

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

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
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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: Aug 3,2016~ Aug 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)(1)	Hopping Channel Separation	PASS	
15.247(b)(1)	Peak Output Power	PASS	
15.209	Radiated Emission	PASS	
15.247(a)(iii)	Number of Hopping Frequency	PASS	
15.247(a)(iii)	Dwell Time	PASS	
15.247(a)(1)	Bandwidth	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

1.11.1 TEST FACILITY

Dongguan Lepont Testing Service Co., Ltd.

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

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


1.21.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, 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	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	HuGO ANYWHERE SPEAKERSity	$\pm 2\%$

22. GENERAL INFORMATION

2.1 2.1GENERAL DESCRIPTION OF EUT

Equipment	GO ANYWHERE SPEAKERS	
Trade Name	FUGOO 	
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:	2402~2480 MHz
	Modulation Type:	BT(1Mbps): GFSK BT EDR(2Mbps): $\pi/4$ -DQPSK BT EDR(3Mbps): 8-DPSK
	Bit Rate of Transmitter	1Mbps/2Mbps/3Mbps
	Number Of Channel	79 CH
	Antenna Designation:	Please see Note 3.
	Output Power(Conducted):	BT(1Mbps): 5.88 dBm BT EDR(2Mbps):5.34 dBm BT EDR(3Mbps):5.21 dBm
Channel List	Please refer to the Note 2.	
Adapter	N/A	
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	2403
.....
.....
...	...
.....
78	2479
79	2480

Note: $f_c = 2402\text{MHz} + k \times 1\text{MHz}$ $k=0$ to 79

3. Table for Filed Antenna

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

2.2 2.2 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.

Pretest Mode	Description
Mode 1	CH00
Mode 2	CH39
Mode 3	CH78
Mode 4	normal link
Mode 5	Hopping

For Conducted Emission	
Final Test Mode	Description
Mode 4	normal link

For Radiated Emission	
Final Test Mode	Description
Mode 1	CH00
Mode 2	CH39
Mode 3	CH78

Note:

- (1) The measurements are performed at the highest, GO ANYWHERE SPEAKERSdle, lowest available channels.
- (2) The EUT use new battery.
- (3)The data rate was set in 2Mbps for radiated emission due to the highest RF output power.

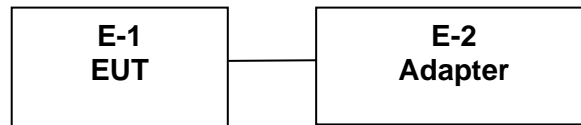
2.3 2.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of FHSS

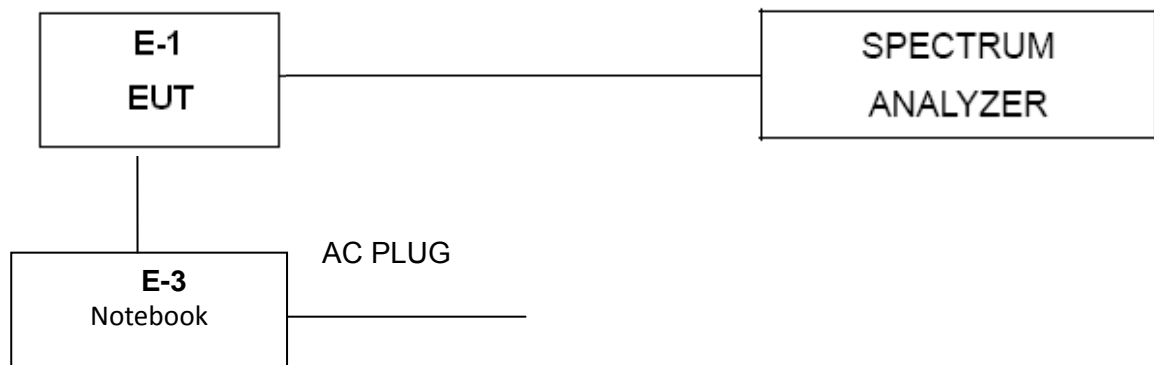
Test software Version	Test program: Broadcom		
Frequency	2402 MHz	2441 MHz	2480 MHz
Parameters(1/2/3Mbps)	DEF	DEF	DEF

2.4 2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test



RF conducted measurement



2.52.5 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	Mfr/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.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

2.6.2.6 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-LINDGRE N	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	MY50140 697	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	Manufactur er	Model No.	Serial No.	Last Cal.	Next Cal.
Horn Antenna	SCHWARZ BECK	BBHA 9120 D	BBHA9120D 1002	April 23,16	1 Year
Board-Band Horn Antenna	SCHWARZ BECK	BBHA 9170	9170-497	April 23,16	1 Year
Signal Amplifier	SCHWARZ BECK	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	Hubersuhn er	RG 214/U	513423	April 23,16	1 Year

33. EMC EMISSION TEST

3.1 3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 3.11 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

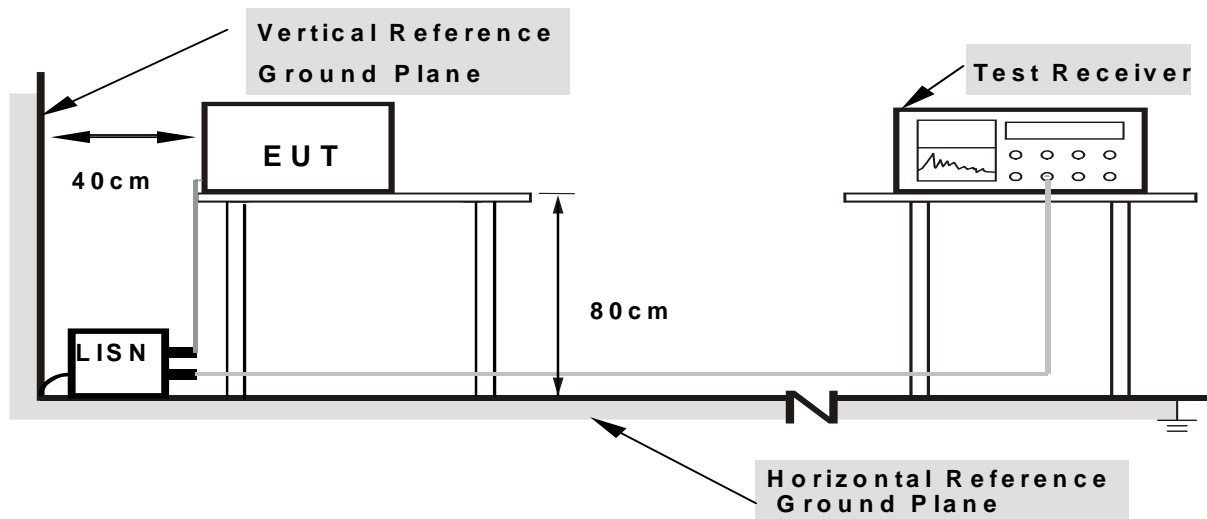
3.1.23.12 TEST PROCEDURE

- 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.
- 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.
- 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.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.33.13 DEVIATION FROM TEST STANDARD

No deviation

3.1.43.14 TEST SETUP



Note: 1.Support units were connected to second LISN.

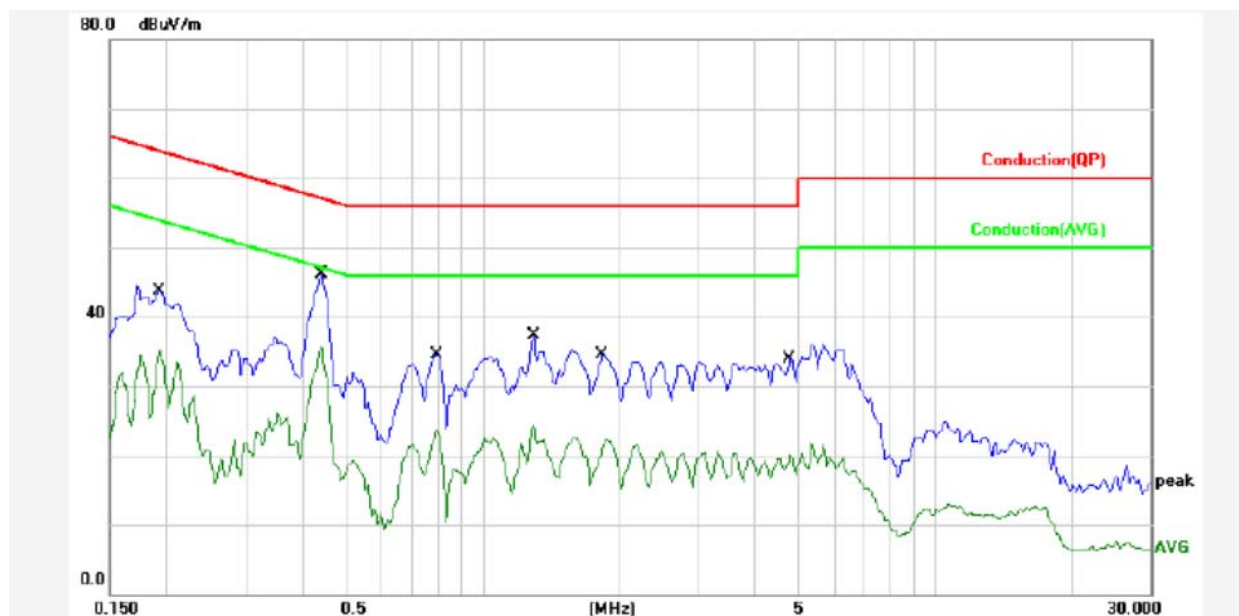
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.153.1.5 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.

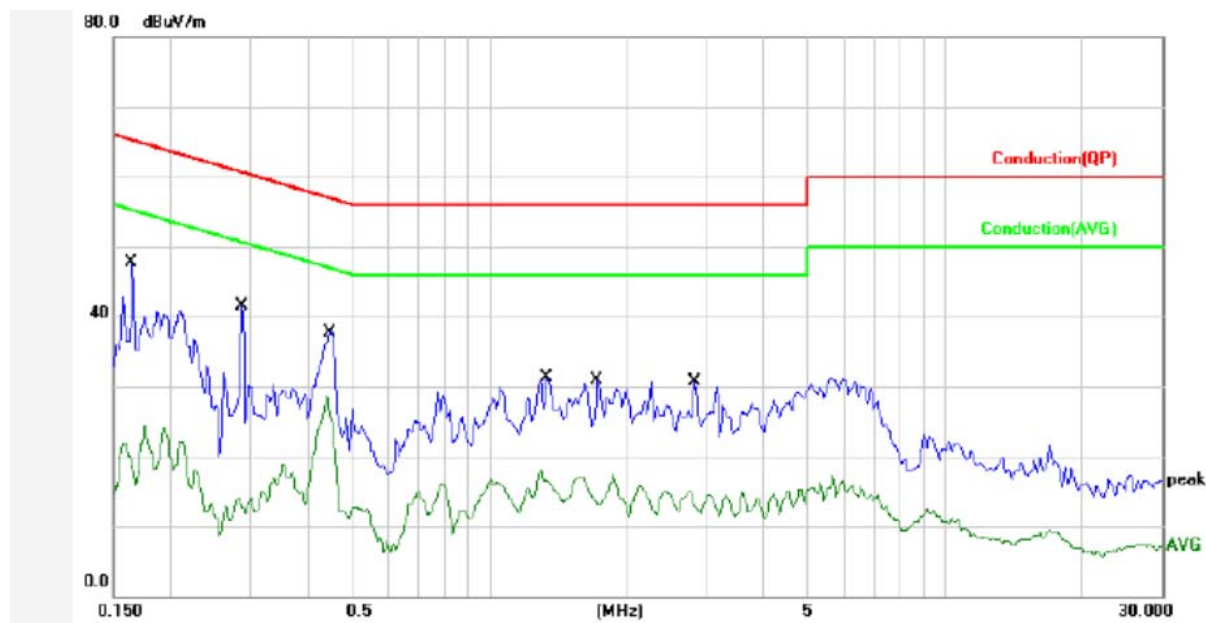
3.1.63.16 TEST RESULTS

EUT :	GO ANYWHERE SPEAKERS	Model Name :	FSNA3
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
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 °C	Humidity	54%
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	

3.24. RADIATED EMISSION MEASUREMENT

3.2.14.1 RADIATED EMISSION (Frequency Range 9kHz-1000MHz)

LIMITS

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 A (dBuV/m) (at 3M)		Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	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	5 th 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

4.113.2.2 TEST PROCEDURE

- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters (<1GHz) and 1.5m(>1GHz)above the ground at a 3 meter test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m or 1.5m; 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.
- The initial step in collecting conducted 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.
- 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.
- 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

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

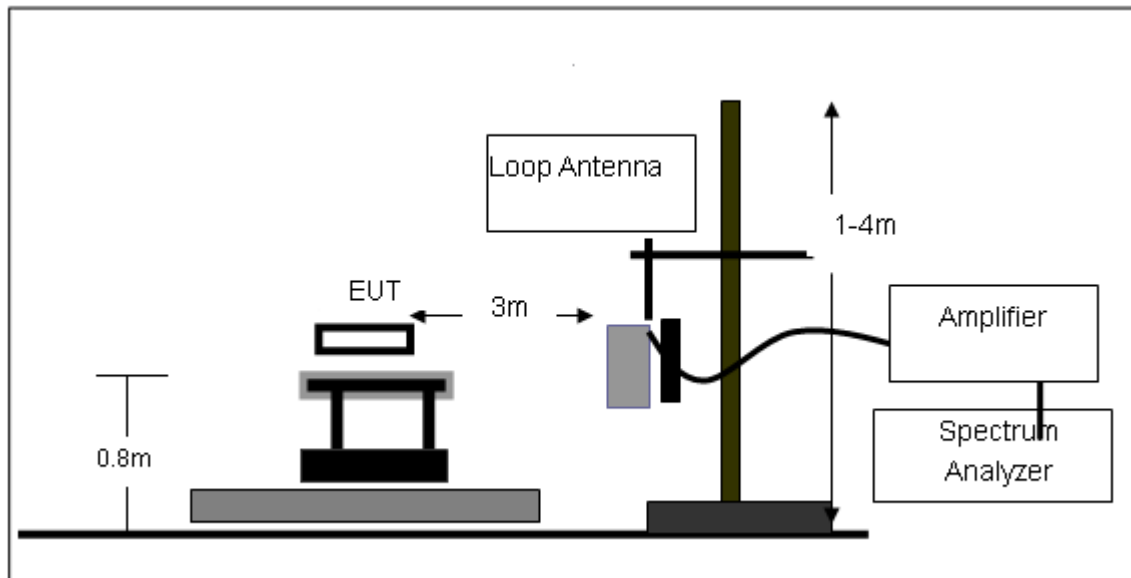
Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

4.123.2.3 DEVIATION FROM TEST STANDARD

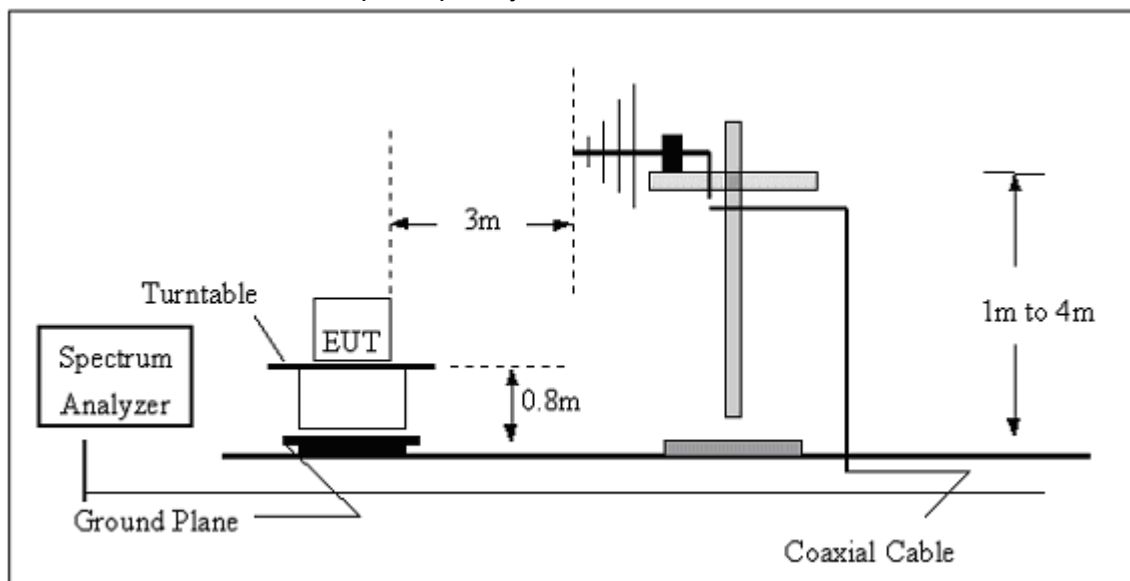
No deviation

4.133.2.4 TEST SETUP

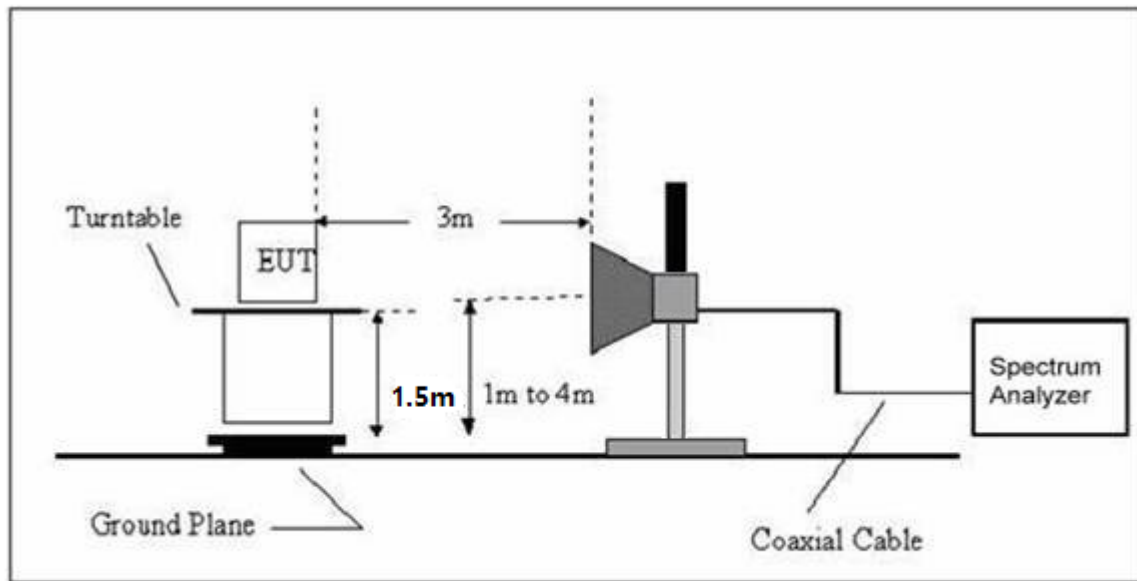
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



4.143.2.5 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.

3.2.64.15 TEST RESULTS (BELOW 30 MHZ)

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

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

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 = $20 \log (\text{specific distance/test distance})$ (dB);

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

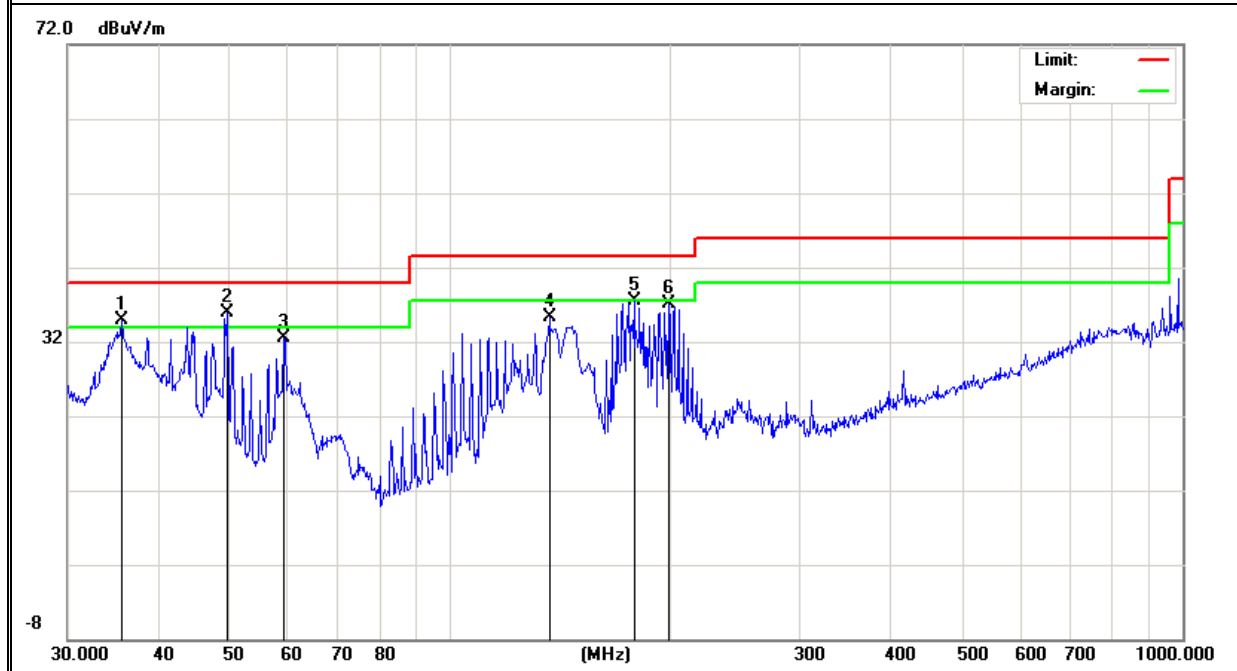
TEST RESULTS (BETWEEN 30M – 1000 MHZ)

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

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	35.4992	18.50	16.37	34.87	40.00	-5.13	QP
V	49.5328	25.11	10.81	35.92	40.00	-4.08	QP
V	59.2325	24.40	8.05	32.45	40.00	-7.55	QP
V	136.4598	23.75	11.58	35.33	43.50	-8.17	QP
V	178.1326	26.97	10.61	37.58	43.50	-5.92	QP
V	198.5879	26.27	10.77	37.04	43.50	-6.46	QP

Remark:

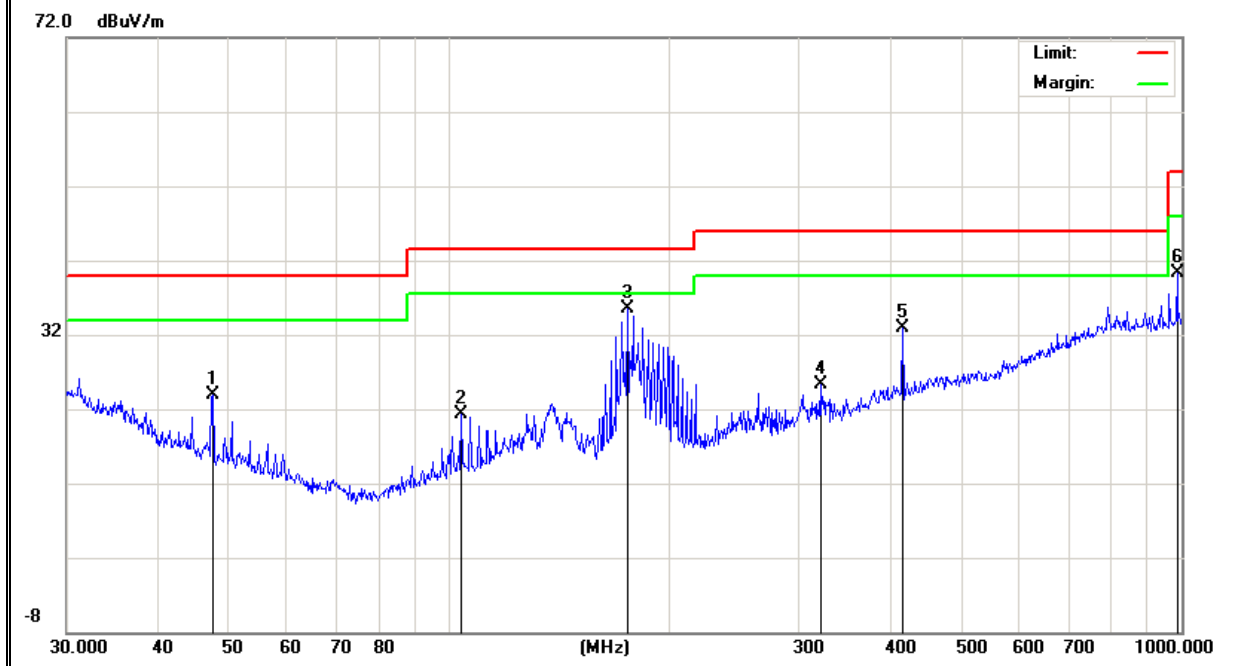
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	47.4917	12.58	11.31	23.89	40.00	-16.11	QP
H	103.8054	12.04	9.35	21.39	43.50	-22.11	QP
H	175.0368	24.91	10.60	35.51	43.50	-7.99	QP
H	321.0607	10.21	15.03	25.24	46.00	-20.76	QP
H	416.1791	14.32	18.63	32.95	46.00	-13.05	QP
H	986.0716	12.73	27.50	40.23	54.00	-13.77	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



TEST RESULTS (ABOVE 1000 MHZ)

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

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark	Comment
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		
Low Channel (2402 MHz)-Above 1G							
4804.063	60.15	-3.64	63.79	74.00	-10.21	Pk	Vertical
4804.063	43.39	-3.64	47.03	54.00	-6.97	AV	Vertical
7206.152	53.25	-0.95	54.20	74.00	-19.80	Pk	Vertical
7206.152	38.33	-0.95	39.28	54.00	-14.72	AV	Vertical
4804.201	60.48	-3.64	64.12	74.00	-9.88	Pk	Horizontal
4804.201	43.31	-3.64	46.95	54.00	-7.05	AV	Horizontal
7206.122	54.45	-0.95	55.40	74.00	-18.60	Pk	Horizontal
7206.122	38.26	-0.95	39.21	54.00	-14.79	AV	Horizontal
GO ANYWHERE SPEAKERS Channel (2441 MHz)-Above 1G							
4882.036	63.92	-3.68	67.60	74.00	-6.40	Pk	Vertical
4882.036	44.33	-3.68	48.01	54.00	-5.99	AV	Vertical
7323.233	57.35	-0.82	58.17	74.00	-15.83	Pk	Vertical
7323.233	42.2	-0.82	43.02	54.00	-10.98	AV	Vertical
4882.145	63.85	-3.68	67.53	74.00	-6.47	Pk	Horizontal
4882.145	43.05	-3.68	46.73	54.00	-7.27	AV	Horizontal
7323.203	57.25	-0.82	58.07	74.00	-15.93	Pk	Horizontal
7323.203	41.47	-0.82	42.29	54.00	-11.71	AV	Horizontal
High Channel (2480MHz)- Above 1G							
4960.236	61.29	-3.59	64.88	74.00	-9.12	Pk	Vertical
4960.236	44.13	-3.59	47.72	54.00	-6.28	AV	Vertical
7440.123	54.76	-0.68	55.44	74.00	-18.56	Pk	Vertical
7440.123	38.98	-0.68	39.66	54.00	-14.34	AV	Vertical
4960.088	61.12	-3.59	64.71	74.00	-9.29	Pk	Horizontal
4960.088	44.28	-3.59	47.87	54.00	-6.13	AV	Horizontal
7440.178	54.63	-0.68	55.31	74.00	-18.69	Pk	Horizontal
7440.178	38.49	-0.68	39.17	54.00	-14.83	AV	Horizontal

Note: Mode 1Mbps is the worst mode.

54. NUMBER OF HOPPING CHANNEL

5.14.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)(iii)	Number of Hopping Channel	≥ 15	2400-2483.5	PASS

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	= the frequency band of operation
RB	RBW=100kHz
VB	VBW \geq RBW
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.114.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100kHz, VBW=300kHz, Sweep time = Auto.

5.124.1.2 DEVIATION FROM STANDARD

No deviation.

5.134.1.3 TEST SETUP



5.144.1.4 EUT OPERATION CONDITIONS

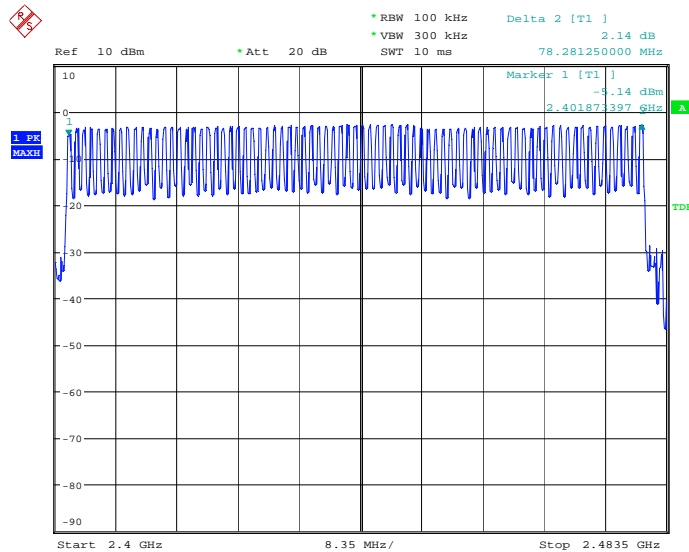
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.154.1.5 TEST RESULTS

EUT :	GO ANYWHERE SPEAKERS	Model Name :	FSNA3
Temperature :	25 °C	Humidity	60%
Pressure :	1015 hPa	Test Voltage :	DC 3.7V From Internal Battery
Test Mode :	Hopping Mode		

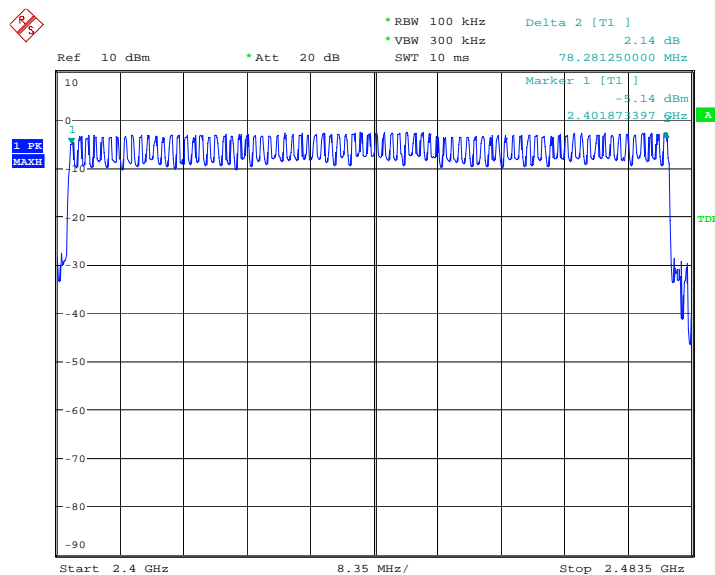
Number of Hopping Channel	79
---------------------------	----

GFSK



Date: 3.AUG.2016 20:05:14

8-DPSK



Date: 3.AUG.2016 20:13:37

65. AVERAGE TIME OF OCCUPANCY**6.15.1 APPLIED PROCEDURES / LIMIT**

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)(iii)	Average Time of Occupancy	0.4sec	2400-2483.5	PASS

6.115.1.1 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyzer
- b. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
- c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
- d. Sweep Time is more than once pulse time.
- e. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- f. Measure the maximum time duration of one single pulse.
- g. Set the EUT for DH5, DH3 and DH1 packet transmitting.
- h. Measure the maximum time duration of one single pulse.
- i. A Period Time = (channel number)*0.4
DH1 Time Slot: Reading * (1600/2)*31.6/(channel number)
DH3 Time Slot: Reading * (1600/4)*31.6/(channel number)
DH5 Time Slot: Reading * (1600/6)*31.6/(channel number)

6.125.1.2 DEVIATION FROM STANDARD

No deviation.

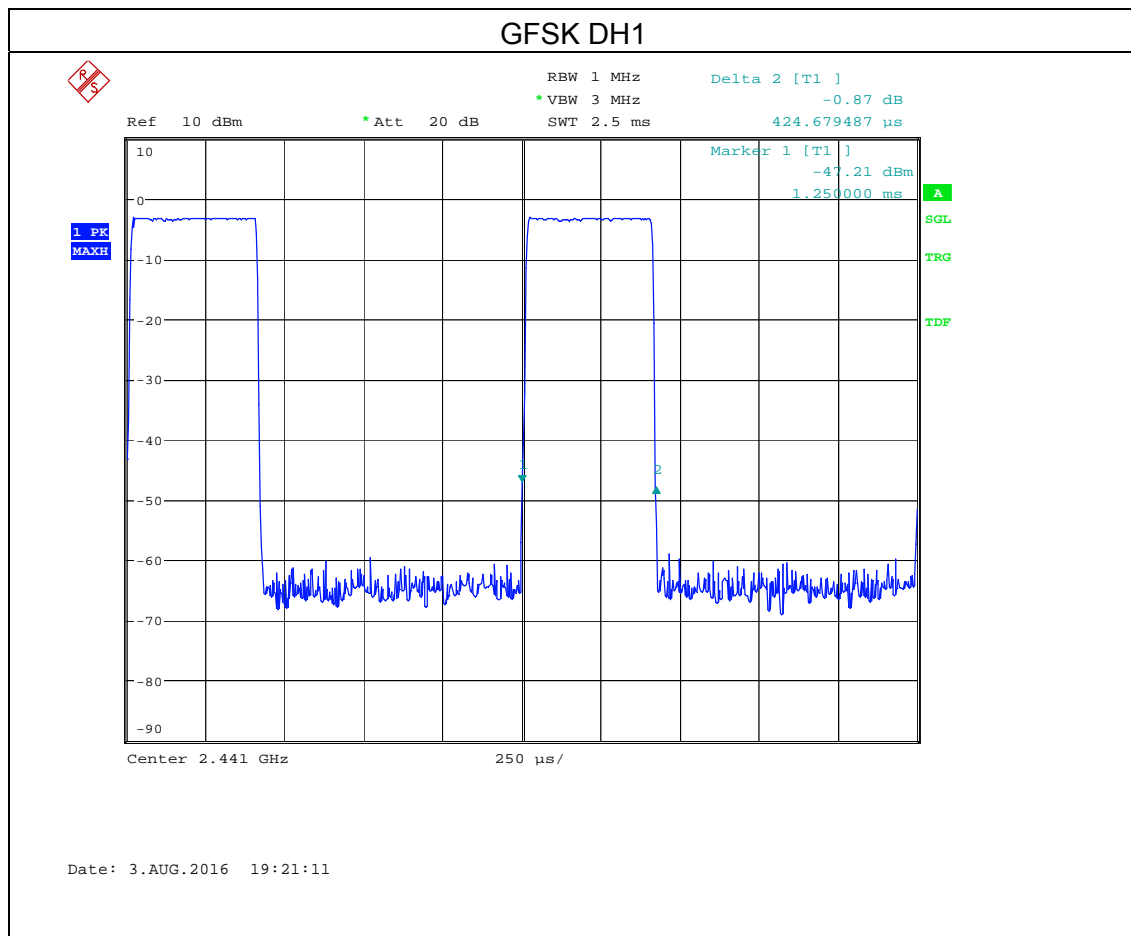
6.135.1.3 TEST SETUP**6.145.1.4 EUT OPERATION CONDITIONS**

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.

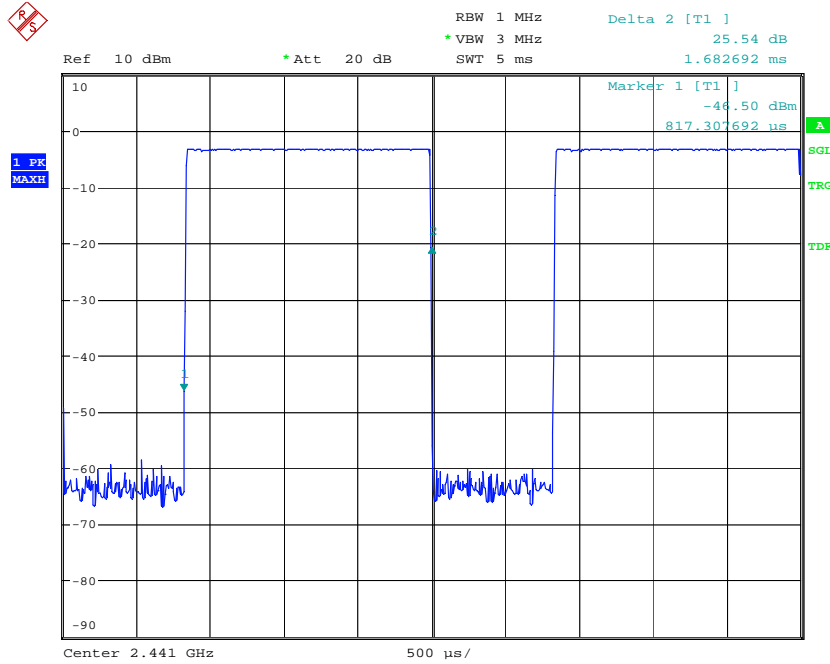
6.15 TEST RESULTS

EUT :	GO ANYWHERE SPEAKERS	Model Name :	FSNA3
Temperature :	25 °C	Humidity	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V From Internal Battery
Test Mode :	GFSK DH1,GFSK DH3,GFSK DH5		

Data Packet	Frequency	Pulse Duration	Dwell Time	Limits
		(ms)	(ms)	(ms)
GFSK DH1	2441 MHz	0.424	135.68	<400
GFSK DH3	2441 MHz	1.682	269.12	<400
GFSK DH5	2441 MHz	2.93	312.5	<400

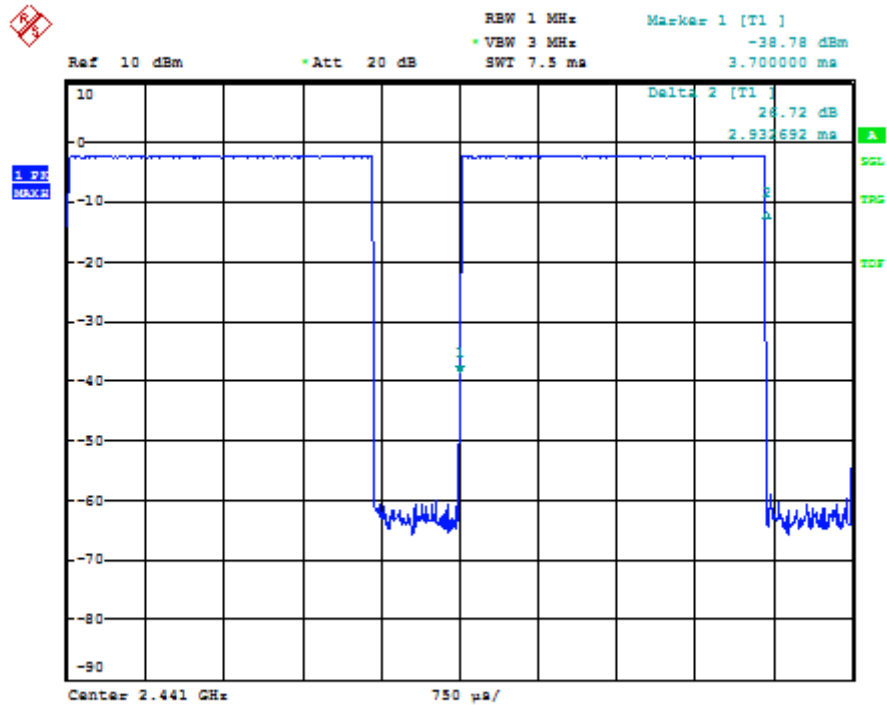


GFSK DH3



Date: 3.AUG.2016 19:22:52

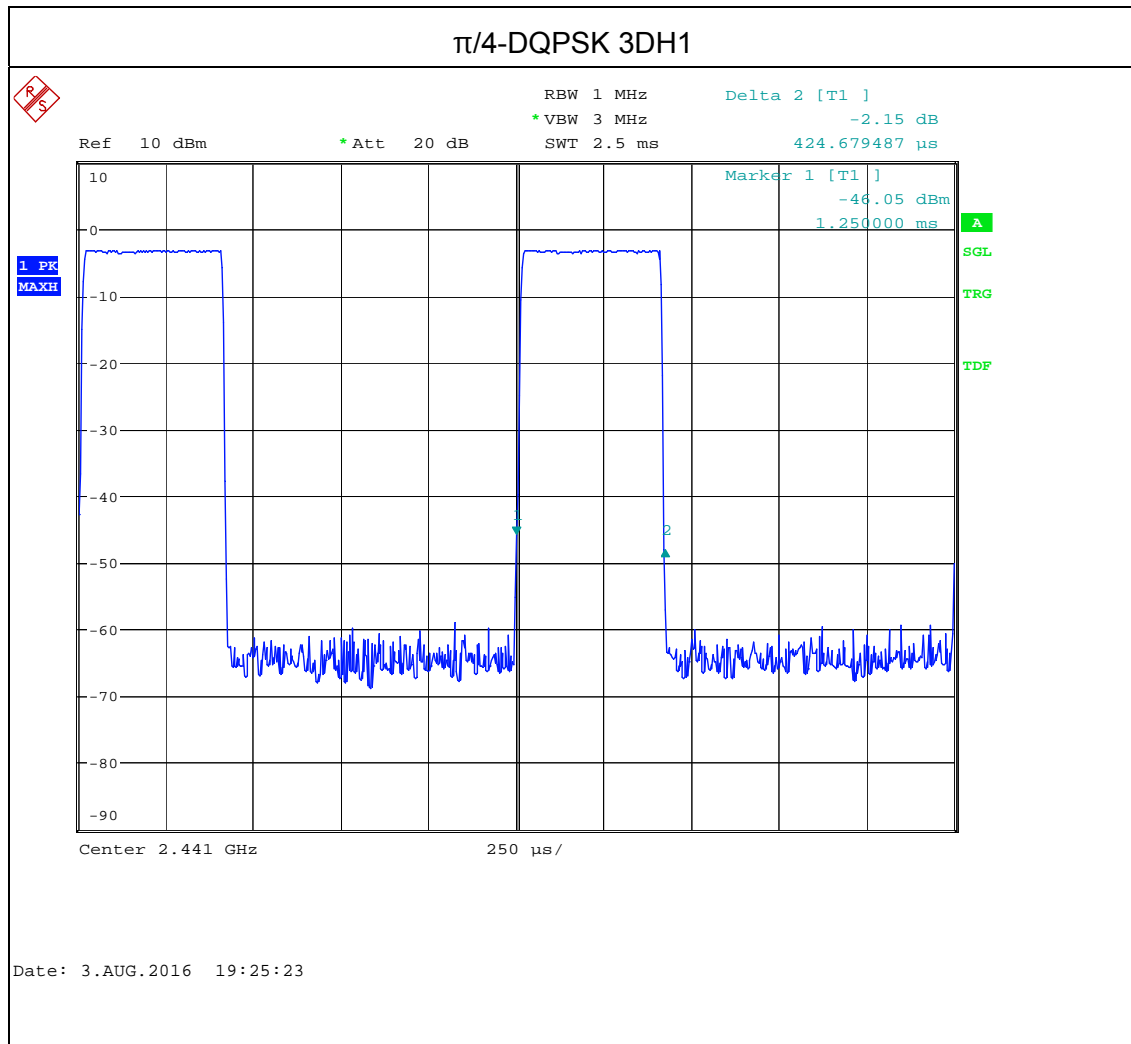
GFSK DH5



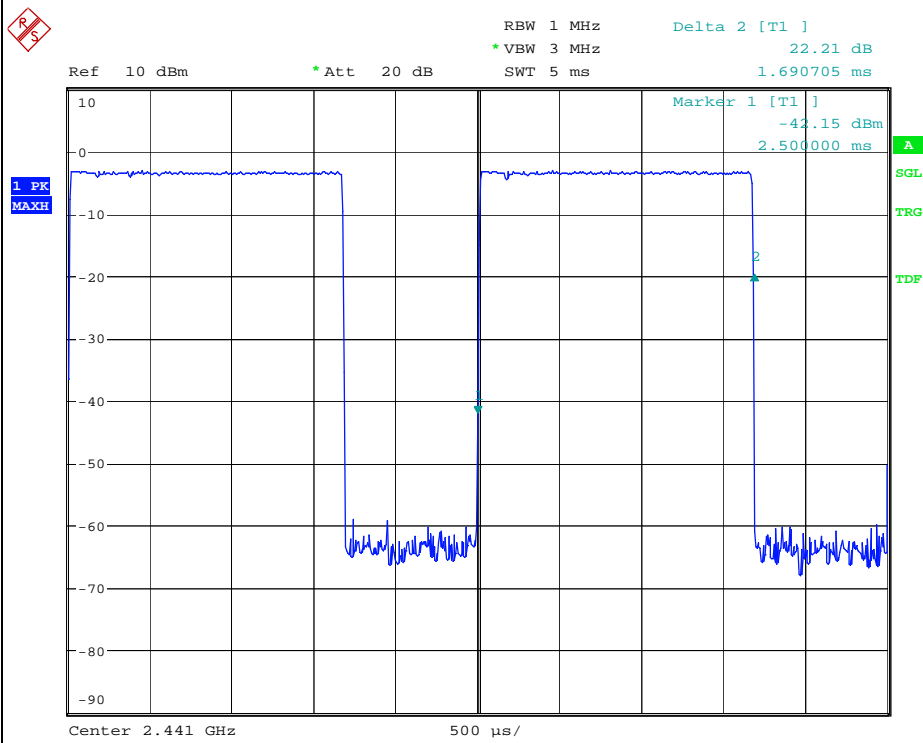
Date: 3.AUG.2016 19:24:15

EUT :	GO ANYWHERE SPEAKERS	Model Name :	FSNA3
Temperature :	25 °C	Humidity	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V From Internal Battery
Test Mode :	$\pi/4$ -DQPSK 3DH1, $\pi/4$ -DQPSK 3DH3, $\pi/4$ -DQPSK 3DH5		

Data Packet	Frequency	Pulse Duration	Dwell Time	Limits
		(ms)	(ms)	(ms)
$\pi/4$ -DQPSK 3DH1	2441 MHz	0.424	135.68	<400
$\pi/4$ -DQPSK 3DH3	2441 MHz	1.69	270.4	<400
$\pi/4$ -DQPSK 3DH5	2441 MHz	2.94	313.6	<400

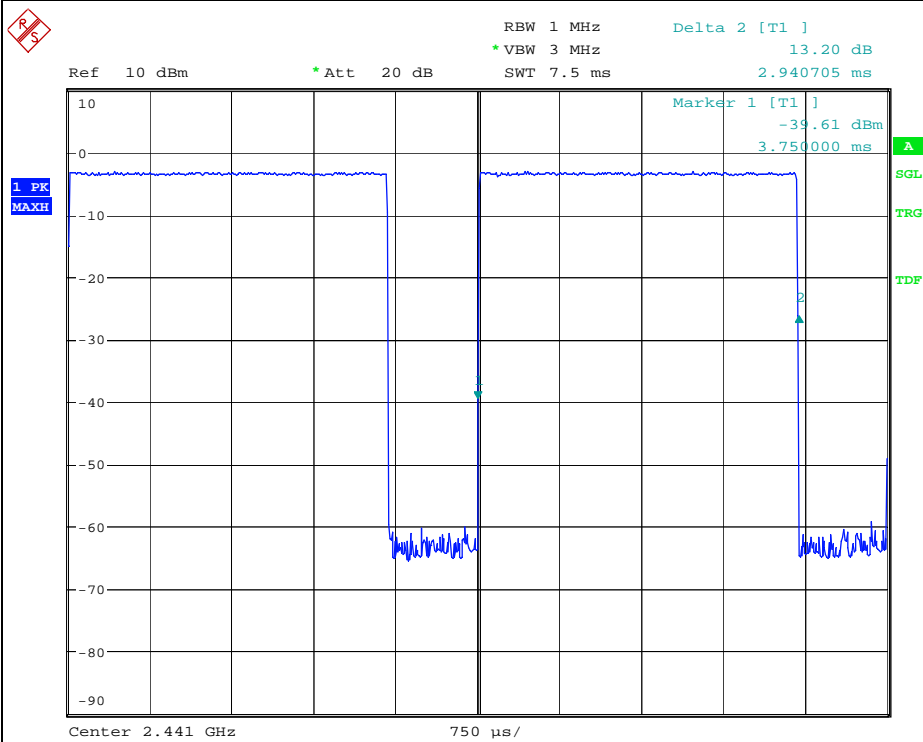


$\pi/4$ -DQPSK 3DH3



Date: 3.AUG.2016 19:27:54

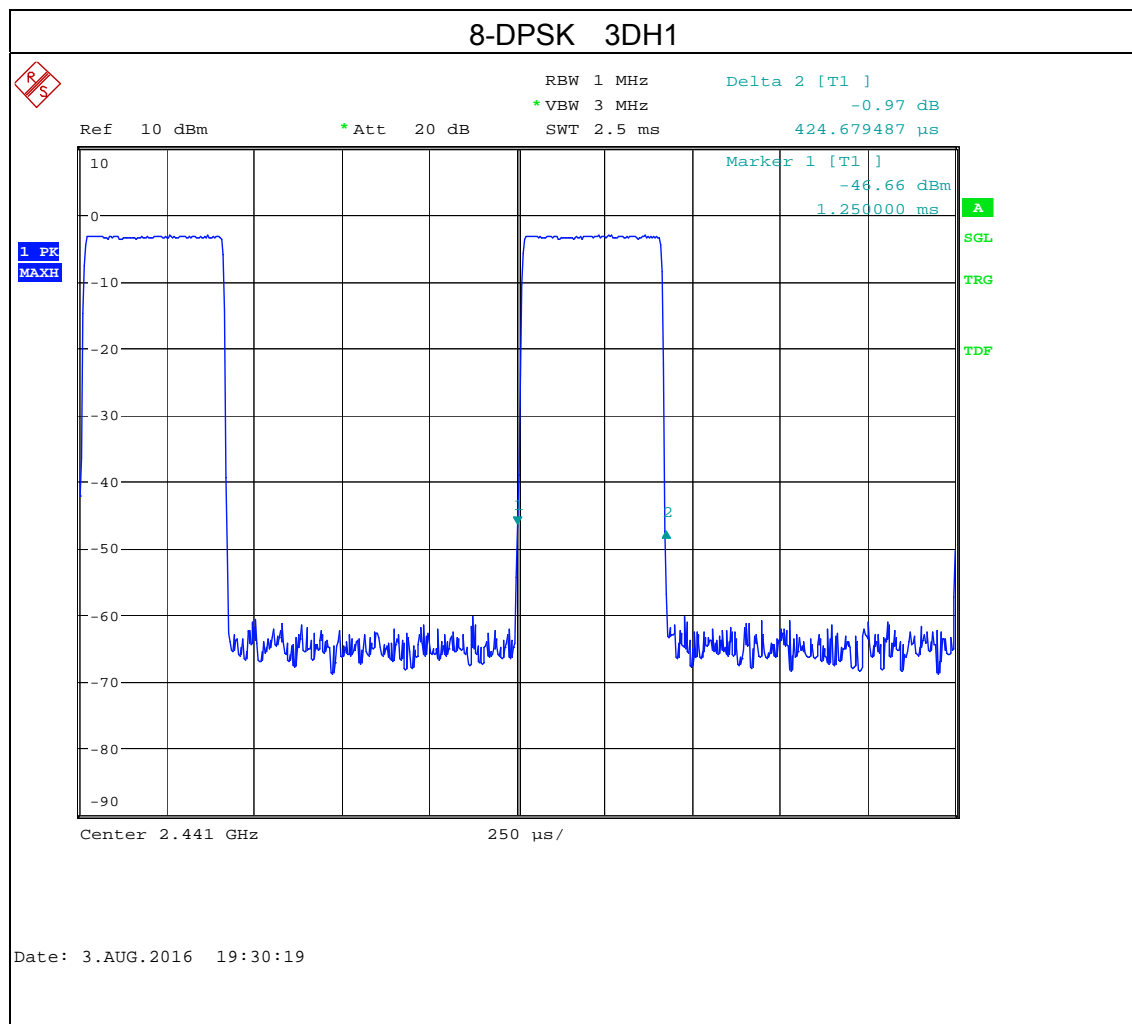
$\pi/4$ -DQPSK 3DH5

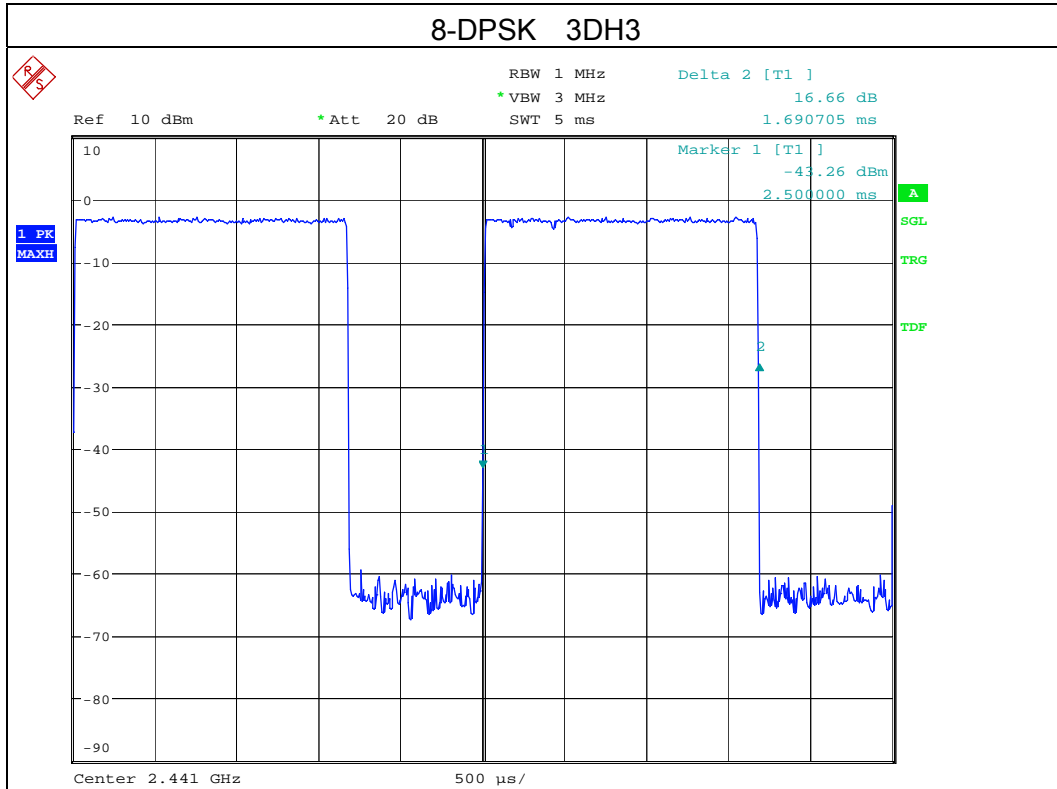


Date: 3.AUG.2016 19:28:55

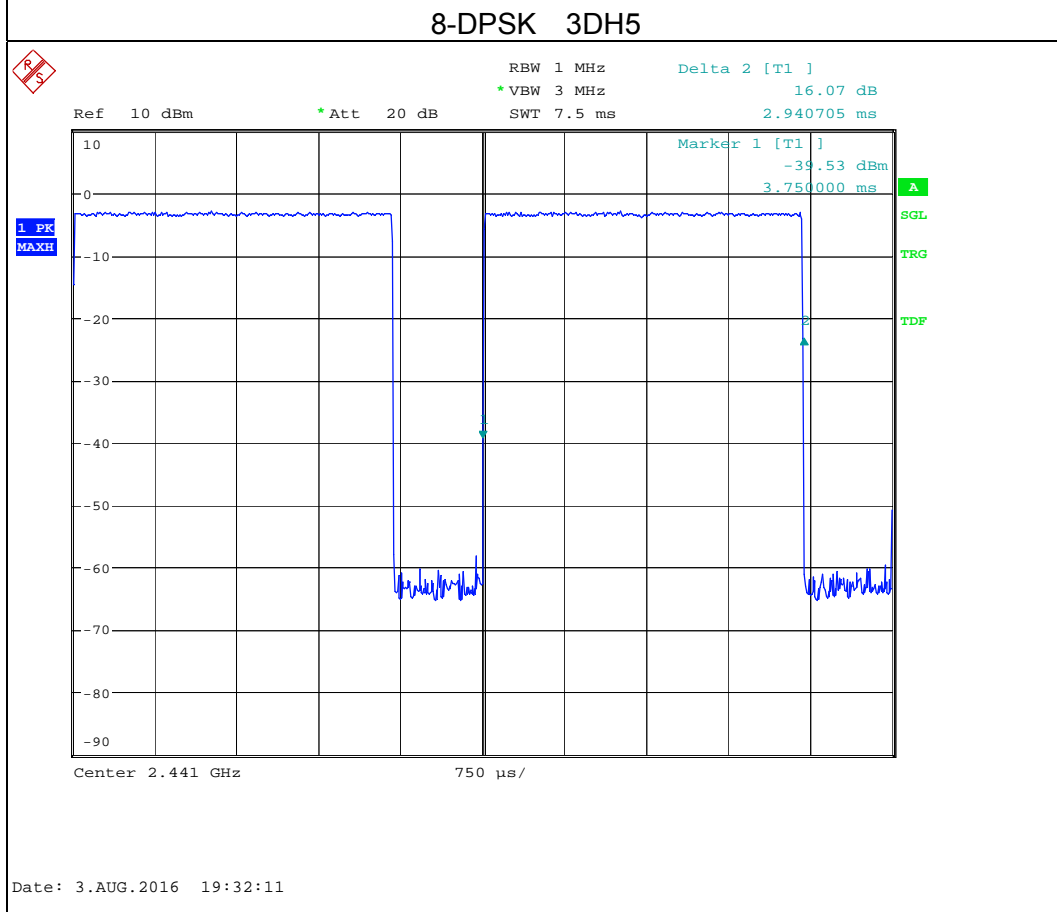
EUT :	GO ANYWHERE SPEAKERS	Model Name :	FSNA3
Temperature :	25 °C	Humidity	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V From Internal Battery
Test Mode :	8-DPSK 3DH1,8-DPSK 3DH3,8-DPSK 3DH5		

Data Packet	Frequency	Pulse Duration	Dwell Time	Limits
		(ms)	(ms)	(ms)
8-DPSK 3DH1	2441 MHz	0.424	135.68	<400
8-DPSK 3DH3	2441 MHz	1.69	270.4	<400
8-DPSK 3DH5	2441 MHz	2.94	313.6	<400





Date: 3.AUG.2016 19:31:13



Date: 3.AUG.2016 19:32:11

76. HOPPING CHANNEL SEPARATION MEASUREMENT

7.16.1 APPLIED PROCEDURES / LIMIT

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (Channel Separation)
VB	100 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

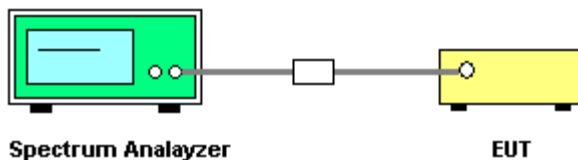
7.116.1.1 TEST PROCEDURE

- The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
- The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for channel separation measurement.

7.126.1.2 DEVIATION FROM STANDARD

No deviation.

7.136.1.3 TEST SETUP



7.146.1.4 EUT OPERATION CONDITIONS

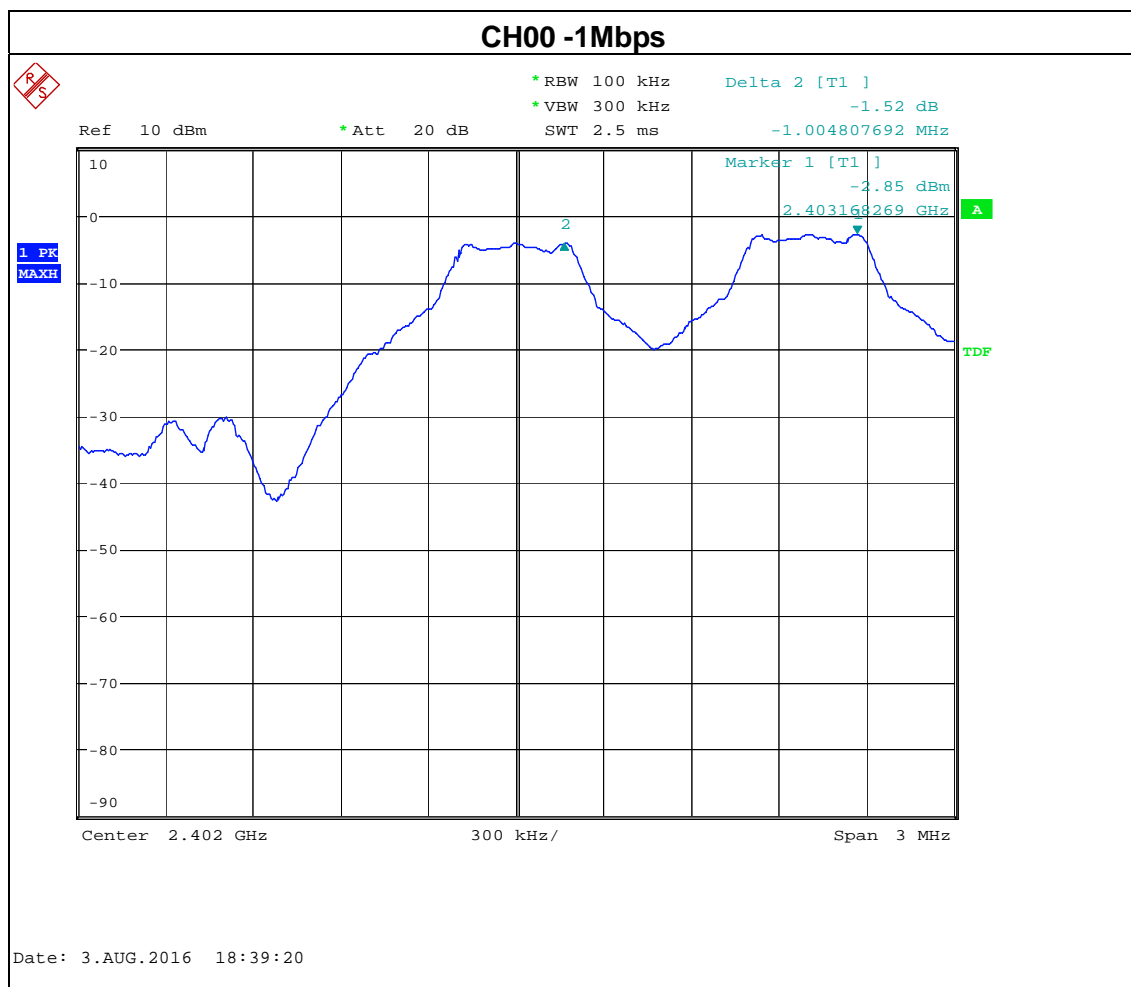
The EUT was programmed to be in continuously transmitting mode.

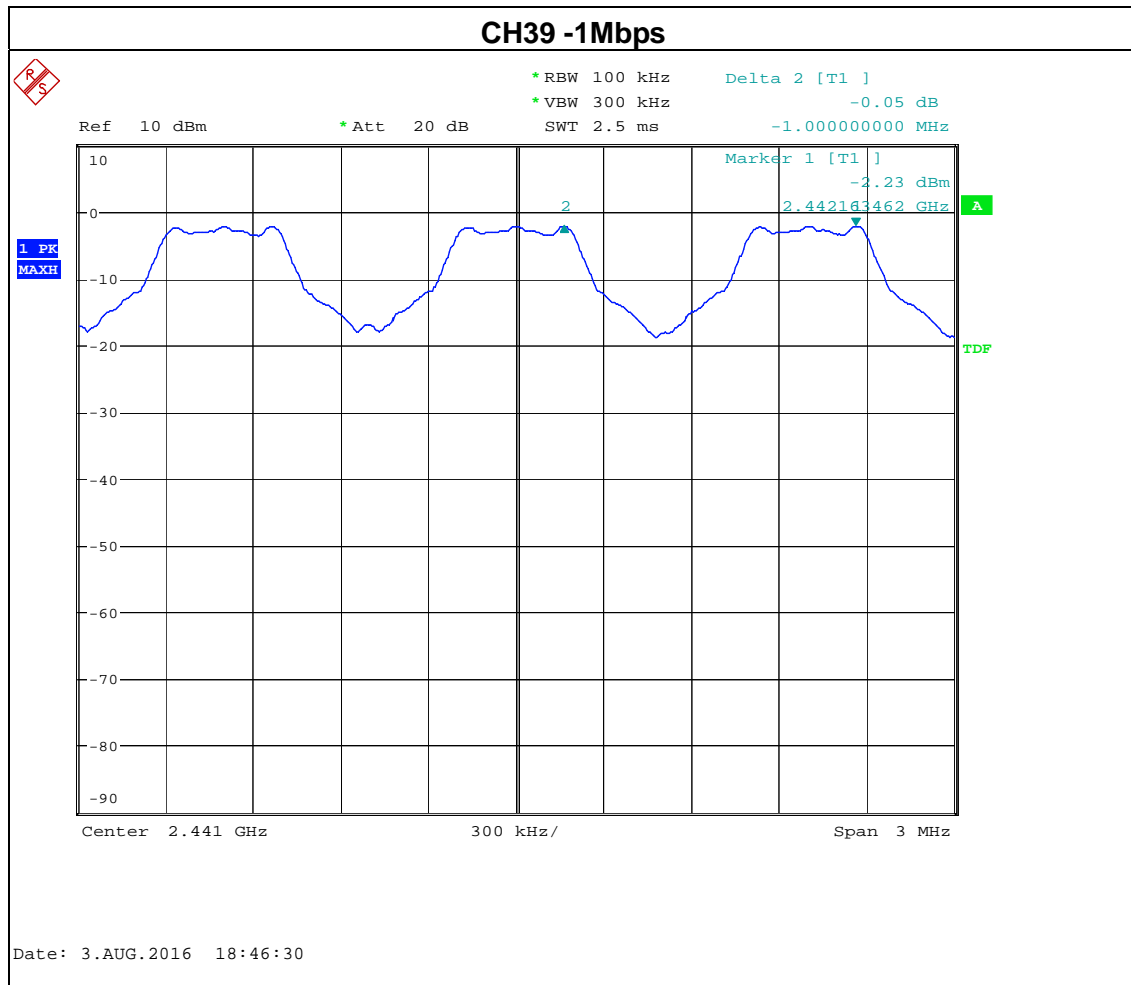
7.156.1.5 TEST RESULTS

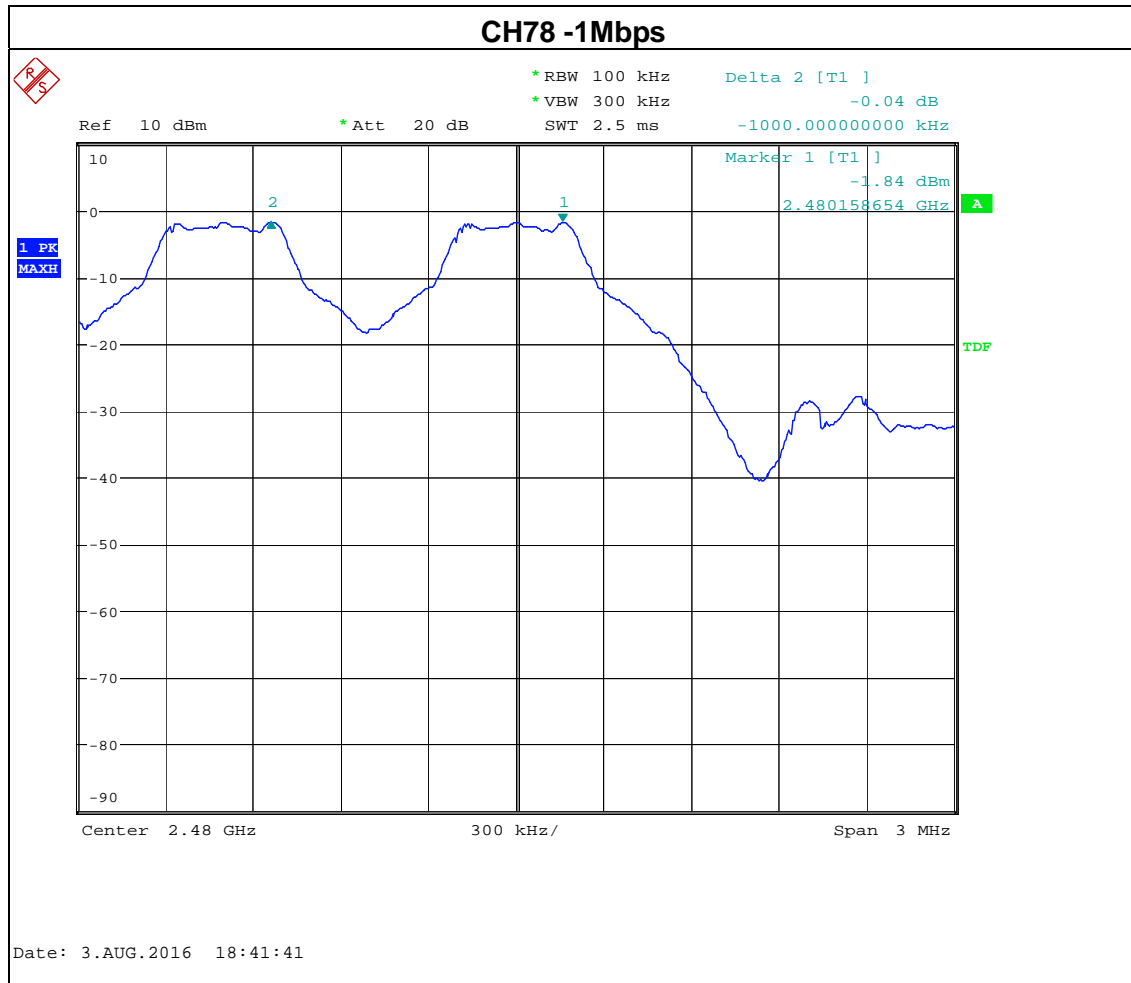
EUT :	GO ANYWHERE SPEAKERS	Model Name :	FSNA3
Temperature :	25 °C	Humidity	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V From Internal Battery
Test Mode :	CH00 / CH39 /CH78 (1Mbps Mode)		

Frequency	Ch. Separation (MHz)	Result
2402 MHz	1.004	Complies
2441 MHz	1.000	Complies
2480 MHz	1.000	Complies

Ch. Separation Limits: > 20dB bandwidth



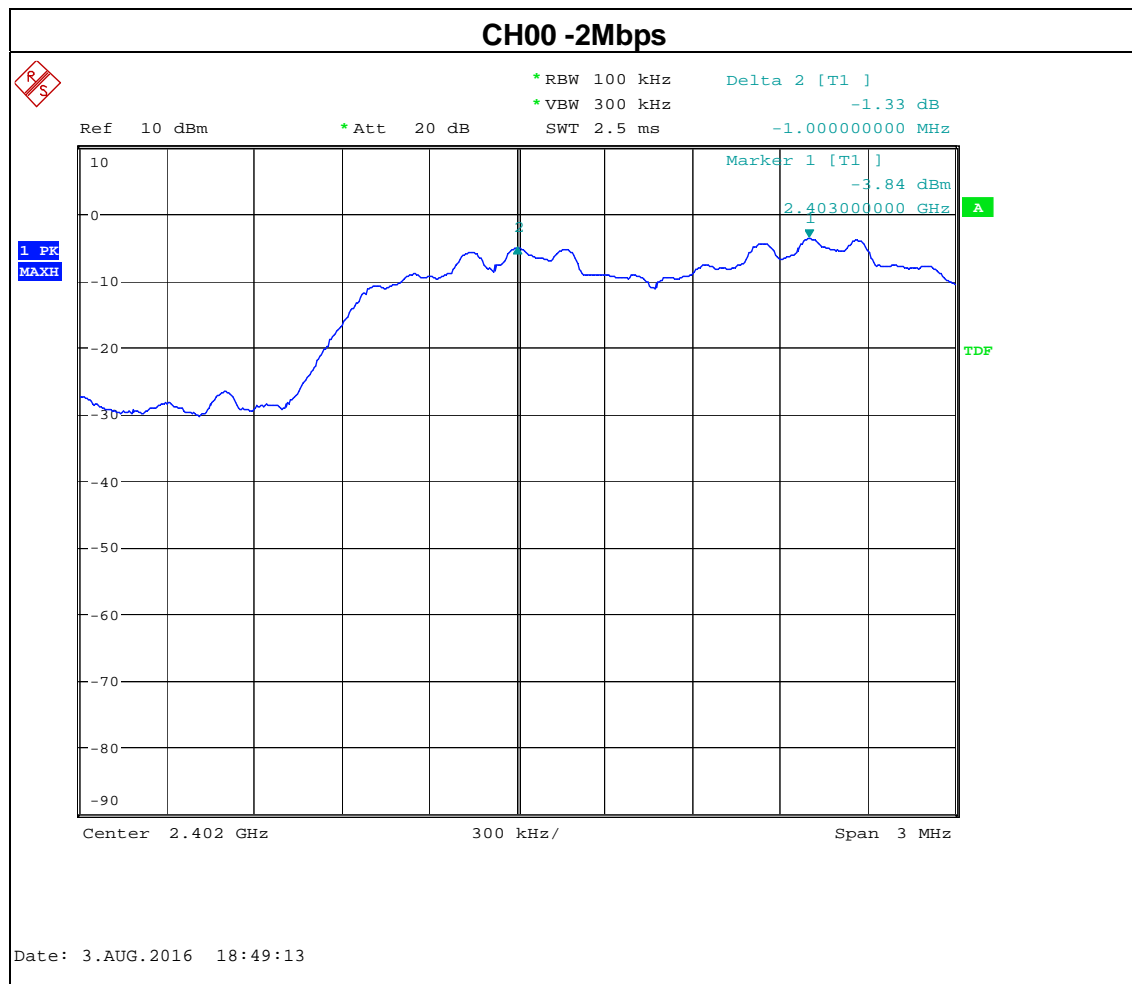




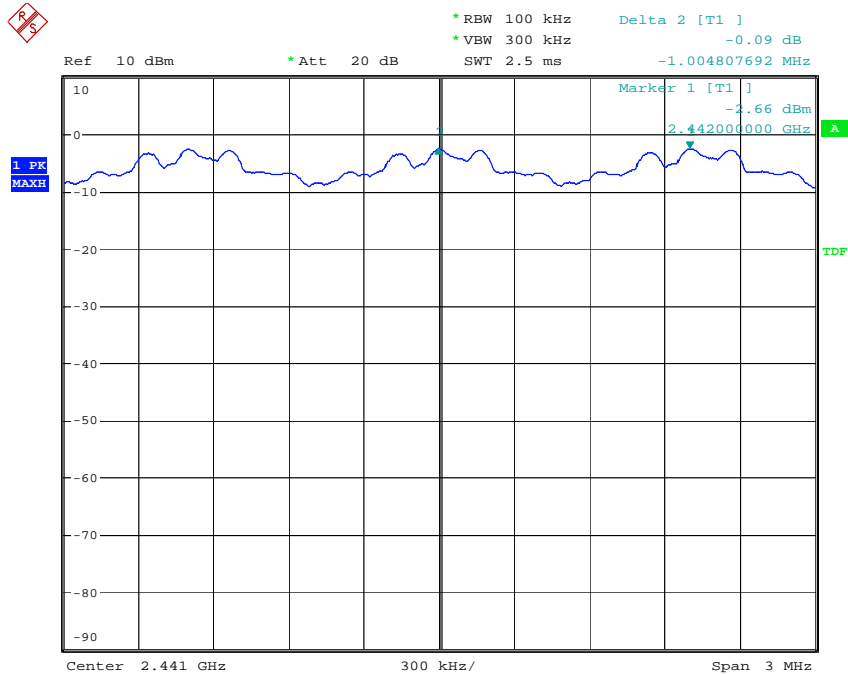
EUT :	GO ANYWHERE SPEAKERS	Model Name :	FSNA3
Temperature :	25 °C	Humidity	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V From Internal Battery
Test Mode :	CH00 / CH39 /CH78 (2Mbps Mode)		

Frequency	Ch. Separation (MHz)	Result
2402 MHz	1.000	Complies
2441 MHz	1.004	Complies
2480 MHz	1.000	Complies

Ch. Separation Limits: >2/3 of 20dB bandwidth

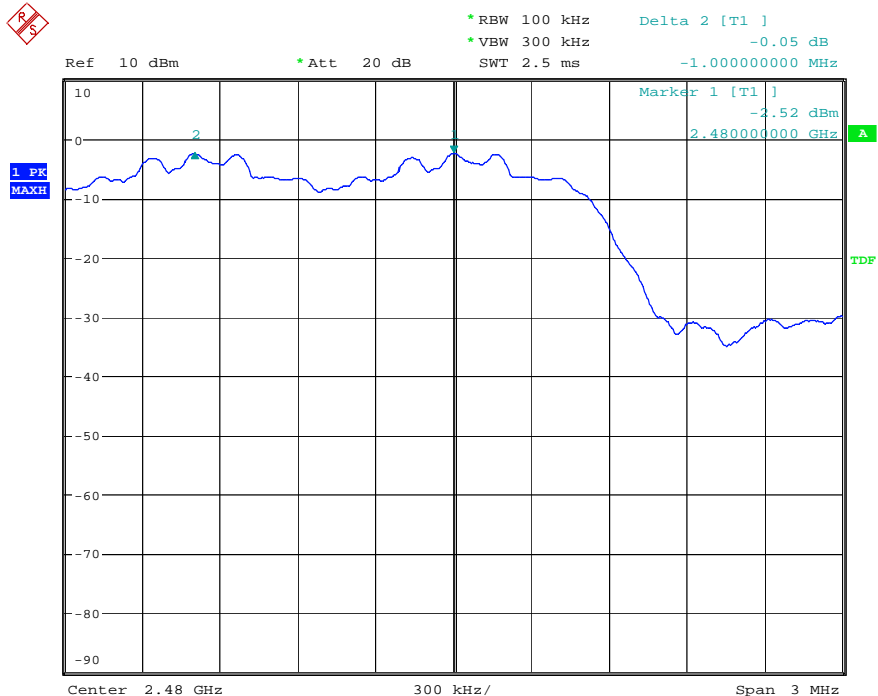


CH39 -2Mbps



Date: 3.AUG.2016 18:53:30

CH78 -2Mbps

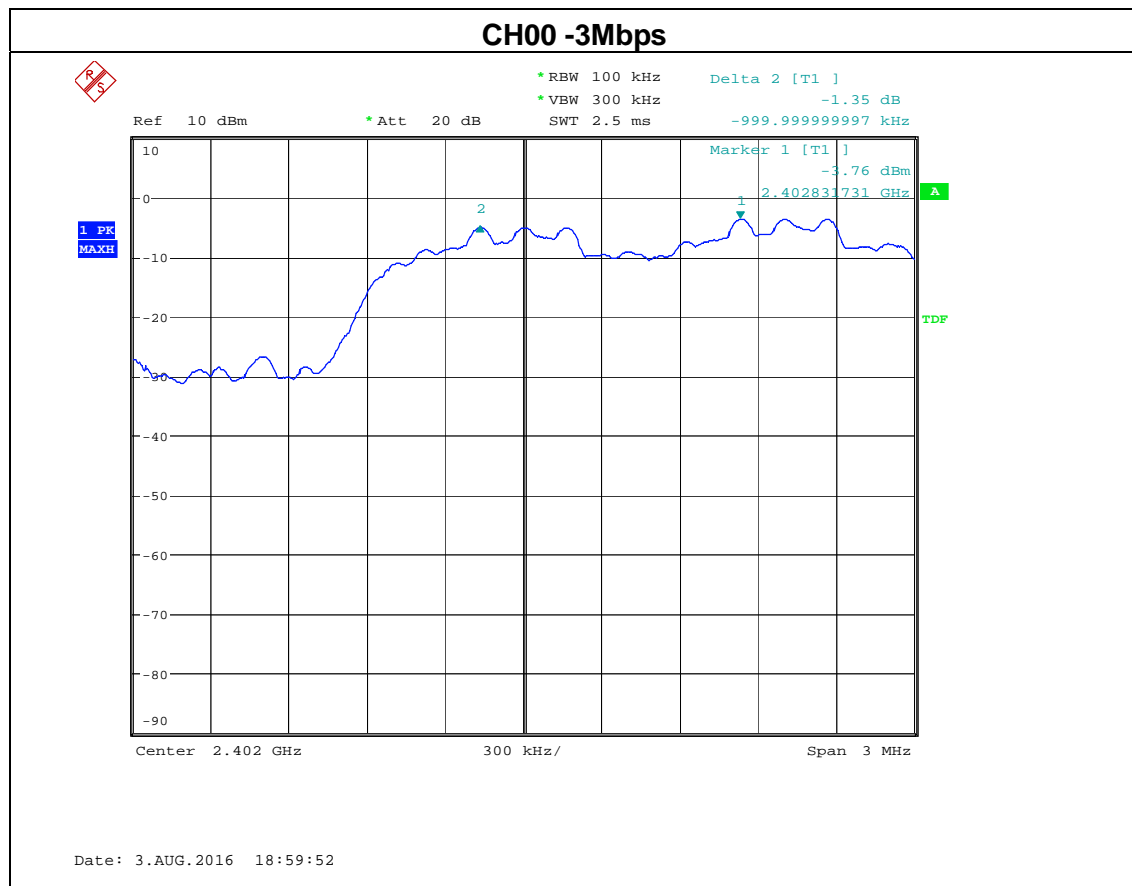


Date: 3.AUG.2016 18:56:43

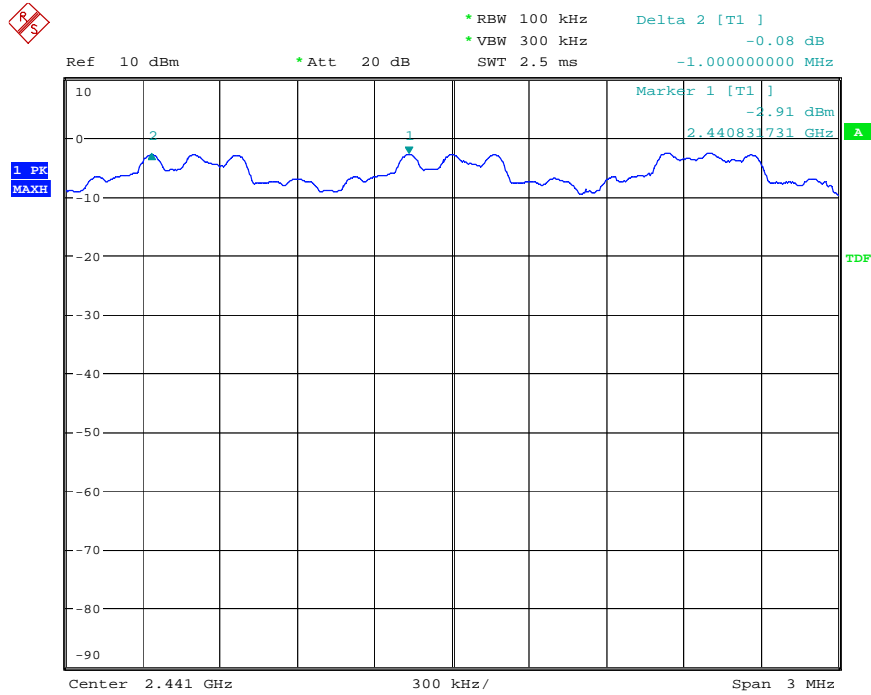
EUT :	GO ANYWHERE SPEAKERS	Model Name :	FSNA3
Temperature :	25 °C	Humidity	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V From Internal Battery
Test Mode :	CH00 / CH39 /CH78 (3Mbps Mode)		

Frequency	Ch. Separation (MHz)	Result
2402 MHz	0.999	Complies
2441 MHz	1.000	Complies
2480 MHz	1.000	Complies

Ch. Separation Limits: >2/3 of 20dB bandwidth

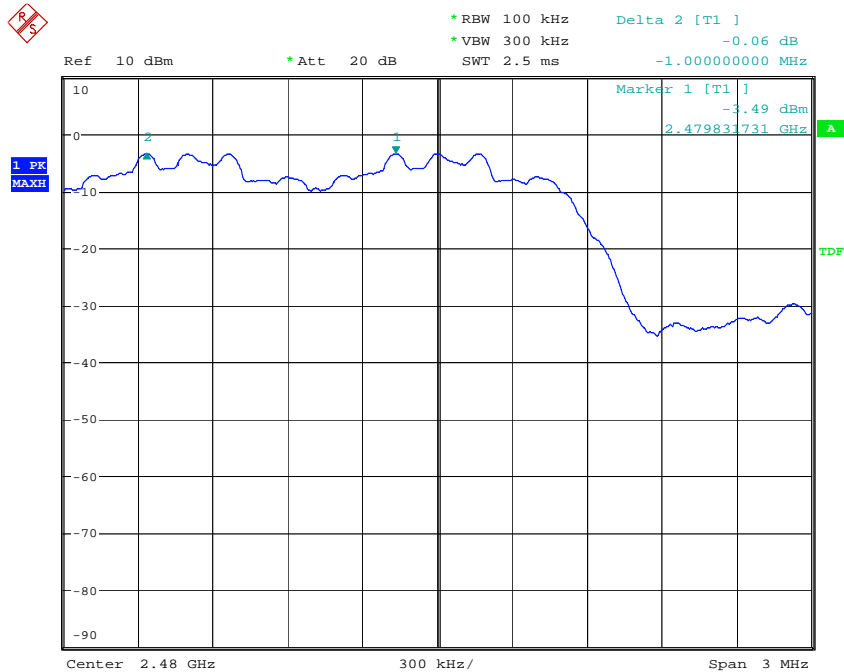


CH39 -3Mbps



Date: 3.AUG.2016 19:17:31

CH78 -3Mbps



Date: 3.AUG.2016 19:19:17

87. BANDWIDTH TEST

8.17.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)	Bandwidth	(20dB bandwidth)	2400-2483.5	PASS

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz
VB	100 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

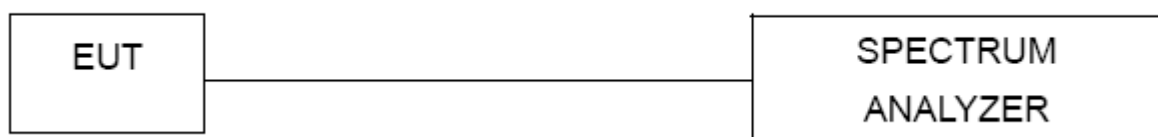
8.117.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 30KHz, VBW=100KHz, Sweep time = Auto.

8.127.1.2 DEVIATION FROM STANDARD

No deviation.

8.137.1.3 TEST SETUP



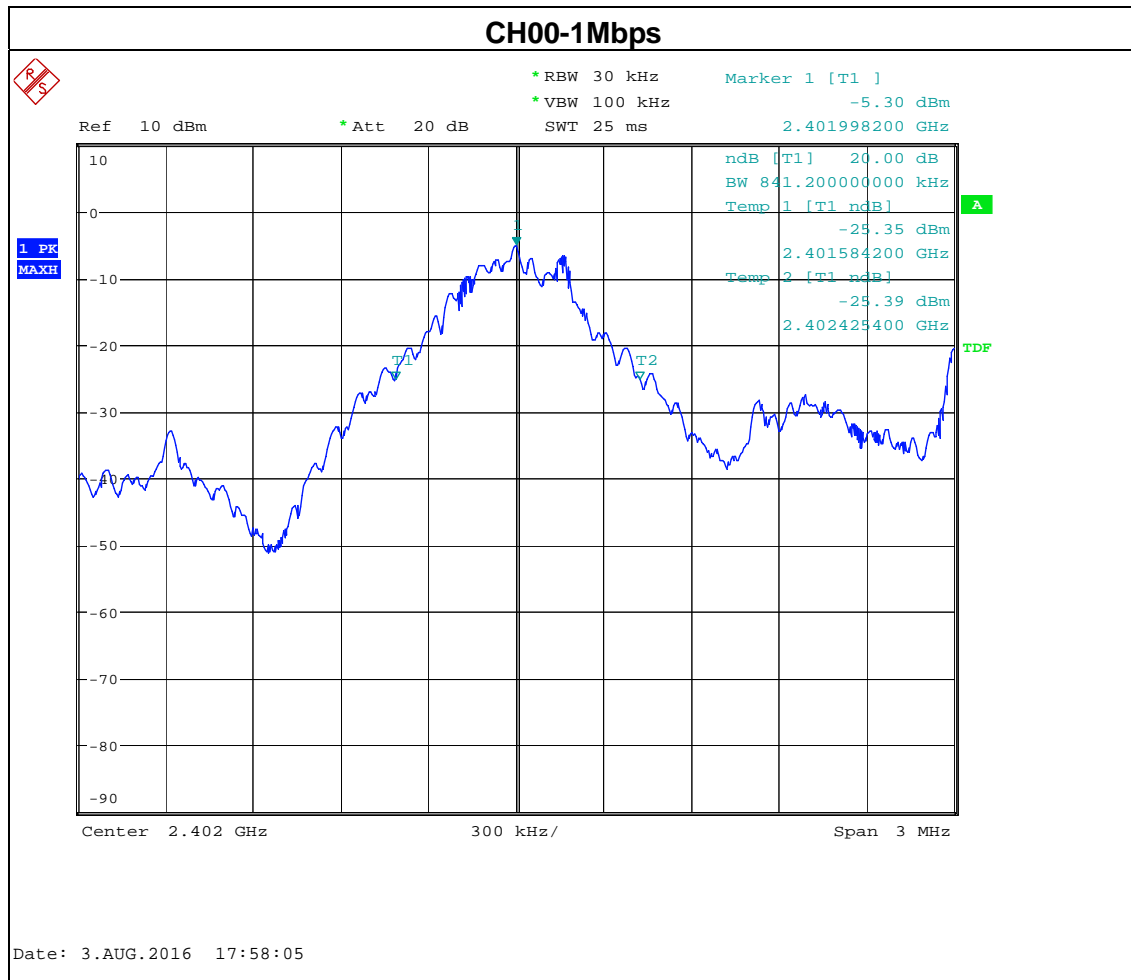
8.147.1.4 EUT OPERATION CONDITIONS

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.

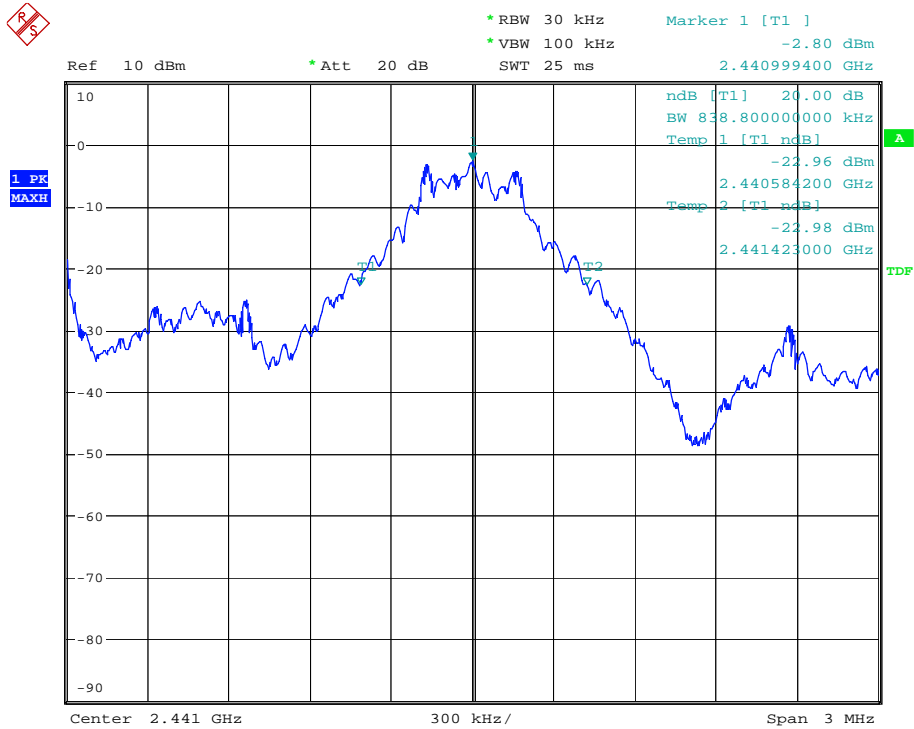
8.157.1.5 TEST RESULTS

EUT :	GO ANYWHERE SPEAKERS	Model Name :	FSNA3
Temperature :	25 °C	Humidity	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V From Internal Battery
Test Mode :	CH00 / CH39 /C78(1Mbps)		

Frequency	20dB Bandwidth (MHz)	Result
2402 MHz	0.841	PASS
2441 MHz	0.838	PASS
2480 MHz	0.894	PASS

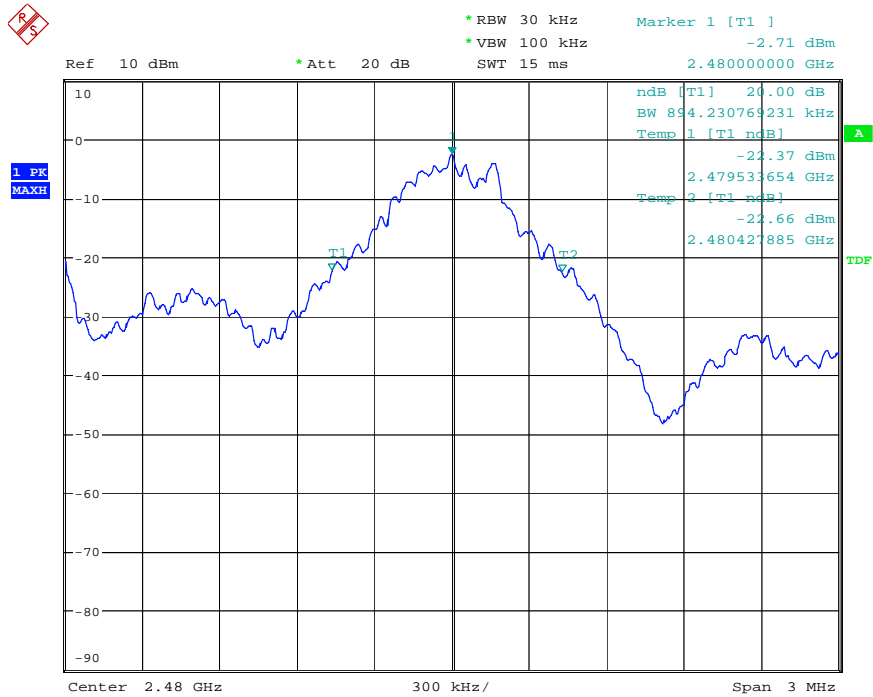


CH39 -1Mbps



Date: 3.AUG.2016 18:18:36

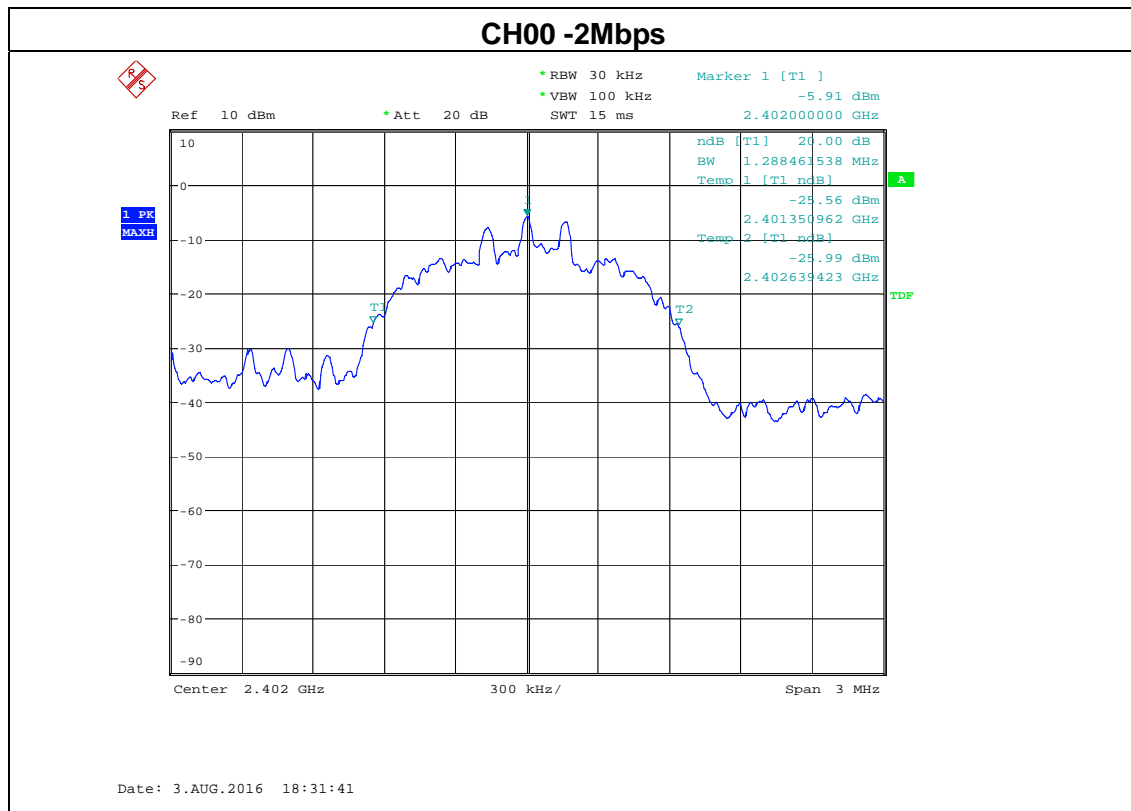
CH78 -1Mbps



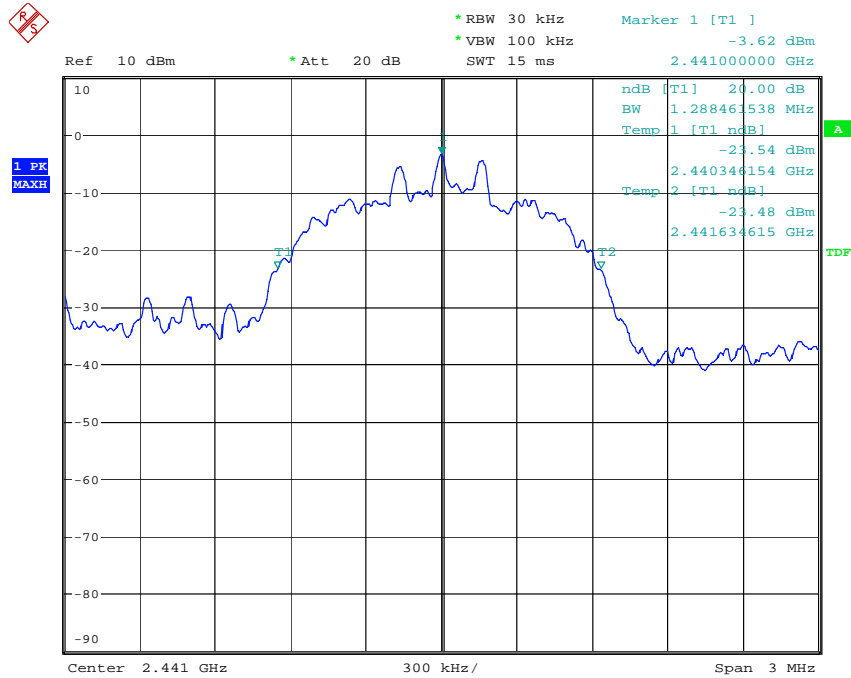
Date: 3.AUG.2016 18:20:33

EUT :	GO ANYWHERE SPEAKERS	Model Name :	FSNA3
Temperature :	25 °C	Humidity	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V From Internal Battery
Test Mode :	CH00 / CH39 /C78(2Mbps)		

Frequency	20dB Bandwidth (MHz)	Result
2402 MHz	1.288	PASS
2441 MHz	1.288	PASS
2480 MHz	1.288	PASS

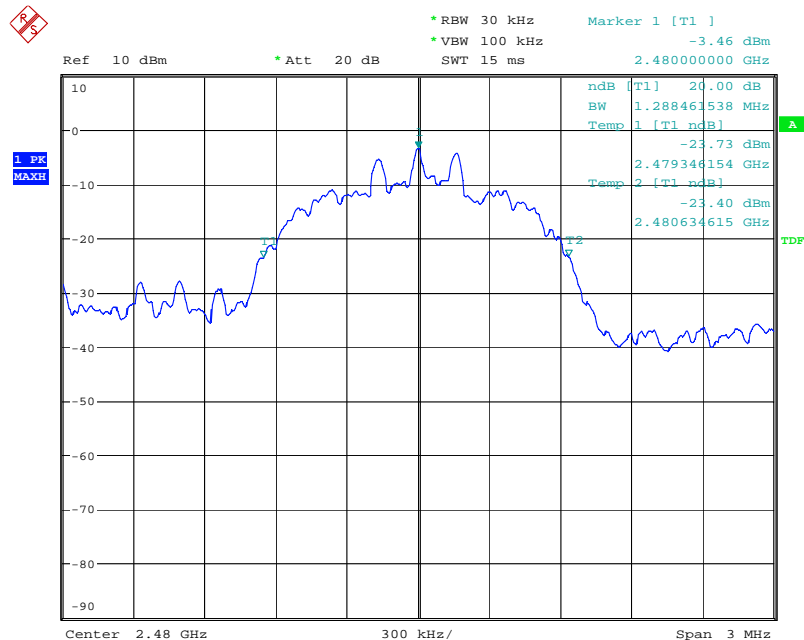


CH39 -2Mbps



Date: 3.AUG.2016 18:32:53

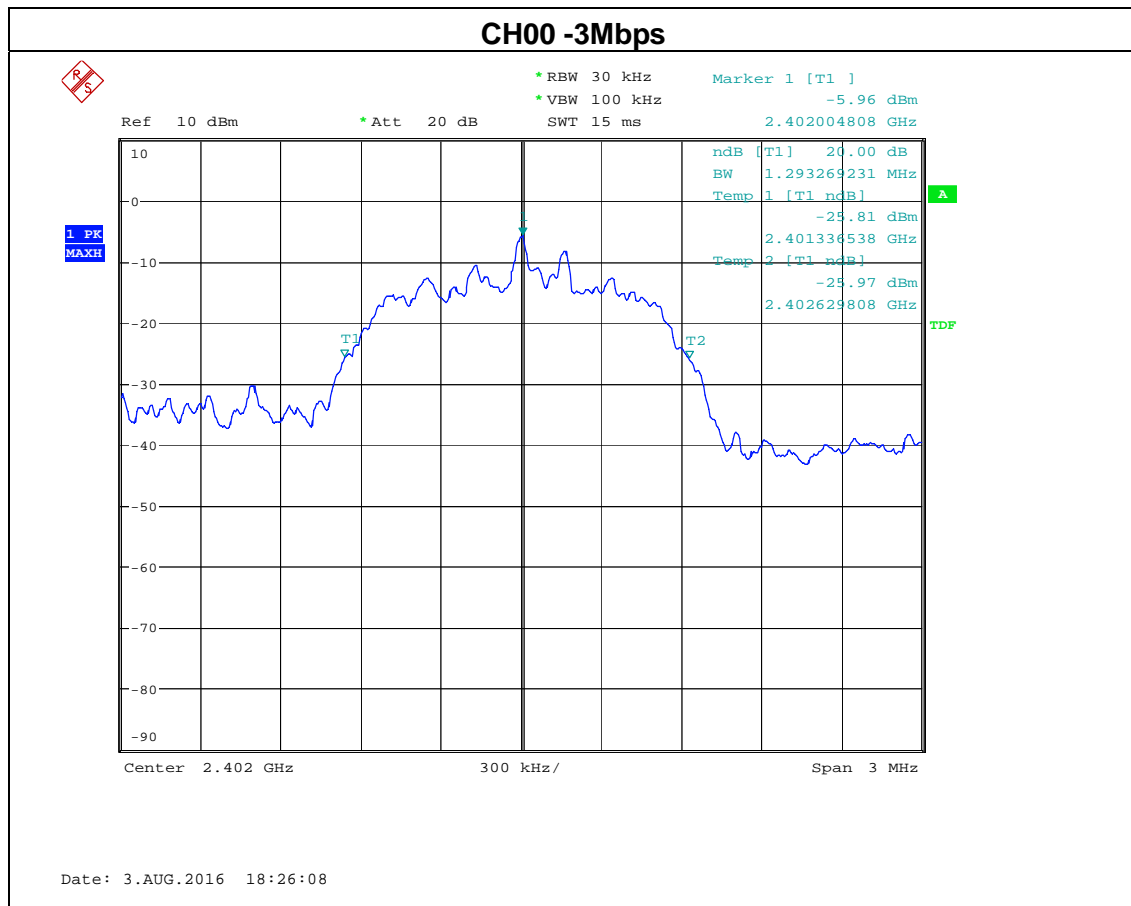
CH78 -2Mbps



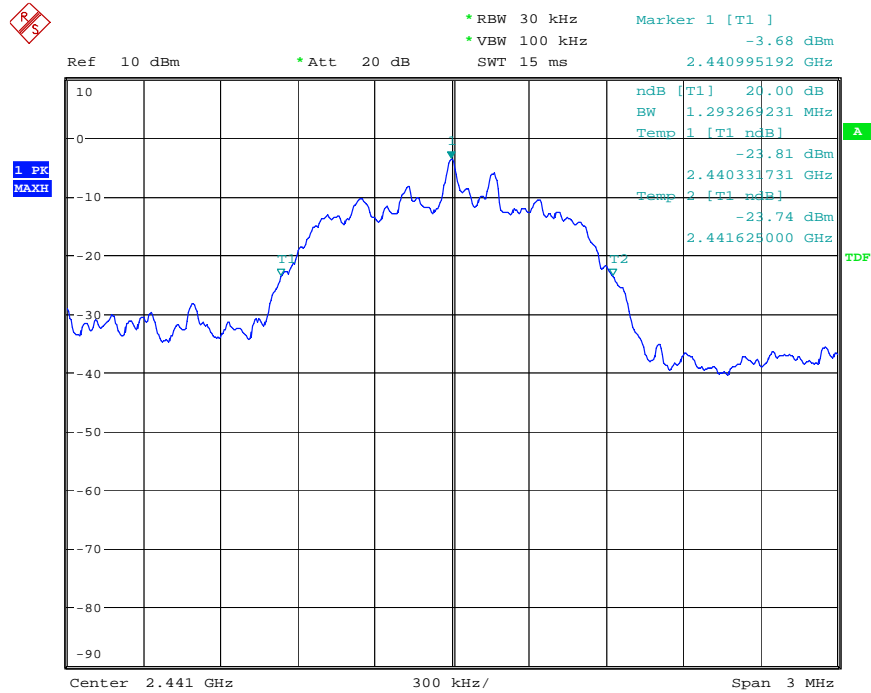
Date: 3.AUG.2016 18:33:42

EUT :	GO ANYWHERE SPEAKERS	Model Name :	FSNA3
Temperature :	25 °C	Humidity	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V From Internal Battery
Test Mode :	CH00 / CH39 /C78(3Mbps)		

Frequency	20dB Bandwidth (MHz)	Result
2402 MHz	1.29	PASS
2441 MHz	1.29	PASS
2480 MHz	1.28	PASS

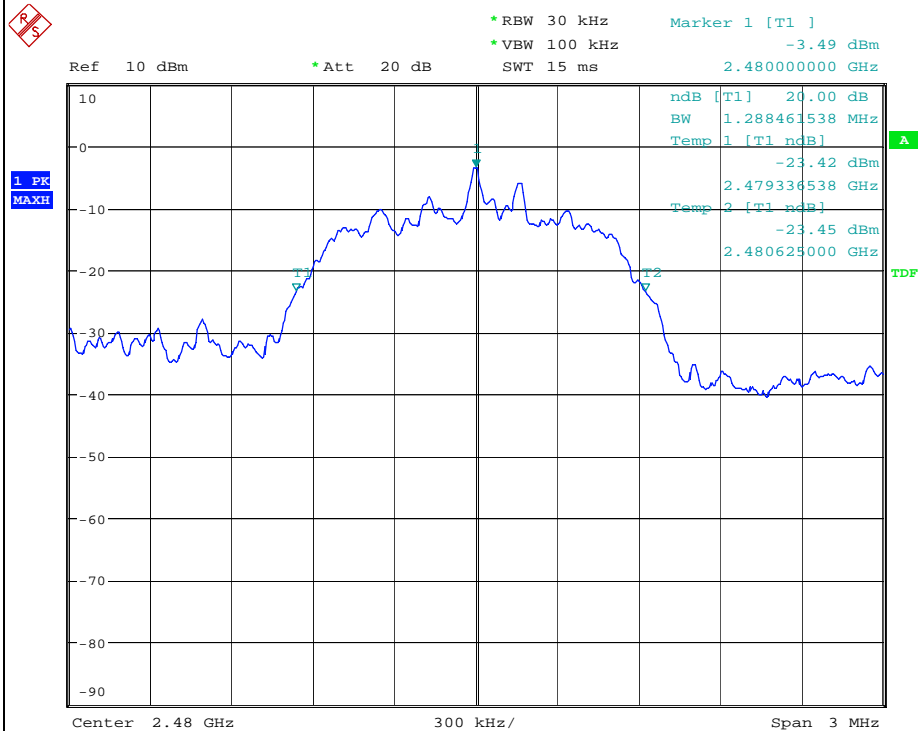


CH39 -3Mbps



Date: 3.AUG.2016 18:27:03

CH78 -3Mbps



Date: 3.AUG.2016 18:27:49

98. PEAK OUTPUT POWER TEST

9.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (b)(i)	Peak Output Power	0.125w or 1W	2400-2483.5	PASS

9.11TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting : RBW > the 20 dB bandwidth of the emission being measured
 - Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
 - VBW ≥ RBW
 - Sweep = auto
 - Detector function = peak
 - Trace = max hold

9.128.1 DEVIATION FROM STANDARD

No deviation.

9.138.2 TEST SETUP



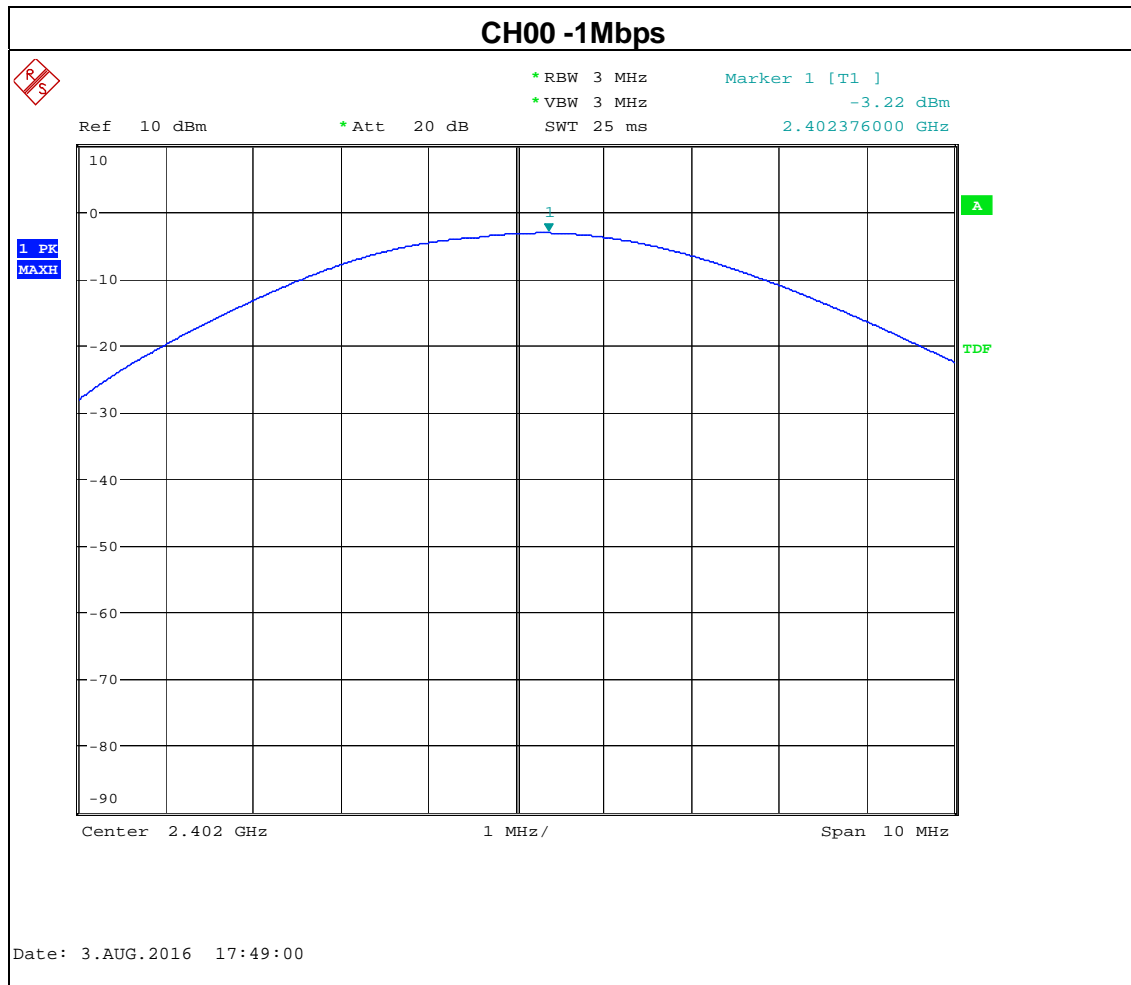
9.148.3 EUT OPERATION CONDITIONS

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.

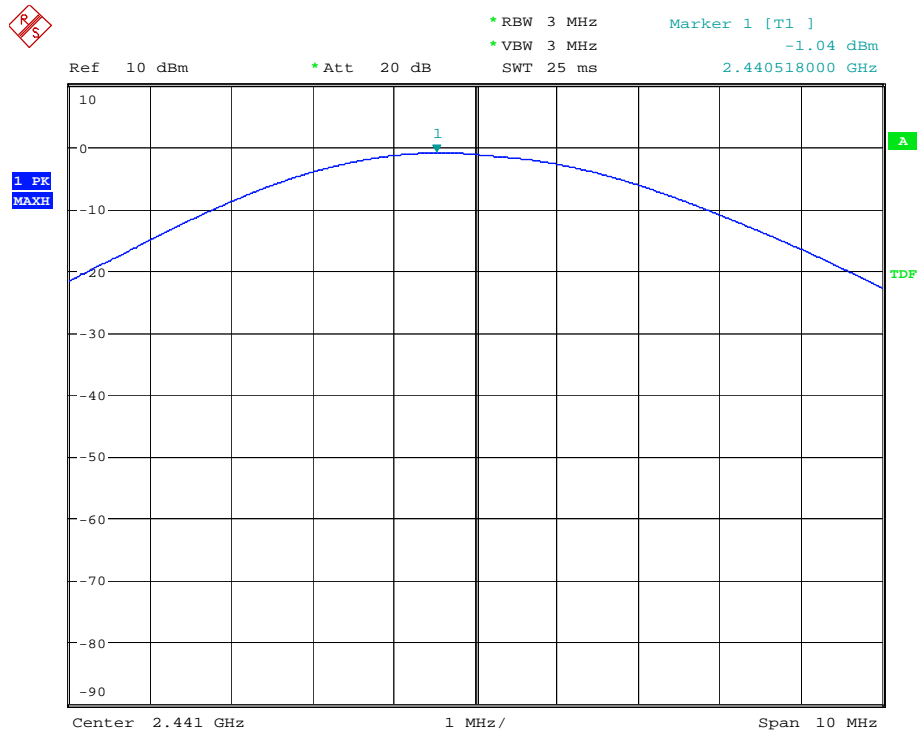
9.158.4 TEST RESULTS

EUT :	GO ANYWHERE SPEAKERS	Model Name :	FSNA3
Temperature :	25 °C	Humidity	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V From Internal Battery
Test Mode :	CH00/ CH39 /CH78 (1M/2M/3Mbps Mode)		

1Mbps			
Test Channel	Frequency (MHz)	Peak Output Power (dBm)	LIMIT (dBm)
CH00	2402	-3.22	30
CH39	2441	-1.04	30
CH78	2480	-0.92	30
2Mbps			
CH00	2402	-3.86	20.96
CH39	2441	-1.62	20.96
CH78	2480	-1.57	20.96
3Mbps			
CH00	2402	-3.91	20.96
CH39	2441	-1.63	20.96
CH78	2480	-1.49	20.96

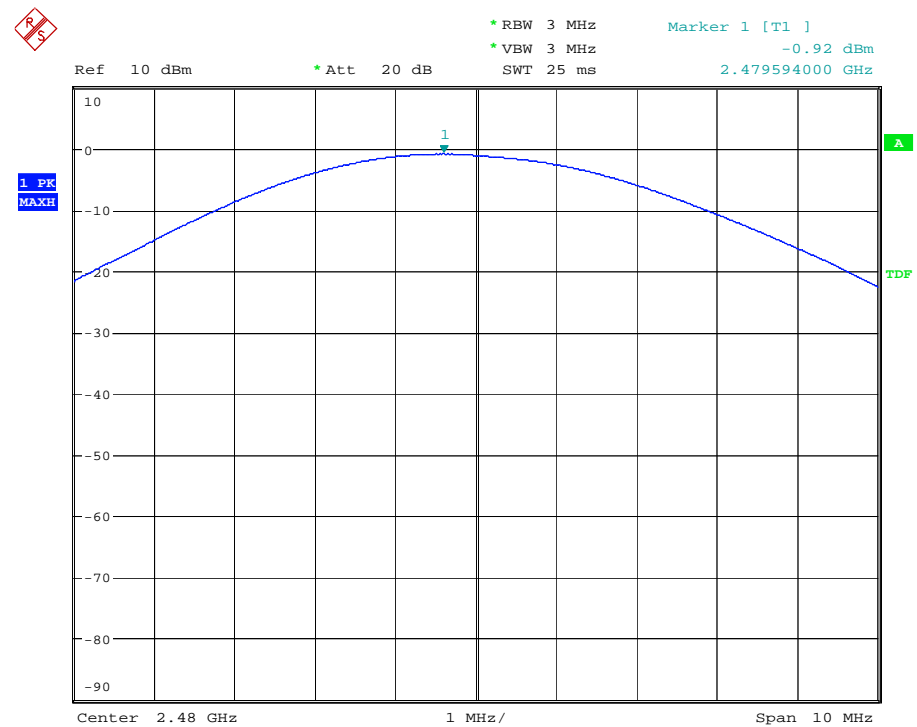


CH39 -1Mbps

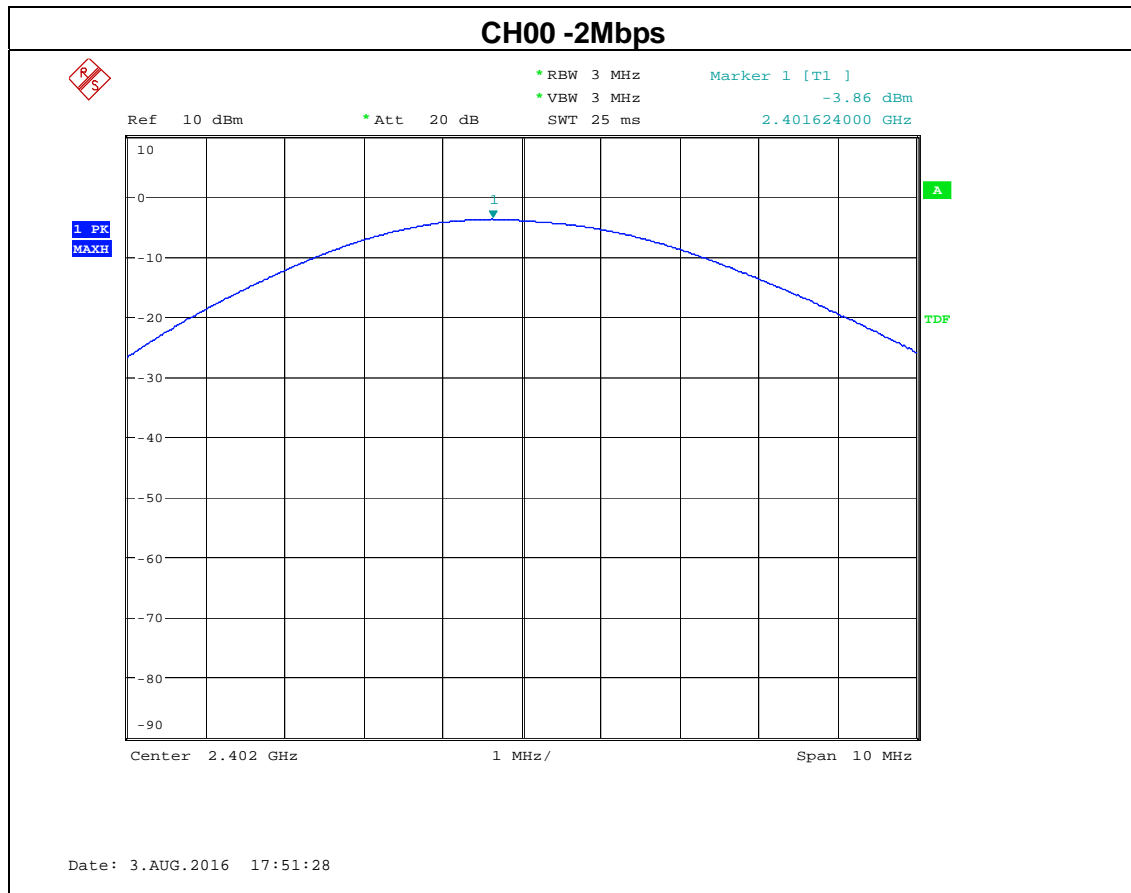


Date: 3.AUG.2016 17:49:40

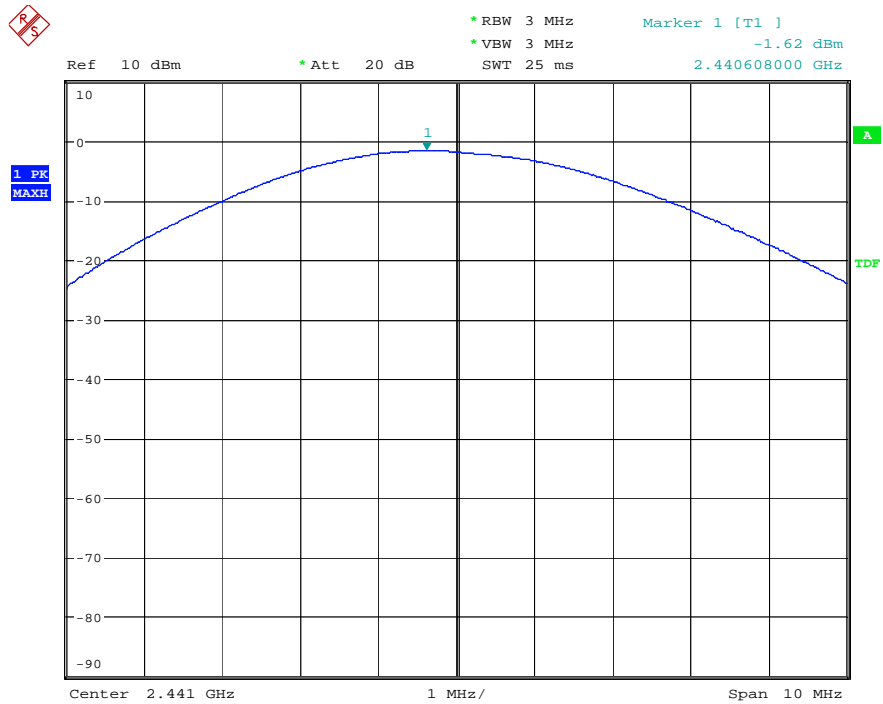
CH78 -1Mbps



Date: 3.AUG.2016 17:50:05

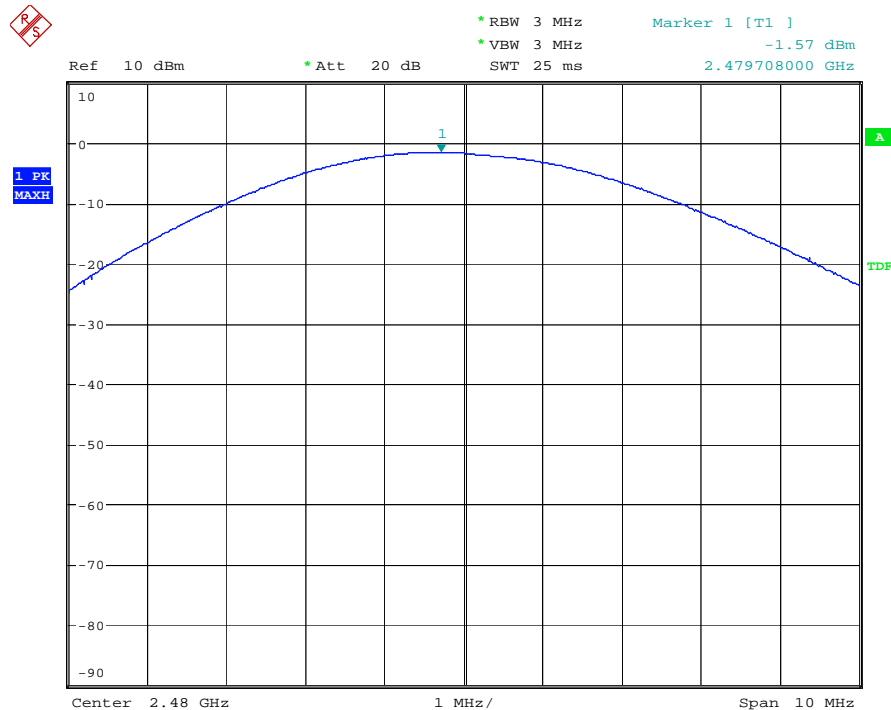


CH39 -2Mbps

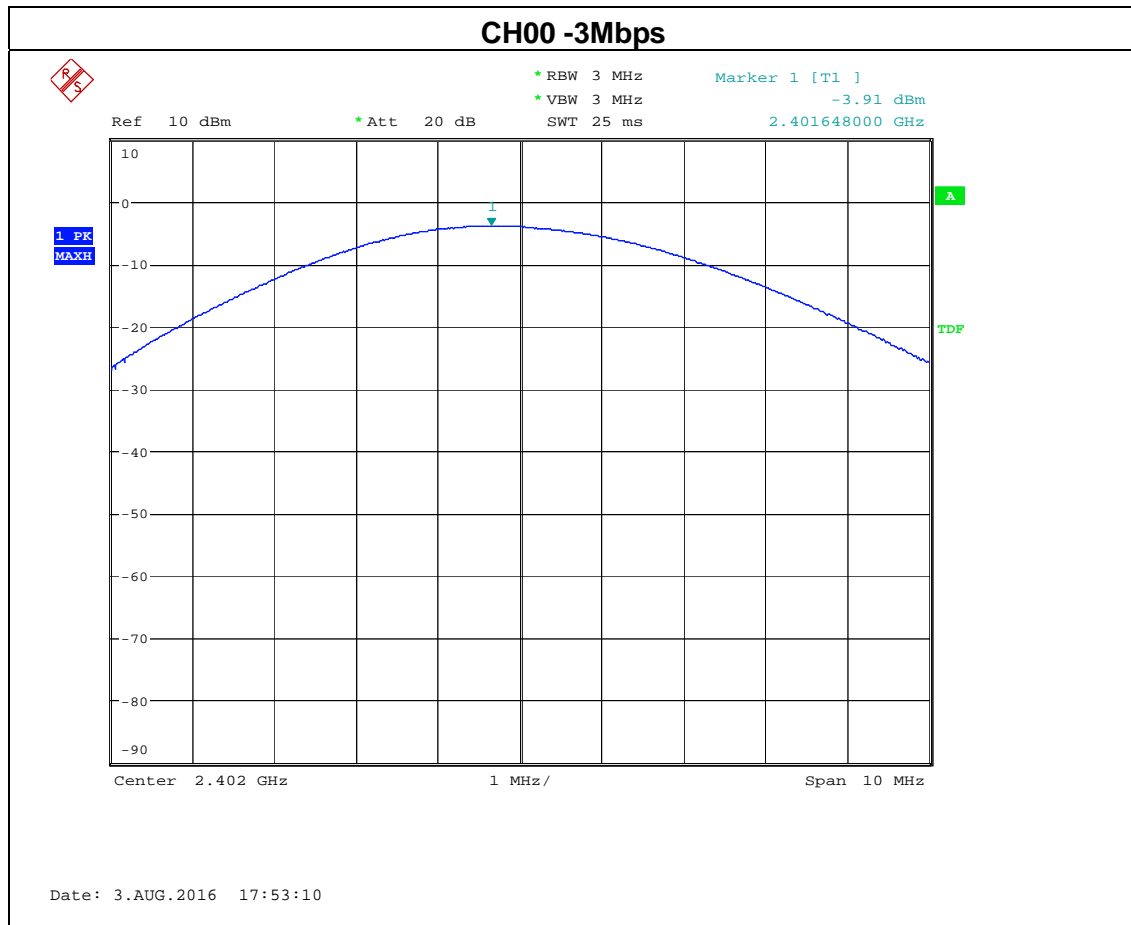


Date: 3.AUG.2016 17:52:06

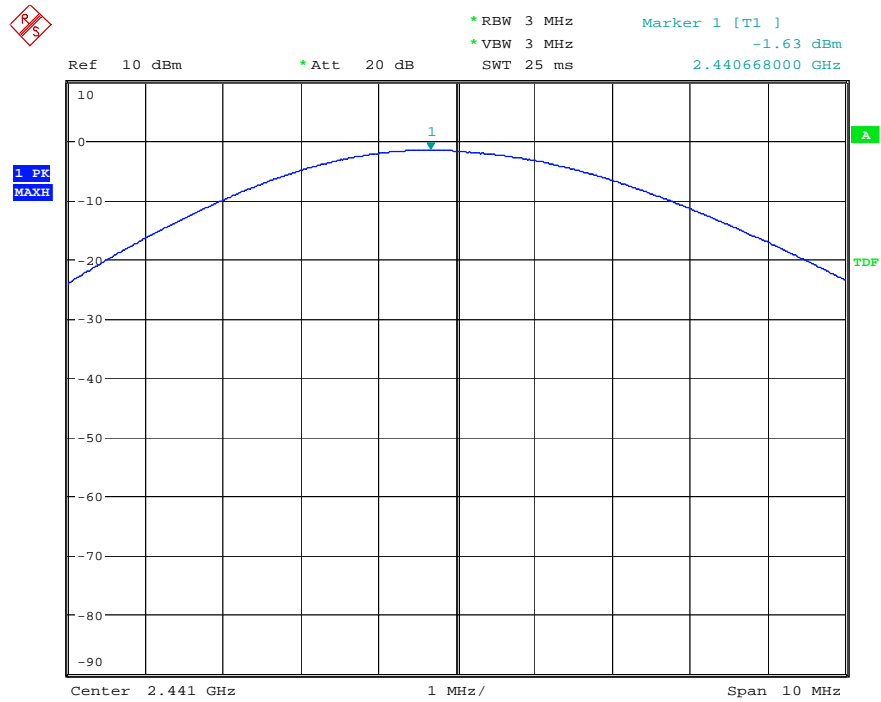
CH78 -2Mbps



Date: 3.AUG.2016 17:52:26

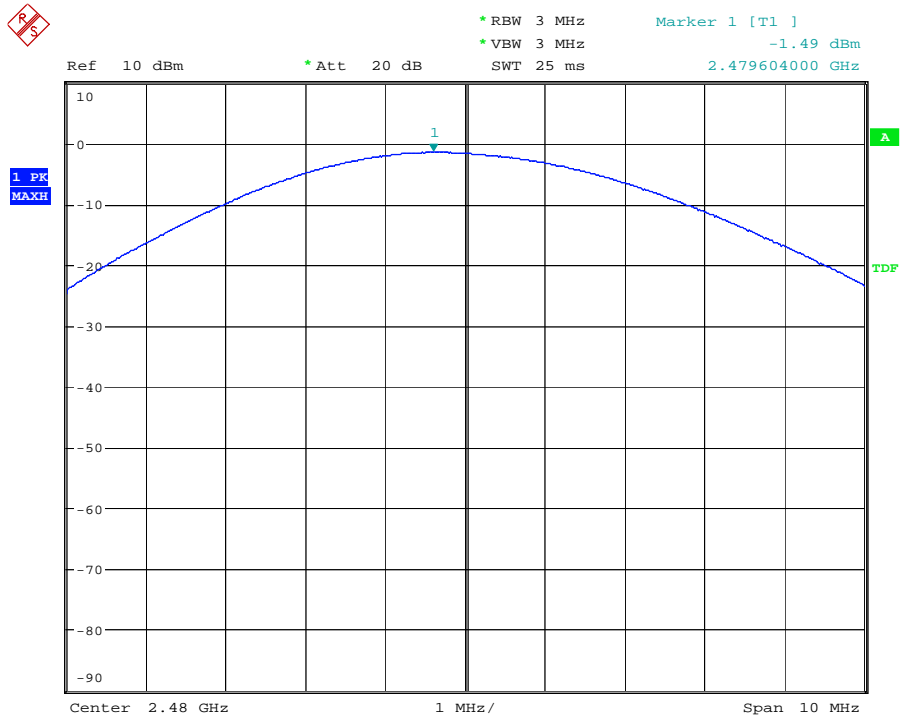


CH39 -3Mbps



Date: 3.AUG.2016 17:53:52

CH78 -3Mbps



Date: 3.AUG.2016 17:54:20

109. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

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)).

TEST PROCEDURE

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- 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.

10.19.1 DEVIATION FROM STANDARD

No deviation.

10.29.2 TEST SETUP



10.39.3 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.

10.49.4 TEST RESULTS

EUT :	GO ANYWHERE SPEAKERS	Model Name :	FSNA3
Temperature :	25 °C	Humidity	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V From Internal Battery
Test Mode :	CH00/ CH78 (1M/2M/3Mbps Mode)		

Frequency Band	Delta Peak to band emission (dBc)	> Limit (dBc)	Result
1Mbps Non-hopping			
Left-band	58.01	20	Pass
Right-band	62.28	20	Pass
2Mbps Non-hopping			
Left-band	56.32	20	Pass
Right-band	59.60	20	Pass
3Mbps Non-hopping			
Left-band	55.23	20	Pass
Right-band	60.09	20	Pass
1Mbps hopping			
Left-band	64.01	20	Pass
Right-band	64.73	20	Pass
2Mbps hopping			
Left-band	58.09	20	Pass
Right-band	65.26	20	Pass
3Mbps hopping			
Left-band	59.22	20	Pass
Right-band	63.43	20	Pass

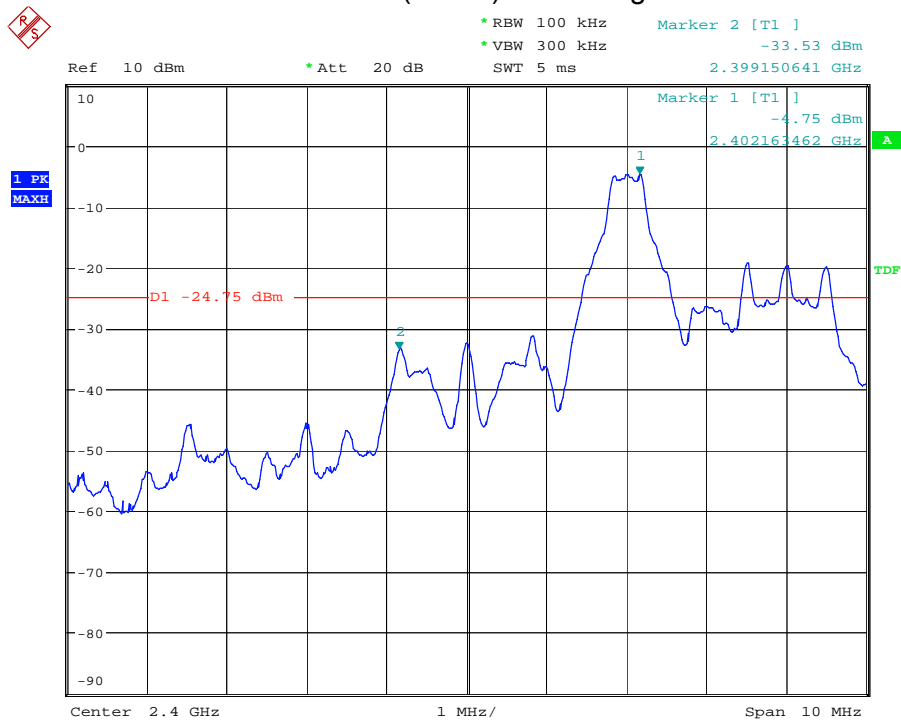
Radiated band edge:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
1Mbps(Non-FHSS)							
2390	48.46	-13.06	51.52	74.00	-12.48	peak	Vertical
2390	48.59	-13.06	51.65	74.00	-12.35	peak	Horizontal
2483.5	48.34	-12.78	51.12	74.00	-12.88	peak	Vertical
2483.5	49.65	-12.78	52.43	74.00	-11.57	peak	Horizontal
2Mbps(Non-FHSS)							
2390	48.35	-13.06	51.41	74.00	-12.59	peak	Vertical
2390	48.68	-13.06	51.74	74.00	-12.26	peak	Horizontal
2483.5	50.21	-12.78	52.99	74.00	-11.01	peak	Vertical
2483.5	50.52	-12.78	53.30	74.00	-10.70	peak	Horizontal
3Mbps(Non-FHSS)							
2390	50.78	-13.06	53.84	74.00	-10.16	peak	Vertical
2390	49.95	-13.06	53.01	74.00	-10.99	peak	Horizontal
2483.5	48.74	-12.78	51.52	74.00	-12.48	peak	Vertical
2483.5	49.62	-12.78	52.40	74.00	-11.60	peak	Horizontal

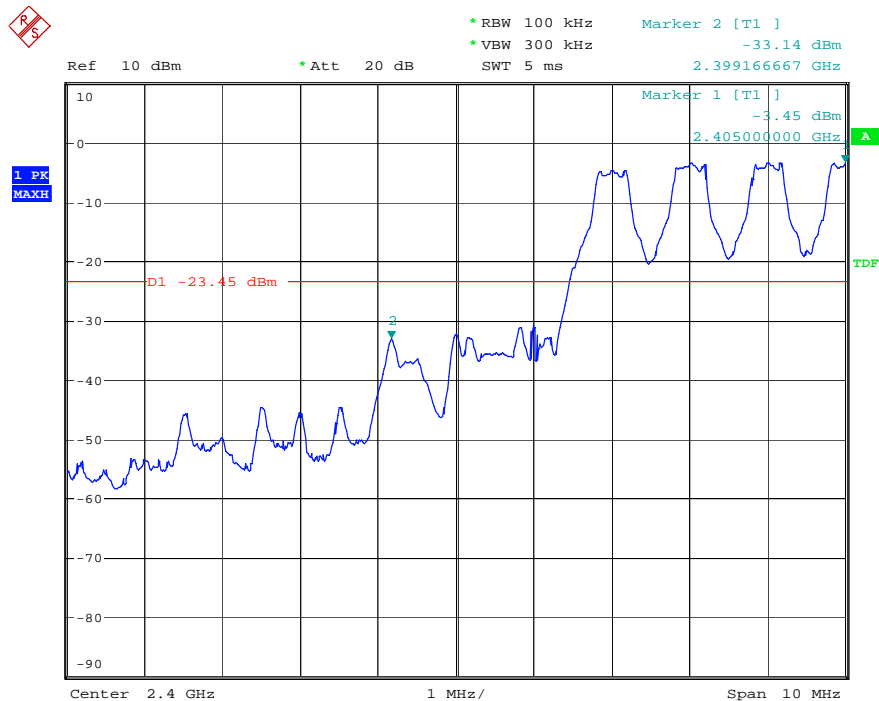
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
1Mbps(FHSS)							
2390	47.82	-13.06	51.52	74	-12.48	peak	Vertical
2390	47.93	-13.06	51.65	74	-12.35	peak	Horizontal
2483.5	47.68	-12.78	51.12	74	-12.88	peak	Vertical
2483.5	48.99	-12.78	52.43	74	-11.57	peak	Horizontal
2Mbps(FHSS)							
2390	47.69	-13.06	51.41	74	-12.59	peak	Vertical
2390	48.02	-13.06	51.74	74	-12.26	peak	Horizontal
2483.5	49.55	-12.78	52.99	74	-11.01	peak	Vertical
2483.5	49.86	-12.78	53.3	74	-10.7	peak	Horizontal
3Mbps(FHSS)							
2390	50.12	-13.06	53.84	74	-10.16	peak	Vertical
2390	49.29	-13.06	53.01	74	-10.99	peak	Horizontal
2483.5	48.08	-12.78	51.52	74	-12.48	peak	Vertical
2483.5	48.96	-12.78	52.4	74	-11.6	peak	Horizontal

Note: Refer to chapter 3.2 test method, When PK value is lower than the Average value limit, average didn't record.

BDR mode (GFSK): Band Edge-Left Side

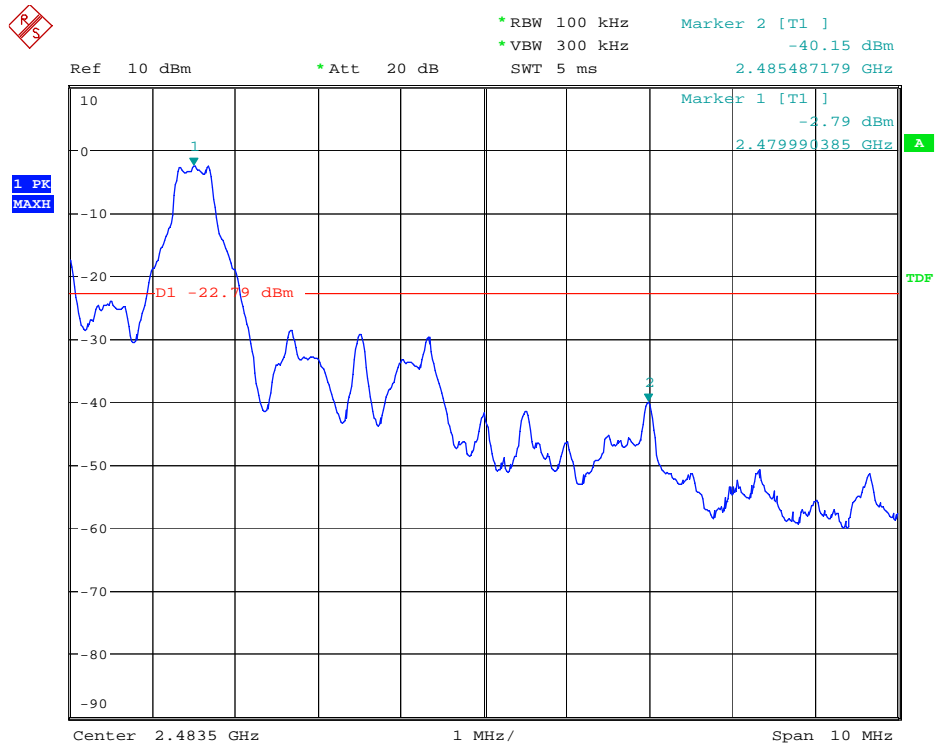


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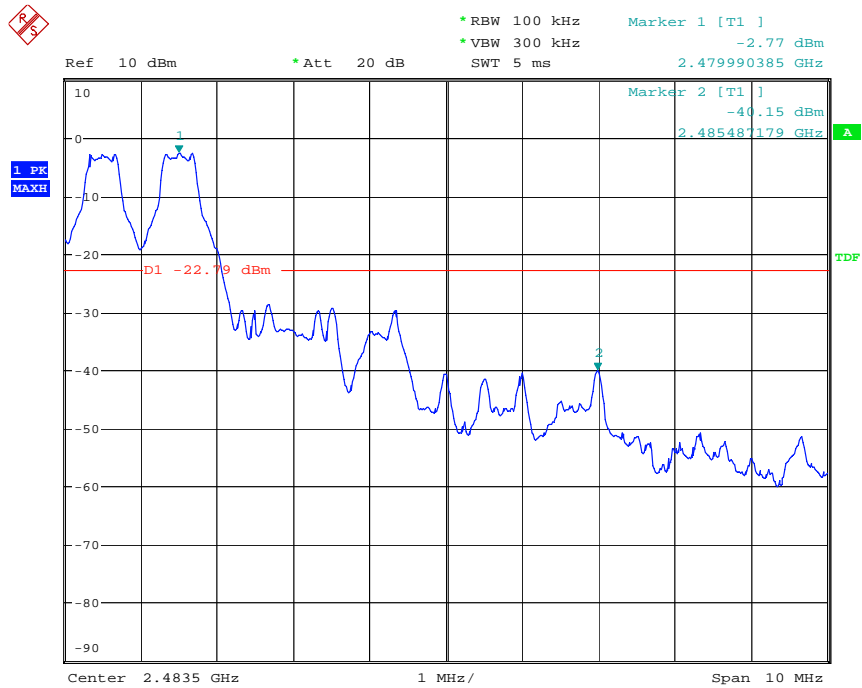


Date: 3.AUG.2016 19:36:46

BDR mode (GFSK): Band Edge-Right Side

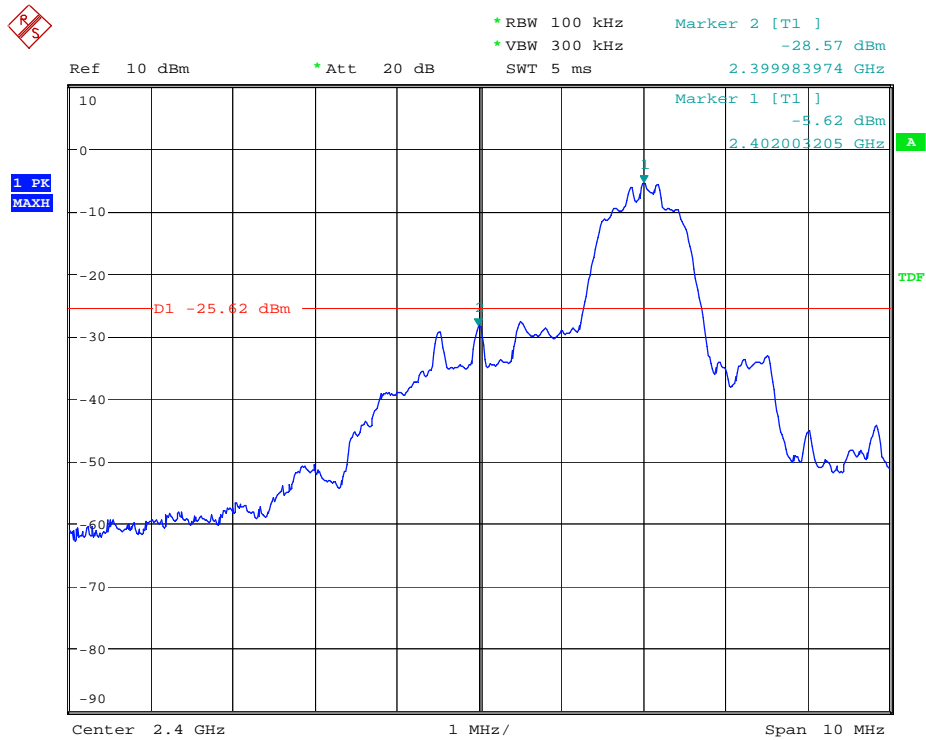


Date: 3.AUG.2016 19:38:16

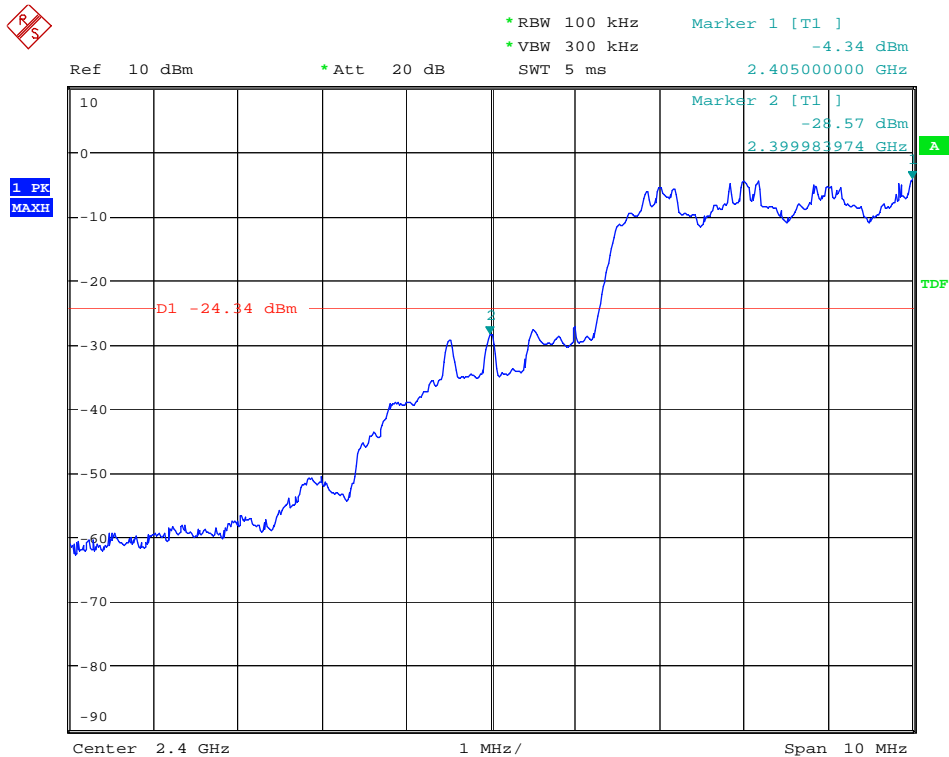


Date: 3.AUG.2016 19:38:57

EDR mode ($\pi/4$ -DQPSK): Band Edge-Left Side

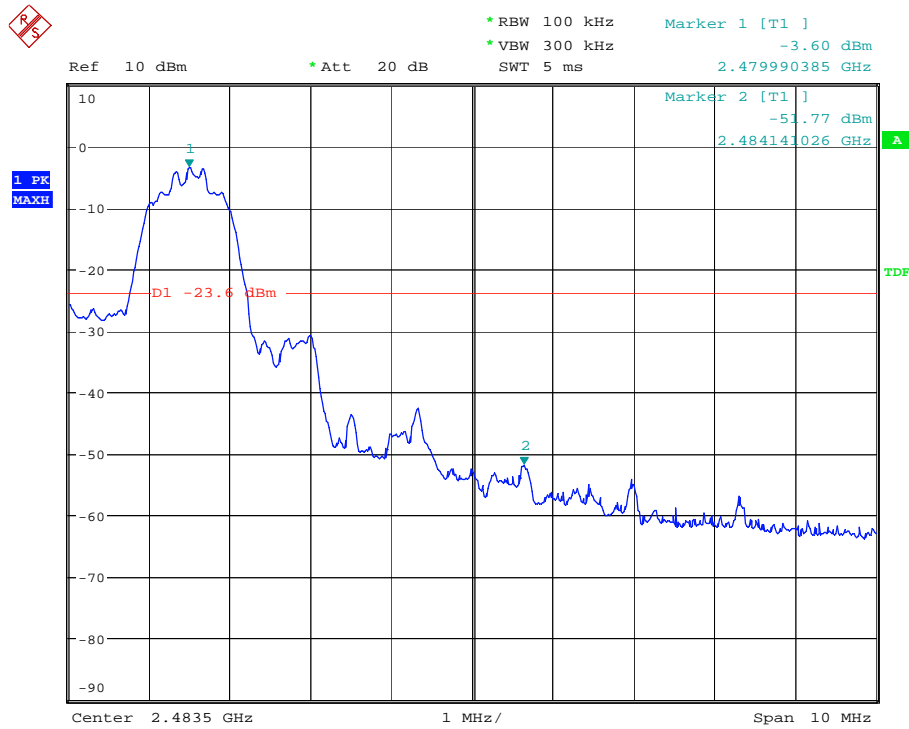


Date: 3.AUG.2016 19:42:52

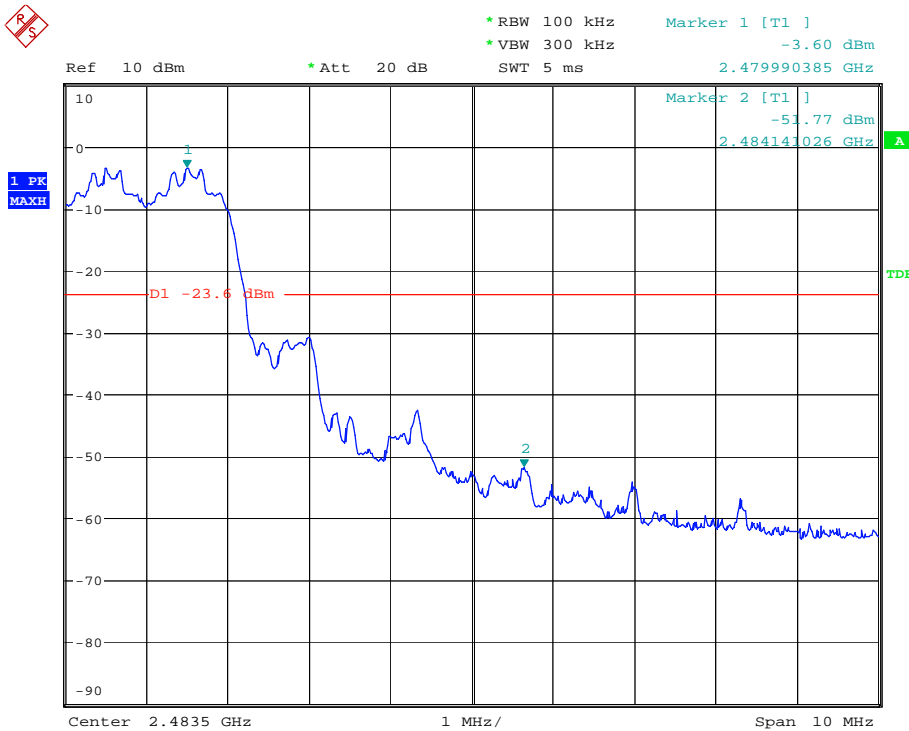


Date: 3.AUG.2016 19:44:09

EDR mode ($\pi/4$ -DQPSK): Band Edge- Right Side

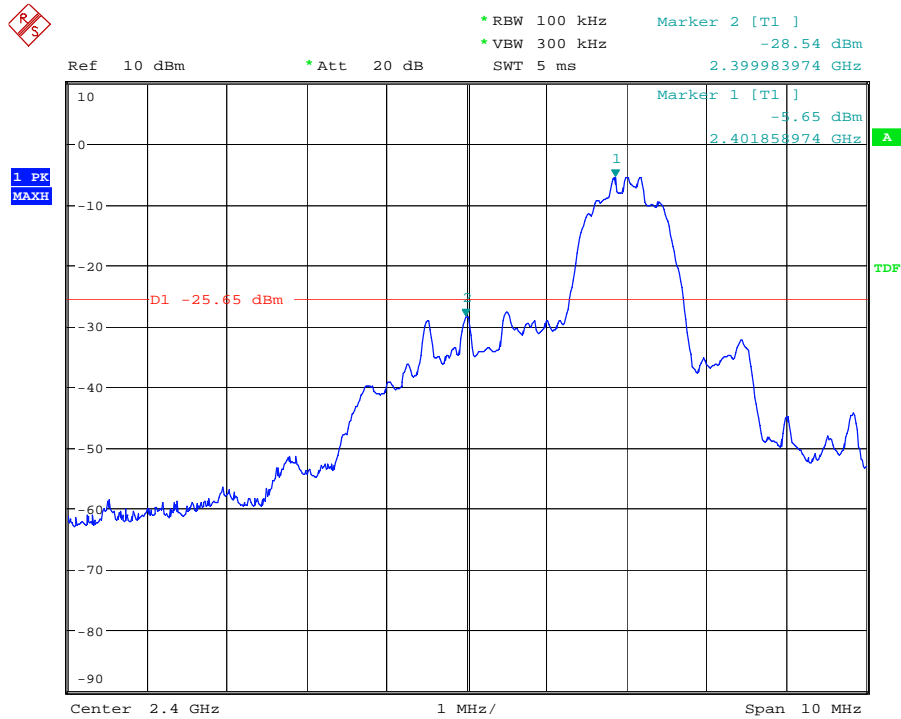


Date: 3.AUG.2016 19:45:27

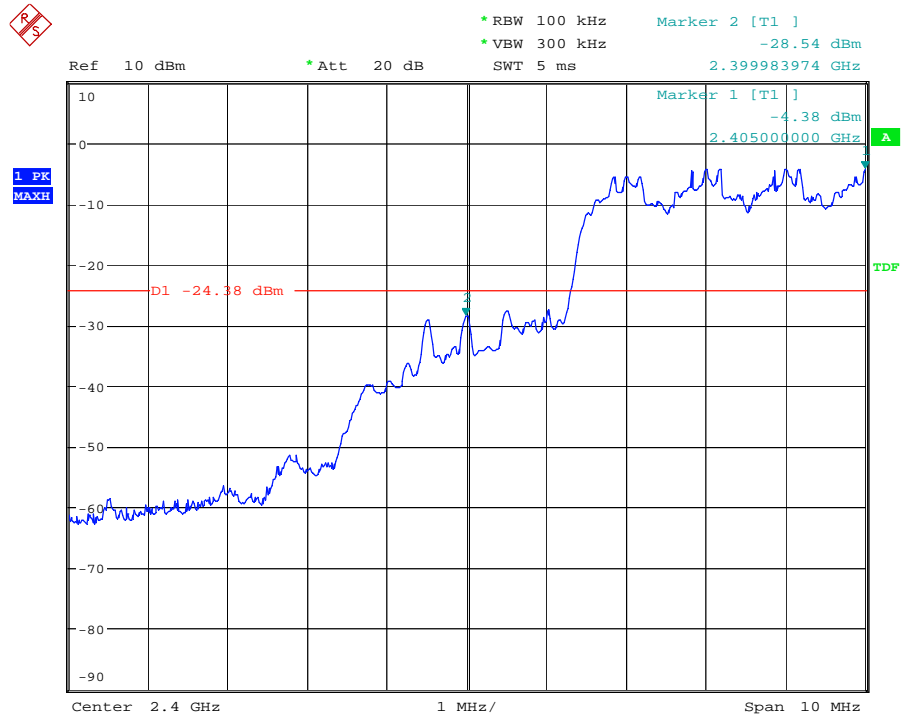


Date: 3.AUG.2016 19:46:03

EDR mode(8DPSK): Band Edge-Left Side



Date: 3.AUG.2016 19:48:00

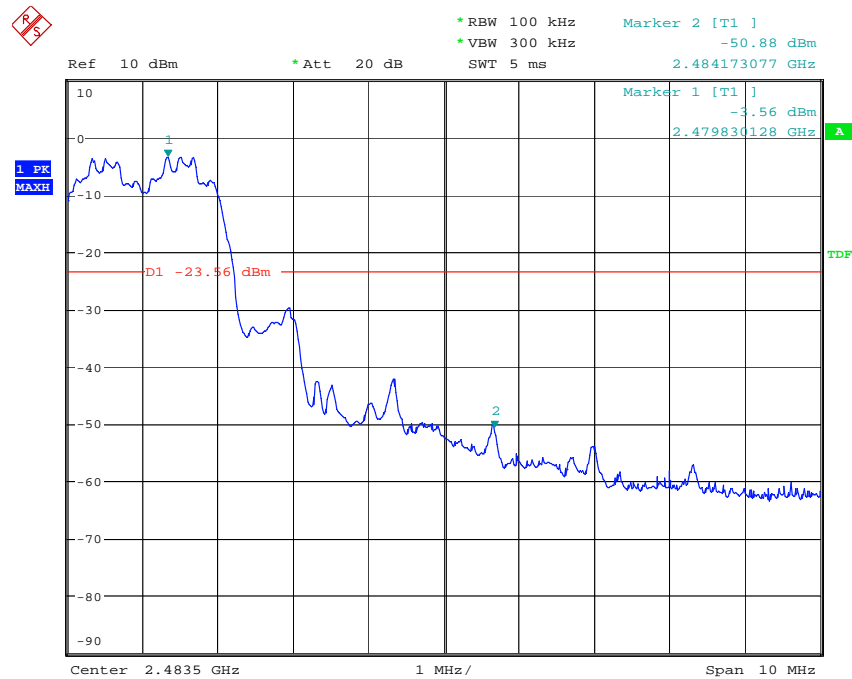


Date: 3.AUG.2016 19:49:00

EDR mode(8DPSK): Band Edge-Right Side



Date: 3.AUG.2016 19:50:55



Date: 3.AUG.2016 19:51:31

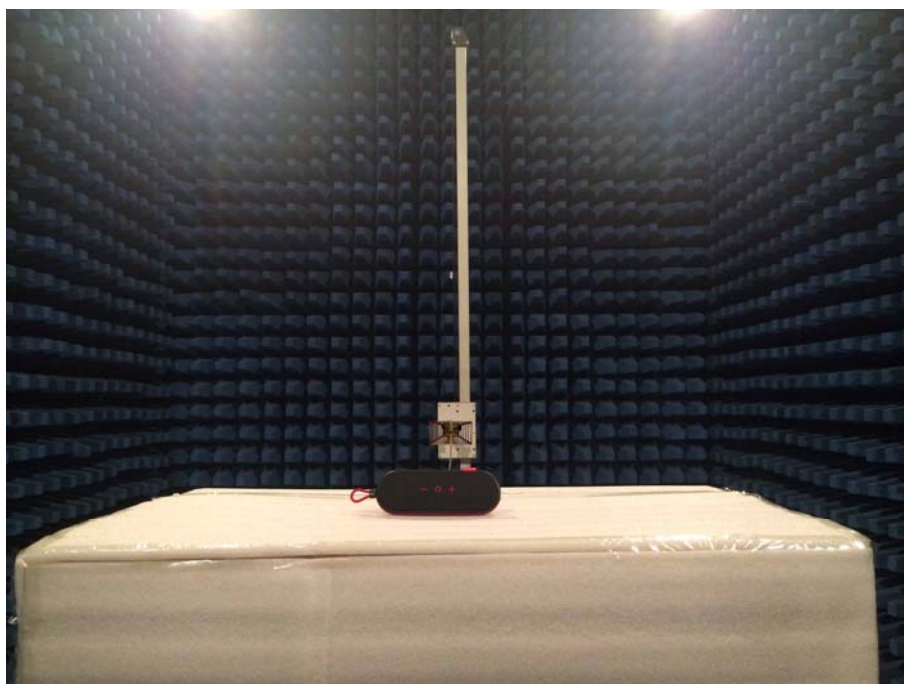
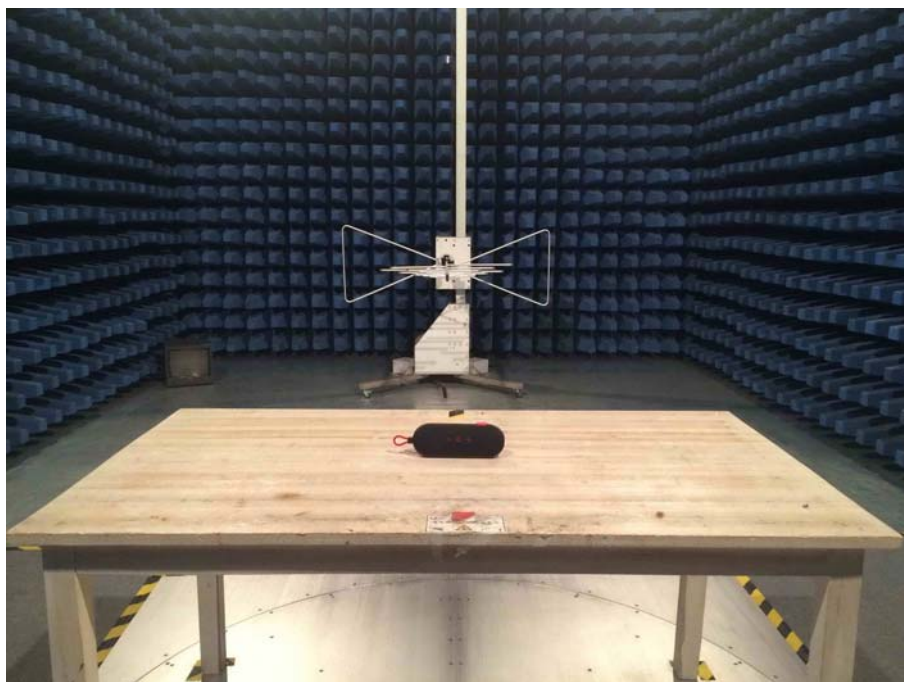
NOTE: Hopping enabled and disabled have evaluated, and the worst data was reported

1110. ANTENNA REQUIREMENT**11.110.1 STANDARD REQUIREMENT**

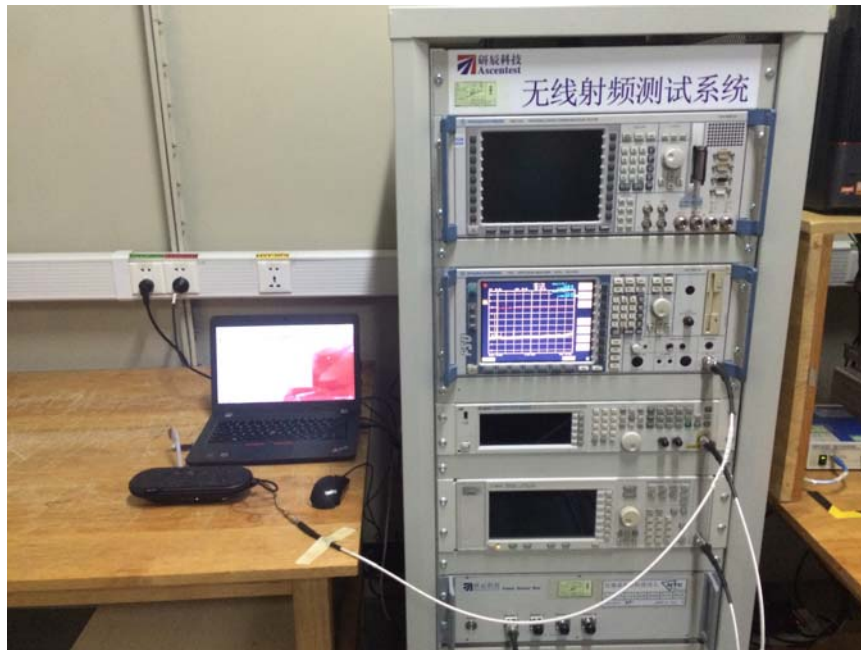
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

11.210.2 EUT ANTENNA

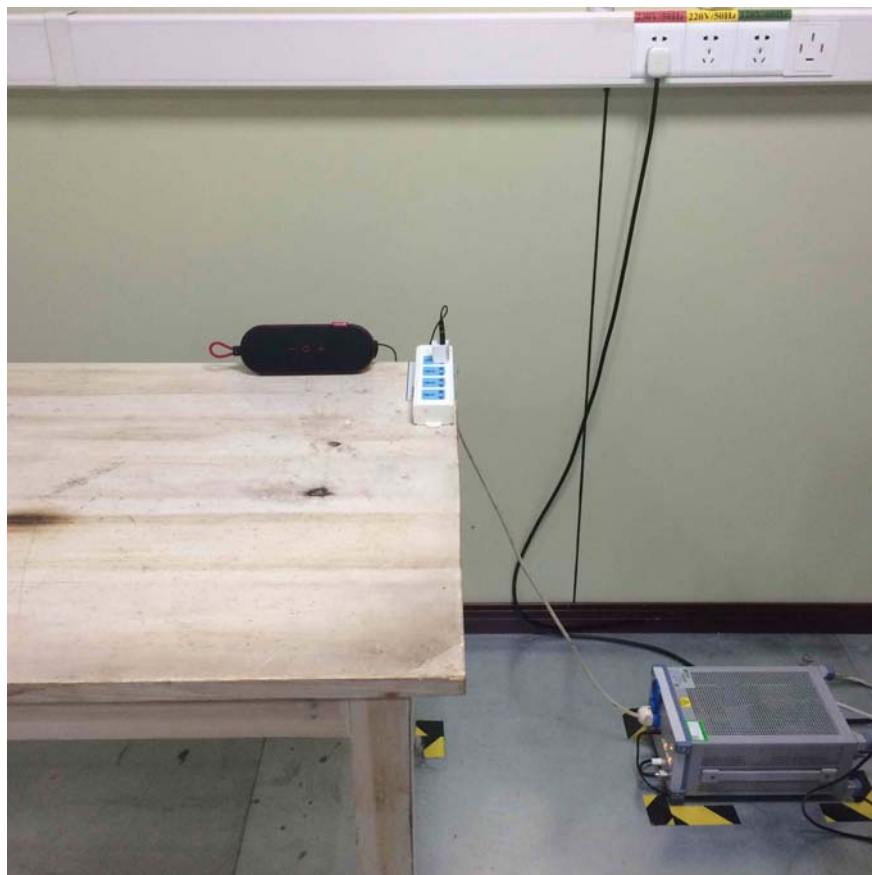
The EUT antenna is PCB Antenna(0dBi Gain). It comply with the standard requirement.

1211. EUT TEST PHOTO**Radiated Measurement Photos**

Conducted Measurement



AC CONDUCTED EMISSION PHOTOS



END OF REPORT