5.2.8. Transmitter Peak Excursion

Test Summary:

Test Engineer:	Nigel Davison	**Test Date:**	12 May 2011
Test Sample Serial No:	ID 3		

FCC Part:	15.407(a)
Test Method Used:	As detailed in ANSI C63.10 Section 6.10.4

Environmental Conditions:

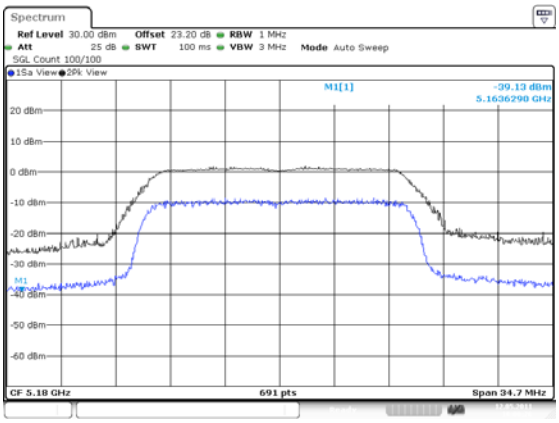
Temperature (°C):	26
Relative Humidity (%):	32

Transmitter Peak Excursion (continued)

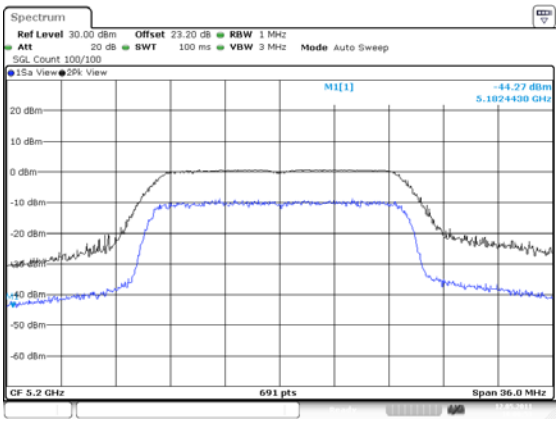
Result 802.11A 5150 to 5250 MHz band

Channel	Frequency (MHz)	Modulation Scheme	Data Rate (Mbps)	Peak Excursion (dB)	Limit (dB)	Result
Bottom	5180	BPSK	6	8.8	13	Complied
Middle	5200	BPSK	6	8.7	13	Complied
Top	5240	BPSK	6	8.7	13	Complied
Bottom	5180	BPSK	9	8.7	13	Complied
Middle	5200	BPSK	9	8.7	13	Complied
Top	5240	BPSK	9	8.7	13	Complied
Bottom	5180	QPSK	12	8.7	13	Complied
Middle	5200	QPSK	12	8.7	13	Complied
Top	5240	QPSK	12	8.7	13	Complied
Bottom	5180	QPSK	18	8.7	13	Complied
Middle	5200	QPSK	18	8.6	13	Complied
Top	5240	QPSK	18	8.6	13	Complied
Bottom	5180	16QAM	24	8.6	13	Complied
Middle	5200	16QAM	24	8.6	13	Complied
Top	5240	16QAM	24	8.6	13	Complied
Bottom	5180	16QAM	36	8.6	13	Complied
Middle	5200	16QAM	36	8.6	13	Complied
Top	5240	16QAM	36	8.6	13	Complied
Bottom	5180	64QAM	48	8.6	13	Complied
Middle	5200	64QAM	48	8.6	13	Complied
Top	5240	64QAM	48	8.6	13	Complied
Bottom	5180	64QAM	54	8.6	13	Complied
Middle	5200	64QAM	54	8.6	13	Complied
Top	5240	64QAM	54	8.6	13	Complied

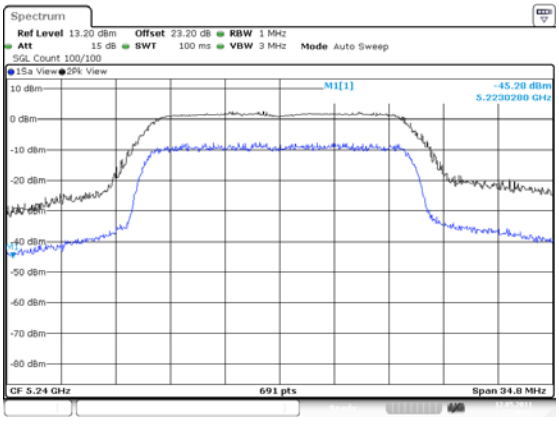
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11A_6MBS_BottomChannel

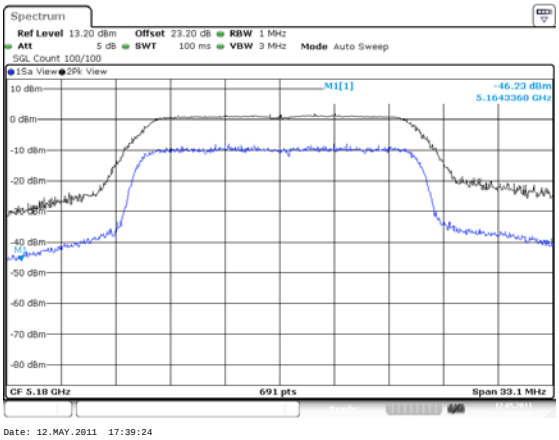


PSD_UNII_1_802_11A_6MBS_MiddleChannel

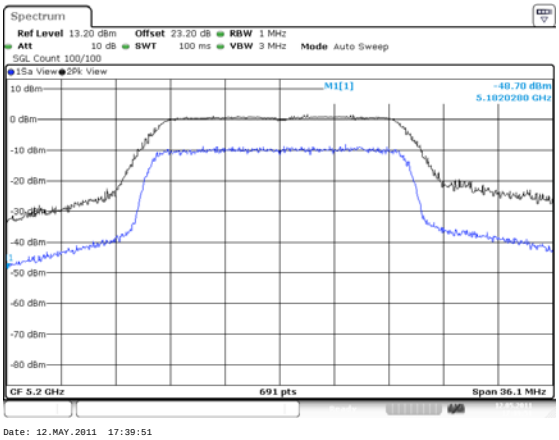


PSD_UNII_1_802_11A_6MBS_TopChannel

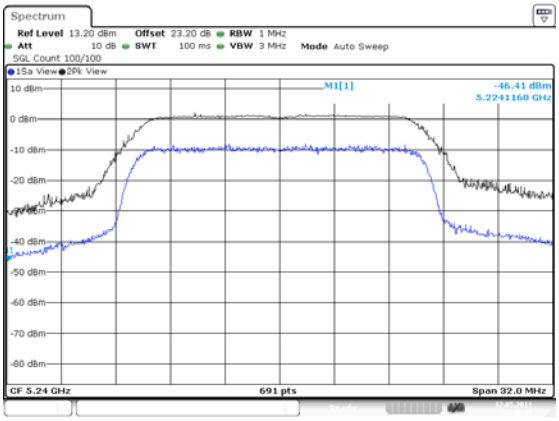
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11A_9MBS_BottomChannel

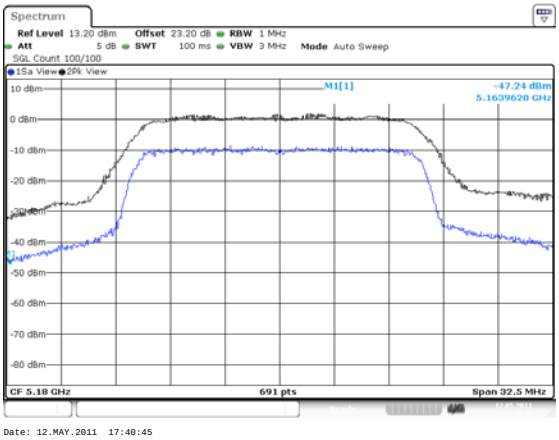


PSD_UNII_1_802_11A_9MBS_MiddleChannel

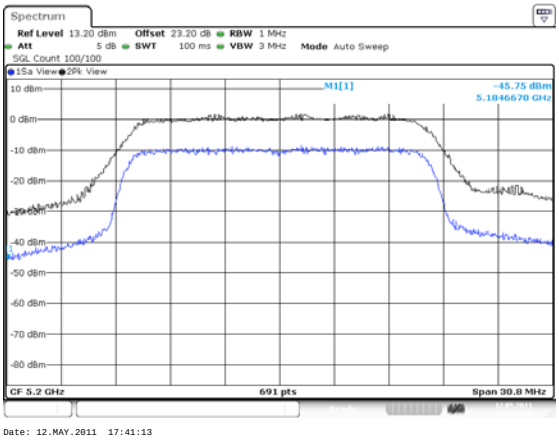


PSD_UNII_1_802_11A_9MBS_TopChannel

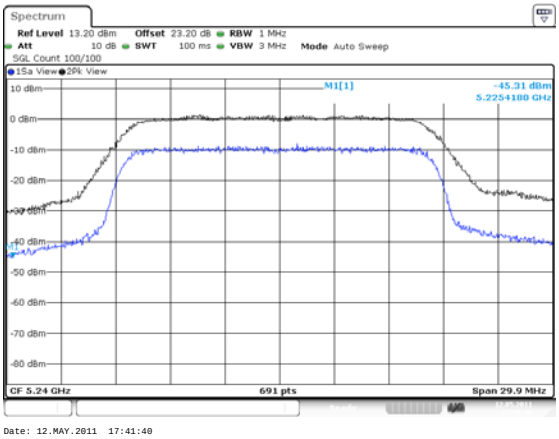
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11A_12MBS_BottomChannel

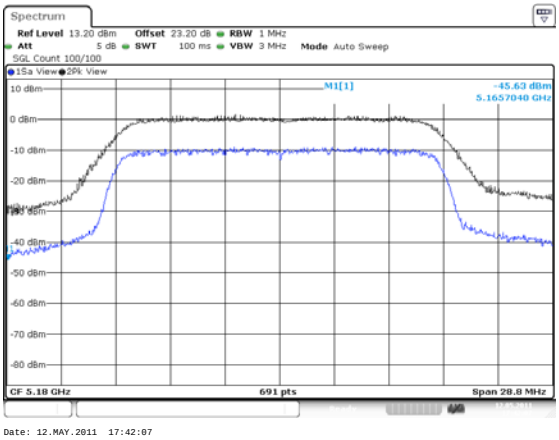


PSD_UNII_1_802_11A_12MBS_MiddleChannel

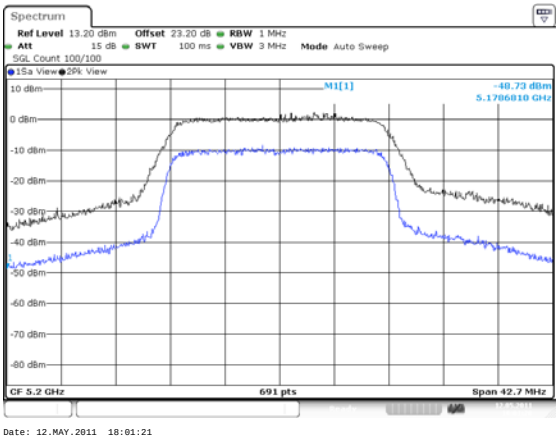


PSD_UNII_1_802_11A_12MBS_TopChannel

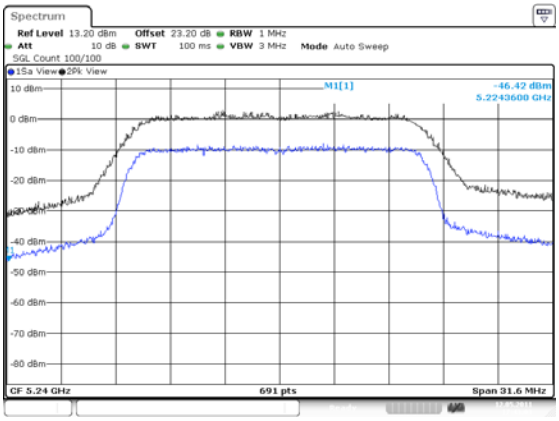
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11A_18MBS_BottomChannel

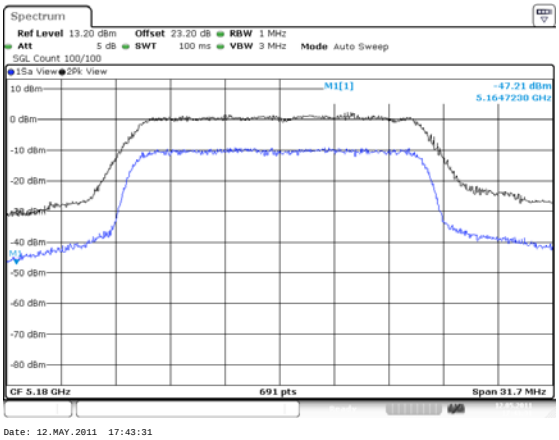


PSD_UNII_1_802_11A_18MBS_MiddleChannel

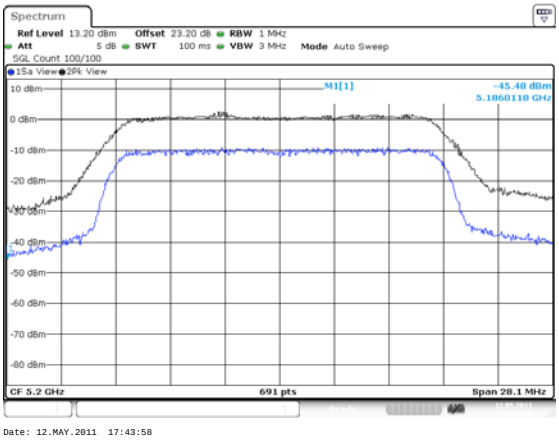


PSD_UNII_1_802_11A_18MBS_TopChannel

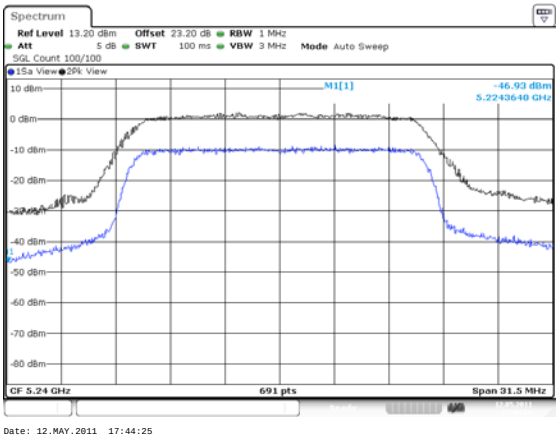
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11A_24MBS_BottomChannel

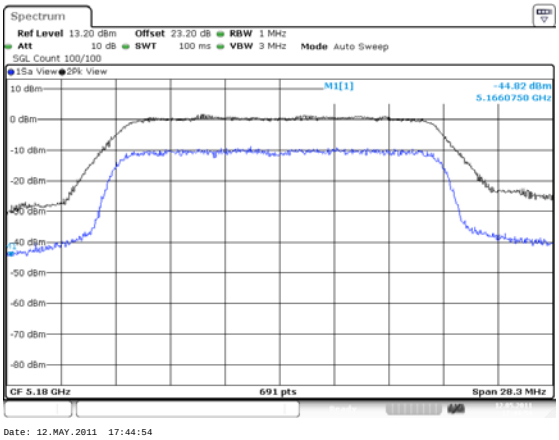


PSD_UNII_1_802_11A_24MBS_MiddleChannel

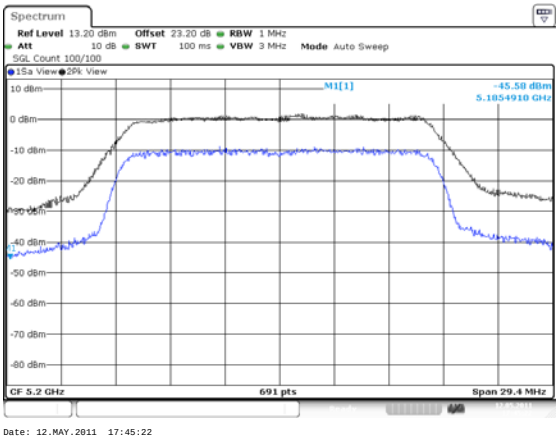


PSD_UNII_1_802_11A_24MBS_TopChannel

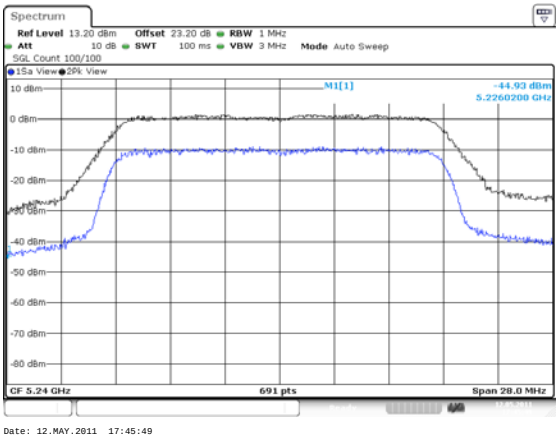
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11A_36MBS_BottomChannel

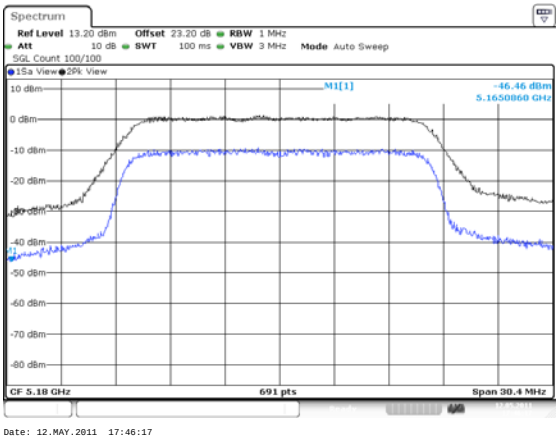


PSD_UNII_1_802_11A_36MBS_MiddleChannel

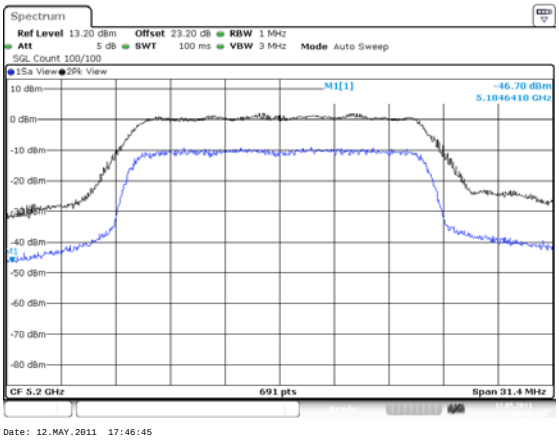


PSD_UNII_1_802_11A_36MBS_TopChannel

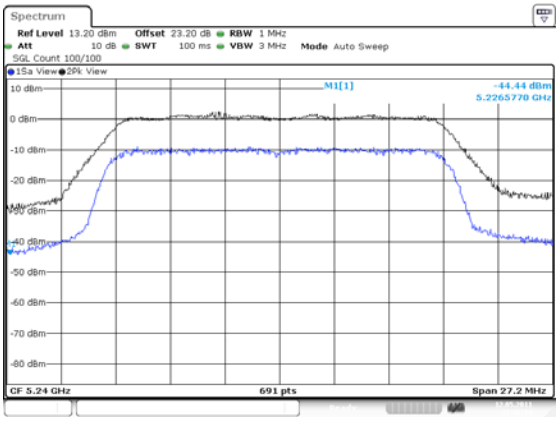
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11A_48MBS_BottomChannel

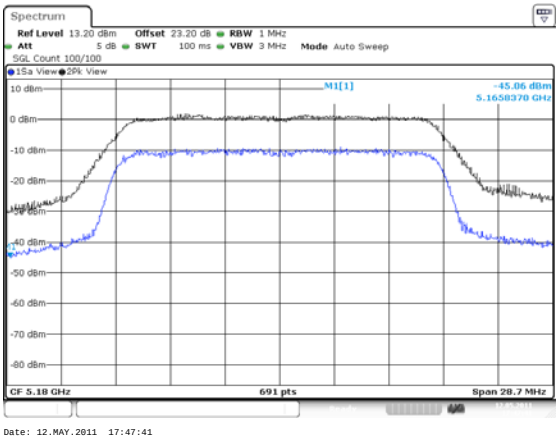


PSD_UNII_1_802_11A_48MBS_MiddleChannel

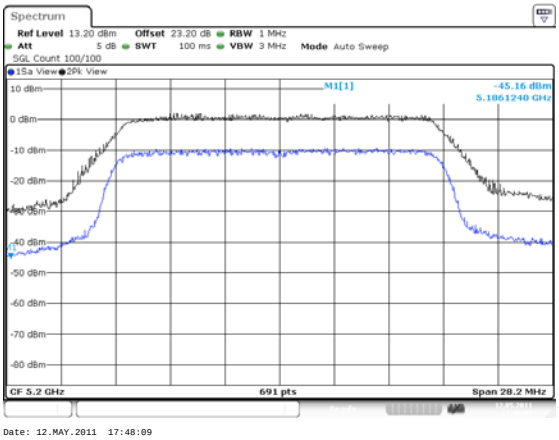


PSD_UNII_1_802_11A_48MBS_TopChannel

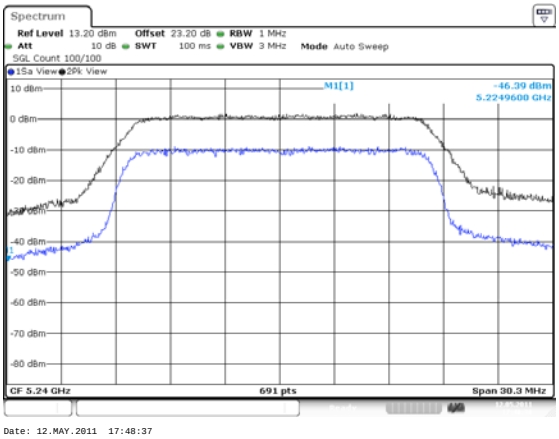
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11A_54MBS_BottomChannel



PSD_UNII_1_802_11A_54MBS_MiddleChannel



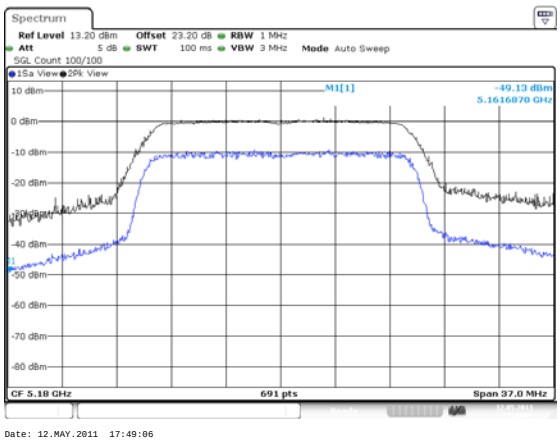
PSD_UNII_1_802_11A_54MBS_TopChannel

Transmitter Peak Excursion (continued)

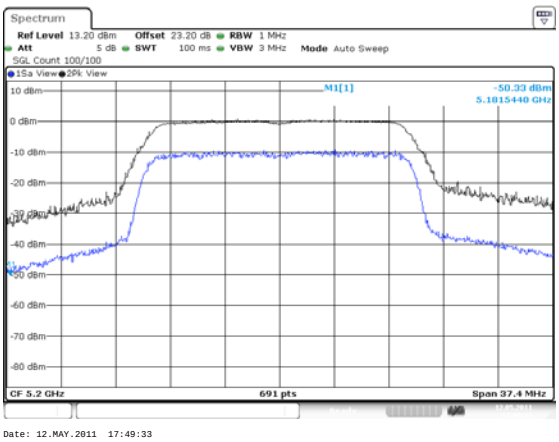
Result 802.11N 5150 to 5250 MHz band

Channel	Frequency (MHz)	Modulation Scheme	Data Rate (Mbps)	Peak Excursion (dB)	Limit (dB)	Result
Bottom	5180	BPSK	6.5	8.7	13	Complied
Middle	5200	BPSK	6.5	8.7	13	Complied
Top	5240	BPSK	6.5	8.7	13	Complied
Bottom	5180	QPSK	13	8.7	13	Complied
Middle	5200	QPSK	13	8.7	13	Complied
Top	5240	QPSK	13	8.7	13	Complied
Bottom	5180	QPSK	19.5	8.7	13	Complied
Middle	5200	QPSK	19.5	8.7	13	Complied
Top	5240	QPSK	19.5	8.7	13	Complied
Bottom	5180	16QAM	26	8.7	13	Complied
Middle	5200	16QAM	26	8.7	13	Complied
Top	5240	16QAM	26	8.7	13	Complied
Bottom	5180	16QAM	39	8.7	13	Complied
Middle	5200	16QAM	39	8.7	13	Complied
Top	5240	16QAM	39	8.7	13	Complied
Bottom	5180	64QAM	52	8.7	13	Complied
Middle	5200	64QAM	52	8.7	13	Complied
Top	5240	64QAM	52	8.7	13	Complied
Bottom	5180	64QAM	58.5	8.7	13	Complied
Middle	5200	64QAM	58.5	8.7	13	Complied
Top	5240	64QAM	58.5	8.7	13	Complied
Bottom	5180	64QAM	65	8.7	13	Complied
Middle	5200	64QAM	65	8.7	13	Complied
Top	5240	64QAM	65	8.7	13	Complied

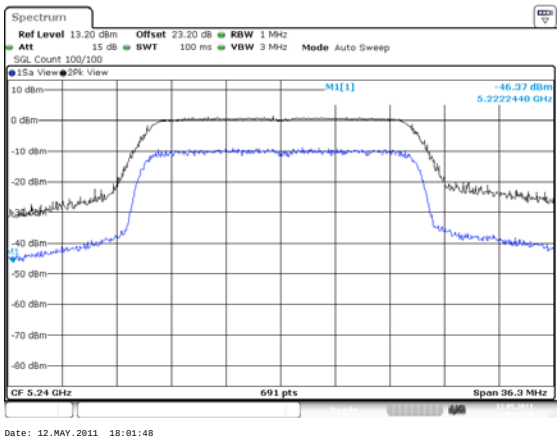
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11N_6_5MBS_BottomChannel

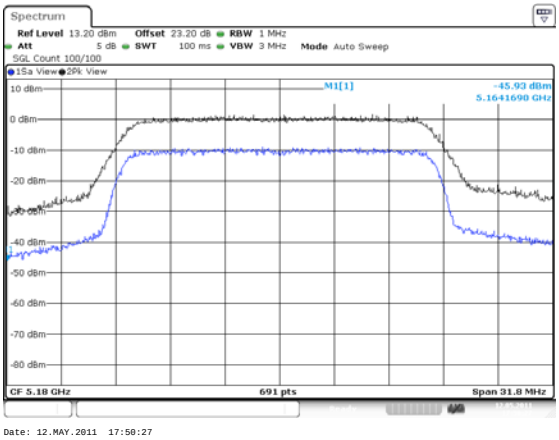


PSD_UNII_1_802_11N_6_5MBS_MiddleChannel

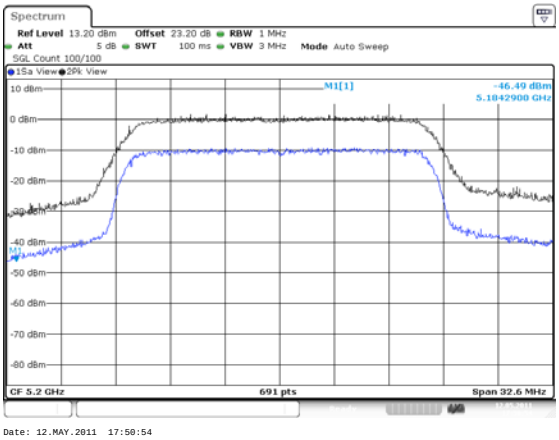


PSD_UNII_1_802_11N_6_5MBS_TopChannel

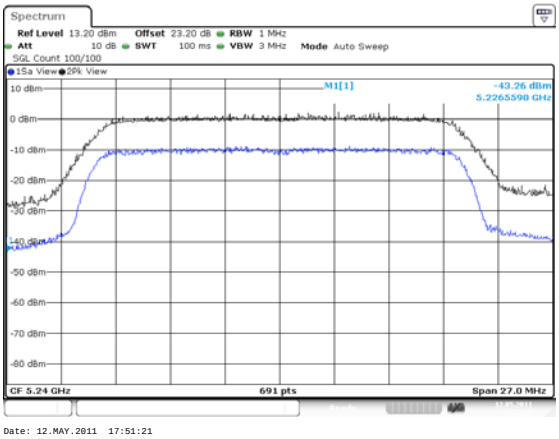
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11N_13MBS_BottomChannel

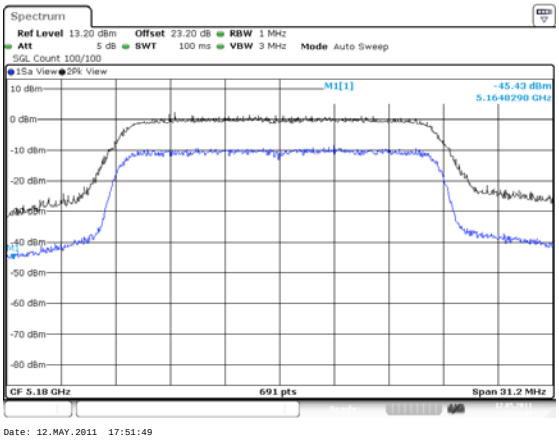


PSD_UNII_1_802_11N_13MBS_MiddleChannel

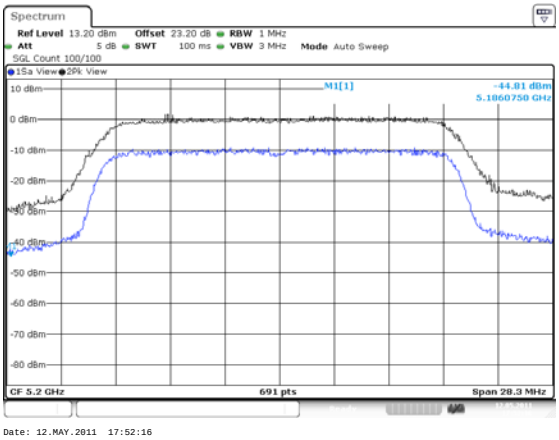


PSD_UNII_1_802_11N_13MBS_TopChannel

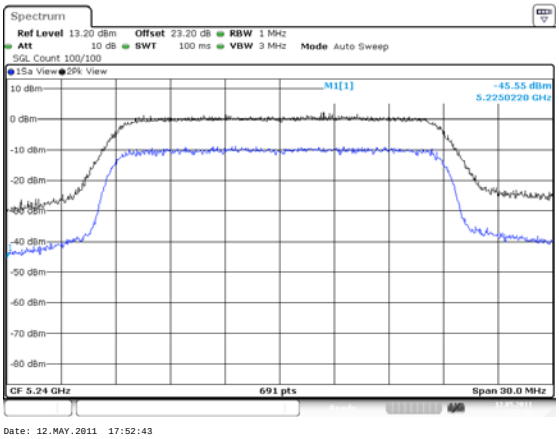
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11N_19_5MBS_BottomChannel

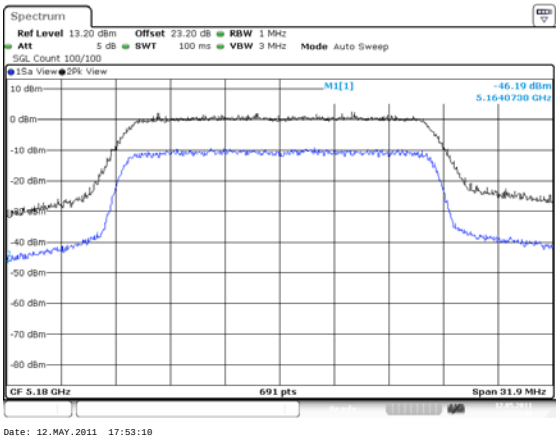


PSD_UNII_1_802_11N_19_5MBS_MiddleChannel

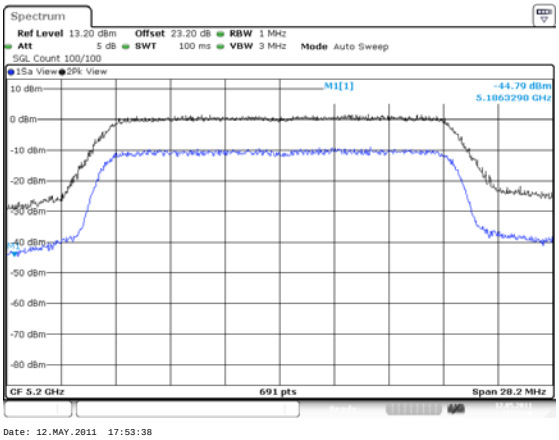


PSD_UNII_1_802_11N_19_5MBS_TopChannel

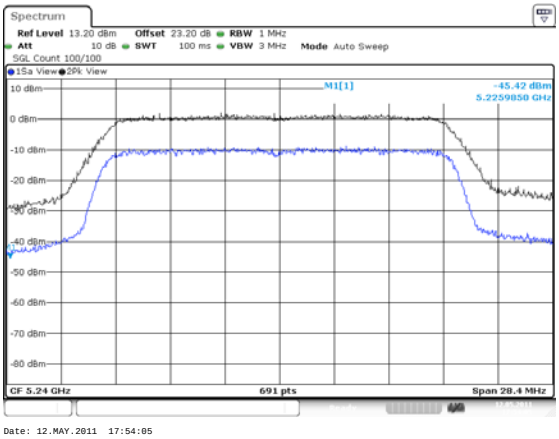
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11N_26MBS_BottomChannel

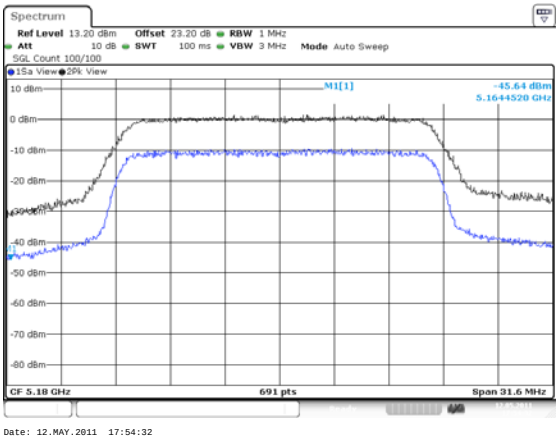


PSD_UNII_1_802_11N_26MBS_MiddleChannel

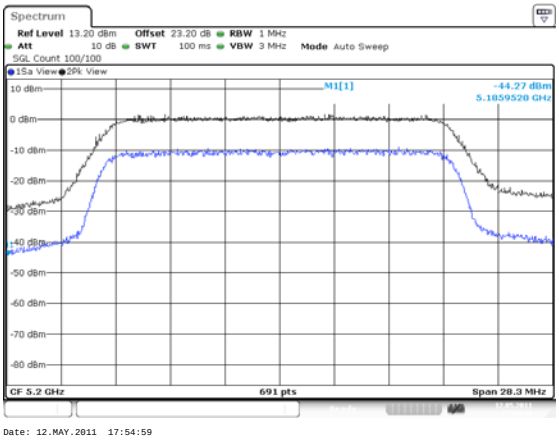


PSD_UNII_1_802_26N_18MBS_TopChannel

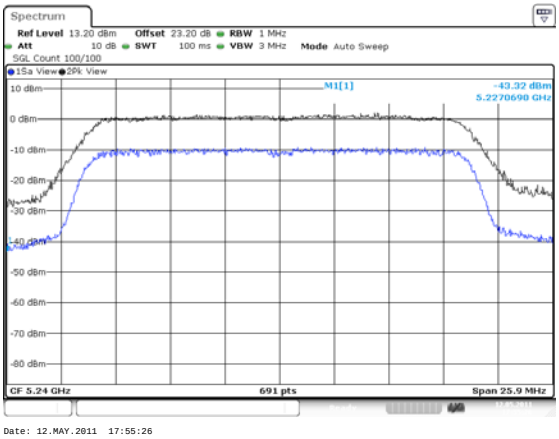
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11N_39MBS_BottomChannel

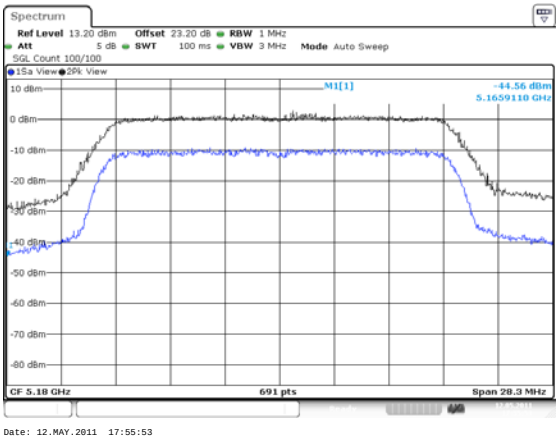


PSD_UNII_1_802_11N_39MBS_MiddleChannel

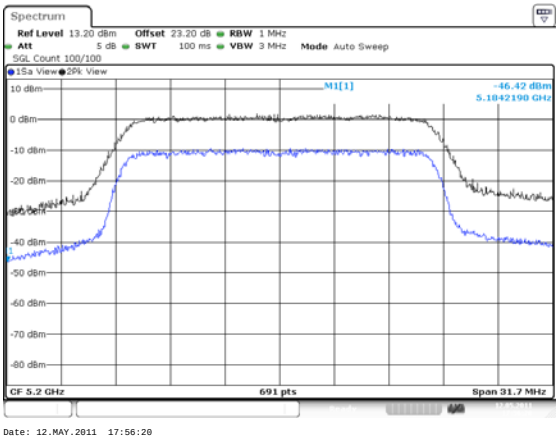


PSD_UNII_1_802_11N_39MBS_TopChannel

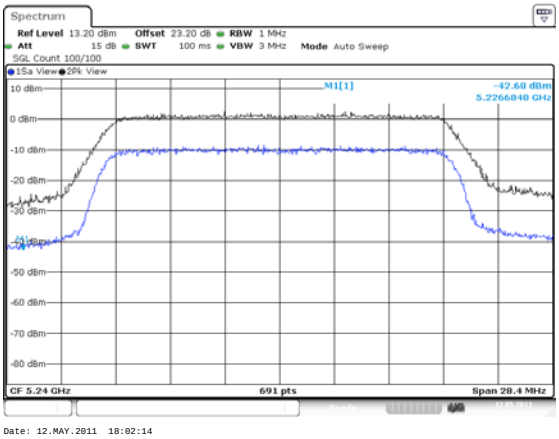
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11N_52MBS_BottomChannel

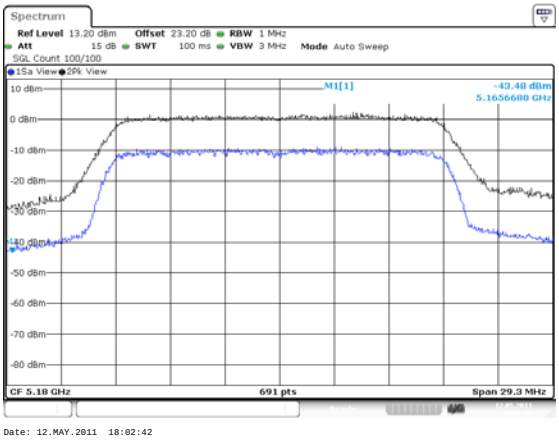


PSD_UNII_1_802_11N_52MBS_MiddleChannel

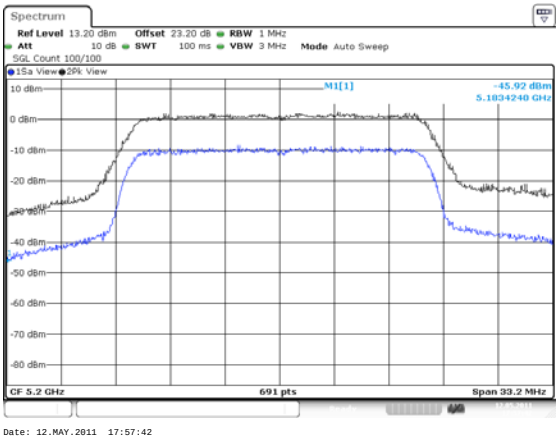


PSD_UNII_1_802_11N_52MBS_TopChannel

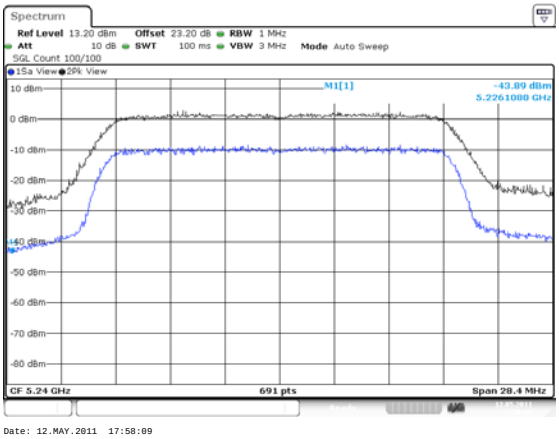
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11N_58_5MBS_BottomChannel

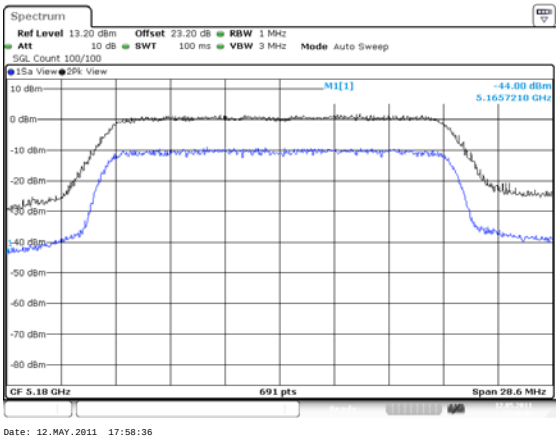


PSD_UNII_1_802_11N_58_5MBS _MiddleChannel

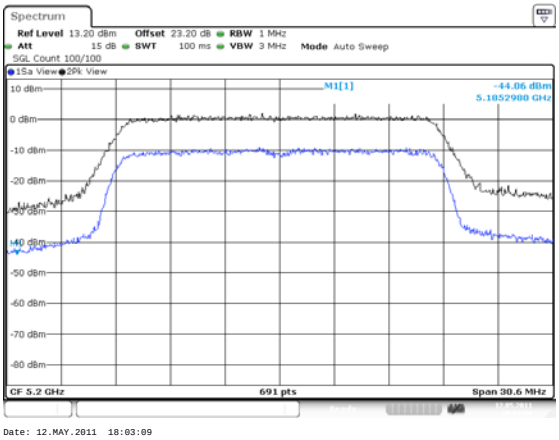


PSD_UNII_1_802_11N_58_5MBS _TopChannel

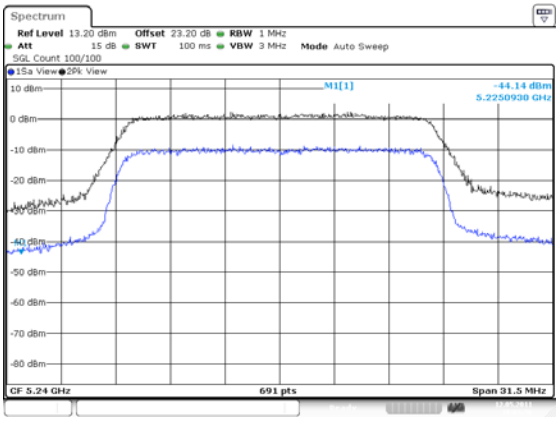
Transmitter Peak Excursion (continued)



PSD_UNII_1_802_11N_65MBS_BottomChannel



PSD_UNII_1_802_11N_65MBS_MiddleChannel



PSD_UNII_1_802_11N_65MBS_TopChannel

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

Test Summary:

Test Engineer:	Nick Steele	**Test Date:**	19 November 2010
Test Sample Serial No:	ID 8		

FCC/IC Part:	15.407(b) / 15.209(a) and RSS-Gen 4.9 / RSS-210 A9.2(1)
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.5 referencing ANSI C63.4
Frequency Range	30 MHz to 1000 MHz

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	23

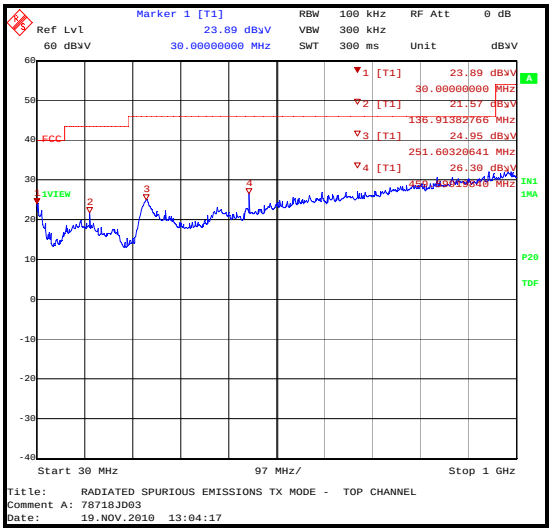
Results: Top Channel

Frequency (MHz)	Antenna Polarity	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Result
159.961	Horizontal	21.7	43.5	21.8	Complied
239.976	Vertical	27.4	46.0	18.6	Complied
458.782	Vertical	27.2	46.0	18.8	Complied

Note(s):

1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss
2. The preliminary scans showed similar emission levels below 1 GHz, for each channel of operation. Therefore final radiated emissions measurements were performed with the EUT set to the top channel only.
3. All other emissions were at least 20 dB below the appropriate limit or below the noise floor of the measurement system.
4. 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.

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



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

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

Test Summary:

Test Engineer:	Nick Steele	**Test Date:**	19 November & 28 November 2010
Test Sample Serial No:	ID 8		

FCC/IC Part:	15.407(b) / 15.209(a) and RSS-Gen 4.9 / RSS-210 A9.2(1)
Test Method Used:	As detailed in ANSI C63.10 Sections 6.3 and 6.6 referencing ANSI C63.4
Frequency Range	1 GHz to 40 GHz

Environmental Conditions:

Temperature (°C):	21 to 23
Relative Humidity (%):	22 to 25

Results: Peak Bottom Channel

Frequency (GHz)	Antenna Polarity	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
10.360	Vertical	-51.5	-27.0	24.5	Complied

Results: Peak Middle Channel

Frequency (GHz)	Antenna Polarity	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
10.401	Vertical	-51.8	-27.0	24.8	Complied

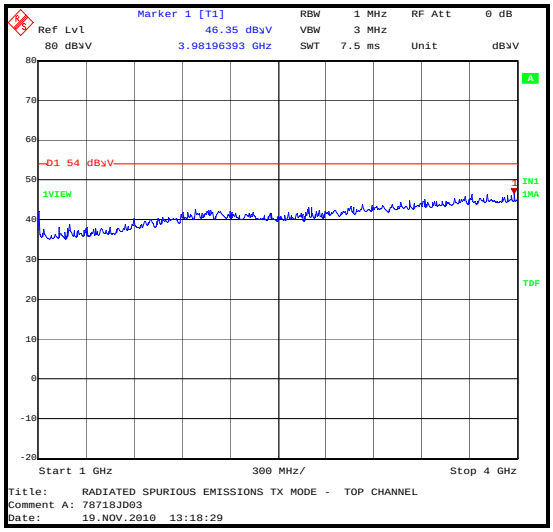
Results: Peak Top Channel

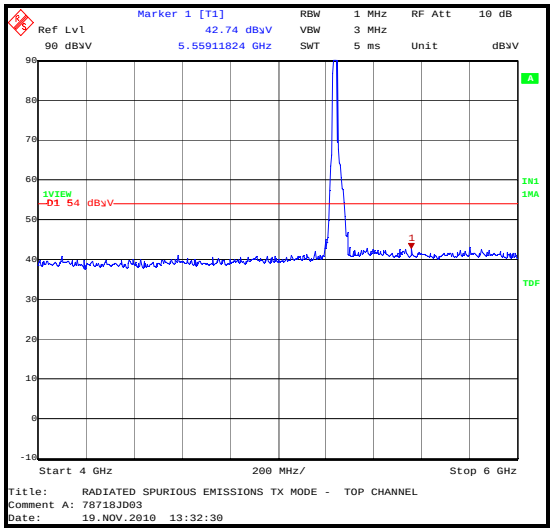
Frequency (GHz)	Antenna Polarity	Level (dBm)	Limit (dBm/MHz)	Margin (dB)	Result
10.480	Vertical	-51.9	-27.0	24.9	Complied

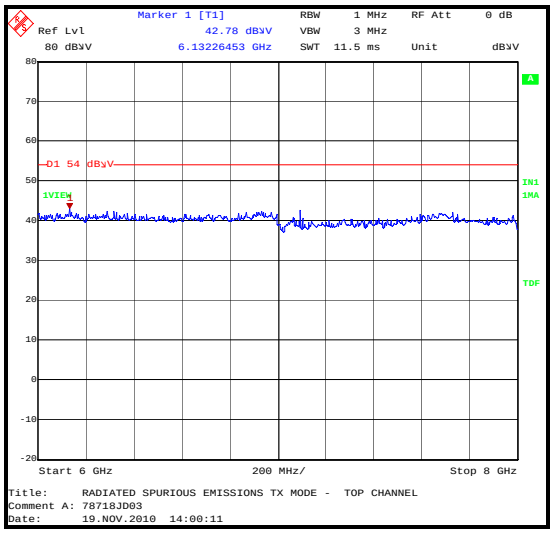
Note(s):

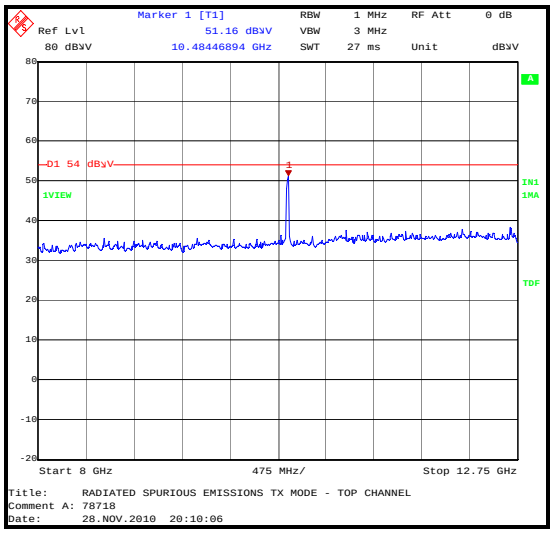
1. The final measured value, for the given emission, in the table above incorporates the calibrated antenna factor and cable loss.
2. The spurious level in dBm was calculated using the following formula $P_T=(E^2R^2)/30$ where P is the calculated power, E is the measured field strength and R is the test distance (3 meters)
3. 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.
4. The emission shown on the 4 GHz to 6 GHz plot is the EUT fundamental.
5. 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)

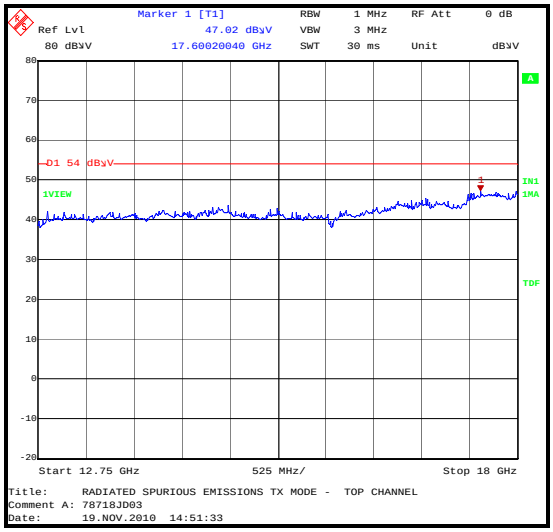


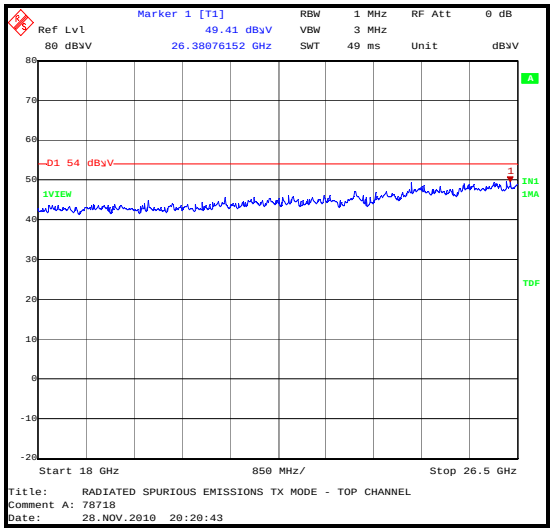


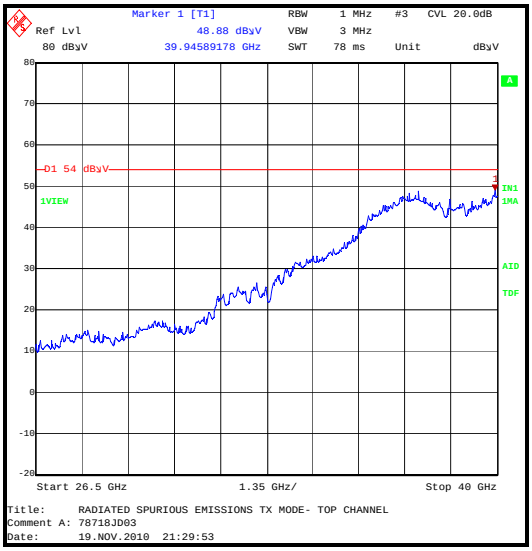




Transmitter Out of Band Radiated Emissions (5.15-5.25 GHz band operation) (continued)







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

5.2.10. Transmitter Band Edge Radiated Emissions

Test Summary:

Test Engineer:	Dave Lakeland Nigel Davison	**Test Date:**	7 January 2011
Test Sample Serial No:	ID8		

FCC/IC Part:	15.407(b) / 15.209(a) and RSS-Gen 4.9 / RSS-210 A9.2(1)
Test Method Used:	As detailed in ANSI C63.10 Section 6.9.2 referencing FCC Part 15.407(b)(5)

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	26

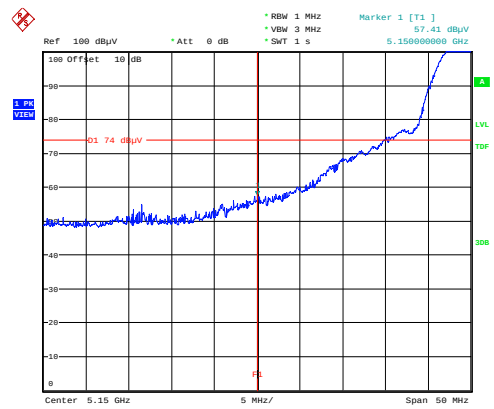
Transmitter Band Edge Radiated Emissions (continued)

Results - 802.11a - 5150 to 5250 MHz band

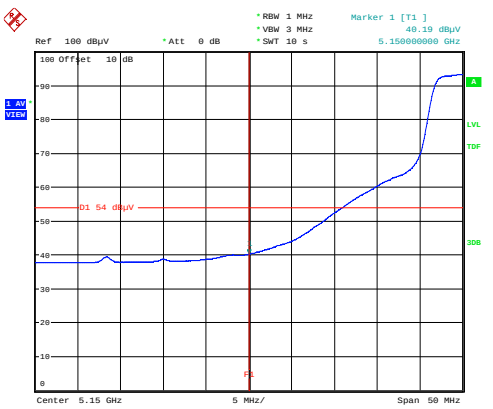
Frequency (MHz)	Modulation Scheme	Data Rate (Mbps)	Detector	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Result
5150	BPSK	6	Peak	48.9	74.0	25.1	Complied
5150	BPSK	6	Average	36.2	54.0	17.8	Complied
5350	BPSK	6	Peak	47.6	74.0	26.4	Complied
5350	BPSK	6	Average	36.3	54.0	17.7	Complied
5150	BPSK	9	Peak	47.9	74.0	26.1	Complied
5150	BPSK	9	Average	36.1	54.0	17.9	Complied
5350	BPSK	9	Peak	49.8	74.0	24.2	Complied
5350	BPSK	9	Average	38.1	54.0	15.9	Complied
5150	QPSK	12	Peak	54.7	74.0	19.3	Complied
5150	QPSK	12	Average	40.6	54.0	13.4	Complied
5350	QPSK	12	Peak	49.6	74.0	24.4	Complied
5350	QPSK	12	Average	38.0	54.0	16.0	Complied
5150	QPSK	18	Peak	53.6	74.0	20.4	Complied
5150	QPSK	18	Average	40.1	54.0	13.9	Complied
5350	QPSK	18	Peak	49.8	74.0	24.2	Complied
5350	QPSK	18	Average	37.9	54.0	16.1	Complied
5150	16QAM	24	Peak	54.7	74.0	19.3	Complied
5150	16QAM	24	Average	39.9	54.0	14.1	Complied
5350	16QAM	24	Peak	50.4	74.0	23.6	Complied
5350	16QAM	24	Average	37.9	54.0	16.1	Complied
5150	16QAM	36	Peak	56.0	74.0	18.0	Complied
5150	16QAM	36	Average	36.0	54.0	18.0	Complied
5350	16QAM	36	Peak	49.2	74.0	24.8	Complied
5350	16QAM	36	Average	37.9	54.0	16.1	Complied
5150	64QAM	48	Peak	54.2	74.0	19.8	Complied
5150	64QAM	48	Average	39.9	54.0	14.1	Complied
5350	64QAM	48	Peak	48.7	74.0	25.3	Complied
5350	64QAM	48	Average	37.9	54.0	16.1	Complied
5150	64QAM	54	Peak	55.3	74.0	18.7	Complied
5150	64QAM	54	Average	39.8	54.0	14.2	Complied
5350	64QAM	54	Peak	47.3	74.0	26.7	Complied
5350	64QAM	54	Average	36.1	54.0	17.9	Complied

Transmitter Band Edge Radiated Emissions (continued)

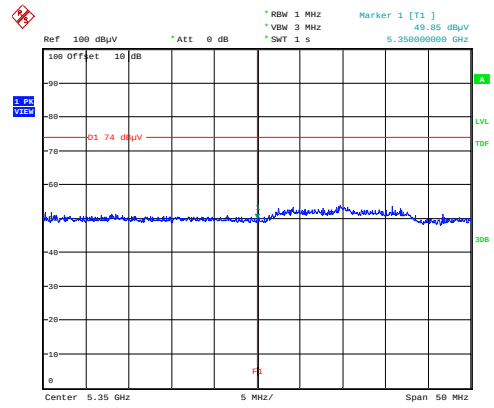
Plots - 802.11a - 5150 to 5250 MHz band



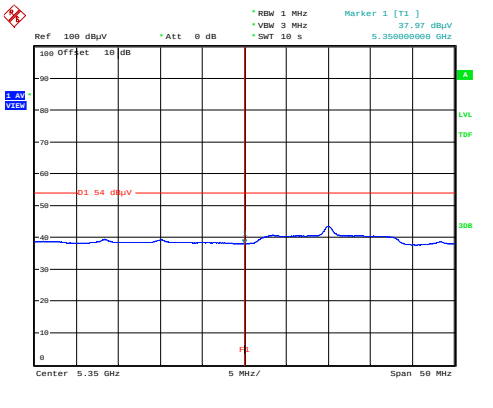
BandEdgePk_UNII_1_802_11A_6MBS_BottomChannel



BandEdgeAg_UNII_1_802_11A_6MBS_BottomChannel



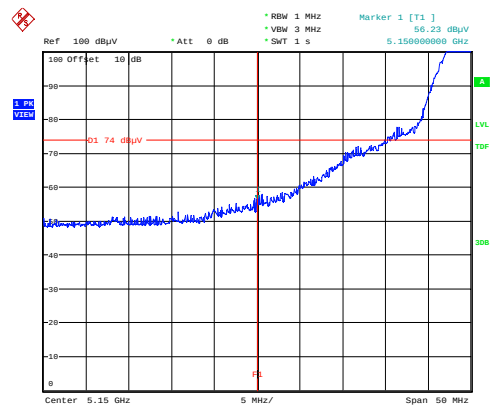
BandEdgePk_UNII_1_802_11A_6MBS_TopChannel



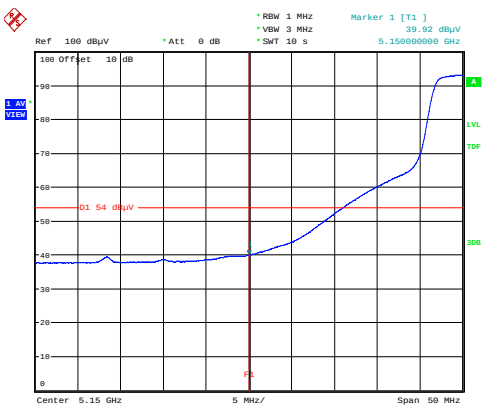
BandEdgeAg_UNII_1_802_11A_6MBS_TopChannel

Transmitter Band Edge Radiated Emissions (continued)

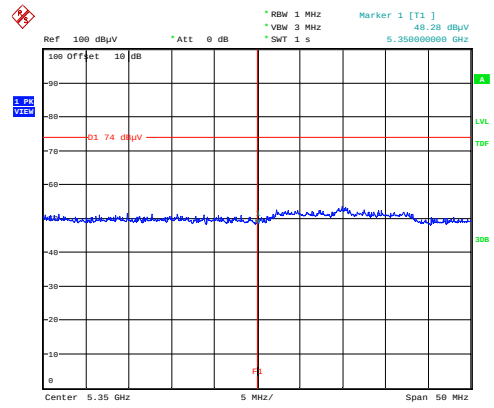
Plots - 802.11a - 5150 to 5250 MHz band



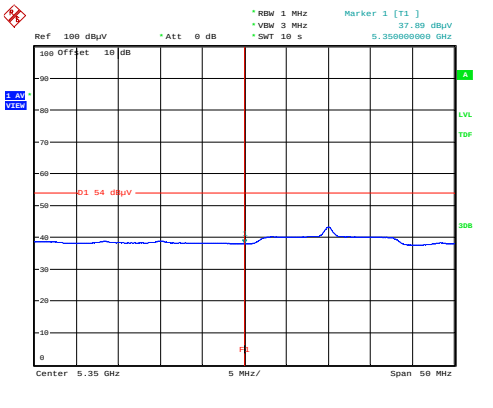
BandEdgePk_UNII_1_802_11A_9MBS_BottomChannel



BandEdgeAv_UNII_1_802_11A_9MBS_BottomChannel



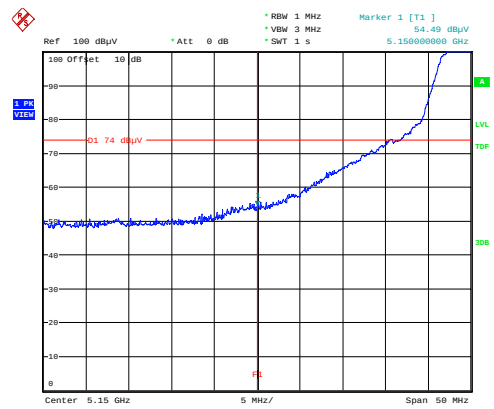
BandEdgePk_UNII_1_802_11A_9MBS_TopChannel



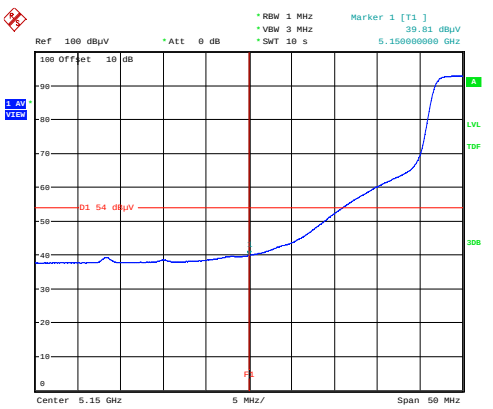
BandEdgeAg_UNII_1_802_11A_9MBS_TopChannel

Transmitter Band Edge Radiated Emissions (continued)

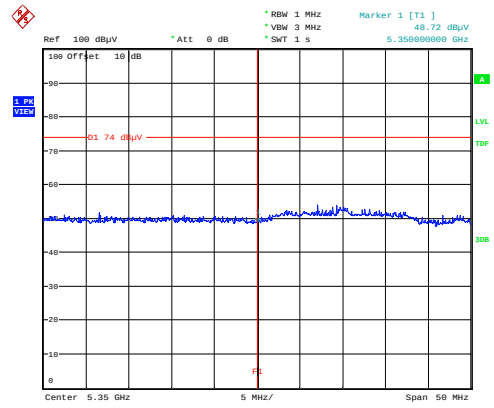
Plots - 802.11a - 5150 to 5250 MHz band



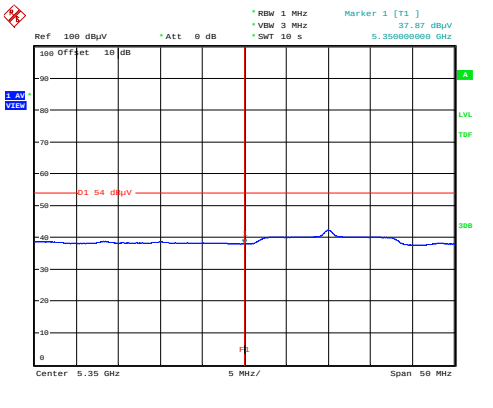
BandEdgePk_UNII_1_802_11A_12MBS_BottomChannel



BandEdgeAg_UNII_1_802_11A_12MBS_BottomChannel



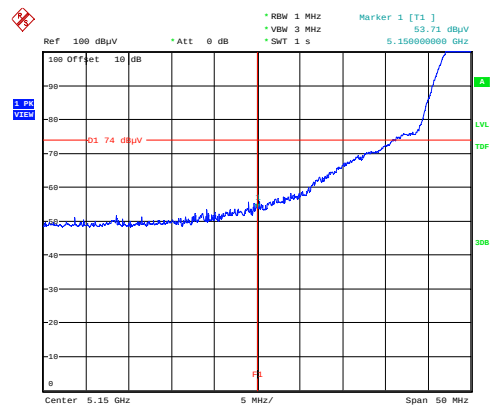
BandEdgePk_UNII_1_802_11A_12MBS_TopChannel



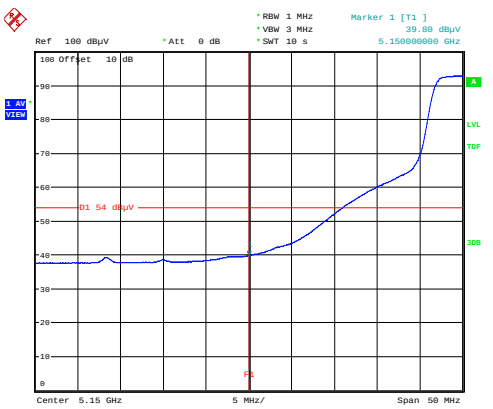
BandEdgeAg_UNII_1_802_11A_12MBS_TopChannel

Transmitter Band Edge Radiated Emissions (continued)

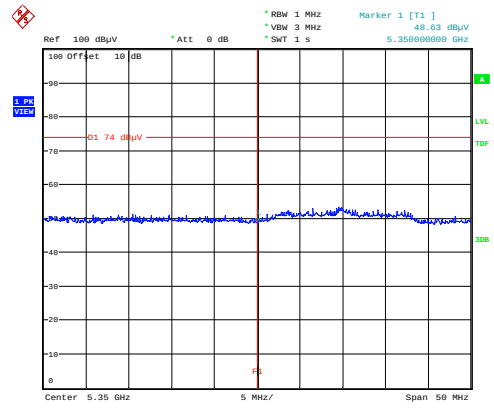
Plots - 802.11a - 5150 to 5250 MHz band



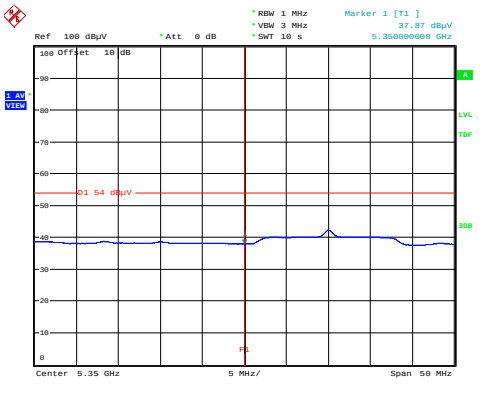
BandEdgePk_UNII_1_802_11A_18MBS_BottomChannel



BandEdgeAg_UNII_1_802_11A_18MBS_BottomChannel



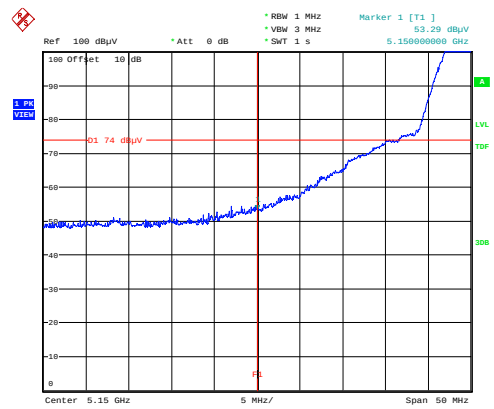
BandEdgePk_UNII_1_802_11A_18MBS_TopChannel



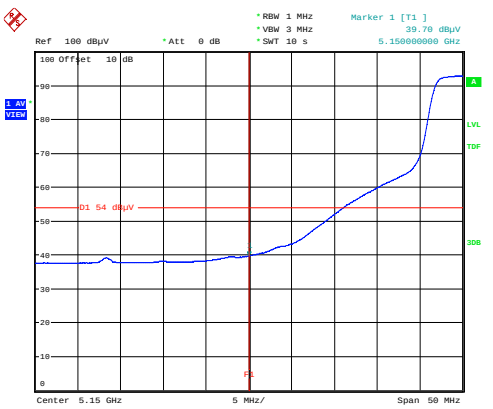
BandEdgeAg_UNII_1_802_11A_18MBS_TopChannel

Transmitter Band Edge Radiated Emissions (continued)

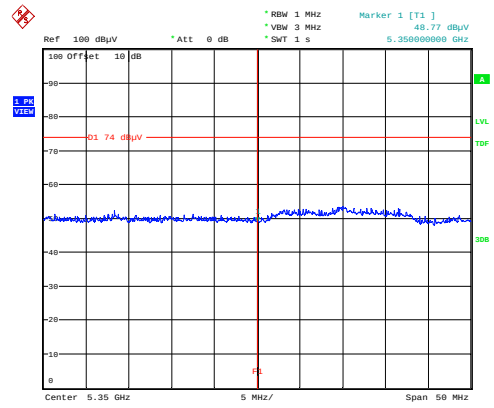
Plots - 802.11a - 5150 to 5250 MHz band



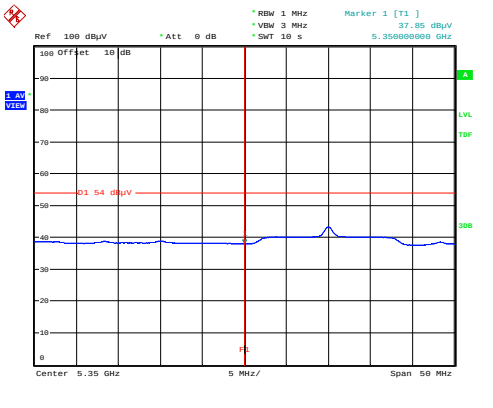
BandEdgePk_UNII_1_802_11A_24MBS_BottomChannel



BandEdgeAg_UNII_1_802_11A_24MBS_BottomChannel



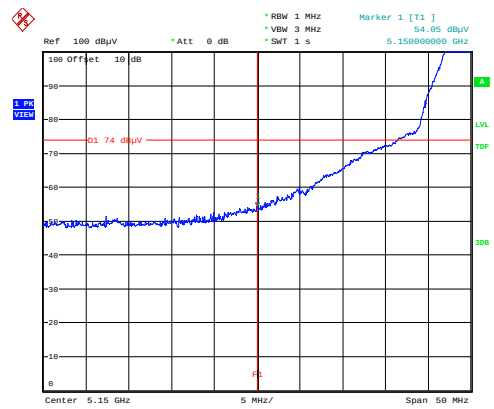
BandEdgePk_UNII_1_802_11A_24MBS_TopChannel



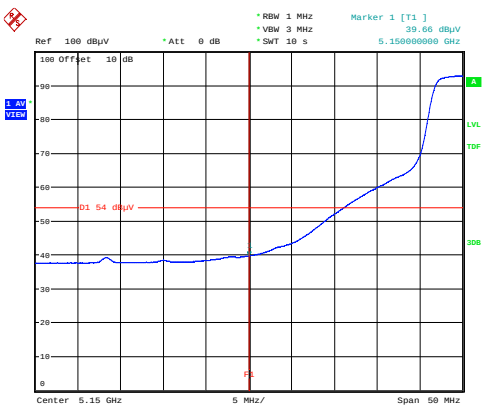
BandEdgeAg_UNII_1_802_11A_24MBS_TopChannel

Transmitter Band Edge Radiated Emissions (continued)

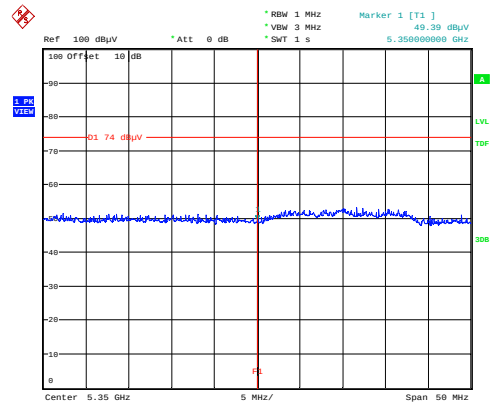
Plots - 802.11a - 5150 to 5250 MHz band



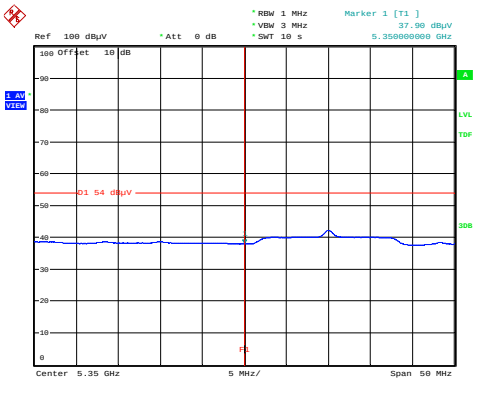
BandEdgePk_UNII_1_802_11A_36MBS_BottomChannel



BandEdgeAg_UNII_1_802_11A_36MBS_BottomChannel



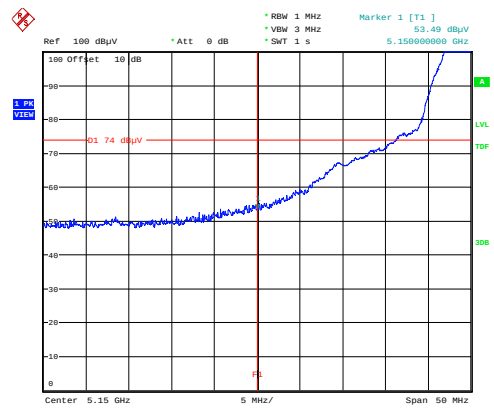
BandEdgePk_UNII_1_802_11A_36MBS_TopChannel



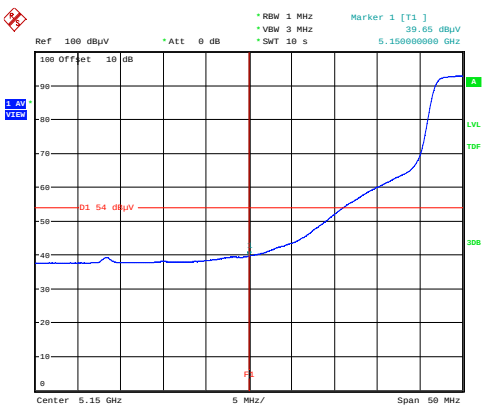
BandEdgeAg_UNII_1_802_11A_36MBS_TopChannel

Transmitter Band Edge Radiated Emissions (continued)

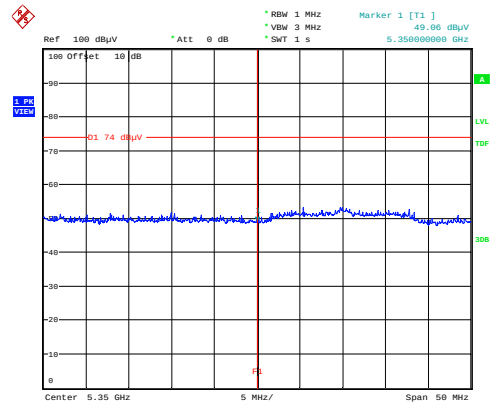
Plots - 802.11a - 5150 to 5250 MHz band



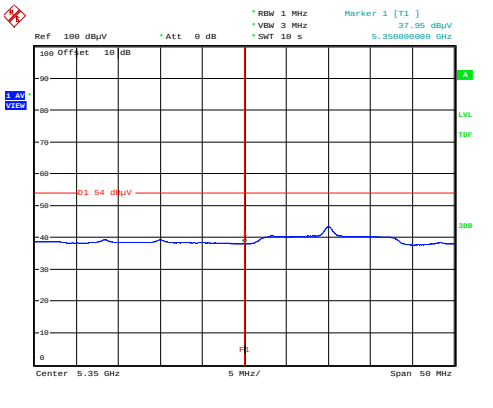
BandEdgePk_UNII_1_802_11A_48MBS_BottomChannel



BandEdgeAg_UNII_1_802_11A_48MBS_BottomChannel



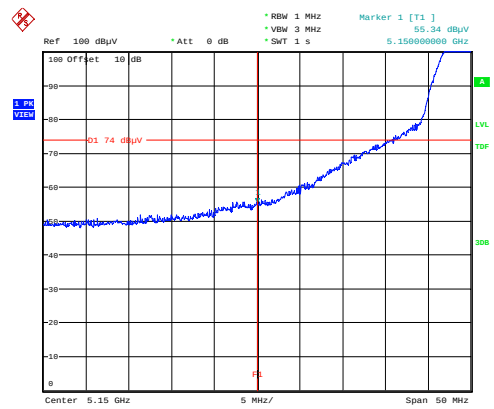
BandEdgePk_UNII_1_802_11A_48MBS_TopChannel



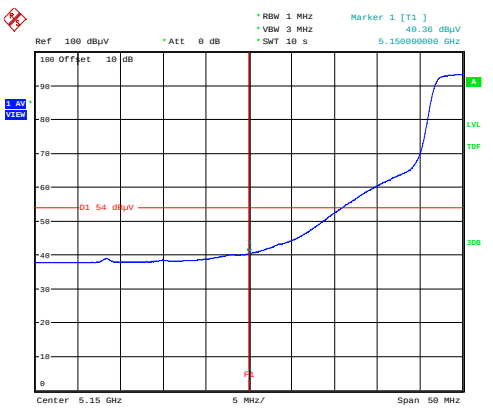
BandEdgeAg_UNII_1_802_11A_48MBS_TopChannel

Transmitter Band Edge Radiated Emissions (continued)

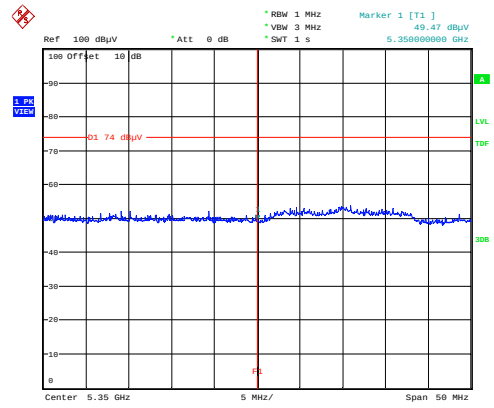
Plots - 802.11a - 5150 to 5250 MHz band



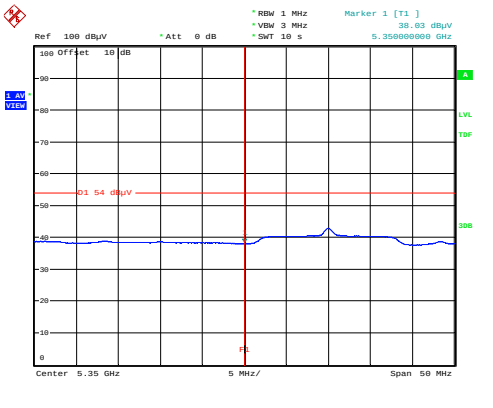
BandEdgePk_UNII_1_802_11A_54MBS_BottomChannel



BandEdgeAg_UNII_1_802_11A_54MBS_BottomChannel



BandEdgePk_UNII_1_802_11A_54MBS_TopChannel



BandEdgeAg_UNII_1_802_11A_54MBS_TopChannel

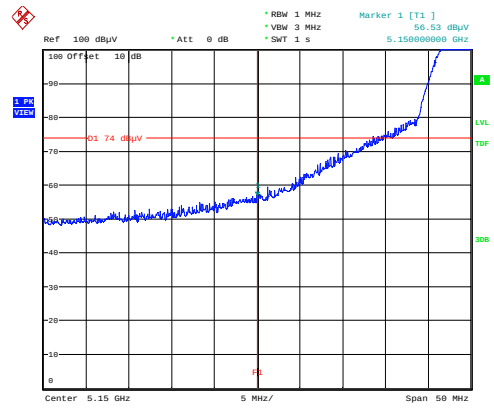
Transmitter Band Edge Radiated Emissions (continued)

Results - 802.11n - 5150 to 5250 MHz band

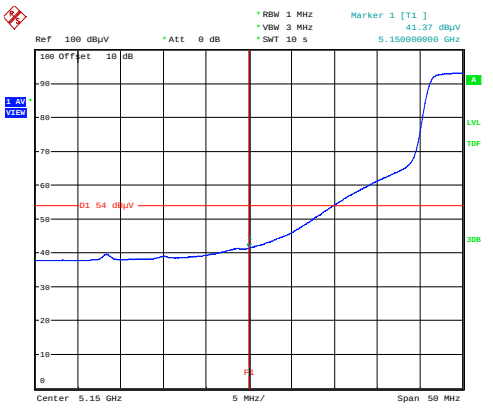
Frequency (MHz)	Modulation Scheme	Data Rate (Mbps)	Detector	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Result
5150	BPSK	6.5	Peak	46.8	74.0	27.2	Complied
5150	BPSK	6.5	Average	41.7	54.0	12.3	Complied
5350	BPSK	6.5	Peak	50.3	74.0	23.7	Complied
5350	BPSK	6.5	Average	38.0	54.0	16.0	Complied
5150	QPSK	13	Peak	55.6	74.0	18.4	Complied
5150	QPSK	13	Average	36.0	54.0	18.0	Complied
5350	QPSK	13	Peak	49.7	74.0	24.3	Complied
5350	QPSK	13	Average	38.0	54.0	16.0	Complied
5150	QPSK	19.5	Peak	56.0	74.0	18.0	Complied
5150	QPSK	19.5	Average	41.3	54.0	12.7	Complied
5350	QPSK	19.5	Peak	50.3	74.0	23.7	Complied
5350	QPSK	19.5	Average	38.0	54.0	16.0	Complied
5150	16QAM	26	Peak	54.7	74.0	19.3	Complied
5150	16QAM	26	Average	41.1	54.0	12.9	Complied
5350	16QAM	26	Peak	49.8	74.0	24.2	Complied
5350	16QAM	26	Average	38.0	54.0	16.0	Complied
5150	16QAM	39	Peak	55.8	74.0	18.2	Complied
5150	16QAM	39	Average	41.0	54.0	13.0	Complied
5350	16QAM	39	Peak	49.3	74.0	24.7	Complied
5350	16QAM	39	Average	37.9	54.0	16.1	Complied
5150	64QAM	52	Peak	53.9	74.0	20.1	Complied
5150	64QAM	52	Average	36.0	54.0	18.0	Complied
5350	64QAM	52	Peak	49.8	74.0	24.2	Complied
5350	64QAM	52	Average	38.0	54.0	16.0	Complied
5150	64QAM	58.5	Peak	47.0	74.0	27.0	Complied
5150	64QAM	58.5	Average	36.0	54.0	18.0	Complied
5350	64QAM	58.5	Peak	47.5	74.0	26.5	Complied
5350	64QAM	58.5	Average	38.1	54.0	15.9	Complied
5150	64QAM	65	Peak	58.3	74.0	15.7	Complied
5150	64QAM	65	Average	41.6	54.0	12.4	Complied
5350	64QAM	65	Peak	47.2	74.0	26.8	Complied
5350	64QAM	65	Average	36.1	54.0	17.9	Complied

Transmitter Band Edge Radiated Emissions (continued)

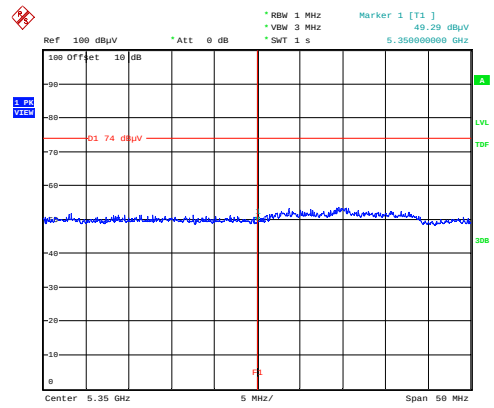
Plots - 802.11n - 5150 to 5250 MHz band



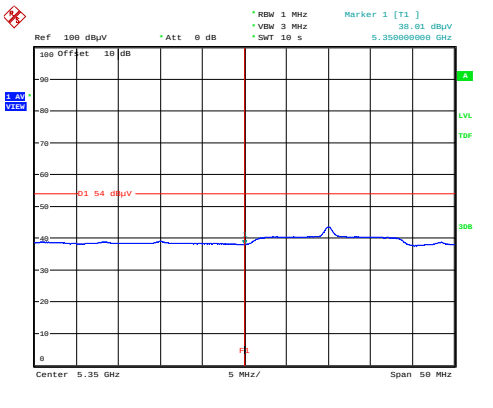
BandEdgePk_UNII_1_802_11N_6.5MBS_BottomChannel



BandEdgeAg_UNII_1_802_11N_6.5MBS_BottomChannel



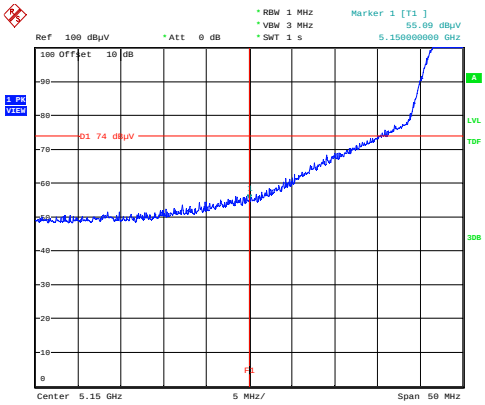
BandEdgePk_UNII_1_802_11N_6.5MBS_TopChannel



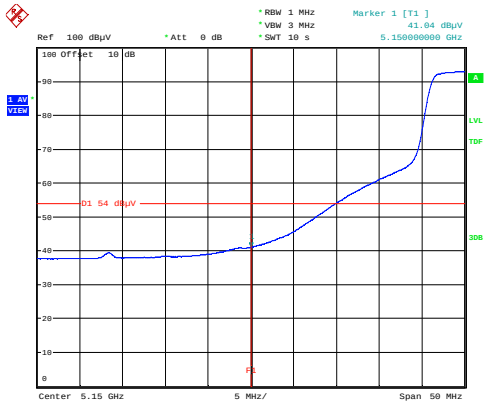
BandEdgeAg_UNII_1_802_11N_6.5MBS_TopChannel

Transmitter Band Edge Radiated Emissions (continued)

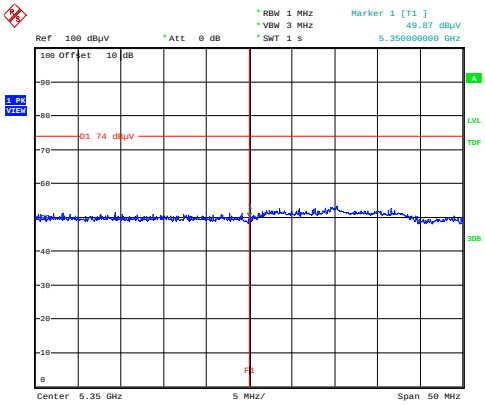
Plots - 802.11n - 5150 to 5250 MHz band



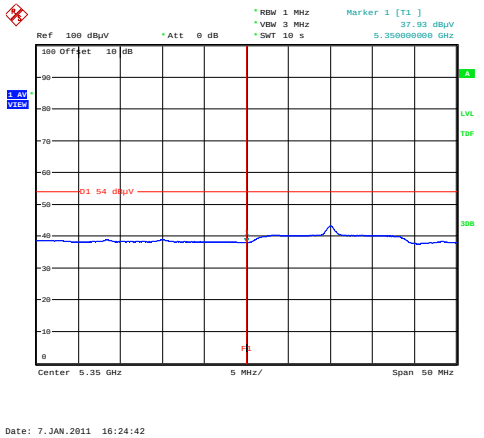
BandEdgePk_UNII_1_802_11N_13MBS_BottomChannel



BandEdgeAg_UNII_1_802_11N_13MBS_BottomChannel



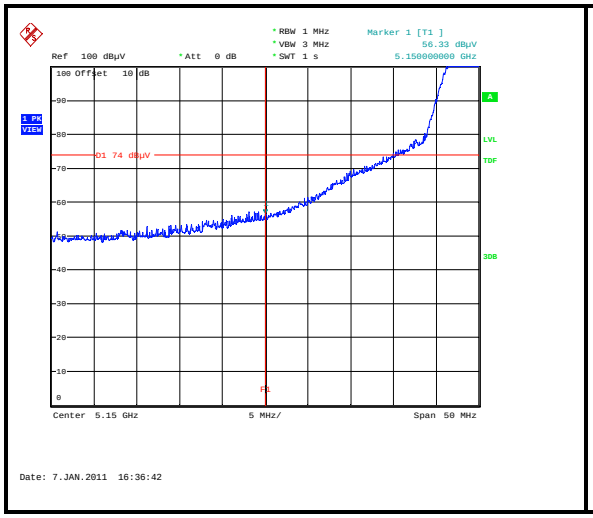
BandEdgePk_UNII_1_802_11N_13MBS_TopChannel



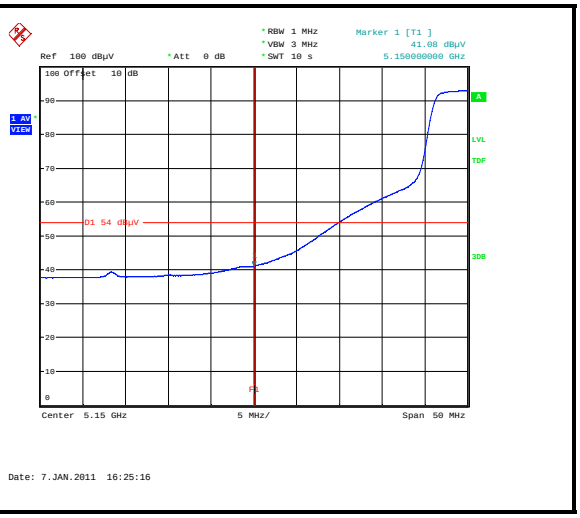
BandEdgeAg_UNII_1_802_11N_13MBS_TopChannel

Transmitter Band Edge Radiated Emissions (continued)

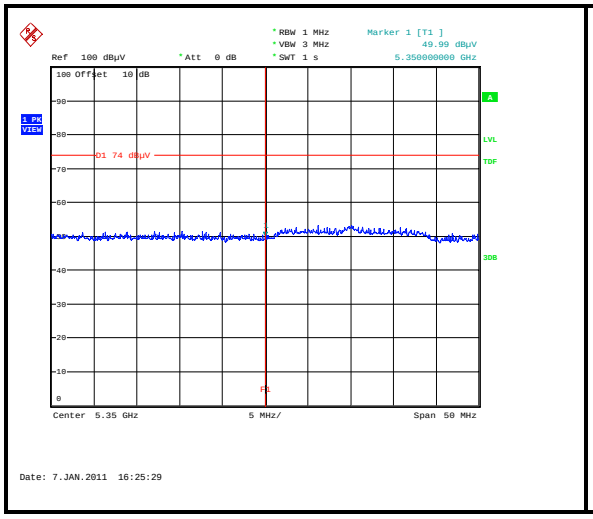
Plots - 802.11n - 5150 to 5250 MHz band



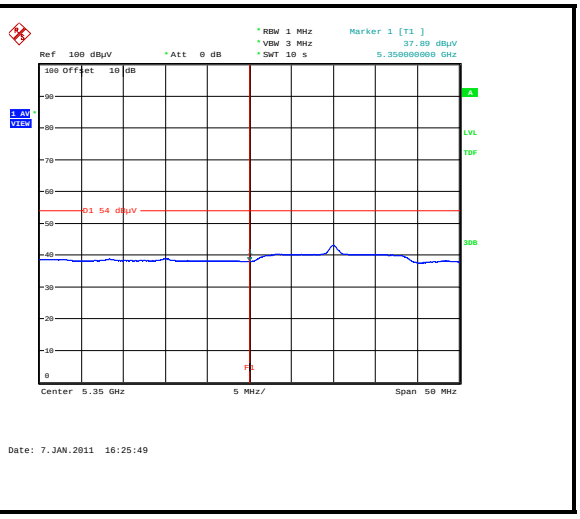
BandEdgePk_UNII_1_802_11N_19.5MBS_BottomChannel



BandEdgeAg_UNII_1_802_11N_19.5MBS_BottomChannel



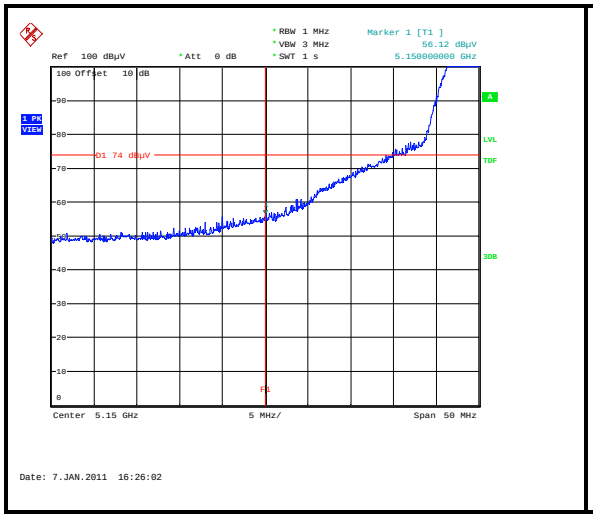
BandEdgePk_UNII_1_802_11N_19.5MBS_TopChannel



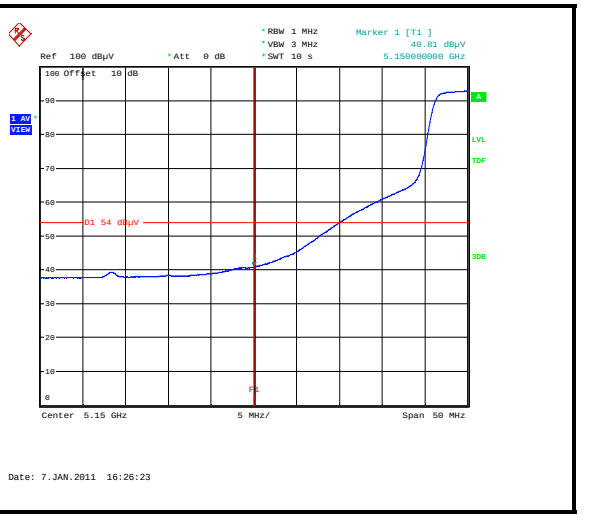
BandEdgeAg_UNII_1_802_11N_19.5MBS_TopChannel

Transmitter Band Edge Radiated Emissions (continued)

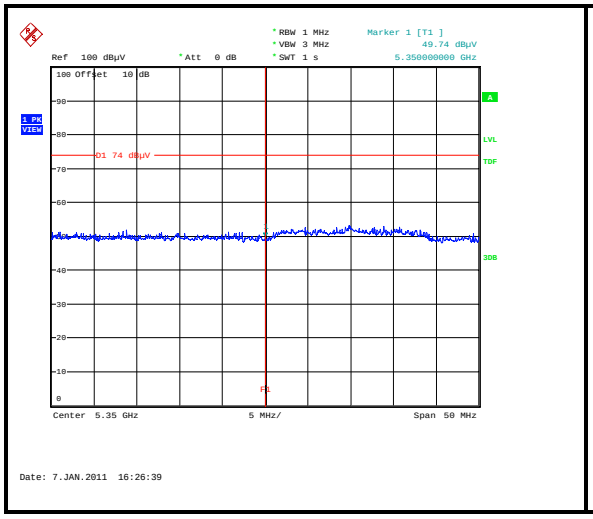
Plots - 802.11n - 5150 to 5250 MHz band



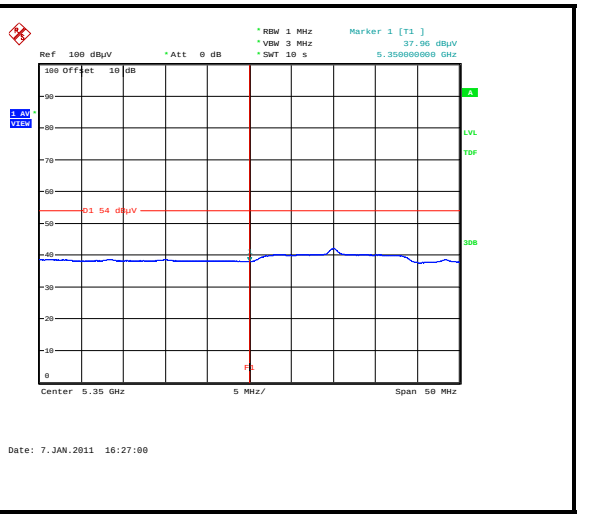
BandEdgePk_UNII_1_802_11N_26MBS_BottomChannel



BandEdgeAg_UNII_1_802_11N_26MBS_BottomChannel



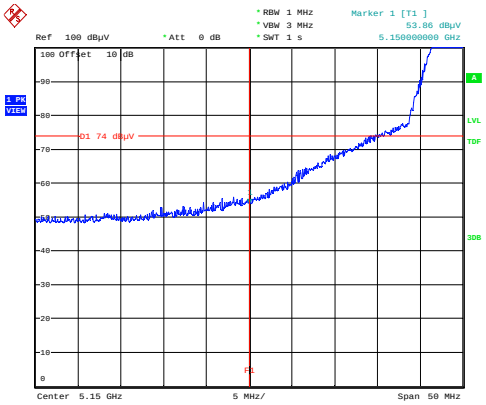
BandEdgePk_UNII_1_802_11N_26MBS_TopChannel



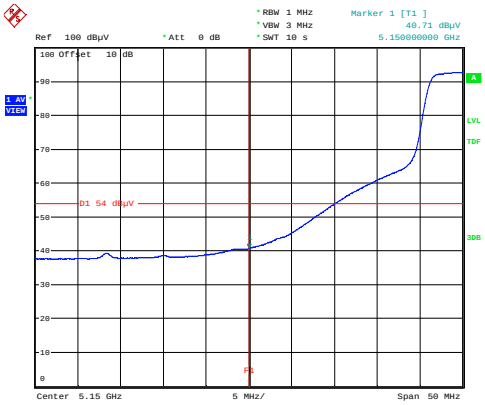
BandEdgeAg_UNII_1_802_11N_26MBS_TopChannel

Transmitter Band Edge Radiated Emissions (continued)

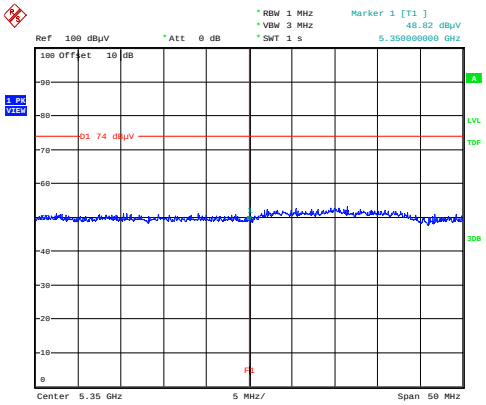
Plots - 802.11n - 5150 to 5250 MHz band



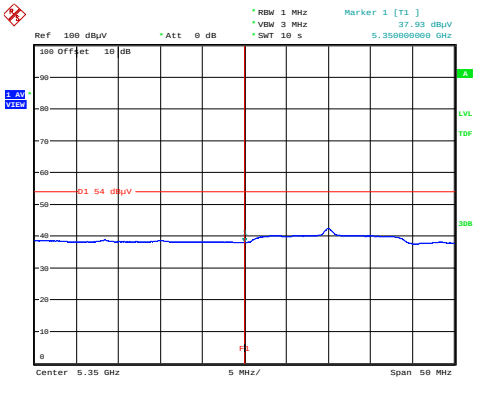
BandEdgePk_UNII_1_802_11N_39MBS_BottomChannel



BandEdgeAg_UNII_1_802_11N_39MBS_BottomChannel



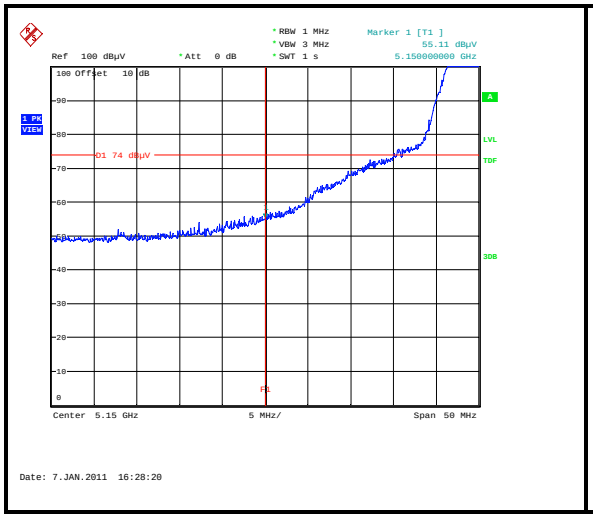
BandEdgePk_UNII_1_802_11N_39MBS_TopChannel



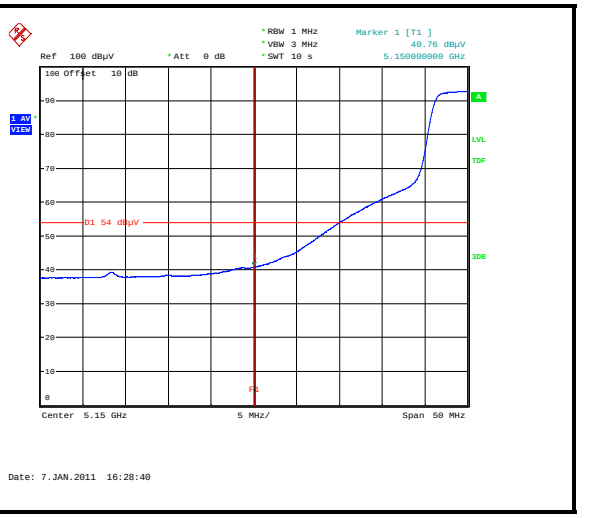
BandEdgeAg_UNII_1_802_11N_39MBS_TopChannel

Transmitter Band Edge Radiated Emissions (continued)

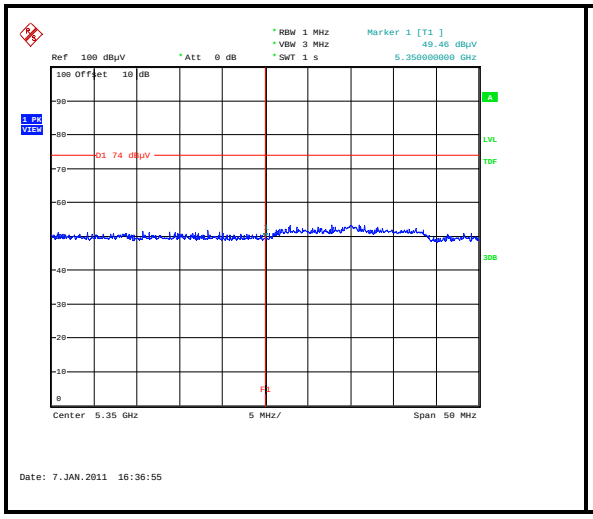
Plots - 802.11n - 5150 to 5250 MHz band



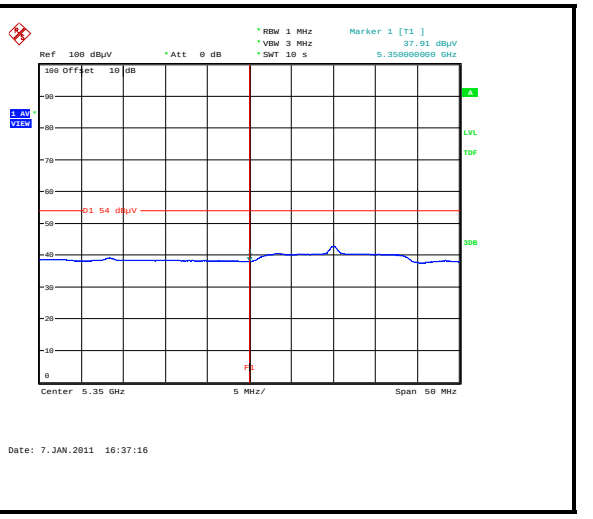
BandEdgePk_UNII_1_802_11N_52MBS_BottomChannel



BandEdgeAg_UNII_1_802_11N_52MBS_BottomChannel



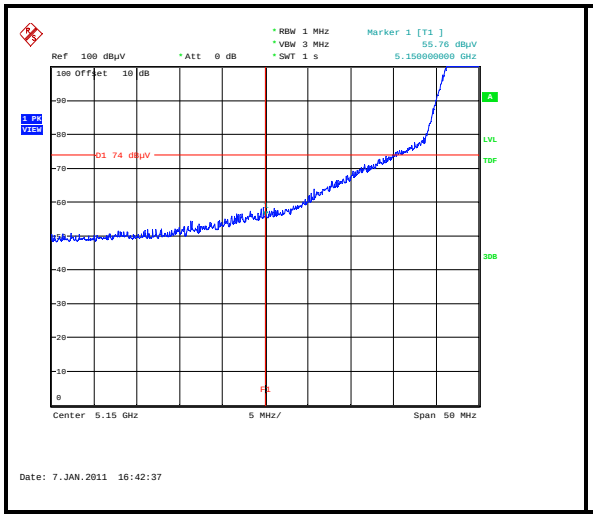
BandEdgePk_UNII_1_802_11N_52MBS_TopChannel



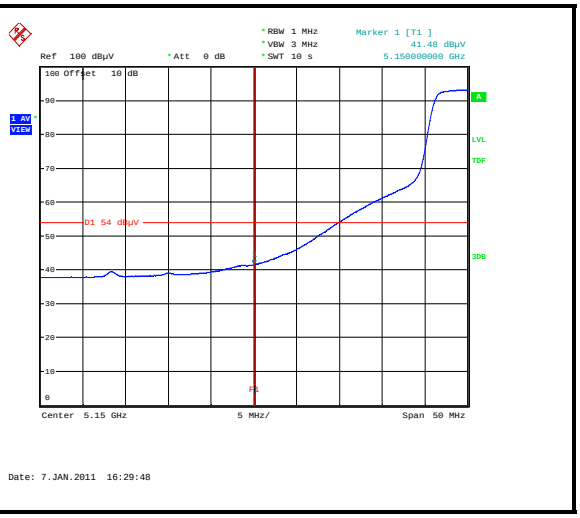
BandEdgeAg_UNII_1_802_11N_52MBS_TopChannel

Transmitter Band Edge Radiated Emissions (continued)

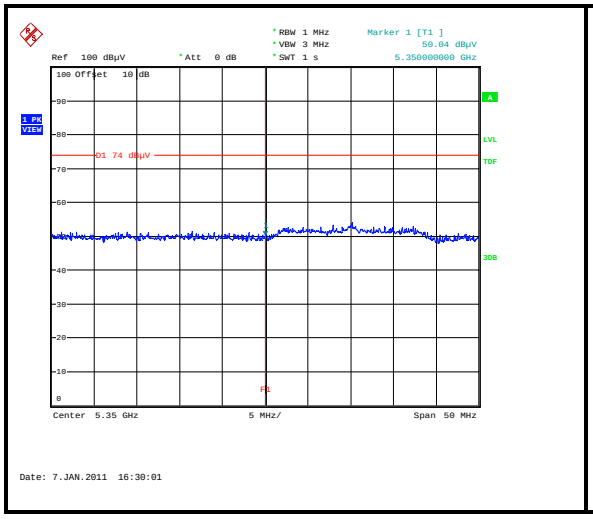
Plots - 802.11n - 5150 to 5250 MHz band



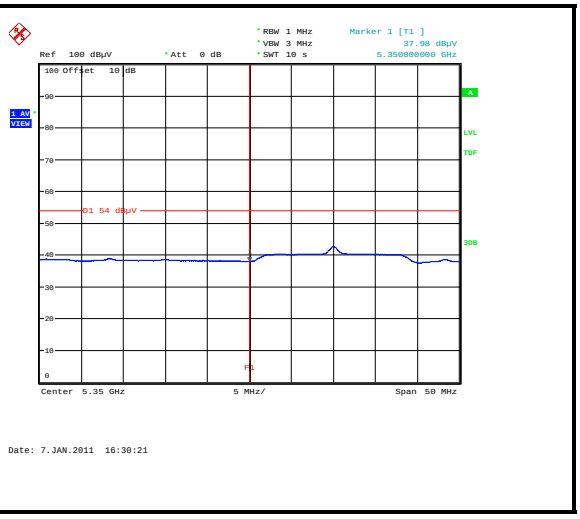
BandEdgePk_UNII_1_802_11N_58.5MBS_BottomChannel



BandEdgeAg_UNII_1_802_11N_58.5MBS_BottomChannel



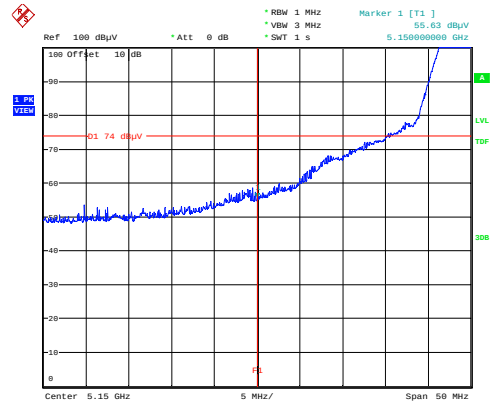
BandEdgePk_UNII_1_802_11N_58.5MBS_TopChannel



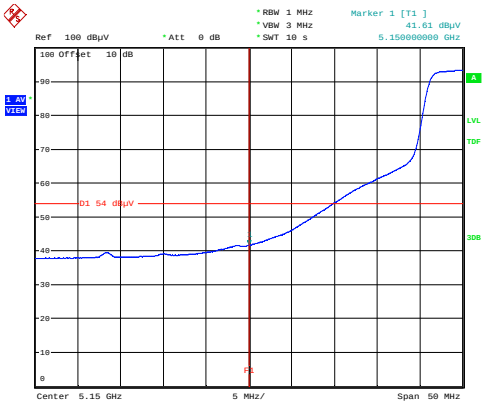
BandEdgeAg_UNII_1_802_11N_58.5MBS_TopChannel

Transmitter Band Edge Radiated Emissions (continued)

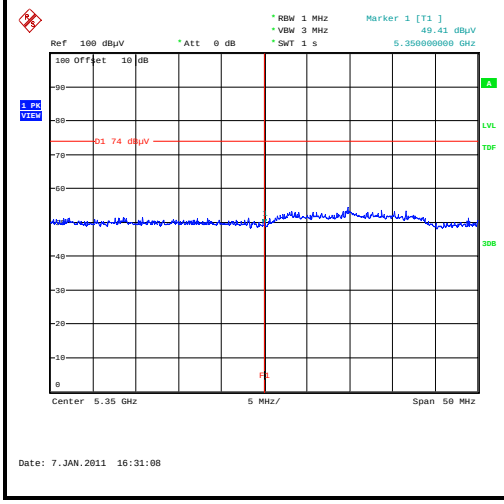
Plots - 802.11n - 5150 to 5250 MHz band



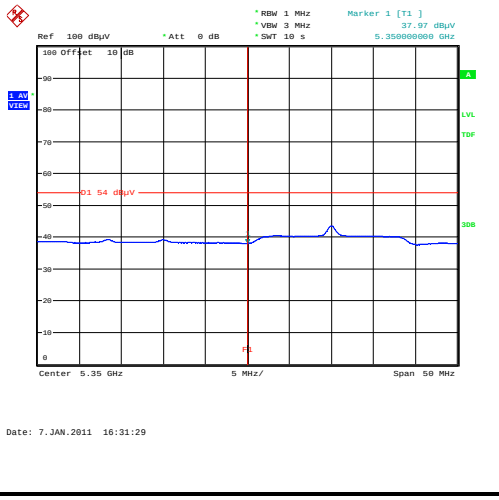
BandEdgePk_UNII_1_802_11N_65MBS_BottomChannel



BandEdgeAg_UNII_1_802_11N_65MBS_BottomChannel



BandEdgePk_UNII_1_802_11N_65MBS_TopChannel



BandEdgeAg_UNII_1_802_11N_65MBS_TopChannel

5.2.11. Transmitter Frequency Stability (Temperature Variation)

Test Summary:

Test Engineer:	ND	**Test Date:**	03 December 2010
Test Sample Serial No:	ID 3		

FCC/IC Part:	15.407(g) and RSS-Gen 4.7 / RSS210 A9.5(5)
Test Method Used:	Using the procedures detailed in ANSI C63.10 Section 6.8.1 and 6.8.2 and the following method: The EUT was operated at the maximum output power and connected to the spectrum analyzer which was set to max hold using a peak detector. The peak value of the power envelope was measured and noted. The lower frequency point of the channel closest to the lower band edge and the upper frequency point of the channel closest to the upper band edge were measured at the -26 dB point relative to the measured peak value. These are the value recorded in the tables below and these must remain with the allocated band at all times. The mode tested was 802.11a 6Mbps as this was the most robust.

Environmental Conditions:

Temperature (°C):	22
Relative Humidity (%):	26

Frequency stability of the EUT with variations in ambient temperature

Results

6MBS/802.11A			**Time after Start-up**			
			0 minutes	**2 minutes**	**5 minutes**	**10 minutes**
Channel	**Nominal Frequency (MHz)**	**Temperature (°C)**	**Frequency (MHz)**	**Frequency (MHz)**	**Frequency (MHz)**	**Frequency (MHz)**
Bottom	5180	-30	5171.330	5171.330	5171.330	5171.330
Bottom	5180	-20	5171.217	5171.217	5171.217	5171.217
Bottom	5180	-10	5171.217	5171.217	5171.217	5171.217
Bottom	5180	0	5171.330	5171.330	5171.330	5171.330
Bottom	5180	10	5171.443	5171.443	5171.443	5171.443
Bottom	5180	20	5171.444	5171.444	5171.444	5171.444
Bottom	5180	30	5171.443	5171.443	5171.443	5171.443
Bottom	5180	40	5171.443	5171.443	5171.443	5171.443
Bottom	5180	50	5171.443	5171.443	5171.443	5171.443

Transmitter Frequency Stability (Temperature Variation) (continued)

Results

6MBS/802.11A			Time after Start-up			
			0 minutes	2 minutes	5 minutes	10 minutes
Channel	**Nominal Frequency (MHz)**	**Temperature (°C)**	**Frequency (MHz)**	**Frequency (MHz)**	**Frequency (MHz)**	**Frequency (MHz)**
Top	5240	-30	5248.896	5248.896	5248.896	5248.896
Top	5240	-20	5248.782	5248.782	5248.782	5248.782
Top	5240	-10	5248.669	5248.669	5248.669	5248.669
Top	5240	0	5248.669	5248.669	5248.669	5248.669
Top	5240	10	5248.556	5248.556	5248.556	5248.556
Top	5240	20	5248.556	5248.556	5248.556	5248.556
Top	5240	30	5248.497	5248.497	5248.497	5248.497
Top	5240	40	5248.442	5248.442	5248.442	5248.442
Top	5240	50	5248.442	5248.442	5248.442	5248.442

Transmitter Frequency Stability (Voltage Variation)

Results

Channel	Nominal Frequency (MHz)	Supply Voltage (V)	Frequency (MHz)	Band Edge (MHz)	Margin (MHz)	Result
Bottom	5180	3.3	5171.444	5150	21.444	Complied
Bottom	5180	5.0	5171.444	5150	21.444	Complied
Bottom	5180	5.5	5171.444	5150	21.444	Complied
Top	5240	3.3	5248.556	5250	1.444	Complied
Top	5240	5.0	5248.556	5250	1.444	Complied
Top	5240	5.5	5248.556	5250	1.444	Complied

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%	±4.05 dB
Maximum Conducted Output Power	5.15 GHz to 5.825 GHz	95%	±0.27 dB
Peak Power Spectral Density	5.15 GHz to 5.825 GHz	95%	±0.27 dB
Peak Excursion	5.15 GHz to 5.825 GHz	95%	±0.27 dB
Power Control	5.25 GHz to 5.725 GHz	95%	±0.27 dB
99% / 26 dB Emission Bandwidth	5.15 GHz to 5.825 GHz	95%	±0.92 ppm
Frequency Stability	5.15 GHz to 5.825 GHz	95%	±0.92 ppm
Radiated Spurious Emissions	30 MHz to 40 GHz	95%	±4.68 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.

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
A1069	Single Phase LISN	Rohde & Schwarz	ESH3-Z5	837469/012	07 Apr 2012	12
A1256	Power Supply Unit	Farnell	11E30/1B	000378	06 Jun 2011	12
A1534	Pre Amplifier	Hewlett Packard	8449B	3008A00405	06 Jun 2011	12
A1818	Antenna	EMCO	3115	00075692	05 Sep 2011	12
A1999	Attenuator	Huber + Suhner AG	6820.17.B	07101	18 March 2012	12
A203	Antenna	Flann Microwave Ltd	22240-20	343	11 May 2013	36
A253	Antenna	Flann Microwave	12240-20	128	05 Sep 2011	12
A254	Antenna	Flann Microwave	14240-20	139	05 Sep 2011	12
A255	Antenna	Flann Microwave	16240-20	519	05 Sep 2011	12
A256	Antenna	Flann Microwave	18240-20	400	05 Sep 2011	12
A288	Antenna	Chase	CBL6111A	1589	05 Sep 2011	12
A436	Antenna	Flann	20240-20	330	05 Sep 2011	12
A553	Antenna	Chase	CBL6111A	1593	16 Mar 2011	12
G0543	Amplifier	Sonoma Instrument Co.	310N	230801	30 Jun 2011	12
K0001	5m Semi-Anechoic Chamber	Rainford EMC	N/A	N/A	25 Apr 2011	12
K0002	3m RSE Chamber	Rainford EMC	N/A	N/A	05 Sep 2011	12
L1001	Test Receiver	ROHDE & SCHWARZ	ESU26	100239	28 Jan 2011	12
M1124	Spectrum Analyser	Rohde & Schwarz	ESI26	100046K	22 Apr 2011	12
M1223	Environmental Chamber	Votsch	VT4002	5856607272 0010	Cal on use	N/A
M1249	Thermometer	Fluke	52II	88800049	05 Jul 2011	12
M1263	Test Receiver	Rohde & Schwarz	ESIB7	100265	28 Jun 2011	12
M127	Spectrum Analyser	Rohde & Schwarz	FSEB 30	842 659/016	05 July 2011	12
A1830	Pulse limiter	Rohde & Schwarz	ESH3-Z2	100668	05 March 2012	12
M1251	Digital Multimeter	Fluke	175	89170179	15 July 2012	12

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1081	DC power supply	Agilent Technologies	66311B	GB38440216	Cal on use	N/A

Asset numbers A553, K0001, L1001 and M1124 were in calibration during testing

NB In accordance with UKAS requirements all the measurement equipment is on a calibration schedule.