FCC TEST REPORT

Product	:	SLYPOD
Trade mark	:	MOZA
Model/Type reference	:	MS-280, MS-580, MS-280S
Serial Number	:	N/A
Report Number	:	EED32L00160903
FCC ID	:	2AMJR-SLYPOD
Date of Issue	:	Jul. 31, 2019
Test Standards	:	47 CFR Part 15 Subpart C
Test result	:	PASS

Prepared for:

Shenzhen Gudsen Technology Co., Ltd
6/F,10th Building,Jiuxiang Ling Industrial Park,
Ave Xili ,Nanshan District, Shenzhen, China

Prepared by:

Centre Testing International Group Co., Ltd.
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Tested By:	Jay Zheng	Compiled by:	Alex Wu
	Jay Zheng		Alex Wu
Reviewed by:	Ware Xin	Approved by:	Kevin Yang
	Ware Xin		Kevin Yang
Date:	Jul. 31, 2019		Check No.:3096310050

CENTRE TESTING INTERNATIONAL GROUP CO.,LTD. Report Seal

2 Version

Version No.	Date	Description
00	Jul. 31, 2019	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.

Model No.: MS-280, MS-580, MS-280S

Only the model MS-280 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, only the internal telescopic part of the telescopic length is different

4 Contents

5 General Information

5.1 Client Information

Applicant:	Shenzhen Gudsen Technology Co., Ltd
Address of Applicant:	6/F,10th Building,Jiuxiang Ling Industrial Park,Ave Xili ,Nanshan District, Shenzhen, China
Manufacturer:	Shenzhen Gudsen Technology Co., Ltd
Address of Manufacturer:	6/F,10th Building,Jiuxiang Ling Industrial Park,Ave Xili ,Nanshan District, Shenzhen, China

5.2 General Description of EUT

Product Name:	SLYPOD
Model No.(EUT):	MS-280, MS-580, MS-280S
Test Model No.	MS-280
Trade Mark:	MOZA
EUT Supports Radios application:	2440MHz
Power Supply:	DC 11.1V

5.3 Product Specification subjective to this standard

Frequency Range:	2440MHz
Modulation Type:	GFSK
Number of Channels:	1
Test Power Grade:	N/A
Test Software of EUT:	EMI_Test_Tool_v1.3 (manufacturer declare)
Antenna Type:	Internal Antenna
Antenna Gain:	-2.29dBi
Test voltage:	5V
Sample Received Date:	Jun. 20, 2019
Sample tested Date:	Jun. 20, 2019 to Jul. 31, 2019

5.4 Test Environment and Mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	64 % RH
Atmospheric Pressure:	1010 mbar
Test mode:	
Transmitting mode:	Keep the EUT in transmitting mode with modulation.

5.5 Description of Support Units

The EUT has been tested independently

5.6
5.6

5.6 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax:+86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

5.7 Deviation from Standards

None.

5.8 Abnormalities from Standard Conditions

None.

5.9 Other Information Requested by the Customer

None.

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

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.46dB (30MHz-1GHz)
		0.55dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.3dB (30MHz-1GHz)
		4.5dB (1GHz-12.75GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	3.8%
7	DC power voltages	0.026%

6 Equipment List

Conducted disturbance Test					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Receiver	R&S	ESCI	100435	05-20-2019	05-18-2020
Temperature/ Humidity Indicator	Defu	TH128	/	06-14-2019	06-12-2020
Communication test set	Agilent	E5515C	GB47050534	03-01-2019	02-28-2020
Communication test set	R&S	CMW500	102898	01-18-2019	01-17-2020
LISN	R&S	ENV216	100098	05-08-2019	05-06-2020
LISN	schwarzbeck	NNLK8121	8121-529	05-08-2019	05-06-2020
Voltage Probe	R&S	ESH2-Z3 0299.7810.56	100042	06-13-2017	06-11-2020
Current Probe	R&S	EZ-17 816.2063.03	100106	05-20-2019	05-18-2020
ISN	TESEQ	ISN T800	30297	01-06-2019	01-15-2020
Barometer	changchun	DYM3	1188	06-20-2019	06-18-2020

RF test system					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. Date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
Signal Generator	Keysight	E8257D	MY53401106	03-01-2019	02-28-2020
Spectrum Analyzer	Keysight	N9010A	MY54510339	03-01-2019	02-28-2020
Signal Generator	Keysight	N5182B	MY53051549	03-01-2019	02-28-2020
High-pass filter	Sinoscite	FL3CX03WG18NM12-0398-002	---	01-09-2019	01-08-2020
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-09-2019	01-08-2020
DC Power	Keysight	E3642A	MY54426035	03-01-2019	02-28-2020
PC-1	Lenovo	R4960d	---	03-01-2019	02-28-2020
BT&WI-FI Automatic control	R&S	OSP120	101374	03-01-2019	02-28-2020
RF control unit	JS Tonscend	JS0806-2	15860006	03-01-2019	02-28-2020
RF control unit	JS Tonscend	JS0806-1	15860004	03-01-2019	02-28-2020
RF control unit	JS Tonscend	JS0806-4	158060007	03-01-2019	02-28-2020
BT&WI-FI Automatic test software	JS Tonscend	JS1120-2	---	03-01-2019	02-28-2020
Temperature/ Humidity Indicator	biaozhi	HM10	1804186	10-12-2018	10-11-2019

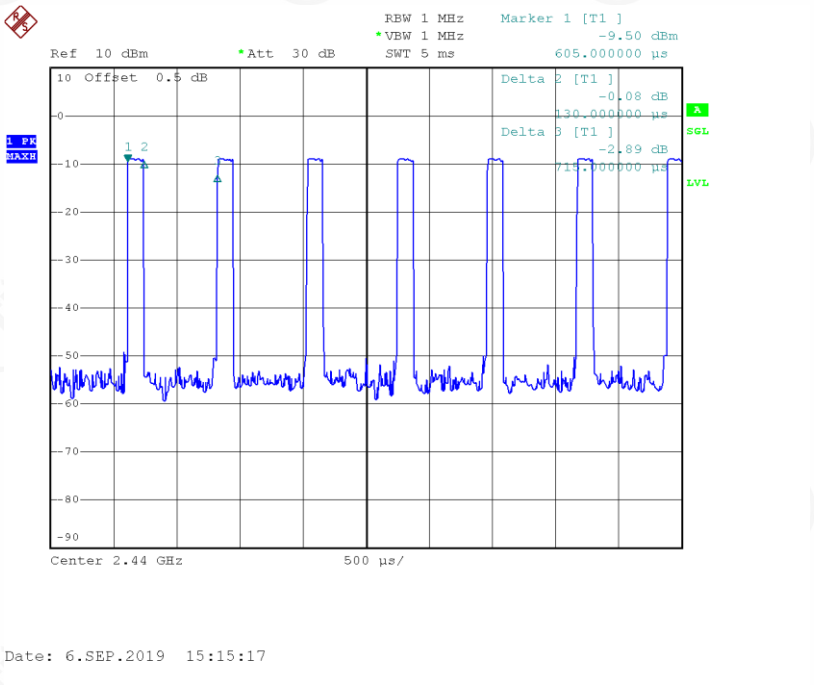
3M Semi/full-anechoic Chamber					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
3M Chamber & Accessory Equipment	TDK	SAC-3	---	05-24-2019	05-24-2022
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-401	12-21-2018	12-20-2019
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-618	07-30-2018	07-29-2019
Microwave Preamplifier	Agilent	8449B	3008A02425	08-21-2018	08-20-2019
Microwave Preamplifier	Tonscend	EMC051845SE	980380	01-16-2019	01-15-2020
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1869	04-25-2018	04-23-2021
Horn Antenna	ETS-LINDGREN	3117	00057410	06-05-2018	06-03-2021
Double ridge horn antenna	A.H.SYSTEMS	SAS-574	374	06-05-2018	06-04-2021
Pre-amplifier	A.H.SYSTEMS	PAP-1840-60	6041.6041	08-08-2018	08-07-2019
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04-25-2018	04-25-2021
Spectrum Analyzer	R&S	FSP40	100416	04-28-2019	04-26-2020
Receiver	R&S	ESCI	100435	05-20-2019	05-18-2020
Receiver	R&S	ESCI7	100938-003	11-23-2018	11-22-2019
Multi device Controller	maturo	NCD/070/10711112	---	01-09-2019	01-08-2020
Signal Generator	Agilent	E4438C	MY45095744	03-01-2019	02-28-2020
Temperature/ Humidity Indicator	Shanghai qixiang	HM10	1804298	10-12-2018	10-11-2019
Communication test set	Agilent	E5515C	GB47050534	03-01-2019	02-28-2020
Cable line	Fulai(7M)	SF106	5219/6A	01-09-2019	01-08-2020
Cable line	Fulai(6M)	SF106	5220/6A	01-09-2019	01-08-2020
Cable line	Fulai(3M)	SF106	5216/6A	01-09-2019	01-08-2020
Cable line	Fulai(3M)	SF106	5217/6A	01-09-2019	01-08-2020
High-pass filter	Sinoscite	FL3CX03WG18NM12-0398-002	---	01-09-2019	01-08-2020
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX01CA09CL12-0395-001	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX01CA08CL12-0393-001	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX02CA04CL12-0396-002	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX02CA03CL12-0394-001	---	01-09-2019	01-08-2020

3M full-anechoic Chamber					
Equipment	**Manufacturer**	**Model No.**	**Serial Number**	**Cal. date (mm-dd-yyyy)**	**Cal. Due date (mm-dd-yyyy)**
RSE Automatic test software	JS Tonscend	JS36-RSE	10166	06-18-2019	06-17-2020
Receiver	Keysight	N9038A	MY57290136	03-27-2019	03-25-2020
Spectrum Analyzer	Keysight	N9020B	MY57111112	03-27-2019	03-25-2020
Spectrum Analyzer	Keysight	N9030B	MY57140871	03-27-2019	03-25-2020
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-075	04-25-2018	04-23-2021
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04-25-2018	04-23-2021
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	9163-1148	04-25-2018	04-23-2021
Horn Antenna	Schwarzbeck	BBHA 9170	9170-832	04-25-2018	04-23-2021
Horn Antenna	Schwarzbeck	BBHA 9170	9170-829	04-25-2018	04-23-2021
Communication Antenna	Schwarzbeck	CLSA 0110L	1014	02-14-2019	02-13-2020
Biconical antenna	Schwarzbeck	VUBA 9117	9117-381	04-25-2018	04-23-2021
Horn Antenna	ETS-LINDGREN	3117	00057407	07-10-2018	07-08-2021
Preamplifier	EMCI	EMC184055SE	980596	05-22-2019	05-22-2020
Communication test set	R&S	CMW500	102898	01-18-2019	01-17-2020
Preamplifier	EMCI	EMC001330	980563	05-08-2019	05-08-2020
Preamplifier	Agilent	8449B	3008A02425	08-21-2018	08-20-2019
Temperature/ Humidity Indicator	biaozhi	GM1360	EE1186631	05-01-2019	04-30-2020
Signal Generator	KEYSIGHT	E8257D	MY53401106	03-01-2019	02-28-2020
Fully Anechoic Chamber	TDK	FAC-3	---	01-17-2018	01-15-2021
Filter bank	JS Tonscend	JS0806-F	188060094	04-10-2018	04-08-2021
Cable line	Times	SFT205-NMSM-2.50M	394812-0001	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMSM-2.50M	394812-0002	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMSM-2.50M	394812-0003	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMSM-2.50M	393495-0001	01-09-2019	01-08-2020
Cable line	Times	EMC104-NMNM-1000	SN160710	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMSM-3.00M	394813-0001	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMNM-1.50M	381964-0001	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMSM-7.00M	394815-0001	01-09-2019	01-08-2020
Cable line	Times	HF160-KMKM-3.00M	393493-0001	01-09-2019	01-08-2020

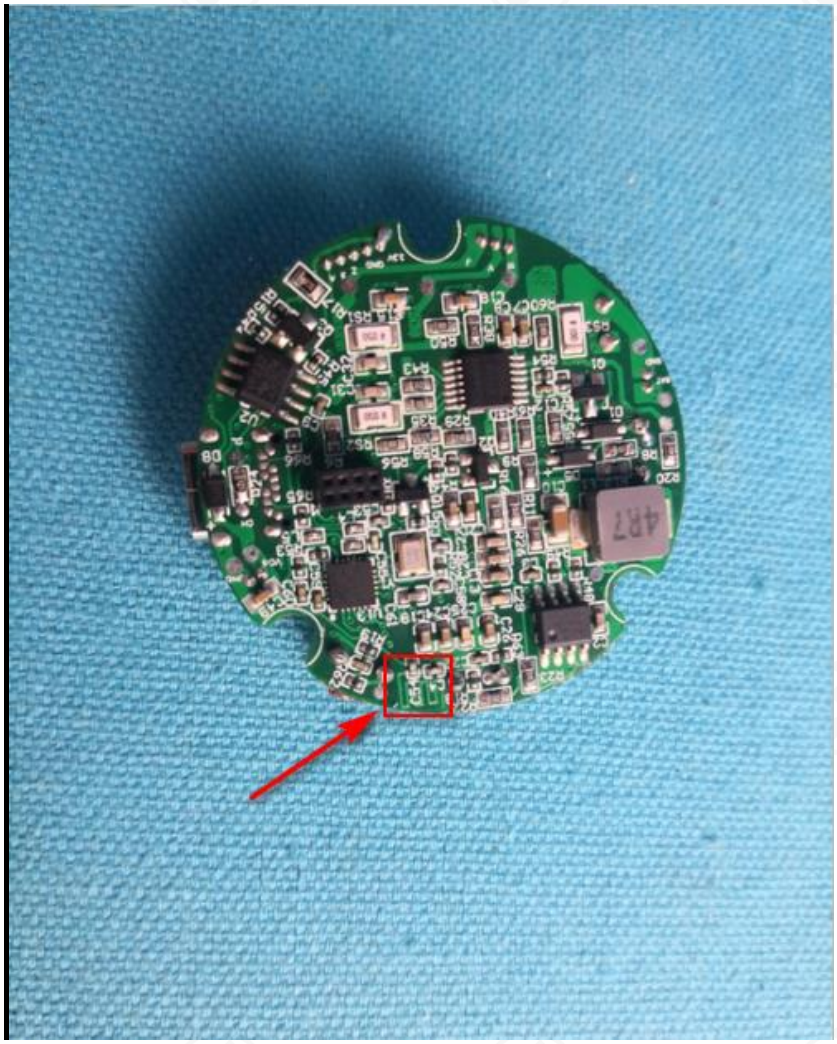
7 Test results and Measurement Data

7.1 Duty cycle

Duty Cycle			
Configuration	**TX ON(ms)**	**TX ALL(ms)**	**Duty Cycle(%)**
customize	**130**	**715**	**18.18**



7.2 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 -2.29dBi.	

7.3 Conducted Emissions

Test Requirement: 47 CFR Part 15C Section 15.207

Ambient: **Temp.: 21 C** **Humid.: 54%** **Press.: 1010mbar**

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.

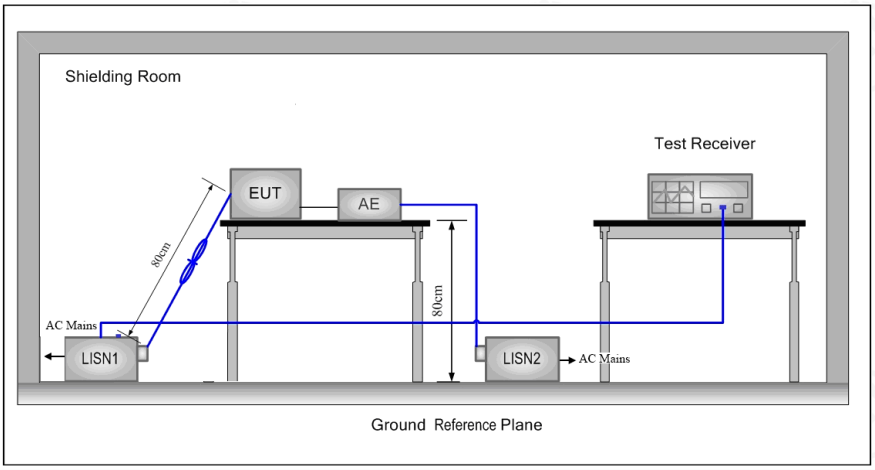
2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the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

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: 2013 on conducted measurement.

Test Setup:



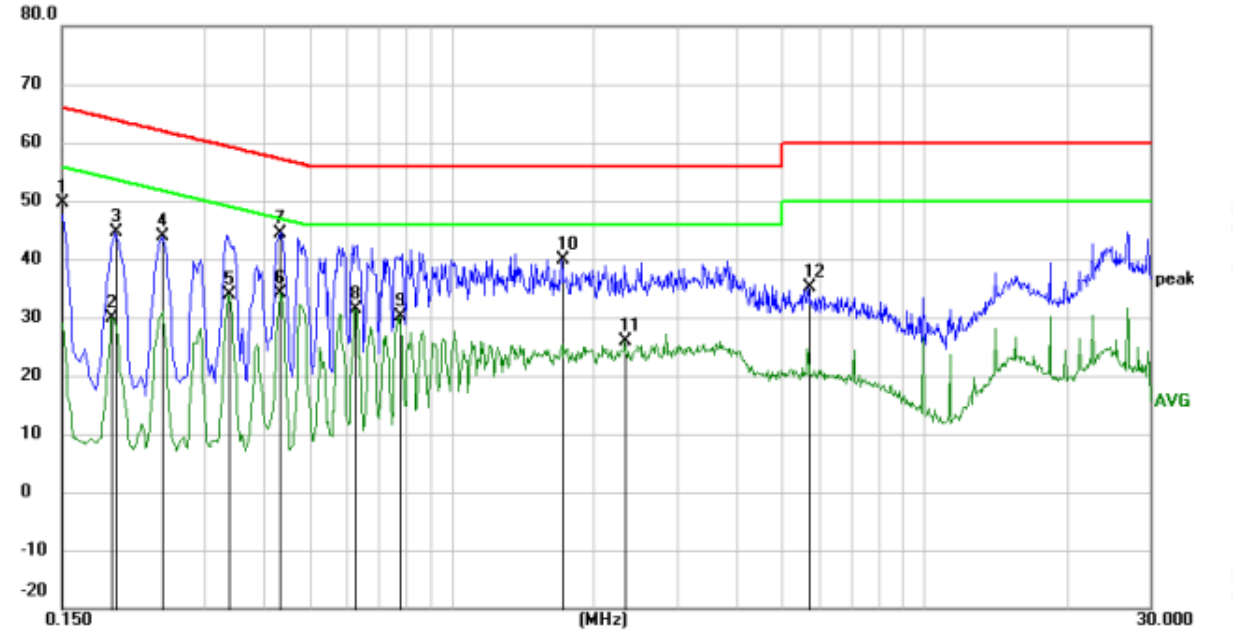
Test Mode:	BT mode
Instruments Used:	Refer to section 6 for details
Test Results:	Pass

Measurement Data

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

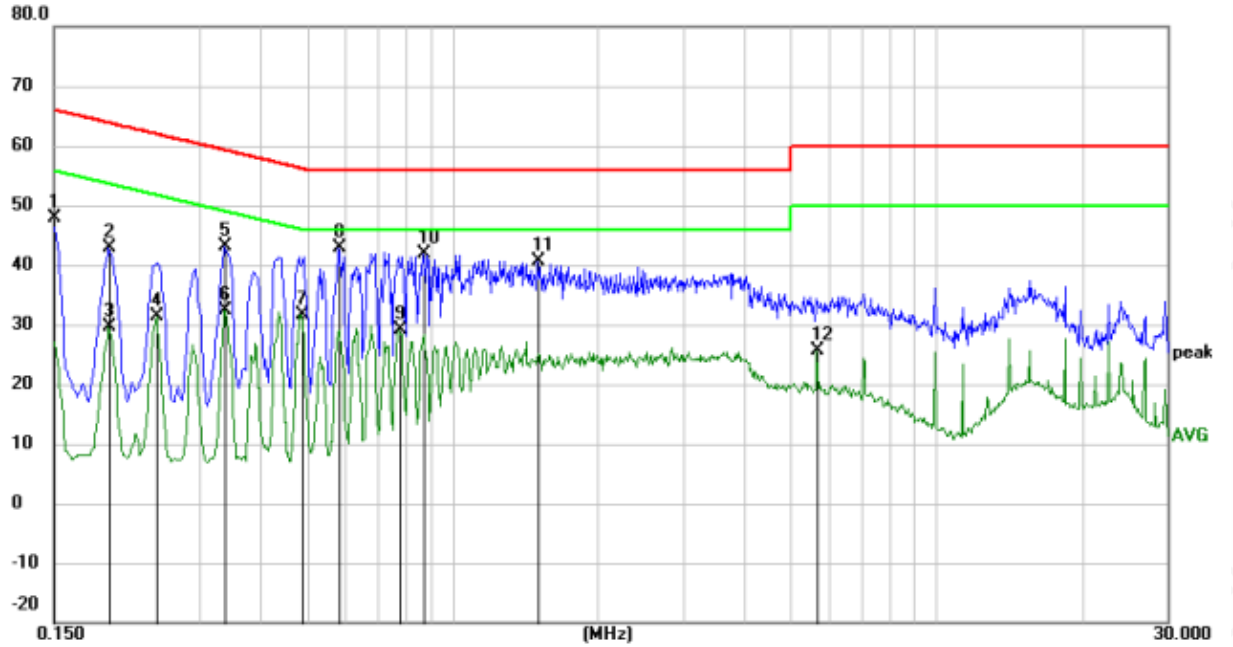
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live Line:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	39.62	9.91	49.53	66.00	-16.47	QP	
2		0.1905	19.93	9.91	29.84	54.01	-24.17	AVG	
3		0.1949	34.67	9.91	44.58	63.83	-19.25	QP	
4		0.2445	33.92	9.95	43.87	61.94	-18.07	QP	
5		0.3390	23.94	9.96	33.90	49.23	-15.33	AVG	
6		0.4335	24.20	9.89	34.09	47.19	-13.10	AVG	
7	*	0.4351	34.53	9.89	44.42	57.15	-12.73	QP	
8		0.6270	21.34	9.99	31.33	46.00	-14.67	AVG	
9		0.7755	20.23	9.80	30.03	46.00	-15.97	AVG	
10		1.7115	30.02	9.75	39.77	56.00	-16.23	QP	
11		2.3280	16.09	9.72	25.81	46.00	-20.19	AVG	
12		5.6850	25.32	9.73	35.05	60.00	-24.95	QP	

Neutral Line:



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1500	38.01	9.91	47.92	66.00	-18.08	QP	
2		0.1949	32.91	9.91	42.82	63.83	-21.01	QP	
3		0.1949	19.82	9.91	29.73	53.83	-24.10	AVG	
4		0.2445	21.35	9.95	31.30	51.94	-20.64	AVG	
5		0.3390	33.06	9.96	43.02	59.23	-16.21	QP	
6		0.3390	22.52	9.96	32.48	49.23	-16.75	AVG	
7		0.4875	21.71	9.89	31.60	46.21	-14.61	AVG	
8	*	0.5820	32.92	10.02	42.94	56.00	-13.06	QP	
9		0.7755	19.38	9.80	29.18	46.00	-16.82	AVG	
10		0.8700	31.97	9.81	41.78	56.00	-14.22	QP	
11		1.5000	30.82	9.77	40.59	56.00	-15.41	QP	
12		5.6805	15.85	9.73	25.58	50.00	-24.42	AVG	

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

7.4 Radiated Spurious Emission

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

Test Method: ANSI C63.10

Ambient: **Temp.: 21°C** **Humid.: 54%** **Press.: 1010mbar**

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:

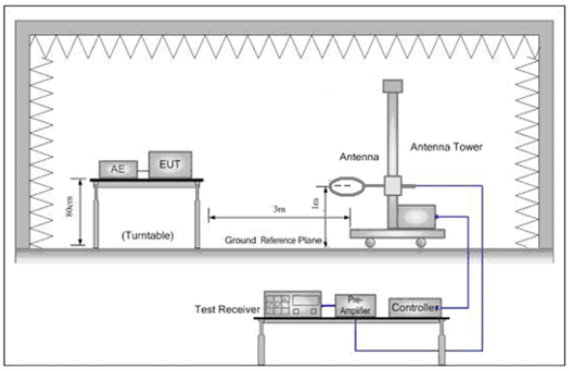


Figure 1. Below 30MHz

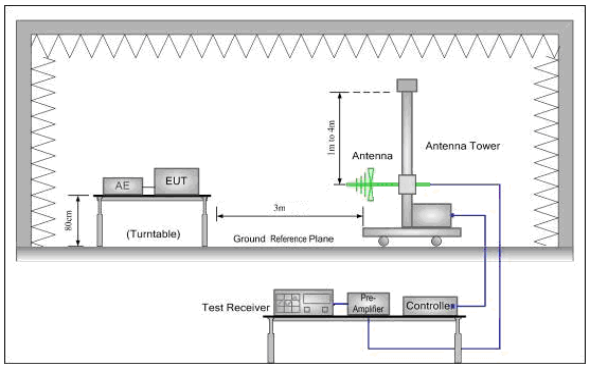


Figure 2. 30MHz to 1GHz

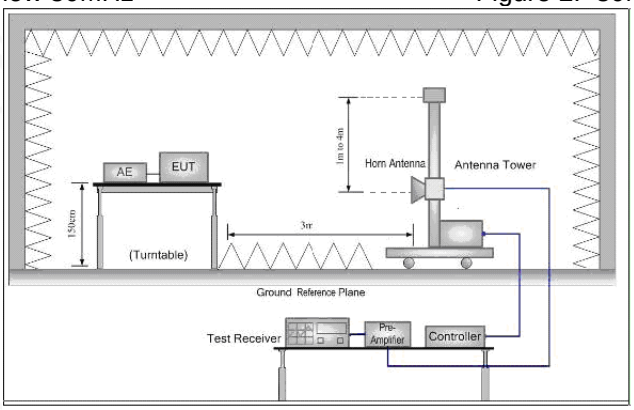


Figure 3. Above 1GHz

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 mete r(Above 18GHz the distance is 1 meter and table is 1.5 meter).
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

Exploratory Test Mode: BT mode,

Final Test Mode: Pretest the EUT at BT mode
Only the worst case is recorded in the report.

Test Results: Pass

Spurious Emissions
Below 1GHz

Channel:		2440								
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Preamp gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	95.9666	10.35	1.13	-32.07	38.38	17.79	43.50	25.71	Pass	H
2	168.9179	8.39	1.52	-31.96	44.88	22.83	43.50	20.67	Pass	H
3	222.6613	11.49	1.78	-31.94	48.77	30.10	46.00	15.90	Pass	H
4	625.0575	19.20	2.97	-31.98	33.69	23.88	46.00	22.12	Pass	H
5	687.5318	19.70	3.14	-32.06	35.46	26.24	46.00	19.76	Pass	H
6	906.3856	22.14	3.60	-31.52	36.01	30.23	46.00	15.77	Pass	H
7	36.5967	11.21	0.67	-32.11	38.49	18.26	40.00	21.74	Pass	V
8	55.2225	12.36	0.84	-32.07	37.73	18.86	40.00	21.14	Pass	V
9	208.8859	11.13	1.71	-31.94	47.40	28.30	43.50	15.20	Pass	V
10	285.0385	12.90	2.01	-31.90	36.30	19.31	46.00	26.69	Pass	V
11	600.0290	19.00	2.96	-31.99	33.59	23.56	46.00	22.44	Pass	V
12	974.9715	22.55	3.75	-30.95	34.79	30.14	54.00	23.86	Pass	V

Above 1GHz

Channel:		2440									
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Preamp gain [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity	Remark
1	1957.0957	31.42	3.43	-42.64	51.01	43.22	74.00	30.78	Pass	H	PK
2	3386.0257	33.35	4.55	-41.89	49.17	45.18	74.00	28.82	Pass	H	PK
3	5922.1948	35.68	5.18	-41.03	46.34	46.17	74.00	27.83	Pass	H	PK
4	8336.3558	36.53	6.15	-40.70	46.57	48.55	74.00	25.45	Pass	H	PK
5	9581.4388	37.63	6.68	-40.79	46.08	49.60	74.00	24.40	Pass	H	PK
6	11156.5438	38.69	7.22	-41.19	45.64	50.36	74.00	23.64	Pass	H	PK
7	2091.9092	31.83	3.58	-42.57	50.53	43.37	74.00	30.63	Pass	V	PK
8	2993.5994	33.19	4.53	-42.12	50.32	45.92	74.00	28.08	Pass	V	PK
9	3556.0371	33.44	4.43	-41.70	49.88	46.05	74.00	27.95	Pass	V	PK
10	5389.1593	34.89	4.84	-40.61	46.71	45.83	74.00	28.17	Pass	V	PK
11	7215.2810	36.32	5.81	-41.02	46.70	47.81	74.00	26.19	Pass	V	PK
12	9638.4426	37.66	6.69	-40.73	44.50	48.12	74.00	25.88	Pass	V	PK

Above 18GHz

Channel:		2440									
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity	Remark
1	18886.6443	38.76	0.00	-63.48	71.41	46.69	74.00	27.31	Pass	H	PK
2	19937.1969	38.97	0.00	-62.81	70.50	46.66	74.00	27.34	Pass	H	PK
3	23720.2860	39.80	0.00	-61.11	69.74	48.43	74.00	25.57	Pass	H	PK
4	26588.1294	40.39	0.00	-59.80	68.21	48.80	74.00	25.20	Pass	H	PK
5	29554.9777	40.61	0.00	-60.05	68.00	48.56	74.00	25.44	Pass	H	PK
6	32452.5226	42.05	0.00	-57.76	66.71	51.00	74.00	23.00	Pass	H	PK
7	18774.4387	38.56	0.00	-63.54	72.57	47.59	74.00	26.41	Pass	V	PK
8	21260.5630	38.54	0.00	-63.24	71.27	46.57	74.00	27.43	Pass	V	PK
9	23655.3828	39.71	0.00	-61.32	68.86	47.25	74.00	26.75	Pass	V	PK
10	25159.1580	40.66	0.00	-59.61	68.27	49.32	74.00	24.68	Pass	V	PK
11	26877.4439	40.38	0.00	-60.19	68.64	48.83	74.00	25.17	Pass	V	PK
12	31018.0509	41.29	0.00	-58.70	68.29	50.88	74.00	23.12	Pass	V	PK

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 30MHz 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 .

7.5 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:

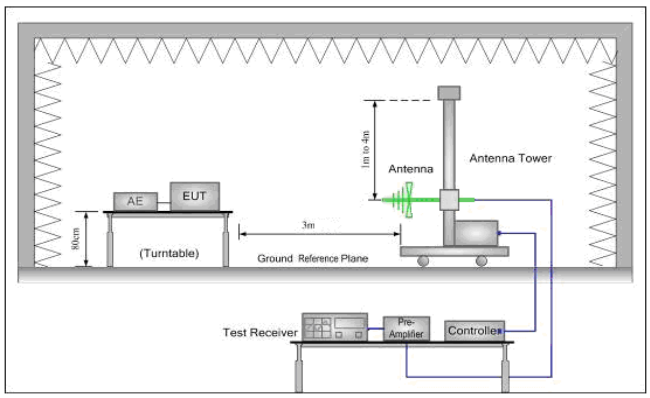


Figure 1. 30MHz to 1GHz

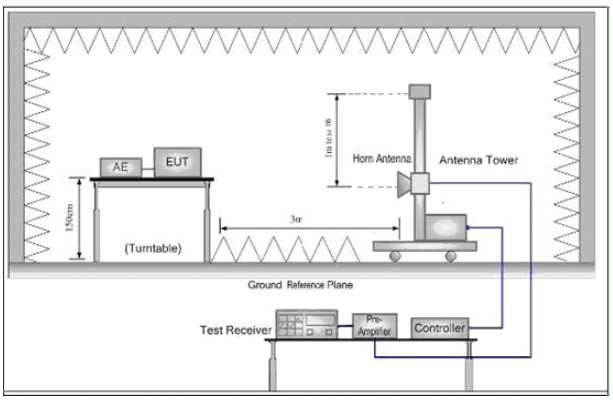


Figure 2. Above 1 GHz

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.

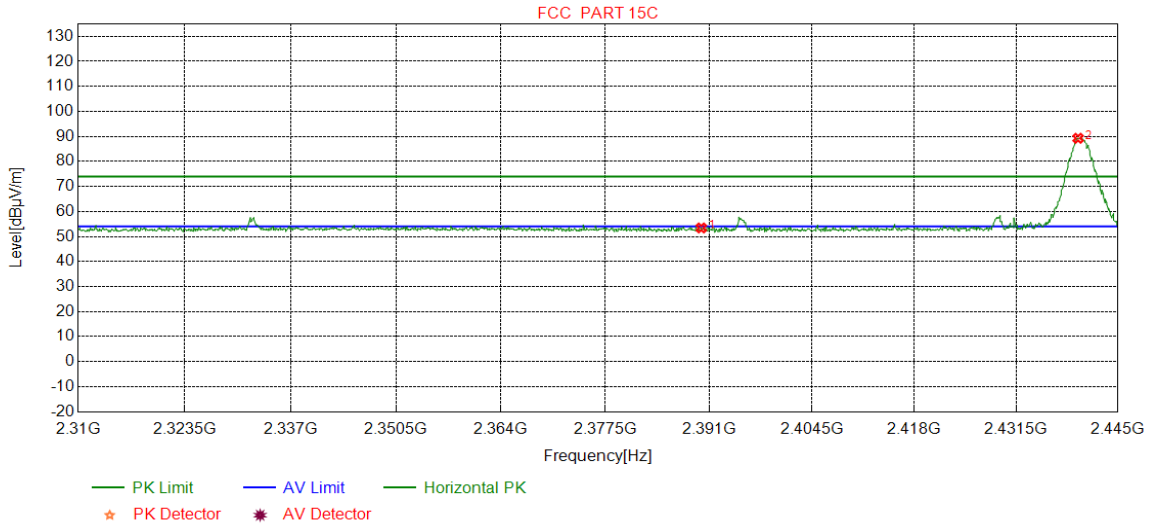
Above 1GHz test procedure as below:

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 Transmitting mode, 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
Exploratory Test Mode: BT mode
Final Test Mode: Pretest the EUT at BT mode
Only the worst case is recorded in the report.
Test Results: Pass

Mode:	GFSK	Channel:	2440
Remark:	PK		

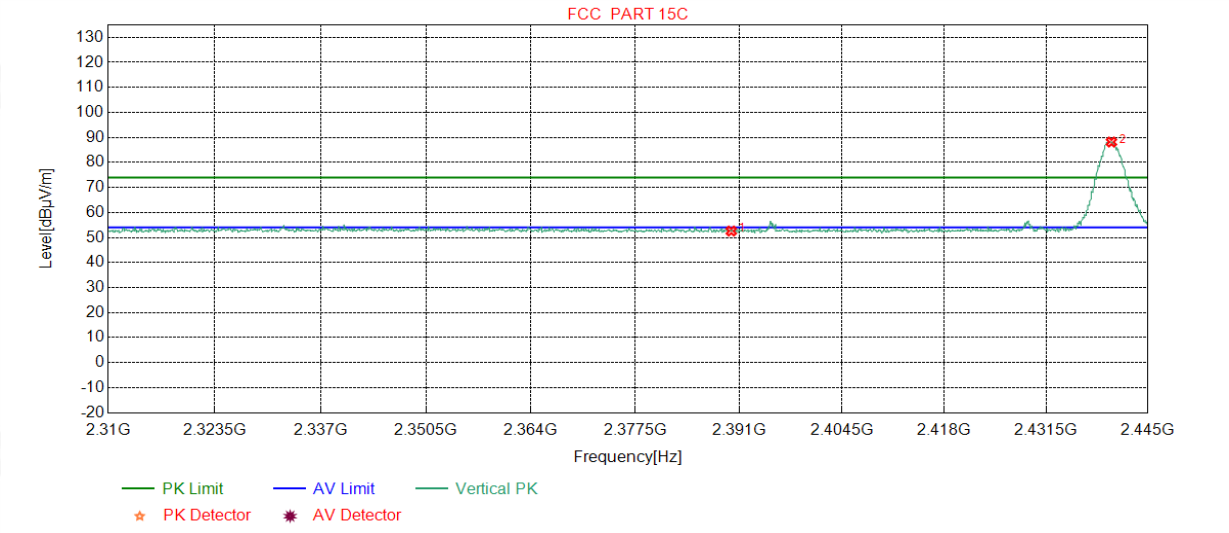
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	50.24	53.42	74.00	20.58	Pass	Horizontal
2	2439.7081	32.32	13.48	-42.42	85.88	89.26	74.00	-15.26	Pass	Horizontal

Mode:	GFSK	Channel:	2440
Remark:	PK		

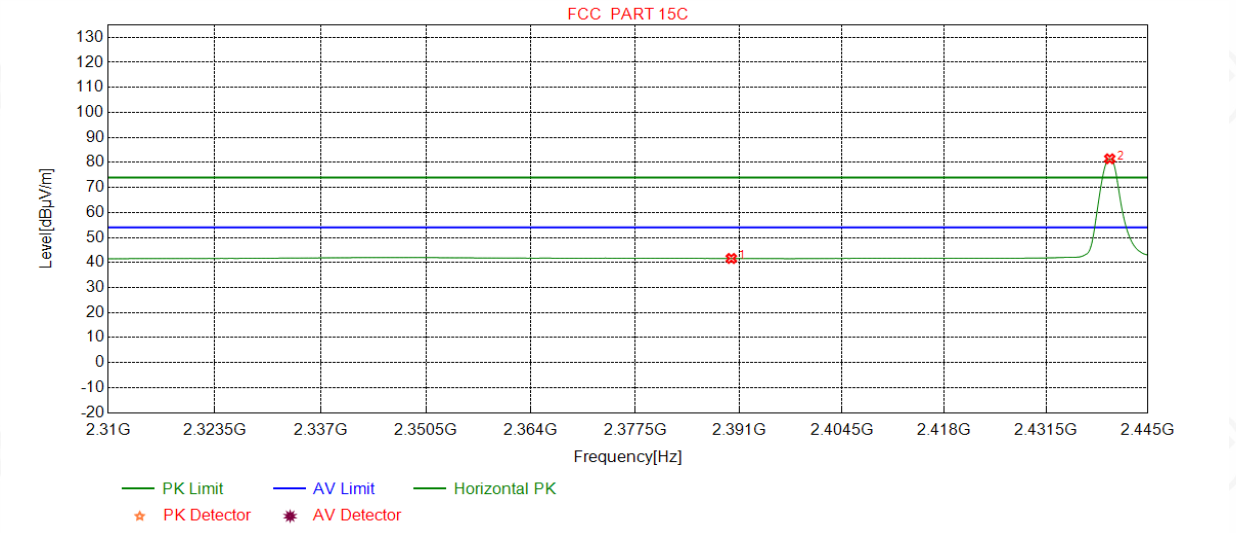
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	49.41	52.59	74.00	21.41	Pass	Vertical
2	2440.1585	32.32	13.48	-42.42	84.78	88.16	74.00	-14.16	Pass	Vertical

Mode:	GFSK	Channel:	2440
Remark:	AV		

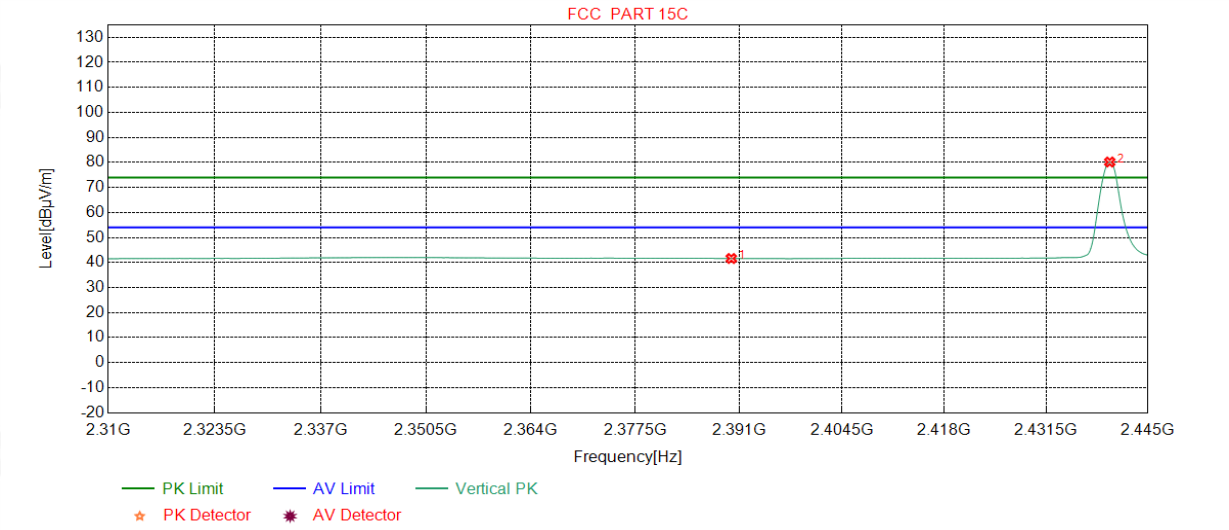
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	38.44	41.62	54.00	12.38	Pass	Horizontal
2	2439.9312	32.32	13.48	-42.42	78.08	81.46	54.00	-27.46	Pass	Horizontal

Mode:	GFSK	Channel:	2440
Remark:	AV		

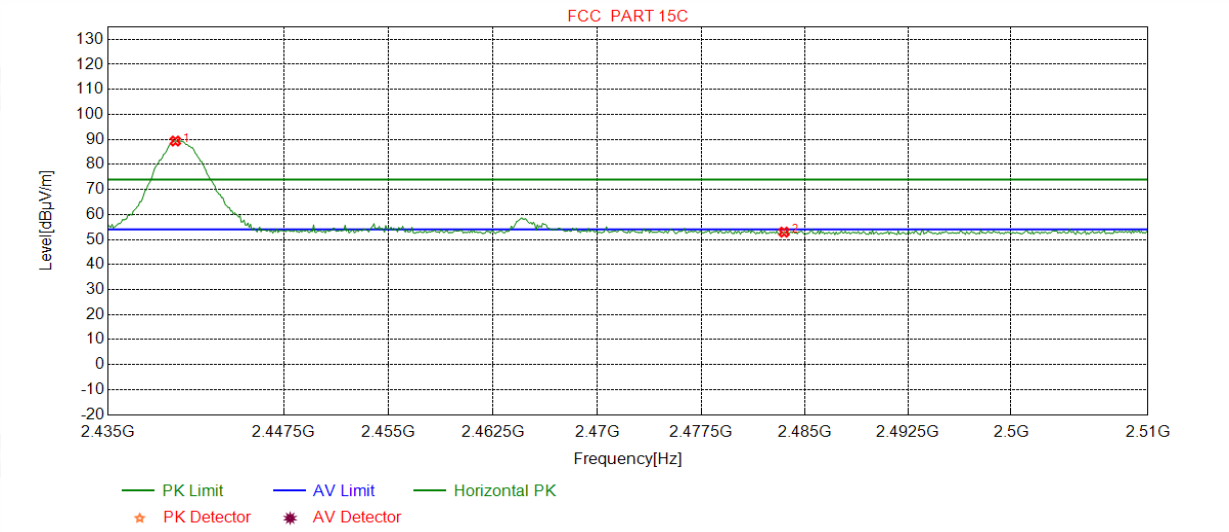
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	38.43	41.61	54.00	12.39	Pass	Vertical
2	2439.9312	32.32	13.48	-42.42	76.79	80.17	54.00	-26.17	Pass	Vertical

Mode:	GFSK	Channel:	2440
Remark:	PK		

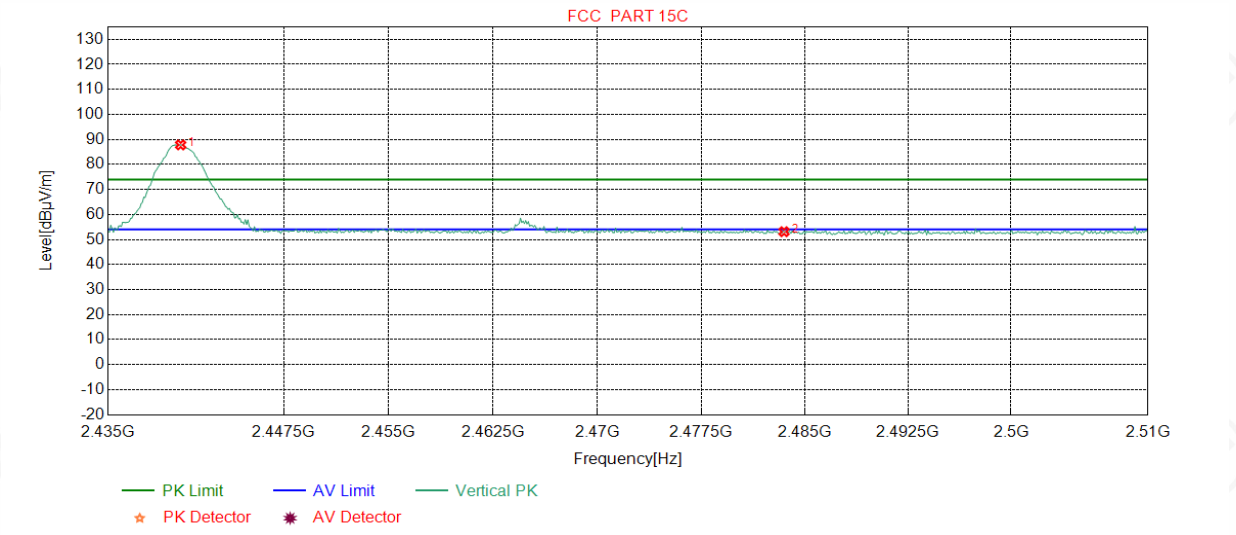
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2439.7872	32.32	13.48	-42.42	85.97	89.35	74.00	-15.35	Pass	Horizontal
2	2483.5000	32.38	13.38	-42.40	49.58	52.94	74.00	21.06	Pass	Horizontal

Mode:	GFSK	Channel:	2440
Remark:	PK		

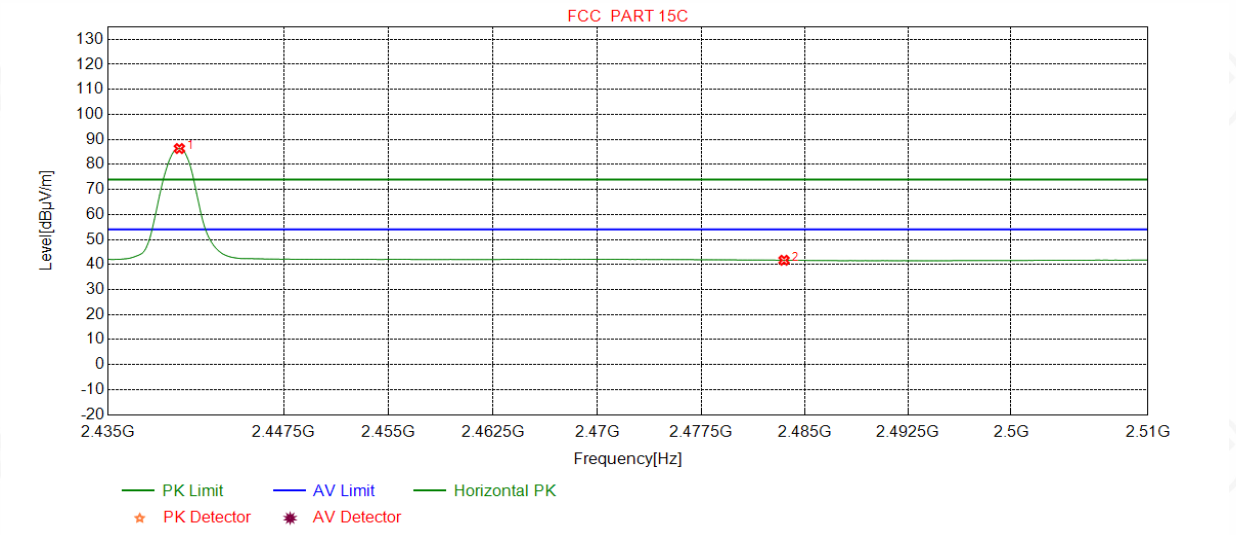
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity
1	2440.1627	32.32	13.48	-42.42	84.42	87.80	74.00	-13.80	Pass	Vertical
2	2483.5000	32.38	13.38	-42.40	49.76	53.12	74.00	20.88	Pass	Vertical

Mode:	GFSK	Channel:	2440
Remark:	AV		

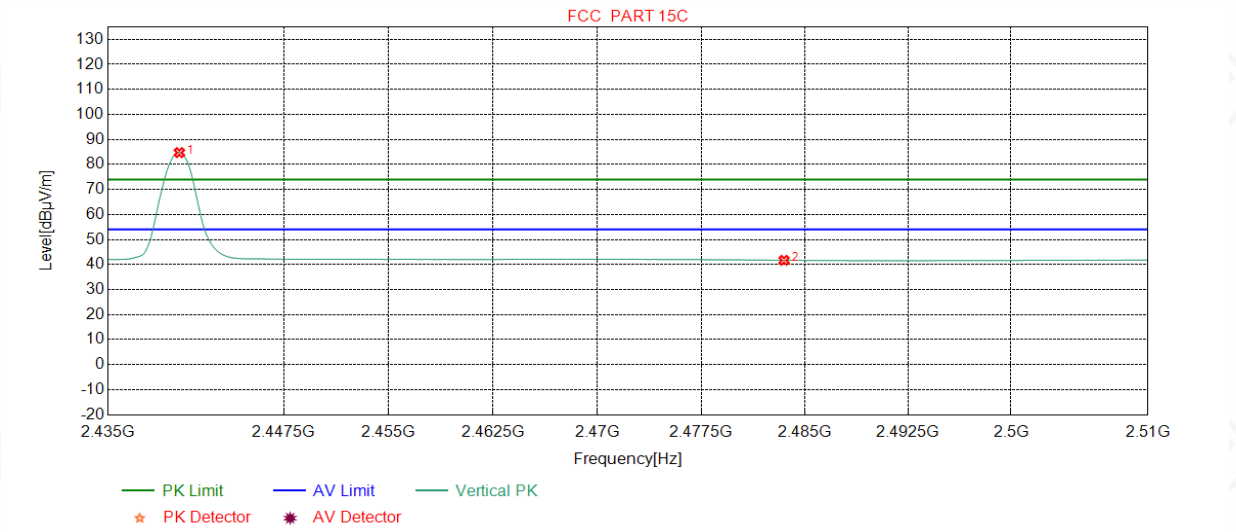
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2440.0688	32.32	13.48	-42.42	82.98	86.36	54.00	-32.36	Pass	Horizontal
2	2483.5000	32.38	13.38	-42.40	38.34	41.70	54.00	12.30	Pass	Horizontal

Mode:	GFSK	Channel:	2440
Remark:	AV		

Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBµV]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Result	Polarity
1	2440.0688	32.32	13.48	-42.42	81.34	84.72	54.00	-30.72	Pass	Vertical
2	2483.5000	32.38	13.38	-42.40	38.32	41.68	54.00	12.32	Pass	Vertical

Note:

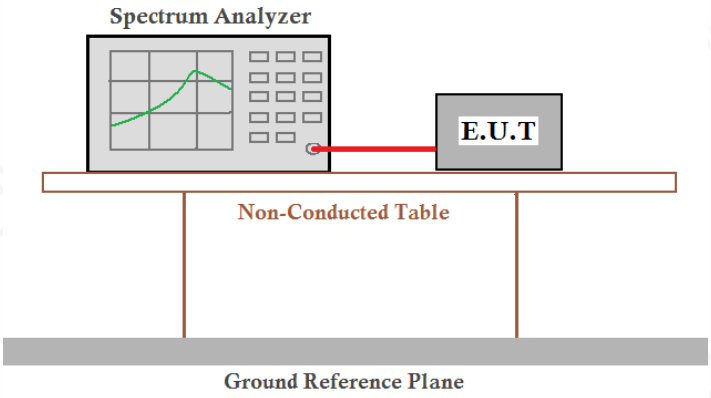
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading - Correct Factor

Correct Factor = *Preamplifier Factor– Antenna Factor–Cable Factor*

7.6 20dB Bandwidth

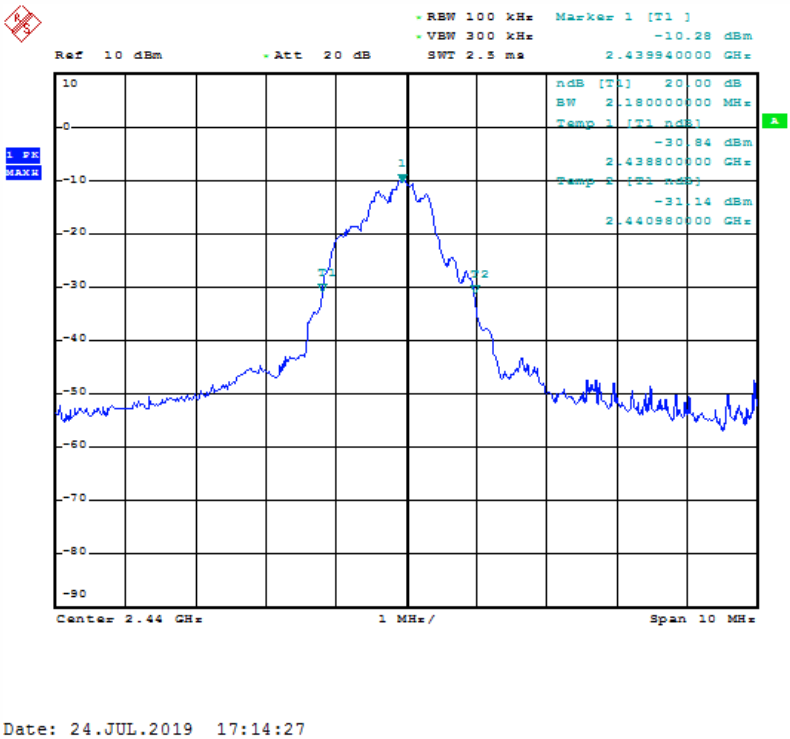
Test Requirement: 47 CFR Part 15C Section 15.215
Test Method: ANSI C63.10
Test Setup:



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

Measurement Data

Test Channel/Frequency	20dB bandwidth (kHz)
2440MHz	2180



Date: 24.JUL.2019 17:14:27

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

Test Model No.: MS-280

Radiated spurious emission Test Setup-1(Below 30MHz)

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

Radiated spurious emission Test Setup-3(Above 1GHz)

APPENDIX 2 PHOTOGRAPHS OF EUT

Refer to Report No. EED32L00160901 for EUT external and internal photos.

*** End of Report ***