

FCC Part 15C Test Report

Report No.: BCTC-FY161004424-3E

FCC ID: ZUN-OB1000

Product Name:	Time and Attendance Device
Trademark:	N/A
Model Name :	OB1000 OB2000, OB3000, GB1000, GB2000, GB3000, FS1000, FS2000, FS3000, A20TS, A30TS, A40TS.
Prepared For :	QINGDAO WINTEC SYSTEM CO., LTD
Address :	No.3 Building, No.151, Zhuzhou Road, Laoshan District, Qingdao, China
Prepared By :	Shenzhen BCTC Technology Co., Ltd.
Address :	No.101, Yousong Road, Longhua New District, Shenzhen, China
Test Date:	Oct. 15 – Oct. 21, 2016
Date of Report :	Oct. 21, 2016
Report No.:	BCTC-FY161004424-3E



TEST RESULT CERTIFICATION

Applicant's name	QII	NGD	AO	WIN	IEC S	SYS	I EM	CO.,	LID
		~ D						_	

Address: No.3 Building, No.151, Zhuzhou Road, Laoshan District, Qingdao,

China

Manufacture's Name...... QINGDAO WINTEC SYSTEM CO., LTD

Address: No.3 Building, No.151, Zhuzhou Road, Laoshan District, Qingdao,

China

Product description

Product name Time and Attendance Device

Trademark...... N/A

Model and/or type reference : OB1000

OB2000, OB3000, GB1000, GB2000, GB3000, FS1000,

Report No.: BCTC-FY161004424-3E

FS2000, FS3000, A20TS, A30TS, A40TS.

Standards..... FCC Part15.225

ANSI C63.10-2013

This device described above has been tested by BCTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of BCTC, this document may be altered or revised by BCTC, personal only, and shall be noted in the revision of the document.

Testing Engineer	:	tric lang
		Eric Yang
Reviewer Supervisor	:	Fade Jang
		Jade Yang
Approved & Authorized Manager:	:	Cores Thory
		Carson Zhang9



Table of Contents

	Page
1 . SUMMARY OF TEST RESULTS	5
1.1 TEST FACILITY	5
1.2 MEASUREMENT UNCERTAINTY	5
2 . GENERAL INFORMATION	6
	_
2.1 GENERAL DESCRIPTION OF EUT	6
2.2 DESCRIPTION OF TEST MODES	7
2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTE	_
2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)	8
2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS	9
3 . EMC EMISSION TEST	10
3.1 CONDUCTED EMISSION MEASUREMENT	10
3.1.1 POWER LINE CONDUCTED EMISSION LIMITS	10
3.1.2 TEST PROCEDURE	10
3.1.3 DEVIATION FROM TEST STANDARD	10
3.1.4 TEST SETUP	11
3.1.5 EUT OPERATING CONDITIONS 3.1.6 TEST RESULTS	11 11
3.2 RADIATED EMISSION MEASUREMENT	14
3.2.1 RADIATED EMISSION LIMITS 3.2.2 TEST PROCEDURE	14 14
3.2.3 DEVIATION FROM TEST STANDARD	15
3.2.4 TEST SETUP	15
3.2.5 EUT OPERATING CONDITIONS	16
3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)	17
3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)	18
3.3 RADIATED BAND EMISSION MEASUREMENT	20
3.3.1 TEST REQUIREMENT:	20
3.3.2 TEST PROCEDURE	20
3.3.3 DEVIATION FROM TEST STANDARD	20
3.3.4 TEST SETUP	21
3.3.5 EUT OPERATING CONDITIONS	21
4 . BANDWIDTH TEST	23
4.1 APPLIED PROCEDURES	23
4.1.1 TEST PROCEDURE	23

Report No.: BCTC-FY161004424-3E

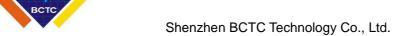




Table of Contents

	Page
4.1.2 DEVIATION FROM STANDARD	23
4.1.3 TEST SETUP	23
4.1.4 EUT OPERATION CONDITIONS	23
4.1.5 TEST RESULTS	24
5. TRANSMITTER FREQUENCY STABILITY	25
5.1 LIMITS	25
5.1.1 TEST PROCEDURE	25
5.1.2 DEVIATION FROM STANDARD	25
5.1.3 TEST SETUP	25
5.1.4 EUT OPERATION CONDITIONS	25
5.1.5 TEST RESULTS	26
6. ANTENNA REQUIREMENT	27
6.1 STANDARD REQUIREMENT	27
6.2 EUT ANTENNA	27
7 . TEST SEUUP PHOTO	28
8 . EUT PHOTO	30

Report No.: BCTC-FY161004424-3E



1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.225)					
Standard Section	Judgment	Remark			
15.207	Conducted Emission	PASS			
Part 15.209(a), 15.225(d)	Radiated Spurious Emission	PASS			
15.225	15.225 Bandwidth				
Part 15.209(a), 15.225(c)(d)	Band Edge Emission	PASS			
Part 15.225(e) Transmitter Frequency Stability (Temperature & Voltage Variation)		PASS			
15.203	Antenna Requirement	PASS			

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

1.1 TEST FACILITY

Shenzhen BCTC Technology Co., Ltd.

Add.: No.101, Yousong Road, Longhua New District, Shenzhen, China

FCC Registered No.: 187086

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $\mathbf{y} \pm \mathbf{U}$, where expended uncertainty \mathbf{U} is based on a standard uncertainty multiplied by a coverage factor of $\mathbf{k=2}$, providing a level of confidence of approximately $\mathbf{95}$ %.

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Time and Attendance Device					
Trade Name	N/A					
Model Name	OB1000 OB2000, OB3000, GB1000, GB2000, GB3000, FS1000, FS2000, FS3000, A20TS, A30TS, A40TS.					
Model Difference	The product's different f	or model name and outlook color.				
	The EUT is a Time and	Attendance Device				
	Operation Frequency:	13.56MHz				
	Modulation Type:	ASK				
	Number Of Channel	1 CH				
Product Description	Antenna type:	PCB antenna				
·	Antenna Gain (dBi)	0dBi				
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.					
Channel List	Please refer to the Note	2.				
Dower	DC 12V from adapter					
Power	DC 7.4V					
	Model:GM-120100					
Adapter	I/P:AC 100-240V 50/60Hz 0.5A					
	O/P:DC 12V 1.0A					
hardware version						
Software version						
Serial number	Serial number					
Connecting I/O Port(s) Please refer to the User's Manual						

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

Report No.: BCTC-FY161004424-3E



2.2 DESCRIPTION OF TEST MODES

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.

Report No.: BCTC-FY161004424-3E

Pretest Mode	Description				
Mode 1 TX Mode					
For Conducted & Radiated Emission					
Final Test Mode	Description				
Mode 1	TX Mode				

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.



2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Spurious Emission Test



Radiated Spurious Emission Test



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	1fr/Brand Model/Type No.		Note
E-1	Time and Attendance Device	N/A	OB1000	N/A	EUT
E-2	Adapter	WINTEC	GM-120100	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C1	No	No	0.8m	

Note:

(1) For detachable type I/O cable should be specified the length in cm in <code>『Length』</code> column.



2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer	Agilent	E4407B	MY45109572	2016.08.27	2017.08.26
2	Test Receiver	R&S	ESPI	101396	2016.08.27	2017.08.26
3	Bilog Antenna	SCHWARZBE CK	VULB9160	VULB9160-3 369	2016.08.27	2017.08.26
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2016.08.27	2017.08.26
5	Spectrum Analyzer	Agilent	N9020A	MY5051041	2016.08.27	2017.08.26
6	Horn Antenna	SCHWARZBE CK	9120D	9120D-1275	2016.08.29	2017.08.28
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2016.08.29	2017.08.28
8	Amplifier	SCHWARZBE CK	BBV9718	9718-270	2016.08.29	2017.08.28
9	Amplifier	SCHWARZBE CK	BBV9743	9743-119	2016.08.29	2017.08.28
10	Loop Antenna	ARA	PLOB1000 MI-BTH0730/ B	1029	2016.07.06	2017.07.05
11	Power Meter	R&S	NRVS	100696	2016.08.27	2017.08.26
12	Power Sensor	R&S	URV5-Z4	0395.1619.0 5	2016.08.27	2017.08.26
13	RF cables	R&S	N/A	N/A	2016.08.27	2017.08.26
14	966 chamber	ChengYu	966 Room	966	2016.08.27	2017.08.26

Conduction Test equipment

	Conduction rest equipment							
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until		
1	Test Receiver	R&S	ESCI	1166.5950K03- 101165-ha	2016.08.27	2017.08.26		
2	LISN	R&S	NSLK81 26	8126466	2016.08.27	2017.08.26		
3	LISN	R&S	NSLK81 26	8126487	2016.08.27	2017.08.26		
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2016.08.27	2017.08.26		
5	RF cables	R&S	R204	R20X	2016.08.27	2017.08.26		



3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

Report No.: BCTC-FY161004424-3E

	Class A	(dBuV)	Class B	Ctondord	
FREQUENCY (MHz)	Quasi-peak	Average	Quasi-peak	Average	Standard
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

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

3.1.2 TEST PROCEDURE

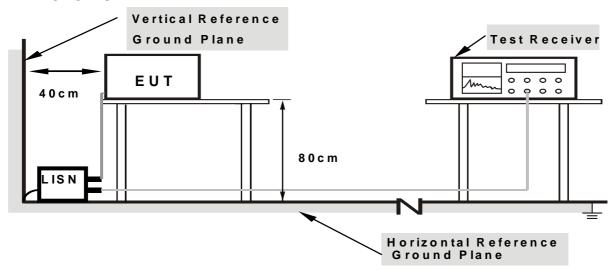
- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item -EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation



3.1.4 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

3.1.5 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.

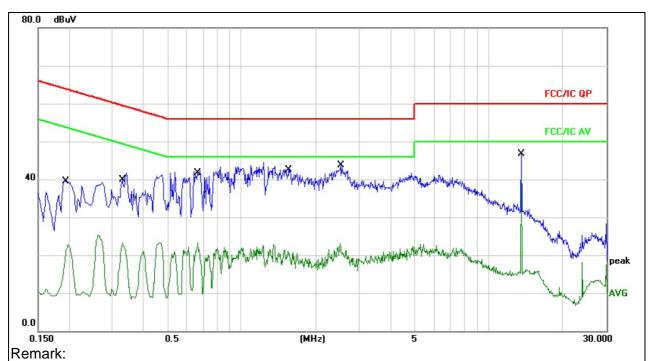
3.1.6 TEST RESULTS



Shenzhen BCTC Technology Co., Ltd.

Temperature :	25 ℃	Relative Humidity:	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 1

Report No.: BCTC-FY161004424-3E



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

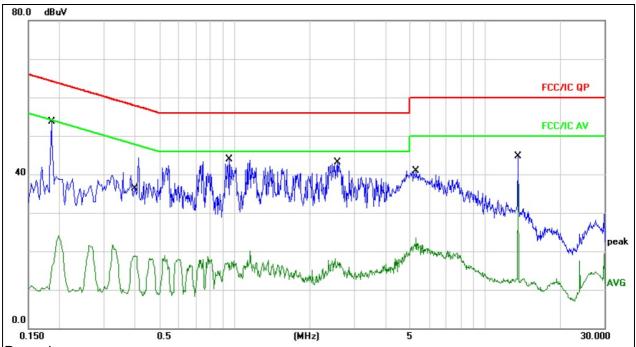
No. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
	MHz	dBuV	dB	dBuV	dBu∨	dB	Detector	Comment	
1	0.1940	29.46	10.06	39.52	63.86	-24.34	QP		
2	0.1940	12.85	10.06	22.91	53.86	-30.95	AVG		
3	0.3300	31.54	10.10	41.64	59.45	-17.81	QP		
4	0.3300	13.13	10.10	23.23	49.45	-26.22	AVG		
5	0.6660	32.17	10.13	42.30	56.00	-13.70	QP		
6	0.6660	13.14	10.13	23.27	46.00	-22.73	AVG		
7	1.5420	32.60	10.18	42.78	56.00	-13.22	QP		
8	1.5420	10.98	10.18	21.16	46.00	-24.84	AVG		
9	2.5100	33.53	10.19	43.72	56.00	-12.28	QP		
10	2.5100	12.82	10.19	23.01	46.00	-22.99	AVG		
11	13.5620	36.49	10.14	46.63	60.00	-13.37	QP		
12 *	13.5620	30.20	10.14	40.34	50.00	-9.66	AVG		



Shenzhen BCTC Technology Co., Ltd.

Temperature :	25 ℃	Relative Humidity:	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 1

Report No.: BCTC-FY161004424-3E



Remark:

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

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBu∨	dB	Detector	Comment
1	*	0.1860	43.72	10.06	53.78	64.21	-10.43	QP	
2		0.1860	13.36	10.06	23.42	54.21	-30.79	AVG	
3		0.3997	34.24	10.10	44.34	57.86	-13.52	QP	
4		0.3997	8.70	10.10	18.80	47.86	-29.06	AVG	
5		0.9540	33.67	10.16	43.83	56.00	-12.17	QP	
6		0.9540	7.33	10.16	17.49	46.00	-28.51	AVG	
7		2.5740	32.83	10.19	43.02	56.00	-12.98	QP	
8		2.5740	7.14	10.19	17.33	46.00	-28.67	AVG	
9		5.3300	30.86	10.13	40.99	60.00	-19.01	QP	
10		5.3300	13.28	10.13	23.41	50.00	-26.59	AVG	
11		13.5620	34.50	10.14	44.64	60.00	-15.36	QP	
12		13.5620	27.50	10.14	37.64	50.00	-12.36	AVG	



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

- 1. The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15.848 microvolts/ meter at 30 meters
- 2. 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	Field Strength	Measurement Distance
(MHz)	(micorvolts/meter)	(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

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

3.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

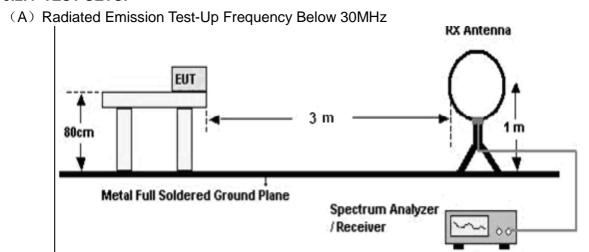
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on 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.



3.2.3 DEVIATION FROM TEST STANDARD

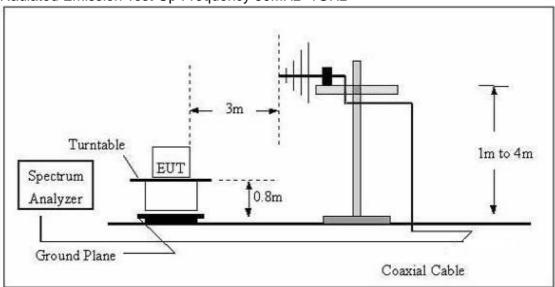
No deviation

3.2.4 TEST SETUP

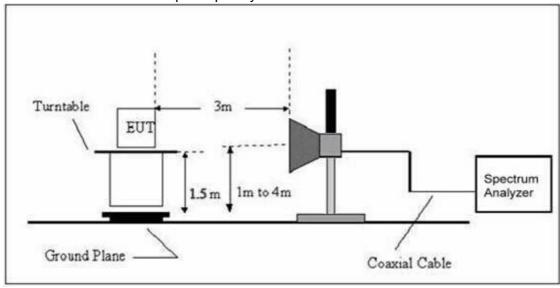




(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



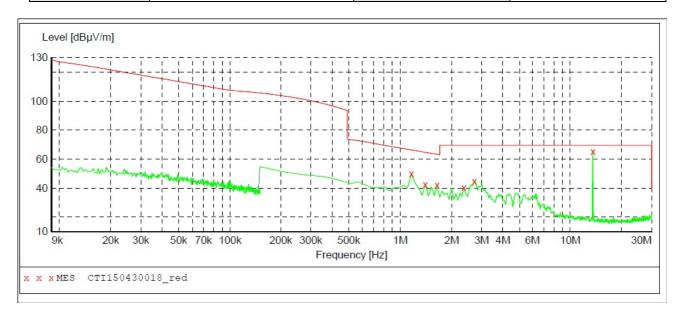
3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.



3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

Temperature:	20℃	Relative Humidtity:	48%
Pressure:	1010 hPa	Test Voltage:	DC 12V from adapter
Test Mode:	Mode 1	Polarization :	



The worst data are below:

Frequency	Antenna	PK Level	QP Level	Test limit_QP	Result
(MHz)	Polarity	(dB μ V/m)	(dB μ V/m)	(dB μ V/m)	
13.56	90°	65.4	63.8	124.0	Pass

NOTE:

Measurements were performed at 3 metres and results extrapolated to 30 metres.

The limit is specified at a test distance of 30 metres. However, as specified by FCC Section 15.31 (f)(2), measurements may be performed at a closer distance and the measured level corrected to the specified measurement distance by making the measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor.

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

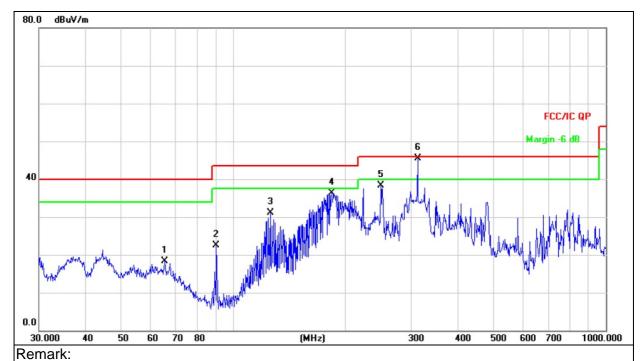
Distance extrapolation factor =40 log (specific distance/test distance)(dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.



3.2.7 TEST RESULTS (BETWEEN 30MHZ - 1GHZ)

Temperature :	26 ℃	Relative Humidity:	54%				
Pressure :	1010 hPa	Polarization :	Horizontal				
Test Voltage :	DC 12V from adapter						
Test Mode :	Mode 1						



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

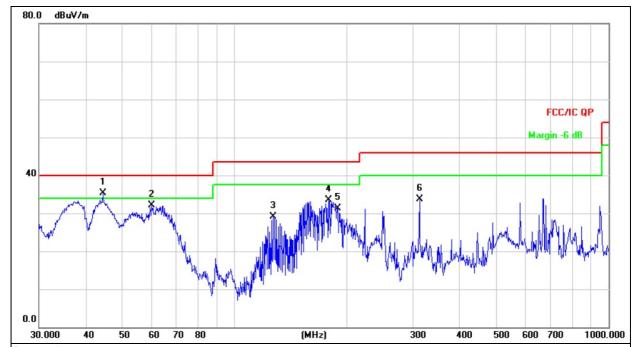
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		65.3432	31.00	-12.66	18.34	40.00	-21.66	QP
2		89.9047	39.98	-17.51	22.47	43.50	-21.03	QP
3		125.4457	45.54	-14.39	31.15	43.50	-12.35	QP
4		183.2005	50.99	-14.73	36.26	43.50	-7.24	QP
5		248.5519	52.54	-14.25	38.29	46.00	-7.71	QP
6	*	312.1792	57.74	-12.27	45.47	46.00	-0.53	QP



Shenzhen BCTC Technology Co., Ltd.

Temperature :	26℃	Relative Humidity:	54%
Pressure :	1010 hPa	Polarization :	Vertical
Test Voltage :	DC 12V from adapter		
Test Mode :	Mode 1		

Report No.: BCTC-FY161004424-3E



Remark:

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

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	44.4308	44.73	-9.40	35.33	40.00	-4.67	QP
2		60.0691	43.55	-11.52	32.03	40.00	-7.97	QP
3		126.7723	43.50	-14.31	29.19	43.50	-14.31	QP
4		178.1327	47.64	-14.17	33.47	43.50	-10.03	QP
5		189.0743	46.82	-15.46	31.36	43.50	-12.14	QP
6		312.1794	45.99	-12.27	33.72	46.00	-12.28	QP



3.3 RADIATED BAND EMISSION MEASUREMENT 3.3.1 TEST REQUIREMENT:

FCC Part15 C Section 15.209 and 15.225

LIMITS OF RADIATED EMISSION MEASUREMENT

Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

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).

3.3.2 TEST PROCEDURE

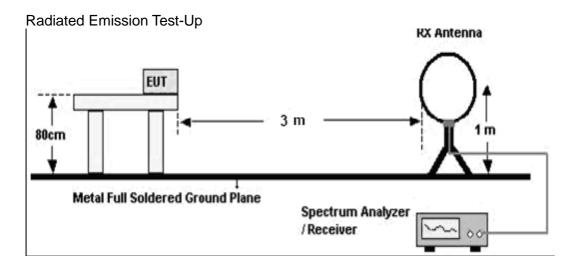
- a. The Product is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The maximum values of the field strength are recorded by adjusting the polarizations of the test antenna and rotating the turntable.
- b. For each suspected emission, the 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.

3.3.3 DEVIATION FROM TEST STANDARD

No deviation



3.3.4 TEST SETUP

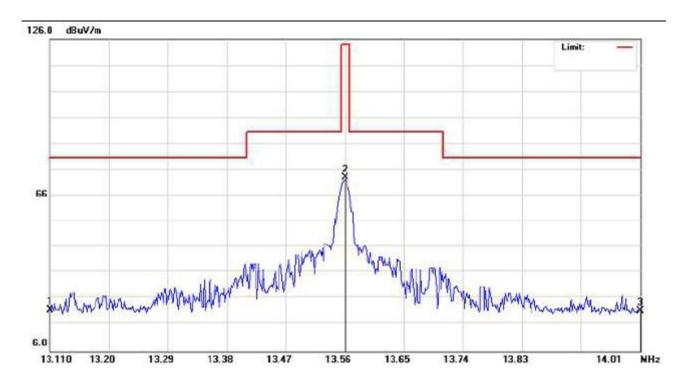


3.3.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.



3.3.6 TEST RESULT



Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m	(dB)	Type
13.11	37.16	38.06	7.42	10.15	16.67	69.50	-52.83	PK
14.01	35.76	38.06	7.42	10.15	15.27	69.50	-54.23	PK



4. BANDWIDTH TEST

4.1 APPLIED PROCEDURES

701	0_0000						
FCC Part15 (15.225)							
Section	Test Item						
15.225	Bandwidth						

4.1.1 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. 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.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



4.1.4 EUT OPERATION CONDITIONS

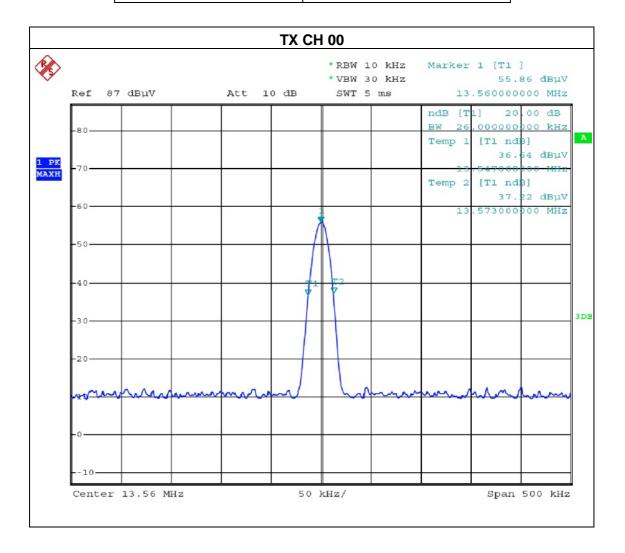
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.



4.1.5 TEST RESULTS

Temperature :	25 ℃	Relative Humidity:	60%
Pressure :	1012 hPa	Test Voltage :	DC 7.4V
Test Mode :	TX Mode		

Frequency	20dB bandwidth		
(MHz)	(KHz)		
13.56	36		





5. TRANSMITTER FREQUENCY STABILITY

5.1 LIMITS

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

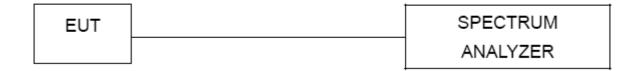
5.1.1 TEST PROCEDURE

- 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.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.



5.1.5 TEST RESULTS

Temperature :	25 ℃	Relative Humidity:	60%
Pressure :	1012 hPa	Test Voltage :	DC 7.4V
Test Mode :	TX Mode		

	Test Conditions		Frequency De			
Frequency MHz	Power(Vdc)	Temperature (°C)	Measured Freq. (MHz)	Frequency Error(Hz)	Result	
	7.4	-20	13.5603	300		
	7.4	-10	13.5604	400		
	7.4	0	13.5603	300		
	7.4	10	13.5605	500	PASS	
	7.4	20	13.5602	200		
13.56	7.4	30	13.5602	200		
	7.4	40	13.5604	400		
	7.4	50	13.5603	300		
	8.51	25	13.5605	500		
	7.4	25	13.5604	400		
	6.29	25	13.5603	400		



6. ANTENNA REQUIREMENT

6.1 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.

Report No.: BCTC-FY161004424-3E

6.2 EUT ANTENNA

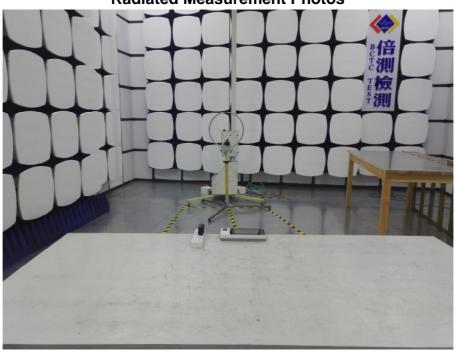
The EUT antenna is internal antenna,. It comply with the standard requirement.



7. TEST SEUUP PHOTO



Report No.: BCTC-FY161004424-3E







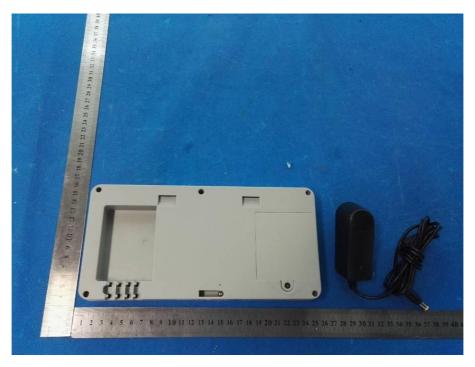






8. EUT PHOTO



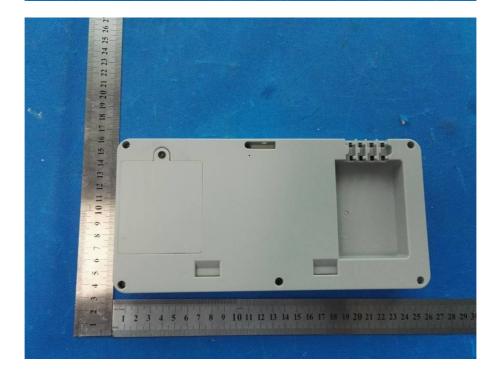






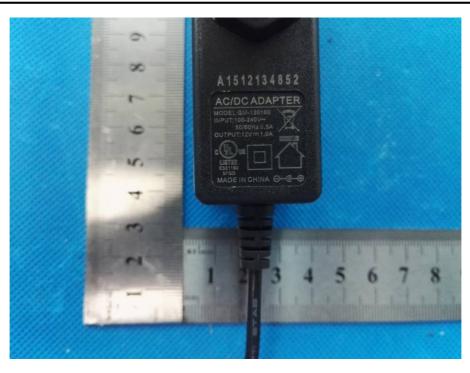


Shenzhen BCTC Technology Co., Ltd.











******** END OF REPORT *******