

FCC TEST REPORT

47 CFR FCC Part 15 Subpart B

Report Reference No.....: MWR1501002903

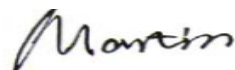
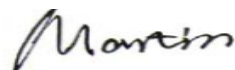
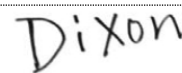
FCC ID.....: 2AAJDFORCE

Compiled by
(position+printed name+signature)..: File administrators Martin Ao

Supervised by
(position+printed name+signature)..: Test Engineer Martin Ao

Approved by
(position+printed name+signature)..: Manager Dixon Hao

Date of issue.....: Jan 28, 2015

Representative Laboratory Name.: Maxwell International Co., Ltd.

Address.....: Room 509, Hongfa center building, Baoan District, Shenzhen, Guangdong, China

Testing Laboratory Name.....: Shenzhen CTL Testing Technology Co., Ltd.

Address.....: Floor 1-A, Baisha Technology Park, No. 3011, Shaheixi Road, Nanshan, Shenzhen, China

Applicant's name.....: Etoway Technology Co., Ltd.

Address.....: Room 1005, Building A, Stars Plaza, #38 Hongli Road, Futian, Shenzhen China

Test specification.....:

Standard.....: **47 CFR FCC Part 15 Subpart B - Unintentional Radiators**
ANSI C63.4: 2009

TRF Originator.....: Maxwell International Co., Ltd.

Master TRF.....: Dated 2011-05

Maxwell International Co., Ltd. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Maxwell International Co., Ltd. as copyright owner and source of the material.
Maxwell International Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test item description.....: Mobile Phone

Trade Mark.....: Etoway

Manufacturer.....: ShenZhen Etoway Electronics Co., Ltd.

Model/Type reference.....: Force

Listed Models: /

Rating.....: DC 3.70V

Hardware version.....: CX26

Software version: D62_IVO_V139_PCB(CX26-MB-V0.1)_ETOWAY_NK_LANGUAGE(YXP)_FLASH(32)
32)___20141104

Result.....: PASS

TEST REPORT

Test Report No. : MWR1501002903	Jan 28, 2015 Date of issue
---	-------------------------------

Equipment under Test : Mobile Phone

Model /Type : Force

Listed Models : /

Applicant : **Etoway Technology Co., Ltd.**

Address : Room 1005, Building A, Stars Plaza, #38 Hongli Road,
Futian, Shenzhen China

Manufacturer **ShenZhen Etoway Electronics Co., Ltd.**

Address : Room 1005, Building A, Stars Plaza, #38 Hongli Road,
Futian, Shenzhen China

Test Result:	PASS
---------------------	-------------

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1.	TEST STANDARDS	4
2.	SUMMARY	5
2.1.	General Remarks	5
2.2.	Product Description	5
2.3.	Equipment under Test	5
2.4.	Short description of the Equipment under Test (EUT)	5
2.5.	EUT operation mode	6
2.6.	Related Submittal(s) / Grant (s)	6
2.7.	Internal Identification of AE used during the test	6
2.8.	Modifications	6
2.9.	EUT configuration	6
2.10.	Configuration of Tested System	7
2.11.	NOTE	7
3.	TEST ENVIRONMENT	8
3.1.	Address of the test laboratory	8
3.2.	Test Facility	8
3.3.	Environmental conditions	8
3.4.	Statement of the measurement uncertainty	8
3.5.	Equipments Used during the Test	9
4.	TEST CONDITIONS AND RESULTS	10
4.1.	Conducted Emissions Test	10
4.2.	Radiated Emission Test	12
5.	TEST SETUP PHOTOS OF THE EUT	15

1. TEST STANDARDS

The tests were performed according to following standards:

[47 CFR FCC Part 15 Subpart B](#) - Unintentional Radiators

[ANSI C63.4: 2009](#) – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Jan 10, 2015
Testing commenced on	:	Jan 10, 2015
Testing concluded on	:	Jan 28, 2015

2.2. Product Description

The **Etoway Technology Co., Ltd.**'s Model: Force or the "EUT" as referred to in this report; more general information as follows, for more details, refer to the user's manual of the EUT.

Name of EUT	Mobile Phone
Model Number	Force
FCC ID	2AAJDFORCE
Modulation Type	GMSK for GSM/GPRS;
BT Operation frequency	2402MHz-2480MHz
BT Modulation Type	GFSK,8DPSK, π /4DQPSK
Antenna Type	Internal
GSM/EDGE/GPRS	Supported GPRS
Extreme temp. Tolerance	-30°C to +50°C
Extreme vol. Limits	3.40VDC to 4.20VDC (nominal: 3.70VDC)
GSM Operation Frequency Band	GSM 850MHz/ PCS 1900MHz
GSM Release Version	R99
GPRS operation mode	Class B
GPRS Multislot Class	12
EGPRS Multislot Class	Not Supported

2.3. Equipment under Test

Power supply system utilised

Power supply voltage	:	☐ 120V / 60 Hz	☐ 115V / 60Hz
		☐ 12 V DC	☐ 24 V DC
		☒ Other (specified in blank below)	

DC 3.70V

2.4. Short description of the Equipment under Test (EUT)

2.4.1 General Description

Force is subscriber equipment in the GSM system. The GSM/GPRS frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900, but only GSM850 and PCS1900 bands test data included in this report. The Mobile Phone implements such functions as RF signal receiving/transmitting, GSM/GPRS protocol processing, voice, video MMS service etc. Externally it provides micro SD card interface, earphone port (to provide voice service) and SIM card interface. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

2.4.2 Internal Identification of EUT used during the test

2.4.3

EUT ID*	SN or IMEI	HW Version	SW Version	Date of receipt	Type of Test
N01	35618106423113	CX26	D62_I VO_V139_PCB(CX26-MB-	2015-	Radio

	5		V0.1)_ETOWAY_NK_LANGUAGE(YXP)_FLASH(32)_20141104	01-10	
N02	356181064231136	CX26	D62_IVO_V139_PCB(CX26-MB-V0.1)_ETOWAY_NK_LANGUAGE(YXP)_FLASH(32)_20141104	2015-01-10	SAR (EMF)

NOTE: We used two Samples only for facilitate testing. All test setup photos are the color difference form External/Internal Photo, But they are the same mode. There are 4 color, they are white, green, yellow and red..

2.4.4 Test Environments

NOTE: The values used in the test report maybe stringent than the declared.

Environment Parameter	Selected Values During Tests		
NTNV	Temperature	Voltage	Relative Humidity
	Ambient	3.7VDC	Ambient

2.5. EUT operation mode

The EUT has been tested under typical operating condition.

2.6. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: 2AAJDFORCE** filing to comply with the FCC Part 15, Subpart B Rules.

2.7. Internal Identification of AE used during the test

AE ID*	Description
AE1	Battery
AE2	Charger

AE1

Model: C663907180T
Capacitance: 1000mAh
Nominal Voltage: 3.70V
Nominal Voltage: 3.70V

AE2

Model: Force
Input:AC 100-240V 50/60Hz
Output:DC 5V 1A

*AE ID: is used to identify the test sample in the lab internally.
We not used AE2 when for FCC Part 15B test.

2.8. Modifications

No modifications were implemented to meet testing criteria.

2.9. EUT configuration

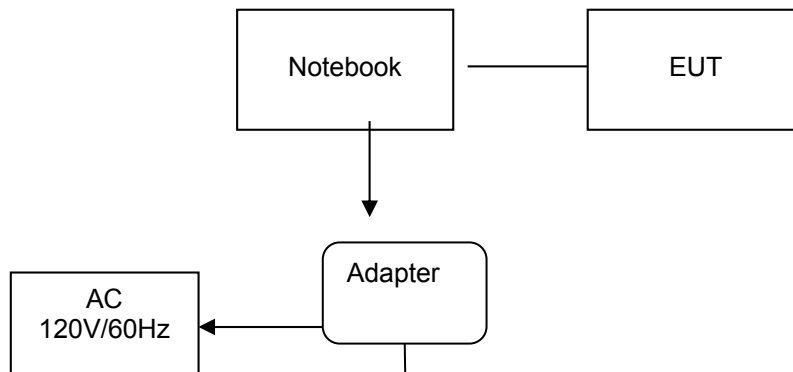
The following peripheral devices and interface cables were connected during the measurement:

- - supplied by the manufacturer
- - supplied by the lab

○ Power Cable	Length (m) :	/
	Shield :	/
	Detachable :	/
○ Multimeter	Manufacturer :	/
	Model No. :	/

2.10. Configuration of Tested System

Configuration of Tested System



Equipment Used in Tested System

No.	Equipment	Manufacturer	Model No.	Serial No.	Length	shielded/unshielded	Notes
1	Notebook	DELL	INS14MD-1328S	1RNN42X	/	/	DOC
5	USB Cable (EUT to PC)	Genshuo	USB 2.0	N/A	0.60m	unshielded	N/A
7	Power line	/	/	N/A	1.00m	unshielded	N/A
8	Adapter	HIPRO	DELL-A0904A3	F1120709016S404	1.50m	unshielded	DOC

2.11. NOTE

- The EUT is a Mobile Phone with GSM/GPRS and Bluetooth function, The functions of the EUT listed as below:

	Test Standards	Reference Report
GSM/GPRS	FCC Part 22/FCC Part 24	MWR1501002901
Bluetooth-EDR	FCC Part 15 C 15.247	MWR1501002902
USB Port	FCC Part 15 B	MWR1501002903
SAR	FCC Part 2 §2.1093	MWR1501002904

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.

Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2003) and CISPR Publication 22.

3.2. Test Facility

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

FCC-Registration No.: 970318

Shenzhen CTL Testing Technology Co., Ltd. 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 970318, Dec 19, 2013

3.3. Environmental conditions

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

Temperature:	<u>15-35 ° C</u>
Humidity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen CTL Testing Technology Co., Ltd. is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.24 dB	(1)
Radiated Emission	1~18GHz	5.16 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	3.39 dB	(1)

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

3.5. Equipments Used during the Test

AC Power Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Artificial Mains	Rohde&Schwarz	ENV216	101316	2014/07/02
2	EMI Test Receiver	Rohde&Schwarz	ESCI3	103710	2014/07/02
3	Pulse Limiter	Com-Power	LIT-153	53226	2014/07/01
4	EMI Test Software	Rohde&Schwarz	ES-K1 V1.71	N/A	N/A
5	Coaxial Cables	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	2014/10/19

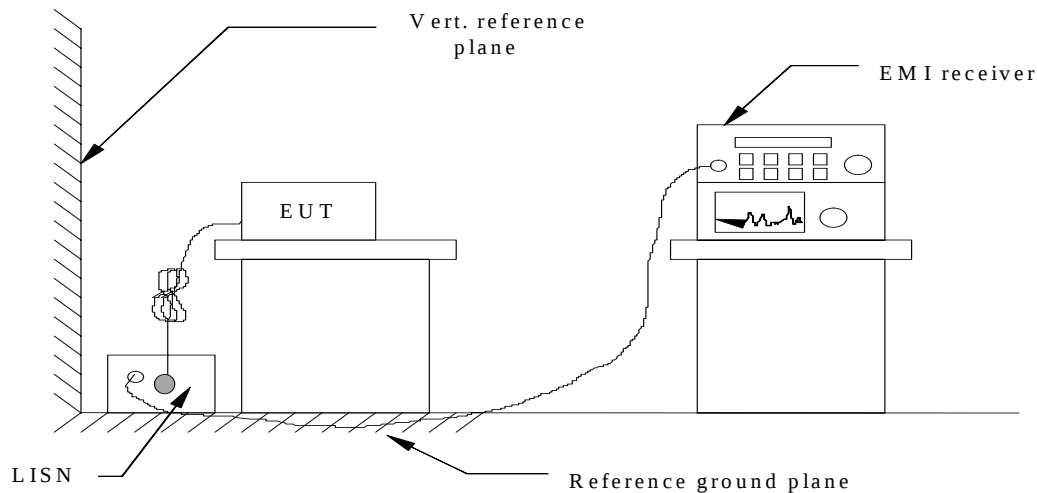
Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Bilog Antenna	Sunol Sciences Corp.	JB1	A061713	2014/07/12
2	EMI TEST Receivcer	Rohde&Schwarz	ESCI3	103710	2014/07/02
3	EMI TEST Software	Audix	E3	N/A	N/A
4	EMI TEST Software	Rohde&Schwarz	ESK1	N/A	N/A
5	HORN ANTENNA	Sunol Sciences Corp.	DRH-118	A062013	2014/07/12
6	Amplifer	HP	8447D	3113A07663	2014/10/22
7	Preamplifier	HP	8349B	3155A00882	2014/07/03
8	Amplifer	Compliance Direction systems	PAP1-4060	129	2014/07/03
9	Loop Antenna	Rohde&Schwarz	HFH2-Z2	100020	2014/06/29
10	TURNTABLE	MATURO	TT2.0	----	N/A
11	ANTENNA MAST	MATURO	TAM-4.0-P	----	N/A
12	Horn Antenna	SCHWARZBECK	BBHA9170	25849	2014/06/21
13	Spectrum Analyzer	Rohde&Schwarz	FSU26	201148	2014/07/02
14	Coaxial Cables	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	2014/10/19
15	Coaxial Cables	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	2014/10/19

The Cal.Interval was one year

4. TEST CONDITIONS AND RESULTS

4.1. Conducted Emissions Test

TEST CONFIGURATION



TEST PROCEDURE

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system; a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4-2009.
2. Support equipment, if needed, was placed as per ANSI C63.4-2009.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4-2009.
4. The EUT received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5. All support equipments received AC power from a second LISN, if any.
6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.

CONDUCTED POWER LINE EMISSION LIMIT

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following :

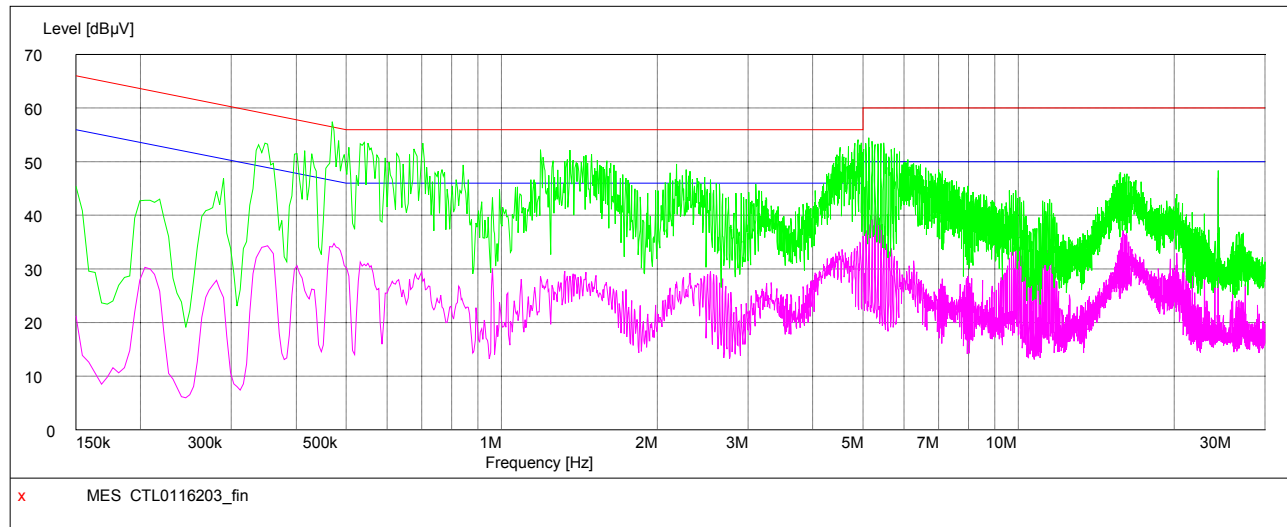
Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

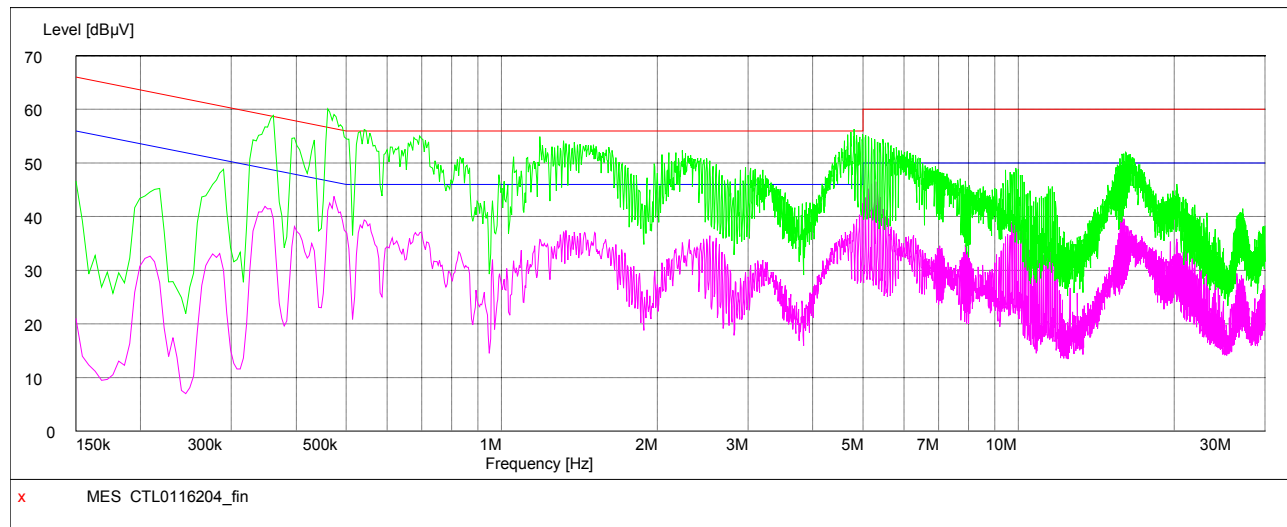
TEST RESULTS

Note : We tested Playing Video, camera and Data transmission (Data transmission with a computer through a data cable) ,and recorded the worst case at the Data transmission Mode.

Note: test voltage: 120V/60Hz



Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line
0.474000	47.40	10.2	56	8.60	QP	L1
4.803000	45.00	10.4	56	11.00	QP	L1
4.875000	44.40	10.4	56	11.60	QP	L1
5.199000	40.10	10.4	50	9.90	AV	L1
5.266500	40.80	10.4	50	9.20	AV	L1
24.391500	47.10	10.8	50	2.90	AV	L1

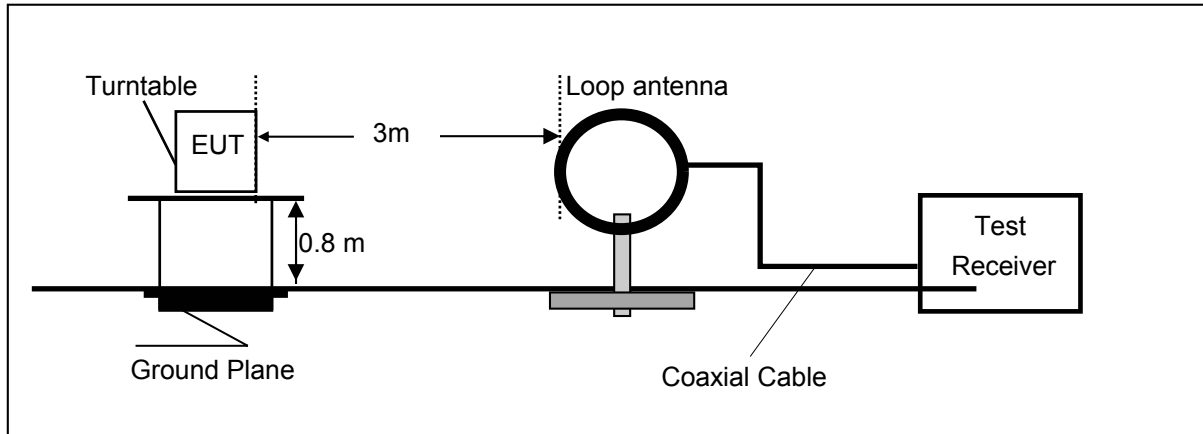


Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line
0.460500	54.50	10.2	57.0	2.50	QP	N
0.541500	52.50	10.2	56.0	3.50	QP	N
4.798500	53.00	10.4	56.0	3.00	QP	N
0.474000	42.90	10.2	46.0	3.10	AV	N
4.987500	42.50	10.4	46.0	3.50	AV	N
5.122500	45.20	10.4	50.0	4.80	AV	N

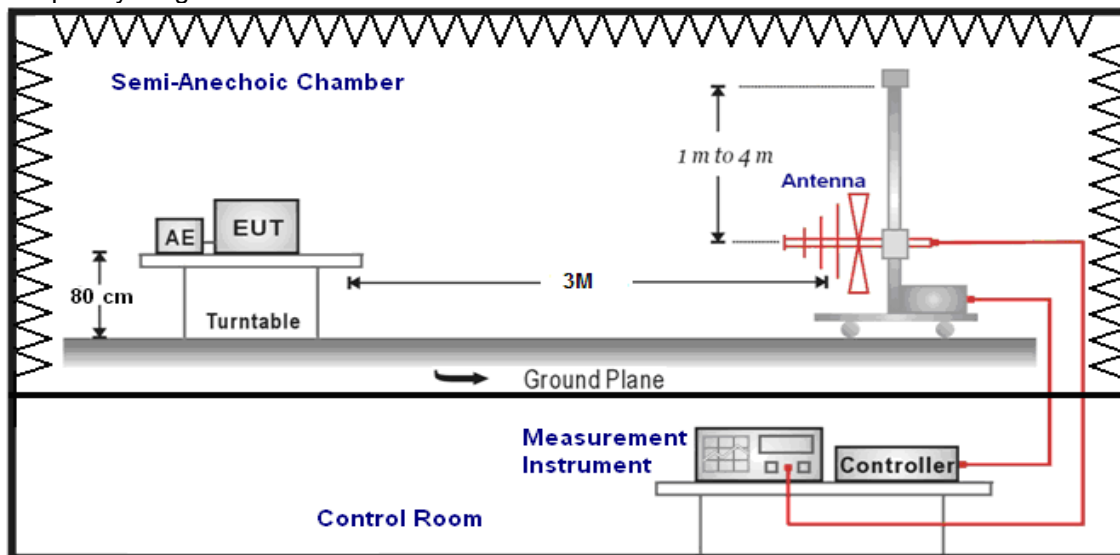
4.2. Radiated Emission Test

TEST CONFIGURATION

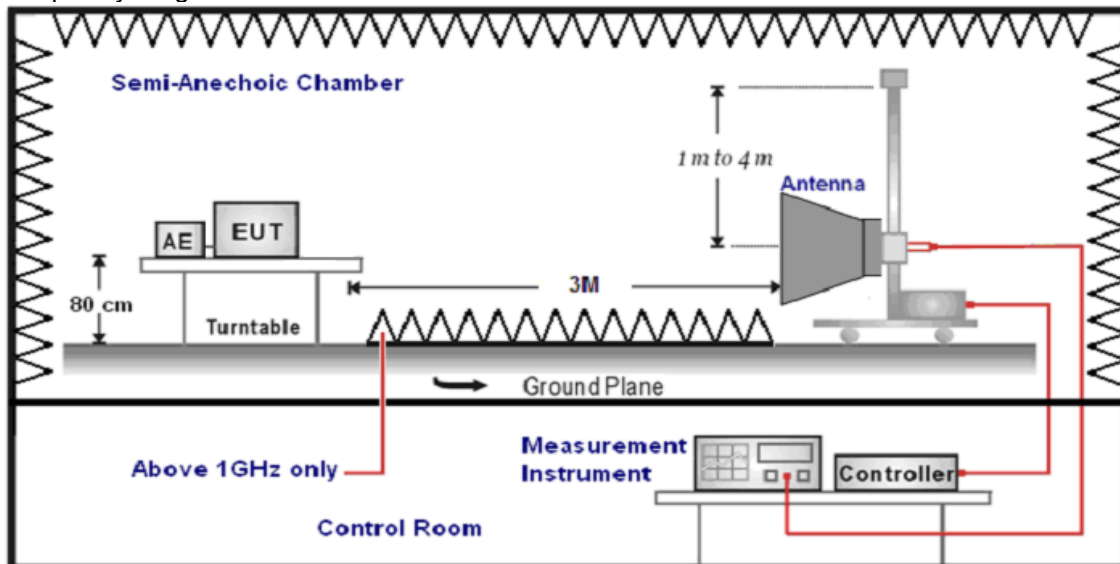
Frequency range: 9 KHz – 30MHz



Frequency range: 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The maximum operation frequency was 512MHz, the radiated emission test frequency from 9 KHz to 18GHz.

FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

For example

Frequency (MHz)	FS (dBμV/m)	RA (dBμV/m)	AF (dB)	CL (dB)	AG (dB)	Transd (dB)
300.00	40	58.1	12.2	1.6	31.90	-18.1

$$\text{Transd} = \text{AF} + \text{CL} - \text{AG}$$

RADIATION LIMIT

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	300	$20\log(2400/F(\text{KHz}))+80$	$2400/F(\text{KHz})$
0.49-1.705	30	$20\log(24000/F(\text{KHz}))+40$	$24000/F(\text{KHz})$
1.705-30	30	$20\log(30)+40$	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST RESULTS

Note : We tested Playing Video, camera and Data transmission (Data transmission with a computer through a data cable) ,and recorded the worst case at the Data transmission Mode.

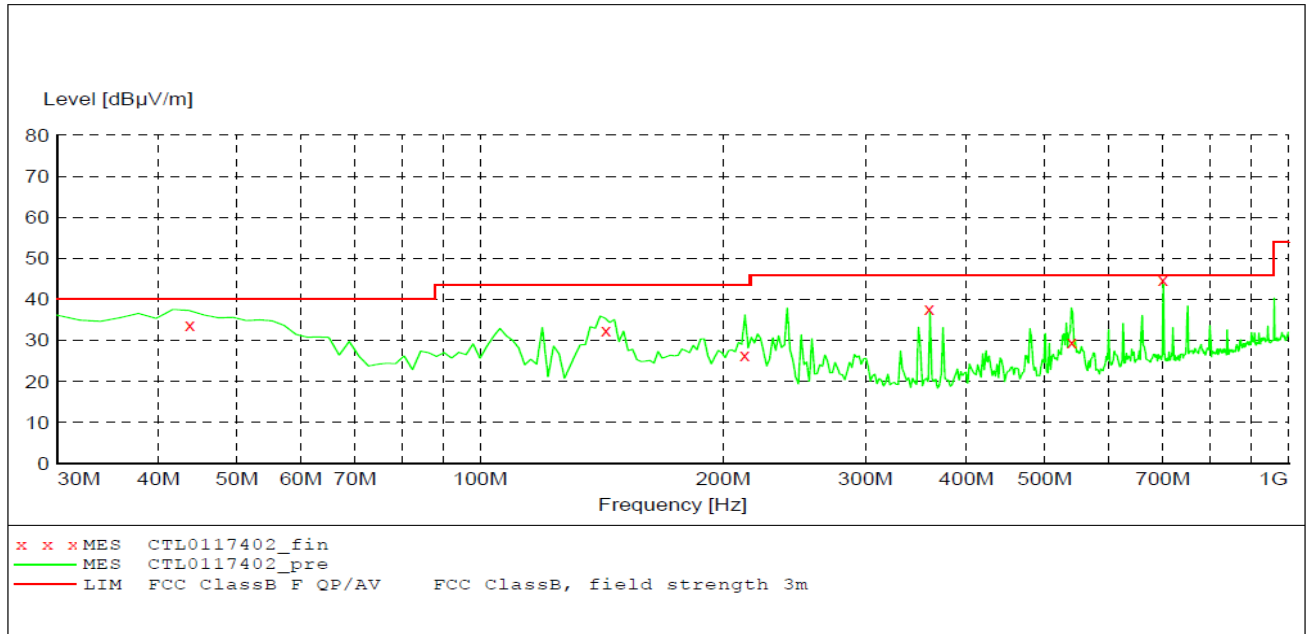
Remark: 1. test voltage: 120V/60Hz

Remark: 2. We not recorded emission level for 10GHz to 18GHz as emissio level was at least 10dB below emission level.

For 9KHz to 30MHz

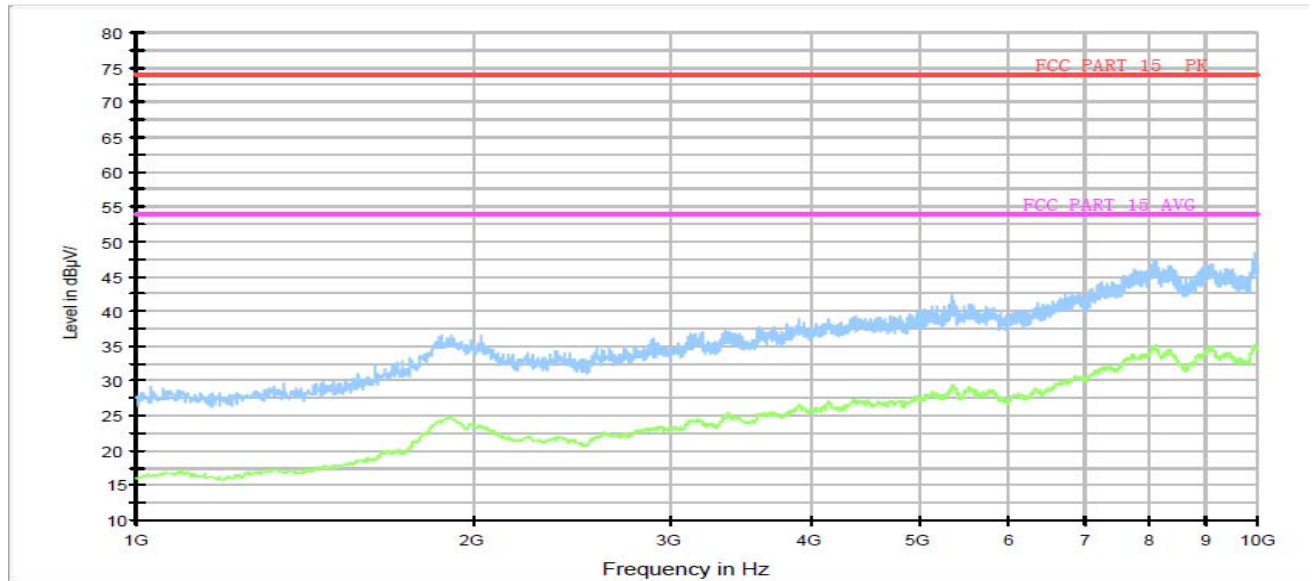
Frequency (MHz)	Corrected Reading (dBμV/m)@3m	FCC Limit (dBμV/m) @3m	Margin (dB)	Detector	Result
12.00	44.12	69.54	25.42	QP	PASS
24.00	46.36	69.54	23.18	QP	PASS

For 30MHz-1GHz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Ant. Polar. H / V
43.800000	46.40	-12.5	33.90	40.0	6.10	QP	V
143.220000	47.90	-15.5	32.40	43.5	11.10	QP	V
212.800000	41.10	-14.6	26.50	43.5	17.00	QP	V
360.000000	47.20	-9.5	37.70	46.0	8.30	QP	H
539.760000	35.50	-5.8	29.70	46.0	16.30	QP	H
699.960000	45.60	-2.8	42.80	46.0	3.20	QP	H

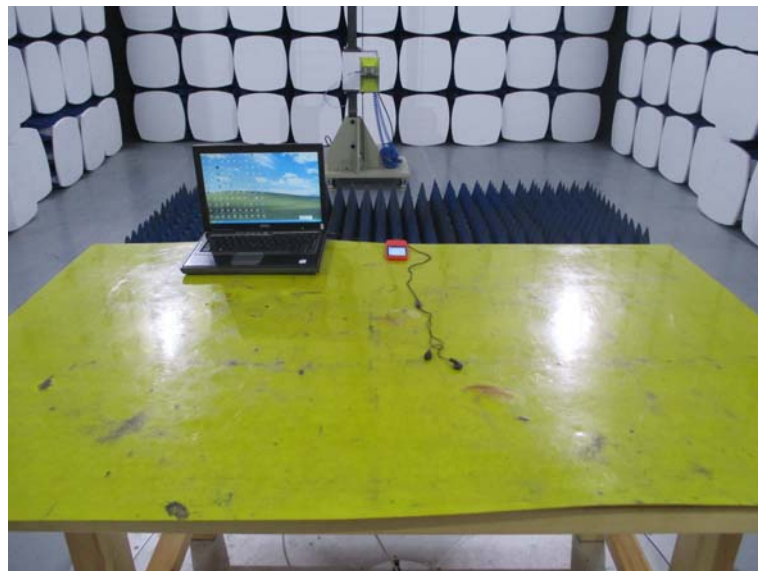
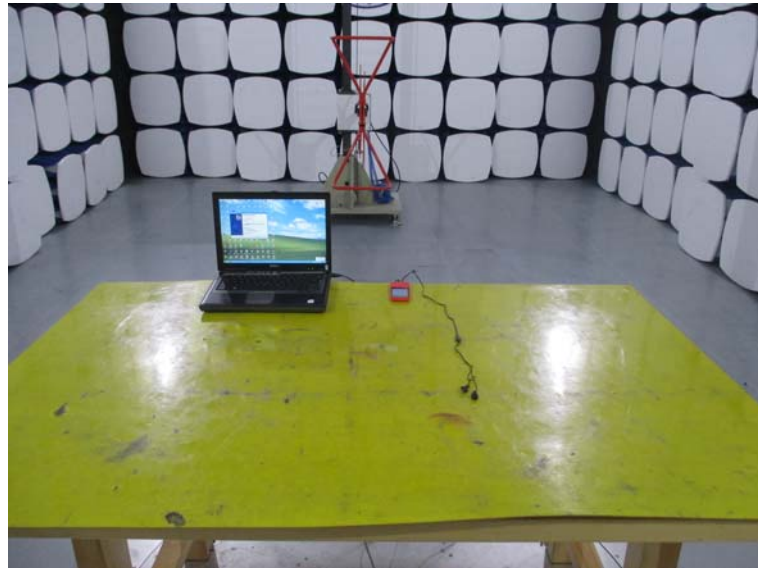
For 1GHz-10GHz



Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin	Detector	Ant. Polar. H / V
1905.6	51.20	-14.70	36.50	74	37.50	Peak	H
8106.5	53.08	-5.58	47.50	74	26.50	Peak	H
1905.6	52.30	-14.70	37.60	74	36.40	Peak	V
8106.5	53.98	-5.58	48.40	74	25.60	Peak	V

5. Test Setup Photos of the EUT





.....End of Report.....