

## EMC TEST REPORT

Applicant:	Mundo Reader S.L.
Address:	Calle Sofía 10, Parque Industrial y Tecnológico Európolis 28232 Las Rozas - Madrid SPAIN

Manufacturer or Supplier:	Mundo Reader S.L.
Address:	Calle Sofía 10, Parque Industrial y Tecnológico Európolis 28232 Las Rozas - Madrid SPAIN
Product:	Smartphone
Brand Name:	BQ
Model Name:	Aquaris C
FCC ID:	2AN87AQUARISC
Date of tests:	Jul. 09, 2018 ~ Aug. 07, 2018

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**
- ANSI C63.4:2014**

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

Issued by Alex Chen  
Engineer / Mobile Department

Approved by Sam Tung  
Manager / Mobile Department



Date: Aug. 08, 2018



Date: Aug. 08, 2018

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**BUREAU**  
**VERITAS**

Test Report No.: FV180702W009

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FV180702W009	Original release	Aug. 08, 2018



# 1 GENERAL INFORMATION

## 1.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Smartphone	
<b>BRAND NAME</b>	BQ	
<b>MODEL NAME</b>	Aquaris C	
<b>NOMINAL VOLTAGE</b>	5.0Vdc (adapter or host equipment) 3.85Vdc (Li-ion, battery )	
<b>BATTERY</b>	Brand Name: BQ Model Name: BQ battery 3000 (1 CP5/60/72) Power Rating: DC 3.85V, 3000mAh, Li-ion	
<b>MODULATION TYPE</b>	<b>WLAN</b>	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
	<b>BT_LE</b>	BT-LE(GFSK) for DTS
	<b>Bluetooth</b>	GFSK, $\pi/4$ -DQPSK, 8DPSK
	<b>GPS/ Glonass</b>	C/A code
	<b>GSM</b>	GMSK
	<b>WCDMA</b>	BPSK/QPSK
	<b>NFC</b>	ASK
	<b>FM</b>	FSK
<b>OPERATING FREQUENCY</b>	<b>WLAN</b>	2412 ~ 2462MHz for 11b/g/n(HT20) 2422 ~ 2452MHz for 11n(HT40) 5150 ~ 5250MHz, 5250 ~ 5350MHz, 5470 ~ 5725MHz, 5725 ~ 5825MHz for 11a/n(HT20)/n(HT40)/ac(HT80)
	<b>Bluetooth/BT_LE</b>	2402MHz ~ 2480MHz
	<b>GPS</b>	1575.42MHz
	<b>GLONASS</b>	1602MHz
	<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) 1710.7MHz ~ 1754.3MHz (FOR WCDMA Band 4) 826.4MHz ~ 846.6MHz (FOR WCDMA Band 5)
	<b>NFC</b>	13.56MHz
	<b>FM</b>	88MHz ~ 108MHz
<b>HW VERSION</b>	MRS_M1000_B11_LLDM108C1-3	
<b>SW VERSION</b>	1.0.0_20180723-1250	



<b>I/O PORTS</b>	Refer to user's manual
<b>CABLE SUPPLIED</b>	USB Cable: non-shielded, detachable, 1.0m
<b>ACCESSORY DEVICES</b>	Refer to note as below

**NOTE:**

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT matched the following USB Cable:

<b>USB CABLE</b>	
<b>BRAND:</b>	bq
<b>MODEL:</b>	HY-005015
<b>SIGNAL LINE:</b>	1.0 METER

3. 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 ANSI C63.4:2014	Conducted Test	PASS	Meets limits minimum passing margin is -9.38dB at 0.548000MHz.
	Radiated Emission Test (30MHz ~ 1GHz)	PASS	Meets Class B Limit Minimum passing margin is -9.37dB at 177.44MHz
	Radiated Emission Test (Above 1GHz)	PASS	Meets Class B Limit Minimum passing margin is -15.97dB at 3150MHz

## 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	+/-3.26dB
	1GHz ~ 18GHz	+/-4.48dB



### 1.4 DESCRIPTION OF TEST MODES

Test Mode	Test Condition
<b>Radiated emission test</b>	
1	GSM850 Idle+ Adapter+ Earphone+ USB cable+ GPS RX+ BT Idle+ WIFI 2.4g Idle+ Back Camera on
2	GSM1900 Idle+ Adapter+ Earphone+ USB cable+ Glonass RX+ BT Idle+ WIFI 5g Idle+ Front Camera On
3	WCDMA B2 Idle+ Adapter+ Earphone+ USB cable+ GPS RX+ BT Idle+ WIFI 2.4g Idle+ FM RX
4	WCDMA B5 Idle+ Adapter+ Earphone+ USB cable+ GPS RX+ BT Idle+ WIFI 5g Idle+ MPEG4
5	GSM850 Idle+ Adapter+ Earphone+ USB cable+ Glonass RX+ BT Idle+ WIFI 2.4g Idle+ NFC RX
6	GSM1900 Idle+USB cable(data link with notebook)+ Earphone + Glonass RX+ BT Idle+ WIFI 5g Idle
<b>Conducted emission test</b>	
1	GSM850 Idle+ Adapter+ Earphone+ USB cable+ GPS RX+ BT Idle+ WIFI 2.4g Idle+ Back Camera on
2	GSM1900 Idle+ Adapter+ Earphone+ USB cable+ Glonass RX+ BT Idle+ WIFI 5g Idle+ Front Camera On
3	WCDMA B2 Idle+ Adapter+ Earphone+ USB cable+ GPS RX+ BT Idle+ WIFI 2.4g Idle+ FM RX
4	WCDMA B5 Idle+ Adapter+ Earphone+ USB cable+ GPS RX+ BT Idle+ WIFI 5g Idle+ MPEG4
5	GSM850 Idle+ Adapter+ Earphone+ USB cable+ Glonass RX+ BT Idle+ WIFI 2.4g Idle+ NFC RX
6	GSM1900 Idle+USB cable(data link with notebook)+ Earphone + Glonass RX+ BT Idle+ WIFI 5g Idle

**NOTE:**

1. For conducted emission test, test mode 1 was the worst case, the worst case and mode 6 were presented in this report.
2. For radiated emission test, test mode 1 was the worst case, the worst case and mode 6 were 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	Adapter	N/A	N/A	N/A	N/A
2	Earphone	N/A	N/A	N/A	N/A
3	Notebook	Lenovo	Thnikpad X520	SL10H14859JS	N/A
4	Printer	HP	Hp LaserJet 1300	CNSJF75989	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A
2	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)

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

**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	Mar. 15,18	Mar. 14,19
EMC32 test software	Rohde&Schwarz	EMC32	NA	NA	NA
LISN network	Rohde&Schwarz	ENV216	101922	Sep. 18,17	Sep. 17,18

**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.

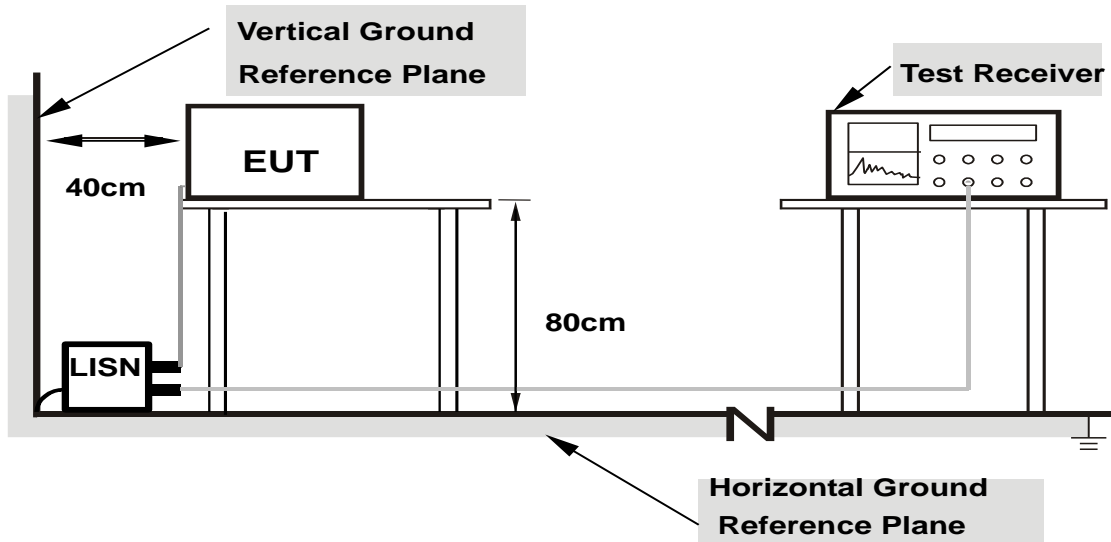
**NOTE:** All modes of operation were investigated and the worst-case emissions are reported.

### 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

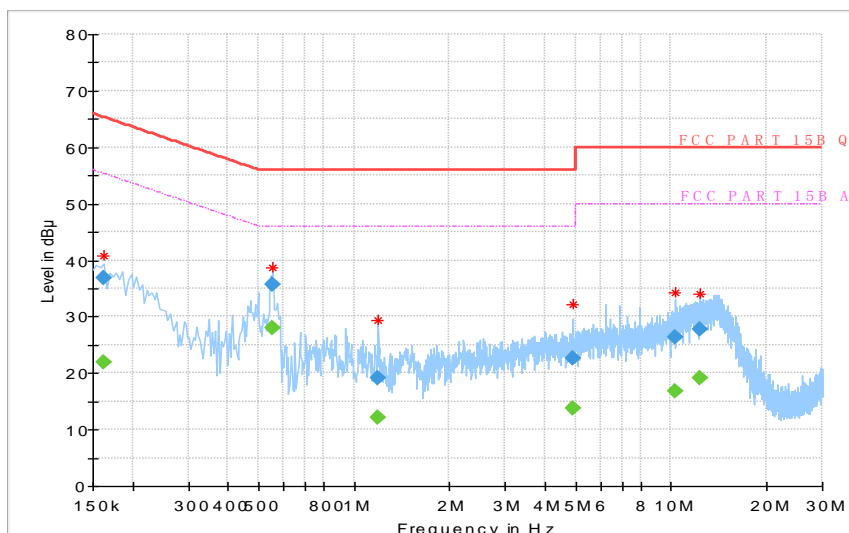
### Mode 1

<b>TEST VOLTAGE</b>	DC 5V From Adapter Input 120 Vac, 60 Hz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9 kHz
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 55RH	<b>TESTED BY</b>	John Wen

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	CAverage (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Line	Filter	Corr. (dB)
0.162000	---	21.96	55.36	-33.40	L1	ON	9.6
0.162000	36.77	---	65.36	-28.59	L1	ON	9.6
0.552000	---	27.99	46.00	-18.01	L1	ON	9.7
0.552000	35.59	---	56.00	-20.41	L1	ON	9.7
1.192000	---	12.10	46.00	-33.90	L1	ON	9.7
1.192000	19.01	---	56.00	-36.99	L1	ON	9.7
4.892000	---	13.80	46.00	-32.20	L1	ON	9.7
4.892000	22.52	---	56.00	-33.48	L1	ON	9.7
10.332000	---	16.81	50.00	-33.19	L1	ON	9.9
10.332000	26.35	---	60.00	-33.65	L1	ON	9.9
12.288000	---	19.23	50.00	-30.77	L1	ON	9.9
12.288000	27.64	---	60.00	-32.36	L1	ON	9.9

- 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





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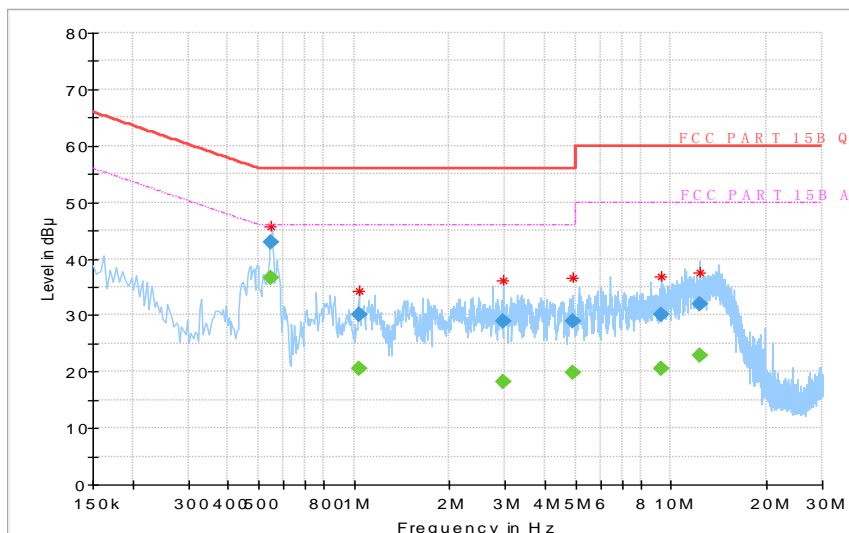
**Test Report No.: FV180702W009**

<b>TEST VOLTAGE</b>	DC 5V From Adapter Input 120 Vac, 60 Hz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9 kHz
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 55RH	<b>TESTED BY</b>	John Wen

Frequency (MHz)	QuasiPeak (dBUV)	CAverage (dBUV)	Limit (dBUV)	Margin (dB)	Line	Filter	Corr. (dB)
<b>0.548000</b>	---	<b>36.62</b>	<b>46.00</b>	<b>-9.38</b>	<b>N</b>	<b>ON</b>	<b>10.1</b>
0.548000	42.95	---	56.00	-13.05	N	ON	10.1
1.036000	---	20.44	46.00	-25.56	N	ON	9.9
1.036000	30.16	---	56.00	-25.84	N	ON	9.9
2.940000	---	18.08	46.00	-27.92	N	ON	9.8
2.940000	28.88	---	56.00	-27.12	N	ON	9.8
4.904000	---	19.72	46.00	-26.28	N	ON	9.8
4.904000	29.03	---	56.00	-26.97	N	ON	9.8
9.260000	---	20.64	50.00	-29.36	N	ON	9.9
9.260000	30.15	---	60.00	-29.85	N	ON	9.9
12.308000	---	22.84	50.00	-27.16	N	ON	9.9
12.308000	31.86	---	60.00	-28.14	N	ON	9.9

- 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





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VERITAS**

**Test Report No.: FV180702W009**

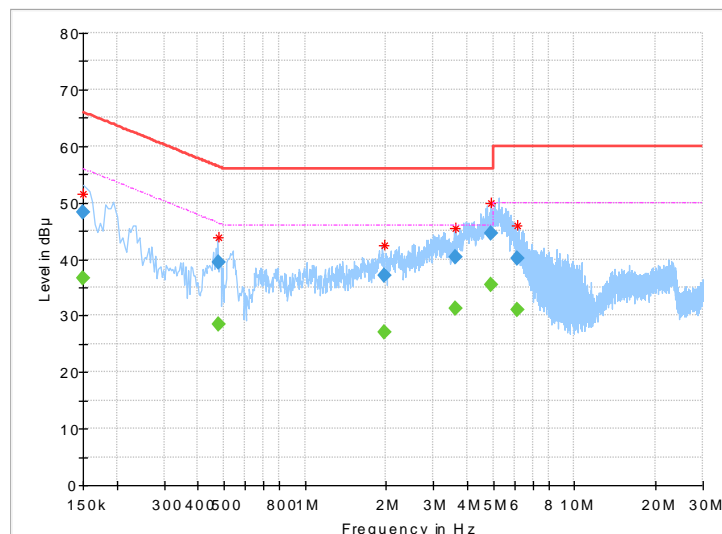
**Mode 6**

<b>TEST VOLTAGE</b>	DC 5V From USB port Input 120 Vac, 60 Hz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9 kHz
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 55RH	<b>TESTED BY</b>	John Wen

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	36.63	56.00	-19.37	L1	ON	9.6
0.150000	48.38	---	66.00	-17.62	L1	ON	9.6
0.476000	---	28.47	46.41	-17.94	L1	ON	9.7
0.476000	39.50	---	56.41	-16.91	L1	ON	9.7
1.966000	---	27.13	46.00	-18.87	L1	ON	9.7
1.966000	37.02	---	56.00	-18.98	L1	ON	9.7
3.606000	---	31.20	46.00	-14.80	L1	ON	9.7
3.606000	40.37	---	56.00	-15.63	L1	ON	9.7
4.912000	---	35.47	46.00	-10.53	L1	ON	9.7
4.912000	44.53	---	56.00	-11.47	L1	ON	9.7
6.128000	---	31.09	50.00	-18.91	L1	ON	9.8
6.128000	40.01	---	60.00	-19.99	L1	ON	9.8

- 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

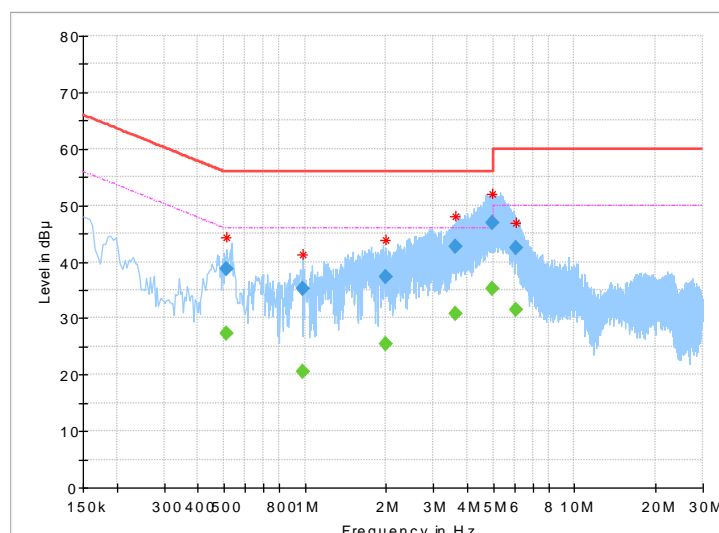


<b>TEST VOLTAGE</b>	DC 5V From USB port Input 120 Vac, 60 Hz	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9 kHz
<b>ENVIRONMENTAL CONDITIONS</b>	24deg. C, 55RH	<b>TESTED BY</b>	John Wen

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.512000	---	27.40	46.00	-18.60	N	ON	10.1
0.512000	38.68	---	56.00	-17.32	N	ON	10.1
0.980000	---	20.63	46.00	-25.37	N	ON	9.9
0.980000	35.32	---	56.00	-20.68	N	ON	9.9
1.984000	---	25.38	46.00	-20.62	N	ON	9.8
1.984000	37.43	---	56.00	-18.57	N	ON	9.8
3.636000	---	30.87	46.00	-15.13	N	ON	9.8
3.636000	42.64	---	56.00	-13.36	N	ON	9.8
4.948000	---	35.32	46.00	-10.68	N	ON	9.8
4.948000	46.44	---	56.00	-9.56	N	ON	9.8
6.104000	---	31.43	50.00	-18.57	N	ON	9.8
6.104000	42.34	---	60.00	-17.66	N	ON	9.8

- 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 10 meters (dB $\mu$ V/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 (dB $\mu$ V/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





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:**
- 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

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	Apr. 21,18	Apr. 20,19
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Nov. 26,16	Nov. 25,18
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 16,18	Mar. 15,19
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jul. 09,18	Jul. 08,19

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	Apr. 21,18	Apr. 20,19
Horn Antenna	ETS-LINDGREN	3117	00168728	Nov. 10,16	Nov. 09,18
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 16,18	Mar. 15,19
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jul. 09,18	Jul. 08,19

- NOTE:**
- The test was performed in 3m chamber.
  - 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.
  - The FCC Site Registration No. is 525120.

## 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:

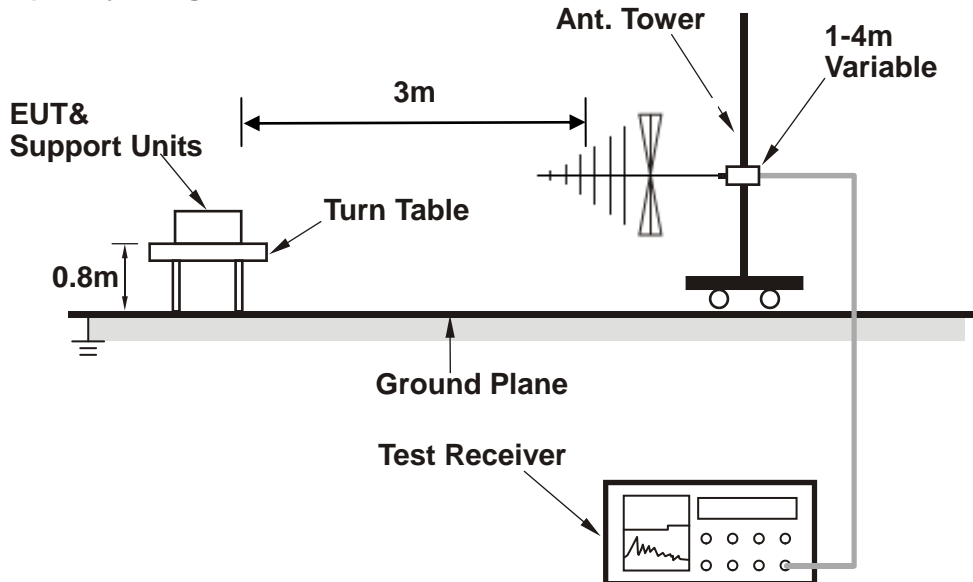
1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth of test receiver/spectrum analyzer is 10Hz 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

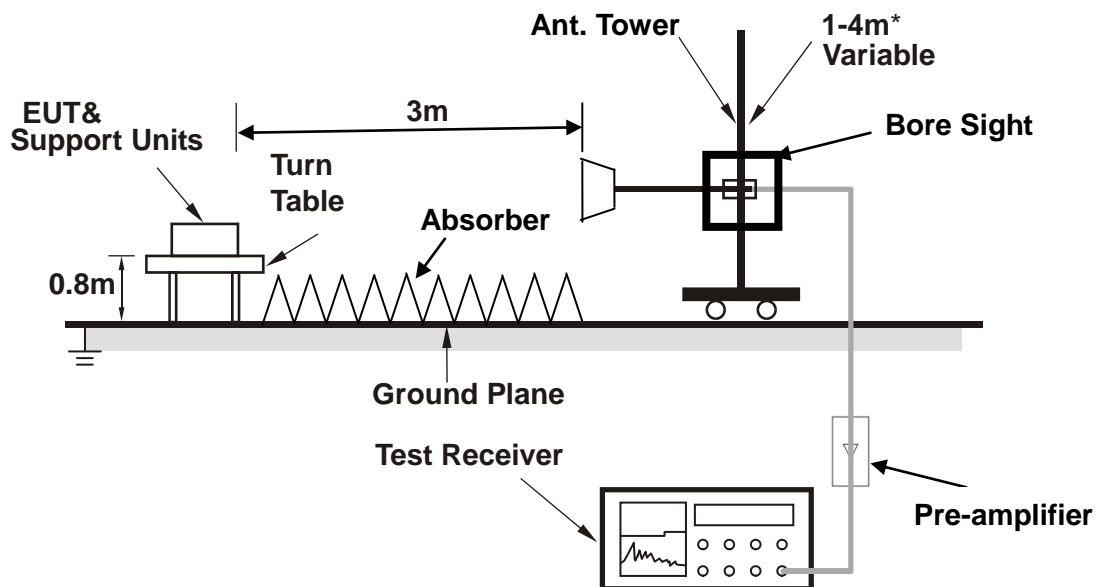
No deviation.

## 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.



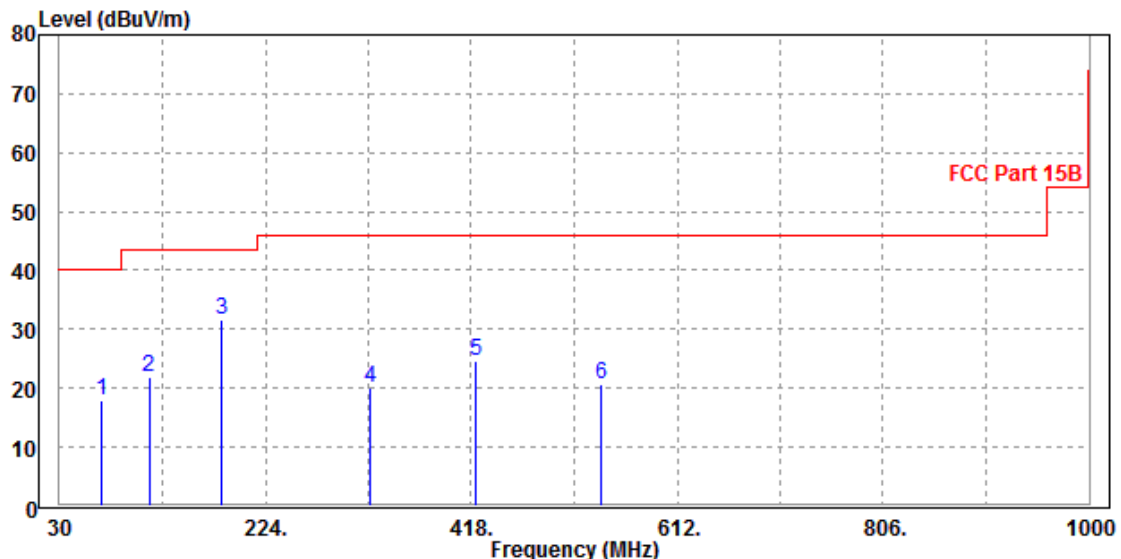
## 2.2.7 TEST RESULTS

### Mode 1

<b>TEST VOLTAGE</b>	DC 5V From Adapter 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>	Vincent Chen		

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
69.77	17.83	46.72	40	-22.17	7.58	0.86	37.33	100	150	QP
114.39	22.01	49.35	43.5	-21.49	8.62	1.14	37.1	100	100	QP
183.26	31.64	56.71	43.5	-11.86	10.18	1.38	36.63	100	70	QP
322.94	20.15	40.58	46	-25.85	14.56	1.78	36.77	100	190	QP
422.85	24.52	42.03	46	-21.48	17.31	2.05	36.87	100	60	QP
540.22	20.82	36.89	46	-25.18	18.8	2.28	37.15	100	250	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.





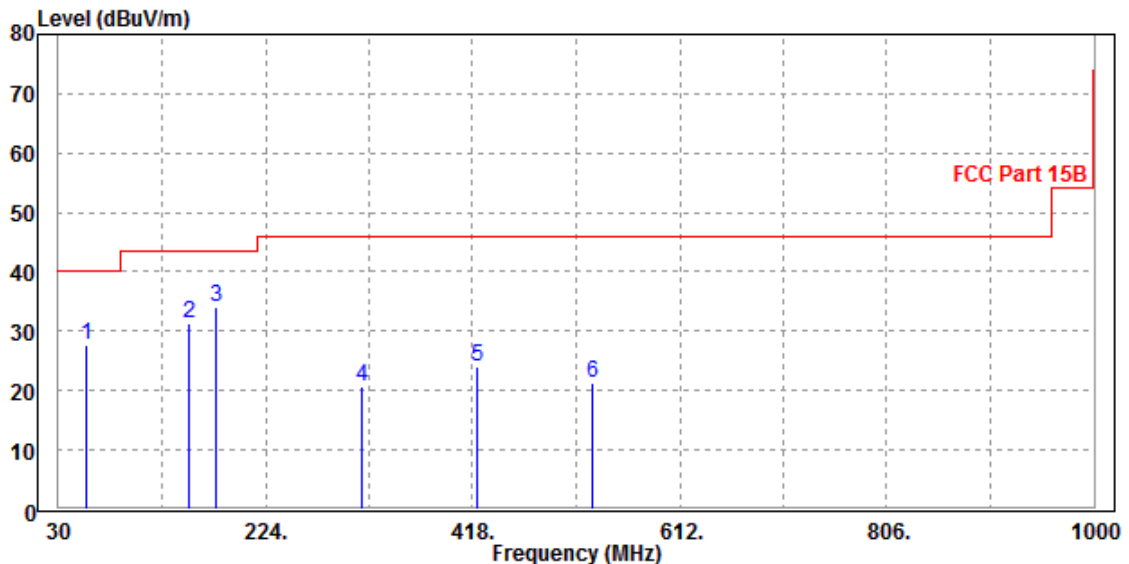
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**Test Report No.: FV180702W009**

<b>TEST VOLTAGE</b>	DC 5V From Adapter 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>	Vincent Chen		

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	
56.19	27.75	57.51	40	-12.25	6.8	0.77	37.33	100	230	QP	
152.22	31.31	56.91	43.5	-12.19	9.9	1.3	36.8	100	250	QP	
<b>177.44</b>	<b>34.13</b>	<b>59.26</b>	<b>43.5</b>	<b>-9.37</b>	<b>10.16</b>	<b>1.36</b>	<b>36.65</b>	<b>100</b>	<b>100</b>	<b>QP</b>	
314.21	20.66	41.39	46	-25.34	14.27	1.76	36.76	100	170	QP	
422.85	24.13	41.64	46	-21.87	17.31	2.05	36.87	100	200	QP	
529.55	21.38	37.64	46	-24.62	18.59	2.26	37.11	100	50	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.



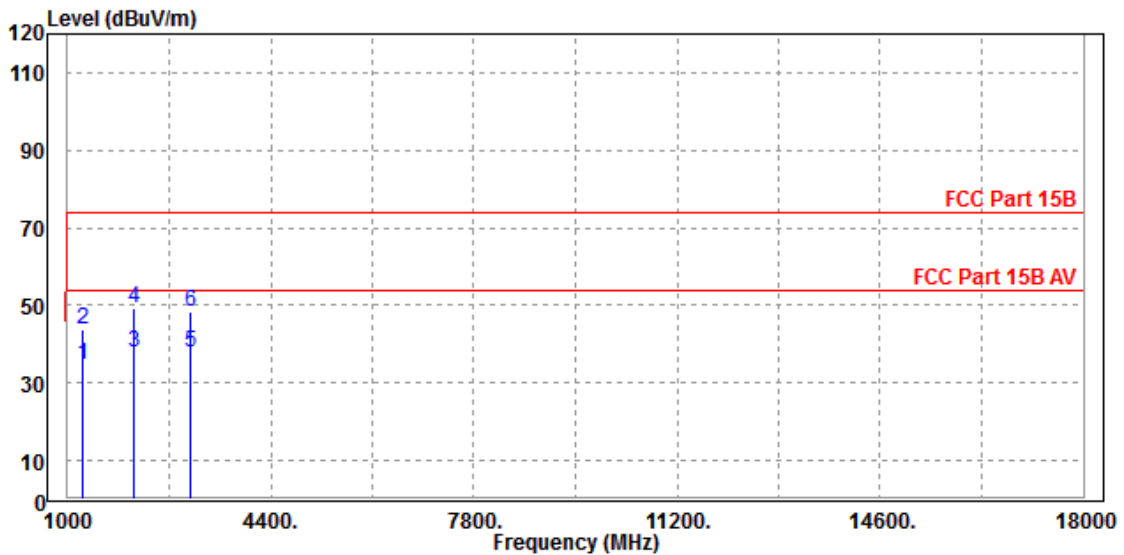


Mode 1

<b>TEST VOLTAGE</b>	DC 5V From Adapter Input 120 Vac, 60 Hz	<b>FREQUENCY RANGE</b>	1-18 GHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70 %RH	<b>DETECTOR FUNCTION &amp; RESOLUTION BANDWIDTH</b>	Peak/Average, 1 MHz
<b>TESTED BY</b>	Vincent Chen		

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
1250	34.64	48.31	54	-19.36	28.95	5.74	48.36	100	48	Average
1250	43.94	57.61	74	-30.06	28.95	5.74	48.36	100	48	Peak
2115	37.68	46.35	54	-16.32	32.01	7.66	48.34	100	110	Average
2115	49.17	57.84	74	-24.83	32.01	7.66	48.34	100	110	Peak
3050	37.99	44.14	54	-16.01	32.91	9.28	48.34	100	215	Average
3050	48.17	54.32	74	-25.83	32.91	9.28	48.34	100	215	Peak

- 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 18GHz.
  4. Only emissions significantly above equipment noise floor are reported.

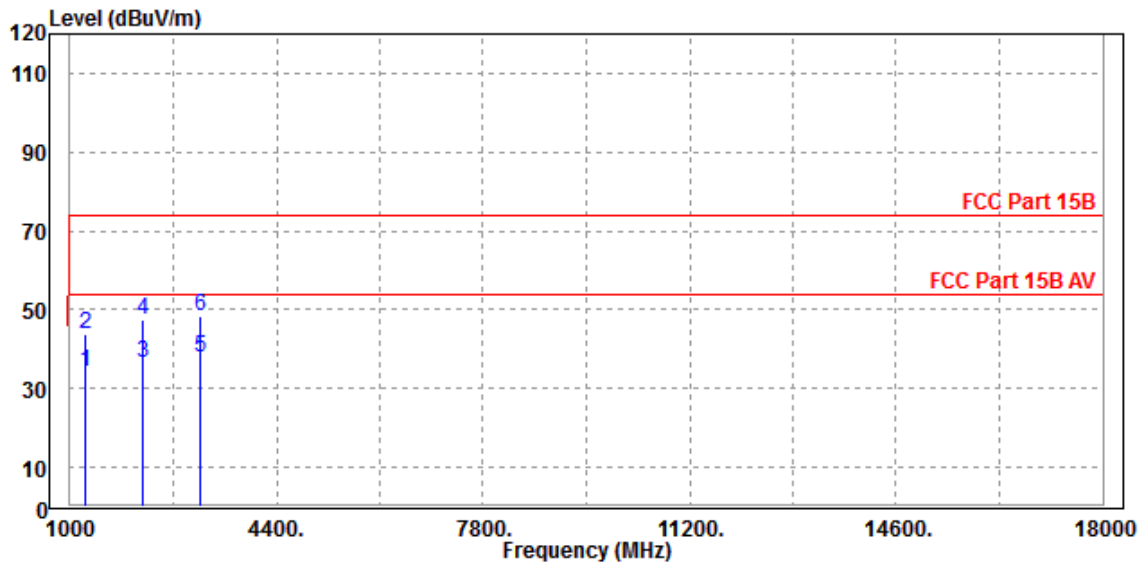




<b>TEST VOLTAGE</b>	DC 5V From Adapter Input 120 Vac, 60 Hz	<b>FREQUENCY RANGE</b>	1-18 GHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70 %RH	<b>DETECTOR FUNCTION &amp; RESOLUTION BANDWIDTH</b>	Peak/Average, 1 MHz
<b>TESTED BY</b>	Vincent Chen		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>										
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
1260	34.22	47.88	54	-19.78	28.94	5.76	48.36	100	120	Average
1260	43.76	57.42	74	-30.24	28.94	5.76	48.36	100	120	Peak
2200	36.69	45.11	54	-17.31	32.1	7.81	48.33	100	80	Average
2200	47.62	56.04	74	-26.38	32.1	7.81	48.33	100	80	Peak
<b>3150</b>	<b>38.03</b>	<b>44.02</b>	<b>54</b>	<b>-15.97</b>	<b>32.93</b>	<b>9.43</b>	<b>48.35</b>	<b>100</b>	<b>215</b>	<b>Average</b>
3150	48.26	54.25	74	-25.74	32.93	9.43	48.35	100	215	Peak

- 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 18GHz.
  4. Only emissions significantly above equipment noise floor are reported.







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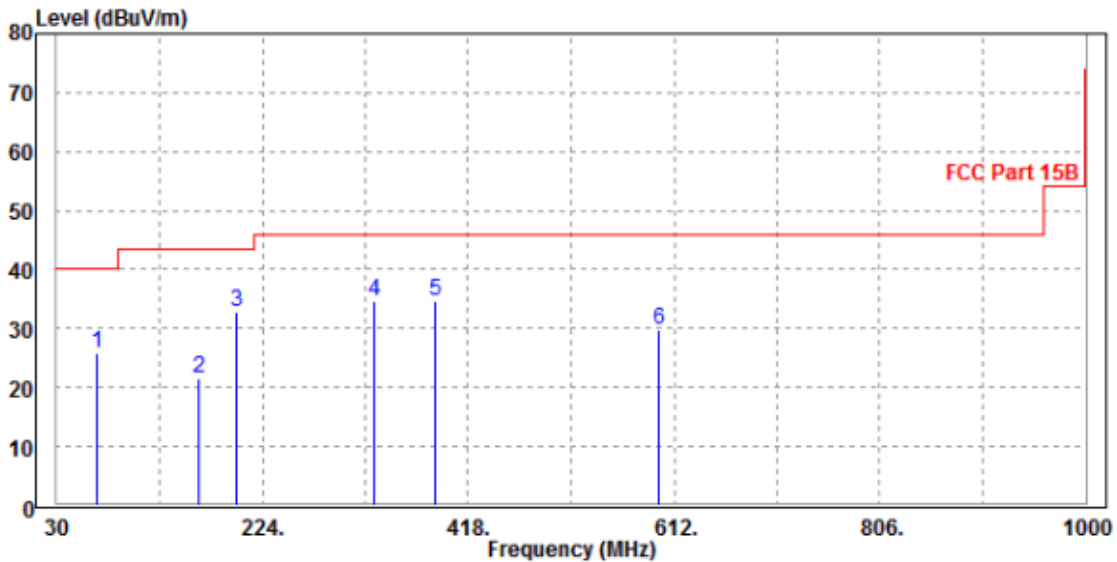
**Test Report No.: FV180702W009**

**Mode 6**

<b>TEST VOLTAGE</b>	DC 5V From USB port 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>	Vincent Chen		

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>											
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	
67.83	25.77	54.82	40	-14.23	7.43	0.85	37.33	100	124	QP	
163.86	21.75	46.66	43.5	-21.75	10.5	1.3	36.71	132	254	QP	
199.75	32.89	57.41	43.5	-10.61	10.59	1.44	36.55	156	288	QP	
329.73	34.66	54.85	46	-11.34	14.78	1.8	36.77	100	289	QP	
386.96	34.81	53	46	-11.19	16.67	1.96	36.82	112	330	QP	
597.45	29.85	44.87	46	-16.15	19.95	2.39	37.36	100	78	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.





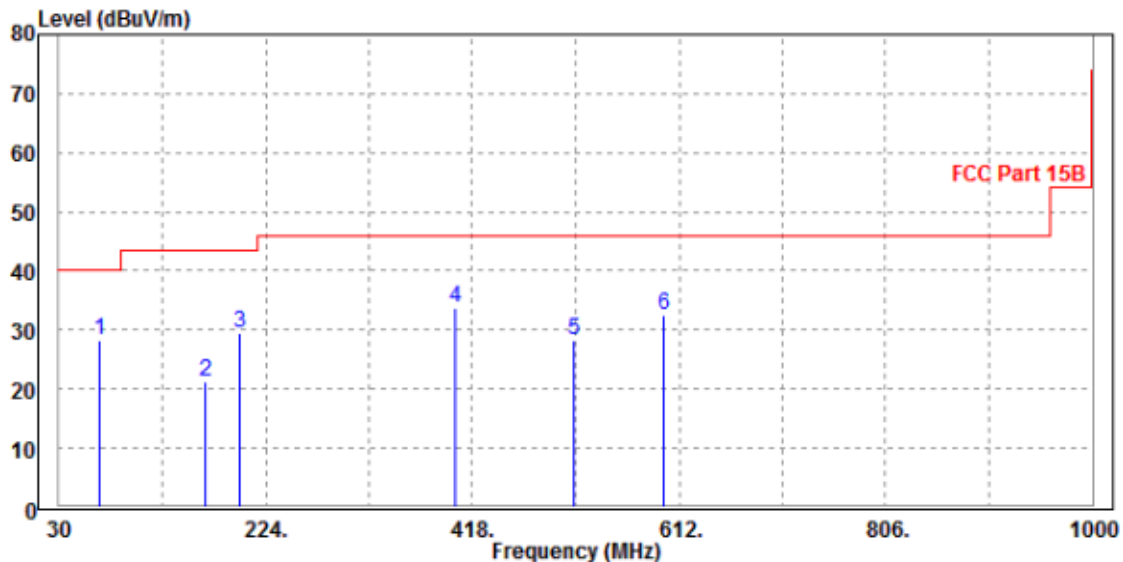
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**Test Report No.: FV180702W009**

<b>TEST VOLTAGE</b>	DC 5V From USB port 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>	Vincent Chen		

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	
67.83	28.27	57.32	40	-11.73	7.43	0.85	37.33	100	360	QP	
167.74	21.4	46.38	43.5	-22.1	10.41	1.31	36.7	100	273	QP	
198.78	29.42	53.97	43.5	-14.08	10.57	1.44	36.56	108	156	QP	
401.51	33.64	51.36	46	-12.36	17.11	2	36.83	100	45	QP	
514.03	28.19	44.73	46	-17.81	18.28	2.23	37.05	112	104	QP	
597.45	32.62	47.64	46	-13.38	19.95	2.39	37.36	106	312	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.





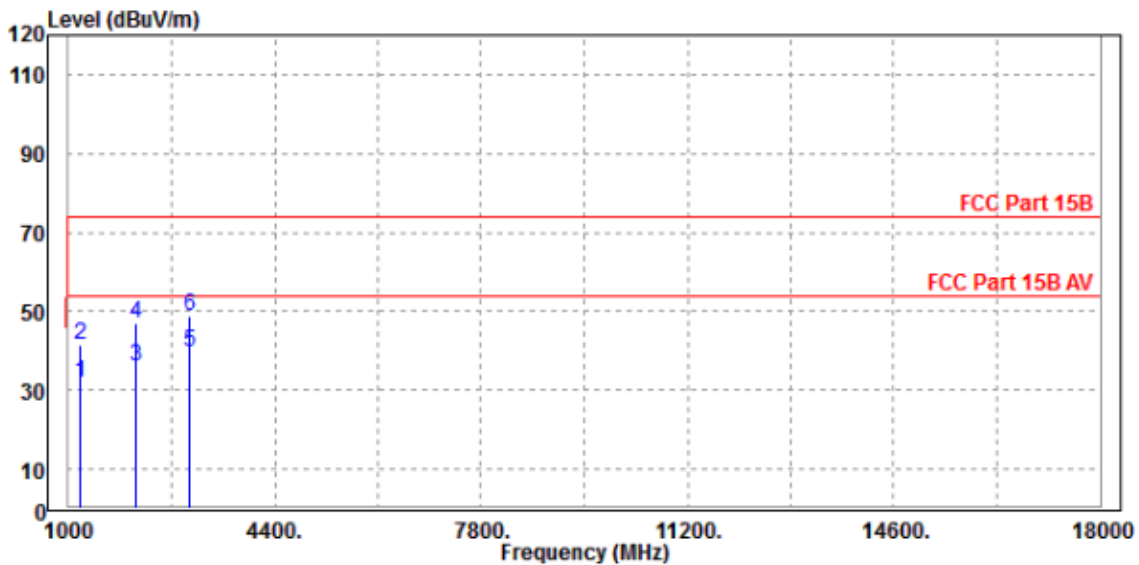
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**Test Report No.: FV180702W009**

<b>TEST VOLTAGE</b>	DC 5V From USB port Input 120 Vac, 60 Hz	<b>FREQUENCY RANGE</b>	1-18 GHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70 %RH	<b>DETECTOR FUNCTION &amp; RESOLUTION BANDWIDTH</b>	Peak/Average, 1 MHz
<b>TESTED BY</b>	Vincent Chen		

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
1186	32.06	45.82	54	-21.94	29.01	5.59	48.36	118	78	Average
1186	41.58	55.34	74	-32.42	29.01	5.59	48.36	118	78	Peak
2105	35.89	44.58	54	-18.11	32.01	7.64	48.34	152	298	Average
2105	46.78	55.47	74	-27.22	32.01	7.64	48.34	152	298	Peak
2984	39.65	45.92	54	-14.35	32.88	9.18	48.33	100	360	Average
2984	48.75	55.02	74	-25.25	32.88	9.18	48.33	100	360	Peak

- 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.





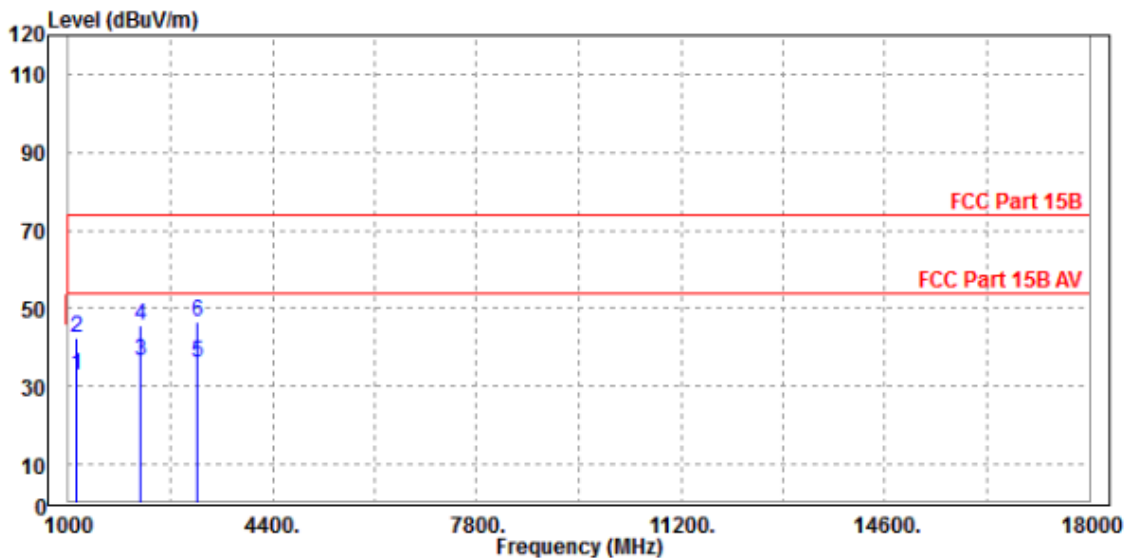
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**Test Report No.: FV180702W009**

<b>TEST VOLTAGE</b>	DC 5V From USB port Input 120 Vac, 60 Hz	<b>FREQUENCY RANGE</b>	1-18 GHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70 %RH	<b>DETECTOR FUNCTION &amp; RESOLUTION BANDWIDTH</b>	Peak/Average, 1 MHz
<b>TESTED BY</b>	Vincent Chen		

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
1130	32.71	46.55	54	-21.29	29.07	5.45	48.36	100	132	Average
1130	42.64	56.48	74	-31.36	29.07	5.45	48.36	100	132	Peak
2185	36.32	44.79	54	-17.68	32.08	7.78	48.33	118	56	Average
2185	45.53	54	74	-28.47	32.08	7.78	48.33	118	56	Peak
3149	36.17	42.16	54	-17.83	32.93	9.43	48.35	110	108	Average
3149	46.47	52.46	74	-27.53	32.93	9.43	48.35	110	108	Peak

- 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.





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Test Report No.: FV180702W009

### **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---**