FCC PART 15 B

TEST REPORT

For

MAXWEST INTERNATIONAL LIMITED

No.1,Longgang Road,Buji,Longgang,ShenzhenCity,Guangdong Province, P.R. China

FCC ID: 2AEN3GRAVITY5LTE

Report Type:	**Product Type:**
Original Report	Gravity 5LTE

Test Engineer: Lion Xiao

Report Number: RDG151125001-00D

Report Date: 2015-12-04

Reviewed By: Jerry Zhang
EMC Manager

Test Laboratory: Bay Area Compliance Laboratories Corp. (Dongguan)
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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *MAXWEST INTERNATIONAL LIMITED*'s product, model number: *Gravity 5LTE (FCC ID: 2AEN3GRAVITY5LTE)* (the "EUT") in this report was a *Gravity 5LTE* , which was measured approximately:14.6 cm (L) x 7.2 cm (W) x 1.0 cm (H), rated input voltage: DC3.8V rechargeable Li-ion battery or DC5.0V charging from adapter. The highest operating frequency is 1.3GHz

Adapter information:
Model: LPL-A005050100Z
Input: AC100-240V, 50/60 Hz 200mA MAX
Output: DC 5V, 1000mA

Note: The model Gravity 5LTE have different samples , they are the same electromagnetic emissions and electromagnetic compatibility characteristics, the difference between them is the colour, the details was explained in the attached declaration letter.

All measurement and test data in this report was gathered from production sample serial number: 151125001 (Assigned byBACL, Dongguan). The EUT was received on 2015-11-25.

Objective

This test report is prepared on behalf of *MAXWEST INTERNATIONAL LIMITED* in accordance with Part 2, Subpart J, and Part 15-Subparts A and B of the Federal Communications Commission's rules.

The objective of the manufacturer is to determine the compliance of EUT with FCC Part 15 B Class B.

Related Submittal(s)/Grant(s)

FCC Part 15C DTS submissions with FCC ID: 2AEN3GRAVITY5LTE.
FCC Part 15C DSS submissions with FCC ID: 2AEN3GRAVITY5LTE.
FCC Part 22H, 24E, 27 PCE submissions with FCC ID: 2AEN3GRAVITY5LTE.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, 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 40 GHz.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Dongguan).

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 06, 2015.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

EUT Exercise Software

The software “winthrax.exe” was used during test.

Equipment Modifications

No modification was made to the EUT tested.

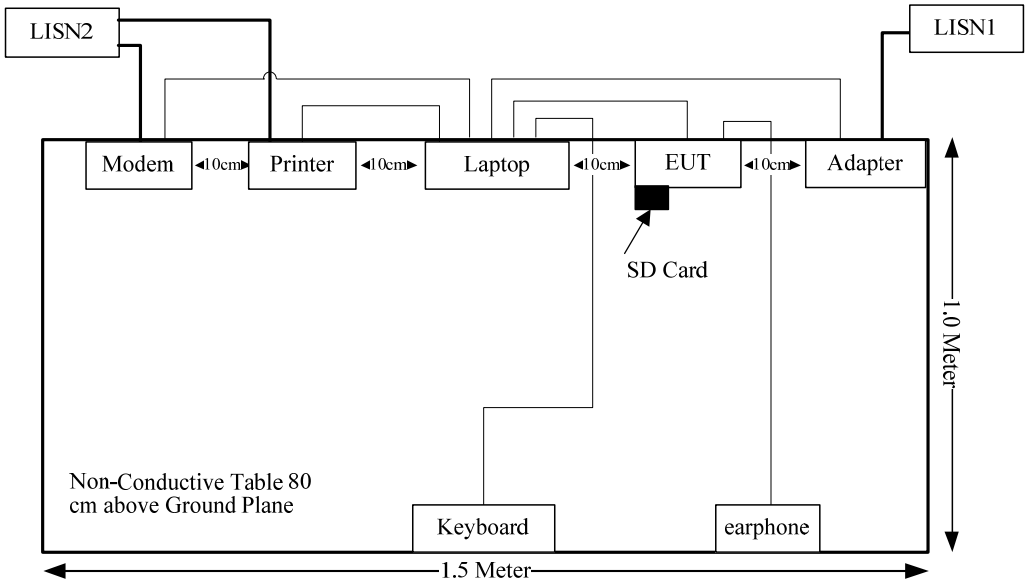
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	QDS-BRCM1017
HP	Printer	C3941A	JPTVOB2337
DELL	Keyboard	L100	CNORH656658907BL05DC
SAST	Modem	AEM-2100	0293
Kingston	Micro SD card	4GB	/

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Serial Cable	yes	No	1.2	Serial Port of Laptop	Modem
Parallel Cable	yes	No	1.2	Parallel Port of Laptop	Printer
Keyboard Cable	yes	No	1.8	USB Port of Laptop	Keyboard

Configuration of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§15.107	Conducted Emissions	Compliance
§15.109	Radiated Emissions	Compliance

FCC§15.107 - CONDUCTED EMISSIONS

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are Receiver, cable loss, and LISN.

Compliance or non- compliance with a disturbance limit shall be determined in the following manner：

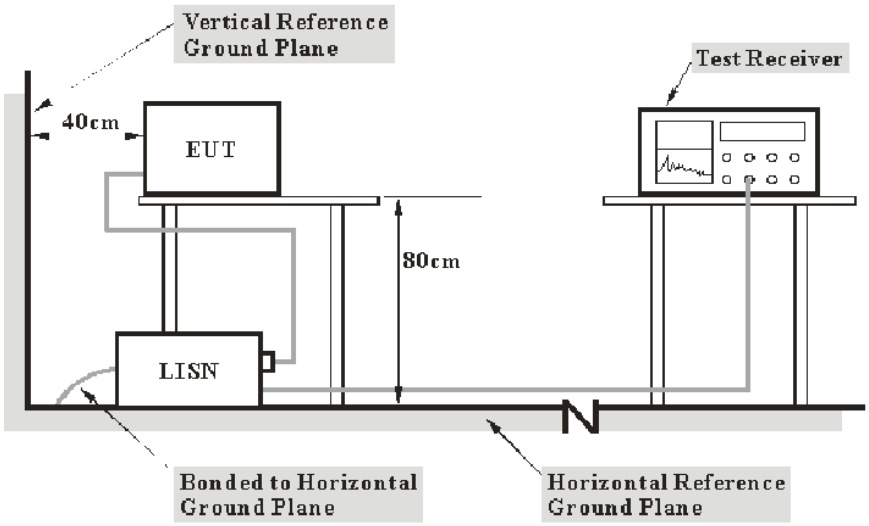
If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit.

Based on CISPR 16-4-2: 2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cispr}

Measurement	U_{cispr}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15 B Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The adapter of laptop was connected to a 120V/60Hz AC power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2015-10-20	2016-10-20
R&S	L.I.S.N	ESH2-Z5	892107/021	2015-07-16	2016-07-15
R&S	Two-line V-network	ENV 216	3560.6550.12	2014-12-11	2015-12-11
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

During the conducted emission test, the adapter of laptop was connected to the outlet of the first LISN and the other support equipments were connected to the outlet of the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$V_C = V_R + A_C + VDF$

Herein,
V_C: corrected voltage amplitude

V_R: reading voltage amplitude

A_c: attenuation caused by cable loss

VDF: voltage division factor of AMN or ISN

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15 B Class B, with the worst margin reading of:

11.3 dB at **0.309742 MHz** in the **Neutral** conducted mode

Test Data

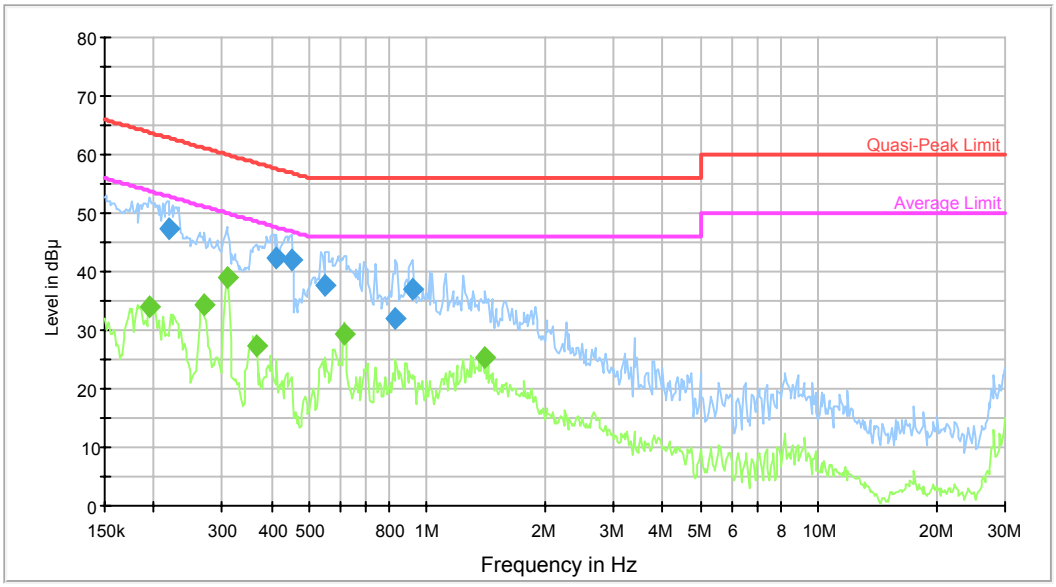
Environmental Conditions

Temperature:	26.4°C
Relative Humidity:	50 %
ATM Pressure:	100.2 kPa

The testing was performed by Lion Xiao on 2015-11-27.

Test Mode: Downloading

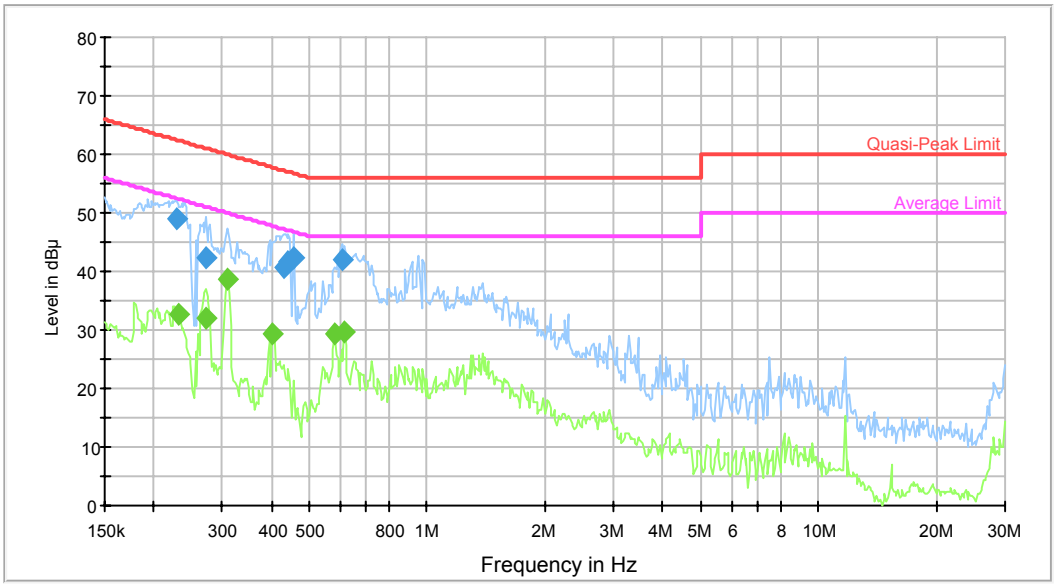
AC120V, 60Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.218141	47.3	9.000	L1	0.2	15.6	62.9	Compliance
0.412647	42.4	9.000	L1	0.2	15.2	57.6	Compliance
0.450448	42.1	9.000	L1	0.2	14.8	56.9	Compliance
0.549741	37.8	9.000	L1	0.2	18.2	56.0	Compliance
0.831967	32.1	9.000	L1	0.2	23.9	56.0	Compliance
0.922769	37.1	9.000	L1	0.2	18.9	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.195114	33.9	9.000	L1	0.2	19.9	53.8	Compliance
0.268355	34.2	9.000	L1	0.2	17.0	51.2	Compliance
0.307284	39.0	9.000	L1	0.2	11.0	50.0	Compliance
0.366160	27.5	9.000	L1	0.2	21.1	48.6	Compliance
0.614619	29.3	9.000	L1	0.2	16.7	46.0	Compliance
1.407671	25.5	9.000	L1	0.2	20.5	46.0	Compliance

AC120V, 60Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.228823	49.2	9.000	N	0.2	13.3	62.5	Compliance
0.272666	42.2	9.000	N	0.2	18.8	61.0	Compliance
0.429420	40.8	9.000	N	0.2	16.5	57.3	Compliance
0.443327	41.5	9.000	N	0.2	15.5	57.0	Compliance
0.457684	42.3	9.000	N	0.2	14.4	56.7	Compliance
0.604902	42.0	9.000	N	0.2	14.0	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.230654	32.6	9.000	N	0.2	19.8	52.4	Compliance
0.272666	31.9	9.000	N	0.2	19.1	51.0	Compliance
0.309742	38.7	9.000	N	0.2	11.3	50.0	Compliance
0.402900	29.3	9.000	N	0.2	18.5	47.8	Compliance
0.581275	29.4	9.000	N	0.2	16.6	46.0	Compliance
0.614619	29.6	9.000	N	0.2	16.4	46.0	Compliance

FCC §15.109 - RADIATED SPURIOUS EMISSIONS

Measurement Uncertainty

Compliance or non- compliance with a disturbance limit shall be determined in the following manner：

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit.

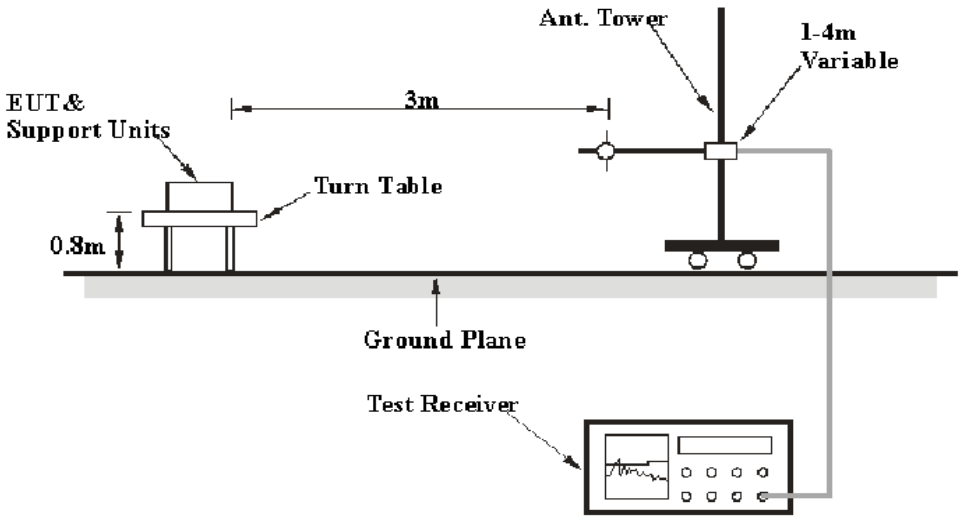
Based on CISPR 16-4-2: 2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:30MHz~200MHz: 5.0 dB; 200MHz~1GHz: 6.2 dB; 1GHz~6GHz: 4.45 dB, 6GHz~18GHz: 5.23 dB

Table 1 – Values of U_{cispr}

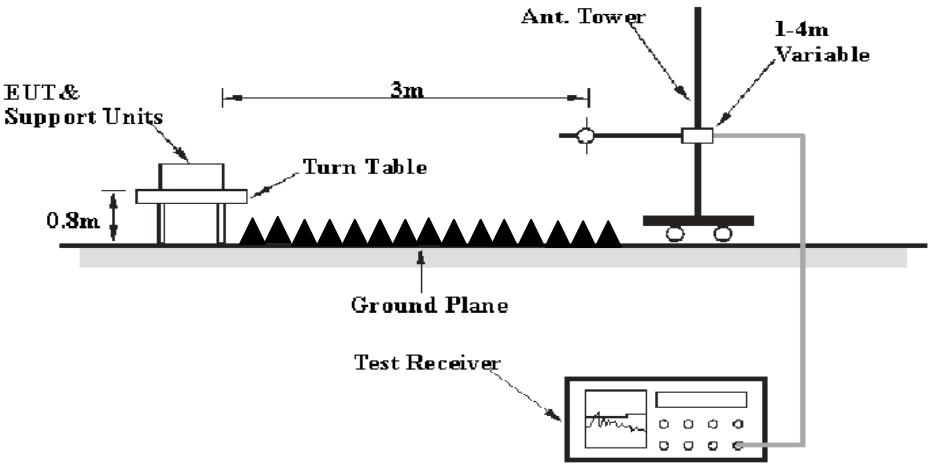
Measurement		U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC)	(30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR)	(1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR)	(6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 6.5 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	10 Hz	/	Ave.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The data was recorded in the Quasi-peak detection mode for below 1 GHz, peak and average detection mode above 1 GHz.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2015-08-03	2016-08-02
Sunol Sciences	Antenna	JB3	A060611-3	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2015-09-01	2016-09-01
Agilent	Spectrum Analyzer	E4440A	SG43360054	2015-11-23	2016-11-22
ETS-Lindgren	Horn Antenna	3115	9808-5557	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2015-02-19	2016-02-19
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Loss + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15 B Class B, with the worst margin reading of:

6.20 dB at **480.0800 MHz** in the **Vertical** polarization

Test Data

Environmental Conditions

Temperature:	25.5 °C
Relative Humidity:	49 %
ATM Pressure:	100.1 kPa

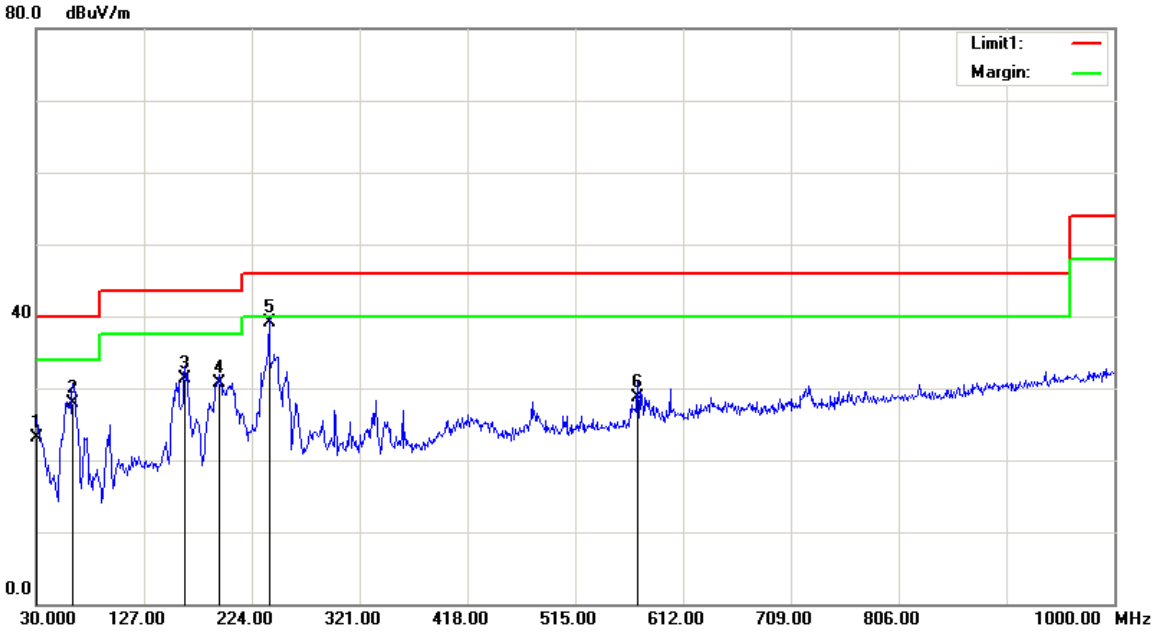
** The testing was performed by Lion Xiao on 2015-11-30.*

Test Result: Compliance

Test Mode: Downloading

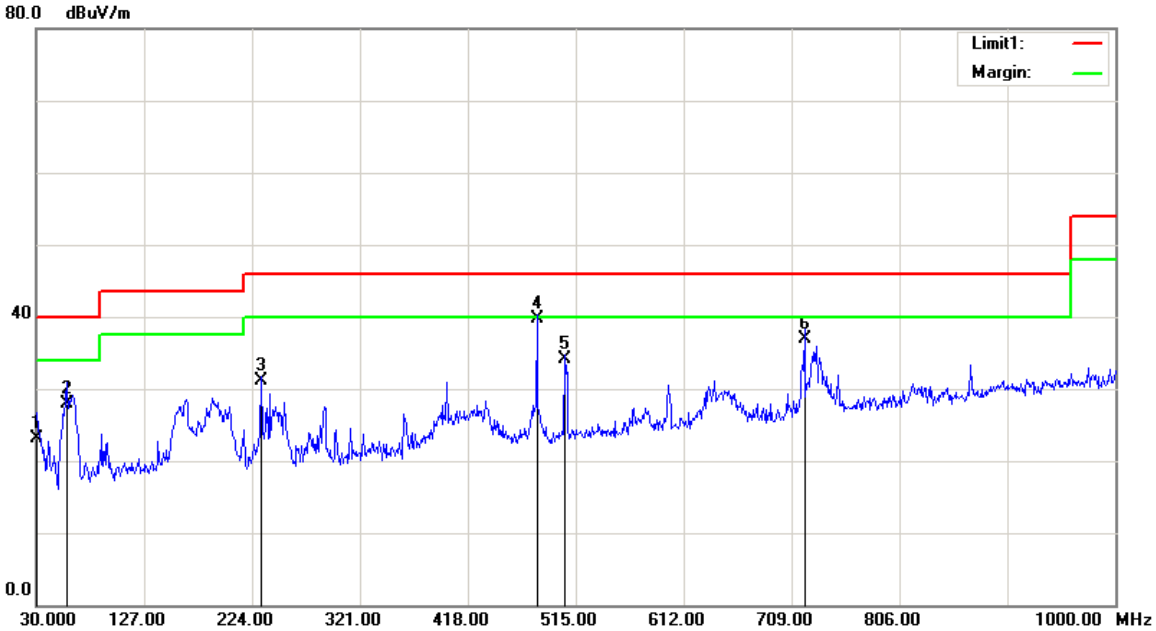
1) Below 1GHz:

Horizontal



Frequency (MHz)	Receiver Reading (dBµV)	Detector (PK/QP/Avg)	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
30.9700	22.18	QP	0.92	23.10	40.00	16.90
62.9800	40.48	QP	-12.58	27.90	40.00	12.10
163.8600	38.78	QP	-7.38	31.40	43.50	12.10
194.9000	38.58	QP	-7.88	30.70	43.50	12.80
239.5200	46.51	QP	-7.41	39.10	46.00	6.90
571.2600	28.75	QP	-0.05	28.70	46.00	17.30

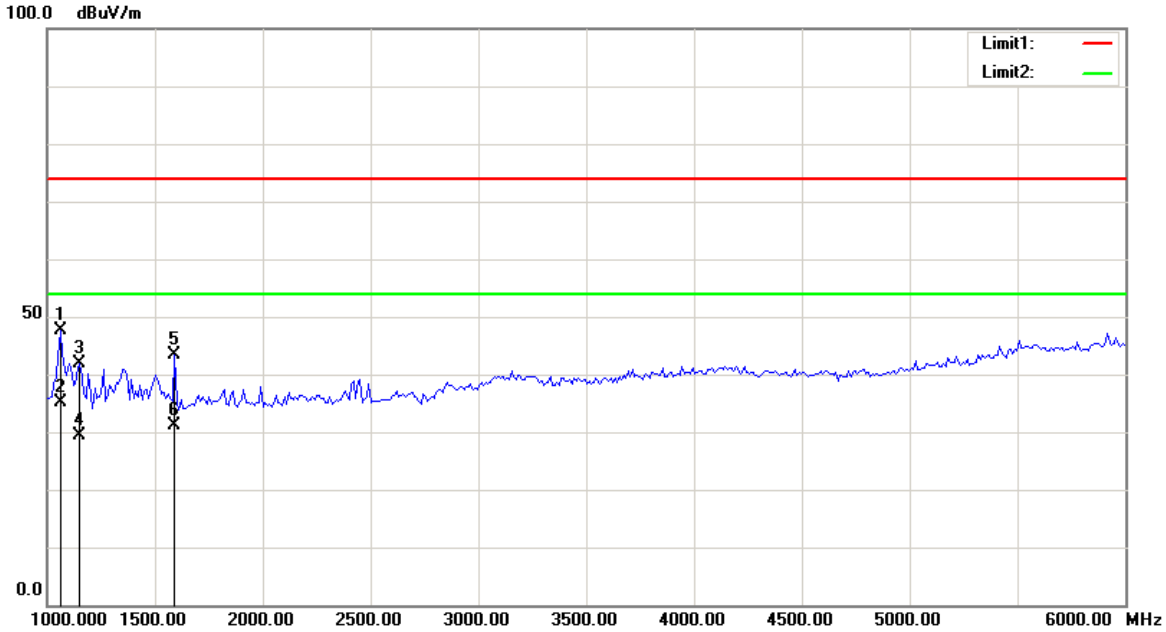
Vertical



Frequency (MHz)	Receiver Reading (dBµV)	Detector (PK/QP/Avg)	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
30.9700	22.18	QP	0.92	23.10	40.00	16.90
57.1600	40.89	QP	-12.99	27.90	40.00	12.10
231.7600	38.87	QP	-7.67	31.20	46.00	14.80
480.0800	41.06	QP	-1.26	39.80	46.00	6.20
505.3000	35.27	QP	-1.17	34.10	46.00	11.90
720.6400	35.08	QP	1.82	36.90	46.00	9.10

2) Above 1GHz:

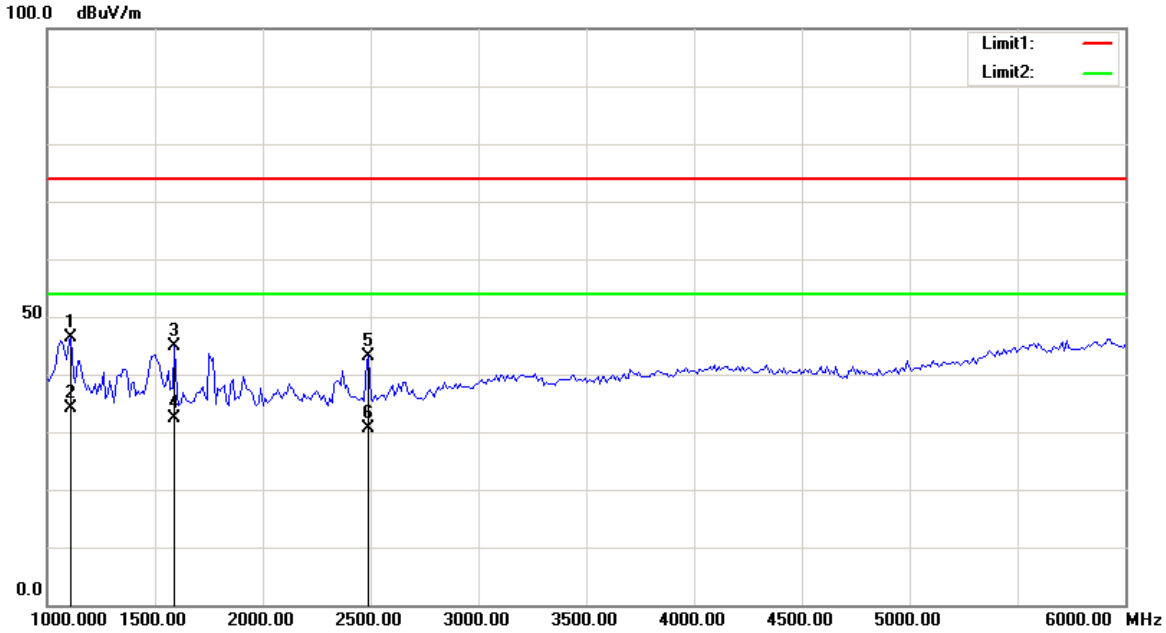
Horizontal



Frequency (MHz)	Receiver Reading (dBµV)	Detector (PK/QP/Avg)	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1060.120	48.80	peak	-1.13	47.67	74.00	26.33
1060.120	36.37	AVG	-1.13	35.24	54.00	18.76
1150.301	42.88	peak	-0.96	41.92	74.00	32.08
1150.301	30.44	AVG	-0.96	29.48	54.00	24.52
1591.182	44.88	peak	-1.43	43.45	74.00	30.55
1591.182	32.49	AVG	-1.43	31.06	54.00	22.94

Note: For above 6 GHz, all spurious emissions are 20dB below the limit or are on the system noise floor.

Vertical



Frequency (MHz)	Receiver Reading (dBµV)	Detector (PK/QP/Avg)	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1110.220	47.49	peak	-1.12	46.37	74.00	27.63
1110.220	35.14	AVG	-1.12	34.02	54.00	19.98
1591.182	46.19	peak	-1.43	44.76	74.00	29.24
1591.182	33.78	AVG	-1.43	32.35	54.00	21.65
2492.986	40.95	peak	2.15	43.10	74.00	30.90
2492.986	28.52	AVG	2.15	30.67	54.00	23.33

Note: For above 6 GHz, all spurious emissions are 20dB below the limit or are on the system noise floor.

DECLARATION LETTER

MAXWEST INTERNATIONAL LIMITED
Add: No.1,Longgang Road,Buji,Longgang,ShenzhenCity,Guangdong Province, P.R. China
Tel: 9498007607 Fax: 9498007607

DECLARATION OF SIMILARITY

Date: 2015-11-25

Dear Sir or Madam:

We, MAXWEST INTERNATIONAL LIMITED, hereby declare that product name: Gravity 5LTE, model:Gravity 5LTE,they are the same electromagnetic emissions and electromagnetic compatibility characteristics. A description of the difference among the 3 samples and those that are declared similar are as follows:

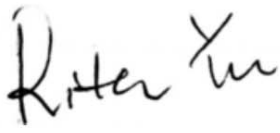
1) They have different colours:golden ,black and silver.

The rest are the same.

Please contact me should there be need for any additional clarification or information.

Best Regards,

Signature:
Rita Yu



Assistant Manager

******* END OF REPORT *******