

FCC/ISED

RF

TEST REPORT

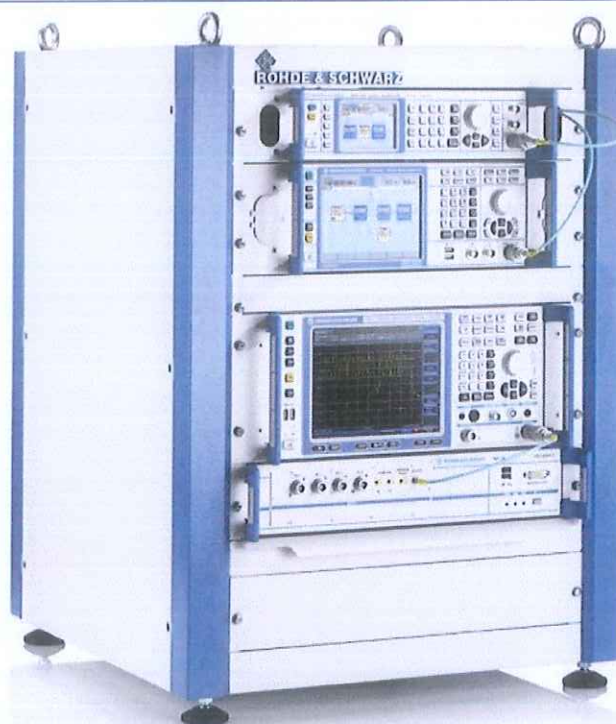
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.



FOR
802.11a/b/g/n/ac RTL8821CE Combo module

ISSUED TO
Realtek Semiconductor Corp.

No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan



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Date: Sep. 12, 2017

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Date: Sep. 12, 2017



Report No.: BL-SZ1770434-604
EUT Name: 802.11a/b/g/n/ac RTL8821CE Combo module
Model Name: RTL8821CE
Brand Name: REALTEK
Test Standard: 47 CFR Part 15 Subpart E
RSS-Gen (Issue 4, November 2014)
RSS-247 (Issue 2, February 2017)
FCC ID: TX2-RTL8821CE
ISED Number: 6317A-RTL8821CE
Test conclusion: Pass
Test Date: Aug. 23, 2017 ~ Aug. 28, 2017
Date of Issue: Sep. 12, 2017

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Revision History

Version	Issue Date	Revisions Content
Rev. 01	Sep. 12, 2017	Initial Issue

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1 ADMINISTRATIVE DATA (GENERAL INFORMATION)

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196. The laboratory is a testing organization accredited by American Association for Laboratory Accreditation (A2LA) according to ISO/IEC 17025. The accreditation certificate is 4344.01. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Laboratory Condition

Ambient Temperature	20 to 25°C
Ambient Relative Humidity	45% - 55%
Ambient Pressure	100 kPa - 102 kPa

1.4 Announce

- (1) The test report reference to the report template version v4.1.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- (5) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.

- (6) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

2 PRODUCT INFORMATION

2.1 Applicant

Applicant	Realtek Semiconductor Corp.
Address	No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan

2.2 Manufacturer

Manufacturer	Realtek Semiconductor Corp.
Address	No. 2, Innovation Road II, Hsinchu Science Park, Hsinchu 300, Taiwan

2.3 Factory

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Type	802.11a/b/g/n/ac RTL8821CE Combo module
Model Name Under Test	RTL8821CE
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Network and Wireless connectivity	Bluetooth 3.0, Bluetooth 4.0 Low Energy (BLE) WIFI 802.11a, 802.11b, 802.11g, 802.11n(HT20/40) and 802.11ac

Host Information

Product Description	notebook computer
Model Name	Lenovo ideapad 720S-13IKB, Lenovo ideapad 720S Touch-13IKB, Lenovo ideapad 720S-13ARR
Brand Name	Lenovo
Module brand Name	REALTEK
Module Model No.	RTL8821CE

Antenna Information:

Antenna Port	Antenna Manufacturer	Antenna Model	Antenna Gain (dBi)		
			5.15~5.35 GHz	5.47~5.725 GHz	5.725~5.850GHz
ANT0	Amphenol	AM149000C10 (Main)	-1.57	-2.69	-1.68
	Luxshare-ICT	AM149000C00 (Main)	-1.23	-0.75	-2.22
ANT1	Amphenol	AM149000C10 (Aux)	-0.79	-1.14	-1.14
	Luxshare-ICT	AM149000C00 (Aux)	-0.94	-1.18	-1.18

Note: All antenna gain were tested, but only the worst antenna gain was shown in this report.

2.5 Technical Information

Frequency Range		Band I: 5150 MHz to 5250 MHz, Band II: 5250 MHz to 5350 MHz, Band III: 5470 MHz to 5725 MHz Band IV: 5725 MHz to 5850 MHz
Product Type		☒ Mobile ☐ Portable ☐ Fix Location
Modulation technology		OFDM
Modulation Type		256QAM, 64QAM, 16QAM, BPSK, QPSK
Product Type		Indoor for IC standard Mobile and portable for FCC standard
Transfer Rate (Mbps) (Single RF path)		802.11a: 54/ 48/ 36 / 24 / 18/12 / 9/ 6 Mbps 802.11n: up to 150 Mbps 802.11ac: up to VHT-MCS9
Channel Bandwidth		802.11a: 20 MHz 802.11n: 20 MHz, 40 MHz 802.11ac: 20 MHz, 40 MHz, 80 MHz
Maximum Output Power		Band I: 17.89 dBm Band II: 17.89 dBm Band III: 17.89 dBm Band IV: 18.37 dBm
Antenna Type	Antenna 0 (ANT 0)	PIFA Antenna
	Antenna 1 (ANT 1)	
Antenna Gain	Antenna 0 (ANT 0)	Band I: 5150 MHz to 5250 MHz: -1.23 dBi Band II: 5250 MHz to 5350 MHz: -1.23dBi Band III: 5470 MHz to 5725 MHz: -0.75 dBi Band IV: 5725 MHz to 5850 MHz: -1.68 dBi
	Antenna 1 (ANT 1)	Band I: 5150 MHz to 5250 MHz: -0.79 dBi Band II: 5250 MHz to 5350 MHz: -0.79 dBi Band III: 5470 MHz to 5725 MHz: -1.14 dBi Band IV: 5725 MHz to 5850 MHz: -1.14 dBi
About the Product		The equipment is Notebook Computer, intended for used

with information technology equipment.

2.6 Additional Instructions

Mode	☒ Special software is used. The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.
------	--

During testing, Channel and 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.

EUT Software Settings:

Test Software Version	REALTEK 11ac 8821CE PCIE WLAN NIC Massproduction		
Support Units (Software installation media)	Description	Manufacturer	Model
	Notebook Computer	Lenovo	Lenovo ideapad 720S-13IKB

Band I (5150 - 5250 MHz) Power level setup in software				
Mode	Channel	Frequency (MHz)	Soft Set	
11a	CH36	5180	53.0	53.0
11a	CH40	5200	53.0	53.0
11a	CH48	5240	52.0	52.0
11n (HT20)	CH36	5180	53.0	53.0
11n (HT20)	CH44	5220	53.0	53.0
11n (HT20)	CH48	5240	52.0	52.0
11n (HT40)	CH38	5190	43.0	43.0
11n (HT40)	CH46	5230	48.0	48.0
11ac (HT80)	CH42	5210	53.0	53.0

Band II (5250 - 5350 MHz) Power level setup in software				
Mode	Channel	Frequency (MHz)	Soft Set	
11a	CH52	5260	53.0	53.0
11a	CH60	5300	53.0	53.0
11a	CH64	5320	53.0	53.0
11n (HT20)	CH52	5260	53.0	53.0
11n (HT20)	CH60	5300	53.0	53.0
11n (HT20)	CH64	5320	53.0	53.0
11n (HT40)	CH54	5270	53.0	53.0
11n (HT40)	CH62	5310	45.0	45.0
11ac (HT80)	CH58	5290	53.0	53.0

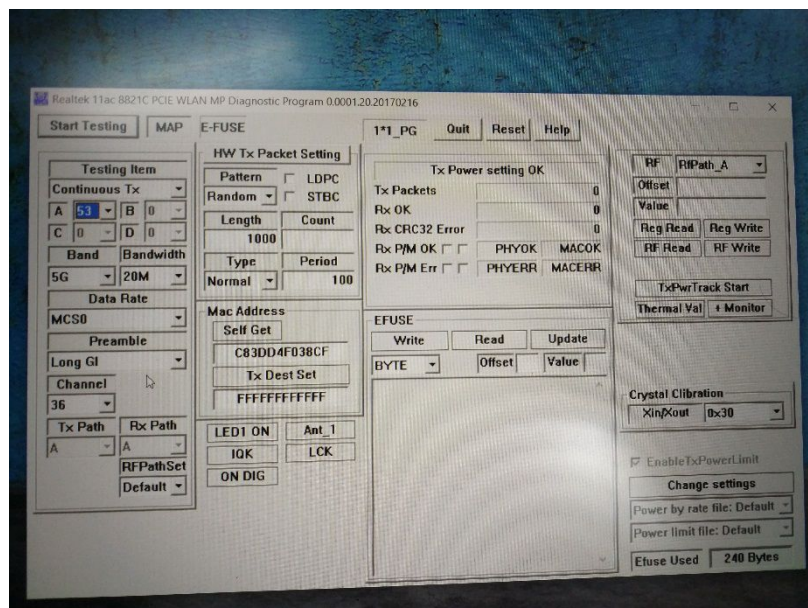
Band III (5470 - 5725 MHz) Power level setup in software

Mode	Channel	Frequency (MHz)	Soft Set	
11a	CH100	5500	53.0	53.0
11a	CH116	5580	53.0	53.0
11a	CH140	5700	53.0	53.0
11n (HT20)	CH100	5500	53.0	53.0
11n (HT20)	CH116	5580	53.0	53.0
11n (HT20)	CH140	5700	53.0	53.0
11n (HT40)	CH102	5510	53.0	53.0
11n (HT40)	CH134	5670	52.0	52.0
11ac (HT80)	CH106	5530	44.0	44.0
11ac (HT80)	CH138	5690	44.0	44.0

Band IV (5725 - 5850 MHz) Power level setup in software

Mode	Channel	Frequency (MHz)	Soft Set	
11a	CH149	5745	54.0	54.0
11a	CH157	5785	54.0	54.0
11a	CH165	5825	55.0	55.0
11n (HT20)	CH149	5745	55.0	55.0
11n (HT20)	CH157	5785	54.0	54.0
11n (HT20)	CH165	5825	54.0	54.0
11n (HT40)	CH151	5755	55.0	55.0
11n (HT40)	CH159	5795	54.0	54.0
11ac (HT80)	CH155	5775	54.0	54.0

Run Software



2.7 Channel List

20 MHz		40 MHz		80 MHz	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230	58	5290
44	5220	54	5270	106	5530
48	5240	62	5310	138	5690
52	5260	102	5510	155	5775
56	5280	110	5550		
60	5300	134	5670		
64	5320	151	5755		
100	5500	159	5795		
104	5520				
108	5540				
112	5560				
116	5580				
132	5660				
136	5680				
140	5700				
149	5745				
153	5765				
157	5785				
161	5805				
165	5825				

Note: Until further notice, devices subject to this section shall not be capable of transmitting in the band 5600-5650 MHz. This restriction is for the protection of weather radars operating in this band.

The Lowest frequency, the middle frequency and the highest frequency of channel were selected to perform the test, and the selected channel see below:

For 802.11a/n(HT20)

Band I (5150 - 5250 MHz)			Band II (5250 - 5350 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
36	Low	5180	52	Low	5260
40	Mid	5200	60	Mid	5300
48	High	5240	64	High	5320

Band III (5470 - 5725 MHz)			Band IV (5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
100	Low	5500	149	Low	5745
116	Mid	5580	157	Mid	5785
140	High	5700	165	High	5825

For 802.11n (HT40)

Band I (5150 - 5250 MHz)			Band II (5250 - 5350 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
38	Low	5190	54	Low	5270
46	High	5230	62	High	5310

Band III (5150 - 5250 MHz)			Band IV (5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
102	Low	5510	151	Low	5755
134	High	5670	159	High	5795

For 802.11ac (HT80)

Band I (5150 - 5250 MHz)			Band II (5250 - 5350 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
42	Low	5210	58	Low	5290

Band III (5470 - 5725 MHz)			Band IV (5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
106	Low	5530	155	Low	5775

Note: Preliminary tests were performed in different data rate in above table to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Modulation Type	Band I	Band II	Band III	Band IV
				Channel	Channel	Channel	Channel
RF Output Power	11a	6	BPSK	48/40/36	64/60/52	140/116/100	165/157/149
	11n(20 MHz)	6.5		48/40/36	64/60/52	140/116/100	165/157/149
	11n(40 MHz)	13.5		46/38	62/54	134/102	159/151
	11ac(80 MHz)	MCS0		42	58	/138106	155
Radiated Spurious Emissions	11a	6	BPSK	48/40/36	64/60/52	140/116/100	165/157/149
	11n(20 MHz)	6.5		48/40/36	64/60/52	140/116/100	165/157/149
	11n(40 MHz)	13.5		46/38	62/54	134/102	159/151
	11ac(80 MHz)	MCS0		42	58	106	155

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15 Subpart E (10-1-15 Edition)	Unlicensed National Information Infrastructure Devices
2	KDB Publication 789033 D02v01r04	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E
3	RSS-Gen (Issue 4, Nov. 2014)	General Requirements for Compliance of Radio Apparatus
4	RSS-247 (Issue 2, February 2017)	Digital Transmission Systems (DTSs), Frequency Hopping Systems(FHSs) and Licence-Exemp Local Area Network (LE-LAN) Devices
5	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

3.2 Verdict

No.	Description	FCC Part No.	RSS Part No.	Test Result	Verdict
1	Antenna Requirement	15.203	RSS-247, 6.2	--	Pass ^{Note1}
2	RF Output Power	15.407(a)	RSS-247, 6.2	ANNEX A.1	Pass
3	Emission Bandwidth & 99% Occupied Bandwidth	15.407(a)	RSS-247, 6.2	ANNEX A.2	N/A
4	6 dB bandwidth	15.407(e)	RSS-247, 6.2	ANNEX A.3	N/A
5	Power Spectral Density	15.407(a)	RSS-247, 6.2	ANNEX A.4	N/A
6	Conducted Emission	15.207	RSS-GEN, 8.8	ANNEX A.5	N/A
7	Conducted Spurious Emission and Band Edge (Authorized-band)	15.407(b) 15.209	RSS-247, 6.2	ANNEX A.6	N/A
8	Radiated Spurious Emissions and Band Edge (Restricted-band)	15.407(b)	RSS-247, 6.2	ANNEX A.7	Pass
9	Frequency Stability	15.407(g)	--	ANNEX A.8	N/A
10	Receiver Spurious Emissions	--	RSS-Gen, 7.1.2	--	N/A ^{Note2}

Note ¹: The EUT has a permanently and irreplaceable attached antenna, which complies with the requirement FCC 15.203.

Note ²: Only radio communication receivers operating in stand-alone mode within the band 30-960 MHz, as well as scanner receivers, are subject to Industry Canada requirements, so this test is not applicable

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

During the measurement, the normal environmental conditions were within the listed ranges:

Relative Humidity	45% - 55%	
Atmospheric Pressure	100 kPa - 102 kPa	
Temperature	NT (Normal Temperature)	+22°C to +25°C
Working Voltage of the EUT	NV (Normal Voltage)	3.3 V(From host system)

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-30	103118	2017.06.22	2018.06.21
Switch Unit with OSP-B157	ROHDE&SCHWARZ	OSP120	101270	2017.06.22	2018.06.21
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2016.09.09	2017.09.08
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2017.06.22	2018.06.21
LISN	SCHWARZBECK	NSLK 8127	8127-687	2017.06.22	2018.06.21
Bluetooth Tester	ROHDE&SCHWARZ	CBT	101005	2017.06.22	2018.06.21
Power Splitter	KMW	DCPD-LDC	1305003215	--	--
Power Sensor	ROHDE&SCHWARZ	NRP-Z21	103971	2017.06.22	2018.06.21
Attenuator (20 dB)	KMW	ZA-S1-201	110617091	--	--
Attenuator (6 dB)	KMW	ZA-S1-61	1305003189	--	--
DC Power Supply	ROHDE&SCHWARZ	HMP2020	018141664	2017.06.22	2018.06.21
Temperature Chamber	ANGELANTIONI SCIENCE	NTH64-40A	1310	2017.06.22	2018.06.21
Test Antenna- Loop(9 kHz-30 MHz)	SCHWARZBECK	FMZB 1519	1519-037	2017.06.22	2018.06.21
Test Antenna- Bi-Log(30 MHz-3 GHz)	SCHWARZBECK	VULB 9163	9163-624	2017.06.22	2018.06.21
Test Antenna- Horn(1-18 GHz)	SCHWARZBECK	BBHA 9120D	9120D-1148	2017.06.22	2018.06.21
Test Antenna- Horn(15-26.5 GHz)	SCHWARZBECK	BBHA 9170	9170-305	2017.06.22	2018.06.21
Test Antenna- Horn (18-40 GHz)	A-INFO	LB-180400 KF	J211060273	N/A	2018.01.06
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.24	2019.02.23
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60 *7.35m	N/A	2016.08.09	2018.08.08
Shielded Enclosure	ChangNing	CN-130701	130703	--	--
Signal Generator	ROHDE&SCHWARZ	SMB100A	177746	2017.06.22	2018.06.21
Power Amplifier	OPHIR RF	5225F	1037	2017.02.17	2018.02.16
Power Amplifier	OPHIR RF	5273F	1016	2017.02.17	2018.02.16
Directional Coupler	Werlantone	C5982-10	109275	N/A	N/A
Directional Coupler	Werlantone	CHP-273E	S00801z-01	N/A	N/A
Feld Strength Meter	Narda	EP601	511WX51129	2017.02.23	2018.02.22

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Mouth Simulator	B&K	4227	2423931	2016.11.15	2017.11.14
Sound Calibrator	B&K	4231	2430337	2016.11.09	2017.11.08
Sound Level Meter	B&K	NL-20	00844023	2016.11.11	2017.11.10
Ear Simulator	B&K	4185	2409449	2016.11.15	2017.11.14
Ear Simulator	B&K	4195	2418189	2016.11.15	2017.11.14
Audio analyzer	B&K	UPL 16	100129	2016.11.08	2017.11.07

4.3 Measurement Uncertainty

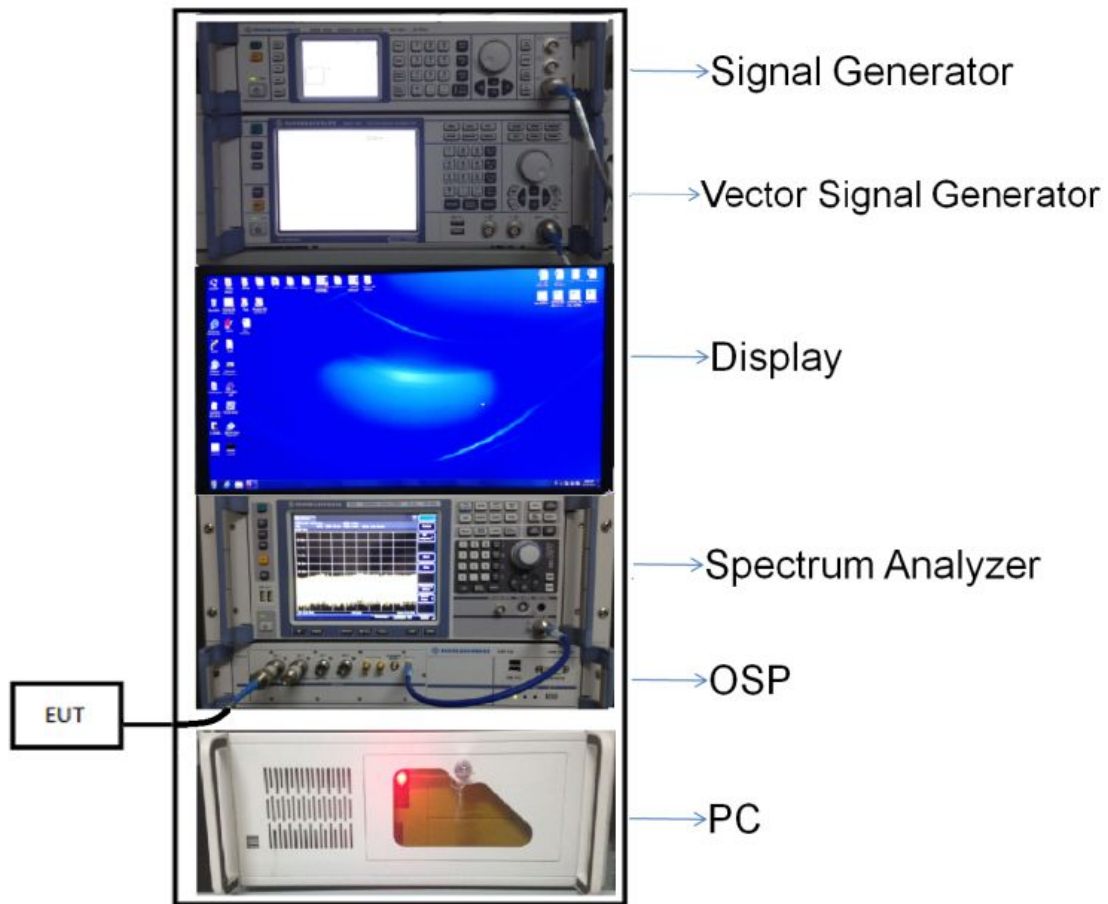
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

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

Measurement	Value
Occupied Channel Bandwidth	±4%
RF output power, conducted	±1.4 dB
Power Spectral Density, conducted	±2.5 dB
Unwanted Emissions, conducted	±2.8 dB
All emissions, radiated	±5.4 dB
Temperature	±1°C
Humidity	±4%

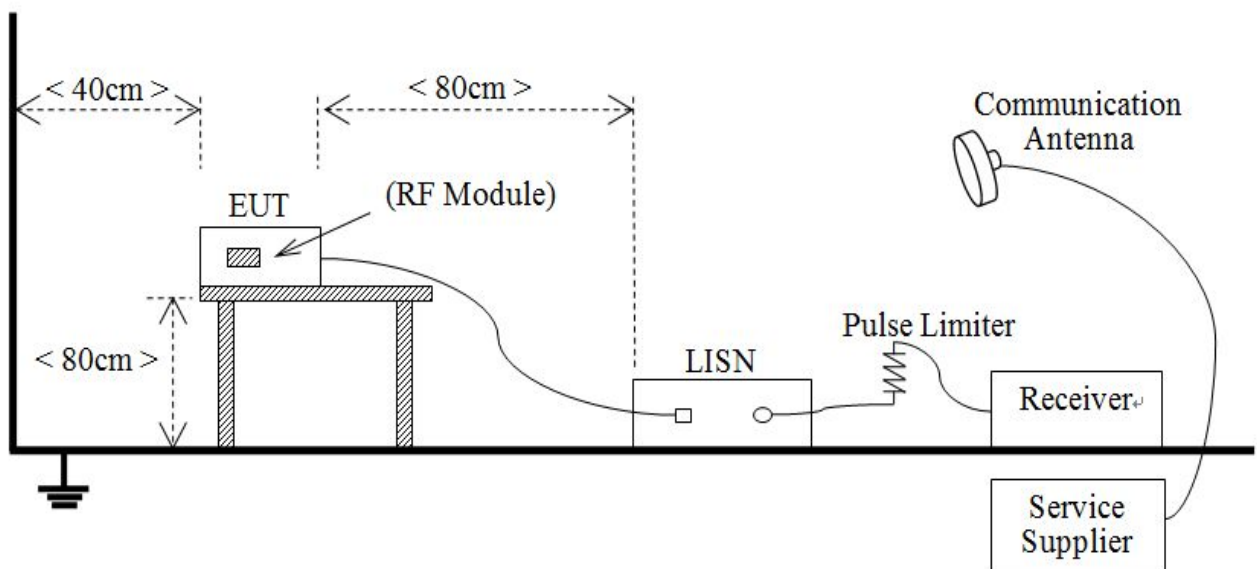
4.4 Description of Test Setup

4.4.1 For Antenna Port Test



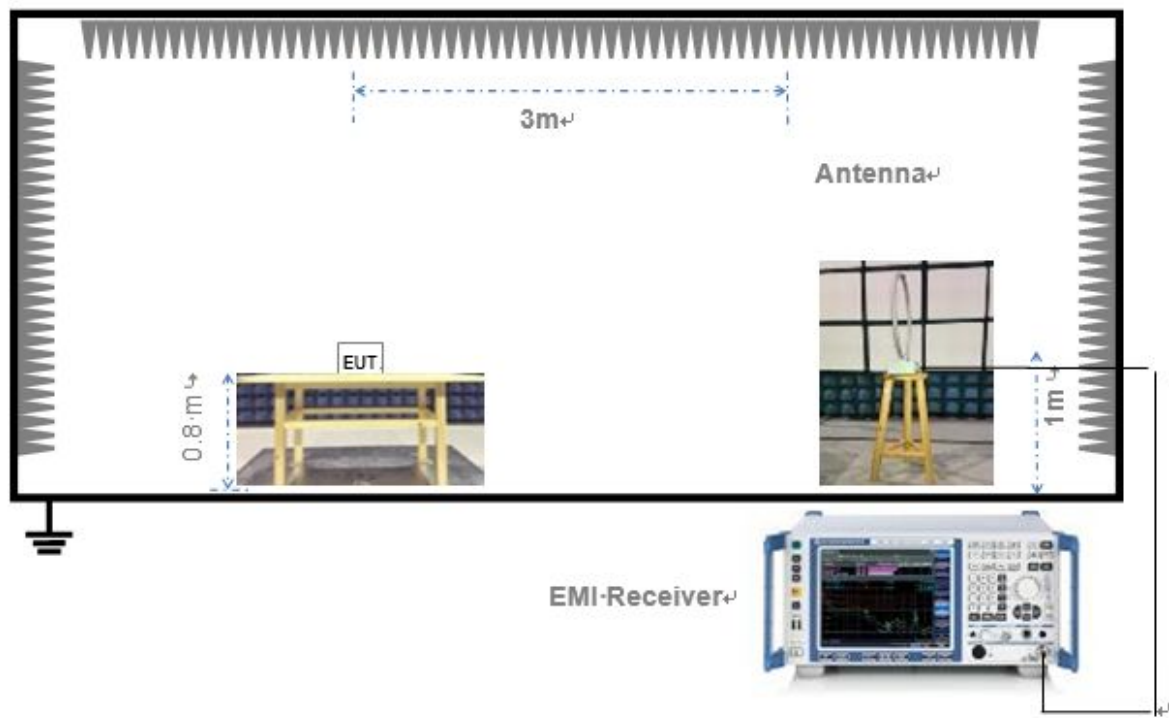
(Diagram 1)

4.4.2 For AC Power Supply Port Test



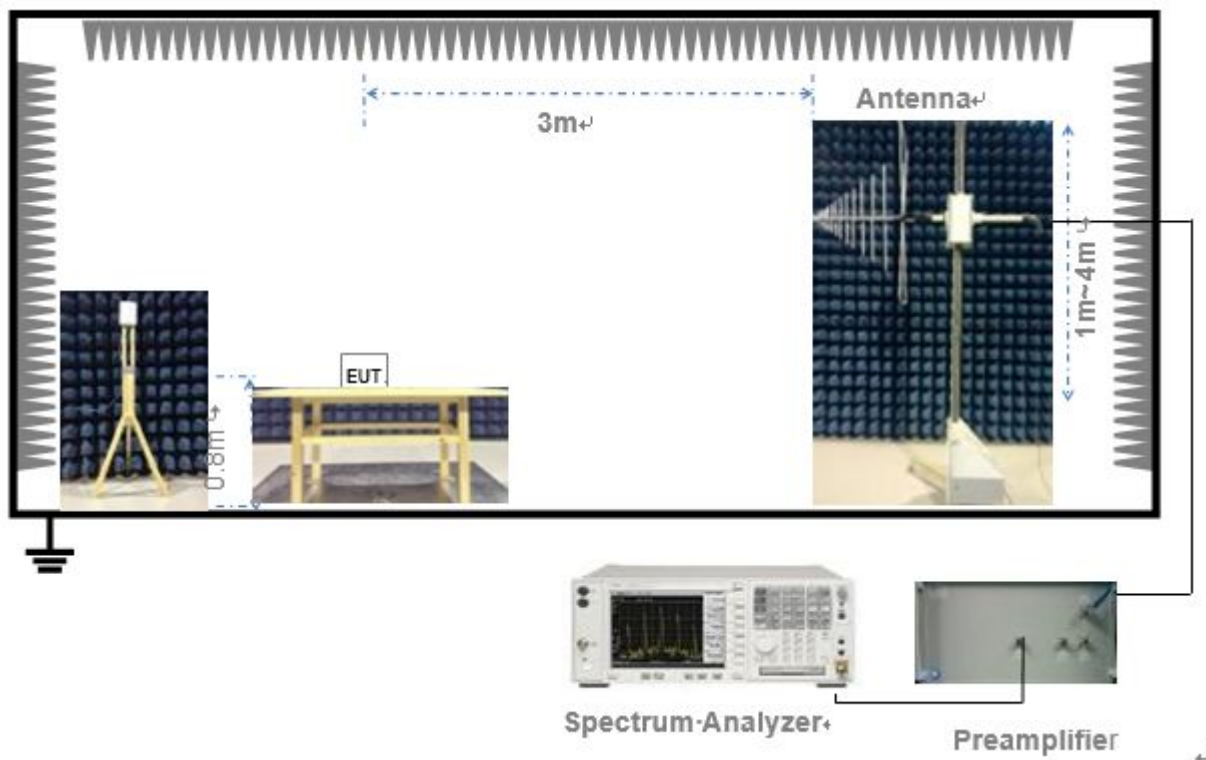
(Diagram 2)

4. 4. 3 For Radiated Test (Below 30 MHz)



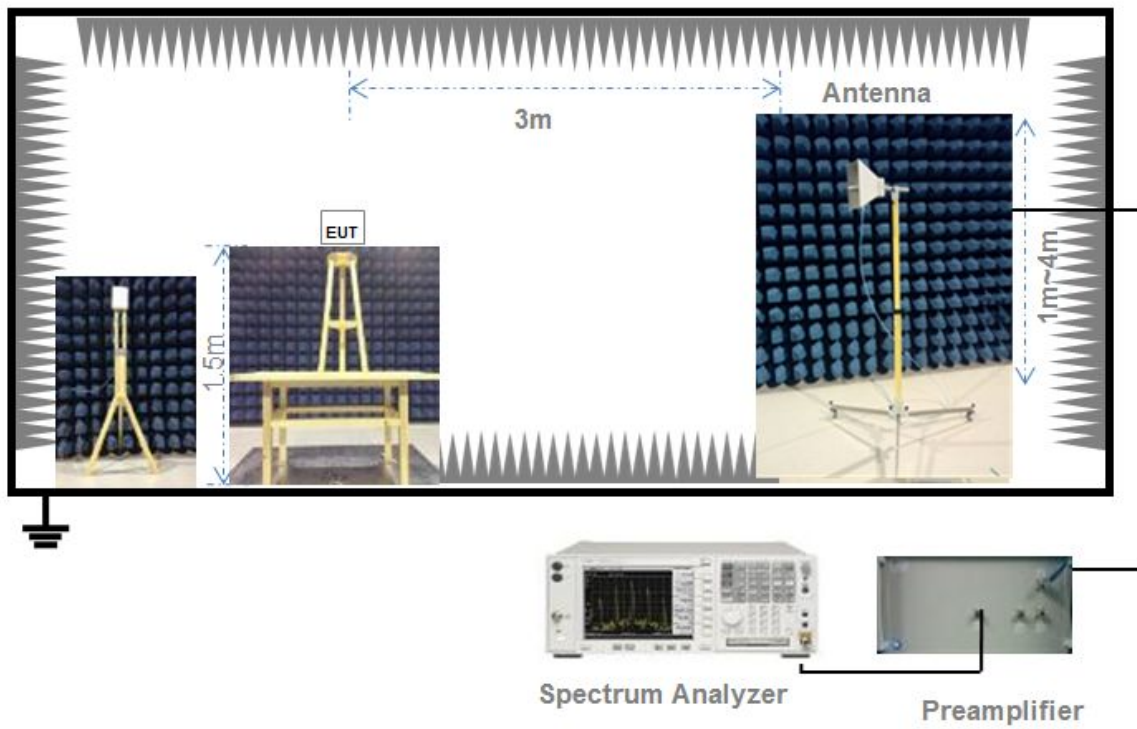
(Diagram 3)

4. 4. 4 For Radiated Test (30 MHz-1 GHz)



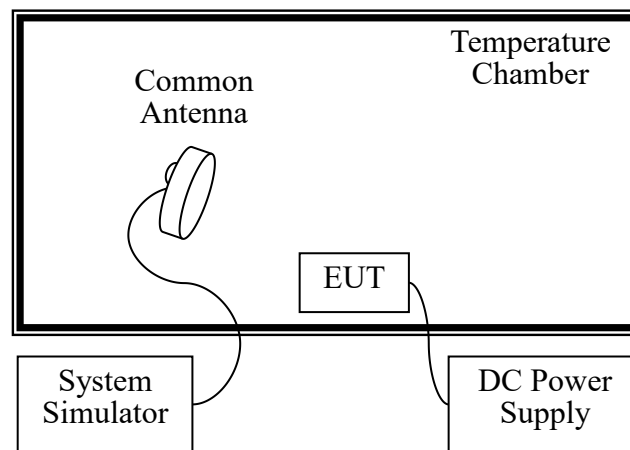
(Diagram 4)

4. 4. 5 For Radiated Test (Above 1 GHz)



(Diagram 5)

4. 4. 6 For Frequency Stability Test



(Diagram 6)

5 TEST ITEMS

5.1 RF Output Power

5.1.1 Test Limit

FCC §15.407(a)

The maximum conducted output power should not exceed:

Frequency Band (MHz)	Limit
5150-5250	250 mW
5250-5350	250 mW or 11 dBm + 10log B, whichever is less.
5470-5725	250 mW or 11 dBm + 10log B, whichever is less.
5725-5850	1 W
Note: Where "B" is the 26 dB emissions bandwidth in MHz.	

RSS-247, 6.2

The maximum conducted output power shall not exceed:

Frequency Band (MHz)	Limit
5150-5250	N/A
5250-5350	250 mW or 11 dBm + 10log B, whichever is less.
5470-5725	250 mW or 11 dBm + 10log B, whichever is less.
5725-5850	1 W
Note: Where "B" is the 99% emissions bandwidth in MHz.	

The maximum e.i.r.p. shall not exceed:

Frequency Band (MHz)	Limit
5150-5250	200 mW or 10 dBm + 10log B, whichever is less.
5250-5350	1W or 17 dBm + 10log B, whichever is less.
5470-5725	1W or 17 dBm + 10log B, whichever is less.
5725-5850	N/A
Note: Where "B" is the 99% emissions bandwidth in MHz.	

5.1.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.1.3 Test Procedure

The maximum peak conducted output power may be measured using a broadband Average RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the emission bandwidth and utilize a fast-responding diode detector.

The E.I.R.P used radiated test method. At a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment.

5.1.4 Test Result

Please refer to ANNEX A.1.

5.2 Emission Bandwidth and 6 dB Bandwidth

5.2.1 Limit

FCC §15.407(a), RSS-247, 6.2

Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

5.2.2 Test Setup

The test setup photo please refer to 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.2.3 Test Procedure

Emission bandwidth

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set VBW $\geq 3 \times$ RBW,
3. Detector = Peak.
4. Trace mode = Max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission.

Occupied Bandwidth

1. Set Span = 1.5 times to 5.0 times the OBW
2. Set RBW = 1% to 5% of the OBW.
3. Set VBW $\geq 3 \times$ RBW, Detector = Peak.
4. Trace mode = Max hold.
5. Use the 99% power bandwidth function of the instrument.

6 dB bandwidth

1. Set RBW = 100 kHz, VBW = 300 kHz.
2. Detector = Peak. Trace mode = Max hold.
3. Allow the trace to stabilize.
4. 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.

5.2.4 Test Result

Please refer to ANNEX A.2 and ANNEX A.3.

5.3 Power Spectral density (PSD)

5.3.1 Limit

FCC §15.407(a)

The maximum power spectral density should not exceed:

Frequency Band (MHz)	Limit
5150-5250	11 dBm/MHz
5250-5350	11 dBm/MHz
5470-5725	11 dBm/MHz
5725-5850	30 dBm/500kHz

RSS-247, 6.2

The maximum power spectral density should not exceed:

Frequency Band (MHz)	Limit
5150-5250	N/A
5250-5350	11 dBm/MHz
5470-5725	11 dBm/MHz
5725-5850	30 dBm/500kHz

The e.i.r.p. spectral density should not exceed:

Frequency Band (MHz)	Limit
5150-5250	10 dBm/MHz
5250-5350	N/A
5470-5725	N/A
5725-5850	N/A

5.3.2 Test Setup

The section 4.4.1 (Diagram 1) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth.

1. Set RBW = 510 kHz/1 MHz, VBW $\geq 3 \times$ RBW, Sweep time = Auto, Detector = RMS.
2. Allow the sweeps to continue until the trace stabilizes.
3. Use the peak marker function to determine the maximum amplitude level.
4. The E.I.R.P spectral density used radiated test method. At a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment.

5.3.4 Test Result

Please refer to ANNEX A.4.

5.4 Conducted Emission

5.4.1 Limit

FCC §15.207, RSS-GEN, 8.8

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dB μ V)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

5.4.2 Test Setup

The section 4.4.2 (Diagram 2) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.

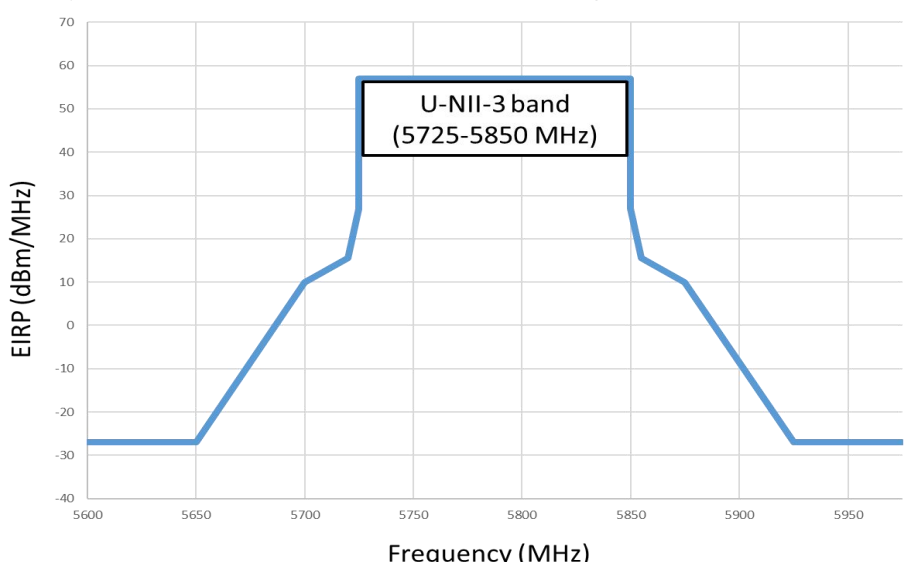
5.4.4 Test Result

Please refer to ANNEX A.5.

5.5 Conducted Spurious Emission and Band Edge (Authorized-band)

5.5.1 Limit

FCC §15.407(b)

Un-restricted band emissions	
Frequency Band (MHz)	Limit
5150 - 5250	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5250 - 5350	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5470 - 5725	Outside of the 5.47-5.725 GHz band: e.i.r.p. -27 dBm
5725 - 5850	All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. 

RSS-247, 6.2

Un-restricted band emissions	
Frequency Band (MHz)	Limit
5150 - 5250	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm, However, any unwanted emissions that fall into the band 5250-5350 MHz must be 26 dBc, when measured using a resolution bandwidth between 1 and 5% of the occupied bandwidth, above 5.25 GHz.
5250 - 5350	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm. And any emissions within the band 5150-5250 MHz shall meet the power spectral density limits of 10 dBm/MHz, The device shall be labelled "for indoor use only."
5470 - 5725	Outside of the 5.47-5.725 GHz band: e.i.r.p. -27 dBm
5725 - 5850	5715 -5725 MHz: e.i.r.p. -17 dBm 5850 -5860 MHz: e.i.r.p. -17 dBm Other un-restricted band: e.i.r.p. -27 dBm

5. 5. 2 Test Setup

See section 4.4.2 (Diagram 2) for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5. 5. 3 Test Procedure

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize

5. 5. 4 Test Result

Please refer to ANNEX A.6.

5.6 Radiated Spurious Emissions and Band Edge (Restricted-band)

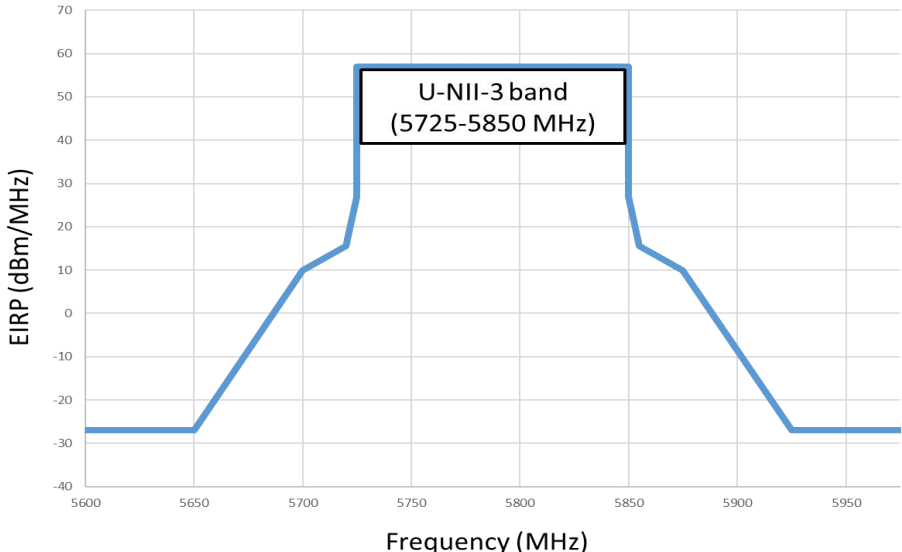
5.6.1 Limit

FCC §15.209 & 15.407(b), RSS-247, 6.2

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

Note¹: The Limit for radiated test was performed according to FCC Part 15C

Note²: The tighter limit applies at the band edge.

Un-restricted band emissions	
Out Operating Band (MHz)	Limit
5150 - 5250	e.i.r.p. -27 dBm (68.2 dBuV/m@3m)
5250 - 5350	e.i.r.p. -27 dBm (68.2 dBuV/m@3m)
5470 - 5725	e.i.r.p. -27 dBm (68.2 dBuV/m@3m)
5725 - 5850	All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. 

Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength.

5.6.2 Test Setup

The section 4.4.3-4.4.5 (Diagram 3 - Diagram 5) test setup description was used for this test. The photo of test

setup please refer to ANNEX B.

5. 6. 3 Test Procedure

Since the emission limits are specified in terms of radiated field strength levels, measurements performed to demonstrate compliance have traditionally relied on a radiated test configuration. Radiated measurements remain the principal method for demonstrating compliance to the specified limits; however antenna-port conducted measurements are also now acceptable to demonstrate compliance (see below for details). When radiated measurements are utilized, test site requirements and procedures for maximizing and measuring radiated emissions that are described in ANSI C63.10 shall be followed.

Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

General Procedure for conducted measurements in restricted bands

- a) Measure the conducted output power (in dBm) using the detector specified (see guidance regarding measurement procedures for determining quasi-peak, peak, and average conducted output power, respectively).
- b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see guidance on determining the applicable antenna gain)
- c) Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).
- d) For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (e.g., Watts, mW).
- e) Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:

$$E = \text{EIRP} - 20 \log D + 104.8$$

where:

E = electric field strength in dB μ V/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

- f) Compare the resultant electric field strength level to the applicable limit.
- g) Perform radiated spurious emission test.

Quasi-Peak measurement procedure

The specifications for measurements using the CISPR quasi-peak detector can be found in Publication 16 of the International Special Committee on Radio Frequency Interference (CISPR) of the International Electrotechnical Commission.

As an alternative to CISPR quasi-peak measurement, compliance can be demonstrated to the applicable emission limits using a peak detector.

Peak power measurement procedure

Peak emission levels are measured by setting the instrument as follows:

- a) RBW = as specified in Table 1.
- b) VBW $\geq 3 \times$ RBW.
- c) Detector = Peak.
- d) Sweep time = auto.
- e) Trace mode = max hold.
- f) Allow sweeps to continue until the trace stabilizes. (Note that the required measurement time may be longer for low duty cycle applications).

Table 1—RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

If the peak-detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

Trace averaging across on and off times of the EUT transmissions followed by duty cycle correction

If continuous transmission of the EUT (i.e., duty cycle ≥ 98 percent) cannot be achieved and the duty cycle is constant (i.e., duty cycle variations are less than ± 2 percent), then the following procedure shall be used:

- a) The EUT shall be configured to operate at the maximum achievable duty cycle.
- b) Measure the duty cycle, x , of the transmitter output signal as described in section 6.0.
- c) RBW = 1 MHz (unless otherwise specified).
- d) VBW $\geq 3 \times$ RBW.
- e) Detector = RMS, if $\text{span}/(\# \text{ of points in sweep}) \leq (\text{RBW}/2)$. Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.
- f) Averaging type = power (i.e., RMS).
 - 1) As an alternative, the detector and averaging type may be set for linear voltage averaging.
 - 2) Some instruments require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.
- g) Sweep time = auto.
- h) Perform a trace average of at least 100 traces.
- i) A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:
 - 1) If power averaging (RMS) mode was used in step f), then the applicable correction factor is $10 \log(1/x)$, where x is the duty cycle.
 - 2) If linear voltage averaging mode was used in step f), then the applicable correction factor is $20 \log(1/x)$, where x is the duty cycle.
 - 3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

NOTE: Reduction of the measured emission amplitude levels to account for operational duty factor is not permitted. Compliance is based on emission levels occurring during transmission - not on an average across on and off times of the transmitter.

Determining the applicable transmit antenna gain

A conducted power measurement will determine the maximum output power associated with a restricted band emission; however, in order to determine the associated EIRP level, the gain of the transmitting antenna (in dBi) must be added to the measured output power (in dBm).

Since the out-of-band characteristics of the EUT transmit antenna will often be unknown, the use of a conservative antenna gain value is necessary. Thus, when determining the EIRP based on the measured conducted power, the upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands, or 2 dBi, whichever is greater. However, for devices that operate in multiple frequency bands while using the same transmit antenna, the highest gain of the antenna within the operating band nearest in frequency to the restricted band emission being measured may be used in lieu of the overall highest gain when the emission is at a frequency that is within 20 percent of the nearest band edge frequency, but in no case shall a value less than 2 dBi be used.

See KDB 662911 for guidance on calculating the additional array gain term when determining the effective antenna gain for a EUT with multiple outputs occupying the same or overlapping frequency ranges in the same band.

Radiated spurious emission test

An additional consideration when performing conducted measurements of restricted band emissions is that unwanted emissions radiating from the EUT cabinet, control circuits, power leads, or intermediate circuit elements will likely go undetected in a conducted measurement configuration. To address this concern, a radiated test shall be performed to ensure that emissions emanating from the EUT cabinet (rather than the antenna port) also comply with the applicable limits.

For these cabinet radiated spurious emission measurements the EUT transmit antenna may be replaced with a termination matching the nominal impedance of the antenna. Procedures for performing radiated measurements are specified in ANSI C63.10. All detected emissions shall comply with the applicable limits.

The measurement frequency range is from 30 MHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

5. 6. 4 Test Result

Please refer to ANNEX A.7 and Please refer to ANNEX A.9

5.7 Frequency Stability

5.7.1 Limit

FCC §15.407(g)

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

5.7.2 Test Setup

The section 4.4.6 (Diagram 6) test setup description was used for this test. The photo of test setup please refer to ANNEX B.

5.7.3 Test Procedure

The EUT is installed in an environment test chamber with external power source.

Set the chamber to operate at 50 centigrade and external power source to output at nominal voltage of EUT.

A sufficient stabilization period at each temperatures is used prior to each frequency measurement.

When temperature is stabled, measure the frequency stability.

The test shall be performed under -30 to 50 centigrade and 85 to 115 percent of the nominal voltage.

Change setting of chamber and external power source to complete all conditions.

5.7.4 Test Result

Please refer to ANNEX A.8.

ANNEX A TEST RESULT

A.1 RF Output Power

Duty cycle

802.11a: Duty cycle = 100%

802.11ac (VHT20): Duty cycle = 100%

802.11ac (VHT40): Duty cycle = 100%

802.11ac (VHT80): Duty cycle = 100%.

Note 1: For FCC standard, if transmitting antennas of directional gain greater than 6 dBi are used, all band maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Data

Conducted Power

Band I (5150 - 5250 MHz)						
Note: Transmitting antennas of directional gain in Band I is less than 6 dBi which the limits do not have to be reduced.						
Mode	Channel	Frequency (MHz)	Conducted Power 0 (dBm)	Conducted Power 1 (dBm)	FCC Limit (mW)	Verdict
11a	CH36	5180	14.61	14.84	250	Pass
11a	CH40	5200	14.58	14.54	250	Pass
11a	CH48	5240	14.71	14.89	250	Pass
11n (HT20)	CH36	5180	14.68	14.77	250	Pass
11n (HT20)	CH44	5220	14.91	14.85	250	Pass
11n (HT20)	CH48	5240	14.78	14.81	250	Pass
11n (HT40)	CH38	5190	12.08	12.07	250	Pass
11n (HT40)	CH46	5230	13.14	13.09	250	Pass
11ac20	CH36	5180	14.81	14.76	250	Pass
11ac20	CH44	5220	14.69	14.74	250	Pass
11ac20	CH48	5240	14.75	14.91	250	Pass
11ac40	CH38	5190	12.10	12.19	250	Pass
11ac40	CH46	5230	13.34	13.37	250	Pass
11ac (HT80)	CH42	5210	11.01	11.04	250	Pass

Band II (5250 - 5350 MHz)

Note ¹: Transmitting antennas of directional gain in Band II is less than 6 dBi which the limits do not have to be reduced.

Note ²: Please refer to section of APPENDIX B of the original report, named "Part 15E part1" issued by SPOTON INTERNATIONAL INC.

Mode	Channel	Frequency (MHz)	Conducted Power 0 (dBm)	Conducted Power 1 (dBm)	dBm + 10log B (mW)	FCC Limit (mW)	IC Limit (mW)	Verdict
11a	CH52	5260	14.81	14.85	24 ^{Note2}	250	250	Pass
11a	CH60	5300	14.79	14.82	24 ^{Note2}	250	250	Pass
11a	CH64	5320	14.87	14.88	24 ^{Note2}	250	250	Pass
11n (HT20)	CH52	5260	14.83	14.67	24 ^{Note2}	250	250	Pass
11n (HT20)	CH60	5300	14.86	14.84	24 ^{Note2}	250	250	Pass
11n (HT20)	CH64	5320	14.76	14.79	24 ^{Note2}	250	250	Pass
11n (HT40)	CH54	5270	14.76	14.92	24 ^{Note2}	250	250	Pass
11n (HT40)	CH62	5310	12.99	13.04	24 ^{Note2}	250	250	Pass
11ac20	CH52	5260	14.74	14.79	24 ^{Note2}	250	250	Pass
11ac20	CH60	5300	14.85	14.87	24 ^{Note2}	250	250	Pass
11ac20	CH64	5320	14.82	14.86	24 ^{Note2}	250	250	Pass
11ac40	CH54	5270	14.89	14.87	24 ^{Note2}	250	250	Pass
11ac40	CH62	5310	12.98	13.01	24 ^{Note2}	250	250	Pass
11ac (HT80)	CH58	5290	12.46	12.39	24 ^{Note2}	250	250	Pass

Band III (5470 - 5725 MHz)

Note ³: Transmitting antennas of directional gain in Band III is less than 6 dBi which the limits do not have to be reduced

Note ⁴: Please refer to section of APPENDIX B of the original report, named "Part 15E part1" issued by SPOTON INTERNATIONAL INC.

Mode	Channel	Frequency (MHz)	Conducted Power 0 (dBm)	Conducted Power 1 (dBm)	11 dBm + 10log B (mW)	FCC Limit (mW)	IC Limit (mW)	Verdict
11a	CH100	5500	14.69	14.61	24 ^{Note 4}	250	250	Pass
11a	CH116	5580	14.33	14.39	24 ^{Note 4}	250	250	Pass
11a	CH140	5700	14.56	14.61	24 ^{Note 4}	250	250	Pass
11n (HT20)	CH100	5500	14.64	14.57	24 ^{Note 4}	250	250	Pass
11n (HT20)	CH116	5580	14.87	14.89	24 ^{Note 4}	250	250	Pass
11n (HT20)	CH140	5700	14.74	14.62	24 ^{Note 4}	250	250	Pass
11n (HT40)	CH102	5510	14.62	14.51	24 ^{Note 4}	250	250	Pass
11n (HT40)	CH134	5670	14.54	14.58	24 ^{Note 4}	250	250	Pass
11ac20	CH100	5500	14.34	14.39	24 ^{Note 4}	250	250	Pass
11ac20	CH116	5580	14.27	14.29	24 ^{Note 4}	250	250	Pass
11ac20	CH140	5700	14.19	14.22	24 ^{Note 4}	250	250	Pass
11ac40	CH102	5510	14.76	14.71	24 ^{Note 4}	250	250	Pass
11ac40	CH134	5670	14.19	14.23	24 ^{Note 4}	250	250	Pass
11ac (HT80)	CH106	5530	10.32	10.28	24 ^{Note 4}	250	250	Pass
11ac (HT80)	CH138	5690	10.44	10.32	24 ^{Note 4}	250	250	Pass

Band IV (5725 - 5850 MHz)						
Note ³ : Transmitting antennas of directional gain in Band IV is less than 6 dBi which the limits do not have to be reduced						
Mode	Channel	Frequency (MHz)	Conducted Power 0 (dBm)	Conducted Power 1 (dBm)	FCC/IC Limit (W)	Verdict
11a	CH149	5745	15.38	15.34	1.00	Pass
11a	CH157	5785	15.29	15.31	1.00	Pass
11a	CH165	5825	15.33	15.27	1.00	Pass
11n (HT20)	CH149	5745	15.39	15.27	1.00	Pass
11n (HT20)	CH157	5785	15.27	15.32	1.00	Pass
11n (HT20)	CH165	5825	15.31	15.29	1.00	Pass
11n (HT40)	CH151	5755	15.32	15.27	1.00	Pass
11n (HT40)	CH159	5795	15.28	15.31	1.00	Pass
11ac20	CH149	5745	15.32	15.39	1.00	Pass
11ac20	CH157	5785	15.29	15.23	1.00	Pass
11ac20	CH165	5825	15.28	15.21	1.00	Pass
11ac40	CH151	5755	15.30	15.27	1.00	Pass
11ac40	CH159	5795	15.25	15.28	1.00	Pass
11ac (HT80)	CH155	5775	15.37	15.32	1.00	Pass

EIRP Power

Band I (5150 - 5250 MHz)										
Note ¹ : The limit is 1W or 17 dBm + 10log B, whichever is less. Where “B” is the 99% emissions bandwidth in MHz.										
Note ² : Please refer to section of APPENDIX B of the original report, named “Part 15E part1” issued by SPOTON INTERNATIONAL INC.										
Mode	Channel	Frequency (MHz)	EIRP Power (dBm)		EIRP Power (mW)		99% EBW (MHz)	10 dBm + 10log B (mW)	IC Limit (mW)	Verdict
			ANT0	ANT1	ANT0	ANT1				
11a	CH36	5180	13.38	14.05	21.78	25.41	Note ¹	Note ²	200	Pass
11a	CH40	5200	13.35	13.75	21.63	23.71	Note ¹	Note ²	200	Pass
11a	CH48	5240	13.48	14.1	22.28	25.70	Note ¹	Note ²	200	Pass
11n (HT20)	CH36	5180	13.45	13.98	22.13	25.00	Note ¹	Note ²	200	Pass
11n (HT20)	CH44	5220	13.68	14.06	23.33	25.47	Note ¹	Note ²	200	Pass
11n (HT20)	CH48	5240	13.55	14.02	22.65	25.23	Note ¹	Note ²	200	Pass
11n (HT40)	CH38	5190	10.85	11.28	12.16	13.43	Note ¹	Note ²	200	Pass
11n (HT40)	CH46	5230	11.91	12.3	15.52	16.98	Note ¹	Note ²	200	Pass
11ac20	CH36	5180	13.58	13.97	22.80	24.95	Note ¹	Note ²	200	Pass
11ac20	CH44	5220	13.46	13.95	22.18	24.83	Note ¹	Note ²	200	Pass
11ac20	CH48	5240	13.52	14.12	22.49	25.82	Note ¹	Note ²	200	Pass
11ac40	CH38	5190	10.87	11.4	12.22	13.80	Note ¹	Note ²	200	Pass
11ac40	CH46	5230	12.11	12.58	16.26	18.11	Note ¹	Note ²	200	Pass
11ac (HT80)	CH42	5210	9.78	10.25	9.51	10.59	Note ¹	Note ²	200	Pass

Band II (5250 - 5350 MHz)

Note ¹: The limit is 1W or 17 dBm + 10log B, whichever is less. Where “B” is the 99% emissions bandwidth in MHz.

Note ²: Please refer to section of APPENDIX B of the original report, named “Part 15E part1” issued by SPOTON INTERNATIONAL INC.

Mode	Channel	Frequency (MHz)	EIRP Power (dBm)		EIRP Power (mW)		99% EBW (MHz)	17 dBm + 10log B (mW)	IC Limit (mW)	Verdict
			ANT0	ANT1	ANT0	ANT1				
11a	CH52	5260	13.58	14.06	22.80	25.47	Note ¹	Note ²	1000	Pass
11a	CH60	5300	13.56	14.03	22.70	25.29	Note ¹	Note ²	1000	Pass
11a	CH64	5320	13.64	14.09	23.12	25.64	Note ¹	Note ²	1000	Pass
11n (HT20)	CH52	5260	13.6	13.88	22.91	24.43	Note ¹	Note ²	1000	Pass
11n (HT20)	CH60	5300	13.63	14.05	23.07	25.41	Note ¹	Note ²	1000	Pass
11n (HT20)	CH64	5320	13.53	14	22.54	25.12	Note ¹	Note ²	1000	Pass
11n (HT40)	CH54	5270	13.53	14.13	22.54	25.88	Note ¹	Note ²	1000	Pass
11n (HT40)	CH62	5310	11.76	12.25	15.00	16.79	Note ¹	Note ²	1000	Pass
11ac20	CH52	5260	13.51	14	22.44	25.12	Note ¹	Note ²	1000	Pass
11ac20	CH60	5300	13.62	14.08	23.01	25.59	Note ¹	Note ²	1000	Pass
11ac20	CH64	5320	13.59	14.07	22.86	25.53	Note ¹	Note ²	1000	Pass
11ac40	CH54	5270	13.66	14.08	23.23	25.59	Note ¹	Note ²	1000	Pass
11ac40	CH62	5310	11.75	12.22	14.96	16.67	Note ¹	Note ²	1000	Pass
11ac (HT80)	CH58	5290	11.23	11.6	13.27	14.45	Note ¹	Note ²	1000	Pass

Band III (5470 - 5725 MHz)

Note ¹: The limit is 1W or 17 dBm + 10log B, whichever is less. Where “B” is the 99% emissions bandwidth in MHz.

Note ²: Please refer to section of APPENDIX B of the original report, named “Part 15E part1” issued by SPOTON INTERNATIONAL INC.

Mode	Channel	Frequency (MHz)	EIRP Power (dBm)		EIRP Power (mW)		99% EBW (MHz)	17 dBm + 10log B (mW)	IC Limit (mW)	Verdict
			ANT0	ANT1	ANT0	ANT1				
11a	CH100	5500	13.94	13.47	24.77	22.23	Note ¹	Note ²	1000	Pass
11a	CH116	5580	13.58	13.25	22.80	21.13	Note ¹	Note ²	1000	Pass
11a	CH140	5700	13.81	13.47	24.04	22.23	Note ¹	Note ²	1000	Pass
11n (HT20)	CH100	5500	13.89	13.43	24.49	22.03	Note ¹	Note ²	1000	Pass
11n (HT20)	CH116	5580	14.12	13.75	25.82	23.71	Note ¹	Note ²	1000	Pass
11n (HT20)	CH140	5700	13.99	13.48	25.06	22.28	Note ¹	Note ²	1000	Pass
11n (HT40)	CH102	5510	13.87	13.37	24.38	21.73	Note ¹	Note ²	1000	Pass
11n (HT40)	CH134	5670	13.79	13.44	23.93	22.08	Note ¹	Note ²	1000	Pass
11ac20	CH100	5500	13.59	13.25	22.86	21.13	Note ¹	Note ²	1000	Pass
11ac20	CH116	5580	13.52	13.15	22.49	20.65	Note ¹	Note ²	1000	Pass
11ac20	CH140	5700	13.44	13.08	22.08	20.32	Note ¹	Note ²	1000	Pass
11ac40	CH102	5510	14.01	13.57	25.18	22.75	Note ¹	Note ²	1000	Pass
11ac40	CH134	5670	13.44	13.09	22.08	20.37	Note ¹	Note ²	1000	Pass
11ac (HT80)	CH106	5530	9.57	9.14	9.06	8.20	Note ¹	Note ²	1000	Pass
11ac (HT80)	CH138	5690	9.69	9.18	9.31	8.28	Note ¹	Note ²	1000	Pass

A.2 Emission Bandwidth & 99% Bandwidth

N/A.

A.3 6 dB Bandwidth

N/A.

A.4 Power Spectral Density

N/A.

A.5 Conducted Emissions

N/A.

A.6 Conducted Spurious Emission and Band Edge (Authorized-band)

N/A.

A.7 Radiated Spurious Emissions and Band Edge (Restricted-band)

Test Data and Plot

Cabinet Radiated spurious emission test

Note¹: The symbol of "--" in the table which means not application.

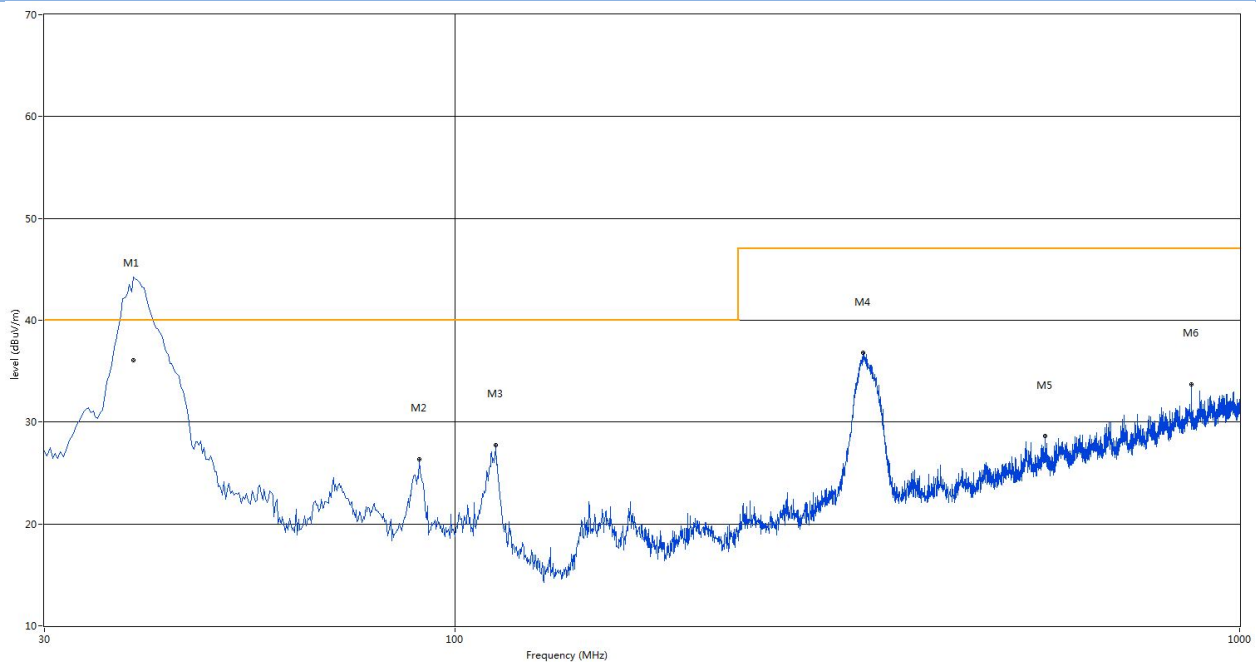
Note²: For the test data above 1 GHz, According the ANSI C63.4, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note³: The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Note⁴: The EUT is working in the Normal link mode below 1 GHz.

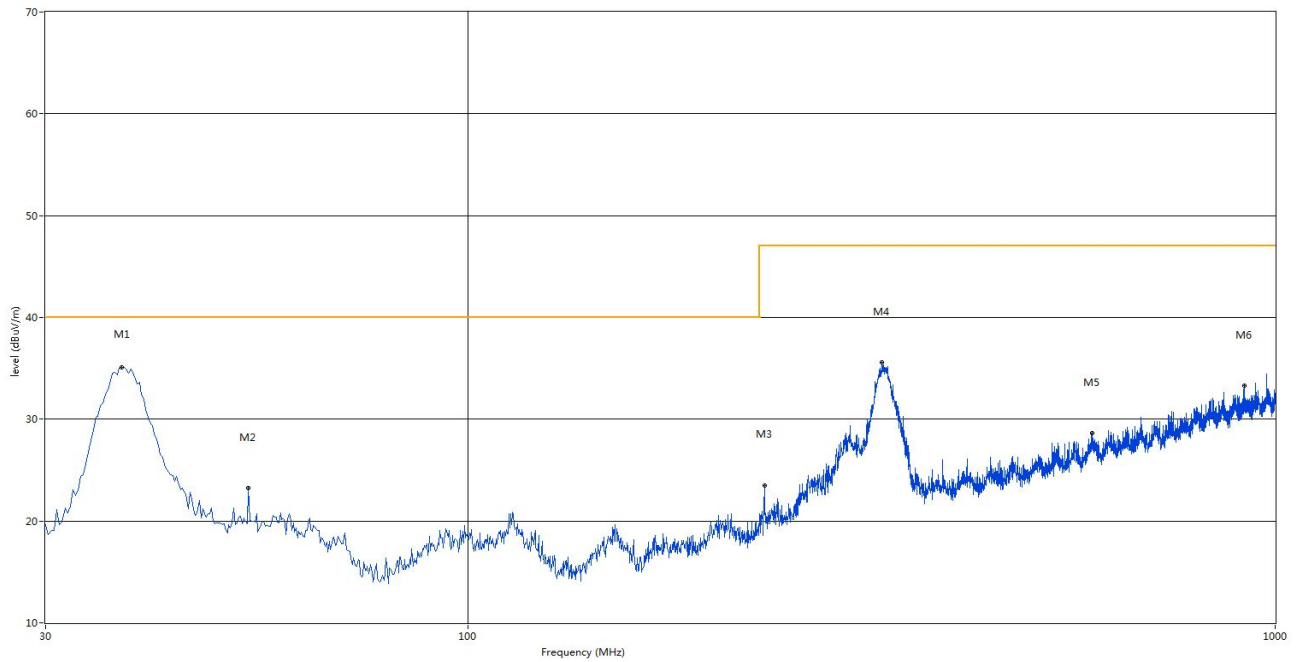
Note⁵: For Multiple transmitter output, the quantity $10 \log (NANT)$ dB is added to each spectrum value before comparing to the emission limit. When testing out-of-band and spurious emissions against relative emission limits, tests may be performed on each output individually without summing or adding $10 \log (NANT)$ if the measurements are made relative to the in-band emissions on the individual outputs.

30 MHz to 1 GHz, ANT V



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	38.850	42.79	-20.59	40.0	-2.79	Peak	81.00	100	Vertical	N/A
1*	38.850	36.31	-20.59	40.0	3.69	QP	81.00	100	Vertical	Pass
2	90.140	26.38	-22.49	40.0	13.62	Peak	291.70	100	Vertical	Pass
3	112.692	27.78	-21.48	40.0	12.22	Peak	246.00	100	Vertical	Pass
4	330.942	36.81	-17.71	47.0	10.19	Peak	0.00	200	Vertical	Pass
5	565.682	28.66	-12.67	47.0	18.34	Peak	168.80	100	Vertical	Pass
6	868.322	33.74	-7.16	47.0	13.26	Peak	202.90	200	Vertical	Pass

30 MHz to 1 GHz, ANT H



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	37.275	35.08	-21.05	40.0	4.92	Peak	127.90	200	Horizontal	Pass
2	53.523	23.24	-19.38	40.0	16.76	Peak	235.50	300	Horizontal	Pass
3	233.215	23.47	-20.42	47.0	23.53	Peak	98.90	100	Horizontal	Pass
4	325.608	35.61	-17.99	47.0	11.39	Peak	25.30	100	Horizontal	Pass
5	592.843	28.67	-11.92	47.0	18.33	Peak	29.00	100	Horizontal	Pass
6	916.095	33.29	-6.39	47.0	13.71	Peak	0.00	300	Horizontal	Pass

Note 1: The device was evaluated/tested in XYZ orientation for radiated spurious emissions. And only the worst orientation of EUT was reported, which is the horizontal orientation.

1 GHz to 18 GHz, ANT V Band I 802.11A20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.91	52.18	-3.29	74	21.82	Peak	13	150	Vertical	PASS
2	4999.16	52.12	9.46	74	21.88	Peak	84.3	200	Vertical	PASS
3	5180.50	103.40	9.90	68.2	-35.20	Peak	172	100	Vertical	N/A
4	7026.35	43.75	12.67	68.2	24.45	Peak	281.4	150	Vertical	PASS
5	10003.00	40.91	15.60	68.2	27.29	Peak	346.7	200	Vertical	PASS
6	11334.00	46.74	15.22	74	27.26	Peak	8.6	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band I 802.11A20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2489.74	50.60	-3.36	74	23.40	Peak	267.9	100	Horizontal	PASS
2	4988.37	51.21	9.45	74	22.79	Peak	113.6	100	Horizontal	PASS
3	5180.54	103.44	9.92	68.2	-35.24	Peak	222.9	200	Horizontal	N/A
4	7018.47	45.12	12.66	68.2	23.08	Peak	78.2	150	Horizontal	PASS
5	8674.75	45.63	16.00	68.2	22.57	Peak	356.4	150	Horizontal	PASS
6	11127.75	44.39	17.38	74	29.61	Peak	299	200	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band I 802.11A20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2490.56	51.83	-3.29	74	22.17	Peak	85	150	Vertical	PASS
2	4999.47	51.70	9.42	74	22.30	Peak	285.2	200	Vertical	PASS
3	5240.58	104.77	9.92	68.2	-36.57	Peak	134.8	200	Vertical	N/A
4	7018.57	44.10	12.96	68.2	24.10	Peak	194.8	150	Vertical	PASS
5	9362.25	42.04	15.54	74	31.96	Peak	321.4	100	Vertical	PASS
6	11350.50	46.04	15.21	74	27.96	Peak	147.2	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band I 802.11A20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2489.01	50.63	-3.45	74	23.37	Peak	192.6	150	Horizontal	PASS
2	4988.01	50.07	9.30	74	23.93	Peak	332	200	Horizontal	PASS
3	5240.62	103.23	9.82	68.2	-35.03	Peak	17.2	150	Horizontal	N/A
4	7023.08	44.89	12.67	68.2	23.31	Peak	144.9	200	Horizontal	PASS
5	9227.50	44.19	14.89	68.2	24.01	Peak	313.5	150	Horizontal	PASS
6	11155.25	46.31	16.31	74	27.69	Peak	61.4	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band II 802.11A20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.85	51.22	-3.36	74	22.78	Peak	236.2	150	Vertical	PASS
2	4997.54	53.24	9.42	74	20.76	Peak	78.8	200	Vertical	PASS
3	5260.94	103.95	9.77	68.2	-35.75	Peak	272	100	Vertical	N/A
4	7036.29	43.81	12.81	68.2	24.39	Peak	277.2	200	Vertical	PASS
5	9090.00	46.28	14.70	74	27.72	Peak	165.4	150	Vertical	PASS
6	10553.00	45.90	15.91	68.2	22.30	Peak	153.6	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band II 802.11A20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2492.33	49.10	-3.29	74	24.90	Peak	257.4	150	Horizontal	PASS
2	4986.51	51.60	9.30	74	22.40	Peak	355.9	200	Horizontal	PASS
3	5260.98	104.28	9.88	68.2	-36.08	Peak	33.4	150	Horizontal	N/A
4	7027.11	43.46	12.81	68.2	24.74	Peak	309.9	200	Horizontal	PASS
5	9497.00	44.18	16.31	74	29.82	Peak	315.1	150	Horizontal	PASS
6	11375.25	47.04	16.57	74	26.96	Peak	26.1	100	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band II 802.11A20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2492.63	52.30	-3.43	74	21.70	Peak	128.3	100	Vertical	PASS
2	4997.03	52.04	9.35	74	21.96	Peak	44.6	150	Vertical	PASS
3	5320.71	104.76	9.82	68.2	-36.56	Peak	275.6	200	Vertical	N/A
4	7030.42	42.62	12.81	68.2	25.58	Peak	316	200	Vertical	PASS
5	9519.00	43.02	14.69	68.2	25.18	Peak	13.8	100	Vertical	PASS
6	10220.25	43.18	17.90	68.2	25.02	Peak	226.3	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band II 802.11A20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2489.75	50.08	-3.36	74	23.92	Peak	314.8	100	Horizontal	PASS
2	4988.36	51.27	9.41	74	22.73	Peak	353.6	100	Horizontal	PASS
3	5320.73	102.98	9.90	68.2	-34.78	Peak	20.9	200	Horizontal	N/A
4	7018.35	44.34	12.66	68.2	23.86	Peak	132.6	150	Horizontal	PASS
5	8551.00	45.92	16.25	68.2	22.28	Peak	261.6	150	Horizontal	PASS
6	11083.75	42.37	16.19	74	31.63	Peak	138.8	200	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band III 802.11A20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2489.36	52.19	-3.29	74	21.81	Peak	115.4	150	Vertical	PASS
2	4998.42	51.75	9.22	74	22.25	Peak	51	100	Vertical	PASS
3	5500.40	104.87	9.88	68.2	-36.67	Peak	58	200	Vertical	N/A
4	7037.00	44.28	12.96	68.2	23.92	Peak	183	200	Vertical	PASS
5	9384.25	45.30	16.08	74	28.70	Peak	20.8	150	Vertical	PASS
6	10839.00	42.80	16.93	74	31.20	Peak	57.5	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band III 802.11A20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2493.53	49.94	-3.44	74	24.06	Peak	312.4	100	Horizontal	PASS
2	4987.91	51.63	9.47	74	22.37	Peak	273.3	100	Horizontal	PASS
3	5500.60	103.47	9.88	68.2	-35.27	Peak	35.2	150	Horizontal	N/A
4	7017.87	45.01	12.66	68.2	23.19	Peak	334.4	200	Horizontal	PASS
5	9538.25	41.62	14.41	68.2	26.58	Peak	100.3	150	Horizontal	PASS
6	11452.25	45.57	17.71	74	28.43	Peak	178.3	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band III 802.11A20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.48	51.38	-3.45	74	22.62	Peak	151.2	150	Vertical	PASS
2	5000.13	51.83	9.42	74	22.17	Peak	248.2	200	Vertical	PASS
3	5700.97	104.96	9.90	68.2	-36.76	Peak	206.5	150	Vertical	N/A
4	7023.55	44.10	12.81	68.2	24.10	Peak	28.6	100	Vertical	PASS
5	8614.25	41.50	15.45	68.2	26.70	Peak	187.4	150	Vertical	PASS
6	11072.75	41.63	17.08	74	32.37	Peak	36.3	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band III 802.11A20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2492.64	50.60	-3.45	74	23.40	Peak	193.3	100	Horizontal	PASS
2	4988.38	50.87	9.30	74	23.13	Peak	216.1	150	Horizontal	PASS
3	5700.85	102.86	9.95	68.2	-34.66	Peak	79.4	100	Horizontal	N/A
4	7018.32	45.44	12.67	68.2	22.76	Peak	132.9	200	Horizontal	PASS
5	9978.25	44.25	14.64	68.2	23.95	Peak	296.5	150	Horizontal	PASS
6	10539.25	44.57	17.54	68.2	23.63	Peak	334.3	200	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band IV 802.11A20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2490.71	51.09	-3.36	74	22.91	Peak	297.9	200	Vertical	PASS
2	5000.77	52.18	9.25	74	21.82	Peak	229	150	Vertical	PASS
3	5745.62	103.14	9.90	68.2	-34.94	Peak	349.3	200	Vertical	N/A
4	7031.24	43.41	12.96	68.2	24.79	Peak	204.3	100	Vertical	PASS
5	9527.25	44.16	16.33	68.2	24.04	Peak	128.5	100	Vertical	PASS
6	11947.25	41.82	16.28	74	32.18	Peak	168.3	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band IV 802.11A20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.81	49.50	-3.43	74	24.50	Peak	69.2	100	Horizontal	PASS
2	4985.22	51.20	9.38	74	22.80	Peak	48.9	150	Horizontal	PASS
3	5745.98	104.01	9.90	68.2	-35.81	Peak	41.5	100	Horizontal	N/A
4	7013.55	43.77	12.81	68.2	24.43	Peak	183.8	150	Horizontal	PASS
5	9598.75	43.57	15.03	68.2	24.63	Peak	288.4	200	Horizontal	PASS
6	10357.75	47.26	17.16	68.2	20.94	Peak	5.6	200	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band IV 802.11A20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.41	51.60	-3.29	74	22.40	Peak	229.1	100	Vertical	PASS
2	5002.05	51.78	9.22	74	22.22	Peak	207.9	150	Vertical	PASS
3	5825.50	104.42	9.71	68.2	-36.22	Peak	357.9	100	Vertical	N/A
4	7025.36	43.79	12.96	68.2	24.41	Peak	53.2	200	Vertical	PASS
5	8732.50	44.58	13.74	68.2	23.62	Peak	275.7	150	Vertical	PASS
6	10773.00	41.85	16.75	74	32.15	Peak	139.1	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band IV 802.11A20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2490.93	49.22	-3.43	74	24.78	Peak	98.3	100	Horizontal	PASS
2	4988.25	50.72	9.47	74	23.28	Peak	166	150	Horizontal	PASS
3	5825.36	103.44	9.82	68.2	-35.24	Peak	20	100	Horizontal	N/A
4	7031.95	43.95	12.63	68.2	24.25	Peak	252.2	200	Horizontal	PASS
5	9043.25	41.42	13.79	74	32.58	Peak	273.7	150	Horizontal	PASS
6	11471.50	46.85	16.02	74	27.15	Peak	31.3	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band I 802.11AC20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.16	52.29	-3.44	74	21.71	Peak	231.5	100	Vertical	PASS
2	5000.58	52.89	9.46	74	21.11	Peak	319.2	150	Vertical	PASS
3	5180.48	103.61	9.71	68.2	-35.41	Peak	207.2	150	Vertical	N/A
4	7021.98	44.34	12.81	68.2	23.86	Peak	320.9	200	Vertical	PASS
5	14730.25	48.21	18.05	68.2	19.99	Peak	239.6	150	Vertical	PASS
6	17386.75	56.83	21.65	68.2	11.37	Peak	102.6	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band I 802.11AC20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2488.99	50.03	-3.44	74	23.97	Peak	120.9	150	Horizontal	PASS
2	4993.93	50.69	9.39	74	23.31	Peak	137.7	200	Horizontal	PASS
3	5180.73	102.54	9.95	68.2	-34.34	Peak	79.1	100	Horizontal	N/A
4	7018.10	45.29	12.66	68.2	22.91	Peak	121.2	200	Horizontal	PASS
5	14119.75	46.16	17.56	68.2	22.04	Peak	276.6	150	Horizontal	PASS
6	15571.75	51.10	20.40	74	22.90	Peak	264.2	100	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band I 802.11AC20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.50	50.89	-3.45	74	23.11	Peak	13.1	100	Vertical	PASS
1*	2491.50	47.52	-3.45	54	6.48	AV	13.1	150	Vertical	PASS
2	4999.57	51.67	9.42	74	22.33	Peak	275.3	100	Vertical	PASS
3	5240.53	104.64	9.88	68.2	-36.44	Peak	156.1	150	Vertical	N/A
4	7035.68	44.54	12.65	68.2	23.66	Peak	30.5	200	Vertical	PASS
5	13127.00	48.17	16.64	68.2	20.03	Peak	143.8	150	Vertical	PASS
6	15382.00	51.50	20.98	74	22.50	Peak	73.6	200	Vertical	PASS

1 GHz to 18 GHz, ANT H Band I 802.11AC20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2489.36	49.29	-3.29	74	24.71	Peak	24.5	100	Horizontal	PASS
2	4987.20	50.49	9.39	74	23.51	Peak	6.1	150	Horizontal	PASS
3	5240.96	102.57	9.92	68.2	-34.37	Peak	355.9	100	Horizontal	N/A
4	7023.67	45.19	12.67	68.2	23.01	Peak	32.9	150	Horizontal	PASS
5	8545.50	42.82	14.84	68.2	25.38	Peak	205.1	200	Horizontal	PASS
6	11419.25	45.86	16.00	74	28.14	Peak	149.5	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band II 802.11AC20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2492.81	50.82	-3.36	74	23.18	Peak	320.2	150	Vertical	PASS
1*	2492.81	45.18	-3.36	54	8.82	AV	320.2	200	Vertical	PASS
2	5003.69	52.00	9.42	74	22.00	Peak	37.8	100	Vertical	PASS
3	5260.21	104.16	9.95	68.2	-35.96	Peak	140.1	100	Vertical	N/A
4	7033.13	44.36	12.81	68.2	23.84	Peak	145.1	150	Vertical	PASS
5	14029.00	45.95	18.63	68.2	22.25	Peak	84.4	200	Vertical	PASS
6	15360.00	50.50	22.04	74	23.50	Peak	141.4	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band II 802.11AC20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2492.30	50.10	-3.29	74	23.90	Peak	33	100	Horizontal	PASS
2	4988.57	50.24	9.30	74	23.76	Peak	168.4	150	Horizontal	PASS
3	5260.13	104.15	9.71	68.2	-35.95	Peak	349.6	100	Horizontal	N/A
4	7022.80	43.53	12.67	68.2	24.67	Peak	194.5	200	Horizontal	PASS
5	14815.50	47.80	17.08	68.2	20.40	Peak	29.3	150	Horizontal	PASS
6	15890.75	49.47	23.66	74	24.53	Peak	309.3	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band II 802.11AC20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.63	52.21	-3.29	74	21.79	Peak	206.5	100	Vertical	PASS
2	4998.21	51.80	9.46	74	22.20	Peak	78.7	150	Vertical	PASS
3	5321.00	103.36	9.77	68.2	-35.16	Peak	315.9	100	Vertical	N/A
4	7031.07	43.82	12.81	68.2	24.38	Peak	335.2	150	Vertical	PASS
5	12566.00	49.08	17.27	74	24.92	Peak	45.7	200	Vertical	PASS
6	17276.75	49.03	20.31	68.2	19.17	Peak	305.5	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band II 802.11AC20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.63	49.70	-3.51	74	24.30	Peak	276.8	100	Horizontal	PASS
2	4991.91	51.59	9.38	74	22.41	Peak	317.3	150	Horizontal	PASS
3	5320.81	104.09	9.90	68.2	-35.89	Peak	16.6	100	Horizontal	N/A
4	7020.01	43.91	12.67	68.2	24.29	Peak	239.6	200	Horizontal	PASS
5	9304.50	43.47	14.57	74	30.53	Peak	182.1	150	Horizontal	PASS
6	11631.00	43.02	16.75	74	30.98	Peak	153.6	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band III 802.11AC20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2490.76	52.89	-3.44	74	21.11	Peak	34.5	200	Vertical	PASS
2	5003.20	52.76	9.35	74	21.24	Peak	97.1	150	Vertical	PASS
3	5500.42	104.90	9.77	68.2	-36.70	Peak	331.2	150	Vertical	N/A
4	7029.58	44.52	12.91	68.2	23.68	Peak	19.4	100	Vertical	PASS
5	11914.25	47.74	17.45	74	26.26	Peak	174.2	150	Vertical	PASS
6	16537.00	49.09	25.93	68.2	19.11	Peak	195.1	200	Vertical	PASS

1 GHz to 18 GHz, ANT H Band III 802.11AC20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2490.28	49.20	-3.36	74	24.80	Peak	39.8	150	Horizontal	PASS
2	4988.30	50.28	9.39	74	23.72	Peak	273.9	150	Horizontal	PASS
3	5500.44	103.05	9.88	68.2	-34.85	Peak	284	100	Horizontal	N/A
4	7026.28	43.98	12.96	68.2	24.22	Peak	176.9	100	Horizontal	PASS
5	14177.50	48.29	17.73	68.2	19.91	Peak	212.3	150	Horizontal	PASS
6	15624.00	52.75	28.29	74	21.25	Peak	254.6	200	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band III 802.11AC20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2493.40	50.28	-3.44	74	23.72	Peak	340.7	100	Vertical	PASS
2	4998.63	51.80	9.48	74	22.20	Peak	102.5	150	Vertical	PASS
3	5700.98	104.13	9.90	68.2	-35.93	Peak	298.4	100	Vertical	N/A
4	7030.48	42.70	12.96	68.2	25.50	Peak	171.4	200	Vertical	PASS
5	14727.50	44.30	18.63	68.2	23.90	Peak	236.1	150	Vertical	PASS
6	15203.25	50.63	21.80	68.2	17.57	Peak	306.5	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band III 802.11AC20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2490.81	50.28	-3.41	74	23.72	Peak	137.8	150	Horizontal	PASS
2	4989.58	51.53	9.45	74	22.47	Peak	95.9	100	Horizontal	PASS
3	5700.25	103.92	9.90	68.2	-35.71	Peak	79.8	150	Horizontal	N/A
4	7031.31	45.11	12.67	68.2	23.09	Peak	199.7	200	Horizontal	PASS
5	8685.75	41.69	14.73	68.2	26.51	Peak	164.1	200	Horizontal	PASS
6	11532.00	44.49	16.44	74	29.51	Peak	231.3	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band IV 802.11AC20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2492.48	51.58	-3.43	74	22.42	Peak	342.2	100	Vertical	PASS
2	4996.70	53.44	9.22	74	20.56	Peak	288.3	150	Vertical	PASS
3	5745.62	104.40	9.90	68.2	-36.20	Peak	63.7	100	Vertical	N/A
4	7023.16	44.45	12.92	68.2	23.75	Peak	200.7	200	Vertical	PASS
5	9645.50	44.53	15.70	68.2	23.67	Peak	222.2	150	Vertical	PASS
6	10566.75	43.16	16.37	68.2	25.04	Peak	255.8	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band IV 802.11AC20 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2490.91	50.34	-3.29	74	23.67	Peak	110.6	150	Horizontal	PASS
2	4989.09	49.85	9.30	74	24.15	Peak	14.3	200	Horizontal	PASS
3	5745.52	102.85	9.77	68.2	-34.65	Peak	307.3	200	Horizontal	N/A
4	7022.70	44.44	12.66	68.2	23.76	Peak	313.2	150	Horizontal	PASS
5	8732.50	43.72	14.62	68.2	24.48	Peak	201.3	150	Horizontal	PASS
6	11507.25	45.68	16.83	74	28.32	Peak	150.1	100	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band IV 802.11AC20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.91	52.78	-3.29	74	21.22	Peak	37.1	150	Vertical	PASS
2	5001.28	51.64	9.46	74	22.36	Peak	119.8	100	Vertical	PASS
3	5825.01	104.02	9.71	68.2	-35.82	Peak	182.7	150	Vertical	N/A
4	7030.08	44.17	12.67	68.2	24.03	Peak	308.8	100	Vertical	PASS
5	9062.50	42.99	14.39	74	31.01	Peak	126.3	150	Vertical	PASS
6	11331.25	42.70	15.37	74	31.30	Peak	98.4	200	Vertical	PASS

1 GHz to 18 GHz, ANT V Band IV 802.11AC20 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.78	50.54	-3.41	74	23.46	Peak	285.7	100	Horizontal	PASS
2	4988.41	51.22	9.41	74	22.78	Peak	247.5	150	Horizontal	PASS
3	5825.67	102.92	9.77	68.2	-34.72	Peak	176.2	200	Horizontal	N/A
4	7022.42	43.56	12.65	68.2	24.64	Peak	123.1	150	Horizontal	PASS
5	8592.25	46.02	15.84	68.2	22.18	Peak	352	200	Horizontal	PASS
6	10162.50	44.54	16.41	68.2	23.66	Peak	72.9	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band I 802.11AC40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.52	52.70	-3.44	74	21.30	Peak	220.3	100	Vertical	PASS
2	5004.38	52.19	9.48	74	21.81	Peak	73.1	150	Vertical	PASS
3	5190.98	103.98	9.71	68.2	-35.78	Peak	12.6	100	Vertical	N/A
4	7032.38	43.61	12.91	68.2	24.59	Peak	104.5	200	Vertical	PASS
5	10008.50	41.47	15.72	68.2	26.73	Peak	90	150	Vertical	PASS
6	10872.00	44.35	14.95	74	29.65	Peak	109.3	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band I 802.11AC40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2489.17	50.10	-3.29	74	23.90	Peak	351.4	150	Horizontal	PASS
2	4989.05	50.70	9.45	74	23.30	Peak	267	100	Horizontal	PASS
3	5210.85	102.59	9.82	68.2	-34.39	Peak	145.1	200	Horizontal	N/A
4	7016.44	45.20	12.96	68.2	23.00	Peak	353.6	150	Horizontal	PASS
5	8883.75	44.48	14.07	68.2	23.72	Peak	121.9	100	Horizontal	PASS
6	11226.75	46.30	15.27	74	27.70	Peak	151.9	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band I 802.11AC40 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.11	52.57	-3.45	74	21.43	Peak	251.1	150	Vertical	PASS
2	4999.56	52.87	9.35	74	21.13	Peak	65.9	150	Vertical	PASS
3	5230.04	103.25	9.82	68.2	-35.05	Peak	322.9	100	Vertical	N/A
4	7033.23	43.54	12.67	68.2	24.66	Peak	30.7	100	Vertical	PASS
5	9098.25	44.04	14.07	74	29.96	Peak	69.4	150	Vertical	PASS
6	10880.25	47.86	16.55	74	26.14	Peak	108.2	200	Vertical	PASS

1 GHz to 18 GHz, ANT H Band I 802.11AC40 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2492.91	49.90	-3.36	74	24.10	Peak	264	150	Horizontal	PASS
2	4993.27	50.63	9.45	74	23.37	Peak	47.9	100	Horizontal	PASS
3	5230.62	102.89	9.88	68.2	-34.69	Peak	71.7	100	Horizontal	N/A
4	7019.50	44.20	12.67	68.2	24.00	Peak	195.2	150	Horizontal	PASS
5	9752.75	44.87	14.75	68.2	23.33	Peak	317.5	200	Horizontal	PASS
6	11897.75	43.11	16.00	74	30.89	Peak	261.7	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band II 802.11AC40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2489.66	52.28	-3.29	74	21.72	Peak	119.7	150	Vertical	PASS
1*	2489.66	47.64	-3.29	54	6.36	AV	119.7	100	Vertical	PASS
2	4999.47	52.31	9.22	74	21.69	Peak	162.6	150	Vertical	PASS
3	5270.30	104.17	9.95	68.2	-35.97	Peak	229.3	100	Vertical	N/A
4	7029.19	43.81	12.65	68.2	24.39	Peak	188	200	Vertical	PASS
5	9057.00	44.09	15.63	74	29.91	Peak	350.8	200	Vertical	PASS
6	11237.75	46.13	16.20	74	27.87	Peak	86.4	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band II 802.11AC40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2489.48	50.23	-3.41	74	23.77	Peak	140.6	100	Horizontal	PASS
2	4988.46	50.98	9.39	74	23.02	Peak	322.5	150	Horizontal	PASS
3	5290.70	103.10	9.90	68.2	-34.90	Peak	105.5	200	Horizontal	N/A
4	7013.99	45.21	12.67	68.2	22.99	Peak	184.3	100	Horizontal	PASS
5	9167.00	41.82	13.96	74	32.18	Peak	210.1	200	Horizontal	PASS
6	10223.00	45.70	15.95	68.2	22.50	Peak	1.4	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band II 802.11AC40 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2489.76	52.52	-3.29	74	21.48	Peak	273	150	Vertical	PASS
2	4999.08	52.88	9.46	74	21.12	Peak	223.7	100	Vertical	PASS
3	5310.87	103.76	9.82	68.2	-35.56	Peak	349.6	150	Vertical	N/A
4	7028.52	42.66	12.81	68.2	25.54	Peak	16	100	Vertical	PASS
5	9557.50	44.98	14.07	68.2	23.22	Peak	41.2	200	Vertical	PASS
6	10982.00	48.96	16.26	74	25.04	Peak	249.3	150	Vertical	PASS

1 GHz to 18 GHz, ANT V Band II 802.11AC40 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2489.75	49.18	-3.29	74	24.82	Peak	120.1	150	Horizontal	PASS
2	4990.85	51.36	9.47	74	22.64	Peak	81.2	100	Horizontal	PASS
3	5310.26	102.90	9.92	68.2	-34.70	Peak	283.5	150	Horizontal	N/A
4	7023.40	44.75	12.92	68.2	23.45	Peak	35.1	100	Horizontal	PASS
5	9769.25	43.53	14.97	68.2	24.67	Peak	116.2	150	Horizontal	PASS
6	11185.50	44.06	16.18	74	29.94	Peak	84.6	200	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band III 802.11AC40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.24	52.21	-3.43	74	21.79	Peak	215	100	Vertical	PASS
2	4999.68	51.79	9.22	74	22.21	Peak	141.2	150	Vertical	PASS
3	5510.97	103.73	9.77	68.2	-35.53	Peak	63.2	100	Vertical	N/A
4	7031.78	44.23	12.96	68.2	23.97	Peak	337.2	200	Vertical	PASS
5	9139.50	40.95	13.99	74	33.05	Peak	22.9	150	Vertical	PASS
6	11262.50	44.40	16.76	74	29.60	Peak	69.7	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band III 802.11AC40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2489.09	50.54	-3.44	74	23.46	Peak	83.6	100	Horizontal	PASS
2	4987.39	49.88	9.35	74	24.12	Peak	242.9	150	Horizontal	PASS
3	5530.65	103.99	9.90	68.2	-35.79	Peak	179.8	100	Horizontal	N/A
4	7017.87	45.01	12.92	68.2	23.19	Peak	130.7	200	Horizontal	PASS
5	10011.25	42.73	15.47	68.2	25.47	Peak	323	150	Horizontal	PASS
6	11840.00	42.51	17.19	74	31.49	Peak	25.8	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band III 802.11AC40 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2489.75	52.84	-3.44	74	21.16	Peak	286.3	150	Vertical	PASS
2	5000.29	52.89	9.46	74	21.11	Peak	85.3	200	Vertical	PASS
3	5670.17	103.58	9.88	68.2	-35.38	Peak	314.7	200	Vertical	N/A
4	7023.22	42.73	12.65	68.2	25.47	Peak	207.3	150	Vertical	PASS
5	9964.50	44.75	14.46	68.2	23.45	Peak	329.1	100	Vertical	PASS
6	11647.50	46.78	16.93	74	27.22	Peak	159.9	150	Vertical	PASS

1 GHz to 18 GHz, ANT V Band III 802.11AC40 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2488.60	50.62	-3.41	74	23.38	Peak	137.2	150	Horizontal	PASS
2	4992.77	50.01	9.47	74	23.99	Peak	195.1	100	Horizontal	PASS
3	5670.52	103.68	9.88	68.2	-35.48	Peak	355.1	150	Horizontal	N/A
4	7021.24	45.40	12.81	68.2	22.80	Peak	60.8	200	Horizontal	PASS
5	9835.25	43.46	14.02	68.2	24.74	Peak	158.2	150	Horizontal	PASS
6	11760.25	43.26	15.09	74	30.74	Peak	341.8	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band IV 802.11AC40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2493.68	52.84	-3.44	74	21.16	Peak	167.4	150	Vertical	PASS
2	5000.33	51.98	9.22	74	22.02	Peak	304.2	150	Vertical	PASS
3	5755.18	104.56	9.95	68.2	-36.36	Peak	281.9	100	Vertical	N/A
4	7025.96	42.57	12.65	68.2	25.63	Peak	230.3	100	Vertical	PASS
5	8699.50	41.50	13.82	68.2	26.72	Peak	223.8	200	Vertical	PASS
6	10250.50	44.11	16.79	68.2	24.12	Peak	68.2	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band IV 802.11AC40 Low Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2489.21	50.05	-3.29	74	23.95	Peak	35.5	100	Horizontal	PASS
2	4991.69	50.19	9.47	74	23.81	Peak	46	150	Horizontal	PASS
3	5775.10	103.03	9.95	68.2	-34.83	Peak	322	100	Horizontal	N/A
4	7026.40	45.04	12.65	68.2	23.16	Peak	129.8	200	Horizontal	PASS
5	9818.75	43.82	14.25	68.2	24.38	Peak	78.2	150	Horizontal	PASS
6	11144.25	43.25	14.99	74	30.75	Peak	28.6	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band IV 802.11AC40 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2490.71	52.74	-3.36	74	21.26	Peak	4.4	150	Vertical	PASS
2	4996.18	52.67	9.46	74	21.33	Peak	152.1	100	Vertical	PASS
3	5795.71	104.12	9.92	68.2	-35.92	Peak	244.7	100	Vertical	N/A
4	7027.67	44.34	12.91	68.2	23.86	Peak	322.1	150	Vertical	PASS
5	9241.25	44.87	15.69	68.2	23.33	Peak	232.4	200	Vertical	PASS
6	11757.50	43.97	16.38	74	30.03	Peak	301.8	200	Vertical	PASS

1 GHz to 18 GHz, ANT V Band IV 802.11AC40 High Channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2492.97	50.29	-3.44	74	23.71	Peak	105.3	150	Horizontal	PASS
2	4987.69	51.48	9.38	74	22.52	Peak	97.8	100	Horizontal	PASS
3	5795.01	102.76	9.92	68.2	-34.56	Peak	231.8	100	Horizontal	N/A
4	7015.57	44.89	12.67	68.2	23.31	Peak	355.6	200	Horizontal	PASS
5	9480.50	42.09	14.27	74	31.91	Peak	231.9	150	Horizontal	PASS
6	11048.00	46.35	17.72	74	27.65	Peak	24.3	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band I 802.11ac80

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2490.24	52.25	-3.44	74	21.75	Peak	214.4	100	Vertical	PASS
2	5002.90	52.11	9.25	74	21.89	Peak	238.1	100	Vertical	PASS
3	5210.69	105.08	9.71	68.2	-36.88	Peak	347.8	150	Vertical	N/A
4	7023.06	43.01	12.65	68.2	25.19	Peak	115.3	200	Vertical	PASS
5	8531.75	45.70	14.44	68.2	22.50	Peak	99.5	150	Vertical	PASS
6	11886.75	45.03	17.71	74	28.97	Peak	284.5	200	Vertical	PASS

1 GHz to 18 GHz, ANT H Band I 802.11ac80

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2490.06	49.19	-3.43	74	24.81	Peak	32.7	150	Horizontal	PASS
2	4989.32	49.70	9.45	74	24.30	Peak	207.9	150	Horizontal	PASS
3	5210.53	104.09	9.71	68.2	-35.89	Peak	309.2	100	Horizontal	N/A
4	7020.89	44.10	12.67	68.2	24.10	Peak	334.5	100	Horizontal	PASS
5	9326.50	45.46	14.54	74	28.54	Peak	227.1	150	Horizontal	PASS
6	10489.75	43.54	15.74	68.2	24.66	Peak	335.1	200	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band II 802.11ac80

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2490.67	52.61	-3.44	74	21.39	Peak	162.3	150	Vertical	PASS
2	4998.22	53.09	9.42	74	20.91	Peak	176.9	100	Vertical	PASS
3	5290.31	103.16	9.77	68.2	-34.96	Peak	225.8	200	Vertical	N/A
4	7027.94	43.70	12.65	68.2	24.50	Peak	158.1	200	Vertical	PASS
5	8721.50	43.60	14.84	68.2	24.60	Peak	219.9	150	Vertical	PASS
6	10366.00	43.07	16.61	68.2	25.13	Peak	180.7	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band II 802.11ac80

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.37	49.30	-3.44	74	24.70	Peak	162.4	150	Horizontal	PASS
2	4988.26	50.44	9.35	74	23.56	Peak	293.1	100	Horizontal	PASS
3	5290.28	103.00	9.90	68.2	-34.80	Peak	63.6	200	Horizontal	N/A
4	7015.99	44.89	12.67	68.2	23.31	Peak	29.4	150	Horizontal	PASS
5	9219.25	42.05	14.84	68.2	26.15	Peak	176.7	200	Horizontal	PASS
6	11072.75	45.58	15.86	74	28.42	Peak	17.5	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band III 802.11ac80

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2490.22	51.40	-3.45	74	22.60	Peak	69.7	100	Vertical	PASS
2	4999.62	52.00	9.25	74	22.00	Peak	331	150	Vertical	PASS
3	5530.30	103.35	9.71	68.2	-35.15	Peak	70.8	100	Vertical	N/A
4	7024.31	44.30	12.91	68.2	23.90	Peak	258.8	150	Vertical	PASS
5	9736.25	47.50	14.18	68.2	20.70	Peak	74.9	200	Vertical	PASS
6	11292.75	44.81	15.75	74	29.19	Peak	174.6	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band III 802.11ac80

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.69	49.74	-3.43	74	24.26	Peak	154.9	150	Horizontal	PASS
2	4987.44	50.61	9.45	74	23.39	Peak	197.4	200	Horizontal	PASS
3	5530.67	103.86	9.95	68.2	-35.66	Peak	348.3	100	Horizontal	N/A
4	7026.03	43.99	12.92	68.2	24.21	Peak	188.1	150	Horizontal	PASS
5	8677.50	43.54	15.56	68.2	24.66	Peak	135.6	200	Horizontal	PASS
6	11424.75	45.61	16.92	74	28.39	Peak	324.5	150	Horizontal	PASS

1 GHz to 18 GHz, ANT V Band IV 802.11ac80

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2490.22	51.40	-3.45	74	22.60	Peak	69.7	150	Vertical	PASS
2	4999.62	52.00	9.25	74	22.00	Peak	331	100	Vertical	PASS
3	5775.30	103.35	9.71	68.2	-35.15	Peak	70.8	100	Vertical	N/A
4	7024.31	44.30	12.91	68.2	23.90	Peak	258.8	150	Vertical	PASS
5	9736.25	47.50	14.18	68.2	20.70	Peak	74.9	200	Vertical	PASS
6	11292.75	44.81	15.75	74	29.19	Peak	174.6	150	Vertical	PASS

1 GHz to 18 GHz, ANT H Band IV 802.11ac80

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2491.69	49.74	-3.43	74	24.26	Peak	154.9	150	Horizontal	PASS
2	4987.44	50.61	9.45	74	23.39	Peak	197.4	100	Horizontal	PASS
3	5775.67	103.86	9.95	68.2	-35.66	Peak	348.3	200	Horizontal	N/A
4	7026.03	43.99	12.92	68.2	24.21	Peak	188.1	150	Horizontal	PASS
5	8677.50	43.54	15.56	68.2	24.66	Peak	135.6	150	Horizontal	PASS
6	11424.75	45.61	16.92	74	28.39	Peak	324.5	100	Horizontal	PASS

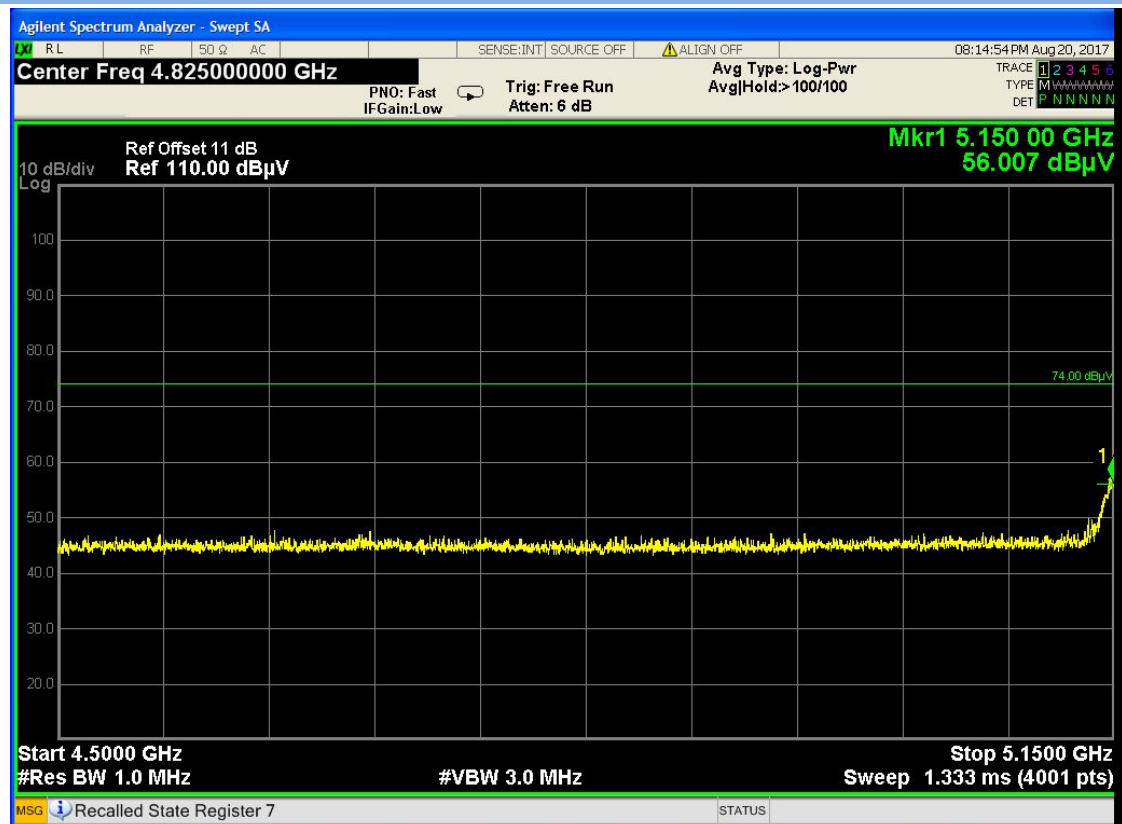
A.7.2 Band Edge (Restricted-band)

Test Band	Mode	Channel	Verdict
Band I	802.11a	Low	Pass
		High	Pass
	802.11ac(HT20)	Low	Pass
		High	Pass
	802.11ac(HT40)	Low	Pass
		High	Pass
Band II	802.11a	Low	Pass
		High	Pass
	802.11ac(HT20)	Low	Pass
		High	Pass
	802.11ac(HT40)	Low	Pass
		High	Pass
Band III	802.11a	Low	Pass
		High	Pass
	802.11ac(HT20)	Low	Pass
		High	Pass
	802.11ac(HT40)	Low	Pass
		High	Pass
Band IV	802.11a	Low	Pass
		High	Pass
	802.11ac(HT20)	Low	Pass
		High	Pass
	802.11ac(HT40)	Low	Pass
		High	Pass
Band V	802.11a	Low	Pass
		High	Pass
	802.11ac(HT20)	Low	Pass
		High	Pass
	802.11ac(HT40)	Low	Pass
		High	Pass

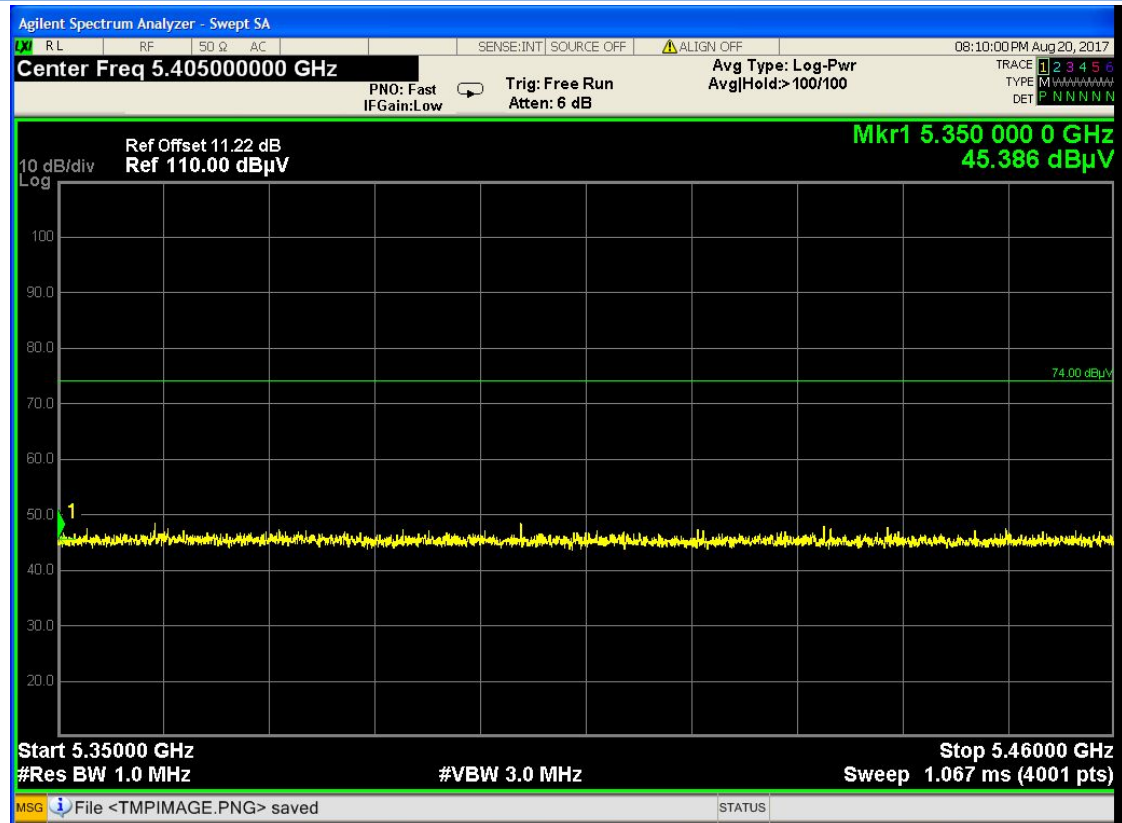
Band I 11a CH36 AV



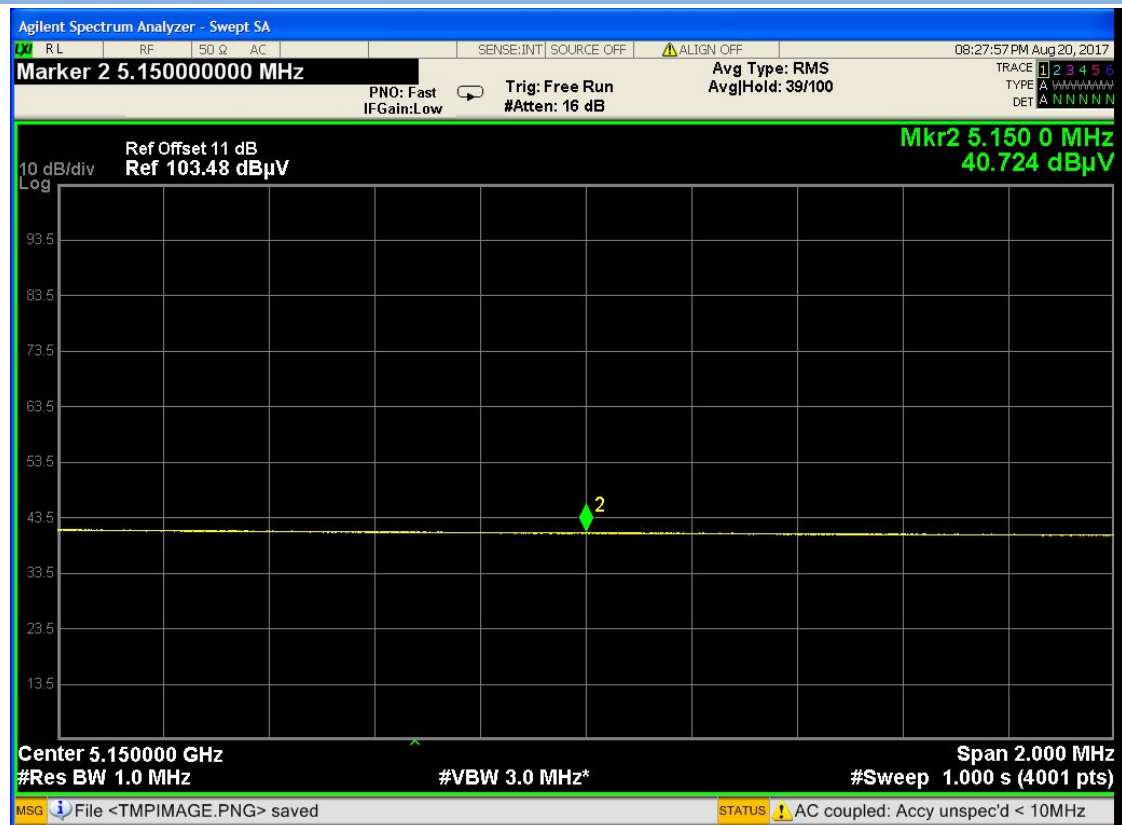
Band I 11a CH36 Peak



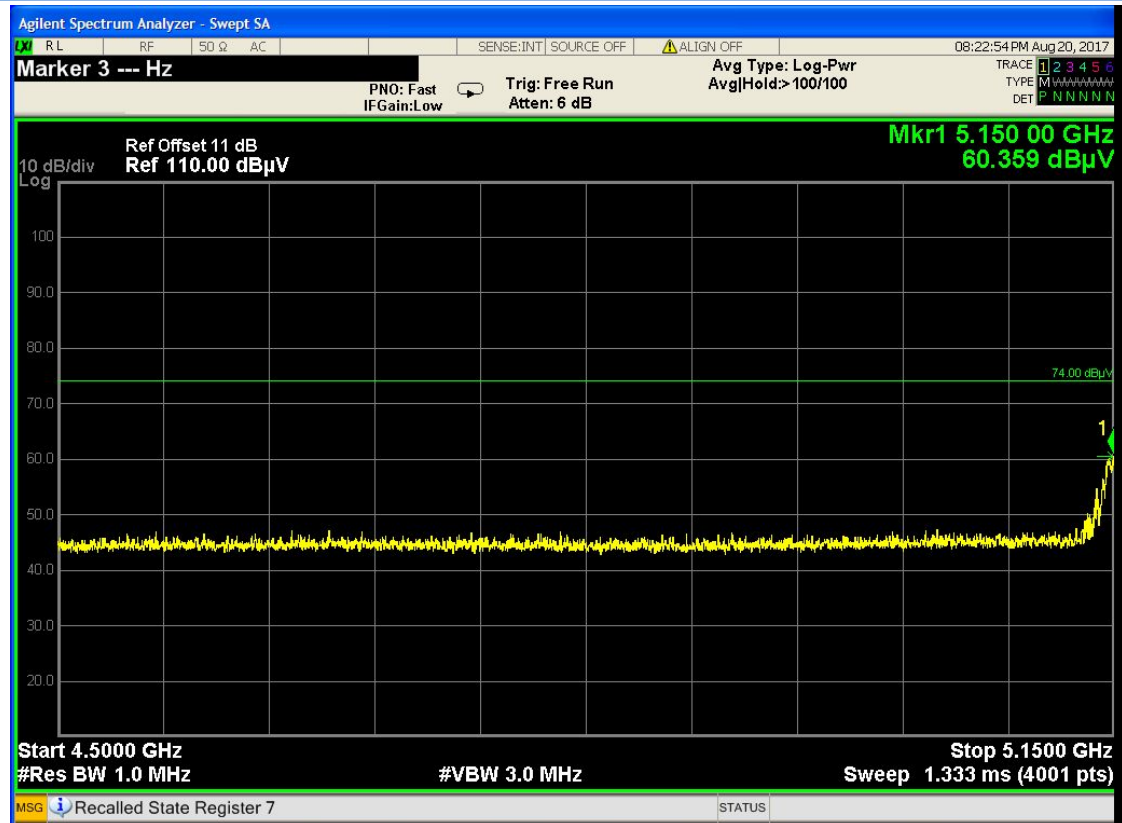
Band I 11a CH48



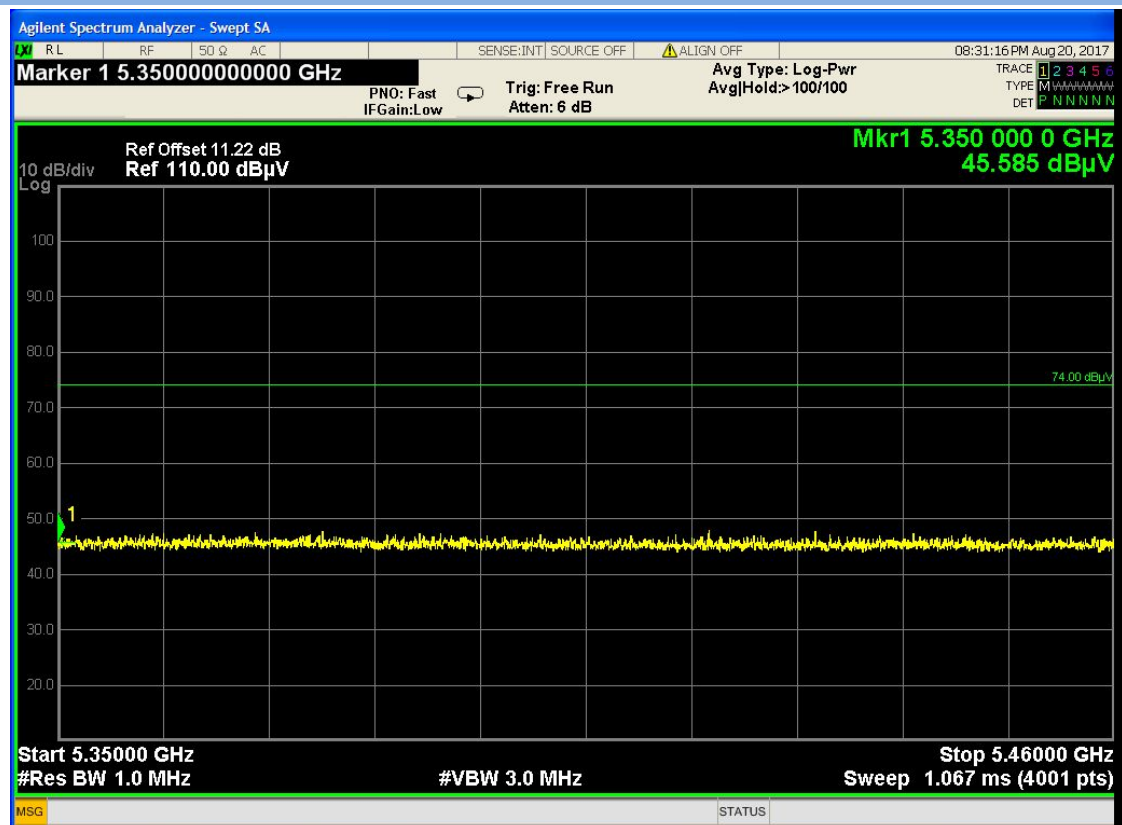
Band I 11ac CH36 AV



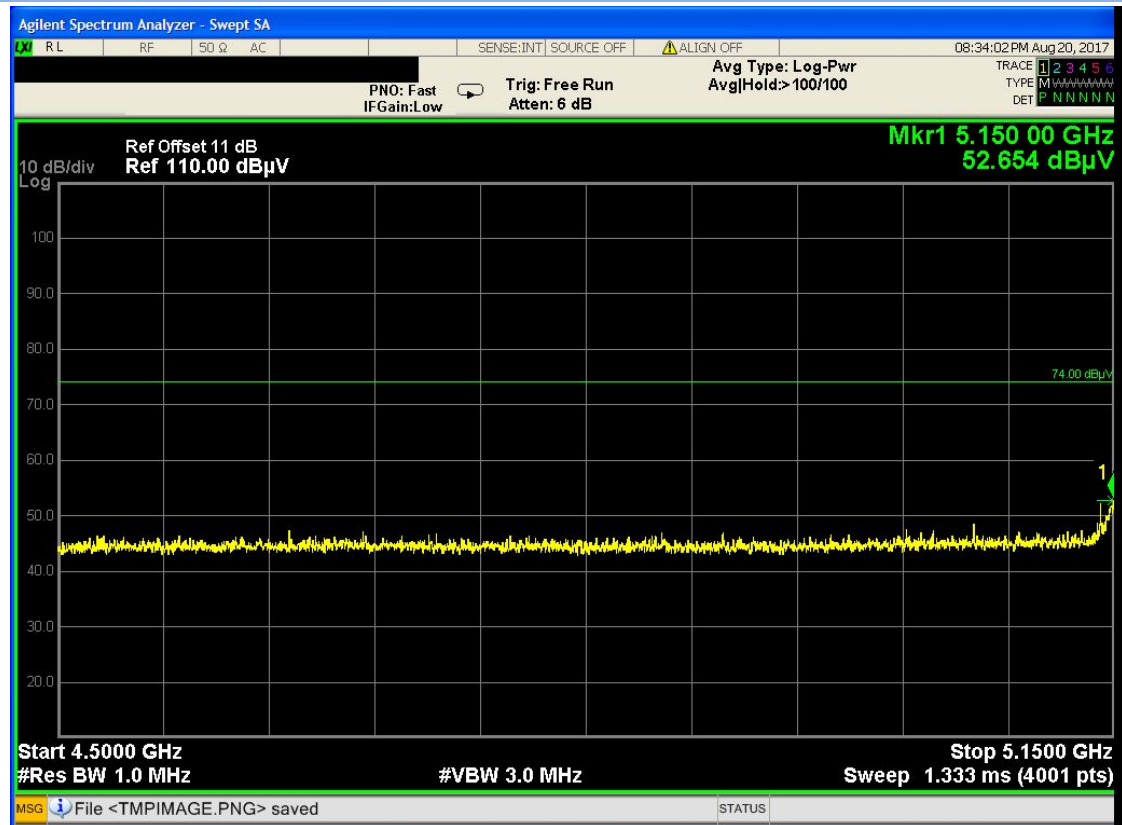
Band I 11ac CH36 Peak



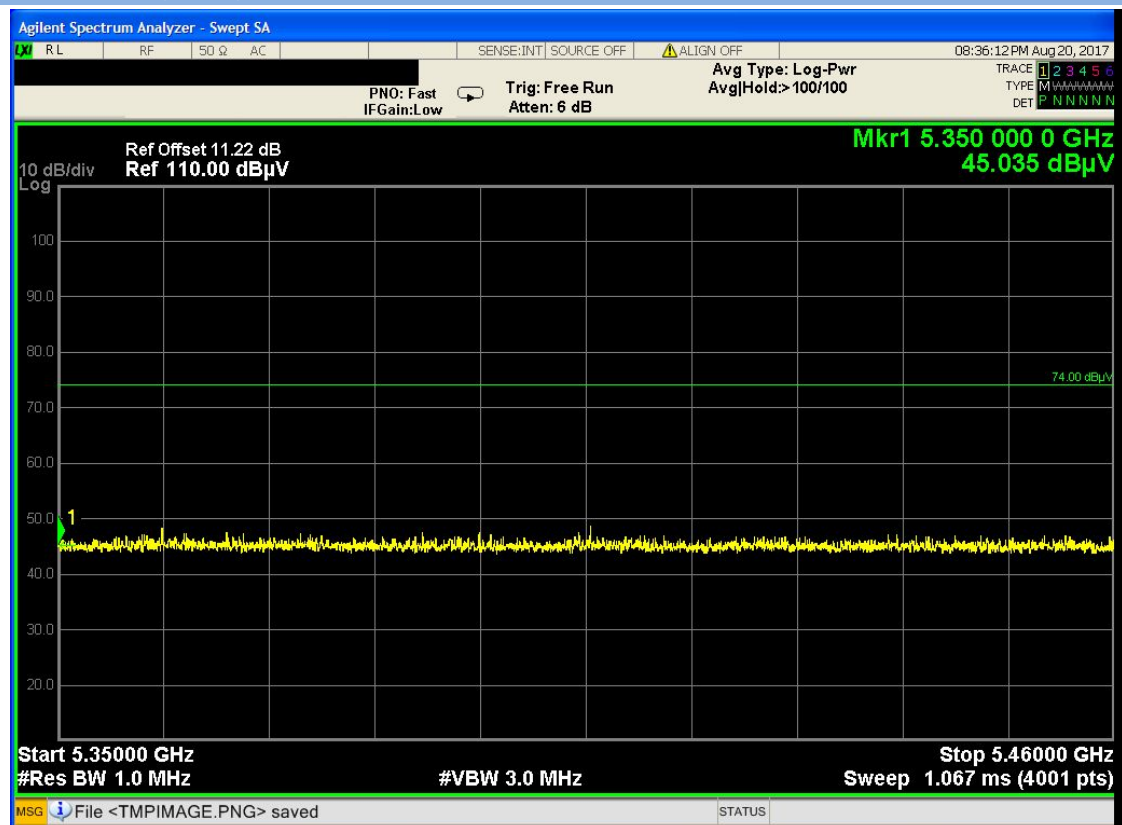
Band I 11ac CH48



Band I 11ac(HT40) CH38



Band I 11ac(HT40) CH46



Agilent Spectrum Analyzer - Swept SA

UX | RL | RF | 50 Ω | AC | SENSE:INT | SOURCE OFF | ALIGN OFF | 08:38:15 PM Aug 20, 2017

PNO: Fast Trig: Free Run Avg Type: Log-Pwr
IFGain:Low Atten: 6 dB Avg|Hold:> 100/100

TRACE 1 2 3 4 5 6
TYPE M H L S F
DET P N N N N N

Ref Offset 11 dB
Ref 110.00 dB μ V

Mkr1 5.150 00 GHz
51.747 dB μ V

10 dB/div
Log

74.00 dB μ V

Start 4.5000 GHz
#Res BW 1.0 MHz

#VBW 3.0 MHz

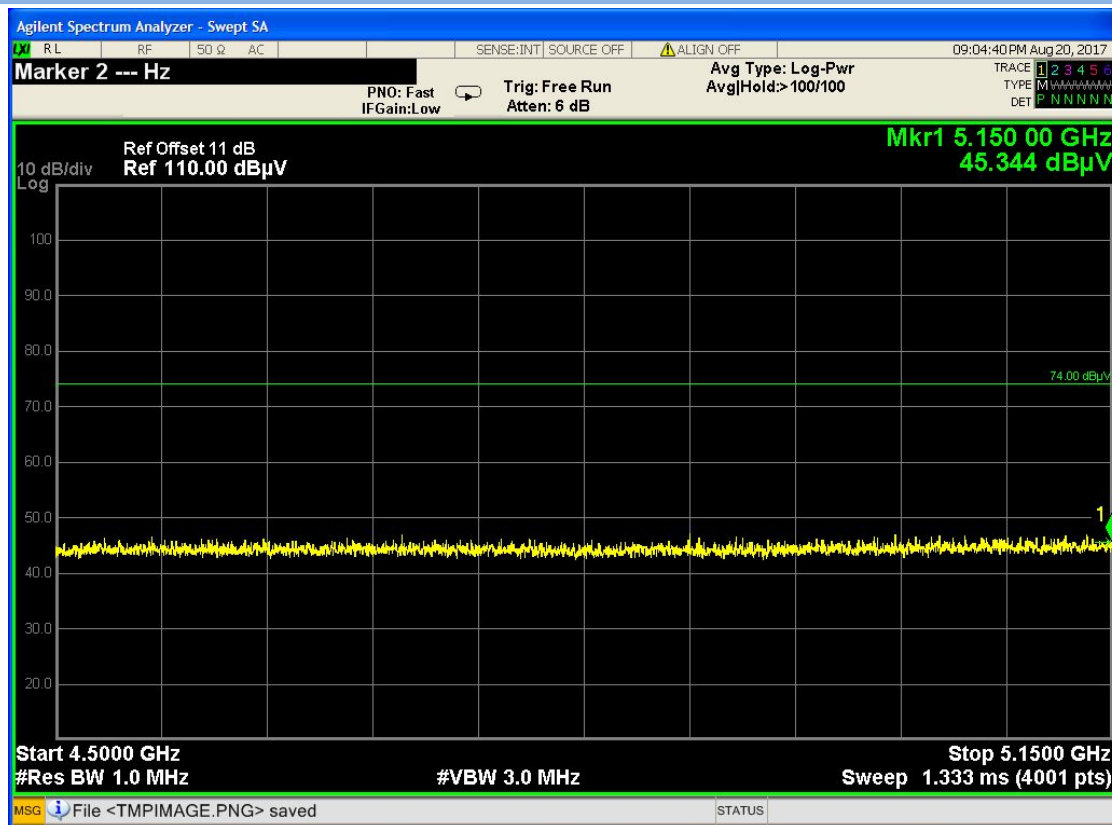
Stop 5.1500 GHz
Sweep 1.333 ms (4001 pts)

MSG File <TMPIMAGE.PNG> saved | STATUS

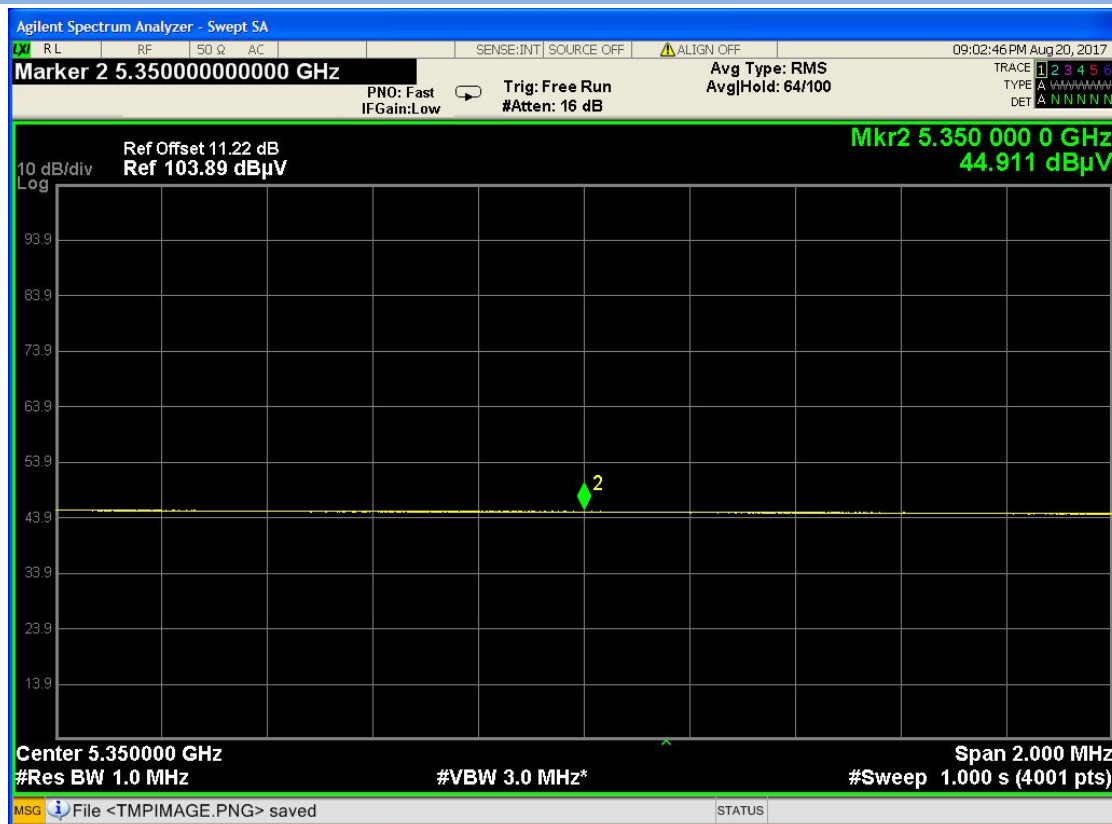
The screenshot displays the Agilent Spectrum Analyzer interface. The top status bar shows the instrument name "Agilent Spectrum Analyzer - Swept SA", various input/output settings (RL, RF, 50 Ω, AC), and the date/time "08:39:45 PM Aug 20, 2017". Below this, control parameters are visible: "PN0: Fast IF Gain: Low", "Trig: Free Run Atten: 6 dB", "Avg Type: Log-Pwr", and "Avg|Hold:> 100/100". A trace configuration menu is open on the right, showing "TRACE 1", "TYPE M", and "DET P".

The main display area shows a spectrum plot with a logarithmic scale. The vertical axis is labeled "10 dB/div Log" and ranges from 20.0 to 100.0 dBμV. The horizontal axis represents frequency, with labels "Start 5.35000 GHz", "#Res BW 1.0 MHz", "#VBW 3.0 MHz", "Stop 5.46000 GHz", and "Sweep 1.067 ms (4001 pts)". The plot itself shows a noisy baseline centered around 45 dBμV, with no significant signal peaks. A reference level is indicated as "Ref 110.00 dBμV". A marker "Mkr1" is positioned at 5.35000 GHz with a value of 44.927 dBμV.

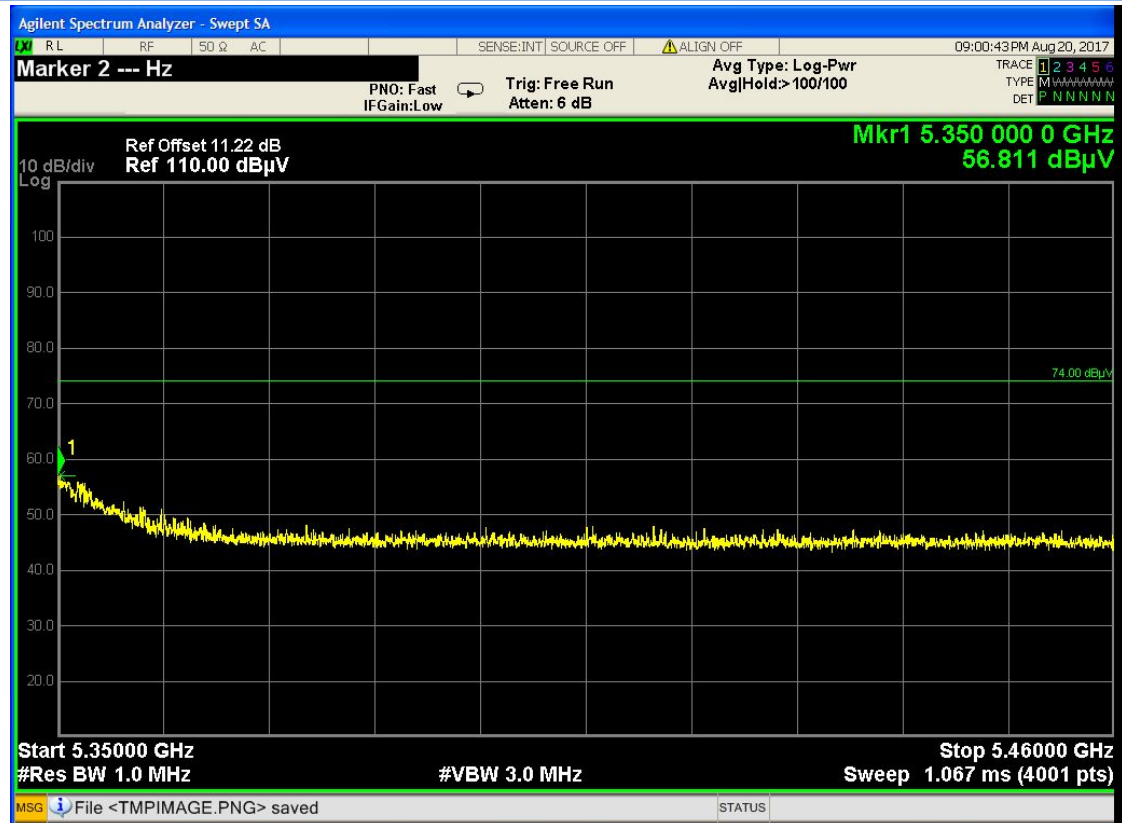
Band II 11a CH52



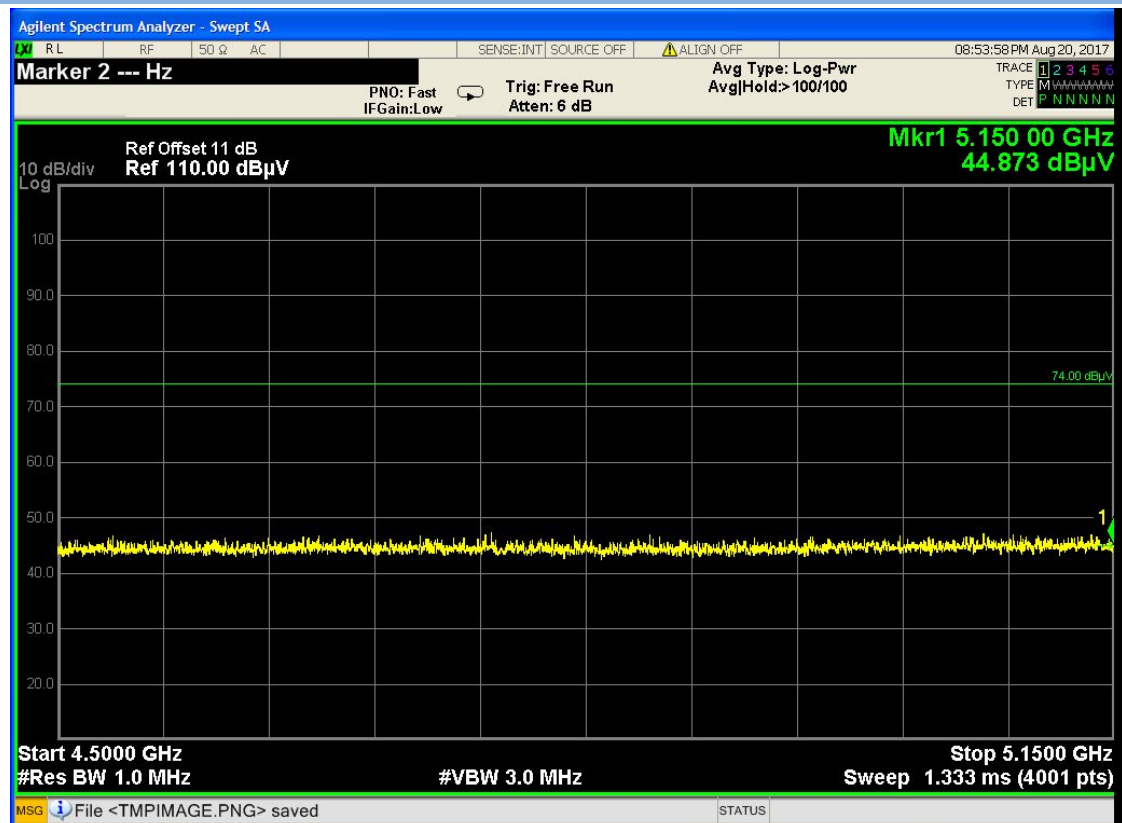
Band II 11a CH64 AV



Band II 11a CH64 Peak



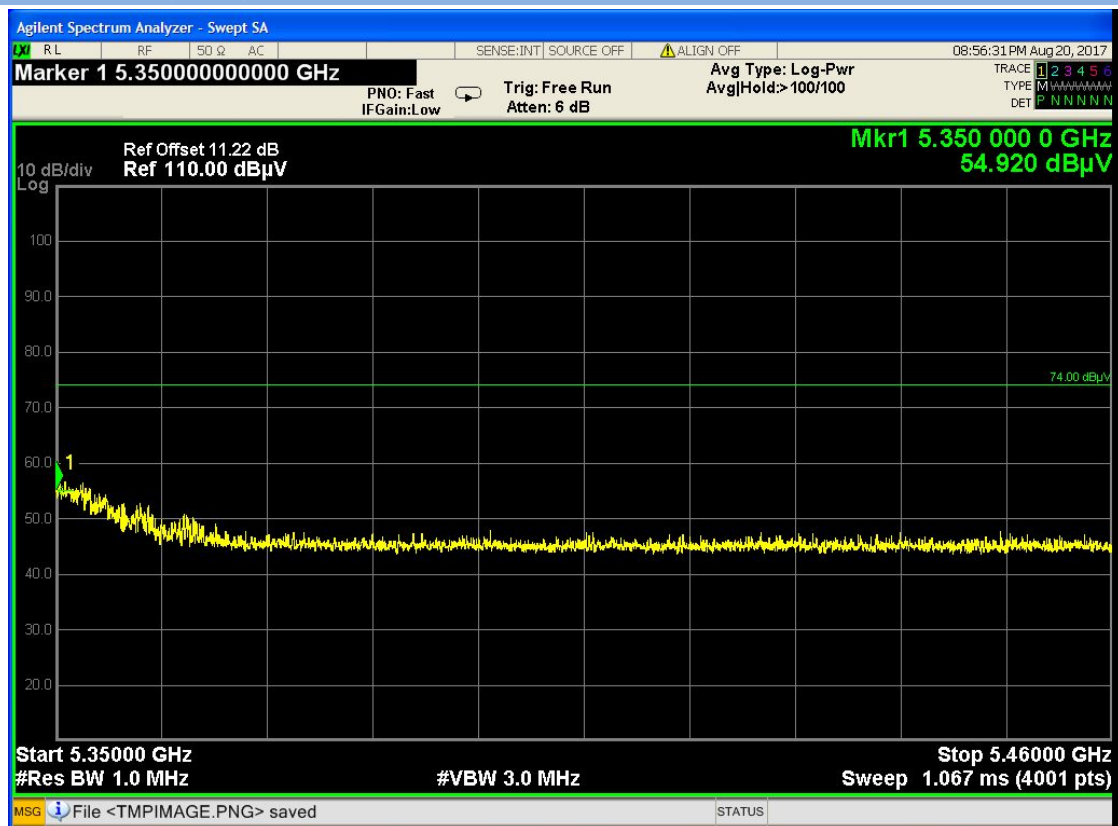
Band II 11ac(HT20) CH52



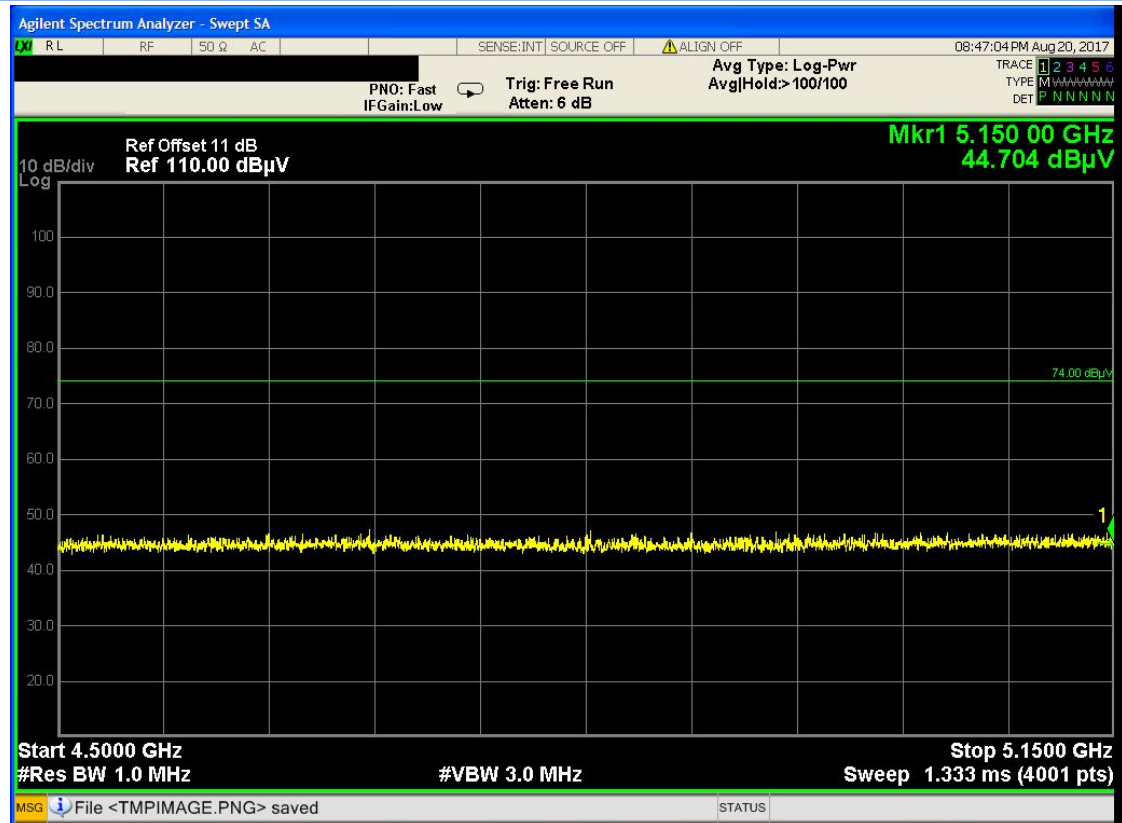
Band II 11ac(HT20) CH64 AV



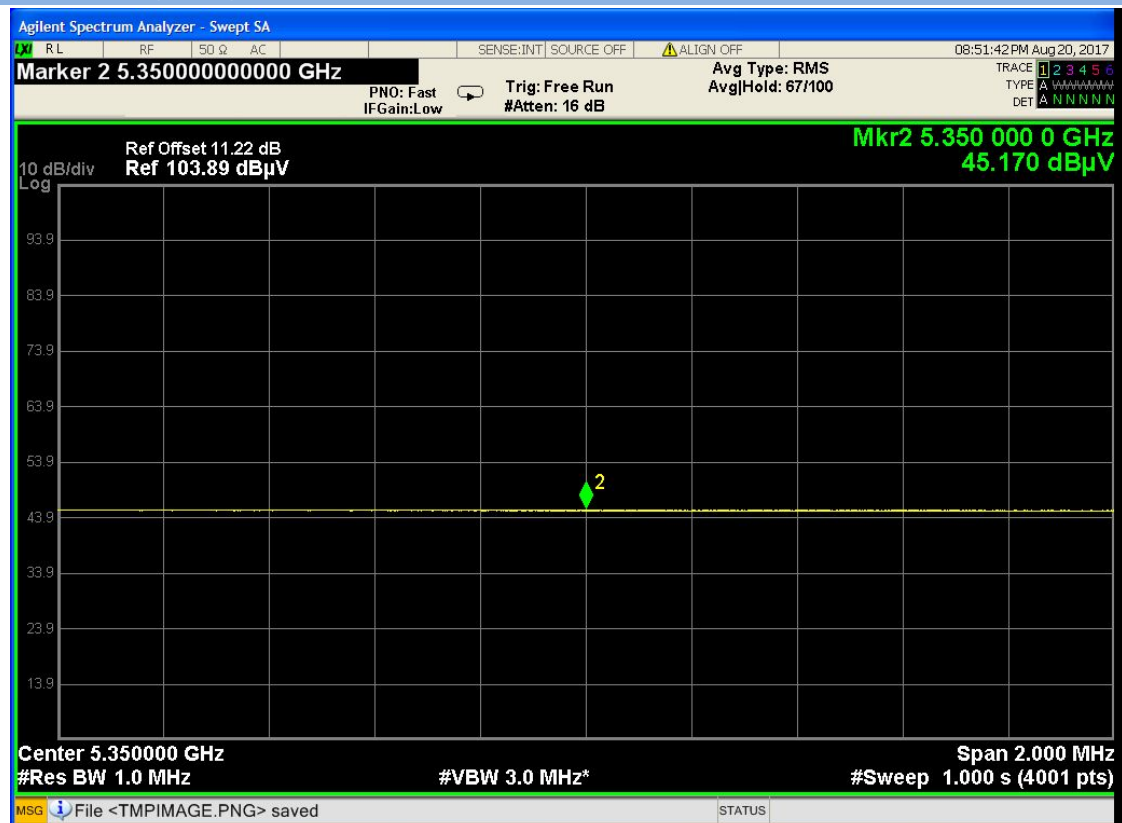
Band II 11ac(HT20) CH64 Peak



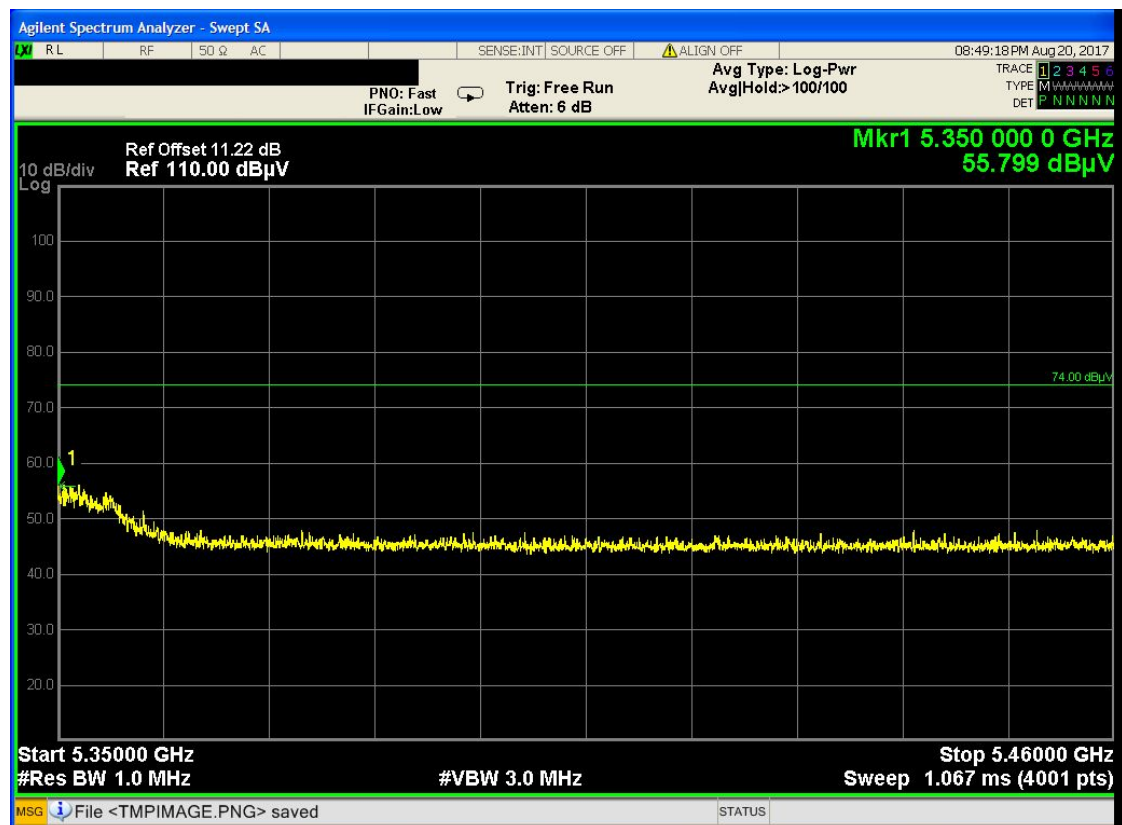
Band II 11ac(HT40) CH54



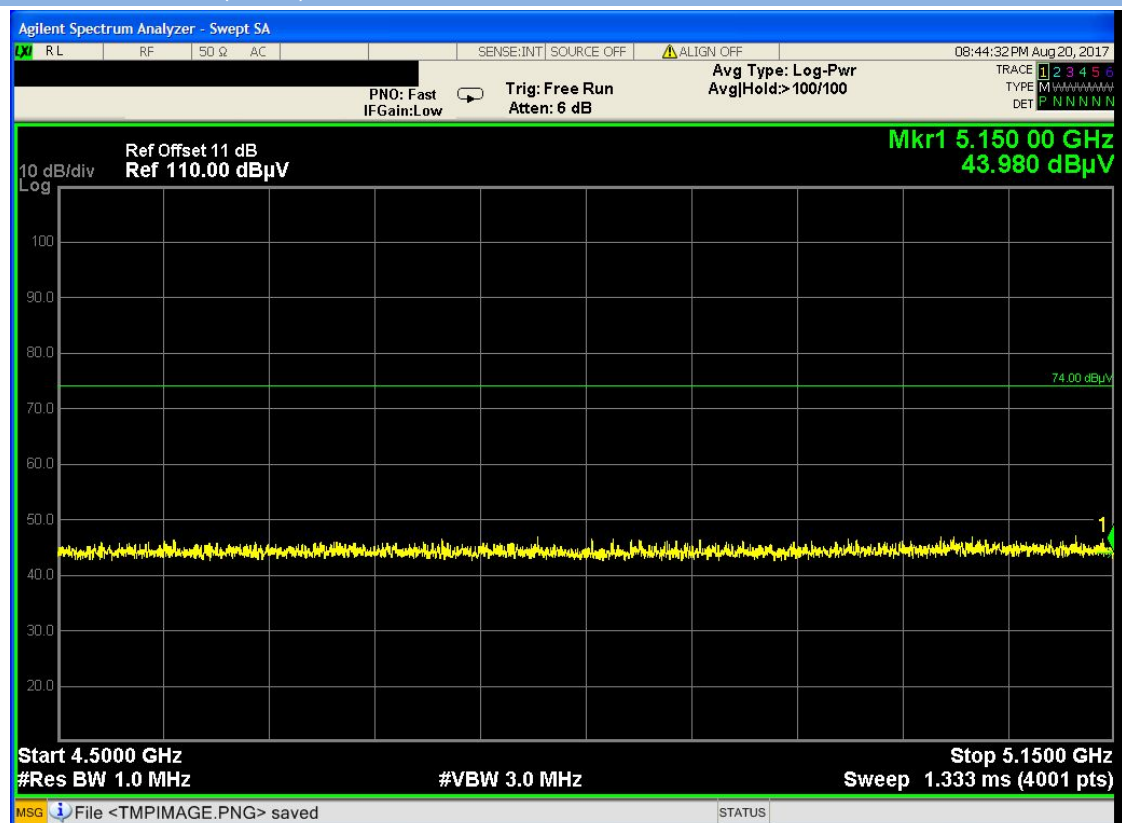
Band II 11n(HT40) CH62 AV



Band II 11n(HT40) CH62 Peak



Left Band II 11ac(HT80) CH58



Agilent Spectrum Analyzer - Swept SA

08:43:38 PM Aug 20, 2017

SENSE:INT SOURCE OFF ALIGN OFF

RL RF 50 Ω AC

PNO: Fast IF Gain: Low Trig: Free Run Atten: 6 dB Avg Type: Log-Pwr Avg|Hold: > 100/100

TRACE 1 2 3 4 5 6 TYPE M N N N N N N N DET P N N N N N N

Ref Offset 11.22 dB Ref 110.00 dB μ V

Mkr1 5.350 000 0 GHz 53.861 dB μ V

10 dB/div Log

74.00 dB μ V

Start 5.35000 GHz #Res BW 1.0 MHz #VBW 3.0 MHz Stop 5.46000 GHz Sweep 1.067 ms (4001 pts)

MSG File <TMPIMAGE.PNG> saved STATUS

The image shows a screenshot of an Agilent Spectrum Analyzer. The main display area is a grid with a yellow trace representing the signal spectrum. The trace is noisy and centered around 5.35 GHz. The vertical axis is labeled '10 dB/div Log' and ranges from 20.0 to 100.0. The horizontal axis is labeled 'Start 5.35000 GHz' and 'Stop 5.46000 GHz'. The resolution bandwidth is '#Res BW 1.0 MHz' and the video bandwidth is '#VBW 3.0 MHz'. The sweep time is 'Sweep 1.067 ms (4001 pts)'. The signal level is indicated as 'Mkr1 5.350 000 0 GHz 53.861 dBμV'. The reference level is 'Ref 110.00 dBμV' and the reference offset is 'Ref Offset 11.22 dB'. The display also shows various control parameters such as 'SENSE:INT', 'SOURCE OFF', 'ALIGN OFF', 'PNO: Fast', 'IF Gain: Low', 'Trig: Free Run', 'Atten: 6 dB', 'Avg Type: Log-Pwr', and 'Avg|Hold: > 100/100'. The status bar at the bottom shows 'MSG File <TMPIMAGE.PNG> saved' and 'STATUS'.

Agilent Spectrum Analyzer - Swept SA

RL RF 50 Ω AC SENSE:INT SOURCE OFF ALIGN OFF 02:47:41 AM Aug 17, 2017

Sweep Time 30.0 s

PASS PNO: Fast IF Gain: Low Trig: Free Run Atten: 6 dB Avg Type: Log-Pwr Avg/Hold: 1/100

TRACE 1 2 3 4 5 6 TYPE M N N N N N DET P N N N N N

Ref Offset 11 dB
Ref 110.00 dB μ V

Mkr1 5.470 00 GHz
46.632 dB μ V

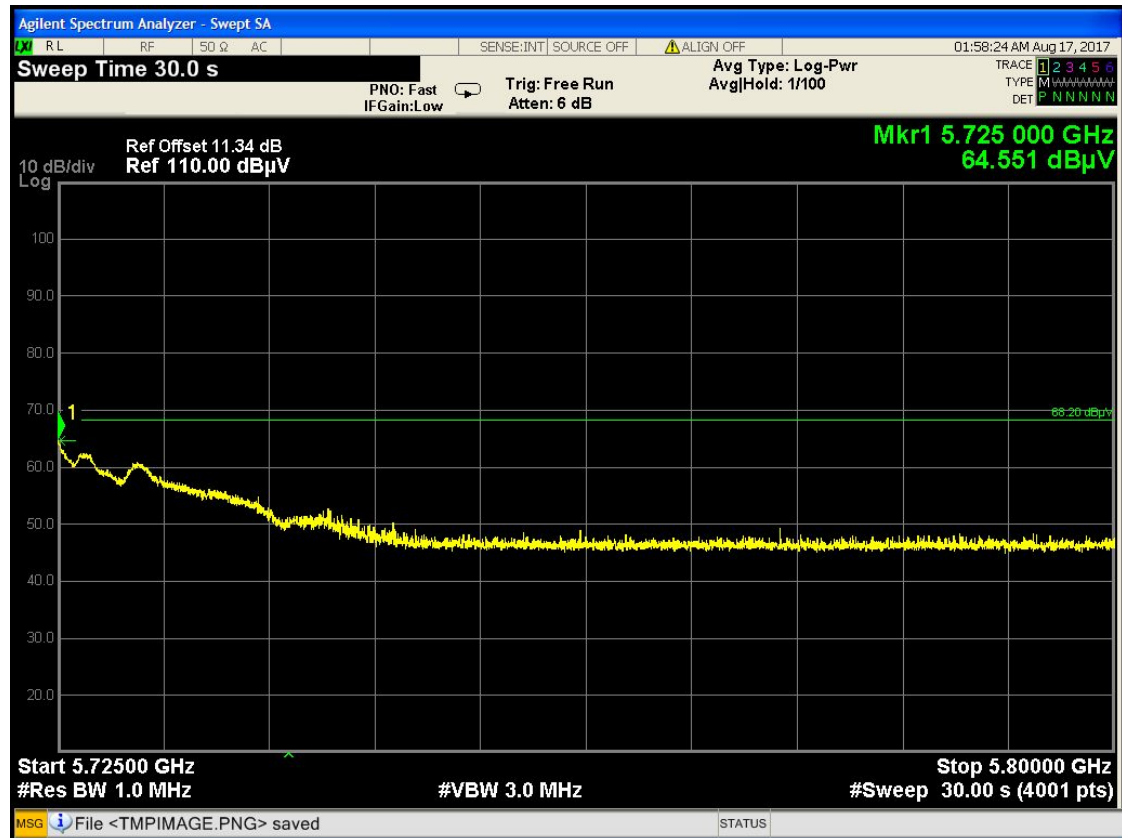
10 dB/div
Log

Trace 1 Pass

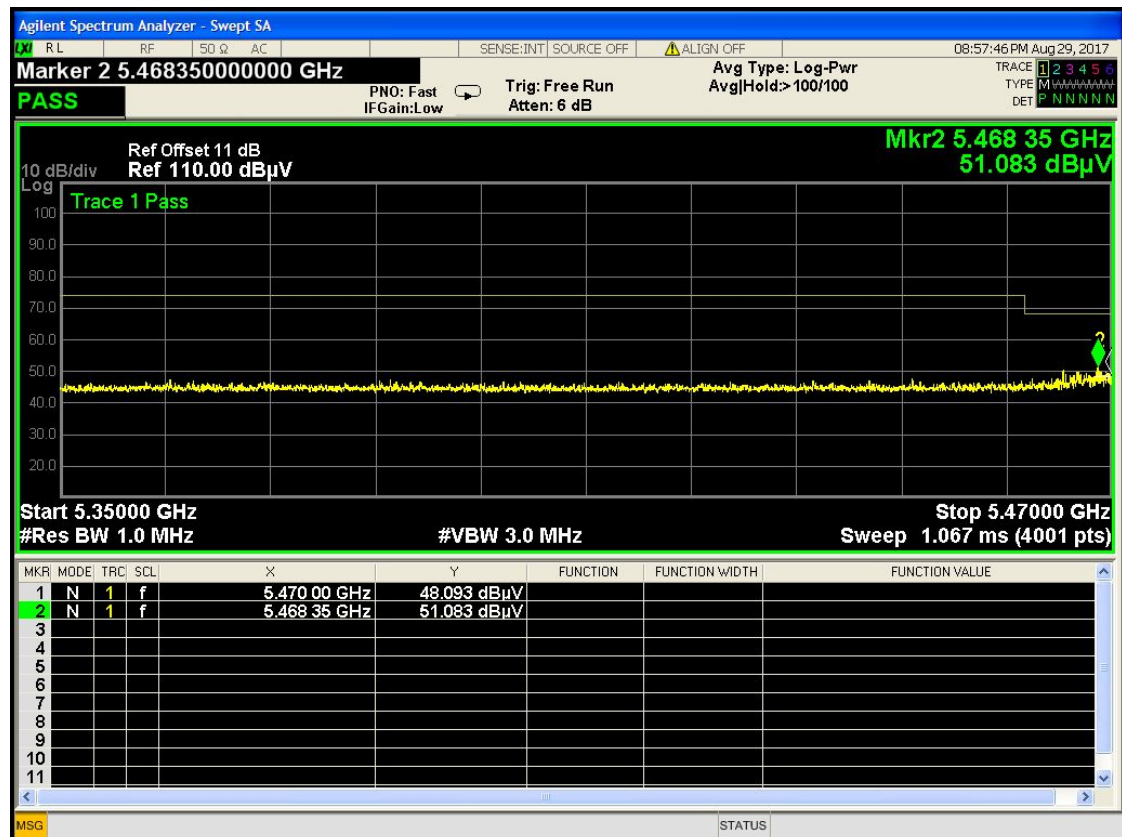
Start 5.35000 GHz Stop 5.47000 GHz
#Res BW 1.0 MHz #VBW 3.0 MHz #Sweep 30.00 s (4001 pts)

MSG File <TMPIMAGE.PNG> saved STATUS

Band III 11a CH140



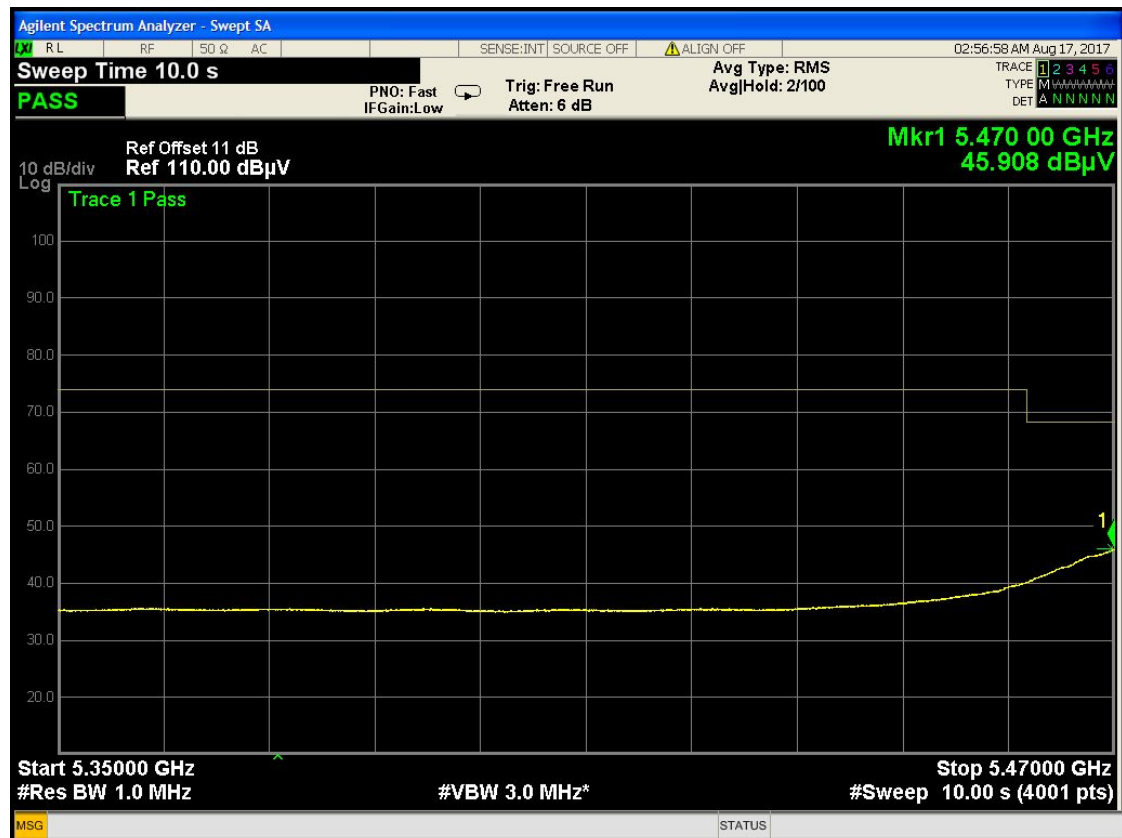
Band III 11ac(HT20) CH100



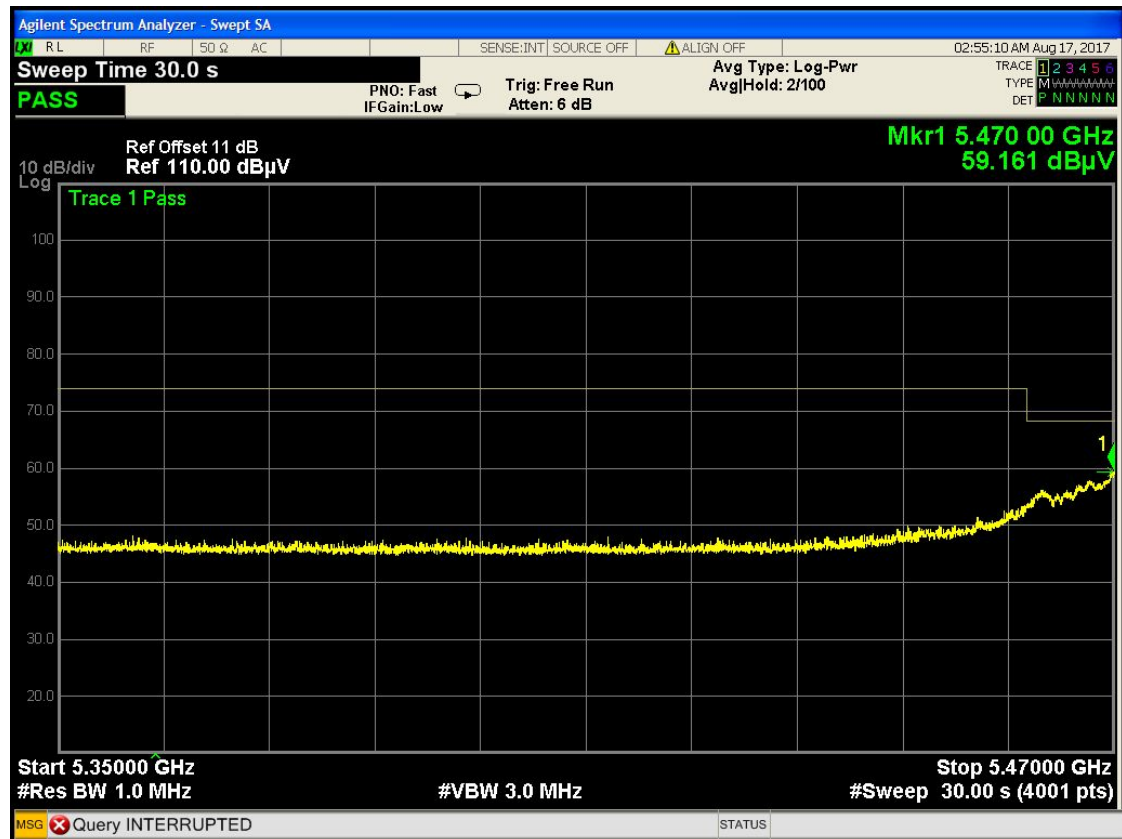
Band III 11ac(HT20) CH140



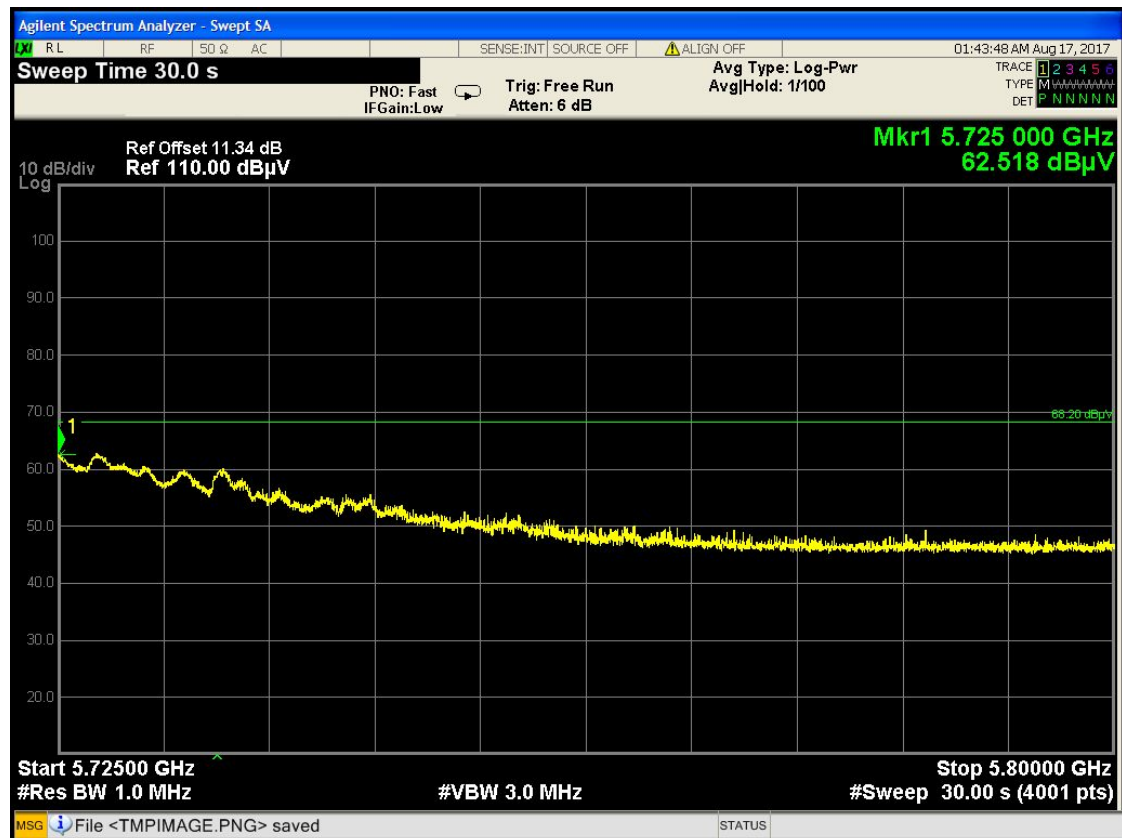
Band III 11ac(HT40) CH102 AV



Band III 11ac(HT40) CH102 Peak



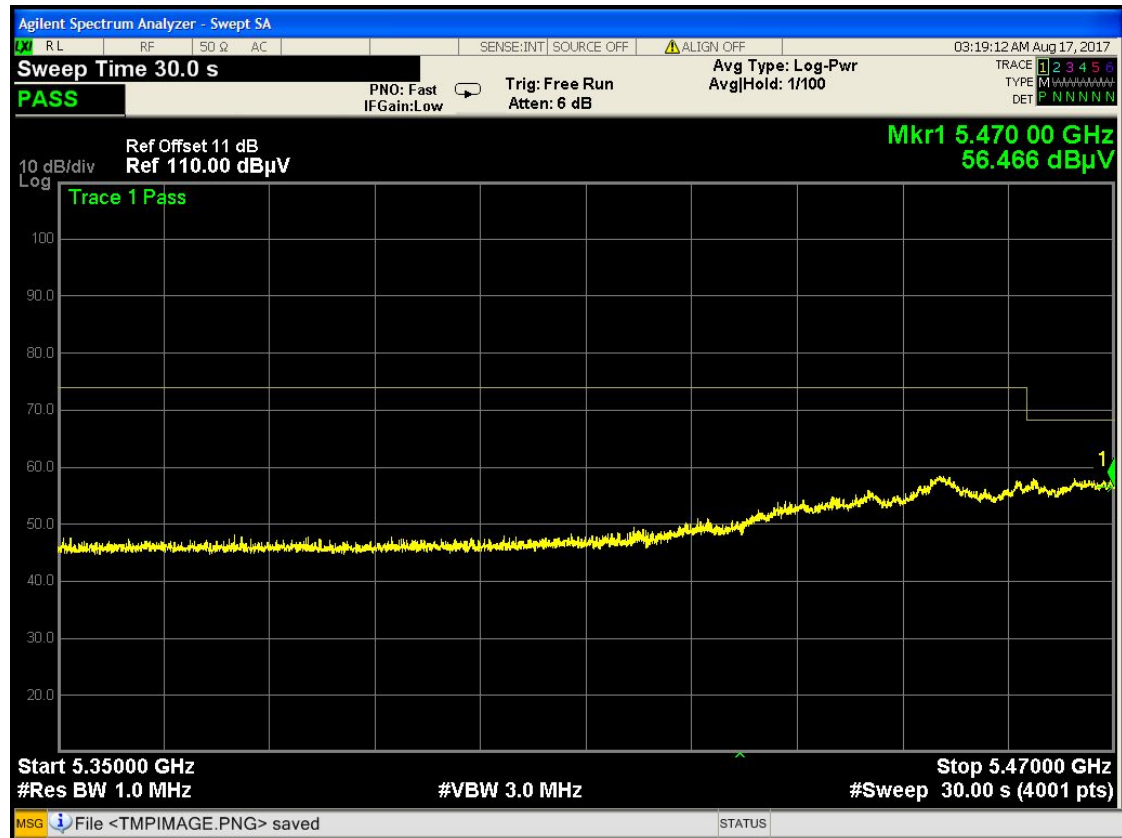
Band III 11ac(HT40) CH134



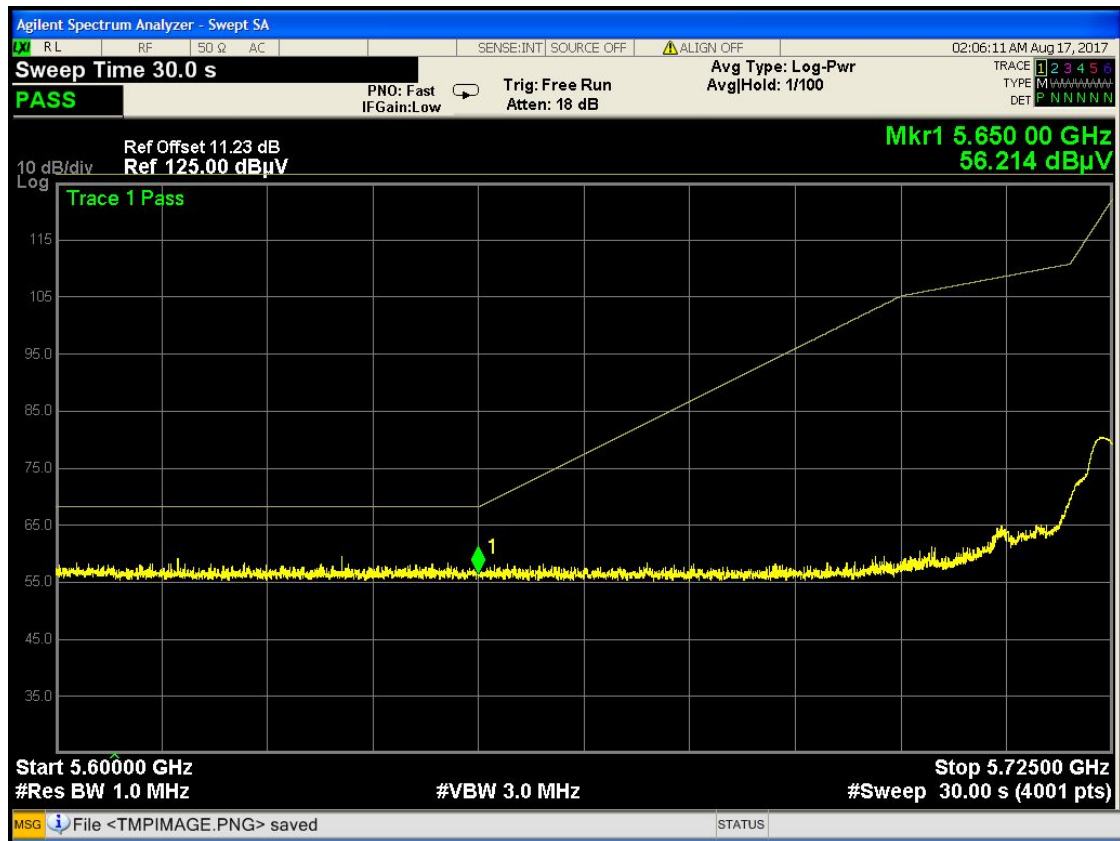
Left Band III 11ac(HT80) CH106 AV



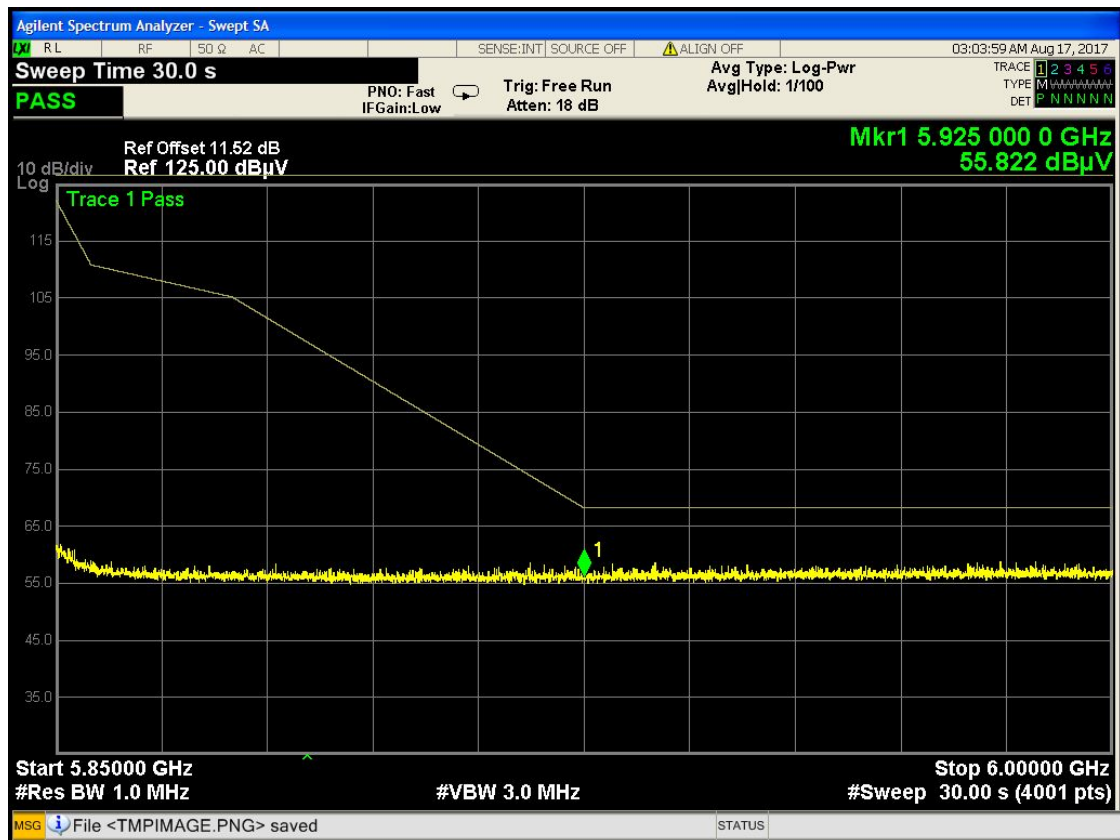
Left Band III 11ac(HT80) CH106 Peak



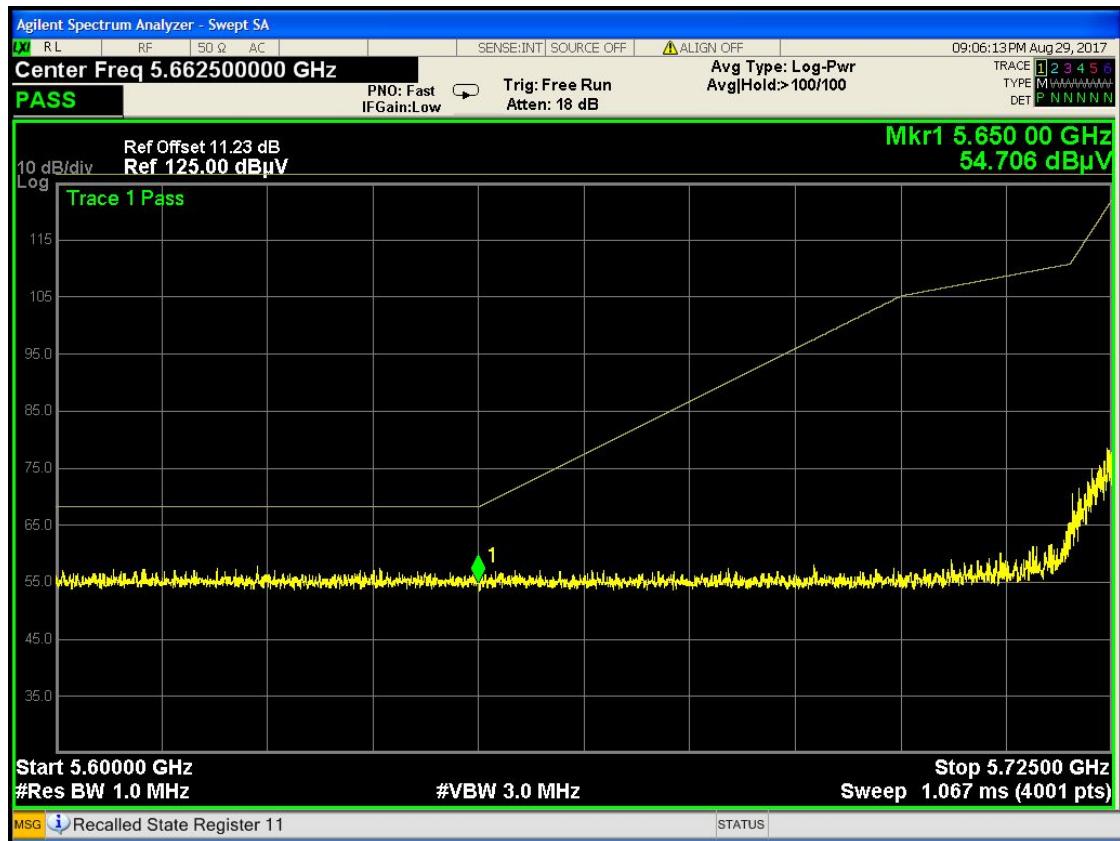
Band IV 11a CH149



Band IV 11a CH165



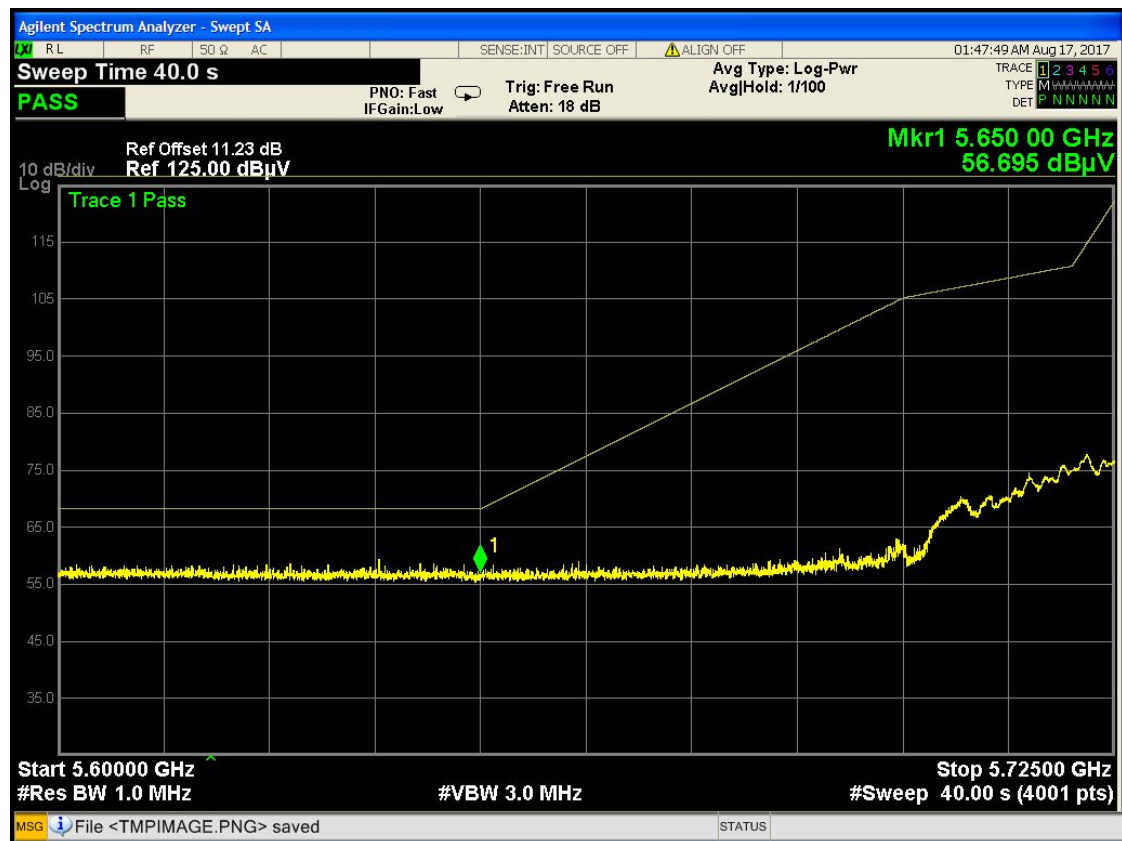
Band IV 11ac(HT20) CH149



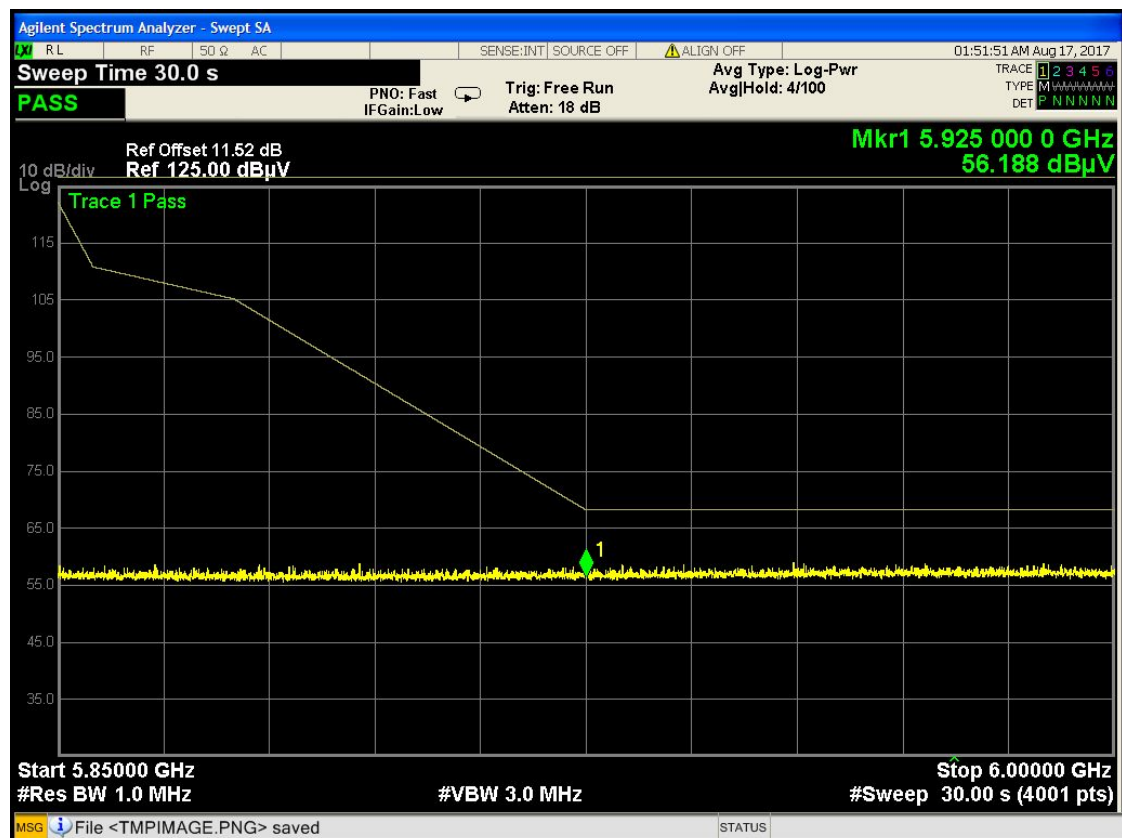
Band IV 11ac(HT20) CH165



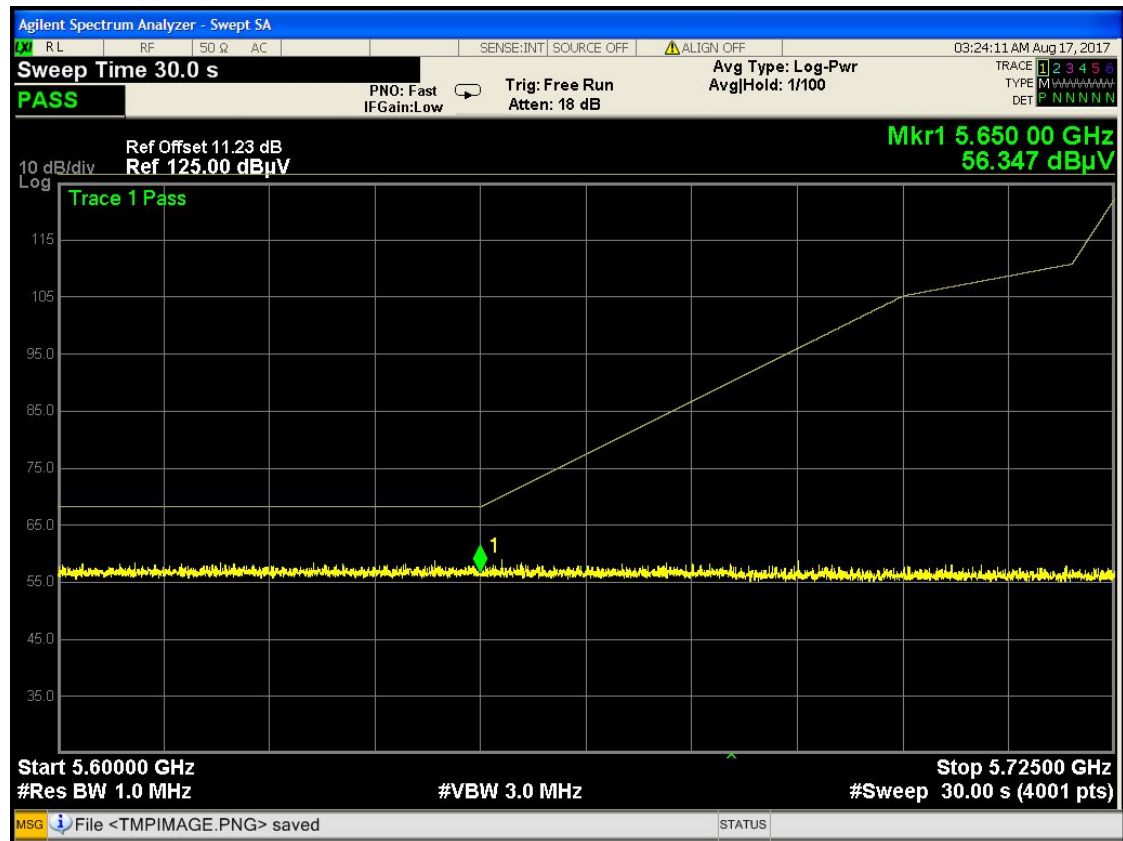
Band IV 11ac(HT40) CH151



Band IV 11ac(HT40) CH159



Left Band IV 11ac(HT80) CH155



A.8 Frequency Stability

N/A.

ANNEX B TEST SETUP PHOTOS

Please refer the document "BL-SZ1770434-AR.PDF".

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document "BL- SZ1770434-AW.PDF".

ANNEX D EUT INTERNAL PHOTOS

Please refer the document "BL- SZ1770434-AI.PDF".

--END OF REPORT--