TEST REPORT

FCC ID:2A6CT-EMF02

Report No.....	:	ZHT-250506112E01
Product.....	:	Radiation detectore
Trademark.....	:	/
Model(s).....	:	EMF02 KEMF-1, KEMF-2, KEMF-3, EMF03, EMF04
Model Difference.....	:	EMF02 is the test model, while other models are derivative models. These models are the same on the circuit, only with different model names and appearance colors. Therefore, the test data of EMF02 can represent the remaining models.
Applicant.....	:	Shenzhen Wanhe Innovation Technology Co., LTD
Address.....	:	Floor 2, Building D, no.2, Tengfeng 1st Road, Fenghuang Community, Fuyong Street, Bao'an District, Shenzhen, China
Manufacturer.....	:	Shenzhen Wanhe Innovation Technology Co., LTD
Address.....	:	Floor 2, Building D, no.2, Tengfeng 1st Road, Fenghuang Community, Fuyong Street, Bao'an District, Shenzhen, China
Prepared by.....	:	Guangdong Zhonghan Testing Technology Co., Ltd.
Address.....	:	Room 104/201, Building 1, Yibaolai Industrial Park, Qiaotou, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Date of Receipt.....	:	May 6, 2025
Date of Test(s).....	:	May 6, 2025 - May 8, 2025
Date of Issue.....	:	May 12, 2025
Test Standard(s).....	:	47CFR Part 15 Subpart B ANSI C63.4:2014

In the configuration tested, the EUT complied with the standards specified above.

Prepared by:	Reviewed by:	Approved by:
Eric Jiang	Baret.Wu	Levi Lee
Eric Jiang/ Engineer	Baret Wu/ Director	Levi Lee/ Manager

Note: The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This test report shall not be reproduced except in full, without prior written approval of ZHT. This document may be altered or revised by ZHT, personnel only, and shall be noted in the revision of the document.

Table of Contents

1. Revision History

Report No.	Issue Date	Description	Approved
ZHT-250506112E01	May 12, 2025	Original	Valid

2. Test Summary

Emission			
Requirement - Test	Test Method	Limit	Result
Conducted Emission	47CFR Part 15 Subpart B ANSI C63.4:2014	Class B	PASS
Radiated Emission	47CFR Part 15 Subpart B ANSI C63.4:2014	Class B	PASS

Remark: N/A is abbreviation for Not Applicable.

3. General Information

3.1. Description of EUT

Product:	Radiation detectore
Model Name:	EMF02
Rated Power Supply:	Input: 5 V⎓ 1 A or 3.7 V⎓ powered by battery
Normal Testing Voltage:	AC 120 V/ 60 Hz, 3.7 V⎓
DC Line	/
I/O Ports	Refer to User Manual
Highest Frequency Generated	Below 108 MHz

Note:
1) Other Accessory Device List and Details

Description	Manufacturer	Model	Note
AC Adapter	HUAWEI	HW-200500C00	AE
/	/	/	/

2) The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

3.2. Block diagram of EUT configuration

Mode 1 & Mode 2

Mode 3

3.3. Test Mode

Pretest mode	Mode 1: Charging + Working mode Mode 2: Charging mode Mode 3: Working mode		
Worst-case Test mode	Conducted Emission		Mode 1
	Radiated Emission	Below 1 GHz	Mode 1
		Above 1 GHz	N/A

* Only the Worst-case test mode is shown in the report

3.4. Test Site Environment

Test Item	Required		Actual
Conducted Emission	Temperature (°C)	15-35	23.8
	Humidity (%RH)	25-75	53.5
	Barometric pressure (mbar)	860-1060	1014
Radiated Emission	Temperature (°C)	15-35	24.0
	Humidity (%RH)	25-75	54
	Barometric pressure (mbar)	860-1060	1014

4. Facilities

4.1. Test Facility and Test Instrument Used

Test site : Guangdong Zhonghan Testing Technology Co., Ltd.
Room 104/201, Building 1, Yibaolai Industrial Park, Qiaotou, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China.

4.2. Test Instruments

Conducted emissions Test

Equipment	Manufacturer	Model	Last Cal.	Next Cal.
Receiver	R&S	ESCI	May 10, 2024	May 09, 2025
LISN	R&S	ENV216	May 10, 2024	May 09, 2025

Radiated emissions Test (966 chamber)

Equipment	Manufacturer	Model	Last Cal.	Next Cal.
Receiver	R&S	ESCI	May 10, 2024	May 09, 2025
Amplifier	Schwarzbeck	BBV 9743 B	May 10, 2024	May 09, 2025
Amplifier	Schwarzbeck	BBV 9718 B	May 10, 2024	May 09, 2025
Bilog Antenna	Schwarzbeck	VULB9162	May 28 2024	May 27, 2025
Horn Antenna	Schwarzbeck	BBHA9120D	May 10, 2024	May 09, 2025
Spectrum Analyzer	R&S	FSV40	May 10, 2024	May 09, 2025

4.3. Testing software

Project	Software name	Edition
Conducted Emission	EZ-EMC	EMC-CON 3A1.1+
Radiated Emission	EZ-EMC	FA-03A2 RE+

4.4. Measurement uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product 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.

Test item	Value (dB)
Conducted Emission (150kHz-30MHz)	2.60
Radiated Emission(30MHz~1GHz)	4.60
Radiated Emission(1GHz~18GHz)	4.30

Decision Rule

☒ Uncertainty is not included

☐ Uncertainty is included

5. Emission

5.1. Conducted Emission

5.1.1. Limit

For Class B devices:

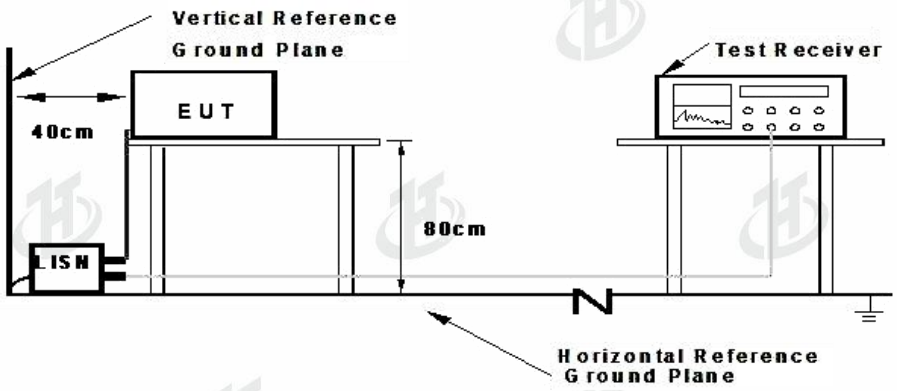
Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

For Class A devices:

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	79	66
0.5-30	73	60

5.1.2. 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

The setup of EUT is according with ANSI C63.4 measurement procedure. Specification used with 47CFR Part 15 Subpart B limits.

5.1.3. Test procedure

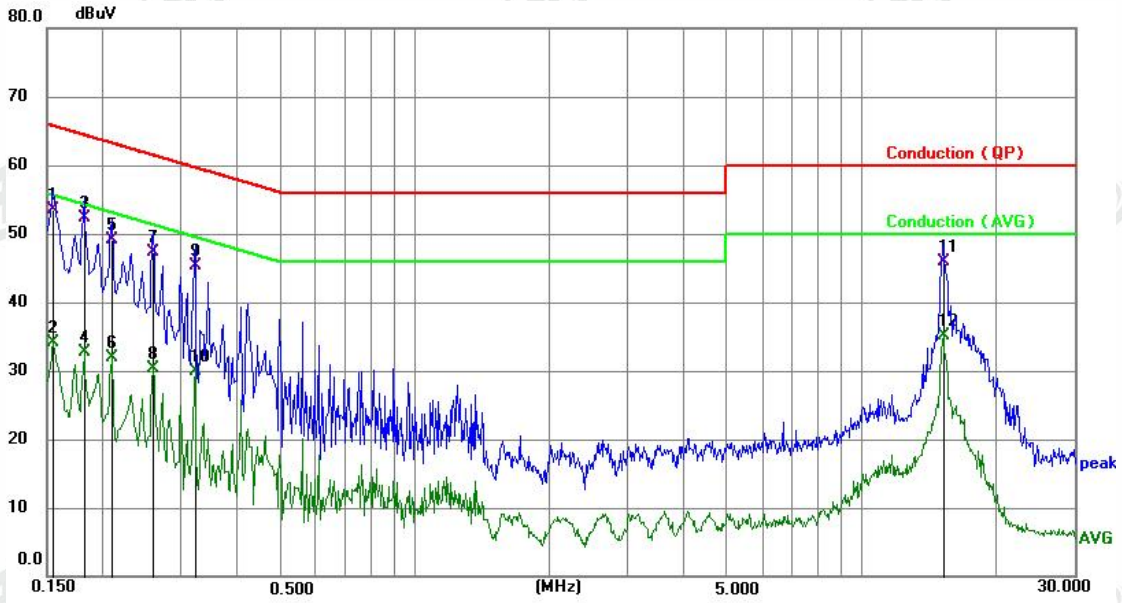
Measurement was performed in shielded room, and instruments used were followed clause 4 of ANSI C63.4.
Detailed test procedure was following clause 7 of ANSI C63.4.
Frequency range 150kHz – 30MHz was checked and EMI receiver measurement bandwidth was set to 9 kHz.

5.1.4. Test results

PASS

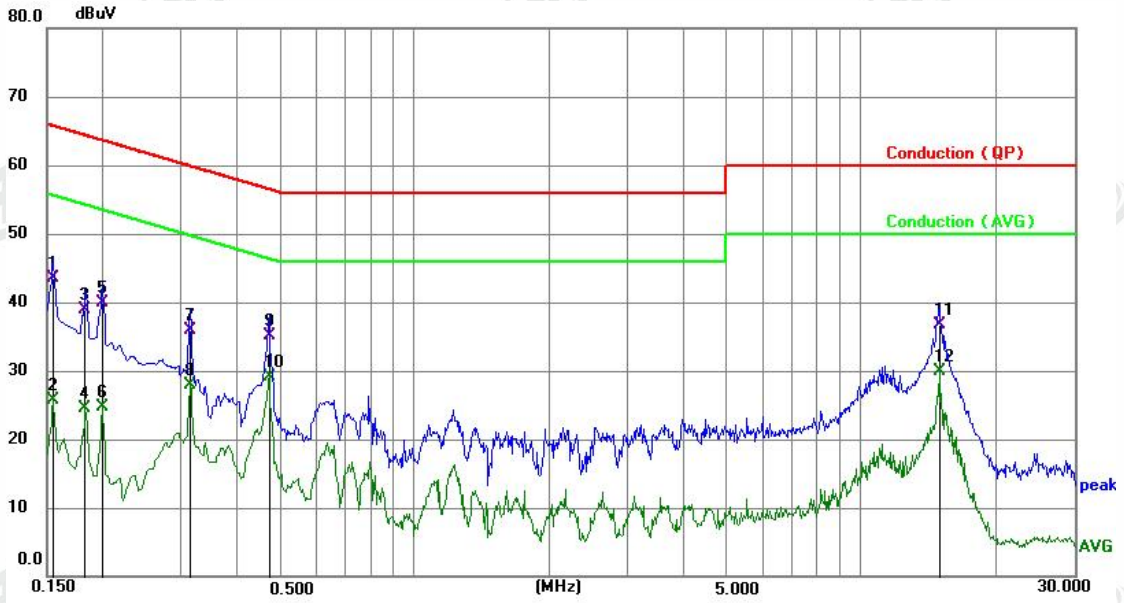
Please refer to pages 11 - 12 for data.

Phase: Live



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1548	43.54	9.89	53.43	65.74	-12.31	QP	P	
2	0.1548	24.25	9.89	34.14	55.74	-21.60	AVG	P	
3 *	0.1815	42.50	9.90	52.40	64.42	-12.02	QP	P	
4	0.1815	22.72	9.90	32.62	54.42	-21.80	AVG	P	
5	0.2094	39.19	9.91	49.10	63.23	-14.13	QP	P	
6	0.2094	21.93	9.91	31.84	53.23	-21.39	AVG	P	
7	0.2589	37.31	9.93	47.24	61.47	-14.23	QP	P	
8	0.2589	20.33	9.93	30.26	51.47	-21.21	AVG	P	
9	0.3217	35.39	9.96	45.35	59.66	-14.31	QP	P	
10	0.3217	20.01	9.96	29.97	49.66	-19.69	AVG	P	
11	15.2261	35.73	10.10	45.83	60.00	-14.17	QP	P	
12	15.2261	25.06	10.10	35.16	50.00	-14.84	AVG	P	

Phase: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1544	33.57	9.89	43.46	65.76	-22.30	QP	P	
2	0.1544	15.86	9.89	25.75	55.76	-30.01	AVG	P	
3	0.1824	29.10	9.90	39.00	64.38	-25.38	QP	P	
4	0.1824	14.54	9.90	24.44	54.38	-29.94	AVG	P	
5	0.1995	29.93	9.91	39.84	63.63	-23.79	QP	P	
6	0.1995	14.76	9.91	24.67	53.63	-28.96	AVG	P	
7	0.3120	25.99	9.96	35.95	59.92	-23.97	QP	P	
8	0.3120	18.00	9.96	27.96	49.92	-21.96	AVG	P	
9	0.4694	25.01	10.00	35.01	56.52	-21.51	QP	P	
10 *	0.4694	19.15	10.00	29.15	46.52	-17.37	AVG	P	
11	14.9145	26.56	10.09	36.65	60.00	-23.35	QP	P	
12	14.9145	19.88	10.09	29.97	50.00	-20.03	AVG	P	

Note: Level=Reading + Factor
Margin=Level – Limit

5.2. Radiated emissions

5.2.1. Limit

For Class B devices (at 3m):

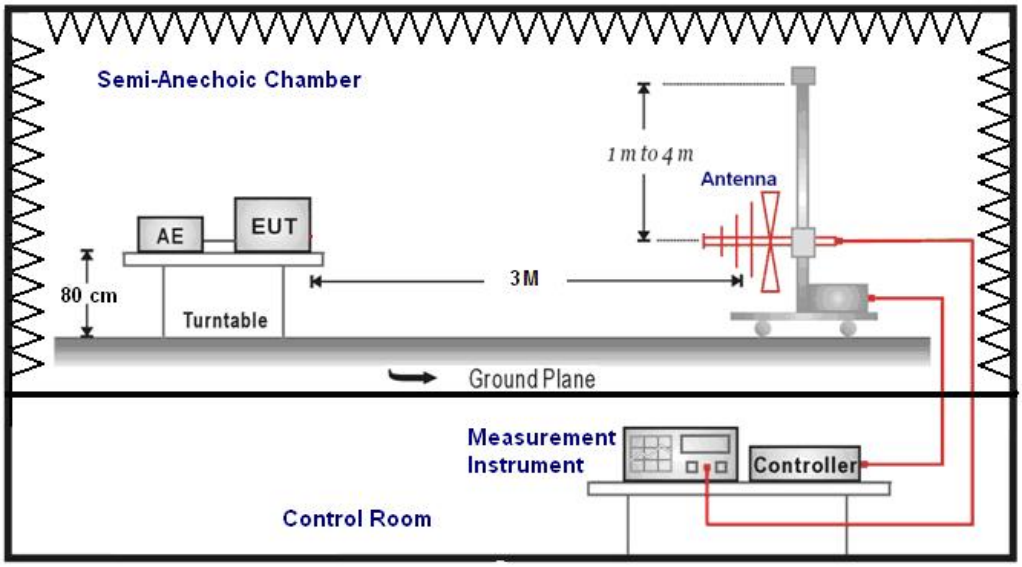
Frequency of emission (MHz)	(microvolts/meter)	(dBμV/m)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

For Class A devices (at 10m):

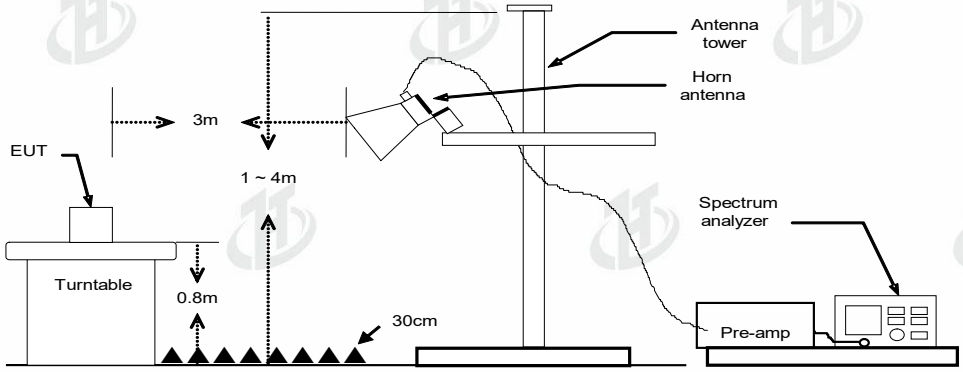
Frequency of emission (MHz)	(microvolts/meter)	(dBμV/m)
30-88	90	39
88-216	150	43.5
216-960	210	46.4
Above 960	300	49.5

5.2.2. Test setup

Radiated Emission Test Set-Up Frequency Below 1 GHz



Radiated Emission Test Set-Up Frequency Above 1GHz



The radiated tests were performed in semi-anechoic(3m) test site, using the setup accordance with the ANSI C63.4:2014.

5.2.3. EMI Test Receiver Setup and Spectrum Analyzer Setup

During the radiated emission test, the EMI test receiver and Spectrum Analyzer were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz-1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1 MHz	3 MHz	/	AVG

5.2.4. Test procedure

The measurement was performed in a 3m semi-anechoic chamber, and instruments used were followed clause 4 of ANSI C63.4.
Detailed test procedure was following clause 8 of ANSI C63.4.
Note: for the measurement distance other than 3m and 10m, the limit is varied according to 20dB/10 decades.

5.2.5. Corrected Amplitude & Margin Calculation

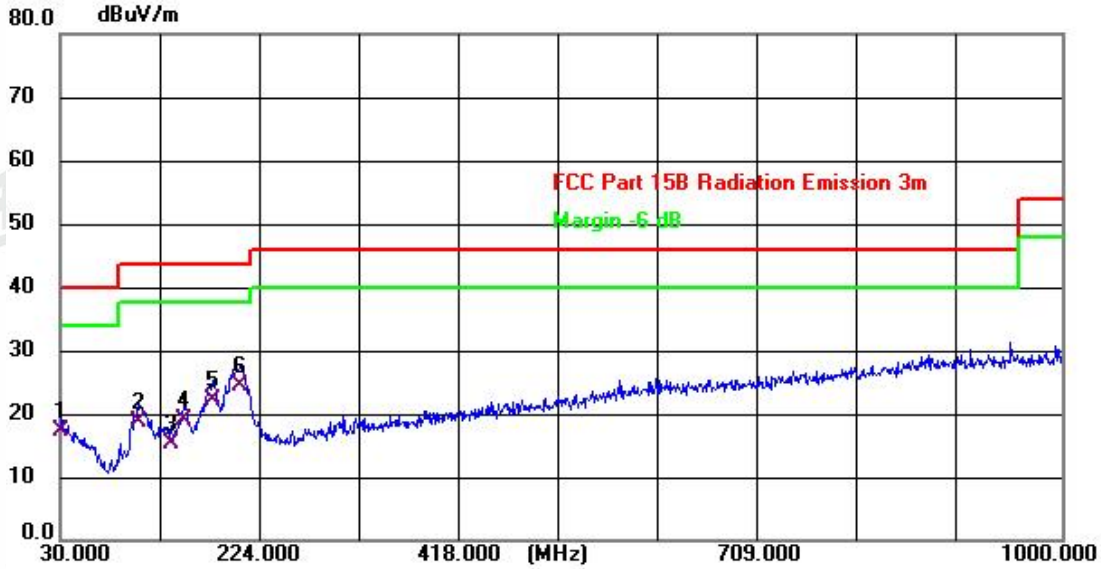
The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:
Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain
The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:
Margin = Limit – Corrected Amplitude

5.2.6. Test results

PASS

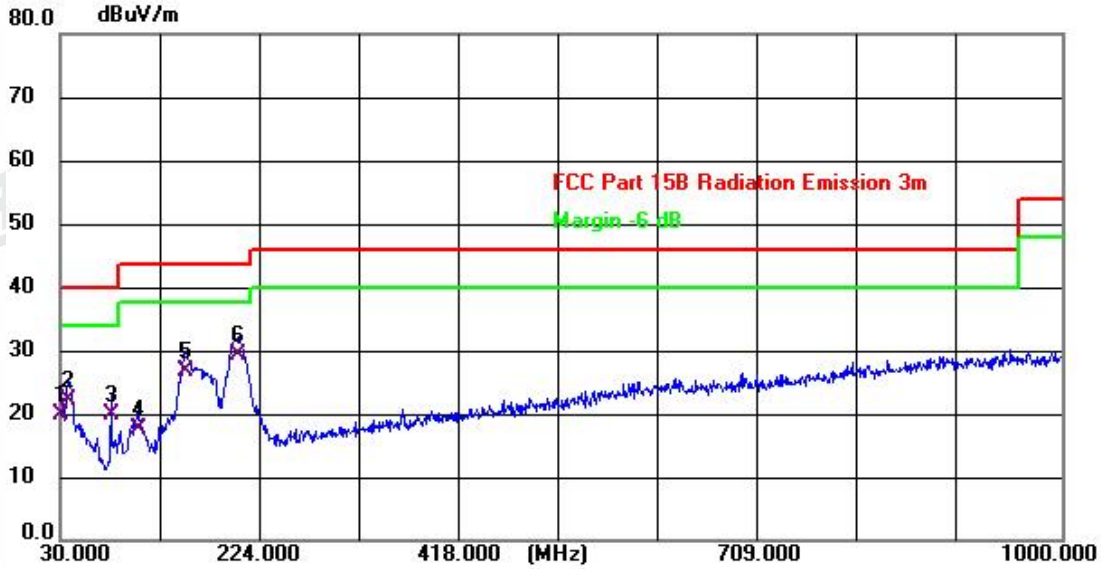
Please refer to pages 15 - 16 for data.

Polarization: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	30.000	31.69	-14.34	17.35	40.00	-22.65	QP
2	106.630	36.22	-17.54	18.68	43.50	-24.82	QP
3	137.670	34.48	-19.24	15.24	43.50	-28.26	QP
4	150.280	38.50	-19.63	18.87	43.50	-24.63	QP
5	178.410	41.08	-18.88	22.20	43.50	-21.30	QP
6 *	203.630	41.24	-16.75	24.49	43.50	-19.01	QP

Polarization: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	30.970	34.18	-14.33	19.85	40.00	-20.15	QP
2	38.730	36.46	-14.26	22.20	40.00	-17.80	QP
3	79.470	40.76	-20.87	19.89	40.00	-20.11	QP
4	106.630	34.97	-17.54	17.43	43.50	-26.07	QP
5	152.220	46.54	-19.70	26.84	43.50	-16.66	QP
6 *	201.690	45.98	-16.81	29.17	43.50	-14.33	QP

Note: Level=Reading + Factor
Margin=Level – Limit

6. Photographs of EUT

Reference to the appendix II for details.

7. Test Setup Photographs

Reference to the appendix I for details.

End of report