RF TEST REPORT

Report No.:	SET2016-04445
Product Name:	Sitting Position – Sensitive Detector
FCC ID:	2AHINKD1
Model No. :	KD1
Applicant:	Shenzhen Kangkang Network Technology Inc.
Address:	Room 1007,Fangda Building,NO.12 Keji South Road,Nanshan District,Shenzhen P.R China
Dates of Testing:	03/18/2016 — 03/28/2016
Issued by:	CCIC-SET
Lab Location:	Building 28/29, East of Shigu, Xili Industrial Zone, Xili Road, Nanshan District, Shenzhen, Guangdong, China
	Tel: 86 755 26627338 **Fax:** 86 755 26627238

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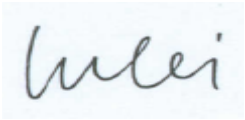
Test Report

Product Name ..... :	Sitting Position – Sensitive Detector
Trade Name ..... :	N/A
Brand Name ..... :	N/A
Applicant ..... :	Shenzhen Kangkang Network Technology Inc.
Applicant Address ..... :	Room 1007,Fangda Building,NO.12 Keji South Road,Nanshan District,Shenzhen P.R China
Manufacturer ..... :	Shenzhen Kangkang Network Technology Inc.
Manufacturer Address..... :	Room 1007,Fangda Building,NO.12 Keji South Road,Nanshan District,Shenzhen P.R China
Test Standards ..... :	47 CFR Part 15 Subpart C(Section 15.249)：Radio Frequency Devices ANSI C63.10:2009
Test Result ..... :	PASS
Tested by ..... :	 2016.03.29 Lu Lei，Test Engineer
Reviewed by..... :	 2016.03.29 Zhu Qi, Senior Engineer
Approved by..... :	 2016.03.29 Wu Li'an，Manager

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Change History		
Issue	Date	Reason for change
1.0	2016.03.29	First edition

1. GENERAL INFORMATION

1.1 EUT Description

EUT Type ..... : Sitting Position – Sensitive Detector
Hardware Version..... : v1.3
Software Version ..... : v1.0.1
Frequency Range..... : 2432MHz~2480MHz (at interval of 1MHz)
Number of channel..... : 49
Modulation Type ..... : MSK
Antenna Type ..... : PCB Antenna
Data Rate..... : 250bits/s
Antenna Gain ..... : 3dBi
Power supply..... : DC 3.7V

Note 1: For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

1.2 Support Equipment

AC adapter	
Model No.	FY1201500
I/p	100-240VAC～50/60Hz ,0.8A
O/p	12V⎓ Max 1.5A Max 18W

Intelligent desk lamp	
Model No.	KK001

1.3 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart C for the EUT FCC ID Certification:

No.	Identity	Document Title
1	47 CFR Part 15 Subpart C 2016	Radio Frequency Devices
2	ANSI C63.10 2009	American National Standard for Testing Unlicensed Wireless Devices

Test detailed items/section required by FCC rules and results are as below:

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliant
§15.207	Conduction Emission	Compliant
§15.215(c)	20 dB Occupied Bandwidth	Compliant
§15.249(a)	Field strength of the fundamental signal	Compliant
§15.249(a)/(d) §15.209	Radiated Spurious Emission	Compliant

NOTE：

"N/A" denotes test is not applicable in this test report.

1.4 Description of Test Mode

Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2432	26	2457
2	2433	27	2458
3	2434	28	2459
4	2435	29	2460
5	2436	30	2461
6	2437	31	2462
7	2438	32	2463
8	2439	33	2464
9	2440	34	2465
10	2441	35	2466
11	2442	36	2467
12	2443	37	2468
13	2444	38	2469
14	2445	39	2470
15	2446	40	2471
16	2447	41	2472
17	2448	42	2473
18	2449	43	2474
19	2450	44	2475
20	2451	45	2476
21	2452	46	2477
22	2453	47	2478
23	2454	48	2479
24	2455	49	2480
25	2456		

Frequency	Test channel
2432~2480MHz	1channel , 25 channel, 49channel

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	TX CH 1
Mode 2	TX CH 25
Mode 3	TX CH 49
Mode 4	Normal operating mode

For Conducted Emission	
Final Test Mode	Description
Mode 4	Normal operating mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	TX CH 1
Mode 2	TX CH 25
Mode 3	TX CH 49

Note1：The EUT was programmed to be in continuously transmitting mode and the transmit duty cycle is not less than 98%.
Note2: Fully-charged battery was used during test.

1.5 Uncertainty of Evaluation

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

Measurement	Frequency	Uncertainty
Conducted emissions	9kHz~30MHz	2.35dB
Radiated emissions	30MHz~1000MHz	2.45dB
	1G~18GHz	2.21dB
	18G~40GHz	1.96dB

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

1.6 Facilities and Accreditations

1.6.1 Facilities

CNAS-Lab Code: L1659

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. CCIC is a third party testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L1659. A 12.8*6.8*6.4 (m) fully anechoic chamber was used for the radiated spurious emissions test.

FCC-Registration No.: 406086

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 406086, valid time is until October 28, 2017.

IC-Registration No.: 11185A-1

CCIC Southern Electronic Product Testing (Shenzhen) Co., Ltd. EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 11185A-1 on July. 15, 2013, valid time is until July. 15, 2016.

1.6.2 Test Environment Conditions

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

Temperature (℃):	15℃ - 35℃
Relative Humidity (%):	30% -60%
Atmospheric Pressure (kPa):	86KPa-106KPa

2. 47 CFR PART 15C REQUIREMENTS

2.1 Antenna requirement

2.1.1 Applicable Standard

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

2.1.2 Antenna Information

Antenna Category: Integral antenna

Antenna General Information:

No.	EUT Model	Ant. Cat.	Gain(dBi)
1	Sitting Position-Sensitive Detector	PCB antenna	3

2.1.3 Result: comply

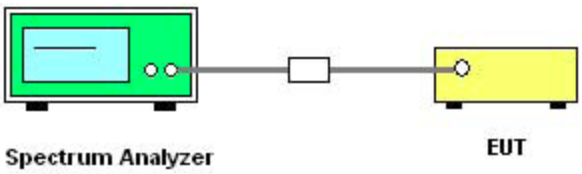
The EUT has a permanently antenna which complies with the Part 15.203. Please refer to the EUT internal photos.

2.2 20 dB Bandwidth Testing

2.2.1 Limit

Intentional radiators must be designed to ensure that the 20dB bandwidth of the emission in the specific band.

2.2.2 Test Description



(1) The transmitter output(antenna port) was connected to the spectrum analyzer in peak hold mode.

(2) The resolution bandwidth of 100 kHz and the video bandwidth of 300 kHz were used.

(3) Measured the spectrum width with power higher than 20dB below carrier.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	＞20dB Bandwidth
RBW	100 kHz
VBW	300 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

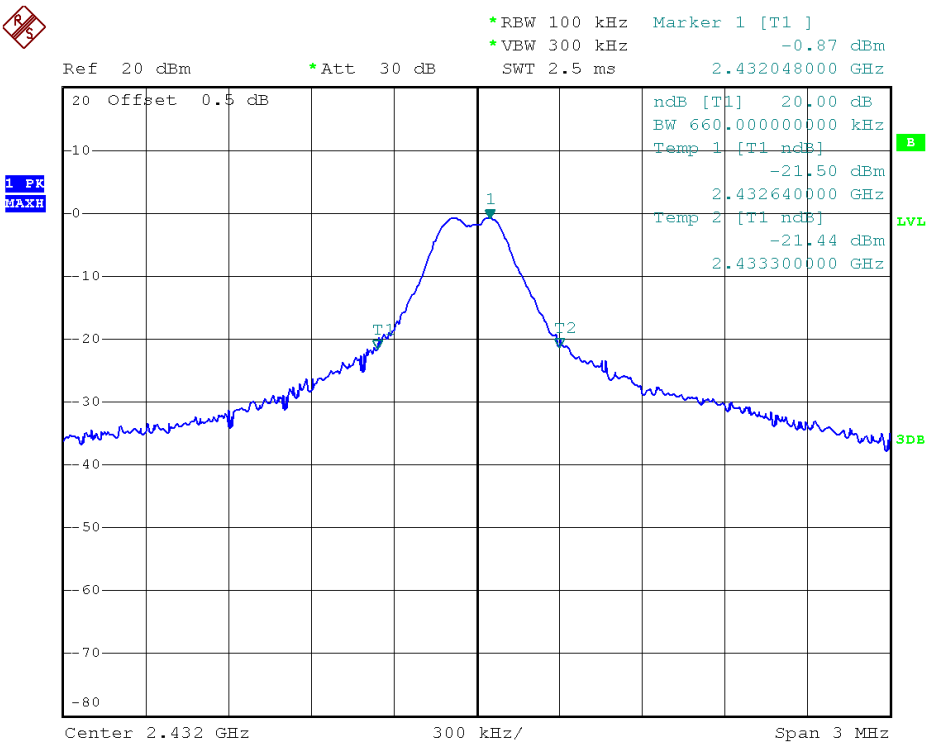
Equipments List:

Description	Manufacturer	Model	Serial No.	Cal. Date	Due Date
Spectrum Analyzer	R&S	FSP40	1164.4391.40	2015.07.07	2016.07.06
SMA Antenna Connector	ARTHUR-YANG	2244-N1TG1	N/A	N/A	N/A
Cable	CDS	79254	46107086	2015.06.02	2016.06.01

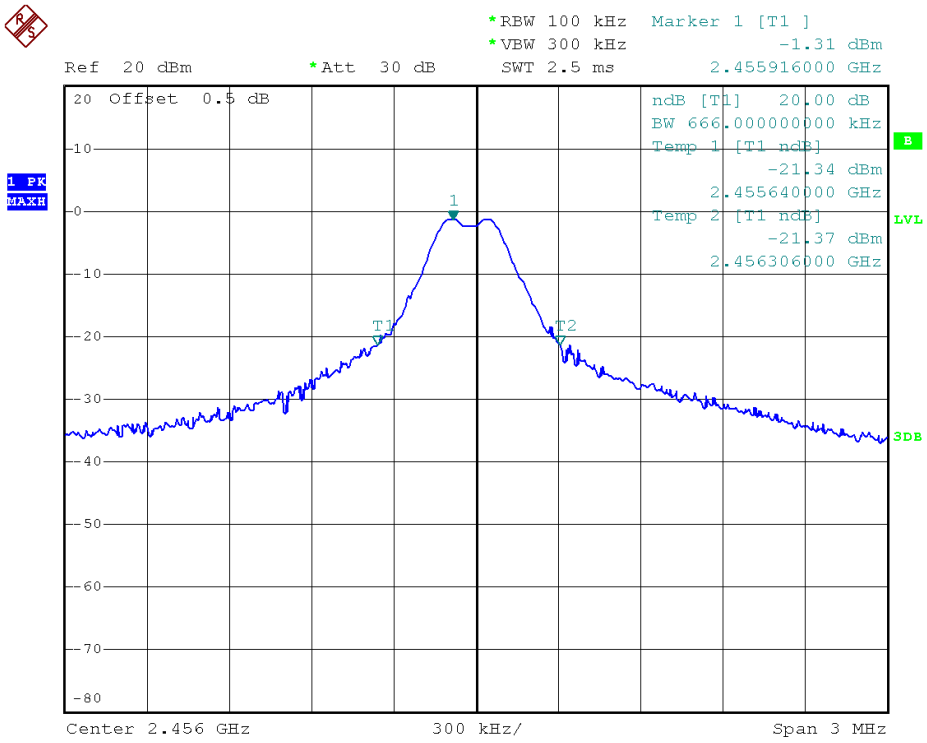
Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

2.2.3 Test Result

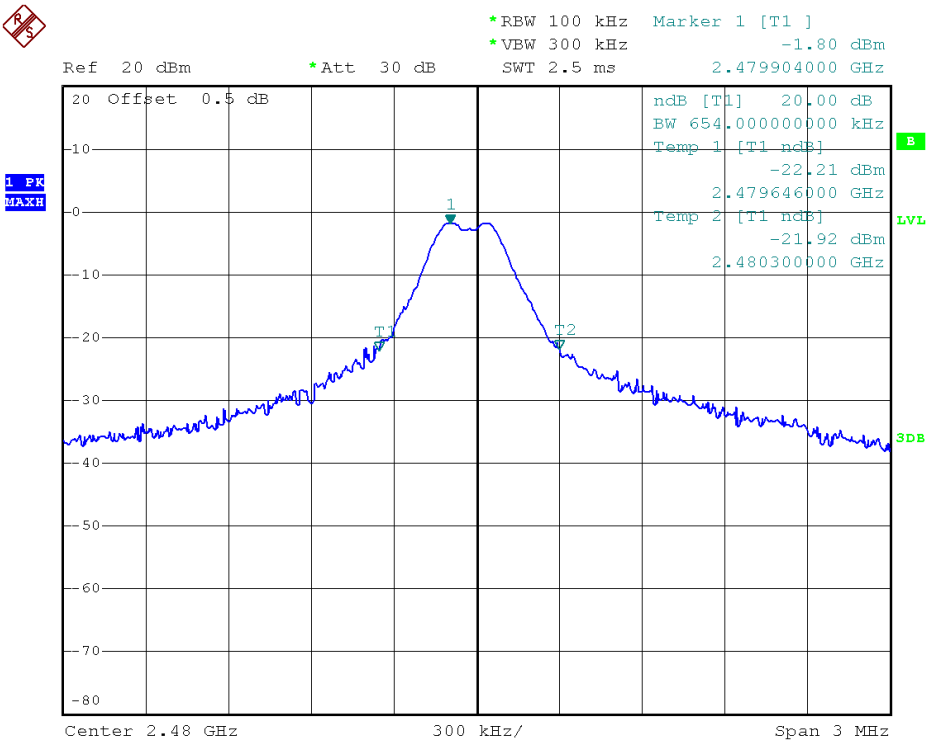
Frequency	20dB Bandwidth（MHz）
2432MHz	0.660
2456MHz	0.666
2480MHz	0.654



2432MHz 20 dB Bandwidth



2456MHz 20 dB Bandwidth



2480MHz 20 dB Bandwidth

2.3 Conducted Emission

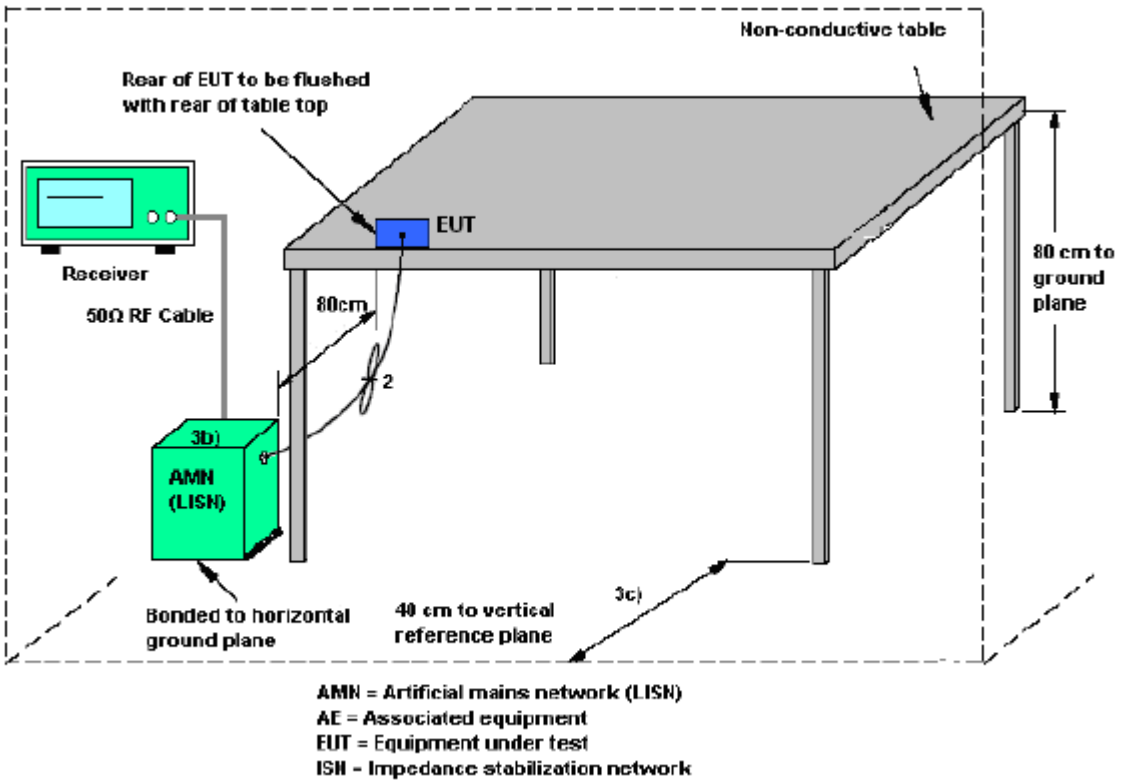
2.3.1 Requirement

According to FCC section 15.207, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency within the band 150kHz to 30MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:
(a) The lower limit shall apply at the band edges.
(b) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50MHz.

2.3.2 Test Description



Equipments List:

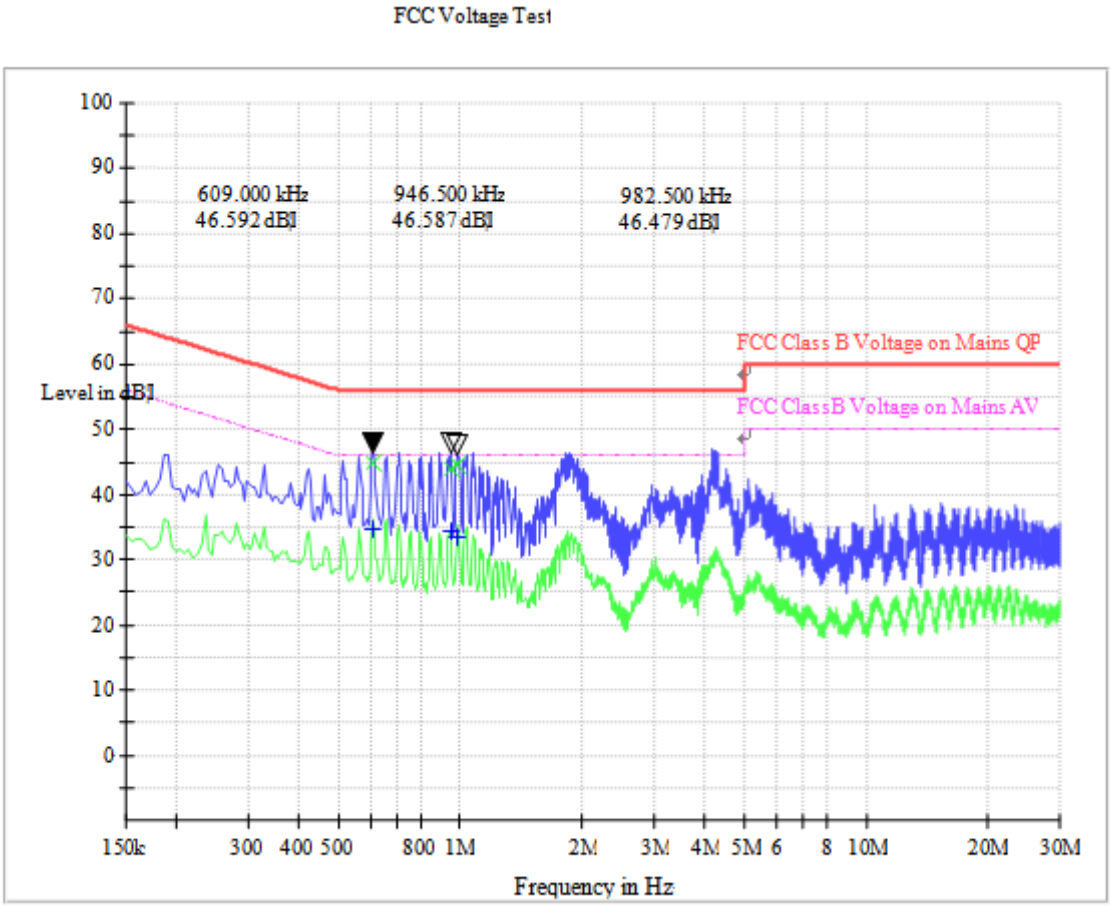
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due Date
Test Receiver	ROHDE&SCHWARZ	ESCS30	A0304260	2015.06.11	2016.06.10
LISN	ROHDE&SCHWARZ	ESH2-Z5	A0304221	2015.06.11	2016.06.10
Cable	H+S	CBL-26	N/A	2015.06.02	2016.06.01
Cable	H+S	CBL-26	N/A	2015.06.02	2016.06.01

2.3.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 micrometry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

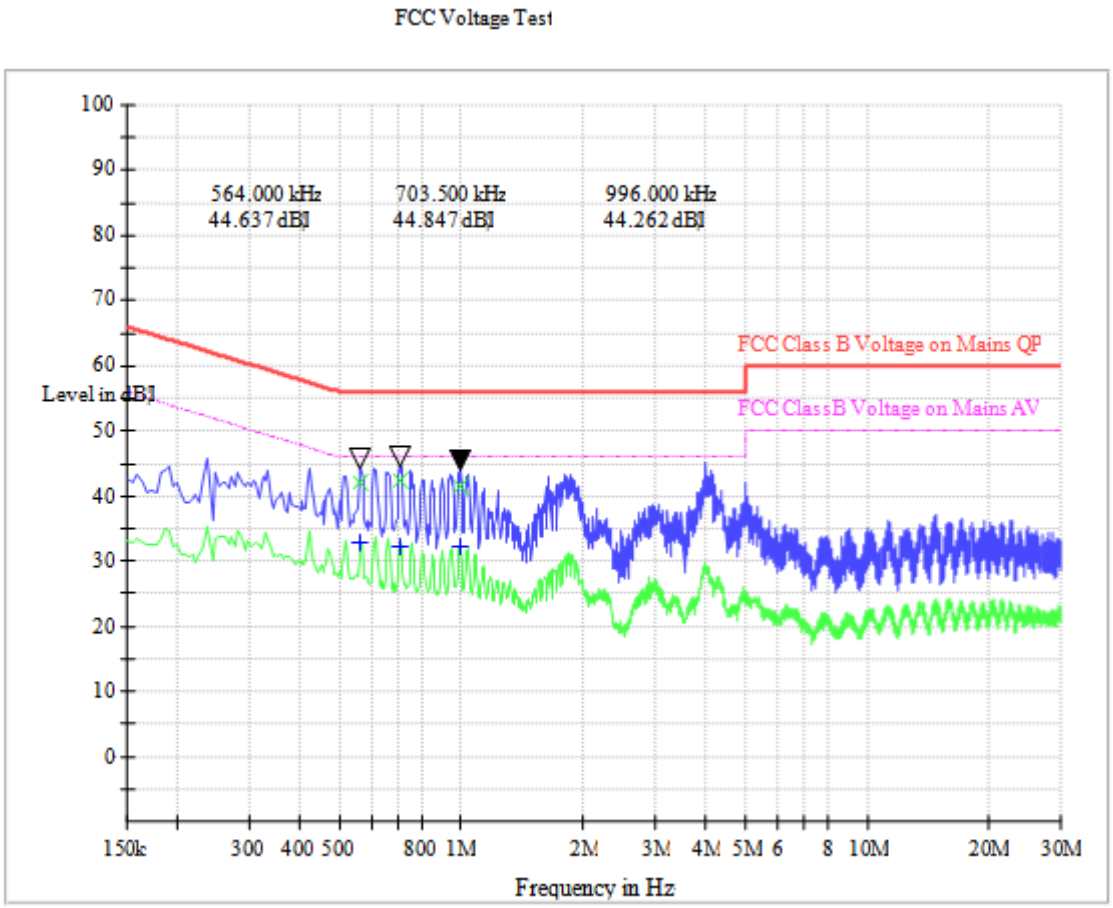
2.3.4 Test Result

Note：The power adapter support (100~240V AC, 50/60Hz), the EUT was tested at the (120V/60Hz).



(Plot A: L Phase)

Conducted Disturbance at Mains Terminals					
QP			AV		
Frequency (MHz)	Limits (dBµV)	Measurement Value (dBµV)	Frequency (MHz)	Limits (dBµV)	Measurement Value (dBµV)
0.609000	56.0	46.59	0.609000	46.0	35.65
0.946500	56.0	46.59	0.946500	46.0	34.59
0.982500	56.0	46.48	0.982500	46.0	33.46



(Plot B: N Phase)

Conducted Disturbance at Mains Terminals					
QP			**AV**		
Frequency (MHz)	**Limits (dBµV)**	**Measurement Value (dBµV)**	**Frequency (MHz)**	**Limits (dBµV)**	**Measurement Value (dBµV)**
0.564000	56.0	44.64	0.564000	46.0	33.70
0.703500	56.0	44.85	0.703500	46.0	33.30
0.996000	56.0	44.26	0.996000	46.0	33.35

2.4 Field Strength of Fundamental Emissions and Radiated Spurious Emission

2.4.1 Limits

The field strength measured at 3 meters shall not exceed the limits in the following table:

Fundamental Frequencies(MHz)	Field Strength(millivolts/m)	
	Fundamental	Harmonics
902~928	50	0.5
2400~2483.5	50	0.5
5725~5875	50	0.5

Note: The limits shown in the above table are based on measurements using an average detector, except for the fundamental emission in the frequency band 902~928MHz, which is based on measurements using a CISPR quasi-peak detector.

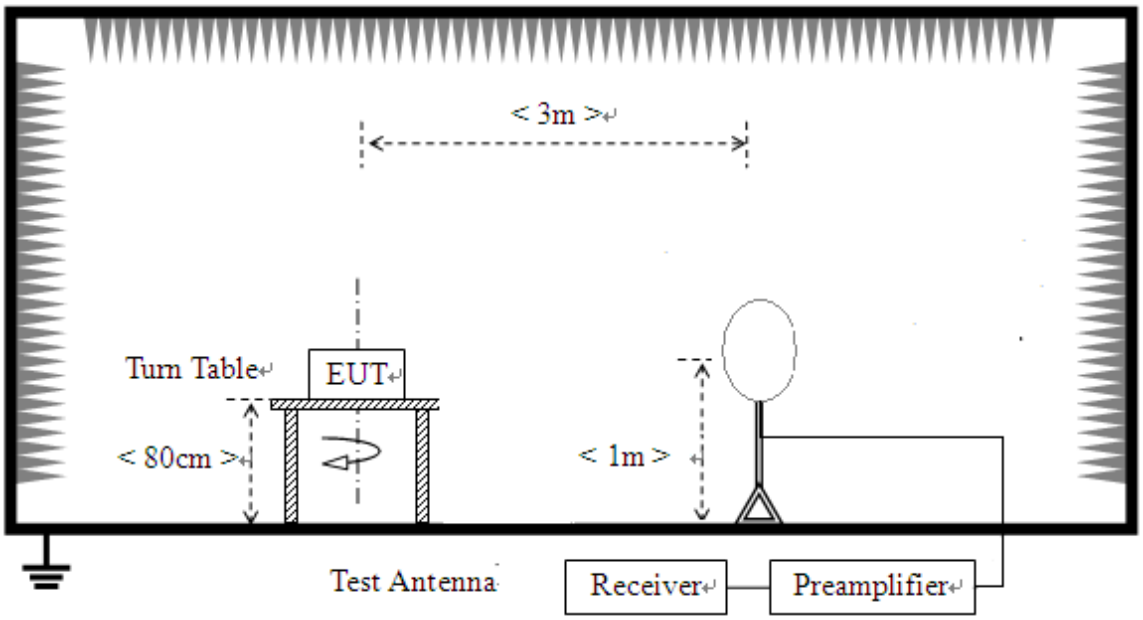
Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB, below the level of the fundamental or to the general field strength limits listed in 15.209 as below, whichever is less stringent.

Frequency (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	20log(2400/F(KHz))+80	300
0.490 - 1.705	24000/F(kHz)	20log(24000/F(KHz))+40	30
1.705 - 30.0	30	20log(30)+40	30
30 - 88	100	40.0	3
88 - 216	150	43.5	3
216 - 960	200	46.0	3
Above 960	500	54.0	3

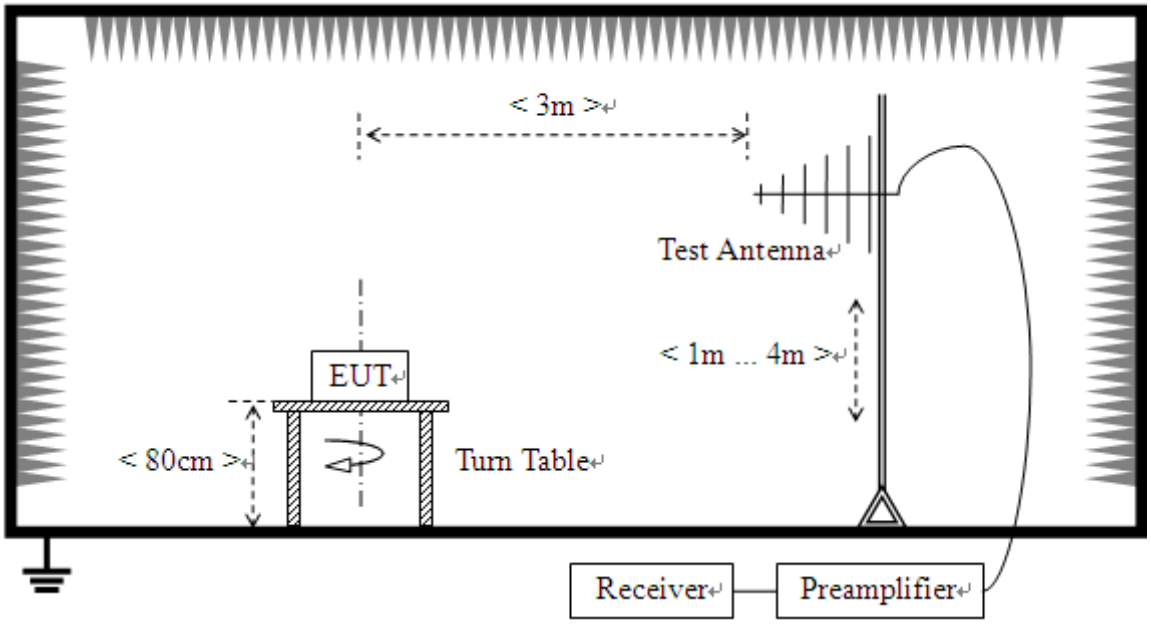
Note:

(1) The tighter limit applies at the band edges.
(2) Emission level(dBuV/m)=20log Emission level (uV/m).

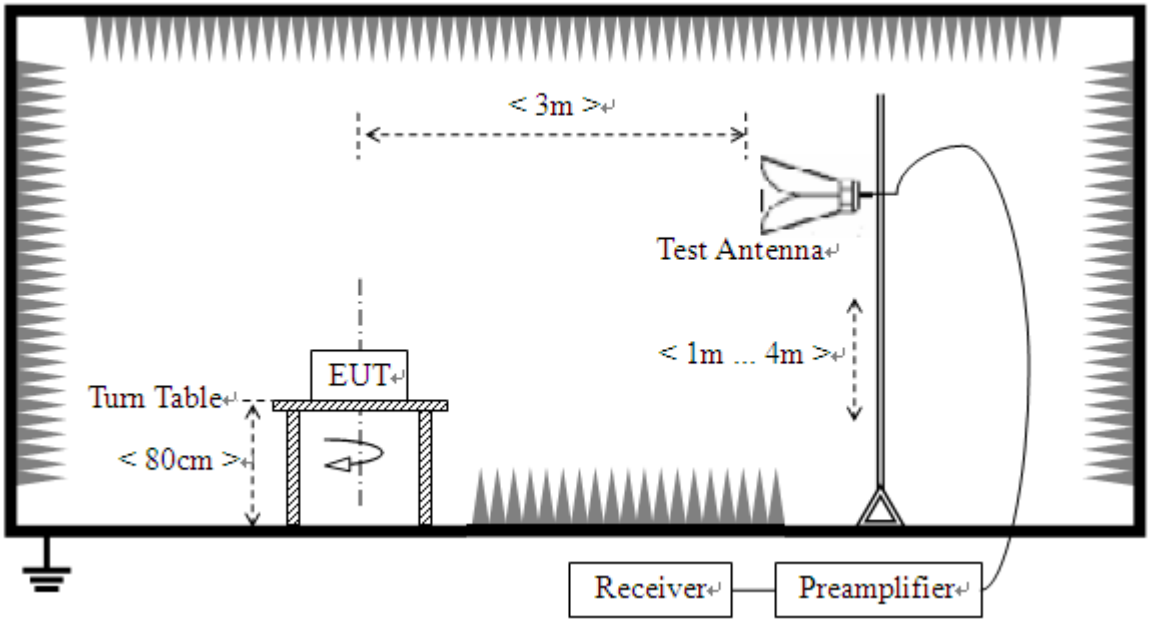
2.4.2 Test Description



Radiated emissions from 9kHz to 30MHz



Radiated emissions from 30MHz to1GHz



Radiated emissions above 1GHz

Equipments List:

Description	Manufacturer	Model	Serial No.	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESIB26	A0304218	2015.06.02	2016.06.01	Radiation
Full-Anechoic Chamber	Albatross	12.8m*6.8m *6.4m	A0412372	2015.06.02	2016.06.01	Radiation
Loop Antenna	Schwarz beck	HFH2-Z2	100047	2015.06.02	2016.06.01	Radiation
Broadband Antenna (30MHz~1GHz)	R&S	HL562	A0304224	2015.06.02	2016.06.01	Radiation
Double ridge horn antenna (1~18GHz)	R&S	HF906	A0304225	2015.06.02	2016.06.01	Radiation
Test Antenna – Horn (18-26.5GHz)	ETS	3160-09	A0902607	2015.06.02	2016.06.01	Radiation
Amplifier 20M~3GHz	R&S	PAP-0203H	22018	2015.06.02	2016.06.01	Radiation
Ampilier 1G~18GHz	R&S	MITEQ AFS42-0010 1800	25-S-42	2015.06.02	2016.06.01	Radiation
Ampilier	R&S	JS42-180026	12111.0980.00	2015.06.02	2016.06.01	Radiation

18G~40GHz		00-28-5A				
Cable	SUNHNER	SUCOFLEX100		2015.06.02	2016.06.01	Radiation
Cable	SUNHNER	SUCOFLEX 104		2015.06.02	2016.06.01	Radiation

2.4.3 Test Procedure

1)9 kHz to 30 MHz emissions:

For testing performed with the loop antenna, testing was performed in accordance to ANSI C63.10. The centre of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT, During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane.

2)30 MHz to 1 GHz emissions:

For testing performed with the bi-log type antenna, testing was performed in accordance to ANSI C63.10. The measurement is performed with the EUT rotated 360º, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

3)1 GHz to 25 GHz emissions:

Test site with RF absorbing material covering the ground plane that met the site validation criterion called out in CISPR 16-1-4:2007 was used to perform radiated emission test above 1 GHz.

For testing performed with the horn antenna, testing was performed in accordance to ANSI C63.10. The measurement is performed with the EUT rotated 360º, the antenna height scan between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

4)For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna

aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

5) All radiated emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Detector：

For PK and QP value:

RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

For AV value:

RBW = 1 MHz for f ≥ 1 GHz,

VBW =10 Hz

Sweep = auto

Detector function = peak

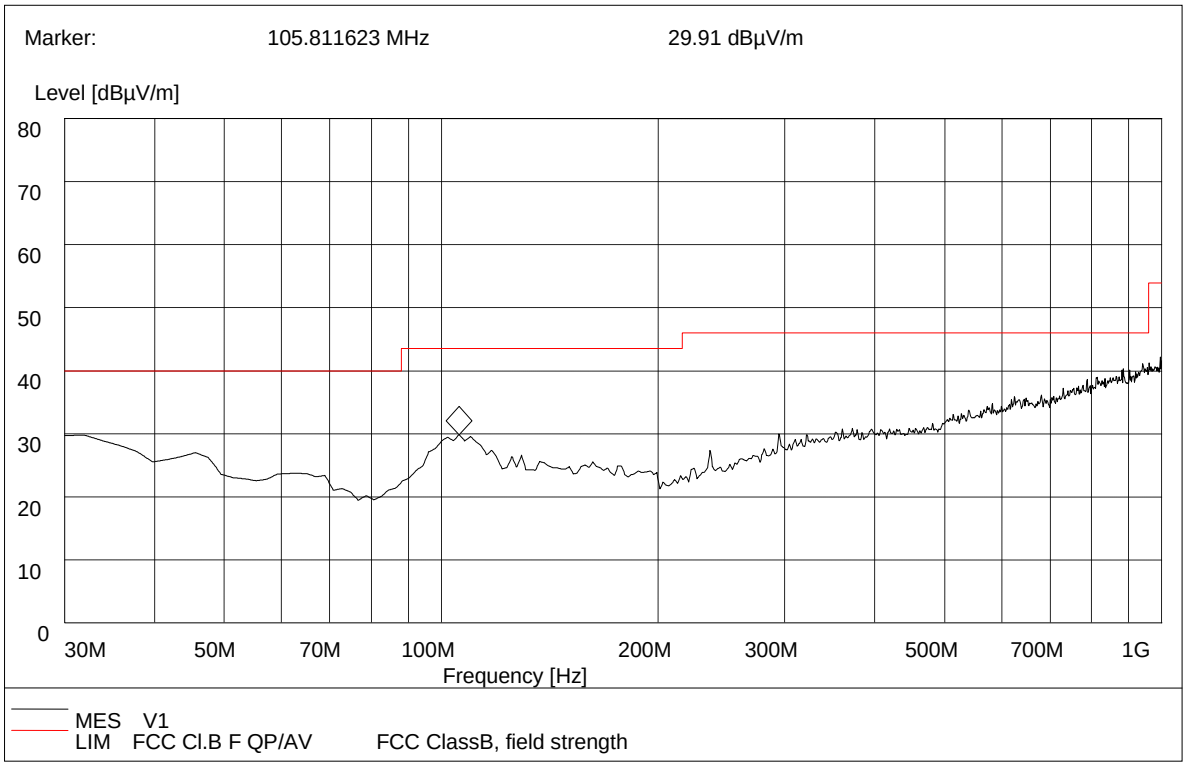
Trace = max hold

2.4.4 Test Result

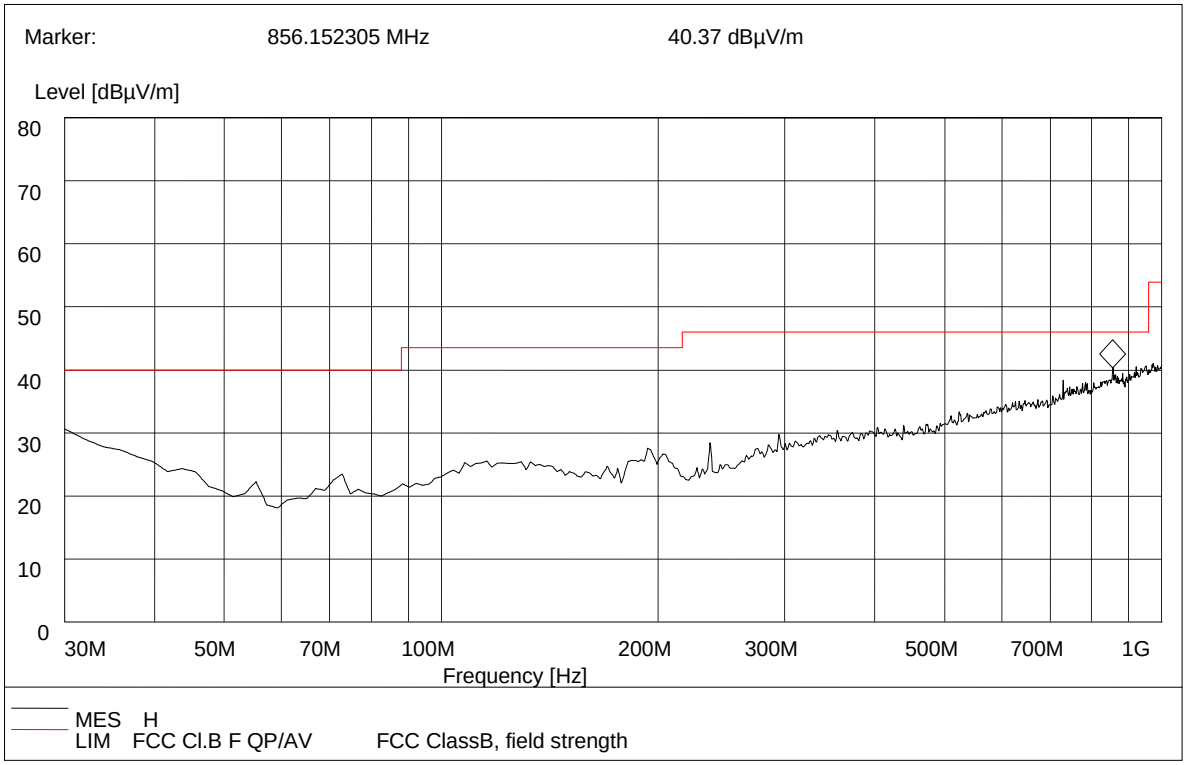
Test Results 9 kHz to 30 MHz

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

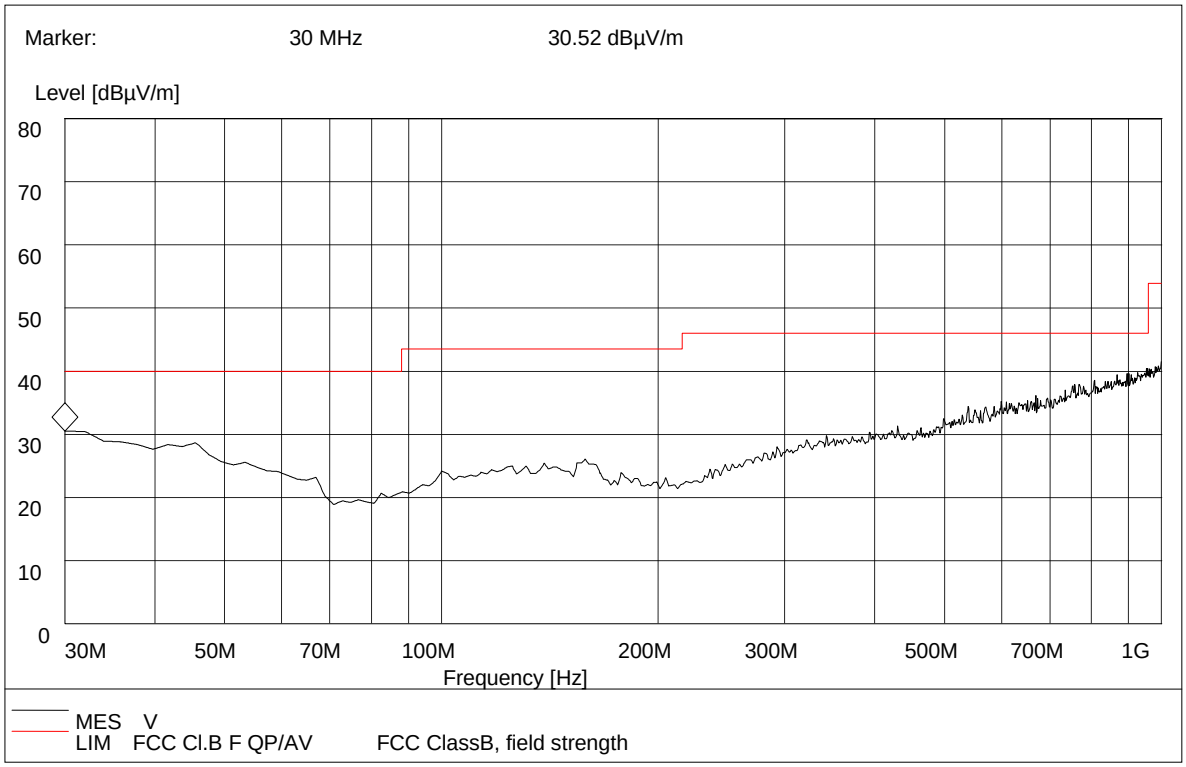
Test Results 30MHz to 1000 MHz



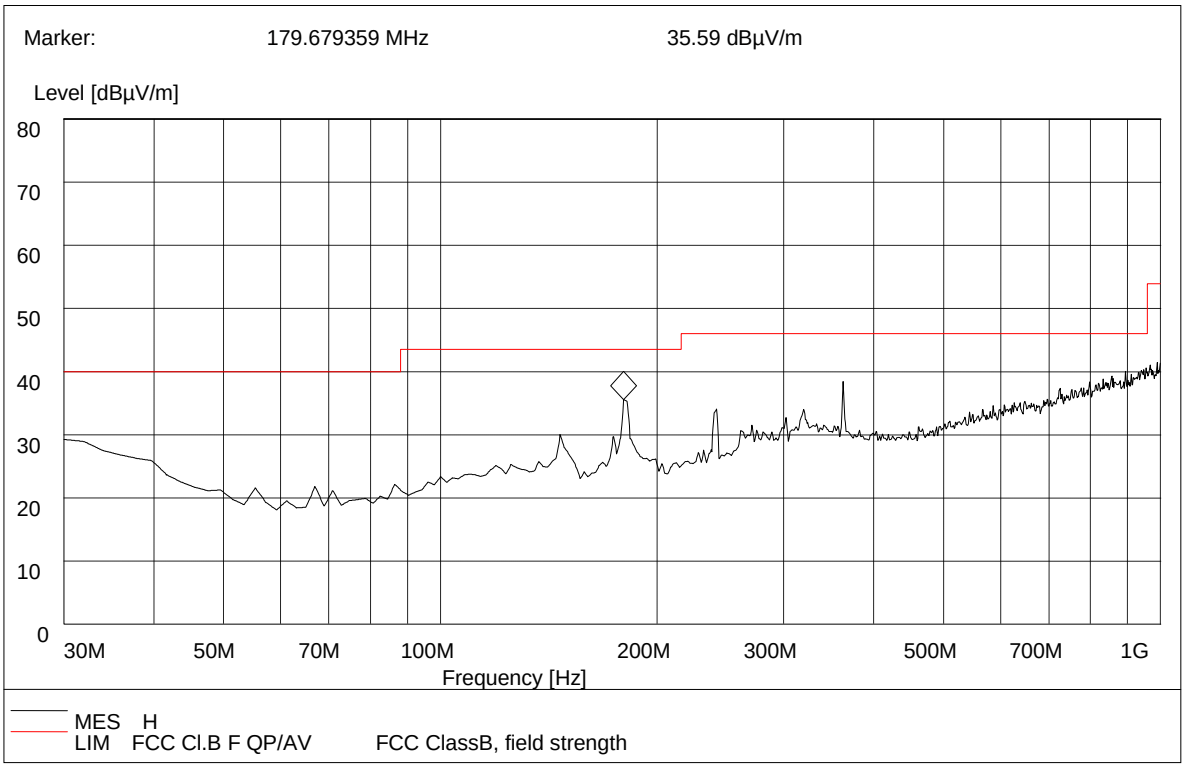
2432MHz - Vertical



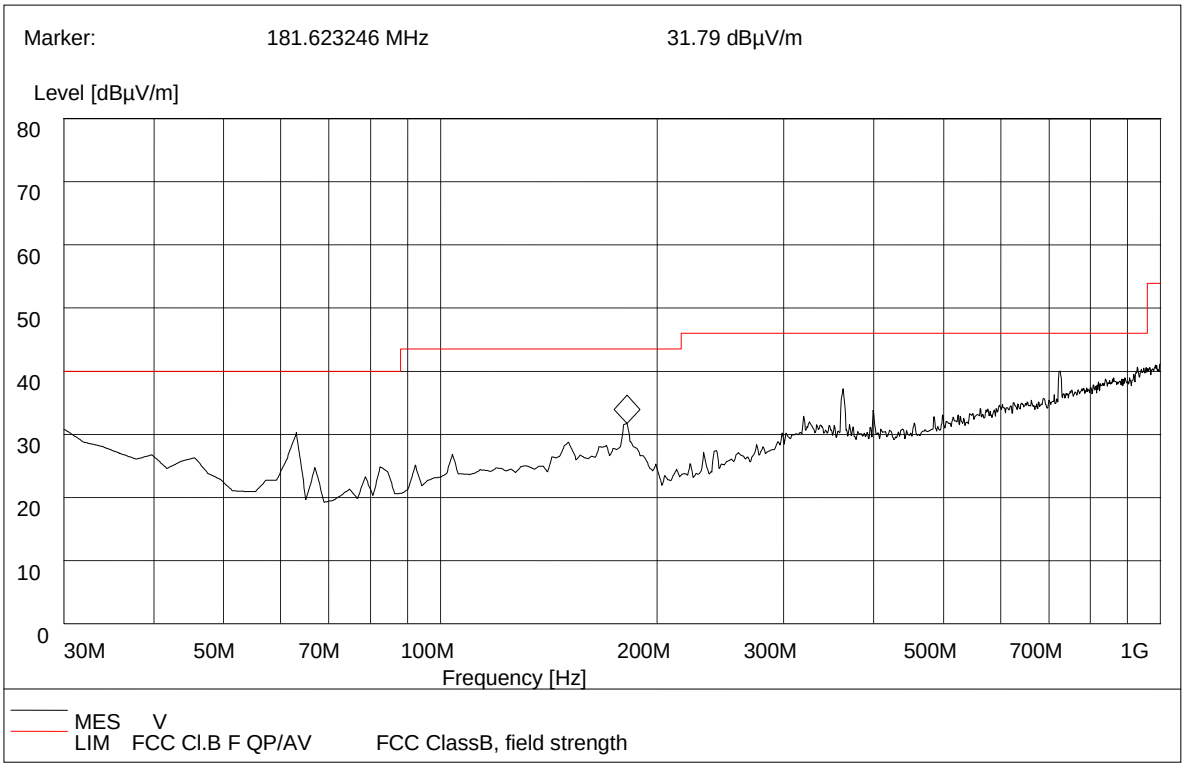
2432MHz – Horizontal



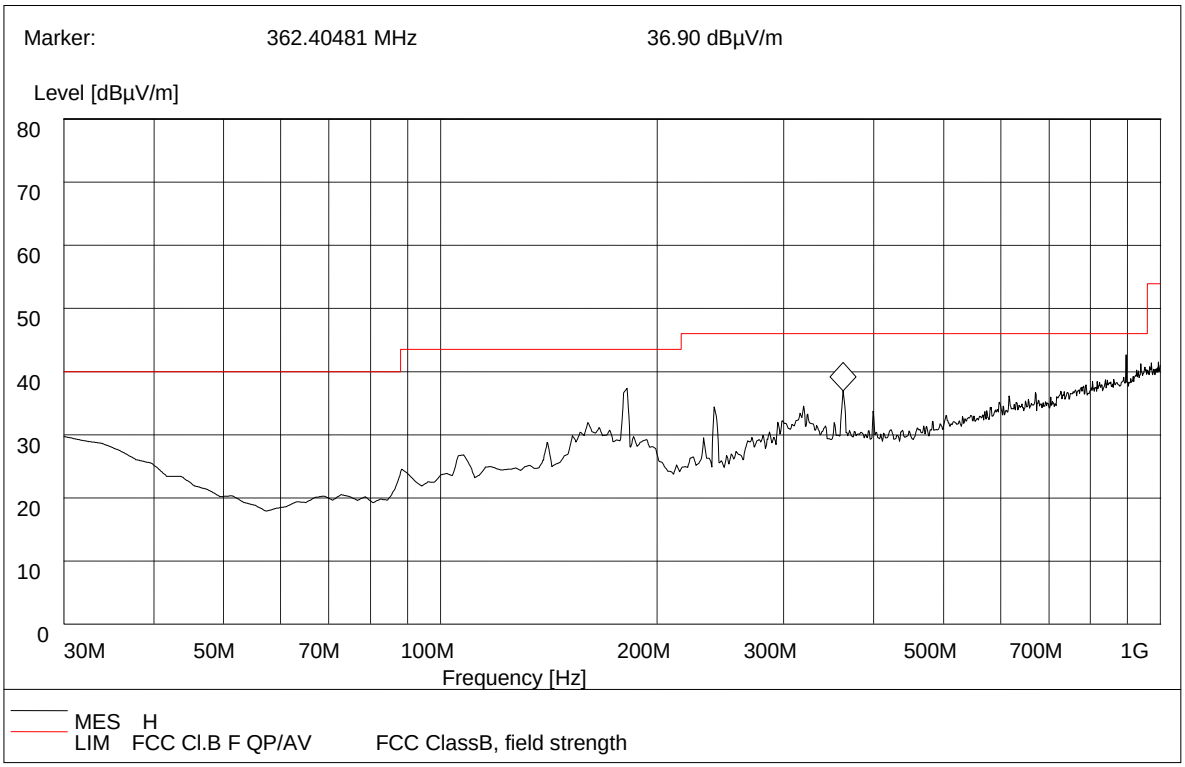
2456MHz - Vertical



2456MHz – Horizontal



2480MHz – Vertical



2480MHz - Horizontal

channel	Frequency (MHz)	QuasiPeak (dBµ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBµ V/m)	Antenna	Verdict
L channel	105.812	29.91	120.000	100.0	43.50	Vertical	Pass
	856.152	40.37	120.000	100.0	46.00	Horizontal	Pass
M channel	30.000	30.52	120.000	100.0	40.00	Vertical	Pass
	179.679	35.59	120.000	100.0	43.50	Horizontal	Pass
H channel	181.623	31.79	120.000	100.0	43.50	Vertical	Pass
	362.405	36.90	120.000	100.0	46.00	Horizontal	Pass

Test Results for 1GHz~25GHz

Test mode: TX 2432MHz

Frequency (MHz)	Ant. Pol. H/V	Reading		Correction Factor(dB)	Level (dBuV/m)		Limit (dBuV/m)	
		Peak (dBuV)	AV (dBuV)		Peak (dBuV)	AV (dBuV)	Peak (dBuV)	AV (dBuV)
2390	H	22.63	4.54	24.09	46.72	28.63	74.00	54.00
	V	22.94	3.85	24.09	47.03	27.94	74.00	54.00
2400	H	23.75	5.57	24.10	46.85	29.67	74.00	54.00
	V	24.14	4.95	24.10	48.24	29.05	74.00	54.00
2432	H	41.52	22.54	24.18	65.70	46.72	114.00	94.00
	V	40.24	21.47	24.18	64.42	45.65	114.00	94.00
4864	H	39.52	23.54	8.52	48.04	32.06	74.00	54.00
	V	41.24	24.47	8.52	49.76	32.99	74.00	54.00

Test mode: TX 2456MHz

Frequency (MHz)	Ant. Pol. H/V	Reading		Correction Factor(dB)	Level (dBuV/m)		Limit (dBuV/m)	
		Peak (dBuV)	AV (dBuV)		Peak (dBuV)	AV (dBuV)	Peak (dBuV)	AV (dBuV)
2456	H	45.61	28.25	24.24	69.85	52.49	114.00	94.00
	V	47.51	29.14	24.24	71.75	53.38	114.00	94.00
4912	H	43.21	25.24	8.60	51.81	33.84	74.00	54.00
	V	42.85	25.04	8.60	51.45	33.64	74.00	54.00

Test mode: TX 2480MHz

Frequency (MHz)	Ant. Pol. H/V	Reading		Correction Factor(dB)	Level (dBuV/m)		Limit (dBuV/m)	
		Peak (dBuV)	AV (dBuV)		Peak (dBuV)	AV (dBuV)	Peak (dBuV)	AV (dBuV)
2480	H	44.51	28.24	24.35	68.86	52.59	114.00	94.00
	V	45.28	27.85	24.35	69.63	52.20	114.00	94.00
2483.50	H	22.14	5.24	24.54	46.68	29.78	74.00	54.00
	V	23.34	4.77	24.54	47.88	29.31	74.00	54.00
4960	H	43.21	26.07	8.79	52.00	34.86	74.00	54.00
	V	42.68	26.44	8.79	51.47	35.23	74.00	54.00

Note：5GHz~25GHz at least have 20dB margin. No recording in the test report.

** END OF REPORT **