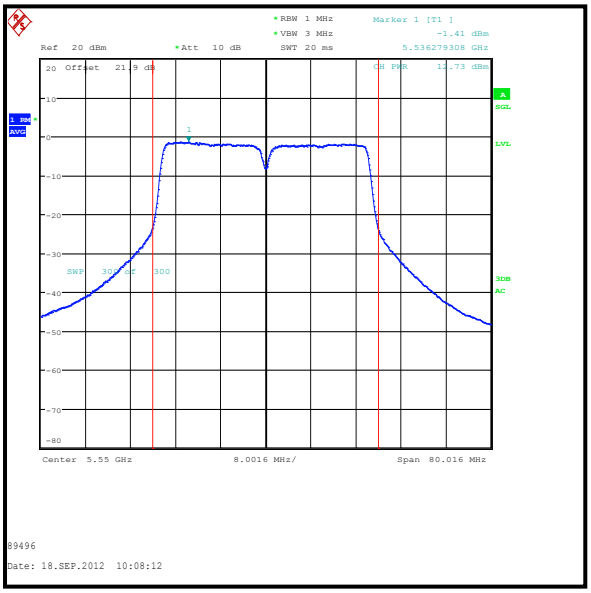
Channel	Frequency (MHz)	Combined PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5510	1.1	7.3	6.2	Complied
Middle	5550	3.2	7.3	4.1	Complied
Top	5670	2.1	7.3	5.2	Complied

Transmitter Peak Power Spectral Density (5.47-5.725 GHz band) (continued)

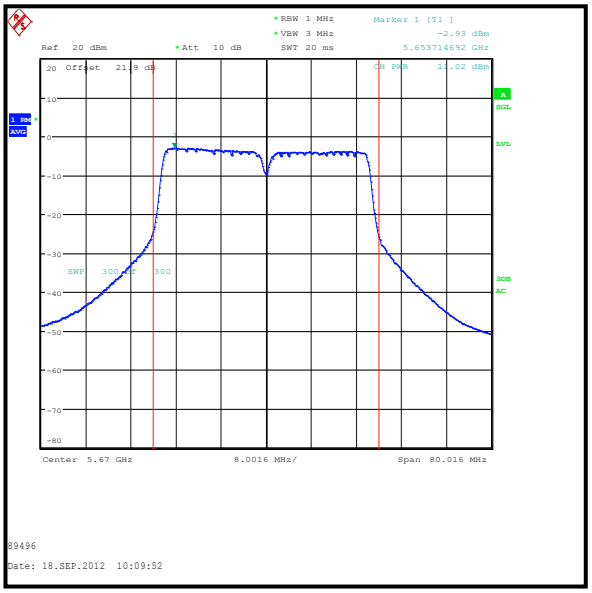
Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK / Port 2401



Bottom Channel



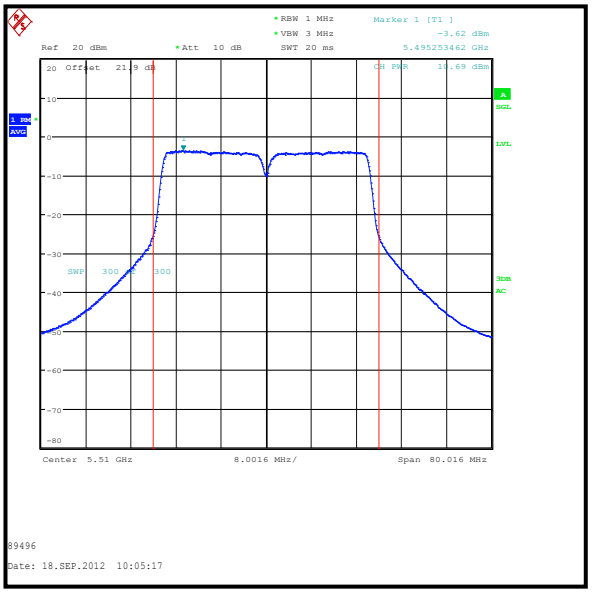
Middle Channel



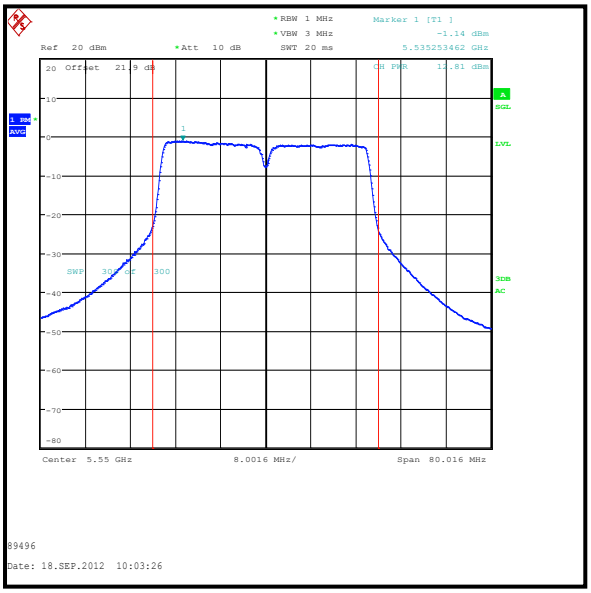
Top Channel

Transmitter Peak Power Spectral Density (5.47-5.725 GHz band) (continued)

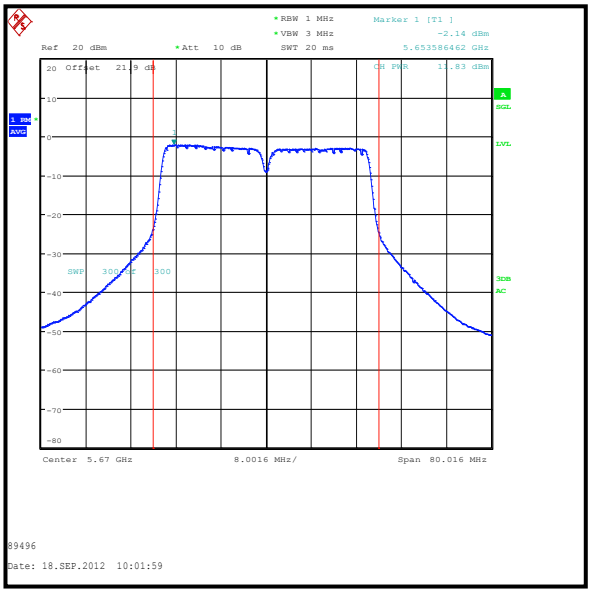
Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK / Port 2403



Bottom Channel



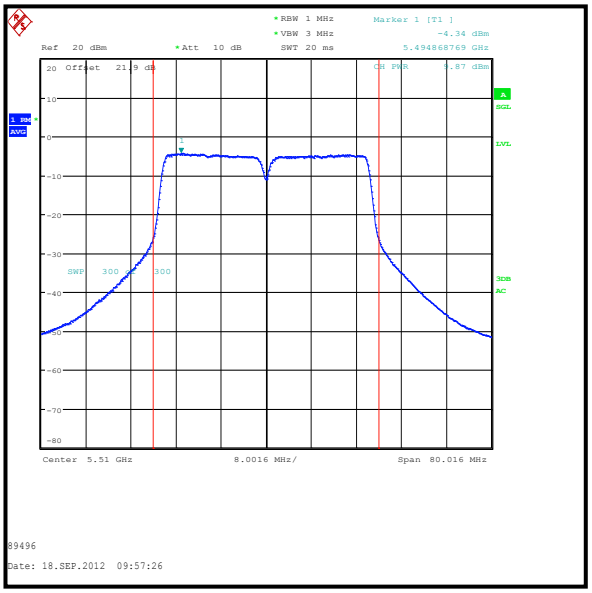
Middle Channel



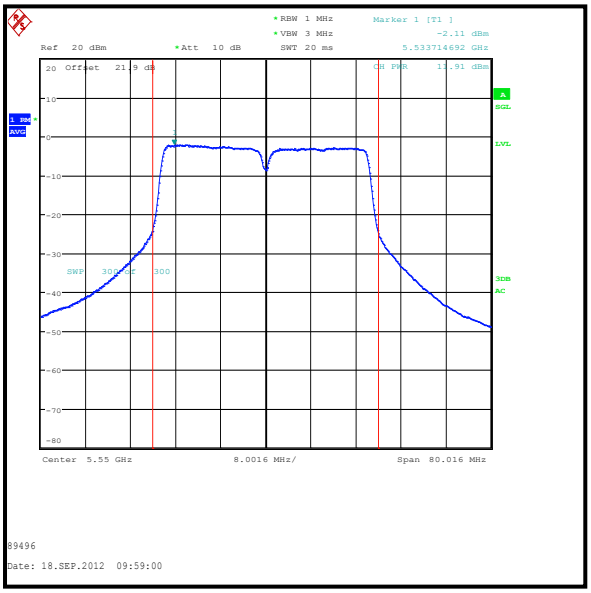
Top Channel

Transmitter Peak Power Spectral Density (5.47-5.725 GHz band) (continued)

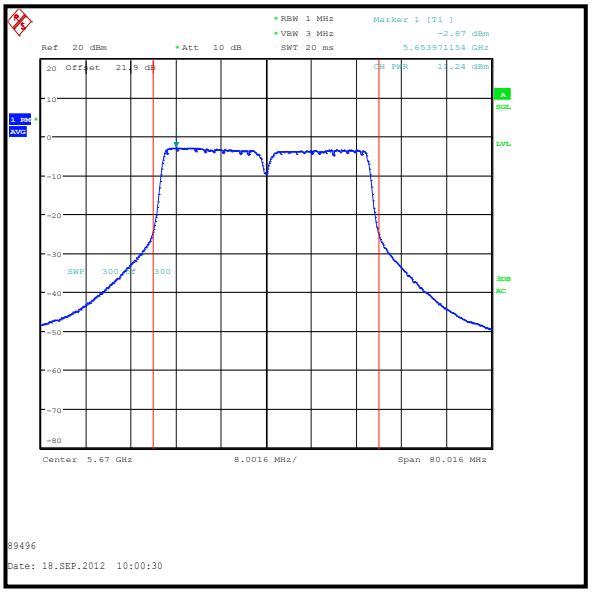
Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK / Port 2405



Bottom Channel



Middle Channel



Top Channel

Transmitter Peak Power Spectral Density (5.725-5.850 GHz band)

Test Summary:

Test Engineer:	Sarah Williams	**Test Date:**	17 September 2012
Test Sample Serial Number:	LK220202177		

FCC Reference:	Part 15.407(a)(3)
Test Method Used:	FCC KDB 789033 E) referencing KDB 789033 C)3)b), Method SA-1

Environmental Conditions:

Temperature (°C):	22
Relative Humidity (%):	41

Note(s):

1. All supported modes and channel widths were initially investigated on one channel. The modes that produced the highest power and widest bandwidth for the 5.725-5.850 GHz band were:
    - 802.11a – BPSK / 6 Mbps
    - 802.11n HT20 – BPSK / 6.5 Mbps / MCS0
    - 802.11n HT40 – BPSK / 13.5 Mbps / MCS0

    Measurements were performed on the relevant channels and ports for all tests.
2. The EUT was configured with a power setting of 14.0 dBm for 20 MHz bottom channel, 13.0 dBm for middle channel, 12.5 dBm for 802.11a 20 MHz top channel, 11.5 dBm for 802.11n 20 MHz top channel, 9.5 dBm for 40 MHz bottom channel and 13.0 dBm for 40 MHz top channel.
7. FCC Part 15.407(a)(3) limit for PPSD in the 5.725-5.850 GHz operating band is <17 dBm/MHz. The Customer declared that the transmit signals from all 3 ports are correlated. The Customer stated that the 3 antennas used have unequal antenna gains: G1 = 5.1 dBi, G2 = 4.0 dBi and G3 = 5.7 dBi. The directional gain was calculated in accordance with FCC KDB 662911 D01 Directional Gain Calculations:

$$10\ log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2/3]$$

The total array gain was calculated as:

$$10\ log[(10^{5.1/20} + 10^{4.0/20} + 10^{5.7/20})^2/3] = 9.7\ dBi$$

In accordance with 15.407(a)(3), 9.7 dBi is 3.7 dB over the directional gain of 6 dBi therefore the PPSD limit of 17 dBm is reduced to 13.3 dBm

Transmitter Peak Power Spectral Density (5.725-5.850 GHz band) (continued)

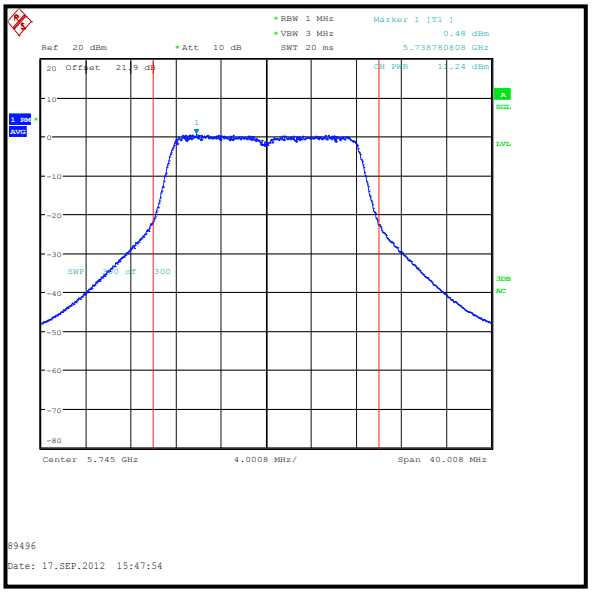
Results: 802.11a / 20 MHz / 6 Mbps / BPSK

Channel	Frequency (MHz)	PPSD P2401 (dBm /MHz)	PPSD P2403 (dBm /MHz)	PPSD P2405 (dBm /MHz)	Combined PPSD (dBm /MHz)
Bottom	5745	0.5	1.3	0.5	5.5
Middle	5765	0.2	0.7	0	5.1
Top	5805	0	0.4	-0.8	4.7

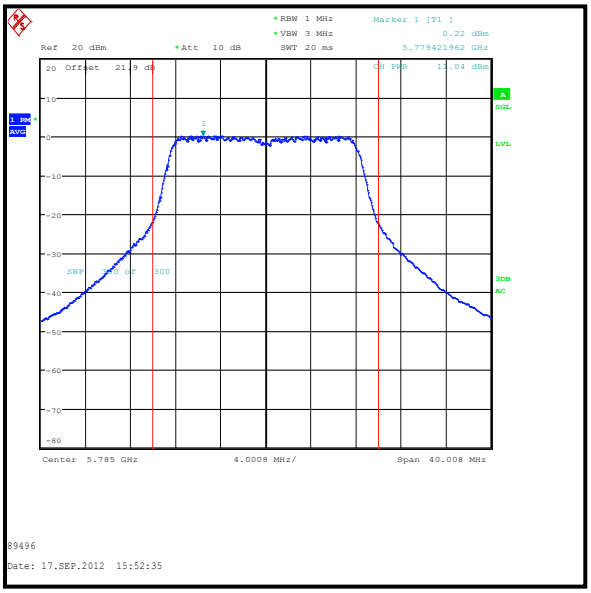
Channel	Frequency (MHz)	Combined PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5745	5.5	13.3	7.8	Complied
Middle	5765	5.1	13.3	8.2	Complied
Top	5805	4.7	13.3	8.6	Complied

Transmitter Peak Power Spectral Density (5.725-5.850 GHz band) (continued)

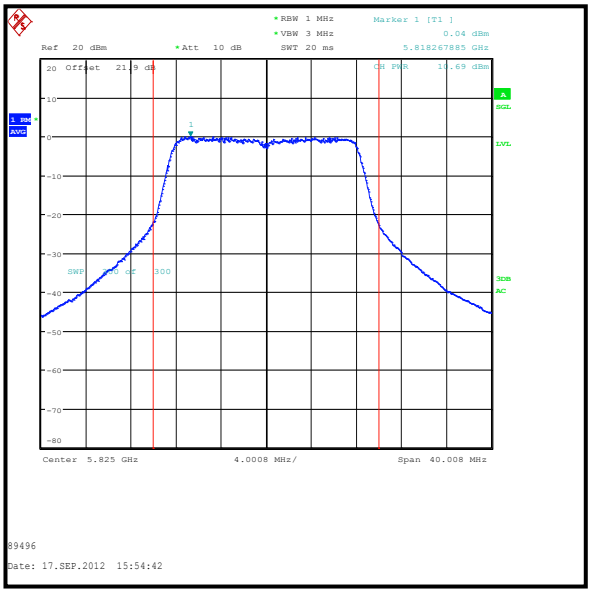
Results: 802.11a / 20 MHz / 6 Mbps / BPSK / Port 2401



Bottom Channel



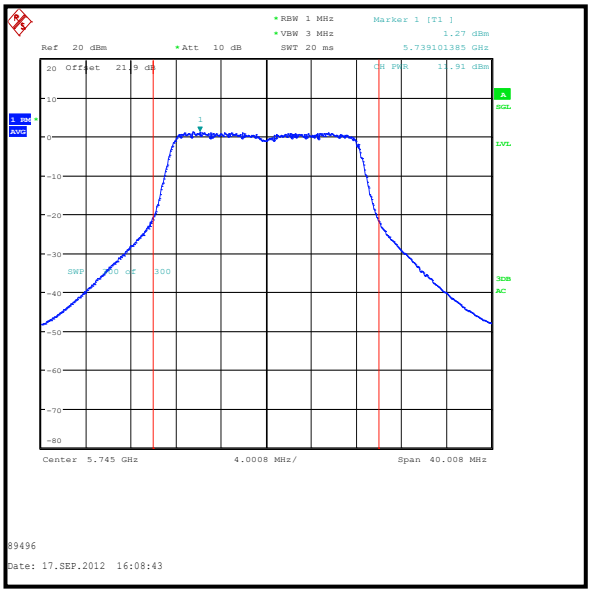
Middle Channel



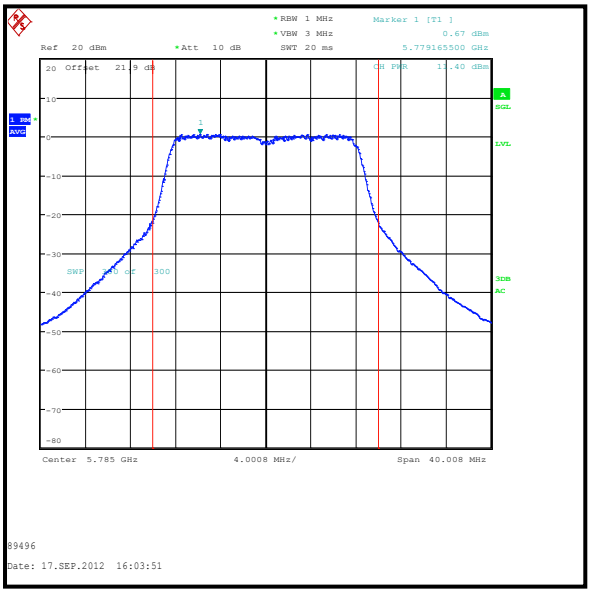
Top Channel

Transmitter Peak Power Spectral Density (5.725-5.850 GHz band) (continued)

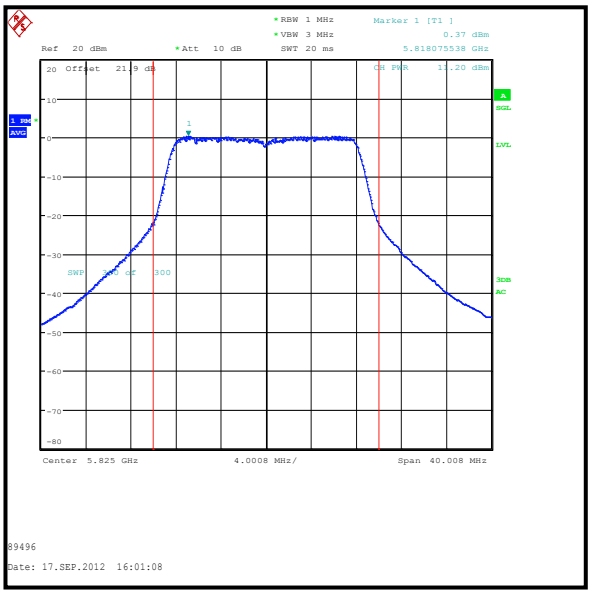
Results: 802.11a / 20 MHz / 6 Mbps / BPSK / Port 2403



Bottom Channel



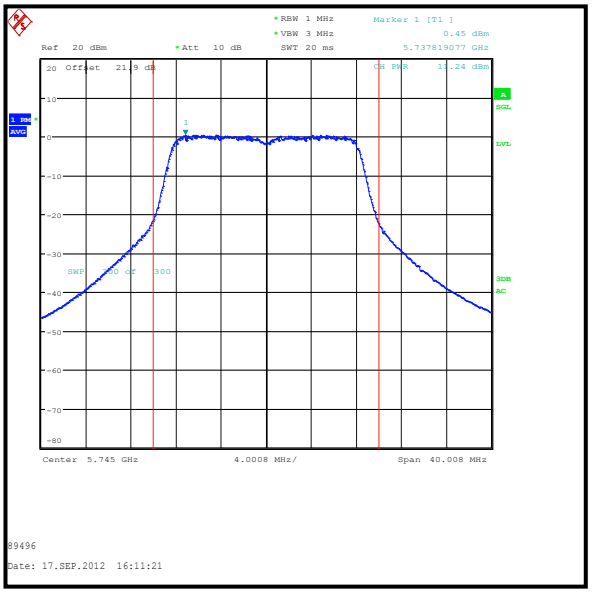
Middle Channel



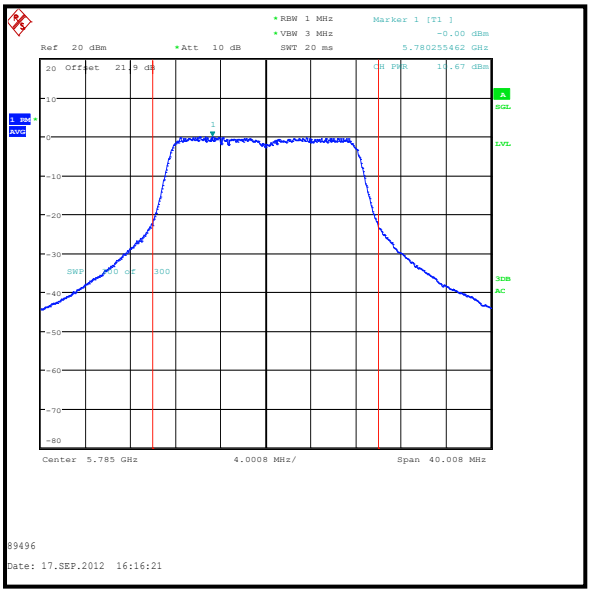
Top Channel

Transmitter Peak Power Spectral Density (5.725-5.850 GHz band) (continued)

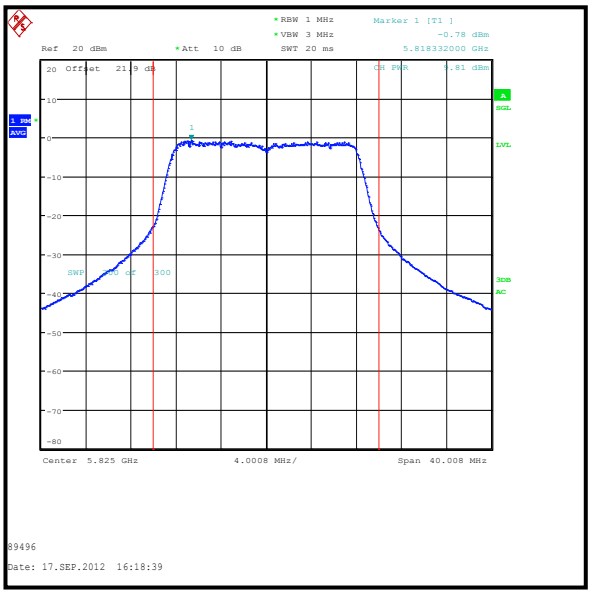
Results: 802.11a / 20 MHz / 6 Mbps / BPSK / Port 2405



Bottom Channel



Middle Channel



Top Channel

Transmitter Peak Power Spectral Density (5.725-5.850 GHz band) (continued)

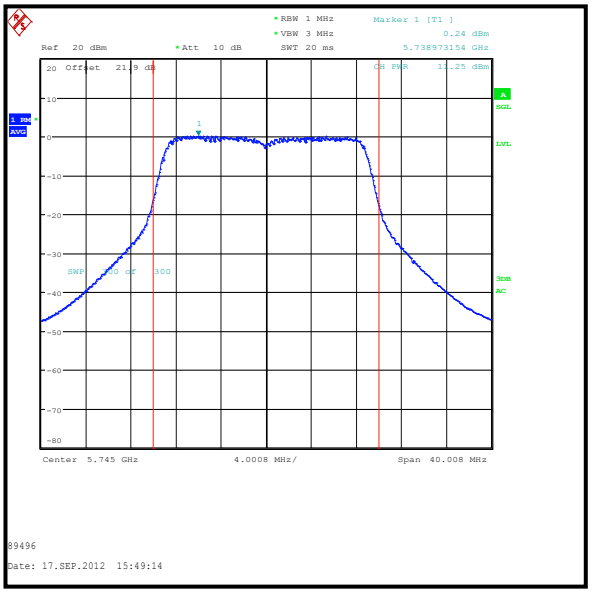
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK

Channel	Frequency (MHz)	PPSD P2401 (dBm /MHz)	PPSD P2403 (dBm /MHz)	PPSD P2405 (dBm /MHz)	Combined PPSD (dBm /MHz)
Bottom	5745	0.2	0.9	0.3	5.2
Middle	5765	-0.2	0.2	-0.6	4.6
Top	5805	-1.1	-0.8	-2.1	3.5

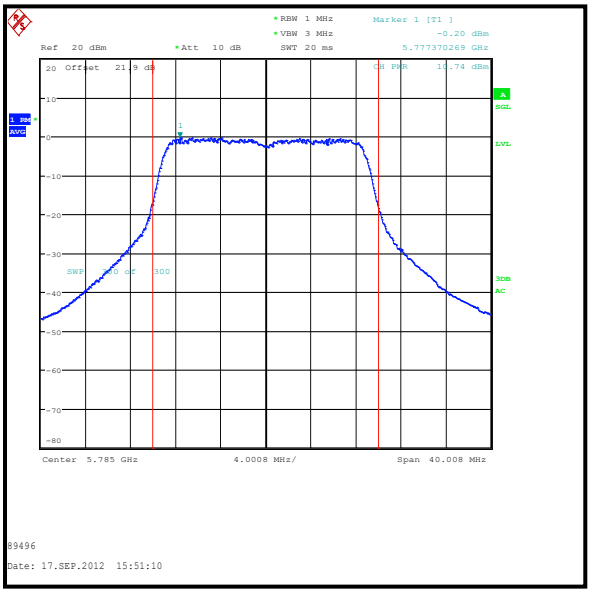
Channel	Frequency (MHz)	Combined PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5745	5.2	13.3	8.1	Complied
Middle	5765	4.6	13.3	8.7	Complied
Top	5805	3.5	13.3	9.8	Complied

Transmitter Peak Power Spectral Density (5.725-5.850 GHz band) (continued)

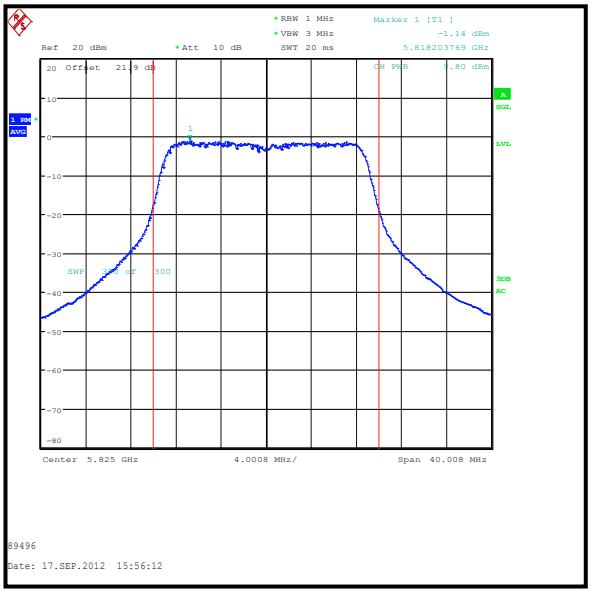
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2401



Bottom Channel



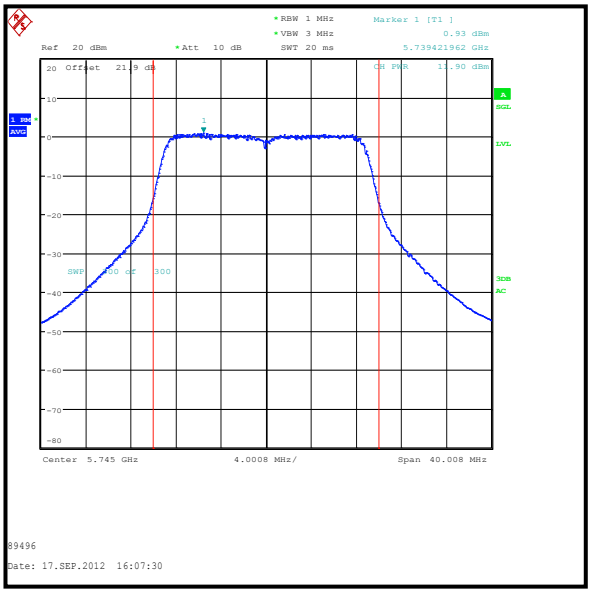
Middle Channel



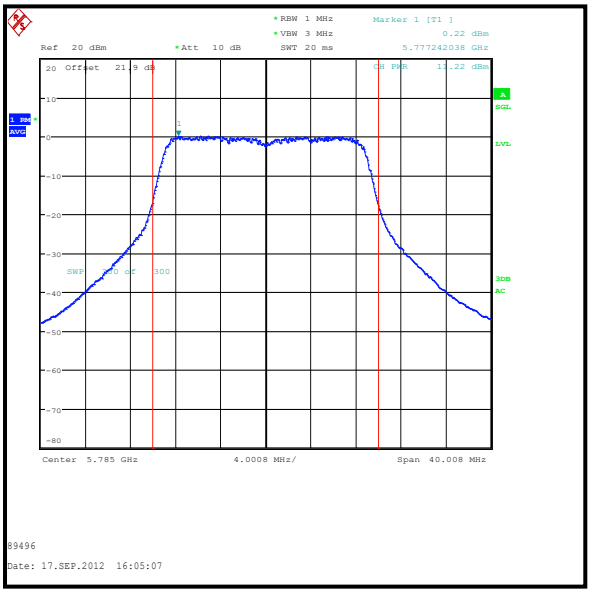
Top Channel

Transmitter Peak Power Spectral Density (5.725-5.850 GHz band) (continued)

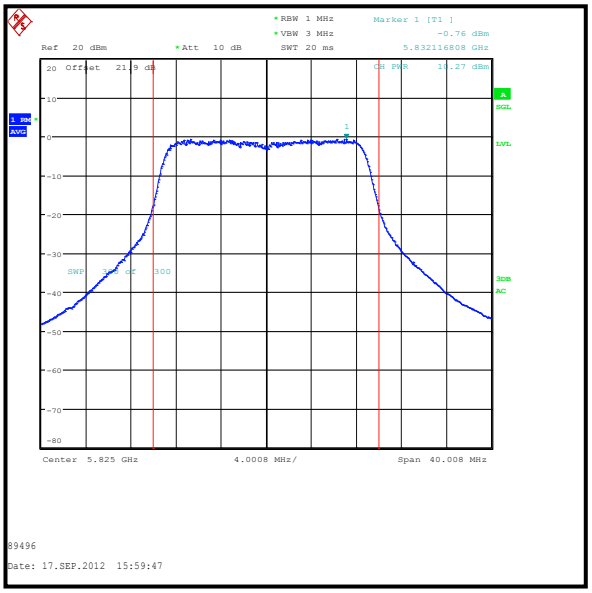
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2403



Bottom Channel



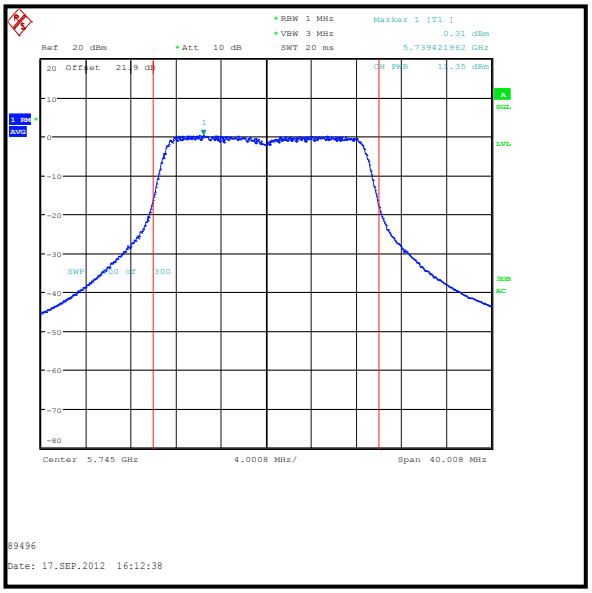
Middle Channel



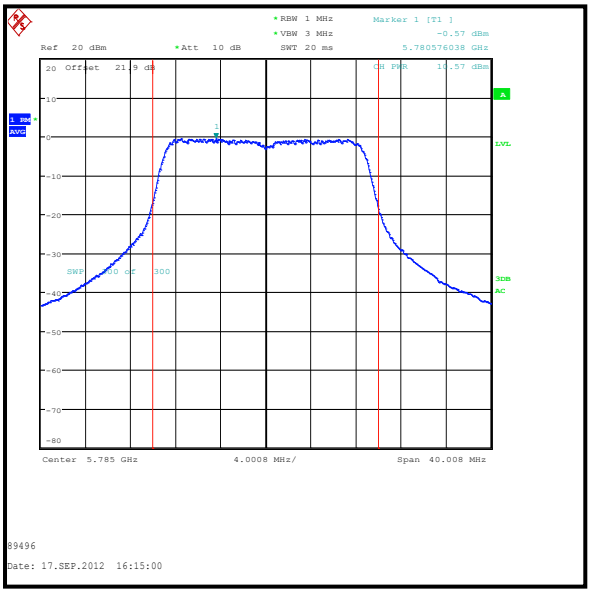
Top Channel

Transmitter Peak Power Spectral Density (5.725-5.850 GHz band) (continued)

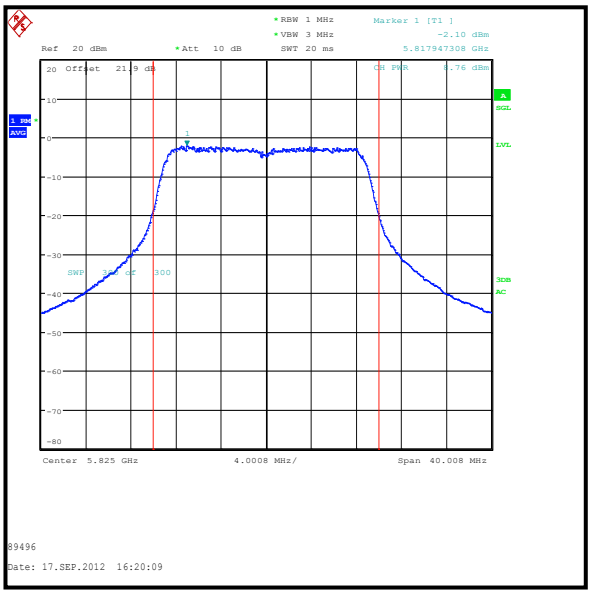
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2405



Bottom Channel



Middle Channel



Top Channel

Transmitter Peak Power Spectral Density (5.725-5.850 GHz band) (continued)

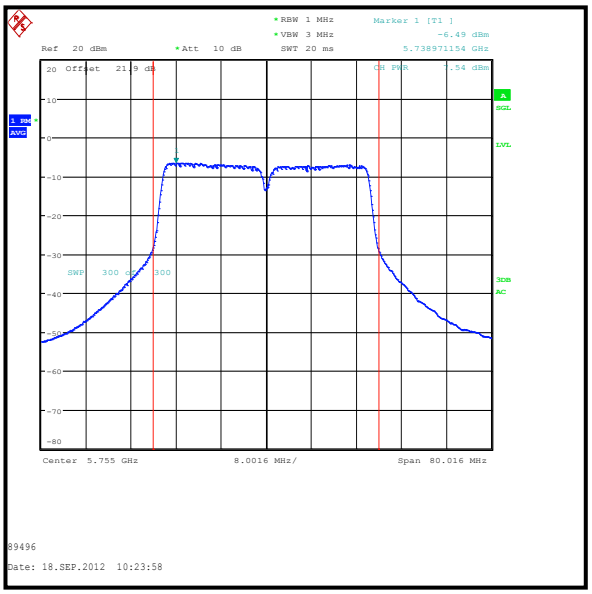
Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK

Channel	Frequency (MHz)	PPSD P2401 (dBm /MHz)	PPSD P2403 (dBm /MHz)	PPSD P2405 (dBm /MHz)	Combined PPSD (dBm /MHz)
Bottom	5755	-6.5	-6.6	-6.6	-1.8
Top	5795	-3.3	-2.8	-3.6	1.5

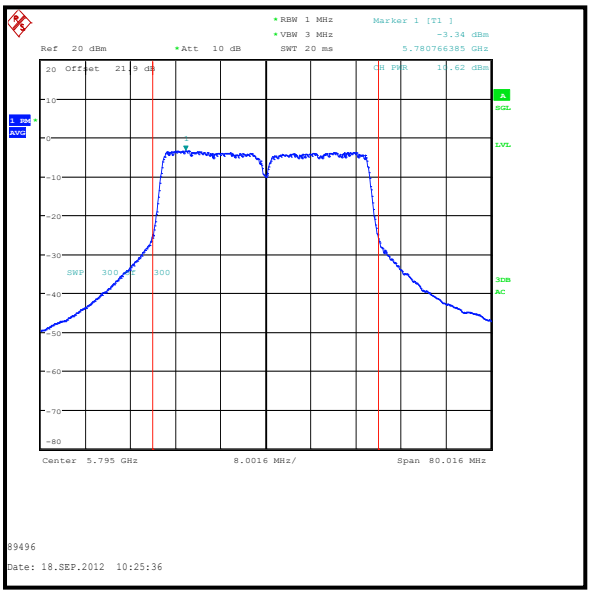
Channel	Frequency (MHz)	Combined PPSD (dBm /MHz)	Limit (dBm /MHz)	Margin (dB)	Result
Bottom	5755	-1.8	13.3	15.1	Complied
Top	5795	1.5	13.3	11.8	Complied

Transmitter Peak Power Spectral Density (5.725-5.850 GHz band) (continued)

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK / Port 2401



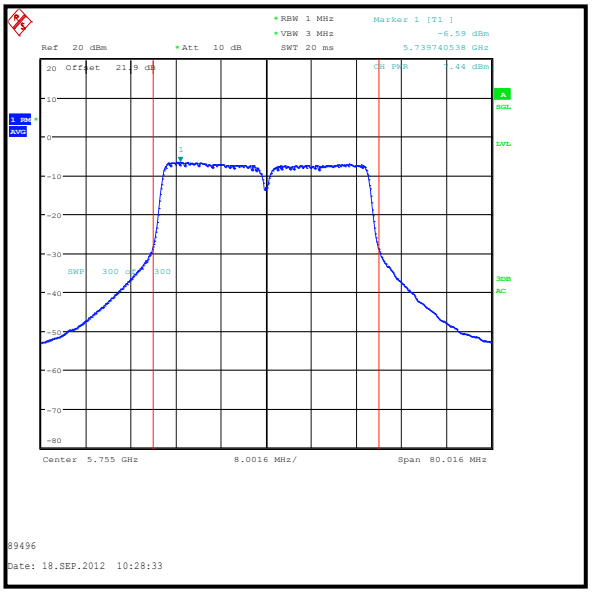
Bottom Channel



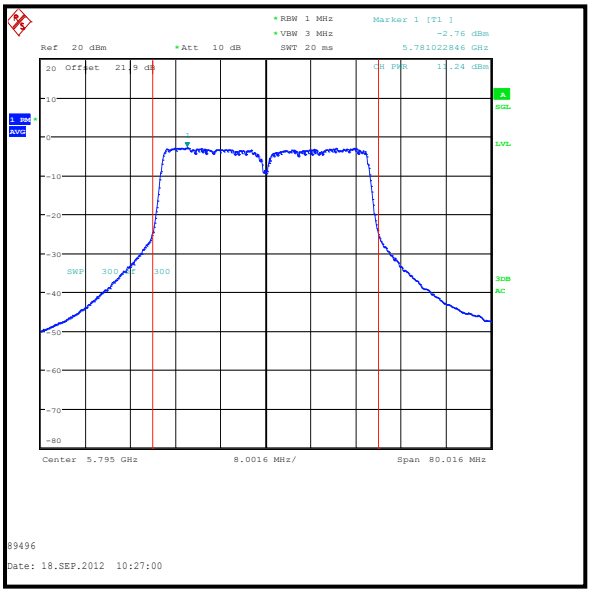
Top Channel

Transmitter Peak Power Spectral Density (5.725-5.850 GHz band) (continued)

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK / Port 2403



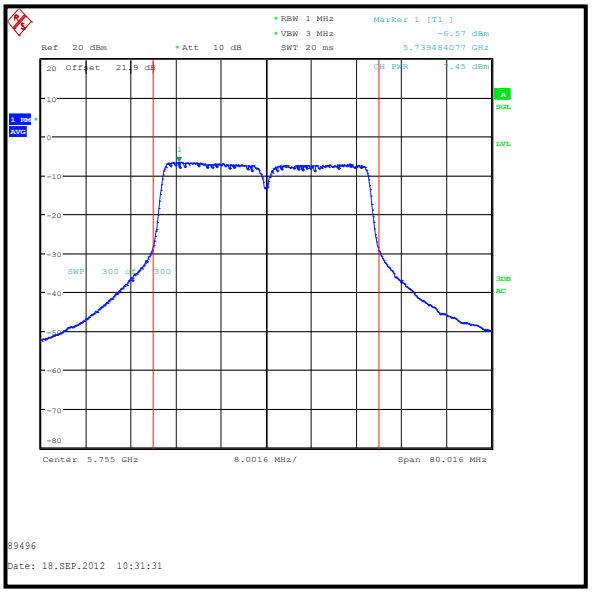
Bottom Channel



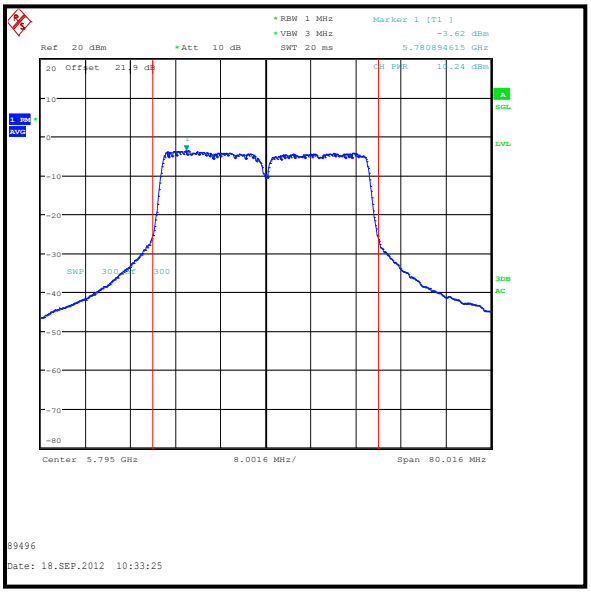
Top Channel

Transmitter Peak Power Spectral Density (5.725-5.850 GHz band) (continued)

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / BPSK / Port 2405



Bottom Channel



Top Channel

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
A1393	Attenuator	6820.17.B	06 Jul 2013	12
A1999	Attenuator	6820.17.B	04 Apr 2013	12
M1630	Test Receiver	ESU40	13 Jan 2013	12

5.2.7. Transmitter Peak Excursion

Test Summary:

Test Engineer:	Sarah Williams	**Test Date:**	18 September 2012
Test Sample Serial Number:	LK220202177		

FCC Reference:	Part 15.407(a)(6)
Test Method Used:	FCC KDB 789033 F)

Environmental Conditions:

Temperature (°C):	20
Relative Humidity (%):	38

Note(s):

1. All supported modes and channel widths were initially investigated on one channel. The modes that produced the highest power and widest bandwidth for all bands were:
    - 802.11a – 6 Mbps
    - 802.11n HT20 – 6.5 Mbps / MCS0
    - 802.11n HT40 – 13.5 Mbps / MCS0

    Measurements were then performed in these modes on all ports in all operating bands. Results are shown for the middle channel in the 5.47-5.725 GHz band when using a 40 MHz channel bandwidth. Results are shown for the top channels in all other bands when using a 40 MHz channel bandwidth as middle channels are not supported.
2. The peak measurement (first trace) was performed in accordance with FCC KDB 789033 F) using a peak detector. The second measurement (trace 2) was performed in accordance with FCC KDB 789033 E) and FCC KDB 789033 C)3)b) Method SA-1 using an RMS detector. Marker 1 was placed at the peak of the first trace and Marker 2 was placed at the peak of the second trace. The peak excursion is the delta between the two markers.
3. The EUT has three RF ports, Port 2401, Port 2403 and Port 2405. Peak excursion on all ports was measured. The highest peak excursion from all ports was compared to the limit in order to obtain the margin.
4. The EUT was transmitting at >99% duty cycle.

Transmitter Peak Excursion (continued)

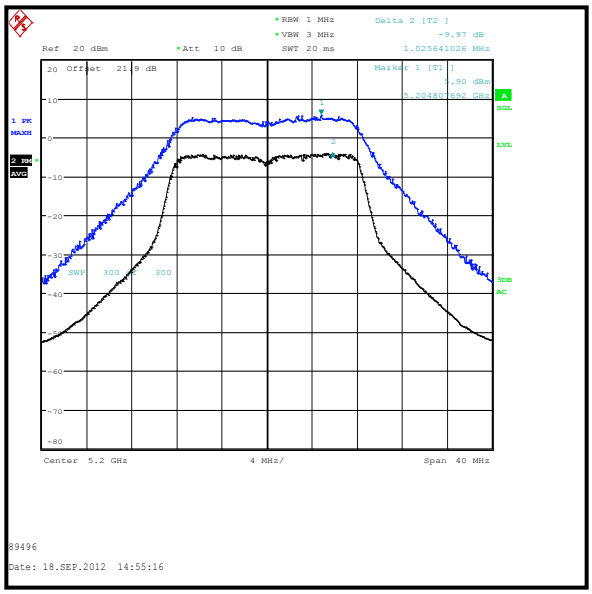
Results: 802.11a / 20 MHz / 6 Mbps / BPSK

Band (GHz)	Middle Frequency (MHz)	Peak Excursion Port 2401 (dB)	Peak Excursion Port 2403 (dB)	Peak Excursion Port 2405 (dB)
5.15-5.25	5200	10.0	9.7	9.9
5.25-5.35	5280	9.6	10.0	10.1
5.47-5.725	5580	9.7	9.7	9.6
5.725-5.850	5785	9.9	9.7	9.6

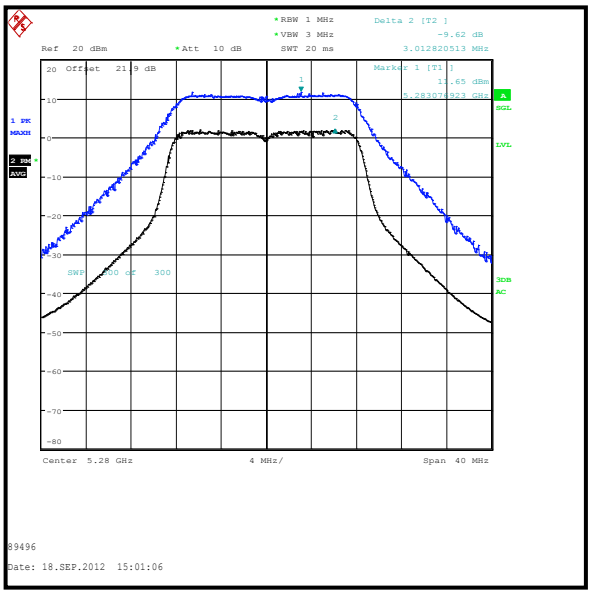
Band (GHz)	Middle Frequency (MHz)	Limit (dB)	Lowest Margin (dB)	Result
5.15-5.25	5200	13.0	3.0	Complied
5.25-5.35	5280	13.0	2.9	Complied
5.47-5.725	5580	13.0	3.3	Complied
5.725-5.850	5785	13.0	3.1	Complied

Transmitter Peak Excursion (continued)

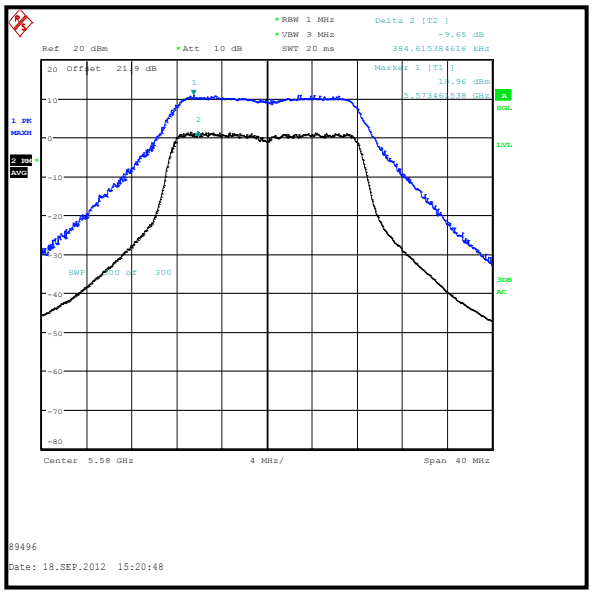
Results: 802.11a / 20 MHz / 6 Mbps / BPSK / Port 2401



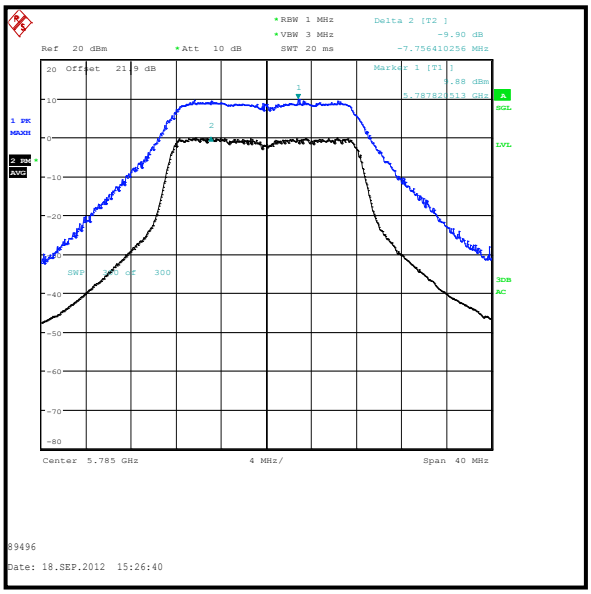
Middle Channel / 5.15-5.25 GHz band



Middle Channel / 5.25-5.35 GHz band



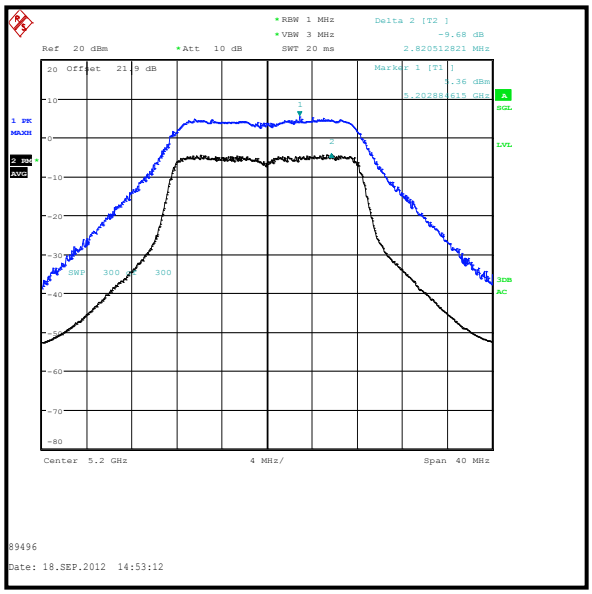
Middle Channel / 5.47-5.725 GHz band



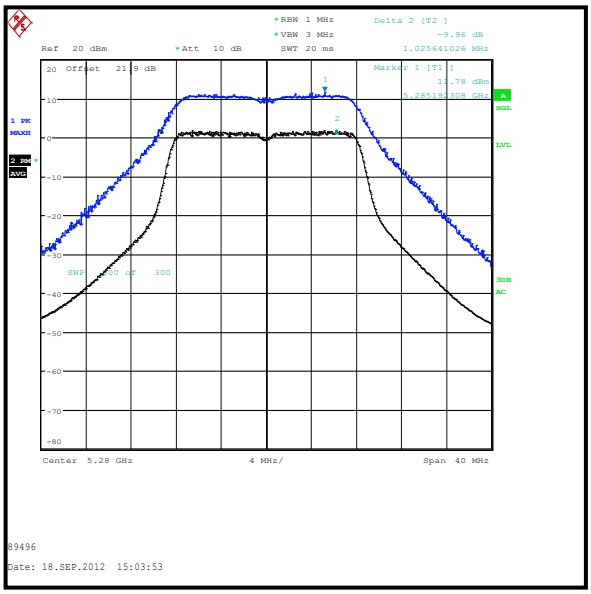
Middle Channel / 5.725-5.850 GHz band

Transmitter Peak Excursion (continued)

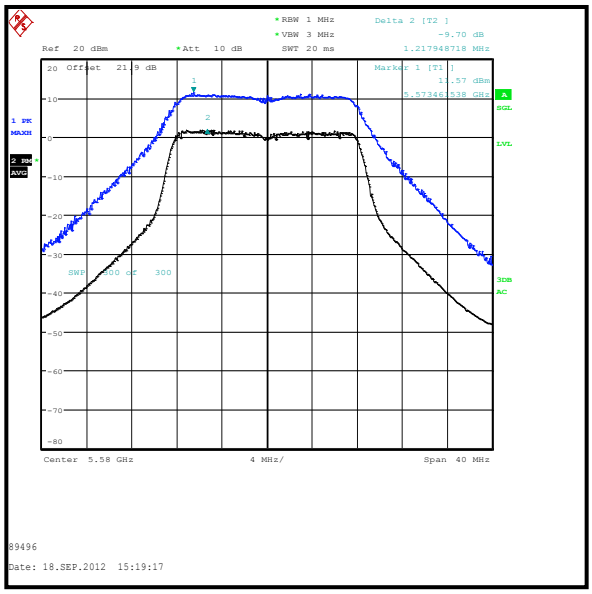
Results: 802.11a / 20 MHz / 6 Mbps / BPSK / Port 2403



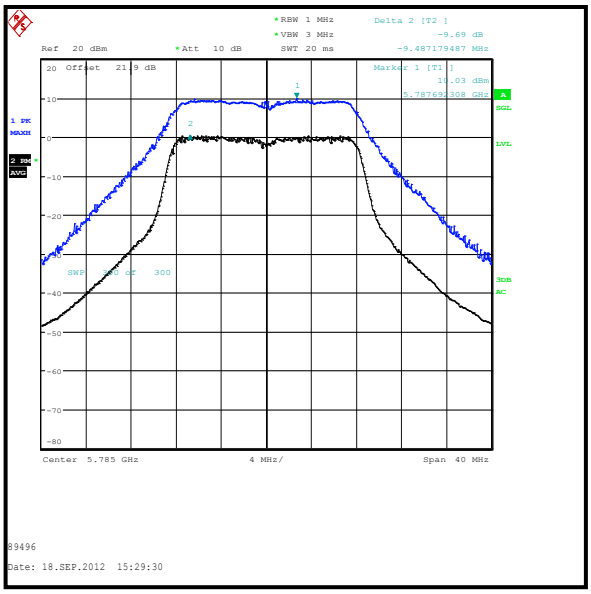
Middle Channel / 5.15-5.25 GHz band



Middle Channel / 5.25-5.35 GHz band



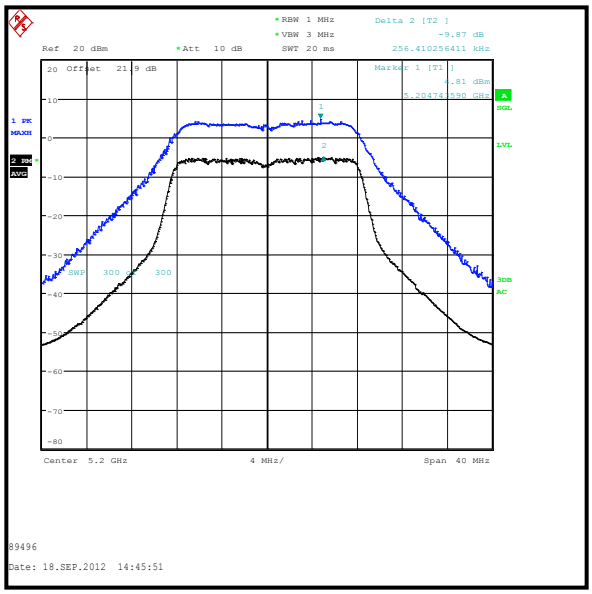
Middle Channel / 5.47-5.725 GHz band



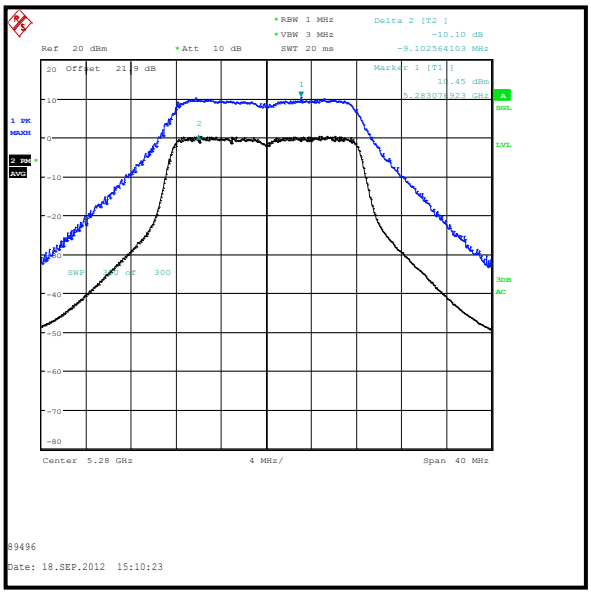
Middle Channel / 5.725-5.850 GHz band

Transmitter Peak Excursion (continued)

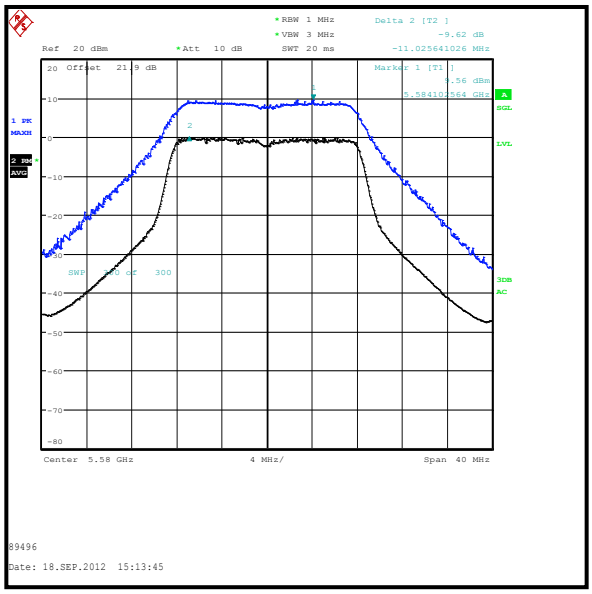
Results: 802.11a / 20 MHz / 6 Mbps / BPSK / Port 2405



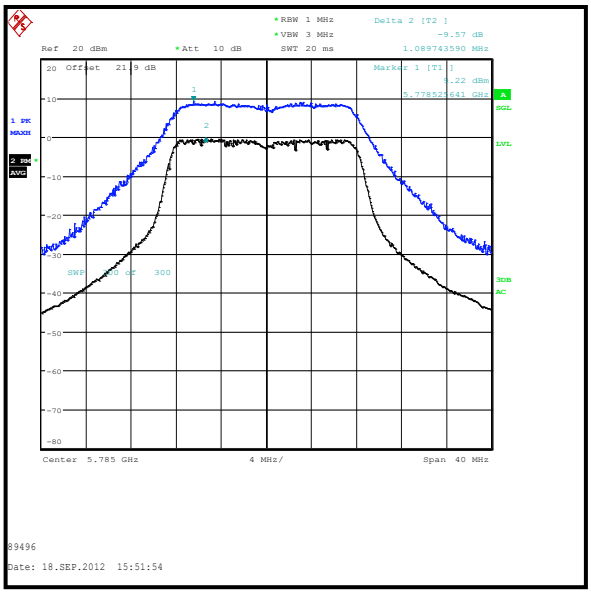
Middle Channel / 5.15-5.25 GHz band



Middle Channel / 5.25-5.35 GHz band



Middle Channel / 5.47-5.725 GHz band



Middle Channel / 5.725-5.850 GHz band

Transmitter Peak Excursion (continued)

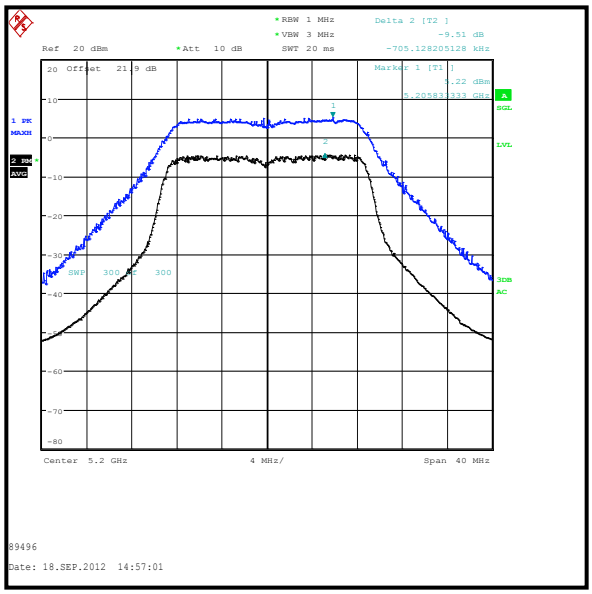
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK

Band (GHz)	Middle Frequency (MHz)	Peak Excursion Port 2401 (dB)	Peak Excursion Port 2403 (dB)	Peak Excursion Port 2405 (dB)
5.15-5.25	5200	9.5	9.6	9.6
5.25-5.35	5280	9.9	9.7	10.0
5.47-5.725	5580	9.7	9.9	9.6
5.725-5.850	5785	9.5	9.7	10.0

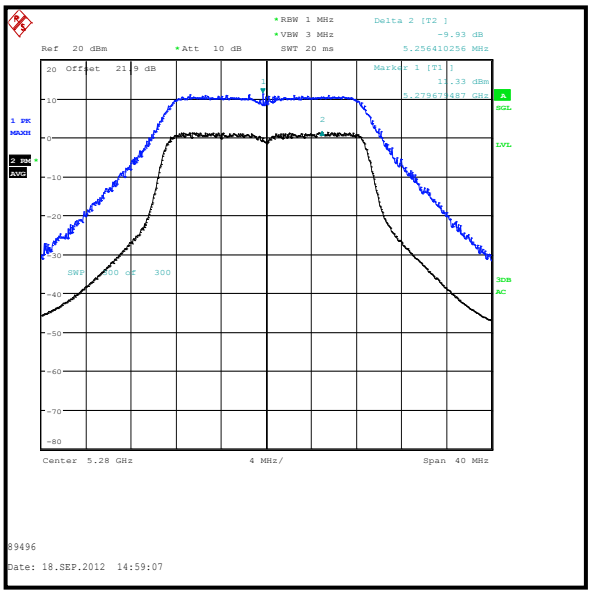
Band (GHz)	Middle Frequency (MHz)	Limit (dB)	Lowest Margin (dB)	Result
5.15-5.25	5200	13.0	3.4	Complied
5.25-5.35	5280	13.0	3.0	Complied
5.47-5.725	5580	13.0	3.1	Complied
5.725-5.850	5785	13.0	3.0	Complied

Transmitter Peak Excursion (continued)

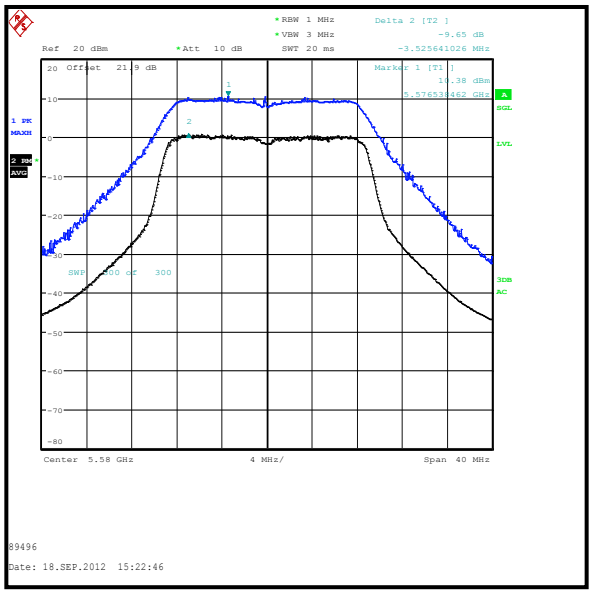
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2401



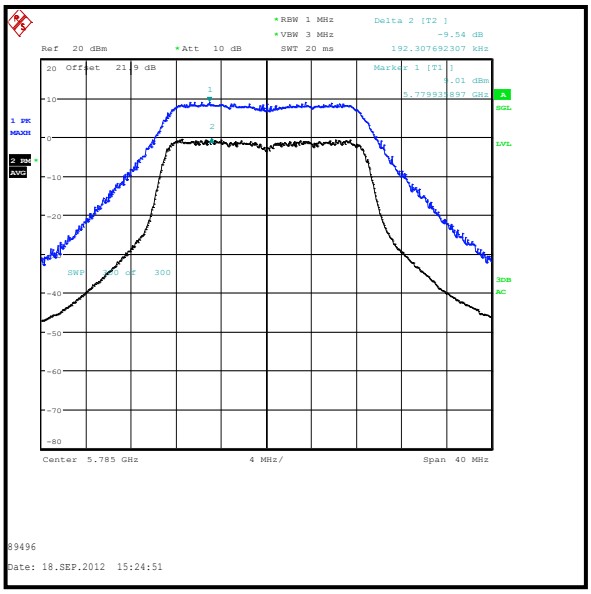
Middle Channel / 5.15-5.25 GHz band



Middle Channel / 5.25-5.35 GHz band



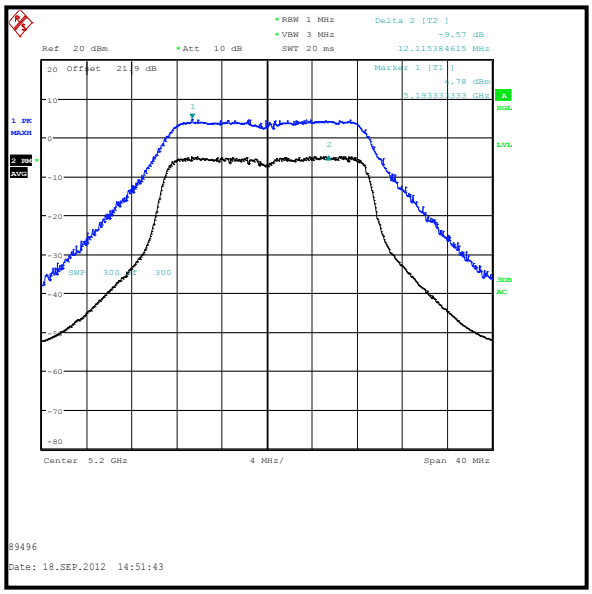
Middle Channel / 5.47-5.725 GHz band



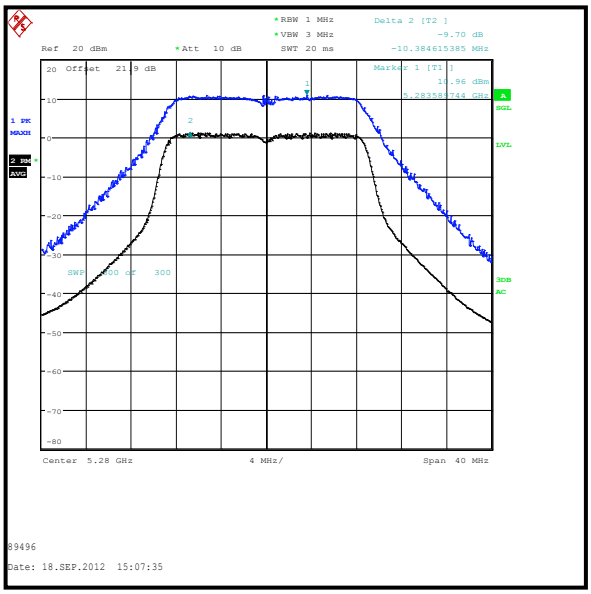
Middle Channel / 5.725-5.850 GHz band

Transmitter Peak Excursion (continued)

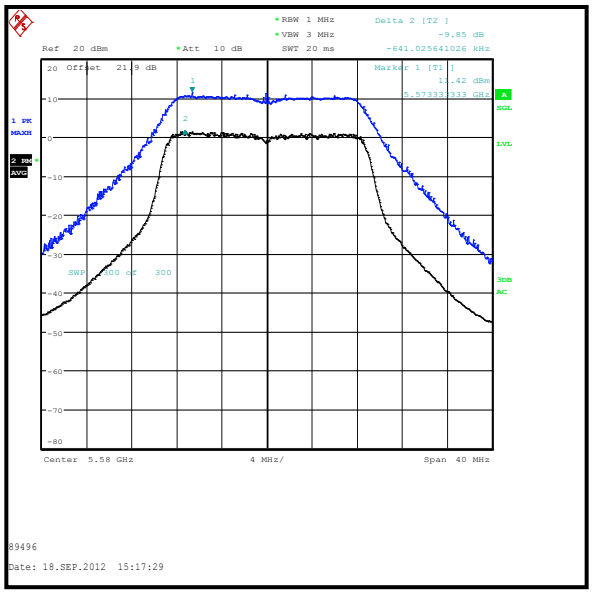
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2403



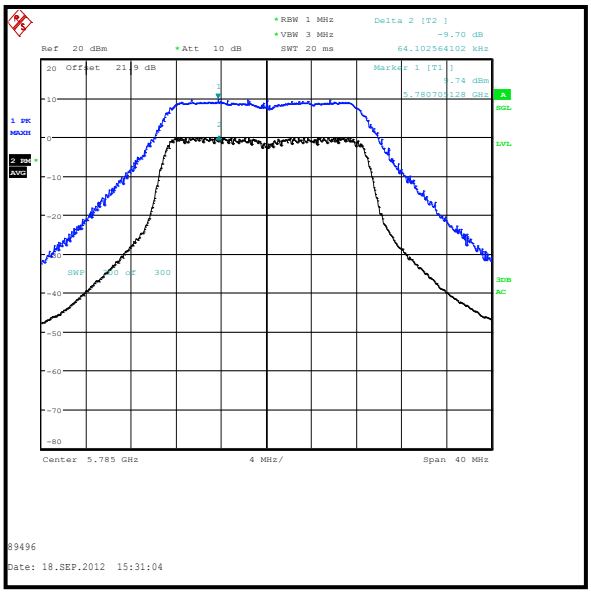
Middle Channel / 5.15-5.25 GHz band



Middle Channel / 5.25-5.35 GHz band



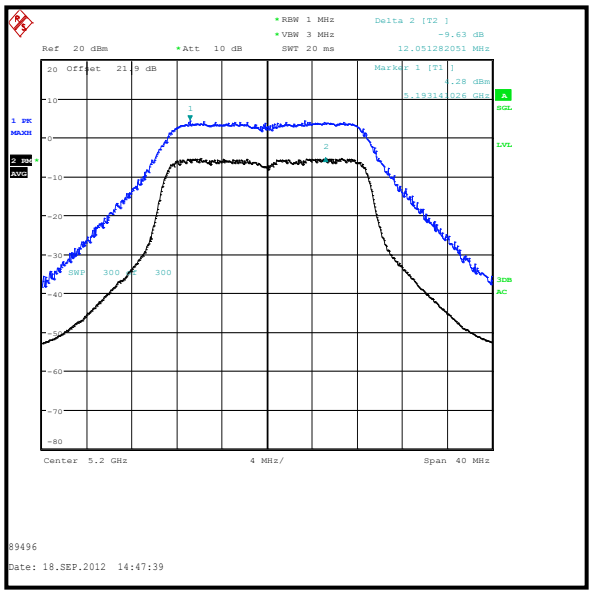
Middle Channel / 5.47-5.725 GHz band



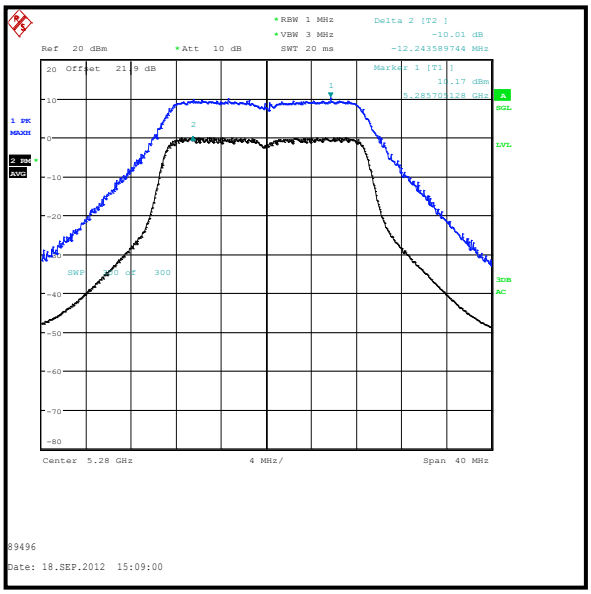
Middle Channel / 5.725-5.850 GHz band

Transmitter Peak Excursion (continued)

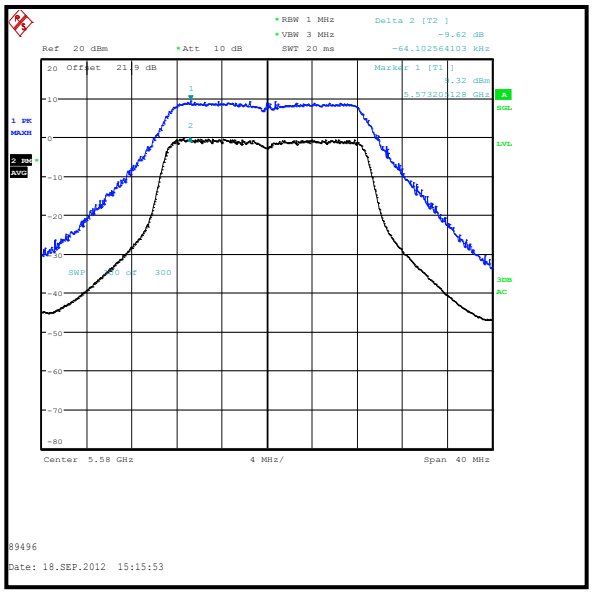
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2405



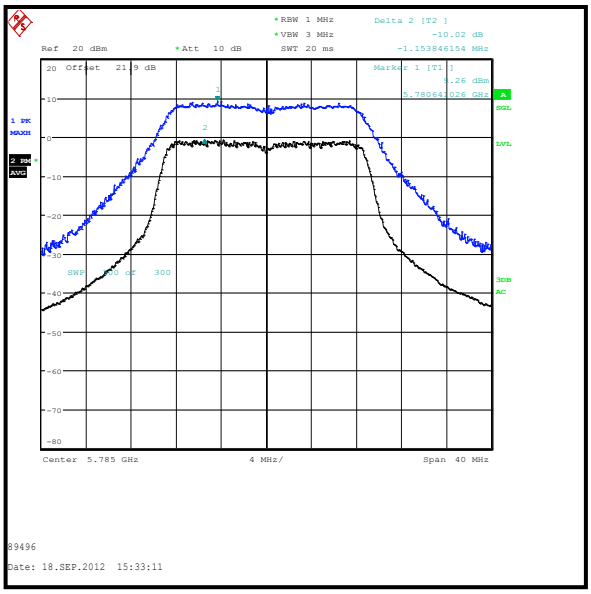
Middle Channel / 5.15-5.25 GHz band



Middle Channel / 5.25-5.35 GHz band



Middle Channel / 5.47-5.725 GHz band



Middle Channel / 5.725-5.850 GHz band

Transmitter Peak Excursion (continued)

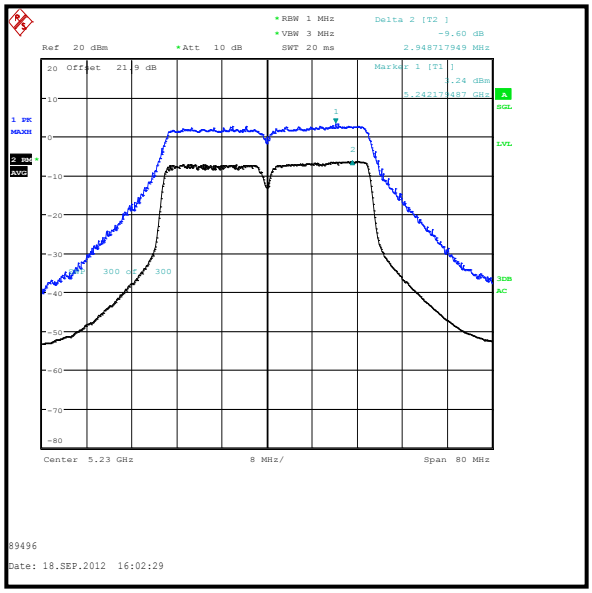
Results: 802.11n / 40 MHz / 6.5 Mbps / MCS0 / BPSK

Band (GHz)	Middle Frequency (MHz)	Peak Excursion Port 2401 (dB)	Peak Excursion Port 2403 (dB)	Peak Excursion Port 2405 (dB)
5.15-5.25	5230	9.6	9.6	9.6
5.25-5.35	5310	9.6	9.3	9.7
5.47-5.725	5550	9.8	9.8	9.7
5.725-5.850	5795	9.8	9.9	9.7

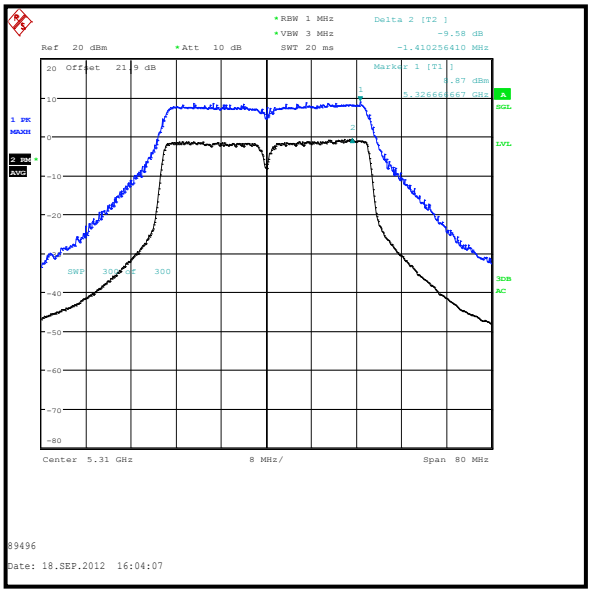
Band (GHz)	Middle / Top Frequency (MHz)	Limit (dB)	Lowest Margin (dB)	Result
5.15-5.25	5230	13.0	3.4	Complied
5.25-5.35	5310	13.0	3.3	Complied
5.47-5.725	5550	13.0	3.2	Complied
5.725-5.850	5795	13.0	3.1	Complied

Transmitter Peak Excursion (continued)

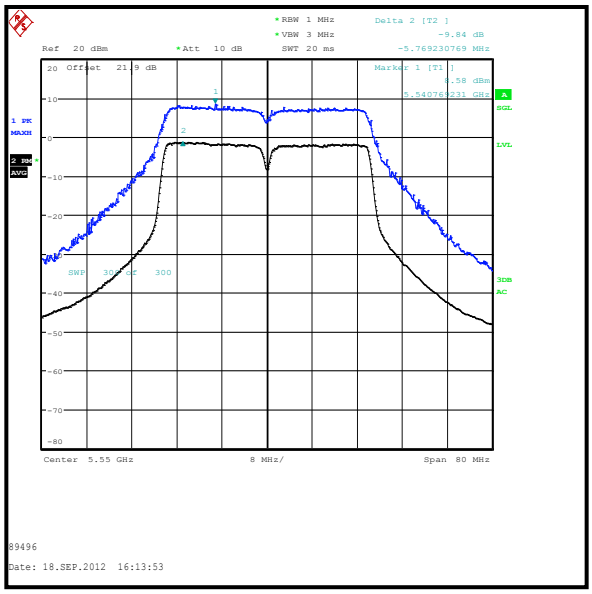
Results: 802.11n / 40 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2401



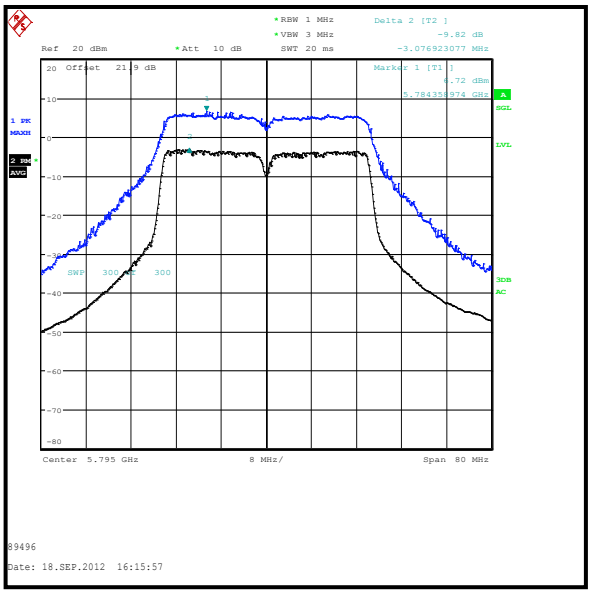
Top Channel / 5.15-5.25 GHz band



Top Channel / 5.25-5.35 GHz band



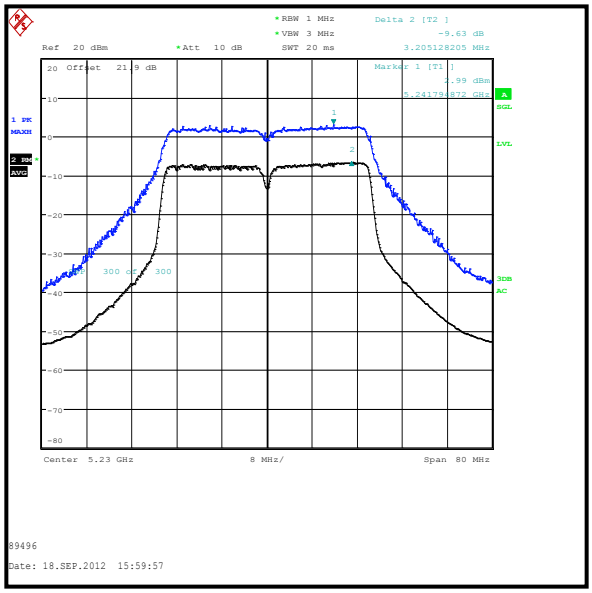
Middle Channel / 5.47-5.725 GHz band



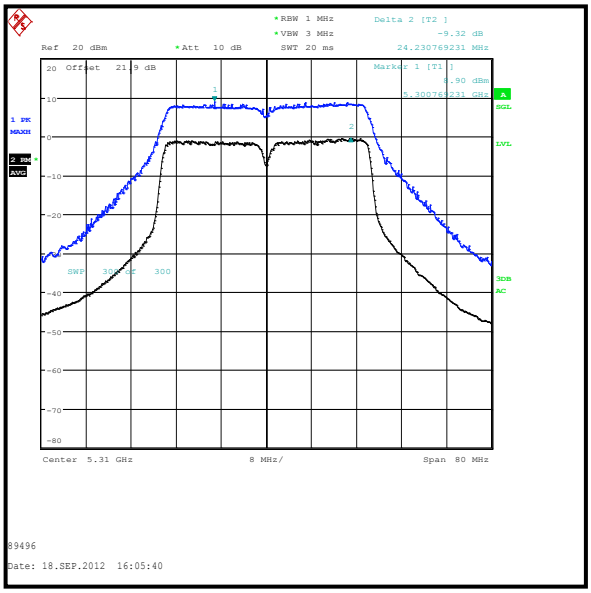
Top Channel / 5.725-5.850 GHz band

Transmitter Peak Excursion (continued)

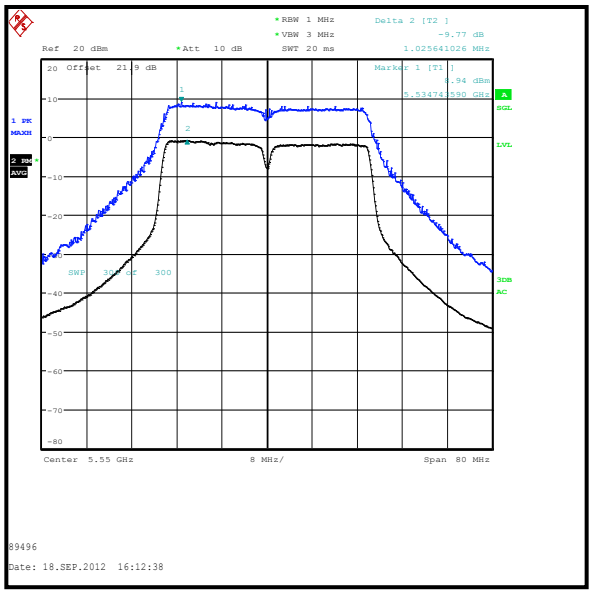
Results: 802.11n / 40 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2403



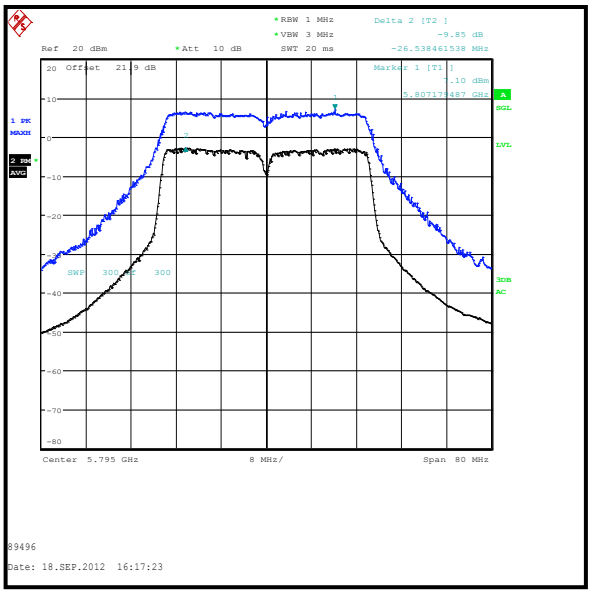
Top Channel / 5.15-5.25 GHz band



Top Channel / 5.25-5.35 GHz band



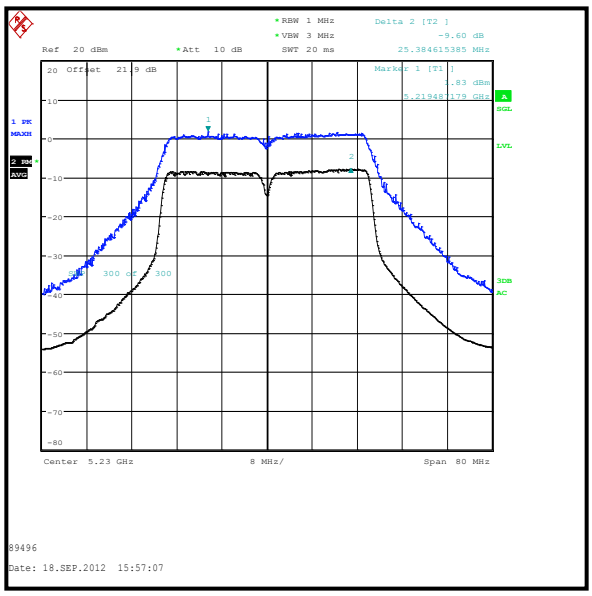
Middle Channel / 5.47-5.725 GHz band



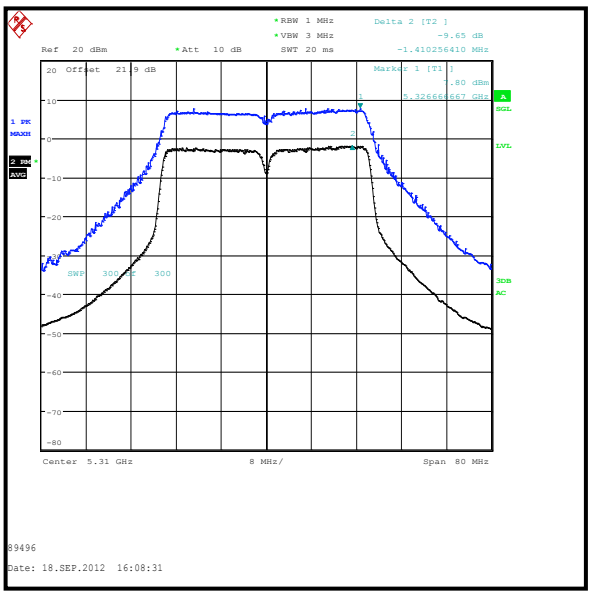
Top Channel / 5.725-5.850 GHz band

Transmitter Peak Excursion (continued)

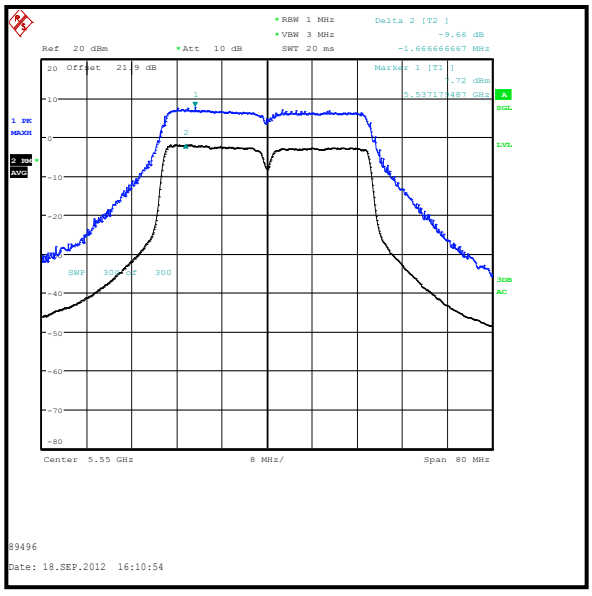
Results: 802.11n / 40 MHz / 6.5 Mbps / MCS0 / BPSK / Port 2405



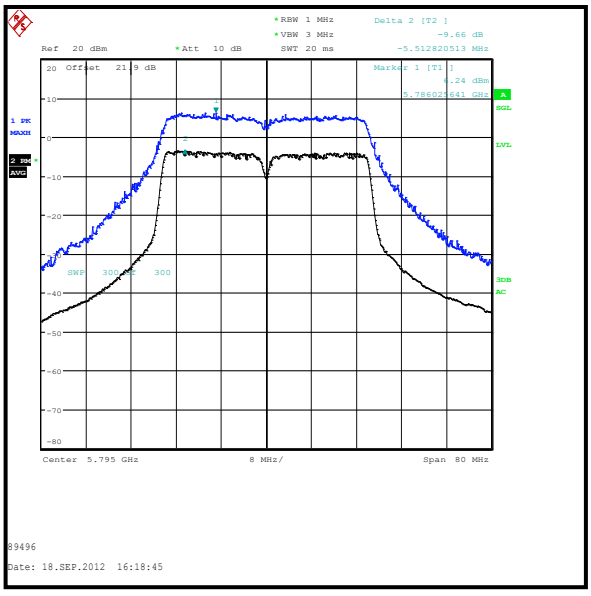
Top Channel / 5.15-5.25 GHz band



Top Channel / 5.25-5.35 GHz band



Middle Channel / 5.47-5.725 GHz band



Top Channel / 5.725-5.850 GHz band

Transmitter Peak Excursion (continued)

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
A1393	Attenuator	6820.17.B	06 Jul 2013	12
A1999	Attenuator	6820.17.B	04 Apr 2013	12
M1630	Test Receiver	ESU40	13 Jan 2013	12

5.2.8. Transmitter Out of Band Radiated Emissions (Below 1 GHz)

Test Summary:

Test Engineer:	Steve White	**Test Date:**	24 August 2012
Test Sample Serial Number:	LK2202169		

FCC Reference:	Parts 15.407(b)(1),(6),(7) & 15.209(a)
Test Method Used:	FCC KDB 789033 G) & ANSI C63.10 Sections 6.3 and 6.5
Frequency Range:	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	27
Relative Humidity (%):	32

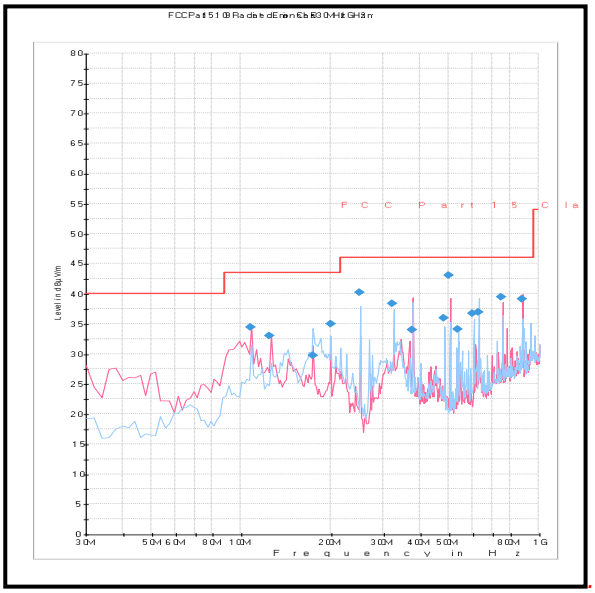
Note(s):

1. Measurements below 1GHz were limited to the 5.25-5.35 GHz band, 802.11n HT40/MCS0 as it produced the highest conducted output power.
2. The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss.
3. Measurements below 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
4. The final measurements shown are within restricted bands, all other emissions were determined to be either unrestricted or greater than 20 dB below the appropriate limit.

Results:

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
125.005	Vertical	33.0	43.5	10.5	Complied
249.991	Horizontal	40.2	46.0	5.8	Complied
323.137	Horizontal	38.3	46.0	7.7	Complied

Transmitter Out of Band Radiated Emissions (5.25-5.35 GHz band operation) (continue)



Note: This plot is a pre-scan and for indication purposes only. For final measurements, see accompanying tables.

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
K0001	5 m Semi-Anechoic Chamber	N/A	31 Aug 2012	12
M1273	Test Receiver	ESIB 26	03 Feb 2013	12
A1834	Attenuator	8491B	29 Jan 2013	12
G0543	Amplifier	310N	15 Oct 2012	12
A553	Antenna	CBL6111A	15 Feb 2013	12

5.2.9. Transmitter Out of Band Radiated Emissions (Above 1 GHz)

Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation)

Test Summary:

Test Engineer:	Philip Harrison	**Test Dates:**	30 August 1012 & 13 September 2012
Test Sample Serial Number:	LK2202169		

FCC Part:	15.407(b)(1),(7) & 15.209(a)
Test Method Used:	FCC KDB 789033 G) & ANSI C63.10 Sections 6.3 and 6.6
Frequency Range:	1 GHz to 40 GHz

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	36

Note(s):

1. FCC Part 15.407(b)(1) states for transmitters operating in the band 5.15 to 5.25 GHz: all emissions outside of the band will not exceed -27 dBm/MHz. Part(b)(7) states the provisions of 15.205 apply eg restricted bands of operation.
2. Pre-scans were performed on the 5.25-5.35 GHz band as it produced the highest conducted output power. However, final measurements were performed on any emission seen for each band as stated in FCC Response to Inquiry (Tracking Number 917954 / Date: 14th February 2012).
3. The EUT was configured with a software power setting of 8.5 dBm for 40 MHz bottom channel and top channel, this is as shown in the below headings
4. The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss.
5. All other emissions shown on the pre-scan plot were investigated and found to be ambient or >20 dB below the applicable limit or below the measurement system noise floor.
6. The emission shown on the 4 GHz to 6 GHz plot is the EUT fundamental.
7. The 3rd harmonic was investigated however it was below the measurement noise floor for both bottom and top channels within this band at approximately 15.570 GHz and15.690 GHz
8. Pre-scans above 1 GHz were performed in a fully anechoic chamber (RFI Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.

Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)

Results: Bottom Channel / EIRP / 802.11n HT40 / MCS0 / S/W Power 8.5

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
1132.233	Vertical	-47.9	-27.0	20.9	Complied
1367.652	Vertical	-49.9	-27.0	22.9	Complied
4839.953	Vertical	-43.7	-27.0	16.7	Complied
4880.045	Vertical	-42.4	-27.0	15.4	Complied
4959.850	Vertical	-42.4	-27.0	15.4	Complied
5000.030	Horizontal	-37.6	-27.0	10.6	Complied
5359.292	Horizontal	-40.4	-27.0	13.4	Complied
5400.651	Horizontal	-40.8	-27.0	13.8	Complied
5439.830	Horizontal	-38.6	-27.0	11.6	Complied
15927.355	Vertical	-49.9	-27.0	22.9	Complied

Results: Bottom Channel 5190 / Field strength / Peak / 802.11n HT40 / MCS0 / S/W Power 8.5

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	48.0	74.0	26.0	Complied
1367.652	Vertical	44.4	74.0	29.6	Complied
4839.953	Vertical	51.5	74.0	22.5	Complied
4839.953	Vertical	51.5	74.0	22.5	Complied
4880.045	Vertical	52.8	74.0	21.2	Complied
4959.850	Vertical	52.8	74.0	21.2	Complied
5000.030	Horizontal	57.6	74.0	16.4	Complied
5359.292	Horizontal	54.8	74.0	19.2	Complied
5400.651	Horizontal	54.4	74.0	19.6	Complied
5439.830	Horizontal	56.6	74.0	17.4	Complied
15927.355	Vertical	45.3	74.0	28.7	Complied

Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)

Results: Bottom Channel 5190 / Field strength / Average / 802.11n HT40 / MCS0 / S/W Power 8.5

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	38.2	54.0	15.8	Complied
1367.652	Vertical	40.0	54.0	14.0	Complied
4840.141	Vertical	45.9	54.0	8.1	Complied
4880.015	Vertical	47.4	54.0	6.6	Complied
4959.870	Vertical	47.0	54.0	7.0	Complied
5000.050	Horizontal	53.7	54.0	0.3	Complied
5360.110	Horizontal	47.8	54.0	6.2	Complied
5399.997	Horizontal	47.9	54.0	6.1	Complied
5439.930	Horizontal	50.6	54.0	3.4	Complied
15927.355	Vertical	42.1	54.0	11.9	Complied

Results: Top Channel 5230 / EIRP / 802.11n HT40 / MCS0 / S/W Power 8.5

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
1132.233	Vertical	-47.9	-27.0	20.9	Complied
1367.652	Vertical	-49.9	-27.0	22.9	Complied
4839.829	Vertical	-42.2	-27.0	15.2	Complied
4879.890	Vertical	-41.1	-27.0	14.1	Complied
4960.028	Vertical	-40.4	-27.0	13.4	Complied
4999.770	Horizontal	-37.1	-27.0	10.1	Complied
5360.110	Vertical	-38.9	-27.0	11.9	Complied
5399.830	Vertical	-36.9	-27.0	9.9	Complied
15927.355	Horizontal	-49.9	-27.0	22.9	Complied

Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)

Results: Top Channel 5230 / Field strength / Peak / 802.11n HT40 / MCS0 / S/W Power 8.5

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	48.0	74.0	26.0	Complied
1367.652	Vertical	44.4	74.0	29.6	Complied
4839.829	Vertical	53.0	74.0	21.0	Complied
4879.890	Vertical	54.1	74.0	19.9	Complied
4960.028	Vertical	54.8	74.0	19.2	Complied
4999.770	Horizontal	58.1	74.0	15.9	Complied
5360.110	Vertical	56.3	74.0	17.7	Complied
5399.830	Vertical	58.3	74.0	15.7	Complied
15927.355	Horizontal	45.3	74.0	28.7	Complied

Results: Top Channel 5230 / Field strength / Average / 802.11n HT40 / MCS0 / S/W Power 8.5

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	38.2	54.0	15.8	Complied
1367.652	Vertical	40.0	54.0	14.0	Complied
4839.890	Vertical	46.8	54.0	7.2	Complied
4880.010	Vertical	49.8	54.0	4.2	Complied
4960.008	Vertical	47.6	54.0	6.4	Complied
4999.910	Horizontal	53.6	54.0	0.4	Complied
5360.251	Vertical	50.1	54.0	3.9	Complied
5399.950	Vertical	52.5	54.0	1.5	Complied
15927.355	Horizontal	41.9	54.0	12.1	Complied

Transmitter Out of Band Radiated Emissions (5.25-5.35 GHz band operation) (continued)

Test Summary:

Test Engineers:	Philip Harrison, Andrew Edwards & Nick Steele	**Test Dates:**	30 August 1012, 31 August 2012, 03 September 2012 & 13 September 2012
Test Sample Serial Number:	LK220202169		

FCC Part:	15.407(b)(2),(7) & 15.209(a)
Test Method Used:	FCC KDB 789033 G) & ANSI C63.10 Sections 6.3 and 6.6
Frequency Range:	1 GHz to 40 GHz

Environmental Conditions:

Temperature (°C):	24 to 25
Relative Humidity (%):	35 to 36

Note(s):

1. FCC Part 15.407(b)(2) states for transmitters operating in the band 5.25 to 5.35 GHz: all emissions outside of the band will not exceed -27 dBm/MHz. Part(b)(7) states the provisions of 15.205 apply eg restricted bands of operation.
2. Pre-scans were performed on the 5.25-5.35 GHz band as it produced the highest conducted output power. However, final measurements were performed on any emission seen for each band as stated in FCC Response to Inquiry (Tracking Number 917954 / Date: 14th February 2012).
3. The EUT was configured with a software power setting of 14 dBm for 40 MHz bottom channel and top channel, this is as shown in the below headings
4. The 3rd harmonic was investigated however it was below the measurement noise floor for bottom channel within this band at approximately 15.810 GHz.
5. The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss.
6. All other emissions shown on the pre-scan plot were investigated and found to be ambient or >20 dB below the applicable limit or below the measurement system noise floor.
7. The emission shown on the 4 GHz to 6 GHz plot is the EUT fundamental.
8. Measurements were performed across the two restricted bands closest to the bands of operation with the EUT transmitting on the top channel in the 5.25 to 5.35 GHz band. Plots are included in this section of the test report. Peak and average measurements were made. No emissions were observed above the noise floor of the measurements system.
9. Pre-scans above 1 GHz were performed in a fully anechoic chamber (RFI Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
10. * -20 dBc limit applies

Transmitter Out of Band Radiated Emissions (5.25-5.35 GHz band operation) (continued)

Results: Bottom Channel 5270 / EIRP / 802.11 n / 40 MHz / MCS0 / S/W Power 15.5

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
1132.233	Vertical	-47.9	-27.0	20.9	Complied
1367.652	Vertical	-49.9	-27.0	22.9	Complied
4879.936	Vertical	-42.6	-27.0	15.6	Complied
4879.936	Vertical	-42.6	-27.0	15.6	Complied
4879.936	Vertical	-42.6	-27.0	15.6	Complied
5000.159	Horizontal	-37.5	-27.0	10.5	Complied
5119.987	Horizontal	-41.2	-27.0	14.2	Complied
5144.078	Vertical	-38.8	-27.0	11.8	Complied
10532.886	Horizontal	-30.4	-27.0	3.4	Complied
15927.355	Vertical	-49.1	-27.0	22.1	Complied

Results: Bottom Channel 5270 / Field strength / Peak / 802.11 n / 40 MHz / MCS0 / S/W Power 15.5

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	48.0	74.0	26.0	Complied
1367.652	Vertical	44.4	74.0	29.6	Complied
4879.936	Vertical	52.6	74.0	21.4	Complied
4920.009	Vertical	52.5	74.0	21.5	Complied
4959.954	Horizontal	54.4	74.0	19.6	Complied
5000.159	Horizontal	57.4	74.0	16.6	Complied
5119.987	Horizontal	54.0	74.0	20.0	Complied
5144.078	Vertical	56.4	74.0	17.6	Complied
10532.886	Horizontal	64.8	89.1*	24.3	Complied
15927.355	Vertical	46.1	74.0	27.9	Complied

Transmitter Out of Band Radiated Emissions (5.25-5.35 GHz band operation) (continued)

Results: Bottom Channel 5270 / Field strength / Average / 802.11 n / 40 MHz / MCS0 / S/W Power 14.0

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
1132.233	Vertical	38.2	54.0	15.8	Complied
1367.652	Vertical	40.0	54.0	14.0	Complied
4879.936	Vertical	47.3	54.0	6.7	Complied
4920.009	Vertical	47.2	54.0	6.8	Complied
4959.954	Horizontal	47.4	54.0	6.6	Complied
5000.159	Horizontal	52.2	54.0	1.8	Complied
5119.987	Horizontal	48.7	54.0	5.3	Complied
5144.078	Vertical	46.5	54.0	7.5	Complied
15927.355	Vertical	42.0	54.0	12.0	Complied

Results: Top Channel 5310 / EIRP / 802.11 n / 40 MHz / MCS0 / S/W Power 14.0

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
1132.233	Vertical	-47.9	-27.0	20.9	Complied
1367.652	Vertical	-49.9	-27.0	22.9	Complied
4880.069	Vertical	-42.2	-27.0	15.2	Complied
4840.120	Vertical	-43.9	-27.0	16.9	Complied
4919.996	Horizontal	-43.0	-27.0	16.0	Complied
4960.051	Horizontal	-41.1	-27.0	14.1	Complied
4999.835	Horizontal	-37.2	-27.0	10.2	Complied
5080.100	Horizontal	-42.5	-27.0	15.5	Complied
10613.086	Horizontal	-29.7	-27.0	2.7	Complied
15940.882	Horizontal	-46.9	-27.0	19.9	Complied

Transmitter Out of Band Radiated Emissions (5.25-5.35 GHz band operation) (continued)

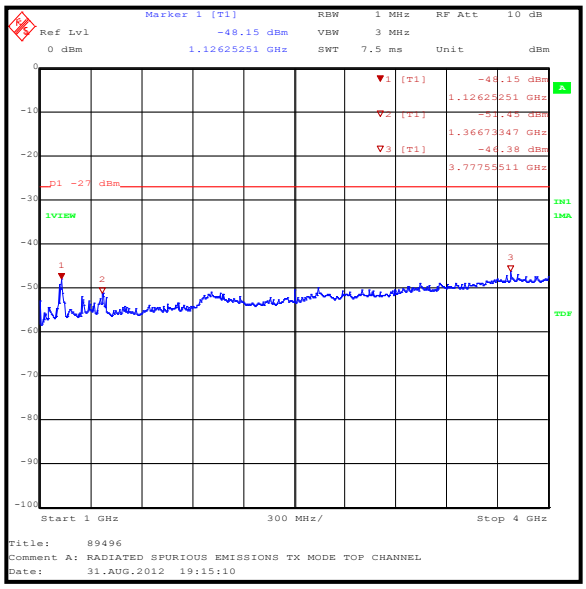
Results: Top Channel 5310 / Field strength / Peak / 802.11 n / 40 MHz / MCS0 / S/W Power 14.0

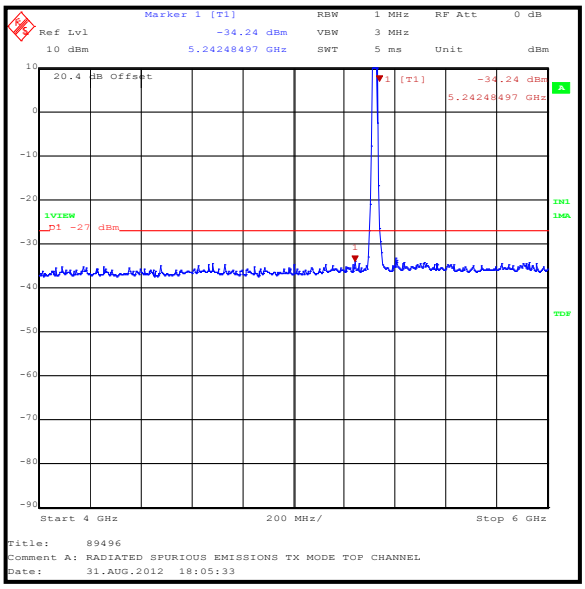
Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	48.0	74.0	26.0	Complied
1367.652	Vertical	44.4	74.0	29.6	Complied
4880.069	Vertical	53.0	74.0	21.0	Complied
4840.120	Vertical	51.3	74.0	22.7	Complied
4919.996	Horizontal	52.2	74.0	21.8	Complied
4960.051	Horizontal	54.1	74.0	19.9	Complied
4999.835	Horizontal	58.0	74.0	16.0	Complied
5080.100	Horizontal	52.7	74.0	21.3	Complied
10613.086	Horizontal	65.5	74.0	8.5	Complied
15940.882	Horizontal	48.3	74.0	25.7	Complied
15927.355	Vertical	46.2	74.0	27.8	Complied

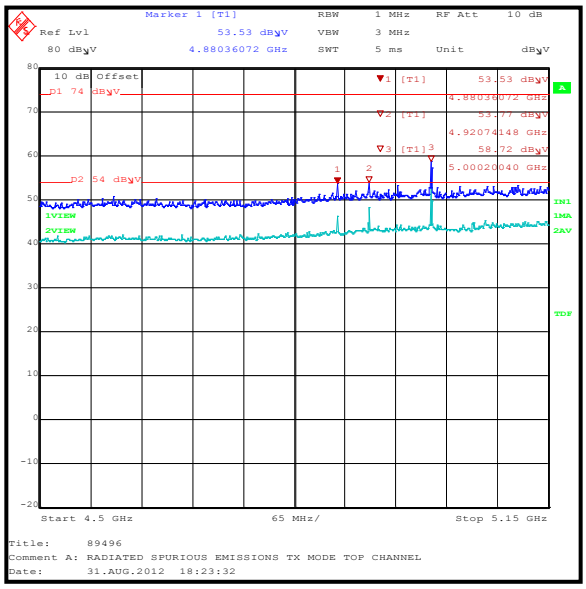
Results: Top Channel 5310 / Field strength / Average / 802.11 n / 40 MHz / MCS0 / S/W Power 14.0

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	38.2	54.0	15.8	Complied
1367.652	Vertical	40.0	54.0	14.0	Complied
4880.069	Vertical	47.9	54.0	6.1	Complied
4840.120	Vertical	44.6	54.0	9.4	Complied
4919.996	Horizontal	46.5	54.0	7.5	Complied
4960.051	Horizontal	48.8	54.0	5.2	Complied
4999.835	Horizontal	51.9	54.0	2.1	Complied
5080.100	Horizontal	45.9	54.0	8.1	Complied
10618.838	Horizontal	52.1	54.0	1.9	Complied
15930.261	Horizontal	34.0	54.0	20.0	Complied
15927.355	Horizontal	42.4	54.0	11.6	Complied

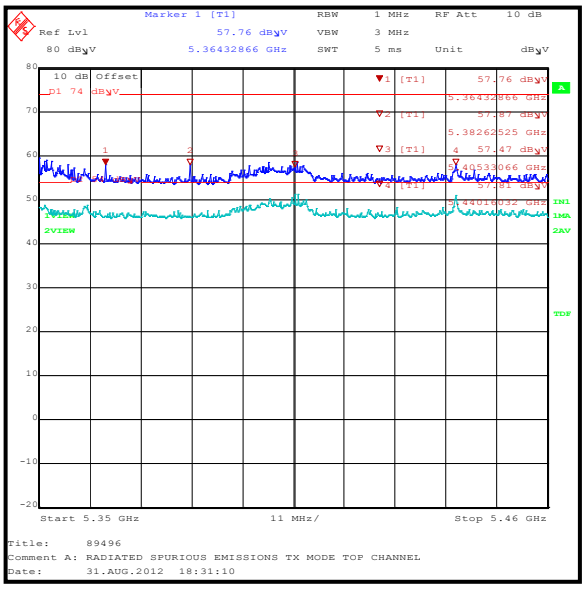
Transmitter Out of Band Radiated Emissions (5.25-5.35 GHz band operation) (continued)





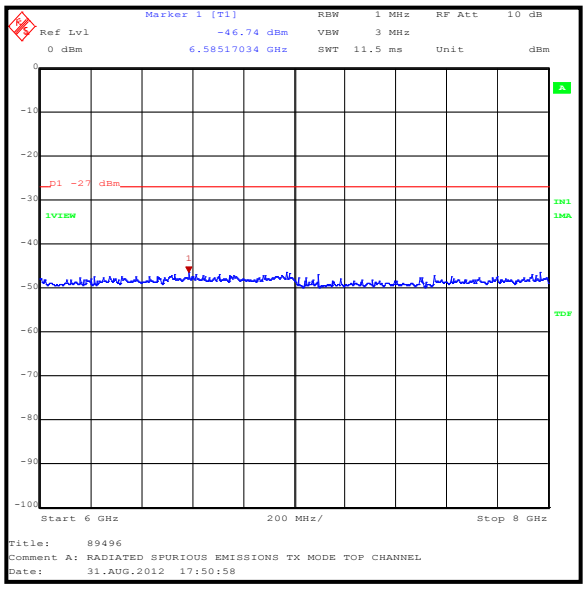


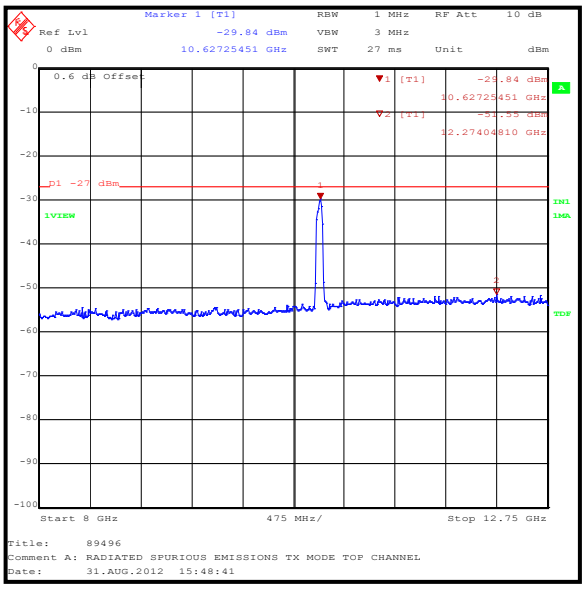
Restricted Band 4.5 GHz to 5.15 GHz

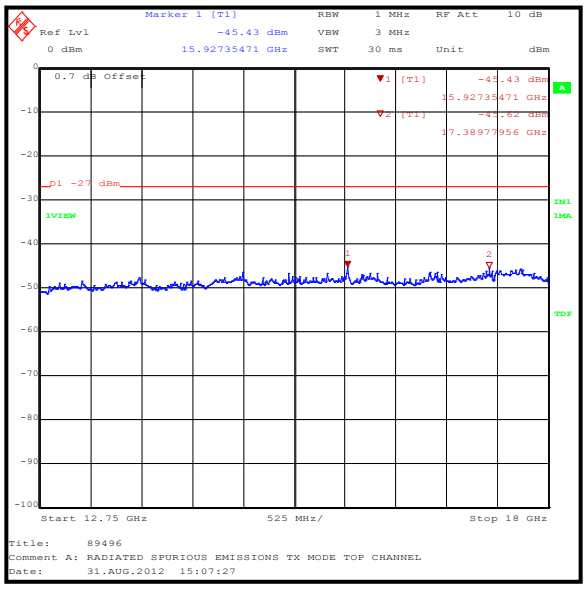


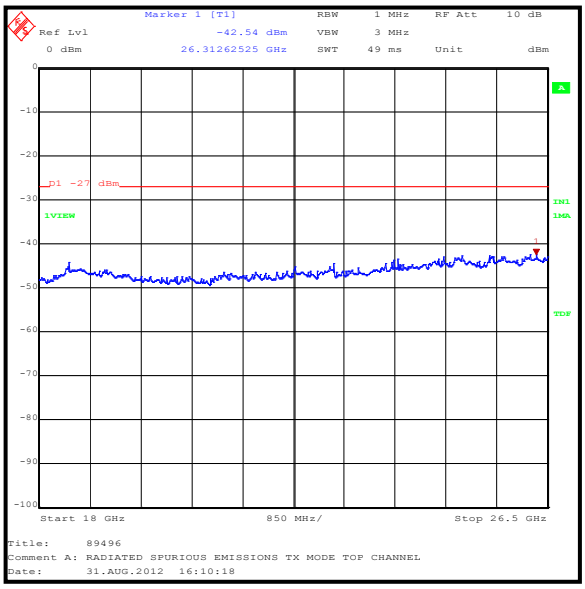
Restricted Band 5.35 GHz to 5.46 GHz

Transmitter Out of Band Radiated Emissions (5.25-5.35 GHz band operation) (continued)

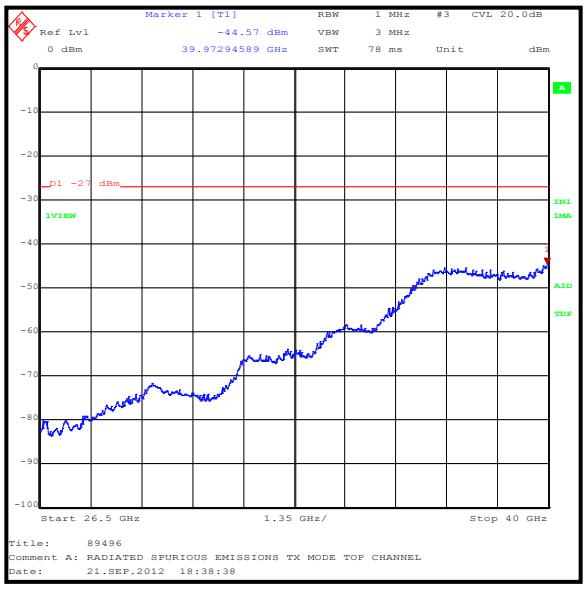








Transmitter Out of Band Radiated Emissions (5.25-5.35 GHz band operation) (continued)



Note: These plots are pre-scans and for indication purposes only. For final measurements, see accompanying tables.

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
K0002	3m RSE Chamber	N/A	09 Oct 2012	12
M1124	Test Receiver	ESIB 26	14 Aug 2013	12
A1534	Pre Amplifier	8449B	09 Oct 2012	12
A1818	Antenna	3115	09 Oct 2012	12
A2176	High Pass Filter 7-18 GHz	AFH-07000	25 May 2013	12
A253	Antenna	12240-20	09 Oct 2012	12
A254	Antenna	14240-20	09 Oct 2012	12
A255	Antenna	16240-20	09 Oct 2012	12
A256	Antenna	18240-20	09 Oct 2012	12
A436	Antenna	20240-20	09 Oct 2012	12
A203	Antenna	22240-20	11 May 2013	36
M1390	Harmonic Mixer	WHMP 28	Calibrated before use	12
A1785	Pre-amplifier	FLNA-28-30	Calibrated before use	12
A366	Isolator	FRR-400	Calibrated before use	-
S0537	DC Power Supply Unit	EL302D	Calibrated before use	-
M1251	Digital Multimeter	175	30 Jul 2013	12

Transmitter Out of Band Radiated Emissions (5.47-5.725 GHz band operation) (continued)

Test Summary:

Test Engineers:	Philip Harrison & Andrew Edwards	**Test Dates:**	13 September 2012 & 20 September 2012
Test Sample Serial Number:	LK2202169		

FCC Part:	15.407(b)(3),(7) & 15.209(a)
Test Method Used:	FCC KDB 789033 G) & ANSI C63.10 Sections 6.3 and 6.6
Frequency Range:	1 GHz to 40 GHz

Environmental Conditions:

Temperature (°C):	25
Relative Humidity (%):	37

Note(s):

1. FCC Part 15.407(b)(3) states for transmitters operating in the band 5.47 to 5.725 GHz: all emissions outside of the band will not exceed -27 dBm/MHz. Part(b)(7) states the provisions of 15.205 apply eg restricted bands of operation.
2. The EUT was configured with a software power setting of 12.0 dBm for 40 MHz bottom channel, 14.0 dBm for 40 MHz middle channel and top channel, this is as shown in the below headings.
3. The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss.
4. All other emissions shown on the pre-scan plot were investigated and found to be ambient or >20 dB below the applicable limit or below the measurement system noise floor.
5. The emission shown on the 4 GHz to 6 GHz plot is the EUT fundamental.
6. Measurements were performed across the two restricted bands closest to the bands of operation with the EUT transmitting on the top channel in the 5.47 to 5.725 GHz band. Plots are included in this section of the test report. Peak and average measurements were made. No emissions were observed above the noise floor of the measurements system.
7. Pre-scans above 1 GHz were performed in a fully anechoic chamber (RFI Asset Number K0002) at a distance of 3 metres. The EUT was placed at a height of 1.5 metres above the test chamber floor in the centre of the chamber turntable. All measurement antennas were placed at a fixed height of 1.5 metres above the test chamber floor, in line with the EUT. Final measurements above 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
8. * - 20dBc limit applies

Transmitter Out of Band Radiated Emissions (5.47-5.725 GHz band operation) (continued)

Results: Bottom Channel 5510 / EIRP / 802.11n HT40 / MCS0

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
1132.233	Vertical	-47.9	-27.0	20.9	Complied
1367.652	Vertical	-49.9	-27.0	22.9	Complied
4839.848	Vertical	-41.6	-27.0	14.6	Complied
4879.821	Vertical	-40.8	-27.0	13.8	Complied
4960.012	Vertical	-39.4	-27.0	12.4	Complied
4999.782	Vertical	-37.9	-27.0	10.9	Complied
5080.018	Vertical	-41.2	-27.0	14.2	Complied
5359.972	Vertical	-40.8	-27.0	13.8	Complied
5400.526	Vertical	-39.5	-27.0	12.5	Complied
5440.612	Vertical	-36.3	-27.0	9.3	Complied
11012.886	Horizontal	-33.8	-27.0	6.8	Complied
16531.253	Horizontal	-45.4	-27.0	18.4	Complied

Results: Bottom Channel 5510 / Field strength / Peak / 802.11n HT40 / MCS0

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	48.0	74.0	26.0	Complied
1367.652	Vertical	44.4	74.0	29.6	Complied
4839.848	Vertical	53.6	74.0	20.4	Complied
4879.821	Vertical	54.4	74.0	19.6	Complied
4960.012	Vertical	55.8	74.0	18.8	Complied
4999.782	Vertical	57.3	74.0	16.7	Complied
5080.018	Vertical	54.0	74.0	20.0	Complied
5359.972	Vertical	54.4	74.0	19.6	Complied
5400.526	Vertical	55.7	74.0	18.3	Complied
5440.612	Vertical	58.9	74.0	15.1	Complied
11012.886	Horizontal	61.4	74.0	12.6	Complied
16531.253	Horizontal	49.8	88.1*	38.3	Complied

Transmitter Out of Band Radiated Emissions (5.47-5.725 GHz band operation) (continued)

Results: Bottom Channel 5510 / Field strength / Average / 802.11n HT40 / MCS0

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	38.2	54.0	15.8	Complied
1367.652	Vertical	40.0	54.0	14.0	Complied
4839.990	Vertical	46.9	54.0	7.1	Complied
4880.106	Vertical	47.7	54.0	6.3	Complied
4959.967	Vertical	50.4	54.0	3.6	Complied
5000.113	Vertical	52.1	54.0	1.9	Complied
5080.138	Vertical	47.4	54.0	6.6	Complied
5359.807	Horizontal	47.4	54.0	6.6	Complied
5399.742	Horizontal	52.5	54.0	1.5	Complied
5440.036	Horizontal	53.2	54.0	0.8	Complied
11013.487	Horizontal	47.2	54.0	6.8	Complied

Results: Middle Channel 5550 / EIRP / 802.11n HT40 / MCS0

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
1132.233	Vertical	-47.9	-27.0	20.9	Complied
1367.652	Vertical	-49.9	-27.0	22.9	Complied
4839.726	Vertical	-41.4	-27.0	14.4	Complied
4880.031	Vertical	-41.0	-27.0	14.0	Complied
4959.847	Vertical	-40.0	-27.0	13.0	Complied
4999.949	Horizontal	-37.7	-27.0	10.7	Complied
5080.723	Horizontal	-40.9	-27.0	13.9	Complied
5359.595	Vertical	-40.6	-27.0	13.6	Complied
5399.776	Vertical	-41.5	-27.0	14.5	Complied
11092.886	Horizontal	-31.3	-27.0	4.3	Complied
16634.719	Horizontal	-44.7	-27.0	17.7	Complied

Transmitter Out of Band Radiated Emissions (5.47-5.725 GHz band operation) (continued)

Results: Middle Channel 5550 / Field strength / Peak / 802.11n HT40 / MCS0

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	48.0	74.0	26.0	Complied
1367.652	Vertical	44.4	74.0	29.6	Complied
4839.726	Vertical	53.8	74.0	20.2	Complied
4880.031	Vertical	54.2	74.0	19.8	Complied
4959.847	Vertical	55.2	74.0	18.8	Complied
4999.949	Horizontal	57.5	74.0	16.5	Complied
5080.723	Horizontal	54.3	74.0	19.7	Complied
5359.595	Vertical	54.6	74.0	19.4	Complied
5399.776	Vertical	57.4	74.0	16.6	Complied
5439.867	Horizontal	58.5	74.0	15.5	Complied
11092.886	Horizontal	63.9	74.0	10.1	Complied
16634.719	Horizontal	50.5	89.9*	39.8	Complied

Results: Middle Channel 5550 / Field strength / Average / 802.11n HT40 / MCS0

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	38.2	54.0	15.8	Complied
1367.652	Vertical	40.0	54.0	14.0	Complied
4840.031	Vertical	46.9	54.0	7.1	Complied
4880.031	Vertical	48.3	54.0	5.7	Complied
4960.031	Vertical	49.1	54.0	4.9	Complied
5000.092	Vertical	52.6	54.0	1.4	Complied
5079.949	Vertical	45.9	54.0	8.1	Complied
5359.870	Vertical	45.2	54.0	8.8	Complied
5400.102	Vertical	49.5	54.0	4.5	Complied
5440.021	Horizontal	50.4	54.0	3.6	Complied
11102.104	Horizontal	50.0	54.0	4.0	Complied

Transmitter Out of Band Radiated Emissions (5.47-5.725 GHz band operation) (continued)

Results: Top Channel 5670 / EIRP / 802.11n HT40 / MCS0

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
1132.233	Vertical	-47.9	-27.0	20.9	Complied
1367.652	Vertical	-49.9	-27.0	22.9	Complied
4839.892	Vertical	-42.0	-27.0	15.0	Complied
4880.183	Horizontal	-41.5	-27.0	14.5	Complied
4959.898	Vertical	-39.2	-27.0	12.2	Complied
4999.888	Horizontal	-36.1	-27.0	9.1	Complied
5080.051	Horizontal	-40.5	-27.0	13.5	Complied
5360.073	Horizontal	-38.0	-27.0	11.0	Complied
5400.295	Horizontal	-37.5	-27.0	10.5	Complied
5439.685	Horizontal	-37.5	-27.0	10.5	Complied
11341.303	Horizontal	-34.6	-27.0	7.6	Complied
17017.265	Horizontal	-41.3	-27.0	14.3	Complied

Results: Top Channel 5670 / Field strength / Peak / 802.11n HT40 / MCS0

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	48.0	74.0	26.0	Complied
1367.652	Vertical	44.4	74.0	29.6	Complied
4839.892	Vertical	53.2	74.0	20.3	Complied
4880.183	Horizontal	53.7	74.0	20.3	Complied
4959.898	Vertical	56.0	74.0	18.0	Complied
4999.888	Horizontal	59.1	74.0	14.9	Complied
5080.051	Horizontal	54.7	74.0	19.3	Complied
5360.073	Horizontal	57.2	74.0	16.8	Complied
5400.295	Horizontal	57.7	74.0	16.3	Complied
5439.685	Horizontal	57.7	74.0	16.3	Complied
11341.303	Horizontal	60.6	74.0	13.4	Complied
17017.265	Horizontal	53.9	89.1*	35.2	Complied

Transmitter Out of Band Radiated Emissions (5.47-5.725 GHz band operation) (continued)

Results: Top Channel 5670 / Field strength / Average / 802.11n HT40 / MCS0

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
1132.233	Vertical	38.2	54.0	15.8	Complied
1367.652	Vertical	40.0	54.0	14.0	Complied
4839.817	Vertical	45.0	54.0	9.0	Complied
4880.061	Horizontal	48.0	54.0	6.0	Complied
4959.898	Vertical	51.0	54.0	3.0	Complied
5000.153	Vertical	53.3	54.0	0.7	Complied
5080.214	Horizontal	47.4	54.0	6.6	Complied
5360.419	Horizontal	48.8	54.0	5.2	Complied
5399.969	Horizontal	52.3	54.0	1.7	Complied
5440.112	Horizontal	53.5	54.0	0.5	Complied
11342.104	Horizontal	47.8	54.0	6.2	Complied

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
K0002	3m RSE Chamber	N/A	09 Oct 2012	12
M1124	Test Receiver	ESIB 26	14 Aug 2013	12
A1534	Pre Amplifier	8449B	09 Oct 2012	12
A1818	1-18GHz Horn Antenna	3115	09 Oct 2012	12
A2176	High Pass Filter 7-18 GHz	AFH-07000	25 May 2013	12
A253	WG 12 Microwave Horn	12240-20	09 Oct 2012	12
A254	WG 14 Microwave Horn	14240-20	09 Oct 2012	12
A255	WG 16 Microwave Horn	16240-20	09 Oct 2012	12
A256	WG 18 Microwave Horn	18240-20	09 Oct 2012	12
A436	WG 20 Microwave Horn	20240-20	09 Oct 2012	12
A203	WG 22 Microwave Horn	22240-20	11 May 2013	36
M1390	26.5 GHz to 40 GHz Harmonic Mixer	WHMP 28	Calibrated before use	12
A1785	26.5 GHz to 40 GHz Pre-amplifier	FLNA-28-30	Calibrated before use	12
A366	Isolator	FRR-400	Calibrated before use	-
M1251	Digital Multimeter	175	30 Jul 2013	12

Transmitter Out of Band Radiated Emissions (5.725-5.850 GHz band operation) (continued)

Test Summary:

Test Engineers:	Ian Watch & Andrew Edwards	**Test Dates:**	14 September 2012 & 21 September 2012
Test Sample Serial Number:	LK2202169		

FCC Reference:	Parts 15.407(b)(4),(7) & 15.209(a)
Test Method Used:	FCC KDB 789033 G) & ANSI C63.10 Sections 6.3 and 6.6
Frequency Range:	1 GHz to 40 GHz

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	46

Note(s):

1. FCC Part 15.407(b)(4) states for transmitters operating in the band 5.725 to 5.850 GHz: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions will not exceed -27 dBm/MHz. Part 15.407(b)(7) states the provisions of Part 15.205 apply.
2. Pre-scans were performed on the 5.47-5.725 GHz band as the EUT produced the highest conducted output power in this band. Final measurements were performed on any emission seen for each band as stated in FCC Response to Inquiry (Tracking Number 917954 / Date: 14th February 2012).
3. The EUT was configured with a software power setting of 9.5 dBm for 40 MHz bottom channel and 13.0 dBm for 40 MHz top channel, this is as shown in the below headings.
4. The final measured value, for the given emission in the field strength result tables, incorporates the calibrated antenna factor and cable loss.
5. Final measurements above 1 GHz were performed in a semi-anechoic chamber (RFI Asset Number K0001) at a distance of 3 metres. The EUT was placed at a height of 80 cm above the reference ground plane in the centre of the chamber turntable. Maximum emission levels were determined by height searching the measurement antenna over the range 1 metre to 4 metres.
6. The 3rd harmonic was investigated however it was below the measurement noise floor for bottom channel within this band at approximately 17.265 GHz.

Transmitter Out of Band Radiated Emissions (5.725-5.850 GHz band operation) (continued)

Results: Bottom Channel / EIRP / 802.11n HT40 / MCS0

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
1132.233	Vertical	-47.9	-27.0	20.9	Complied
1367.652	Vertical	-49.9	-27.0	22.9	Complied
4839.953	Vertical	-43.7	-27.0	16.7	Complied
4880.045	Vertical	-42.4	-27.0	15.4	Complied
4959.850	Vertical	-42.4	-27.0	15.4	Complied
5000.030	Horizontal	-37.6	-27.0	10.6	Complied
5359.292	Horizontal	-40.4	-27.0	13.4	Complied
5400.651	Horizontal	-40.8	-27.0	13.8	Complied
5439.830	Horizontal	-38.6	-27.0	11.6	Complied
11509.499	Horizontal	-39.7	-27.0	12.7	Complied

Results: Bottom Channel / Field strength / Peak / 802.11n HT40 / MCS0

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	48.0	74.0	26.0	Complied
1367.652	Vertical	44.4	74.0	29.6	Complied
4839.953	Vertical	51.5	74.0	22.5	Complied
4880.045	Vertical	52.8	74.0	21.2	Complied
4959.850	Vertical	52.8	74.0	21.2	Complied
5000.030	Horizontal	57.6	74.0	16.4	Complied
5359.292	Horizontal	54.8	74.0	19.2	Complied
5400.651	Horizontal	54.4	74.0	19.6	Complied
5439.830	Horizontal	56.6	74.0	17.4	Complied
11509.499	Horizontal	55.5	74.0	18.5	Complied

Transmitter Out of Band Radiated Emissions (5.725-5.850 GHz band operation) (continued)

Results: Bottom Channel / Field strength / Average / 802.11n HT40 / MCS0

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	38.2	54.0	15.8	Complied
1367.652	Vertical	40.0	54.0	14.0	Complied
4840.141	Vertical	45.9	54.0	8.1	Complied
4880.015	Vertical	47.4	54.0	6.6	Complied
4959.870	Vertical	47.0	54.0	7.0	Complied
5000.050	Horizontal	53.7	54.0	0.3	Complied
5360.110	Horizontal	47.8	54.0	6.2	Complied
5399.997	Horizontal	47.9	54.0	6.1	Complied
5439.930	Horizontal	50.6	54.0	3.4	Complied
11513.707	Horizontal	41.1	54.0	12.9	Complied

Results: Top Channel / EIRP / 802.11n HT40 / MCS0

Frequency (MHz)	Antenna Polarity	Level (dBm)	Limit (dBm)	Margin (dB)	Result
1132.233	Vertical	-47.9	-27.0	20.9	Complied
1367.652	Vertical	-49.9	-27.0	22.9	Complied
4839.829	Vertical	-42.2	-27.0	15.2	Complied
4879.890	Vertical	-41.1	-27.0	14.1	Complied
4960.028	Vertical	-40.4	-27.0	13.4	Complied
4999.770	Horizontal	-37.1	-27.0	10.1	Complied
5360.110	Vertical	-38.9	-27.0	11.9	Complied
5399.830	Vertical	-36.9	-27.0	9.9	Complied
11585.491	Horizontal	-35.2	-27.0	8.2	Complied
17368.717	Horizontal	-39.3	-27.0	12.3	Complied

Transmitter Out of Band Radiated Emissions (5.725-5.850 GHz band operation) (continued)

Results: Top Channel / Field strength / Peak / 802.11n HT40 / MCS0

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	48.0	74.0	26.0	Complied
1367.652	Vertical	44.4	74.0	29.6	Complied
4839.829	Vertical	53.0	74.0	21.0	Complied
4879.890	Vertical	54.1	74.0	19.9	Complied
4960.028	Vertical	54.8	74.0	19.2	Complied
4999.770	Horizontal	58.1	74.0	15.9	Complied
5360.110	Vertical	56.3	74.0	17.7	Complied
5399.830	Vertical	58.3	74.0	15.7	Complied
11585.491	Horizontal	60.0	74.0	14.0	Complied
17368.717	Horizontal	55.9	88.3	32.4	Complied

Results: Top Channel / Field strength / Average / 802.11n HT40 / MCS0

Frequency (MHz)	Antenna Polarity	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
1132.233	Vertical	38.2	54.0	15.8	Complied
1367.652	Vertical	40.0	54.0	14.0	Complied
4839.890	Vertical	46.8	54.0	7.2	Complied
4880.010	Vertical	49.8	54.0	4.2	Complied
4960.008	Vertical	47.6	54.0	6.4	Complied
4999.910	Horizontal	53.6	54.0	0.4	Complied
5360.251	Vertical	50.1	54.0	3.9	Complied
5399.950	Vertical	52.5	54.0	1.5	Complied
11584.890	Horizontal	46.8	54.0	7.2	Complied
11584.890	Horizontal	46.8	54.0	7.2	Complied

.

Transmitter Out of Band Radiated Emissions (5.725-5.850 GHz band operation) (continued)

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
K0002	3m RSE Chamber	N/A	09 Oct 2012	12
M1124	Test Receiver	ESIB 26	14 Aug 2013	12
A1534	Pre Amplifier	8449B	09 Oct 2012	12
A1818	1-18GHz Horn Antenna	3115	09 Oct 2012	12
A2176	High Pass Filter 7-18 GHz	AFH-07000	25 May 2013	12
A253	WG 12 Microwave Horn	12240-20	09 Oct 2012	12
A254	WG 14 Microwave Horn	14240-20	09 Oct 2012	12
A255	WG 16 Microwave Horn	16240-20	09 Oct 2012	12
A256	WG 18 Microwave Horn	18240-20	09 Oct 2012	12
A436	WG 20 Microwave Horn	20240-20	09 Oct 2012	12
A203	WG 22 Microwave Horn	22240-20	Calibrated before use	-
M1390	26.5 GHz to 40 GHz Harmonic Mixer	WHMP 28	Calibrated before use	-
A1785	26.5 GHz to 40 GHz Pre-amplifier	FLNA-28-30	Calibrated before use	-
A366	Isolator	FRR-400	Calibrated before use	-
M1251	Digital Multimeter	175	30 Jul 2013	12

5.2.10. Transmitter Band Edge Radiated Emissions

Test Summary:

Test Engineer:	Philip Harrison	**Test Date:**	25 August 2012
Test Sample Serial Number:	LK220202169		

FCC Reference:	Parts 15.407(b)(1), 15.407(b)(7), 15.205 & 15.209(a)
Test Method Used:	ANSI C63.10 Section 6.9.2

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	62

Note(s):

1. FCC Response to Inquiry (Tracking Number 917954 / Date: 14th February 2012) confirmed band edge measurements need only be performed in the EUT modes that produce the highest power and the widest bandwidths. The modes that produced the highest power and widest bandwidth for the 5.15-5.25 GHz band were:
    - 802.11a – BPSK / 6 Mbps
    - 802.11n HT20 – BPSK / 6.5 Mbps / MCS0
    - 802.11n HT40 – BPSK / 13.5 Mbps / MCS0

    Band edge testing was performed in all modes on both supported channel widths.
2. Lower band edge measurements were performed with the EUT transmitting on the bottom channel. Upper band edge measurements were performed with the EUT transmitting on the top channel.
3. For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. However, there are restricted bands of operation below the lower band edge at 4.5-5.15 GHz and also above the upper band edge at 5.35-5.46 GHz therefore the provisions of FCC Part 15.205 apply.
4. Field strength measurements using peak and average detectors were performed in the restricted bands below 5.15 GHz and above 5.35 GHz. Field strength and EIRP results were found to be compliant with the restricted band limits and Part 15.407 out-of-band limits.

Transmitter Band Edge Radiated Emissions (5.15-5.25 GHz band operation) (continued)

Results: 802.11a / 20 MHz / 6 Mbps / Peak/SW Power

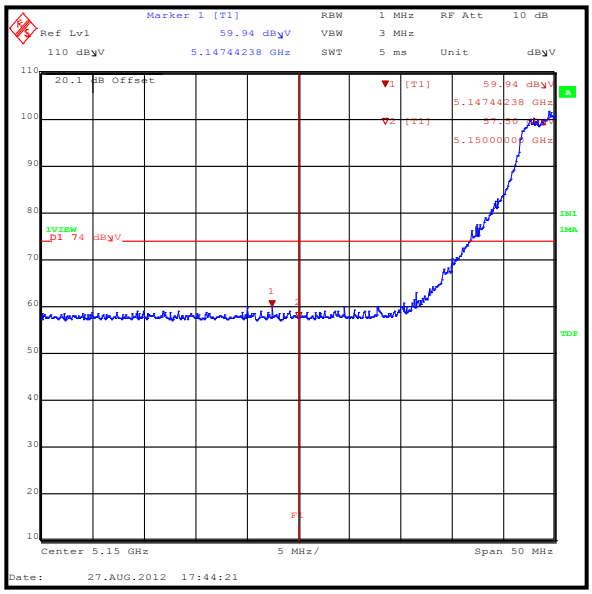
Band Edge Frequency (MHz)	Channel Centre Frequency (MHz)	S/W Power Setting (dBm)	Level (dBμV/m)	Restricted Band Limit (dBμV/m)	Margin (dB)	Result
5150	5180	8.5	59.9	74.0	14.1	Complied
5350	5240	8.5	60.2	74.0	13.8	Complied

Results: 802.11a / 20 MHz / 6 Mbps / Average

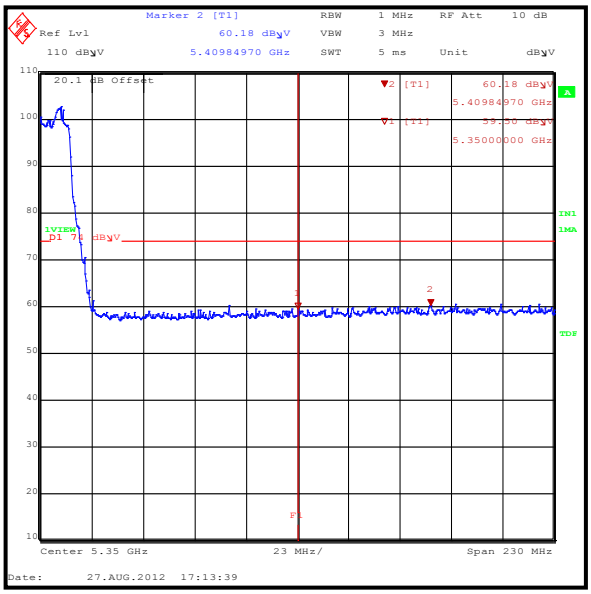
Band Edge Frequency (MHz)	Channel Centre Frequency (MHz)	S/W Power Setting (dBm)	Level (dBμV/m)	Restricted Band Limit (dBμV/m)	Margin (dB)	Result
5150	5180	8.5	47.3	54.0	6.7	Complied
5350	5240	8.5	50.3	54.0	3.7	Complied

Transmitter Band Edge Radiated Emissions (5.15-5.25 GHz band operation) (continued)

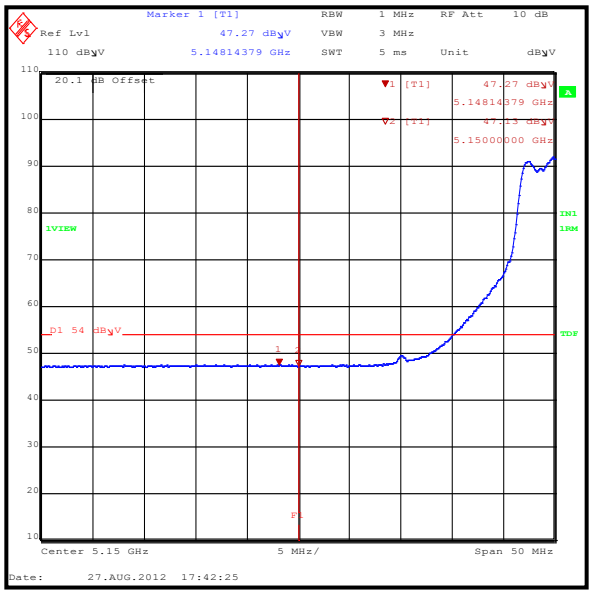
Results: 802.11a / 20 MHz / 6 Mbps



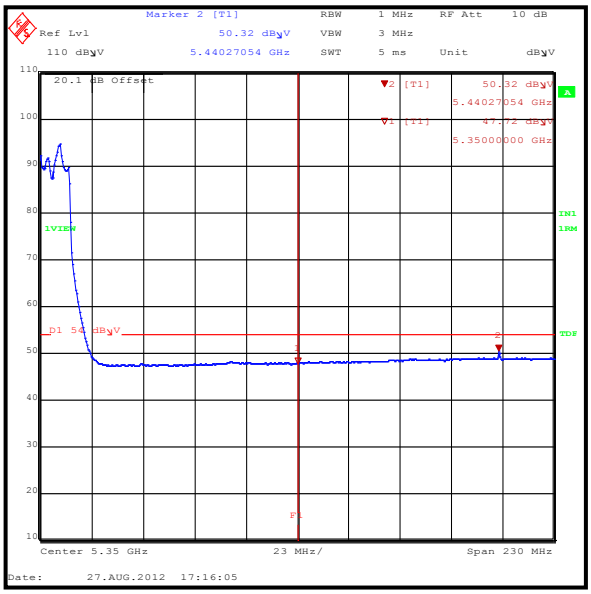
Lower Band Edge Peak



Upper Band Edge Peak



Lower Band Edge Average



Upper Band Edge Average

Transmitter Band Edge Radiated Emissions (5.15-5.25 GHz band operation) (continued)

Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / Peak

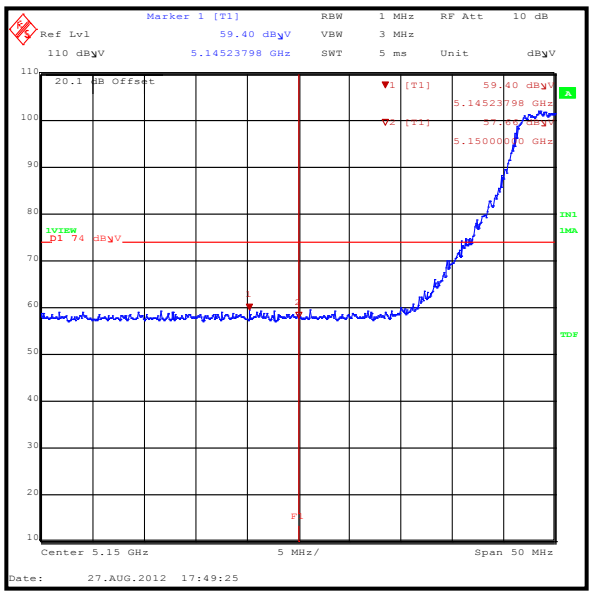
Band Edge Frequency (MHz)	Channel Centre Frequency (MHz)	S/W Power Setting (dBm)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5150	5180	8.5	59.4	74.0	14.6	Complied
5350	5240	8.5	61.2	74.0	12.8	Complied

Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / Average

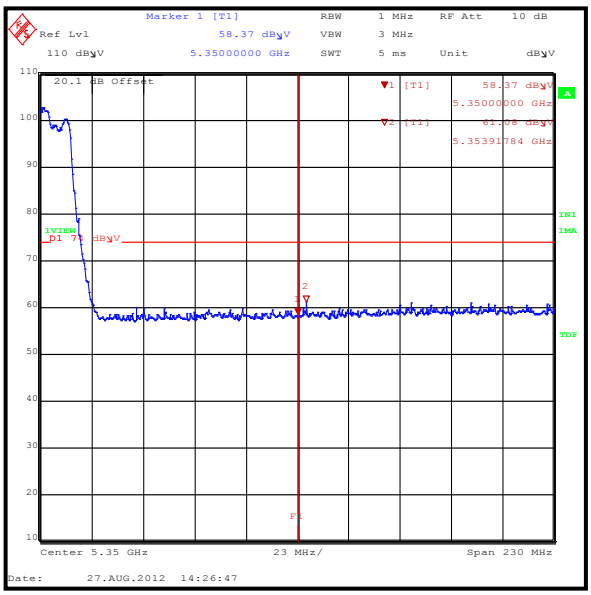
Band Edge Frequency (MHz)	Channel Centre Frequency (MHz)	S/W Power Setting (dBm)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5150	5180	8.5	47.3	54.0	6.7	Complied
5350	5240	8.5	49.5	54.0	4.5	Complied

Transmitter Band Edge Radiated Emissions (5.15-5.25 GHz band operation) (continued)

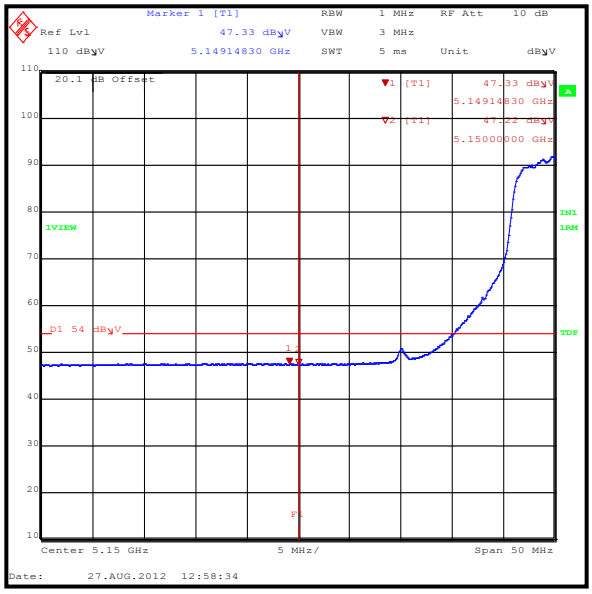
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0



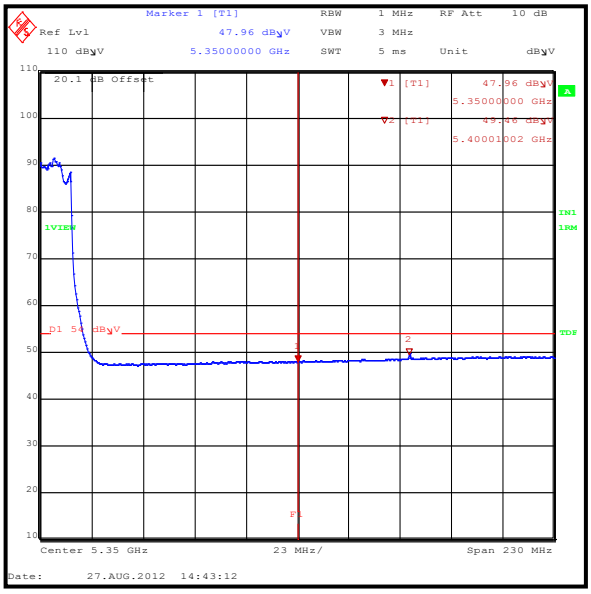
Lower Band Edge Peak



Upper Band Edge Peak



Lower Band Edge Average



Upper Band Edge Average

Transmitter Band Edge Radiated Emissions (5.15-5.25 GHz band operation) (continued)

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / Peak

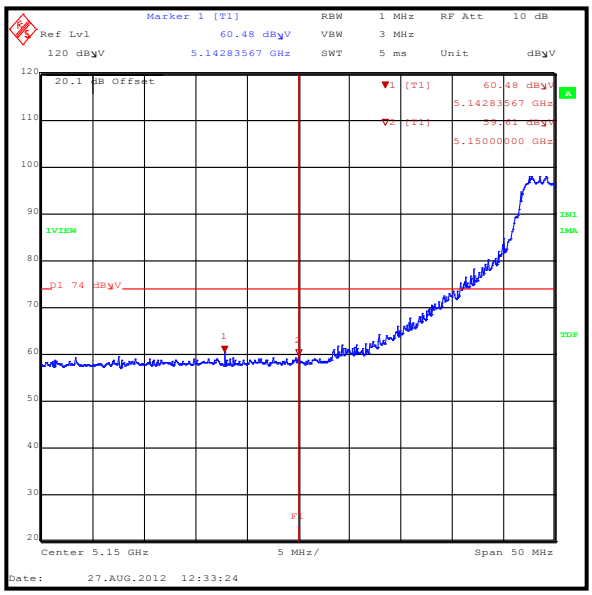
Band Edge Frequency (MHz)	Channel Centre Frequency (MHz)	S/W Power Setting (dBm)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5150	5190	8.5	60.5	74.0	13.5	Complied
5350	5230	8.5	61.3	74.0	12.7	Complied

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / Average

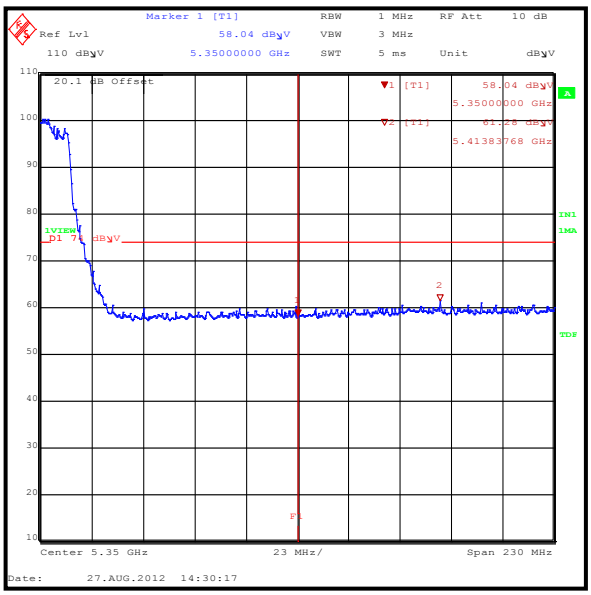
Band Edge Frequency (MHz)	Channel Centre Frequency (MHz)	S/W Power Setting (dBm)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5150	5190	8.5	47.8	54.0	6.2	Complied
5350	5230	8.5	49.7	54.0	4.3	Complied

Transmitter Band Edge Radiated Emissions (5.15-5.25 GHz band operation) (continued)

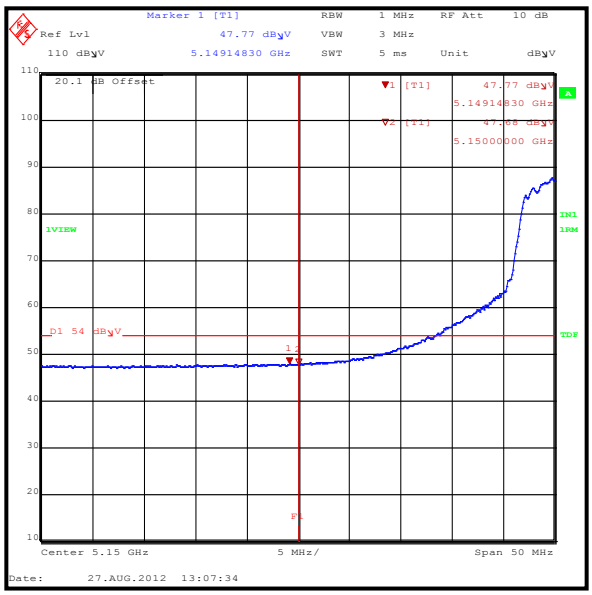
Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0



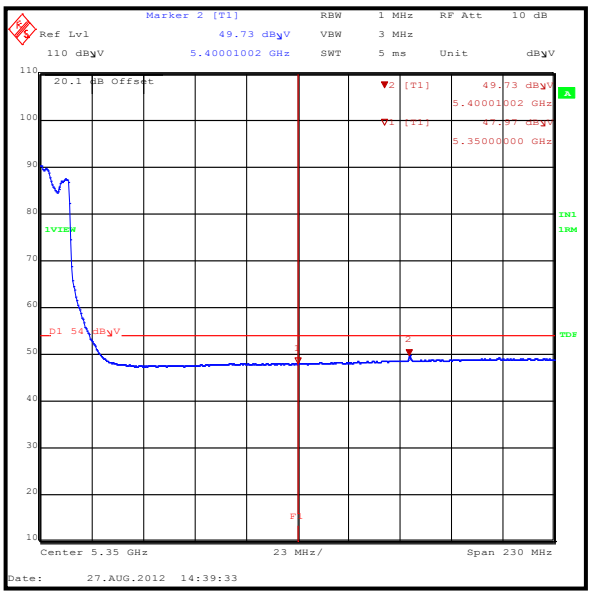
Lower Band Edge Peak



Upper Band Edge Peak



Lower Band Edge Average



Upper Band Edge Average

Transmitter Band Edge Radiated Emissions (5.25-5.35 GHz band)

Test Summary:

Test Engineer:	Philip Harrison	**Test Date:**	26 August 2012
Test Sample Serial Number:	LK220202169		

FCC Reference:	Parts 15.407(b)(2), 15.407(b)(7), 15.205 & 15.209(a)
Test Method Used:	ANSI C63.10 Section 6.9.2

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	33

Note(s):

1. FCC Response to Inquiry (Tracking Number 917954 / Date: 14th February 2012) confirmed band edge measurements need only be performed in the EUT modes that produce the highest power and the widest bandwidths. The modes that produced the highest power and widest bandwidth for the 5.25-5.35 GHz band were:
   - 802.11a – BPSK / 6 Mbps
   - 802.11n HT20 – BPSK / 6.5 Mbps / MCS0
   - 802.11n HT40 – BPSK / 13.5 Mbps / MCS0

   Band edge testing was performed in all modes on both supported channel widths.
2. Lower band edge measurements were performed with the EUT transmitting on the bottom channel. Upper band edge measurements were performed with the EUT transmitting on the top channel.
3. For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. However, there are restricted bands of operation below the lower band edge at 4.5-5.15 GHz and also above the upper band edge at 5.35-5.46 GHz therefore the provisions of FCC Part 15.205 apply.
4. Field strength measurements using peak and average detectors were performed in the restricted bands below 5.15 GHz and above 5.35 GHz. Field strength and EIRP results were found to be compliant with the restricted band limits and Part 15.407 out-of-band limits.

Transmitter Band Edge Radiated Emissions (5.25-5.35 GHz band operation) (continued)

Results: 802.11a / 20 MHz / 6 Mbps / Peak

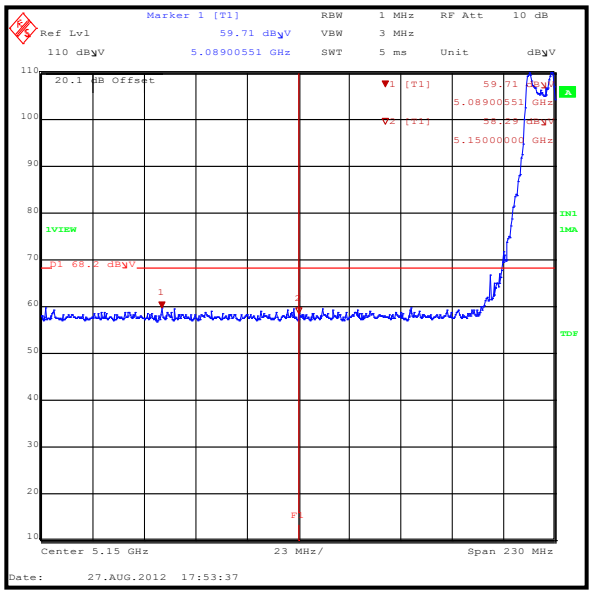
Band Edge Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5150	59.7	74.0	14.3	Complied
5350	60.5	74.0	13.5	Complied

Results: 802.11a / 20 MHz / 6 Mbps / Average

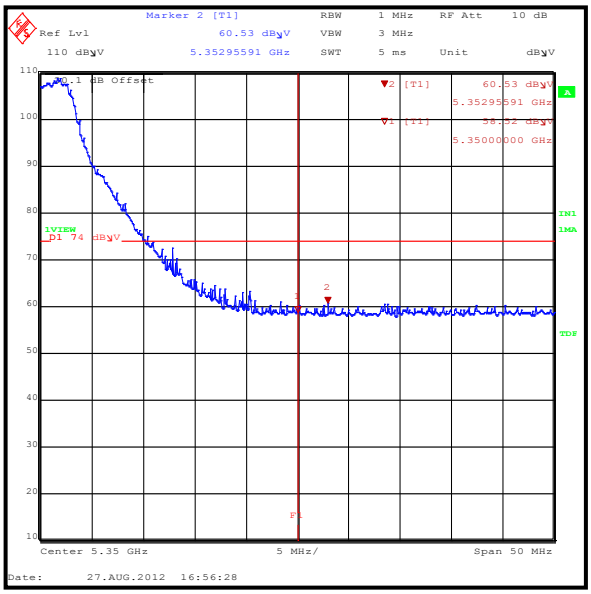
Band Edge Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5150	49.6	54.0	4.4	Complied
5350	49.7	54.0	4.3	Complied

Transmitter Band Edge Radiated Emissions (5.25-5.35 GHz band operation) (continued)

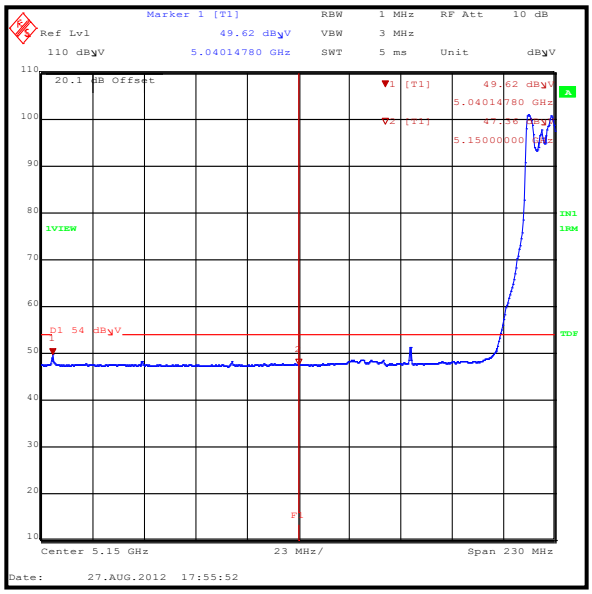
Results: 802.11a / 20 MHz / 6 Mbps



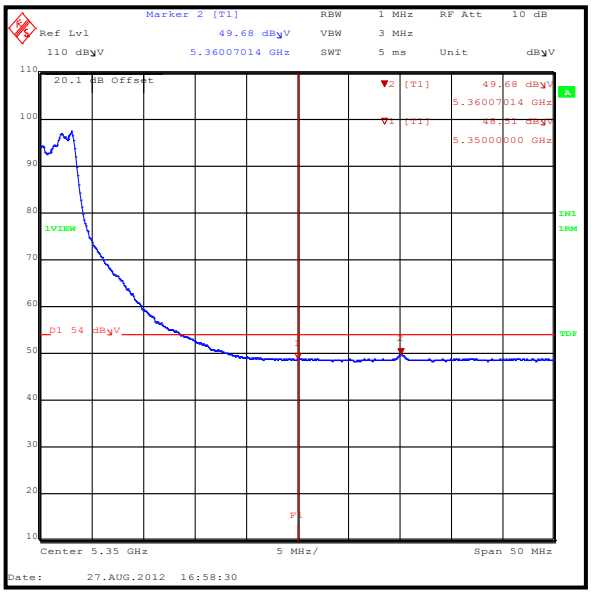
Lower Band Edge Peak



Upper Band Edge Peak



Lower Band Edge Average



Upper Band Edge Average

Transmitter Band Edge Radiated Emissions (5.25-5.35 GHz band operation) (continued)

Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / Peak

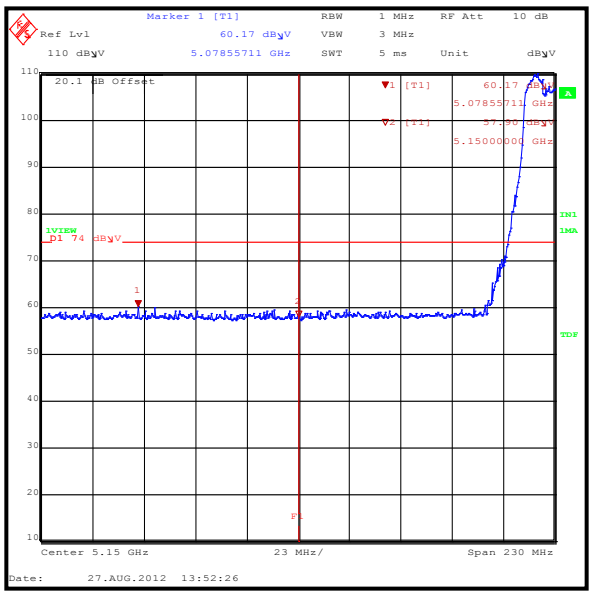
Band Edge Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5150	60.2	74.0	13.8	Complied
5350	60.1	74.0	13.9	Complied

Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / Average

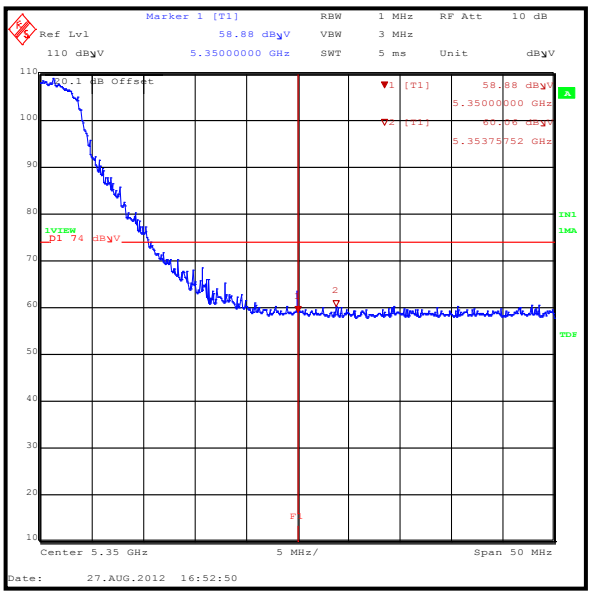
Band Edge Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5150	48.2	54.0	5.8	Complied
5350	48.5	54.0	5.5	Complied

Transmitter Band Edge Radiated Emissions (5.25-5.35 GHz band operation) (continued)

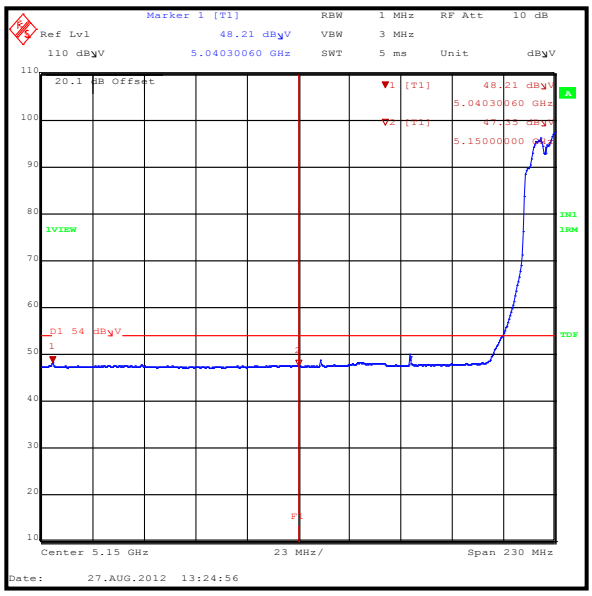
Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0



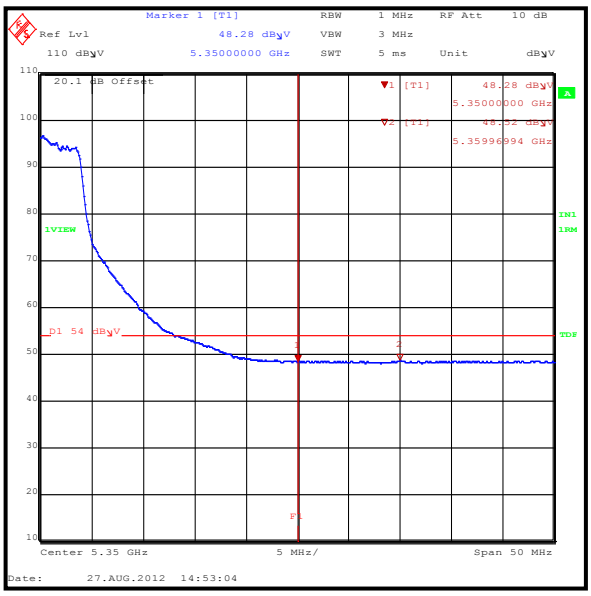
Lower Band Edge Peak



Upper Band Edge Peak



Lower Band Edge Average



Upper Band Edge Average

Transmitter Band Edge Radiated Emissions (5.25-5.35 GHz band operation) (continued)

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / Peak

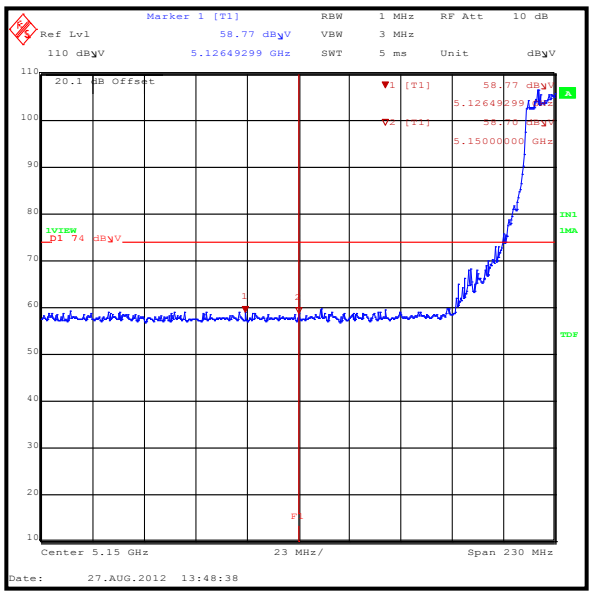
Band Edge Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5150	58.8	74.0	15.2	Complied
5350	65.1	74.0	8.9	Complied

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / Average

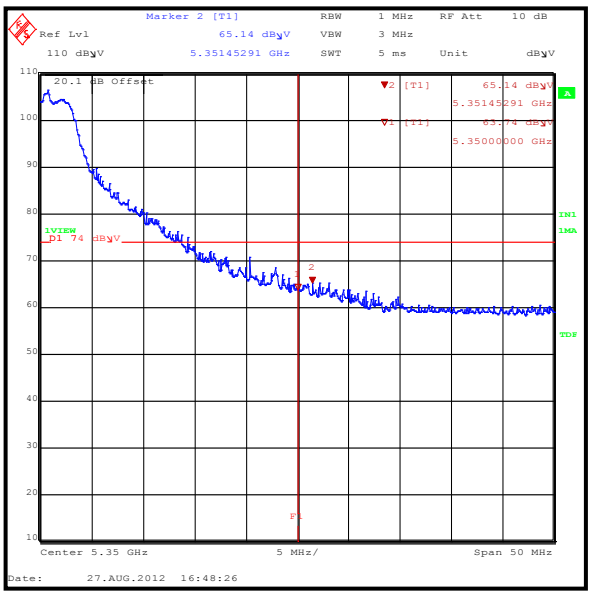
Band Edge Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Result
5150	47.8	54.0	6.2	Complied
5350	52.3	54.0	1.7	Complied

Transmitter Band Edge Radiated Emissions (5.25-5.35 GHz band operation) (continued)

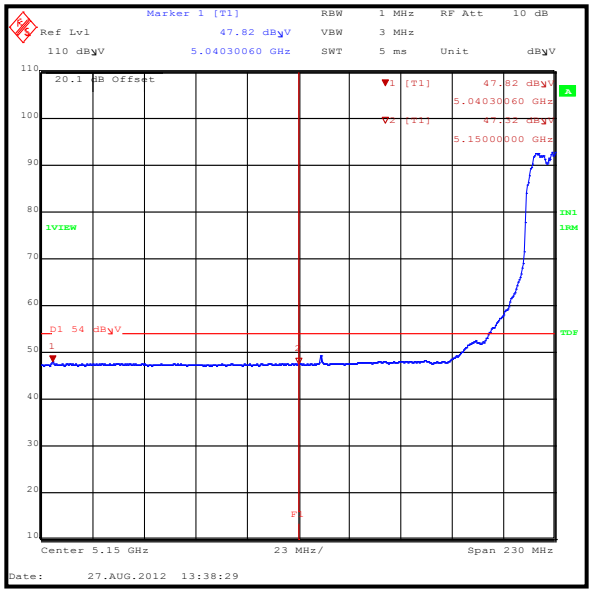
Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0



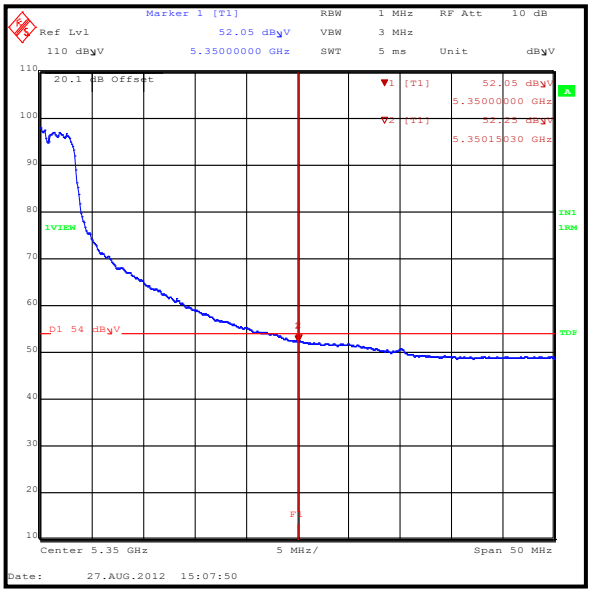
Lower Band Edge Peak



Upper Band Edge Peak



Lower Band Edge Average



Upper Band Edge Average

Transmitter Band Edge Radiated Emissions (5.47-5.725 GHz band)

Test Summary:

Test Engineer:	Philip Harrison	**Test Dates:**	31 August 2012 & 12 September 2012
Test Sample Serial Number:	LK220202169		

FCC Reference:	Parts 15.407(b)(3), 15.407(b)(7), 15.205 & 15.209(a)
Test Method Used:	ANSI C63.10 Section 6.9.2 & FCC KDB 789033 G)

Environmental Conditions:

Temperature (°C):	23.0 to 23.3
Relative Humidity (%):	40

Note(s):

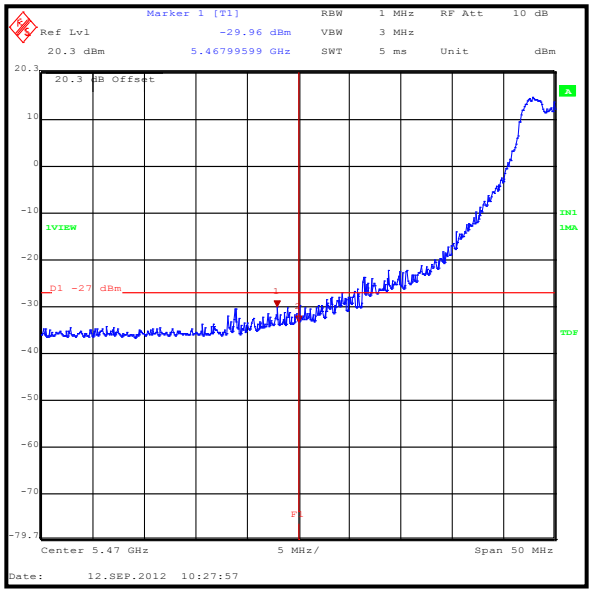
1. FCC Response to Inquiry (Tracking Number 917954 / Date: 14th February 2012) confirmed band edge measurements need only be performed in the EUT modes that produce the highest power and the widest bandwidths. The modes that produced the highest power and widest bandwidth for the 5.47-5.725 GHz band were:
    - 802.11a – BPSK / 6 Mbps
    - 802.11n HT20 – BPSK / 6.5 Mbps / MCS0
    - 802.11n HT40 – BPSK / 13.5 Mbps / MCS0

    Band edge testing was performed in all modes on both supported channel widths.
2. Lower band edge measurements were performed with the EUT transmitting on the bottom channel. Upper band edge measurements were performed with the EUT transmitting on the top channel.
3. For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz. However, there are restricted bands of operation below the lower band edge at 4.5-5.15 GHz and also at 5.35-5.46 GHz therefore the provisions of FCC Part 15.205 apply. Tests were performed in these restricted bands of operation with the EUT transmitting on the bottom and top channels within 5.47-5.725 GHz band, the results are included in the transmitter 5.47-5.725 GHz band radiated spurious emissions section of this test report.
4. Field strength measurements using peak and average detectors were performed in the restricted bands below 5.15 GHz and above 5.35 GHz. Field strength and EIRP results were found to be compliant with the restricted band limits and Part 15.407 out-of-band limits.
5. For completeness, results are also shown as EIRP measured at a distance of 3 metres in dBm and also as field strength in dBµV/m. Measured field strength was converted to EIRP in accordance with FCC KDB 789033G)3)d)(iii) using a conversion factor of 95.2.

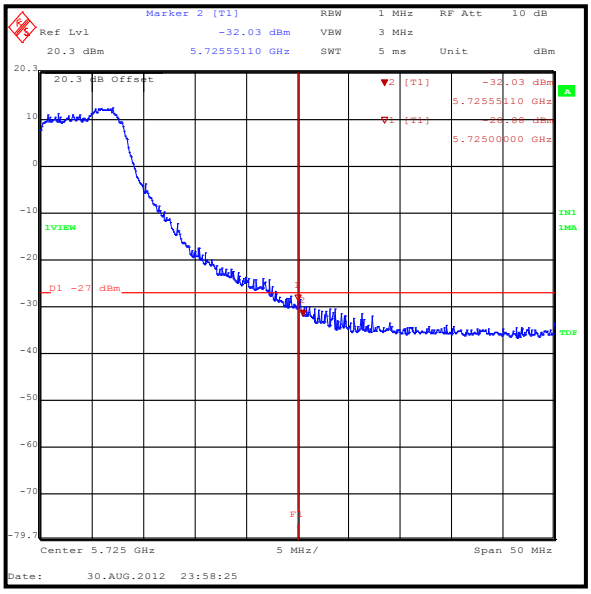
Transmitter Band Edge Radiated Emissions (5.47-5.725 GHz band operation) (continued)

Results: 802.11a / 20 MHz / 6 Mbps / Peak

Band Edge Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
5470	-30.0	-27.0	3.0	Complies
5725	-28.9	-27.0	1.9	Complies



Lower Band Edge

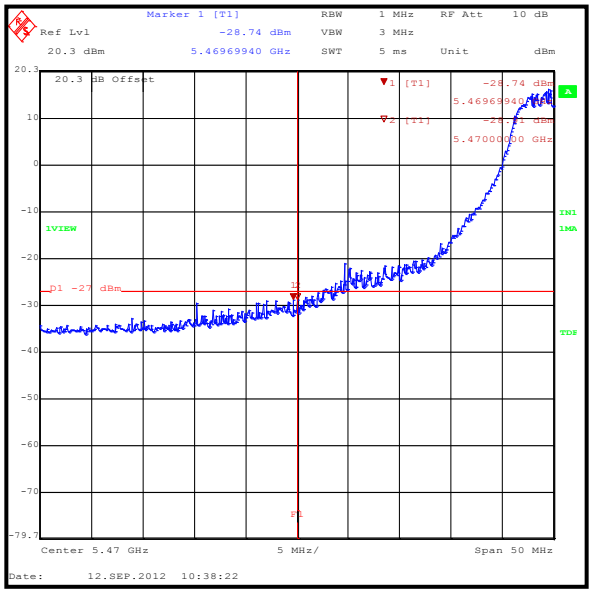


Upper Band Edge

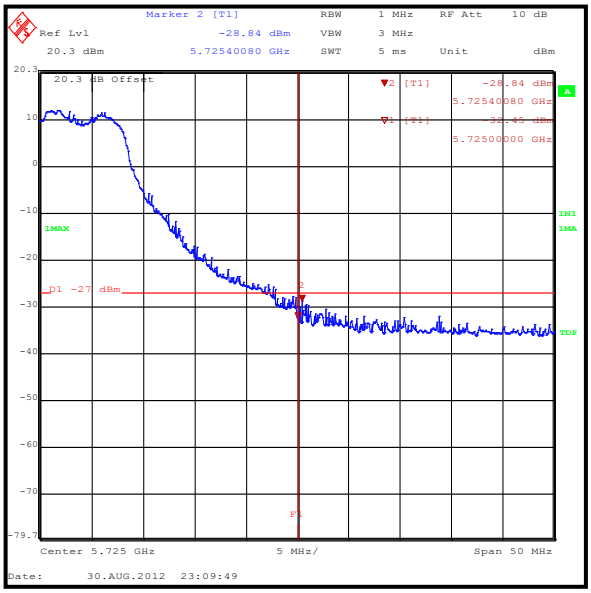
Transmitter Band Edge Radiated Emissions (5.47-5.725 GHz band operation) (continued)

Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / Peak

Band Edge Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
5470	-28.7	-27.0	1.7	Complies
5725	-28.8	-27.0	1.8	Complies



Lower Band Edge

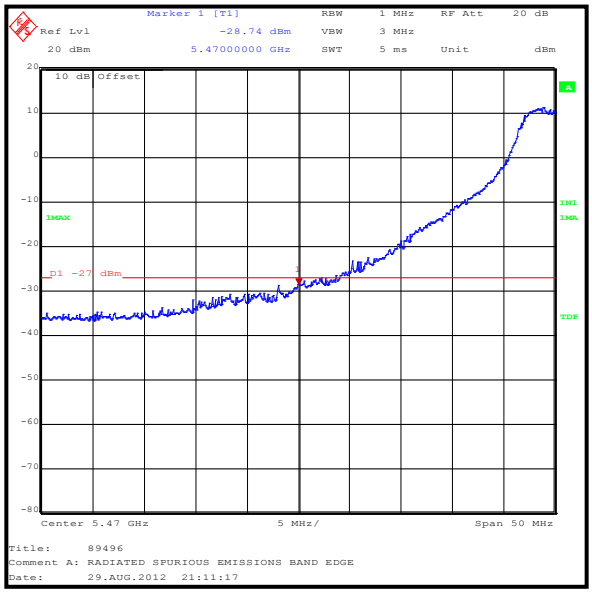


Upper Band Edge

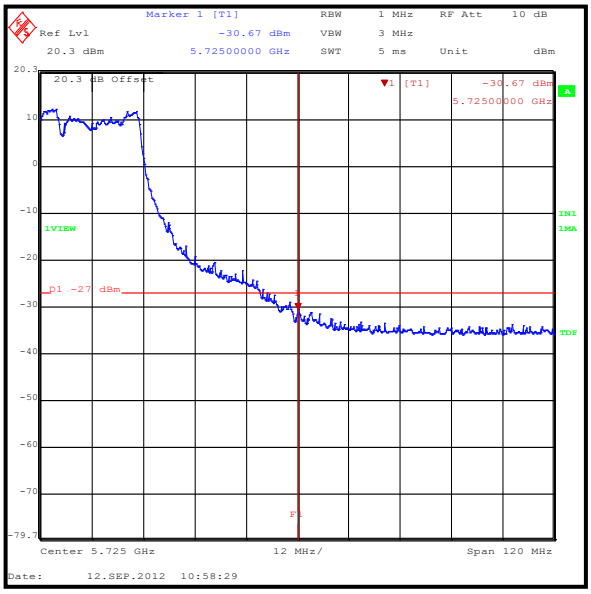
Transmitter Band Edge Radiated Emissions (5.47-5.725 GHz band operation) (continued)

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / Peak

Band Edge Frequency (MHz)	Peak Level (dBm)	Limit (dBm)	Margin (dB)	Result
5470	-28.7	-27.0	1.7	Complies
5725	-30.7	-27.0	3.7	Complies



Lower Band Edge



Upper Band Edge

Transmitter Band Edge Radiated Emissions (5.725-5.850 GHz band)

Test Summary:

Test Engineer:	Philip Harrison	**Test Dates:**	31 August 2012 & 12 September 2012
Test Sample Serial Number:	LK220202169		

FCC Reference:	Parts 15.407(b)(4) & 15.209(a)
Test Method Used:	FCC KDB 789033 G)

Environmental Conditions:

Temperature (°C):	23
Relative Humidity (%):	41

Note(s):

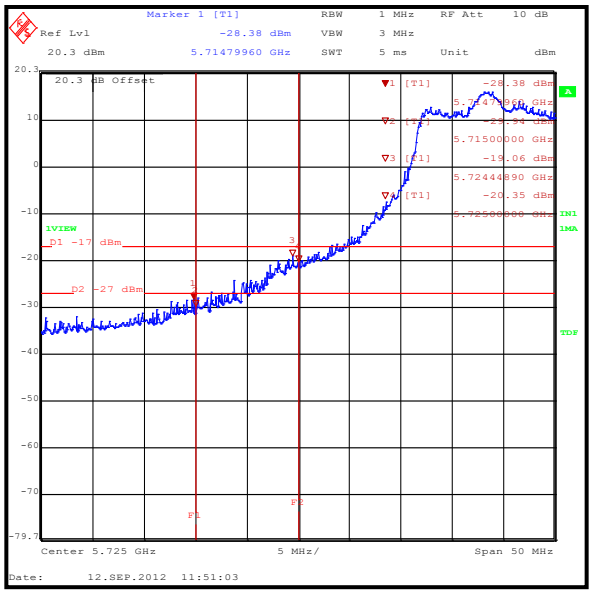
1. FCC Response to Inquiry (Tracking Number 917954 / Date: 14th February 2012) confirmed band edge measurements need only be performed in the EUT modes that produce the highest power and the widest bandwidths. The modes that produced the highest power and widest bandwidth for the 5.725-5.850 GHz band were:
    - 802.11a – BPSK / 6 Mbps
    - 802.11n HT20 – BPSK / 6.5 Mbps / MCS0
    - 802.11n HT40 – BPSK / 13.5 Mbps / MCS0

    Band edge testing was performed in all modes on both supported channel widths.
2. Lower band edge measurements were performed with the EUT transmitting on the bottom channel. Upper band edge measurements were performed with the EUT transmitting on the top channel.
3. Emissions from the band edges to 10 MHz above or below the band edges did not exceed -17 dBm/MHz EIRP.
4. For completeness, results are also shown as EIRP measured at a distance of 3 metres in dBm and also as field strength in dBµV/m. Measured field strength was converted to EIRP in accordance with FCC KDB 789033G)3)d)(iii) using a conversion factor of 95.2.
5. The EUT transmits on channel 165; the upper band edge frequency of 15.247 was therefore used, in accordance with KDB 644545. Alternative Guidance for IEEE 802.11ac and Pre-ac Device Emission testing, date 07 June 2012

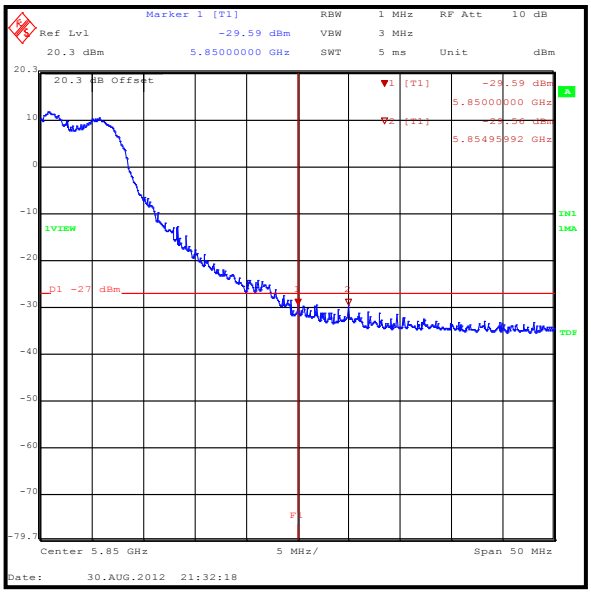
Transmitter Band Edge Radiated Emissions (5.725-5.850 GHz band operation) (continued)

Results: 802.11a / 20 MHz / 6 Mbps / Peak

Band Edge Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
5715	-28.4	-27.0	1.4	Complied
5725	-19.1	-17.0	2.1	Complied
5850	-29.6	-27.0	2.6	Complied



Lower Band Edge

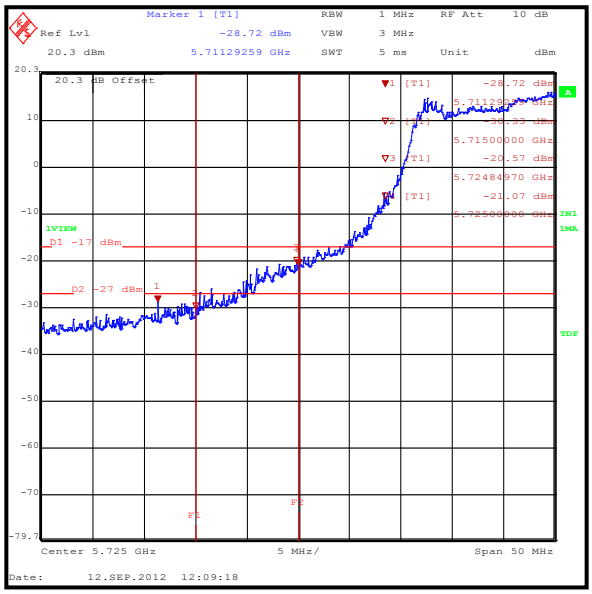


Upper Band Edge

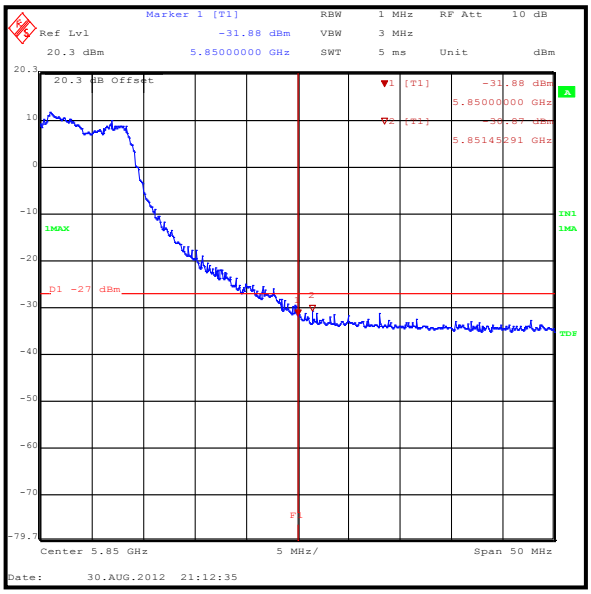
Transmitter Band Edge Radiated Emissions (5.725-5.850 GHz band operation) (continued)

Results: 802.11n / 20 MHz / 6.5 Mbps / MCS0 / Peak

Band Edge Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
5715	-28.7	-27.0	1.7	Complied
5725	-20.6	-17.0	3.6	Complied
5850	-30.9	-27.0	3.9	Complied



Lower Band Edge

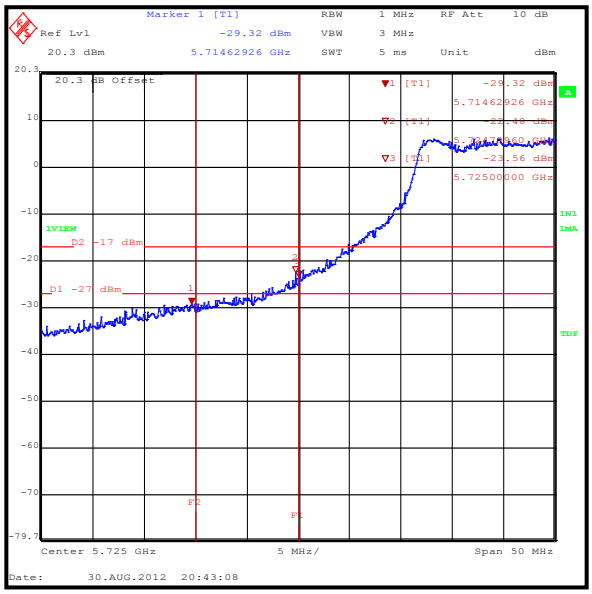


Upper Band Edge

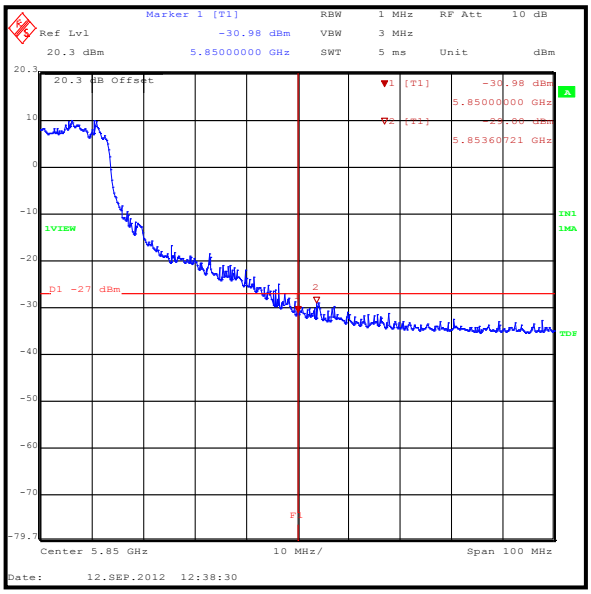
Transmitter Band Edge Radiated Emissions (5.725-5.850 GHz band operation) (continued)

Results: 802.11n / 40 MHz / 13.5 Mbps / MCS0 / Peak

Band Edge Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)	Result
5715	-29.3	-27.0	2.3	Complied
5725	-22.5	-17.0	5.5	Complied
5850	-29.0	-27.0	2.0	Complied



Lower Band Edge



Upper Band Edge

Transmitter Band Edge Radiated Emissions (5.725-5.850 GHz band operation) (continued)

Test Equipment Used:

RFI ID	Instrument Description	Model Number	Calibration Due	Calibration Interval (Months)
K0002	3m RSE Chamber	N/A	09 Oct 2012	12
M1124	Test Receiver	ESIB 26	14 Aug 2013	12
A1534	Pre Amplifier	8449B	09 Oct 2012	12
A1818	1-18GHz Horn Antenna	3115	09 Oct 2012	12
A1393	20 dB Attenuator	6820.17.B	06 July 2013	12

6. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

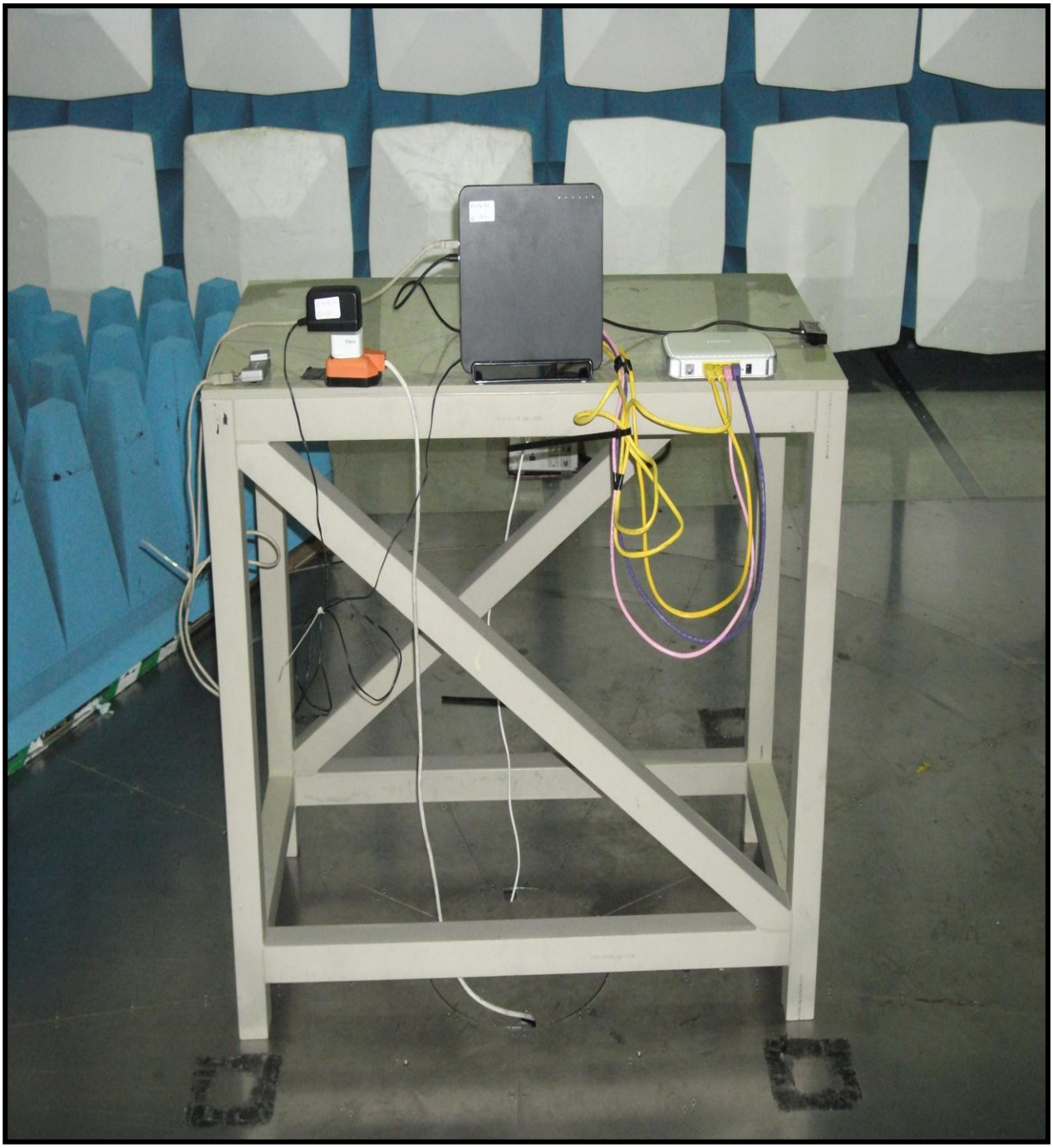
The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

Measurement Type	Range	Confidence Level (%)	Calculated Uncertainty
AC Conducted Spurious Emissions	0.15 MHz to 30 MHz	95%	±3.25 dB
Maximum Conducted Output Power	5.15 GHz to 5.85 GHz	95%	±0.28 dB
Peak Power Spectral Density	5.15 GHz to 5.850 GHz	95%	±0.28 dB
Peak Excursion	5.15 GHz to 5.850 GHz	95%	±0.27 dB
26 dB Emission Bandwidth	5.15 GHz to 5.850 GHz	95%	±0.92 ppm
Radiated Spurious Emissions	30 MHz to 40 GHz	95%	±2.94 dB

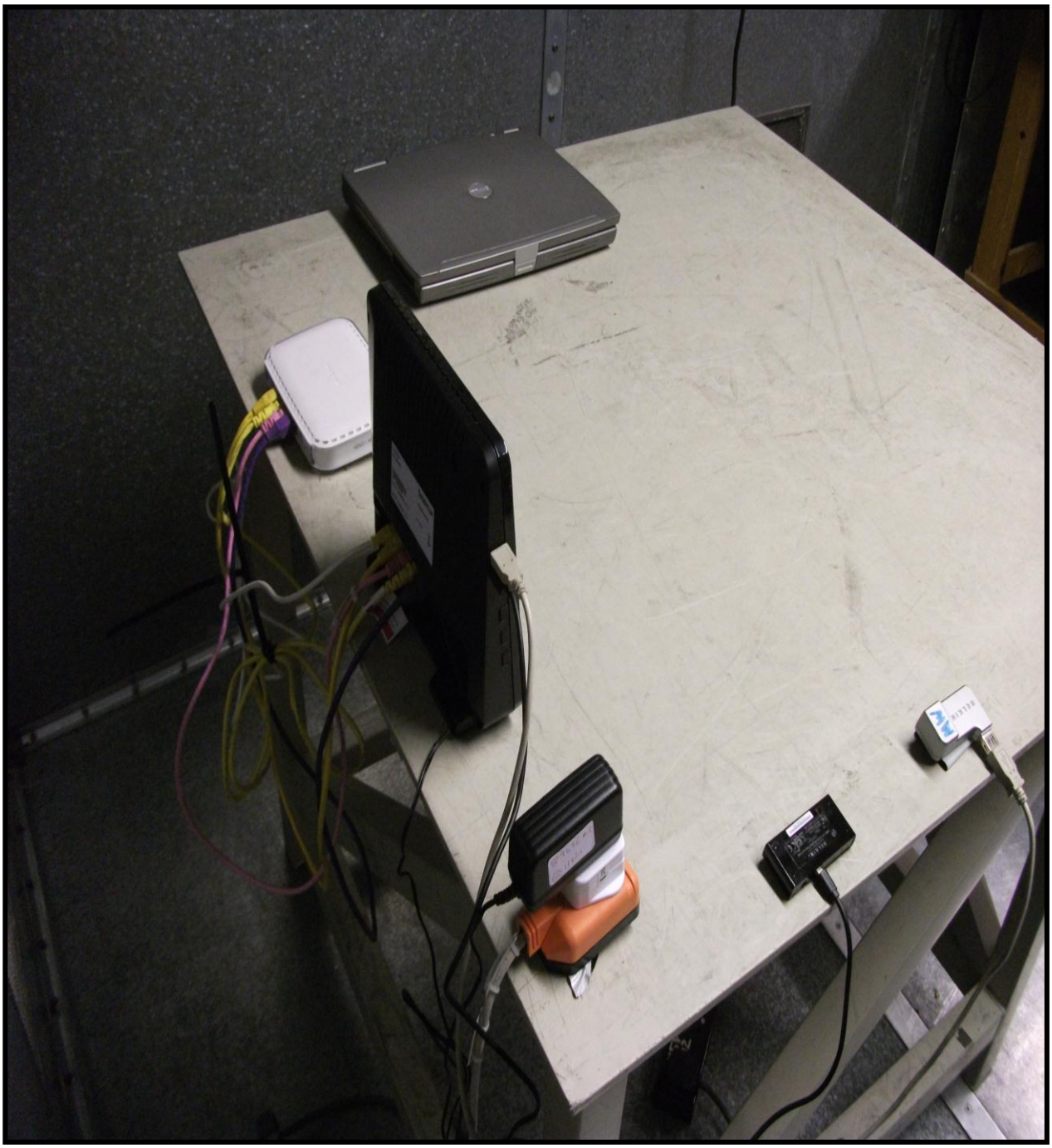
The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

7. Set up Photographs

Radiated Emissions



AC Conducted Emissions



8. Report Revision History

Version Number	Revision Details		
	Page No(s)	**Clause**	**Details**
1.0	-	-	Initial Version
2.0	-	-	Addition of setup photographs & correction of typographic errors
3.0	157 – 180 21 - 69	-	Clarification provided on EUT software configuration and calibration status of test equipment.

9. Annex A

BAND	CHANNEL	FREQUENCY	11a	20HT	40HT-frequency	40HT	CHANNEL
	36	5180	8.5	8.5	5190	8.5	36
1	40	5200	8.5	8.5		8.5	40
	44	5220	8.5	8.5		8.5	44
	48	5240	8.5	8.5	5230	8.5	48
	52	5260	14	14	5270	14	52
2	56	5280	14	14		14	56
	60	5300	14	14		14	60
	64	5320	14	14	5310	14	64
	100	5500	14	14	5510	12	100
	104	5520	14	14		12	104
	108	5540	14	14	5550	14	108
	112	5560	14	14		14	112
	116	5580	14	14	5590	14	116
	120	5600	14	14		14	120
3	124	5620	14	14	5630	14	124
	128	5640	14	14		14	128
	132	5660	14	14	5670	14	132
	136	5680	14	14		14	136
	140	5700	13.5	13.5			
	149	5745	14	14	5755	9.5	149
	153	5765	14	14		9.5	153
4	157	5785	13	13	5795	13	157
	161	5805	13	13		13	161
	165	5825	12.5	11.5			