

# RF TEST REPORT

**Report No. : 130403024SZN-004**

**Model No. : M310**

**Issued Date : April 8, 2013**

**Applicant:** Huawei Technologies Co.,Ltd  
Administration Building, Headquarters of Huawei  
Technologies Co., Ltd., Bantian, Longgang District,  
Shenzhen, 518129, P.R.China

**Test Method/  
Standard:** FCC Part 15 Subpart E, KDB 789033 D01 v01r03, ANSI  
C63.4 2009.

**Note:** DFS report refer to Report No.: TS13040071-EME

**Test By:** Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch  
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## Table of Contents

Summary of Tests .....	3
1. General information .....	4
1.1 Identification of the EUT .....	4
1.2 Additional information about the EUT.....	5
1.3 Antenna description.....	5
1.4 Peripherals equipment.....	5
2. Test specifications .....	6
2.1 Test standard.....	6
2.2 Operation mode.....	7
3. Maximum Output Power test (FCC 15.407) .....	8
3.1 Operating environment.....	8
3.2 Test setup & procedure.....	8
3.3 Limit.....	8
3.3 Measured data of Maximum Output Power test results .....	9
4. Power Spectrum Density test (FCC 15.407) .....	33
4.1 Operating environment.....	33
4.2 Test setup & procedure.....	33
4.3 Limitation.....	33
4.4 Measured data of Power Spectrum Density test results .....	34
5. Peak excursion to average ratio test (FCC 15.407).....	49
5.1 Operating environment.....	49
5.2 Test setup & procedure.....	49
5.3 Limitation.....	49
5.4 Measured data of Peak excursion to average ratio test results.....	50
6. Radiated Emission test (FCC 15.205 & 15.209 & 15.407).....	65
6.1 Operating environment.....	65
6.2 Test setup & procedure.....	65
6.3 Emission limits.....	67
6.4 Radiated spurious emission test data.....	69
6.4.1 Measurement results: frequencies equal to or less than 1 GHz.....	69
6.4.2 Measurement results: frequency above 1GHz .....	70
7. Power Line Conducted Emission test.....	79
7.1 Operating environment.....	79
7.2 Test setup & procedure.....	79
7.3 Emission limit .....	80
7.4 Uncertainty of Conducted Emission .....	80
7.5 Power Line Conducted Emission test data.....	81
8. Frequency Stability Test.....	83
8.1 Test setup & procedure.....	83
8.2 Frequency Stability Test data .....	83
Appendix A: Test equipment list.....	87

### Summary of Tests

FCC Parts	Test	Section	Results
15.203	Antenna Requirement	1.3	Pass
15.407 a (1)/(2)	26dB Bandwidth	3	Pass
15.407 a (1)/(2)	Maximum output power test	3	Pass
15.407 a (1)/(2)	Power Spectrum Density test	4	Pass
15.407 a (6)	Peak excursion to average ratio test	5	Pass
15.407 b (1)/(2)/(3) 15.205, 15.209	Radiated spurious emission test	6	Pass
15.207	AC line conducted emission test	7	Pass
15.407 g	Frequency Stability	8	Pass
15.407 h	Dynamic Frequency Selection	See DFS report No.: TS13040071-EME	Pass

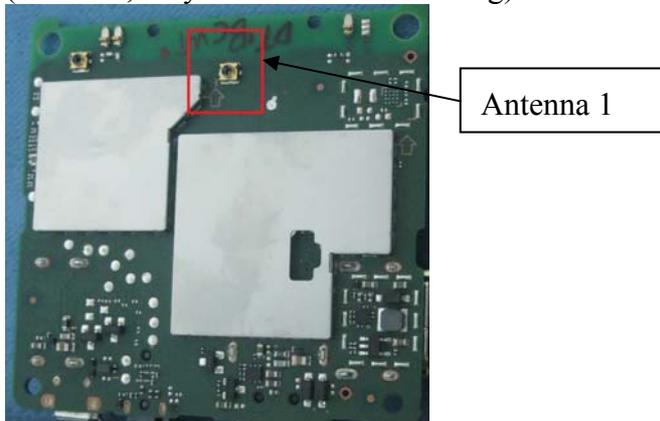
## 1. General information

### 1.1 Identification of the EUT

Product:	MediaQ
Model No.:	QIS-MEDIAQM310
Nominal Channel Bandwidth:	20 MHz, 40MHz
Operating Frequency:	<ol style="list-style-type: none"><li>1. 5180 MHz ~ 5240 MHz</li><li>2. 5260 MHz ~ 5320 MHz</li><li>3. 5500 MHz ~ 5580 MHz</li><li>4. 5660 MHz ~ 5700 MHz</li></ol>
<b>Note:</b>	<ol style="list-style-type: none"><li>5. 5600 MHz ~ 5650 MHz (it's confirmed no 802.11a/n mode transmitter bandwidth has emission within this band)</li></ol>
Channel Number:	<ol style="list-style-type: none"><li>1. 4 channels for 5180 MHz ~ 5240 MHz for 11a,11n HT20</li><li>2. 2 channels for 5190 MHz ~ 5230 MHz for 11n HT40</li><li>3. 4 channels for 5260 MHz ~ 5320 MHz for 11a,11n HT20</li><li>4. 2 channels for 5270 MHz ~ 5310 MHz for 11n HT40</li><li>5. 5 channels for 5500 MHz ~ 5580 MHz for 11a,11n HT20</li><li>6. 2 channels for 5510 MHz ~ 5550 MHz for 11n HT40</li><li>7. 3 channels for 5660 MHz ~ 5700 MHz for 11a,11n HT20</li><li>8. 1 channels for 5670 MHz for 11n HT40</li></ol>
Rated Power:	5Vdc, 2A from adapter (Model No.: HW-050200U3W), Input: 100-240Vac, 50/60Hz, Output: 5Vdc, 2A
Data Cable:	Shielding HDMI Cable & Shielding USB Cable with OTG Port
Sample Received:	April 3, 2013
Test Date(s):	April 3, 2013 ~ April 7, 2013
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Note 2:	When determining the test conclusion, the Measurement Uncertainty of test has been considered.
Note 3:	For more detail product info, please refer check list "attached file.pdf".

**1.2 Additional information about the EUT**

The EUT is a MediaQ Android terminal (OS: Android V4.1), the device is a SISO product (5G band, only Antenna 1 transmitting).



For more detail features, please refer to User's manual as file name “descri.pdf”.

**1.3 Antenna description (15.203)**

The EUT uses Integral Antenna which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.

**1.4 Peripherals equipment**

Description	Manufacturer	Model No.
TV	Sony	KDL-24EX520
Earphone	G-Tide	3.5mm jack earphone
TF Card	Sandisk	TF/4GB
2 X USB Disk	Sandisk	USB/4GB
HDMI	MTC	Shielded, Length: 120cm
HDMI Terminal	MTC	TL-001
HDMI cable	Huawei	Shielded, Length: 17cm
USB Cable with OTG port	Huawei	Shielded, Length: 100cm OTG Length: 18cm
AC/DC Adapter (Huawei)	Huntkey	HW-050200U3W Input: 100-240Vac, 50/60Hz; Output: 5Vdc, 3A
	XinQiao	

Note: The Model: M310 have two different AC/DC Adapter power suppliers, which have already arranged the test accordingly, and the worst case data was record in this report.

## 2. Test specifications

### 2.1 Test standard

The EUT was performed according to the procedures in FCC Part 15 E, Section 15.203, 15.207, 15.209, 15.407 and ANSI C63.4/2009, method of measurement: reference to FCC KDB789033 D01 v01r03.

The test of radiated measurements according to FCC Part 15 Section 15.33(a) had been conducted and the field strength of this frequency band was all meet limit requirement, thus we evaluate the EUT pass the specified test.

The AC power conducted emissions was investigated over the frequency range from 0.15 MHz to 30 MHz using a receiver bandwidth of 9 kHz (15.207 paragraph).

Radiated emissions were investigated cover the frequency range from 30 MHz to 1000 MHz using a receiver RBW of 120 kHz record QP reading, and the frequency over 1 GHz using a spectrum analyzer RBW of 1 MHz, VBW of 3MHz, Detector=Peak record for Peak reading, RBW of 1 MHz, VBW of 3MHz, Detector=RMS record for Average reading recorded on the report.

The EUT setup configurations please refer to the photo of radiated setup photos.pdf & conducted setup photos.pdf.

## 2.2 Operation mode

The EUT was supplied by adapter with 5Vdc, 2A (AC/DC Adapter rating: Input: 100-240Vac, 50-60Hz, Output: 5Vdc, 2A) and it was run in TX mode that was controlled by client provided RF testing program.

The EUT was transmitted continuously during the test.

With individual verifying, the maximum output power was found at 6 Mbps data rate for 802.11a mode, 6.5 Mbps data rate for 802.11n-HT20 mode, 13.5 Mbps data rate for 802.11n-HT40 mode. The final tests were executed under these conditions and recorded in this report individually.

### Table for Parameters of Test Software Setting

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

<b>Power Parameters of 802.11a/n</b>			
<b>Modem</b>	<b>Software (dBm)</b>		
	5180 MHz	5200 MHz	5240 MHz
802.11a	10.0	10.0	10.0
	5260 MHz	5280 MHz	5320 MHz
	10.0	10.0	10.0
	5500 MHz	5580 MHz	5700 MHz
	10.0	10.0	10.0
802.11n-HT20	5180 MHz	5200 MHz	5240 MHz
	10.0	10.0	10.0
	5260 MHz	5280 MHz	5320 MHz
	10.0	10.0	10.0
	5500 MHz	5580 MHz	5700 MHz
802.11n-HT40	10.0	10.0	10.0
	5190 MHz	5230 MHz	5270MHz
	10.0	10.0	10.0
	5310 MHz	5510 MHz	5550 MHz
	10.0	10.0	10.0
	5670 MHz	-	-
10.0	-	-	

### 3. Maximum Output Power test (FCC 15.407)

#### 3.1 Operating environment

Temperature: 25 °C  
Relative Humidity: 50 %  
Atmospheric Pressure: 1023 hPa

#### 3.2 Test setup & procedure

##### Method of Measurement:

For Maximum Output Power test:

The power output per FCC §15.407(a) was measured on the EUT using a 50 ohm SMA cable connected to spectrum analyzer and the measurement method refer to KDB 789033D01 v01r03: Method SA-1. Power was read directly and cable loss correction (0.6dB) was added to the reading to obtain power at the EUT antenna terminals.

For 26dB bandwidth test:

The measurement methods refer to KDB 789033D01 v01r03: section C.

#### 3.3 Limit

Operating Frequency (MHz)	Output power limit (which is the lesser)
5150~5250	< 50 mW (17 dBm) or 4 dBm+10 log B=17.7dBm
5250~5350, 5470~5725	< 250 mW (24 dBm) or 11 dBm+10 log B=24.7dBm

Remark: where B is the -26 dB emission bandwidth in MHz.

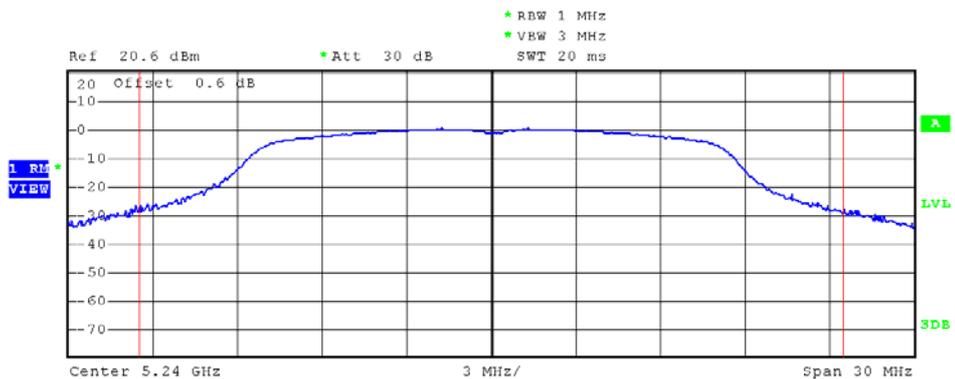
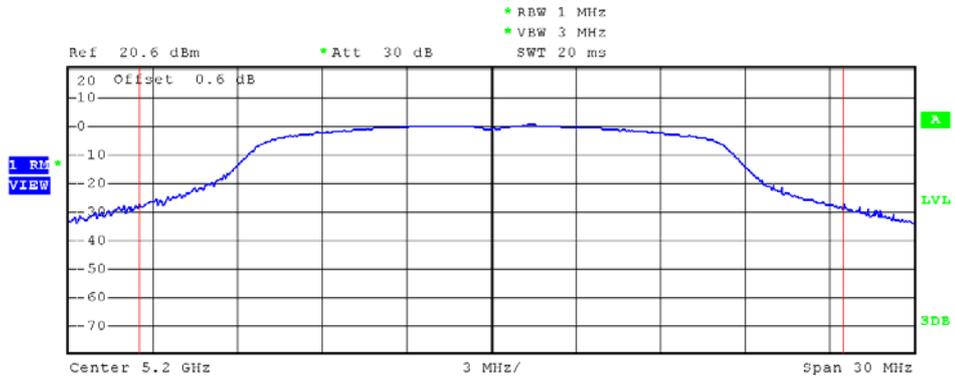
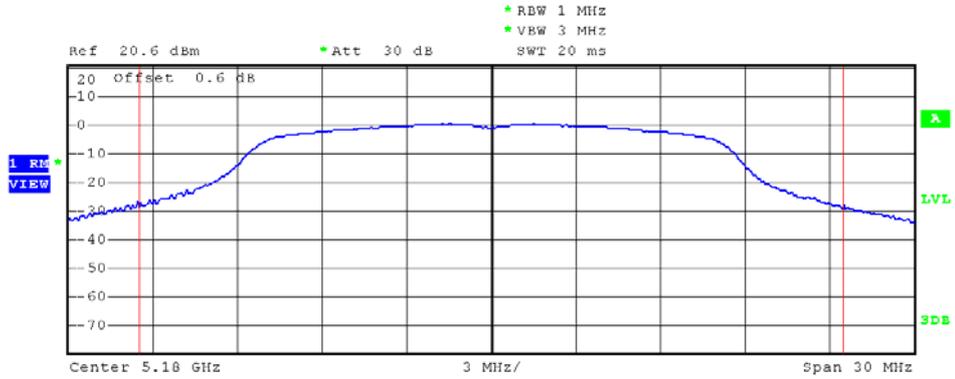
### 3.3 Measured data of Maximum Output Power test results

Mode	Channel	Data Rate (Mbps)	Output Power (dBm)	Limit (dBm)
802.11a	36	6	10.09	17
	40		10.11	17
	48		10.13	17
	52		10.21	24
	56		10.14	24
	64		10.18	24
	100		9.87	24
	116		9.77	24
	140		9.73	24
802.11n (HT20)	36	6.5	10.01	17
	40		10.03	17
	48		10.21	17
	52		10.08	24
	56		10.35	24
	64		10.21	24
	100		9.81	24
	116		9.91	24
	140		9.79	24
802.11n (HT40)	38	13.5	9.92	17
	46		9.87	17
	54		9.79	24
	62		9.83	24
	102		9.72	24
	110		9.67	24
	134		9.20	24

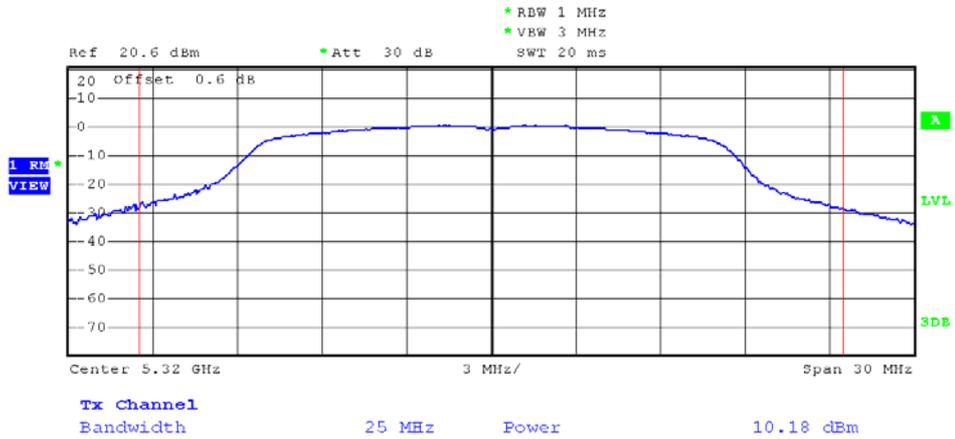
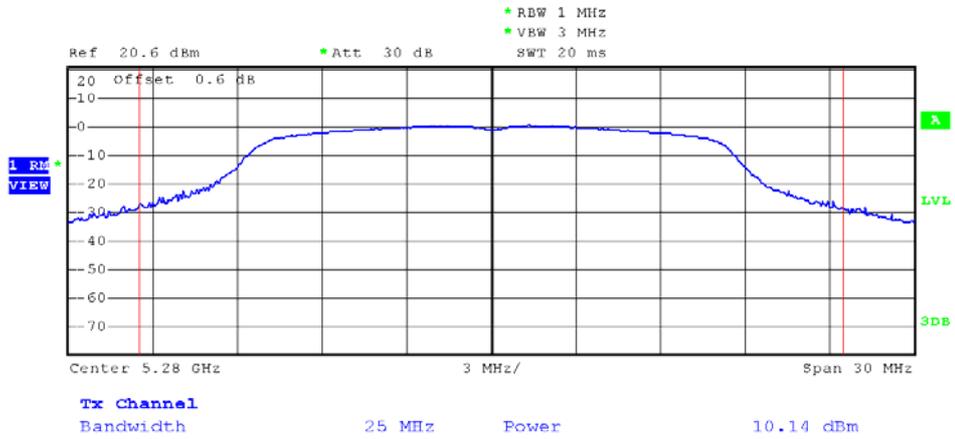
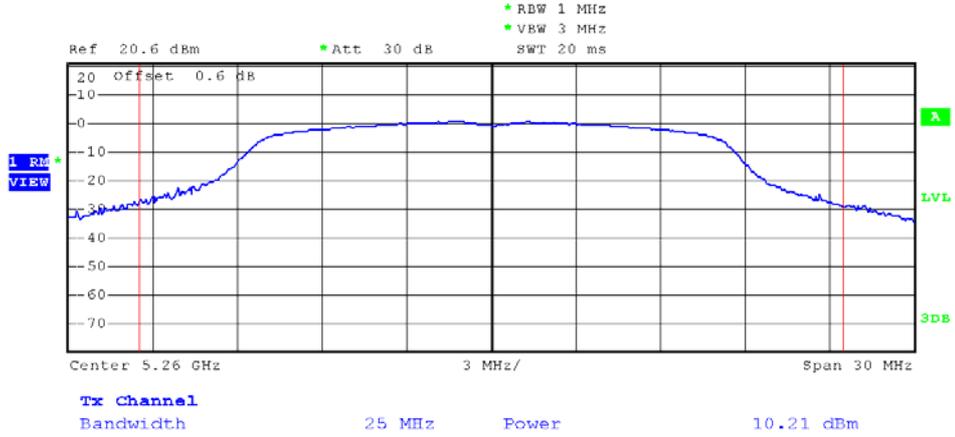
Please see the plot below.

**Maximum conducted output power:**

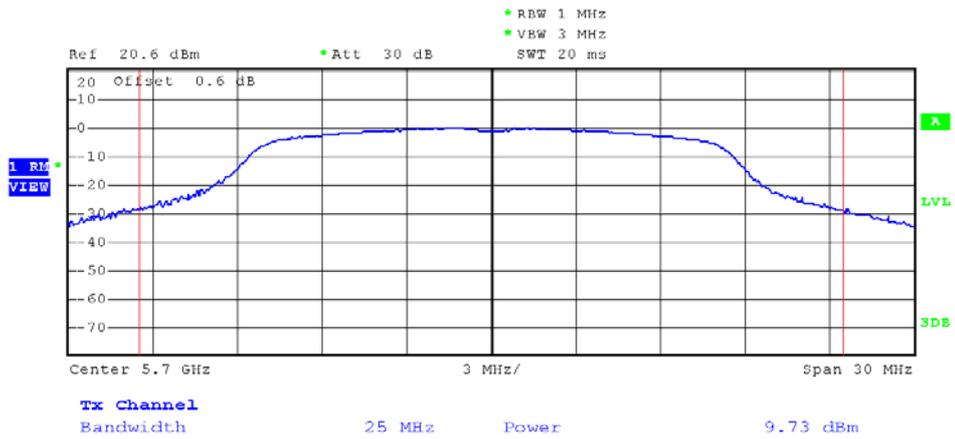
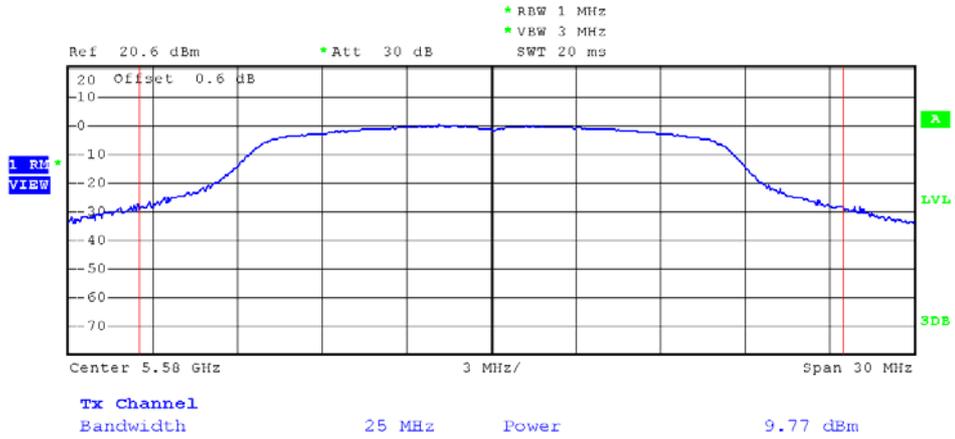
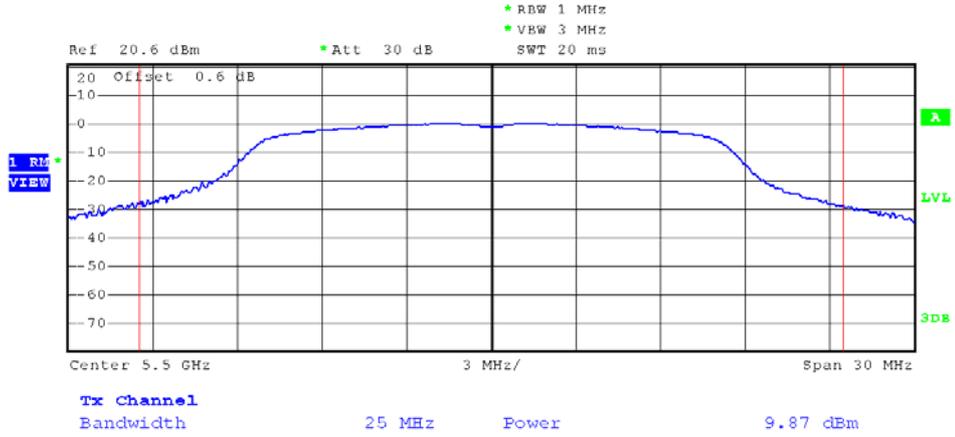
**802.11a 36/40/48**



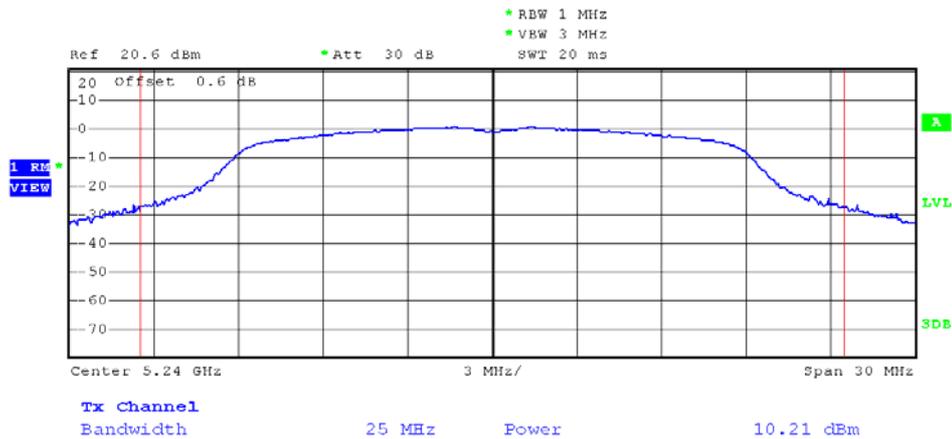
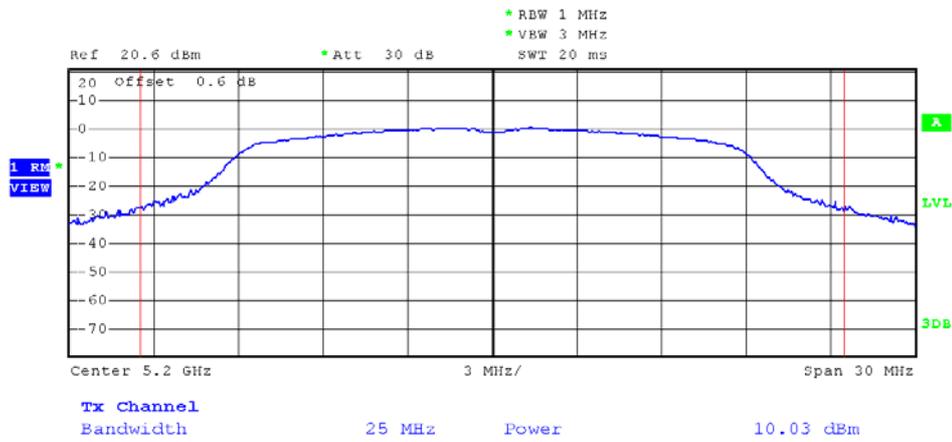
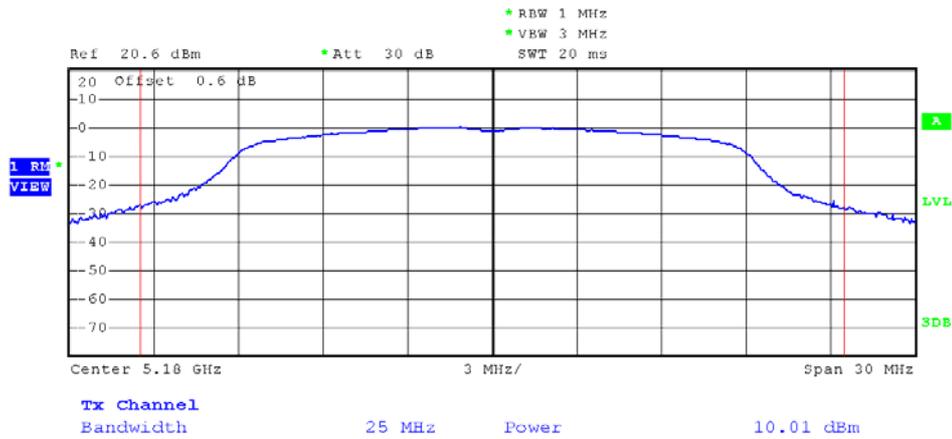
**802.11a 52/56/64**



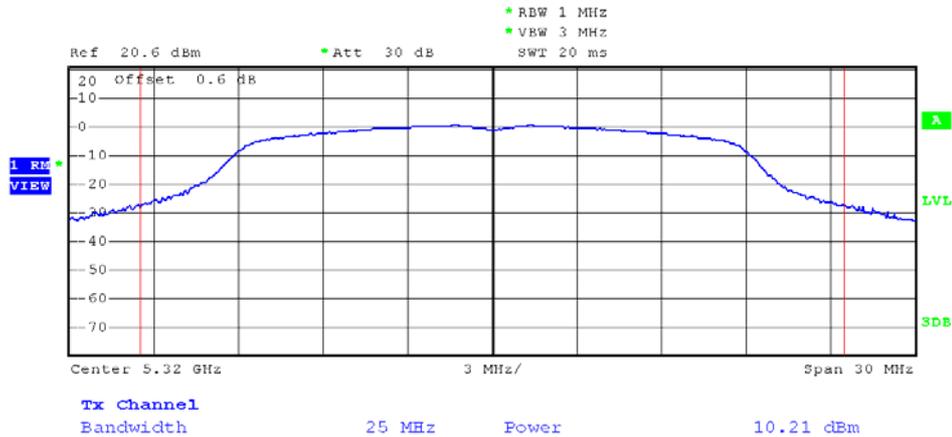
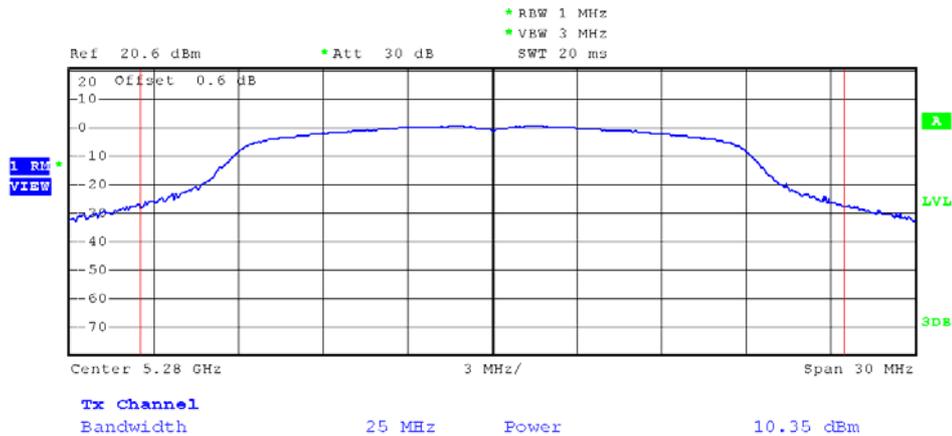
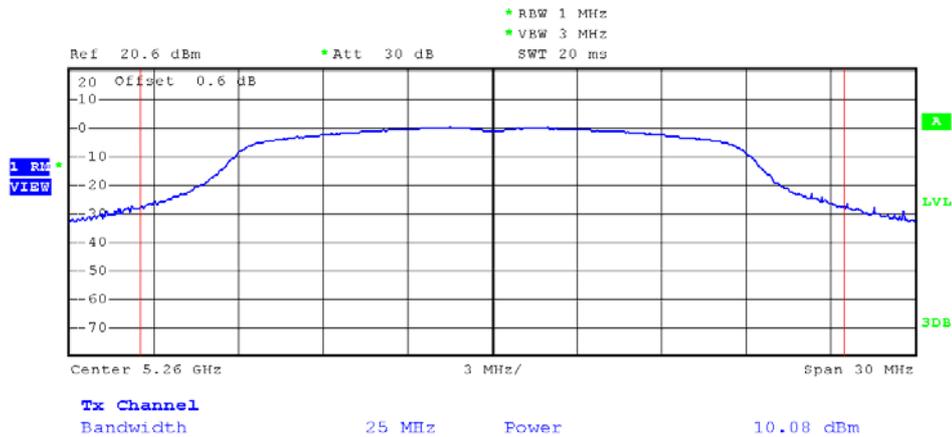
**802.11a 100/116/140**



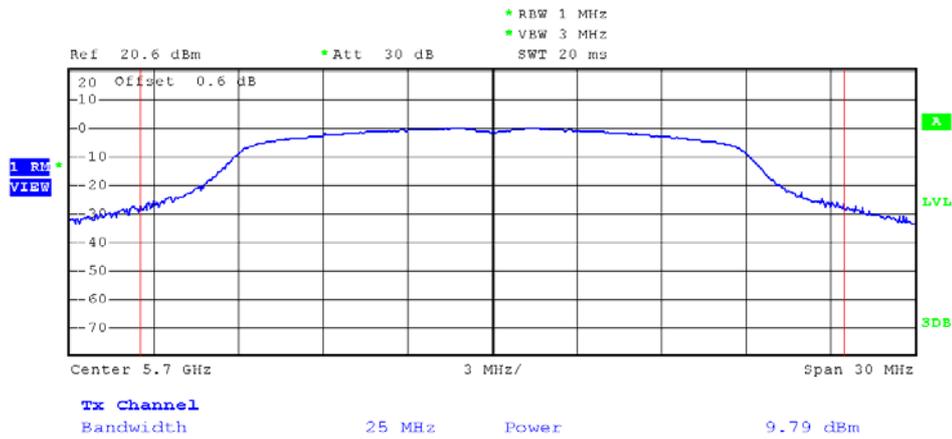
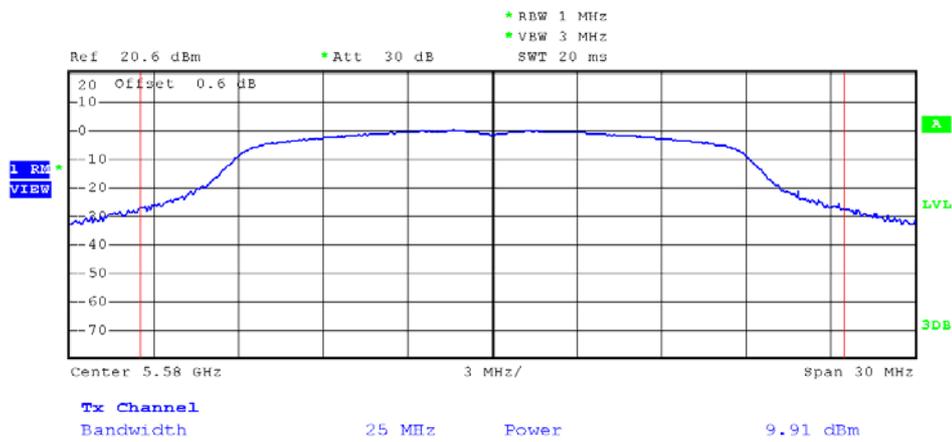
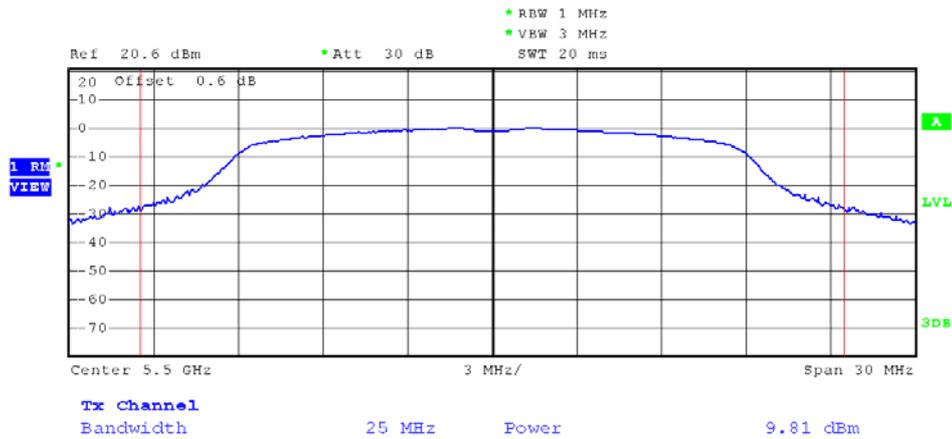
802.11n-HT20 36/40/48



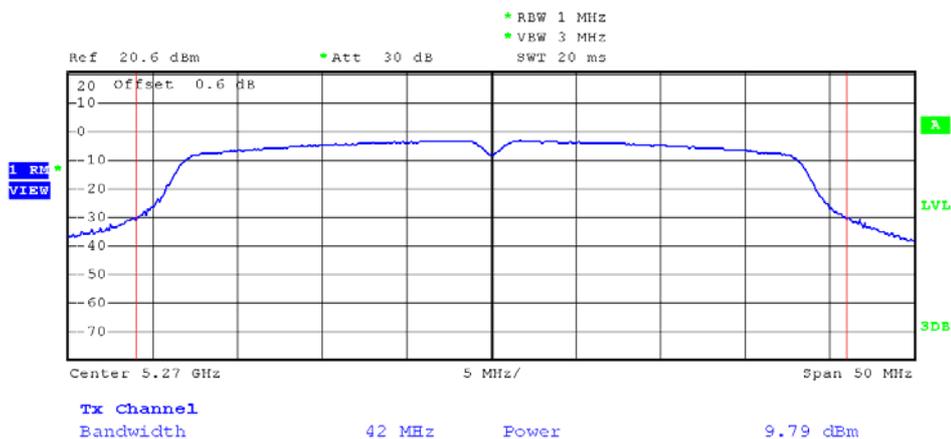
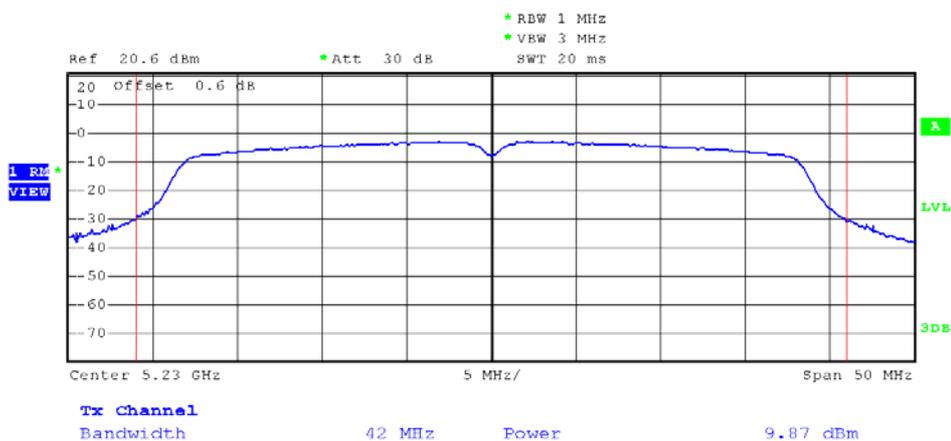
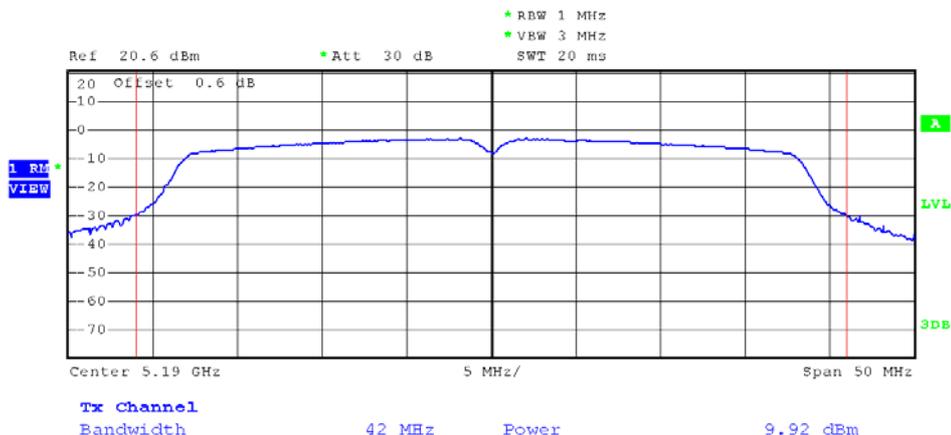
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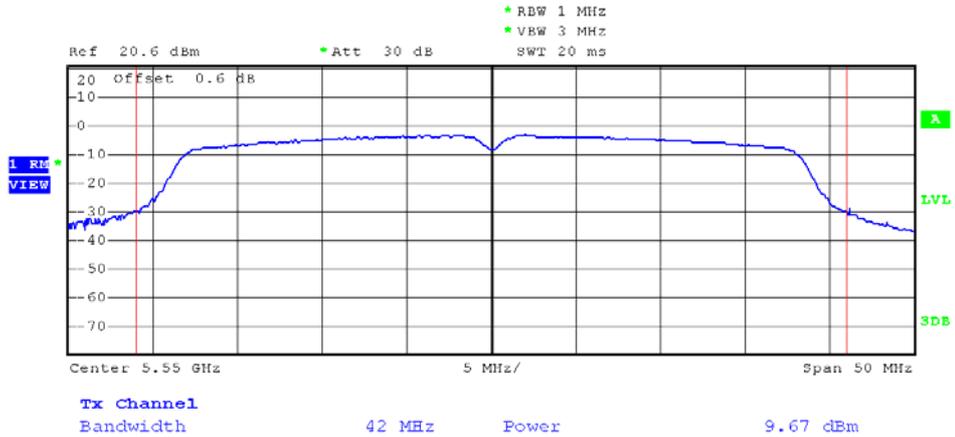
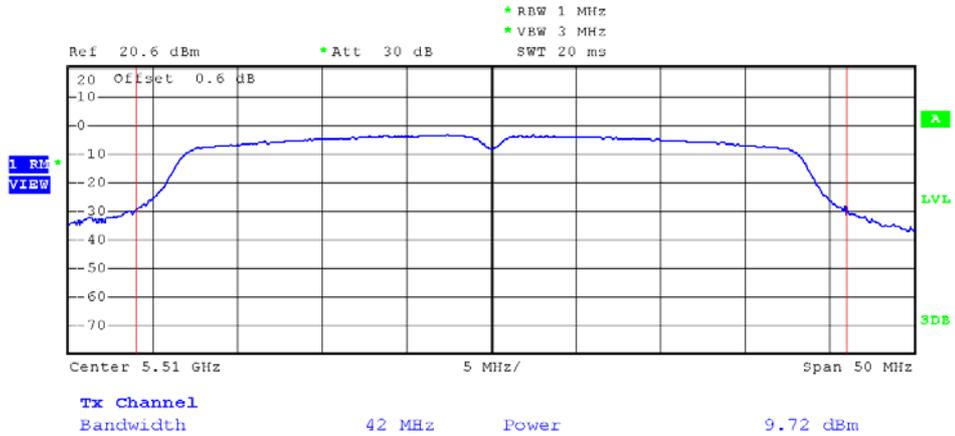
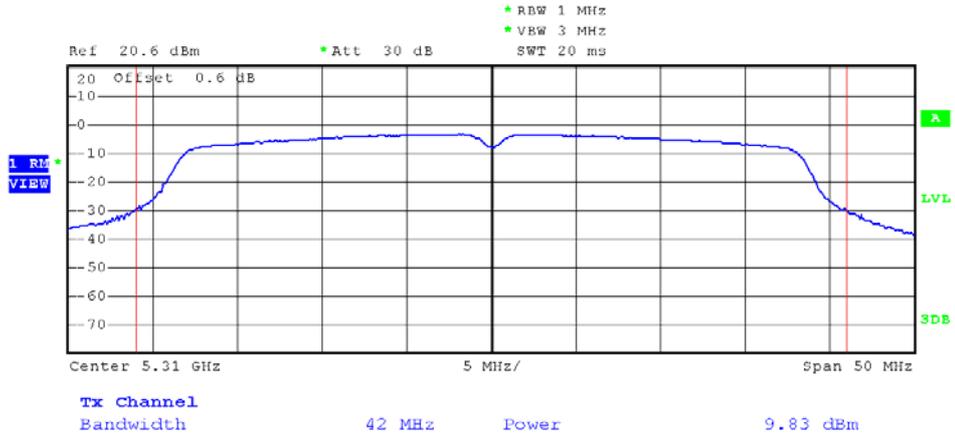
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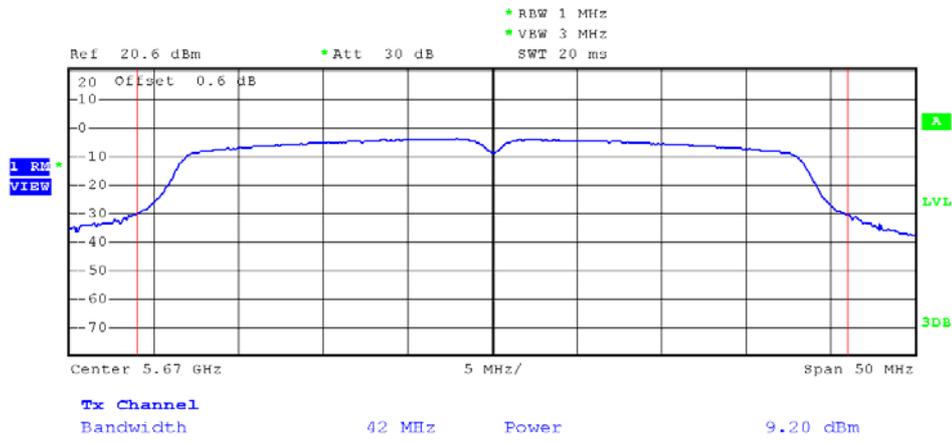
802.11n-HT40 38/46/54



**802.11n-HT40 62/102/110**

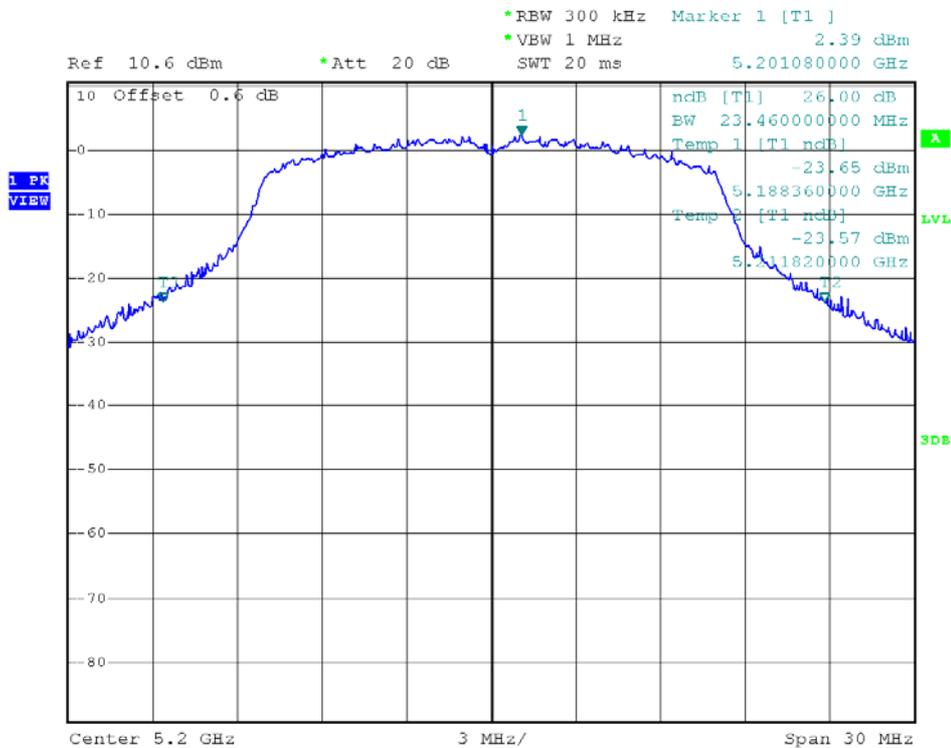
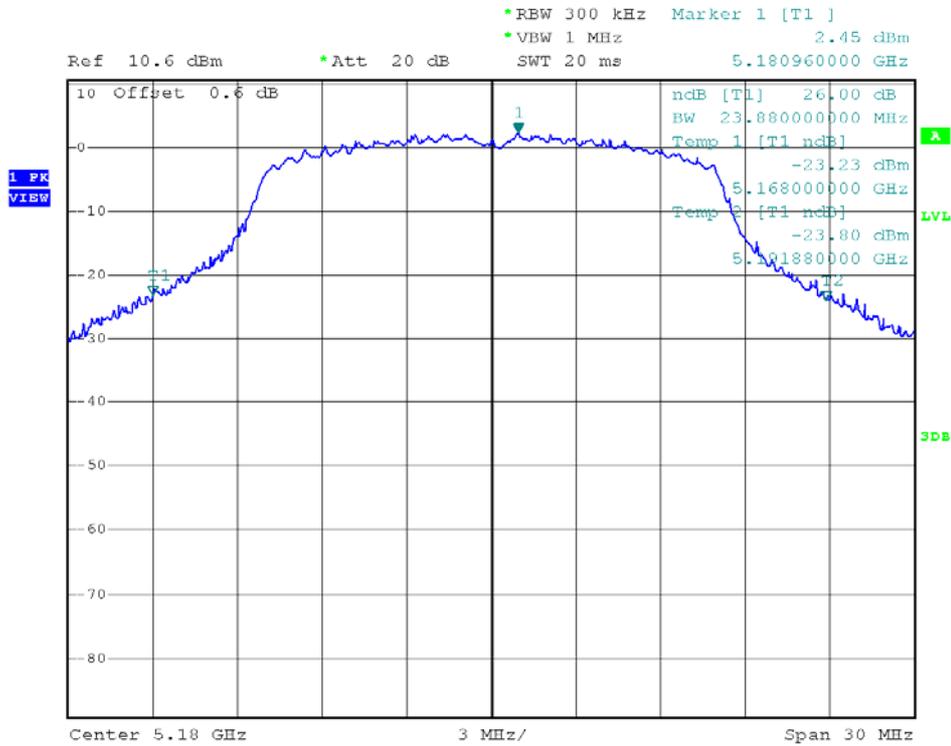


**802.11n-HT40 134**



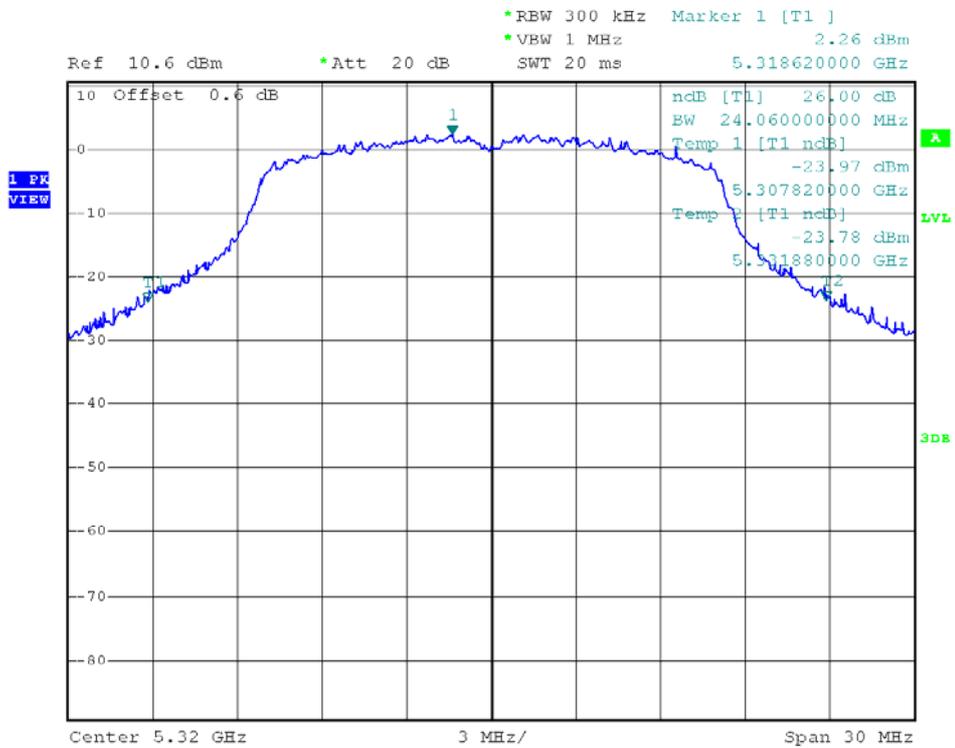
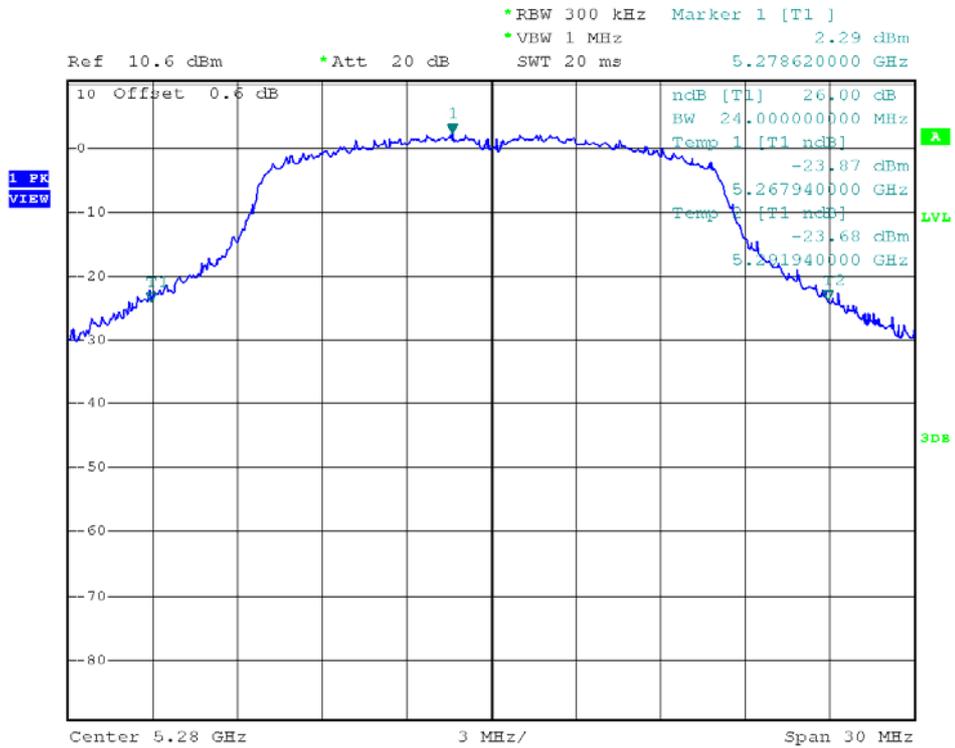
26dB Bandwidth :

802.11a 36/40



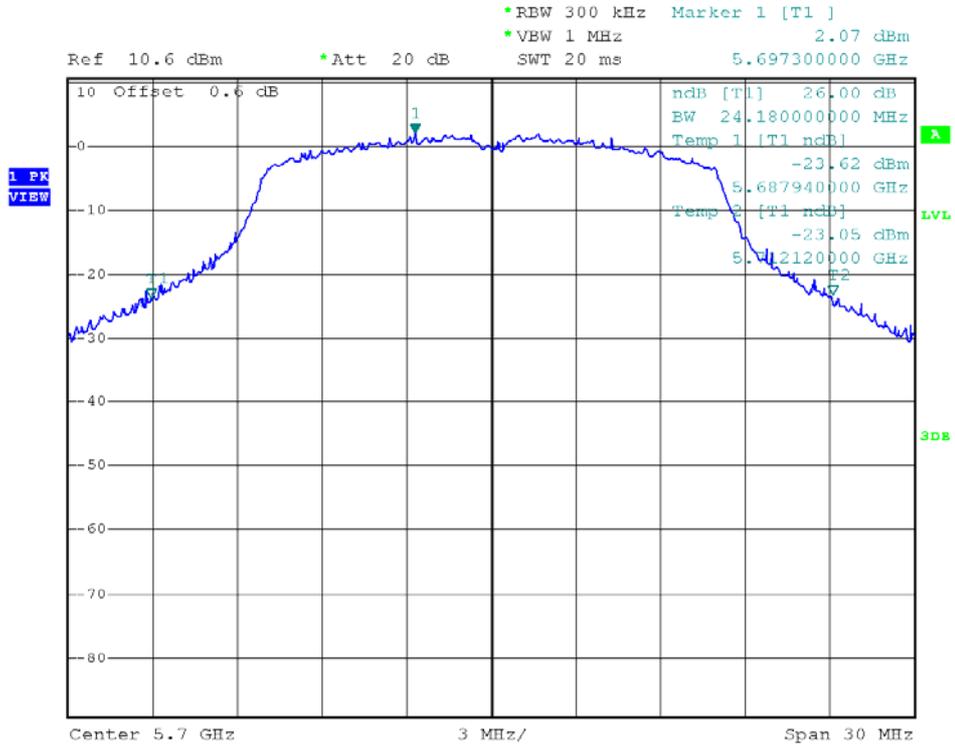


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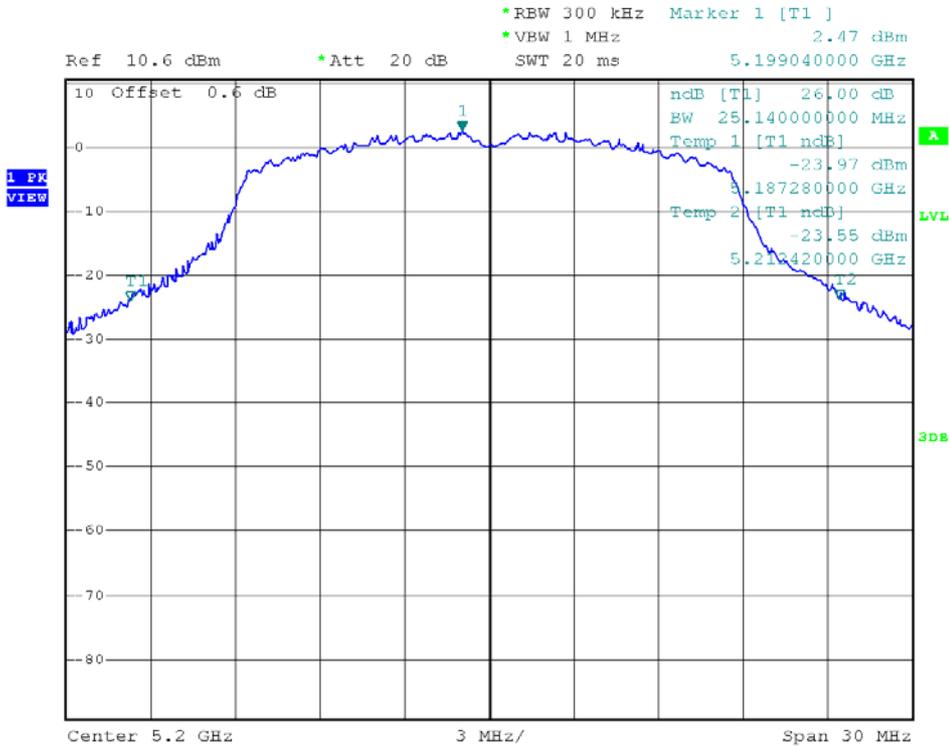
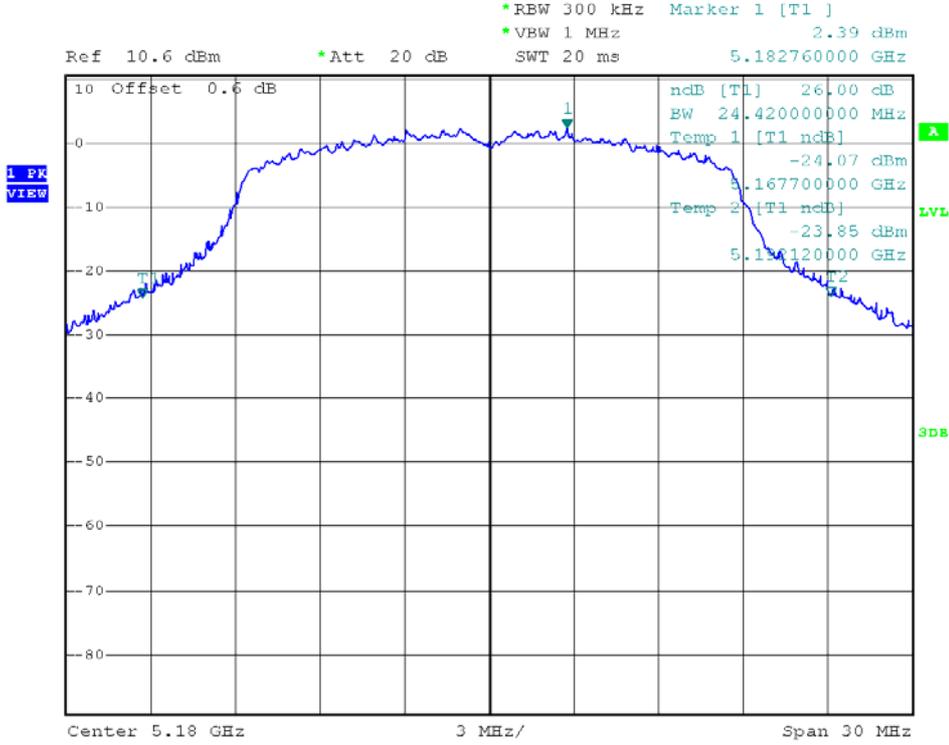




**802.11a 140**

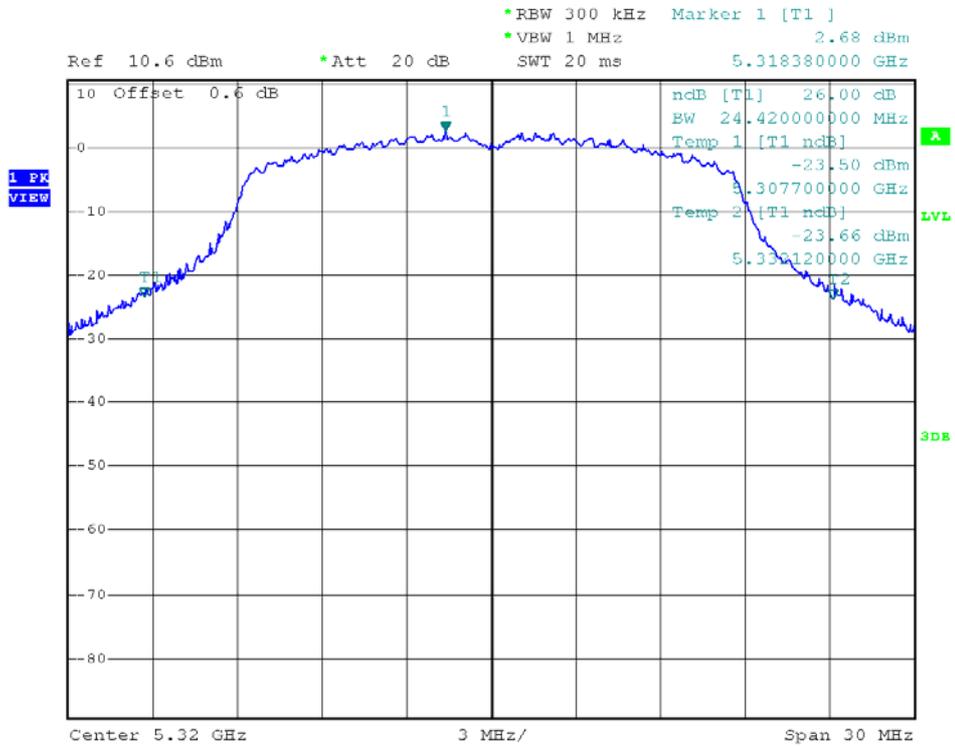
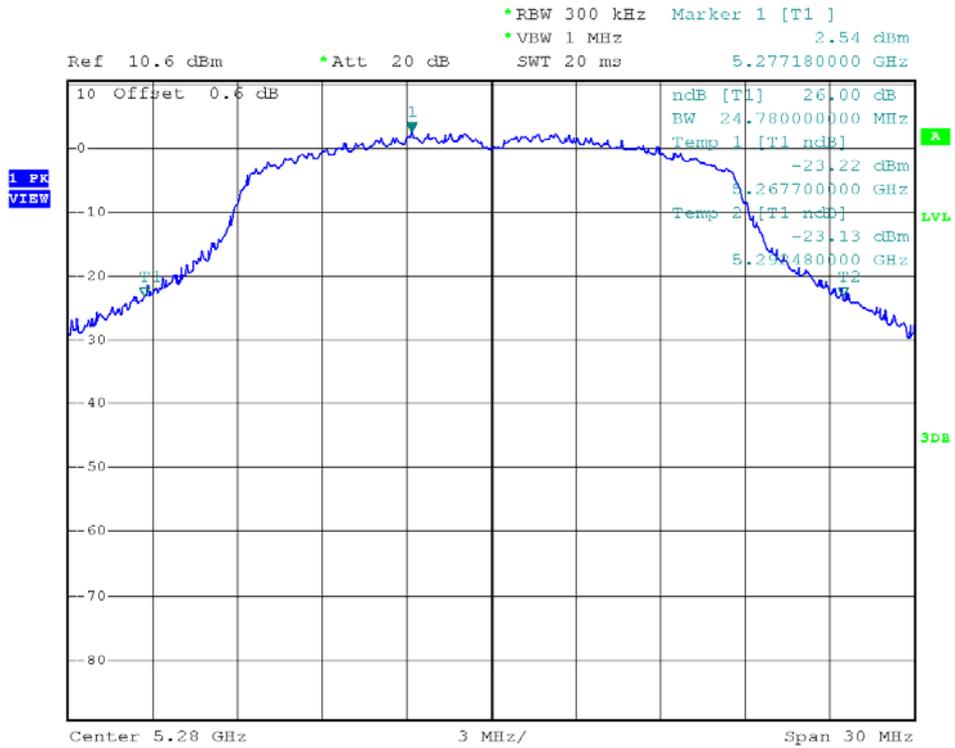


802.11n-HT20 36/40

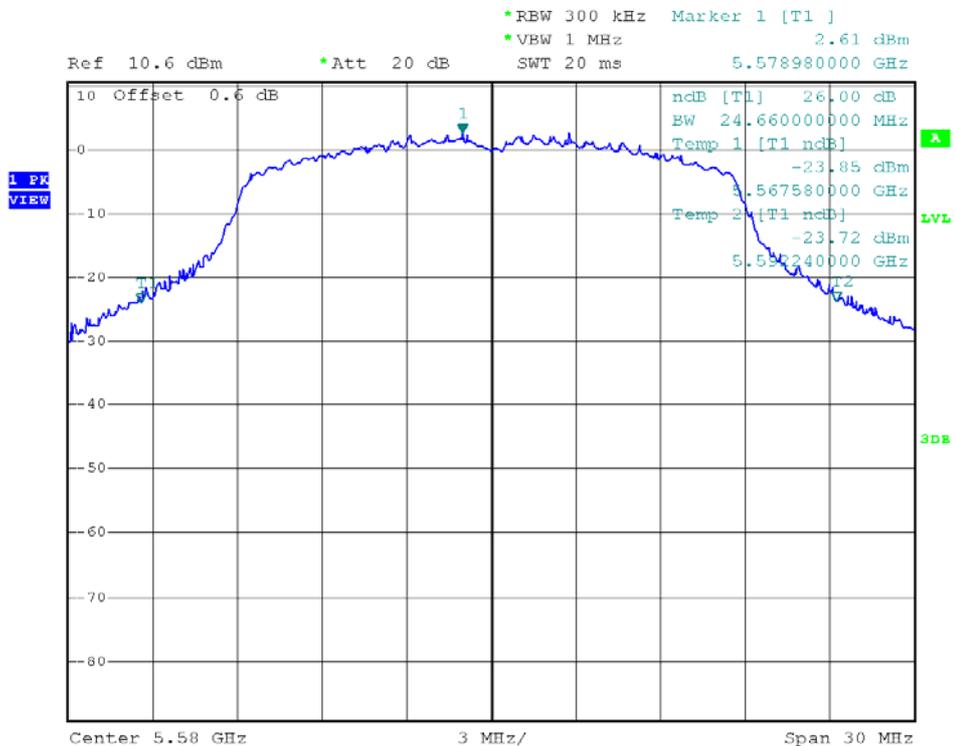
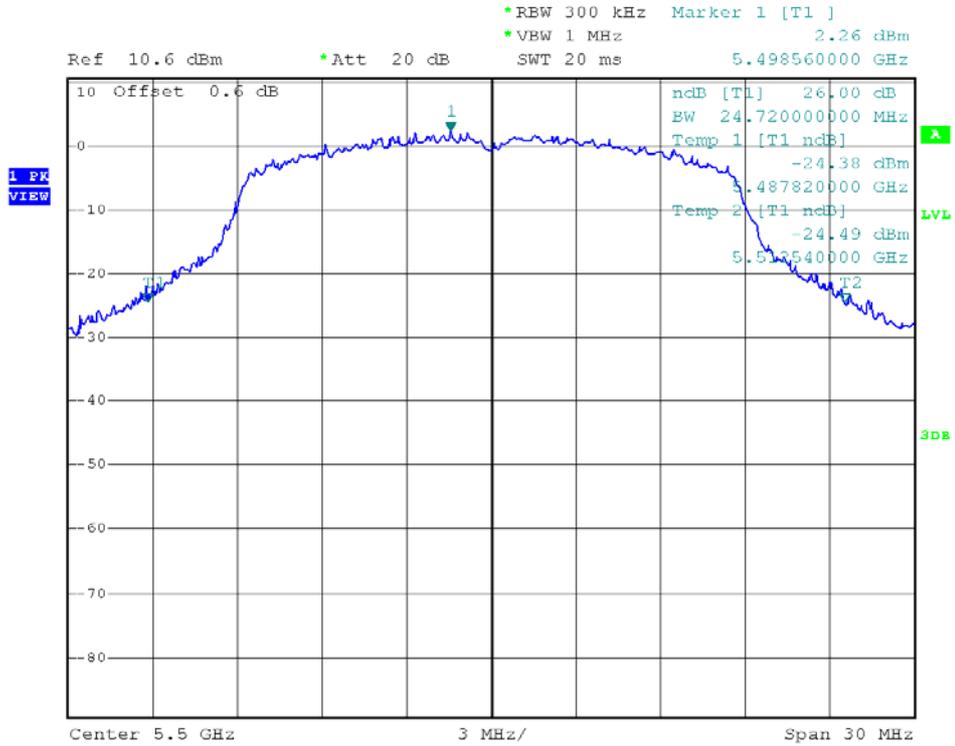




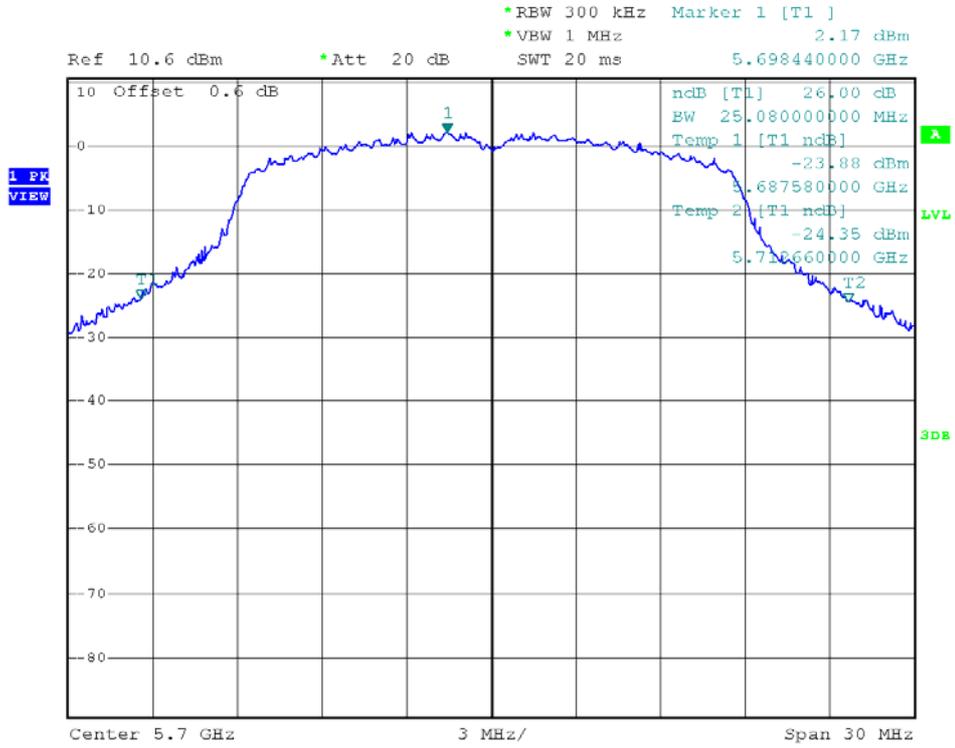
**802.11n-HT20 56/64**



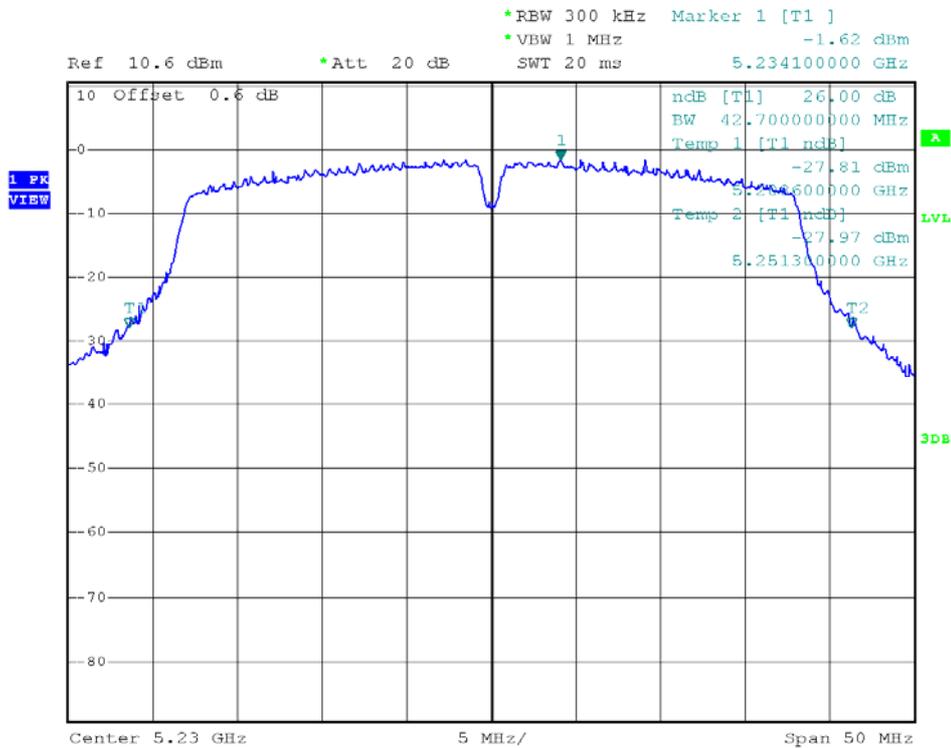
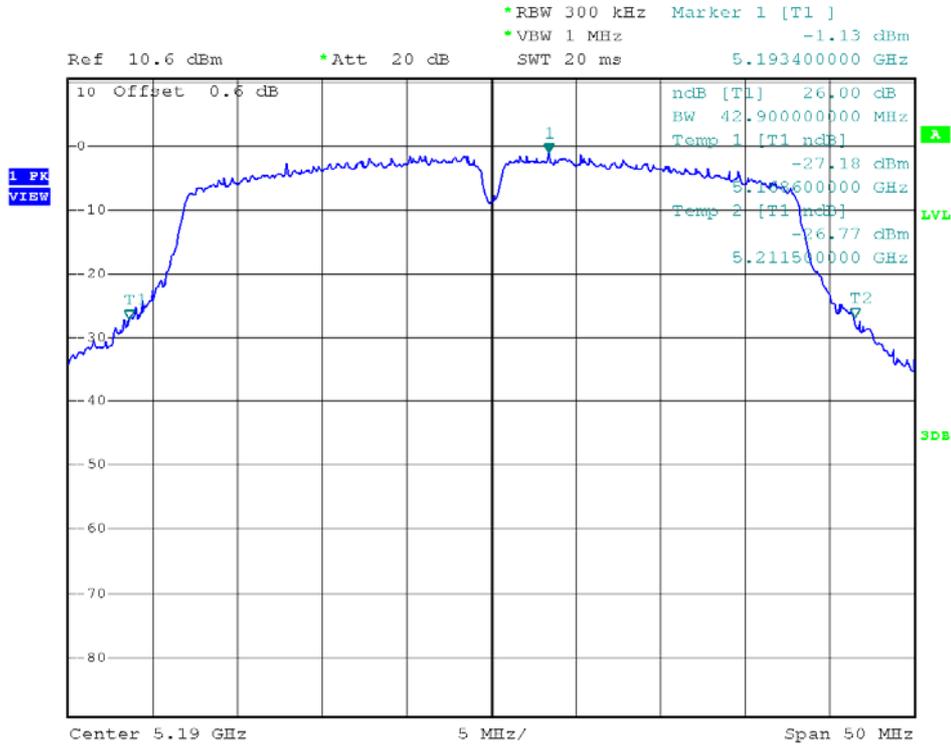
**802.11n-HT20 100/116**



### 802.11n-HT20 140

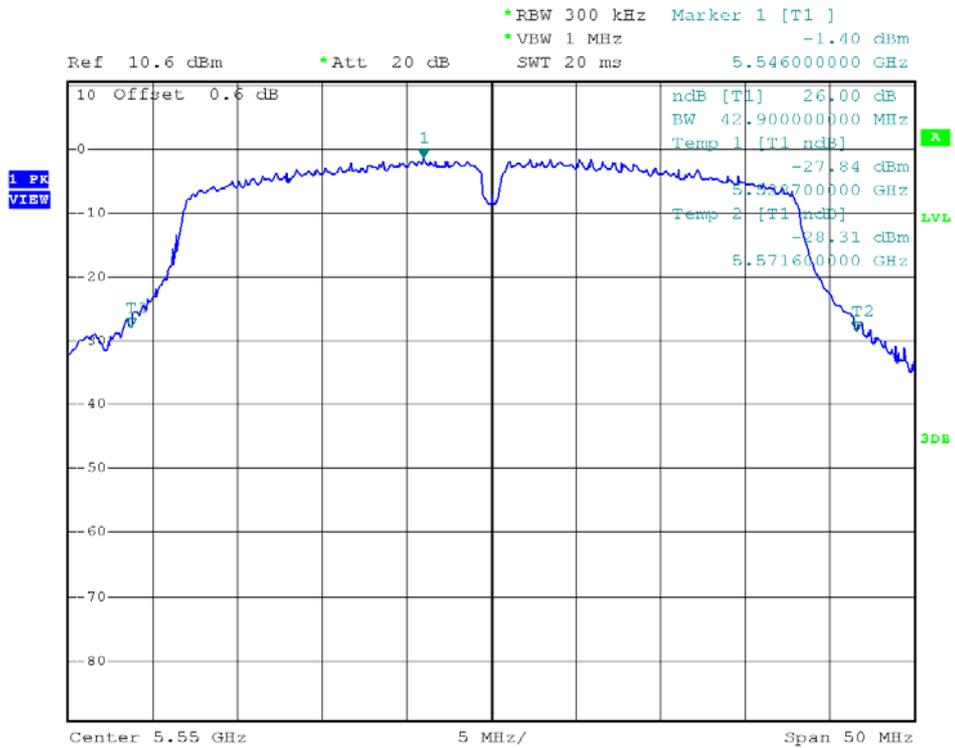
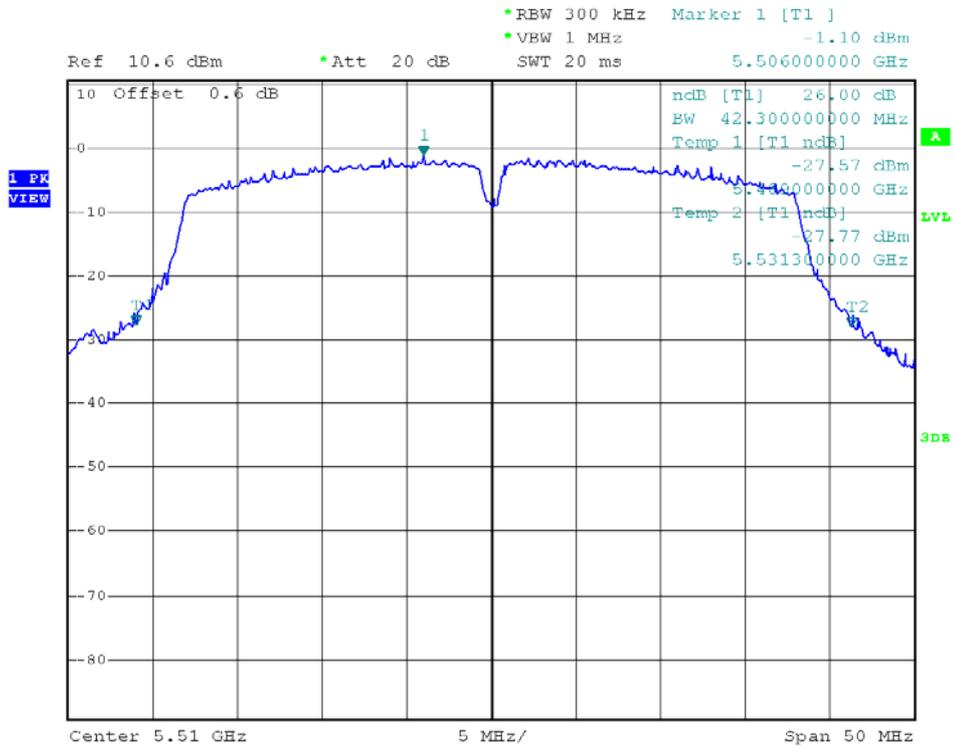


**802.11n-HT40 38/46**

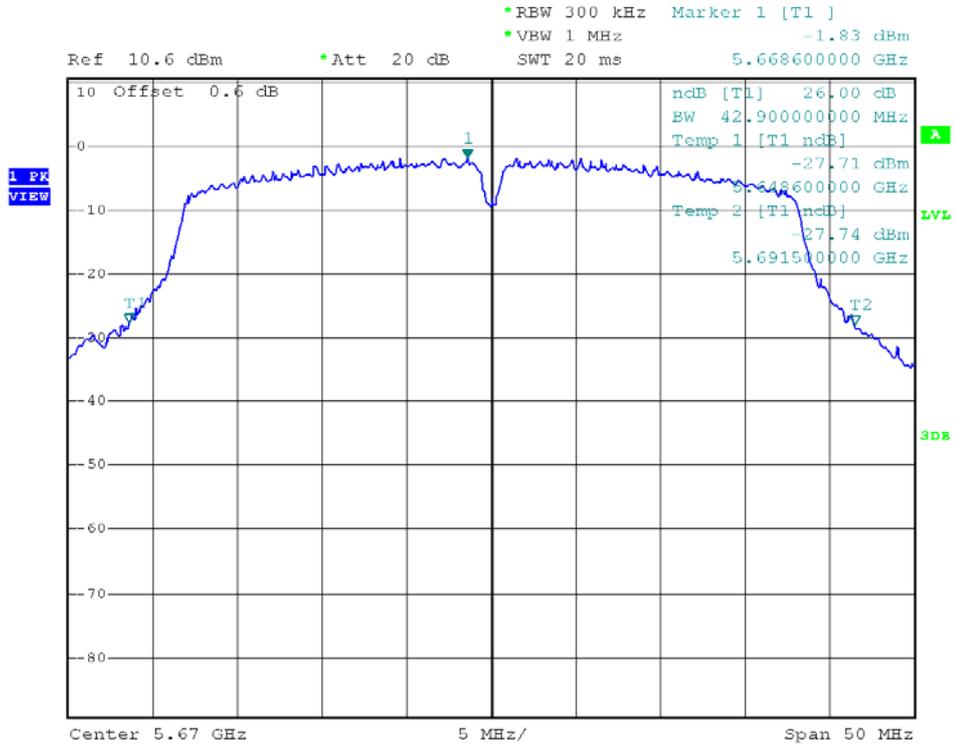




**802.11n-HT40 102/110**



**802.11n-HT40 134**



#### 4. Power Spectrum Density test (FCC 15.407)

##### 4.1 Operating environment

Temperature: 25 °C  
Relative Humidity: 50 %  
Atmospheric Pressure: 1023 hPa

##### 4.2 Test setup & procedure

###### Method of Measurement:

The power spectrum density per FCC §15.407(a) was measured from the antenna port of the EUT using a 50 ohm spectrum analyzer with the resolution bandwidth set at 1MHz, the video bandwidth set at 3 MHz (measurement method refer to KDB 789033D01 v01r03: section F). Power spectrum density was read directly and cable loss (0.6 dB) reading to obtain power at the EUT antenna terminals.

##### 4.3 Limitation

Operating Frequency (MHz)	Power density limit
5150~5250	< 4 dBm/MHz
5250~5350, 5470~5725	< 11 dBm/MHz

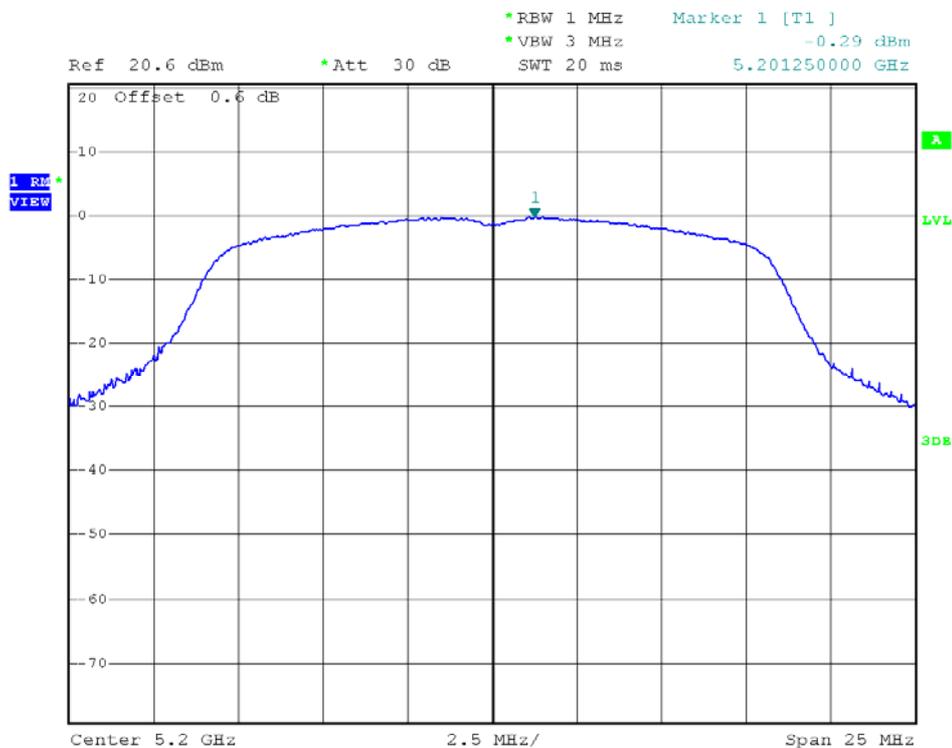
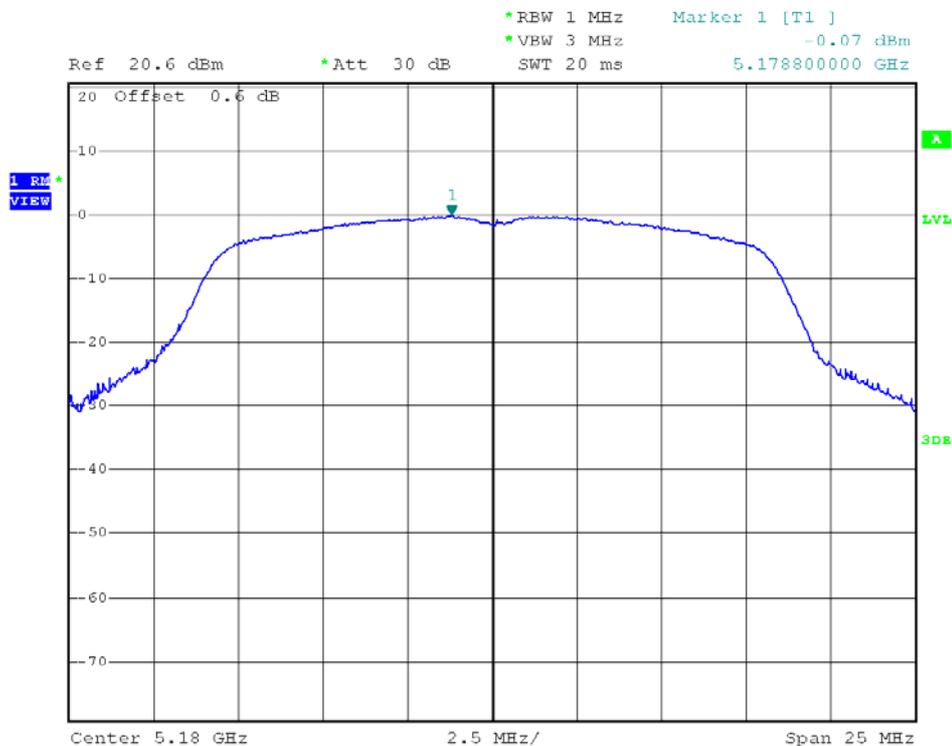
#### 4.4 Measured data of Power Spectrum Density test results

Mode	Channel	Data rate Mbps	PPSD (dBm)	Limit (dBm)
802.11a	36	6	-0.07	4
	40		-0.29	4
	48		-0.48	4
	52		-0.23	11
	56		-0.36	11
	64		-0.21	11
	100		-0.71	11
	116		-0.55	11
	140		-0.73	11
802.11n (HT20)	36	6.5	-0.03	4
	40		0.08	4
	48		-0.17	4
	52		-0.24	11
	56		-0.09	11
	64		-0.15	11
	100		-0.44	11
	116		-0.07	11
	140		-0.52	11
802.11n (HT40)	38	13.5	-3.91	4
	46		-3.73	4
	54		-3.70	11
	62		-3.46	11
	102		-3.87	11
	110		-3.84	11
	134		-4.19	11

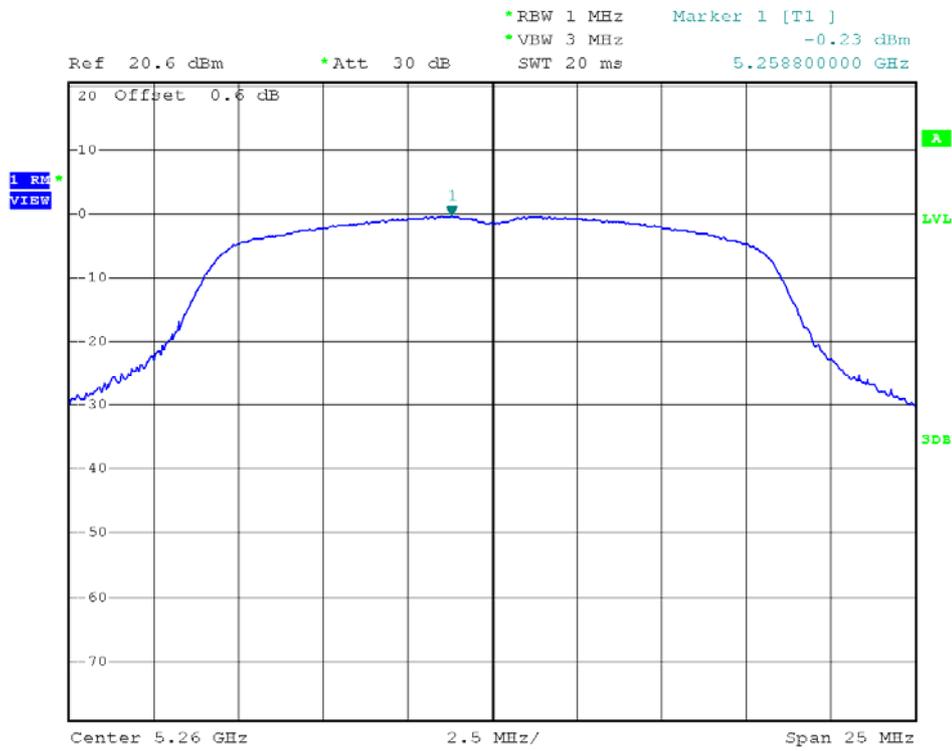
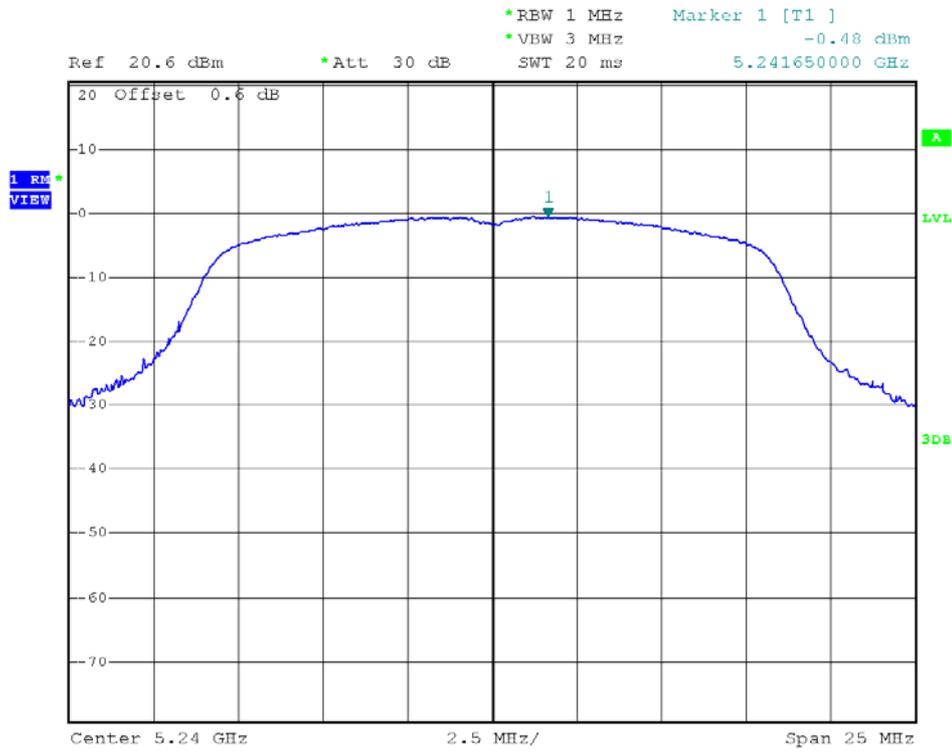
Please see the plot below.

**Power Spectral Density**

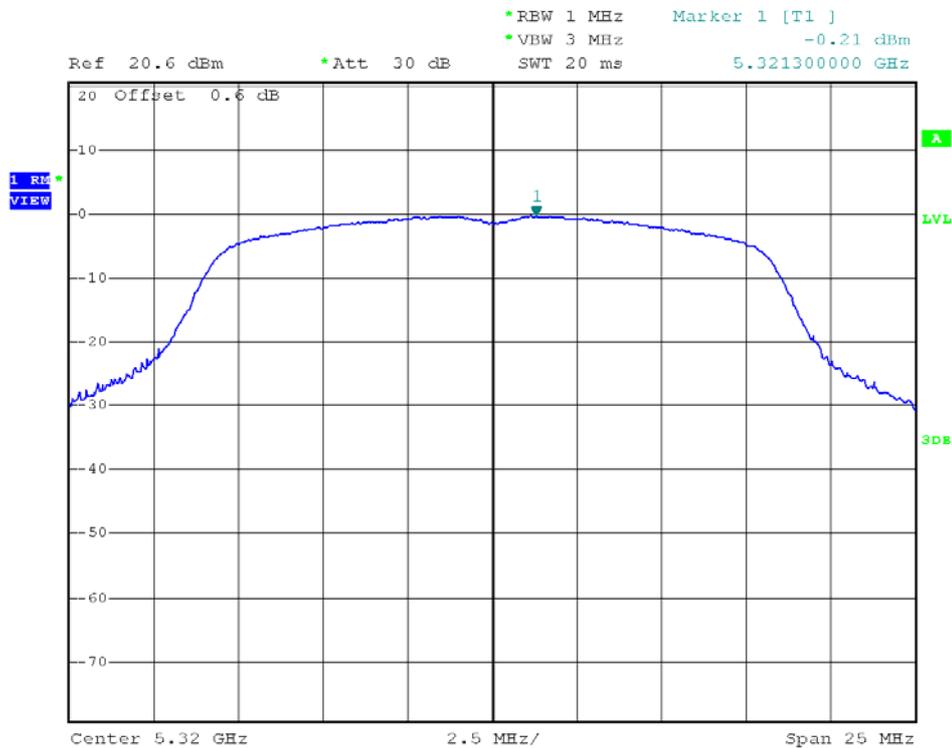
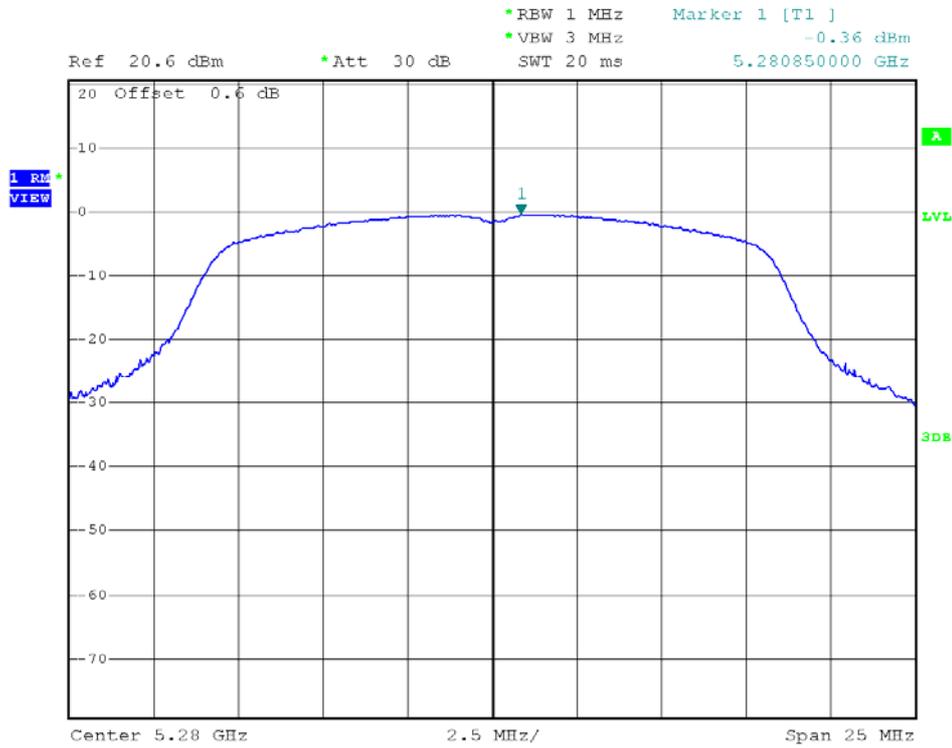
802.11a 36/40



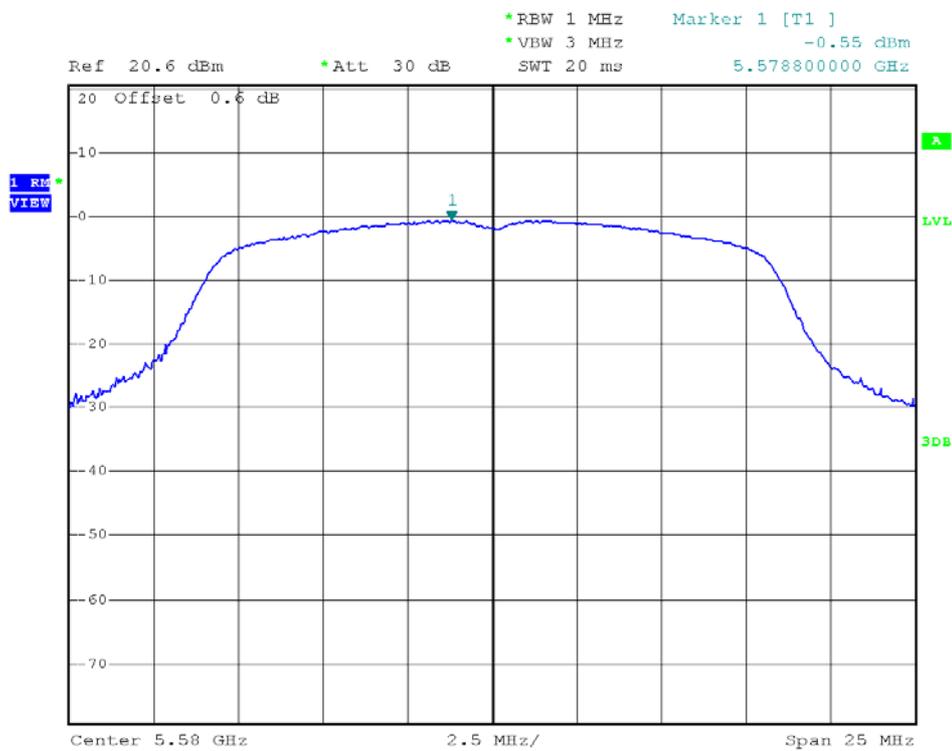
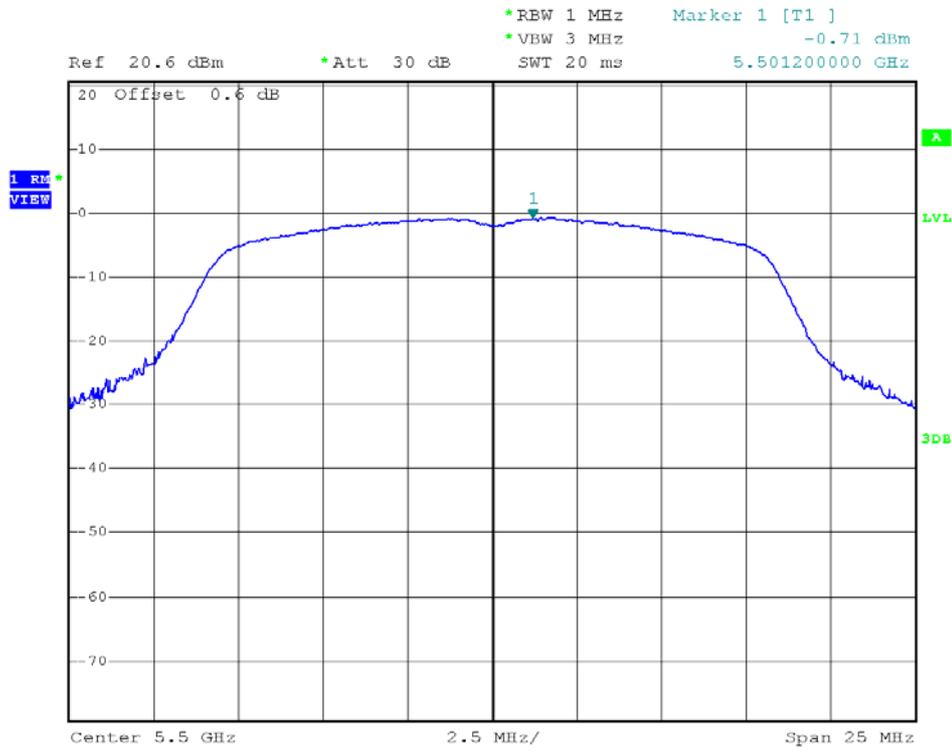
802.11a 48/52



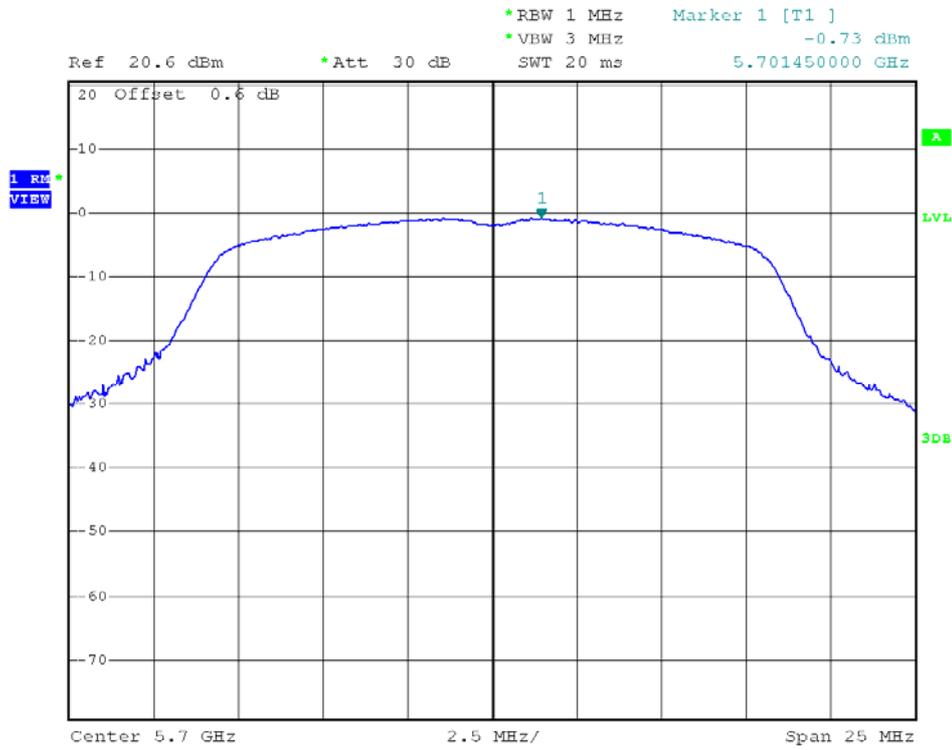
802.11a 56/64



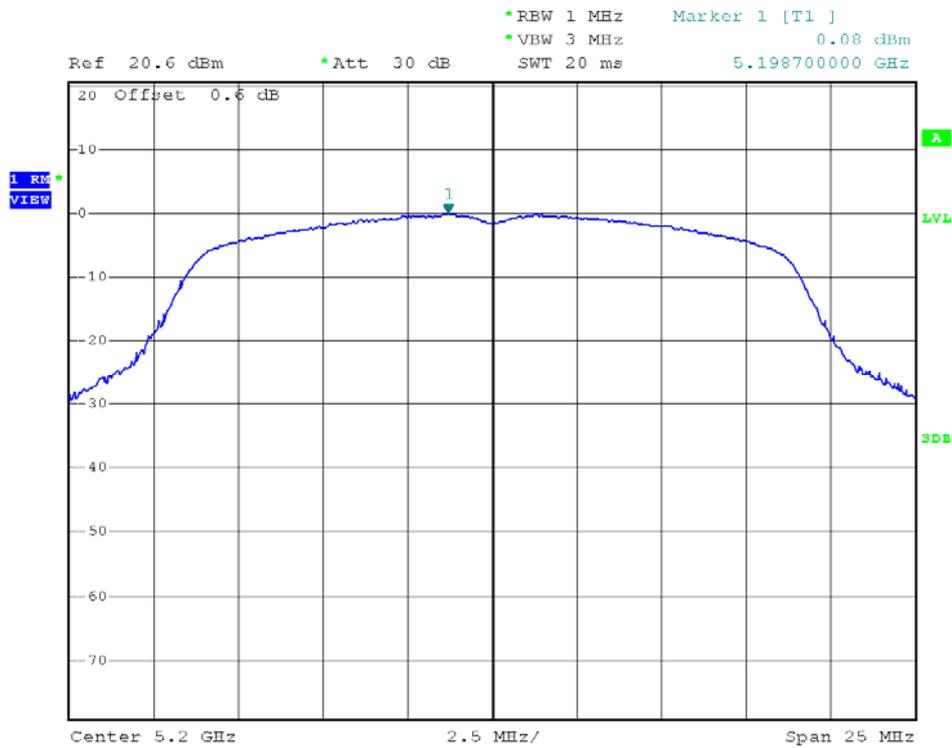
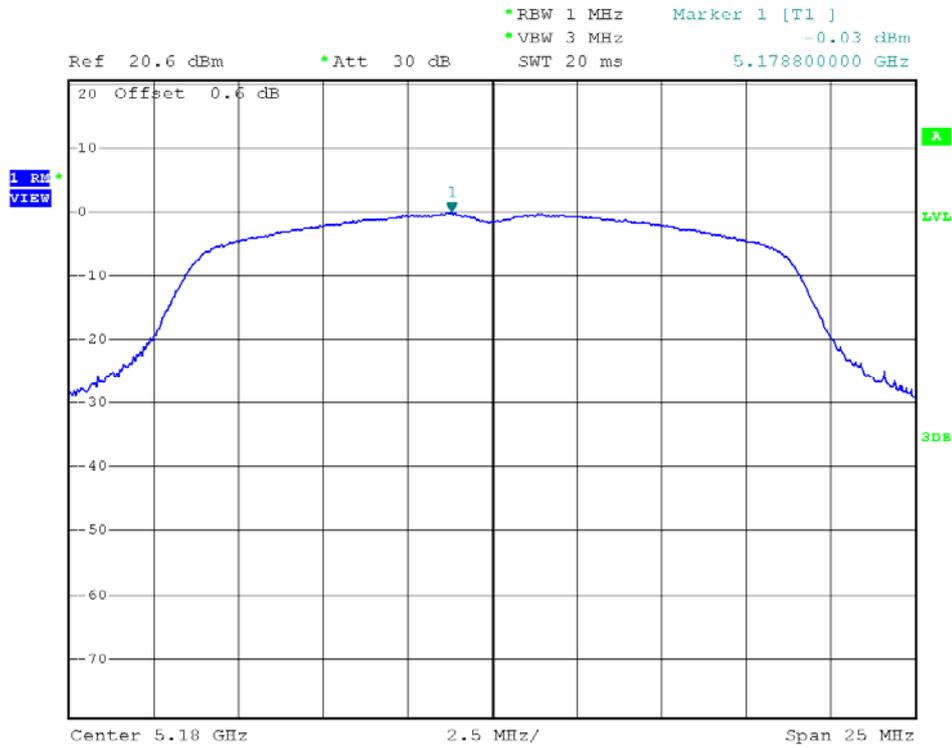
802.11a 100/116



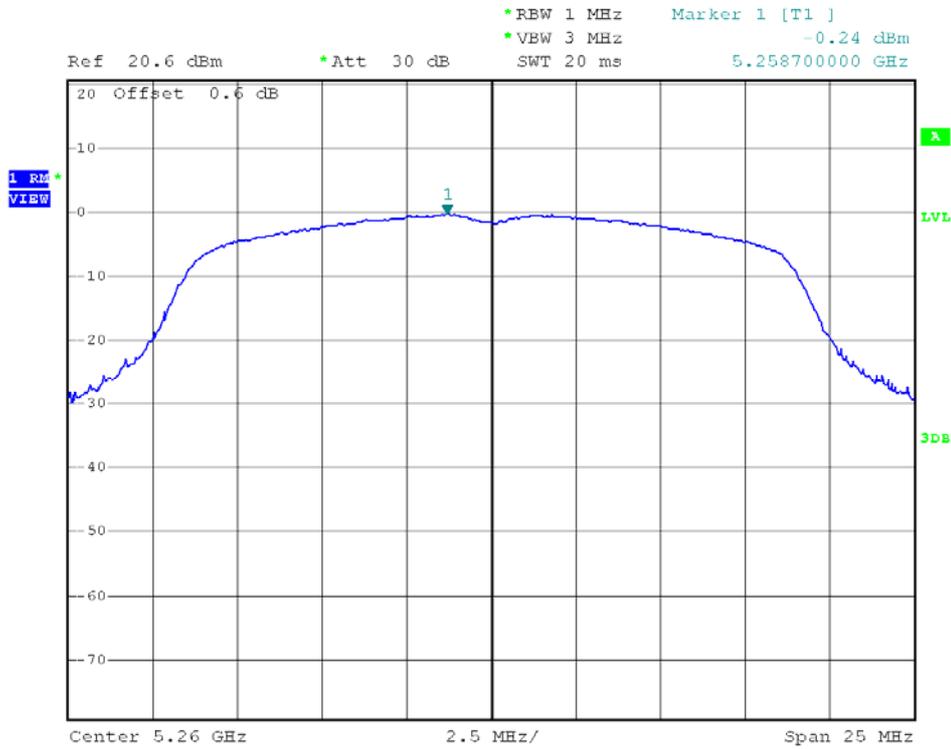
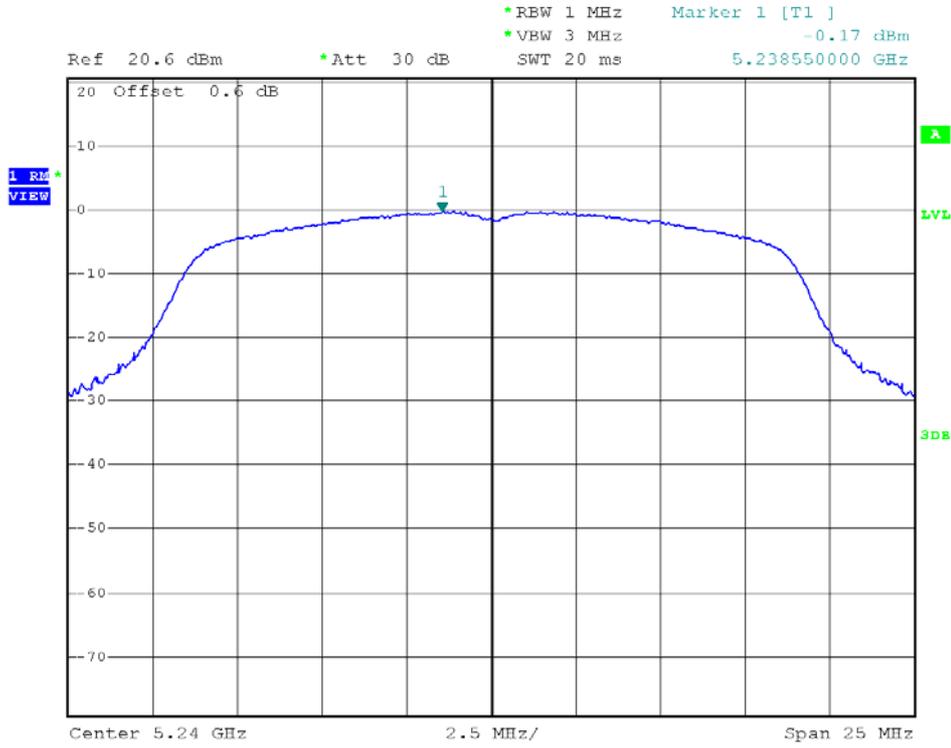
802.11a 140



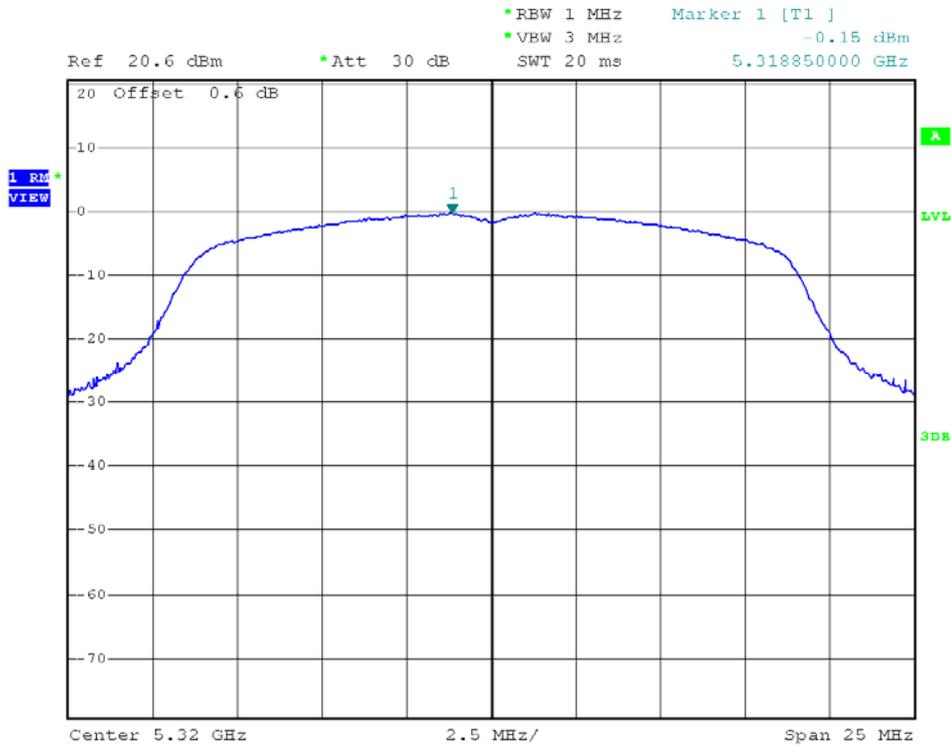
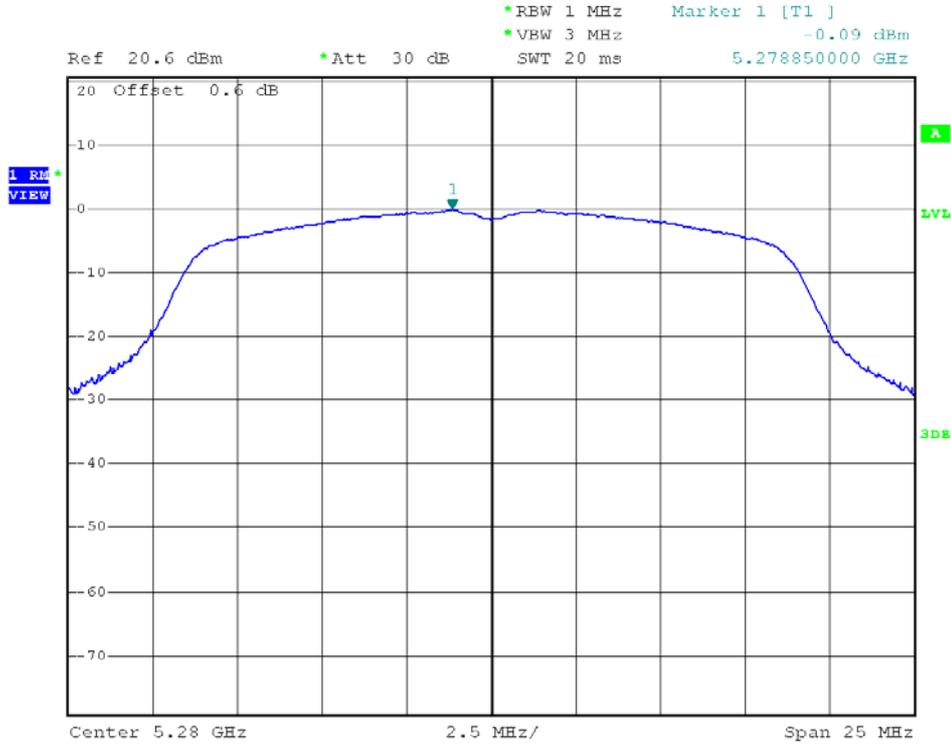
802.11n-HT20 36/40



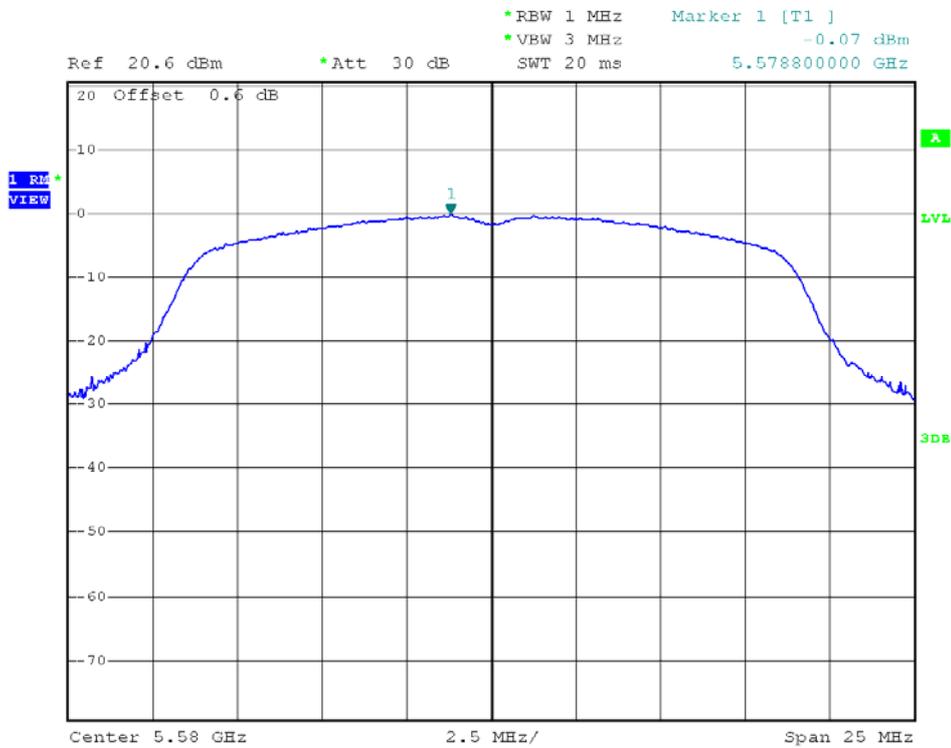
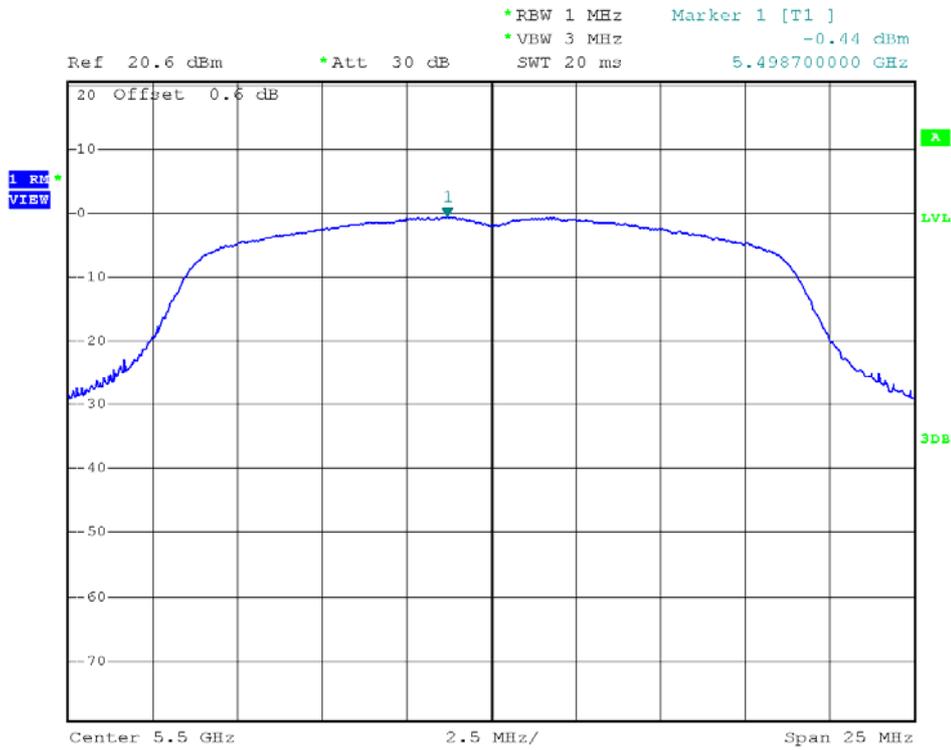
802.11n-HT20 48/52



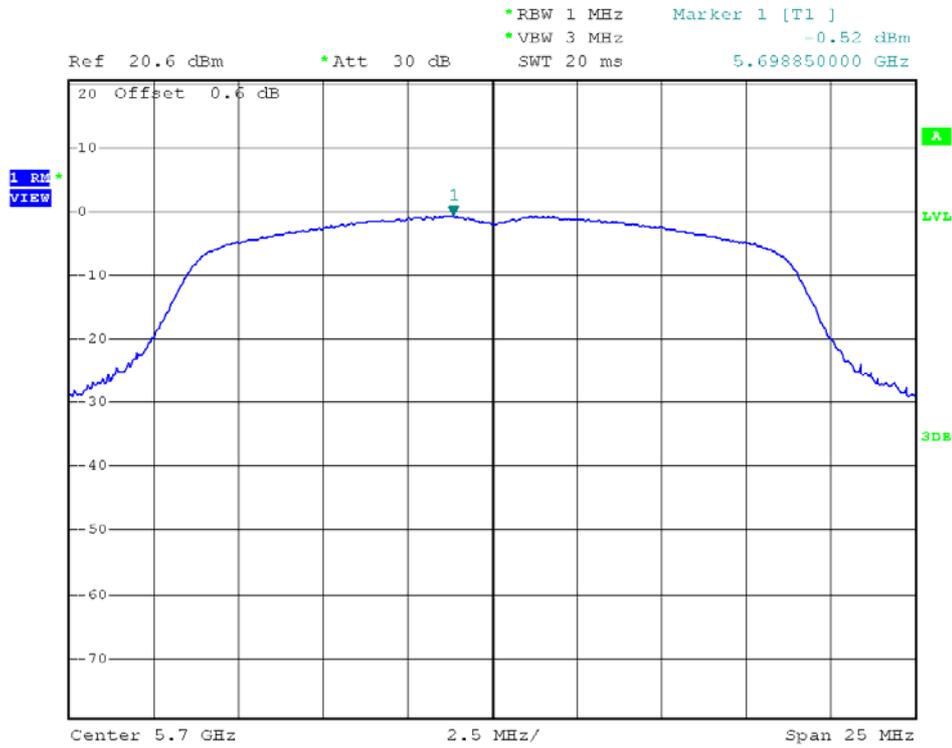
802.11n-HT20 56/64



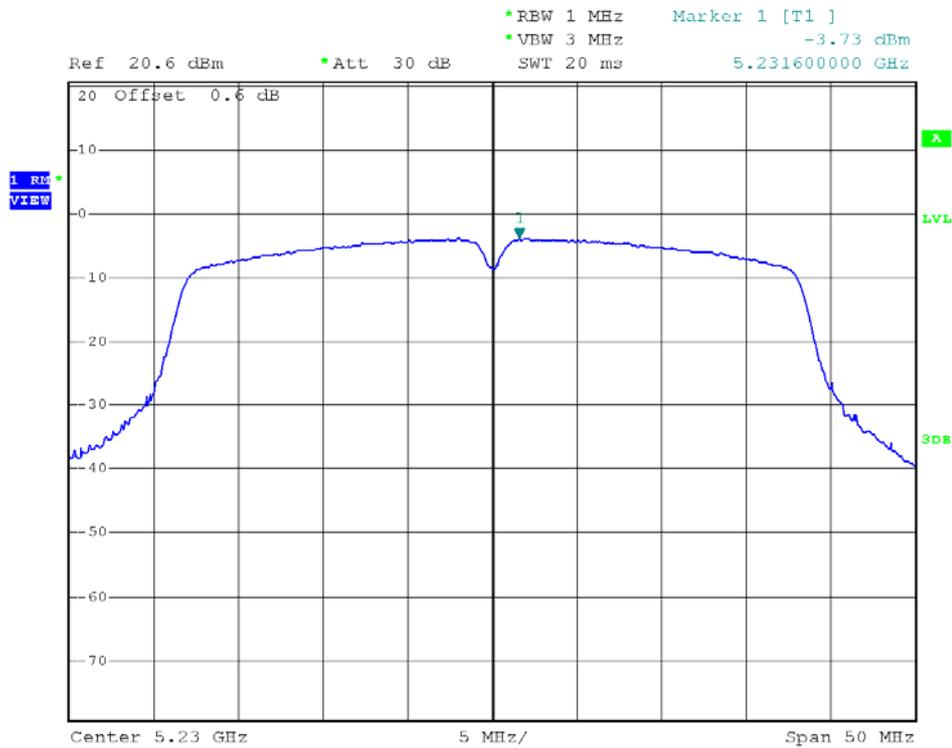
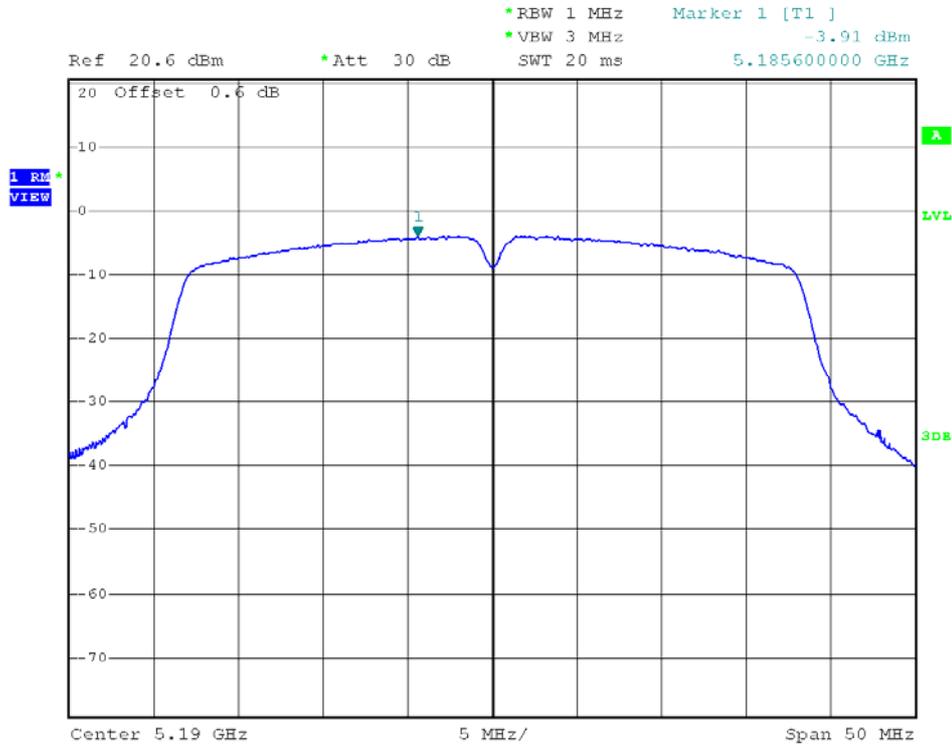
802.11n-HT20 100/116



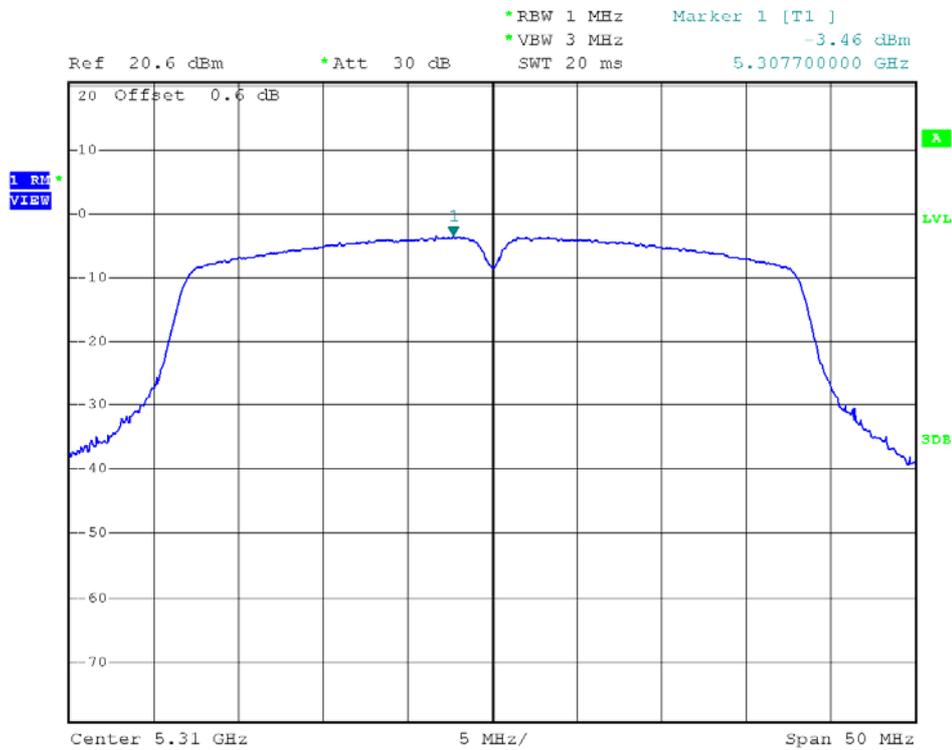
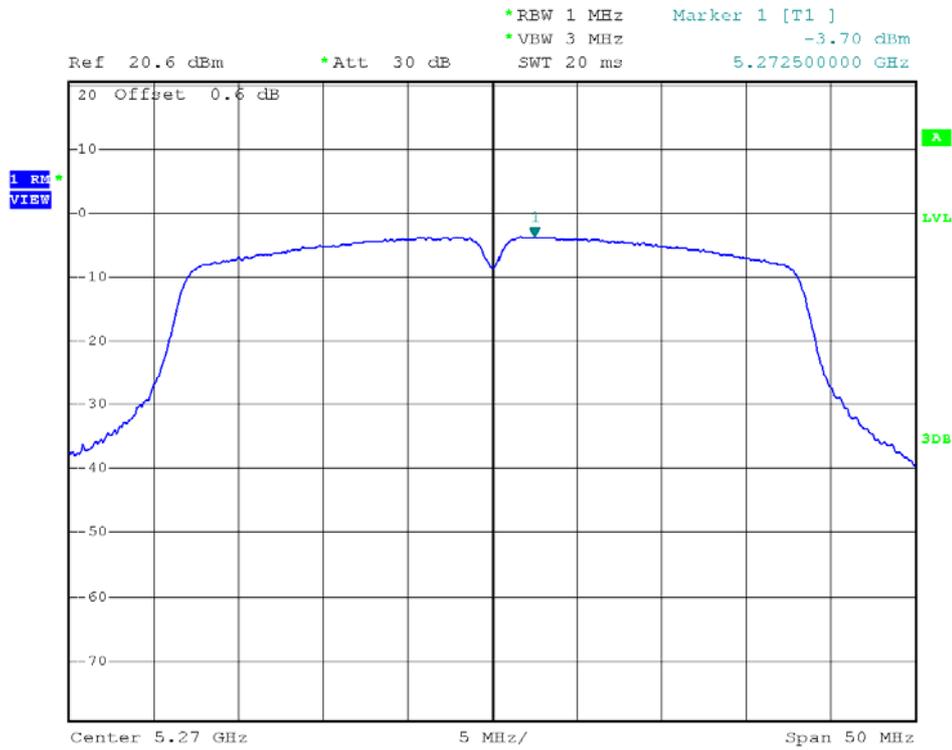
802.11n-HT20 140



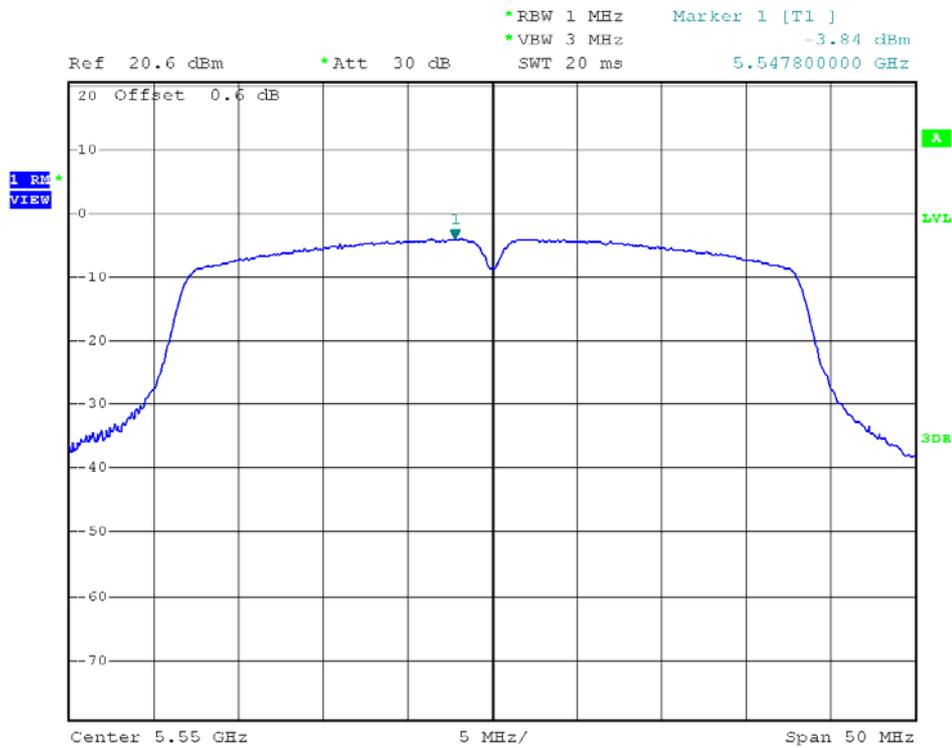
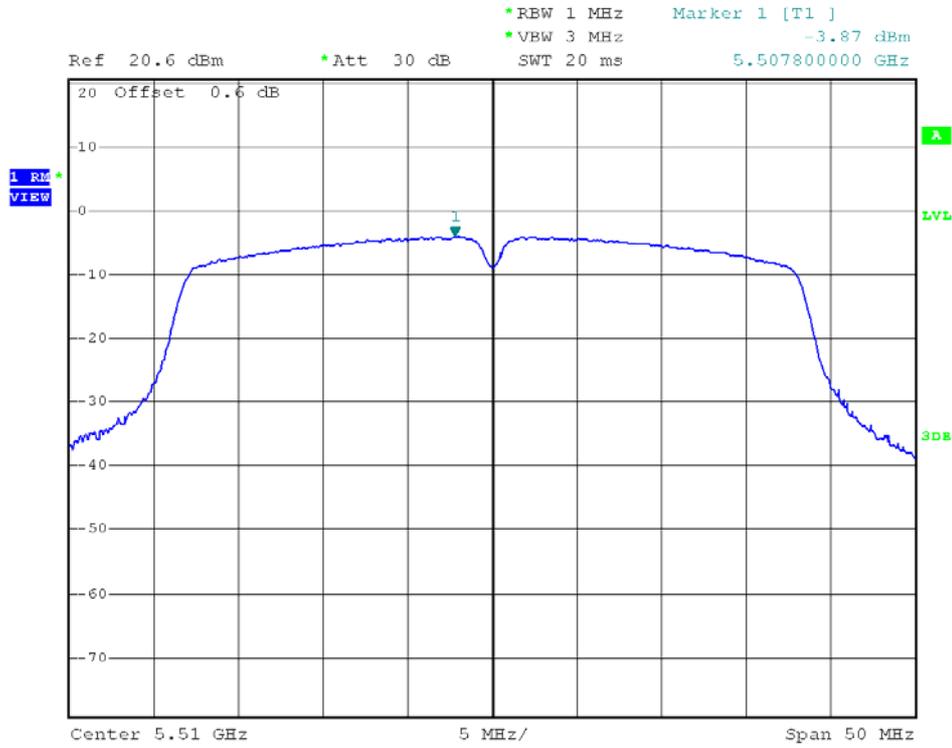
802.11n-HT40 38/46



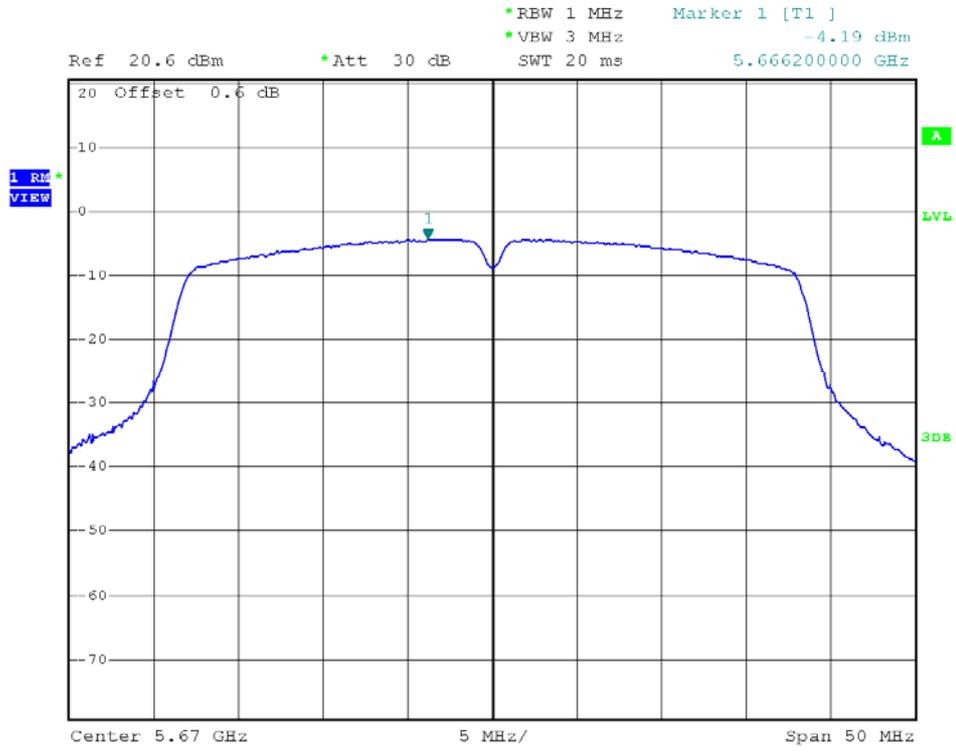
802.11n-HT40 54/62



802.11n-HT40 102/110



802.11n-HT40 134



## 5. Peak excursion to average ratio test (FCC 15.407)

### 5.1 Operating environment

Temperature: 25 °C  
Relative Humidity: 50 %  
Atmospheric Pressure: 1023 hPa

### 5.2 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 (measurement method refer to KDB 789033D01 v01r03: Section G) with the RBW=1MHz, VBW=3MHz, Detector=Peak for peak measurement and RBW=1MHz, VBW=3MHz, Detector=RMS for average measurement. And delta-mark peak & average ratio was read directly.

### 5.3 Limitation

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

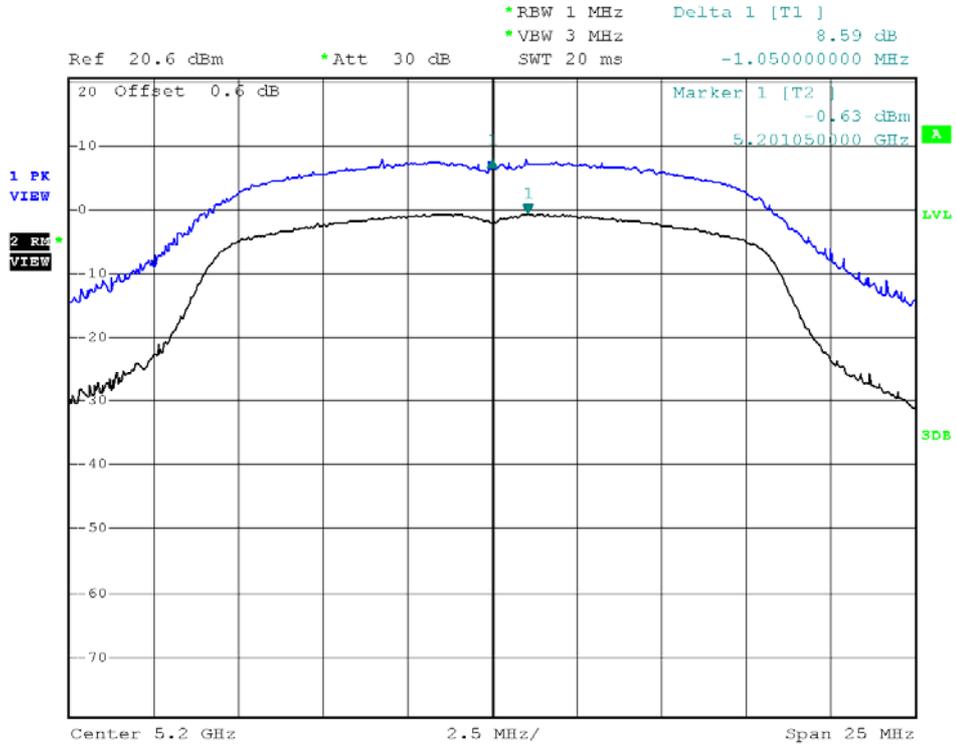
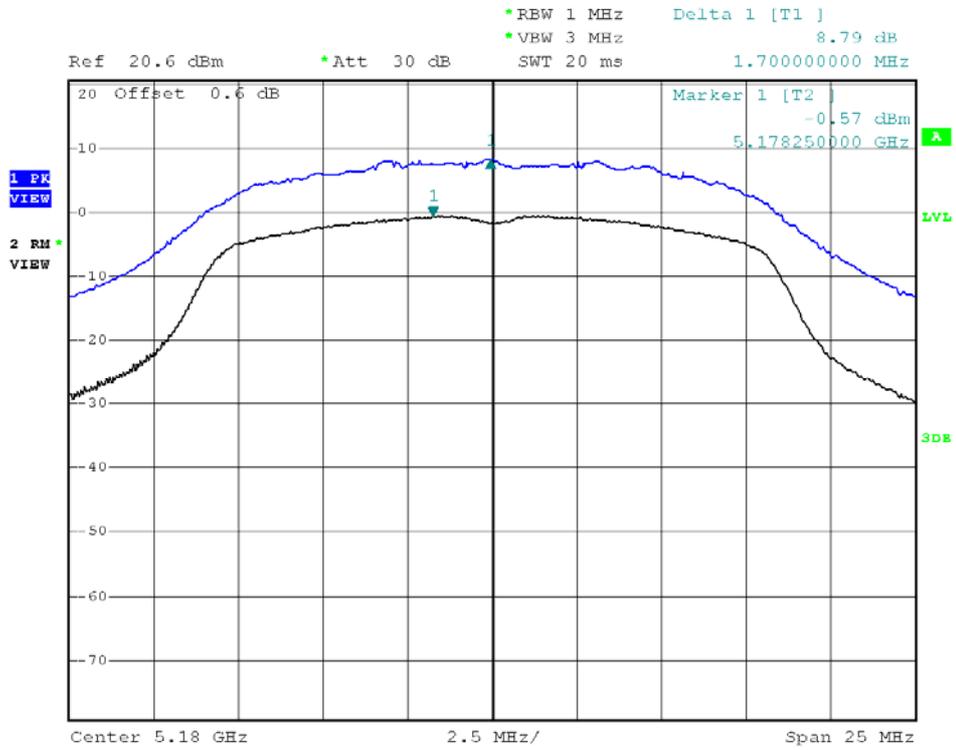
**5.4 Measured data of Peak excursion to average ratio test results**

Mode	Channel	Data rate Mbps	Result
802.11a	36	6	Pass
	40		Pass
	48		Pass
	52		Pass
	56		Pass
	64		Pass
	100		Pass
	116		Pass
	140		Pass
802.11n (HT20)	36	6.5	Pass
	40		Pass
	48		Pass
	56		Pass
	60		Pass
	64		Pass
	100		Pass
	116		Pass
	140		Pass
802.11n (HT40)	38	13.5	Pass
	46		Pass
	54		Pass
	62		Pass
	102		Pass
	110		Pass
	134		Pass

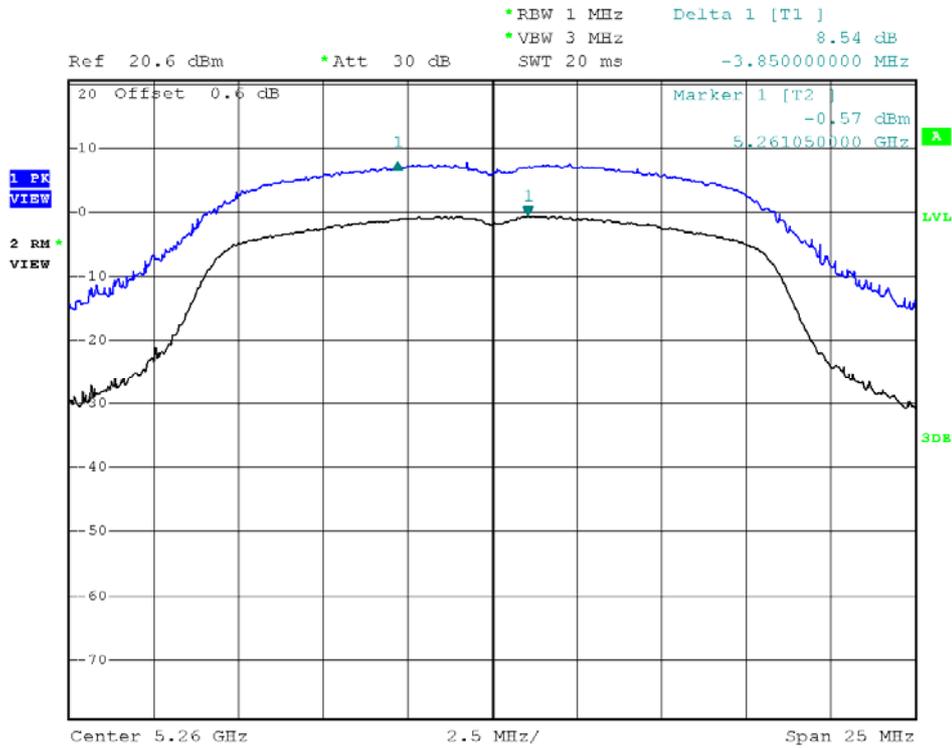
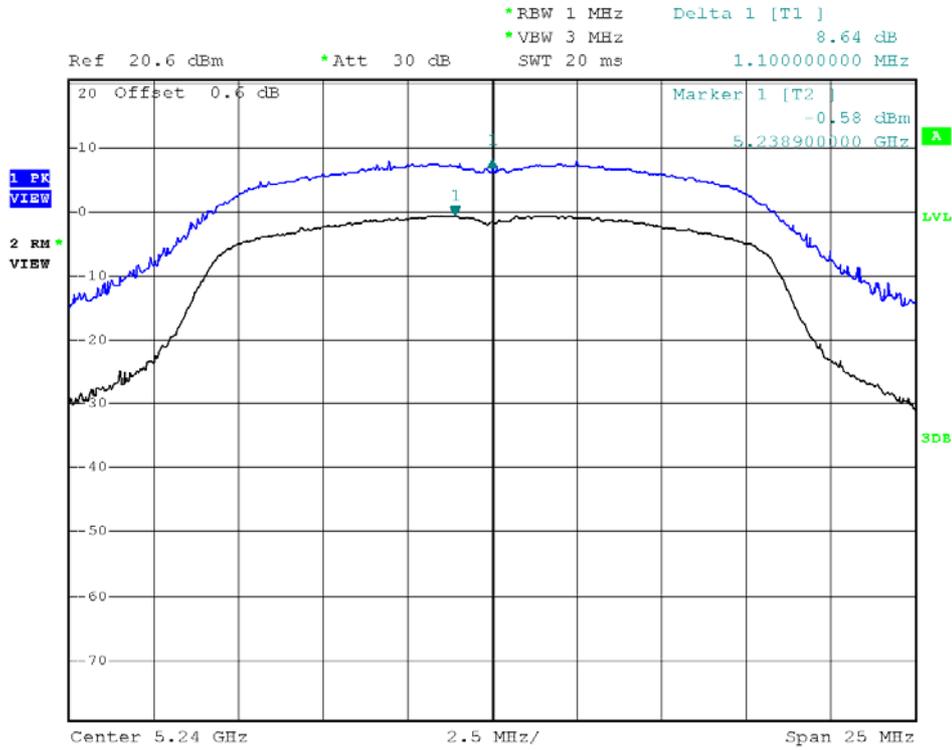
Please see the plot below.

## Peak excursion

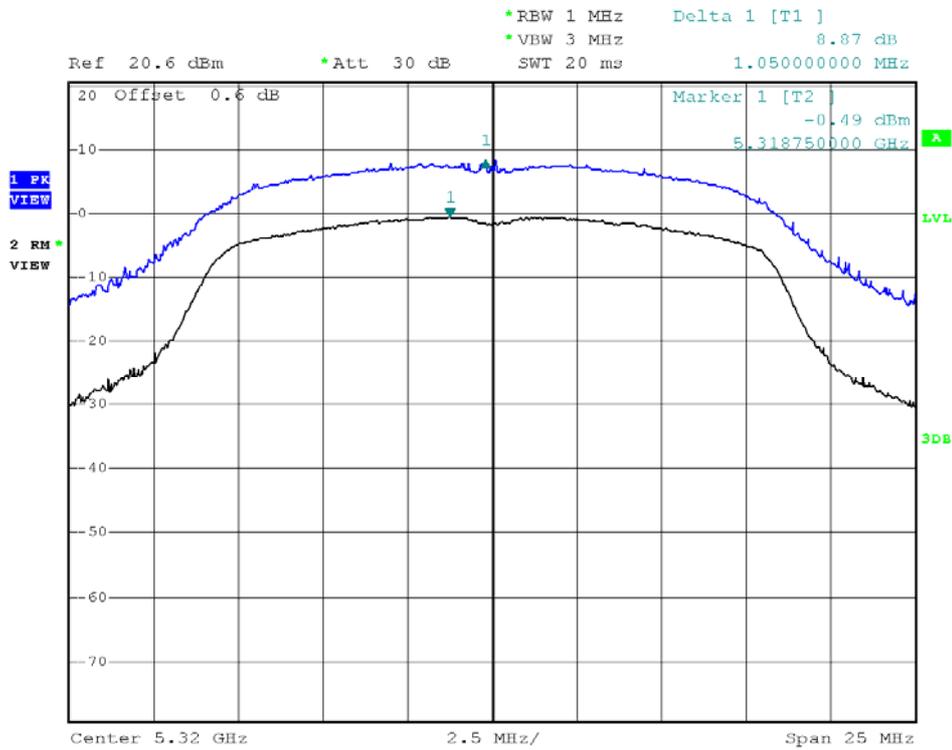
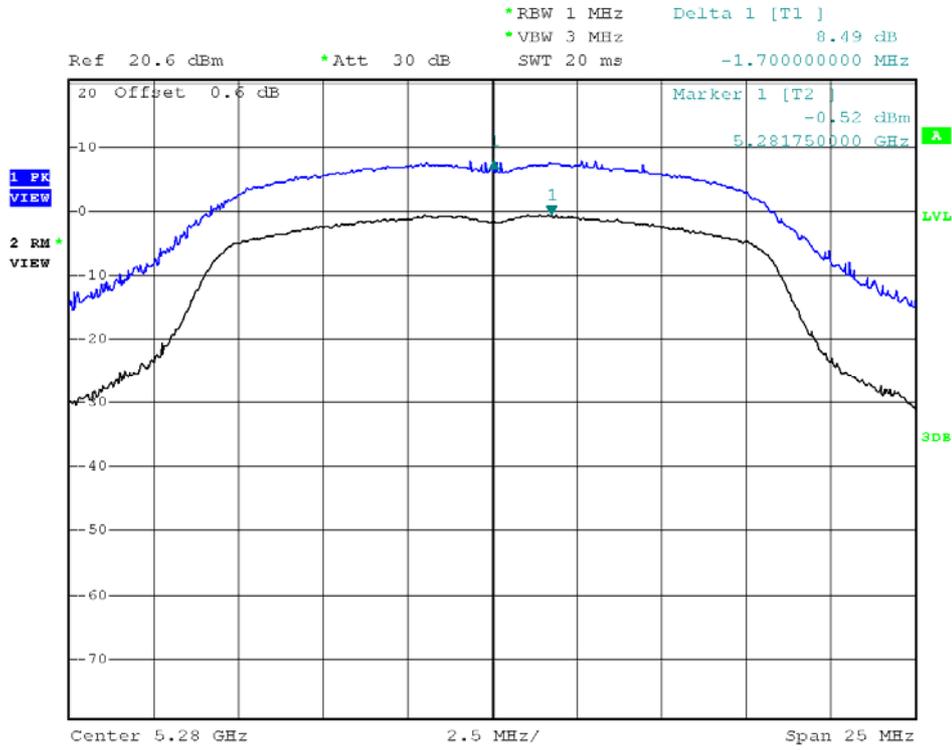
802.11a 36/40



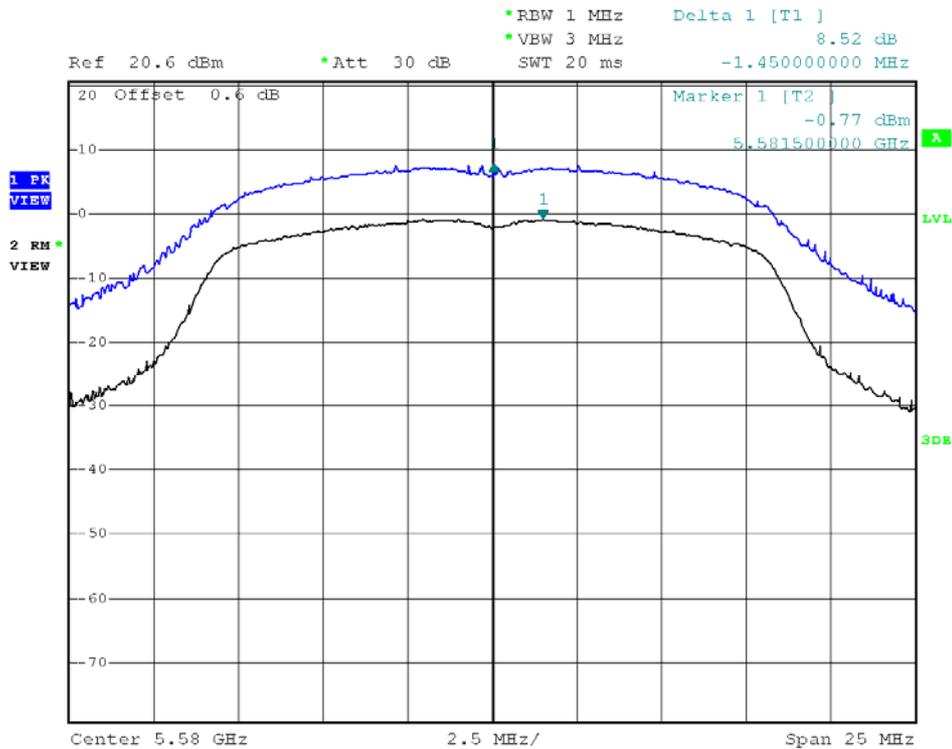
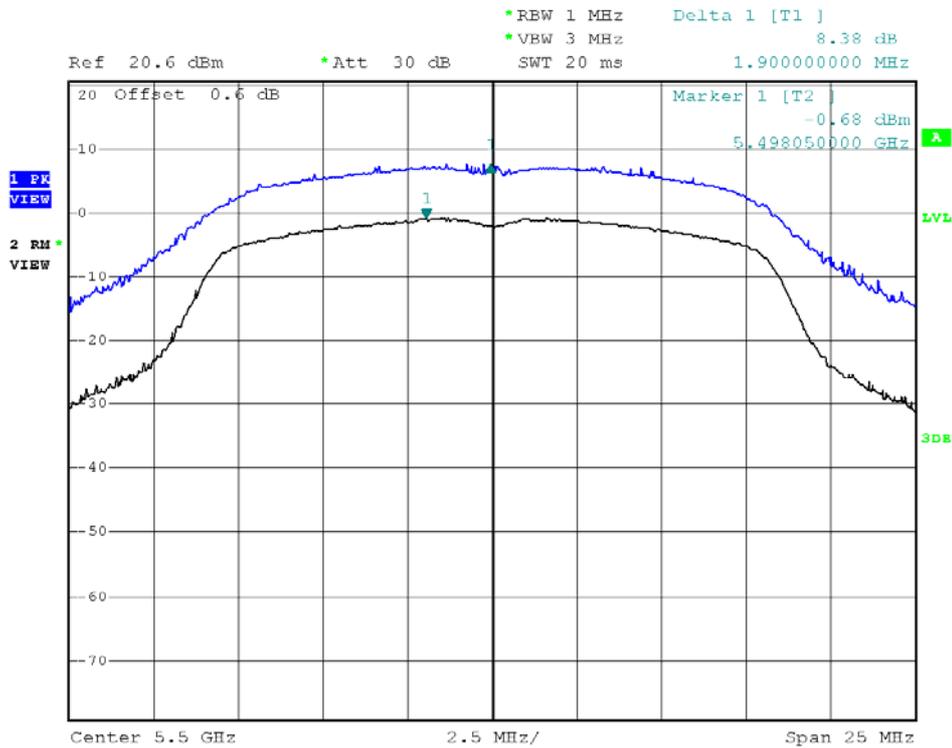
802.11a 48/52



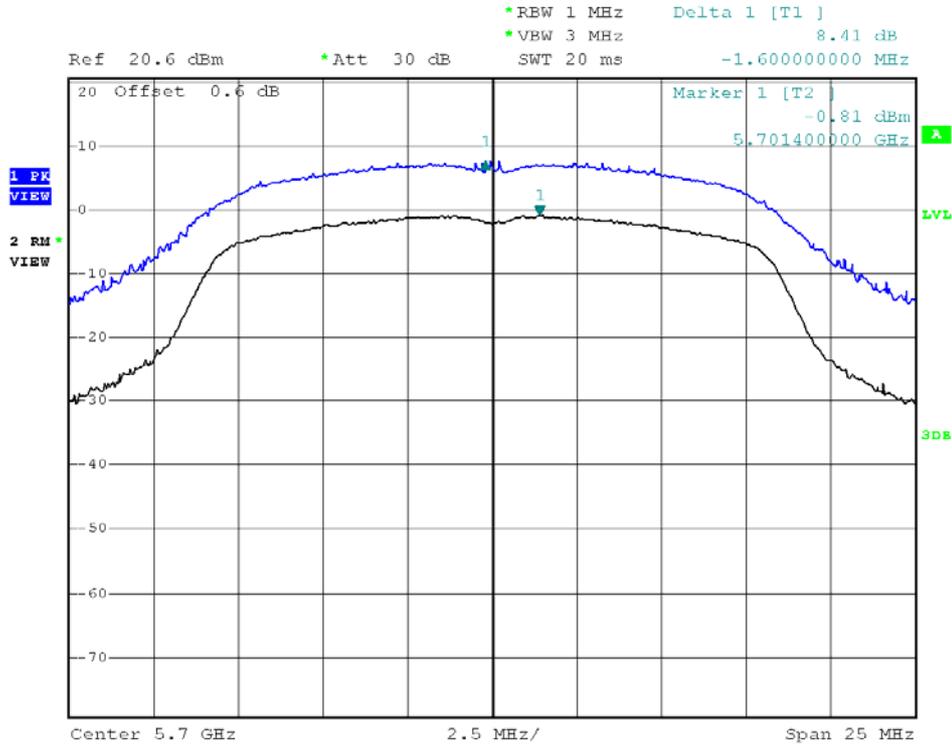
802.11a 56/64



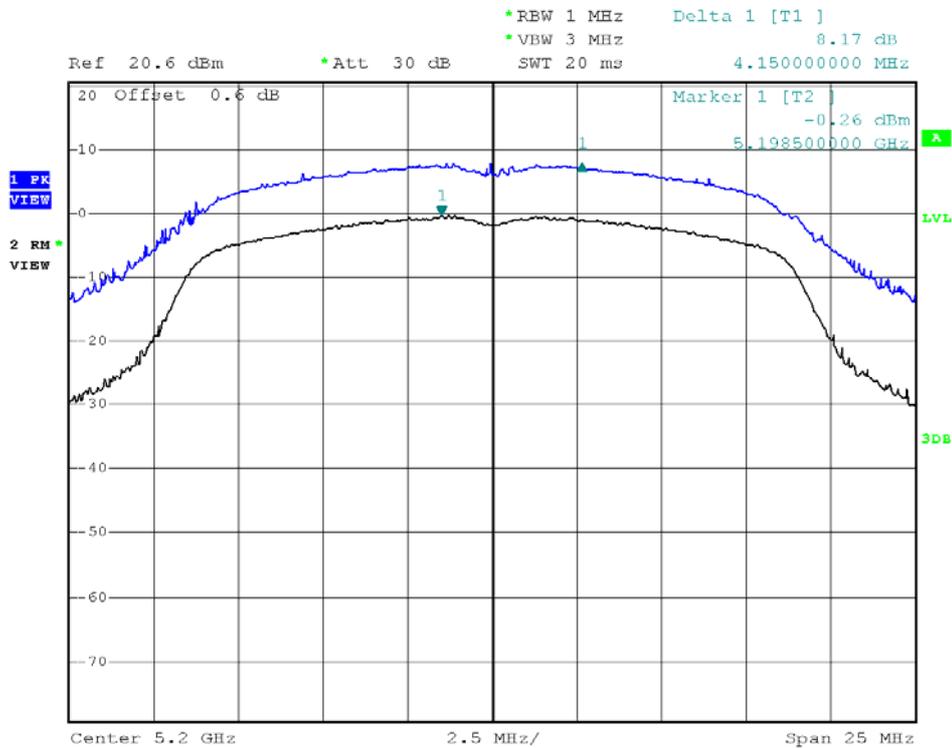
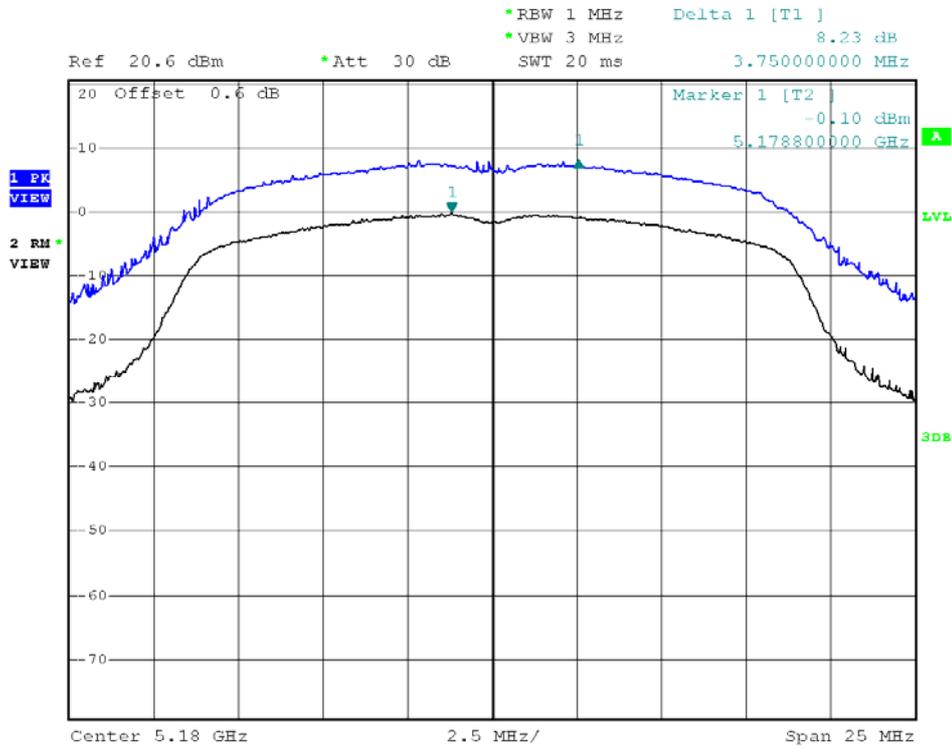
802.11a 100/116



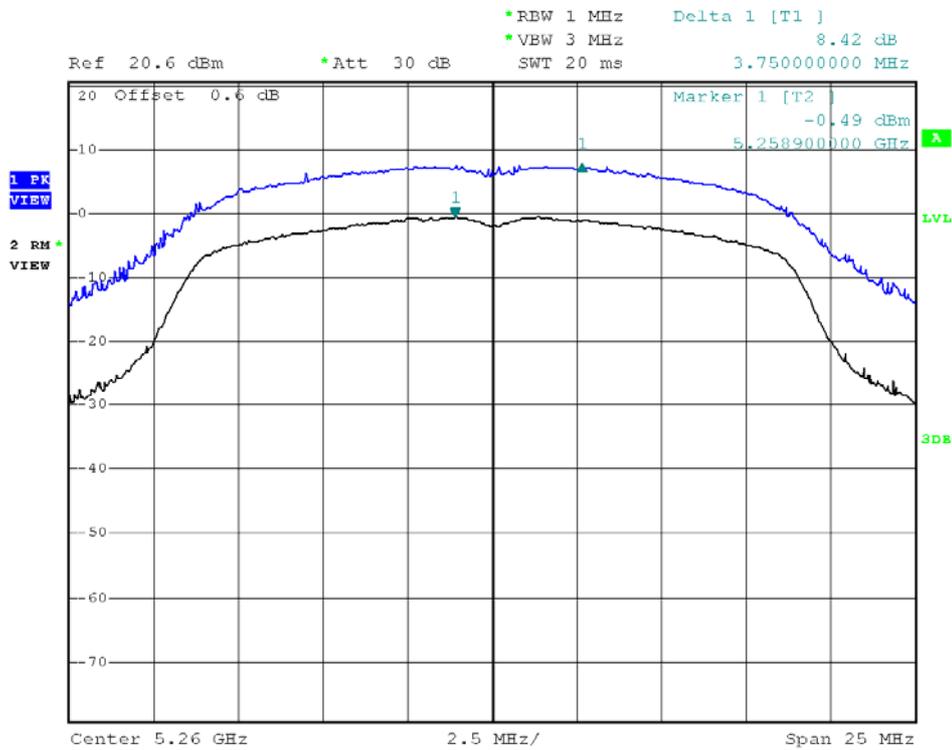
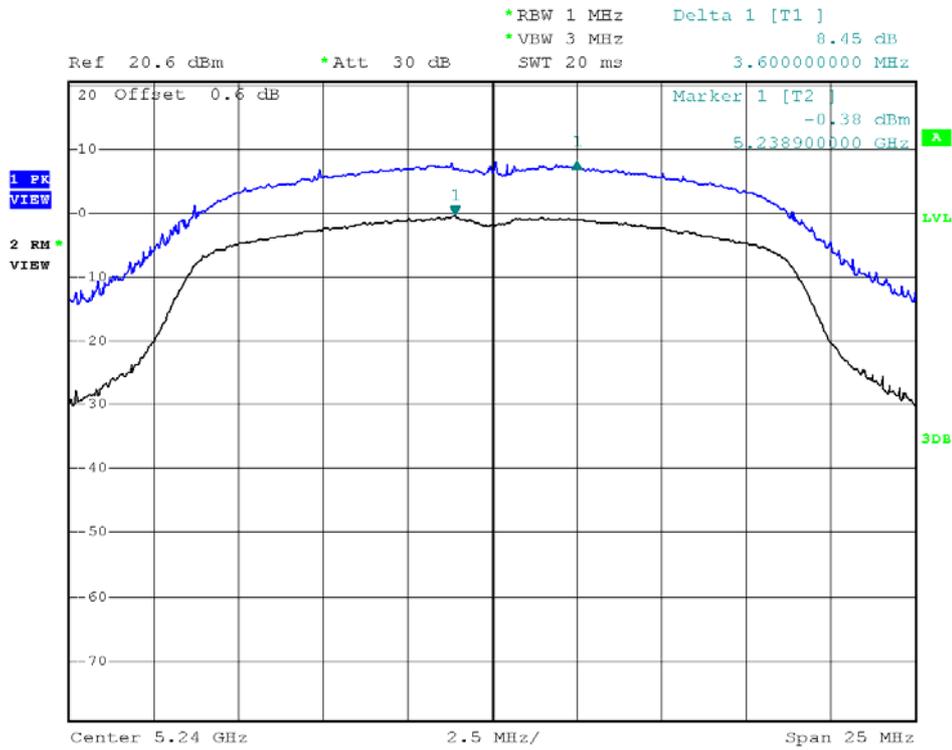
802.11a 140



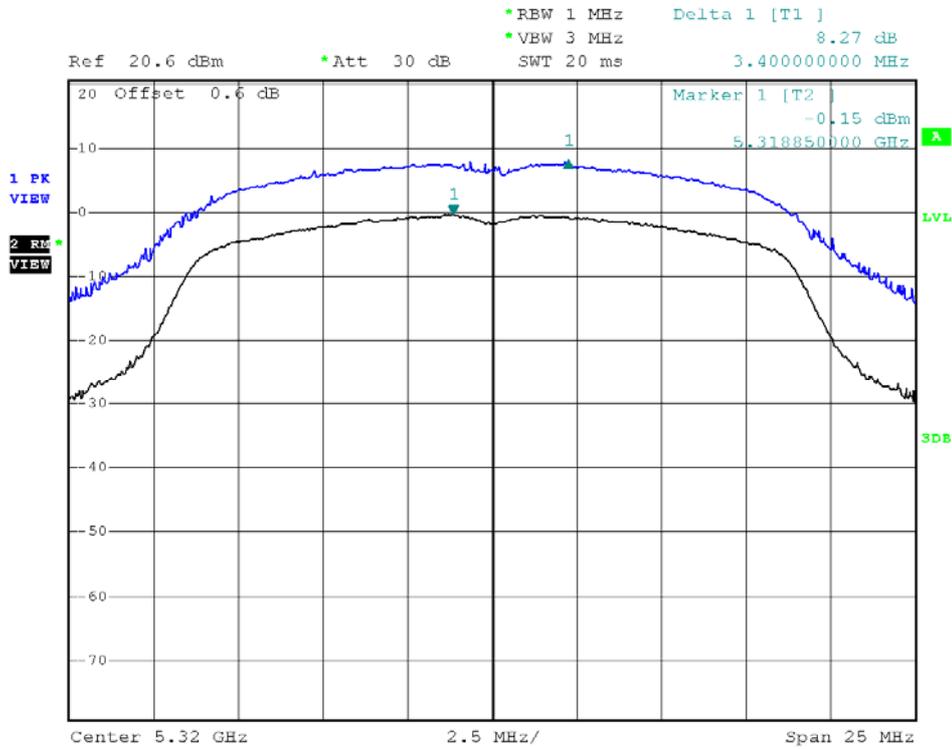
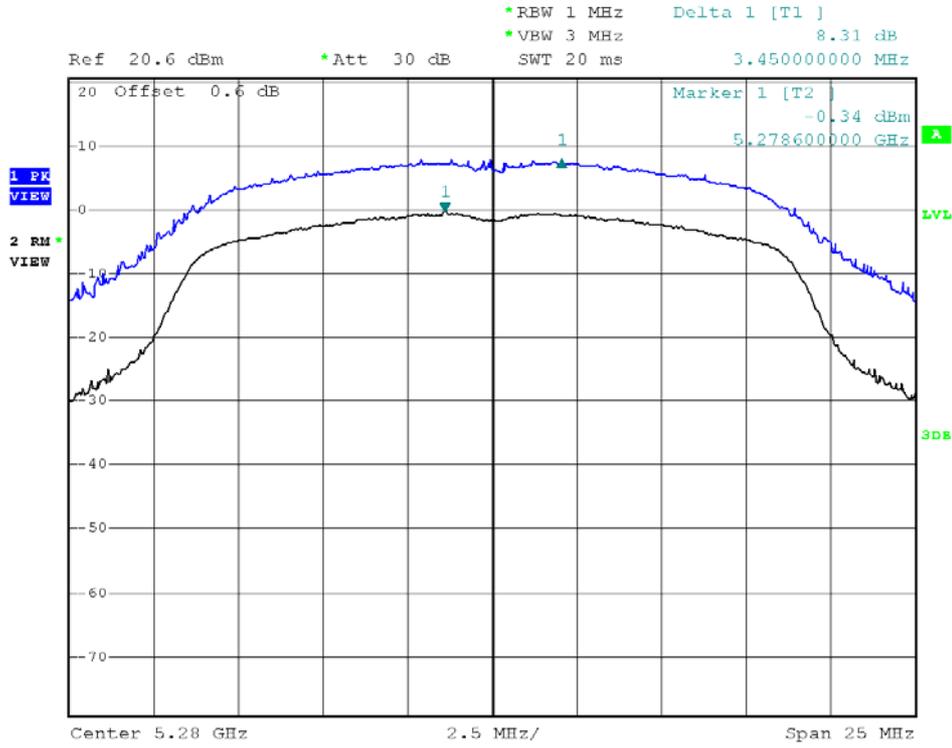
802.11n-HT20 36/40



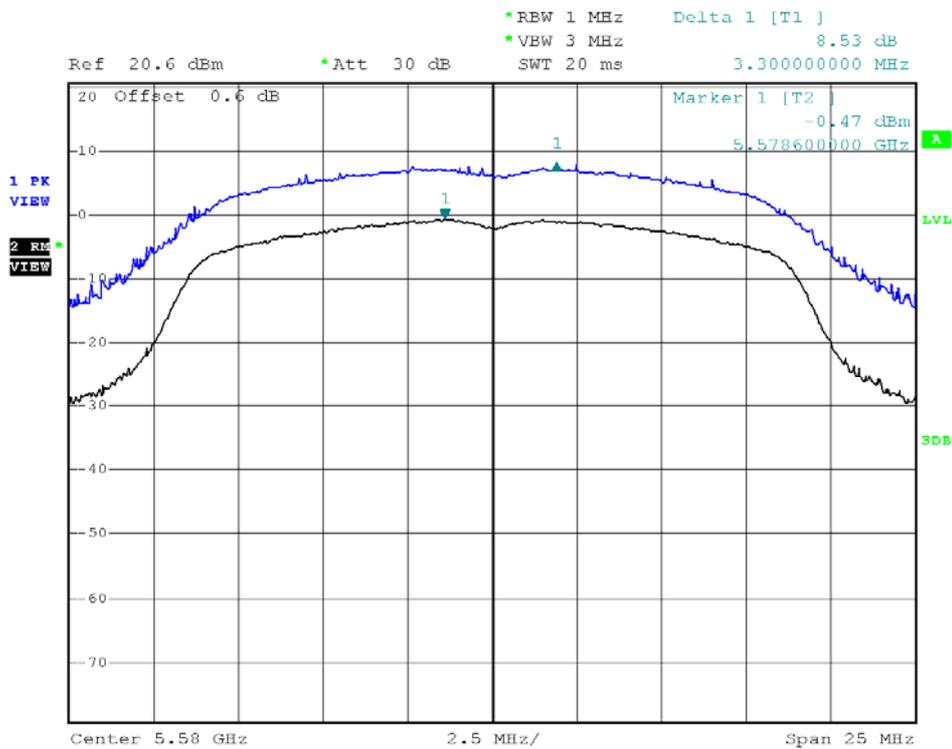
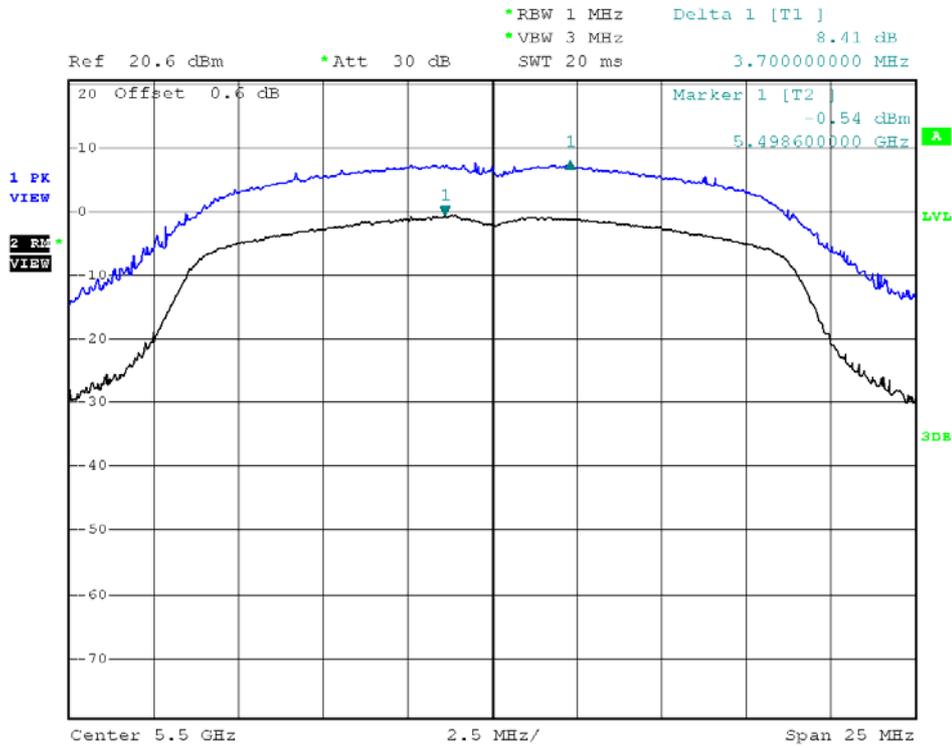
802.11n-HT20 48/52



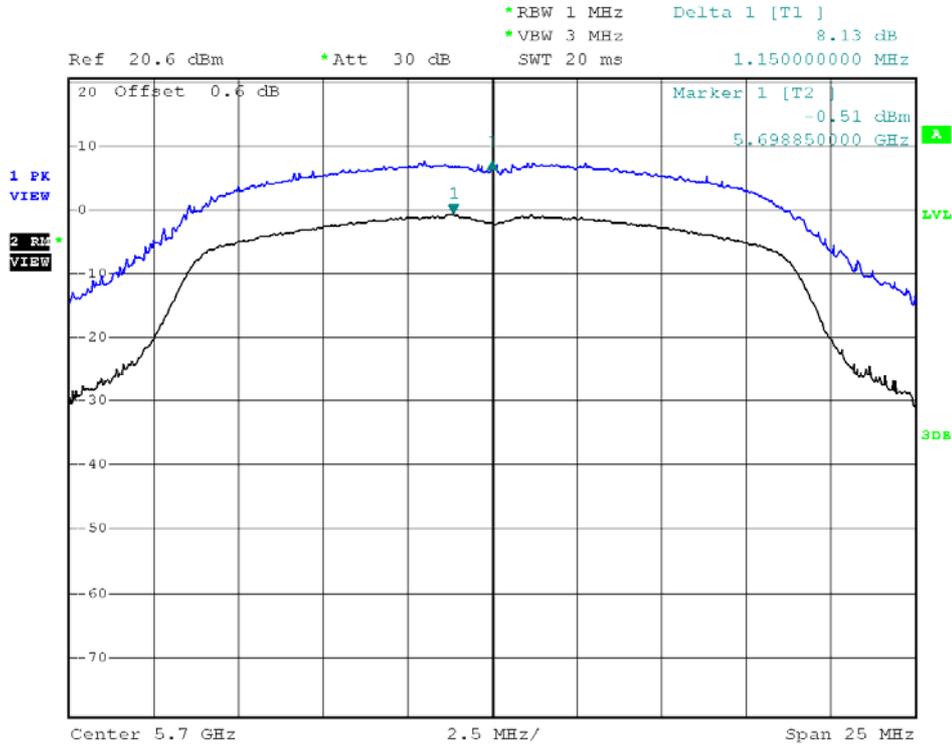
802.11n-HT20 56/64



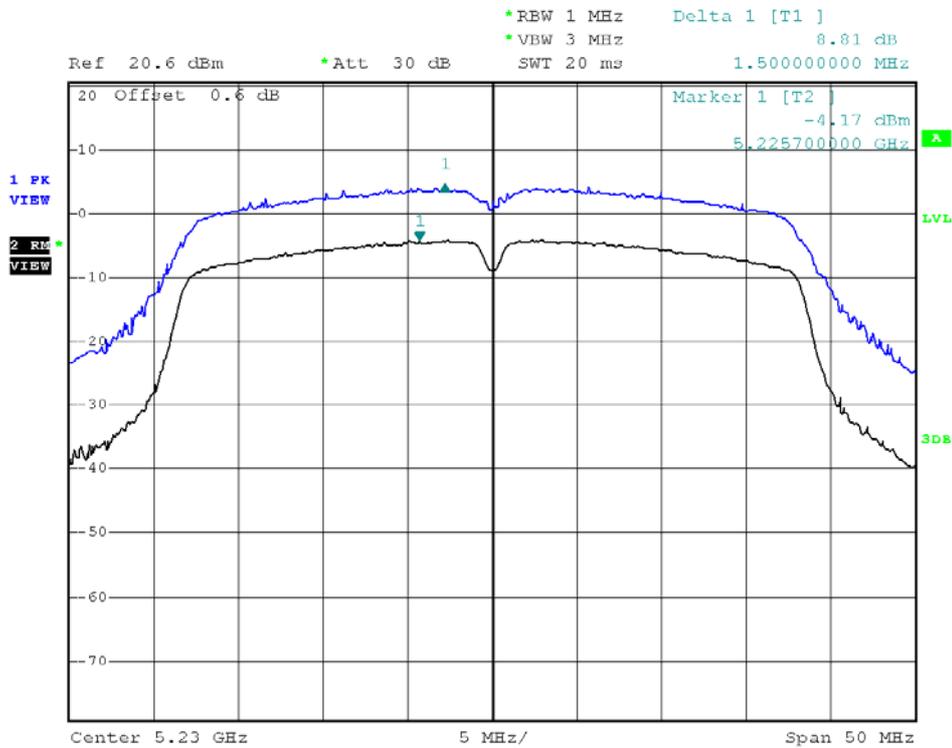
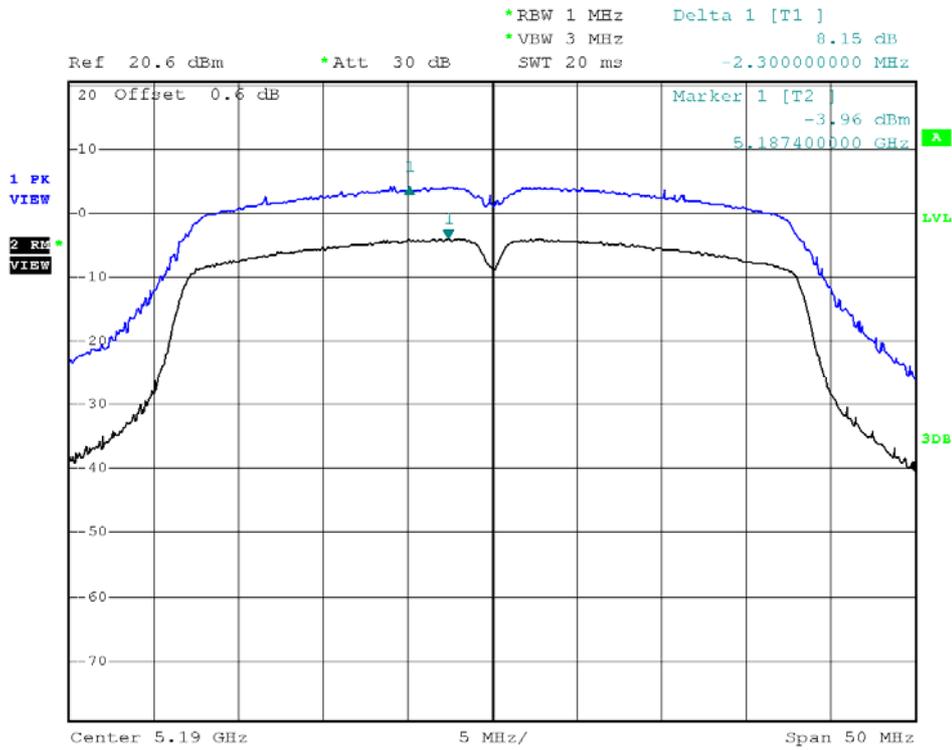
802.11n-HT20 100/116



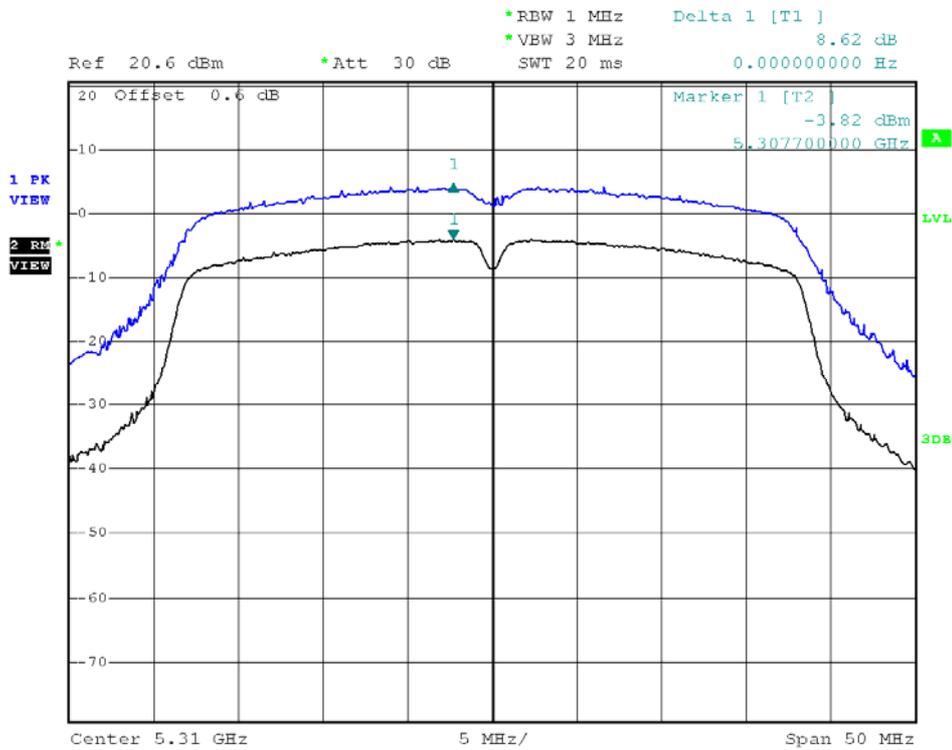
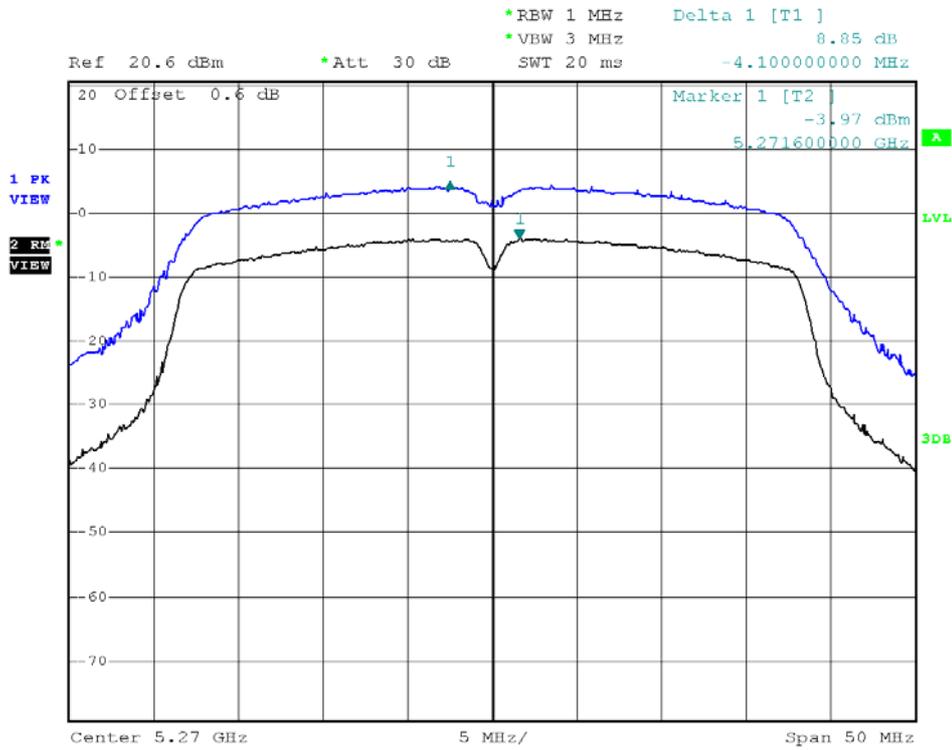
802.11n-HT20 140



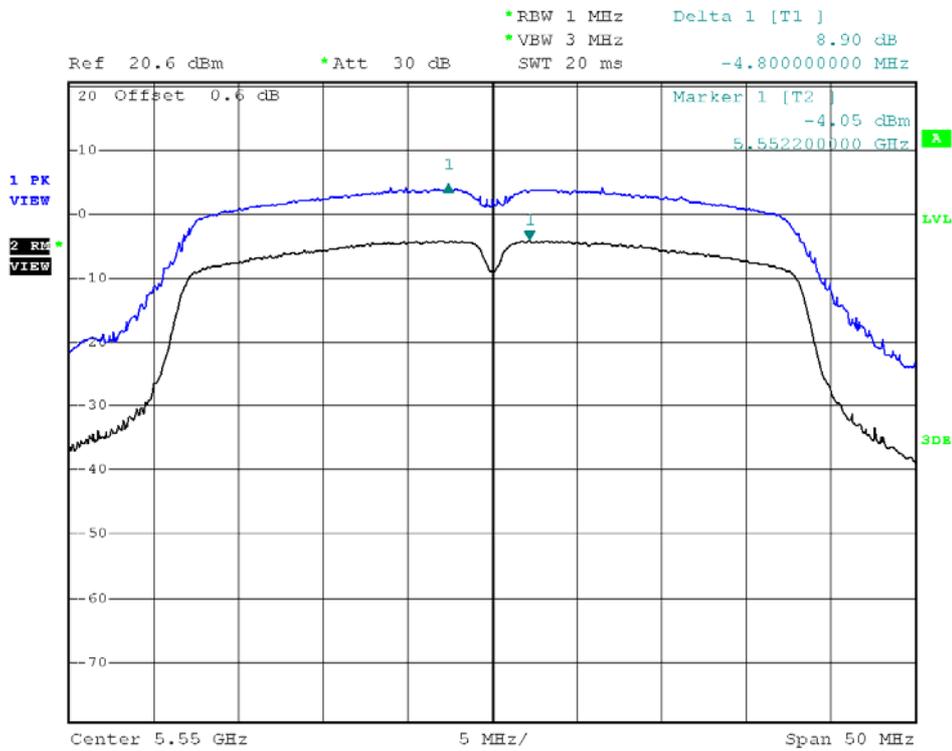
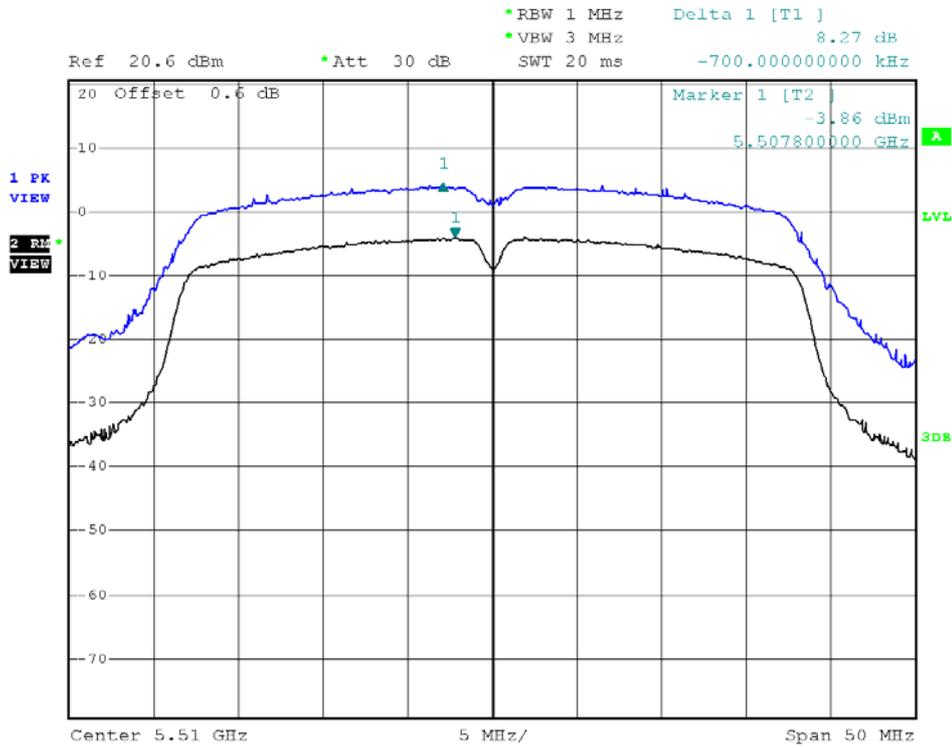
802.11n-HT40 38/46



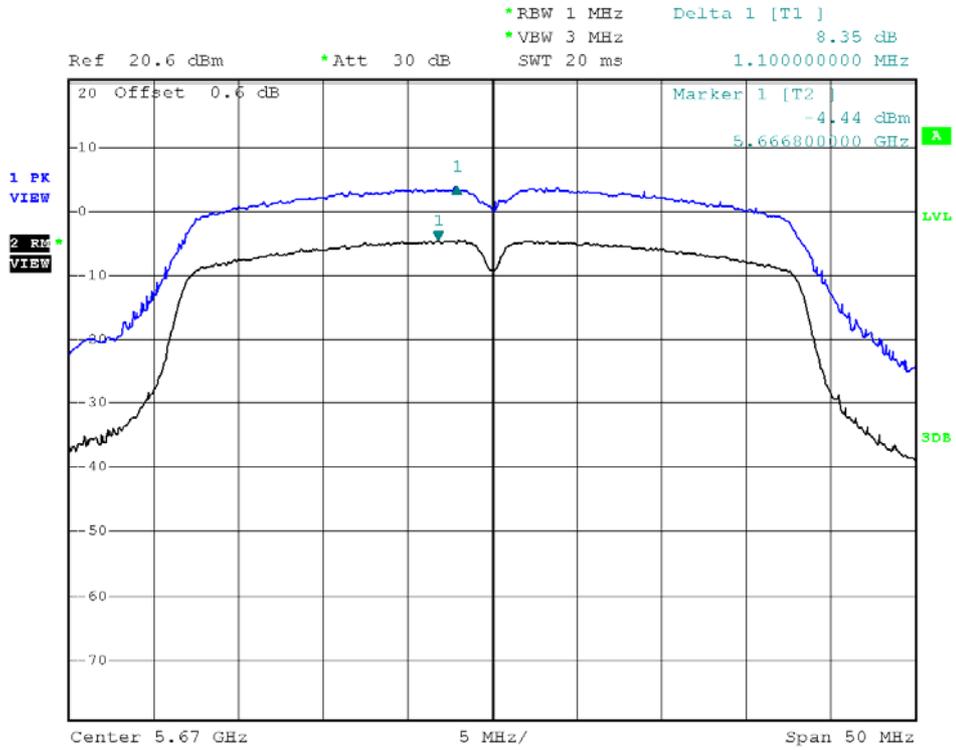
802.11n-HT40 54/62



802.11n-HT40 102/110



802.11n-HT40 134



**6. Radiated Emission test (FCC 15.205 & 15.209 & 15.407)**

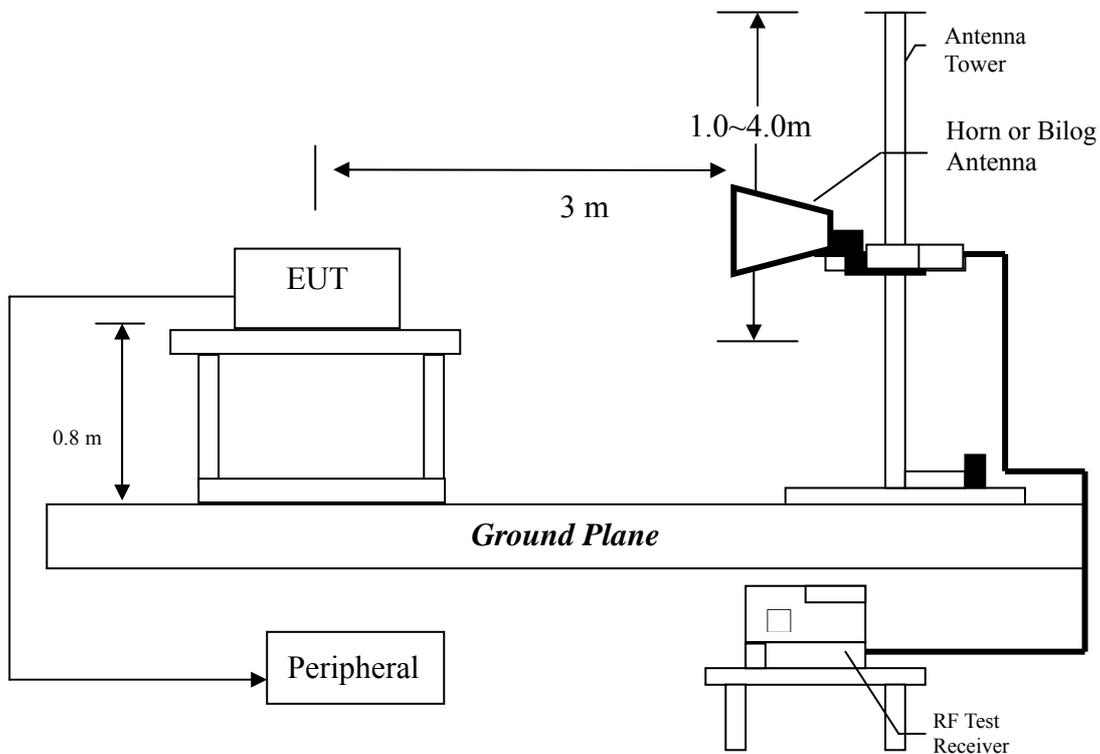
**6.1 Operating environment**

Temperature: 23 °C  
 Relative Humidity: 58 %  
 Atmospheric Pressure 1023 hPa

**6.2 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.

Testing settings (refer to KDB 789033 v01r03 section H)

Peak Measurements below 1GHz

- 1, Analyzer center frequency was set to the frequency of the radiated spurious emission.
- 2, Span=encompass the entire emission
- 3, RBW=120KHz
- 4, Detector=Quasi-Peak
- 5, Trace was allowed to stabilize

Peake Measurements above 1GHz

- 1, Analyzer center frequency was set to the frequency of the radiated spurious emission.
- 2, Span=encompass the entire emission
- 3, RBW=1MHz
- 4, VBW=3MHz
- 4, Detector= Peak (Max-hold)
- 5, Trace was allowed to stabilize

Average Measurements above 1GHz

- 1, Analyzer center frequency was set to the frequency of the radiated spurious emission.
- 2, Span=encompass the entire emission
- 3, RBW=1MHz
- 4, VBW=3MHz
- 4, Detector= RMS (Max-hold)
- 5, Trace was allowed to stabilize

### 6.3 Emission limits

The spurious Emission shall test through the 10th harmonic or 40GHz (whichever is lower). 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).

Radiated emission limits

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

Restricted bands Table list

MHz	MHz	MHz	GHz
0.090–0.110	16.42–16.423	399.9–410	4.5–5.15
10.495–0.505	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225	123–138	2200–2300	14.47–14.5
8.291–8.294	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675	156.7–156.9	2690–2900	22.01–23.12
8.41425–8.41475	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293	167.72–173.2	3332–3339	31.2–31.8

Notes:

- 1, All emission out-side of the 5.15-5.35GHz & 5.47-5.725GHz band shall not exceed an EIRP of -27dBm/MHz (68.2dBuV/m, test distance: 3 meter).
- 2, The spectrum is measured from 9KHz to the 10<sup>th</sup> harmonic of the fundamental frequency of the transmitter using QP detector below 1GHz, above 1GHz, average & peak measurements were taken using for test. The worst-case emission are reported however emission whose levels were not within 20dB of the respective limited were not reported.
- 3, The test was performed on EUT under 802.11a/n-HT20/n-HT40 continuously transmitting mode.
- 4, Field Strength Calculation please refer page 68.

## Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + AF + CF - AG + PD$$

Where FS = Field Strength in dB $\mu$ V/m  
RA = Receiver Amplitude (including preamplifier) in dB $\mu$ V  
CF = Cable Attenuation Factor in dB  
AF = Antenna Factor in dB  
AG = Amplifier Gain in dB  
PD = Pulse Desensitization in dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG + PD$$

### Example

Assume a receiver reading of 62.0 dB $\mu$ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB. The net field strength for comparison to the appropriate emission limit is 32 dB $\mu$ V/m. This value in dB $\mu$ V/m was converted to its corresponding level in  $\mu$ V/m.

$$\begin{aligned} RA &= 62.0 \text{ dB}\mu\text{V} \\ AF &= 7.4 \text{ dB} \\ CF &= 1.6 \text{ dB} \\ AG &= 29.0 \text{ dB} \\ PD &= 0 \text{ dB} \\ FS &= 62 + 7.4 + 1.6 - 29 + 0 = 42 \text{ dB}\mu\text{V/m} \end{aligned}$$

$$\text{Level in mV/m} = \text{Common Antilogarithm} [(42 \text{ dB}\mu\text{V/m})/20] = 125.9 \mu\text{V/m}$$

## 6.4 Radiated spurious emission test data

### 6.4.1 Measurement results: frequencies equal to or less than 1 GHz

The worst case occurred at 802.11a Tx channel 36.

Polarization	Frequency (MHz)	Reading (dB $\mu$ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
Horizontal	114.875	37.5	20.0	8.0	25.5	43.5	-18.0
Horizontal	222.545	38.3	20.0	11.9	30.2	46.0	-15.8
Horizontal	288.505	43.5	20.0	13.0	36.5	46.0	-9.5
Horizontal	320.033	39.2	20.0	15.9	35.1	46.0	-10.9
Horizontal	850.130	34.6	20.0	24.0	38.6	46.0	-7.4
Horizontal	959.985	38.0	20.0	24.0	42.0	46.0	-4.0
Vertical	30.552	36.1	20.0	18.9	35.0	40.5	-5.5
Vertical	68.809	39.0	20.0	7.4	26.4	40.5	-14.1
Vertical	148.345	42.4	20.0	7.8	30.2	43.5	-13.3
Vertical	171.135	44.4	20.0	9.1	33.5	43.5	-10.0
Vertical	288.022	45.4	20.0	13.0	38.4	46.0	-7.6
Vertical	624.125	25.9	20.0	20.5	26.4	46.0	-19.6

### 6.4.2 Measurement results: frequency above 1GHz

Test Condition : 802.11a Tx at channel 36/6Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	10360.000	54.3	36.3	38.9	56.9	68.2	-11.3
Horizontal	15540.000	52.5	34.7	41.0	58.8	68.2	-9.4
Horizontal	*5149.859	60.7	36.1	35.5	60.1	68.2	-8.1

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	15540.000	42.2	34.7	41.0	48.5	54.0	-5.5
Horizontal	*5149.859	48.5	36.1	35.5	47.9	54.0	-6.1

Test Condition : 802.11a Tx at channel 40/6Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	10400.000	54.2	36.3	38.9	56.8	68.2	-11.4
Horizontal	15600.000	51.9	34.7	41.0	58.2	68.2	-10.0

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	15600.000	40.8	34.7	41.0	47.1	54.0	-6.9

Test Condition : 802.11a Tx at channel 48/6Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	10480.000	54.0	36.3	38.9	56.6	68.2	-11.6
Horizontal	15720.000	52.9	34.7	41.0	59.2	68.2	-9.0
Horizontal	*5351.050	58.1	35.9	36.4	58.6	68.2	-9.6

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	15720.000	39.5	34.7	41.0	45.8	54.0	-8.2
Horizontal	*5351.050	45.5	35.9	36.4	46.0	54.0	-8.0

Test Condition : 802.11a Tx at channel 52/6Mbps

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	10520.000	54.6	36.3	38.9	57.2	68.2	-11.0
Horizontal	15780.000	53.0	34.7	41.0	59.3	68.2	-8.9
Horizontal	*5148.706	57.6	36.1	35.5	57.0	68.2	-11.2

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	15540.000	42.2	34.7	41.0	48.5	54.0	-5.5
Horizontal	*5148.706	47.5	36.1	35.5	46.9	54.0	-7.1

Test Condition : 802.11a Tx at channel 56/6Mbps

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	10560.000	54.2	36.3	38.9	56.8	68.2	-11.4
Horizontal	15840.000	51.6	34.7	41.0	57.9	68.2	-10.3

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	15840.000	40.6	34.7	41.0	46.9	54.0	-7.1

Test Condition : 802.11a Tx at channel 64/6Mbps

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Peak Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	10640.000	53.6	36.3	38.9	56.2	68.2	-12.0
Horizontal	15960.000	52.3	34.7	41.0	58.6	68.2	-9.6
Horizontal	*5351.053	57.3	35.9	36.4	57.8	68.2	-10.4

Polarization	Frequency (MHz)	Reading (dBµV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBµV/m)	Average Limit at 3m (dBµV/m)	Margin (dB)
Horizontal	10640.000	44.3	36.3	38.9	46.9	54.0	-7.1
Horizontal	15960.000	42.3	34.7	41.0	48.6	54.0	-5.4
Horizontal	*5351.053	47.0	35.9	36.4	47.5	54.0	-6.5

Test Condition : 802.11a Tx at channel 100/6Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	11000.000	55.1	36.3	38.9	57.7	68.2	-10.5
Horizontal	16500.000	51.8	34.7	41.0	58.1	68.2	-10.1
Horizontal	*5457.903	58.8	35.9	36.4	59.3	68.2	-8.9

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	11000.000	41.2	34.7	41.0	47.5	54.0	-6.5
Horizontal	*5457.903	45.4	35.9	36.4	45.9	54.0	-8.1

Test Condition : 802.11a Tx at channel 116/6Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	11160.000	55.1	36.3	38.9	57.7	68.2	-10.5
Horizontal	16740.000	52.0	34.7	41.0	58.3	68.2	-9.9

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	11160.000	41.6	34.7	41.0	47.9	54.0	-6.1

Test Condition : 802.11a Tx at channel 140/6Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	11400.000	54.5	36.3	38.9	57.1	68.2	-11.1
Horizontal	17100.000	52.4	34.7	41.0	58.7	68.2	-9.5
Horizontal	*7253.005	57.6	36.2	36.5	57.9	68.2	-10.3

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	17100.000	41.6	34.7	41.0	47.9	54.0	-6.1
Horizontal	*7253.005	46.7	36.2	36.5	47.0	54.0	-7.0

Test Condition : 802.11n-HT20 Tx at channel 36/6.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	10360.000	53.9	36.3	38.9	56.5	68.2	-11.7
Horizontal	15540.000	51.9	34.7	41.0	58.2	68.2	-10.0
Horizontal	*5149.007	58.5	36.1	35.5	57.9	68.2	-10.3

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	15540.000	41.6	34.7	41.0	47.9	54.0	-6.1
Horizontal	*5149.007	47.1	36.1	35.5	46.5	54.0	-7.5

Test Condition : 802.11n-HT20 Tx at channel 40/6.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	10400.000	53.9	36.3	38.9	56.5	68.2	-11.7
Horizontal	15600.000	51.1	34.7	41.0	57.4	68.2	-10.8

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	15600.000	41.5	34.7	41.0	47.8	54.0	-6.2

Test Condition : 802.11n-HT20 Tx at channel 48/6.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	10480.000	54.4	36.3	38.9	57.0	68.2	-11.2
Horizontal	15720.000	52.8	34.7	41.0	59.1	68.2	-9.1
Horizontal	*5352.860	57.3	35.9	36.4	57.8	68.2	-10.4

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	15720.000	40.5	34.7	41.0	46.8	54.0	-7.2
Horizontal	*5352.860	44.7	35.9	36.4	45.2	54.0	-8.8

Test Condition : 802.11n-HT20 Tx at channel 52/6.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	10520.000	56.3	36.3	38.9	58.9	68.2	-9.3
Horizontal	15780.000	53.2	34.7	41.0	59.5	68.2	-8.7
Horizontal	*5148.363	57.5	36.1	35.5	56.9	68.2	-11.3

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	15540.000	40.9	34.7	41.0	47.2	54.0	-6.8
Horizontal	*5148.363	46.5	36.1	35.5	45.9	54.0	-8.1

Test Condition : 802.11n-HT20 Tx at channel 56/6.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	10560.000	54.9	36.3	38.9	57.5	68.2	-10.7
Horizontal	15840.000	51.9	34.7	41.0	58.2	68.2	-10.0

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	15840.000	41.2	34.7	41.0	47.5	54.0	-6.5

Test Condition : 802.11n-HT20 Tx at channel 64/6.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	10640.000	54.5	36.3	38.9	57.1	68.2	-11.1
Horizontal	15960.000	53.5	34.7	41.0	59.8	68.2	-8.4
Horizontal	*5351.859	56.9	35.9	36.4	57.4	68.2	-10.8

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	10640.000	44.5	36.3	38.9	47.1	54.0	-6.9
Horizontal	15960.000	41.7	34.7	41.0	48.0	54.0	-6.0
Horizontal	*5351.859	45.4	35.9	36.4	45.9	54.0	-8.1

Test Condition : 802.11n-HT20 Tx at channel 100/6.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	11000.000	53.9	36.3	38.9	56.5	68.2	-11.7
Horizontal	16500.000	51.6	34.7	41.0	57.9	68.2	-10.3
Horizontal	*5458.577	57.5	35.9	36.4	58.0	68.2	-10.2

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	11000.000	41.8	34.7	41.0	48.1	54.0	-5.9
Horizontal	*5458.577	46.8	35.9	36.4	47.3	54.0	-6.7

Test Condition : 802.11n-HT20 Tx at channel 116/6.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	11160.000	56.0	36.3	38.9	58.6	68.2	-9.6
Horizontal	16740.000	52.7	34.7	41.0	59.0	68.2	-9.2

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	11160.000	41.7	34.7	41.0	48.0	54.0	-6.0

Test Condition : 802.11n-HT20 Tx at channel 140/6.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	11400.000	55.6	36.3	38.9	58.2	68.2	-10.0
Horizontal	17100.000	52.6	34.7	41.0	58.9	68.2	-9.3
Horizontal	*7251.594	57.1	36.2	36.5	57.4	68.2	-10.8

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	17100.000	41.2	34.7	41.0	47.5	54.0	-6.5
Horizontal	*7251.594	45.6	36.2	36.5	45.9	54.0	-8.1

Test Condition : 802.11n-HT40 Tx at channel 38/13.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	10380.000	53.5	36.3	38.9	56.1	68.2	-12.1
Horizontal	15570.000	50.9	34.7	41.0	57.2	68.2	-11.0
Horizontal	*5148.532	57.5	36.1	35.5	56.9	68.2	-11.3

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	15570.000	39.7	34.7	41.0	46.0	54.0	-8.0
Horizontal	*5148.532	46.1	36.1	35.5	45.5	54.0	-8.5

Test Condition : 802.11n-HT40 Tx at channel 46/13.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	10460.000	53.9	36.3	38.9	56.5	68.2	-11.7
Horizontal	15690.000	51.6	34.7	41.0	57.9	68.2	-10.3
Horizontal	*5352.045	57.6	35.9	36.4	58.1	68.2	-10.1

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	15690.000	40.4	34.7	41.0	46.7	54.0	-7.3
Horizontal	*5352.045	44.6	35.9	36.4	45.1	54.0	-8.9

Test Condition : 802.11n-HT40 Tx at channel 54/13.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	10540.000	54.0	36.3	38.9	56.6	68.2	-11.6
Horizontal	15810.000	52.7	34.7	41.0	59.0	68.2	-9.2
Horizontal	*5149.683	58.8	36.1	35.5	58.2	68.2	-10.0

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	15720.000	40.5	34.7	41.0	46.8	54.0	-7.2
Horizontal	*5149.683	47.5	36.1	35.5	46.9	54.0	-7.1

Test Condition : 802.11n-HT40 Tx at channel 62/13.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	10620.000	53.9	36.3	38.9	56.5	68.2	-11.7
Horizontal	15930.000	52.3	34.7	41.0	58.6	68.2	-9.6
Horizontal	*5351.905	57.4	35.9	36.4	57.9	68.2	-10.3

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	10620.000	43.5	36.3	38.9	46.1	54.0	-7.9
Horizontal	15930.000	40.5	34.7	41.0	46.8	54.0	-7.2
Horizontal	*5351.905	46.5	35.9	36.4	47.0	54.0	-7.0

Test Condition : 802.11n-HT40 Tx at channel 102/13.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	11020.000	55.6	36.3	38.9	58.2	68.2	-10.0
Horizontal	16530.000	52.2	34.7	41.0	58.5	68.2	-9.7
Horizontal	*5458.589	56.8	35.9	36.4	57.3	68.2	-10.9

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	*5458.589	45.3	35.9	36.4	45.8	54.0	-8.2

Test Condition : 802.11n-HT40 Tx at channel 110/13.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	11100.000	54.3	36.3	38.9	56.9	68.2	-11.3
Horizontal	16650.000	52.5	34.7	41.0	58.8	68.2	-9.4

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	16650.000	41.6	34.7	41.0	47.9	54.0	-6.1

Test Condition : 802.11n-HT40 Tx at channel 134/13.5Mbps

Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Peak Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	11340.000	55.3	36.3	38.9	57.9	68.2	-10.3
Horizontal	17010.000	51.9	34.7	41.0	58.2	68.2	-10.0
Horizontal	*7251.442	57.2	36.2	36.5	57.5	68.2	-10.7

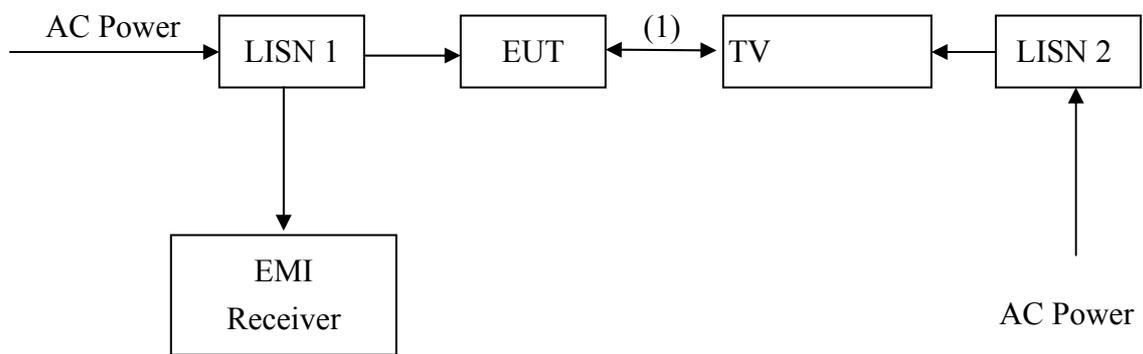
Polarization	Frequency (MHz)	Reading (dBμV)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dBμV/m)	Average Limit at 3m (dBμV/m)	Margin (dB)
Horizontal	11340.000	44.9	36.3	38.9	47.5	54.0	-6.5
Horizontal	17010.000	40.6	34.7	41.0	46.9	54.0	-7.1
Horizontal	*7251.442	45.7	36.2	36.5	46.0	54.0	-8.0

**7. Power Line Conducted Emission test**

**7.1 Operating environment**

Temperature: 23 °C  
 Relative Humidity: 55 %  
 Atmospheric Pressure 1023 hPa

**7.2 Test setup & procedure**



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 C63.4/2009 on conducted measurement. The bandwidth of the field strength meter (R & S Test Receiver ESCS 30) is set at 9 kHz.

### 7.3 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.

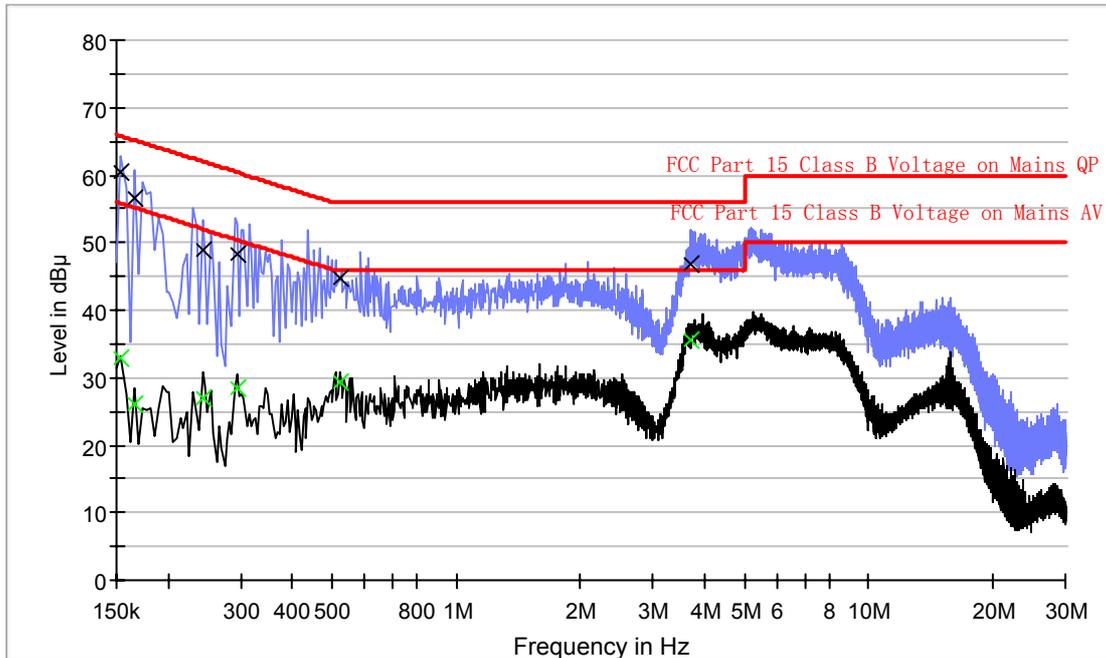
### 7.4 Uncertainty of Conducted Emission

Expanded uncertainty of conducted emission measurement is  $\pm 3.6$  dB.

### 7.5 Power Line Conducted Emission test data

The test was performed on EUT under 802.11a/n-HT20/n-HT40 continuously transmitting mode. The worst case occurred at 802.11a test mode.

Phase: Line  
 Test Condition: Tx 802.11a 36/6Mbps



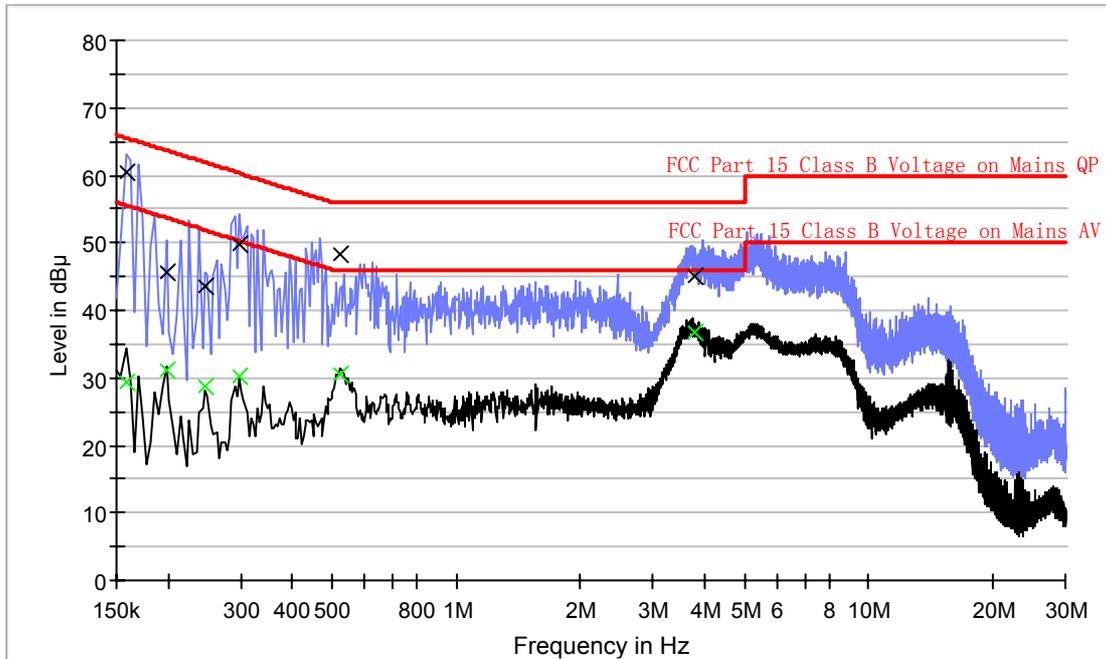
### Result Table QP

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.154	60.5	L1	9.6	5.3	65.8
0.166	56.7	L1	9.6	8.5	65.2
0.242	48.8	L1	9.6	13.2	62.0
0.294	48.3	L1	9.6	12.1	60.4
0.522	44.6	L1	9.6	11.4	56.0
3.718	46.9	L1	9.7	9.1	56.0

### Result Table AV

Frequency (MHz)	Average (dB $\mu$ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.154	32.9	L1	9.6	22.9	55.8
0.166	26.1	L1	9.6	29.1	55.2
0.242	26.9	L1	9.6	25.1	52.0
0.294	28.6	L1	9.6	21.8	50.4
0.522	29.3	L1	9.6	16.7	46.0
3.718	35.7	L1	9.7	10.3	46.0

Phase: : Neutral  
 Test Condition: : Tx 802.11a 36/6Mbps



**Result Table QP**

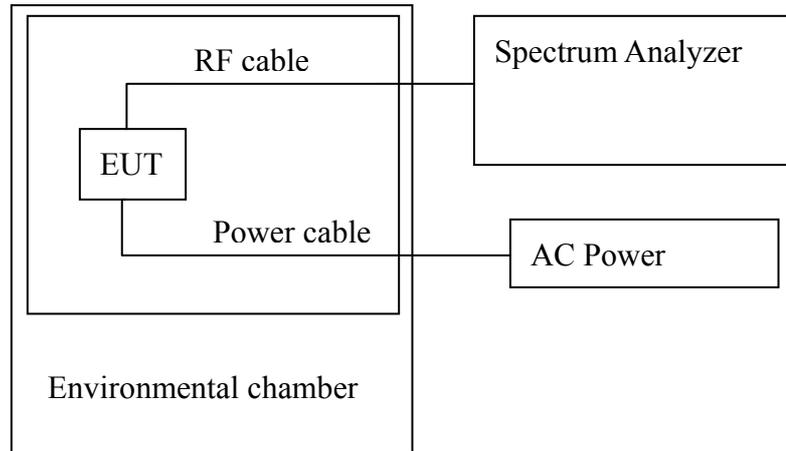
Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.158	60.3	N	9.7	5.3	65.6
0.198	45.7	N	9.6	18.0	63.7
0.246	43.7	N	9.6	18.2	61.9
0.298	49.8	N	9.7	10.5	60.3
0.522	48.4	N	9.6	7.6	56.0
3.806	44.9	N	9.7	11.1	56.0

**Result Table AV**

Frequency (MHz)	CAverage (dB $\mu$ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)
0.158	29.5	N	9.7	26.1	55.6
0.198	31.0	N	9.6	22.7	53.7
0.246	28.7	N	9.6	23.2	51.9
0.298	30.3	N	9.7	20.0	50.3
0.522	30.4	N	9.6	15.6	46.0
3.806	36.7	N	9.7	9.3	46.0

**8. Frequency Stability Test**

**8.1 Test setup & procedure**



Note1: The frequency stability is measured with the temperature variation range of -30°C to +50°C (10°C increment), and voltage supply variation range of 85% to 115% of nominal AC supply voltage.

- 2: To ensure emission at the band-edge is maintained within the authorized band, the frequency 802.11a & 802.11n-HT20 channel 36, 64, 100, 802.11n-HT40 channel 38, 62, 102 are selected to test.
- 3: The EUT was power by AC/DC Adapter, Input: 120Vac, 60Hz.
- 4: Limit: the measured frequency within the band of operation under all conditions.

**8.2 Frequency Stability Test Data**

20°C is taken as temperature in normal condition.

Model: 802.11a, Operation frequency: 5180MHz, Channel: 36, Rate: 6Mbps

Input voltage (VAC)	Temperature (°C)	Measured Frequency (MHz)	Frequency deviation (Hz)	ppm
120	-30	5179.989908	-10,092	-1.95
	-20	5179.990092	-9,908	-1.91
	-10	5179.990892	-9,108	-1.76
	0	5180.000328	328	0.06
	+10	5180.000459	459	0.09
	+20	5180.000597	597	0.12
	+30	5179.993251	-6,749	-1.30
	+40	5179.996332	-3,668	-0.71
	+50	5179.999358	-642	-0.12
102	+20	5180.000442	442	0.09
138	+20	5180.000532	532	0.10

Model: 802.11a, Operation frequency: 5320MHz, Channel: 64, Rate: 6Mbps

Input voltage (VAC)	Temperature (°C)	Measured Frequency (MHz)	Frequency deviation (Hz)	ppm
120	-30	5320.000291	291	0.05
	-20	5320.000125	125	0.02
	-10	5320.000372	372	0.07
	0	5320.000220	220	0.04
	+10	5319.998902	-1,098	-0.21
	+20	5319.999321	-679	-0.13
	+30	5319.999832	-168	-0.03
	+40	5319.999525	-475	-0.09
	+50	5319.999398	-602	-0.11
102	+20	5319.999558	-442	-0.08
138	+20	5319.999669	-331	-0.06

Model: 802.11a, Operation frequency: 5500MHz, Channel: 100, Rate: 6Mbps

Input voltage (VAC)	Temperature (°C)	Measured Frequency (MHz)	Frequency deviation (Hz)	ppm
120	-30	5500.000522	522	0.09
	-20	5500.000339	339	0.06
	-10	5500.000465	465	0.08
	0	5500.000228	228	0.04
	+10	5500.000339	339	0.06
	+20	5499.987325	-12,675	-2.30
	+30	5499.996984	-3,016	-0.55
	+40	5499.997520	-2,480	-0.45
	+50	5499.998520	-1,480	-0.27
102	+20	5500.000190	190	0.03
138	+20	5500.000250	250	0.05

Model: 802.11n-HT20, Operation frequency: 5180MHz, Channel: 36, Rate: 6Mbps

Input voltage (VAC)	Temperature (°C)	Measured Frequency (MHz)	Frequency deviation (Hz)	ppm
120	-30	5179.989562	-10,438	-2.02
	-20	5179.990132	-9,868	-1.91
	-10	5179.990595	-9,405	-1.82
	0	5180.000440	440	0.08
	+10	5180.000600	600	0.12
	+20	5180.000558	558	0.11
	+30	5179.994691	-5,309	-1.02
	+40	5179.998732	-1,268	-0.24
	+50	5179.999375	-625	-0.12
102	+20	5180.000552	552	0.11
138	+20	5180.000337	337	0.07

Model: 802.11n-HT20, Operation frequency: 5320MHz, Channel: 64, Rate: 6Mbps

Input voltage (VAC)	Temperature (°C)	Measured Frequency (MHz)	Frequency deviation (Hz)	ppm
120	-30	5319.999650	-350	-0.07
	-20	5319.999537	-463	-0.09
	-10	5319.999469	-531	-0.10
	0	5320.000302	302	0.06
	+10	5320.000585	585	0.11
	+20	5320.000380	380	0.07
	+30	5320.000369	369	0.07
	+40	5320.000488	488	0.09
	+50	5319.999525	-475	-0.09
102	+20	5320.000347	347	0.07
138	+20	5320.000332	332	0.06

Model: 802.11n-HT20, Operation frequency: 5500MHz, Channel: 100, Rate: 6Mbps

Input voltage (VAC)	Temperature (°C)	Measured Frequency (MHz)	Frequency deviation (Hz)	ppm
120	-30	5499.989032	-10,968	-1.99
	-20	5499.988930	-11,070	-2.01
	-10	5499.989082	-10,918	-1.99
	0	5500.000462	462	0.08
	+10	5500.000387	387	0.07
	+20	5499.988902	-11,098	-2.02
	+30	5500.000320	320	0.06
	+40	5500.000344	344	0.06
	+50	5500.000510	510	0.09
102	+20	5499.998772	-1,228	-0.22
138	+20	5499.999023	-977	-0.18

Model: 802.11n-HT40, Operation frequency: 5190MHz, Channel: 38, Rate: 13.5Mbps

Input voltage (VAC)	Temperature (°C)	Measured Frequency (MHz)	Frequency deviation (Hz)	ppm
120	-30	5190.000693	693	0.13
	-20	5190.000763	763	0.15
	-10	5190.000302	302	0.06
	0	5190.000423	423	0.08
	+10	5190.000551	551	0.11
	+20	5189.998135	-1,865	-0.36
	+30	5189.998353	-1,647	-0.32
	+40	5189.998765	-1,235	-0.24
	+50	5189.998325	-1,675	-0.32
102	+20	5189.998743	-1,257	-0.24
138	+20	5189.998543	-1,457	-0.28

Model: 802.11n-HT40, Operation frequency: 5310MHz, Channel: 62, Rate: 13.5Mbps

Input voltage (VAC)	Temperature (°C)	Measured Frequency (MHz)	Frequency deviation (Hz)	ppm
120	-30	5310.000893	893	0.17
	-20	5310.000845	845	0.16
	-10	5310.000553	553	0.10
	0	5310.000652	652	0.12
	+10	5310.000798	798	0.15
	+20	5310.000564	564	0.11
	+30	5310.000658	658	0.12
	+40	5310.000435	435	0.08
	+50	5310.000978	978	0.18
102	+20	5310.000658	658	0.12
138	+20	5310.000734	734	0.14

Model: 802.11n-HT40, Operation frequency: 5510MHz, Channel: 102, Rate: 13.5Mbps

Input voltage (VAC)	Temperature (°C)	Measured Frequency (MHz)	Frequency deviation (Hz)	ppm
120	-30	5509.999454	-546	-0.10
	-20	5509.999764	-236	-0.04
	-10	5509.999533	-467	-0.08
	0	5509.998532	-1,468	-0.27
	+10	5509.997959	-2,041	-0.37
	+20	5509.998042	-1,958	-0.36
	+30	5510.000634	634	0.12
	+40	5510.000589	589	0.11
	+50	5510.000665	665	0.12
102	+20	5510.000543	543	0.10
138	+20	5510.000125	125	0.02

## Appendix A: Test equipment list

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	30-Jun-12	30-Jun-13
SZ185-01	EMI Receiver	R&S	ESCI	100547	22-Sep-12	22-Jun-13
SB9060	Spectrum Analyzer	R&S	FSQ	308005870	15-May-12	15-May-12
SZ061-09	Horn Antenna	ETS	3115	00092346	28-Nov-12	28-Nov-13
SZ061-07	Pyramidal Horn Antenna	ETS	3160-09	00083067	8-Sep-12	22-Jun-13
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	8-Dec-12	8-Jun-13
SZ056-03	Spectrum Analyzer	R&S	FSP 30	101148	22-Sep-12	22-Jun-13
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	17-Nov-12	17-May-13
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	3-Dec-12	08-Jun-13
SZ062-02	RF Cable	RADIALL	RG 213U	--	17-Mar-12	17-Sep-13
SZ062-05	RF Cable	RADIALL	0.04-26.5 GHz	--	29-Dec-12	29-Jun-13
SZ062-12	RF Cable	RADIALL	0.04-26.5 GHz	--	29-Dec-12	29-Jun-13
SZ067-21	Notch Filter	Micro-Tronics	High-pass filter	--	12-Mar-13	12-Mar-14
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	5-Nov-12	5-Nov-13
SZ187-01	Two-Line V-Network	R&S	ENV216	100072	5-Nov-12	5-Nov-13
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	5-Nov-12	5-Nov-13
SZ188-03	Shielding Room	ETS	RFD-100	4100	10-Sep-12	10-Sep-13
SZ016-12	Programmable Temperature & Humidity Chamber	Taili	MHK-120 NK	AB0105	12-Mar-13	12-Mar-14
SZ006-12	AC Power Source	Apcpowers	AFC-1100 5GS	F312020082	23-Feb-13	23-Aug-13

Expanded uncertainty of radiated emission measurement is  $\pm 4.9$  dB.

Expanded uncertainty of conducted emission measurement is  $\pm 3.6$  dB.