FCC TEST REPORT

Product	:	RF mouse
Trade mark	:	N/A
Model/Type reference	:	1TIPS-1000
Serial Number	:	N/A
Report Number	:	EED32H00263203
FCC ID	:	2AG55AA0602
Date of Issue	:	Jan. 14, 2016
Test Standards	:	47 CFR Part 15 Subpart C (2015)
Test result	:	PASS

Prepared for:

uHDevice Electronics Jiangsu Co., Ltd.
No 168, Lengyu Road, Dantu District , Zhengjiang City, Jiangsu Province

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China
TEL: +86-755-3368 3668
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Compiled by: Kevin Lan Reviewed by: Eman Li

Approved by: Sheek Luo Date: Jan. 14, 2016

Sheek Luo
Lab supervisor

Check No.: 2254788607

2 Version

Version No.	Date	Description
00	Jan. 14, 2016	Original

3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203	ANSI C63.10-2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013	PASS
Field Strength of the Fundamental Signal	47 CFR Part 15 Subpart C Section 15.249 (a)	ANSI C63.10-2013	PASS
Spurious Emissions	47 CFR Part 15 Subpart C Section 15.249 (a)/15.209	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15 Subpart C Section 15.249(a)/15.205	ANSI C63.10-2013	PASS
20dB Occupied Bandwidth	47 CFR Part 15 Subpart C Section 15.215 (c)	ANSI C63.10-2013	PASS

Remark:
The tested sample(s) and the sample information are provided by the client.
Test according to ANSI C63.4-2014 & ANSI C63.10-2013.

4 Contents

5 General Information

5.1 Client Information

Applicant:	uHDevice Electronics Jiangsu Co., Ltd.
Address of Applicant:	No 168, Lengyu Road, Dantu District , Zhengjiang City, Jiangsu Province
Manufacturer:	uHDevice Electronics Jiangsu Co., Ltd.
Address of Manufacturer:	No 168, Lengyu Road, Dantu District , Zhengjiang City, Jiangsu Province
Factory:	uHDevice Electronics Jiangsu Co., Ltd.
Address of Factory:	No 168, Lengyu Road, Dantu District , Zhengjiang City, Jiangsu Province

5.2 General Description of EUT

Product Name:	RF mouse
Model No.:	1TIPS-1000
Trade mark:	N/A
EUT Supports Radios application:	2402MHz-2480MHz
Power Supply:	DC 5V by PC

5.3 Product Specification subjective to this standard

Carrier Frequency:	2402MHz-2480MHz
Test Software of EUT:	N/A (manufacturer declare)
Modulation Technique:	GFSK
Number of Channels:	16
Antenna Type and gain:	Antenna Type: Internal; Antenna gain: -3dBi
Test voltage:	AC 120V/60Hz
Sample Received Date:	Dec. 23, 2015
Sample tested Date:	Dec. 23, 2015 to Jan. 14, 2016

5.4 Test Environment and Mode

Operating Environment:	
Temperature:	24 °C
Humidity:	54 % RH
Atmospheric Pressure:	1010mbar
Test mode:	
TX mode:	Keep Transmitter mode

5.5 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.	FCC Approval
PC	Dell	DPTIPLE×755	DOC
Monitor	Dell	E157FPC	DOC
Keyboard	L.Selectron	N/A	DOC

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	100435	06-30-2015	06-28-2016
Receiver	R&S	ESCI	100009	06-30-2015	06-28-2016
Temperature/ Humidity Indicator	Belida	TT-512	101	01-14-2015	01-13-2016
Temperature/ Humidity Indicator	Belida	TT-512	101	01-13-2016	01-11-2017
Communication test set	Agilent	E5515C	GB47050533	12-31-2014	12-29-2015
Communication test set	Agilent	E5515C	GB47050533	12-31-2015	12-29-2016
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
LISN	ETS-LINDGREN	3850/2	00051952	11-13-2015	11-10-2016
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	01-28-2016

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
3M Chamber	ETS-LINDGREN	FACT-3	3510	07-13-2013	07-12-2016
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	---	01-13-2015	01-12-2016
Multi device Controller	maturo	NCD/070/10711112	---	01-12-2016	01-10-2017
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	12-31-2014	12-29-2015
Communication test set	Agilent	E5515C	GB47050533	12-31-2015	12-29-2016
Cable line	Fulai(7M)	SF106	5219/6A	01-13-2015	01-12-2016
Cable line	Fulai(7M)	SF106	5219/6A	01-12-2016	01-10-2017
Cable line	Fulai(6M)	SF106	5220/6A	01-13-2015	01-12-2016
Cable line	Fulai(6M)	SF106	5220/6A	01-12-2016	01-10-2017
Cable line	Fulai(3M)	SF106	5216/6A	01-13-2015	01-12-2016
Cable line	Fulai(3M)	SF106	5216/6A	01-12-2016	01-10-2017
Cable line	Fulai(3M)	SF106	5217/6A	01-13-2015	01-12-2016
Cable line	Fulai(3M)	SF106	5217/6A	01-12-2016	01-10-2017
Communication test set	R&S	CMW500	152394	04-19-2015	04-18-2016
High-pass filter(3-18GHz)	Sinoscite	FL3CX03WG18NM12-0398-002	---	01-13-2015	01-12-2016
High-pass filter(3-18GHz)	Sinoscite	FL3CX03WG18NM12-0398-002	---	01-12-2016	01-10-2017
High-pass filter(5-18GHz)	MICRO-TRONICS	SPA-F-63029-4	---	01-13-2015	01-12-2016
High-pass filter(5-18GHz)	MICRO-TRONICS	SPA-F-63029-4	---	01-12-2016	01-10-2017
band rejection filter	Sinoscite	FL5CX01CA09CL12-0395-001	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX01CA09CL12-0395-001	---	01-12-2016	01-10-2017
band rejection filter	Sinoscite	FL5CX01CA08CL12-0393-001	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX01CA08CL12-0393-001	---	01-12-2016	01-10-2017
band rejection filter	Sinoscite	FL5CX02CA04CL12-0396-002	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX02CA04CL12-0396-002	---	01-12-2016	01-10-2017
band rejection filter	Sinoscite	FL5CX02CA03CL12-0394-001	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX02CA03CL12-0394-001	---	01-12-2016	01-10-2017

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	FL3CX03WG18 NM12-0398-002	---	01-13-2015	01-12-2016
High-pass filter(3-18GHz)	Sinoscite	FL3CX03WG18 NM12-0398-002	---	01-12-2016	01-10-2017
High-pass filter(5-18GHz)	MICRO-TRONICS	SPA-F-63029-4	---	01-13-2015	01-12-2016
High-pass filter(5-18GHz)	MICRO-TRONICS	SPA-F-63029-4	---	01-12-2016	01-10-2017
band rejection filter	Sinoscite	FL5CX01CA09C L12-0395-001	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX01CA09C L12-0395-001	---	01-12-2016	01-10-2017
band rejection filter	Sinoscite	FL5CX01CA08C L12-0393-001	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX01CA08C L12-0393-001	---	01-12-2016	01-10-2017
band rejection filter	Sinoscite	FL5CX02CA04C L12-0396-002	---	01-13-2015	01-12-2016
band rejection filter	Sinoscite	FL5CX02CA04C L12-0396-002	---	01-12-2016	01-10-2017

7 Test results and Measurement Data

7.1 Antenna Requirement

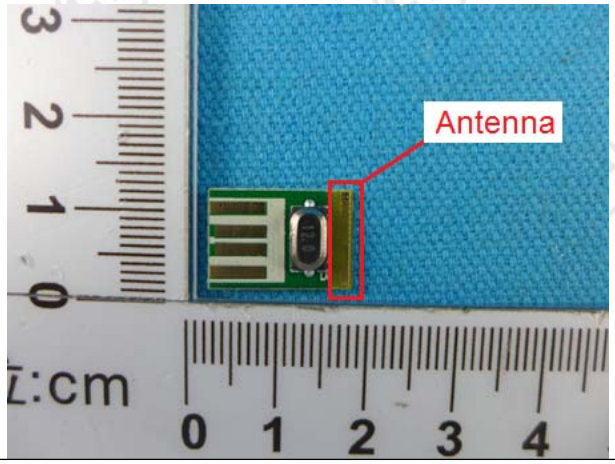
Standard requirement:	47 CFR Part 15C Section 15.203

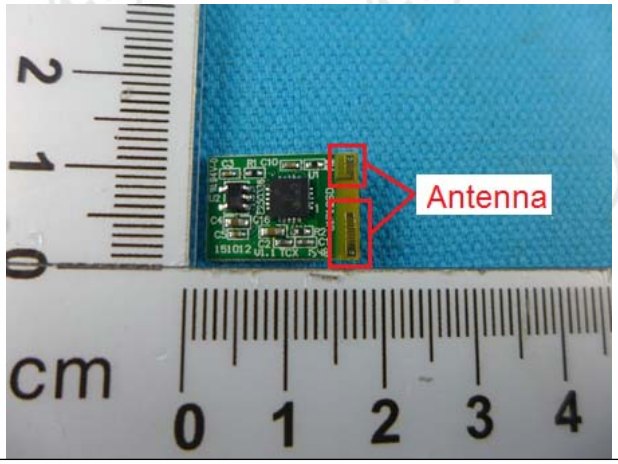
15.203 requirement:

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.

EUT Antenna:	

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is -3dBi.





7.2 Conducted Emissions

Test Requirement: 47 CFR Part 15C Section 15.207

Test Method: ANSI C63.10

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.

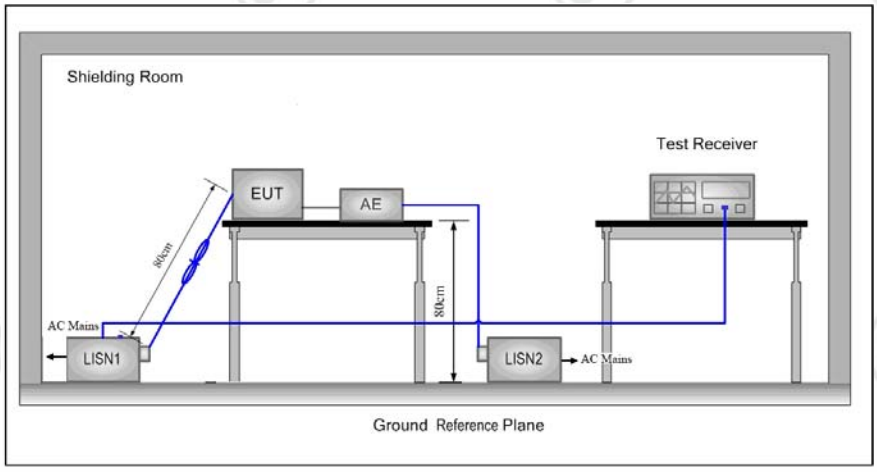
2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ωlinear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 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.

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: TX

Instruments Used: Refer to section 6 for details

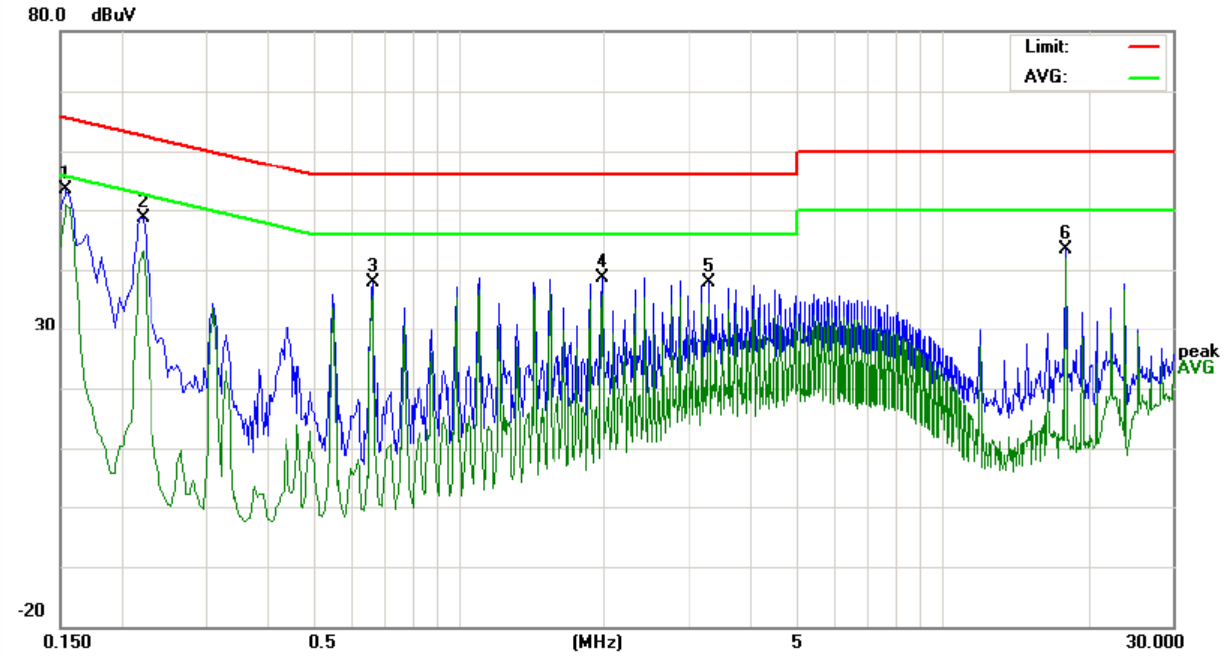
Test Results: Pass

Measurement Data

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

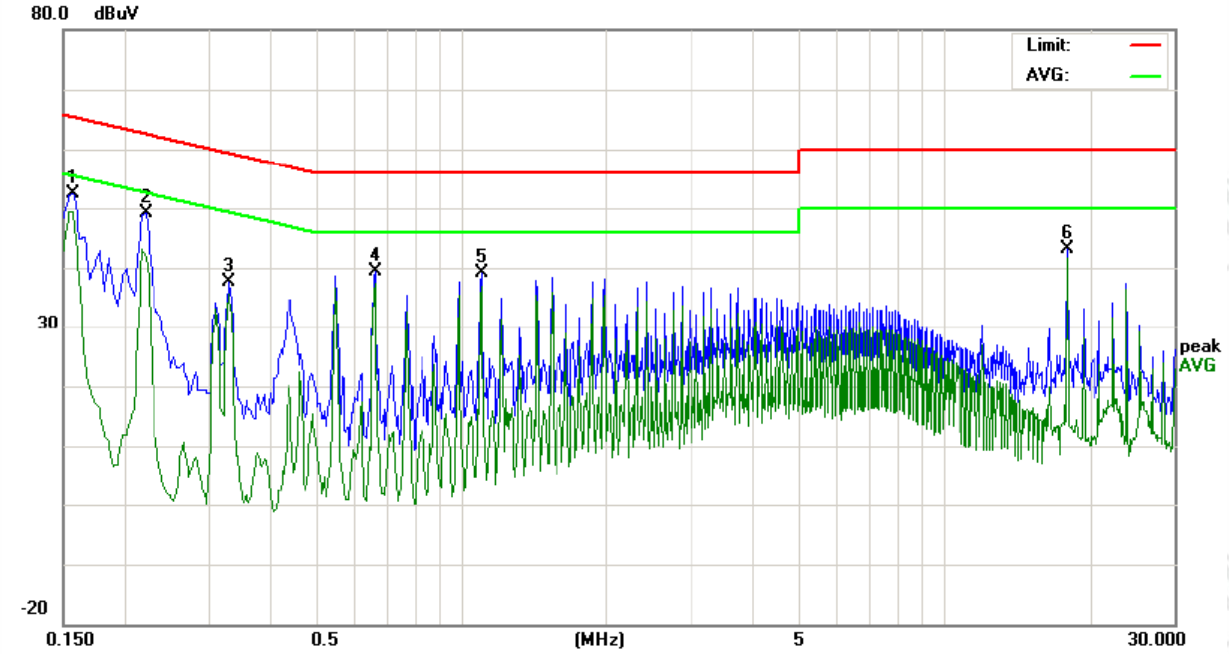
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

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	0.1539	43.47	42.18	41.35	9.80	53.27	51.98	51.15	65.78	55.78	-13.80	-4.63	P	
2	0.2220	38.94	36.00	31.79	9.80	48.74	45.80	41.59	62.74	52.74	-16.94	-11.15	P	
3	0.6620	27.95	27.32	25.65	9.90	37.85	37.22	35.55	56.00	46.00	-18.78	-10.45	P	
4	1.9820	28.69	27.60	26.05	10.00	38.69	37.60	36.05	56.00	46.00	-18.40	-9.95	P	
5	3.3020	27.83	26.50	24.40	10.00	37.83	36.50	34.40	56.00	46.00	-19.50	-11.60	P	
6	18.0020	33.07	31.29	31.44	10.34	43.41	41.63	41.78	60.00	50.00	-18.37	-8.22	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	0.1580	42.68	39.39	38.20	9.80	52.48	49.19	48.00	65.56	55.56	-16.37	-7.56	P	
2	0.2220	39.37	37.09	32.16	9.80	49.17	46.89	41.96	62.74	52.74	-15.85	-10.78	P	
3	0.3300	27.75	26.98	25.82	9.83	37.58	36.81	35.65	59.45	49.45	-22.64	-13.80	P	
4	0.6620	29.58	28.74	27.31	9.90	39.48	38.64	37.21	56.00	46.00	-17.36	-8.79	P	
5	1.1019	29.14	28.26	26.80	10.00	39.14	38.26	36.80	56.00	46.00	-17.74	-9.20	P	
6	18.0020	32.76	31.18	31.37	10.34	43.10	41.52	41.71	60.00	50.00	-18.48	-8.29	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 Spurious Emission

Test Requirement: 47 CFR Part 15C Section 15.249 and 15.209

Test Method: ANSI C63.10

Test Site: Measurement Distance: 3m (Semi-Anechoic Chamber)

Receiver Setup:

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

Test Setup:

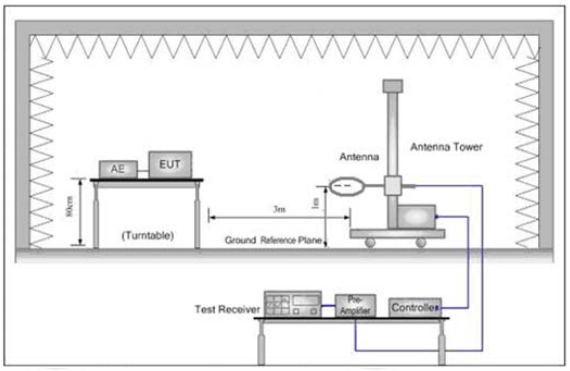


Figure 1. Below 30MHz

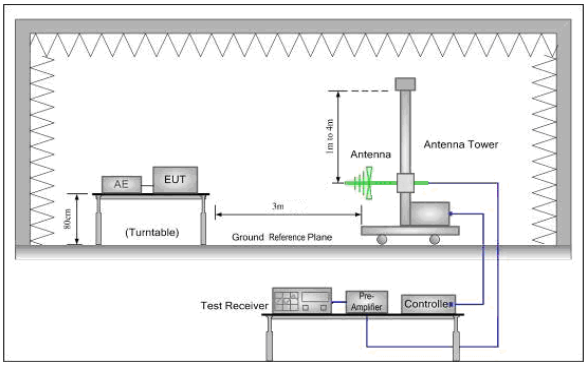


Figure 2. 30MHz to 1GHz

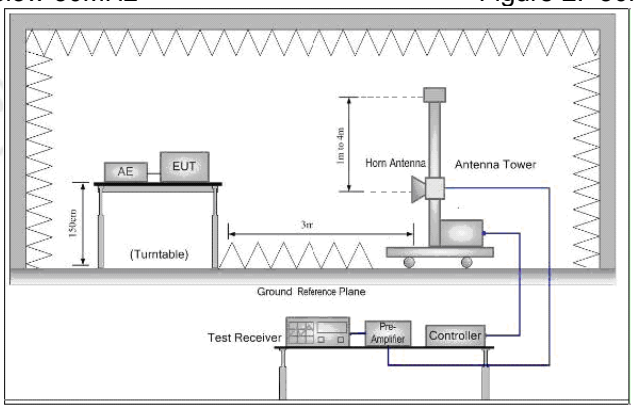


Figure 3. Above 1GHz

Test Procedure:

Below 1GHz test procedure as below:

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.

The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

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.

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 rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.

The test-receiver system was set to Peak Detect Function and Specified Bandwidth with

Maximum Hold Mode.
If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).

Test the EUT in the lowest channel ,middle channel, the Highest channel

The radiation measurements are performed in X, Y, Z axis positioning for Control TX, and found the X axis positioning which it is worse case.

Repeat above procedures until all frequencies measured was complete.

Limit: (Spurious Emissions)

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
Above 1GHz	500	54.0	Average	3

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Limit: (Field strength of the fundamental signal)

Frequency	Limit (dBμV/m @3m)	Remark
2400MHz-2483.5MHz	94.0	Average Value
	114.0	Peak Value

Test Mode: TX

Instruments Used: Refer to section 6 for details

Test Results: Pass

Measurement Data

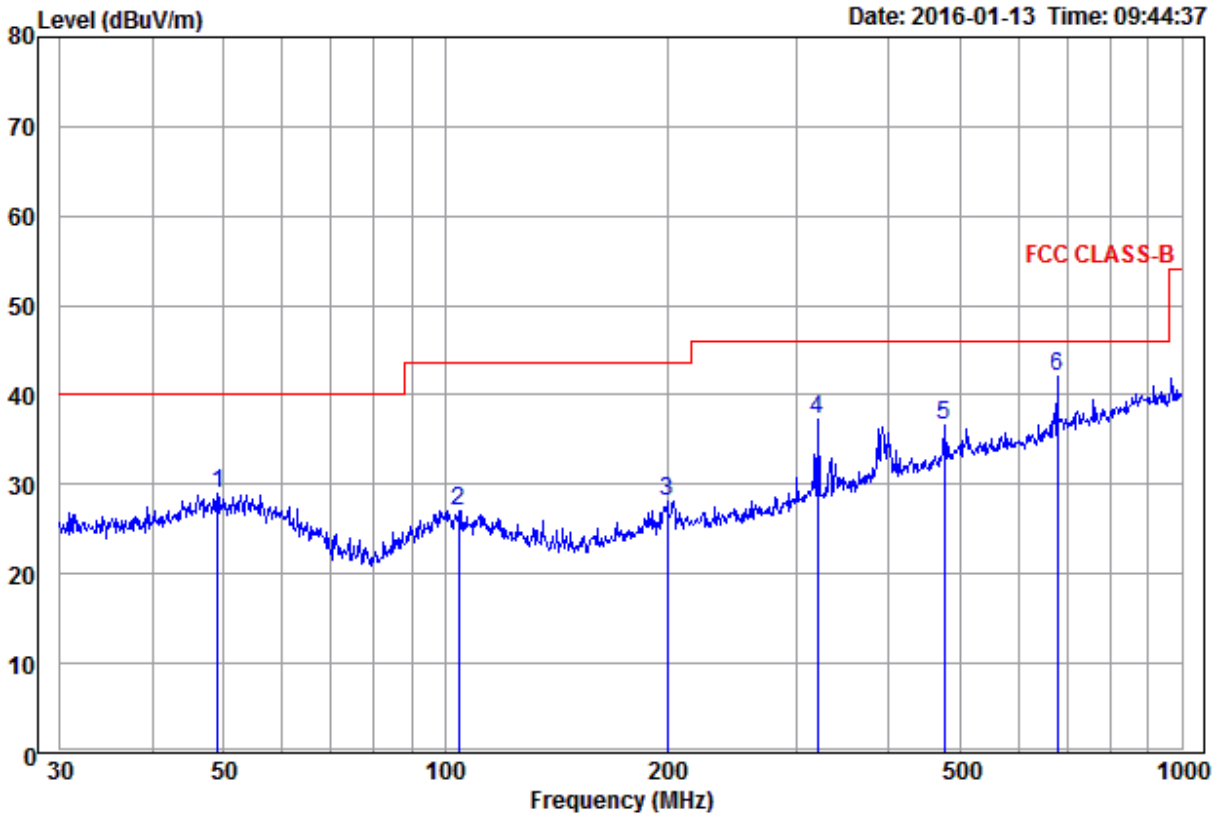
Field Strength Of The Fundamental Signal

Test Set up: RBW=3MHz, VBW=3MHz

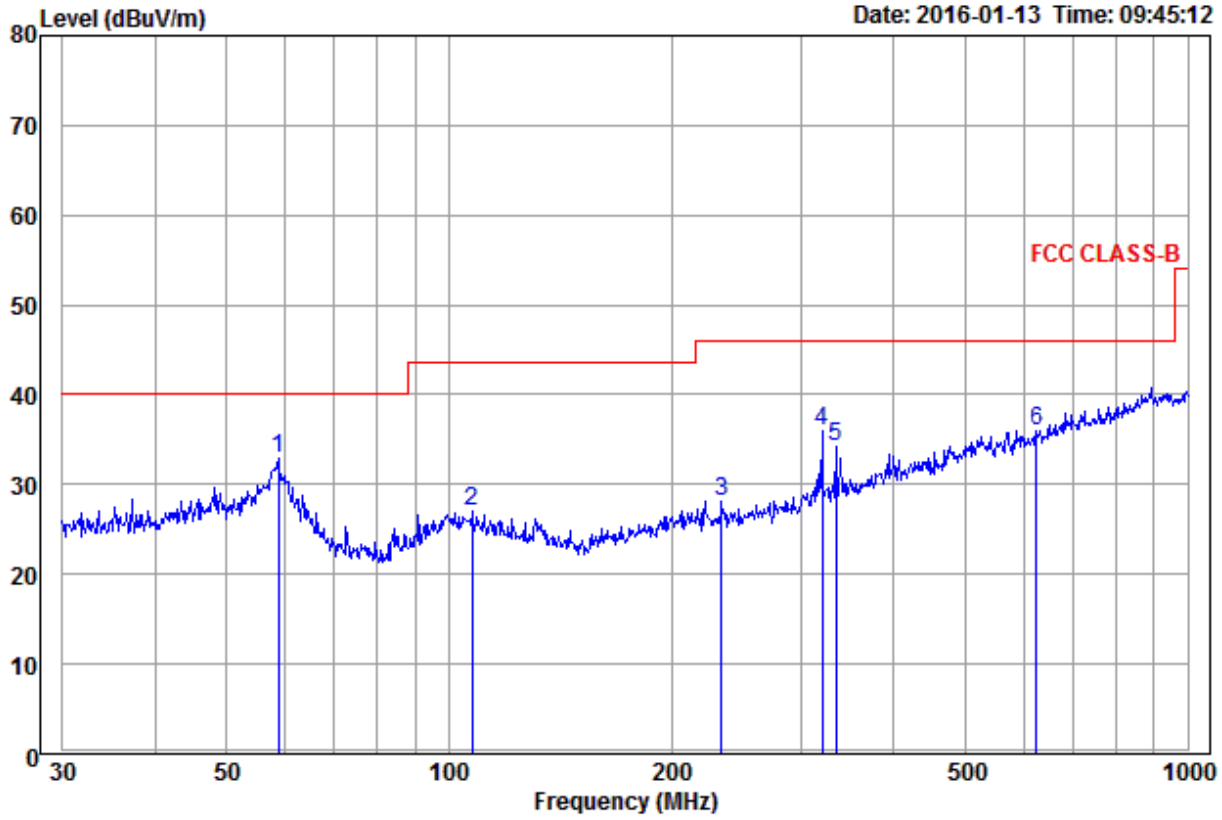
Frequency (MHz)	Height (cm)	Azimuth (deg)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis	Remark
2402	150.0	222	86.47	114	-27.53	Pass	H	PK
2402	150.0	110	78.43	114	-35.57	Pass	V	PK
2442	150.0	100	83.73	114	-30.27	Pass	H	PK
2442	150.0	310	77.24	114	-36.76	Pass	V	PK
2480	150.0	340	84.11	114	-29.89	Pass	H	PK
2480	150.0	70	78.43	114	-35.57	Pass	V	PK

Remark: Scan from Field Strength Of The Fundamental Signal data, The average value is lower than limit, and The below the limit need not be reported, so only the peak value had been displayed.

Spurious Emissions
30MHz~1GHz



	Freq	Ant Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	49.01	15.02	1.32	12.58	28.92	40.00	-11.08	Horizontal	
2	104.17	12.85	1.57	12.55	26.97	43.50	-16.53	Horizontal	
3	199.99	11.60	2.21	14.26	28.07	43.50	-15.43	Horizontal	
4	319.94	14.04	2.52	20.74	37.30	46.00	-8.70	Horizontal	
5	475.50	17.78	3.06	15.78	36.62	46.00	-9.38	Horizontal	
6 pp	677.58	20.22	3.75	18.00	41.97	46.00	-4.03	Horizontal	



	Freq	Ant Factor	Cable Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1 pp	58.82	13.94	1.43	17.47	32.84	40.00	-7.16	Vertical	
2	107.51	12.57	1.57	12.89	27.03	43.50	-16.47	Vertical	
3	234.17	12.17	2.31	13.67	28.15	46.00	-17.85	Vertical	
4	319.94	14.04	2.52	19.36	35.92	46.00	-10.08	Vertical	
5	333.69	14.40	2.61	17.25	34.26	46.00	-11.74	Vertical	
6	625.08	19.21	3.54	13.27	36.02	46.00	-9.98	Vertical	

Above 1GHz					
Test mode:	Transmitting	Test channel:	2402MHz		

Frequency (MHz)	Antenna Factor (dB/m)	Preamp Gain (dB)	Cable Loss (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1257.465	30.36	38.37	2.58	47.16	41.73	74	-32.27	Pass	H
1668.044	31.18	37.72	2.98	45.98	42.42	74	-31.58	Pass	H
4804.000	34.69	36.82	5.11	41.95	44.93	74	-29.07	Pass	H
6047.776	35.93	36.74	7.38	42.83	49.40	74	-24.60	Pass	H
7206.000	36.42	37.46	6.66	41.61	47.23	74	-26.77	Pass	H
9608.000	37.88	37.82	7.73	42.60	50.39	74	-23.61	Pass	H
1185.958	30.19	38.51	2.50	48.43	42.61	74	-31.39	Pass	V
1659.574	31.16	37.73	2.97	49.25	45.65	74	-28.35	Pass	V
4804.000	34.69	36.82	5.11	43.10	46.08	74	-27.92	Pass	V
6094.137	35.95	36.78	7.33	44.02	50.52	74	-23.48	Pass	V
7206.000	36.42	37.46	6.66	42.95	48.57	74	-25.43	Pass	V
9608.000	37.88	37.82	7.73	43.21	51.00	74	-23.00	Pass	V

Test mode:	Transmitting	Test channel:	2442MHz		

Frequency (MHz)	Antenna Factor (dB/m)	Preamp Gain (dB)	Cable Loss (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1326.513	30.52	38.25	2.66	49.00	43.93	74	-30.07	Pass	H
1525.860	30.92	37.92	2.85	48.71	44.56	74	-29.44	Pass	H
4884.000	34.86	36.81	5.08	44.31	47.44	74	-26.56	Pass	H
5880.782	35.81	36.71	7.17	43.53	49.8	74	-24.20	Pass	H
7326.000	36.43	37.43	6.77	43.28	49.05	74	-24.95	Pass	H
9768.000	38.05	37.86	7.60	43.11	50.90	74	-23.10	Pass	H
1346.929	30.56	38.21	2.68	47.49	42.52	74	-31.48	Pass	V
1668.044	31.18	37.72	2.98	48.58	45.02	74	-28.98	Pass	V
3653.463	33.05	36.96	5.50	45.72	47.31	74	-26.69	Pass	V
4884.000	34.86	36.81	5.08	43.62	46.75	74	-27.25	Pass	V
7326.000	36.43	37.43	6.77	43.35	49.12	74	-24.88	Pass	V
9768.000	38.05	37.86	7.60	43.17	50.96	74	-23.04	Pass	V

Test mode:	Transmitting	Test channel:	2480MHz	

Frequency (MHz)	Antenna Factor (dB/m)	Preamp Gain (dB)	Cable Loss (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1329.894	30.52	38.24	2.66	48.34	43.28	74	-30.72	Pass	H
1668.044	31.18	37.72	2.98	47.14	43.58	74	-30.42	Pass	H
3815.033	32.93	36.93	5.47	45.57	47.04	74	-26.96	Pass	H
4960.000	35.02	36.80	5.05	44.30	47.57	74	-26.43	Pass	H
7440.000	36.45	37.41	6.88	43.10	49.02	74	-24.98	Pass	H
9920.000	38.22	37.88	7.47	43.10	50.91	74	-23.09	Pass	H
1518.111	30.90	37.94	2.84	46.46	42.26	74	-31.74	Pass	V
1663.803	31.17	37.72	2.97	48.01	44.43	74	-29.57	Pass	V
3766.785	32.97	36.94	5.48	45.39	46.90	74	-27.10	Pass	V
4960.000	35.02	36.80	5.05	42.57	45.84	74	-28.16	Pass	V
7440.000	36.45	37.41	6.88	43.72	49.64	74	-24.36	Pass	V
9920.000	38.22	37.88	7.47	43.17	50.98	74	-23.02	Pass	V

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 - Correct Factor
   Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor
2) Scan from 9kHz to 25GHz,The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported .

7.4 Restricted bands around fundamental frequency

Test Requirement: 47 CFR Part 15C Section 15.209 and 15.205
Test Method: ANSI C63.10
Test Site: Measurement Distance: 3m (Semi-Anechoic Chamber)
Limit(Band Edge): Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Frequency	Limit (dBμV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Test Setup:

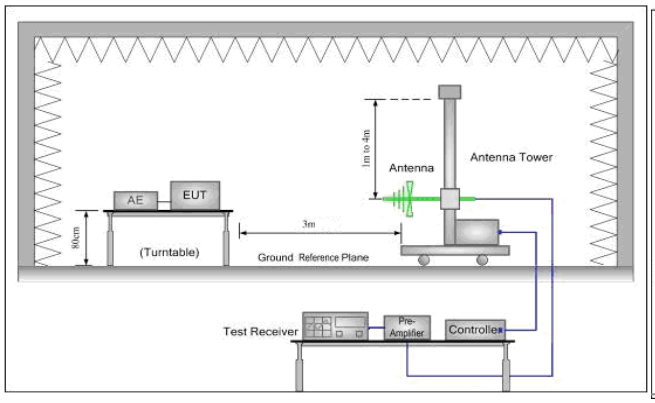


Figure 1. 30MHz to 1GHz

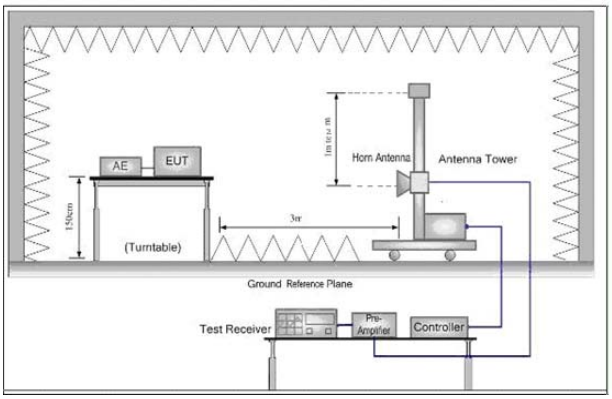


Figure 2. Above 1 GHz

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.

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
h. Test the EUT in the lowest channel , the Highest channel
i. The radiation measurements are performed in X, Y, Z axis positioning for Control TX, and found the X axis positioning which it is worse case.

j. Repeat above procedures until all frequencies measured was complete.

Instruments Used: Refer to section 6 for details

Test Mode: TX

Test Results: Pass

Test plot as follows:

Frequency (MHz)	Read Level (dBμV)	Level (dBμV/m)	Antenna Factor (dB/m)	Cable Loss (dB)	Premap Factor (dB)	Limit (dBμV/m)	Over Limit (dB)	Antenna Polaxis	Remark	Test channel
2390.00	50.10	49.70	32.53	4.28	37.21	74	-24.30	H	PK	Lowest
2390.00	44.67	44.27	32.53	4.28	37.21	74	-29.73	V	PK	Lowest
2400.00	66.14	65.78	32.55	4.30	37.21	74	-8.22	H	PK	Lowest
2400.00	51.14	50.78	32.55	4.30	37.21	54	-3.22	H	AV	Lowest
2400.00	53.47	53.11	32.55	4.30	37.21	74	-20.86	V	PK	Lowest
2400.00	51.17	50.81	32.55	4.30	37.21	54	-3.19	V	AV	Lowest
2483.50	50.56	50.59	32.71	4.51	37.19	74	-23.41	H	PK	Highest
2483.50	50.79	50.82	32.71	4.51	37.19	74	-23.18	V	PK	Highest

Note:

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

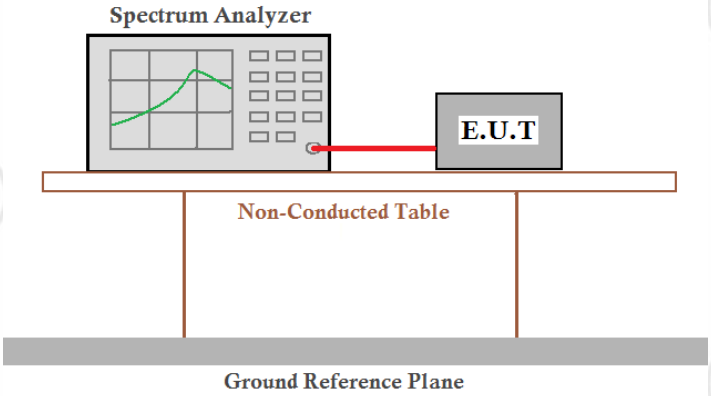
Final Test Level =Receiver Reading - Correct Factor

Correct Factor = Preamplifier Factor– Antenna Factor–Cable Factor

Remark: Scan from the test data, The average value is lower than limit, and The below the limit need not be reported, so only the peak value had been displayed.

7.5 20dB Bandwidth

Test Requirement: 47 CFR Part 15C Section 15.215
Test Method: ANSI C63.10
Test Setup:

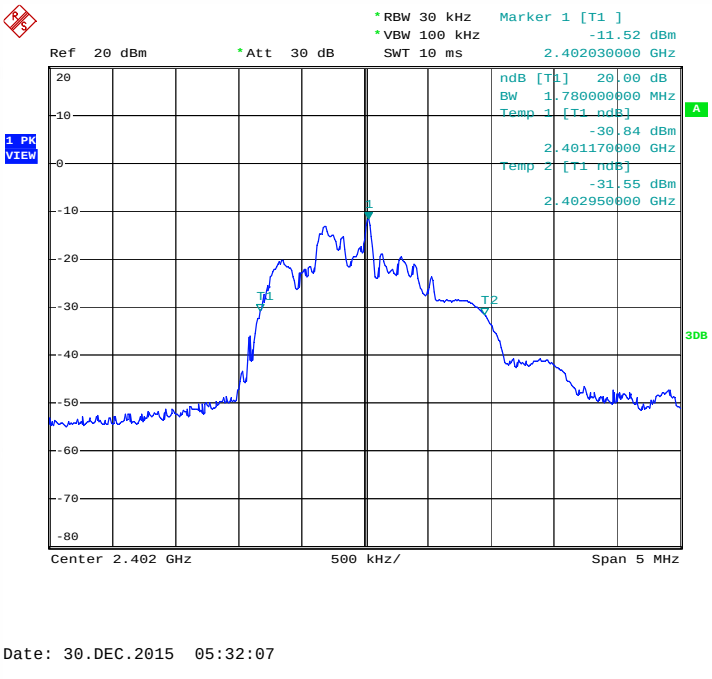


Test Mode: Control TX
Limit: N/A
Instruments Used: Refer to section 6 for details
Test Results: Pass

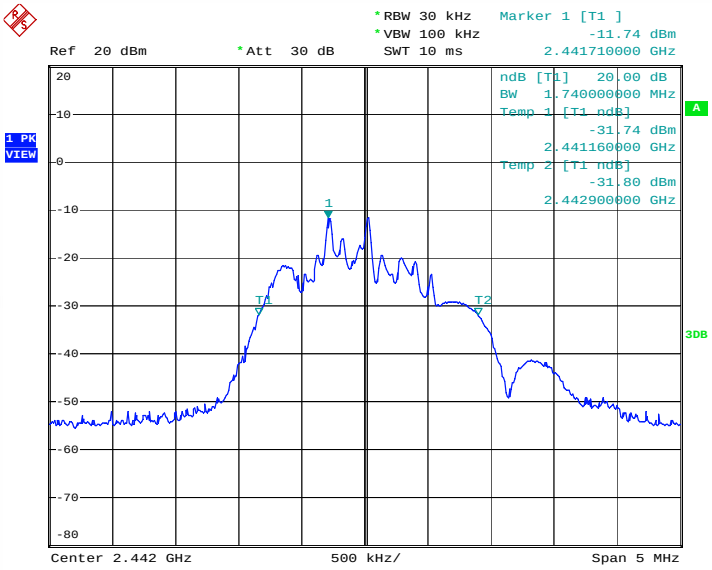
Measurement Data

Test Channel	20dB bandwidth (MHz)	Results
Lowest	1.78	Pass
Middle	1.74	Pass
Highest	1.20	Pass

Test plot as follows:
Test channel: 2402MHz

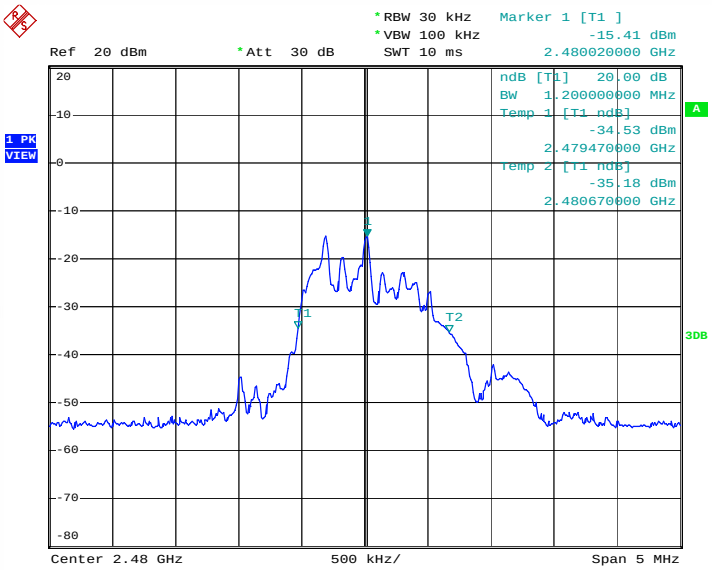


Test channel: 2442MHz



Date: 30.DEC.2015 05:59:00

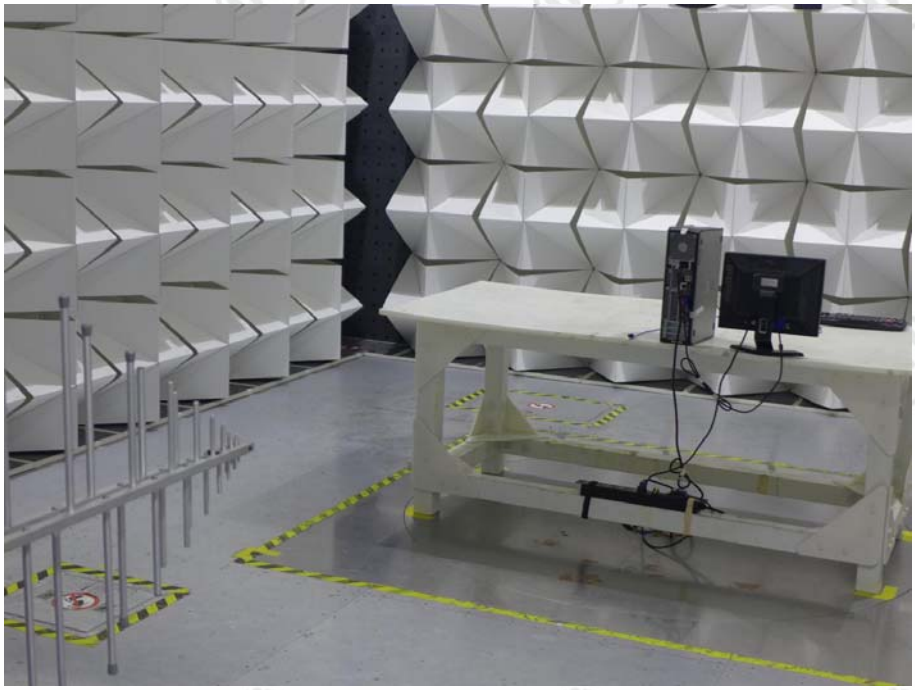
Test channel: 2480MHz



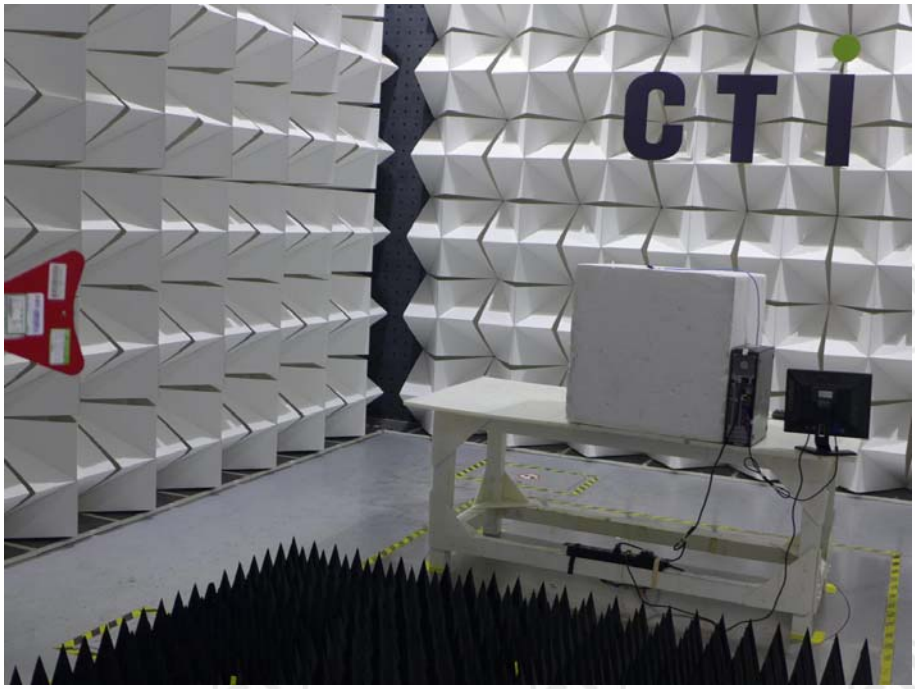
Date: 30.DEC.2015 06:23:29

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

Test Model No.: 1TIPS-1000



Radiated emission Test Setup-1(Below 1GHz)

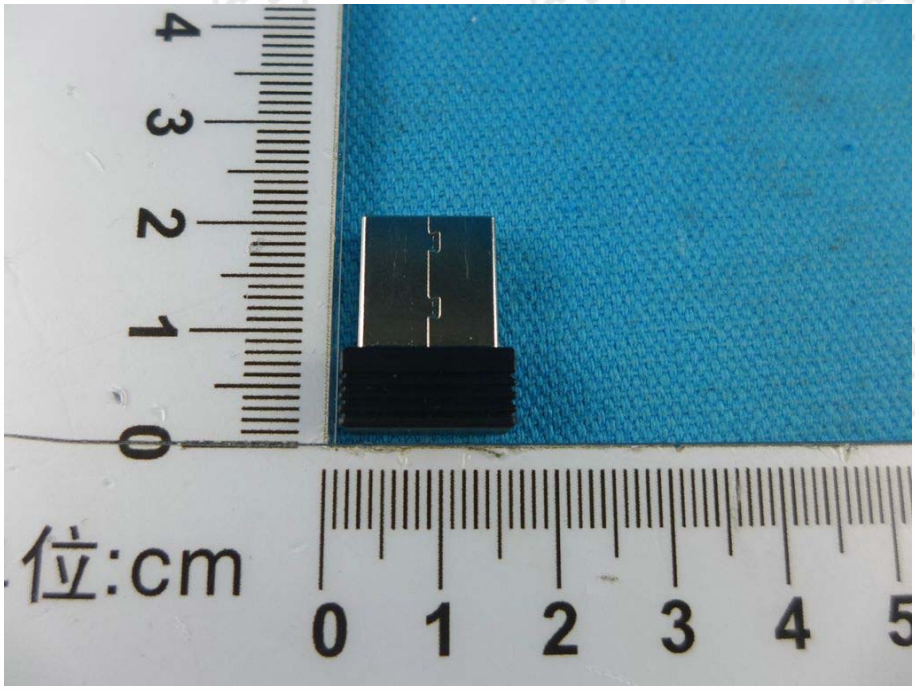


Radiated spurious emission Test Setup-2 (Above 1GHz)

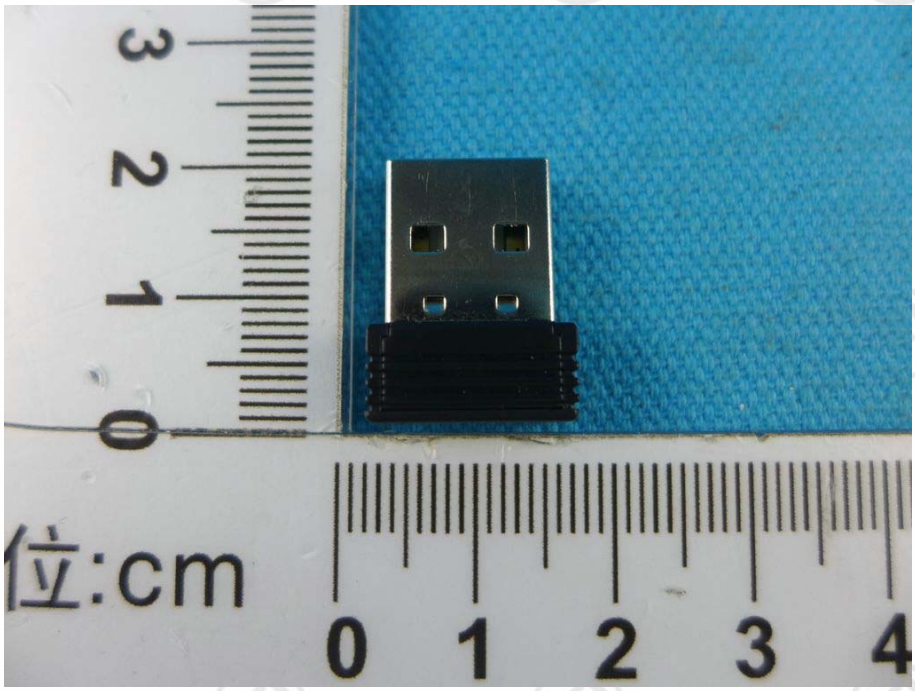
Conducted disturbance Test Setup

APPENDIX 2 PHOTOGRAPHS OF EUT

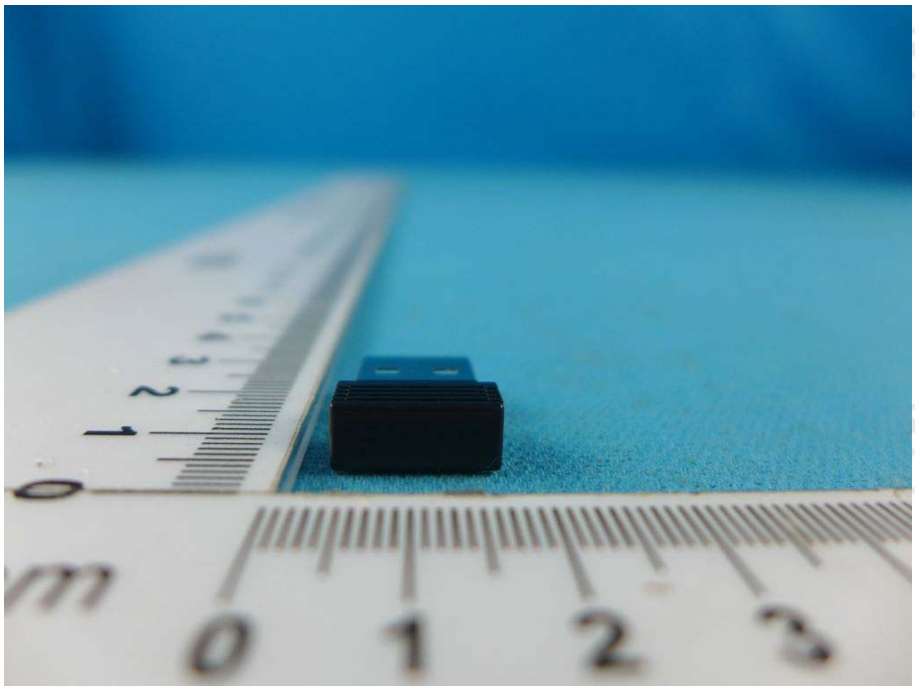
Test mode No.: 1TIPS-1000



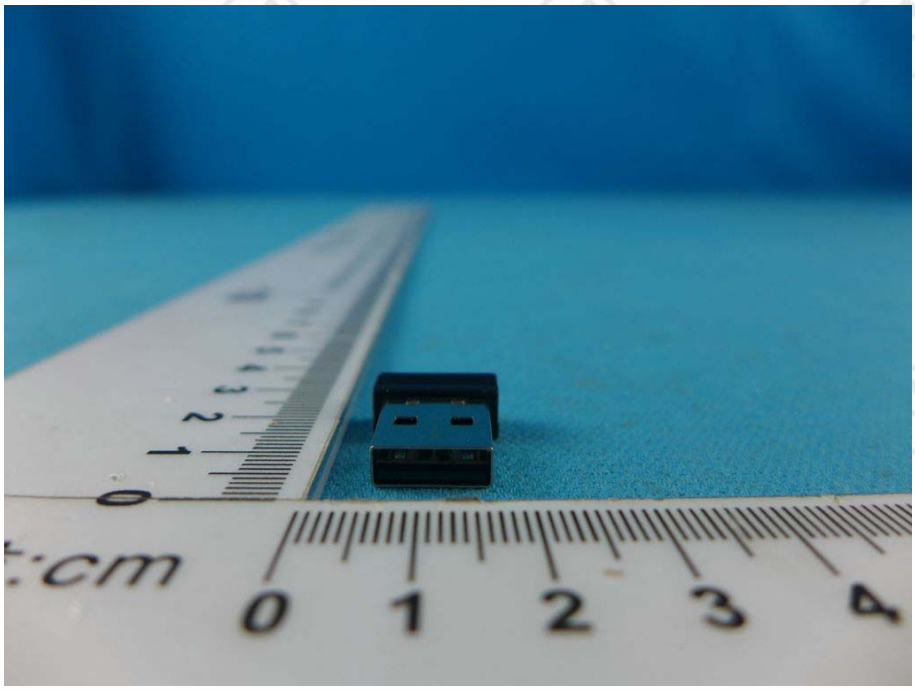
View of product-1



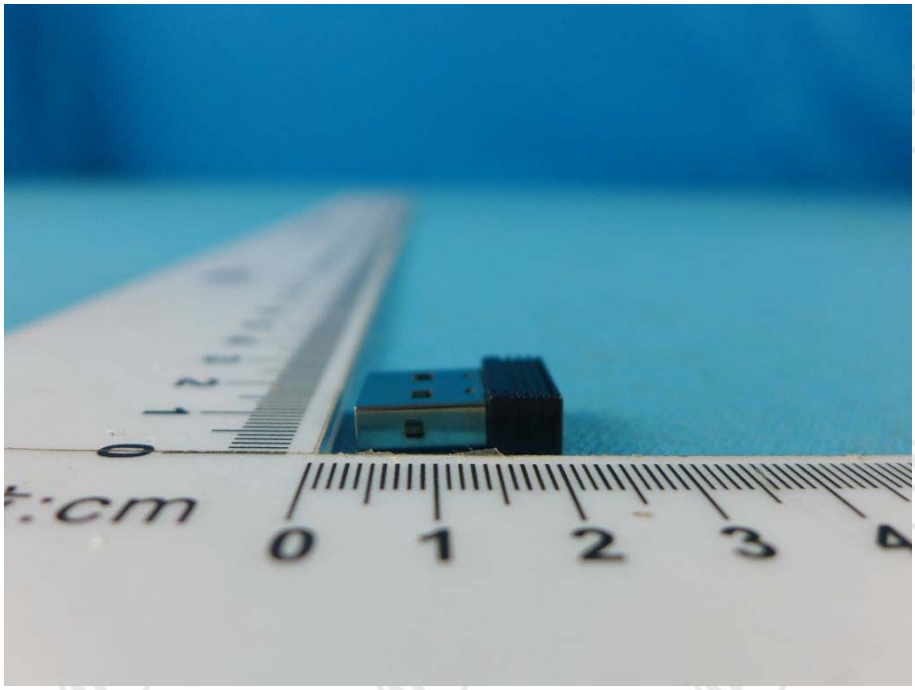
View of product-2



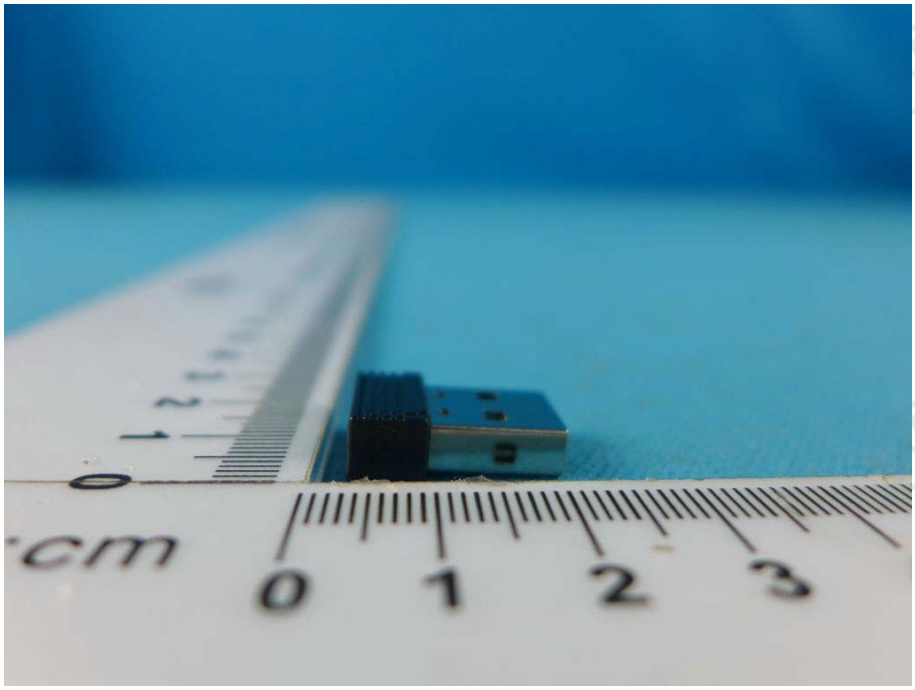
View of product-3



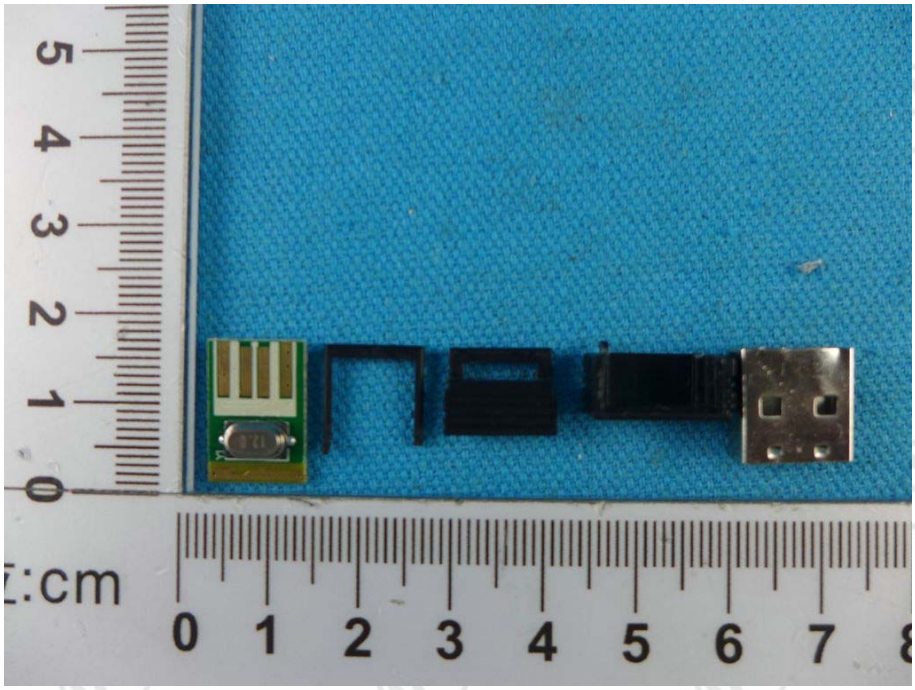
View of product-4



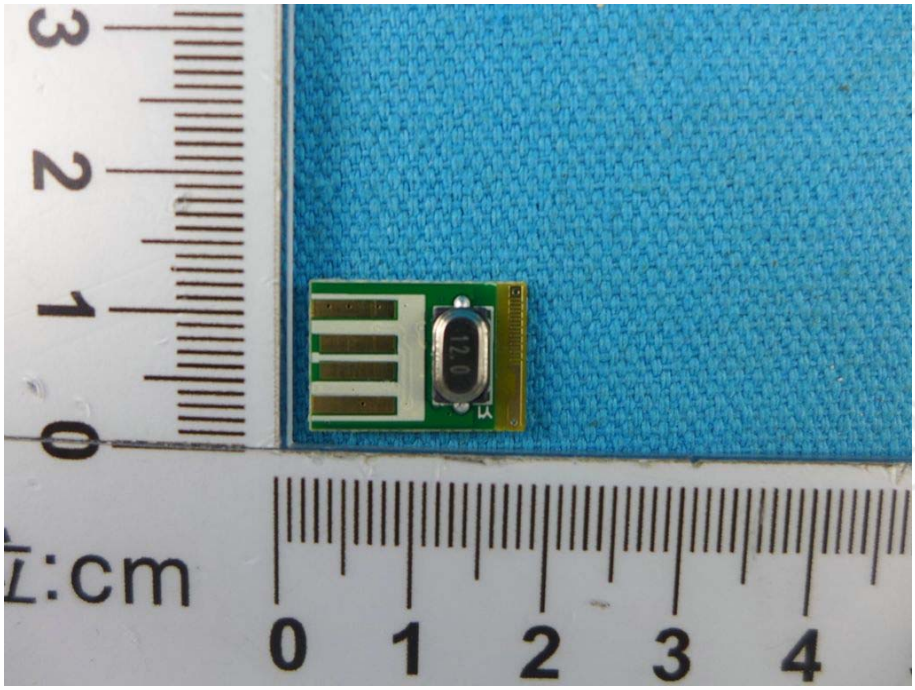
View of product-5



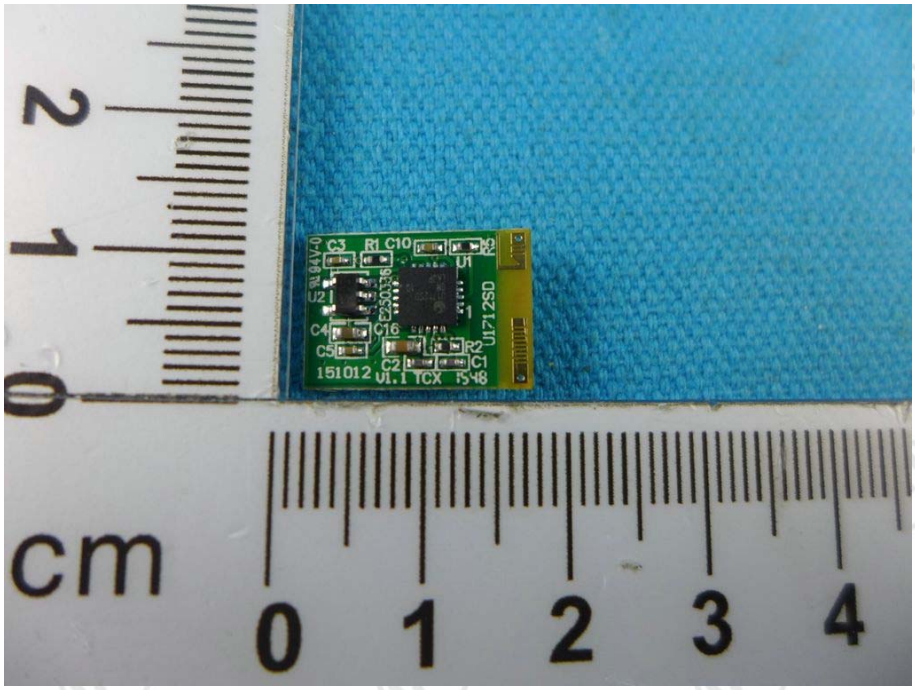
View of product-6



View of product-7



View of product-8



View of product-9

*** End of Report ***