FCC/IC RADIO TEST REPORT

according to

FCC CFR Title 47 Part 15 Subpart C

Industry Canada RSS-Gen Issue 3/RSS-210 Issue 8

Applicant	:	Shenzhen South Digital Limited
Address	:	Building 1,Hao'er Jiashitai Industrial Park, Fengtang Rd., Tangwei, Fuyong Town, Baoan District, Shenzhen,China
Equipment	:	Tablet PC
Model No.	:	W100
Trademark	:	Shenzhen South Digital Limited
FCC ID	:	2ACT4-W100
IC	:	12203A-W100

- The test result refers exclusively to the test presented test model / sample.,
- Without written approval of ***Cerpass Technology (Suzhou) Co.,Ltd***. the test report shall not be reproduced except in full.
- The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Rules and Regulations Part 15. The test report has been issued separately.
- The test report must not be used by the clients to claim product certification approval by ***NVLAP*** or any agency of the Government.

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History of this test report

■ ORIGINAL

☐ Additional attachment as following record:

Attachment No.	Issue Date	Description

CERTIFICATE OF COMPLIANCE

according to

FCC CFR Title 47 Part 15 Subpart C
Industry Canada RSS-Gen Issue 3/RSS-210 Issue 8

Applicant	:	Shenzhen South Digital Limited
Address	:	Building 1,Hao'er Jiashitai Industrial Park, Fengtang Rd., Tangwei, Fuyong Town, Baoan District, Shenzhen,China
Equipment	:	Tablet PC
Model No.	:	W100
Trademark	:	Shenzhen South Digital Limited
FCC ID	:	2ACT4-W100
IC	:	12203A-W100

I **HEREBY** CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4** The equipment was ***passed*** the test performed according to **FCC Rules and Regulations Part 15 Subpart C (2010).**

The test was carried out on Jul 27~Aug 04,2014 at ***Cerpass Technology (Suzhou) Co.,Ltd***

Signature

Miro Chueh/ Technical director

1. Report of Measurements and Examinations

1.1 List of Measurements and Examinations

FCC Rule	. Description of Test	Result
§ 15.203	. Antenna Requirement	Pass
§ 15.207(a)	. Conducted Emission	Pass
§ 15.209(a)	. Radiated Emission	Pass
§ 15.247(a)(1)	. Channel Carrier Frequencies Separation	Pass
§ 15.247(a)(1)	. 20dB Bandwidth Measurement	Pass
§ 15.247(a)(1)	. Dwell Time	Pass
§ 15.247(b)	. Number of Hopping Channels	Pass
§ 15.247(b)	. Peak Output Power Measurement Data	Pass
§ 15.247(d)	. Band Edges Measurement Data	Pass

IC Rule	Description of Test	Result
ICES-003	Conducted Emission	PASS
ICES-003	Radiated Emission	PASS
RSS 210 A8.1	Occupied Bandwidth	PASS
RSS 210 A8.1	Frequencies Separation	PASS
RSS 210 A8.1	Dwell Time on each channel	PASS
RSS 210 A8.1	Number of Hopping Channels	PASS
RSS 210 A8.4	Maximum Peak Output Power	PASS
RSS 210 A8.5	Band Edges Measurement Data	PASS

2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

Frequency	2.402GHz~2.480GHz
Number of Channel	79 channel
Modulation type	GFSK, π /4 PSK,8DPSK
Power Supply	DC5.0V Supplied by adapter DC 3.7V supplied by battery
Adapter Spec.	SK02G-0900200U I/P: AC100-240V~ 50/60Hz 0.6A Max O/P:DC9.0V ⎓ 2A DC
Battery	3.7V,7900mAh,29.23Wh
Transmit Power	GFSK: 5.08dBm
	8DPSK: 5.31dBm
Antenna type	Built-in Antenna 2 dBi

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

2.2 Carrier Frequency of Channels

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	20	2422	40	2442	60	2462
01	2403	21	2423	41	2443	61	2463
02	2404	22	2424	42	2444	62	2464
03	2405	23	2425	43	2445	63	2465
04	2406	24	2426	44	2446	64	2466
05	2407	25	2427	45	2447	65	2467
06	2408	26	2428	46	2448	66	2468
07	2409	27	2429	47	2449	67	2469
08	2410	28	2430	48	2450	68	2470
09	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461	---	---

2.3 Test Mode & Test Software

a. During testing, the interface cables and equipment positions were varied according to ANSI C63.4
b. The complete test system included EUT for RF test.
c. The EUT was executed to keep transmitting and receiving data via Bluetooth.
d. The following test mode was performed for conduction and radiation test:
GFSK: CH 00: 2402MHz, CH 39: 2441MHz, CH 78: 2480MHz.
8DPSK: CH 00: 2402MHz, CH 39: 2441MHz, CH 78: 2480MHz.

2.4 Description of Test System

No	Device	Manufacturer	Model No.	Description
1	Earphone	LENOVO	GS-402IM	N/A
2	USB Mouse	DELL	OXN967	R41108
3	Flat Panel Monitor	DELL	U2713HMt	R41126
4	SecureDigital	Kingston	Kingston8GTF	N/A
5	Adapter	SIMSUKIAN	SK02G-0900200U	N/A

Use Cable:

No.	Cable	Quantity	Description
A	HDMI Cable	1	1.5m Non Shielding
B	DC Cable	1	1.2m Non Shielding with one
C	Audio Cable	1	1.5m Non Shielding
D	USB Mouse Cable	1	1.5m Non Shielding

2.5 General Information of Test

Test Site:	Cerpass Technology (Suzhou) Co.,Ltd
Test Site Location :	No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China
NVLAP LAB Code :	200814-0
FCC Registration Number :	916572, 331395
IC Registration Number :	7290A-1, 7290A-2
VCCI Registration Number :	T-1945 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test below 1GHz G-227 for Radiated emission test above 1GHz
Frequency Range Investigated:	Conducted: from 150kHz to 30MHz Radiation: from 30MHz to 25000MHz
Test Distance:	The test distance of radiated emission from antenna to EUT is 3 M.

NVLAP LAB CODE 200814-0

2.6 Measurement Uncertainty

Measurement Item	Measurement Uncertainty
Conducted Emission	±2.71 dB
Radiation test (10m) below 1GHz	Vertical : ±3.89 dB
	Horizontal: ±4.11 dB
Radiation test (3m) below 1GHz	Vertical : ±4.11 dB
	Horizontal: ±4.10 dB
20 dB Bandwidth	7500 Hz
Maximum Peak Output Power	±1.4 dB
100kHz Bandwidth of Frequency Band Edges	±2.2 dB
Power Spectral Density	±1.3870 dB

3. Antenna Requirements

3.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 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.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

3.2 Antenna Construction and Directional Gain

Antenna type: Built-in Antenna

Antenna Gain: 2 dBi

4. Test of Conducted Emission

4.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2009 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

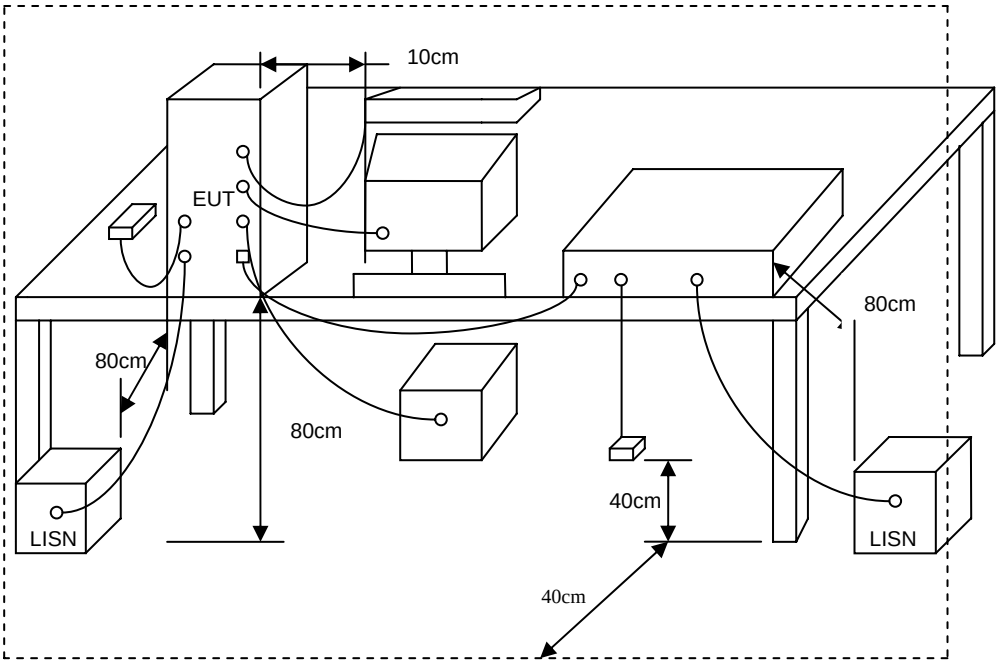
Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

4.2 Test Procedures

a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
c. All the support units are connecting to the other LISN.
d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
f. Both sides of AC line were checked for maximum conducted interference.
g. The frequency range from 150 kHz to 30 MHz was searched.
h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

4.3 Typical Test Setup

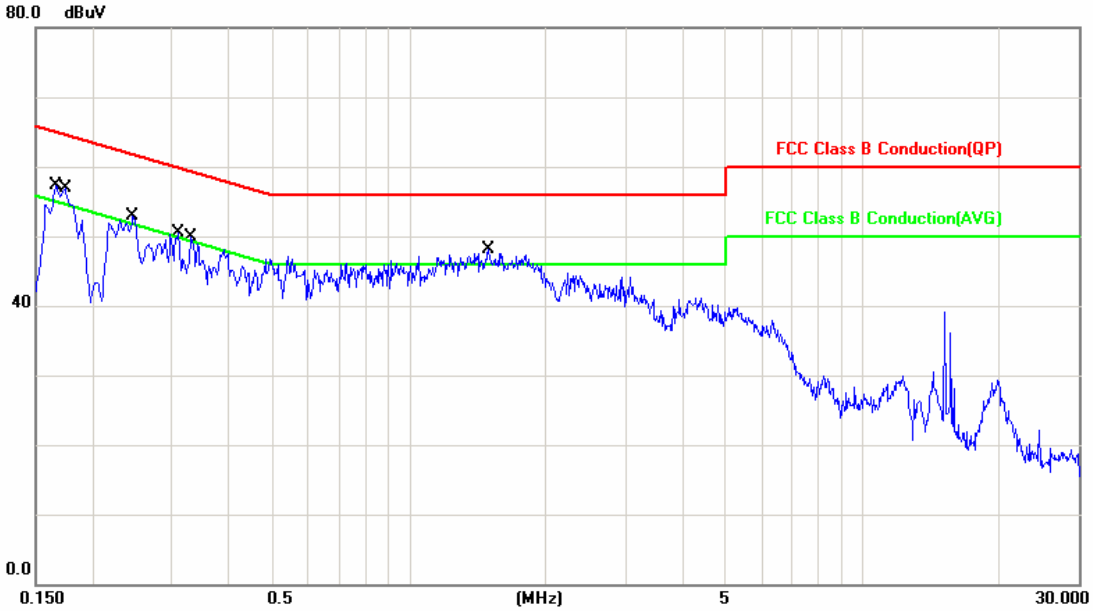


4.4 Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Test Receiver	R&S	ESCI	100564	2014.03.01	2015.02.28
LISN	R&S	ENV216	100024	2014.03.01	2015.02.28
LISN	R&S	ESH3-Z5	891843/016	2014.03.01	2015.02.28
Temperature/ Humidity Meter	VICHY	CTH-608	N/A	2014.03.04	2015. 03.03

4.5 Test Result and Data

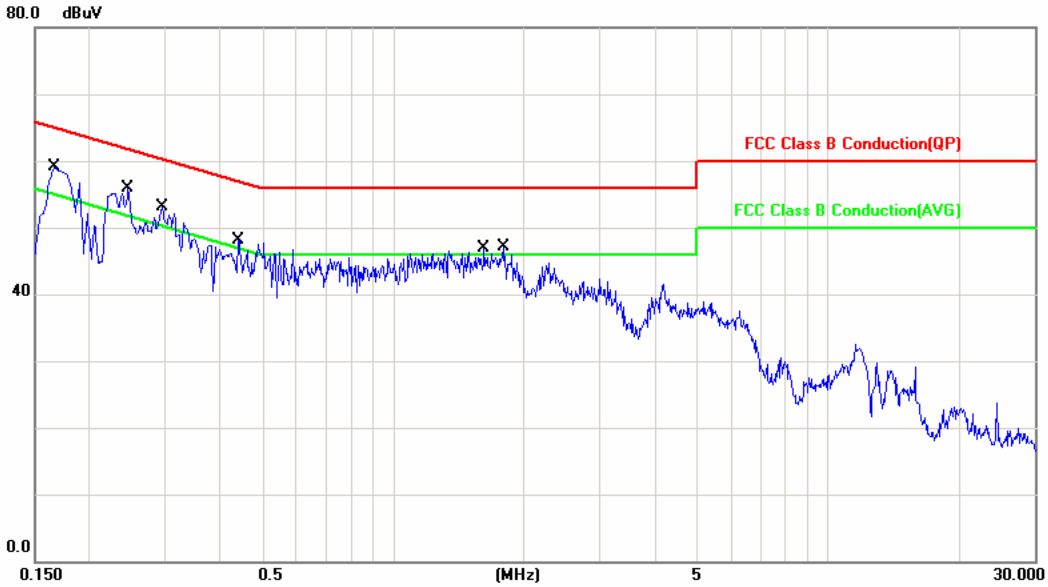
Test Mode :	Normal Link	Phase :	Line
Temperature :	20°C	Humidity:	51%
Pressur(mbar) :	1002	Date:	2014-07-31



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1660	9.70	45.33	55.03	65.15	-10.12	QP
2	0.1660	9.70	33.06	42.76	55.15	-12.39	AVG
3	0.1740	9.70	44.23	53.93	64.76	-10.83	QP
4	0.1740	9.70	32.51	42.21	54.76	-12.55	AVG
5	0.2460	9.69	39.52	49.21	61.89	-12.68	QP
6	0.2460	9.69	28.49	38.18	51.89	-13.71	AVG
7	0.3100	9.68	35.61	45.29	59.97	-14.68	QP
8	0.3100	9.68	25.41	35.09	49.97	-14.88	AVG
9	0.3300	9.68	36.07	45.75	59.45	-13.70	QP
10	0.3300	9.68	25.48	35.16	49.45	-14.29	AVG
11	1.4980	9.66	32.30	41.96	56.00	-14.04	QP
12	1.4980	9.66	25.96	35.62	46.00	-10.38	AVG

Note: Measurement Level = Reading Level + Correct Factor+ Attenuator

Test Mode :	Normal Link	Phase :	Neutral
Temperature :	20°C	Humidity :	51%
Pressur(mbar) :	1002	Date :	2014-07-31



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1660	9.70	46.35	56.05	65.15	-9.10	QP
2	0.1660	9.70	32.89	42.59	55.15	-12.56	AVG
3	0.2460	9.69	42.01	51.70	61.89	-10.19	QP
4	0.2460	9.69	30.19	39.88	51.89	-12.01	AVG
5	0.2940	9.68	39.00	48.68	60.41	-11.73	QP
6	0.2940	9.68	28.49	38.17	50.41	-12.24	AVG
7	0.4420	9.67	31.78	41.45	57.02	-15.57	QP
8	0.4420	9.67	22.35	32.02	47.02	-15.00	AVG
9	1.6260	9.67	31.34	41.01	56.00	-14.99	QP
10	1.6260	9.67	25.17	34.84	46.00	-11.16	AVG
11	1.7940	9.68	31.16	40.84	56.00	-15.16	QP
12	1.7940	9.68	25.39	35.07	46.00	-10.93	AVG

Note: Measurement Level = Reading Level + Correct Factor+ Attenuator

5. Test of Radiated Emission

5.1 Test Limit

Radiated emissions from 30 MHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2009. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions
For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

FREQUENCIES(MHz)	FIELD STRENGTH(microvolts/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

For unintentional device, according to CISPR PUB.22, for Class B digital devices, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 10 meters shall not exceed the above table.

Frequency (MHz)	Distance Meters	Radiated (dB μ V/ M)
30-230	10	30
230-1000	10	37

5.2 Test Procedures

a. The EUT was placed on a rotatable table top 0.8 meter above ground.

b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.

c. The table was rotated 360 degrees to determine the position of the highest radiation.

d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.

e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.

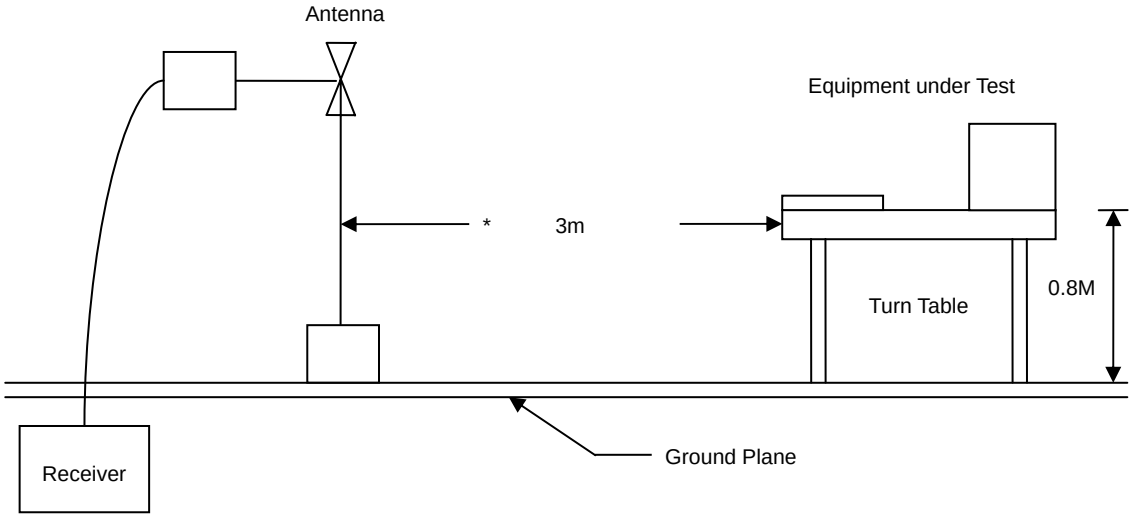
f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.

g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.

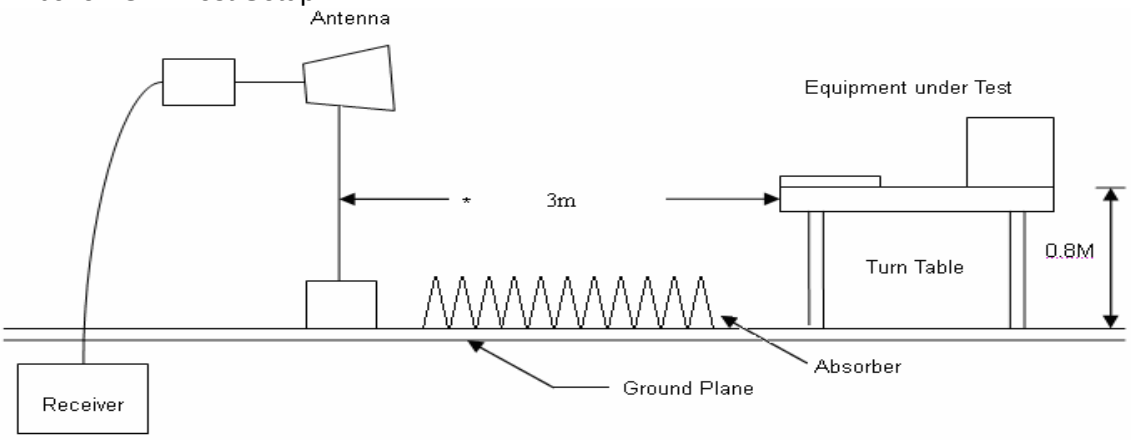
h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

5.3 Typical Test Setup

Below 1GHz Test Setup



Above 1GHz Test Setup



5.4 Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
EMI Test Receiver	R&S	ESCI	100853	2014.03.01	2015.02.28
Preamplifier	HP	8447F	3113A05915	2014.03.01	2015.02.28
Preamplifier	FIELD	AFS44-00101800 -25-10P-44	1579008	2013.11.27	2014.11.26
Ultra Broadband Antenna	SCHAFFNER	CBL6112D	22241	2014.03.04	2015. 03.03
Broad-Band Horn Antenna	Sunol	DRH-118	A072913	2013.10.16	2014.10.15
Spectrum Analyzer	Agilent	E4407B	MY45118947	2014.07.18	2015.07.17
Temperature/ Humidity Meter	VICHY	CTH-608	N/A	2014.03.04	2015.03.03

5.5 Test Result and Data

The 9kHz-30MHz spurious emission is under limit 20dB more.

5.5.1 Test Result and Data of Transmitter

Below 1GHz

Engineer :Amos	
Site : EMC Lab AC 102	**Time : 2014-7-30**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
EUT : Tablet PC	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	**Note : Normal Link**

Frequency (MHz)	AntPol. H/V	Correct Factor (dB)	Reading level (dBuV)	Measure Level (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)	Detector mode (PK/QP)
350.1000	H	-4.22	43.29	39.07	46.00	-6.93	QP
700.2698	H	-1.19	37.39	36.20	46.00	-9.80	QP
750.7100	H	1.49	35.11	36.60	46.00	-9.40	QP
800.1799	H	0.37	37.05	37.42	46.00	-8.58	QP
850.6200	H	1.54	34.13	35.67	46.00	-10.33	QP
1000.0000	H	5.95	32.88	38.83	54.00	-15.17	QP
33.8800	V	-5.41	34.82	29.41	40.00	-10.59	QP
350.1000	V	-4.22	33.20	28.98	46.00	-17.02	QP
650.8000	V	-0.32	35.52	35.20	46.00	-10.80	QP
700.2700	V	-1.19	41.65	40.46	46.00	-5.54	QP
750.7100	V	1.49	36.66	38.15	46.00	-7.85	QP
800.1800	V	0.37	36.34	36.71	46.00	-9.29	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Above 1GHz

Site : EMC Lab AC 102	**Time : 2014-07-27**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Test mode: Transmit by GFSK(1M) 2402MHz	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2062.500	4.33	46.49	50.82	74.00	-23.18	peak
2	2062.500	4.33	37.64	41.97	54.00	-12.03	AVG
3	5972.500	18.50	33.97	52.47	74.00	-21.53	peak
4	5972.500	18.50	26.39	44.89	54.00	-9.11	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2147.500	4.71	46.95	51.66	74.00	-22.34	peak
2	2147.500	4.71	36.91	41.62	54.00	-12.38	AVG
3	5887.500	18.24	34.67	52.91	74.00	-21.09	peak
4	5887.500	18.24	26.00	44.24	54.00	-9.76	AVG

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Site : EMC Lab AC 102	**Time : 2014-07-27**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Test mode: Transmit by GFSK(1M) 2441MHz	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2062.500	4.33	47.49	51.82	74.00	-22.18	peak
2	2062.500	4.33	40.62	44.95	54.00	-9.05	AVG
3	5760.000	17.85	34.45	52.30	74.00	-21.70	peak
4	5760.000	17.85	23.06	40.91	54.00	-13.09	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2955.000	8.33	43.56	51.89	74.00	-22.11	peak
2	2955.000	8.33	34.92	43.25	54.00	-10.75	AVG
3	5080.000	16.72	36.13	52.85	74.00	-21.15	peak
4	5080.000	16.72	26.51	43.23	54.00	-10.77	AVG

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Site : EMC Lab AC 102	**Time : 2014-07-27**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Test mode: Transmit by GFSK(1M) 2480MHz	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2062.500	4.33	46.49	50.82	74.00	-23.18	peak
2	2062.500	4.33	37.03	41.36	54.00	-12.64	AVG
3	7757.500	23.46	27.56	51.02	74.00	-22.98	peak
4	7757.500	23.46	20.61	44.07	54.00	-9.93	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2615.000	6.83	43.83	50.66	74.00	-23.34	peak
2	2615.000	6.83	35.67	42.50	54.00	-11.50	AVG
3	7077.500	21.76	30.01	51.77	74.00	-22.23	peak
4	7077.500	21.76	22.08	43.84	54.00	-10.16	AVG

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Site : EMC Lab AC 102	**Time : 2014-07-27**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Test mode: Transmit by 8DPSK(3M) 2402MHz	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2062.500	4.33	46.99	51.32	74.00	-22.68	peak
2	2062.500	4.33	39.46	43.79	54.00	-10.21	AVG
3	6482.500	20.12	33.12	53.24	74.00	-20.76	peak
4	6482.500	20.12	23.83	43.95	54.00	-10.05	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2445.000	6.07	45.71	51.78	74.00	-22.22	peak
2	2445.000	6.07	37.99	44.06	54.00	-9.94	AVG
3	5590.000	17.33	35.85	53.18	74.00	-20.82	peak
4	5590.000	17.33	27.53	44.86	54.00	-9.14	AVG

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Site : EMC Lab AC 102	**Time : 2014-07-27**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Test mode: Transmit by 8DPSK(3M) 2441MHz	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2955.000	8.33	42.85	51.18	74.00	-22.82	peak
2	2955.000	8.33	35.03	43.36	54.00	-10.64	AVG
3	6992.500	21.55	31.30	52.85	74.00	-21.15	peak
4	6992.500	21.55	21.94	43.49	54.00	-10.51	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2445.000	6.07	46.21	52.28	74.00	-21.72	peak
2	2445.000	6.07	38.16	44.23	54.00	-9.77	AVG
3	5802.500	17.98	35.08	53.06	74.00	-20.94	peak
4	5802.500	17.98	26.33	44.31	54.00	-9.69	AVG

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Site : EMC Lab AC 102	**Time : 2014-07-27**
Limit : FCC_CLASS_B_03M_QP	**Margin : 6**
Test mode: Transmit by 8DPSK(3M) 2480MHz	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2657.500	7.02	45.45	52.47	74.00	-21.53	peak
2	2657.500	7.02	37.23	44.25	54.00	-9.75	AVG
3	6057.500	18.76	33.94	52.70	74.00	-21.30	peak
4	6057.500	18.76	25.69	44.45	54.00	-9.55	AVG

HORIZONTAL

No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)	Detector Type
1	2445.000	6.07	45.71	51.78	74.00	-22.22	peak
2	2445.000	6.07	36.94	43.01	54.00	-10.99	AVG
3	5292.500	16.89	36.55	53.44	74.00	-20.56	peak
4	5292.500	16.89	28.08	44.97	54.00	-9.03	AVG

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Receiver

Below1GHz

Site : EMC Lab AC 102	**Time : 2014-07-27**
Limit : IC_CLASS_B_03M_QP	**Margin : 6**
Test mode: normal link	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	30.0000	-3.01	30.95	27.94	40.00	-12.06	QP	100	135
2	207.5100	-9.50	43.40	33.90	43.50	-9.60	QP	100	203
3	275.4100	-8.94	46.41	37.47	46.00	-8.53	QP	100	359
4	346.2200	-4.26	41.13	36.87	46.00	-9.13	QP	100	359
5	692.5100	-1.21	39.70	38.49	46.00	-7.51	QP	100	319
6	897.1800	2.93	35.45	38.38	46.00	-7.62	QP	100	296

HORIZONTAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	30.0000	-3.01	30.33	27.32	40.00	-12.68	QP	200	228
2	247.2800	-8.61	40.07	31.46	46.00	-14.54	QP	300	332
3	276.3798	-8.82	41.60	32.78	46.00	-13.22	QP	100	78
4	288.0199	-7.94	39.27	31.33	46.00	-14.67	QP	100	89
5	692.5099	-1.21	38.49	37.28	46.00	-8.72	QP	200	359
6	895.2400	2.94	35.45	38.39	46.00	-7.61	QP	100	15

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Above 1GHz

Site : EMC Lab AC 102	**Time : 2014-07-27**
Limit : IC_CLASS_B_03M_QP	**Margin : 6**
Test mode: Receiver by GFSK(1M) 2402MHz	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	2020.000	-4.64	49.12	44.48	74.00	-29.52	peak
2	2955.000	0.47	41.93	42.40	74.00	-31.60	peak
3	4740.000	8.11	35.55	43.66	74.00	-30.34	peak
4	5335.000	8.88	34.39	43.27	74.00	-30.73	peak
5	7290.000	13.21	33.45	46.66	74.00	-27.34	peak
6	8225.000	14.89	32.72	47.61	74.00	-26.39	peak

HORIZONTAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1637.500	-6.82	51.40	44.58	74.00	-29.42	peak
2	2955.000	0.47	40.96	41.43	74.00	-32.57	peak
3	4952.500	8.51	35.26	43.77	74.00	-30.23	peak
4	5505.000	9.03	34.87	43.90	74.00	-30.10	peak
5	7630.000	14.09	32.87	46.96	74.00	-27.04	peak
6	8097.500	14.54	32.86	47.40	74.00	-26.60	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Site : EMC Lab AC 102	**Time : 2014-07-27**
Limit : IC_CLASS_B_03M_QP	**Margin : 6**
Test mode: Receiver by GFSK(1M) 2441MHz	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1637.500	-6.82	49.78	42.96	74.00	-31.04	peak
2	2020.000	-4.64	49.09	44.45	74.00	-29.55	peak
3	2870.000	-0.10	41.65	41.55	74.00	-32.45	peak
4	4272.500	6.50	36.90	43.40	74.00	-30.60	peak
5	5335.000	8.88	35.09	43.97	74.00	-30.03	peak
6	6397.500	10.42	33.72	44.14	74.00	-29.86	peak

HORIZONTAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1637.500	-6.82	51.34	44.52	74.00	-29.48	peak
2	2445.000	-2.82	45.30	42.48	74.00	-31.52	peak
3	2955.000	0.47	41.96	42.43	74.00	-31.57	peak
4	4527.500	7.71	35.43	43.14	74.00	-30.86	peak
5	5505.000	9.03	35.41	44.44	74.00	-29.56	peak
6	7375.000	13.54	33.48	47.02	74.00	-26.98	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Site : EMC Lab AC 102	**Time : 2014-07-27**
Limit : IC_CLASS_B_03M_QP	**Margin : 6**
Test mode: Receiver by GFSK(1M) 2480MHz	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1680.000	-6.57	50.68	44.11	74.00	-29.89	peak
2	2020.000	-4.64	48.00	43.36	74.00	-30.64	peak
3	2955.000	0.47	41.37	41.84	74.00	-32.16	peak
4	4995.000	8.59	36.91	45.50	74.00	-28.50	peak
5	7162.500	12.71	33.09	45.80	74.00	-28.20	peak
6	8437.500	15.47	33.36	48.83	74.00	-25.17	peak

HORIZONTAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1680.000	-6.57	51.45	44.88	74.00	-29.12	peak
2	2955.000	0.47	41.03	41.50	74.00	-32.50	peak
3	4527.500	7.71	36.37	44.08	74.00	-29.92	peak
4	5292.500	8.85	35.75	44.60	74.00	-29.40	peak
5	6440.000	10.44	33.84	44.28	74.00	-29.72	peak
6	7290.000	13.21	33.75	46.96	74.00	-27.04	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Site : EMC Lab AC 102	**Time : 2014-07-27**
Limit : IC_CLASS_B_03M_QP	**Margin : 6**
Test mode: Receiver by 8DPSK(3M) 2402MHz	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1637.500	-6.82	53.05	46.23	74.00	-27.77	peak
2	2955.000	0.47	42.08	42.55	74.00	-31.45	peak
3	4187.500	6.07	36.84	42.91	74.00	-31.09	peak
4	4995.000	8.59	38.08	46.67	74.00	-27.33	peak
5	5675.000	9.45	35.22	44.67	74.00	-29.33	peak
6	7375.000	13.54	33.75	47.29	74.00	-26.71	peak

HORIZONTAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1637.500	-6.82	52.73	45.91	74.00	-28.09	peak
2	2402.500	-3.00	45.54	42.54	74.00	-31.46	peak
3	2955.000	0.47	41.10	41.57	74.00	-32.43	peak
4	4570.000	7.79	35.91	43.70	74.00	-30.30	peak
5	6270.000	10.37	34.34	44.71	74.00	-29.29	peak
6	7332.500	13.38	33.90	47.28	74.00	-26.72	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Site : EMC Lab AC 102	**Time : 2014-07-27**
Limit : IC_CLASS_B_03M_QP	**Margin : 6**
Test mode: Receiver by 8DPSK(3M) 2441MHz	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1637.500	-6.82	49.73	42.91	74.00	-31.09	peak
2	2020.000	-4.64	47.76	43.12	74.00	-30.88	peak
3	2955.000	0.47	41.05	41.52	74.00	-32.48	peak
4	4995.000	8.59	39.08	47.67	74.00	-26.33	peak
5	6057.500	10.28	33.88	44.16	74.00	-29.84	peak
6	7460.000	13.87	33.65	47.52	74.00	-26.48	peak

HORIZONTAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1637.500	-6.82	49.61	42.79	74.00	-31.21	peak
2	2445.000	-2.82	45.33	42.51	74.00	-31.49	peak
3	2955.000	0.47	40.99	41.46	74.00	-32.54	peak
4	4485.000	7.58	36.99	44.57	74.00	-29.43	peak
5	5887.500	9.98	34.75	44.73	74.00	-29.27	peak
6	7035.000	12.22	33.93	46.15	74.00	-27.85	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

Site : EMC Lab AC 102	**Time : 2014-07-27**
Limit : IC_CLASS_B_03M_QP	**Margin : 6**
Test mode: Receiver by 8DPSK(3M) 2480MHz	**Probe : VERTICAL/ HORIZONTAL**
Power : AC 120V/60Hz	

VERTICAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1637.500	-6.82	51.79	44.97	74.00	-29.03	peak
2	2020.000	-4.64	48.01	43.37	74.00	-30.63	peak
3	2870.000	-0.10	42.25	42.15	74.00	-31.85	peak
4	4825.000	8.27	35.93	44.20	74.00	-29.80	peak
5	6482.500	10.45	34.33	44.78	74.00	-29.22	peak
6	7842.500	14.19	33.11	47.30	74.00	-26.70	peak

HORIZONTAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	1680.000	-6.57	51.54	44.97	74.00	-29.03	peak
2	2955.000	0.47	42.49	42.96	74.00	-31.04	peak
3	4570.000	7.79	35.33	43.12	74.00	-30.88	peak
4	6057.500	10.28	34.55	44.83	74.00	-29.17	peak
5	7332.500	13.38	33.32	46.70	74.00	-27.30	peak
6	8735.000	16.27	32.58	48.85	74.00	-25.15	peak

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. Measurement Level = Reading Level + Correct Factor

6. 20dB Bandwidth Measurement Data

6.1 Test Limit

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 than125 mW.

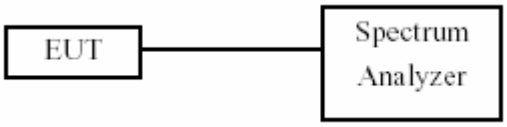
6.2 Test Procedures

a. The transmitter output was connected to the spectrum analyzer.

b. Set RBW of spectrum analyzer to 30 KHz and VBW to 100 KHz.

c. The 20 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20 dB.

6.3 Test Setup Layout



6.4 Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	Agilent	E4407B	MY45118947	2014.07.18	2015.07.17

6.5 Test Result and Data

Test Date: Aug. 04, 2014 Temperature: 25℃

Atmospheric pressure: 1020 hPa Humidity: 55%

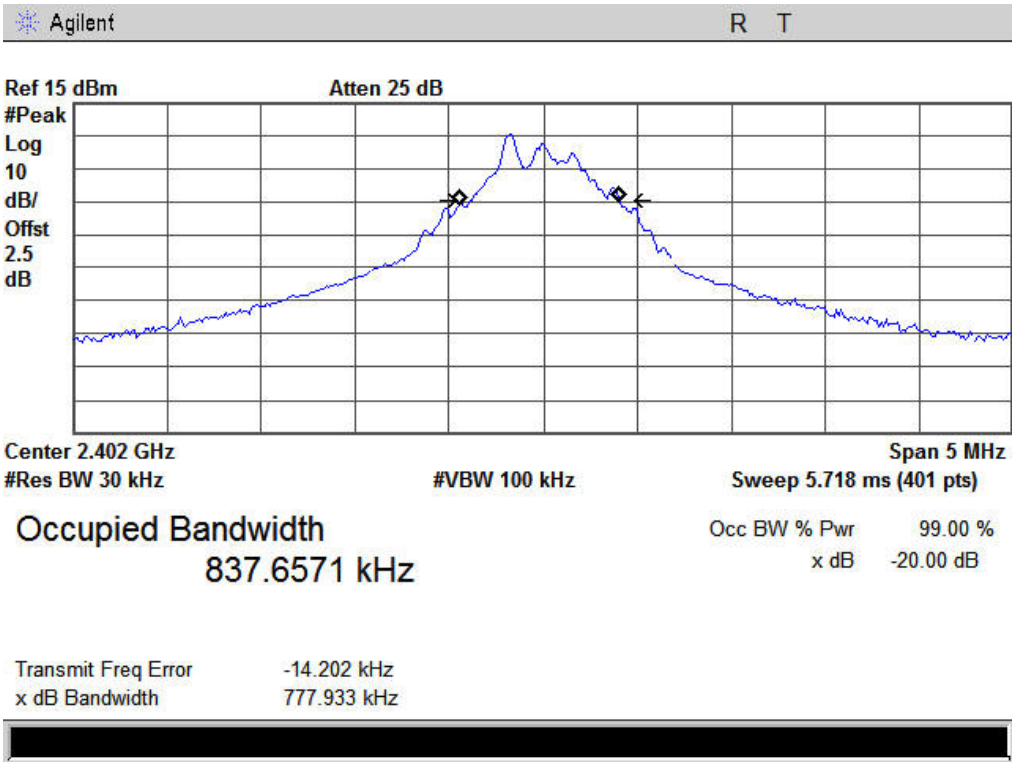
1M

Channel	Frequency (MHz)	20dB Bandwidth (KHz)
00	2402	777.93
39	2441	776.11
78	2480	793.81

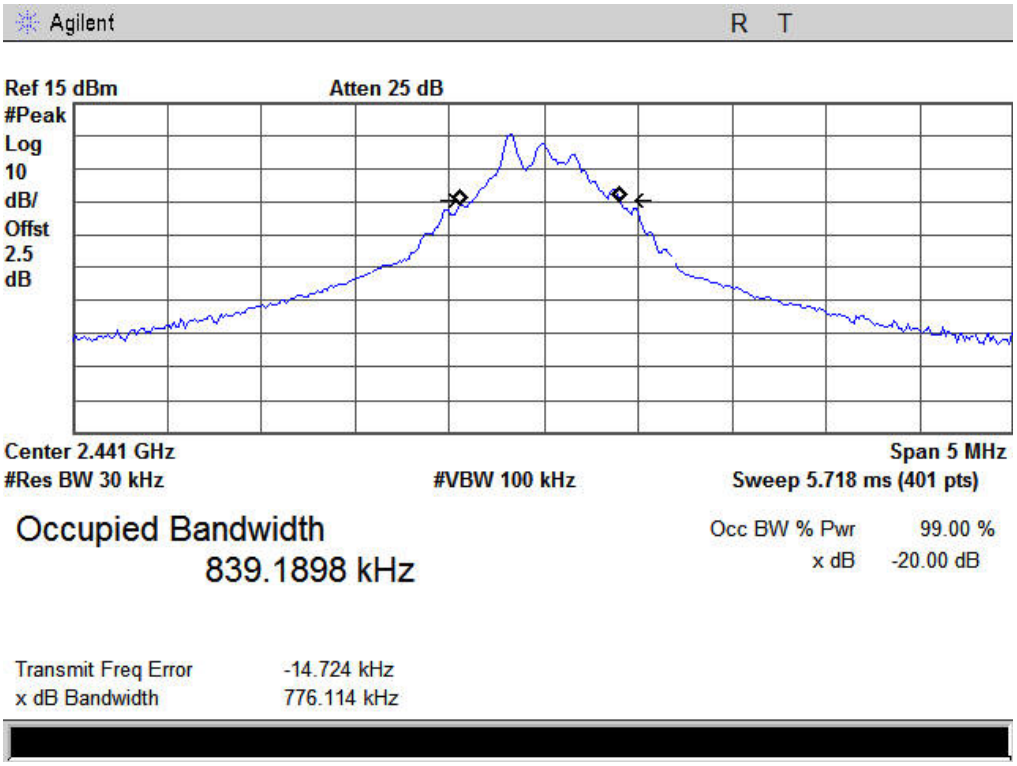
3M

Channel	Frequency (MHz)	20dB Bandwidth (KHz)
00	2402	1145.00
39	2441	1145.00
78	2480	1144.00

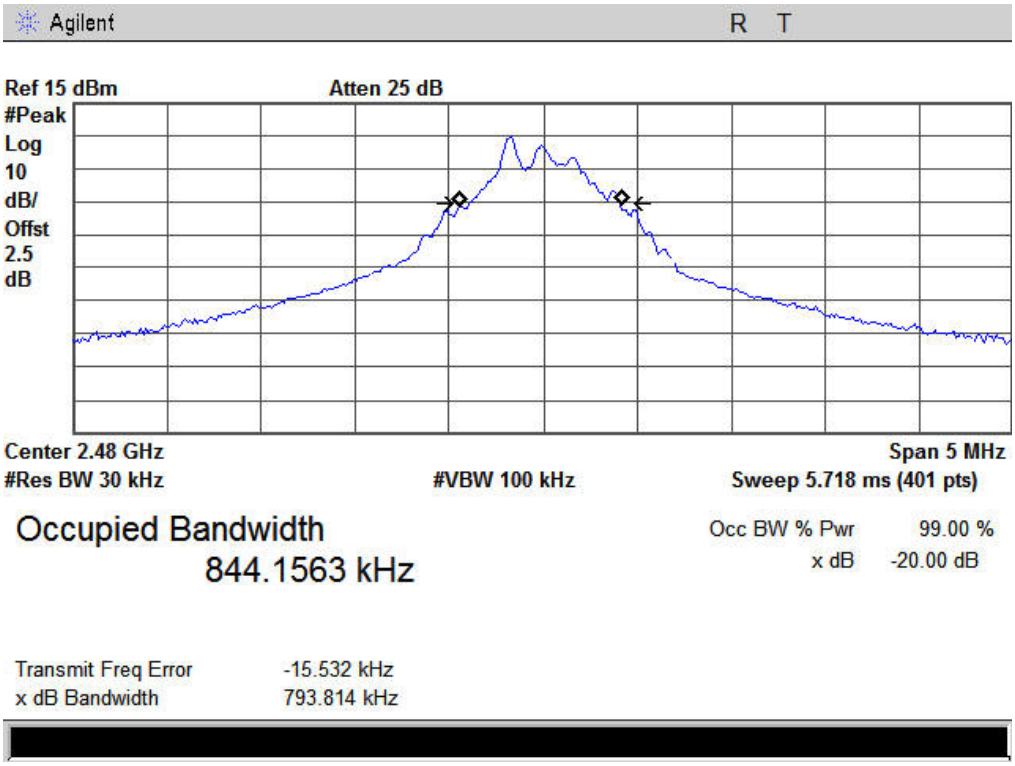
Modulation Standard: GFSK (1Mbps)
Channel: 00



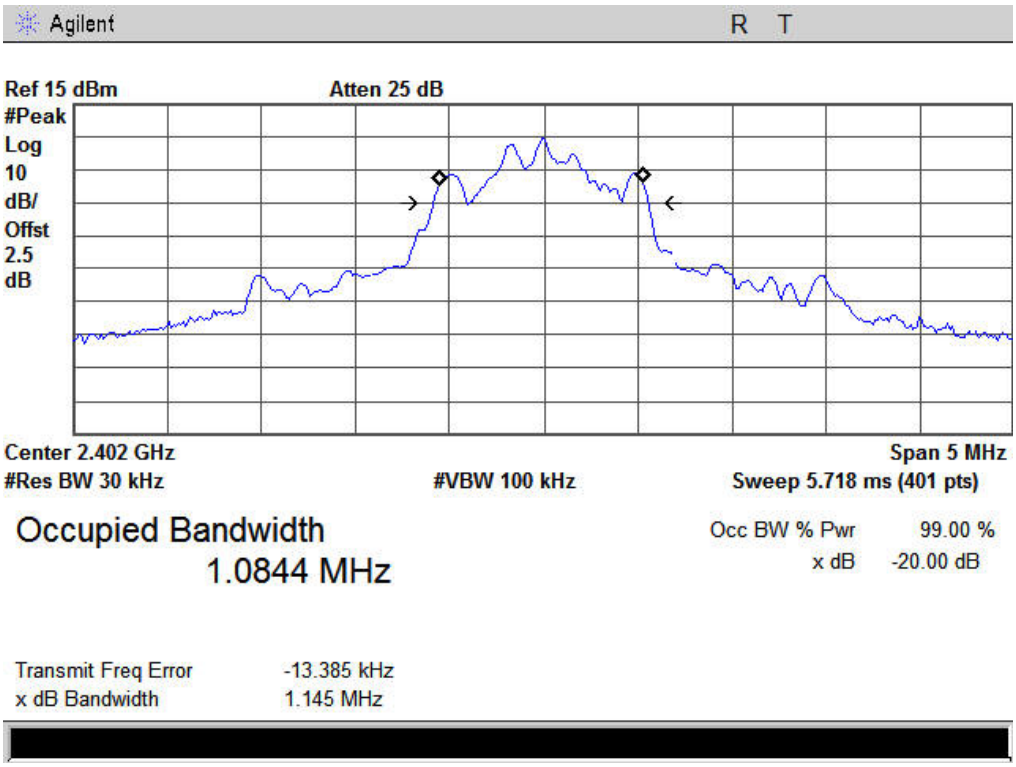
Modulation Standard: GFSK (1Mbps)
Channel: 39



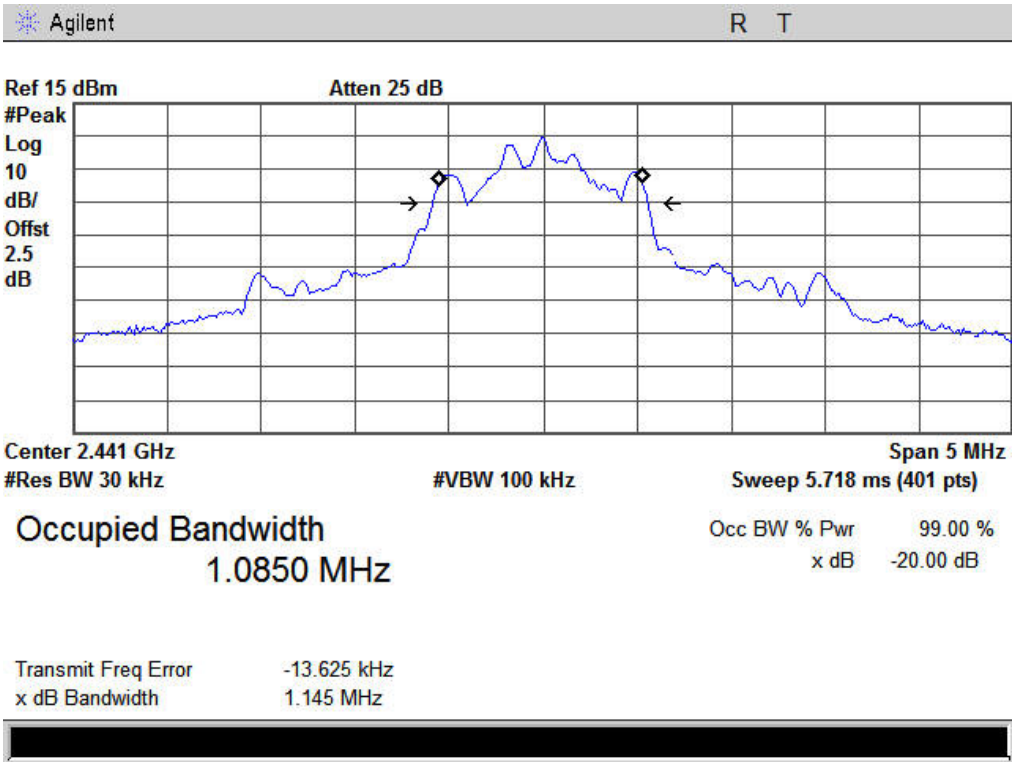
Modulation Standard: GFSK (1Mbps)
Channel: 78



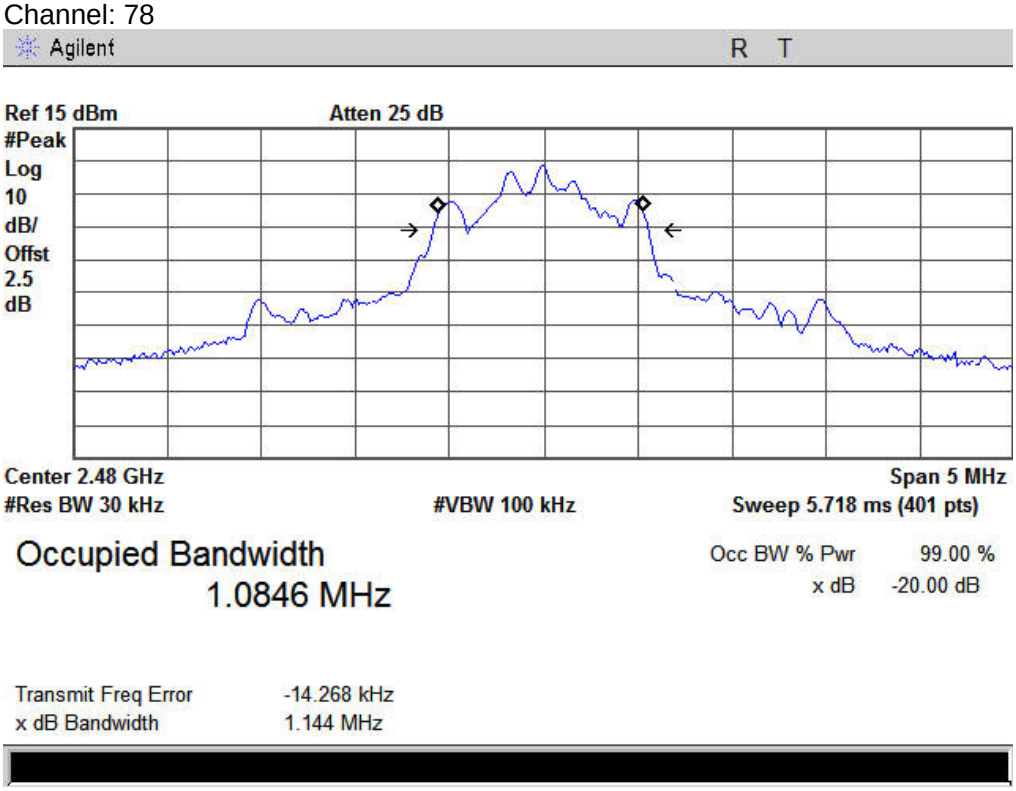
Modulation Standard: 8DPSK (3Mbps)
Channel: 00



Modulation Standard: 8DPSK (3Mbps)
Channel: 39



Modulation Standard: 8DPSK (3Mbps)
Channel: 78



7. 99% Bandwidth

7.1 Test Limit

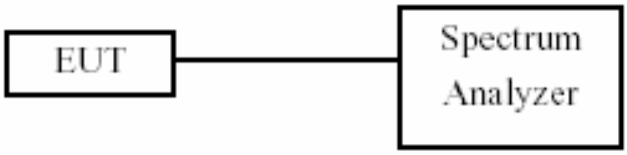
None; for reporting purposes only.

7.2 Test Procedures

a.The transmitter output was connected to the spectrum analyzer.

b. The RBW=30KHz, VBW=100KHz , Span=5M.

7.3 Test Setup Layout



7.4 Measurement Equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	Agilent	E4407B	MY45118947	2014.07.18	2015.07.17

7.5 Test Result and Data

Test Date: Aug. 04, 2014 Temperature: 25℃

Atmospheric pressure: 1020 hPa Humidity: 55%

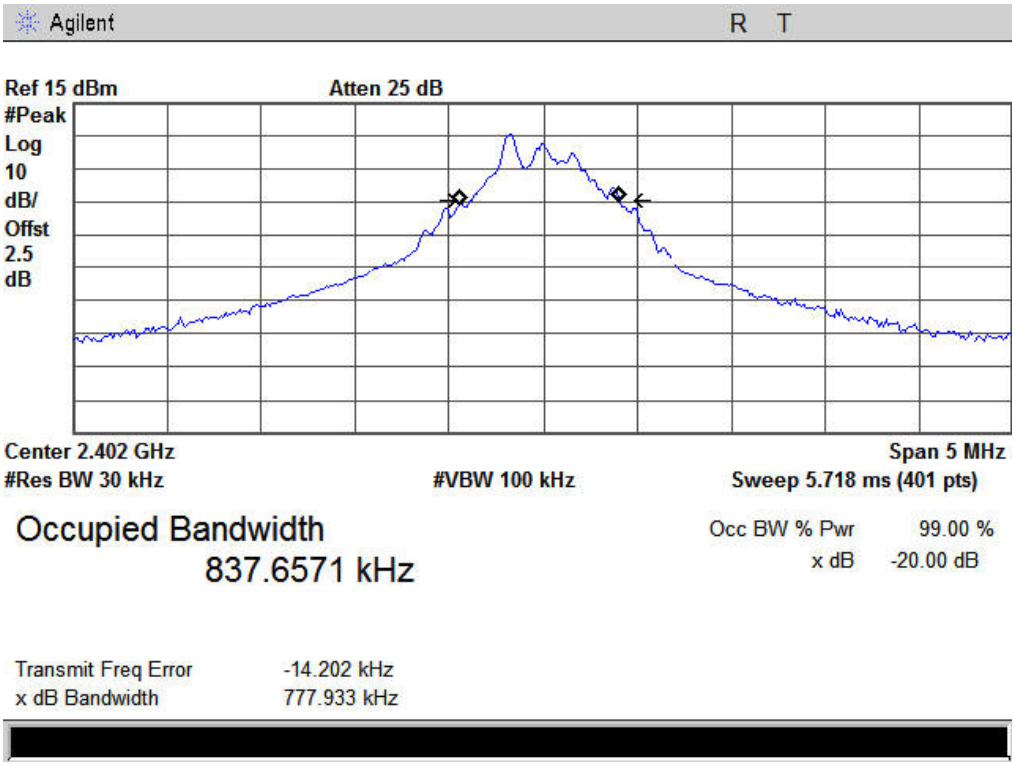
1M

Channel	Frequency (MHz)	99% Bandwidth (KHz)
00	2402	837.66
39	2441	839.19
78	2480	844.16

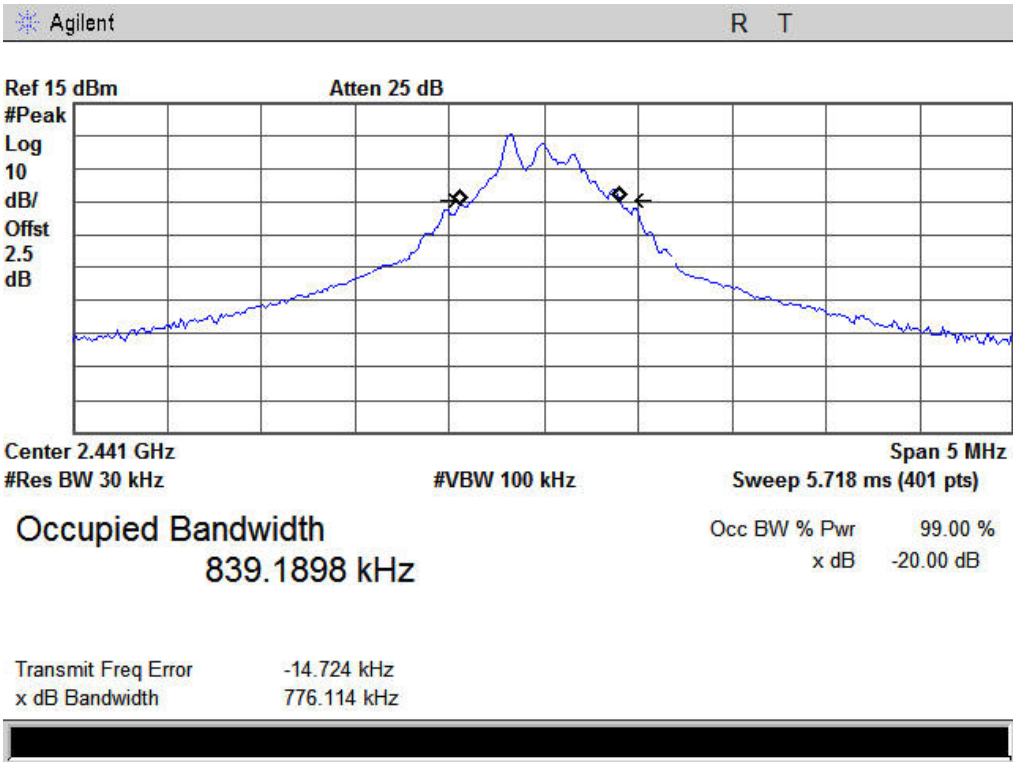
3M

Channel	Frequency (MHz)	99% Bandwidth (KHz)
00	2402	1084.40
39	2441	1085.00
78	2480	1084.60

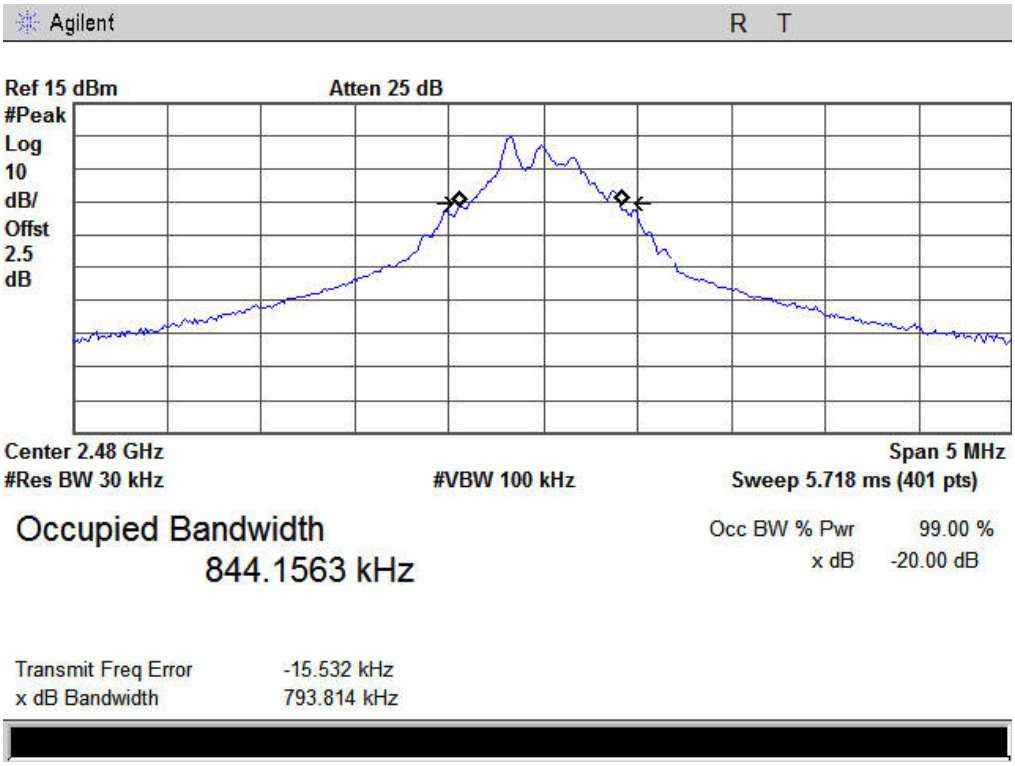
Modulation Standard: GFSK (1Mbps)
Channel: 00



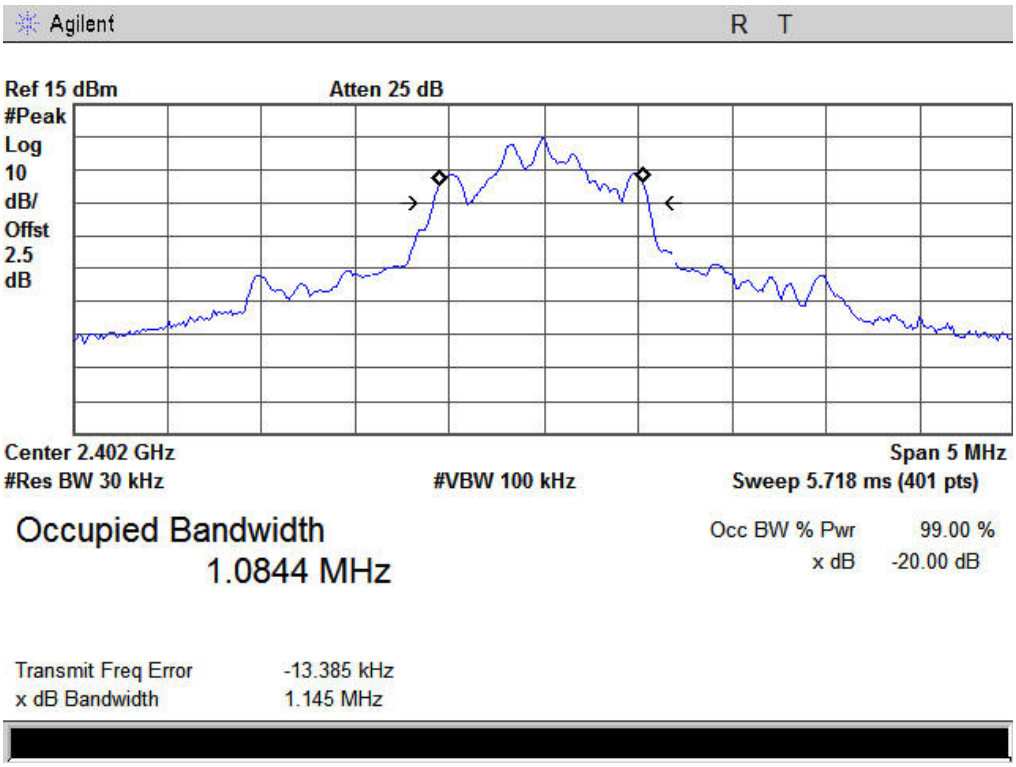
Modulation Standard: GFSK (1Mbps)
Channel: 39



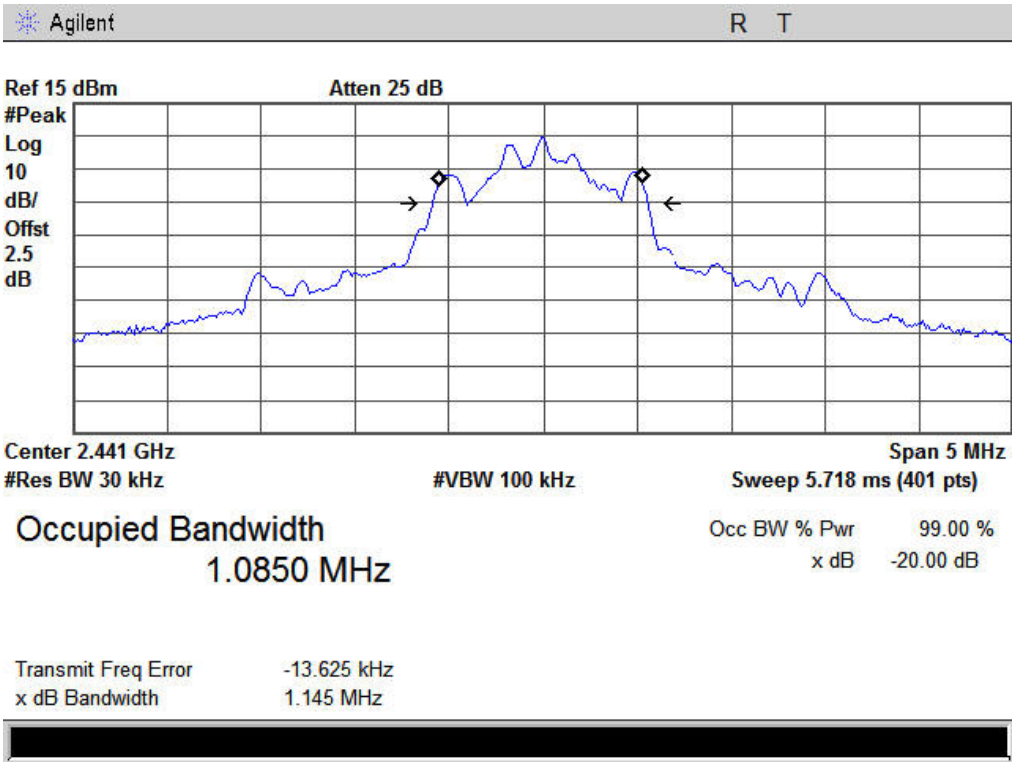
Modulation Standard: GFSK (1Mbps)
Channel: 78



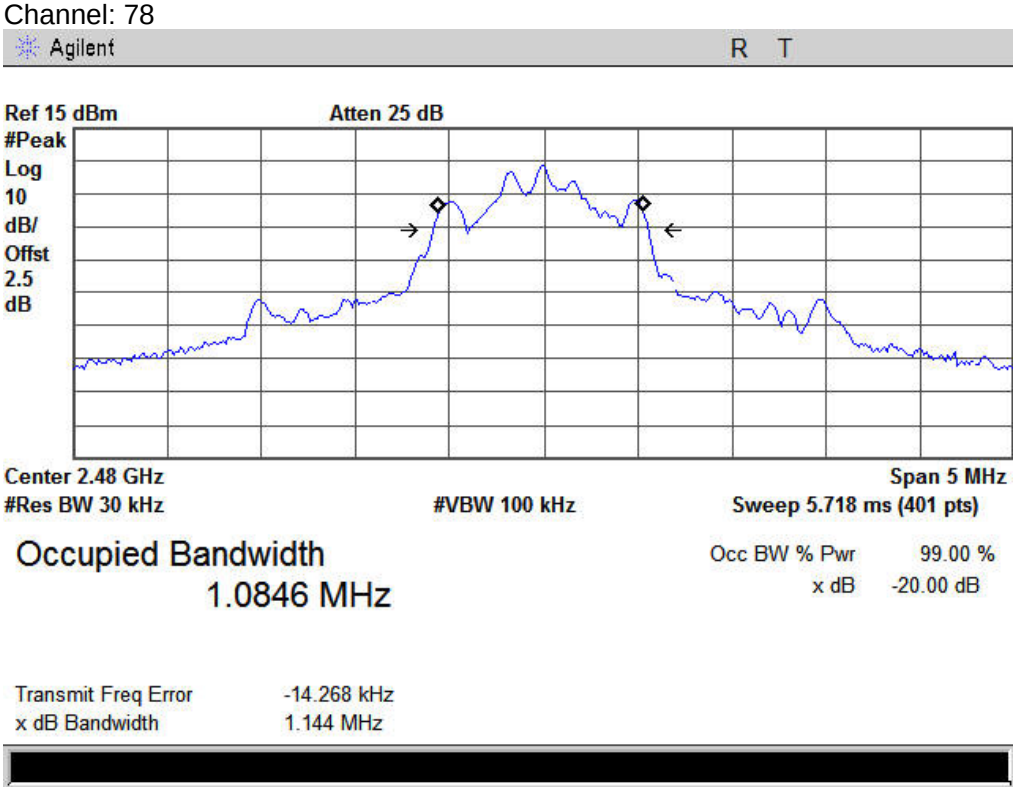
Modulation Standard: 8DPSK (3Mbps)
Channel: 00



Modulation Standard: 8DPSK (3Mbps)
Channel: 39



Modulation Standard: 8DPSK (3Mbps)
Channel: 78



8. Frequencies Separation

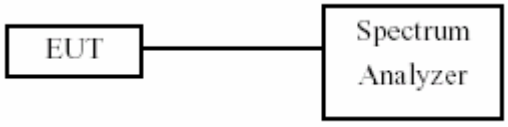
8.1 Test Limit

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.

8.2 Test Procedures

a. The transmitter output was connected to the spectrum analyzer.
b. Set RBW of spectrum analyzer to 30 KHz and VBW to 100 KHz.
c. By using the MaxHold function record the separation of two adjacent channels.
d. Measure the frequency difference of these two adjacent channels.

8.3 Test Setup Layout



8.4 Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	Agilent	E4407B	MY45118947	2014.07.18	2015.07.17

8.5 Test Result and Data

Test Date: Aug. 04, 2014 Temperature: 25℃

Atmospheric pressure: 1020 hPa Humidity: 55%

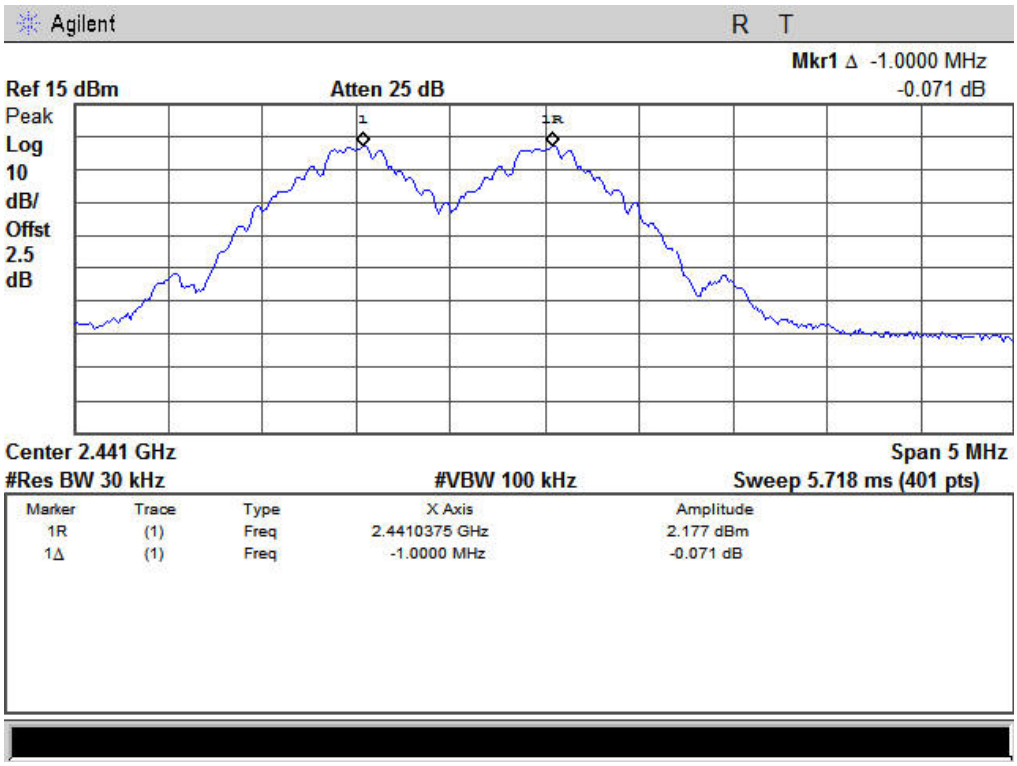
1M

Channel Separation	Result
(MHz)	
1.000	Pass

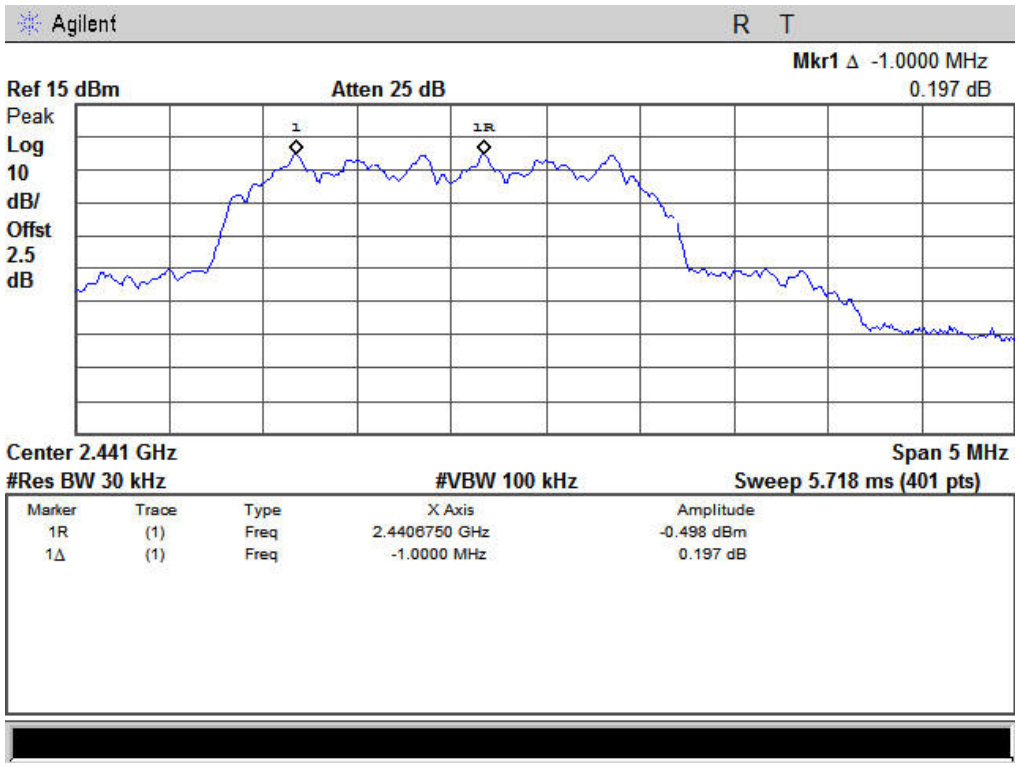
3M

Channel Separation	Result
(MHz)	
1.000	Pass

Modulation Standard: GFSK (1Mbps)



Modulation Standard:8DPSK (3Mbps)



9. Dwell Time on each channel

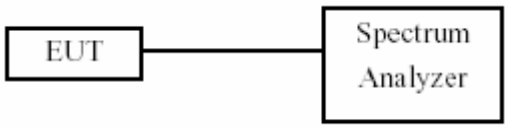
9.1 Test Limit

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.

9.2 Test Procedures

1. The transmitter output was connected to the spectrum analyzer.
2. Adjust the center frequency to measure frequency, then set zero span mode.
2. Set RBW of spectrum analyzer to 1 MHz and VBW to 1 MHz.
4. Measure the time duration of one transmission on the measured frequency.

9.3 Test Setup Layout



9.4 Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	Agilent	E4407B	MY45118947	2014.07.18	2015.07.17

9.5 Test Result and Data

Test Date: Aug. 04, 2014 Temperature: 25℃

Atmospheric pressure: 1020 hPa Humidity: 55%

1M

DH 1

0.40* (1600/2)/79 * 31.6 = 128.00 (ms)

Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
0.40	128.00	31.60	400	PASS

DH 3

1.62 * (1600/4)/79 * 31.6 = 259.20 (ms)

Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
1.62	259.20	31.60	400	PASS

DH 5

2.90* (1600/6)/79 * 31.6 = 309.33 (ms)

Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
2.90	309.33	31.60	400	PASS

3M
DH 1
0.40 * (1600/2)/79 * 31.6 = 128.00 (ms)

Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
0.40	128.00	31.60	400	PASS

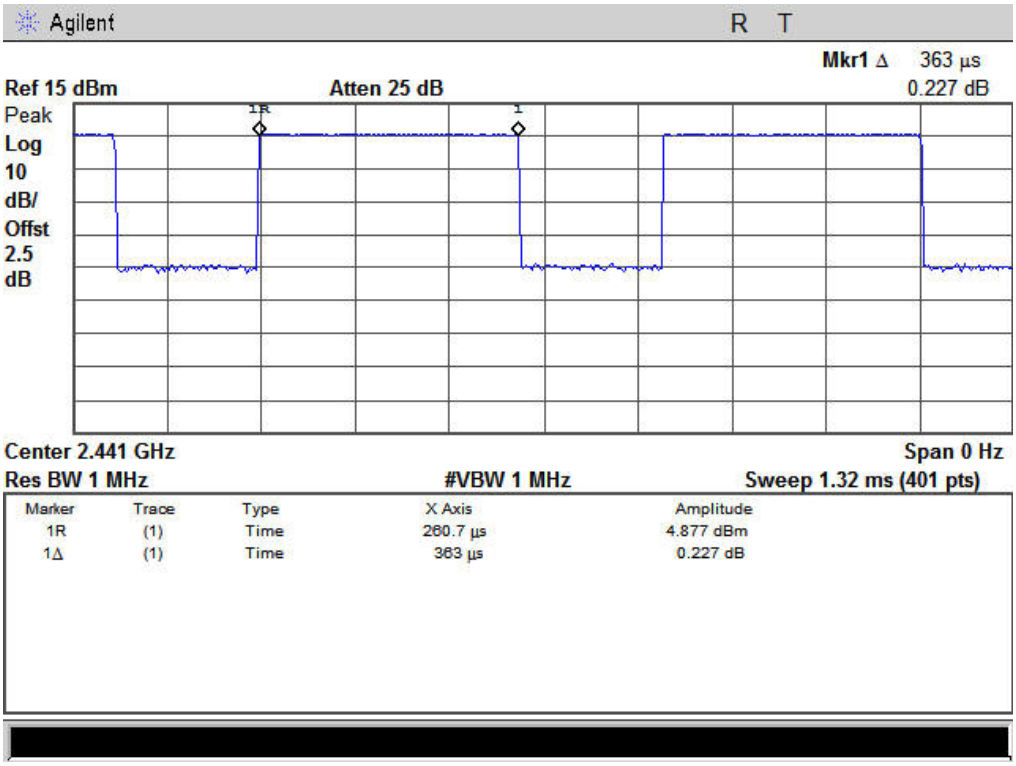
DH 3
1.63 * (1600/4)/79 * 31.6 = 260.80 (ms)

Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
1.63	260.80	31.60	400	PASS

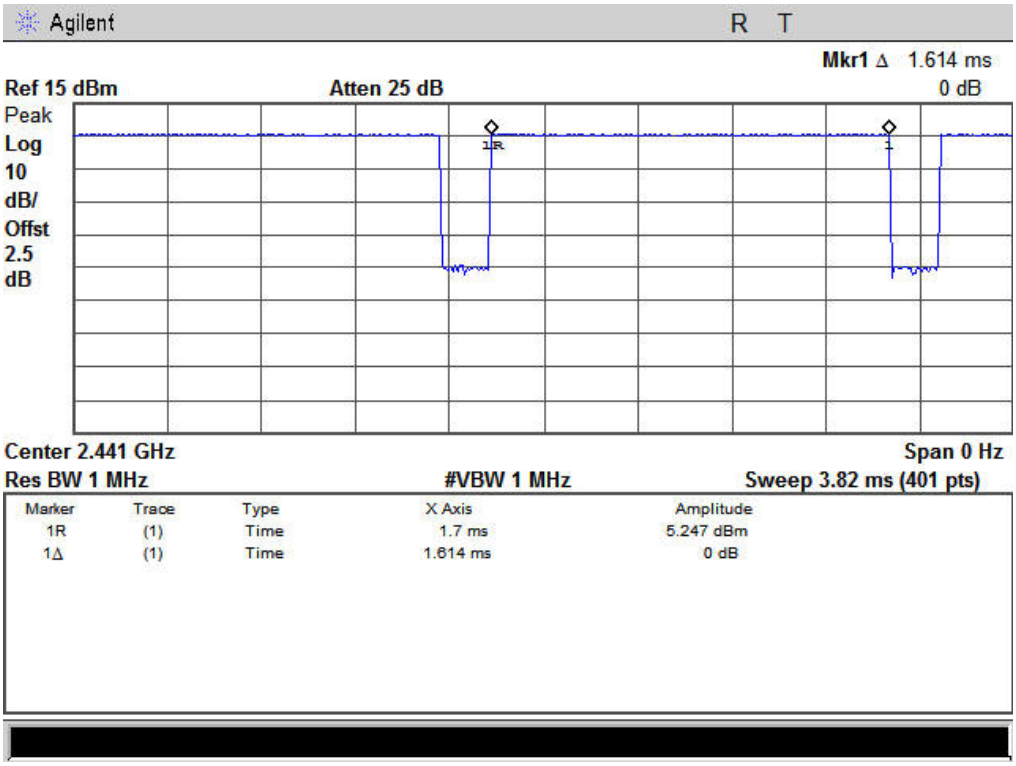
DH 5
2.90* (1600/6)/79 * 31.6 =309.33 (ms)

Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
2.90	309.33	31.60	400	PASS

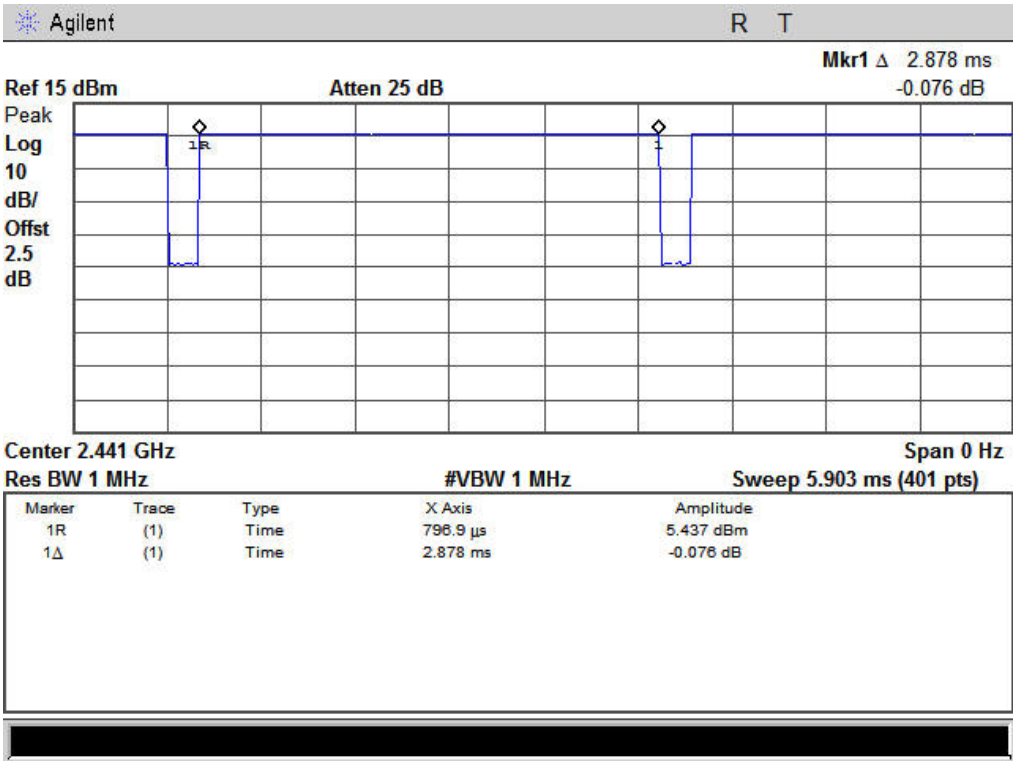
Modulation Standard: GFSK (1Mbps)
DH1



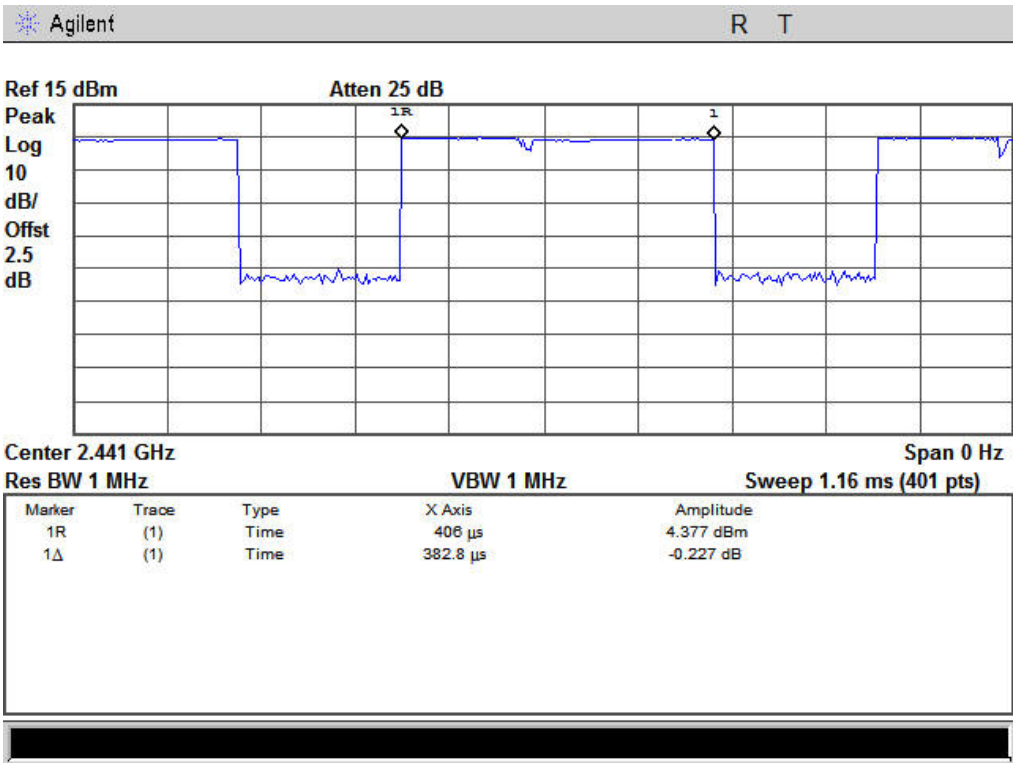
Modulation Standard: GFSK (1Mbps)
DH3



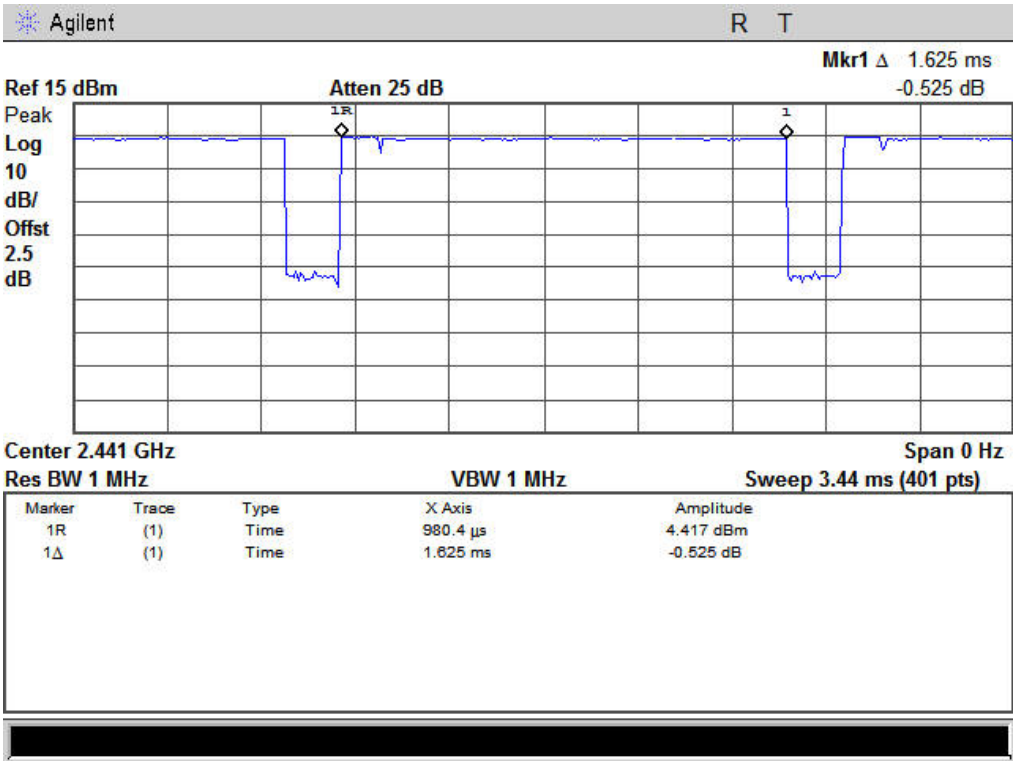
Modulation Standard: GFSK (1Mbps)
DH5



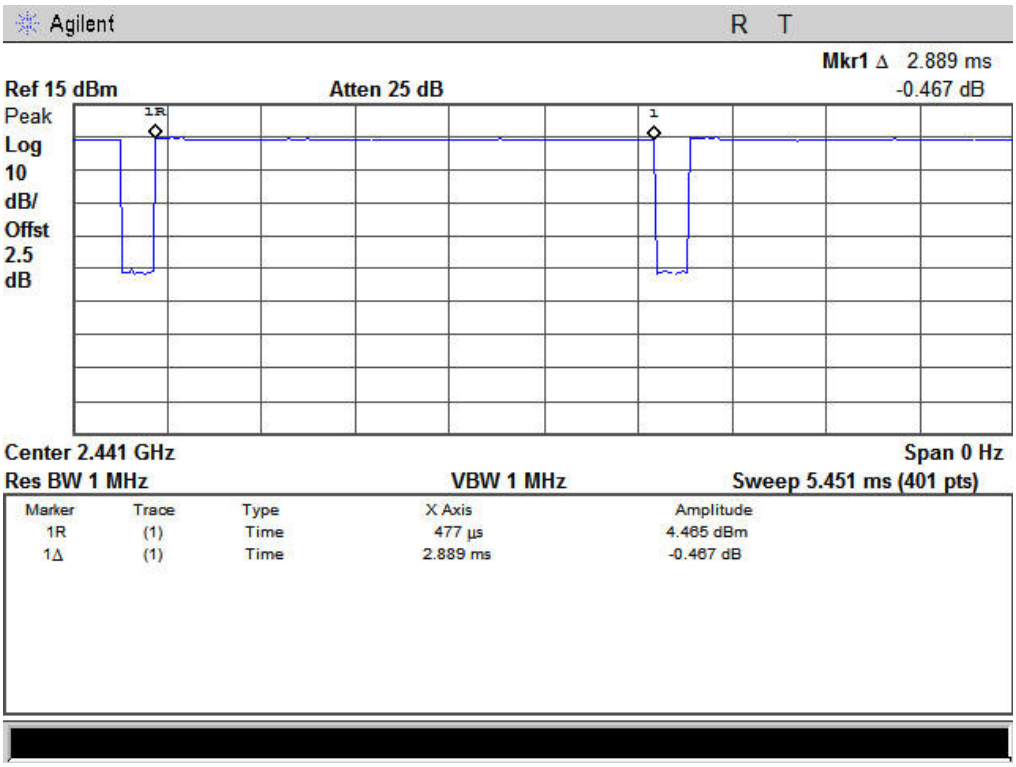
Modulation Standard: 8DPSK (3Mbps)
DH1



Modulation Standard: 8DPSK (3Mbps)
DH3



Modulation Standard: 8DPSK (3Mbps)
DH5



10. Number of Hopping Channels

10.1 Test Limit

Frequency hopping systems in the 2400 ~ 2483.5 MHz band shall use at least 15 channels.

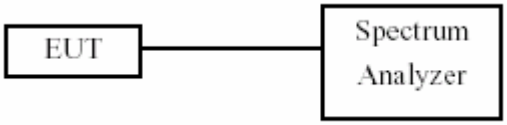
10.2 Test Procedures

a. The transmitter output was connected to the spectrum analyzer.

b. 2. Set RBW of spectrum analyzer to 300 KHz and VBW to 300 KHz.

c. 3. Set the MaxHold function, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been record.

10.3 Test Setup Layout



10.4 Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	Agilent	E4407B	MY45118947	2014.07.18	2015.07.17

10.5 Test Result and Data

Test Date: Aug. 04, 2014 Temperature: 25℃

Atmospheric pressure: 1020 hPa Humidity: 55%

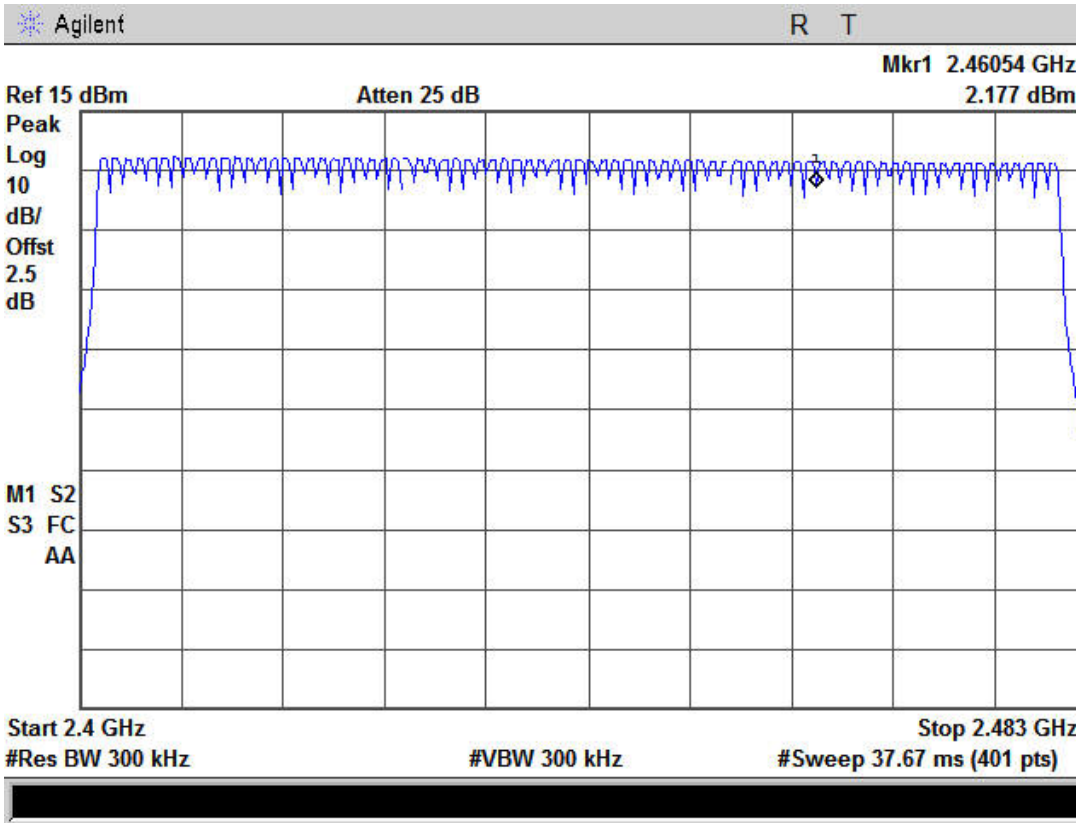
Modulation Standard: GFSK (1Mbps)

Number of hopping channels:	79	Channels

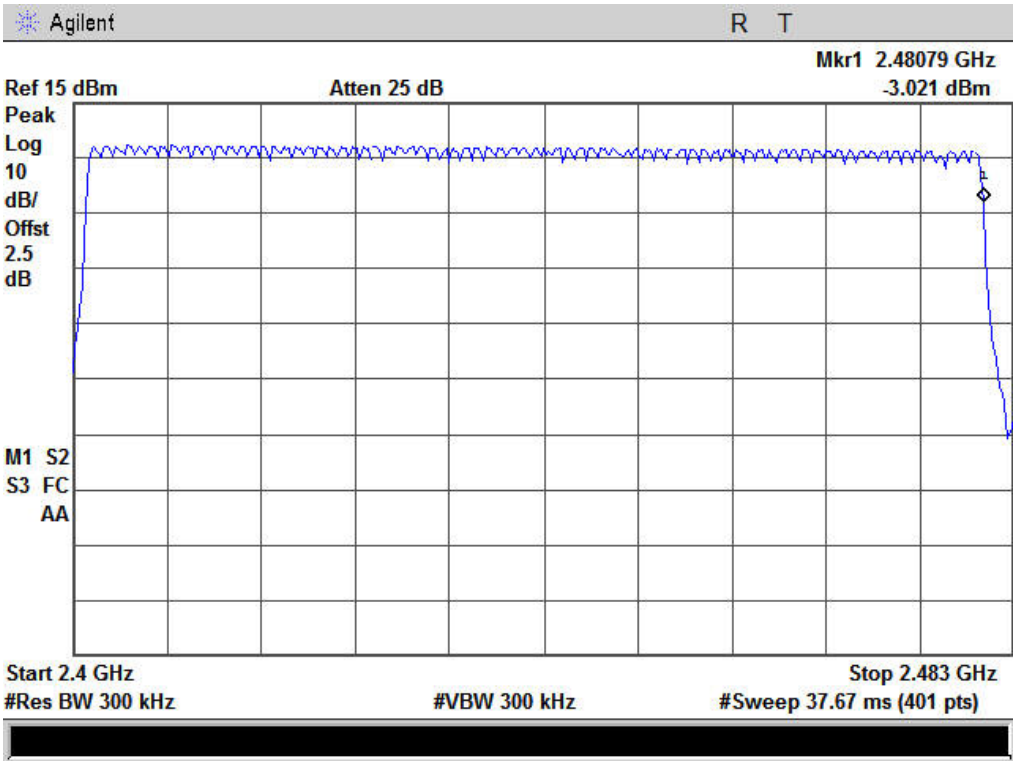
Modulation Standard: 8DPSK (3Mbps)

Number of hopping channels:	79	Channels

Modulation Standard: GFSK (1Mbps)



Modulation Standard: 8DPSK (3Mbps)



11. Maximum Peak Output Power

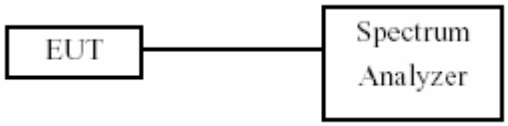
11.1 Test Limit

The Maximum Peak Output Power Measurement is 30dBm.

11.2 Test Procedures

The antenna port(RF output)of the EUT was connected to the input(RF input)of a power meter. Power was read directly from the meter and cable loss connection was added to the reading to obtain power at the EUT antenna terminal. The EUT Output Power was set to maximum to produce the worse case test result.

11.3 Test Setup Layout



11.4 Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	Agilent	E4407B	MY45118947	2014.07.18	2015.07.17

11.5 Test Result and Data

Test Date: Aug. 04, 2014 Temperature: 25℃

Atmospheric pressure: 1020 hPa Humidity: 55%

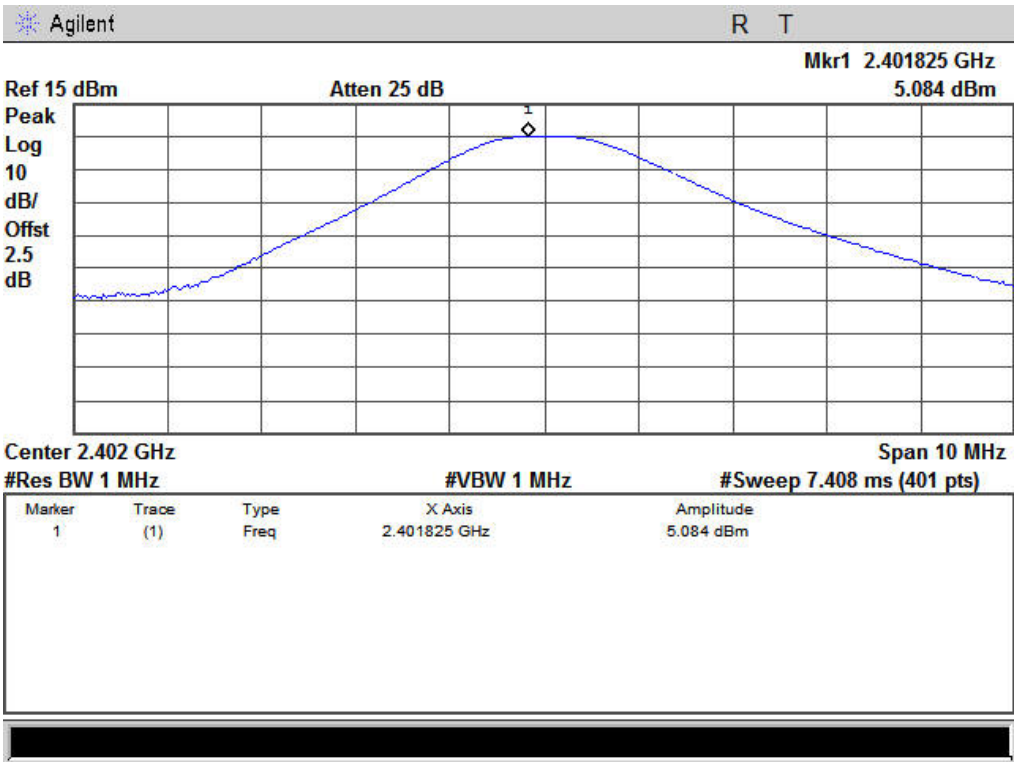
1M

Channel	Frequency (MHz)	Peak Power Output (dBm)	Peak Power Output (mW)
00	2402	5.08	3.22
39	2441	4.77	3.00
78	2478	4.20	2.63

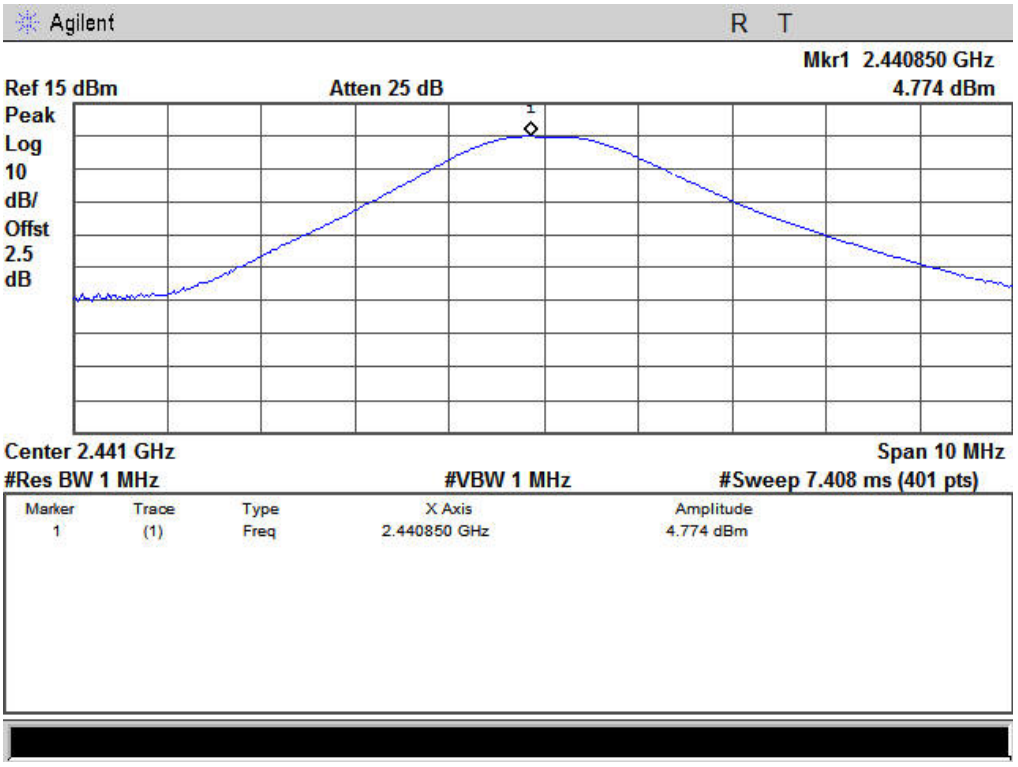
3M

Channel	Frequency (MHz)	Peak Power Output (dBm)	Peak Power Output (mW)
00	2402	5.31	3.40
39	2441	4.74	3.00
78	2478	4.20	2.63

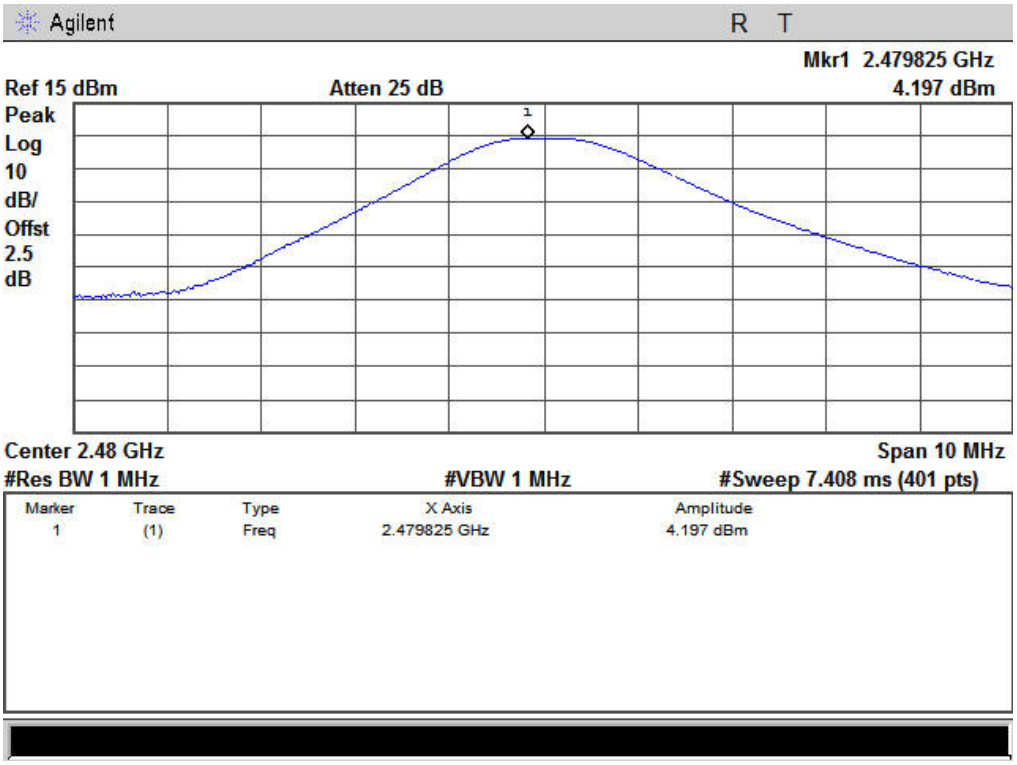
Modulation Standard: GFSK (1Mbps)
Channel: 00



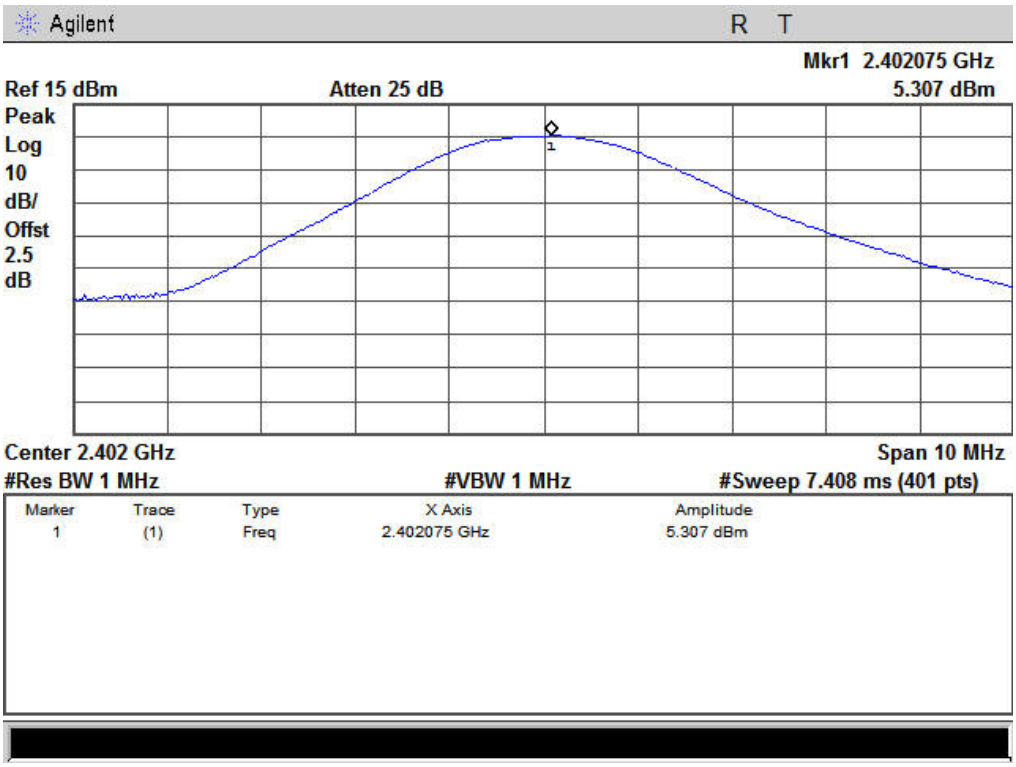
Modulation Standard: GFSK (1Mbps)
Channel: 39



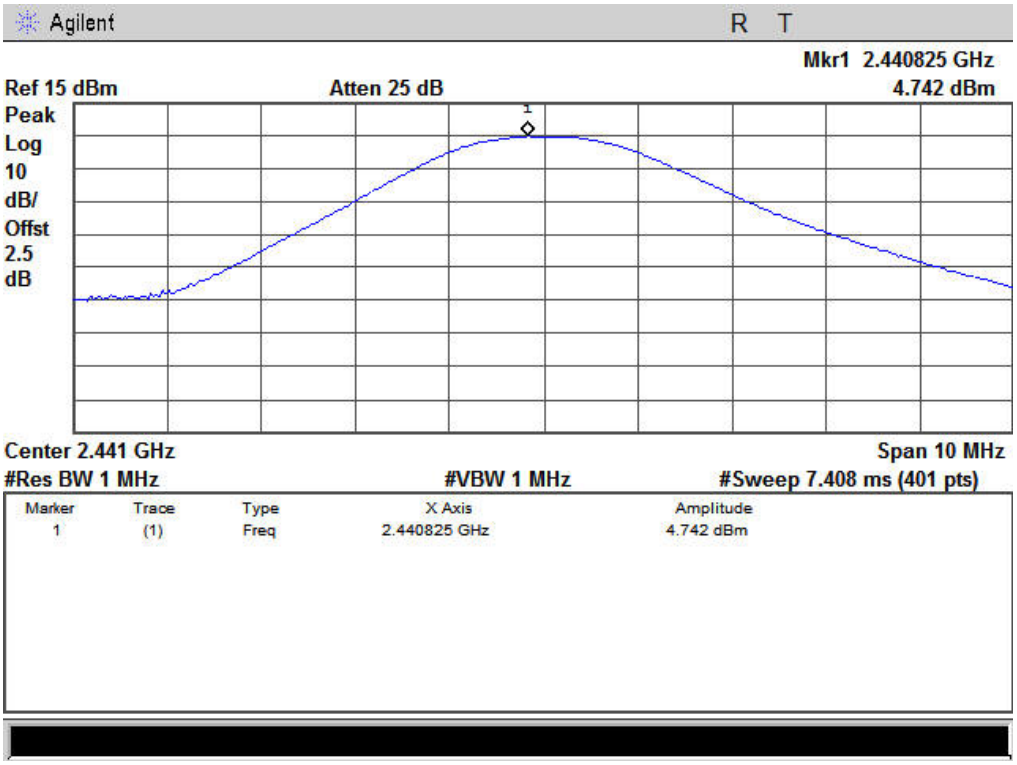
Modulation Standard: GFSK (1Mbps)
Channel: 78



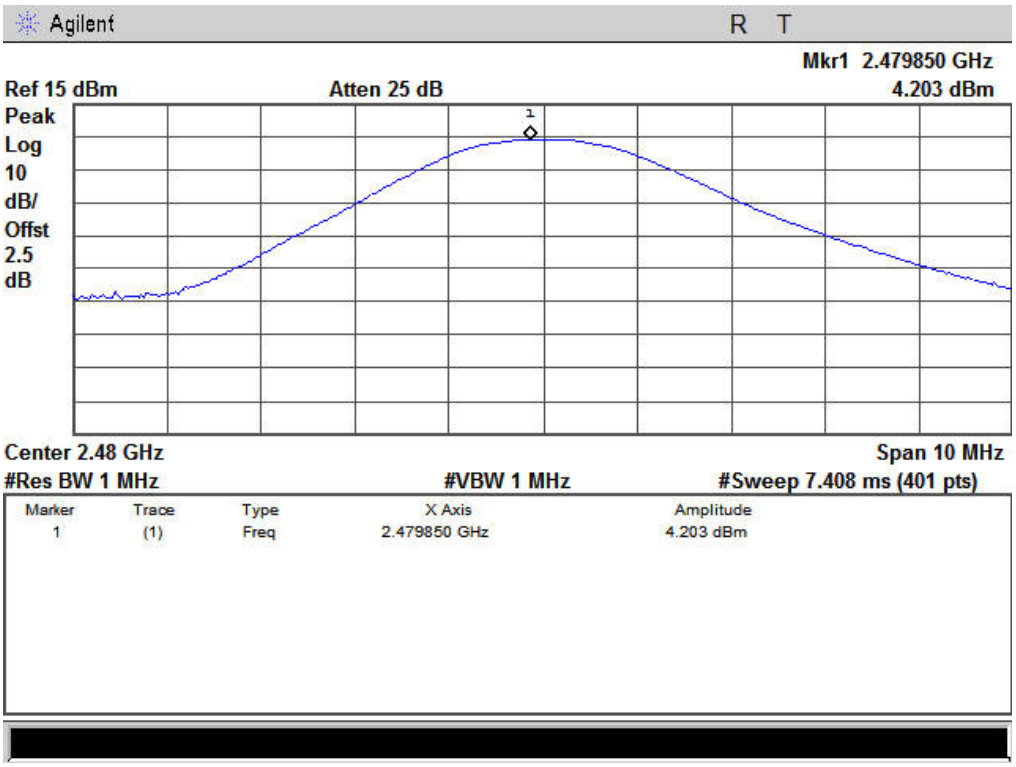
Modulation Standard:8DPSK (3Mbps)
Channel: 00



Modulation Standard: 8DPSK (3Mbps)
Channel: 39



Modulation Standard: 8DPSK (3Mbps)
Channel: 78



12. Band Edges Measurement

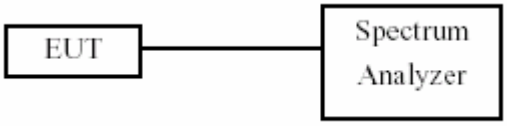
12.1 Test Limit

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

12.2 Test Procedure

a. The transmitter output was connected to the spectrum analyzer via a low lose cable.
b. Set both RBW and VBW of spectrum analyzer to 100 KHz with convenient frequency span including 100 KHz bandwidth from band edge.
c. The band edges was measured and recorded.

12.3 Test Setup Layout



12.4 List of Measuring Equipment Used

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date
Spectrum Analyzer	Agilent	E4407B	MY45118947	2014.07.18	2015.07.17

12.5 Test Result and Data

Test Date: Aug. 04, 2014 Temperature: 25℃

Atmospheric pressure: 1020 hPa Humidity: 55%

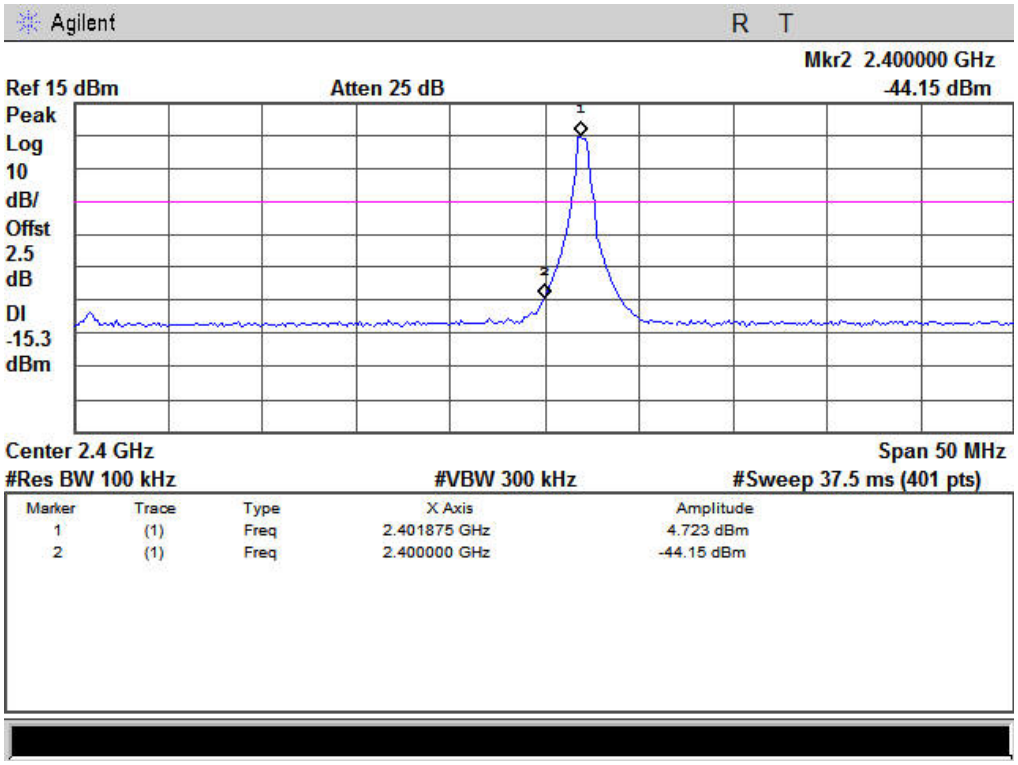
1M

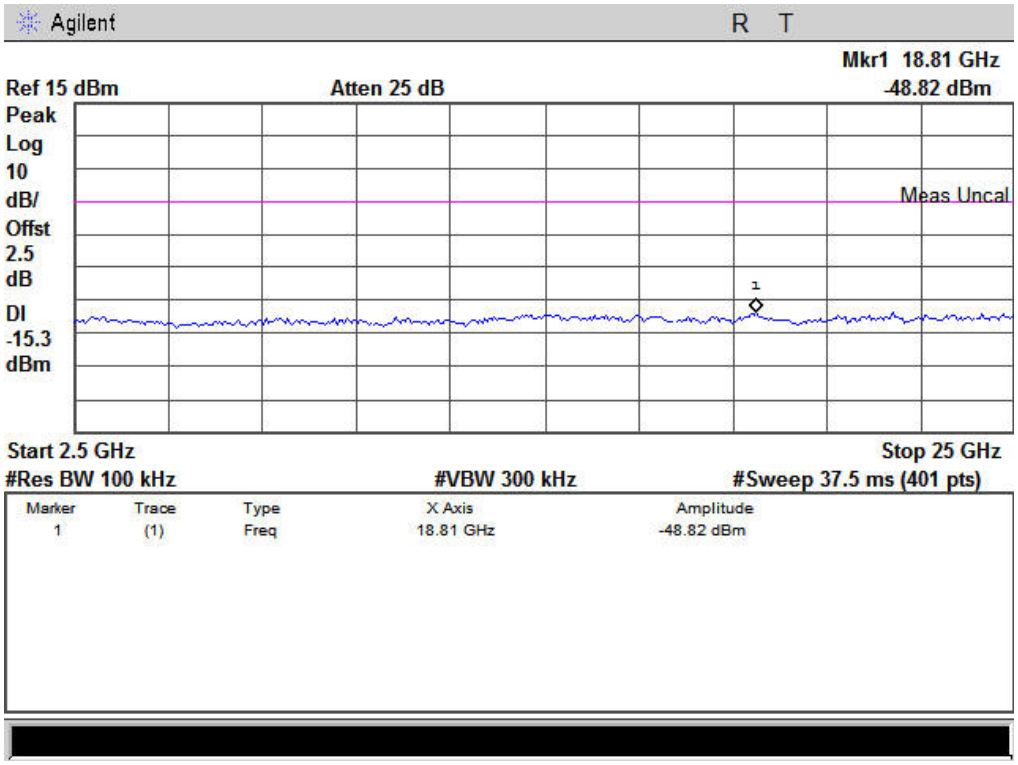
Channel	Frequency	maximum value in frequency (MHz)	maximum value is (dBm)
00	2402	2400.00	-44.15
78	2480	2483.50	-51.37

3M

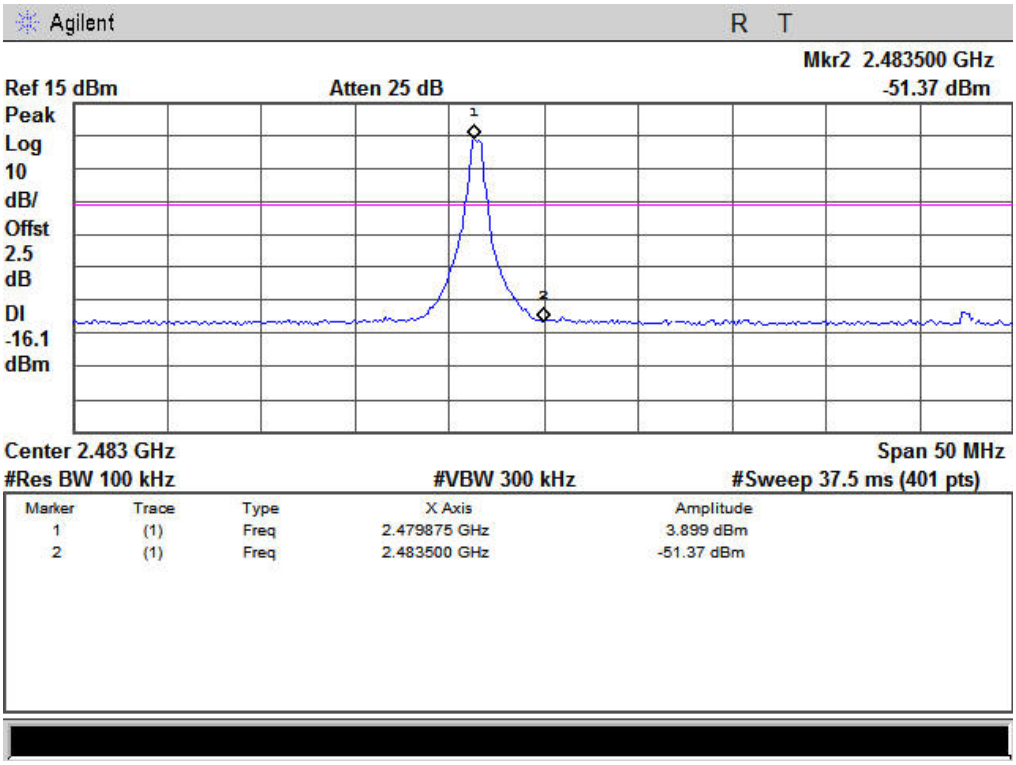
Channel	Frequency	maximum value in frequency (MHz)	maximum value is (dBm)
00	2402	2400.00	-43.45
78	2480	2483.50	-51.22

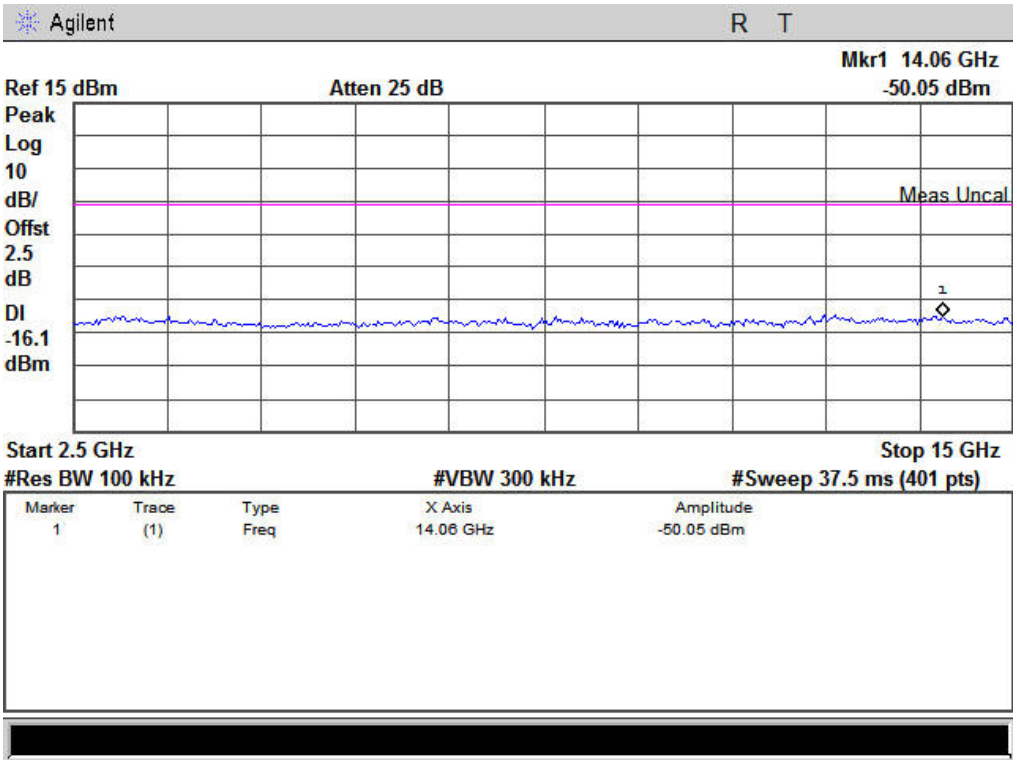
Modulation Standard: GFSK (1Mbps)
Channel: 00

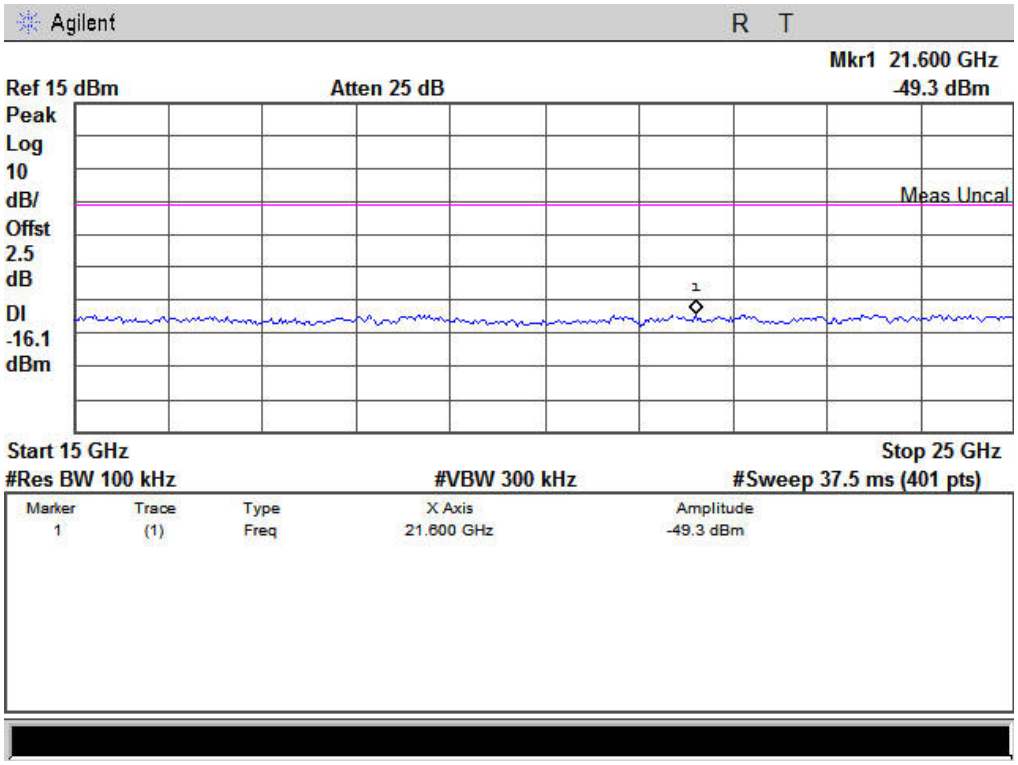




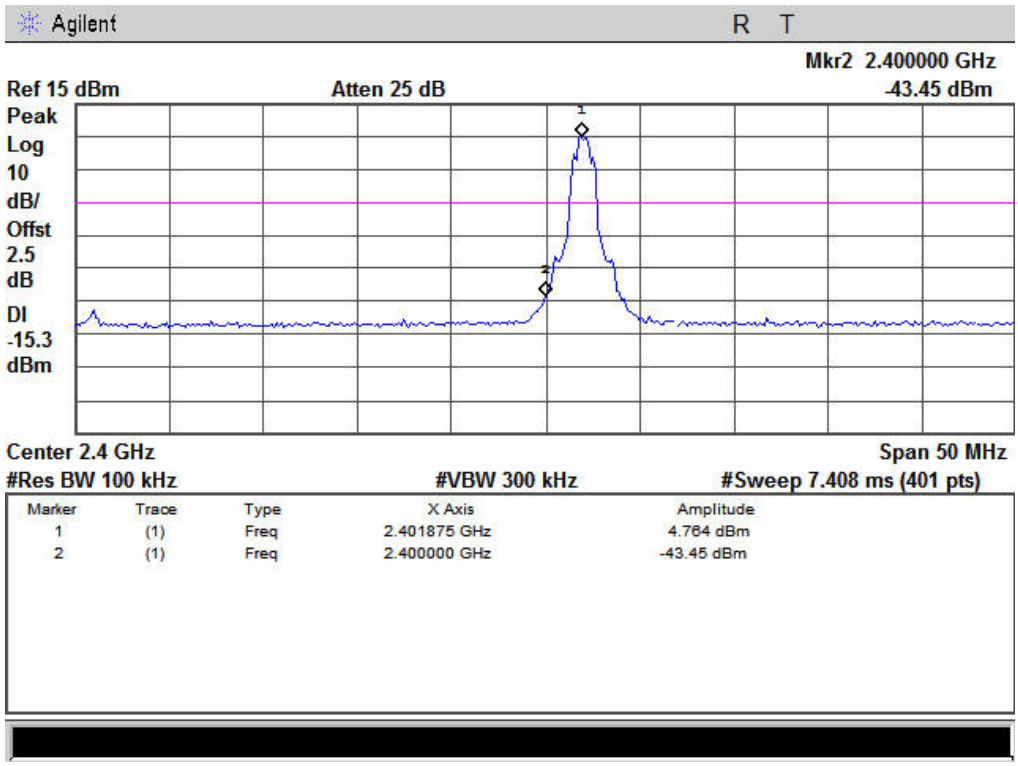
Modulation Standard: GFSK (1Mbps)
Channel: 78

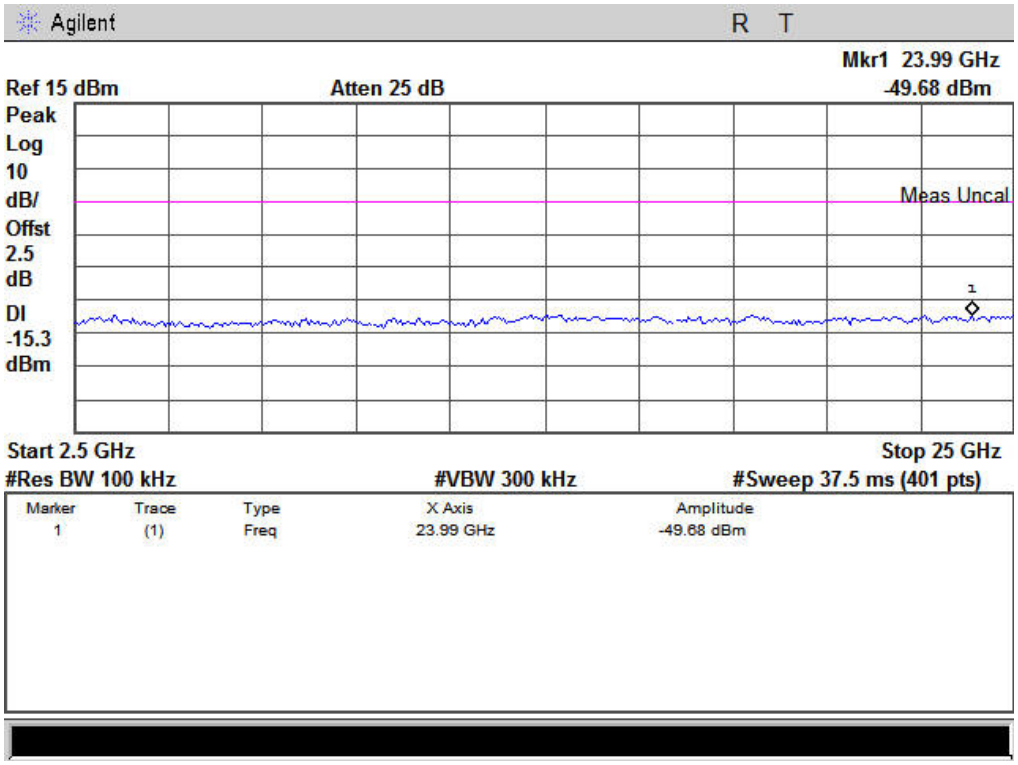




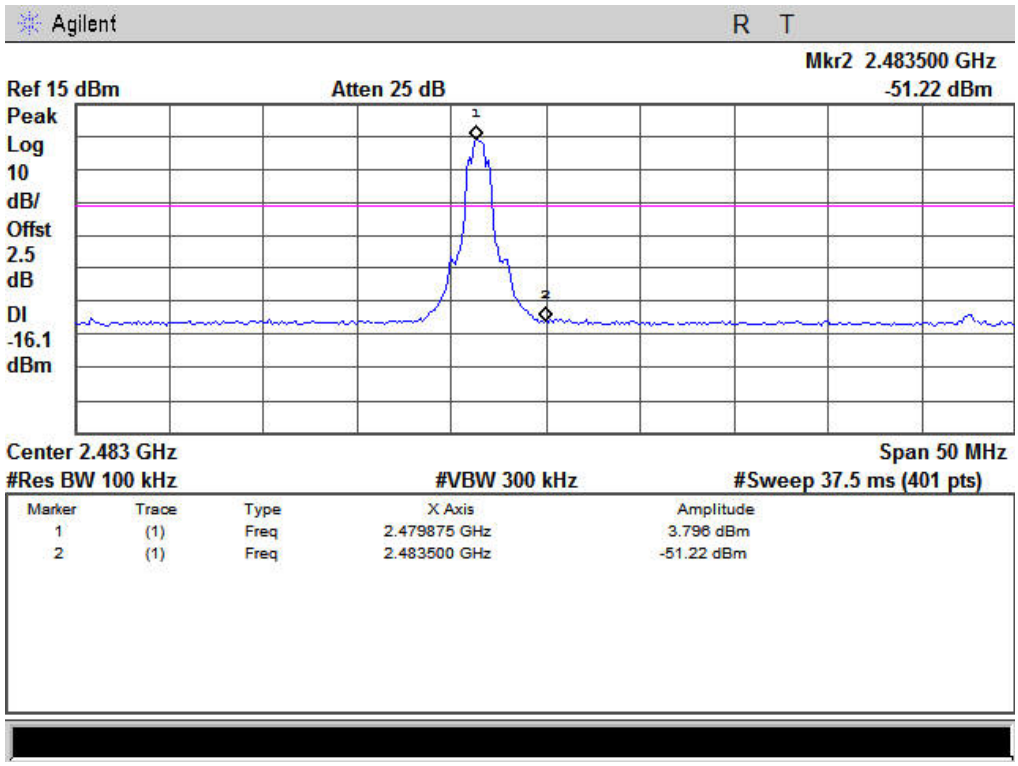


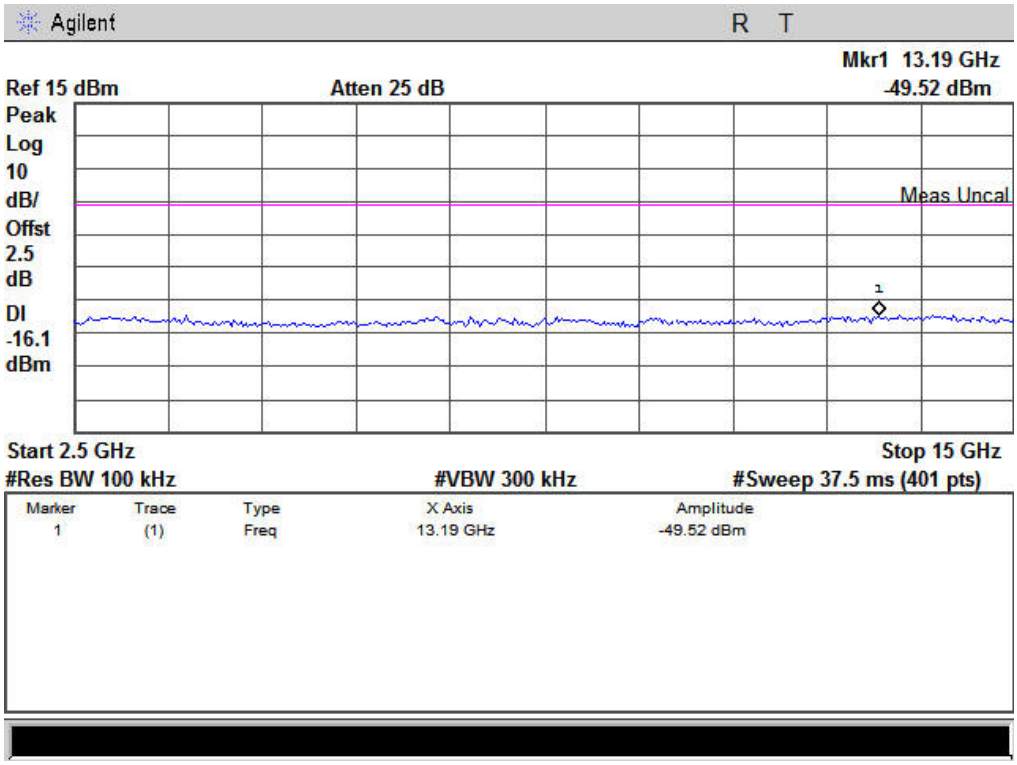
Modulation Standard: 8DPSK (3Mbps)
Channel: 00

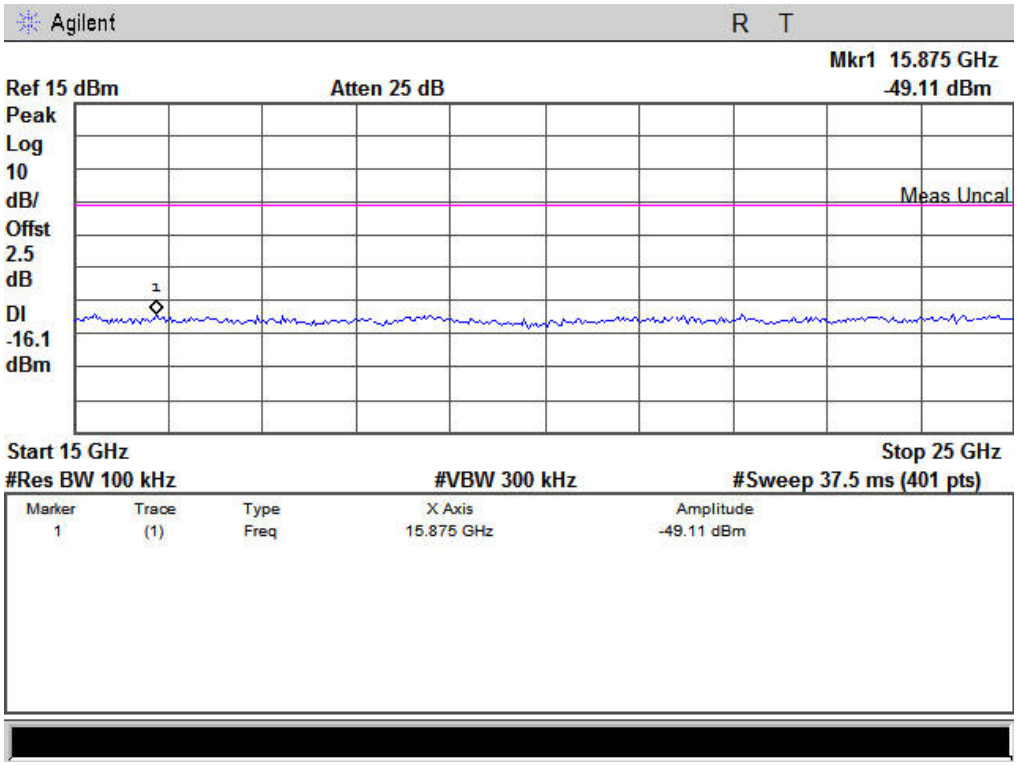




Modulation Standard: 8DPSK (3Mbps)
Channel: 78




Agilent
R T
Mkr1 13.19 GHz
Ref 15 dBm
Atten 25 dB
-49.52 dBm
Peak
Log
10
dB/
Offst
2.5
dB
Dl
-16.1
dBm
Meas Uncal
1
Start 2.5 GHz
Stop 15 GHz
#Res BW 100 kHz
#VBW 300 kHz
#Sweep 37.5 ms (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 13.19 GHz -49.52 dBm


Agilent
R T
Mkr1 15.875 GHz
Ref 15 dBm
Atten 25 dB
-49.11 dBm
Peak
Log
10
dB/
Offst
2.5
dB
Dl
-16.1
dBm
Meas Uncal
1
Start 15 GHz
Stop 25 GHz
#Res BW 100 kHz
#VBW 300 kHz
#Sweep 37.5 ms (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 15.875 GHz -49.11 dBm

12.6 Restrict band emission Measurement Data

Test Date : Aug. 04, 2014
Temperature : 25℃
Humidity : 55%
Atmospheric Pressure : 1020 hPa

1M

Channel 0 Fundamental Frequency: 2402 MHz

VERTICAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
1	2390.000	5.82	51.46	57.28	74.00	-16.72	peak
2	2390.000	5.82	44.34	50.16	54.00	-3.84	AVG

HORIZONTAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
1	2390.000	5.82	51.67	57.49	74.00	-16.51	AVG
2	2390.000	5.82	44.63	50.45	54.00	-3.55	PEAK

Channel 78 Fundamental Frequency: 2480 MHz

VERTICAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
1	2483.500	6.24	51.41	57.65	74.00	-16.35	PEAK
2	2483.500	6.24	44.73	50.97	54.00	-3.03	AVG

HORIZONTAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
1	2483.500	6.24	50.73	56.97	74.00	-17.03	AVG
2	2483.500	6.24	44.53	50.77	54.00	-3.23	PEAK

3M

Channel 0 Fundamental Frequency: 2402 MHz

VERTICAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
1	2390.000	5.82	52.03	57.85	74.00	-16.15	PEAK
2	2390.000	5.82	45.00	50.82	54.00	-3.18	AVG

HORIZONTAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
1	2390.000	5.82	50.68	56.50	74.00	-17.50	2349.700
2	2390.000	5.82	45.12	50.94	54.00	-3.06	2350.390

Channel 78 Fundamental Frequency: 2480 MHz

VERTICAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
1	2483.500	6.24	51.67	57.91	74.00	-16.09	PEAK
2	2483.500	6.24	44.38	50.62	54.00	-3.38	AVG

HORIZONTAL

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
1	2483.500	6.24	51.73	57.97	74.00	-16.03	PEAK
2	2483.500	6.24	44.19	50.43	54.00	-3.57	AVG

Notes:

1. Result = Meter Reading + Factor
2. Factor = Antenna Factor + Cable Loss – Amplifier
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3 MHz for Peak detection at frequency above 1GHz.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average detection at frequency above 1GHz

13. Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

**: Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

13.1 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.