5. Additional provisions test (FCC 15.215)

5.1 Operating environment

Temperature:	25	℃
Relative Humidity:	50	%
Atmospheric Pressure:	1008	hPa

5.2 Procedure of test setup & limitation

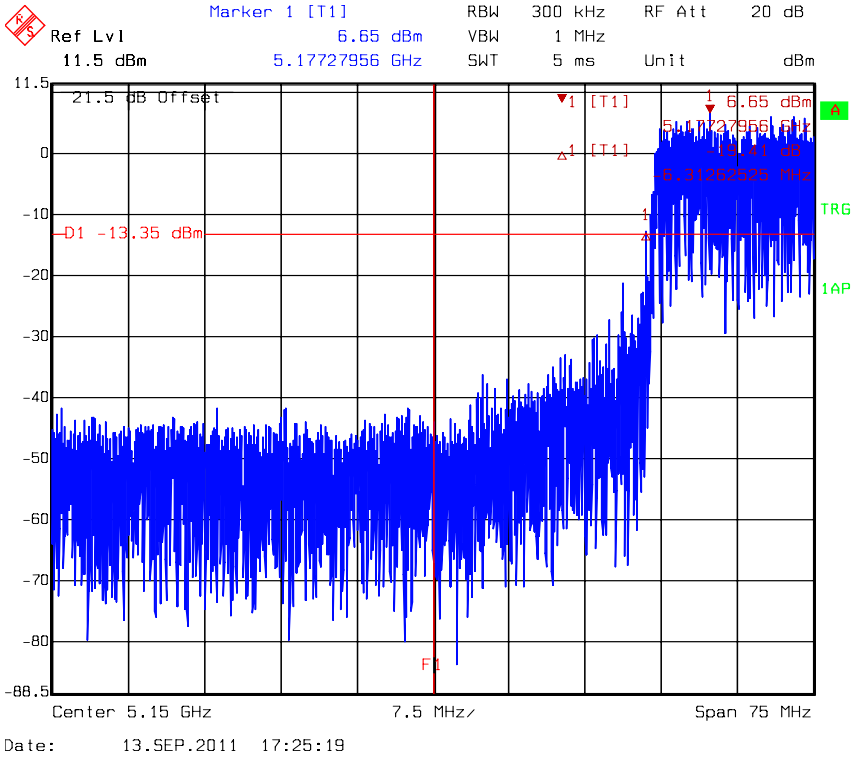
Method of Measurement:

The additional provisions mean the device must be designed to ensure that the 20dB bandwidth of the emission or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

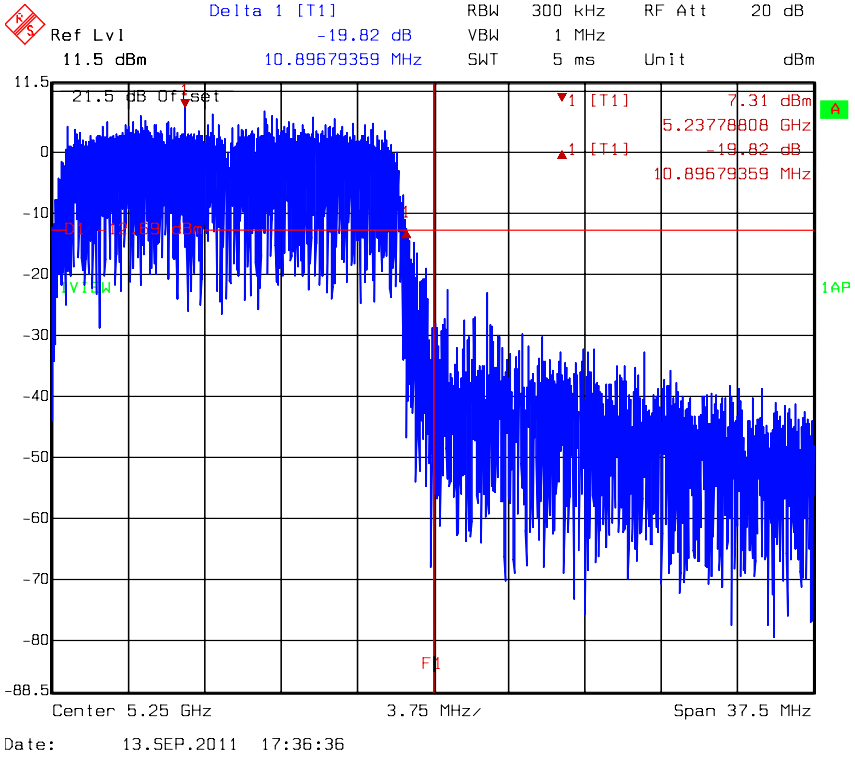
This requirement per FCC §15.215 (c) was measured from the antenna port of the EUT using a 50ohm spectrum analyzer with the resolution bandwidth set at 300kHz (approximately 1% of the emission bandwidth), the video bandwidth set at 1MHz (VBW > RBW).

5.3 Measured data of Power Spectrum Density test results

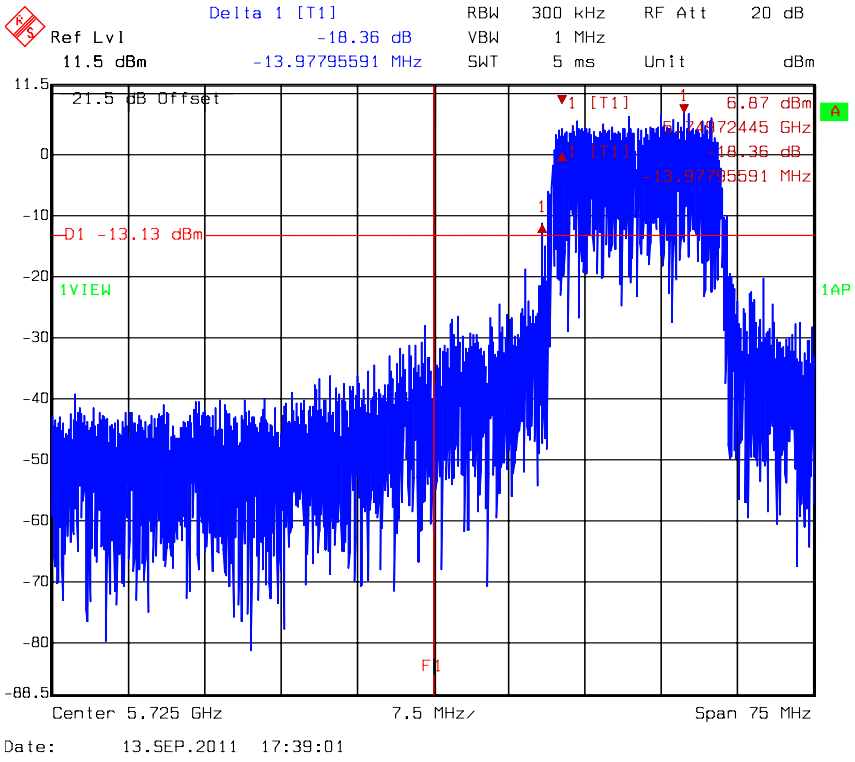
Chain 0: 802.11a mode channel 36



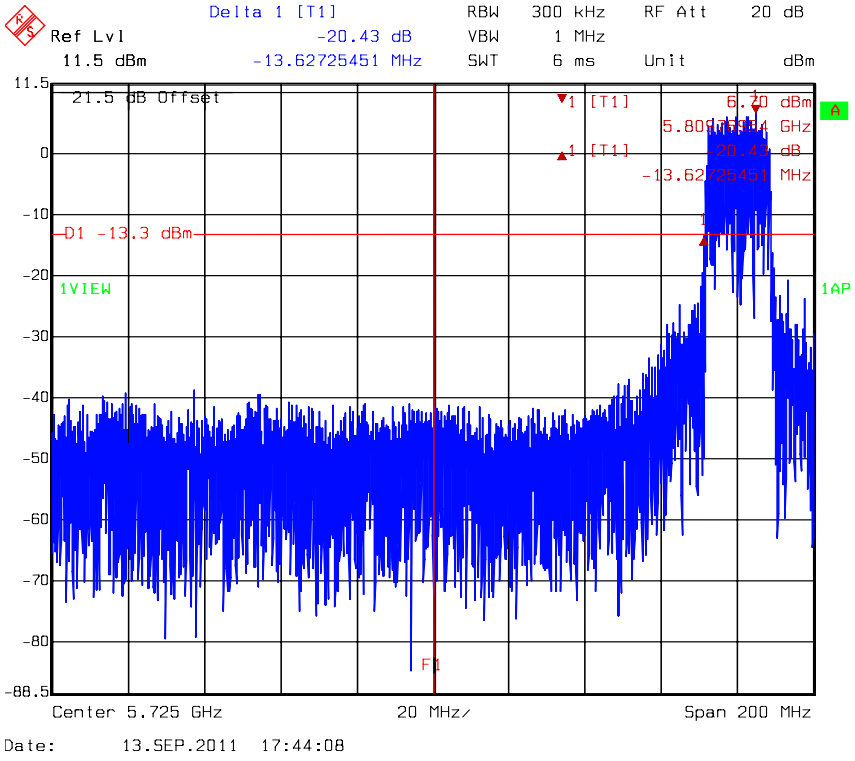
Chain 0: 802.11a mode channel 48



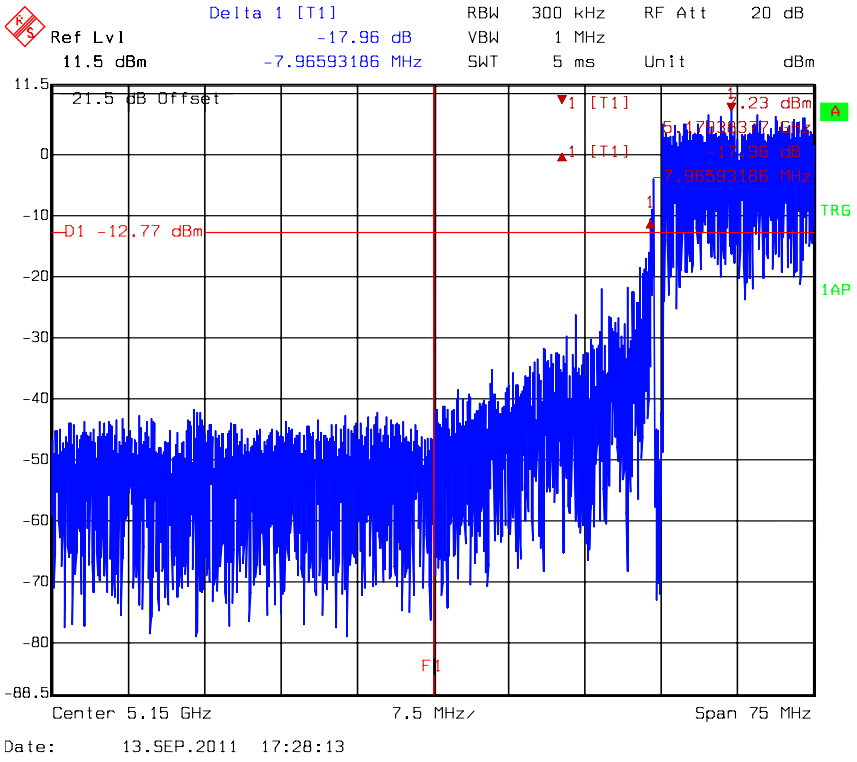
Chain 0: 802.11a mode channel 149



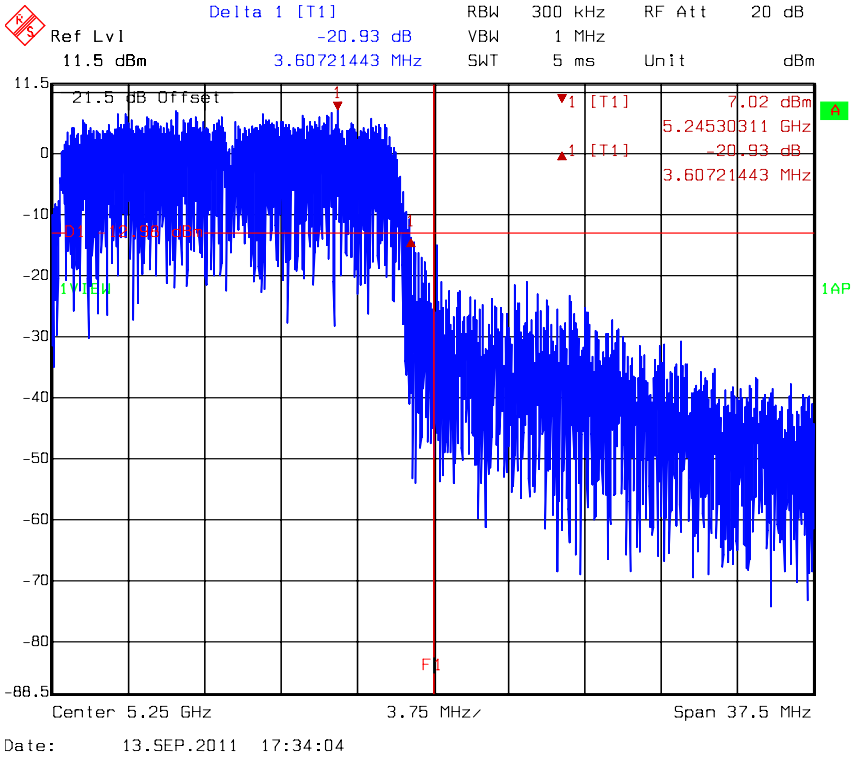
Chain 0: 802.11a mode channel 161



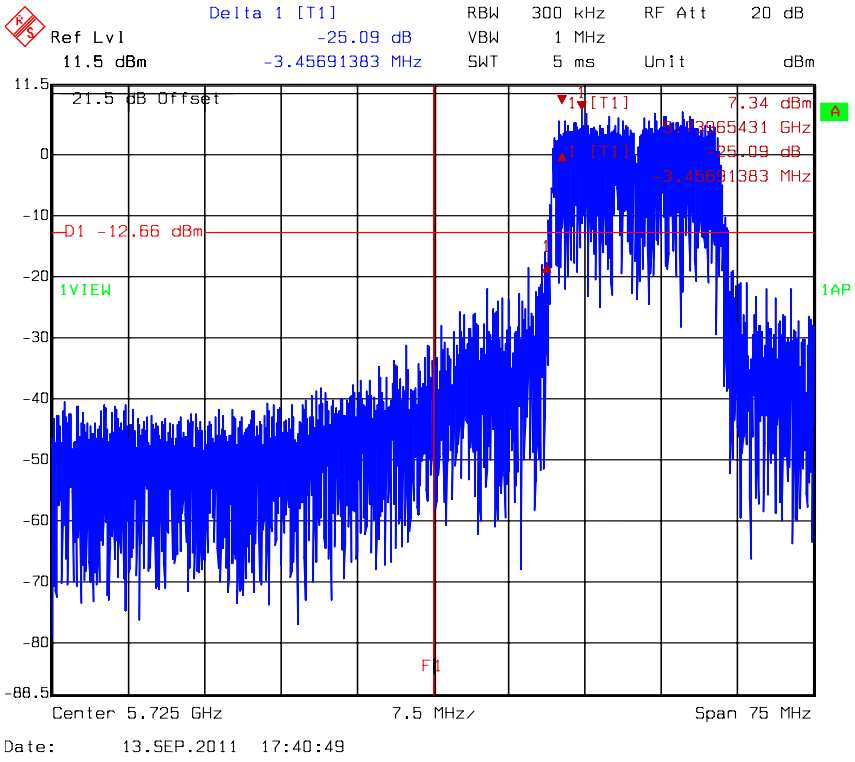
Chain 1: 802.11a mode channel 36



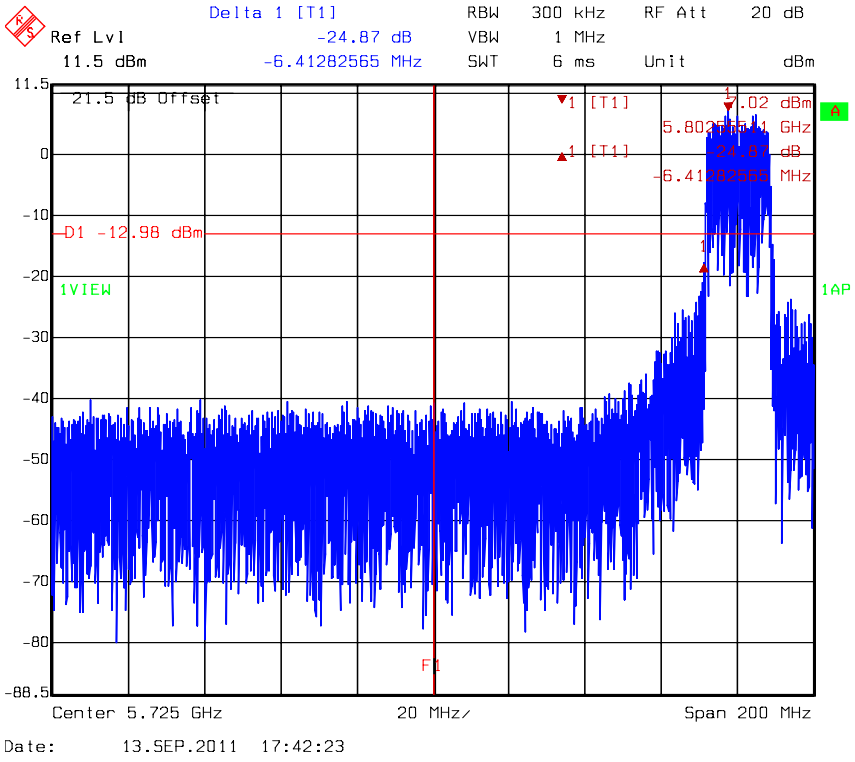
Chain 1: 802.11a mode channel 48



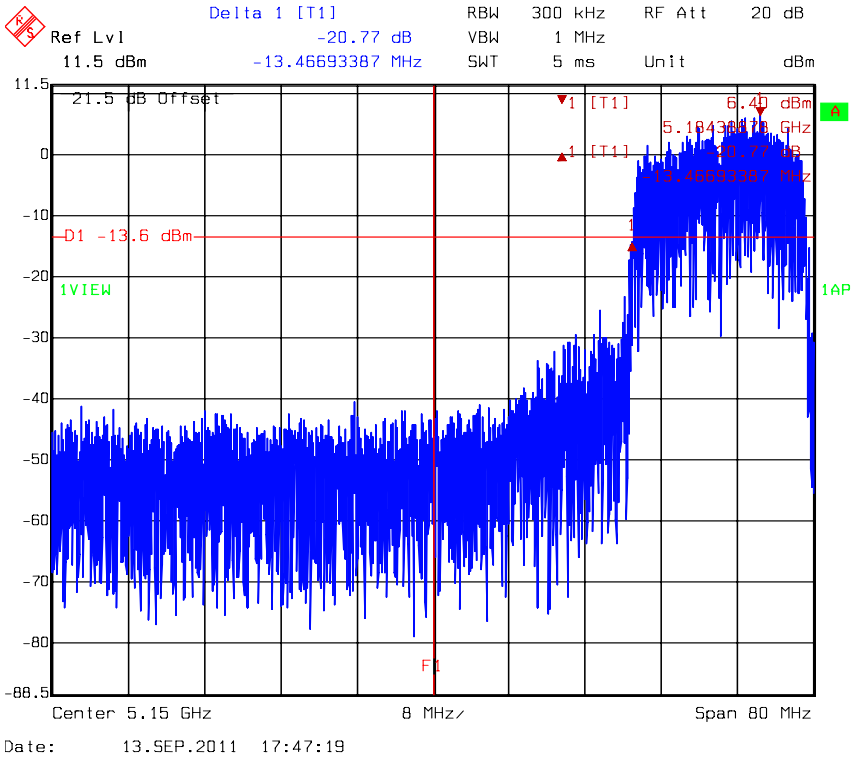
Chain 1: 802.11a mode channel 149



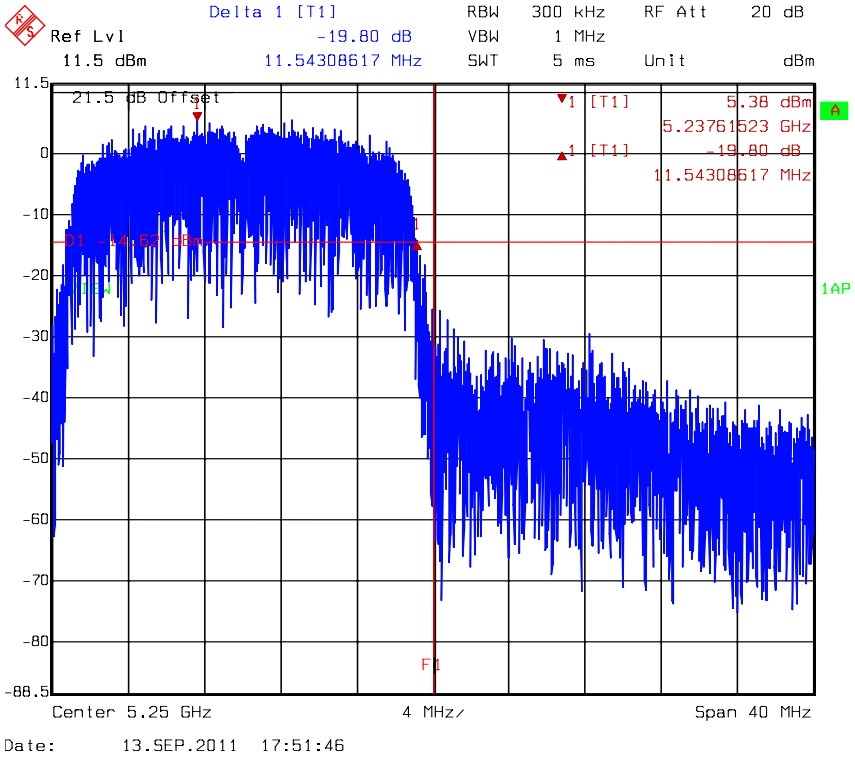
Chain 1: 802.11a mode channel 161



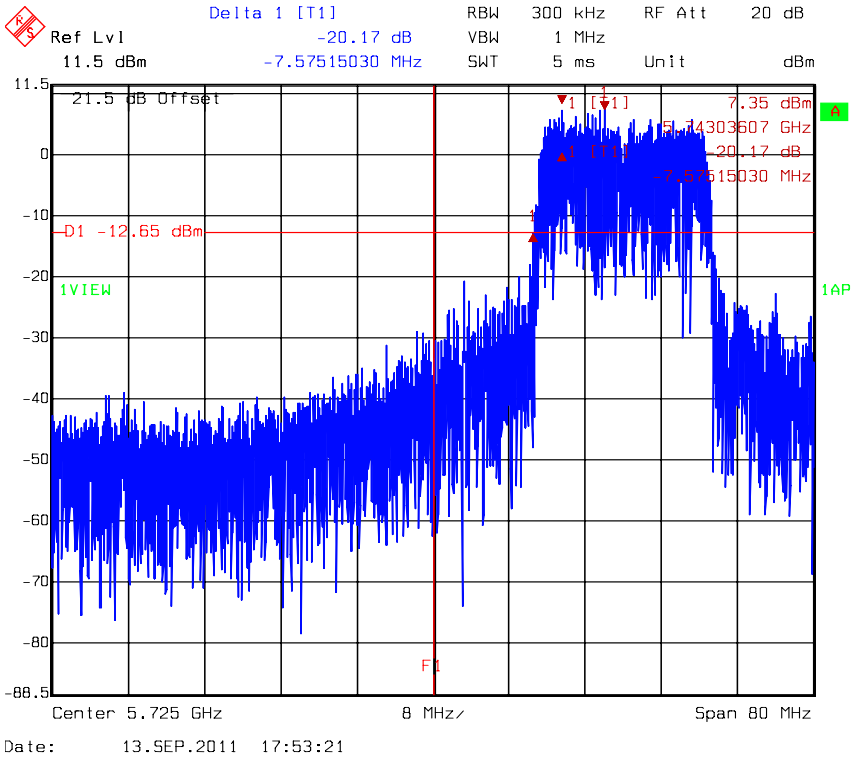
Chain 0: 802.11n HT20 mode channel 36



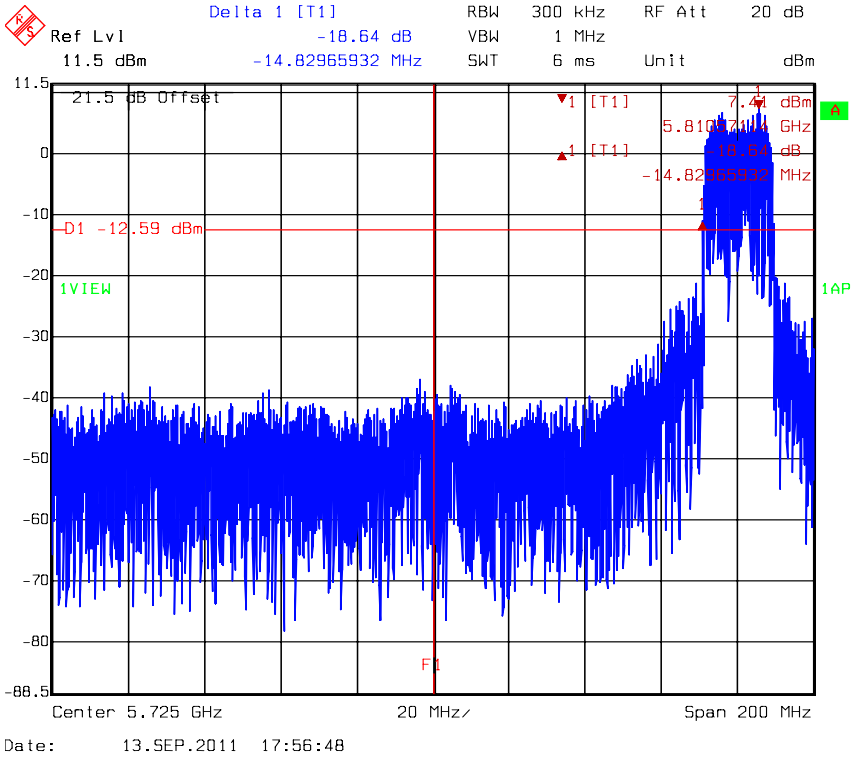
Chain 0: 802.11n HT20 mode channel 48



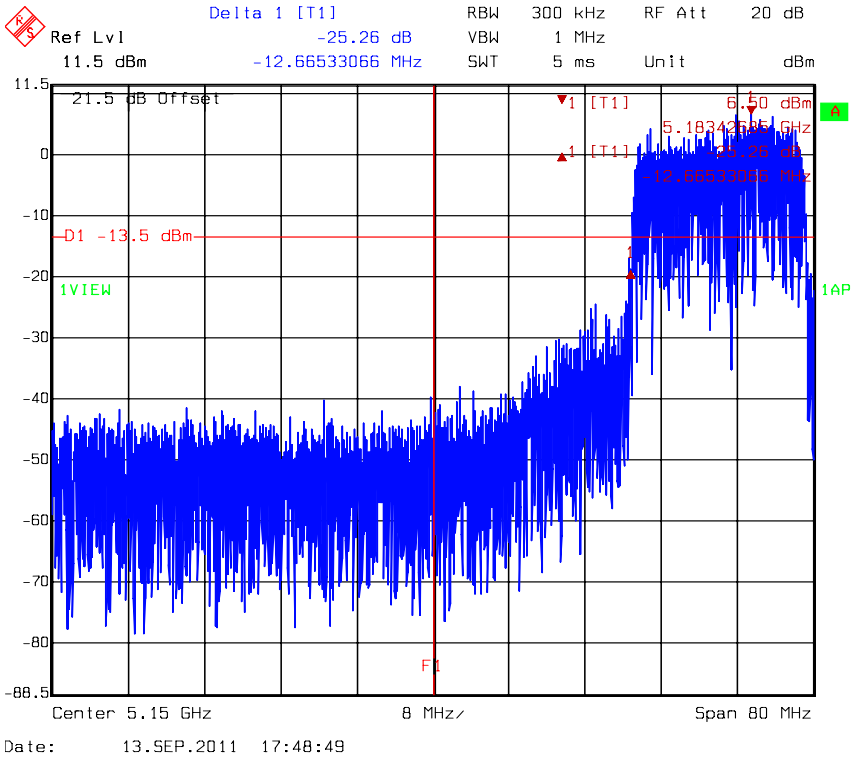
Chain 0: 802.11n HT20 mode channel 149



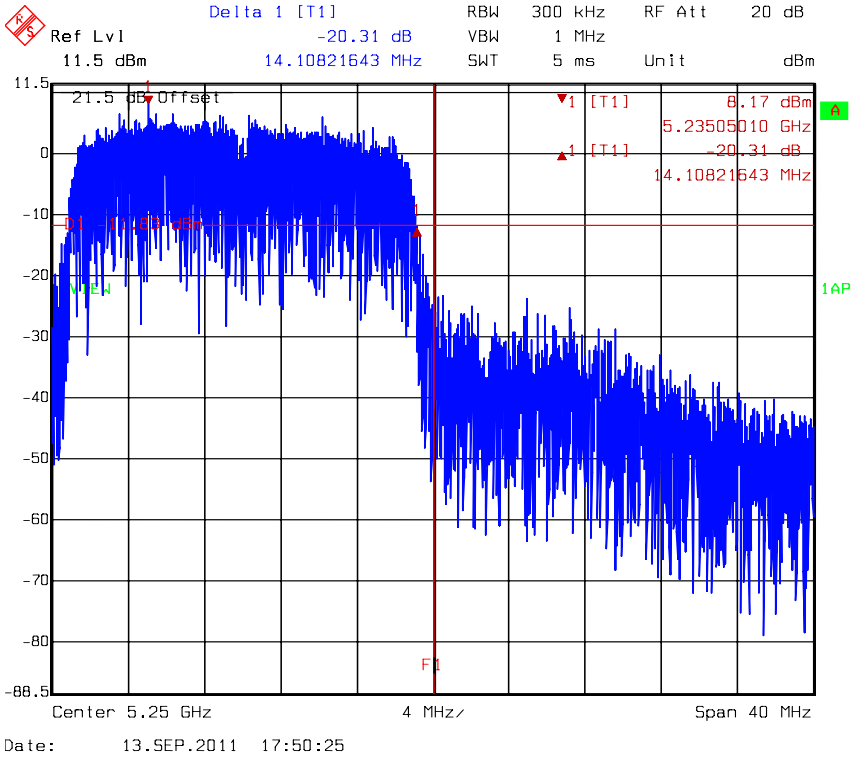
Chain 0: 802.11n HT20 mode channel 161



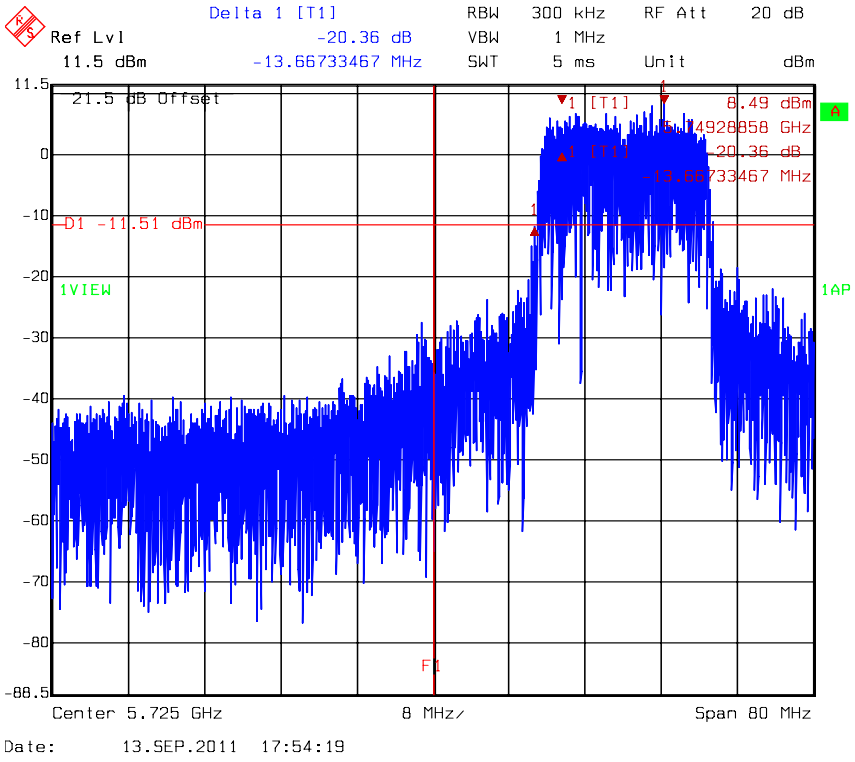
Chain 1: 802.11n HT20 mode channel 36



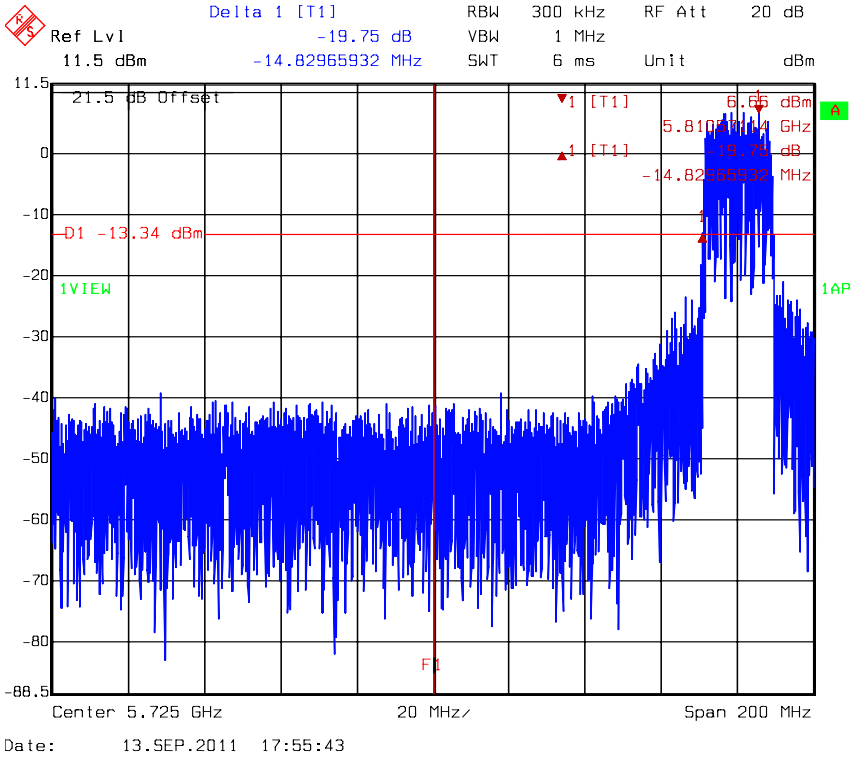
Chain 1: 802.11n HT20 mode channel 48



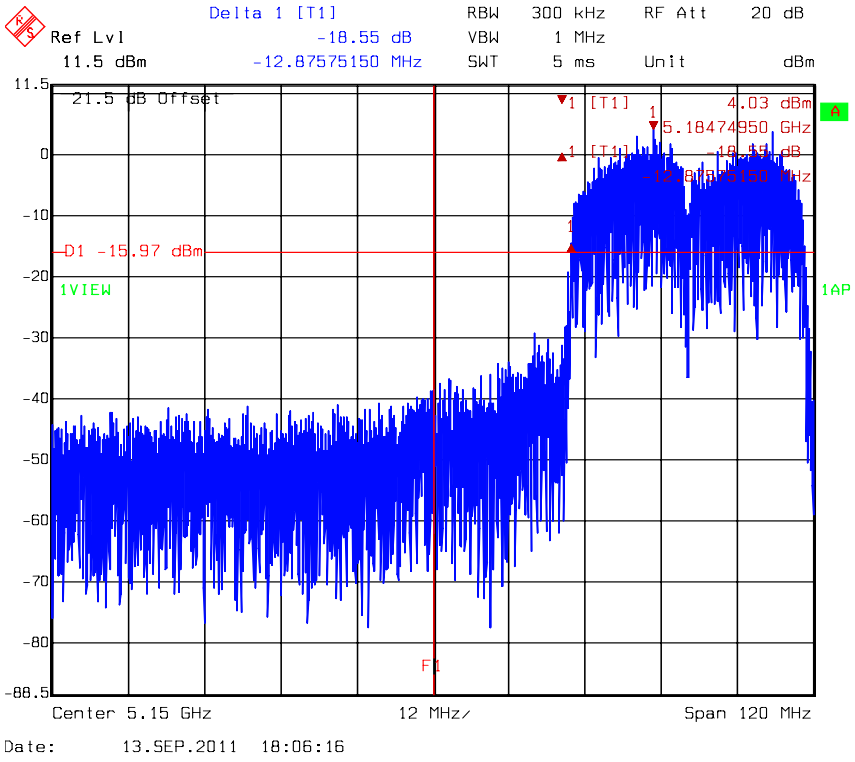
Chain 1: 802.11n HT20 mode channel 149



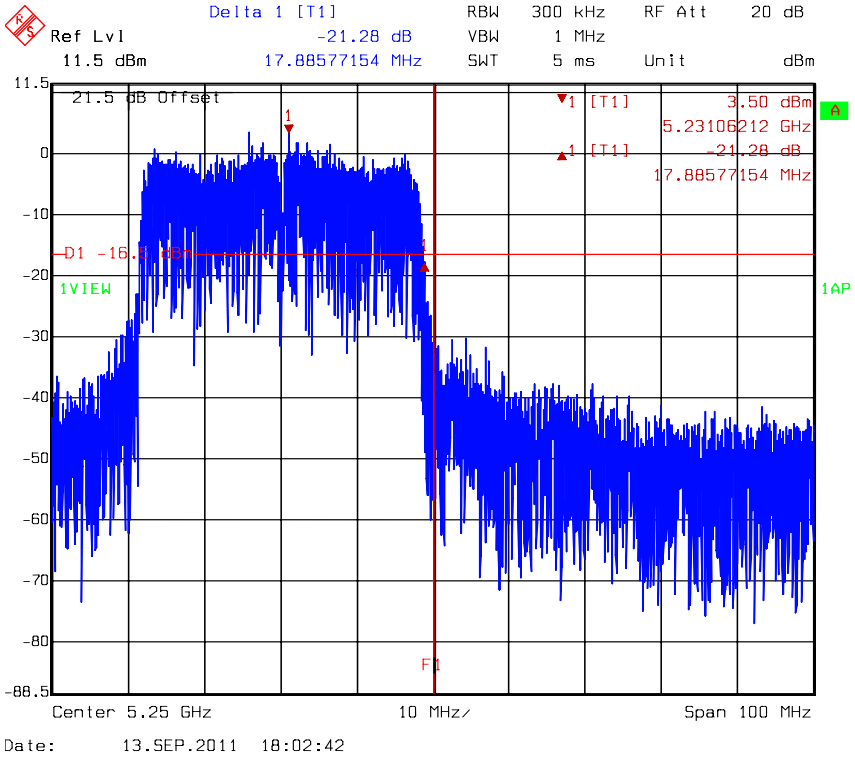
Chain 1: 802.11n HT20 mode channel 161



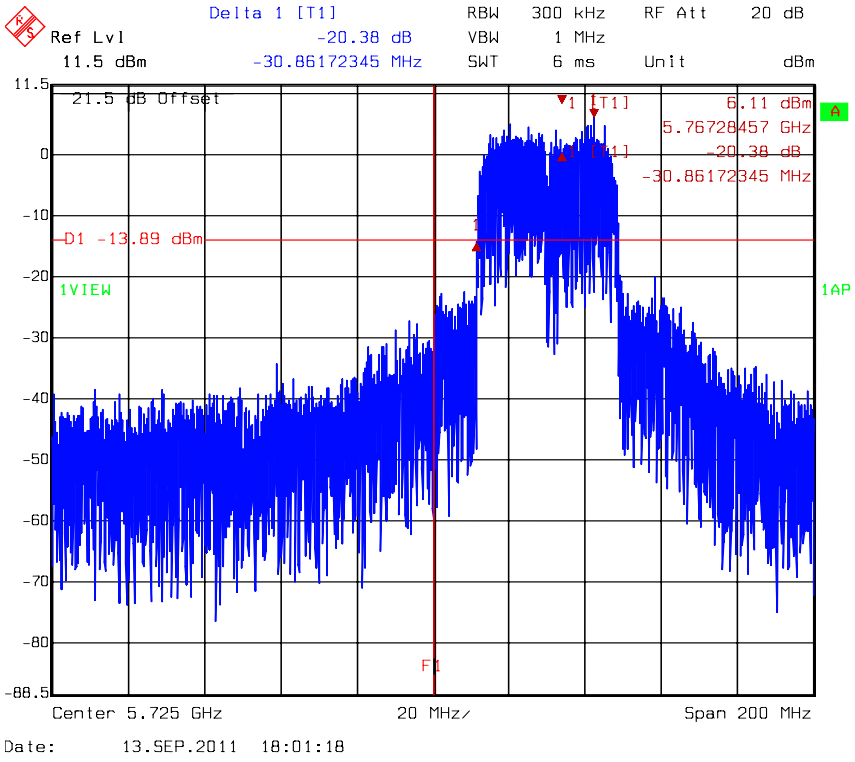
Chain 0: 802.11n HT40 mode channel 38



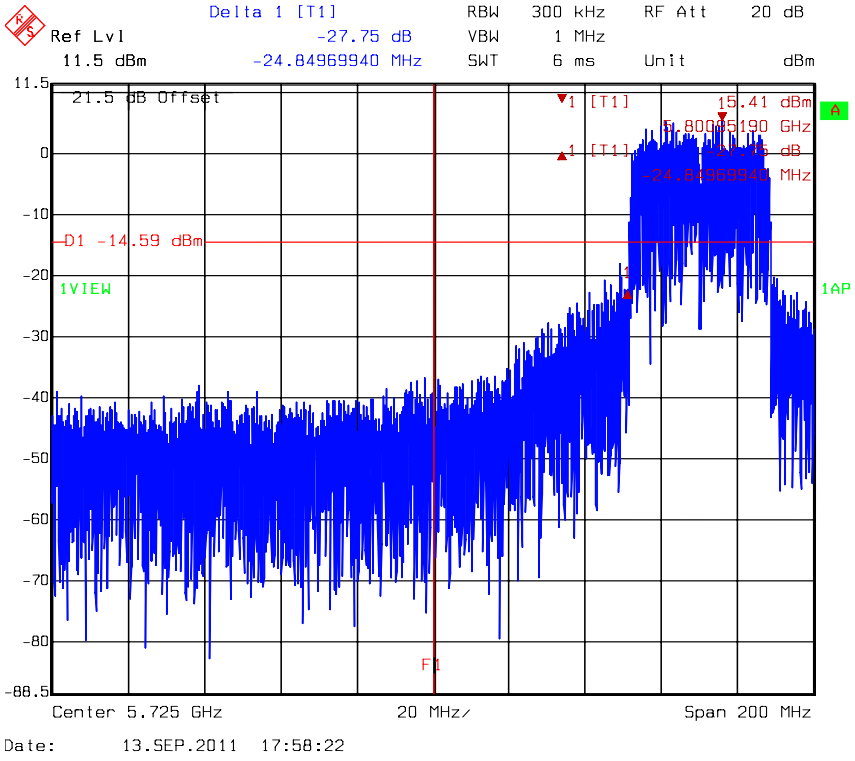
Chain 0: 802.11n HT40 mode channel 46



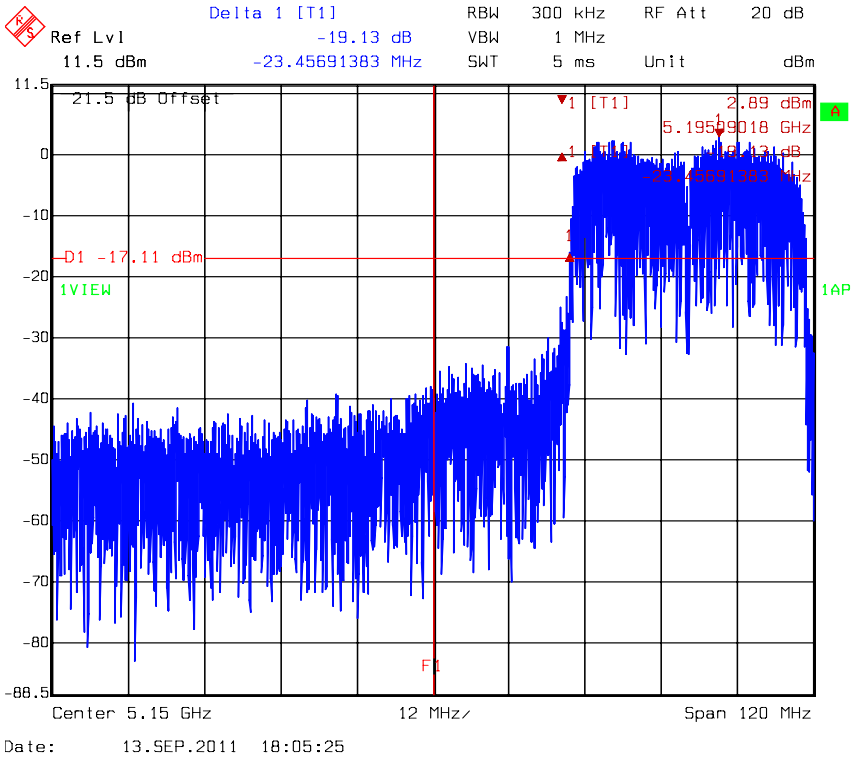
Chain 0: 802.11n HT40 mode channel 151



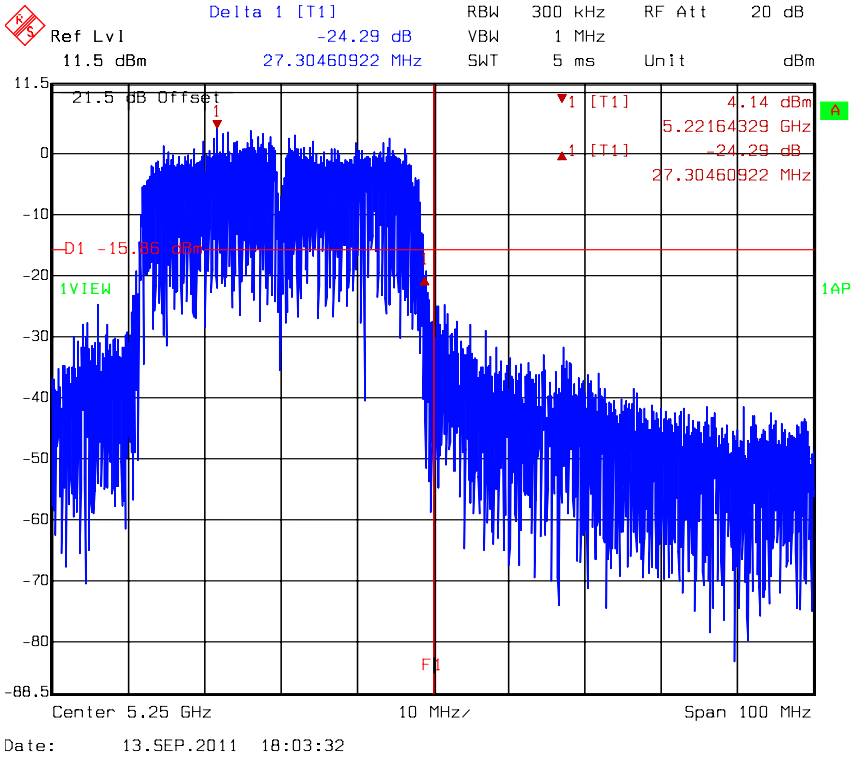
Chain 0: 802.11n HT40 mode channel 159



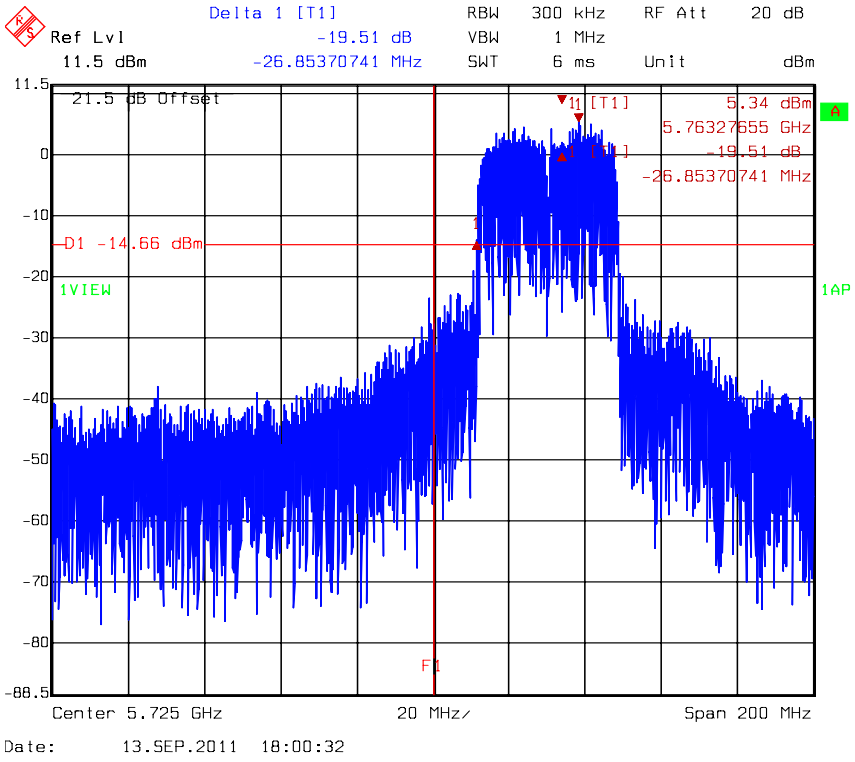
Chain 1: 802.11n HT40 mode channel 38



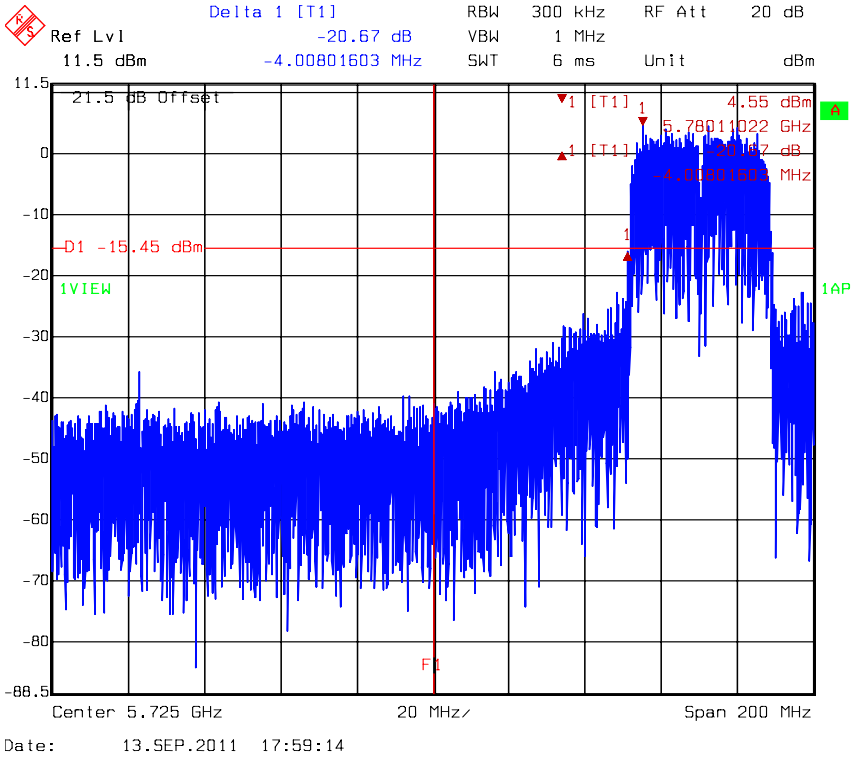
Chain 1: 802.11n HT40 mode channel 46



Chain 1: 802.11n HT40 mode channel 151



Chain 1: 802.11n HT40 mode channel 159



6. Peak excursion to average ratio test (FCC 15.407)

6.1 Operating environment

Temperature:	23	℃
Relative Humidity:	52	%
Atmospheric Pressure:	1008	hPa

6.2 Test setup & procedure

The power spectrum density per FCC §15.407(a)(6) was measured from the antenna port of the EUT. Using a 50ohm spectrum analyzer with the RBW=1MHz, VBW=3MHz for peak measurement and RBW=1MHz, VBW=10 kHz for average measurement. Peak excursion to average ratio was read directly.

Set the spectrum analyzer span to view the entire emission bandwidth. The largest difference between the following two traces must be ≤ 13 dB for all frequencies across the emission bandwidth. Submit a plot.

1st Trace:
Step: Set RBW = 1 MHz, VBW ≥ 3 MHz with peak detector and maxhold settings.

2nd Trace:
Step 1: Set span to encompass the entire emission bandwidth (EBW) of the signal.
Step 2: Set RBW = 1 MHz.
Step 3: Set VBW ≥ 3 MHz.
Step 4: Use sample detector mode if bin width (i.e., span/number of points in spectrum display) < 0.5 RBW. Otherwise use peak detector mode.
Step 5: Use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at full control power for entire sweep of every sweep.If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to “free run”.
Step 6: Trace average 100 traces in power averaging mode.

6.3 Limitation

Operating Frequency (MHz)	Peak excursion to average ratio limit
5150~5250	<13dB
5250~5350, 5470~5725	<13dB
5725~5825	<13dB

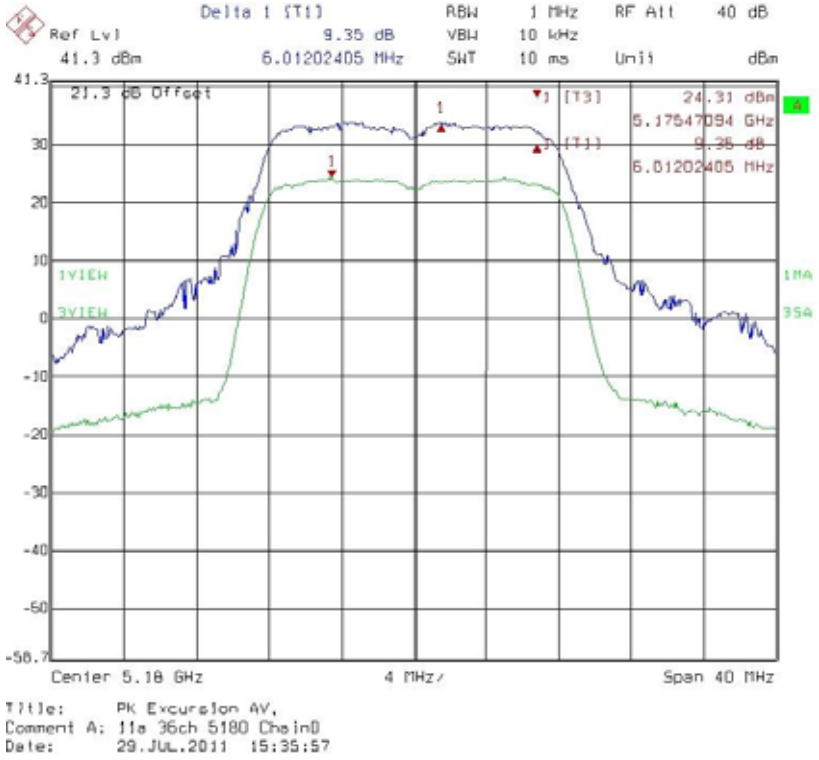
6.4 Measured data of Peak excursion to average ratio test results

Mode	Channel	Frequency (MHz)	Data rate (Mbps)	PK excursion (dBm)	Limit (dBm)	Margin (dB)
802.11a (DAC 0)	36	5180	6	9.35	13	-3.65
	40	5200		9.31	13	-3.69
	48	5240		9.40	13	-3.60
	149	5745		9.49	13	-3.51
	157	5785		9.28	13	-3.72
	161	5805		9.49	13	-3.51
802.11a (DAC 1)	36	5180		9.38	13	-3.62
	40	5200		9.24	13	-3.76
	48	5240		9.31	13	-3.69
	149	5745		9.24	13	-3.76
	157	5785		9.28	13	-3.72
	161	5805		9.46	13	-3.54

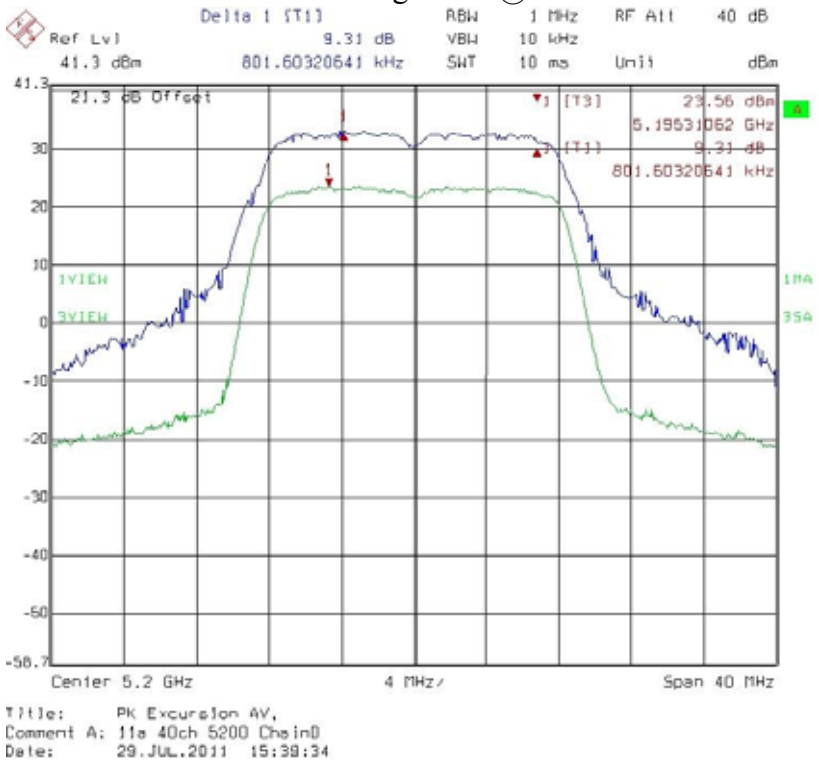
Mode	Channel	Frequency (MHz)	Data rate (Mbps)	PK excursion (dBm)		Limit (dBm)	Margin (dBm)	
				DAC 0	DAC 1		DAC 0	DAC 1
802.11n HT20	36	5180	6.5	9.31	9.35	13	-3.69	-3.65
	40	5200		9.11	9.61	13	-3.89	-3.39
	48	5240		9.39	9.59	13	-3.61	-3.41
	149	5745		9.42	9.52	13	-3.58	-3.48
	157	5785		9.49	9.70	13	-3.51	-3.30
	161	5805		9.04	9.52	13	-3.96	-3.48
802.11n HT40	36	5180	13	9.89	10.41	13	-3.11	-2.59
	40	5200		9.49	10.47	13	-3.51	-2.53
	48	5240		9.85	10.46	13	-3.15	-2.54
	149	5745		9.61	10.53	13	-3.39	-2.47

Please see the plot below.

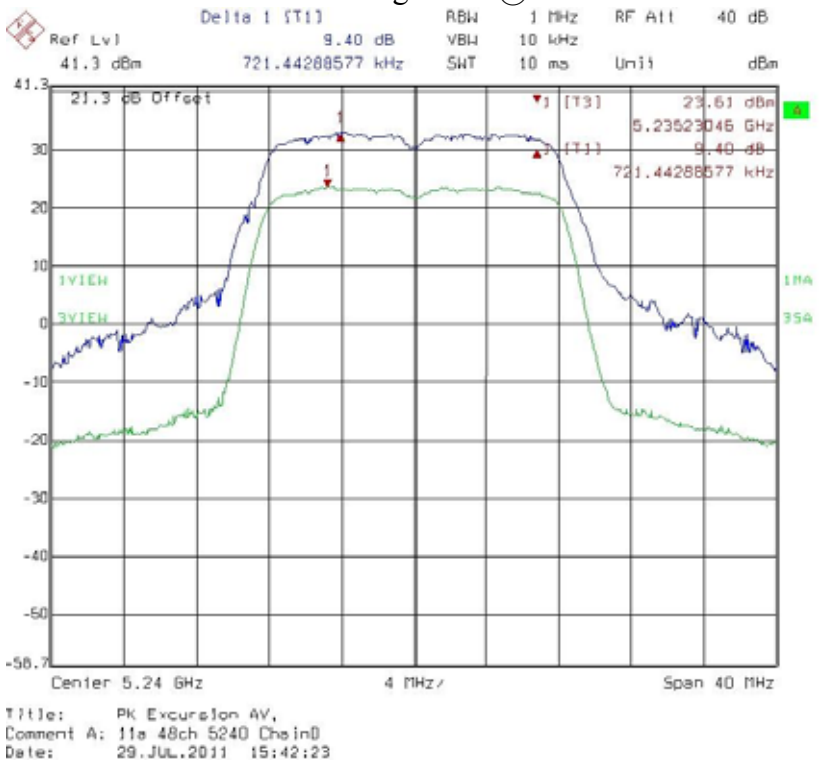
Chain 0: Peak excursion to average ratio @ 802.11a mode channel 36



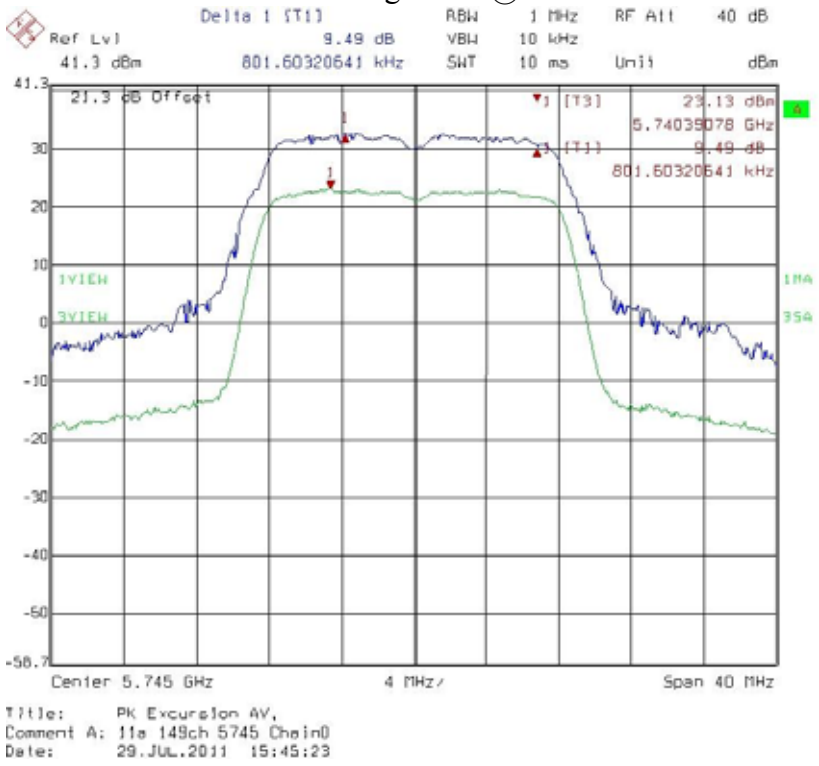
Chain 0: Peak excursion to average ratio @ 802.11a mode channel 40



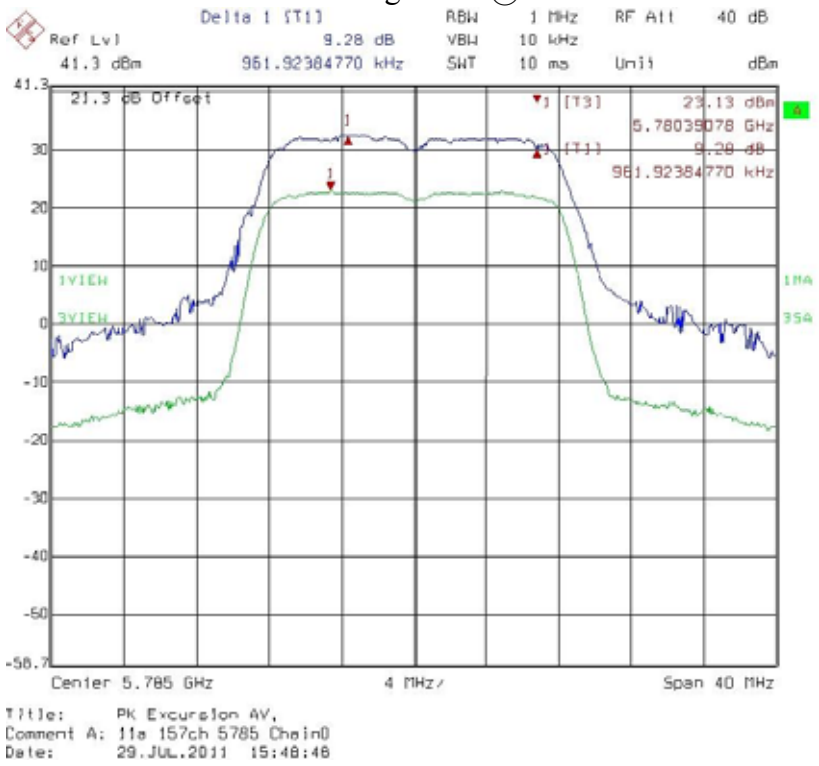
Chain 0: Peak excursion to average ratio @ 802.11a mode channel 48



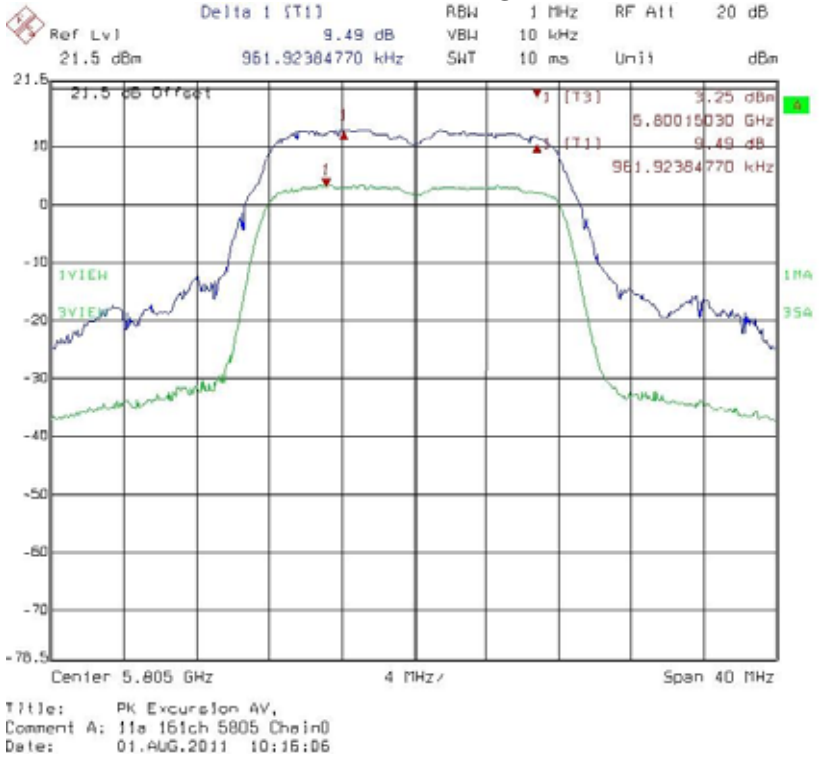
Chain 0: Peak excursion to average ratio @ 802.11a mode channel 149



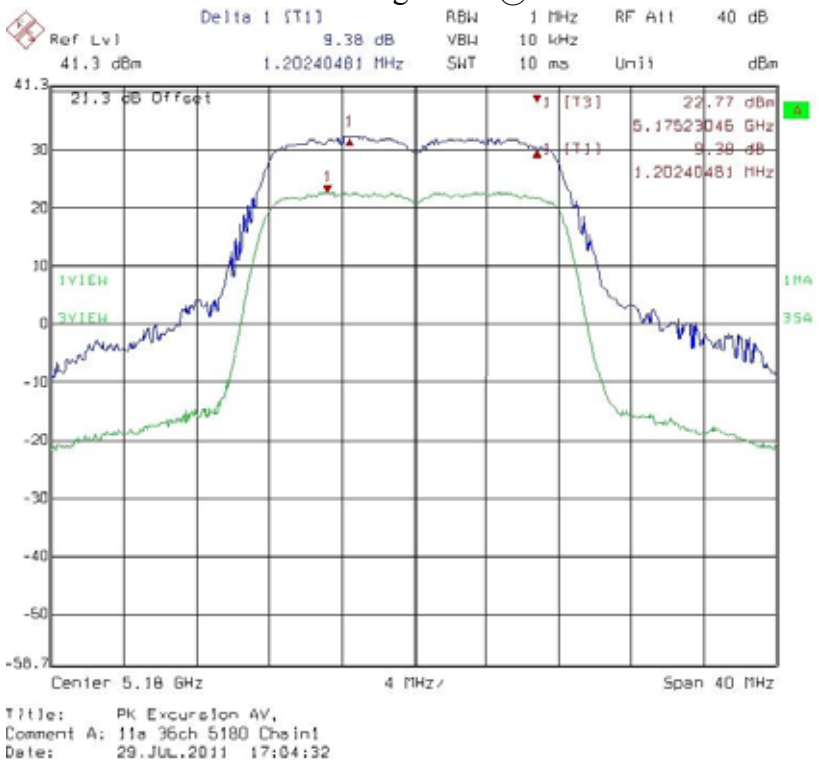
Chain 0: Peak excursion to average ratio @ 802.11a mode channel 157



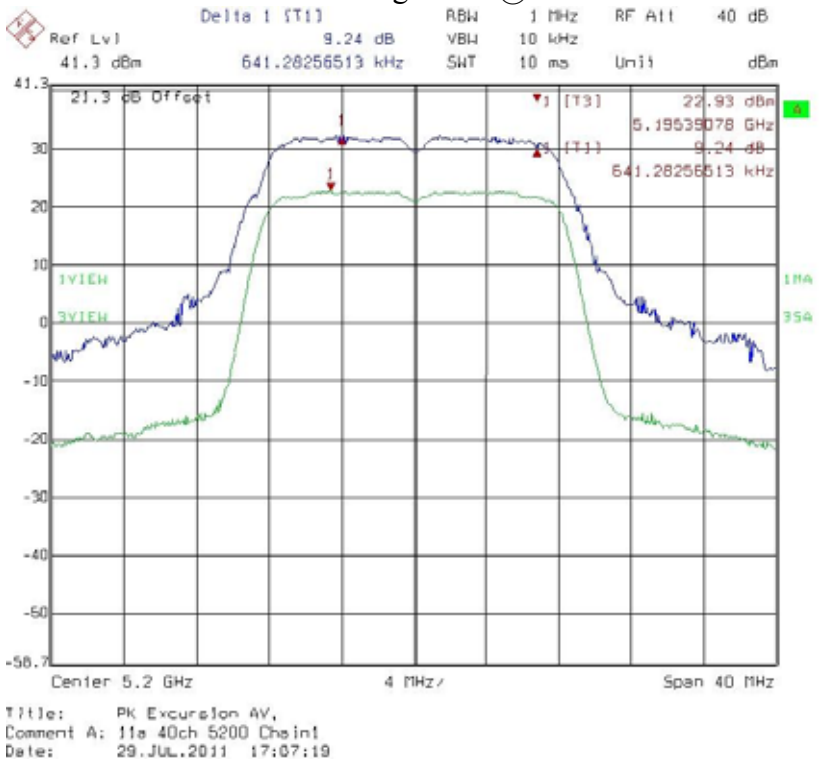
Chain 0: Peak excursion to average ratio @ 802.11a mode channel 161



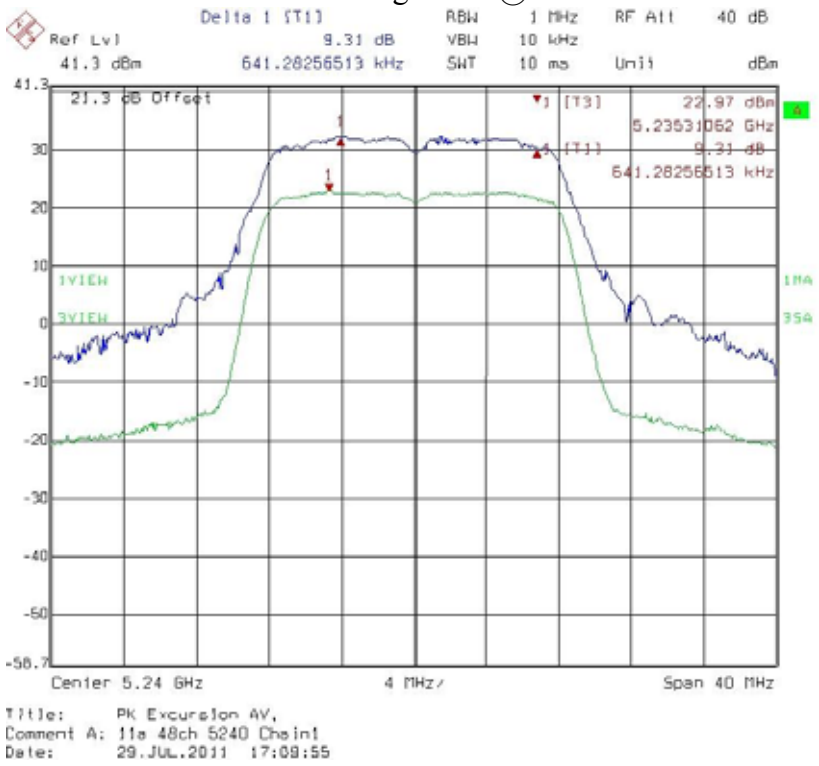
Chain 1: Peak excursion to average ratio @ 802.11a mode channel 36



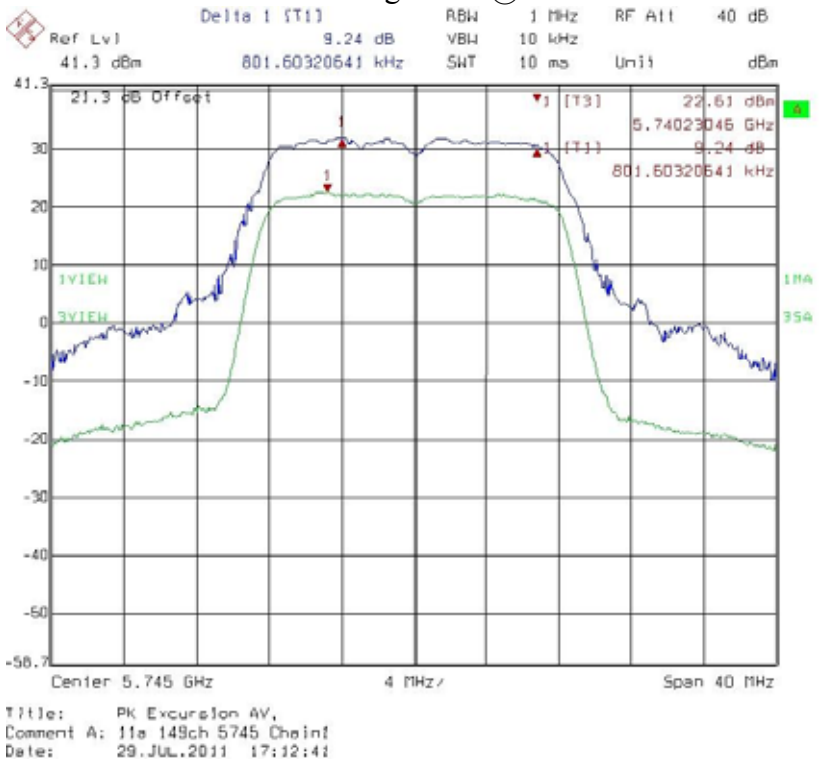
Chain 1: Peak excursion to average ratio @ 802.11a mode channel 40



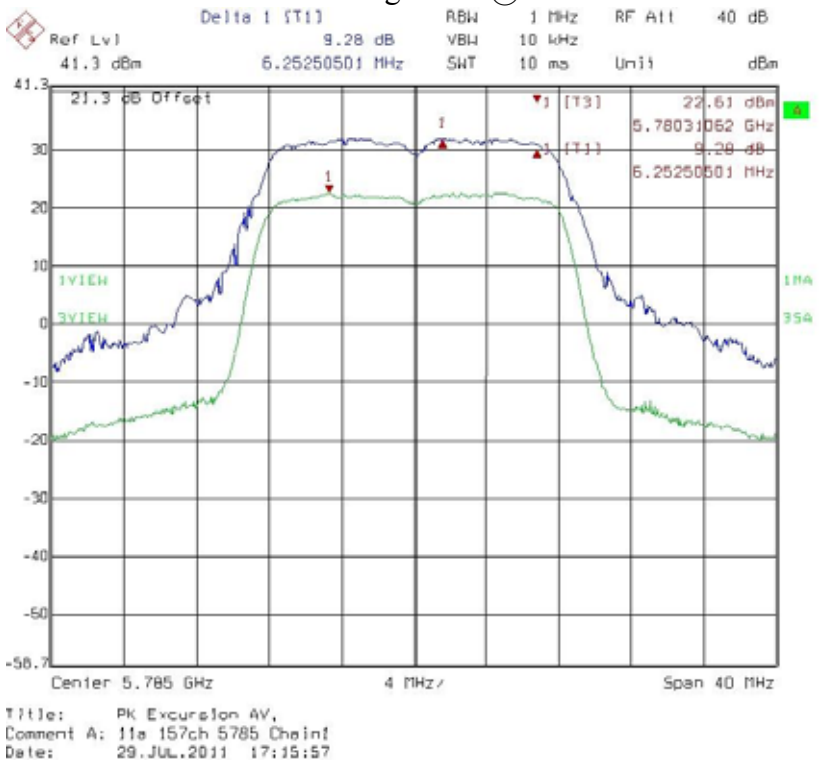
Chain 1: Peak excursion to average ratio @ 802.11a mode channel 48



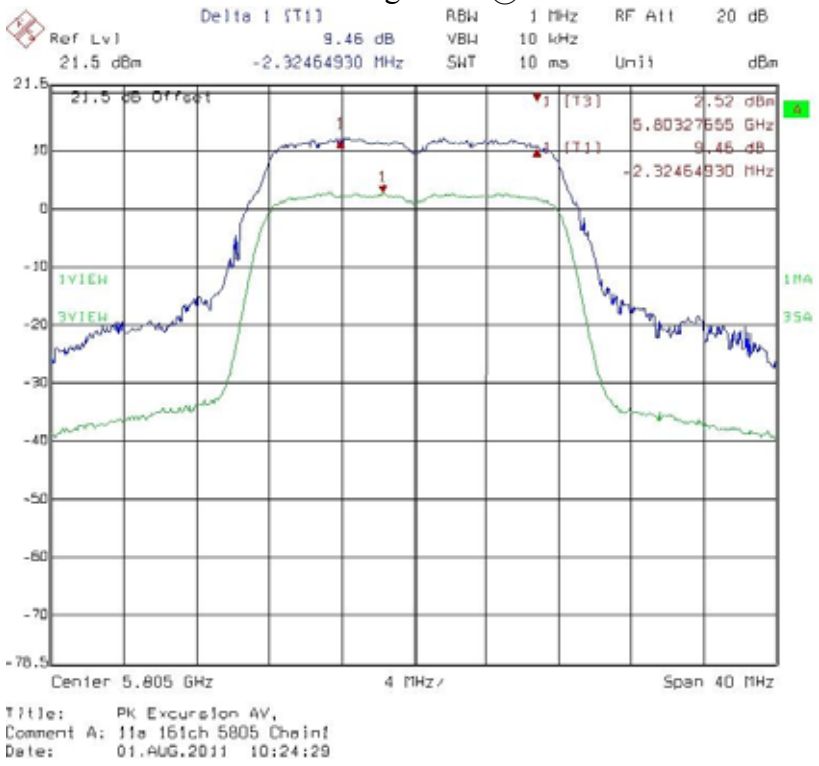
Chain 1: Peak excursion to average ratio @ 802.11a mode channel 149



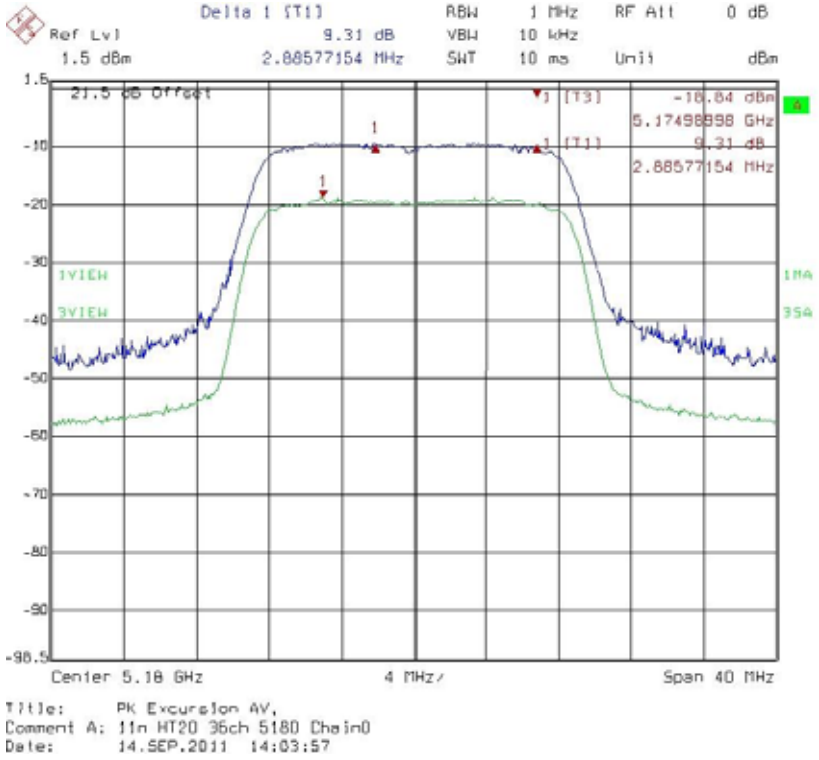
Chain 1: Peak excursion to average ratio @ 802.11a mode channel 157



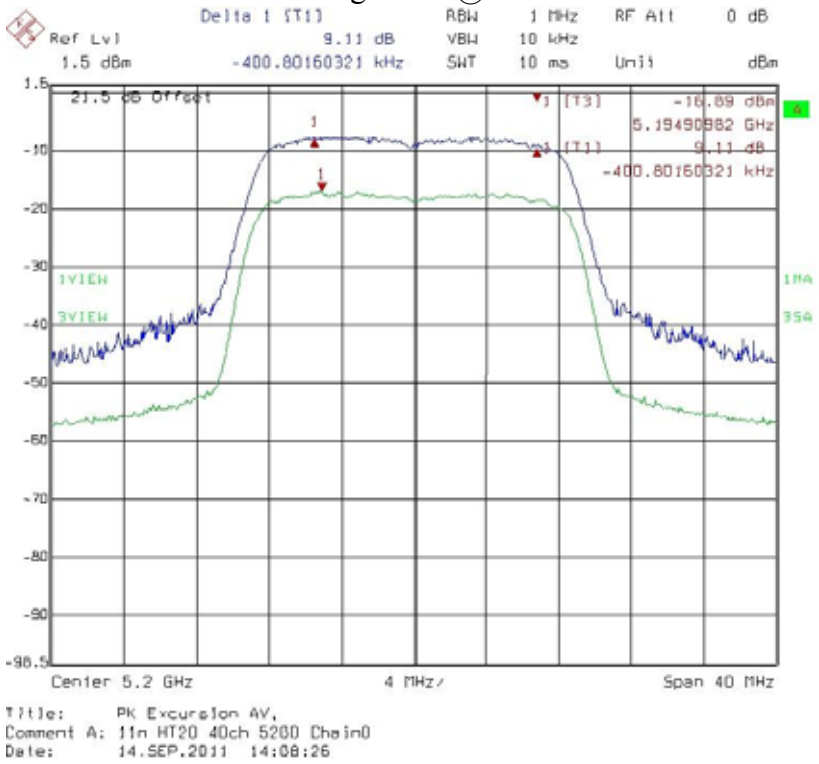
Chain 1: Peak excursion to average ratio @ 802.11a mode channel 161



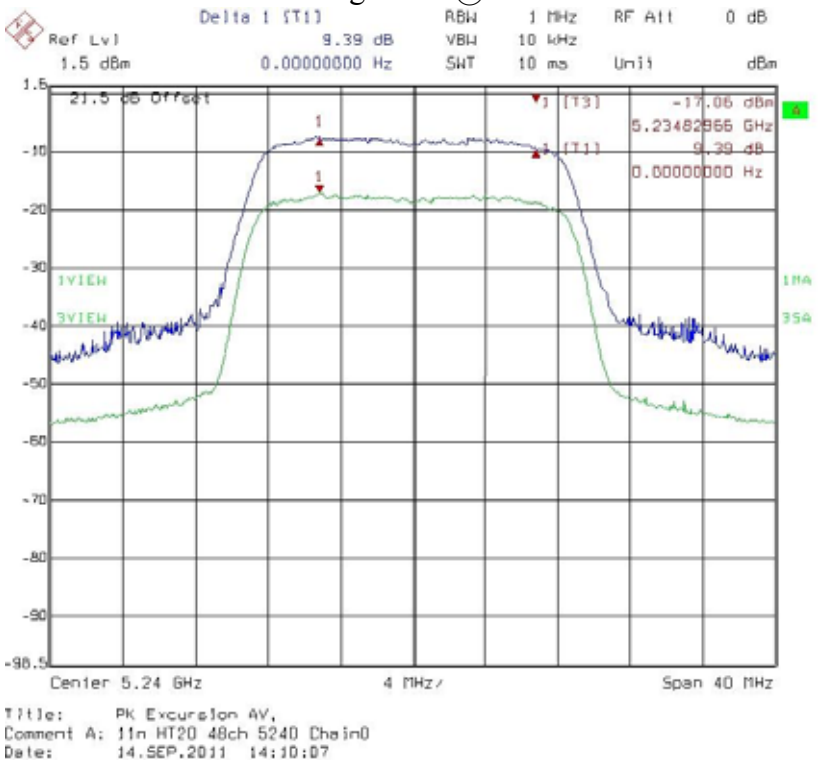
Chain 0: Peak excursion to average ratio @ 802.11n HT20 mode channel 36



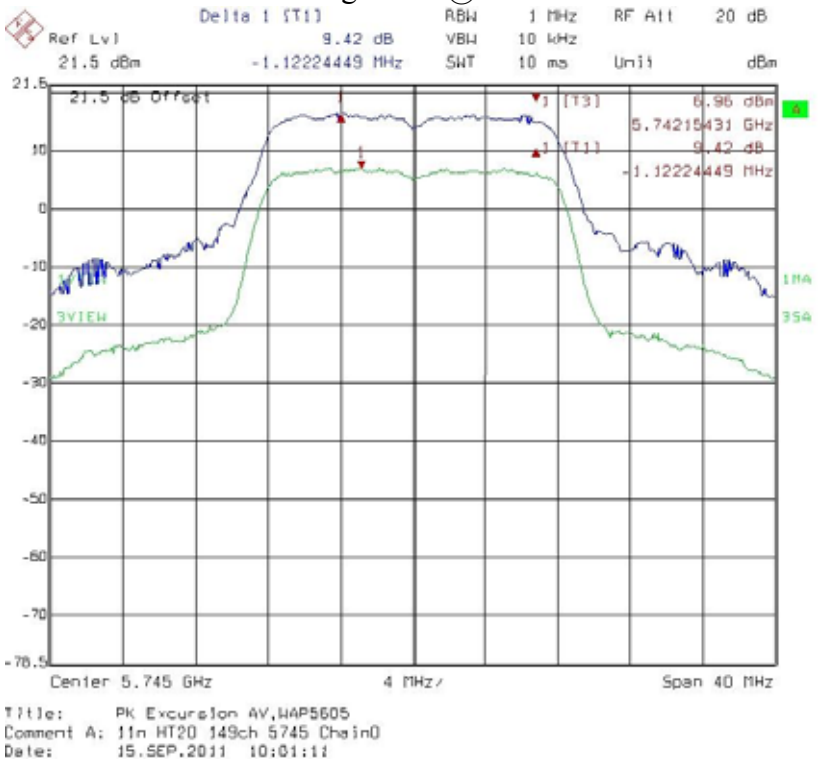
Chain 0: Peak excursion to average ratio @ 802.11n HT20 mode channel 40



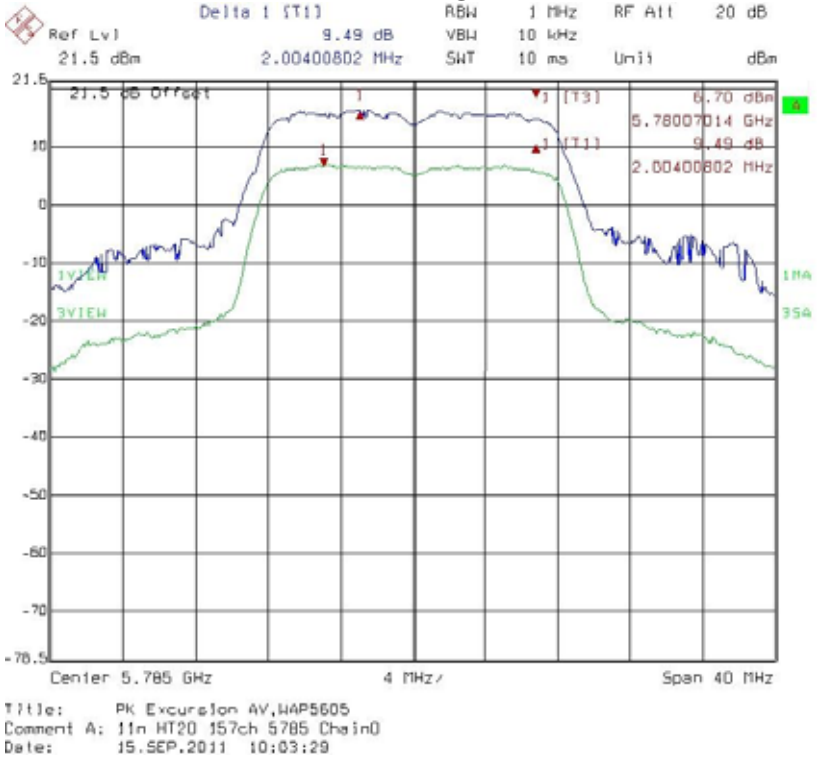
Chain 0: Peak excursion to average ratio @ 802.11n HT20 mode channel 48



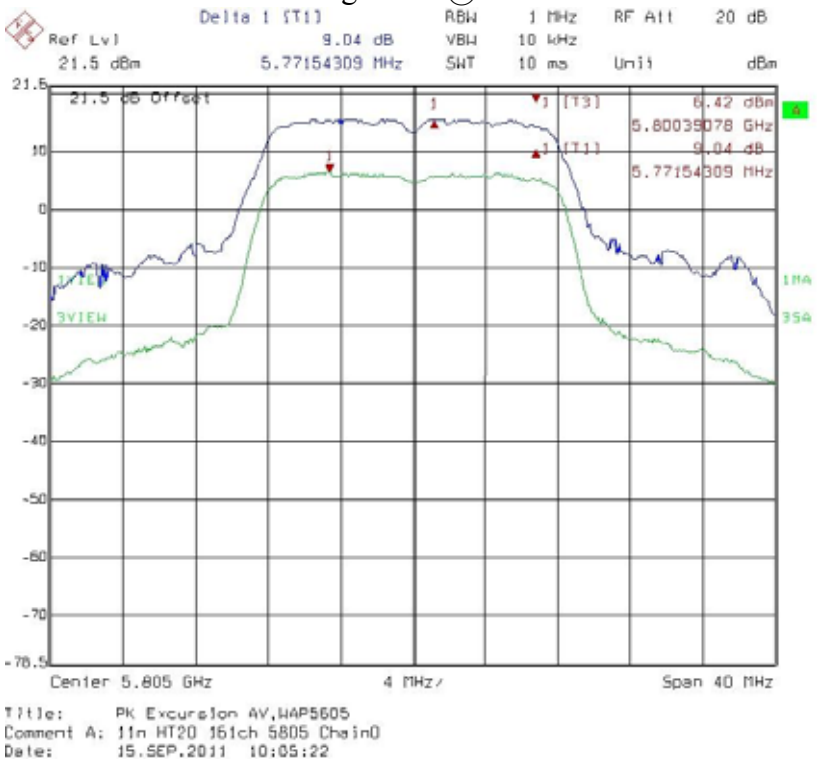
Chain 0: Peak excursion to average ratio @ 802.11n HT20 mode channel 149



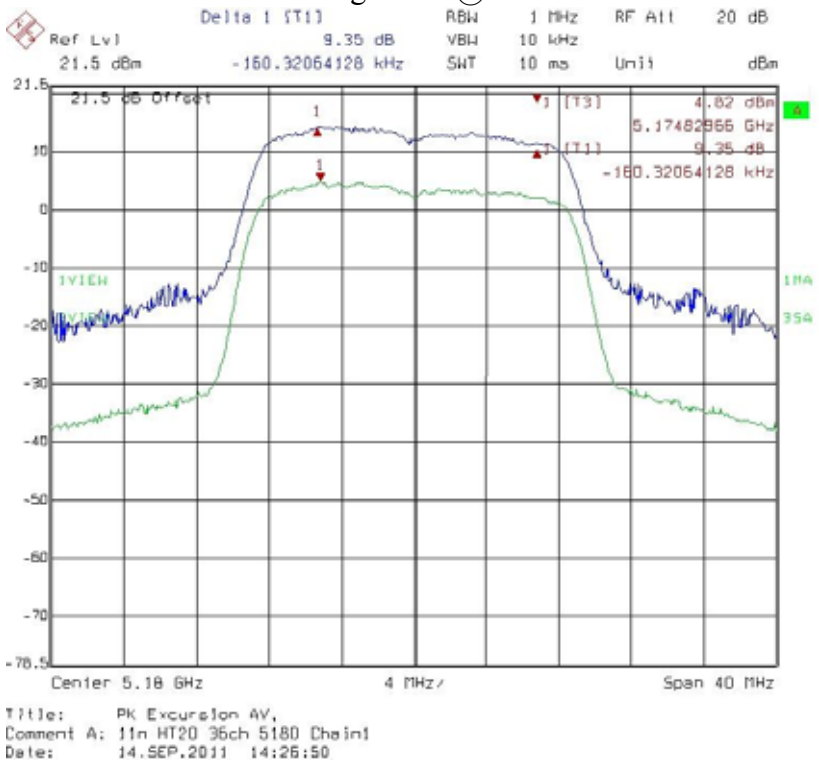
Chain 0: Peak excursion to average ratio @ 802.11n HT20 mode channel 157



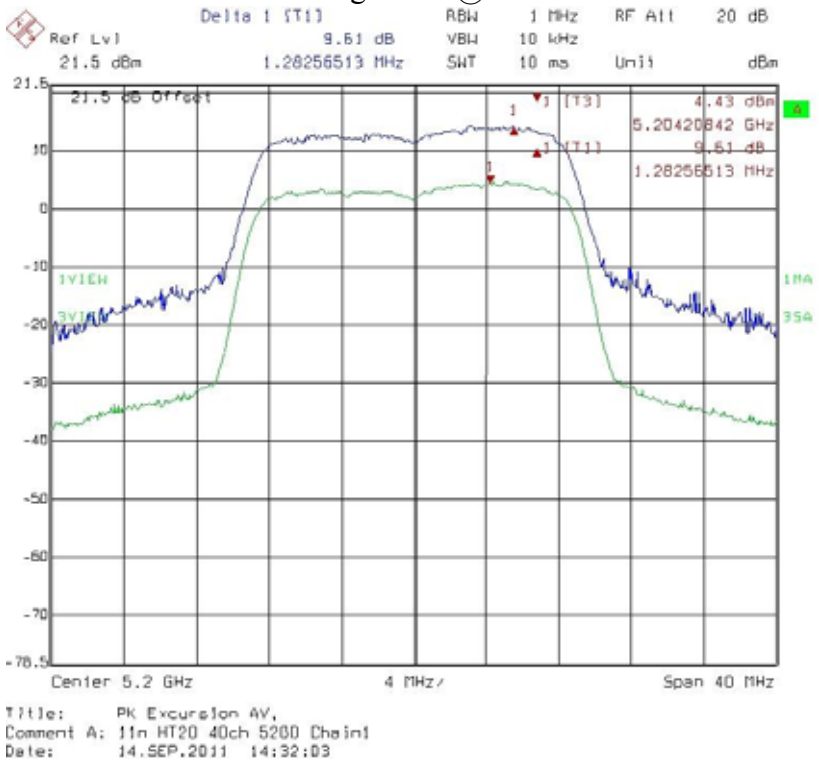
Chain 0: Peak excursion to average ratio @ 802.11n HT20 mode channel 161



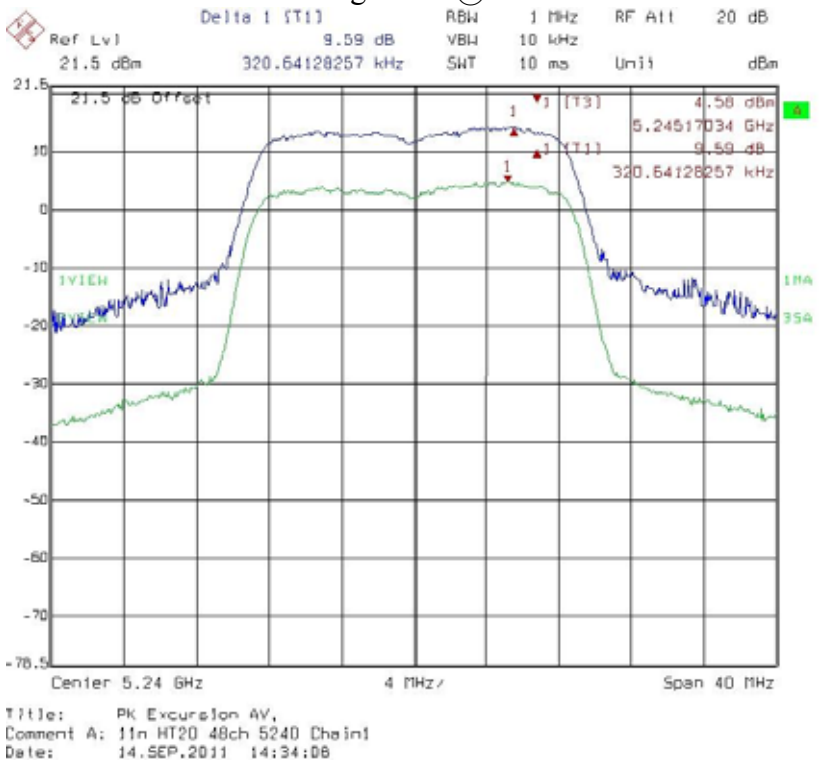
Chain 1: Peak excursion to average ratio @ 802.11n HT20 mode channel 36



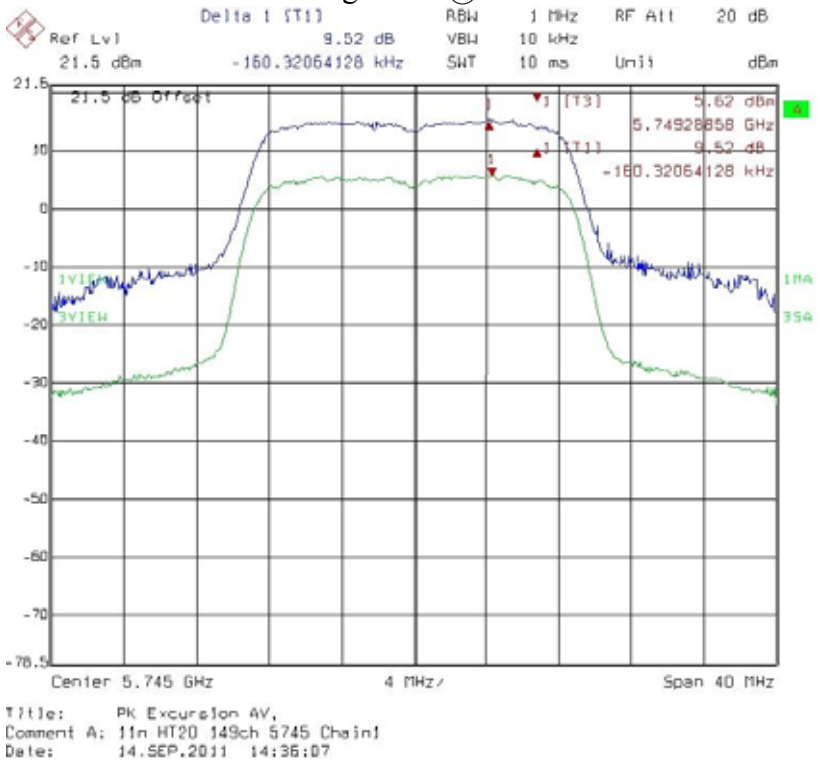
Chain 1: Peak excursion to average ratio @ 802.11n HT20 mode channel 40



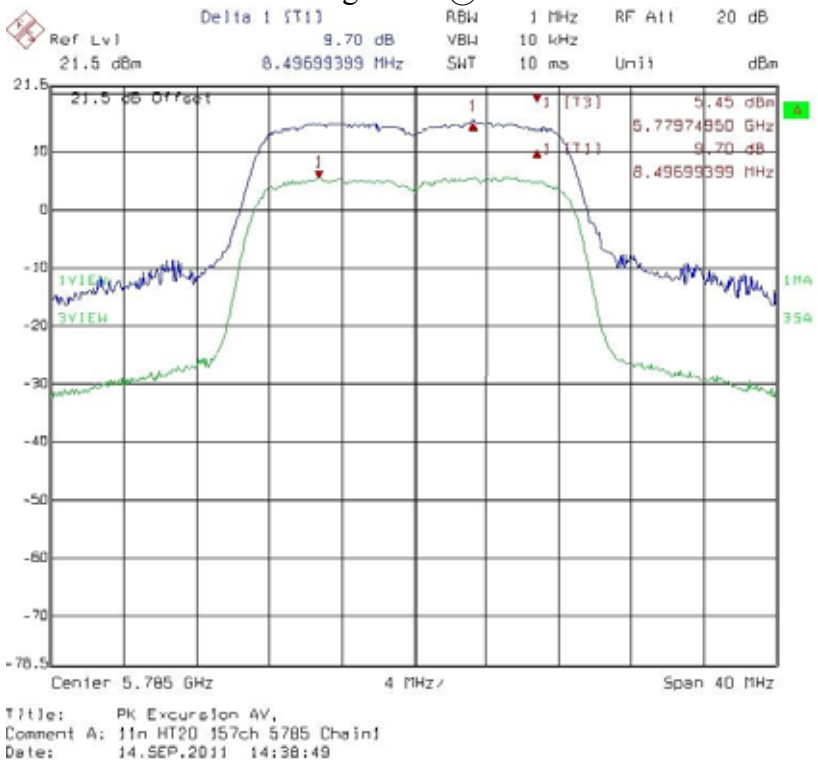
Chain 1: Peak excursion to average ratio @ 802.11n HT20 mode channel 48



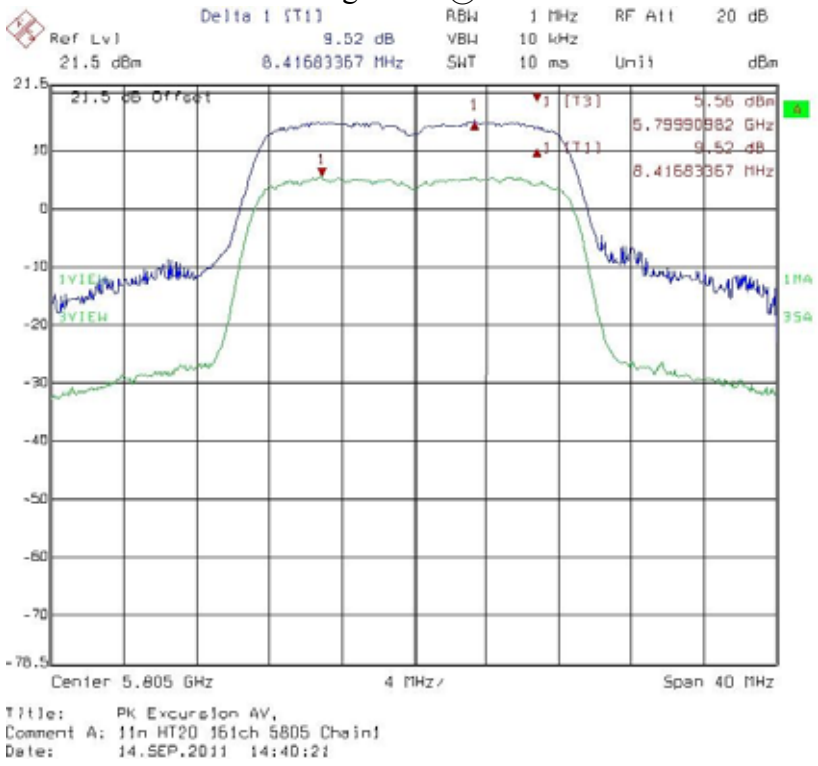
Chain 1: Peak excursion to average ratio @ 802.11n HT20 mode channel 149



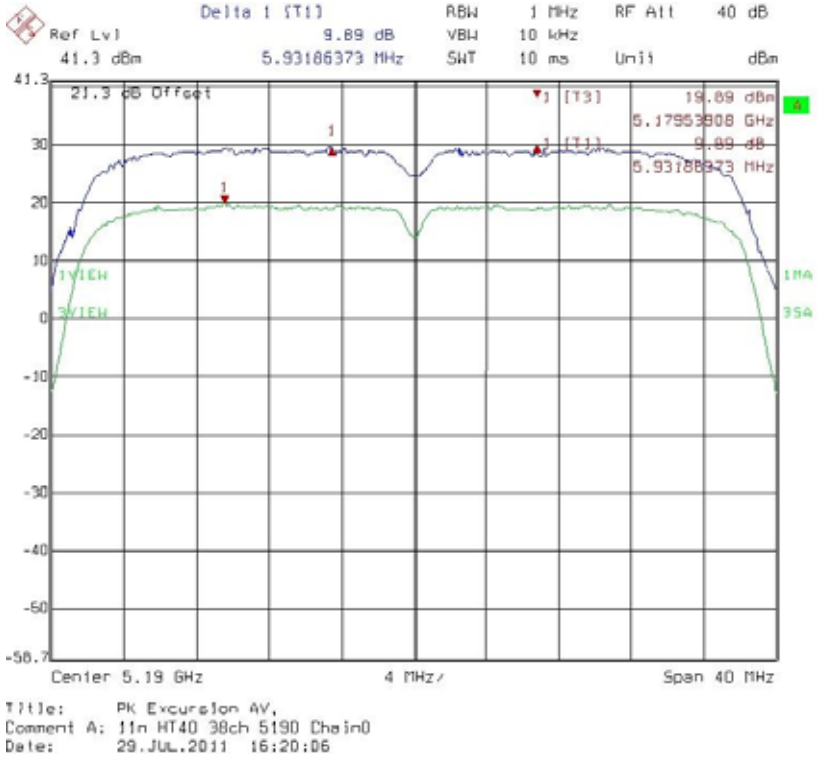
Chain 1: Peak excursion to average ratio @ 802.11n HT20 mode channel 157



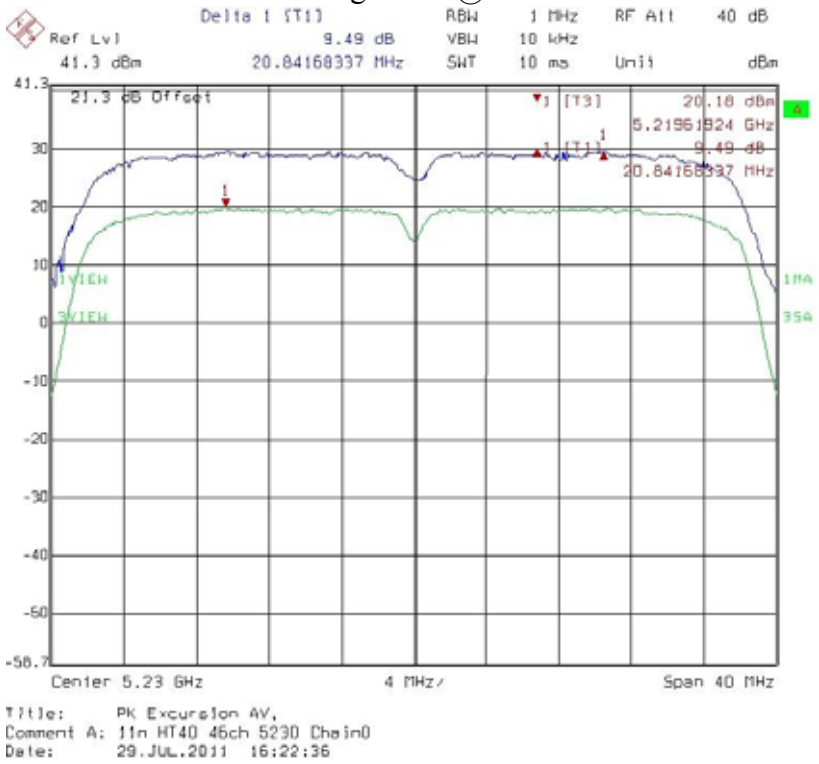
Chain 1: Peak excursion to average ratio @ 802.11n HT20 mode channel 161



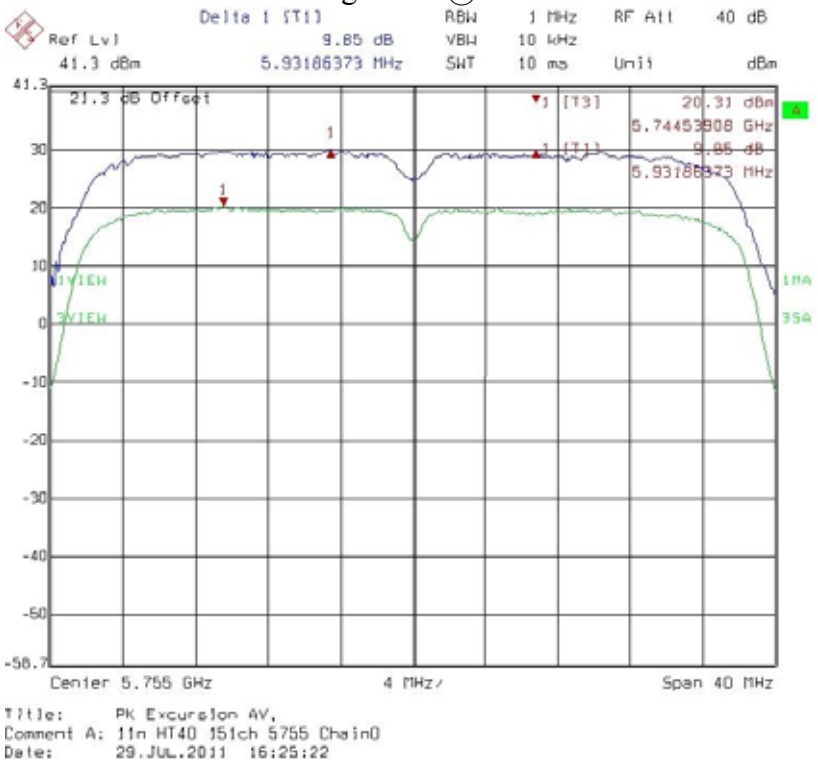
Chain 0: Peak excursion to average ratio @ 802.11n HT40 mode channel 38



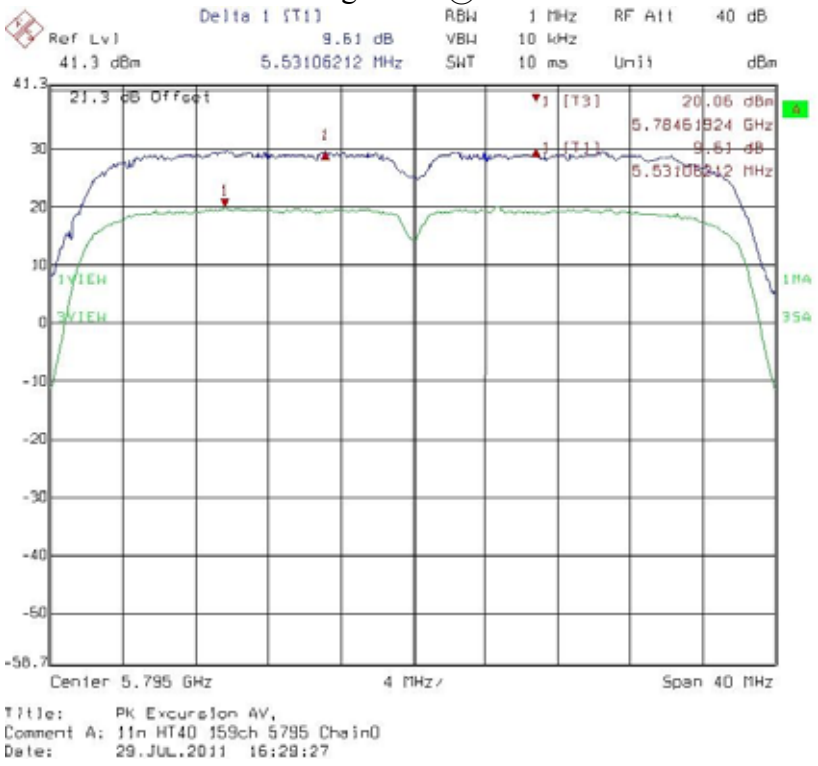
Chain 0: Peak excursion to average ratio @ 802.11n HT40 mode channel 46



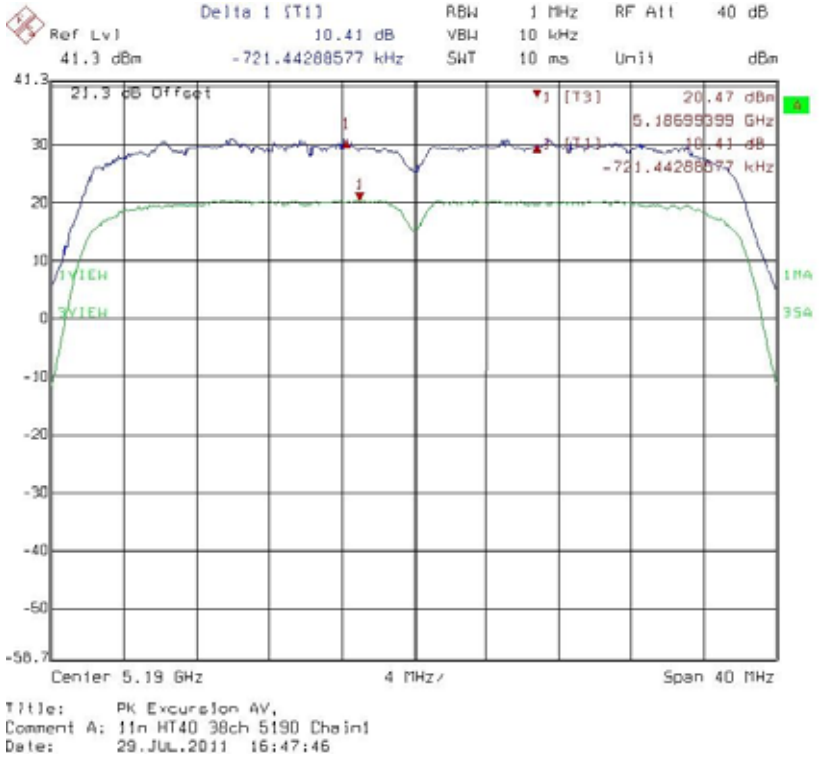
Chain 0: Peak excursion to average ratio @ 802.11n HT40 mode channel 151



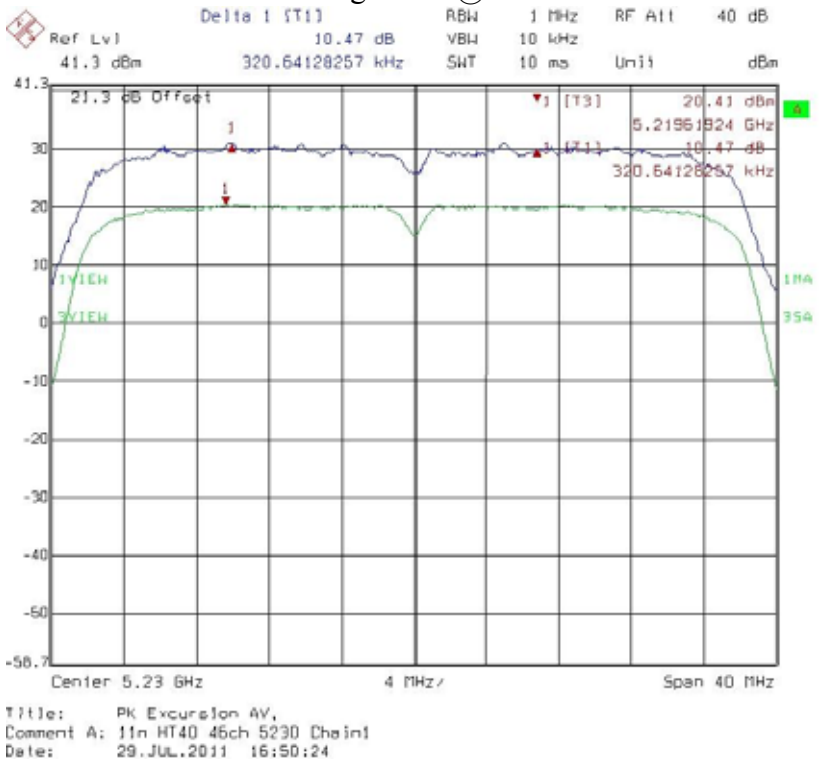
Chain 0: Peak excursion to average ratio @ 802.11n HT40 mode channel 159



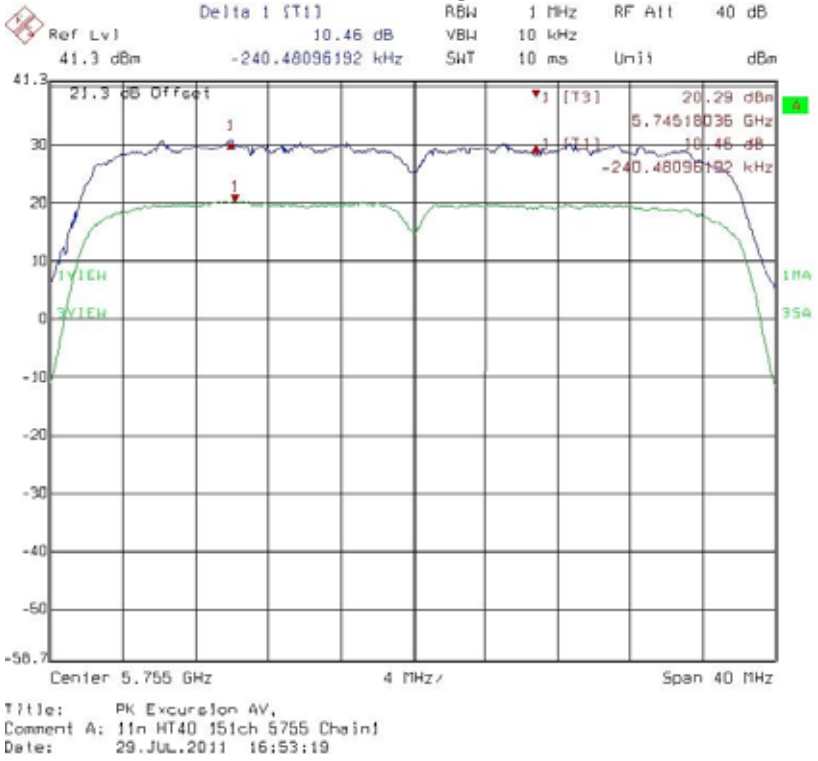
Chain 1: Peak excursion to average ratio @ 802.11n HT40 mode channel 38



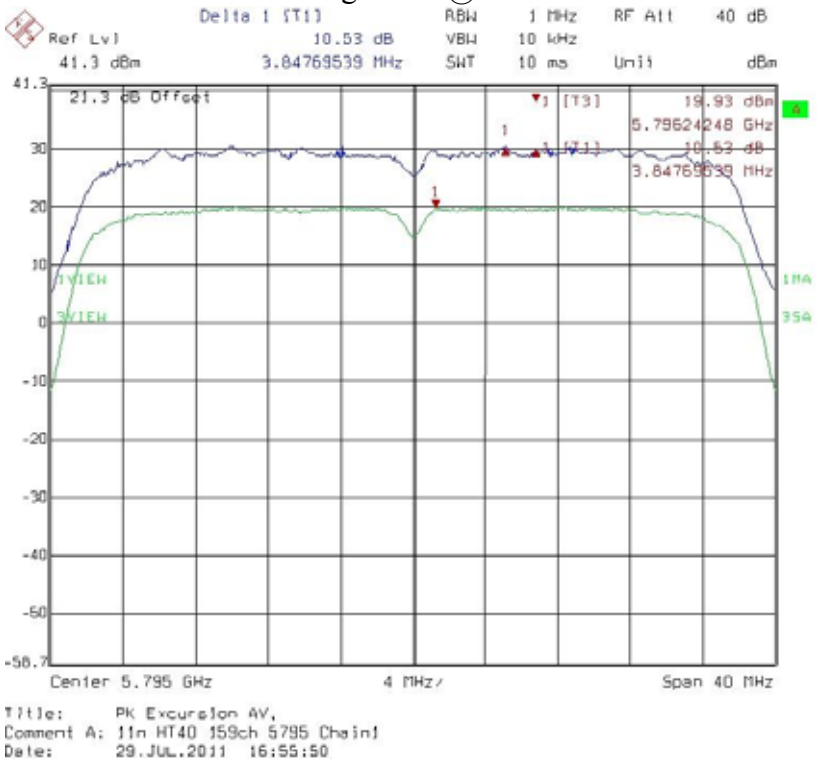
Chain 1: Peak excursion to average ratio @ 802.11n HT40 mode channel 46



Chain 1: Peak excursion to average ratio @ 802.11n HT40 mode channel 151



Chain 1: Peak excursion to average ratio @ 802.11n HT40 mode channel 159



7. Radiated Emission test (FCC 15.205 & 15.209)

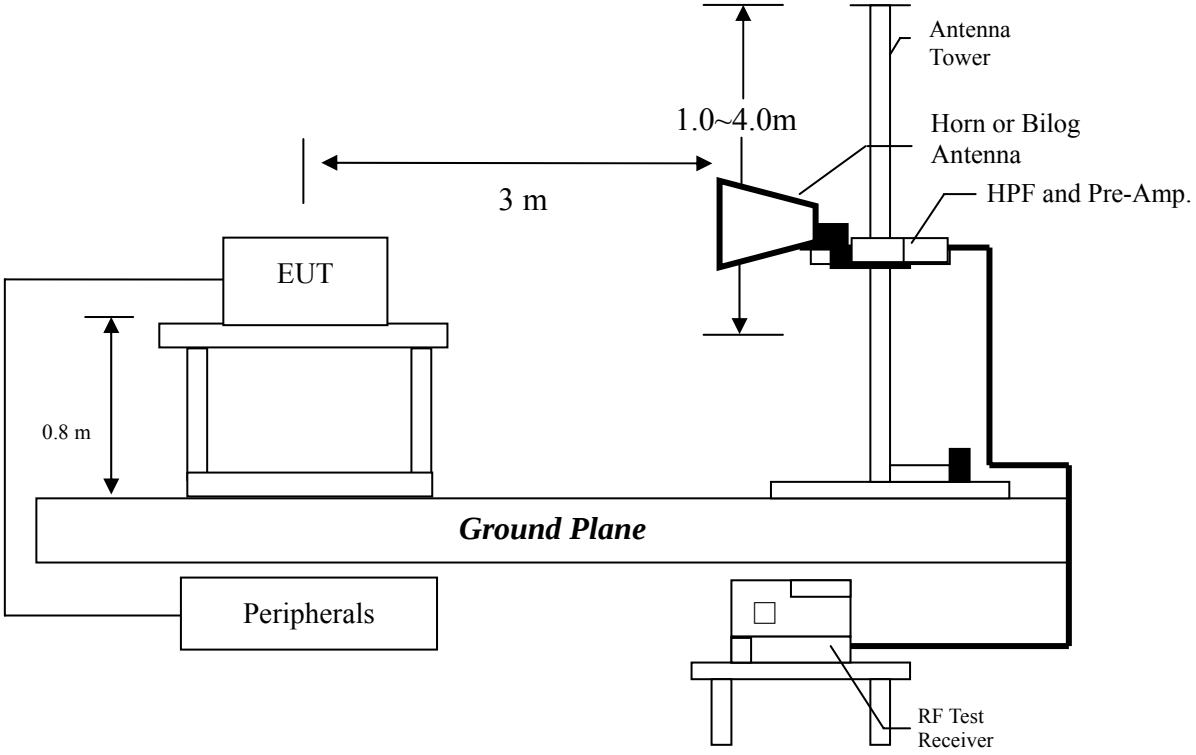
7.1 Operating environment

Temperature:	23	℃
Relative Humidity:	52	%
Atmospheric Pressure	1008	hPa

7.2 Test setup & procedure

Method of Measurement:

The Diagram below shows the test setup, which is utilized to make these measurements.



Radiated emission measurements were performed from 30MHz to tenth harmonic or 40GHz. The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter.

The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.

7.3 Emission limits

The spurious Emission shall test through the 10th harmonic. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

Frequency (MHz)	Limits (dBμV/m@3m)
30-88	40
88-216	43.5
216-960	46
Above 960	54

Remark:
1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system

7.4 Radiated spurious emission test data

7.4.1 Measurement results: frequencies equal to or less than 1 GHz

The test was performed on EUT under 802.11a continuously transmitting mode. The worst case occurred at 802.11a Tx channel 40 (Chain 0).

EUT : WAP5605
Worst Case : 802.11a Tx at channel 40 (Chain 0)

Antenna Polariz. (V/H)	Freq. (MHz)	Receiver Detector	Corr. Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
V	38.84	QP	12.62	22.38	35.00	40.00	-5.00
V	85.29	QP	8.50	25.58	34.07	40.00	-5.93
V	142.52	QP	14.27	18.77	33.04	43.50	-10.46
V	224.97	QP	12.08	17.07	29.15	46.00	-16.85
V	249.22	QP	12.22	17.24	29.45	46.00	-16.55
V	348.16	QP	14.98	13.95	28.93	46.00	-17.07
H	87.23	QP	9.45	16.56	26.00	40.00	-14.00
H	142.52	QP	13.24	15.29	28.52	43.50	-14.98
H	299.66	QP	14.17	14.61	28.77	46.00	-17.23
H	450.01	QP	18.16	11.57	29.73	46.00	-16.27
H	499.48	QP	18.64	16.41	35.05	46.00	-10.95
H	749.74	QP	22.95	12.52	35.47	46.00	-10.53

Remark:

1. Corr. Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Corr. Factor

7.4.2 Measurement results: frequency above 1GHz

EUT : WAP5605
Test Condition : 802.11a Tx at channel 36 (DAC 0)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
10360	PK	V	33.72	48.15	39.79	54.22	74	-19.78
10360	AV	V	33.72	48.15	31.40	45.83	54	-8.17
10360	PK	H	33.72	48.15	38.22	52.65	74	-21.35
15540	PK	H	38.46	50.66	52.53	64.73	74	-9.27
15540	AV	H	38.46	50.66	36.60	48.80	54	-5.20

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11a Tx at channel 40 (DAC 0)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
10400	PK	V	33.72	48.15	38.21	52.64	74	-21.36
10400	AV	V	33.72	48.15	31.64	46.07	54	-7.93
10400	PK	H	33.72	48.15	36.75	51.18	74	-22.82
15600	PK	H	38.46	50.66	46.81	59.01	74	-14.99
15600	AV	H	38.46	50.66	35.63	47.83	54	-6.17

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11a Tx at channel 48 (DAC 0)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
10480	PK	V	33.72	48.15	40.32	54.75	74	-19.25
10480	AV	V	33.72	48.15	30.64	45.07	54	-8.93
10480	PK	H	33.72	48.15	37.82	52.25	74	-21.75
15720	PK	H	38.46	50.66	46.02	58.22	74	-15.78
15720	AV	H	38.46	50.66	33.76	45.96	54	-8.04

Remark:
1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11a Tx at channel 149 (DAC 0)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
11490	PK	V	33.53	49.96	48.38	64.81	74	-9.19
11490	AV	V	33.53	49.96	37.04	53.47	54	-0.53
11490	PK	H	33.53	49.96	39.38	55.81	74	-18.19
11490	AV	H	33.53	49.96	33.29	49.72	54	-4.28
17235	PK	H	36.61	53.16	50.31	66.86	74	-7.14
17235	AV	H	36.61	53.16	32.91	49.46	54	-4.54

Remark:
1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11a Tx at channel 157 (DAC 0)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
11570	PK	V	34.55	50.03	48.42	63.90	74	-10.10
11570	AV	V	34.55	50.03	37.24	52.72	54	-1.28
11570	PK	H	34.55	50.03	42.28	57.76	74	-16.24
11570	AV	H	34.55	50.03	34.58	50.06	54	-3.94

Remark:
1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11a Tx at channel 161 (DAC 0)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
11610	PK	V	34.55	50.03	49.38	64.86	74	-9.14
11610	AV	V	34.55	50.03	37.17	52.65	54	-1.35
11610	PK	H	34.55	50.03	40.77	56.25	74	-17.75
11610	AV	H	34.55	50.03	34.26	49.74	54	-4.26

Remark:
1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1 GHz to 40 GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11a Tx at channel 36 (DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
10360	PK	V	33.72	48.15	42.83	57.26	74	-16.74
10360	AV	V	33.72	48.15	33.68	48.11	54	-5.89
10360	PK	H	33.72	48.15	39.26	53.69	74	-20.31

Remark:
1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11a Tx at channel 40 (DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
10400	PK	V	33.72	48.15	43.71	58.14	74	-15.86
10400	AV	V	33.72	48.15	33.20	47.63	54	-6.37
10400	PK	H	33.72	48.15	39.32	53.75	74	-20.25

Remark:
1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11a Tx at channel 48 (DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
10480	PK	V	33.72	48.15	44.56	58.99	74	-15.01
10480	AV	V	33.72	48.15	36.02	50.45	54	-3.55
10480	PK	H	33.72	48.15	39.44	53.87	74	-20.13

Remark:
1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11a Tx at channel 149 (DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
11490	PK	V	33.53	49.96	43.45	59.88	74	-14.12
11490	AV	V	33.53	49.96	31.43	47.86	54	-6.14
11490	PK	H	33.53	49.96	37.06	53.49	74	-20.51

Remark:
1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11a Tx at channel 157 (DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
11570	PK	V	34.55	50.03	44.62	60.10	74	-13.90
11570	AV	V	34.55	50.03	33.59	49.07	54	-4.93
11570	PK	H	34.55	50.03	41.66	57.14	74	-16.86
11570	AV	H	34.55	50.03	32.87	48.35	54	-5.65
17355	PK	H	36.61	53.16	51.40	67.95	74	-6.05
17355	AV	H	36.61	53.16	33.90	50.45	54	-3.55

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11a Tx at channel 161 (DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
11610	PK	V	34.55	50.03	46.73	62.21	74	-11.79
11610	AV	V	34.55	50.03	36.86	52.34	54	-1.66
11610	PK	H	34.55	50.03	42.63	58.11	74	-15.89
11610	AV	H	34.55	50.03	33.13	48.61	54	-5.39
17415	PK	H	36.61	53.16	49.46	66.01	74	-7.99
17415	AV	H	36.61	53.16	34.17	50.72	54	-3.28

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11n HT 20 Tx at channel 36 (DAC 0+DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
10360	PK	V	33.72	48.15	43.10	57.53	74	-16.47
10360	AV	V	33.72	48.15	32.96	47.39	54	-6.61
10360	PK	H	33.72	48.15	41.24	55.67	74	-18.33
10360	AV	H	33.72	48.15	30.43	44.86	54	-9.14
15540	PK	H	38.46	50.66	45.72	57.92	74	-16.08
15540	AV	H	38.46	50.66	33.32	45.52	54	-8.48

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11n HT 20 Tx at channel 40 (DAC 0+DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
10400	PK	V	33.72	48.15	46.03	60.46	74	-13.54
10400	AV	V	33.72	48.15	33.63	48.06	54	-5.94
10400	PK	H	33.72	48.15	40.67	55.10	74	-18.90
10400	AV	H	33.72	48.15	31.38	45.81	54	-8.19
15600	PK	H	38.46	50.66	46.64	58.84	74	-15.16
15600	AV	H	38.46	50.66	34.95	47.15	54	-6.85

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11n HT 20 Tx at channel 48 (DAC 0+DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
10480	PK	V	33.72	48.15	44.66	59.09	74	-14.91
10480	AV	V	33.72	48.15	35.26	49.69	54	-4.31
10480	PK	H	33.72	48.15	40.95	55.38	74	-18.62
10480	AV	H	33.72	48.15	29.40	43.83	54	-10.17

Remark:
1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11n HT 20 Tx at channel 149 (DAC 0+DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
11490	PK	V	33.53	49.96	49.33	65.76	74	-8.24
11490	AV	V	33.53	49.96	37.13	53.56	54	-0.44
11490	PK	H	33.53	49.96	41.49	57.92	74	-16.08
11490	AV	H	33.53	49.96	32.04	48.47	54	-5.53

Remark:
1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11n HT 20 Tx at channel 157 (DAC 0+DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
11570	PK	V	34.55	50.03	49.14	64.62	74	-9.38
11570	AV	V	34.55	50.03	37.07	52.55	54	-1.45
11570	PK	H	34.55	50.03	43.32	58.80	74	-15.20
11570	AV	H	34.55	50.03	34.48	49.96	54	-4.04
17355	PK	H	36.61	53.16	48.34	64.89	74	-9.11
17355	AV	H	36.61	53.16	31.60	48.15	54	-5.85

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11n HT 20 Tx at channel 161 (DAC 0+DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
11610	PK	V	34.55	50.03	51.05	66.53	74	-7.47
11610	AV	V	34.55	50.03	37.17	52.65	54	-1.35
11610	PK	H	34.55	50.03	43.26	58.74	74	-15.26
11610	AV	H	34.55	50.03	34.19	49.67	54	-4.33

Remark:

1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11n HT 40 Tx at channel 38 (DAC 0+DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
10380	PK	V	33.72	48.15	41.01	55.44	74	-18.56
10380	AV	V	33.72	48.15	32.93	47.36	54	-6.64
10380	PK	H	33.72	48.15	37.29	51.72	74	-22.28

Remark:
1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11n HT 40 Tx at channel 46 (DAC 0+DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
10460	PK	V	33.72	48.15	39.77	54.20	74	-19.80
10460	AV	V	33.72	48.15	33.09	47.52	54	-6.48
10460	PK	H	33.72	48.15	38.33	52.76	74	-21.24

Remark:
1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11n HT 40 Tx at channel 151 (DAC 0+DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
11510	PK	V	34.55	50.03	47.58	63.06	74	-10.94
11510	AV	V	34.55	50.03	35.47	50.95	54	-3.05
11510	PK	H	34.55	50.03	39.83	55.31	74	-18.69
11510	AV	H	34.55	50.03	33.06	48.54	54	-5.46

Remark:
1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

EUT : WAP5605
Test Condition : 802.11n HT 40 Tx at channel 159 (DAC 0+DAC 1)

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Preamp. Gain (dB)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
11590	PK	V	34.55	50.03	46.53	62.01	74	-11.99
11590	AV	V	34.55	50.03	34.00	49.48	54	-4.52
11590	PK	H	34.55	50.03	40.95	56.43	74	-17.57
11590	AV	H	34.55	50.03	32.83	48.31	54	-5.69

Remark:
1. Correction Factor = Antenna Factor + Cable Loss
2. Corrected Level = Reading + Correction Factor – Preamp. Gain
3. The frequency measured ranges from 1GHz to 40GHz.The data value listed above which is higher than the system noise floor.

8. Emission on the band edge §FCC 15.205

Method of Measurement:
Reference FCC document: KDB 913591
The measurement was made to the average and peak field strength of the fundamental frequency. And the spurious emission in the restrict band must also comply with the FCC subpart C 15.209.

8.1 Operating environment

Temperature:	23	℃
Relative Humidity:	52	%
Atmospheric Pressure	1008	hPa

8.2 Test setup & procedure

Radiated setup:
Reference to section 7.2

Procedure:

STEP 1: Perform an in-band field strength measurement of the fundamental emission using a 1 MHz RBW, a 1 MHz VBW, and a peak detector (as required by Section 15.35). Repeat the measurement with an average detector (i.e., 1 MHz RBW with 10 Hz VBW).

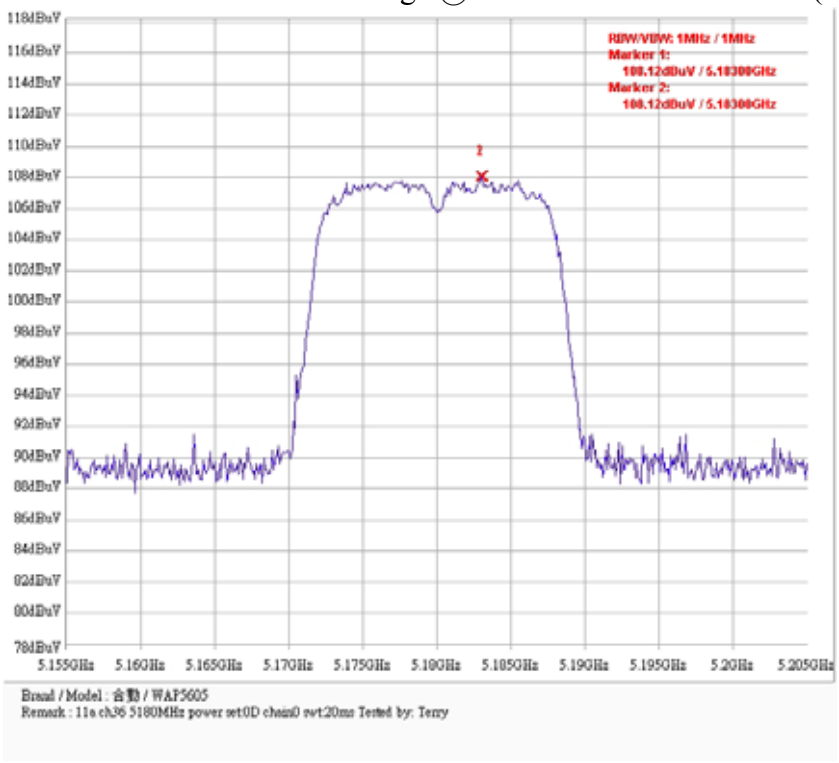
STEP 2: Choose a spectrum analyzer span that encompasses both the peak of the fundamental emission and the band edge emission under investigation. Record the peak levels of the fundamental emission and the relevant band edge emission (i.e., run several sweeps in peak hold mode). Observe the stored trace and measure the amplitude delta between the peak of the fundamental and the peak of the band edge emission. This is not a field strength measurement, it is only a relative measurement to determine the amount by which the emission drops at the band edge relative to the highest fundamental emission level.

STEP 3: Subtract the delta measured in step (2) from the field strengths measured in step (1). The resultant field strengths are then used to determine band edge compliance as required by Section 15.205.

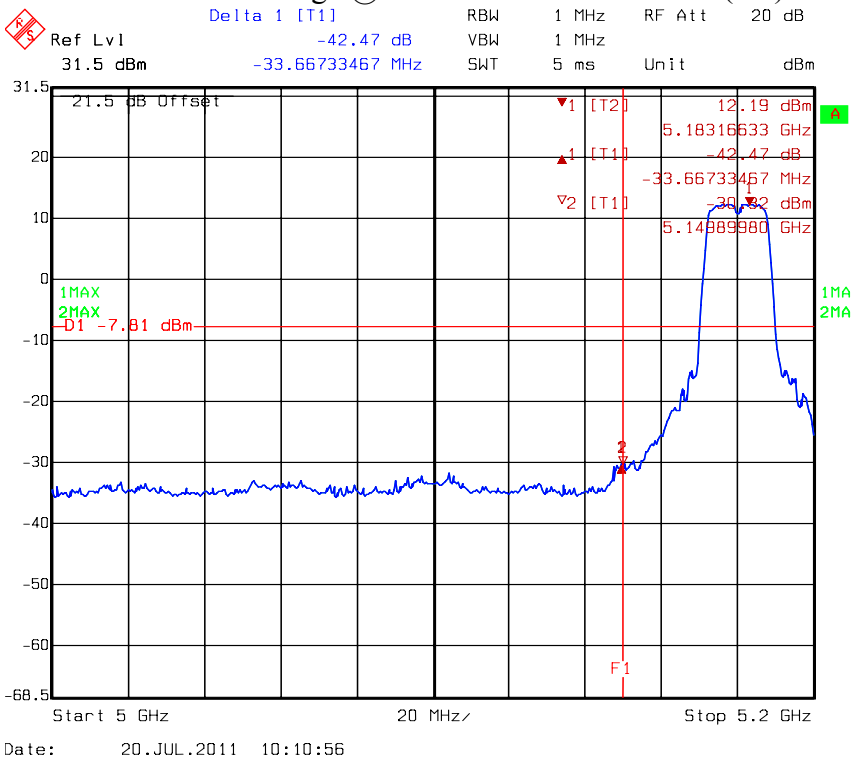
8.3 Test Result

Channel	Detector	Radiated Method	Conducted Method	The Max. Field Strength in Restrict Band (dBuV/m)	Limit @ 3 m (dBuV/m)	Margin (dB)
		Max. Field Strength of Fundamental (dBuV)	Between Carrier Max. Power and Loca Max. Emission in Restrict Band (dBc)			
Chain 0: 802.11a channel 36	PK	108.12	42.47	65.65	74	-8.35
	AV	98.15	48.23	49.92	54	-4.08
Chain 1: 802.11a channel 36	PK	106.97	44.23	62.74	74	-11.26
	AV	97.59	48.43	49.16	54	-4.84
Chain 0: 802.11n HT20 channel 36	PK	107.64	43.60	64.04	74	-9.96
	AV	97.54	48.17	49.37	54	-4.63
Chain 1: 802.11n HT20 channel 36	PK	102.11	43.31	58.80	74	-15.20
	AV	92.24	48.35	43.89	54	-10.11
Chain 0: 802.11n HT40 channel 38	PK	106.15	39.70	66.45	74	-7.55
	AV	94.85	43.62	51.23	54	-2.77
Chain 1: 802.11n HT40 channel 38	PK	107.81	37.67	70.14	74	-3.86
	AV	95.96	42.31	53.65	54	-0.35

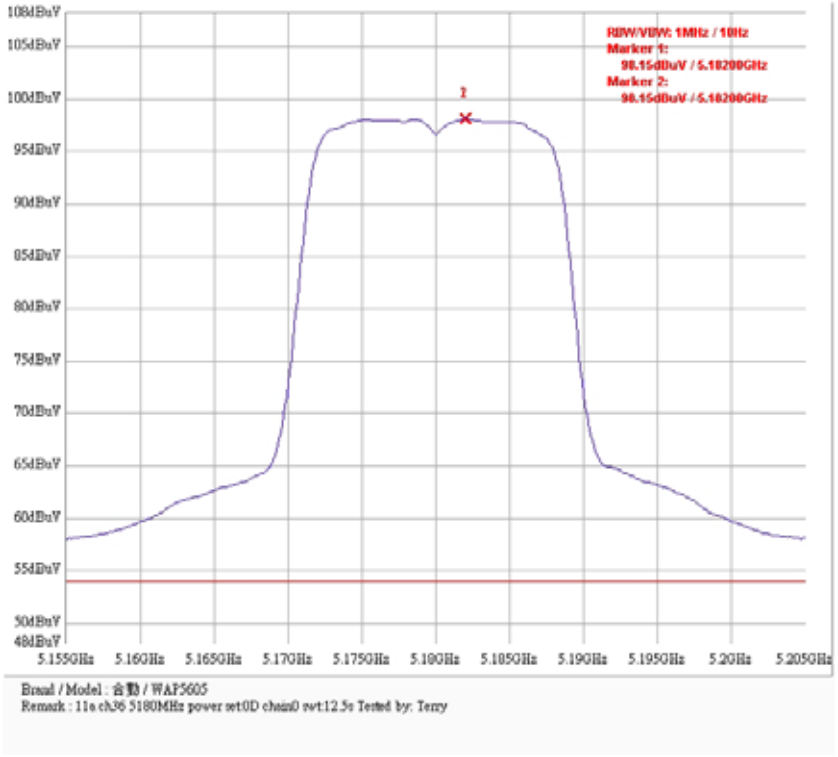
Fundamental: Chain 0: Band edge @ 802.11a mode channel 36 (PK)



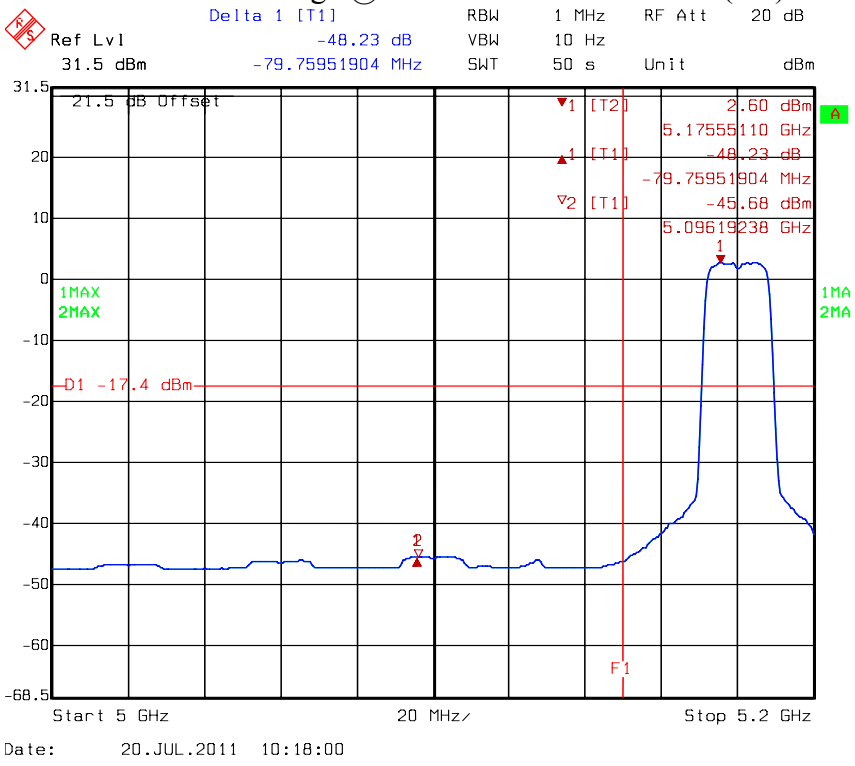
Chain 0: Band edge @ 802.11a mode channel 36 (PK)



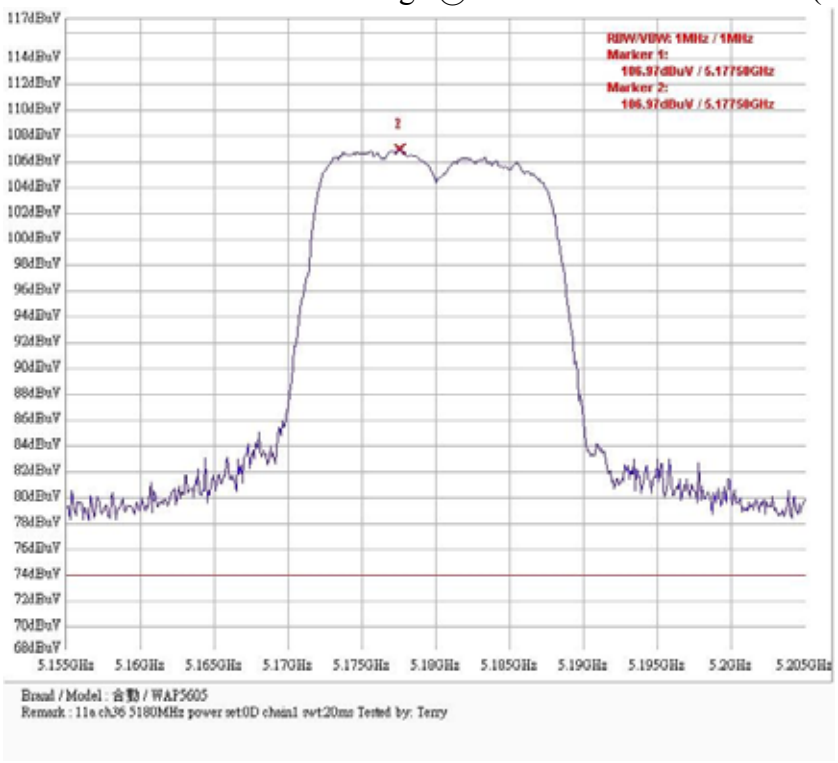
Fundamental: Chain 0: Band edge @ 802.11a mode channel 36 (AV)



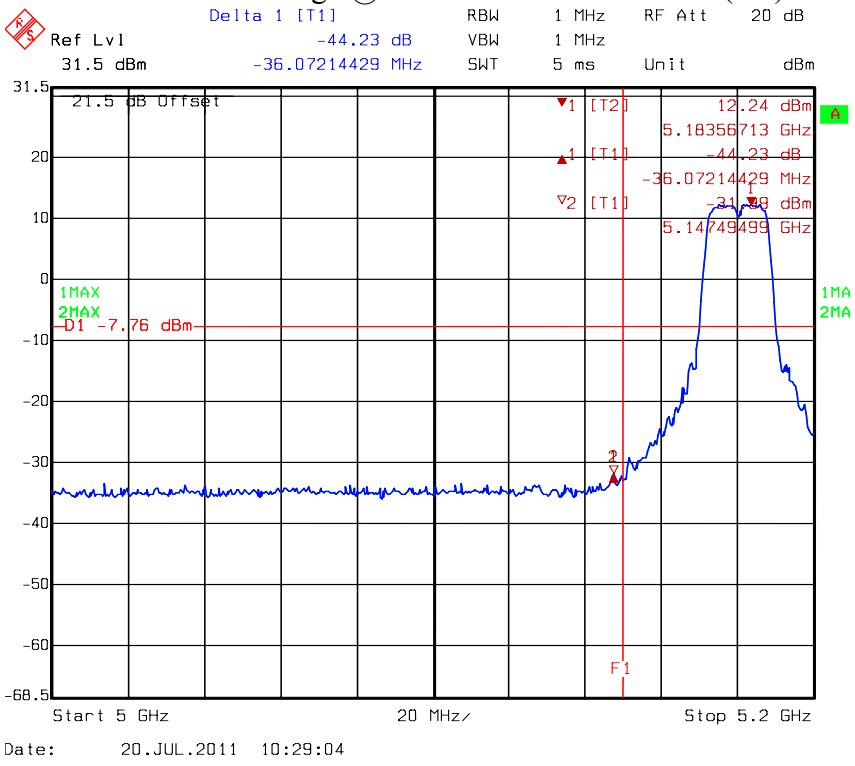
Chain 0: Band edge @ 802.11a mode channel 36 (AV)



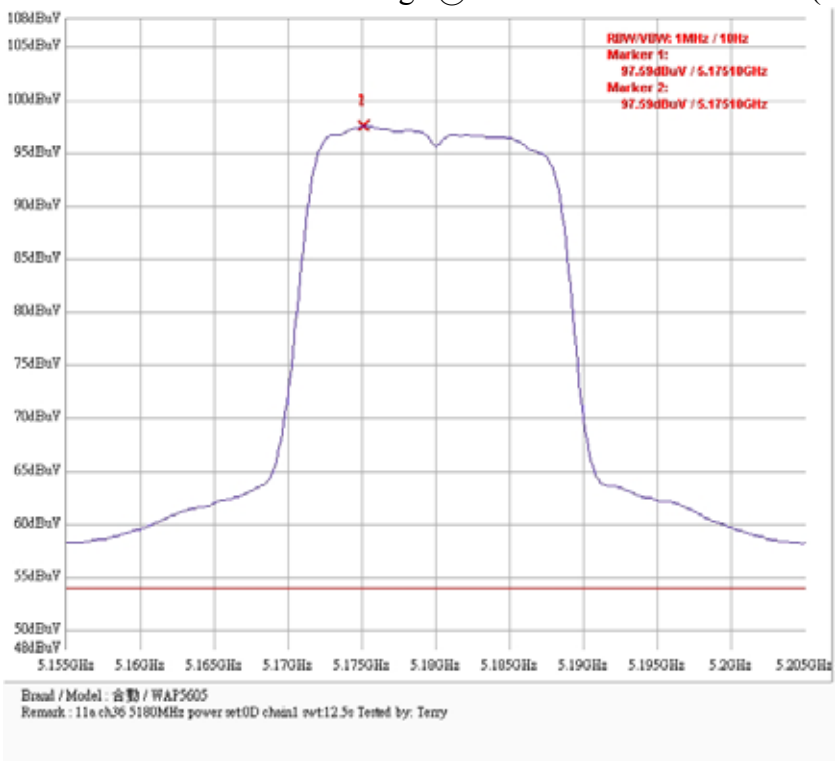
Fundamental: Chain 1: Band edge @ 802.11a mode channel 36 (PK)



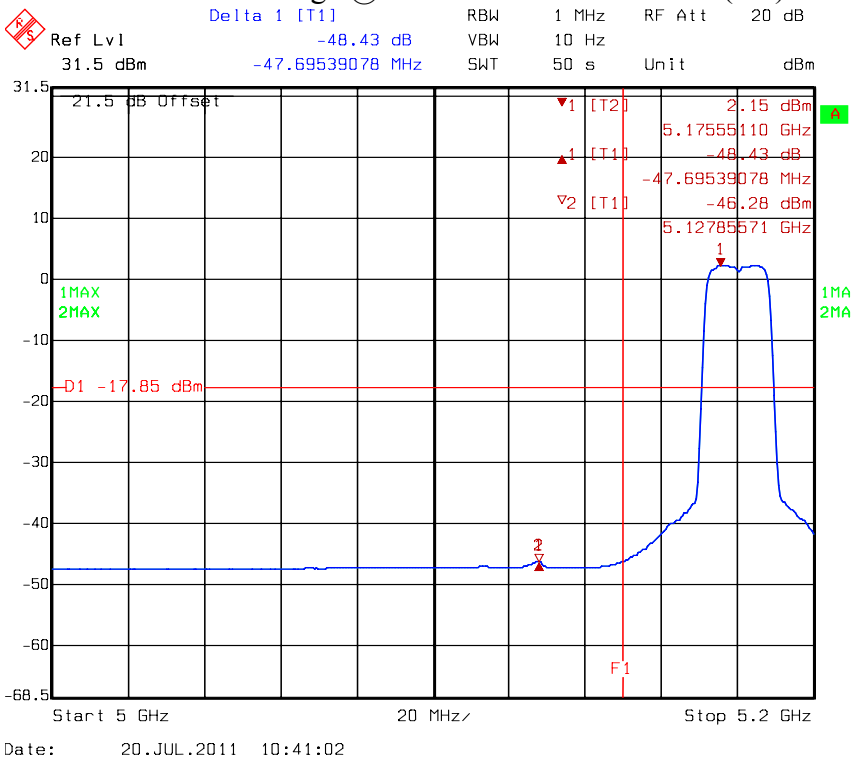
Chain 1: Band edge @ 802.11a mode channel 36 (PK)



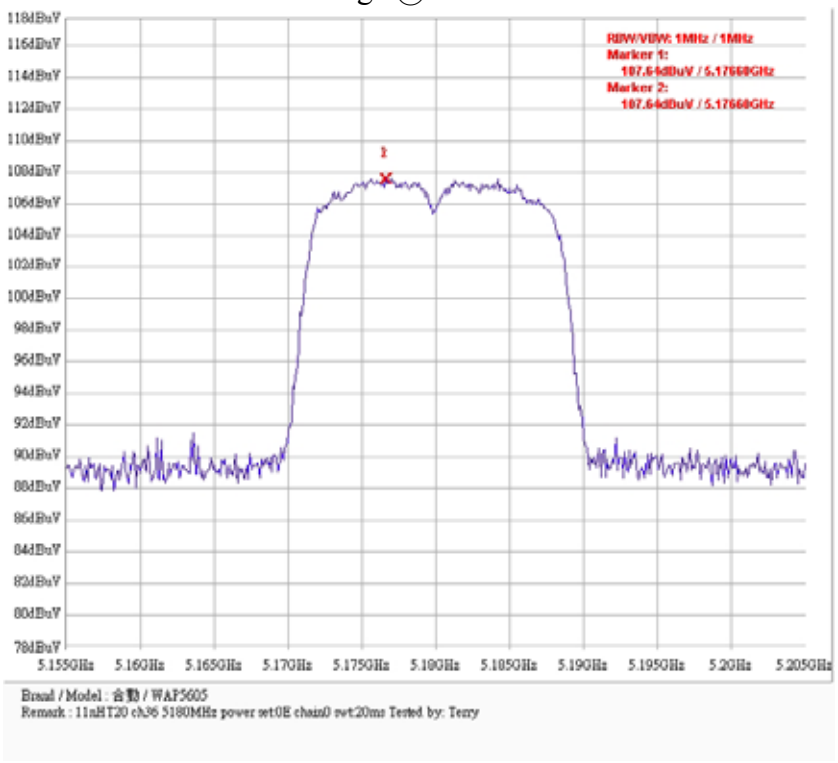
Fundamental: Chain 1: Band edge @ 802.11a mode channel 36 (AV)



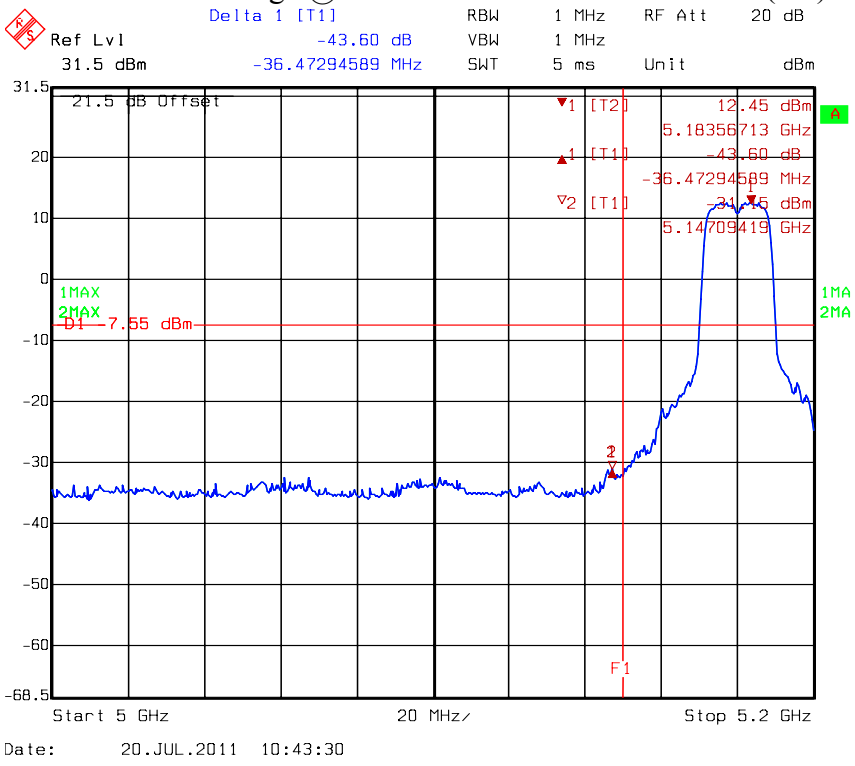
Chain 1: Band edge @ 802.11a mode channel 36 (AV)



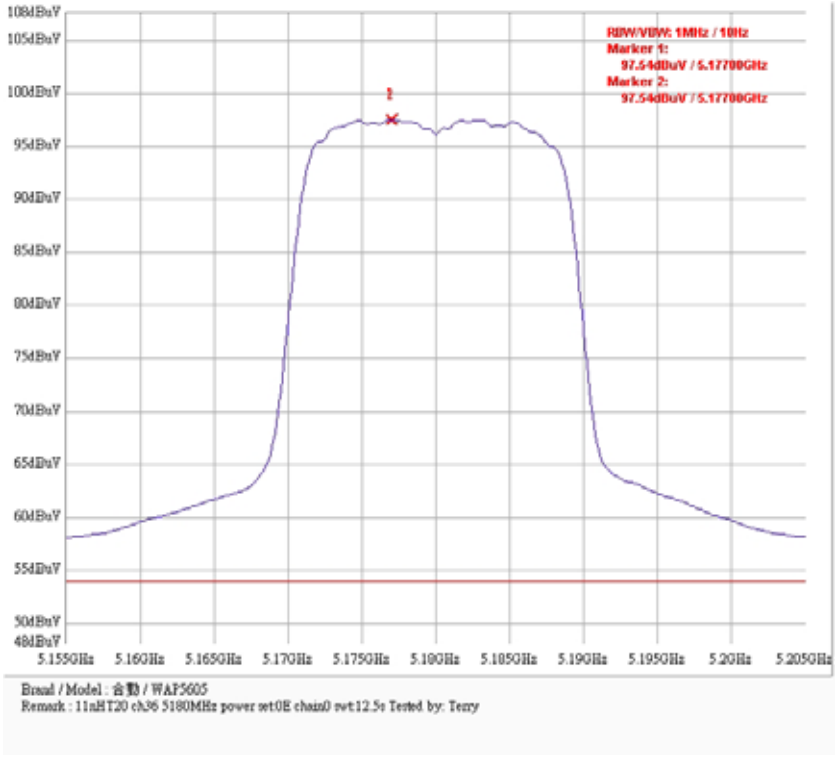
Fundamental: Chain 0: Band edge @ 802.11n HT20 mode channel 36 (PK)



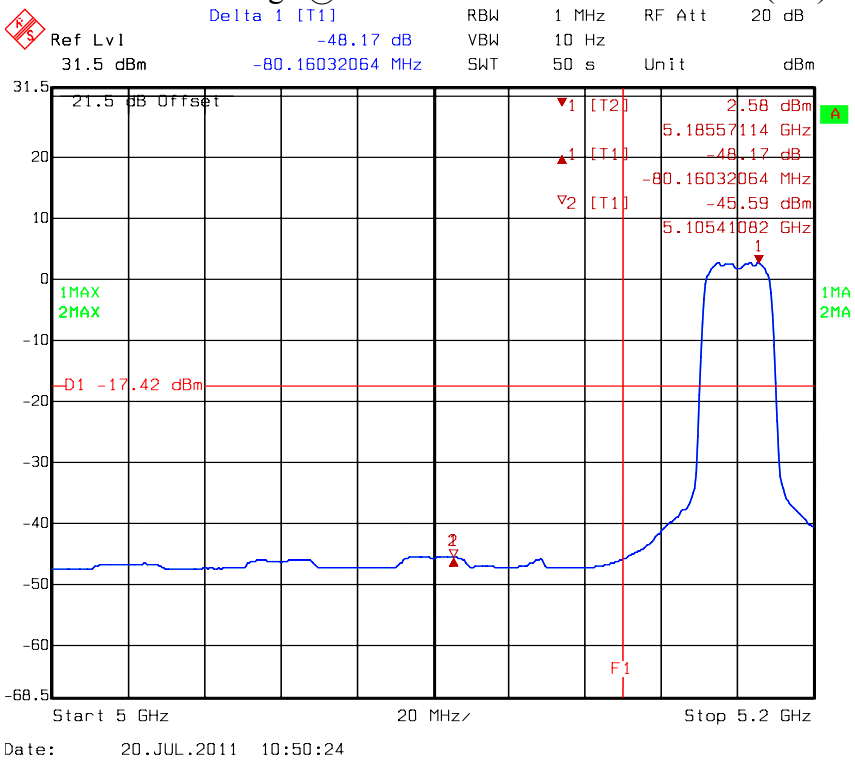
Chain 0: Band edge @ 802.11n HT20 mode channel 36 (PK)



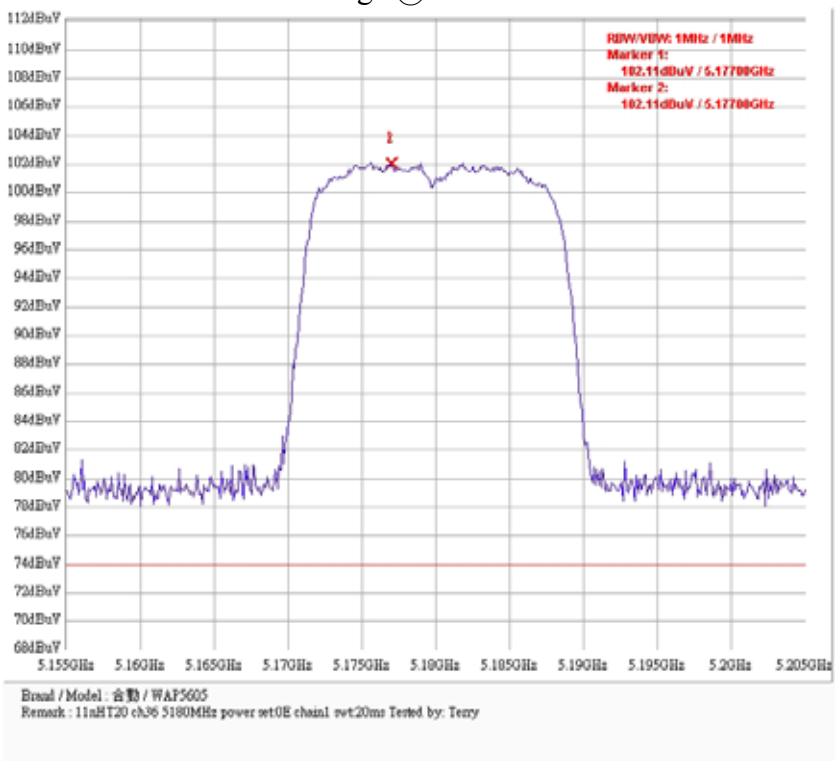
Fundamental: Chain 0: Band edge @ 802.11n HT20 mode channel 36 (AV)



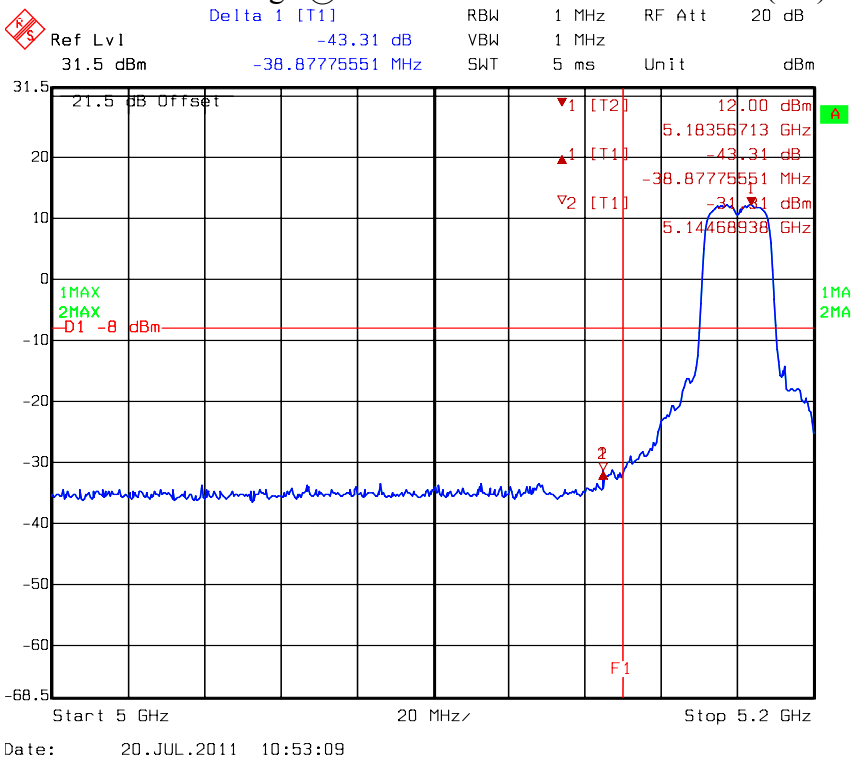
Chain 0: Band edge @ 802.11n HT20 mode channel 36 (AV)



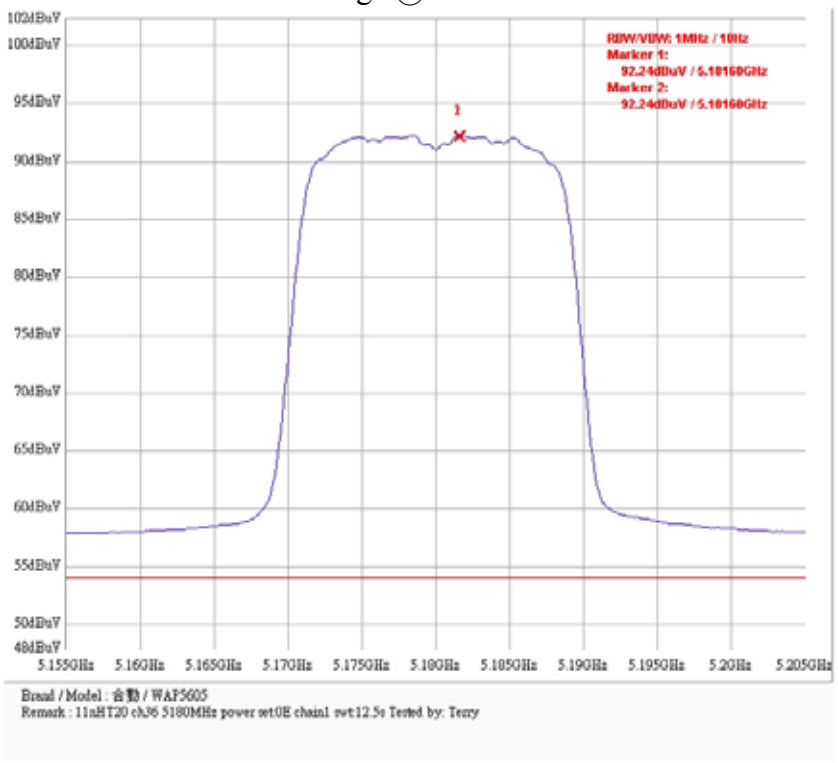
Fundamental: Chain 1: Band edge @ 802.11n HT20 mode channel 36 (PK)



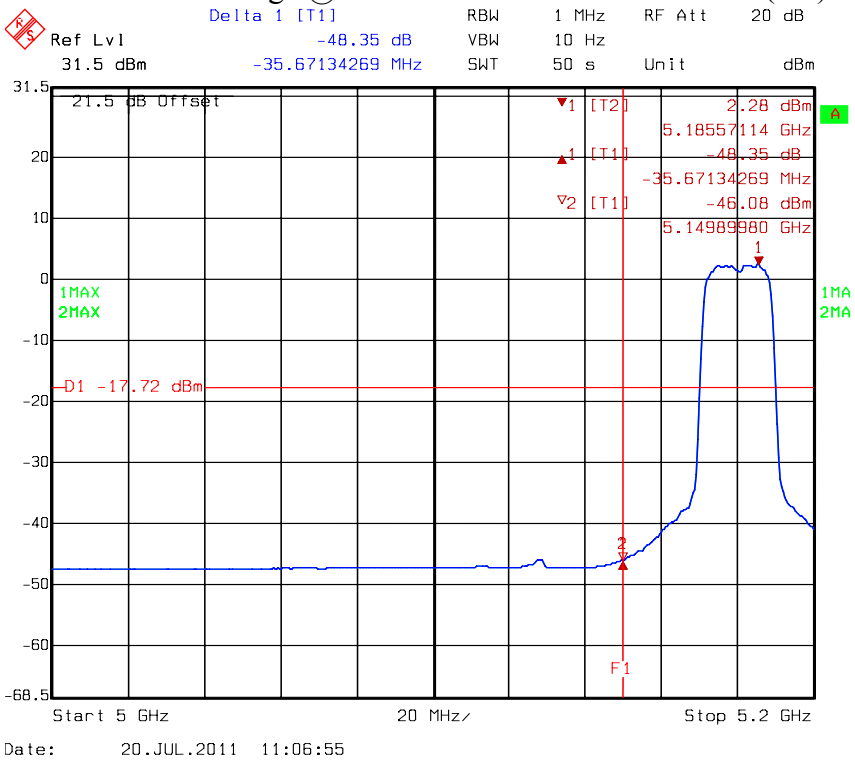
Chain 1: Band edge @ 802.11n HT20 mode channel 36 (PK)



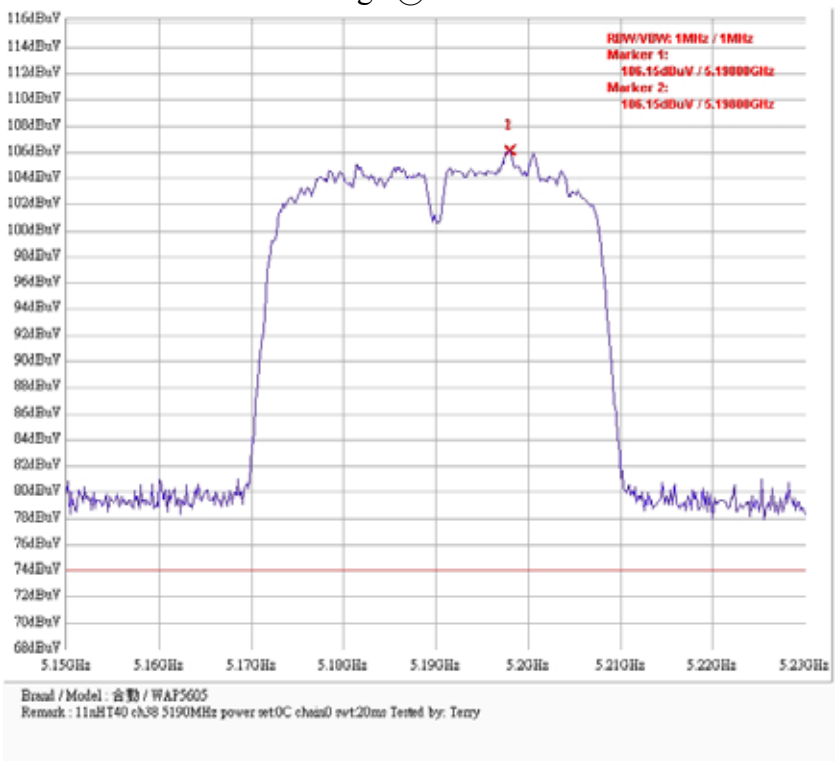
Fundamental: Chain 1: Band edge @ 802.11n HT20 mode channel 36 (AV)



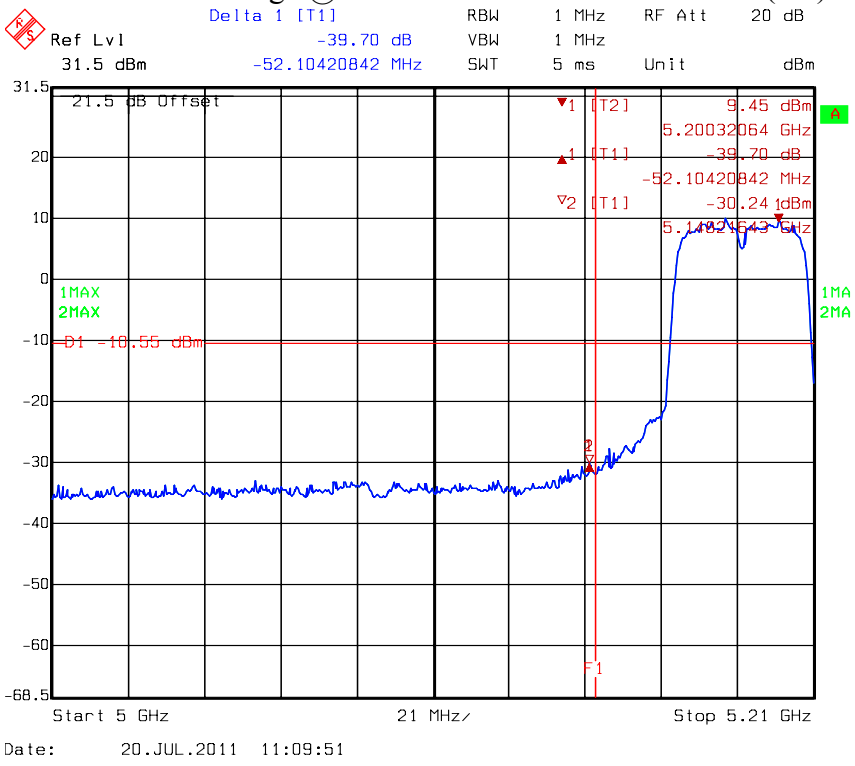
Chain 1: Band edge @ 802.11n HT20 mode channel 36 (AV)



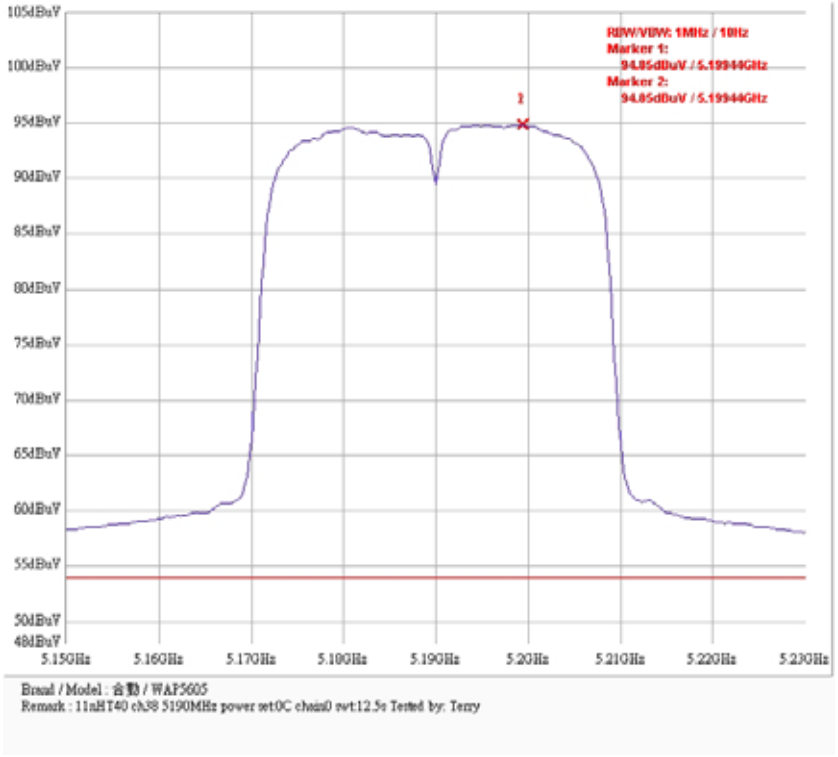
Fundamental: Chain 0: Band edge @ 802.11n HT40 mode channel 38 (PK)



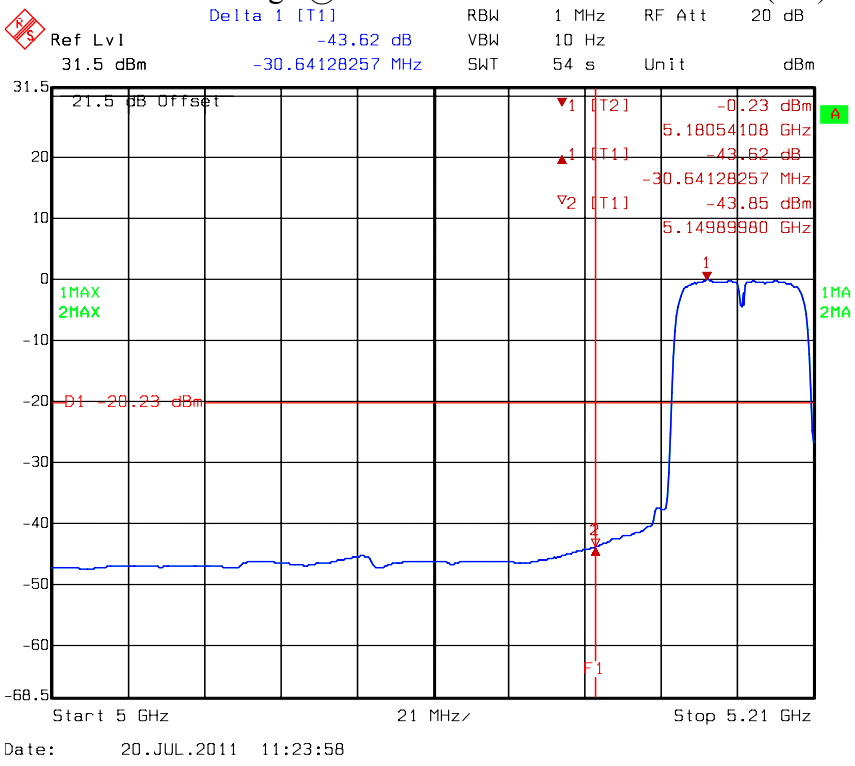
Chain 0: Band edge @ 802.11n HT40 mode channel 38 (PK)



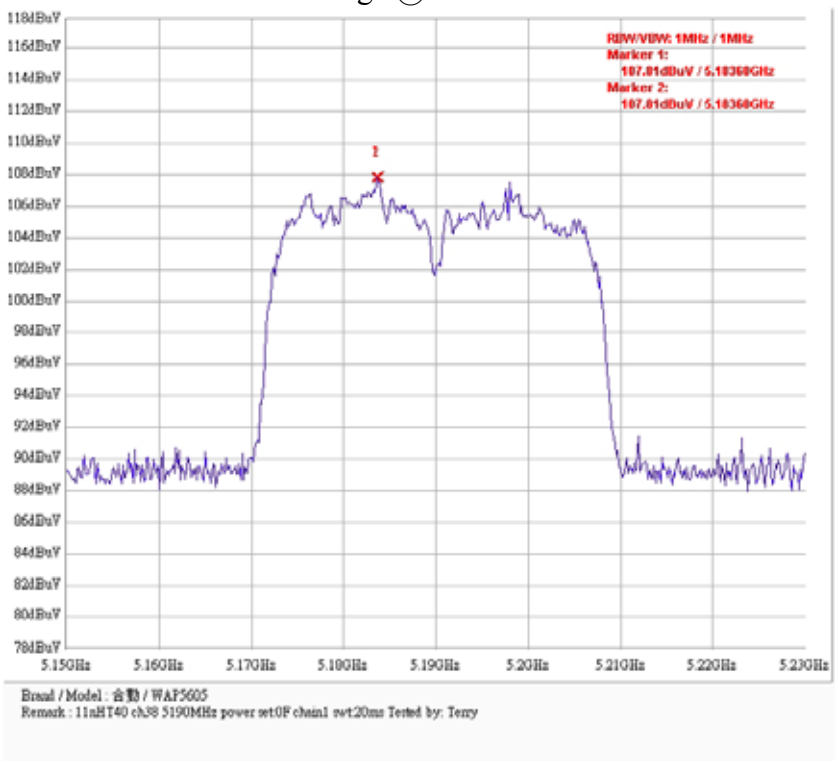
Fundamental: Chain 0: Band edge @ 802.11n HT40 mode channel 38 (AV)



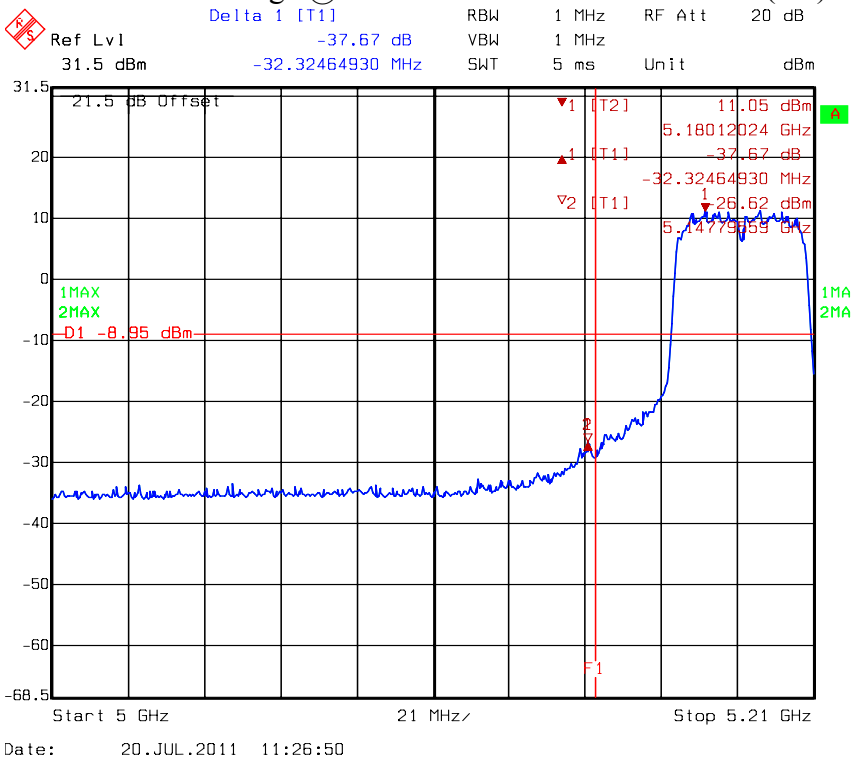
Chain 0: Band edge @ 802.11n HT40 mode channel 38 (AV)



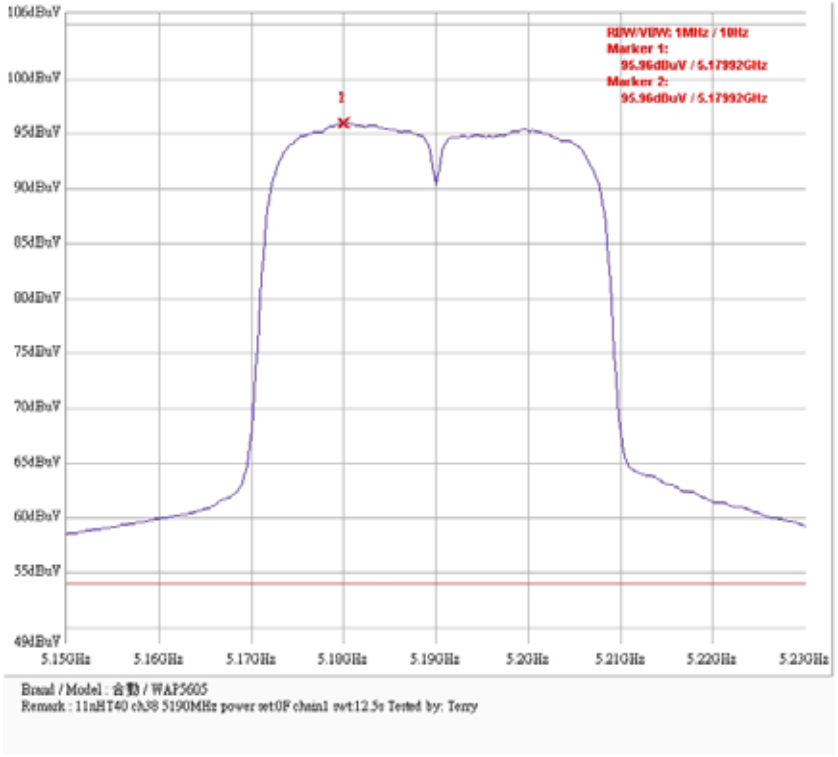
Fundamental: Chain 1: Band edge @ 802.11n HT40 mode channel 38 (PK)



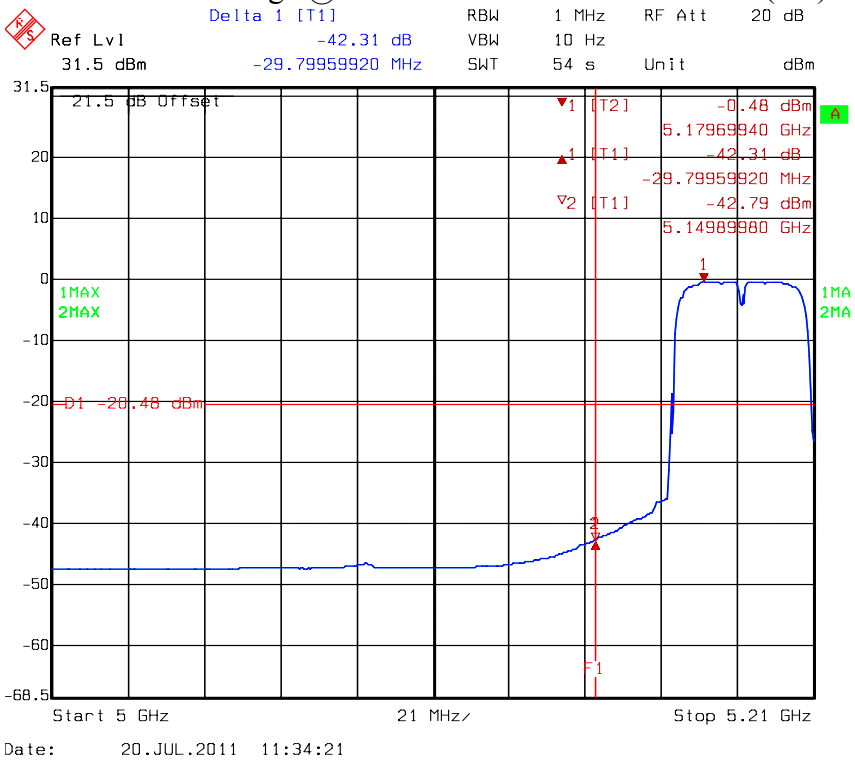
Chain 1: Band edge @ 802.11n HT40 mode channel 38 (PK)



Fundamental: Chain 1: Band edge @ 802.11n HT40 mode channel 38 (AV)



Chain 1: Band edge @ 802.11n HT40 mode channel 38 (AV)

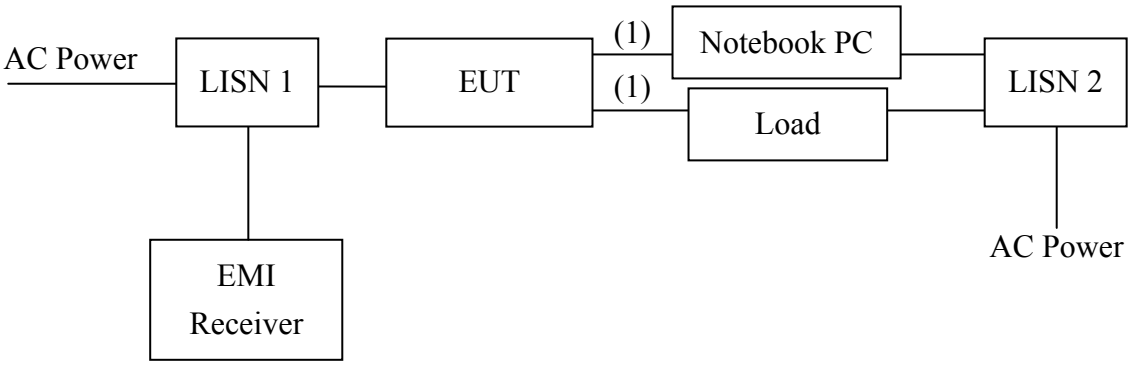


9. Power Line Conducted Emission test

9.1 Operating environment

Temperature:	29	℃
Relative Humidity:	50	%
Atmospheric Pressure	1008	hPa

9.2 Test setup & procedure



(1) RJ-45 UTP Cat.5 10 meter × 2

The EUT are connected to the main power through a line impedance stabilization network (LISN). This provides a 50 ohm/50 uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 ohm/50 uH coupling impedance with 50 ohm termination.
Both sides (Line and Neutral) of AC line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4/2003 on conducted measurement.
The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9 kHz.

The EUT configuration please refer to the “Conducted set-up photo.pdf”.

9.3 Emission limit

Freq. (MHz)	Conducted Limit (dBuV)	
	Q.P.	Ave.
0.15~0.50	66 – 56*	56 – 46*
0.50~5.00	56	46
5.00~30.0	60	50

*Decreases with the logarithm of the frequency.

9.4 Uncertainty of Conducted Emission

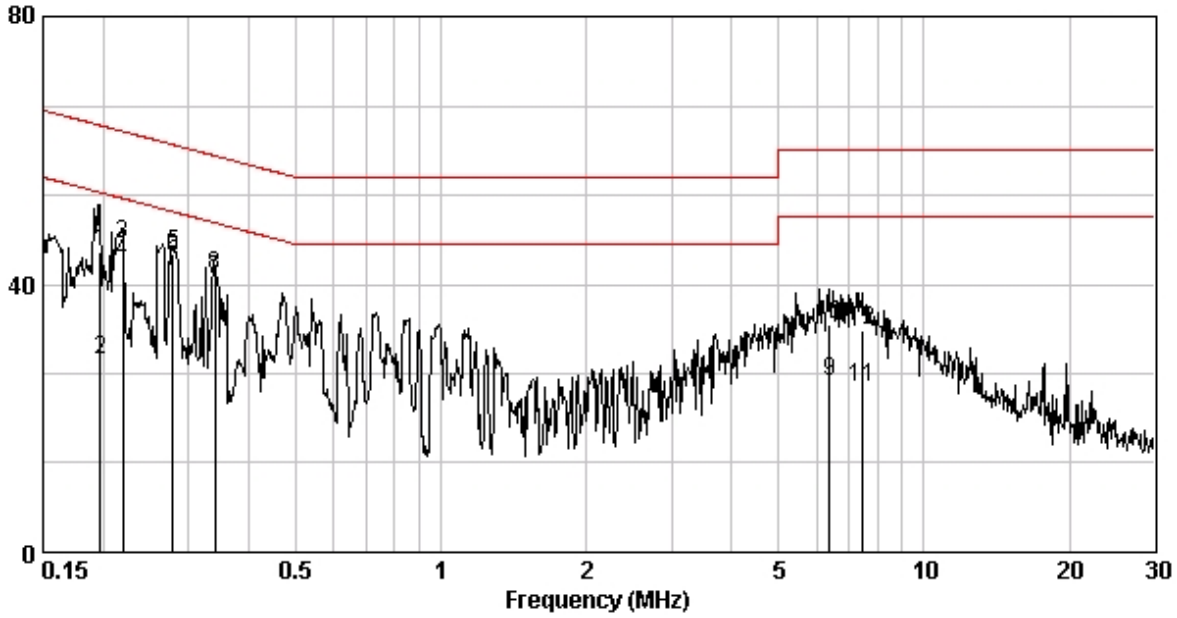
Expanded uncertainty (k=2) of conducted emission measurement is ±2.786 dB.

9.5 Power Line Conducted Emission test data

Phase: Line
EUT: WAP5605
Test Condition: Continuously mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level Av (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Margin (dB) Av
0.198	0.80	44.82	63.71	28.66	53.71	-18.89	-25.05
0.220	0.70	45.89	62.83	43.29	52.83	-16.94	-9.54
0.279	0.46	44.44	60.85	43.89	50.85	-16.41	-6.96
0.341	0.26	40.87	59.18	41.20	49.18	-18.31	-7.98
6.386	0.40	33.90	60.00	25.48	50.00	-26.10	-24.52
7.446	0.44	33.14	60.00	24.56	50.00	-26.86	-25.44

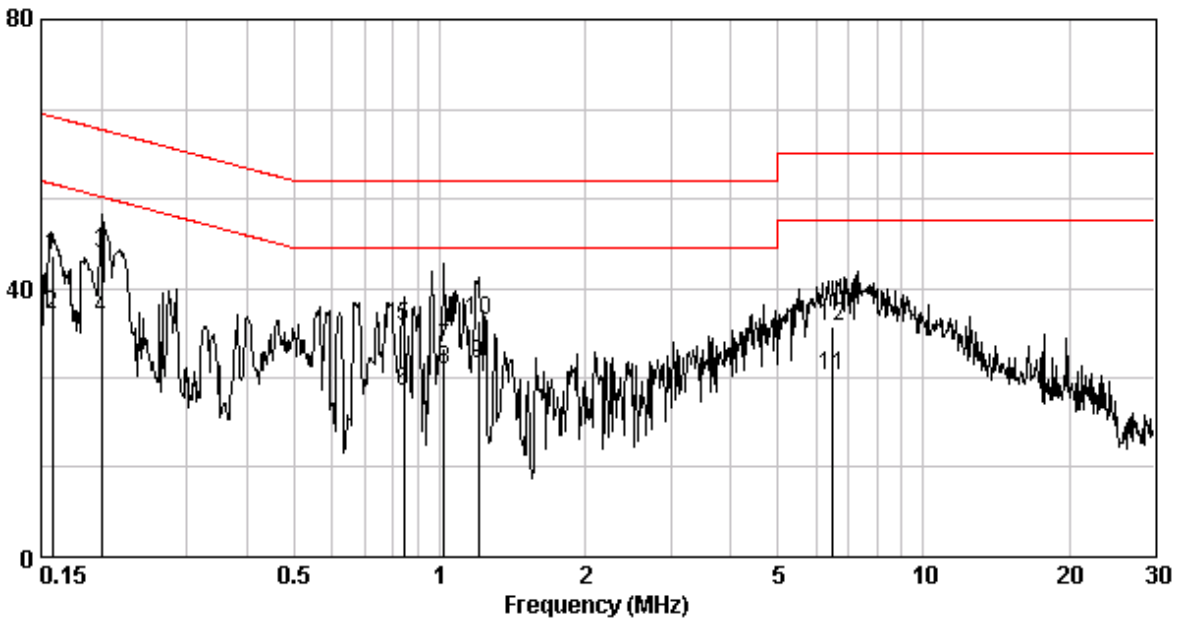
Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)



Phase: Neutral
EUT: WAP5605
Test Condition: Continuously mode

Frequency (MHz)	Corr. Factor (dB)	Level Qp (dBuV)	Limit Qp (dBuV)	Level Av (dBuV)	Limit Av (dBuV)	Margin (dB) Qp	Margin (dB) Av
0.158	0.04	44.96	65.56	35.93	55.56	-20.60	-19.63
0.200	0.04	45.23	63.62	35.55	53.62	-18.39	-18.07
0.844	0.07	34.17	56.00	24.53	46.00	-21.83	-21.47
1.021	0.07	31.14	56.00	27.85	46.00	-24.86	-18.15
1.203	0.08	35.23	56.00	28.78	46.00	-20.77	-17.22
6.488	0.10	34.24	60.00	27.06	50.00	-25.76	-22.94

Remark:
1. Correction Factor (dB)= LISN Factor (dB) + Cable Loss (dB)
2. Margin (dB) = Level (dBuV) – Limit (dBuV)



Appendix A: Test equipment list

Equipment	Brand	Frequency range	Model No.	Cal. Date	Cal. interval
EMI Test Receiver	Rohde & Schwarz	9 kHz~2.75 GHz	ESCS30	6/29/2011	1 year
Spectrum Analyzer	Rohde & Schwarz	9 kHz~30 GHz	FSP30	6/29/2011	1 year
Spectrum Analyzer	Rohde & Schwarz	20 Hz~40 GHz	FSEK30	1/18/2011	1 year
Horn Antenna	SCHWARZBECK	1 GHz~18 GHz	BBHA 9120 D	8/31/2010	2 years
Horn Antenna	SCHWARZBECK	14 GHz~42 GHz	BBHA 9170	9/3/2010	2 years
Bilog Antenna	SCHWARZBECK	25MHz~1.7GHz	VULB 9168	7/26/2011	2 years
Pre-Amplifier	MITEQ	100 MHz~ 26.5 GHz	AFS44-00102650 --42-10P-44	10/27/2009	2 years
Pre-Amplifier	MITEQ	26 GHz~40 GHz	JS4-26004000--2 7-8A	9/8/2010	2 years
Power Meter	Anritsu	100 MHz~ 18 GHz	ML2495A	10/20/2010	1 year
Power Sensor	Anritsu	100 MHz~ 18 GHz	MA2411B	10/20/2010	1 year
Temperature & Humidity Test Chamber	TERCHY	N/A	MHU-225LRU (SA)	6/17/2011	1 year
LISN	Rohde & Schwarz	9 kHz~30 MHz	ESH3-Z5	10/15/2010	1 year

Note: The above equipments are within the valid calibration period.

Measurement Uncertainty:
Measurement uncertainty was calculated in accordance with TR 100 028-1.

Parameter	Uncertainty
Radiated Emission	±5.056 dB
Conducted Emission	±2.786 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.