TEST REPORT

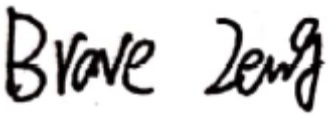
Report No.:	BCTC2111707978E
Applicant:	EnvisionWare INC
Product Name:	DeskPad RFID Reader
Model/Type reference:	RFID-READER-KIT PL DeskPad XR BL-U
Tested Date:	2021-11-26 to 2021-12-06
Issued Date:	2022-01-19

Shenzhen BCTC Testing Co., Ltd.

FCC ID: 2ALTGPLXRBLU

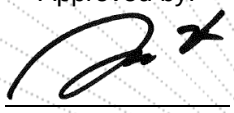
Product Name:	DeskPad RFID Reader
Trademark:	EnvisionWare
Model/Type Ref.:	RFID-READER-KIT PL DeskPad XR BL-U
Prepared For:	EnvisionWare INC
Address:	One Sugarloaf Centre 1960 Satellite Blvd, Suite 4100 Duluth, GA 30097-4127 United States
Manufacturer:	EnvisionWare INC
Address:	One Sugarloaf Centre 1960 Satellite Blvd, Suite 4100 Duluth, GA 30097-4127 United States
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	2021-11-26
Sample tested Date:	2021-11-26 to 2021-12-06
Issue Date:	2022-01-19
Report No.:	BCTC2111707978E
Test Standards	FCC Part15.225 ANSI C63.10-2013
Test Results	PASS
Remark:	This is NFC radio test report.

Tested by:



Brave Zeng/ Project Handler

Approved by:



Zero Zhou/Reviewer

Table Of Content

(Note: N/A Means Not Applicable)

1. Version

Report No.	Issue Date	Description	Approved
BCTC2111707978E	2022-01-19	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

No.	Test Parameter	Clause No	Results
1	15.207	Conducted Emission	PASS
2	Part 15.209(a), 15.225(d)	Radiated Spurious Emission	PASS
3	15.215	Bandwidth	PASS
4	Part 15.209(a), 15.225(a)(b)(c)(d)	Band Edge Emission	PASS
5	Part 15.225(e)	Transmitter Frequency Stability (Temperature & Voltage Variation)	PASS
6	15.203	Antenna Requirement	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.

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.3dB
2	3m chamber Radiated spurious emission(9KHz-30MHz)	U=3.7dB
3	3m chamber Radiated spurious emission(1GHz-18GHz)	U=4.5dB
4	3m chamber Radiated spurious emission(18GHz-40GHz)	U=3.34dB
5	Conducted Emission (150kHz-30MHz)	U=3.20dB
6	Conducted Adjacent channel power	U=1.38dB
7	Conducted output power uncertainty Above 1G	U=1.576dB
8	Conducted output power uncertainty below 1G	U=1.28dB
9	humidity uncertainty	U=5.3%
10	Temperature uncertainty	U=0.59℃

4. Product Information And Test Setup

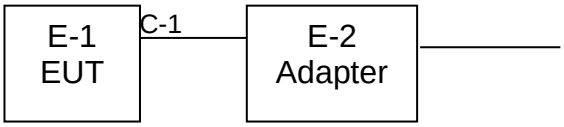
4.1 Product Information

Model/Type Ref.:	RFID-READER-KIT PL DeskPad XR BL-U
Model differences:	The difference between 2 boards of PR-B1-COMM Rev.F4 are power IC. One board uses TPS54202/TPS54202H/TPS54302 switching power IC convert the DC 12V to DC 8.6V. The other board uses LM317 low dropout regulator convert the DC 12V to DC 8.6V
Hardware Version:	N/A
Software Version:	N/A
Operation Frequency:	13.56MHz
Modulation Type:	ASK
Number Of Channel	1 CH
Antenna installation:	Coil Antenna
Antenna Gain:	0 dBi
Ratings:	AC 120V/60Hz
Adapter:	Model: B3G18W-1201000A Input: 100-240V~0.5A Max 50/60Hz Output: DC 12V 1A

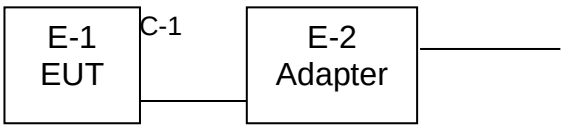
4.2 Test Setup Configuration

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

Conducted Emission:



Radiated Spurious Emission



4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
E-1	DeskPad RFID Reader	EnvisionWare	RFID-READER-KIT PL DeskPad XR BL-U	N/A	EUT
E-2	Adapter	N/A	B3G18W-1201000A	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C-1	N/A	N/A	0.8M	DC cable unshielded

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 Channel List

Channel List	
Channel	Frequency(MHz)
01	13.56

4.5 Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

For All Mode	Description
Mode 1	TX Mode
Mode 2	TX Mode

Link mode(conducted emission and Radiated emission)	
Final Test Mode	Description
Mode 1	TX Mode
Mode 2	TX Mode

Notes:
(1) The measurements are performed at the highest, middle, lowest available channels.
(2) Fully-charged battery is used during the test.
(3) To test the differences between two models, and the Mode 1 is using TPS54202 / TPS54202H/TPS54302, Mode 2 LM317 low pressure differential regulator is adopted.

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:1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.
FCC Test Firm Registration Number: 712850
IC Registered No.: 23583

5.2 Test Instrument Used

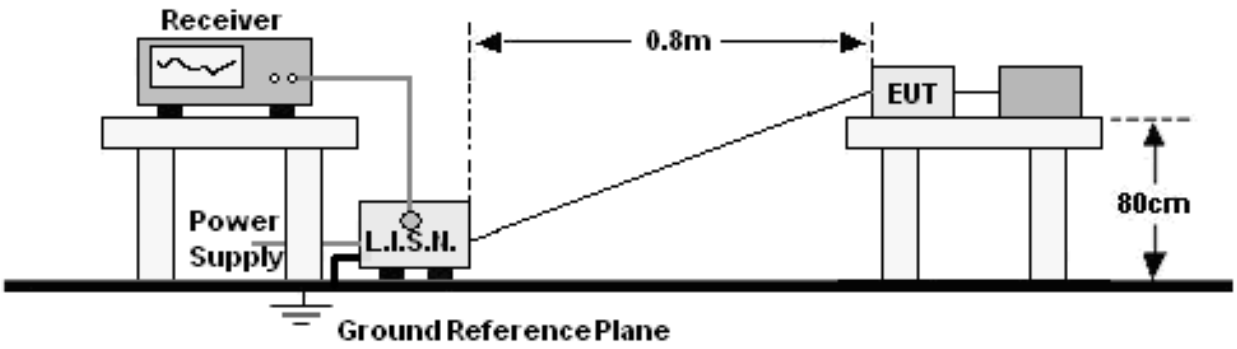
Conducted emissions Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Receiver	R&S	ESR3	102075	May 28, 2021	May 27, 2022
LISN	R&S	ENV216	101375	May 28, 2021	May 27, 2022
Software	Frad	EZ-EMC	EMC-CON 3A1	\	\

RF Conducted Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Power Metter	Keysight	E4419	\	May 28, 2021	May 27, 2022
Power Sensor (AV)	Keysight	E9300A	\	May 28, 2021	May 27, 2022
Signal Analyzer20kHz-26.5GHz	Keysight	N9020A	MY49100060	May 28, 2021	May 27, 2022
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	\	May 28, 2021	May 27, 2022

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	May 28, 2021	May 27, 2022
Receiver	R&S	ESRP	101154	May 28, 2021	May 27, 2022
Amplifier	SKET	LAPA_01G18G-45dB	\	May 28, 2021	May 27, 2022
Amplifier	Schwarzbeck	BBV9744	9744-0037	May 28, 2021	May 27, 2022
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	942	Jun. 01, 2021	May 31, 2022
Horn Antenna	Schwarzbeck	BBHA9120D	1541	Jun. 02, 2021	Jun. 01, 2022
Horn Antenn(18GHz-40GHz)	Schwarzbeck	BBHA9170	00822	Jun. 15, 2021	Jun. 14, 2022
Amplifier(18GHz-40GHz)	MITEQ	TTA1840-35-HG	2034381	May 28, 2021	May 27, 2022
Loop Antenna(9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Jun. 02, 2021	Jun. 01, 2022
RF cables1(9kHz-30MHz)	Huber+Suhnar	9kHz-30MHz	B1702988-0008	May 28, 2021	May 27, 2022
RF cables2(30MHz-1GHz)	Huber+Suhnar	30MHz-1GHz	1486150	May 28, 2021	May 27, 2022
RF cables3(1GHz-40GHz)	Huber+Suhnar	1GHz-40GHz	1607106	May 28, 2021	May 27, 2022
Power Metter	Keysight	E4419	\	May 28, 2021	May 27, 2022
Power Sensor (AV)	Keysight	E9300A	\	May 28, 2021	May 27, 2022
Signal Analyzer20kHz-26.5GHz	Keysight	N9020A	MY491000600	May 28, 2021	May 27, 2022
Spectrum Analyzer9kHz-40GHz	R&S	FSP40	\	May 28, 2021	May 27, 2022
Software	Frad	EZ-EMC	FA-03A2 RE	\	\

6. Conducted Emissions

6.1 Block Diagram Of Test Setup



6.2 Limit

FREQUENCY (MHz)	Limit (dBuV)	
	Quas-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

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

6.3 Test Procedure

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

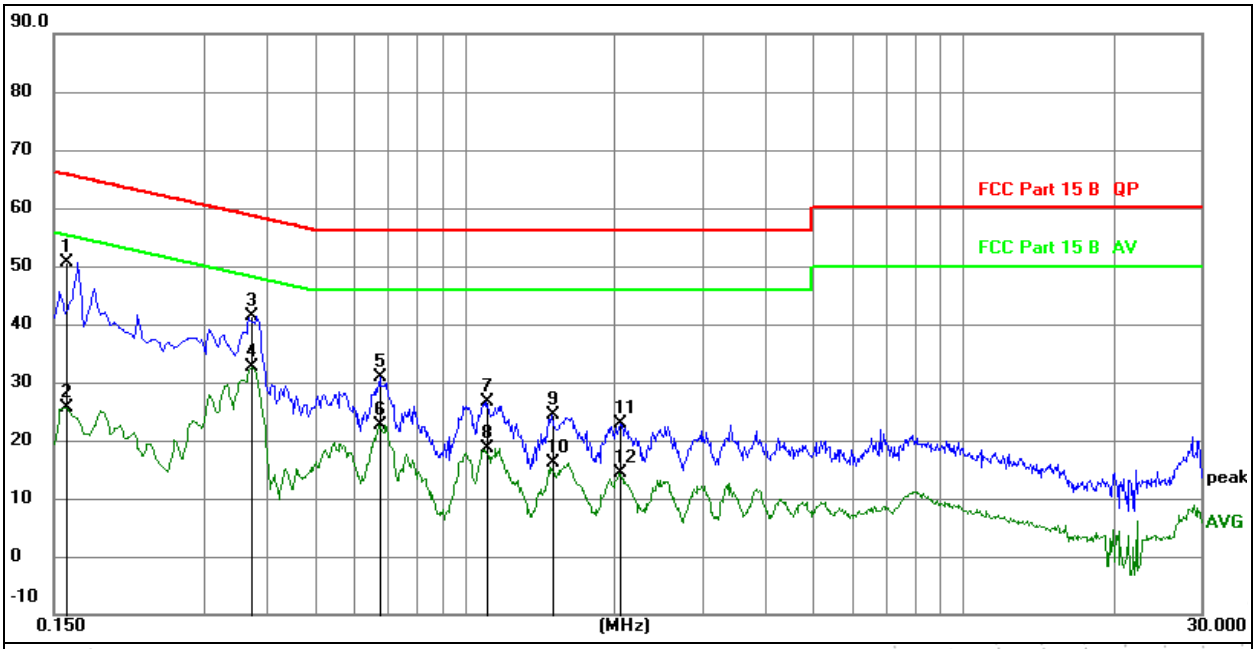
a. The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak 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.
c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4 EUT operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

6.4 Test Result

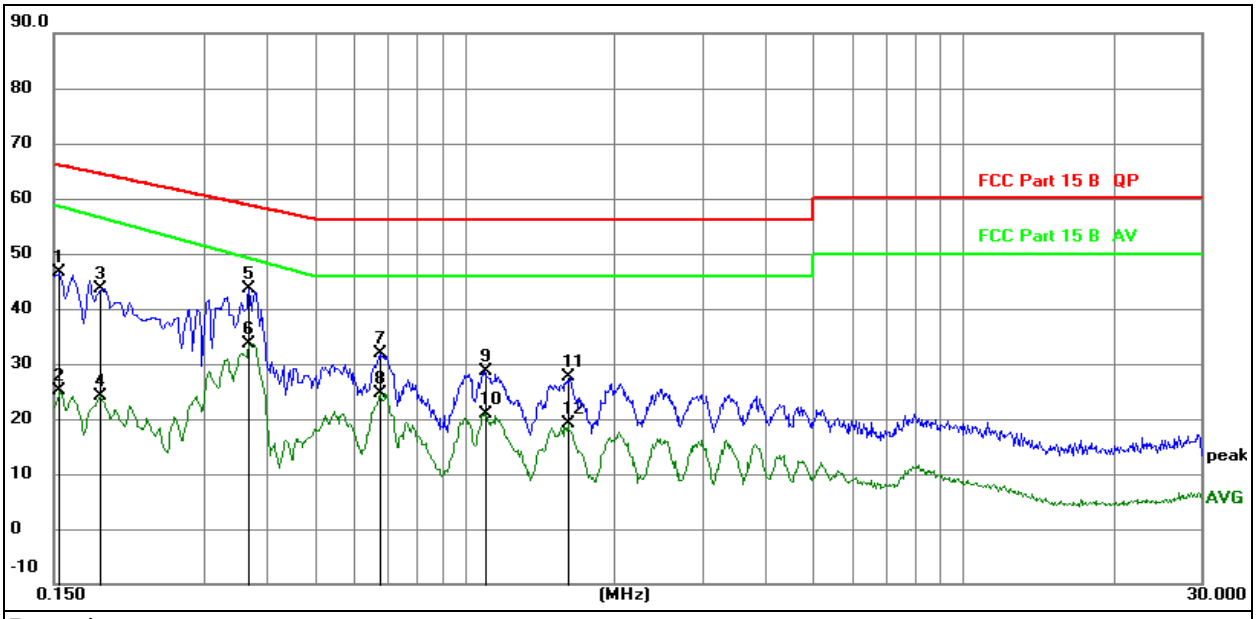
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Line
Test Voltage :	AC120/60Hz	Test Mode:	Mode 1



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

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1	*	0.1590	31.07	19.61	50.68	65.52	-14.84	QP
2		0.1590	6.13	19.61	25.74	55.52	-29.78	AVG
3		0.3750	21.86	19.62	41.48	58.39	-16.91	QP
4		0.3750	12.97	19.62	32.59	48.39	-15.80	AVG
5		0.6765	11.30	19.62	30.92	56.00	-25.08	QP
6		0.6765	3.12	19.62	22.74	46.00	-23.26	AVG
7		1.1085	7.03	19.63	26.66	56.00	-29.34	QP
8		1.1085	-1.08	19.63	18.55	46.00	-27.45	AVG
9		1.4955	4.83	19.63	24.46	56.00	-31.54	QP
10		1.4955	-3.39	19.63	16.24	46.00	-29.76	AVG
11		2.0535	3.28	19.63	22.91	56.00	-33.09	QP
12		2.0535	-5.29	19.63	14.34	46.00	-31.66	AVG

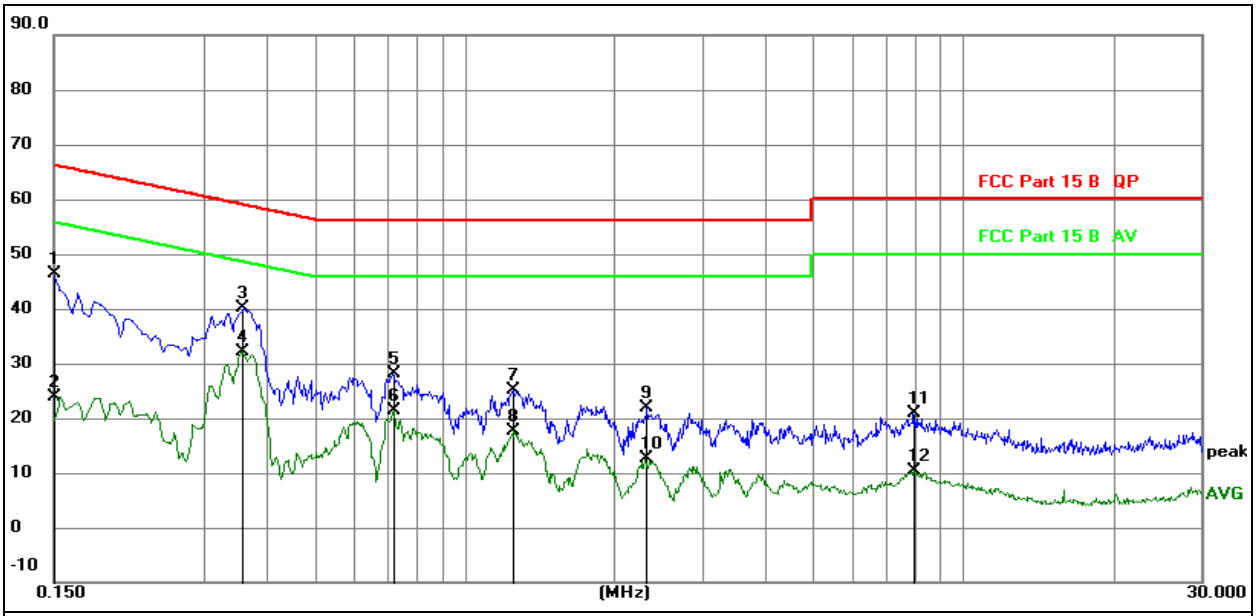
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Neutral
Test Voltage :	AC120/60Hz	Test Mode:	Mode 1



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

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.1539	27.08	19.61	46.69	65.79	-19.10	QP
2		0.1539	5.57	19.61	25.18	58.72	-33.54	AVG
3		0.1853	24.12	19.61	43.73	64.24	-20.51	QP
4		0.1853	4.57	19.61	24.18	56.72	-32.54	AVG
5	*	0.3692	23.93	19.62	43.55	58.52	-14.97	QP
6		0.3692	14.07	19.62	33.69	49.27	-15.58	AVG
7		0.6753	12.15	19.62	31.77	56.00	-24.23	QP
8		0.6753	4.97	19.62	24.59	46.00	-21.41	AVG
9		1.0939	8.92	19.63	28.55	56.00	-27.45	QP
10		1.0939	1.35	19.63	20.98	46.00	-25.02	AVG
11		1.6105	8.10	19.63	27.73	56.00	-28.27	QP
12		1.6105	-0.53	19.63	19.10	46.00	-26.90	AVG

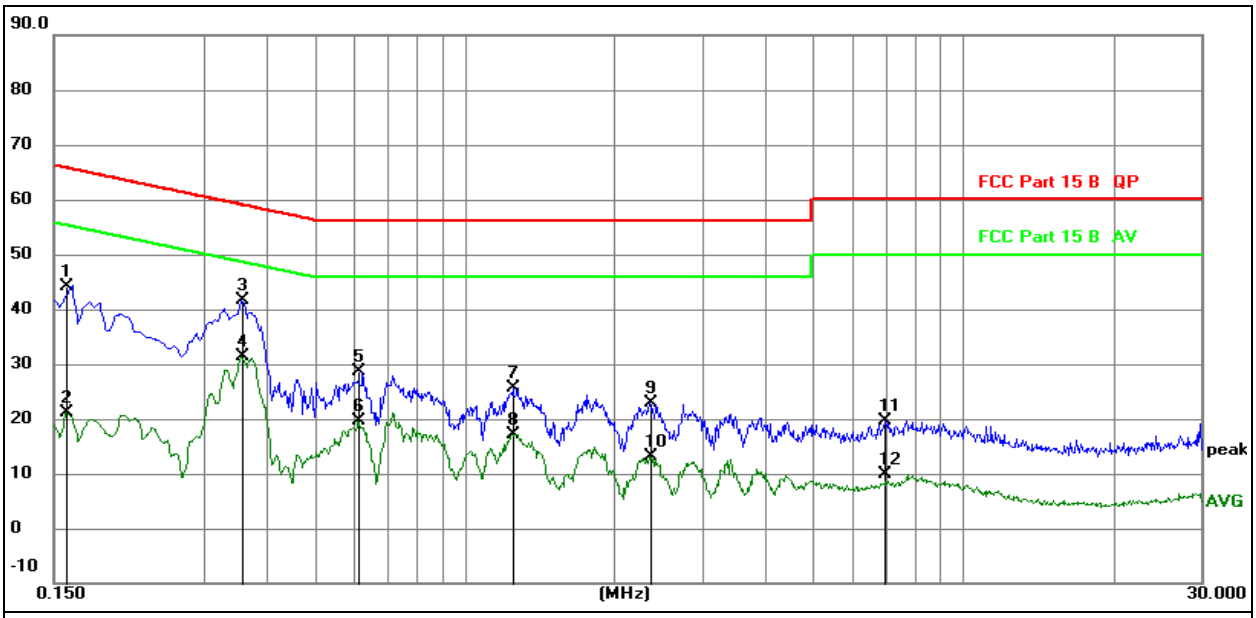
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Line
Test Voltage :	AC120/60Hz	Test Mode:	Mode 2



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

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.1500	26.82	19.61	46.43	66.00	-19.57	QP
2		0.1500	4.36	19.61	23.97	56.00	-32.03	AVG
3		0.3558	20.42	19.62	40.04	58.83	-18.79	QP
4	*	0.3558	12.48	19.62	32.10	48.83	-16.73	AVG
5		0.7160	8.40	19.62	28.02	56.00	-27.98	QP
6		0.7160	1.69	19.62	21.31	46.00	-24.69	AVG
7		1.2488	5.52	19.63	25.15	56.00	-30.85	QP
8		1.2488	-2.07	19.63	17.56	46.00	-28.44	AVG
9		2.2968	2.20	19.64	21.84	56.00	-34.16	QP
10		2.2968	-6.94	19.64	12.70	46.00	-33.30	AVG
11		7.9353	1.14	19.76	20.90	60.00	-39.10	QP
12		7.9353	-9.26	19.76	10.50	50.00	-39.50	AVG

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101kPa	Phase :	Neutral
Test Voltage :	AC120/60Hz	Test Mode:	Mode 2



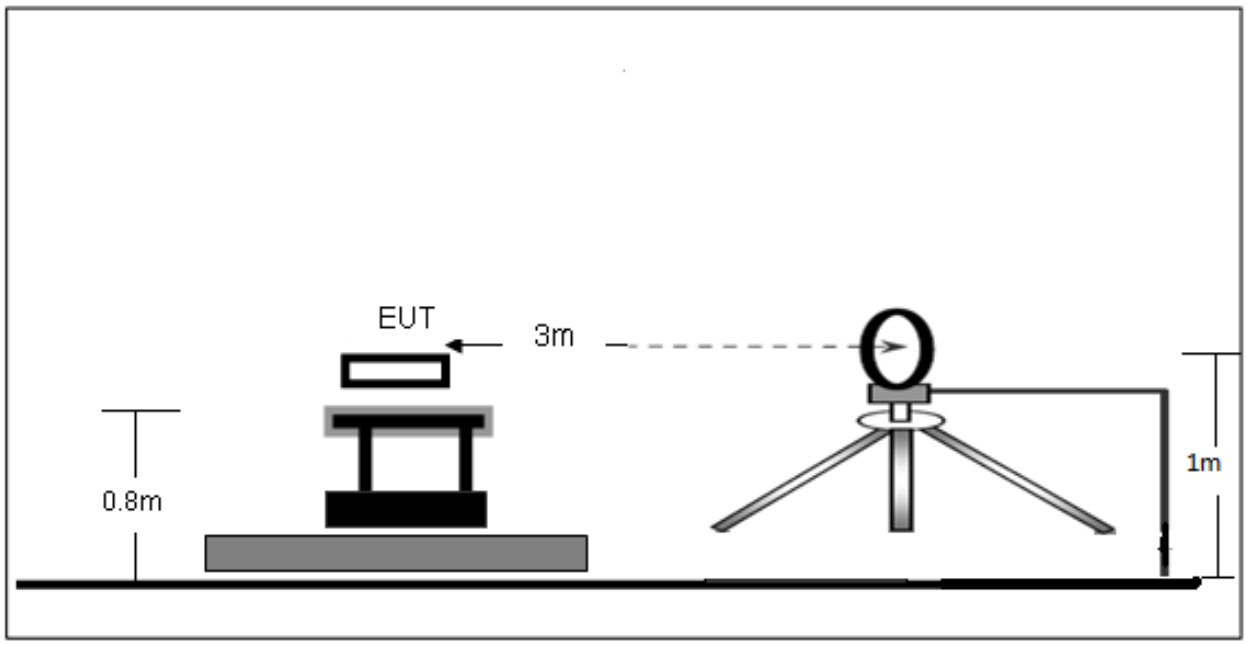
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz		dB	dBuV	dBuV	dB	Detector
1		0.1590	24.64	19.61	44.25	65.52	-21.27	QP
2		0.1590	1.52	19.61	21.13	55.52	-34.39	AVG
3	*	0.3570	21.92	19.62	41.54	58.80	-17.26	QP
4		0.3570	11.64	19.62	31.26	48.80	-17.54	AVG
5		0.6134	8.90	19.62	28.52	56.00	-27.48	QP
6		0.6134	-0.08	19.62	19.54	46.00	-26.46	AVG
7		1.2525	5.90	19.63	25.53	56.00	-30.47	QP
8		1.2525	-2.52	19.63	17.11	46.00	-28.89	AVG
9		2.3505	3.32	19.64	22.96	56.00	-33.04	QP
10		2.3505	-6.54	19.64	13.10	46.00	-32.90	AVG
11		6.9585	-0.01	19.74	19.73	60.00	-40.27	QP
12		6.9585	-9.90	19.74	9.84	50.00	-40.16	AVG

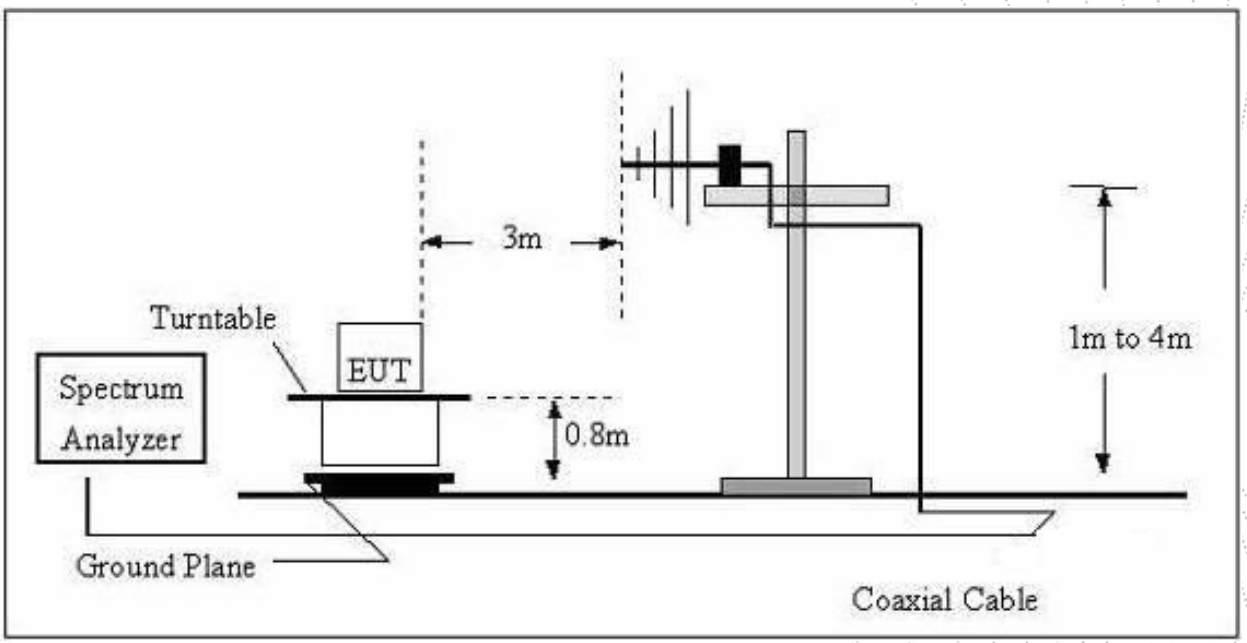
7. Radiated Emissions

7.1 Block Diagram Of Test Setup

（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



7.2 Limit

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.

Frequency	Field Strength	Distance	Field Strength Limit at 3m Distance	
(MHz)	uV/m	(m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))}$ + 80
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))}$ + 40
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)}$ + 40
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

Below 1GHz test procedure as below:
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Above 1GHz test procedure as below:
g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel.
Note:
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

7.3 EUT Operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

7.4 Test Result

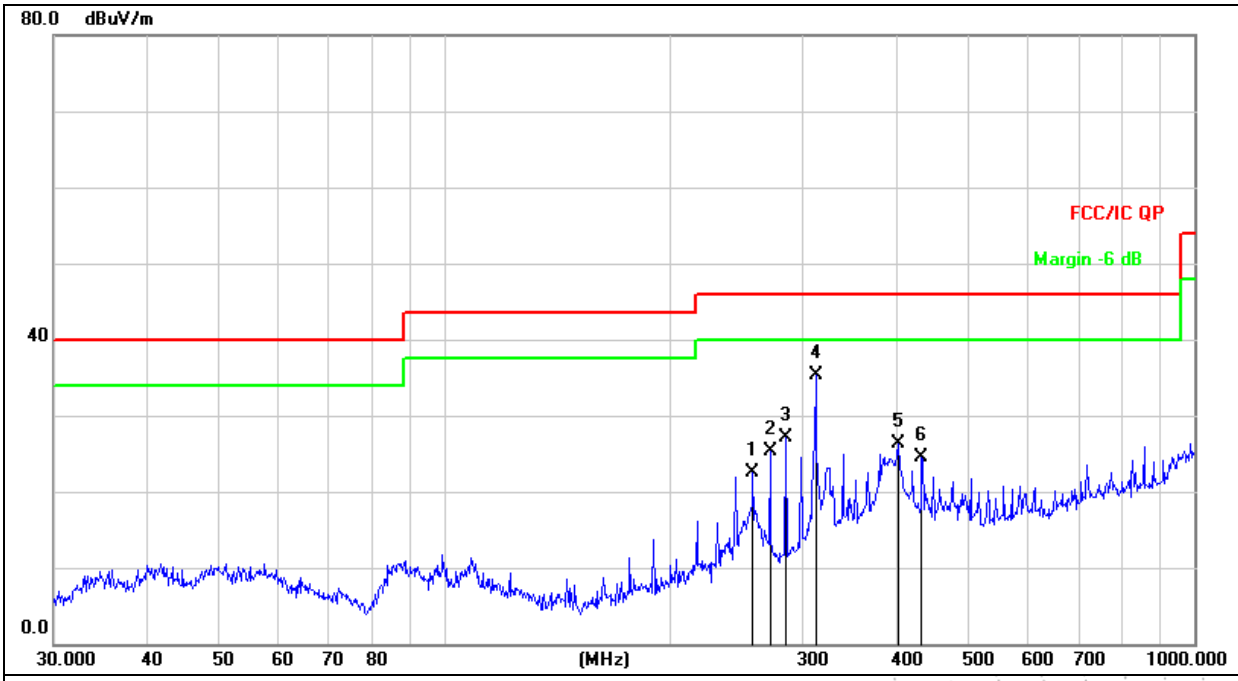
Temperature：	26℃	Relative Humidity：	54%
Pressure：	101 kpa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	Mode 1	Polarization：	-

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
0.0788	51.23	20.15	71.38	129.67	-58.29	PK
0.0788	45.73	20.15	65.88	109.67	-43.79	AV
0.2874	51.32	20.33	71.65	118.43	-46.78	PK
0.2874	44.38	20.33	64.71	98.43	-33.72	AV
0.3959	63.86	20.55	84.41	116.48	-32.07	PK
0.3959	62.53	20.55	83.08	96.48	-13.40	AV
0.9742	36.25	20.64	56.89	67.83	-10.94	QP
1.6515	36.14	21.26	57.40	63.25	-5.85	QP
1.7001	37.35	22.32	59.67	62.99	-3.32	QP

Note:
Pre-scan in the all of mode, the worst case in of was recorded.
Factor = antenna factor + cable loss – pre-amplifier.
Margin = Emission Level- Limit.

Between 30MHz – 1GHz

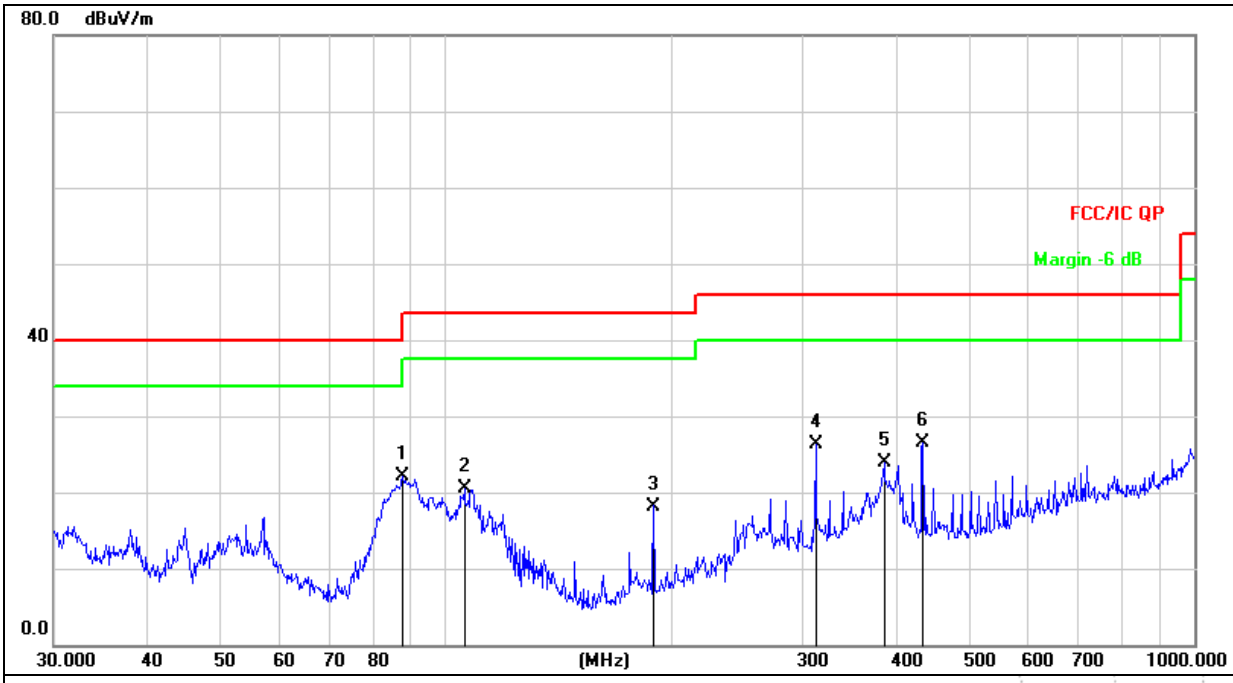
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Horizontal
Test Mode:	Mode 1	Remark:	N/A



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

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		257.4222	37.34	-14.92	22.42	46.00	-23.58	QP
2		271.3246	39.85	-14.49	25.36	46.00	-20.64	QP
3		284.9767	41.11	-14.07	27.04	46.00	-18.96	QP
4	*	312.1794	48.52	-13.27	35.25	46.00	-10.75	QP
5		401.8385	37.30	-11.05	26.25	46.00	-19.75	QP
6		432.5457	34.83	-10.36	24.47	46.00	-21.53	QP

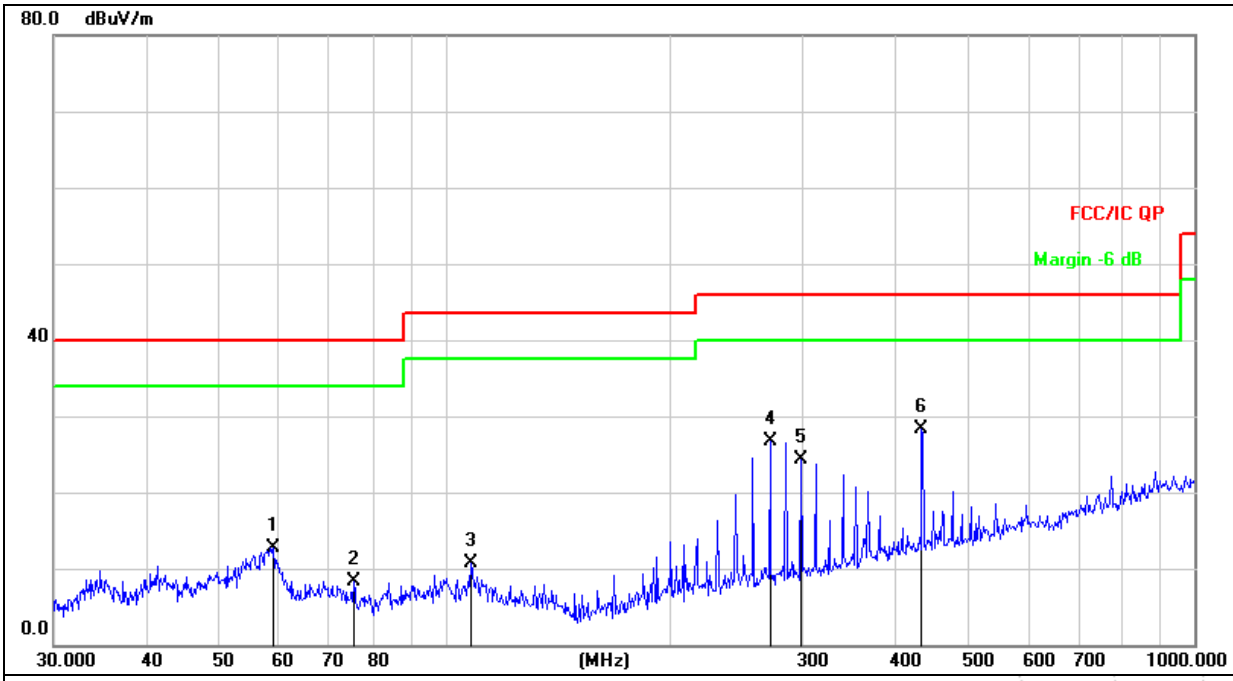
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Vertical
Test Mode:	Mode 1	Remark:	N/A



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

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1	*	87.7248	40.69	-18.63	22.06	40.00	-17.94	QP
2		106.0126	37.09	-16.67	20.42	43.50	-23.08	QP
3		189.7385	35.16	-16.96	18.20	43.50	-25.30	QP
4		312.1794	39.62	-13.27	26.35	46.00	-19.65	QP
5		385.2805	35.38	-11.43	23.95	46.00	-22.05	QP
6		434.0651	36.93	-10.33	26.60	46.00	-19.40	QP

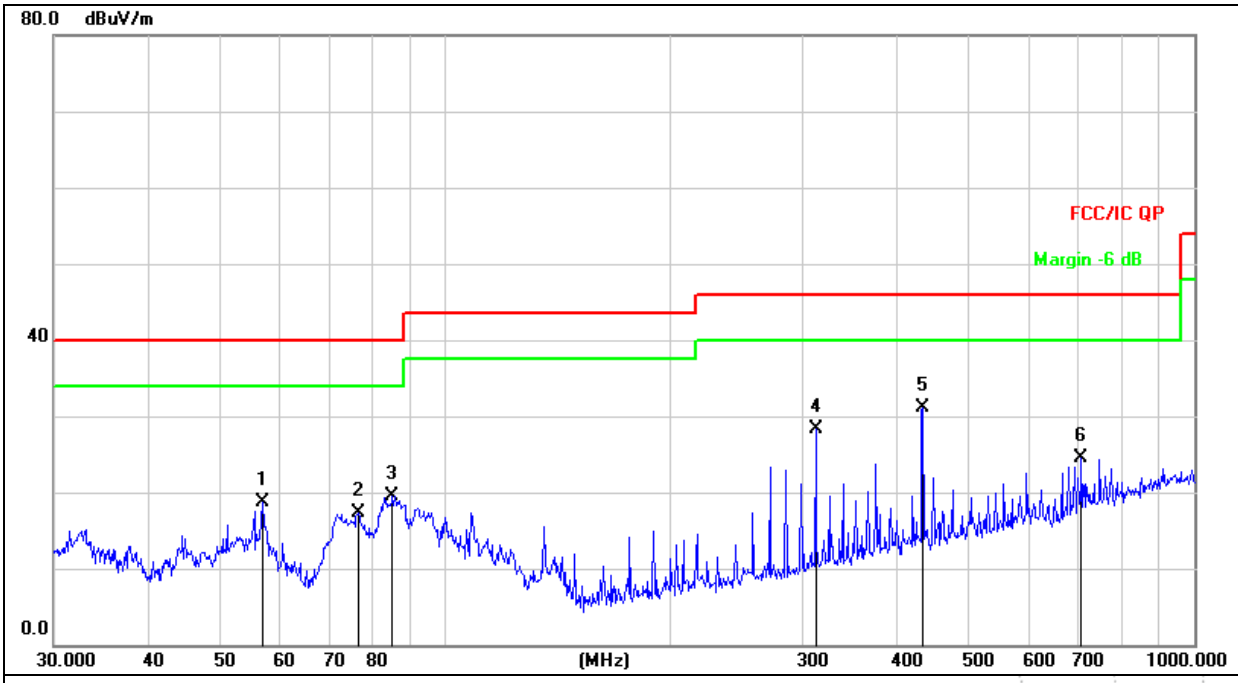
Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Horizontal
Test Mode:	Mode 2	Remark:	N/A



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

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		59.0251	28.53	-15.81	12.72	40.00	-27.28	QP
2		75.4464	27.65	-19.40	8.25	40.00	-31.75	QP
3		108.2667	27.59	-16.81	10.78	43.50	-32.72	QP
4		271.3246	41.16	-14.49	26.67	46.00	-19.33	QP
5		298.2681	37.87	-13.65	24.22	46.00	-21.78	QP
6	*	432.5457	38.58	-10.36	28.22	46.00	-17.78	QP

Temperature:	26 ℃	Relative Humidity:	54%
Pressure:	101KPa	Phase :	Vertical
Test Mode:	Mode 2	Remark:	N/A



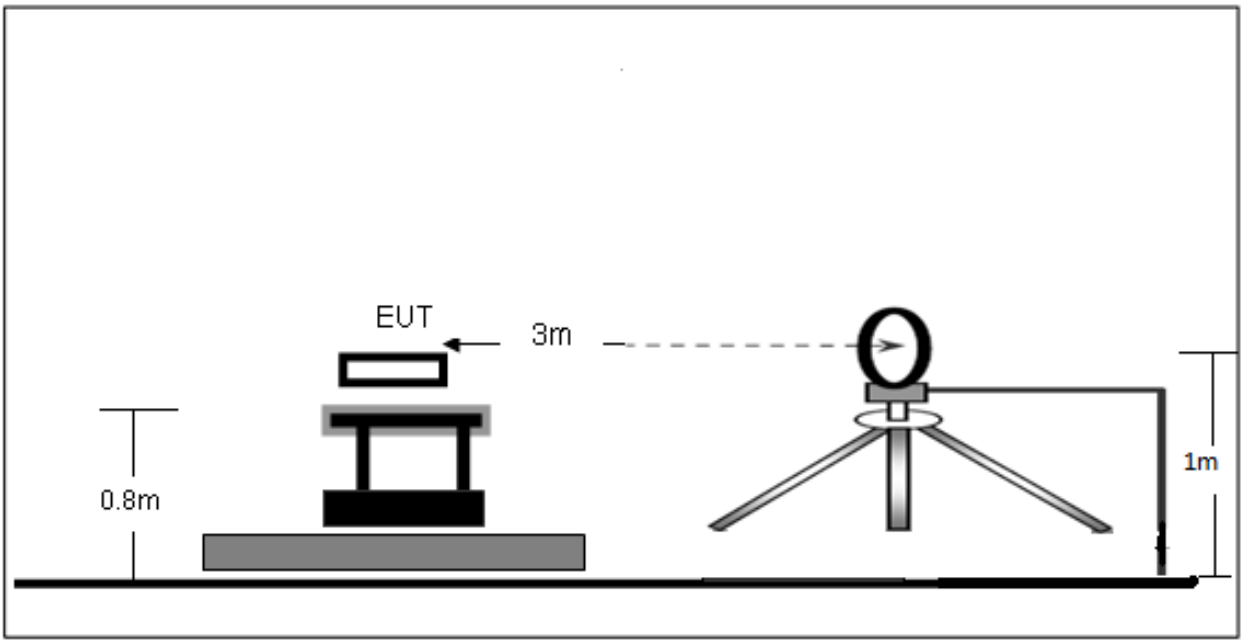
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		56.9912	34.28	-15.59	18.69	40.00	-21.31	QP
2		76.5121	37.02	-19.64	17.38	40.00	-22.62	QP
3		84.9995	38.79	-19.26	19.53	40.00	-20.47	QP
4		312.1794	41.57	-13.27	28.30	46.00	-17.70	QP
5	*	434.0651	41.37	-10.33	31.04	46.00	-14.96	QP
6		706.6999	29.49	-5.03	24.46	46.00	-21.54	QP

8. Radiated Band Emission Measurement

8.1 Block Diagram Of Test Setup

Radiated Emission Test-Up Frequency Below 30MHz



8.2 Limit

FCC Part15 C Section 15.209 and 15.225

LIMITS OF RADIATED EMISSION MEASUREMENT (Below 30MHz)
a. 15.848 microvolts/m (84 dBμ V/m) at 30 m, within the band 13.553– 13.567 MHz.
b. 334 microvolts/m (50.5 dBμ V/m) at 30 m, within the bands 13.410– 13.553 MHz and 13.567– 13.710 MHz.
c. 106 microvolts/m (40.5 dBμ V/m) at 30 m, within the bands 13.110– 13.410 MHz and 13.710– 14.010 MHz.
d. 30 microvolts/m (29.5 dBμ V/m) at 30 m, outside the band 13.110– 14.010 MHz.

Notes:
(1) The limit for radiated test was performed according to FCC PART 15C.
(2) The tighter limit applies at the band edges.
(3) Emission level (dBuV/m)=20log Emission level (uV/m).

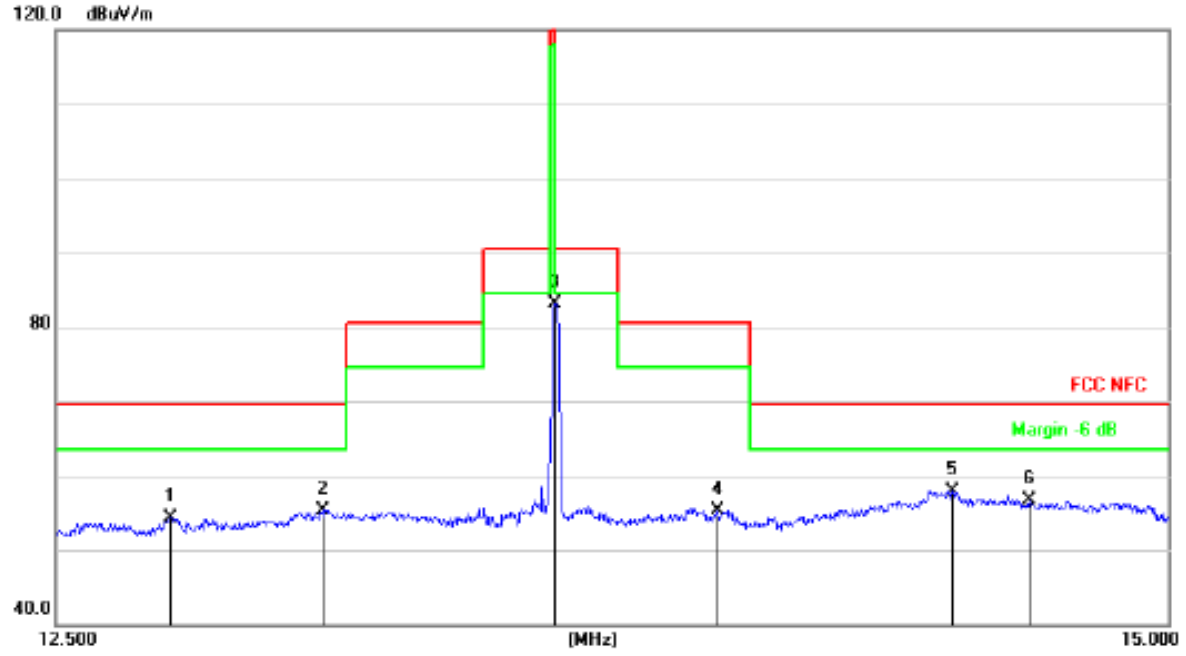
8.3 Test Procedure

a. The Product is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The maximum values of the field strength are recorded by adjusting the polarizations of the test antenna and rotating the turntable.
b. For each suspected emission, the Product was arranged to its worst case and then turn table was turned from 0 degrees to 360 degrees to find the maximum reading.
c. The test frequency analyzer system was set to Peak Detect (300Hz RBW in 9kHz to 150kHz and 10kHz RBW in 150kHz to 30MHz) Function and Specified Bandwidth with Maximum Hold Mode.

8.4 EUT Operating Conditions

The EUT tested system was configured as the statements of 4.5 Unless otherwise a special operating condition is specified in the follows during the testing.
The report only show the worst antenna Polarity's data.

8.5 Test Result

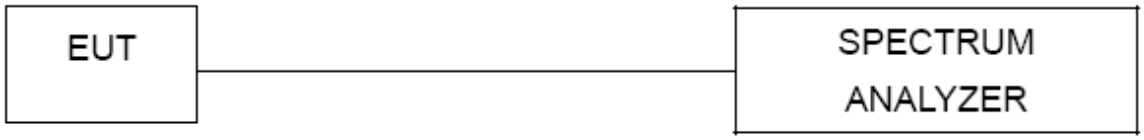


Note:
Factor = antenna factor + cable loss – pre-amplifier.
Margin = Emission Level- Limit.

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		12.7375	45.27	9.11	54.38	69.50	-15.12	peak
2		13.0600	46.41	8.99	55.40	69.50	-14.10	peak
3		13.5648	74.30	8.80	83.10	124.0	-40.90	peak
4		13.9323	45.91	9.41	55.32	80.50	-25.18	peak
5	*	14.4800	48.88	9.02	57.90	69.50	-11.60	peak
6		14.6623	47.51	9.11	56.62	69.50	-12.88	peak

9. Bandwidth Test

9.1 Block Diagram Of Test Setup



9.2 Test Procedure

FCC Part15 (15.215)	
Section	Test Item
15.215	Bandwidth

1. Set RBW = 1% to 5% of the OBW
2. Set the video bandwidth (VBW) ≥RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

9.3 EUT Operation Conditions

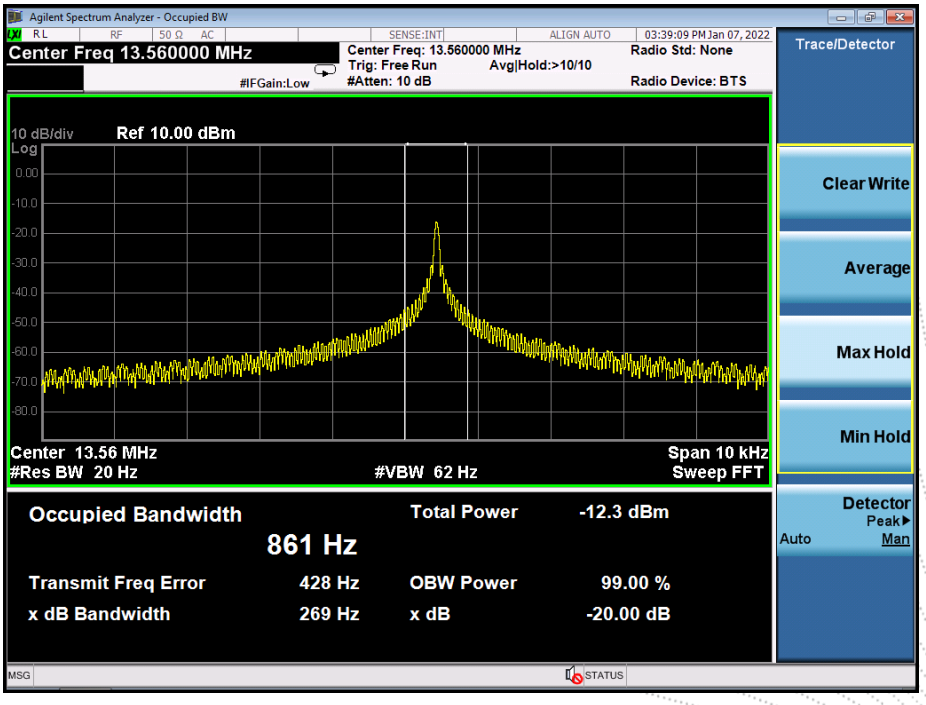
The EUT tested system was configured as the statements of 4.2 Unless otherwise a special operating condition is specified in the follows during the testing.

9.4 Test Result

Temperature：	26℃	Relative Humidity：	54%
Test Mode ：	ASK	Test Voltage ：	AC 120V/60Hz

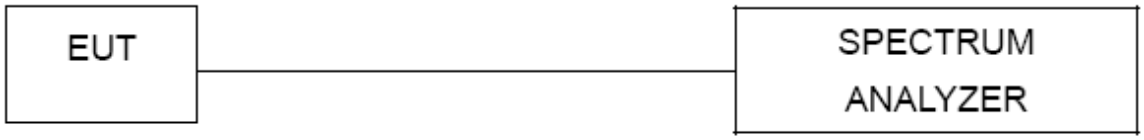
Frequency (MHz)	20dB bandwidth (kHz)
13.56	0.269

TX CH 01



10. Transmitter Frequency Stability

10.1 Block Diagram Of Test Setup



10.2 Limit

The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.
Limit: ±0.01% of 13.56MHz=1356Hz

10.3 Test Procedure

1. Set RBW = 10 kHz.
2. Set the video bandwidth (VBW) ≥RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. The transmitter output (antenna port) was connected to the spectrum analyzer.

10.4 EUT Operating Conditions

The EUT tested system was configured as the statements of 4.5 Unless otherwise a special operating condition is specified in the follows during the testing.

10.5 Test Result

Temperature：	26℃	Relative Humidity：	54%
Pressure：	101kPa	Test Voltage ：	AC 120V/60Hz
Test Mode ：	TX Mode		

Test Conditions			Frequency Deviation		Limit(Hz)	Result
Frequency MHz	Power(Vdc)	Temperature (℃)	Measured Freq.	Frequency Error(Hz)		
13.56	120	-20	13.56005	50	1356	PASS
	120	-10	13.56008	80	1356	
	120	0	13.56007	70	1356	
	120	10	13.56005	50	1356	
	120	20	13.56008	80	1356	
	120	30	13.56006	60	1356	
	120	40	13.56009	90	1356	
	120	50	13.56007	70	1356	
	102	20	13.56002	20	1356	
	138	20	13.56006	60	1356	

11. Antenna Requirement

11.1 Standard Requirement

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

11.2 EUT Antenna

The EUT antenna is Coil Antenna, It comply with the standard requirement.

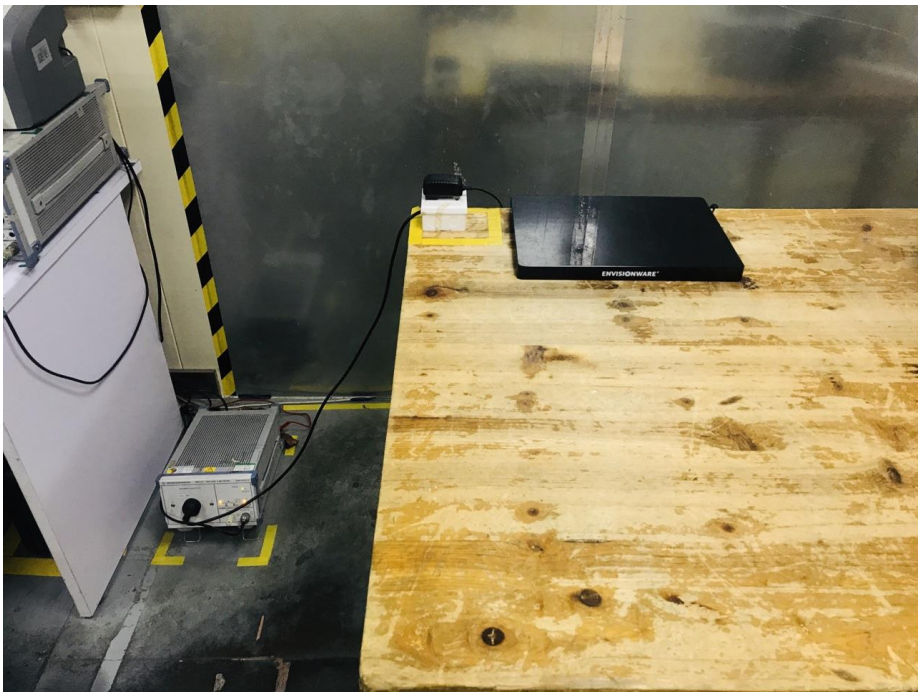
12. EUT Photographs

EUT Photo 1

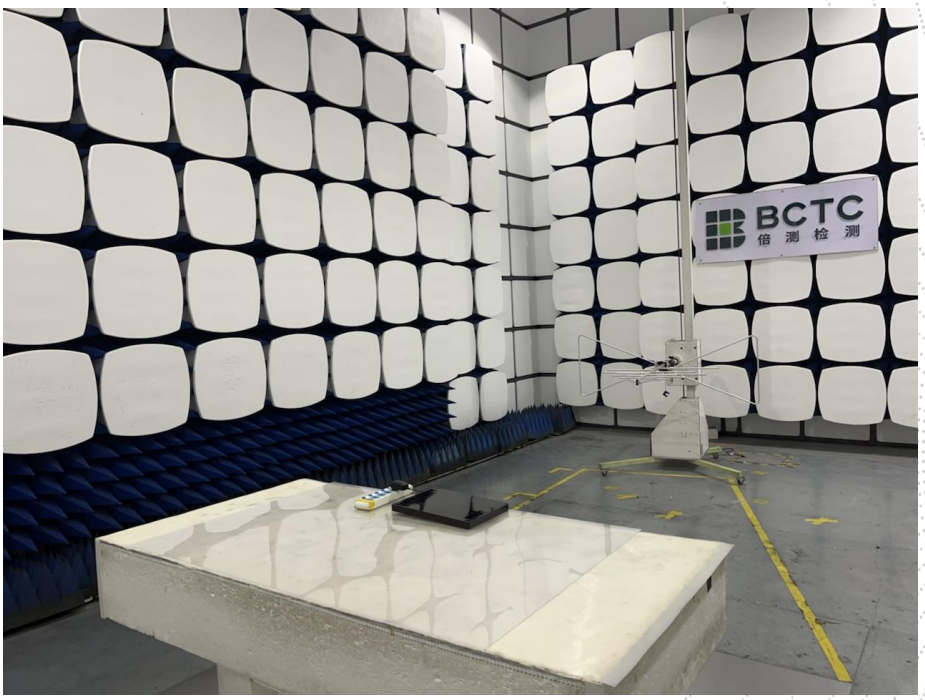
EUT Photo 2

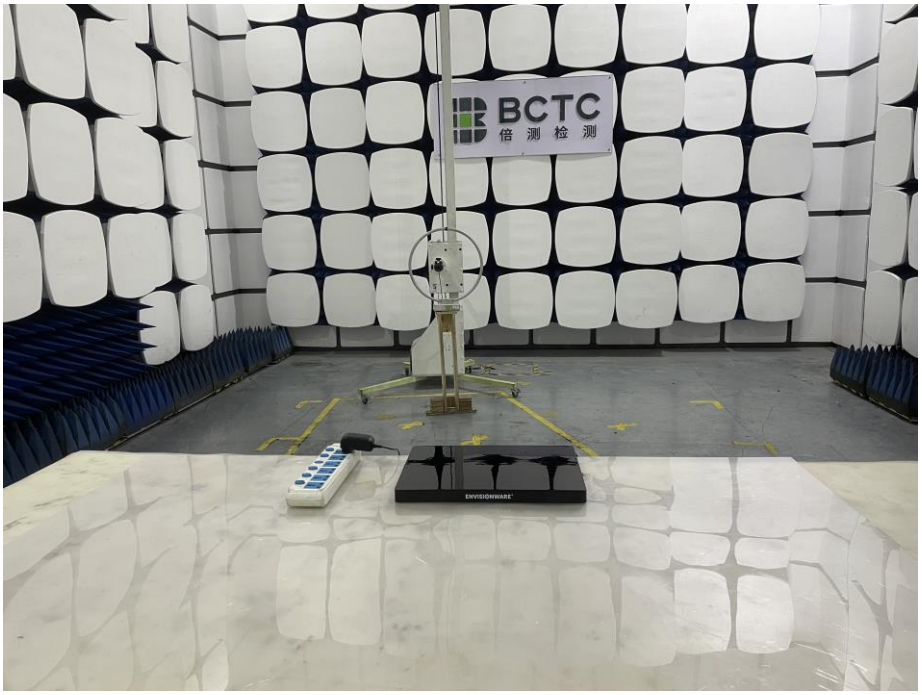
13. EUT Test Setup Photographs

Conducted Emission Photos



Radiated Measurement Photos




BCTC
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STATEMENT

1.The equipment lists are traceable to the national reference standards.

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

3.The test report is invalid without stamp of laboratory.

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

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

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

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

Address:
1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Tangwei, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL：400-788-9558

P.C.: 518103

FAX：0755-33229357

Website：http://www.chnbctc.com

E-Mail：bctc@bctc-lab.com.cn

※※※※※ **END** ※※※※※