

TEST REPORT

Product : 4G LTE smartphone
Trade mark : iTree
Model/Type reference : S988
Serial Number : N/A
Report Number : EED32N80998105
FCC ID : 2A3BAITREES988
Date of Issue : Nov. 17, 2021
Test Standards : 47 CFR Part 15 Subpart C
Test result : PASS

Prepared for:

FAR WIDE Telecommunications CO.,LTD.
10F, No.127, Anxing Rd, Xindian Dist.,
New Taipei City 231 Taiwan

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District,
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Date:

Dec. 10, 2021

Check No.: 1731111021



Report No. : EED32N80998105

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1 Version

Version No.	Date	Description
00	Dec. 10, 2021	Original

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3 Test Summary

Test Item	FCC Test Requirement	Test Method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203	ANSI C63.10 2013	Pass
Conducted Emission (150KHz to 30MHz)	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 2013	Pass
Electric Field Strength of Fundamental and Outside the Allocated bands	47 CFR Part 15, Subpart C Section 15.225(a)/(b)/(c)	ANSI C63.10 2013	Pass
Radiated Emission	47 CFR Part 15, Subpart C Section 15.225(d)/15.209	ANSI C63.10 2013	Pass
Frequency Tolerance	47 CFR Part 15, Subpart C Section 15.225(e)	ANSI C63.10 2013	Pass
20dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.215	ANSI C63.10 2013	Pass

Remark:

Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.

4 General Information

4.1 Client Information

Applicant:	FAR WIDE Telecommunications CO.,LTD.
Address of Applicant:	10F, No.127,Anxing Rd, Xindian Dist., New Taipei City 231 Taiwan
Manufacturer:	SHENZHEN TOPWELL TECHNOLOGY CO., LTD.
Address of Manufacturer:	15/F, Building A1, Qiaode Science & Technology Park, No.7 Road, Hi-Tech Industry Park, Guangming new district, Shenzhen, China.
Factory:	SHENZHEN TOPWELL TECHNOLOGY CO., LTD.
Address of Factory:	15/F, Building A1, Qiaode Science & Technology Park, No.7 Road, Hi-Tech Industry Park, Guangming new district, Shenzhen, China.

4.2 General Description of EUT

Product Name:	4G LTE smartphone	
Mode No.:	S988	
Trade mark:	iTree	
Product Type:	<input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> Fix Location	
Operation Frequency:	13.56MHz	
Modulation Type:	ASK	
Antenna Type:	Loop antenna	
Antenna Gain:	0dBi	
Power Supply:	AC/DC ADAPTER	Model: TPA-23A050200UU01 Input: 100-240V~ 50/60Hz, 0.3A OUTPUT: 5.0V---2000mA
	Battery:	Model:B35 DC 3.8V, 3500mAh, 13.3Wh
Test Voltage:	AC 120V/60Hz	
Sample Received Date:	Oct. 12, 2021	
Sample tested Date:	Oct. 12, 2021 to Nov. 17, 2021	

4.3 Test Environment & Test Mode

Operating Environment:	
Radiated Emissions:	
Temperature:	22~25.0 °C
Humidity:	50~55 % RH
Atmospheric Pressure:	1010mbar
Conducted Emissions:	
Temperature:	22~25.0 °C
Humidity:	50~55 % RH
Atmospheric Pressure:	1010mbar
Test Mode:	
Mode a:	Keep EUT working in continuous transmitting mode with 100% duty cycle.

4.4 Description of Support Units

The EUT has been tested independently.

4.5 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

4.6 Deviation from Standards

None.

4.7 Abnormalities from Standard Conditions

None.

4.8 Other Information Requested by the Customer

None.

4.9 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	3.3dB (9kHz-30MHz)
		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%

4.10 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	04-15-2021	04-14-2022
Temperature/ Humidity Indicator	Defu	TH128	/	---	---
LISN	R&S	ENV216	100098	03-04-2021	03-03-2022
Barometer	changchun	DYM3	1188	---	---

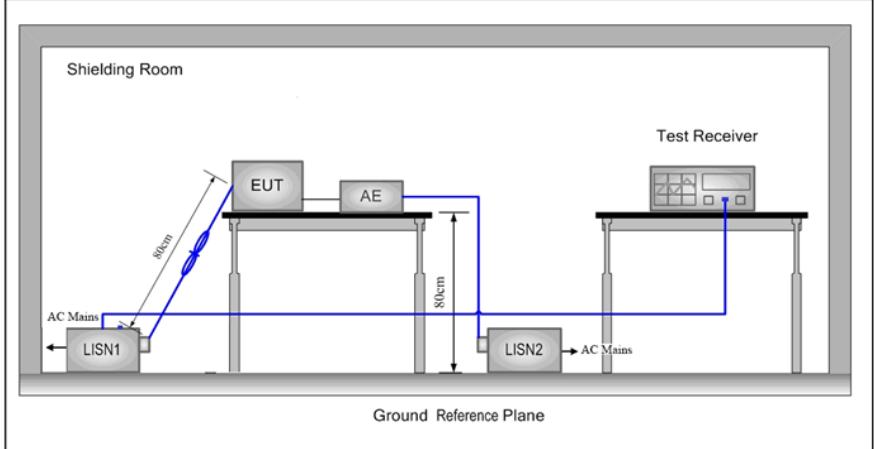
3M Semi/full-anechoic Chamber					
Equipment	Manufacturer	Model No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
3M Chamber & Accessory Equipment	TDK	SAC-3	---	05-24-2019	05-23-2022
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-618	05-16-2021	05-15-2022
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04-15-2021	04-14-2024
Receiver	R&S	ESCI7	100938-003	10-14-2021	10-13-2022
Temperature/ Humidity Indicator	Shanghai qixiang	HM10	1804298	06-24-2021	06-23-2022
Cable line	Fulai(7M)	SF106	5219/6A	---	---
Cable line	Fulai(6M)	SF106	5220/6A	---	---
Cable line	Fulai(3M)	SF106	5216/6A	---	---
Cable line	Fulai(3M)	SF106	5217/6A	---	---

5 Test results and Measurement Data

5.1 Antenna Requirement

Standard requirement:	47 CFR Part15 C 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 Loop antenna.

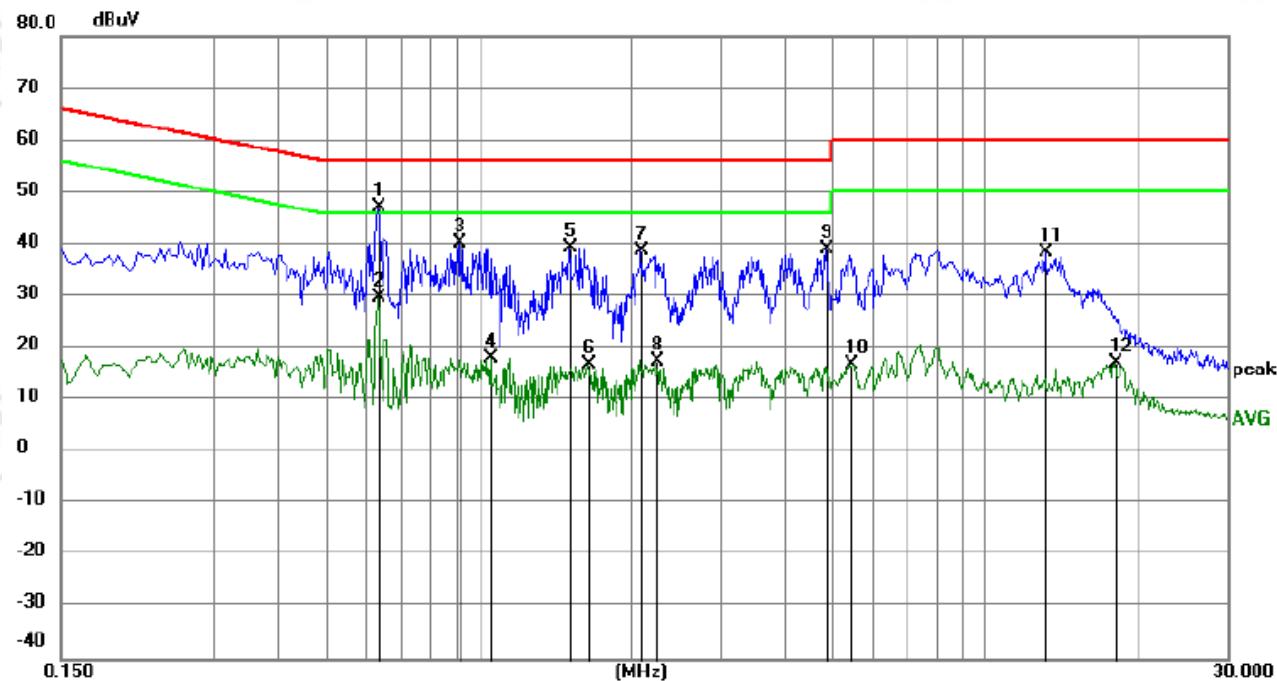
5.2 Conducted Emissions

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 (dBuV)
			Quasi-peak
	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:	<ol style="list-style-type: none"> 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 $50\Omega/50\mu\text{H} + 5\Omega$ 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: 2013 on conducted measurement. 		
Test Setup:			
Test Mode:	Transmitting with ASK modulation.		
Test Results:	Pass		

Measurement Data

Mode a:

Live line:



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.6315	37.29	10.01	47.30	56.00	-8.70	peak	
2		0.6315	19.80	10.01	29.81	46.00	-16.19	AVG	
3		0.9150	30.33	9.85	40.18	56.00	-15.82	peak	
4		1.0545	8.28	9.83	18.11	46.00	-27.89	AVG	
5		1.5045	29.50	9.81	39.31	56.00	-16.69	peak	
6		1.6395	6.99	9.80	16.79	46.00	-29.21	AVG	
7		2.0985	28.91	9.79	38.70	56.00	-17.30	peak	
8		2.2425	7.57	9.79	17.36	46.00	-28.64	AVG	
9		4.8390	29.33	9.78	39.11	56.00	-16.89	peak	
10		5.4375	7.16	9.78	16.94	50.00	-33.06	AVG	
11		13.1730	28.45	9.88	38.33	60.00	-21.67	peak	
12		18.0240	7.33	9.95	17.28	50.00	-32.72	AVG	

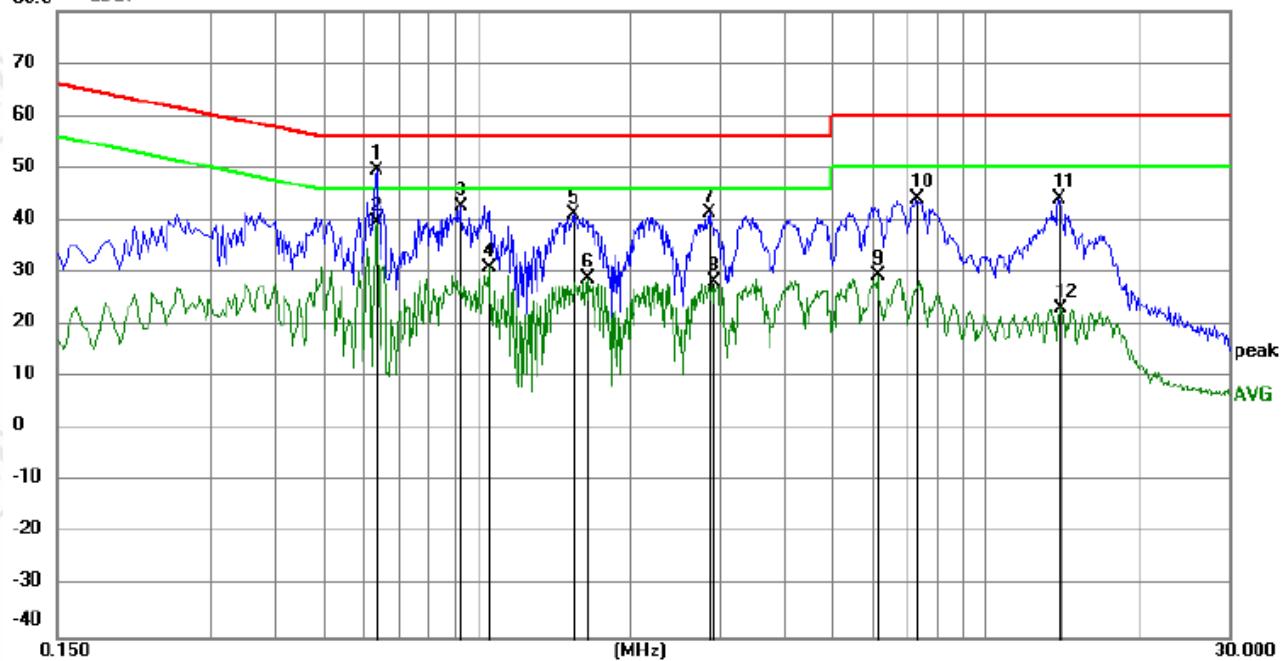
Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

Mode a:

Neutral line:

80.0 dBuV

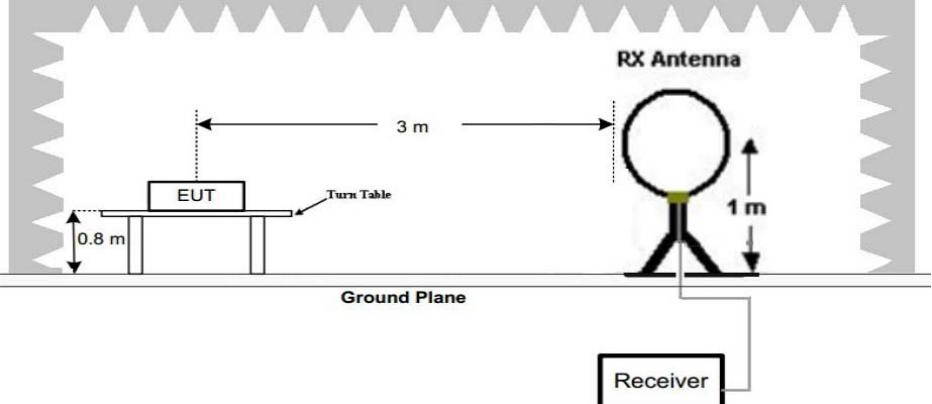


No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin	Comment
			Level	Factor	ment			
		MHz	dBuV	dB	dBuV	dB	Detector	
1		0.6360	39.52	10.00	49.52	56.00	-6.48	peak
2	*	0.6360	29.74	10.00	39.74	46.00	-6.26	AVG
3		0.9285	32.88	9.84	42.72	56.00	-13.28	peak
4		1.0590	20.99	9.83	30.82	46.00	-15.18	AVG
5		1.5494	31.20	9.81	41.01	56.00	-14.99	peak
6		1.6485	19.07	9.80	28.87	46.00	-17.13	AVG
7		2.8635	31.76	9.79	41.55	56.00	-14.45	peak
8		2.9130	18.45	9.79	28.24	46.00	-17.76	AVG
9		6.1305	19.54	9.79	29.33	50.00	-20.67	AVG
10		7.3095	34.25	9.79	44.04	60.00	-15.96	peak
11		13.9110	34.11	9.90	44.01	60.00	-15.99	peak
12		13.9785	13.36	9.90	23.26	50.00	-26.74	AVG

Remark:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. If the Peak value under Average limit, the Average value is not recorded in the report.

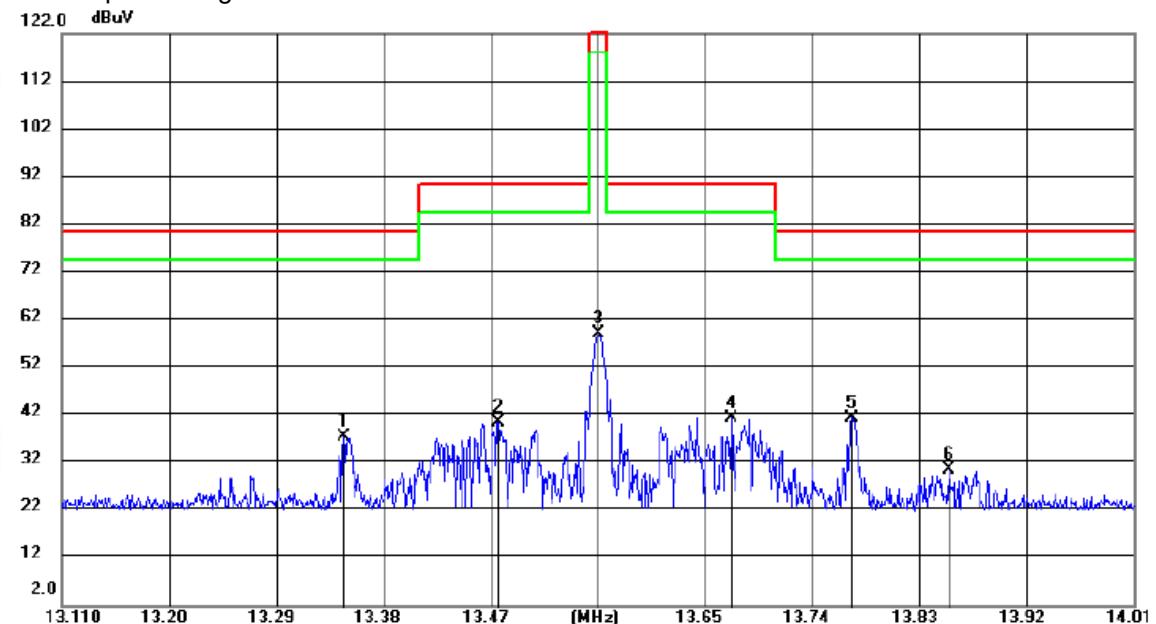
5.3 Electric Field Strength of Fundamental and Outside the Allocated bands

Test Requirement:	47 CFR Part 15, Subpart C Section 15.225(a)/(b)/(c)								
Test Method:	ANSI C63.10: 2013								
Test Site:	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				
Limit:	Frequency Range(MHz)	E-field Strength Limit @ 30 m (μ V/m)		E-field Strength Limit @ 3 m ($\text{dB}\mu\text{V}/\text{m}$)					
	13.560 \pm 0.007	15848		124					
	13.410 to 13.553	334		90					
	13.567 to 13.710								
	13.110 to 13.410	106		81					
<p>Note: Where the limits have been defined at one distance, and a signal level measured at another, the limits have been extrapolated using the following formula:</p> <p>Extrapolation(dB)=40log₁₀(Measurement Distance/Specification Distance)</p>									
Test Setup:									
Figure 1. Below 30MHz									
Test Procedure:	<ol style="list-style-type: none"> The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. 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 								

	<p>measurement.</p> <p>4. 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.</p> <p>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>6. 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.</p> <p>7. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.</p>
Test Mode:	Transmitting with ASK modulation.
Test Result:	Pass

Measurement Data

X axis positioning



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin	Antenna	Table	Degree
			Level	Factor	ment					
1		13.3467	16.92	20.62	37.54	80.50	-42.96	peak	100	35
2		13.4763	20.00	20.61	40.61	90.47	-49.86	peak	100	35
3		13.5609	38.57	20.61	59.18	124.00	-64.82	peak	100	356
4		13.6724	20.74	20.60	41.34	90.47	-49.13	peak	100	0
5	*	13.7733	21.00	20.60	41.60	80.50	-38.90	peak	100	219
6		13.8543	10.13	20.60	30.73	80.50	-49.77	peak	100	35

Remark:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier.

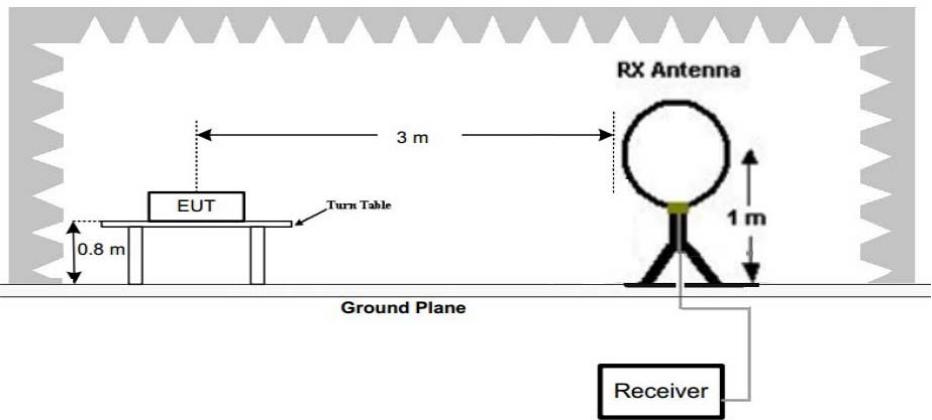
The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.

5.4 Radiated Emissions

Test Requirement:	47 CFR Part 15C Section 15.209 and 15.225(d),						
Test Method:	ANSI C63.10: 2013						
Test Site:	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		
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m) @ 3 m		Remark		
	0.009MHz-0.490MHz	2400/F(kHz) @300m	128.5-93.8		Quasi-peak		
	0.490MHz-1.705MHz	24000/F(kHz) @30m	73.8-63		Quasi-peak		
	1.705MHz-30MHz	30 @30m	70		Quasi-peak		
	30MHz-88MHz	100 @3m	40.0		Quasi-peak		
	88MHz-216MHz	150 @3m	43.5		Quasi-peak		
	216MHz-960MHz	200 @3m	46.0		Quasi-peak		
	960MHz-1GHz	500 @3m	54.0		Quasi-peak		
<p>Note: Where the limits have been defined at one distance, and a signal level measured at another, the limits have been extrapolated using the following formula:</p> <p>Extrapolation(dB)=40log₁₀(Measurement Distance/Specification Distance)</p>							
Test Setup:							
	<p>Figure 1. Below 30MHz</p>						

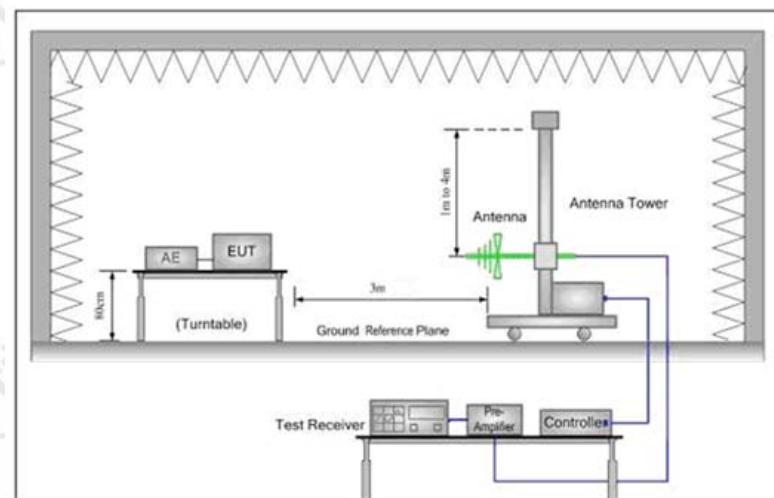


Figure 2. 30MHz to 1GHz

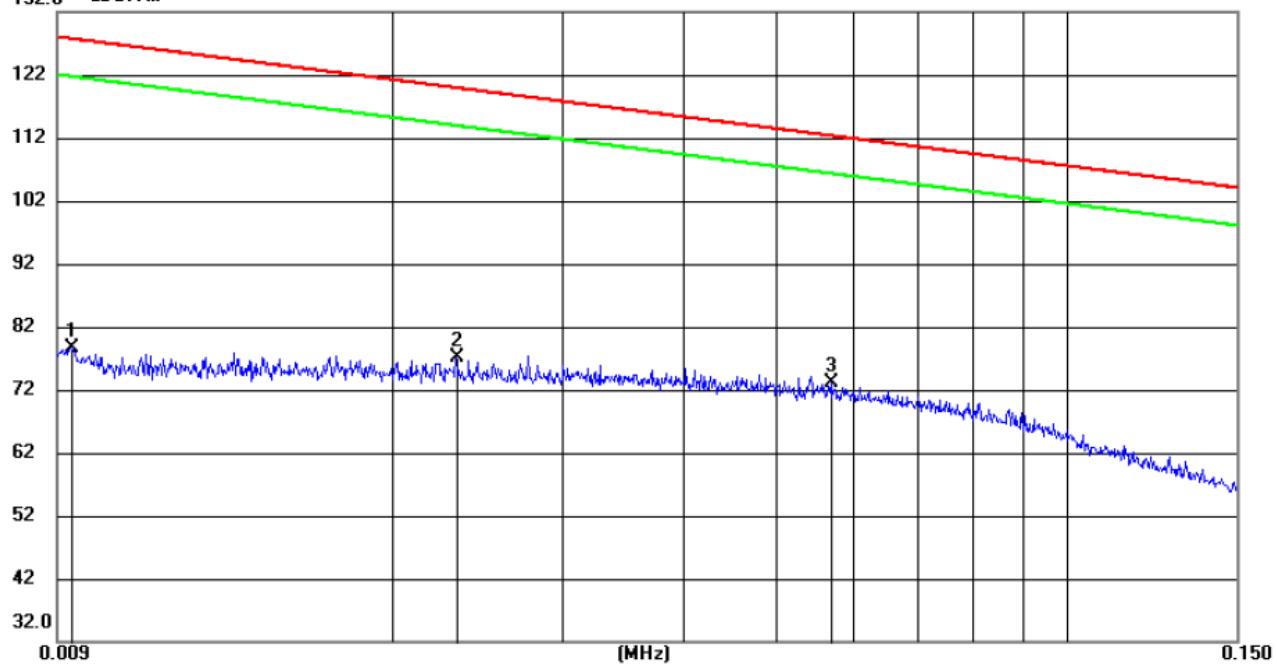
Test Procedure:	<ol style="list-style-type: none"> The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving 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 rotatable 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. The radiation measurements are performed in X, Y, Z axis positioning. And found the X axis positioning which it is worse case, only the test worst case mode is recorded in the report.
Test Mode:	Transmitting with ASK modulation.
Test Result:	Pass

Measurement Data

X axis positioning

9kHz – 150KHz:

132.0 dBuV/m



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin	Antenna	Table		
			Level	Factor	ment					Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		0.0093	58.70	20.03	78.73	127.72	-48.99	peak			
2		0.0233	56.33	20.88	77.21	119.91	-42.70	peak			
3	*	0.0570	52.68	20.49	73.17	112.31	-39.14	peak			

Remark:

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

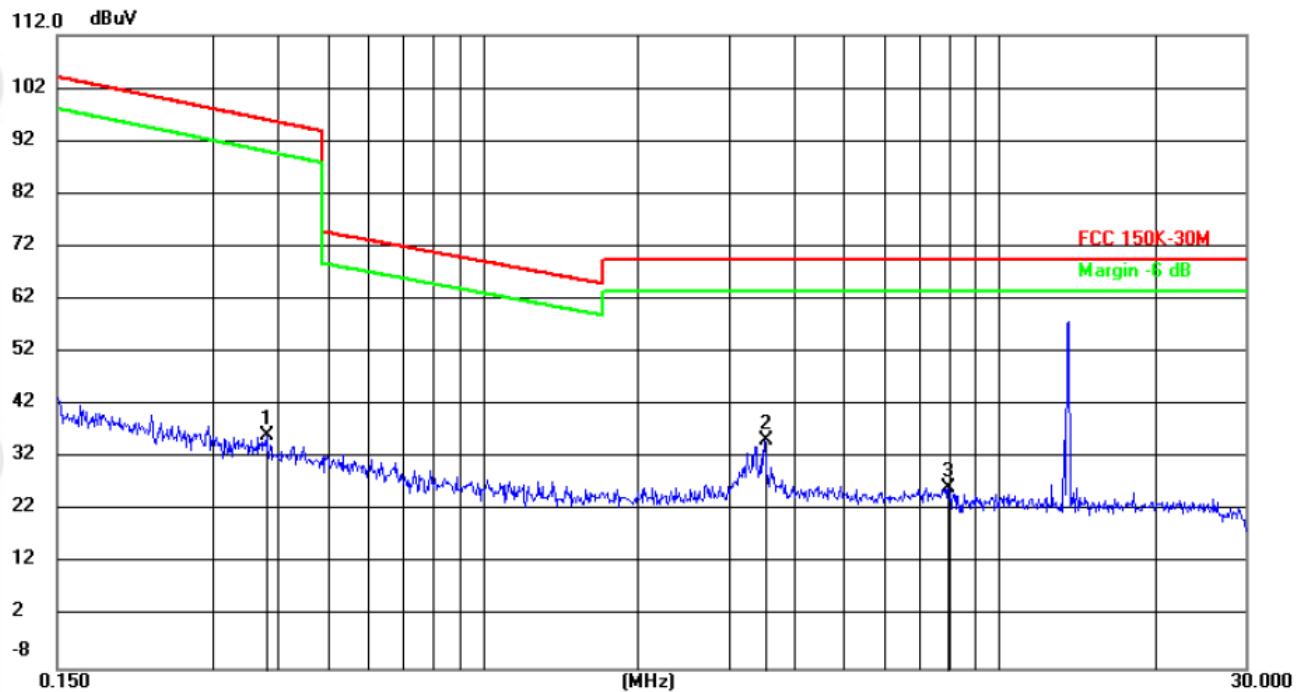
Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.

X axis positioning

150KHz-30MHz:



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin	Antenna	Table		
			Level	Factor	ment			Height	Degree		
			MHz	dBuV	dB	dBuV	dB	Detector	cm	degree	Comment
1		0.3811	15.42	20.84	36.26	95.98	-59.72	peak	100	343	
2	*	3.5092	15.01	20.37	35.38	69.54	-34.16	peak	100	247	
3		7.9774	5.74	20.59	26.33	69.54	-43.21	peak	100	311	

Remark:

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

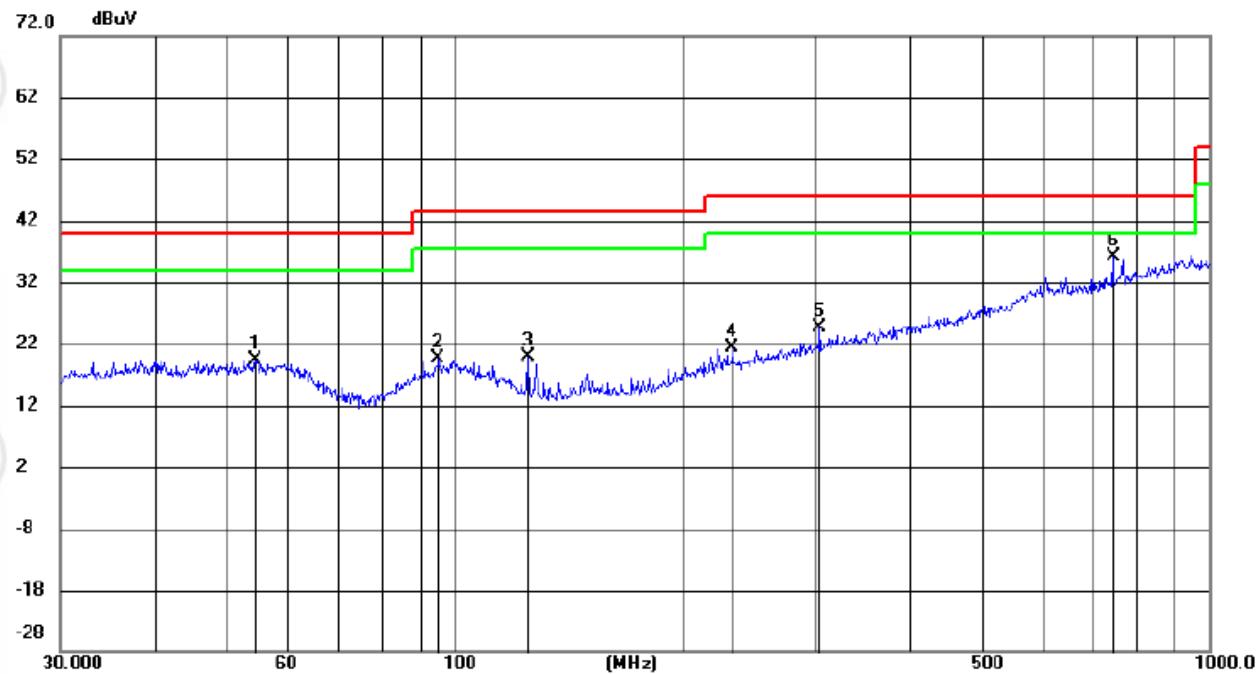
Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.

30MHz-1GHz

Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	Antenna Height	Table Degree	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	cm	degree
1		54.4515	5.42	14.07	19.49	40.00	-20.51	peak	200	123
2		95.0929	5.87	13.87	19.74	43.50	-23.76	peak	100	255
3		125.0065	9.43	10.53	19.96	43.50	-23.54	peak	100	142
4		233.3486	6.35	14.97	21.32	46.00	-24.68	peak	200	4
5		304.6099	7.22	17.39	24.61	46.00	-21.39	peak	100	334
6	*	744.8660	9.65	26.52	36.17	46.00	-9.83	peak	100	14

Remark:

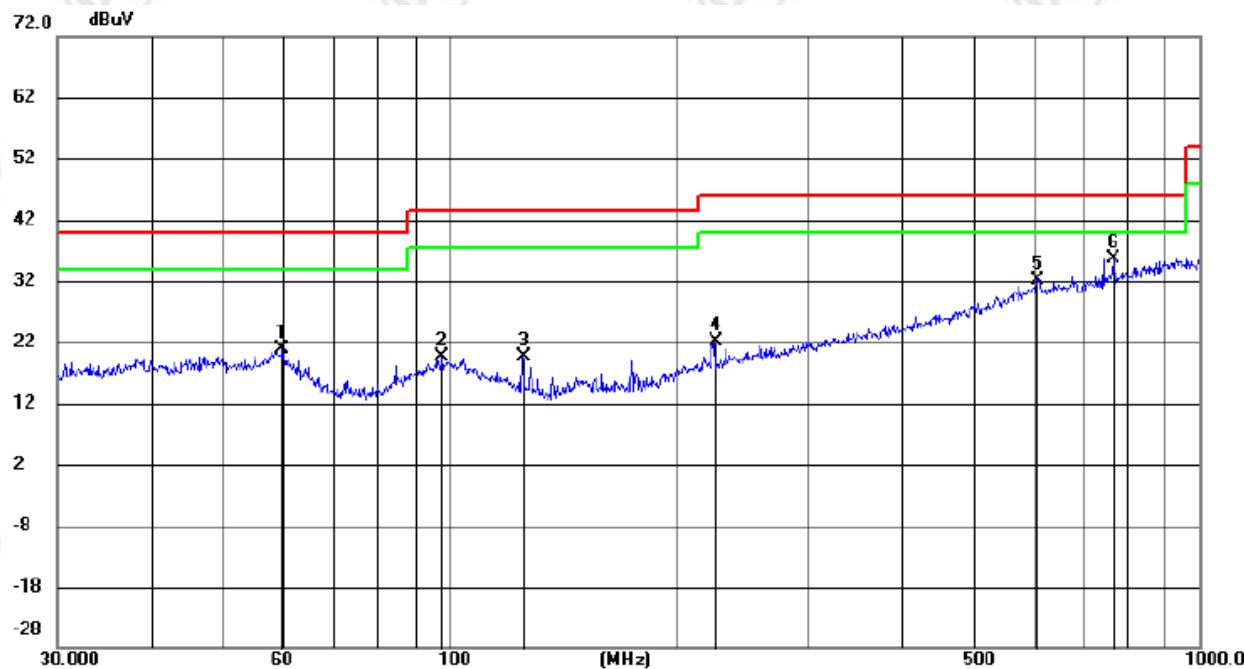
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.

Vertical



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Antenna Height cm	Table Degree degree	Comment
1		59.8588	6.81	14.07	20.88	40.00	-19.12	peak	100	297
2		97.7983	5.28	14.24	19.52	43.50	-23.98	peak	200	230
3		125.0066	9.09	10.53	19.62	43.50	-23.88	peak	200	39
4		225.3080	7.65	14.56	22.21	46.00	-23.79	peak	100	4
5		607.7867	6.90	25.27	32.17	46.00	-13.83	peak	200	356
6	*	766.0571	8.82	26.90	35.72	46.00	-10.28	peak	100	4

Remark:

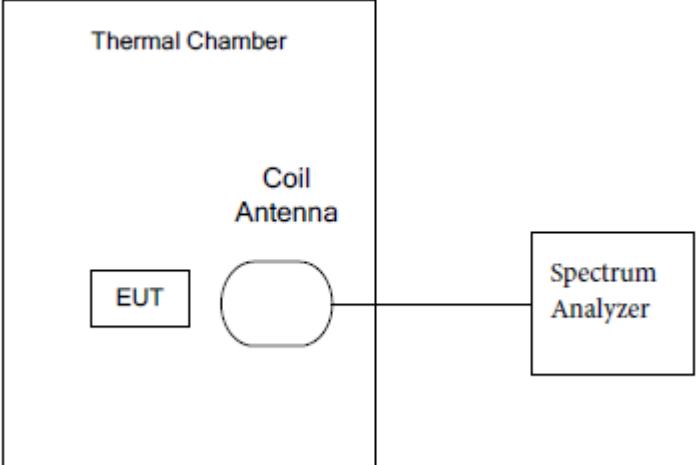
The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Factor= Antenna Factor + Cable Factor – Preamplifier Factor,

Level = Read Level + Factor,

Over Limit=Level-Limit Line.

5.5 Frequency Stability

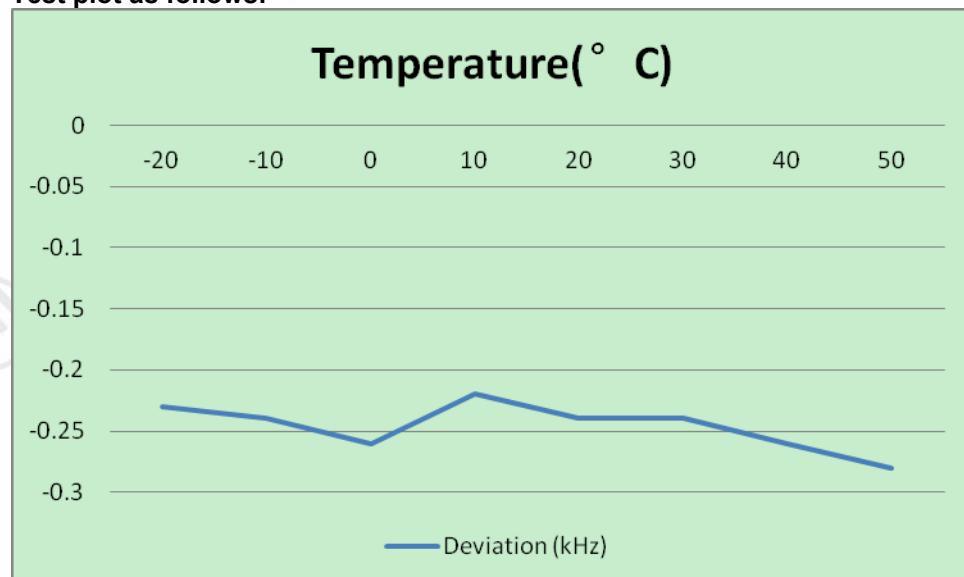
Test Requirement:	47 CFR Part 15 C Section 15.225(e)
Test Method:	ANSI C63.10: 2013
Test Setup:	
Frequency Range:	Operation within the band 13.110-14.010 MHz
Requirements:	The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.
Method of Measurement:	The EUT was placed in an environmental test chamber and powered such that control element received normal voltage and the transmitter provided maximum RF output.
Test Result:	The unit does meet the FCC Part 15 C Section 15.225(e) requirements.

Test Frequency: 13.56MHz			Temperature:20°C	
Supply Voltage (V) DC	Test Result (MHz)	Deviation (kHz)	Limit	Result
3.8	13.55975	-0.25	1.3560	Pass
4.35	13.55976	-0.24	1.3560	Pass
3.4	13.55975	-0.25	1.3560	Pass

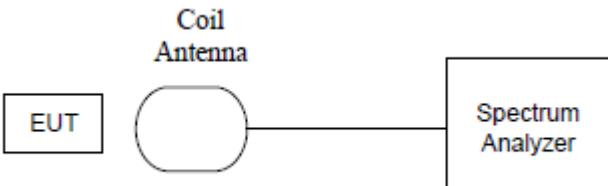
Test Frequency: 13.56MHz			Normal Voltage:3.7Vdc	
Temperature (°C)	Test Result (MHz)	Deviation (kHz)	Limit	Result
-20	13.55976	-0.24	1.3560	
-10	13.55976	-0.24	1.3560	
0	13.55974	-0.26	1.3560	
10	13.55978	-0.22	1.3560	
20	13.55976	-0.24	1.3560	
30	13.55976	-0.24	1.3560	
40	13.55978	-0.22	1.3560	
50	13.55972	-0.28	1.3560	Pass

Note: Deviation (KHz) = (Test Result-13.56MHz)*1000

Test plot as follows:



5.6 20dB Occupied Bandwidth

Test Requirement:	47 CFR Part 15 C Section 15.215 (C)
Test Method:	ANSI C63.10: 2013
Test Setup:	
Frequency Range:	Operation within the band 13.110 – 14.010 MHz
Requirements:	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 the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the 20 dB bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.
Limit:	For 13.56 MHz the permitted frequency band is 14kHz, so the limit is 11.2 kHz.

Test Data:

20dB bandwidth (kHz)	FL (MHz)	FH (MHz)	Limit(MHz)	Result
1.261	13.55994	13.561201	13.110 – 14.010	Pass

Test plot as follows:

