RF Test Report

Applicant	：	EnGenius Technologies
Product Type	：	11ax Indoor Managed Access Point (for EWS377AP v3) 11ax Cloud Managed Access Point (for ECW230 v3)
Trade Name	：	EnGenius
Model Number	：	EWS377AP v3, ECW230 v3
Applicable Standard	：	FCC 47 CFR PART 15 SUBPART C ANSI C63.10:2013
Received Date	：	May 13, 2020
Test Period	：	Oct. 22 ~ Oct. 23, 2020
Issued Date	：	Nov. 30, 2020

Issued by

A Test Lab Techno Corp.
No. 140-1, Changan Street, Bade District,
Taoyuan City 33465, Taiwan (R.O.C.)
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Taiwan Accreditation Foundation accreditation number: 1330
Frequency Range : 9 kHz to 40 GHz
Test Firm MRA designation number: TW0010

Note:
1.The test results are valid only for samples provided by customers and under the test conditions described in this report.
2.This report shall not be reproduced except in full, without the written approval of A Test Lab Technology Corporation.
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	Nov. 03, 2020	Initial Issue	Yu Chiang
01	Nov. 30, 2020	Revised 4.1 chapter(P.22)	Yu Chiang

Verification of Compliance

Applicant	:	EnGenius Technologies
Product Type	:	11ax Indoor Managed Access Point (for EWS377AP v3) 11ax Cloud Managed Access Point (for ECW230 v3)
Trade Name	:	EnGenius
Model Number	:	EWS377AP v3, ECW230 v3
FCC ID	:	A8J-EWS377APV3
EUT Rated Voltage	:	DC 12 V, 2.5 A (DC Power Adapter) DC 54 V, 0.6 A (PoE injector (802.3af/at))
Test Voltage	:	120 Vac / 60 Hz
Applicable Standard	:	FCC 47 CFR PART 15 SUBPART C ANSI C63.10:2013
Test Result	:	Complied
Performing Lab.	:	A Test Lab Techno Corp. No. 140-1, Changan Street, Bade District, Taoyuan City 33465, Taiwan (R.O.C.) Tel：+886-3-2710188 / Fax：+886-3-2710190 Taiwan Accreditation Foundation accreditation number: 1330 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 : Ken Yang

(Manager) (Ken Yang)

TABLE OF CONTENTS

1 General Information

1.1. Summary of Test Result

Standard	Item	Result	Remark
15.207	AC Power Conducted Emission	PASS	Note
15.247(d)	Transmitter Radiated Emissions	PASS	Note
15.247(b)(3)	Max. Output Power	N/A	N/A
15.247(a)(2)	6 dB RF Bandwidth	N/A	N/A
15.247(e)	Maximum Power Spectral Density	N/A	N/A
15.247(d)	Out of Band Conducted Spurious Emission	N/A	N/A
15.203	Antenna Requirement	N/A	N/A

Note：Transmitter Radiated Emissions is larger than the original report but not out of 3 dBm. After evaluation above, C1PC is applicable.

After the evaluation, AC Power Conducted and Transmitter Radiated Emissions (Below 1 GHz) need to be re-evaluated.

Decision Rule

■ Uncertainty is not included.

□ Uncertainty is included.

Standard	Description
CFR47, Part 15, Subpart C	Intentional Radiators
ANSI C63. 10: 2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
KDB 558074 D01 15.247 Meas Guidance v05r02	GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES
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

2 EUT Description

Applicant	EnGenius Technologies 1580 Scenic Avenue, Costa Mesa, CA 92626				
Manufacturer	EnGenius Networks. Inc. No.500, Fusing 3rd Rd., Hwa-Ya Technology Park Kuei-Shan Dist., Taoyuan City, Taiwan (R.O.C.)				
Product Type	11ax Indoor Managed Access Point (for EWS377AP v3) 11ax Cloud Managed Access Point (for ECW230 v3)				
Trade Name	EnGenius				
Model Number	EWS377AP v3, ECW230 v3				
Difference description of model number	Differences are due to selling region.				
FCC ID	A8J-EWS377APV3				
Class I Permissive Change	Add conductive foam.				
Operate Freq. Band	Frequency Range (MHz)		Modulation	Channel Bandwidth	Data Rate 400GI (ns)
IEEE 802.11b	2412 ~ 2462		DSSS	20 MHz	Up to 11 Mbps
IEEE 802.11g	2412 ~ 2462		OFDM	20 MHz	Up to 54 Mbps
IEEE 802.11n 2.4 GHz 20 MHz	2412 ~ 2462		OFDM (256QAM)	20 MHz	Up to 364.8 Mbps
IEEE 802.11n 2.4 GHz 40 MHz	2422 ~ 2452		OFDM (256QAM)	40 MHz	Up to 800 Mbps
IEEE 802.11ax 2.4 GHz 20 MHz	2412 ~ 2452		OFDMA	20 MHz	MCS11
IEEE 802.11ax 2.4 GHz 40 MHz	2422 ~ 2452		OFDMA	40 MHz	MCS11
Antenna information	ANT	Model Number	Type		Max. Gain (dBi)
	ANT-0	5718A0514300	PIFA Antenna		3.70
	ANT-1	5718A0515300	PIFA Antenna		4.08
	ANT-2	5718A0516300	PIFA Antenna		4.12
	ANT-3	5718A0517300	PIFA Antenna		5.01
Antenna Delivery	See section 3.1				
Operate Temp. Range	0 ~ +40 ℃				

Frequency Band	Max. RF Output Power (W)
IEEE 802.11b	0.089
IEEE 802.11g	0.334
IEEE 802.11n 2.4 GHz 20 MHz	0.329
IEEE 802.11n 2.4 GHz 40 MHz	0.226
IEEE 802.11ax 2.4 GHz 20 MHz	0.332
IEEE 802.11ax 2.4 GHz 40 MHz	0.186

Beamforming on

Frequency Band	Max. RF Output Power (W)
IEEE 802.11n 2.4 GHz 20 MHz	0.078
IEEE 802.11n 2.4 GHz 40 MHz	0.051
IEEE 802.11ax 2.4 GHz 20 MHz	0.079
IEEE 802.11ax 2.4 GHz 40 MHz	0.042

EUT Modify Description：

Modify Description: Add conductive foam. After the evaluation, AC Power Conducted Emission & Transmitter Radiated Emissions (Below 1 GHz) is smaller than the original. After evaluation above, C1PC is applicable.
Original Report : 2007FR28 Rev.01 Modify: 2010FR14 Rev.00

3 Test Methodology

3.1. Mode of Operation

In the test report use EUT model: EWS377AP v3 to operate testing.

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:

Test Mode
Mode 1: Transmit mode
Mode 2: IEEE 802.11b Continuous TX mode
Mode 3: IEEE 802.11g Continuous TX mode
Mode 4: IEEE 802.11n 2.4 GHz 20 MHz Continuous TX mode
Mode 5: IEEE 802.11n 2.4 GHz 40 MHz Continuous TX mode
Mode 6: IEEE 802.11ax 2.4 GHz 20 MHz Continuous TX mode
Mode 7: IEEE 802.11ax 2.4 GHz 40 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.

By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that “X axis” position was the worst, then the final test was executed the worst condition and test data were recorded in this report.

Note 1: Ant-1 is worst case in Mode 2.

Note 2: EUT only supports Full RU.

Test Mode	ANT-0	ANT-1	ANT-2	ANT-3	ANT-0+1+2+3
Mode 2	V	V	V	V	
Mode 3	V	V	V	V	V
Mode 4	V	V	V	V	V
Mode 5	V	V	V	V	V
Mode 6	V	V	V	V	V
Mode 7	V	V	V	V	V

Test Mode	Antenna Delivery	Data Rate (Mbps)	Test Channel
Mode 2	1TX(Diversity)	1	1, 6, 11
Mode 3	4TX(CDD)	6	1, 6, 11
Mode 4	4TX (STBC/Beamforming on)	26	1, 6, 11
Mode 5	4TX (STBC/Beamforming on)	54	3, 6, 9
Mode 6	4TX (STBC/Beamforming on)	MCS0	1, 6, 11
Mode 7	4TX (STBC/Beamforming on)	MCS0	3, 6, 9

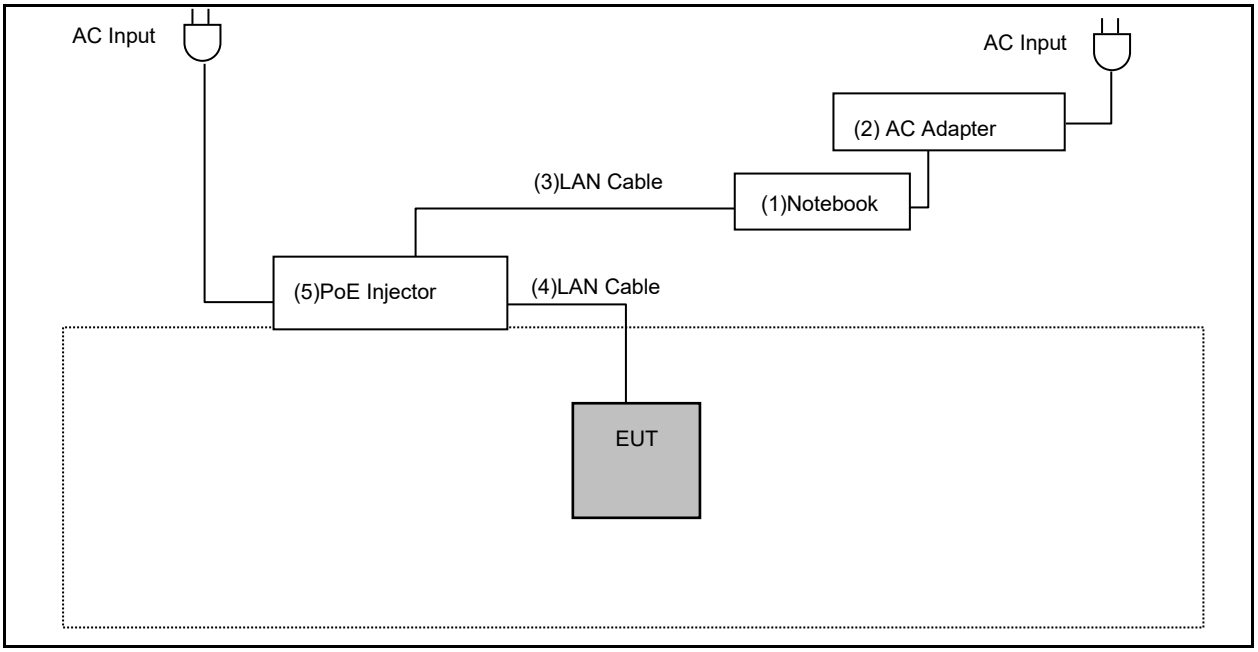
3.2. EUT Test Step

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.

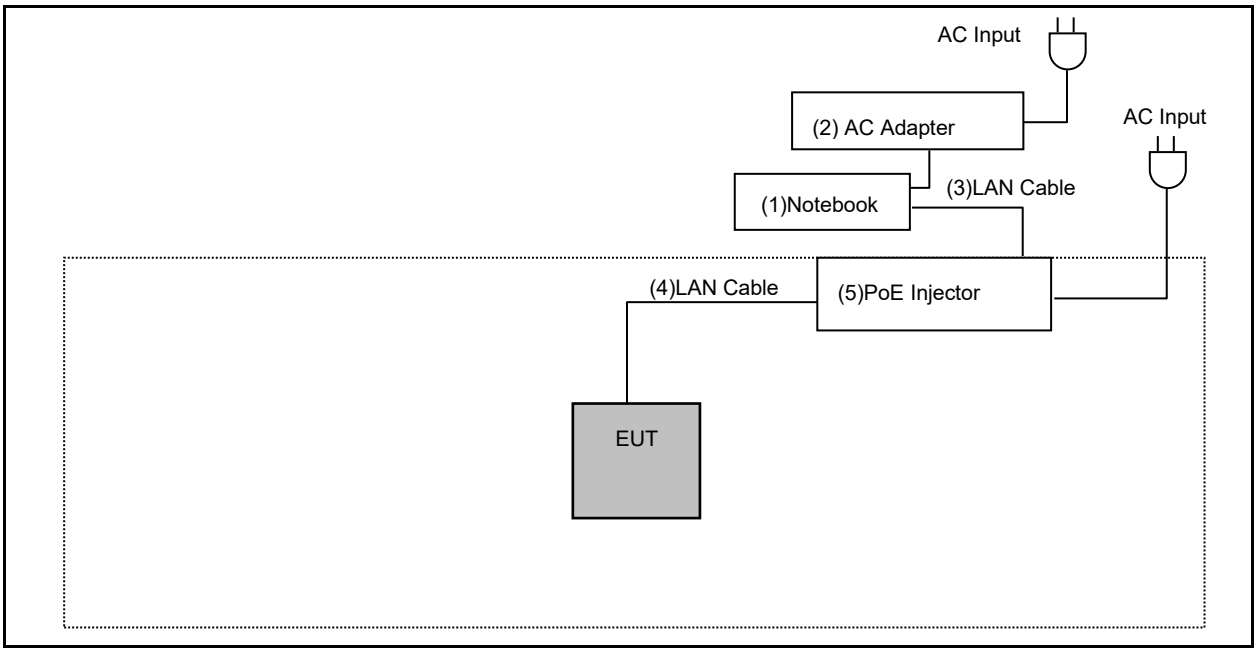
Measurement Software			
No.	Description	Software	Version
1	Conducted Emission	EZ EMC	1.1.4.3
2	Radiated Emission	EZ EMC	1.1.4.4

3.3. Configuration of Test System Details

Conducted Emission



Radiated Emissions



Devices Description					
Product		Manufacturer	Model Number	Serial Number	Remark
(1)	Notebook	DELL	LATITUDE E6440	5HZBD72	---
(2)	AC Adapter	DELL	HA65NM130	---	INPUT : 100-240 VAC, 50/60 Hz, 1.7 A OUTPUT : 19.5 VDC, 3.34 A Non-Shielded, 1.8 m
(3)	LAN Cable	WINKEY ENTERPRISE CO., LTD.	CY-SZ-141224	---	---
(4)	LAN Cable	WINKEY ENTERPRISE CO., LTD.	CY-SZ-141224	---	---
(5)	PoE Injector	emplus	EPA5006GAT	---	INPUT : 100-240 VAC, 50-60 Hz, 0.8 A OUTPUT : 54 VDC, 0.6 A
(6)	AC Adapter	SPC	ZZU1588-250120-2A	---	INPUT : 100-240 VAC, 50-60 Hz, 1.5 A OUTPUT : 12.0 VDC, 2.5 A

Note: The device used (6)AC Adapter and (5)PoE Injector to evaluation AC Power line Conducted Emission, (5)POE Injector is worst case to perform testing.

3.4. Test Instruments

For Conducted Emission
Test Period: Oct. 23, 2020
Testing Engineer: Peter Liu

Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
Test Receiver	R&S	ESCI	100367	05/25/2020	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	05/25/2020	1 year

For Radiated Emissions
Test Period: Oct. 22, 2020
Testing Engineer: Marc Yeh

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
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

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

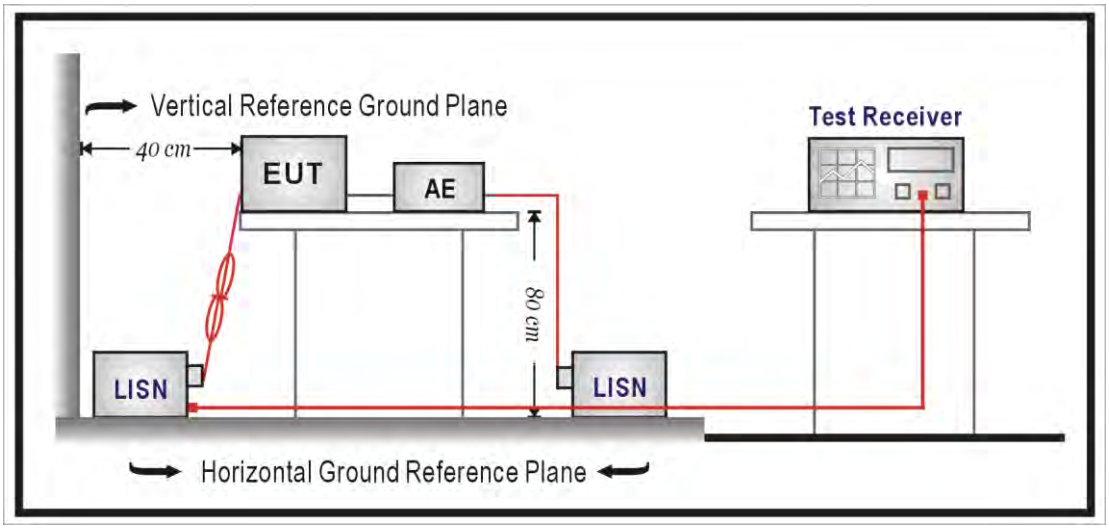
4 Measurement Procedure

4.1. AC Power Line 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 Ω// 50 uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50 Ω// 50 uH 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. Radiated Emission Measurement

■ **Limit**

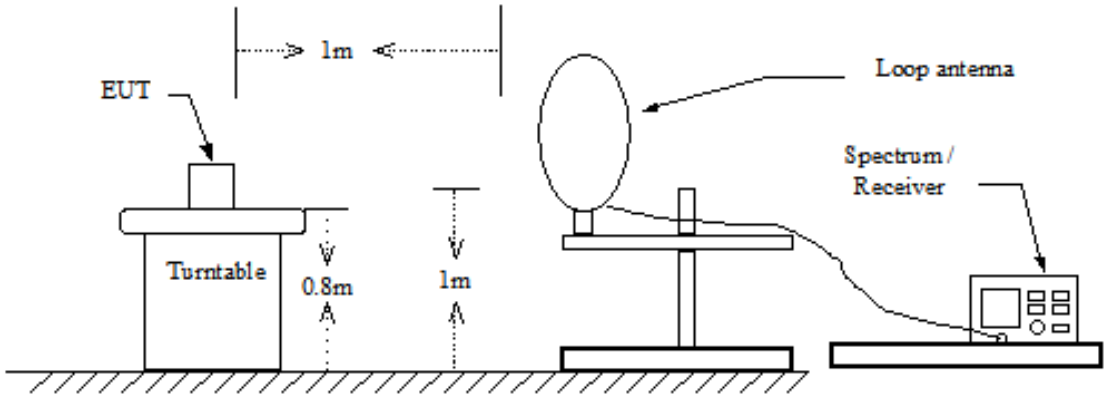
According to §15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m at 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	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

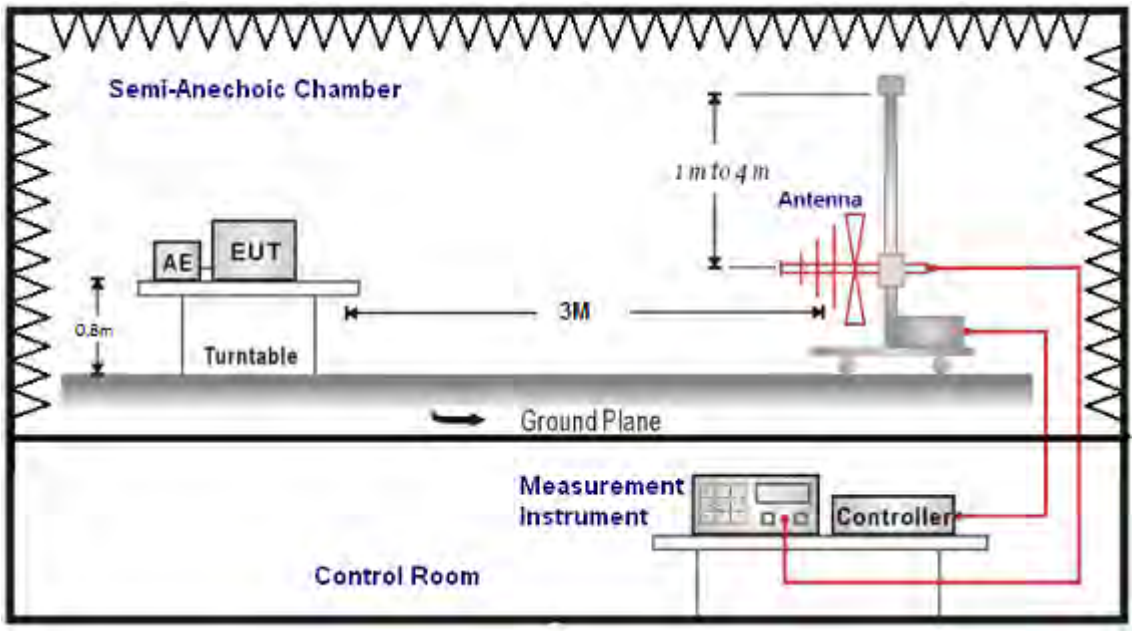
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

■ **Setup**

9 kHz ~ 30 MHz



Below 1 GHz


Semi-Anechoic Chamber
1 m to 4 m
Antenna
AE
EUT
0.8m
3M
Turntable
Ground Plane
Measurement
Instrument
Controller
Control Room

■ **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, 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 26.5 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 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. A nonconductive material surrounded the EUT to supporting the EUT for standing on tree 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 Biconilog Antenna at 3 Meter and the SCHWARZBECK Double Ridged Guide Antenna was used in frequencies 1 –26.5 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 pre meter (uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in micro colts 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

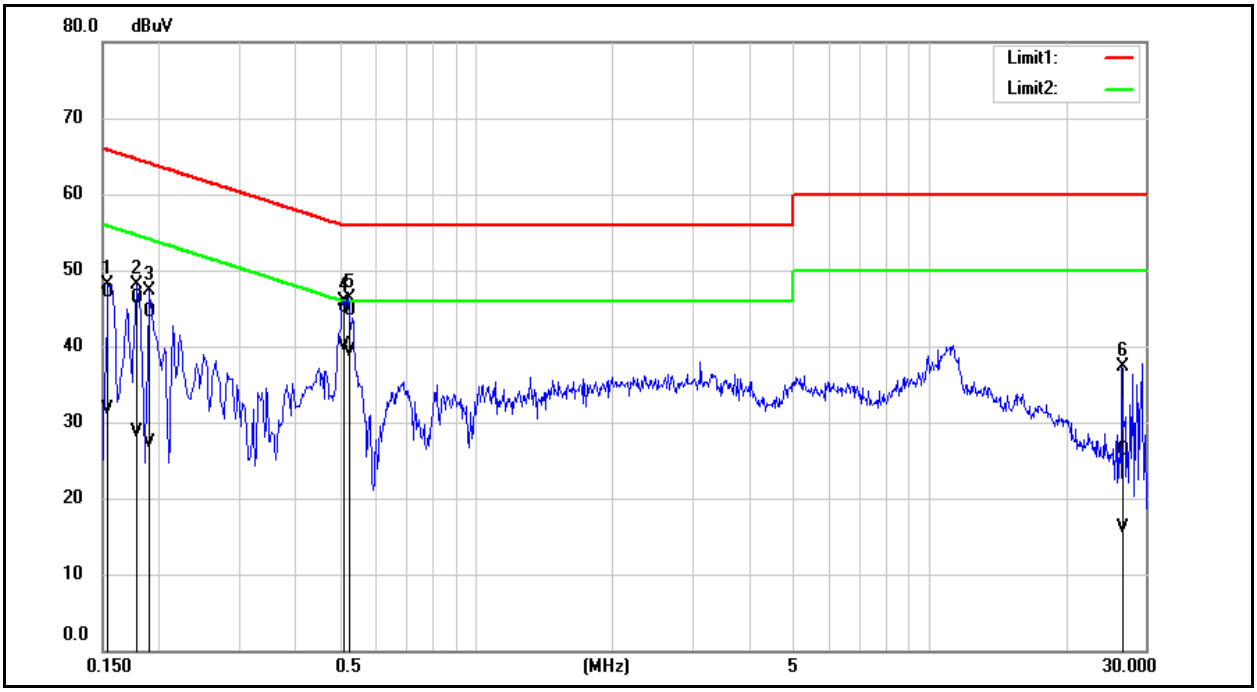
Data of measurement within this frequency range without mark in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.

5 Test Results

Annex A. Conducted Emission

POE Injector

Standard:	FCC Part 15.247	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1		

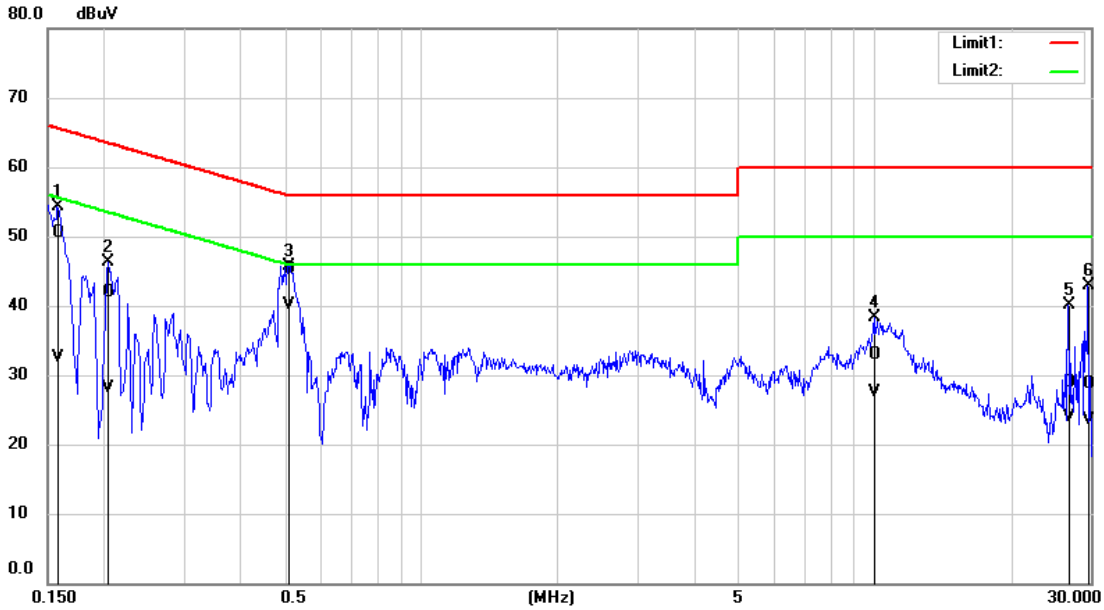


No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1540	37.37	22.08	9.65	47.02	31.73	65.78	55.78	-18.76	-24.05	Pass
2	0.1780	36.76	19.06	9.64	46.40	28.70	64.58	54.58	-18.18	-25.88	Pass
3	0.1900	34.92	17.60	9.64	44.56	27.24	64.04	54.04	-19.48	-26.80	Pass
4	0.5100	35.51	30.40	9.66	45.17	40.06	56.00	46.00	-10.83	-5.94	Pass
5	0.5220	35.14	29.66	9.66	44.80	39.32	56.00	46.00	-11.20	-6.68	Pass
6	26.5900	16.26	5.98	10.05	26.31	16.03	60.00	50.00	-33.69	-33.97	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 15.247	Line:	N
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1		



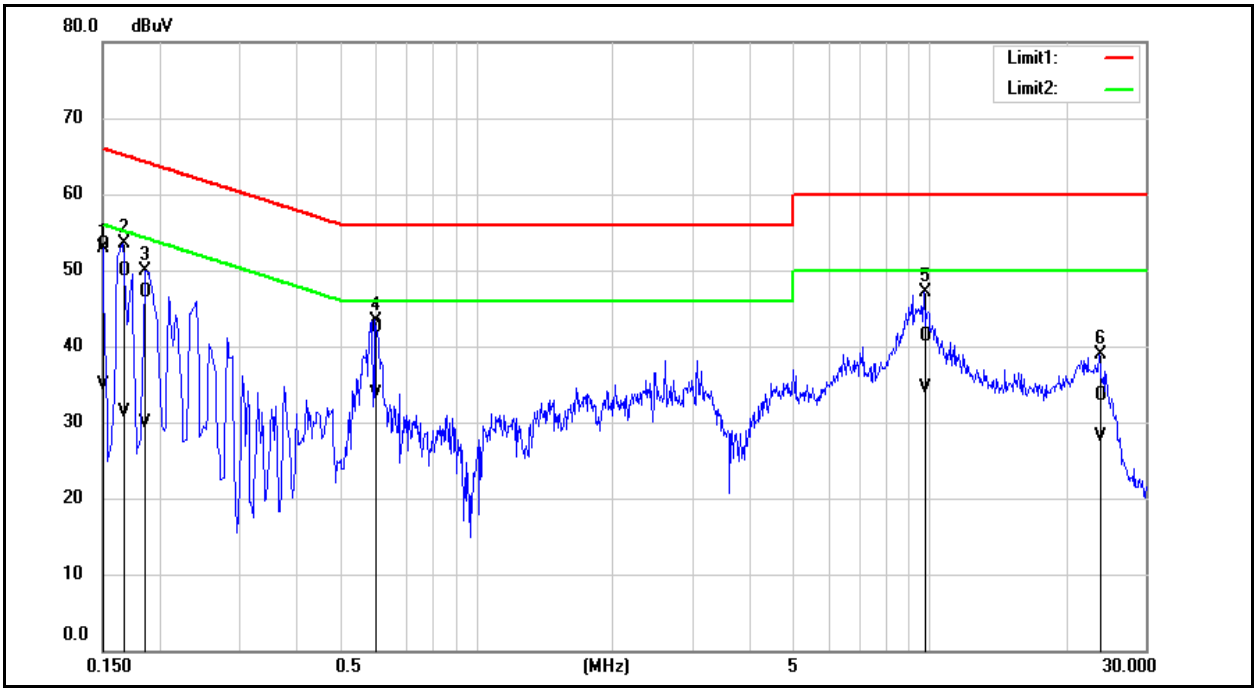
No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1580	40.92	22.91	9.68	50.60	32.59	65.57	55.57	-14.97	-22.98	Pass
2	0.2040	32.14	18.48	9.67	41.81	28.15	63.45	53.45	-21.64	-25.30	Pass
3	0.5100	35.61	30.41	9.69	45.30	40.10	56.00	46.00	-10.70	-5.90	Pass
4	9.9860	22.86	17.59	9.96	32.82	27.55	60.00	50.00	-27.18	-22.45	Pass
5	26.8380	18.71	13.58	10.26	28.97	23.84	60.00	50.00	-31.03	-26.16	Pass
6	29.6260	18.42	13.21	10.29	28.71	23.50	60.00	50.00	-31.29	-26.50	Pass

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

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

AC Adapter

Standard:	FCC Part 15.247	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1		

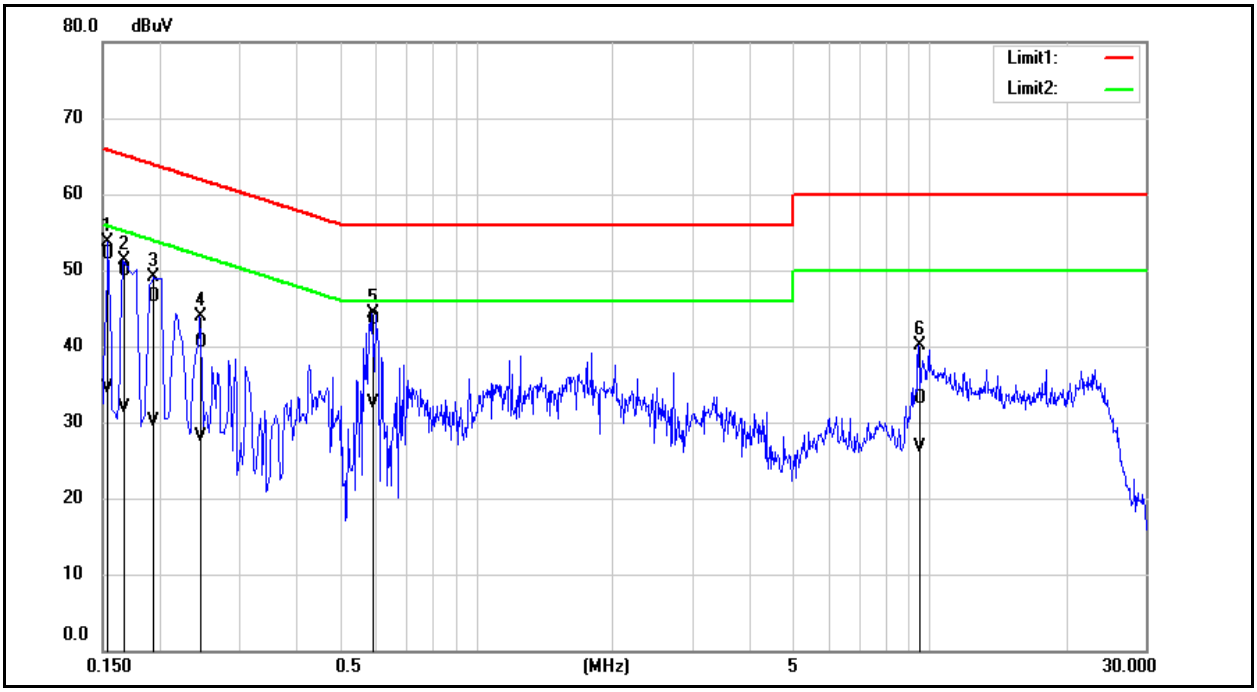


No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1500	43.69	25.31	9.65	53.34	34.96	66.00	56.00	-12.66	-21.04	Pass
2	0.1660	40.33	21.74	9.65	49.98	31.39	65.16	55.16	-15.18	-23.77	Pass
3	0.1860	37.49	20.34	9.64	47.13	29.98	64.21	54.21	-17.08	-24.23	Pass
4	0.5980	32.89	24.08	9.66	42.55	33.74	56.00	46.00	-13.45	-12.26	Pass
5	9.7220	31.45	24.61	9.90	41.35	34.51	60.00	50.00	-18.65	-15.49	Pass
6	23.6580	23.39	18.14	10.03	33.42	28.17	60.00	50.00	-26.58	-21.83	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 15.247	Line:	N
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1		



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	0.1540	42.37	24.79	9.68	52.05	34.47	65.78	55.78	-13.73	-21.31	Pass
2	0.1660	40.16	22.28	9.68	49.84	31.96	65.16	55.16	-15.32	-23.20	Pass
3	0.1940	36.74	20.46	9.67	46.41	30.13	63.86	53.86	-17.45	-23.73	Pass
4	0.2460	30.88	18.36	9.67	40.55	28.03	61.89	51.89	-21.34	-23.86	Pass
5	0.5900	33.78	22.88	9.69	43.47	32.57	56.00	46.00	-12.53	-13.43	Pass
6	9.4620	23.11	16.69	9.94	33.05	26.63	60.00	50.00	-26.95	-23.37	Pass

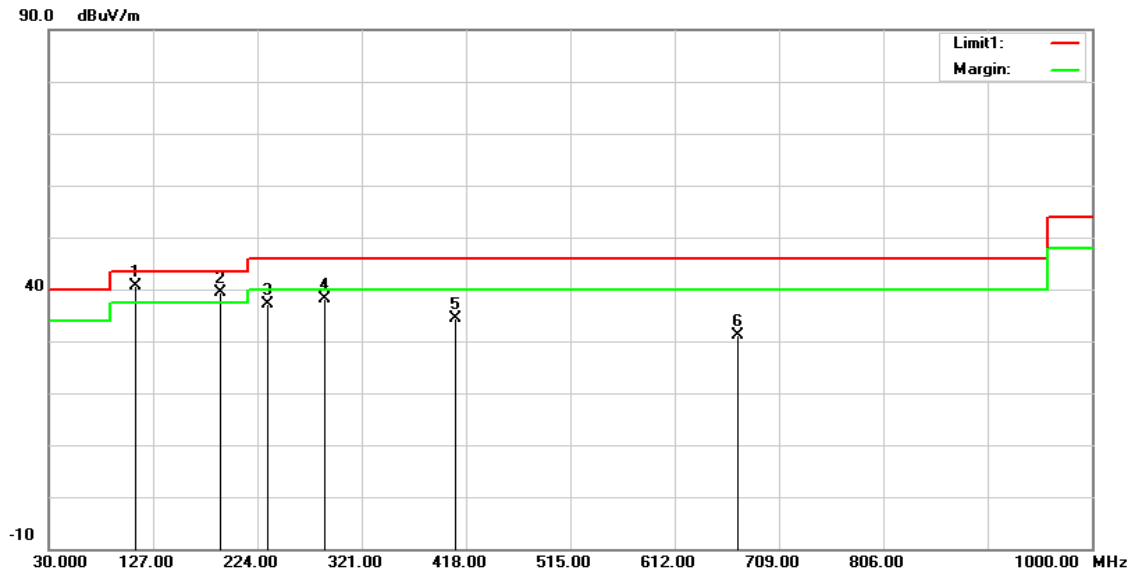
Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

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

Annex B. Radiated Emission Measurement

Below 1 GHz

Standard:	FCC Part 15.247	Test Distance:	3m
Frequency:	2437 MHz		
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	110.5100	49.93	-9.18	40.75	43.50	-2.75	QP
2	189.0800	46.69	-7.30	39.39	43.50	-4.11	QP
3	233.7000	43.93	-6.68	37.25	46.00	-8.75	QP
4	287.0500	42.69	-4.52	38.17	46.00	-7.83	QP
5	408.3000	36.27	-1.85	34.42	46.00	-11.58	QP
6	670.2000	27.76	3.33	31.09	46.00	-14.91	QP

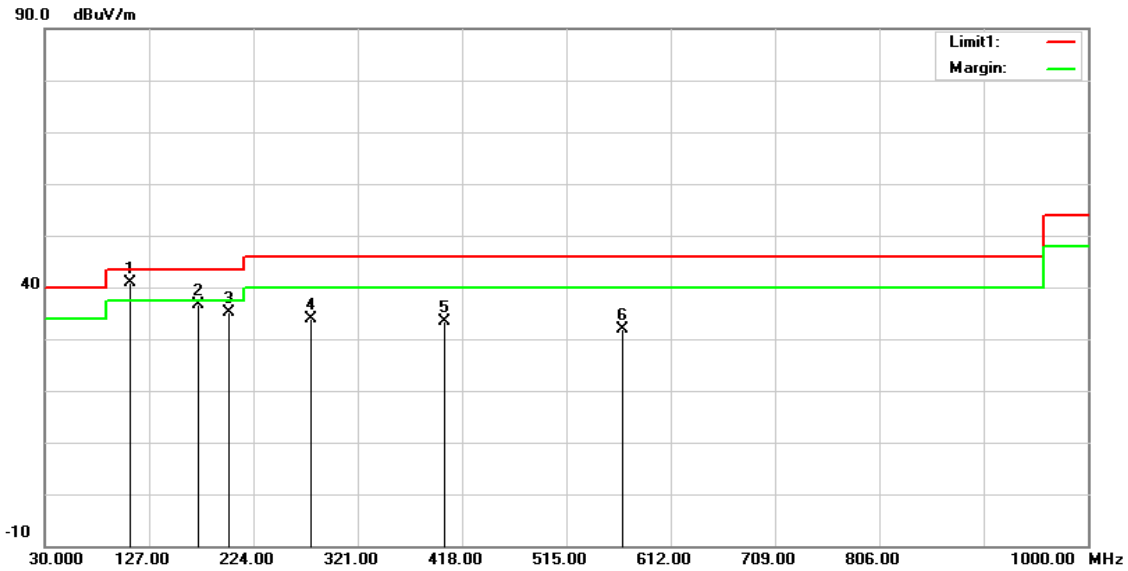
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: 40.75 =-9.18+49.93.

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 15.247	Test Distance:	3m
Frequency:	2437 MHz		
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	109.5400	50.19	-9.29	40.90	43.50	-2.60	QP
2	172.5900	42.62	-6.00	36.62	43.50	-6.88	QP
3	201.6900	42.98	-7.79	35.19	43.50	-8.31	QP
4	277.3500	38.73	-4.81	33.92	46.00	-12.08	QP
5	401.5100	35.34	-2.05	33.29	46.00	-12.71	QP
6	567.3800	30.38	1.55	31.93	46.00	-14.07	QP

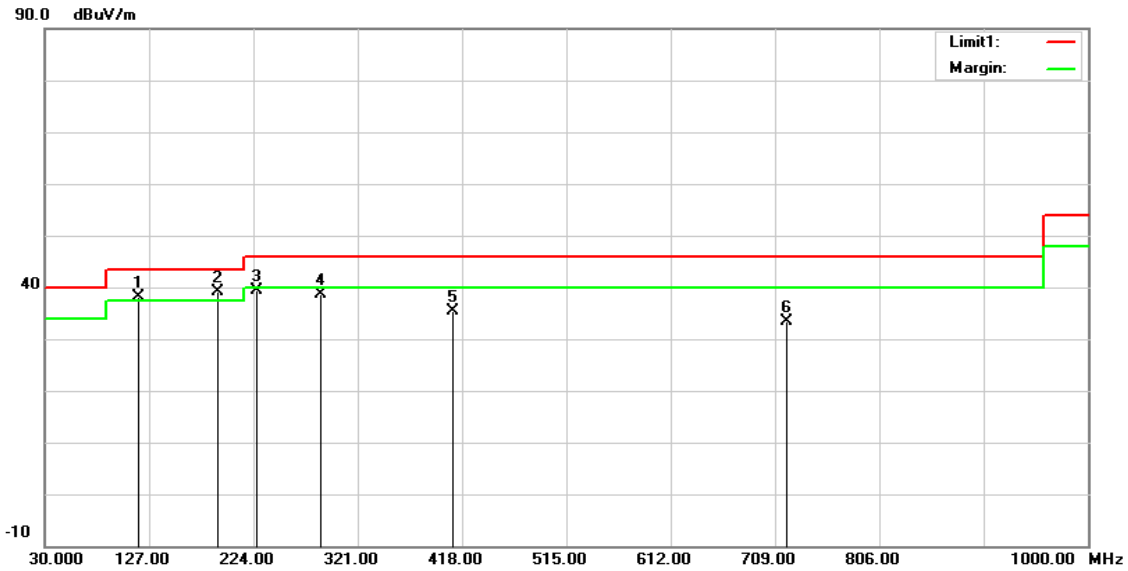
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: 40.90 =-9.29+50.19.

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 15.247	Test Distance:	3m
Frequency:	2437 MHz		
Mode:	Mode 6		
Ant.Polar.:	Horizontal		



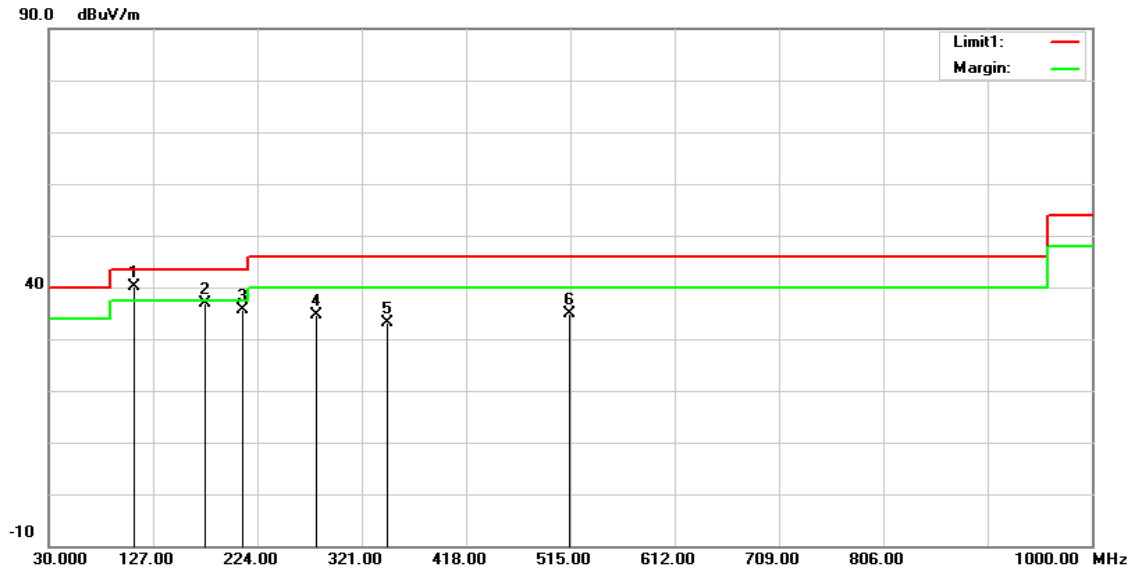
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	117.3000	46.67	-8.66	38.01	43.50	-5.49	QP
2	191.0200	46.41	-7.39	39.02	43.50	-4.48	QP
3	226.9100	46.33	-7.03	39.30	46.00	-6.70	QP
4	287.0500	43.03	-4.52	38.51	46.00	-7.49	QP
5	409.2700	37.11	-1.83	35.28	46.00	-10.72	QP
6	719.6700	29.05	4.43	33.48	46.00	-12.52	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 15.247	Test Distance:	3m
Frequency:	2437 MHz		
Mode:	Mode 6		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	109.5400	49.36	-9.29	40.07	43.50	-3.43	QP
2	175.5000	43.08	-6.23	36.85	43.50	-6.65	QP
3	210.4200	43.20	-7.65	35.55	43.50	-7.95	QP
4	278.3200	39.37	-4.77	34.60	46.00	-11.40	QP
5	344.2800	36.57	-3.49	33.08	46.00	-12.92	QP
6	514.0300	34.79	0.19	34.98	46.00	-11.02	QP

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

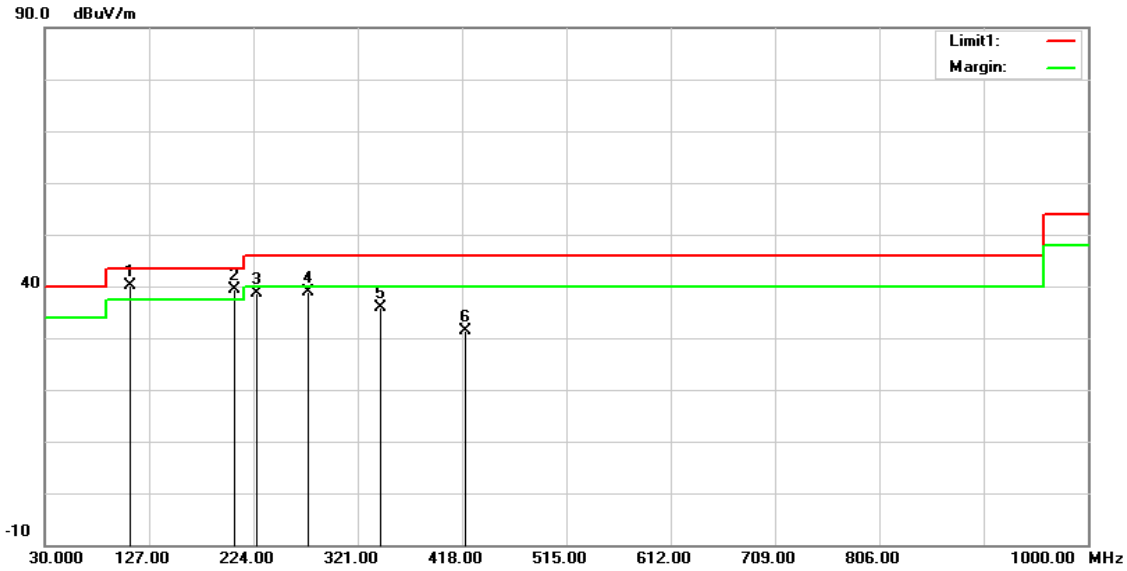
2.Correction factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) – Pre-Amplifier gain (dB).

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

Beamforming on

Below 1 GHz

Standard:	FCC Part 15.247	Test Distance:	3m
Frequency:	2437 MHz		
Mode:	Mode 4		
Ant.Polar.:	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	109.5400	49.51	-9.29	40.22	43.50	-3.28	QP
2	206.5400	47.22	-7.72	39.50	43.50	-4.00	QP
3	226.9100	45.78	-7.03	38.75	46.00	-7.25	QP
4	275.4100	43.80	-4.88	38.92	46.00	-7.08	QP
5	342.3400	39.35	-3.53	35.82	46.00	-10.18	QP
6	420.9100	32.86	-1.51	31.35	46.00	-14.65	QP

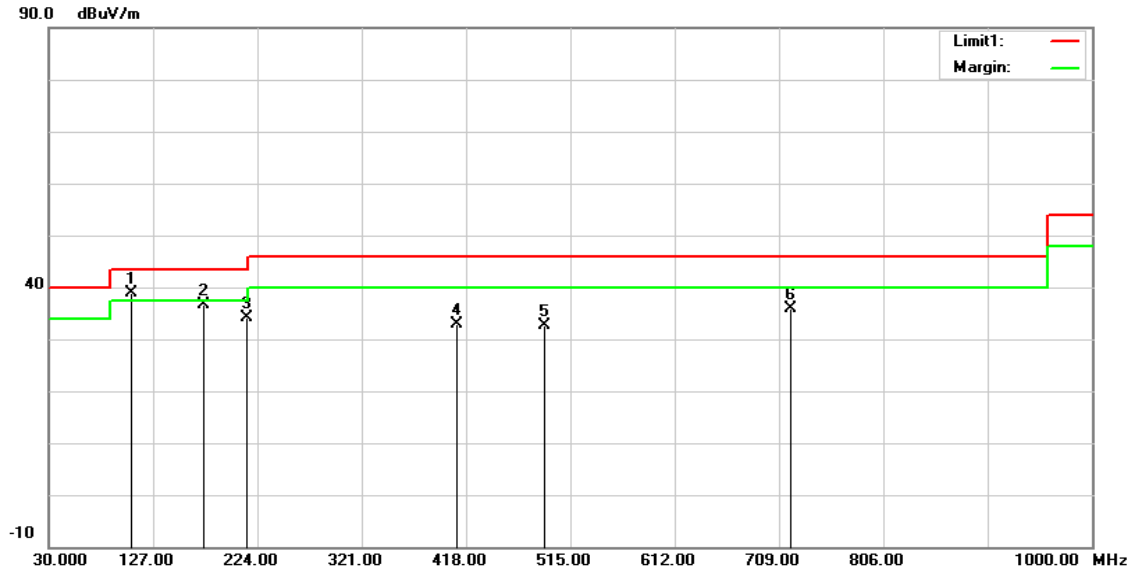
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: 40.22 = -9.29+49.51.

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 15.247	Test Distance:	3m
Frequency:	2437 MHz		
Mode:	Mode 4		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	106.6300	48.51	-9.74	38.77	43.50	-4.73	QP
2	174.5300	42.89	-6.16	36.73	43.50	-6.77	QP
3	214.3000	41.58	-7.44	34.14	43.50	-9.36	QP
4	409.2700	34.81	-1.83	32.98	46.00	-13.02	QP
5	490.7500	32.92	-0.24	32.68	46.00	-13.32	QP
6	719.6700	31.50	4.43	35.93	46.00	-10.07	QP

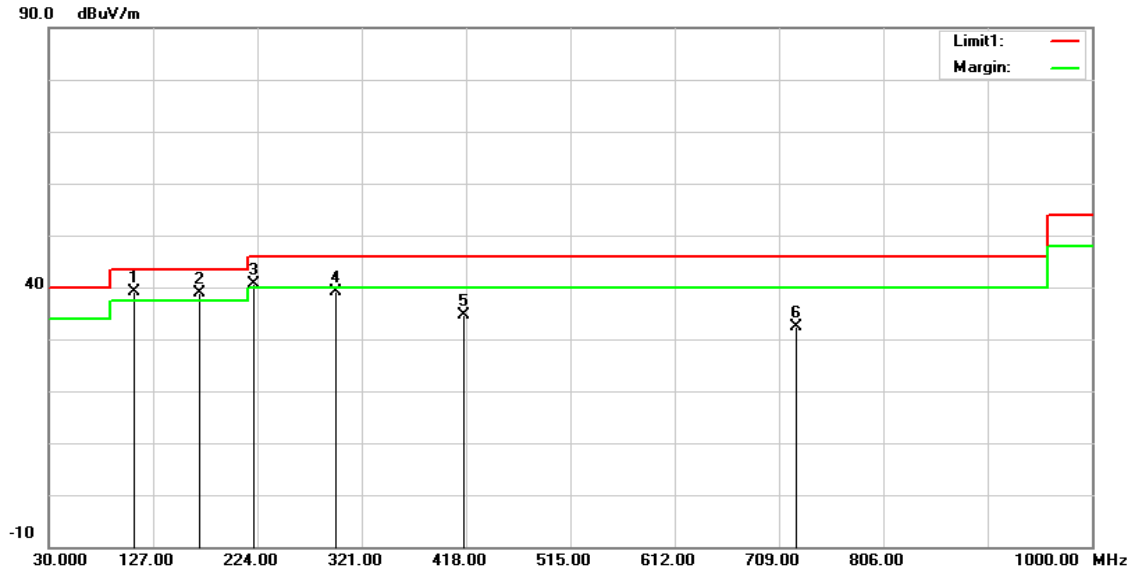
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example: 38.77=-9.74+48.51.

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 15.247	Test Distance:	3m
Frequency:	2437 MHz		
Mode:	Mode 6		
Ant.Polar.:	Horizontal		



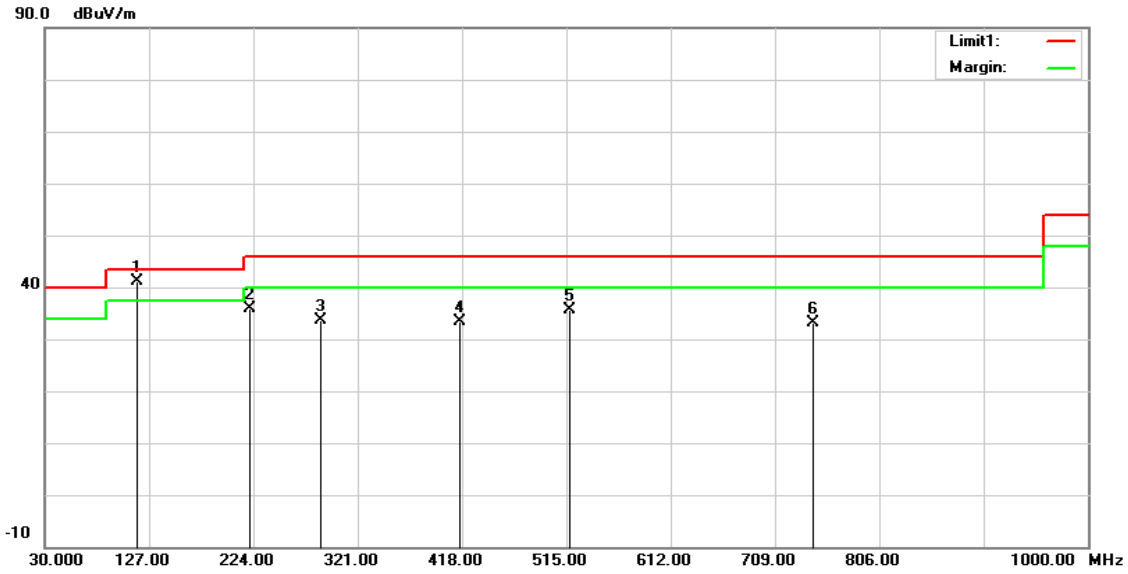
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	109.5400	48.52	-9.29	39.23	43.50	-4.27	QP
2	169.6800	44.73	-5.78	38.95	43.50	-4.55	QP
3	221.0900	47.85	-7.12	40.73	46.00	-5.27	QP
4	296.7500	43.52	-4.29	39.23	46.00	-6.77	QP
5	416.0600	36.19	-1.64	34.55	46.00	-11.45	QP
6	724.5200	27.81	4.56	32.37	46.00	-13.63	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 15.247	Test Distance:	3m
Frequency:	2437 MHz		
Mode:	Mode 6		
Ant.Polar.:	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	116.3300	49.78	-8.74	41.04	43.50	-2.46	QP
2	221.0900	42.93	-7.12	35.81	46.00	-10.19	QP
3	287.0500	38.24	-4.52	33.72	46.00	-12.28	QP
4	416.0600	34.93	-1.64	33.29	46.00	-12.71	QP
5	517.9100	35.34	0.28	35.62	46.00	-10.38	QP
6	743.9200	27.98	5.05	33.03	46.00	-12.97	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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