

FCC

RF

TEST REPORT

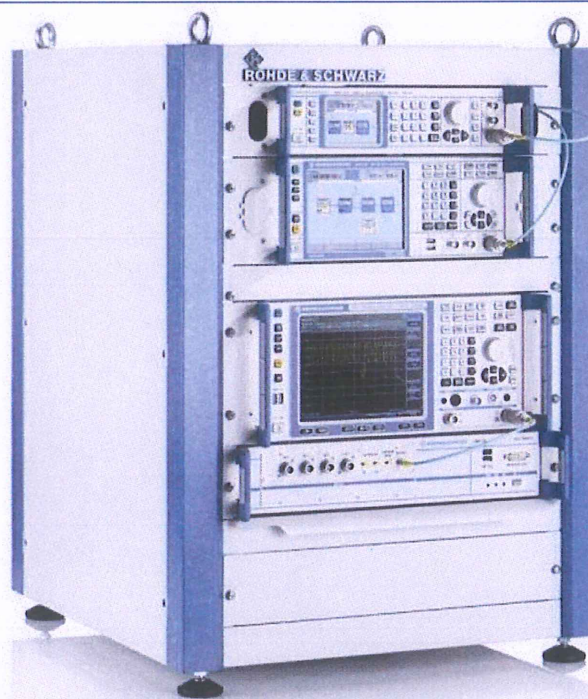
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.



FOR
Smart POS Terminal

ISSUED TO
Advanced Mobile Payment Inc.

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



Tested by: Heng Aiping
Heng Aiping

Date Jan 15, 2020

Approved by: Wei Yanquan
Wei Yanquan
(Chief Engineer)

Date Jan 15, 2020

Report No.: BL-SZ19A0582-604

EUT Name: Smart POS Terminal

Model Name: AMP 8000

Brand Name: AMP

Test Standard: 47 CFR Part 15 Subpart E

FCC ID: 2AKJB-AMP8000-1

Test Conclusion: Pass

Test Date: Nov. 05, 2019 ~ Dec. 20, 2019

Date of Issue: Jan. 15, 2020

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Revision History

<u>Version</u>	<u>Issue Date</u>	<u>Revisions Content</u>
<u>Rev. 01</u>	<u>Jan. 15, 2020</u>	<u>Initial Issue</u>

TABLE OF CONTENTS

1	ADMINISTRATIVE DATA (GENERAL INFORMATION)	4
1.1	Identification of the Testing Laboratory	4
1.2	Identification of the Responsible Testing Location	4
1.3	Laboratory Condition	4
1.4	Announce	4
2	PRODUCT INFORMATION	5
2.1	Applicant	5
2.2	Manufacturer	5
2.3	Factory	5
2.4	General Description for Equipment under Test (EUT)	5
2.5	Technical Information	6
2.6	Additional Instructions	7
2.7	Channel List	9
3	SUMMARY OF TEST RESULTS	11
3.1	Test Standards	11
3.2	Verdict	11
4	GENERAL TEST CONFIGURATIONS	12
4.1	Test Environments	12
4.2	Test Equipment List	12
4.3	Measurement Uncertainty	13
4.4	Description of Test Setup	14
5	TEST ITEMS	17
5.1	RF Output Power	17
5.2	Emission Bandwidth and 6 dB Bandwidth	18
5.3	Power Spectral density (PSD)	19
5.4	Conducted Emission	20
5.5	Radiated Spurious Emissions and Band Edge (Restricted-band)	21

ANNEX A	TEST RESULT	26
A.1	RF Output Power	26
A.2	Emission Bandwidth & 99% Bandwidth	26
A.3	6 dB Bandwidth	26
A.4	Power Spectral Density	26
A.5	Conducted Emissions	27
A.6	Radiated Spurious Emissions and Band Edge (Restricted-band).....	29
ANNEX B	TEST SETUP PHOTOS	50
ANNEX C	EUT EXTERNAL PHOTOS	50
ANNEX D	EUT INTERNAL PHOTOS	50

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°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	NEW POS TECHNOLOGY LIMITED
Address	Floor, Block A, Financial Technology Building, No.11 Keyuan Rd, Nanshan District, Shenzhen

2.3 Factory

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Name	Smart POS Terminal
Model Name Under Test	AMP 8000
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	N0000H30225E0
Software Version	V1.0.1
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	☐ Mobile ☒ Portable ☐ 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	FPC 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 Smart POS Terminal, intended for used with information technology equipment.

2.6 Additional Instructions

EUT Software Settings:

Mode	☒ Special software is used. The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.
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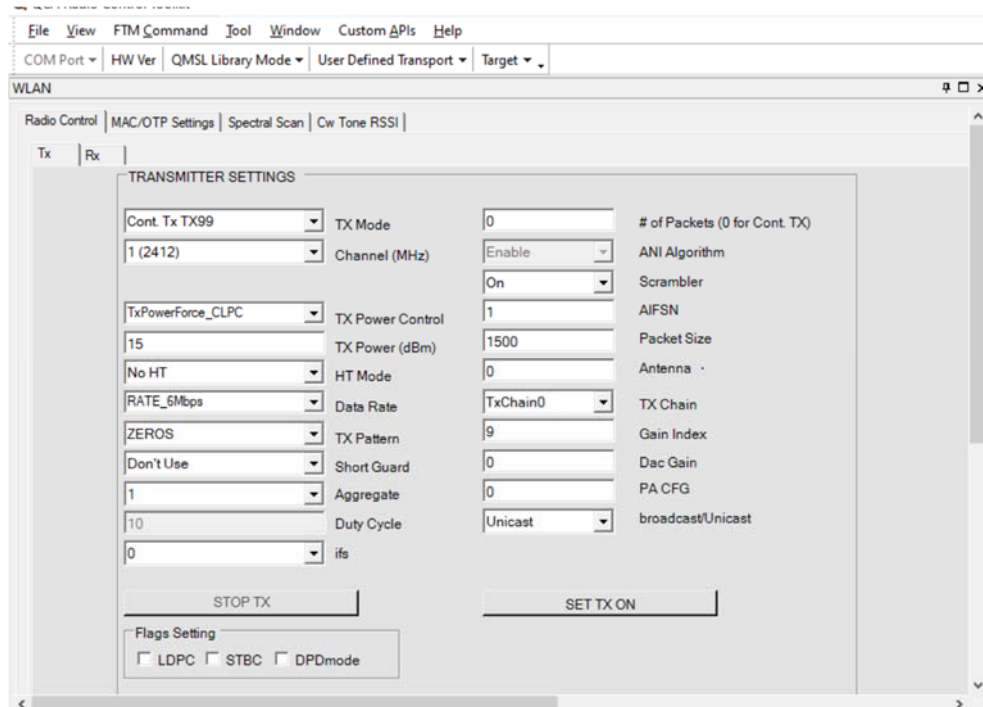
During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Test Software Version	N/A
-----------------------	-----

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:



The screenshot shows the 'WLAN' window with the 'Radio Control' tab selected. The 'Tx' sub-tab is active, displaying the 'TRANSMITTER SETTINGS' panel. The settings are organized into two columns. The left column contains dropdown menus for 'Cont. Tx TX99', '1 (2412)', 'TxPowerForce_CLPC', '15', 'No HT', 'RATE_6Mbps', 'ZEROS', 'Don't Use', '1', '10', and '0'. The right column contains dropdown menus for 'TX Mode', 'Channel (MHz)', 'TX Power Control', 'TX Power (dBm)', 'HT Mode', 'Data Rate', 'TX Pattern', 'Short Guard', 'Aggregate', 'Duty Cycle', and 'ifs'. Below these are two buttons: 'STOP TX' and 'SET TX ON'. At the bottom, there is a 'Flags Setting' section with checkboxes for 'LDPC', 'STBC', and 'DPDmode'. The right side of the panel lists various parameters: '# of Packets (0 for Cont. TX)', 'ANI Algorithm', 'Scrambler', 'AIFSN', 'Packet Size', 'Antenna', 'TX Chain', 'Gain Index', 'Dac Gain', 'PA CFG', and 'broadcast/Unicast'.

Parameter	Value
Cont. Tx TX99	0
TX Mode	Enable
1 (2412)	On
Channel (MHz)	1
TxPowerForce_CLPC	1500
TX Power Control	0
15	TxChain0
TX Power (dBm)	9
No HT	0
HT Mode	0
RATE_6Mbps	0
Data Rate	0
ZEROS	Unicast
TX Pattern	
Don't Use	
Short Guard	
1	
Aggregate	
Duty Cycle	
10	
ifs	
0	
Flags Setting	
LDPC	
STBC	
DPDmode	
# of Packets (0 for Cont. TX)	
ANI Algorithm	
Scrambler	
AIFSN	
Packet Size	
Antenna	
TX Chain	
Gain Index	
Dac Gain	
PA CFG	
broadcast/Unicast	

2.7 Channel List

20 MHz		40 MHz	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
36	5180	38	5190
40	5200	46	5230
44	5220	151	5755
48	5240	159	5795
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 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 ^{Note1}
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 ^{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.

Note ³: 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)	+50°C
Working Voltage of the EUT	NV (Normal Voltage)	7.2 V
	LV (Low Voltage)	6.5 V
	HV (High Voltage)	8 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.

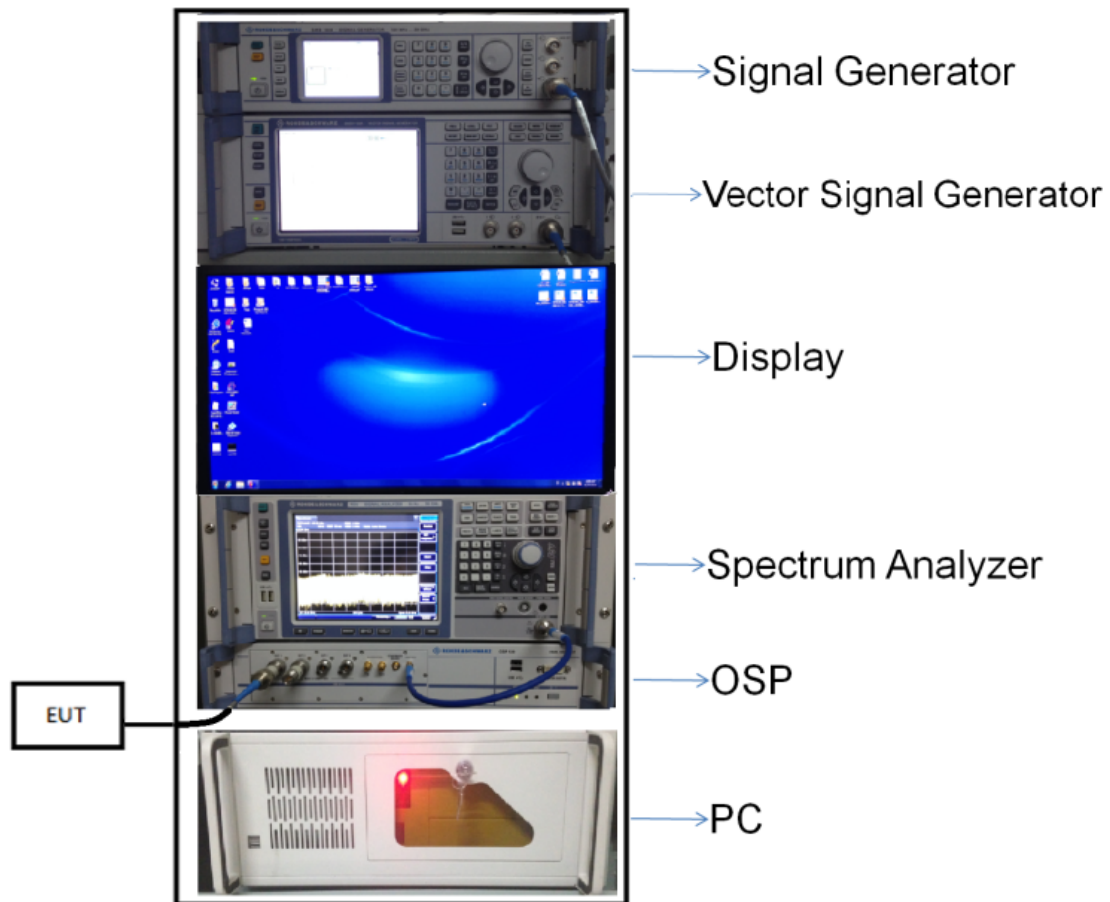
This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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.**

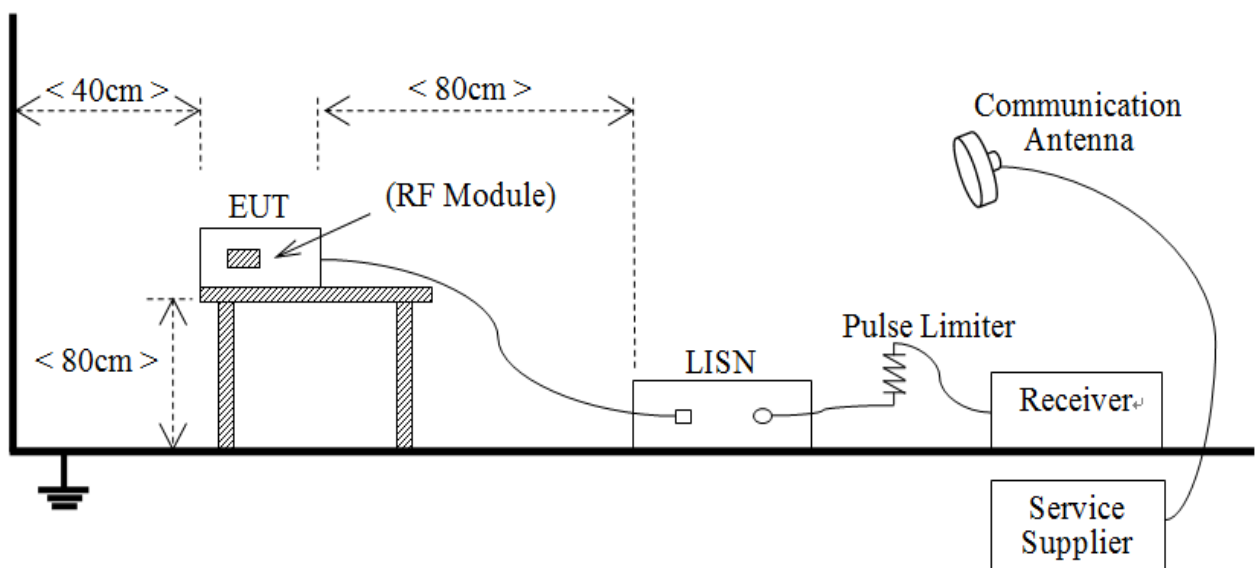
4.4 Description of Test Setup

4.4.1 For Antenna Port Test



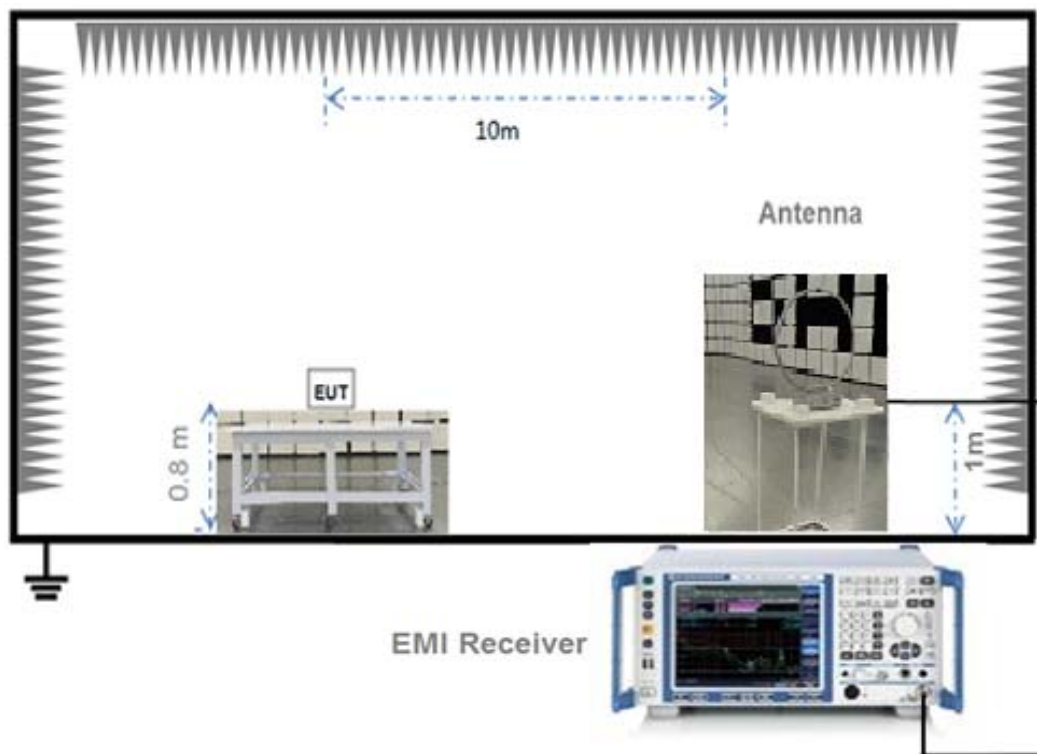
(Diagram 1)

4.4.2 For AC Power Supply Port Test



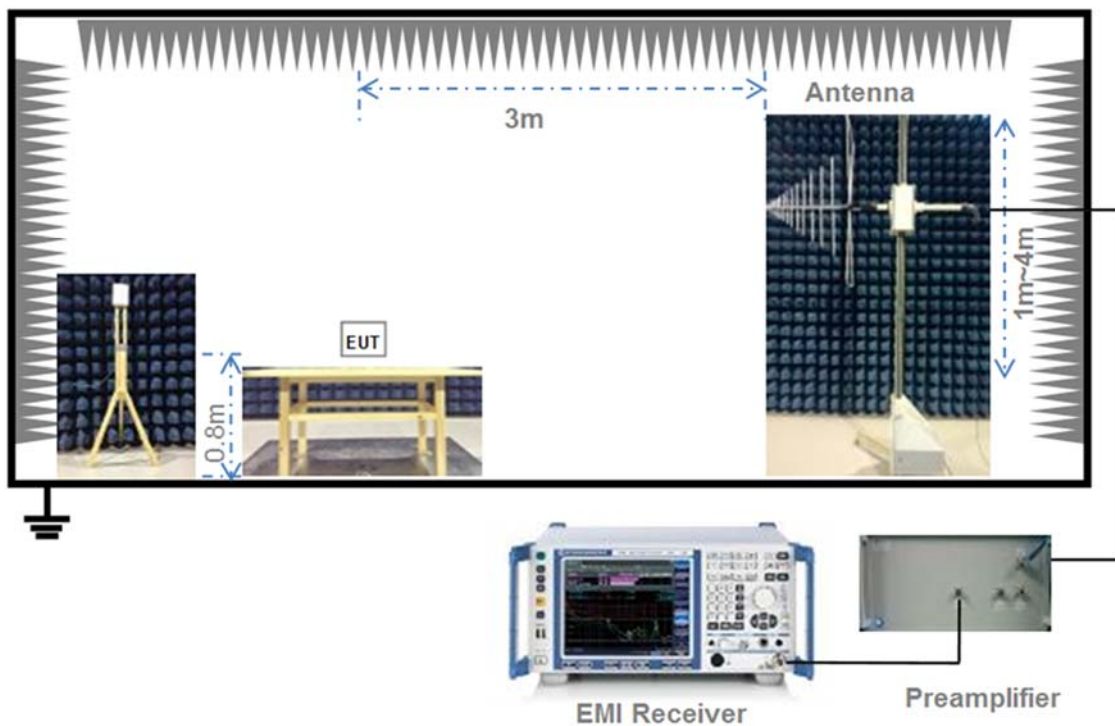
(Diagram 2)

4.4.3 For Radiated Test (Below 30 MHz)



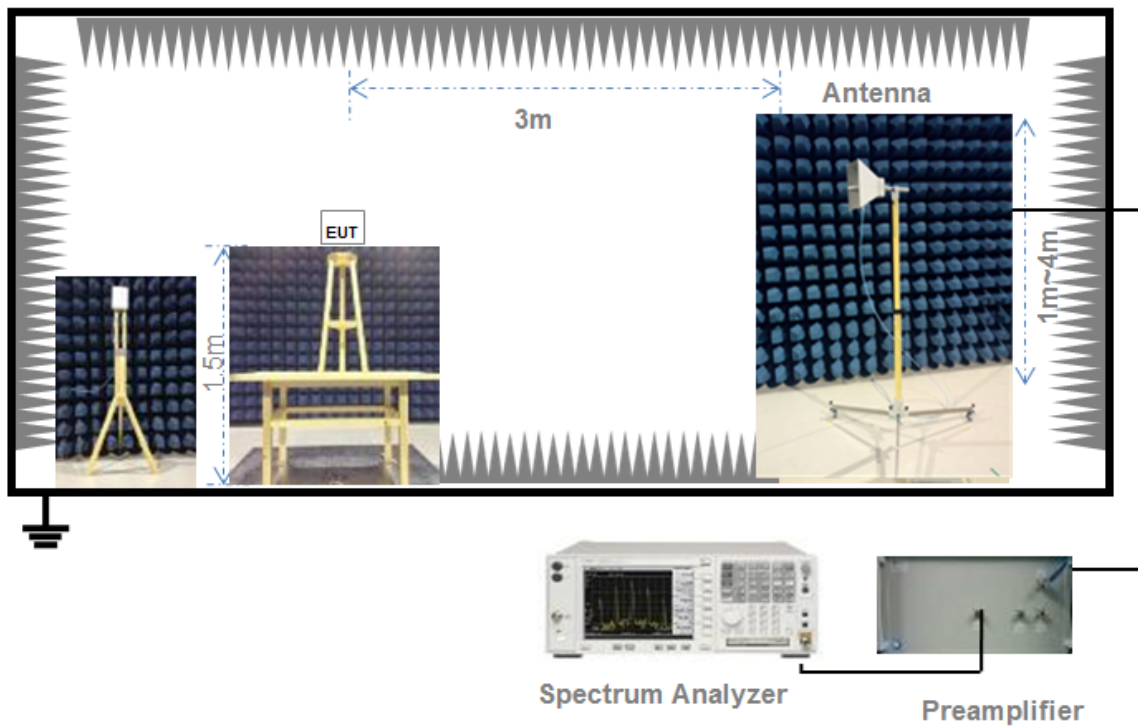
(Diagram 3)

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 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 Radiated Spurious Emissions and Band Edge (Restricted-band)

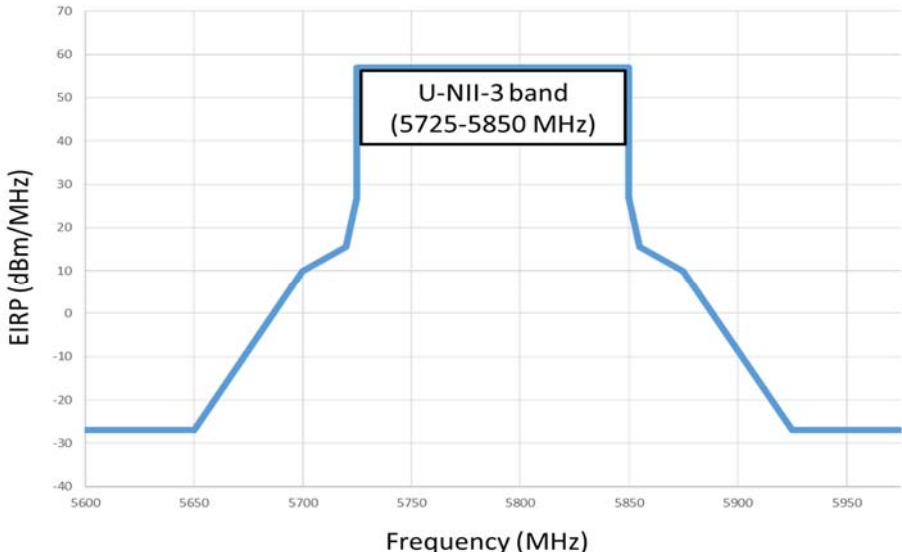
5.5.1 Limit

FCC §15.209 & 15.407(b), RSS-247, 6.2

Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	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.

5.5.2 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 ≤ 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 $\text{span}/(\# \text{ of points in sweep}) \leq (RBW/2)$. 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

5.5.4 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

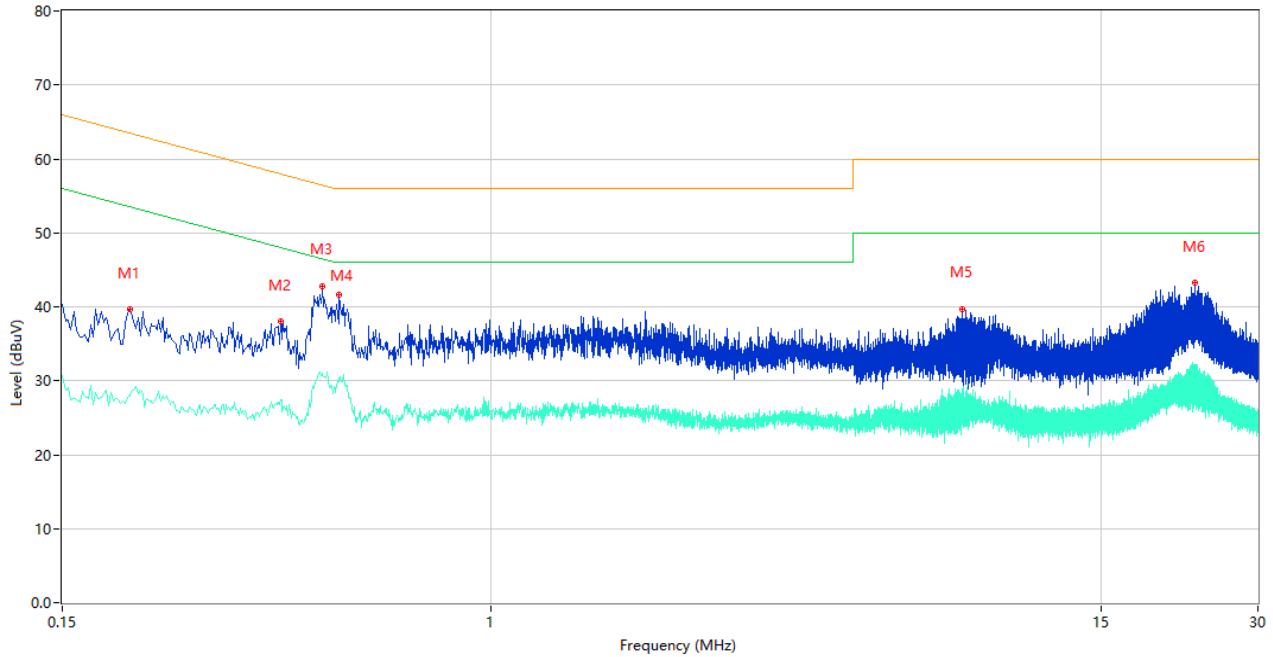
Note¹: The EUT is working in the Normal link mode.

Note²: 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

PHASE L

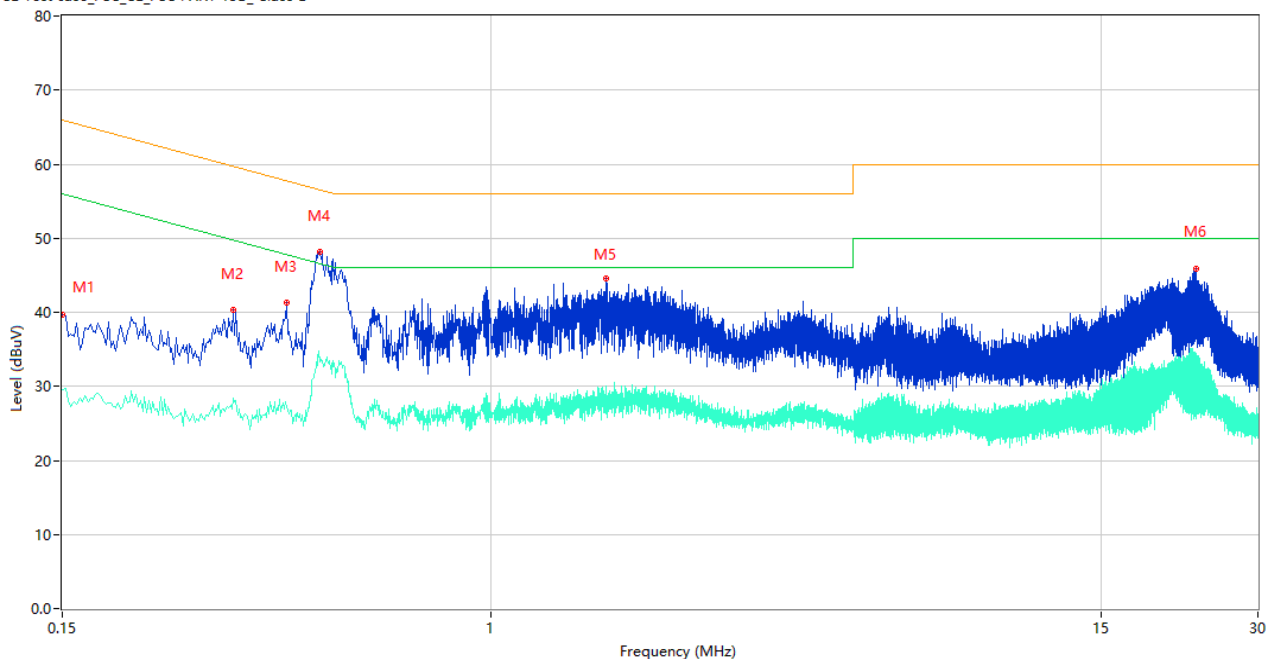
CE Test case_FCC_CE_FCC PART 15B_ Class B



No.	Frequency (MHz)	Results (dBUV)	Factor (dB)	Limit (dBUV)	Over Limit (dB)	Detector	Line	Verdict
1	0.202	39.65	10.38	63.53	-23.88	Peak	L	Pass
1**	0.202	27.89	10.38	53.53	-25.64	AV	L	Pass
2	0.394	37.98	10.30	57.98	-20.00	Peak	L	Pass
2**	0.394	27.42	10.30	47.98	-20.56	AV	L	Pass
3	0.476	42.76	10.29	56.41	-13.65	Peak	L	Pass
3**	0.476	30.90	10.29	46.41	-15.51	AV	L	Pass
4	0.512	41.59	10.30	56.00	-14.41	Peak	L	Pass
4**	0.512	30.24	10.30	46.00	-15.76	AV	L	Pass
5	8.098	39.64	10.35	60.00	-20.36	Peak	L	Pass
5**	8.098	27.53	10.35	50.00	-22.47	AV	L	Pass
6	22.752	43.20	10.61	60.00	-16.80	Peak	L	Pass
6**	22.752	27.12	10.61	50.00	-22.88	AV	L	Pass

PHASE N

CE Test case_FCC_CE_FCC PART 15B_ Class B



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.150	39.75	10.41	66.00	-26.25	Peak	N	Pass
1**	0.150	29.48	10.41	56.00	-26.52	AV	N	Pass
2	0.320	40.28	10.33	59.71	-19.43	Peak	N	Pass
2**	0.320	28.39	10.33	49.71	-21.32	AV	N	Pass
3	0.406	41.25	10.31	57.73	-16.48	Peak	N	Pass
3**	0.406	27.22	10.31	47.73	-20.51	AV	N	Pass
4	0.470	48.12	10.30	56.51	-8.39	Peak	N	Pass
4**	0.470	33.32	10.30	46.51	-13.19	AV	N	Pass
5	1.668	44.54	10.26	56.00	-11.46	Peak	N	Pass
5**	1.668	30.03	10.26	46.00	-15.97	AV	N	Pass
6	22.808	45.89	10.61	60.00	-14.11	Peak	N	Pass
6**	22.808	34.28	10.61	50.00	-15.72	AV	N	Pass

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

Test Data

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

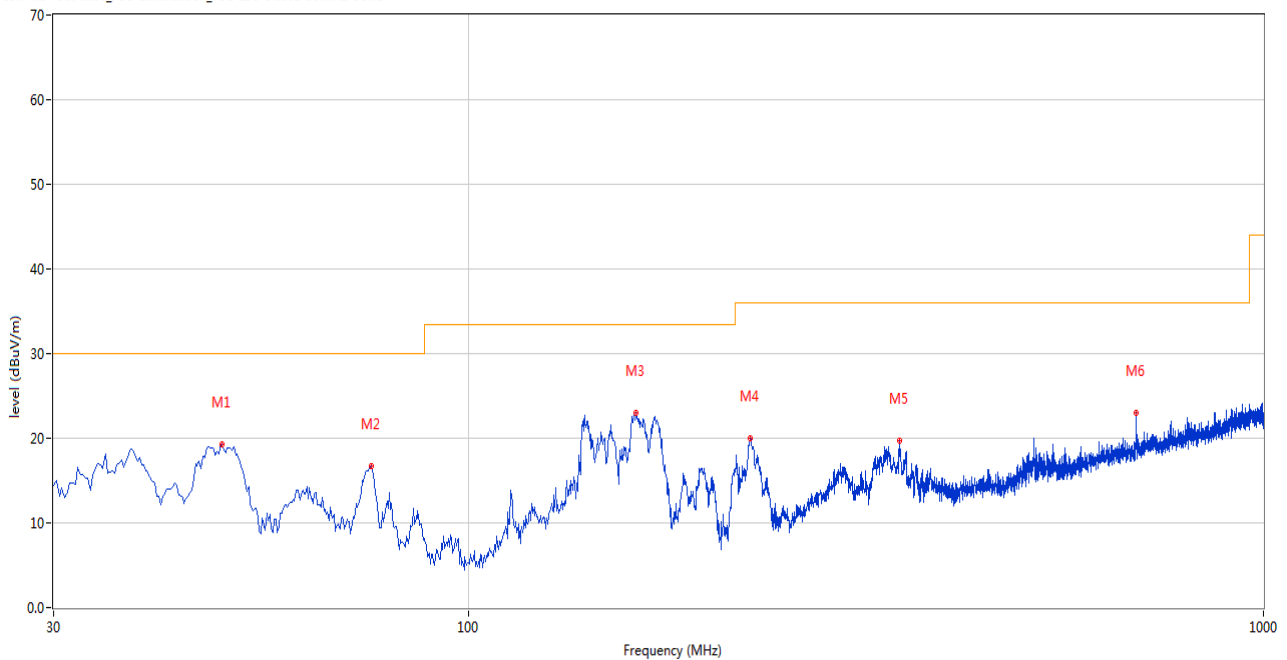
Note²: For the test data above 1 GHz, According the ANSI C63.4, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

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.

30 MHz to 1 GHz, ANT V

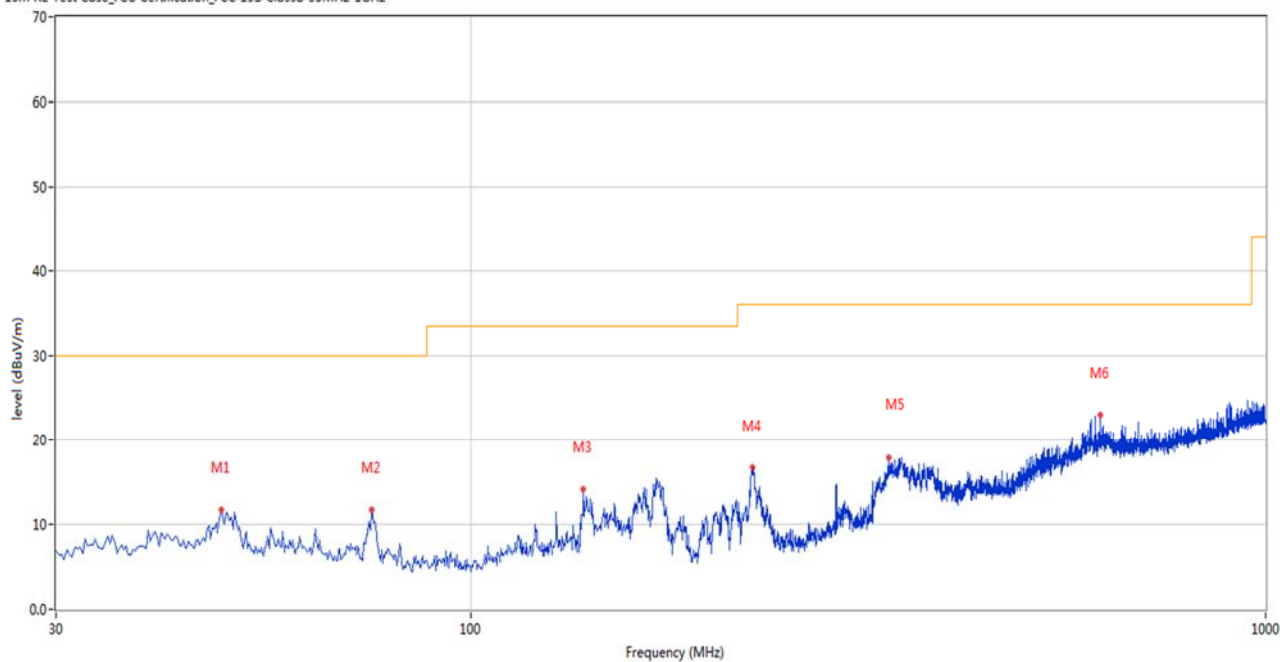
10m RE Test Case_FCC Certification_FCC 15B ClassB 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	48.910	19.32	-27.31	30.0	-10.68	Peak	1.00	100	Vertical	Pass
2	75.336	16.74	-30.64	30.0	-13.26	Peak	181.00	200	Vertical	Pass
3	162.372	22.99	-25.97	33.5	-10.51	Peak	174.00	100	Vertical	Pass
4	225.649	19.98	-28.20	36.0	-16.02	Peak	119.00	100	Vertical	Pass
5	348.565	19.69	-24.26	36.0	-16.31	Peak	265.00	100	Vertical	Pass
6	691.617	23.02	-16.12	36.0	-12.98	Peak	60.00	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	48.425	11.75	-27.24	30.0	-18.25	Peak	360.00	200	Horizontal	Pass
2	74.851	11.66	-30.60	30.0	-18.34	Peak	206.00	300	Horizontal	Pass
3	138.370	14.11	-26.44	33.5	-19.39	Peak	125.00	300	Horizontal	Pass
4	226.133	16.68	-28.23	36.0	-19.32	Peak	292.00	300	Horizontal	Pass
5	335.231	17.93	-24.84	36.0	-18.07	Peak	14.00	300	Horizontal	Pass
6	619.128	22.94	-17.56	36.0	-13.06	Peak	150.00	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	1354.500	35.95	-14.87	68.2	-32.25	Peak	238.00	150	Vertical	Pass
1**	1354.500	25.60	-14.87	54.0	-28.40	AV	238.00	150	Vertical	Pass
2	2837.500	41.03	-8.45	68.2	-27.17	Peak	25.00	150	Vertical	Pass
2**	2837.500	30.73	-8.45	54.0	-23.27	AV	25.00	150	Vertical	Pass
3	4045.000	45.45	-4.32	68.2	-22.75	Peak	327.00	150	Vertical	Pass
3**	4045.000	35.09	-4.32	54.0	-18.91	AV	327.00	150	Vertical	Pass
4	5184.000	90.56	-0.98	--	62.56	Peak	28.00	150	Vertical	N/A
4**	5184.000	83.44	-0.98	--	83.44	AV	28.00	150	Vertical	N/A
5	7609.500	48.24	18.06	68.2	-19.96	Peak	179.00	150	Vertical	Pass
5**	7609.500	38.02	18.06	54.0	-15.98	AV	179.00	150	Vertical	Pass
6	12545.875	52.29	21.74	68.2	-15.91	Peak	92.00	150	Vertical	Pass
6**	12545.875	41.16	21.74	54.0	-12.84	AV	92.00	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	1379.500	36.55	-14.76	68.2	-31.65	Peak	145.00	150	Horizontal	Pass
1**	1379.500	26.25	-14.76	54.0	-27.75	AV	145.00	150	Horizontal	Pass
2	2781.000	40.73	-8.99	68.2	-27.47	Peak	342.00	150	Horizontal	Pass
2**	2781.000	30.23	-8.99	54.0	-23.77	AV	342.00	150	Horizontal	Pass
3	4092.000	45.30	-4.17	68.2	-22.90	Peak	244.00	150	Horizontal	Pass
3**	4092.000	35.07	-4.17	54.0	-18.93	AV	244.00	150	Horizontal	Pass
4	5176.000	93.61	-1.14	--	-144.39	Peak	238.00	150	Horizontal	N/A
4**	5176.000	86.41	-1.14	--	86.41	AV	238.00	150	Horizontal	N/A
5	7592.250	48.91	18.00	68.2	-19.29	Peak	223.00	150	Horizontal	Pass
5**	7592.250	37.30	18.00	54.0	-16.70	AV	223.00	150	Horizontal	Pass
6	12545.875	51.36	21.74	68.2	-16.84	Peak	358.00	150	Horizontal	Pass
6**	12545.875	41.35	21.74	54.0	-12.65	AV	358.00	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	1404.000	37.23	-14.86	68.2	-30.97	Peak	161.00	150	Vertical	Pass
1**	1404.000	25.62	-14.86	54.0	-28.38	AV	161.00	150	Vertical	Pass
2	2866.000	41.70	-8.14	68.2	-26.50	Peak	108.00	150	Vertical	Pass
2**	2866.000	30.53	-8.14	54.0	-23.47	AV	108.00	150	Vertical	Pass
3	4007.000	45.69	-4.02	68.2	-22.51	Peak	360.00	150	Vertical	Pass
3**	4007.000	35.47	-4.02	54.0	-18.53	AV	360.00	150	Vertical	Pass
4	5193.000	90.78	-1.27	--	56.78	Peak	34.00	150	Vertical	N/A
4**	5193.000	82.84	-1.27	--	82.84	AV	34.00	150	Vertical	N/A
5	7600.875	47.93	18.33	68.2	-20.27	Peak	155.00	150	Vertical	Pass
5**	7600.875	37.82	18.33	54.0	-16.18	AV	155.00	150	Vertical	Pass
6	11699.188	51.44	20.39	68.2	-16.76	Peak	347.00	150	Vertical	Pass
6**	11699.188	39.39	20.39	54.0	-14.61	AV	347.00	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	1351.500	36.56	-15.05	68.2	-31.64	Peak	26.00	150	Horizontal	Pass
1**	1351.500	25.68	-15.05	54.0	-28.32	AV	26.00	150	Horizontal	Pass
2	2815.000	41.39	-8.52	68.2	-26.81	Peak	257.00	150	Horizontal	Pass
2**	2815.000	30.35	-8.52	54.0	-23.65	AV	257.00	150	Horizontal	Pass
3	4048.000	45.45	-4.18	68.2	-22.75	Peak	15.00	150	Horizontal	Pass
3**	4048.000	35.04	-4.18	54.0	-18.96	AV	15.00	150	Horizontal	Pass
4	5195.000	93.73	-1.10	--	35.73	Peak	58.00	150	Horizontal	N/A
4**	5195.000	86.71	-1.10	--	86.71	AV	58.00	150	Horizontal	N/A
5	7605.188	48.08	18.30	68.2	-20.12	Peak	0.00	150	Horizontal	Pass
5**	7605.188	37.90	18.30	54.0	-16.10	AV	0.00	150	Horizontal	Pass
6	12091.625	51.24	20.77	68.2	-16.96	Peak	300.00	150	Horizontal	Pass
6**	12091.625	39.50	20.77	54.0	-14.50	AV	300.00	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	1362.000	36.35	-15.06	68.2	-31.85	Peak	69.00	150	Vertical	Pass
1**	1362.000	25.91	-15.06	54.0	-28.09	AV	69.00	150	Vertical	Pass
2	2843.000	41.25	-8.31	68.2	-26.95	Peak	235.00	150	Vertical	Pass
2**	2843.000	30.64	-8.31	54.0	-23.36	AV	235.00	150	Vertical	Pass
3	4179.000	46.93	-4.09	68.2	-21.27	Peak	340.00	150	Vertical	Pass
3**	4179.000	35.52	-4.09	54.0	-18.48	AV	340.00	150	Vertical	Pass
4	5246.000	92.75	-1.16	--	-171.25	Peak	264.00	150	Vertical	N/A
4**	5246.000	84.38	-1.16	--	84.38	AV	264.00	150	Vertical	N/A
5	7603.750	47.94	18.34	68.2	-20.26	Peak	188.00	150	Vertical	Pass
5**	7603.750	37.91	18.34	54.0	-16.09	AV	188.00	150	Vertical	Pass
6	12548.750	51.65	21.76	68.2	-16.55	Peak	49.00	150	Vertical	Pass
6**	12548.750	41.17	21.76	54.0	-12.83	AV	49.00	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	1367.000	36.19	-14.96	68.2	-32.01	Peak	228.00	150	Horizontal	Pass
1**	1367.000	25.23	-14.96	54.0	-28.77	AV	228.00	150	Horizontal	Pass
2	2770.000	41.38	-8.50	68.2	-26.82	Peak	146.00	150	Horizontal	Pass
2**	2770.000	30.39	-8.50	54.0	-23.61	AV	146.00	150	Horizontal	Pass
3	4008.000	46.01	-3.98	68.2	-22.19	Peak	47.00	150	Horizontal	Pass
3**	4008.000	35.33	-3.98	54.0	-18.67	AV	47.00	150	Horizontal	Pass
4	5243.000	94.84	-0.89	--	-237.16	Peak	332.00	150	Horizontal	N/A
4**	5243.000	87.70	-0.89	--	87.70	AV	332.00	150	Horizontal	N/A
5	7606.625	47.98	18.39	68.2	-20.22	Peak	172.00	150	Horizontal	Pass
5**	7606.625	38.10	18.39	54.0	-15.90	AV	172.00	150	Horizontal	Pass
6	11623.000	49.93	20.39	68.2	-18.27	Peak	37.00	150	Horizontal	Pass
6**	11623.000	39.43	20.39	54.0	-14.57	AV	37.00	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	1373.000	36.31	-14.81	68.2	-31.89	Peak	171.00	150	Vertical	Pass
1**	1373.000	25.87	-14.81	54.0	-28.13	AV	171.00	150	Vertical	Pass
2	2842.500	42.23	-8.35	68.2	-25.97	Peak	360.00	150	Vertical	Pass
2**	2842.500	30.97	-8.35	54.0	-23.03	AV	360.00	150	Vertical	Pass
3	4111.000	45.87	-4.20	68.2	-22.33	Peak	196.00	150	Vertical	Pass
3**	4111.000	35.14	-4.20	54.0	-18.86	AV	196.00	150	Vertical	Pass
4	5187.000	89.92	-0.91	--	61.92	Peak	28.00	150	Vertical	N/A
4**	5187.000	83.15	-0.91	--	83.15	AV	28.00	150	Vertical	N/A
5	7543.375	47.37	17.33	68.2	-20.83	Peak	21.00	150	Vertical	Pass
5**	7543.375	36.48	17.33	54.0	-17.52	AV	21.00	150	Vertical	Pass
6	11980.937	50.37	20.72	68.2	-17.83	Peak	0.00	150	Vertical	Pass
6**	11980.937	39.11	20.72	54.0	-14.89	AV	0.00	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	1387.500	36.16	-14.93	68.2	-32.04	Peak	360.00	150	Horizontal	Pass
1**	1387.500	26.21	-14.93	54.0	-27.79	AV	360.00	150	Horizontal	Pass
2	2840.500	41.76	-8.39	68.2	-26.44	Peak	2.00	150	Horizontal	Pass
2**	2840.500	30.29	-8.39	54.0	-23.71	AV	2.00	150	Horizontal	Pass
3	4002.000	45.34	-3.86	68.2	-22.86	Peak	285.00	150	Horizontal	Pass
3**	4002.000	35.71	-3.86	54.0	-18.29	AV	285.00	150	Horizontal	Pass
4	5183.000	92.36	-1.06	--	-217.64	Peak	310.00	150	Horizontal	N/A
4**	5183.000	85.33	-1.06	--	85.33	AV	310.00	150	Horizontal	N/A
5	7508.875	48.33	17.69	68.2	-19.87	Peak	123.00	150	Horizontal	Pass
5**	7508.875	36.73	17.69	54.0	-17.27	AV	123.00	150	Horizontal	Pass
6	12038.438	50.34	20.44	68.2	-17.86	Peak	43.00	150	Horizontal	Pass
6**	12038.438	40.47	20.44	54.0	-13.53	AV	43.00	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	1394.000	36.77	-14.87	68.2	-31.43	Peak	2.00	150	Vertical	Pass
1**	1394.000	26.15	-14.87	54.0	-27.85	AV	2.00	150	Vertical	Pass
2	2836.000	41.10	-8.34	68.2	-27.10	Peak	332.00	150	Vertical	Pass
2**	2836.000	30.34	-8.34	54.0	-23.66	AV	332.00	150	Vertical	Pass
3	4215.000	46.05	-3.71	68.2	-22.15	Peak	360.00	150	Vertical	Pass
3**	4215.000	35.76	-3.71	54.0	-18.24	AV	360.00	150	Vertical	Pass
4	5194.000	89.82	-1.25	--	56.82	Peak	33.00	150	Vertical	N/A
4**	5194.000	83.64	-1.25	--	83.64	AV	33.00	150	Vertical	N/A
5	7439.875	47.55	16.73	68.2	-20.65	Peak	355.00	150	Vertical	Pass
5**	7439.875	36.36	16.73	54.0	-17.64	AV	355.00	150	Vertical	Pass
6	12080.125	50.63	20.75	68.2	-17.57	Peak	64.00	150	Vertical	Pass
6**	12080.125	40.16	20.75	54.0	-13.84	AV	64.00	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	1344.000	36.27	-14.80	68.2	-31.93	Peak	346.00	150	Horizontal	Pass
1**	1344.000	25.87	-14.80	54.0	-28.13	AV	346.00	150	Horizontal	Pass
2	2782.000	41.50	-9.07	68.2	-26.70	Peak	54.00	150	Horizontal	Pass
2**	2782.000	29.82	-9.07	54.0	-24.18	AV	54.00	150	Horizontal	Pass
3	4095.000	45.95	-4.24	68.2	-22.25	Peak	198.00	150	Horizontal	Pass
3**	4095.000	34.91	-4.24	54.0	-19.09	AV	198.00	150	Horizontal	Pass
4	5205.000	92.82	-1.16	--	-137.18	Peak	230.00	150	Horizontal	N/A
4**	5205.000	85.94	-1.16	--	85.94	AV	230.00	150	Horizontal	N/A
5	7628.188	47.89	17.17	68.2	-20.31	Peak	295.00	150	Horizontal	Pass
5**	7628.188	36.39	17.17	54.0	-17.61	AV	295.00	150	Horizontal	Pass
6	12072.937	50.87	20.65	68.2	-17.33	Peak	78.00	150	Horizontal	Pass
6**	12072.937	39.87	20.65	54.0	-14.13	AV	78.00	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	1307.500	38.47	-14.66	68.2	-29.73	Peak	119.00	150	Vertical	Pass
1**	1307.500	26.21	-14.66	54.0	-27.79	AV	119.00	150	Vertical	Pass
2	2839.000	41.75	-8.33	68.2	-26.45	Peak	284.00	150	Vertical	Pass
2**	2839.000	30.56	-8.33	54.0	-23.44	AV	284.00	150	Vertical	Pass
3	4055.000	45.76	-4.56	68.2	-22.44	Peak	106.00	150	Vertical	Pass
3**	4055.000	34.86	-4.56	54.0	-19.14	AV	106.00	150	Vertical	Pass
4	5233.000	90.55	-1.17	--	46.55	Peak	44.00	150	Vertical	N/A
4**	5233.000	82.95	-1.17	--	82.95	AV	44.00	150	Vertical	N/A
5	7461.437	47.83	17.33	68.2	-20.37	Peak	132.00	150	Vertical	Pass
5**	7461.437	36.69	17.33	54.0	-17.31	AV	132.00	150	Vertical	Pass
6	12026.937	51.29	20.29	68.2	-16.91	Peak	173.00	150	Vertical	Pass
6**	12026.937	39.38	20.29	54.0	-14.62	AV	173.00	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	1384.500	36.36	-15.02	68.2	-31.84	Peak	203.00	150	Horizontal	Pass
1**	1384.500	26.17	-15.02	54.0	-27.83	AV	203.00	150	Horizontal	Pass
2	2769.000	41.61	-8.39	68.2	-26.59	Peak	79.00	150	Horizontal	Pass
2**	2769.000	30.12	-8.39	54.0	-23.88	AV	79.00	150	Horizontal	Pass
3	4001.000	45.44	-3.82	68.2	-22.76	Peak	89.00	150	Horizontal	Pass
3**	4001.000	35.50	-3.82	54.0	-18.50	AV	89.00	150	Horizontal	Pass
4	5235.000	93.81	-1.22	--	-135.19	Peak	229.00	150	Horizontal	N/A
4**	5235.000	87.04	-1.22	--	87.04	AV	229.00	150	Horizontal	N/A
5	7602.313	48.05	18.35	68.2	-20.15	Peak	7.00	150	Horizontal	Pass
5**	7602.313	37.75	18.35	54.0	-16.25	AV	7.00	150	Horizontal	Pass
6	12058.563	51.35	20.47	68.2	-16.85	Peak	0.00	150	Horizontal	Pass
6**	12058.563	39.79	20.47	54.0	-14.21	AV	0.00	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	1545.500	36.50	-15.02	68.2	-31.70	Peak	90.00	150	Vertical	Pass
1**	1545.500	25.48	-15.02	54.0	-28.52	AV	90.00	150	Vertical	Pass
2	2847.500	41.16	-8.27	68.2	-27.04	Peak	143.00	150	Vertical	Pass
2**	2847.500	30.83	-8.27	54.0	-23.17	AV	143.00	150	Vertical	Pass
3	4002.000	45.39	-3.86	68.2	-22.81	Peak	0.00	150	Vertical	Pass
3**	4002.000	35.17	-3.86	54.0	-18.83	AV	0.00	150	Vertical	Pass
4	5196.000	90.82	-1.02	--	46.82	Peak	44.00	150	Vertical	N/A
4**	5196.000	84.28	-1.02	--	84.28	AV	44.00	150	Vertical	N/A
5	7494.500	47.33	17.20	68.2	-20.87	Peak	175.00	150	Vertical	Pass
5**	7494.500	36.75	17.20	54.0	-17.25	AV	175.00	150	Vertical	Pass
6	12545.875	51.83	21.74	68.2	-16.37	Peak	273.00	150	Vertical	Pass
6**	12545.875	41.12	21.74	54.0	-12.88	AV	273.00	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	1343.500	36.39	-14.82	68.2	-31.81	Peak	10.00	150	Horizontal	Pass
1**	1343.500	25.75	-14.82	54.0	-28.25	AV	10.00	150	Horizontal	Pass
2	2763.500	41.76	-9.05	68.2	-26.44	Peak	293.00	150	Horizontal	Pass
2**	2763.500	29.49	-9.05	54.0	-24.51	AV	293.00	150	Horizontal	Pass
3	4061.000	45.10	-4.22	68.2	-23.10	Peak	64.00	150	Horizontal	Pass
3**	4061.000	35.36	-4.22	54.0	-18.64	AV	64.00	150	Horizontal	Pass
4	5196.000	94.33	-1.02	--	-216.67	Peak	311.00	150	Horizontal	N/A
4**	5196.000	87.06	-1.02	--	87.06	AV	311.00	150	Horizontal	N/A
5	7612.375	47.59	18.16	68.2	-20.61	Peak	7.00	150	Horizontal	Pass
5**	7612.375	38.23	18.16	54.0	-15.77	AV	7.00	150	Horizontal	Pass
6	12044.188	50.46	20.47	68.2	-17.74	Peak	175.00	150	Horizontal	Pass
6**	12044.188	39.97	20.47	54.0	-14.03	AV	175.00	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	1578.000	35.71	-15.22	68.2	-32.49	Peak	145.00	150	Vertical	Pass
1**	1578.000	25.74	-15.22	54.0	-28.26	AV	145.00	150	Vertical	Pass
2	2827.000	41.28	-8.39	68.2	-26.92	Peak	71.00	150	Vertical	Pass
2**	2827.000	29.70	-8.39	54.0	-24.30	AV	71.00	150	Vertical	Pass
3	3893.000	45.71	-4.58	68.2	-22.49	Peak	330.00	150	Vertical	Pass
3**	3893.000	34.65	-4.58	54.0	-19.35	AV	330.00	150	Vertical	Pass
4	5235.000	90.54	-1.22	--	48.54	Peak	42.00	150	Vertical	N/A
4**	5235.000	84.12	-1.22	--	84.12	AV	42.00	150	Vertical	N/A
5	7608.062	47.46	18.36	68.2	-20.74	Peak	323.00	150	Vertical	Pass
5**	7608.062	37.94	18.36	54.0	-16.06	AV	323.00	150	Vertical	Pass
6	11623.000	50.05	20.39	68.2	-18.15	Peak	316.00	150	Vertical	Pass
6**	11623.000	39.46	20.39	54.0	-14.54	AV	316.00	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	1349.500	36.41	-14.63	68.2	-31.79	Peak	157.00	150	Horizontal	Pass
1**	1349.500	25.73	-14.63	54.0	-28.27	AV	157.00	150	Horizontal	Pass
2	2844.500	41.71	-8.22	68.2	-26.49	Peak	361.00	150	Horizontal	Pass
2**	2844.500	31.12	-8.22	54.0	-22.88	AV	361.00	150	Horizontal	Pass
3	4042.000	45.49	-4.31	68.2	-22.71	Peak	298.00	150	Horizontal	Pass
3**	4042.000	34.82	-4.31	54.0	-19.18	AV	298.00	150	Horizontal	Pass
4	5236.000	94.84	-1.14	--	-137.16	Peak	232.00	150	Horizontal	N/A
4**	5236.000	86.88	-1.14	--	86.88	AV	232.00	150	Horizontal	N/A
5	7600.875	48.02	18.33	68.2	-20.18	Peak	137.00	150	Horizontal	Pass
5**	7600.875	38.26	18.33	54.0	-15.74	AV	137.00	150	Horizontal	Pass
6	12026.937	50.32	20.29	68.2	-17.88	Peak	224.00	150	Horizontal	Pass
6**	12026.937	39.44	20.29	54.0	-14.56	AV	224.00	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	1350.000	35.95	-14.70	68.2	-32.25	Peak	357.00	150	Vertical	Pass
1**	1350.000	26.63	-14.70	54.0	-27.37	AV	357.00	150	Vertical	Pass
2	2819.000	40.98	-8.42	68.2	-27.22	Peak	111.00	150	Vertical	Pass
2**	2819.000	29.98	-8.42	54.0	-24.02	AV	111.00	150	Vertical	Pass
3	4090.000	45.55	-4.28	68.2	-22.65	Peak	27.00	150	Vertical	Pass
3**	4090.000	34.82	-4.28	54.0	-19.18	AV	27.00	150	Vertical	Pass
4	5740.000	94.48	0.10	--	94.48	Peak	0.00	150	Vertical	N/A
4**	5740.000	87.55	0.10	--	87.55	AV	0.00	150	Vertical	N/A
5	7593.688	47.90	18.07	68.2	-20.30	Peak	150.00	150	Vertical	Pass
5**	7593.688	37.37	18.07	54.0	-16.63	AV	150.00	150	Vertical	Pass
6	12123.250	50.21	20.72	68.2	-17.99	Peak	358.00	150	Vertical	Pass
6**	12123.250	39.63	20.72	54.0	-14.37	AV	358.00	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	1551.500	36.30	-14.97	68.2	-31.90	Peak	262.00	150	Horizontal	Pass
1**	1551.500	25.75	-14.97	54.0	-28.25	AV	262.00	150	Horizontal	Pass
2	2780.500	40.98	-8.93	68.2	-27.22	Peak	269.00	150	Horizontal	Pass
2**	2780.500	30.03	-8.93	54.0	-23.97	AV	269.00	150	Horizontal	Pass
3	3892.000	45.43	-4.75	68.2	-22.77	Peak	307.00	150	Horizontal	Pass
3**	3892.000	34.18	-4.75	54.0	-19.82	AV	307.00	150	Horizontal	Pass
4	5737.000	95.00	0.11	--	-219.00	Peak	314.00	150	Horizontal	N/A
4**	5737.000	77.12	0.11	--	77.12	AV	314.00	150	Horizontal	N/A
5	7608.062	48.32	18.36	68.2	-19.88	Peak	296.00	150	Horizontal	Pass
5**	7608.062	38.06	18.36	54.0	-15.94	AV	296.00	150	Horizontal	Pass
6	12072.937	50.26	20.65	68.2	-17.94	Peak	137.00	150	Horizontal	Pass
6**	12072.937	39.86	20.65	54.0	-14.14	AV	137.00	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	1588.500	37.40	-15.14	68.2	-30.80	Peak	276.00	150	Vertical	Pass
1**	1588.500	25.43	-15.14	54.0	-28.57	AV	276.00	150	Vertical	Pass
2	2817.000	41.86	-8.35	68.2	-26.34	Peak	267.00	150	Vertical	Pass
2**	2817.000	30.13	-8.35	54.0	-23.87	AV	267.00	150	Vertical	Pass
3	4039.000	45.87	-4.81	68.2	-22.33	Peak	120.00	150	Vertical	Pass
3**	4039.000	34.52	-4.81	54.0	-19.48	AV	120.00	150	Vertical	Pass
4	5790.000	93.72	0.48	--	92.72	Peak	1.00	150	Vertical	N/A
4**	5790.000	86.73	0.48	--	86.73	AV	1.00	150	Vertical	N/A
5	7612.375	48.05	18.16	68.2	-20.15	Peak	108.00	150	Vertical	Pass
5**	7612.375	38.13	18.16	54.0	-15.87	AV	108.00	150	Vertical	Pass
6	11972.312	50.59	20.49	68.2	-17.61	Peak	220.00	150	Vertical	Pass
6**	11972.312	38.84	20.49	54.0	-15.16	AV	220.00	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	1305.500	42.86	-14.65	68.2	-25.34	Peak	70.00	150	Horizontal	Pass
1**	1305.500	25.40	-14.65	54.0	-28.60	AV	70.00	150	Horizontal	Pass
2	2768.000	41.89	-8.56	68.2	-26.31	Peak	286.00	150	Horizontal	Pass
2**	2768.000	29.41	-8.56	54.0	-24.59	AV	286.00	150	Horizontal	Pass
3	3845.000	45.16	-5.22	68.2	-23.04	Peak	97.00	150	Horizontal	Pass
3**	3845.000	34.14	-5.22	54.0	-19.86	AV	97.00	150	Horizontal	Pass
4	5778.000	94.31	0.09	--	-217.69	Peak	312.00	150	Horizontal	N/A
4**	5778.000	86.83	0.09	--	86.83	AV	312.00	150	Horizontal	N/A
5	7599.437	48.29	18.34	68.2	-19.91	Peak	73.00	150	Horizontal	Pass
5**	7599.437	37.75	18.34	54.0	-16.25	AV	73.00	150	Horizontal	Pass
6	11648.874	50.60	20.45	68.2	-17.60	Peak	244.00	150	Horizontal	Pass
6**	11648.874	39.32	20.45	54.0	-14.68	AV	244.00	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	1367.500	36.31	-15.02	68.2	-31.89	Peak	227.00	150	Vertical	Pass
1**	1367.500	25.48	-15.02	54.0	-28.52	AV	227.00	150	Vertical	Pass
2	2845.500	41.57	-8.17	68.2	-26.63	Peak	147.00	150	Vertical	Pass
2**	2845.500	30.59	-8.17	54.0	-23.41	AV	147.00	150	Vertical	Pass
3	4246.000	46.77	-3.88	68.2	-21.43	Peak	136.00	150	Vertical	Pass
3**	4246.000	35.47	-3.88	54.0	-18.53	AV	136.00	150	Vertical	Pass
4	5821.000	93.59	0.49	--	-267.41	Peak	361.00	150	Vertical	N/A
4**	5821.000	86.65	0.49	--	86.65	AV	361.00	150	Vertical	N/A
5	7609.500	47.97	18.06	68.2	-20.23	Peak	361.00	150	Vertical	Pass
5**	7609.500	37.78	18.06	54.0	-16.22	AV	361.00	150	Vertical	Pass
6	11704.937	49.98	20.38	68.2	-18.22	Peak	79.00	150	Vertical	Pass
6**	11704.937	39.52	20.38	54.0	-14.48	AV	79.00	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	1554.000	36.26	-15.04	68.2	-31.94	Peak	259.00	150	Horizontal	Pass
1**	1554.000	25.77	-15.04	54.0	-28.23	AV	259.00	150	Horizontal	Pass
2	2846.500	41.79	-8.22	68.2	-26.41	Peak	334.00	150	Horizontal	Pass
2**	2846.500	30.57	-8.22	54.0	-23.43	AV	334.00	150	Horizontal	Pass
3	3893.000	45.44	-4.58	68.2	-22.76	Peak	338.00	150	Horizontal	Pass
3**	3893.000	34.72	-4.58	54.0	-19.28	AV	338.00	150	Horizontal	Pass
4	5825.000	94.86	0.57	--	-211.14	Peak	306.00	150	Horizontal	N/A
4**	5825.000	87.17	0.57	--	87.17	AV	306.00	150	Horizontal	N/A
5	7595.125	48.11	18.08	68.2	-20.09	Peak	216.00	150	Horizontal	Pass
5**	7595.125	37.57	18.08	54.0	-16.43	AV	216.00	150	Horizontal	Pass
6	11666.125	50.07	20.40	68.2	-18.13	Peak	64.00	150	Horizontal	Pass
6**	11666.125	39.59	20.40	54.0	-14.41	AV	64.00	150	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	1533.000	36.70	-15.16	68.2	-31.50	Peak	342.00	150	Vertical	Pass
1**	1533.000	25.53	-15.16	54.0	-28.47	AV	342.00	150	Vertical	Pass
2	2834.500	41.42	-8.25	68.2	-26.78	Peak	40.00	150	Vertical	Pass
2**	2834.500	30.30	-8.25	54.0	-23.70	AV	40.00	150	Vertical	Pass
3	4179.000	46.23	-4.09	68.2	-21.97	Peak	239.00	150	Vertical	Pass
3**	4179.000	34.95	-4.09	54.0	-19.05	AV	239.00	150	Vertical	Pass
4	5741.000	93.08	0.29	--	92.08	Peak	1.00	150	Vertical	N/A
4**	5741.000	86.45	0.29	--	86.45	AV	1.00	150	Vertical	N/A
5	7602.313	48.72	18.35	68.2	-19.48	Peak	290.00	150	Vertical	Pass
5**	7602.313	37.70	18.35	54.0	-16.30	AV	290.00	150	Vertical	Pass
6	11624.438	50.14	20.39	68.2	-18.06	Peak	0.00	150	Vertical	Pass
6**	11624.438	38.90	20.39	54.0	-15.10	AV	0.00	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	1386.000	36.18	-15.07	68.2	-32.02	Peak	181.00	150	Horizontal	Pass
1**	1386.000	25.49	-15.07	54.0	-28.51	AV	181.00	150	Horizontal	Pass
2	2778.500	41.13	-8.73	68.2	-27.07	Peak	15.00	150	Horizontal	Pass
2**	2778.500	29.96	-8.73	54.0	-24.04	AV	15.00	150	Horizontal	Pass
3	4020.000	45.30	-4.71	68.2	-22.90	Peak	262.00	150	Horizontal	Pass
3**	4020.000	34.54	-4.71	54.0	-19.46	AV	262.00	150	Horizontal	Pass
4	5738.000	94.38	0.03	--	-218.62	Peak	313.00	150	Horizontal	N/A
4**	5738.000	86.19	0.03	--	86.19	AV	313.00	150	Horizontal	N/A
5	7603.750	47.64	18.34	68.2	-20.56	Peak	171.00	150	Horizontal	Pass
5**	7603.750	38.04	18.34	54.0	-15.96	AV	171.00	150	Horizontal	Pass
6	11644.562	49.48	20.41	68.2	-18.72	Peak	353.00	150	Horizontal	Pass
6**	11644.562	39.14	20.41	54.0	-14.86	AV	353.00	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	1401.500	36.51	-14.92	68.2	-31.69	Peak	239.00	150	Vertical	Pass
1**	1401.500	25.56	-14.92	54.0	-28.44	AV	239.00	150	Vertical	Pass
2	2755.000	41.38	-9.04	68.2	-26.82	Peak	74.00	150	Vertical	Pass
2**	2755.000	29.93	-9.04	54.0	-24.07	AV	74.00	150	Vertical	Pass
3	4057.000	46.25	-4.36	68.2	-21.95	Peak	63.00	150	Vertical	Pass
3**	4057.000	35.33	-4.36	54.0	-18.67	AV	63.00	150	Vertical	Pass
4	5778.000	93.84	0.09	--	-266.16	Peak	360.00	150	Vertical	N/A
4**	5778.000	85.04	0.09	--	85.04	AV	360.00	150	Vertical	N/A
5	7603.750	47.23	18.34	68.2	-20.97	Peak	350.00	150	Vertical	Pass
5**	7603.750	38.27	18.34	54.0	-15.73	AV	350.00	150	Vertical	Pass
6	12205.187	50.43	21.59	68.2	-17.77	Peak	350.00	150	Vertical	Pass
6**	12205.187	38.83	21.59	54.0	-15.17	AV	350.00	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	1388.500	36.65	-14.89	68.2	-31.55	Peak	336.00	150	Horizontal	Pass
1**	1388.500	25.96	-14.89	54.0	-28.04	AV	336.00	150	Horizontal	Pass
2	2704.500	42.25	-9.24	68.2	-25.95	Peak	156.00	150	Horizontal	Pass
2**	2704.500	29.73	-9.24	54.0	-24.27	AV	156.00	150	Horizontal	Pass
3	3973.000	45.11	-4.70	68.2	-23.09	Peak	344.00	150	Horizontal	Pass
3**	3973.000	34.47	-4.70	54.0	-19.53	AV	344.00	150	Horizontal	Pass
4	5778.000	94.03	0.09	--	-221.97	Peak	316.00	150	Horizontal	N/A
4**	5778.000	86.08	0.09	--	86.08	AV	316.00	150	Horizontal	N/A
5	7612.375	48.04	18.16	68.2	-20.16	Peak	352.00	150	Horizontal	Pass
5**	7612.375	37.85	18.16	54.0	-16.15	AV	352.00	150	Horizontal	Pass
6	12133.313	50.30	20.80	68.2	-17.90	Peak	275.00	150	Horizontal	Pass
6**	12133.313	39.38	20.80	54.0	-14.62	AV	275.00	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	1333.500	36.21	-14.76	68.2	-31.99	Peak	93.00	150	Vertical	Pass
1**	1333.500	25.84	-14.76	54.0	-28.16	AV	93.00	150	Vertical	Pass
2	2838.500	41.66	-8.37	68.2	-26.54	Peak	182.00	150	Vertical	Pass
2**	2838.500	30.60	-8.37	54.0	-23.40	AV	182.00	150	Vertical	Pass
3	3890.000	45.14	-4.95	68.2	-23.06	Peak	259.00	150	Vertical	Pass
3**	3890.000	34.01	-4.95	54.0	-19.99	AV	259.00	150	Vertical	Pass
4	5822.000	92.25	0.58	--	-255.75	Peak	348.00	150	Vertical	N/A
4**	5822.000	85.73	0.58	--	85.73	AV	348.00	150	Vertical	N/A
5	7605.188	48.11	18.30	68.2	-20.09	Peak	55.00	150	Vertical	Pass
5**	7605.188	38.06	18.30	54.0	-15.94	AV	55.00	150	Vertical	Pass
6	12515.687	51.16	20.96	68.2	-17.04	Peak	165.00	150	Vertical	Pass
6**	12515.687	40.03	20.96	54.0	-13.97	AV	165.00	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	1485.500	36.78	-15.01	68.2	-31.42	Peak	99.00	150	Horizontal	Pass
1**	1485.500	25.71	-15.01	54.0	-28.29	AV	99.00	150	Horizontal	Pass
2	2866.500	42.20	-8.14	68.2	-26.00	Peak	232.00	150	Horizontal	Pass
2**	2866.500	30.86	-8.14	54.0	-23.14	AV	232.00	150	Horizontal	Pass
3	3990.000	45.85	-3.98	68.2	-22.35	Peak	184.00	150	Horizontal	Pass
3**	3990.000	34.82	-3.98	54.0	-19.18	AV	184.00	150	Horizontal	Pass
4	5821.000	93.36	0.49	--	-211.64	Peak	305.00	150	Horizontal	N/A
4**	5821.000	86.97	0.49	--	86.97	AV	305.00	150	Horizontal	N/A
5	7606.625	47.73	18.39	68.2	-20.47	Peak	56.00	150	Horizontal	Pass
5**	7606.625	37.87	18.39	54.0	-16.13	AV	56.00	150	Horizontal	Pass
6	11651.750	50.29	20.45	68.2	-17.91	Peak	25.00	150	Horizontal	Pass
6**	11651.750	39.21	20.45	54.0	-14.79	AV	25.00	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	1518.500	35.92	-15.11	68.2	-32.28	Peak	40.00	150	Vertical	Pass
1**	1518.500	25.95	-15.11	54.0	-28.05	AV	40.00	150	Vertical	Pass
2	2771.000	41.33	-8.62	68.2	-26.87	Peak	230.00	150	Vertical	Pass
2**	2771.000	30.51	-8.62	54.0	-23.49	AV	230.00	150	Vertical	Pass
3	4049.000	45.32	-4.24	68.2	-22.88	Peak	71.00	150	Vertical	Pass
3**	4049.000	35.04	-4.24	54.0	-18.96	AV	71.00	150	Vertical	Pass
4	5770.000	91.92	-0.27	--	-252.08	Peak	344.00	150	Vertical	N/A
4**	5770.000	84.53	-0.27	--	84.53	AV	344.00	150	Vertical	N/A
5	7608.062	48.97	18.36	68.2	-19.23	Peak	219.00	150	Vertical	Pass
5**	7608.062	37.77	18.36	54.0	-16.23	AV	219.00	150	Vertical	Pass
6	12035.562	50.41	20.41	68.2	-17.79	Peak	208.00	150	Vertical	Pass
6**	12035.562	40.03	20.41	54.0	-13.97	AV	208.00	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	1400.000	36.88	-14.81	68.2	-31.32	Peak	171.00	150	Horizontal	Pass
1**	1400.000	25.75	-14.81	54.0	-28.25	AV	171.00	150	Horizontal	Pass
2	2788.500	40.93	-9.08	68.2	-27.27	Peak	0.00	150	Horizontal	Pass
2**	2788.500	30.25	-9.08	54.0	-23.75	AV	0.00	150	Horizontal	Pass
3	4025.000	45.14	-4.85	68.2	-23.06	Peak	272.00	150	Horizontal	Pass
3**	4025.000	34.29	-4.85	54.0	-19.71	AV	272.00	150	Horizontal	Pass
4	5770.000	92.79	-0.27	--	-220.21	Peak	313.00	150	Horizontal	N/A
4**	5770.000	85.51	-0.27	--	85.51	AV	313.00	150	Horizontal	N/A
5	7585.062	48.07	17.85	68.2	-20.13	Peak	194.00	150	Horizontal	Pass
5**	7585.062	37.41	17.85	54.0	-16.59	AV	194.00	150	Horizontal	Pass
6	12041.312	50.22	20.47	68.2	-17.98	Peak	27.00	150	Horizontal	Pass
6**	12041.312	39.75	20.47	54.0	-14.25	AV	27.00	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	1338.500	35.82	-14.87	68.2	-32.38	Peak	151.00	150	Vertical	Pass
1**	1338.500	25.48	-14.87	54.0	-28.52	AV	151.00	150	Vertical	Pass
2	2795.000	40.87	-9.17	68.2	-27.33	Peak	342.00	150	Vertical	Pass
2**	2795.000	30.23	-9.17	54.0	-23.77	AV	342.00	150	Vertical	Pass
3	4002.000	45.20	-3.86	68.2	-23.00	Peak	65.00	150	Vertical	Pass
3**	4002.000	35.32	-3.86	54.0	-18.68	AV	65.00	150	Vertical	Pass
4	5809.000	91.88	0.54	--	-269.12	Peak	361.00	150	Vertical	N/A
4**	5809.000	84.82	0.54	--	84.82	AV	361.00	150	Vertical	N/A
5	7603.750	47.76	18.34	68.2	-20.44	Peak	201.00	150	Vertical	Pass
5**	7603.750	37.94	18.34	54.0	-16.06	AV	201.00	150	Vertical	Pass
6	12093.062	50.22	20.77	68.2	-17.98	Peak	126.00	150	Vertical	Pass
6**	12093.062	39.42	20.77	54.0	-14.58	AV	126.00	150	Vertical	Pass

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

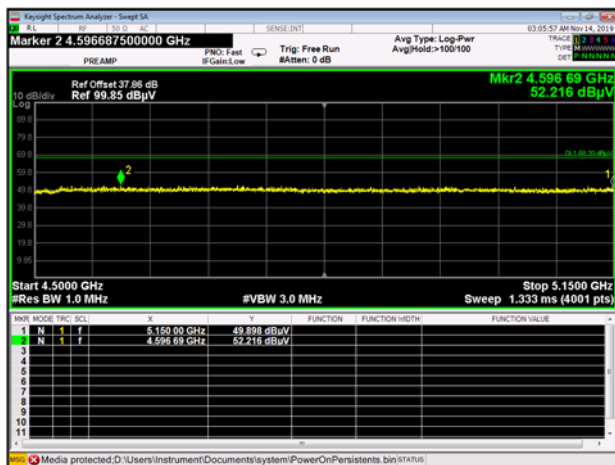
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1352.000	36.24	-15.08	68.2	-31.96	Peak	0.00	150	Horizontal	Pass
1**	1352.000	25.41	-15.08	54.0	-28.59	AV	0.00	150	Horizontal	Pass
2	2865.500	41.65	-8.14	68.2	-26.55	Peak	275.00	150	Horizontal	Pass
2**	2865.500	31.08	-8.14	54.0	-22.92	AV	275.00	150	Horizontal	Pass
3	4092.000	46.71	-4.17	68.2	-21.49	Peak	18.00	150	Horizontal	Pass
3**	4092.000	35.26	-4.17	54.0	-18.74	AV	18.00	150	Horizontal	Pass
4	5809.000	92.05	0.54	--	-218.95	Peak	311.00	150	Horizontal	N/A
4**	5809.000	85.51	0.54	--	85.51	AV	311.00	150	Horizontal	N/A
5	7603.750	47.52	18.34	68.2	-20.68	Peak	56.00	150	Horizontal	Pass
5**	7603.750	37.74	18.34	54.0	-16.26	AV	56.00	150	Horizontal	Pass
6	12553.062	51.55	21.81	68.2	-16.65	Peak	348.00	150	Horizontal	Pass
6**	12553.062	41.32	21.81	54.0	-12.68	AV	348.00	150	Horizontal	Pass

A.6.2 Band Edge (Restricted-band)

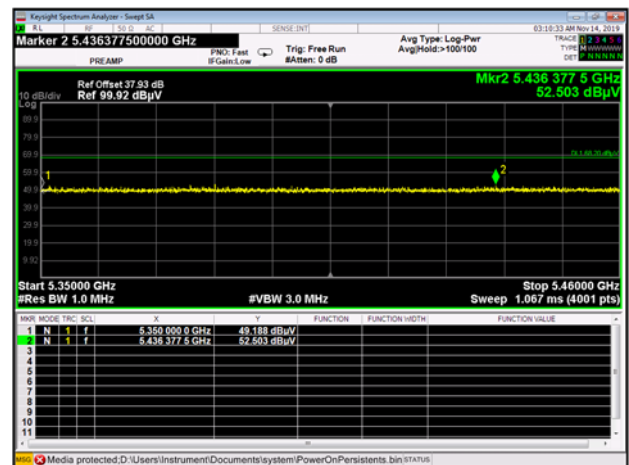
Test Band	Mode	Channel	Verdict
Band I	802.11a	Low	Pass
		High	Pass
	802.11n(HT20)	Low	Pass
		High	Pass
	802.11n(HT40)	Low	Pass
		High	Pass
Band IV	802.11a	Low	Pass
		High	Pass
	802.11n(HT20)	Low	Pass
		High	Pass
	802.11n(HT40)	Low	Pass
		High	Pass

Test Plots

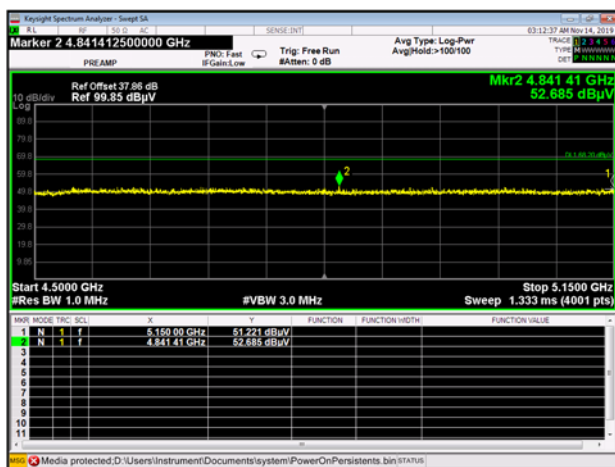
Band I 11a CH36 PK



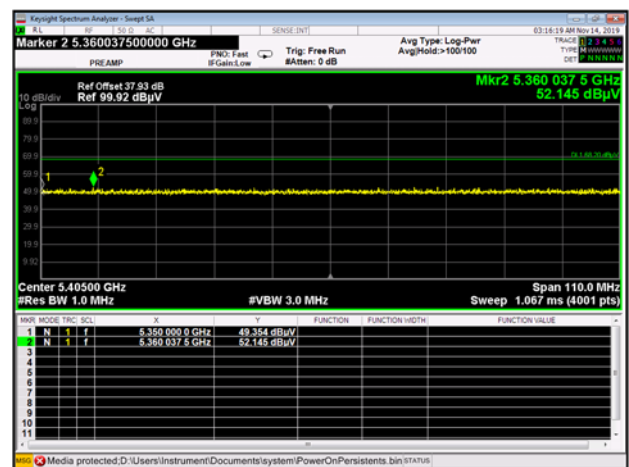
Band I 11a CH48 PK



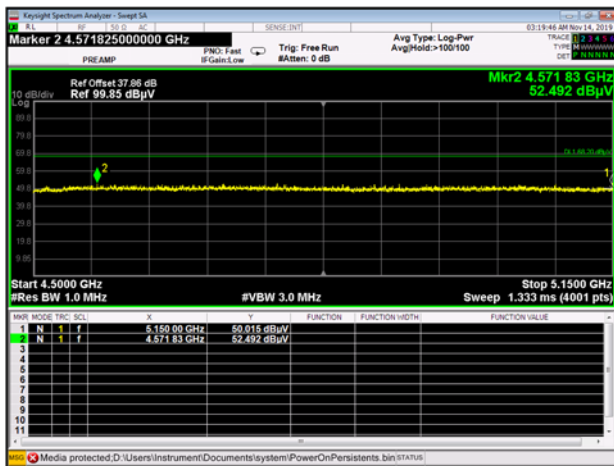
Band I 11n20 CH36 PK



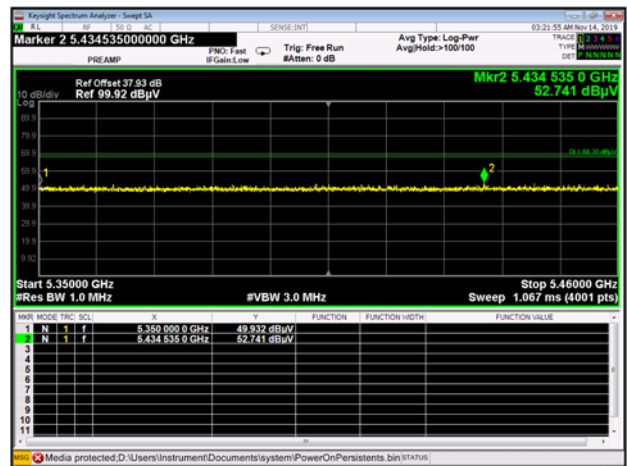
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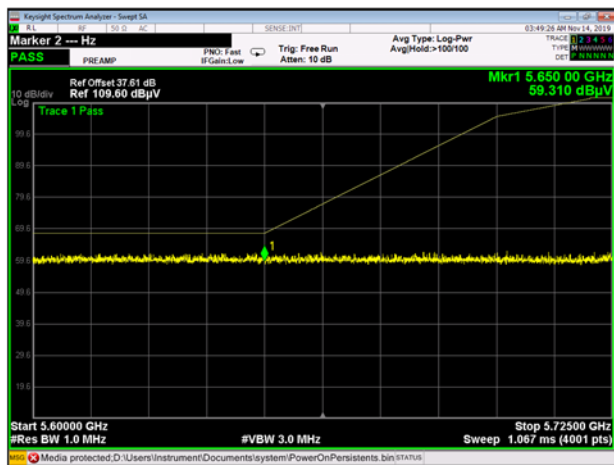
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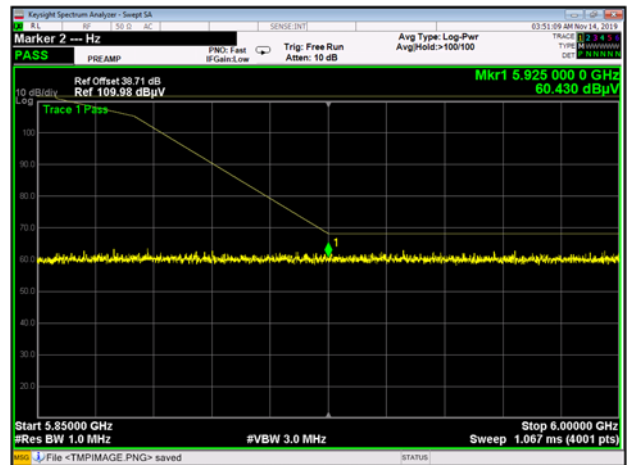
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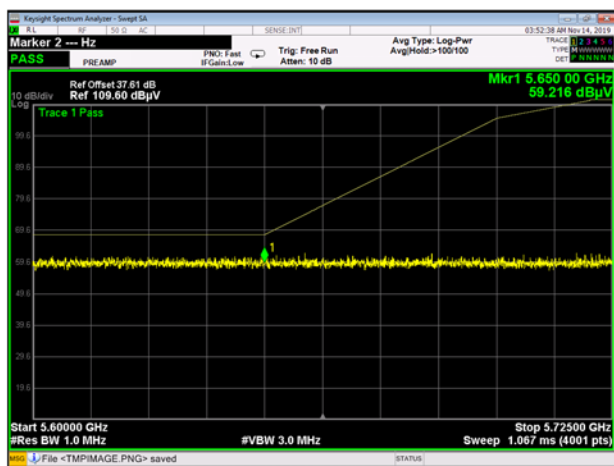
Band IV 11a CH149 PK



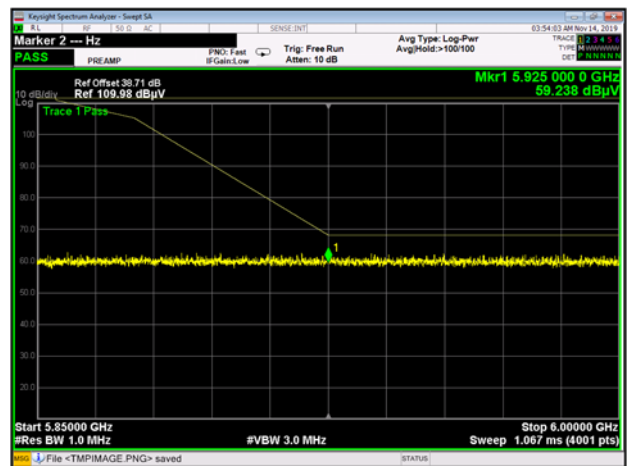
Band IV 11a CH165 PK



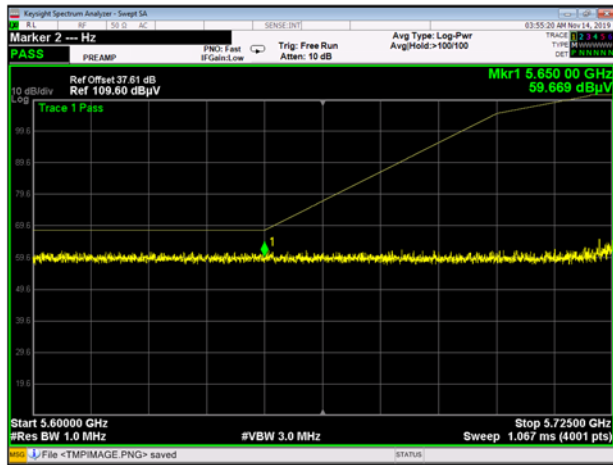
Band IV 11n20 CH149 PK



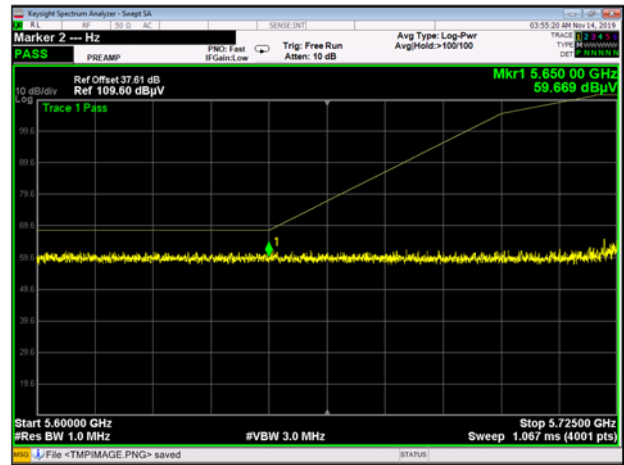
Band IV 11n20 CH165 PK



Band IV 11n40 CH151 PK



Band IV 11n40 CH159 PK



ANNEX B TEST SETUP PHOTOS

Please refer the document "BL-SZ19A0582-AR.PDF".

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document "BL-SZ19A0582-AW.PDF".

ANNEX D EUT INTERNAL PHOTOS

Please refer the document "BL-SZ19A0582-AI.PDF".

--END OF REPORT--