

RF Test Report

Applicant : Getac Technology Corporation
Product Type : Wireless module
Trade Name : Getac
Model Number : AX200NGW
Applicable Standard : FCC 47 CFR PART 15 SUBPART E
ANSI C63.10:2013
Received Date : May 13, 2020
Test Period : May 22, 2020
Issued Date : Jun. 23, 2020

Issued by

A Test Lab Techno Corp.
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Taiwan Accreditation Foundation accreditation number: 1330
Test Firm MRA designation number: TW0010

Note:

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- 3.The relevant information is provided by customers in this test report. According to the correctness, appropriateness or completeness of the information provided by the customer, if there is any doubt or error in the information which affects the validity of the test results, the laboratory does not take the responsibility.



Revision History

Rev.	Issued Date	Revisions	Revised By
00	May 27, 2020	Initial Issue	Tobey Cheng
01	Jun. 11, 2020	Page 8 Revised Max. RF Output Power. Page 23~29 Added Maximum Conducted Output Power Measurement test data.	Nina Lin
02	Jun. 23, 2020	Update chapter 2 (P.6). Update chapter 5 (P.23~P.26).	Nina Lin

Verification of Compliance

Issued Date: Jun. 23, 2020

Applicant : Getac Technology Corporation
Product Type : Wireless module
Trade Name : Getac
Model Number : AX200NGW
FCC ID : QYLAX200NG
EUT Rated Voltage : DC 3.7 V
Test Voltage : 120 Vac / 60 Hz
Applicable Standard : FCC 47 CFR PART 15 SUBPART E
ANSI C63.10:2013

Test Result : Complied

Performing Lab. : A Test Lab Techno Corp.
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<http://www.atl-lab.com.tw/e-index.htm>



A Test Lab Techno Corp. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by A Test Lab Techno Corp. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By : Fly Lu
(Manager) (Fly Lu)

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1 General Information

1.1. Summary of Test Result

Standard	Item	Result	Remark
15.407(b)(6) 15.207	AC Power Conducted Emission	PASS	---
15.407(b) 15.205 / 15.209	Transmitter Radiated Emissions	PASS	Note 2
15.407(a)	Maximum Conducted Output Power	PASS	---
15.407(a)	26 dB RF Bandwidth	N/A	Note 1
15.407(e)	6 dB RF Bandwidth	N/A	Note 1
15.407(a)	Maximum Power Spectral Density	N/A	Note 1
15.407(c)	Automatically discontinue transmission	N/A	Note 1
15.407(a) 15.203	Antenna Requirement	N/A	Note 1

Note 1 : Class II permissive change. No need for verification.

Note 2 : Transmitter Radiated Emissions in below 1 GHz for Verification.

Standard	Description
CFR47, Part 15, Subpart C	Intentional Radiators
CFR47, Part 15, Subpart E	Unlicensed National Information Infrastructure Devices
ANSI C63. 10: 2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
KDB789033: D02	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E
KDB 662911 D01 v02r01	Emissions Testing of Transmitters with Multiple Outputs in the Same Band (e.g., MIMO, Smart Antenna, etc)

1.2. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conducted Emission	150 kHz ~ 30 MHz	2.68
Radiated Emission	9 kHz ~ 30 MHz	2.14
	30 MHz ~ 1000 MHz	4.99
	1000 MHz ~ 18000 MHz	4.99
	18000 MHz ~ 26500 MHz	4.23
	26500 MHz ~ 40000 MHz	4.39

Decision Rule

■ Uncertainty is not included.

□ Uncertainty is included.



2 EUT Description

Applicant	Getac Technology Corporation 5F.,Building A,No.209,Sec.1 Nangang.,Rd., Taipei City, 11568, Taiwan			
Manufacturer	Intel Mobile Communications 100 Center Point Circle, Suite 200, Columbia, South Carolina 29210, USA			
Product Type	Wireless module			
Trade Name	Getac			
Model No.	AX200NGW			
FCC ID	QYLAX200NG			
Class II Permissive Change	(1) This is to request a Class II permissive change for FCC ID:QYLAX200NG , originally granted on 2020/3/18 Modification: The major change filed under this application is: Change #1: Additional the accessory is for finger print (Egistec / ETU-801)			
Host Information	Product Type: Tablet Trade Name: Getac Model Name: UX10			
Operate Frequency	Frequency Band		Frequency Range (MHz)	Number of Channels
	IEEE 802.11a	U-NII Band I	5180 – 5240	3
		U-NII Band II-A	5260 – 5320	3
		U-NII Band II-C	5500 – 5700	3
		U-NII Band III	5745 – 5825	3
	IEEE 802.11n 5 GHz 20 MHz	U-NII Band I	5180 – 5240	3
		U-NII Band II-A	5260 – 5320	3
		U-NII Band II-C	5500 – 5700	4
		U-NII Band III	5745 – 5825	3
	IEEE 802.11n 5 GHz 40 MHz	U-NII Band I	5190 – 5230	2
		U-NII Band II-A	5270 – 5310	2
		U-NII Band II-C	5510 – 5710	4
		U-NII Band III	5755 – 5795	2
	IEEE 802.11ac 80 MHz	U-NII Band I	5210	1
		U-NII Band II-A	5290	1
		U-NII Band II-C	5530 – 5690	3
		U-NII Band III	5775	1
	IEEE 802.11ac 160 MHz	U-NII Band I & U-NII Band II-A	5250	1
		U-NII Band II-C	5570	1

Operate Frequency	Frequency Band			Frequency Range (MHz)	Number of Channels
	IEEE 802.11ax 20 MHz	U-NII Band I		5180 – 5240	3
		U-NII Band II-A		5260 – 5320	3
		U-NII Band II-C		5500 – 5720	4
		U-NII Band III		5720 – 5825	4
	IEEE 802.11ax 40 MHz	U-NII Band I		5190 – 5230	2
		U-NII Band II-A		5270 – 5310	2
		U-NII Band II-C		5510 – 5710	4
		U-NII Band III		5710 – 5795	3
	IEEE 802.11ax 80 MHz	U-NII Band I		5210	1
		U-NII Band II-A		5290	1
		U-NII Band II-C		5530 – 5690	3
		U-NII Band III		5690 – 5775	2
	IEEE 802.11ax 160 MHz	U-NII Band I & U-NII Band II-A		5250	1
		U-NII Band II-C		5570	1
Modulation Type	OFDM/OFDMA				
Equipment Type	Client devices				
Antenna information	ANT	Model Number	Type	Frequency (MHz)	Max. Gain (dBi)
	Main (ANT-0)	T-0239 UX10 MAIN WIFI ANT	PIFA Antenna	5150~5250	2.14
				5250~5350	2.43
				5470~5725	4.37
				5725~5850	3.43
	AUX (ANT-1)	T-0239 UX10 AUX WIFI ANT	PIFA Antenna	5150~5250	1.71
				5250~5350	1.27
				5470~5725	1.18
				5725~5850	1.40
Antenna Delivery	Reference section 3.1				
Operate Temp. Range	0 ~ +80 ℃				



Frequency Band		RF Output Power (W)
		SYSTEM 2 Full
IEEE 802.11a	U-NII Band I	0.055
	U-NII Band II-A	0.055
	U-NII Band II-C	0.055
	U-NII Band III	0.055
IEEE 802.11n 5 GHz 20 MHz	U-NII Band I	0.054
	U-NII Band II-A	0.055
	U-NII Band II-C	0.056
	U-NII Band III	0.054
IEEE 802.11n 5 GHz 40 MHz	U-NII Band I	0.055
	U-NII Band II-A	0.056
	U-NII Band II-C	0.054
	U-NII Band III	0.056
IEEE 802.11ac 80 MHz	U-NII Band I	0.051
	U-NII Band II-A	0.053
	U-NII Band II-C	0.053
	U-NII Band III	0.053
IEEE 802.11ac 160 MHz	U-NII Band I & U-NII Band II-A	0.027
	U-NII Band II-C	0.030
IEEE 802.11ax 20 MHz	U-NII Band I	0.054
	U-NII Band II-A	0.054
	U-NII Band II-C	0.055
	U-NII Band III	0.054
IEEE 802.11ax 40 MHz	U-NII Band I	0.054
	U-NII Band II-A	0.055
	U-NII Band II-C	0.054
	U-NII Band III	0.056
IEEE 802.11ax 80 MHz	U-NII Band I	0.050
	U-NII Band II-A	0.053
	U-NII Band II-C	0.053
	U-NII Band III	0.053
IEEE 802.11ax 160 MHz	U-NII Band I & U-NII Band II-A	0.029
	U-NII Band II-C	0.029

Equipment Type		
Outdoor access point	point-to-point	---
	point-to-multipoint	---
Indoor access point		---
Fixed point-to-point access points		---
Client devices		V

3 Test Methodology

3.1. Mode of Operation

Decision of Test ATL has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode
Mode 1: Transmit mode
Mode 2: IEEE 802.11a Continuous TX mode
Mode 3: IEEE 802.11n 5 GHz 20 MHz Continuous TX mode
Mode 4: IEEE 802.11n 5 GHz 40 MHz Continuous TX mode
Mode 5: IEEE 802.11ac 80 MHz Continuous TX mode
Mode 6: IEEE 802.11ac 160 MHz Continuous TX mode
Mode 7: IEEE 802.11ax 20 MHz Continuous TX mode
Mode 8: IEEE 802.11ax 40 MHz Continuous TX mode
Mode 9: IEEE 802.11ax 80 MHz Continuous TX mode
Mode 10: IEEE 802.11ax 160 MHz Continuous TX mode

Final-Test Mode
Mode 1: Transmit mode
Mode 3: IEEE 802.11ac 20 MHz Continuous TX mode
Mode 7: IEEE 802.11ax 20 MHz Continuous TX mode

Software used to control the EUT for staying in continuous transmitting mode was programmed.
After verification, all tests were carried out with the worst case test modes.



Decision of Test Mode				
Description	Vender	Model Number	Remarks	SYSTEM 2 Full
Main Board	WUS Printed Circuit	R0B	---	V
CPU	Intel	i7-10710U	1.10 GHz, 1528 Pin	V
Menory	Kingston	CBD26D4S9S8ME-8	DDR4, 2400 MHz, 8 GB	
	Kingston	CBD24D4S7D8ME-16	DDR4, 2400 MHz, 16GB	V
HDD	LITEON	CV8-8E256	256 GB, 3D TLC AES	
	LITEON	CV8-8E512	512 GB, 3D TLC AES	V
LCM	K&D Technology	KD101N69-30NP	1920 x 1080 (FHD)	
	Getac	GET-101	Digitizer	V
Upside Option	Getac	UX10 PN7462 NFC Module	NXP RFID	
	Motorola	SE4710	Moto, Zebra, SE4710	V
STD Battery (Optional)	Getac	BP3S2P2100S-01	11.1 VDC, 4200 mAh	
Large Battery (Optional)	Getac	BP3S3P3450P-03	10.8 VDC, 9240 mAh	V
Bridge Battery (Optional)	Getac	BP2S1P2100S	Back Expansion Bay 7.4 VDC, 2100 mAh	V
Fingerprint CrossMatch(1)	Crossmatch	TCETC1	Right Expansion Bay	
Finger print(2)	Egistec	ETU-801(*)	Right Expansion Bay	V
MSR Reader	Magtek	99875494-3	Right Expansion Bay	V
Module	Getac	EM7455	WWAN/GPS	V
	LOCOSYS	MC 1010	GPS/GNS	
	Intel	AX200NGW	WLAN/BT	V
Rear Camera 8M	Foxlink	FN80AF-704H	---	V
Windows Hollow	Foxlink	FN23FF-705H	---	V
Capacitive Pen	Who Care	N/A	---	
AC Adapter (1)	FSP	FSP065-RBBN3	INPUT: 100-240 VAC, 50-60 Hz, 1.5 A OUTPUT: 19 VDC, 3.42 A Non-Shielded,1.5 m, with one core	V
AC Adapter (2)	Getac	MTA190474W4	INPUT: 100-240 VAC, 50-60 Hz, 1.6 A OUTPUT: 19 VDC, 4.74 A Non-Shielded,1.5 m with two cores	V
Power Cord (1)	I-SHENG	SP-305B+IS-034	3 pin, for U.S. power connector Non-Shielded,1.75 m	V
Power Cord (2)	I-SHENG	SP-305B+IS-034	3 pin, for European power connector Non-Shielded,1.75 m	
Digitizer Pen (Optional)	EMRight	GET-101	---	V

Note 1: (*) Add keyparts.

Note 2: The device used two models of adapter, adapter number: MTA190474W4 is worst case to perform testing.



3.2. EUT Test Step

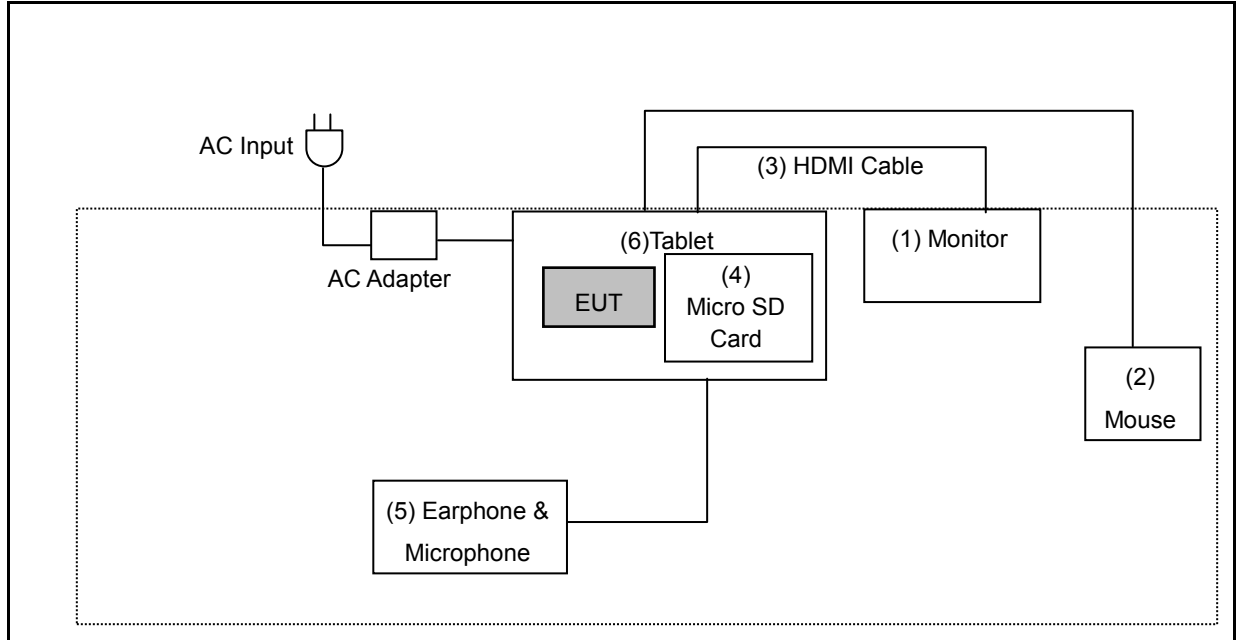
The EUT is operated in the engineering mode to fix the TX frequency for the purposes of measurement. According to its specifications, the EUT must comply with the requirements of Section 15.407 under the FCC Rules Part 15 Subpart E.

1.	Setup the EUT shown on "Configuration of Test System Details".
2.	Turn on the power of all equipment.
3.	Turn on TX function.
4.	EUT run test program.

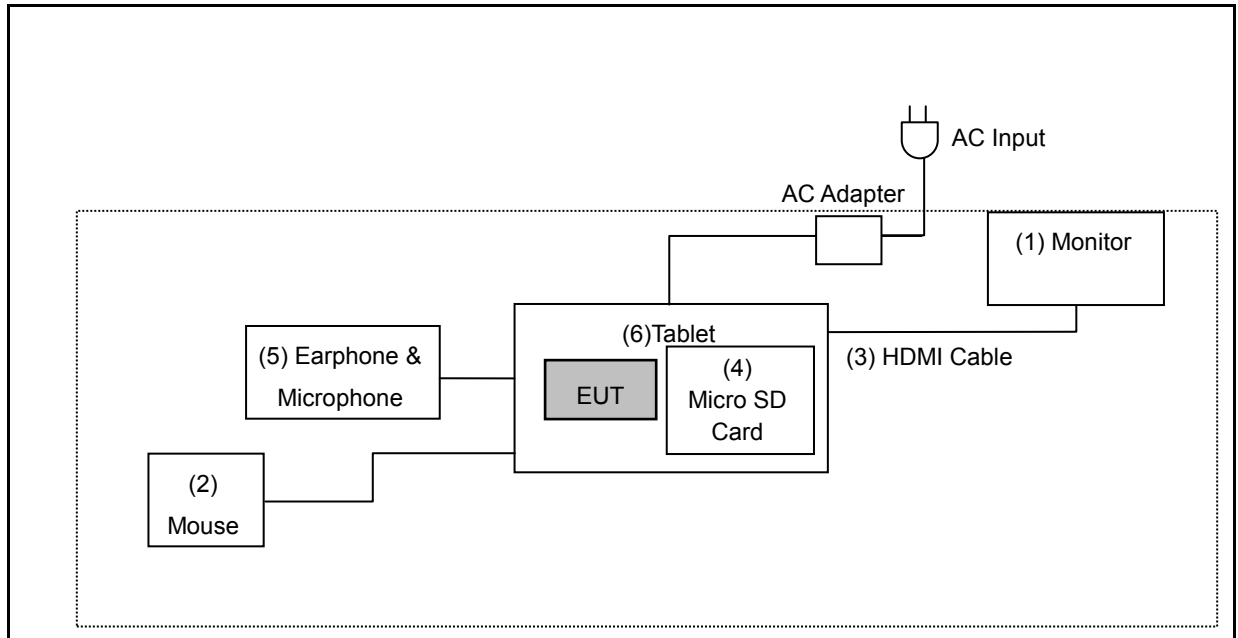
Measurement Software			
No.	Description	Software	Version
1	Conducted Emission	EZ EMC	1.1.4.3
2	Radiated Emission	EZ EMC	1.1.4.4

3.3. Configuration of Test System Details

Conducted Emission



Radiated Emissions





Devices Description					
Product		Manufacturer	Model Number	Serial Number	Power Cord
(1)	Monitor	DELL	U2410f	CN-OJ257M-72872 -09J-01AL	---
(2)	Mouse	DELL	MOCZUL	CN-049TWY-73820 -63N-01SB	---
(3)	HDMI Cable	Avier	K48GHS	---	Shielded, 1.7 m
(4)	Micro SD Card	Transcend	9153BA 8G 07DS1	---	---
(5)	Earphone & Microphone	HUAWEI	LYA-L29	---	---
(6)	Tablet	Getac	UX10	---	---

3.4. Test Instruments

For Conducted Emission

Test Period: May 22, 2020

Testing Engineer: Paul.chiu

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Test Receiver	R&S	ESCI	100367	05/23/2019	1 year
LISN	R&S	ENV216	101040	03/23/2020	1 year
LISN	R&S	ENV216	101041	04/06/2020	1 year
RF Cable	Woken	00100D1380194M	TE-02-03	05/23/2019	1 year

For Radiated Emissions

Test Period: May 22, 2020

Testing Engineer: Ricky Liu

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Spectrum Analyzer (10 Hz~44 GHz)	Keysight	N9010A	MY52221312	01/13/2020	1 year
Pre Amplifier (100 kHz~1.3 GHz)	Agilent	8447D	2944A11119	01/15/2020	1 year
Broadband Antenna	Schwarzbeck	VULB9168	416	10/23/2019	1 year
Loop Antenna	COM-POWER CORPORATION	AL-130	121014	03/27/2020	1 year
RF Cable	EMCI	EMC104-N-N-6000	TE01-1	02/20/2020	1 year
Microwave Cable	EMCI	EMC104-SM-SM -13000	170814	10/29/2019	1 year
Microwave Cable	EMCI	EMC102-KM-KM -14000	151001	02/20/2020	1 year

Note: N.C.R. = No Calibration Request.

3.5. Test Site Environment

Items	Required (IEC 60068-1)	Actual
Temperature (°C)	15-35	20-30
Humidity (%RH)	25-75	45-75
Barometric pressure (mbar)	860-1060	990-1005

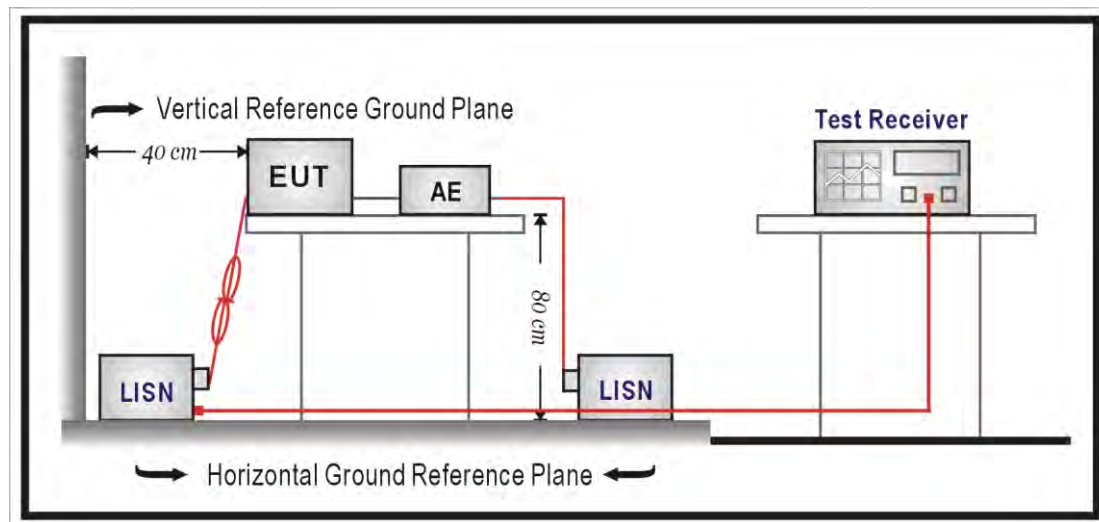
4 Measurement Procedure

4.1. AC Power Conducted Emission Measurement

■ Limit

Frequency (MHz)	Quasi-peak	Average
0.15 - 0.5	66 to 56	56 to 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

■ Test Setup



■ Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a $50\ \Omega // 50\ \mu\text{H}$ coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a $50\ \Omega // 50\ \mu\text{H}$ coupling impedance with 50 ohm termination.

Tabletop device shall be placed on a non-conducting platform, of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The wall of screened room shall be located 40 cm to the rear of the EUT. Other surfaces of tabletop or floor standing EUT shall be at least 80 cm from any other ground conducting surface including one or more LISNs. For floor-standing device shall be placed under the EUT with a 12 mm insulating material.

Conducted emissions were investigated over the frequency range from 0.15 MHz to 30 MHz using a resolution bandwidth of 9 kHz. The equipment under test (EUT) shall be meet the limits in section 4.1, as applicable, including the average limit and the quasi-peak limit when using respectively, an average detector and quasi-peak detector measured in accordance with the methods described of related standard. When all of peak value were complied with quasi-peak and average limit from 150 kHz to 30 MHz then quasi-peak and average measurement was unnecessary.

The AMN shall be placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for AMNs mounted on top of the ground reference plane. This distance is between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8 m from the AMN. If the mains power cable is longer than 1 m then the cable shall be folded back and forth at the centre of the lead to form a bundle no longer than 0.4 m. All of interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 cm to 40 cm long. All of EUT and AE shall be separate place more than 0.1 m. All 50 Ω ports of the LISN shall be resistively terminated into 50 Ω loads when not connected to the measuring instrument.

If the reading of the measuring receiver shows fluctuations close to the limit, the reading shall be observed for at least 15 s at each measurement frequency; the higher reading shall be recorded with the exception of any brief isolated high reading which shall be ignored

4.2. Transmitter Radiated Emissions Measurement

■ Limit

(1) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

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

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

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

(d) For transmitters operating in the 5.725-5.85 GHz band:

(i) 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.

(2) Limits of Radiated Emission Measurement

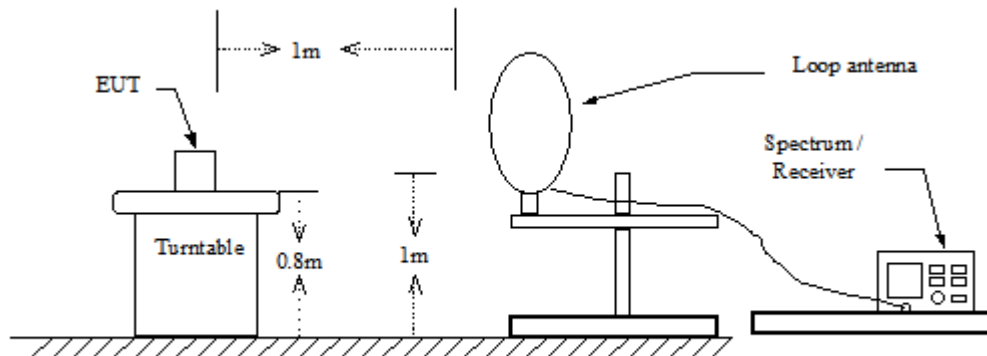
Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequency Range (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	10	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

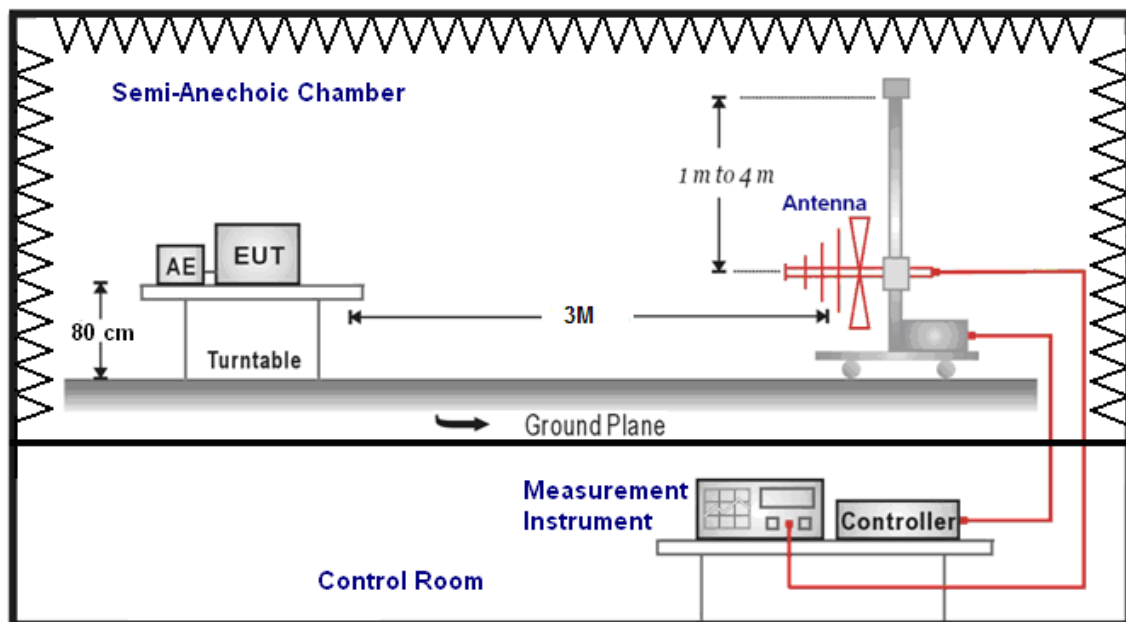
Note: 1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

■ Setup

9 kHz ~ 30 MHz



30 MHz ~ 1 GHz



■ Test Procedure

Final radiation measurements were made on a three-meter, Semi Anechoic Chamber. The EUT system was placed on a nonconductive turntable which is 0.8 or 1.5 meters height (below 1 GHz use 0.8 m turntable / above 1 GHz use 1.5 m turntable), top surface 1.0 x 1.5 meter. The spectrum was examined from 250 MHz to 2.5 GHz in order to cover the whole spectrum below 10th harmonic which could generate from the EUT. During the test, EUT was set to transmit continuously & Measurements spectrum range from 9 kHz to 40 GHz is investigated.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For restricted measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 3 MHz for peak measurements and 10 Hz for average measurements when Duty cycle > 0.98 / 1/T for average measurements when Duty cycle < 0.98.

For out of band measurements above 1 GHz the resolution bandwidth is set to 1 MHz, and then the video bandwidth is set to 3 MHz for peak measurements.

A nonconductive material surrounded the EUT to supporting the EUT for standing on three orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

SCHWARZBECK MESS-ELEKTRONIK Trilog-Broadband Antenna at 3 Meter and the ETS-Lindgren Double-Ridged Waveguide Horn antenna Schwarzbeck Mess-Elektronik Broadband Horn Antenna was used in frequencies 1 – 40 GHz at a distance of 3 meter. The antenna at an angle toward the source of the emission. All test results were extrapolated to equivalent signal at 3 meters utilizing an inverse linear distance extrapolation Factor (20 dB/decade).

For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer's 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvolt (dBuV) into field intensity in micro volts per meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro volts per meter (dBuV/m).

The actual field is intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

(1) Amplitude (dBuV/m) = FI (dBuV) +AF (dBuV) +CL (dBuV)-Gain (dB)

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

(2) Actual Amplitude (dBuV/m) = Amplitude (dBuV)-Dis(dB)

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

(a) For fundamental frequency : Transmitter Output < +30 dBm

(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

Measuring Instruments and setting

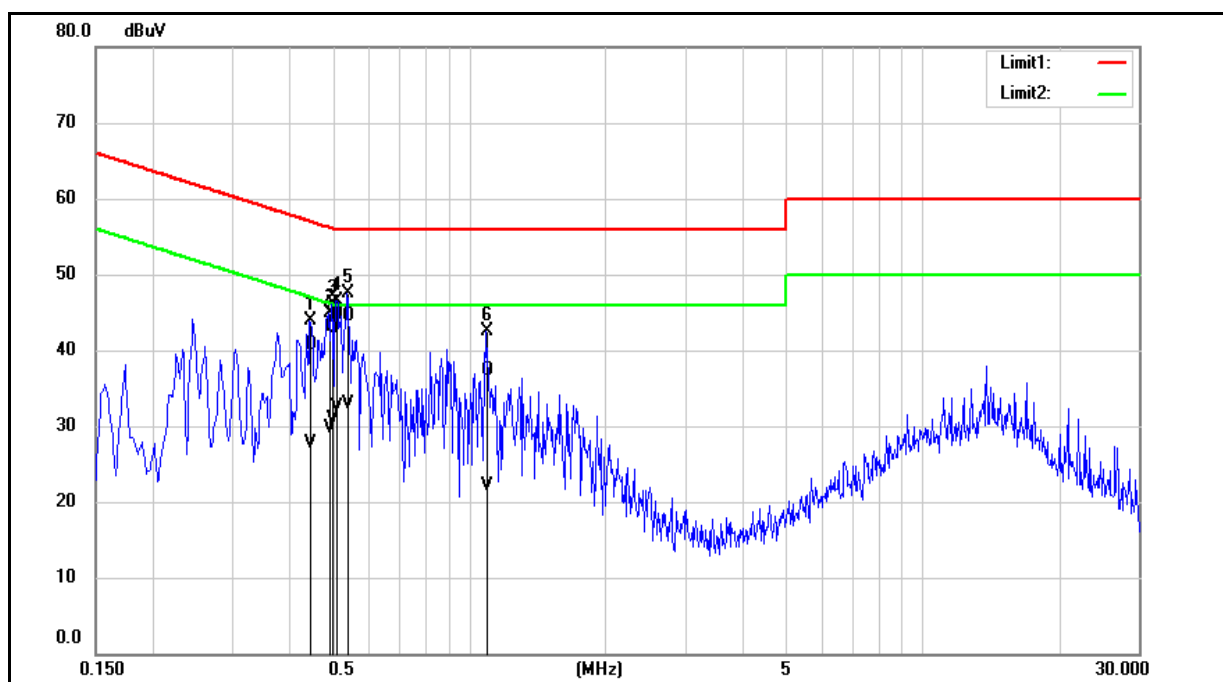
The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	40 GHz
RBW/VBW(Emission in restricted band)	1 MHz / 3 MHz for Peak 1 MHz / (1/T) for Average
RBW/VBW(Emission in non-restricted band)	1 MHz / 3 MHz for Peak

5 Test Results

Annex A. Conducted Emission

Standard:	FCC Part 15.407	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Description:			

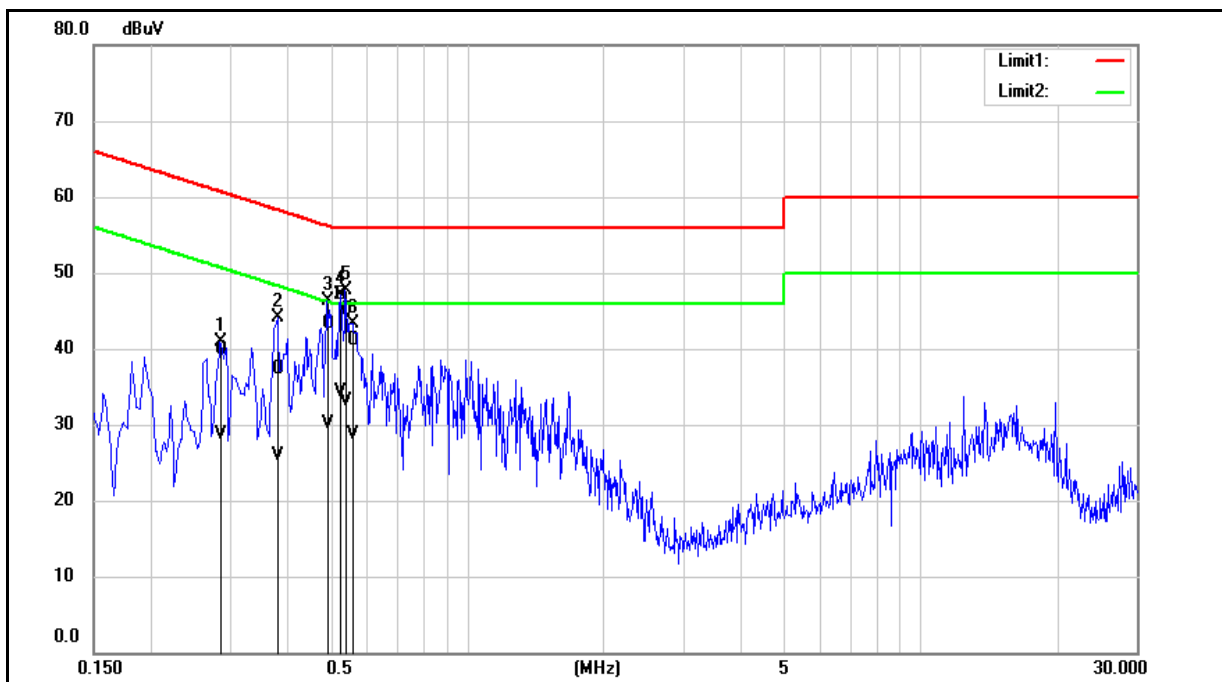


No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.4460	30.97	18.08	9.66	40.63	27.74	56.95	46.95	-16.32	-19.21	Pass
2	0.4900	33.48	20.09	9.66	43.14	29.75	56.17	46.17	-13.03	-16.42	Pass
3	0.4980	33.26	21.21	9.66	42.92	30.87	56.03	46.03	-13.11	-15.16	Pass
4	0.5100	35.05	22.82	9.66	44.71	32.48	56.00	46.00	-11.29	-13.52	Pass
5	0.5380	34.93	23.18	9.66	44.59	32.84	56.00	46.00	-11.41	-13.16	Pass
6	1.0900	27.60	12.38	9.68	37.28	22.06	56.00	46.00	-18.72	-23.94	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

Standard:	FCC Part 15.407	Line:	N
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Description:			



No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.2860	30.14	19.06	9.68	39.82	28.74	60.64	50.64	-20.82	-21.90	Pass
2	0.3820	27.60	16.32	9.68	37.28	26.00	58.24	48.24	-20.96	-22.24	Pass
3	0.4900	33.71	20.44	9.69	43.40	30.13	56.17	46.17	-12.77	-16.04	Pass
4	0.5260	37.33	24.69	9.69	47.02	34.38	56.00	46.00	-8.98	-11.62	Pass
5	0.5380	35.50	23.45	9.69	45.19	33.14	56.00	46.00	-10.81	-12.86	Pass
6	0.5580	31.47	18.97	9.69	41.16	28.66	56.00	46.00	-14.84	-17.34	Pass

Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

2. Correction factor (dB) = Cable loss (dB) + L.I.S.N. factor (dB).

Annex B. Conducted Test Results

Maximum Conducted Output Power Measurement

ANT-0					
Test Mode	Frequency (MHz)	Data Rate	Average Output Power		Limit
			Measurement Results		
			dBm	W	dBm
Mode 2	2412	1 M	19.38	0.087	≤ 30
	2437		19.81	0.096	≤ 30
	2462		18.92	0.078	≤ 30
	2467		17.88	0.061	≤ 30
	2472		14.78	0.030	≤ 30
Mode 3	2412	6 M	16.87	0.049	≤ 30
	2437		19.71	0.094	≤ 30
	2462		14.82	0.030	≤ 30
	2467		13.81	0.024	≤ 30
	2472		11.81	0.015	≤ 30
Mode 4	2412	6.5 M	16.81	0.048	≤ 30
	2437		19.69	0.093	≤ 30
	2462		16.77	0.048	≤ 30
	2467		14.16	0.026	≤ 30
	2472		12.41	0.017	≤ 30
Mode 5	2422	13.5 M	16.11	0.041	≤ 30
	2437		16.71	0.047	≤ 30
	2452		15.31	0.034	≤ 30
	2457		12.98	0.020	≤ 30
	2462		12.41	0.017	≤ 30

Note: The relevant measured result has the offset with cable loss already.

ANT-0							
Test Mode	Frequency (MHz)	Data Rate	RU Tone	RU Number	Average Output Power		Limit
					Measurement Results		
					dBm	W	dBm
Mode 6	2412	MCS 0	242	1	16.73	0.047	≤ 30
	2437		242	1	19.11	0.081	≤ 30
	2462		242	1	16.36	0.043	≤ 30
	2467		242	1	14.82	0.030	≤ 30
	2472		242	1	11.82	0.015	≤ 30
Mode 7	2422	MCS 0	484	1	16.71	0.047	≤ 30
	2437		484	1	16.17	0.041	≤ 30
	2452		484	1	14.83	0.030	≤ 30
	2457		484	1	12.46	0.018	≤ 30
	2462		484	1	11.88	0.015	≤ 30

Note: The relevant measured result has the offset with cable loss already.

ANT-1					
Test Mode	Frequency (MHz)	Data Rate	Average Output Power		Limit
			Measurement Results		
			dBm	W	dBm
Mode 2	2412	1 M	18.33	0.068	≤ 30
	2437		18.38	0.069	≤ 30
	2462		18.35	0.068	≤ 30
	2467		16.79	0.048	≤ 30
	2472		14.32	0.027	≤ 30
Mode 3	2412	6 M	16.91	0.049	≤ 30
	2437		18.08	0.064	≤ 30
	2462		14.72	0.030	≤ 30
	2467		13.85	0.024	≤ 30
	2472		11.88	0.015	≤ 30
Mode 4	2412	6.5 M	16.91	0.049	≤ 30
	2437		18.07	0.064	≤ 30
	2462		16.77	0.048	≤ 30
	2467		14.81	0.030	≤ 30
	2472		11.74	0.015	≤ 30
Mode 5	2422	13.5 M	16.43	0.044	≤ 30
	2437		16.81	0.048	≤ 30
	2452		15.14	0.033	≤ 30
	2457		12.22	0.017	≤ 30
	2462		11.87	0.015	≤ 30

Note: The relevant measured result has the offset with cable loss already.

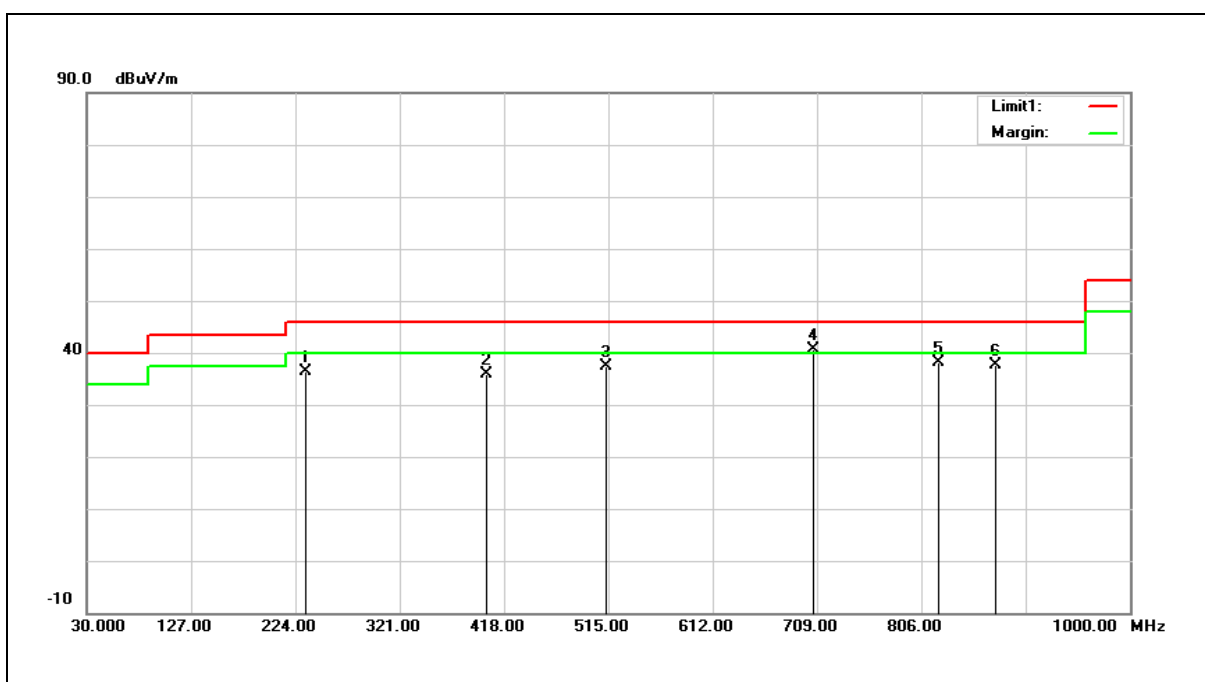
ANT-1							
Test Mode	Frequency (MHz)	Data Rate	RU Tone	RU Number	Average Output Power		Limit
					Measurement Results		
					dBm	W	dBm
Mode 6	2412	MCS 0	242	1	16.82	0.048	≤ 30
	2437		242	1	17.54	0.057	≤ 30
	2462		242	1	16.23	0.042	≤ 30
	2467		242	1	11.24	0.013	≤ 30
	2472		242	1	11.29	0.013	≤ 30
Mode 7	2422	MCS 0	484	1	16.76	0.047	≤ 30
	2437		484	1	16.37	0.043	≤ 30
	2452		484	1	14.61	0.029	≤ 30
	2457		484	1	12.22	0.017	≤ 30
	2462		484	1	11.91	0.016	≤ 30

Note: The relevant measured result has the offset with cable loss already.

Annex C. Radiated Emission Measurement

Below 1 GHz

Standard:	FCC Part 15.407	Test Distance:	3 m
Test item:	Radiated Emission	Power:	AC 120 V/60 Hz
Frequency:	5500 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	Mode 3		
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	233.7000	43.02	-6.68	36.34	46.00	-9.66	QP
2	401.5100	38.04	-2.05	35.99	46.00	-10.01	QP
3	513.0600	37.26	0.17	37.43	46.00	-8.57	QP
4	705.1200	36.68	4.05	40.73	46.00	-5.27	QP
5	821.5200	32.05	6.18	38.23	46.00	-7.77	QP
6	874.8700	30.40	7.11	37.51	46.00	-8.49	QP

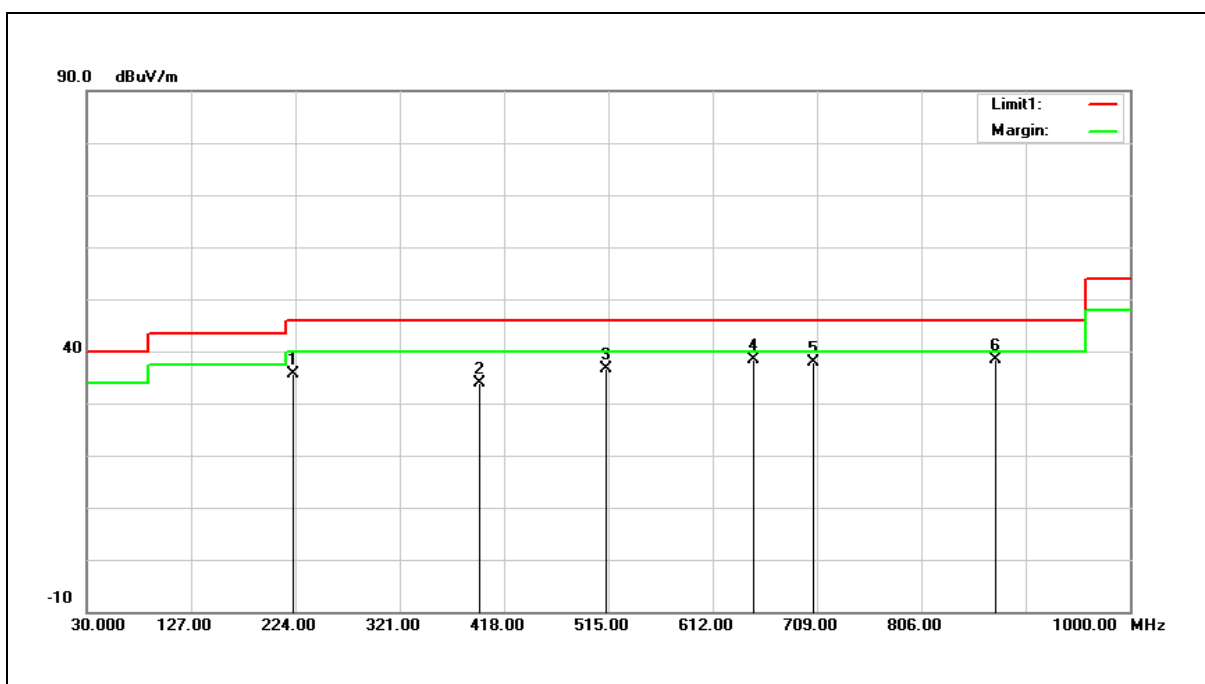
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: 36.34 = -6.68 + 43.02

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15.407	Test Distance:	3 m
Test item:	Radiated Emission	Power:	AC 120 V/60 Hz
Frequency:	5500 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	Mode 3		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	222.0600	42.76	-7.10	35.66	46.00	-10.34	QP
2	394.7200	36.10	-2.23	33.87	46.00	-12.13	QP
3	513.0600	36.42	0.17	36.59	46.00	-9.41	QP
4	649.8300	35.36	2.91	38.27	46.00	-7.73	QP
5	705.1200	33.94	4.05	37.99	46.00	-8.01	QP
6	874.8700	31.35	7.11	38.46	46.00	-7.54	QP

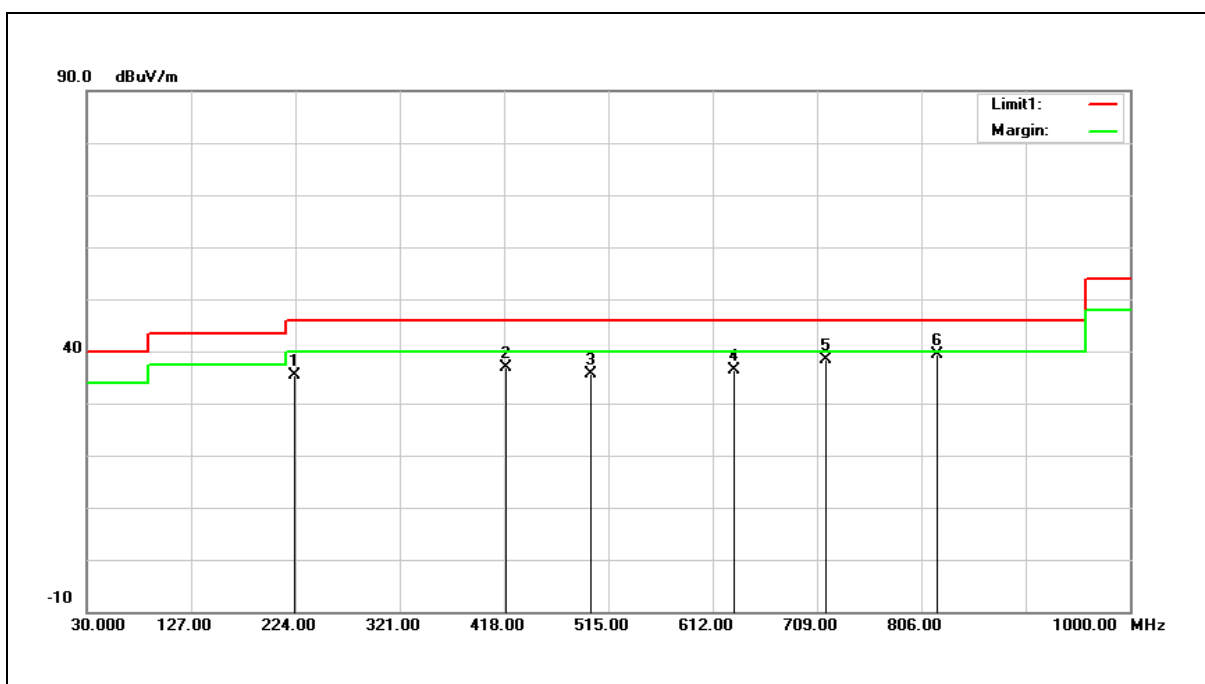
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: $35.66 = -7.10 + 42.76$

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15.407	Test Distance:	3 m
Test item:	Radiated Emission	Power:	AC 120 V/60 Hz
Frequency:	5500 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	Mode 7		
Ant.Polar.:	Horizontal		



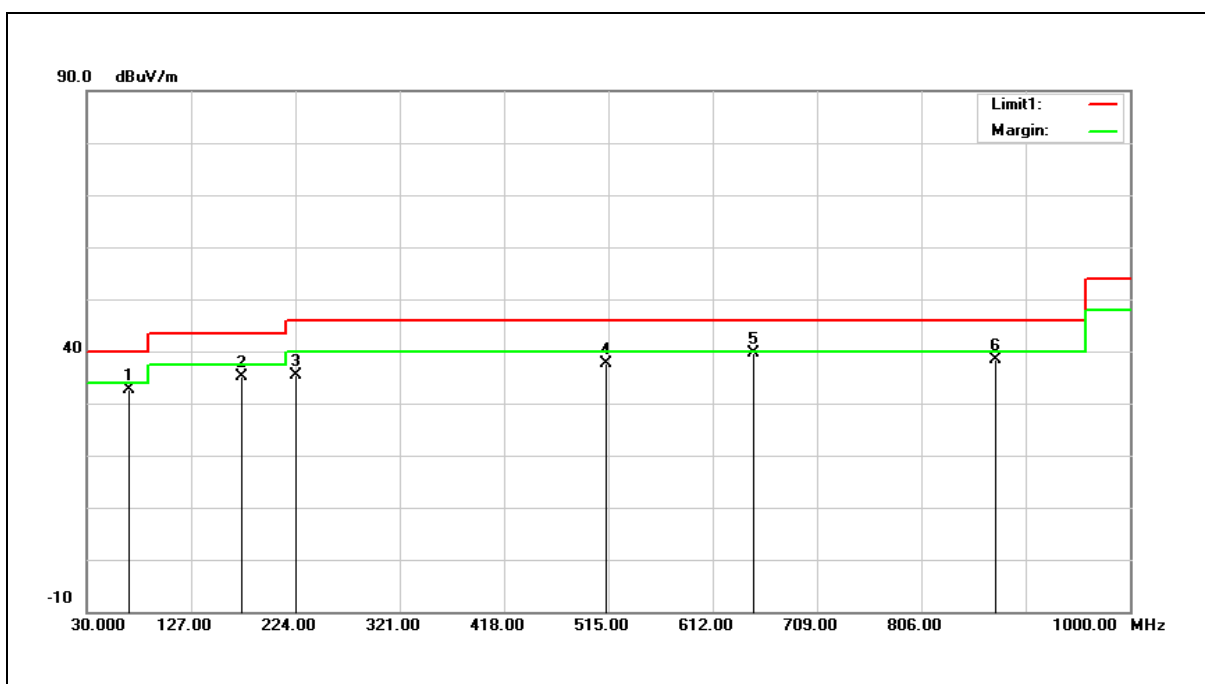
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	223.0300	42.52	-7.09	35.43	46.00	-10.57	QP
2	419.9400	38.48	-1.54	36.94	46.00	-9.06	QP
3	498.5100	35.73	-0.15	35.58	46.00	-10.42	QP
4	631.4000	33.58	2.76	36.34	46.00	-9.66	QP
5	717.7300	33.99	4.38	38.37	46.00	-7.63	QP
6	820.5500	33.11	6.16	39.27	46.00	-6.73	QP

Note: 1. Result (dBuV/m) = Correct Factor (dB/m) + Reading (dBuV).

2. Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When the peak results are less than average limit, so not need to evaluate the average.

Standard:	FCC Part 15.407	Test Distance:	3 m
Test item:	Radiated Emission	Power:	AC 120 V/60 Hz
Frequency:	5500 MHz	Temp.(°C)/Hum.(%RH):	26(°C)/60 %RH
Mode:	Mode 7		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	68.8000	41.12	-8.37	32.75	40.00	-7.25	QP
2	173.5600	41.13	-6.08	35.05	43.50	-8.45	QP
3	224.9700	42.45	-7.07	35.38	46.00	-10.62	QP
4	513.0600	37.44	0.17	37.61	46.00	-8.39	QP
5	649.8300	36.77	2.91	39.68	46.00	-6.32	QP
6	874.8700	31.21	7.11	38.32	46.00	-7.68	QP

Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

3. When the peak results are less than average limit, so not need to evaluate the average.

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