



## FCC PART 15 B

### TEST REPORT

For

### Dynamics Hong Kong Limited

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**FCC ID: C89PIXCELL3310**

<b>Report Type:</b> Original Report	<b>Product Type:</b> mobile phone
<b>Report Number:</b>	RDG171208003-00A
<b>Report Date:</b>	2017-12-27
<b>Reviewed By:</b> Reviewed By: Jerry Zhang EMC Manager	<i>Jerry Zhang</i>
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## GENERAL INFORMATION

### Product Description for Equipment Under Test (EUT)

The **Dynamics Hong Kong Limited**'s product, model number: **CR3310 (FCC ID:C89PIXCELL3310 )** (the "EUT") in this report was a **mobile phone** , which was measured approximately: 11.9 cm (L) x 5.25 cm (W) x 1.35 cm (H), rated input voltage: DC3.7V from Battery or DC 5V from adapter. The highest operation frequency is 2480 MHz.

#### *Adapter Information:*

*Model number:CR 3310*

*INPUT: AC 100-240V, 50/60Hz*

*OUTPUT: DC 5V, 500mA*

*Note: The series product, model ROCK10 are electrically identical, the difference between them is model name, we selected CR3310 for testing, the detail was explained in the attached declaration letter.*

*\*All measurement and test data in this report was gathered from production sample serial number: 171208003 (Assigned by BACL,Dongguan). The EUT was received on 2017-12-08.*

### Objective

This test report is prepared on behalf of *Dynamics Hong Kong 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 DSS submissions with FCC ID: C89PIXCELL3310.

FCC Part 22H, 24E PCE submissions with FCC ID: C89PIXCELL3310.

### 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).

## Measurement Uncertainty

Parameter	Measurement Uncertainty
Unwanted Emissions, radiated	30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical 1G~6GHz: 4.45 dB, 6G~26.5GHz: 5.23 dB
Temperature	±1°C
Humidity	±5%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

## 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 Industry Area, Tangxia, Dongguan, Guangdong, China

Bay Area Compliance Laboratories Corp. (Dongguan) has been accredited to ISO/IEC 17025 by CNAS(Lab code: L5662). And accredited to ISO/IEC 17025 by A2LA(Test Laboratory Accreditation Certificate Number 4820.01), the FCC Designation No. CN5002 under the KDB 974614 D01.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 477991. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Bay Area Compliance Laboratories Corp. (Dongguan) was registered with ISED Canada under ISED Canada Registration Number 3062D.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

The system was configured for testing in operating and downloading mode.

### EUT Exercise Software

The software “Withrax” was used during test.

### Equipment Modifications

No modification was made to the EUT tested.

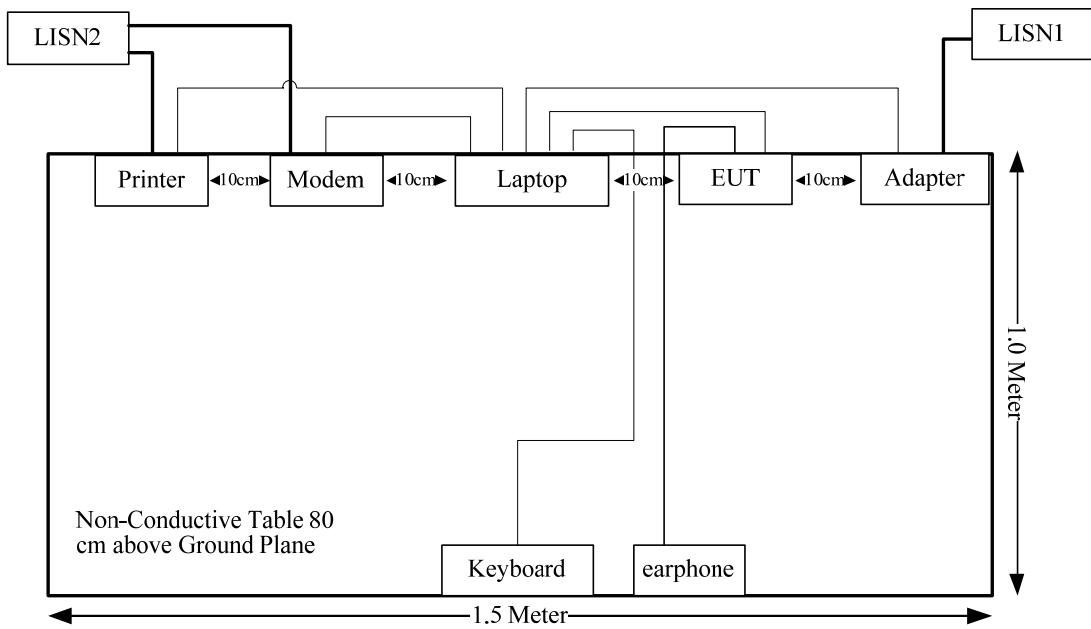
### Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	QDS-BRCM1017
HP	Printer	C3941A	JPTVOB2337
DELL	Keyboard	L100	CNORH656658907BL05DC
AST	Modem	AEM-2100	0293

### 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
USB Cable	Yes	No	1.2	USB Port of Laptop	EUT
Earphone Cable	No	No	0.91	EUT	Earphone

## Configuration of Test Setup

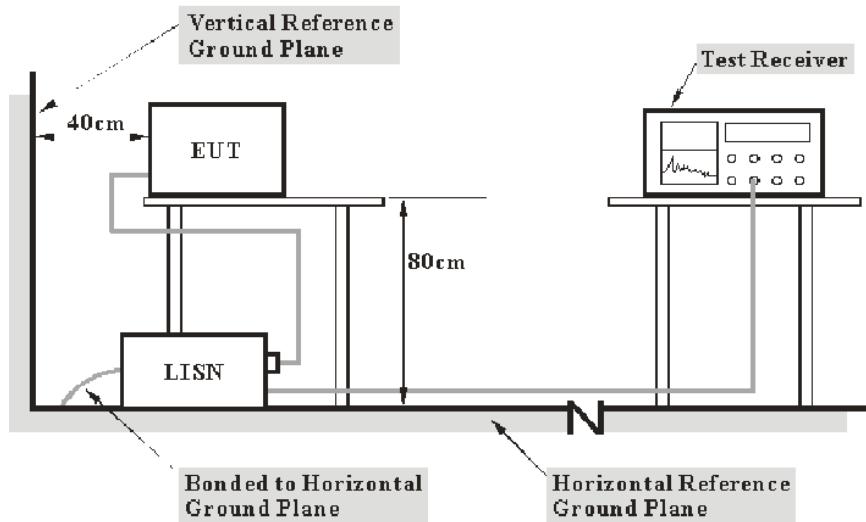


## SUMMARY OF TEST RESULTS

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

## FCC§15.107 - CONDUCTED EMISSIONS

### 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 was connected to the Main LISN with 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	L.I.S.N	ESH2-Z5	892107/021	2017-09-25	2018-09-25
R&S	Two-line V-network	ENV 216	101614	2017-12-8	2018-12-8
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
N/A	Coaxial Cable	C-NJNJ-50	C-0200-01	2017-09-05	2018-09-05
R&S	EMI Test Receiver	ESCS 30	830245/006	2017-12-11	2018-12-11

\* **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 limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

## Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15 B Class B.

## Test Data

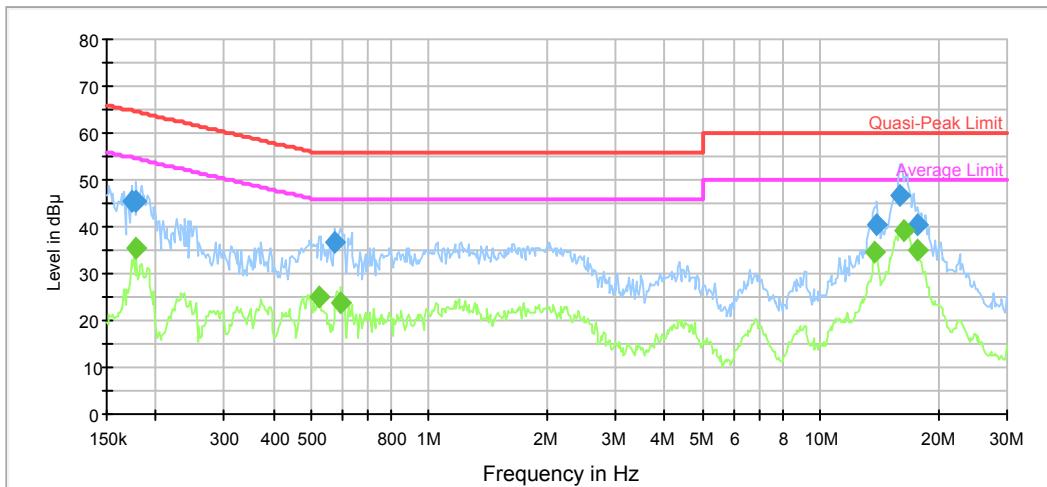
### Environmental Conditions

<b>Temperature:</b>	23.7 °C
<b>Relative Humidity:</b>	43%
<b>ATM Pressure:</b>	102 kPa

*The testing was performed by Alex You on 2017-12-15.*

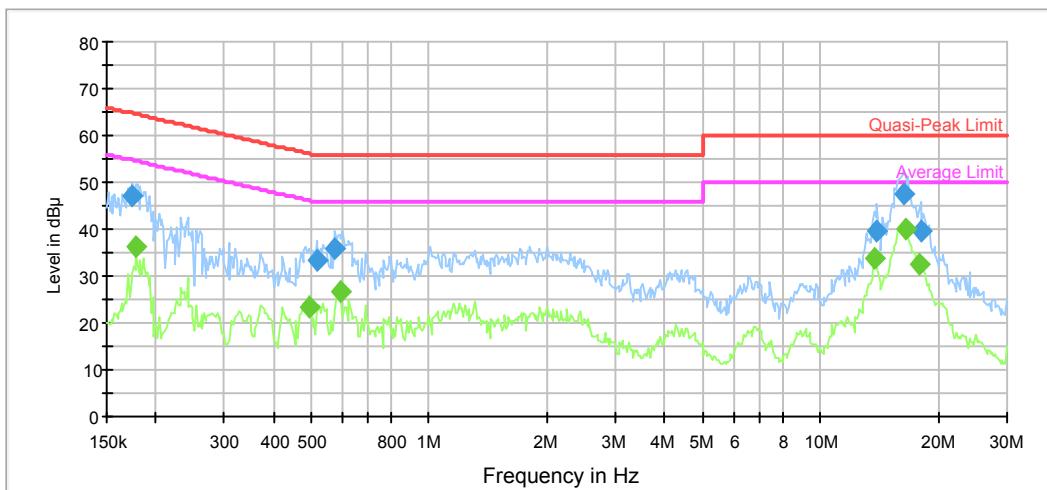
*Test Mode: Downloading*

**AC120V, 60Hz, Line:**



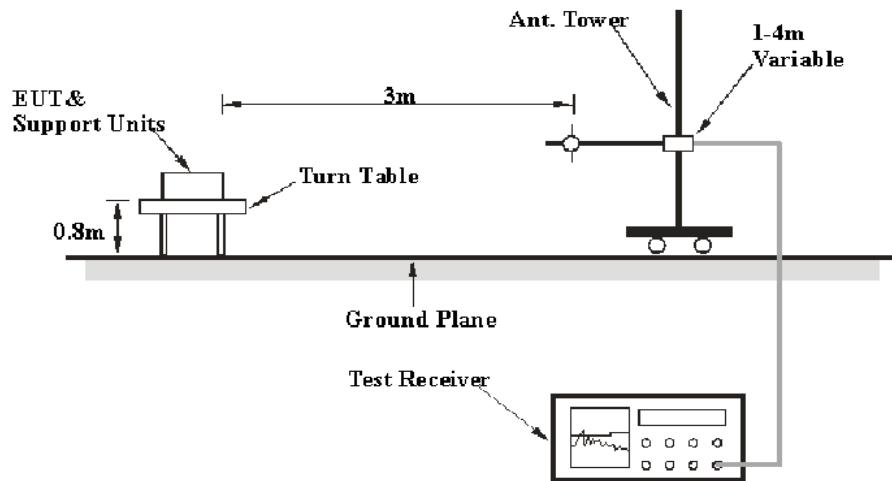
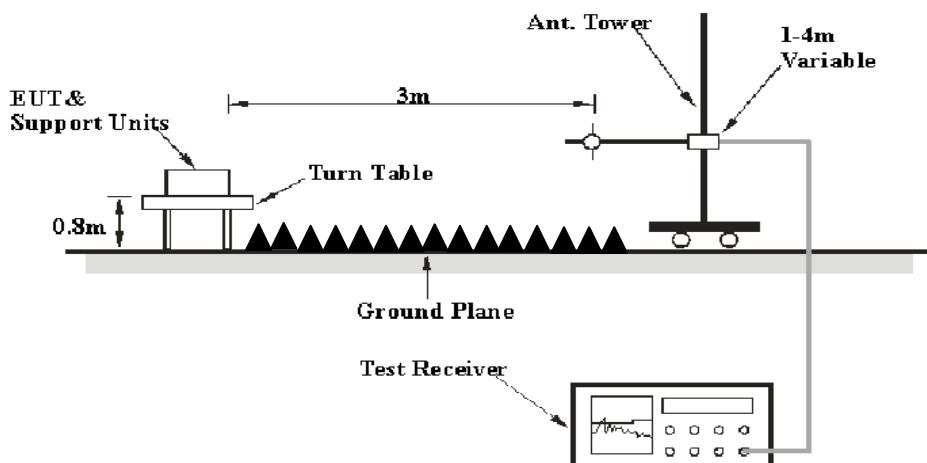
Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.173134	45.5	9.000	L1	10.9	19.3	64.8	Compliance
0.178741	45.4	9.000	L1	10.8	19.1	64.5	Compliance
0.576662	36.6	9.000	L1	9.8	19.4	56.0	Compliance
13.968003	40.3	9.000	L1	9.9	19.7	60.0	Compliance
15.994231	46.6	9.000	L1	10.0	13.4	60.0	Compliance
17.739864	40.3	9.000	L1	10.0	19.7	60.0	Compliance

Frequency (MHz)	Average (dB $\mu$ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.178741	35.3	9.000	L1	10.8	19.2	54.5	Compliance
0.524077	25.1	9.000	L1	9.9	20.9	46.0	Compliance
0.595338	23.5	9.000	L1	9.8	22.5	46.0	Compliance
13.747168	34.6	9.000	L1	9.9	15.4	50.0	Compliance
16.251162	39.3	9.000	L1	10.0	10.7	50.0	Compliance
17.739864	35.1	9.000	L1	10.0	14.9	50.0	Compliance

**AC120V, 60Hz, Neutral:**

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.174519	47.0	9.000	N	10.9	17.7	64.7	Compliance
0.515791	33.4	9.000	N	9.9	22.6	56.0	Compliance
0.576662	35.6	9.000	N	9.8	20.4	56.0	Compliance
13.968003	39.6	9.000	N	9.9	20.4	60.0	Compliance
16.251162	47.5	9.000	N	10.0	12.5	60.0	Compliance
18.024837	39.8	9.000	N	10.0	20.2	60.0	Compliance

Frequency (MHz)	Average (dB $\mu$ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	Comment
0.178741	36.3	9.000	N	10.8	18.2	54.5	Compliance
0.491712	23.2	9.000	N	9.9	22.9	46.1	Compliance
0.590613	26.9	9.000	N	9.8	19.1	46.0	Compliance
13.747168	33.6	9.000	N	9.9	16.4	50.0	Compliance
16.512221	39.8	9.000	N	10.0	10.2	50.0	Compliance
17.881783	32.5	9.000	N	10.0	17.5	50.0	Compliance

**FCC §15.109 - RADIATED SPURIOUS EMISSIONS****EUT Setup****Below 1GHz:****Above 1GHz:**

The radiated emission tests were performed in the 3 meters chamber test site for the range 30MHz to 1GHz and the 3 meters chamber test site for above 1GHz, 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 13 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	Measurement
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	Peak
	1 MHz	10 Hz	/	AVG

## Test Procedure

During the radiated emissions, the adapter of laptop was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

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	2017-09-01	2018-08-31
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
HP	Amplifier	8447D	2727A05902	2017-09-05	2018-09-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2017-12-08	2018-12-08
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
MITEQ	Amplifier	AFS42-00101800-2 5-S-42	2001271	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-0400-01	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-0075-01	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-1000-01	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-SJSJ-50	C-0800-01	2017-09-05	2018-09-05
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 Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

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:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

## Test Data

### Environmental Conditions

<b>Temperature:</b>	23.4°C
<b>Relative Humidity:</b>	41 %
<b>ATM Pressure:</b>	101.3 kPa

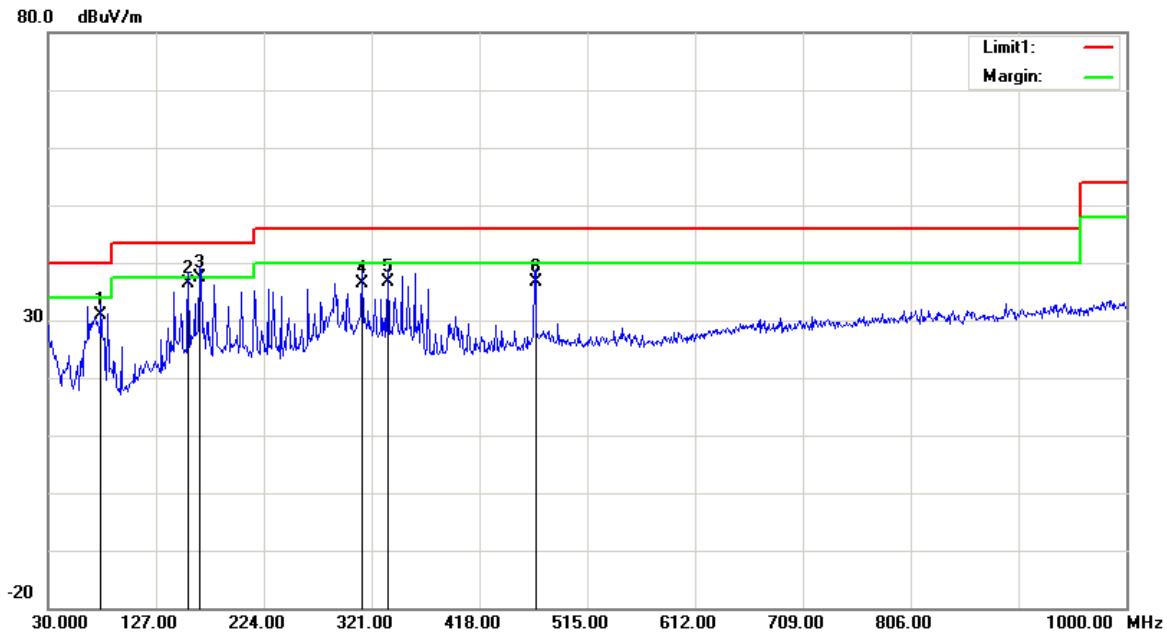
\* The testing was performed by Black Yang and Sunny Cen on 2017-12-14.

Test Result: Compliance

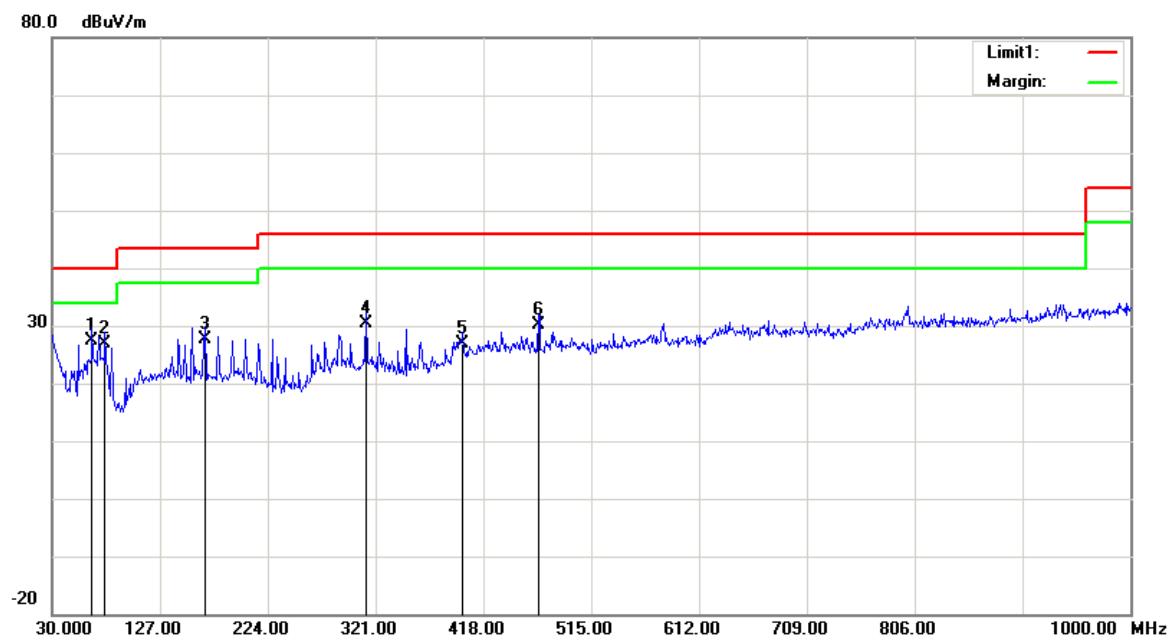
*Test Mode: Downloading*

**1) Below 1GHz:**

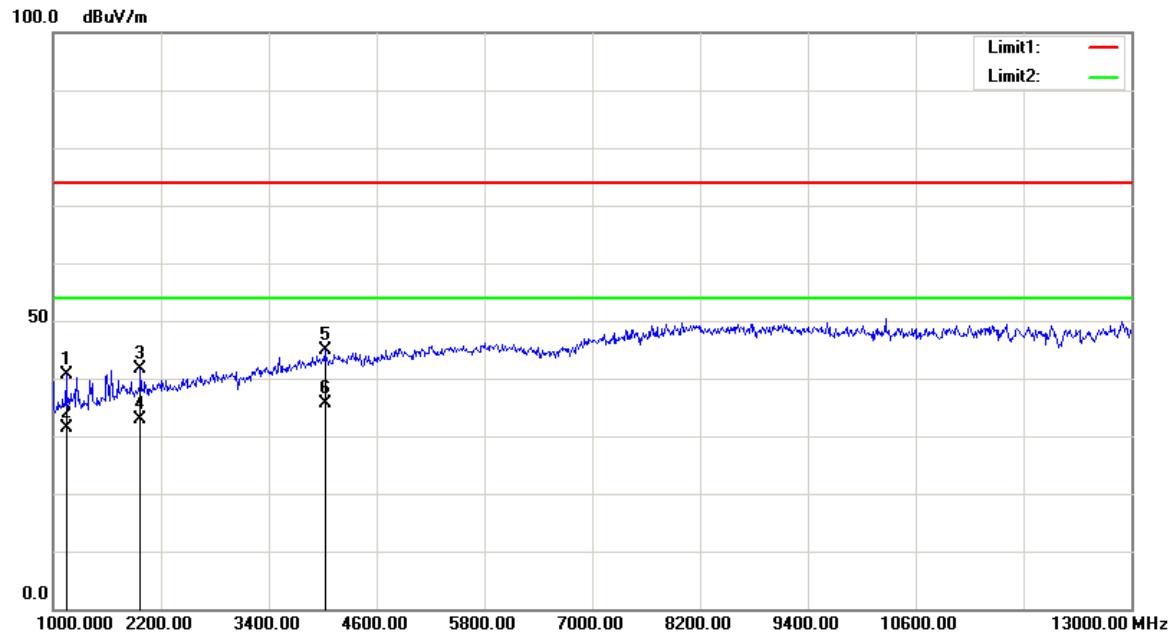
**Horizontal**



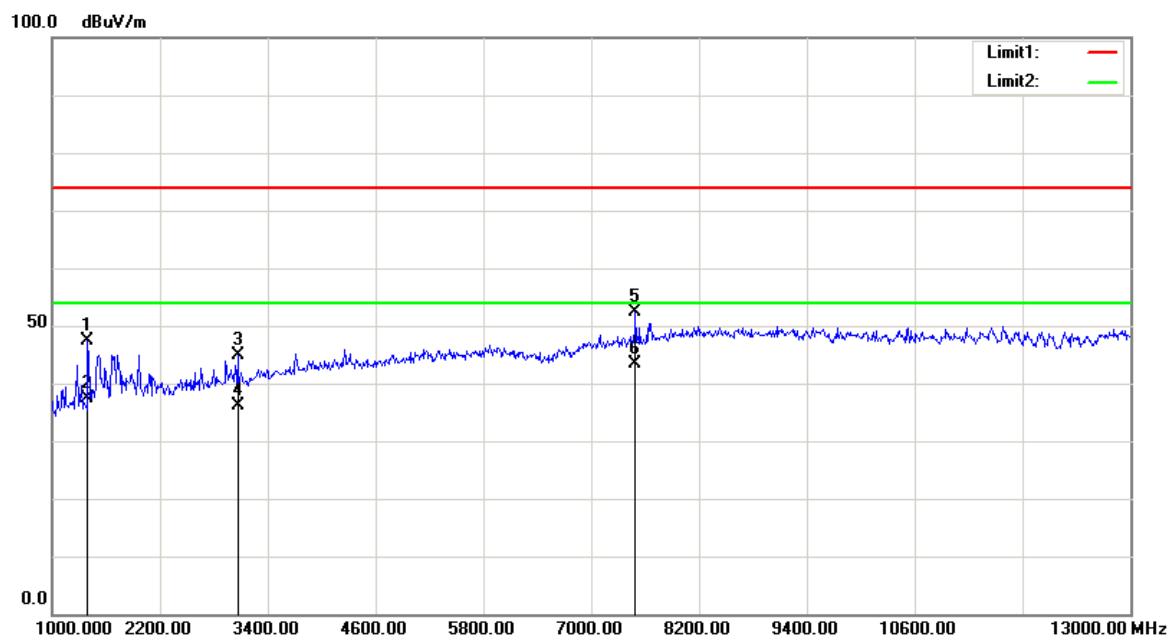
Frequency (MHz)	Receiver Reading (dB $\mu$ V)	Detector	Correction Factor (dB/m)	Cord. Amp. (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
77.5300	48.10	QP	-17.20	30.90	40.00	9.10
156.1000	48.31	QP	-11.91	36.40	43.50	7.10
165.8000	49.69	QP	-12.39	37.30	43.50	6.20
312.2700	46.06	QP	-9.76	36.30	46.00	9.70
335.5500	46.08	QP	-9.38	36.70	46.00	9.30
468.4400	43.29	QP	-6.59	36.70	46.00	9.30

**Vertical**

Frequency (MHz)	Receiver Reading (dB $\mu$ V)	Detector	Correction Factor (dB/m)	Cord. Amp. (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
65.8900	45.20	QP	-17.70	27.50	40.00	12.50
77.5300	43.98	QP	-17.20	26.78	40.00	13.22
167.7400	40.19	QP	-12.52	27.67	43.50	15.83
312.2700	40.05	QP	-9.76	30.29	46.00	15.71
399.5700	34.91	QP	-8.07	26.84	46.00	19.16
467.4700	36.67	QP	-6.61	30.06	46.00	15.94

**2) Above 1GHz:****Horizontal**

Frequency (MHz)	Receiver Reading (dB $\mu$ V)	Detector	Correction Factor (dB/m)	Cord. Amp. (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1144.000	50.78	peak	-10.14	40.64	74.00	33.36
1144.000	41.56	AVG	-10.14	31.42	54.00	22.58
1972.000	49.02	peak	-7.28	41.74	74.00	32.26
1972.000	40.13	AVG	-7.28	32.85	54.00	21.15
4024.000	46.84	peak	-1.94	44.90	74.00	29.10
4024.000	37.69	AVG	-1.94	35.75	54.00	18.25

**Vertical**

Frequency (MHz)	Receiver Reading (dB $\mu$ V)	Detector	Correction Factor (dB/m)	Cord. Amp. (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)
1402.000	56.78	peak	-9.52	47.26	74.00	26.74
1402.000	46.82	AVG	-9.52	37.30	54.00	16.70
3070.000	49.36	peak	-4.52	44.84	74.00	29.16
3070.000	40.53	AVG	-4.52	36.01	54.00	17.99
7492.000	49.10	peak	3.21	52.31	74.00	21.69
7492.000	40.22	AVG	3.21	43.43	54.00	10.57

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