



EMC TEST REPORT

Report No.: SET2021-03080

Product Name: Wireless BBQ Thermometer

FCC ID: 2AZCPSXH4325

Model No. : CH-216,CH-218

Applicant: SHENZHEN SHENXINHUI ELECTRONICS Co.,LTD

Address: 3rd,Block B,No.1 Building,No 1 ShaJing
Road,Baoan,Shenzhen,China

Received Date: 2020.11.06

Dates of Testing: 2020.11.06—2021.03.17

Issued by: CCIC Southern Testing Co., Ltd.

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Test Report

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Trade name N/A

Applicant..... SHENZHEN SHENXINHUI ELECTRONICS Co.,LTD

Applicant Address..... 3rd, Block B, No.1 Building, No 1 ShaJing
Road, Baoan, Shenzhen, China

Manufacturer SHENZHEN SHENXINHUI ELECTRONICS Co.,LTD

Manufacturer Address 3rd, Block B, No.1 Building, No 1 ShaJing
Road, Baoan, Shenzhen, China

Test Standards..... 47 CFR Part 15 Subpart B

Test Result..... PASS

Tested by Zhang Pei Sen

Pei Sen Zhang Test Engineer

2021.03.17

Reviewed by Chris You

Chris You Senior Engineer

2021.03.17

Approved by Shuangwen Zhang

Shuangwen Zhang, Manager

2021.03.17

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Change History		
Issue	Date	Reason for change
1.0	2021.03.17	First edition



1. GENERAL INFORMATION

1.1 EUT Description

EUT Name : Wireless BBQ Thermometer
Trade Name..... : N/A
Brand Name..... : N/A
Hardware Version..... : RX_V5
Software Version..... : V1.0

*Note1:*The EUT is a Wireless BBQ Thermometer;

*Note 2:*For a more detailed description, please refer to Specification or User's Manual supplied by the applicant and/or manufacturer.

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1.2 Test Standards and Results

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart B:

No.	Identity	Document Title
1	47 CFR Part 15 Subpart B 2018	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Result
1	15.107	Conducted Emission	PASS
2	15.109	Radiated Emission	PASS

NOTE:

(1) The EUT has been tested according to 47 CFR Part 15 Subpart B, Class B. The test procedure is according to ANSI C63.4:2014.



1.3 Facilities and Accreditations

1.3.1 Facilities

FCC-Registration No.: CN1283

CCIC Southern Testing Co., Ltd EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Designation Number: CN1283, valid time is until June 30th, 2021.

A2LA Code: 5721.01

CCIC-SET is a third party testing organization accredited by A2LA according to ISO/IEC 17025. The accreditation certificate number is 5721.01.

1.3.2 Test Environment Conditions

During the measurement, the environmental conditions were within the listed ranges:

Temperature (°C):	15 °C - 35 °C
Relative Humidity (%):	25% -75%
Atmospheric Pressure (kPa):	86kPa-106kPa

1.3.3 Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Uncertainty of Conducted Emission:	Uc = 2.6 dB (k=2)
Uncertainty of Radiated Emission:	Uc = 4.5 dB (k=2)

2. TEST CONDITIONS SETTING

2.1 Test Peripherals

The following is a listing of the EUT and peripherals utilized during the performance of EMC test:

Support Cable:

Description	Shield Type	Ferrite Core	Length
PC Power adapter Cable	Un- shielding	No	1.2m
Mouse Cable	Un- shielding	No	1m

2.2 Test Mode

The EUT have the following typical setups during the test:

Setup1: EUT TX+ RX Part Working

Setup2: Idle

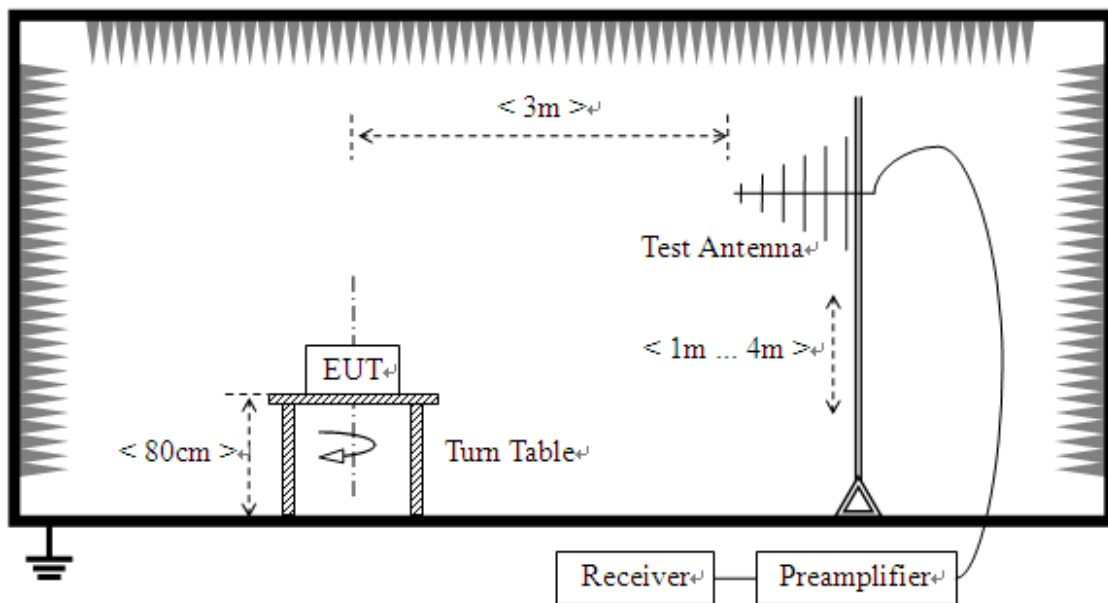
Note: Only worst-case mode setup 1 mode data provide at the report

2.3 Test Setup and Equipments List

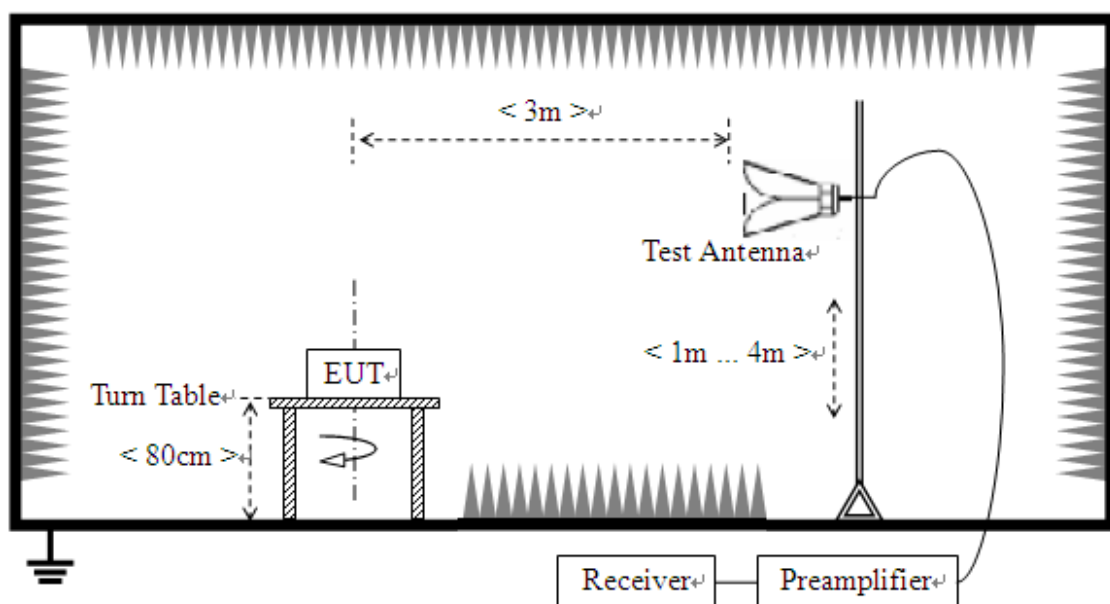
2.3.1 Radiated Emission

A. Test Setup:

- 1) For radiated emissions from 30MHz to 1GHz



- 2) For radiated emissions above 1GHz



**B. Test Procedure**

The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower.

For the test Antenna:

- 1) In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

C. Equipments List:

Description	Manufacturer	Model	Serial No.	Calibration Date	Calibration Due. Date
Test Software	R&S	EMC32	NA	NA	NA
Test Receiver	KEYSIGHT	N9038A	A141202036	2020.11.21	2021.09.20
LISN	ROHDE&SCHWARZ	ENV216	A140701847	2020.11.21	2021.09.21
Shield Room	Xinju Electronics	L7300*W4500 *H3100	A181003226	2018.09.06	2021.09.05
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	A0902601	2020.07.01	2021.06.23
Broadband Ant.	2786	ETC	A150402239	2018.09.17	2021.09.16
3M Anechoic Chamber	Albatross	SAC-3MAC 9*6*6m	A0412375	2019.03.26	2023.03.25
EMI Test Receiver	ROHDE&SCHWARZ	ESW26	A180502935	2020.10.21	2021.08.12
System Simulator	ROHDE&SCHWARZ	CMW500	A150802214	2019.07.30	2021.07.29
5M Anechoic Chamber	Albatross	SAC-5MAC 12.8x6.8x6.4m	A0304210	2019.03.25	2023.03.24
EMI Horn Ant.	ROHDE&SCHWARZ	HF906	A0304225	2019.04.17	2022.04.17

3. 47 CFR PART 15C REQUIREMENTS

3.1 Radiated Emission

3.1.1 Requirement

According to FCC section 15.109, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency range (MHz)	Field Strength		Field Strength Limitation at 3m Measurement Dist	
	$\mu\text{V/m}$	Dist	($\mu\text{V/m}$)	(dBuV/m)
0.009 - 0.490	$2400/\text{F(kHz)}$	300m	$10000 * 2400/\text{F(kHz)}$	$20\log 2400/\text{F(kHz)} + 80$
0.490 - 1.705	$2400/\text{F(kHz)}$	30m	$100 * 2400/\text{F(kHz)}$	$20\log 2400/\text{F(kHz)} + 40$
1.705 - 30.00	30	30m	$100 * 30$	$20\log 30 + 40$
30.0 - 88.0	100	3m	100	$20\log 100$
88.0 - 216.0	150	3m	150	$20\log 150$
216.0 - 960.0	200	3m	200	$20\log 200$
Above 960.0	500	3m	500	$20\log 500$

- As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.
- Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength.
- For below 1G :QP detector RBW 120kHz ,VBW 300kHz.
- For Above 1G: PK detector RBW 1MHz,VBW 3MHz for PK value ;AV detector RBW 1MHz, VBW 10Hz for AV value.

Note:

- The tighter limit shall apply at the boundary between two frequency range.
- Limitation expressed in dBuV/m is calculated by $20\log \text{Emission Level}(\mu\text{V/m})$.
- If measurement is made at 3m distance, then F.S Limitation at 3m distance is adjusted by using the formula of $Ld1 = Ld2 * (d2/d1)^2$.

Example:

F.S Limit at 30m distance is $30\mu\text{V/m}$, then F.S Limitation at 3m distance is adjusted as



$$Ld1 = L1 = 30\mu V/m * (10)^2 = 100 * 30\mu V/m.$$

3.1.2 Test Description

See section 2.3.2 of this report.

3.1.3 Test Result

The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform the tests. All test modes are considered, refer to recorded points and plots below.

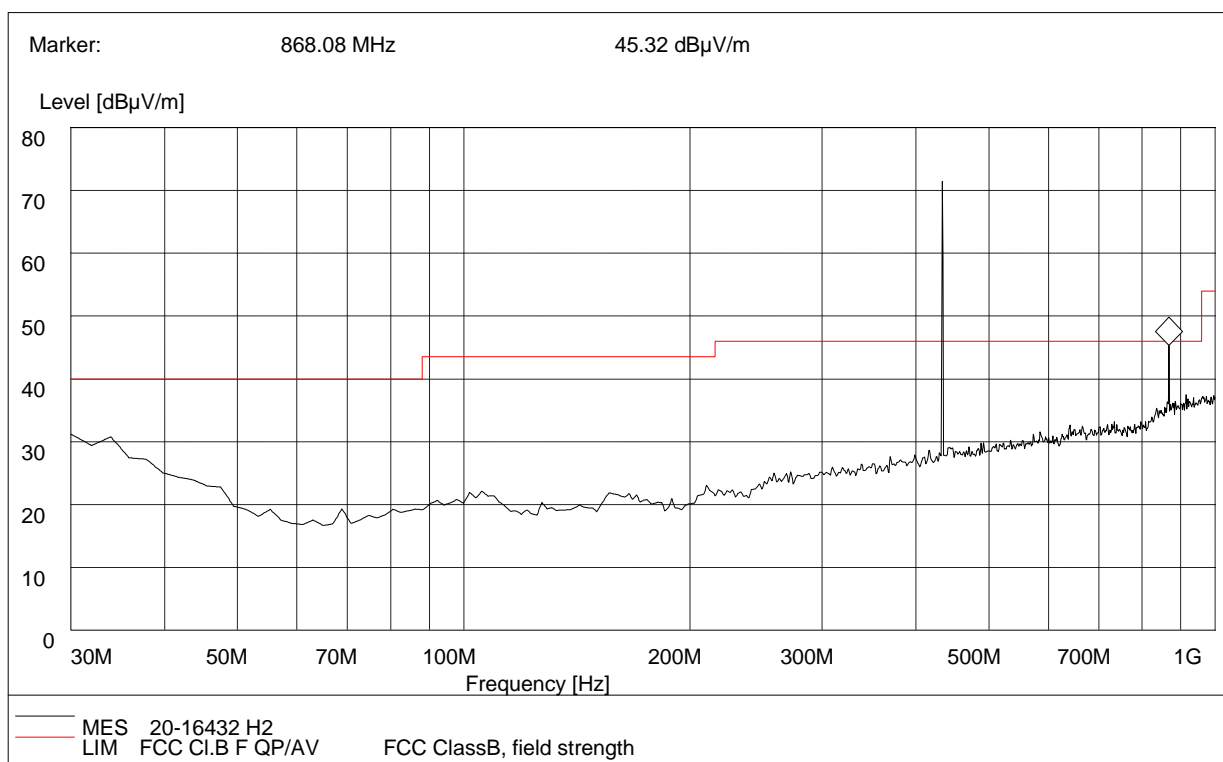
The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

Note: All radiated emission tests were performed in X, Y, Z axis direction, and only the worst axis test condition was recorded in this test report.

$$\text{Emission Level(dBuV/m)} = 20\log \text{Emission Level(uV/m)}$$

$$\text{Corrected Reading} = \text{Antenna factor} + \text{Cable Loss} + \text{Read Level-Preamplifier Factor} = \text{Level}$$

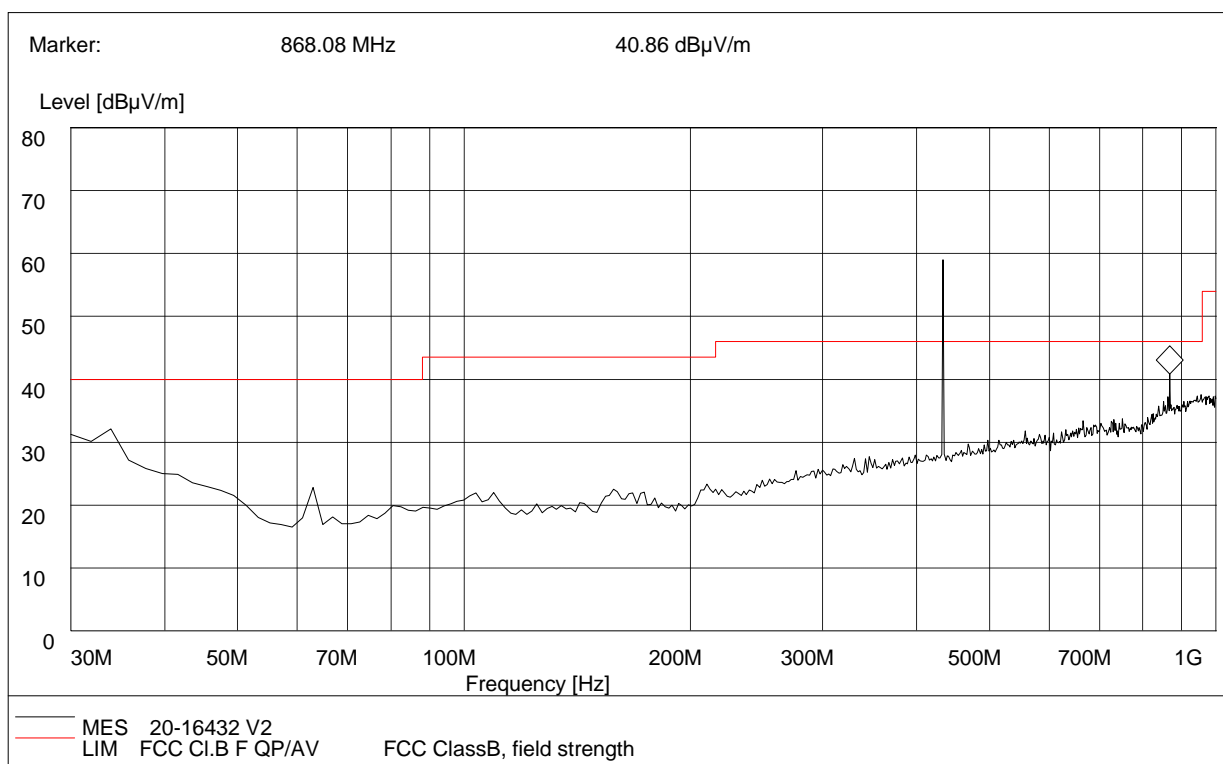
A.Radiation disturbances, antenna polarization: Horizontal



(Plot A: Test Antenna Vertical 30M - 1G)

Frequency (MHz)	QuasiPeak (dBμV/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dBμV/m)	Margin (dB)	Antenna	Cable Loss(dB)	ANT. Factor(dB)	Verdict
34.01	28.05	120.000	207	40.0	11.95	Horizontal	0.4	26.3	Pass
47.46	21.82	120.000	185	40.0	18.18	Horizontal	0.6	26.3	Pass
210.42	22.06	120.000	224	43.5	21.44	Horizontal	0.4	26.3	Pass
258.92	23.63	120.000	196	43.5	19.87	Horizontal	0.7	29.0	Pass
369.50	24.39	120.000	140	46.0	21.61	Horizontal	0.5	29.0	Pass
868.08	45.03	120.000	166	46.0	0.97	Horizontal	0.8	29.0	Pass

B.Radiation disturbances, antenna polarization: Vertical

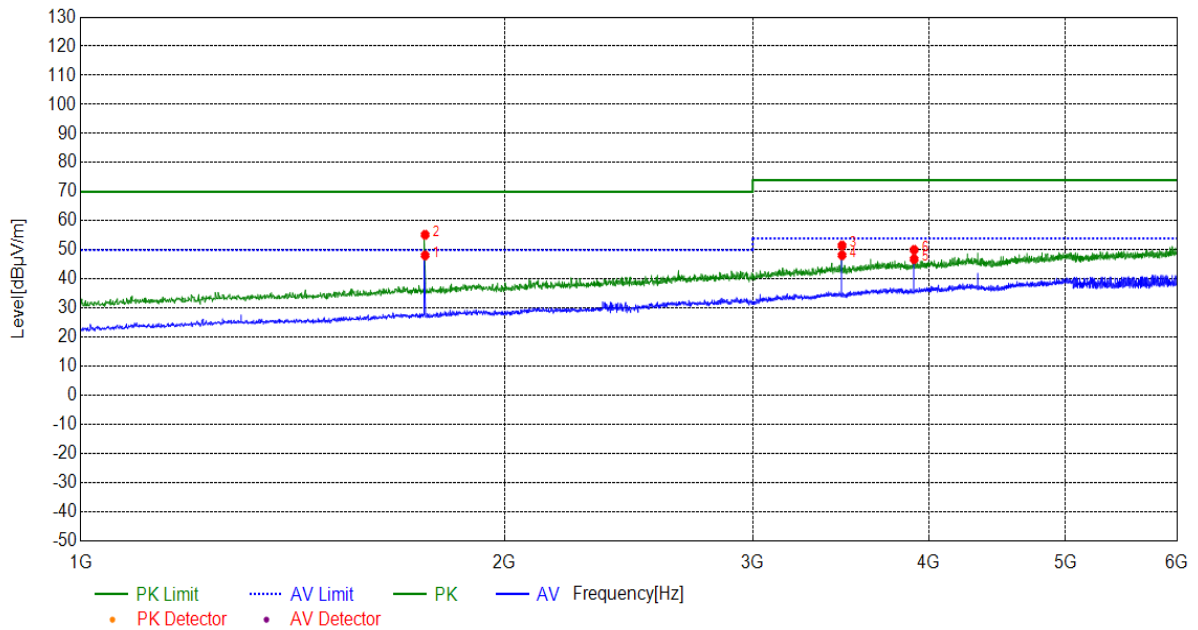


(Plot B: Test Antenna Horizontal 30M - 1G)

Frequency (MHz)	QuasiPeak (dB μ V/m)	Bandwidth (kHz)	Antenna height (cm)	Limit (dB μ V/m)	Margin (dB)	Antenna	Cable Loss(dB)	ANT. Factor(dB)	Verdict
33.88	29.63	120.000	145	40.0	10.37	Horizontal	0.5	26.3	Pass
63.21	21.33	120.000	179	40.0	18.67	Horizontal	0.5	27.4	Pass
103.72	21.28	120.000	200	43.5	22.22	Horizontal	0.6	29.0	Pass
158.04	21.93	120.000	189	43.5	21.57	Horizontal	0.5	28.3	Pass
330.70	26.32	120.000	164	46.0	19.68	Horizontal	0.4	29.4	Pass
868.08	39.31	120.000	155	46.0	6.69	Horizontal	1.0	28.9	Pass

Test Result: PASS

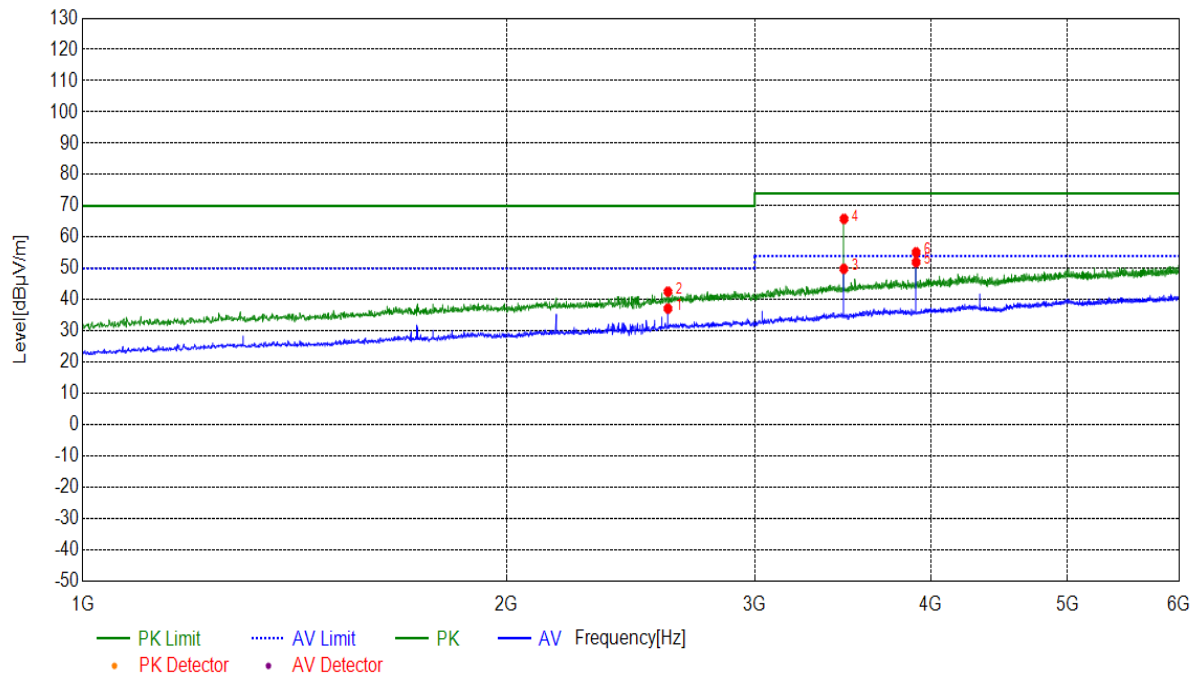
A.Radiation disturbances, antenna polarization: Horizontal



(Plot C: Test Antenna Horizontal 1G – 18G)

NO.	Freq. [MHz]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Trace	Height [cm]	Angle [°]	Polarity
1	1756.15	48.14	50.00	1.86	AV	100	45	Horizontal
2	1756.15	55.23	70.00	14.77	PK	100	50	Horizontal
3	3471.49	51.54	74.00	22.46	PK	100	55	Horizontal
4	3471.49	48.21	54.00	5.79	AV	100	50	Horizontal
5	3905.58	46.86	54.00	7.14	AV	100	50	Horizontal
6	3905.58	50.03	74.00	23.97	PK	100	55	Horizontal

B.Radiation disturbances, antenna polarization: Vertical



(Plot D: Test Antenna Vertical 1G – 18G)

NO.	Freq. [MHz]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Trace	Height [cm]	Angle [°]	Polarity
1	2603.32	37.17	50.00	12.83	AV	100	260	Vertical
2	2603.32	42.59	70.00	27.41	PK	100	270	Vertical
3	3470.49	49.88	54.00	4.12	AV	100	260	Vertical
4	3471.49	65.84	74.00	8.16	PK	100	260	Vertical
5	3905.58	52.00	54.00	2.00	AV	100	260	Vertical
6	3905.58	55.16	74.00	18.84	PK	100	260	Vertical

-----End of Report-----