

## RF Test Report

Applicant : Emplus Technologies, Inc  
Product Type : 4x4 AX Dual-band AP  
Trade Name : emplus  
Model Number : WAP380-C  
Applicable Standard : FCC 47 CFR PART 15 SUBPART C  
ANSI C63.10:2013  
Received Date : Oct. 12, 2020  
Test Period : Oct. 22 ~ Oct. 31, 2020  
Issued Date : Nov. 25, 2020

### Issued by

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  
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.
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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	Nov. 06, 2020	Initial Issue	Tobey Cheng
01	Nov. 25, 2020	Update chapter 2 (P.7)	Tobey Cheng

## Verification of Compliance

Applicant : Emplus Technologies, Inc

Product Type : 4x4 AX Dual-band AP

Trade Name : emplus

Model Number : WAP380-C



FCC ID : 2AL6XWAP380-C

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,  
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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)

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# 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, C2PC 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	Emplus Technologies, Inc Bld B, 10F, No.209, Sec.1, Nangang Rd., Taipei City, Taiwan			
Manufacturer	Emplus Technologies., Inc. 10F., Building B, No.209, Sec. 1, Nangang Rd., Nangang Dist., Taipei City 115, Taiwan (R.O.C.)			
Product Type	4x4 AX Dual-band AP			
Trade Name	emplus			
Model Number	WAP380-C			
FCC ID	2AL6XWAP380-C			
Class II 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 °C			



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



### 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:

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

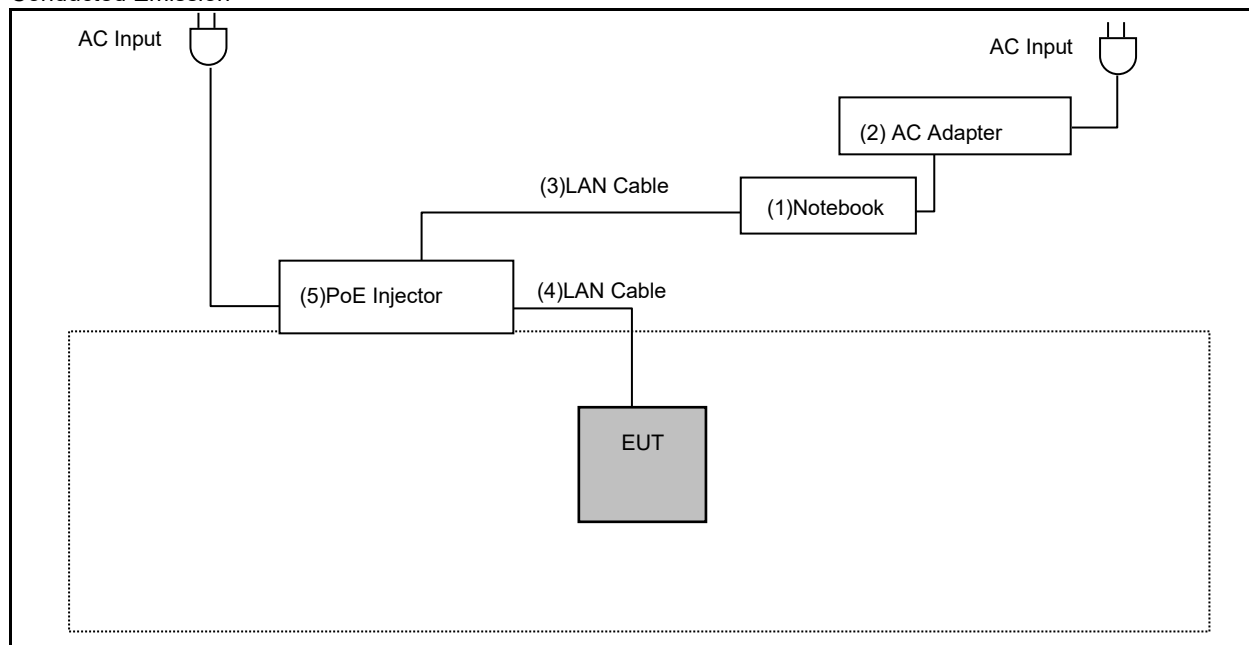
### 3.2. EUT Test Step

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.

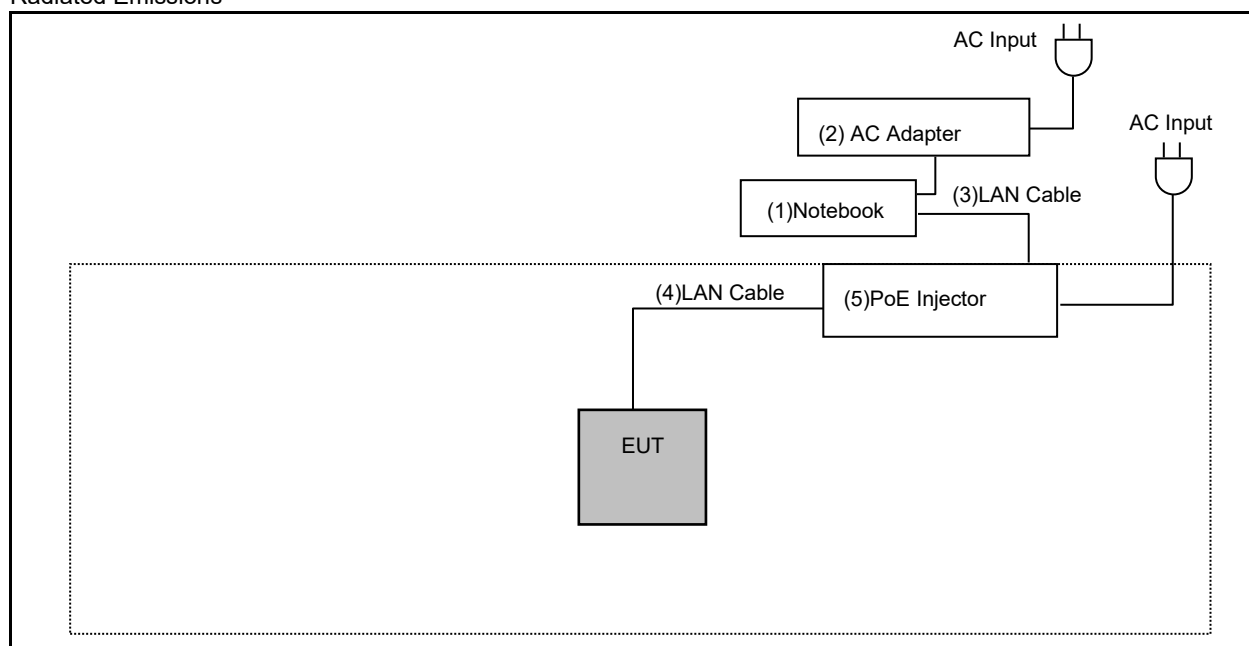
Measurement Software			
No.	Description	Software	Version
1	Conducted Emission	EZ EMC	1.1.4.3
2	Radiated Emission	EZ EMC	1.1.4.4

### 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	48GBD72	---
(2)	AC Adapter	DELL	HA65NM130	---	INPUT : 100-240 VAC, 50/60 Hz, 1.7 A OUTPUT : 19.5 VDC, 3.34 A Non-Shielded, 1.7 m
(3)	LAN Cable	WINKEY ENTERPRISE CO., LTD.	CY-SZ-141224	---	---
(4)	LAN Cable	HUAWEI	UL2464	---	---
(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. 30, 2020

Testing Engineer: Paul Chiu

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 ~ Oct. 31, 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	01146	7/3/2020	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

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

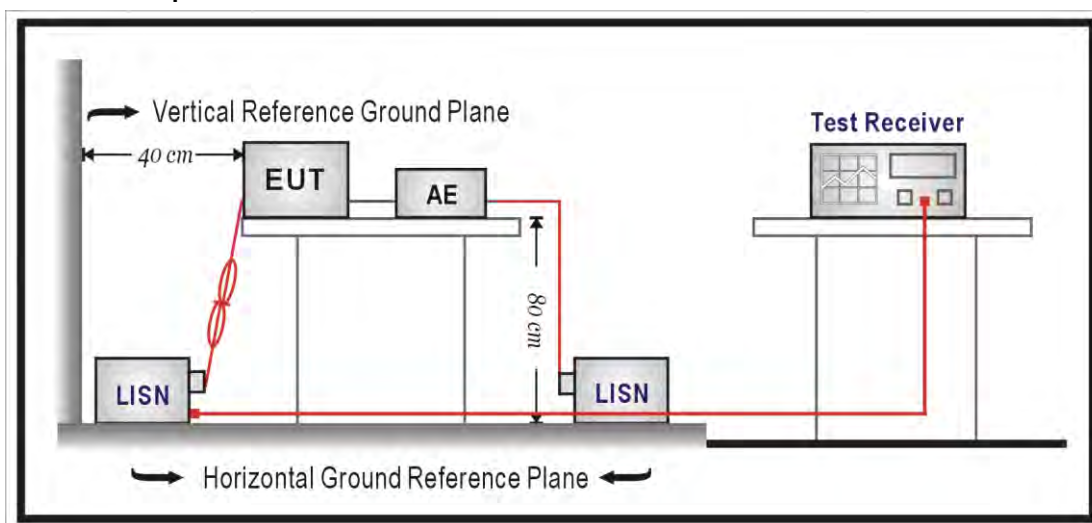
## 4 Measurement Procedure

### 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  $50\ \Omega // 50\ \mu\text{H}$  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  $\Omega$  ports of the LISN shall be resistively terminated into 50  $\Omega$  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

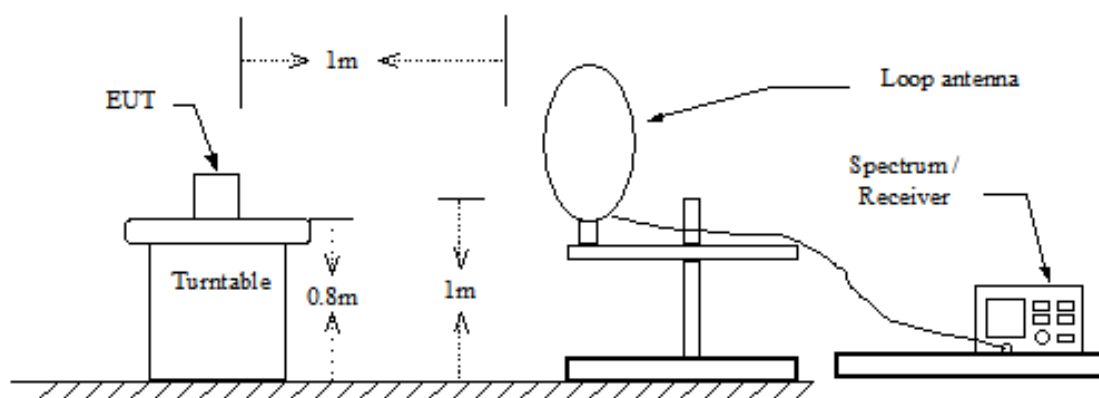
According to §15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

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

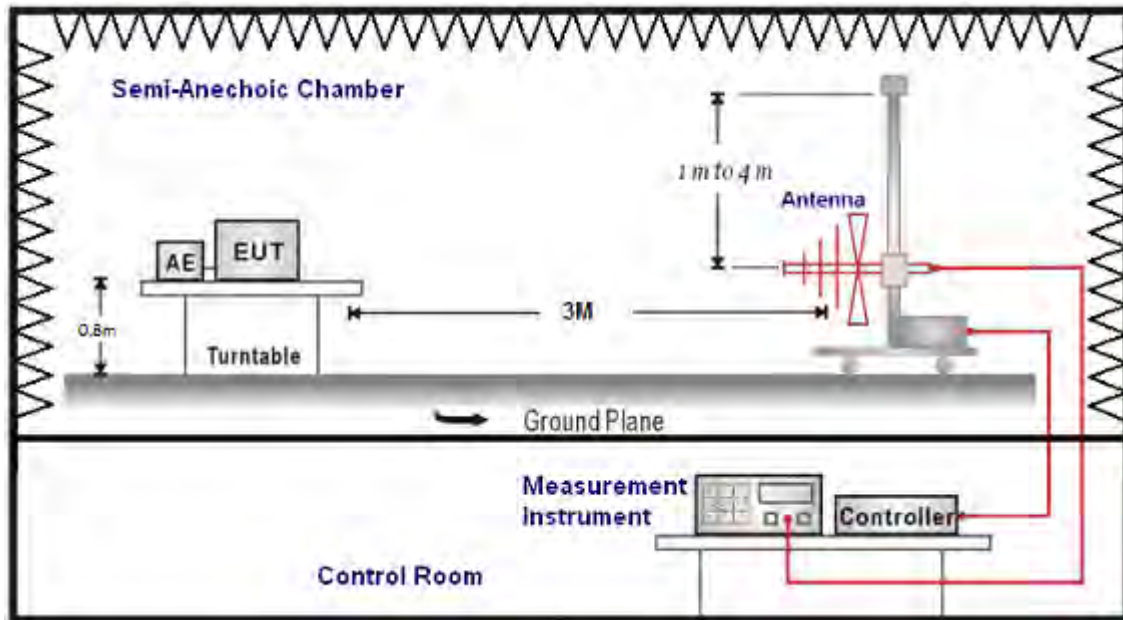
### ■ Setup

9 kHz ~ 30 MHz

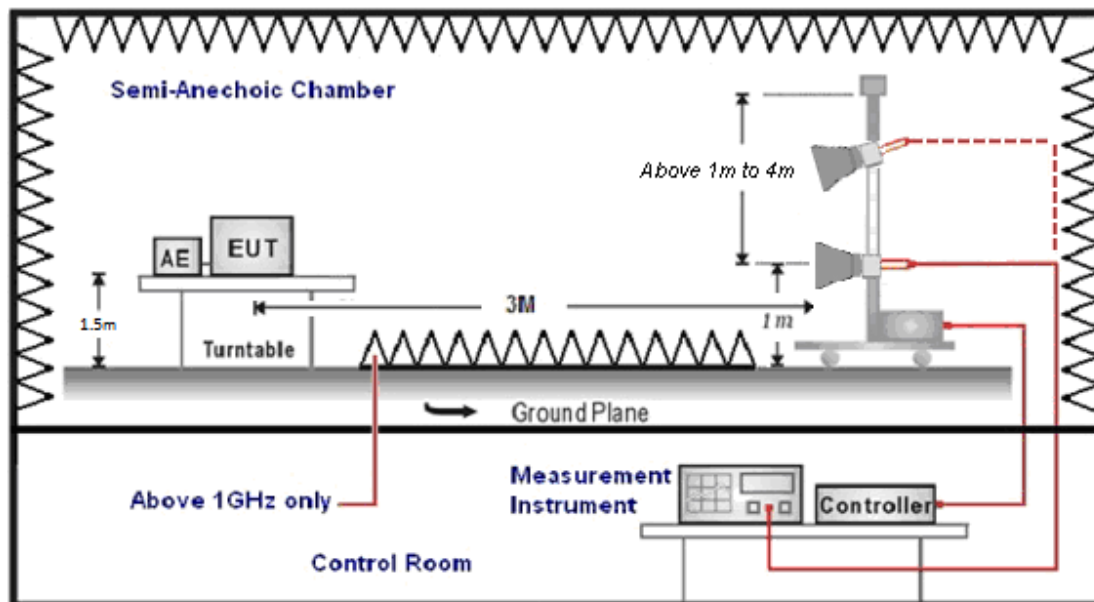




Below 1 GHz



Above 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, 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 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 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 volts per meter (dBuV/m).

The actual field 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.

$$(1) \text{ Amplitude (dBuV/m) = FI (dBuV) + AF (dBuV) + CL (dBuV) - Gain (dB)}$$

FI= Reading of the field intensity.

AF= Antenna factor.

CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

$$(2) \text{ Actual Amplitude (dBuV/m) = Amplitude (dBuV) - Dis(dB)}$$

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

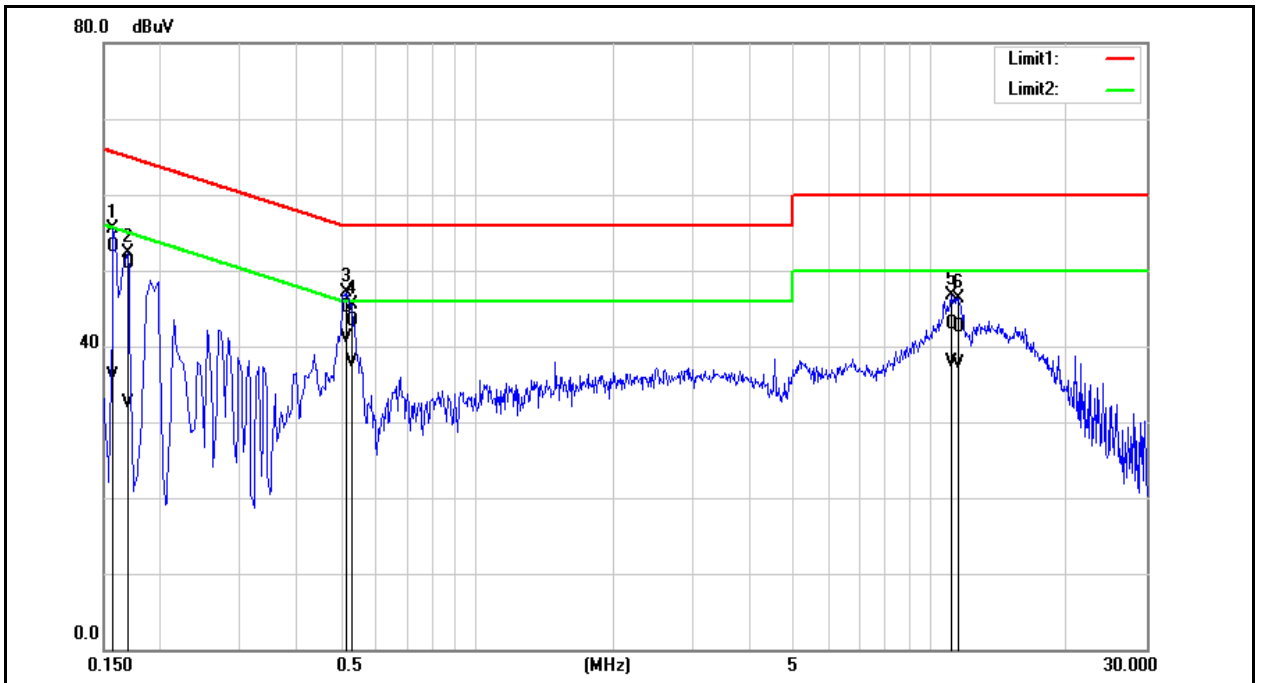
(b) For spurious frequency : Spurious emission limits = fundamental emission limit /10

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		
Description:			

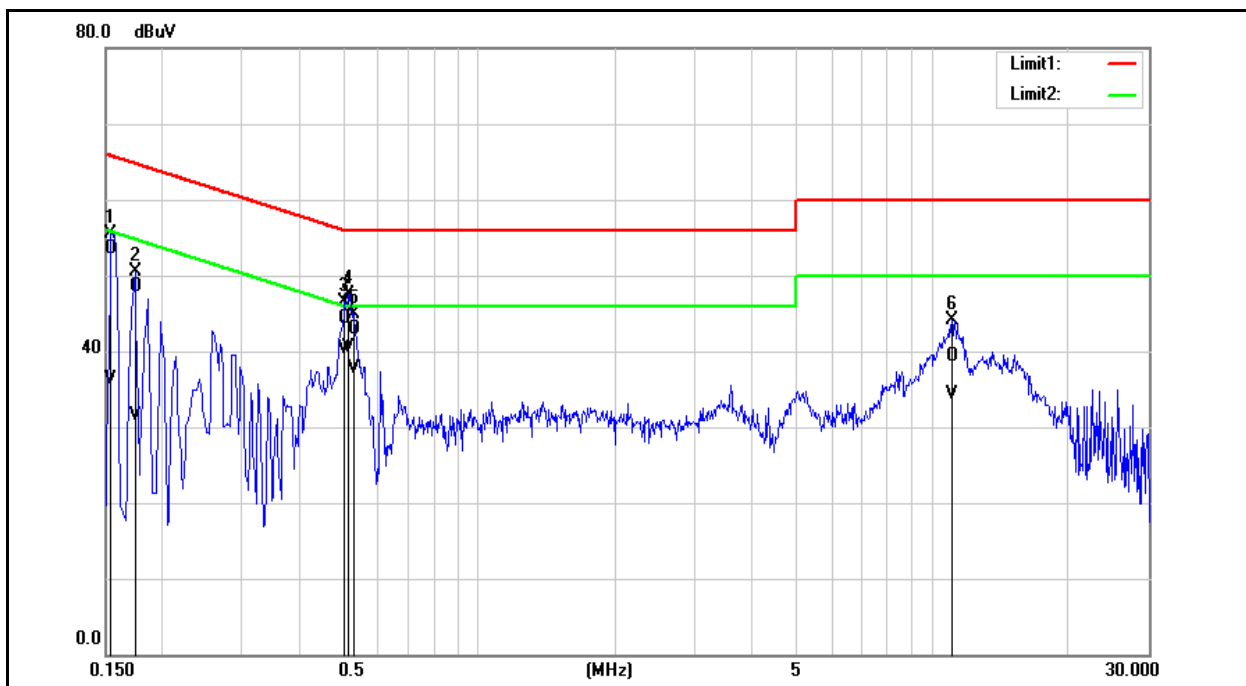


No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1580	43.48	26.50	9.70	53.18	36.20	65.57	55.57	-12.39	-19.37	Pass
2	0.1700	41.27	22.81	9.70	50.97	32.51	64.96	54.96	-13.99	-22.45	Pass
3	0.5140	35.37	31.30	9.71	45.08	41.01	56.00	46.00	-10.92	-4.99	Pass
4	0.5300	33.63	28.26	9.71	43.34	37.97	56.00	46.00	-12.66	-8.03	Pass
5	11.1140	32.95	27.92	9.91	42.86	37.83	60.00	50.00	-17.14	-12.17	Pass
6	11.5220	32.65	27.80	9.91	42.56	37.71	60.00	50.00	-17.44	-12.29	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		
Description:			



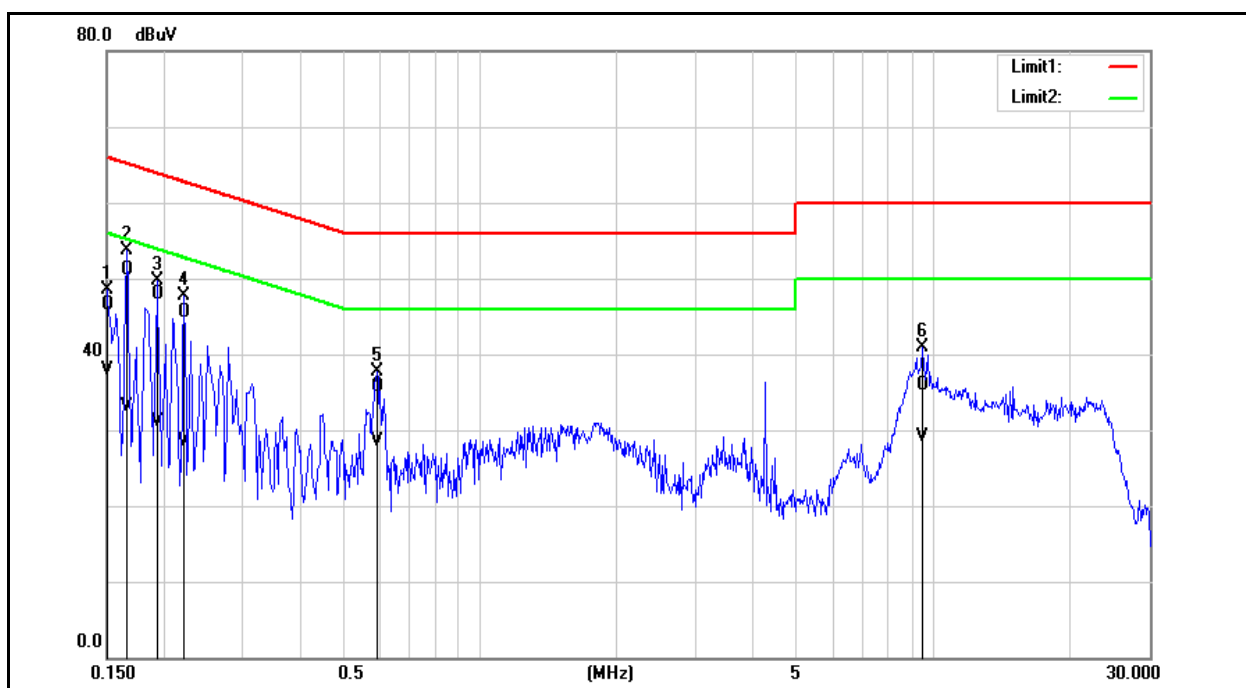
No.	Frequency (MHz)	QP reading (dBuV)	AVG reading (dBuV)	Correction factor (dB)	QP result (dBuV)	AVG result (dBuV)	QP limit (dBuV)	AVG limit (dBuV)	QP margin (dB)	AVG margin (dB)	Remark
1	0.1540	43.84	26.64	9.69	53.53	36.33	65.78	55.78	-12.25	-19.45	Pass
2	0.1740	38.82	21.73	9.69	48.51	31.42	64.77	54.77	-16.26	-23.35	Pass
3	0.5060	34.66	30.56	9.70	44.36	40.26	56.00	46.00	-11.64	-5.74	Pass
4	0.5180	36.17	30.90	9.70	45.87	40.60	56.00	46.00	-10.13	-5.40	Pass
5	0.5300	33.27	28.08	9.70	42.97	37.78	56.00	46.00	-13.03	-8.22	Pass
6	11.0740	29.36	24.36	9.91	39.27	34.27	60.00	50.00	-20.73	-15.73	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

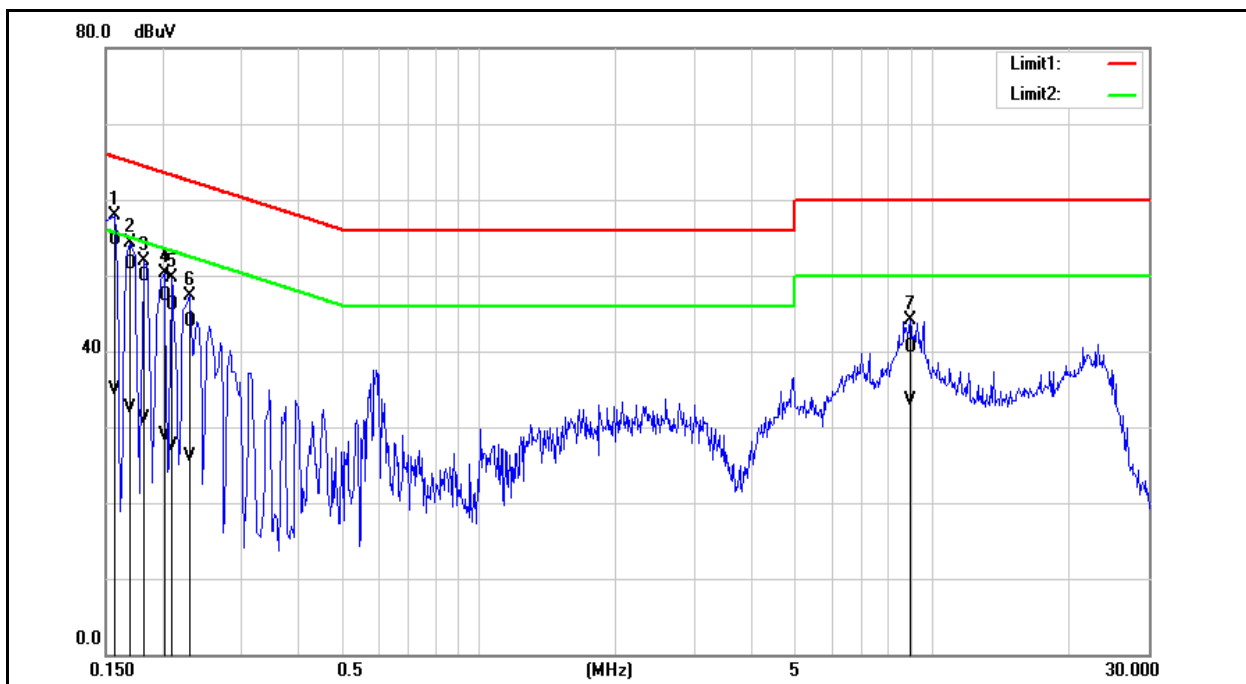
Standard:	FCC Part 15.247	Line:	L1
Test item:	Conducted Emission	Power:	AC 120 V/60 Hz
Mode:	Mode 1		
Description:			



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	0.1500	36.86	28.22	9.70	46.56	37.92	66.00	56.00	-19.44	-18.08	Pass
2	0.1660	41.34	23.42	9.70	51.04	33.12	65.16	55.16	-14.12	-22.04	Pass
3	0.1940	38.16	21.37	9.70	47.86	31.07	63.86	53.86	-16.00	-22.79	Pass
4	0.2220	35.75	18.81	9.70	45.45	28.51	62.74	52.74	-17.29	-24.23	Pass
5	0.5940	26.03	18.74	9.71	35.74	28.45	56.00	46.00	-20.26	-17.55	Pass
6	9.4620	25.98	19.16	9.87	35.85	29.03	60.00	50.00	-24.15	-20.97	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		
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	0.1580	44.99	25.14	9.69	54.68	34.83	65.57	55.57	-10.89	-20.74	Pass
2	0.1700	41.86	22.91	9.69	51.55	32.60	64.96	54.96	-13.41	-22.36	Pass
3	0.1820	40.25	21.50	9.69	49.94	31.19	64.39	54.39	-14.45	-23.20	Pass
4	0.2020	37.52	19.25	9.69	47.21	28.94	63.53	53.53	-16.32	-24.59	Pass
5	0.2100	36.33	17.84	9.69	46.02	27.53	63.21	53.21	-17.19	-25.68	Pass
6	0.2300	34.22	16.43	9.69	43.91	26.12	62.45	52.45	-18.54	-26.33	Pass
7	8.9460	30.65	23.58	9.87	40.52	33.45	60.00	50.00	-19.48	-16.55	Pass

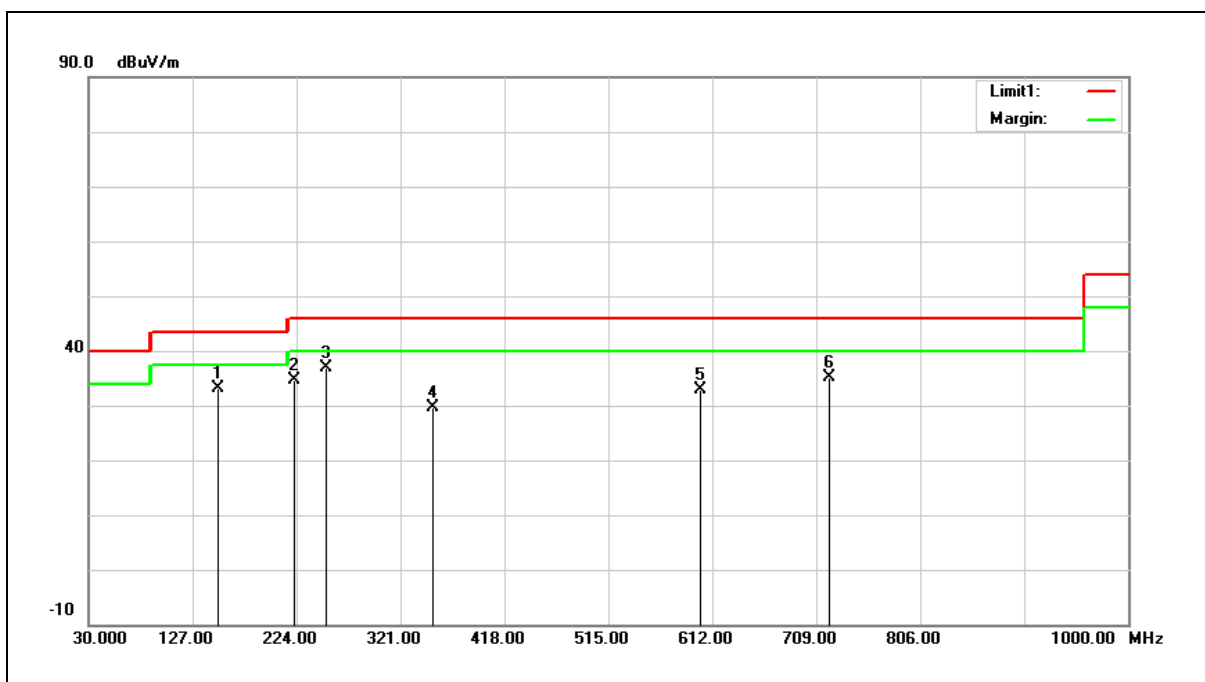
Note: 1. Result (dBuV) = Correction factor (dB) + Reading(dBuV).

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:	3 m
Test item:	Harmonic	Power:	
Frequency:	2437 MHz	Temp.(°C)/Hum.(%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	150.4002	39.59	-6.35	33.24	43.50	-10.26	QP
2	221.2812	42.73	-8.17	34.56	46.00	-11.44	QP
3	250.4104	43.71	-6.91	36.80	46.00	-9.20	QP
4	350.4202	33.95	-4.29	29.66	46.00	-16.34	QP
5	600.9307	31.62	1.20	32.82	46.00	-13.18	QP
6	721.3313	31.81	3.34	35.15	46.00	-10.85	QP

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

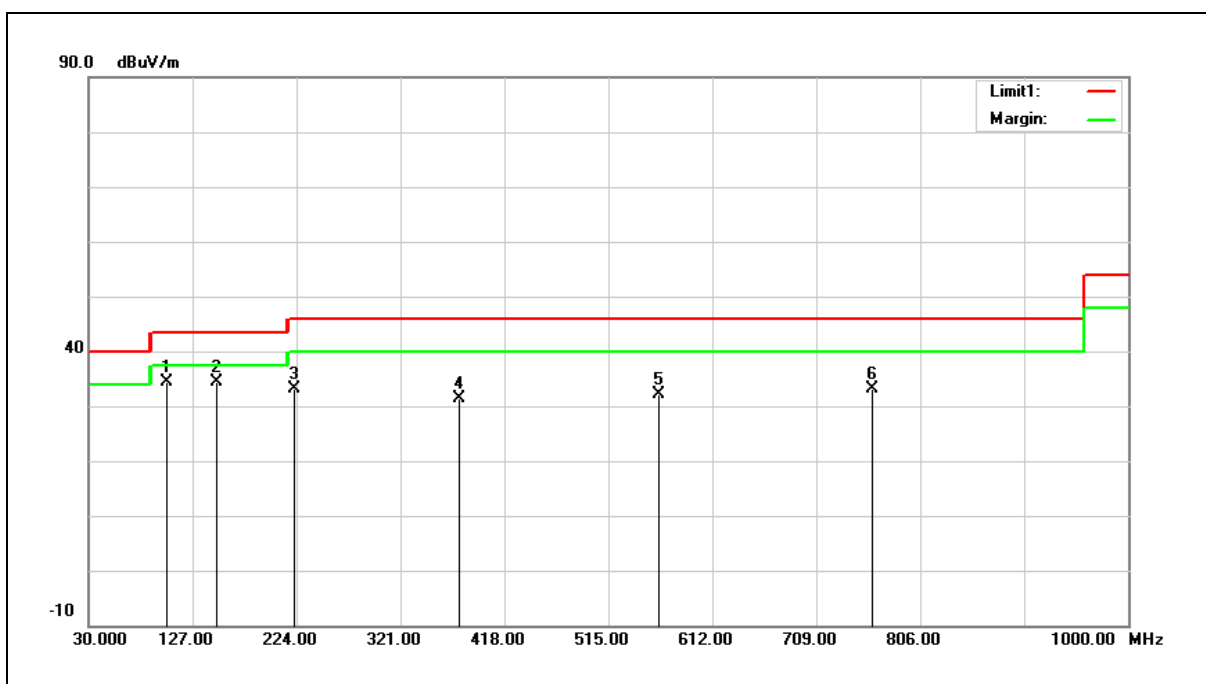
Example: 33.24 = -6.35 + 39.59

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:	3 m
Test item:	Harmonic	Power:	
Frequency:	2437 MHz	Temp.(°C)/Hum.(%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	101.8520	45.51	-11.24	34.27	43.50	-9.23	QP
2	148.4584	40.89	-6.39	34.50	43.50	-9.00	QP
3	221.2812	41.38	-8.17	33.21	46.00	-12.79	QP
4	374.6947	35.15	-3.71	31.44	46.00	-14.56	QP
5	561.1210	32.02	0.14	32.16	46.00	-13.84	QP
6	761.1411	29.06	4.15	33.21	46.00	-12.79	QP

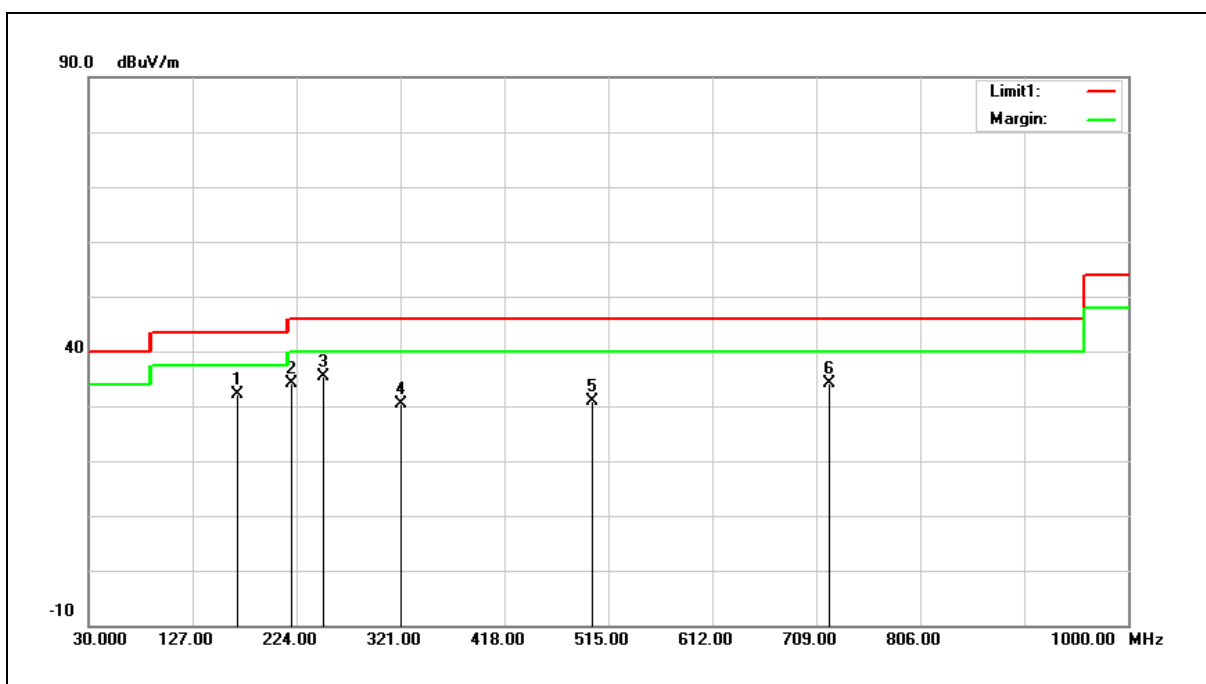
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

Example:  $34.27 = -11.24 + 45.51$

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:	3 m
Test item:	Harmonic	Power:	
Frequency:	2437 MHz	Temp.(°C)/Hum.(%RH):	
Mode:	Mode 6		
Ant.Polar.:	Horizontal		



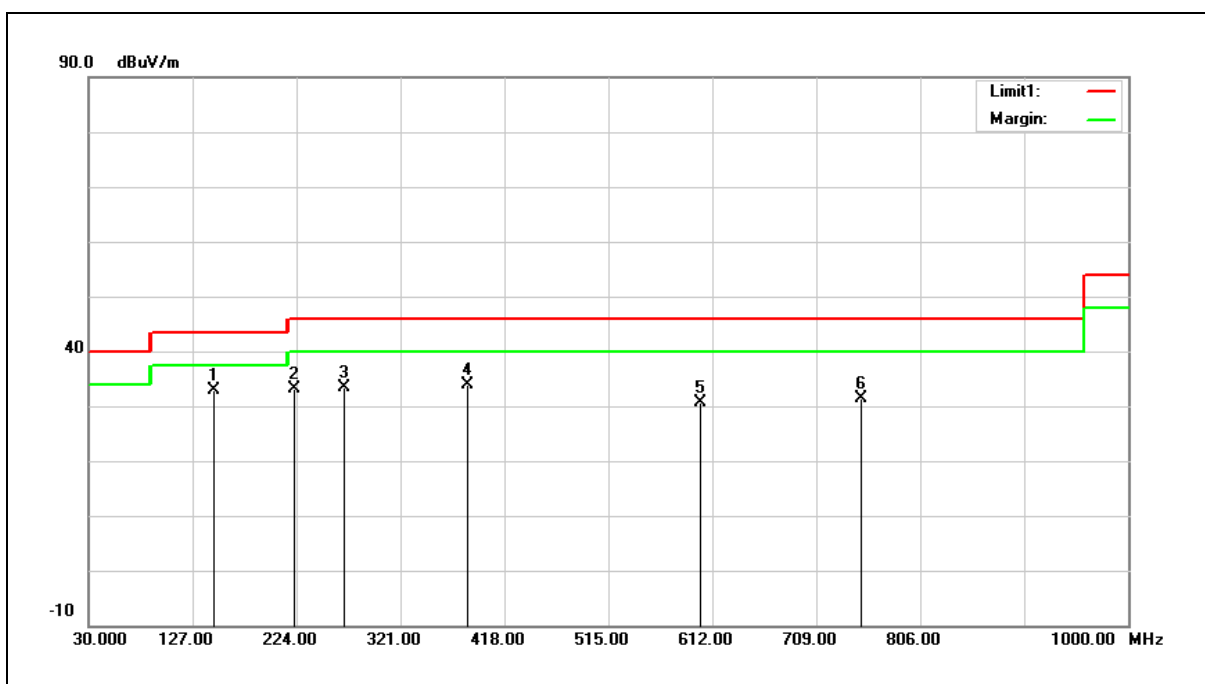
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	167.8780	38.37	-6.32	32.05	43.50	-11.45	QP
2	218.3684	42.35	-8.27	34.08	46.00	-11.92	QP
3	248.4685	42.23	-6.95	35.28	46.00	-10.72	QP
4	320.3201	35.09	-4.83	30.26	46.00	-15.74	QP
5	498.9790	32.52	-1.54	30.98	46.00	-15.02	QP
6	721.3313	30.87	3.34	34.21	46.00	-11.79	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:	3 m
Test item:	Harmonic	Power:	
Frequency:	2437 MHz	Temp.(°C)/Hum.(%RH):	
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	146.5165	39.29	-6.42	32.87	43.50	-10.63	QP
2	221.2812	41.27	-8.17	33.10	46.00	-12.90	QP
3	267.8880	39.66	-6.27	33.39	46.00	-12.61	QP
4	383.4334	37.46	-3.49	33.97	46.00	-12.03	QP
5	600.9307	29.39	1.20	30.59	46.00	-15.41	QP
6	750.4605	27.30	4.01	31.31	46.00	-14.69	QP

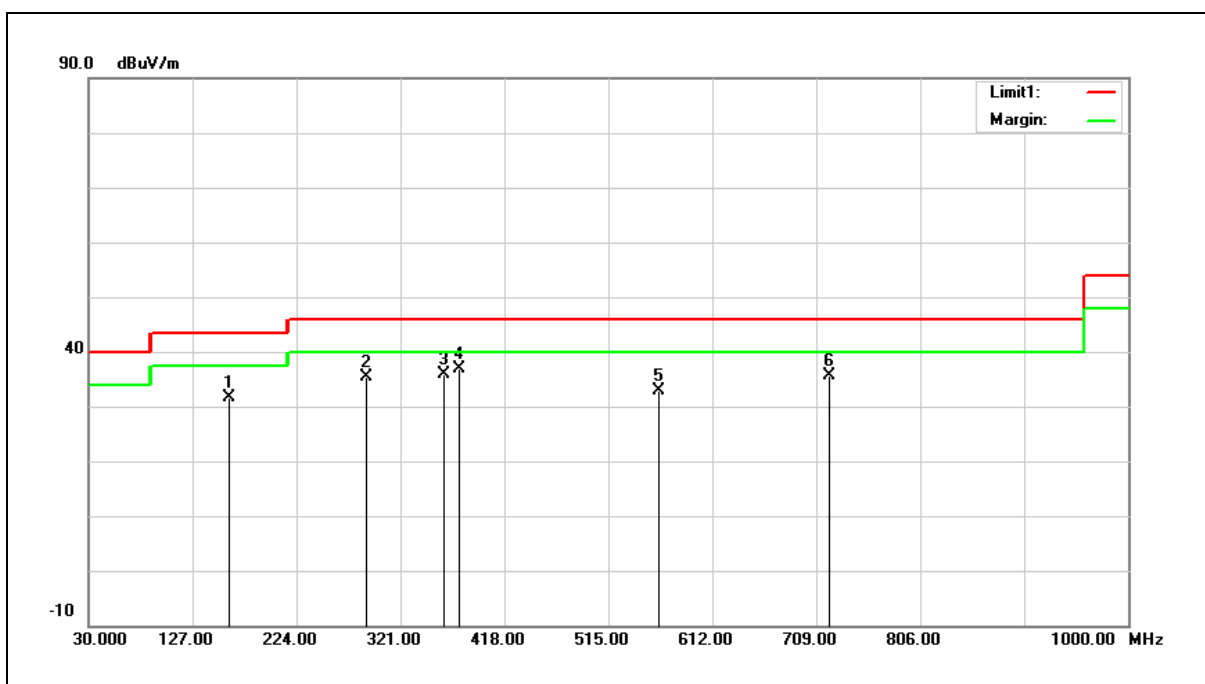
Note:1.Result (dBuV/m) = Correct Factor (dB/m) + Reading(dBuV).

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

Standard:	FCC Part 15.247	Test Distance:	3 m
Test item:	Harmonic	Power:	
Frequency:	2437 MHz	Temp.(°C)/Hum.(%RH):	
Mode:	Mode 4		
Ant.Polar.:	Horizontal		



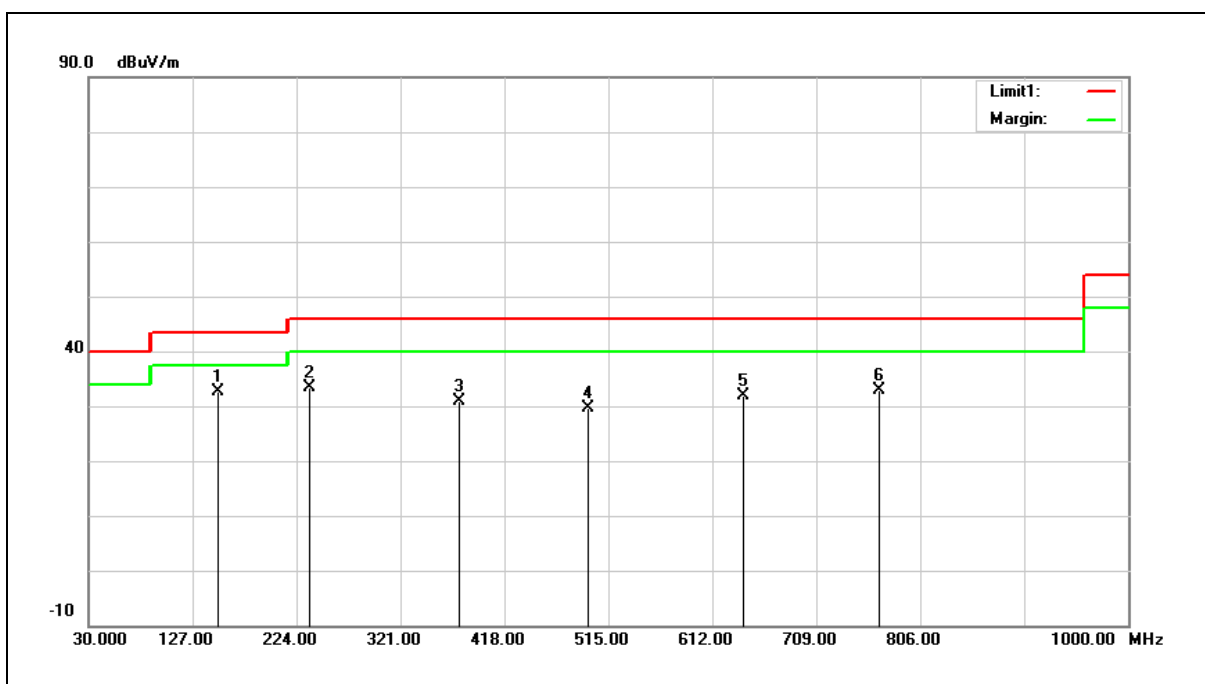
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	160.1100	37.55	-6.01	31.54	43.50	-11.96	QP
2	288.2783	40.90	-5.48	35.42	46.00	-10.58	QP
3	361.1010	39.90	-4.04	35.86	46.00	-10.14	QP
4	375.6656	40.67	-3.68	36.99	46.00	-9.01	QP
5	561.1210	32.68	0.14	32.82	46.00	-13.18	QP
6	721.3313	32.33	3.34	35.67	46.00	-10.33	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:	3 m
Test item:	Harmonic	Power:	
Frequency:	2437 MHz	Temp.(°C)/Hum.(%RH):	
Mode:	Mode 4		
Ant.Polar.:	Vertical		



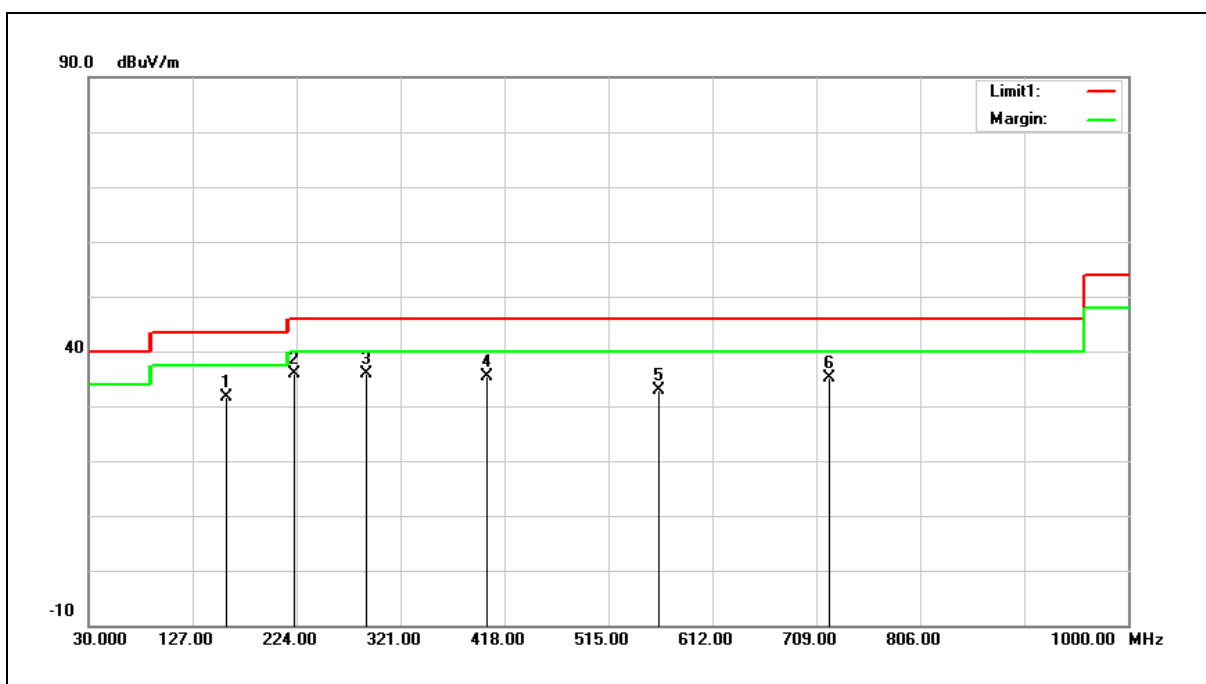
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	150.4002	39.00	-6.35	32.65	43.50	-10.85	QP
2	235.8456	40.72	-7.38	33.34	46.00	-12.66	QP
3	375.6656	34.49	-3.68	30.81	46.00	-15.19	QP
4	495.0951	31.13	-1.55	29.58	46.00	-16.42	QP
5	640.7405	30.10	1.70	31.80	46.00	-14.20	QP
6	767.9380	28.69	4.23	32.92	46.00	-13.08	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:	3 m
Test item:	Harmonic	Power:	
Frequency:	2437 MHz	Temp.(°C)/Hum.(%RH):	
Mode:	Mode 6		
Ant.Polar.:	Horizontal		



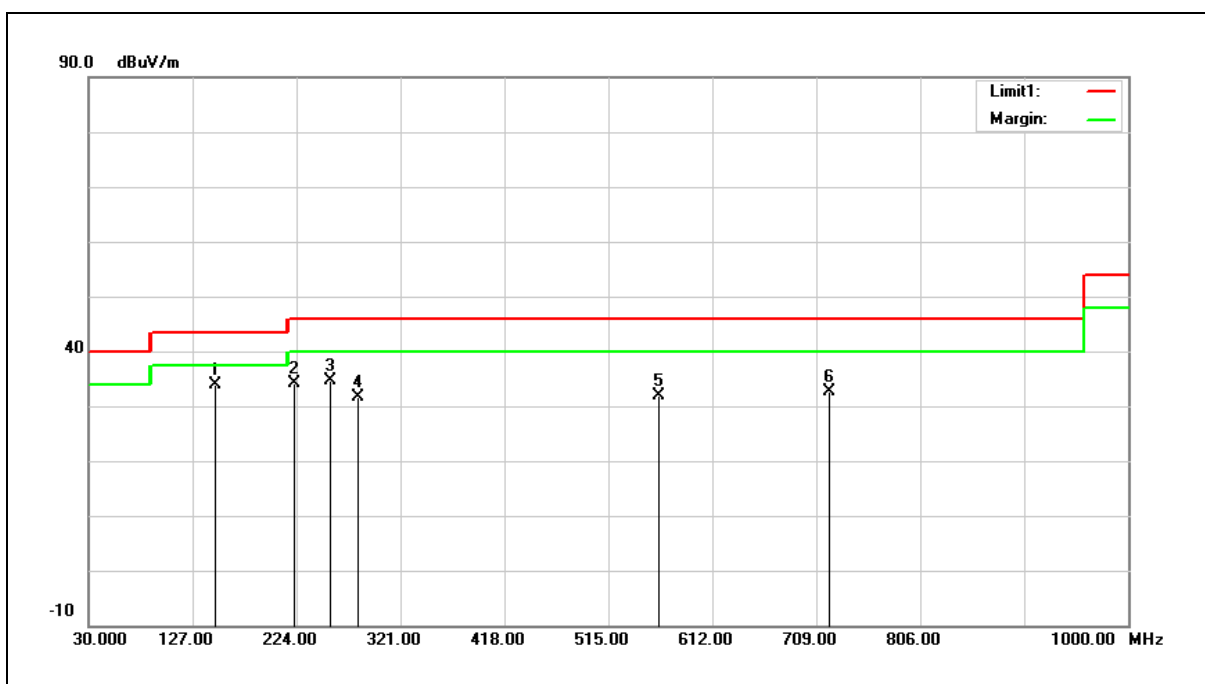
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	157.1972	37.75	-6.10	31.65	43.50	-11.85	QP
2	221.2812	43.94	-8.17	35.77	46.00	-10.23	QP
3	288.2783	41.39	-5.48	35.91	46.00	-10.09	QP
4	400.9110	38.41	-3.06	35.35	46.00	-10.65	QP
5	561.1210	32.63	0.14	32.77	46.00	-13.23	QP
6	721.3313	31.91	3.34	35.25	46.00	-10.75	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:	3 m
Test item:	Harmonic	Power:	
Frequency:	2437 MHz	Temp.(°C)/Hum.(%RH):	
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	147.4875	40.21	-6.41	33.80	43.50	-9.70	QP
2	221.2812	42.26	-8.17	34.09	46.00	-11.91	QP
3	255.2651	41.41	-6.84	34.57	46.00	-11.43	QP
4	280.5104	37.29	-5.67	31.62	46.00	-14.38	QP
5	561.1210	31.65	0.14	31.79	46.00	-14.21	QP
6	721.3313	29.17	3.34	32.51	46.00	-13.49	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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