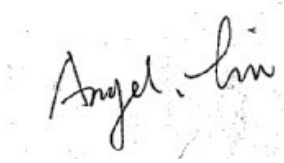
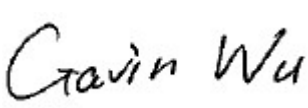
TEST REPORT

Report No.:	**EM201200150-5**	**Application No.:**	**ZJ00014918**
Applicant:	Harman International Industries, Incorporated		
Applicant Address:	8500 Balboa Blvd, Northridge, CA 91329, UNITED STATES		
Sample Description:	Speaker system		
Model:	Soundsticks Wireless		
FCC ID	APISOUNDSTWIGG		
Test Location:	EMC Laboratory of Guangzhou GRG Metrology and Test Co., Ltd.		
Test Specification:	FCC PART 15 Subpart C: 2010		
Test Date:	2012-04-20 ~ 2012-05-03		
Test Result:	*According to the kind and extend of tests performed the test item passed test specification.*		

Tested By:	**Reviewed By:**	**Approved By:**
Jane Cao / Test Engineer	Angel Liu / Reviewer	Gavin Wu / Director
 Date:2012-05-03	 Date:2012-05-03	 Date:2012-05-03

Other Aspects:

/

Abbreviations: *ok / P = passed; fail / F = failed; n.a. / N = not applicable*

The test result in this test report refers exclusively to the presented test sample. This report shall not be reproduced except in full, without the written approval of GRGT.

DIRECTIONS OF TEST

1. This station carries out test task according to the national regulation of verifications which can be traced to National Primary Standards and BIPM.

2. The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

3. If there is any objection concerning the test, the client should inform the laboratory within 15 days from the date of receiving the test report.

1 Test Summary

Test	Test Requirement	Standard Paragraph	Result
Antenna Requirement	FCC PART 15C :2010	Section 15.247 (c)	PASS
Occupied Bandwidth	FCC PART 15C :2010	Section 15.247 (a1)	PASS
Carrier Frequencies Separated	FCC PART 15C :2010	Section 15.247(a)(1)	PASS
Hopping Channel Number	FCC PART 15C :2010	Section 15.247(a)(1)(iii)	PASS
Dwell Time	FCC PART 15C :2010	Section 15.247(a)(1)(iii)	PASS
Maximum Peak Output Power	FCC PART 15C :2010	Section 15.247(b)(1)	PASS
Conducted Emission	FCC PART 15C :2010	Section 15.207	PASS
Conducted Spurious Emission (30MHz to 25GHz)	FCC PART 15C :2010	Section 15.209 &15.247(d)	PASS
Radiated Spurious Emission (30MHz to 25GHz)	FCC PART 15C :2010	Section 15.209 &15.247(d)	PASS
Band Edges Measurement	FCC PART 15C :2010	Section 15.247 (d) &15.205	PASS

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2 General Information

2.1 Client Information

Applicant:	Harman International Industries, Incorporated
Address of Applicant:	8500 Balboa Blvd, Northridge, CA 91329, UNITED STATES

2.2 Manufacturer Information

Manufacturer：	GuoGuang Electric Co.,LTD
Address of Applicant:	No.8 Jinghu Road,Xinhua Street,Huadu Reg,Guangzhou,510800 P.R.China

2.3 General Description of E.U.T.

Product Name:	Speaker system
Model:	Soundsticks Wireless
Trade Name:	harman/kardon
Number of Channels	79 Channels
Channel Separation	1 MHz
Type of Modulation	GFSK, 8DPSK, Pi/4 QPSK
Dwell time	Per channel is less than 0.4s.
Antenna Type	Integral
Adapter:	Product Name: POWER SUPPLY Model Number: SSA-60W-12 160150 Trade Mark: harman/kardon Input: 100-240V~ 50/60Hz 1.5A Output: 16VDC 1.5A

2.4 Description of Support Units

Name of Equipment	Manufacturer	Model	Serial Number
PC	Lenovo	X220i	42863FC

2.5 Standards Applicable for Testing

The standard used was FCC PART 15 Subpart C: 2010. ANSI C63.10: 2009.

2.6 Test Location

All tests were performed at:

EMC Laboratory of Guangzhou GRG Metrology and Test Co., Ltd.
No tests were sub-contracted.

2.7 Other Information Requested by the Customer

None.

2.8 Test Facility

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC Listed Lab No. 688188
China	CNAS No.L0446
China	DILAC No.DL175
Canada	8355A-1

3 Equipments Used during Test

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Conducted Emissions				
EMI Receiver	R&S	ESCI	100529	2012-06-16
L.I.S.N	SCHWARZBECK	NSLK 8127	8127450	2012-08-21
Cable	GRGT	GRGT1	GRGT1	2012-06-12
Dwell Time				
Receiver	R&S	ESU40	100106	2012-09-26
Restricted Bands				
Receiver	R&S	ESU40	100106	2012-09-26
Spurious Emissions				
Biconical Log-periodic Antenna	ETS.LINDGREN	3142C	00075971	2012-09-26
Pre-amplifier	HP	8447D OPT 010	2944A06252	2013-03-11
Pre-amplifier	Agilent	8449B	3008A01649	2013-03-11
Receiver	R&S	ESU40	100106	2012-06-09
Horn antenna	SCHWARZBECK	BBHA9120D	D752	2013-10-14
Cable	GRGT	GRGT2	GRGT2	2012-06-12
Number of Hopping Frequency				
Receiver	R&S	ESU40	100106	2012-09-26
Maximum Peak Output Power				
Receiver	R&S	ESU40	100106	2012-06-09
Band Edge				
Receiver	R&S	ESU40	100106	2012-09-26

4 Test Results

4.1 E.U.T. test conditions

Type of antenna: **Integral**

Operating Environment:

Temperature: **20.0 °C**

Humidity: **52 % RH**

Atmospheric Pressure: **1006 mbar**

Test frequencies: **According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and. if required. reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:**

Frequency range over which device operates	Number of frequencies	Location in the range of operation
1 MHz or less	1	Middle
1 to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top. 1 near middle and 1 near bottom

EUT channels and frequencies list:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	14	2416	28	2430
1	2403	15	2417	29	2431
2	2404	16	2418	30	2432
3	2405	17	2419	31	2433
4	2406	18	2420	32	2434
5	2407	19	2421	33	2435
6	2408	20	2422	34	2436
7	2409	21	2423	35	2437
8	2410	22	2424	36	2438
9	2411	23	2425	37	2439
10	2412	24	2426	38	2440
11	2413	25	2427	39	2441
12	2414	26	2428	40	2442
13	2415	27	2429	41	2443

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	2444	55	2457	68	2470
43	2445	56	2458	69	2471
44	2446	57	2459	70	2472
45	2447	58	2460	71	2473
46	2448	59	2461	72	2474
47	2449	60	2462	73	2475
48	2450	61	2463	74	2476
49	2451	62	2464	75	2477
50	2452	63	2465	76	2478
51	2453	64	2466	77	2479
52	2454	65	2467	78	2480
53	2455	66	2468		
54	2456	67	2469		

Test frequency is the lowest channel: 0 channel(2402MHz), middle channel: 39 channel(2441MHz) and highest channel: 78 channel(2480MHz)

4.2 Antenna Requirement

4.2.1 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.
15.247(c) (1)(i) requirement:
(i) Systems operating in the 2400-2483.5 MHz band that are used exclusively for fixed. point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

4.2.2 EUT Antenna

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

Test result: The unit does meet the FCC requirements.

4.3 Occupied Bandwidth

Test Requirement:	**FCC Part 15 C**
Test Method:	**Based on FCC Part15 C Section 15.247 & DA 00-705**
Test Date:	**2012-05-03**
Test Status:	**Test in fixing operating frequency at lowest, Middle, highest channel.**
Power supply:	**Connected with convert board powered by PC USB ports, and to fix frequency transmitting.**

Test Procedure:

1. **Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;**
2. **Set the spectrum analyzer: Span = approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel;**
3. **Set the spectrum analyzer: RBW >= 1% of the 20dB bandwidth (set 10kHz). VBW >= RBW. Sweep = auto; Detector Function = Peak. Trace = Max Hold.**
4. **Mark the peak frequency and -20dB points or 99% bandwidth.**
5. **bandwidth value is OBW value.**

Remark:

Pre-test the 3 modulation to find GFSK and 8DPSK is worse case, so only record GFSK and 8DPSK test data.

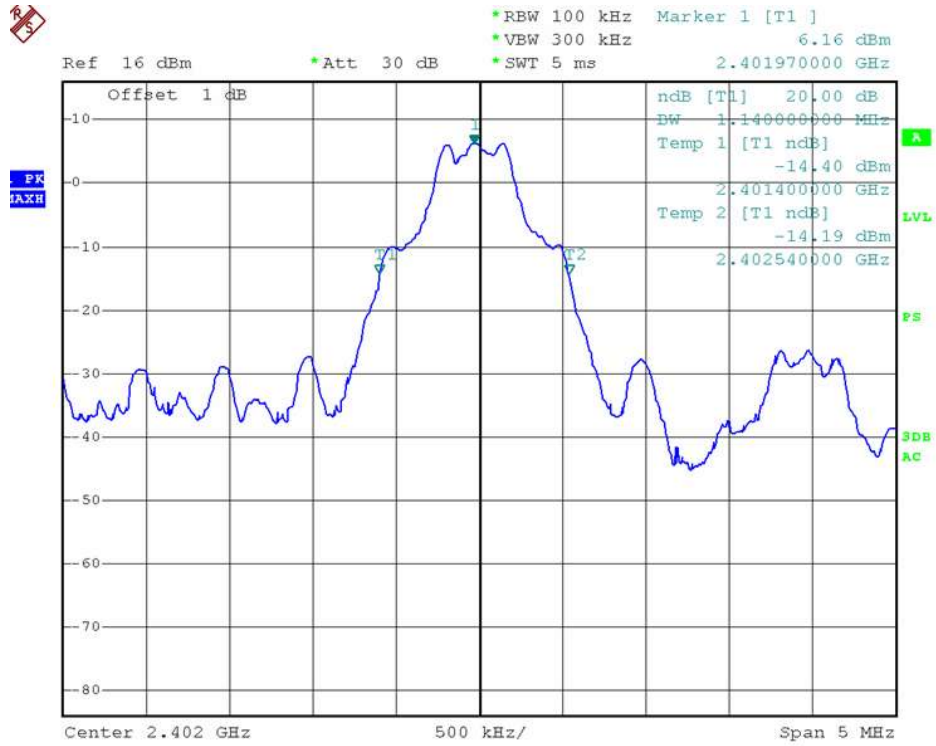
Test result:

For GFSK

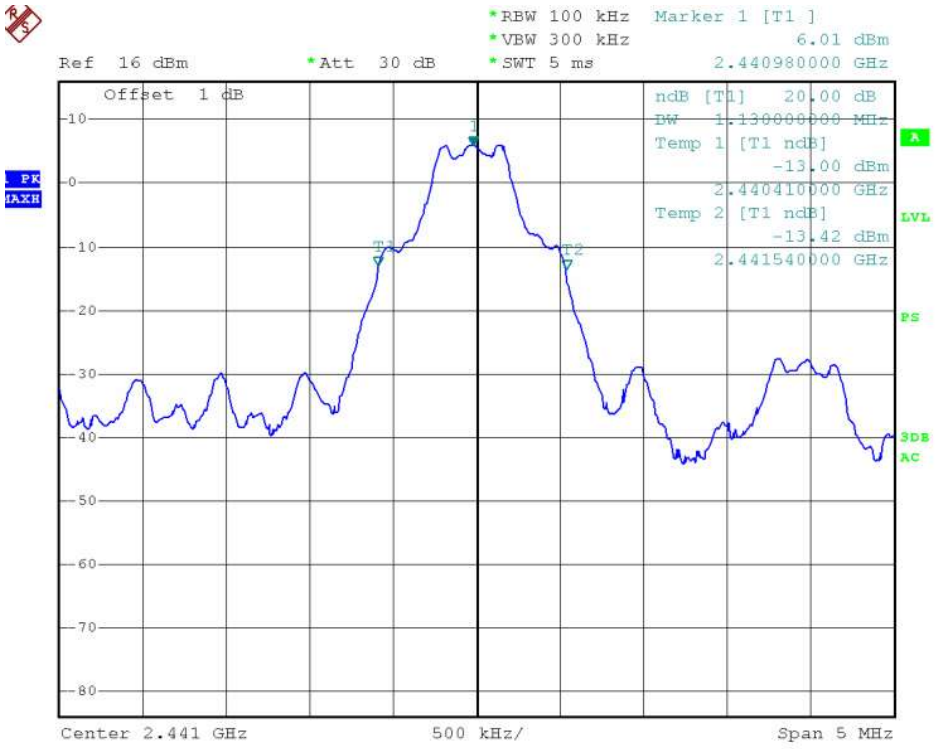
Frequency (GHz)	Test Channel	bandwidth
2.402	Lowest	1.140MHz
2.441	Middle	1.130MHz
2.480	Highest	1.130MHz

Result plot as follows:

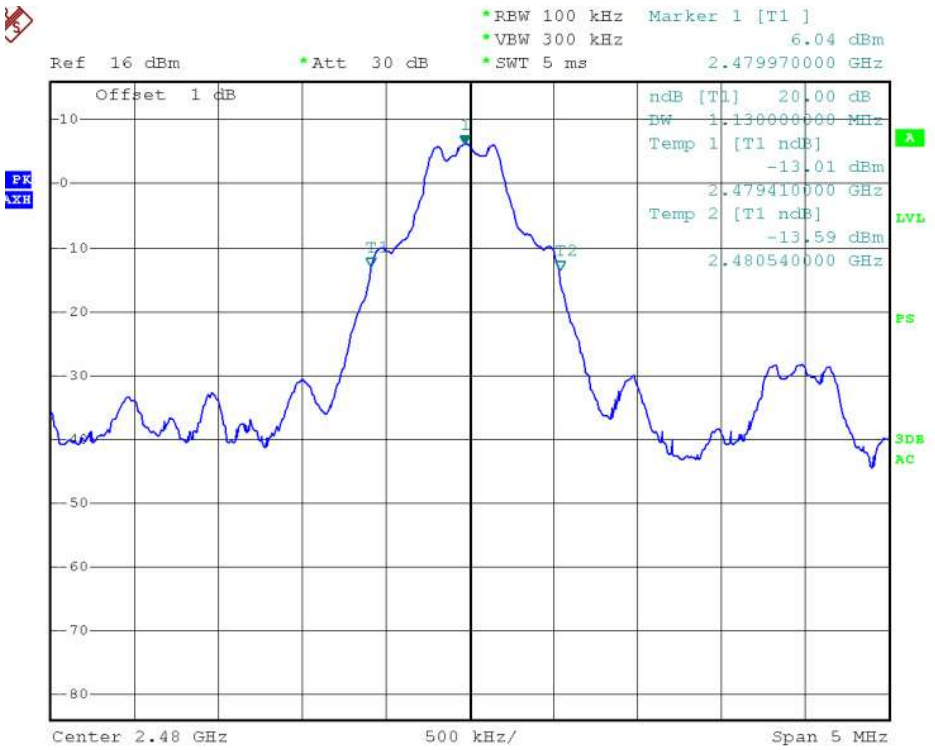
Lowest Channel：



Middle Channel：



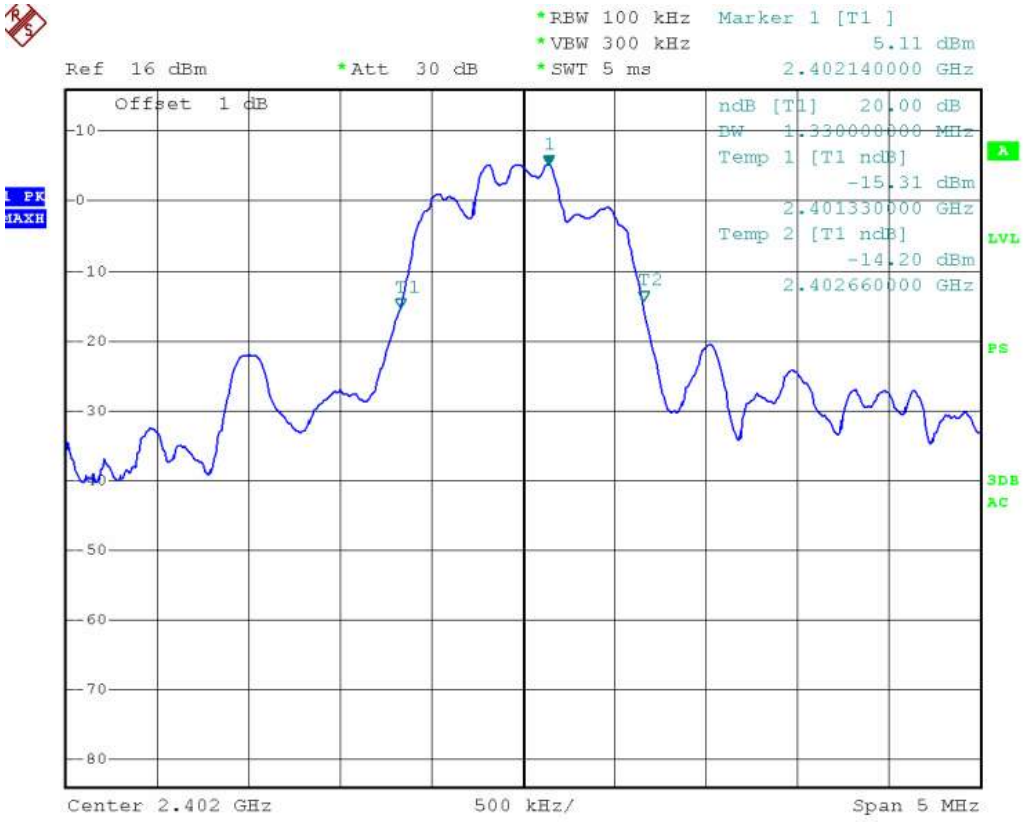
Highest Channel：



For 8DPSK

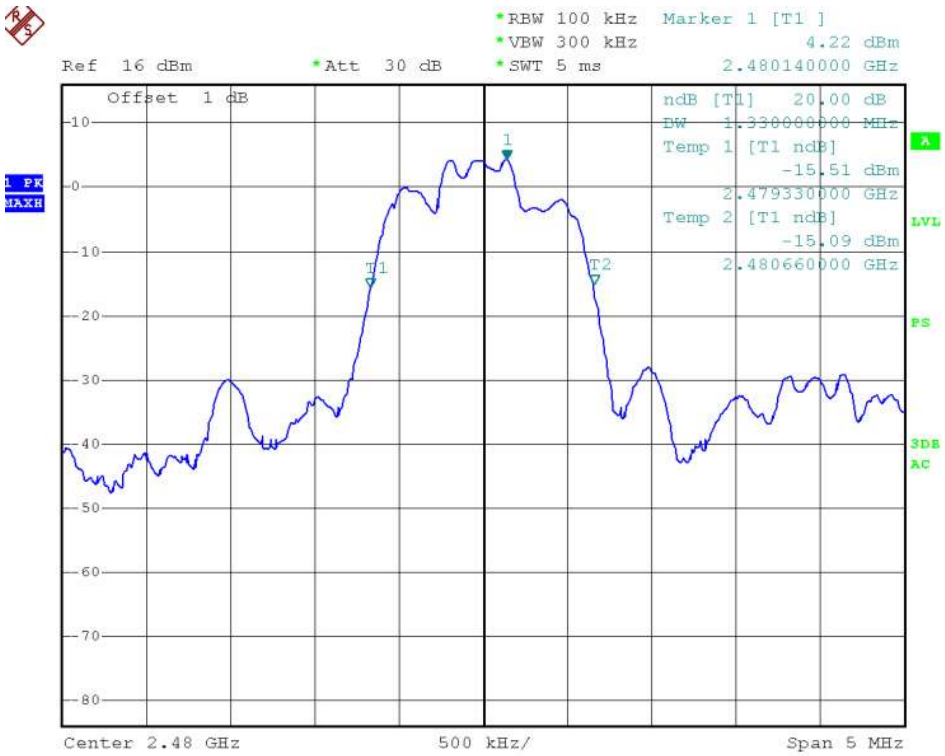
Frequency (GHz)	Test Channel	bandwidth
2.402	Lowest	1.330MHz
2.441	Middle	1.330MHz
2.480	Highest	1.330MHz

Lowest Channel：



Middle Channel：

Highest Channel：



4.4 Carrier Frequencies Separated

Test Requirement: **FCC Part 15 C**

Test Method: **Based on FCC Part15 C Section 15.247 & DA 00-705**

Test Date: **2012-05-03**

Test requirements: Regulation 15.247(a),(1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, 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, provided the systems operate with an output power no greater than 125 mW.

Test Status: **Test in hopping transmitting operating mode.**

Power supply: **Connected with convert board powered by PC USB ports, and to fix frequency transmitting.**

Test Procedure:

1. **Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.**
2. **Set the spectrum analyzer: RBW >= 1% of the span (set 100 kHz). VBW >= RBW , Span = 6MHz. Sweep = auto; Detector Function = Peak. Trace = Max,hold.**
3. **Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section. Submit this plot.**

Remark：

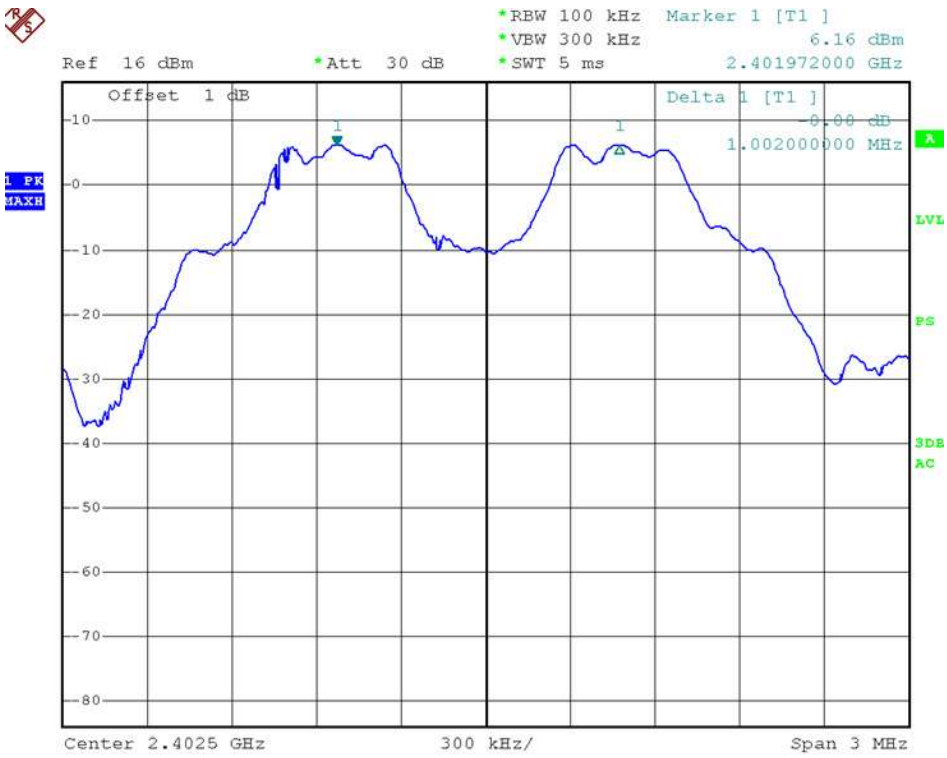
Pre-test the 3 modulation to find GFSK and 8DPSK is worse case, so only record GFSK and 8DPSK test data.

Test result:

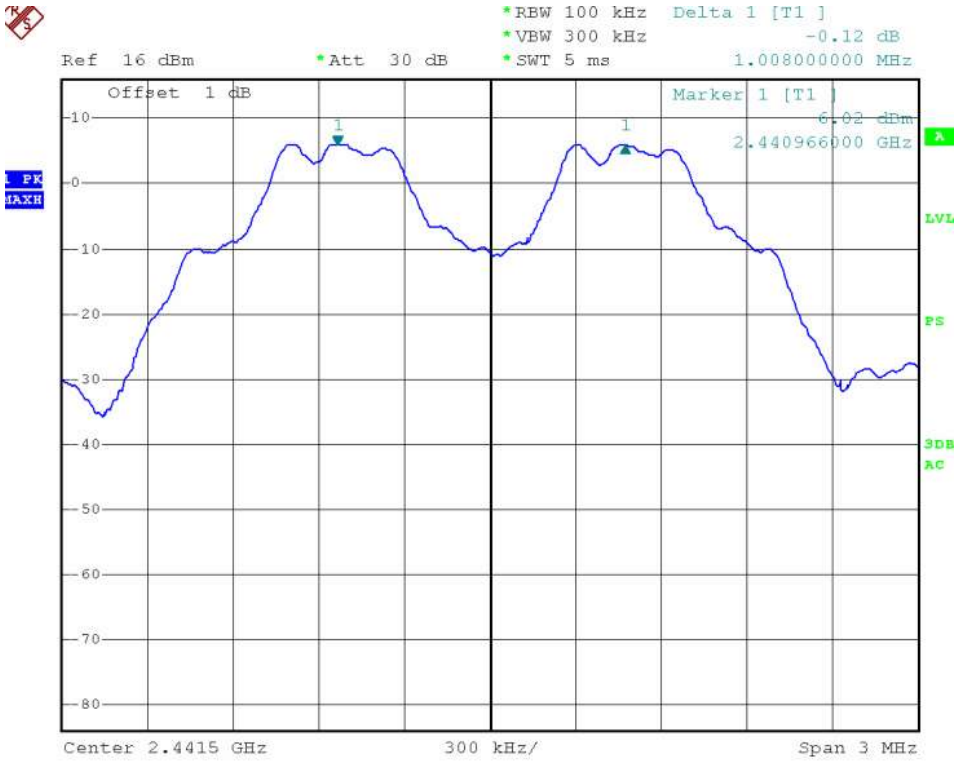
Mode	Test Channel	Carrier Frequencies Separated	PASS/FAIL
GFSK	Lower Channels (channel 0 and channel 1)	1.002MHz	Pass
	Middle Channels (channel 39 and channel 40)	1.008MHz	Pass
	Upper Channels (channel 77 and channel 78)	1.002MHz	Pass
8DPSK	Lower Channels (channel 0 and channel 1)	1.002MHz	Pass
	Middle Channels (channel 39 and channel 40)	1.002MHz	Pass
	Upper Channels (channel 77 and channel 78)	1.002MHz	Pass

For GFSK

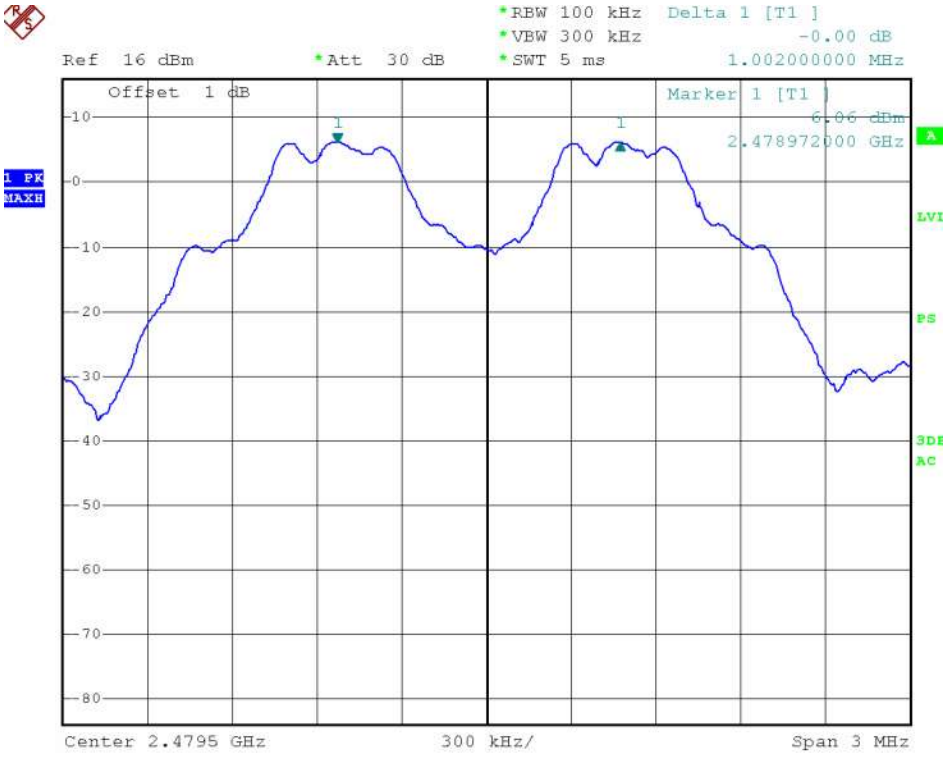
Lowest Channels:



Middle Channels:



Highest Channels:

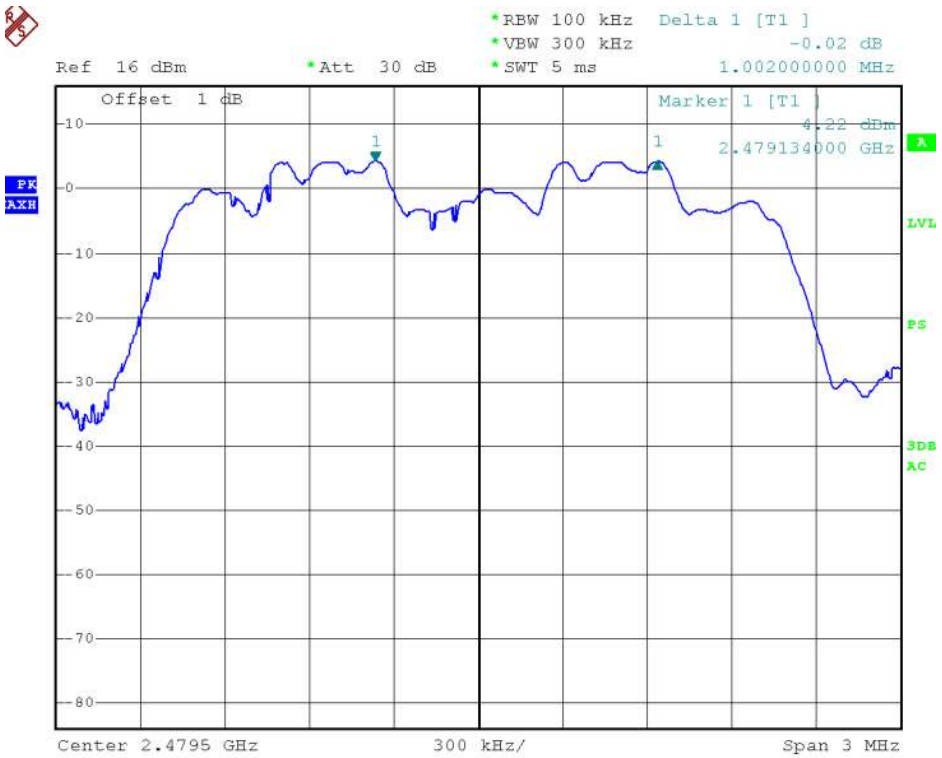


For 8DPSK

Lowest Channels:

Middle Channels:

Highest Channels:



Test result: The unit does meet the FCC requirements.

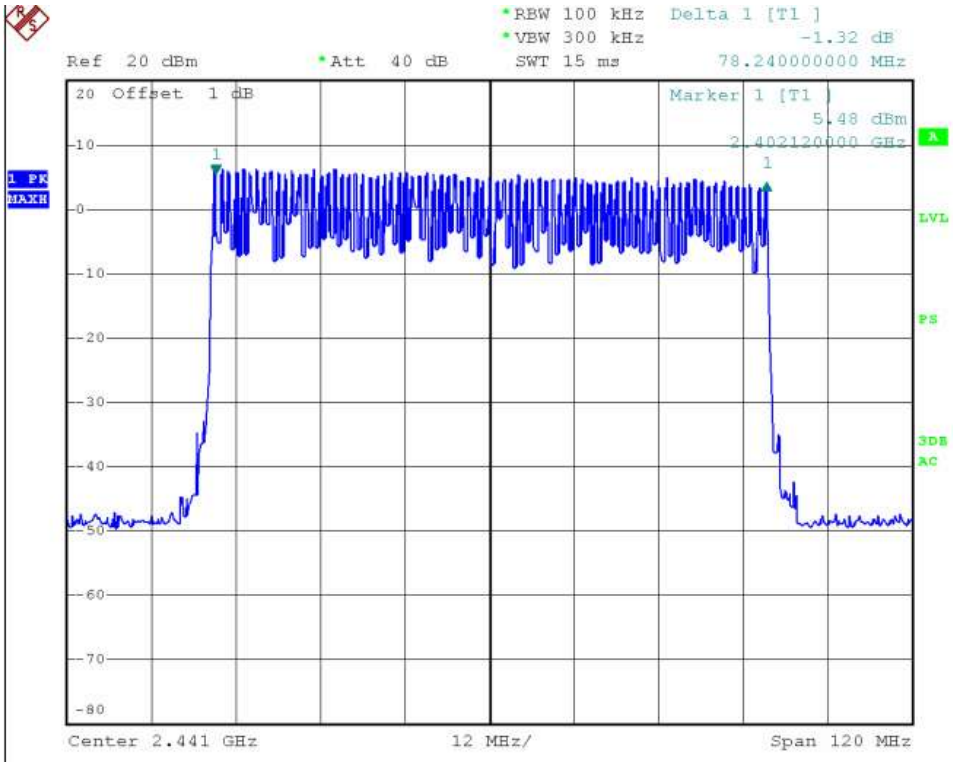
4.5 Hopping Channel Number

Test Requirement:	**FCC Part15 C**
Test Method:	**Based on FCC Part15 C Section 15.247 & DA 00-705**
Test Date:	**2012-05-03**
Requirements:	**Regulation 15.247 (a) (1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.**
Test Status:	**Test in hopping transmitting operating mode.**
Power supply:	**Connected with convert board powered by PC USB ports, and to fix frequency transmitting.**

Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 100 kHz. VBW = 300 kHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. It may prove necessary to break the span up to sections. in order to clearly show all of the hopping frequencies. The limit is specified in one of the subparagraphs of this Section.
4. Set the spectrum analyzer: start frequency = 2400MHz. stop frequency = 2483.5MHz. Submit the test result graph.

Test result: Total channels are 79 channels.



Test result: The unit does meet the FCC requirements.

4.6 Dwell Time

Test Requirement:	**FCC Part 15 C**
Test Method:	**Based on FCC Part15 C Section 15.247 & DA 00-705**
Test Date:	**2012-05-03**
Test requirements:	**Regulation 15.247(a)(1)(iii) Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.**
Test Status:	**Test in hopping transmitting operating mode.**
Power supply:	**Connected with convert board powered by PC USB ports, and to fix frequency transmitting.**

Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set spectrum analyzer span = 0. centered on a hopping channel;
3. Set RBW = 1MHz and VBW = 3MHz.Sweep = as necessary to capture the entire dwell time per hopping channel. Detector Function = Peak. Trace = Max hold;
4. Use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g.. data rate. modulation format. etc.). repeat this test for each variation. The limit is specified in one of the subparagraphs of this Section. Submit this plot(s). An oscilloscope may be used instead of a spectrum analyzer.

Test Results:

The test period: T= 0.4 Second/Channel x 79 Channel = 31.6 s

1. **Channel 0:** 2.402GHz

DH1 time slot = 0.396 (ms) * (1600/(2*79)) * 31.6 = 126.720 ms

DH3 time slot = 1.648(ms) * (1600/(4*79)) * 31.6 = 263.680 ms

DH5 time slot = 2.912 (ms) * (1600/(6*79)) * 31.6 = 310.613 ms

2DH1 time slot = 0.396(ms) * (1600/(2*79)) * 31.6 = 126.720 ms

2DH3 time slot = 1.648(ms) * (1600/(4*79)) * 31.6 = 263.680 ms

2DH5 time slot = 1.712 (ms) * (1600/(6*79)) * 31.6 = 182.610ms

3DH1 time slot = 0.396 (ms) * (1600/(2*79)) * 31.6 = 126.720 ms

3DH3 time slot = 1.648(ms) * (1600/(4*79)) * 31.6 = 263.680 ms

3DH5 time slot= 2.912 (ms) * (1600/(6*79)) * 31.6 = 310.600 ms

2. **Channel 39:** 2.441GHz

DH1 time slot = 0.405 (ms) * (1600/(2*79)) * 31.6 = 129.600 ms

DH3 time slot = 1.664 (ms) * (1600/(4*79)) * 31.6 = 266.240 ms

DH5 time slot = 2.912 (ms) * (1600/(6*79)) * 31.6 = 310.600 ms

2DH1 time slot = 0.387(ms) * (1600/(2*79)) * 31.6 = 123.840ms

2DH3 time slot = 1.648 (ms) * (1600/(4*79)) * 31.6 = 263.680 ms

2DH5 time slot = 1.680 (ms) * (1600/(6*79)) * 31.6 = 179.200 ms

3DH1 time slot = 0.405(ms) * (1600/(2*79)) * 31.6 = 129.600ms

3DH3 time slot =1.648(ms) * (1600/(4*79)) * 31.6 = 263.680 ms

3DH5 time slot =2.912 (ms) * (1600/(6*79)) * 31.6 = 310.600 ms

3. **Channel 78:** 2.480GHz

DH1 time slot = 0.396* (1600/(2*79)) * 31.6 = 126.720 ms

DH3 time slot = 1.664 (ms) * (1600/(4*79)) * 31.6 = 266.240 ms

DH5 time slot = 2.912 (ms) * (1600/(6*79)) * 31.6 = 310.600 ms

2DH1 time slot =0.405* (1600/(2*79)) * 31.6 = 129.600 ms

2DH3 time slot =1.648 (ms) * (1600/(4*79)) * 31.6 = 263.680 ms

2DH5 time slot =1.696 (ms) * (1600/(6*79)) * 31.6 = 180.900 ms

3DH1 time slot=0.405* (1600/(2*79)) * 31.6 = 129.600 ms

3DH3 time slot=1.664(ms) * (1600/(4*79)) * 31.6 = 266.240 ms

3DH5 time slot=2.896 (ms) * (1600/(6*79)) * 31.6 = 308.906 ms

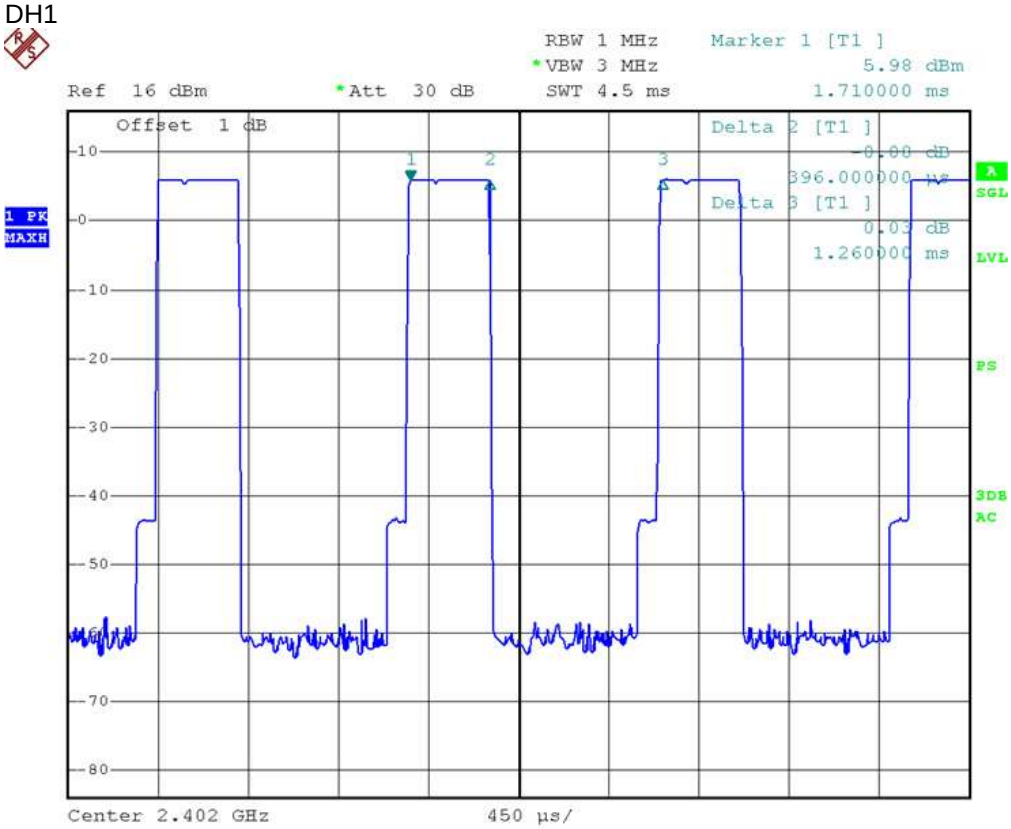
The results are not greater than 0.4 seconds.

The unit does meet the FCC requirements.

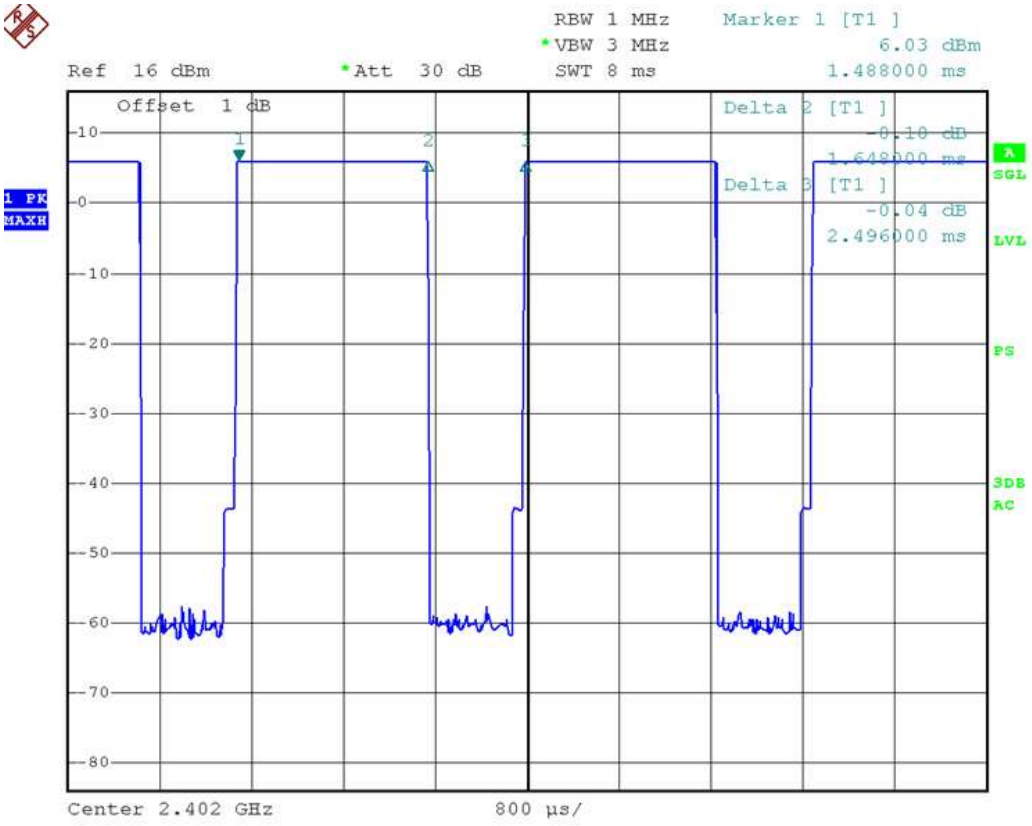
Please refer the graph as below:

1. Lowest channel (2.402 GHz):

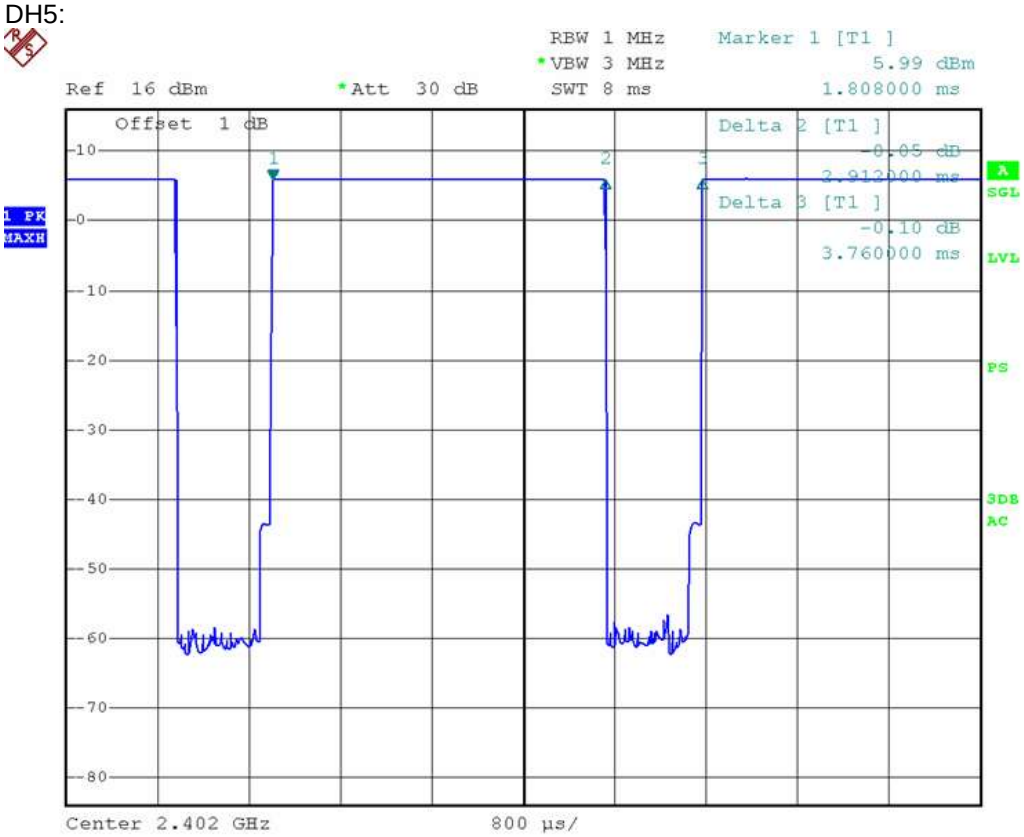
DH1



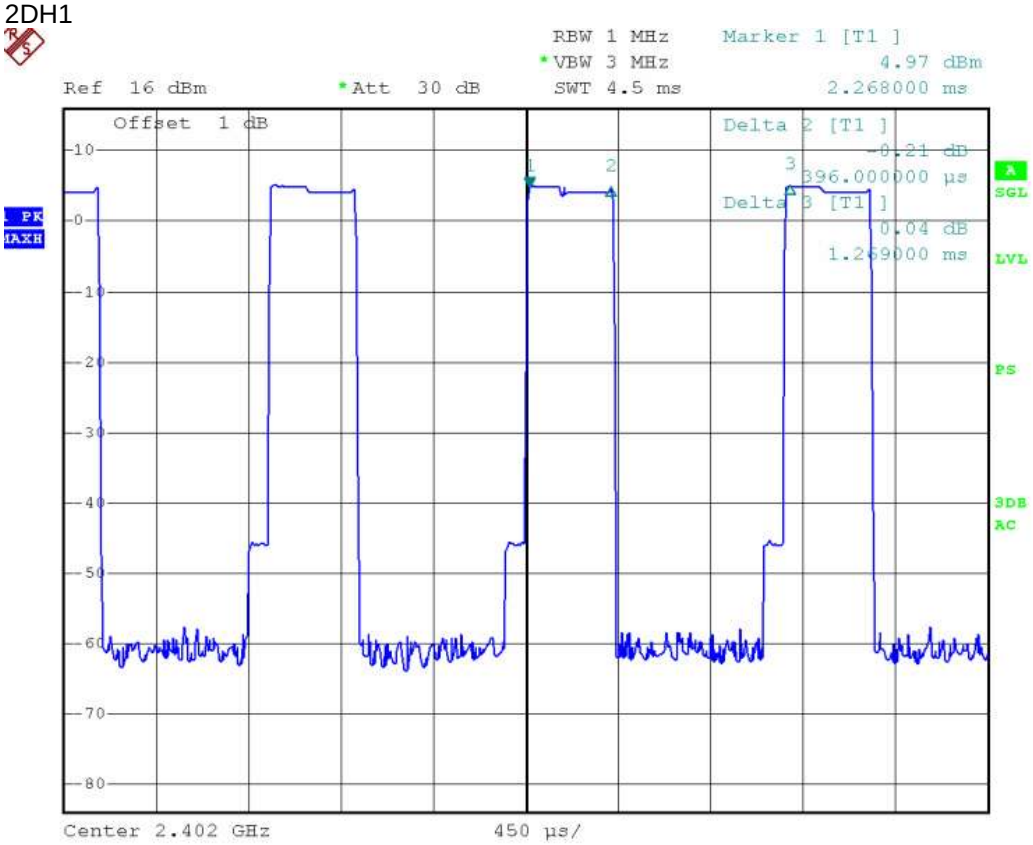
DH3:


RBW 1 MHz
*VBW 3 MHz
SWT 8 ms
Marker 1 [T1]
6.03 dBm
1.488000 ms
Ref 16 dBm
*Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.10 dB
1.648000 ms
Delta 3 [T1]
-0.04 dB
2.496000 ms
1 PK
MAXH
A
SGL
LVL
PS
3DB
AC
Center 2.402 GHz
800 µs/

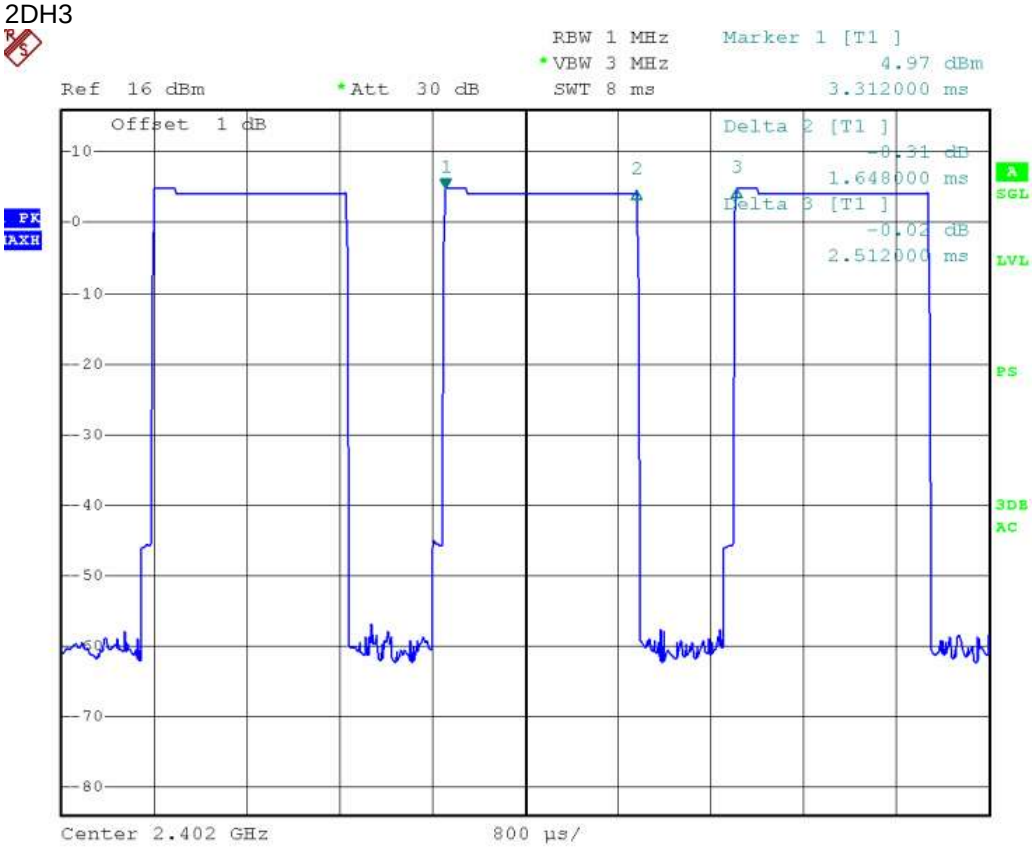
DH5:


RBW 1 MHz
*VBW 3 MHz
SWT 8 ms
Marker 1 [T1]
5.99 dBm
1.808000 ms
Ref 16 dBm
*Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.05 dB
2.912000 ms
Delta 3 [T1]
-0.10 dB
3.760000 ms
1 PK
MAXH
A
SGL
LVL
PS
3DB
AC
Center 2.402 GHz
800 µs/

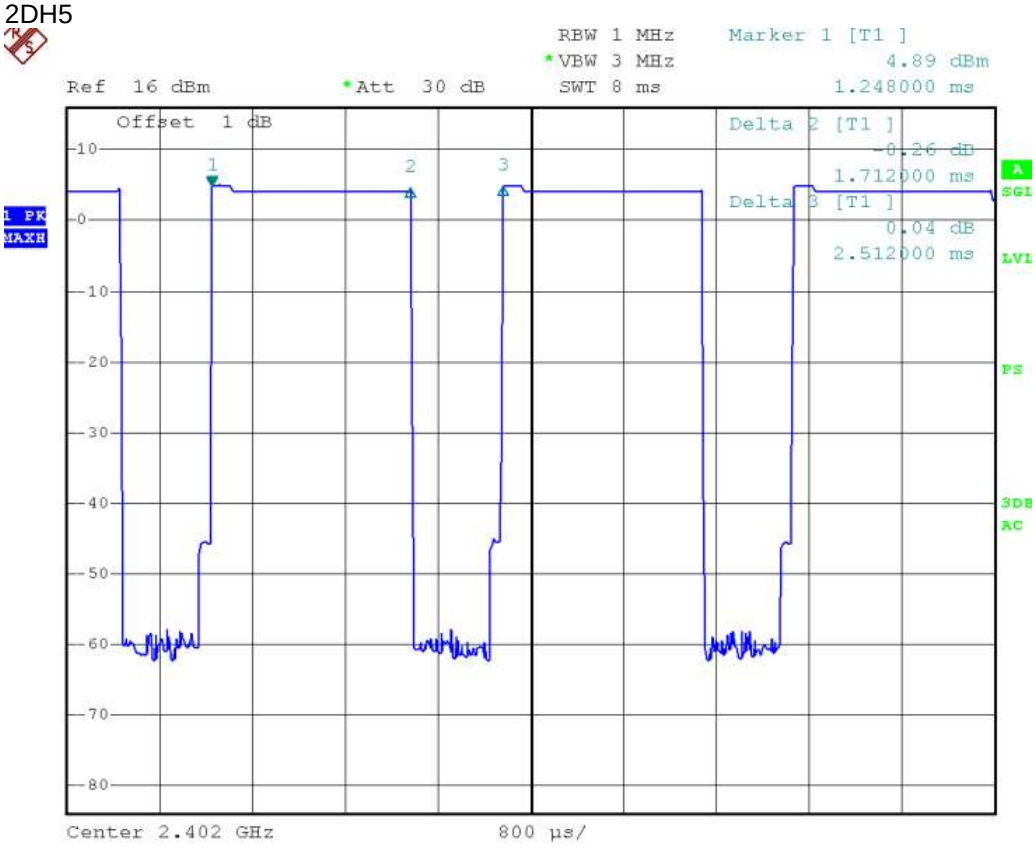
2DH1


RBW 1 MHz
VBW 3 MHz
SWT 4.5 ms
Marker 1 [T1]
4.97 dBm
2.268000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.21 dB
396.000000 µs
Delta 3 [T1]
0.04 dB
1.269000 ms
SGL
LVL
PS
3DB
AC
Center 2.402 GHz
450 µs/

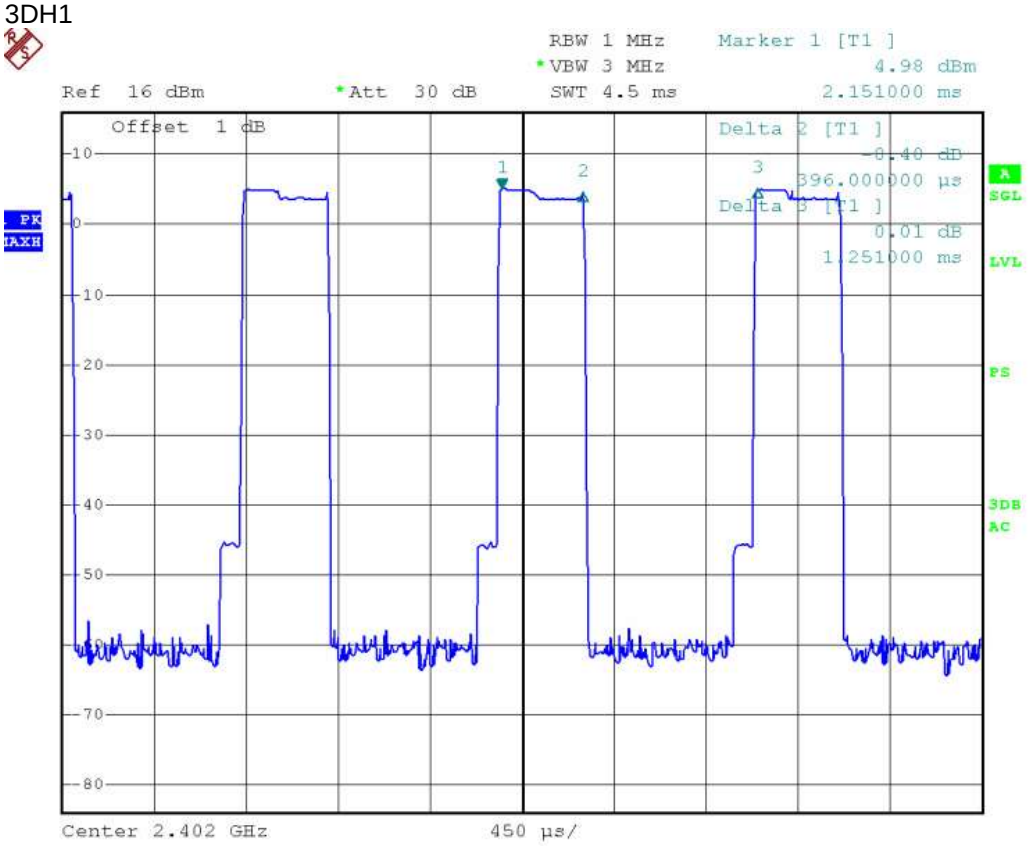
2DH3


RBW 1 MHz
VBW 3 MHz
SWT 8 ms
Marker 1 [T1]
4.97 dBm
3.312000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.31 dB
1.648000 ms
Delta 3 [T1]
-0.02 dB
2.512000 ms
SGL
LVL
PS
3DB
AC
Center 2.402 GHz
800 µs/

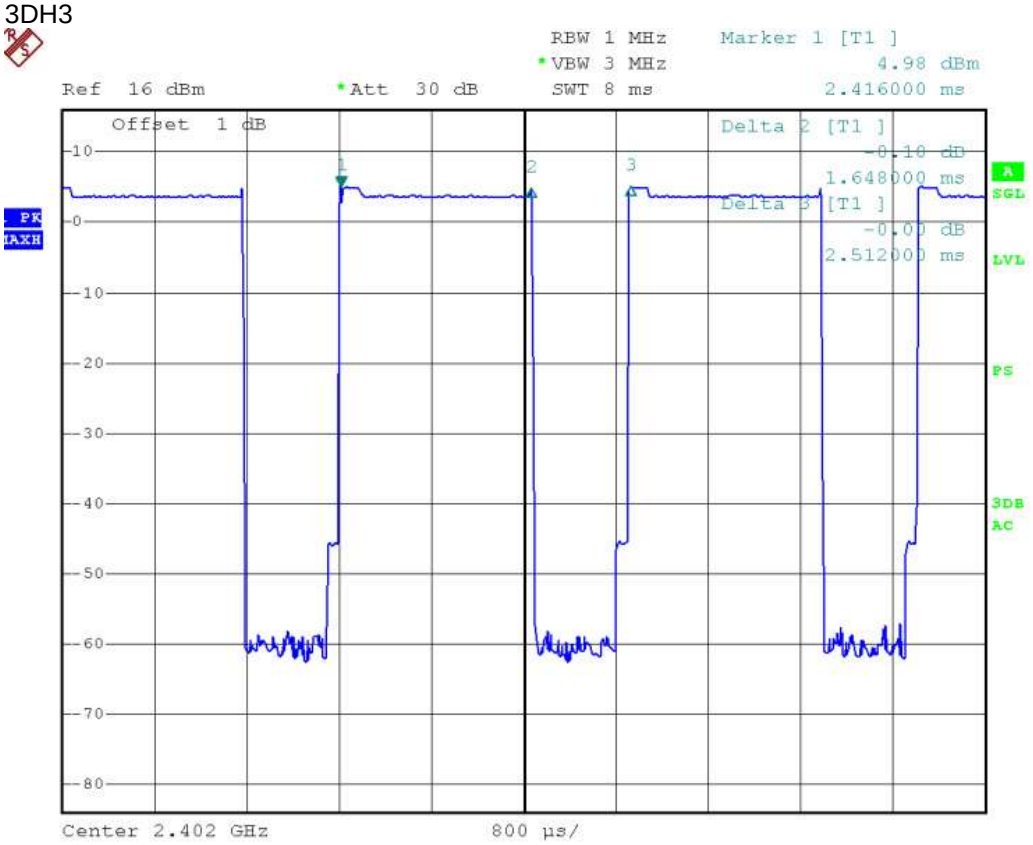
2DH5


RBW 1 MHz
VBW 3 MHz
SWT 8 ms
Marker 1 [T1]
4.89 dBm
1.248000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.26 dB
1.712000 ms
Delta 3 [T1]
0.04 dB
2.512000 ms
Center 2.402 GHz
800 µs/

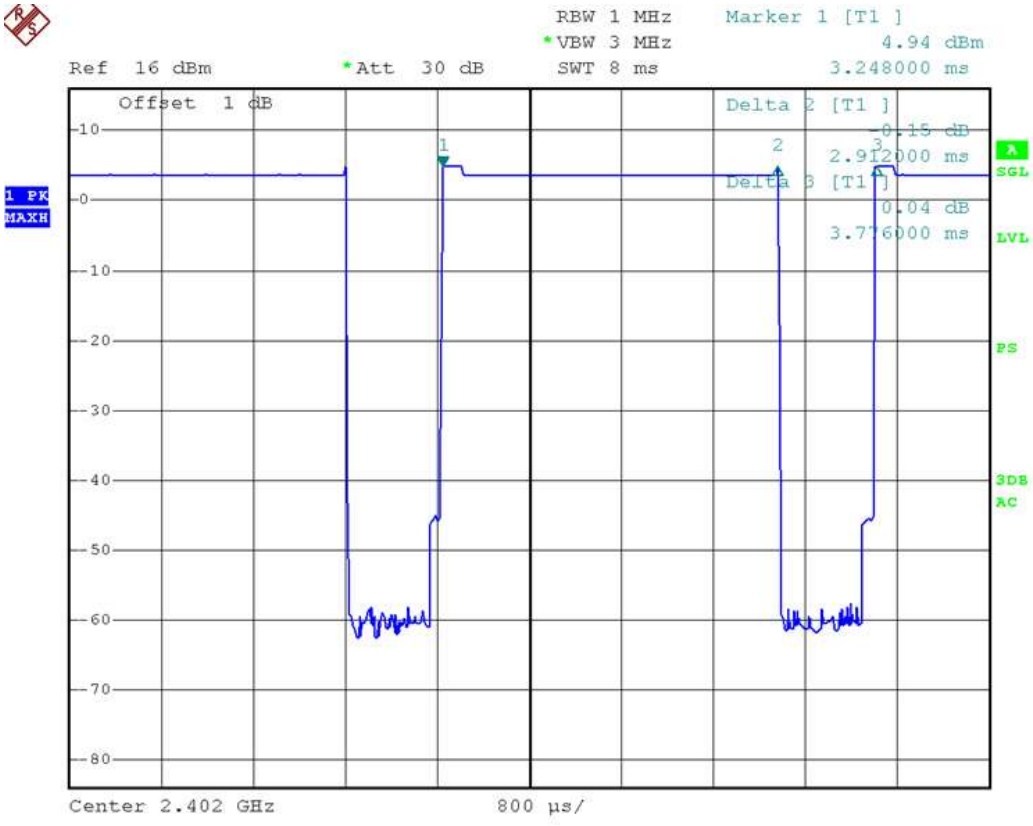
3DH1


RBW 1 MHz
VBW 3 MHz
SWT 4.5 ms
Marker 1 [T1]
4.98 dBm
2.151000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.40 dB
396.000000 µs
Delta 3 [T1]
0.01 dB
1.251000 ms
Center 2.402 GHz
450 µs/

3DH3

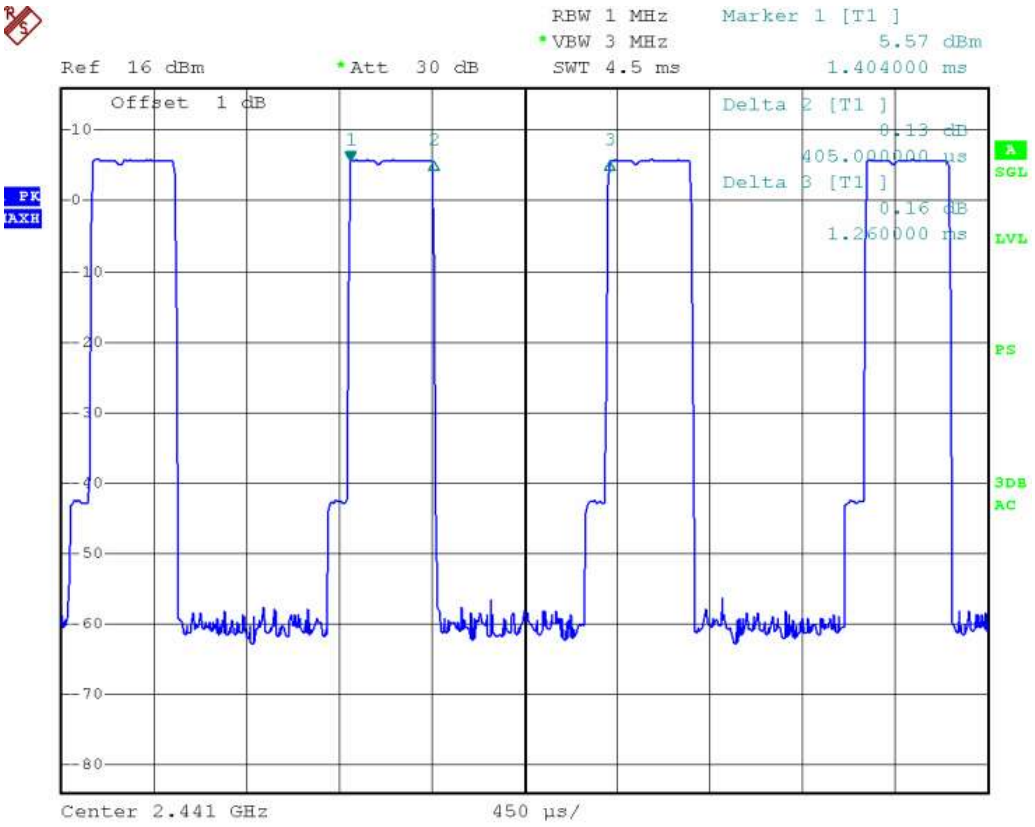

RBW 1 MHz
VBW 3 MHz
SWT 8 ms
Marker 1 [T1]
4.98 dBm
2.416000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.10 dB
1.648000 ms
Delta 3 [T1]
-0.00 dB
2.512000 ms
1 PK
MAXH
A
SGL
LVL
PS
3DB
AC
Center 2.402 GHz
800 µs/

3DH5

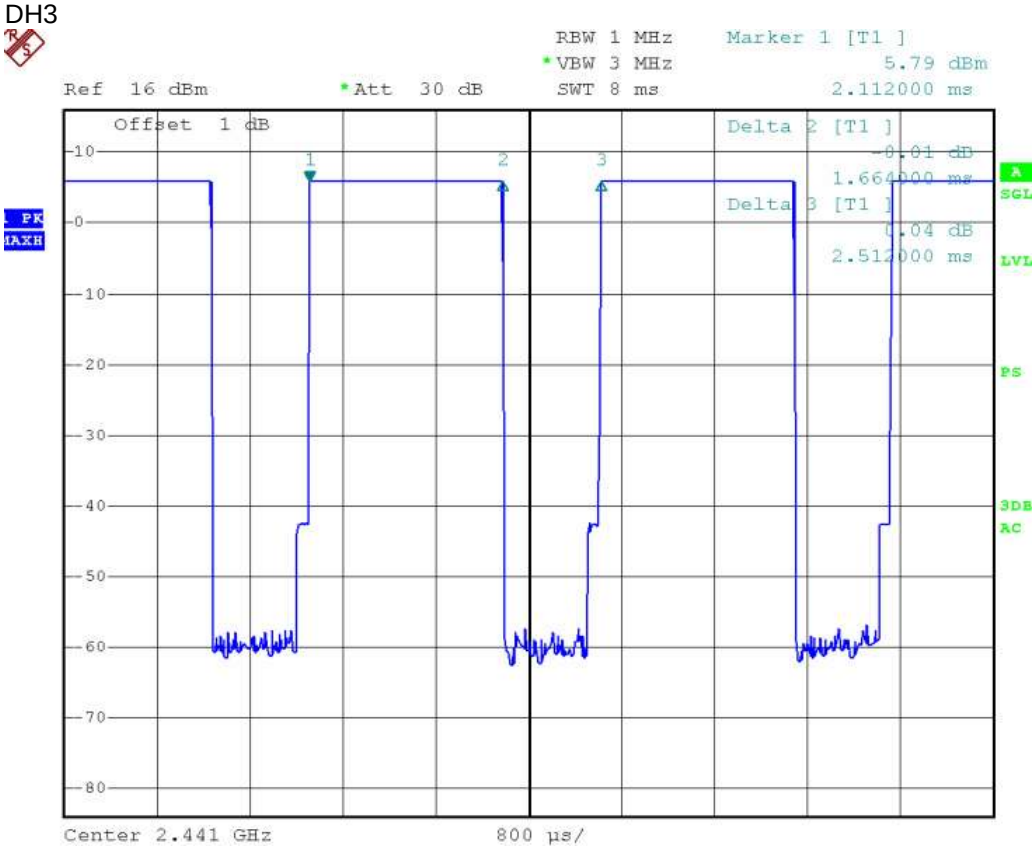

RBW 1 MHz
VBW 3 MHz
SWT 8 ms
Marker 1 [T1]
4.94 dBm
3.248000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.15 dB
2.912000 ms
Delta 3 [T1]
0.04 dB
3.776000 ms
1 PK
MAXH
A
SGL
LVL
PS
3DB
AC
Center 2.402 GHz
800 µs/

2. Middle Channel (2.441GHz)

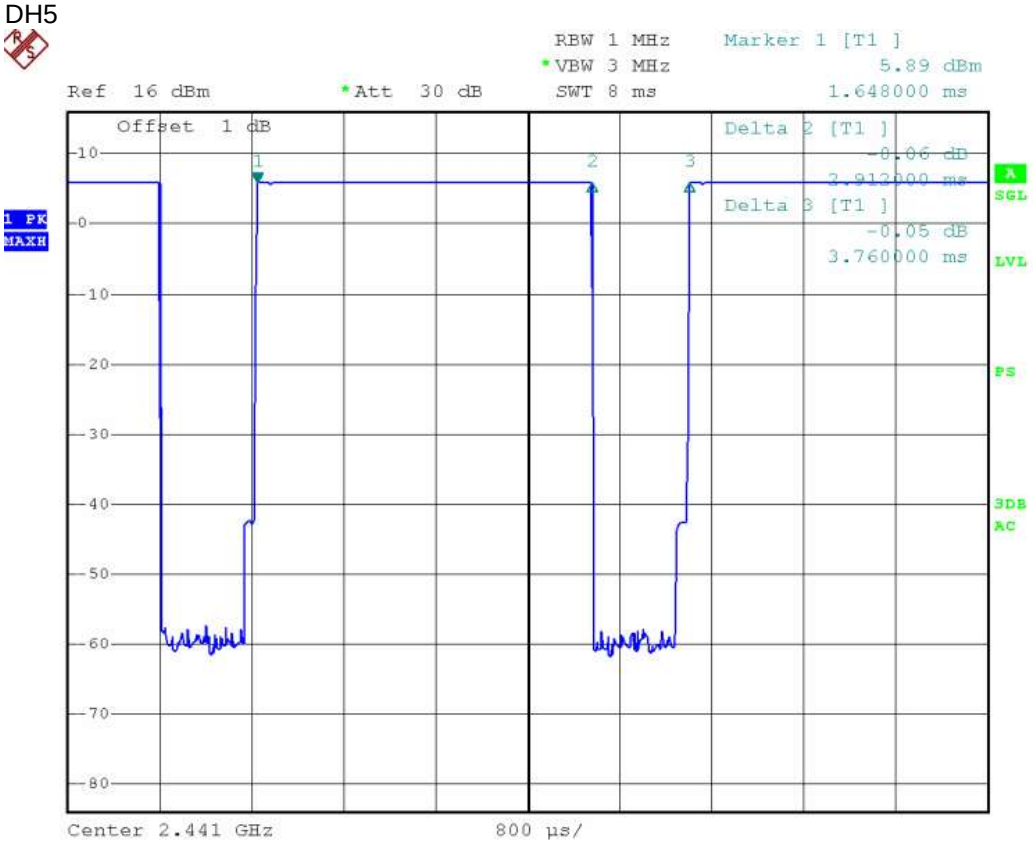
DH1



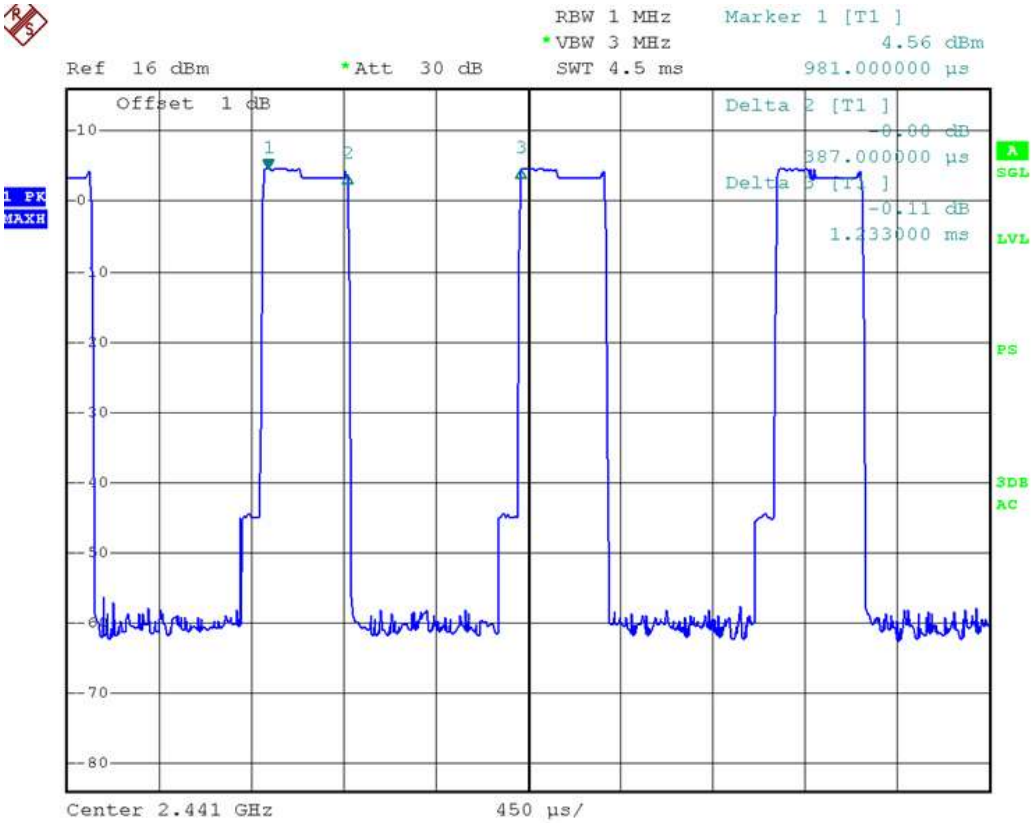
DH3



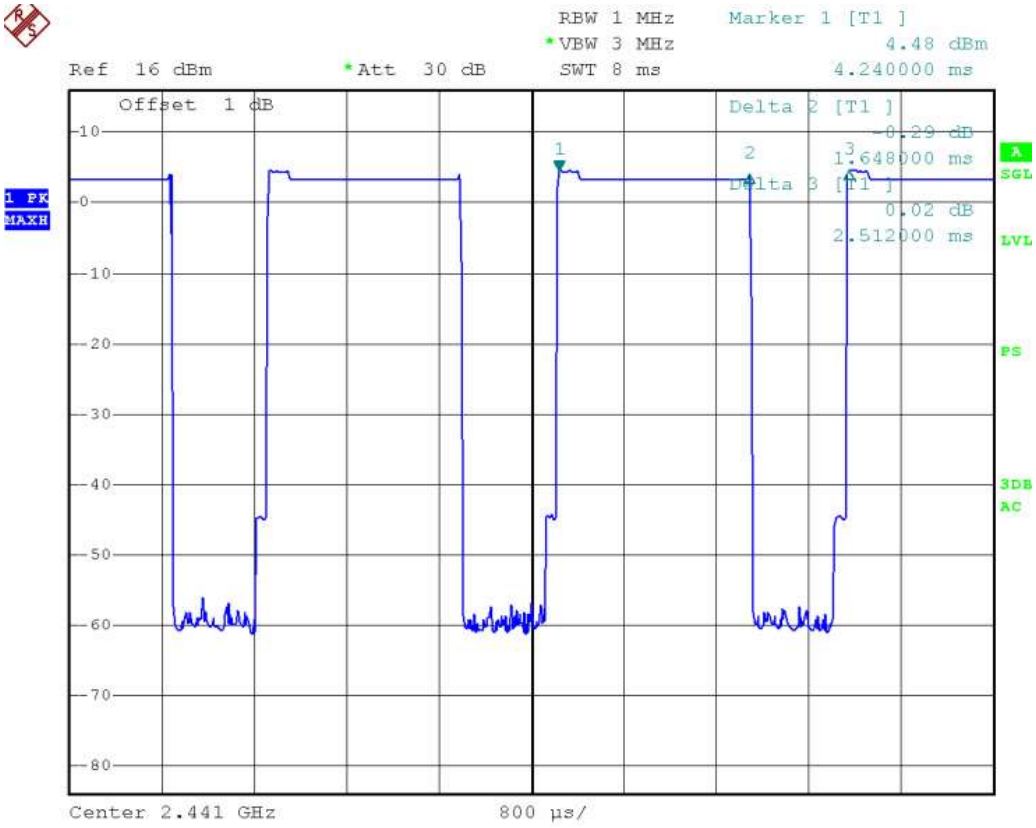
DH5


RBW 1 MHz
VBW 3 MHz
SWT 8 ms
Marker 1 [T1]
5.89 dBm
1.648000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.06 dB
2.912000 ms
Delta 3 [T1]
-0.05 dB
3.760000 ms
1 PK
MAXH
A
SGL
LVL
PS
3DB
AC
Center 2.441 GHz
800 µs/

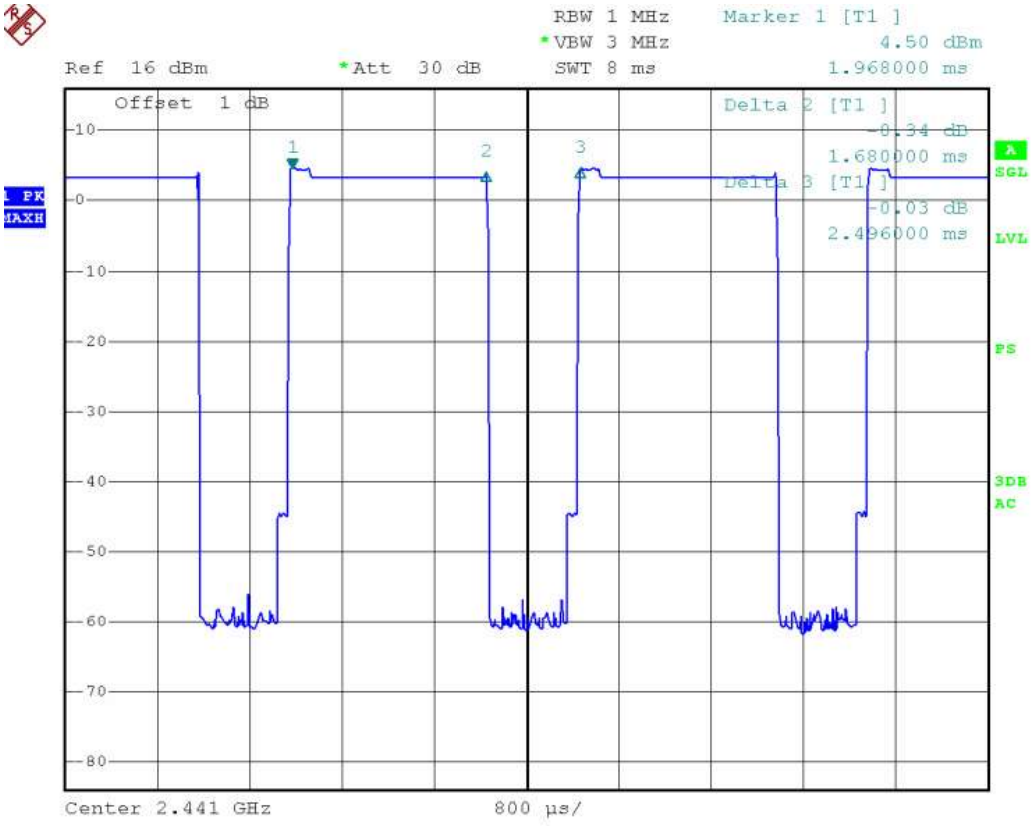
2DH1


RBW 1 MHz
VBW 3 MHz
SWT 4.5 ms
Marker 1 [T1]
4.56 dBm
981.000000 µs
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.00 dB
387.000000 µs
Delta 3 [T1]
-0.11 dB
1.233000 ms
1 PK
MAXH
A
SGL
LVL
PS
3DB
AC
Center 2.441 GHz
450 µs/

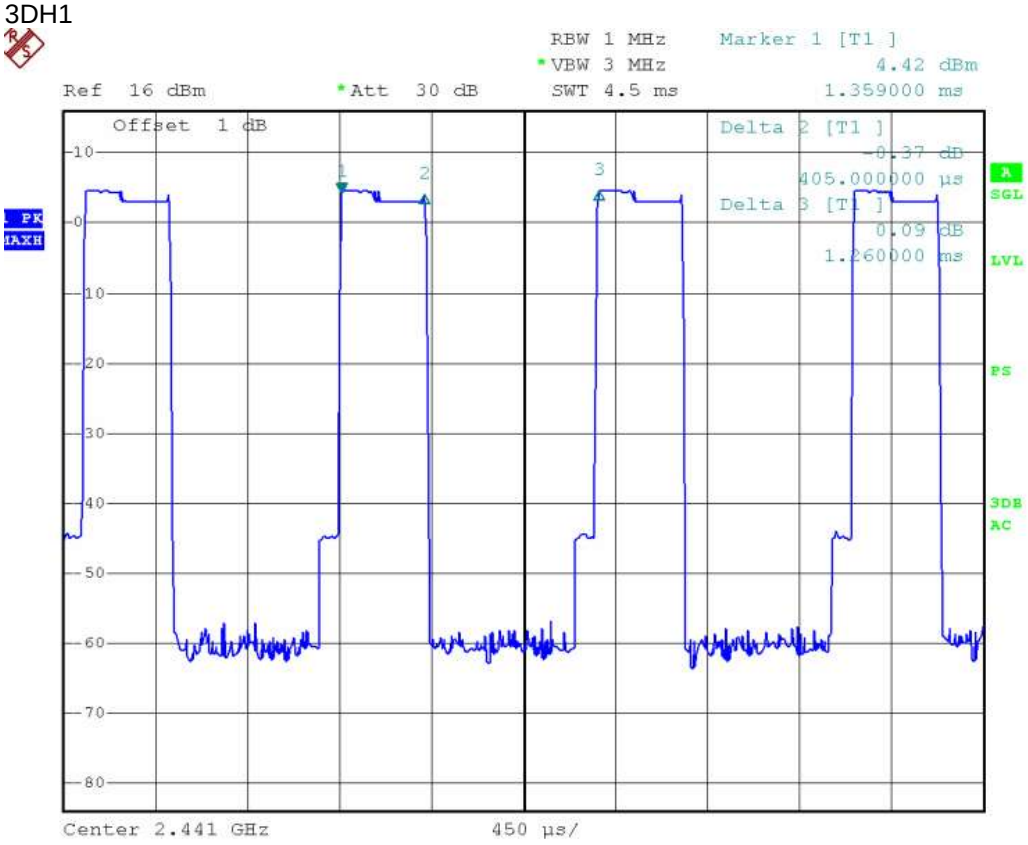
2DH3


RBW 1 MHz
VBW 3 MHz
SWT 8 ms
Marker 1 [T1]
4.48 dBm
4.240000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.29 dB
1.648000 ms
Delta 3 [T1]
0.02 dB
2.512000 ms
1 PK
MAXH
A
SGL
LVL
PS
3DB
AC
Center 2.441 GHz
800 µs/

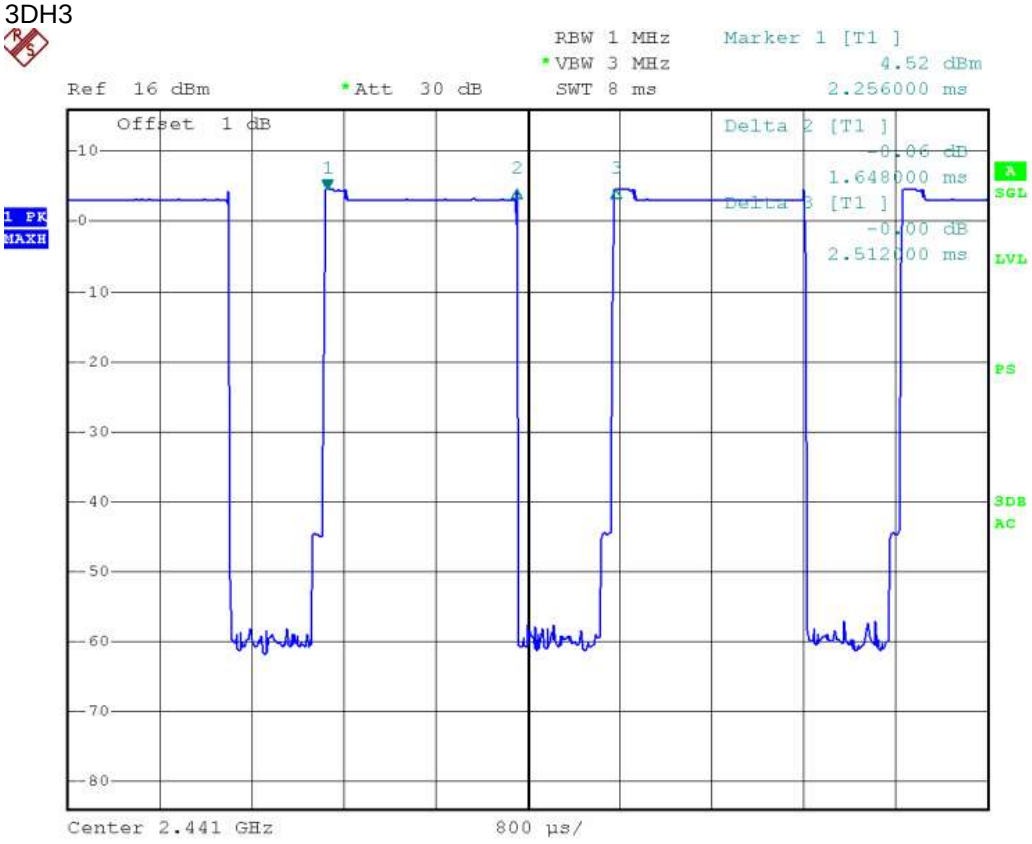
2DH5


RBW 1 MHz
VBW 3 MHz
SWT 8 ms
Marker 1 [T1]
4.50 dBm
1.968000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.34 dB
1.680000 ms
Delta 3 [T1]
-0.03 dB
2.496000 ms
1 PK
MAXH
A
SGL
LVL
PS
3DB
AC
Center 2.441 GHz
800 µs/

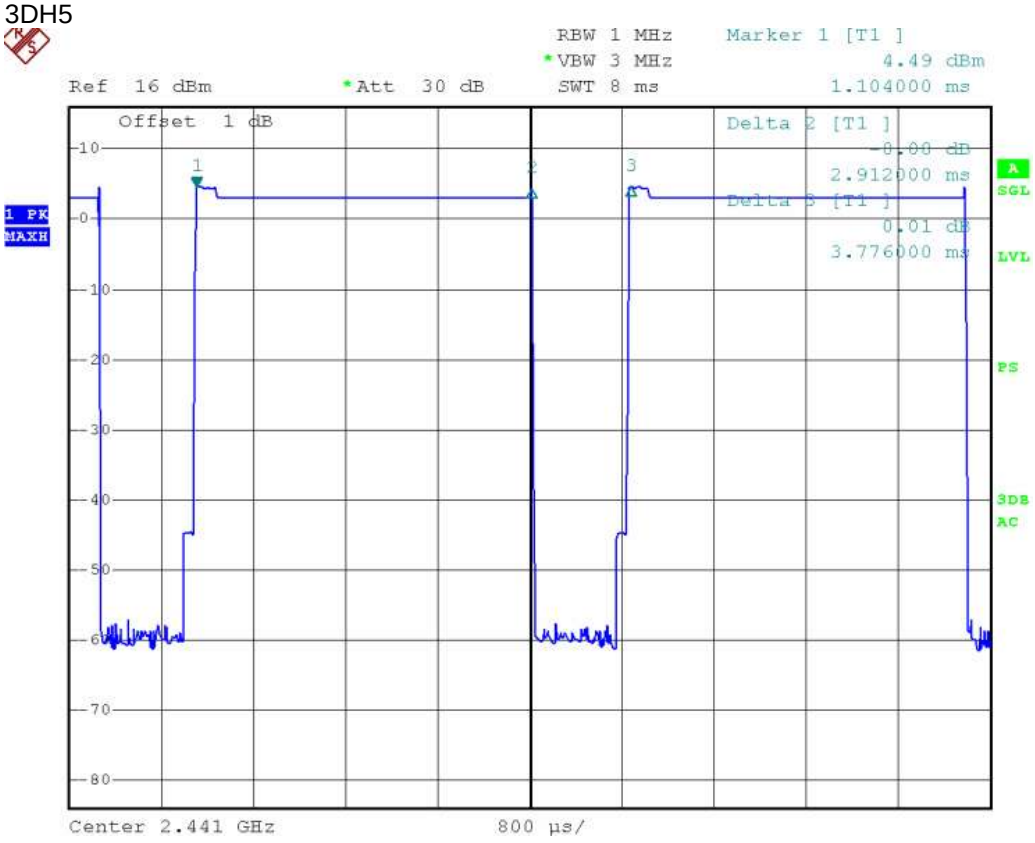
3DH1


RBW 1 MHz
VBW 3 MHz
SWT 4.5 ms
Marker 1 [T1]
4.42 dBm
1.359000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.37 dB
405.000000 µs
Delta 3 [T1]
0.09 dB
1.260000 ms
Center 2.441 GHz
450 µs/

3DH3

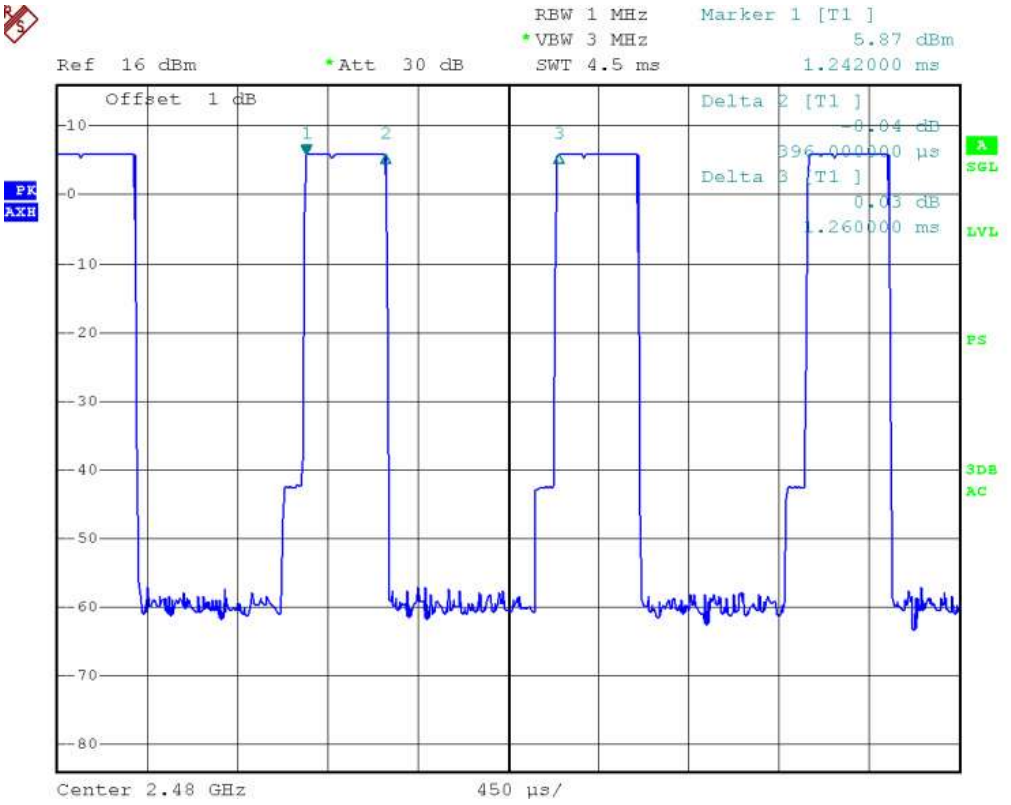

RBW 1 MHz
VBW 3 MHz
SWT 8 ms
Marker 1 [T1]
4.52 dBm
2.256000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.06 dB
1.648000 ms
Delta 3 [T1]
-0.00 dB
2.512000 ms
Center 2.441 GHz
800 µs/

3DH5

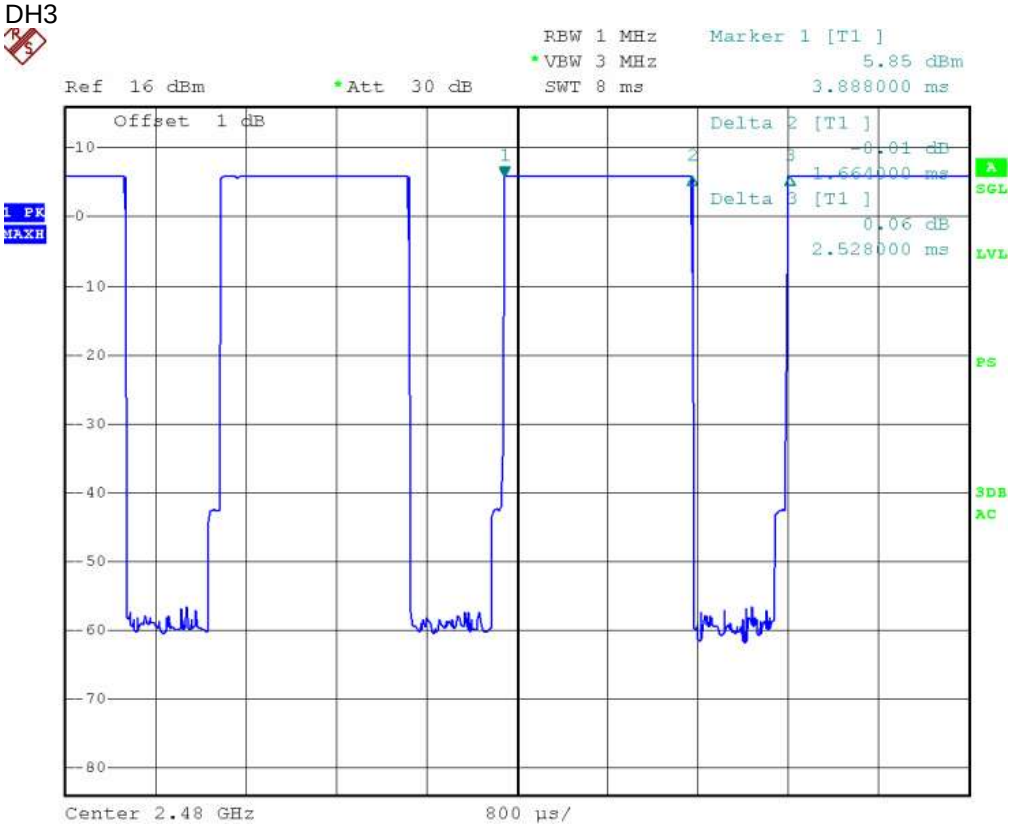

RBW 1 MHz
*VBW 3 MHz
Ref 16 dBm
*Att 30 dB
SWT 8 ms
Marker 1 [T1]
4.49 dBm
1.104000 ms
Offset 1 dB
Delta 2 [T1]
-0.00 dB
2.912000 ms
Delta 3 [T1]
0.01 dB
3.776000 ms
1 PK
MAXH
A
SGL
LVL
PS
3DB
AC
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.441 GHz
800 µs/

3. Highest channel (2.480GHz)

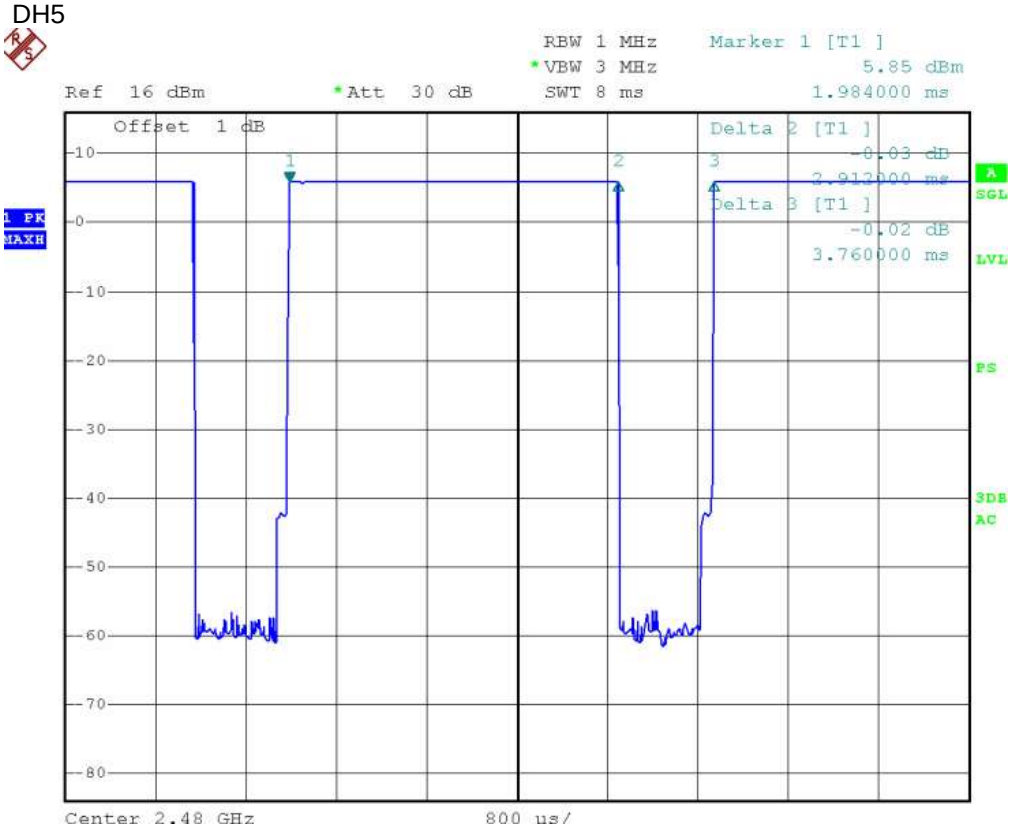
DH1



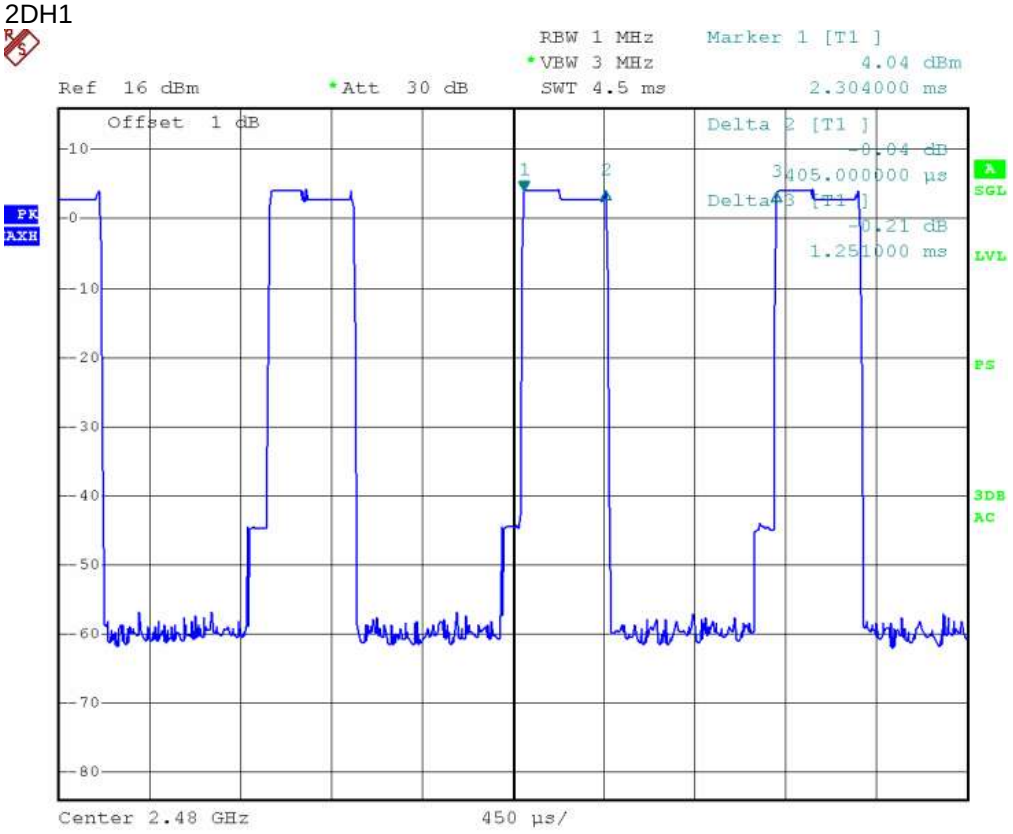
DH3



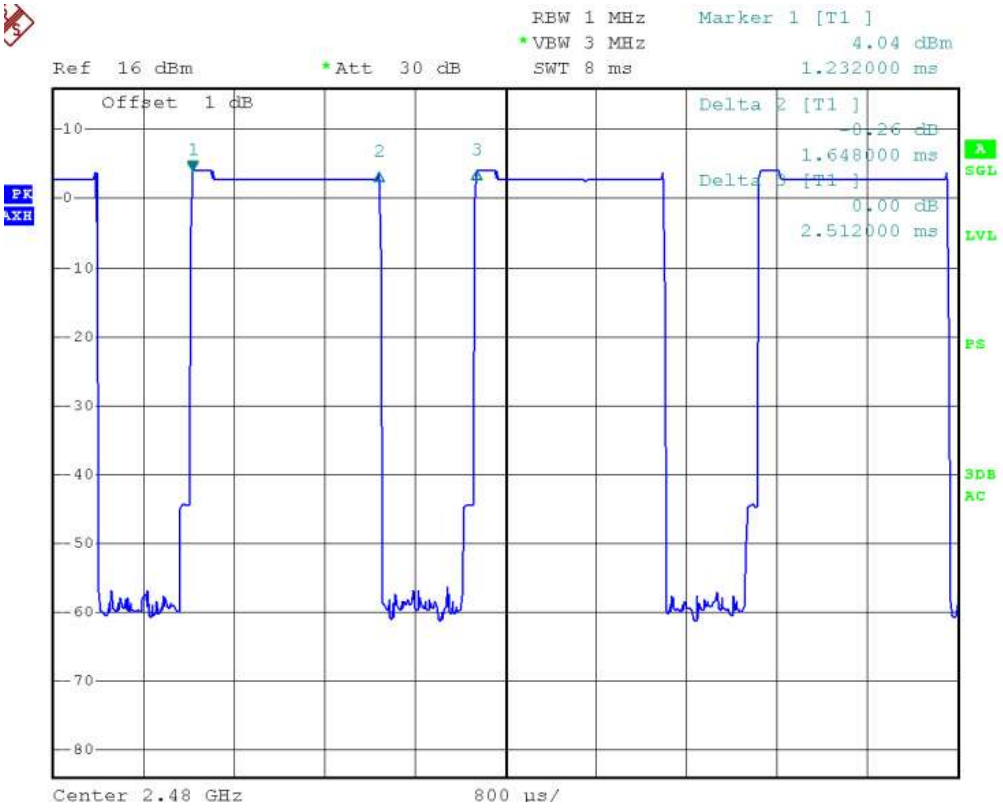
DH5


RBW 1 MHz
VBW 3 MHz
SWT 8 ms
Marker 1 [T1]
5.85 dBm
1.984000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.03 dB
2.912000 ms
Delta 3 [T1]
-0.02 dB
3.760000 ms
1 PK
MAXH
A
SGL
LVL
PS
3DB
AC
Center 2.48 GHz
800 µs/

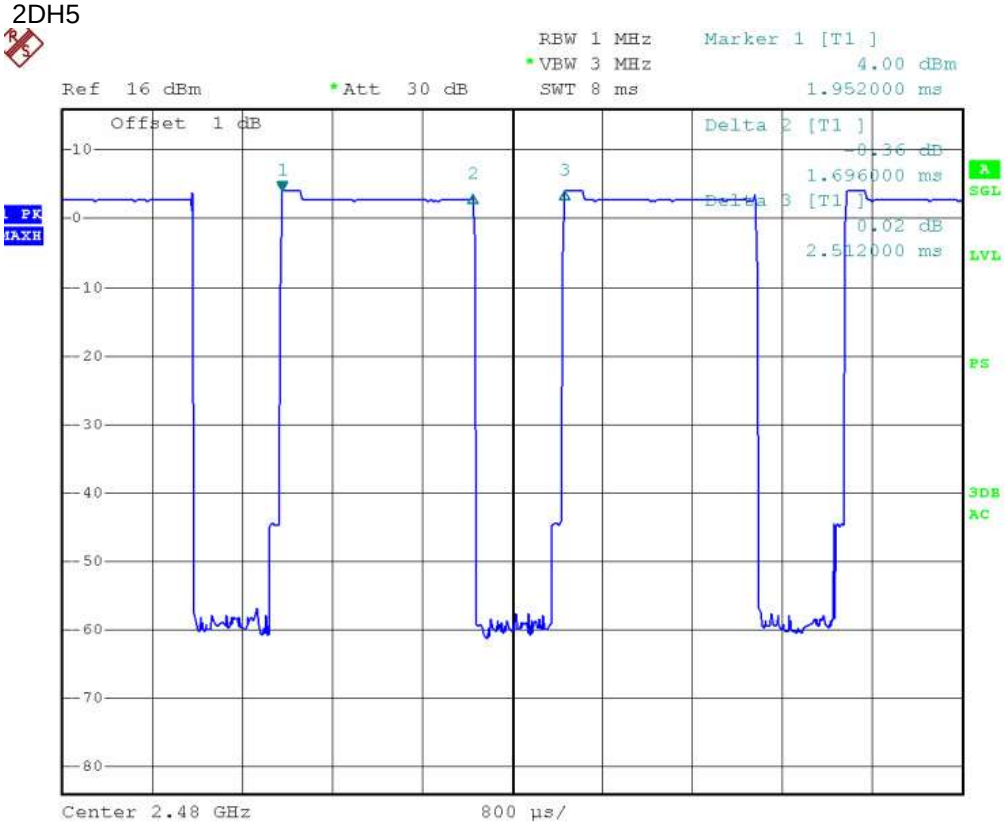
2DH1


RBW 1 MHz
VBW 3 MHz
SWT 4.5 ms
Marker 1 [T1]
4.04 dBm
2.304000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.04 dB
3405.000000 µs
Delta 3 [T1]
-0.21 dB
1.251000 ms
PK
AXH
A
SGL
LVL
PS
3DB
AC
Center 2.48 GHz
450 µs/

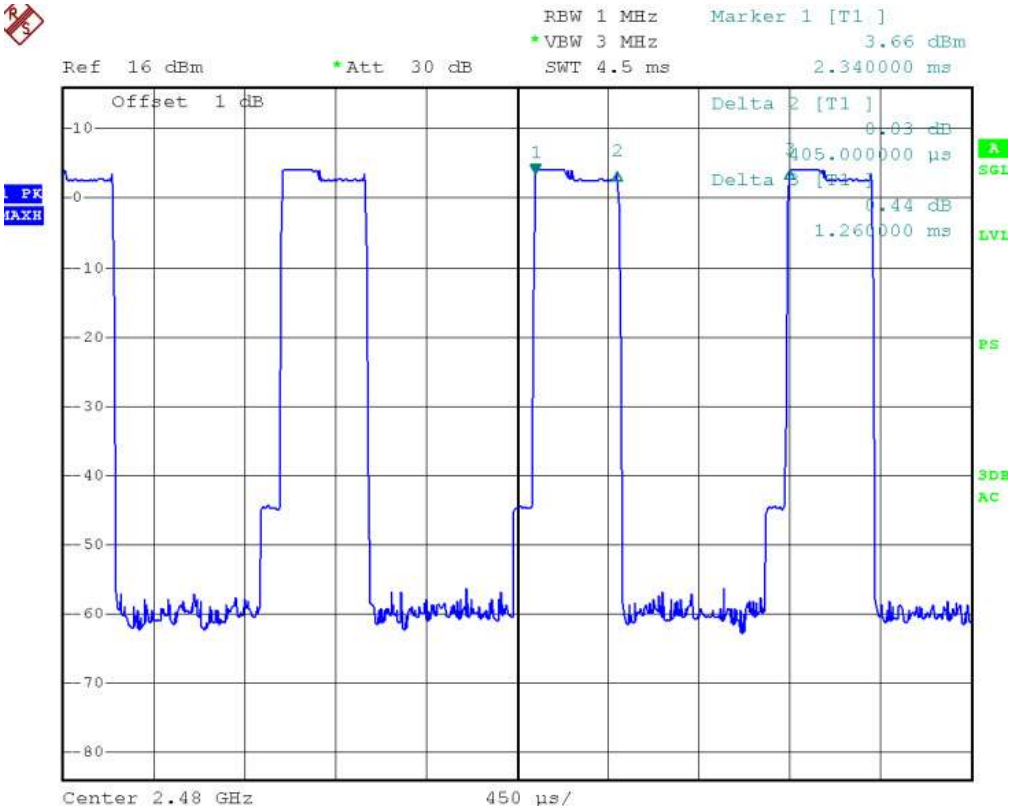
2DH3


RBW 1 MHz
*VBW 3 MHz
SWT 8 ms
Marker 1 [T1]
4.04 dBm
1.232000 ms
Ref 16 dBm
*Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.26 dB
1.648000 ms
Delta 3 [T1]
0.00 dB
2.512000 ms
SGL
LVL
PS
3DB
AC
Center 2.48 GHz
800 µs/

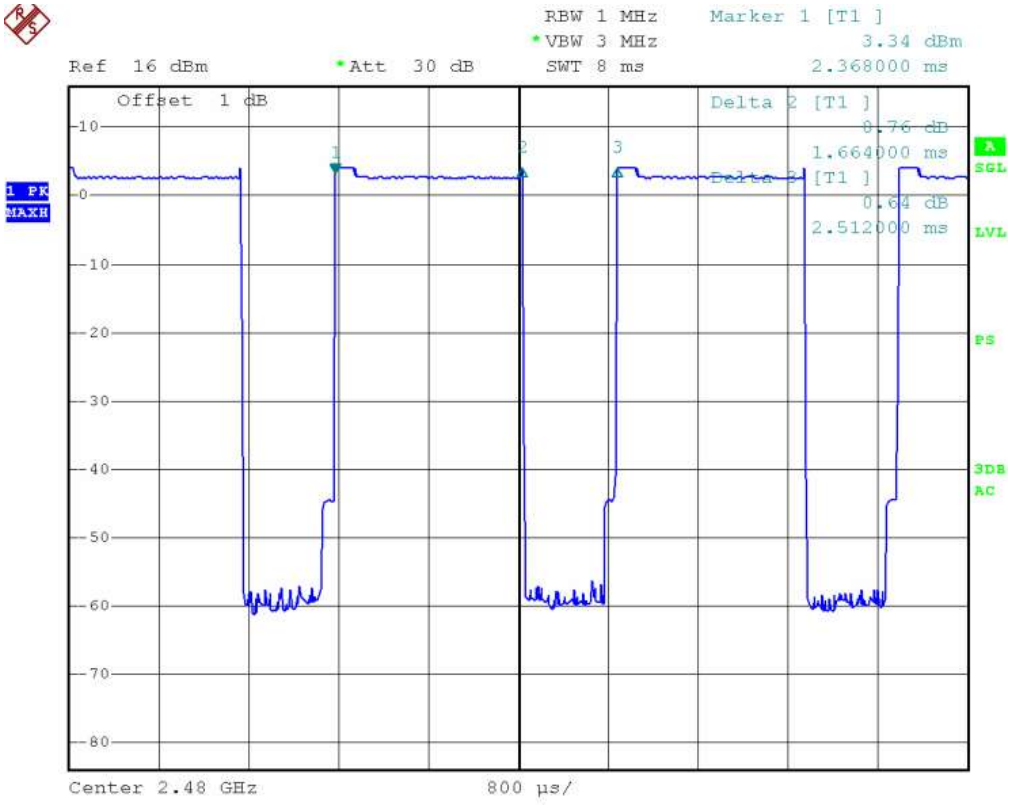
2DH5


RBW 1 MHz
*VBW 3 MHz
SWT 8 ms
Marker 1 [T1]
4.00 dBm
1.952000 ms
Ref 16 dBm
*Att 30 dB
Offset 1 dB
Delta 2 [T1]
-0.36 dB
1.696000 ms
Delta 3 [T1]
0.02 dB
2.512000 ms
SGL
LVL
PS
3DB
AC
Center 2.48 GHz
800 µs/

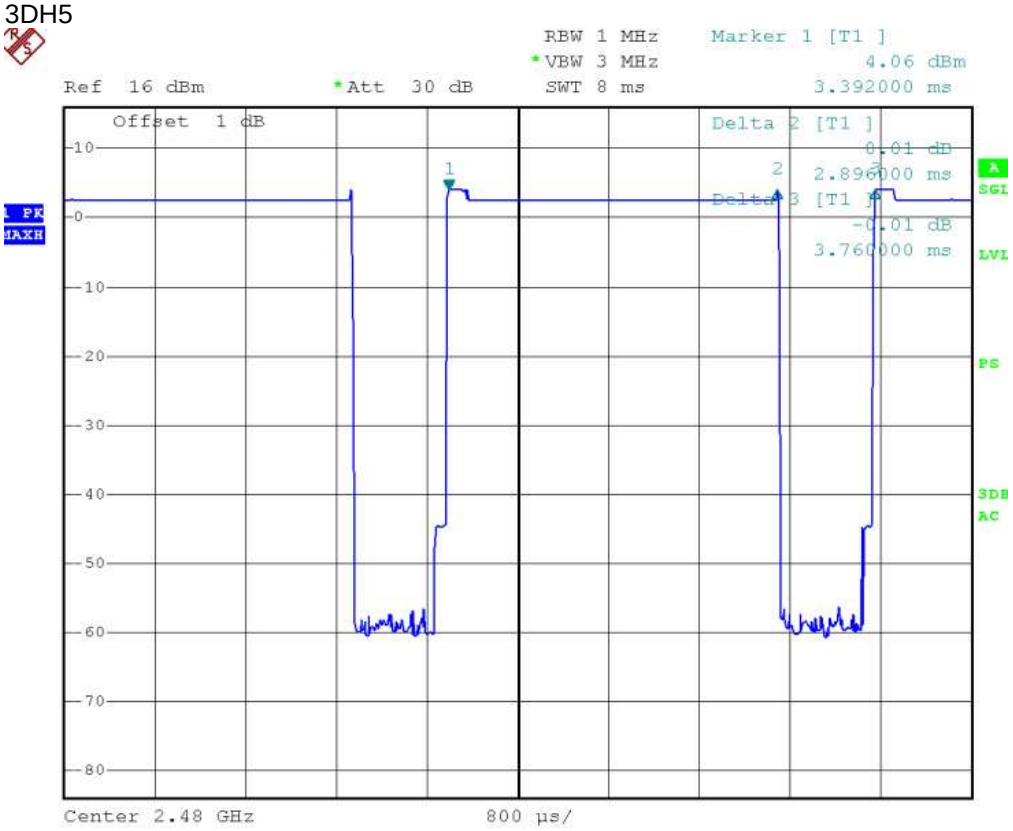
3DH1


RBW 1 MHz
VBW 3 MHz
SWT 4.5 ms
Marker 1 [T1]
3.66 dBm
2.340000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
0.03 dB
405.000000 µs
Delta 3 [T1]
0.44 dB
1.260000 ms
Center 2.48 GHz
450 µs/

3DH3


RBW 1 MHz
VBW 3 MHz
SWT 8 ms
Marker 1 [T1]
3.34 dBm
2.368000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
0.76 dB
1.664000 ms
Delta 3 [T1]
0.64 dB
2.512000 ms
Center 2.48 GHz
800 µs/

3DH5


RBW 1 MHz
VBW 3 MHz
SWT 8 ms
Marker 1 [T1]
4.06 dBm
3.392000 ms
Ref 16 dBm
Att 30 dB
Offset 1 dB
Delta 2 [T1]
0.01 dB
2.896000 ms
Delta 3 [T1]
-0.01 dB
3.760000 ms
10
0
10
20
30
40
50
60
70
80
Center 2.48 GHz
800 µs/

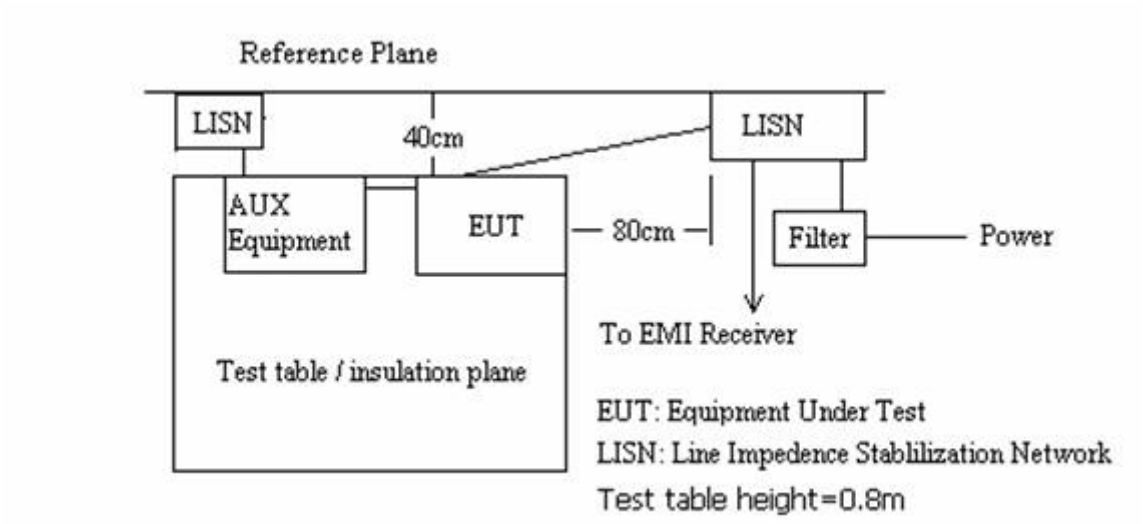
4.7 Conducted Emission Measurement

Test Requirement:	**FCC Part 15.207**
Test Method:	**ANSI C63.10: 2009**
Test Date:	**2012-03-29**
Frequency Range:	**150KHz to 30MHz**
Detector:	**Peak for pre-scan (9kHz Resolution Bandwidth)**
	Quasi-Peak if maximised peak within 6dB of Quasi-Peak limit
EUT Operation:	**Pretest the EUT in 3 modulations to find GFSK and 8DPSK is worse case, so only record 8DPSK test data.**

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

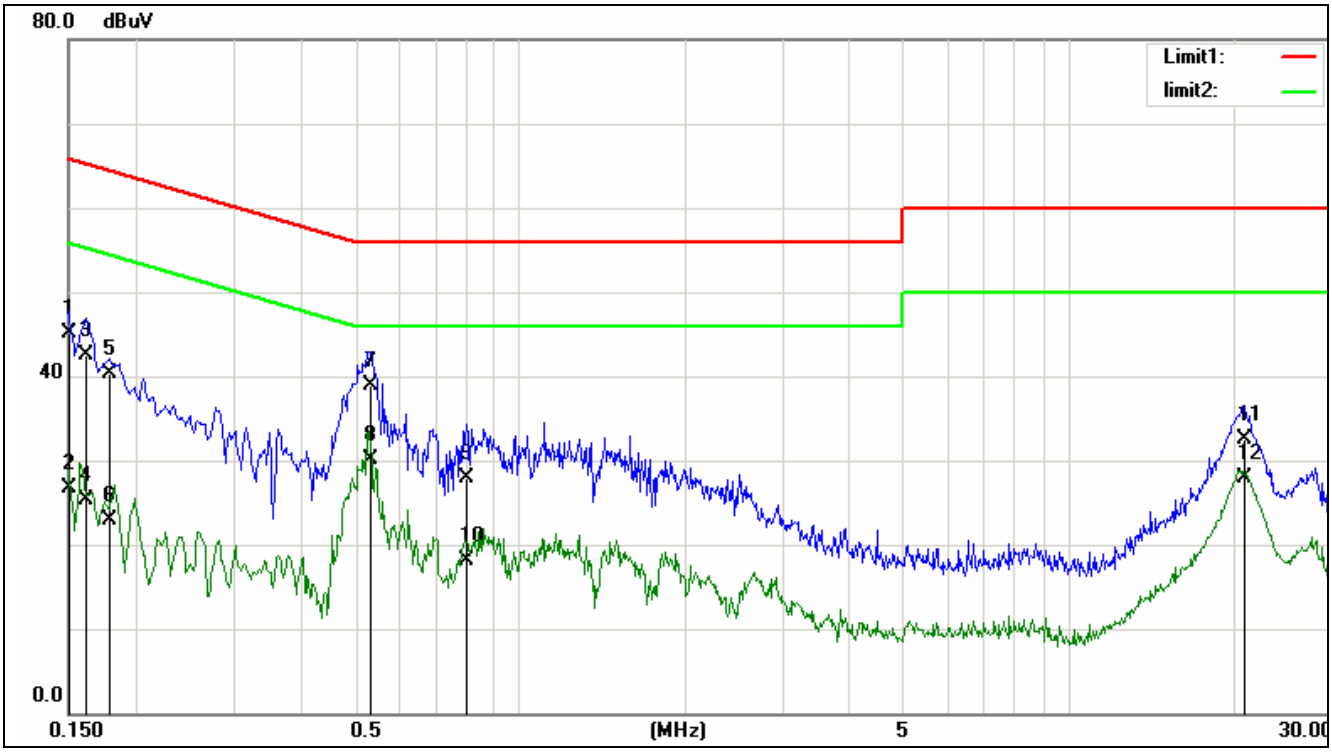
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Plan View of Test Setup



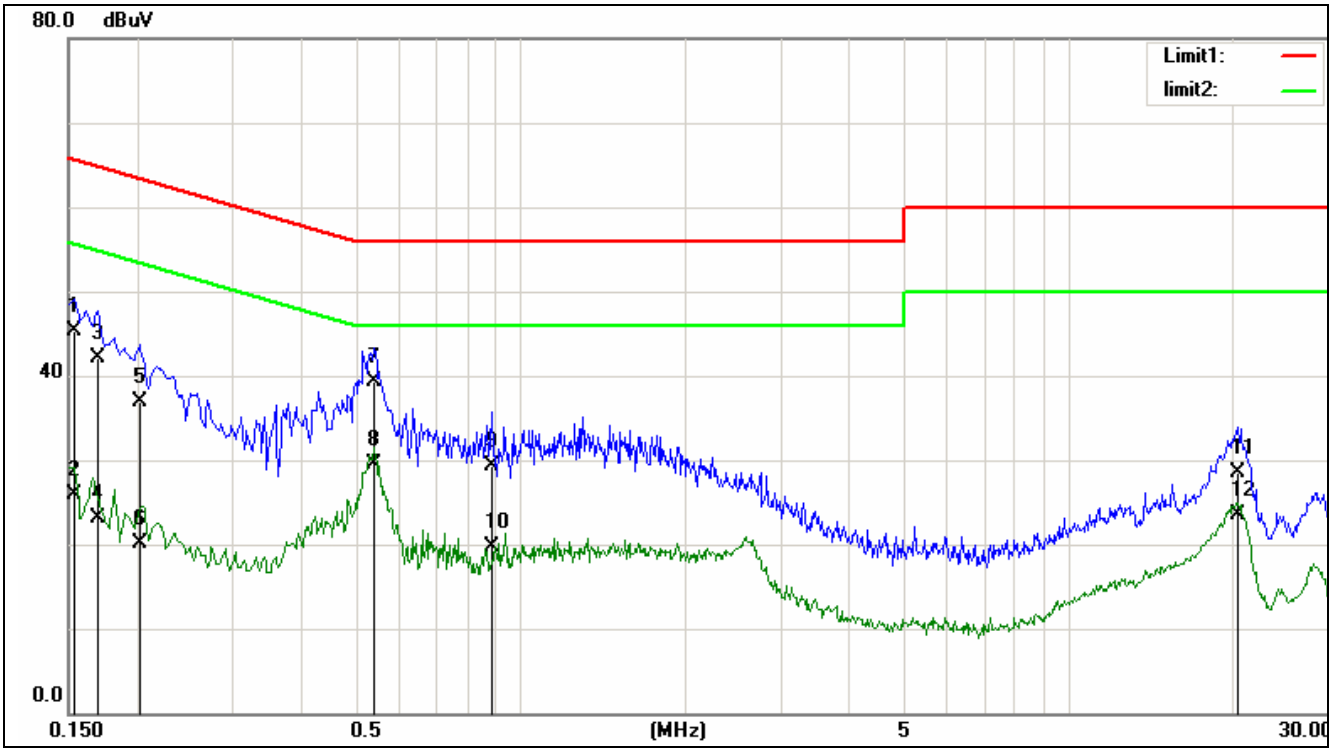
Test Results

Test Result:	**Pass**	**Probe:**	**N**
Standard:	**FCC PART 15 class B_QP**	**Power Source:**	**AC 120V/60Hz**
Test item:	**Conduction Test**	**Date:**	**2012-5-2**
Temp./Hum.(%RH):	**22/50%RH**	**Time:**	**20:10:44**
EUT:	**Speaker system**	**Model:**	**Soundsticks wireless**
Note:	**Test the EUT in transmitting mode**		



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1500	43.28	1.92	45.20	65.99	-20.79	QP
2	0.1500	24.78	1.92	26.70	55.99	-29.29	AVG
3	0.1620	40.81	1.79	42.60	65.36	-22.76	QP
4	0.1620	23.51	1.79	25.30	55.36	-30.06	AVG
5	0.1780	38.90	1.50	40.40	64.57	-24.17	QP
6	0.1780	21.40	1.50	22.90	54.57	-31.67	AVG
7	0.5340	38.47	0.53	39.00	56.00	-17.00	QP
8	0.5340	29.67	0.53	30.20	46.00	-15.80	AVG
9	0.7980	27.59	0.41	28.00	56.00	-28.00	QP
10	0.7980	17.79	0.41	18.20	46.00	-27.80	AVG
11	20.8620	31.29	1.21	32.50	60.00	-27.50	QP
12	20.8620	26.69	1.21	27.90	50.00	-22.10	AVG

Test Result:	**Pass**	**Probe:**	**L1**
Standard:	**FCC PART 15 class B_QP**	**Power Source:**	**AC 120V/60Hz**
Test item:	**Conduction Test**	**Date:**	**2012-5-2**
Temp./Hum.(%RH):	**22/50%RH**	**Time:**	**20:16:30**
EUT:	**Speaker system**	**Model:**	**Soundsticks wireless**
Note:	**Test the EUT in transmitting mode**		

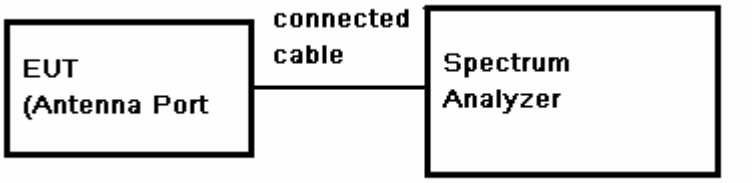


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1539	43.45	1.85	45.30	65.78	-20.48	QP
2	0.1539	24.15	1.85	26.00	55.78	-29.78	AVG
3	0.1700	40.55	1.65	42.20	64.96	-22.76	QP
4	0.1700	21.55	1.65	23.20	54.96	-31.76	AVG
5	0.2020	35.85	1.05	36.90	63.52	-26.62	QP
6	0.2020	19.05	1.05	20.10	53.52	-33.42	AVG
7	0.5420	38.88	0.52	39.40	56.00	-16.60	QP
8	0.5420	28.98	0.52	29.50	46.00	-16.50	AVG
9	0.8860	28.89	0.41	29.30	56.00	-26.70	QP
10	0.8860	19.29	0.41	19.70	46.00	-26.30	AVG
11	20.3300	27.30	1.30	28.60	60.00	-31.40	QP
12	20.3300	22.30	1.30	23.60	50.00	-26.40	AVG

4.8 Maximum Peak Output Power

Test Requirement:	**FCC Part 15.247 & DA 00-705**
Test Method:	**Base on ANSI 63.10: 2009**
Test Date:	**2012-03-31**
Test Limit:	**Regulation 15.247 (b)(1)For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.** **Refer to the result "Hopping channel number" of this document. The 1 watt (30.0dBm) limit applies.**
Test mode:	**Test in fixing frequency transmitting mode.**
Power supply:	**Connected with convert board powered by PC USB ports, and to fix frequency transmitting.**

Test Configuration:



Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 3MHz. VBW = 3 MHz. Sweep = auto; Detector Function = Peak.
3. Keep the EUT in transmitting at lowest, medium and highest channel individually. Record the max value.

Remark:

1. Pre-test the 3 modulation to find GFSK and 8DPSK is worse case, so only record GFSK and 8DPSK test data.

2. Cable loss = 1.0dB， the receiver offset loss 1.0dB

Test Result:

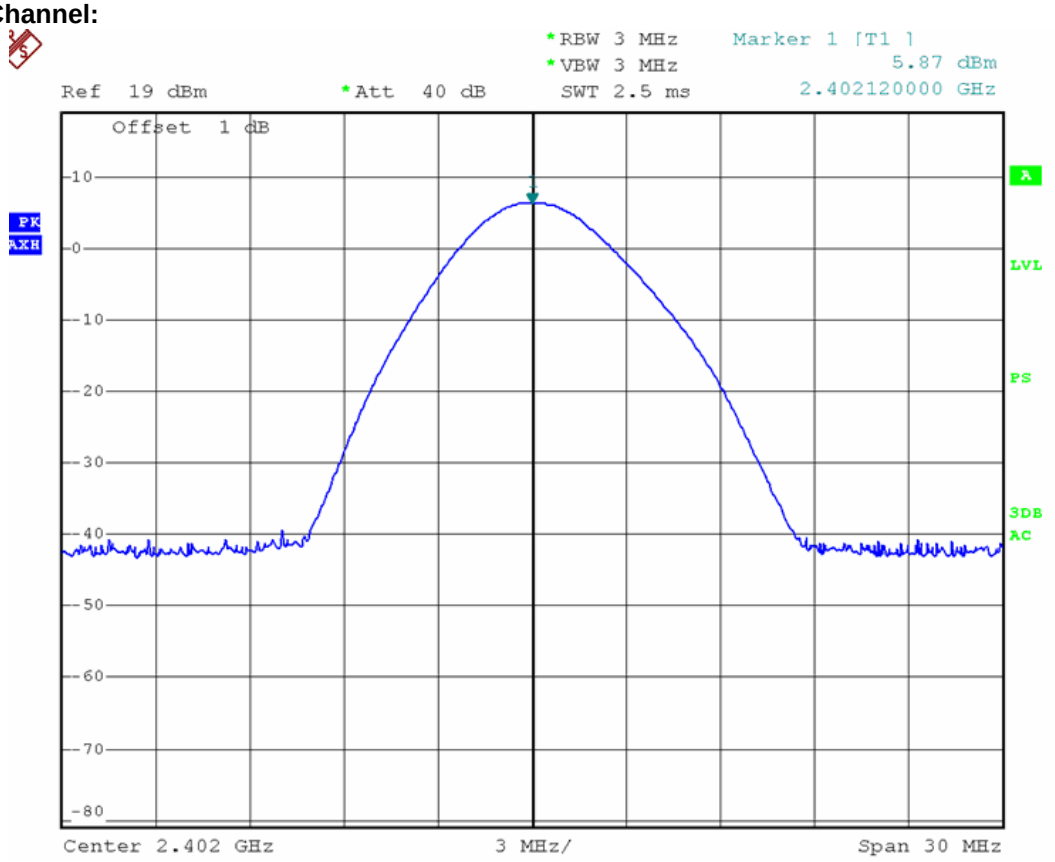
For GFSK:

Test Channel	Fundamental Frequency (GHz)	Max Output Power (dBm)	Limit (dBm)	Margin (dB)
Lowest	2.402	5.87	30.0	24.13
Middle	2.441	5.75	30.0	24.25
Highest	2.480	5.72	30.0	24.28

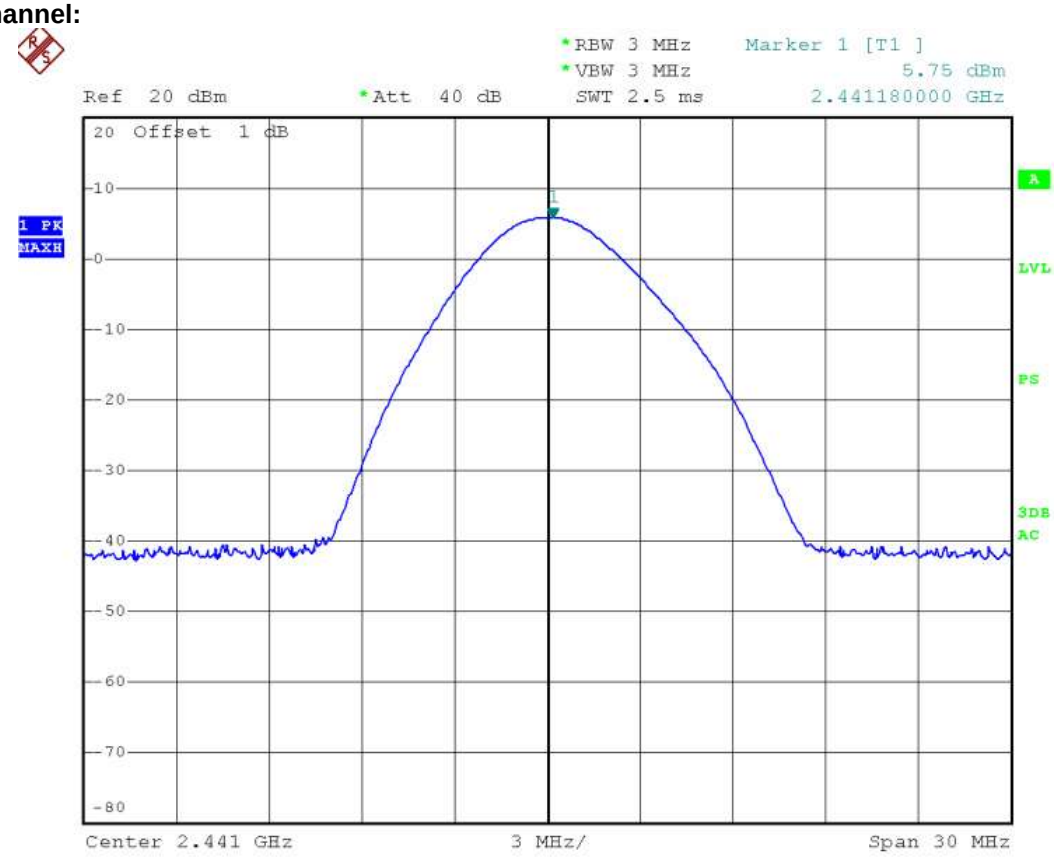
Test result: The unit does meet the FCC requirements.

Test result plot as follows:

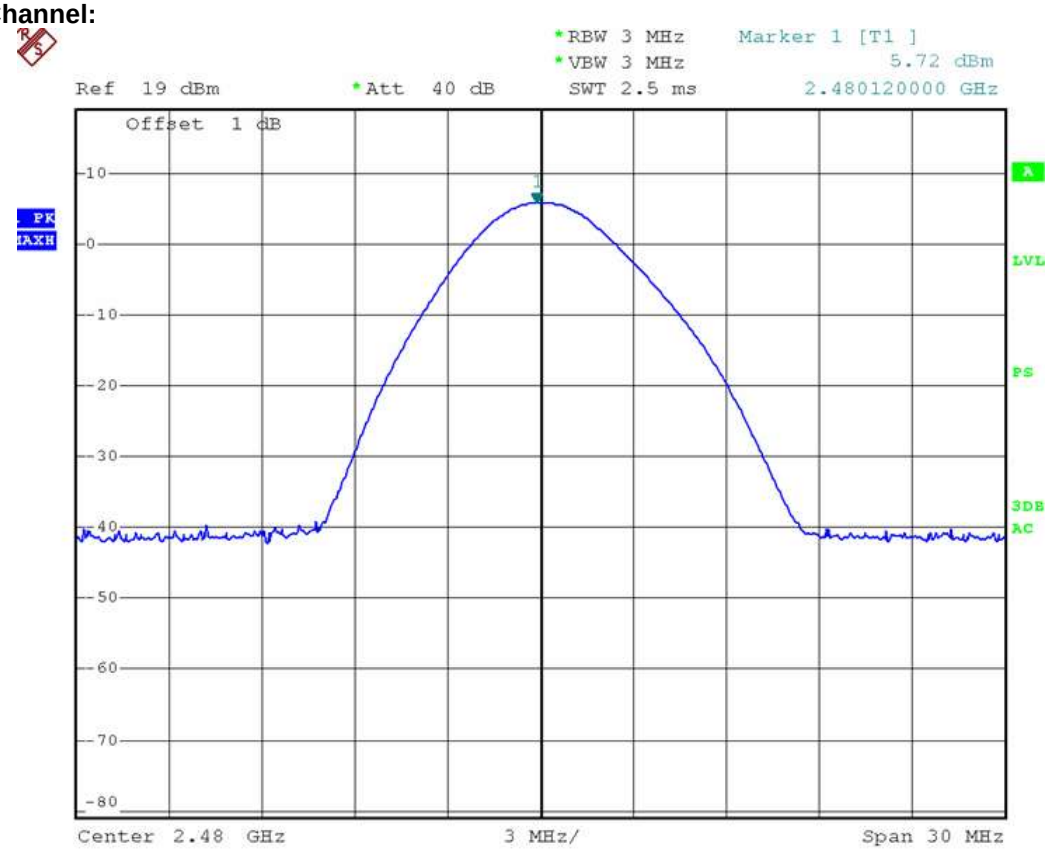
Lowest Channel:



Middle Channel:



Highest Channel:



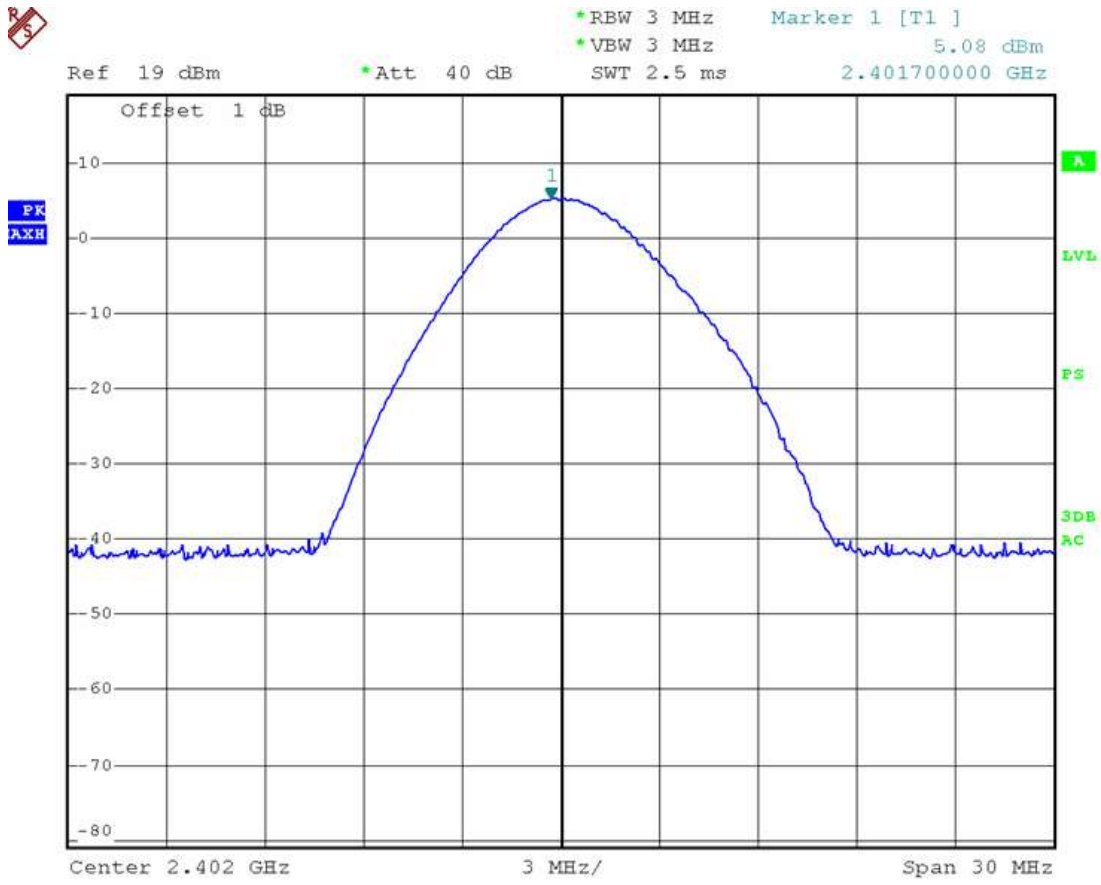
For 8DPSK:

Test Channel	Fundamental Frequency (GHz)	Max Output Power (dBm)	Limit (dBm)	Margin (dB)
Lowest	2.402	5.08	30.0	24.92
Middle	2.441	4.68	30.0	25.32
Highest	2.480	4.38	30.0	25.62

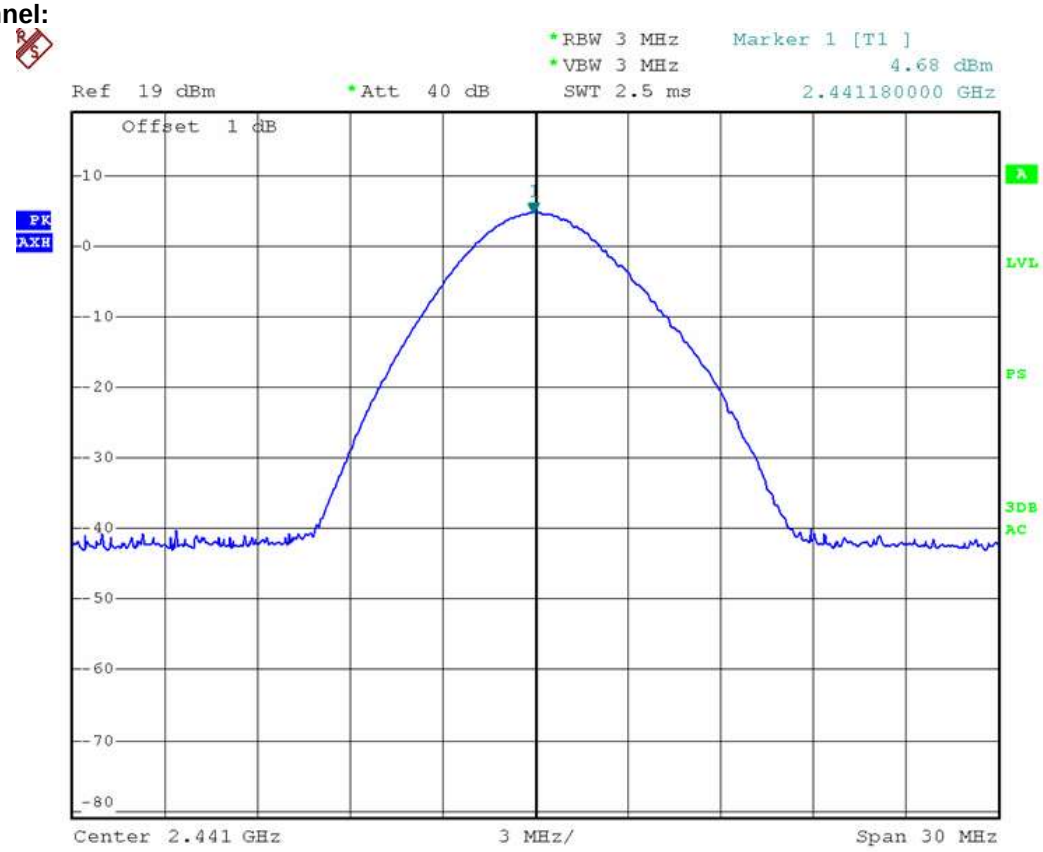
Test result: The unit does meet the FCC requirements.

Test result plot as follows:

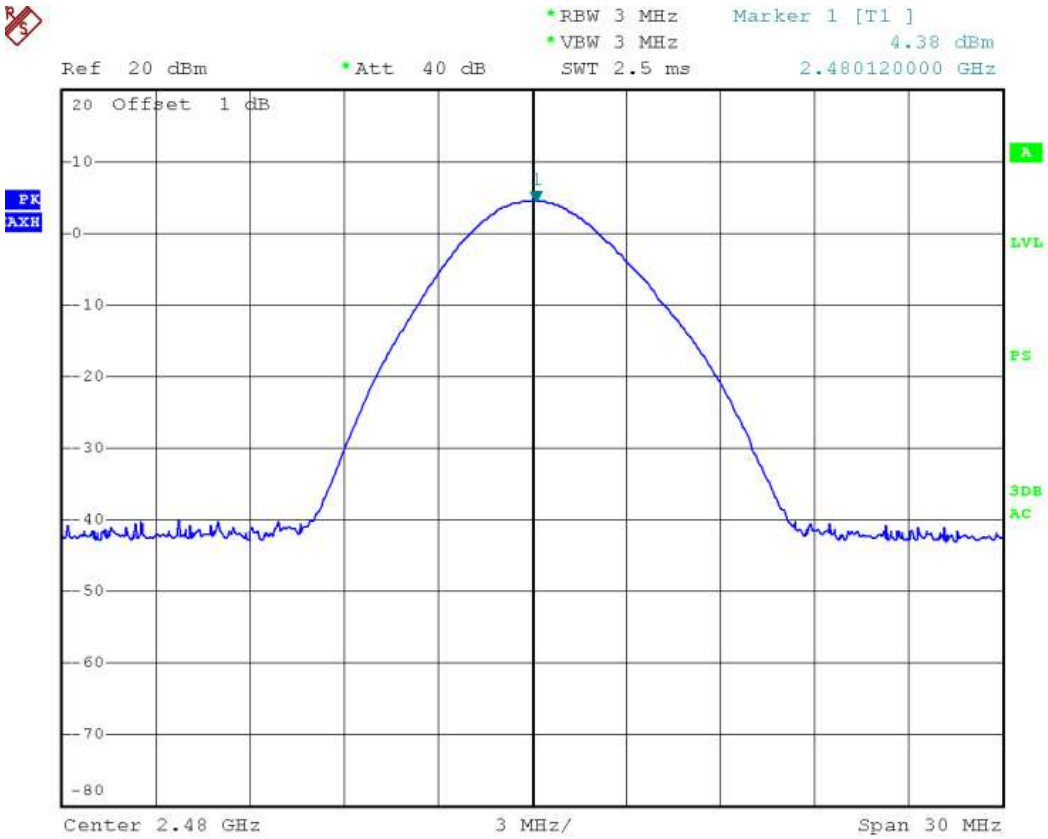
Lowest Channel:



Middle Channel:



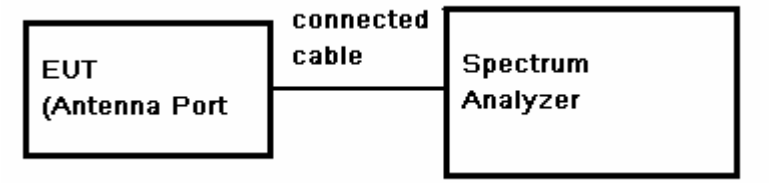
Highest Channel:



4.9 Conducted Spurious Emissions

Test Requirement:	**FCC Part 15.247**
Test Method:	**Based on FCC Part 15 C Section 15.247**
Test Date:	**2012-03-31**
Power supply:	**Connected with convert board powered by PC USB ports, and to fix frequency transmitting.**
Test requirements:	(d) 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.
Test Status:	Test the lowest. Middle, highest channel.

Test Configuration:



Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.

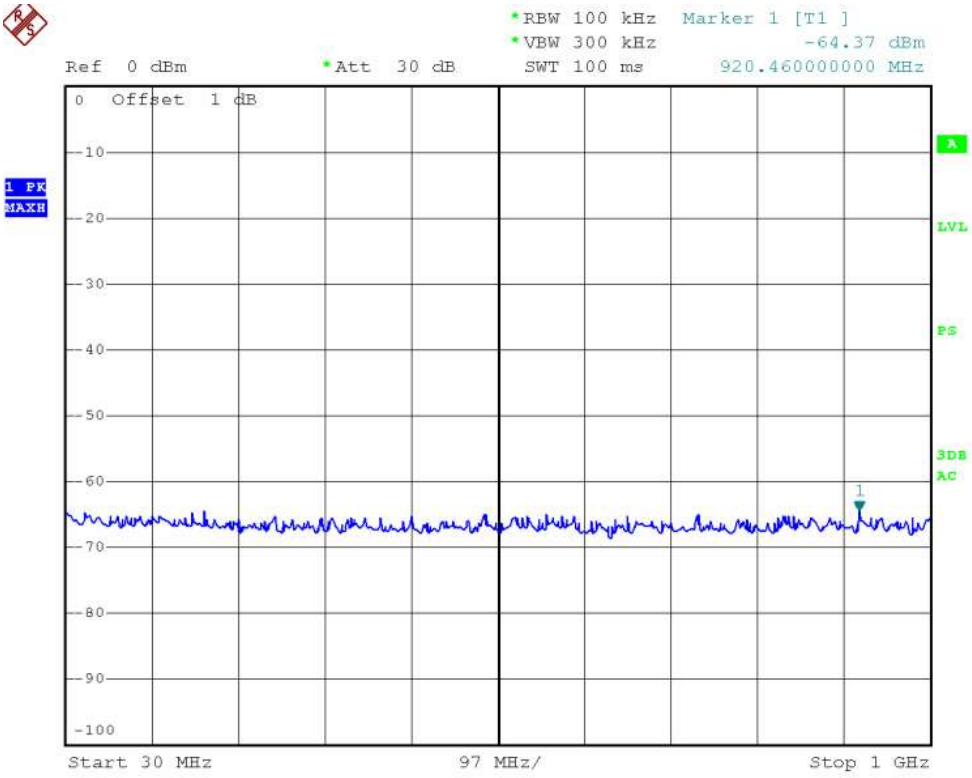
2. Set the spectrum analyzer: Sweep = auto; Detector Function = Peak (Max. hold).

Test result plot as follows:

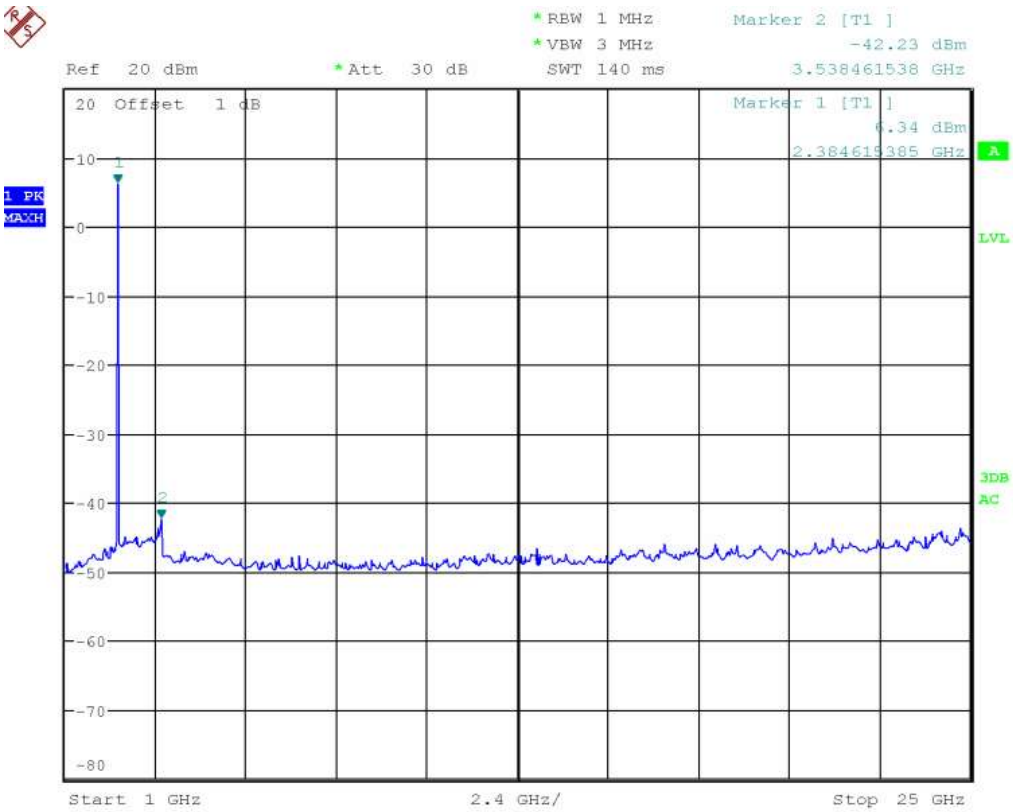
For GFSK

Lowest Channel:

30M to 1GHz

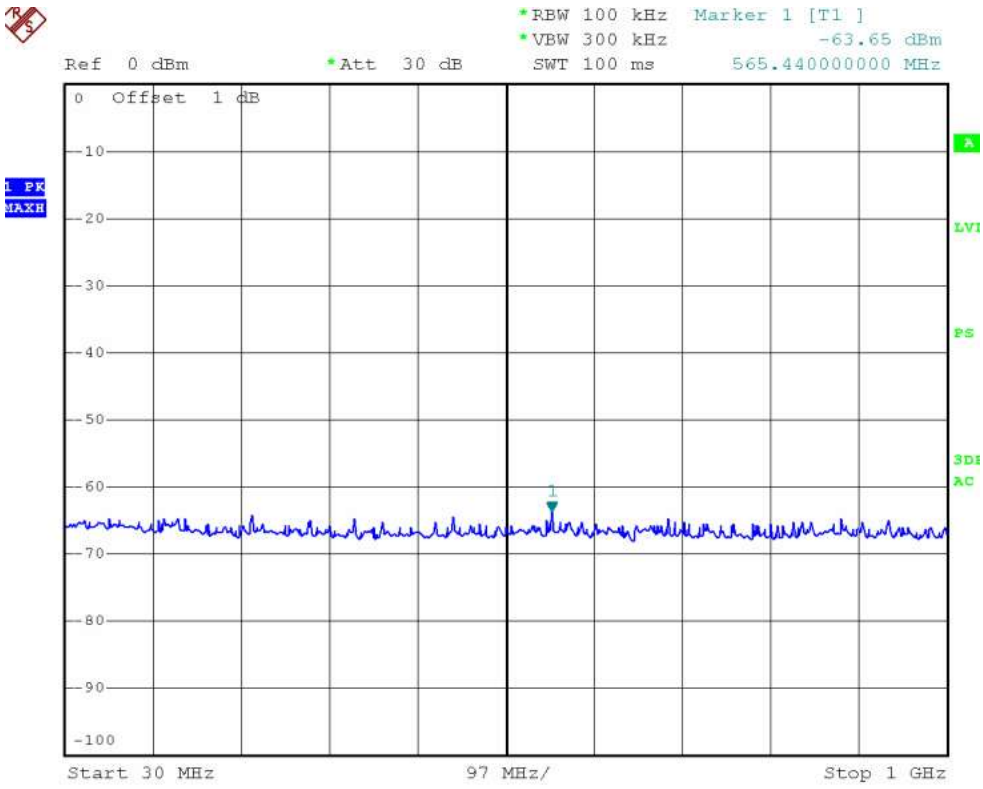


1G to 25GHz

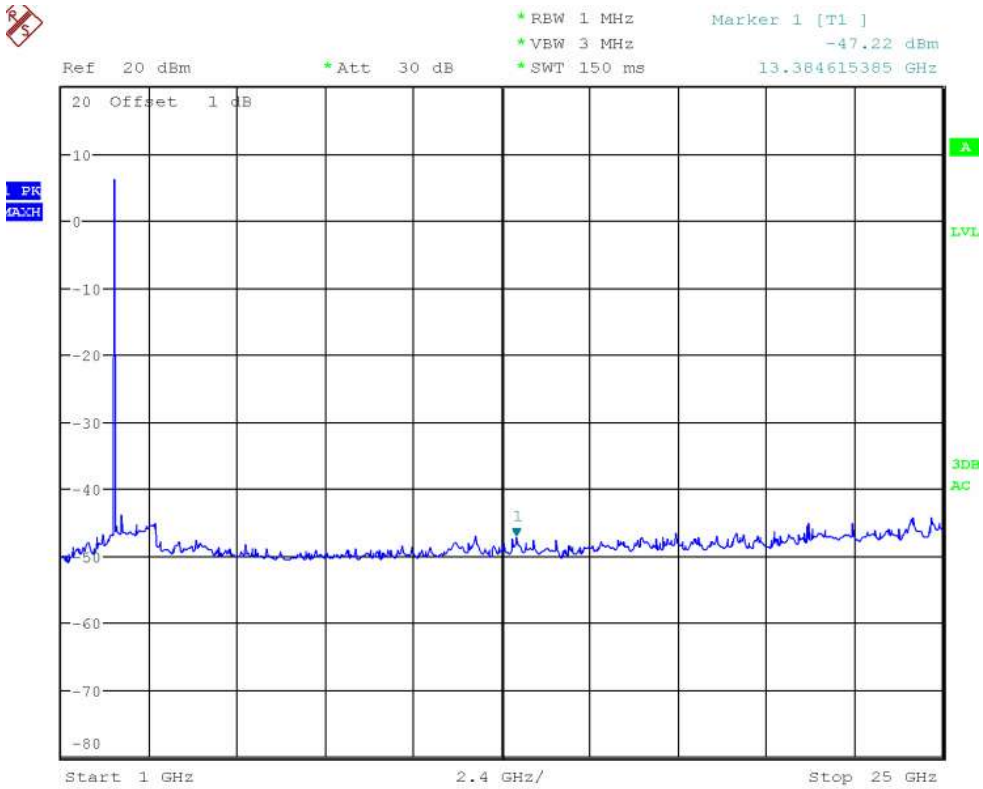


Middle Channel:

30M to 1GHz

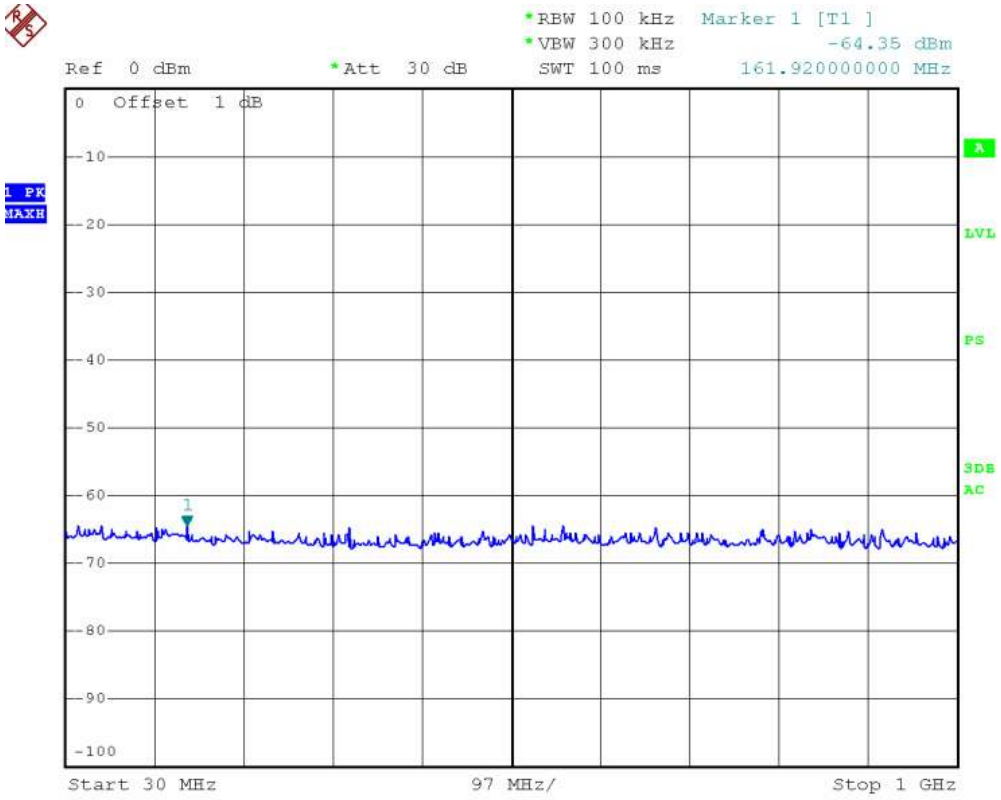


1G to 25GHz

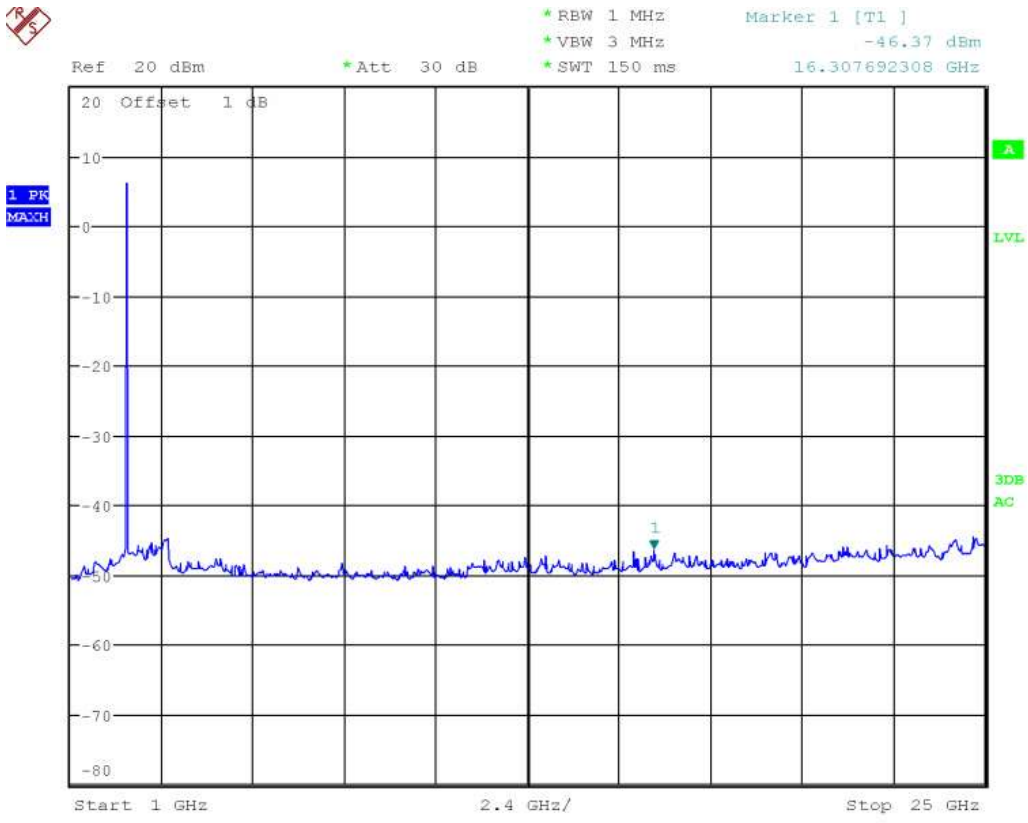


Highest Channel

30M to 1GHz



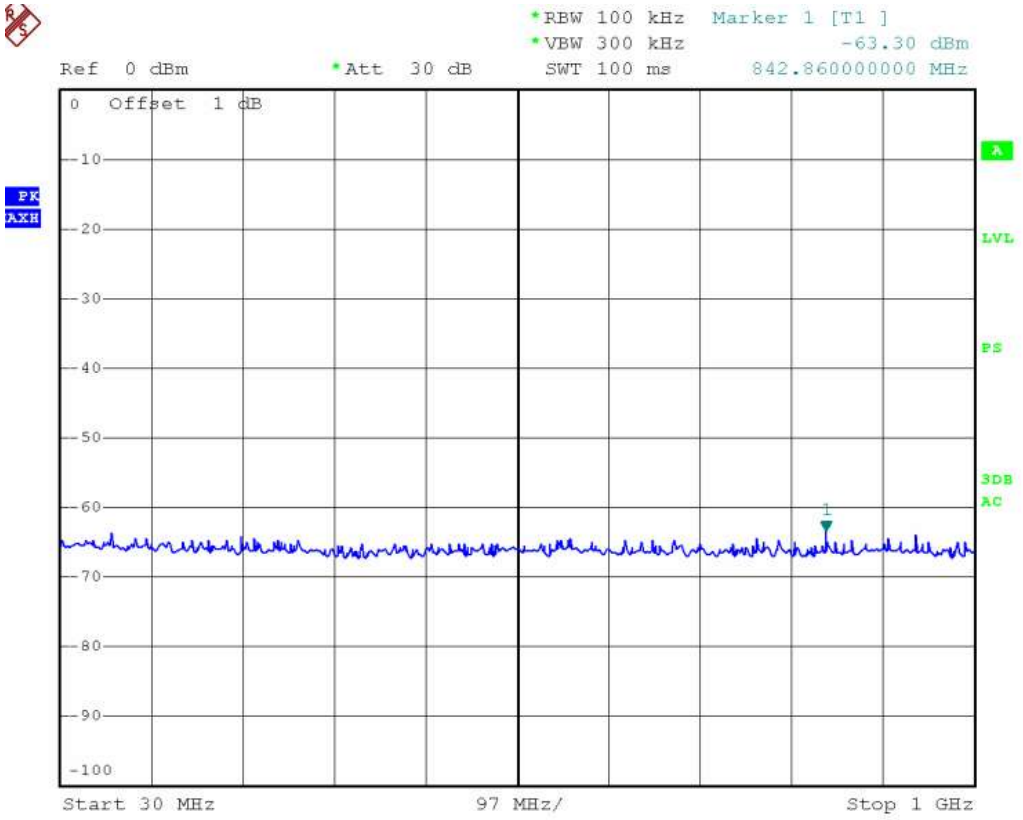
1G to 25GHz



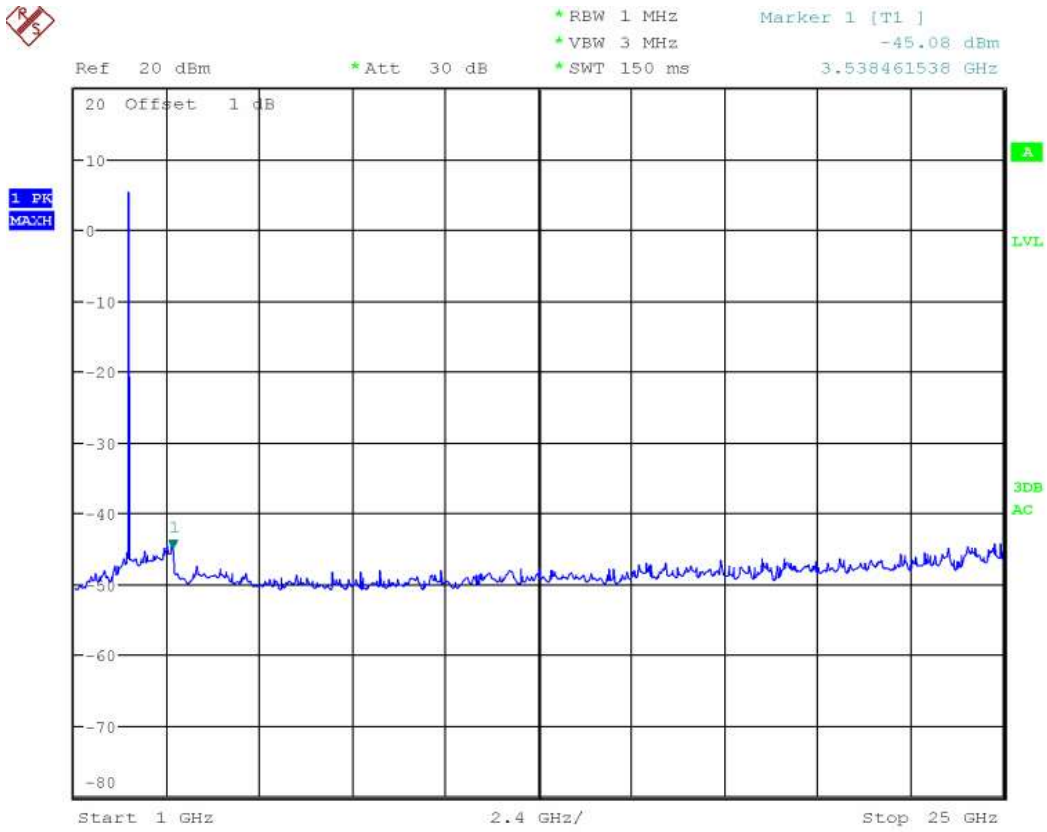
For 8DPSK

Lowest Channel:

30M to 1GHz

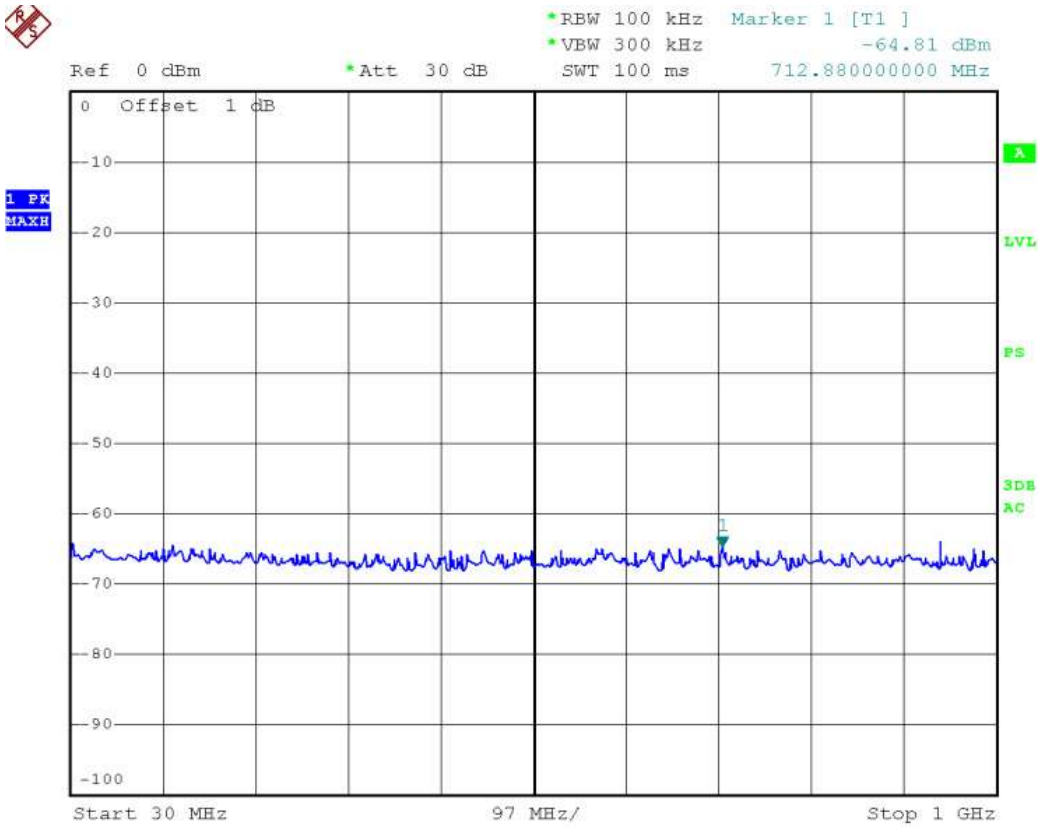


1G to 25GHz

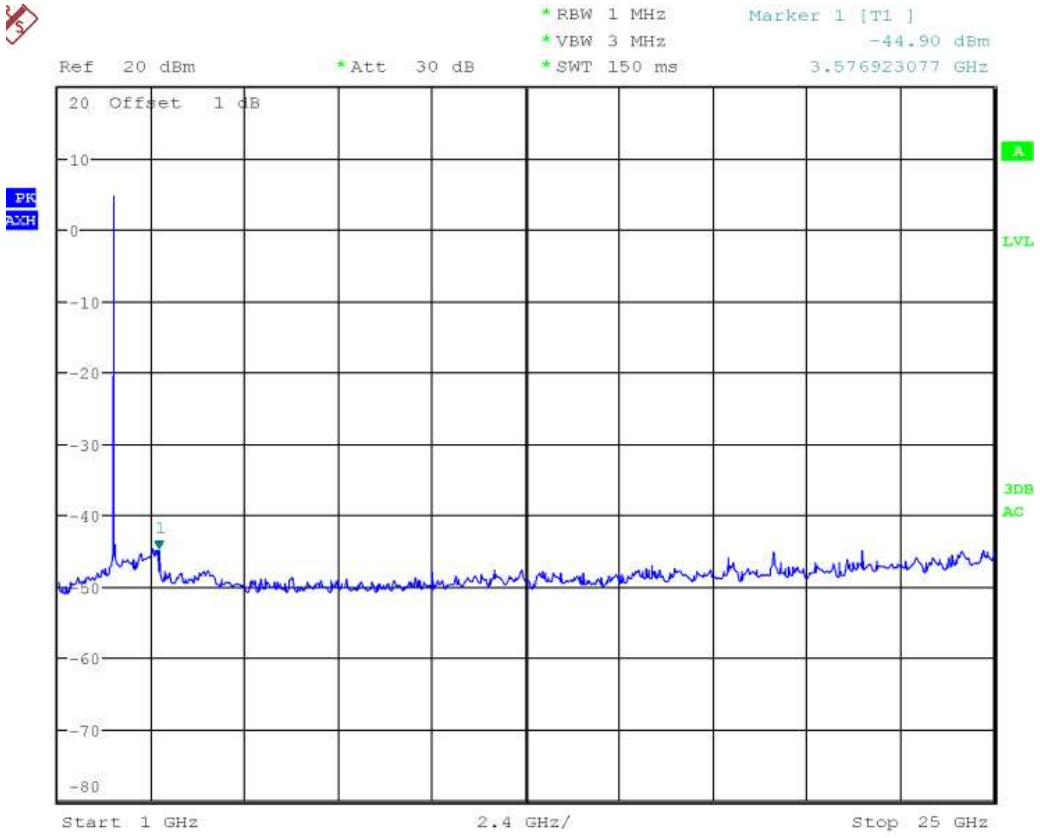


Middle Channel:

30M to 1GHz

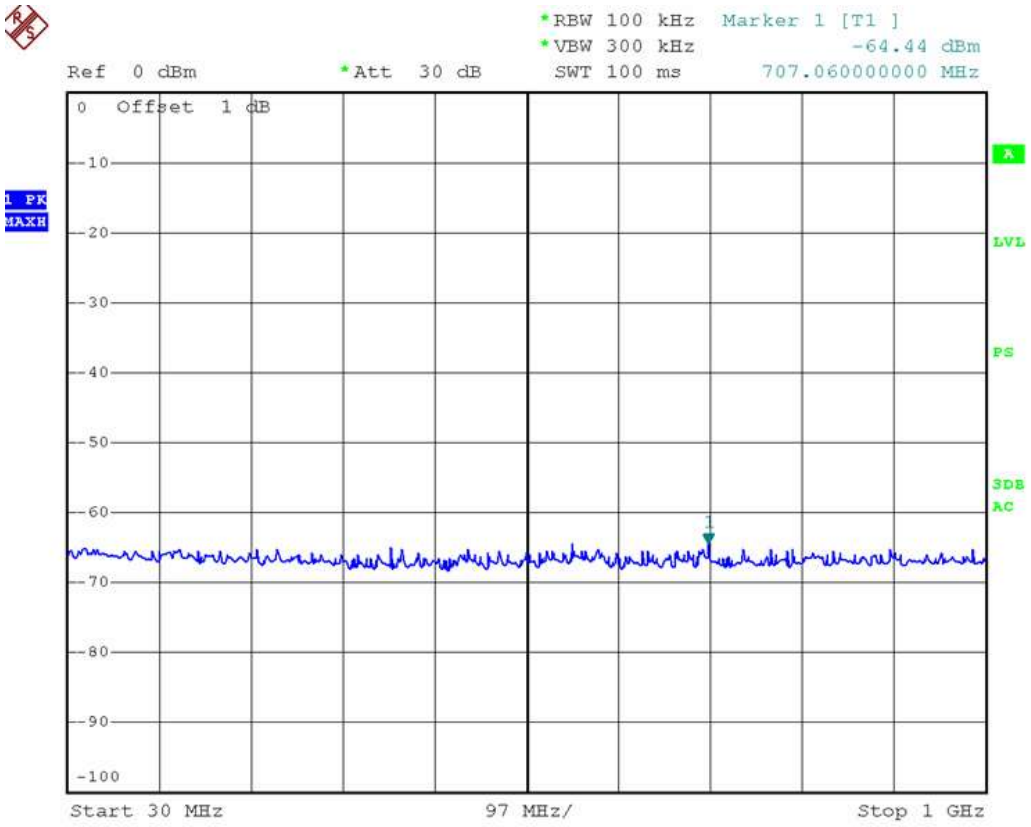


1G to 25GHz

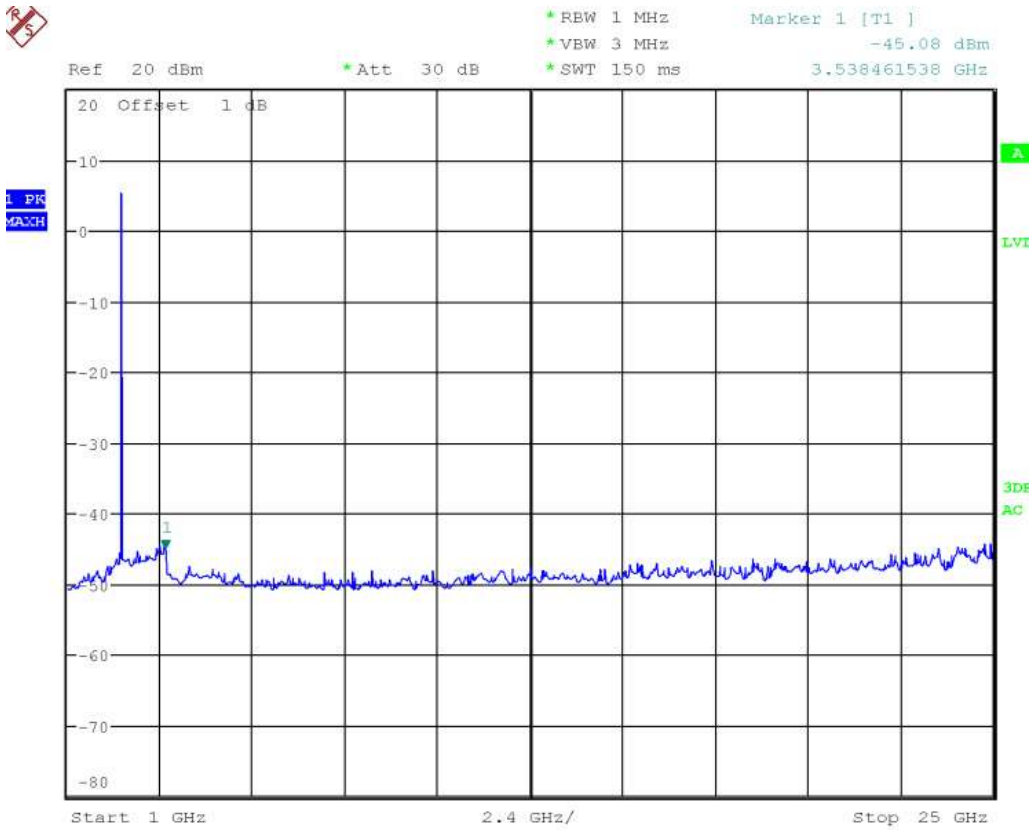


Highest Channel

30M to 1GHz



1G to 25GHz



4.10 Radiated Spurious Emissions

Test Requirement:	FCC 15.247(d) & 15.209
Test Method:	ANSI C63.10 section 8 & 13
Test Date:	2012-05-02
Test Status:	Test in fixing frequency transmitting mode.
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)
	Test instrumentation resolution bandwidth 120 kHz and Quasi-Peak detector applies (30 MHz – 1000 MHz). 1MHz resolution bandwidth and Peak and Average-Peak detector apply (1000 MHz – 25GHz).
	Receive antenna scan height 1 m – 4 m. polarization Vertical / Horizontal
Power supply:	Connected with convert board powered by PC USB ports, and to fix frequency transmitting.
15.209 Limit:	40.0 dBμV/m between 30MHz & 88MHz
	43.5 dBμV/m between 88MHz & 216MHz
	46.0 dBμV/m between 216MHz & 960MHz
	54.0 dBμV/m above 960MHz
	1G ~26.5GHz， 74dBμV/m in Peak，
	54.0 dBμV/m in AV.
15.247(d) limit:	(d) 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.

Test Configuration:

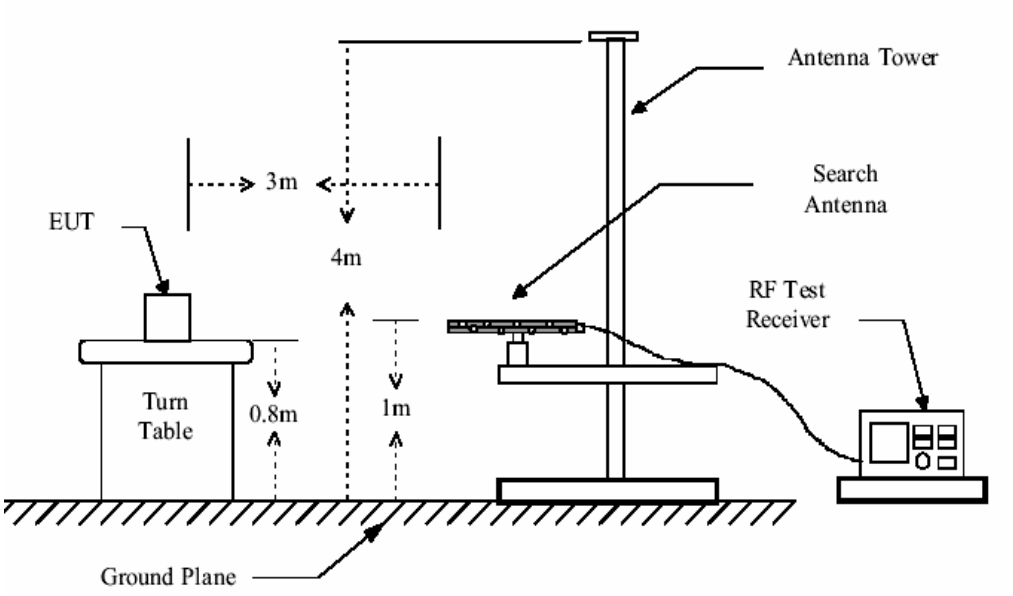


Figure 1. 30MHz to 1GHz radiated emissions test configuration

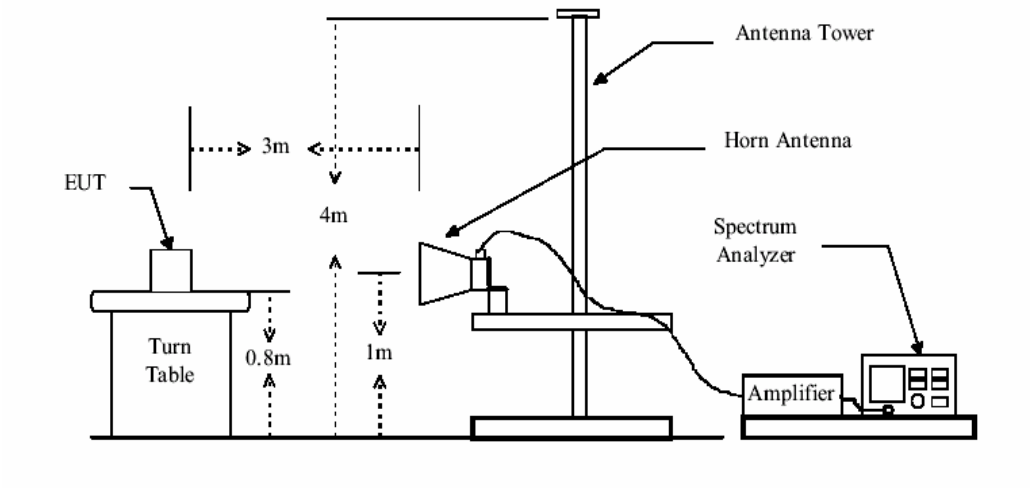


Figure 2. Above 1GHz radiated emissions test configuration

Test Procedure: The procedure used was ANSI Standard C63.10-2009. The receiver was scanned from 30MHz to 25GHz.When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Pre-test for normal mode and EDR mode, to find the EDR is the worst case.

The worst case emissions were reported.

Test Results

1. Low Frequency 2402MHz

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Polarziation
1	127.8713	31.18	8.72	39.90	43.50	-3.60	Horizontal
2	136.0250	31.62	8.98	40.60	43.50	-2.90	Horizontal
3	160.1007	29.91	10.69	40.60	43.50	-2.90	Horizontal
4	303.8167	27.03	15.27	42.30	46.00	-3.70	Horizontal
5	336.1560	25.44	16.86	42.30	46.00	-3.70	Horizontal
6	127.8713	26.28	8.72	35.00	43.50	-8.50	Vertical
7	136.0250	24.22	8.98	33.20	43.50	-10.30	Vertical
8	152.2050	25.04	10.26	35.30	43.50	-8.20	Vertical
9	215.6456	22.95	12.25	35.20	43.50	-8.30	Vertical

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Antenna polarization
1	3067.753	30.01	0.92	30.93	74.00	-43.07	Horizontal
2	5177.706	31.95	3.66	35.61	74.00	-38.39	Horizontal
3	10276.904	30.06	17.42	47.48	74.00	-26.52	Horizontal
4	17105.836	30.15	22.64	52.79	74.00	-21.21	Horizontal
5	4031.884	30.49	7.44	37.93	74.00	-36.07	Vertical
6	10324.617	30.87	17.34	48.21	74.00	-25.79	Vertical
7	17185.254	29.86	22.59	52.45	74.00	-21.55	Vertical

AV Measurement:

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Antenna polarization
1	3067.753	17.28	0.92	18.20	54.00	-35.80	Horizontal
2	5177.706	19.74	3.66	23.40	54.00	-30.60	Horizontal
3	10276.904	18.18	17.42	35.60	54.00	-18.40	Horizontal
4	17105.836	17.96	22.64	40.60	54.00	-13.40	Horizontal
5	4031.884	18.86	7.44	26.30	54.00	-27.70	Vertical
6	10324.617	18.26	17.34	35.60	54.00	-18.40	Vertical
7	17185.254	17.71	22.59	40.30	54.00	-13.70	Vertical

2. Middle Frequency 2441MHz

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Antenna polarization
1	226.8324	21.02	12.81	33.83	46.00	-12.17	Vertical
2	127.1547	27.61	8.72	36.33	43.50	-7.17	Horizontal
3	168.4062	26.19	10.54	36.73	43.50	-6.77	Horizontal
4	191.6416	24.04	11.45	35.49	43.50	-8.01	Horizontal
5	277.6921	21.01	14.37	35.38	46.00	-10.62	Horizontal

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Antenna polarization
1	1628.542	42.05	2.57	44.62	74.00	-29.39	Horizontal
2	2441.524	44.27	5.71	49.98	74.00	-24.02	Horizontal
3	1628.542	40.02	2.57	42.59	74.00	-31.41	Vertical
4	2441.524	41.52	5.71	47.23	74.00	-26.77	Vertical

AV Measurement:

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Antenna polarization
1	1628.542	41.12	2.57	43.69	54.00	-10.31	Horizontal
2	2441.524	42.43	5.71	48.14	54.00	-5.86	Horizontal
3	1628.542	37.50	2.57	40.07	54.00	-13.93	Vertical
4	2441.524	38.87	5.71	44.58	54.00	-9.42	Vertical

The field strength is calculated by adding the Antenna Factor. Correct Factor.

The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Correct Factor

3. High Frequency 2480MHz

30MHz~1GHz Spurious Emissions .Quasi-Peak Measurement

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Antenna polarization
1	127.8713	26.28	8.72	35.00	43.50	-8.50	Vertical
2	136.0250	27.22	8.98	36.20	43.50	-7.30	Vertical
3	152.2050	24.94	10.26	35.20	43.50	-8.30	Vertical
4	224.2973	23.49	12.71	36.20	46.00	-9.80	Vertical
1	127.8713	31.58	8.72	40.30	43.50	-3.20	Horizontal
2	136.0250	31.42	8.98	40.40	43.50	-3.10	Horizontal
3	160.1008	29.81	10.69	40.50	43.50	-3.00	Horizontal
4	336.1560	25.34	16.86	42.20	46.00	-3.80	Horizontal

1~25 GHz Harmonics & Spurious Emissions. Peak & Average Measurement

Peak Measurement:

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Antenna polarization
1	2969.880	31.08	0.57	31.65	74.00	-42.35	Horizontal
2	4897.761	31.35	3.74	35.09	74.00	-38.91	Horizontal
3	8578.429	27.78	13.81	41.59	74.00	-32.41	Horizontal
4	10229.411	30.17	17.52	47.69	74.00	-26.31	Horizontal
5	17587.910	30.25	22.48	52.73	74.00	-21.27	Horizontal
6	2969.880	30.62	0.57	31.19	74.00	-42.81	Vertical
7	3976.245	29.99	7.43	37.42	74.00	-36.58	Vertical
8	10324.617	30.51	17.34	47.85	74.00	-26.15	Vertical
9	17105.836	30.38	22.64	53.02	74.00	-20.98	Vertical

AV Measurement:

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Antenna polarization
1	2969.880	17.93	0.57	18.50	54.00	-35.50	Horizontal
2	4897.761	19.66	3.74	23.40	54.00	-30.60	Horizontal
3	8578.429	16.39	13.81	30.20	54.00	-23.80	Horizontal
4	10229.411	18.88	17.52	36.40	54.00	-17.60	Horizontal
5	17587.910	17.52	22.48	40.00	54.00	-14.00	Horizontal
6	2969.880	17.73	0.57	18.30	54.00	-35.70	Vertical
7	3976.245	18.27	7.43	25.70	54.00	-28.30	Vertical
8	10324.617	19.06	17.34	36.40	54.00	-17.60	Vertical
9	17105.836	18.56	22.64	41.20	54.00	-12.80	Vertical

The field strength is calculated by adding the Antenna Factor. Correct Factor.

The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Correct Factor

Remark: No any other emissions level which are attenuated less than 20dB below the limit.

According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.

Hence there no other emissions have been reported.

Remark:

1). N/A: For this intentional radiator operates below 25 GHz. The spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the third harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 3rd harmonic.

2). As shown in Section, for frequencies above 1000 MHz. the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

3). The test only perform the EUT in transmitting status since the test frequencies were over 1GHz only required transmitting status.

Test result: The unit does meet the requirements.

4.10.1 Radiated Emissions which fall in the restricted bands

Test Requirement:	Section 15.247(d) In addition, radiated emissions which fall in the restricted bands. as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).
Test Method:	Base on ANSI 63.10
Test Date:	2012-03-31
Measurement Distance:	3m (Semi-Anechoic Chamber)
Limit:	40.0 dBμV/m between 30MHz & 88MHz; 43.5 dBμV/m between 88MHz & 216MHz; 46.0 dBμV/m between 216MHz & 960MHz; 54.0 dBμV/m above 960MHz.
Detector:	Peak for pre-scan: 100kHz resolution bandwidth and 100kHz video bandwidth within 1GHz. 1MHz resolution bandwidth and 1MHz video bandwidth above 1GHz

Section 15.205 Restricted bands of operation.

(a) Except as shown in paragraph (d) of this section. only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	
13.36 - 13.41	322 - 335.4		

Test Result:

Pretest the Bluetooth normal mode and EDR mode， record EDR mode date

The field strength was measured with an EMI measuring receiver and 1 MHz RBW / VBW for peak and with 1MHz RBW / 10Hz VBW for average at a distance of 3m.

Max field strength in 3m distance:

Horizontal：

No.	Frequency (MHz)	PK Reading (dBuV/m)	AV Reading (dBuV/m)	Correct Factor(dB/m)	Peak (dBuV/m)	Average (dBuV/m)
1	2390.000	38.25	35.16	5.88	44.13	41.04
2	2483.500	36.65	34.12	5.02	41.67	39.14

Vertical：

No.	Frequency (MHz)	PK Reading (dBuV/m)	AV Reading (dBuV/m)	Correct Factor(dB/m)	Peak (dBuV/m)	Average (dBuV/m)
1	2390.000	40.12	37.58	5.88	46.00	43.46
2	2483.500	39.95	36.36	5.02	44.97	4.38

Remark: No any other emission which fall in restricted bands can be detected and be reported.

4.11 Band Edges Requirement

Test Requirement:	**FCC Part 15 C**
Test Method:	**Based on ANSI 63.10**
	Operation within the band 2400 – 2483.5 MHz
Test Date:	**2012-05-03**
Power supply:	**Connected with convert board powered by PC USB ports, and to fix frequency transmitting.**
Requirements:	**Section 15.247 (d) 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 Section 15.209(a) is not required.**
Method of Measurement:	Set RBW of spectrum analyzer to 100 kHz and VBW of spectrum analyzer to 300 kHz with suitable frequency span including 100 kHz bandwidth from band edge. The band edges was measured and recorded.

GFSK and 8DPSK mode:

The band edges was measured and recorded Result:

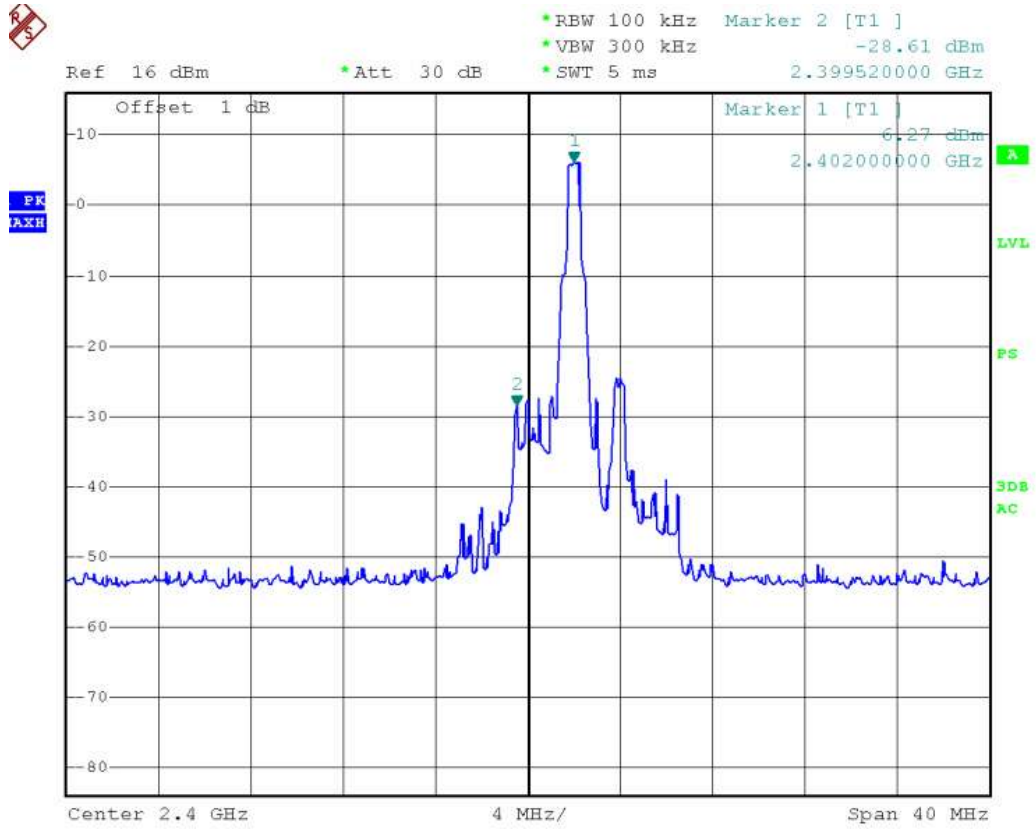
The Lower Edges attenuated more than 20dB.

The Upper Edges attenuated more than 20dB.

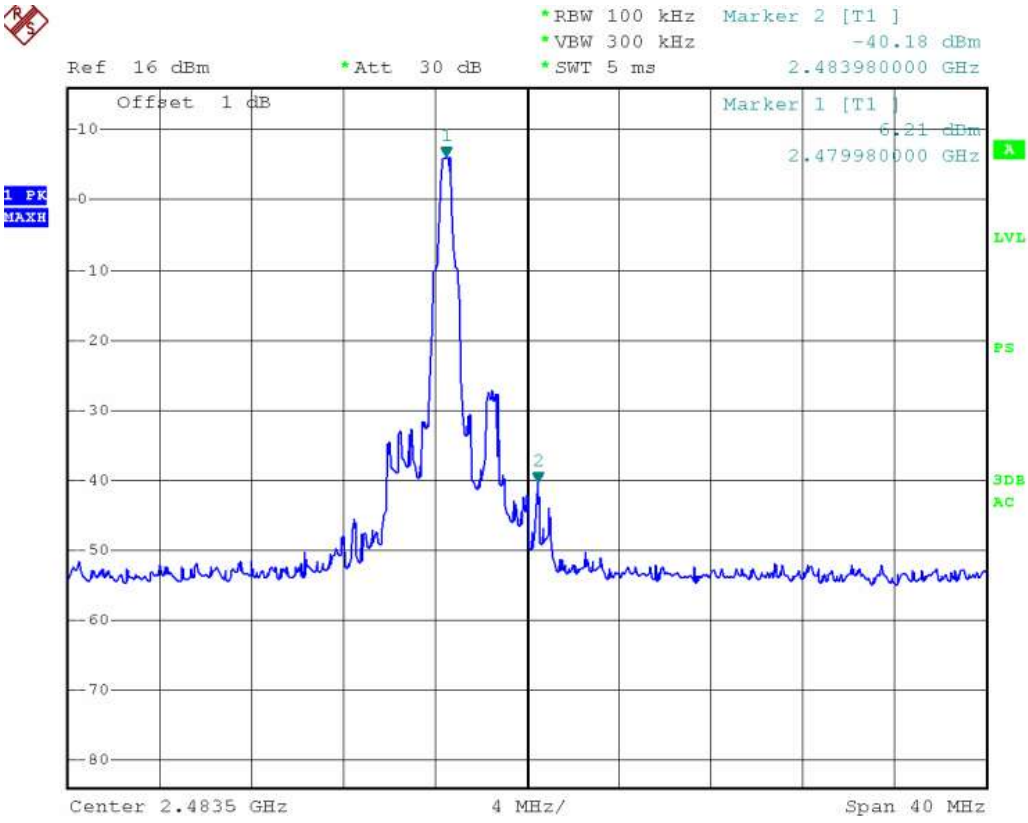
The graph as below. Represents the emissions take for this device.

For GFSK

Lowest Channel

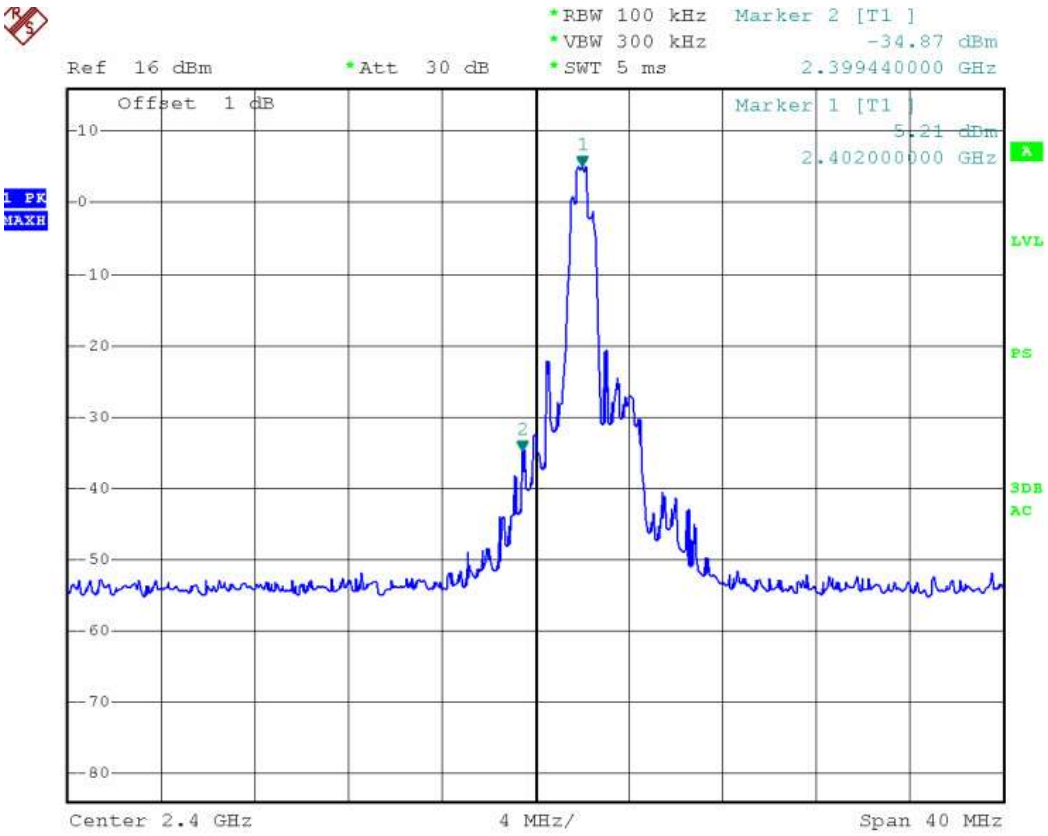


Highest Channel

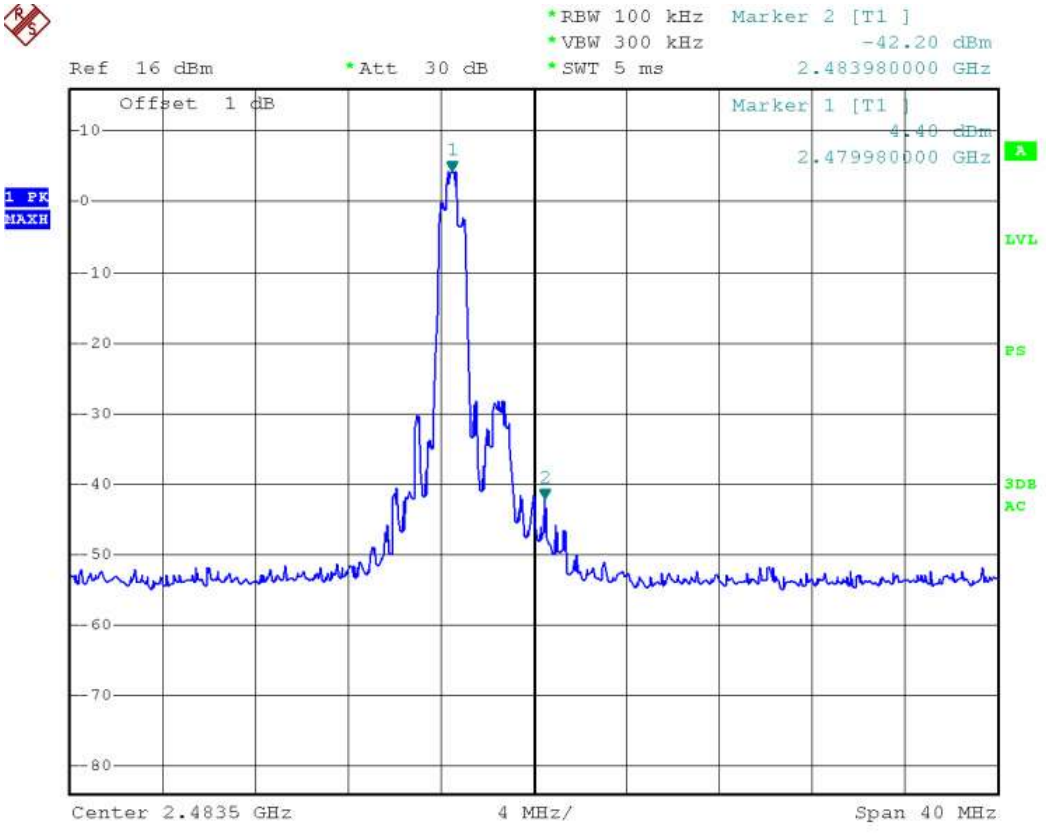


For 8DPSK

Lowest Channel



Highest Channel



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