

7. 20 DB BANDWIDTH TEST

7.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	N9030A	MY51380221	Oct.31, 13	1Year
2.	Attenuator (20dB)	Agilent	8491B	MY39262165	Apr. 28,14	1 Year
3.	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	Apr. 28,14	1 Year

7.2.Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

7.3.Test Results

EUT: HOME THEATRE SYSTEM		
M/N: HT-XT100		
Test date: 2014-09-15	Pressure: 101.4±1.0kpa	Humidity: 53.5±1.0%
Tested by: Kobe-Huang	Test site: RF site	Temperature: 22.6±1.0°C

Test Mode	Frequency (MHz)	20dB bandwidth (KHz)	Limit (KHz)
GFSK	2402	908.2	N/A
	2441	881.5	N/A
	2480	880.9	N/A
8-DPSK	2402	1209	N/A
	2441	1211	N/A
	2480	1212	N/A
Conclusion : PASS			

GFSK

Test Frequency: 2402MHz



Test Frequency: 2441MHz



Test Frequency: 2480MHz



8-DPSK

Test Frequency: 2402MHz



Test Frequency: 2441MHz



Test Frequency: 2480MHz



8. NUMBER OF HOPPING FREQUENCY TEST

8.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	N9030A	MY51380221	Oct.31, 13	1Year

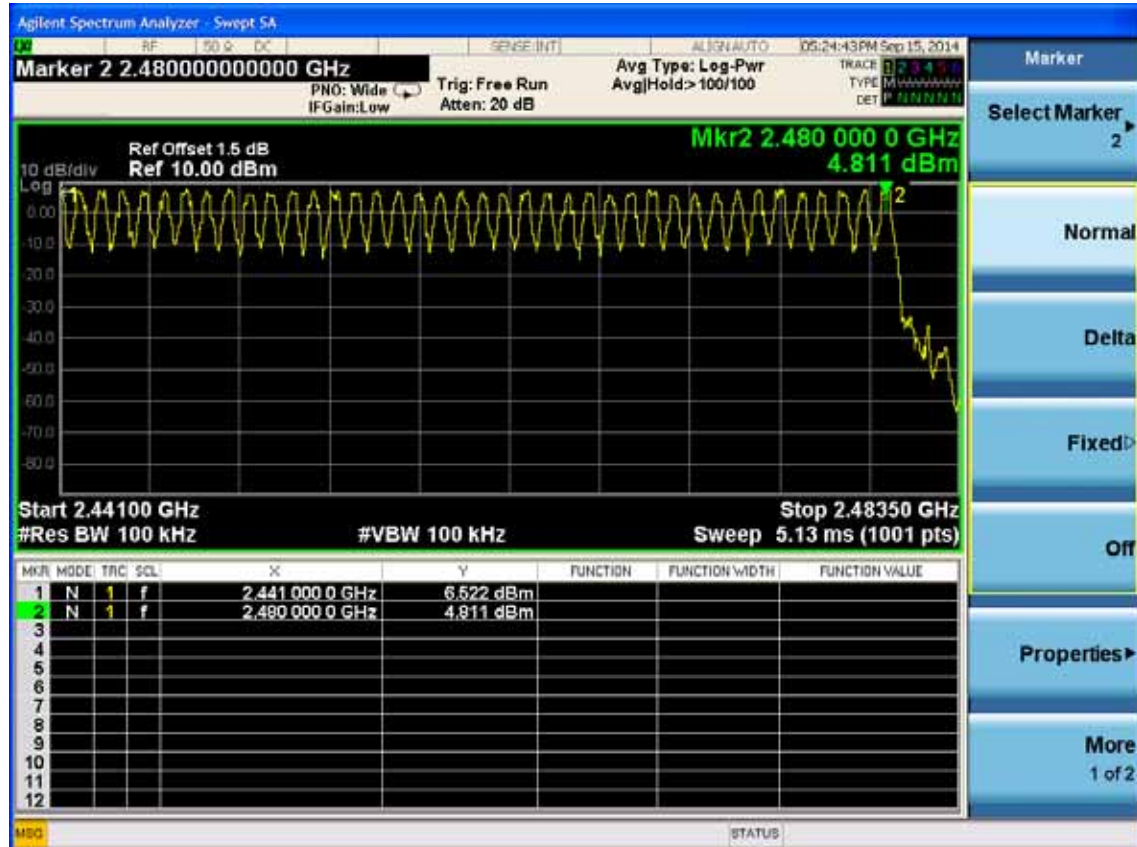
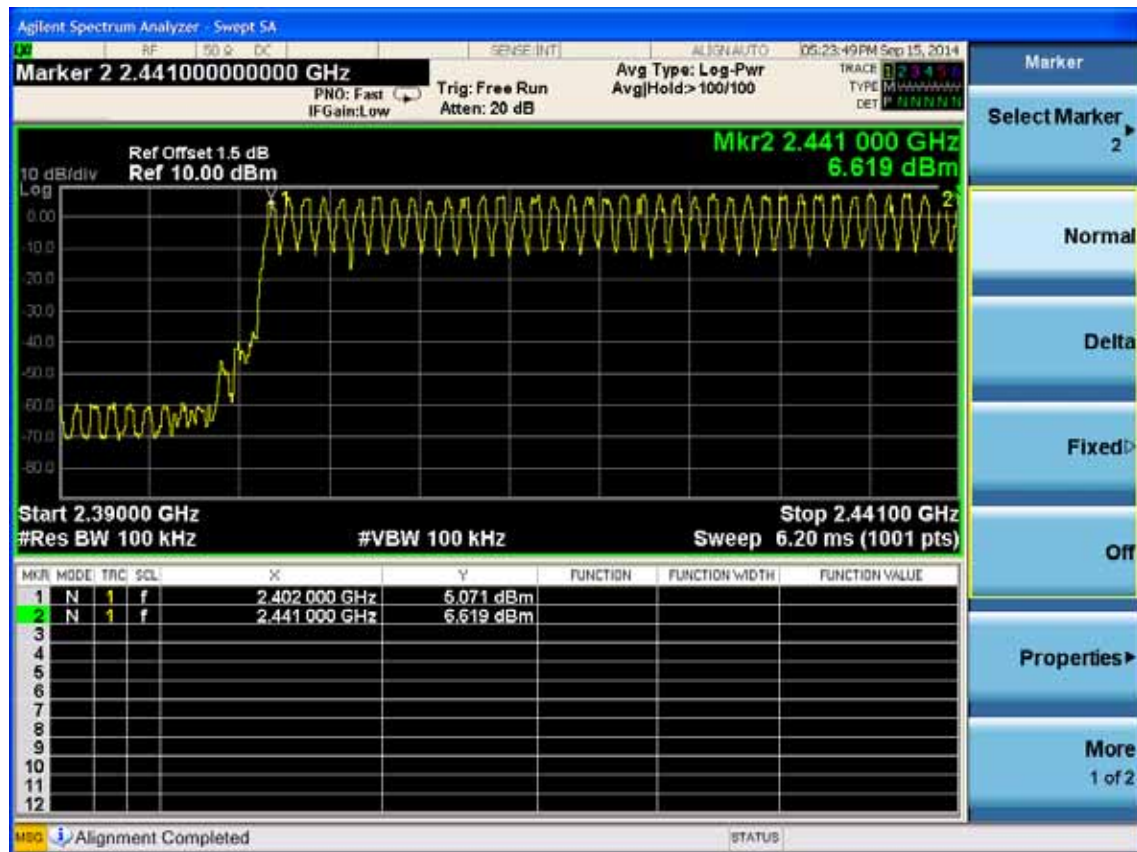
8.2. Limit

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

8.3. Test Results

EUT: HOME THEATRE SYSTEM		
M/N: HT-XT100		
Test date: 2014-09-15	Pressure: 101.4±1.0kpa	Humidity: 53.5±1.0%
Tested by: Kobe-Huang	Test site: RF site	Temperature: 22.6±1.0℃

Test Mode	Number of channel	Limit	Conclusion
8-DPSK	79	≥15	PASS
GFSK	79	≥15	PASS



9. DWELL TIME

9.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	N9030A	MY51380221	Oct.31, 13	1Year

9.2. 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.

9.3. Test Results

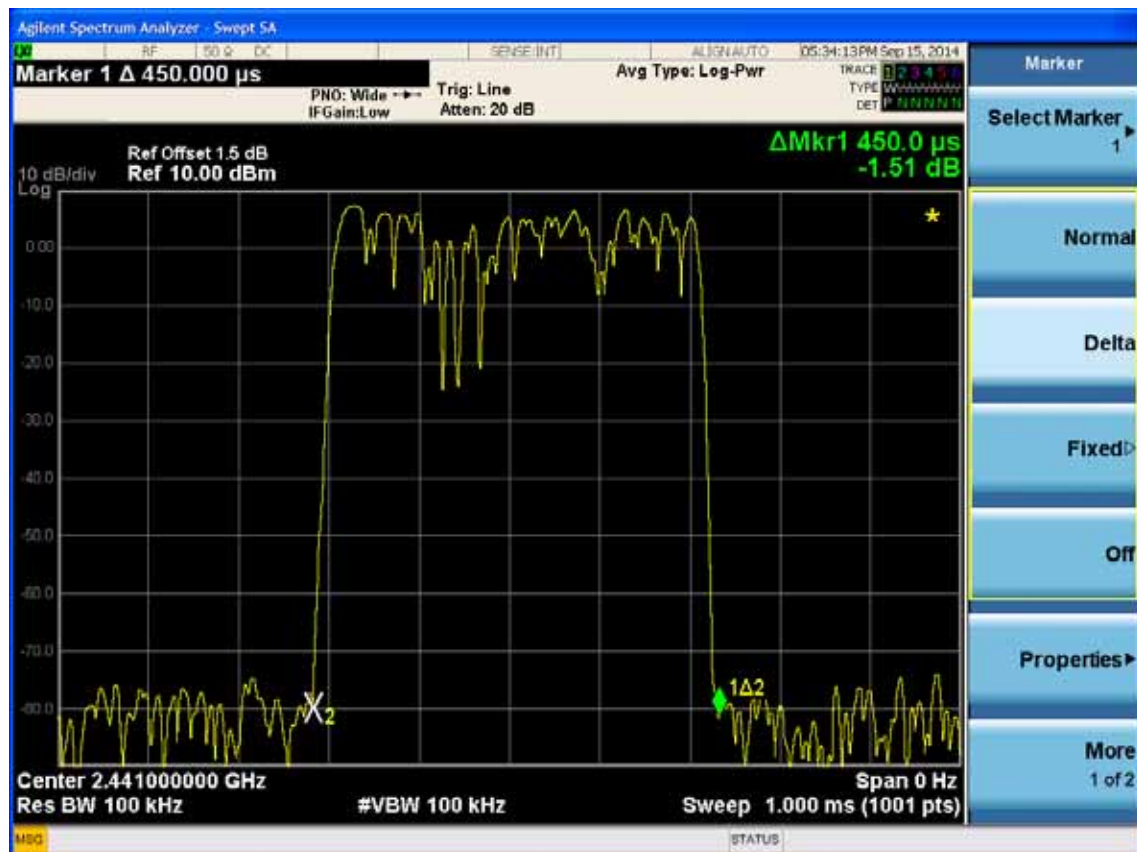
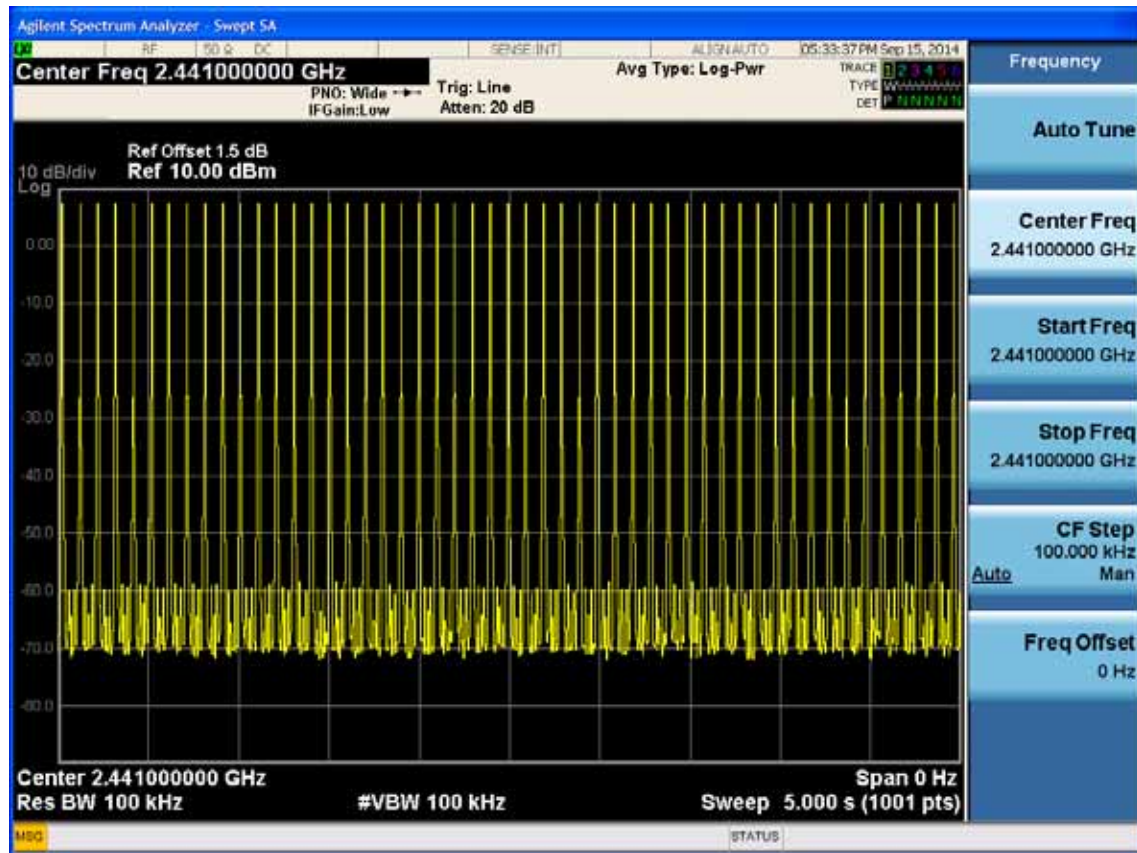
EUT: HOME THEATRE SYSTEM		
M/N: HT-XT100		
Test date: 2014-09-15	Pressure: 101.4±1.0kpa	Humidity: 53.5±1.0%
Tested by: Kobe-Huang	Test site: RF site	Temperature: 22.6±1.0℃

Mode		dwel time	Limit	Conclusion
GFSK	DH1	50hops/5s*0.4*79chanel*0.450ms =142.20ms	<400ms	PASS
	DH3	24hops/5s*0.4*79chanel*1.710ms =259.37ms	<400ms	PASS
	DH5	17hops/5s*0.4*79chanel*2.975ms =319.63ms	<400ms	PASS
8-DPSK	DH1	49hops/5s*0.4*79chanel*0.457ms =141.52ms	<400ms	PASS
	DH3	25hops/5s*0.4*79chanel*1.713ms =270.65ms	<400ms	PASS
	DH5	15hops/5s*0.4*79chanel*2.980ms =282.50ms	<400ms	PASS

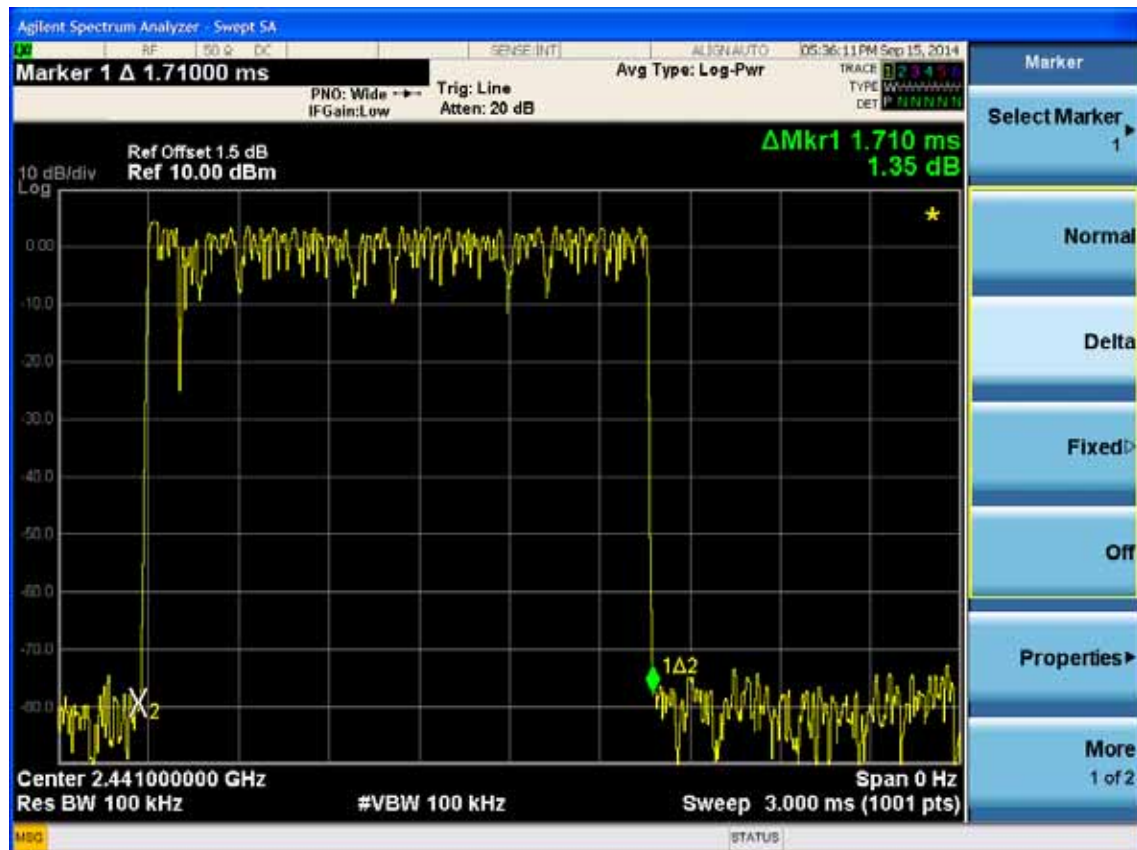
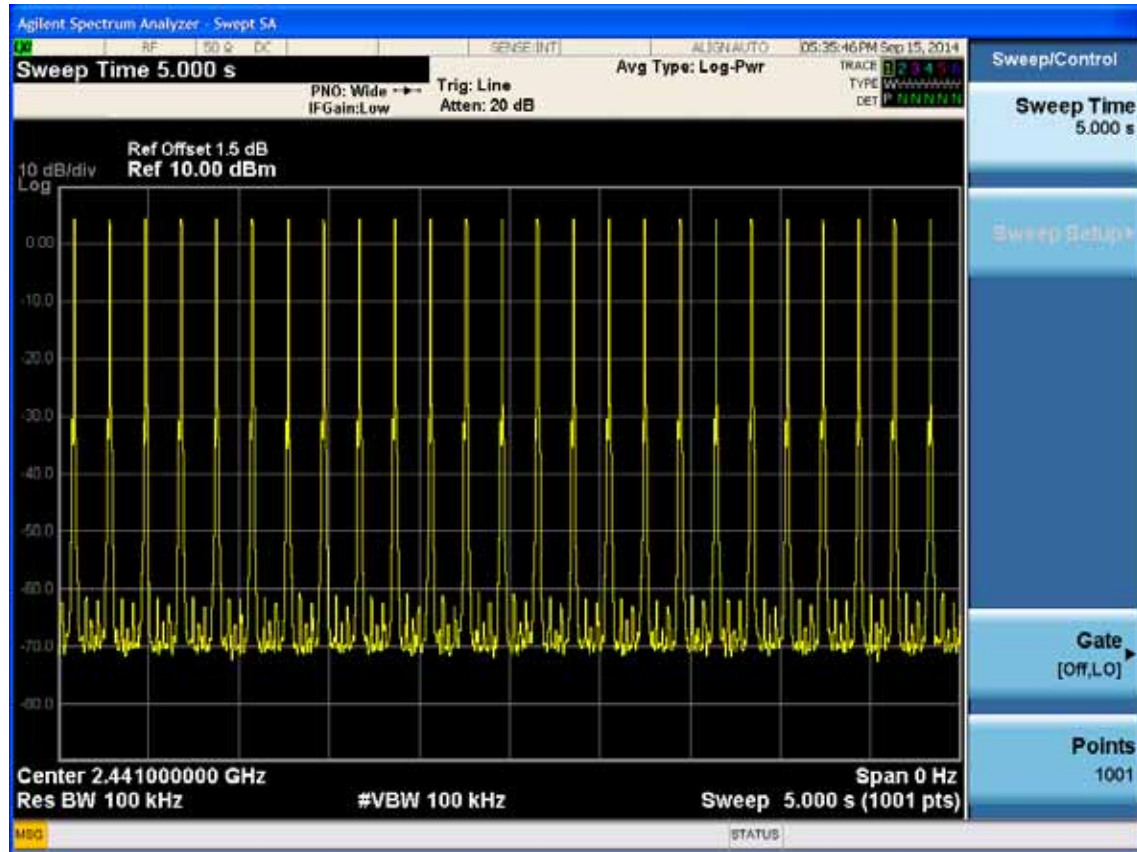
Note: All the lower levels were signaled from receiver and should not be considered in here.

Test Mode: GFSK

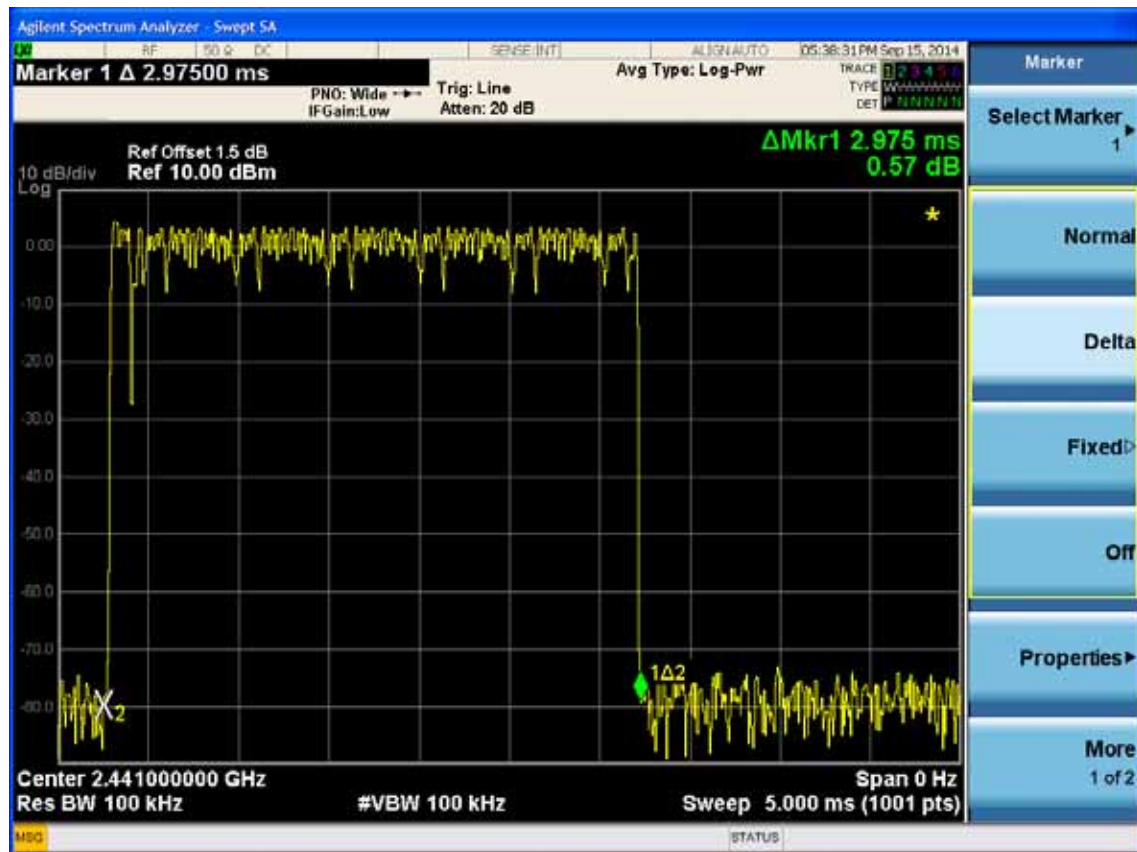
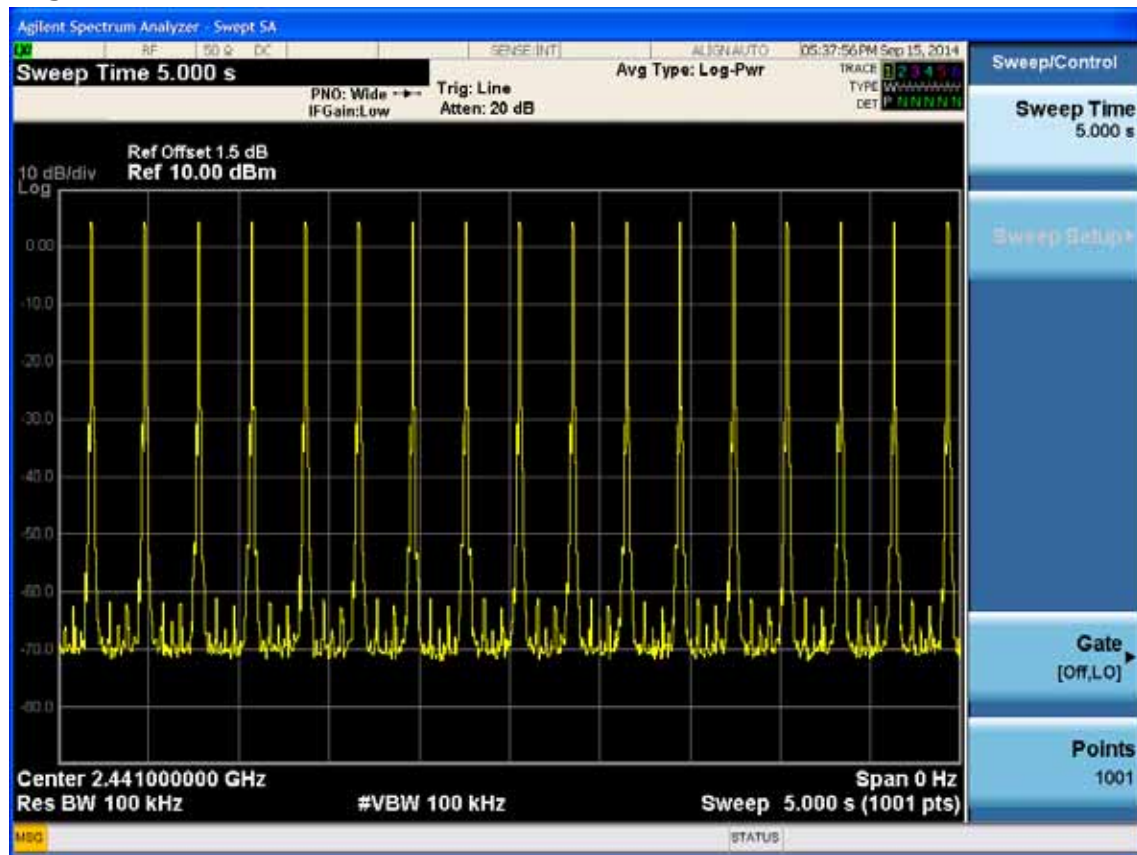
DH 1



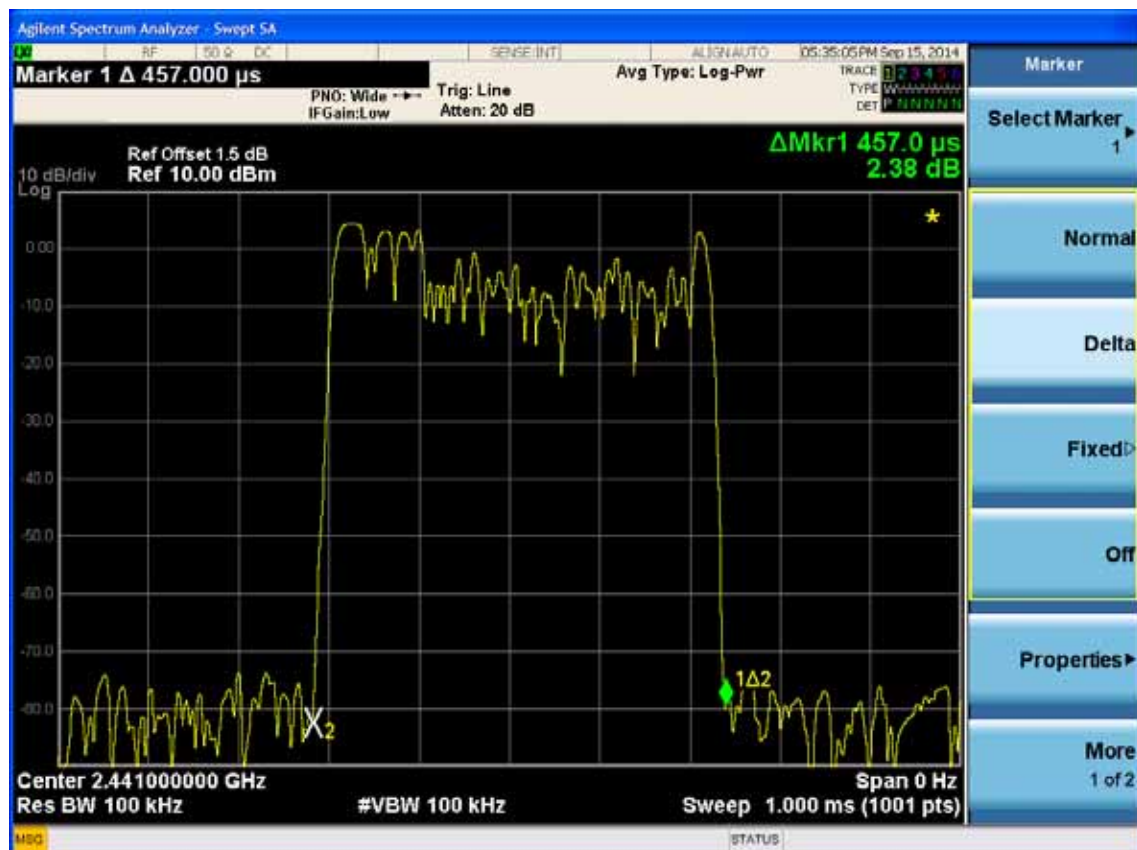
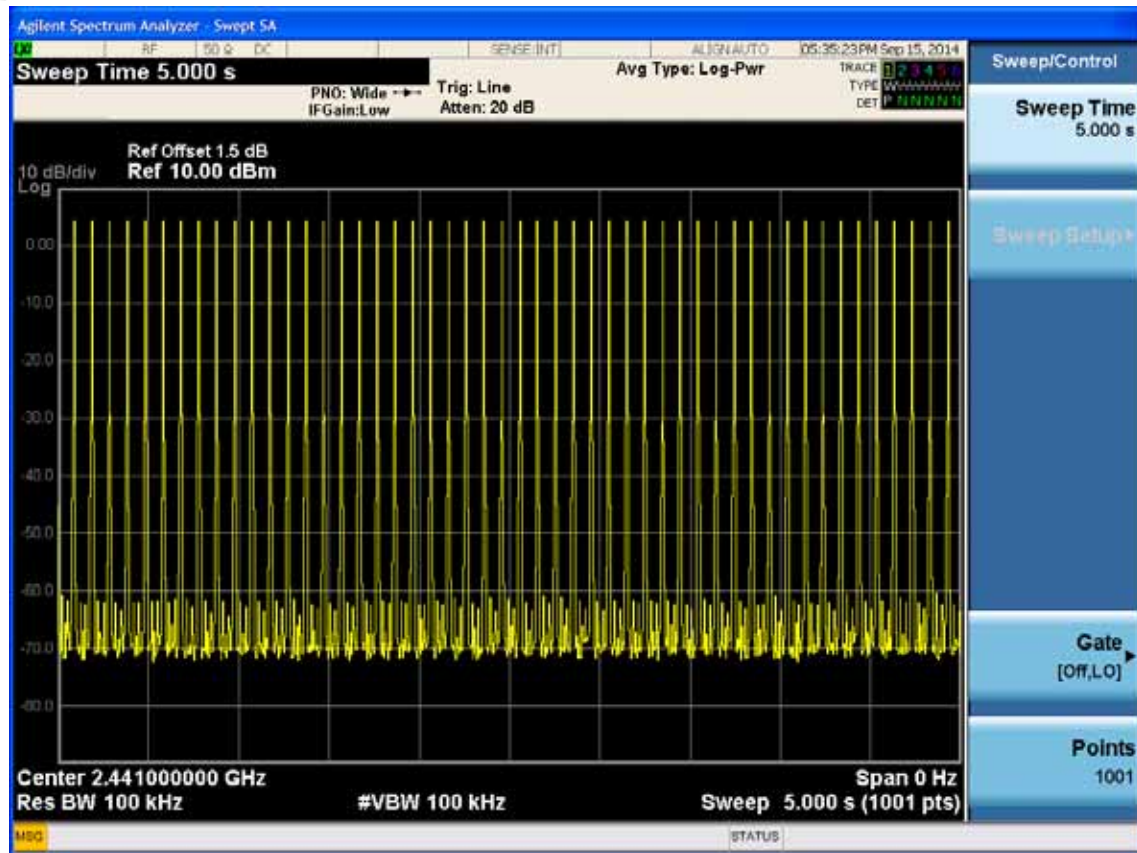
DH 3



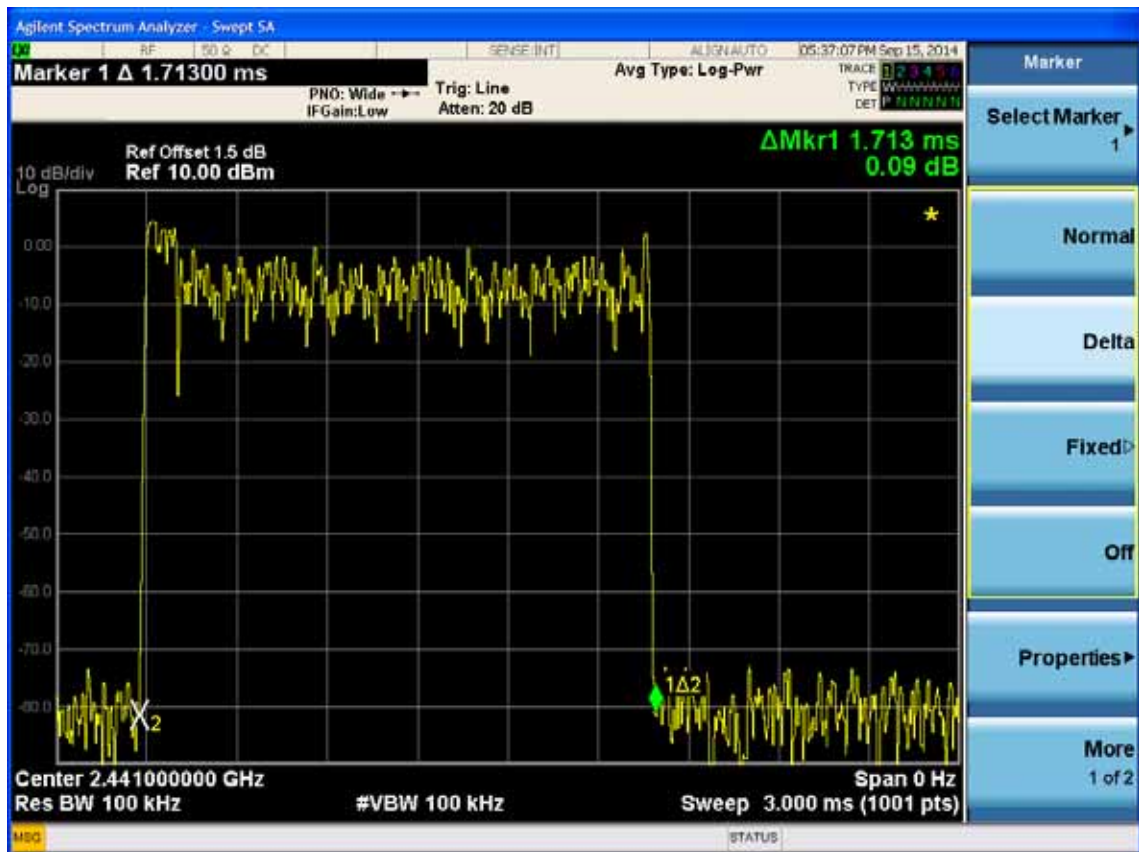
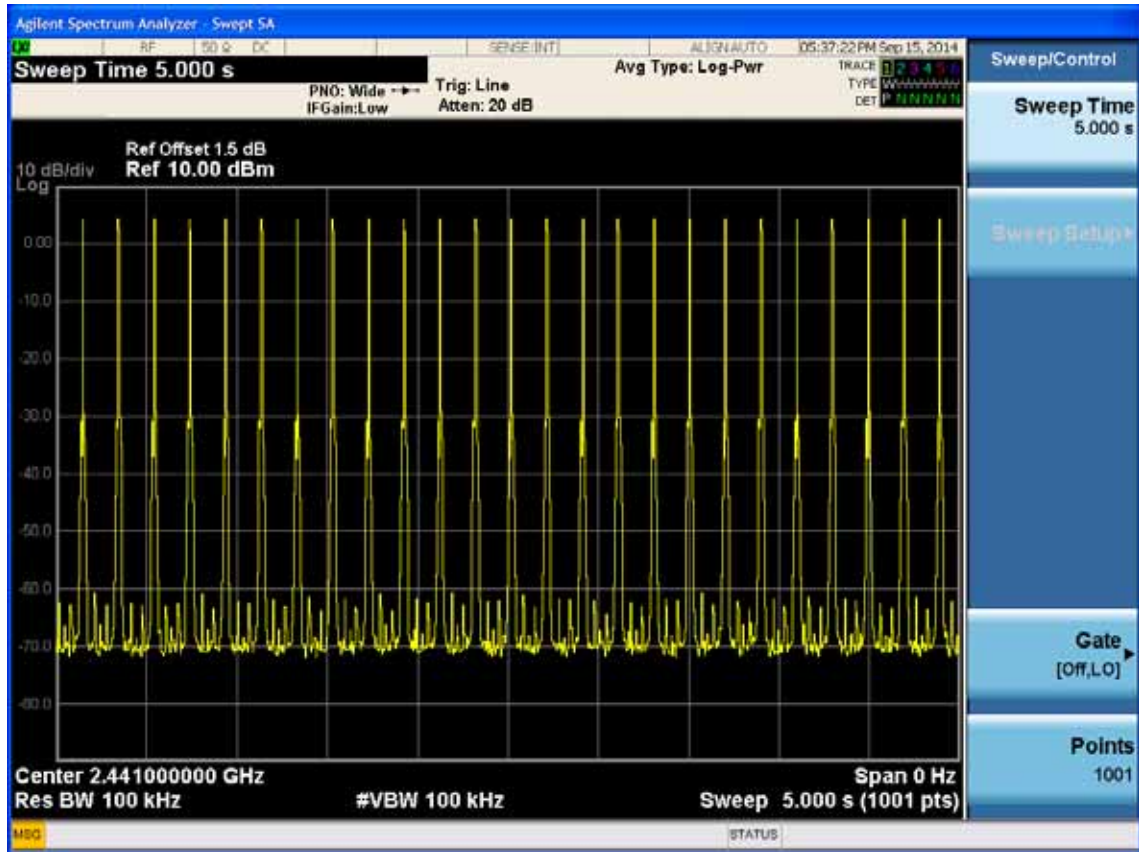
DH 5



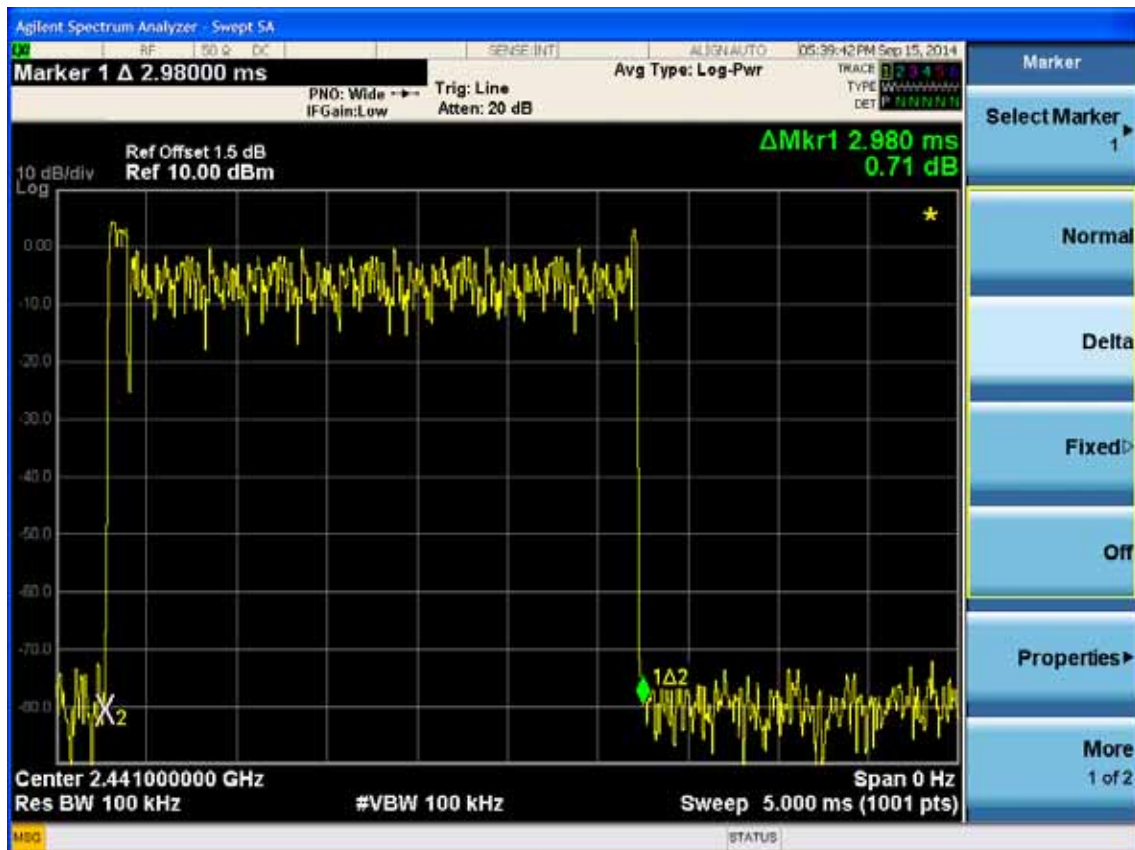
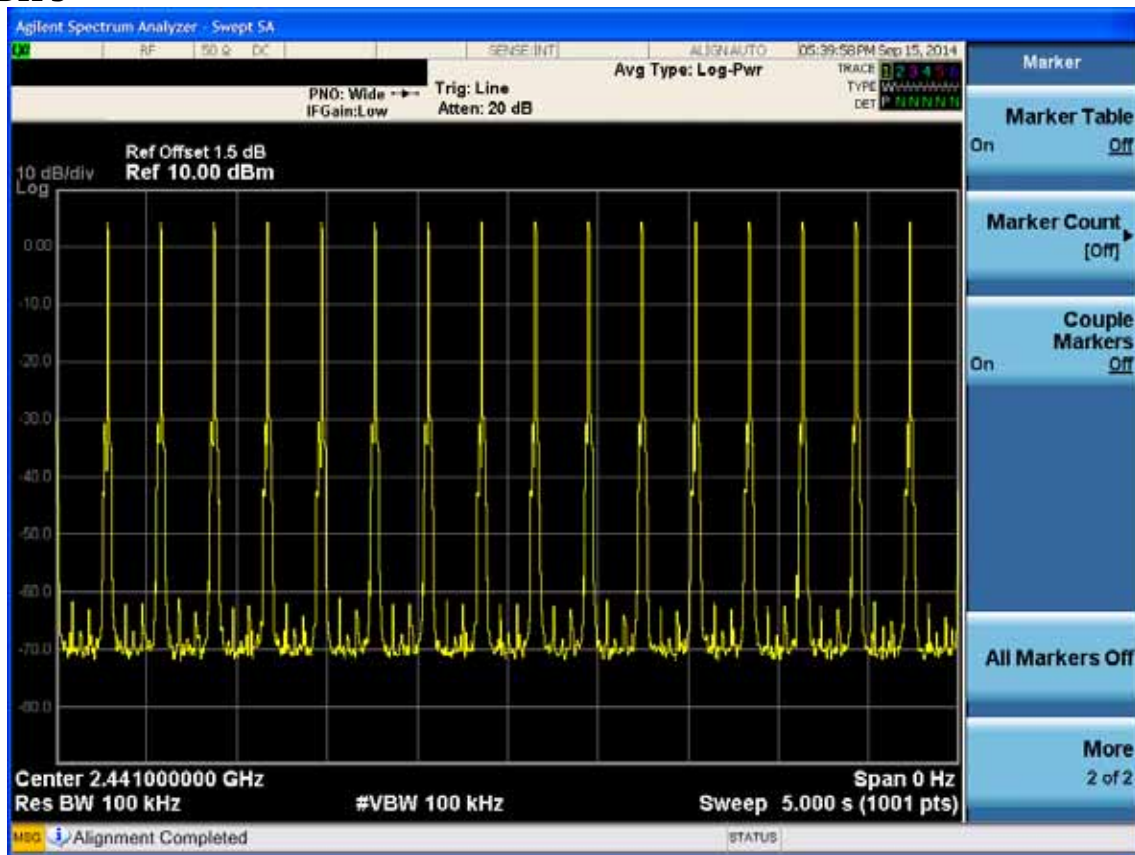
Test Mode: 8-DPSK DH 1



DH 3



DH 5



10. MAXIMUM PEAK OUTPUT POWER TEST

10.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum	Agilent	N9030A	MY51380221	Oct.31, 13	1 Year
2.	Power meter	Anritsu	ML2487A	6K00002472	Apr. 28,14	1 Year
3.	Power sensor	Anritsu	MA2491A	0033005	Apr. 28,14	1 Year
4.	Attenuator (20dB)	Agilent	8491B	MY39262165	Apr. 28,14	1 Year
5.	RF Cable	Hubersuhner	SUCOFLEX102	28610/2	Apr. 28,14	1 Year

10.2. Limit

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

10.3. Test Procedure

Connected the EUT's antenna port to Power Sensor, and use power meter to test peak output power Directly.

10.4. Test Results

EUT: HOME THEATRE SYSTEM			
M/N: HT-XT100			
Test date: 2014-09-15		Pressure: 101.6±1.0kpa	Humidity: 53.5±1.0%
Tested by: Kobe-Huang		Test site: RF site	Temperature: 22.4±1.0℃
Test Mode	Frequency (MHz)	Peak output Power (dBm)	Limit (dBm)
GFSK	2402	5.207	30
	2441	7.418	30
	2480	7.481	30
8-DPSK	2402	3.571	30
	2441	5.909	30
	2480	5.863	30
Conclusion: PASS			

11.BAND EDGE COMPLIANCE TEST

11.1.Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Amp	HP	8449B	3008A02495	Apr. 28,14	1 Year
2.	Horn Antenna	ETS	3115	9510-4580	Jun. 06, 14	1 Year
3.	HF Cable	Hubersuhner	Sucoflex104	274094/4	Apr. 28,14	1 Year
4.	RF Cable	Hubersuhner	Sucoflex102	28610/2	Apr. 28,14	1 Year

11.2.Limit

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

11.3.Test Produce

For upper band emissions that are up to two bandwidths(2MHz) away (2483.5MHz to 2485.5MHz) from the band-edge use below produce:

1. Choose a spectrum analyzer span that encompasses both the peak of the fundamental emission and the band-edge emission under investigation. Set the analyzer RBW to 100KHz and with a video bandwidth 300KHz. Record the peak levels of the fundamental emission and the relevant band-edge emission, Observe the stored trace and measure the amplitude delta between the peak of the fundamental and the peak of the band-edge emission. This is not a field strength measurement, it is only a relative measurement to determine the amount by which the emission drops at the band edge relative to the highest fundamental emission level.
2. Subtract the delta measured in step (1) from the maximum field strengths measured in clause 4 .The resultant field strengths are then used to determine band-edge compliance as required by Section 15.205

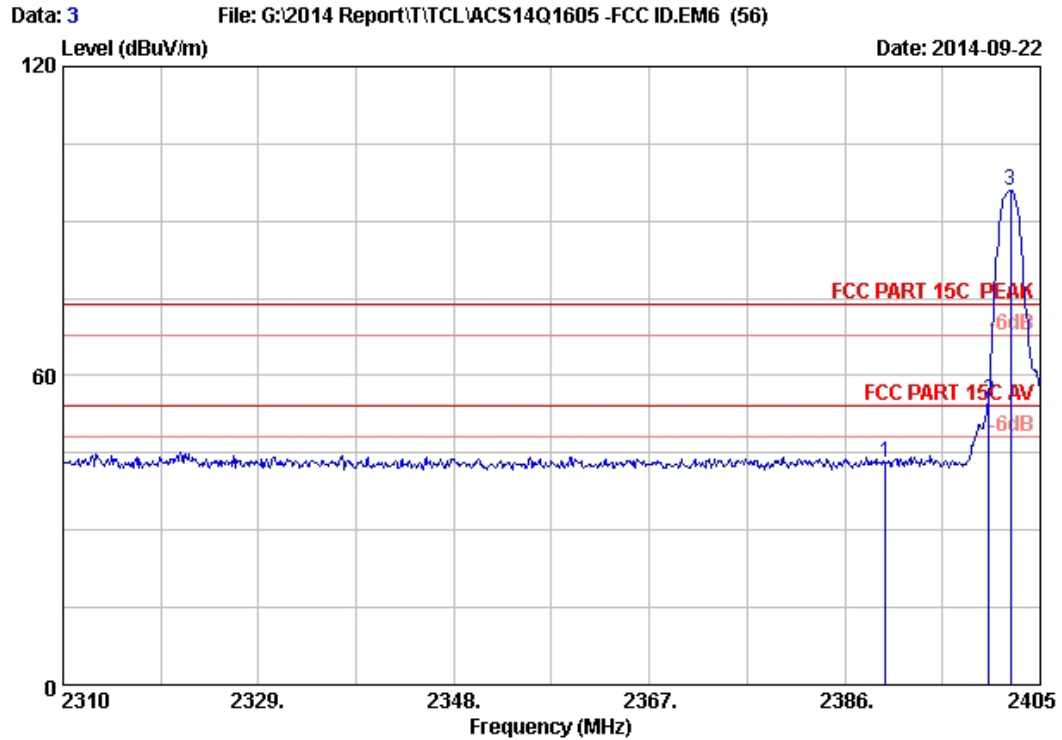
For emissions above two bandwidths away from the band-edge use below produce:

1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upperband-edges of the emission:
 - (a) PEAK: RBW=1MHz ;VBW=3MHz, PK detector, Sweep=AUTO
 - (b) This is pulse Modulation device a duty cycle factor was used to calculate average level based measured peak level.

11.4.Test Results

Pass (The testing data was attached in the next pages.)

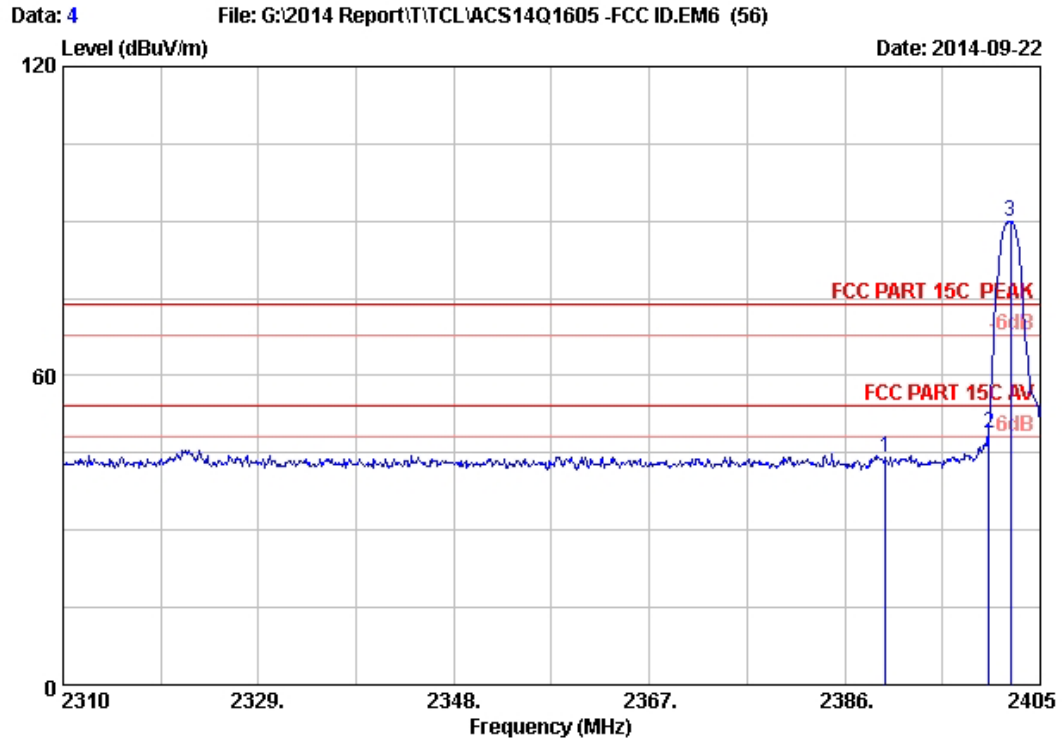
Note: If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.



Site no. : 3m Chamber Data no. : 3
 Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/56% Engineer : Kobe-Huang
 EUT : HOME THEATRE SYSTEM
 Power Rating : AC 120V/60Hz
 Test Mode : GFSK 2402MHz
 M/N : HT-XT100

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission			Remark
						Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	
1	2390.000	28.16	5.78	35.70	44.79	43.03	74.00	30.97	Peak
2	2400.000	28.18	5.80	35.70	56.77	55.05	74.00	18.95	Peak
3	2402.150	28.18	5.80	35.70	97.60	95.88	74.00	-21.88	Peak

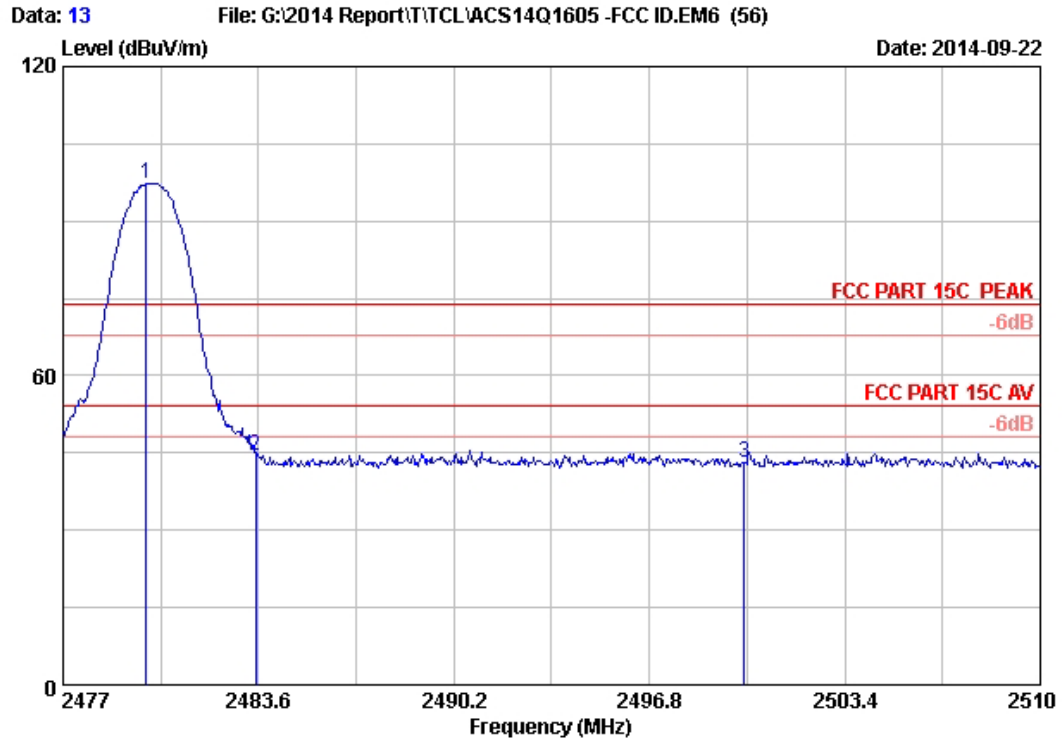
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 4
 Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/56% Engineer : Kobe-Huang
 EUT : HOME THEATRE SYSTEM
 Power Rating : AC 120V/60Hz
 Test Mode : GFSK 2402MHz
 M/N : HT-XT100

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission			Remark
						Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	
1	2390.000	28.16	5.78	35.70	45.77	44.01	74.00	29.99	Peak
2	2400.000	28.18	5.80	35.70	50.60	48.88	74.00	25.12	Peak
3	2402.150	28.18	5.80	35.70	91.78	90.06	74.00	-16.06	Peak

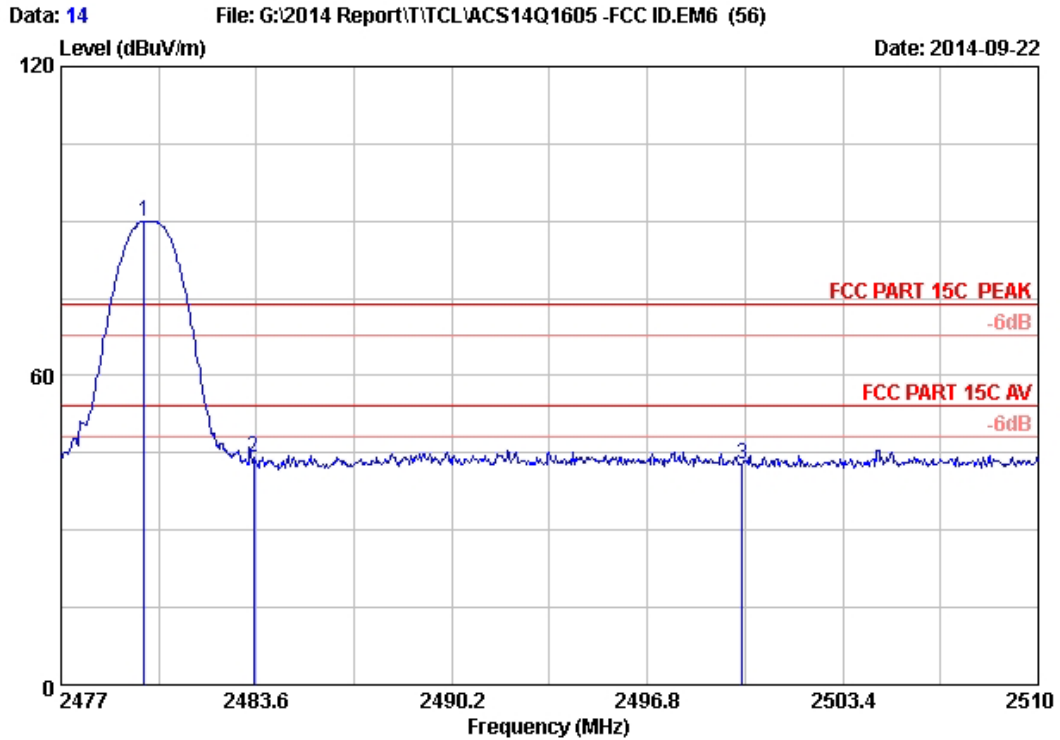
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 13
 Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/56% Engineer : Kobe-Huang
 EUT : HOME THEATRE SYSTEM
 Power Rating : AC 120V/60Hz
 Test Mode : GFSK 2480MHz
 M/N : HT-XT100

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.805	28.36	5.91	35.70	98.64	97.21	74.00	-23.21	Peak
2	2483.500	28.36	5.92	35.70	45.78	44.36	74.00	29.64	Peak
3	2500.000	28.40	5.94	35.70	44.45	43.09	74.00	30.91	Peak

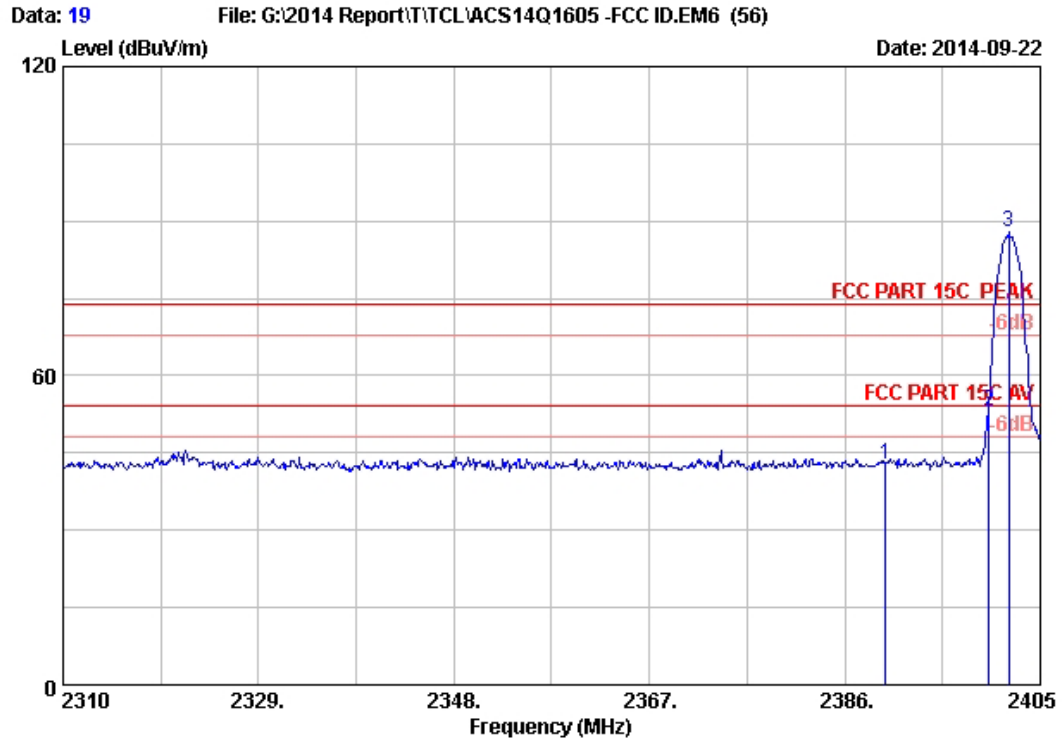
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 14
 Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/56% Engineer : Kobe-Huang
 EUT : HOME THEATRE SYSTEM
 Power Rating : AC 120V/60Hz
 Test Mode : GFSK 2480MHz
 M/N : HT-XT100

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.805	28.36	5.91	35.70	91.37	89.94	74.00	-15.94	Peak
2	2483.500	28.36	5.92	35.70	45.65	44.23	74.00	29.77	Peak
3	2500.000	28.40	5.94	35.70	44.22	42.86	74.00	31.14	Peak

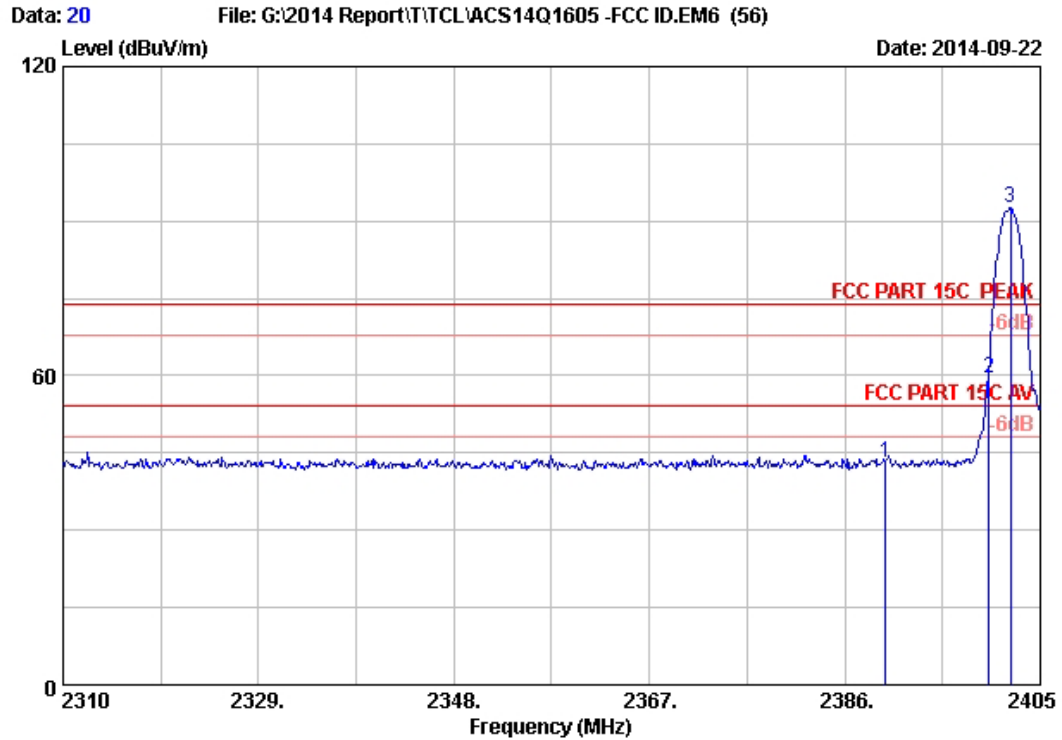
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 19
 Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/56% Engineer : Kobe-Huang
 EUT : HOME THEATRE SYSTEM
 Power Rating : AC 120V/60Hz
 Test Mode : 8-DPSK 2402MHz
 M/N : HT-XT100

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission			
						Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	28.16	5.78	35.70	44.71	42.95	74.00	31.05	Peak
2	2400.000	28.18	5.80	35.70	54.76	53.04	74.00	20.96	Peak
3	2401.960	28.18	5.80	35.70	89.61	87.89	74.00	-13.89	Peak

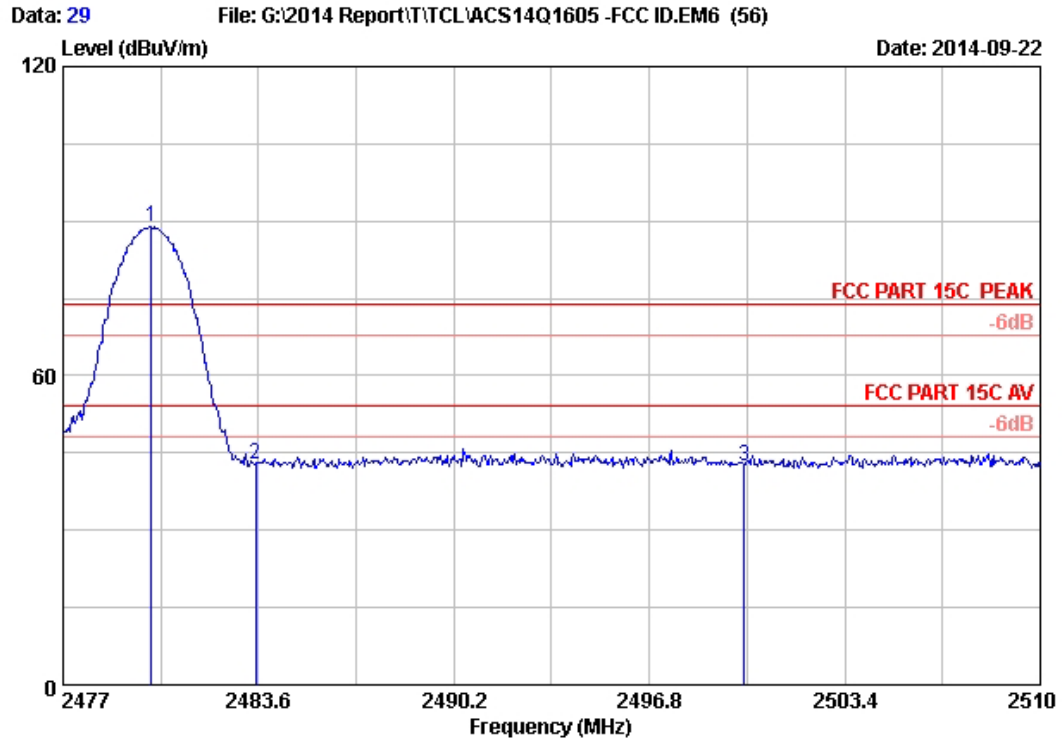
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 20
 Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/56% Engineer : Kobe-Huang
 EUT : HOME THEATRE SYSTEM
 Power Rating : AC 120V/60Hz
 Test Mode : 8-DPSK 2402MHz
 M/N : HT-XT100

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	28.16	5.78	35.70	44.81	43.05	74.00	30.95	Peak
2	2400.000	28.18	5.80	35.70	61.21	59.49	74.00	14.51	Peak
3	2402.150	28.18	5.80	35.70	94.47	92.75	74.00	-18.75	Peak

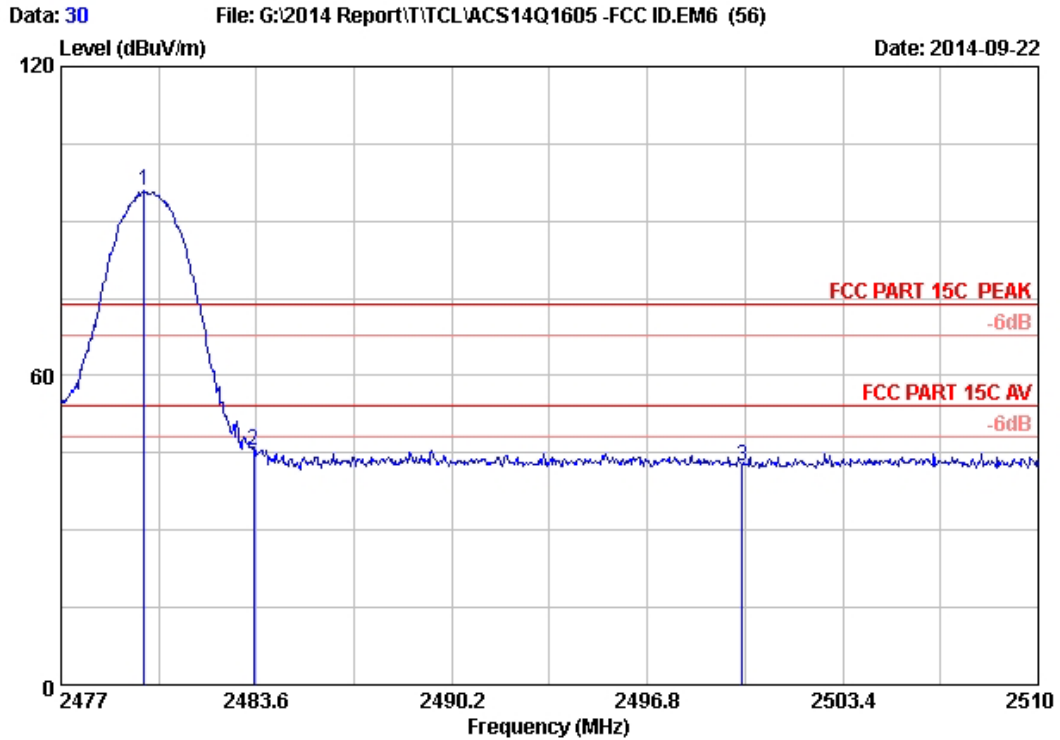
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 29
 Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : VERTICAL
 Limit : FCC PART 15C PEAK
 Env. / Ins. : 24°C/56% Engineer : Kobe-Huang
 EUT : HOME THEATRE SYSTEM
 Power Rating : AC 120V/60Hz
 Test Mode : 8-DPSK 2480MHz
 M/N : HT-XT100

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.970	28.36	5.91	35.70	90.43	89.00	74.00	-15.00	Peak
2	2483.500	28.36	5.92	35.70	44.35	42.93	74.00	31.07	Peak
3	2500.000	28.40	5.94	35.70	43.97	42.61	74.00	31.39	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
 -Amp Factor
 2. The emission levels that are 20dB below the official
 limit are not reported.



Site no. : 3m Chamber Data no. : 30
Dis. / Ant. : 3m 2014 3115 (4580) Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 24°C/56% Engineer : Kobe-Huang
EUT : HOME THEATRE SYSTEM
Power Rating : AC 120V/60Hz
Test Mode : 8-DPSK 2480MHz
M/N : HT-XT100

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2479.805	28.36	5.91	35.70	97.29	95.86	74.00	-21.86	Peak
2	2483.500	28.36	5.92	35.70	46.91	45.49	74.00	28.51	Peak
3	2500.000	28.40	5.94	35.70	43.94	42.58	74.00	31.42	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading
-Amp Factor
2. The emission levels that are 20dB below the official
limit are not reported.

12.DEVIATION TO TEST SPECIFICATIONS

[NONE]