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VERITAS

Test Report No.: PSU-NQN2204290110-1EM03



Certificate #6613.01

## EMC TEST REPORT

Applicant:	u-blox AG
Address:	Zuercherstrasse 68, 8800 Thalwil, Switzerland

Manufacturer or Supplier:	u-blox AG
Address:	Zuercherstrasse 68, 8800 Thalwil, Switzerland
Product:	LENA-R8001M10
Brand Name:	u-blox
Model Name:	LENA-R8001M10
FCC ID:	XPYUBX22EL01
Date of tests:	Nov. 10, 2022 ~ Nov. 25, 2022

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 Chao Wu  
Engineer / Mobile Department

Approved by Peibo Sun  
Manager / Mobile Department

Date: Nov.25, 2022

Date: Nov.25, 2022

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



# TABLE OF CONTENTS

<b>RELEASE CONTROL RECORD .....</b>	<b>3</b>
<b>1 GENERAL INFORMATION .....</b>	<b>4</b>
1.1 GENERAL DESCRIPTION OF EUT .....	4
1.2 SUMMARY OF TEST RESULTS .....	5
1.3 MEASUREMENT UNCERTAINTY .....	6
1.4 DESCRIPTION OF TEST MODES .....	7
1.5 DESCRIPTION OF SUPPORT UNITS .....	8
<b>2 EMISSION TEST .....</b>	<b>9</b>
2.1 CONDUCTED EMISSION MEASUREMENT .....	9
2.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT .....	9
2.1.2 TEST INSTRUMENTS .....	9
2.1.3 TEST PROCEDURES .....	10
2.1.4 DEVIATION FROM TEST STANDARD .....	10
2.1.5 TEST SETUP .....	11
2.1.6 EUT OPERATING CONDITIONS .....	11
2.1.7 TEST RESULTS .....	12
2.2 RADIATED EMISSION MEASUREMENT .....	14
2.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT .....	14
2.2.2 TEST INSTRUMENTS .....	15
2.2.3 TEST PROCEDURE .....	16
2.2.4 DEVIATION FROM TEST STANDARD .....	17
2.2.5 TEST SETUP .....	18
2.2.6 EUT OPERATING CONDITIONS .....	19
2.2.7 TEST RESULTS .....	20
<b>3 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB .....</b>	<b>24</b>



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Test Report No.: PSU-NQN2204290110-1EM03

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
PSU-NQN2204290110-1EM03	Original release	Nov.25, 2022



# 1 GENERAL INFORMATION

## 1.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	LENA-R8001M10		
<b>BRAND NAME</b>	u-blox		
<b>MODEL NAME</b>	LENA-R8001M10		
<b>NOMINAL VOLTAGE</b>	EUT 3.8V		
<b>MODULATION TYPE</b>	<b>GSM/GPRS</b>	GMSK	
	<b>GPS/GALILEO</b>	BPSK	
	<b>LTE</b>	QPSK/16QAM	
<b>OPERATING FREQUENCY</b>	<b>GSM</b>	824.2MHz ~ 848.8MHz (FOR GSM 850) 1850.2MHz ~ 1909.8MHz (FOR GSM 1900)	
	<b>GPS/GALILEO</b>	1559MHz~ 1610MHz	
	<b>LTE</b>	1850.7MHz ~ 1909.3MHz	(FOR LTE Band2)
		1710.7MHz ~ 1754.3MHz	(FOR LTE Band4)
824.7MHz ~ 848.3MHz		(FOR LTE Band5)	
2502.5MHz ~ 2567.5MHz		(FOR LTE Band7)	
699.7MHz ~ 715.3MHz		(FOR LTE Band12)	
2572.5MHz~2617.5MHz	(FOR LTE Band38)		
2498.5MHz~2687.5MHz	(FOR LTE Band41)		
1710.7MHz ~ 1779.3MHz	(FOR LTE Band 66)		
<b>HIGHEST FREQUENCY</b>	2687.5MHz		
<b>HW VERSION</b>	UBX-R80AA0		
<b>SW VERSION</b>	02.00		
<b>I/O PORTS</b>	Refer to user's manual		
<b>CABLE SUPPLIED</b>	N/A		
<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. 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	Test lab*
FCC Part 15, Subpart B, Class B ANSI C63.4:2014	Conducted Test	Compliance	B
	Radiated Emission Test (30MHz ~ 1GHz)	Compliance	A
	Radiated Emission Test (Above 1GHz)	Compliance	A

### \*Test Lab Information Reference

#### Lab A:

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

#### Lab Address:

Tower N, Innovation Center, 88 Zhuyi Road, High-tech District, Suzhou City, Anhui Province

**Accredited Test Lab Cert 6613.01**

The FCC Site Registration No. is 434559; The Designation No. is CN1325.

#### Lab B:

BV 7Layers Communications Technology (Shenzhen) Co. Ltd

#### Lab Address:

No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China

**Accredited Test Lab Cert 3939.01**

The FCC Site Registration No. is 525120; The Designation No. is CN1171.

### 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	$\pm 2.70\text{dB}$
Radiated emissions	30MHz~1GMHz	$\pm 4.98\text{dB}$
	1GMHz ~6GMHz	$\pm 4.70\text{dB}$
	6GMHz ~18GMHz	$\pm 4.60\text{dB}$



## 1.4 DESCRIPTION OF TEST MODES

Test Mode	Test Condition
<b>Radiated emission test</b>	
1	GSM850 idle + earphone + SIM + adapter + GPS RX
2	LTE B5 idle + earphone + SIM + adapter + GALILEO RX
3	LTE B12 idle + earphone + SIM + adapter + GPS RX

Test Mode	Test Condition
<b>Conducted emission test</b>	
1	GSM850 idle + earphone + SIM + adapter + GPS RX
2	LTE B5 idle + earphone + SIM + adapter + GALILEO RX
3	LTE B12 idle + earphone + SIM + adapter + GPS RX

**NOTE:**

1. For radiated emission test, test mode 2 was the verification case and only this mode was presented in this report
2. For conducted emission test, test mode 2 was the verification 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	Adapter	N/A	N/A	N/A	N/A
2	Earphone	N/A	N/A	N/A	N/A
3	DC source	Kikusui/JP	PMX18-5A	0000001	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	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 (dBμV)	
	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 (dBμV)	
	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. 15,22	Feb. 14,23
EMC32 test software	Rohde&Schwarz	EMC32	NA	NA	NA
LISN network	Rohde&Schwarz	ENV216	101922	Mar. 04,22	Mar. 03,23

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

### 2.1.3 TEST PROCEDURES

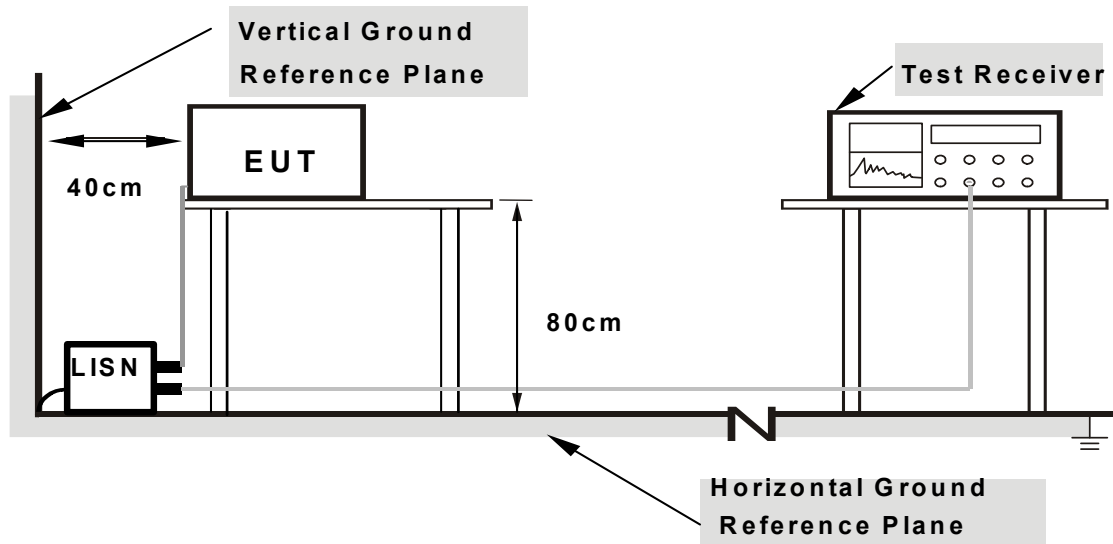
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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

Worst case data:

<b>TEST VOLTAGE</b>	EUT 3.8V	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9 kHz
<b>ENVIRONMENTAL CONDITIONS</b>	26deg. C, 51%RH	<b>TESTED BY</b>	Chao Wu

Rg	Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	CAV Level [dBμV]	CAV: AVG Limit [dBμV]	CAV Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]
1	0.330	40.18	59.45	19.27	27.17	49.45	22.28	9.90	L1	9.000
1	0.573	36.03	56.00	19.97	22.08	46.00	23.92	10.04	L1	9.000
1	1.496	30.62	56.00	25.38	17.18	46.00	28.82	9.81	L1	9.000
1	2.517	26.68	56.00	29.32	12.86	46.00	33.14	9.79	L1	9.000
1	13.920	27.52	60.00	32.48	17.84	50.00	32.16	10.04	L1	9.000
1	22.074	27.76	60.00	32.24	16.04	50.00	33.96	10.13	L1	9.000

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





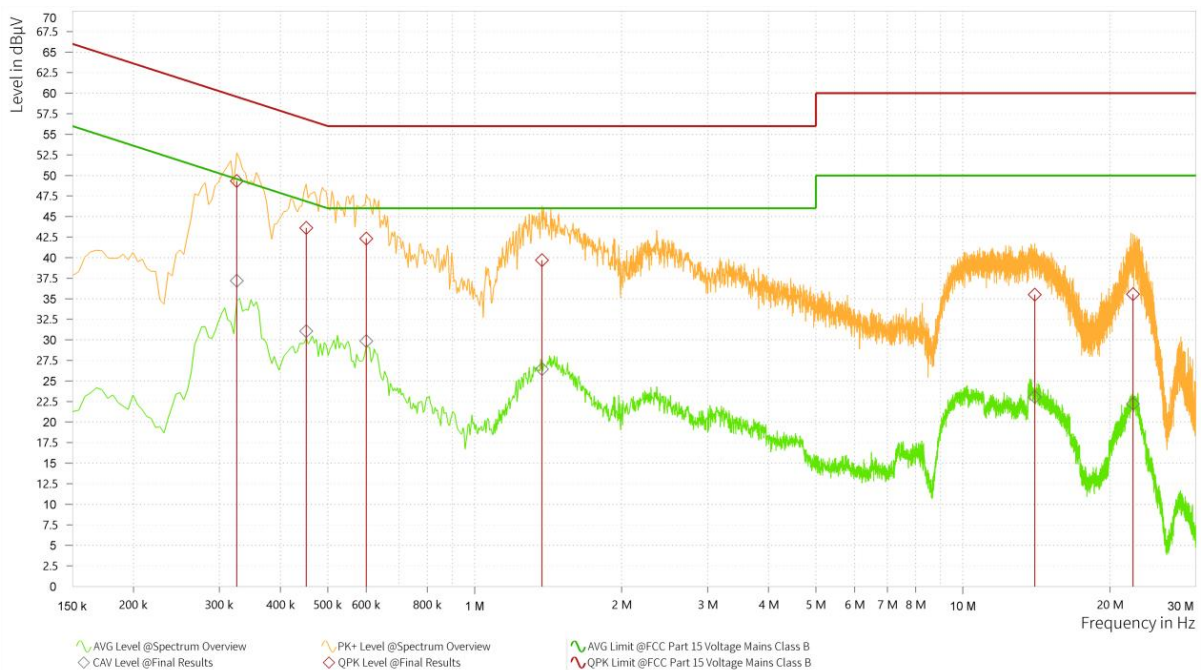
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**Test Report No.: PSU-NQN2204290110-1EM03**

<b>TEST VOLTAGE</b>	EUT 3.8V	<b>Detector Function &amp; Resolution Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9 kHz
<b>ENVIRONMENTAL CONDITIONS</b>	26deg. C, 51%RH	<b>TESTED BY</b>	Chao Wu

Rg	Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	CAV Level [dBμV]	CAV: AVG Limit [dBμV]	CAV Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]
1	0.326	49.32	59.57	10.25	37.20	49.57	12.37	9.90	N	9.000
1	0.452	43.60	56.85	13.25	31.07	46.85	15.78	10.05	N	9.000
1	0.600	42.33	56.00	13.67	29.84	46.00	16.16	10.03	N	9.000
1	1.374	39.71	56.00	16.29	26.44	46.00	19.56	9.82	N	9.000
1	14.037	35.50	60.00	24.50	23.07	50.00	26.93	10.08	N	9.000
1	22.304	35.57	60.00	24.43	22.20	50.00	27.80	10.23	N	9.000

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





## 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 Class A	FCC 15B 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	May. 19,20	May. 18,23
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 06,22	Mar. 05,23
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 18,22	Feb. 17,23
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May.12,22	May.11,23
E3 Test Software	E3	V 9.160323	N/A	N/A	N/A

### 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	May. 19,20	May. 18,23
Horn Antenna	ETS-LINDGREN	3117	00168728	Mar. 06,22	Mar. 05,23
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 18,22	Feb. 17,23
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.12,22	May.11,23
E3 Test Software	E3	V 9.160323	N/A	N/A	N/A

- NOTE:**
1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
  2. The test was performed in 3m Chamber.



## 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 = Limit value -Emission level.



### <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 = Limit value- Emission level.

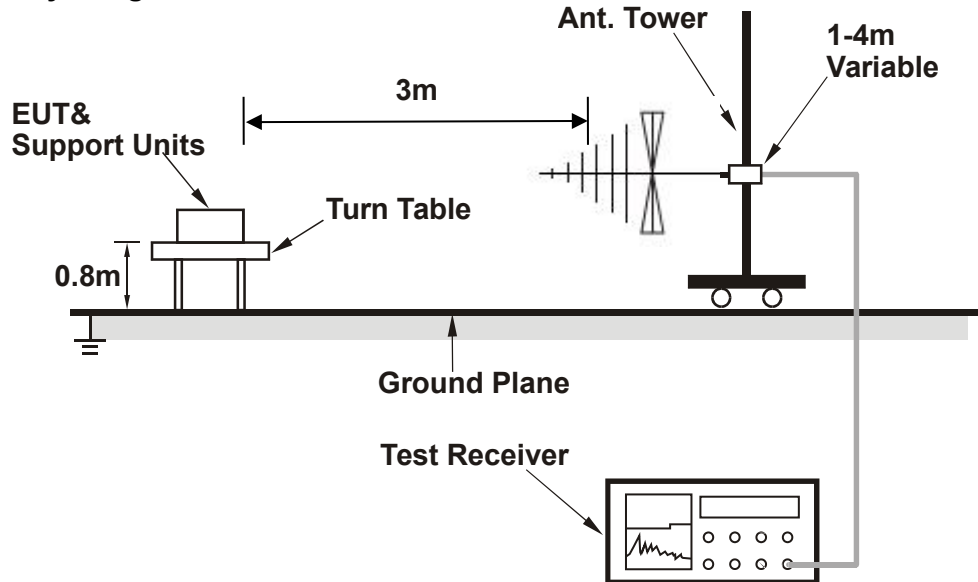
## 2.2.4 DEVIATION FROM TEST STANDARD

No deviation.

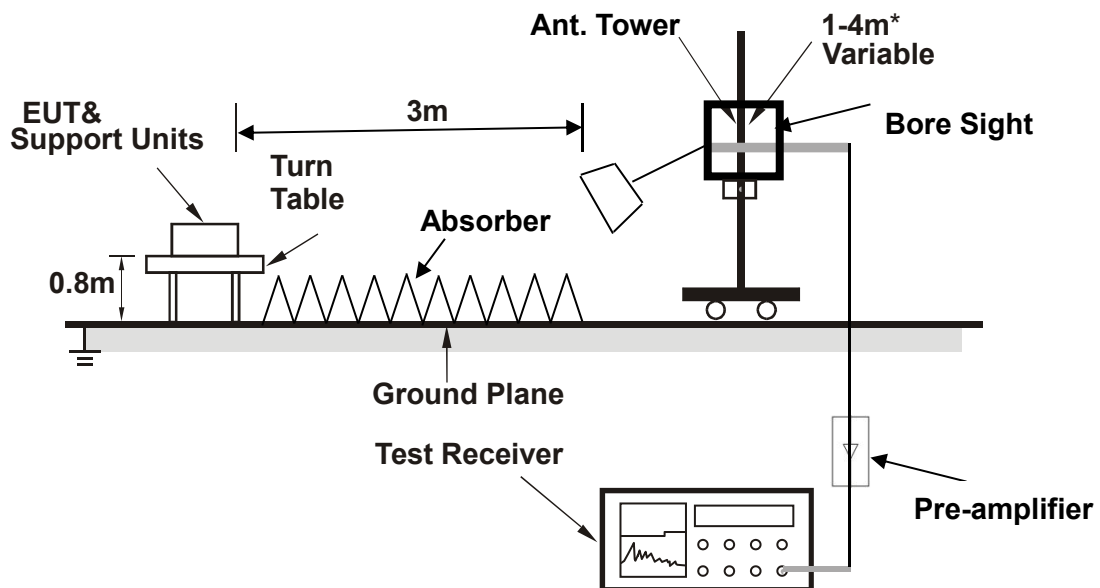


## 2.2.5 TEST SETUP

<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.



Test Report No.: PSU-NQN2204290110-1EM03

## 2.2.6 EUT OPERATING CONDITIONS

Same as item 2.1.6.



## 2.2.7 TEST RESULTS

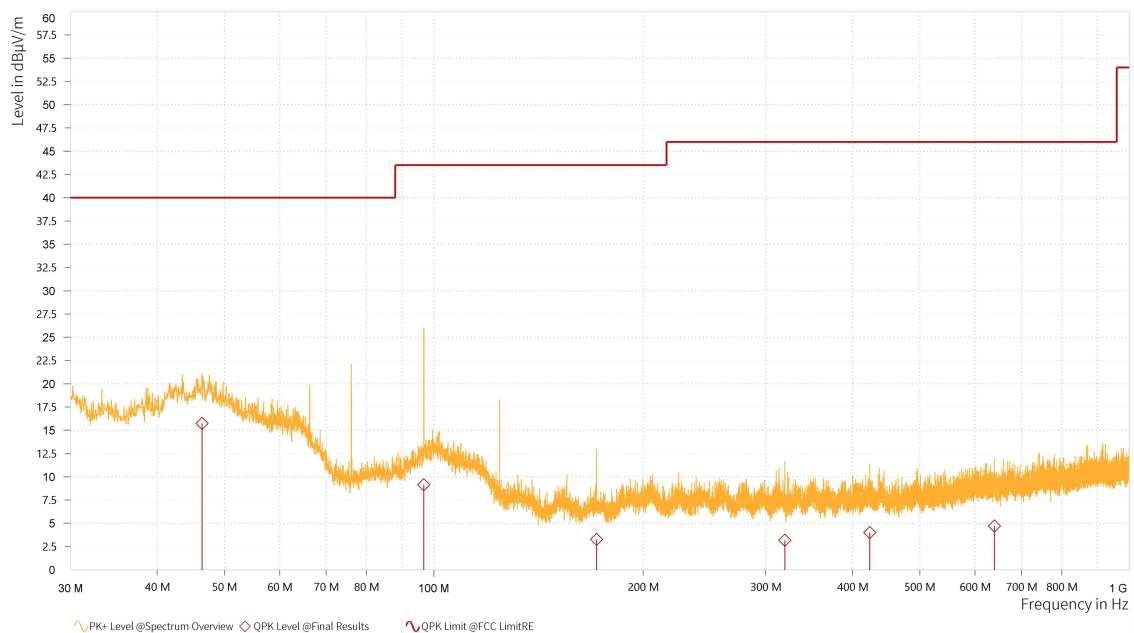
Worst case:

<b>TEST VOLTAGE</b>	EUT 3.8V	<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>	Chao Wu		

### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

Rg	Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	46.393	15.73	40.00	24.27	-16.98	H	101.2	2	120.000
1	96.736	9.15	43.50	34.35	-21.69	H	126.1	1	120.000
1	171.426	3.28	43.50	40.22	-25.14	H	4.4	1	120.000
1	319.836	3.16	46.00	42.84	-21.74	H	101.2	2	120.000
1	423.481	4.00	46.00	42.00	-19.26	H	126.1	1	120.000
1	639.936	4.71	46.00	41.29	-15.82	H	359.1	1	120.000

- 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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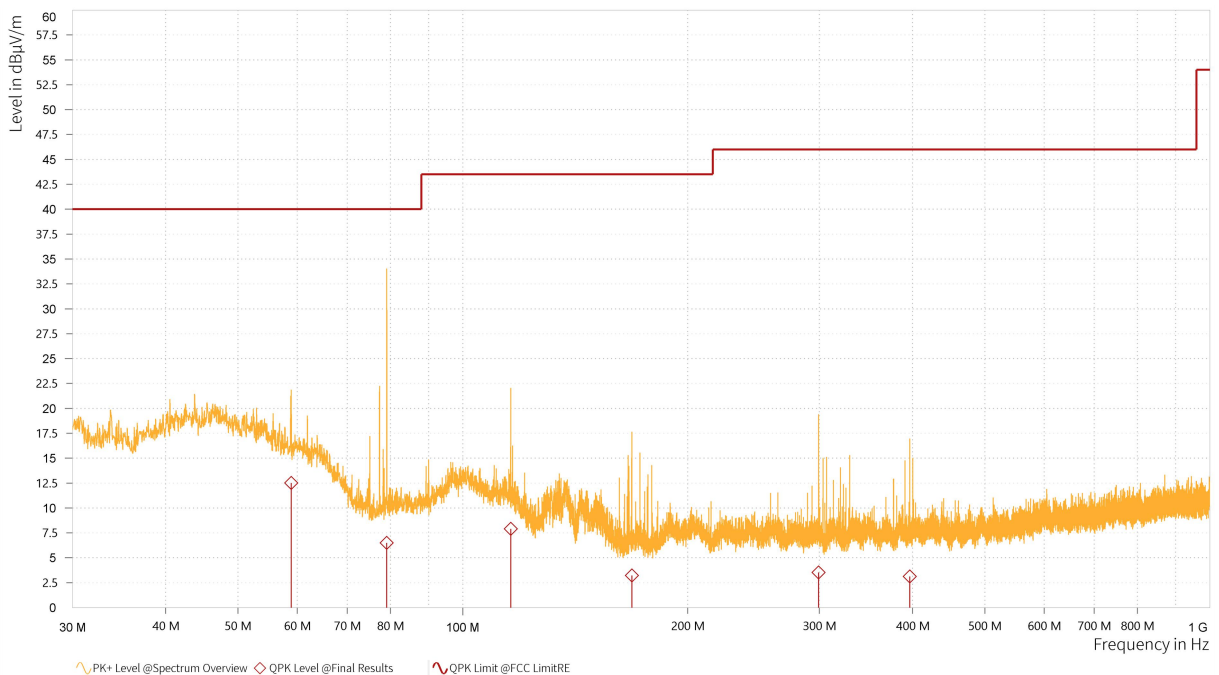
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<b>TEST VOLTAGE</b>	EUT 3.8V	<b>FREQUENCY RANGE</b>	30-1000 MHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70 %RH	<b>DETECTOR FUNCTION &amp; RESOLUTION BANDWIDTH</b>	Quasi-Peak, 120 kHz
<b>TESTED BY</b>	Chao Wu		

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

Rg	Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
1	58.906	12.51	40.00	27.49	-19.64	V	126.1	1	120.000
1	79.082	6.49	40.00	33.51	-24.74	V	126.1	1	120.000
1	115.894	7.90	43.50	35.60	-22.61	V	126.1	1	120.000
1	168.322	3.23	43.50	40.27	-25.31	V	102.3	2	120.000
1	299.466	3.53	46.00	42.47	-21.90	V	5	1	120.000
1	396.612	3.12	46.00	42.88	-20.53	V	232.6	2	120.000

- 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.

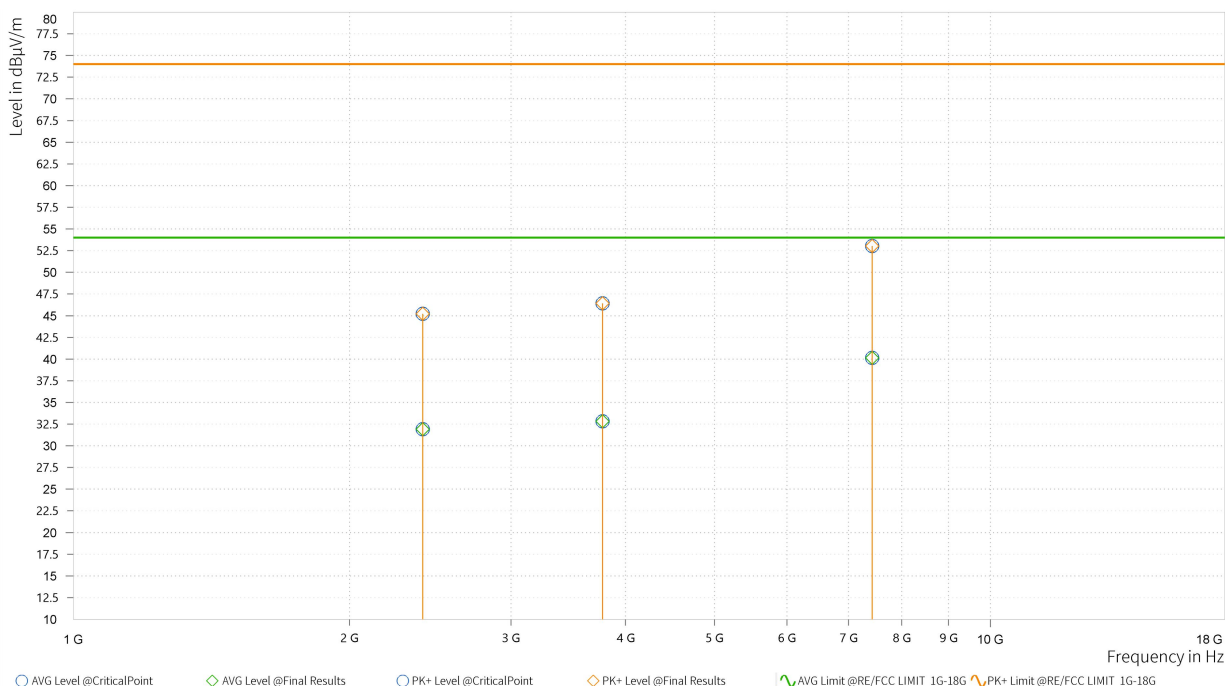


<b>TEST VOLTAGE</b>	EUT 3.8V	<b>FREQUENCY RANGE</b>	1-18 GHz
<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 70 %RH	<b>DETECTOR FUNCTION &amp; RESOLUTION BANDWIDTH</b>	Peak/Average, 1 MHz
<b>TESTED BY</b>	Chao Wu		

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

Rg	Frequency [MHz]	PK+ Level [dBμV/m]	PK+ Limit [dBμV/m]	PK+ Margin [dB]	AVG Level [dBμV/m]	AVG Limit [dBμV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
3	2,404.000	45.22	74.00	28.78	31.91	54.00	22.09	11.42	H	242	2	1,000.000
4	3,775.000	46.43	74.00	27.57	32.83	54.00	21.17	14.42	H	359	2	1,000.000
5	7,429.225	53.02	74.00	20.98	40.13	54.00	13.87	23.96	H	93.8	2	1,000.000

- 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 5th harmonic of the highest frequency or 40GHz, whichever is lower. For frequency above 18GHz, the emission was tested 20db below the limit so the data not recorded in the sheet.
  4. Only emissions significantly above equipment noise floor are reported.





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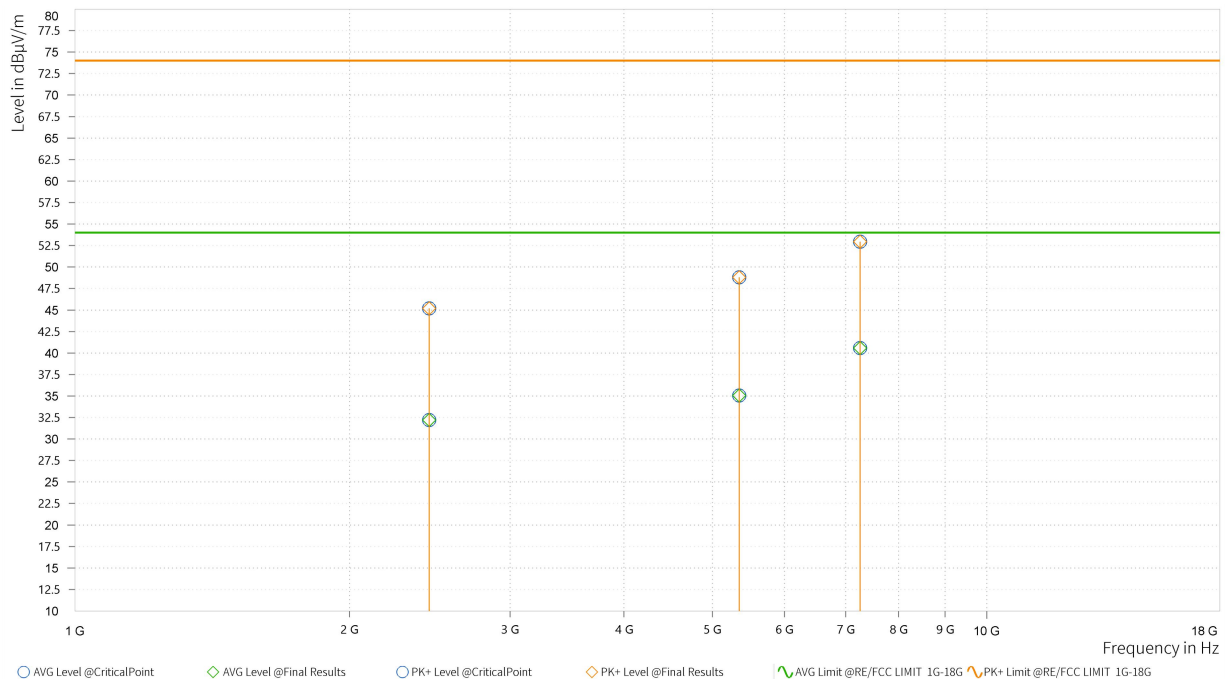
**Test Report No.: PSU-NQN2204290110-1EM03**

<b>TEST VOLTAGE</b>	EUT 3.8V	<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>	Chao Wu		

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

Rg	Frequency [MHz]	PK+ Level [dBµV/m]	PK+ Limit [dBµV/m]	PK+ Margin [dB]	AVG Level [dBµV/m]	AVG Limit [dBµV/m]	AVG Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]
3	2,445.697	45.20	74.00	28.80	32.21	54.00	21.79	11.43	V	359	2	1,000.000
4	5,352.500	48.79	74.00	25.21	35.06	54.00	18.94	18.93	V	359	2	1,000.000
5	7,259.225	52.94	74.00	21.06	40.59	54.00	13.41	24.35	V	1	2	1,000.000

- 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 5th harmonic of the highest frequency or 40GHz, whichever is lower. For frequency above 18GHz, the emission was tested 20db below the limit so the data not recorded in the sheet.
  4. Only emissions significantly above equipment noise floor are reported.





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Test Report No.: PSU-NQN2204290110-1EM03

### **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---**