

TEST REPORT

Report No.: BCTC2007000322E

Applicant: Shenzhen Microlong Technology Co.,Ltd.

Product Name: Digital microscope

Product Type: DM3

Tested Date: Jul. 06, 2020 to Nov. 10, 2020

Issued Date: Nov. 10, 2020

Shenzhen BCTC Testing Co., Ltd.

Product Name: Digital microscope
Trademark: N/A
Model /Type Ref.: DM3
DM2
Prepared For: Shenzhen Microlong Technology Co.,Ltd.
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Manufacturer: Shenzhen Microlong Technology Co.,Ltd.
Address: Building E 401,N0.131 Shanglilang community,Nanwan Street, Longgang District,Shenzhen City, China
Prepared By: Shenzhen BCTC Testing Co., Ltd.
Address: 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China
Sample Received Date: Jul. 06, 2020
Sample tested Date: Jul. 06, 2020 to Nov. 10, 2020
Issue Date: Nov. 10, 2020
Report No.: BCTC2007000322E
Test Standards FCC Part 15 Subpart B
Test Results PASS

Tested by:



Icay Chen/ Project Handler

Approved by:

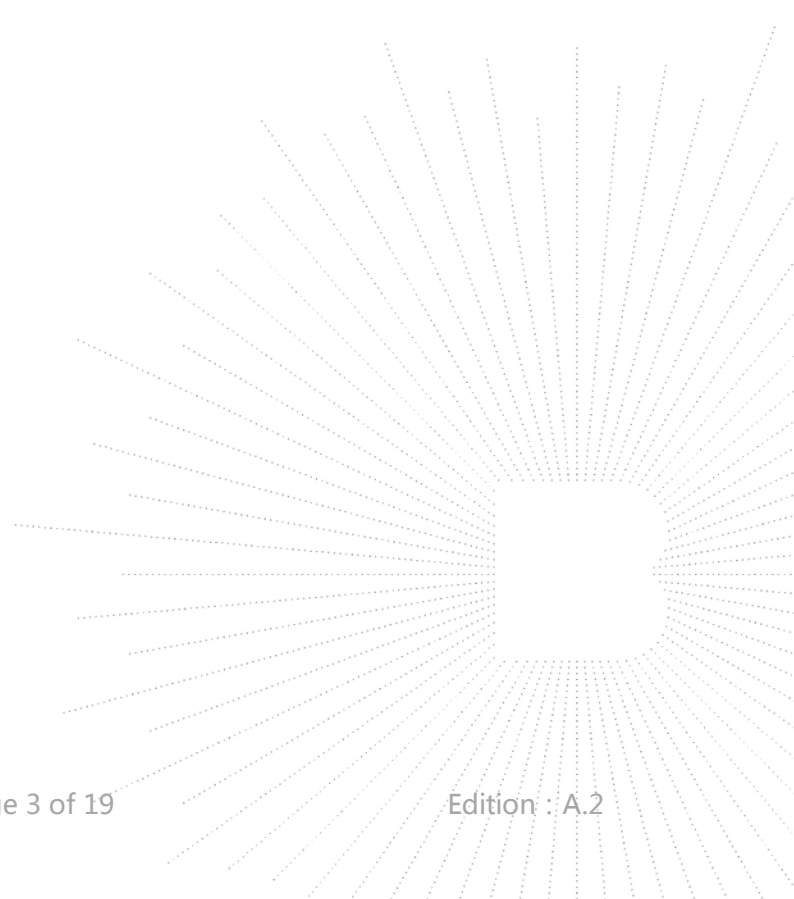


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TABLE OF CONTENT

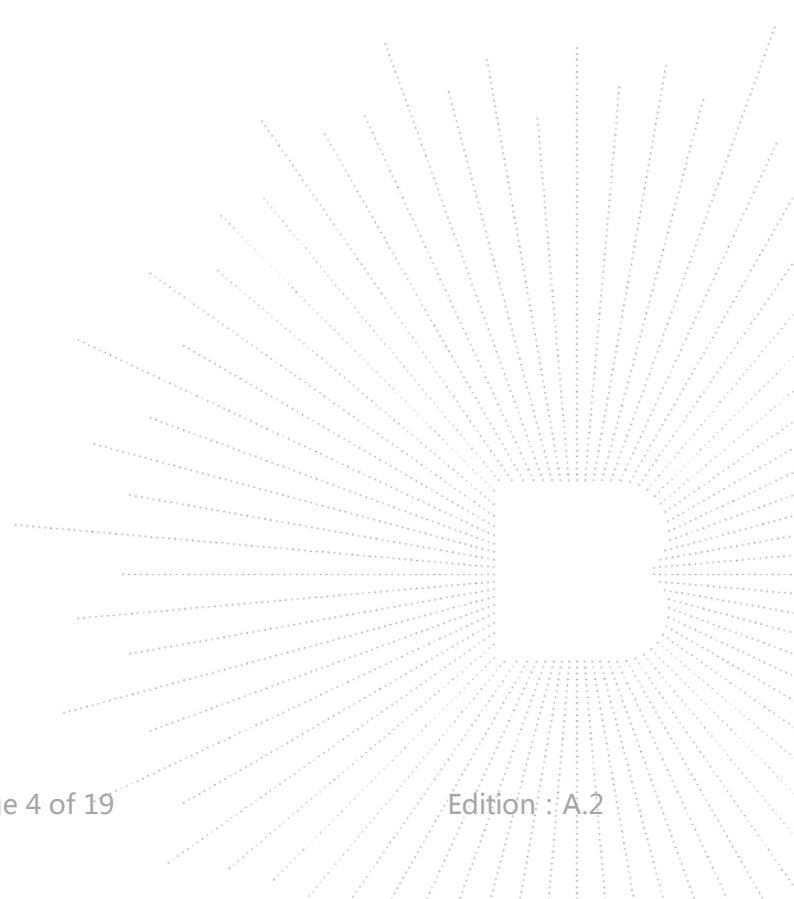
Test Report Declaration	Page
1. VERSION.....	4
2. TEST SUMMARY	5
3. MEASUREMENT UNCERTAINTY	6
4. PRODUCT INFORMATION AND TEST SETUP	7
5. TEST FACILITY AND TEST INSTRUMENT USED.....	8
6. CONDUCTED EMISSION AT THE MAINS TERMINALS TEST	9
6.1 Block Diagram Of Test Setup.....	9
6.2 Limit	9
6.3 Test procedure.....	9
6.4 Test Result.....	10
7. RADIATION EMISSION TEST	12
7.1 Block Diagram Of Test Setup.....	12
7.2 Limit	12
7.3 Test Procedure	13
7.4 Test Result.....	14
8. EUT PHOTOGRAPHS.....	16
9. EUT TEST SETUP PHOTOGRAPHS.....	18

(Note: N/A means not applicable)



1. VERSION

Report No.	Issue Date	Description	Approved
BCTC2007000322E	Nov. 10, 2020	Original	Valid



2. TEST SUMMARY

The Product has been tested according to the following specifications:

Standard	Test Item	Test result
FCC 15.107	Conducted Emission	Pass
FCC 15.109	Radiated Emission	Pass

3. 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)	3.20
Radiated Emission(30MHz~1GHz)	4.80
Radiated Emission(1GHz~6GHz)	4.90

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Ratings: DC 5V from adapter
DC 3.7V from battery

Model difference: All models are identical except for the appearance color, the test model is DM3 and the test results are applicable to other tests.

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
	ADAPTER	UGREEN	CD122	---	---	---

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Test Mode

Test item	Test Mode	Test Voltage
Conducted Emission (150KHz-30MHz) Class B	Charging+ Working	AC 120V/60Hz
Radiated mission(30MHz-1GHz) Class B	Charging+ Working	AC 120V/60Hz
All test mode were tested and passed, only Conducted Emission and Radiated Emissions shows (*) is the nearest standard limit which were recorded in this report.		

5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

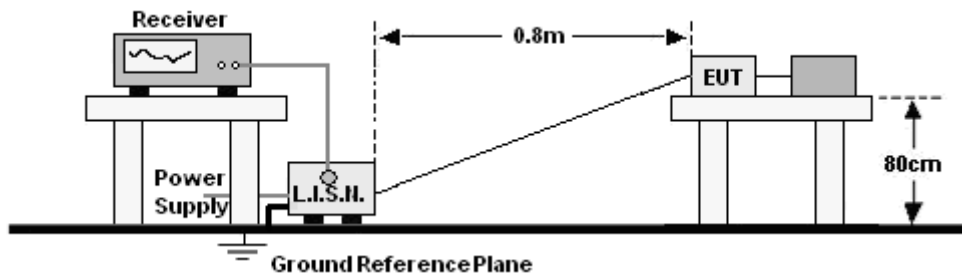
Conducted emissions Test					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Receiver	R&S	ESR3	102075	Jun. 08, 2020	Jun. 07, 2021
LISN	R&S	ENV216	101375	Jun. 04, 2020	Jun. 03, 2021
ISN	HPX	ISN T800	S1509001	Jun. 04, 2020	Jun. 03, 2021
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\

Radiated emissions Test (966 chamber)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	Jun. 06, 2020	Jun. 05, 2023
Receiver	R&S	ESR3	102075	Jun. 08, 2020	Jun. 07, 2021
Receiver	R&S	ESRP	101154	Jun. 08, 2020	Jun. 07, 2021
Amplifier	Schwarzbeck	BBV9718	9718-309	Jun. 04, 2020	Jun. 03, 2021
Amplifier	Schwarzbeck	BBV9744	9744-0037	Jun. 04, 2020	Jun. 03, 2021
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	VULB9163-942	Jun. 08, 2020	Jun. 07, 2021
Horn Antenna	SCHWARZBEC K	BBHA9120D	1541	Jun. 10, 2020	Jun. 09, 2021
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

6. CONDUCTED EMISSION AT THE MAINS TERMINALS TEST

6.1 Block Diagram Of Test Setup

For mains ports:



6.2 Limit

Limits for Class B devices

(MHz)	Limits dB(μ V)	
	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

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

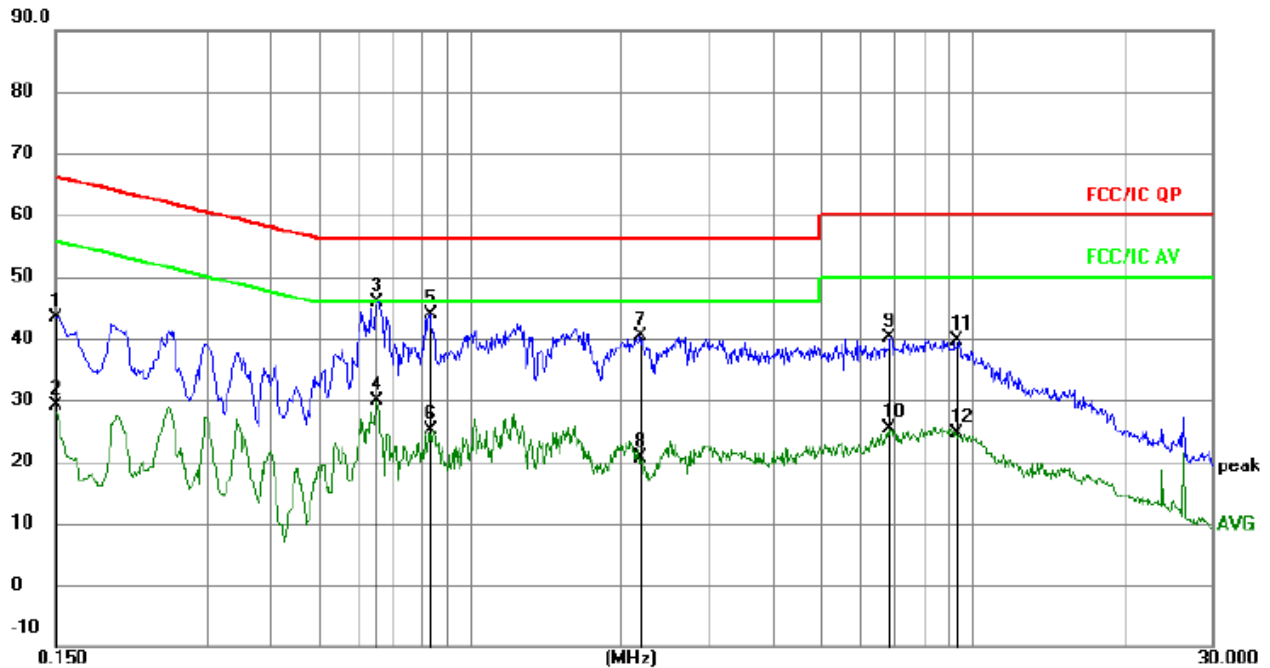
6.3 Test procedure

For mains ports:

- The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
- The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

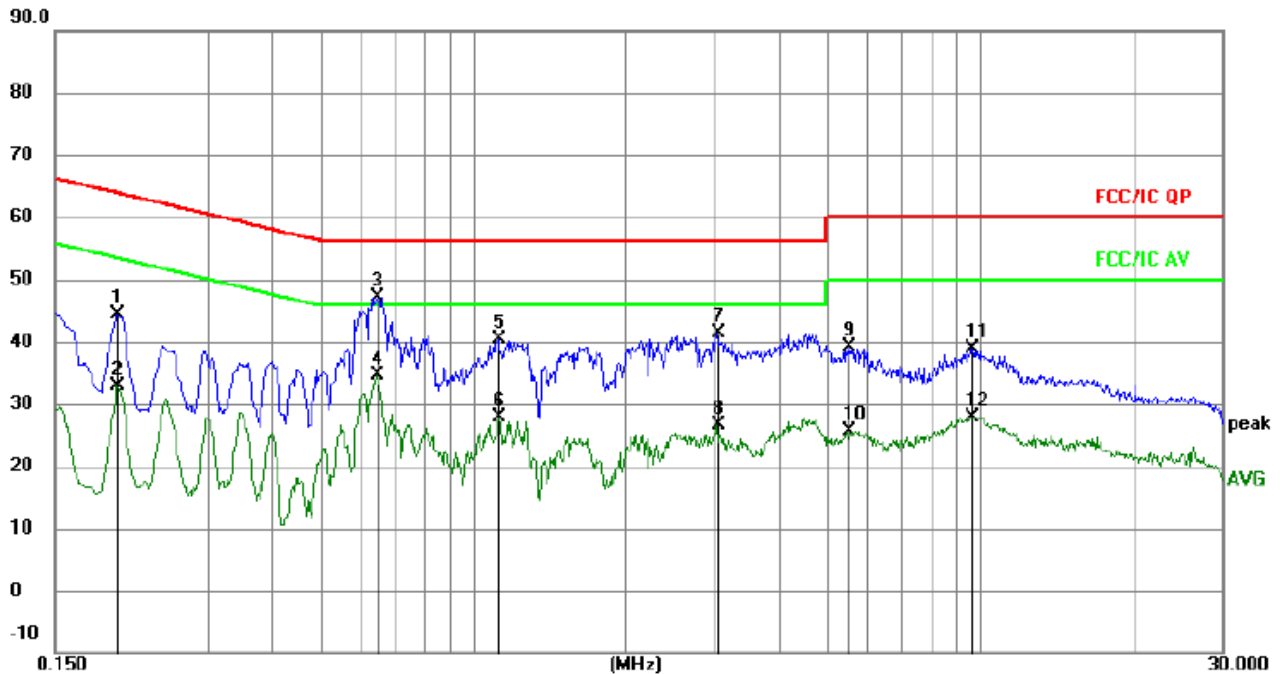
6.4 Test Result

Temperature:	26 °C	Relative Humidity:	54 %
Pressure:	101kPa	Phase :	Line
Test Voltage :	AC 120V/60Hz	Test Mode:	Charging+ Working



No.	Mk.	Freq. MHz	Reading Level	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1500	33.79	9.52	43.31	66.00	-22.69	QP	
2		0.1500	19.53	9.52	29.05	56.00	-26.95	AVG	
3	*	0.6539	36.03	9.81	45.84	56.00	-10.16	QP	
4		0.6539	19.98	9.81	29.79	46.00	-16.21	AVG	
5		0.8384	34.21	9.62	43.83	56.00	-12.17	QP	
6		0.8384	15.51	9.62	25.13	46.00	-20.87	AVG	
7		2.1839	30.66	9.60	40.26	56.00	-15.74	QP	
8		2.1839	10.99	9.60	20.59	46.00	-25.41	AVG	
9		6.8325	30.28	9.73	40.01	60.00	-19.99	QP	
10		6.8325	15.63	9.73	25.36	50.00	-24.64	AVG	
11		9.2805	30.04	9.70	39.74	60.00	-20.26	QP	
12		9.2805	14.88	9.70	24.58	50.00	-25.42	AVG	

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Neutral
Test Voltage :	AC 120V/60Hz	Test Mode:	Charging+ Working



No.	Mk.	Freq. MHz	Reading Level dB	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1995	34.83	9.46	44.29	63.63	-19.34	QP	
2		0.1995	23.34	9.46	32.80	53.63	-20.83	AVG	
3	*	0.6449	37.27	9.84	47.11	56.00	-8.89	QP	
4		0.6449	24.79	9.84	34.63	46.00	-11.37	AVG	
5		1.1264	30.90	9.57	40.47	56.00	-15.53	QP	
6		1.1264	18.35	9.57	27.92	46.00	-18.08	AVG	
7		3.0390	31.81	9.66	41.47	56.00	-14.53	QP	
8		3.0390	16.88	9.66	26.54	46.00	-19.46	AVG	
9		5.5275	29.39	9.78	39.17	60.00	-20.83	QP	
10		5.5275	15.88	9.78	25.66	50.00	-24.34	AVG	
11		9.6360	29.25	9.69	38.94	60.00	-21.06	QP	
12		9.6360	18.31	9.69	28.00	50.00	-22.00	AVG	

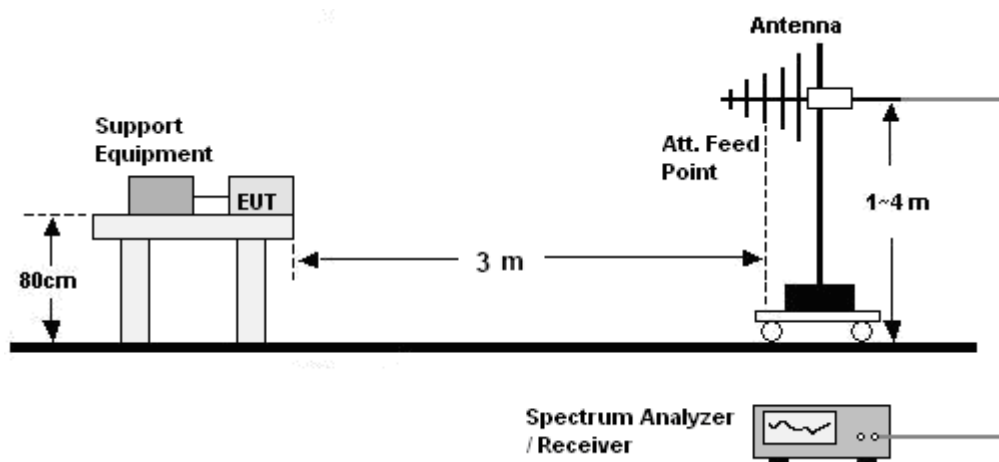
Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

7. RADIATION EMISSION TEST

7.1 Block Diagram Of Test Setup

30MHz ~ 1GHz:



7.2 Limit

Limits for Class B devices

Frequency (MHz)	limits at 3m dB(μ V/m)		
	QP Detector	PK Detector	AV Detector
30-88	40.0	--	--
88-216	43.5	--	--
216-960	46.0	--	--
960 to 1000	54.0	--	--
Above 1000	--	74.0	54.0

Note: The lower limit shall apply at the transition frequencies.

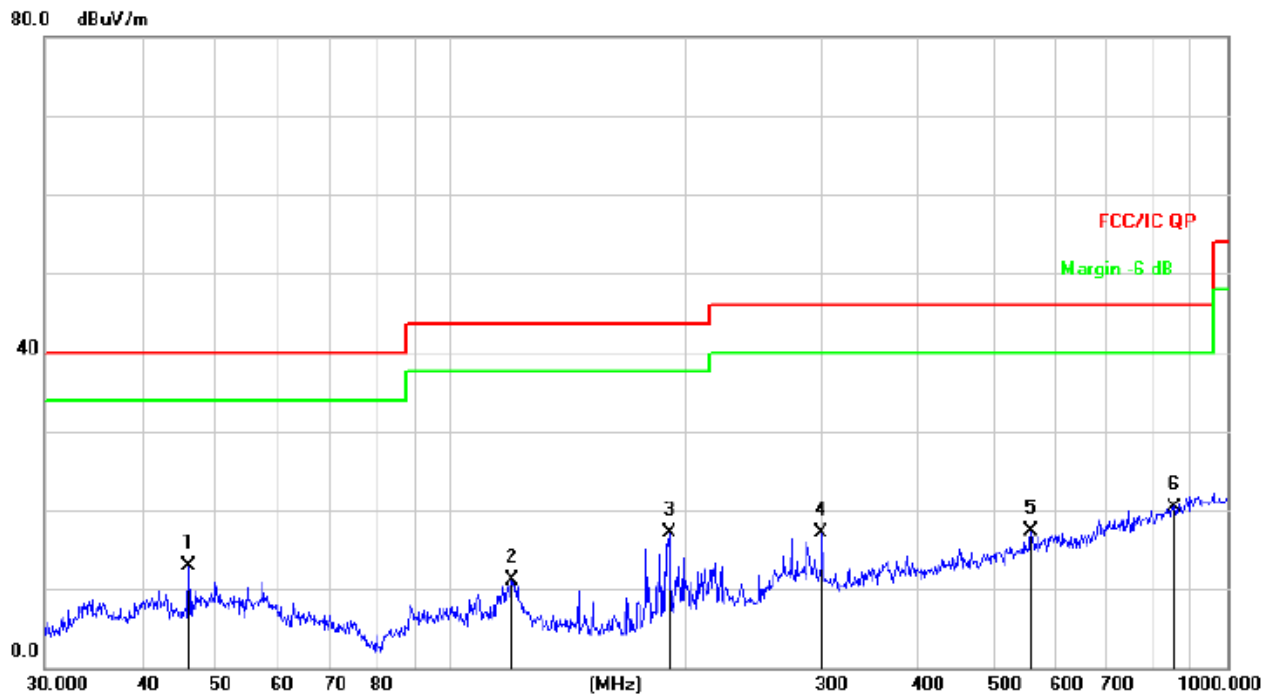
7.3 Test Procedure

30MHz ~ 1GHz:

- a. The Product was placed on the nonconductive turntable 0.8 m above the ground at a chamber.
- b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

7.4 Test Result

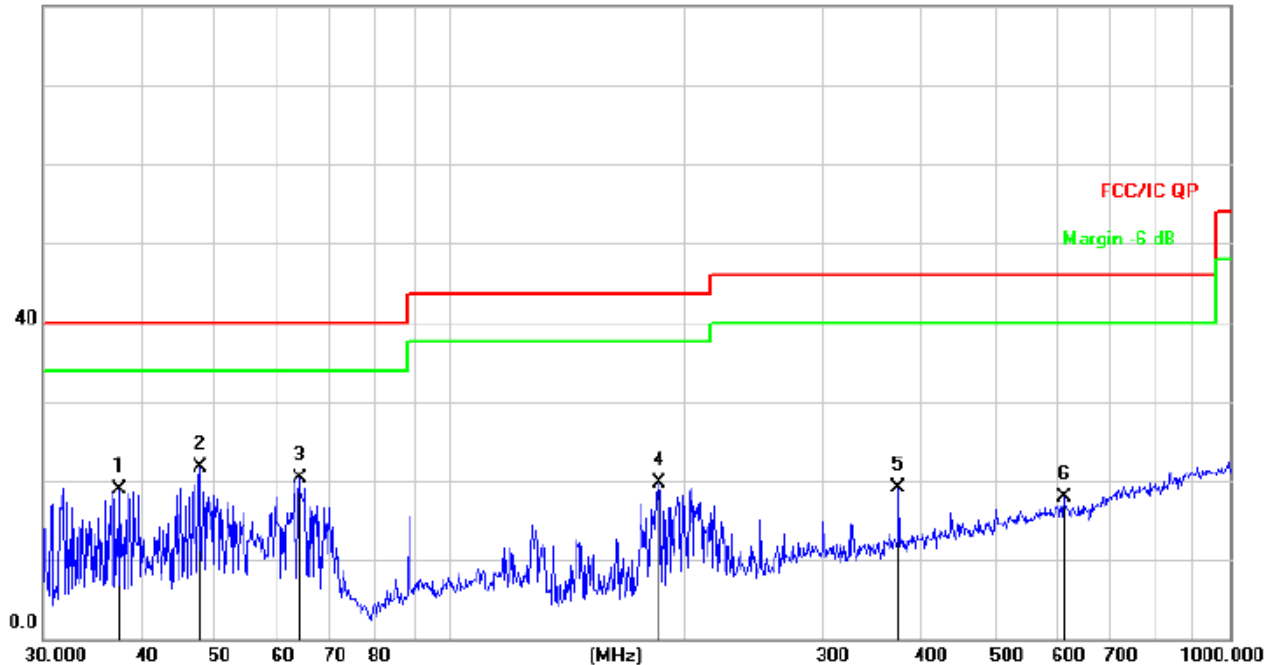
Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Horizontal
Test Voltage :	AC 120V/60Hz	Test Mode:	Charging+ Working



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	cm	degree	Comment
1		46.0164	27.90	-15.07	12.83	40.00	-27.17	QP		
2		119.8556	28.57	-17.56	11.01	43.50	-32.49	QP		
3		191.0738	33.98	-16.87	17.11	43.50	-26.39	QP		
4		300.3672	30.74	-13.59	17.15	46.00	-28.85	QP		
5		558.7302	24.85	-7.48	17.37	46.00	-28.63	QP		
6	*	854.0247	22.84	-2.44	20.40	46.00	-25.60	QP		

Temperature:	26 °C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Vertical
Test Voltage :	AC 120V/60Hz	Test Mode:	Charging+ Working

80.0 dBuV/m



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		37.6798	34.75	-15.84	18.91	40.00	-21.09	QP		
2	*	47.6586	36.62	-14.98	21.64	40.00	-18.36	QP		
3		63.9828	37.17	-16.82	20.35	40.00	-19.65	QP		
4		185.1379	36.98	-17.25	19.73	43.50	-23.77	QP		
5		375.9385	30.78	-11.64	19.14	46.00	-26.86	QP		
6		612.0642	24.57	-6.59	17.98	46.00	-28.02	QP		

Remark:

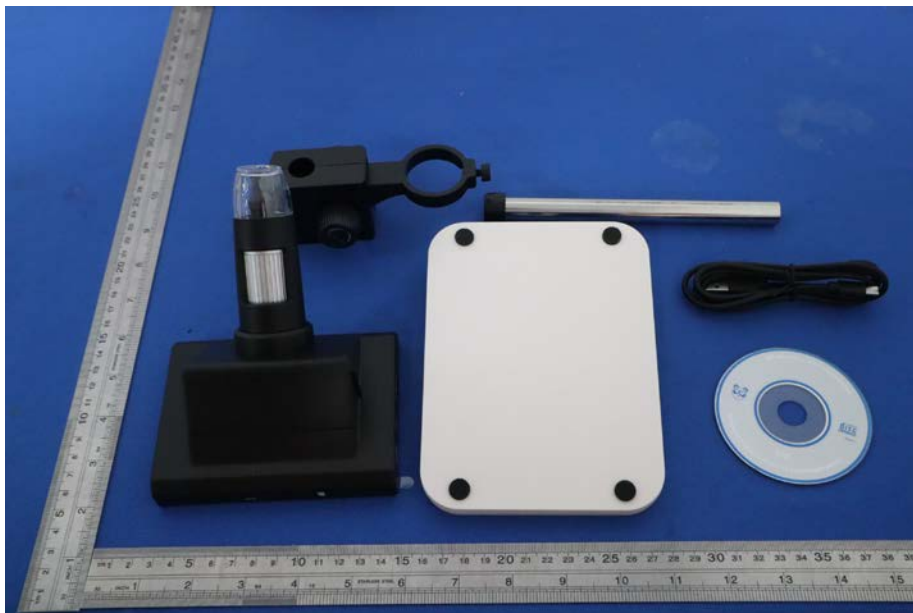
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

8. EUT PHOTOGRAPHS

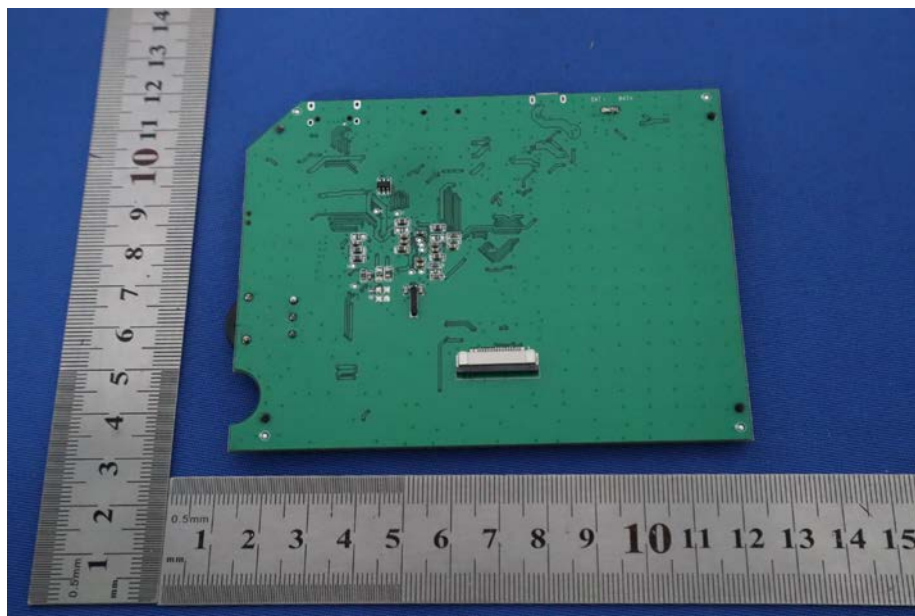
EUT Photo 1



EUT Photo 2



EUT Photo 3



EUT Photo 4

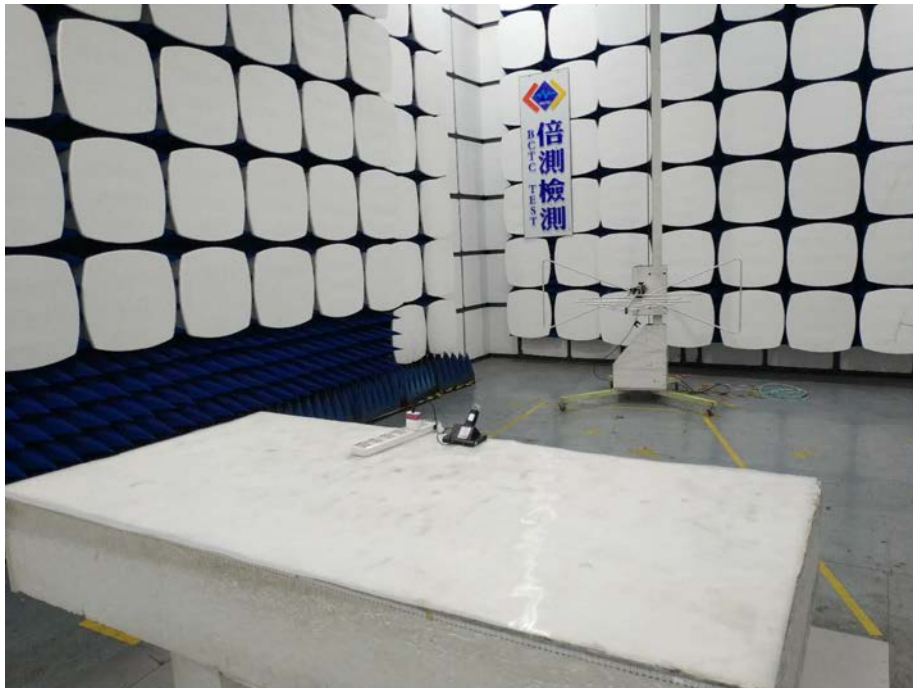


9. EUT TEST SETUP PHOTOGRAPHS

Conducted emission



Radiated emission



STATEMENT

The equipment lists are traceable to the national reference standards.

The test report can not be partially copied unless prior written approval is issued from our lab.

The test report is invalid without stamp of laboratory.

The test report is invalid without signature of person(s) testing and authorizing.

The test process and test result is only related to the Unit Under Test.

The quality system of our laboratory is in accordance with ISO/IEC17025.

If there is any objection to report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

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***** END *****