



FCC TEST REPORT

**Test report
On Behalf of
Shenzhen Relight Technology Co.,Ltd
For
Bonsai Bluetooth Speaker Lamp with Wireless Charging Pad
Model No.: MS-W10
FCC ID: 2AVHR-MS-W10**

Prepared for : Shenzhen Relight Technology Co.,Ltd
6th floor, building A, Guancheng low carbon industrial park, Gongming town,
Guangming new district, Shenzhen, China.

Prepared By : Shenzhen HUAKE Testing Technology Co., Ltd.
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Bao'an District, Shenzhen City, China

Date of Test: Dec. 25, 2019 ~Dec. 31, 2019

Date of Report: Dec. 31, 2019

Report Number: HK1912253318-2E



TEST RESULT CERTIFICATION

Applicant's name : Shenzhen Relight Technology Co.,Ltd
Address : 6th floor, building A, Guancheng low carbon industrial park,
Gongming town, Guangming new district, Shenzhen, China.

Manufacture's Name..... : Shenzhen Relight Technology Co.,Ltd
Address : 6th floor, building A, Guancheng low carbon industrial park,
Gongming town, Guangming new district, Shenzhen, China.

Product description

Trade Mark: MESUN
Product name : Bonsai Bluetooth Speaker Lamp with Wireless Charging Pad
Model and/or type reference : MS-W10

Standards : FCC CFR 47 PART 18

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Date of Test :

Date (s) of performance of tests : Dec. 25, 2019 ~Dec. 31, 2019

Date of Issue..... : Dec. 31, 2019

Test Result..... : **Pass**

Testing Engineer :

(Gary Qian)

Technical Manager :

(Eden Hu)

Authorized Signatory :

(Jason Zhou)



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1. TEST SUMMARY

1.1 TEST PROCEDURES AND RESULTS

DESCRIPTION OF TEST	Section number	RESULT
CONDUCTED EMISSIONS TEST	§18.307	COMPLIANT
RADIATED EMISSION TEST	§18.305	COMPLIANT

1.2 TEST FACILITY

Test Firm : Shenzhen HUAKE Testing Technology Co., Ltd.

Address 1F, B2 Building, Junfeng Zhongcheng Zhizao Innovation Park, Fuhai Street, Bao'an District, Shenzhen City, China

1.3 MEASUREMENT UNCERTAINTY

Measurement Uncertainty

Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	=	4.06dB, k=2



2. GENERAL INFORMATION

2.1 General Description of EUT

Equipment	Bonsai Bluetooth Speaker Lamp with Wireless Charging Pad
Model Name	MS-W10
Serial No.	N/A
Model Difference	N/A
Trade Mark	MESUN
FCC ID	2AVHR-MS-W10
Antenna Type	Coil Antenna
Antenna Gain	0dBi
BT Operation frequency	125KHz
Number of Channels	1
Modulation Type	ASK
Power Source	Input: DC 5V from Micro USB Wireless Output: DC5V
Power Rating	Input: DC 5V from Micro USB Wireless Output: DC5V



2.2. Carrier Frequency of Channels

Operation Frequency each of channel	
Channel	Frequency
1	125KHz

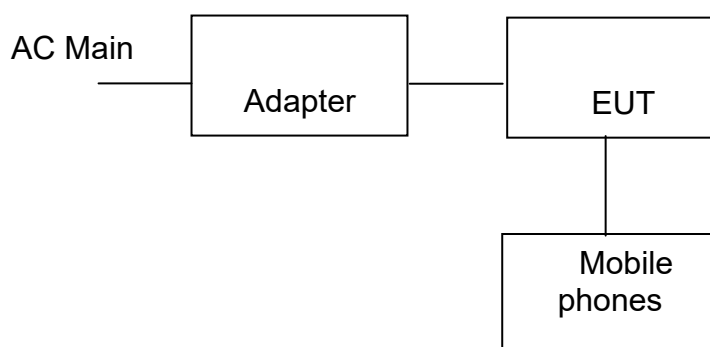
2.3 Operation of EUT during testing

Operating Mode

The mode is used: Transmitting mode

2.4 Description of Test Setup

Operation of EUT during testing



- Mobile phones information
Model: S6
Input: 5VDC
- Adapter information
Model: SAW30-050-3500U
Input: AC100-240V, 50/60Hz, 0.8A
Output: DC5V, 3.5A

The sample was placed 0.8m height above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. The worst case is X position



2.5 Measurement Instruments List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	R&S	ENV216	HKE-002	Dec. 26, 2019	1 Year
2.	Receiver	R&S	ESCI 7	HKE-010	Dec. 26, 2019	1 Year
3.	RF automatic control unit	Tonscend	JS0806-2	HKE-060	Dec. 26, 2019	1 Year
4.	Spectrum analyzer	R&S	FSP40	HKE-025	Dec. 26, 2019	1 Year
5.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 26, 2019	1 Year
6.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Dec. 26, 2019	1 Year
7.	EMI Test Receiver	Rohde & Schwarz	ESCI 7	HKE-010	Dec. 26, 2019	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Dec. 26, 2019	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Dec. 26, 2019	1 Year
10.	Horn Antenna	Schwarzbeck	9120D	HKE-013	Dec. 26, 2019	1 Year
11.	Pre-amplifier	EMCI	EMC051845 SE	HKE-015	Dec. 26, 2019	1 Year
12.	Pre-amplifier	Agilent	83051A	HKE-016	Dec. 26, 2019	1 Year
13.	EMI Test Software EZ-EMC	Tonscend	JS1120-B Version	HKE-083	Dec. 26, 2019	N/A
14.	Power Sensor	Agilent	E9300A	HKE-086	Dec. 26, 2019	1 Year
15.	Spectrum analyzer	Agilent	N9020A	HKE-048	Dec. 26, 2019	1 Year
16.	Signal generator	Agilent	N5182A	HKE-029	Dec. 26, 2019	1 Year
17.	Signal Generator	Agilent	83630A	HKE-028	Dec. 26, 2019	1 Year
18.	Shielded room	Shiel Hong	4*3*3	HKE-039	Dec. 26, 2019	1 Year



3. CONDUCTED EMISSION TEST

3.1 Test Specification

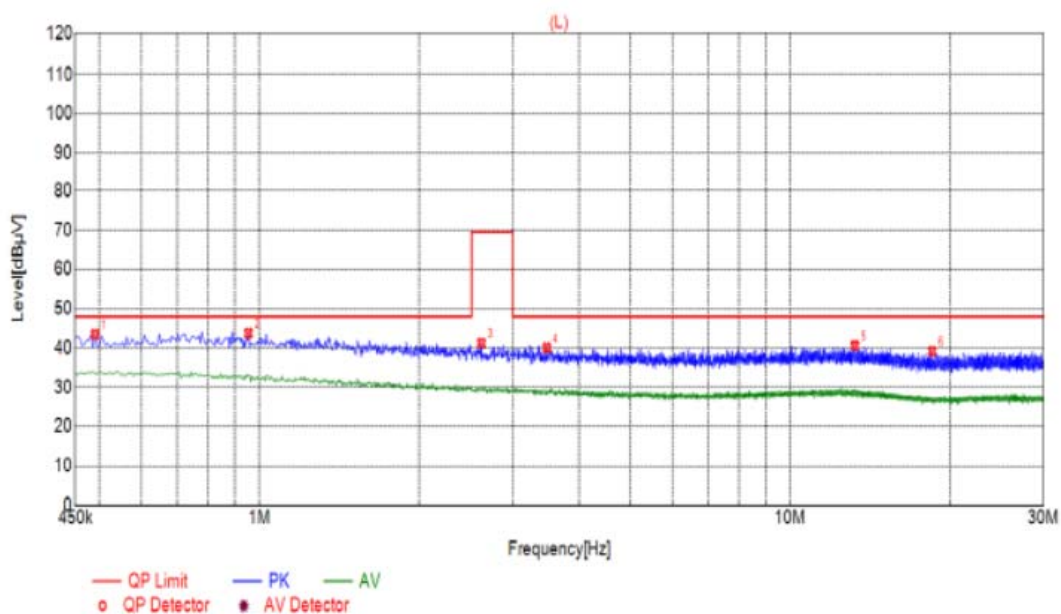
Test Requirement:	FCC Part18 Section 18.307																
Test Method:	FCC MP-5																
Frequency Range:	150 kHz to 30 MHz																
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto																
Limits:	<table><thead><tr><th>Frequency (MHz)</th><th>Maximum RF line voltage measured with a 50 uH/50 ohm LISN (uV)</th></tr></thead><tbody><tr><td colspan="2">Non-consumer equipment:</td></tr><tr><td>0.45 to 1.6</td><td>1,000</td></tr><tr><td>1.6 to 30</td><td>3,000</td></tr><tr><td colspan="2">Consumer equipment:</td></tr><tr><td>0.45 to 2.51</td><td>250</td></tr><tr><td>2.51 to 3.0</td><td>3,000</td></tr><tr><td>3.0 to 30</td><td>250</td></tr></tbody></table>	Frequency (MHz)	Maximum RF line voltage measured with a 50 uH/50 ohm LISN (uV)	Non-consumer equipment:		0.45 to 1.6	1,000	1.6 to 30	3,000	Consumer equipment:		0.45 to 2.51	250	2.51 to 3.0	3,000	3.0 to 30	250
Frequency (MHz)	Maximum RF line voltage measured with a 50 uH/50 ohm LISN (uV)																
Non-consumer equipment:																	
0.45 to 1.6	1,000																
1.6 to 30	3,000																
Consumer equipment:																	
0.45 to 2.51	250																
2.51 to 3.0	3,000																
3.0 to 30	250																
Test Setup:	Remark E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m																
Test Mode:	Charging																
Test Procedure:	1. The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference.																
Test Result:	PASS																



3.2 Test data

Please refer to following diagram for individual

Test Specification: Line



Suspected List								
NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.4905	43.50	10.04	48.00	4.50	33.46	PK	L
2	0.9540	43.78	10.06	48.00	4.22	33.72	PK	L
3	2.6190	41.23	10.21	69.50	28.27	31.02	PK	L
4	3.4785	40.09	10.25	48.00	7.91	29.84	PK	L
5	13.2345	40.61	9.96	48.00	7.39	30.65	PK	L
6	18.5040	39.17	10.05	48.00	8.83	29.12	PK	L

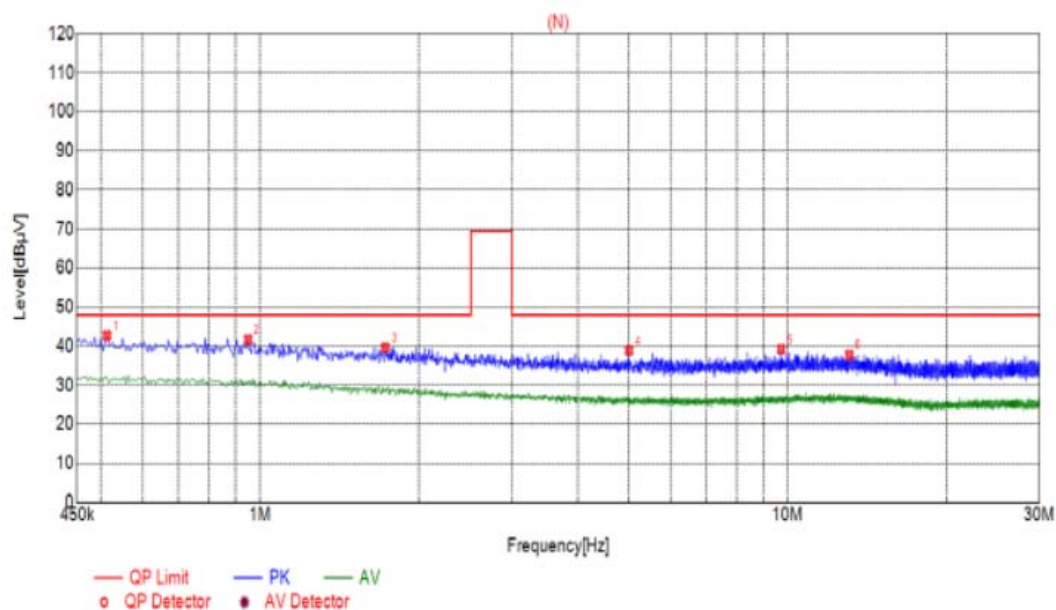
Remark: $\text{Margin} = \text{Limit} - \text{Level}$

Correction factor = Cable loss + LISN insertion loss

Level = Test receiver reading + correction factor



Test Specification: Neutral



Suspected List								
NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.5130	42.72	10.04	48.00	5.28	32.68	PK	N
2	0.9495	41.70	10.06	48.00	6.30	31.64	PK	N
3	1.7280	39.71	10.13	48.00	8.29	29.58	PK	N
4	5.0040	38.89	10.26	48.00	9.11	28.63	PK	N
5	9.7155	39.24	10.08	48.00	8.76	29.16	PK	N
6	13.0815	37.72	9.96	48.00	10.28	27.76	PK	N

Remark: $\text{Margin} = \text{Limit} - \text{Level}$

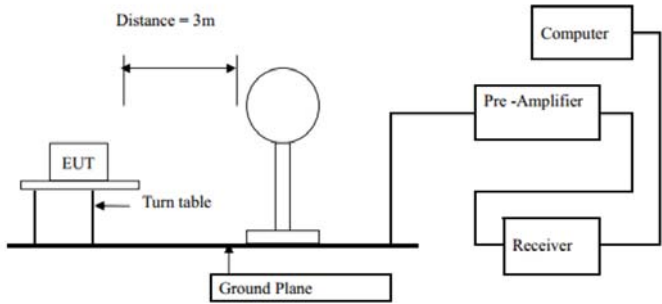
Correction factor = Cable lose + LISN insertion loss

Level = Test receiver reading + correction factor



4. Radiated Spurious Emission Measurement

4.1 Block Diagram of Test Setup

Test Requirement:	FCC Part18 Section 18.305																						
Test Method:	FCC MP-5																						
Frequency Range:	9 kHz to 25 GHz																						
Measurement Distance:	3 m																						
Antenna Polarization:	Horizontal & Vertical																						
Operation mode:	Refer to item 4.1																						
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark																		
	9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value																		
	150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value																		
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value																		
	Above 1GHz	Peak	1MHz	3MHz	Peak Value																		
Peak		1MHz	10Hz	Average Value																			
Limit:	<table><tr><th>Frequency (MHz)</th><th>Field strength limit at 30 meters (µV/m)</th></tr><tr><td colspan="2">Non-consumer equipment:</td></tr><tr><td>30-88</td><td>30</td></tr><tr><td>88-216</td><td>50</td></tr><tr><td>216-1000</td><td>70</td></tr><tr><td colspan="2">Consumer equipment:</td></tr><tr><td>30-88</td><td>10</td></tr><tr><td>88-216</td><td>15</td></tr><tr><td>216-1000</td><td>20</td></tr></table>					Frequency (MHz)	Field strength limit at 30 meters (µV/m)	Non-consumer equipment:		30-88	30	88-216	50	216-1000	70	Consumer equipment:		30-88	10	88-216	15	216-1000	20
	Frequency (MHz)	Field strength limit at 30 meters (µV/m)																					
	Non-consumer equipment:																						
	30-88	30																					
	88-216	50																					
	216-1000	70																					
	Consumer equipment:																						
	30-88	10																					
88-216	15																						
216-1000	20																						
Test setup:	For radiated emissions below 30MHz  The diagram shows a side view of the test setup. On the left, a box labeled 'EUT' sits on a 'Turn table'. A horizontal double-headed arrow indicates a 'Distance = 3m' between the EUT and a circular antenna. The antenna is mounted on a vertical 'antenna tower' which sits on a 'Ground Plane'. To the right of the antenna, a signal path is shown: a line from the antenna to a 'Pre-Amplifier' box, then to a 'Receiver' box, and finally to a 'Computer' box. The 'Pre-Amplifier' and 'Receiver' are connected in parallel to the signal line.																						
Test Procedure:	1. For the radiated emission test below 1GHz: The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level. 2. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level 3. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported.																						



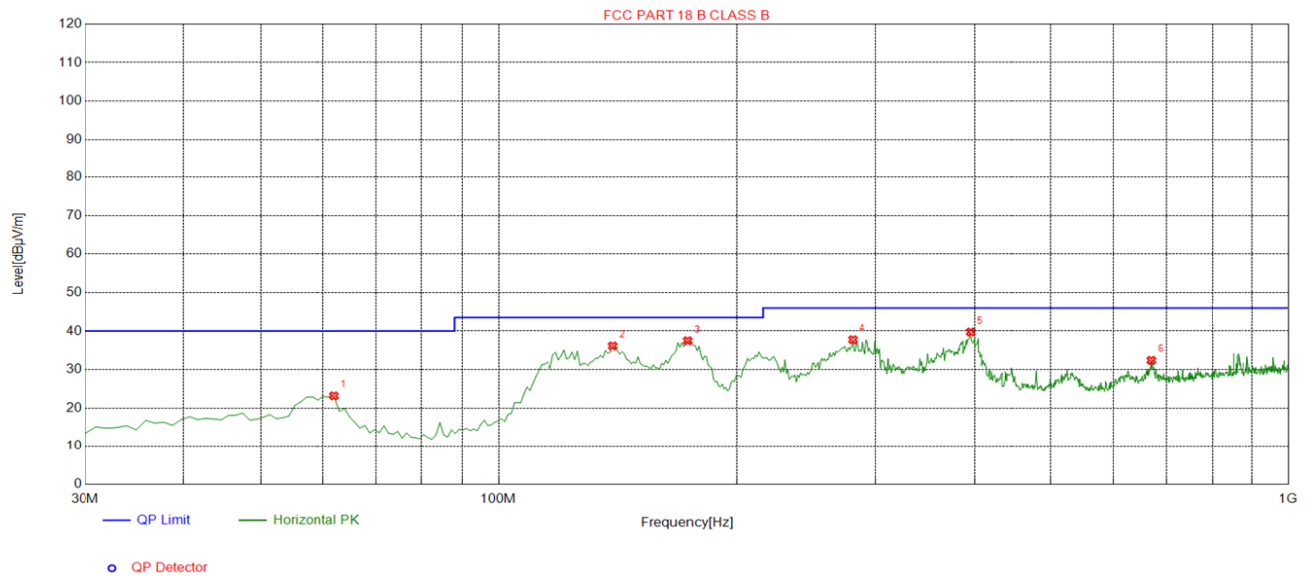
	Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported. 4. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=200Hz for $9K < f < 150\text{ KHz}$; $VBW \geq RBW$; Sweep = auto; Detector function = peak; Trace = max hold; (3) Set RBW = 9 KHz, VBW= 30KHz for $150KHz < f < 30\text{ MHz}$ for peak measurement.
Test mode:	Refer to section 4.1 for details
Test results:	PASS



4.2 Test Result

PASS

Please refer to following diagram for individual
30MHz-1GHz

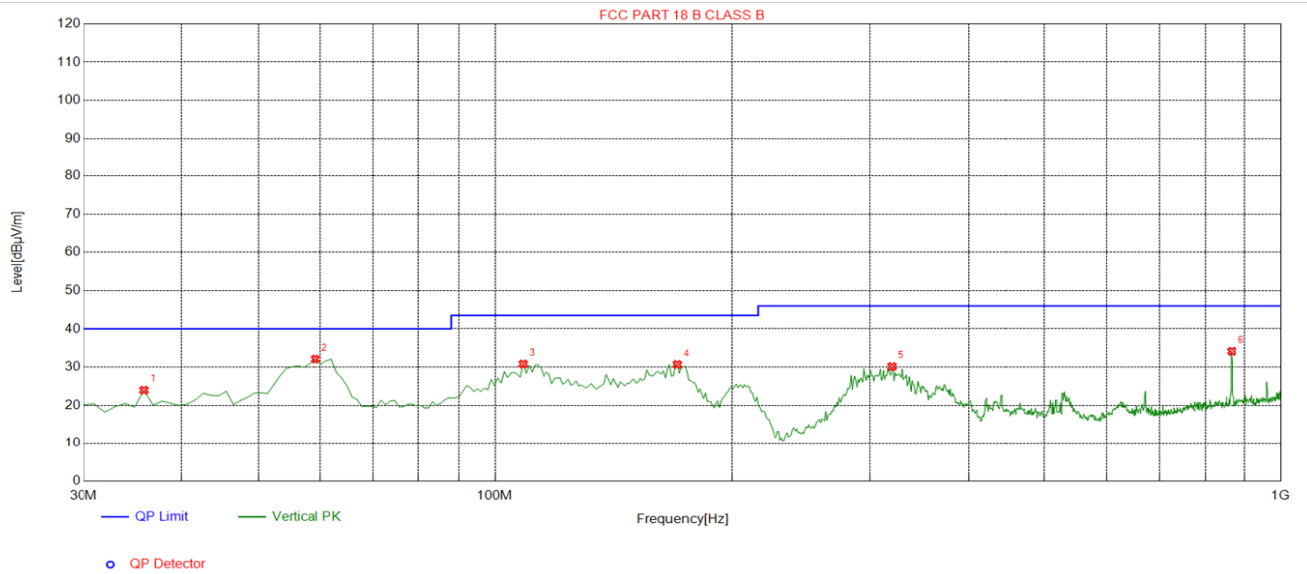


Suspected List

Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	62.0100	-15.66	38.84	23.18	40.00	16.82	100	359	Horizontal
2	139.6100	-19.16	55.31	36.15	43.50	7.35	100	359	Horizontal
3	173.5600	-17.14	54.64	37.50	43.50	6.00	100	359	Horizontal
4	281.2300	-13.20	50.97	37.77	46.00	8.23	100	122	Horizontal
5	395.6900	-10.51	50.29	39.78	46.00	6.22	100	315	Horizontal
6	670.2000	-4.57	36.98	32.41	46.00	13.59	100	224	Horizontal

Final Data List

Remark: Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;

**Suspected List**

Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.8200	-15.88	39.85	23.97	40.00	16.03	100	287	Vertical
2	59.1000	-15.02	47.13	32.11	40.00	7.89	100	216	Vertical
3	108.5700	-15.43	46.24	30.81	43.50	12.69	100	264	Vertical
4	170.6500	-17.27	47.98	30.71	43.50	12.79	100	222	Vertical
5	320.0300	-12.10	42.25	30.15	46.00	15.85	100	358	Vertical
6	865.1700	-2.35	36.49	34.14	46.00	11.86	100	144	Vertical

Final Data List

Remark: Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;



5. PHOTOGRAPH OF TEST

5.1 Radiated Emission





5.2 Conducted Emission



6. PHOTOGRAPH OF TEST

Reference to the reporter : ANNEX A of external photos and ANNEX B of internal photos

-----End of test report-----