

FCC

RF

TEST REPORT

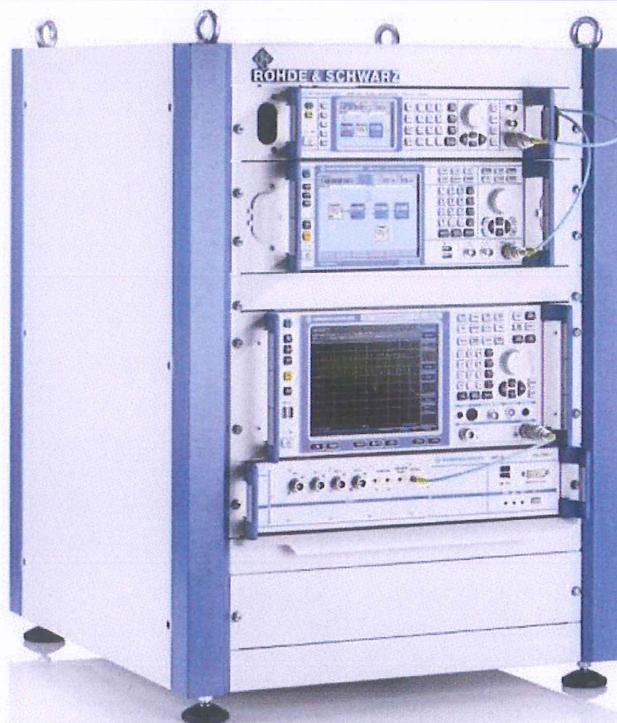
ISSUED BY  
Shenzhen BALUN Technology Co., Ltd.



FOR  
**Unattended Payment Terminal**

ISSUED TO  
Advanced Mobile Payment Inc.

Units 401-403, 15 Wertheim Court. Richmond Hill, Ontario L4B 3H7  
CANADA



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Date: *Jan 16, 2020*

Approved by: *Wei Yanquan*  
Wei Yanquan  
(Chief Engineer)

Date: *Jan. 16, 2020*

Report No.: BL-SZ19B0502-604

EUT Name: Unattended Payment Terminal

Model Name: AMP 6500

Brand Name: AMP

Test Standard: 47 CFR Part 15 Subpart E

FCC ID: 2AKJB-AMP6500-2

Test Conclusion: Pass

Test Date: Dec. 02, 2019 ~ Dec. 10, 2019

Date of Issue: Jan. 16, 2020

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### Revision History

<u>Version</u>	<u>Issue Date</u>	<u>Revisions Content</u>
<u>Rev. 01</u>	<u>Jan. 16, 2020</u>	<u>Initial Issue</u>

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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	<p>The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1.</p> <p>The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.</p> <p>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.</p> <p>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.</p>
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°C to 25°C
Ambient Relative Humidity	45% to 55%
Ambient Pressure	100 kPa to 102 kPa

## 1.4 Announce

- (1) The test report reference to the report template version v4.3.
- (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	Advanced Mobile Payment Inc.
Address	Units 401-403, 15 Wertheim Court. Richmond Hill, Ontario L4B 3H7 CANADA

### 2.2 Manufacturer

Manufacturer	Advanced Mobile Payment Inc.
Address	Units 401-403, 15 Wertheim Court. Richmond Hill, Ontario L4B 3H7 CANADA

### 2.3 Factory

Factory	NEW POS TECHNOLOGY LIMITED DONGGUAN BRANCH, China
Address	No.8 Xintoulong Rd, Pingshan 188 Industry District, Tangxia Town, Dongguan, China

### 2.4 General Description for Equipment under Test (EUT)

EUT Name	Unattended Payment Terminal
Model Name Under Test	AMP 6500
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	AMP 6500-CB
Software Version	V1.0.5
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

## 2.5 Technical Information

Network and Wireless connectivity	2G Network GSM/GPRS/EGPRS 850/1900 MHz 3G Network WCDMA/HSDPA/HSUPA Band 2/4/5 4G Network FDD LTE Band 2/4/5/12/13 Bluetooth 4.1 (BR+EDR+BLE) WIFI 802.11a, 802.11b, 802.11g, 802.11n Band 1/4 SRD NFC
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The requirement for the following technical information of the EUT was tested in this report:

Frequency Range	Band I: 5150 MHz to 5250 MHz, Band IV: 5725 MHz to 5850 MHz
Product Type	<input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable <input type="checkbox"/> Fix Location
Modulation technology	OFDM
Modulation Type	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
Channel Bandwidth	802.11a: 20 MHz 802.11n: 20 MHz, 40 MHz
Average Conducted Power	Band I: 13.80 dBm Band IV: 11.96 dBm
Antenna System (eg., MIMO, Smart Antenna)	N/A
Categorization as Correlated or Completely Uncorrelated	N/A
Antenna Type	PIFA Antenna
Antenna Gain	Band I: 5150 MHz to 5250 MHz: 4 dBi Band IV: 5725 MHz to 5850 MHz: 4 dBi
About the Product	The equipment is AMP 6500, intended for used with information technology equipment.

## 2.6 Additional Instructions

EUT Software Settings:

Mode	<input checked="" type="checkbox"/> 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.

Power level setup in software			
Test Software Version	QRCT3		
Support Units (Software installation media)	Description	Manufacturer	Model
	Notebook	Lenovo	X220

Band I (5150 - 5250 MHz ) Power level setup in software			
Mode	Channel	Frequency (MHz)	Soft Set
11a	CH36	5180	13.5
11a	CH40	5200	13.5
11a	CH48	5240	13.5
11n (HT20)	CH36	5180	12.5
11n (HT20)	CH40	5200	12.5
11n (HT20)	CH48	5240	12.5
11n (HT40)	CH38	5190	12.5
11n (HT40)	CH46	5230	12.5

Band IV (5725 - 5850 MHz) Power level setup in software			
Mode	Channel	Frequency (MHz)	Soft Set
11a	CH149	5745	13.5
11a	CH157	5785	13.5
11a	CH165	5825	13.5
11n (HT20)	CH149	5745	12.5
11n (HT20)	CH157	5785	13.5
11n (HT20)	CH165	5825	12.5
11n (HT40)	CH151	5755	12.5
11n (HT40)	CH159	5795	12.5

Run Software:

WLAN

Radio Control | MAC/OTF Settings | GoldenBinGen

Tx | Tx2 | Rx | Rx2

TRANSMITTER SETTINGS

PhyA only	RF Mode	PhyA	PhyId
Cont Tx TX99	TX Mode	0	# of Packets (0 for Cont. TX)
116 (5580)	Channel (MHz)	Enable	ANI Algorithm
1 (2412)	Channel2 (MHz)	On	Scrambler
TxPowerForce_CLPC	TX Power Control	1	AIFSN
17	TX Power (dBm)	1500	Packet Size
No HT	HT Mode	0	Antenna
RATE_6Mbps	Data Rate	TxChain0	TX Chain
PN9_PATTERN	TX Pattern	0	Gain Index
Don't Use	Short Guard	0	Dac Gain
1	Aggregate	0	PA CFG
0	IFS	Unicast	broadcast/Unicast
99	Duty Cycle (0~100%)		

STOP TX      SET TX ON

Flags Setting:  LDPC  STBC  DPDmode  HeavyClip

Select Reg Domain: UNRESTRICTED



## 2.7 Channel List

20 MHz		40 MHz	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
<b>36</b>	<b>5180</b>	<b>38</b>	<b>5190</b>
40	5200	<b>46</b>	<b>5230</b>
<b>44</b>	<b>5220</b>	<b>151</b>	<b>5755</b>
<b>48</b>	<b>5240</b>	<b>159</b>	<b>5795</b>
<b>149</b>	<b>5745</b>		
153	5765		
<b>157</b>	<b>5785</b>		
161	5805		
<b>165</b>	<b>5825</b>		

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 IV (5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
36	Low	5180	149	Low	5745
44	Mid	5220	157	Mid	5785
48	High	5240	165	High	5825

For 802.11n(HT40)

Band I (5150 - 5250 MHz)			Band IV (5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
38	Low	5190	151	Low	5755
46	High	5230	159	High	5795

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 IV
				Channel	Channel
RF Output Power	11a	6	BPSK	48/44/36	165/157/149
	11n(20 MHz)	6.5		48/44/36	165/157/149
	11n(40 MHz)	13.5		46/38	159/151
Emission Bandwidth & 99% Occupied Bandwidth	11a	6	BPSK	48/44/36	165/157/149
	11n(20 MHz)	6.5		48/44/36	165/157/149
	11n(40 MHz)	13.5		46/38	159/151
6 dB bandwidth	11a	6	BPSK	N/A	165/157/149
	11n(20 MHz)	6.5		N/A	165/157/149
	11n(40 MHz)	13.5		N/A	159/151
Power Spectral Density	11a	6	BPSK	48/44/36	165/157/149
	11n(20 MHz)	6.5		48/44/36	165/157/149
	11n(40 MHz)	13.5		46/38	159/151
Radiated Spurious Emissions	11a	6	BPSK	48/44/36	165/157/149
	11n(20 MHz)	6.5		48/44/36	165/157/149
	11n(40 MHz)	13.5		46/38	159/151
Band Edge (Restricted-band)	11a	6	BPSK	48/36	165/149
	11n(20 MHz)	6.5		48/36	165/149
	11n(40 MHz)	13.5		46/38	159/151

### 3 SUMMARY OF TEST RESULTS

#### 3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15 Subpart E (10-1-16 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	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

#### 3.2 Verdict

No.	Description	FCC Part No.	Test Result	Verdict
1	Antenna Requirement	15.203	--	Pass <sup>Note1</sup>
2	RF Output Power	15.407(a)	ANNEX A.1	Pass
3	Emission Bandwidth & 99% Occupied Bandwidth	15.407(a)	ANNEX A.2	Pass
4	6 dB bandwidth	15.407(e)	ANNEX A.3	Pass
5	Power Spectral Density	15.407(a)	ANNEX A.4	Pass
6	Conducted Emission	15.207	ANNEX A.5	Pass
7	Radiated Spurious Emissions and Band Edge (Restricted-band)	15.407(b)	ANNEX A.6	Pass
8	Receiver Spurious Emissions	--	--	N/A <sup>Note2</sup>

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

Note <sup>2</sup>: 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.

Note <sup>3</sup>: Because the RF module installed in the EUT is electronically and mechanically identical to the original certified module in the test report No. FR741007D & FR741007E (FCC ID: XMR201706SC20A) (which issued by Sporton International (KunShan) INC. on Aug. 11, 2017), so just Conducted Emission & Radiated Spurious Emissions and Band Edge (Restricted-band) were retested in this report. Other test items please refer to the No. FR741007D & FR741007E (FCC ID: XMR201706SC20A) (which issued by Sporton International (KunShan) INC. on Aug. 11, 2017).

## 4 GENERAL TEST CONFIGURATIONS

### 4.1 Test Environments

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

Relative Humidity	45% to 55%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+22°C to +25°C
	LT (Low Temperature)	0°C
	HT (High Temperature)	+40°C
Working Voltage of the EUT	NV (Normal Voltage)	12 V
	LV (Low Voltage)	11.4 V
	HV (High Voltage)	12.6 V

### 4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-30	103118	2019.06.13	2020.06.12
Switch Unit with OSP-B157	ROHDE&SCHWARZ	OSP120	101270	2019.06.13	2020.06.12
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2019.10.29	2020.10.28
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2019.06.13	2020.06.12
LISN	SCHWARZBECK	NSLK 8127	8127-687	2019.06.13	2020.06.12
Bluetooth Tester	ROHDE&SCHWARZ	CBT	101005	2019.06.15	2020.06.14
DC Power Supply	ROHDE&SCHWARZ	HMP2020	018141664	2019.06.18	2020.06.17
Power Splitter	KMW	DCPD-LDC	1305003215	--	--
Power Sensor	ROHDE&SCHWARZ	NRP-Z21	103971	2019.06.15	2020.06.14
Attenuator (20 dB)	KMW	ZA-S1-201	110617091	--	--
Attenuator (6 dB)	KMW	ZA-S1-61	1305003189	--	--
Temperature Chamber	AHK	SP20	1412	2019.06.24	2020.06.23
Test Antenna-Loop(9 kHz-30 MHz)	SCHWARZBECK	FMZB 1519	1519-037	2017.11.09	2020.11.08
Test Antenna-Bi-Log(30 MHz-3 GHz)	SCHWARZBECK	VULB 9163	9163-624	2018.08.22	2020.08.21
Test Antenna-Horn(1-18 GHz)	SCHWARZBECK	BBHA 9120D	9120D-1148	2018.07.11	2020.07.10
Test Antenna-Horn (18-40 GHz)	A-INFO	LB-180400KF	J211060273	2019.01.05	2021.01.04
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.21	2020.02.20
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60*7.35m	N/A	2018.07.19	2020.07.18
Shielded Enclosure	ChangNing	CN-130701	130703	--	--
Signal Generator	ROHDE&SCHWARZ	SMB100A	177746	2019.08.23	2020.08.22
Power Amplifier	OPHIR RF	5225F	1037	2019.02.28	2020.02.27
Power Amplifier	OPHIR RF	5273F	1016	2019.02.28	2020.02.27
Directional Coupler	Werlantone	C5982-10	109275	N/A	N/A

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Directional Coupler	Werlantone	CHP-273E	S00801z-01	N/A	N/A
Sound Level Meter	B&K	NL-20	00844023	2019.11.12	2020.11.11
Ear Simulator	B&K	4185	2409449	2019.11.12	2020.11.11
Ear Simulator	B&K	4195	2418189	2019.11.12	2020.11.11
Audio analyzer	B&K	UPL 16	100129	2019.11.12	2020.11.11

Note: The Test Equipment List please refer to the Report No. FR741007D & FR741007E (FCC ID: XMR201706SC20A) (which issued by Sporton International (KunShan) INC. on Aug. 11, 2017), **Section 4 List of Measuring Equipment.**

### 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.

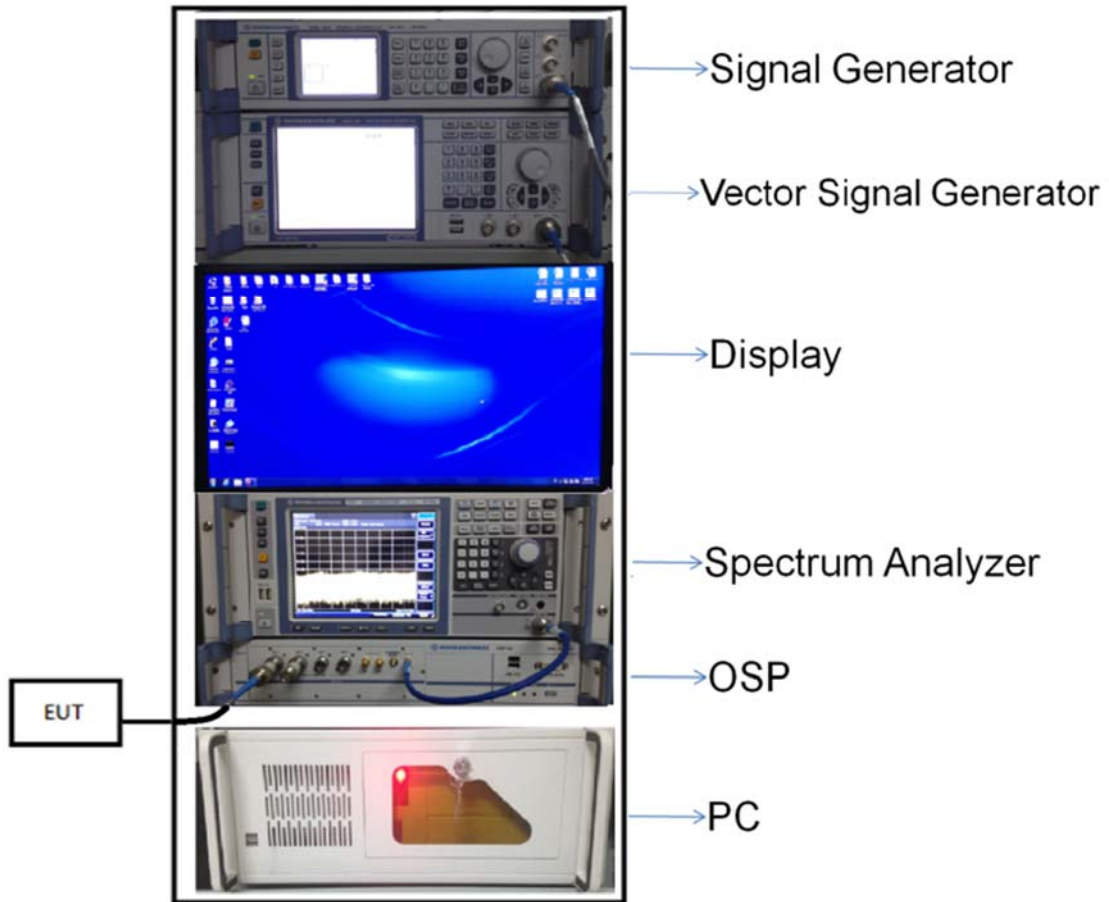
This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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%

Note: The Measurement Uncertainty please refer to the Report No. FR741007D & FR741007E (FCC ID: XMR201706SC20A) (which issued by Sporton International (KunShan) INC. on Aug. 11, 2017), **Section 5 Uncertainty of Evaluation.**

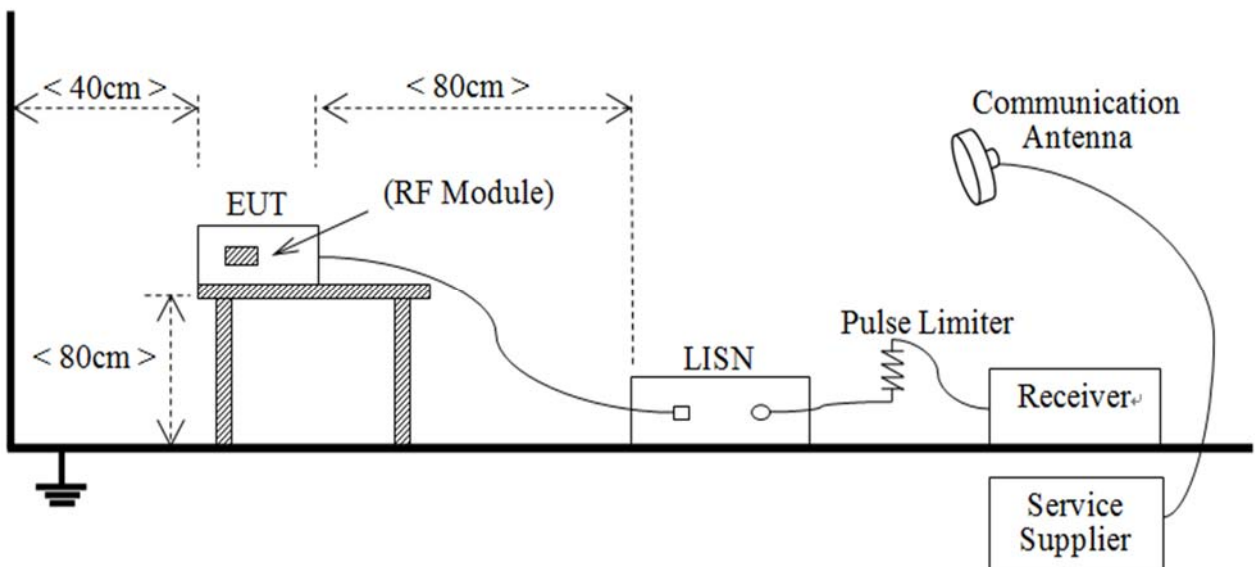
### 4.4 Description of Test Setup

#### 4.4.1 For Antenna Port Test



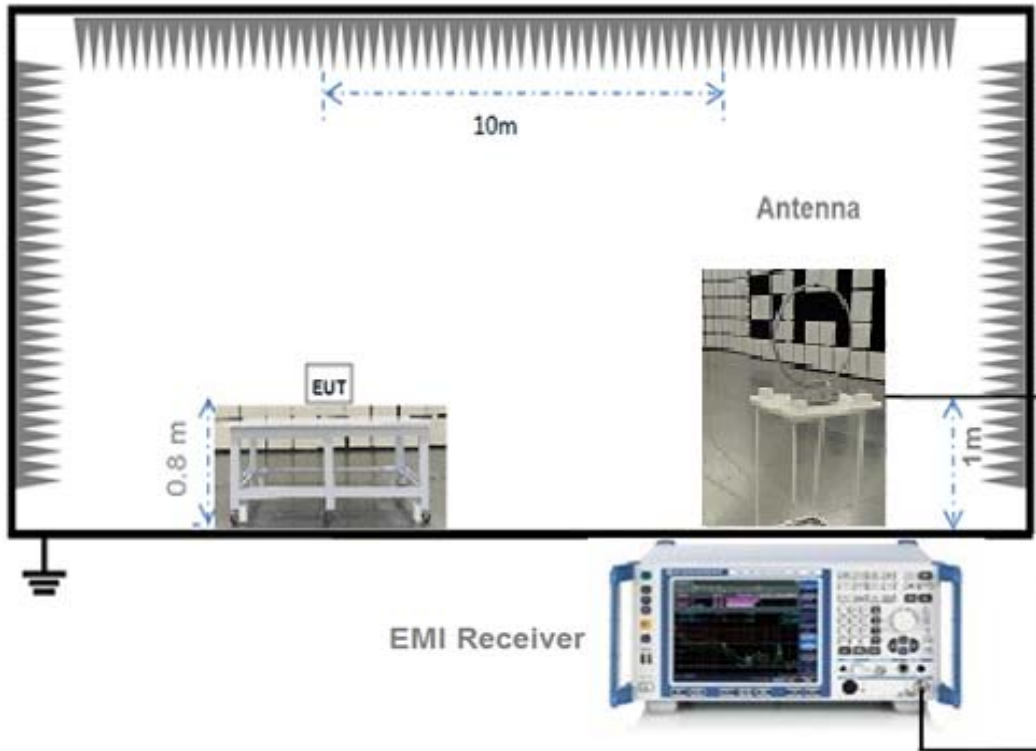
(Diagram 1)

#### 4.4.2 For AC Power Supply Port Test



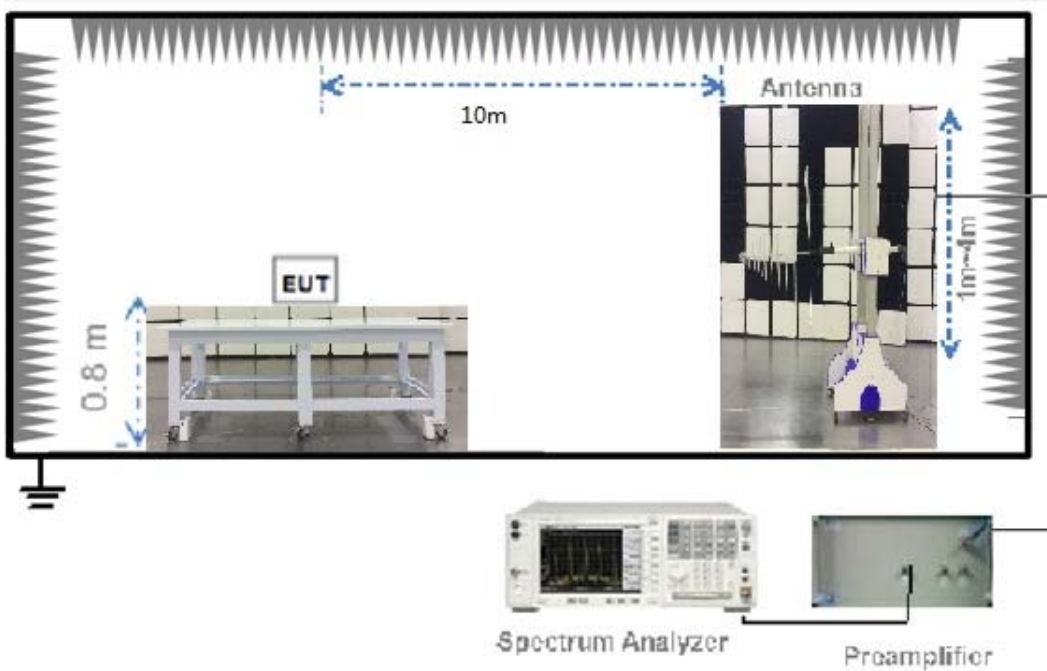
(Diagram 2)

4.4.3 For Radiated Test (Below 30 MHz)



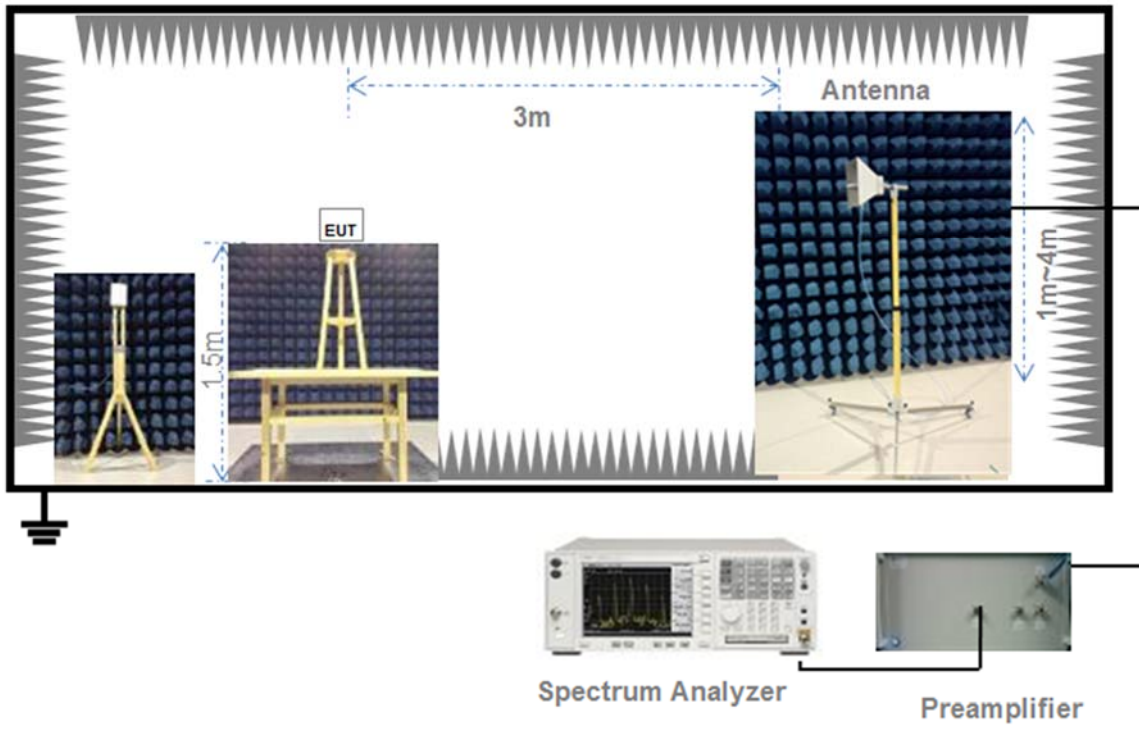
(Diagram 3)

4.4.4 For Radiated Test (30 MHz-1 GHz)



(Diagram 4)

4.4.5 For Radiated Test (Above 1 GHz)



(Diagram 5)



## 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 $\mu$ H/50 $\Omega$  line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dB $\mu$ 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 Radiated Spurious Emissions and Band Edge (Restricted-band)

### 5.5.1 Limit

FCC §15.209 & 15.407(b), RSS-247, 6.2

Frequency (MHz)	Field Strength (µV/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

Note<sup>1</sup>: The Limit for radiated test was performed according to FCC Part 15C

Note<sup>2</sup>: 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	<p>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.</p>

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

### 5.5.2 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.

### 5.5.3 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  $\leq 30$  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 $\mu$ 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  $\geq 98$  percent) cannot be achieved and the duty cycle is constant (i.e., duty cycle variations are less than  $\pm 2$  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  $\text{span}/(\# \text{ of points in sweep}) \leq (RBW/2)$ . 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 ( $\geq 98$  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  $0^\circ$  to  $360^\circ$ , 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



#### 5.5.4 Test Result

Please refer to ANNEX A.6.

## ANNEX A TEST RESULT

### A.1 RF Output Power

Note: The RF Output Power please refer to the Report No. FR741007D & FR741007E (FCC ID: XMR201706SC20A) (which issued by Sporton International (KunShan) INC. on Aug. 11, 2017), **Section 3.2 Maximum Conducted Output Power Measurement.**

### A.2 Emission Bandwidth & 99% Bandwidth

Note: The Emission Bandwidth & 99% Bandwidth please refer to the Report No. FR741007D & FR741007E (FCC ID: XMR201706SC20A) (which issued by Sporton International (KunShan) INC. on Aug. 11, 2017), **Section 3.1 26dB & 99% Occupied Bandwidth Measurement & Section 3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement.**

### A.3 6 dB Bandwidth

Note: The 6 dB Bandwidth please refer to the Report No. FR741007E (FCC ID: XMR201706SC20A) (which issued by Sporton International (KunShan) INC. on Aug. 11, 2017), **Section 3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement.**

### A.4 Power Spectral Density

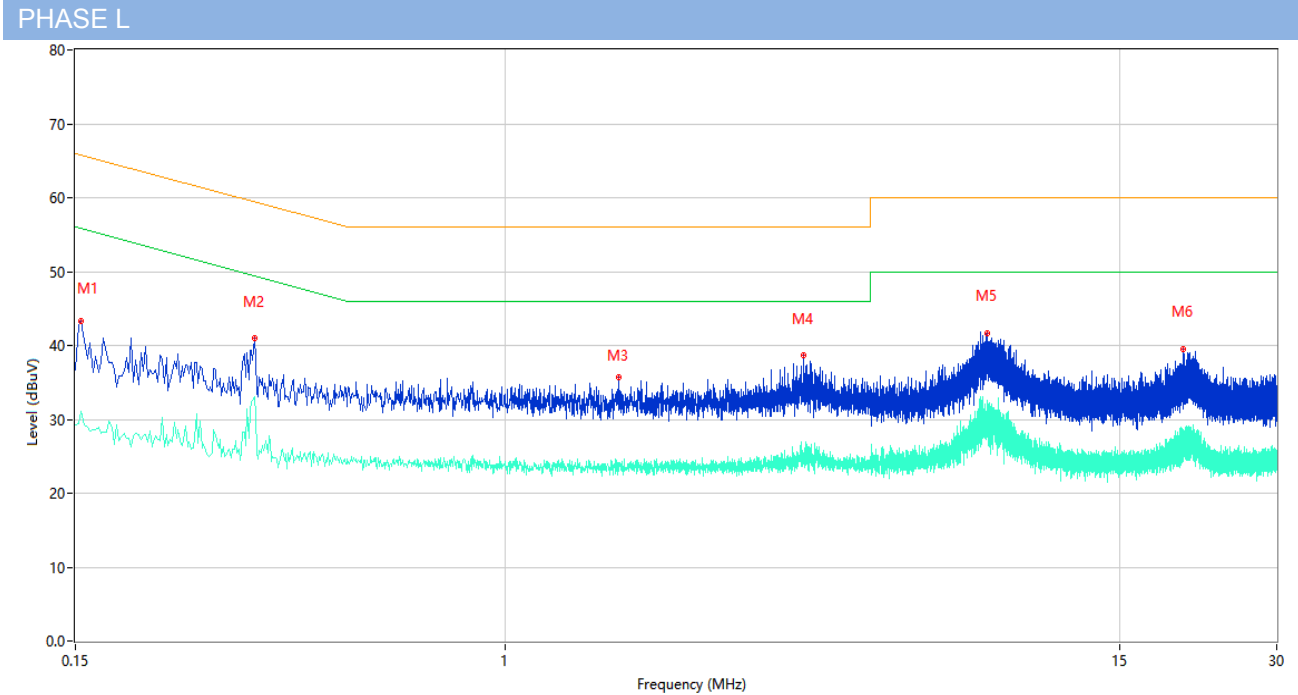
Note: The Power Spectral Density please refer to the Report No. FR741007D & FR741007E (FCC ID: XMR201706SC20A) (which issued by Sporton International (KunShan) INC. on Aug. 11, 2017), **Section 3.3 Power Spectral Density Measurement.**

## A.5 Conducted Emissions

Note 1: The EUT is working in the Normal link mode.

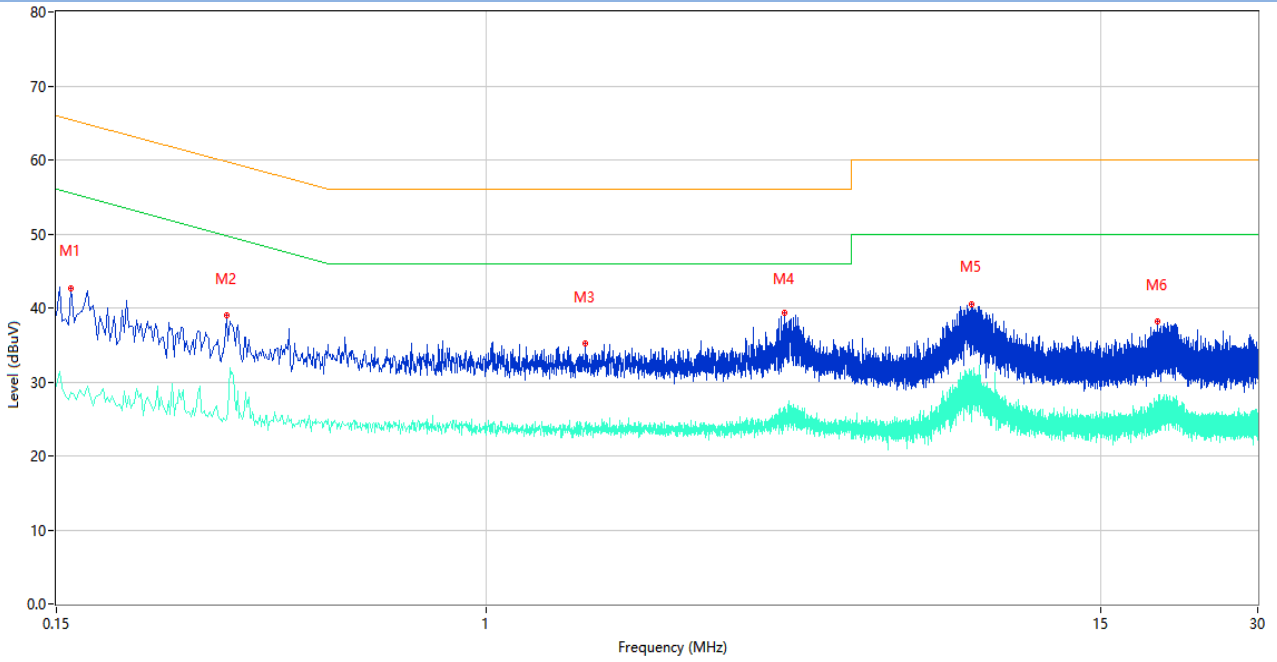
Note 2: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 60 Hz and 240 VAC, 50 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz) shown here.

### Test Data and Plots



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.154	43.36	10.41	65.78	-22.42	Peak	L	Pass
1**	0.154	31.02	10.41	55.78	-24.76	AV	L	Pass
2	0.330	40.99	10.33	59.45	-18.46	Peak	L	Pass
2**	0.330	33.13	10.33	49.45	-16.32	AV	L	Pass
3	1.644	35.65	10.26	56.00	-20.35	Peak	L	Pass
3**	1.644	23.65	10.26	46.00	-22.35	AV	L	Pass
4	3.720	38.70	10.29	56.00	-17.30	Peak	L	Pass
4**	3.720	25.37	10.29	46.00	-20.63	AV	L	Pass
5	8.378	41.72	10.35	60.00	-18.28	Peak	L	Pass
5**	8.378	28.12	10.35	50.00	-21.88	AV	L	Pass
6	19.890	39.47	10.55	60.00	-20.53	Peak	L	Pass
6**	19.890	28.42	10.55	50.00	-21.58	AV	L	Pass

PHASE N



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.160	42.70	10.40	65.46	-22.76	Peak	N	Pass
1**	0.160	28.53	10.40	55.46	-26.93	AV	N	Pass
2	0.318	38.93	10.33	59.76	-20.83	Peak	N	Pass
2**	0.318	25.03	10.33	49.76	-24.73	AV	N	Pass
3	1.548	35.26	10.24	56.00	-20.74	Peak	N	Pass
3**	1.548	24.43	10.24	46.00	-21.57	AV	N	Pass
4	3.722	39.33	10.29	56.00	-16.67	Peak	N	Pass
4**	3.722	26.56	10.29	46.00	-19.44	AV	N	Pass
5	8.482	40.44	10.36	60.00	-19.56	Peak	N	Pass
5**	8.482	31.51	10.36	50.00	-18.49	AV	N	Pass
6	19.254	38.22	10.53	60.00	-21.78	Peak	N	Pass
6**	19.254	26.04	10.53	50.00	-23.96	AV	N	Pass

## A.6 Radiated Spurious Emissions and Band Edge (Restricted-band)

### Test Data

Note 1: The symbol of "--" in the table which means not application.

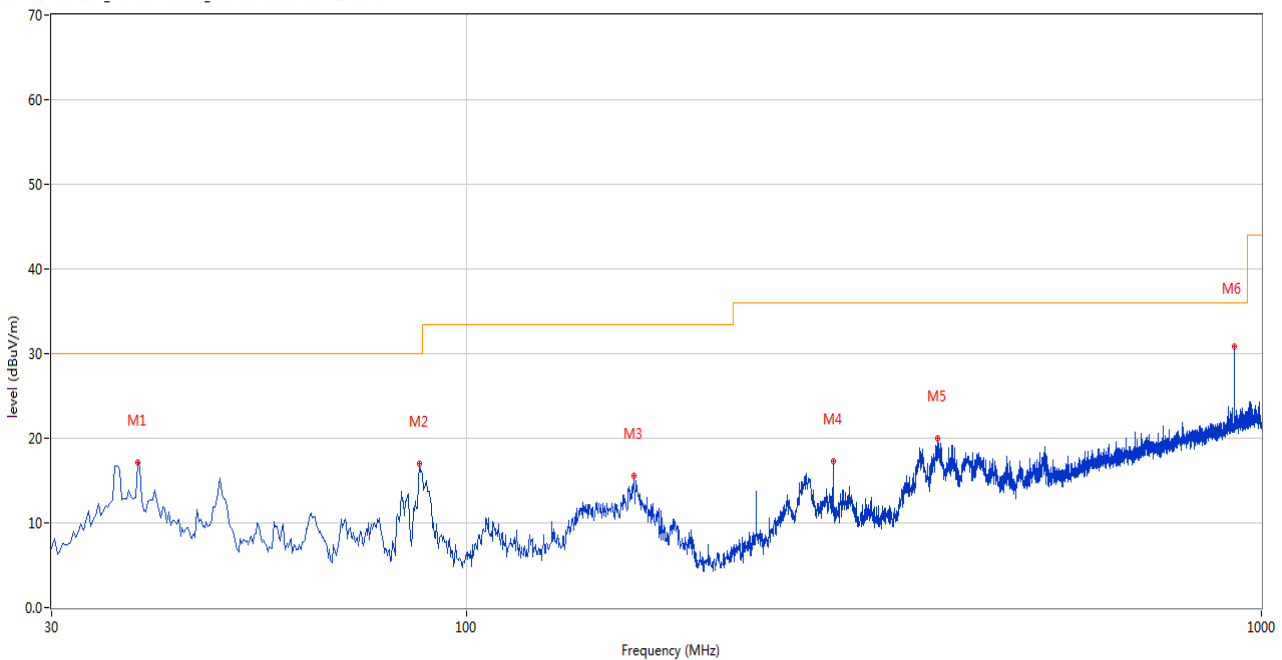
Note 2: For the test data above 1 GHz, According the ANSI C63.4, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note 3: 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.

Note 4: The EUT is working in the Normal link mode below 1 GHz.

### 30 MHz to 1 GHz, ANT V

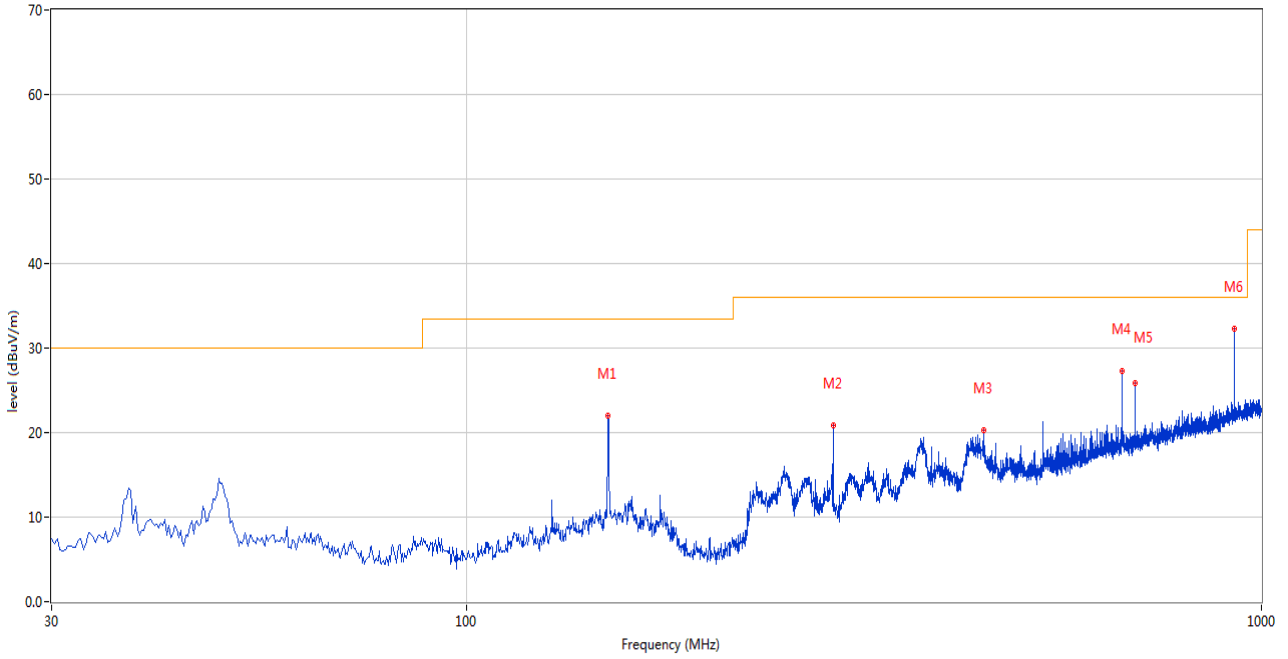
10m RE Test Case\_FCC Certification\_FCC 15B ClassB 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	38.485	17.13	-26.93	30.0	-12.87	Peak	360.00	200	Vertical	Pass
2	87.216	17.05	-31.05	30.0	-12.95	Peak	94.00	200	Vertical	Pass
3	162.129	15.50	-25.94	33.5	-18.00	Peak	120.00	100	Vertical	Pass
4	289.168	17.34	-26.07	36.0	-18.66	Peak	45.00	100	Vertical	Pass
5	391.720	19.98	-23.27	36.0	-16.02	Peak	246.00	100	Vertical	Pass
6	925.329	30.91	-12.04	36.0	-5.09	Peak	194.00	200	Vertical	Pass

30 MHz to 1 GHz, ANT H

10m RE Test Case\_FCC Certification\_FCC 15B ClassB 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	150.492	21.98	-25.98	33.5	-11.52	Peak	35.00	400	Horizontal	Pass
2	289.168	20.92	-26.07	36.0	-15.08	Peak	261.00	400	Horizontal	Pass
3	447.481	20.22	-21.67	36.0	-15.78	Peak	75.00	400	Horizontal	Pass
4	667.616	27.23	-16.44	36.0	-8.77	Peak	40.00	400	Horizontal	Pass
5	694.041	25.80	-16.00	36.0	-10.20	Peak	0.00	200	Horizontal	Pass
6	925.329	32.33	-12.04	36.0	-3.67	Peak	154.00	100	Horizontal	Pass

Note 1: The marked spikes near 5000 MHz with circle should be ignored because they are Fundamental signal.

Note 2: The spurious above 18 G is noise only, do not show on the report.

1 GHz to 18 GHz, ANT V Band I 11a Low channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1118.000	39.46	-15.11	68.2	-28.74	Peak	163.00	150	Vertical	Pass
1**	1118.000	28.00	-15.11	54.0	-26.00	AV	163.00	150	Vertical	Pass
2	2820.000	42.52	-8.51	68.2	-25.68	Peak	73.00	150	Vertical	Pass
2**	2820.000	26.47	-8.51	54.0	-27.53	AV	73.00	150	Vertical	Pass
3	3985.000	46.07	-4.05	68.2	-22.13	Peak	326.00	150	Vertical	Pass
3**	3985.000	29.48	-4.05	54.0	-24.52	AV	326.00	150	Vertical	Pass
4	5182.000	94.11	-1.06	--	-194.89	Peak	289.00	150	Vertical	N/A
4**	5182.000	87.04	-1.06	--	87.04	AV	289.00	150	Vertical	N/A
5	7612.375	47.06	18.16	68.2	-21.14	Peak	84.00	150	Vertical	Pass
5**	7612.375	31.66	18.16	54.0	-22.34	AV	84.00	150	Vertical	Pass
6	11151.500	45.30	18.72	68.2	-22.90	Peak	305.00	150	Vertical	Pass
6**	11151.500	30.83	18.72	54.0	-23.17	AV	305.00	150	Vertical	Pass

1 GHz to 18 GHz, ANT H Band I 11a Low channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1120.000	38.79	-15.31	68.2	-29.41	Peak	325.00	150	Horizontal	Pass
1**	1120.000	25.66	-15.31	54.0	-28.34	AV	325.00	150	Horizontal	Pass
2	2792.500	42.62	-8.81	68.2	-25.58	Peak	360.00	150	Horizontal	Pass
2**	2792.500	26.79	-8.81	54.0	-27.21	AV	360.00	150	Horizontal	Pass
3	4000.000	45.54	-3.74	68.2	-22.66	Peak	307.00	150	Horizontal	Pass
3**	4000.000	30.12	-3.74	54.0	-23.88	AV	307.00	150	Horizontal	Pass
4	5182.000	93.17	-1.06	--	-231.83	Peak	325.00	150	Horizontal	N/A
4**	5182.000	85.59	-1.06	--	85.59	AV	325.00	150	Horizontal	N/A
5	7603.750	46.63	18.34	68.2	-21.57	Peak	173.00	150	Horizontal	Pass
5**	7603.750	32.08	18.34	54.0	-21.92	AV	173.00	150	Horizontal	Pass
6	11158.688	44.53	18.59	68.2	-23.67	Peak	249.00	150	Horizontal	Pass
6**	11158.688	30.45	18.59	54.0	-23.55	AV	249.00	150	Horizontal	Pass

## 1 GHz to 18 GHz, ANT V Band I 11a Middle channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1125.000	39.18	-15.44	68.2	-29.02	Peak	193.00	150	Vertical	Pass
1**	1125.000	28.14	-15.44	54.0	-25.86	AV	193.00	150	Vertical	Pass
2	2792.000	42.35	-8.82	68.2	-25.85	Peak	155.00	150	Vertical	Pass
2**	2792.000	26.83	-8.82	54.0	-27.17	AV	155.00	150	Vertical	Pass
3	3995.000	45.82	-3.91	68.2	-22.38	Peak	73.00	150	Vertical	Pass
3**	3995.000	29.52	-3.91	54.0	-24.48	AV	73.00	150	Vertical	Pass
4	5204.000	94.75	-1.15	--	-208.25	Peak	303.00	150	Vertical	N/A
4**	5204.000	87.03	-1.15	--	87.03	AV	303.00	150	Vertical	N/A
5	7612.375	47.12	18.16	68.2	-21.08	Peak	93.00	150	Vertical	Pass
5**	7612.375	31.91	18.16	54.0	-22.09	AV	93.00	150	Vertical	Pass
6	15545.625	50.04	26.34	68.2	-18.16	Peak	255.00	150	Vertical	Pass
6**	15545.625	36.82	26.34	54.0	-17.18	AV	255.00	150	Vertical	Pass

## 1 GHz to 18 GHz, ANT H Band I 11a Middle channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1120.000	39.28	-15.31	68.2	-28.92	Peak	242.00	150	Horizontal	Pass
1**	1120.000	26.33	-15.31	54.0	-27.67	AV	242.00	150	Horizontal	Pass
2	2809.500	42.55	-8.71	68.2	-25.65	Peak	-1.00	150	Horizontal	Pass
2**	2809.500	26.55	-8.71	54.0	-27.45	AV	-1.00	150	Horizontal	Pass
3	3990.000	46.37	-3.98	68.2	-21.83	Peak	165.00	150	Horizontal	Pass
3**	3990.000	29.39	-3.98	54.0	-24.61	AV	165.00	150	Horizontal	Pass
4	5203.000	93.91	-1.20	--	-222.09	Peak	316.00	150	Horizontal	N/A
4**	5203.000	86.72	-1.20	--	86.72	AV	316.00	150	Horizontal	N/A
5	7599.437	46.68	18.34	68.2	-21.52	Peak	301.00	150	Horizontal	Pass
5**	7599.437	31.65	18.34	54.0	-22.35	AV	301.00	150	Horizontal	Pass
6	11157.250	44.40	18.62	68.2	-23.80	Peak	361.00	150	Horizontal	Pass
6**	11157.250	30.56	18.62	54.0	-23.44	AV	361.00	150	Horizontal	Pass



## 1 GHz to 18 GHz, ANT V Band I 11a High channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1129.500	39.52	-15.23	68.2	-28.68	Peak	164.00	150	Vertical	Pass
1**	1129.500	27.46	-15.23	54.0	-26.54	AV	164.00	150	Vertical	Pass
2	2790.500	43.69	-8.91	68.2	-24.51	Peak	206.00	150	Vertical	Pass
2**	2790.500	26.66	-8.91	54.0	-27.34	AV	206.00	150	Vertical	Pass
3	3936.000	45.20	-5.06	68.2	-23.00	Peak	180.00	150	Vertical	Pass
3**	3936.000	28.76	-5.06	54.0	-25.24	AV	180.00	150	Vertical	Pass
4	5239.000	94.97	-1.02	--	-188.03	Peak	283.00	150	Vertical	N/A
4**	5239.000	87.63	-1.02	--	87.63	AV	283.00	150	Vertical	N/A
5	7462.875	48.76	17.46	68.2	-19.44	Peak	360.00	150	Vertical	Pass
5**	7462.875	33.58	17.46	54.0	-20.42	AV	360.00	150	Vertical	Pass
6	15583.688	49.48	27.10	68.2	-18.72	Peak	239.00	150	Vertical	Pass
6**	15583.688	38.11	27.10	54.0	-15.89	AV	239.00	150	Vertical	Pass

## 1 GHz to 18 GHz, ANT H Band I 11a High channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1139.000	40.25	-14.81	68.2	-27.95	Peak	137.00	150	Horizontal	Pass
1**	1139.000	25.59	-14.81	54.0	-28.41	AV	137.00	150	Horizontal	Pass
2	2777.000	42.62	-8.60	68.2	-25.58	Peak	239.00	150	Horizontal	Pass
2**	2777.000	26.60	-8.60	54.0	-27.40	AV	239.00	150	Horizontal	Pass
3	3983.000	45.48	-4.19	68.2	-22.72	Peak	0.00	150	Horizontal	Pass
3**	3983.000	29.13	-4.19	54.0	-24.87	AV	0.00	150	Horizontal	Pass
4	5243.000	93.13	-0.89	--	-233.87	Peak	327.00	150	Horizontal	N/A
4**	5243.000	86.10	-0.89	--	86.10	AV	327.00	150	Horizontal	N/A
5	7586.500	49.16	17.98	68.2	-19.04	Peak	-1.00	150	Horizontal	Pass
5**	7586.500	34.34	17.98	54.0	-19.66	AV	-1.00	150	Horizontal	Pass
6	11138.562	46.72	18.89	68.2	-21.48	Peak	200.00	150	Horizontal	Pass
6**	11138.562	33.69	18.89	54.0	-20.31	AV	200.00	150	Horizontal	Pass

## 1 GHz to 18 GHz, ANT V Band I 11n20 Low channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1118.000	39.73	-15.11	68.2	-28.47	Peak	185.00	150	Vertical	Pass
1**	1118.000	27.17	-15.11	54.0	-26.83	AV	185.00	150	Vertical	Pass
2	2771.000	43.00	-8.62	68.2	-25.20	Peak	359.00	150	Vertical	Pass
2**	2771.000	26.56	-8.62	54.0	-27.44	AV	359.00	150	Vertical	Pass
3	4006.000	45.77	-4.07	68.2	-22.43	Peak	361.00	150	Vertical	Pass
3**	4006.000	29.62	-4.07	54.0	-24.38	AV	361.00	150	Vertical	Pass
4	5185.000	92.77	-0.90	--	-209.23	Peak	302.00	150	Vertical	N/A
4**	5185.000	85.55	-0.90	--	85.55	AV	302.00	150	Vertical	N/A
5	7599.437	49.20	18.34	68.2	-19.00	Peak	321.00	150	Vertical	Pass
5**	7599.437	33.92	18.34	54.0	-20.08	AV	321.00	150	Vertical	Pass
6	11138.562	47.05	18.89	68.2	-21.15	Peak	99.00	150	Vertical	Pass
6**	11138.562	33.33	18.89	54.0	-20.67	AV	99.00	150	Vertical	Pass

## 1 GHz to 18 GHz, ANT H Band I 11n20 Low channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1129.000	38.80	-15.20	68.2	-29.40	Peak	321.00	150	Horizontal	Pass
1**	1129.000	27.22	-15.20	54.0	-26.78	AV	321.00	150	Horizontal	Pass
2	2778.500	42.79	-8.73	68.2	-25.41	Peak	217.00	150	Horizontal	Pass
2**	2778.500	26.77	-8.73	54.0	-27.23	AV	217.00	150	Horizontal	Pass
3	4006.000	45.22	-4.07	68.2	-22.98	Peak	262.00	150	Horizontal	Pass
3**	4006.000	29.71	-4.07	54.0	-24.29	AV	262.00	150	Horizontal	Pass
4	5183.000	93.76	-1.06	--	-227.24	Peak	321.00	150	Horizontal	N/A
4**	5183.000	84.88	-1.06	--	84.88	AV	321.00	150	Horizontal	N/A
5	7623.875	48.64	17.45	68.2	-19.56	Peak	221.00	150	Horizontal	Pass
5**	7623.875	33.82	17.45	54.0	-20.18	AV	221.00	150	Horizontal	Pass
6	15587.625	50.14	26.83	68.2	-18.06	Peak	336.00	150	Horizontal	Pass
6**	15587.625	37.74	26.83	54.0	-16.26	AV	336.00	150	Horizontal	Pass

1 GHz to 18 GHz, ANT V Band I 11n20 Middle channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1124.500	40.22	-15.37	68.2	-27.98	Peak	149.00	150	Vertical	Pass
1**	1124.500	27.80	-15.37	54.0	-26.20	AV	149.00	150	Vertical	Pass
2	2852.000	43.38	-8.25	68.2	-24.82	Peak	318.00	150	Vertical	Pass
2**	2852.000	26.62	-8.25	54.0	-27.38	AV	318.00	150	Vertical	Pass
3	3997.000	45.48	-3.95	68.2	-22.72	Peak	290.00	150	Vertical	Pass
3**	3997.000	29.90	-3.95	54.0	-24.10	AV	290.00	150	Vertical	Pass
4	5197.000	92.89	-1.15	--	-197.11	Peak	290.00	150	Vertical	N/A
4**	5197.000	86.11	-1.15	--	86.11	AV	290.00	150	Vertical	N/A
5	7590.813	48.57	17.78	68.2	-19.63	Peak	76.00	150	Vertical	Pass
5**	7590.813	33.46	17.78	54.0	-20.54	AV	76.00	150	Vertical	Pass
6	11470.625	46.45	19.20	68.2	-21.75	Peak	330.00	150	Vertical	Pass
6**	11470.625	32.40	19.20	54.0	-21.60	AV	330.00	150	Vertical	Pass

1 GHz to 18 GHz, ANT H Band I 11n20 Middle channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1132.000	38.40	-15.27	68.2	-29.80	Peak	320.00	150	Horizontal	Pass
1**	1132.000	26.66	-15.27	54.0	-27.34	AV	320.00	150	Horizontal	Pass
2	2807.000	43.06	-9.24	68.2	-25.14	Peak	150.00	150	Horizontal	Pass
2**	2807.000	26.19	-9.24	54.0	-27.81	AV	150.00	150	Horizontal	Pass
3	3949.000	45.18	-5.05	68.2	-23.02	Peak	109.00	150	Horizontal	Pass
3**	3949.000	29.15	-5.05	54.0	-24.85	AV	109.00	150	Horizontal	Pass
4	5195.000	92.24	-1.10	--	-218.76	Peak	311.00	150	Horizontal	N/A
4**	5195.000	85.11	-1.10	--	85.11	AV	311.00	150	Horizontal	N/A
5	7549.125	48.09	17.31	68.2	-20.11	Peak	159.00	150	Horizontal	Pass
5**	7549.125	33.40	17.31	54.0	-20.60	AV	159.00	150	Horizontal	Pass
6	12016.874	46.78	20.21	68.2	-21.42	Peak	60.00	150	Horizontal	Pass
6**	12016.874	33.13	20.21	54.0	-20.87	AV	60.00	150	Horizontal	Pass

## 1 GHz to 18 GHz, ANT V Band I 11n20 High channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1126.500	40.75	-15.66	68.2	-27.45	Peak	202.00	150	Vertical	Pass
1**	1126.500	27.52	-15.66	54.0	-26.48	AV	202.00	150	Vertical	Pass
2	2770.000	43.12	-8.50	68.2	-25.08	Peak	35.00	150	Vertical	Pass
2**	2770.000	26.43	-8.50	54.0	-27.57	AV	35.00	150	Vertical	Pass
3	4173.000	46.55	-3.57	68.2	-21.65	Peak	361.00	150	Vertical	Pass
3**	4173.000	29.42	-3.57	54.0	-24.58	AV	361.00	150	Vertical	Pass
4	5236.000	94.65	-1.14	--	-184.35	Peak	279.00	150	Vertical	Pass
4**	5236.000	86.89	-1.14	--	86.89	AV	279.00	150	Vertical	N/A
5	7618.125	49.82	17.65	68.2	-18.38	Peak	74.00	150	Vertical	N/A
5**	7618.125	33.91	17.65	54.0	-20.09	AV	74.00	150	Vertical	Pass
6	10953.125	46.67	18.57	68.2	-21.53	Peak	125.00	150	Vertical	Pass
6**	10953.125	32.19	18.57	54.0	-21.81	AV	125.00	150	Vertical	Pass

## 1 GHz to 18 GHz, ANT H Band I 11n20 High channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1117.500	39.04	-15.20	68.2	-29.16	Peak	318.00	150	Horizontal	Pass
1**	1117.500	25.81	-15.20	54.0	-28.19	AV	318.00	150	Horizontal	Pass
2	2778.000	42.20	-8.69	68.2	-26.00	Peak	195.00	150	Horizontal	Pass
2**	2778.000	26.47	-8.69	54.0	-27.53	AV	195.00	150	Horizontal	Pass
3	4003.000	45.58	-3.84	68.2	-22.62	Peak	309.00	150	Horizontal	Pass
3**	4003.000	29.50	-3.84	54.0	-24.50	AV	309.00	150	Horizontal	Pass
4	5246.000	92.05	-1.16	--	-227.95	Peak	320.00	150	Horizontal	N/A
4**	5246.000	85.41	-1.16	--	85.41	AV	320.00	150	Horizontal	N/A
5	7606.625	49.11	18.39	68.2	-19.09	Peak	31.00	150	Horizontal	Pass
5**	7606.625	34.37	18.39	54.0	-19.63	AV	31.00	150	Horizontal	Pass
6	10825.187	46.89	18.24	68.2	-21.31	Peak	-1.00	150	Horizontal	Pass
6**	10825.187	33.09	18.24	54.0	-20.91	AV	-1.00	150	Horizontal	Pass

## 1 GHz to 18 GHz, ANT V Band I 11n40 Low channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1128.500	41.28	-15.20	68.2	-26.92	Peak	206.00	150	Vertical	Pass
1**	1128.500	28.63	-15.20	54.0	-25.37	AV	206.00	150	Vertical	Pass
2	2807.000	42.50	-9.24	68.2	-25.70	Peak	235.00	150	Vertical	Pass
2**	2807.000	26.70	-9.24	54.0	-27.30	AV	235.00	150	Vertical	Pass
3	4030.000	45.22	-4.79	68.2	-22.98	Peak	75.00	150	Vertical	Pass
3**	4030.000	28.58	-4.79	54.0	-25.42	AV	75.00	150	Vertical	Pass
4	5205.000	93.37	-1.16	--	-185.63	Peak	279.00	150	Vertical	N/A
4**	5205.000	86.12	-1.16	--	86.12	AV	279.00	150	Vertical	N/A
5	7589.375	48.95	17.79	68.2	-19.25	Peak	-1.00	150	Vertical	Pass
5**	7589.375	33.46	17.79	54.0	-20.54	AV	-1.00	150	Vertical	Pass
6	15564.000	49.88	26.93	68.2	-18.32	Peak	206.00	150	Vertical	Pass
6**	15564.000	37.27	26.93	54.0	-16.73	AV	206.00	150	Vertical	Pass

## 1 GHz to 18 GHz, ANT H Band I 11n40 Low channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1119.000	39.46	-15.21	68.2	-28.74	Peak	232.00	150	Horizontal	Pass
1**	1119.000	25.93	-15.21	54.0	-28.07	AV	232.00	150	Horizontal	Pass
2	2866.500	43.80	-8.14	68.2	-24.40	Peak	55.00	150	Horizontal	Pass
2**	2866.500	26.99	-8.14	54.0	-27.01	AV	55.00	150	Horizontal	Pass
3	3985.000	45.48	-4.05	68.2	-22.72	Peak	77.00	150	Horizontal	Pass
3**	3985.000	29.38	-4.05	54.0	-24.62	AV	77.00	150	Horizontal	Pass
4	5204.000	92.00	-1.15	--	-222.00	Peak	314.00	150	Horizontal	N/A
4**	5204.000	84.86	-1.15	--	84.86	AV	314.00	150	Horizontal	N/A
5	7602.313	50.63	18.35	68.2	-17.57	Peak	336.00	150	Horizontal	Pass
5**	7602.313	34.31	18.35	54.0	-19.69	AV	336.00	150	Horizontal	Pass
6	11032.188	47.25	18.72	68.2	-20.95	Peak	105.00	150	Horizontal	Pass
6**	11032.188	32.15	18.72	54.0	-21.85	AV	105.00	150	Horizontal	Pass

## 1 GHz to 18 GHz, ANT V Band I 11n40 High channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1130.000	40.75	-15.26	68.2	-27.45	Peak	206.00	150	Vertical	Pass
1**	1130.000	27.60	-15.26	54.0	-26.40	AV	206.00	150	Vertical	Pass
2	2785.500	43.01	-8.94	68.2	-25.19	Peak	74.00	150	Vertical	Pass
2**	2785.500	26.23	-8.94	54.0	-27.77	AV	74.00	150	Vertical	Pass
3	4008.000	45.54	-3.98	68.2	-22.66	Peak	59.00	150	Vertical	Pass
3**	4008.000	30.44	-3.98	54.0	-23.56	AV	59.00	150	Vertical	Pass
4	5240.000	93.67	-1.06	--	-198.33	Peak	292.00	150	Vertical	N/A
4**	5240.000	86.40	-1.06	--	86.40	AV	292.00	150	Vertical	N/A
5	7550.562	49.04	17.37	68.2	-19.16	Peak	123.00	150	Vertical	Pass
5**	7550.562	33.06	17.37	54.0	-20.94	AV	123.00	150	Vertical	Pass
6	11144.313	45.99	18.83	68.2	-22.21	Peak	220.00	150	Vertical	Pass
6**	11144.313	33.66	18.83	54.0	-20.34	AV	220.00	150	Vertical	Pass

## 1 GHz to 18 GHz, ANT H Band I 11n40 High channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1118.000	39.33	-15.11	68.2	-28.87	Peak	227.00	150	Horizontal	Pass
1**	1118.000	26.84	-15.11	54.0	-27.16	AV	227.00	150	Horizontal	Pass
2	2769.500	43.04	-8.43	68.2	-25.16	Peak	113.00	150	Horizontal	Pass
2**	2769.500	26.70	-8.43	54.0	-27.30	AV	113.00	150	Horizontal	Pass
3	3910.000	45.73	-5.25	68.2	-22.47	Peak	319.00	150	Horizontal	Pass
3**	3910.000	27.69	-5.25	54.0	-26.31	AV	319.00	150	Horizontal	Pass
4	5245.000	91.59	-1.11	--	-222.41	Peak	314.00	150	Horizontal	N/A
4**	5245.000	84.81	-1.11	--	84.81	AV	314.00	150	Horizontal	N/A
5	7539.062	49.74	17.39	68.2	-18.46	Peak	198.00	150	Horizontal	Pass
5**	7539.062	32.74	17.39	54.0	-21.26	AV	198.00	150	Horizontal	Pass
6	10809.375	46.81	18.19	68.2	-21.39	Peak	311.00	150	Horizontal	Pass
6**	10809.375	32.21	18.19	54.0	-21.79	AV	311.00	150	Horizontal	Pass

## 1 GHz to 18 GHz, ANT V Band IV 11a Low channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1497.500	37.68	-17.52	74.0	-36.32	Peak	360.00	150	Vertical	Pass
1**	1497.500	24.20	-17.52	54.0	-29.80	AV	360.00	150	Vertical	Pass
2	2851.500	42.96	-10.17	74.0	-31.04	Peak	260.00	150	Vertical	Pass
2**	2851.500	27.94	-10.17	54.0	-26.06	AV	260.00	150	Vertical	Pass
3	4255.000	48.38	-4.69	74.0	-25.62	Peak	205.00	150	Vertical	Pass
3**	4255.000	31.61	-4.69	54.0	-22.39	AV	205.00	150	Vertical	Pass
4	5751.000	99.58	-2.05	--	-48.42	Peak	148.00	150	Vertical	N/A
4**	5751.000	92.40	-2.05	--	92.40	AV	148.00	150	Vertical	N/A
5	7518.938	49.40	-2.68	74.0	-24.60	Peak	157.00	150	Vertical	Pass
5**	7518.938	32.20	-2.68	54.0	-21.80	AV	157.00	150	Vertical	Pass
6	12623.500	53.40	2.04	74.0	-20.60	Peak	347.00	150	Vertical	Pass
6**	12623.500	36.08	2.04	54.0	-17.92	AV	347.00	150	Vertical	Pass

## 1 GHz to 18 GHz, ANT H Band IV 11a Low channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1501.500	37.86	-17.47	74.0	-36.14	Peak	130.00	150	Horizontal	Pass
1**	1501.500	24.50	-17.47	54.0	-29.50	AV	130.00	150	Horizontal	Pass
2	2806.000	44.11	-10.45	74.0	-29.89	Peak	166.00	150	Horizontal	Pass
2**	2806.000	27.34	-10.45	54.0	-26.66	AV	166.00	150	Horizontal	Pass
3	4025.000	47.64	-4.70	74.0	-26.36	Peak	177.00	150	Horizontal	Pass
3**	4025.000	31.20	-4.70	54.0	-22.80	AV	177.00	150	Horizontal	Pass
4	5747.000	101.71	-2.13	--	-176.29	Peak	278.00	150	Horizontal	N/A
4**	5747.000	94.42	-2.13	--	94.42	AV	278.00	150	Horizontal	N/A
5	8184.500	49.20	-1.96	74.0	-24.80	Peak	17.00	150	Horizontal	Pass
5**	8184.500	34.18	-1.96	54.0	-19.82	AV	17.00	150	Horizontal	Pass
6	12157.750	53.37	0.97	74.0	-20.63	Peak	290.00	150	Horizontal	Pass
6**	12157.750	35.70	0.97	54.0	-18.30	AV	290.00	150	Horizontal	Pass

## 1 GHz to 18 GHz, ANT V Band IV 11a Middle channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1490.500	39.97	-17.68	74.0	-34.03	Peak	99.00	150	Vertical	Pass
1**	1490.500	24.79	-17.68	54.0	-29.21	AV	99.00	150	Vertical	Pass
2	2836.000	42.98	-10.50	74.0	-31.02	Peak	283.00	150	Vertical	Pass
2**	2836.000	27.42	-10.50	54.0	-26.58	AV	283.00	150	Vertical	Pass
3	4263.000	48.40	-4.53	74.0	-25.60	Peak	205.00	150	Vertical	Pass
3**	4263.000	32.88	-4.53	54.0	-21.12	AV	205.00	150	Vertical	Pass
4	5789.000	98.85	-2.52	--	-40.15	Peak	139.00	150	Vertical	N/A
4**	5789.000	91.98	-2.52	--	91.98	AV	139.00	150	Vertical	N/A
5	8329.688	49.79	-1.20	74.0	-24.21	Peak	185.00	150	Vertical	Pass
5**	8329.688	32.90	-1.20	54.0	-21.10	AV	185.00	150	Vertical	Pass
6	12509.938	52.66	1.83	74.0	-21.34	Peak	361.00	150	Vertical	Pass
6**	12509.938	35.83	1.83	54.0	-18.17	AV	361.00	150	Vertical	Pass

## 1 GHz to 18 GHz, ANT H Band IV 11a Middle channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1494.000	40.09	-17.50	74.0	-33.91	Peak	71.00	150	Horizontal	Pass
1**	1494.000	26.80	-17.50	54.0	-27.20	AV	71.00	150	Horizontal	Pass
2	2780.500	43.35	-10.59	74.0	-30.65	Peak	58.00	150	Horizontal	Pass
2**	2780.500	27.49	-10.59	54.0	-26.51	AV	58.00	150	Horizontal	Pass
3	4067.000	47.88	-5.39	74.0	-26.12	Peak	200.00	150	Horizontal	Pass
3**	4067.000	31.62	-5.39	54.0	-22.38	AV	200.00	150	Horizontal	Pass
4	5789.000	101.22	-2.52	--	-170.78	Peak	272.00	150	Horizontal	N/A
4**	5789.000	93.67	-2.52	--	93.67	AV	272.00	150	Horizontal	N/A
5	8207.500	48.99	-2.10	74.0	-25.01	Peak	169.00	150	Horizontal	Pass
5**	8207.500	32.58	-2.10	54.0	-21.42	AV	169.00	150	Horizontal	Pass
6	12180.750	52.59	1.00	74.0	-21.41	Peak	354.00	150	Horizontal	Pass
6**	12180.750	35.94	1.00	54.0	-18.06	AV	354.00	150	Horizontal	Pass



## 1 GHz to 18 GHz, ANT V Band IV 11a High channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1571.000	37.01	-17.66	74.0	-36.99	Peak	109.00	150	Vertical	Pass
1**	1571.000	24.39	-17.66	54.0	-29.61	AV	109.00	150	Vertical	Pass
2	2754.000	42.45	-10.68	74.0	-31.55	Peak	80.00	150	Vertical	Pass
2**	2754.000	26.90	-10.68	54.0	-27.10	AV	80.00	150	Vertical	Pass
3	4236.000	48.48	-4.58	74.0	-25.52	Peak	205.00	150	Vertical	Pass
3**	4236.000	32.07	-4.58	54.0	-21.93	AV	205.00	150	Vertical	Pass
4	5830.000	98.92	-1.82	--	-41.08	Peak	140.00	150	Vertical	N/A
4**	5830.000	92.78	-1.82	--	92.78	AV	140.00	150	Vertical	N/A
5	8335.437	49.13	-1.17	74.0	-24.87	Peak	188.00	150	Vertical	Pass
5**	8335.437	33.26	-1.17	54.0	-20.74	AV	188.00	150	Vertical	Pass
6	10818.000	52.67	0.88	74.0	-21.33	Peak	292.00	150	Vertical	Pass
6**	10818.000	35.33	0.88	54.0	-18.67	AV	292.00	150	Vertical	Pass

## 1 GHz to 18 GHz, ANT H Band IV 11a High channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1534.500	37.38	-17.53	74.0	-36.62	Peak	79.00	100	Horizontal	Pass
1**	1534.500	24.22	-17.53	54.0	-29.78	AV	79.00	100	Horizontal	Pass
2	2783.500	43.43	-10.49	74.0	-30.57	Peak	212.00	100	Horizontal	Pass
2**	2783.500	27.09	-10.49	54.0	-26.91	AV	212.00	100	Horizontal	Pass
3	3904.000	48.38	-5.56	74.0	-25.62	Peak	91.00	100	Horizontal	Pass
3**	3904.000	31.06	-5.56	54.0	-22.94	AV	91.00	100	Horizontal	Pass
4	5829.000	101.42	-1.70	--	-174.58	Peak	276.00	100	Horizontal	N/A
4**	5829.000	94.53	-1.70	--	94.53	AV	276.00	100	Horizontal	N/A
5	8175.875	49.90	-1.87	74.0	-24.10	Peak	0.00	100	Horizontal	Pass
5**	8175.875	33.85	-1.87	54.0	-20.15	AV	0.00	100	Horizontal	Pass
6	12216.688	52.47	1.60	74.0	-21.53	Peak	248.00	100	Horizontal	Pass
6**	12216.688	36.37	1.60	54.0	-17.63	AV	248.00	100	Horizontal	Pass

## 1 GHz to 18 GHz, ANT V Band IV 11n20 Low channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1585.000	37.44	-17.47	74.0	-36.56	Peak	88.00	150	Vertical	Pass
1**	1585.000	23.71	-17.47	54.0	-30.29	AV	88.00	150	Vertical	Pass
2	2782.500	43.08	-10.50	74.0	-30.92	Peak	334.00	150	Vertical	Pass
2**	2782.500	27.05	-10.50	54.0	-26.95	AV	334.00	150	Vertical	Pass
3	4039.000	48.39	-4.73	74.0	-25.61	Peak	83.00	150	Vertical	Pass
3**	4039.000	31.50	-4.73	54.0	-22.50	AV	83.00	150	Vertical	Pass
4	5743.000	98.68	-1.96	--	-41.32	Peak	140.00	150	Vertical	N/A
4**	5743.000	91.38	-1.96	--	91.38	AV	140.00	150	Vertical	N/A
5	8177.312	49.56	-1.87	74.0	-24.44	Peak	325.00	150	Vertical	Pass
5**	8177.312	33.21	-1.87	54.0	-20.79	AV	325.00	150	Vertical	Pass
6	12351.813	52.86	1.73	74.0	-21.14	Peak	360.00	150	Vertical	Pass
6**	12351.813	36.28	1.73	54.0	-17.72	AV	360.00	150	Vertical	Pass

## 1 GHz to 18 GHz, ANT H Band IV 11n20 Low channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1393.000	37.93	-17.53	74.0	-36.07	Peak	174.00	150	Horizontal	Pass
1**	1393.000	23.90	-17.53	54.0	-30.10	AV	174.00	150	Horizontal	Pass
2	2836.500	43.24	-10.47	74.0	-30.76	Peak	117.00	150	Horizontal	Pass
2**	2836.500	26.81	-10.47	54.0	-27.19	AV	117.00	150	Horizontal	Pass
3	4233.000	48.09	-4.59	74.0	-25.91	Peak	177.00	150	Horizontal	Pass
3**	4233.000	32.48	-4.59	54.0	-21.52	AV	177.00	150	Horizontal	Pass
4	5753.000	97.63	-2.00	--	-57.37	Peak	155.00	150	Horizontal	N/A
4**	5753.000	90.78	-2.00	--	90.78	AV	155.00	150	Horizontal	N/A
5	8404.438	49.83	-1.06	74.0	-24.17	Peak	341.00	150	Horizontal	Pass
5**	8404.438	32.65	-1.06	54.0	-21.35	AV	341.00	150	Horizontal	Pass
6	12407.875	53.09	1.66	74.0	-20.91	Peak	355.00	150	Horizontal	Pass
6**	12407.875	35.79	1.66	54.0	-18.21	AV	355.00	150	Horizontal	Pass

## 1 GHz to 18 GHz, ANT V Band IV 11n20 Middle channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1514.000	37.43	-17.73	74.0	-36.57	Peak	-1.00	150	Vertical	Pass
1**	1514.000	24.51	-17.73	54.0	-29.49	AV	-1.00	150	Vertical	Pass
2	2799.000	43.73	-10.53	74.0	-30.27	Peak	250.00	150	Vertical	Pass
2**	2799.000	27.19	-10.53	54.0	-26.81	AV	250.00	150	Vertical	Pass
3	3887.000	47.19	-5.46	74.0	-26.81	Peak	173.00	150	Vertical	Pass
3**	3887.000	31.13	-5.46	54.0	-22.87	AV	173.00	150	Vertical	Pass
4	5791.000	98.97	-2.46	--	-43.03	Peak	142.00	150	Vertical	N/A
4**	5791.000	92.61	-2.46	--	92.61	AV	142.00	150	Vertical	N/A
5	8118.375	48.83	-2.57	74.0	-25.17	Peak	311.00	150	Vertical	Pass
5**	8118.375	32.38	-2.57	54.0	-21.62	AV	311.00	150	Vertical	Pass
6	12173.563	52.60	1.06	74.0	-21.40	Peak	141.00	150	Vertical	Pass
6**	12173.563	36.37	1.06	54.0	-17.63	AV	141.00	150	Vertical	Pass

## 1 GHz to 18 GHz, ANT H Band IV 11n20 Middle channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1579.500	37.82	-17.71	74.0	-36.18	Peak	353.00	150	Horizontal	Pass
1**	1579.500	24.19	-17.71	54.0	-29.81	AV	353.00	150	Horizontal	Pass
2	2787.000	44.19	-10.47	74.0	-29.81	Peak	22.00	150	Horizontal	Pass
2**	2787.000	27.58	-10.47	54.0	-26.42	AV	22.00	150	Horizontal	Pass
3	3953.000	47.77	-4.67	74.0	-26.23	Peak	64.00	150	Horizontal	Pass
3**	3953.000	31.91	-4.67	54.0	-22.09	AV	64.00	150	Horizontal	Pass
4	5783.000	101.94	-2.19	--	-170.06	Peak	272.00	150	Horizontal	N/A
4**	5783.000	93.89	-2.19	--	93.89	AV	272.00	150	Horizontal	N/A
5	7585.062	49.00	-3.06	74.0	-25.00	Peak	153.00	150	Horizontal	Pass
5**	7585.062	32.01	-3.06	54.0	-21.99	AV	153.00	150	Horizontal	Pass
6	12423.687	52.44	1.68	74.0	-21.56	Peak	329.00	150	Horizontal	Pass
6**	12423.687	36.34	1.68	54.0	-17.66	AV	329.00	150	Horizontal	Pass

## 1 GHz to 18 GHz, ANT V Band IV 11n20 High channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1483.000	37.72	-17.53	74.0	-36.28	Peak	86.00	150	Vertical	Pass
1**	1483.000	24.31	-17.53	54.0	-29.69	AV	86.00	150	Vertical	Pass
2	2812.500	42.88	-10.35	74.0	-31.12	Peak	155.00	150	Vertical	Pass
2**	2812.500	27.39	-10.35	54.0	-26.61	AV	155.00	150	Vertical	Pass
3	4041.000	48.32	-4.70	74.0	-25.68	Peak	244.00	150	Vertical	Pass
3**	4041.000	31.61	-4.70	54.0	-22.39	AV	244.00	150	Vertical	Pass
4	5828.000	98.02	-1.78	--	-51.98	Peak	150.00	150	Vertical	N/A
4**	5828.000	90.94	-1.78	--	90.94	AV	150.00	150	Vertical	N/A
5	7481.563	48.81	-3.71	74.0	-25.19	Peak	94.00	150	Vertical	Pass
5**	7481.563	32.44	-3.71	54.0	-21.56	AV	94.00	150	Vertical	Pass
6	12377.687	52.88	1.59	74.0	-21.12	Peak	265.00	150	Vertical	Pass
6**	12377.687	36.17	1.59	54.0	-17.83	AV	265.00	150	Vertical	Pass

## 1 GHz to 18 GHz, ANT H Band IV 11n20 High channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1529.000	37.21	-17.59	74.0	-36.79	Peak	254.00	150	Horizontal	Pass
1**	1529.000	24.26	-17.59	54.0	-29.74	AV	254.00	150	Horizontal	Pass
2	2810.500	43.05	-10.32	74.0	-30.95	Peak	192.00	150	Horizontal	Pass
2**	2810.500	27.15	-10.32	54.0	-26.85	AV	192.00	150	Horizontal	Pass
3	3938.000	47.83	-5.43	74.0	-26.17	Peak	157.00	150	Horizontal	Pass
3**	3938.000	31.09	-5.43	54.0	-22.91	AV	157.00	150	Horizontal	Pass
4	5824.000	100.71	-2.08	--	-177.29	Peak	278.00	150	Horizontal	N/A
4**	5824.000	93.22	-2.08	--	93.22	AV	278.00	150	Horizontal	N/A
5	8354.125	49.04	-1.37	74.0	-24.96	Peak	207.00	150	Horizontal	Pass
5**	8354.125	32.54	-1.37	54.0	-21.46	AV	207.00	150	Horizontal	Pass
6	11900.438	53.75	2.23	74.0	-20.25	Peak	164.00	150	Horizontal	Pass
6**	11900.438	36.66	2.23	54.0	-17.34	AV	164.00	150	Horizontal	Pass

## 1 GHz to 18 GHz, ANT V Band IV 11n40 Low channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1402.500	37.51	-17.49	74.0	-36.49	Peak	284.00	150	Vertical	Pass
1**	1402.500	23.88	-17.49	54.0	-30.12	AV	284.00	150	Vertical	Pass
2	2823.000	43.04	-10.45	74.0	-30.96	Peak	232.00	150	Vertical	Pass
2**	2823.000	27.05	-10.45	54.0	-26.95	AV	232.00	150	Vertical	Pass
3	4190.000	47.97	-4.59	74.0	-26.03	Peak	12.00	150	Vertical	Pass
3**	4190.000	31.79	-4.59	54.0	-22.21	AV	12.00	150	Vertical	Pass
4	5752.000	94.88	-2.05	--	-50.12	Peak	145.00	150	Vertical	N/A
4**	5752.000	87.12	-2.05	--	87.12	AV	145.00	150	Vertical	N/A
5	8175.875	48.98	-1.87	74.0	-25.02	Peak	351.00	150	Vertical	Pass
5**	8175.875	33.71	-1.87	54.0	-20.29	AV	351.00	150	Vertical	Pass
6	12468.250	52.80	1.78	74.0	-21.20	Peak	198.00	150	Vertical	Pass
6**	12468.250	36.06	1.78	54.0	-17.94	AV	198.00	150	Vertical	Pass

## 1 GHz to 18 GHz, ANT H Band IV 11n40 Low channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1512.500	37.58	-17.70	74.0	-36.42	Peak	151.00	150	Horizontal	Pass
1**	1512.500	24.75	-17.70	54.0	-29.25	AV	151.00	150	Horizontal	Pass
2	2779.000	43.67	-10.62	74.0	-30.33	Peak	120.00	150	Horizontal	Pass
2**	2779.000	27.22	-10.62	54.0	-26.78	AV	120.00	150	Horizontal	Pass
3	4129.000	47.47	-4.82	74.0	-26.53	Peak	162.00	150	Horizontal	Pass
3**	4129.000	31.82	-4.82	54.0	-22.18	AV	162.00	150	Horizontal	Pass
4	5758.000	97.78	-1.95	--	-174.22	Peak	272.00	150	Horizontal	N/A
4**	5758.000	89.86	-1.95	--	89.86	AV	272.00	150	Horizontal	N/A
5	8250.625	49.42	-1.37	74.0	-24.58	Peak	273.00	150	Horizontal	Pass
5**	8250.625	32.84	-1.37	54.0	-21.16	AV	273.00	150	Horizontal	Pass
6	12475.437	53.11	1.74	74.0	-20.89	Peak	0.00	150	Horizontal	Pass
6**	12475.437	36.22	1.74	54.0	-17.78	AV	0.00	150	Horizontal	Pass

## 1 GHz to 18 GHz, ANT V Band IV 11n40 High channel

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1561.000	37.28	-17.59	74.0	-36.72	Peak	73.00	150	Vertical	Pass
1**	1561.000	25.01	-17.59	54.0	-28.99	AV	73.00	150	Vertical	Pass
2	2717.500	43.88	-11.05	74.0	-30.12	Peak	42.00	150	Vertical	Pass
2**	2717.500	27.70	-11.05	54.0	-26.30	AV	42.00	150	Vertical	Pass
3	4085.000	47.75	-5.18	74.0	-26.25	Peak	8.00	150	Vertical	Pass
3**	4085.000	32.04	-5.18	54.0	-21.96	AV	8.00	150	Vertical	Pass
4	5806.000	94.27	-2.30	--	-53.73	Peak	148.00	150	Vertical	N/A
4**	5806.000	87.09	-2.30	--	87.09	AV	148.00	150	Vertical	N/A
5	7550.562	49.82	-2.27	74.0	-24.18	Peak	294.00	150	Vertical	Pass
5**	7550.562	33.00	-2.27	54.0	-21.00	AV	294.00	150	Vertical	Pass
6	12120.375	53.05	0.88	74.0	-20.95	Peak	287.00	150	Vertical	Pass
6**	12120.375	35.96	0.88	54.0	-18.04	AV	287.00	150	Vertical	Pass

## 1 GHz to 18 GHz, ANT H Band IV 11n40 High channel

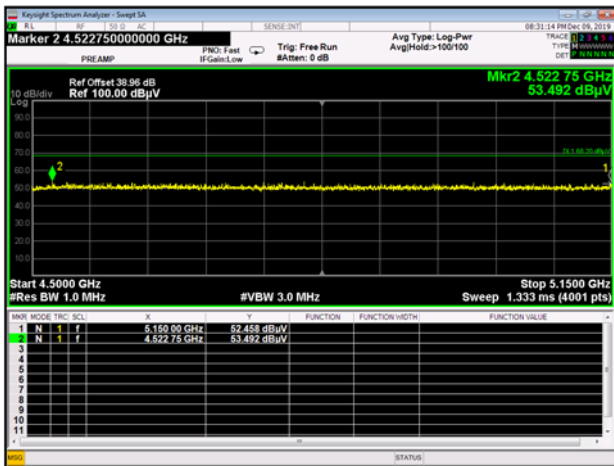
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1520.500	37.42	-17.66	74.0	-36.58	Peak	338.00	150	Horizontal	Pass
1**	1520.500	24.74	-17.66	54.0	-29.26	AV	338.00	150	Horizontal	Pass
2	2855.500	43.08	-10.28	74.0	-30.92	Peak	242.00	150	Horizontal	Pass
2**	2855.500	27.09	-10.28	54.0	-26.91	AV	242.00	150	Horizontal	Pass
3	4208.000	48.33	-4.77	74.0	-25.67	Peak	205.00	150	Horizontal	Pass
3**	4208.000	33.23	-4.77	54.0	-20.77	AV	205.00	150	Horizontal	Pass
4	5809.000	96.51	-2.20	--	-181.49	Peak	278.00	150	Horizontal	N/A
4**	5809.000	89.80	-2.20	--	89.80	AV	278.00	150	Horizontal	N/A
5	7602.313	48.61	-3.03	74.0	-25.39	Peak	257.00	150	Horizontal	Pass
5**	7602.313	32.75	-3.03	54.0	-21.25	AV	257.00	150	Horizontal	Pass
6	11891.812	52.55	2.12	74.0	-21.45	Peak	161.00	150	Horizontal	Pass
6**	11891.812	36.12	2.12	54.0	-17.88	AV	161.00	150	Horizontal	Pass

### A.6.2 Band Edge (Restricted-band)

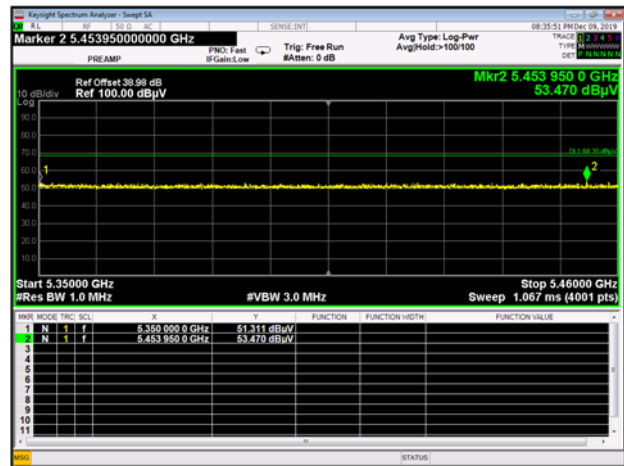
Test Band	Mode	Channel	Verdict
Band I	802.11a	Low	Pass
		High	Pass
	802.11n(HT20)	Low	Pass
		High	Pass
Band IV	802.11a	Low	Pass
		High	Pass
	802.11n(HT20)	Low	Pass
		High	Pass
802.11n(HT40)	Low	Pass	
	High	Pass	

### Test Plots

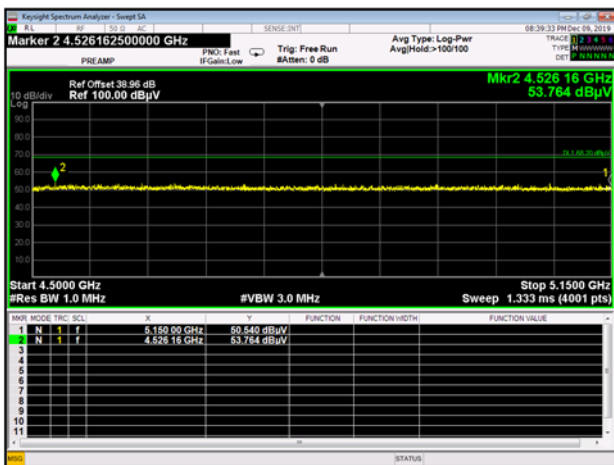
Band I 11a CH36 PK



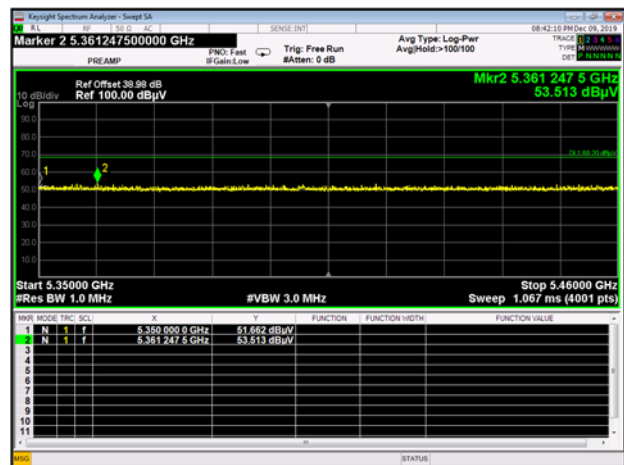
Band I 11a CH48 PK



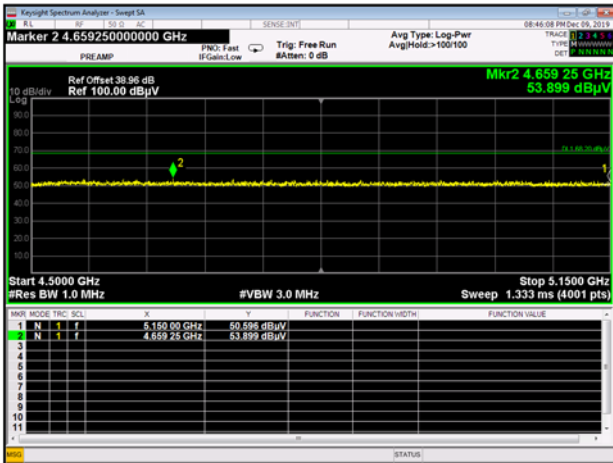
Band I 11n20 CH36 PK



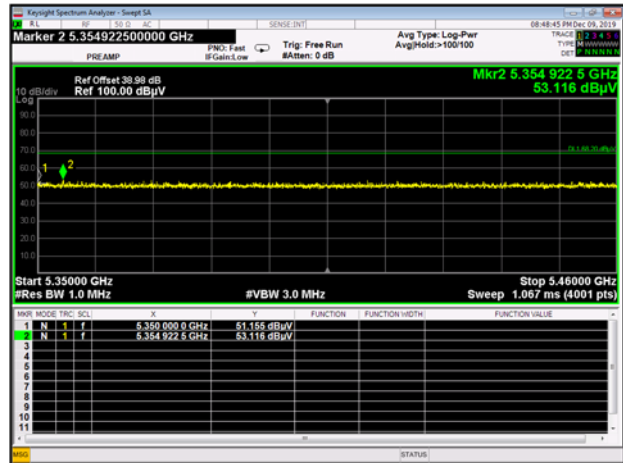
Band I 11n20 CH48 PK



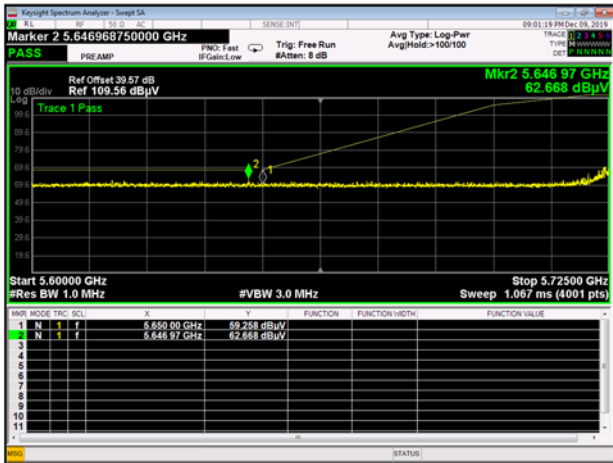
Band I 11n40 CH38 PK



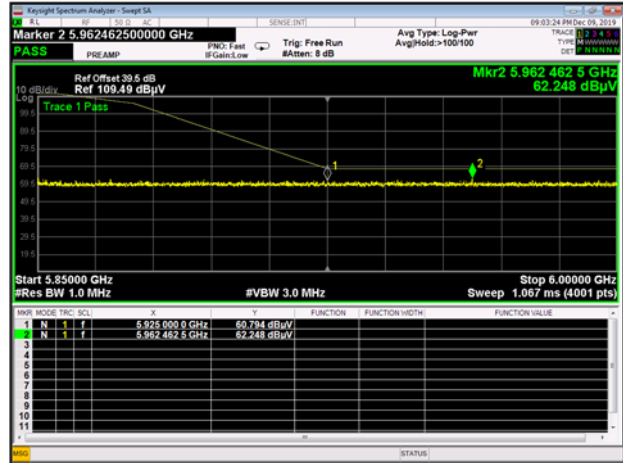
Band I 11n40 CH46 PK



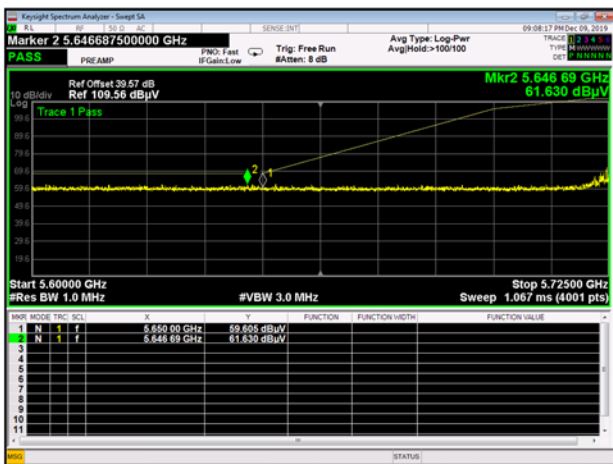
Band IV 11a CH149 PK



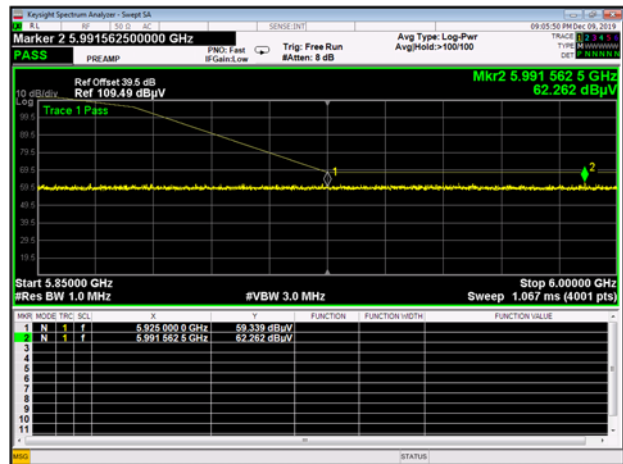
Band IV 11a CH165 PK



Band IV 11n20 CH149 PK

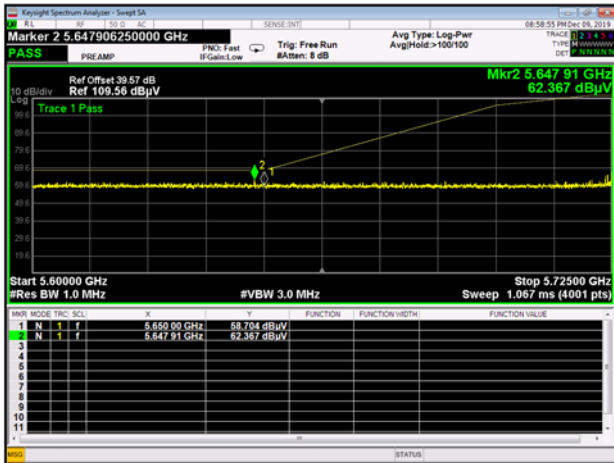


Band IV 11n20 CH165 PK

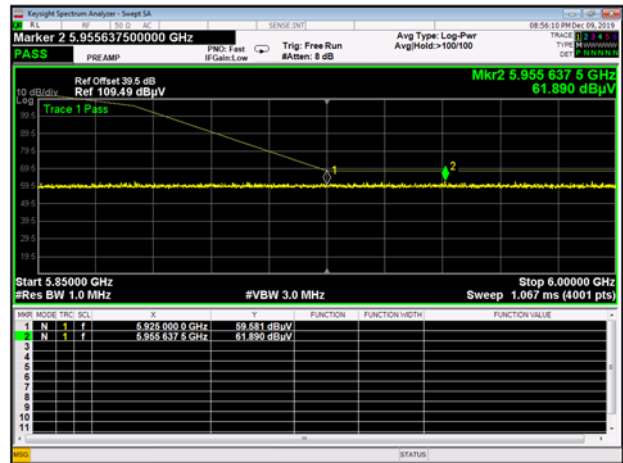




Band IV 11n40 CH151 PK



Band IV 11n40 CH159 PK



## **ANNEX B TEST SETUP PHOTOS**

Please refer the document "BL-SZ19B0502-AR.PDF".

## **ANNEX C EUT EXTERNAL PHOTOS**

Please refer the document "BL-SZ19B0502-AW.PDF".

## **ANNEX D EUT INTERNAL PHOTOS**

Please refer the document "BL-SZ19B0502-AI.PDF".

--END OF REPORT--