

FCC Test Report

Client Information:

Applicant: PRECASTER ENTERPRISES Co., Ltd
Applicant add.: No.204,Sec.2,Hu-Hsing Rd., Taichung, Taiwan, R.O.C.

EUT Information:

EUT Name: Receiver
Model No.: 40-6250
Brand Name: Johnson Level & Tool
FCC ID: YWSCA200MR

Prepared By:

Asia Institute Technology (Dongguan) Limited
Add. : No.6 Binhe Road, Tianxin Village, Huangjiang,
Dongguan, Guangdong, China.

Date of Receipt: Oct. 27, 2010 Date of Test: Nov.1—8, 2010
Date of Issue: Nov. 8, 2010 Test Result: **Pass**

Test procedure used: ANSI C63.4-2003

This device described above has been tested by Asia Institute Technology (Dongguan) Limited, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

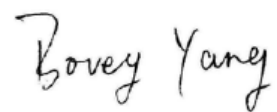
*This test report must not be used by the client to claim product endorsement by any agency of the U.S. government.

Reviewed by: _____



Test director

Approved by: _____



Technical director

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2 Test Summary

2.1 Compliance with FCC Part 15 subpart C

Test	Test Requirement	Standard Paragraph	Result
Conduction Emissions	FCC Part 15 C:2009	Section 15.203	PASS
Antenna Requirement	FCC Part 15 C:2009	Section 15.247(c)	PASS
Occupied Bandwidth	FCC Part 15 C:2009	Section 15.247(a)	PASS
Carrier Frequencies Separated	FCC Part 15 C:2009	Section 15.247(a)(1)	PASS
Hopping Channel Number	FCC Part 15 C:2009	Section 15.247(a)(1) (iii)	PASS
Dwell Time	FCC Part 15 C:2009	Section 15.247(a)(1) (iii)	PASS
Maximum Peak Output Power	FCC Part 15 C:2009	Section 15.247(b)(1)	PASS
Band edge	FCC Part 15 C:2009	Section 15.247(d)	PASS
Conducted Spurious Emissions	FCC Part 15 C:2009	Section 15.247(d)	PASS
Radiated Emissions	FCC Part 15 C:2009	Section 15.247(d)	PASS

2.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, The following measurements uncertainty Level have estimated based on ANSI C63.4:2003, the maximum value of the uncertainty as below

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	Radiated Emission Test	$\pm 3.57\text{dB}$

3 Test Facility

The test facility is recognized, certified or accredited by the following organizations:

.FCC- Registration No: 248337

The 3m Semi-Anechoic Chamber, 3m/10m Open Area Test Site and Shielding Room of Asia Institute Technology (Dong guan) Limited have been registered by Federal Communications Commission (FCC) on Dec.07, 2006.

.Industry Canada(IC)-Registration No: IC6819A-1 & IC6819A-2

The 3m Semi-Anechoic Chamber and 3m/10m Open Area Test Site of Asia Institute Technology (Dongguan) Limited have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing on Nov.07, 2006.

.VCCI- Registration No: R-2482 & C-2730

The 3m/10m Open Area Test Site and Shielding Room of Asia Institute Technology (Dongguan) Limited have been registered by Voluntary Control Council for Interference on Jan.24, 2007.

.TUV Rhineland

Asia Institute Technology (Dongguan) Limited has been assessed on Jan.16, 2007 that it can carry out EMC tests by order and under supervision of TUV Rhineland.

.ITS- Registration No: TMPSHA031

Asia Institute Technology (Dongguan) Limited has been assessed and included in Intertek Shanghai TMP Program regarding Laboratory facilities and test equipment on Nov.10, 2006.

3.1 Deviation from standard

None

3.2 Abnormalities from standard conditions

None

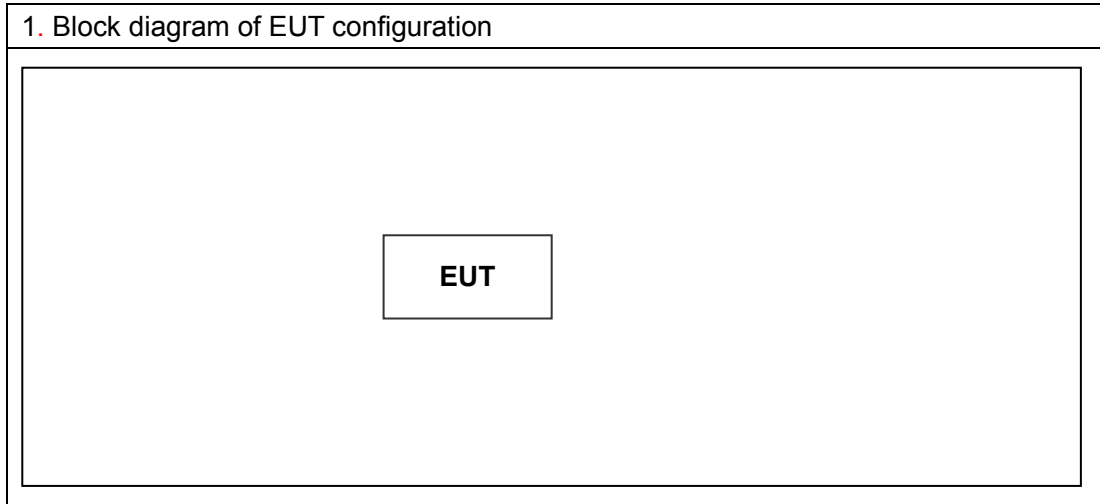
4 General Information

4.1 General Description of EUT

Manufacturer:	SINTAI Optical(shen zhen) CO., LTD.		
Manufacturer Address:	Li-Song_lang The Second Industry Zone, Gongming Town, Shenzhen City,Guang Dong Province, China.		
EUT Name:	Receiver		
Model No:	40-6250		
Operation frequency:	2402 MHz to 2480MHz		
Channel Number:	79		
Modulation Technology:	GFSK, $\pi/4$ DQPSK, 8DPSK		
AntennaType:	Printed on PCB		
Brand Name:	Johnson Lvel & Tool		
Serial No:	N/A		
Power Supply Range:	N/A		
Power Supply:	DC 4.5V from battery		
Power Cord:	N/A		
Signal Cable:	N/A		
Model description: N/A			
Description of Channel:			
channel	Frequency (MHz)	channel	Frequency (MHz)
1	2402
1	2403
2	2404	79	2480
.....		
39	2441		
40	2442		
41	2443		
42	2444		

4.2 Description of Test conditions

- (1) EUT was tested in normal configuration (Please See following Block diagram)



- (2) E.U.T. test conditions:

15.31(e) :For intentional radiators, measurements of the variation of the input power or the adiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% ofthe nominal rated supply voltage. For battery operated equipment, theequipment tests shall be performed using a new battery.

- (3) 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

- (4) Frequency range of radiated measurements:

According to the 15.33,The test range will be upto the tenth harmonic of the highest fundamental frequency

- (5) During the preliminary test, GFSK, $\pi/4$ -QPSK & 8DPSK with DH1 were pre-tested and found that 8DPSK emits the highest output power. Then the tests were carried on with DH1 compare to DH3 & DH5 and found that 8DPSK with DH5 emit the highest output power, and therefore had been tested under operating condition.

Following channels were selected for the radiated emission testing only as listed below:

Tested Channel	Modulation Type	Packet Type
Low, Mid, High	GFSK	DH 5
Low, Mid, High	8DPSK	DH 5

4.3 Peripheral List

No.	Equipment	Manufacturer	Model No.	Serial No.	Power cord	signal cable
1	N/A	N/A	N/A	N/A	N/A	N/A

5 Equipments List for All Test Items

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	Spectrum Analyzer	ADVANTEST	R3182	150900201	2010.10.16	2011.04.15
2	EMI Measuring Receiver	Schaffner	SCR3501	235	2010.10.16	2011.04.15
3	Low Noise Pre Amplifier	Tsj	MLA-10K01-B01-27	1205323	2010.09.08	2011.03.07
4	Low Noise Pre Amplifier	Tsj	MLA-0120-A02-34	2648A04738	2010.04.08	2011.04.07
5	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2010.07.15	2011.07.14
6	Broadband Horn Antenna	SCHWARZBECK	BBHA9120A	451	2010.07.15	2011.07.14
7	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2010.09.08	2011.03.07
8	EMI Test Receiver	R&S	ESCI	100124	2009.12.29	2010.12.28
9	LISN	Kyoritsu	KNW-242	8-837-4	2010.04.08	2011.04.07
10	LISN	Kyoritsu	KNW-407	8-1789-3	2010.04.08	2011.04.07
11	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2010.09.08	2011.03.07



12	Loop Antenna	ARA	PLA-1030/B	1029	2010.03.20	2011.03.19
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6 Test Result

6.1 Antenna Requirement

6.1.1 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 is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi 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 6dBi.

6.1.2 EUT Antenna

The antenna is integrated on the main PCB and no consideration of replacement. antenna gain is 1dbi max

6.2 Conduction Emissions Measurement

6.2.1 limit

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

Note:Decreases with the logarithm of the frequency.

6.2.2 Test procedure

EUT was placed upon a wooden test table 0.8m above the horizontal metal reference plane and 0.4m from the vertical ground plane, and it was connected to an AMN. The closest distance between the boundary of the EUT and the surface of the AMN is 0.8m. All peripherals were connected to another AMN, and placed at a distance of 10cm from each other. A spectrum and receiver was connected to the RF output port of the AMN. Both average and quasi-peak value were detected.

6.2.3 Test result

Cause the EUT only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Measurements to demonstrate compliance with the conducted limits are not required for devices

6.3 Occupied Bandwidth

6.3.1 limit

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.

6.3.2 Test procedure

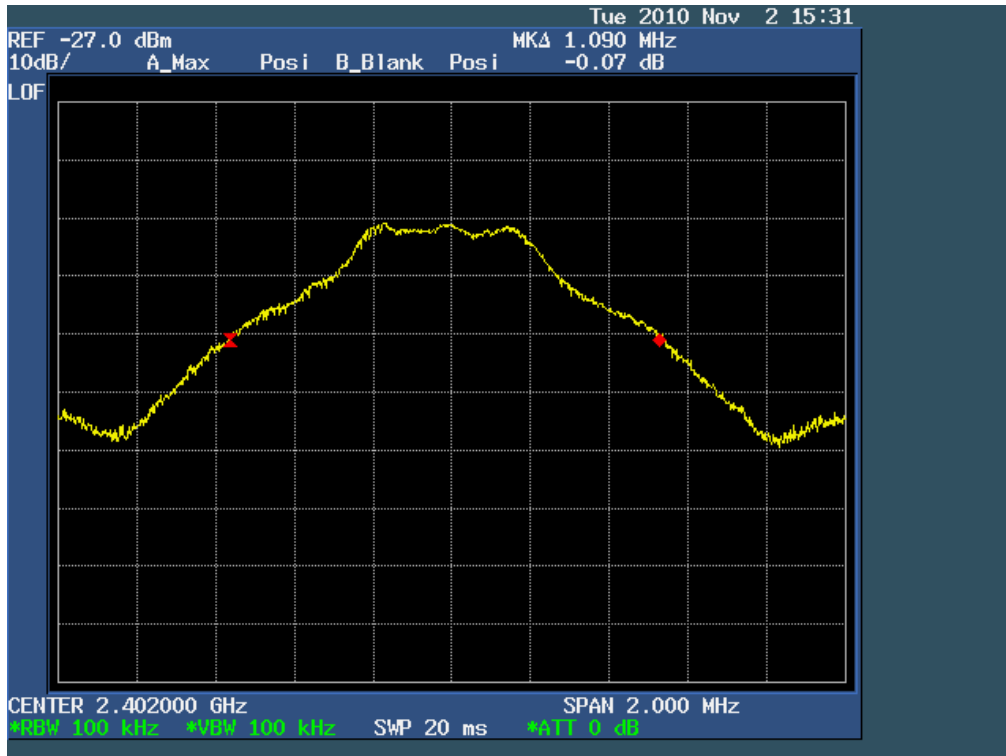
- (1) Connected the antenna port to the Spectrum Analyzer , set the Spectrum Analyzer as RBW=30kHz,VBW \geq RBW,Sweep time=Auto, Detector Function=Peak
- (2) The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission.
- (3) The above procedure shall be repeated at the lowest, the middle, and the highest frequency of the stated frequency range with modulated mode. also shall be performed at different modes of operation

6.3.3 Test result

For GFSK

channel	Channel frequency (MHz)	20dB bandwidth (KHz)	Limit (KHz)	Conclusion
Low	2402	1090	N/A	Pass
Middle	2441	1118	N/A	Pass
Highest	2480	1064	N/A	Pass

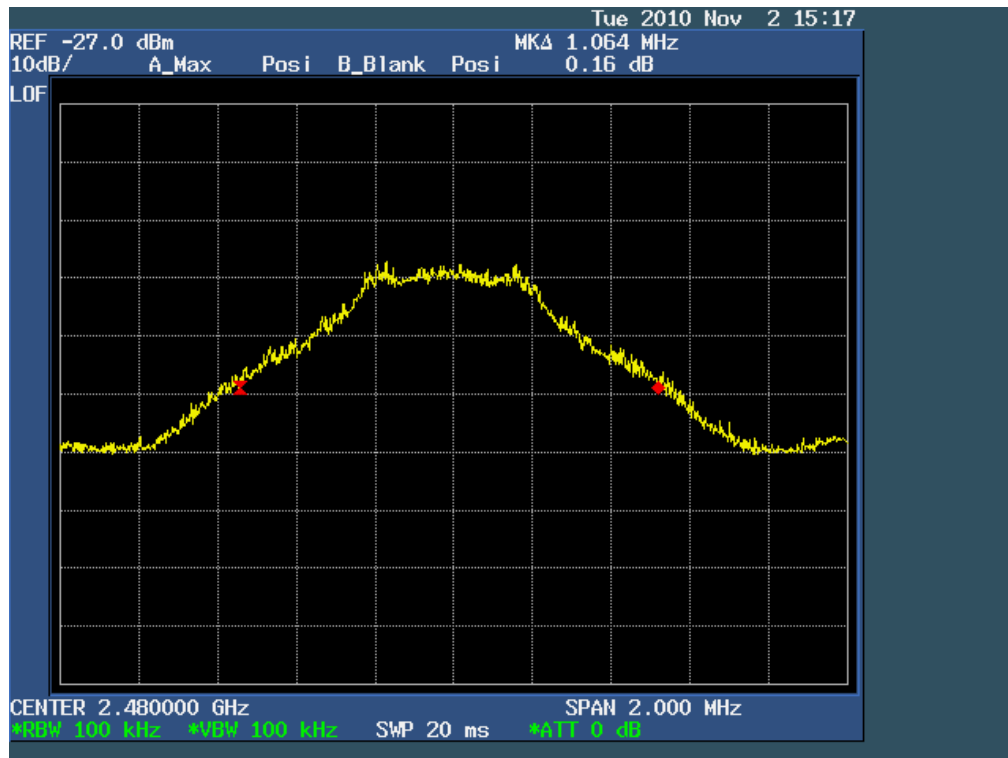
CH1



CH39



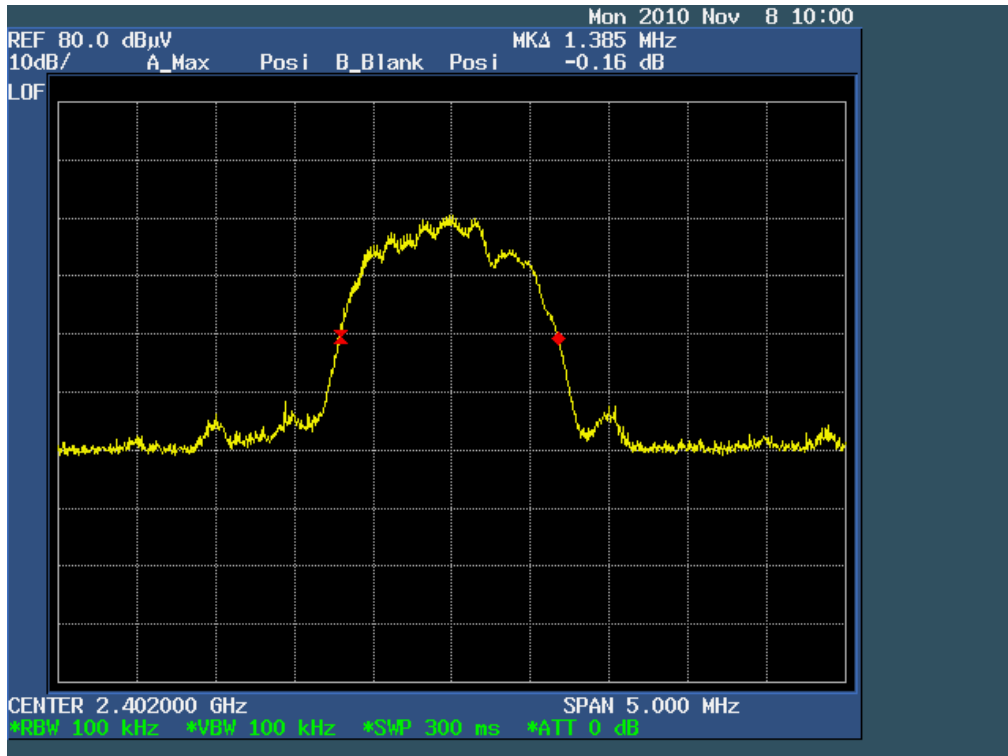
CH79



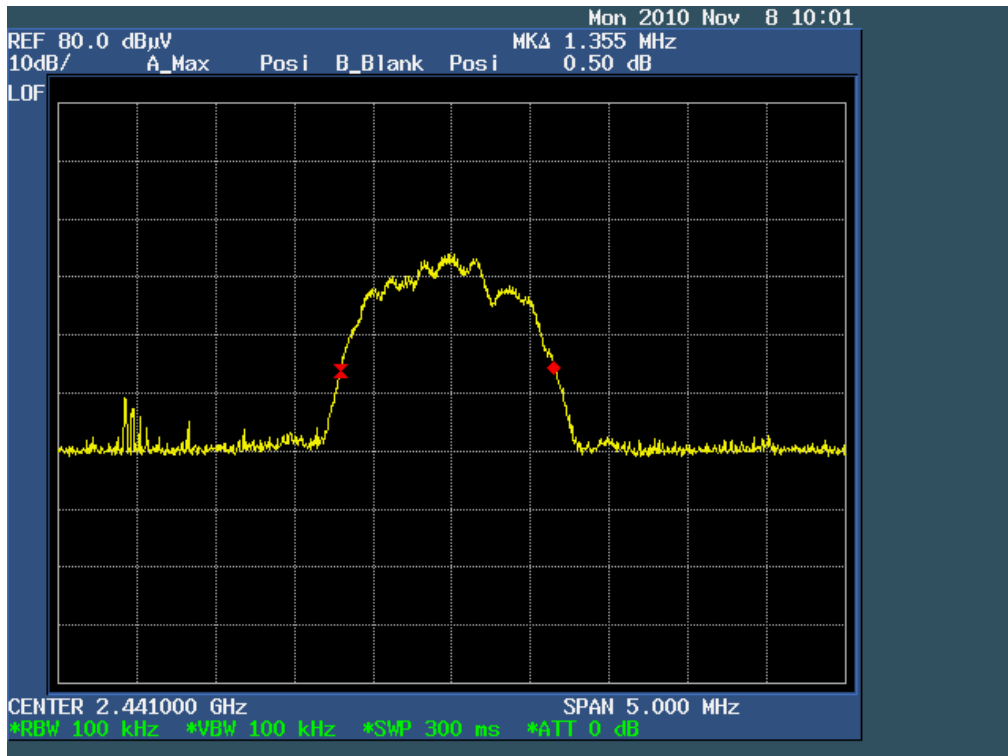
For 8DPSK

channel	Channel frequency (MHz)	20dB bandwidth (KHz)	Limit (KHz)	Conclusion
Low	2402	1385	N/A	Pass
Middle	2441	1355	N/A	Pass
Highest	2480	1375	N/A	Pass

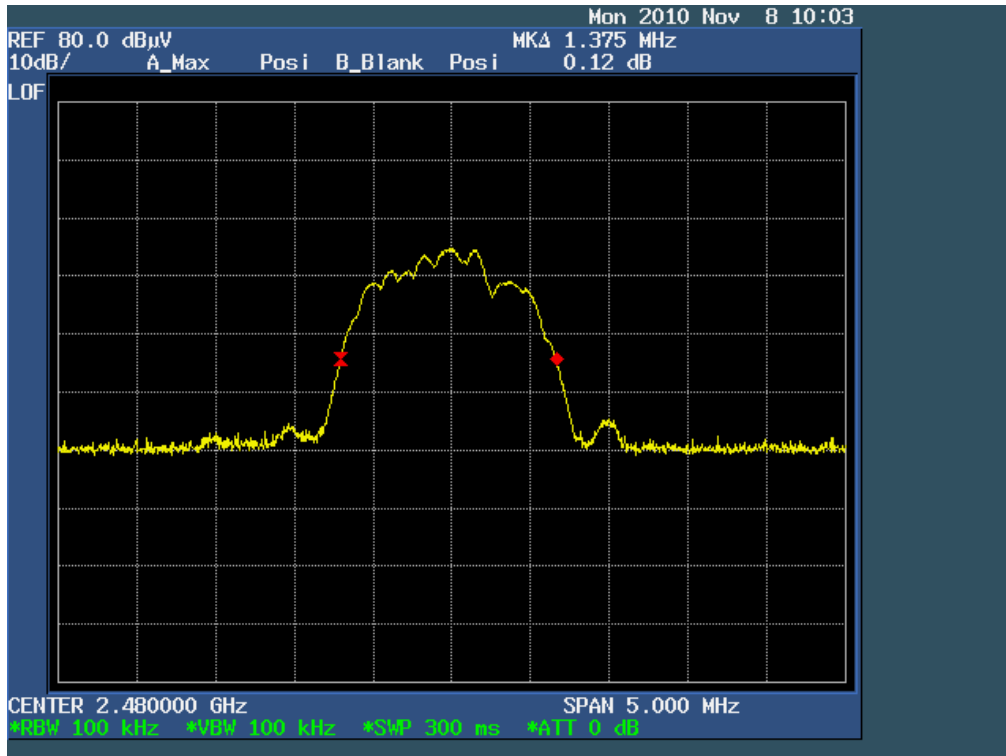
CH1



CH39



CH79



6.4 Carrier Frequencies Separated

6.4.1 limit

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.

6.4.2 Test procedure

- (1) Connected the antenna port to the Spectrum Analyzer, set the Spectrum Analyzer as RBW=100kHz, VBW \geq RBW, Sweep time=Auto, Detector Function=Peak
- (2) The EUT should be transmitting at its maximum data rate. Use the marker-delta function to determine the separation between the peaks of the adjacent channels
- (3) The above procedure shall be repeated at the lowest, the middle, and the highest frequency of the stated frequency range with modulated mode. also shall be performed at different modes of operation

6.4.3 Test result

For GFSK

channel	Channel frequency (MHz)	Channel Separation (MHz)	Conclusion
Low	2402	0.981	Pass
Middle	2441	1.008	Pass
Highest	2480	1.020	Pass

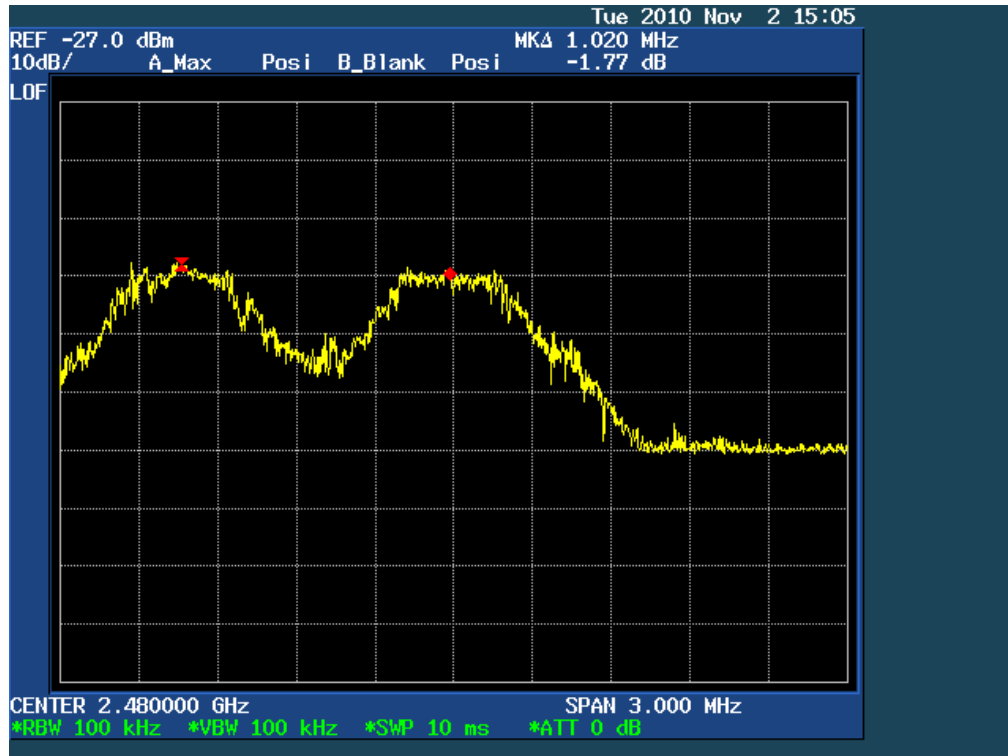
CH1



CH39



CH79



For 8DPSK

channel	Channel frequency (MHz)	Channel Separation (MHz)	Conclusion
Low	2402	1.010	Pass
Middle	2441	1.011	Pass
Highest	2480	1.029	Pass

CH1



CH39



CH79



6.5 Hopping Channel Number

6.5.1 limit

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.

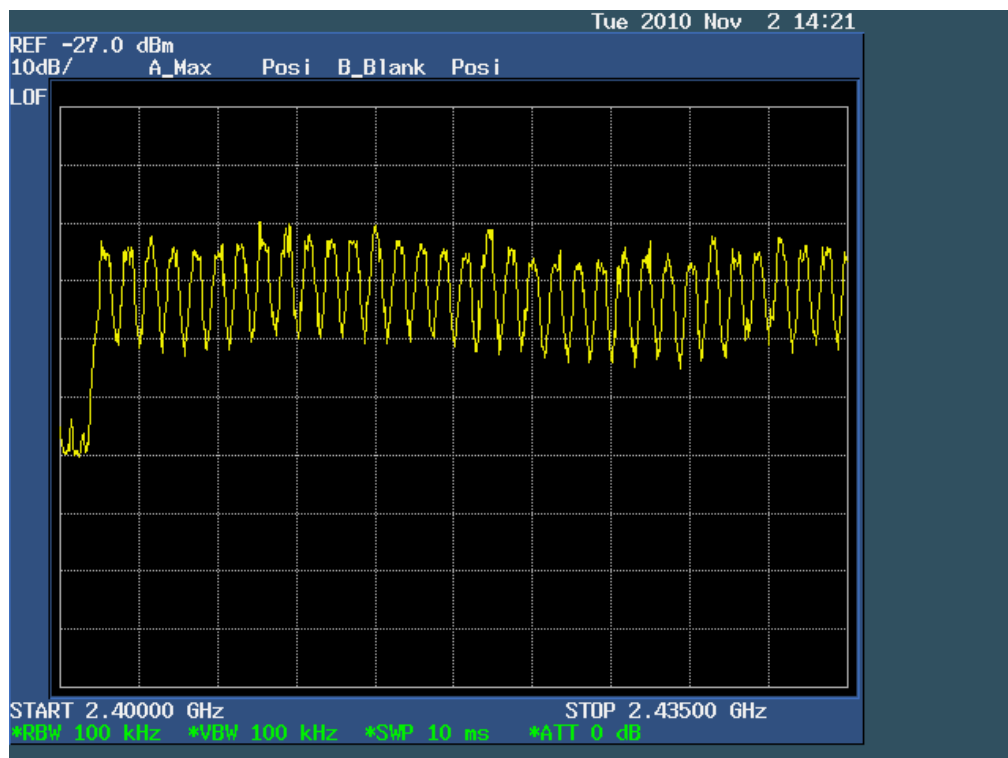
6.5.2 Test procedure

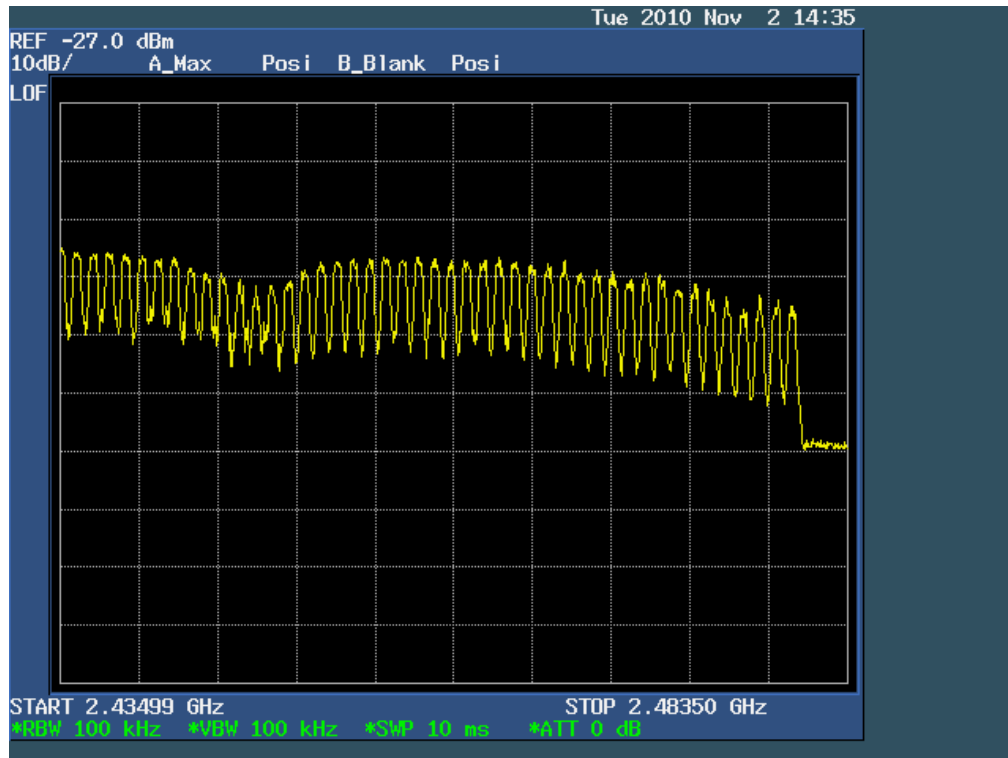
- (1) Connected the antenna port to the Spectrum Analyzer , set the Spectrum Analyzer as RBW=100kHz,VBW \geq RBW,Sweep time=Auto, Detector Function=Peak Trace=Maxhold
- (2) The EUT should be have its hopping function enabled. Maxhold and record hopping channels It may prove necessary to break the span up to sections, in order to clearly show all of the hopping frequencies.

6.5.3 Test result

For GFSK

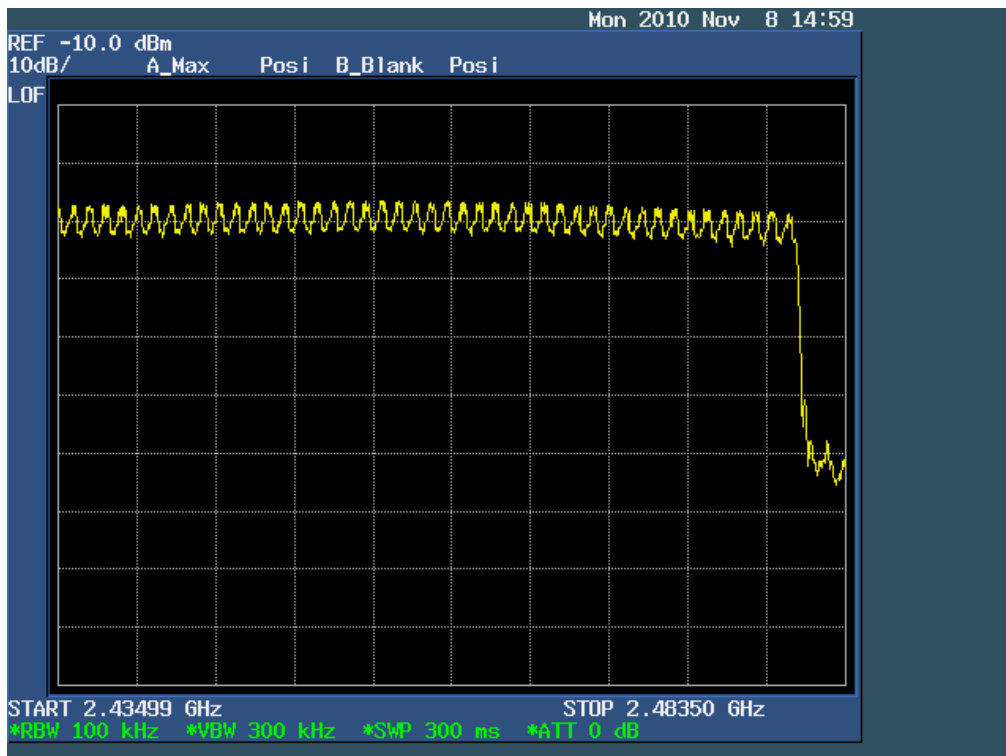
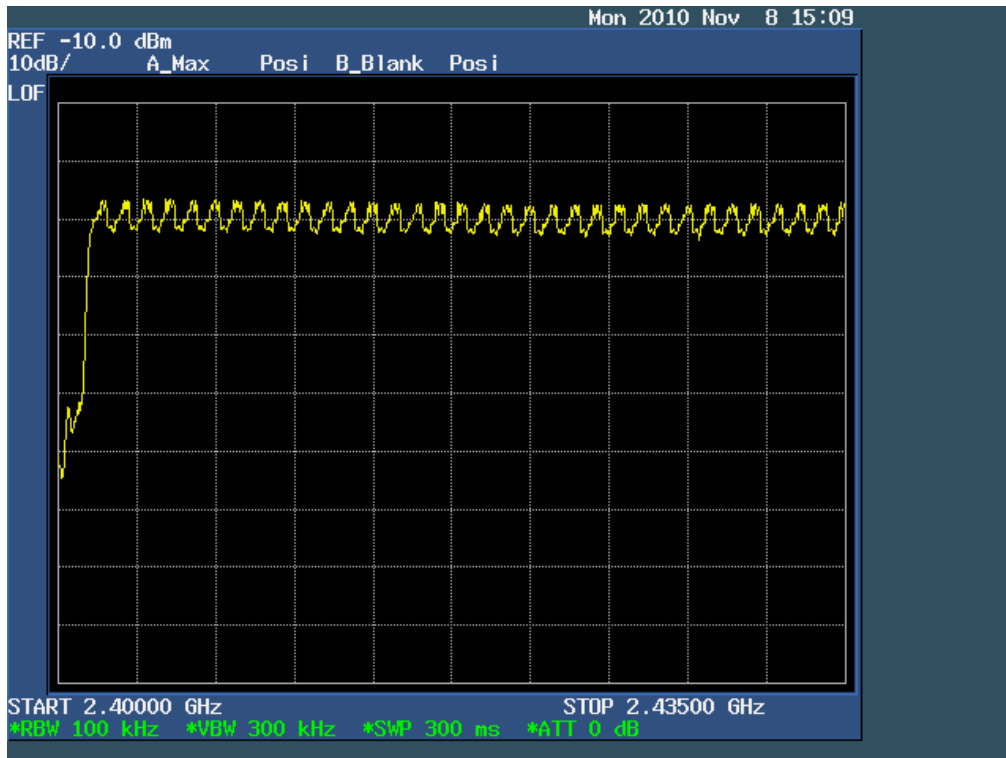
Hopping Channel Number result		
Operating Mode: GFSK Mode		Test date:2010-11-04
Result	Limit	Conclusion
79	15	Pass





For 8DPSK

Hopping Channel Number result		
Operating Mode: GFSK Mode		Test date:2010-11-08
Result	Limit	Conclusion
79	15	Pass



6.6 Dwell time

6.6.1 limit

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.

6.6.2 Test procedure

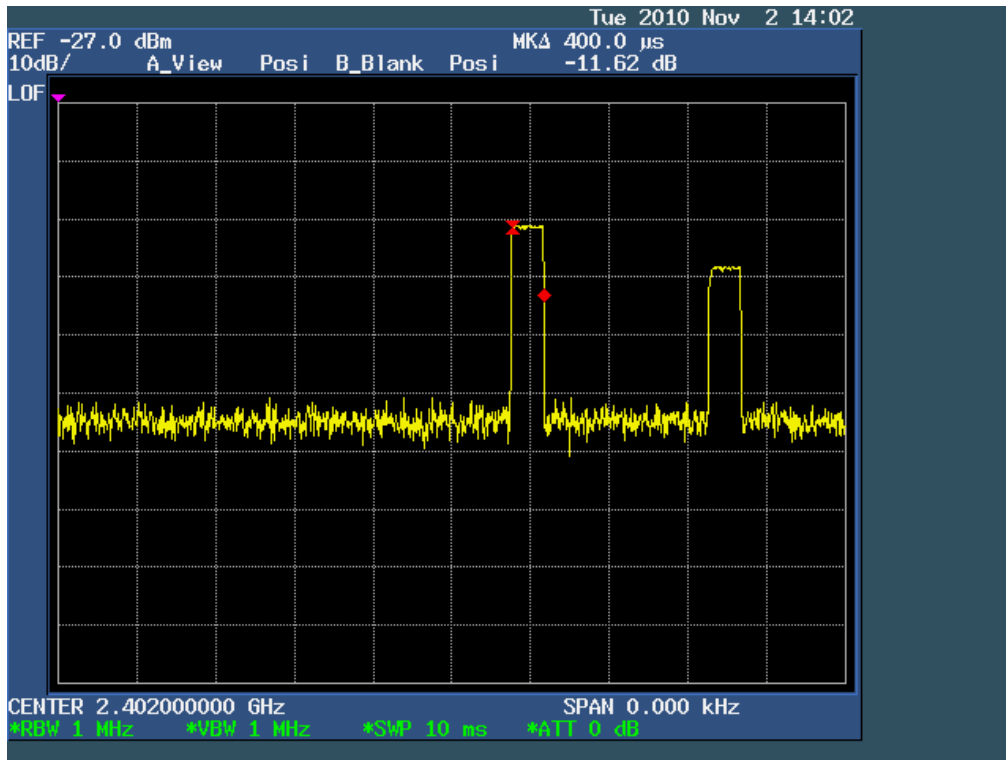
- (1) connect the antenna port of the EUT to spectrum analyzer and set it in transmitting mode.
- (2) Set center frequency of spectrum analyzer = operating frequency.
- (3) Set the spectrum analyzer as RBW=1MHz, VBW=1MHz, Span=0Hz, Sweep Time is more than once pulse time.
- (4) Measure the maximum time duration of one single pulse.
- (5) Set the EUT for DH5, DH3 and DH1 packet transmitting.
- (6) DH5 Packet permit maximum $1600 / 79 / 6 = 3.37$ hops per second in each channel (5 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times $3.37 \times 31.6 = 106.6$ within 31.6 seconds.
- (7) DH3 Packet permit maximum $1600 / 79 / 4 = 5.06$ hops per second in each channel (3 time slots RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times $5.06 \times 31.6 = 160$ within 31.6 seconds.
- (8) DH1 Packet permit maximum $1600 / 79 / 2 = 10.12$ hops per second in each channel (1 time slot RX, 1 time slot TX). So, the dwell time is the time duration of the pulse times $10.12 \times 31.6 = 320$ within 31.6 seconds.

6.6.3 Test result

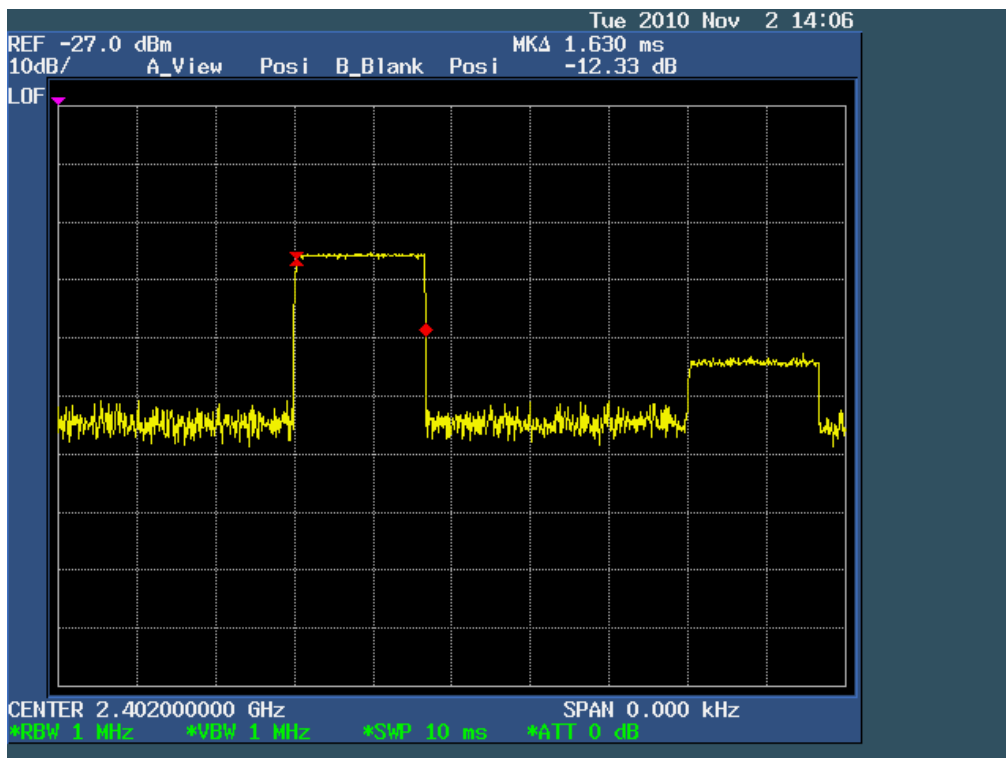
- (1) GFSK Mode

Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH5	2402 MHz	2.900	0.3091	0.4000
DH3	2402 MHz	1.630	0.2608	0.4000
DH1	2402 MHz	0.400	0.1280	0.4000

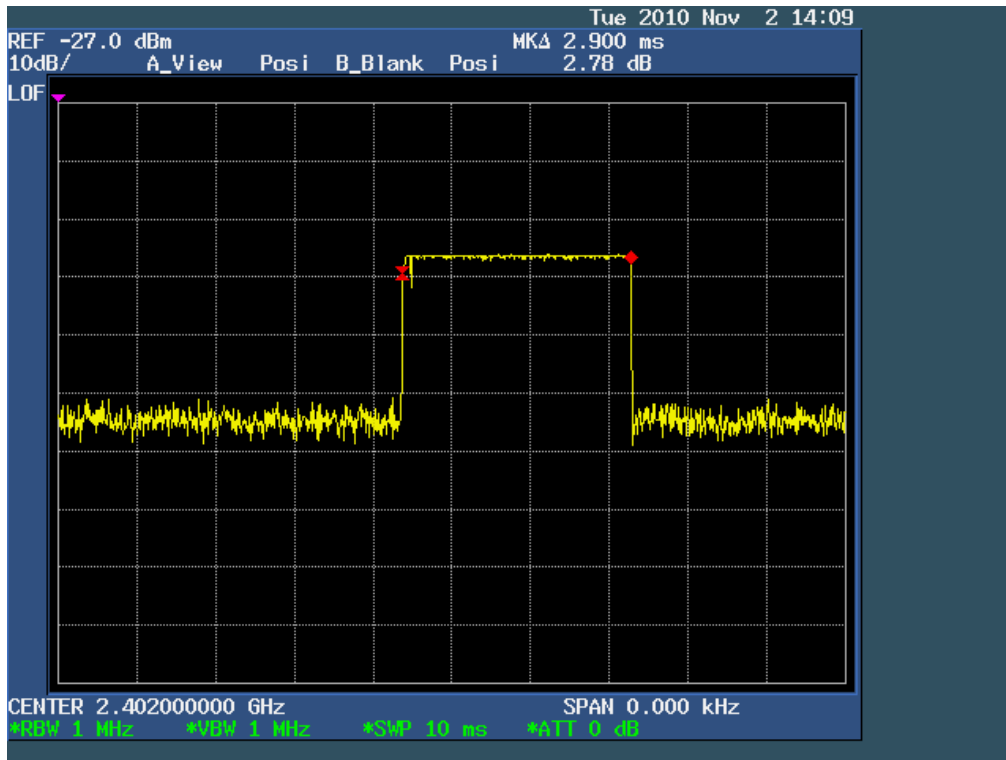
DH1



DH3



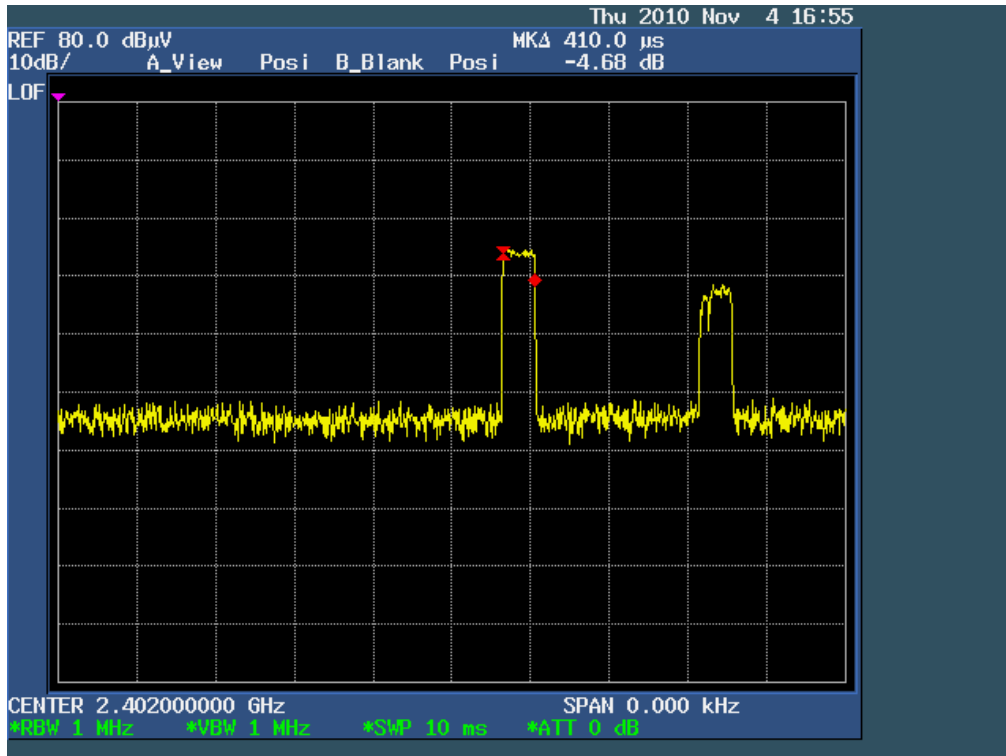
DH5



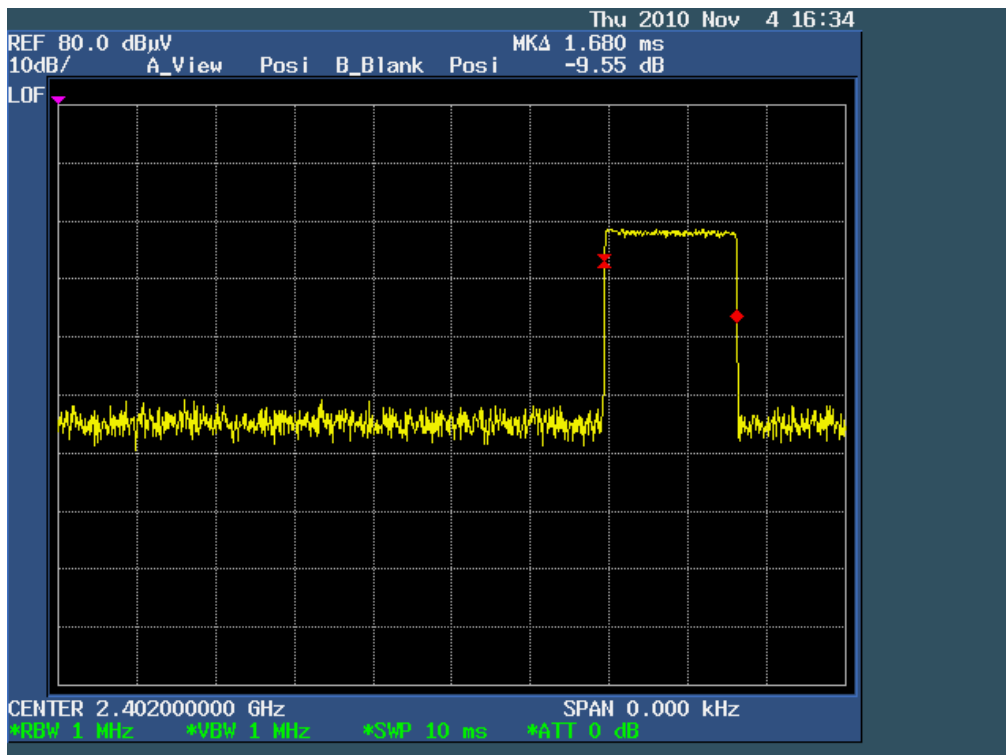
(3) 8DPSK Mode

Data Packet	Frequency	Pulse Duration (ms)	Dwell Time (s)	Limits (s)
DH5	2402 MHz	2.920	0.3112	0.4000
DH3	2402 MHz	1.680	0.2688	0.4000
DH1	2402 MHz	0.410	0.1312	0.4000

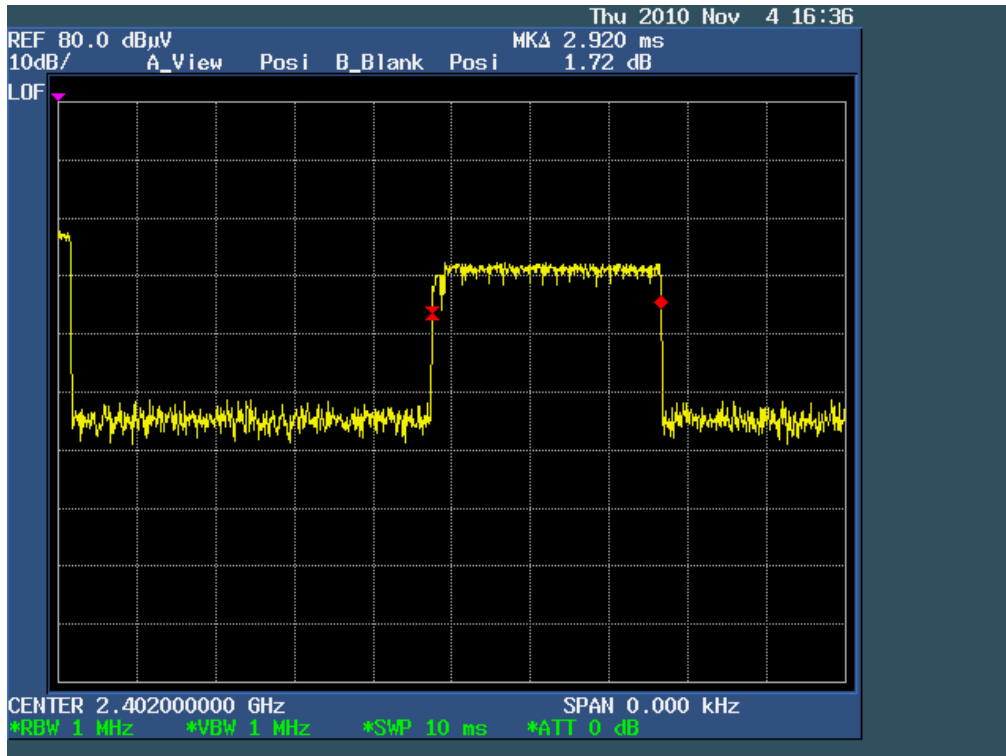
DH1



DH3



DH5



6.7 Maximum Peak Output Power

6.7.1 limit

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: 1watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

6.7.2 Test procedure

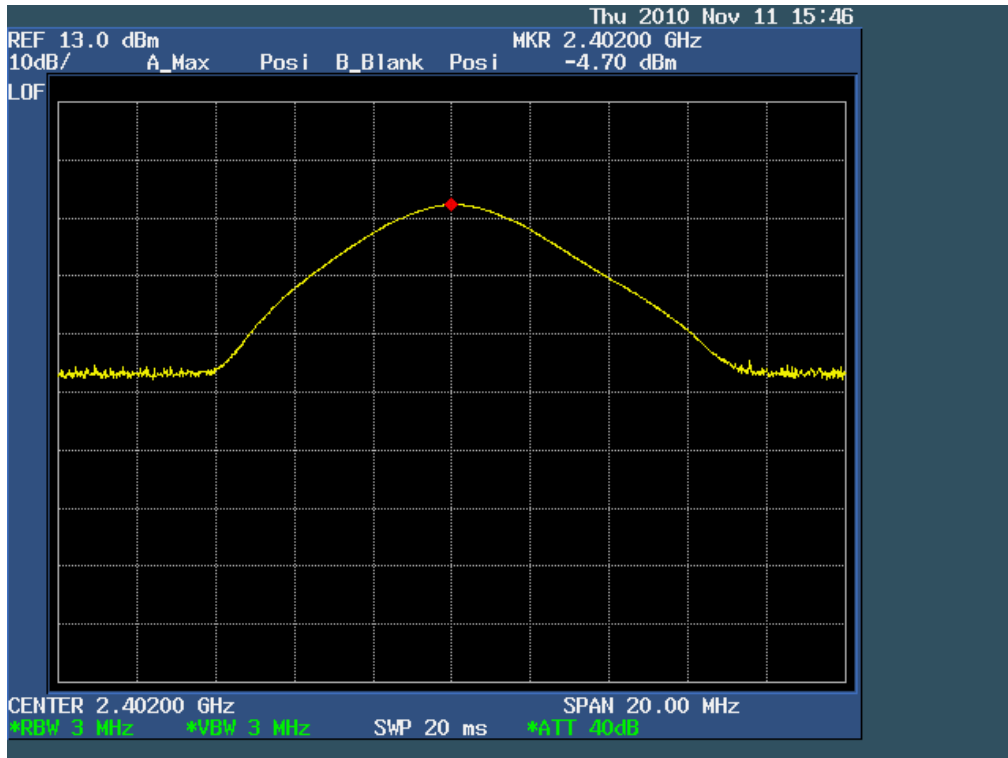
- (1) Connected the antenna port to the Spectrum Analyzer, set the Spectrum Analyzer as RBW>20dB bandwidth as measured,VBW \geq RBW,Sweep time=Auto, Detector Function=Peak
- (2) The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power
- (3) The above procedure shall be repeated at the lowest, the middle, and the highest frequency of the stated frequency range with modulated mode. also shall be performed at different modes of operation

6.7.3 Test result

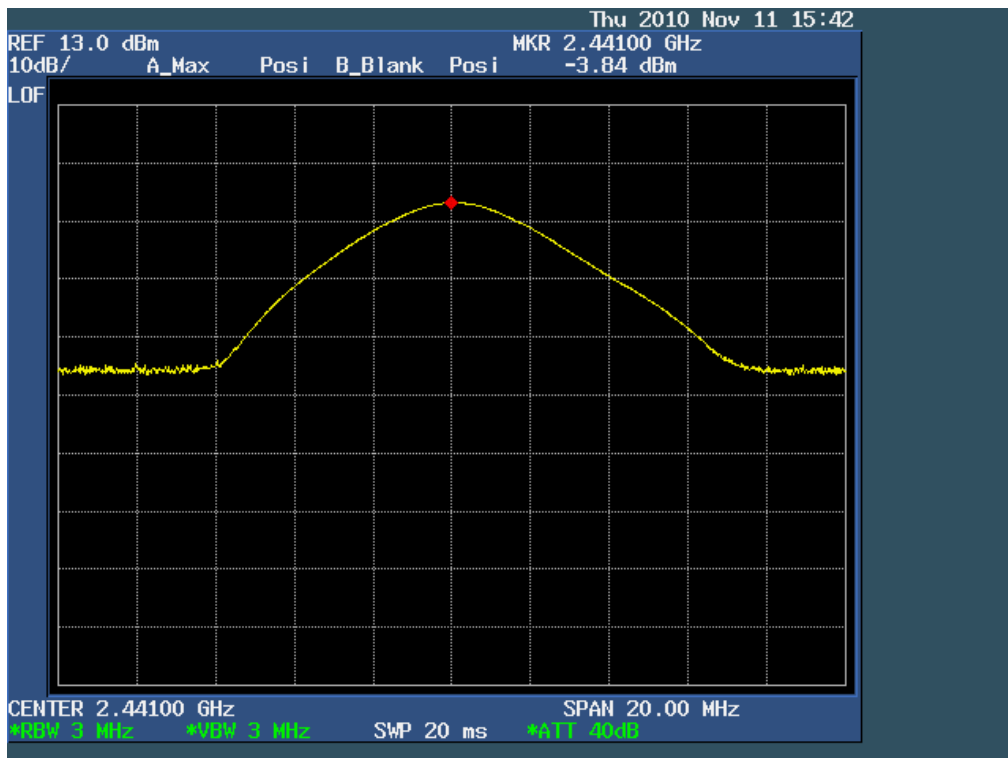
For GFSK

channel	Channel frequency (MHz)	Read Power (dBm)	Cable loss (dB)	Output power (dBm)	Limit (dBm)	Conclusion
Low	2402	-4.70	1.9	-2.80	30	Pass
Middle	2441	-3.84	1.9	-1.94	30	Pass
Highest	2480	-5.98	1.9	-4.08	30	Pass

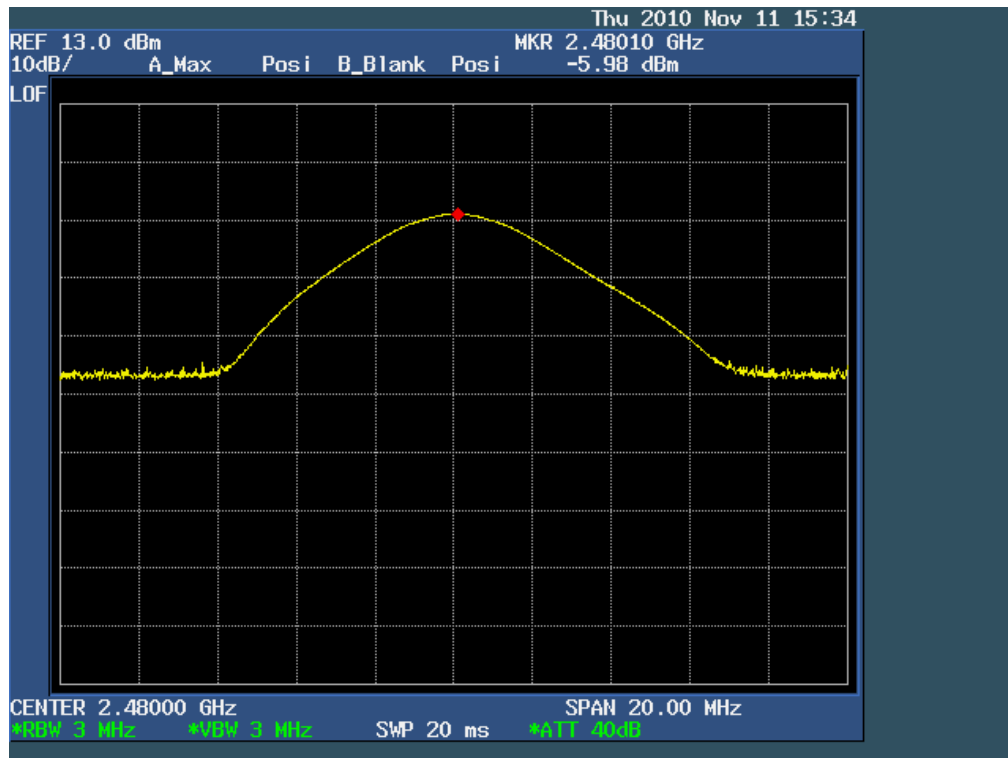
CH1



CH39



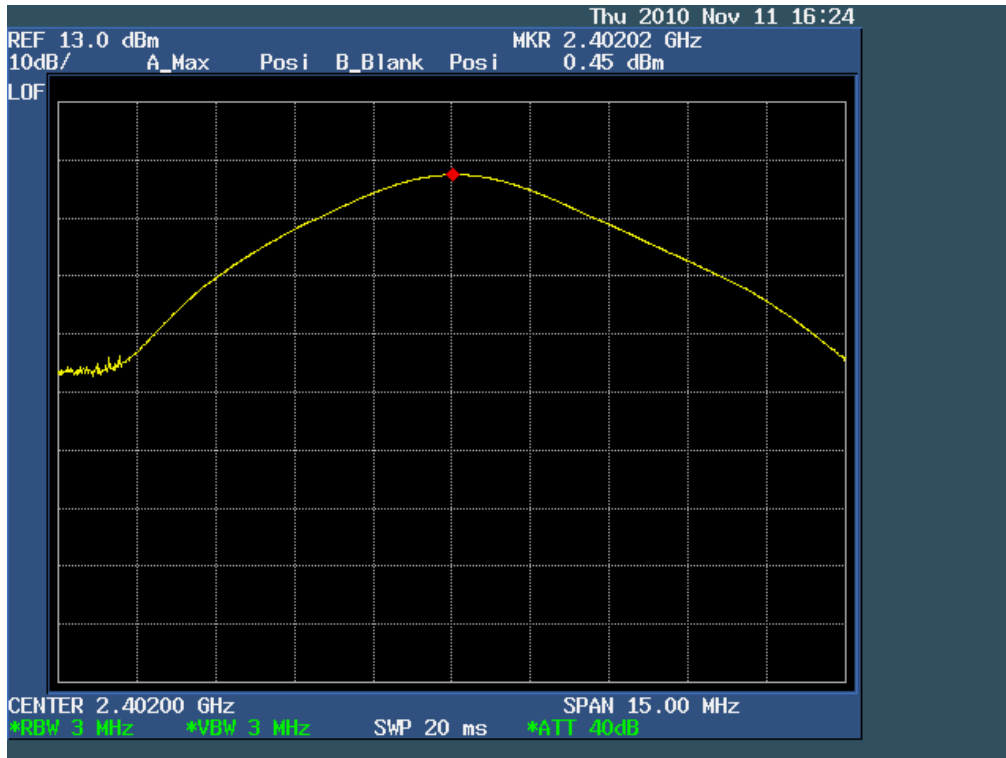
CH79



For 8DPSK

channel	Channel frequency (MHz)	Read Power (dBm)	Cable loss (dB)	Output power (dBm)	Limit (dBm)	Conclusion
Low	2402	0.45	1.9	2.35	30	Pass
Middle	2441	0.35	1.9	2.25	30	Pass
Highest	2480	-2.47	1.9	-0.57	30	Pass

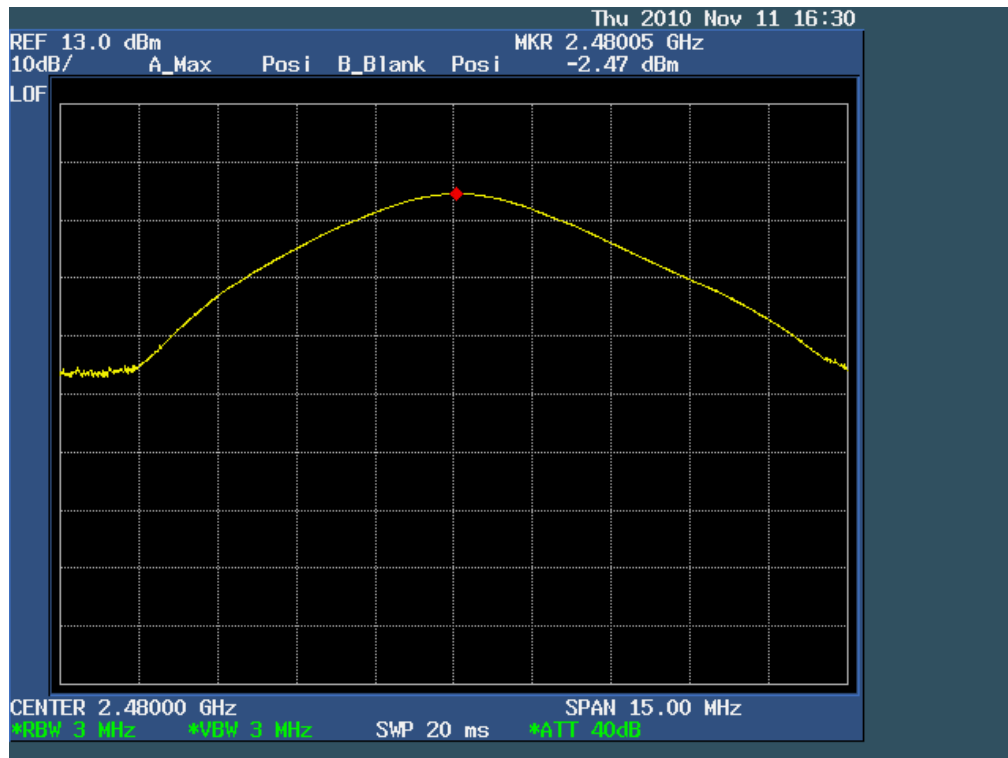
CH1



CH39



CH79



6.8 Band edge

6.8.1 limit

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. 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)).

6.8.2 Test procedure

- (1) Connected the antenna port to the Spectrum Analyzer, set the Spectrum Analyzer as RBW=100kHz,VBW \geq RBW,Sweep time=Auto, Detector Function=Peak
- (2) The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. And then marker the bandedge Level.
- (3) The above procedure shall be repeated at the lowest, and the highest frequency of the stated frequency range with modulated mode.

6.8.3 Test result

For GFSK

CH1

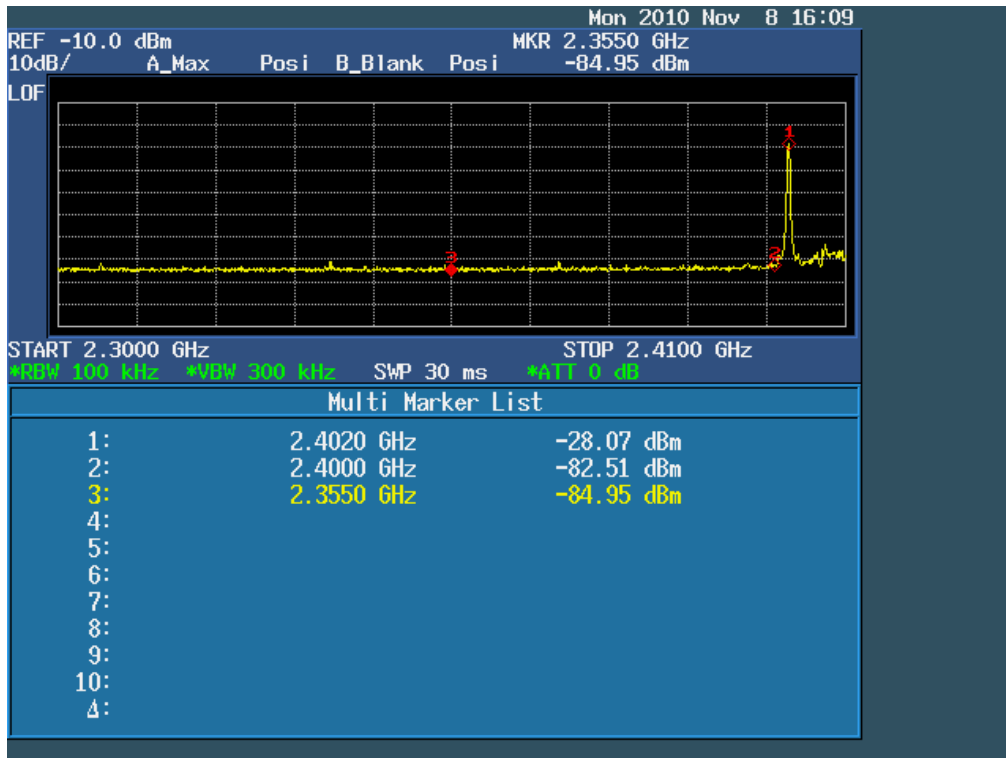


CH79

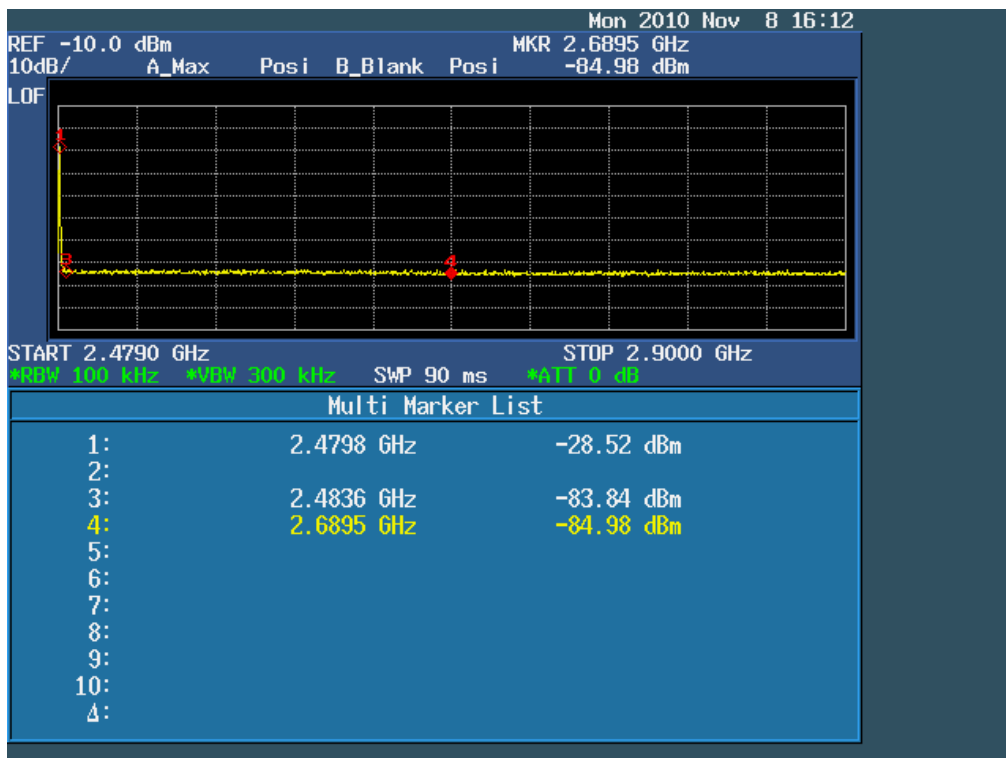


For 8DPSK

CH1



CH79



6.9 Radiated Emissions Measurement

6.9.1 Limit

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. 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))

Frequency of Emission (MHz)	Field Strength		Measurement Distance (meters)
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$	
0.009-0.49	2400/F(kHz)		300
0.49-1.705	24000/F(kHz)		30
1.705-30	30		30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

6.9.2 Test procedure

EUT was placed upon a wooden test table which was placed on the turn table 0.8m above the horizontal metal ground plane, and operating in the mode as mentioned above. A receiving antenna was placed 3m away from the EUT. During testing, turn around the turn table and move the antenna from 1m to 4m to find the maximum field-strength reading. All peripherals were placed at a distance of 10cm between each other. Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

6.9.3 Test Result

There is not detected blow 30MHz

Test Data: 2010-11-4

Frenqucy Range: 30MHz to 1GHz

RBW/VBW: 100KHz/300KHz for spectrum, RBW=120KHz for receiver

Measurement Distance: 3 m

Operating Environment: 25.3°C, 58% RH, 102 Kpa

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
63.9827	40.63	-13.45	27.18	40.00	-12.82	QUASIPeAK
144.3348	51.07	-11.34	39.73	43.50	-3.77	QUASIPeAK
176.2685	48.95	-11.90	37.05	43.50	-6.45	QUASIPeAK
234.1683	53.35	-12.63	40.72	46.00	-5.28	QUASIPeAK
252.0627	52.71	-11.92	40.79	46.00	-5.21	QUASIPeAK
334.8589	47.00	-9.31	37.69	46.00	-8.31	QUASIPeAK

(b) Antenna polarization: vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
37.6798	50.25	-13.73	36.52	40.00	-3.48	QUASIPeAK
53.8817	48.56	-13.52	35.04	40.00	-4.96	QUASIPeAK
60.2800	49.87	-13.25	36.62	40.00	-3.38	QUASIPeAK
79.8002	53.22	-16.93	36.29	40.00	-3.71	QUASIPeAK
167.8242	50.74	-11.25	39.49	43.50	-4.01	QUASIPeAK
176.2685	52.33	-11.90	40.43	43.50	-3.07	QUASIPeAK

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

Test Data: 2010-11-4

Frequency Range: 1GHz to 25GHz

RBW/VBW: 1MHz/1MHz for Peak, 1MHz/10Hz for Average

Measurement Distance: 3 m

Operating Environment: 25.3°C, 58% RH, 102 Kpa

(1) GFSK Mode

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2390	29.24	0.487	29.729	74.00	-44.273	PEAK
2390	22.74	0.487	23.227	54.00	-30.773	AVERAGE
4804	58.54	4.100	62.64	74.00	-11.36	PEAK
4804	47.96	4.100	52.06	54.00	-1.940	AVERAGE
7206	44.32	7.550	51.87	74.00	-22.13	PEAK
7206	37.65	7.550	45.20	54.00	-8.800	AVERAGE
9608	36.81	11.54	48.35	74.00	-25.65	PEAK
9608	28.64	11.54	40.18	54.00	-13.82	AVERAGE

(b) Antenna polarization: vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2390	27.56	0.487	28.047	74.00	-45.953	PEAK
2390	21.45	0.487	21.937	54.00	-32.063	AVERAGE
4804	57.97	4.100	62.07	74.00	-11.93	PEAK
4804	47.24	4.100	51.34	54.00	-2.660	AVERAGE
7206	45.28	7.550	52.83	74.00	-21.17	PEAK
7206	37.55	7.550	45.10	54.00	-8.900	AVERAGE
9608	31.54	11.54	43.08	74.00	-30.92	PEAK
9608	26.88	11.54	38.42	54.00	-15.58	AVERAGE

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

Low Channel:2402 MHz

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
4882	55.27	4.250	59.52	74.00	-14.48	PEAK
4882	46.76	4.250	51.01	54.00	-2.99	AVERAGE
7323	43.78	9.26	53.04	74.00	-20.96	PEAK
7323	33.64	9.26	42.90	54.00	-11.10	AVERAGE
9764	35.61	11.68	47.29	74.00	-26.71	PEAK
9764	26.54	11.68	38.22	54.00	-15.78	AVERAGE

(b) Antenna polarization: vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
4882	54.77	4.250	59.02	74.00	-14.98	PEAK
4882	44.51	4.250	48.76	54.00	-5.240	AVERAGE
7323	47.23	9.26	56.49	74.00	-17.51	PEAK
7323	37.64	9.26	46.90	54.00	-7.100	AVERAGE
9764	40.38	11.68	52.06	74.00	-21.94	PEAK
9764	31.44	11.68	43.12	54.00	-10.88	AVERAGE

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

Middle Channel :2441 MHz

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2483.5	27.26	0.814	28.074	74.00	-45.926	PEAK
2483.5	19.87	0.814	20.684	54.00	-33.316	AVERAGE
4960	54.19	4.39	58.58	74.00	-15.42	PEAK
4960	45.27	4.39	49.66	54.00	-4.340	AVERAGE
7440	45.22	9.88	55.10	74.00	-18.90	PEAK
7440	35.66	9.88	45.54	54.00	-8.460	AVERAGE
9920	38.51	11.95	50.46	74.00	-23.54	PEAK
9920	28.66	11.95	40.62	54.00	-13.80	AVERAGE

(b) Antenna polarization: vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2483.5	25.78	0.814	26.594	74.00	-47.406	PEAK
2483.5	19.52	0.814	20.334	54.00	-33.666	AVERAGE
4960	53.29	4.39	57.68	74.00	-16.32	PEAK
4960	46.51	4.39	50.9	54.00	-3.100	AVERAGE
7440	45.21	9.88	55.09	74.00	-18.91	PEAK
7440	37.77	9.88	47.65	54.00	-6.350	AVERAGE
9920	40.92	11.95	52.87	74.00	-21.13	PEAK
9920	32.54	11.95	44.46	54.00	-9.540	AVERAGE

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

High Channel :2480 MHz

(2) $\pi/4$ DQPSK Mode

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2390	29.53	0.487	30.017	74.00	-43.983	PEAK
2390	21.47	0.487	21.957	54.00	-32.043	AVERAGE
4804	51.74	4.100	55.84	74.00	-18.16	PEAK
4804	47.26	4.100	51.36	54.00	-2.640	AVERAGE
7206	45.95	7.550	53.50	74.00	-20.50	PEAK
7206	34.92	7.550	42.47	54.00	-11.53	AVERAGE
9608	35.46	11.54	47.00	74.00	-27.00	PEAK
9608	25.64	11.54	37.18	54.00	-16.82	AVERAGE

(b) Antenna polarization: vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2390	28.57	0.487	29.057	74.00	-44.943	PEAK
2390	20.77	0.487	21.257	54.00	-32.743	AVERAGE
4804	54.81	4.100	58.91	74.00	-15.09	PEAK
4804	45.29	4.100	49.39	54.00	-4.610	AVERAGE
7206	45.99	7.550	53.54	74.00	-20.46	PEAK

7206	34.28	7.550	41.83	54.00	-12.17	AVERAGE
9608	35.52	11.54	47.06	74.00	-26.94	PEAK
9608	26.57	11.54	38.11	54.00	-15.89	AVERAGE

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

Low Channel:2402 MHz

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
4882	52.18	4.250	56.43	74.00	-17.57	PEAK
4882	43.85	4.250	48.10	54.00	-5.900	AVERAGE
7323	47.62	9.26	56.88	74.00	-17.12	PEAK
7323	36.29	9.26	45.55	54.00	-8.450	AVERAGE
9764	38.44	11.68	50.12	74.00	-23.88	PEAK
9764	29.61	11.68	41.29	54.00	-12.71	AVERAGE

(b) Antenna polarization: vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
4882	50.94	4.250	55.19	74.00	-18.81	PEAK
4882	45.28	4.250	49.53	54.00	-4.470	AVERAGE
7323	44.48	9.26	53.74	74.00	-20.26	PEAK
7323	38.81	9.26	48.07	54.00	-5.930	AVERAGE
9764	40.42	11.68	52.10	74.00	-21.90	PEAK
9764	29.84	11.68	41.52	54.00	-12.48	AVERAGE

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

Middle Channel :2441 MHz

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2483.5	26.57	0.814	27.384	74.00	-46.616	PEAK
2483.5	20.74	0.814	21.554	54.00	-32.446	AVERAGE
4960	53.91	4.39	58.30	74.00	-15.70	PEAK
4960	47.29	4.39	51.68	54.00	-2.320	AVERAGE

7440	47.68	9.88	57.56	74.00	-16.44	PEAK
7440	36.40	9.88	46.28	54.00	-7.720	AVERAGE
9920	39.57	11.95	51.52	74.00	-22.48	PEAK
9920	30.11	11.95	42.06	54.00	-11.94	AVERAGE

(b) Antenna polarization: vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2483.5	27.12	0.814	27.934	74.00	-46.066	PEAK
2483.5	22.23	0.814	23.044	54.00	-30.956	AVERAGE
4960	51.19	4.39	55.58	74.00	-18.42	PEAK
4960	42.88	4.39	47.27	54.00	-6.73	AVERAGE
7440	45.77	9.88	55.65	74.00	-18.35	PEAK
7440	32.50	9.88	42.38	54.00	-11.62	AVERAGE
9920	35.99	11.95	47.94	74.00	-26.06	PEAK
9920	28.22	11.95	40.17	54.00	-13.83	AVERAGE

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

High Channel :2480 MHz

(3) 8DPSK Mode

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2390	29.14	0.487	29.627	74.00	-44.373	PEAK
2390	21.45	0.487	21.937	54.00	-32.063	AVERAGE
4804	53.87	4.100	57.97	74.00	-16.03	PEAK
4804	44.26	4.100	48.36	54.00	-5.640	AVERAGE
7206	45.81	7.550	53.36	74.00	-20.64	PEAK
7206	37.71	7.550	45.26	54.00	-8.74	AVERAGE
9608	35.42	11.54	46.96	74.00	-27.04	PEAK
9608	27.55	11.54	39.09	54.00	-14.91	AVERAGE

(b) Antenna polarization: vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2390	27.51	0.487	27.997	74.00	-46.003	PEAK

2390	20.44	0.487	20.927	54.00	-33.073	AVERAGE
4804	51.99	4.100	56.09	74.00	-17.91	PEAK
4804	46.28	4.100	50.38	54.00	-3.620	AVERAGE
7206	42.81	7.550	50.36	74.00	-23.64	PEAK
7206	35.16	7.550	42.71	54.00	-11.29	AVERAGE
9608	34.18	11.54	45.72	74.00	-28.28	PEAK
9608	24.28	11.54	35.82	54.00	-18.18	AVERAGE

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

Low Channel:2402 MHz

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
4882	51.11	4.250	55.36	74.00	-18.64	PEAK
4882	41.75	4.250	46.00	54.00	-8.000	AVERAGE
7323	44.26	9.26	53.52	74.00	-20.48	PEAK
7323	31.65	9.26	40.91	54.00	-13.09	AVERAGE
9764	36.87	11.68	48.55	74.00	-25.45	PEAK
9764	29.64	11.68	41.32	54.00	-12.68	AVERAGE

(b) Antenna polarization: vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
4882	50.98	4.250	55.23	74.00	-18.77	PEAK
4882	42.65	4.250	46.90	54.00	-7.100	AVERAGE
7323	43.99	9.26	53.25	74.00	-20.75	PEAK
7323	38.66	9.26	47.92	54.00	-6.080	AVERAGE
9764	38.81	11.68	50.49	74.00	-23.51	PEAK
9764	29.77	11.68	41.45	54.00	-12.55	AVERAGE

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

Middle Channel :2441 MHz

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2483.5	25.53	0.814	26.344	74.00	-47.656	PEAK
2483.5	19.41	0.814	20.224	54.00	-33.776	AVERAGE
4960	52.19	4.39	56.58	74.00	-17.42	PEAK
4960	42.97	4.39	47.36	54.00	-6.640	AVERAGE
7440	42.88	9.88	52.76	74.00	-21.24	PEAK
7440	35.29	9.88	45.17	54.00	-8.83	AVERAGE
9920	40.11	11.95	52.06	74.00	-21.94	PEAK
9920	31.44	11.95	43.39	54.00	-10.61	AVERAGE

(b) Antenna polarization: vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
2483.5	26.54	0.814	27.354	74.00	-46.646	PEAK
2483.5	20.11	0.814	20.924	54.00	-33.076	AVERAGE
4960	49.98	4.39	54.37	74.00	-19.63	PEAK
4960	42.26	4.39	46.65	54.00	-7.350	AVERAGE
7440	42.99	9.88	52.87	74.00	-21.13	PEAK
7440	32.45	9.88	42.33	54.00	-11.67	AVERAGE
9920	39.58	11.95	51.53	74.00	-22.47	PEAK
9920	29.28	11.95	41.23	54.00	-12.77	AVERAGE

Note: '*' means the worst case

Measurement Level = Reading Level + Factor

Factor=Ant Factor + Cable Loss

High Channel :2480 MHz