TECHNICAL REPORT

ISO/IEC17025 Accredited Lab.

Report No: FCC 1110096-02
File reference No: 2011-11-09

Applicant: E-STAR ELECTRONICS TECHNOLOGY LIMITED

Product: MID

Model No: E-STAR

Trademark: MD-702, MID-702, MID-703, MID-704

Test Standards: FCC Part 15 Subpart B: 2009

Test result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4&FCC Part 15 regulations for the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung

Manager

Dated: November 09, 2011

Results appearing herein relate only to the sample tested
The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD

East 5/Block 4, Anhua Industrial Zone, No.8, Tairan Rd. Chegongmiao, FuTian District, Shenzhen, CHINA.

Tel (755) 83448688 Fax (755) 83442996

Special Statement:

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAS-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 899988

The 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 No.: 899988.

IC- Registration No.: IC5205A-01

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration IC No.: 5205A-01.

Test Report Conclusion

Content

1.0 General Details

1.1 Test Lab Details

Name :	SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD
Address:	East 5/Block 4, Anhua Industrial Zone, No.8,Tairan Rd. CheGongMiao, FuTian District, Shenzhen, CHINA.
Telephone:	(755) 83448688
Fax:	(755) 83442996

1.2 Applicant Details

Applicant:	E-STAR ELECTRONICS TECHNOLOGY LIMITED
Address:	FLAT U,11/F, BLOCK 3，CAMELPAINT BLDG ., 60 HOI YUEN HONG KONG.
Telephone:	852-23445685
Fax:	852-29510086

1.3 Description of EUT

Product:	MID
Manufacturer:	Dong Guan Hop Wo Electronic Product Co., Ltd
Address:	122 Qing Hu Road, Qing Hu Tou , Tang Xia Town, Dong Guan City, Guang Dong Province, China
Brand Name:	E-STAR, Dopo
Model Number:	MD-702
Additional Model Number:	MID-702, MID-703, MID-704
Power Adapter	Model: FJ-SW0601500U, Input :100-240V~, 50-60Hz,0.35A; Output: DC6V, 1500mA

1.4 Submitted Sample: 2 Sample

1.5 Test Duration: 2011-10-18 to 2011-11-09

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions Uncertainty =4.7dB

1.7 Test Engineer

The sample tested by Terry Tong

Print Name: Terry Tong

2.0 List of Measurement Equipment

2.1 Conducted Emission Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EMI Test Receiver	ESH3	860905/006	RS	2011.4.26	1Year
Spectrum Analyzer	ESA-L1500A	US37451154	HP	2011.4.26	1Year
PULSE LIMITER	ESH3-Z2	100281	RS	2011.4.26	1Year
LISN	ESH3-Z5	100294	RS	2011.4.26	1Year
LISN	ESH3-Z5	100253	RS	2011.4.26	1Year
LISN	LS16C	10010947251	AFJ	2011.4.26	1Year
LISN (Three Phase)	NSLK 8126	8126453	Schwarebeck	2011.4.26	1Year

2.2 Radiated electromagnetic disturbance test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EMI Test Receiver	ESVD	100008	RS	2011.4.26	1Year
Coaxial Switch	MP59B	M70585	ANRITSU	N/A	N/A
Spectrum Analyzer	8595E	3441A00893	HP	2011.4.26	1Year
Amplifier	8447D	2727A05017	HP	2011.4.26	1Year
Bilog Antenna	VULB9163	9163/340	Schwarebeck	2011.4.26	1Year
Horn Antenna	BBHA 9120D	9120D-631	Schwarebeck	2011.4.26	1Year

2.3 Auxiliary Equipment

Name	Model No.	Serial No.	Manufacturer	Cable	FCC ID/DOC
Earphone	--	--	--	--	--
TF	--	--	Kingston	--	--
PC	R400	--	IBM	--	FCC ID
Mouse	M-F105	--	L.SEletron	--	FCC DOC
Keyboard	KB-0225	--	IBM	--	FCC DOC

3.0 Technical Details

3.1 Investigations Requested

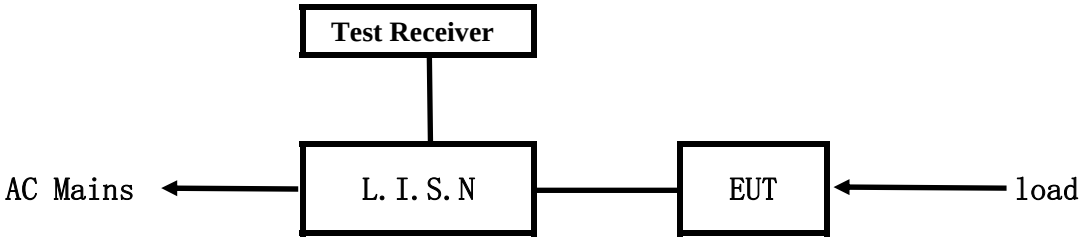
Perform Electromagnetic Interference [EMI] tests for FCC Requirement.

3.2 Test Standards

FCC Part 15 Subpart B: 2009

4.0 Conducted Power line Test

4.1 Schematics of the test



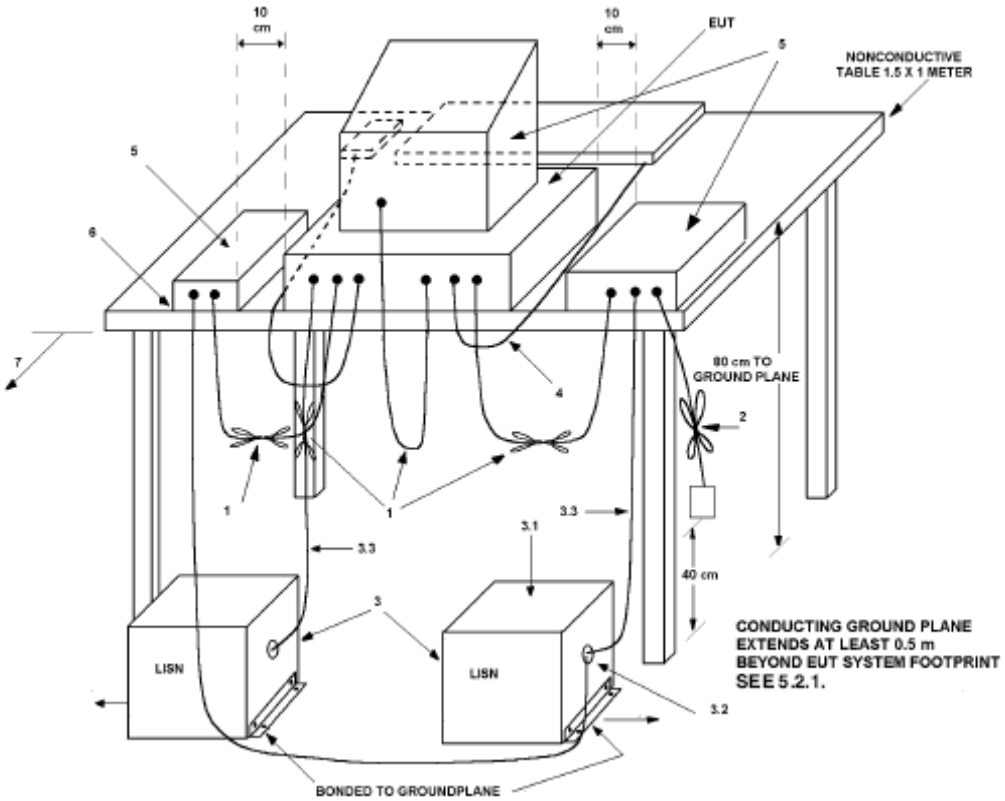
EUT: Equipment Under Test

4.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.4-2009.The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2009.Cables and peripherals were moved to find the maximum emission levels for each frequency.

Actual Working Voltage and Frequency: 120V~, 60Hz

Block diagram of Test setup



4.3 Power line conducted Emission Limit

Frequency(MHz)	Class A Limits dB(μV)		Class B Limits dB(μV)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ～ 0.50	79.00	66.00	66.00～56.00*	56.00～46.00*
0.50 ～ 5.00	73.00	60.00	56.00	46.00
5.00 ～ 30.00	73.00	60.00	60.00	50.00

Notes: 1. *decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

4.4 Test Results

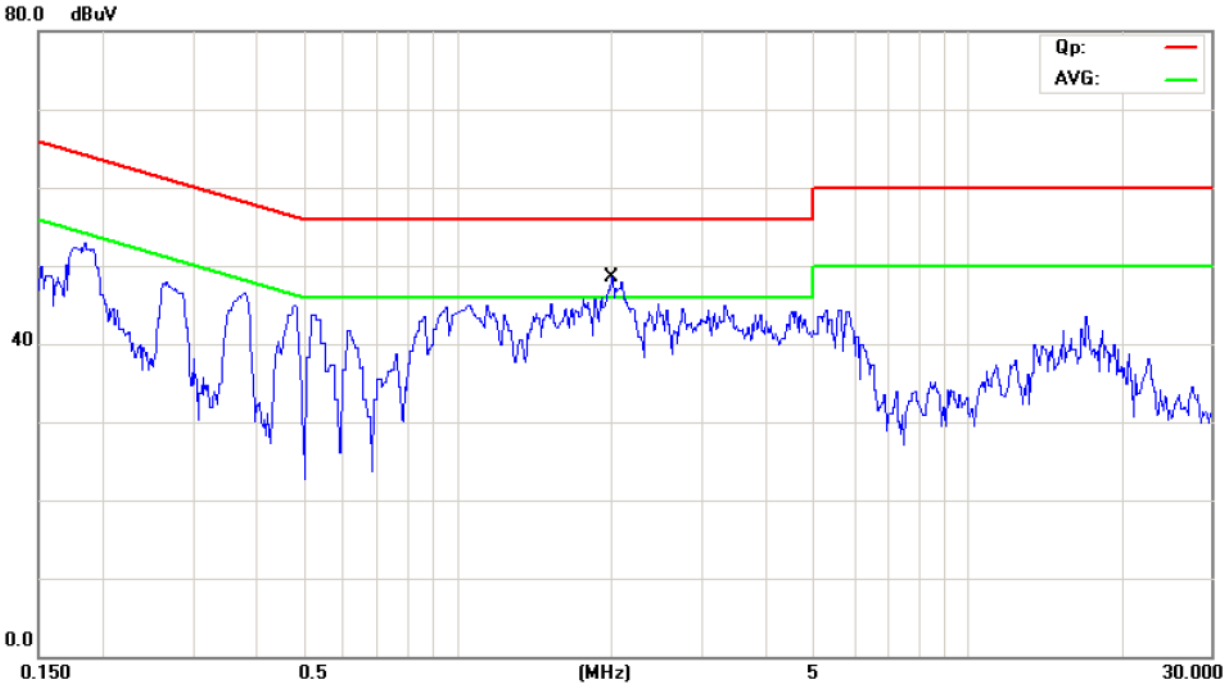
The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

A Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Keep WIFI Transmitting, Play Memory and Running EMC test Software

Results: **Pass**

Please refer to following diagram for individual



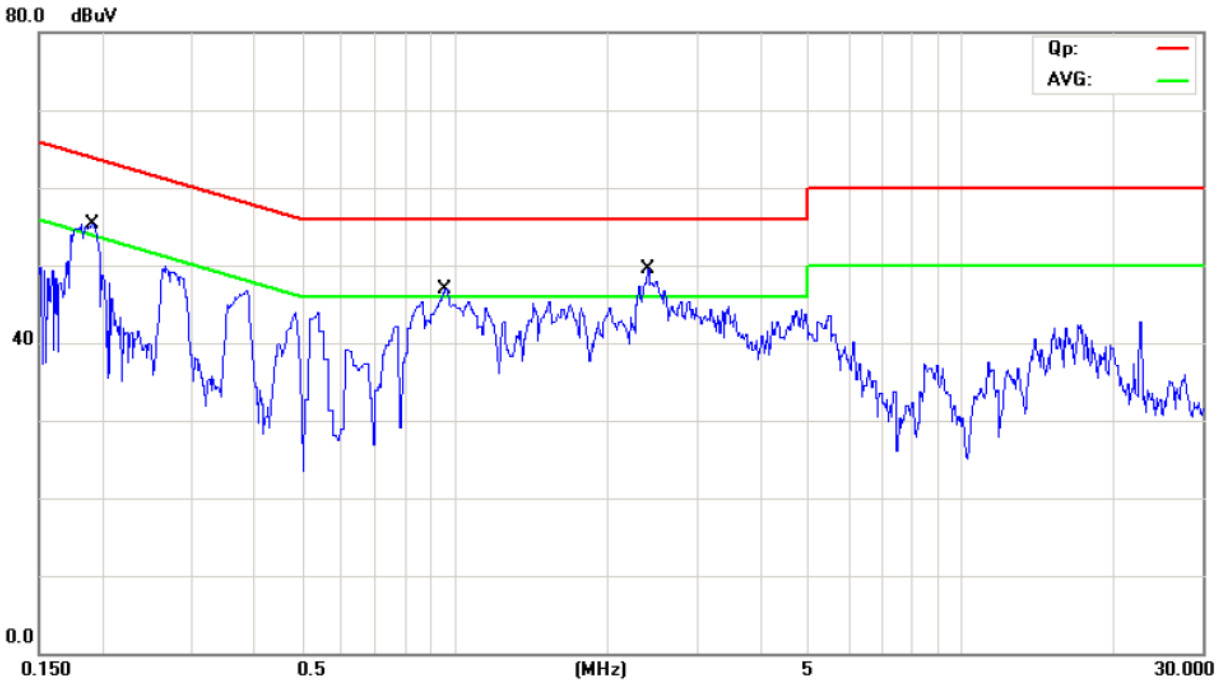
Frequency (MHz)	Reading(dB μ V)				Limit (dB μ V)	
	Line		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
2.003	46.30	29.80	--	--	56.00	46.00

B **Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)**

EUT set Condition: Keep WIFI Transmitting, Play Memory and Running EMC test Software

Results: **Pass**

Please refer to following diagram for individual



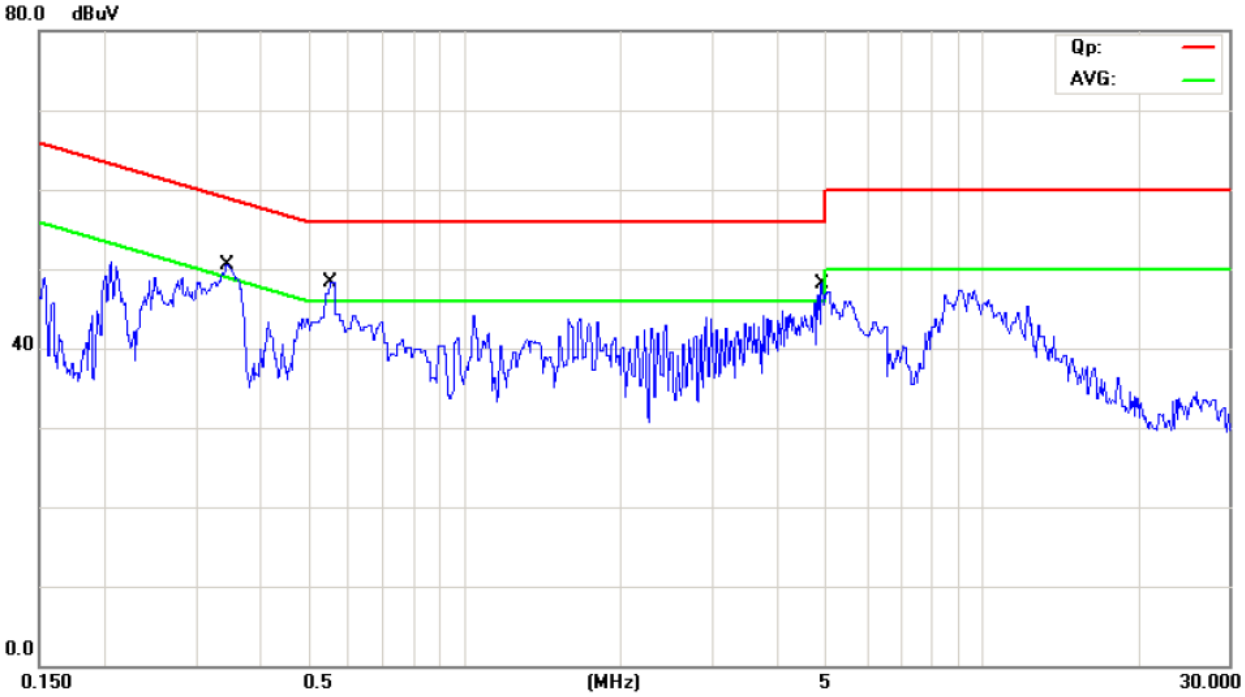
Frequency (MHz)	Reading(dB μ V)				Limit (dB μ V)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
2.392	--	--	47.56	34.16	56.00	46.00
0.192	--	--	50.44	32.54	63.95	53.95
0.955	--	--	45.75	20.55	56.00	46.00

C Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Connected to PC and Full Load

Results: **Pass**

Please refer to following diagram for individual



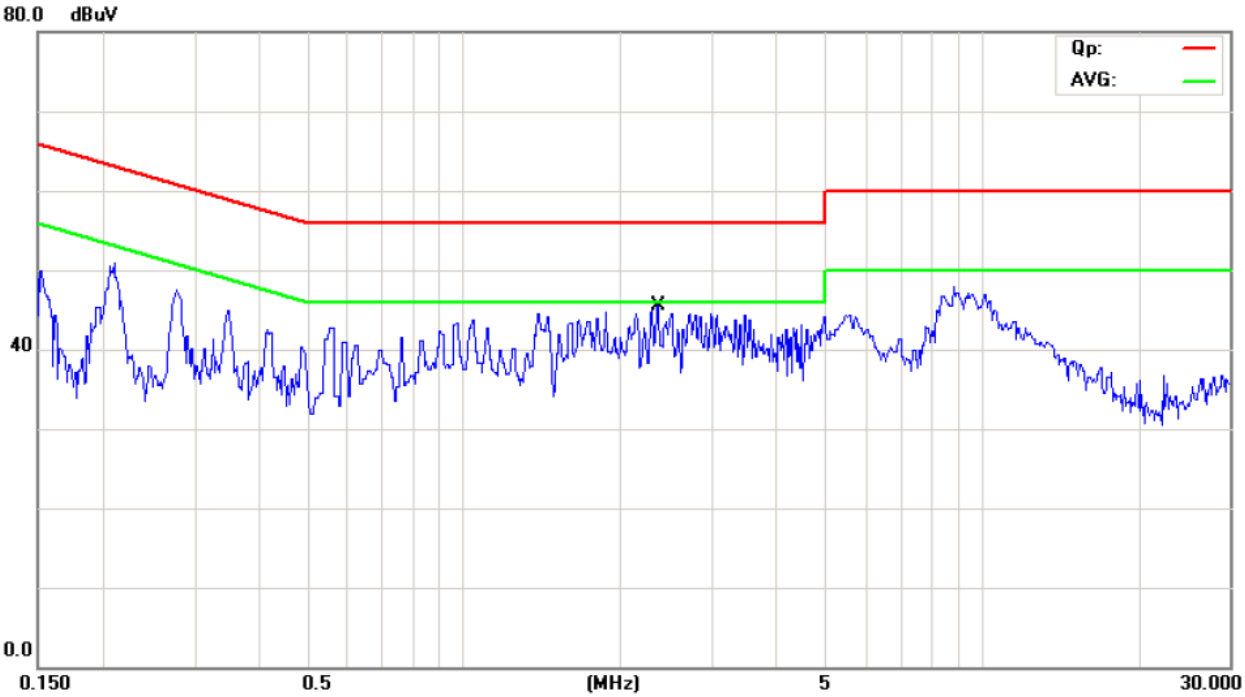
Frequency (MHz)	Reading(dB μ V)				Limit (dB μ V)	
	Line		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.345	48.61	35.11	--	--	59.06	49.06
0.556	45.73	33.93	--	--	56.00	46.00
4.866	44.25	34.15	--	--	56.00	46.00

D Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Connected to PC and Full Load

Results: **Pass**

Please refer to following diagram for individual



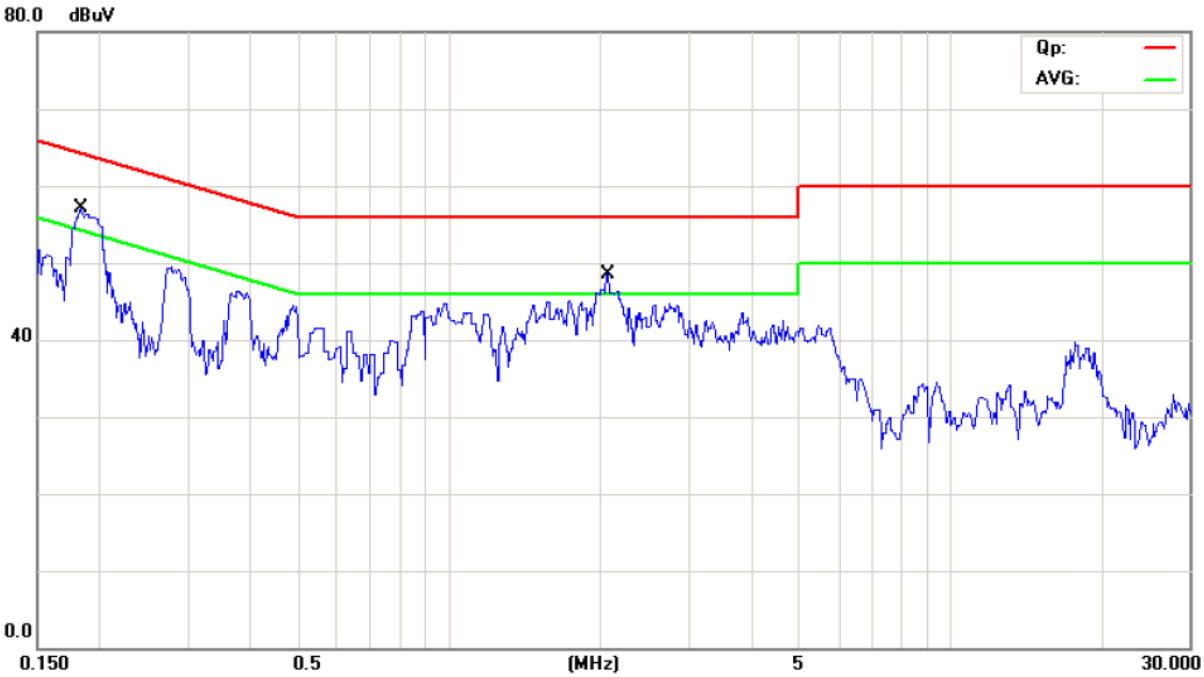
Frequency (MHz)	Reading(dB μ V)				Limit (dB μ V)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
2.357	--	--	44.84	30.44	56.00	46.00

E Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Play TF Card and Full Load

Results: **Pass**

Please refer to following diagram for individual



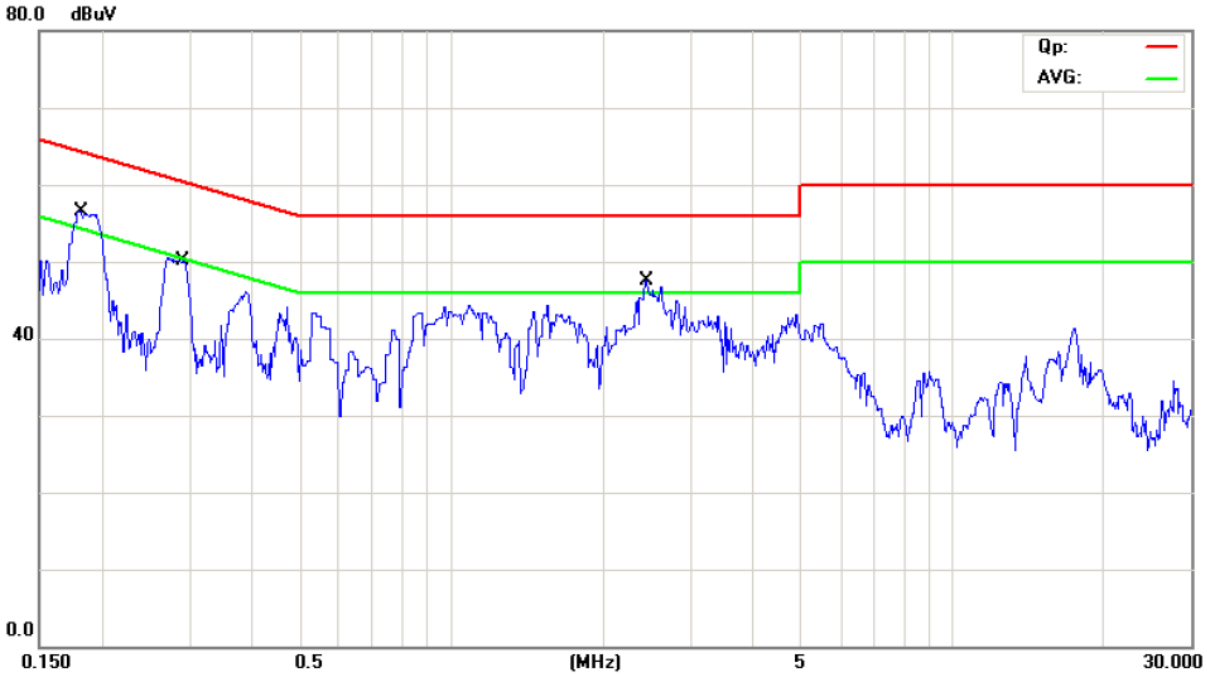
Frequency (MHz)	Reading(dB μ V)				Limit (dB μ V)	
	Line		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.183	54.43	33.73	--	--	64.35	54.35
2.051	45.52	26.92	--	--	56.00	46.00

F Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Play TF Card and Full Load

Results: **Pass**

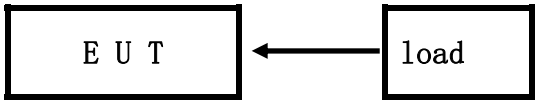
Please refer to following diagram for individual



Frequency (MHz)	Reading(dB μ V)				Limit (dB μ V)	
	Live		Neutral			
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.179	--	--	53.47	39.87	64.50	54.50
0.291	--	--	47.63	34.83	60.48	50.48
2.435	--	--	44.43	29.93	56.00	46.00

5.0 Radiated Disturbance Test

5.1 Schematics of the test

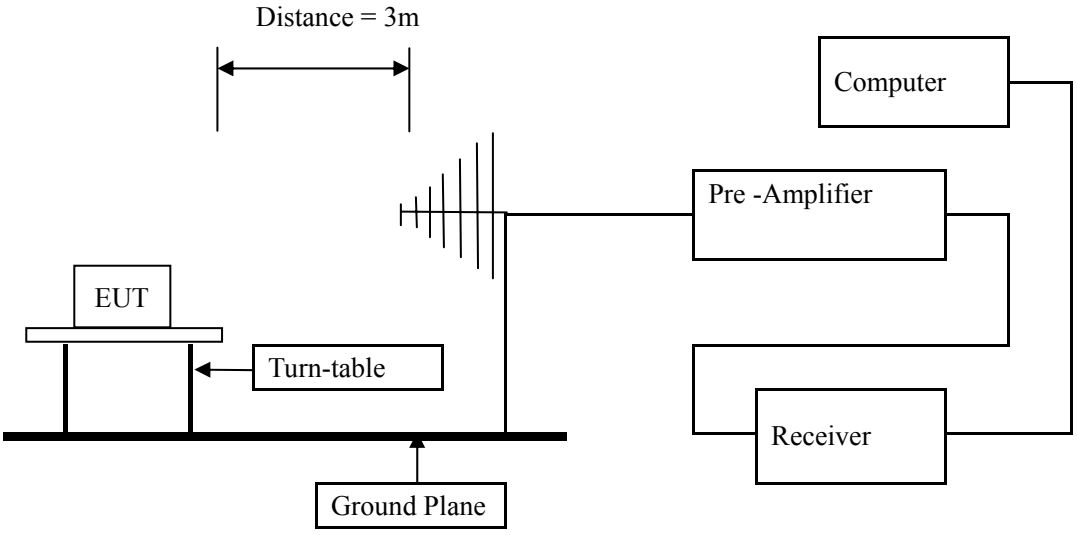


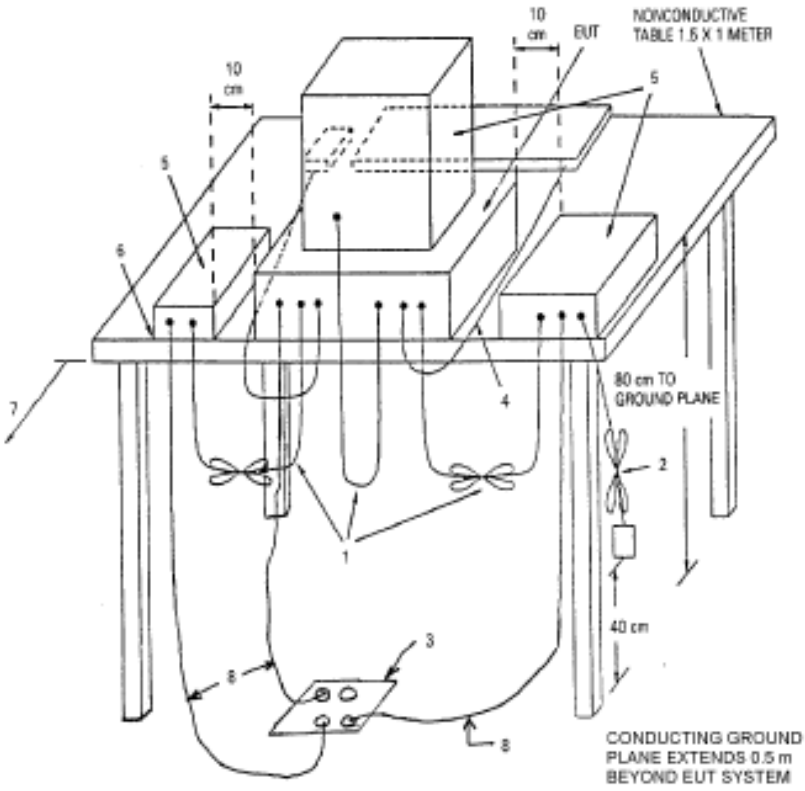
5.2 Test Method and test Procedure:

The EUT was tested according to ANSI C63.4 –2003, The frequency spectrum from 30MHz to 5GHz was investigated. All reading from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120kHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK

Actual Working Voltage and Frequency: 120V~, 60Hz

Block diagram of Test setup





5.3 Radiated Emission Limit

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.00
88-216	3	43.50
216-960	3	46.00
Above 960	3	54.00

Note: 1.The lower limit shall apply at the transition frequencies

2.This is a handhold device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.

5.4 Test result

The frequency spectrum from 30MHz to 6GHz was investigated. All reading from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120KHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK. Measurements were made at 3 meters.

Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

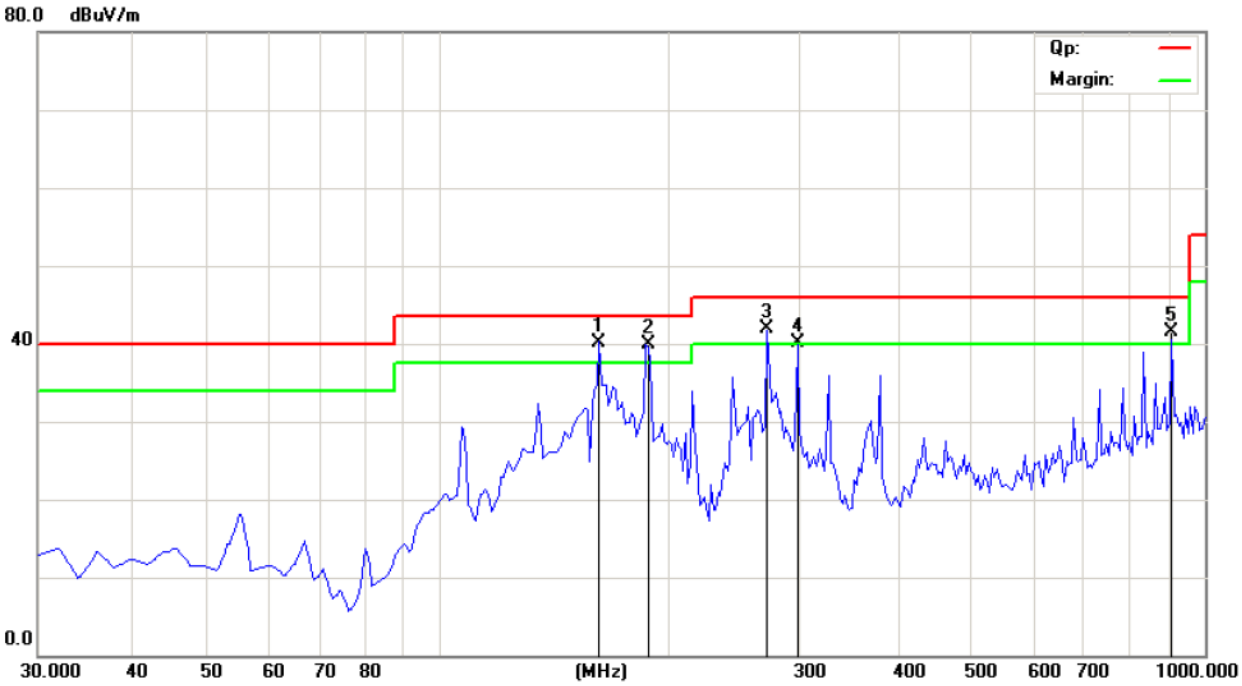
EUT set Condition: Keep WIFI Transmitting, Play Memory and Running EMC test Software

Results: **Pass**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
162.002	40.18	H	43.50
189.003	39.87	H	43.50
269.994	41.94	H	46.00
297.027	40.05	H	46.00
911.975	41.43	H	46.00
189.006	39.44	V	43.50
161.990	39.58	V	43.50
135.006	40.35	V	43.50
216.006	40.85	V	46.00

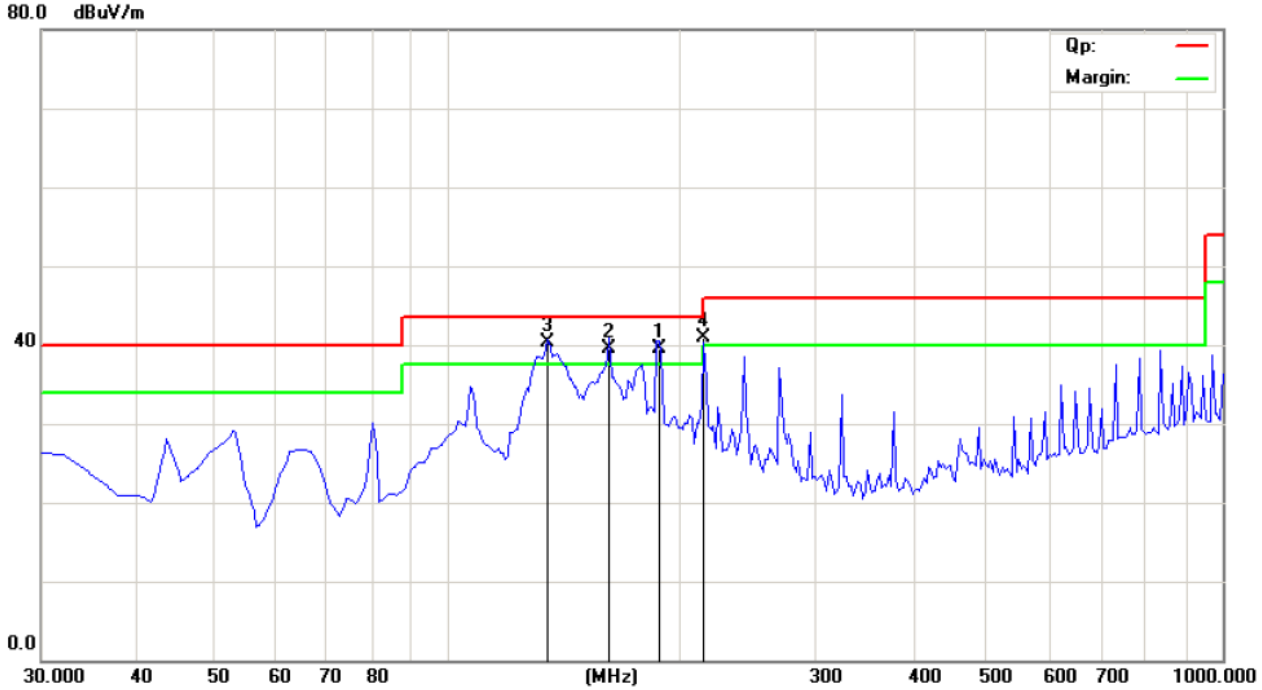
Test Figure:

H



Test Figure:

V



Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

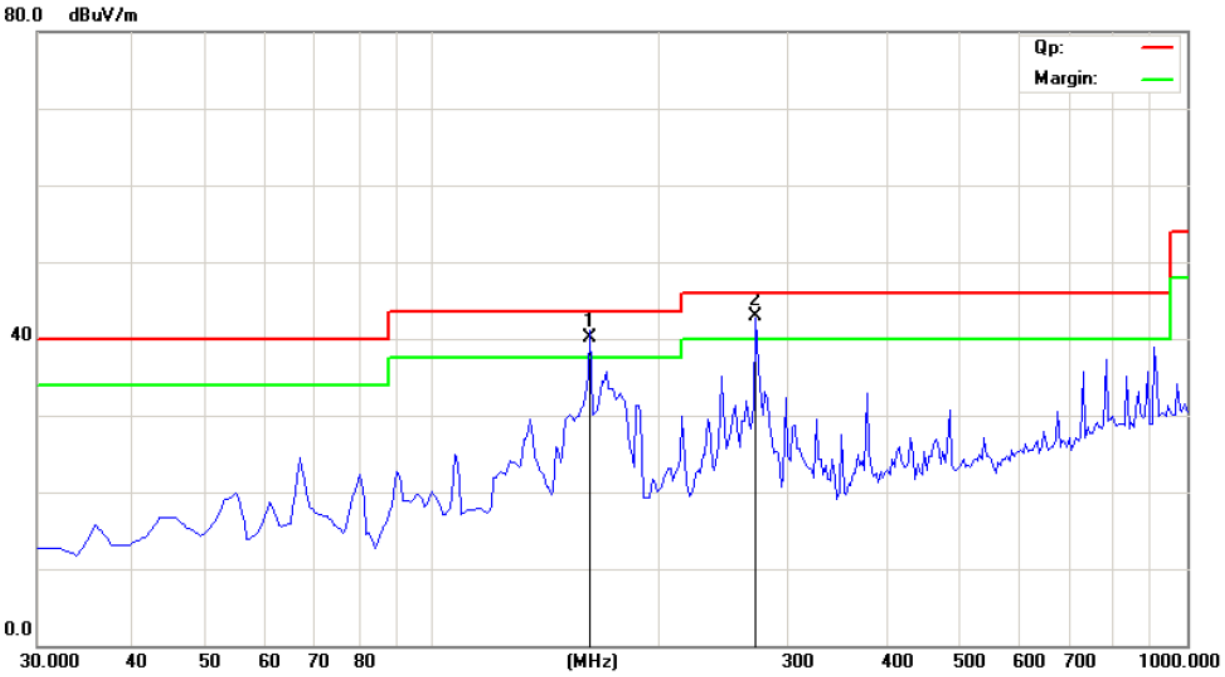
EUT set Condition: Play TF Card and Full Load

Results: **Pass**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
162.004	40.04	H	43.50
270.030	42.85	H	46.00
134.989	39.18	V	43.50
162.008	40.13	V	43.50
188.993	37.47	V	43.50

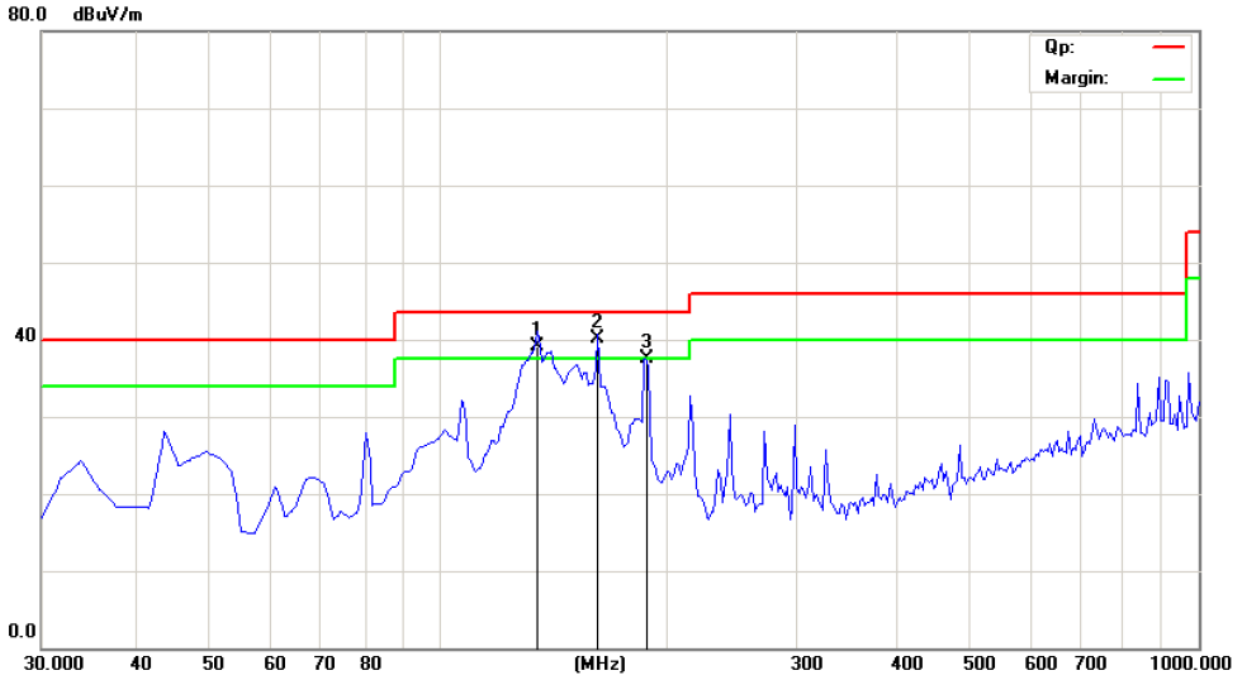
Test Figure:

H



Test Figure:

V



Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

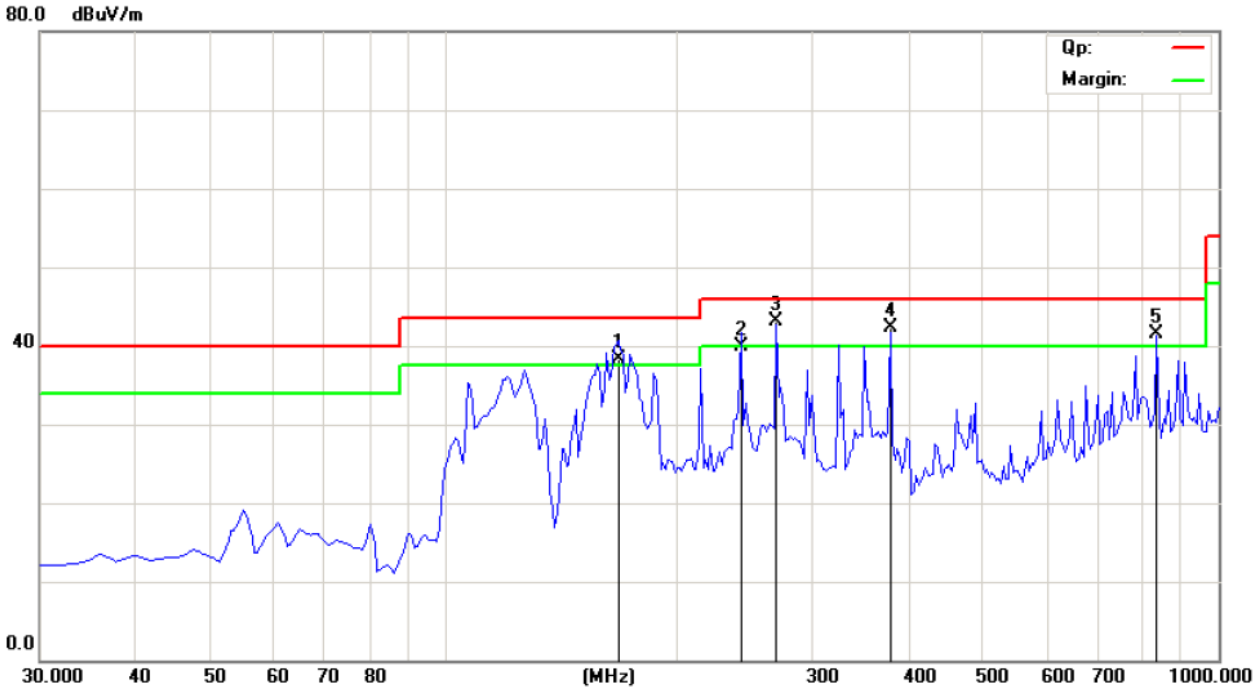
EUT set Condition: Connect to PC with 1#USB Line and Full Load

Results: **Pass**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
169.372	38.39	H	43.50
243.009	39.98	H	46.00
269.997	43.16	H	46.00
378.008	42.37	H	46.00
837.000	41.50	H	46.00
108.016	39.54	V	43.50
147.312	31.41	V	43.50
181.624	32.37	V	43.50
216.014	38.38	V	46.00

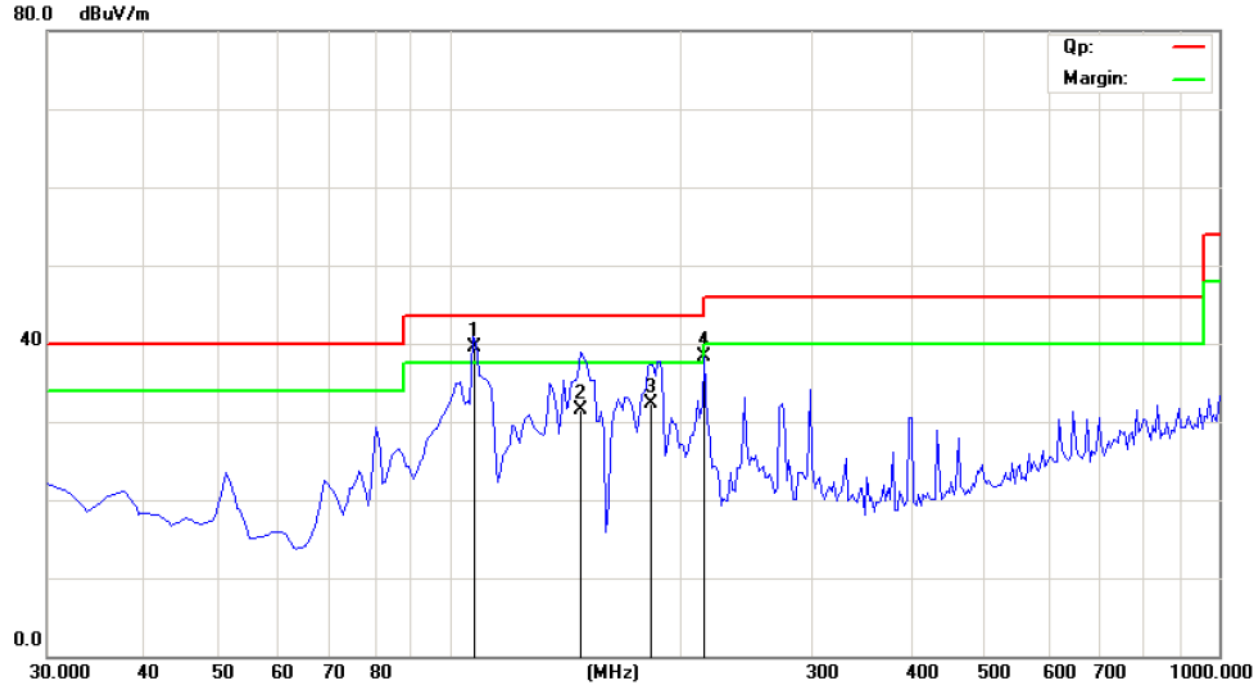
Test Figure:

H



Test Figure:

V



Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

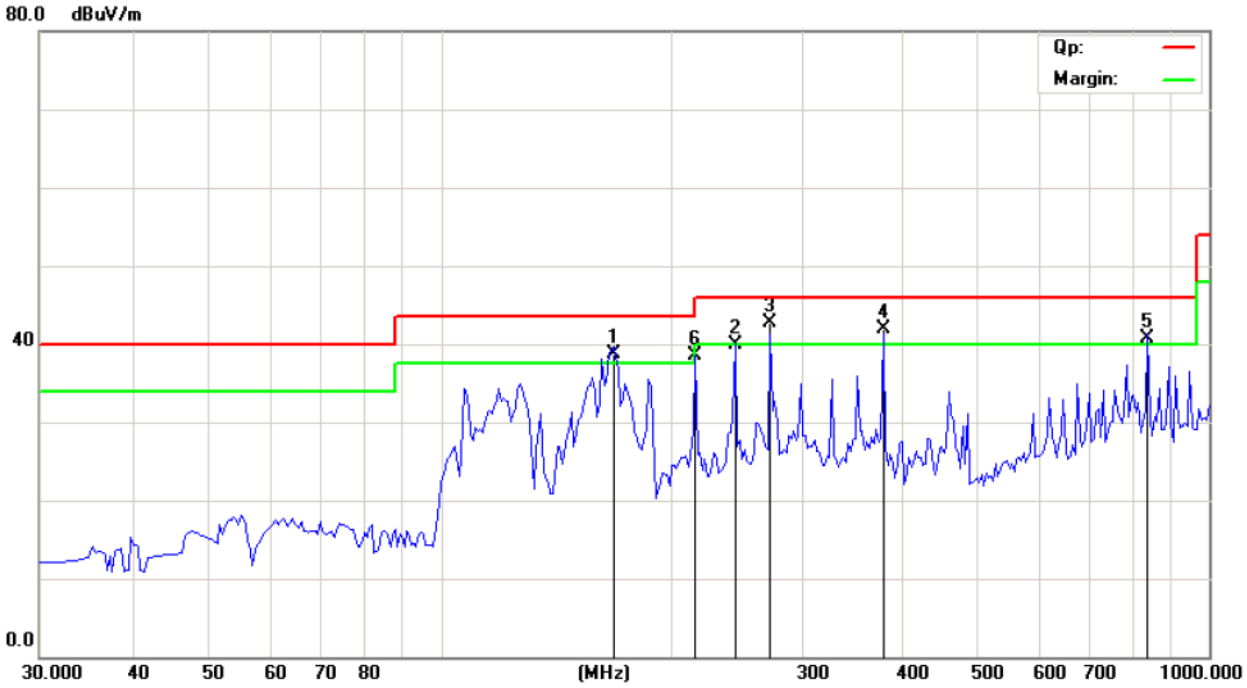
EUT set Condition: Connect to PC with 2#USB Line and Full Load

Results: **Pass**

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
169.372	38.67	H	43.50
243.009	39.98	H	46.00
270.002	42.80	H	46.00
378.008	42.00	H	46.00
837.000	40.73	H	46.00
215.972	38.60	H	43.50
108.008	39.54	V	43.50
148.241	32.02	V	43.50
181.732	33.11	V	43.50
216.008	35.37	V	46.00

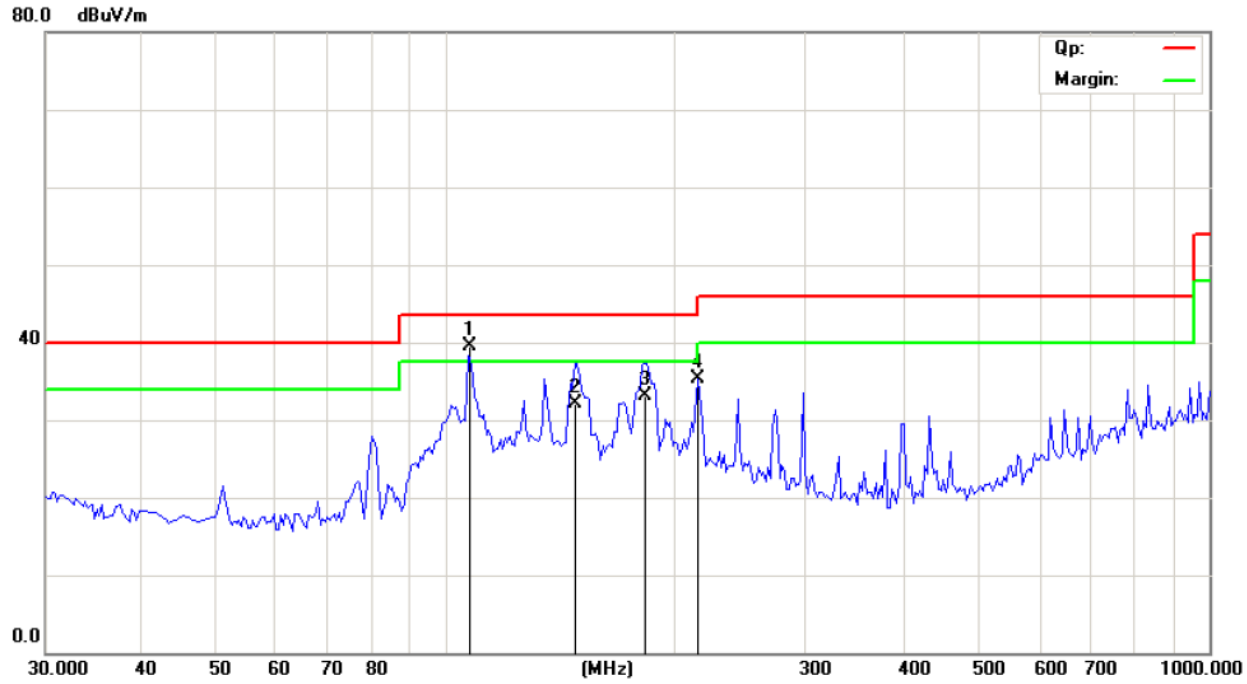
Test Figure:

H



Test Figure:

V



Radiated Disturbance (1000MHz----6000MHz)

EUT Operating Environment

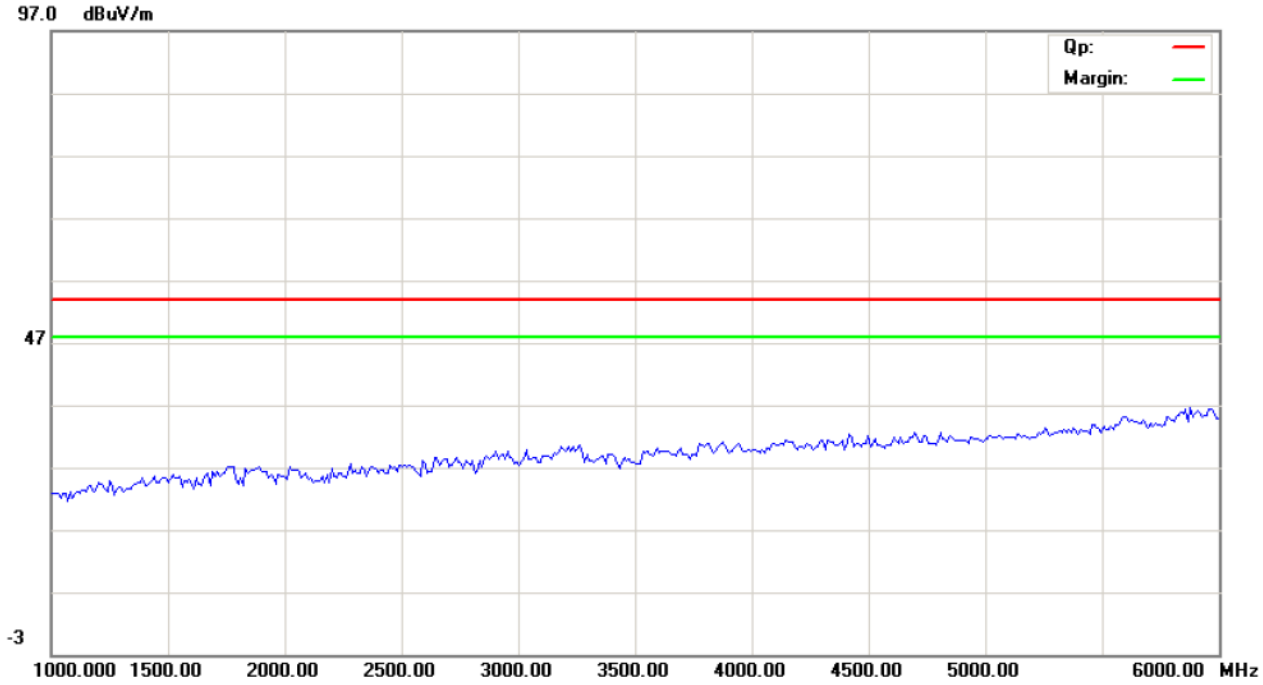
Temperature: 25℃ Humidity: 75%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Play Memory and Running EMC test Software

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
--	--	H	54(AV)
--	--	H	54(AV)

Note: Due to the final radiated level much less than the limit, no necessary take down final radiated level

Radiated Disturbance (1000MHz----6000MHz)

EUT Operating Environment

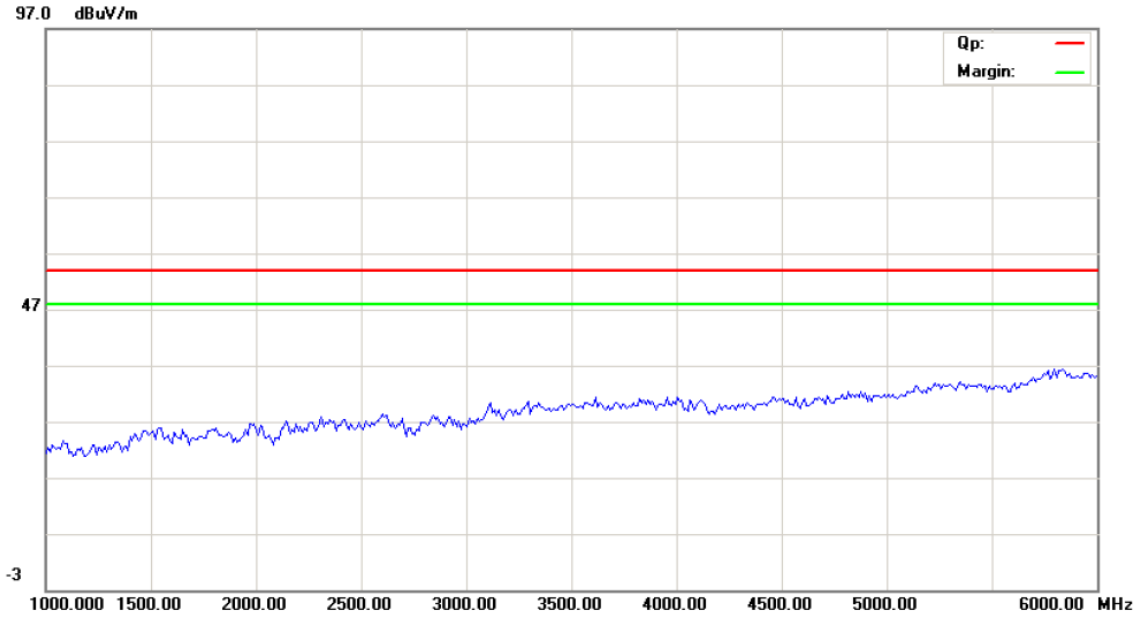
Temperature:25℃ Humidity: 75%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Play Memory and Running EMC test Software

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
--	--	V	54(AV)
--	--	V	54(AV)
--	--	V	54(AV)

Note: Due to the final radiated level much less than the limit, no necessary take down final radiated level

Radiated Disturbance (1000MHz----6000MHz)

EUT Operating Environment

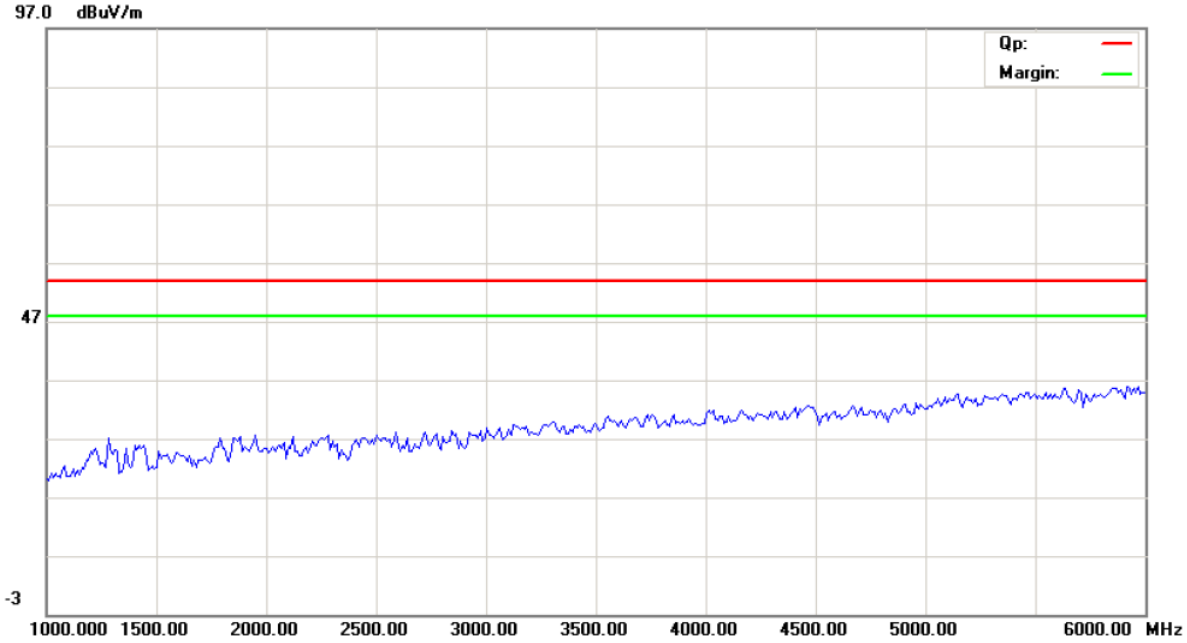
Temperature:25℃ Humidity: 75%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Connect to PC with 1#USB Line and Full Load

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
--	--	H	54(AV)

Note: Due to the final radiated level much less than the limit, no necessary take down final radiated level

Radiated Disturbance (1000MHz----6000MHz)

EUT Operating Environment

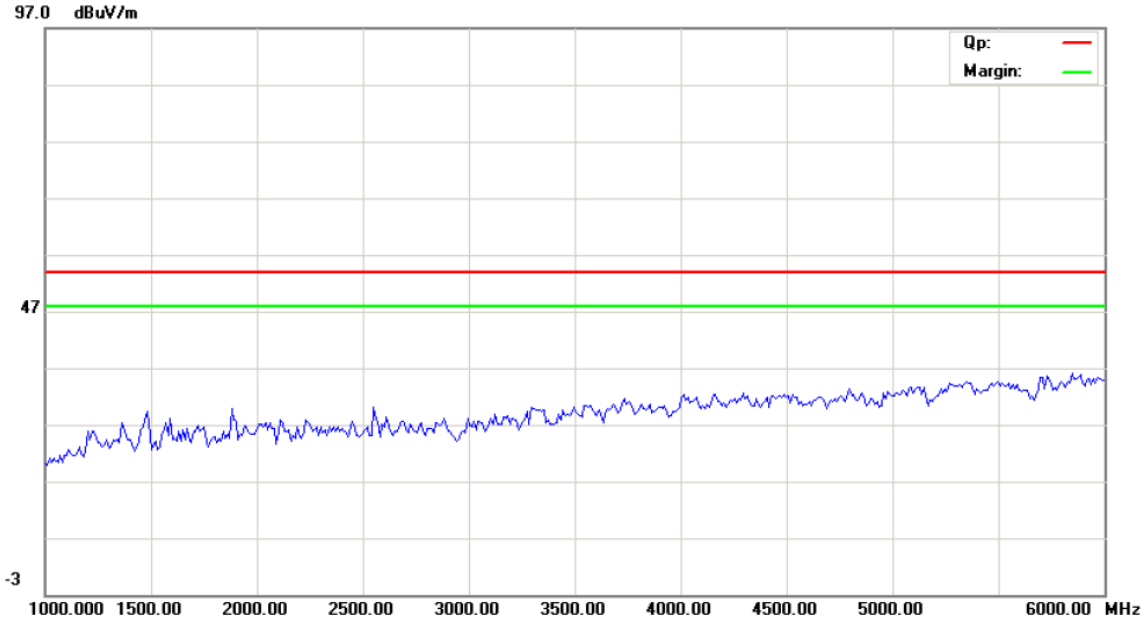
Temperature:25℃ Humidity: 75%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Connect to PC with 1#USB Line and Full Load

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
--	--	V	54(AV)

Note: Due to the final radiated level much less than the limit, no necessary take down final radiated level

Radiated Disturbance (1000MHz----6000MHz)

EUT Operating Environment

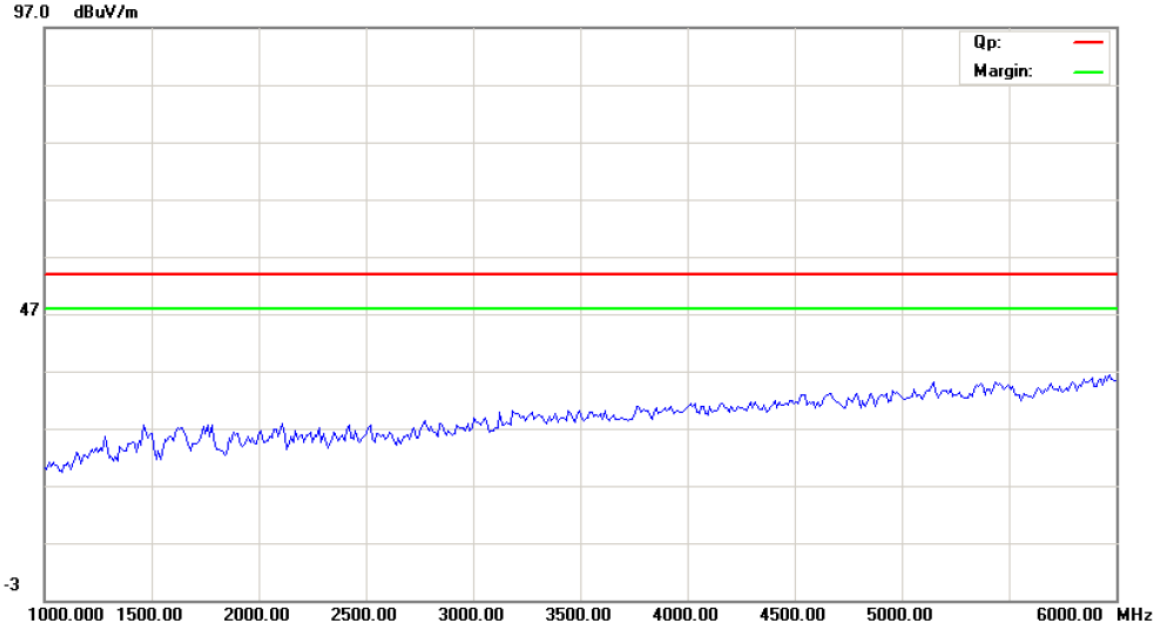
Temperature:25℃ Humidity: 75%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Connect to PC with 2#USB Line and Full Load

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
--	--	V	54(AV)

Note: Due to the final radiated level much less than the limit, no necessary take down final radiated level

Radiated Disturbance (1000MHz----6000MHz)

EUT Operating Environment

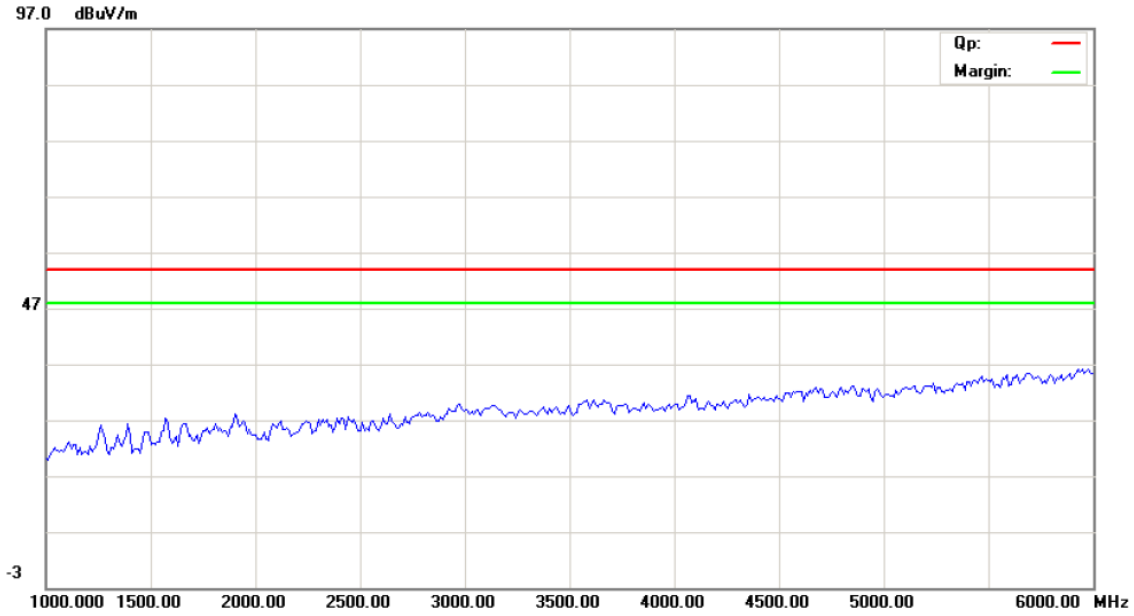
Temperature:25℃ Humidity: 75%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Connect to PC with 2#USB Line and Full Load

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
--	--	H	54(AV)

Note: Due to the final radiated level much less than the limit, no necessary take down final radiated level

Radiated Disturbance (1000MHz----6000MHz)

EUT Operating Environment

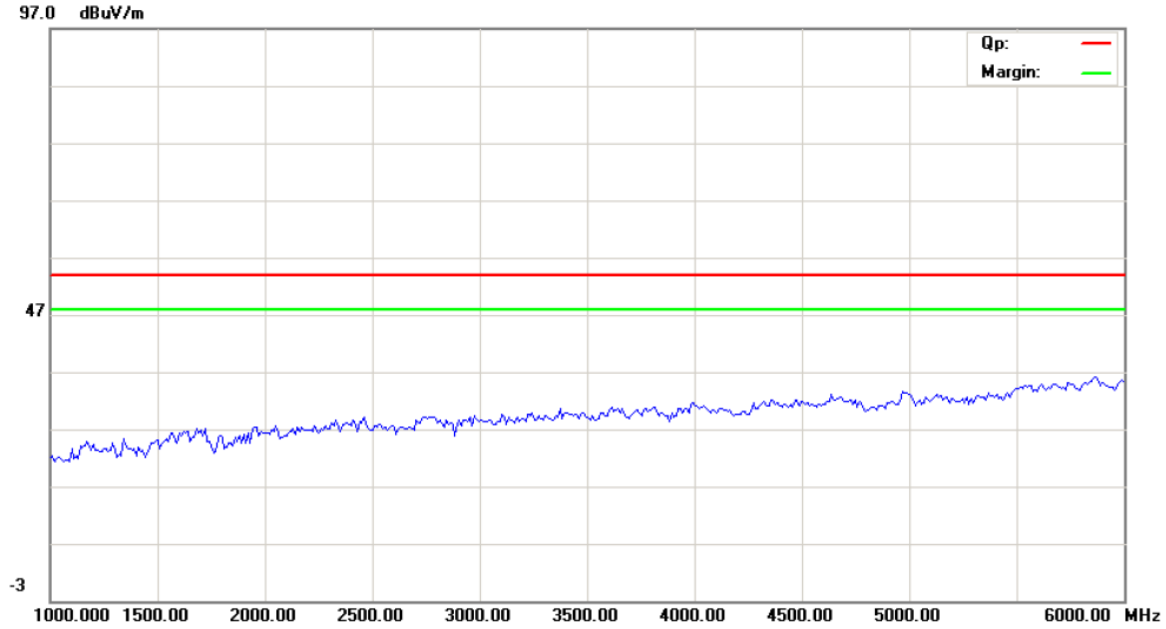
Temperature:25℃ Humidity: 75%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Play TF Card and Full Load

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
--	--	H	54(AV)

Note: Due to the final radiated level much less than the limit, no necessary take down final radiated level

Radiated Disturbance (1000MHz----6000MHz)

EUT Operating Environment

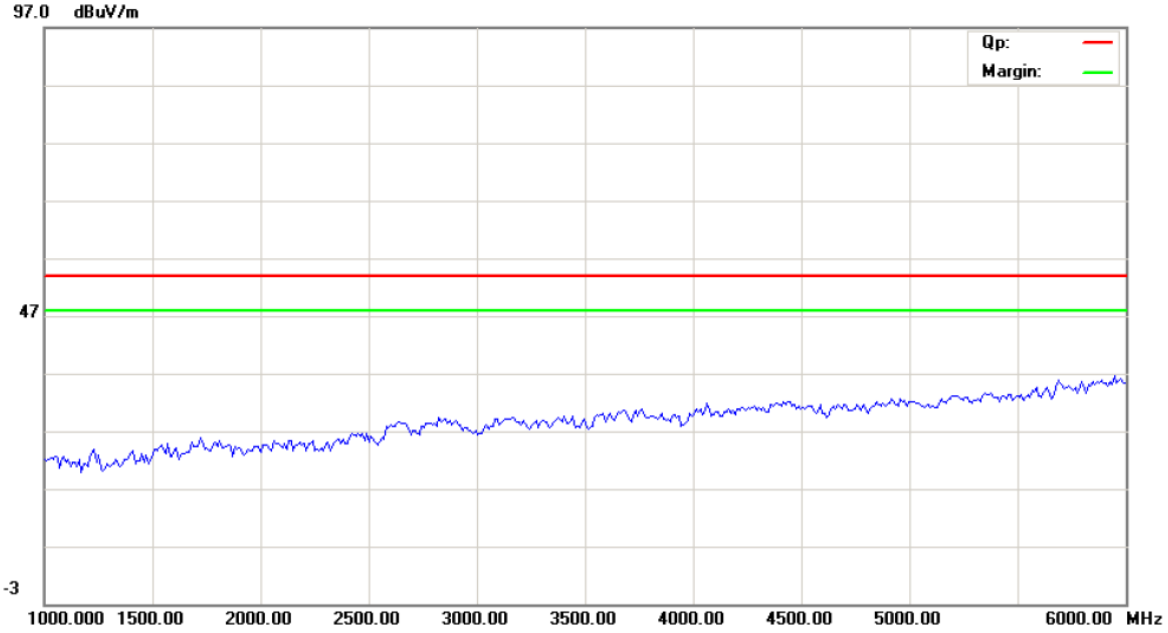
Temperature:25℃ Humidity: 75%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Play TF Card and Full Load

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



Frequency (MHz)	Level@3m (dBμV/m)	Antenna Polarity	Limit@3m (dBμV/m)
--	--	V	54(AV)

Note: Due to the final radiated level much less than the limit, no necessary take down final radiated level

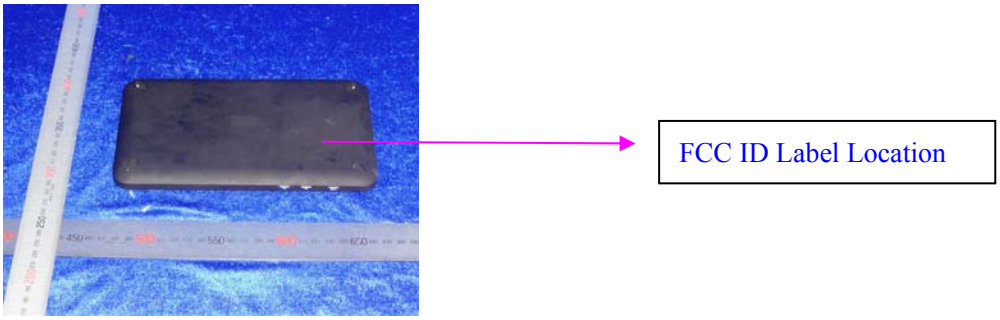
6.0 FCC ID Label

FCC ID: Z6CMD702

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



7.0 Photo of testing

7.1 Conducted test View--
Please refer to report EMC1110096-01

7.2 Radiated emission test view--
Please refer to report EMC1110096-01

-End of the report-