FCC PART 15C TEST REPORT FOR CERTIFICATION

On Behalf of

Fugoo Corporation

GO ANYWHERE SPEAKERS

Model Number: FSNA3

FCC ID: 2AA2O-FSNA3

Prepared for : Fugoo Corporation

300 Spectrum Center Drive, Suite 750, Irvine, CA, 92618, USA

Prepared By : Dongguan Lepont Testing Service Co., Ltd.

TEL:86-769-83086888 Fax:86-769-83096886

No.117 Ting Shan Industrial Zone, Houjie Town, Dongguan,Guangdong, P.R. China

Report Number: LPE-ID16072901

Date of Test : August 3,2016~ August 8, 2016

Date of Report : August 11, 2016

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Test Report Verification

Applicant:	**Fugoo Corporation**
Address:	**300 Spectrum Center Drive, Suite 750, Irvine, CA, 92618, USA**
Manufacturer	**Fugoo Corporation**
Address:	**300 Spectrum Center Drive, Suite 750, Irvine, CA, 92618, USA**
Factory:	**Zhao Yang Electronic (Shenzhen) Co. , Ltd.**
Address:	**Building 2 De Yong Jia Industrial Park, Guang Qiao Road, Yu Lv Community, GongMing Street, Guangming New District, Shenzhen, 518132 China**
E.U.T:	**GO ANYWHERE SPEAKERS**
Model Number:	**FSNA3**
	This model will be two cases, one has AUX IN port, the other without AUX IN port (port blocked), the other are the same.
Power Supply:	**DC 5V From USB For Charging**
	DC 3.7V From Internal Battery
Test Voltage:	**DC 5V From Adapter input AC 120V/60Hz**
	DC 3.7V From Internal Battery
Trade Name:	FUGOO **Serial No.:** **---**
Date of Receipt:	**August 10,2016** **Date of Test:** **August 3,2016~ August 8, 2016**
Test Specification:	**FCC Rules and Regulations Part 15 Subpart C:2015**
	ANSI C63.10:2013
Test Result:	**The device described above is tested by Lepont Testing Service Co., Ltd.. The measurement results were contained in this test report and Lepont Testing Service Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the FCC Rules and Regulations Part 15 Subpart C requirements.**
	This report applies to above tested sample only and shall not be reproduced in part without written approval of Lepont Testing Service Co., Ltd.

Date: Aug 10,2016

Prepared by:	Tested by:	Approved by:
Flora / Assistant	Jackie.XU/ Engineer	Allen Yang / Manager

Other Aspects:

None.

Abbreviations: OK/P=passed fail/F=failed n.a/N=not applicable E.U.T=equipment under tested

This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Dongguan Lepont Testing Service Co., Ltd.

11. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.209	Radiated Emission	PASS	
15.247 (d)	Power Spectral Density	PASS	
15.205	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

(2) All test items were verified and recorded according to the standards and without any deviation during the test.

TEST FACILITY

Dongguan Lepont Testing Service Co., Ltd.

No.117 Ting Shan Industrial Zone, Houjie Town, Dongguan,Guangdong, P.R. China

FCC Registration No.:374391; IC Registration No.:20133

1.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

22. GENERAL INFORMATION

2.12.1 GENERAL DESCRIPTION OF EUT

Equipment	**GO ANYWHERE SPEAKERS**
Trade Name	FUGOO
FCC ID	**2AA2O-FSNA3**
Model Name	**FSNA3** *This model will be two cases, one has AUX IN port, the other without AUX IN port (port blocked), the other are the same.*
Product Description	**The EUT is a GO ANYWHERE SPEAKERS** **Operation Frequency:** 2402MHz~2480MHz **Modulation Type:** GFSK **Number Of Channel** 40 Channels **Antenna Designation:** Please see Note 3. **Antenna Gain (dBi)** 0 dBi **Bluetooth version** Bluetooth v4.2 BLE
Channel List	**Please refer to the Note 2.**
Ratings	**DC 5V From USB For Charging** **DC 3.7V From Internal Battery**
Battery	**DC 3.7V, 2600mAh**
Connecting I/O Port(s)	**Please refer to the User's Manual**
Hardware Version	**V4.2**
Software Version	**JS1T_V01B**

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel	Frequency (MHz)
00	2402
01	2404
……	……
……	…….
…	…
……	……
38	2478
39	2480

Note: fc=2402MHz+k×2MHz k=0 to 39

3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
A	N/A	N/A	PCB antenna	N/A	0	BLE Antenna

2.22.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Those data rates (1Mbps for GFSK modulation) were used for all test.

The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement –X, Y, and Z-plane. The X-plane results were found as the worst case and were shown in this report.

For AC Conducted Emission	
Final Test Mode	Description
Mode 4	normal link mode

Note: AC power line Conducted Emission was tested under maximum output power.

For Conducted Test Cases	
Final Test Mode	Description
Mode 1	CH00(2402MHz)
Mode 2	CH19(2440MHz)
Mode 3	CH39(2480MHz)

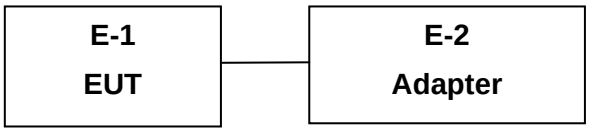
Note: The engineering test program was provided and the EUT was programmed to be in continuously transmitting mode.

For Radiated Test Cases	
Final Test Mode	Description
Mode 1	CH00(2402MHz)
Mode 2	CH19(2440MHz)
Mode 3	CH39(2480MHz)

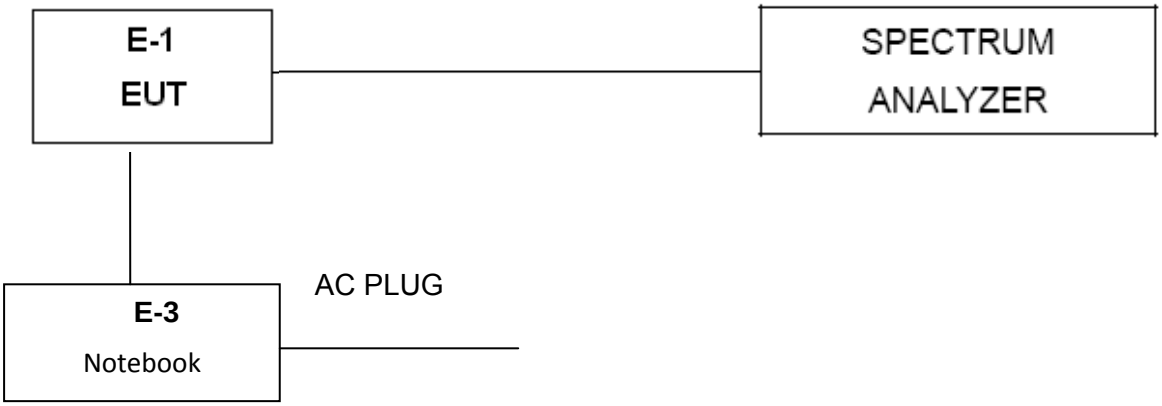
Note: For radiated test cases, the worst mode data rate 1Mbps was reported only, because this data rate has the highest RF output power at preliminary tests, and no other significantly frequencies found in conducted spurious emission.

2.32.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test



RF conducted measurement



3.42.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	GO ANYWHERE SPEAKERS	FUGOO	FSNA3	N/A	EUT
E-2	Adapter	apple	A1385	N/A	Peripherals
E-3	Notebook	LENOVO	E450	N/A	Peripherals

Item	Shielded Type	Ferrite Core	Length	Note

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

EQUIPMENTS LIST FOR ALL TEST ITEMS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESHS30	832354	April 23,16	1 Year
Artificial Mains Networ	Rohde & Schwarz	ENV216	101260	April 23,16	1 Year
Pulse Limiter	Rohde & Schwarz	ESFSNA3-Z2	101100	April 23,16	1 Year
RF Cable	Fujikura	3D-2W	844 Chamber No.1	April 23,16	1 Year

FOR RADIATED EMISSION TEST(9 KHZ-30MHZ)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESCI	100435	April 23,16	1 Year
Loop Antenna	ETS-LINDGREN	6502	00071730	April 23,16	1 Year
RF Cable	MIYAZAKI	5D-2W	966 Chamber No.1	April 23,16	1 Year

FOR RADIATED EMISSION TEST(30-1000MHZ)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde & Schwarz	ESVS10	100004	April 23,16	1 Year
Spectrum Analyzer	Agilent	E4411B	MY50140697	April 23,16	1 Year
Bilog Antenna	Teseq	CBL 6111D	27090	April 23,16	1 Year
Signal Amplifier	Agilent	310N	187037	April 23,16	1 Year
RF Cable	MIYAZAKI	5D-2W	966 Chamber No.1	April 23,16	1 Year

FOR RADIATED EMISSION TEST(ABOVE 1GHZ)

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Horn Antenna	SCHWARZBECK	BBHA 9120 D	BBHA9120D1002	April 23,16	1 Year
Board-Band Horn Antenna	SCHWARZBECK	BBHA 9170	9170-497	April 23,16	1 Year
Signal Amplifier	SCHWARZBECK	BBV9718	9718-212	April 23,16	1 Year
Spectrum Analyzer	Agilent	E4408B	MY44211139	April 23,16	1 Year
Spectrum Analyzer	Rohde &Schwarz	FSV	103173	April 23,16	1 Year
RF Cable	Hubersuhner	RG 214/U	513423	April 23,16	1 Year

33. TEST REQUIREMENTS

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 APPLICABLE STANDARD

According to FCC Part 15.207(a) and KDB 174176 D01 Line Conducted FAQ v01r01

3.1.2 POWER LINE CONDUCTED EMISSION LIMITS

(Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.3TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

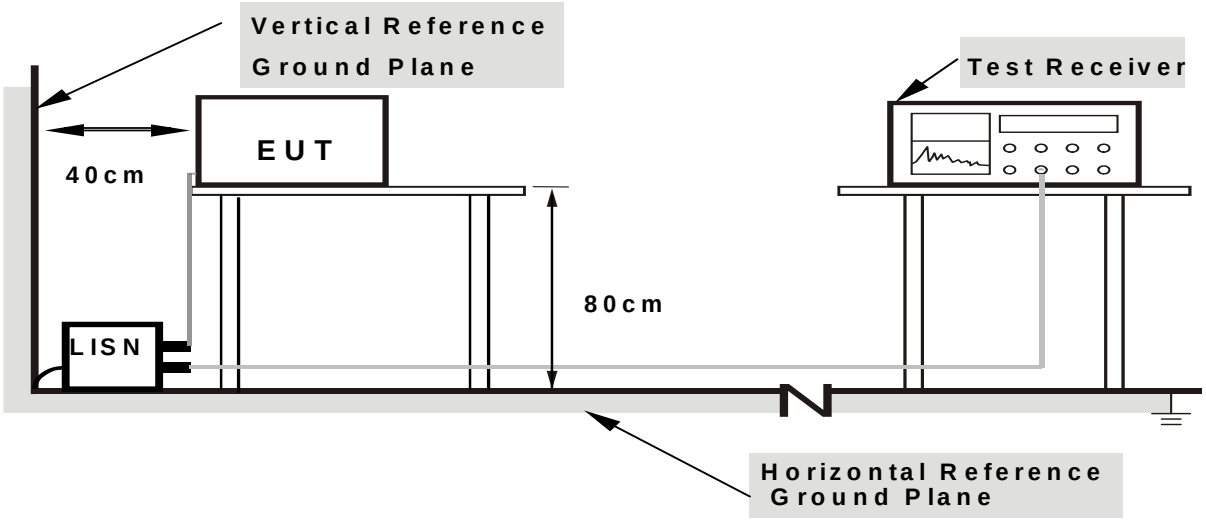
d. LISN at least 80 cm from nearest part of EUT chassis.

e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation

3.1.5 TEST SETUP



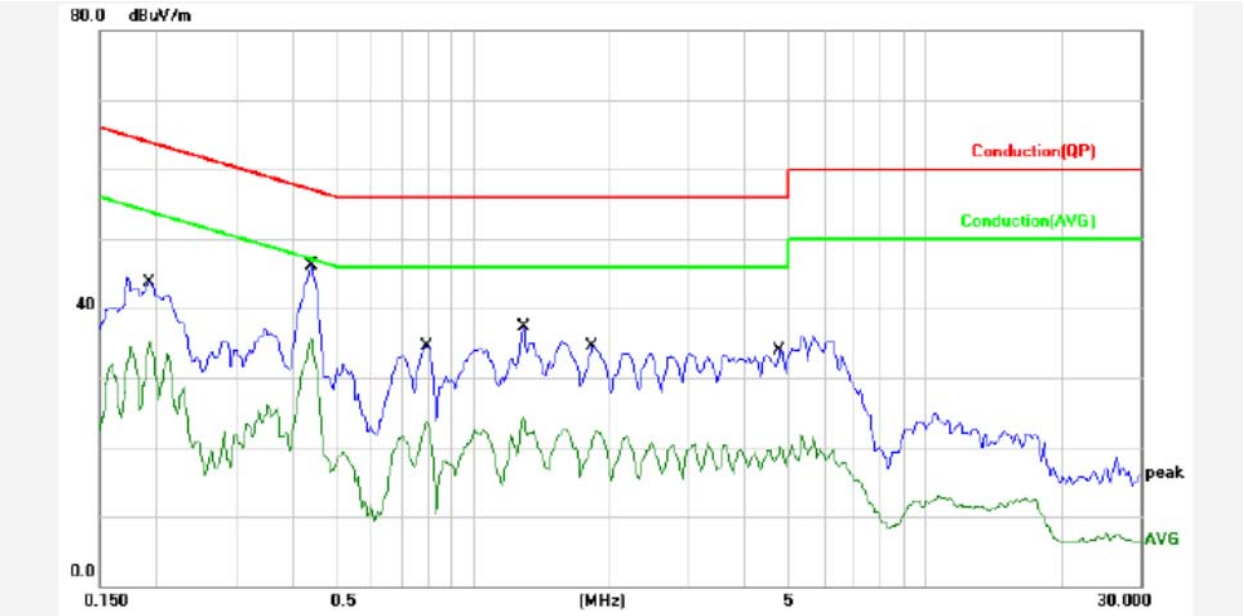
Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.6 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

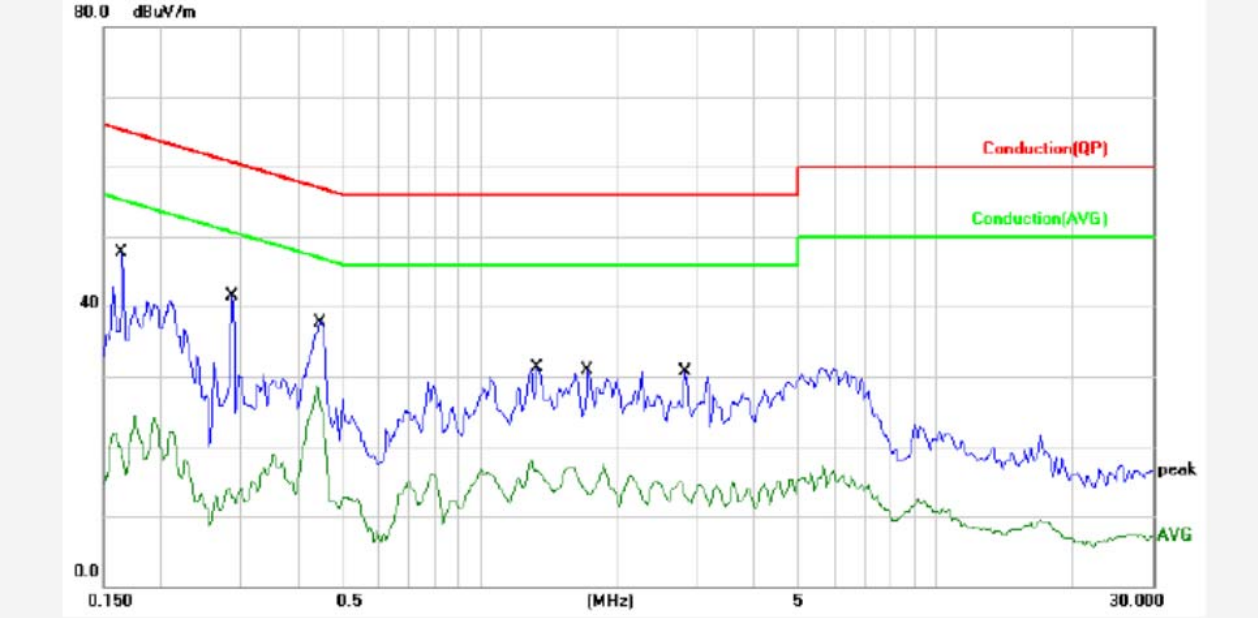
3.1.7 TEST RESULTS

EUT：	GO ANYWHERE SPEAKERS	Model Name. ：	FSNA3
Temperature：	26 ℃	Relative Humidity：	56%
Pressure：	1010hPa	Phase：	L1
Test Voltage ：	DC 5.0V from Adapter AC 120V/60Hz	Test Mode：	Mode 4



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.1934	12.69	31.07	43.76	63.89	-20.13	QP	P	
2	0.1934	12.69	22.37	35.06	53.89	-18.83	AVG	P	
3	0.4414	11.25	34.95	46.20	57.04	-10.84	QP	P	
4	0.4414	11.25	24.49	35.74	47.04	-11.30	AVG	P	
5	0.7941	13.85	20.74	34.59	56.00	-21.41	QP	P	
6	0.7941	13.85	9.79	23.64	46.00	-22.36	AVG	P	
7	1.2991	13.78	23.50	37.28	56.00	-18.72	QP	P	
8	1.2991	13.78	10.57	24.35	46.00	-21.65	AVG	P	
9	1.8420	13.77	20.77	34.54	56.00	-21.46	QP	P	
10	1.8420	13.77	8.58	22.35	46.00	-23.65	AVG	P	
11	4.7743	13.69	20.27	33.96	56.00	-22.04	QP	P	
12	4.7743	13.69	6.38	20.07	46.00	-25.93	AVG	P	

EUT：	GO ANYWHERE SPEAKERS	Model Name. ：	FSNA3
Temperature：	26 ℃	Relative Humidity：	56%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 5.0V from Adapter AC 120V/60Hz	Test Mode：	Mode 4



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.1650	12.97	34.74	47.71	65.21	-17.50	QP	P	
2	0.1650	12.97	9.02	21.99	55.21	-33.22	AVG	P	
3	0.2876	12.10	29.42	41.52	60.59	-19.07	QP	P	
4	0.2876	12.10	2.10	14.20	50.59	-36.39	AVG	P	
5	0.4485	11.21	26.58	37.79	56.90	-19.11	QP	P	
6	0.4485	11.21	17.46	28.67	46.90	-18.23	AVG	P	
7	1.3410	13.78	17.54	31.32	56.00	-24.68	QP	P	
8	1.3410	13.78	4.39	18.17	46.00	-27.83	AVG	P	
9	1.7287	13.77	17.08	30.85	56.00	-25.15	QP	P	
10	1.7287	13.77	-0.71	13.06	46.00	-32.94	AVG	P	
11	2.8277	13.74	16.96	30.70	56.00	-25.30	QP	P	
12	2.8277	13.74	1.26	15.00	46.00	-31.00	AVG	P	

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz and above 1GHz.

b. The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter Anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

d. The initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.

f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested

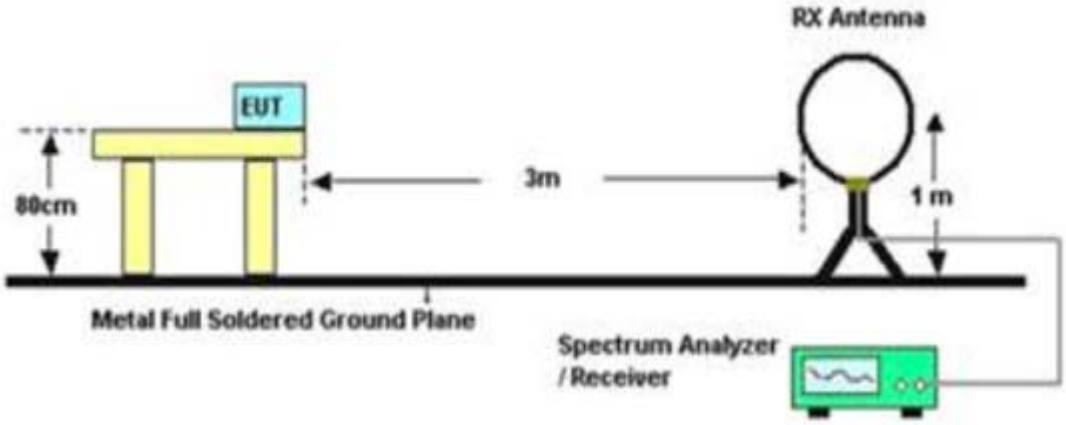
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

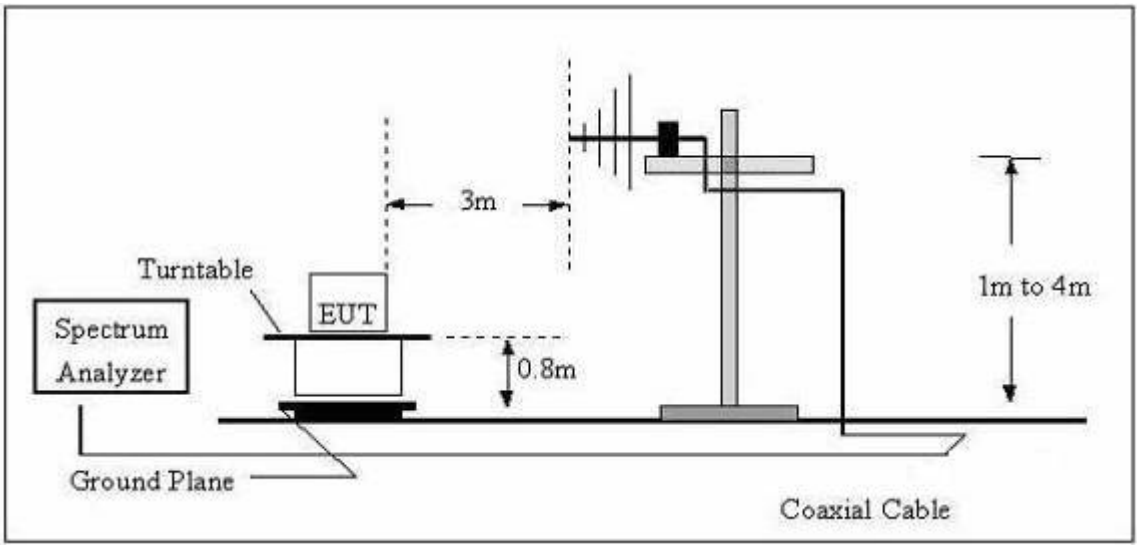
No deviation

3.2.4 TEST SETUP

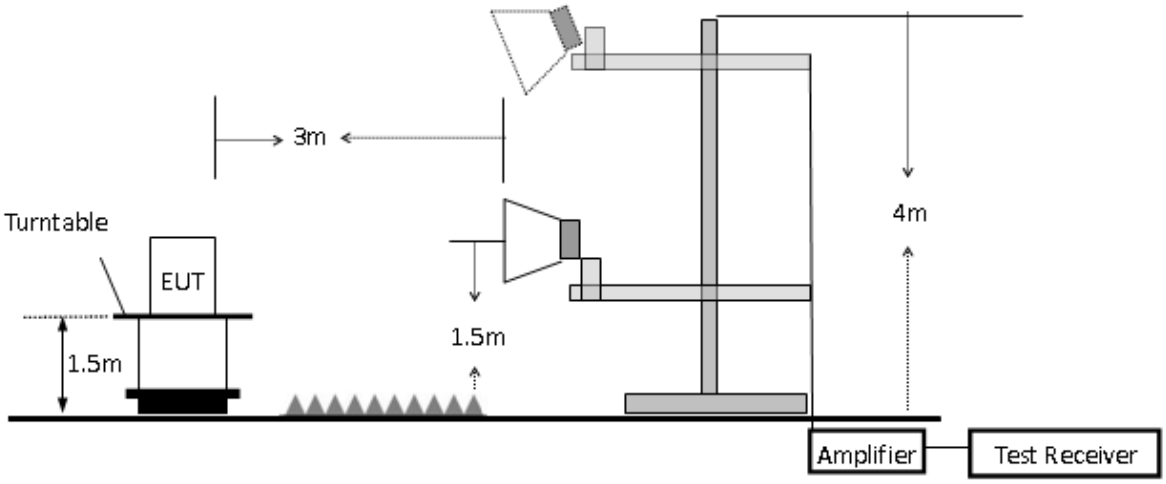
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

EUT：	GO ANYWHERE SPEAKERS	Model Name. ：	FSNA3
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From Adapter input AC 120V/60Hz
Test Mode ：	Mode 4	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	P
--	--	--	--	P

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.

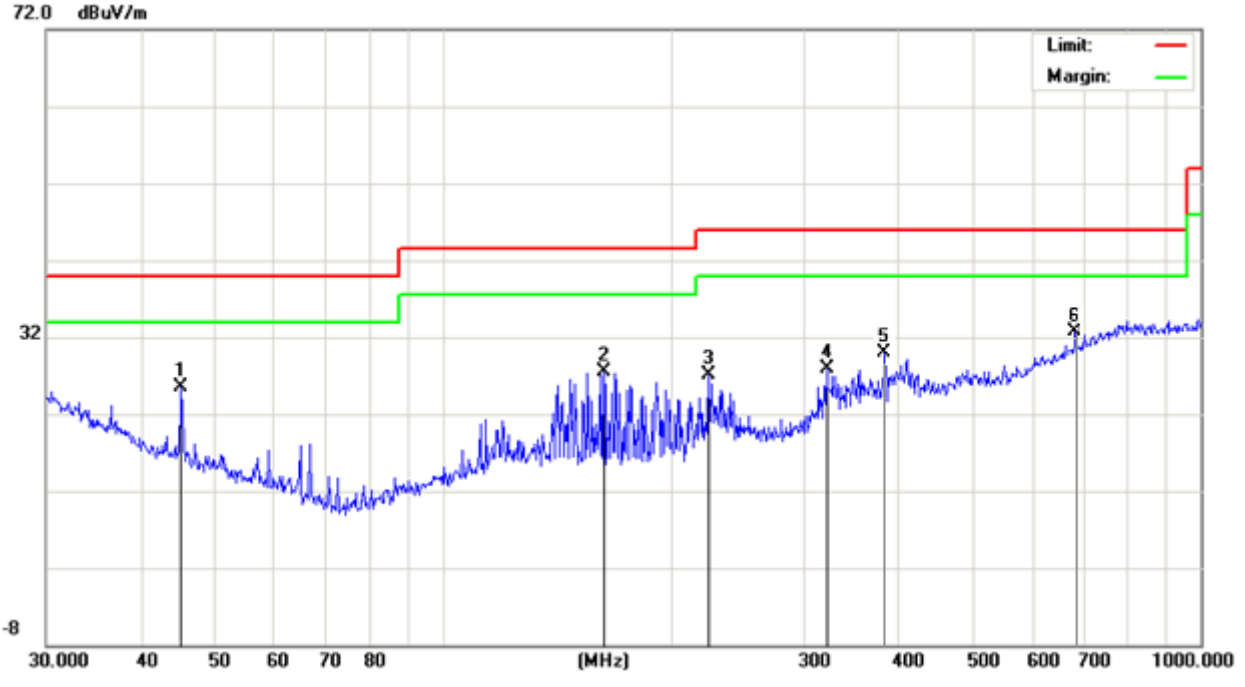
3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

EUT:	GO ANYWHERE SPEAKERS	Model Name :	FSNA3
Temperature:	20 ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Date:	2016-08-06
Test Mode:	Mode 1	Polarization:	Vertical
Test Power:	DC 5V From Adapter input AC 120V/60Hz		

Freq. (MHz)	Reading (dBμV/m)	Factor (dB)	Measurement (dBμV/m)	Limit (dBμV/m)	Over (dB)	Detector
45.22	13.56	11.87	25.43	40.00	-14.57	peak
163.18	17.05	10.51	27.56	43.50	-15.94	peak
224.52	14.69	12.44	27.13	46.00	-18.87	peak
321.06	12.78	15.03	27.81	46.00	-18.19	peak
391.24	13.16	17.05	30.21	46.00	-15.79	peak
689.57	19.99	13.13	33.12	46.00	-12.88	peak

Remark:

Factor = Antenna Factor + Cable Loss.

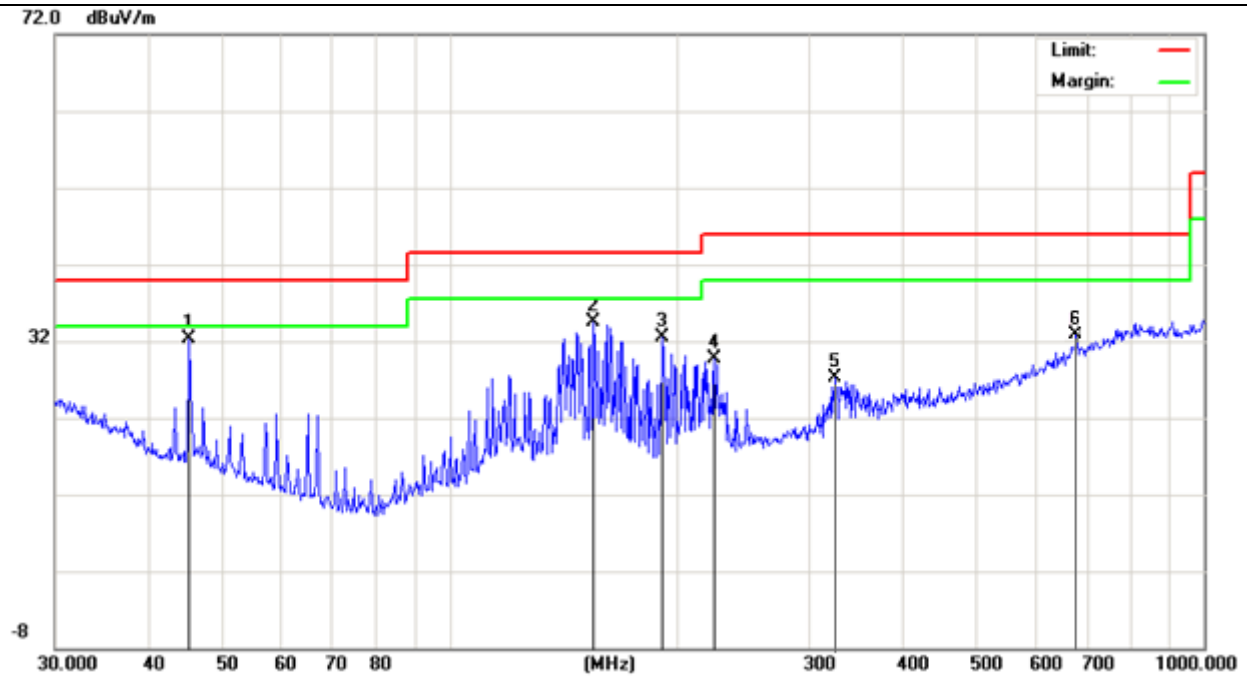


EUT:	GO ANYWHERE SPEAKERS	Model Name :	FSNA3
Temperature:	20 ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Date:	2016-08-06
Test Mode:	Mode 1	Polarization:	Horizontal
Test Power:	DC 5V From Adapter input AC 120V/60Hz		

Freq. (MHz)	Reading (dBμV/m)	Factor (dB)	Measurement (dBμV/m)	Limit (dBμV/m)	Over (dB)	Detector
45.22	20.45	11.87	32.32	40.00	-7.68	peak
155.36	23.99	10.45	34.44	43.50	-9.06	peak
191.75	21.80	10.71	32.51	43.50	-10.99	peak
224.52	17.31	12.44	29.75	46.00	-16.25	peak
325.14	9.77	16.24	26.01	46.00	-19.99	peak
676.24	19.20	14.02	33.22	46.00	-12.78	peak

Remark:

Factor = Antenna Factor + Cable Loss.



3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT：	GO ANYWHERE SPEAKERS	Model Name ：	FSNA3
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 5V From Adapter input AC 120V/60Hz
Test Mode ：	TX		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Remark	Comment
Low Channel (2402 MHz)							
4804.112	52.76	10.44	63.20	74.00	-10.80	Pk	Vertical
4804.112	34.32	10.44	44.76	54.00	-9.24	Av	Vertical
7206.096	45.97	12.39	58.36	74.00	-15.64	Pk	Vertical
7206.096	30.25	12.39	42.64	54.00	-11.36	Av	Vertical
4804.147	54.51	10.44	64.95	74.00	-9.05	Pk	Horizontal
4804.147	35.23	10.44	45.67	54.00	-8.33	Av	Horizontal
7206.206	46.67	12.39	59.06	74.00	-14.94	Pk	Horizontal
7206.206	31.81	12.39	44.20	54.00	-9.80	Av	Horizontal
Middel Channel (2440 MHz)							
4880.147	51.59	10.40	61.99	74.00	-12.01	Pk	Vertical
4880.147	32.51	10.40	42.91	54.00	-11.09	Av	Vertical
7320.069	45.25	12.75	58.00	74.00	-16.00	Pk	Vertical
7320.069	28.24	12.75	40.99	54.00	-13.01	Av	Vertical
4880.196	52.36	10.40	62.76	74.00	-11.24	Pk	Horizontal
4880.196	33.59	10.40	43.99	54.00	-10.01	Av	Horizontal
7320.047	48.47	12.75	61.22	74.00	-12.78	Pk	Horizontal
7320.047	29.16	12.75	41.91	54.00	-12.09	Av	Horizontal
High Channel (2480 MHz)							
4960.036	51.53	10.39	61.92	74.00	-12.08	Pk	Vertical
4960.036	33.16	10.39	43.55	54.00	-10.45	Av	Vertical
7440.089	44.93	12.68	57.61	74.00	-16.39	Pk	Vertical
7440.089	28.57	12.68	41.25	54.00	-12.75	Av	Vertical
4960.045	51.56	10.39	61.95	74.00	-12.05	Pk	Horizontal
4960.045	33.66	10.39	44.05	54.00	-9.95	Av	Horizontal
7440.036	47.95	12.68	60.63	74.00	-13.37	Pk	Horizontal
7440.036	29.25	12.68	41.93	54.00	-12.07	Av	Horizontal

Note2: Investigated frequency range is up to 10th harmonics of highest operating frequency, reports only record the worst record

3.2.9 RADIATED BAND EDGE: 2310-2390MHZ AND 2483.5-2500MHZ

EUT：	GO ANYWHERE SPEAKERS	Model Name ：	FSNA3
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 3.7V From Internal Battery
Test Mode ：	TX		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
1Mbps							
2390	60.67	-13.06	47.61	74.00	-26.39	peak	Vertical
2390	59.81	-13.06	46.75	74.00	-27.25	peak	Horizontal
2483.5	61.38	-12.78	48.60	74.00	-25.40	peak	Vertical
2483.5	60.90	-12.78	48.12	74.00	-25.88	peak	Horizontal

3.3 DUTY CYCLE

3.3.1 APPLIED PROCEDURES / LIMIT

No limit requirement.

3.3.2 TEST PROCEDURE

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value. Set VBW ≥ RBW. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T ≤ 16.7 microseconds.)

The transmitter output is connected to the Spectrum Analyzer. We tested accroding to the zero-span measurement method, 6.0)b) in KDB 558074(issued 04/08/2016)

The largest availble value of RBW is 8 MHz and VBW is 50 MHz. The zero-span method of measuring duty cycle shall not be used if T ≤ 6.25 microseconds. (50/6.25 = 8)

The zero-span method was used because all measured T data are > 6.25 microseconds and both RBW and VBW are > 50/T.

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.

The path loss was compensated to the results for each measurement.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT was operating in controlled its channel.

Use the following spectrum analyzer settings:

Span = Zero Span

RBW = 8MHz(the largest available value)

VBW = 8MHz (≥ RBW)

Number of points in Sweep >100

Detector function = peak

Trace = Clear write

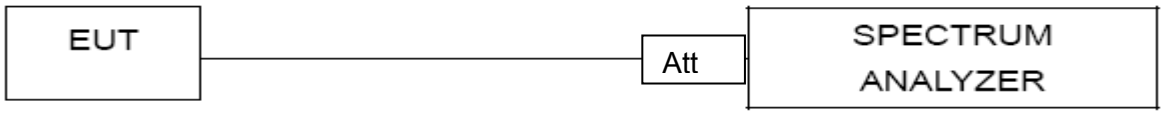
Measure T_{total} and T_{on}

Calculate Duty Cycle = T_{on} / T_{total} and Duty Cycle Factor=10*log(1/Duty Cycle)

3.3.3 DEVIATION FROM STANDARD

No deviation.

3.3.4 TEST SETUP



3.3.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

3.3.6 TEST RESULTS

EUT：	GO ANYWHERE SPEAKERS	Model Name ：	FSNA3
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1015 hPa	Test Voltage ：	DC 3.7V From Internal Battery
Test Mode ：	Mode 2		

Modulation Mode	T_{on} (ms)	T_{total} (ms)	Duty Cycle (%)	Duty Cycle Factor (dB)
GFSK	405	625	0.6480	1.884

3.4 POWER SPECTRAL DENSITY TEST

3.4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

3.4.2 TEST PROCEDURE

The testing follows Measurement Procedure 10.2 Method PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.

The path loss was compensated to the results for each measurement.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT was operating in controlled its channel.

Use the following spectrum analyzer settings:

Set RBW =3KHz

Set VBW =10KHz

Set the span =1.5 times the DTS bandwidth

Set Sweep time = auto couple.

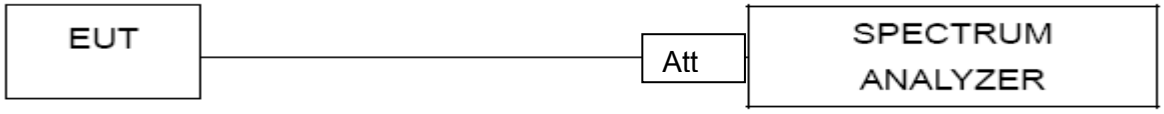
Set Detector = peak.

Set Trace mode = max hold.

3.4.3 DEVIATION FROM STANDARD

No deviation.

3.4.4 TEST SETUP



3.4.5 EUT OPERATION CONDITIONS

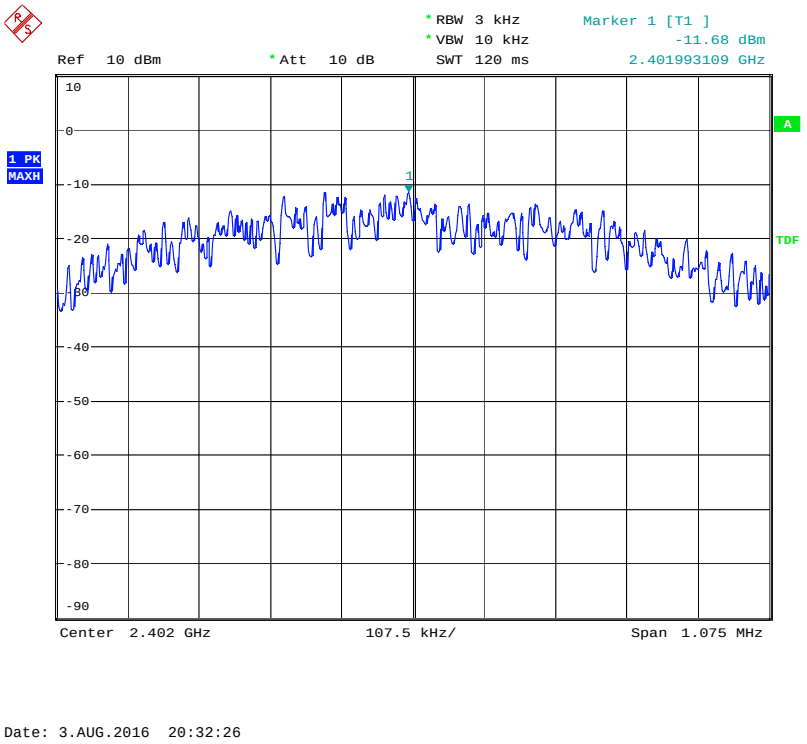
The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

3.4.6 TEST RESULTS

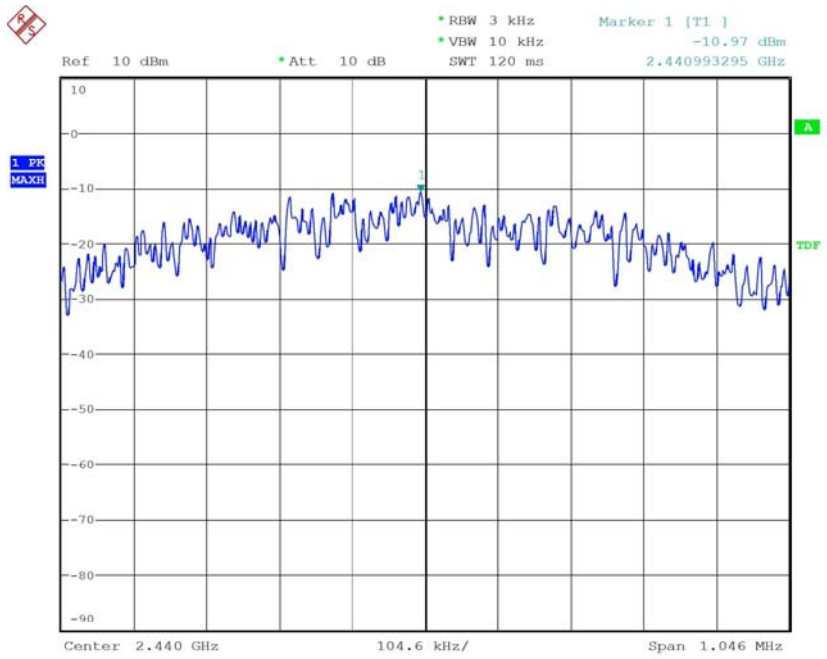
EUT：	GO ANYWHERE SPEAKERS	Model Name ：	FSNA3
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1015 hPa	Test Voltage ：	DC 3.7V From Internal Battery
Test Mode ：	Mode1/Mode2/Mode3		

Test Channel	Frequency (MHz)	Power Density (dBm/3KHz)	Limit (dBm/3KHz)	Verdict
1Mbps				
00	2402	-11.68	8	PASS
19	2440	-10.97	8	PASS
39	2480	-10.99	8	PASS

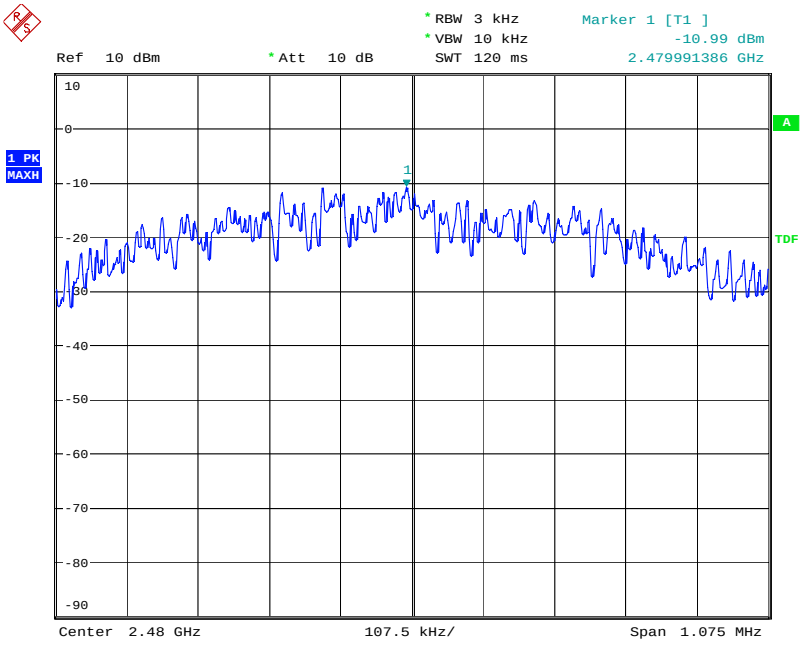
TX CH00	1Mbps



TX CH19	1Mbps



TX CH39	1Mbps



3.5 BANDWIDTH TEST

3.5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS

3.5.2 TEST PROCEDURE

The testing follows KDB 558074 DTS 01 Meas. Guidance v03r05

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.

The path loss was compensated to the results for each measurement.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT was operating in controlled its channel.

Use the following spectrum analyzer settings:

Span = the frequency band of operation

RBW = 100KHz

VBW ≥ 3*RBW

Sweep = auto

Detector function = peak

Trace = max hold

3.5.3 TEST SETUP

3.5.4 EUT OPERATION CONDITIONS

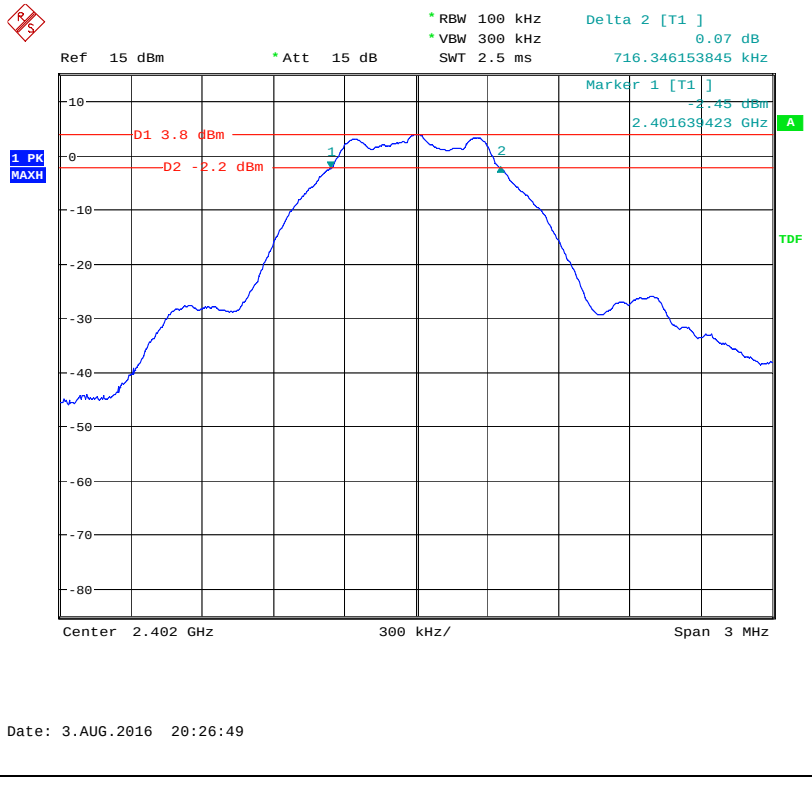
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.5.5 TEST RESULTS

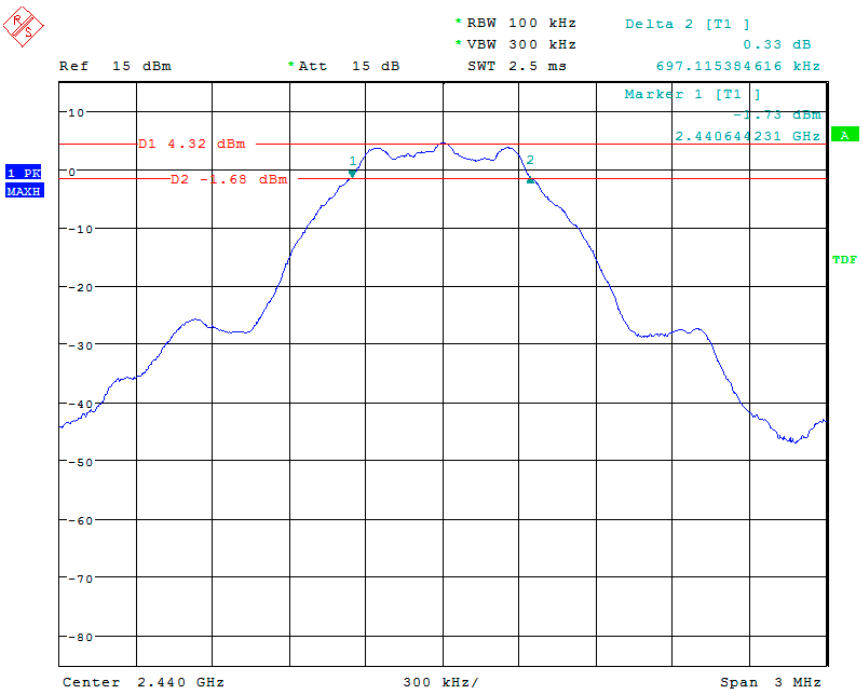
EUT：	GO ANYWHERE SPEAKERS	Model Name ：	FSNA3
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1012 hPa	Test Voltage ：	DC 3.7V From Internal Battery
Test Mode ：	Mode1/Mode2/Mode3		

Channel	Frequency (MHz)	6dB bandwidth (kHz)	Limit (kHz)	Result
Low	2402	716.346	500	Pass
Middle	2440	697.115	500	Pass
High	2480	716.346	500	Pass

TX CH 00	1Mbps

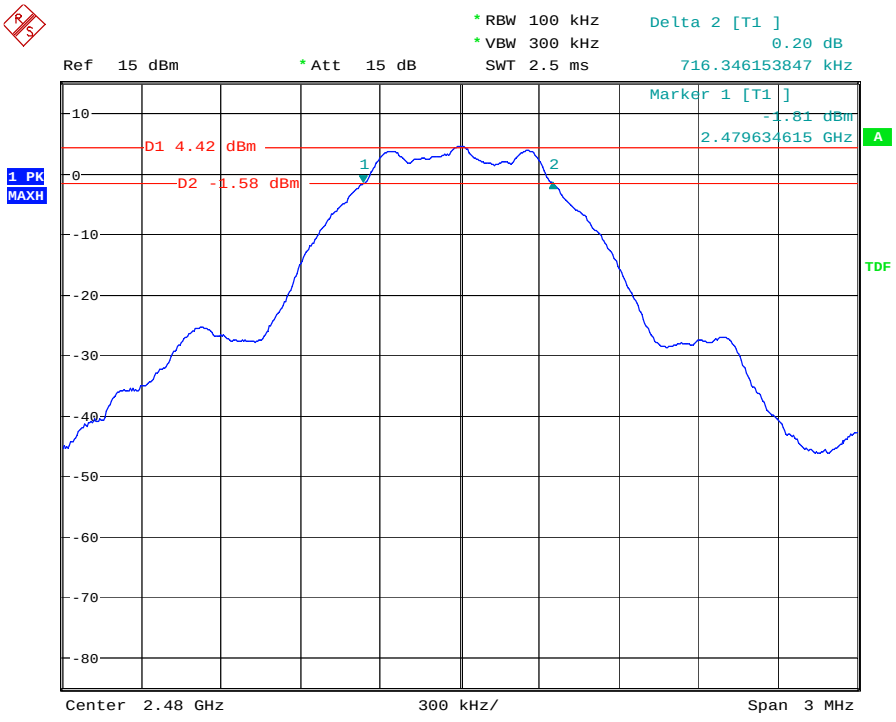


TX CH 19	1Mbps



Date: 3.AUG.2016 20:28:37

TX CH 39	1Mbps



Date: 3.AUG.2016 20:30:31

3.6 PEAK OUTPUT POWER TEST

3.6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

3.6.2 TEST PROCEDURE

The testing follows KDB 558074 DTS 01 Meas. Guidance v03r05

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.

The path loss was compensated to the results for each measurement.

Set to the maximum power setting and enable the EUT transmit continuously.

The EUT was operating in controlled its channel.

Use the following spectrum analyzer settings:

Set the RBW ≧DTS bandwidth(about 1MHz).

Set VBW =3*RBW(about 3MHz)

Set the span ≧3*RBW

Set Sweep time = auto couple.

Set Detector = peak.

Set Trace mode = max hold.

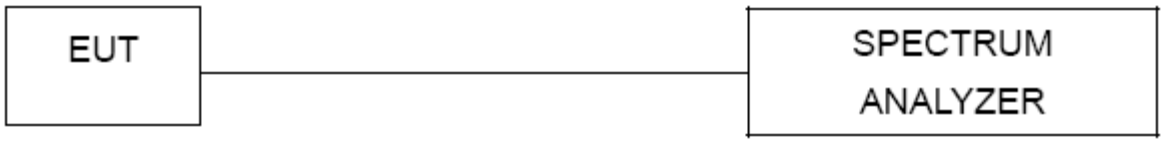
Allow trace to fully stabilize.

Use peak marker function to determine the peak amplitude level.

3.6.3 DEVIATION FROM STANDARD

No deviation.

3.6.4 TEST SETUP



3.6.5 EUT OPERATION CONDITIONS

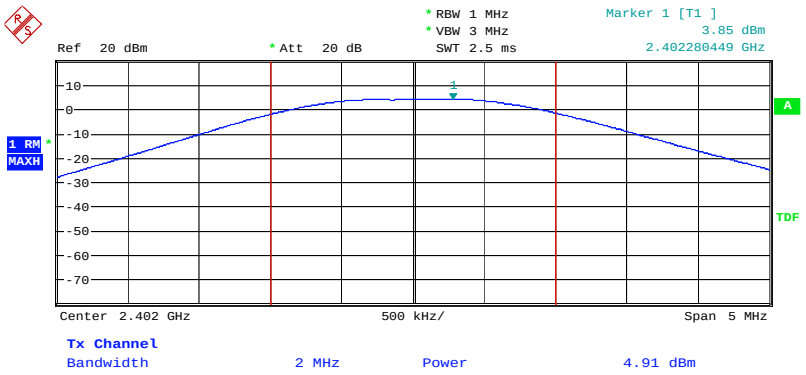
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.6.6 TEST RESULTS

EUT：	GO ANYWHERE SPEAKERS	Model Name ：	FSNA3
Temperature：	25 ℃	Relative Humidity：	60%
Pressure：	1012 hPa	Test Voltage ：	DC 3.7V From Internal Battery
Test Mode ：	Mode1/Mode2/Mode3		

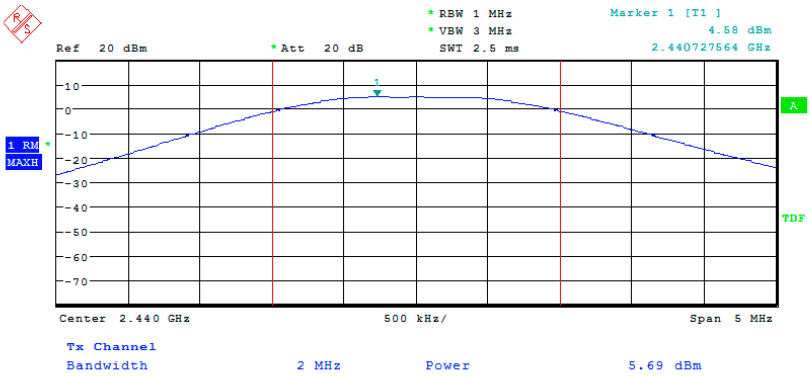
Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)	Verdict
1Mbps				
00	2402	4.91	30	PASS
19	2440	5.69	30	PASS
39	2480	5.35	30	PASS

TX CH 00	1Mbps



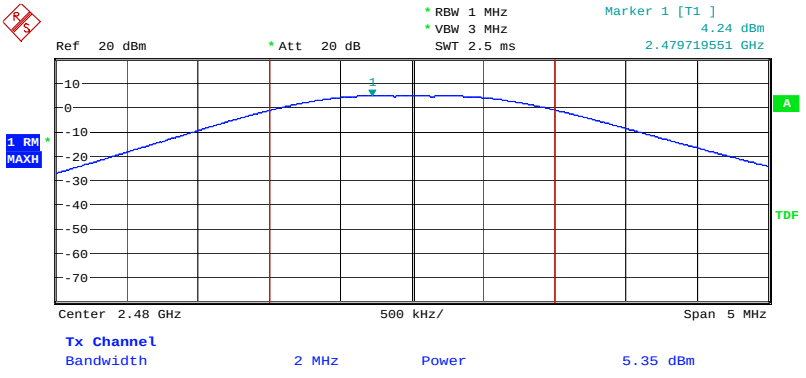
Date: 3.AUG.2016 20:19:13

TX CH 19	1Mbps



Date: 3.AUG.2016 20:21:10

TX CH 39	1Mbps



Date: 3.AUG.2016 20:21:54

3.7 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

3.7.1 APPLICABLE STANDARD

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

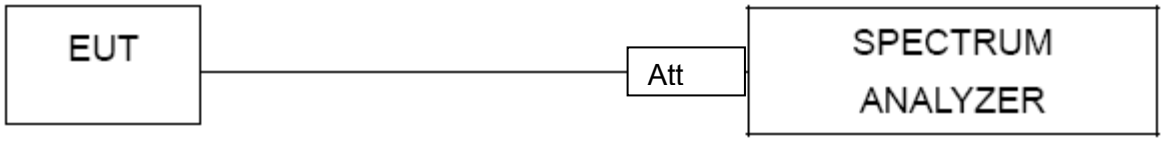
3.7.2 TEST PROCEDURE

The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v03r05.
The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
The path loss was compensated to the results for each measurement.
Set to the maximum power setting and enable the EUT transmit continuously.
The EUT was operating in controlled its channel.
Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
Repeat above procedures until all measured frequencies were complete.

3.7.3 DEVIATION FROM STANDARD

No deviation.

3.7.4 TEST SETUP



3.7.5 EUT OPERATION CONDITIONS

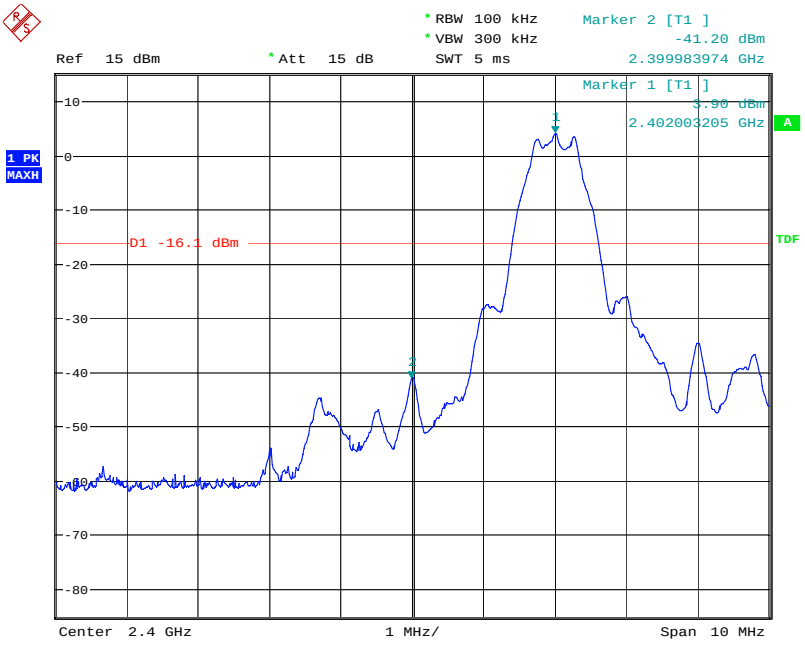
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.7.6 TEST RESULTS

EUT：	GO ANYWHERE SPEAKERS	Model Name ：	FSNA3
Temperature：	25 ℃	Relative Humidity：	56%
Pressure：	1012 hPa	Test Voltage ：	DC 3.7V From Internal Battery

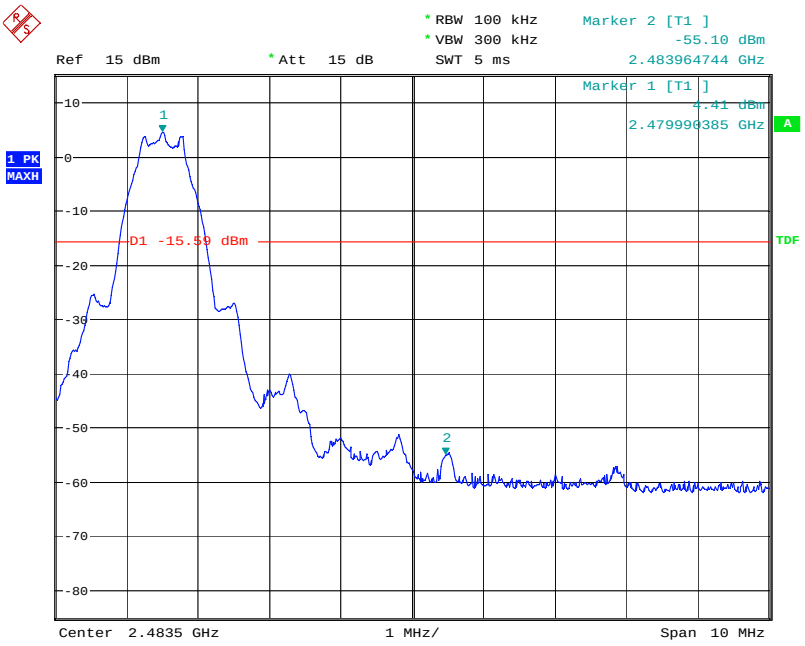
Frequency Band MHz	Delta Peak to band emission(dBc)	> Limit(dBc)	Verdict
2400	41.20	20	Pass
2483.5	55.10	20	Pass

GFSK mode: Band Edge-Low Channel



Date: 3.AUG.2016 20:36:40

GFSK mode: Band Edge-High Channel



Date: 3.AUG.2016 20:38:15

3.8 ANTENNA REQUIREMENT

3.8.1 STANDARD REQUIREMENT

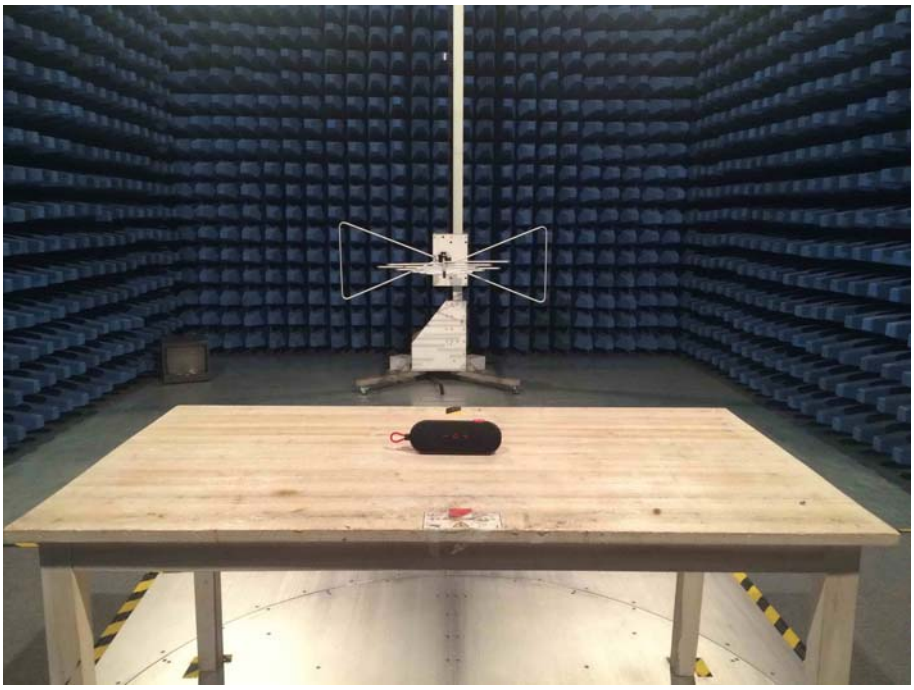
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

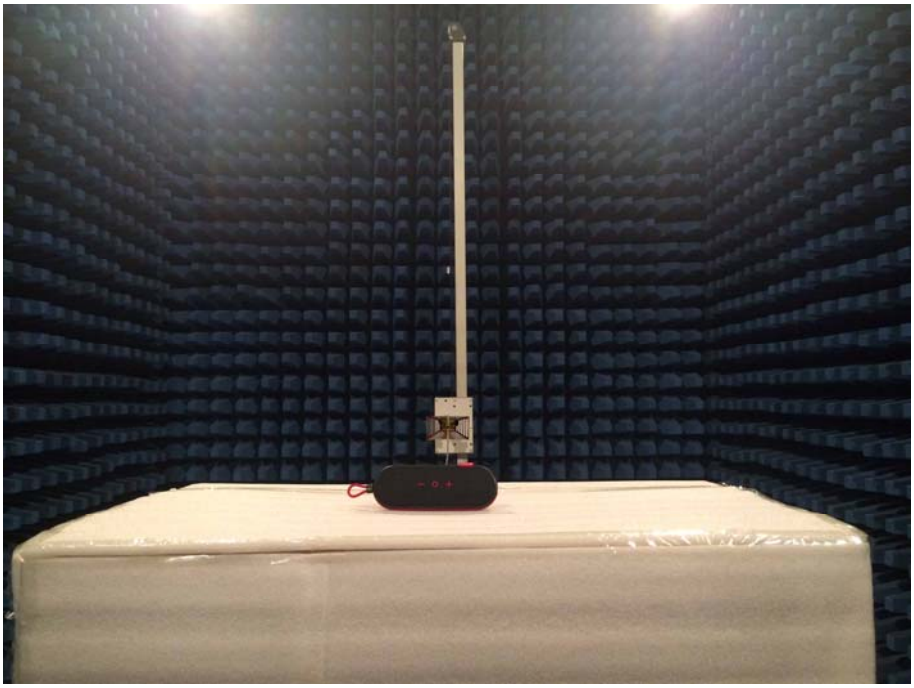
3.8.2 EUT ANTENNA

The antenna peak gain of EUT is 0 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

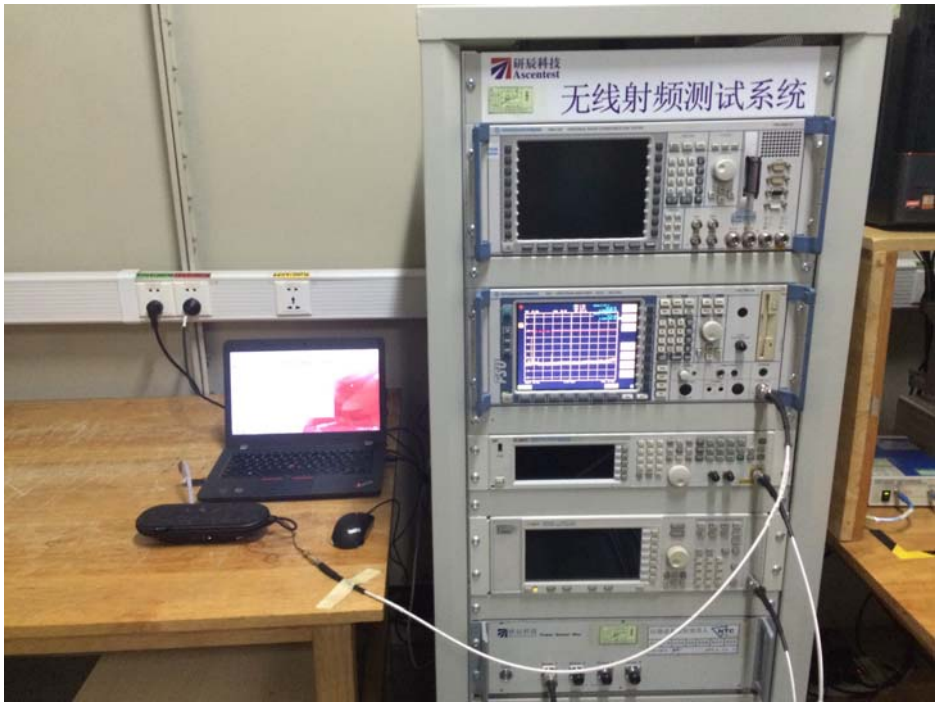
44. EUT TEST PHOTO

Radiated Measurement Photos





Conducted **Measurement Photos**



AC CONDUCTED MEASUREMENT PHOTOS