1 COVER PAGE

FCC TEST REPORT

Product	:	Touchable Trust
Trade mark	:	Integrated
Model/Type reference	:	IC-RD/TT
Serial Number	:	N/A
Report Number	:	EED32H000603
FCC ID	:	RHR-IC-RD-TT
Date of Issue	:	Mar. 04, 2016
Test Standards	:	47 CFR Part 15 Subpart C (2015)
Test result	:	PASS

Prepared for:

Integrated Security Technology (ZhongShan) Co., Ltd.
5/F, Torch Building, Torch Hi-Tech Industrial Development Zone
Zhongshan, Guangdong, China

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District,
Shenzhen, Guangdong, China
TEL: +86-755-3368 3668
FAX: +86-755-3368 3385

Compiled by: Reviewed by:

Approved by: Date: Mar. 04, 2016

Sheek Luo
Lab supervisor

Check No.:1022583113

2 Version

Version No.	Date	Description
00	Mar. 04, 2016	Original

3 Test Summary

Test Item	Test Requirement	Test method	Result
AC Power Line Conducted Emission	47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013	PASS
Radiated Emission	47 CFR Part 15 Subpart C Section 15.209; 15.225(a)(b)(c)(d)	ANSI C63.10-2013	PASS
Frequency Tolerance	47 CFR Part 15 Subpart C Section 15.225(e)	ANSI C63.10-2013	PASS
Occupied Bandwidth	47 CFR Part 15 Subpart C Section 15.215	ANSI C63.10-2013	PASS

Remark:
The tested sample(s) and the sample information are provided by the client.

4 Contents

5 General Information

5.1 Client Information

Applicant:	Integrated Security Technology (ZhongShan) Co., Ltd.
Address of Applicant:	5/F,Torch Building,Torch Hi-Tech Industrial Development Zone Zhongshan, Guangdong, China
Manufacturer:	Integrated Security Technology (ZhongShan) Co., Ltd.
Address of Manufacturer:	5/F,Torch Building,Torch Hi-Tech Industrial Development Zone Zhongshan,Guangdong, China

5.2 General Description of EUT

Product Name:	Touchable Trust
Mode No.(EUT):	IC-RD/TT
Trade Mark:	Integrated
EUT Supports Radios application:	13.56MHz
AC adapter:	AC 100-240V, 1.5A
Power Supply:	AC 120V, 60Hz

5.3 Product Specification subjective to this standard

Carrier Frequency:	13.56MHz
Modulation Type:	ASK
Sample Type:	Fixed production
Antenna Type:	Integral
Antenna Gain:	0 dBi
Test voltage:	AC 120V, 60Hz
Sample Received Date:	Jan. 18, 2016
Sample tested Date:	Jan. 18, 2016 to Mar. 04, 2016

5.4 Test Environment and Mode

Operating Environment:	
Temperature:	22 °C
Humidity:	50 % RH
Atmospheric Pressure:	1010mbar
Test mode:	
Transmitting mode:	The EUT transmitted the continuous modulation test signal at the specific channel(s)

5.5 Description of Support Units

1) support equipment

Description	Manufacturer	Model No.	Certification	Supplied by
Control box	Integrated Security Technology	IC-CU/EL-B	FCC VOC	Client

5.6 Test Location

All tests were performed at:
Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China 518101
Telephone: +86 (0) 755 3368 3668 Fax:+86 (0) 755 3368 3385
No tests were sub-contracted.

5.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L1910

Centre Testing International Group Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories..

A2LA-Lab Cert. No. 3061.01

Centre Testing International Group Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 565659

Centre Testing International Group Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 565659.

IC-Registration No.: 7408A

The 3m Alternate Test Site of Centre Testing International Group Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408A .

IC-Registration No.: 7408B

The 10m Alternate Test Site of Centre Testing International Group Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408B.

NEMKO-Aut. No.: ELA503

Centre Testing International Group Co., Ltd. has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10.

VCCI

The Radiation 3 &10 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-4096. Main Ports Conducted Interference Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-4563.

Telecommunication Ports Conducted Disturbance Measurement of

Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-2146.

The Radiation 3 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-758

5.8 Deviation from Standards

None.

5.9 Abnormalities from Standard Conditions

None.

5.10 Other Information Requested by the Customer

None.

5.11 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.31dB (30MHz-1GHz)
		0.57dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.5dB (30MHz-1GHz)
		4.8dB (1GHz-12.75GHz)
4	Conduction emission	3.6dB (9kHz to 150kHz)
		3.2dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	2.8%
7	DC power voltages	0.025%

6 Equipment List

Conducted disturbance Test					
Equipment	**Manufacturer**	**Mode No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Receiver	R&S	ESCI	100009	06-30-2015	06-28-2016
Temperature/ Humidity Indicator	Belida	TT-512	101	07-09-2015	07-07-2016
Communication test set	Agilent	E5515C	GB47050533	04-27-2015	04-26-2016
Communication test set	R&S	CMW500	152394	04-19-2015	04-18-2016
LISN	R&S	ENV216	100098	06-30-2015	06-28-2016
LISN	schwarzbeck	NNLK8121	8121-529	06-30-2015	06-28-2016
Voltage Probe	R&S	ESH2-Z3	100042	07-09-2014	07-08-2017
Current Probe	R&S	EZ17	100106	07-09-2014	07-08-2017
ISN	TESEQ GmbH	ISN T800	30297	01-29-2015	01-27-2017

3M Semi/full-anechoic Chamber					
Equipment	**Manufacturer**	**Mode No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
3M Chamber	TDK	SAC-3	---	06-02-2013	06-01-2016
TRILOG Broadband Antenna	schwarzbeck	VULB9163	9163-617	07-31-2015	07-29-2016
Microwave Preamplifier	Agilent	8449B	3008A02425	02-05-2015	02-04-2016
Horn Antenna	ETS-LINDGREN	3117	00057410	06-30-2015	06-28-2018
Loop Antenna	ETS	6502	00071730	07-30-2015	07-28-2017
Spectrum Analyzer	R&S	FSP40	100416	06-30-2015	06-28-2016
Receiver	R&S	ESCI	100435	06-30-2015	06-28-2016
Multi device Controller	maturo	NCD/070/10711112	---	01-12-2016	01-11-2017
LISN	schwarzbeck	NNBM8125	81251547	06-30-2015	06-28-2016
LISN	schwarzbeck	NNBM8125	81251548	06-30-2015	06-28-2016
Signal Generator	Agilent	E4438C	MY45095744	04-19-2015	04-18-2016
Signal Generator	Keysight	E8257D	MY53401106	04-14-2015	04-13-2016
Temperature/ Humidity Indicator	TAYLOR	1451	1905	07- 08-2015	07-06-2016
Communication test set	Agilent	E5515C	GB47050533	04-27-2015	04-26-2016
Cable line	Fulai(7M)	SF106	5219/6A	01-12-2016	01-11-2017
Cable line	Fulai(6M)	SF106	5220/6A	01-12-2016	01-11-2017
Cable line	Fulai(3M)	SF106	5216/6A	01-12-2016	01-11-2017
Cable line	Fulai(3M)	SF106	5217/6A	01-12-2016	01-11-2017
Communication test set	R&S	CMW500	152394	04-19-2015	04-18-2016
High-pass filter(3-	Sinoscite	FL3CX03WG18NM1	---	01-12-2016	01-11-2017

18GHz)		2-0398-002			
High-pass filter(5-18GHz)	MICRO-TRONICS	SPA-F-63029-4	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA09CL12-0395-001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA08CL12-0393-001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX02CA04CL12-0396-002	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX02CA03CL12-0394-001	---	01-12-2016	01-11-2017

Conducted RF test					
Equipment	**Manufacturer**	**Mode No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Spectrum Analyzer	R&S	FSP40	100416	06-30-2015	06-28-2016
Receiver	R&S	ESCI	100435	06-30-2015	06-28-2016
Noise generator	Beijing daming jidian	DM1661	126001	04-01-2015	03-31-2016
Attenuator	HuaXiang	INMET64671	INMET64671	04-01-2015	03-31-2016
Signal Generator	Agilent	E4438C	MY45095744	04-19-2015	04-18-2016
Attenuator	HuaXiang	SHX370	15040701	04-01-2015	03-31-2016
Signal Generator	Keysight	E8257D	MY53401106	04-14-2015	04-13-2016
High-pass filter(3-18GHz)	Sinoscite	FL3CX03WG18NM12-0398-002	---	01-12-2016	01-11-2017
High-pass filter(5-18GHz)	MICRO-TRONICS	SPA-F-63029-4	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA09CL12-0395-001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA08CL12-0393-001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX02CA04CL12-0396-002	---	01-12-2016	01-11-2017

7 Test Result & Measurement Data

7.1 Antenna Requirement

Standard Requirement:	47 CFR Part 15C Section 15.203

15.203 Requirement:

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

7.2 Conducted Emissions

Test Requirement: 47 CFR Part 15C Section 15.207

Test Method: ANSI C63.10-2013

Test Frequency Range: 150kHz to 30MHz

Limit:

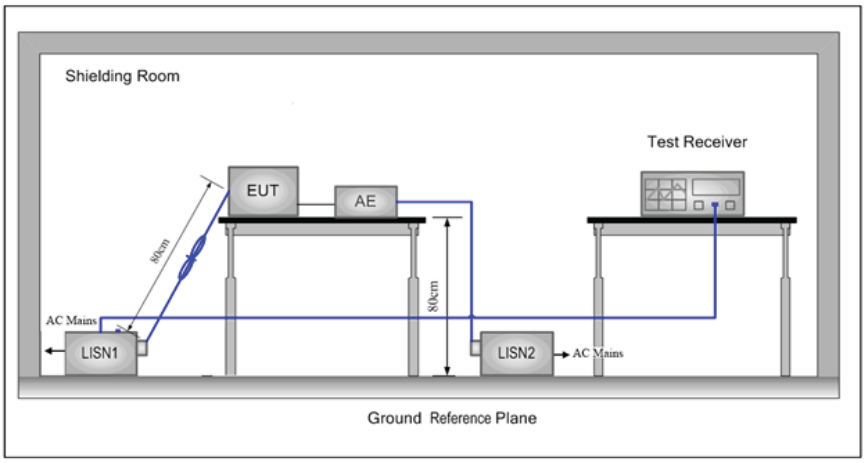
Frequency range (MHz)	Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

Test Procedure:

1) The mains terminal disturbance voltage test was conducted in a shielded room.
2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2009 on conducted measurement.

Test Setup:



Test Mode: Transmitting mode

Instruments Used: Refer to section 6 for details

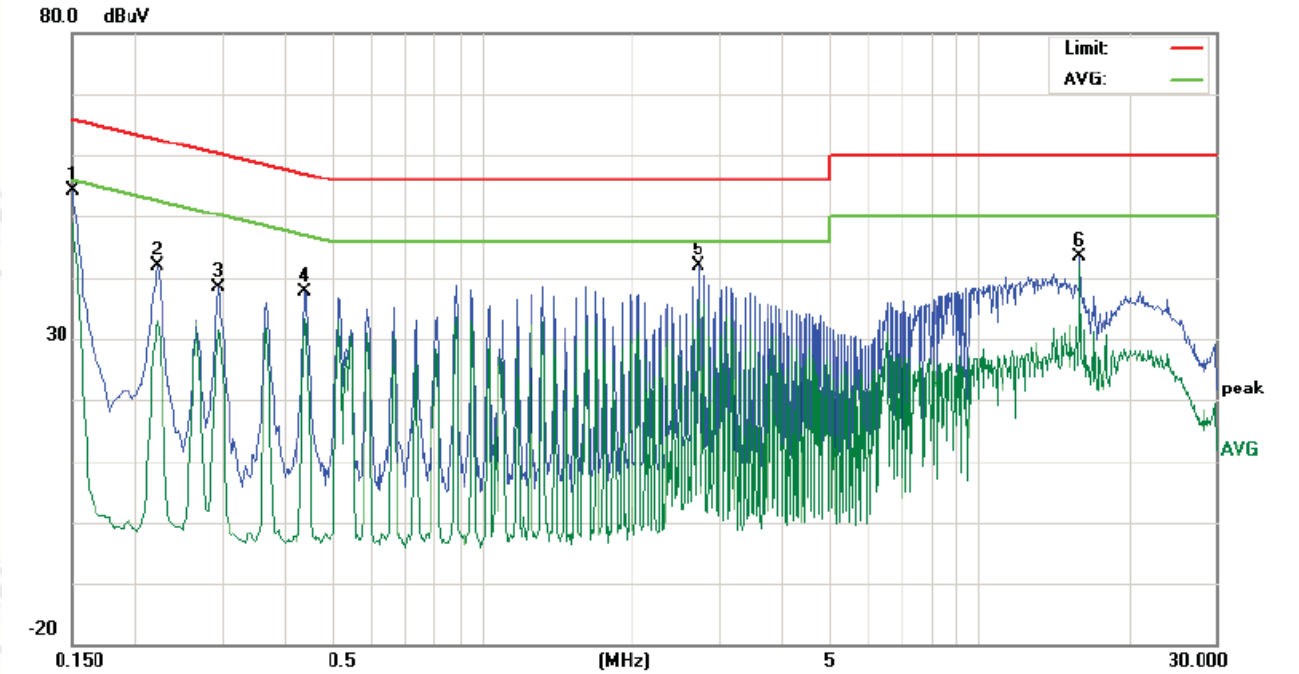
Test Results: Pass

Test Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

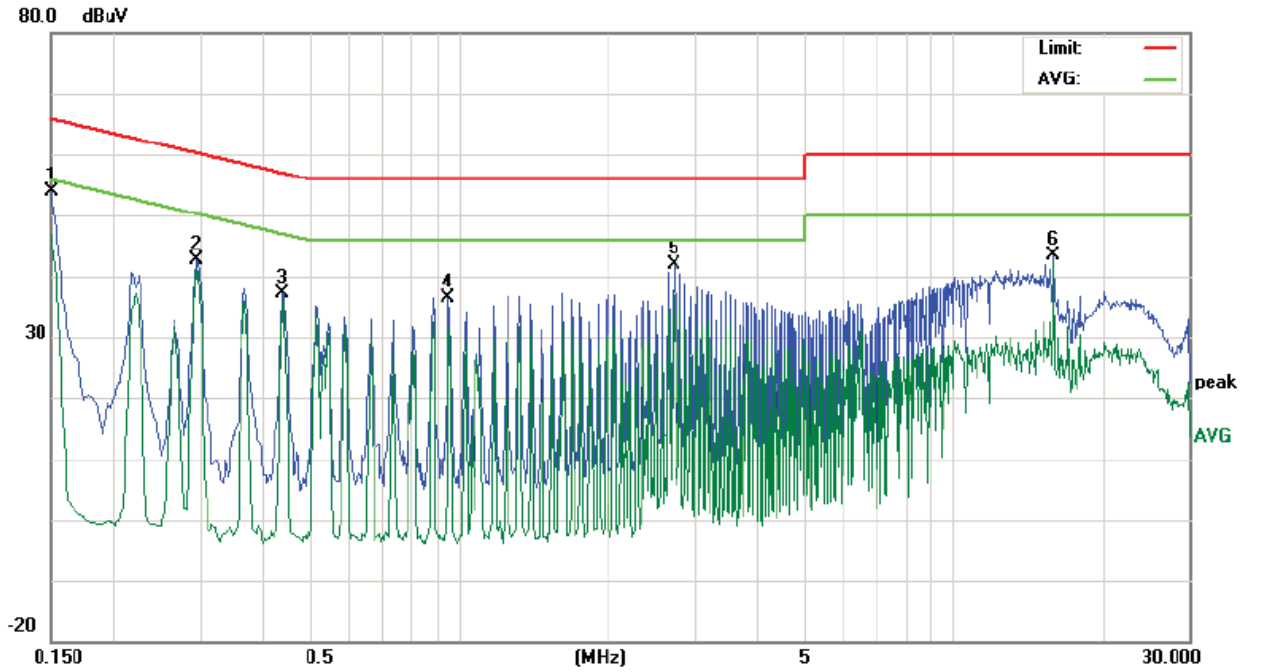
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live Line:



No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)			
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F	Comment
1	0.1500	44.26	43.19	38.77	9.80	54.06	52.99	48.57	65.99	55.99	-13.00	-7.42	P	
2	0.2220	32.18	31.09	22.41	9.80	41.98	40.89	32.21	62.74	52.74	-21.85	-20.53	P	
3	0.2940	28.61	28.27	21.77	9.80	38.41	38.07	31.57	60.41	50.41	-22.34	-18.84	P	
4	0.4420	27.65	26.59	23.21	9.90	37.55	36.49	33.11	57.02	47.02	-20.53	-13.91	P	
5	2.7260	31.91	27.50	26.17	10.00	41.91	37.50	36.17	56.00	46.00	-18.50	-9.83	P	
6	15.9980	33.20	32.20	31.58	10.18	43.38	42.38	41.76	60.00	50.00	-17.62	-8.24	P	

Neutral Line:



No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)			
	MHz	Peak	QP	AVG	dB	peak	QP	AVG	QP	AVG	QP	AVG	P/F	Comment
1	0.1500	44.08	42.89	36.20	9.80	53.88	52.69	46.00	65.99	55.99	-13.30	-9.99	P	
2	0.2940	32.78	32.62	31.68	9.80	42.58	42.42	41.48	60.41	50.41	-17.99	-8.93	P	
3	0.4420	27.17	26.96	25.95	9.90	37.07	36.86	35.85	57.02	47.02	-20.16	-11.17	P	
4	0.9580	26.44	25.49	21.72	10.00	36.44	35.49	31.72	56.00	46.00	-20.51	-14.28	P	
5	2.7300	31.80	29.94	26.54	10.00	41.80	39.94	36.54	56.00	46.00	-16.06	-9.46	P	
6	15.9980	33.17	32.47	32.15	10.18	43.35	42.65	42.33	60.00	50.00	-17.35	-7.67	P	

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

7.3 Radiated Emissions

Test Requirement: 47 CFR Part 15 Subpart C Section 15.209; 15.225(a)(b)(c)(d)

Test Method: ANSI C63.10-2013

Test Site: 3m (Semi-Anechoic Chamber)

Requirements: (a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed

15,848 microvolts/meter at 30 meters.

(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) 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.

(d) 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.

Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Quasi-peak	10kHz	30kHz	Peak
0.009MHz-0.090MHz	Quasi-peak	10kHz	30kHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
0.110MHz-0.490MHz	Quasi-peak	10kHz	30kHz	Peak
0.110MHz-0.490MHz	Quasi-peak	10kHz	30kHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120 kHz	300kHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Test Setup:

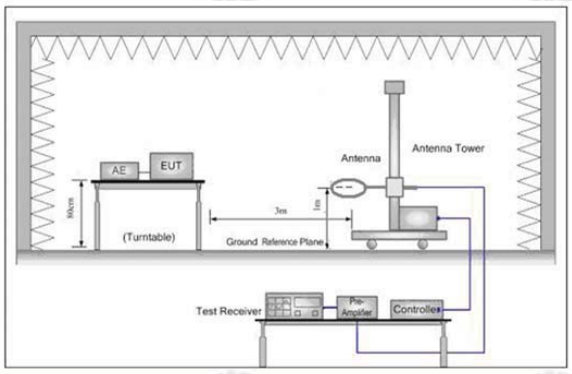


Figure 1. Below 30MHz

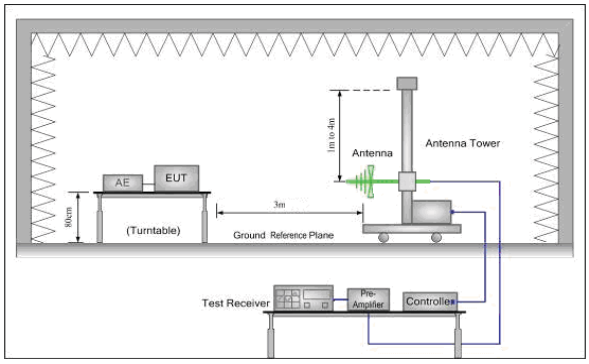


Figure 2. 30MHz to 1GHz

Test Procedure:

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The limit 1.705MHz to 30MHz in clause 4.3 are specified at 30 meters, and measurements were made at 3 meters, the limit is translated to 3 meters by using a formula as follows:

   Limit3m = Limit30m + 40log(30m/3)
8. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode: Transmitting mode

Instruments Used: Refer to section 6 for details

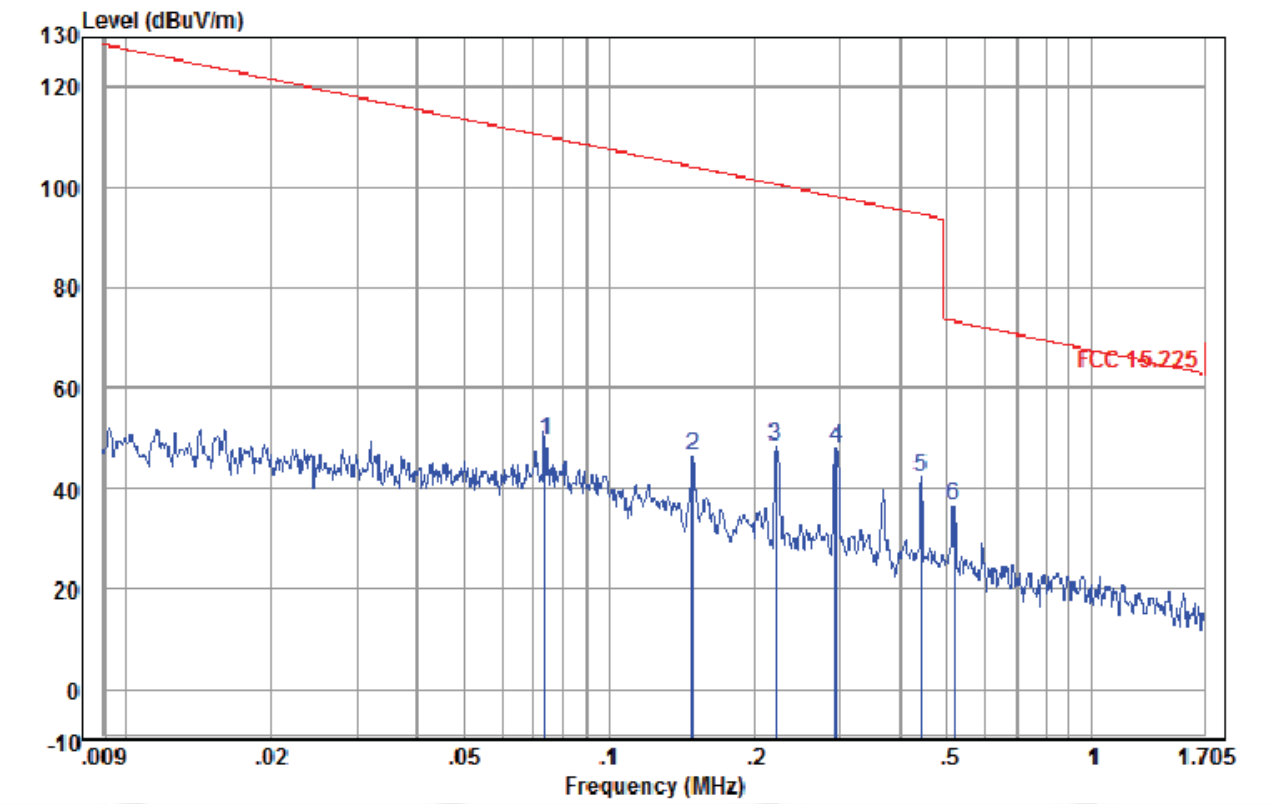
Test Result: Pass

1.705-30MHz Mode

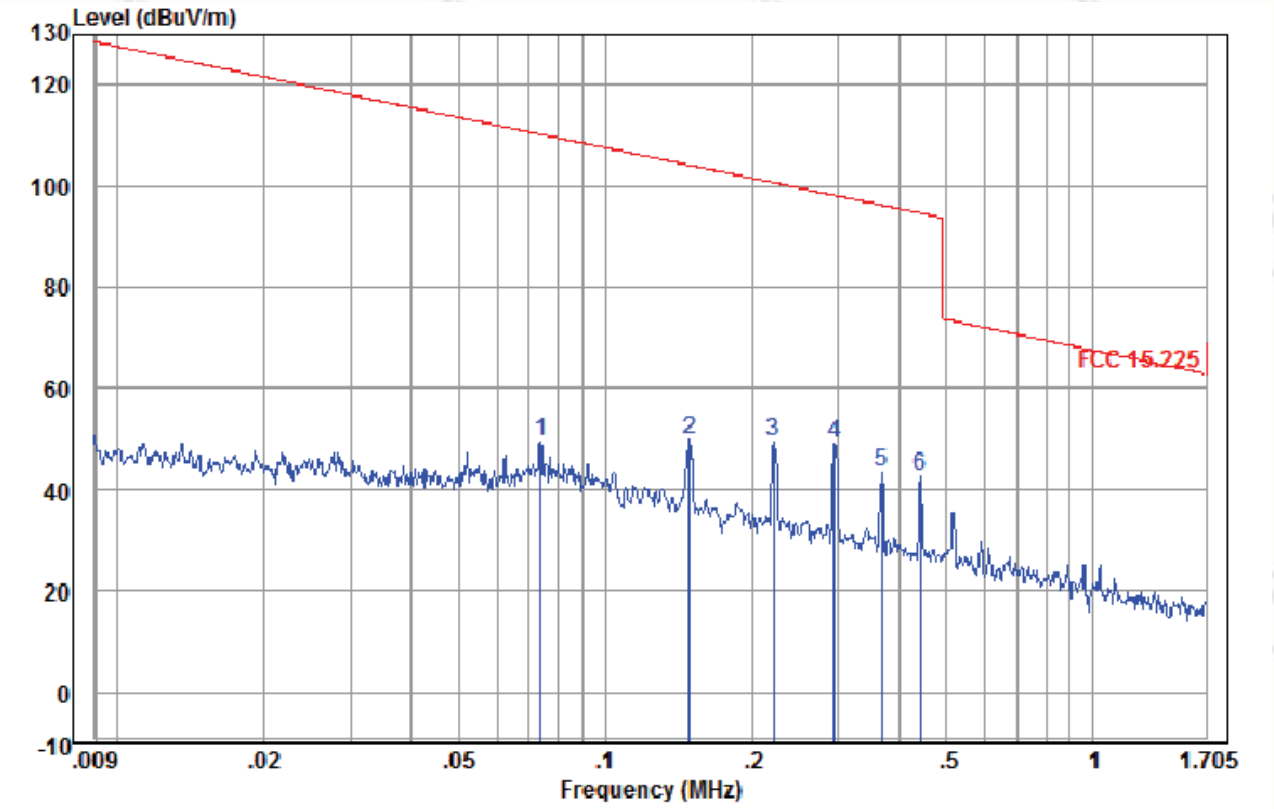
Test Procedure: For testing performed with the loop antenna, testing was performed in accordance to ANSI C63.4: 2014, section 8.2.1. The center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane. Only the worst position of vertical was shown in the report.

Test data:

9 kHz-1.705MHz

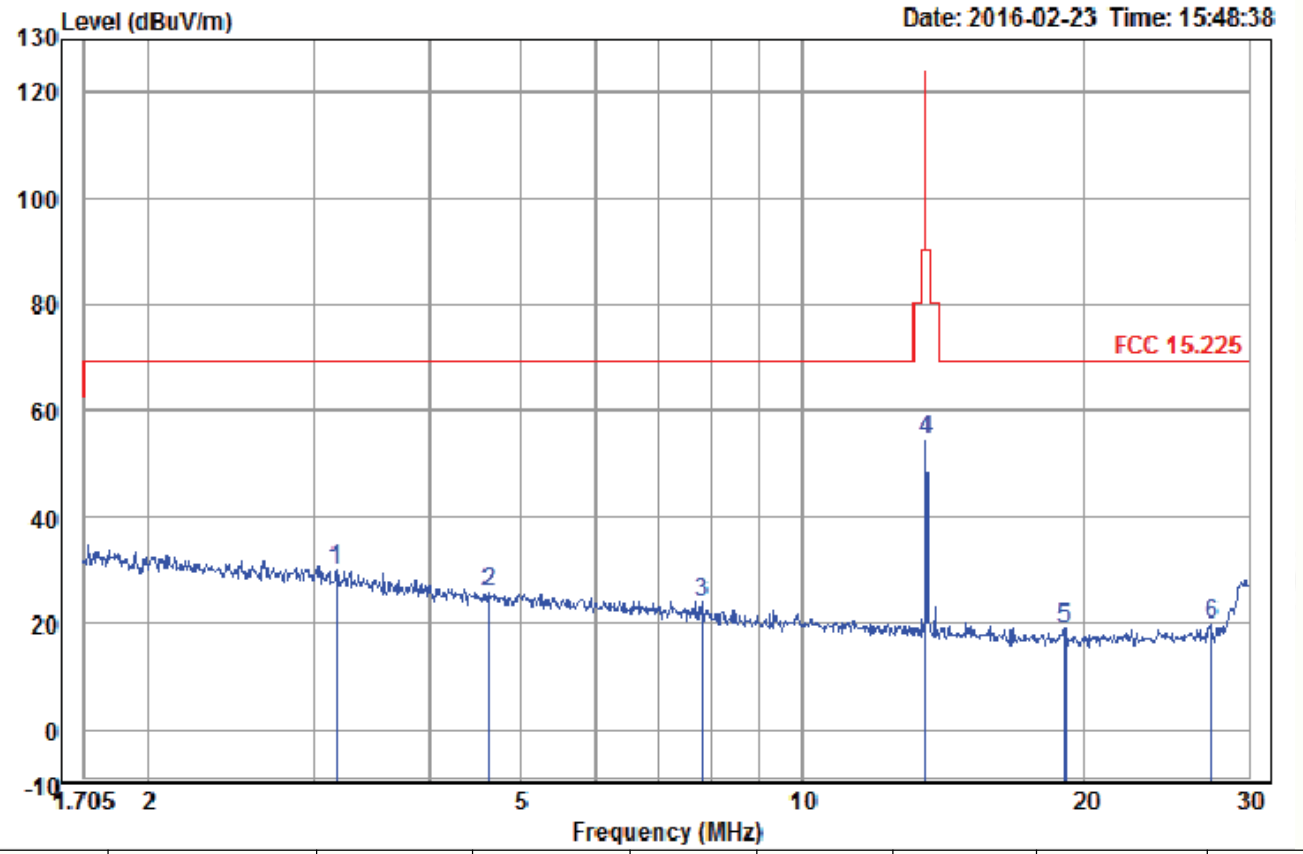


Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
0.07371	11.51	0.09	63.74	49.34	110.24	-60.9	Horizontal	PK
0.14805	11.4	0.11	49.29	46.33	104.19	-57.86	Horizontal	PK
0.22171	11.32	0.11	37.05	48.48	100.68	-52.2	Horizontal	PK
0.29583	11.3	0.11	36.55	47.96	98.18	-50.22	Horizontal	PK
0.44301	11.3	0.12	31.02	42.44	94.68	-52.24	Horizontal	PK
0.51848	11.3	0.12	24.99	36.41	73.31	-36.9	Horizontal	QP

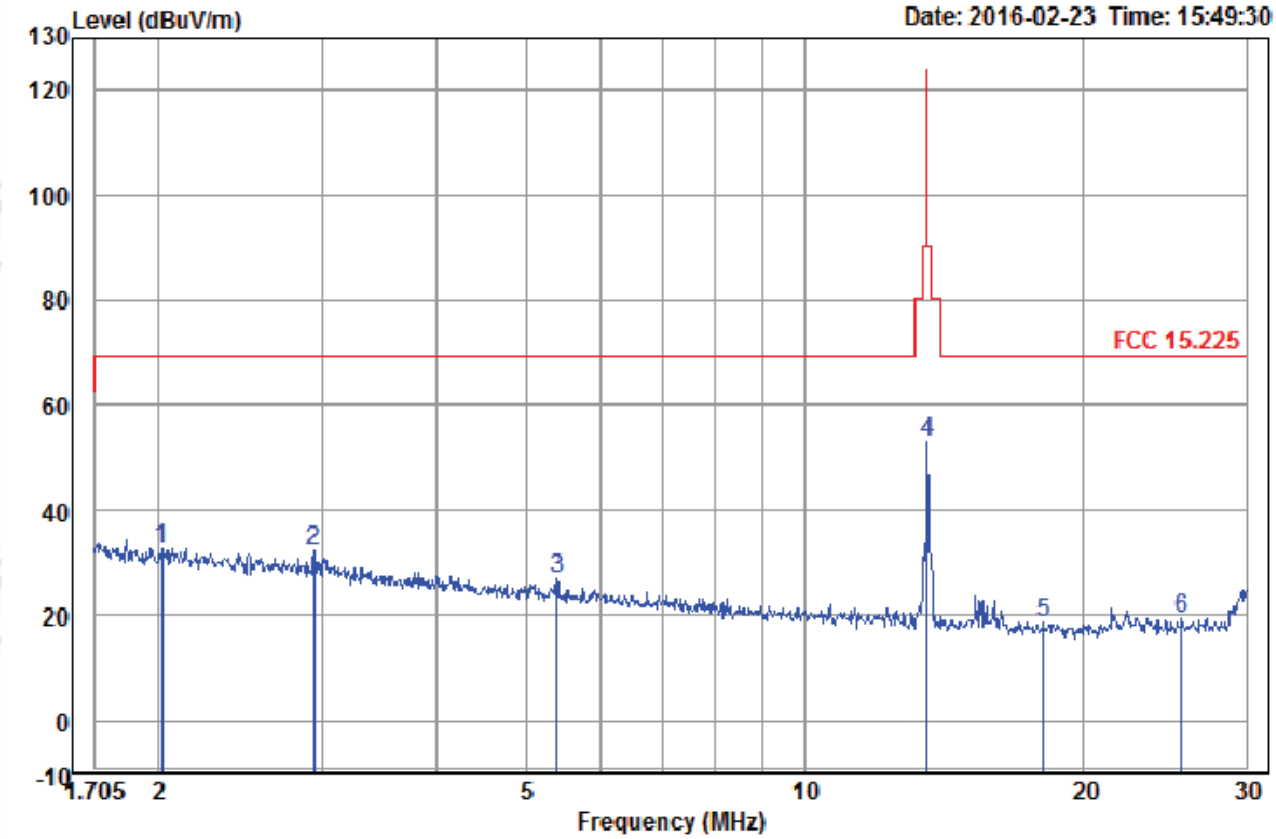


Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
0.07371	11.51	0.09	64.96	49.56	110.24	-60.68	Vertical	PK
0.14805	11.4	0.11	51.07	49.95	104.19	-54.24	Vertical	PK
0.22171	11.32	0.11	37.9	49.33	100.68	-51.35	Vertical	PK
0.29583	11.3	0.11	37.85	49.26	98.18	-48.92	Vertical	PK
0.36872	11.3	0.12	31.83	43.25	96.27	-53.02	Vertical	PK
0.44301	11.3	0.12	31.33	42.75	94.68	-51.93	Vertical	PK

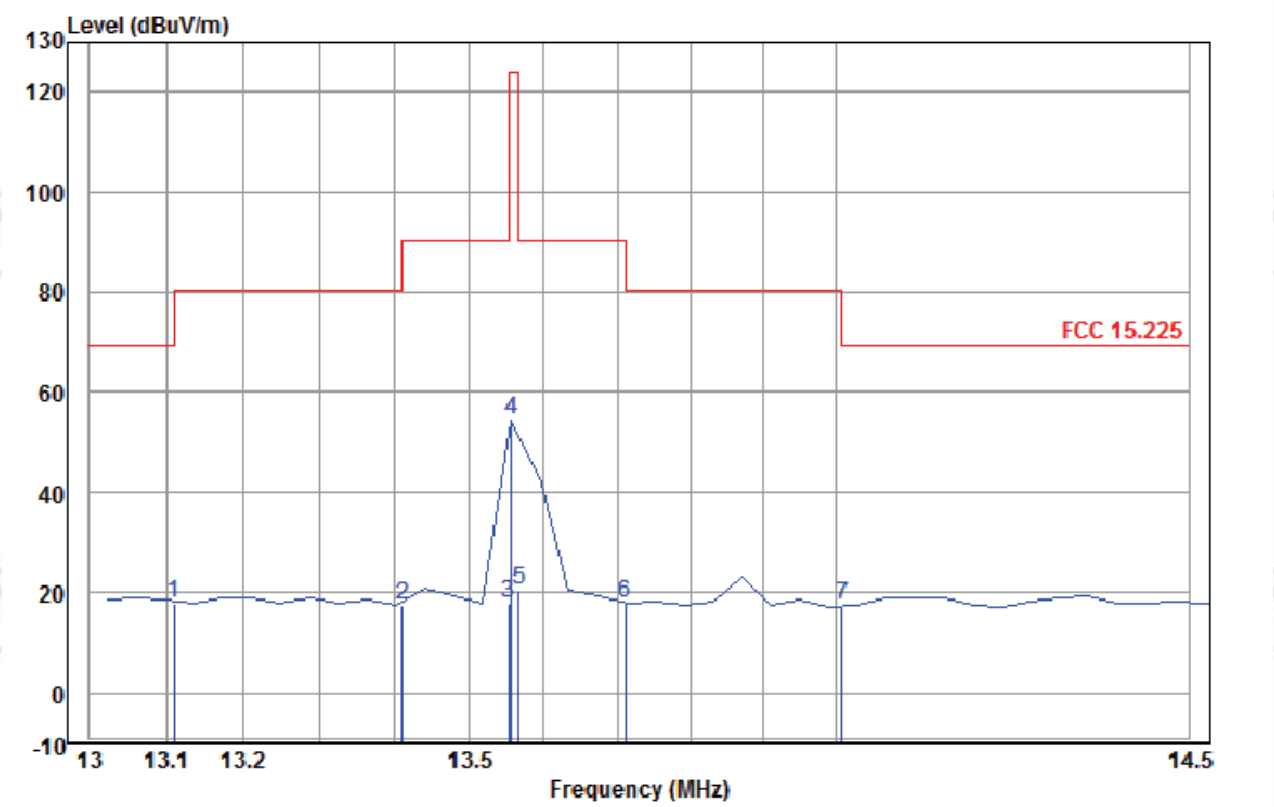
1.705MHz-30MHz



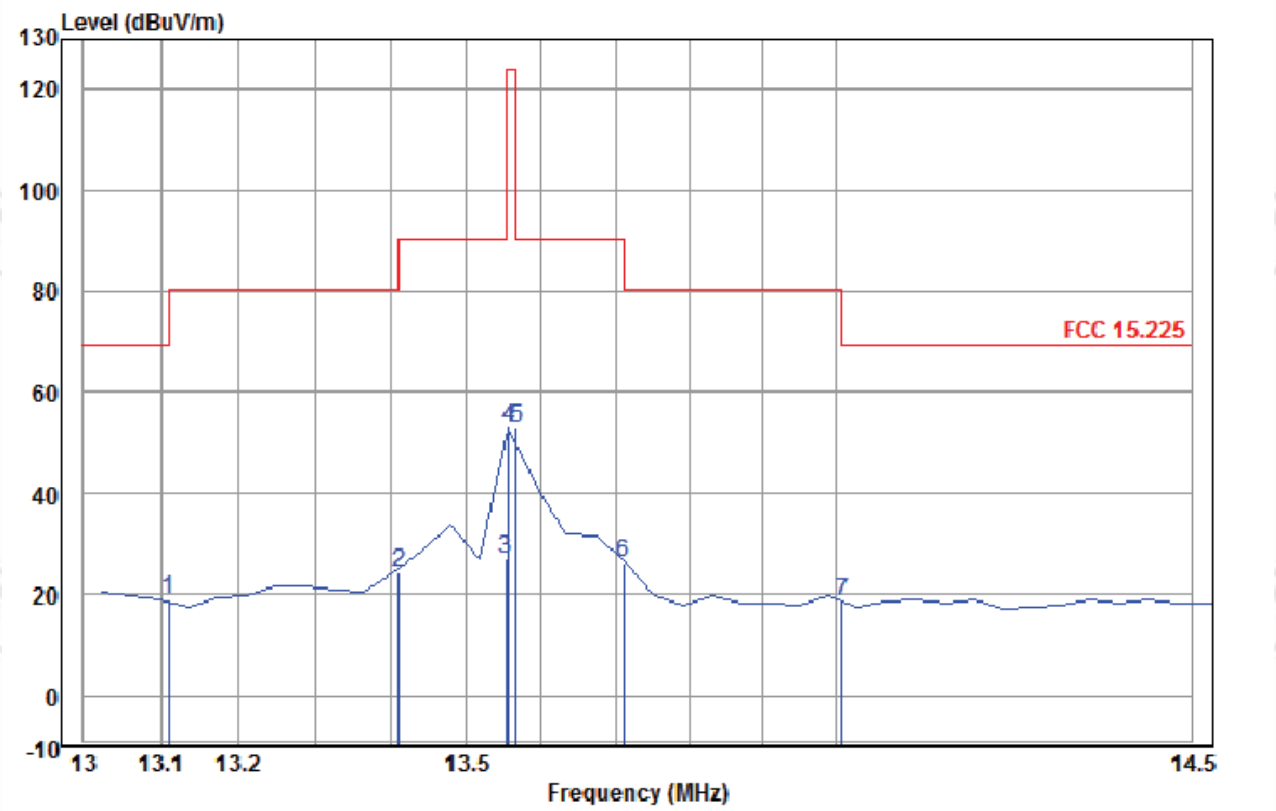
Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
3.168	11.46	0.17	18.27	29.9	69.5	-39.6	Horizontal	QP
4.612	11.24	0.16	14.31	25.71	69.5	-43.79	Horizontal	QP
7.817	11.01	0.46	12.62	24.09	69.5	-45.41	Horizontal	QP
13.56	10.75	0.69	43.09	54.53	123.9	-69.37	Horizontal	QP
19.07	10.2	0.76	8.01	18.97	69.5	-50.53	Horizontal	QP
27.37	8.85	0.89	9.89	19.63	69.5	-49.87	Horizontal	QP



Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
2.014	11.4	0.2	21.28	32.88	69.5	-36.62	Vertical	QP
2.94	11.5	0.16	20.65	32.31	69.5	-37.19	Vertical	QP
5.384	11.17	0.19	15.46	26.82	69.5	-42.68	Vertical	QP
13.56	10.75	0.69	41.35	52.79	123.9	-71.11	Vertical	QP
18.111	10.31	0.75	7.67	18.73	69.5	-50.77	Vertical	QP
25.549	9.35	1	9.18	19.53	69.5	-49.97	Vertical	QP

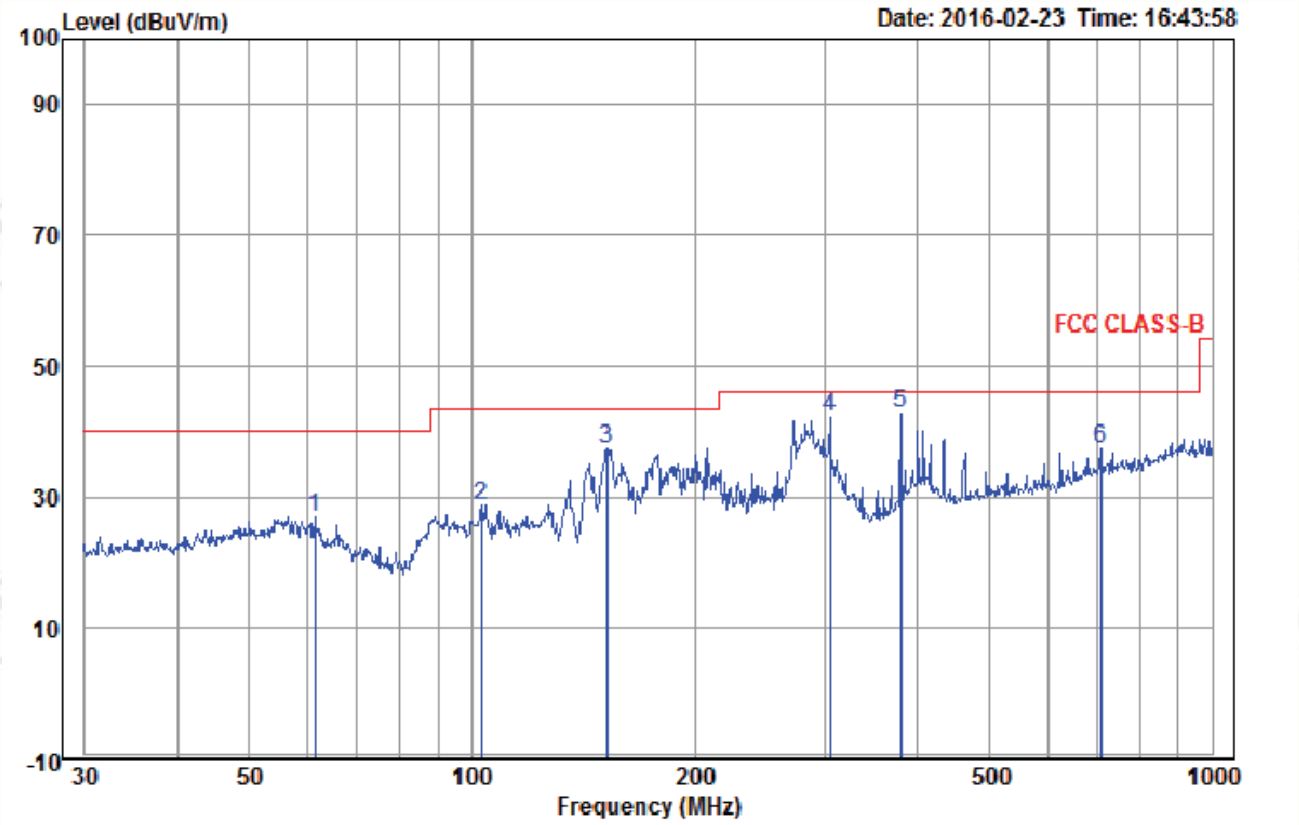


Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
13.110	10.77	0.68	6.50	17.95	69.5	-51.55	Horizontal	QP
13.410	10.76	0.68	6.17	17.61	80.5	-62.89	Horizontal	QP
13.553	10.75	0.69	40.21	51.65	90.5	-38.85	Horizontal	QP
13.567	10.75	0.69	39.63	51.07	90.5	-39.43	Horizontal	QP
13.710	10.74	0.69	6.32	17.75	80.5	-62.75	Horizontal	QP
14.010	10.73	0.69	5.94	17.36	69.5	-52.14	Horizontal	QP

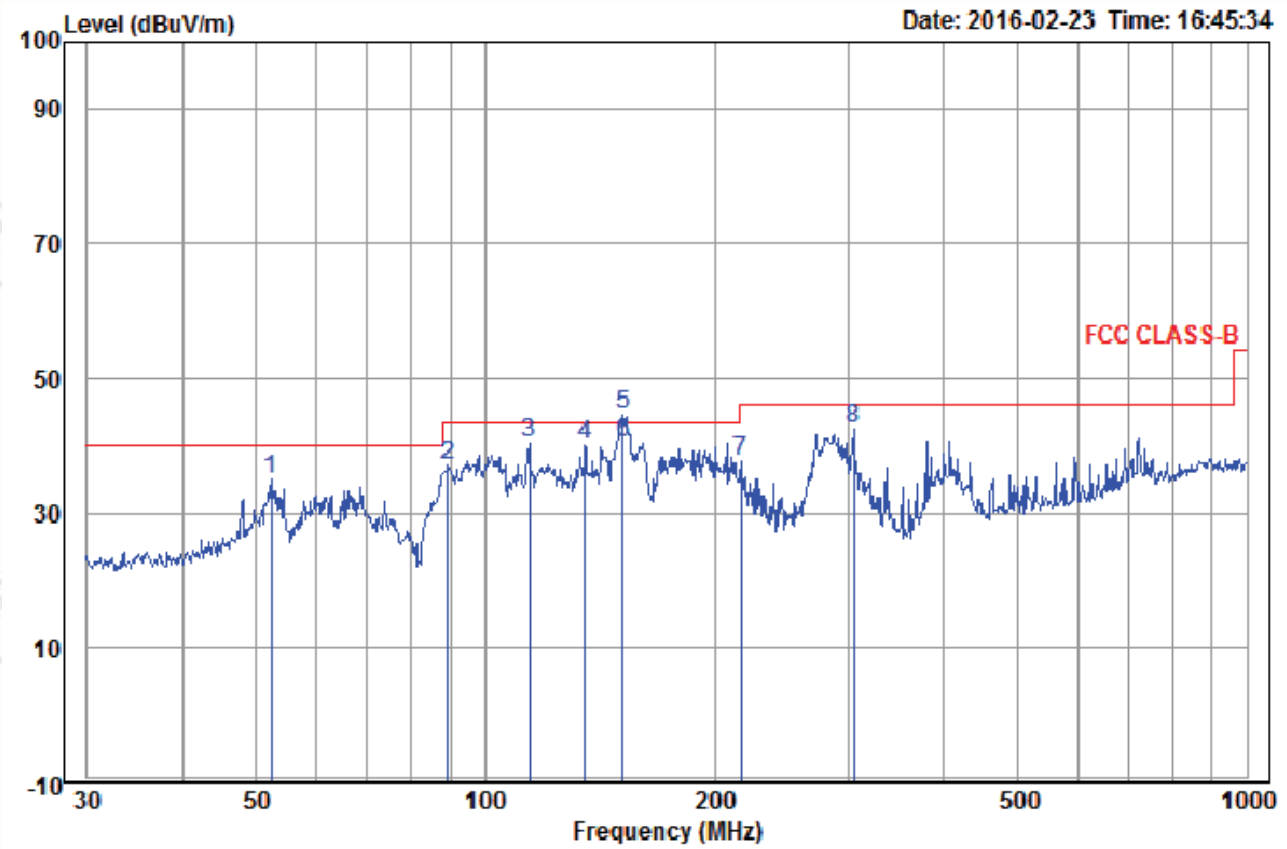


Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
13.110	10.77	0.68	7.54	19.02	69.5	-50.48	Vertical	QP
13.410	10.76	0.68	13.02	24.46	80.5	-56.04	Vertical	QP
13.553	10.75	0.69	39.51	50.95	90.5	-39.55	Vertical	QP
13.567	10.75	0.69	38.82	50.26	90.5	-40.24	Vertical	QP
13.710	10.74	0.69	14.95	26.38	80.5	-54.12	Vertical	QP
14.010	10.73	0.69	7.32	18.74	69.5	-50.76	Vertical	QP

30MHz-1000MHz



Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
61.346	13.31	1.43	12.17	26.91	40	-13.09	Horizontal	QP
103.08	12.94	1.57	14.05	28.56	43.5	-14.94	Horizontal	QP
152.13	9.79	1.61	26.11	37.51	43.5	-5.99	Horizontal	QP
304.61	13.63	2.41	26.11	42.15	46	-3.85	Horizontal	QP
379.914	15.72	2.77	24.12	42.61	46	-3.39	Horizontal	QP
706.7	20.74	3.91	12.59	37.24	46	-8.76	Horizontal	QP



Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
52.391	14.77	1.41	18.78	34.96	40	-5.04	Vertical	QP
89.276	11.02	1.59	24.54	37.15	43.5	-6.35	Vertical	QP
114.114	12.06	1.57	26.62	40.25	43.5	-3.25	Vertical	QP
135.032	10.61	1.58	27.77	39.96	43.5	-3.54	Vertical	QP
151.597	9.77	1.6	29.01	40.38	43.5	-3.12	Vertical	QP
216.783	11.89	2.26	23.44	37.59	46	-8.41	Vertical	QP
304.61	13.63	2.41	26.28	42.32	46	-3.68	Vertical	QP

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

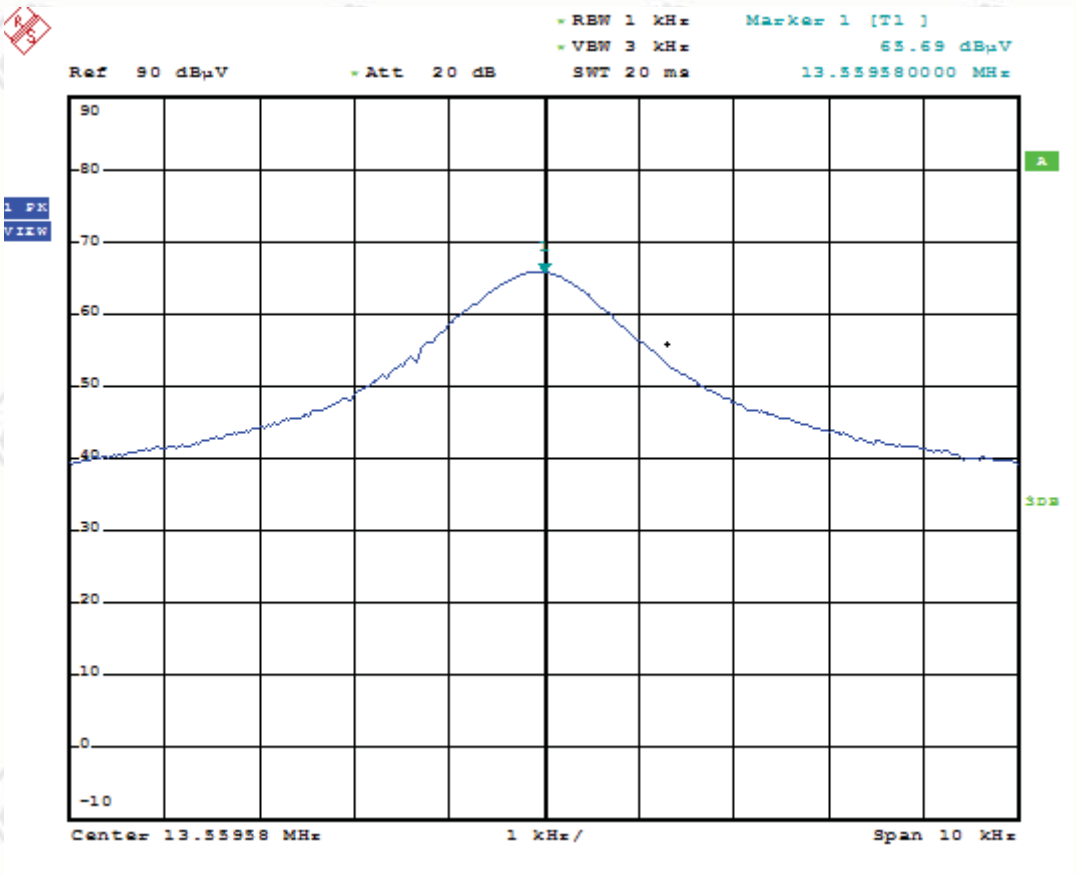
7.4 Frequency Tolerance

Test Requirement:	47 CFR Part 15 Subpart C Section 15.225(e)
Test Method:	ANSI C63.10-2013
Frequency range:	Operation within the band 13.110-14.010 MHz
Requirement :	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.
Test Mode:	Transmitter mode
Method of measurement:	The EUT was placed in an environmental test chamber and powered such that control element received normal voltage and the transmitter provided maximum RF output.
Instruments Used:	Refer to section 6 for details
Test Result:	Pass

Test Frequency: 13.56MHz				**Temperature:22℃**
Supply Voltage (V)	**Test Result (MHz)**	**Deviation (kHz)**	**Limit (kHz)**	**Result**
12	**13.55938**	**0.62**	**1.356**	**Pass**

Test Frequency: 13.56MHz				**Temperature:20℃**
Supply Voltage (V)	**Test Result (MHz)**	**Deviation (kHz)**	**Limit (kHz)**	**Result**
10.2	**13.55937**	**0.63**	**1.356**	**Pass**
11	**13.55937**	**0.63**	**1.356**	**Pass**
12	**13.55938**	**0.62**	**1.356**	**Pass**
13	**13.55938**	**0.62**	**1.356**	**Pass**
13.8	**13.55938**	**0.62**	**1.356**	**Pass**

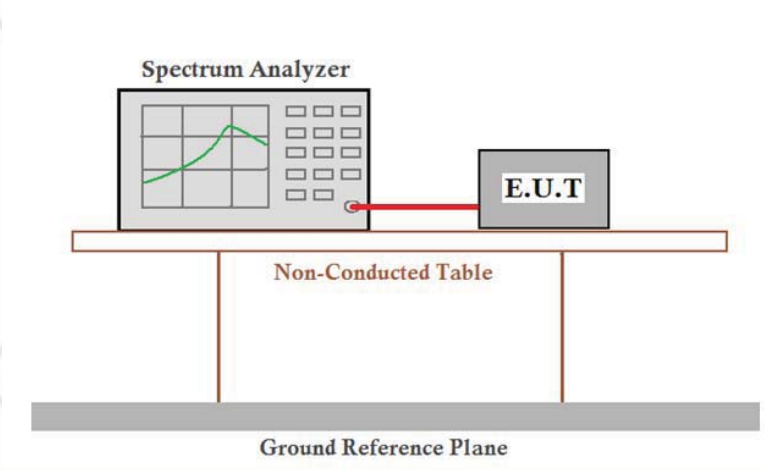
Test Frequency: 13.56MHz				**Voltage: 12V**
Temperature (℃)	**Test Result (MHz)**	**Deviation (kHz)**	**Limit (kHz)**	**Result**
-20	**13.55937**	**0.63**	**1.356**	**Pass**
-10	**13.55938**	**0.62**	**1.356**	
0	**13.55938**	**0.62**	**1.356**	
10	**13.55936**	**0.64**	**1.356**	
20	**13.55938**	**0.62**	**1.356**	
30	**13.55938**	**0.62**	**1.356**	
40	**13.55938**	**0.62**	**1.356**	
50	**13.55938**	**0.62**	**1.356**	


RBW 1 kHz
VBW 3 kHz
SWT 20 ms
Marker 1 [T1]
65.69 dBµV
13.559580000 MHz
Ref 90 dBµV
Att 20 dB
90
80
70
60
50
40
30
20
10
0
-10
1 PK
VIEW
A
3DB
Center 13.55958 MHz
1 kHz/
Span 10 kHz

7.5 Occupied Bandwidth

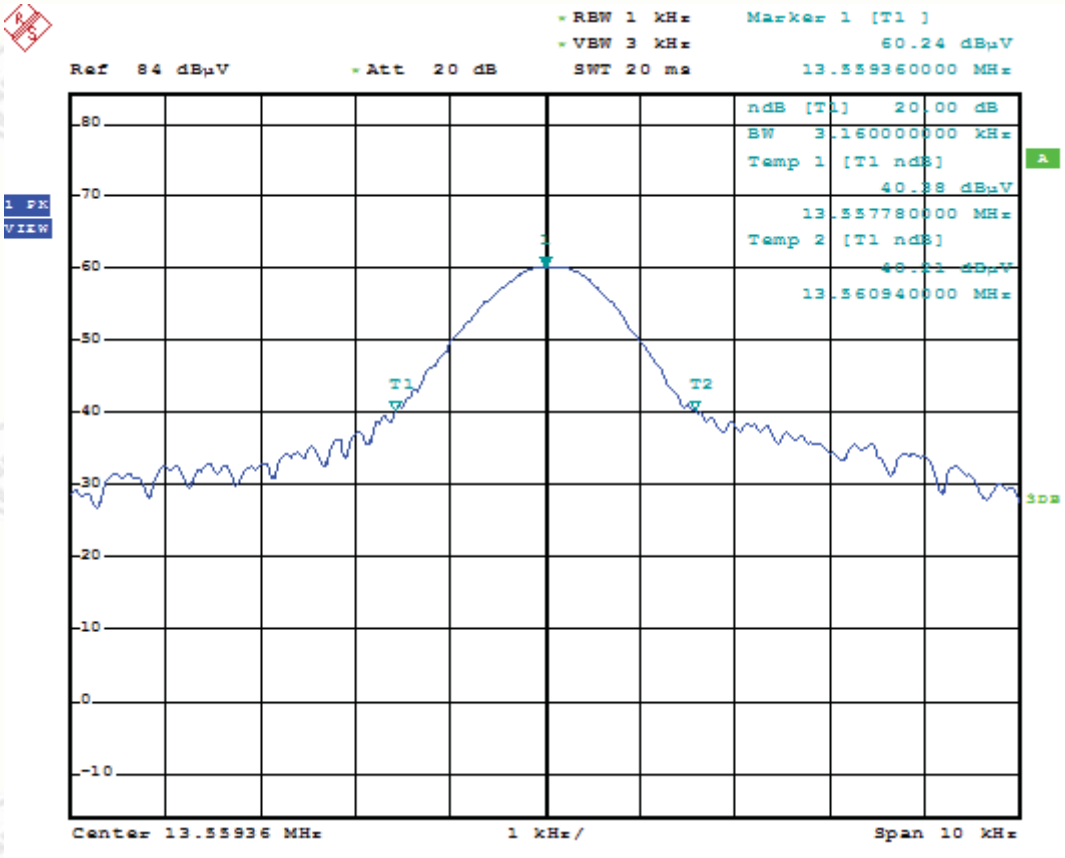
Test Requirement:	47 CFR Part 15C Section 15.215 (C)
Test Method:	ANSI C63.10-2013
Frequency range:	Operation within the band 13.110 – 14.010 MHz
Requirement :	Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that 20dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equip compliance with the 20dB attenuation specification may base on measurement at the intentional radiator's antenna output terminal unless the intentional radiator uses a permanently attached antenna, in which case compliance shall be.deomonstrated by measuring the radiated emissions.

Test Setup:



Test Mode:	Transmitter mode
Instruments Used:	Refer to section 6 for details
Test Result:	Pass

The graph as below: represents the emissions take for this device.

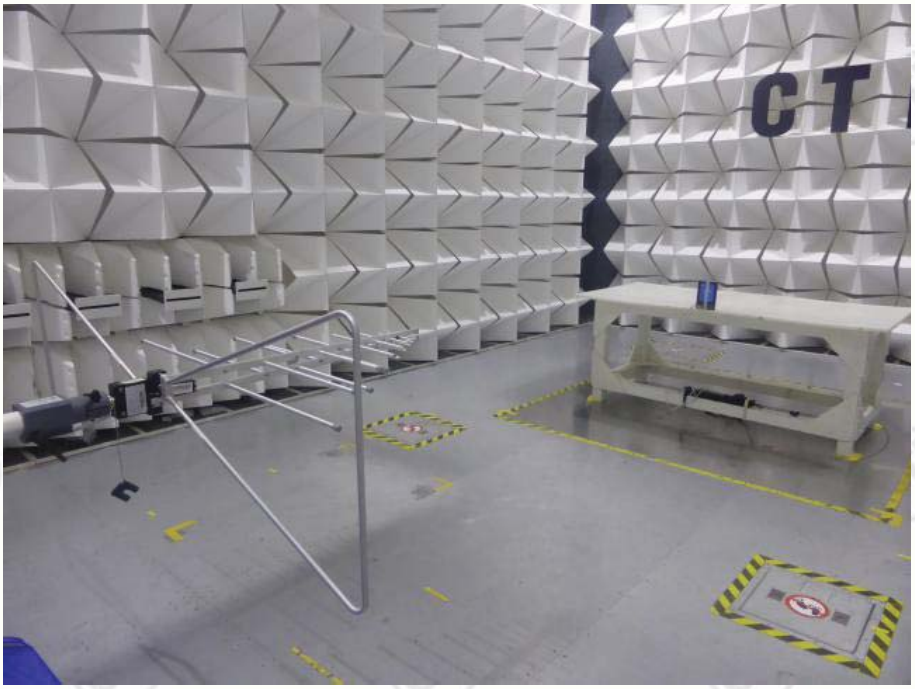

RBW 1 kHz
VBW 3 kHz
SWT 20 ms
Marker 1 [T1]
60.24 dBµV
13.559360000 MHz
Ref 84 dBµV
Att 20 dB
ndB [T1] 20.00 dB
BW 3.160000000 kHz
Temp 1 [T1 ndB]
40.38 dBµV
13.557780000 MHz
Temp 2 [T1 ndB]
40.21 dBµV
13.560940000 MHz
1 PK
VIEW
80
70
60
50
40
30
20
10
0
-10
T1
T2
1
3DB
Center 13.55936 MHz
1 kHz/
Span 10 kHz

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

Test Model No.: IC-RD/TT

Conducted Emissions

Radiated emission Test Setup (9kHz～30MHz)

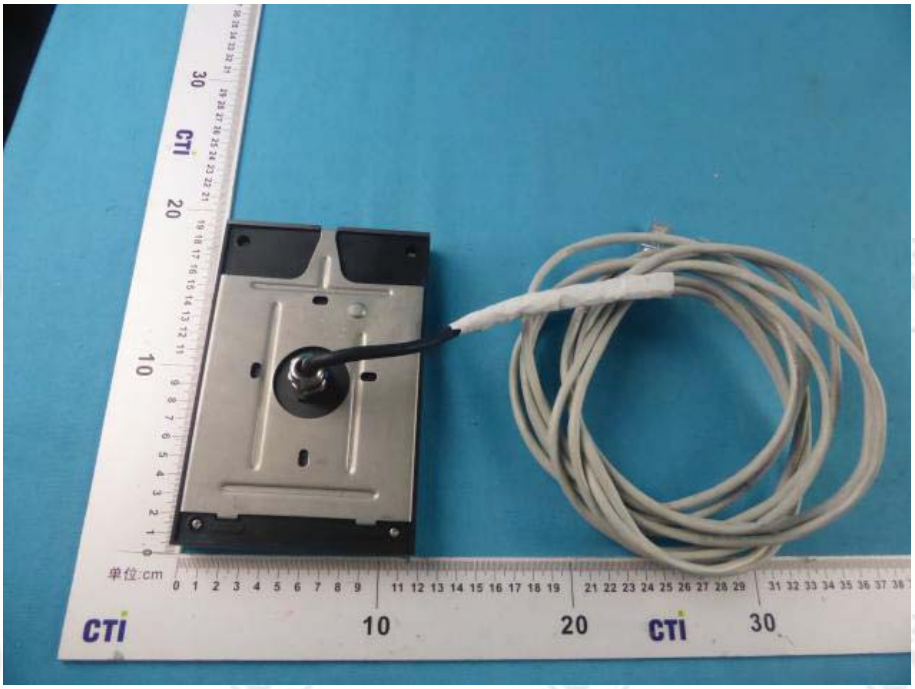


Radiated emission Test Setup (30MHz～1000MHz)

APPENDIX 2 PHOTOGRAPHS OF EUT

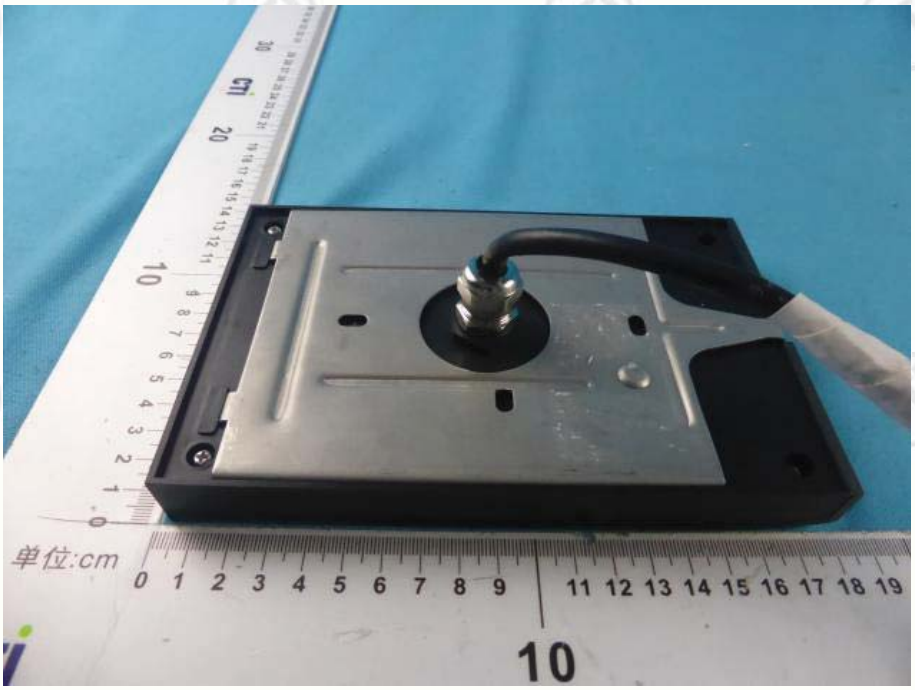
Test Model No.: IC-RD/TT

View of Product-1

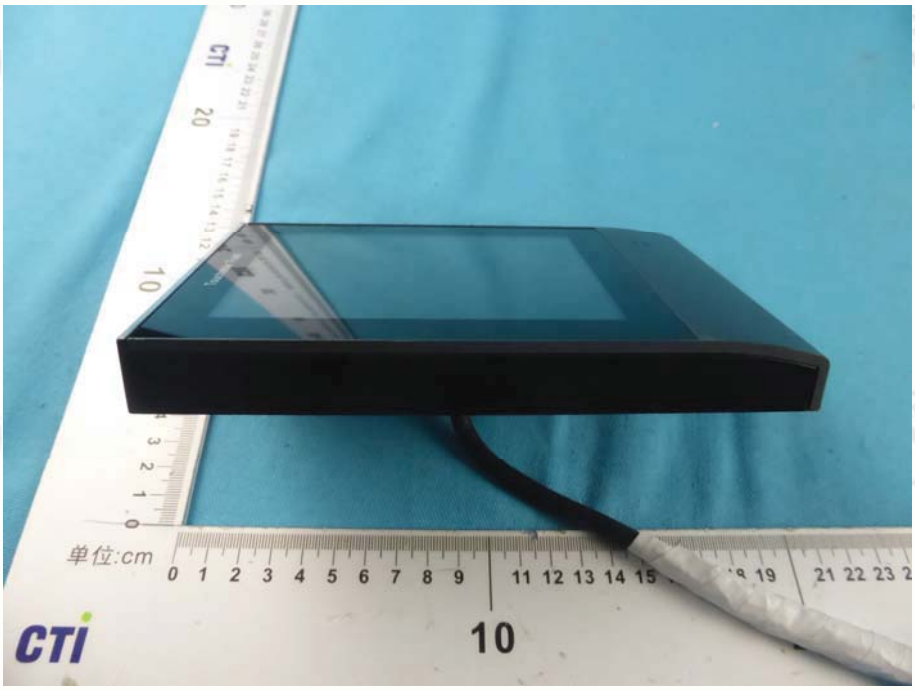


View of Product-2

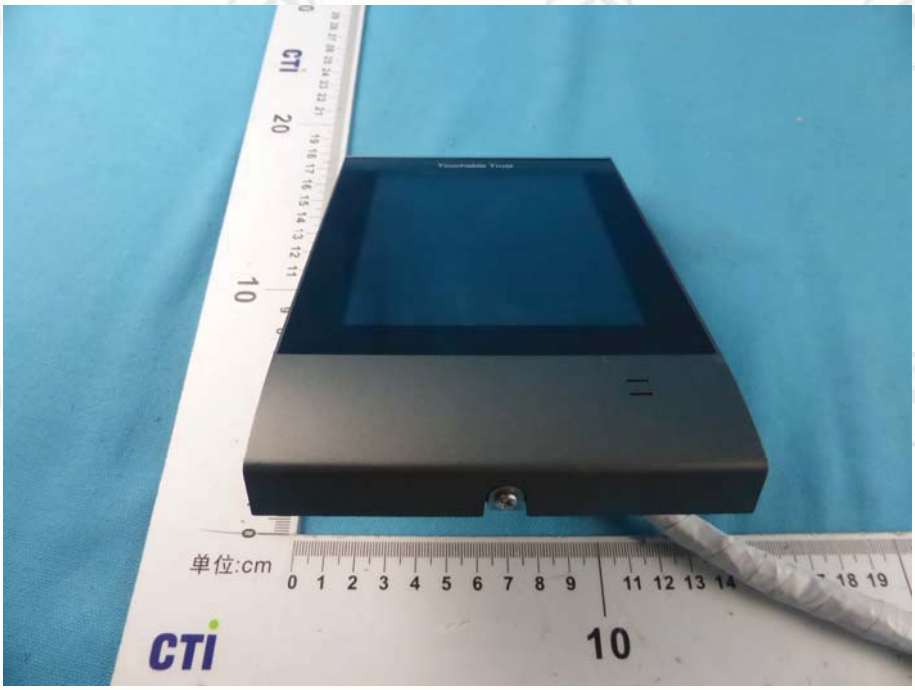
View of Product-3



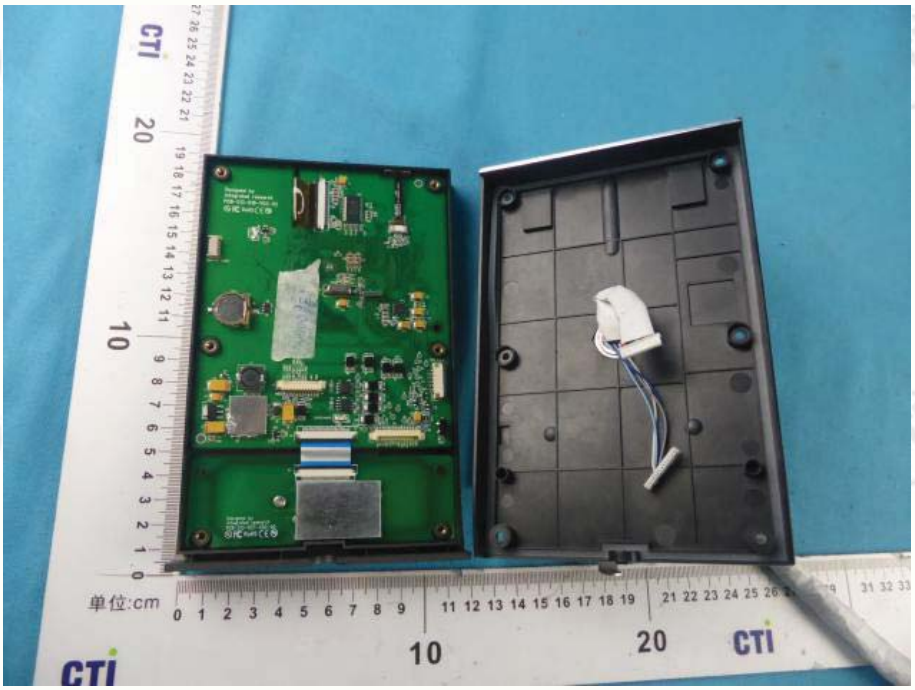
View of Product-4



View of Product-5

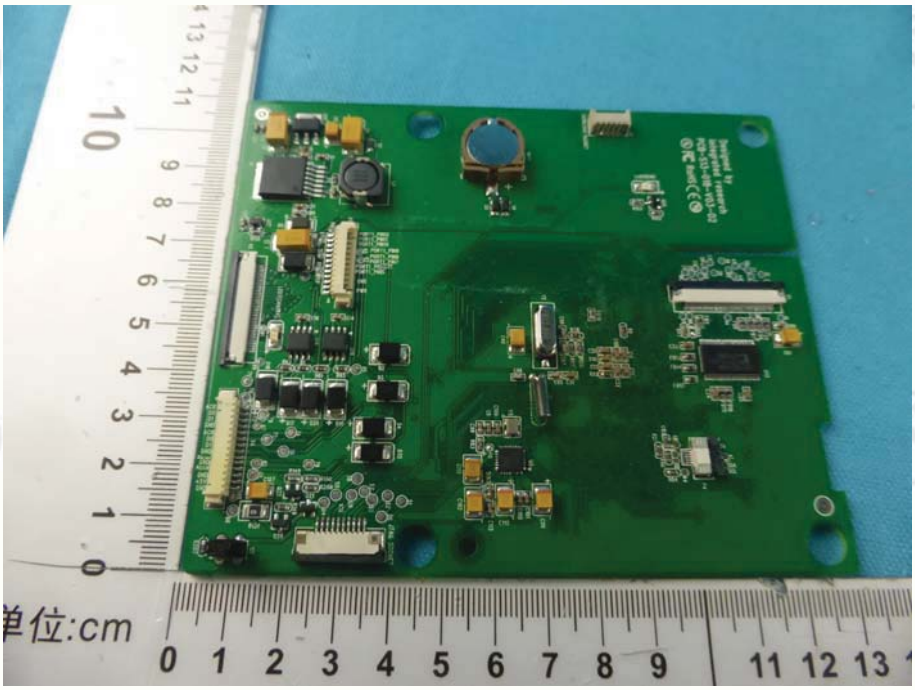


View of Product-6

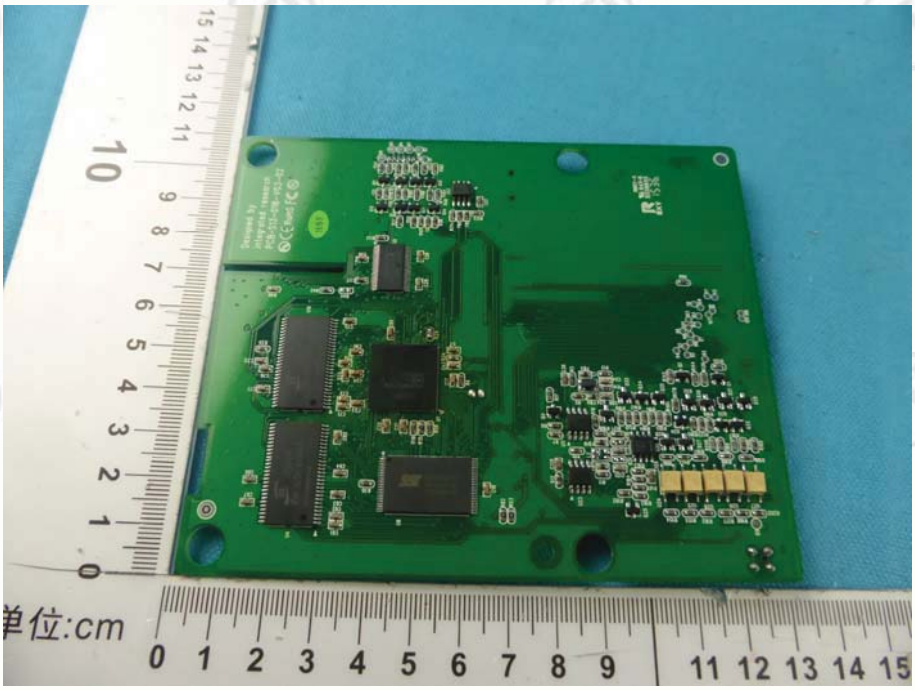


View of Product-7

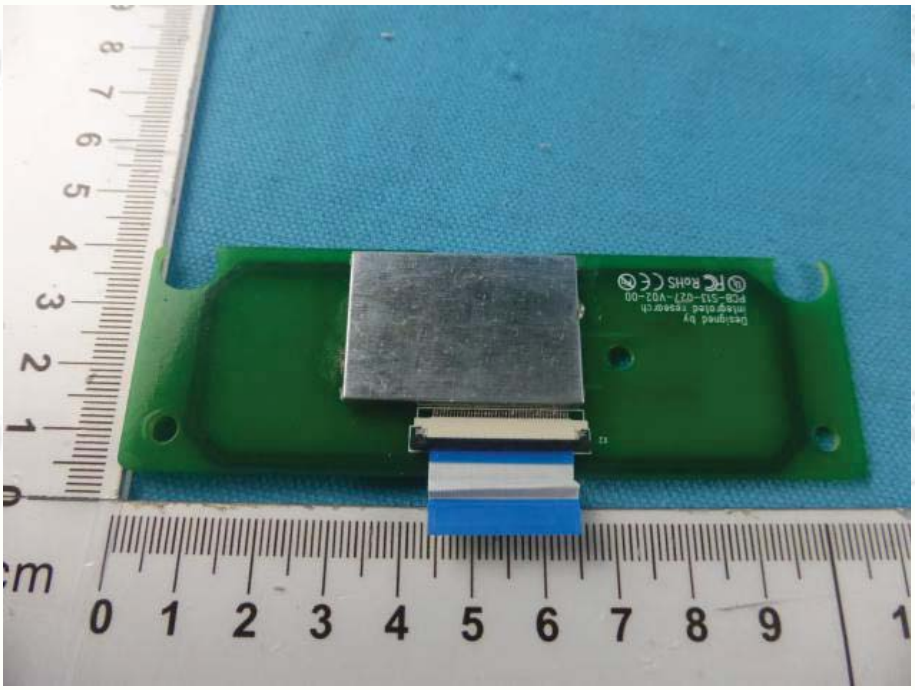
View of Product-8



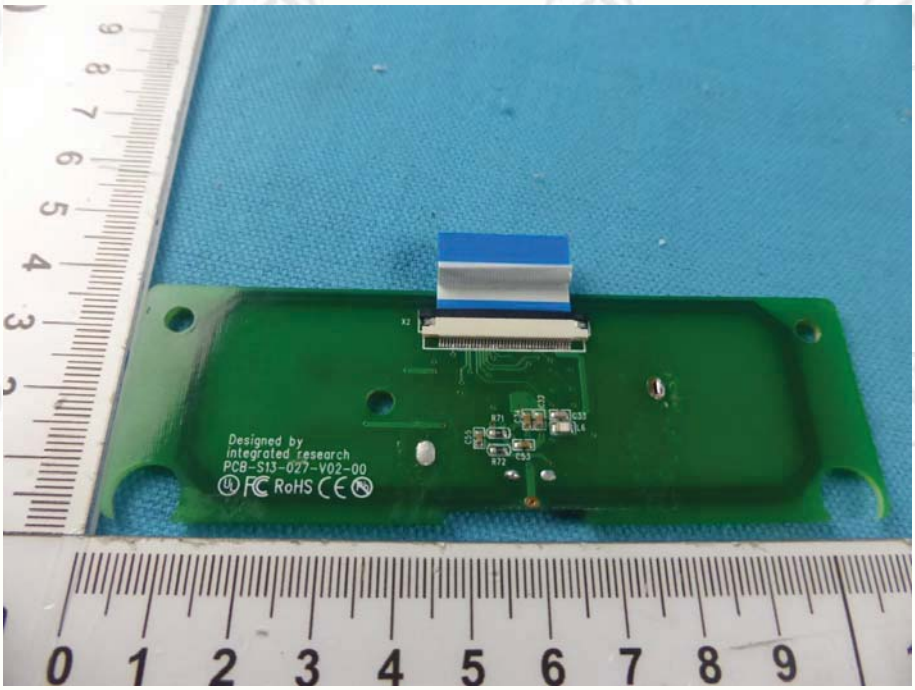
View of Product-9



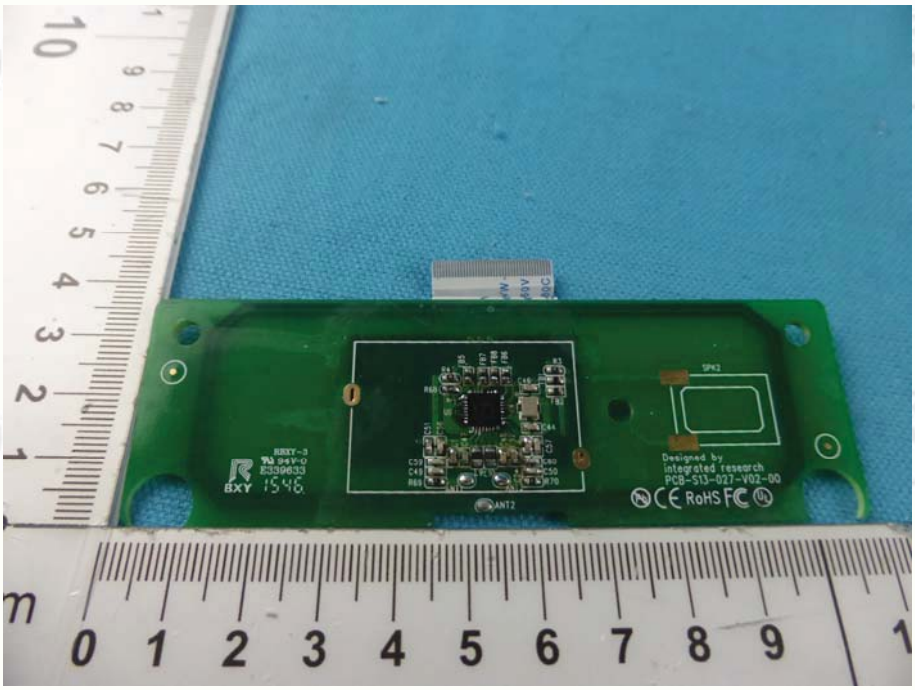
View of Product-10



View of Product-11

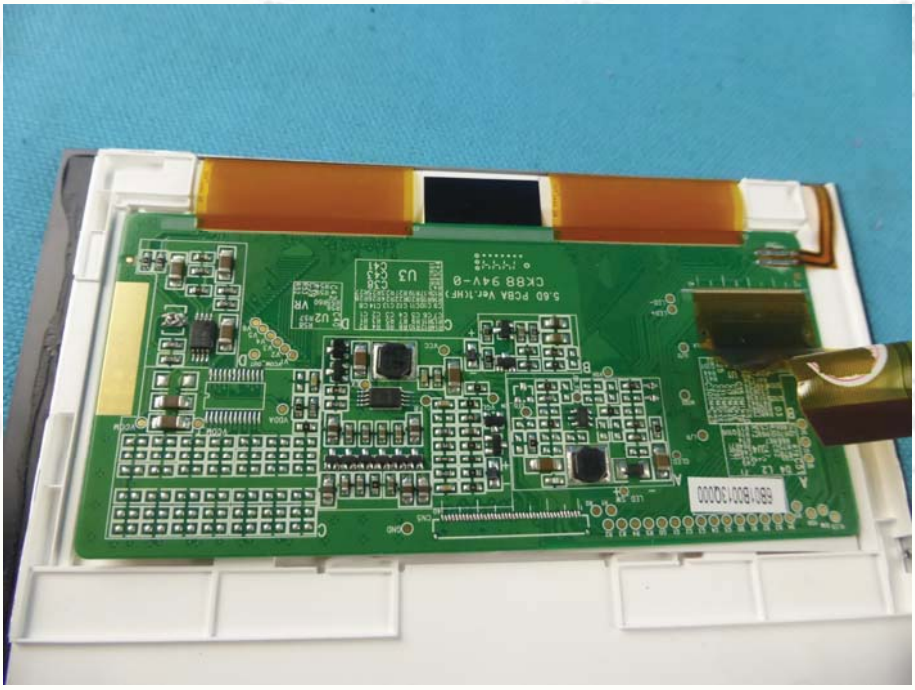


View of Product-12

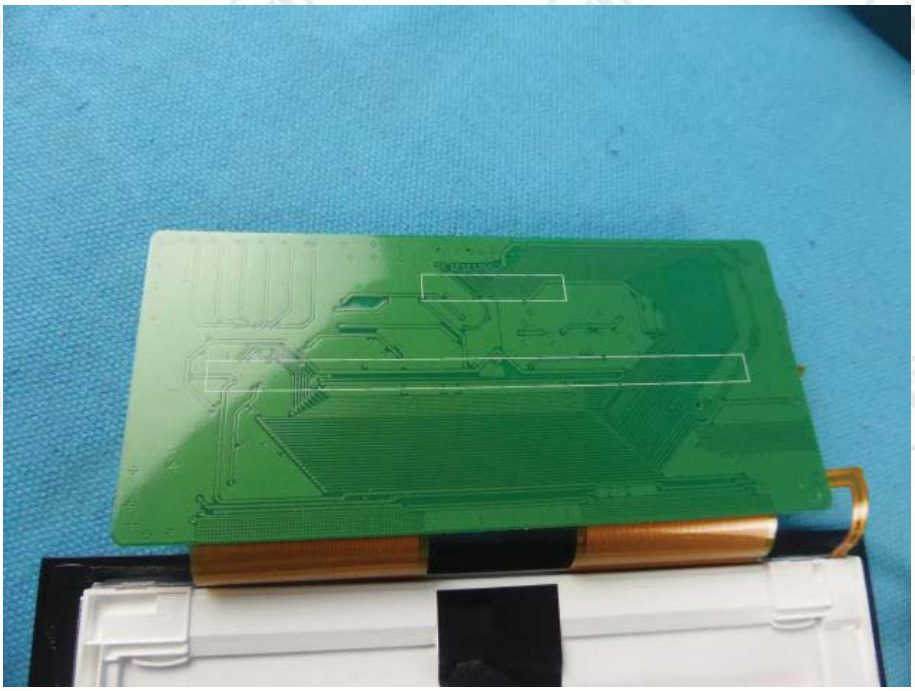


View of Product-13

View of Product-14



View of Product-15



View of Product-16

*** End of Report ***