Test Report of FCC CFR 47 Part 15 Subpart C and Industry Canada RSS-210 Issue 8

On Behalf of

Deliberant LLC

FCC ID:	UB8- FWBD1102
Product Description:	Broadband Digital Transmission System
Model No.:	FWBD-1102
Prepared for:	**Deliberant LLC** 138 Mountain Brook Dr Canton, GA 30115 United States
Prepared by:	**Shenzhen Bontek Compliance Testing Laboratory Co., Ltd.** 1/F, Block East H-3, OCT Eastern Ind. Zone, Qiaocheng East Road, Nanshan, Shenzhen, China Tel: 86-755-86337020 Fax: 86-755-86337028
Report No.:	BCT14DR095E-1
FCC Rule Part(s):	Part 15.407
Test Procedure(s):	KDB 789033 D02v01, KDB 662911 D01v02r01
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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	**Deliberant LLC**
Address of Applicant:	138 Mountain Brook Dr Canton, GA 30115 United States
Manufacturer:	**Deliberant LLC**
Address of Manufacturer:	138 Mountain Brook Dr Canton, GA 30115 United States

General Description of E.U.T

Items	Description
EUT Description:	Broadband Digital Transmission System
Trade Name:	N/A
Model No.:	FWBD-1102
Operation Frequency:	For 802.11a/n-HT20: 5180~5240MHz, 5745~5825MHz For 802.11n-HT40: 5190~5230MHz, 5755~5795MHz
Channel numbers:	802.11a/ 802.11n20:13, 802.11n40:2
Channel separation:	802.11a/802.11n20 :20MHz, 802.11n40 :40MHz
Modulation technology: (IEEE 802.11a)	BPSK,QPSK,16-QAM,64-QAM
Modulation technology: (IEEE 802.11n/802.11n)	BPSK,QPSK,16-QAM,64-QAM
Data speed(IEEE 802.11a)	6MHz,9MHz,12MHz,18MHz,24MHz,36MHz,48MHz,54MHz
Data speed (IEEE 802.11n20):	MCS0: 6.5MHz,MCS1:13MHz,MCS2:19.5MHz,MCS3:26MHz, MCS4:39MHz,MCS5:52MHz,MCS6:58.5MHz,MCS7:65MHz
Data speed (IEEE 802.11n40):	MCS0:15MHz,MCS1:30MHz,MCS2:45MHz,MCS3:60MHz, MCS4:90MHz,MCS5:120MHz,MCS6:135MHz,MCS7:150MHz
Antenna Type:	ANT1:Omni-directional,ANT2:Omni-directional,ANT3:Sector,ANT4: Directional, ANT5:Dish
Antenna Gain:	ANT1:3dBi, ANT2:12dBi, ANT3:19 dBi,ANT4:23 dBi,ANT5:30 dBi
Power Supply:	DC 24V 0.5A
Adapter Information:	1# Model No: AY012E-ZF243; 2# Model No: GRT-240050; Input: 100-240V AC 50/60Hz 0.5A Output: DC 24V 0.5A

Remark: * *The test data gathered are from the production sample provided by the manufacturer.*

Operation Frequency:

UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII)	
CHANNEL	**MHz**
36	5180
38	5190
40	5200
44	5220
46	5230
48	5240
149	5745
151	5755
157	5785
159	5795
165	5825

Remark: *The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer.*

802.11a/802.11n20

Channel	Frequency	Frequency
The lowest channel	5180MHz	5745MHz
The middle channel	5220MHz	5785MHz
The Highest channel	5240MHz	5825MHz

802.11n40

Channel	Frequency	Frequency
The lowest channel	5190MHz	5755MHz
The Highest channel	5230MHz	5795MHz

1.2 Test Standards

The tests were performed based on the Electromagnetic Interference (EMI) tests performed on the EUT. Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 - 2009 and and Industry Canada RSS-210 Issue 8. Radiated testing was performed at an antenna to EUT distance 3 meters.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.207, 15.209 and 15.407 rules and the FCC publication KDB789033,KDB662911, KDB558074 of Guidance on Measurements for Digital Transmission Systems (47 CFR 15.407) 。

1.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC – Registration No.: 970318

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 970318, December, 2013.

IC Registration No.: 7631A

The 3m alternate test site of Shenzhen Bontek Compliance Testing Laboratory Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 7631A on January 2011.

The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

2. SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The calibrated antennas used to sample the radiated field strength are mounted on a non-conductive, motorized antenna mast 3 or 10 meters from the leading edge of the turntable.

Support equipments or special accessories in test configuration：

AUX Description:	Manufacturer	Model No.	Certificate	CABLE
Host Computer	Dell	78MD82X	CE, FCC	1.5m Unshielded Power Cord
Monitor	Dell	E178Pc	CE, FCC	1.5m Unshielded Power Cord 1.8m shielded data Cable with core
Keyboard	Dell	L100	CE, FCC	1.8m shielded data Cable with core
Mouse	Dell	OCJ339	CE, FCC	1.8m shielded data Cable with core

2.3 General Test Procedures

Conducted Emissions:The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 7.1 of ANSI C63.4-2009 and Clause 4 of RSS-GEN Issue 2. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak detector mode.

Radiated Emissions: The EUT is a placed on as turntable, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4-2009 and Clause 4 of RSS-GEN Issue 2.

2.4 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Power Line Conducted Emission	+/- 2.3 dB
Radiated Emission	+/- 3.4 dB

Uncertainty figures are valid to a confidence level of 95%.

2.5 List of Measuring Equipments Used

Test equipments list of Shenzhen Bontek Compliance Testing Laboratory Co., Ltd.

No.	Instrument no.	Equipment	Manufacturer	Model No.	S/N	Last Calculator	Due Calculator
1	BCT-EMC001	EMI Test Receiver	R&S	ESCI	100687	2014-4-16	2015-4-17
2	BCT-EMC002	EMI Test Receiver	R&S	ESPI	100097	2013-11-1	2014-10-31
3	BCT-EMC003	Amplifier	HP	8447D	1937A02492	2014-4-16	2015-4-17
4	BCT-EMC004	Single Power Conductor Module	R&S	NNBM 8124	242	2014-4-16	2015-4-17
5	BCT-EMC005	Single Power Conductor Module	R&S	NNBM 8124	243	2014-4-16	2015-4-17
6	BCT-EMC006	Power Clamp	SCHWARZBECK	MDS-21	3812	2013-11-1	2014-10-31
7	BCT-EMC007	Positioning Controller	C&C	CC-C-1F	MF7802113	N/A	N/A
8	BCT-EMC008	`Electrostatic Discharge Simulator	TESEQ	NSG437	125	2013-11-1	2014-10-31
9	BCT-EMC009	Fast Transient Burst Generator	SCHAFFNER	MODULA6150	34572	2014-4-16	2015-4-17
10	BCT-EMC010	Fast Transient Noise Simulator	Noiseken	FNS-105AX	10501	2013-11-1	2014-10-31
11	BCT-EMC011	Color TV Pattern Genenator	PHILIPS	PM5418	TM209947	N/A	N/A
12	BCT-EMC012	Power Frequency Magnetic Field Generator	EVERFINE	EMS61000-8K	608002	2014-4-16	2015-4-17
14	BCT-EMC014	Capacitive Coupling Clamp	TESEQ	CDN8014	25096	2014-4-16	2015-4-17
15	BCT-EMC015	High Field Biconical Antenna	ELECTRO-METRICS	EM-6913	166	2013-11-1	2014-10-31
16	BCT-EMC016	Log Periodic Antenna	ELECTRO-METRICS	EM-6950	811	2013-11-1	2014-10-31
17	BCT-EMC017	Remote Active Vertical Antenna	ELECTRO-METRICS	EM-6892	304	2013-11-1	2014-10-31
18	BCT-EMC018	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9163	9163-324	2014-5-19	2015-5-18
19	BCT-EMC019	Horn Antenna	SCHWARZBECK	BBHA9120A	0499	2013-11-1	2014-10-31
20	BCT-EMC020	Teo Line Single Phase Module	SCHWARZBECK	NSLK8128	8128247	2013-11-1	2014-10-31
21	BCT-EMC021	Triple-Loop Antenna	EVERFINE	LLA-2	711002	2013-11-1	2014-10-31
22	BCT-EMC022	Electric bridge	Jhai	JK2812C	803024	N/A	N/A
23	BCT-EMC026	RF POWER AMPLIFIER	FRANKONIA	FLL-75	1020A1109	2014-4-16	2015-4-17
24	BCT-EMC027	CDN	FRANKONIA	CDN M2+M3	A3027019	2014-4-16	2015-4-17
25	BCT-EMC029	6DB Attenuator	FRANKONIA	N/A	1001698	2014-4-16	2015-4-17
26	BCT-EMC030	EM Injection clamp	FCC	F-203I-23mm	091536	2014-4-16	2015-4-17
27	BCT-EMC031	9kHz-2.4GHz signal generator 2024	MARCONI	10S/6625-99-457-8730	112260/042	2014-4-16	2015-4-17
28	BCT-EMC032	10dB attenuator	ELECTRO-METRICS	EM-7600	836	2014-4-16	2015-4-17

29	BCT-EMC033	ISN	TESEQ	ISN-T800	30301	2013-11-1	2014-10-31
30	BCT-EMC034	10KV surge generator	SANKI	SKS-0510M	048110003E 321	2013-11-1	2014-10-31
31	BCT-EMC035	HRMONICS&FLICKRE ANALYSER	VOLTECH	PM6000	200006700433	2013-11-1	2014-10-31
32	BCT-EMC036	Spectrum Analyzer	R&S	FSP	100397	2013-11-1	2014-10-31
33	BCT-EMC037	Broadband preamplifier	SCH WARZBECK	BBV9718	9718-182	2014-4-16	2015-4-17
34	BCT-EMC038	Power Sensor	Anymetre	TH101B	TR3-01	2014-4-16	2015-4-17

3. SUMMARY OF TEST RESULTS

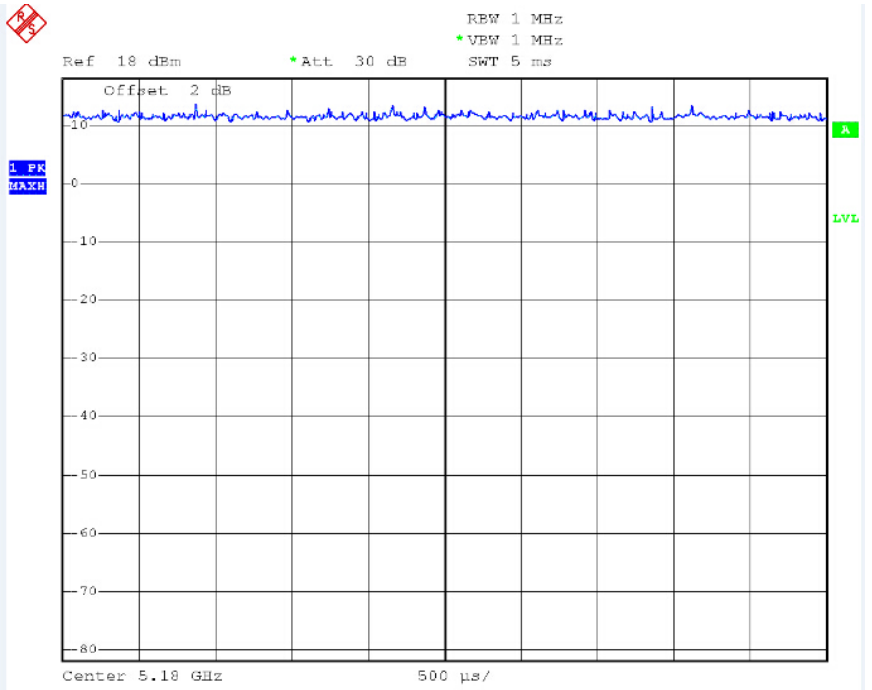
FCC Rules	Description of Test	Test Limit	Result
N/A	Duty Cycle	>99%	Pass
FCC §15.407(a)	26dB Bandwidth	N/A	Pass
FCC §15.407(e)	6dB Bandwidth	≥ 500kHz	Pass
FCC §15.407(a)	Maximum Conducted Output Power	< 30 dBm	Pass
FCC §15.407(a)	Power Spectral Density	< 17 dBm/MHz < 30 dBm/MHz	Pass
FCC §15.407(b)	Band Edges Measurement	< -27dBm/MHz EIRP < -17dBm/MHz EIRP	Pass
FCC §15.407(g)	Frequency Stability	N/A	Pass
FCC §15.209(a)	Radiated Undesirable Emission	Emissions in restricted bands must meet the radiated limits detailed in15.209	Pass
FCC §15.407(b)	Conducted Undesirable Emission	< -27dBm/MHz	Pass
FCC §15.207(a)	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.207 limits	Pass

4. DUTY CYCLE

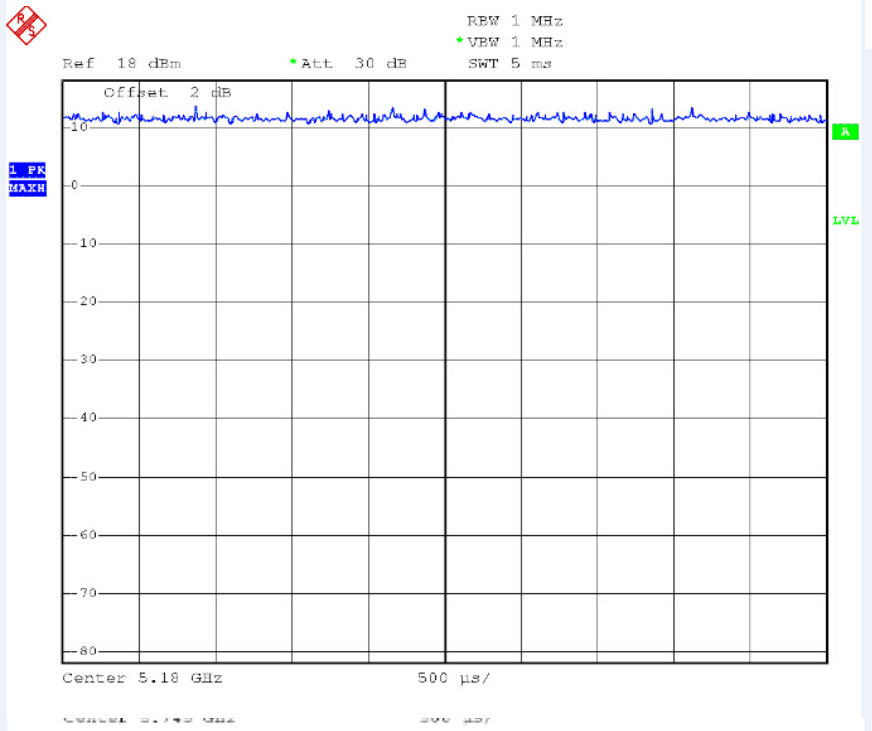
A mode duty cycle

Duty cycle > 99%

5180MHz



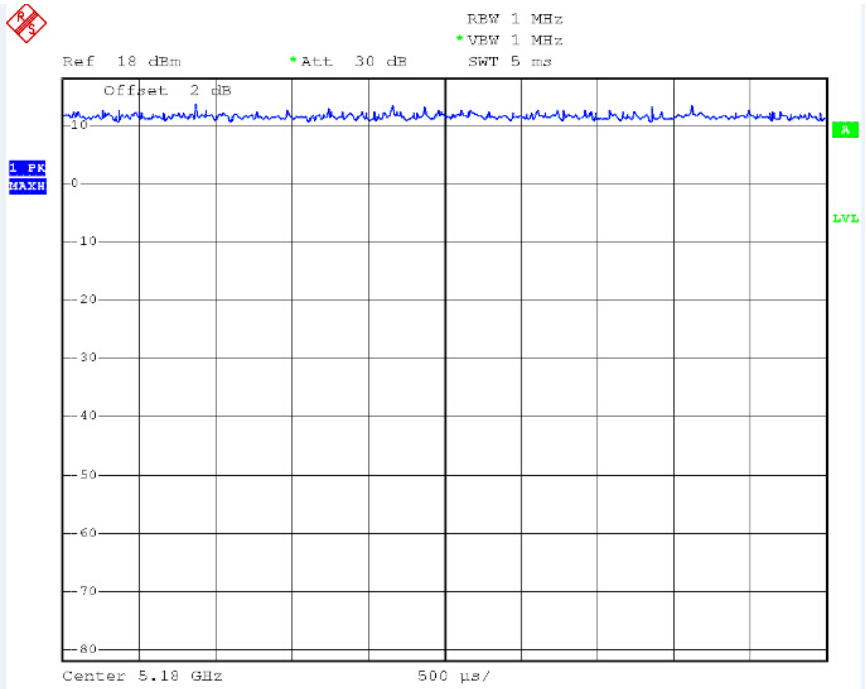
5745MHz



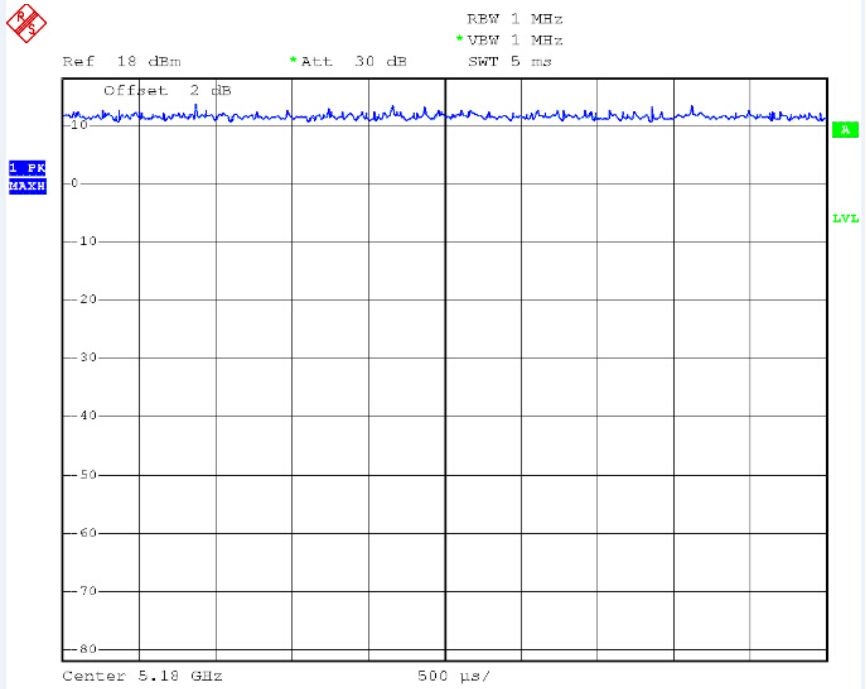
N20 mode duty cycle

Duty cycle > 99%

5180MHz



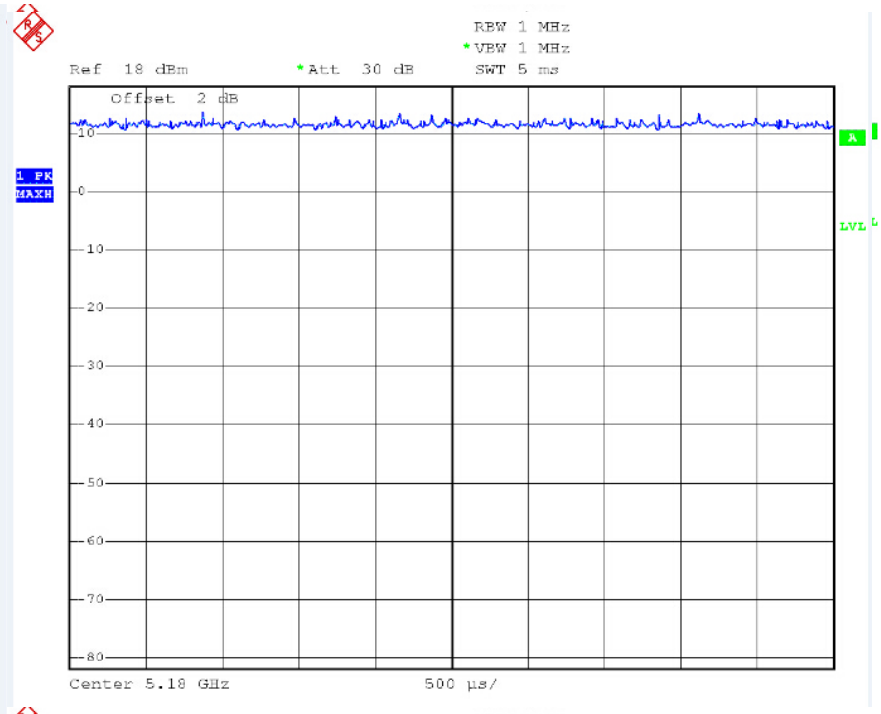
5745MHz



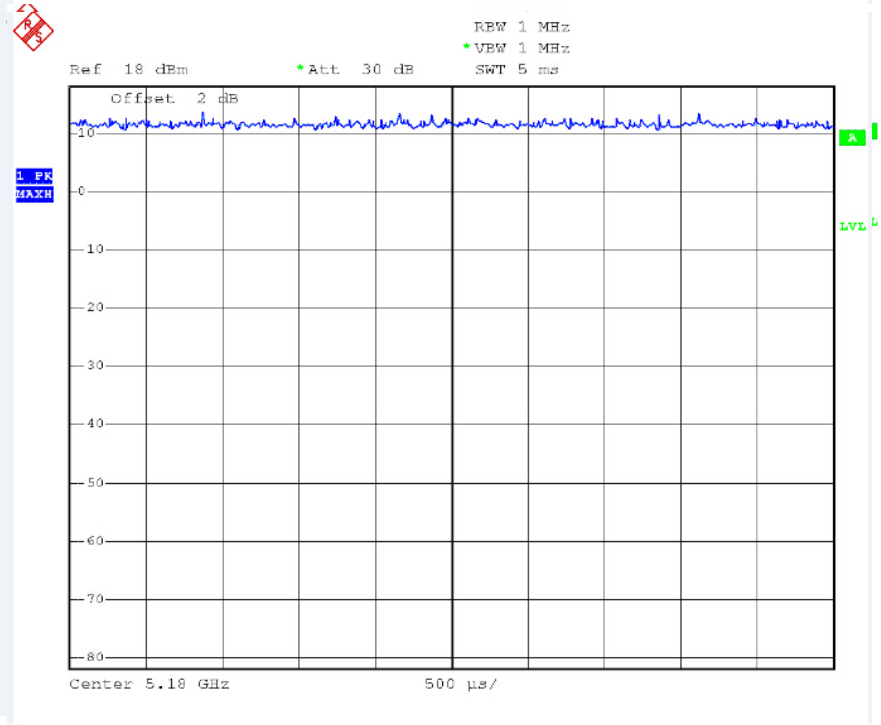
N40 mode duty cycle

Duty cycle > 99%

5190MHz



5755MHz



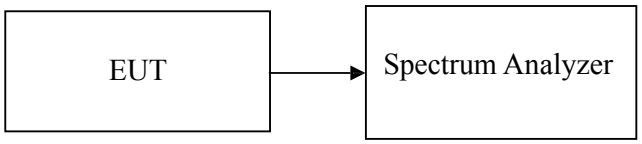
5. 26 dB EMISSION BANDWIDTH

LIMIT

According to §15.303(c), for purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Compliance with the emissions limits is based on the use of measurement instrumentation employing a peak detector function with an instrument resolutions bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

Test Procedure used
KDB 789033 D02v01 – Section C.1

Test Configuration



TEST PROCEDURE

1. The analyzers' automatic bandwidth measurement capability was used to perform the 26dB bandwidth measurement. The "X" dB bandwidth parameter was set to X = 26. The automatic bandwidth measurement function also has the capability of simultaneously measuring the 99% occupied bandwidth. The bandwidth measurement was not influenced by any intermediated power nulls in the fundamental emission.
2. RBW = approximately 1% of the emission bandwidth.
3. VBW ≥ 3 × RBW.
4. Detector = Peak.
5. Trace mode = max hold.

TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11a mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Ant. Port	Bandwidth (MHz)	99%Bandwidth (MHz)
Low	5180	Chain 1	21.92	16.88
		Chain 2	21.76	16.88
Mid	5220	Chain 1	21.52	16.88
		Chain 2	21.36	16.88
Hig	5240	Chain 1	22.56	16.88
		Chain 2	22.64	16.88

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz

Channel	Frequency (MHz)	Ant. Port	Bandwidth (B) (MHz)	99%Bandwidth (MHz)
Low	5180	Chain 1	23.92	18.08
		Chain 2	23.68	18.08
Mid	5220	Chain 1	23.44	18.00
		Chain 2	23.36	18.00
Hig	5240	Chain 1	22.96	18.00
		Chain 2	23.28	18.00

Test mode: IEEE 802.11n HT 40 MHz Channel mode / 5190 ~ 5230MHz

Channel	Frequency (MHz)	Ant. Port	Bandwidth (B) (MHz)	99%Bandwidth (MHz)
Low	5190	Chain 1	44.96	36.48
		Chain 2	44.64	36.48
Hig	5230	Chain 1	44.64	36.48
		Chain 2	44.80	36.48

Test mode: IEEE 802.11a mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	Ant. Port	Bandwidth (MHz)	99%Bandwidth (MHz)
Low	5745	Chain 1	23.36	17.20
		Chain 2	23.12	17.20
Mid	5785	Chain 1	24.88	17.36
		Chain 2	24.72	17.36
Hig	5825	Chain 1	26.56	17.44
		Chain 2	28.40	17.36

Test mode: IEEE 802.11n HT 20 MHz Channel mode / 5745 ~ 5825MHz

Channel	Frequency (MHz)	Ant. Port	Bandwidth (B) (MHz)	99%Bandwidth (MHz)
Low	5745	Chain 1	26.08	18.32
		Chain 2	26.00	18.32
Mid	5785	Chain 1	24.72	18.24
		Chain 2	24.56	18.16
Hig	5825	Chain 1	26.64	18.40
		Chain 2	24.96	18.32

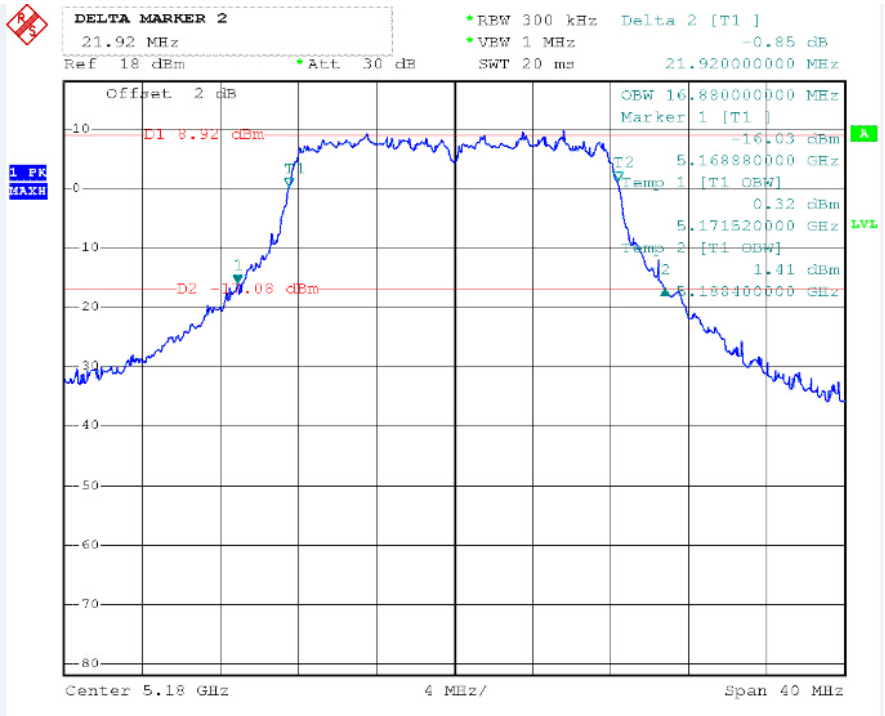
Test mode: IEEE 802.11n HT 40 MHz Channel mode / 5755 ~ 5825MHz

Channel	Frequency (MHz)	Ant. Port	Bandwidth (B) (MHz)	99%Bandwidth (MHz)
Low	5755	Chain 1	59.76	36.64
		Chain 2	57.84	36.48
Hig	5795	Chain 1	49.68	36.64
		Chain 2	50.00	36.64

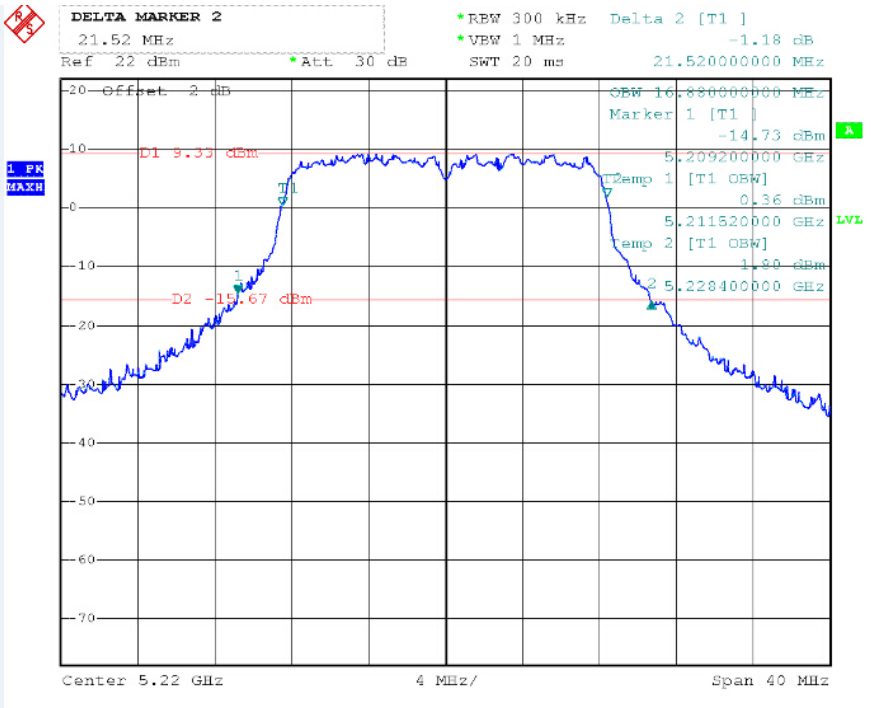
Chain 1

Test Plot

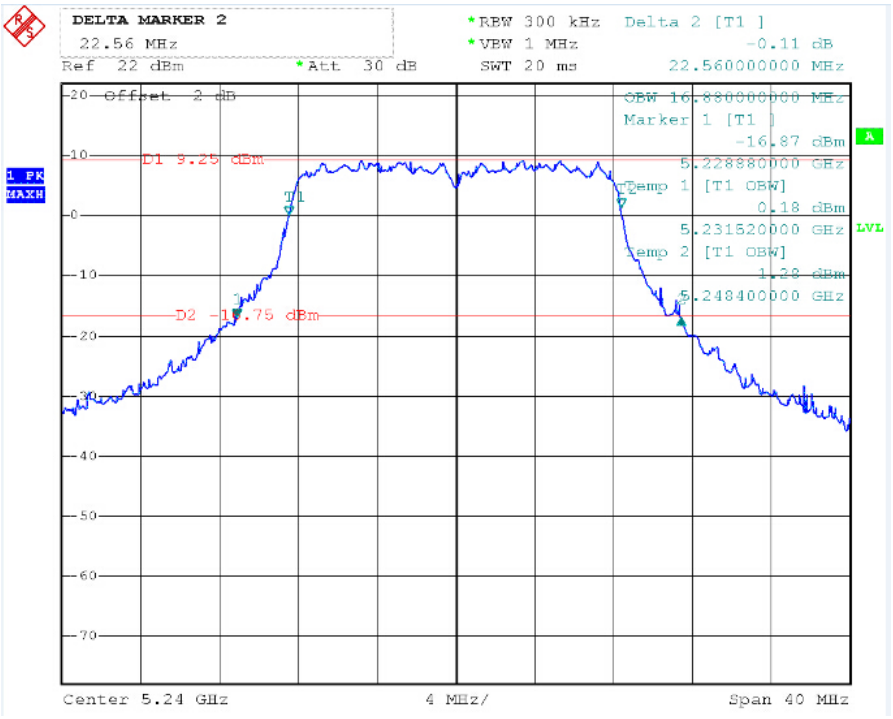
IEEE 802.11a for 5180 ~ 5240MHz
CH Low



CH Mid

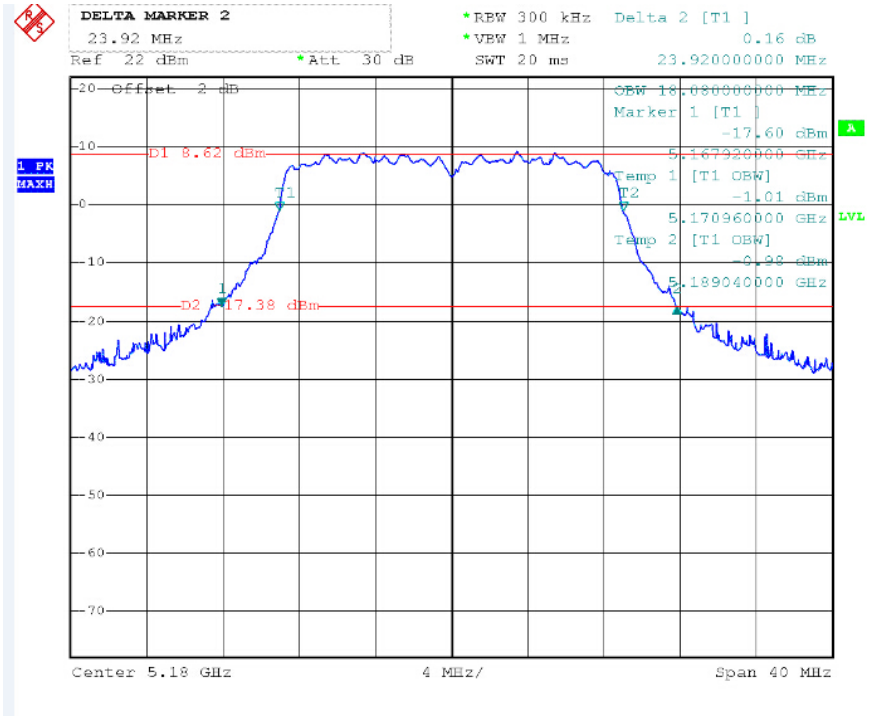


CH High



IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz

CH Low



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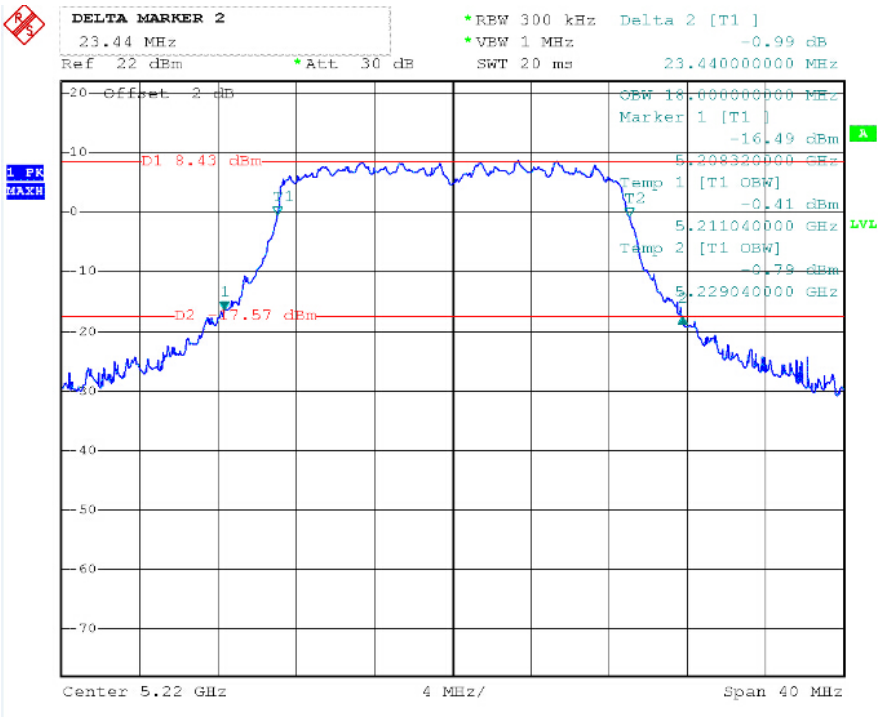

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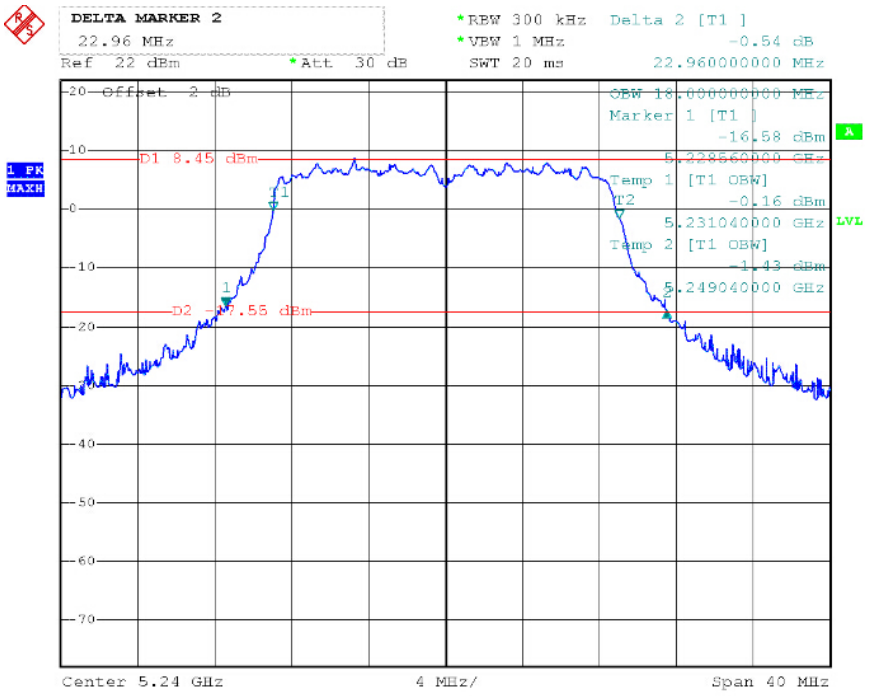
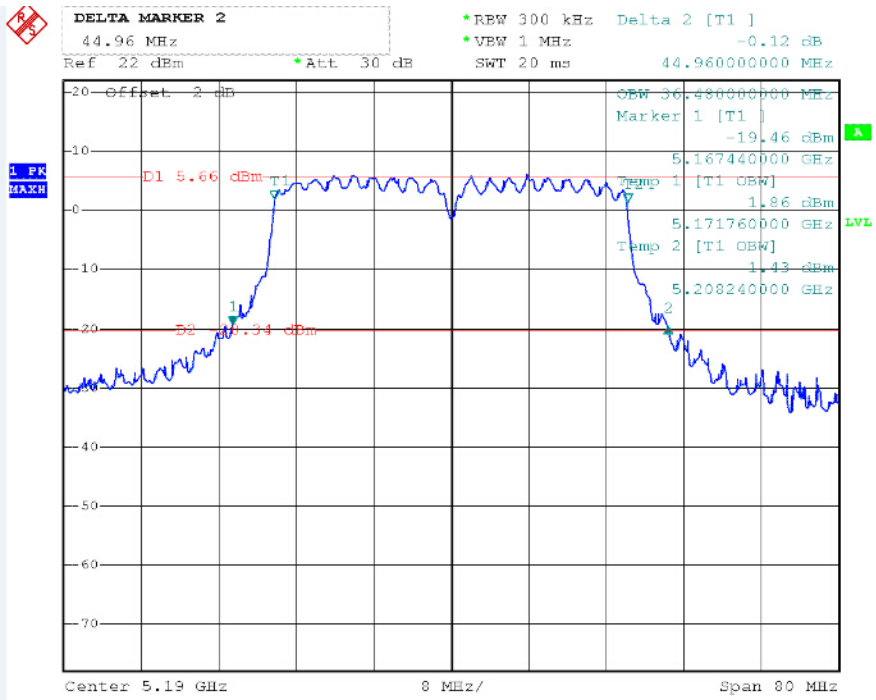


IEEE 802.11n HT 40 MHz Channel mode / 5190 ~ 5230MHz

CH Low



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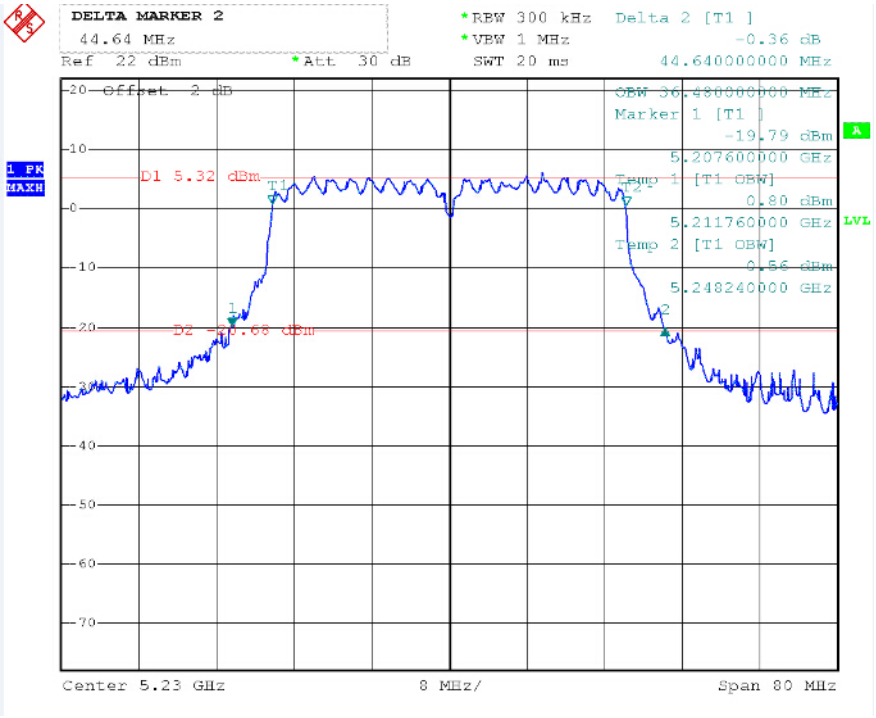
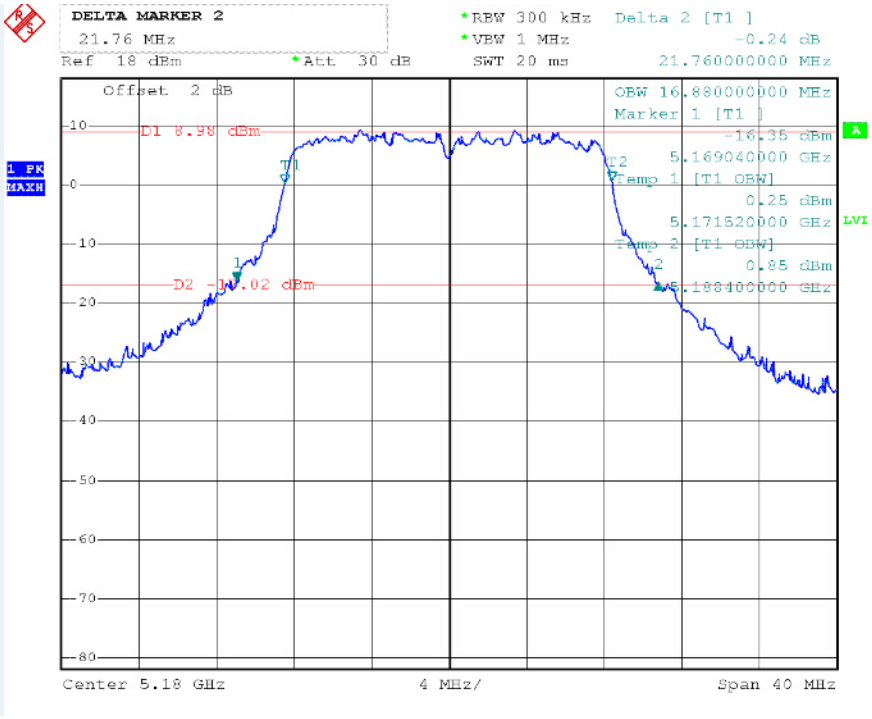


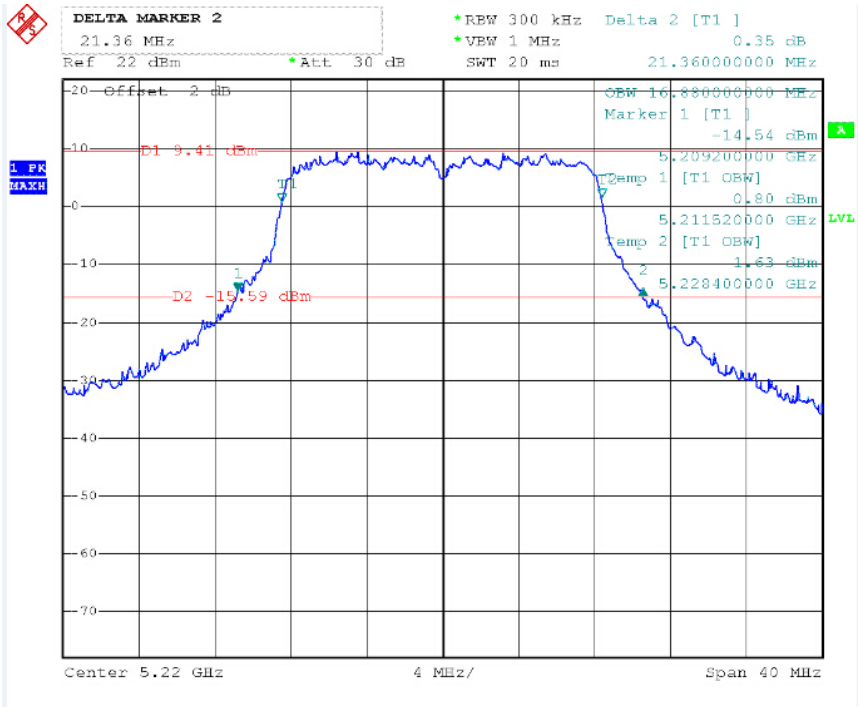
Chain 2

IEEE 802.11a for 5180 ~ 5240MHz

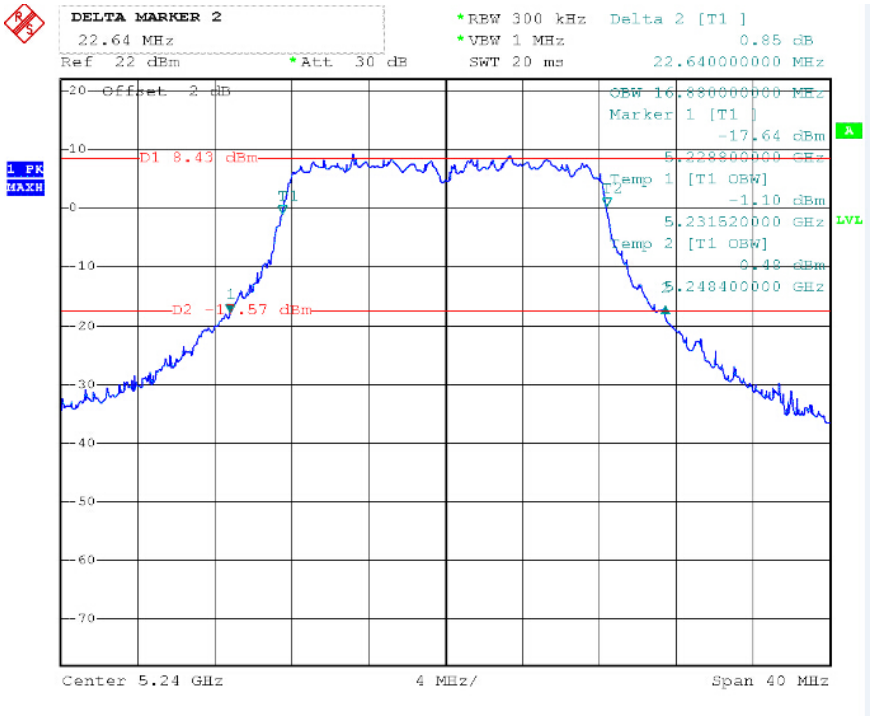
CH Low



CH Mid

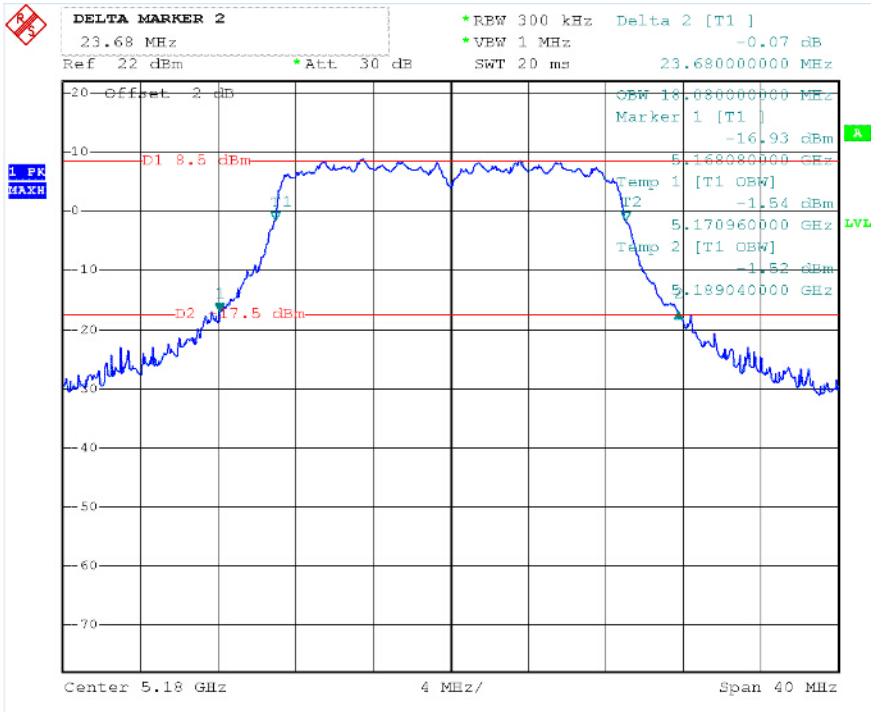


CH High

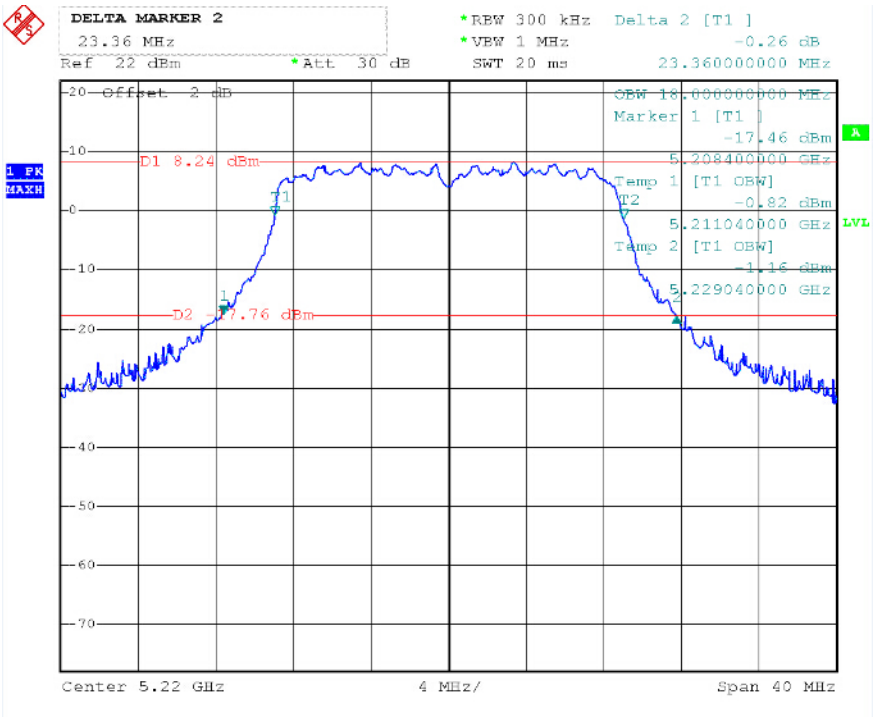


IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz

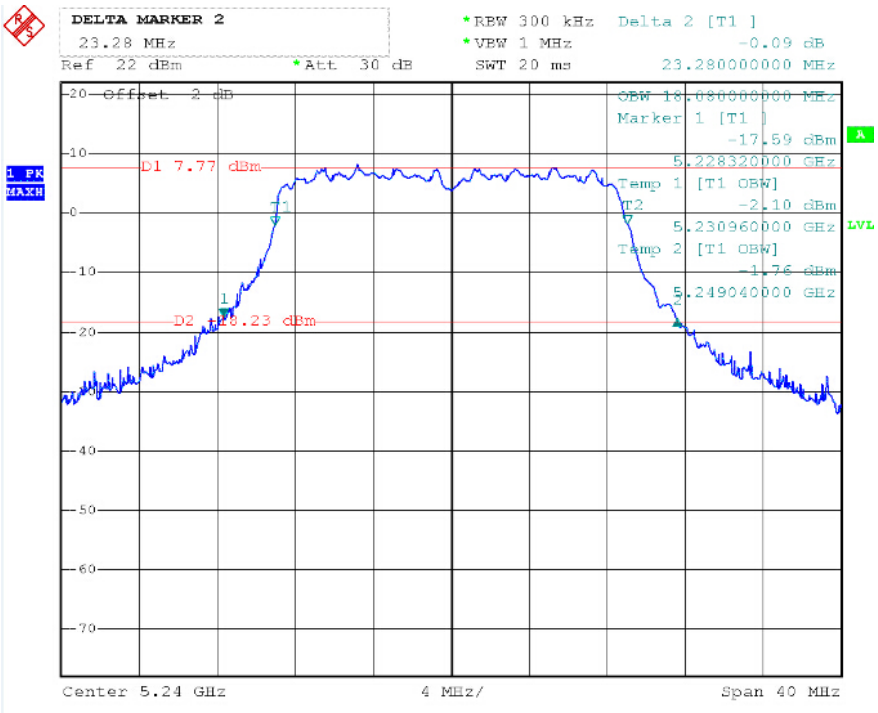
CH Low



CH Mid

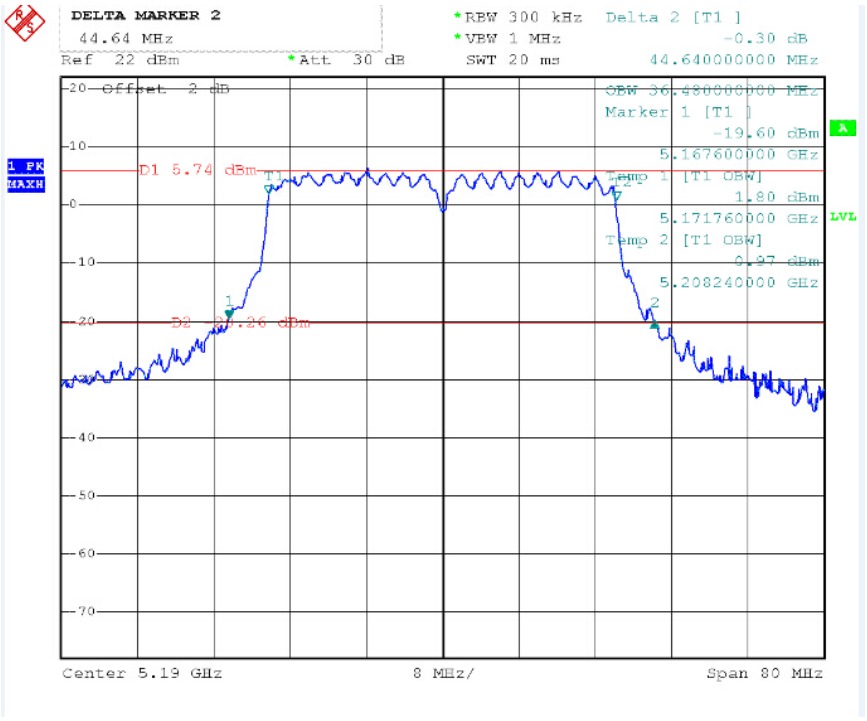


CH High

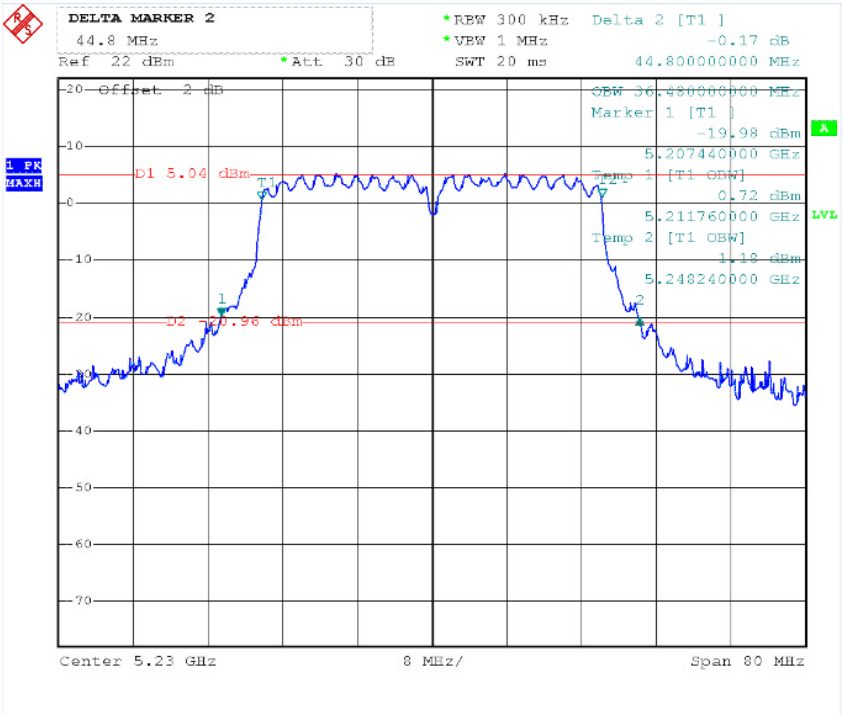


IEEE 802.11n HT 40 MHz Channel mode / 5190 ~ 5230MHz

CH Low



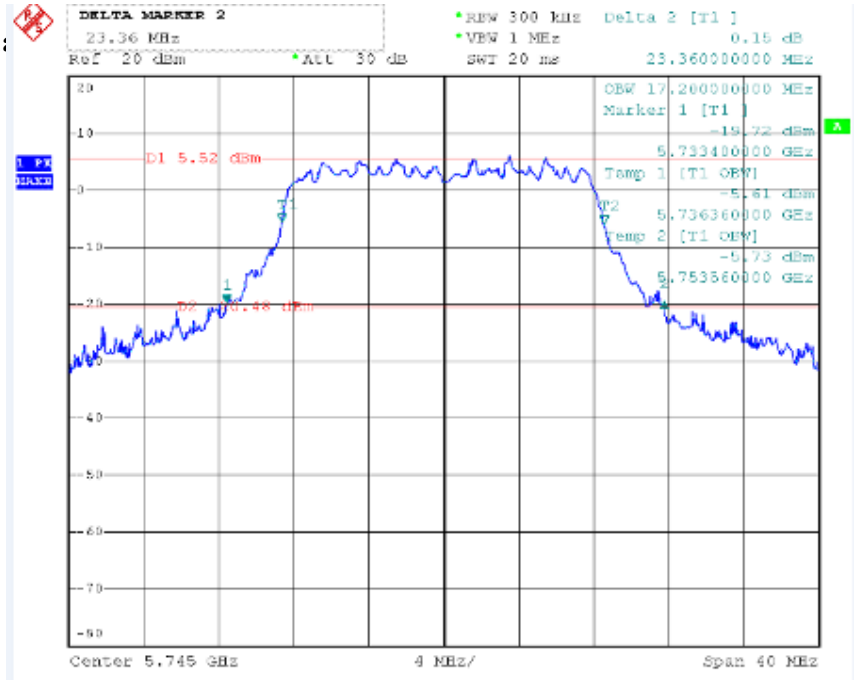
CH High



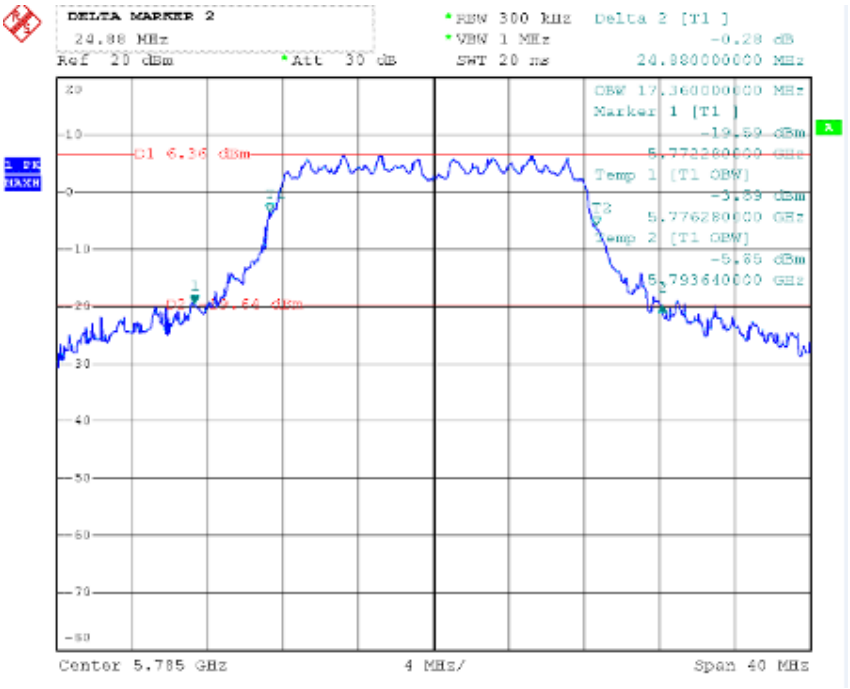
Chain 1

Test Plot

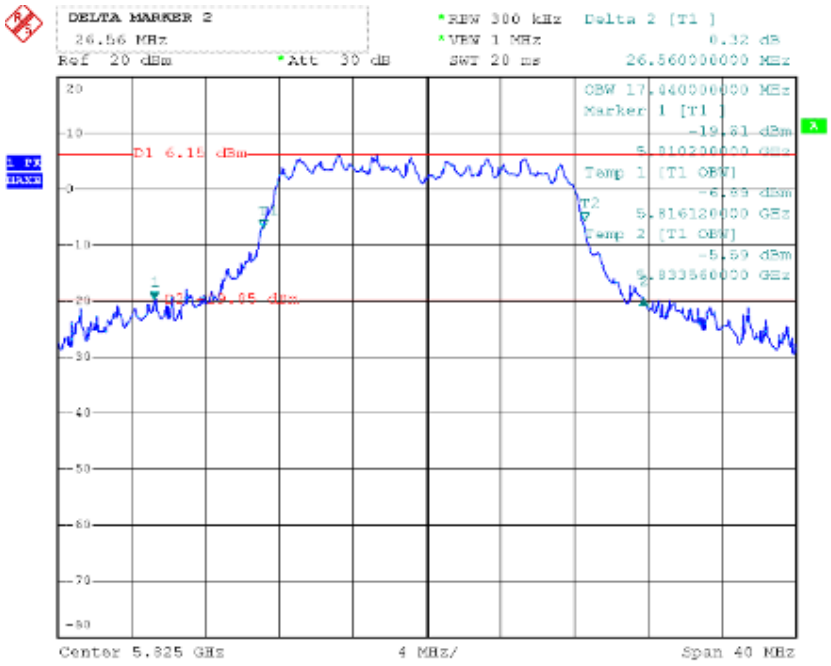
IEEE 802.11a
CH Low



CH Mid

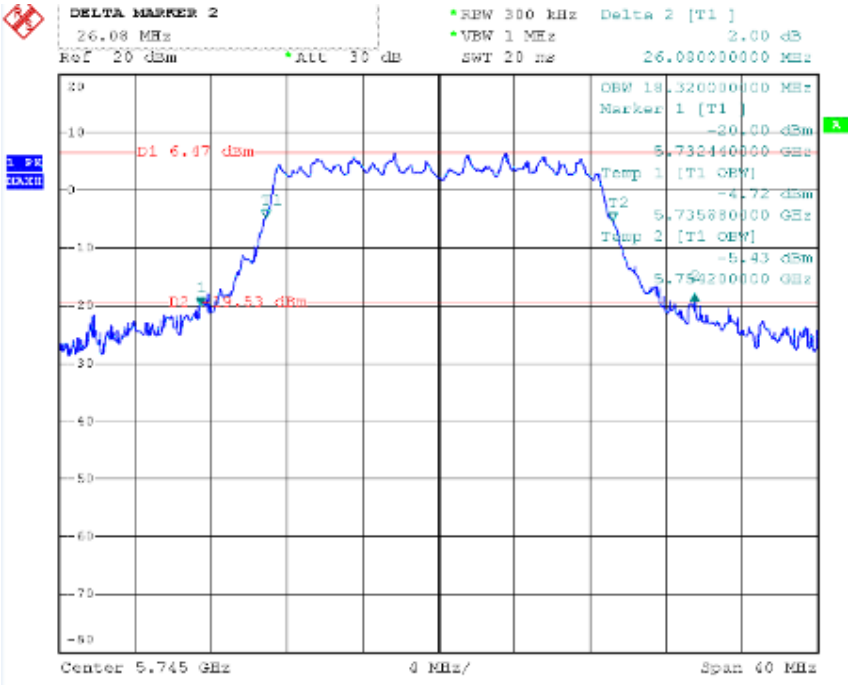


CH High

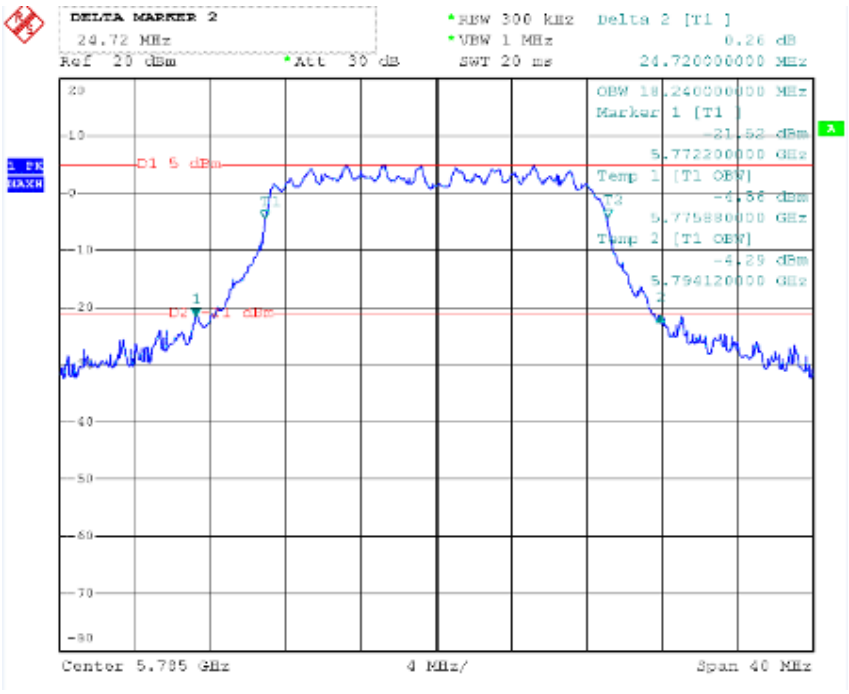


IEEE 802.11n HT 20 MHz Channel mode / 5745 ~ 5825MHz

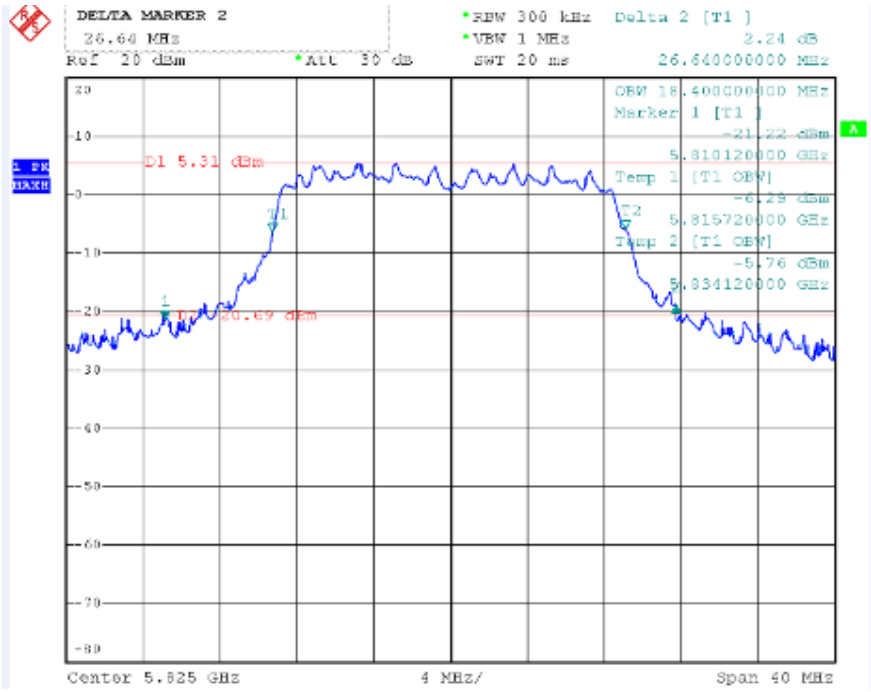
CH Low



CH Mid

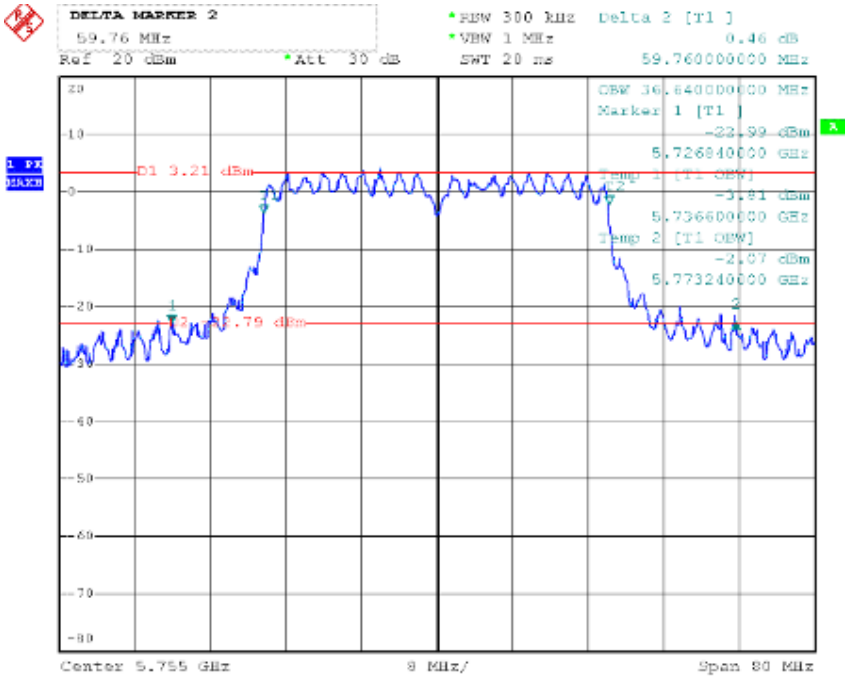


CH High

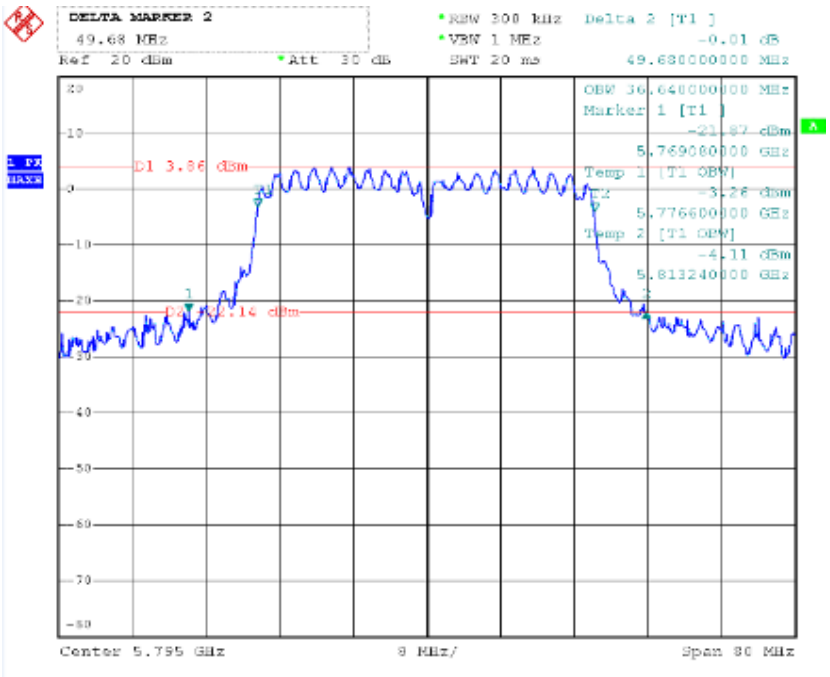


IEEE 802.11n HT 40 MHz Channel mode / 5755 ~ 5795MHz

CH Low



CH High

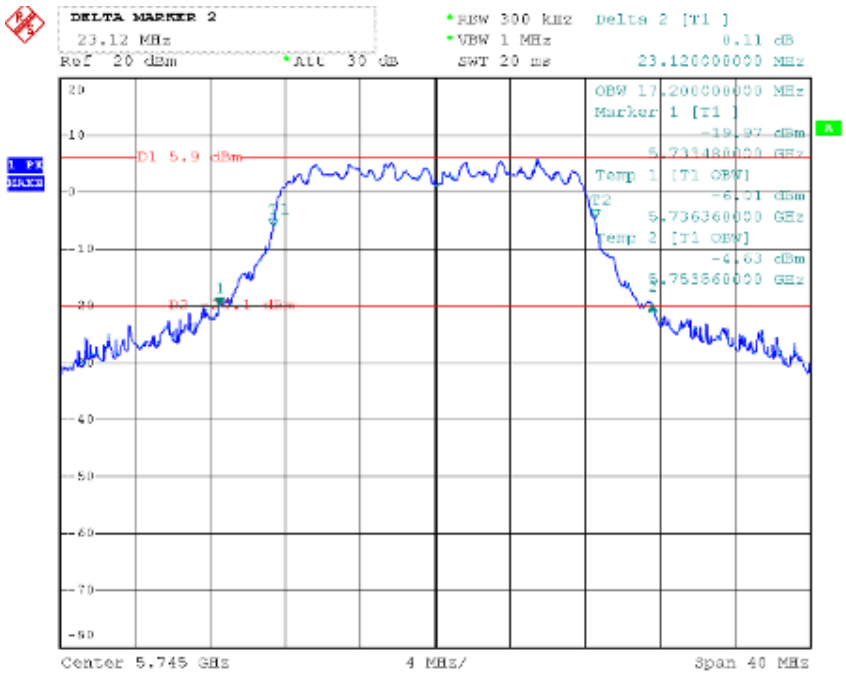


Chain 2

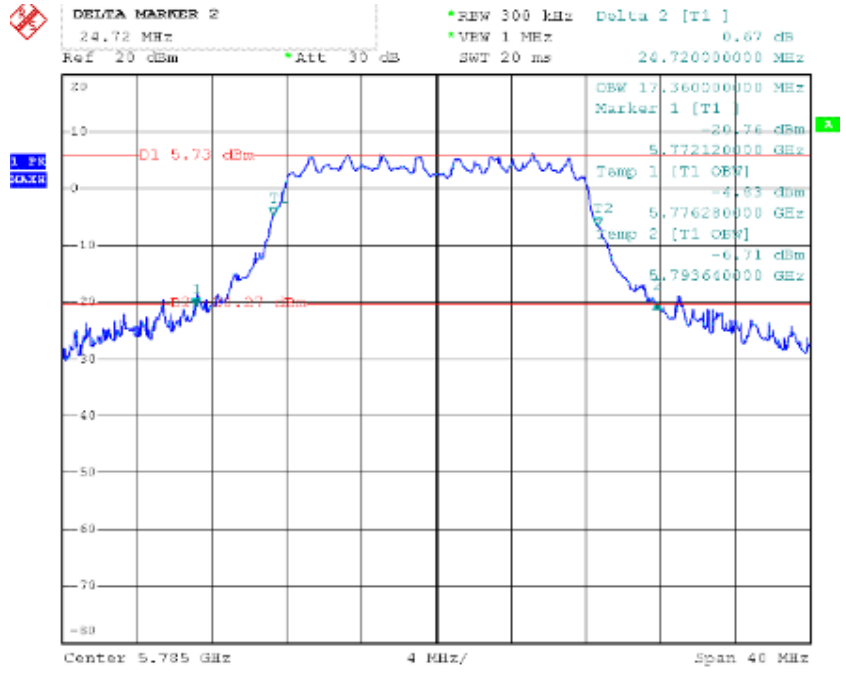
Test Plot

IEEE 802.11a for 5745 ~ 5825MHz

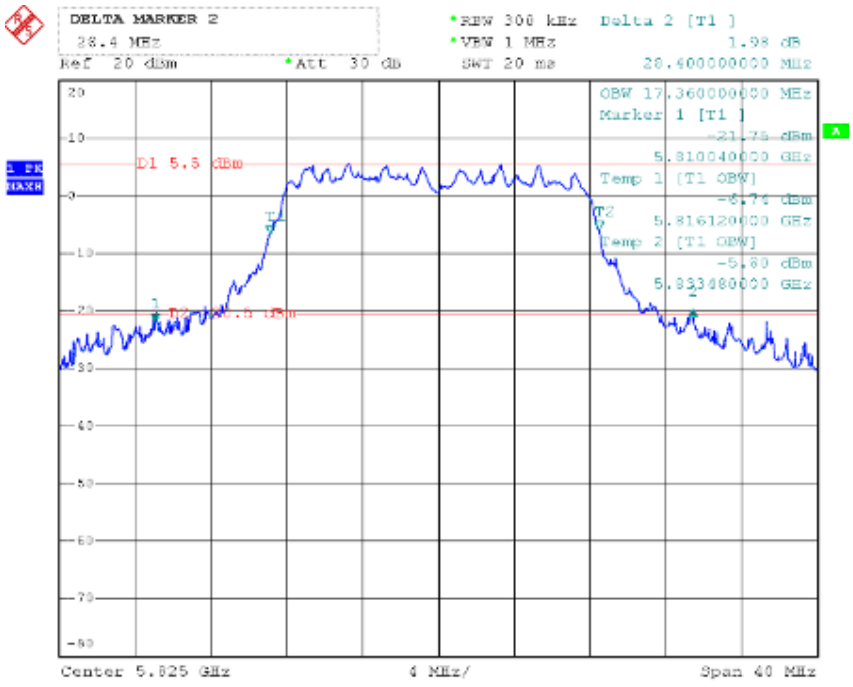
CH Low



CH Mid

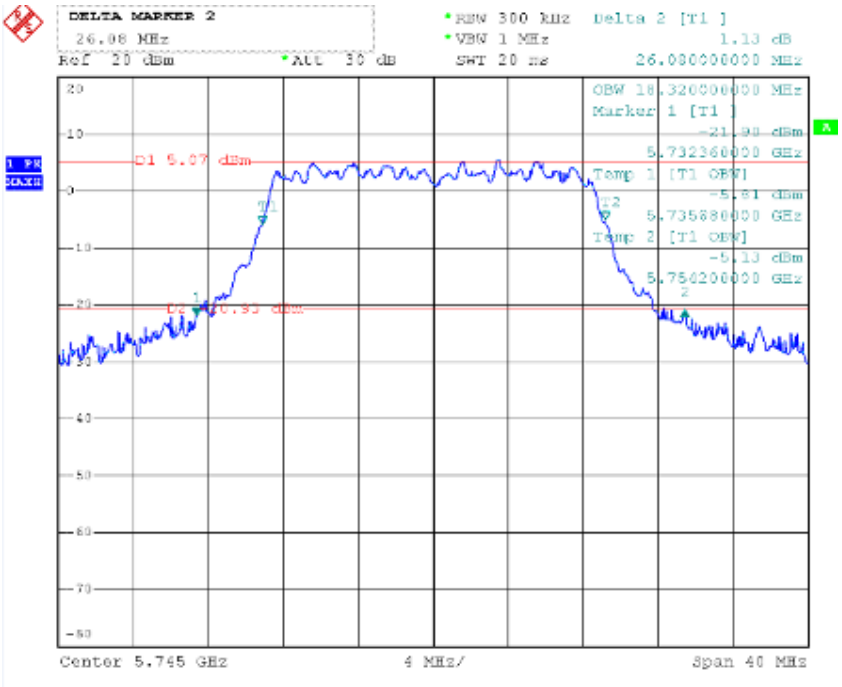


CH High

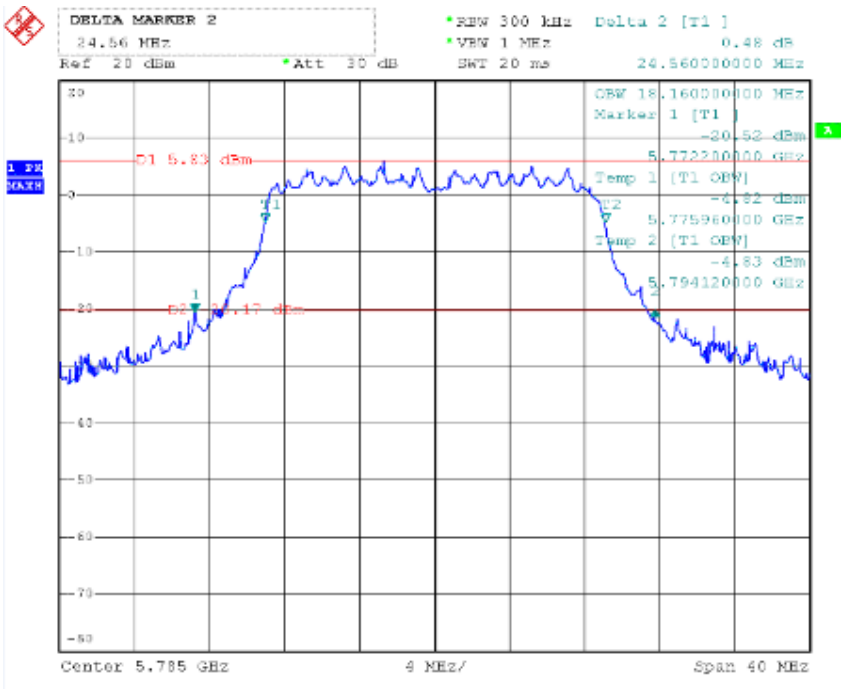


IEEE 802.11n HT 20 MHz Channel mode / 5745 ~ 5825MHz

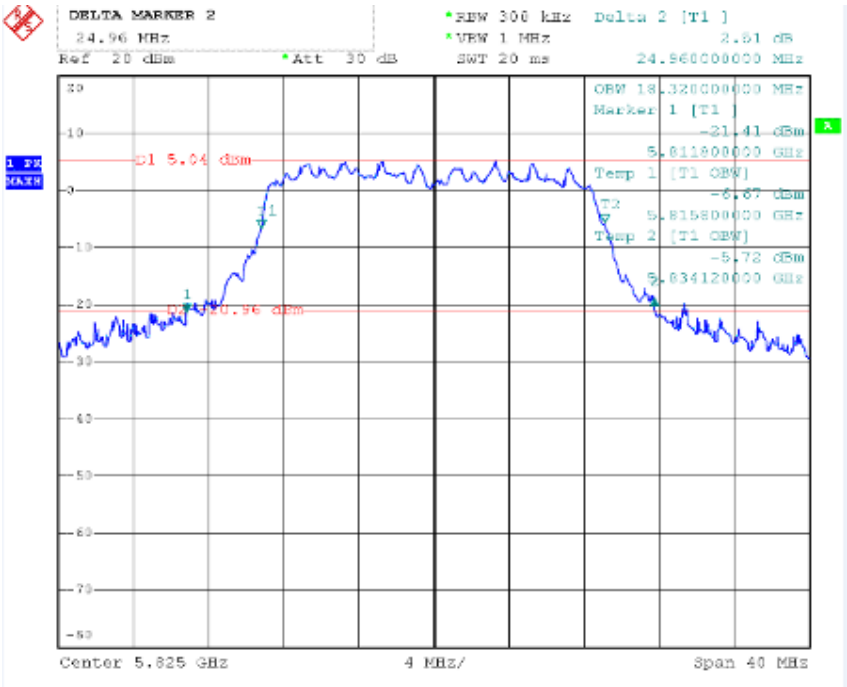
CH Low



CH Mid

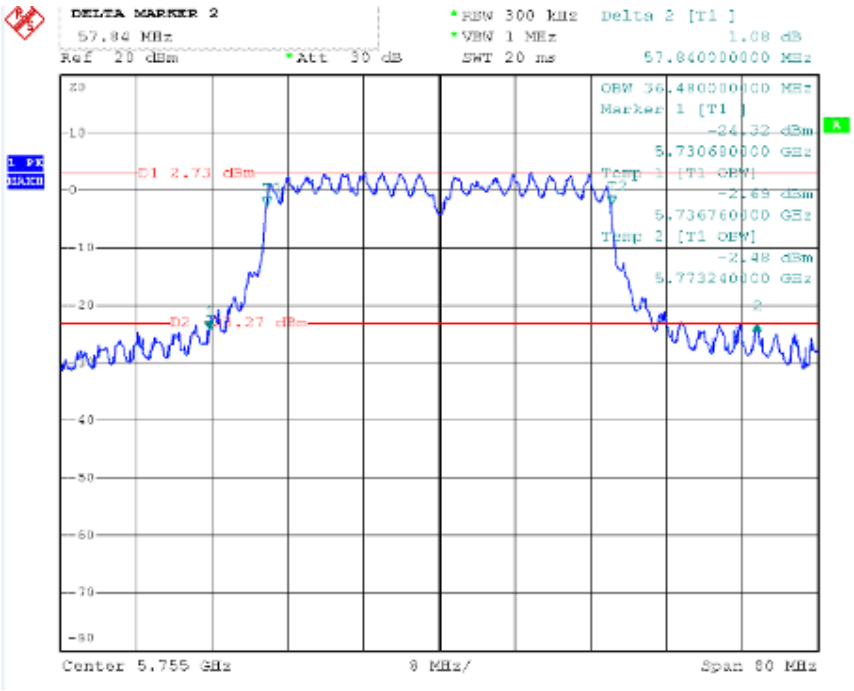


CH High

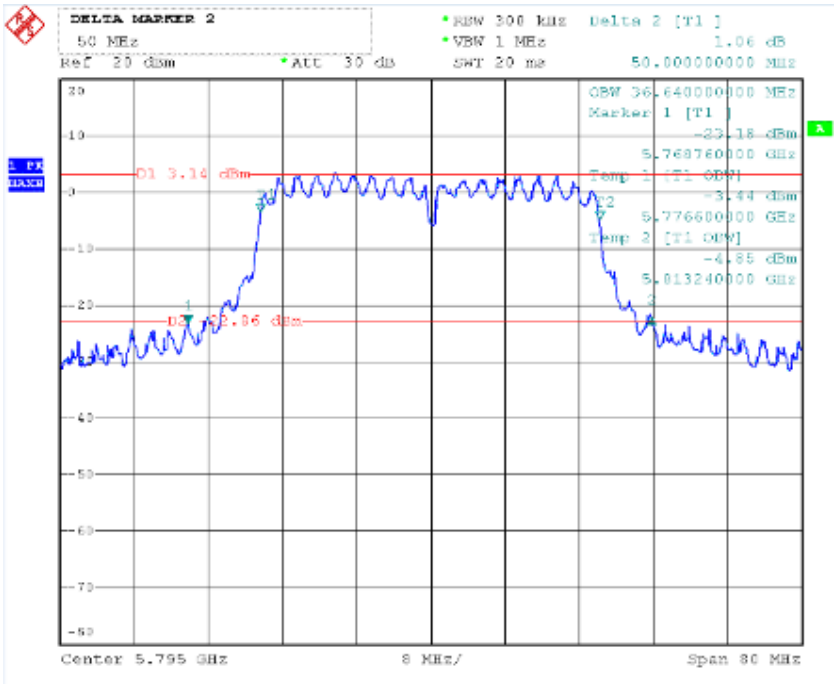


IEEE 802.11n HT 40 MHz Channel mode / 5755 ~ 5795MHz

CH Low



CH High



6. THE MAXIMUM E.I.R.P & MAXIMUM CONDUCTED OUTPUT POWER

6.1 LIMIT

According to §15.407(a),

(1) For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1W . The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(2) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W

If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

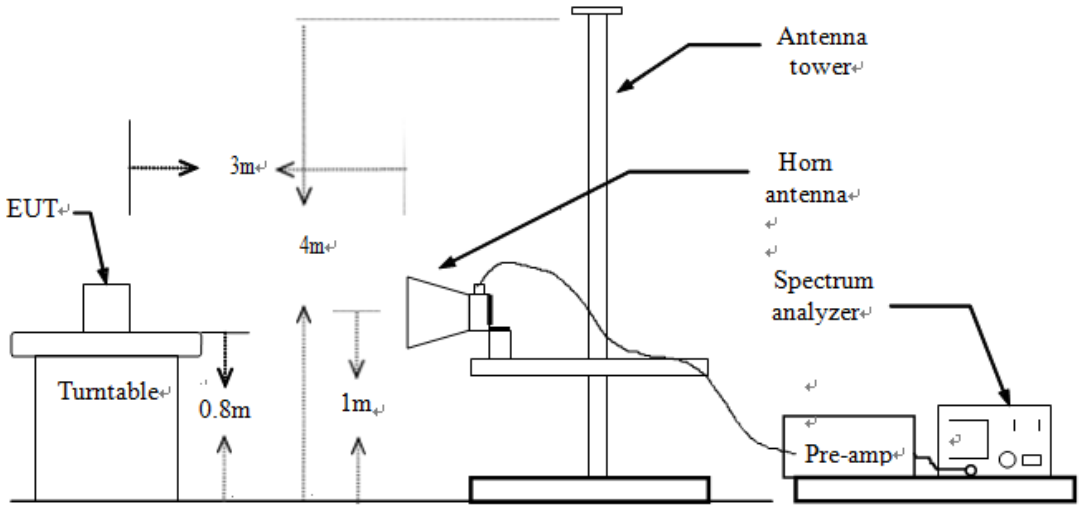
5.15-5.25GHz: Limit (dBm) = 30dBm.

5.725-5.85GHz: Limit (dBm) = 30dBm.

6.2 Test Procedure Used

KDB 789033 D02v01 - Section E) 3) b) Method PM-G

6.3 Radiation measurement Test Configuration



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

Below 1GHz:

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz:

(a) PEAK: RBW=1MHz, VBW=3MHz / Sweep=AUTO

(b)AVERAGE: RBW=1MHz

duty cycle ≥ 98 percent, set VBW ≤ RBW/100 but not less than 10 Hz.

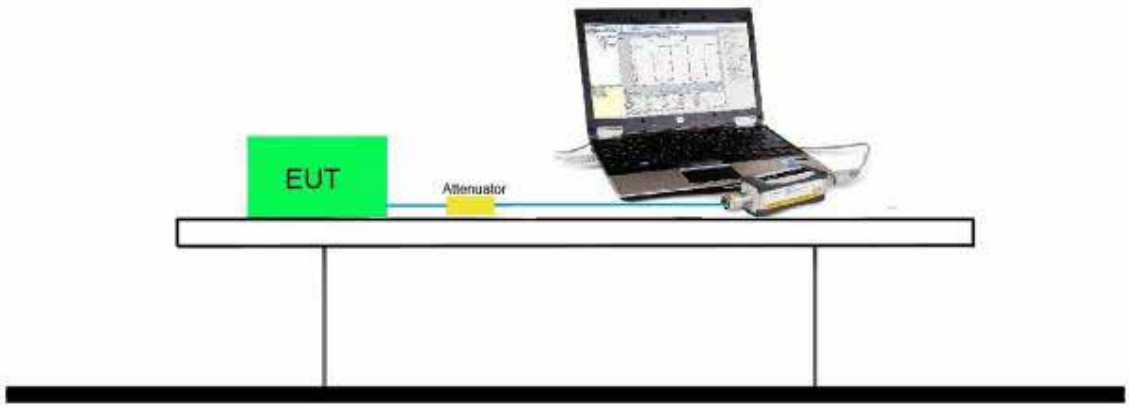
duty cycle < 98 percent, set VBW ≥ 1/*T*

/ Sweep=AUTO

7. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.
8. Repeat above procedures until the measurements for all frequencies are complete.

6.3 Conduction measurement Test Configuration

Average power measurements were perform only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.



TEST RESULTS

No non-compliance noted

THE E.I.R.P TEST DATA

5150-5250MHz

3dBi Omni-directional Antenna

Mode	Test CH	Antenna. Pol	EIRP (dBm)	Limit (dBm)	Result
802.11a	Low	V	19.33	21.00	Pass
		H	15.34		
	Mid	V	18.34	21.00	Pass
		H	15.29		
	High	V	18.02	21.00	Pass
		H	14.28		
802.11n20	Low	V	17.31	21.00	Pass
		H	15.13		
	Mid	V	17.33	21.00	Pass
		H	14.56		
	High	V	16.99	21.00	Pass
		H	14.25		
802.11n40	Low	V	17.22	21.00	Pass
		H	13.58		
	High	V	17.16	21.00	Pass
		H	13.20		

15dBi Omni-directional Antenna

Mode	Test CH	Antenna. Pol	EIRP (dBm)	Limit (dBm)	Result
802.11a	Low	V	18.69	21.00	Pass
		H	15.66		
	Mid	V	18.21	21.00	Pass
		H	15.01		
	High	V	18.23	21.00	Pass
		H	14.66		
802.11n20	Low	V	17.69	21.00	Pass
		H	14.88		
	Mid	V	17.56	21.00	Pass
		H	14.23		
	High	V	16.77	21.00	Pass
		H	14.85		
802.11n40	Low	V	17.22	21.00	Pass
		H	13.44		
	High	V	17.98	21.00	Pass
		H	13.63		

19dBi Sector Antenna

Mode	Test CH	Antenna. Pol	EIRP (dBm)	Limit (dBm)	Result
802.11a	Low	V	18.59	21.00	Pass
		H	15.66		
	Mid	V	18.22	21.00	Pass
		H	15.85		
	High	V	18.22	21.00	Pass
		H	14.25		
802.11n20	Low	V	17.26	21.00	Pass
		H	15.22		
	Mid	V	17.88	21.00	Pass
		H	13.59		
	High	V	16.78	21.00	Pass
		H	14.26		
802.11n40	Low	V	16.24	21.00	Pass
		H	14.22		
	High	V	16.22	21.00	Pass
		H	13.87		

23dBi Panel Antenna

Mode	Test CH	Antenna. Pol	EIRP (dBm)	Limit (dBm)	Result
802.11a	Low	V	18.34	21.00	Pass
		H	16.44		
	Mid	V	18.24	21.00	Pass
		H	15.89		
	High	V	18.55	21.00	Pass
		H	15.24		
802.11n20	Low	V	18.32	21.00	Pass
		H	15.55		
	Mid	V	17.69	21.00	Pass
		H	15.02		
	High	V	16.33	21.00	Pass
		H	15.66		
802.11n40	Low	V	17.68	21.00	Pass
		H	14.32		
	High	V	16.28	21.00	Pass
		H	13.44		

30dBi Dish Antenna

Mode	Test CH	Antenna. Pol	EIRP (dBm)	Limit (dBm)	Result
802.11a	Low	V	19.24	21.00	Pass
		H	15.54		
	Mid	V	18.78	21.00	Pass
		H	15.21		
	High	V	18.22	21.00	Pass
		H	15.88		
802.11n20	Low	V	18.32	21.00	Pass
		H	15.65		
	Mid	V	17.88	21.00	Pass
		H	14.22		
	High	V	17.99	21.00	Pass
		H	14.29		
802.11n40	Low	V	17.58	21.00	Pass
		H	14.48		
	High	V	17.30	21.00	Pass
		H	15.26		

OUTPUT POWER TEST DATA
5150-5250MHz

3dBi Omni-directional Antenna

Mode	Test CH	Ant. Port	Average power (dBm)	Total Average power (dBm)	Limit (dBm)	Result
802.11a	Low	Chain 1	25.66	28.54	30.00	Pass
		Chain 2	25.39			
	Mid	Chain 1	25.34	28.29	30.00	Pass
		Chain 2	25.22			
	High	Chain 1	25.25	28.18	30.00	Pass
		Chain 2	25.08			
802.11n20	Low	Chain 1	25.31	28.23	30.00	Pass
		Chain 2	25.13			
	Mid	Chain 1	25.15	28.22	30.00	Pass
		Chain 2	25.27			
	High	Chain 1	25.01	28.09	30.00	Pass
		Chain 2	25.15			
802.11n40	Low	Chain 1	25.37	28.38	30.00	Pass
		Chain 2	25.37			
	High	Chain 1	25.13	28.18	30.00	Pass
		Chain 2	25.21			

Remark: The Total Average Power (dBm) = $10*\log\{10^{(\text{Chain 1 Average Power }/10)}+10^{(\text{Chain 2 Average Power }/10)}\}$.

5150-5250MHz

15dBi Omni-directional Antenna

Mode	Test CH	Ant. Port	Average power (dBm)	Total Average power (dBm)	Limit (dBm)	Result
802.11a	Low	Chain 1	16.27	19.32	21.00	Pass
		Chain 2	16.34			
	Mid	Chain 1	16.48	19.34	21.00	Pass
		Chain 2	16.18			
	High	Chain 1	16.15	19.14	21.00	Pass
		Chain 2	16.11			
802.11n20	Low	Chain 1	16.46	19.34	21.00	Pass
		Chain 2	16.19			
	Mid	Chain 1	16.47	19.38	21.00	Pass
		Chain 2	16.26			
	High	Chain 1	16.24	19.18	21.00	Pass
		Chain 2	16.10			
802.11n40	Low	Chain 1	16.17	19.16	21.00	Pass
		Chain 2	16.12			
	High	Chain 1	16.41	19.34	21.00	Pass
		Chain 2	16.25			

Remark:Power limit=30dBm-(antenna gain-6) =21dBm

The Total Average Power (dBm) = $10*\log\{10^{(\text{Chain 1 Average Power }/10)}+10^{(\text{Chain 2 Average Power }/10)}\}$.

5150-5250MHz

19dBi Sector Antenna

Mode	Test CH	Ant. Port	Average power (dBm)	Total Average power (dBm)	Limit (dBm)	Result
802.11a	Low	Chain 1	12.41	15.41	17.00	Pass
		Chain 2	12.38			
	Mid	Chain 1	12.30	15.38	17.00	Pass
		Chain 2	12.43			
	High	Chain 1	12.16	15.12	17.00	Pass
		Chain 2	12.05			
802.11n20	Low	Chain 1	12.62	15.41	17.00	Pass
		Chain 2	12.17			
	Mid	Chain 1	12.90	15.61	17.00	Pass
		Chain 2	12.27			
	High	Chain 1	12.51	15.30	17.00	Pass
		Chain 2	12.06			
802.11n40	Low	Chain 1	12.39	15.28	17.00	Pass
		Chain 2	12.15			
	High	Chain 1	12.48	15.36	17.00	Pass
		Chain 2	12.22			

Remark:Power limit=30dBm-(antenna gain-6) =17dBm

The Total Average Power (dBm) = $10*\log\{10^{(\text{Chain 1 Average Power }/10)}+10^{(\text{Chain 2 Average Power }/10)}\}$.

5150-5250MHz

23dBi Panel Antenna

Mode	Test CH	Ant. Port	Average power (dBm)	Total Average power (dBm)	Limit (dBm)	Result
802.11a	Low	Chain 1	8.78	11.86	13.00	Pass
		Chain 2	8.91			
	Mid	Chain 1	8.83	11.64	13.00	Pass
		Chain 2	8.43			
	High	Chain 1	8.82	11.61	13.00	Pass
		Chain 2	8.37			
802.11n20	Low	Chain 1	8.43	11.47	13.00	Pass
		Chain 2	8.48			
	Mid	Chain 1	8.69	11.69	13.00	Pass
		Chain 2	8.68			
	High	Chain 1	8.41	11.45	13.00	Pass
		Chain 2	8.47			
802.11n40	Low	Chain 1	8.50	11.46	13.00	Pass
		Chain 2	8.41			
	High	Chain 1	8.23	11.30	13.00	Pass
		Chain 2	8.34			

Remark:Power limit=30dBm-(antenna gain-6) =13dBm

The Total Average Power (dBm) = $10*\log\{10^{(\text{Chain 1 Average Power }/10)}+10^{(\text{Chain 2 Average Power }/10)}\}$.

5150-5250MHz

30dBi Dish Antenna

Mode	Test CH	Ant. Port	Average power (dBm)	Total Average power (dBm)	Limit (dBm)	Result
802.11a	Low	Chain 1	1.42	4.56	6.00	Pass
		Chain 2	1.67			
	Mid	Chain 1	1.28	4.39	6.00	Pass
		Chain 2	1.48			
	High	Chain 1	1.06	4.11	6.00	Pass
		Chain 2	1.14			
802.11n20	Low	Chain 1	1.81	4.64	6.00	Pass
		Chain 2	1.45			
	Mid	Chain 1	1.56	4.45	6.00	Pass
		Chain 2	1.31			
	High	Chain 1	1.12	4.17	6.00	Pass
		Chain 2	1.19			
802.11n40	Low	Chain 1	1.37	4.36	6.00	Pass
		Chain 2	1.32			
	High	Chain 1	1.64	4.49	6.00	Pass
		Chain 2	1.31			

Remark:Power limit=30dBm-(antenna gain-6) =6dBm

The Total Average Power (dBm) = $10*\log\{10^{(\text{Chain 1 Average Power }/10)}+10^{(\text{Chain 2 Average Power }/10)}\}$.

5725-5850MHz

3dBi Omni-directional Antenna

Mode	Test CH	Ant. Port	Average power (dBm)	Total Average power (dBm)	Limit (dBm)	Result
802.11a	Low	Chain 1	25.21	28.15	30.00	Pass
		Chain 2	25.07			
	Mid	Chain 1	25.52	28.39	30.00	Pass
		Chain 2	25.24			
	High	Chain 1	25.02	27.88	30.00	Pass
		Chain 2	24.72			
802.11n20	Low	Chain 1	25.12	27.90	30.00	Pass
		Chain 2	24.65			
	Mid	Chain 1	24.95	27.54	30.00	Pass
		Chain 2	24.06			
	High	Chain 1	24.47	27.27	30.00	Pass
		Chain 2	24.03			
802.11n40	Low	Chain 1	25.12	28.06	30.00	Pass
		Chain 2	24.98			
	High	Chain 1	25.20	27.97	30.00	Pass
		Chain 2	24.90			

Remark: The Total Average Power (dBm) = $10*\log\{10^{(\text{Chain 1 Average Power }/10)}+10^{(\text{Chain 2 Average Power }/10)}\}$.

5725-5850MHz

15dBi Omni-directional Antenna

Mode	Test CH	Ant. Port	Average power (dBm)	Total Average power (dBm)	Limit (dBm)	Result
802.11a	Low	Chain 1	16.32	19.34	21.00	Pass
		Chain 2	16.33			
	Mid	Chain 1	16.37	19.31	21.00	Pass
		Chain 2	16.23			
	High	Chain 1	16.39	19.27	21.00	Pass
		Chain 2	16.13			
802.11n20	Low	Chain 1	16.58	19.50	21.00	Pass
		Chain 2	16.40			
	Mid	Chain 1	16.38	19.29	21.00	Pass
		Chain 2	16.19			
	High	Chain 1	16.30	19.24	21.00	Pass
		Chain 2	16.15			
802.11n40	Low	Chain 1	16.34	19.21	21.00	Pass
		Chain 2	16.05			
	High	Chain 1	16.31	19.27	21.00	Pass
		Chain 2	16.21			

Remark:Power limit=30dBm-(antenna gain-6) =21dBm

The Total Average Power (dBm) = $10*\log\{10^{(\text{Chain 1 Average Power }/10)}+10^{(\text{Chain 2 Average Power }/10)}\}$.

5725-5850MHz

19dBi Sector Antenna

Mode	Test CH	Ant. Port	Average power (dBm)	Total Average power (dBm)	Limit (dBm)	Result
802.11a	Low	Chain 1	12.48	15.40	17.00	Pass
		Chain 2	12.30			
	Mid	Chain 1	12.41	15.27	17.00	Pass
		Chain 2	12.10			
	High	Chain 1	12.23	15.27	17.00	Pass
		Chain 2	12.29			
802.11n20	Low	Chain 1	12.29	15.39	17.00	Pass
		Chain 2	12.46			
	Mid	Chain 1	12.29	15.25	17.00	Pass
		Chain 2	12.18			
	High	Chain 1	12.42	15.33	17.00	Pass
		Chain 2	12.22			
802.11n40	Low	Chain 1	12.32	15.27	17.00	Pass
		Chain 2	12.19			
	High	Chain 1	12.21	15.19	17.00	Pass
		Chain 2	12.14			

Remark:Power limit=30dBm-(antenna gain-6) =17dBm

The Total Average Power (dBm) = $10*\log\{10^{(\text{Chain 1 Average Power }/10)}+10^{(\text{Chain 2 Average Power }/10)}\}$.

5725-5850MHz

23dBi Panel Antenna

Mode	Test CH	Ant. Port	Average power (dBm)	Total Average power (dBm)	Limit (dBm)	Result
802.11a	Low	Chain 1	8.38	11.24	13.00	Pass
		Chain 2	8.11			
	Mid	Chain 1	8.58	11.52	13.00	Pass
		Chain 2	8.15			
	High	Chain 1	8.32	11.28	13.00	Pass
		Chain 2	8.21			
802.11n20	Low	Chain 1	8.52	11.51	13.00	Pass
		Chain 2	8.48			
	Mid	Chain 1	8.47	11.45	13.00	Pass
		Chain 2	8.41			
	High	Chain 1	8.22	11.18	13.00	Pass
		Chain 2	8.12			
802.11n40	Low	Chain 1	8.46	11.46	13.00	Pass
		Chain 2	8.43			
	High	Chain 1	8.23	11.21	13.00	Pass
		Chain 2	8.18			

Remark:Power limit=30dBm-(antenna gain-6) =13dBm

The Total Average Power (dBm) = $10*\log\{10^{(\text{Chain 1 Average Power }/10)}+10^{(\text{Chain 2 Average Power }/10)}\}$.

5725-5850MHz

30dBi Dish Antenna

Mode	Test CH	Ant. Port	Average power (dBm)	Total Average power (dBm)	Limit (dBm)	Result
802.11a	Low	Chain 1	1.76	4.67	6.00	Pass
		Chain 2	1.56			
	Mid	Chain 1	1.47	4.27	6.00	Pass
		Chain 2	1.04			
	High	Chain 1	1.27	4.35	6.00	Pass
		Chain 2	1.41			
802.11n20	Low	Chain 1	1.41	4.33	6.00	Pass
		Chain 2	1.22			
	Mid	Chain 1	1.12	4.11	6.00	Pass
		Chain 2	1.07			
	High	Chain 1	1.46	4.46	6.00	Pass
		Chain 2	1.43			
802.11n40	Low	Chain 1	1.95	4.52	6.00	Pass
		Chain 2	1.02			
	High	Chain 1	1.71	4.49	6.00	Pass
		Chain 2	1.24			

Remark:Power limit=30dBm-(antenna gain-6) =6dBm

The Total Average Power (dBm) = $10*\log\{10^{(\text{Chain 1 Average Power }/10)}+10^{(\text{Chain 2 Average Power }/10)}\}$.

7. BAND EDGES MEASUREMENT

7.1 Test Limit

For 15.205 requirement:

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) of FCC part 15, must also comply with the radiated emission limits specified in Section 15.209(a).

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 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
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])

For 15.407(b) requirement:

For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

Operating Frequency Band (MHz)	EIRP Limit (dBm/MHz)	Equivalent Field Strength at 3m (dBuV/m)
5150 - 5350	-27	68.2
5470 - 5725	-27	68.2
5725 - 5850	-17	78.2
	-27	68.2

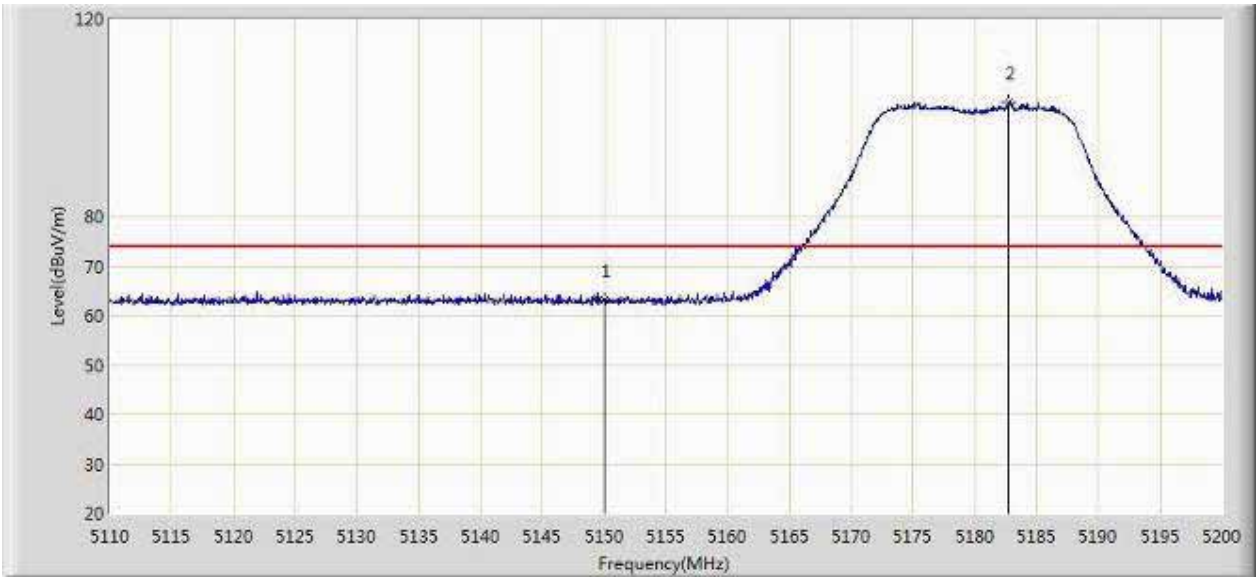
Note: Refer to KDB 789033 D02v01 G)2)c), as specified in § 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a maximum emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in § 15.407(b)(4)). However, an out-of-band emission that complies with both the peak and average limits of § 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz maximum emission limit.

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table per Section 15.209.

FCC Part 15 Subpart C Paragraph 15.209		
Frequency [MHz]	Field Strength [V/m]	Measured Distance [Meters]
0.009 – 0.490	2400/F (kHz)	300
0.490 – 1.705	24000/F (kHz)	30
1.705 - 30	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

7.2Test Result of Radiated Restricted Band Edge

Band Edges (IEEE 802.11a mode / 5180 MHz)
Detector mode: Peak **Polarity: Horizontal**



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5150.000	63.096	26.344	-10.904	74.000	36.752	PK
2		*	5182.765	103.290	66.633	N/A	N/A	36.657	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11a mode / 5180 MHz)

Detector mode: Average **Polarity: Horizontal**

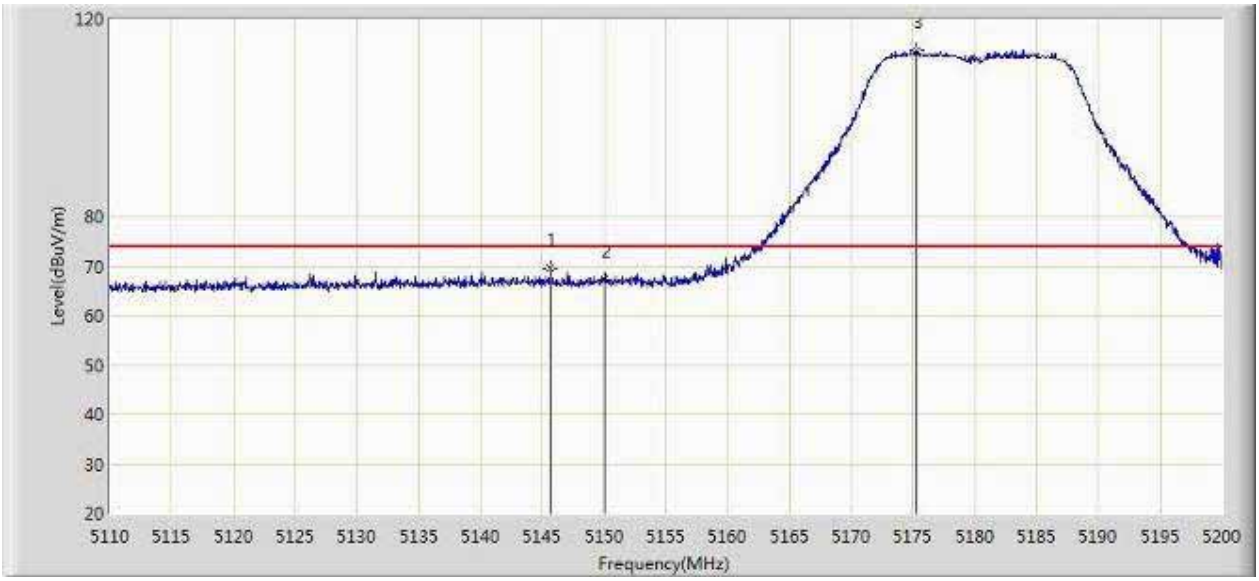
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5150.000	50.090	13.338	-3.910	54.000	36.752	AV
2		*	5176.150	90.413	53.735	N/A	N/A	36.678	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11a mode / 5180 MHz)

Detector mode: Peak **Polarity: Vertical**



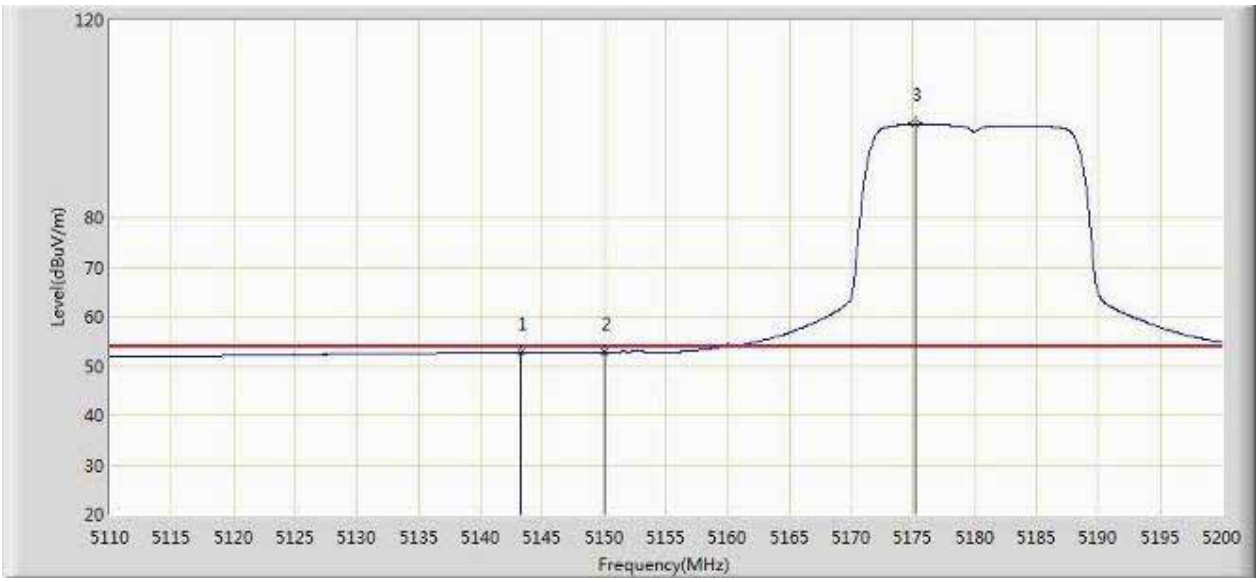
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5145.640	69.542	32.784	-4.458	74.000	36.758	PK
2			5150.000	67.185	30.433	-6.815	74.000	36.752	PK
3		*	5175.340	113.619	76.939	N/A	N/A	36.680	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11a mode / 5180 MHz)

Detector mode: Average **Polarity: Vertical**



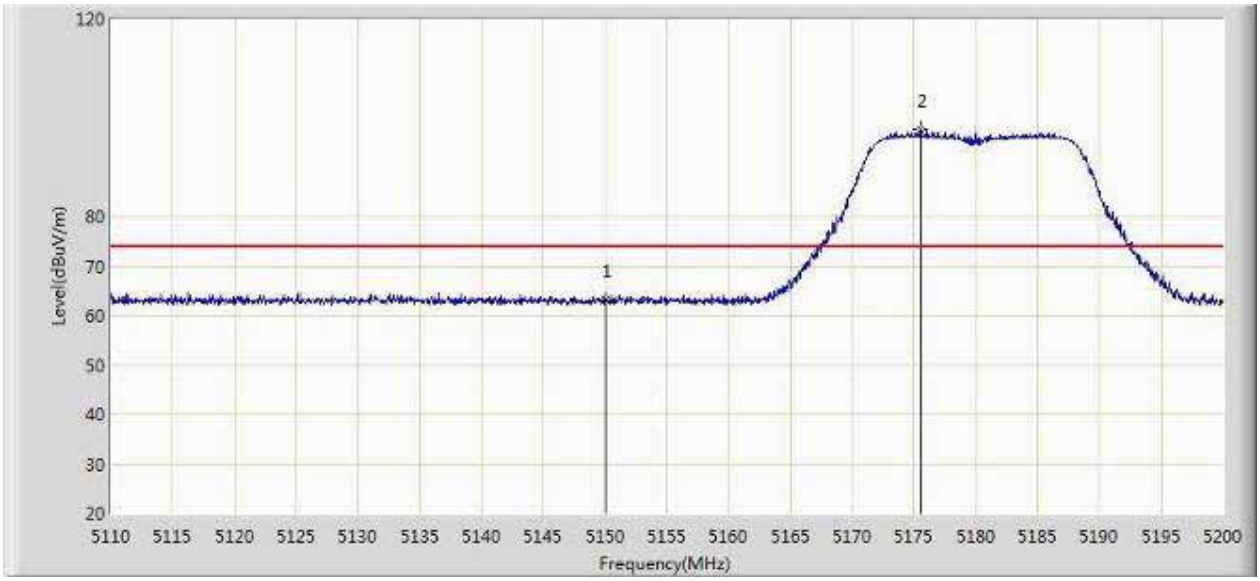
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5143.255	52.827	45.649	-1.173	54.000	7.178	AV
2			5150.000	52.882	45.706	-1.118	54.000	7.176	AV
3		*	5175.160	99.001	91.915	N/A	N/A	7.086	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT 20 MHz Channel mode / 5180 MHz)

Detector mode: Peak **Polarity: Horizontal**



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5150.000	63.117	55.941	-10.883	74.000	7.176	PK
2		*	5175.475	97.544	90.460	N/A	N/A	7.084	PK

Note: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT 20 MHz Channel mode / 5180 MHz)

Detector mode: Average **Polarity: Horizontal**

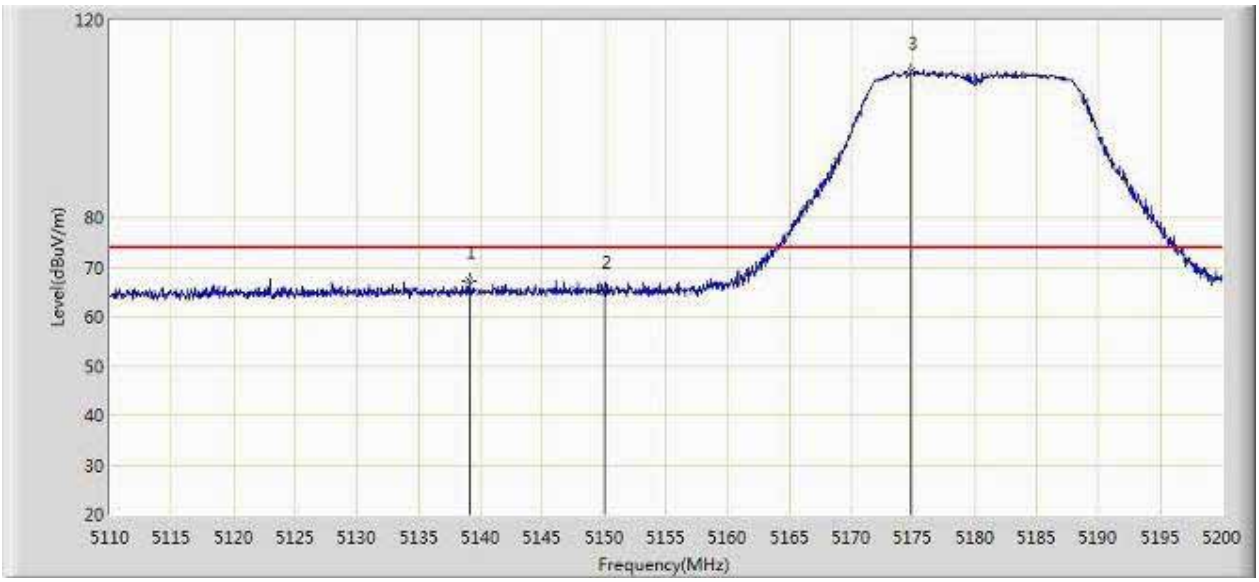
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5150.000	50.138	42.962	-3.862	54.000	7.176	AV
2		*	5174.890	85.029	77.941	N/A	N/A	7.088	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT 20 MHz Channel mode / 5180 MHz)

Detector mode: Peak **Polarity: Vertical**



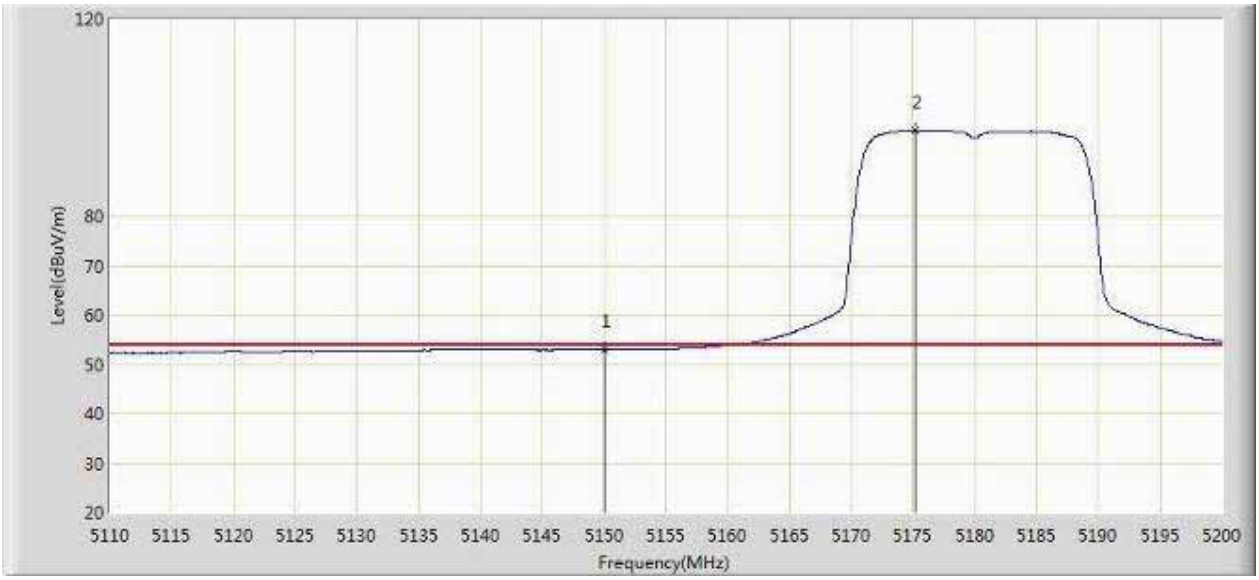
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5139.115	67.172	59.992	-6.828	74.000	7.180	PK
2			5150.000	65.073	57.897	-8.927	74.000	7.176	PK
3		*	5174.890	109.700	102.612	N/A	N/A	7.088	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT 20 MHz Channel mode / 5180 MHz)

Detector mode: Average **Polarity: Vertical**



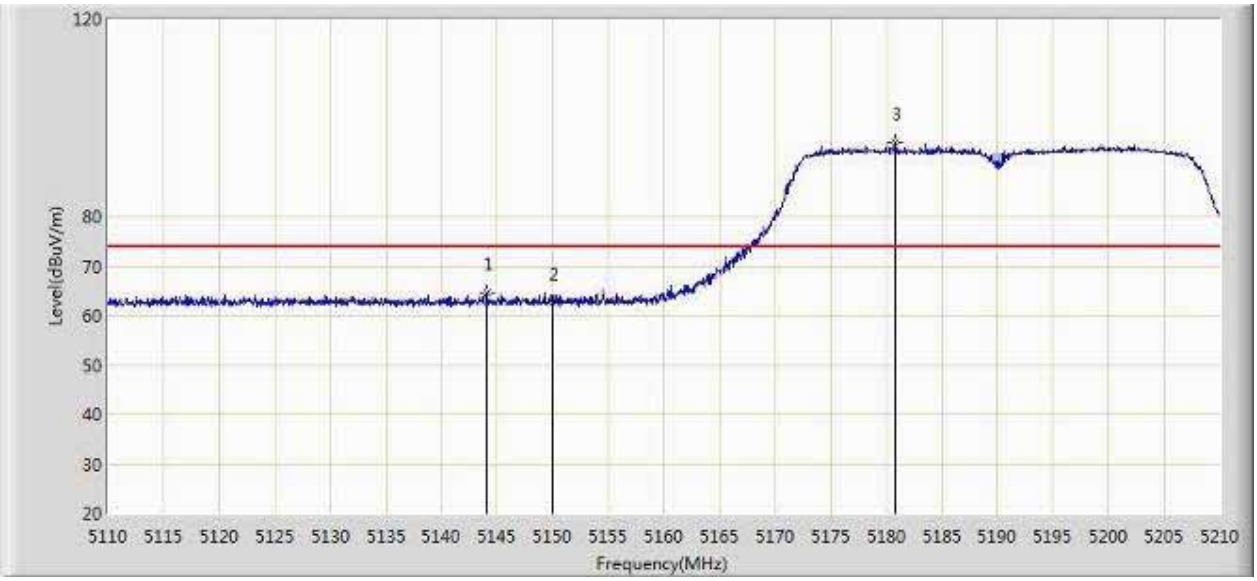
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5150.000	52.984	45.808	-1.016	54.000	7.176	AV
2		*	5175.160	97.344	90.258	N/A	N/A	7.086	AV

Note: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT 40 MHz Channel mode / 5190 MHz)

Detector mode: Peak **Polarity: Horizontal**



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5144.100	64.765	57.587	-9.235	74.000	7.178	PK
2			5150.000	62.744	55.568	-11.256	74.000	7.176	PK
3		*	5180.850	95.114	88.065	N/A	N/A	7.049	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT 40 MHz Channel mode / 5190 MHz)

Detector mode: Average **Polarity: Horizontal**

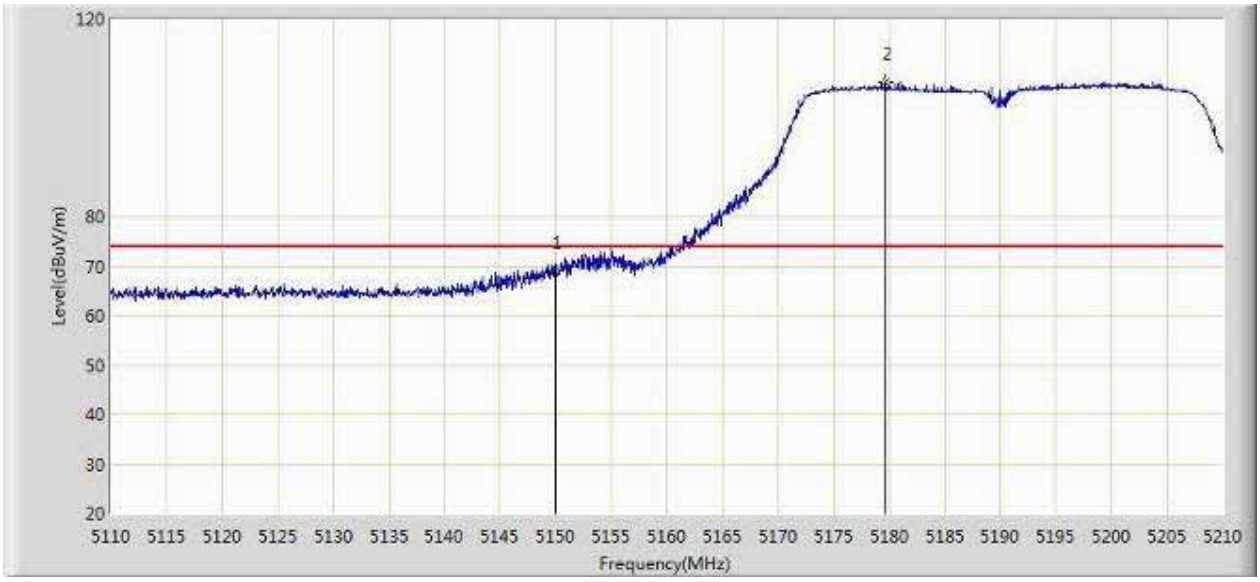
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5150.000	50.199	43.023	-3.801	54.000	7.176	AV
2		*	5198.450	82.072	75.130	N/A	N/A	6.942	AV

Note: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT 40 MHz Channel mode / 5190 MHz)

Detector mode: Peak **Polarity: Vertical**



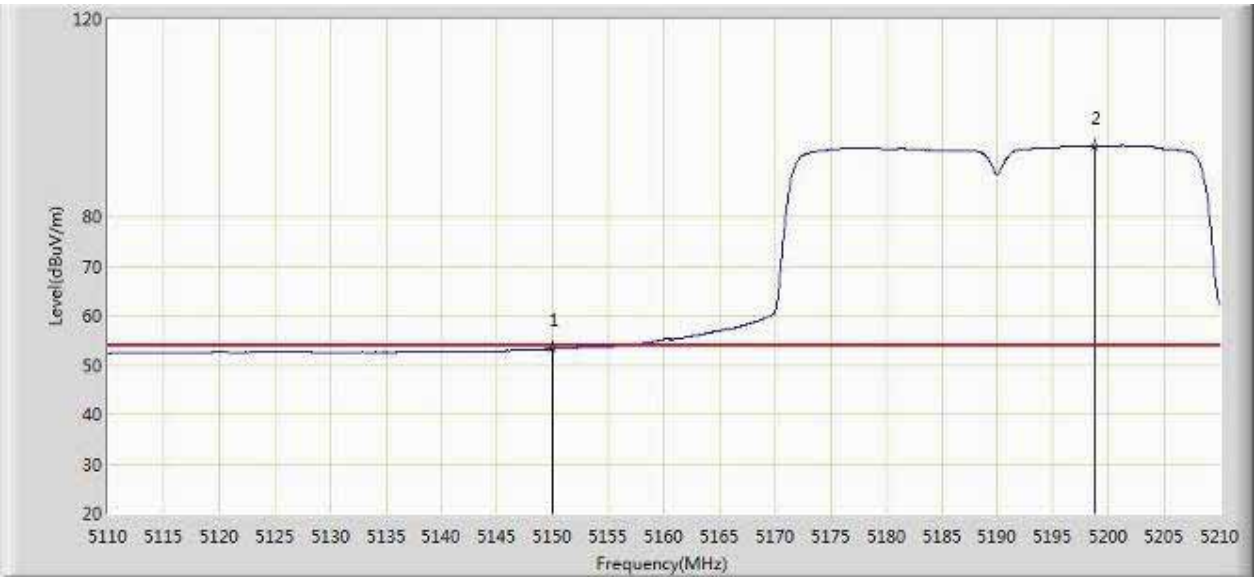
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5150.000	68.970	61.794	-5.030	74.000	7.176	PK
2		*	5179.650	107.383	100.326	N/A	N/A	7.057	PK

Note: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT 40 MHz Channel mode / 5190 MHz)

Detector mode: Average **Polarity: Vertical**



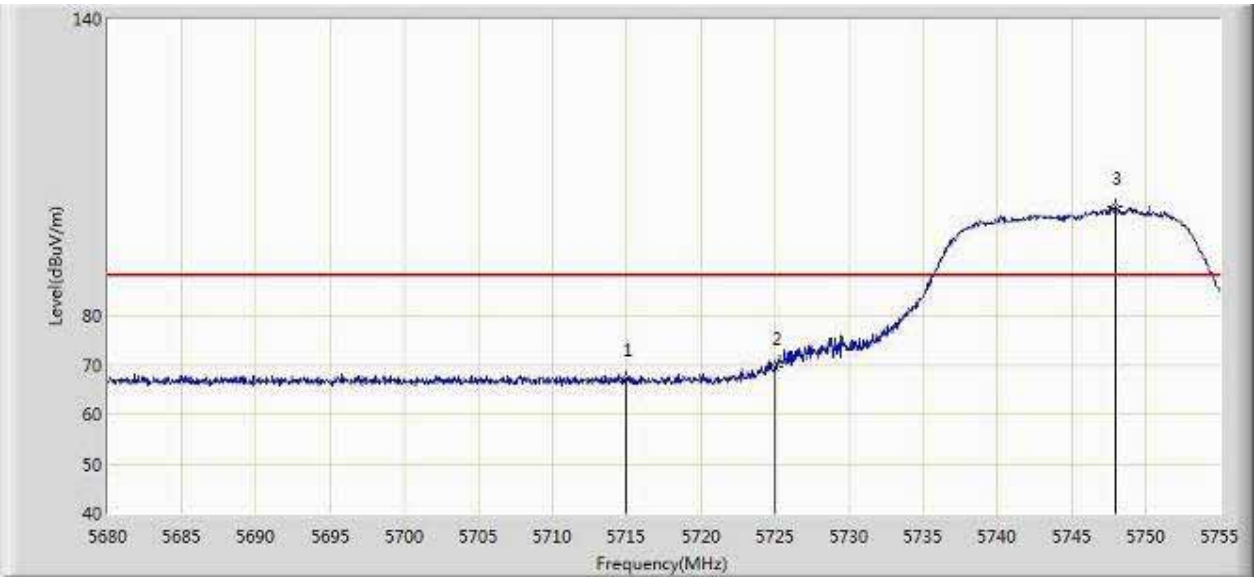
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5150.000	53.257	46.081	-0.743	54.000	7.176	AV
2		*	5198.750	94.305	87.365	N/A	N/A	6.940	AV

Note: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11a mode / 5745 MHz)

Detector mode: Peak **Polarity: Horizontal**



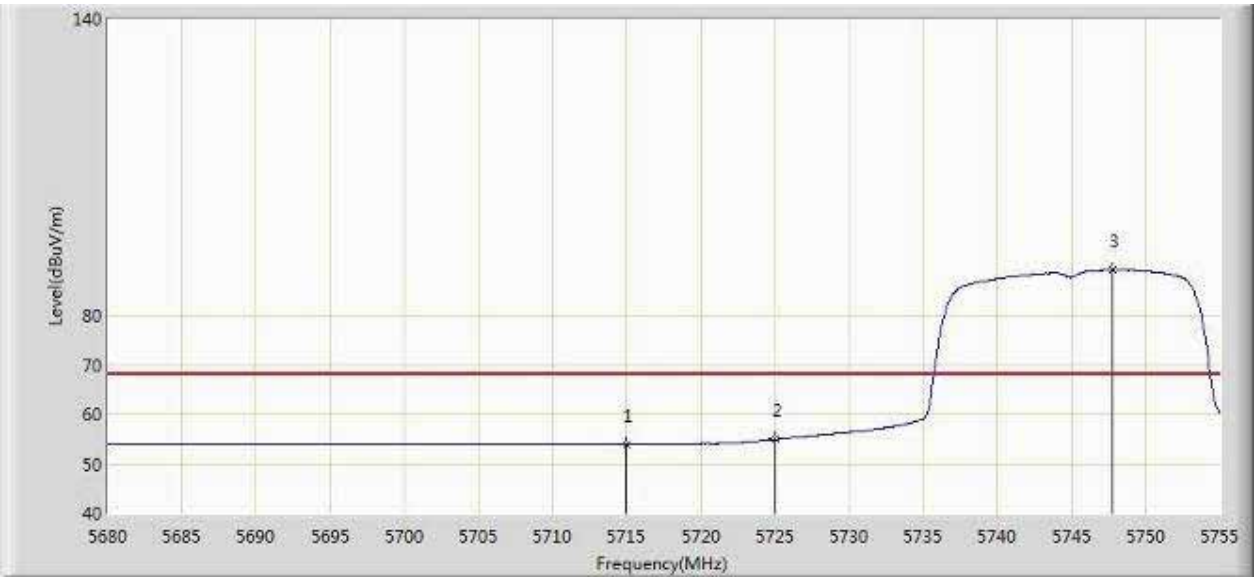
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5715.000	67.238	59.466	-20.962	88.200	7.772	PK
2			5725.000	69.491	61.700	-28.709	98.200	7.791	PK
3		*	5747.958	102.081	94.242	N/A	N/A	7.839	PK

Note: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11a mode / 5745 MHz)

Detector mode: Average **Polarity: Horizontal**



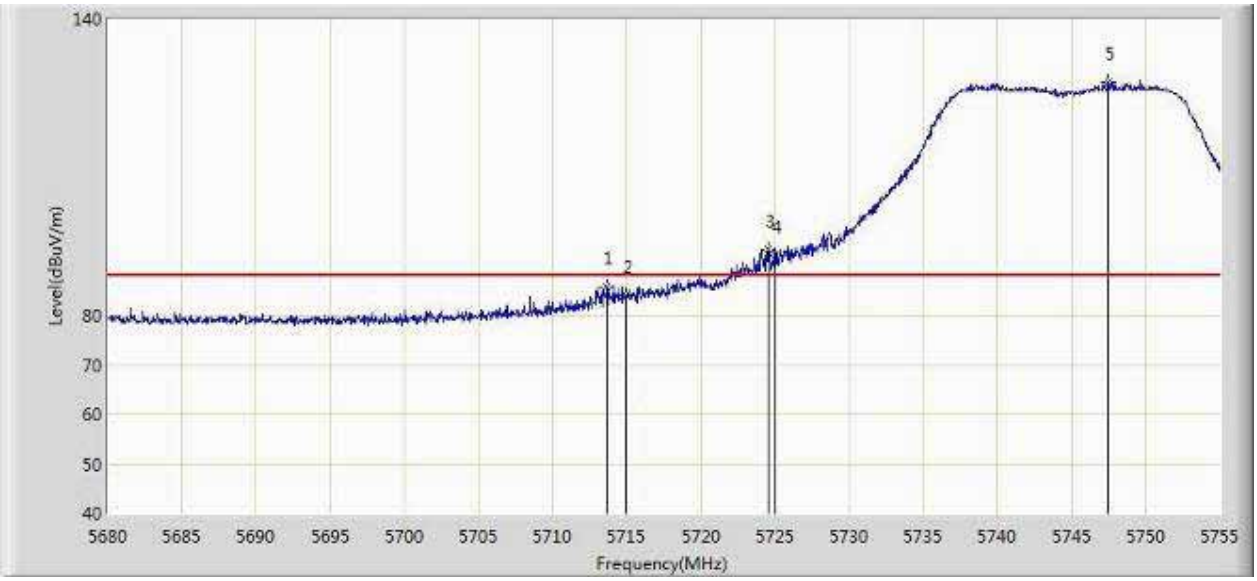
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5715.000	53.916	46.144	-14.284	68.200	7.772	AV
2			5725.000	54.933	47.142	-23.267	78.200	7.791	AV
3		*	5747.788	89.173	81.334	N/A	N/A	7.839	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11a mode / 5745 MHz)

Detector mode: Peak **Polarity: Vertical**



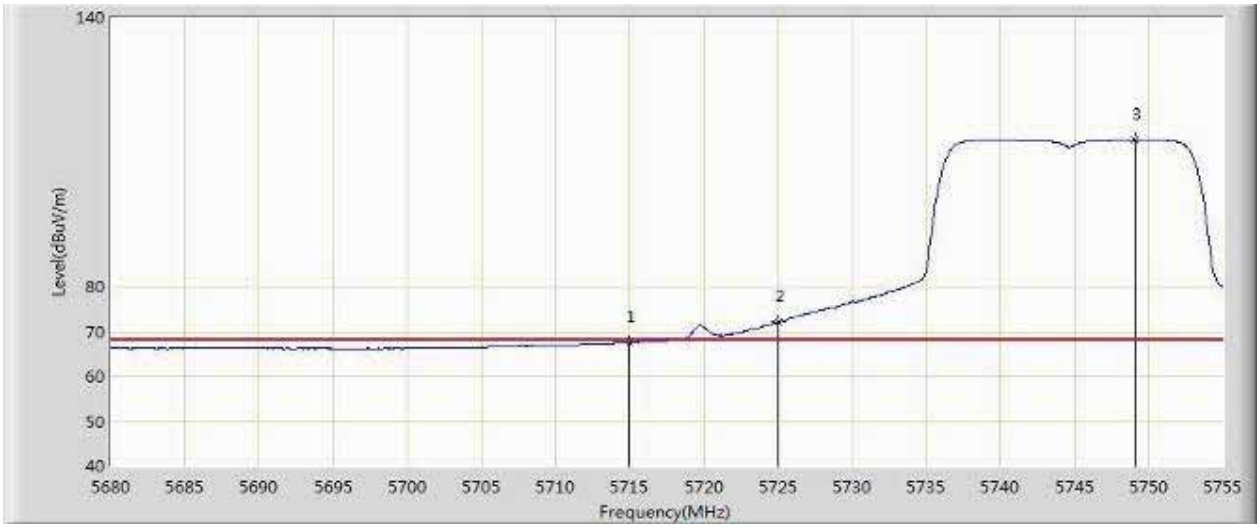
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5713.660	85.882	78.113	-2.318	88.200	7.769	PK
2			5715.000	84.127	76.355	-4.073	88.200	7.772	PK
3			5724.583	93.445	85.655	-4.755	98.200	7.790	PK
4			5725.000	92.241	84.450	-5.959	98.200	7.791	PK
5		*	5747.490	127.296	119.458	N/A	N/A	7.838	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11a mode / 5745 MHz)

Detector mode: Average **Polarity: Vertical**



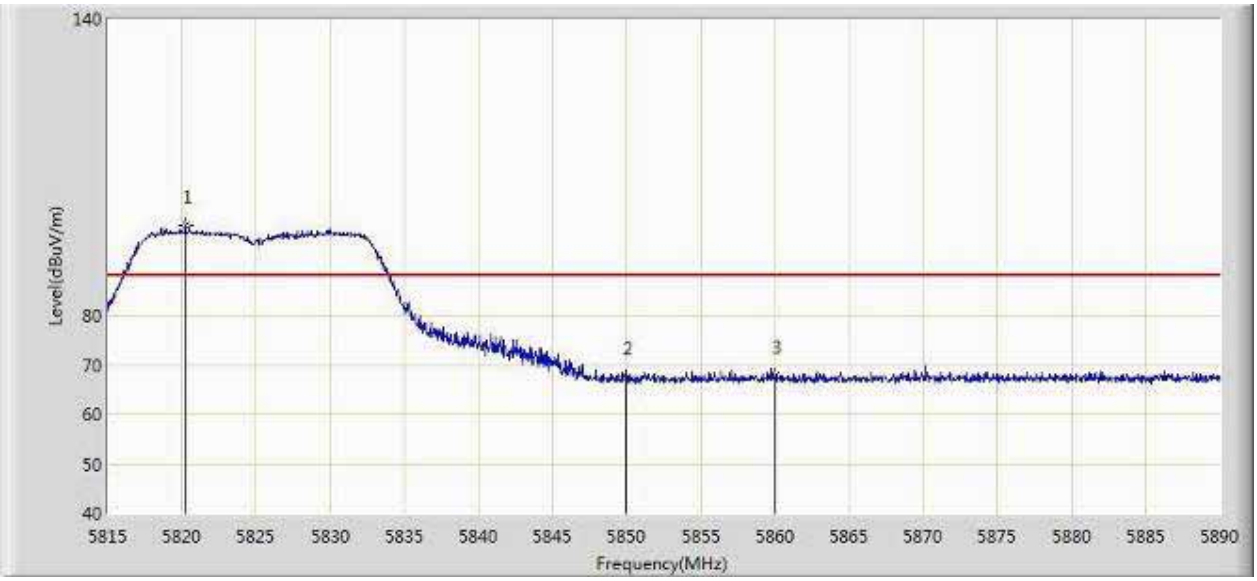
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5715.000	67.541	59.769	-0.659	68.200	7.772	AV
2			5725.000	72.182	64.391	-6.018	78.200	7.791	AV
3		*	5749.105	112.852	105.011	N/A	N/A	7.841	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11a 20 MHz Channel mode / 5825 MHz)

Detector mode: Peak **Polarity: Horizontal**



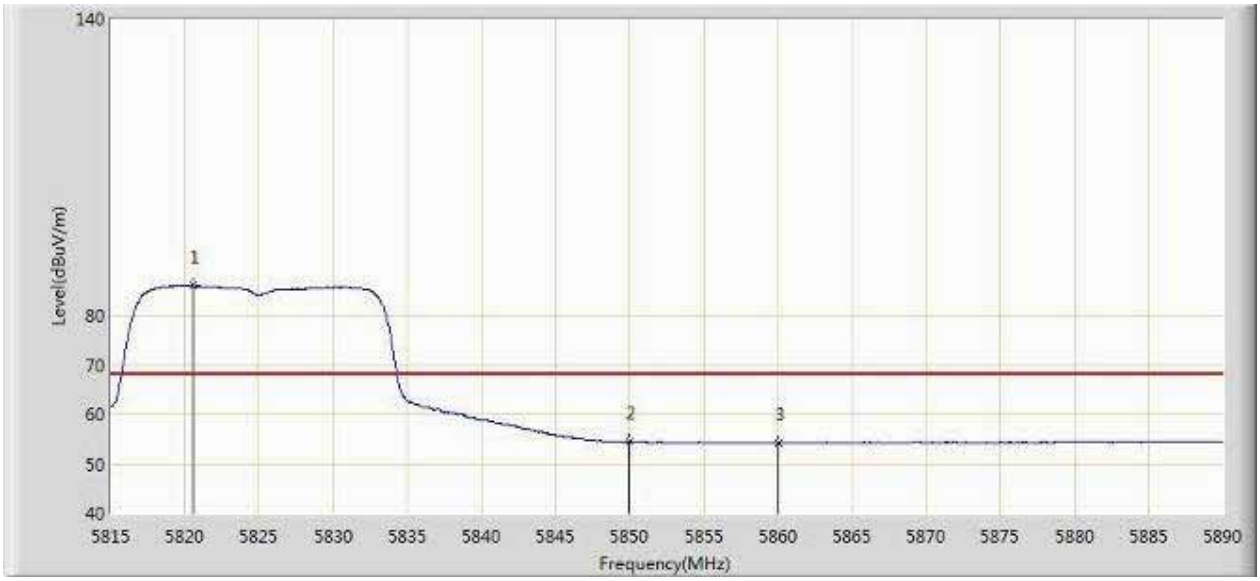
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	5820.250	98.264	90.221	N/A	N/A	8.043	PK
2			5850.000	67.629	59.495	-30.571	98.200	8.134	PK
3			5860.000	67.848	59.659	-20.352	88.200	8.189	PK

Note: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11a 20 MHz Channel mode / 5825 MHz)

Detector mode: Average **Polarity: Horizontal**



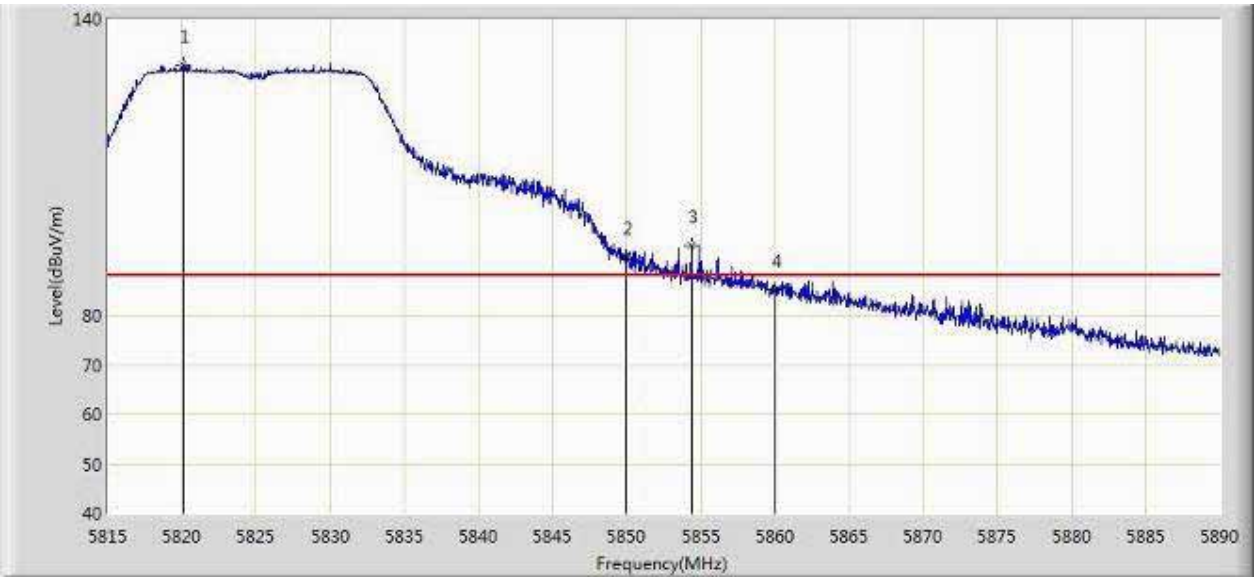
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	5820.550	85.963	77.920	N/A	N/A	8.043	AV
2			5850.000	54.396	46.262	-23.804	78.200	8.134	AV
3			5860.000	54.324	46.135	-13.876	68.200	8.189	AV

Note: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11a 20 MHz Channel mode / 5825 MHz)

Detector mode: Peak **Polarity: Vertical**



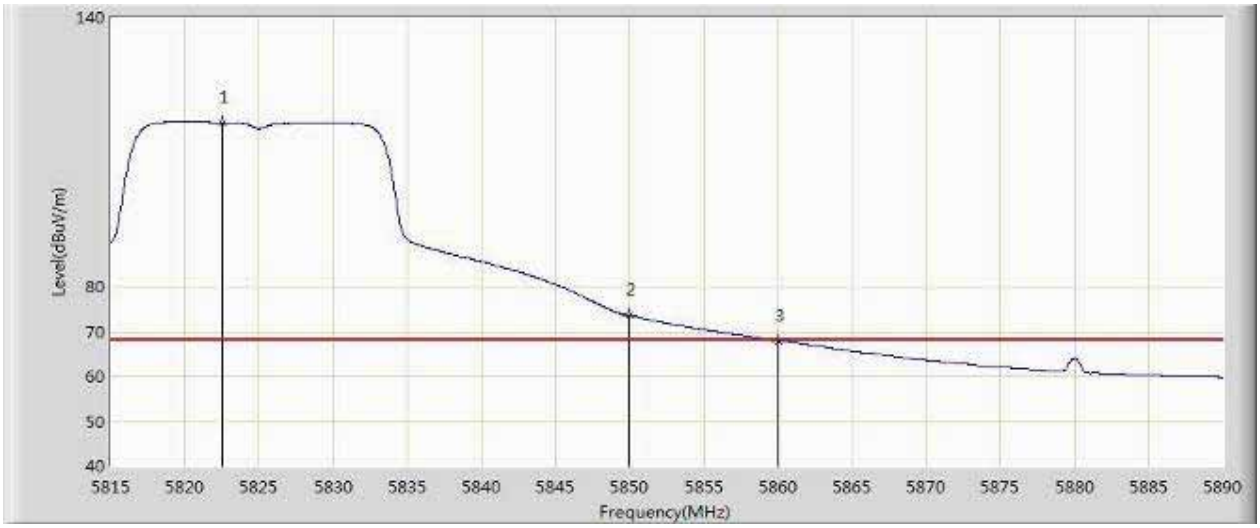
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	5820.062	130.729	122.686	N/A	N/A	8.043	PK
2			5850.000	91.943	83.809	-6.257	98.200	8.134	PK
3			5854.337	94.255	86.097	-3.945	98.200	8.157	PK
4			5860.000	85.322	77.133	-2.878	88.200	8.189	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11a 20 MHz Channel mode / 5825 MHz)

Detector mode: Average **Polarity: Vertical**



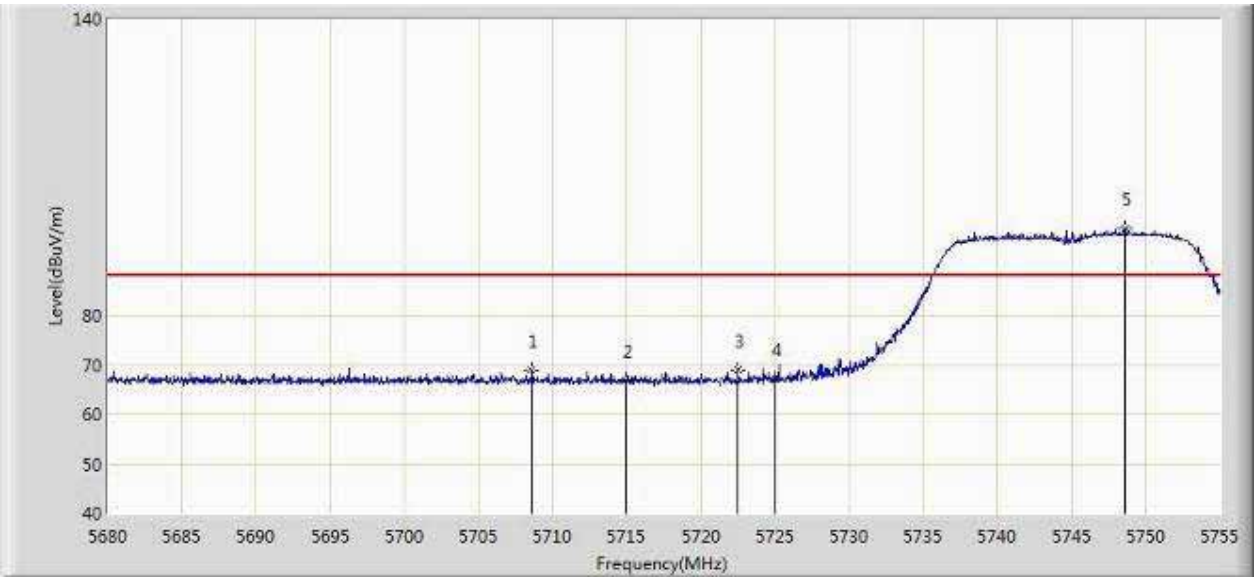
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	5822.538	116.571	108.524	N/A	N/A	8.047	AV
2			5850.000	73.538	65.404	-4.662	78.200	8.134	AV
3			5860.000	67.939	59.750	-0.261	68.200	8.189	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT20 MHz Channel mode / 5745 MHz)

Detector mode: Peak **Polarity: Horizontal**



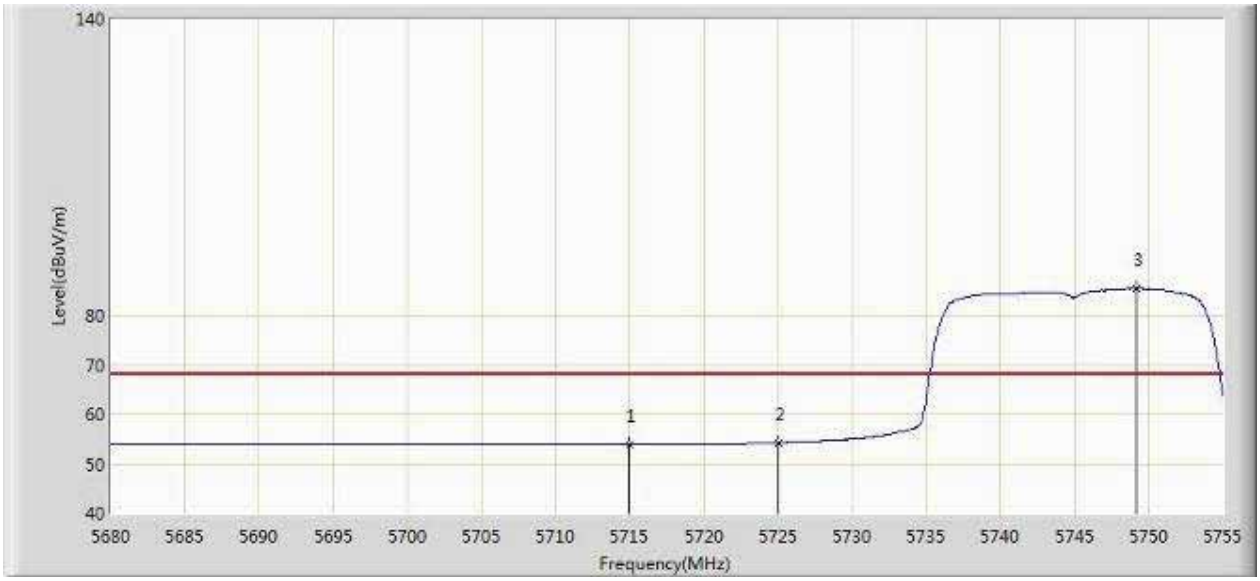
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5708.612	68.933	61.174	-19.267	88.200	7.759	PK
2			5715.000	66.895	59.123	-21.305	88.200	7.772	PK
3			5722.525	68.984	61.198	-29.216	98.200	7.786	PK
4			5725.000	67.150	59.359	-31.050	98.200	7.791	PK
5		*	5748.587	97.545	89.705	N/A	N/A	7.840	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT20 MHz Channel mode / 5745 MHz)

Detector mode: Average **Polarity: Horizontal**



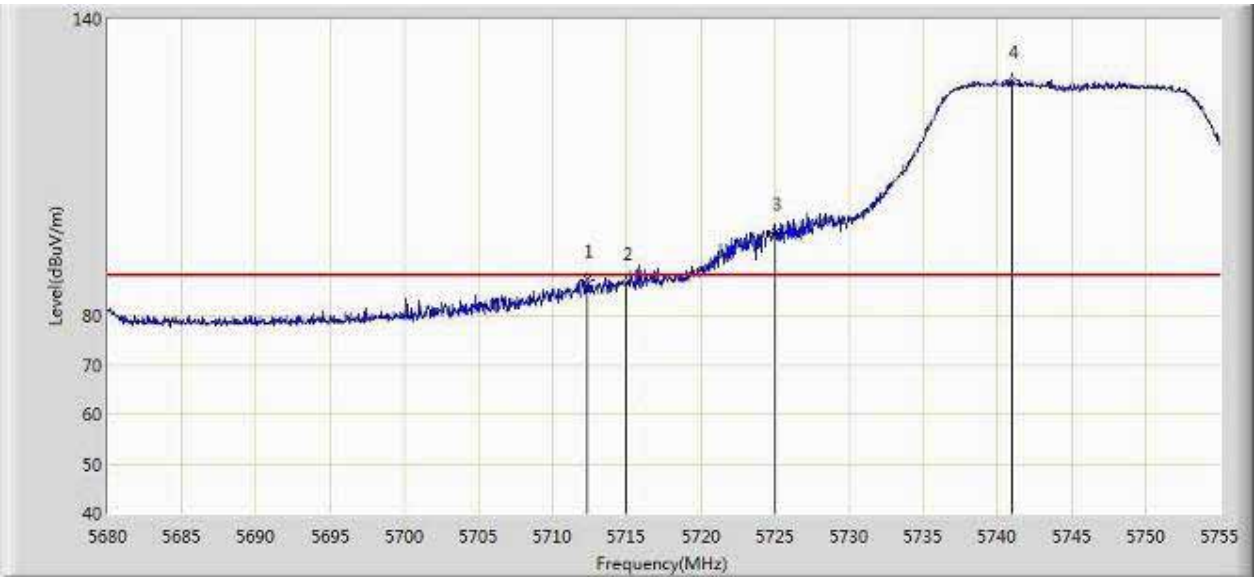
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5715.000	53.858	46.086	-14.342	68.200	7.772	AV
2			5725.000	54.301	46.510	-23.899	78.200	7.791	AV
3		*	5749.150	85.395	77.554	N/A	N/A	7.841	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT20 MHz Channel mode / 5745 MHz)

Detector mode: Peak **Polarity: Vertical**



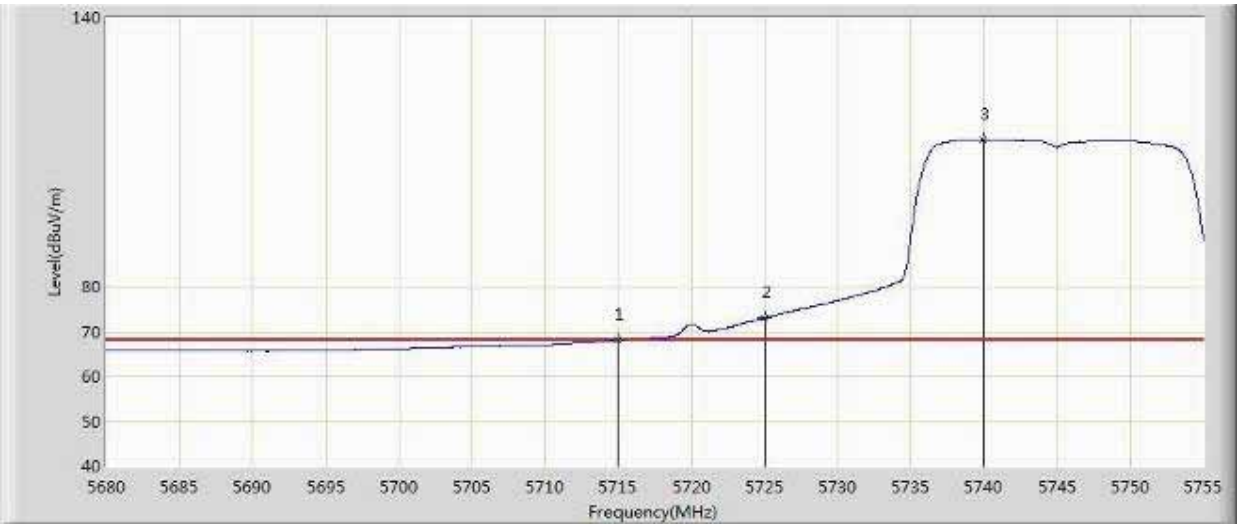
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5712.325	87.131	79.365	-1.069	88.200	7.767	PK
2			5715.000	86.635	78.863	-1.565	88.200	7.772	PK
3			5725.000	96.785	88.994	-1.415	98.200	7.791	PK
4		*	5740.975	127.510	119.685	N/A	N/A	7.825	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT20 MHz Channel mode / 5745 MHz)

Detector mode: Average **Polarity: Vertical**



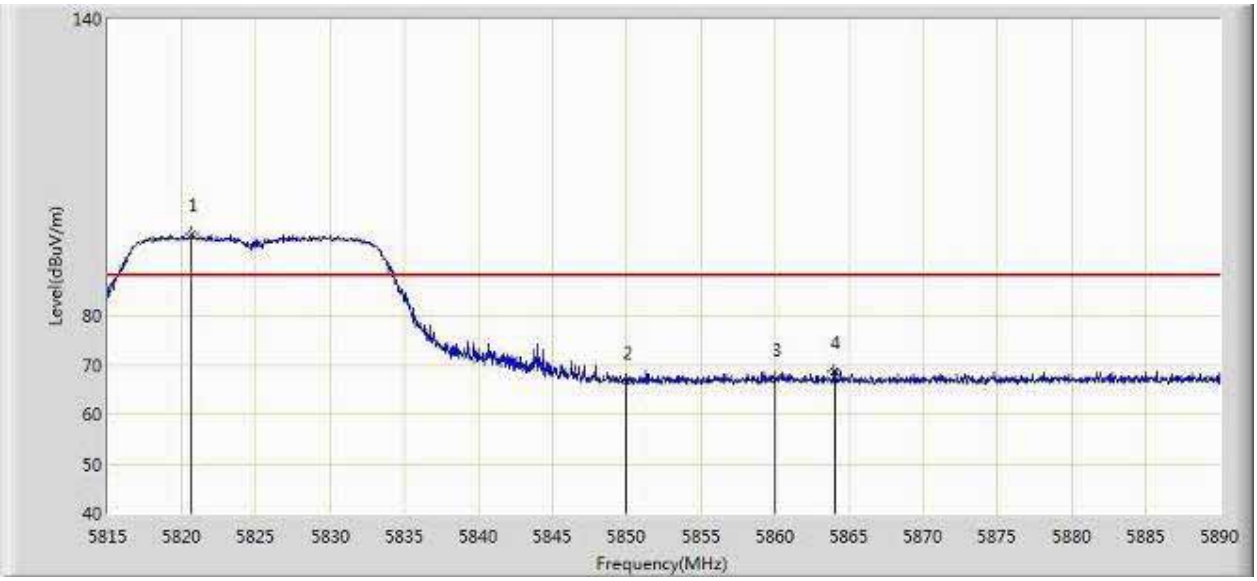
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5715.000	68.025	60.253	-0.175	68.200	7.772	AV
2			5725.000	73.014	65.223	-5.186	78.200	7.791	AV
3		*	5739.925	112.832	105.009	N/A	N/A	7.823	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT20 MHz Channel mode / 5785 MHz)

Detector mode: Peak **Polarity: Horizontal**



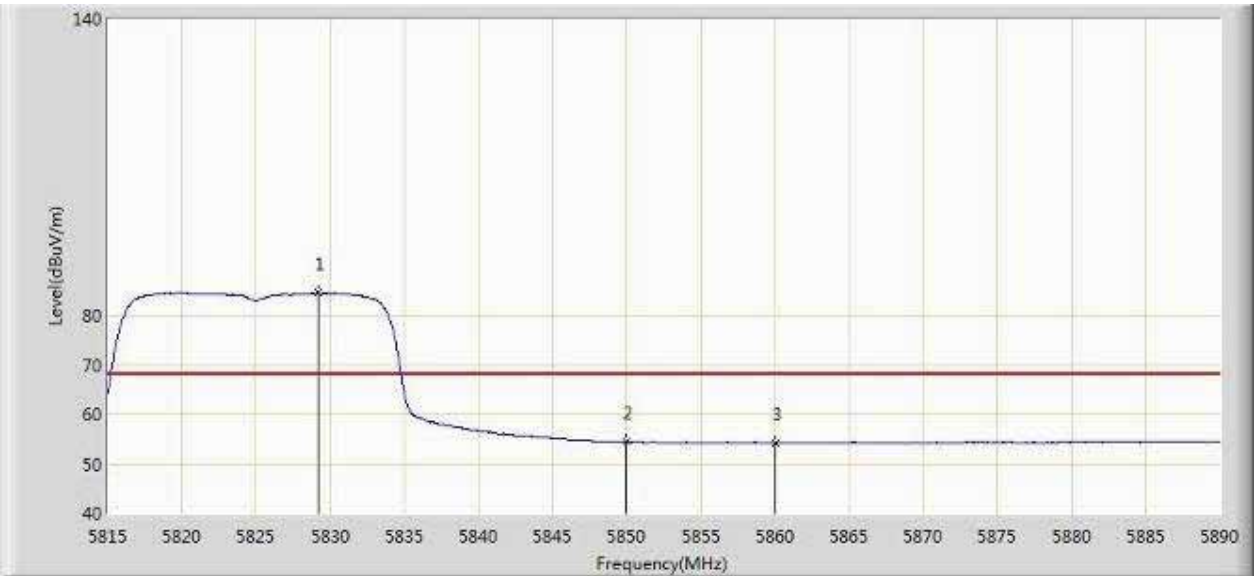
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	5820.663	96.566	88.522	N/A	N/A	8.044	PK
2			5850.000	66.704	58.570	-31.496	98.200	8.134	PK
3			5860.000	67.318	59.129	-20.882	88.200	8.189	PK
4			5864.013	68.728	60.521	-19.472	88.200	8.207	PK

Note: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT20 MHz Channel mode / 5785 MHz)

Detector mode: Average **Polarity: Horizontal**



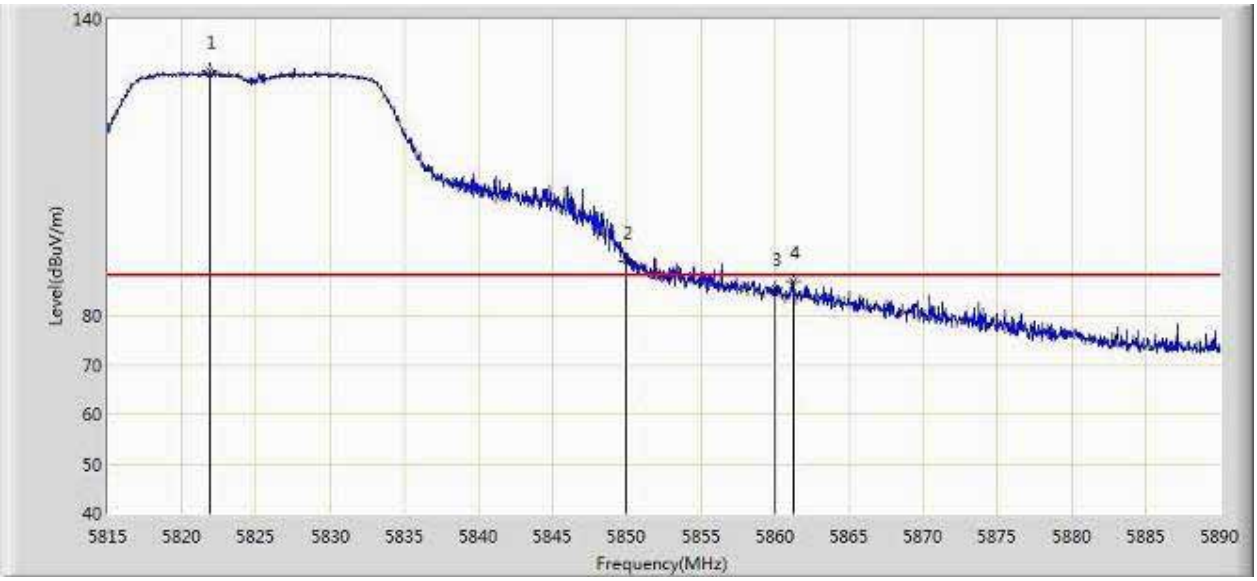
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	5829.175	84.572	76.513	N/A	N/A	8.059	AV
2			5850.000	54.393	46.259	-23.807	78.200	8.134	AV
3			5860.000	54.317	46.128	-13.883	68.200	8.189	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT20 MHz Channel mode / 5785 MHz)

Detector mode: Peak **Polarity: Vertical**



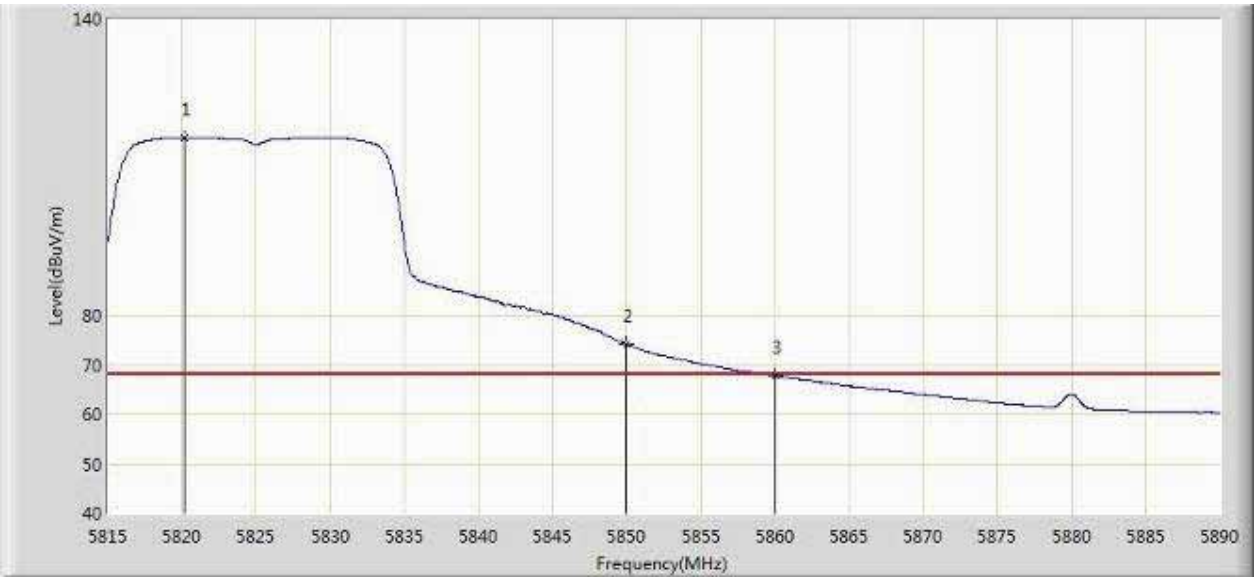
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	5821.862	129.665	121.620	N/A	N/A	8.045	PK
2			5850.000	91.002	82.868	-7.198	98.200	8.134	PK
3			5860.000	85.463	77.274	-2.737	88.200	8.189	PK
4			5861.200	87.009	78.814	-1.191	88.200	8.195	PK

Note: Measure Level (dBµV/m) = Reading Level (dBµV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT20 MHz Channel mode / 5785 MHz)

Detector mode: Average **Polarity: Vertical**



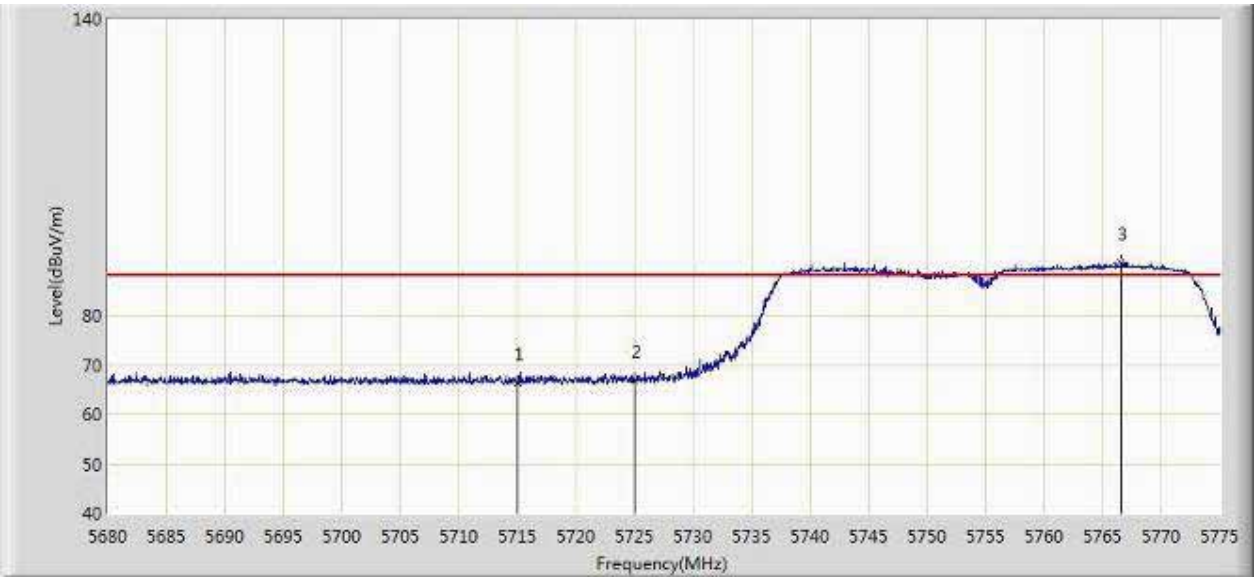
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	5820.212	115.942	107.899	N/A	N/A	8.043	AV
2			5850.000	74.178	66.044	-4.022	78.200	8.134	AV
3			5860.000	67.813	59.624	-0.387	68.200	8.189	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT40 MHz Channel mode / 5755 MHz)

Detector mode: Peak **Polarity: Horizontal**



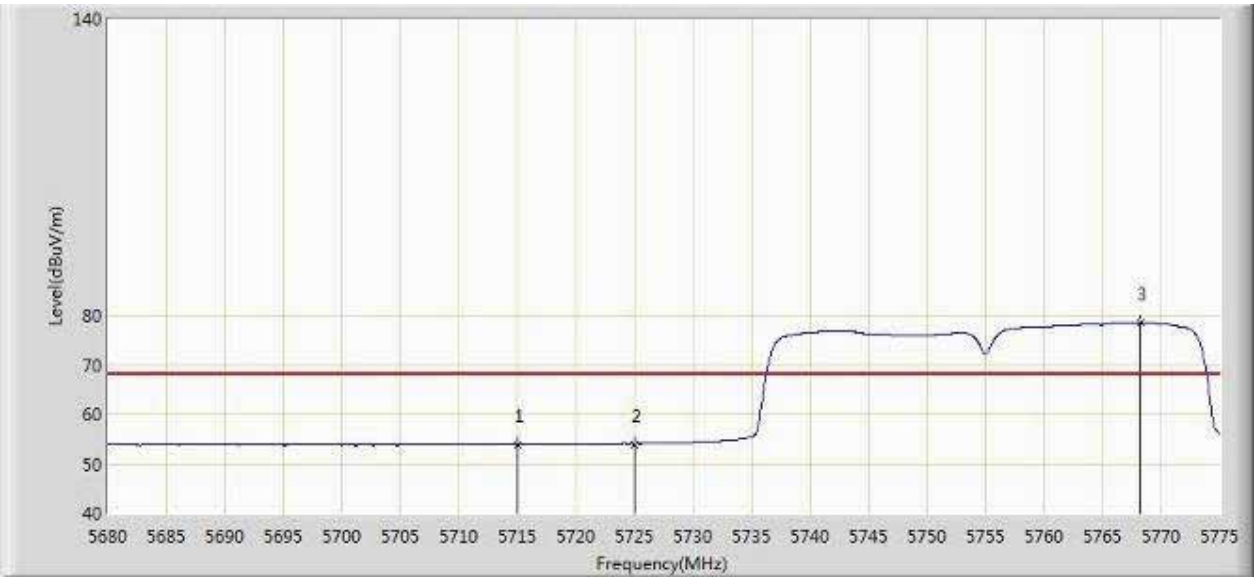
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5715.000	66.435	58.663	-21.765	88.200	7.772	PK
2			5725.000	66.853	59.062	-31.347	98.200	7.791	PK
3		*	5766.592	90.678	82.794	N/A	N/A	7.884	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT40 MHz Channel mode / 5755 MHz)

Detector mode: Average **Polarity: Horizontal**



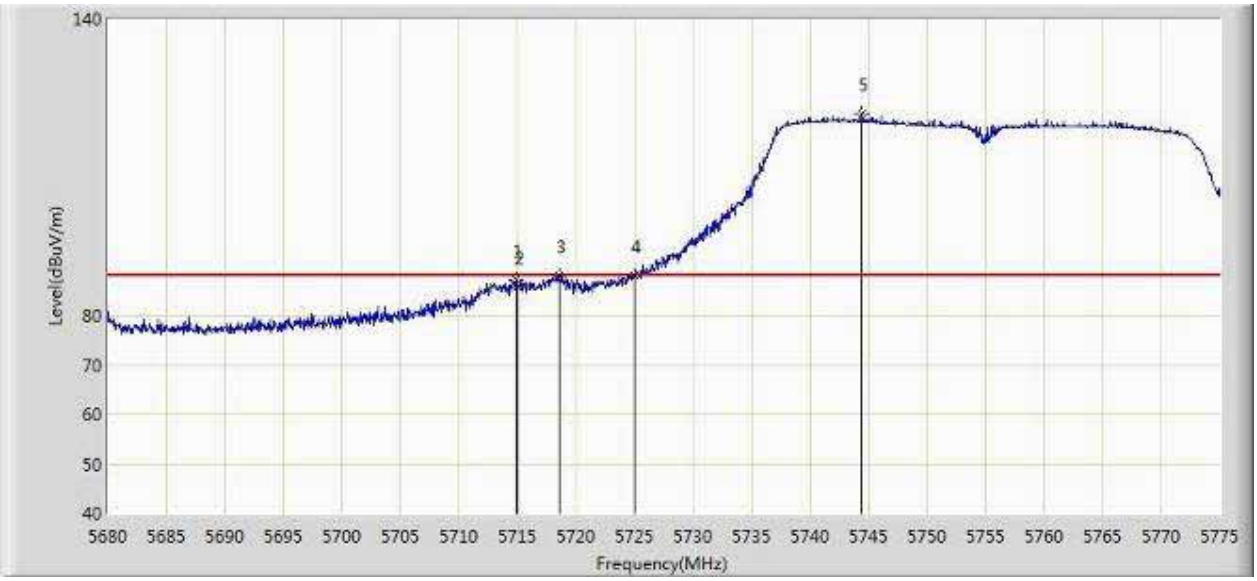
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5715.000	53.913	46.141	-14.287	68.200	7.772	AV
2			5725.000	54.042	46.251	-24.158	78.200	7.791	AV
3		*	5768.160	78.565	70.676	N/A	N/A	7.889	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT40 MHz Channel mode / 5755 MHz)

Detector mode: Peak **Polarity: Vertical**



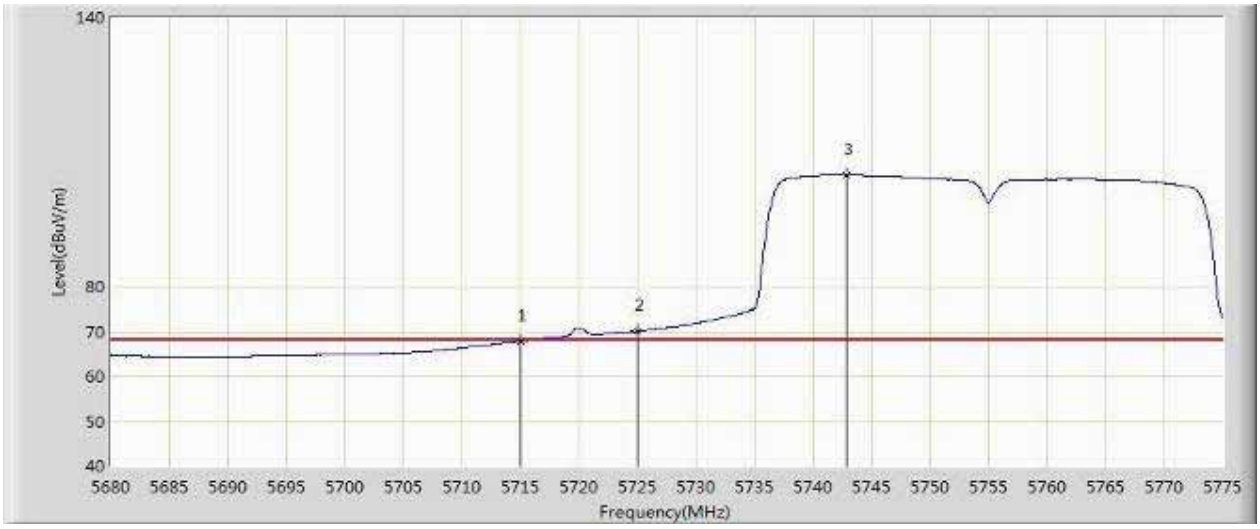
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5714.913	87.140	79.369	-1.060	88.200	7.771	PK
2			5715.000	85.752	77.980	-2.448	88.200	7.772	PK
3			5718.618	88.042	80.264	-10.158	98.200	7.778	PK
4			5725.000	87.980	80.189	-10.220	98.200	7.791	PK
5		*	5744.410	120.848	113.017	N/A	N/A	7.831	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT40 MHz Channel mode / 5755 MHz)

Detector mode: Average **Polarity: Vertical**



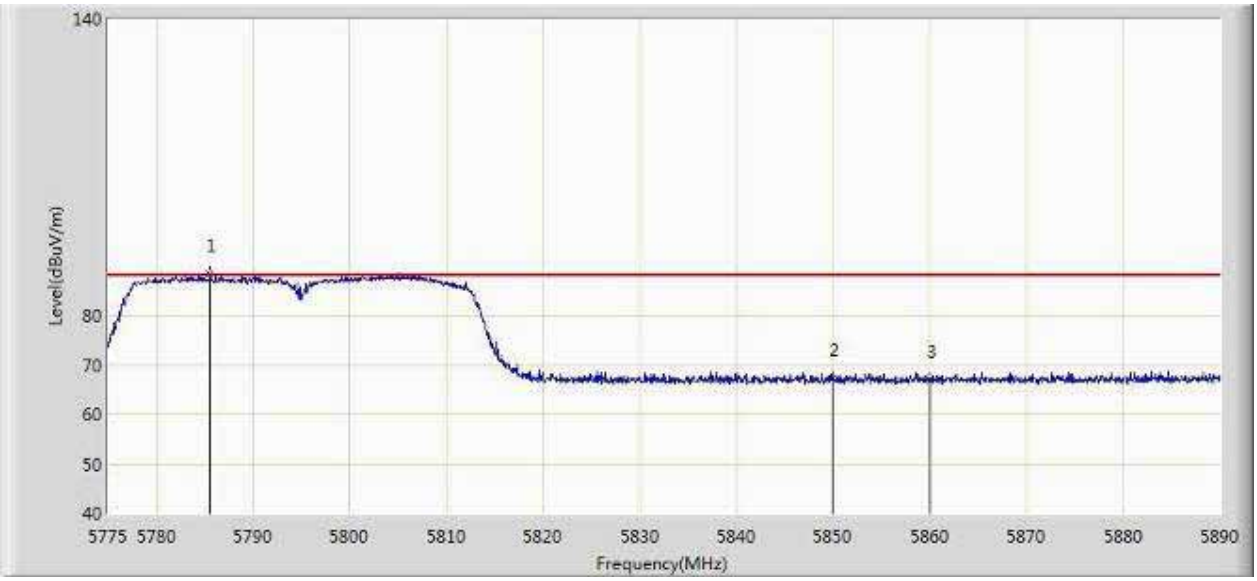
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1			5715.000	67.787	60.015	-0.413	68.200	7.772	AV
2			5725.000	70.036	62.245	-8.164	78.200	7.791	AV
3		*	5742.890	104.931	97.103	N/A	N/A	7.828	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT40 MHz Channel mode / 5795 MHz)

Detector mode: Peak **Polarity: Horizontal**



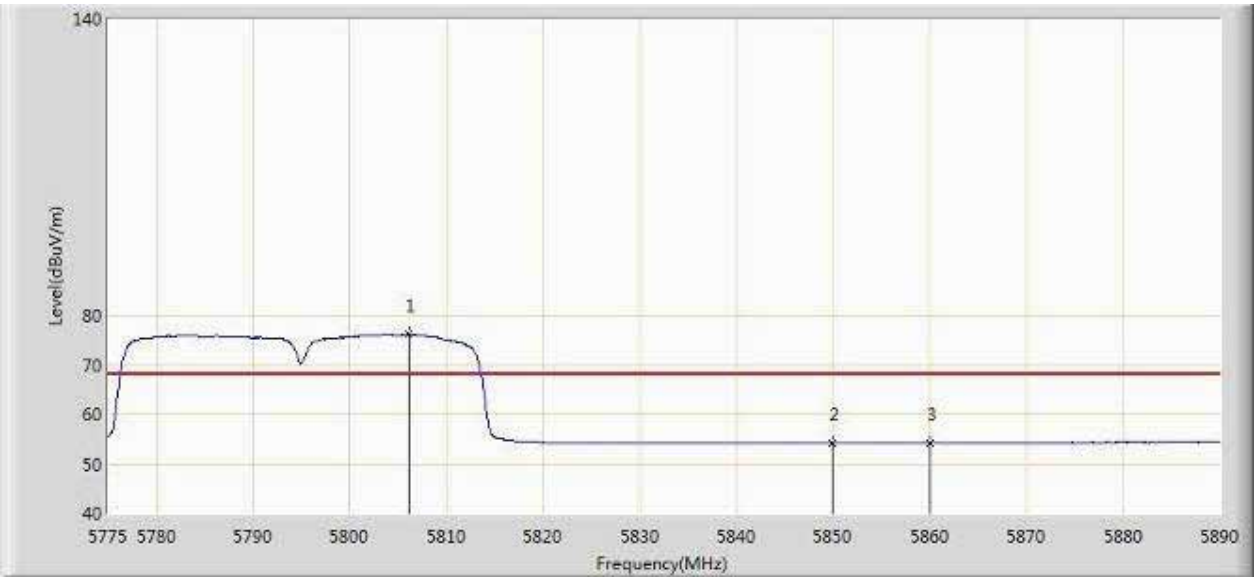
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	5785.522	88.528	80.579	N/A	N/A	7.949	PK
2			5850.000	67.191	59.057	-31.009	98.200	8.134	PK
3			5860.000	66.976	58.787	-21.224	88.200	8.189	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT40 MHz Channel mode / 5795 MHz)

Detector mode: Average **Polarity: Horizontal**



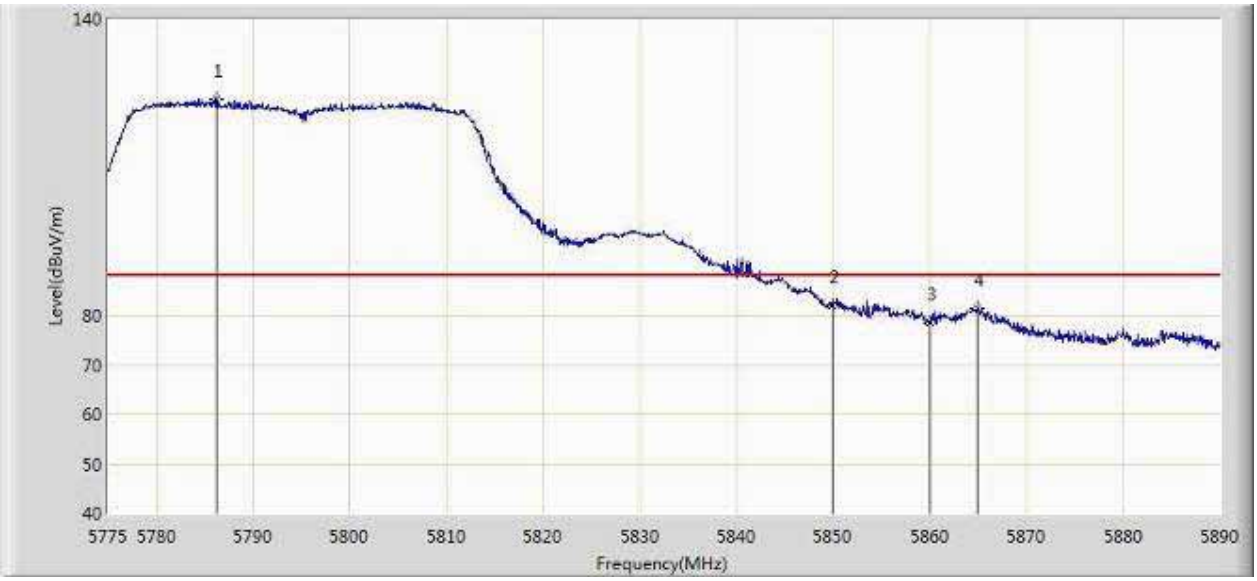
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	5806.107	76.183	68.169	N/A	N/A	8.015	AV
2			5850.000	54.211	46.077	-23.989	78.200	8.134	AV
3			5860.000	54.283	46.094	-13.917	68.200	8.189	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT40 MHz Channel mode / 5795 MHz)

Detector mode: Peak **Polarity: Vertical**



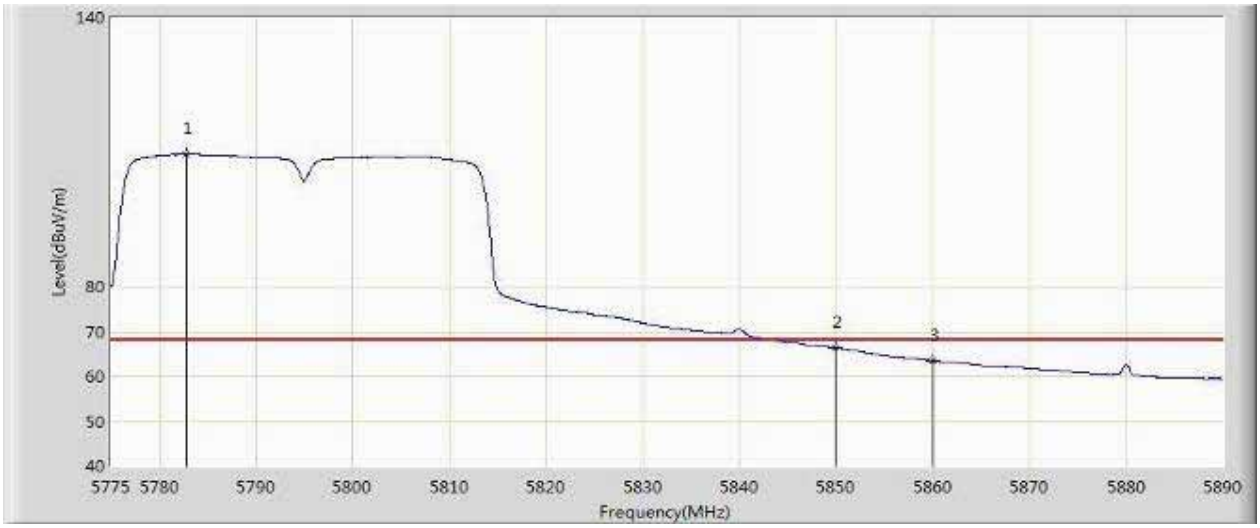
No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	5786.270	123.769	115.817	N/A	N/A	7.953	PK
2			5850.000	82.062	73.928	-16.138	98.200	8.134	PK
3			5860.000	78.587	70.398	-9.613	88.200	8.189	PK
4			5864.873	81.496	73.292	-6.704	88.200	8.210	PK

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

Band Edges (IEEE 802.11n HT40 MHz Channel mode / 5795 MHz)

Detector mode: Average **Polarity: Vertical**



No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor (dB)	Type
1		*	5782.820	109.519	101.579	N/A	N/A	7.940	AV
2			5850.000	66.403	58.269	-11.797	78.200	8.134	AV
3			5860.000	63.530	55.341	-4.670	68.200	8.189	AV

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

Factor (dB) = Cable Loss (dB) + Antenna Factor (dB/m) – Pre_Amplifier Gain (dB).

8. PEAK POWER SPECTRAL DENSITY

8.1LIMIT

According to §15.407(a)

For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.15-5.25 GHz: Limit (dBm/MHz) = 17dBm/MHz.

5.725-5.85 GHz Limit (dBm/500kHz) = 30dBm/500kHz.

8.2.Test Procedure Used

KDB 789033 D02v01 - Section F

8.3.Test Setting

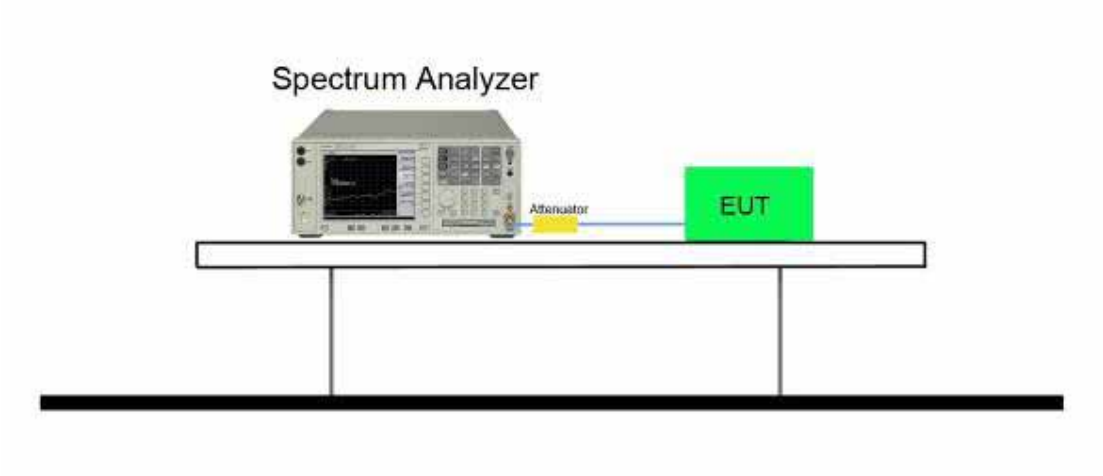
1. Analyzer was set to the center frequency of the UNII channel under investigation
2. Span was set to encompass the entire 26dB EBW of the signal.
3. RBW = 1MHz, if measurement bandwidth of Maximum PSD is specified in 500 kHz, RBW = 100 kHz
4. VBW = 3MHz
5. Number of sweep points ≥ 2 × (span / RBW)
6. Detector = power averaging (RMS)
7. Sweep time = auto
8. Trigger = free run
9. Use the peak search function on the instrument to find the peak of the spectrum and record its value

10. Add 10*log(1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add 10*log(1/0.25) =

    6 dB if the duty cycle is 25 percent.

11. When the measurement bandwidth of Maximum PSD is specified in 500 kHz, add a constant factor 10*log(500kHz/100kHz) = 6.99 dB to the measured result

8.4. Test Setup



8.5TEST RESULTS

No non-compliance noted

5180-5240MHz Test Data

Mode	Test CH	Ant. Port	PSD (dBm)	Total PSD	Limt (dBm)	Result
802.11a	Lowest	Chain 1	12.89	16.26	17	Pass
		Chain 2	13.59			
	Middle	Chain 1	13.18	16.24	17	Pass
		Chain 2	13.28			
	Highest	Chain 1	13.00	16.04	17	Pass
		Chain 2	13.05			
802.11n 20	Lowest	Chain 1	13.22	16.58	17	Pass
		Chain 2	13.89			
	Middle	Chain 1	13.05	16.37	17	Pass
		Chain 2	13.65			
	Highest	Chain 1	13.29	16.28	17	Pass
		Chain 2	13.25			
802.11n 40	Lowest	Chain 1	13.02	15.89	17	Pass
		Chain 2	12.74			
	Highest	Chain 1	11.42	14.56	17	Pass
		Chain 2	11.67			

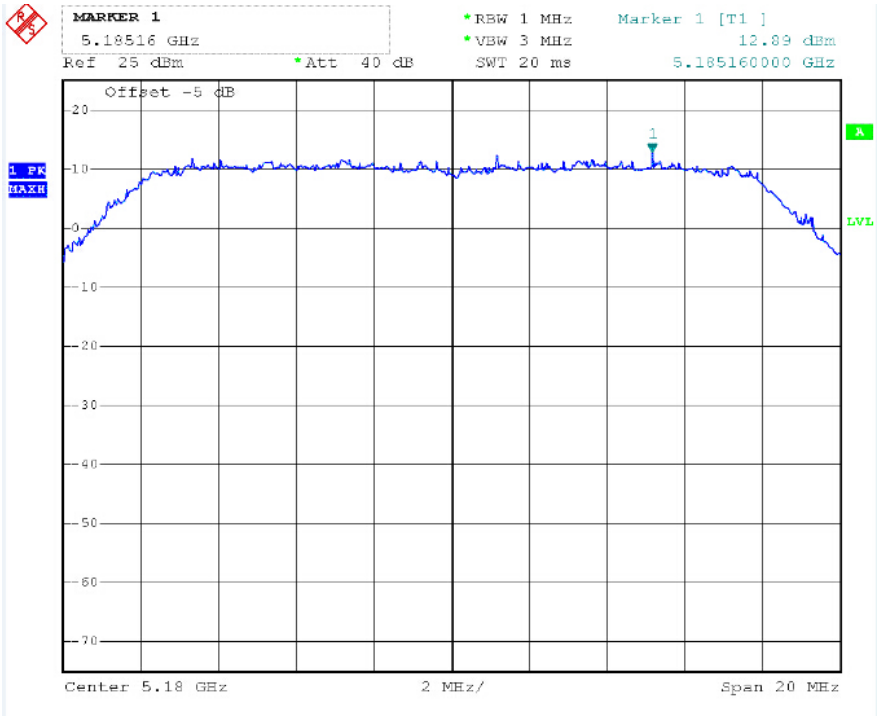
Note: The Total PSD Level = $10*\log\{10^{(\text{chain 1 PSD}/10)}+10^{(\text{chain 2 PSD}/10)}\}$

Mode	Test CH	Ant. Port	PSD (dBm)	Total PSD (dBm)	Limit (dBm)	Result
802.11a	Lowest	Ant 1	4.56	7.29	30	Pass
		Ant 2	3.97			
	Middle	Ant 1	4.59	6.95	30	Pass
		Ant 2	3.17			
	Highest	Ant 1	4.81	7.05	30	Pass
		Ant 2	3.09			
802.11n 20	Lowest	Ant 1	4.12	6.64	30	Pass
		Ant 2	3.07			
	Middle	Ant 1	4.22	6.66	30	Pass
		Ant 2	2.99			
	Highest	Ant 1	3.56	6.05	30	Pass
		Ant 2	2.44			
802.11n 40	Lowest	Ant 1	0.66	3.07	30	Pass
		Ant 2	-0.63			
	Highest	Ant 1	0.23	2.44	30	Pass
		Ant 2	-1.55			

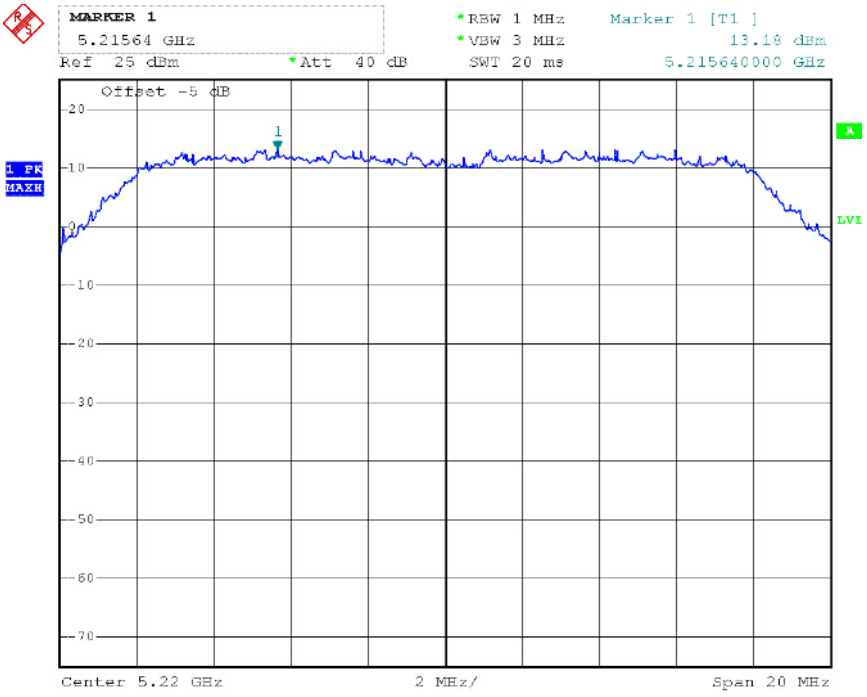
Note: The Total PSD Level = $10*\log\{10^{(\text{chain 1 PSD}/10)}+10^{(\text{chain 2 PSD}/10)}\}$

Chain 1
IEEE 802.11a mode / 5180 ~ 5240MHz

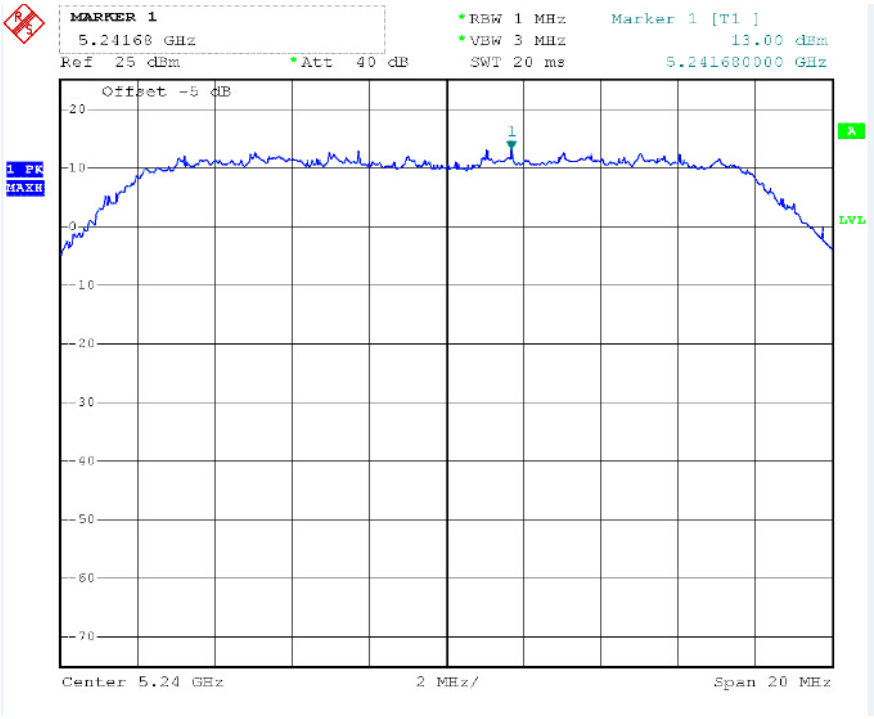
CH Low



CH Mid

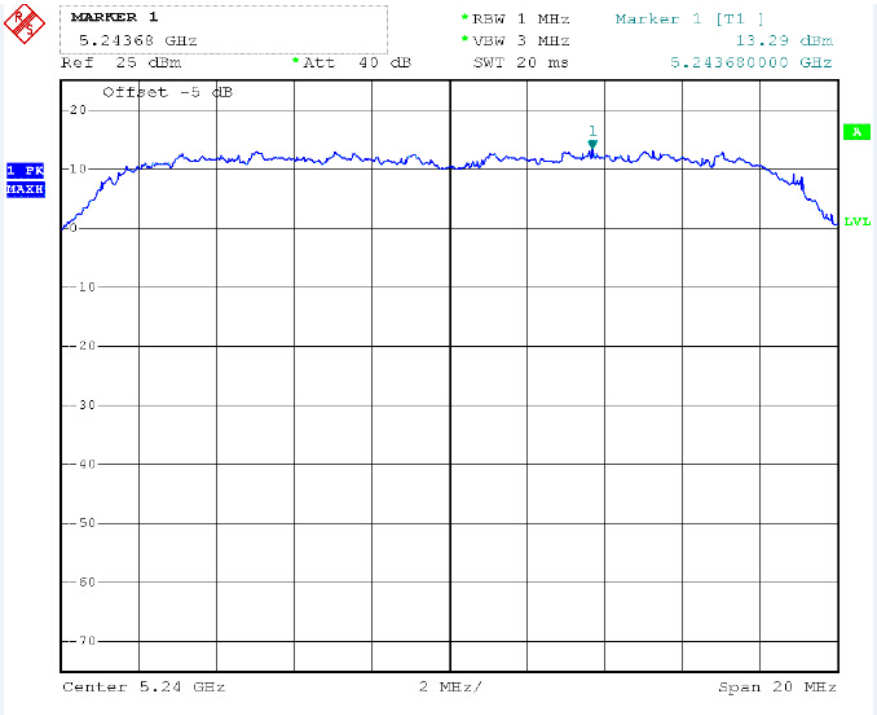


CH High

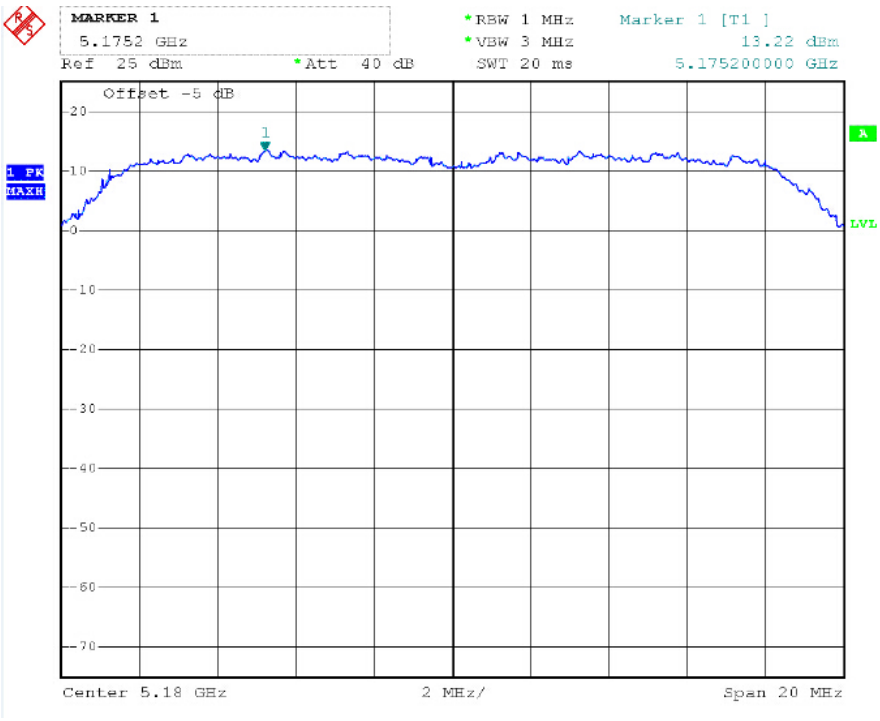


IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz

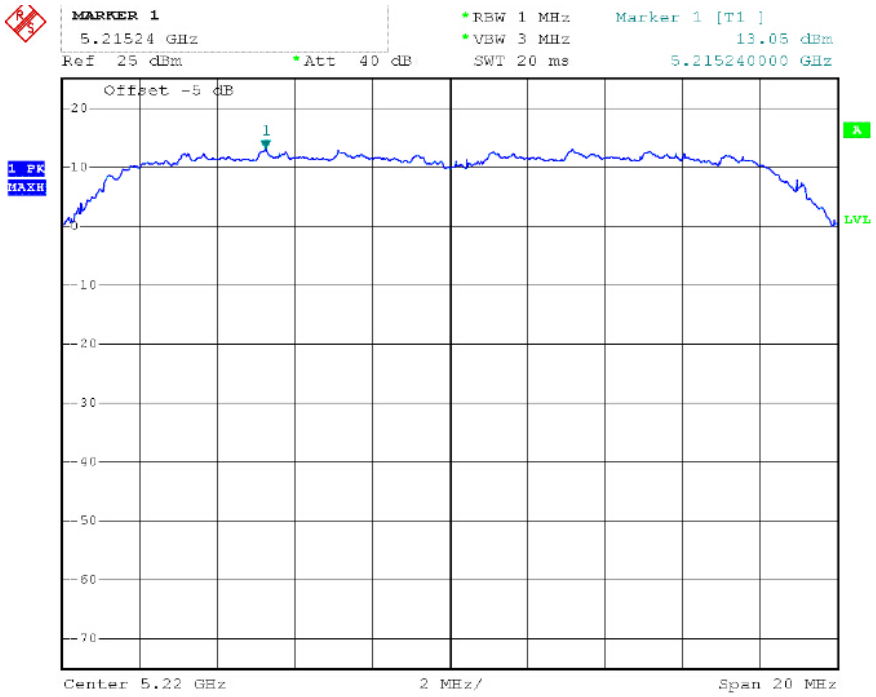
CH Low



CH Mid

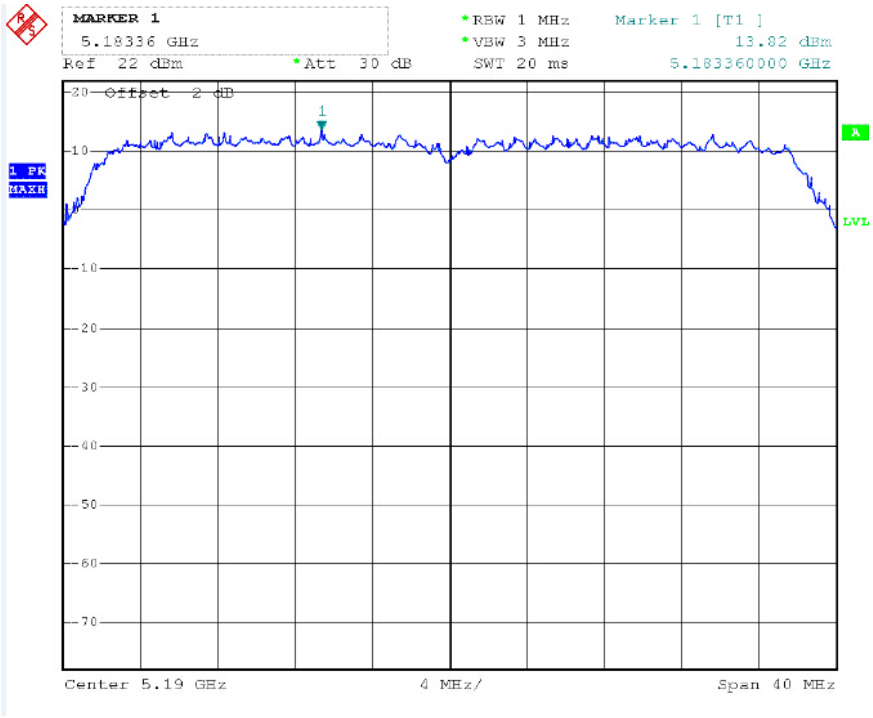


CH High

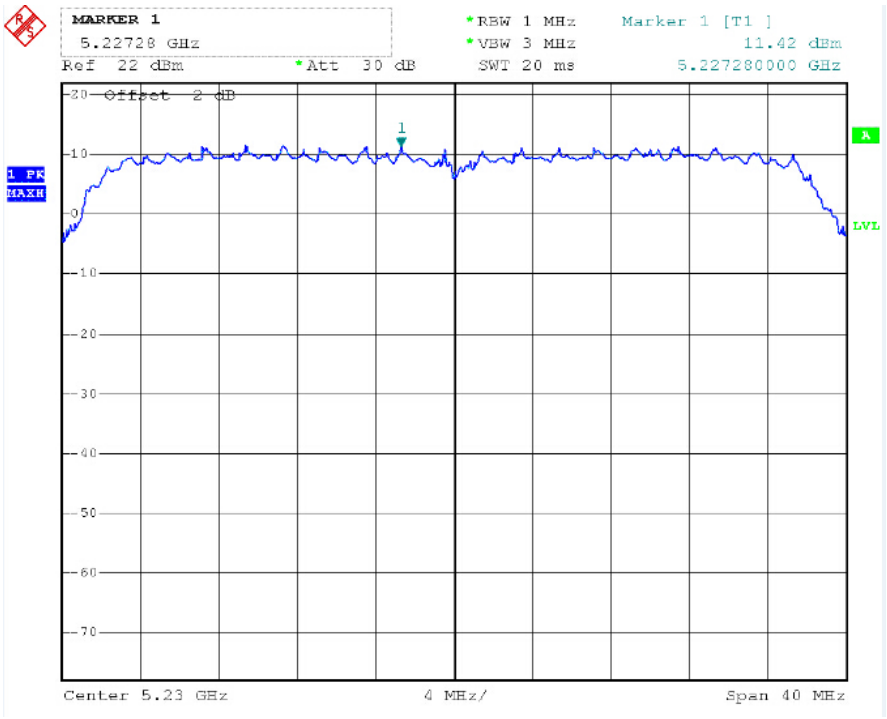


IEEE 802.11n HT 40 MHz Channel mode / 5190 ~ 5230MHz

CH Low

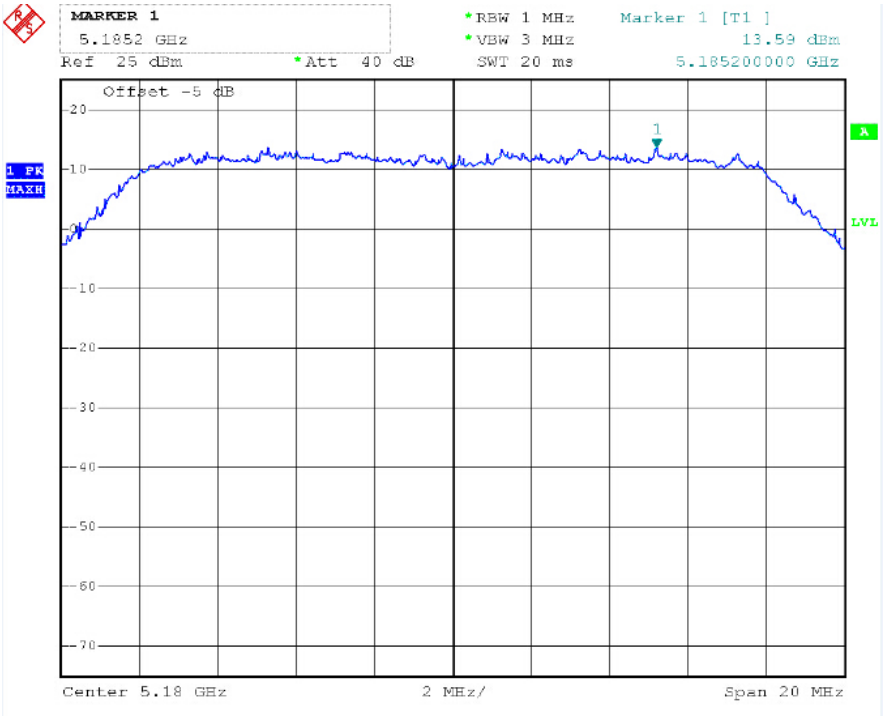


CH High

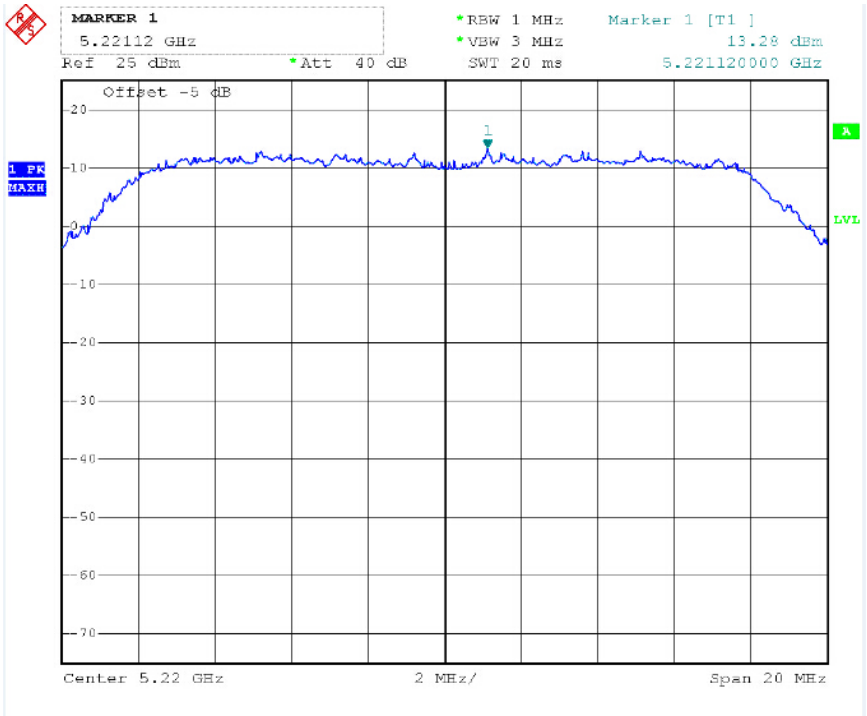


Chain 2
IEEE 802.11a mode / 5180 ~ 5240MHz

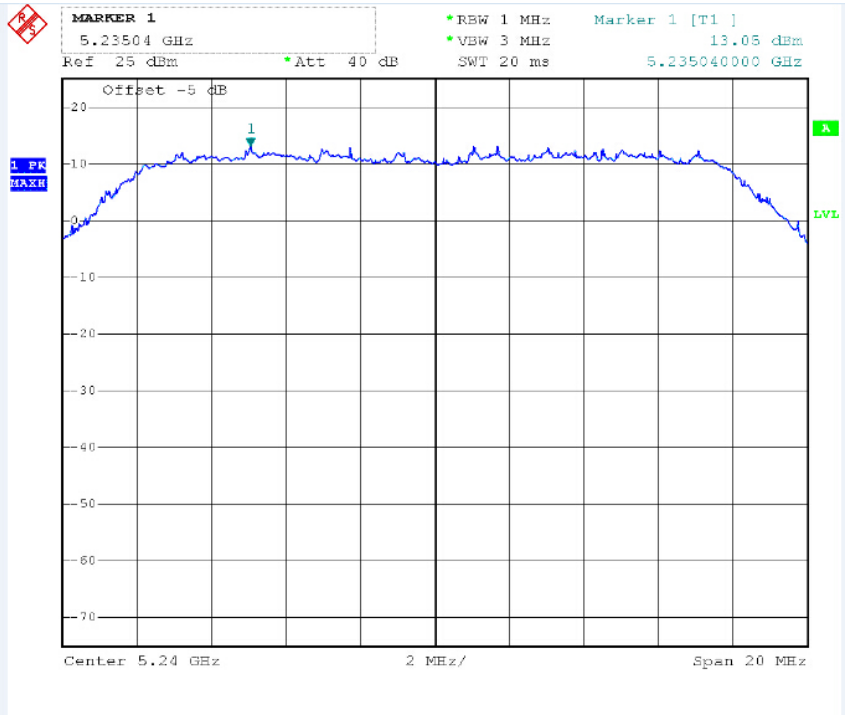
CH Low



CH Mid

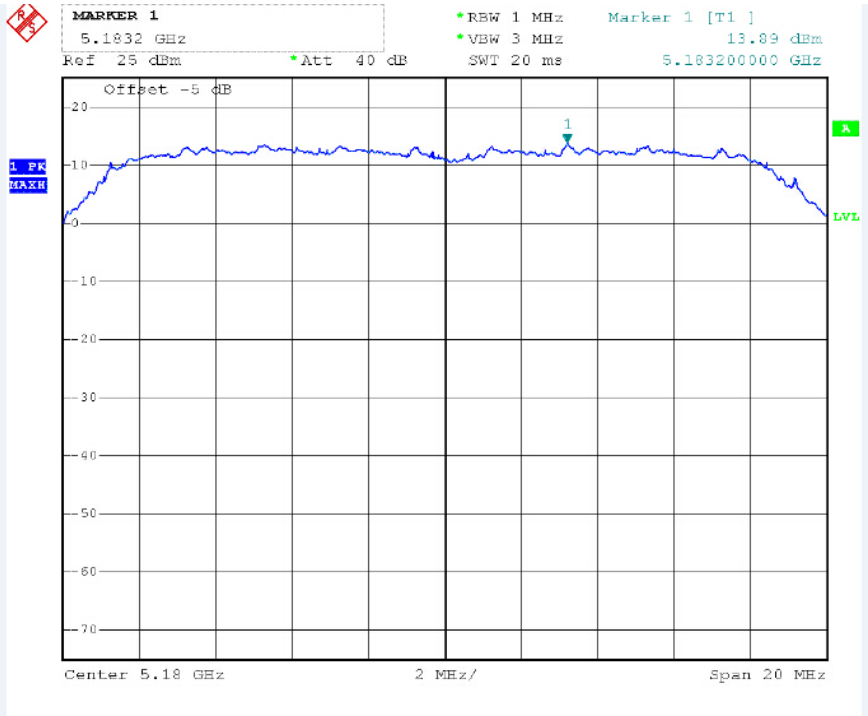


CH High

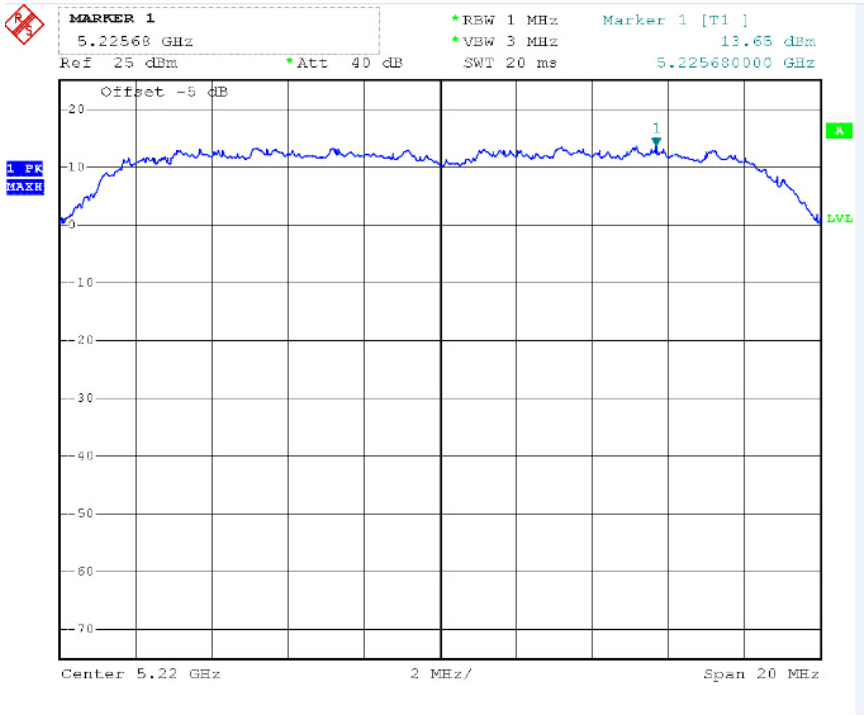


IEEE 802.11n HT 20 MHz Channel mode / 5180 ~ 5240MHz

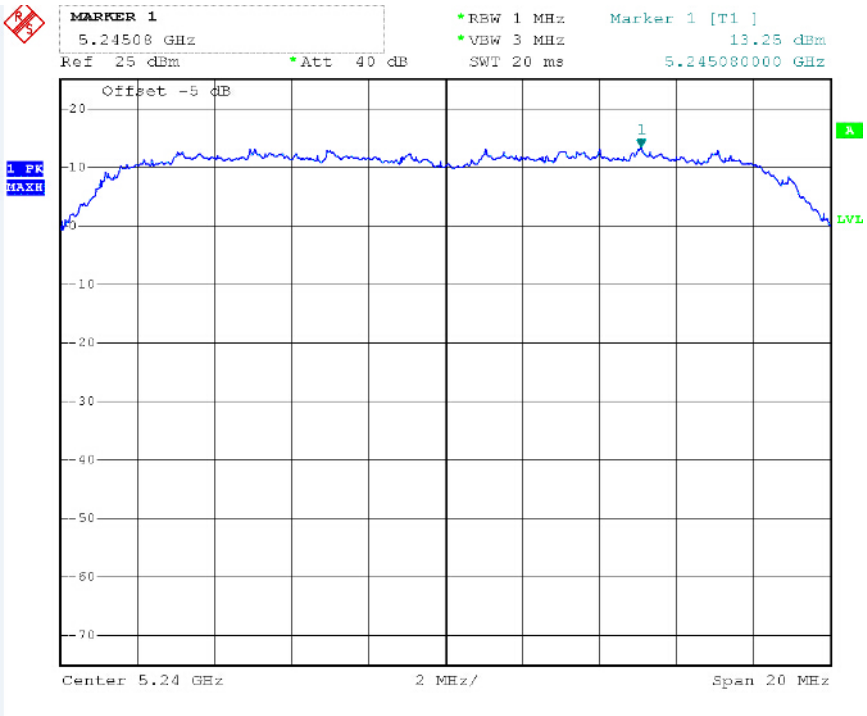
CH Low



CH Mid

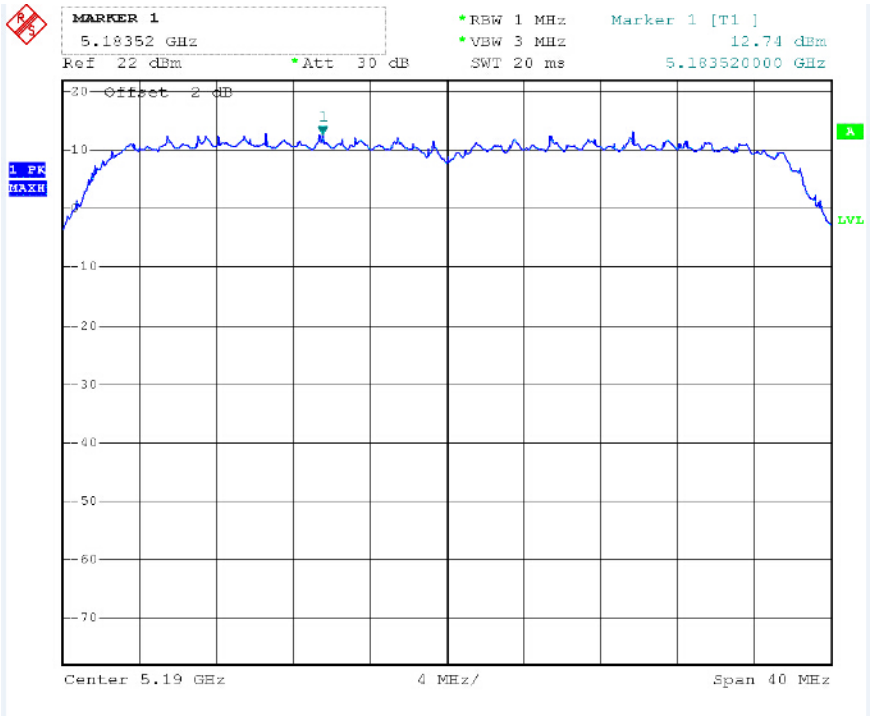


CH High

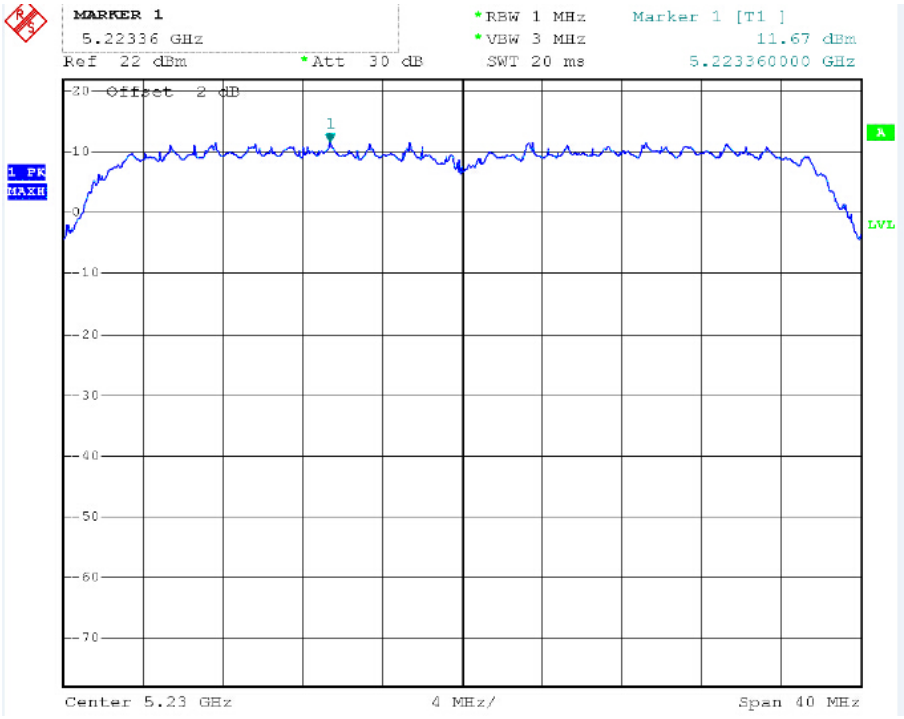


IEEE 802.11n HT 40 MHz Channel mode / 5190 ~ 5230MHz

CH Low

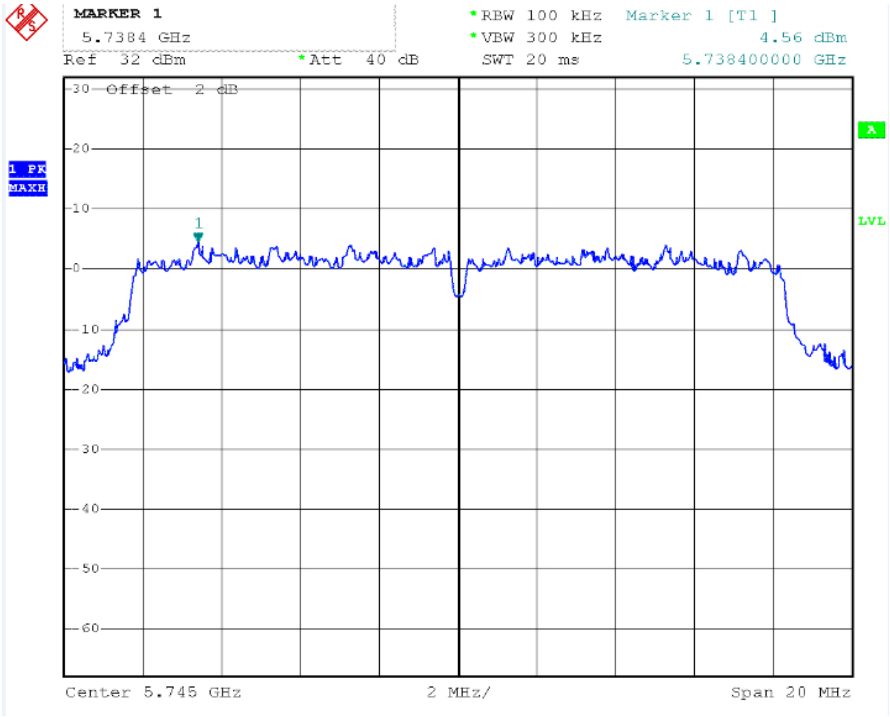


CH High

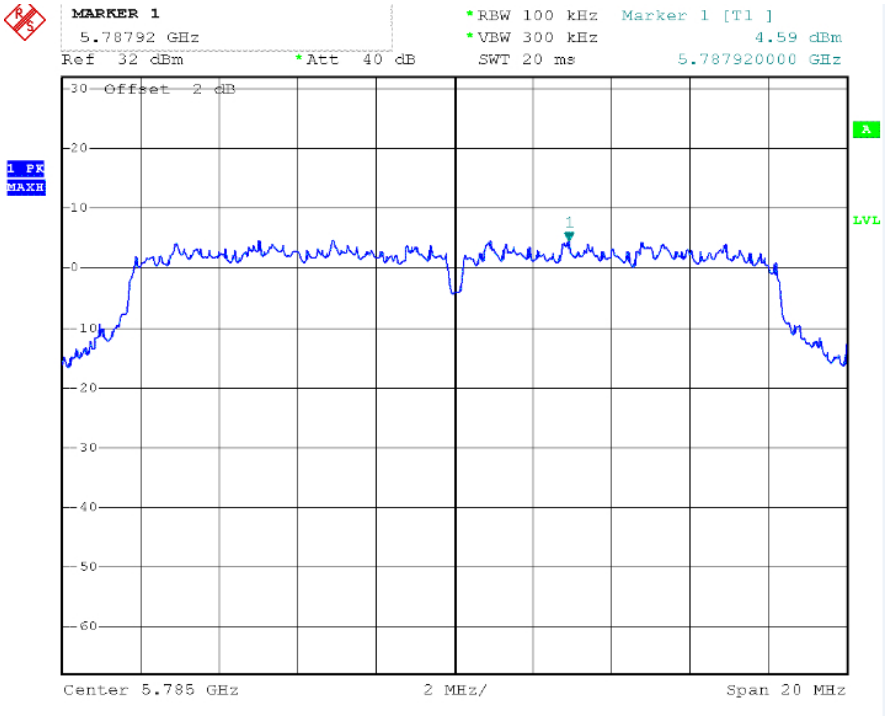


Chain 1
IEEE 802.11a mode / 5745 ~ 5825MHz

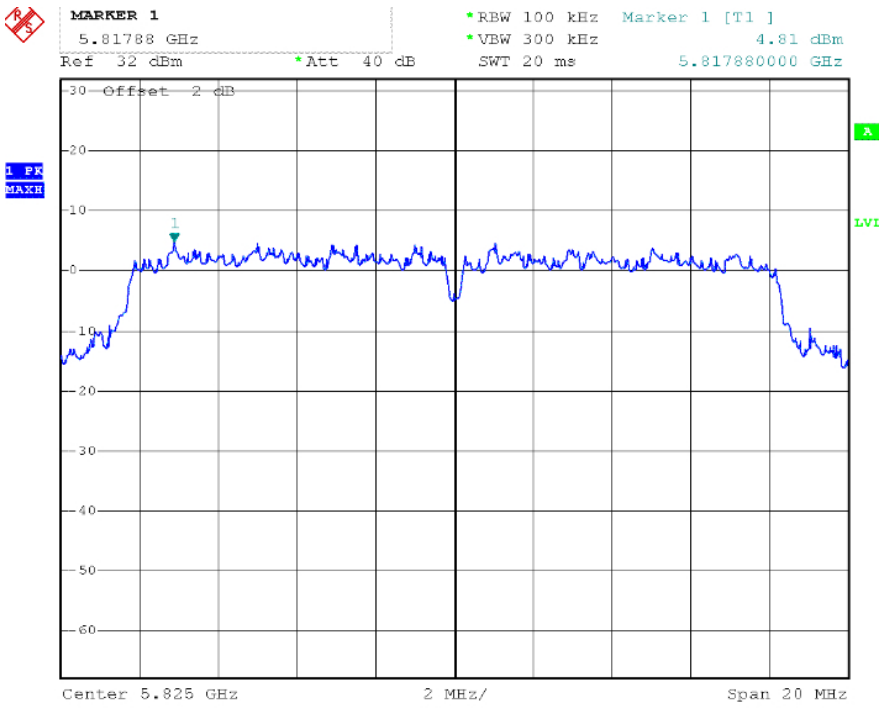
CH Low



CH Mid

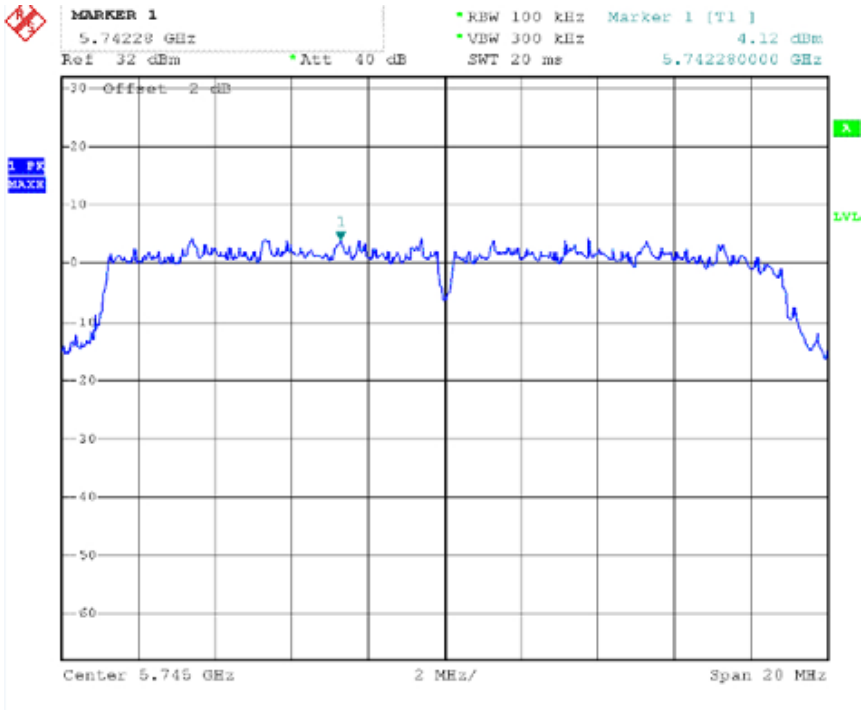


CH High

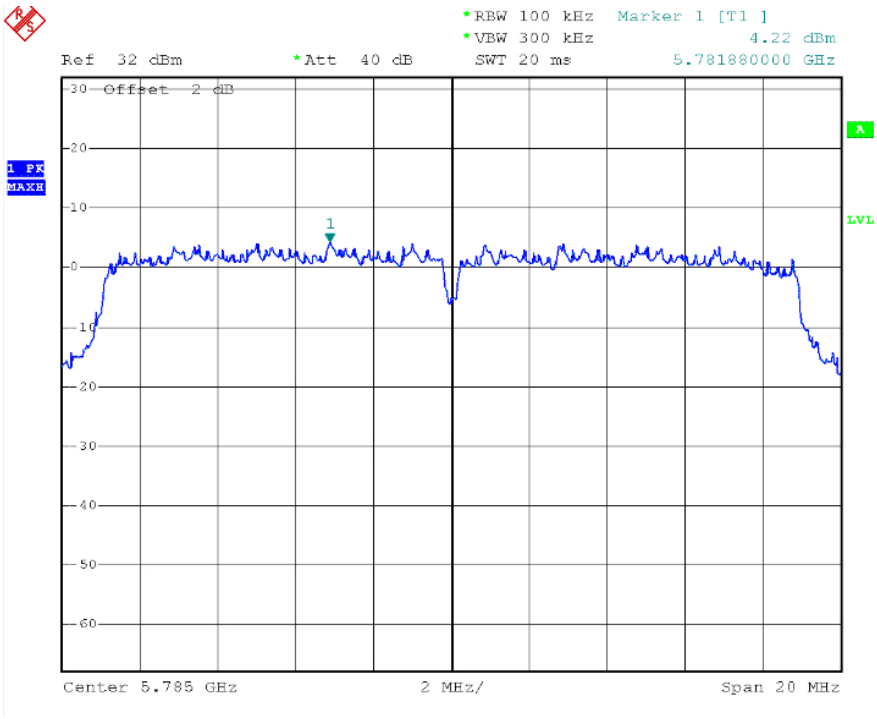


IEEE 802.11n HT 20 MHz Channel mode / 5745 ~ 5825MHz

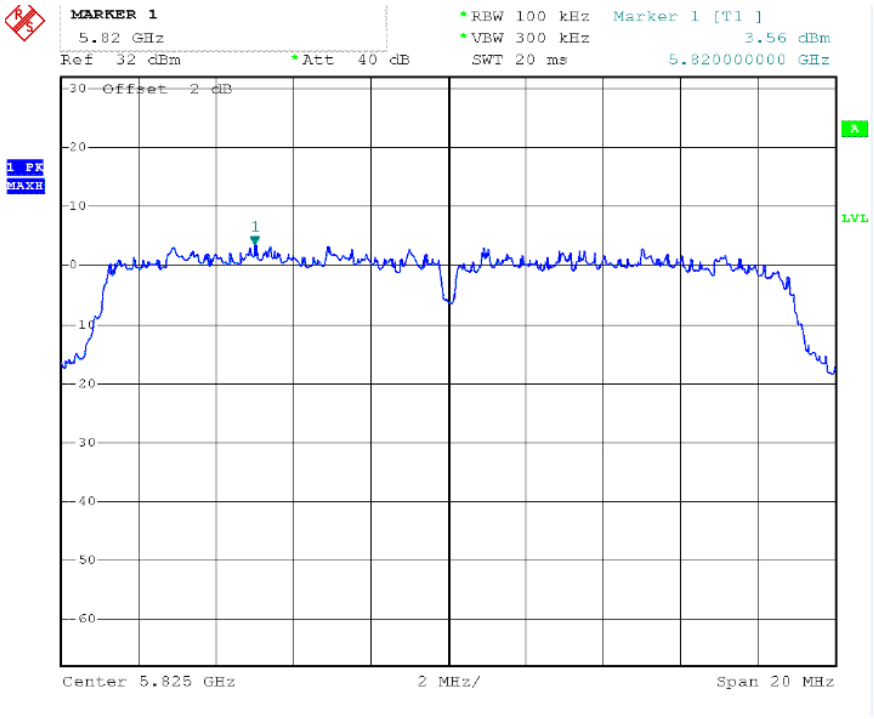
CH Low



CH Mid

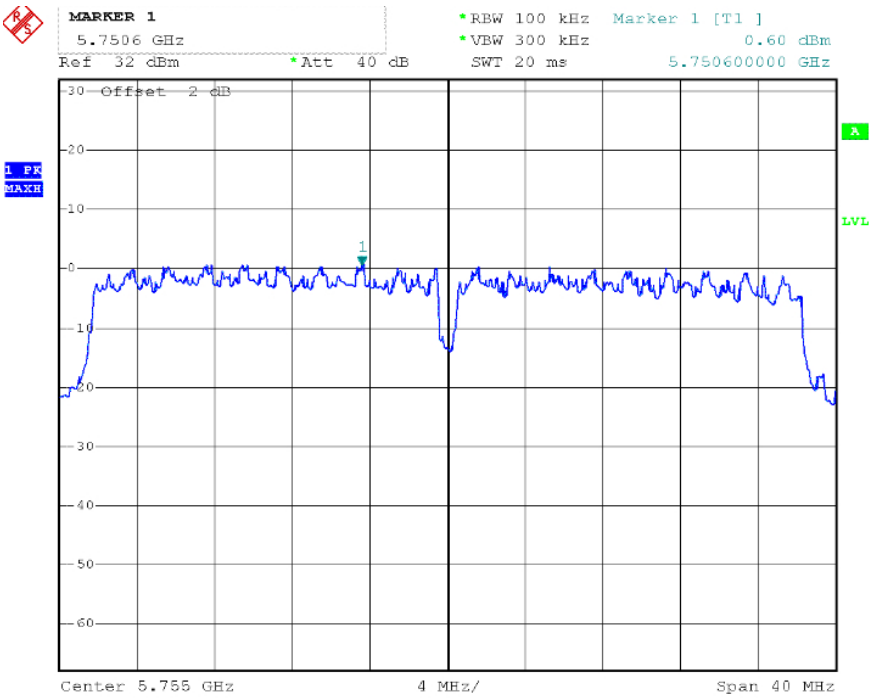


CH High

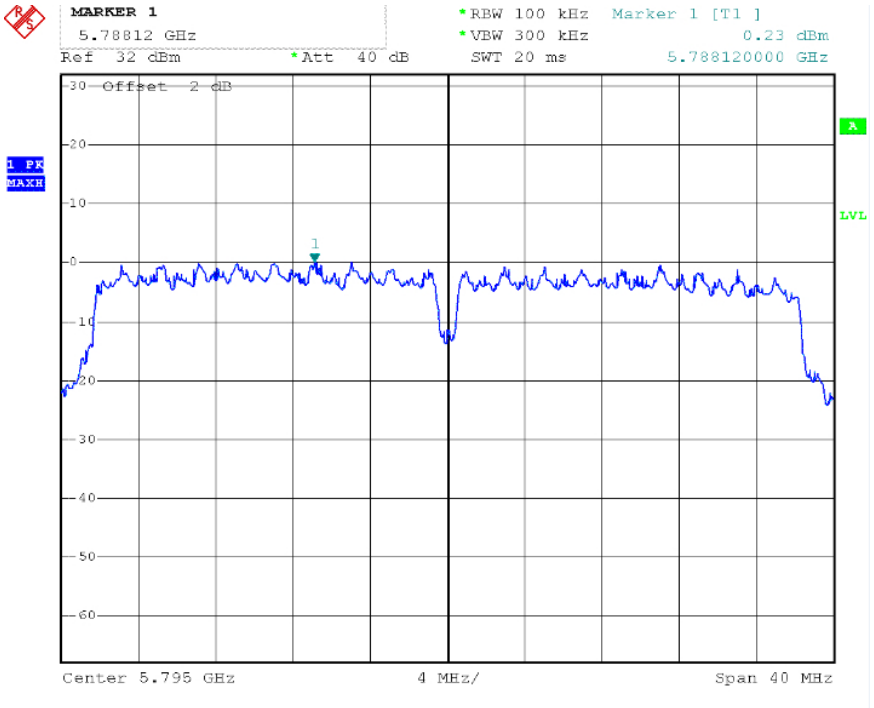


IEEE 802.11n HT 40 MHz Channel mode / 5755 ~ 5795MHz

CH Low

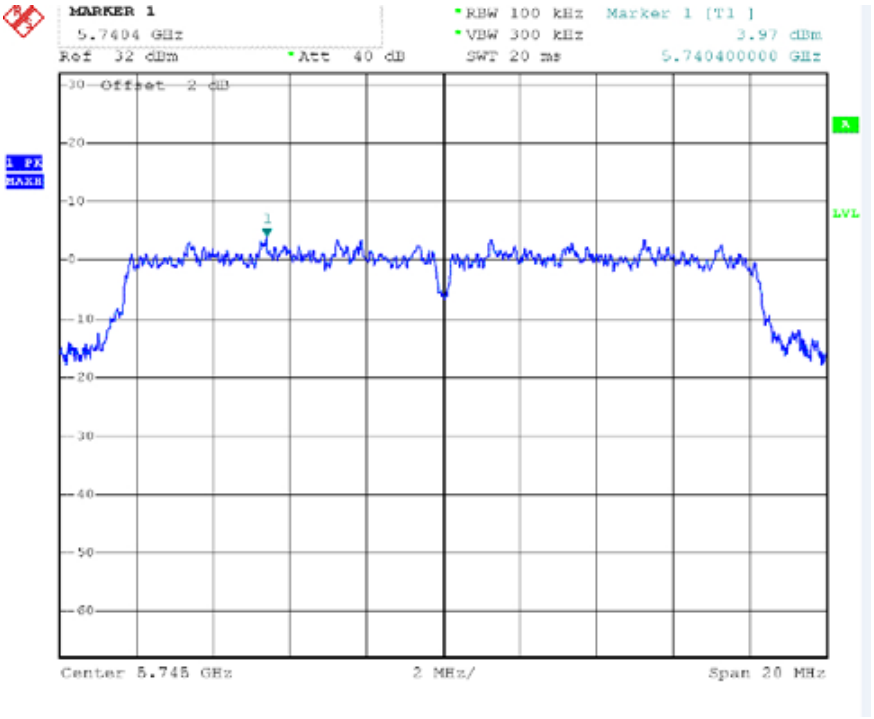


CH High

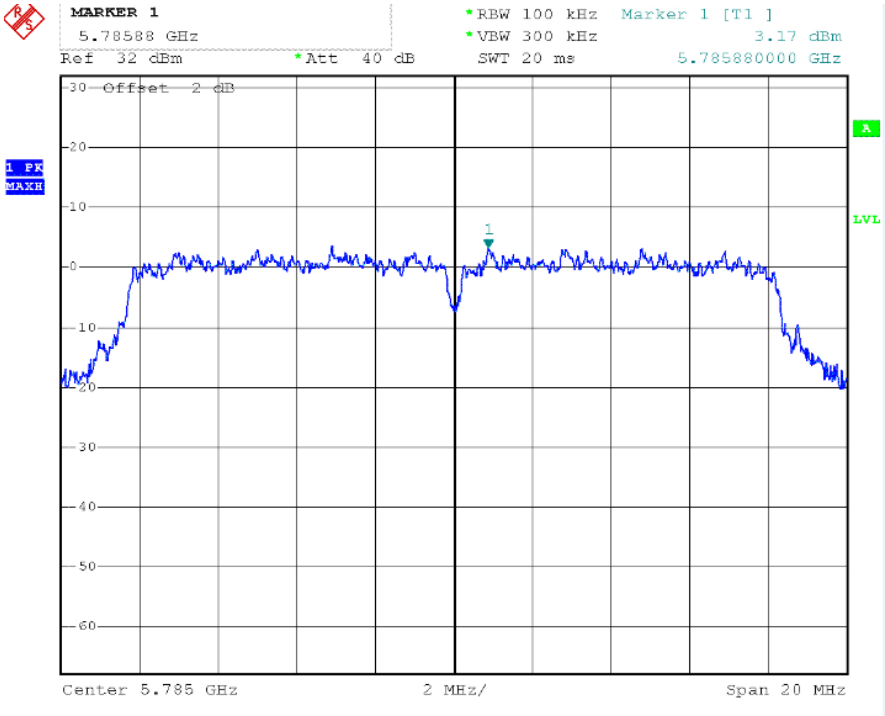


Chain 2
IEEE 802.11a mode / 5745 ~ 5825MHz

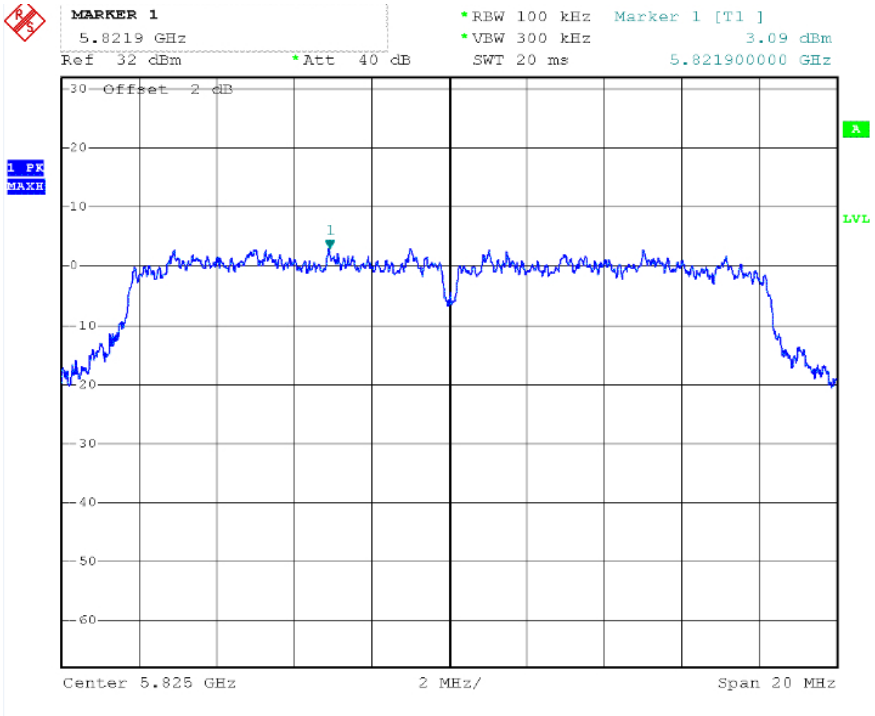
CH Low



CH Mid

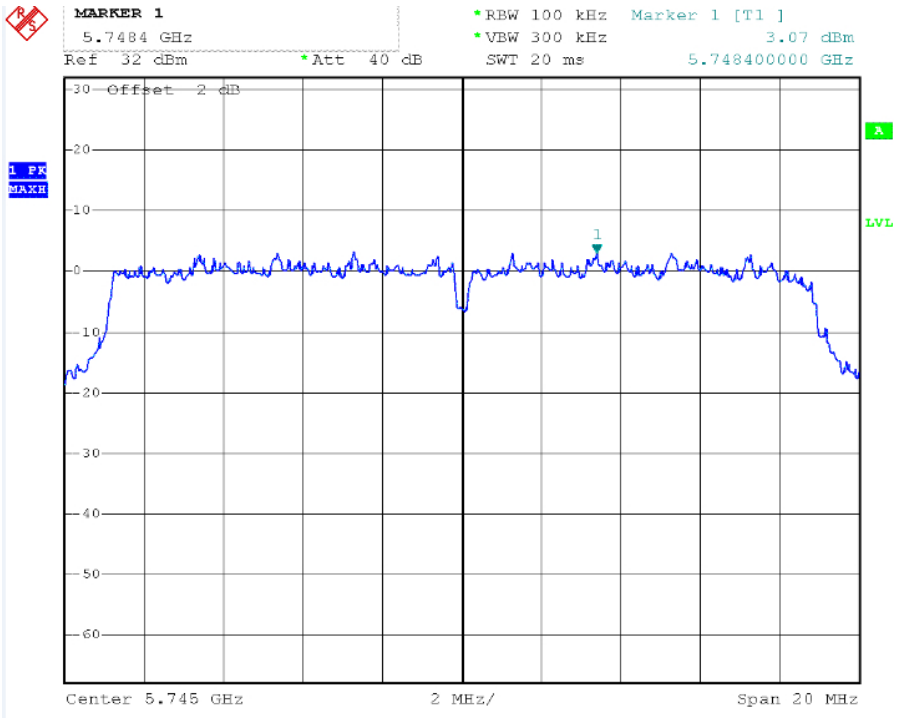


CH High

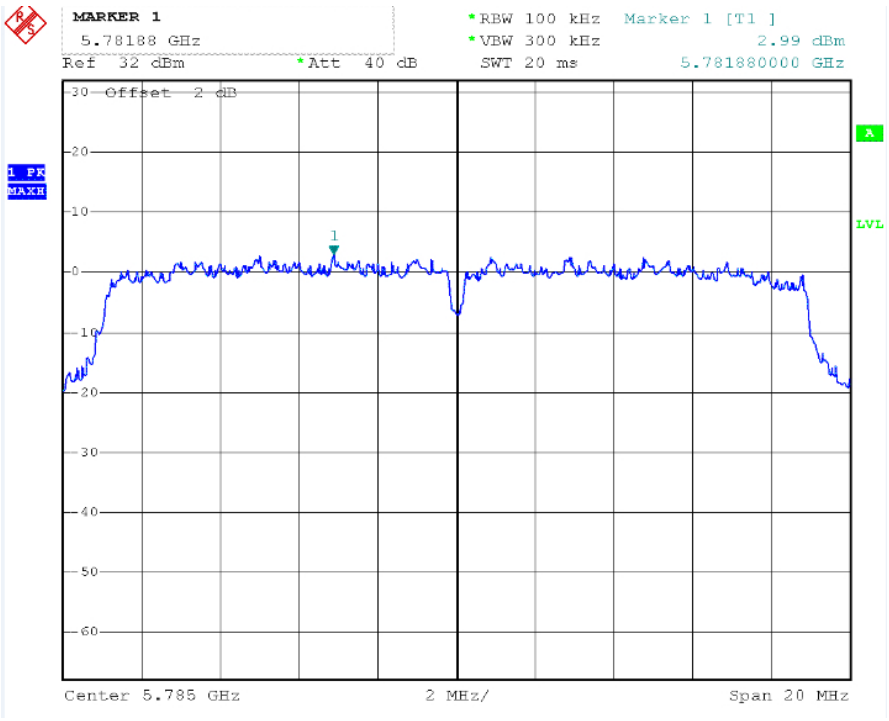


IEEE 802.11n HT 20 MHz Channel mode / 5745 ~ 5825MHz

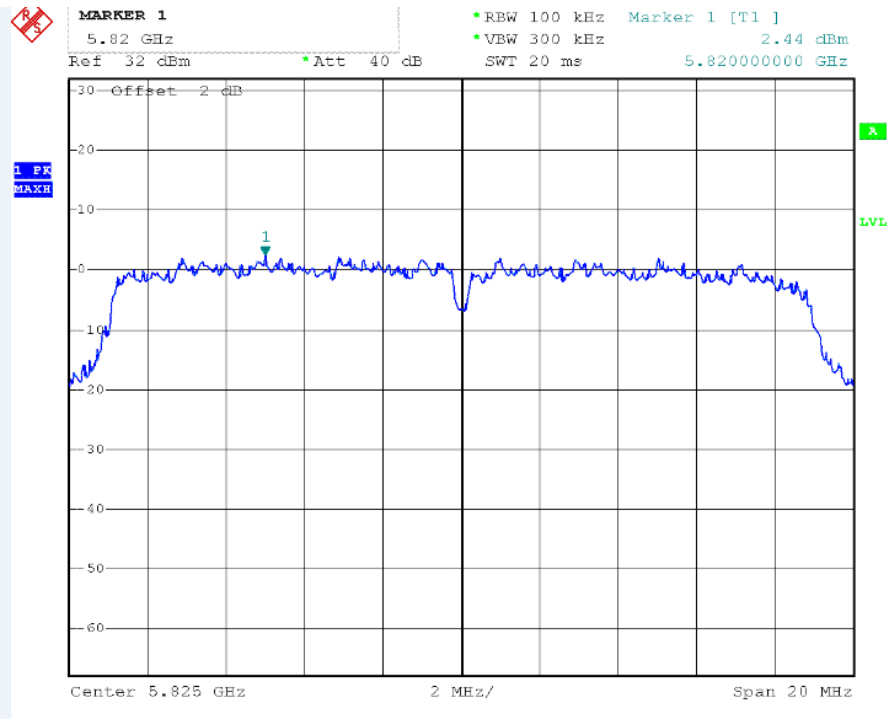
CH Low



CH Mid

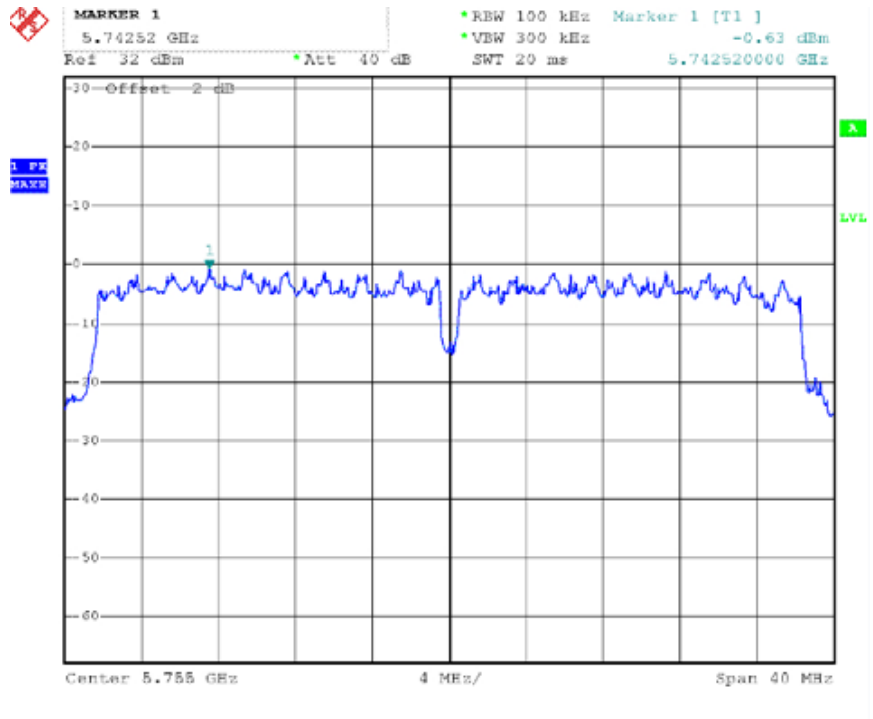


CH High

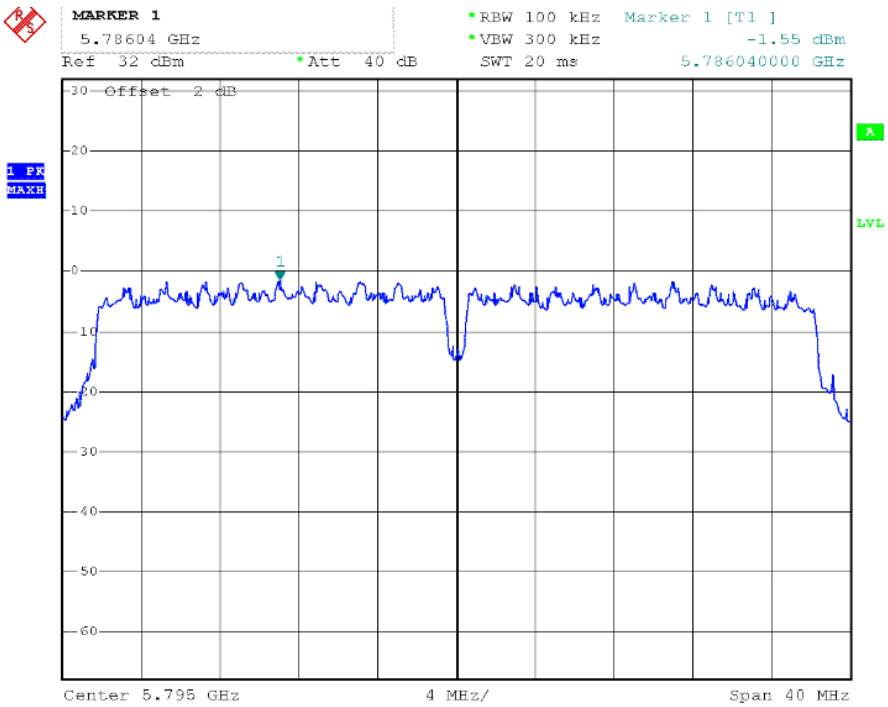


IEEE 802.11n HT 40 MHz Channel mode / 5755 ~ 5795MHz

CH Low



CH High



9. 6dB Bandwidth Measurement

9.1. Test Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

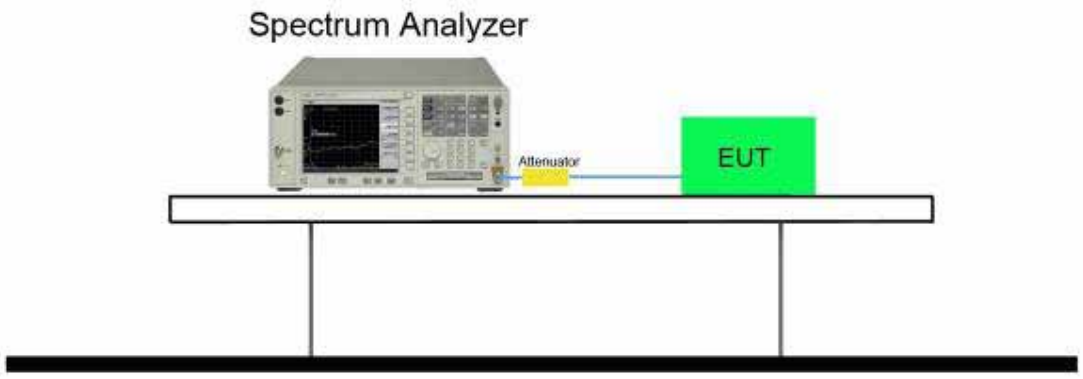
9.2. Test Procedure used

KDB 789033 D02v01 – Section C.2

9.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency.
2. RBW = 100 kHz.
3. VBW 3 × RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Sweep = auto couple.
7. Allow the trace to stabilize.
8. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.3.4. Test Setup



TEST RESULTS

No non-compliance noted

Chain 1

Test CH	6dB Bandwidth (MHz)			Limit(kHz)	Result
	802.11a	802.11n20	802.11n40		
Lowest	16.44	17.60	36.80	>500	Pass
Middle	16.40	17.76	---		
Highest	16.40	17.68	36.48		

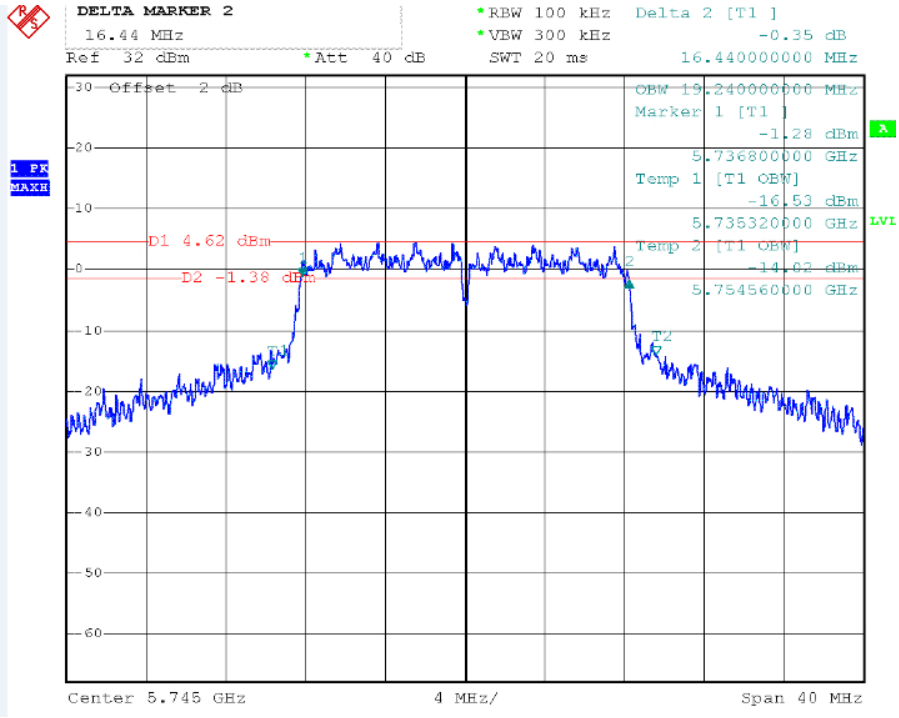
Chain 2

Test CH	6dB Bandwidth (MHz)			Limit(kHz)	Result
	802.11a	802.11n20	802.11n40		
Lowest	16.48	17.60	36.48	>500	Pass
Middle	16.52	17.76	---		
Highest	16.36	17.44	36.64		

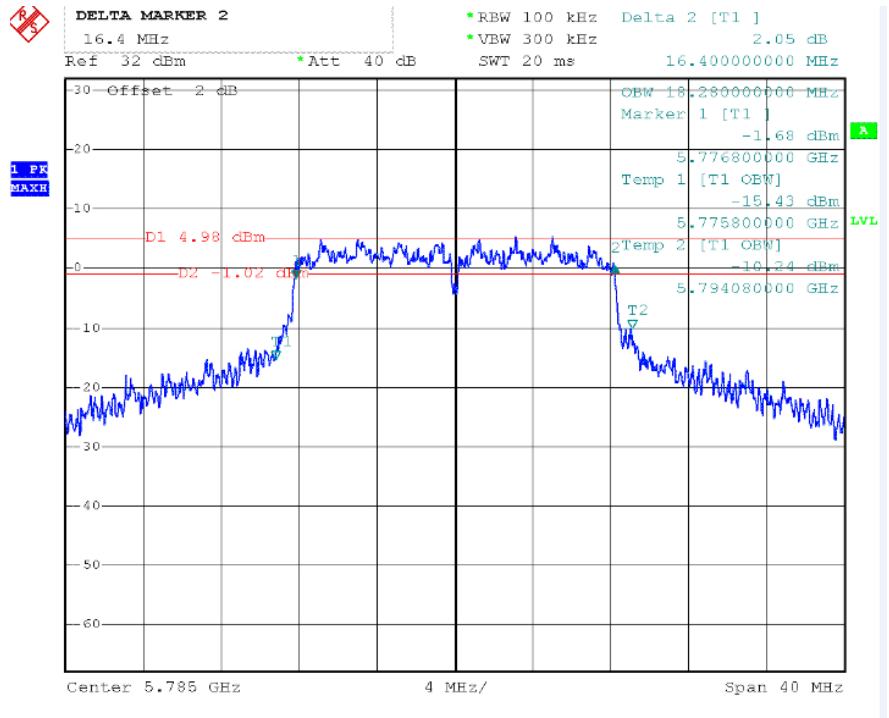
Test plot as follows:

Chain 1

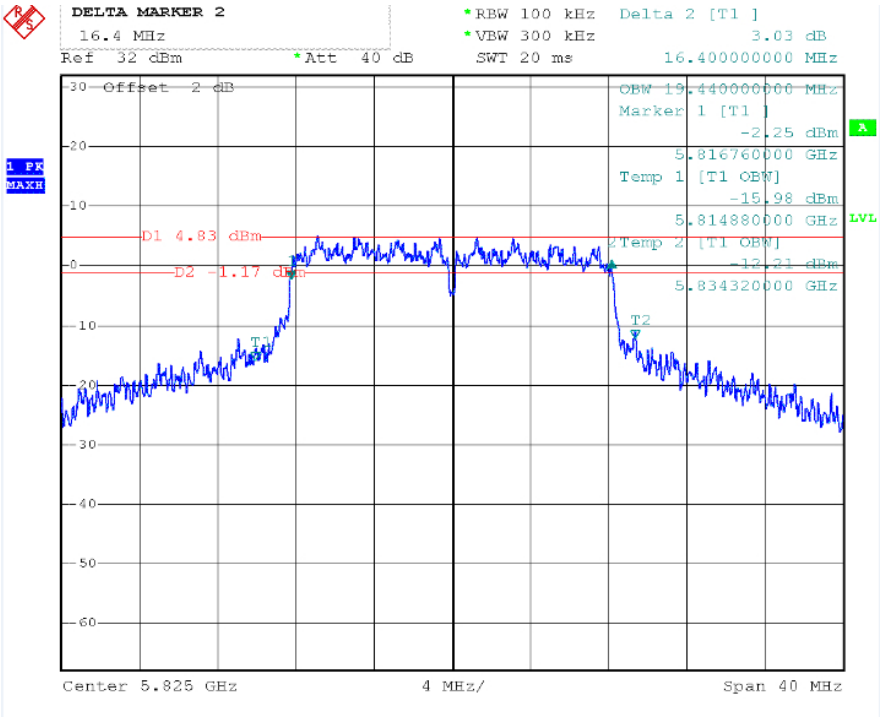
6dB BANDWIDTH (802.11a MODE CH Low 5745MHz)



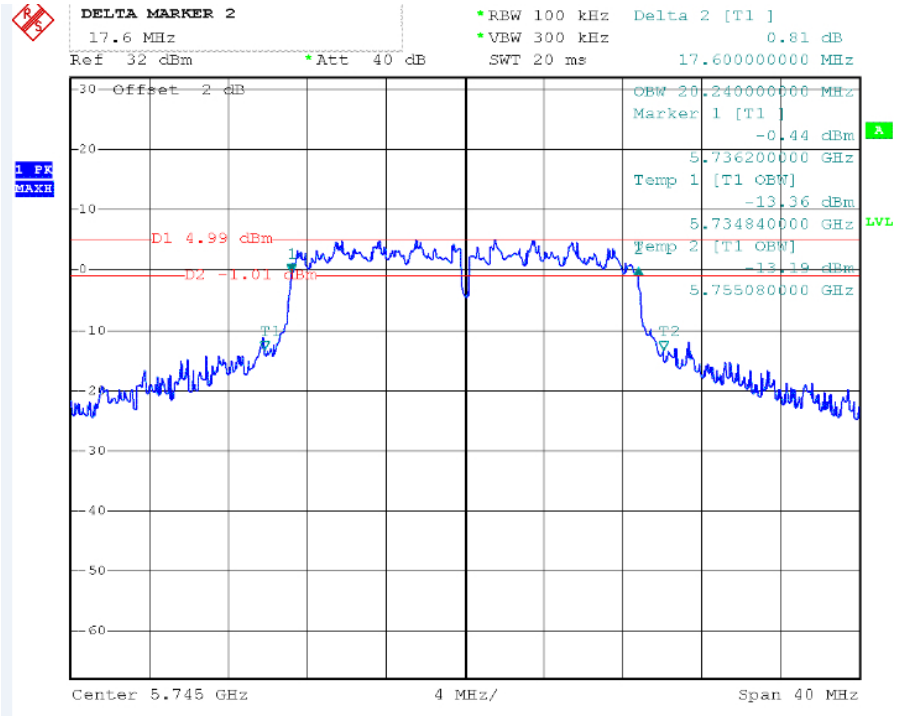
6dB BANDWIDTH (802.11a MODE CH Mid 5785MHz)



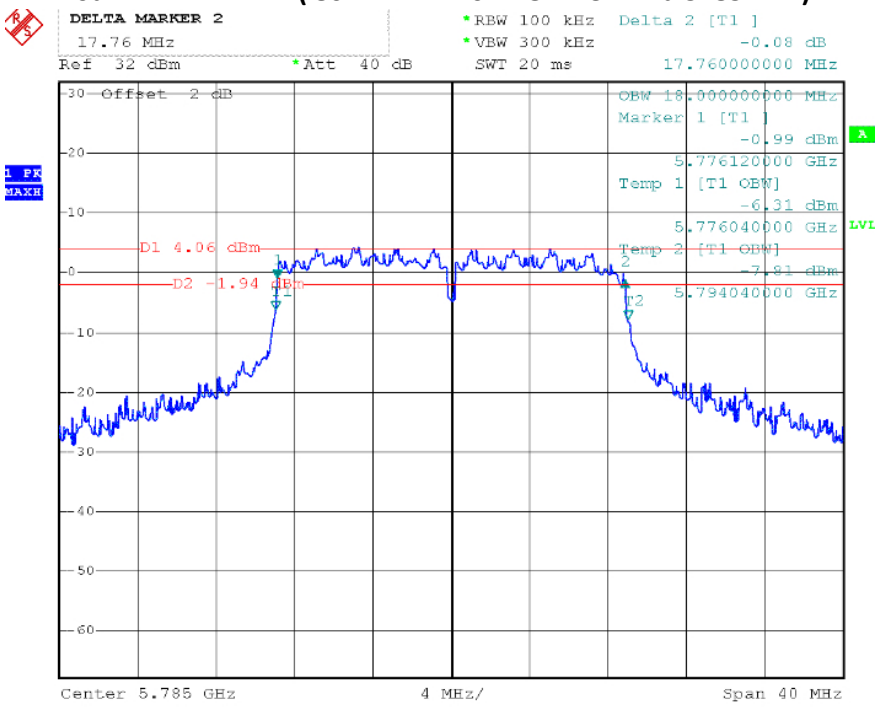
6dB BANDWIDTH (802.11a MODE CH High 5825MHz)



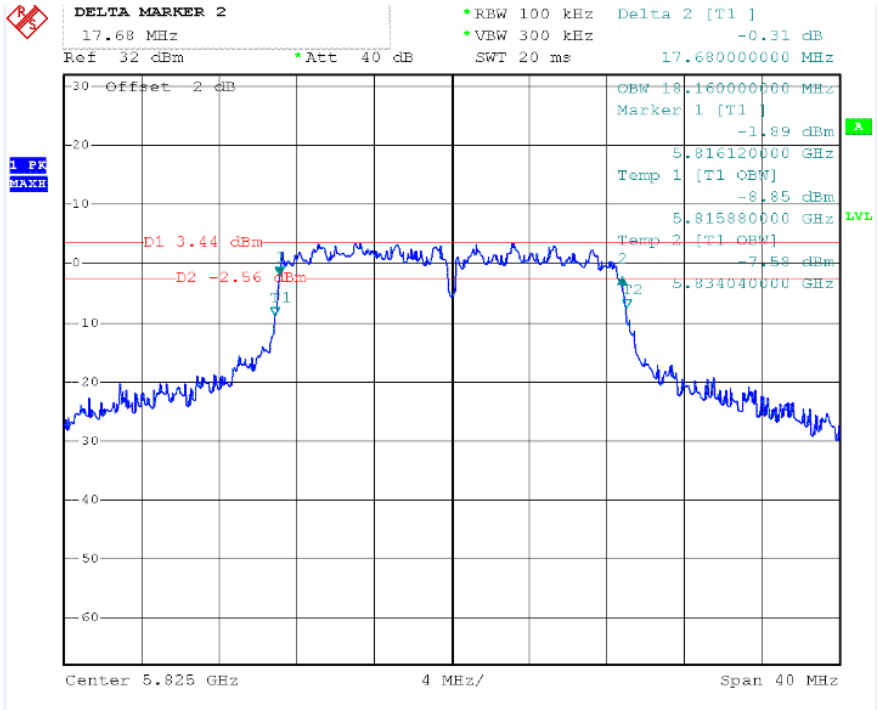
6dB BANDWIDTH (802.11n HT20 MODE CH Low 5745MHz)



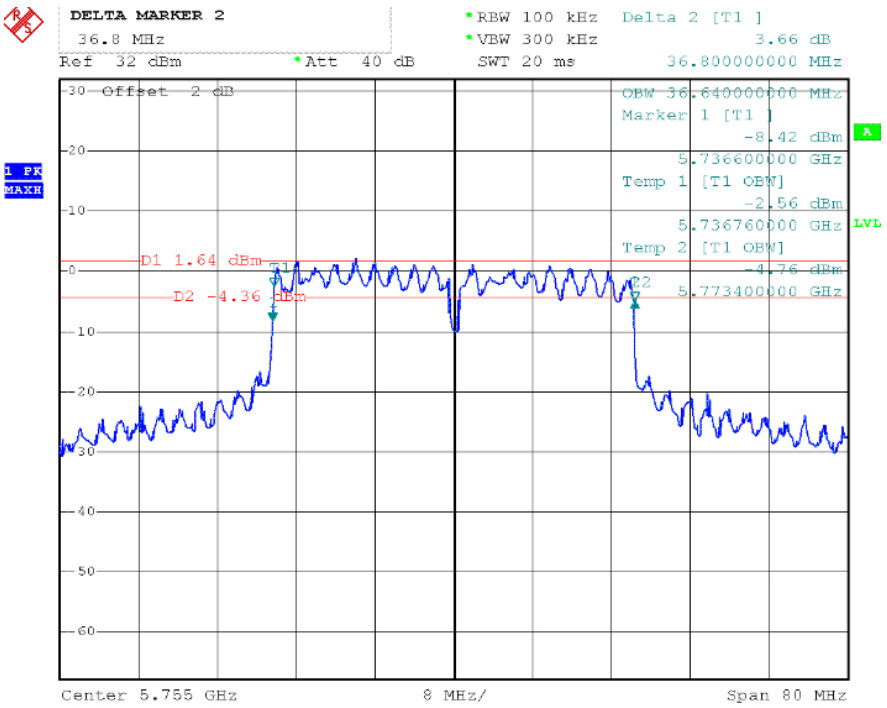
6dB BANDWIDTH (802.11n HT20 MODE CH Mid 5785MHz)



6dB BANDWIDTH (802.11n HT20 MODE CH High 5825MHz)



6dB BANDWIDTH (802.11n HT40 MODE CH Low 5755MHz)



6dB BANDWIDTH (802.11n HT40 MODE CH High 5795MHz)