

EMC TEST REPORT

Applicant:	ZTE Corporation
Address:	ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R. China

Manufacturer or Supplier	ZTE Corporation
Address	ZTE Plaza, Keji Road South, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, P.R. China
Product	GSM Wireless Data Terminal
Brand Name	ZTE
Model	ZTE MG2618
Additional Model & Model Difference	N/A
Date of tests	Mar. 02, 2015 ~ Mar. 10, 2015

The submitted sample of the above equipment has been tested for according to the requirements of the following standards:

FCC Part 15, Subpart B, Class B

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Jeffery Lee
Project Engineer / EMC Department

Approved by Sam Tung
Supervisor / EMC Department




Date: Mar. 10, 2015

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BUREAU
VERITAS

Test Report No.: FV150213N005

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FV150213N005	Original release	Mar. 10, 2015



1 GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF EUT

PRODUCT	GSM Wireless Data Terminal
MODEL NO.	ZTE MG2618
POWER SUPPLY	Powered by Host Unit
OPERATING FREQUENCY	Below 15MHz
ACCESSORY DEVICES	N/A

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.



1.2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart B			
Standard Section	Test Item	Result	Remark
FCC Part 15, Subpart B, Class B	Radiated Emission Test (30MHz ~ 1GHz)	PASS	Meets Class B Limit Minimum passing margin is -8.54dB at 30.242MHz
	Radiated Emission Test (Above 1GHz)	PASS	Meets Class B Limit Minimum passing margin is -15.6dB at 1883.14MHz

1.3 MEASUREMENT UNCERTAINTY

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

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

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz ~ 30MHz	+/-2.66dB
Radiated emissions	30MHz ~ 1GHz	+/-4.10dB
	1GHz ~ 18GHz	+/-4.58dB



1.4 DESCRIPTION OF TEST MODES

Test Mode	Test Condition
Radiated emission test	
1	GSM Wireless Data Terminal + GSM900 Idle + GPS Rx
2	GSM Wireless Data Terminal + DCS1800 Idle + GPS Rx

NOTE:

1. For radiated emission test, test mode 1 was the worst case and only this mode was presented in this report.



1.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

FOR EMISSION TESTS

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Universal Radio Communication Tester	R&S	CMU200	123259	N/A
2	Notebook	DELL	E6420	9H12FS1	N/A
3	Mouse	DELL	M056UOA	01688082	N/A

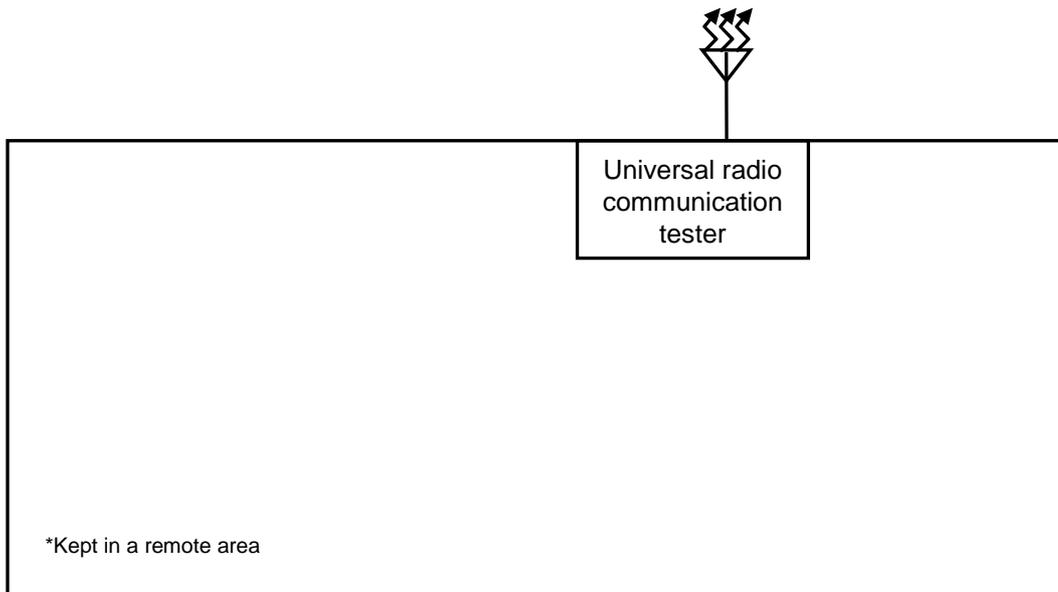
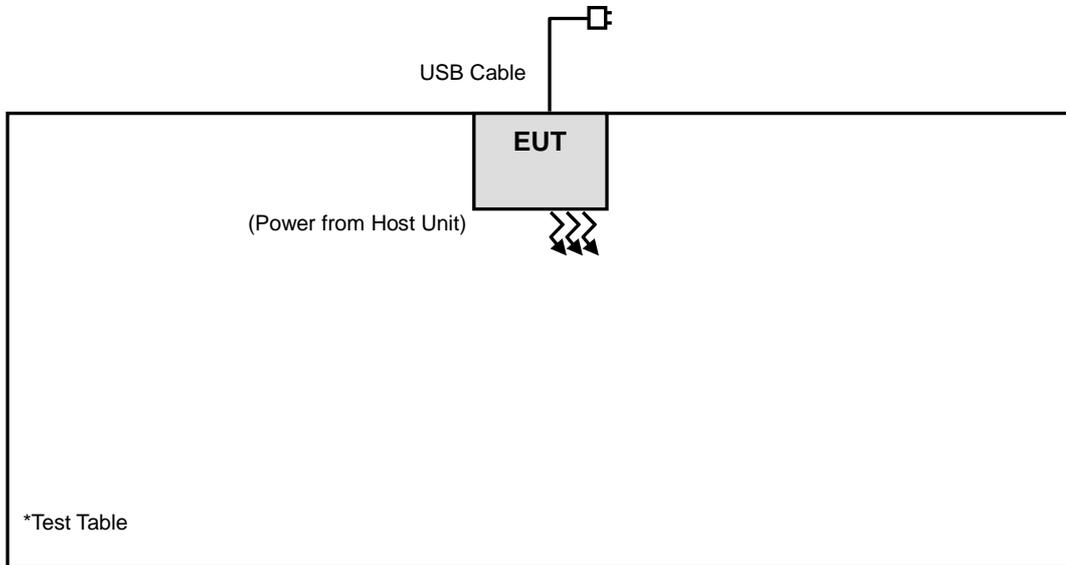
NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A
2	DC Line: Unshielded, Undetachable, 2.0m
3	USB Line: Unshielded, Undetachable 1.8m;

NOTE:

1. All power cords of the above support units are non shielded (1.8m).
2. Items 3-4 acted as communication partners.



1.6 CONFIGURATION OF SYSTEM UNDER TEST





2 EMISSION TEST

2.1 RADIATED EMISSION MEASUREMENT

2.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.109)

Emissions radiated outside of the specified bands, shall be according to the general radiated limits as following:

Radiated Emissions Limits at 10 meters (dBµV/m)				
Frequencies (MHz)	FCC 15B/ ICES-003, Class A	FCC 15B / ICES-003, Class B	CISPR 22, Class A	CISPR 22, Class B
30-88	39	29.5	40	30
88-216	43.5	33.1		
216-230	46.4	35.6		
230-960			47	37
960-1000	49.5	43.5	Not defined	Not defined
1000-3000	Avg: 49.5	Avg: 43.5		
3000+	Peak: 69.5	Peak: 63.5	Not defined	Not defined

Radiated Emissions Limits at 3 meters (dBµV/m)				
Frequencies (MHz)	FCC 15B / ICES-003, Class A	FCC 15B / ICES-003, Class B	CISPR 22, Class A	CISPR 22, Class B
30-88	49.5	40	50.5	40.5
88-216	54	43.5		
216-230	56.9	46		
230-960			57.5	47.5
960-1000	60	54	Avg: 56 Peak: 76	Avg: 50 Peak: 70
1000-3000	Avg: 60	Avg: 54		
3000+	Peak: 80	Peak: 74	Avg: 60 Peak: 80	Avg: 54 Peak: 74

- NOTE:**
- The lower limit shall apply at the transition frequencies.
 - Emission level (dBuV/m) = 20 log Emission level (uV/m).
 - As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
 - QP detector shall be applied if not specified.



2.2.2 TEST INSTRUMENTS

For frequency below 1G

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESCI	100962	Mar. 06,14	Mar. 05,15
EMI Test Receiver	Rohde&Schwarz	ESCI	101418	Mar. 28,14	Mar. 27,15
Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-554	Dec. 03, 14	Dec. 02, 15
Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-555	Nov. 24, 14	Nov. 23, 15
Signal Amplifier	Agilent	8447D	2944A10488	Jun. 25,14	Jun. 24,15
Signal Amplifier	Agilent	8447D	2944A11174	Jun. 25,14	Jun. 24,15
10m Semi-anechoic Chamber	CHANGLING	21.4m*12.1m*8.8m	NSEMC006	May 15, 14	May 14, 15
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A	N/A

Frequency range above 1GHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Horn Antenna	ETS-Lindgren	3117	00085519	Feb. 02,13	Feb. 01,15
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170242	Feb. 13,14	Feb. 12,17
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101003	Apr. 9, 14	Apr. 8, 15
Spectrum Analyzer (9KHz-25GHz)	Agilent	E7405A	MY45118807	May 13,14	May 12,15
Pre-Amplifier (100MHz-26.5GHz)	EMCI	EMC 012645	980077	Jun. 16,14	Jun. 15,15
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 20,14	Nov. 19,15
Test Software	ADT	ADT_Radiated_V7.6.15	N/A	N/A	N/A

- NOTE:**
1. The test was performed in 10m Chamber.
 2. The calibration interval of the above test instruments is 12 months or 24 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
 3. The FCC Site Registration No. is 502831.



2.2.3 TEST PROCEDURE

<Frequency Range below 1GHz>

The basic test procedure was in accordance with ANSI C63.4:2009 (section 12).

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.

NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) (if the raw value not contains the amplifier);
4. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Amplifier Gain(dB) (if the raw value contains the amplifier).
5. Margin value = Emission level – Limit value.



<Frequency Range above 1GHz>

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meters Semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. The bore sight should be used during the test above 1GHz.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz

NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz for Average detection (AV) at frequency above 1GHz.
3. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the receiver antenna.
4. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
5. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) (if the raw value not contains the amplifier);
6. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Amplifier Gain(dB) (if the raw value contains the amplifier)
7. Margin value = Emission level – Limit value.

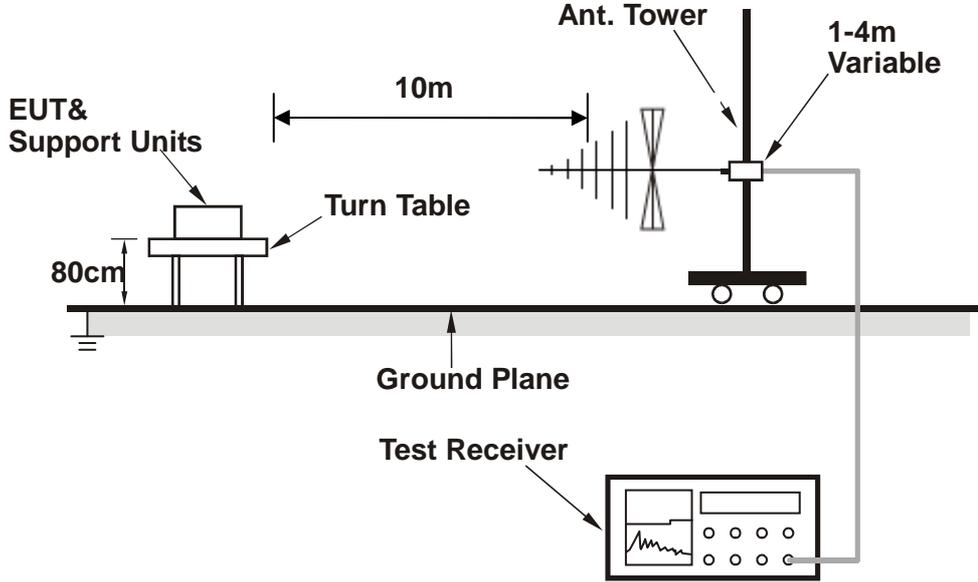
2.2.4 DEVIATION FROM TEST STANDARD

No deviation.

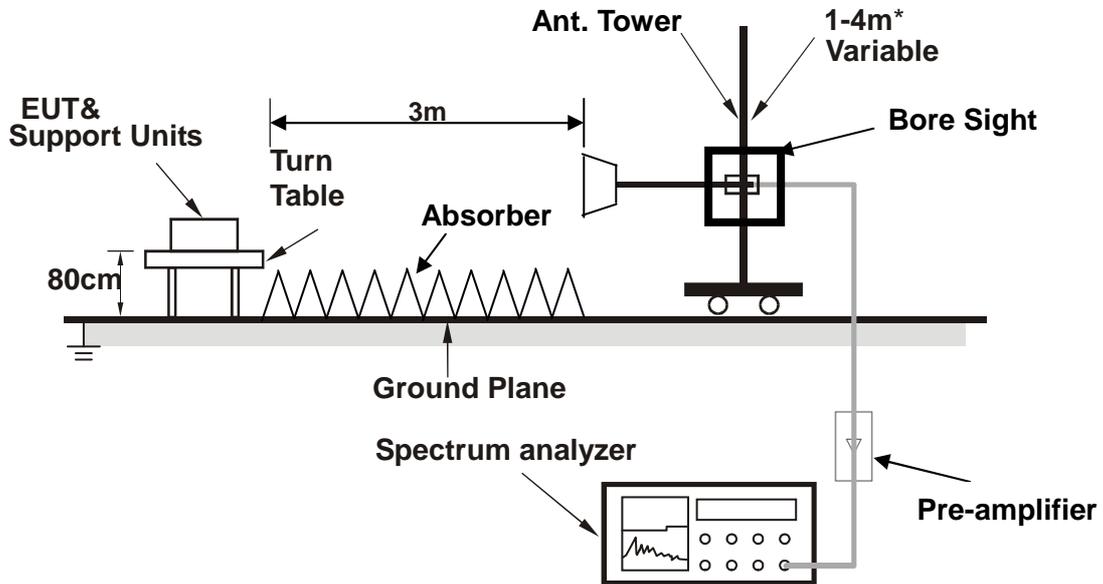


2.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



* : depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

2.2.6 EUT OPERATING CONDITIONS

Same as item 2.1.6.

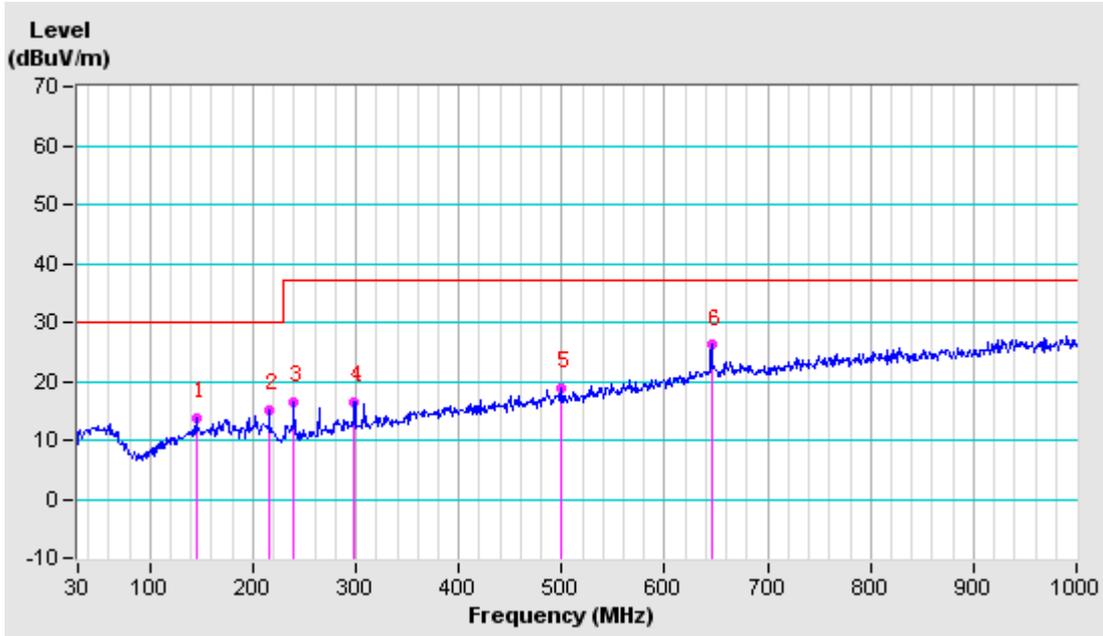


2.2.7 TEST RESULTS

TEST VOLTAGE	AC 120V/60Hz	FREQUENCY RANGE	30-1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 60 %RH	DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak , 120 kHz
TESTED BY	William Wang		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	145.187	-14.46	28.34	13.88	30	-16.12	400	69
2	215.998	-16.31	31.46	15.15	30	-14.85	400	274
3	240.005	-14.83	31.3	16.47	37	-20.53	400	311
4	298.811	-12.48	29.07	16.59	37	-20.41	400	360
5	500.207	-8.87	27.6	18.73	37	-18.27	400	163
6	645.101	-4.69	30.85	26.16	37	-10.84	400	169

- REMARKS:**
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
 2. Negative sign (-) in the margin column signify levels below the limit.
 3. Frequency range scanned: 30MHz to 1000MHz.
 4. Only emissions significantly above equipment noise floor are reported.

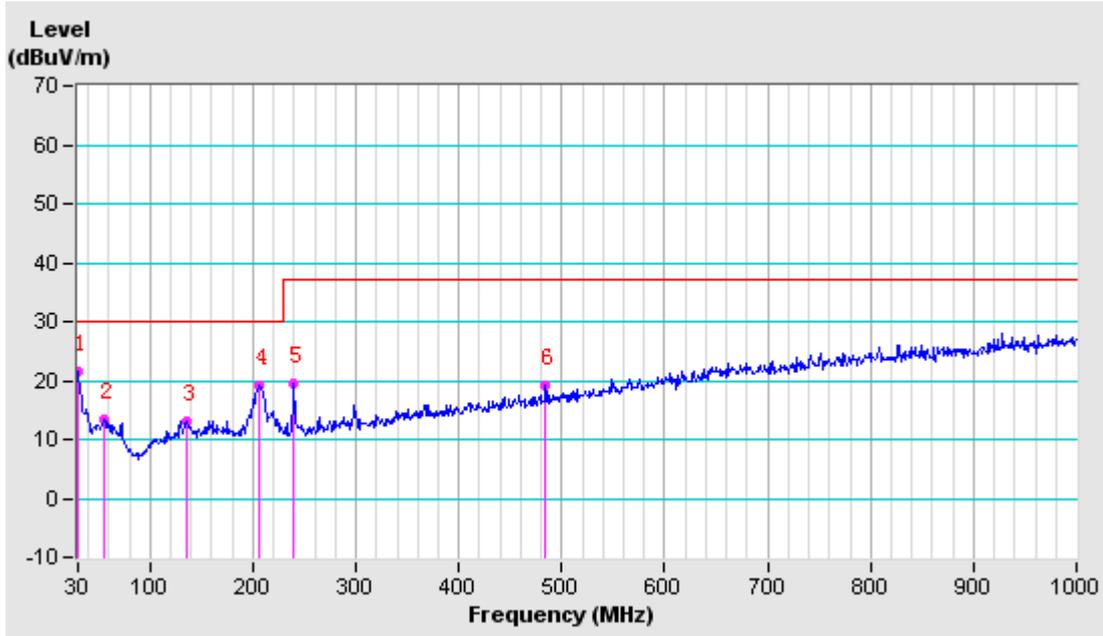




TEST VOLTAGE	AC 120V/60Hz	FREQUENCY RANGE	30-1000 MHz
ENVIRONMENTAL CONDITIONS	22deg. C, 60 %RH	DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak , 120 kHz
TESTED BY	William Wang		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 10 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	30.242	-15.6	37.06	21.46	30	-8.54	100	166
2	55.341	-14.61	28.14	13.53	30	-16.47	100	290
3	136.458	-14.92	27.9	12.98	30	-17.02	100	221
4	206.055	-16.59	35.72	19.13	30	-10.87	100	296
5	240.005	-14.83	34.41	19.58	37	-17.42	100	336
6	484.202	-9.09	28.26	19.17	37	-17.83	100	31

- REMARKS:**
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
 2. Negative sign (-) in the margin column signify levels below the limit.
 3. Frequency range scanned: 30MHz to 1000MHz.
 4. Only emissions significantly above equipment noise floor are reported.





TEST VOLTAGE	AC 120V/60Hz	FREQUENCY RANGE	1-6 GHz
ENVIRONMENTAL CONDITIONS	20deg. C, 50 %RH	DETECTOR FUNCTION & BANDWIDTH	Peak/Average, 1 MHz
TESTED BY	William Wang		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 10 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBUV)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	1883.14 PK	-8.95	63.61	54.66	74	-19.34	100	158
2	1883.14 AV	-8.95	47.35	38.4	54	-15.6	100	158
3	8315.425 PK	3.11	52.49	55.6	74	-18.4	123	38
4	8315.425 AV	3.11	34.79	37.9	54	-16.1	123	38
5	12118.37 PK	7.25	46.55	53.8	74	-20.2	162	74
6	12118.37 AV	7.25	29.55	36.8	54	-17.2	162	74

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 10 M								
No.	Freq. (MHz)	Correction Factor (dB/m)	Raw Value (dBUV)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
1	1783.14 PK	-9.79	64.23	54.44	74	-19.56	100	121
2	1783.14 AV	-9.79	47.29	37.5	54	-16.5	100	121
3	8315.425 PK	3.11	52.79	55.9	74	-18.1	123	123
4	8315.425 AV	3.11	34.79	37.9	54	-16.1	123	123
5	12228.35 PK	7.54	45.66	53.2	74	-20.8	162	214
6	12228.35 AV	7.54	29.66	37.2	54	-16.8	162	214

- REMARKS:**
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
 2. Negative sign (-) in the margin column signify levels below the limit.
 3. Frequency range scanned: 1GHz to 6GHz.
 4. Only emissions significantly above equipment noise floor are reported.



Test Report No.: FV150213N005

3 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications were made to the EUT by the lab during the test.

---END---