



FCC TEST REPORT

For

Dongguan Boxinda Electronic Technology Co., LTD

4 in1 Wireless Charger

Test Model: B-19

Prepared for : Dongguan Boxinda Electronic Technology Co., LTD
Address : Room 302, Building 1, 160 Luyuan Road, Tangxia Town,
Dongguan City, Guangdong Province China

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
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Date of receipt of test sample : May 05, 2023
Number of tested samples : 2
Serial number : A050423093-1(Engineer sample), A050423093-2(Normal
sample)
Date of Test : May 05, 2023 ~ May 12, 2023
Date of Report : May 15, 2023



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**FCC TEST REPORT
FCC CFR 47 PART 15C****Report Reference No.** : **LCSA050423093EA****Date Of Issue**..... : May 15, 2023**Testing Laboratory Name**..... : **Shenzhen LCS Compliance Testing Laboratory Ltd.****Address**..... : 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Shajing Street,
Baoan District, Shenzhen, China**Testing Location/ Procedure**..... : Full application of Harmonised standards ☒
Partial application of Harmonised standards ☐
Other standard testing method ☐**Applicant's Name**..... : **Dongguan Boxinda Electronic Technology Co., LTD****Address**..... : Room 302, Building 1, 160 Luyuan Road, Tangxia Town,
Dongguan City, Guangdong Province China**Test Specification****Standard**..... : FCC CFR 47 PART 15C**Test Report Form No.**..... : LCSEMC-1.0**TRF Originator**..... : Shenzhen LCS Compliance Testing Laboratory Ltd.**Master TRF**..... : Dated 2011-03**Shenzhen LCS Compliance Testing Laboratory Ltd. All rights reserved.**

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Test Item Description..... : **4 in1 Wireless Charger****Trade Mark**..... : N/A**Test Model**..... : B-19**Power Supply**..... : Input: 9V $\rightarrow$ 3A, 12V $\rightarrow$ 3A
Mobile phone output1: 15W Max
Mobile phone output2: 10W
Headphone port output: 3W
Watch Output: 2W**Result** : **Positive****Compiled by:****Supervised by:****Approved by:**

Diamond Lu/ Administrator

Cary Luo/ Technique principal

Gavin Liang/ Manager



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**FCC TEST REPORT**

Test Report No. : LCSA050423093EA	<u>May 15, 2023</u> Date of issue
---	--------------------------------------

Test Model.....	: B-19
EUT.....	: 4 in1 Wireless Charger
Applicant.....	: Dongguan Boxinda Electronic Technology Co., LTD
Address.....	: Room 302, Building 1, 160 Luyuan Road, Tangxia Town, Dongguan City, Guangdong Province China
Telephone.....	: /
Fax.....	: /
Manufacturer.....	: Dongguan Boxinda Electronic Technology Co., LTD
Address.....	: Room 302, Building 1, 160 Luyuan Road, Tangxia Town, Dongguan City, Guangdong Province China
Telephone.....	: /
Fax.....	: /
Factory.....	: Dongguan Boxinda Electronic Technology Co., LTD
Address.....	: Room 302, Building 1, 160 Luyuan Road, Tangxia Town, Dongguan City, Guangdong Province China
Telephone.....	: /
Fax.....	: /

Test Result	Positive
--------------------	-----------------

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.



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Revision History

Report Version	Issue Date	Revision Content	Revised By
000	May 15, 2023	Initial Issue	--



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1. GENERAL INFORMATION

1.1 Description of Device (EUT)

EUT : 4 in1 Wireless Charger

Test Model : B-19

Power Supply : Input: 9V $\overline{\text{---}}$ 3A, 12V $\overline{\text{---}}$ 3A
Mobile phone output1: 15W Max
Mobile phone output2: 10W
Headphone port output: 3W
Watch Output: 2W

Hardware Version : /

Software Version : /

Wireless Charging :

Operating Frequency : 110.3~205.0KHz

Modulation Type : Continuous Wave

Antenna Type : Coil Antenna

1.2 Support equipment List

Manufacturer	Description	Model	Serial Number	Certificate
SHENZHEN TIANYIN ELECTRONICS CO., LTD	Power Adapter	TPA-46050200UU	---	FCC
Huawei	Mobile phone	FRD-AL10	---	FCC
HONOR	phone	V30Pro	---	FCC
Apple	TWS Earphone	--	---	FCC
MI	Watch	MW1	---	FCC

Note: Auxiliary equipment is provided by the laboratory.

1.3 External I/O Cable

I/O Port Description	Quantity	Cable
Type-C USB Port	1	USB Cable: 0.8m, unshielded

1.4 Description of Test Facility

NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024

CAB identifier is CN0071.

CNAS Registration Number is L4595.

Test Firm Registration Number: 254912.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.4:2014 and CISPR 16-1-4:2010 SVSWR requirement for radiated emission above 1GHz.



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1.5 Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

1.6 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Radiation Uncertainty	9KHz~30MHz	3.10dB	(1)
	30MHz~200MHz	2.96dB	(1)
	200MHz~1000MHz	3.10dB	(1)
	1GHz~26.5GHz	3.80dB	(1)
	26.5GHz~40GHz	3.90dB	(1)
Conduction Uncertainty	150kHz~30MHz	1.63dB	(1)
Power disturbance	30MHz~300MHz	1.60dB	(1)

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.7 Description of Test Modes

Equipment under test was operated during the measurement under the following conditions:

☒ Charging and communication mode

Modulation Type: CW (Continuous Wave)

Test Modes		
Mode 1	AC/DC Adapter (12V/3A) + EUT + Phone + Watch + TWS Earphone (Battery Status: <1%)	Record
Mode 2	AC/DC Adapter (12V/3A) + EUT + Phone + Watch + TWS Earphone (Battery Status: <50%)	Pre-tested
Mode 3	AC/DC Adapter (12V/3A) + EUT + Phone + Watch + TWS Earphone (Battery Status: 100%)	Pre-tested
Mode 4	AC/DC Adapter (9V/3A) + EUT + Phone + Watch + TWS Earphone (Battery Status: <1%)	Pre-tested
Mode 5	AC/DC Adapter (9V/3A) + EUT + Phone + Watch + TWS Earphone (Battery Status: <50%)	Pre-tested
Mode 6	AC/DC Adapter (9V/3A) + EUT + Phone + Watch + TWS Earphone (Battery Status: 100%)	Pre-tested
Note: All test modes were pre-tested, but we only recorded the worst case in this report.		





2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR PART 15C 15.207.

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The EUT was operated in the normal operating mode for Hopping Numbers and Dwell Time test and a continuous transmits mode for other tests.

According to its specifications, the EUT must comply with the requirements of the Section 15.207 under the FCC Rules Part 15 Subpart C.

2.3 General Test Procedures

2.3.1 Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

2.3.2 Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1GHz and 1.5 m above ground plane above 1GHz. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 6.3 of ANSI C63.10-2013

2.4. Test Sample

The application provides 2 samples to meet requirement;

Sample Number	Description
Sample 1(A050423093-1)	Engineer sample – continuous transmit
Sample 2(A050423093-2)	Normal sample – Intermittent transmit



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3. SYSTEM TEST CONFIGURATION

3.1 Justification

The system was configured for testing in a normal condition.

3.2 EUT Exercise Software

N/A.

3.3 Special Accessories

No.	Equipment	Manufacturer	Model No.	Serial No.	Length	shielded/ unshielded	Notes
/	/	/	/	/	/	/	/

3.4 Block Diagram/Schematics

Please refer to the related document.

3.5 Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

3.6 Test Setup

Please refer to the test setup photo.



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4. SUMMARY OF TEST EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	MXA Signal Analyzer	Agilent	N9020A	MY49100040	2022-06-16	2023-06-15
2	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2022-10-29	2023-10-28
3	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2022-06-16	2023-06-15
4	Positioning Controller	Max-Full	MF7802BS	MF780208586	N/A	N/A
5	EMI Test Software	AUDIX	E3	/	N/A	N/A
6	EMI Test Receiver	R&S	ESR 7	101181	2022-06-16	2023-06-15
7	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	00005	2021-08-29	2024-08-28
8	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2021-09-12	2024-09-11
9	EMI Test Receiver	R&S	ESPI	101940	2022-08-18	2023-08-17
10	Artificial Mains	R&S	ENV216	101288	2022-06-16	2023-06-15
11	10dB Attenuator	SCHWARZBECK	MTS-IMP-136	261115-001-0032	2022-06-16	2023-06-15
12	EMI Test Software	Farad	EZ	/	N/A	N/A
13	Broadband Preamplifier	SCHWARZBECK	BBV9745	9719-025	2022-06-16	2023-06-15



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5. SUMMARY OF TEST RESULT

FCC Rules	Description of Test	Test Sample	Result
§15.207(a)	AC Conducted Emissions	Sample 1	Compliant
§15.209	Radiated Spurious Emissions	Sample 1	Compliant

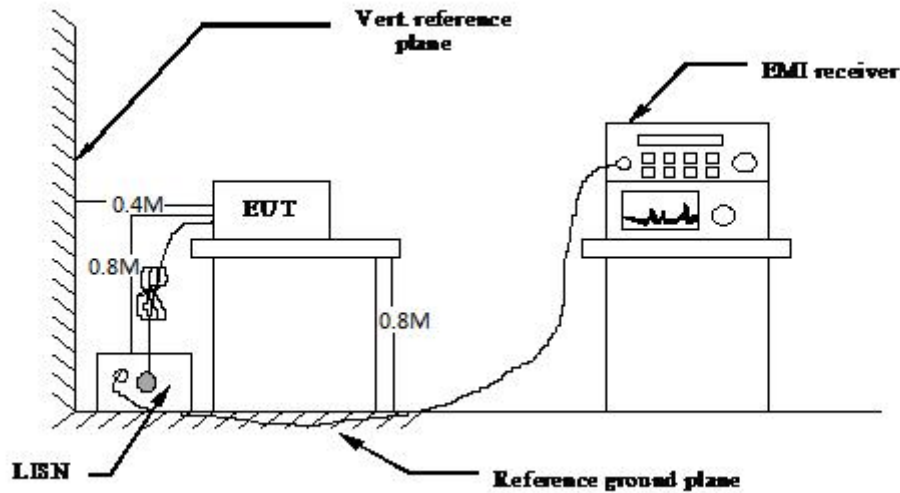
Remark: The measurement uncertainty is not included in the test result.
N/A – Not Applicable!!!





6. POWER LINE CONDUCTED MEASUREMENT

6.1. Block Diagram of Test Setup



6.2. Standard Applicable

According to §15.207: For all the consumer devices which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range are listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

* Decreasing linearly with the logarithm of the frequency

6.3 Test Results

PASS

The test data please refer to following page.

Temperature	23.5°C	Humidity	53.6%
Test Engineer	Mening Su	Configurations	Transmit



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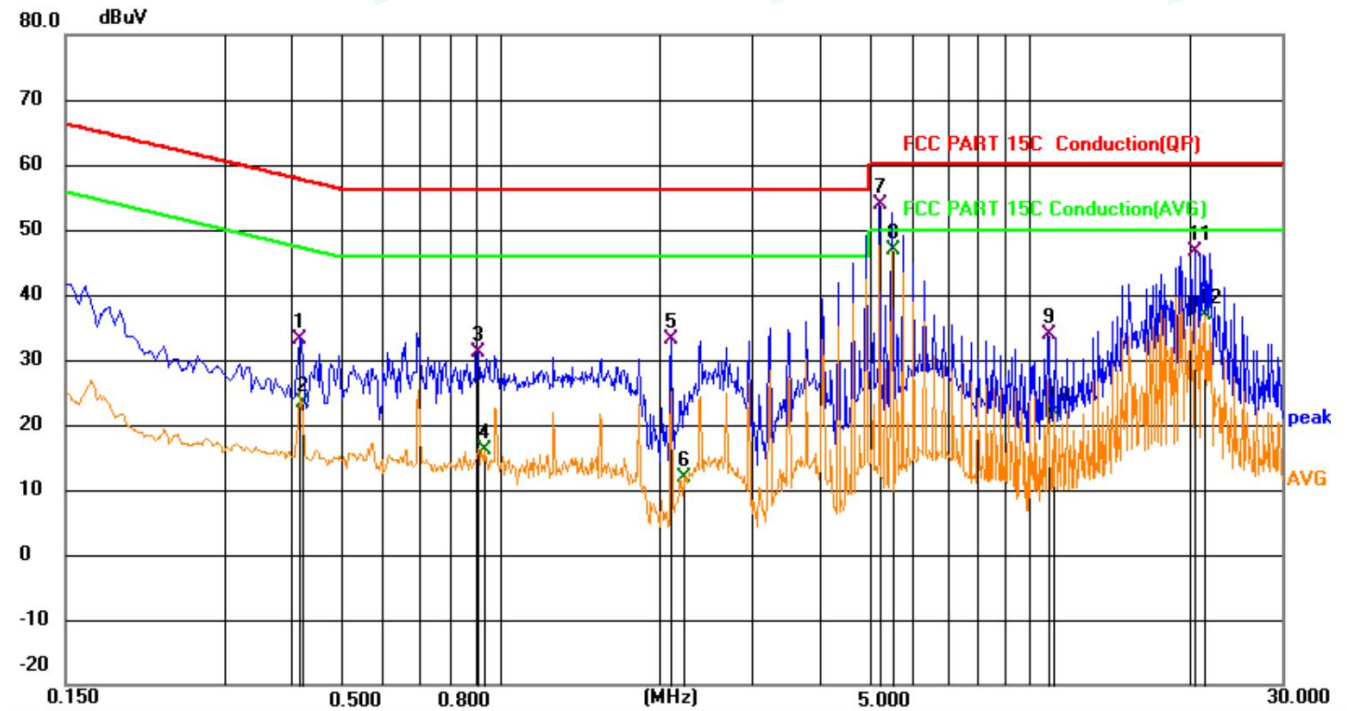
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**AC Power Line Conducted Emission (Power input to adapter @ AC 120V/60Hz (Worst Case))**

Line



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.4156	13.62	19.63	33.25	57.54	-24.29	QP	
2		0.4201	3.68	19.63	23.31	47.45	-24.14	AVG	
3		0.9060	11.37	19.65	31.02	56.00	-24.98	QP	
4		0.9285	-3.40	19.65	16.25	46.00	-29.75	AVG	
5		2.1030	13.55	19.68	33.23	56.00	-22.77	QP	
6		2.2244	-7.80	19.68	11.88	46.00	-34.12	AVG	
7		5.1991	34.19	19.70	53.89	60.00	-6.11	QP	
8	*	5.4826	27.17	19.70	46.87	50.00	-3.13	AVG	
9		10.8151	13.97	19.84	33.81	60.00	-26.19	QP	
10		11.0940	1.99	19.85	21.84	50.00	-28.16	AVG	
11		20.5126	26.41	20.18	46.59	60.00	-13.41	QP	
12		21.5881	16.72	20.12	36.84	50.00	-13.16	AVG	



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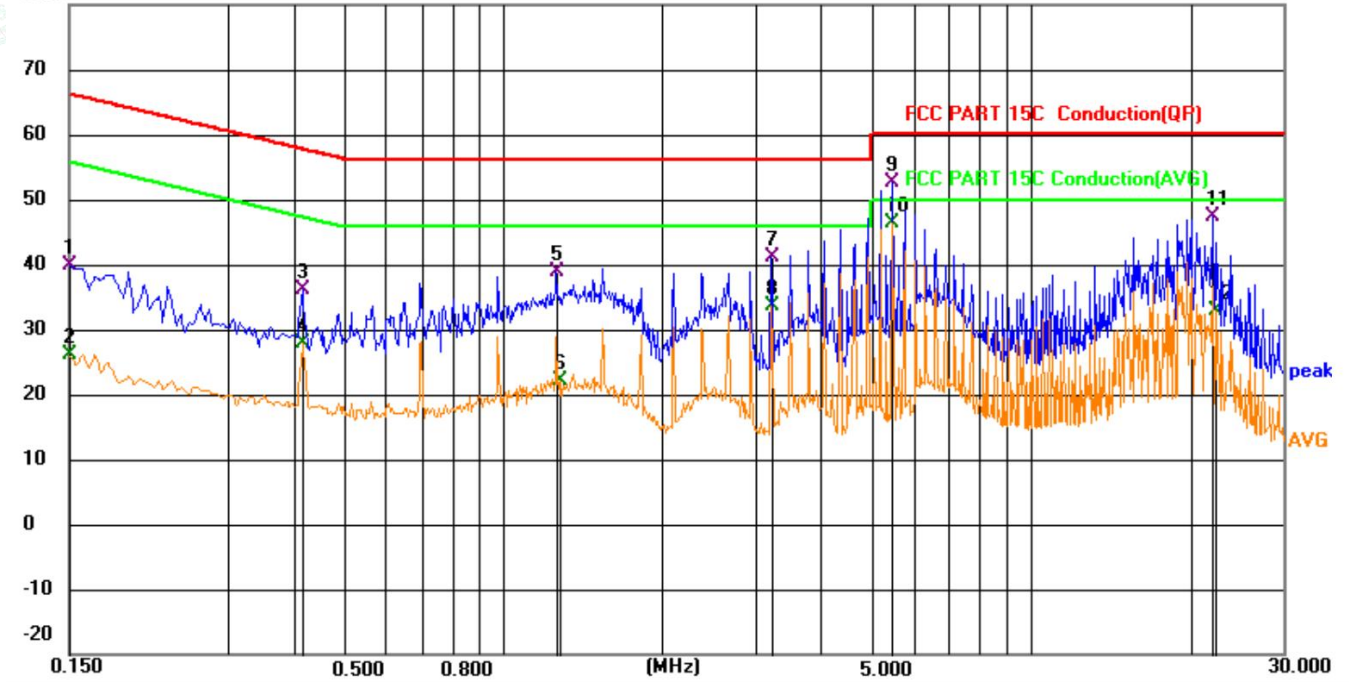
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Neutral

80.0 dBuV



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1500	20.23	19.63	39.86	66.00	-26.14	QP	
2		0.1500	6.52	19.63	26.15	56.00	-29.85	AVG	
3		0.4156	16.55	19.63	36.18	57.54	-21.36	QP	
4		0.4156	8.24	19.63	27.87	47.54	-19.67	AVG	
5		1.2570	19.12	19.66	38.78	56.00	-17.22	QP	
6		1.2839	2.39	19.66	22.05	46.00	-23.95	AVG	
7		3.2236	21.50	19.70	41.20	56.00	-14.80	QP	
8		3.2236	13.91	19.70	33.61	46.00	-12.39	AVG	
9		5.4691	32.99	19.70	52.69	60.00	-7.31	QP	
10	*	5.4691	26.67	19.70	46.37	50.00	-3.63	AVG	
11		22.1731	27.35	20.08	47.43	60.00	-12.57	QP	
12		22.4566	12.83	20.08	32.91	50.00	-17.09	AVG	

***Note: Pre-scan all modes and recorded the worst case results in this report.
Margin=Reading level + Correct - Limit



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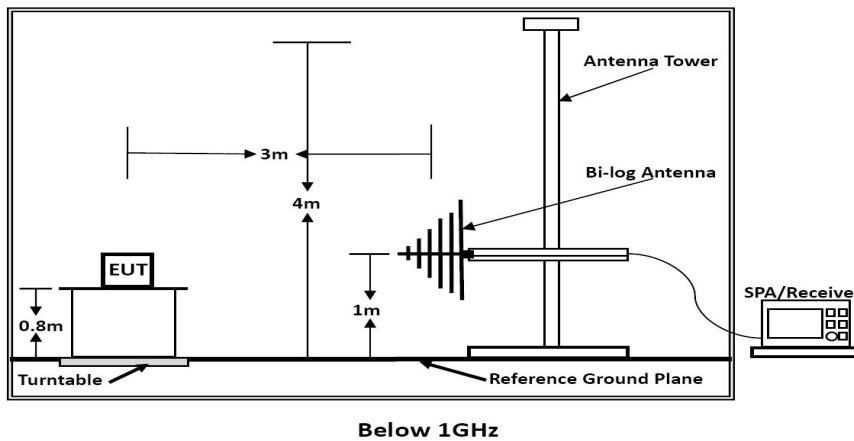
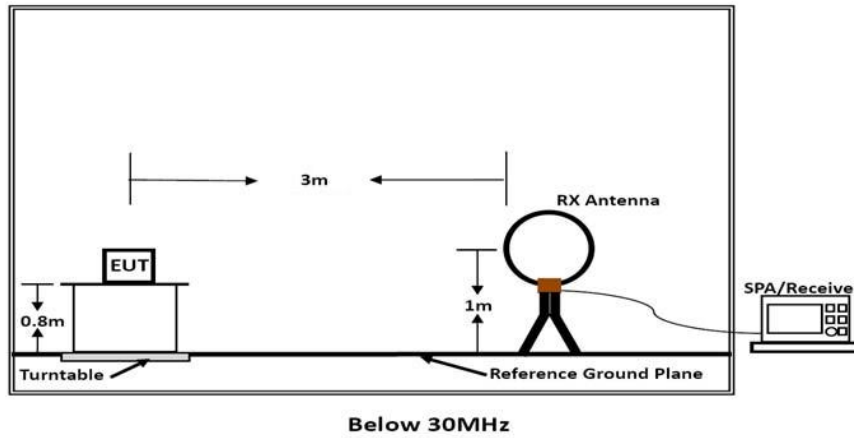
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7. RADIATED EMISSION MEASUREMENT

7.1. Block Diagram of Test Setup



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7.2. Radiated Emission Limit

15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
\1\ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(\2\)
13.36-13.41			

\1\ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

\2\ Above 38.6

According to §15.247 (d): 20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

7.3. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

7.4. Operating Condition of EUT

(1) Setup the EUT as shown in Section 7.1.



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7.5. Measuring Setting

The following table is the setting of spectrum analyzer and receiver.

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP/Average
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP/Average
Start ~ Stop Frequency	30MHz~1000MHz / RB 100kHz for QP

7.6. Test Procedure

1) Sequence of testing 9 kHz to 30 MHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.
- If the EUT is a floor standing device, it is placed on the ground.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions.
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Premeasurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna height is 1.0 meter.
- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).
- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.
- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.



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2) Sequence of testing 30 MHz to 1 GHz

Setup:

- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.
- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.
- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.
- Auxiliary equipment and cables were positioned to simulate normal operation conditions
- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.
- The measurement distance is 3 meter.
- The EUT was set into operation.

Premeasurement:

- The turntable rotates from 0° to 315° using 45° steps.
- The antenna is polarized vertical and horizontal.
- The antenna height changes from 1 to 3 meter.
- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

- The final measurement will be performed with minimum the six highest peaks.
- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position ($\pm 45^\circ$) and antenna movement between 1 and 4 meter.
- The final measurement will be done with QP detector with an EMI receiver.
- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

7.7. Test Results

PASS.

Only report the worst test data (Mode 1) in test report;

The test data please refer to following page:

Temperature	23.8°C	Humidity	52.5%
Test Engineer	Mening Su	Configurations	Transmit



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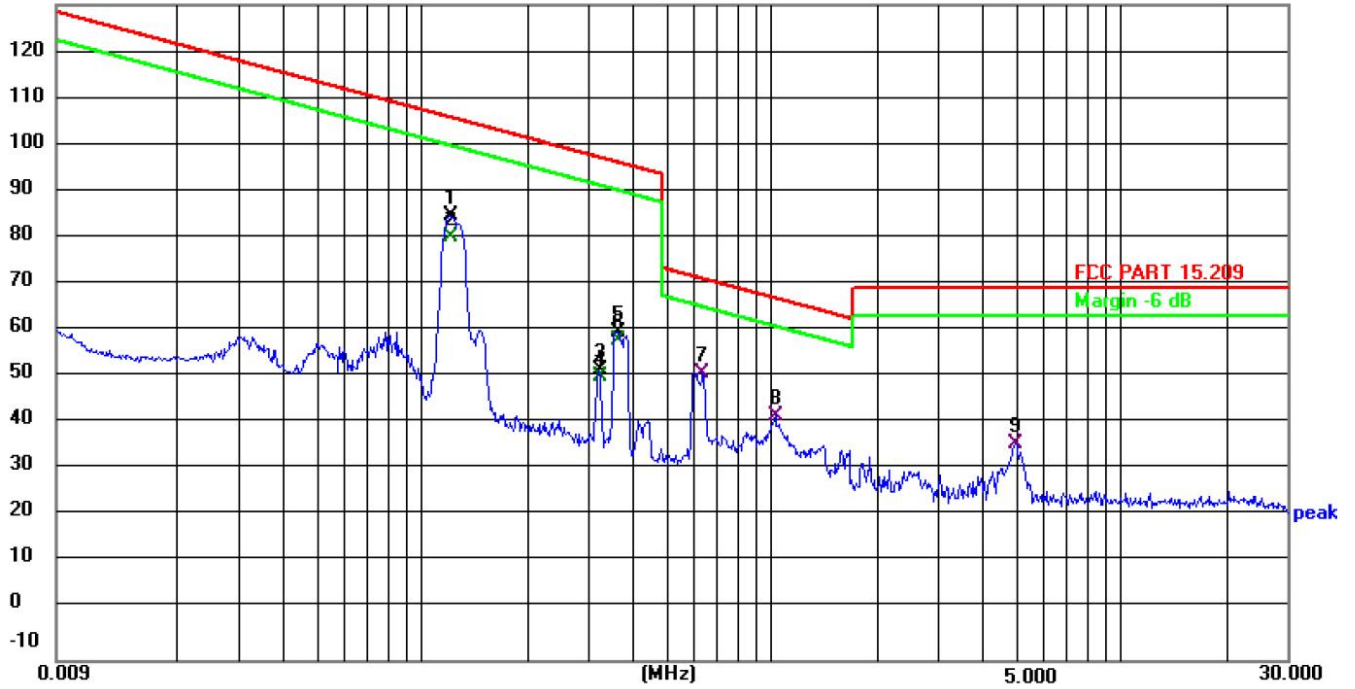
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0.009 MHz – 30 MHz
0 degree

130.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	0.1207	94.80	-9.74	85.06	105.94	-20.88	peak
2	0.1207	90.10	-9.74	80.36	105.94	-25.58	AVG
3	0.3220	61.90	-9.74	52.16	97.44	-45.28	peak
4	0.3220	60.41	-9.74	50.67	97.44	-46.77	AVG
5	0.3666	69.94	-9.73	60.21	96.31	-36.10	peak
6	0.3666	68.22	-9.73	58.49	96.31	-37.82	AVG
7	0.6363	60.84	-9.58	51.26	71.53	-20.27	QP
8	1.0271	51.75	-9.25	42.50	67.37	-24.87	QP
9	4.9952	45.63	-9.39	36.24	69.54	-33.30	QP

Remark: 1). Measured at antenna position 0 degree and 90 degree, recorded worst case at 0 degree.

2). $\text{Margin} = \text{Reading level} + \text{Factor} - \text{Limit}$



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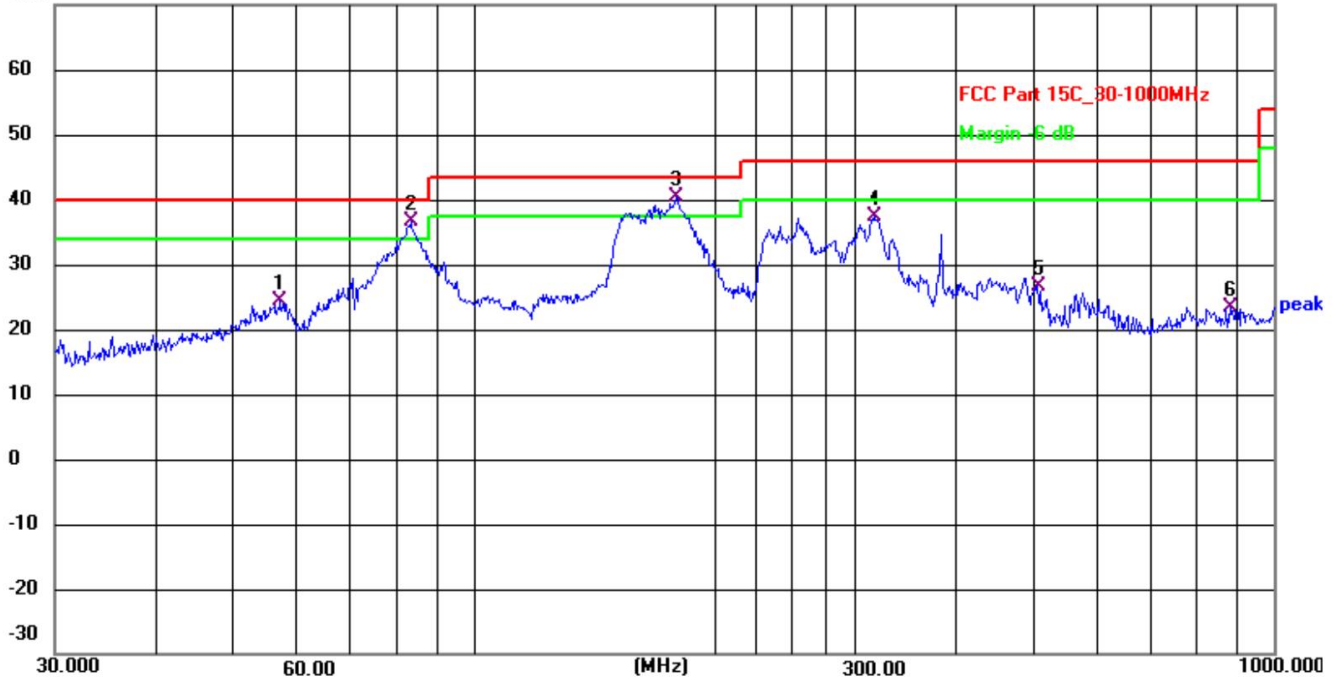


Temperature	23.8℃	Humidity	52.1%
Test Engineer	Mening Su	Configurations	Transmit

Below 1GHz

Horizontal

70.0 dBuV/m



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	57.3923	42.67	-18.38	24.29	40.00	-15.71	QP
2	83.5222	56.04	-19.53	36.51	40.00	-3.49	QP
3	179.3863	59.04	-18.74	40.30	43.50	-3.20	QP
4	316.5890	52.07	-14.66	37.41	46.00	-8.59	QP
5	506.4791	39.58	-13.06	26.52	46.00	-19.48	QP
6	881.4067	31.98	-8.59	23.39	46.00	-22.61	QP

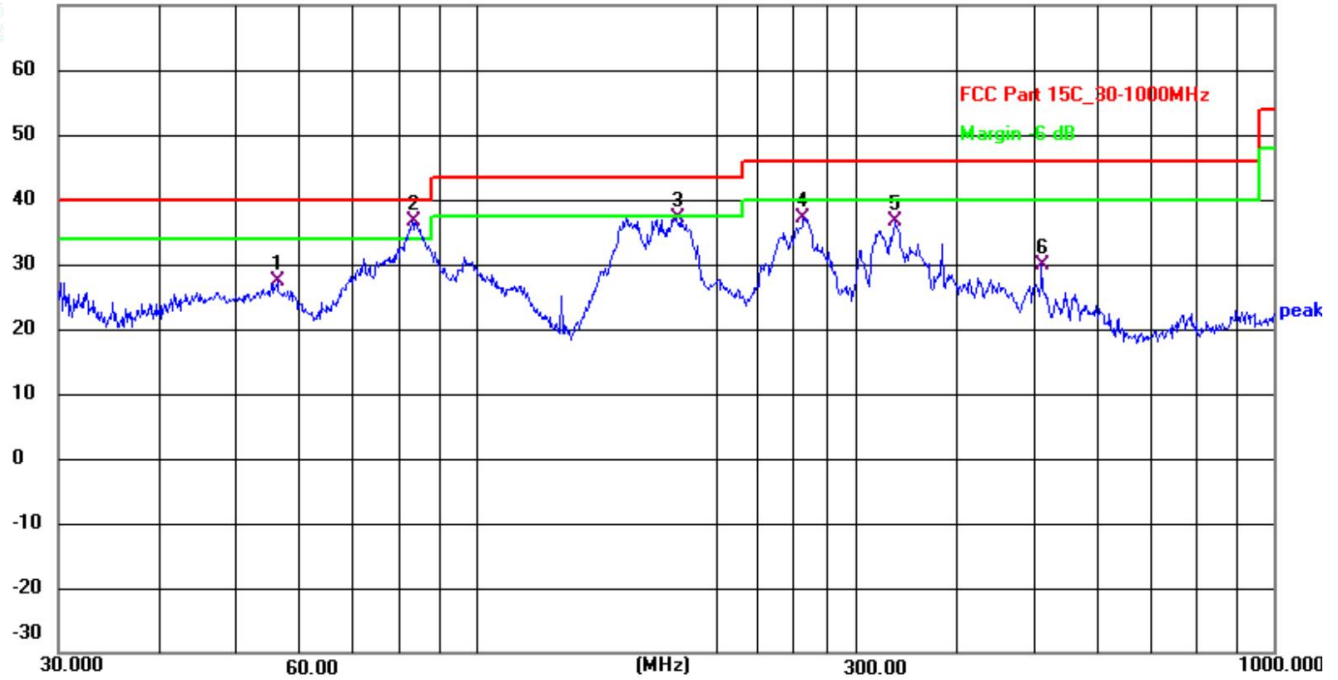


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Vertical
70.0 dBuV/m

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	56.3948	45.66	-18.20	27.46	40.00	-12.54	QP
2	83.2298	56.25	-19.56	36.69	40.00	-3.31	QP
3	178.7584	55.98	-18.79	37.19	43.50	-6.31	QP
4	257.4221	52.58	-15.54	37.04	46.00	-8.96	QP
5	334.8588	50.97	-14.46	36.51	46.00	-9.49	QP
6	511.8352	42.72	-12.96	29.76	46.00	-16.24	QP

1). Emission level (dBuV/m) = 20 log Emission level (uV/m).

2). Margin=Reading level + Factor- Limit.



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8. PHOTOGRAPHS OF TEST SETUP

Please refer to separated files for Test Setup Photos of the EUT.

9. EXTERNAL PHOTOGRAPHS OF THE EUT

Please refer to separated files for External Photos of the EUT.

10. INTERNAL PHOTOGRAPHS OF THE EUT

Please refer to separated files for Internal Photos of the EUT.

-----THE END OF REPORT-----



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