



Test Report No.: FV200304W004



## EMC TEST REPORT

Applicant:	Xiaomi Communications Co., Ltd.
Address:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

Manufacturer or Supplier:	Xiaomi Communications Co., Ltd.
Address:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
Product:	Mobile Phone
Brand Name:	Redmi
Model Name:	M2003J6B2G
FCC ID:	2AFZZJ6B2G
Date of tests:	Mar. 05, 2020 ~ Apr. 01, 2020

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 A
- FCC Part 15, Subpart B, Class B
- ANSI C63.4:2014

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

Prepared by Alex Chen Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
 Date: Apr. 01, 2020	 Date: Apr. 01, 2020

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Test Report No.: FV200304W004

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FV200304W004	Original release	Apr. 01, 2020



# 1 GENERAL INFORMATION

## 1.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Mobile Phone	
<b>BRAND NAME</b>	Redmi	
<b>MODEL NAME</b>	M2003J6B2G	
<b>NOMINAL VOLTAGE</b>	5V/9V/11V/12/20Vdc (adapter or host equipment) 3.87Vdc (Li-ion, battery)	
<b>MODULATION TYPE</b>	<b>WLAN</b>	DSSS, OFDM
	<b>BT_LE</b>	GFSK
	<b>Bluetooth</b>	GFSK, $\pi/4$ -DQPSK, 8DPSK
	<b>GPS/ GLONASS / BDS/ GALILEO/ SBAS</b>	BPSK
	<b>FM</b>	FM
	<b>NFC</b>	ASK/FSK
	<b>GSM/GPRS/EDGE</b>	GMSK, 8PSK
	<b>WCDMA</b>	BPSK/QPSK
	<b>LTE</b>	QPSK/16QAM/64QAM
<b>OPERATING FREQUENCY</b>	<b>WLAN</b>	2412 ~ 2472MHz for 11b/g/n(HT20/HT40) 5180 ~ 5240MHz, 5260 ~ 5320 MHz, 5500 ~ 5700MHz, 5745 ~ 5805 MHz for 11a/ n(HT20)/ n(HT40) / ac(VHT20)/ ac(VHT40) / ac(VHT80)
	<b>Bluetooth/BT_LE</b>	2402MHz ~ 2480MHz
	<b>GPS/ GLONASS/ BDS/ GALILEO/ SBAS</b>	1559MHz ~ 1610MHz
	<b>FM</b>	87.5MHz ~ 108MHz
	<b>NFC</b>	13.56MHz
	<b>GSM</b>	824.2MHz ~ 848.8MHz (FOR GSM 850) 1850.2MHz ~ 1909.8MHz (FOR GSM 1900)
	<b>WCDMA</b>	1852.4MHz ~ 1907.6MHz(FOR WCDMA Band 2) 1712.4MHz ~ 1752.6MHz(FOR WCDMA Band 4) 826.4MHz ~ 846.6MHz (FOR WCDMA Band 5)
<b>LTE</b>	1850.7MHz ~ 1909.3MHz (FOR LTE Band2) 1710.7MHz ~ 1754.3MHz (FOR LTE Band4)	



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		824.7MHz ~ 848.3MHz (FOR LTE Band5) 2502.5MHz ~ 2567.5MHz (FOR LTE Band7) 2572.5MHz ~ 2617.5MHz (FOR LTE Band38) 2535 MHz ~2655MHz (FOR LTE Band41)
<b>IMEI CODE</b>	86531204	
<b>HW VERSION</b>	P2.1	
<b>SW VERSION</b>	MIUI 11	
<b>I/O PORTS</b>	Refer to user's manual	
<b>CABLE SUPPLIED</b>	USB cable: 1.0 meter, non-shielded cable, with w/o ferrite core	

**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.

**List of Accessory:**

<b>ACCESSORIES</b>	<b>BRAND</b>	<b>MODEL</b>	<b>MANUFACTURER</b>	<b>SPECIFICATION</b>
AC Adapter 1	MI	MDY-12-EA	Aohai	I/P:100 - 240Vac, 700mA, O/P: 5Vdc, 3000mA, 9 Vdc, 3000mA,12Vdc, 2250mA, 20Vdc, 1350mA,11Vdc, 3000mA
Battery	MI	BN53	NingDe AmpereX Technology Limited	Rating :3.87Vdc, 4920mAh, Li-ion, Y
USB Cable 1	MI	L63312	Luxshare Precision Industry Co., Ltd.	1 meter, non-shielded cable, with w/o ferrite core

## 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
FCC Part 15, Subpart B, Class B ANSI C63.4:2014	Conducted Test	Compliance
	Radiated Emission Test (30MHz ~ 1GHz)	Compliance
	Radiated Emission Test (Above 1GHz)	Compliance

## 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	±2.70dB
Radiated emissions	30MHz~1GMHz	±4.98dB
	1GMHz ~6GMHz	±4.70dB
	6GMHz ~18GMHz	±4.60dB
	18GMHz ~40GMHz	±4.12dB



## 1.4 DESCRIPTION OF TEST MODES

Test Mode	Test Condition
<b>Radiated emission test</b>	
1	GSM850 Idle + Adapter + GPS RX + USB cable + Earphone + BT Idle + WIFI Idle (2.4G) + SIM1 + Front Camera On
2	GSM1900 Idle + Adapter + Glonass RX + USB cable + Earphone + BT Idle + WIFI Idle (5G) + SIM2 + Back Camera On
3	WCDMA B2 Idle + Adapter + Beidou RX + USB cable + Earphone + BT Idle + WIFI Idle (2.4G) + SIM 1 + FM RX
4	WCDMA B4 Idle + Adapter + Galileo RX + USB cable + Earphone + BT Idle + WIFI Idle (5G) + SIM2 + NFC
5	WCDMA B5 Idle + Adapter + SBAS RX + USB cable + Earphone + BT Idle + WIFI Idle (2.4G) + SIM1 + MPG4
6	LTE B2 Idle + Adapter + GPS RX + USB cable + Earphone + BT Idle + WIFI Idle (5G) + SIM2 + Front Camera On
7	LTE B4 Idle + Adapter + Glonass RX + USB cable + Earphone + BT Idle + WIFI Idle (2.4G) + SIM 1 + Back Camera On
8	LTE B5 Idle + Adapter + GNSS RX + USB cable + Earphone + BT Idle + WIFI Idle (5G) + SIM2 + FM RX
9	LTE B7 Idle + Adapter + Beidou RX + USB cable + Earphone + BT Idle + WIFI Idle (2.4G) + SIM1 + NFC
10	LTE B38 Idle + Adapter + Galileo RX + USB cable + Earphone + BT Idle + WIFI Idle (5G) + SIM2 + MPG4
11	LTE B7C Idle + Adapter + SBAS RX + USB cable + Earphone + BT Idle + WIFI Idle (2.4G) + SIM 1 + Front Camera On
12	LTE B38C Idle + USB Link + Data Transmission + GPS RX + BT Idle + WIFI Idle (2.4G) + EUT to Notebook + USB cable + SIM1 + Earphone
13	WCDMA B2 Idle + USB Link + Data Transmission + Glonass RX + BT Idle + WIFI Idle (5G) + Notebook to SD + USB cable + SIM2 + Earphone
14	LTE B41 Idle + Adapter + GPS RX + USB cable + Earphone + BT Idle + WIFI Idle (5G) + SIM2 + Front Camera On



<b>Conducted emission test</b>	
1	GSM850 Idle + Adapter + GPS RX + USB cable + Earphone + BT Idle + WIFI Idle (2.4G) + SIM1 + Front Camera On
2	GSM1900 Idle + Adapter + Glonass RX + USB cable + Earphone + BT Idle + WIFI Idle (5G) + SIM2 + Back Camera On
3	WCDMA B2 Idle + Adapter + Beidou RX + USB cable + Earphone + BT Idle + WIFI Idle (2.4G) + SIM 1 + FM RX
4	WCDMA B4 Idle + Adapter + Galileo RX + USB cable + Earphone + BT Idle + WIFI Idle (5G) + SIM2 + NFC
5	WCDMA B5 Idle + Adapter + SBAS RX + USB cable + Earphone + BT Idle + WIFI Idle (2.4G) + SIM1 + MPG4
6	LTE B2 Idle + Adapter + GPS RX + USB cable + Earphone + BT Idle + WIFI Idle (5G) + SIM2 + Front Camera On
7	LTE B4 Idle + Adapter + Glonass RX + USB cable + Earphone + BT Idle + WIFI Idle (2.4G) + SIM 1 + Back Camera On
8	LTE B5 Idle + Adapter + GNSS RX + USB cable + Earphone + BT Idle + WIFI Idle (5G) + SIM2 + FM RX
9	LTE B7 Idle + Adapter + Beidou RX + USB cable + Earphone + BT Idle + WIFI Idle (2.4G) + SIM1 + NFC
10	LTE B38 Idle + Adapter + Galileo RX + USB cable + Earphone + BT Idle + WIFI Idle (5G) + SIM2 + MPG4
11	LTE B7C Idle + Adapter + SBAS RX + USB cable + Earphone + BT Idle + WIFI Idle (2.4G) + SIM 1 + Front Camera On
12	LTE B38C Idle + USB Link + Data Transmission + GPS RX + BT Idle + WIFI Idle (2.4G) + EUT to Notebook + USB cable + SIM1 + Earphone
13	WCDMA B2 Idle + USB Link + Data Transmission + Glonass RX + BT Idle + WIFI Idle (5G) + Notebook to SD + USB cable + SIM2 + Earphone
14	LTE B41 Idle + Adapter + GPS RX + USB cable + Earphone + BT Idle + WIFI Idle (5G) + SIM2 + Front Camera On

**NOTE:**

1. For conducted emission test, test mode 1 was the worst case and only this mode was presented in this report.
2. For radiated emission test, test mode 5 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 ALL TESTS

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Wireless AP	ABOCOM	WR224GR	060500749P	N/A
2	Bluetooth Earphone	FAP00	H6080	12098	N/A
3	IC Card	N/A	N/A	N/A	N/A
4	Laptop	Lenovo	Thnikpad L440	R90FTFKP	N/A
5	FM signal generator	Rohde & Schwarz	SMB100A	109279	N/A
6	GPS Simulator +Antenna	TOJOIN	GNSS-5000A	E1-010-010119	N/A
7	Universal radio communication tester	Rohde&Schwarz	CMW500	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A
2	non-Shielded, Detachable 1.5m;
3	N/A
4	N/A
5	N/A
6	N/A
7	N/A

## 2 EMISSION TEST

### 2.1 CONDUCTED EMISSION MEASUREMENT

#### 2.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.107 a CLASS B)

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.107 b CLASS A)

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15 ~ 0.5	79	66
0.5 ~ 30	73	60

**NOTE:** 1.The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 2.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR3	101900	Feb. 28,20	Feb. 27, 21
EMC32 test software	Rohde&Schwarz	EMC32	NA	NA	NA
LISN network	Rohde&Schwarz	ENV216	101922	Feb. 28,20	Feb. 27, 21

**NOTE:** 1. The test was performed in CE shielded room.

2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

### 2.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

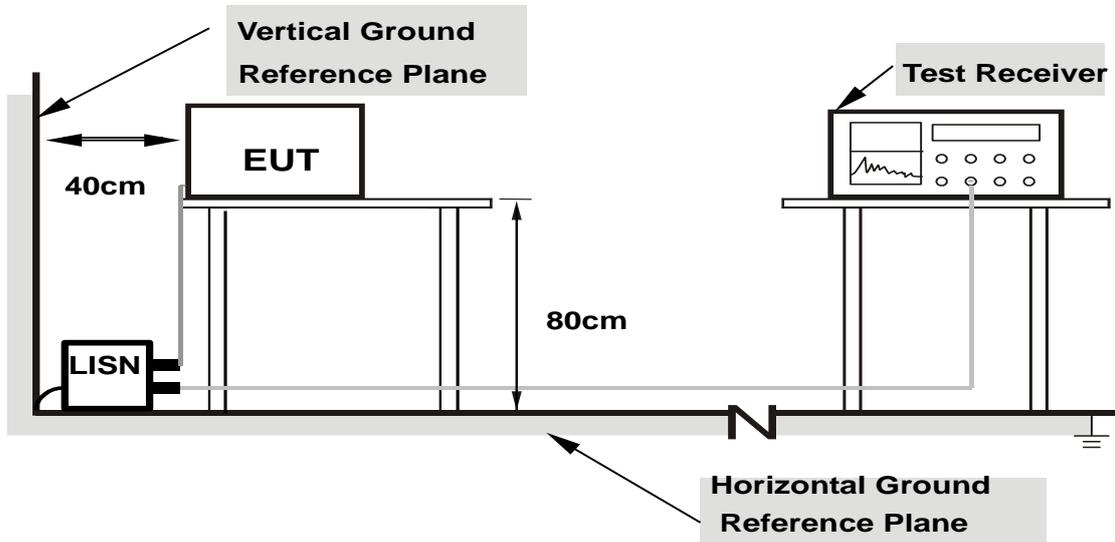
**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.

### 2.1.4 DEVIATION FROM TEST STANDARD

No deviation.



## 2.1.5 TEST SETUP



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

For the actual test configuration, please refer to the attached file (Test Setup Photo).

## 2.1.6 EUT OPERATING CONDITIONS

- a. Turned on the power and connected of all equipment.
- b. EUT was operated according to the use type described in the manufacturer's specifications or the user's manual.

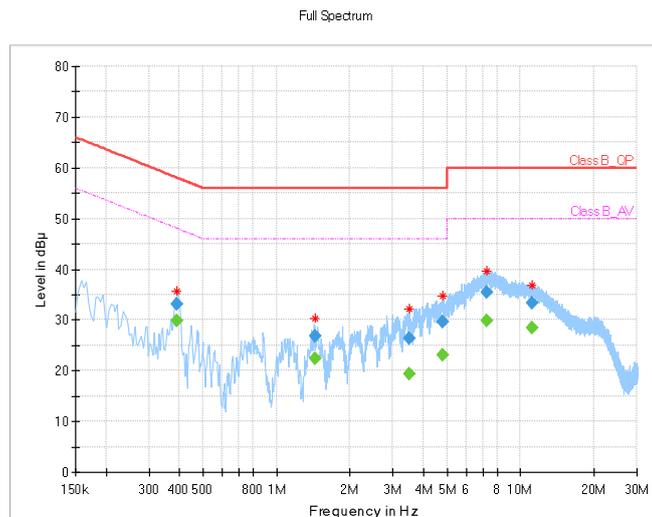


## 2.1.7 TEST RESULTS

<b>TEST VOLTAGE</b>	Input 120 Vac, 60 Hz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9 kHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 55RH	<b>TESTED BY</b>	Chase Zhou

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	CAverage (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Line	Filter	Corr. (dB)
<b>0.392000</b>	---	<b>29.78</b>	<b>48.02</b>	<b>-18.24</b>	<b>L</b>	<b>ON</b>	<b>10.0</b>
0.392000	33.13	---	58.02	-24.89	L	ON	10.0
1.432000	---	22.44	46.00	-23.56	L	ON	10.1
1.432000	26.86	---	56.00	-29.14	L	ON	10.1
3.492000	---	19.46	46.00	-26.54	L	ON	10.2
3.492000	26.42	---	56.00	-29.58	L	ON	10.2
4.788000	---	23.19	46.00	-22.81	L	ON	10.2
4.788000	29.63	---	56.00	-26.37	L	ON	10.2
7.236000	---	29.90	50.00	-20.10	L	ON	10.3
7.236000	35.40	---	60.00	-24.60	L	ON	10.3
11.188000	---	28.55	50.00	-21.45	L	ON	10.5
11.188000	33.32	---	60.00	-26.68	L	ON	10.5

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.





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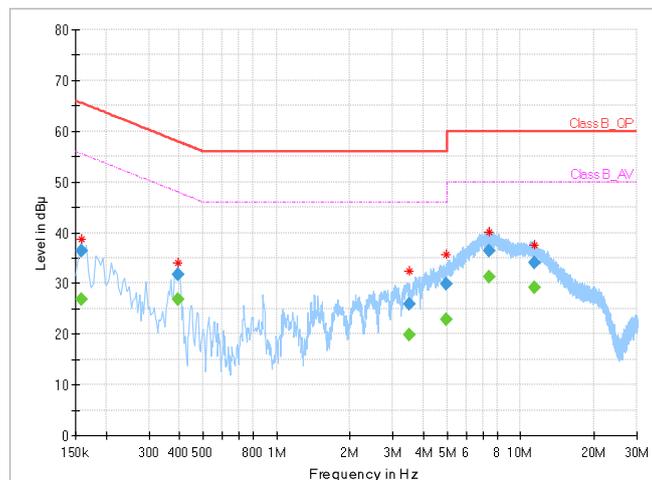
**Test Report No.: FV200304W004**

<b>TEST VOLTAGE</b>	Input 120 Vac, 60 Hz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9 kHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 55RH	<b>TESTED BY</b>	Chase Zhou

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	CAverage (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Line	Filter	Corr. (dB)
0.158000	---	26.84	55.57	-28.73	N	ON	9.9
0.158000	36.38	---	65.57	-29.19	N	ON	9.9
0.396000	---	26.77	47.94	-21.17	N	ON	9.9
0.396000	31.64	---	57.94	-26.29	N	ON	9.9
3.488000	---	19.75	46.00	-26.25	N	ON	10.1
3.488000	25.96	---	56.00	-30.04	N	ON	10.1
4.952000	---	22.93	46.00	-23.07	N	ON	10.1
4.952000	29.81	---	56.00	-26.19	N	ON	10.1
7.404000	---	31.19	50.00	-18.81	N	ON	10.2
7.404000	36.32	---	60.00	-23.68	N	ON	10.2
11.348000	---	29.11	50.00	-20.89	N	ON	10.3
11.348000	33.98	---	60.00	-26.02	N	ON	10.3

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.

Full Spectrum





## 2.2 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 3 meters (dBµV/m)		
Frequencies (MHz)	FCC 15B / ICES-003, Class A	FCC 15B / ICES-003, Class B
30-88	49	40
88-216	53.5	43.5
216-960	56	46
960-1000	59.5	54
Above 1000	Avg: 59.5 Peak: 79.5	Avg: 54 Peak: 74

#### Frequency Range (For unintentional radiators)

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5 <sup>th</sup> harmonic of the highest frequency or 40GHz, whichever is lower

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
  2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
  3. 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.
  4. QP detector shall be applied if not specified.

## 2.2.2 TEST INSTRUMENTS

### Frequency range below 1GHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	Feb. 28,20	Feb. 27,21
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Feb. 28,20	Feb. 27,21
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 28,20	Feb. 27,21
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 24,19	Jun. 23,20

### Frequency range above 1GHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	Feb. 28,20	Feb. 27,21
Horn Antenna	ETS-LINDGREN	3117	00168728	Feb. 28,20	Feb. 27,21
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170242	Feb. 28,20	Feb. 27,21
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Jun. 24,19	Jun. 23,20
Signal Pre-Amplifier (1~18GHz)	EMSI	EMC 012645B	980257	Feb. 28,20	Feb. 27,21
Signal Pre-Amplifier (18GHz-40GHz)	EMSI	EMC 184045	980102	Dec. 27,19	Dec. 26,20

- NOTE:**
1. The test was performed in 3m 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 525120; The Designation No. is CN1171.



## 2.2.3 TEST PROCEDURE

### <Frequency Range below 1GHz>

The basic test procedure was in accordance with ANSI C63.4:2014 (section 12).

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter 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 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 3 meter fully-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 and video bandwidth of test receiver/spectrum analyzer is 1Hz 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.

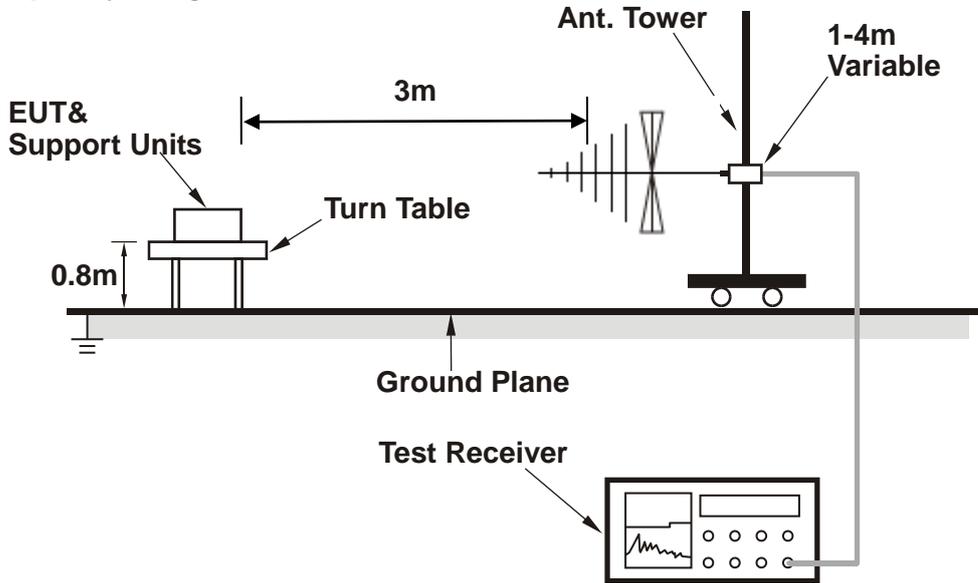
## 2.2.4 DEVIATION FROM TEST STANDARD

No deviation.

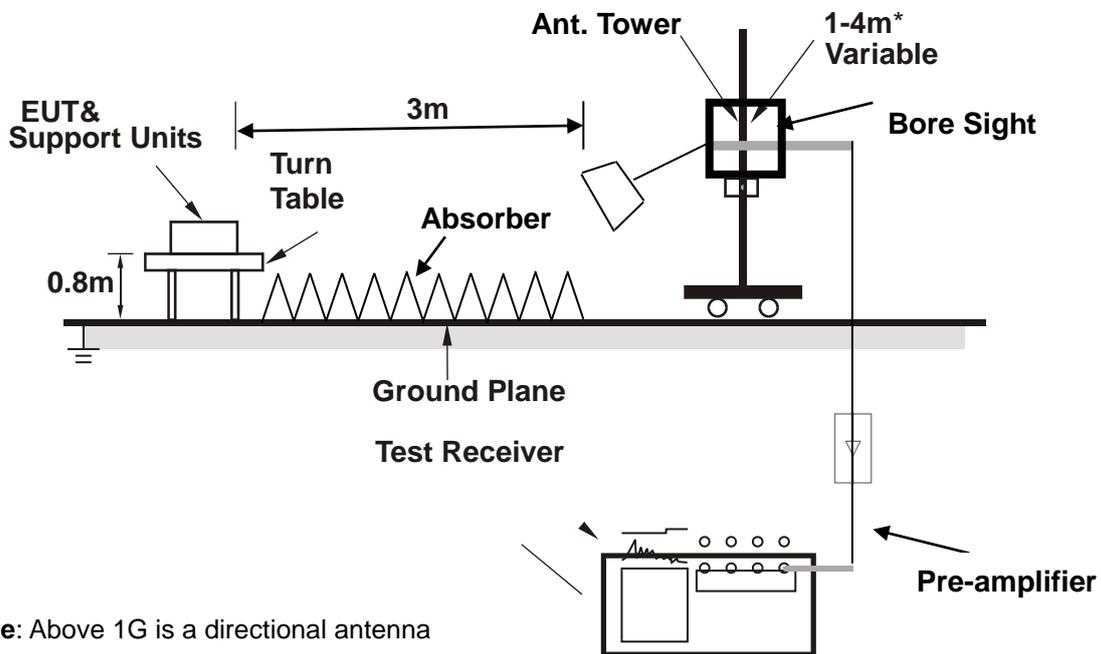


### 2.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



**Note:** Above 1G is a directional antenna

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

### 2.2.6 EUT OPERATING CONDITIONS

Same as item 2.1.6.

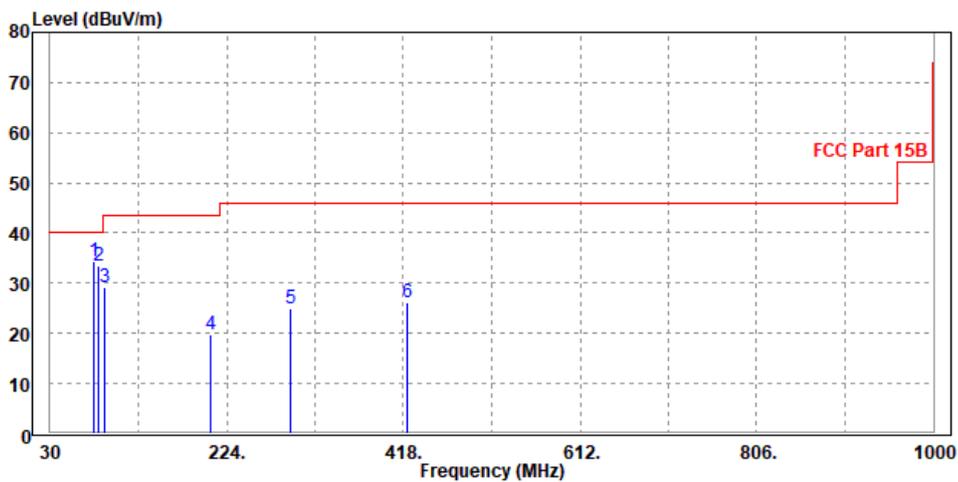


### 2.2.7 TEST RESULTS

<b>TEST VOLTAGE</b>	Input 120 Vac, 60 Hz	<b>FREQUENCY RANGE</b>	30-1000 MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70 %RH	<b>DETECTOR FUNCTION &amp; RESOLUTION BANDWIDTH</b>	Quasi-Peak, 120 kHz
<b>TESTED BY</b>	Tony		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
77.53	34.38	62.57	40	-5.62	7.95	1.2	37.34	101	122	QP
83.35	33.46	61.31	40	-6.54	8.23	1.23	37.31	101	0	QP
90.14	29.23	56.68	43.5	-14.27	8.52	1.28	37.25	101	322	QP
206.54	19.85	43.5	43.5	-23.65	11.09	1.82	36.56	101	146	QP
293.84	25.03	45.62	46	-20.97	13.96	2.19	36.74	101	128	QP
422.85	26.28	42.95	46	-19.72	17.5	2.7	36.87	101	237	QP

- 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.





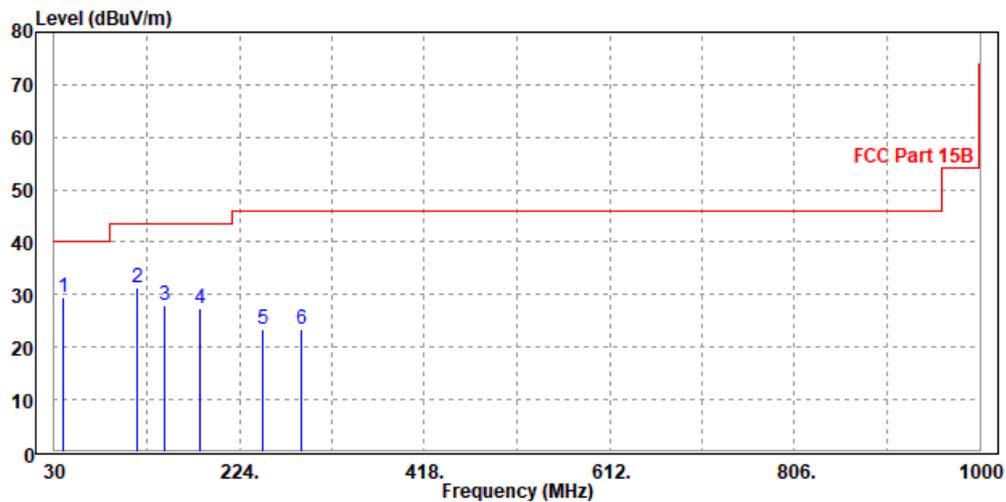
**BUREAU  
VERITAS**

**Test Report No.: FV200304W004**

<b>TEST VOLTAGE</b>	Input 120 Vac, 60 Hz	<b>FREQUENCY RANGE</b>	30-1000 MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70 %RH	<b>DETECTOR FUNCTION &amp; RESOLUTION BANDWIDTH</b>	Quasi-Peak, 120 kHz
<b>TESTED BY</b>	Tony		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
39.7	29.56	52.45	40	-10.44	13.72	0.91	37.52	200	0	QP
117.3	31.48	58.29	43.5	-12.02	8.85	1.43	37.09	200	163	QP
146.4	27.92	53.83	43.5	-15.58	9.38	1.56	36.85	200	255	QP
183.26	27.44	51.89	43.5	-16.06	10.47	1.71	36.63	200	154	QP
248.25	23.39	44.89	46	-22.61	13.12	2.03	36.65	200	63	QP
288.99	23.42	44	46	-22.58	13.98	2.17	36.73	200	341	QP

- 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.





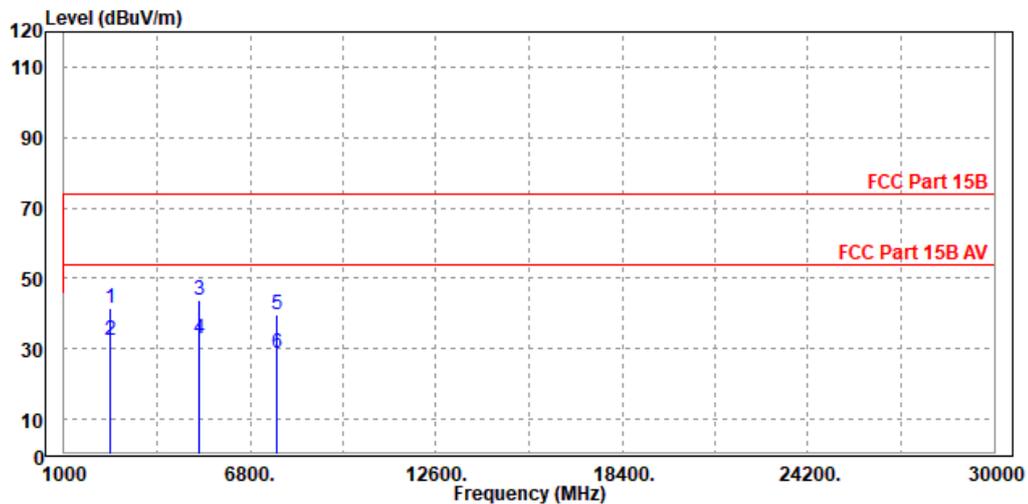
**BUREAU  
VERITAS**

**Test Report No.: FV200304W004**

<b>TEST VOLTAGE</b>	Input 120 Vac, 60 Hz	<b>FREQUENCY RANGE</b>	1-30 GHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70 %RH	<b>DETECTOR FUNCTION &amp; RESOLUTION BANDWIDTH</b>	Peak/Average, 1 MHz
<b>TESTED BY</b>	Tony		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2428	41.36	54.56	74	-32.64	33.17	4.82	46.37	200	0	Peak
2428	32.36	45.56	54	-21.64	33.17	4.82	46.37	200	0	Average
5233	43.79	54.09	74	-30.21	36.03	5.26	46.33	200	0	Peak
5233	32.85	43.15	54	-21.15	36.03	5.26	46.33	200	0	Average
7630	39.72	47.91	74	-34.28	37.45	6.96	45.64	200	0	Peak
7630	28.79	36.98	54	-25.21	37.45	6.96	45.64	200	0	Average

- 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 30GHz.
  4. Only emissions significantly above equipment noise floor are reported.





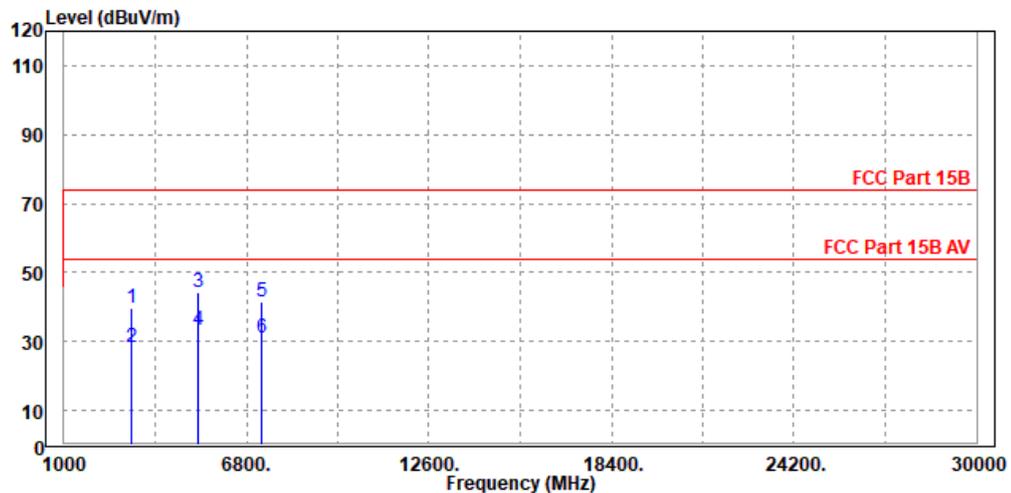
**BUREAU  
VERITAS**

**Test Report No.: FV200304W004**

<b>TEST VOLTAGE</b>	Input 120 Vac, 60 Hz	<b>FREQUENCY RANGE</b>	1-30 GHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70 %RH	<b>DETECTOR FUNCTION &amp; RESOLUTION BANDWIDTH</b>	Peak/Average, 1 MHz
<b>TESTED BY</b>	Tony		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
3142	39.51	52.29	74	-34.49	32.97	5.96	45.75	200	0	Peak
3142	28.48	41.26	54	-25.52	32.97	5.96	45.75	200	0	Average
5250	44.4	54.38	74	-29.6	36.35	5.52	46.33	200	0	Peak
5250	33.47	43.45	54	-20.53	36.35	5.52	46.33	200	0	Average
7290	41.51	49.52	74	-32.49	37.73	6.59	45.74	200	0	Peak
7290	31.25	39.26	54	-22.75	37.73	6.59	45.74	200	0	Average

- 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 30GHz.
  4. Only emissions significantly above equipment noise floor are reported.





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VERITAS**

Test Report No.: FV200304W004

### **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---**