

FCC/ISED

RF

TEST REPORT

ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

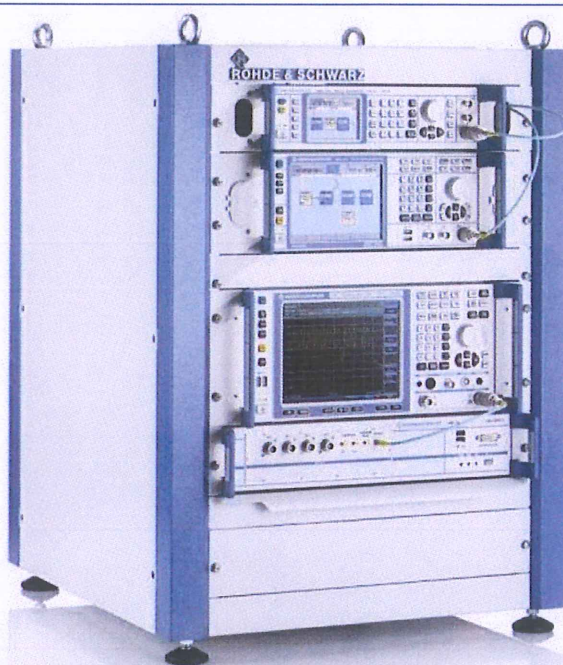


FOR

3-Axis Gimbal Camera

Yunee Technology Co., Limited

Unit 2301, 23/F, 9 Chong Yip Street, Kwun Tong, Kowloon,
Hong Kong.



Prepared by: Heng Aiping
(Engineer)

Date: Jan. 02, 2020

Approved by: Wei Yanquan
(Chief Engineer)

Date: Jan. 02, 2020

Report No.: BL-EC19C0036-601
EUT Name: 3-Axis Gimbal Camera
Model Name: E30Z
Brand Name: YUNEEC
Test Standard: 47 CFR Part 15 Subpart C
RSS-Gen (Issue 5, March 2019)
RSS-247 (Issue 2, February 2017)
FCC ID: 2ACS5-E30Z
ISED Number: 11554B-E30Z
Test Conclusion: Pass
Test Date: Nov. 25, 2019 ~ Dec. 17, 2019
Date of Issue: Jan. 02, 2020

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Revision History

<u>Version</u>	<u>Issue Date</u>	<u>Revisions Content</u>
<u>Rev. 01</u>	<u>Jan. 02, 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	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	Yuneec Technology Co., Limited
Address	Unit 2301, 23/F, 9 Chong Yip Street, Kwun Tong, Kowloon, Hong Kong.

2.2 Manufacturer

Manufacturer	Yuneec International (China) Co., Ltd.
Address	No.388 East Zhengwei Road, Jinxi Town, Kunshan, Jiangsu 215324, China

2.3 Factory

Factory	Yuneec International (China) Co., Ltd.
Address	No.388 East Zhengwei Road, Jinxi Town, Kunshan, Jiangsu 215324, China

2.4 General Description for Equipment under Test (EUT)

EUT Name	3-Axis Gimbal Camera
Model Name Under Test	E30Z
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Technical Information

Network and Wireless connectivity	5G WIFI 802.11a
About the Product	Band I and Band IV for FCC Band IV for ISSED

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
Transfer Rate (Mbps) (Single RF path)	802.11a: 54/48/36/24/18/12/9/6 Mbps
Channel Bandwidth	802.11a: 20 MHz
Maximum Output Power	Band I: 22.6 dBm Band IV: 24.1 dBm
Antenna Type	Omnidirectional Antenna
Antenna Gain	Band I: -4.84 dBi Band IV: -3.66 dBi

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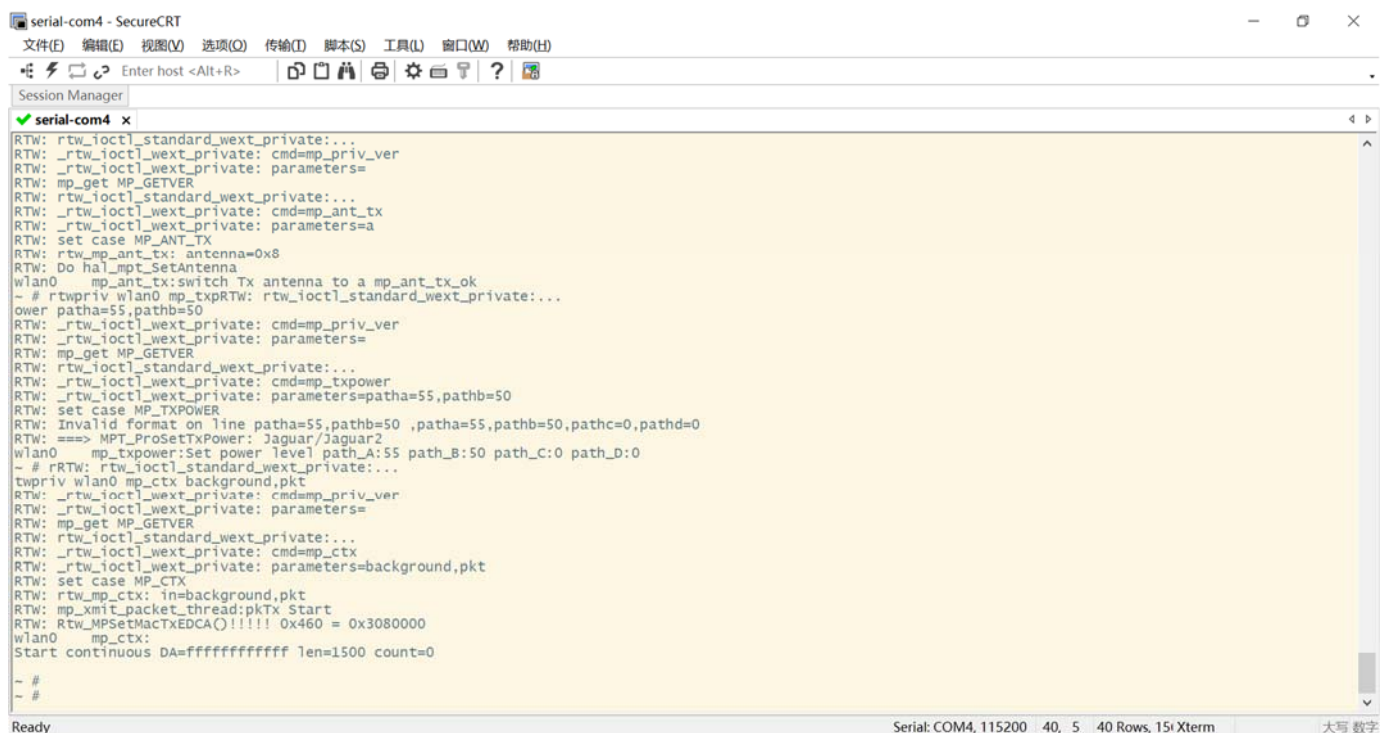
During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final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

Test Software Version	SecureCRT		
Support Units(Software installation media)	Description	Manufacturer	Model
	Notebook	Lenovo	ThinkPad E485

Band I (5150 - 5250 MHz) Power level setup in software			
Mode	Channel	Frequency (MHz)	Soft Set
11a	CH36	5180	55
11a	CH44	5220	55
11a	CH48	5240	55

Band IV (5725 - 5850 MHz) Power level setup in software			
Mode	Channel	Frequency (MHz)	Soft Set
11a	CH149	5745	55
11a	CH157	5785	55
11a	CH165	5825	55

Run Software



```

serial-com4 - SecureCRT
文件(F) 编辑(E) 视图(V) 选项(O) 传输(T) 脚本(S) 工具(L) 窗口(W) 帮助(H)
Enter host <Alt+R>
Session Manager
serial-com4 x
RTW: rtw_ioctl_standard_wext_private:...
RTW: _rtw_ioctl_wext_private: cmd=mp_priv_ver
RTW: _rtw_ioctl_wext_private: parameters=
RTW: mp_get MP_GETVER
RTW: rtw_ioctl_standard_wext_private:...
RTW: _rtw_ioctl_wext_private: cmd=mp_ant_tx
RTW: _rtw_ioctl_wext_private: parameters=a
RTW: set case MP_ANT_TX
RTW: rtw_mp_ant_tx: antenna=0x8
RTW: Do hal_mpt_SetAntenna
wlan0 mp_ant_tx:switch Tx antenna to a mp_ant_tx_ok
- # rtwpriv wlan0 mp_txpRTW: rtw_ioctl_standard_wext_private:...
ower patha=55,pathb=50
RTW: _rtw_ioctl_wext_private: cmd=mp_priv_ver
RTW: _rtw_ioctl_wext_private: parameters=
RTW: mp_get MP_GETVER
RTW: rtw_ioctl_standard_wext_private:...
RTW: _rtw_ioctl_wext_private: cmd=mp_txpower
RTW: _rtw_ioctl_wext_private: parameters=patha=55,pathb=50
RTW: set case MP_TXPOWER
RTW: Invalid format on line patha=55,pathb=50 ,patha=55,pathb=50,pathc=0,pathd=0
RTW: ==> MPT_ProSetTxPower: Jaguar/Jaguar2
wlan0 mp_txpower:Set power level path_A:55 path_B:50 path_C:0 path_D:0
- # rRTW: rtw_ioctl_standard_wext_private:...
twpriv wlan0 mp_ctx background,pkt
RTW: _rtw_ioctl_wext_private: cmd=mp_priv_ver
RTW: _rtw_ioctl_wext_private: parameters=
RTW: mp_get MP_GETVER
RTW: rtw_ioctl_standard_wext_private:...
RTW: _rtw_ioctl_wext_private: cmd=mp_ctx
RTW: _rtw_ioctl_wext_private: parameters=background,pkt
RTW: set case MP_CTX
RTW: rtw_mp_ctx: in=background,pkt
RTW: mp_xmit_packet_thread:pktX Start
RTW: RTW_MPSetMacTxEDCA()!!!! 0x460 = 0x3080000
wlan0 mp_ctx:
Start continuous DA=ffffffff len=1500 count=0
- #
- #
Ready
Serial: COM4, 115200 40, 5 40 Rows, 15x Xterm
大写 数字

```

2.7 Channel List

20 MHz	
Channel Number	Frequency (MHz)
36	5180
40	5200
44	5220
48	5240
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

Band I (5150 - 5250 MHz)		Band IV (5725 - 5850 MHz)	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
36	5180	149	5745
44	5220	157	5785
48	5240	165	5825

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
Emission Bandwidth & 99% Occupied Bandwidth	11a	6	BPSK	48/44/36	165/157/149
6 dB bandwidth	11a	6	BPSK	N/A	165/157/149
Power Spectral Density	11a	6	BPSK	48/44/36	165/157/149
Radiated Spurious Emissions	11a	6	BPSK	48/44/36	165/157/149
Band Edge (Restricted-band)	11a	6	BPSK	48/44/36	165/157/149

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	RSS-Gen (Issue 5, Mar. 2019)	General Requirements for Compliance of Radio Apparatus
4	RSS-247 (Issue 2, February 2017)	Digital Transmission Systems (DTSs), Frequency Hopping Systems(FHSs) and Licence-Exemp Local Area Network (LE-LAN) Devices
5	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

3.2 Verdict

No.	Description	FCC Part No.	RSS Part No.	Test Result	Verdict
1	Antenna Requirement	15.203	RSS-247, 6.2	--	Pass ^{Note1}
2	RF Output Power	15.407(a)	RSS-247, 6.2	ANNEX A.1	Pass
3	Emission Bandwidth & 99% Occupied Bandwidth	15.407(a)	RSS-247, 6.2	ANNEX A.2	Pass
4	6 dB bandwidth	15.407(e)	RSS-247, 6.2	ANNEX A.3	Pass
5	Power Spectral Density	15.407(a)	RSS-247, 6.2	ANNEX A.4	Pass
6	Conducted Emission	15.207	RSS-GEN, 8.8	ANNEX A.5	N/A ^{Note2}
7	Radiated Spurious Emissions and Band Edge (Restricted-band)	15.407(b)	RSS-247, 6.2	ANNEX A.6	Pass
8	Receiver Spurious Emissions	--	RSS-Gen, 7.1.2	--	N/A ^{Note3}

Note¹: The EUT has a permanently and irreplaceable attached antenna, which complies with the requirement FCC 15.203.

Note²: The EUT was powered by battery for normally use.

Note³: Only radio communication receivers operating in stand-alone mode within the band 30-960 MHz, as well as scanner receivers, are subject to Industry Canada requirements, so this test is not applicable

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

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

Relative Humidity	45% to 55%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+22°C to +25°C
Working Voltage of the EUT	NV (Normal Voltage)	DC 12 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
Spectrum Analyzer	Agilent	E4440A	MY45304434	2019.10.30	2020.10.29
Spectrum Analyzer	Agilent	E4440A	MY46181663	2019.10.30	2020.10.29
Wideband Radio Communication Tester	R&S	CMW 500	127794	2019.06.13	2020.06.12
Wideband Radio Communication Tester	R&S	CMW 500	120598	2019.02.28	2020.02.27
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	2019.06.13	2020.06.12
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	2019.06.13	2020.06.12
Attenuator (20 dB)	KMW	ZA-S1-201	110617091	2019.01.09	2020.01.08
Attenuator (6 dB)	KMW	ZA-S1-61	1305003189	2019.01.09	2020.01.08
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

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
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
Directional Coupler	Werlantone	CHP-273E	S00801z-01	N/A	N/A
Software	BALUN	BL410	-	-	-
Cable	ROHDE&SCHWARZ	JUNFLON	APR0914004	2019.01.09	2020.01.08
Note: The calibration period on the Cable is three month.					

4.3 Measurement Uncertainty

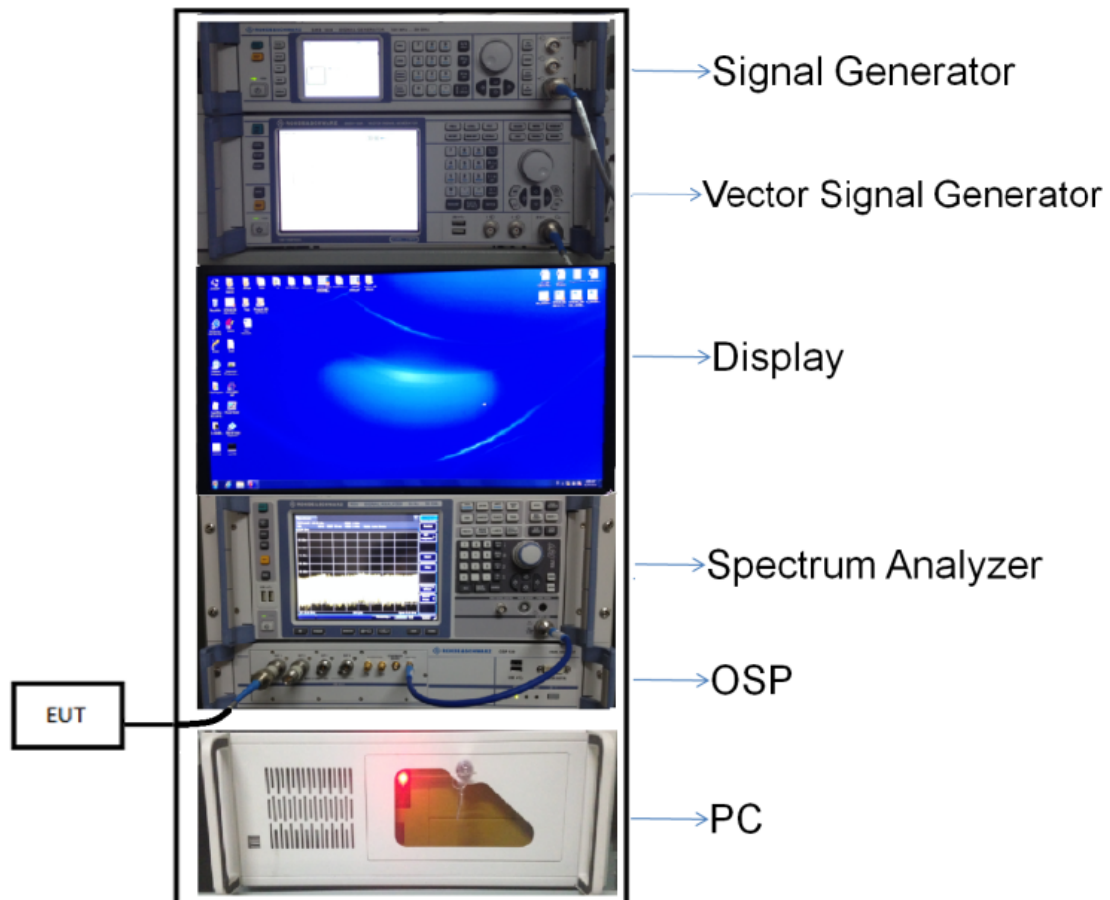
The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

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

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

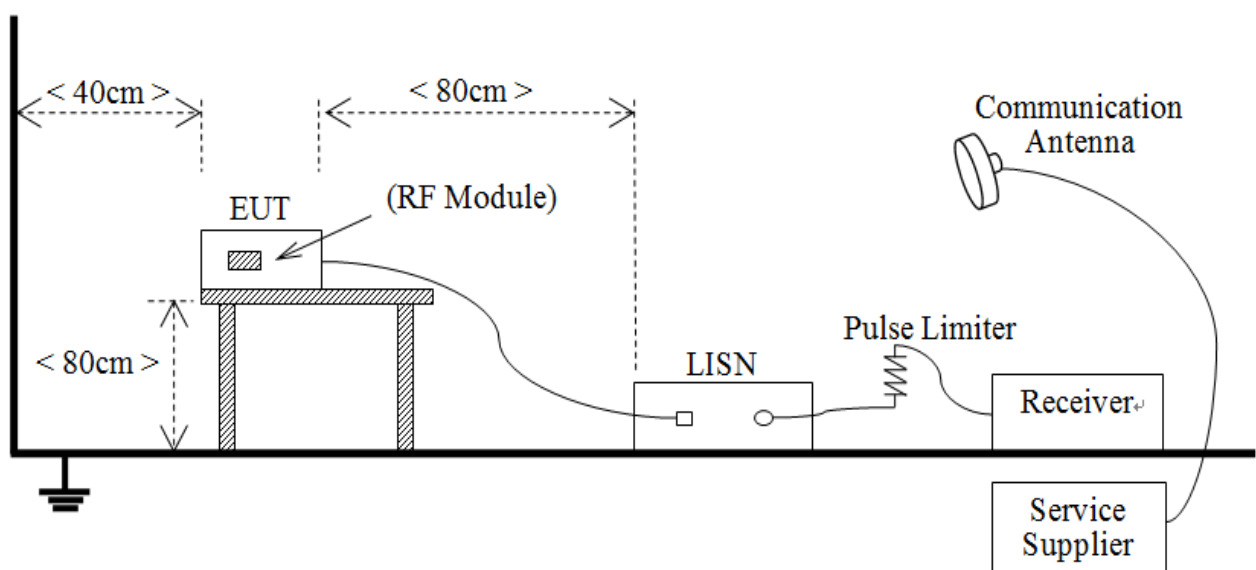
4.4 Description of Test Setup

4.4.1 For Antenna Port Test



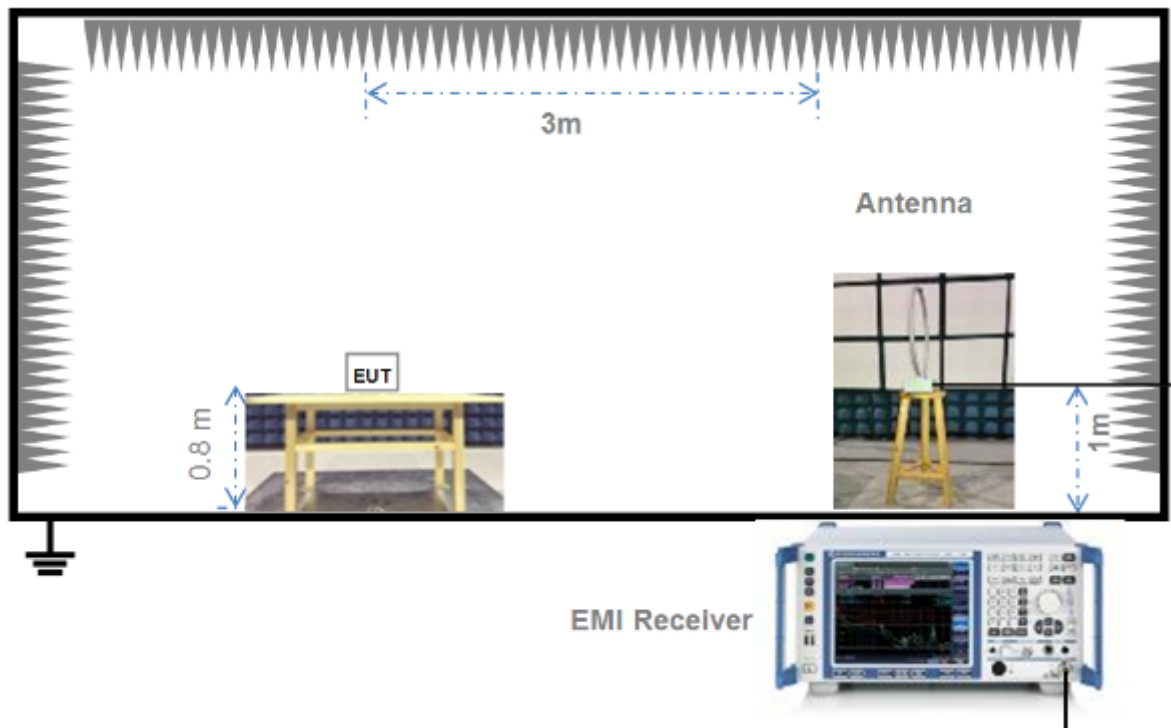
(Diagram 1)

4.4.2 For AC Power Supply Port Test



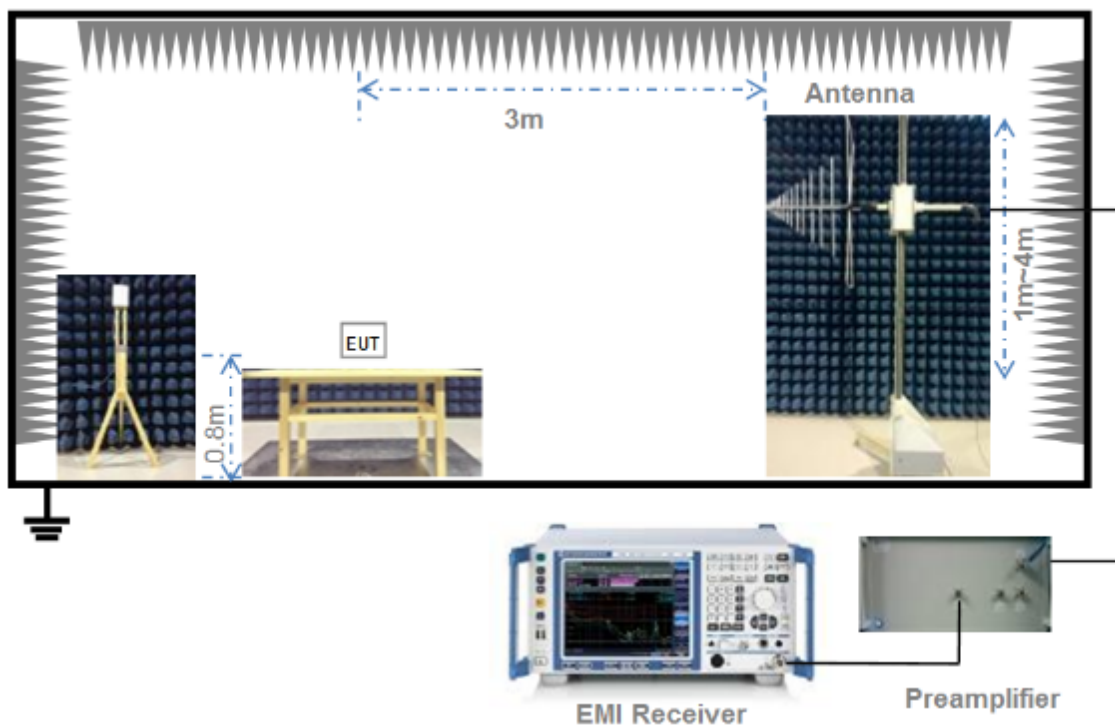
(Diagram 2)

4.4.3 For Radiated Test (Below 30 MHz)



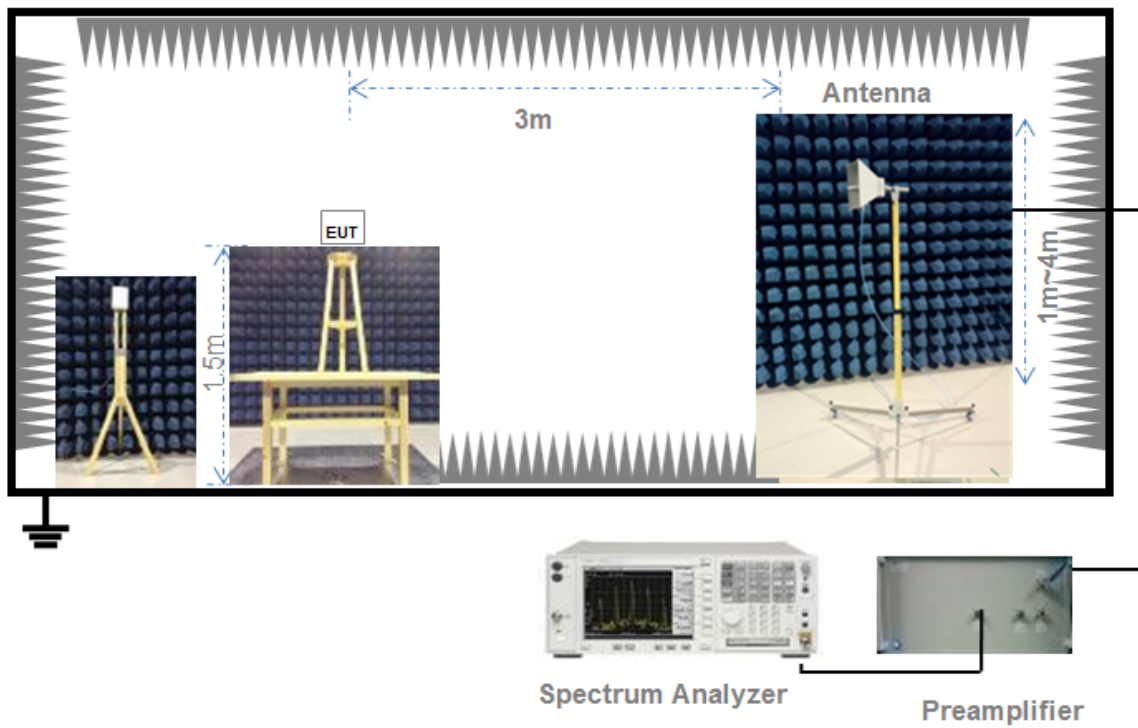
(Diagram 3)

4.4.4 For Radiated Test (30 MHz-1 GHz)



(Diagram 4)

4.4.5 For Radiated Test (Above 1 GHz)



(Diagram 5)

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)

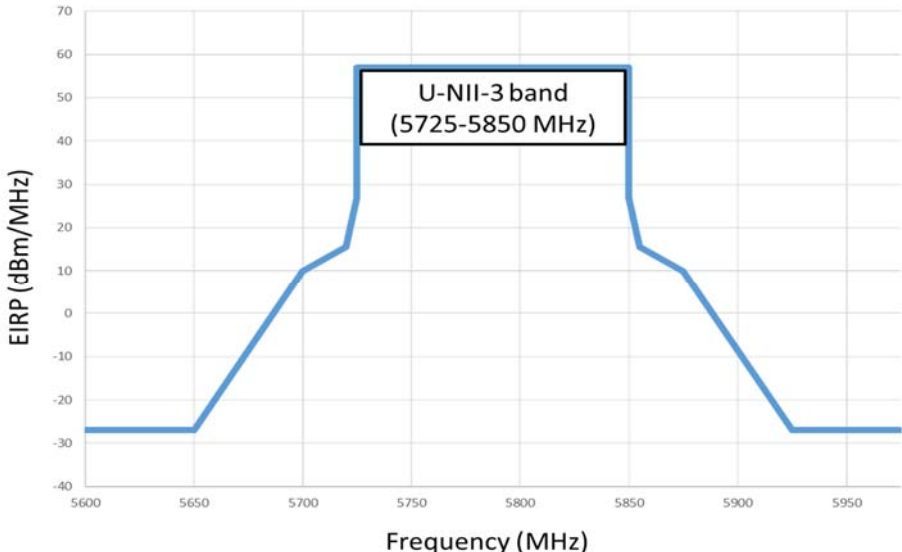
5.5.1 Limit

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 $\text{span}/(\# \text{ of points in sweep}) \leq (\text{RBW}/2)$. Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied, then the detector mode shall be set to peak.
- f) Averaging type = power (i.e., RMS).
 - 1) As an alternative, the detector and averaging type may be set for linear voltage averaging.
 - 2) Some instruments require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used.
- g) Sweep time = auto.
- h) Perform a trace average of at least 100 traces.
- i) A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:

- 1) If power averaging (RMS) mode was used in step f), then the applicable correction factor is $10 \log(1/x)$, where x is the duty cycle.
- 2) If linear voltage averaging mode was used in step f), then the applicable correction factor is $20 \log(1/x)$, where x is the duty cycle.
- 3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

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

Determining the applicable transmit antenna gain

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

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

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

Radiated spurious emission test

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

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

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

The power of the EUT transmitting frequency should be ignored.

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

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

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

VBW $\geq$ RBW

Sweep = auto

Detector function = peak

Trace = max hold

5.5.4 Test Result

Please refer to ANNEX A.6.

ANNEX A TEST RESULT

A.1 RF Output Power

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

Test Data

Conducted Power

Band I (5150 - 5250 MHz)						
Mode	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (mW)	FCC Limit (mW)	Verdict
11a	CH36	5180	22.5	177.83	250.0	Pass
11a	CH44	5220	22.4	173.78	250.0	Pass
11a	CH48	5240	22.6	181.97	250.0	Pass

Band IV (5725 - 5850 MHz)						
Mode	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (mW)	FCC/IC Limit (W)	Verdict
11a	CH149	5745	24.1	257.04	1.00	Pass
11a	CH157	5785	24.0	251.19	1.00	Pass
11a	CH165	5825	23.4	218.78	1.00	Pass

A.2 Emission Bandwidth & 99% Bandwidth

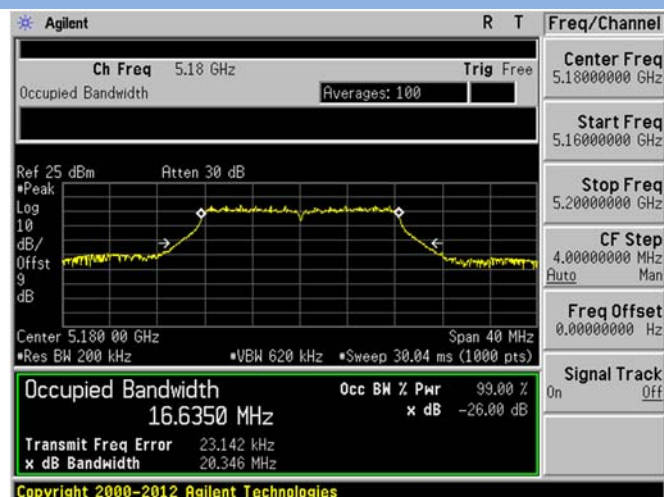
Test Data

Band I (5150 - 5250 MHz)				
Mode	Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
11a	CH36	5180	20.346	16.6106
11a	CH44	5220	20.417	16.6042
11a	CH48	5240	20.270	16.5961

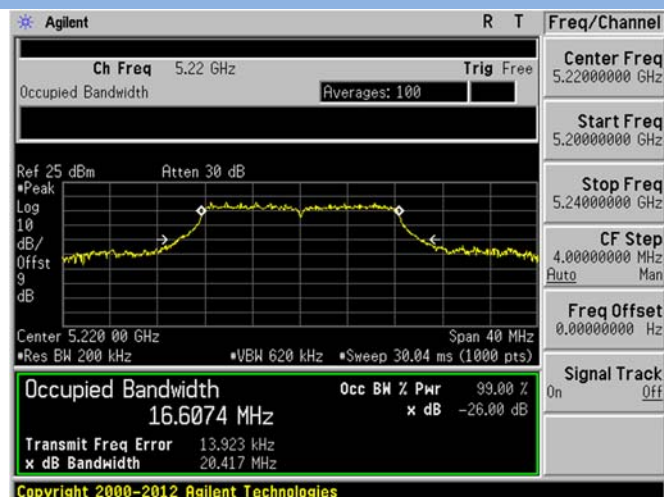
Band IV (5725 - 5850 MHz)				
Mode	Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	99% Bandwidth (MHz)
11a	CH149	5745	35.293	17.5321
11a	CH157	5785	30.471	17.0058
11a	CH165	5825	33.741	17.2803

Test plots (26dB Bandwidth)

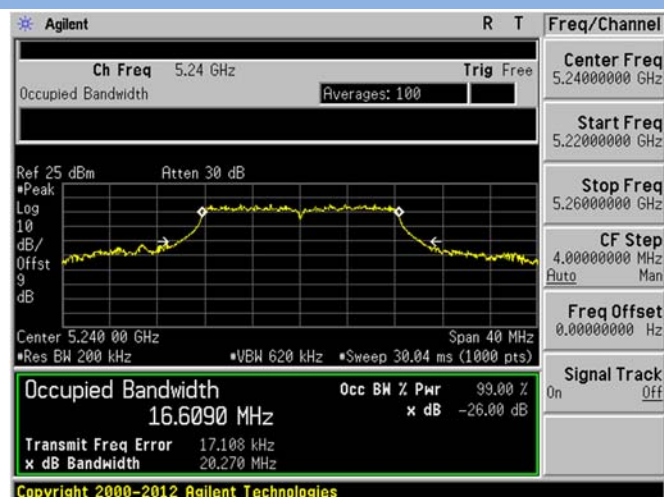
802.11a Band I LOW CHANNEL



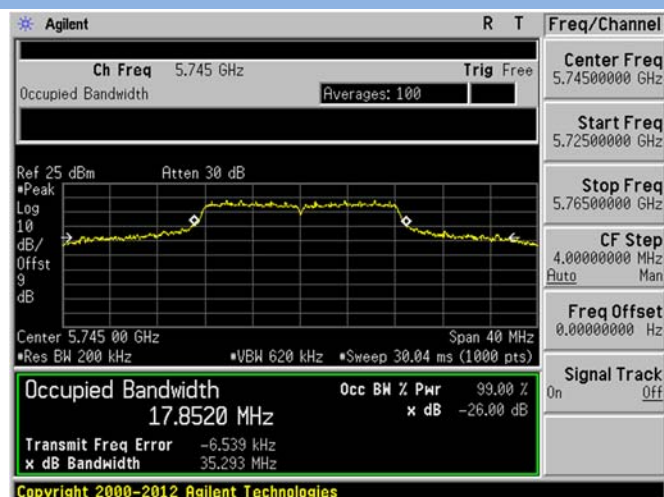
802.11a Band I MIDDLE CHANNEL



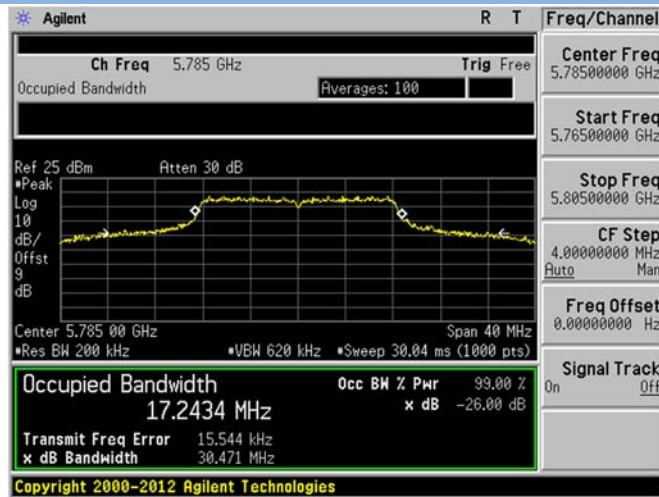
802.11a Band I HIGH CHANNEL



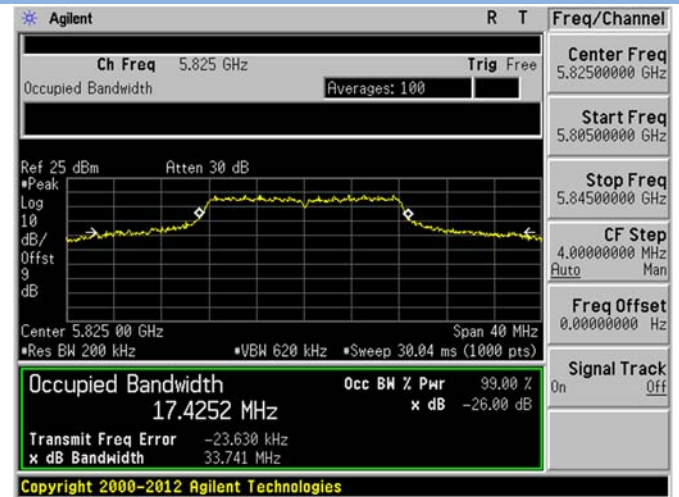
802.11a Band IV LOW CHANNEL



802.11a Band IV MIDDLE CHANNEL

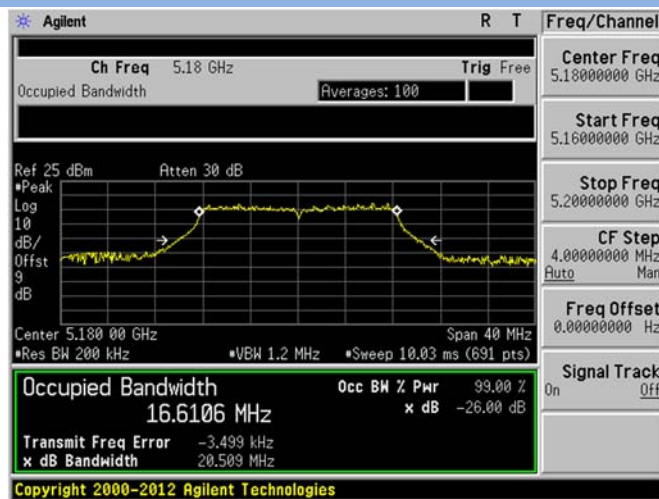


802.11a Band IV HIGH CHANNEL

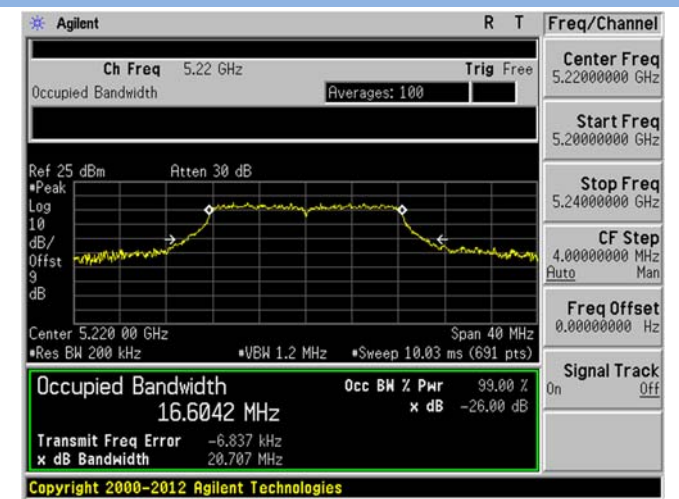


Test plots (99% Bandwidth)

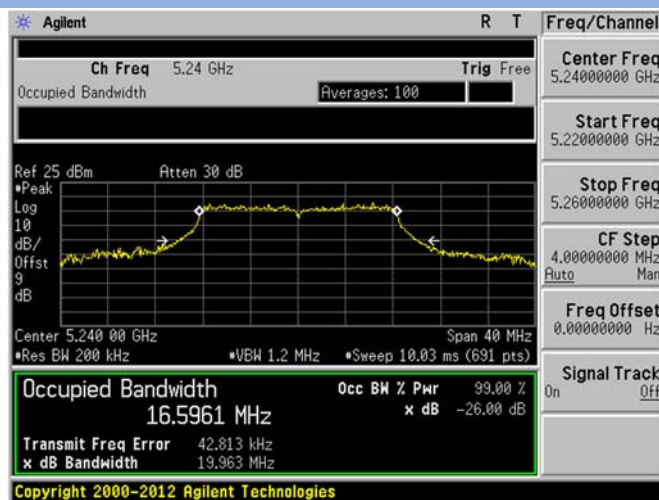
802.11a Band I LOW CHANNEL



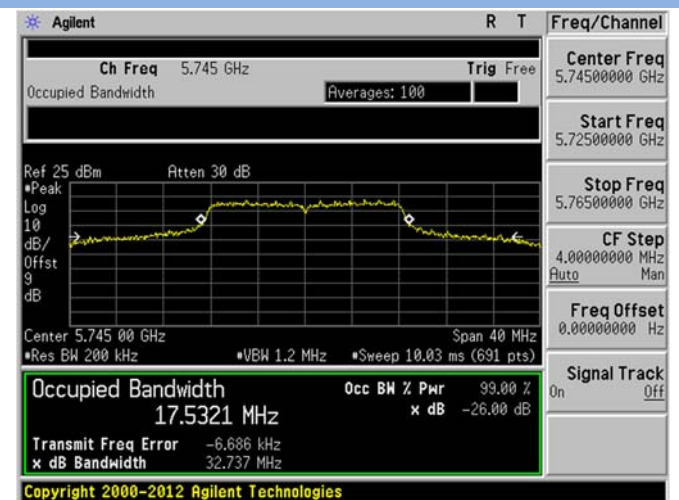
802.11a Band I MIDDLE CHANNEL



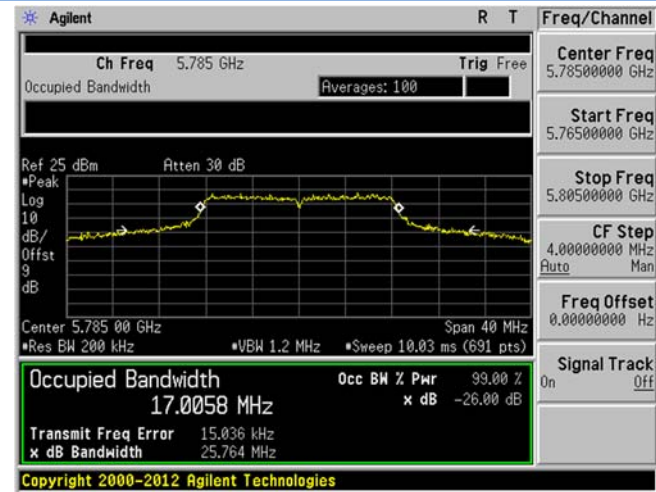
802.11a Band I HIGH CHANNEL



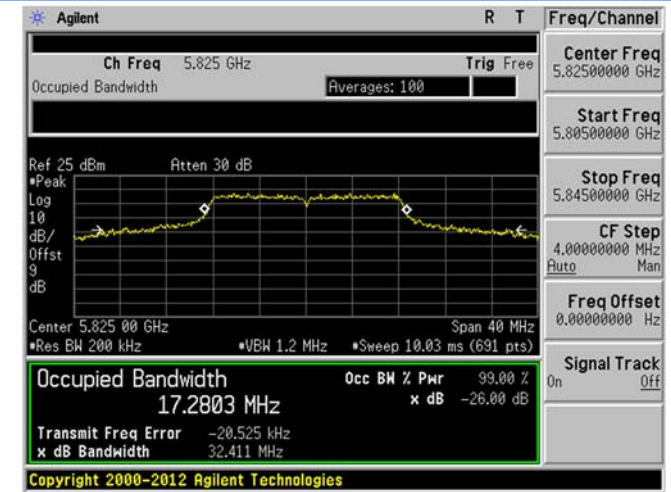
802.11a Band IV LOW CHANNEL



802.11a Band IV MIDDLE CHANNEL



802.11a Band IV HIGH CHANNEL



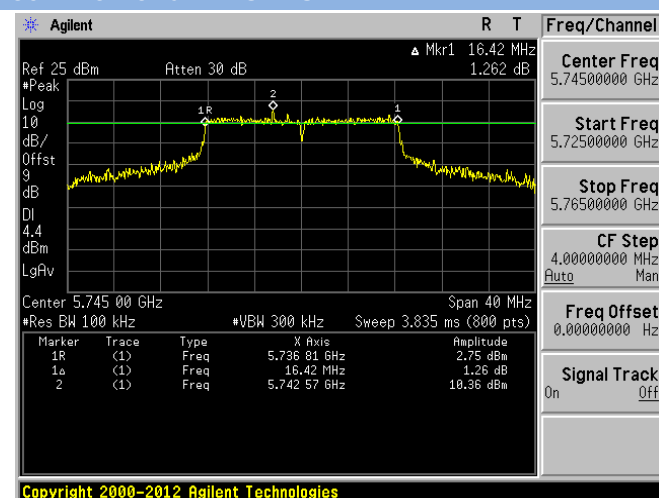
A.3 6 dB Bandwidth

Test Data

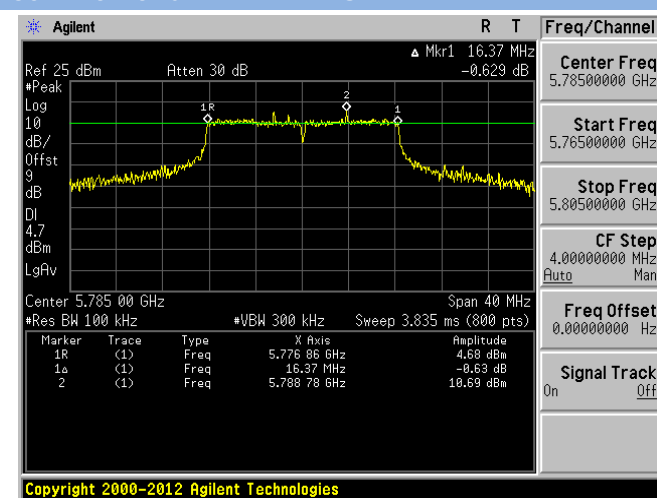
Band IV (5725 - 5850 MHz)					
Mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (kHz)	Verdict
11a	CH149	5745	16.42	500	Pass
11a	CH157	5785	16.37	500	Pass
11a	CH165	5825	16.32	500	Pass

Test plots

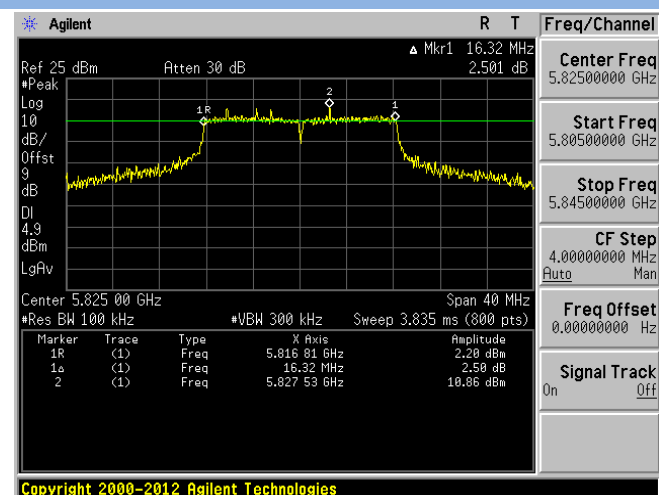
802.11a Band IV LOW CHANNEL



802.11a Band IV MIDDLE CHANNEL



802.11a Band IV LOW CHANNEL



A.4 Power Spectral Density

Test Data

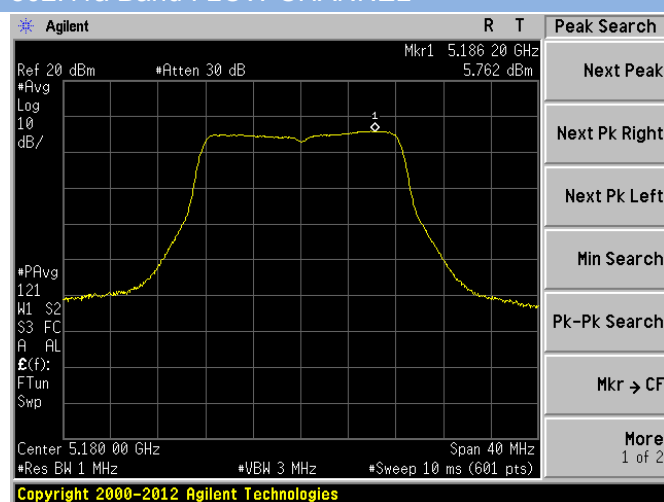
Band I (5150 - 5250 MHz)					
Mode	Channel	Frequency (MHz)	PSD (dBm/MHz)	FCC Limit (dBm/MHz)	Verdict
11a	CH36	5180	5.762	11.0	Pass
11a	CH44	5220	6.233	11.0	Pass
11a	CH48	5240	6.636	11.0	Pass

Band IV (5725 - 5850 MHz)					
Mode	Channel	Frequency (MHz)	PSD (dBm/510kHz)	FCC/IC Limit (dBm/500kHz)	Verdict
11a	CH149	5745	6.597	30.0	Pass
11a	CH157	5785	7.564	30.0	Pass
11a	CH165	5825	7.086	30.0	Pass

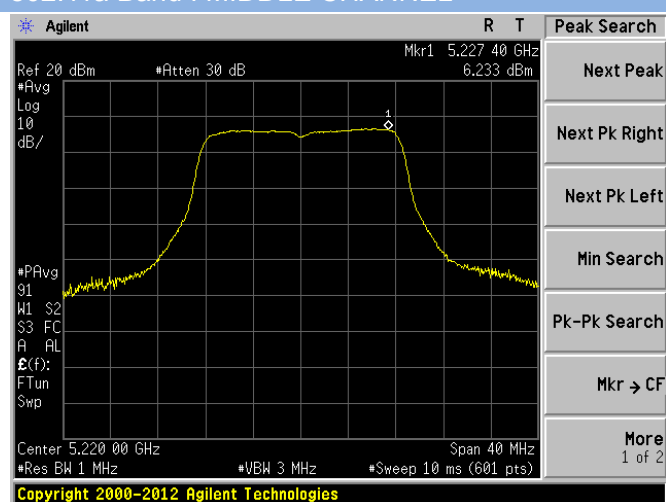
Note 1: The RBW used in Band IV is 510 kHz, and the PSD factor is: $10 \cdot \log(500 \text{ kHz/RBW}) = -0.09 \text{ dBm}$.

Test plots

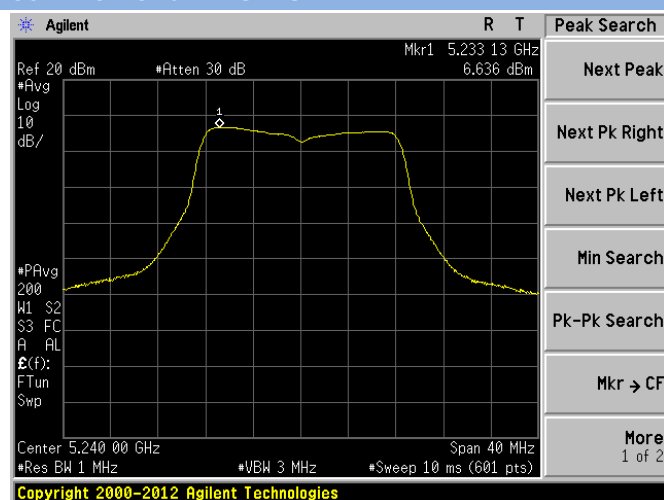
802.11a Band I LOW CHANNEL



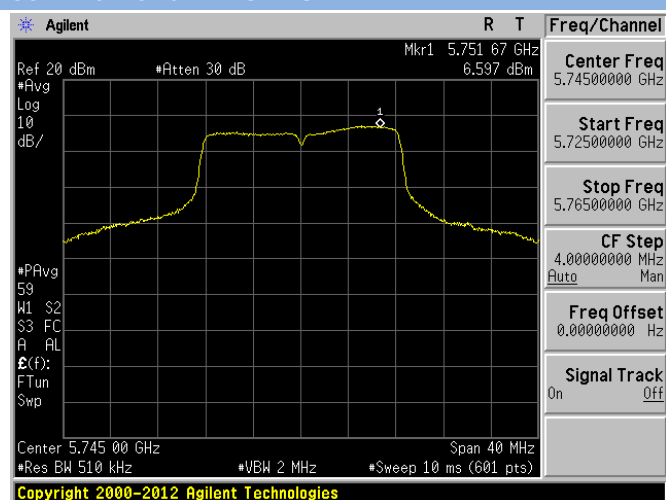
802.11a Band I MIDDLE CHANNEL



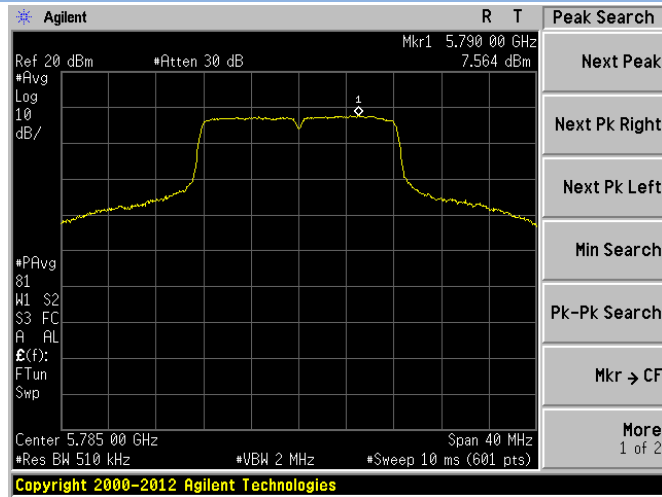
802.11a Band I HIGH CHANNEL



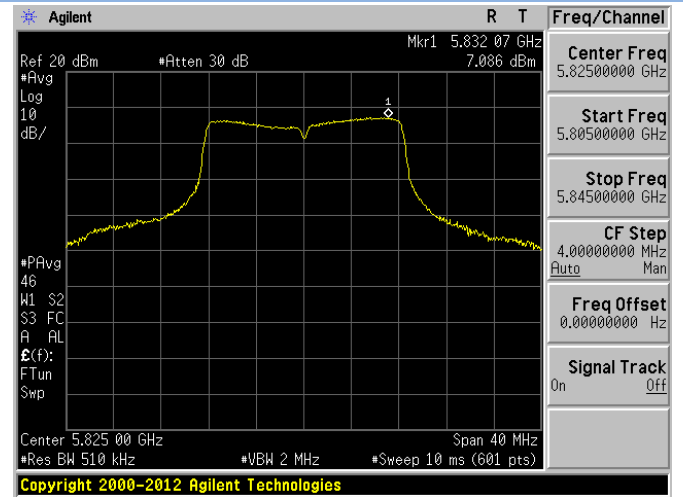
802.11a Band IV LOW CHANNEL



802.11a Band IV MIDDLE CHANNEL



802.11a Band IV HIGH CHANNEL



A.5 Conducted Emissions

Note: Not applicable

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

Test Data

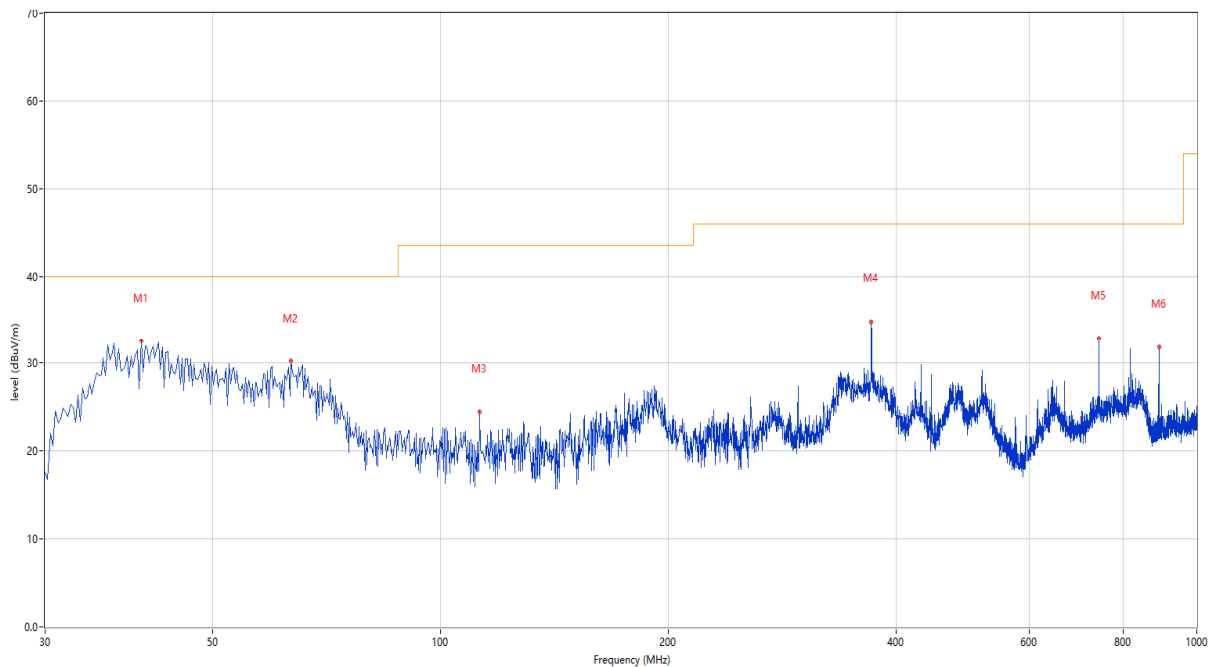
Note¹: The symbol of “--” in the table which means not application.

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.

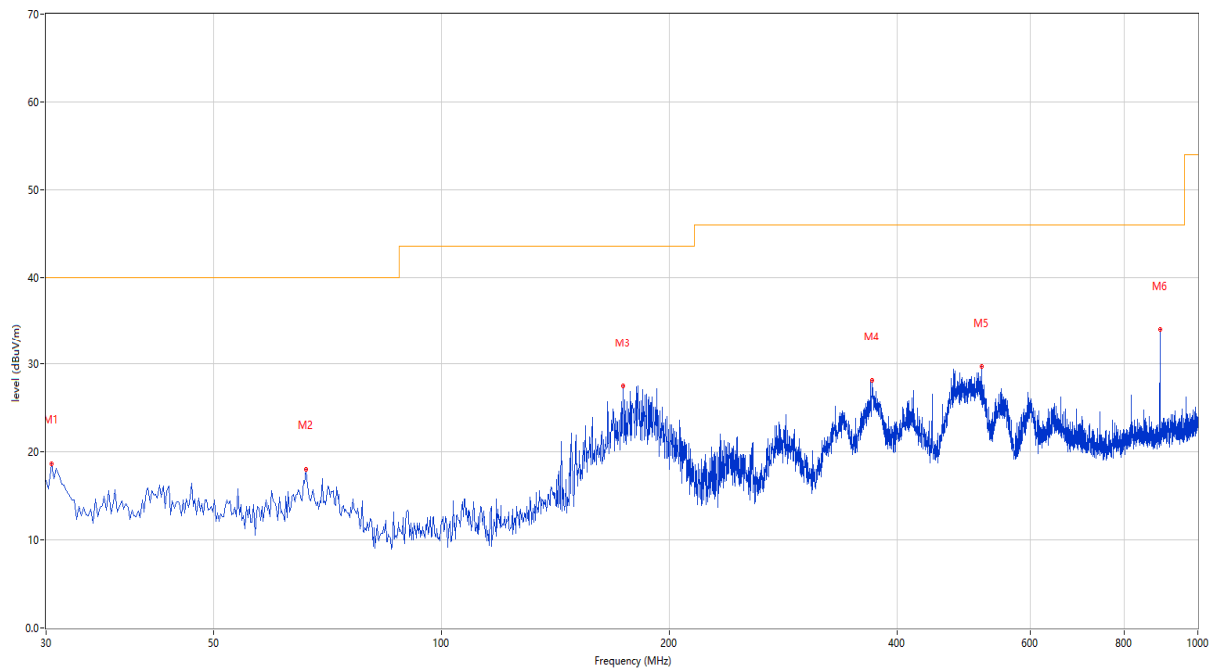
Note⁴: The EUT is working in the Normal link mode below 1 GHz.

30 MHz to 1 GHz, ANT V



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	40.185	32.55	-25.46	40.0	-7.45	Peak	184.00	100	Vertical	Pass
2	63.465	30.23	-26.04	40.0	-9.77	Peak	145.00	100	Vertical	Pass
3	112.692	24.43	-26.21	43.5	-19.07	Peak	229.00	100	Vertical	Pass
4	371.198	34.80	-21.93	46.0	-11.20	Peak	251.00	100	Vertical	Pass
5	742.465	32.84	-13.86	46.0	-13.16	Peak	120.00	100	Vertical	Pass
6	891.118	31.87	-11.43	46.0	-14.13	Peak	16.00	100	Vertical	Pass

30 MHz to 1 GHz, ANT H



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	30.000	16.81	-27.81	40.0	-23.19	Peak	146.00	100	Horizontal	Pass
2	66.132	18.04	-26.46	40.0	-21.96	Peak	183.00	200	Horizontal	Pass
3	173.803	27.49	-27.83	43.5	-16.01	Peak	357.00	200	Horizontal	Pass
4	371.198	28.16	-21.93	46.0	-17.84	Peak	299.00	200	Horizontal	Pass
5	518.153	29.76	-18.59	46.0	-16.24	Peak	109.00	200	Horizontal	Pass
6	891.118	34.03	-11.43	46.0	-11.97	Peak	142.00	200	Horizontal	Pass

Note: The spurious from 18G-40G is noise only, do not show on the report.

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

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1162.000	42.66	-16.76	74.0	-31.34	Peak	350.00	100	Vertical	Pass
1**	1162.000	24.61	-16.76	54.0	-29.39	AV	350.00	100	Vertical	Pass
2	1860.000	58.27	-14.78	68.2	-9.93	Peak	18.00	100	Vertical	Pass
3	2795.000	47.50	-10.42	74.0	-26.50	Peak	15.00	100	Vertical	Pass
3**	2795.000	29.49	-10.42	54.0	-24.51	AV	15.00	100	Vertical	Pass
4	5187.000	107.03	-2.05	---	---	Peak	272.00	100	Vertical	N/A
4**	5187.000	99.56	-2.05	---	---	AV	272.00	100	Vertical	N/A
5	5508.000	57.66	-1.44	68.2	-10.54	Peak	325.00	100	Vertical	Pass
6	11851.000	51.36	6.09	74.0	-22.64	Peak	256.00	100	Vertical	Pass
6**	11851.000	42.02	6.09	54.0	-11.98	AV	256.00	100	Vertical	Pass

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

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1861.500	49.33	-14.69	68.2	-18.87	Peak	169.00	100	Horizontal	Pass
2	2432.000	44.18	-12.36	68.2	-24.02	Peak	349.00	100	Horizontal	Pass
3	5173.000	106.99	-1.86	---	---	Peak	302.00	100	Horizontal	N/A
3**	5173.000	98.26	-1.86	---	---	AV	302.00	100	Horizontal	N/A
4	5505.000	56.66	-1.31	68.2	-11.54	Peak	292.00	100	Horizontal	Pass
5	11078.250	51.37	7.20	74.0	-22.63	Peak	225.00	100	Horizontal	Pass
5**	11078.250	41.98	7.20	54.0	-12.02	AV	225.00	100	Horizontal	Pass
6	14590.000	55.79	12.45	68.2	-12.41	Peak	222.00	100	Horizontal	Pass

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

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1862.000	57.42	-14.66	68.2	-10.78	Peak	25.00	100	Vertical	Pass
2	2908.500	42.50	-9.26	68.2	-25.7	Peak	250.00	100	Vertical	Pass
3	4882.000	53.65	-2.16	74.0	-20.35	Peak	131.00	100	Vertical	Pass
3**	4882.000	39.62	-2.16	54.0	-14.38	AV	131.00	100	Vertical	Pass
4	5226.000	107.58	-1.92	---	---	Peak	343.00	100	Vertical	N/A
4**	5226.000	100.40	-1.92	---	---	AV	343.00	100	Vertical	N/A
5	5999.000	57.33	-0.19	68.2	-10.87	Peak	32.00	100	Vertical	Pass
6	14260.000	54.95	11.37	68.2	-13.25	Peak	164.00	100	Vertical	Pass

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

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1866.500	48.44	-14.62	68.2	-19.76	Peak	61.00	100	Horizontal	Pass
2	3120.000	44.51	-6.17	68.2	-23.69	Peak	172.00	100	Horizontal	Pass
3	4891.000	53.11	-2.84	74.0	-20.89	Peak	224.00	100	Horizontal	Pass
3**	4891.000	39.55	-2.84	54.0	-14.45	AV	224.00	100	Horizontal	Pass
4	5215.000	107.85	-1.64	---	---	Peak	294.00	100	Horizontal	N/A
4**	5215.000	100.45	-1.64	---	---	AV	294.00	100	Horizontal	N/A
5	5547.000	55.93	-1.67	68.2	-12.27	Peak	357.00	100	Horizontal	Pass
6	16682.750	57.43	12.19	68.2	-10.77	Peak	160.00	100	Horizontal	Pass

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

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1163.500	41.74	-16.61	74.0	-32.26	Peak	359.00	100	Vertical	Pass
1**	1163.500	25.44	-16.61	54.0	-28.56	AV	359.00	100	Vertical	Pass
2	1865.000	57.82	-14.77	68.2	-10.38	Peak	19.00	100	Vertical	Pass
3	2798.500	47.92	-10.11	74.0	-26.08	Peak	148.00	100	Vertical	Pass
3**	2798.500	27.72	-10.11	54.0	-26.28	AV	148.00	100	Vertical	Pass
4	4913.000	52.75	-2.14	74.0	-21.25	Peak	250.00	100	Vertical	Pass
4**	4913.000	42.82	-2.14	54.0	-11.18	AV	250.00	100	Vertical	Pass
5	5248.000	107.27	-2.50	---	---	Peak	348.00	100	Vertical	N/A
5**	5248.000	100.20	-2.50	---	---	AV	348.00	100	Vertical	N/A
6	11944.500	52.63	5.76	74.0	-21.37	Peak	73.00	100	Vertical	Pass
6**	11944.500	41.77	5.76	54.0	-12.23	AV	73.00	100	Vertical	Pass

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

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1861.500	48.29	-14.69	68.2	-19.91	Peak	171.00	100	Horizontal	Pass
2	4906.000	53.12	-2.69	74.0	-20.88	Peak	356.00	100	Horizontal	Pass
2**	4906.000	40.64	-2.69	54.0	-13.36	AV	356.00	100	Horizontal	Pass
3	5234.000	108.34	-2.10	---	---	Peak	298.00	100	Horizontal	N/A
3**	5234.000	100.74	-2.10	---	---	AV	298.00	100	Horizontal	N/A
4	5564.000	56.01	-1.46	68.2	-12.19	Peak	306.00	100	Horizontal	Pass
5	11818.000	50.96	6.32	74.0	-23.04	Peak	172.00	100	Horizontal	Pass
5**	11818.000	41.04	6.32	54.0	-12.96	AV	172.00	100	Horizontal	Pass
6	17708.501	59.99	16.27	74.0	-14.01	Peak	360.00	100	Horizontal	Pass
6**	17708.501	50.26	16.27	54.0	-3.74	AV	360.00	100	Horizontal	Pass

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

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1863.500	55.51	-14.55	68.2	-12.69	Peak	9.00	100	Vertical	Pass
2	2798.500	49.52	-10.11	74.0	-24.48	Peak	14.00	100	Vertical	Pass
2**	2798.500	28.68	-10.11	54.0	-25.32	AV	14.00	100	Vertical	Pass
3	3192.000	51.79	-7.37	68.2	-16.41	Peak	356.00	100	Vertical	Pass
4	5738.000	107.64	-2.16	---	---	Peak	346.00	100	Vertical	N/A
4**	5738.000	99.23	-2.16	---	---	AV	346.00	100	Vertical	N/A
5	14488.250	56.13	12.14	74.0	-17.87	Peak	349.00	100	Vertical	Pass
5**	14488.250	47.07	12.14	54.0	-6.93	AV	349.00	100	Vertical	Pass
6	17901.001	60.54	17.44	74.0	-13.46	Peak	123.00	100	Vertical	Pass
6**	17901.001	50.42	17.44	54.0	-3.58	AV	123.00	100	Vertical	Pass

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

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1864.500	49.96	-14.76	68.2	-18.24	Peak	165.00	100	Horizontal	Pass
2	3043.000	45.18	-7.52	68.2	-23.02	Peak	299.00	100	Horizontal	Pass
3	4633.000	48.14	-3.03	74.0	-25.86	Peak	305.00	100	Horizontal	Pass
3**	4633.000	31.23	-3.03	54.0	-22.77	AV	305.00	100	Horizontal	Pass
4	5750.000	110.49	-0.65	---	---	Peak	294.00	100	Horizontal	N/A
4**	5750.000	104.09	-0.65	---	---	AV	294.00	100	Horizontal	N/A
5	11991.250	51.60	6.12	74.0	-22.40	Peak	152.00	100	Horizontal	Pass
5**	11991.250	41.79	6.12	54.0	-12.21	AV	152.00	100	Horizontal	Pass
6	14966.750	56.37	10.88	68.2	-11.83	Peak	152.00	100	Horizontal	Pass

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

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1262.000	39.92	-16.26	68.2	-28.28	Peak	85.00	100	Vertical	Pass
2	2414.000	43.44	-11.53	68.2	-24.76	Peak	146.00	100	Vertical	Pass
3	3190.000	46.23	-7.42	68.2	-21.97	Peak	70.00	100	Vertical	Pass
4	5778.000	106.17	-1.41	---	---	Peak	357.00	100	Vertical	N/A
4**	5778.000	99.01	-1.41	---	---	AV	357.00	100	Vertical	N/A
5	11160.750	51.26	6.93	74.0	-22.74	Peak	339.00	100	Vertical	Pass
5**	11160.750	41.06	6.93	54.0	-12.94	AV	339.00	100	Vertical	Pass
6	16787.250	57.42	12.58	68.2	-10.78	Peak	136.00	100	Vertical	Pass

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

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1411.000	45.53	-16.22	74.0	-28.47	Peak	297.00	100	Horizontal	Pass
1**	1411.000	39.26	-16.22	54.0	-14.74	AV	297.00	100	Horizontal	Pass
2	1930.500	41.86	-14.67	68.2	-26.34	Peak	215.00	100	Horizontal	Pass
3	2673.000	46.57	-10.18	68.2	-21.63	Peak	195.00	100	Horizontal	Pass
4	5464.000	58.57	-1.78	68.2	-9.63	Peak	326.00	100	Horizontal	Pass
5	5787.000	102.57	-1.21	---	---	Peak	65.00	100	Horizontal	N/A
5**	5787.000	94.27	-1.21	---	---	AV	65.00	100	Horizontal	N/A
6	14631.250	55.75	12.01	68.2	-12.45	Peak	217.00	100	Horizontal	Pass

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

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1465.500	37.37	-16.06	74.0	-36.63	Peak	10.00	100	Vertical	Pass
1**	1465.500	25.45	-16.06	54.0	-28.55	AV	10.00	100	Vertical	Pass
2	2419.500	41.54	-12.01	68.2	-26.66	Peak	211.00	100	Vertical	Pass
3	4223.000	46.19	-3.58	74.0	-27.81	Peak	67.00	100	Vertical	Pass
3**	4223.000	34.71	-3.58	54.0	-19.29	AV	67.00	100	Vertical	Pass
4	5822.000	109.15	-1.07	---	---	Peak	199.00	100	Vertical	N/A
4**	5822.000	97.52	-1.07	---	---	AV	199.00	100	Vertical	N/A
5	10850.000	51.38	7.41	74.0	-22.62	Peak	300.00	100	Vertical	Pass
5**	10850.000	42.40	7.41	54.0	-11.60	AV	300.00	100	Vertical	Pass
6	17757.999	59.59	16.46	74.0	-14.41	Peak	328.00	100	Vertical	Pass
6**	17757.999	49.67	16.46	54.0	-4.33	AV	328.00	100	Vertical	Pass

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

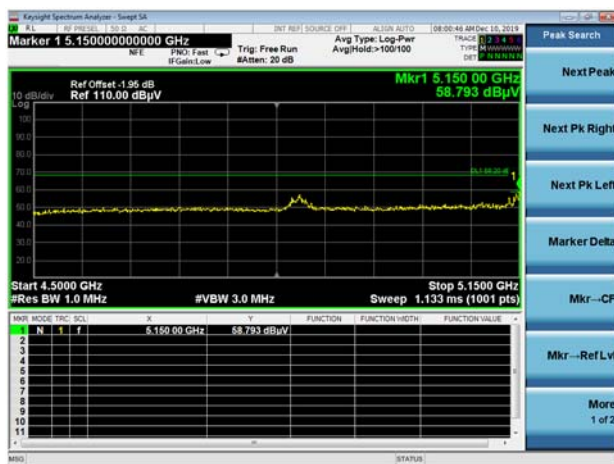
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1520.500	37.83	-16.01	74.0	-36.17	Peak	27.00	100	Horizontal	Pass
1**	1520.500	25.03	-16.01	54.0	-28.97	AV	27.00	100	Horizontal	Pass
2	2470.500	42.24	-11.75	68.2	-25.96	Peak	1.00	100	Horizontal	Pass
3	3103.000	44.12	-6.60	68.2	-24.08	Peak	65.00	100	Horizontal	Pass
4	5820.000	110.43	-1.16	---	---	Peak	263.00	100	Horizontal	N/A
4**	5820.000	103.57	-1.16	---	---	AV	263.00	100	Horizontal	N/A
5	10140.500	50.82	6.76	68.2	-17.38	Peak	51.00	100	Horizontal	Pass
6	17887.250	59.83	16.95	74.0	-14.17	Peak	197.00	100	Horizontal	Pass
6**	17887.250	50.61	16.95	54.0	-3.39	AV	197.00	100	Horizontal	Pass

A.6.2 Band Edge (Restricted-band)

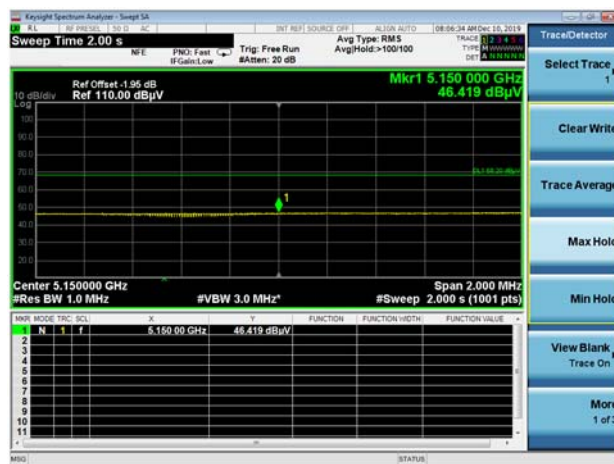
Test Band	Mode	Channel	Verdict
Band I	802.11a	Low	Pass
		High	Pass
Band IV	802.11a	Low	Pass
		High	Pass

Test Plots

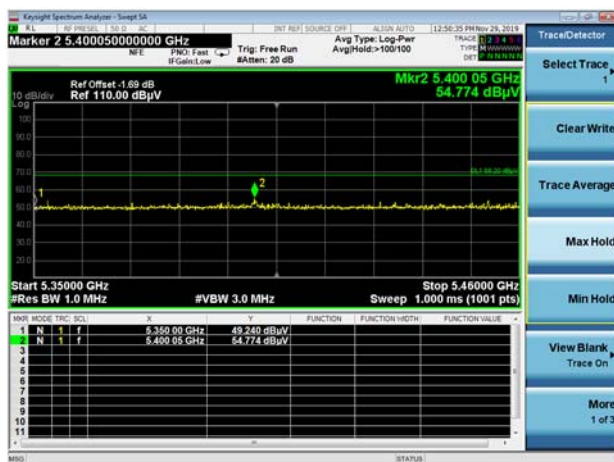
Band I 11a CH36 Peak



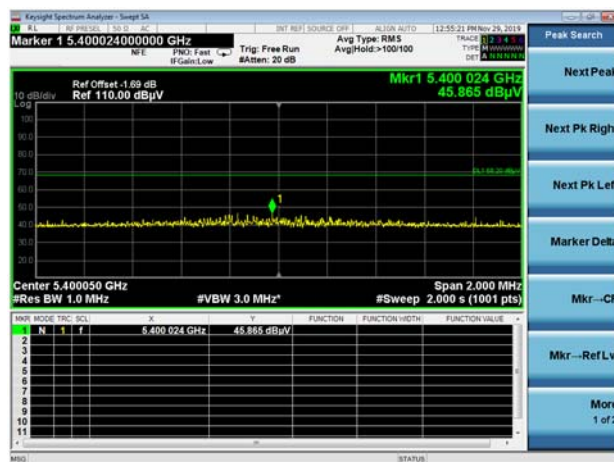
Band I 11a CH36 AV



Band I 11a CH48 Peak



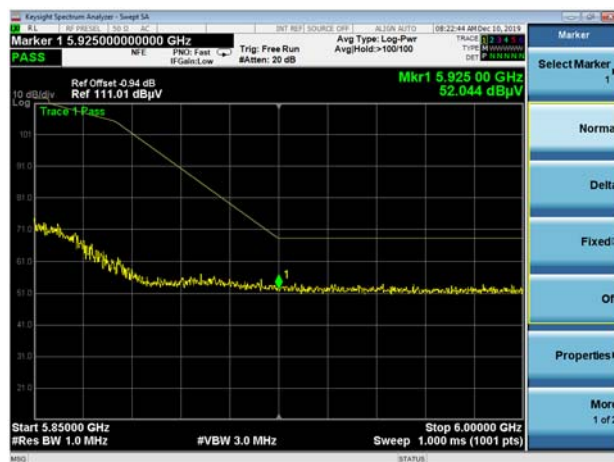
Band I 11a CH48 AV



Band IV 11a CH149 Peak



Band IV 11a CH165 Peak



ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-EC19C0036-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-EC19C0036-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-EC19C0036-AI.PDF”.

--END OF REPORT--