FCC TEST REPORT

Product	:	DT005+0010/ELECTRONIC DOG FENCE SYSTEM
Trade mark	:	N/A
Model/Type reference	:	EF-4000
Serial Number	:	N/A
Report Number	:	EED32H00237401
FCC ID	:	TLB2015EF4000
Date of Issue	:	Jan. 29, 2016
Test Standards	:	47 CFR Part 15 Subpart C (2015)
Test result	:	PASS

Prepared for:

Jetta Company Limited

Jetta House, 19 On Kui Street, On Lok Tsuen, Fanling, Hong Kong

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: Jan. 29, 2016

Sheek Luo

Lab supervisor

Check No.:1996212499

2 Version

Version No.	Date	Description
00	Jan. 29, 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 15.205(b)	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.

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5 General Information

5.1 Client Information

Applicant:	Jetta Company Limited
Address of Applicant:	Jetta House, 19 On Kui Street, On Lok Tsuen, Fanling, Hong Kong
Factory:	Jetta (China) Industries Co., Ltd.
Address of Factory:	333 Cai Xin Lu, Lan He Zhen, Nan Sha Qu, Guangzhou Shi, Guangdong Province, China

5.2 General Description of EUT

Product Name:	DT005+0010/ELECTRONIC DOG FENCE SYSTEM
Mode No.(EUT):	EF-4000
Trade Mark:	N/A
EUT Supports Radios application:	20KHz
AC adapter:	AC 100-240V, 50/60Hz Output: DC 15V, 0.15A
Power Supply:	AC 120V, 60Hz

5.3 Product Specification subjective to this standard

Carrier Frequency:	20KHz
Modulation Type:	ASK
Sample Type:	Fixed production
Antenna Type:	Temporary
Antenna Gain:	0 dBi
Hardware Version:	04-02
Software Version:	00
Test voltage:	AC 120V, 60Hz
Sample Received Date:	Dec. 04, 2015
Sample tested Date:	Dec. 04, 2015 to Jan. 14, 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

The EUT has been tested independently.

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
Multi device Controller	maturo	NCD/070/10711112	---	01-13-2015	01-12-2016
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(7M)	SF106	5219/6A	01-13-2015	01-12-2016
Cable line	Fulai(6M)	SF106	5220/6A	01-12-2016	01-11-2017

Cable line	Fulai(6M)	SF106	5220/6A	01-13-2015	01-12-2016
Cable line	Fulai(3M)	SF106	5216/6A	01-12-2016	01-11-2017
Cable line	Fulai(3M)	SF106	5216/6A	01-13-2015	01-12-2016
Cable line	Fulai(3M)	SF106	5217/6A	01-12-2016	01-11-2017
Cable line	Fulai(3M)	SF106	5217/6A	01-13-2015	01-12-2016
Communication test set	R&S	CMW500	152394	04-19-2015	04-18-2016
High-pass filter(3-18GHz)	Sinoscite	FL3CX03WG18NM12-0398-002	---	01-12-2016	01-11-2017
High-pass filter(3-18GHz)	Sinoscite	FL3CX03WG18NM12-0398-002	---	01-13-2015	01-12-2016
High-pass filter(5-18GHz)	MICRO-TRONICS	SPA-F-63029-4	---	01-12-2016	01-11-2017
High-pass filter(5-18GHz)	MICRO-TRONICS	SPA-F-63029-4	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX01CA09CL12-0395-001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA09CL12-0395-001	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX01CA08CL12-0393-001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA08CL12-0393-001	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX02CA04CL12-0396-002	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX02CA04CL12-0396-002	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX02CA03CL12-0394-001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX02CA03CL12-0394-001	---	01-13-2015	01-12-2016

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(3-18GHz)	Sinoscite	FL3CX03WG18NM12-0398-002	---	01-13-2015	01-12-2016
High-pass filter(5-18GHz)	MICRO-TRONICS	SPA-F-63029-4	---	01-12-2016	01-11-2017

High-pass filter(5-18GHz)	MICRO-TRONICS	SPA-F-63029-4	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX01CA09C L12-0395-001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA09C L12-0395-001	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX01CA08C L12-0393-001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA08C L12-0393-001	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX02CA04C L12-0396-002	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX02CA04C L12-0396-002	---	01-13-2015	01-12-2016

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:

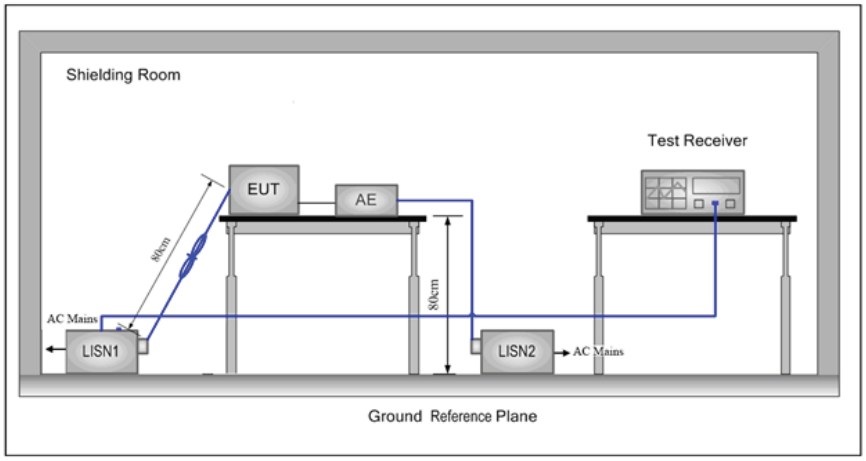
Frequency range (MHz)	Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* 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 5.11 for details

Test Results: Pass

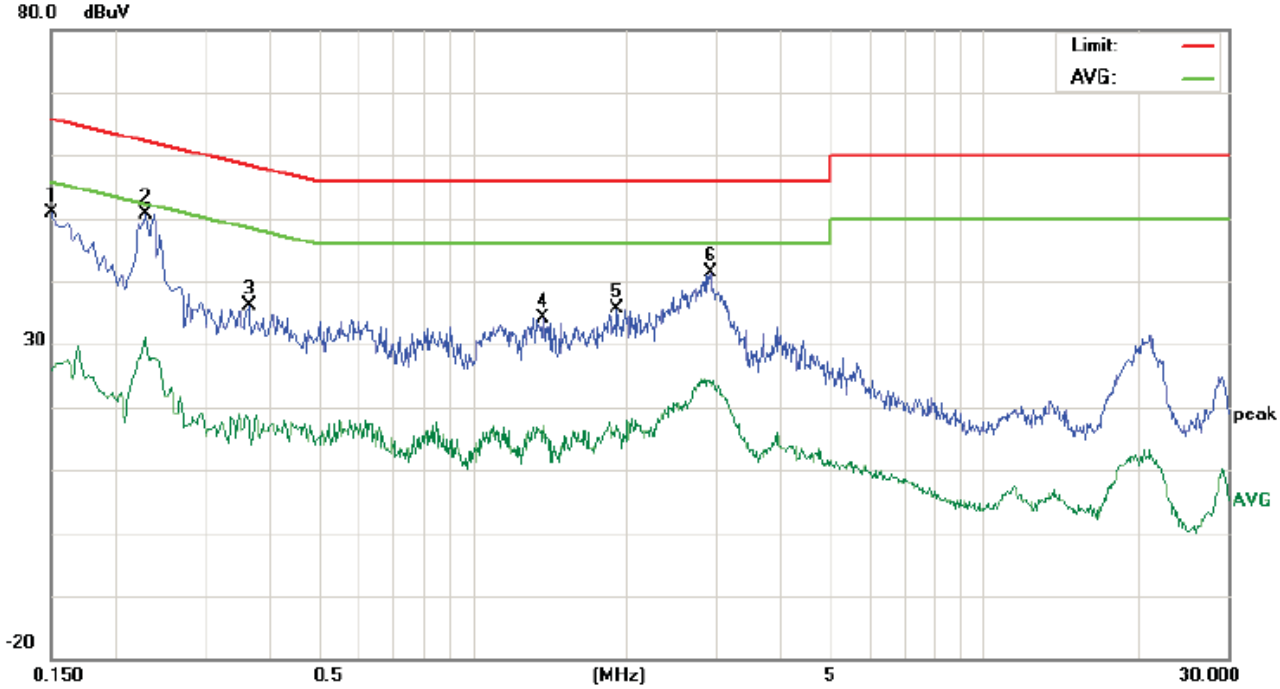
Test Data

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.

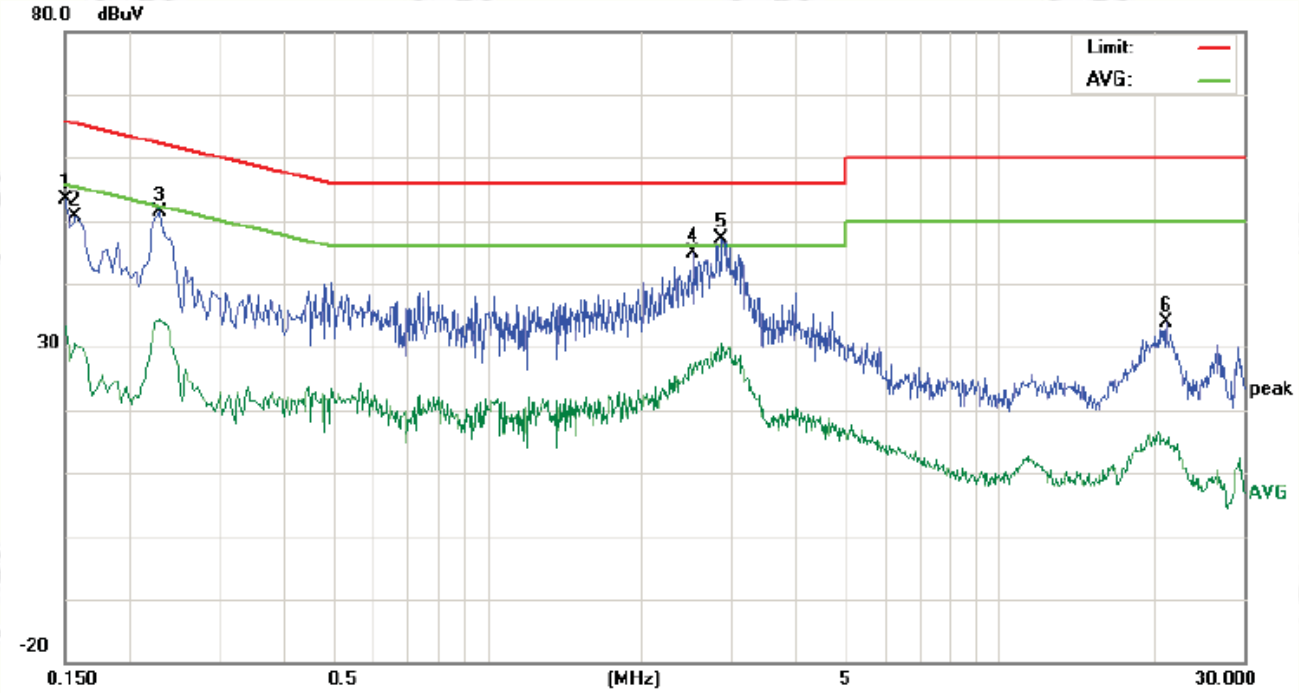
Adapter port: HKP-1500150

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	40.95	35.62	15.99	9.80	50.75	45.42	25.79	65.99	55.99	-20.57	-30.20	P	
2	0.2300	40.92	37.28	19.59	9.80	50.72	47.08	29.39	62.45	52.45	-15.37	-23.06	P	
3	0.3660	26.14	19.58	5.37	9.87	36.01	29.45	15.24	58.59	48.59	-29.14	-33.35	P	
4	1.3779	24.20	17.13	3.97	10.00	34.20	27.13	13.97	56.00	46.00	-28.87	-32.03	P	
5	1.9220	25.57	17.19	3.69	10.00	35.57	27.19	13.69	56.00	46.00	-28.81	-32.31	P	
6	2.9180	31.37	23.73	12.13	10.00	41.37	33.73	22.13	56.00	46.00	-22.27	-23.87	P	

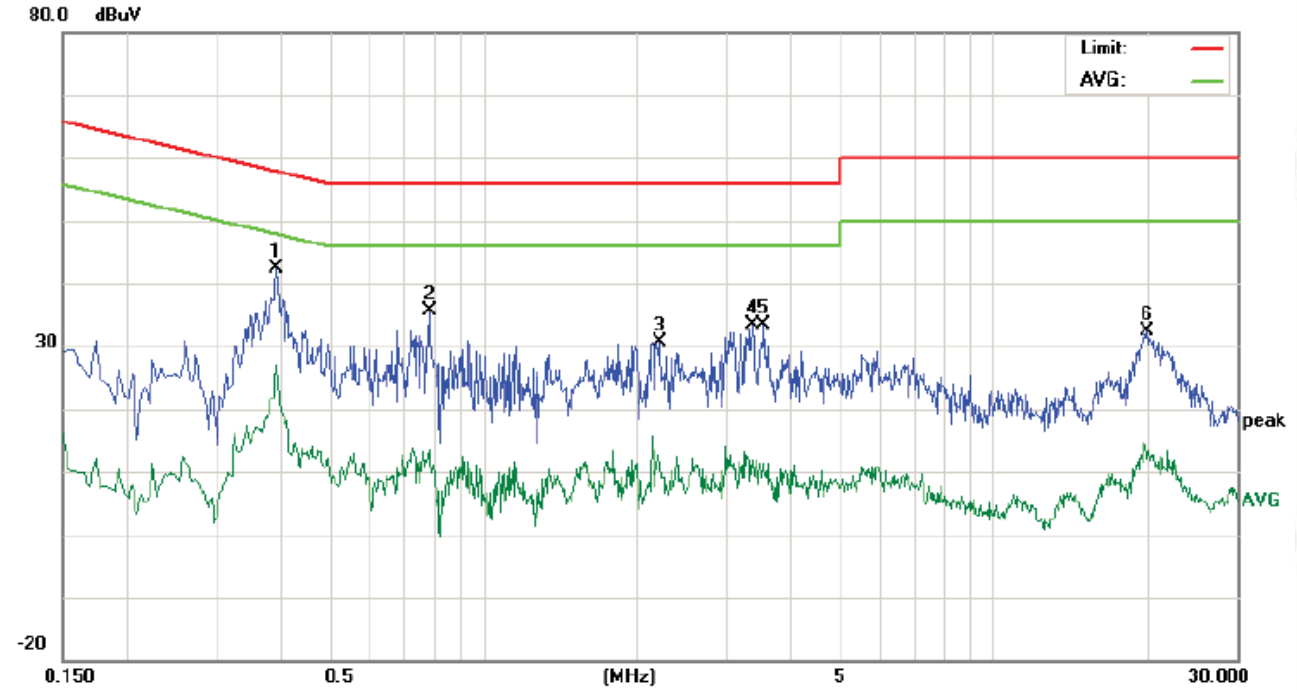
Neutral Line:



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	43.46	37.40	23.66	9.80	53.26	47.20	33.46	65.99	55.99	-18.79	-22.53	P	
2	0.1580	40.85	35.50	20.71	9.80	50.65	45.30	30.51	65.56	55.56	-20.26	-25.05	P	
3	0.2300	41.60	36.20	24.58	9.80	51.40	46.00	34.38	62.45	52.45	-16.45	-18.07	P	
4	2.5380	34.80	25.80	16.87	10.00	44.80	35.80	26.87	56.00	46.00	-20.20	-19.13	P	
5	2.8740	37.07	29.60	20.54	10.00	47.07	39.60	30.54	56.00	46.00	-16.40	-15.46	P	
6	21.2060	23.46	13.30	4.54	10.48	33.94	23.78	15.02	60.00	50.00	-36.22	-34.98	P	

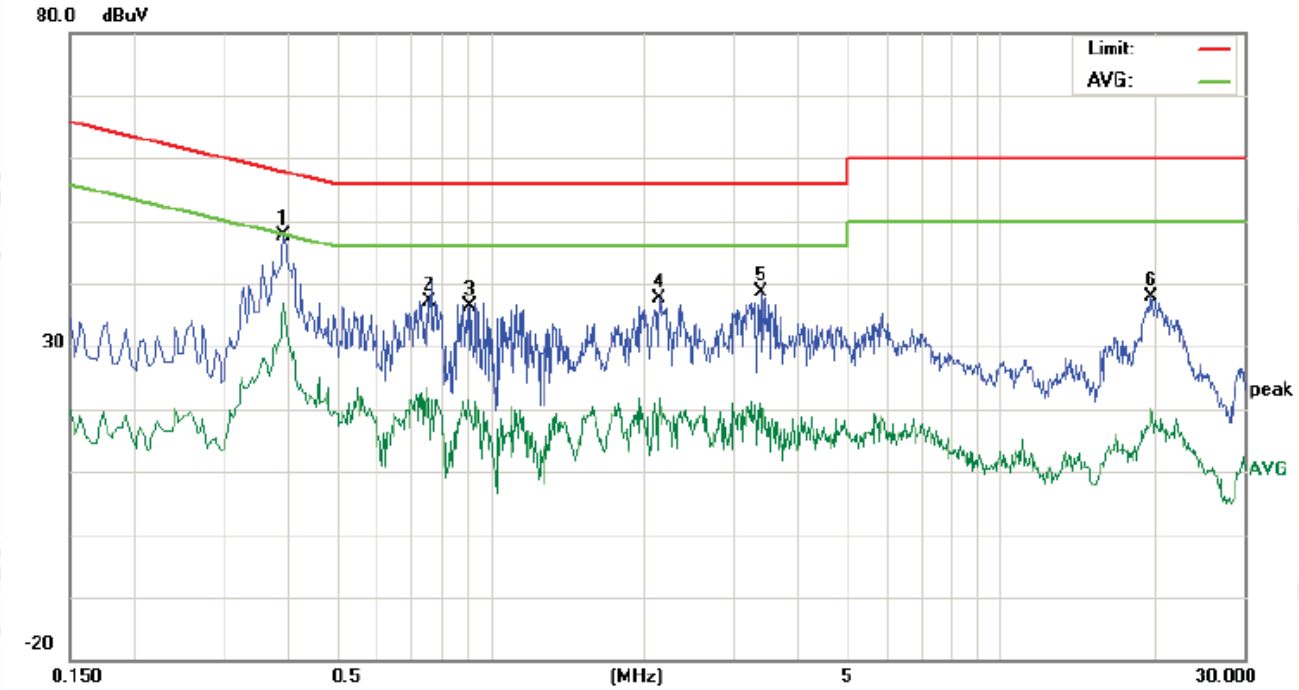
Adapter port: HKP06-1500150dU

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	0.3940	32.41	25.10	16.96	9.89	42.30	34.99	26.85	57.98	47.98	-22.99	-21.13	P	
2	0.7860	25.64	14.60	3.79	9.90	35.54	24.50	13.69	56.00	46.00	-31.50	-32.31	P	
3	2.2220	20.75	12.70	1.11	10.00	30.75	22.70	11.11	56.00	46.00	-33.30	-34.89	P	
4	3.3780	23.36	13.10	1.92	10.00	33.36	23.10	11.92	56.00	46.00	-32.90	-34.08	P	
5	3.5580	23.47	11.20	0.62	10.00	33.47	21.20	10.62	56.00	46.00	-34.80	-35.38	P	
6	20.0459	21.93	14.10	1.64	10.50	32.43	24.60	12.14	60.00	50.00	-35.40	-37.86	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	0.3940	37.71	33.10	26.93	9.89	47.60	42.99	36.82	57.98	47.98	-14.99	-11.16	P	
2	0.7500	25.22	20.60	13.55	9.90	35.12	30.50	23.45	56.00	46.00	-25.50	-22.55	P	
3	0.9060	26.17	20.30	11.38	10.00	36.17	30.30	21.38	56.00	46.00	-25.70	-24.62	P	
4	2.1540	27.60	19.60	11.97	10.00	37.60	29.60	21.97	56.00	46.00	-26.40	-24.03	P	
5	3.4140	28.60	20.30	10.20	10.00	38.60	30.30	20.20	56.00	46.00	-25.70	-25.80	P	
6	19.8340	27.41	18.50	9.74	10.49	37.90	28.99	20.23	60.00	50.00	-31.01	-29.77	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 15C Section 15.201

Test Method: ANSI C63.10-2013

Test Site: 3m (Semi-Anechoic Chamber)

Limit: All emissions are at least 40 dB below the 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:

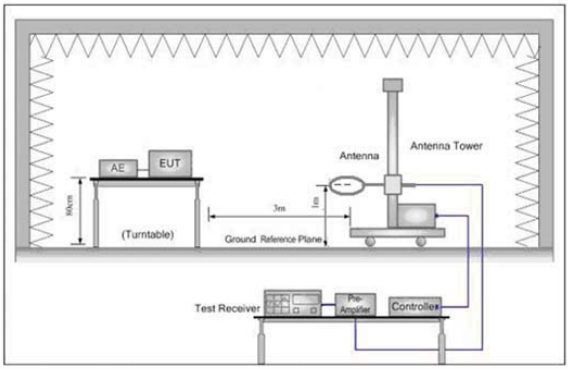


Figure 1. Below 30MHz

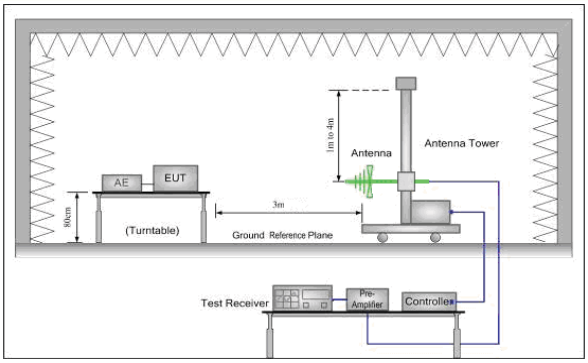


Figure 2. 30MHz to 1GHz

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 placed 1m above the ground find out the maximum emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. 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.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Limit:

Frequency	Field strength (microvolt/meter)	Limit (dBμV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
1.705MHz-30MHz	30	-	-	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3

Test Mode: Transmitting mode

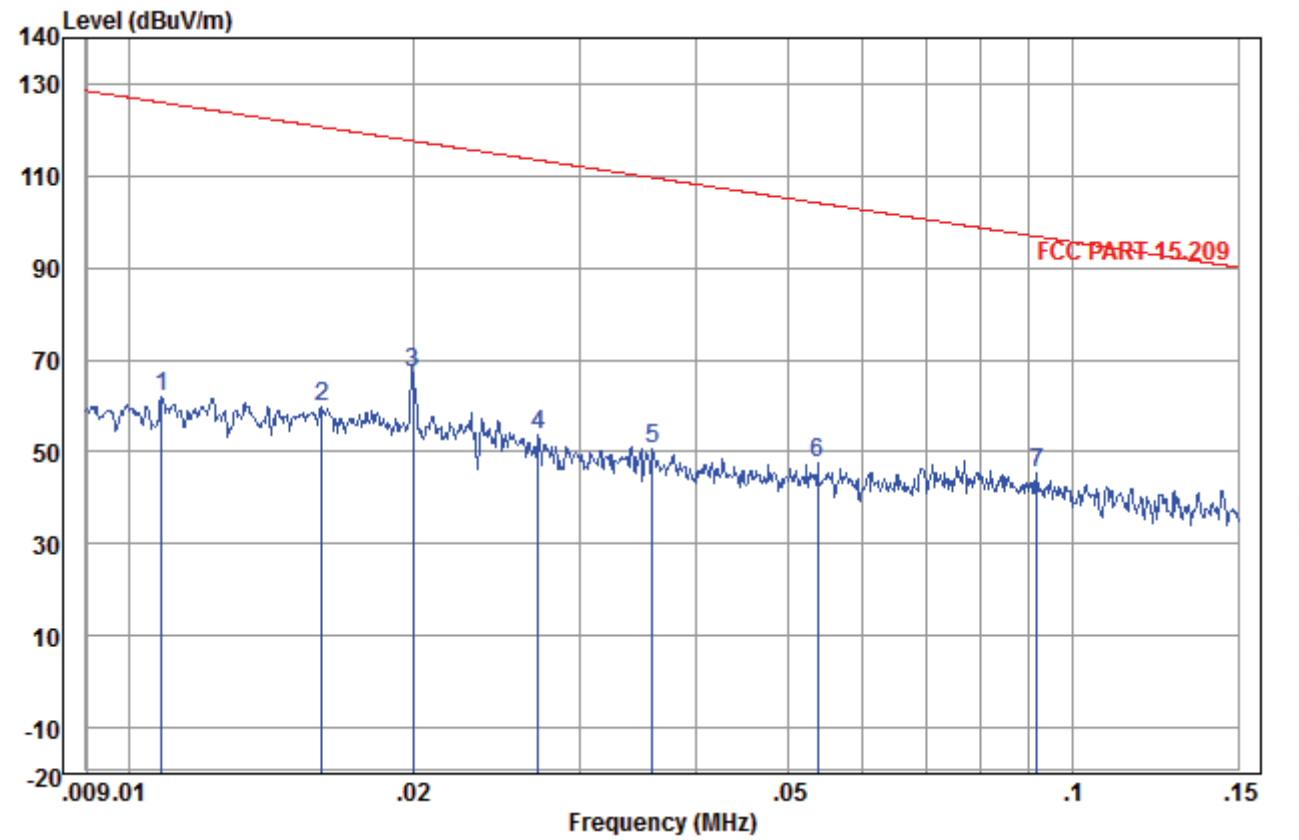
Instruments Used: Refer to section 5.11 for details

Test Result: Pass

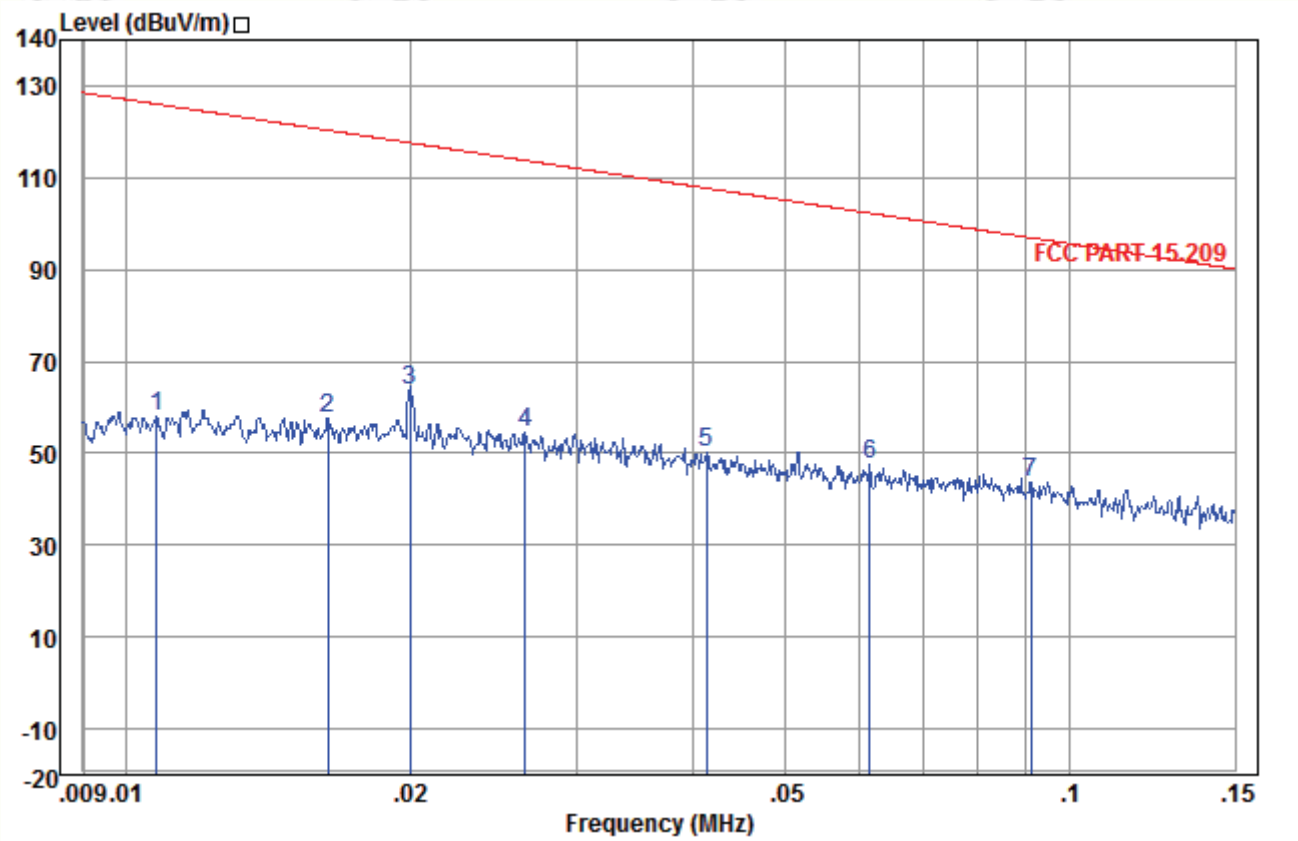
Test data:

Adapter port: HKP-1500150

9 kHz-150 kHz

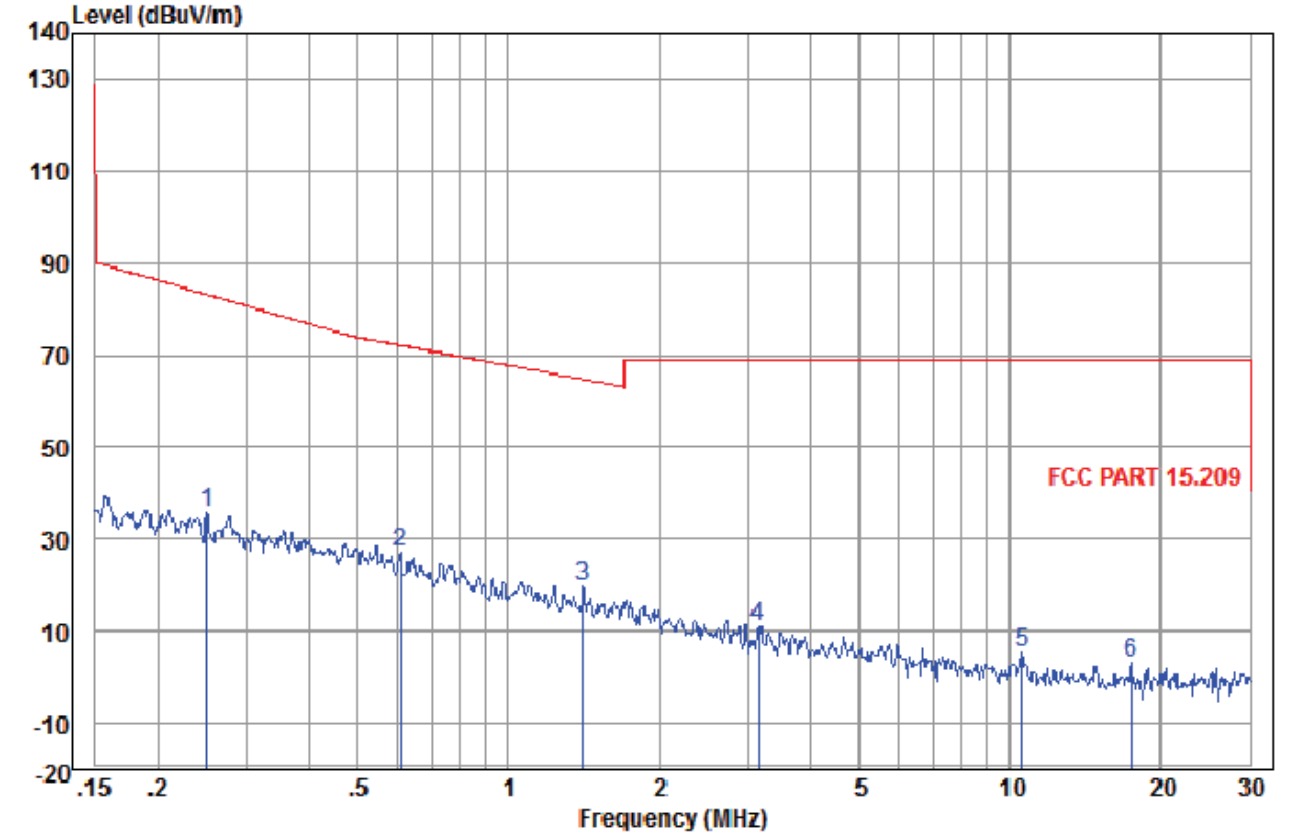


Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
0.01084	18.62	0.02	43.5	62.14	126.9	-64.76	Horizontal	PK
0.01602	17.27	0.04	42.42	59.73	123.51	-63.78	Horizontal	PK
0.02000	16.50	0.05	50.45	67.00	121.58	-54.58	Horizontal	PK
0.02719	14.89	0.06	38.52	53.47	118.91	-65.44	Horizontal	PK
0.03592	13.43	0.06	37.12	50.61	116.5	-65.89	Horizontal	PK
0.05372	11.66	0.07	35.93	47.66	113	-65.34	Horizontal	PK
0.09194	11.43	0.1	34.07	45.6	108.33	-62.73	Horizontal	QP

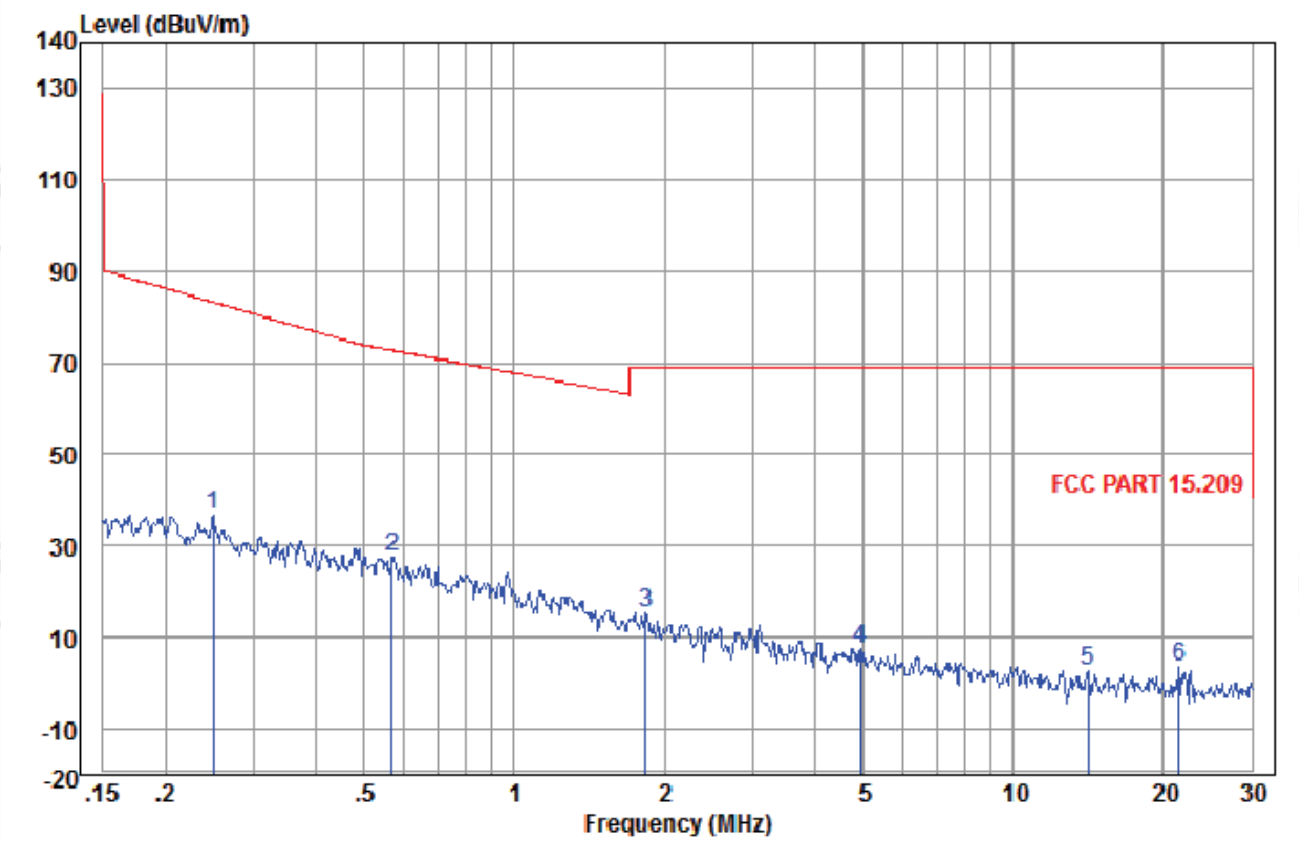


Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
0.01078	18.64	0.02	39.39	58.05	126.95	-68.9	Vertical	PK
0.01639	17.19	0.04	40.33	57.56	123.31	-65.75	Vertical	PK
0.02000	16.50	0.05	47.03	63.58	121.58	-58.00	Vertical	PK
0.02651	15.02	0.06	39.44	54.52	119.14	-64.62	Vertical	PK
0.04123	12.71	0.07	37.51	50.29	115.3	-65.01	Vertical	PK
0.06148	11.6	0.08	35.99	47.67	111.83	-64.16	Vertical	PK
0.09116	11.43	0.1	32.21	43.74	108.41	-64.67	Vertical	QP

150 kHz-30MHz

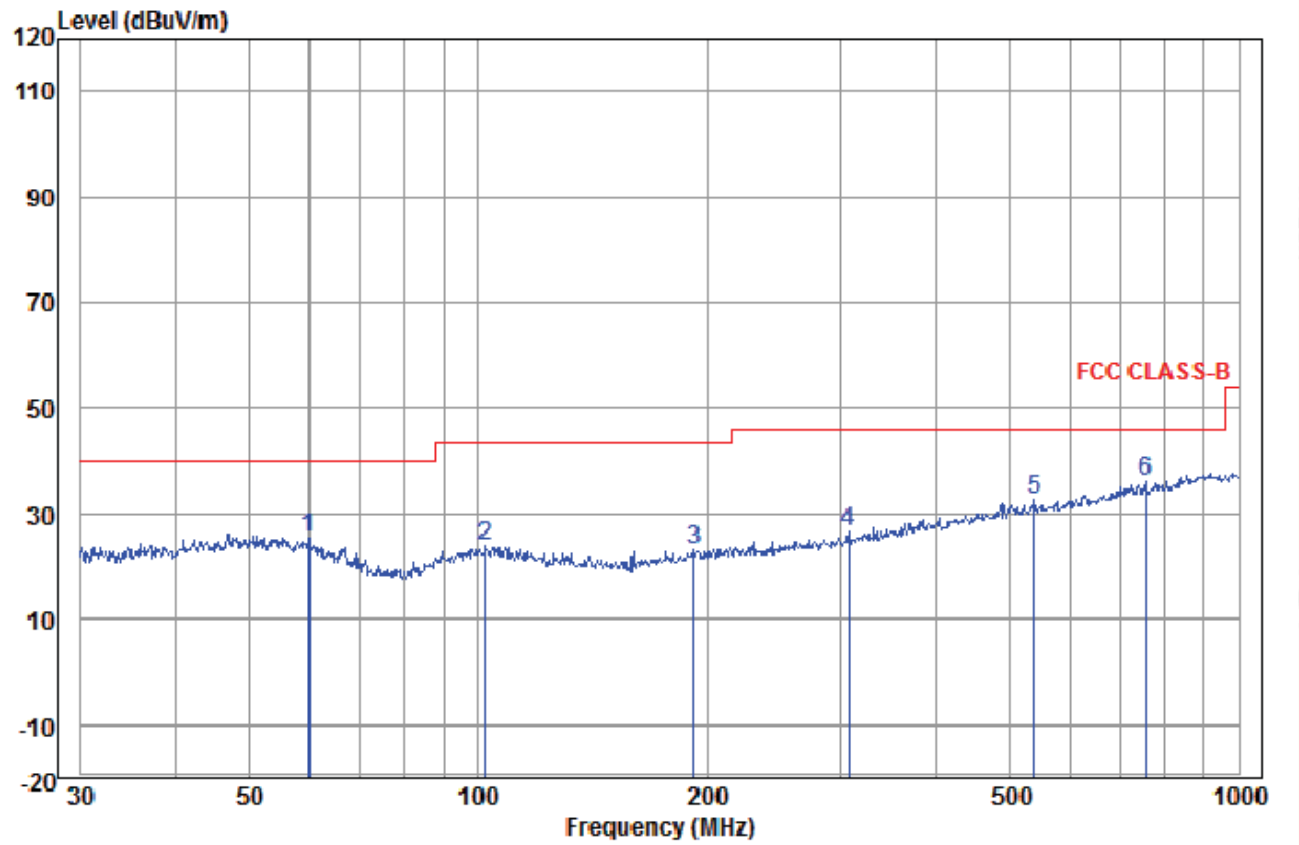


Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
0.25078	11.3	0.11	24.48	35.89	99.61	-63.72	Horizontal	PK
0.61075	11.3	0.12	15.64	27.06	72.06	-44.82	Horizontal	QP
1.403	11.4	0.16	8.01	19.57	64.66	-45.09	Horizontal	QP
3.140	11.47	0.17	-0.49	11.15	69	-57.85	Horizontal	QP
10.564	10.87	0.65	-6.08	5.44	69	-63.56	Horizontal	QP
17.475	10.38	0.74	-8.03	3.09	69	-65.91	Horizontal	QP

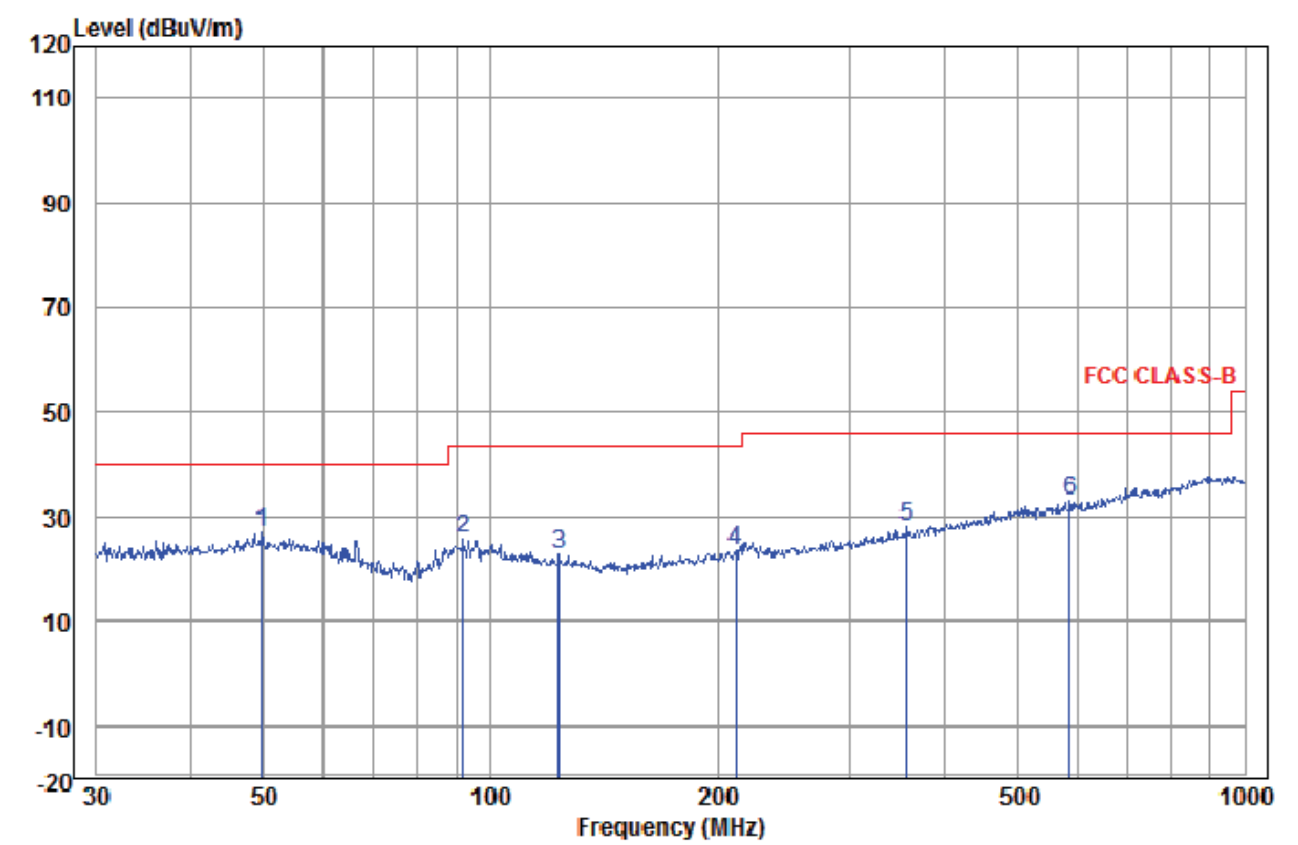


Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
0.24945	11.3	0.11	25.17	36.58	99.66	-63.08	Vertical	PK
0.5701	11.3	0.12	16.12	27.54	72.48	-44.94	Vertical	QP
1.839	11.4	0.19	3.76	15.35	69	-53.65	Vertical	QP
4.952	11.2	0.14	-3.72	7.62	69	-61.38	Vertical	QP
14.138	10.73	0.69	-8.81	2.61	69	-66.39	Vertical	QP
21.486	9.91	0.86	-7.37	3.4	69	-65.6	Vertical	QP

30MHz-1000MHz



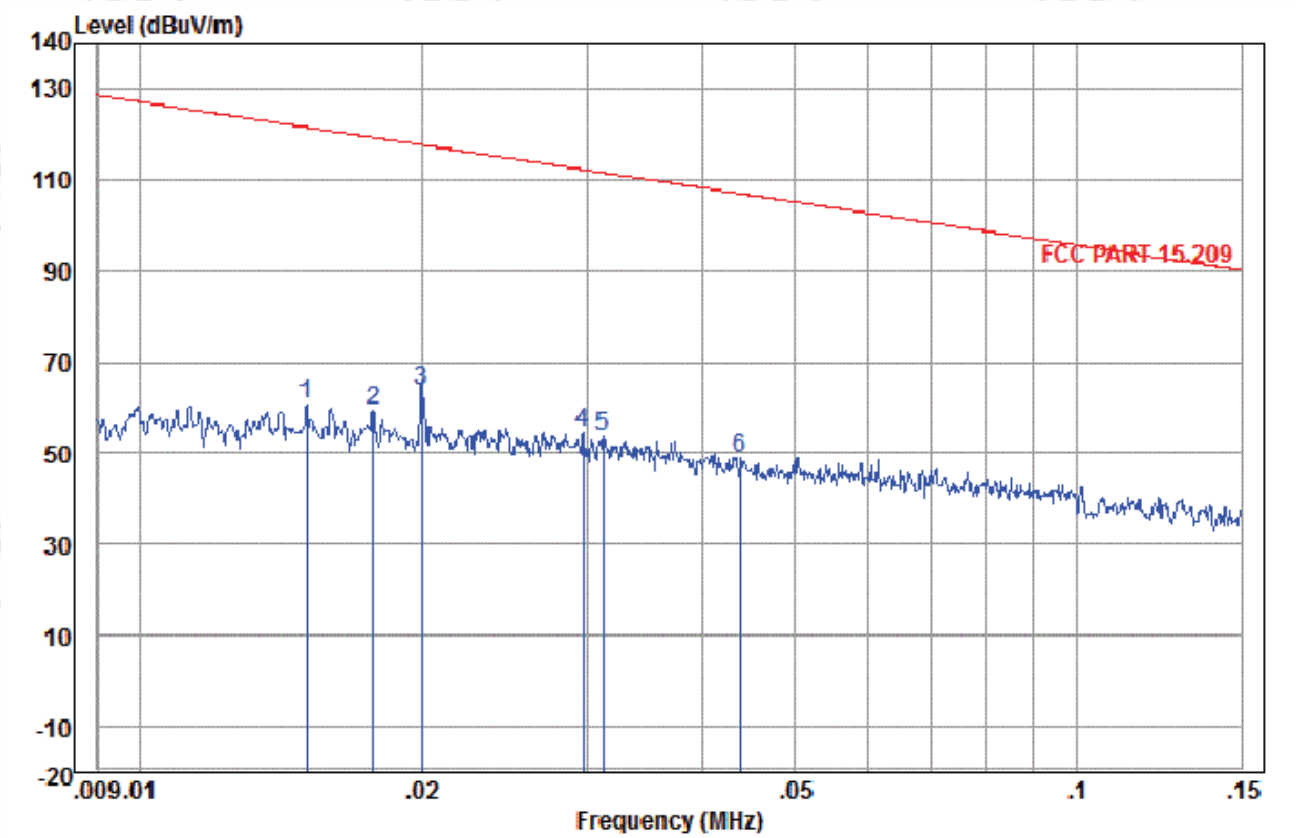
Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
59.859	13.82	1.43	10.12	25.37	40	-14.63	Horizontal	QP
102.001	13.03	1.57	9.18	23.78	43.5	-19.72	Horizontal	QP
192.419	11.34	2.13	9.78	23.25	43.5	-20.25	Horizontal	QP
306.754	13.69	2.43	10.28	26.4	46	-19.6	Horizontal	QP
539.478	18.56	3.19	10.74	32.49	46	-13.51	Horizontal	QP
755.387	21.07	3.99	11.01	36.07	46	-9.93	Horizontal	QP



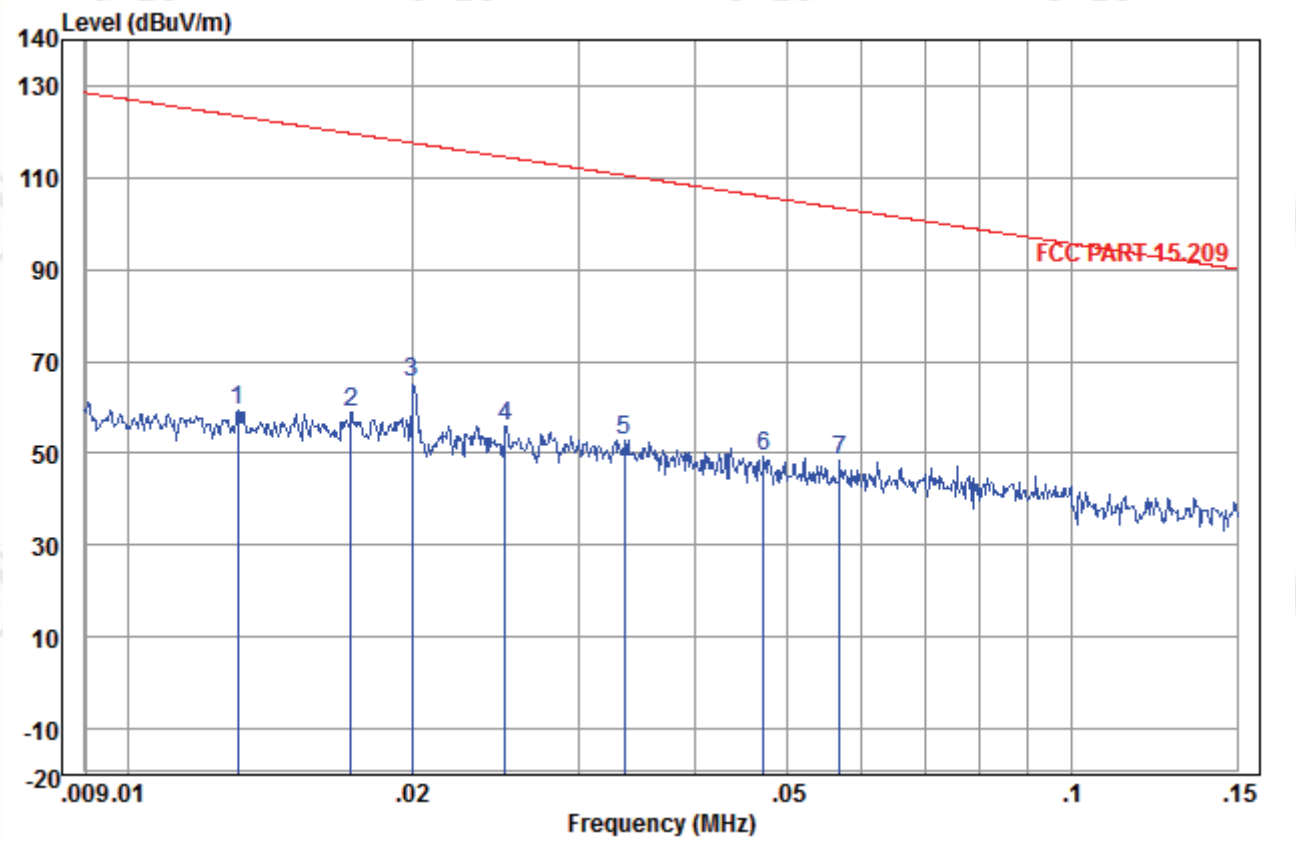
Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
49.707	15.08	1.38	10.27	26.73	40	-13.27	Vertical	QP
92.139	11.65	1.59	12.64	25.88	43.5	-17.62	Vertical	QP
123.266	11.39	1.58	9.72	22.69	43.5	-20.81	Vertical	QP
211.527	11.8	2.25	9.39	23.44	43.5	-20.06	Vertical	QP
356.676	15.01	2.72	10.25	27.98	46	-18.02	Vertical	QP
586.844	18.75	3.43	10.81	32.99	46	-13.01	Vertical	QP

Adapter port: HKP06-1500150dU

9 kHz-150 kHz

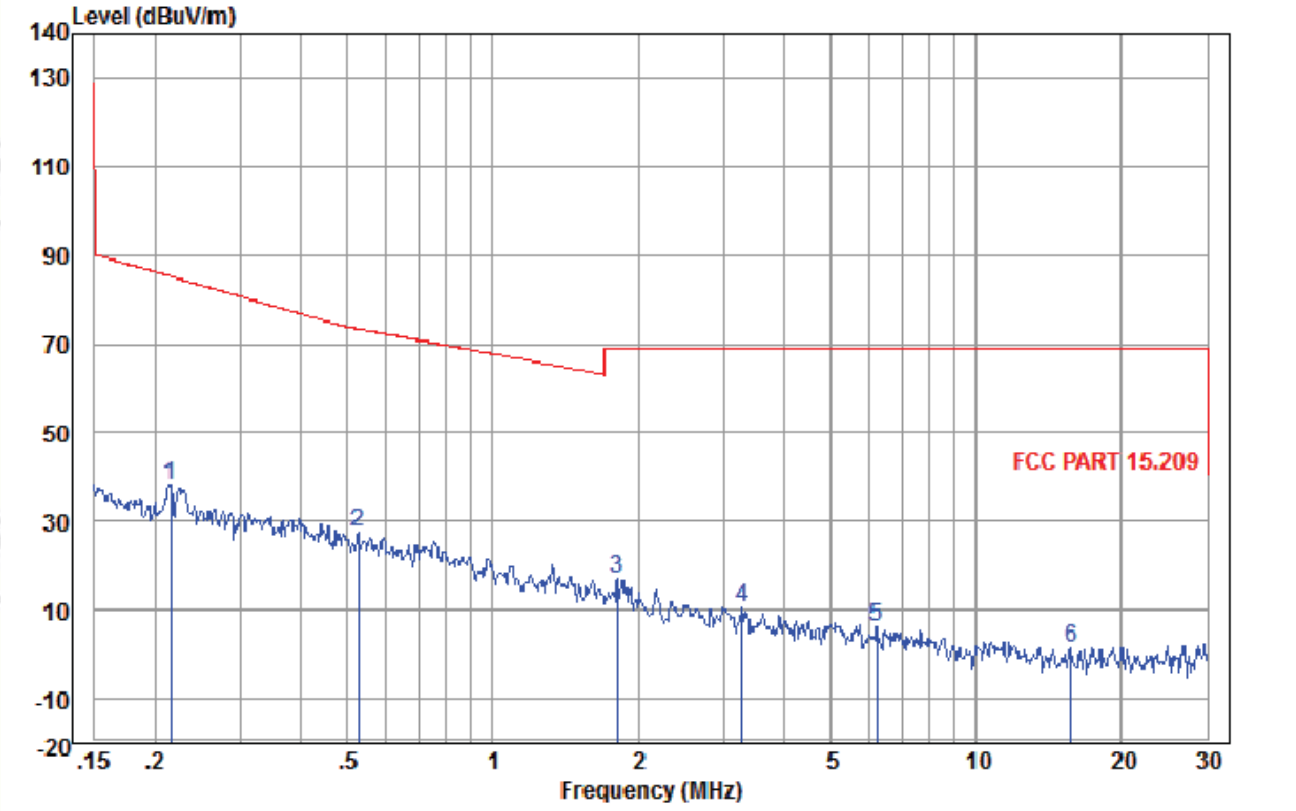


Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
0.01506	17.48	0.04	43.02	60.54	124.05	-63.51	Horizontal	PK
0.01773	16.92	0.04	42.52	59.48	122.63	-63.15	Horizontal	PK
0.02000	16.50	0.05	47.19	63.79	121.58	-57.79	Horizontal	PK
0.02975	14.42	0.06	39.97	54.45	118.13	-63.68	Horizontal	PK
0.03121	14.17	0.06	39.29	53.52	117.72	-64.2	Horizontal	PK
0.04374	12.4	0.07	36.57	49.04	114.79	-65.75	Horizontal	PK

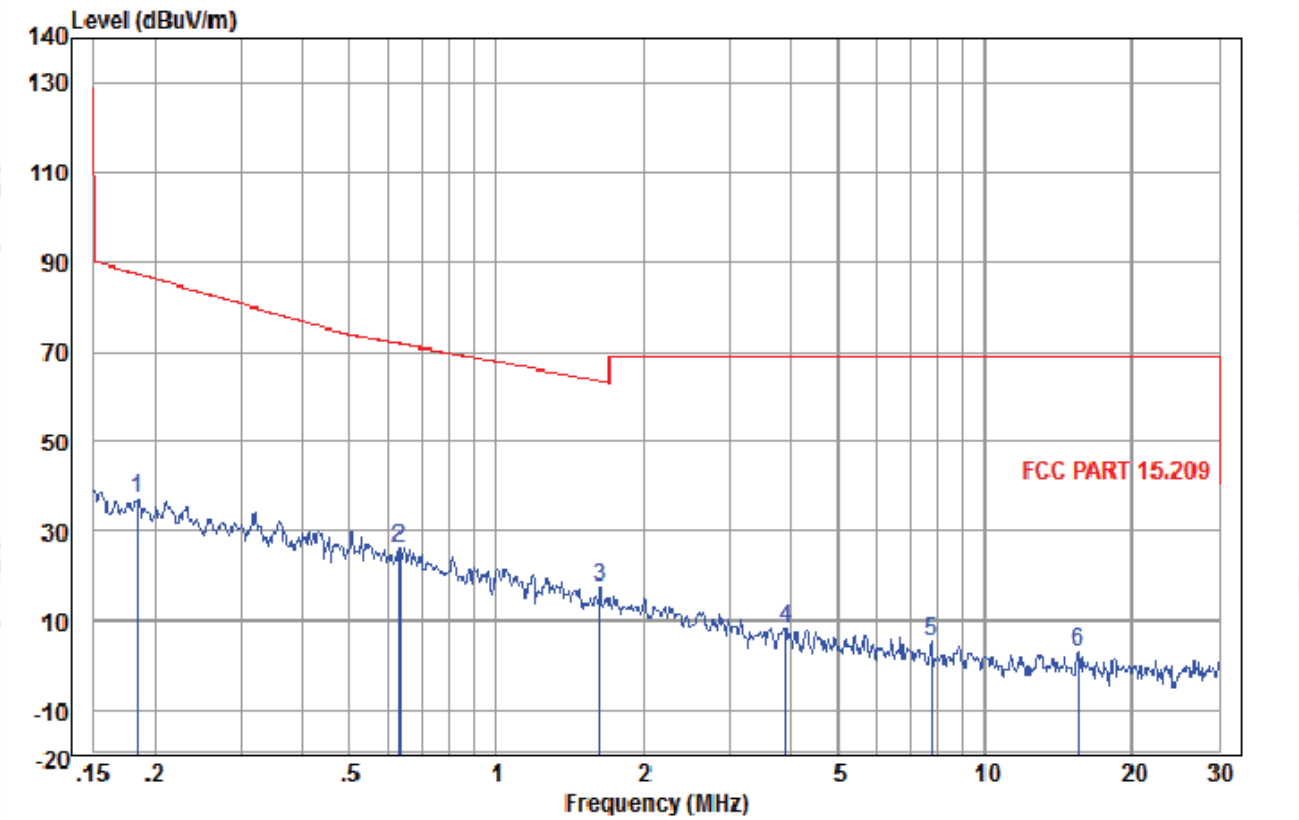


Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
0.01308	17.97	0.03	41.35	59.35	125.27	-65.92	Vertical	PK
0.01724	17.01	0.04	41.97	59.02	122.87	-63.85	Vertical	PK
0.02000	16.5	0.05	48.77	65.32	121.58	-56.26	Vertical	PK
0.02513	15.3	0.05	40.62	55.97	119.6	-63.63	Vertical	PK
0.03358	13.79	0.06	39.05	52.9	117.08	-64.18	Vertical	PK
0.0472	12	0.07	37.34	49.41	114.13	-64.72	Vertical	PK
0.05683	11.64	0.08	36.89	48.61	112.51	-63.9	Vertical	PK

150 kHz-30MHz

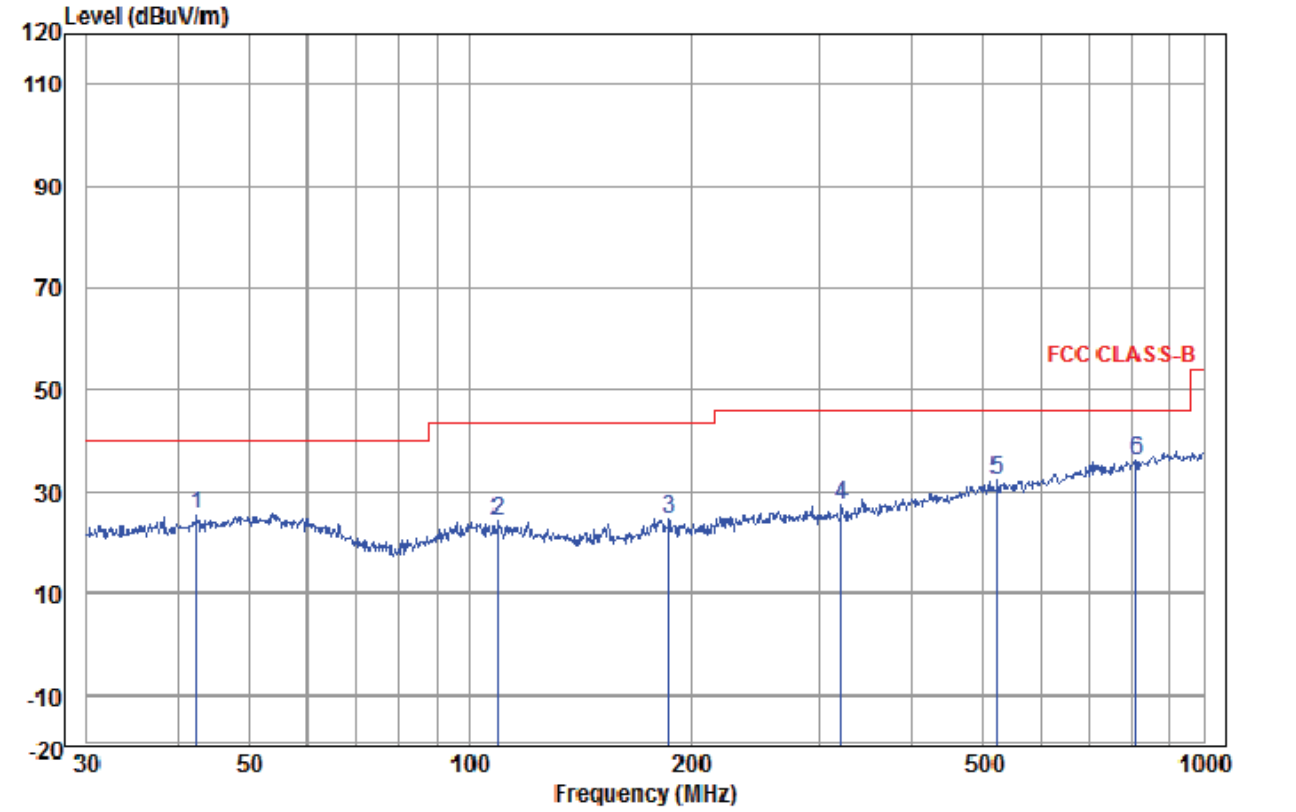


Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
0.21506	11.33	0.11	26.64	38.08	100.09	-62.87	Horizontal	PK
0.52654	11.3	0.12	16.18	27.6	73.17	-45.57	Horizontal	QP
1.810	11.4	0.19	5.35	16.94	69	-52.06	Horizontal	QP
3.276	11.44	0.17	-0.94	10.67	69	-58.33	Horizontal	QP
6.219	11.11	0.3	-5.34	6.07	69	-62.93	Horizontal	QP
15.718	10.6	0.71	-9.94	1.37	69	-67.63	Horizontal	QP

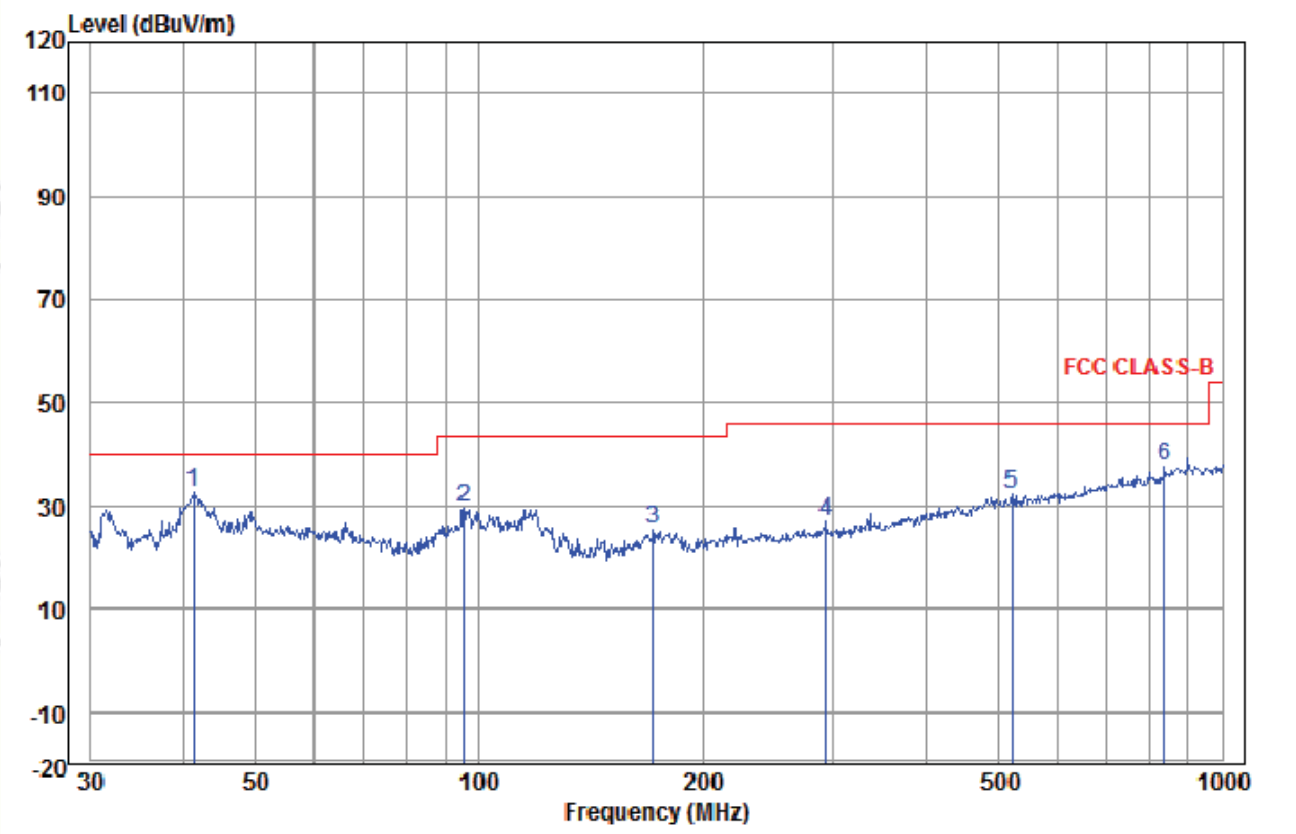


Freq (MHz)	Antenna_Factor (dB/m)	Cable_Loss (dB)	Read_Level (dBuV)	Level (dBuV/m)	Limit_Line (dBuV/m)	Over_Limit (dB)	Polarization	Remark
0.18443	11.36	0.11	25.74	37.21	102.28	-65.07	Vertical	PK
0.63383	11.3	0.12	14.87	26.29	71.56	-45.27	Vertical	QP
1.628	11.4	0.18	6.11	17.69	63.41	-45.72	Vertical	QP
3.901	11.32	0.2	-3.08	8.44	69	-60.56	Vertical	QP
7.769	11.01	0.46	-6.39	5.08	69	-63.92	Vertical	QP
15.47	10.64	0.71	-8.09	3.26	69	-65.74	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
42.451	14.44	0.76	10.03	25.23	40	-14.77	Horizontal	QP
109.029	12.45	1.57	10.21	24.23	43.5	-19.27	Horizontal	QP
186.441	11.14	2.06	11.44	24.64	43.5	-18.86	Horizontal	QP
321.061	14.07	2.53	10.52	27.12	46	-18.88	Horizontal	QP
522.718	18.49	3.17	10.54	32.2	46	-13.8	Horizontal	QP
810.265	21.66	3.9	10.43	35.99	46	-10.01	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
41.277	14.33	0.65	17.5	32.48	40	-7.52	Vertical	QP
95.427	12.31	1.58	15.51	29.4	43.5	-14.1	Vertical	QP
171.393	10.58	1.87	12.96	25.41	43.5	-18.09	Vertical	QP
293.084	13.36	2.38	11.07	26.81	46	-19.19	Vertical	QP
520.888	18.49	3.16	10.65	32.3	46	-13.7	Vertical	QP
836.244	21.82	4.09	11.82	37.73	46	-8.27	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 Occupied Bandwidth

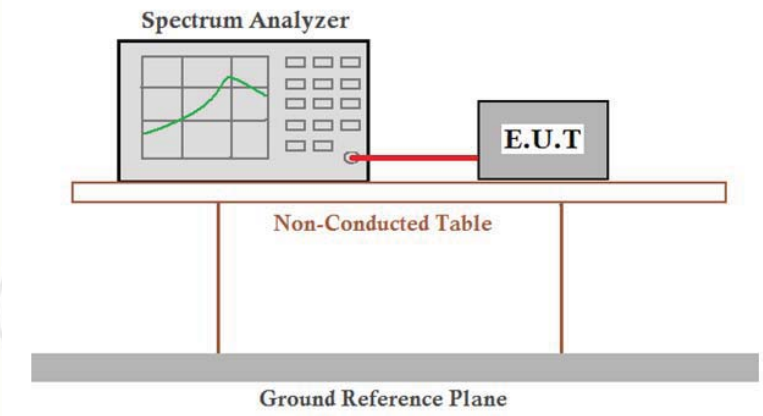
Test Requirement: 47 CFR Part 15C Section 15.215 (C)

Test Method: ANSI C63.10-2013

Limit: Operation within the band

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

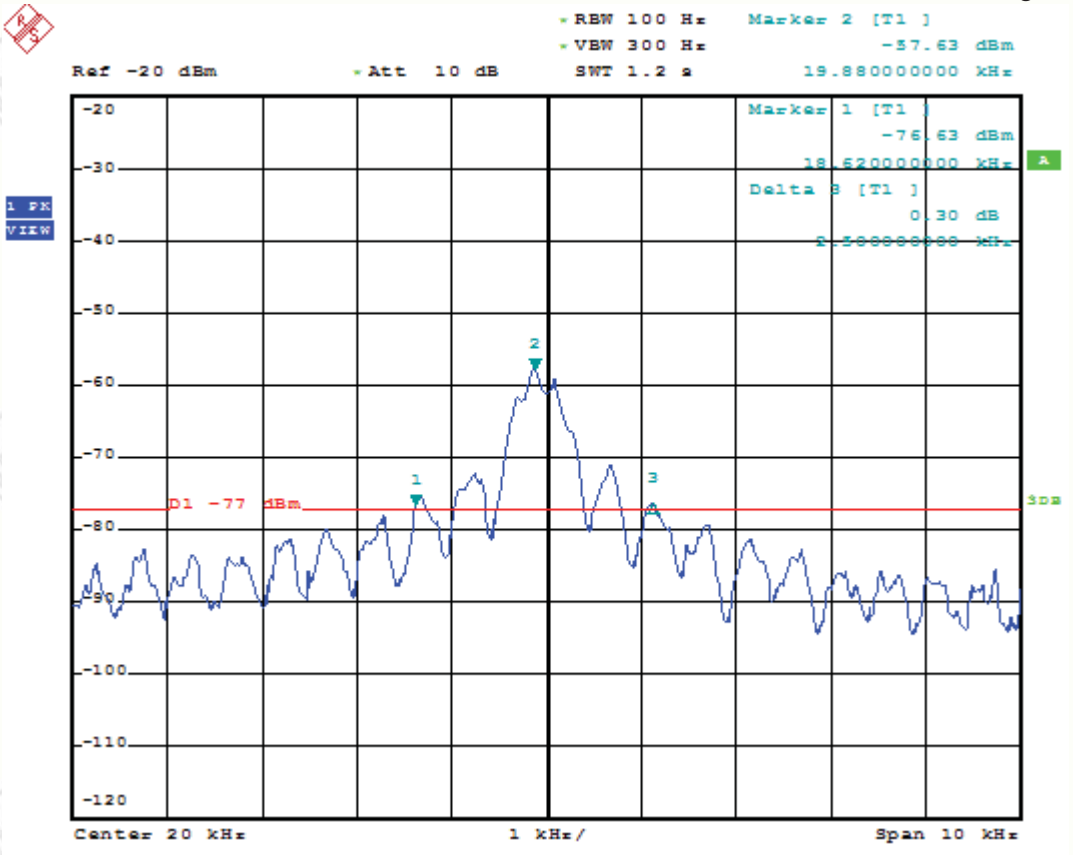
Instruments Used: Refer to section 5.11 for details

Test Result: Pass

Test data:

Measurement Conditions		Peak Frequency (kHz)	Lowest Frequency (kHz)	Highest Frequency (kHz)
T_{normal} 24 °C	V_{normal} 120V	19.88	18.62	21.12

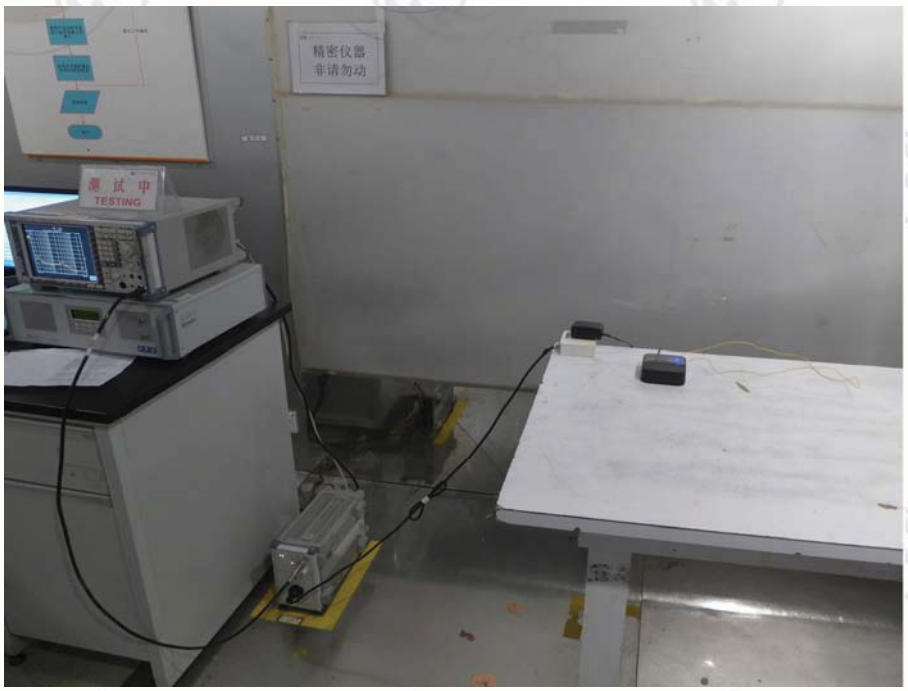
20dB BW: 2.5KHz


RBW 100 Hz
VBW 300 Hz
SWT 1.2 s
Marker 2 [T1]
-57.63 dBm
19.880000000 kHz
Ref -20 dBm
Att 10 dB
Marker 1 [T1]
-76.63 dBm
18.620000000 kHz
Delta 3 [T1]
0.30 dB
1.500000000 kHz
1 PK
VIEW
D1 -77 dBm
Center 20 kHz
1 kHz/
Span 10 kHz

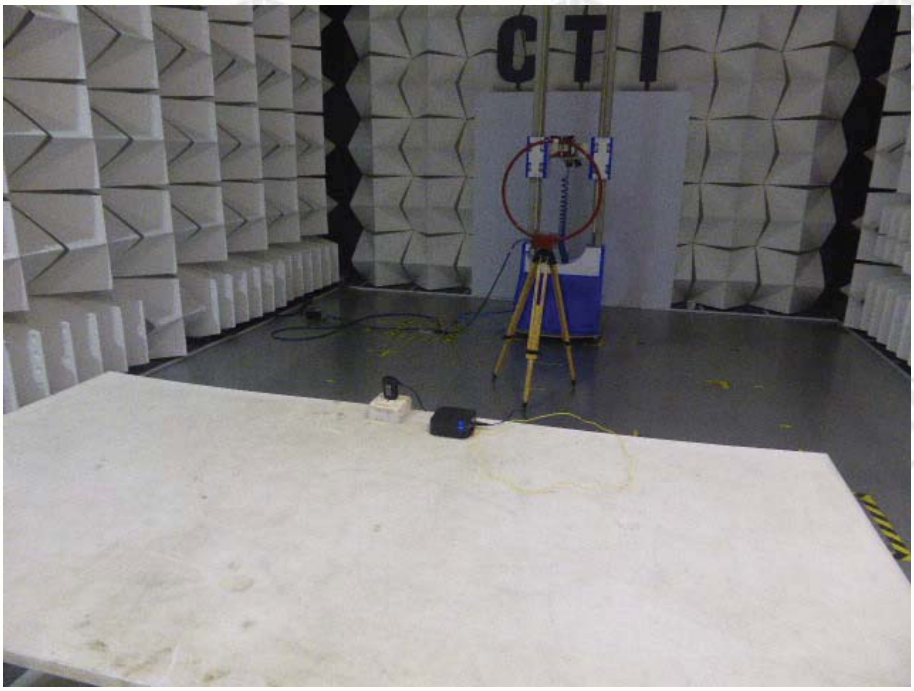
APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

Test Model No.: EF-4000

Conducted Emissions-1

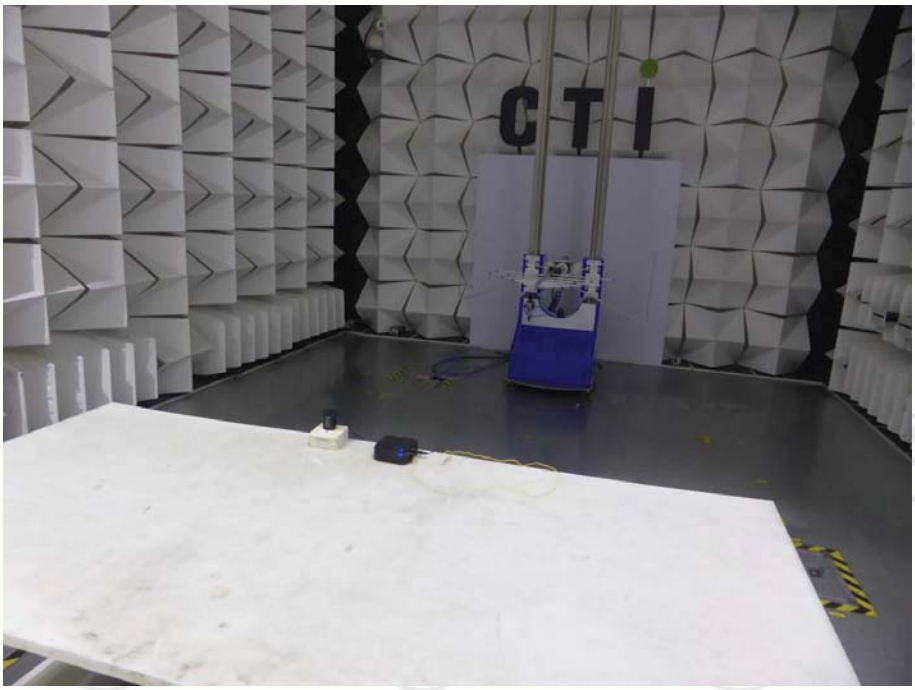


Conducted Emissions-2

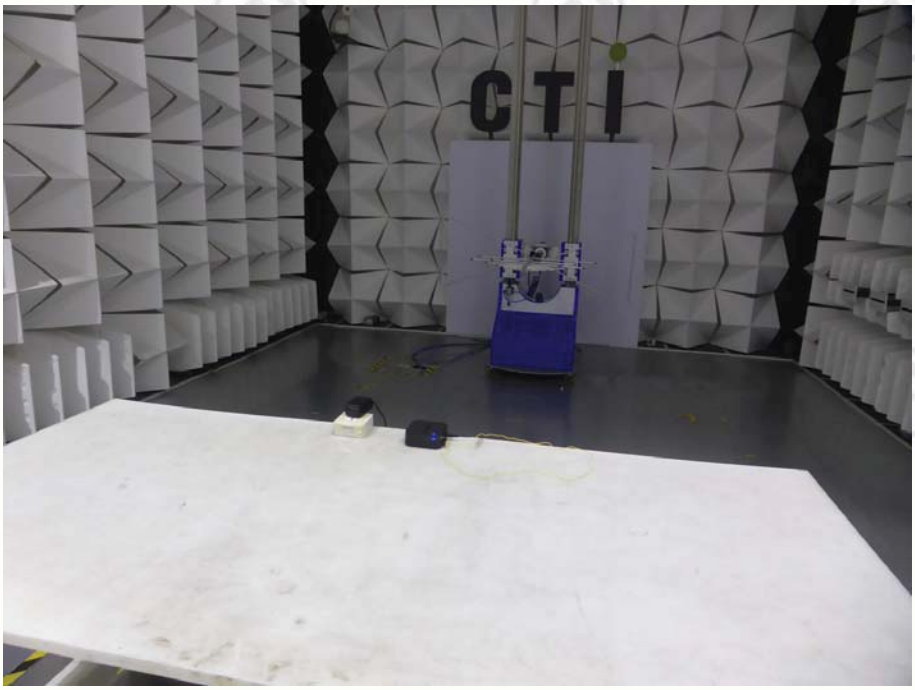


Radiated emission Test Setup-1(9kHz～30MHz)

Radiated emission Test Setup-2(9kHz～30MHz)



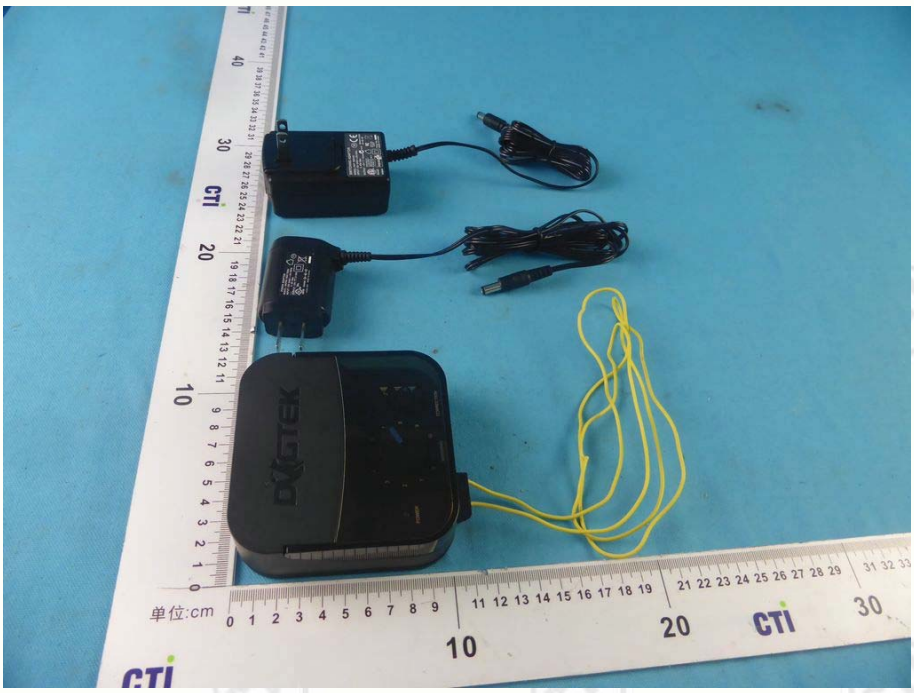
Radiated emission Test Setup-1(30MHz～1000MHz)



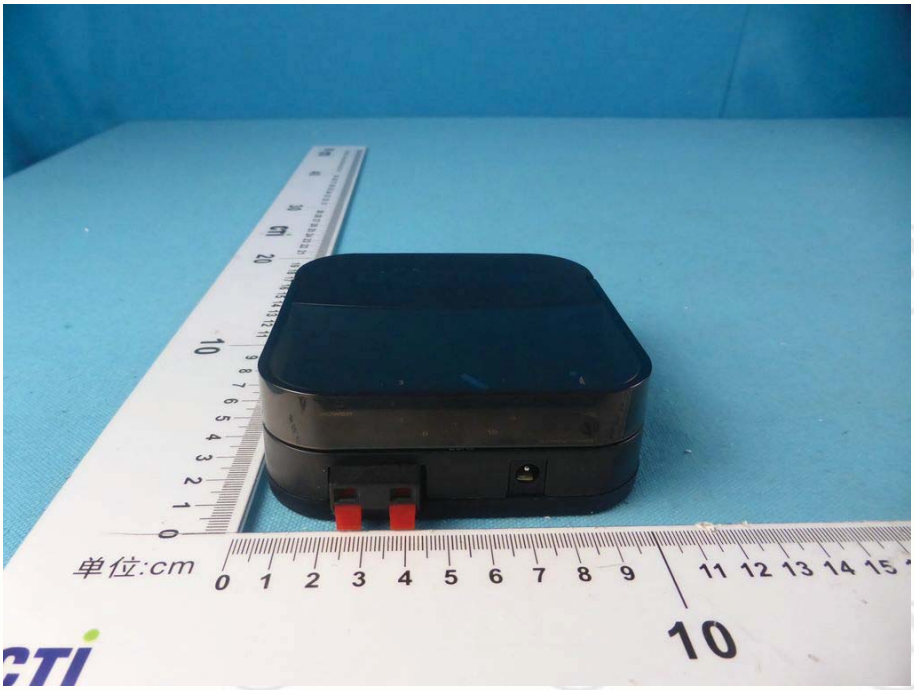
Radiated emission Test Setup-2(30MHz～1000MHz)

APPENDIX 2 PHOTOGRAPHS OF EUT

Test Model No.: EF-4000

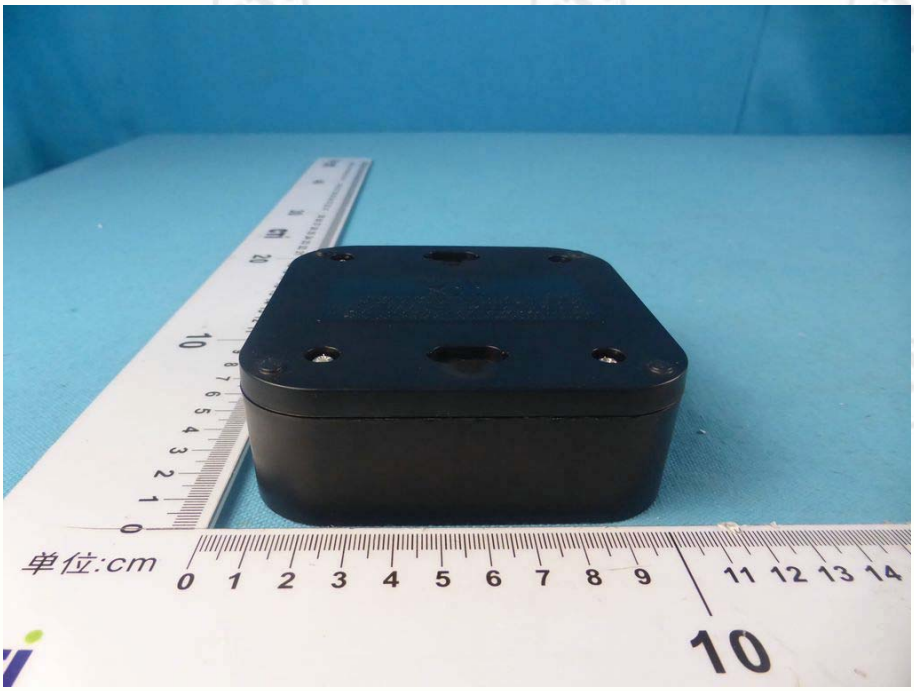


View of Product-1



View of Product-2

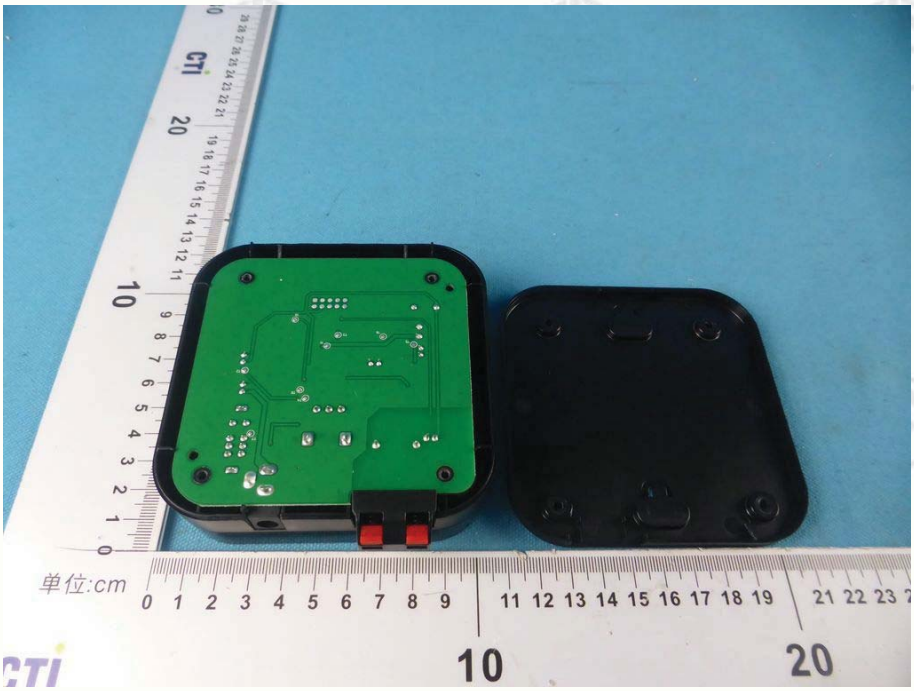
View of Product-3



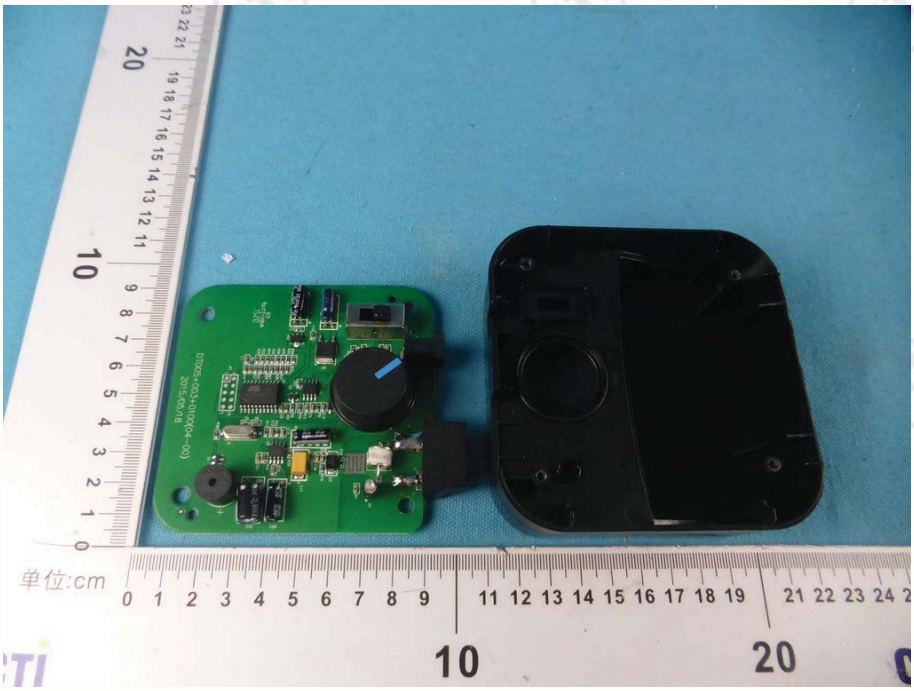
View of Product-4

View of Product-5

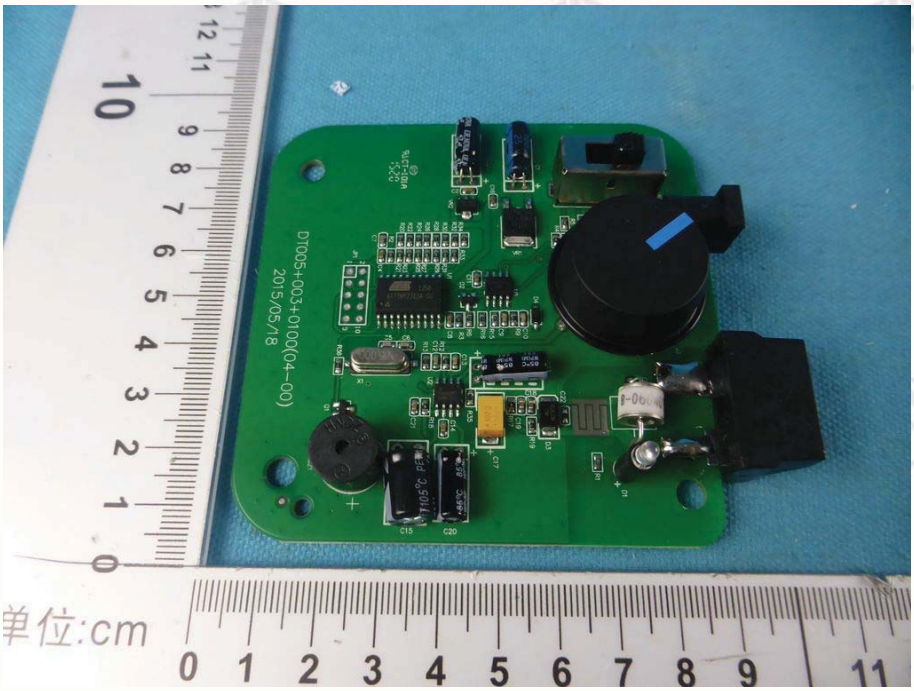
View of Product-6



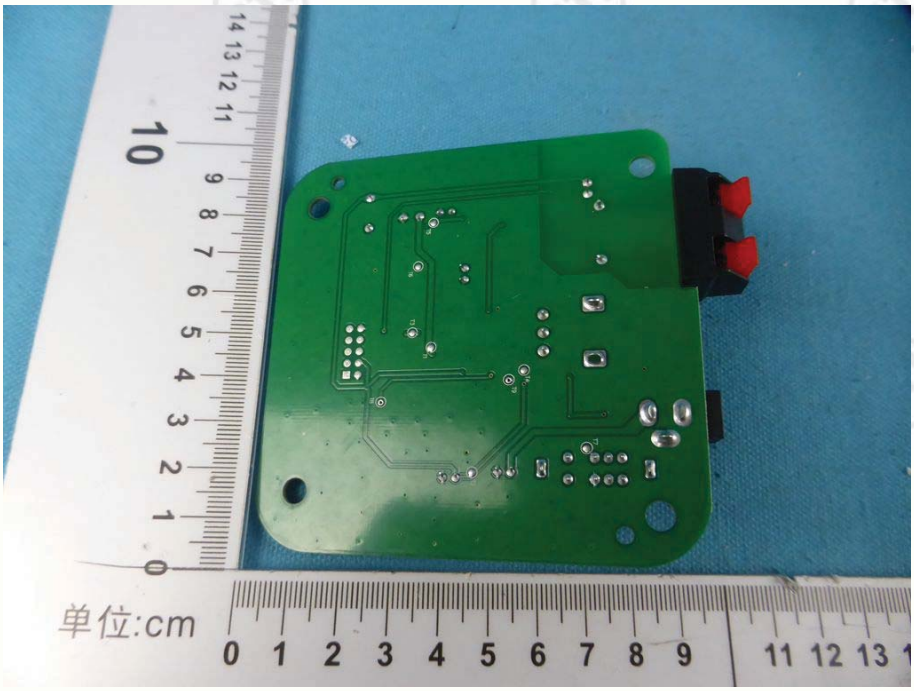
View of Product-7



View of Product-8



View of Product-9

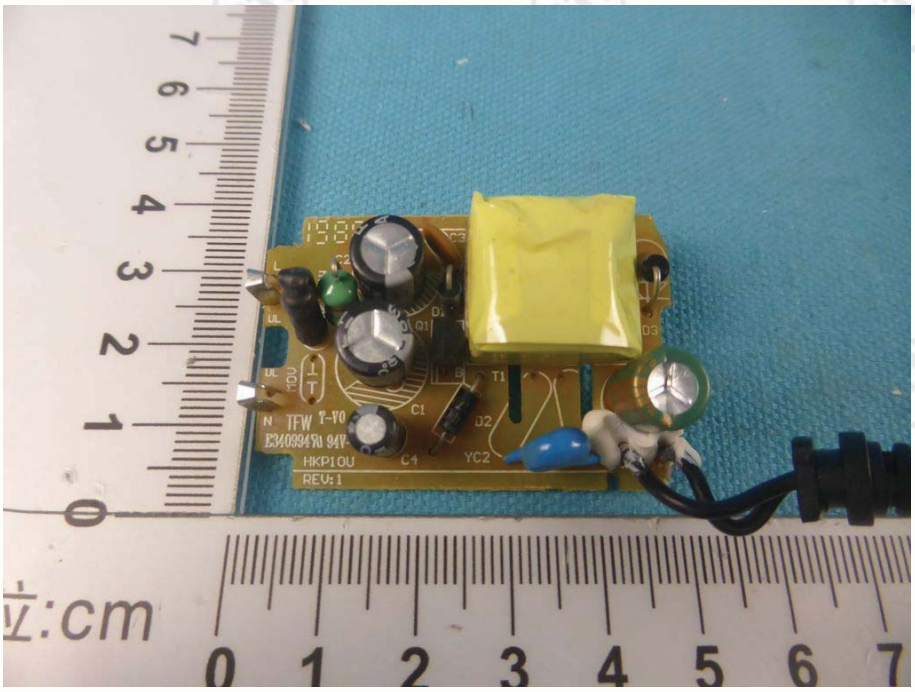


View of Product-10

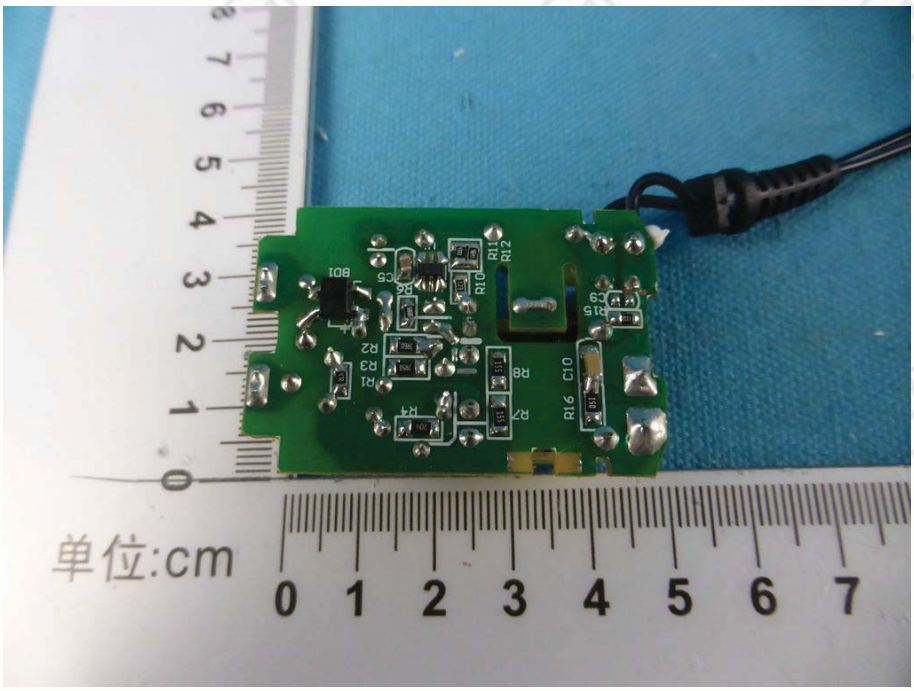
View of Product-11

View of Product-12

View of Product-13



View of Product-14

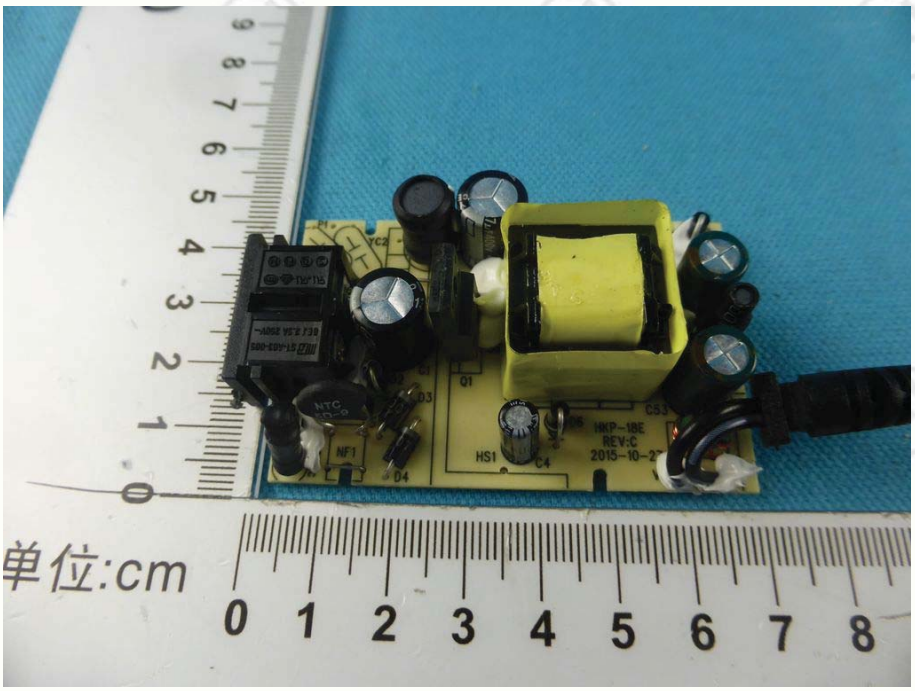


View of Product-15

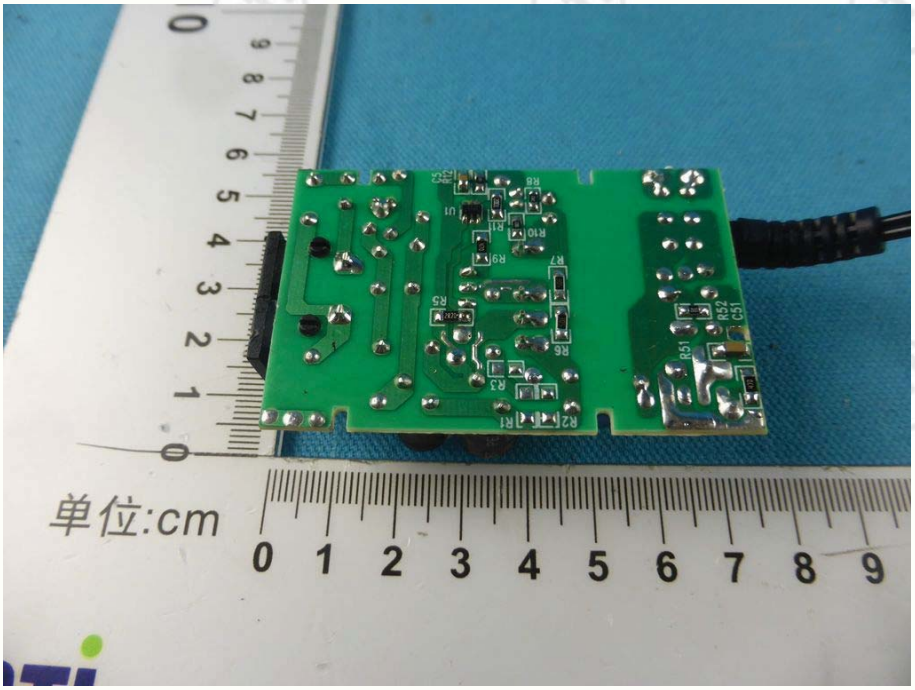
View of Product-16

View of Product-17

View of Product-18



View of Product-19



View of Product-20

*** End of Report ***

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