



TESTING LABORATORY  
CERTIFICATE #4820.01



# FCC PART 15 B TEST REPORT

For

## HONG KONG IPRO TECHNOLOGY CO., LIMITED

FLAT/RM A3, 9/F SILVERCORP INT TOWER, 707-713 NATHAN RD MONGKOK,  
HONGKONG, China

**FCC ID: PQ4IPROSMART24**

<b>Report Type:</b>	<b>Product Type:</b>
Original Report	Mobile Phone
<b>Report Number:</b>	RDG190610006-00A
<b>Report Date:</b>	2019-07-05
<b>Reviewed By:</b>	Jerry Zhang EMC Manager
<b>Test Laboratory:</b>	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 <a href="http://www.baclcorp.com.cn">www.baclcorp.com.cn</a>

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## GENERAL INFORMATION

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

<b>EUT Name:</b>		Mobile Phone
<b>EUT Model:</b>		Smart 2.4
<b>Rated Input Voltage:</b>		DC 3.7V from battery or charging from DC 5V adapter
<b>Adapter Information</b>	<b>Model Name:</b>	NTR-01
	<b>Input:</b>	AC 100V-240V 50/60Hz 150mA
	<b>Output:</b>	DC 5.0V, DC 500mA
<b>Highest Operation Frequency:</b>		2480 MHz
<b>External Dimension:</b>		123mm(L)*52mm(W)*13.5mm(H)
<b>Serial Number:</b>		190610006
<b>EUT Received Date:</b>		2019.06.10

### Objective

This test report is prepared on behalf of *HONG KONG IPRO TECHNOLOGY CO., 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: PQ4IPROSMART24.

FCC Part 15C DTS submissions with FCC ID: PQ4IPROSMART24

FCC Part 22H, 24E submissions with FCC ID: PQ4IPROSMART24

### 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**

<b>Parameter</b>	<b>Measurement Uncertainty</b>
Unwanted Emissions, radiated	30M~200MHz: 4.55 dB, 200M~1GHz: 5.92 dB, 1G~6GHz: 4.98 dB, 6G~18GHz: 5.89 dB, 18G~26.5G: 5.47 dB, 26.5G~40G: 5.63 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.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

The system was configured for testing in downloading mode.

### EUT Exercise Software

No exercise software was used.

### Equipment Modifications

No modification was made to the EUT tested.

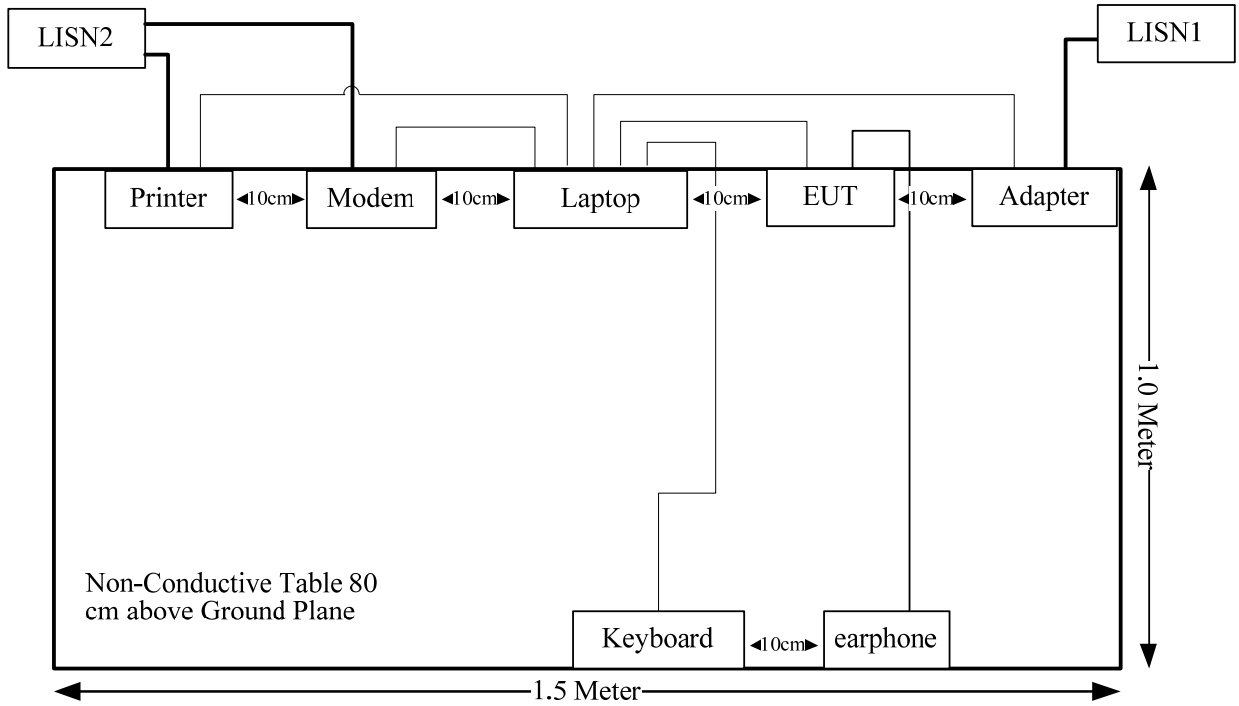
### Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	1CVM0C1
SAST	modem	AEM-2100	90200213
DELL	Keyboard	SK-8115	CN-0J4628-71616-52H-0RT6
HP	Printer	C3941A	JPTV013237

### Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Earphone Cable	No	No	1.0	EUT	Earphone
USB Cable	Yes	No	0.8	USB Port of Laptop	EUT
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



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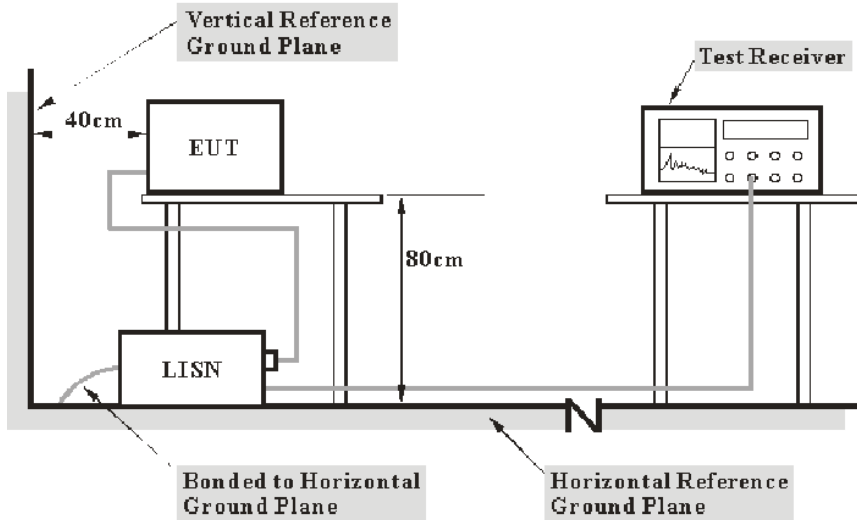
## SUMMARY OF TEST RESULTS

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

## 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	EMI Test Receiver	ESPI	100120	2019-05-09	2020-05-09
Unknown	Coaxial Cable	C-NJNJ-50	C-0200-01	2018-09-05	2019-09-05
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
R&S	Two-line V-network	ENV 216	101614	2018-12-10	2019-12-10
R&S	L.I.S.N	ESH2-Z5	892107/021	2018-09-19	2019-09-19

\* **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.

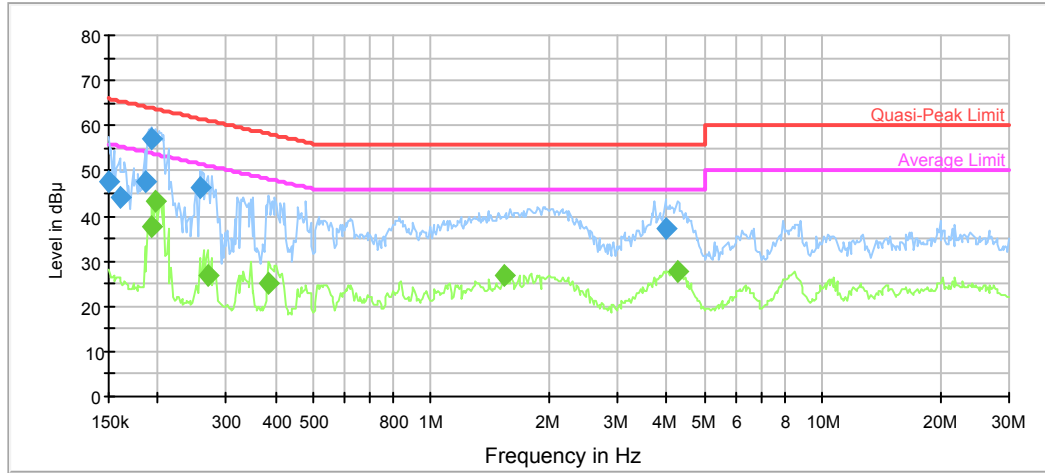
### Test Data

#### Environmental Conditions

<b>Temperature:</b>	28.7 °C
<b>Relative Humidity:</b>	53 %
<b>ATM Pressure:</b>	100.1 kPa
<b>Tester:</b>	Lily Xie
<b>Test Date:</b>	2019-06-16

Test Mode: Downloading

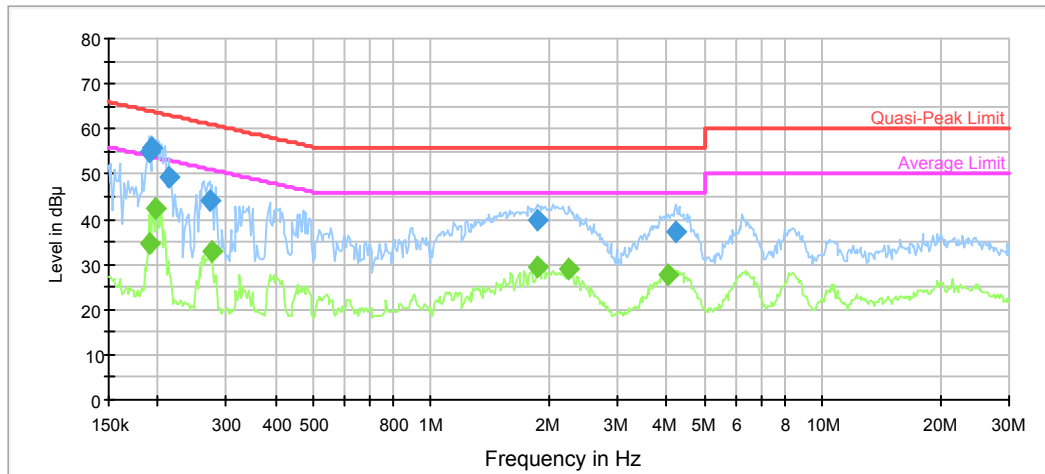
AC120V, 60Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.150000	47.5	9.000	L1	11.2	18.5	66.0	Compliance
0.159873	43.9	9.000	L1	11.0	21.6	65.5	Compliance
0.186006	47.7	9.000	L1	10.7	16.5	64.2	Compliance
0.193566	57.1	9.000	L1	10.7	6.8	63.9	Compliance
0.255827	46.3	9.000	L1	10.3	15.3	61.6	Compliance
3.966160	37.4	9.000	L1	9.8	18.6	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.193566	37.7	9.000	L1	10.7	16.2	53.9	Compliance
0.198249	43.3	9.000	L1	10.6	10.4	53.7	Compliance
0.268355	26.8	9.000	L1	10.2	24.4	51.2	Compliance
0.384091	24.9	9.000	L1	10.0	23.3	48.2	Compliance
1.536622	26.9	9.000	L1	9.7	19.1	46.0	Compliance
4.261034	27.7	9.000	L1	9.8	18.3	46.0	Compliance

**AC120V, 60Hz, Neutral:**



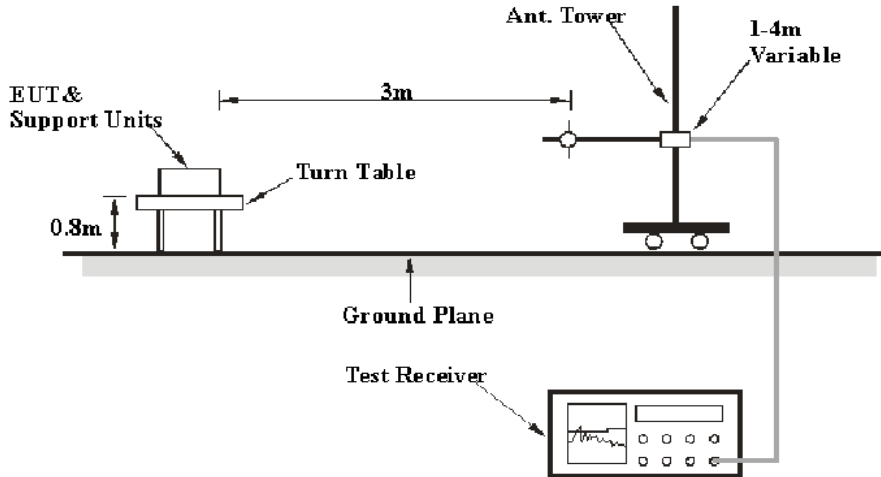
Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.190505	54.9	9.000	N	10.7	9.1	64.0	Compliance
0.193566	55.7	9.000	N	10.7	8.2	63.9	Compliance
0.212988	49.4	9.000	N	10.5	13.7	63.1	Compliance
0.272666	44.0	9.000	N	10.2	17.0	61.0	Compliance
1.875341	39.8	9.000	N	9.8	16.2	56.0	Compliance
4.227217	37.3	9.000	N	9.8	18.7	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.190505	34.4	9.000	N	10.7	19.6	54.0	Compliance
0.198249	42.5	9.000	N	10.6	11.2	53.7	Compliance
0.277046	32.8	9.000	N	10.2	18.1	50.9	Compliance
1.875341	29.4	9.000	N	9.8	16.6	46.0	Compliance
2.234662	28.9	9.000	N	9.8	17.1	46.0	Compliance
4.029873	27.5	9.000	N	9.8	18.5	46.0	Compliance

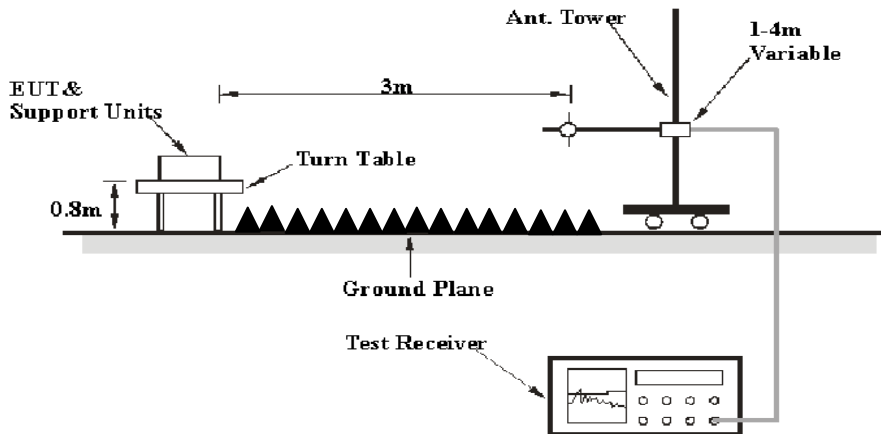
## FCC §15.109 - RADIATED SPURIOUS EMISSIONS

### EUT Setup

#### Below 1GHz:



#### Above 1GHz:



The radiated emission tests were performed in the 10 meters chamber test site for the range 30MHz to 1GHz and the 3 meters chamber test site B 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 13.0 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	Reduced VBW	/	AVG

If the maximized peak measured value complies with under the limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

### 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	100035	2018-08-03	2019-08-03
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
Sunol Sciences	Antenna	JB3	A060611-3	2017-07-21	2019-07-21
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2018-09-24	2019-09-24
Sonoma	Amplifier	310N	185914	2018-10-13	2019-10-13
Agilent	Spectrum Analyzer	E4440A	SG43360054	2019-01-04	2020-01-04
ETS-Lindgren	Horn Antenna	3115	000 527 35	2018-10-12	2021-10-12
MITEQ	Amplifier	AFS42-00101800-2 5-S-42	2001271	2018-09-05	2019-09-05
Unknown	Coaxial Cable	C-SJSJ-50	C-0800-01	2018-09-05	2019-09-05

\* **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

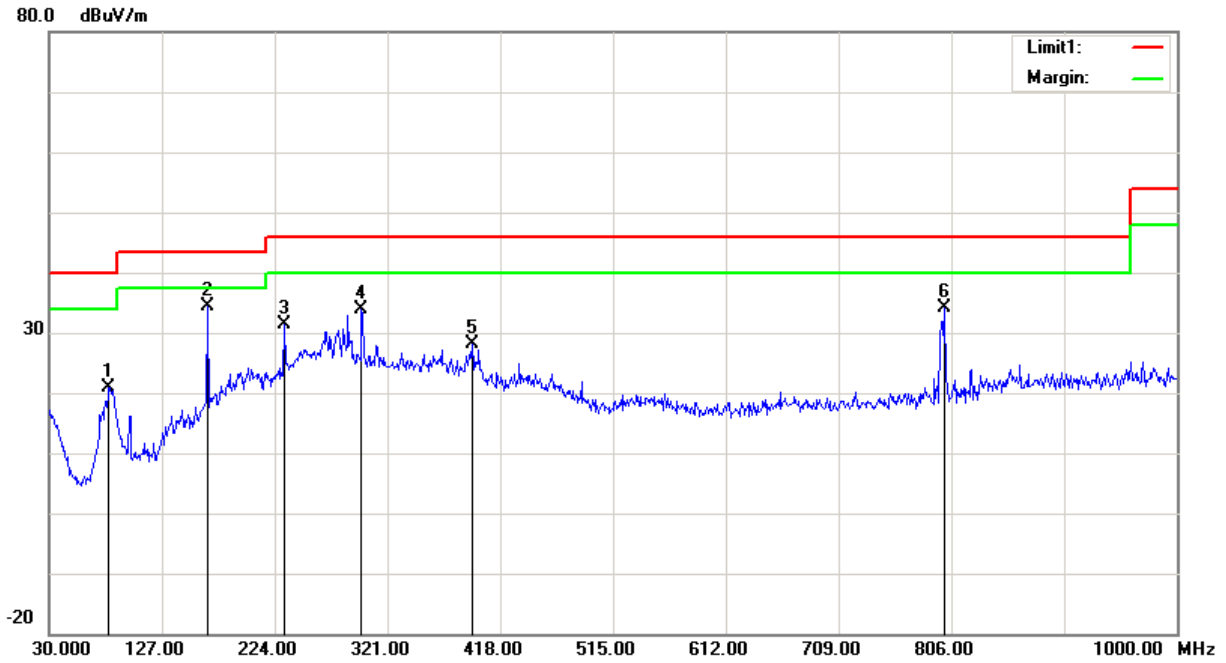
Test Items	Radiation Below 1GHz	Radiation Above 1GHz
Temperature:	26.1 °C	28.2 °C
Relative Humidity:	49%	50 %
ATM Pressure:	100.1 kPa	100.1 kPa
Tester:	Lily Xie	Lily Xie
Test Date:	2019-06-17	2019-06-19

*Test Result: Compliance*

Test Mode: Downloading

1) Below 1GHz:

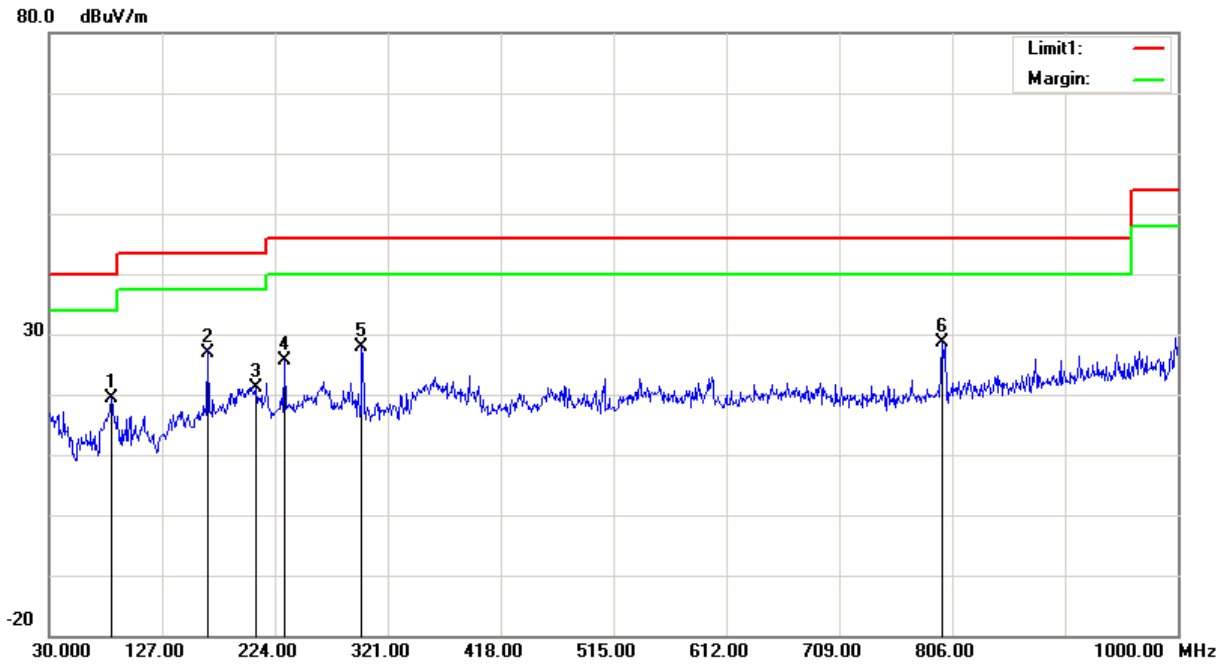
Horizontal



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
81.4100	42.79	peak	-21.88	20.91	40.00	19.09
165.8000	49.91	peak	-15.64	34.27	43.50	9.23
232.7300	47.81	peak	-16.38	31.43	46.00	14.57
298.6900	47.47	peak	-13.50	33.97	46.00	12.03
393.7500	39.60	peak	-11.48	28.12	46.00	17.88
800.1800	39.21	peak	-5.03	34.18	46.00	11.82



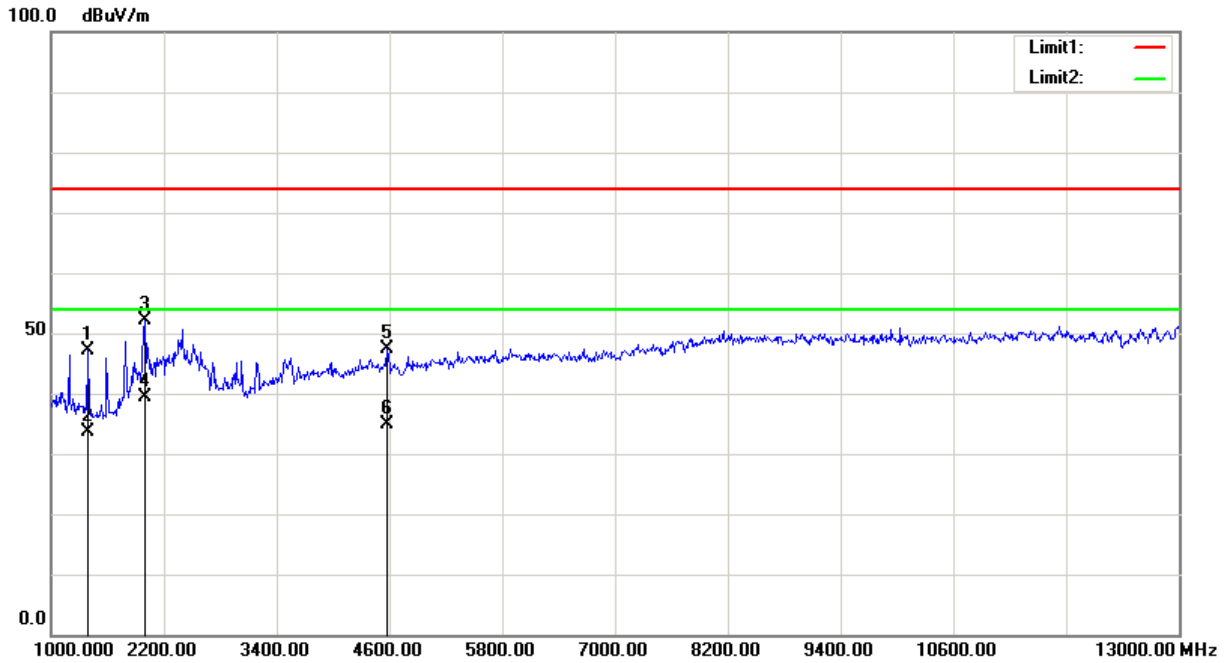
**Vertical**



Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
83.3500	40.89	peak	-21.62	19.27	40.00	20.73
166.7700	42.51	peak	-15.59	26.92	43.50	16.58
207.5100	38.16	peak	-16.91	21.25	43.50	22.25
232.7300	42.07	peak	-16.38	25.69	46.00	20.31
298.6900	41.31	peak	-13.50	27.81	46.00	18.19
797.2700	33.59	peak	-5.02	28.57	46.00	17.43

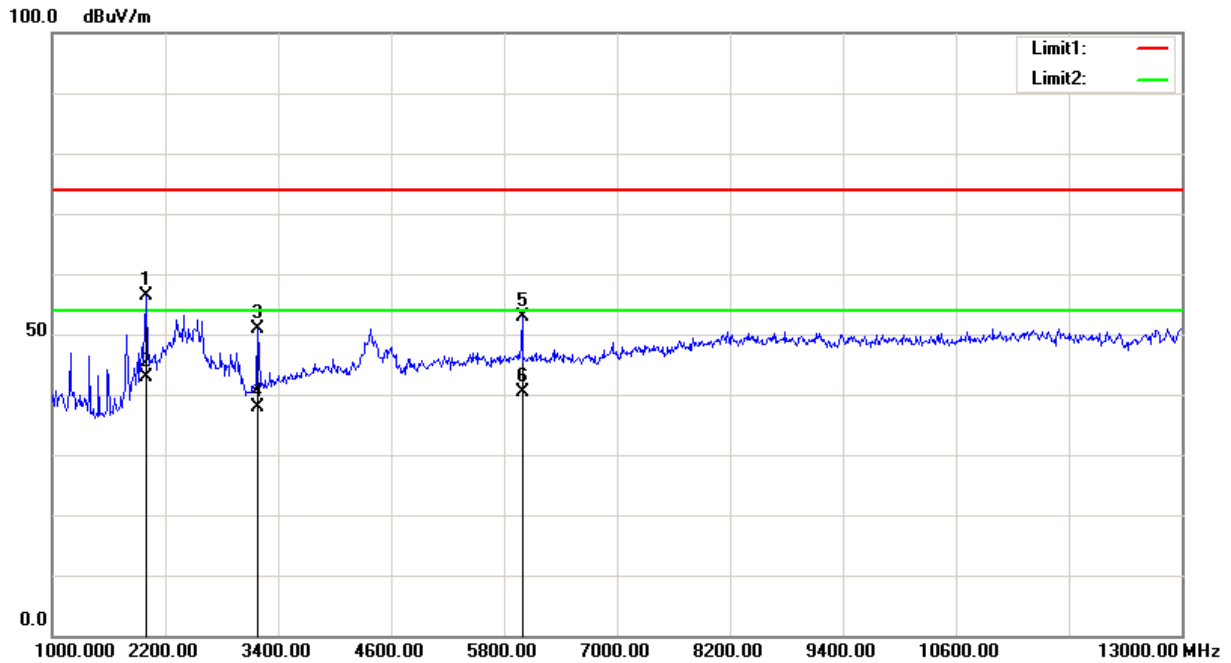
2) Above 1GHz:

Horizontal



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
1402.000	56.73	peak	-9.52	47.21	74.00	26.79
1402.000	43.21	AVG	-9.52	33.69	54.00	20.31
1996.000	59.37	peak	-7.19	52.18	74.00	21.82
1996.000	46.48	AVG	-7.19	39.29	54.00	14.71
4582.000	49.05	peak	-1.59	47.46	74.00	26.54
4582.000	36.44	AVG	-1.59	34.85	54.00	19.15

**Vertical**



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
2002.000	63.56	peak	-7.18	56.38	74.00	17.62
2002.000	50.13	AVG	-7.18	42.95	54.00	11.05
3190.000	55.20	peak	-4.22	50.98	74.00	23.02
3190.000	42.15	AVG	-4.22	37.93	54.00	16.07
5998.000	52.00	peak	0.80	52.80	74.00	21.20
5998.000	39.46	AVG	0.80	40.26	54.00	13.74

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