MEASUREMENT REPORT

(FCC : Part 15 Subpart C (15.247) / ANSI C63.4-2003)
Classification : (DSS) Spread Spectrum Transmitter

Testing Laboratory
1288

Product	:	Martian Watch
Trade Name	:	SilverCare
Model No.	:	MG100TST (The other see Appendix II)
Applicant	:	SilverPlus, Inc.
Applicant Address	:	10F.-2,No,659,Sec.1,NeihuRd. TaipeiCity 114 ,Taiwan

Report Number	MLT1211P15001-1
Applicant	SilverPlus, Inc.
Product	Martian Watch
Sample Received Date	2012/11/1
Sample Tested Date	2012/11/1 ~ 2013/11/14

Report Prepared By	Jesse Tien
Signature	
Date Prepared	2013/1/24

Report Authorized By	Roger Chen
Signature	
Date Authorized	2013/1/24

Test By

Max Light Technology Co., Ltd.
Room 5, 8F, No.125, Section 3 Roosevelt Road,
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Table of Contents :

History of Test Report

Original Report Issue Date: Jan. 24, 2013

■ No additional attachment

☐ additional attachments were issued as in the following record:

Attachment No.	Issue Date	Description
MLT1211P15001-1	Jan. 24, 2013	Original report

CERTIFICATION

We here by verify that :

The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4-2003. All test were conducted by

MLT(Max Light Technology Co.,Ltd) Room 5, 8F, No.125, Section 3 Roosevelt Road, Taipei, Taiwan, R.O.C Also, we attest to the accuracy of each.

We further submit that the energy emitted by the sample EUT tested as described in the report is in compliance with Class B radiated and conducted emission limit of FCC Rules Part 15 Subpart C (15.247).

Applicant Name	SilverPlus, Inc.
Applicant Address	10F.-2,No,659,Sec.1,NeihuRd. TaipeiCity 114 ,Taiwan
Manufacturer Name	SilverPlus, Inc.
Manufacturer Address	10F.-2,No,659,Sec.1,NeihuRd. TaipeiCity 114 ,Taiwan

Equipment	Martian Watch
Model No	MG100TST (The other see Appendix II)
FCC ID	X4LMW100

Report Prepared By	Jesse Tien
Signature	

Report Authorized By	Roger Chen
Signature	

1. General

1.1 Introduction:

The following measurement report is submitted on behalf of SilverPlus, Inc. In support of a Class B Digital Device certification in accordance with Part2 Subpart J and Part 15 Subpart C of the Commission's and Regulations.

1.2 Customer Details:

Applicant Name	SilverPlus, Inc.
Applicant Address	10F.-2,No,659,Sec.1,NeihuRd. TaipeiCity 114 ,Taiwan
Manufacturer Name	SilverPlus, Inc.
Manufacturer Address	10F.-2,No,659,Sec.1,NeihuRd. TaipeiCity 114 ,Taiwan

1.3 Technical data of EUT:

Equipment	Martian Watch
Model No	MG100TST (The other see Appendix II)
FCC ID	X4LMW100
Power Type	Battery 3.7V
Type of Modulation	GFSK ; π/4-DQPSK ; 8-DPSK
Transfer rate	Bluetooth :1Mbps(GFSK) Bluetooth EDR2.1 : 2 ; 3 Mbps(π/4-DQPSK , 8-DPSK) Bluetooth EDR3.0 : 2 ; 3 Mbps(π/4-DQPSK , 8-DPSK)
Type of Antenna	Chip Antenna
Frequency of Channel	See Next page

During testing the EUT was operated at Tx or Rx mode for each emission measured. This was done in order to ensure that maximum emission levels were attained.

Frequency of Each Channel (Working Frequency)

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	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		

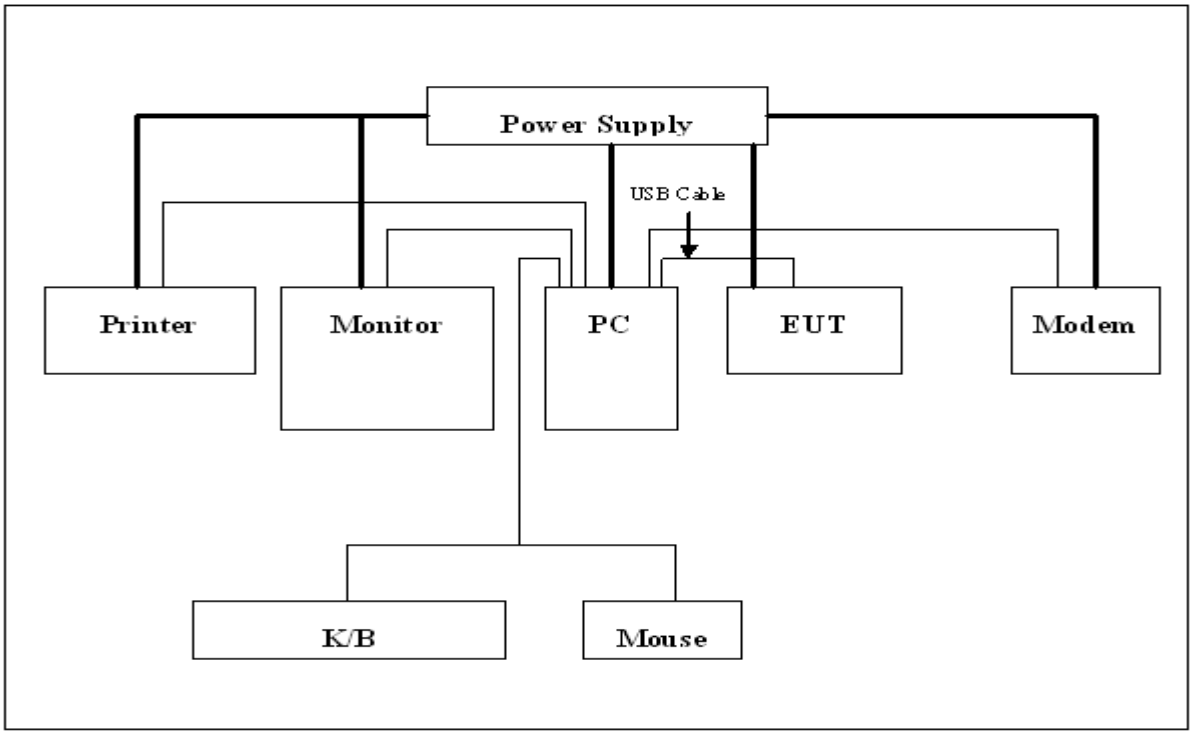
1.4 Summary Of Tests

47 CFR Part 15 Subpart C			
Reference	**Test**	**Results**	**Note**
15.207	Conducted Emission	PASS	
15.209	Radiated Emission	PASS	
15.247(a)(1)(i)-(ii)	20dB Bandwidth	PASS	
15.247(a)(1)	Hopping Frequency Separation	PASS	
15.247(a)(1)(iii)	Number of Hopping Channel	PASS	
15.247(a)(1)(iii)	Dwell Time of Each Channel	PASS	
15.247(b)	Max. Output Power	PASS	
15.247(d)	Band Edge Measurement	PASS	
15.247(c)	Out of Band Conducted Spurious Emission	PASS	
15.203	Antenna Requirement	PASS	

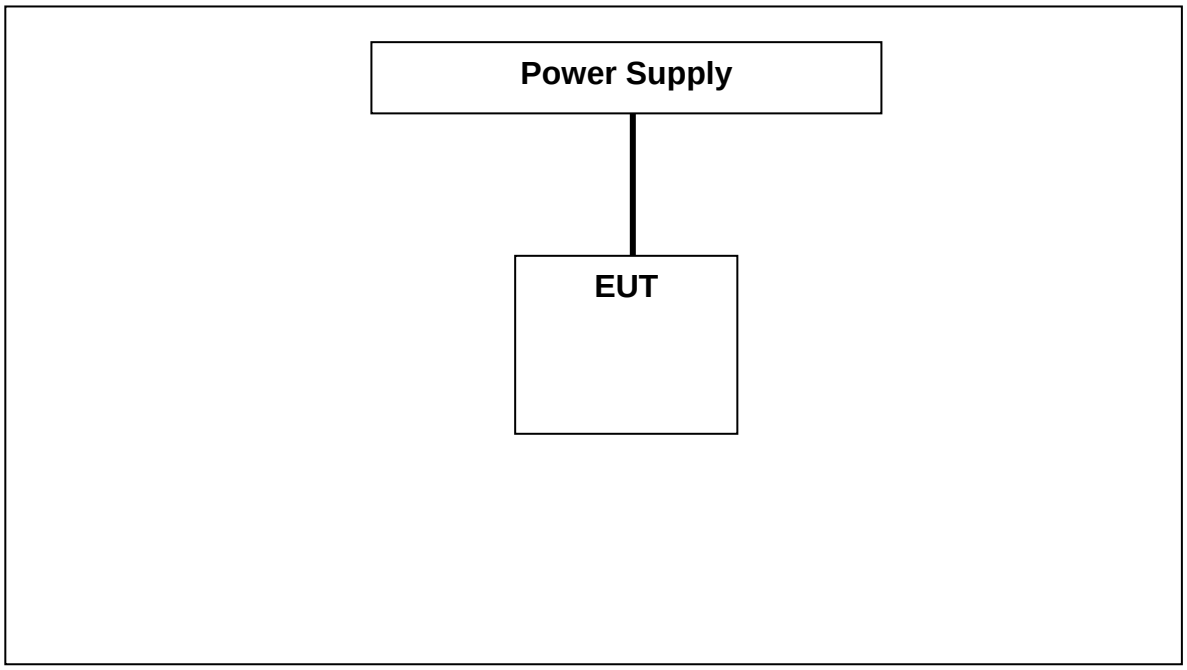
1.5 Description of Support Equipment

In order to construct the minimum system which required by the ANSI C63.4-2003, following equipments were used as the support units.

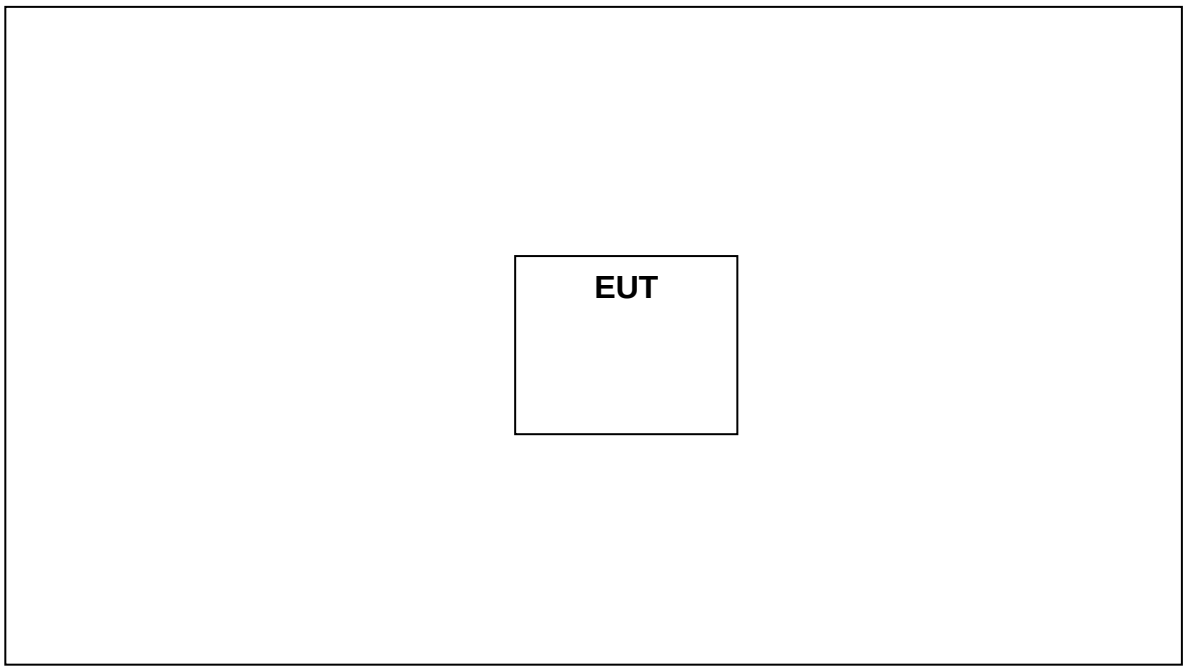
1.6 Configuration of System Under Test:



Charged by PC



Charged by Power



Operate

1.7 Test Procedure:

All measurements contained in this report were performed according to the techniques described in Measurement procedure ANSI C63.4-2003 followed FCC DA 00-75 or ANSI C63.10 for this testing.

1.8 General Test Condition:

The conditions under which the EUT operates were varied to determine their effect on the equipment's emission characteristics. The final configuration of the test system and the mode of operation used during these tests were chosen as that which produced the highest emission levels. However, only those conditions which the EUT was considered likely to encounter in normal use were investigated. The system's radiated and conducted emissions were investigated while the computer alternately transferred data to the EUT as well as to the monitor and printer. Using a test program which sent a continuous data and transferred data to and from the EUT was proven to worst case emissions. The system's physical layout and cabling was randomly arranged to ensure that maximum emission levels were attained.

This assessment of the maximum conducted output power tests is base on the minimum transfer rate will produce a maximum output power.

2. Conducted Emissions Requirements

2.1 General & Setup:

The power line conducted emission measurements were performed in a shielded enclosure. The EUT was assembled on a wooden table which is 80 centimeters high, was placed 40 centimeters from the back wall and at least 1 meter from the sidewall.

Power was fed to the EUT from the public utility power grid through a line filter and EMCO Model 3825/2 Line Impedance Stabilization Networks (LISN). The LISN housing, measuring instrumentation case, ground plane, etc., were electrically bonded together at the same RF potential. The Spectrum analyzer was connected to the AC line through an isolation transformer. The 50-ohm output of the LISN was connected to the spectrum analyzer directly. Conducted emission levels were in the CISPER quasi-peak detection mode. The analyzer's 6 dB bandwidth was set to 9 KHz. No post-detector video filter was used.

The spectrum was scanned from 150 KHz to 30 MHz. The physical arrangement of the test system and associated cabling was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude and frequency. All spurious emission frequencies were observed. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in paragraph 2.5.

2.2 Test Equipment List:

Item	Mfr/Brand	Instruments	Serial No.	Model/Type No.	Calibrated Date	Next Cal. Date
1.	HP	Spectrum Analyzer	73412A00110	8591EM	2012/3/22	2013/3/22
2.	EMCO	LISN	2658	3825/2	2012/3/3	2013/3/3
3.	TESEQ	ISN	24810	ISN T8	2012/4/26	2013/4/26

2.3 Test Condition:

EUT tested in accordance with the specifications given by the manufacturer, and exercised in the most unfavorable manner.

2.4 Conducted Emissions Limits:

FCC Part 15

Frequency range (MHz)	Limits (dBuV)			
	Class A		Class B	
	QP	Avg.	QP	Avg.
0.15 to 0.50	79	66	66 to 56	56 to 46
0.50 to 5.0	73	60	56	46
5.0 to 30	73	60	60	50

2.5 Measurement Data Of Conducted Emissions:

2.5.1 Conducted Emissions

The following table shows a summary of the highest emissions of power line conducted emissions to the HOT and NEUTRAL conductor of the EUT power.

Test Mode : USB Charge

Conducted Emissions (Class B)										
Test Port	Freq (MHz)	Read(dBuV)		Factor	Limits (dBuV)		Amplitude (dBuV)		Margin (dBuV)	
		QP	AV		QP	AV	QP	AV	QP	AV
L1	0.1768	58.23	36.12	1.12	64.64	54.64	59.35	37.24	-5.29	-17.40
	0.2644	52.36	29.85	1.14	61.29	51.29	53.50	30.99	-7.79	-20.30
	0.3428	52.57	27.52	1.15	59.13	49.13	53.72	28.67	-5.41	-20.46
	0.3976	49.23	25.41	1.17	57.90	47.90	50.40	26.58	-7.50	-21.32
	0.4661	50.71	26.85	1.20	56.58	46.58	51.91	28.05	-4.67	-18.53
	0.6272	50.25	29.11	1.22	56.00	46.00	51.47	30.33	-4.53	-15.67
	0.7793	47.36	22.7	1.23	56.00	46.00	48.59	23.93	-7.41	-22.07
L2	0.1825	55.87	32.22	1.07	64.37	54.37	56.94	33.29	-7.43	-21.08
	0.2644	50.83	29.66	1.09	61.29	51.29	51.92	30.75	-9.37	-20.54
	0.3483	52.07	27.96	1.09	59.00	49.00	53.16	29.05	-5.84	-19.95
	0.4516	51.71	26.75	1.14	56.85	46.85	52.85	27.89	-4.00	-18.96
	0.6075	50.43	25.11	1.15	56.00	46.00	51.58	26.26	-4.42	-19.74
	0.6936	47.21	24.15	1.17	56.00	46.00	48.38	25.32	-7.62	-20.68
	0.7918	45.21	22.1	1.18	56.00	46.00	46.39	23.28	-9.61	-22.72

Notes : 1. L1: One end & Ground L2: The other end & Ground

2. Height of table on which the EUT was placed : 0.8 m.
3. The Quasi-Peak Value have already met the Average Value Limit showed on above limits.
4. The above test results are obtained under the normal condition.
5. Amplitude = Read + Factor

2.5.2 Conducted Emissions

The following table shows a summary of the highest emissions of power line conducted emissions to the HOT and NEUTRAL conductor of the EUT power.

Test Mode : PC Charge

Conducted Emissions (Class B)										
Test Port	Freq (MHz)	Read(dBuV)		Factor	Limits (dBuV)		Amplitude (dBuV)		Margin (dBuV)	
		QP	AV		QP	AV	QP	AV	QP	AV
L1	0.1633	42.81	--	1.05	65.30	55.30	43.86	--	-21.44	--
	0.2353	37.61	--	1.14	62.26	52.26	38.75	--	-23.51	--
	0.5948	31.48	--	1.24	56.00	46.00	32.72	--	-23.28	--
	0.7122	30.88	--	1.23	56.00	46.00	32.11	--	-23.89	--
	1.0650	30.66	--	1.28	56.00	46.00	31.94	--	-24.06	--
	2.6780	31.63	--	1.90	56.00	46.00	33.53	--	-22.47	--
	13.5510	36.14	--	2.06	60.00	50.00	38.20	--	-21.80	--
L2	0.1731	38.64	--	0.93	64.81	54.81	39.57	--	-25.24	--
	0.7122	30.43	--	1.18	56.00	46.00	31.61	--	-24.39	--
	1.0210	31.97	--	1.21	56.00	46.00	33.18	--	-22.82	--
	1.5440	30.19	--	1.39	56.00	46.00	31.58	--	-24.42	--
	2.7650	33.72	--	1.83	56.00	46.00	35.55	--	-20.45	--
	5.0580	32.61	--	1.95	60.00	50.00	34.56	--	-25.44	--
	13.6950	37.64	--	2.06	60.00	50.00	39.70	--	-20.30	--

Notes : 1. L1: One end & Ground L2: The other end & Ground

2. Height of table on which the EUT was placed : 0.8 m.
3. The Quasi-Peak Value have already met the Average Value Limit showed on above limits.
4. The above test results are obtained under the normal condition.
5. Amplitude = Read + Factor

3. Radiated Emissions Requirements (Below 1GHz)

3.1 General & Setup:

Prior to open-field testing, the EUT was placed in a shielded enclosure and scanned at a close distance to determine its emission characteristics. The physical arrangement of the EUT was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude, directivity, and frequency. The exact system configuration which produced the highest emissions was noted so it could be reproduced later during the open-field tests. This was done to ensure that the final measurements would demonstrate the worst-case interference potential of the EUT. The radiated emissions test is made at a 10 meters open site from 30MHz to 1GHz. The EUT system was placed on a nonconductive turntable which is 0.8 meters height, top surface 1.0 x 1.5 meter. The spectrum was examined from 30 MHz to 1000 MHz using an Hewlett Packard E7403A Spectrum Analyzer, EMCO Biconilog Antenna (Model 3142C) for 30MHz -1GHz. At each frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization. Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post-detector video filters were used in the test. The spectrum analyzer's 6 dB bandwidth was set to 120 KHz, and the analyzer was operated in the quasi-peak detection mode. The highest emission amplitudes relative to the appropriate limit were measured and recorded in paragraph 3.5.

3.2 Test Equipment List:

Item	Mfr/Brand	Instruments	Serial No.	Model/Type No.	Calibrated Date	Next Cal. Date
1.	Agilent	Spectrum Analyzer	US40240137	E7403A	2012/1/31	2013/1/31
2.	Agilent	Spectrum Analyzer	US39240419	4407B	2012/1/31	2013/1/31
3.	EMCO	Biconilog Antenna	00059739	3142C	2012/9/6	2013/9/6
4.	MLT	Pre Amplifier	20110301	PREAMP6G-02	2012/3/3	2013/3/3
5.	MLT	Pre Amplifier	20110209	PREAMP6G-01	2012/3/3	2013/3/3
6.	EMCO	Biconilog Antenna	00044568	3142C	2012/9/6	2013/9/6

3.3 Test Condition:

EUT tested in accordance with the specifications given by the manufacturer, and exercised in the most unfavorable manner.

3.4 Radiated Emissions Limits:

CISPR 22

Frequency range (MHz)	Limits (dBuV)			
	Class A		Class B	
	Distance (Meter)	Limits (dBuV/m)	Distance (Meter)	Limits (dBuV/m)
30 to 230	10	40	10	30
230 to 1000	10	47	10	37

FCC Part 15

Frequency range (MHz)	Limits (dBuV)			
	Class A		Class B	
	Distance (Meter)	Limits (dBuV/m)	Distance (Meter)	Limits (dBuV/m)
30 to 88	10	39	3	40
88 to 216	10	43.5	3	43.5
216 to 960	10	46.5	3	46
960 to 1000	10	49.5	3	54

3.5 Measurement Data Of Radiated Emissions:

3.5.1 Open Field Radiated Emissions

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following

Test Mode : USB Charge

Radiated Emissions (VERTICAL)Class B							
Frequency (MHz)	Read (dBuV/m)	Factor	Ant. (cm)	Table (Degree)	Amplitude (dBuV/m)	Limits (dBuV/m)	Margin (dB)
35.40	60.43	-23.09	100	166	37.34	40	-2.66
40.60	61.43	-25.88	100	200	35.55	40	-4.45
108.01	68.50	-31.09	100	297	37.41	43.5	-6.09
144.00	65.88	-30.97	100	155	34.91	43.5	-8.59
162.70	61.49	-28.77	100	329	32.72	43.5	-10.78
180.00	65.81	-28.80	100	99	37.01	43.5	-6.49
324.03	61.52	-23.53	100	323	37.99	46	-8.01
488.11	57.17	-18.66	100	26	38.51	46	-7.49
623.68	51.73	-12.79	100	40	38.94	46	-7.06

Radiated Emissions (HORIZONTAL)Class B							
Frequency (MHz)	Read (dBuV/m)	Factor	Ant. (cm)	Table (Degree)	Amplitude (dBuV/m)	Limits (dBuV/m)	Margin (dB)
40.80	57.14	-25.60	400	256	31.54	40	-8.46
54.23	59.97	-29.60	400	220	30.37	40	-9.63
108.00	63.51	-31.09	400	242	32.42	43.5	-11.08
162.73	58.94	-28.92	400	312	30.02	43.5	-13.48
180.01	65.57	-28.60	400	107	36.97	43.5	-6.53
203.38	61.29	-28.38	400	283	32.91	43.5	-10.59
643.70	50.62	-14.39	100	307	36.23	46	-9.77
696.20	51.72	-13.26	100	277	38.46	46	-7.54
749.17	51.50	-11.78	100	155	39.72	46	-6.28

Notes : 1.Margin= Amplitude - Limits
2.Distance of Measurement : 3 Meter
3.Height of table for EUT placed: 0.8 Meter.
4.Amplitude= Reading Amplitude –Amplifier gain+ Cable loss + Antenna factor
5.Pre amplifier Gain :38dB to 42dB

3.5.2 Open Field Radiated Emissions

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following

Test Mode : PC Charge

Radiated Emissions (VERTICAL)Class B							
Frequency (MHz)	Read (dBuV/m)	Factor	Ant. (cm)	Table (Degree)	Amplitude (dBuV/m)	Limits (dBuV/m)	Margin (dB)
35.35	60.49	-23.09	100	160	37.40	40	-2.60
40.60	65.40	-25.88	100	250	39.52	40	-0.48
108.12	70.59	-31.09	100	297	39.50	43.5	-4.00
144.00	66.34	-30.97	100	150	35.37	43.5	-8.13
162.80	61.73	-28.77	100	335	32.96	43.5	-10.54
180.10	66.13	-28.80	100	100	37.33	43.5	-6.17
324.20	61.80	-23.53	100	330	38.27	46	-7.73
488.11	57.35	-18.66	100	30	38.69	46	-7.31
623.60	51.90	-12.79	100	50	39.11	46	-6.89

Radiated Emissions (HORIZONTAL)Class B							
Frequency (MHz)	Read (dBuV/m)	Factor	Ant. (cm)	Table (Degree)	Amplitude (dBuV/m)	Limits (dBuV/m)	Margin (dB)
40.80	62.31	-25.60	400	260	36.71	40	-3.29
54.10	59.80	-29.60	400	210	30.20	40	-9.80
108.12	63.61	-31.09	400	250	32.52	43.5	-10.98
144.01	60.09	-30.64	400	160	29.45	43.5	-14.05
162.80	59.00	-28.92	400	320	30.08	43.5	-13.42
180.00	65.50	-28.60	400	110	36.90	43.5	-6.60
203.38	61.45	-28.38	400	285	33.07	43.5	-10.43
696.00	52.05	-13.26	100	280	38.79	46	-7.21
750.00	51.60	-11.78	100	160	39.82	46	-6.18

Notes : 1.Margin= Amplitude - Limits
2.Distance of Measurement : 3 Meter
3.Height of table for EUT placed: 0.8 Meter.
4.Amplitude= Reading Amplitude –Amplifier gain+ Cable loss + Antenna factor
5.Pre amplifier Gain :38dB to 42dB

3.5.3 Open Field Radiated Emissions

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following

Test Mode : Worst case(X Axis)2441MHz

Radiated Emissions (VERTICAL)Class B							
Frequency (MHz)	Read (dBuV/m)	Factor	Ant. (cm)	Table (Degree)	Amplitude (dBuV/m)	Limits (dBuV/m)	Margin (dB)
30.15	56.31	-20.70	100	143	35.61	40	-4.39
32.97	56.15	-21.78	100	166	34.37	40	-5.63
60.00	61.85	-30.34	100	247	31.51	40	-8.49
112.35	61.79	-31.42	100	263	30.37	43.5	-13.13
132.06	63.55	-31.94	100	333	31.61	43.5	-11.89
150.15	59.23	-30.07	100	169	29.16	43.5	-14.34
176.07	60.66	-28.75	100	46	31.91	43.5	-11.59
208.20	58.16	-28.00	100	91	30.16	43.5	-13.34
790.00	46.27	-10.44	400	74	35.83	46	-10.17

Radiated Emissions (HORIZONTAL)Class B							
Frequency (MHz)	Read (dBuV/m)	Factor	Ant. (cm)	Table (Degree)	Amplitude (dBuV/m)	Limits (dBuV/m)	Margin (dB)
47.55	57.75	-28.04	400	121	29.71	40	-10.29
55.11	58.45	-29.73	400	250	28.72	40	-11.28
119.91	58.47	-31.72	400	33	26.75	43.5	-16.75
130.71	59.44	-31.82	400	111	27.62	43.5	-15.88
216.03	56.49	-27.77	400	236	28.72	46	-17.28
519.10	50.72	-17.53	330	145	33.19	46	-12.81
646.50	47.80	-14.29	400	338	33.51	46	-12.49
715.10	47.28	-12.68	120	142	34.60	46	-11.40
950.30	46.85	-9.23	100	340	37.62	46	-8.38

Notes : 1.Margin= Amplitude - Limits

2.Distance of Measurement : 3 Meter

3.Height of table for EUT placed: 0.8 Meter.

4.Amplitude= Reading Amplitude –Amplifier gain+ Cable loss + Antenna factor

5.Pre amplifier Gain :38dB to 42dB

3.5.4 Open Field Radiated Emissions

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following

Test Mode : Worst case(Y Axis)2441MHz

Radiated Emissions (VERTICAL)Class B							
Frequency (MHz)	Read (dBuV/m)	Factor	Ant. (cm)	Table (Degree)	Amplitude (dBuV/m)	Limits (dBuV/m)	Margin (dB)
30.02	55.50	-20.70	100	150	34.80	40	-5.20
32.97	55.50	-21.78	100	170	33.72	40	-6.28
47.62	59.90	-28.52	100	70	31.38	40	-8.62
60.00	59.84	-30.34	100	240	29.50	40	-10.50
120.00	61.40	-31.90	100	160	29.50	43.5	-14.00
155.55	59.61	-29.39	100	180	30.22	43.5	-13.28
174.46	61.46	-28.76	100	90	32.70	43.5	-10.80
210.36	60.02	-27.96	100	80	32.06	43.5	-11.44
758.50	47.94	-11.44	400	190	36.50	46	-9.50

Radiated Emissions (HORIZONTAL)Class B							
Frequency (MHz)	Read (dBuV/m)	Factor	Ant. (cm)	Table (Degree)	Amplitude (dBuV/m)	Limits (dBuV/m)	Margin (dB)
47.55	57.75	-28.04	400	100	29.71	40	-10.29
89.67	66.19	-31.57	400	250	34.62	43.5	-8.88
115.86	59.50	-31.41	400	45	28.09	43.5	-15.41
125.31	60.95	-31.79	400	130	29.16	43.5	-14.34
210.36	56.62	-28.12	400	270	28.50	43.5	-15.00
517.70	52.17	-17.56	320	240	34.61	46	-11.39
645.80	49.14	-14.31	400	320	34.83	46	-11.17
723.50	50.39	-12.49	150	290	37.90	46	-8.10
778.10	49.58	-11.08	100	60	38.50	46	-7.50

Notes : 1.Margin= Amplitude - Limits

2.Distance of Measurement : 3 Meter

3.Height of table for EUT placed: 0.8 Meter.

4.Amplitude= Reading Amplitude –Amplifier gain+ Cable loss + Antenna factor

5.Pre amplifier Gain :38dB to 42dB

3.5.5 Open Field Radiated Emissions

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following

Test Mode : Worst case(Z Axis)2441MHz

Radiated Emissions (VERTICAL)Class B							
Frequency (MHz)	Read (dBuV/m)	Factor	Ant. (cm)	Table (Degree)	Amplitude (dBuV/m)	Limits (dBuV/m)	Margin (dB)
30.02	55.50	-20.70	100	150	34.80	40	-5.20
36.75	57.02	-24.01	100	200	33.01	40	-6.99
47.62	59.13	-28.52	100	60	30.61	40	-9.39
81.30	61.72	-32.28	100	250	29.44	40	-10.56
119.91	61.83	-31.90	100	160	29.93	43.5	-13.57
148.80	60.82	-30.34	100	150	30.48	43.5	-13.02
175.26	61.15	-28.75	100	80	32.40	43.5	-11.10
202.80	59.14	-28.15	100	110	30.99	43.5	-12.51
755.70	47.70	-11.44	390	200	36.26	46	-9.74

Radiated Emissions (HORIZONTAL)Class B							
Frequency (MHz)	Read (dBuV/m)	Factor	Ant. (cm)	Table (Degree)	Amplitude (dBuV/m)	Limits (dBuV/m)	Margin (dB)
47.82	57.50	-28.04	400	110	29.46	40	-10.54
98.31	65.69	-30.91	400	300	34.78	43.5	-8.72
125.31	60.61	-31.79	400	130	28.82	43.5	-14.68
145.02	61.51	-30.50	400	200	31.01	43.5	-12.49
209.55	55.28	-28.13	400	310	27.15	43.5	-16.35
519.10	51.86	-17.53	320	140	34.33	46	-11.67
645.80	48.49	-14.31	400	330	34.18	46	-11.82
725.60	50.72	-12.44	150	280	38.28	46	-7.72
780.00	50.02	-11.06	100	50	38.96	46	-7.04

Notes : 1.Margin= Amplitude - Limits
2.Distance of Measurement : 3 Meter
3.Height of table for EUT placed: 0.8 Meter.
4.Amplitude= Reading Amplitude –Amplifier gain+ Cable loss + Antenna factor
5.Pre amplifier Gain :38dB to 42dB

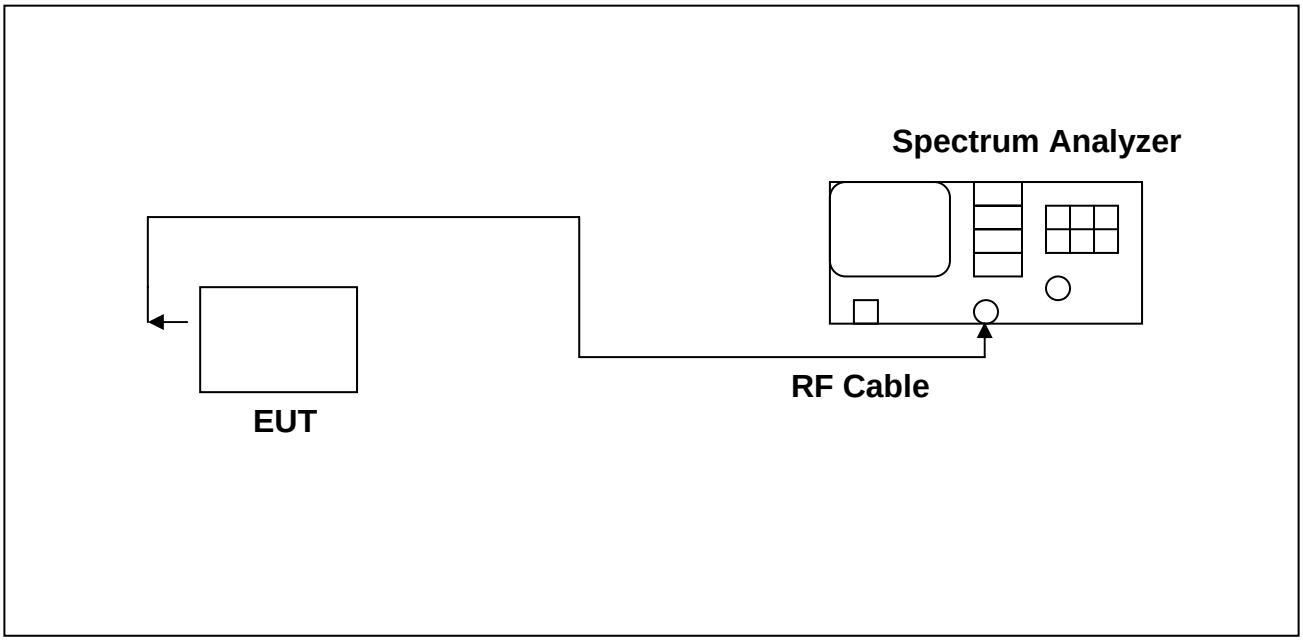
4. Minimum 20dB RF Bandwidth Requirements

4.1 Test Condition & Setup:

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW set to 100 kHz .VBW set to 300kHz. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. Hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel or the maximum 20 dB bandwidth of the hopping channel is 1 MHz. A peak output reading was taken, a display line was drawn 20 dB lower than peak level. The 20 dB bandwidth was determined from where the channel output spectrum intersected the display line.

The test was performed at 3 channels (Channel 0, 39, 78)

4.2 Test Instruments Configuration:



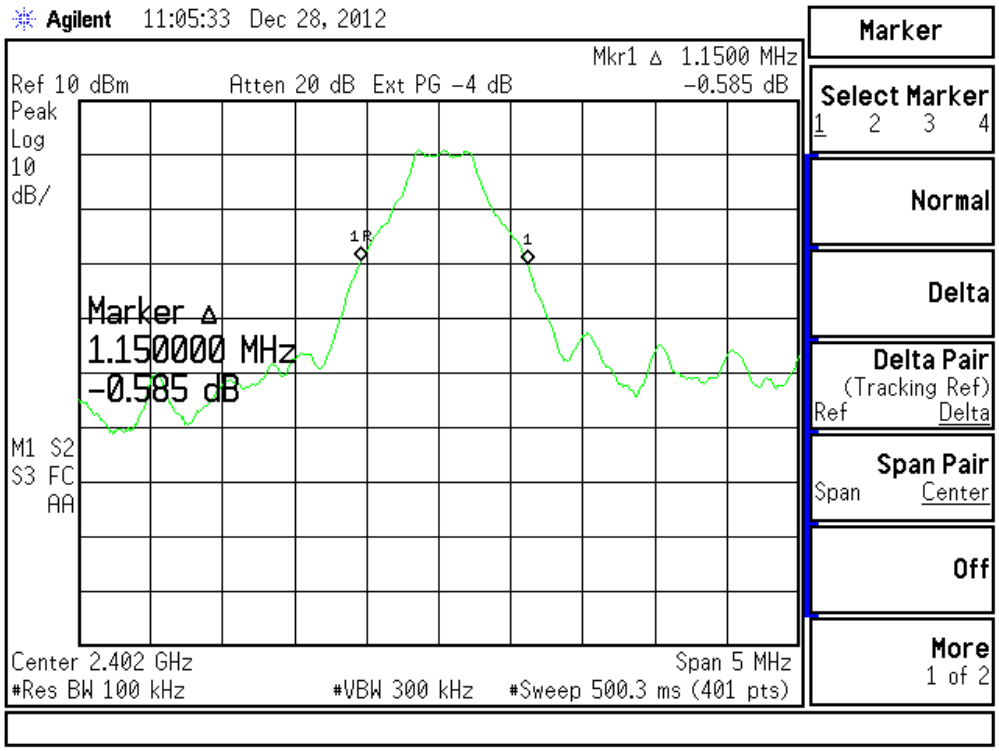
4.3 Test Equipment List:

Item	Mfr/Brand	Instruments	Serial No.	Model/Type No.	Calibrated Date	Next Cal. Date
1.	Agilent	Spectrum Analyzer	US39240419	E4407B	2012/1/31	2013/1/31

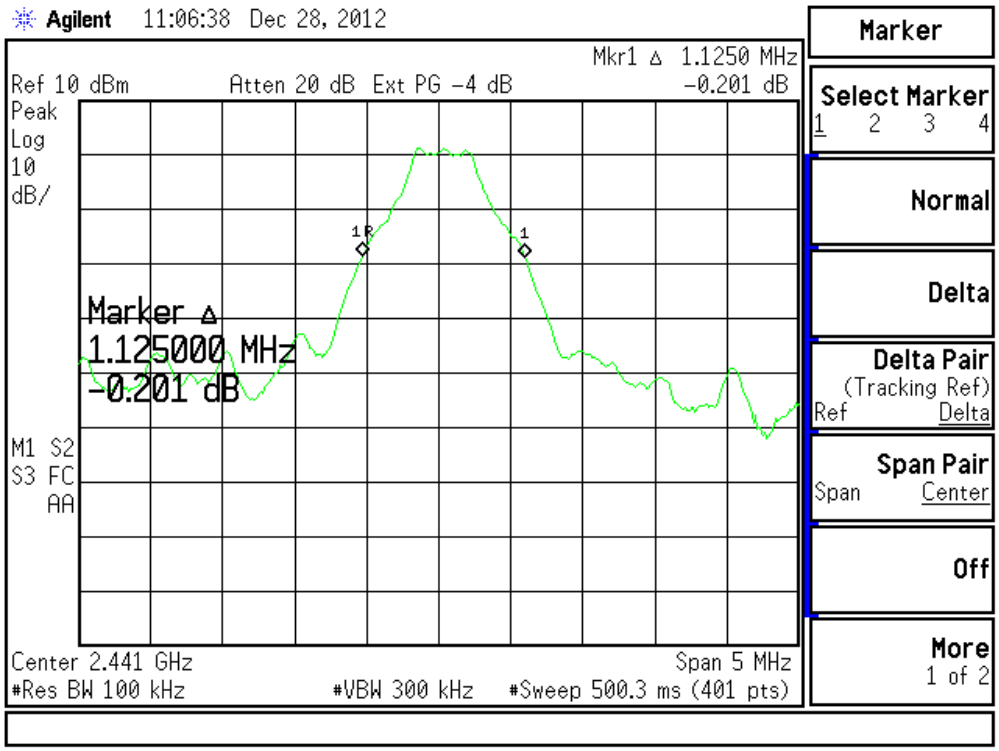
4.4 Test Result:

Channel	Frequency (MHz)	Data Rate (Mbps)	Results (MHz)	Limit
0	2402	1	1.15000	>25kHz
		2	1.12500	>25kHz
		3	1.13750	>25kHz
39	2441	1	1.46250	>25kHz
		2	1.41666	>25kHz
		3	1.43333	>25kHz
78	2480	1	1.39166	>25kHz
		2	1.40000	>25kHz
		3	1.40000	>25kKHz

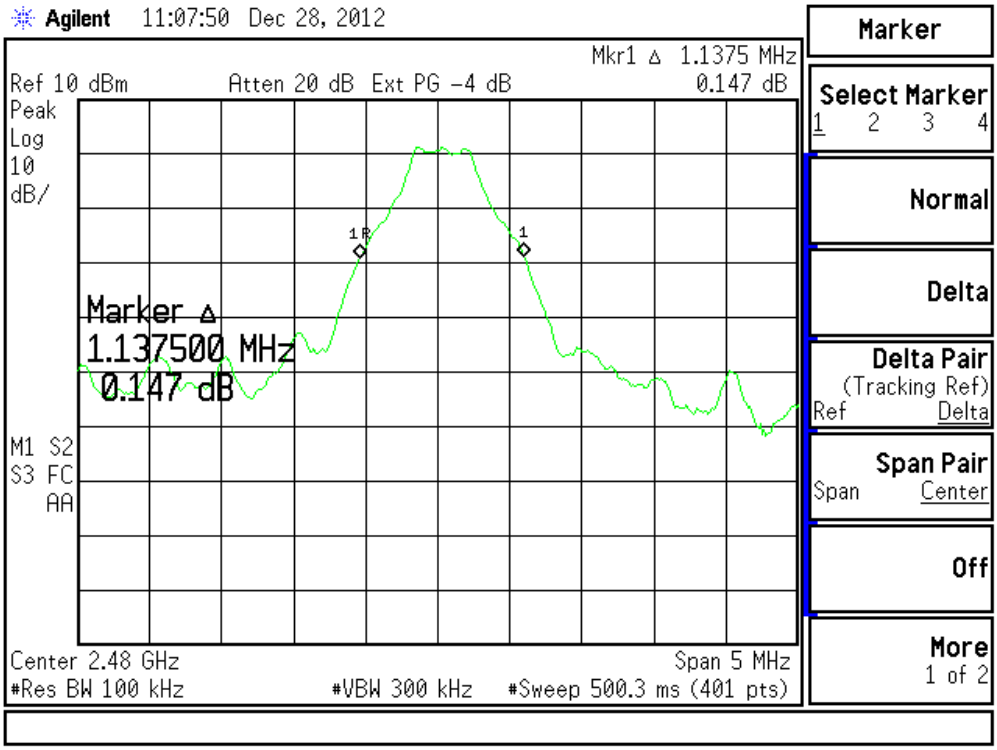
Data Rate : 1Mbps
(2402MHz)



(2441MHz)

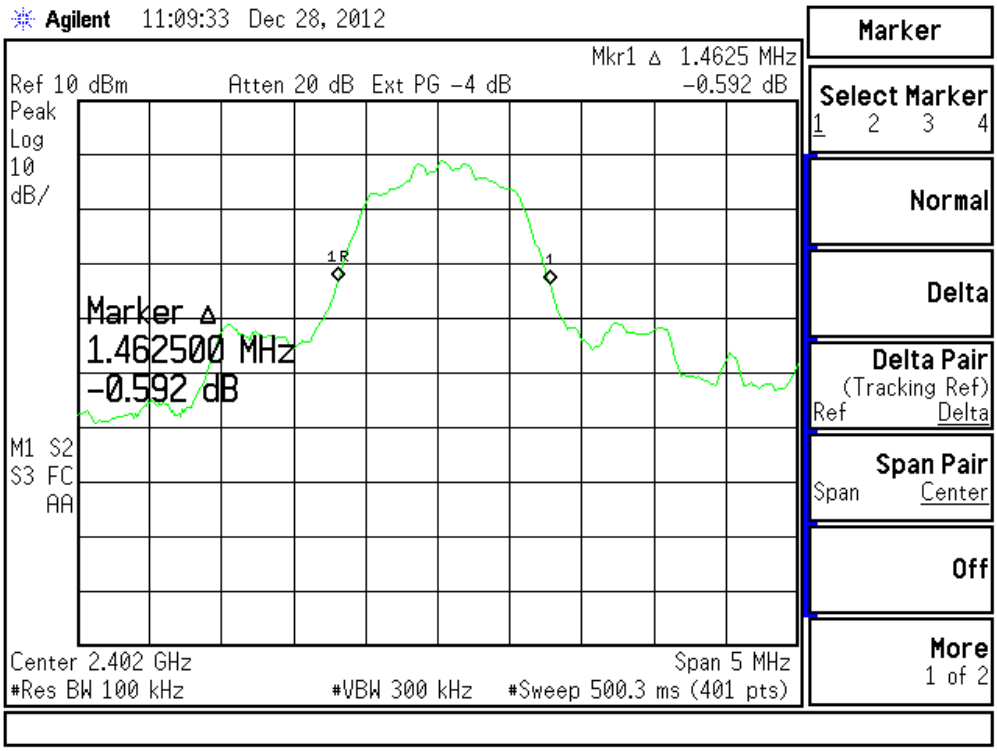


(2480MHz)

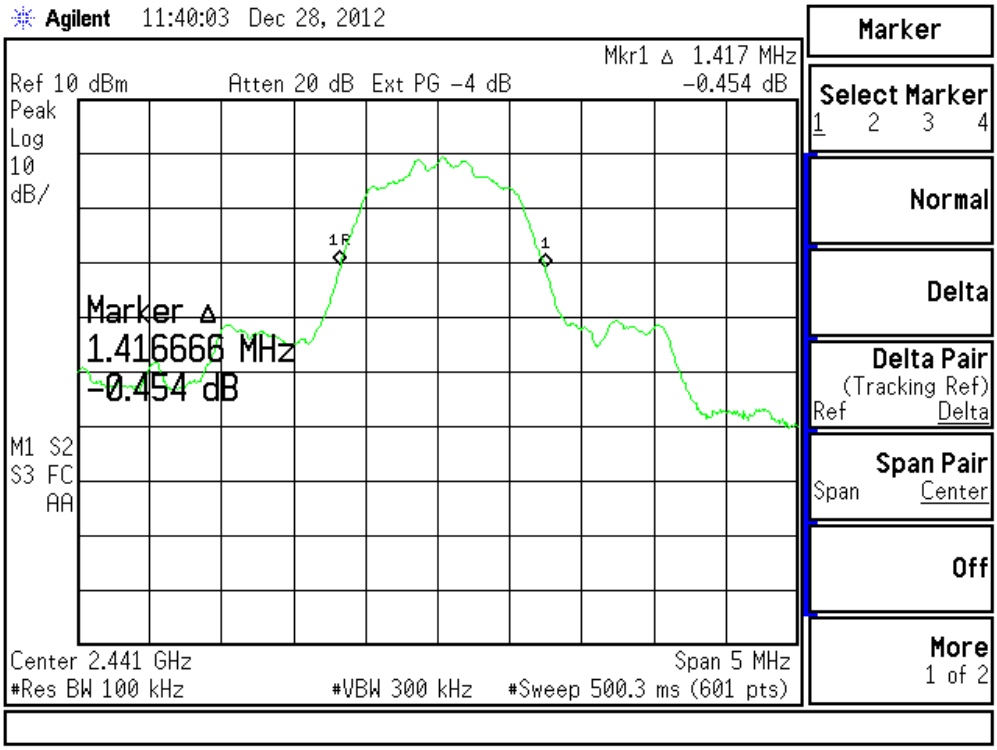


Data Rate : 2Mbps

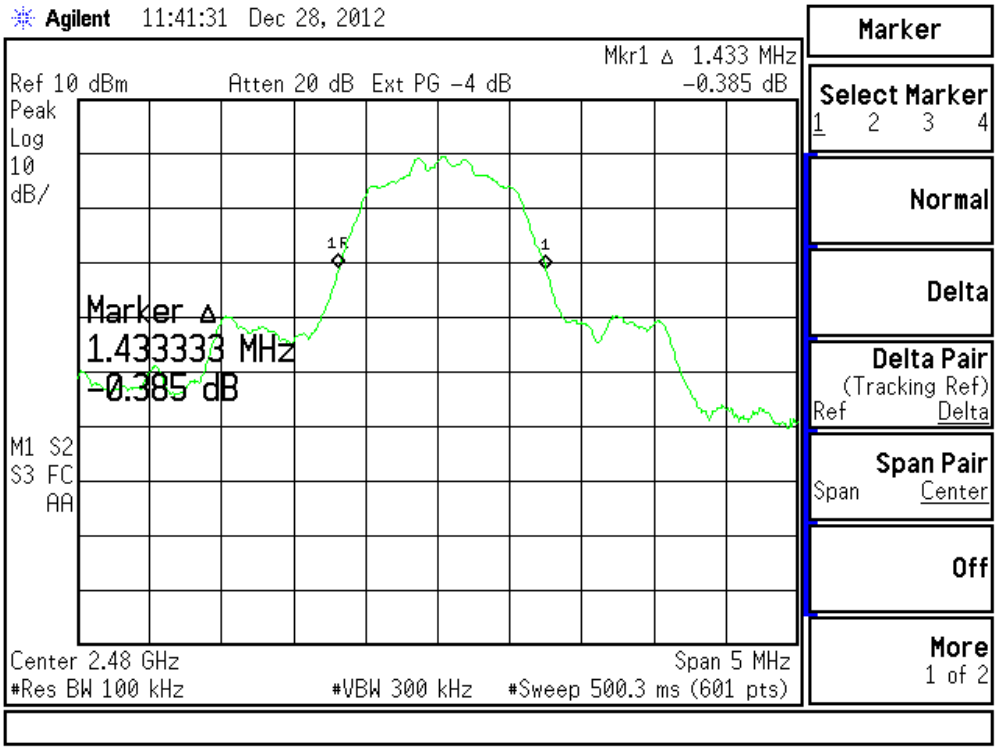
(2402MHz)



(2441MHz)

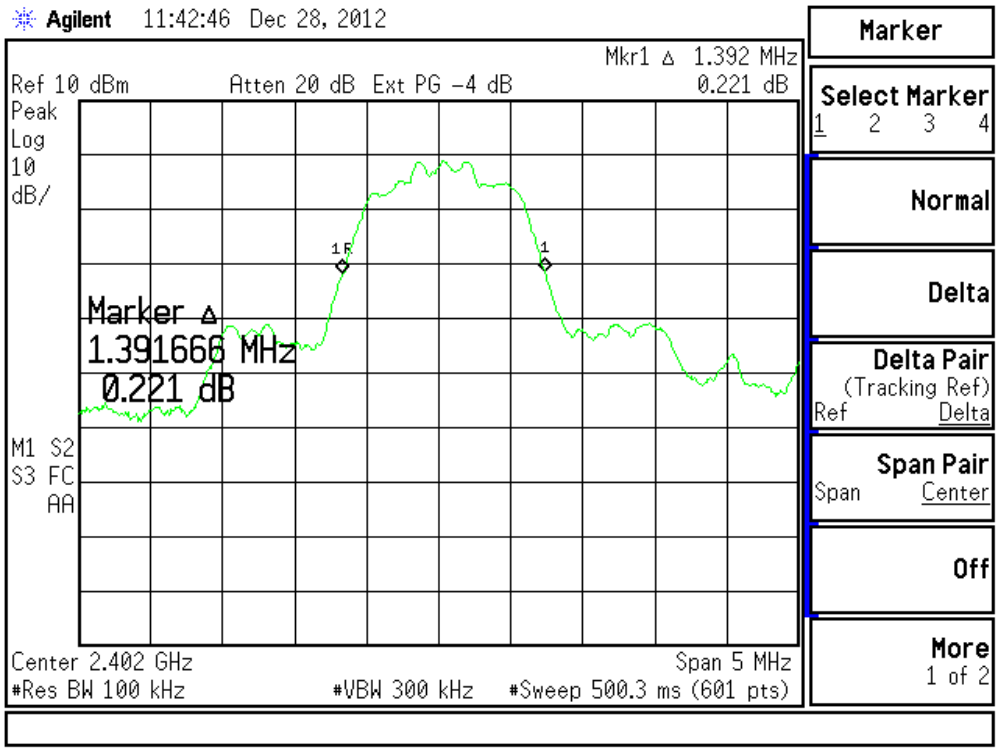


(2480MHz)

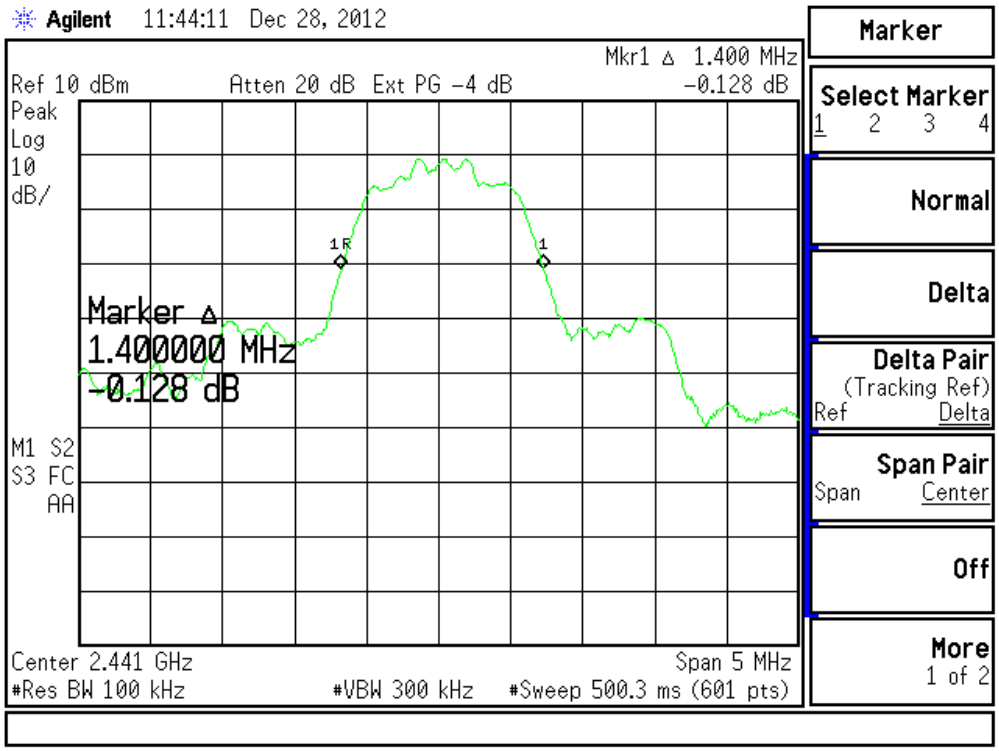


Data Rate : 3Mbps

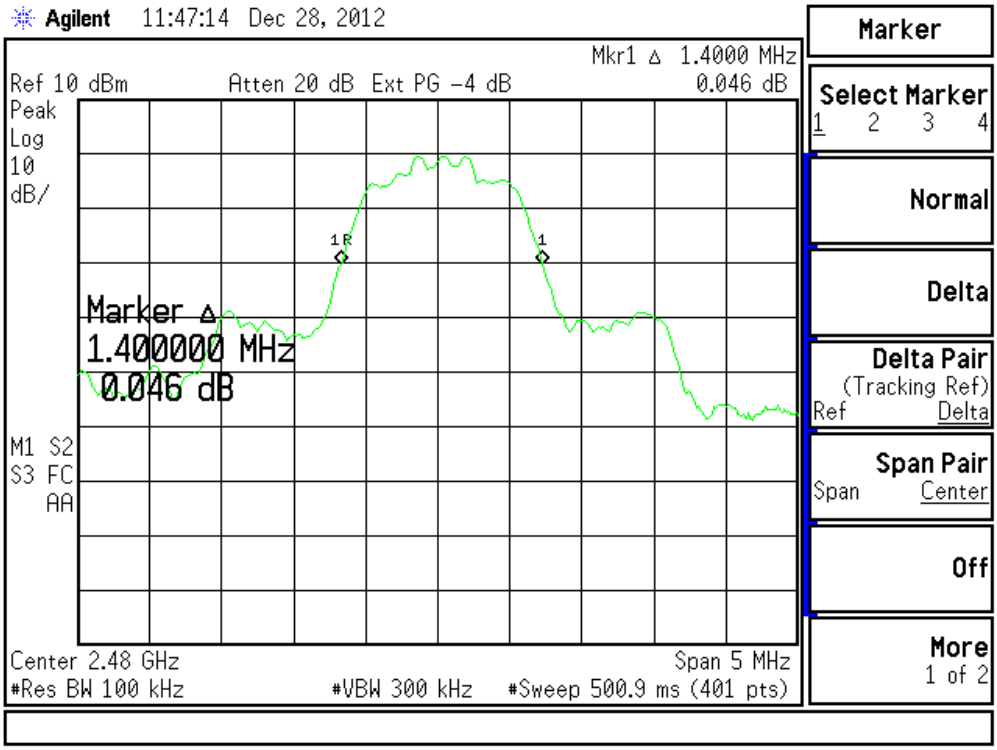
(2402MHz)



(2441MHz)



(2480MHz)

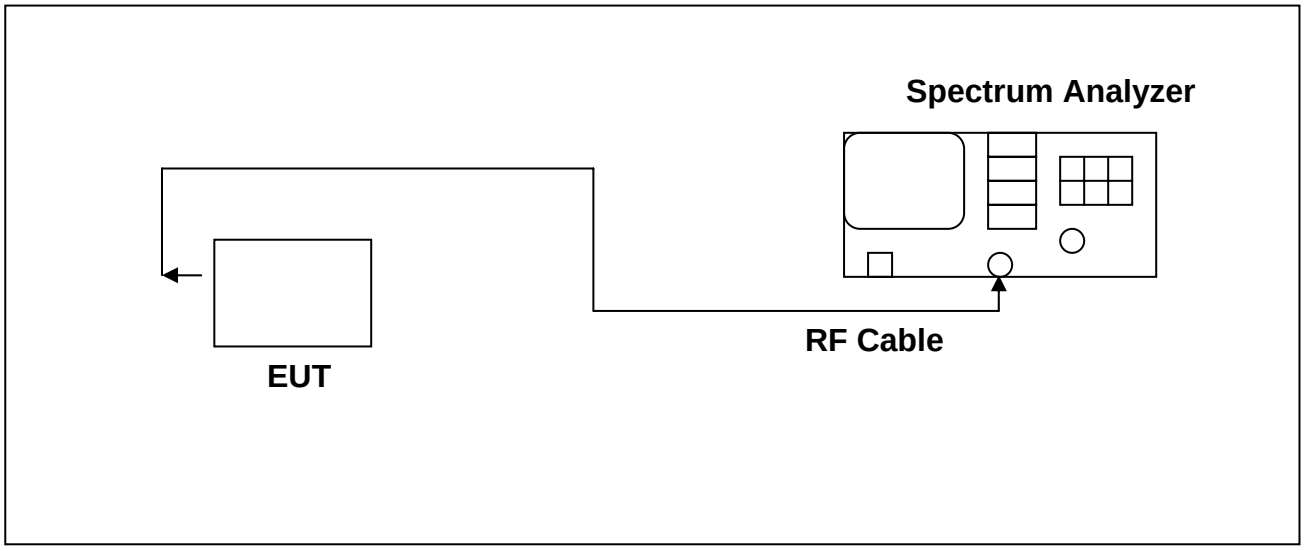

Agilent 11:47:14 Dec 28, 2012
Mkr1 Δ 1.4000 MHz
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
0.046 dB
Peak
Log
10
dB/
1R
1
Marker Δ
1.400000 MHz
0.046 dB
M1 S2
S3 FC
AA
Center 2.48 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 5 MHz
#Sweep 500.9 ms (401 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

5. Hopping Frequency Separation Requirements

5.1 Test Condition & Setup:

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW set to 100 kHz .VBW set to 300kHz. The 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.

5.2 Test Instruments Configuration:



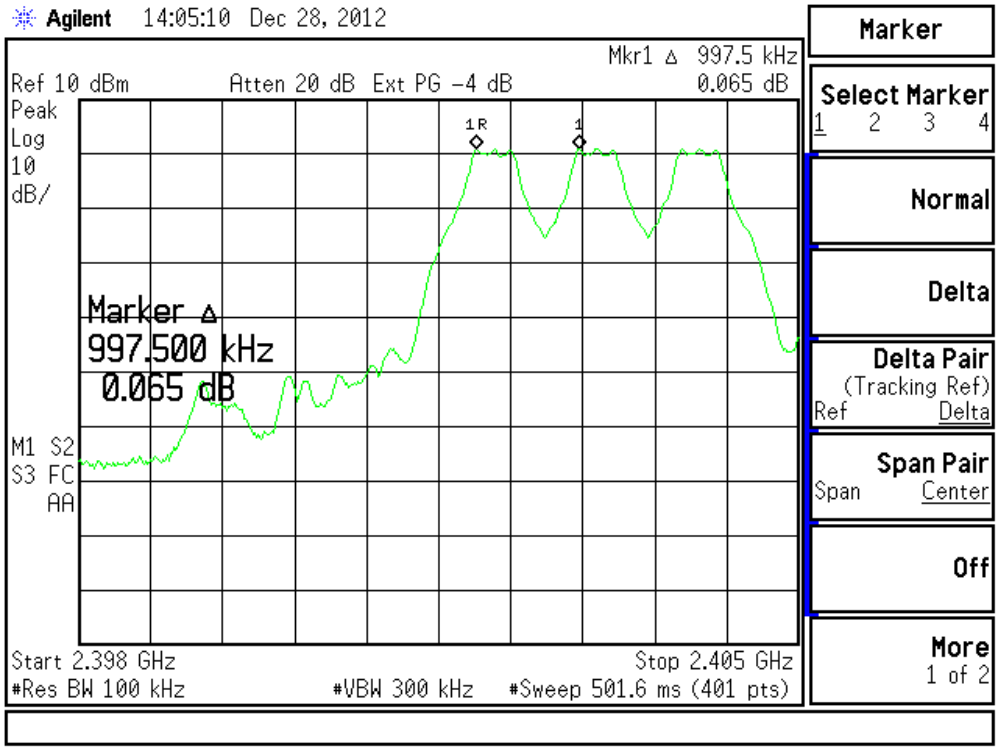
5.3 Test Equipment List:

Item	Mfr/Brand	Instruments	Serial No.	Model/Type No.	Calibrated Date	Next Cal. Date
1.	Agilent	Spectrum Analyzer	US39240419	E4407B	2012/1/31	2013/1/31

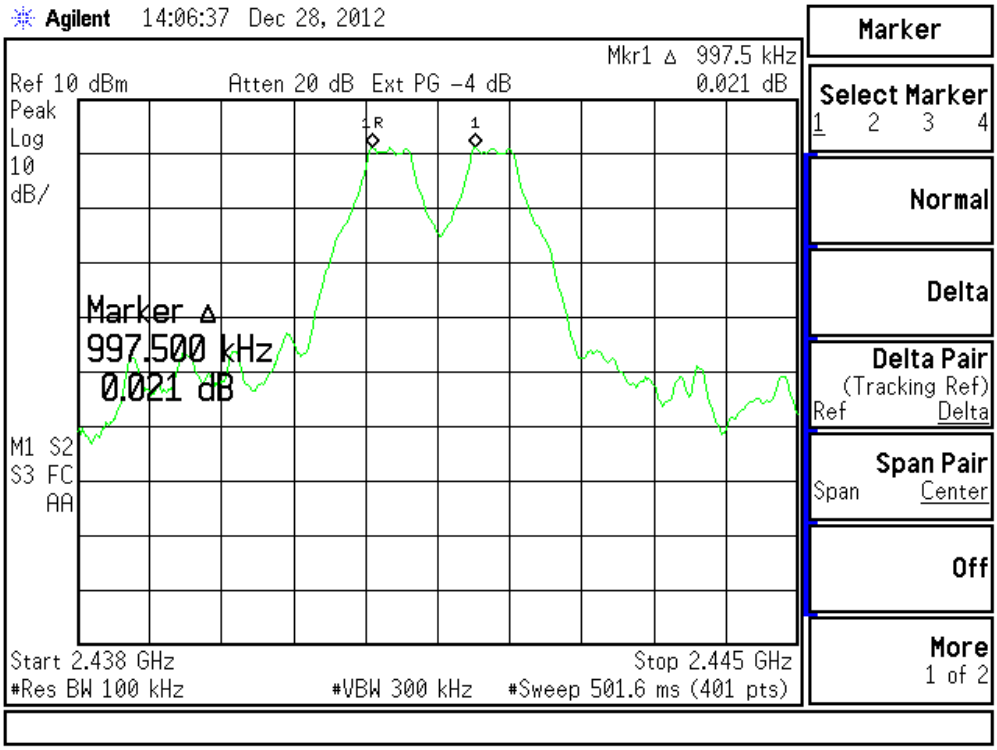
5.4 Test Result:

Data Rate (Mbps)	Channel	Frequency (MHz)	Results (kHz)	Limit
1	0	2402	997.5	separated by 25 kHz or two-thirds of the 20 dB bandwidth
	39	2441	997.5	
	78	2480	990.0	
2	0	2402	1025.0	
	39	2441	1012.5	
	78	2480	1025.0	
3	0	2402	1012.5	
	39	2441	1000.0	
	78	2480	1000.0	

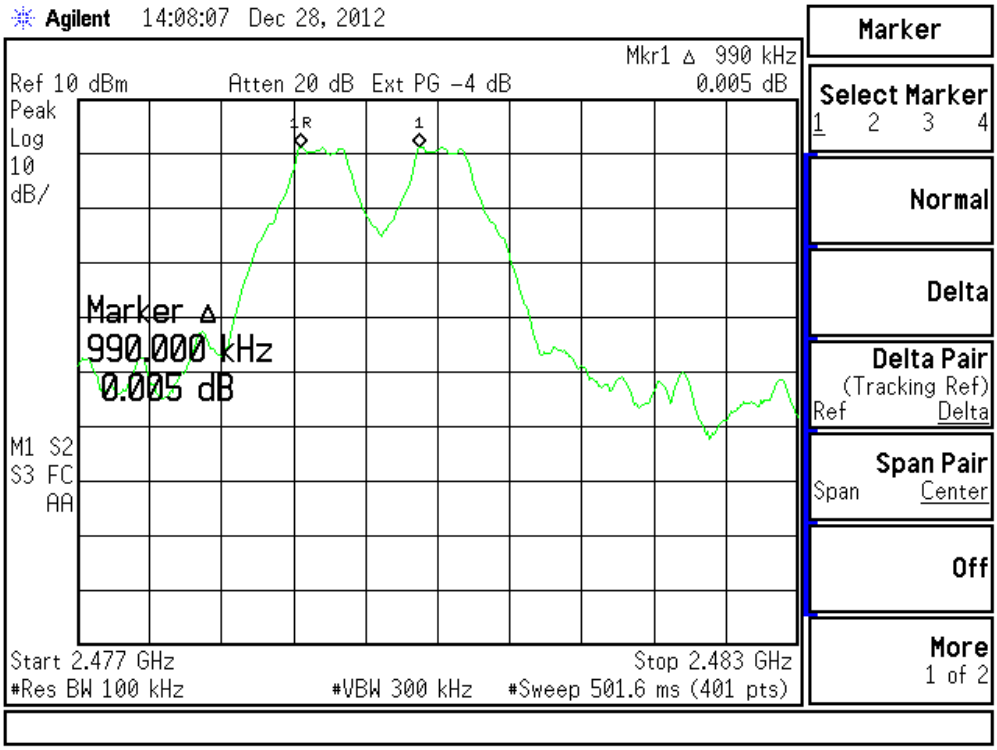
Data Rate : 1Mbps
(2402MHz)



(2441MHz)

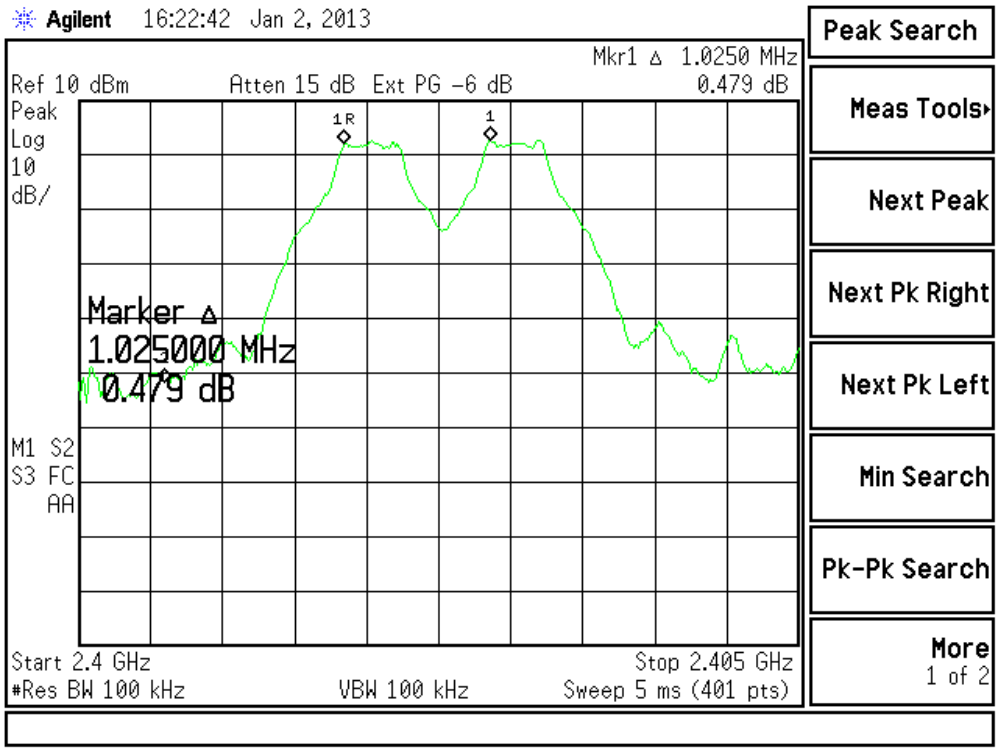


(2480MHz)

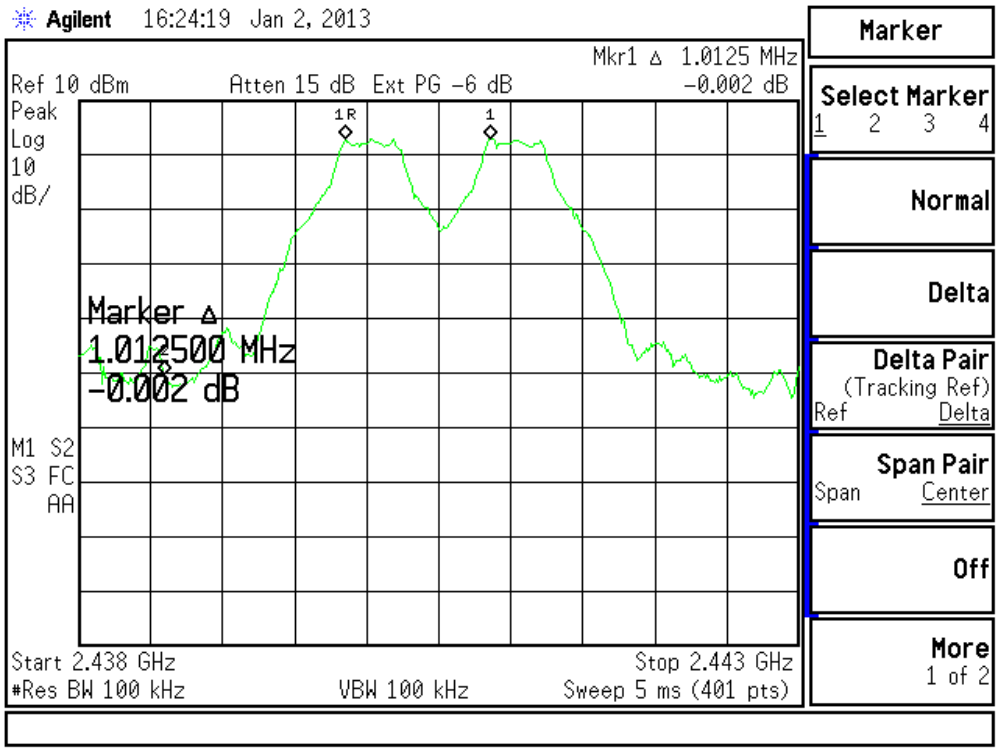


Data Rate : 2Mbps

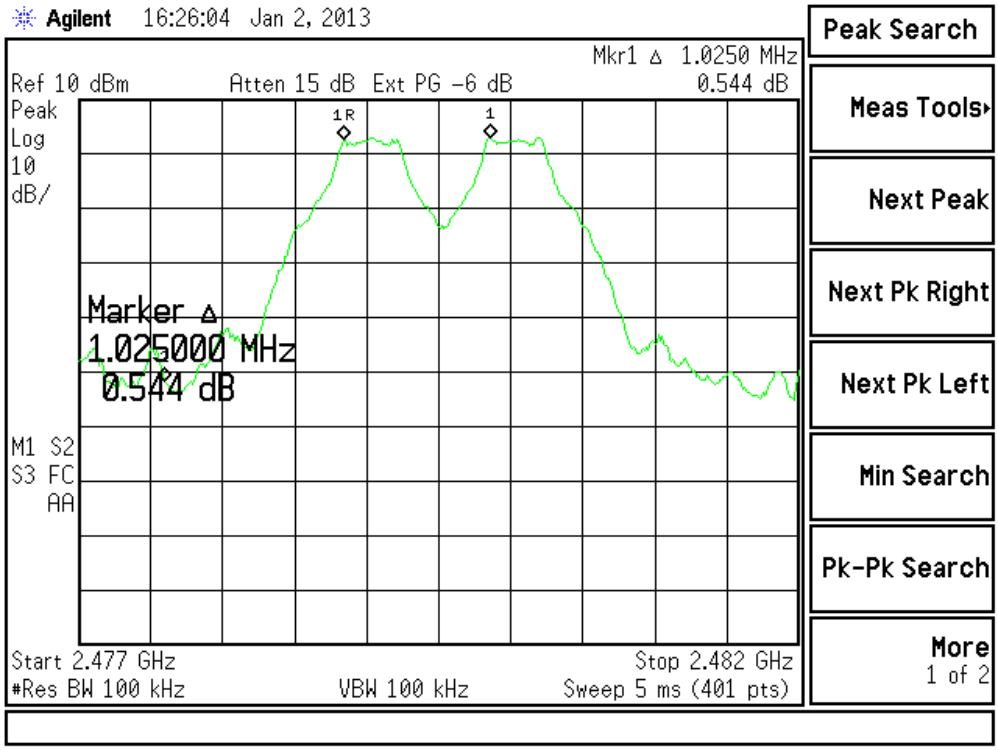
(2402MHz)



(2441MHz)

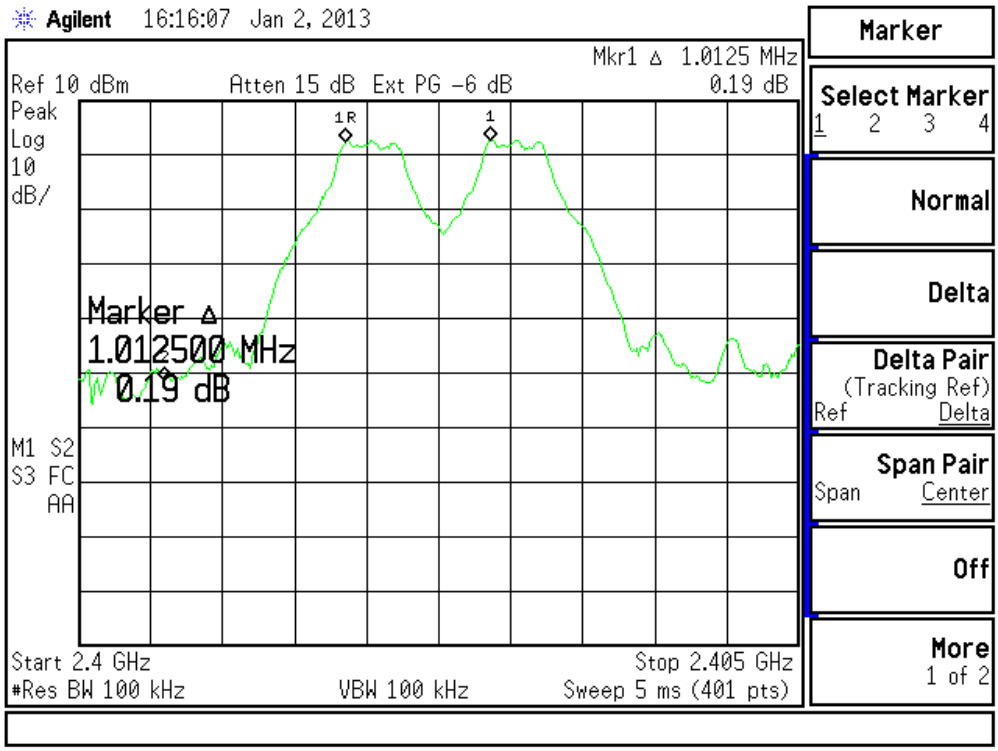


(2480MHz)

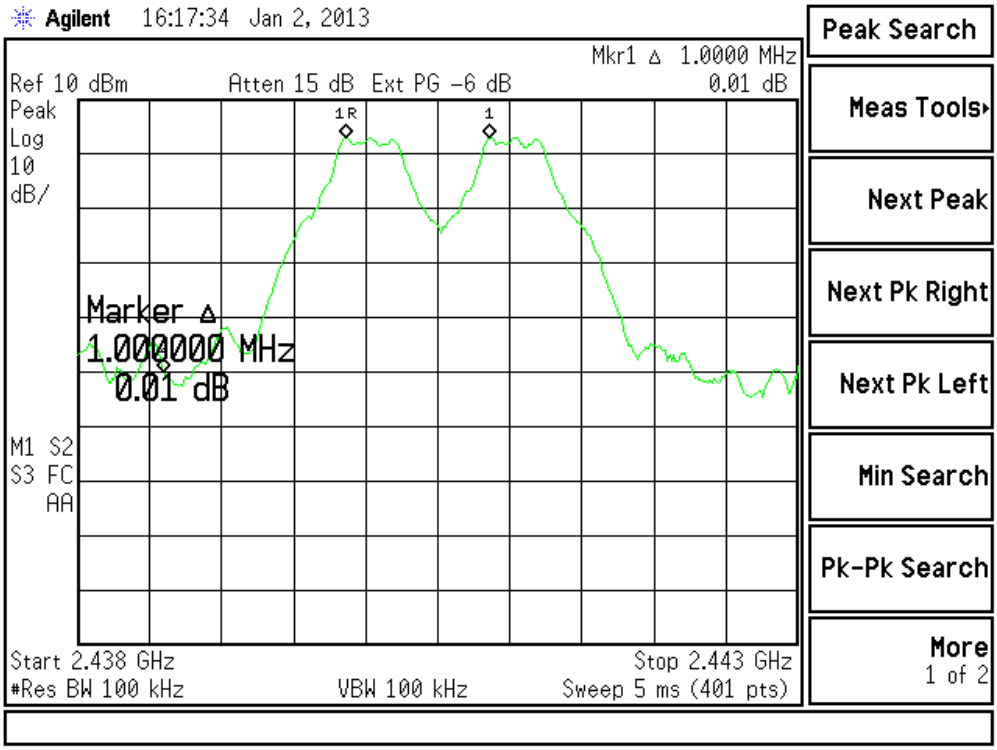


Data Rate : 3Mbps

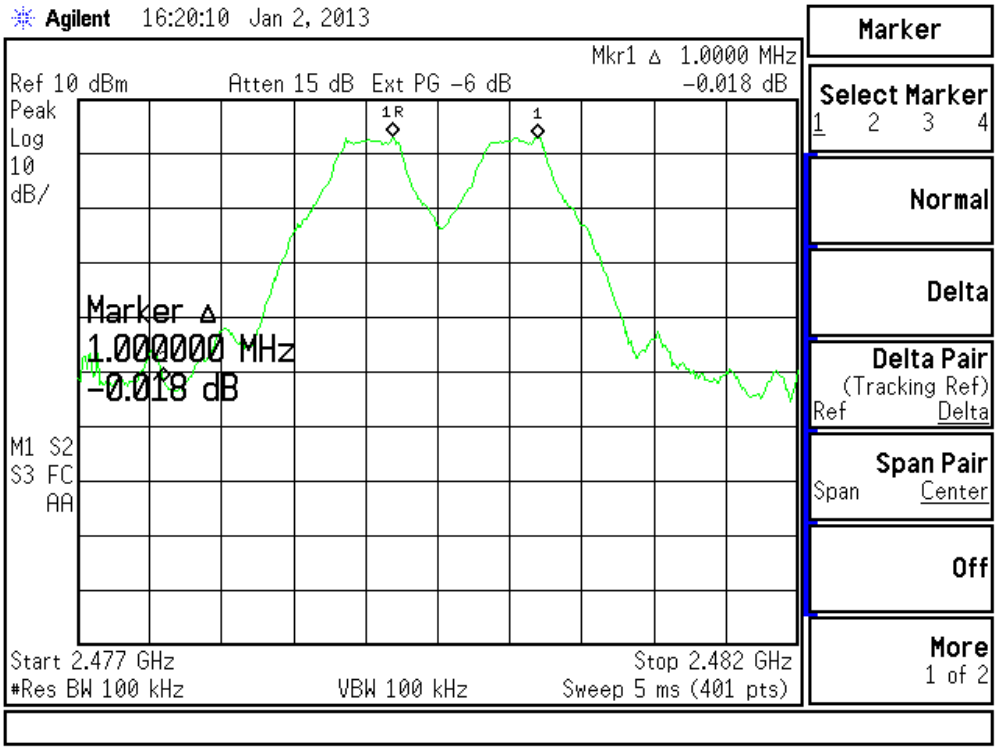
(2402MHz)



(2441MHz)



(2480MHz)

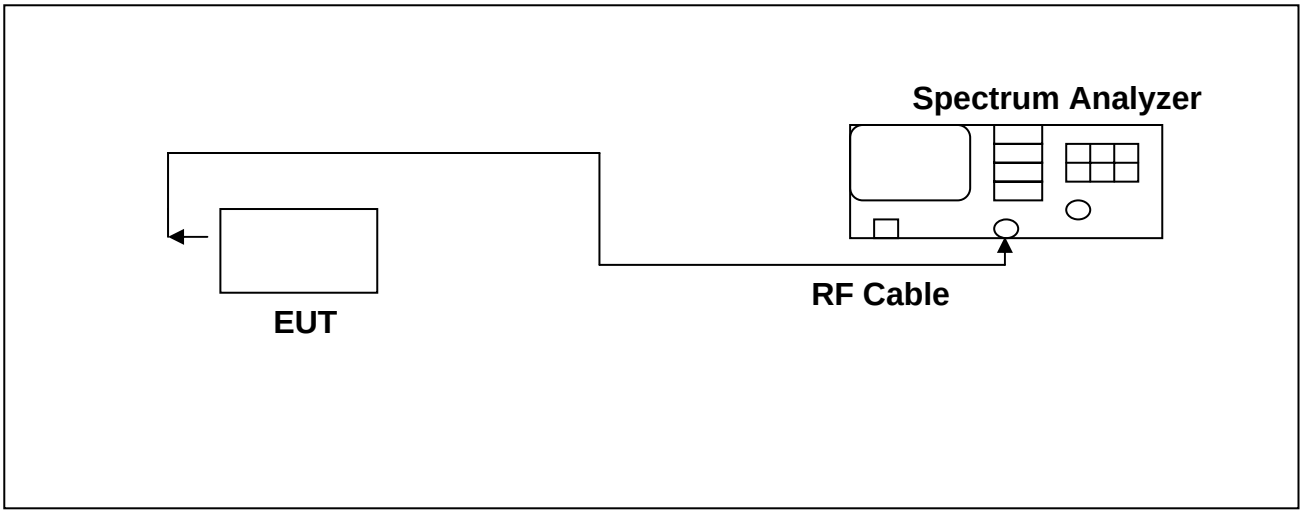


6. Number of Hopping Channels Requirements

6.1 Test Condition & Setup:

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW and VBW was set to 100 kHz. The hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

6.2 Test Instruments Configuration:



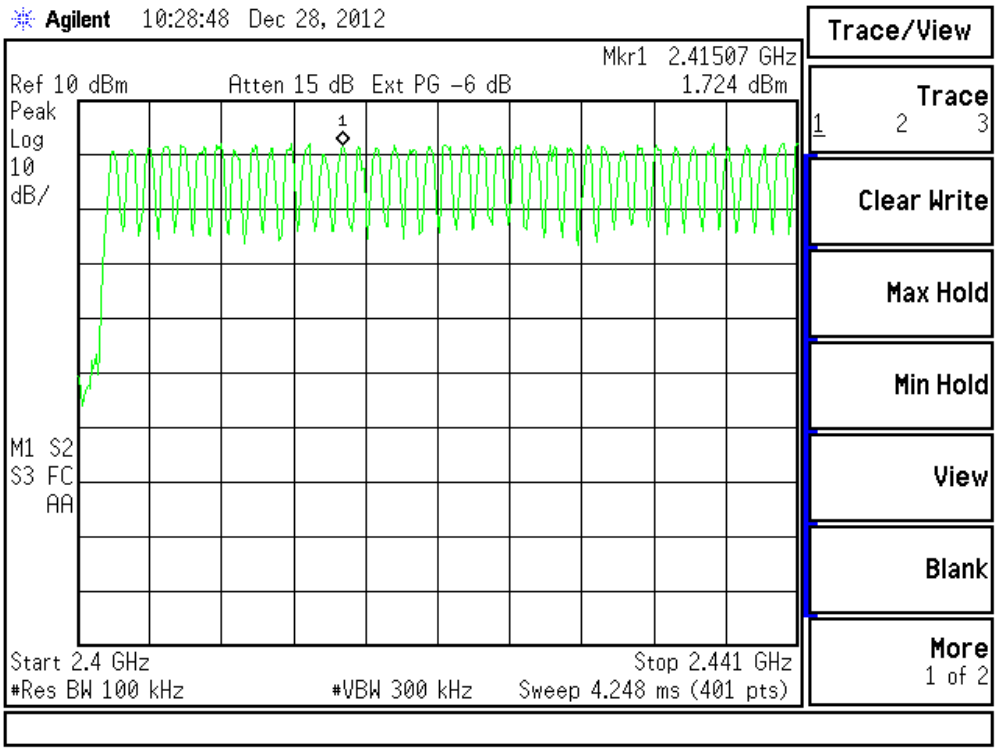
6.3 Test Equipment List:

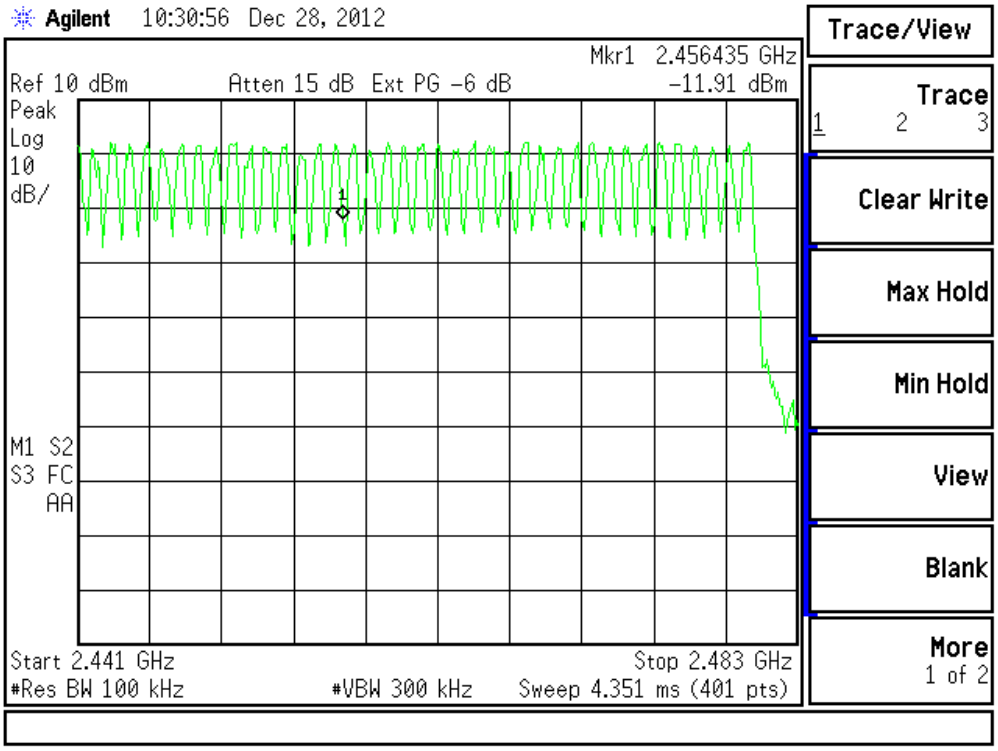
Item	Mfr/Brand	Instruments	Serial No.	Model/Type No.	Calibrated Date	Next Cal. Date
1.	Agilent	Spectrum Analyzer	US39240419	E4407B	2012/1/31	2013/1/31

6.4 Test Result:

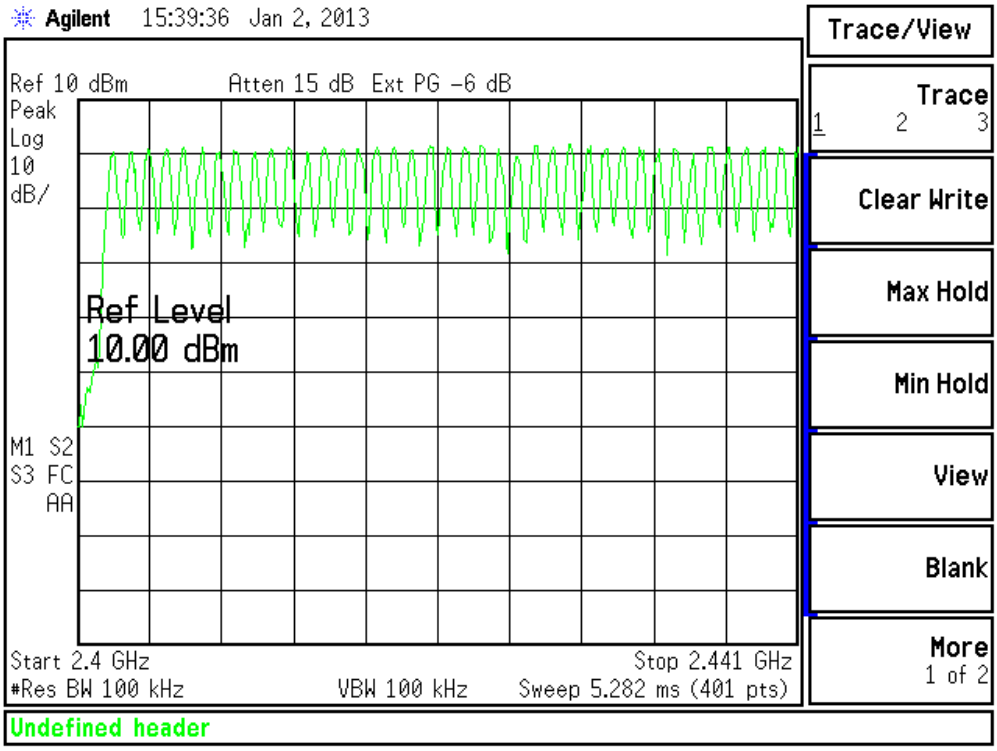
Result (Channel)	Limit (Channel)	Pass / Fail
79	≧15	Pass

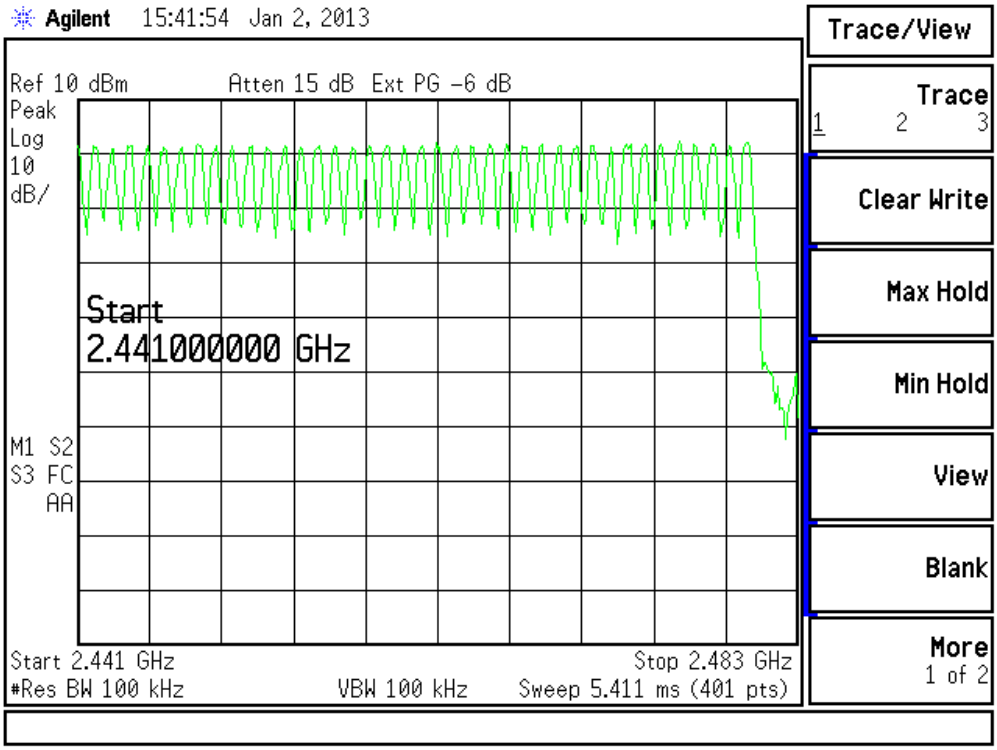
Data Rate : 1Mbps



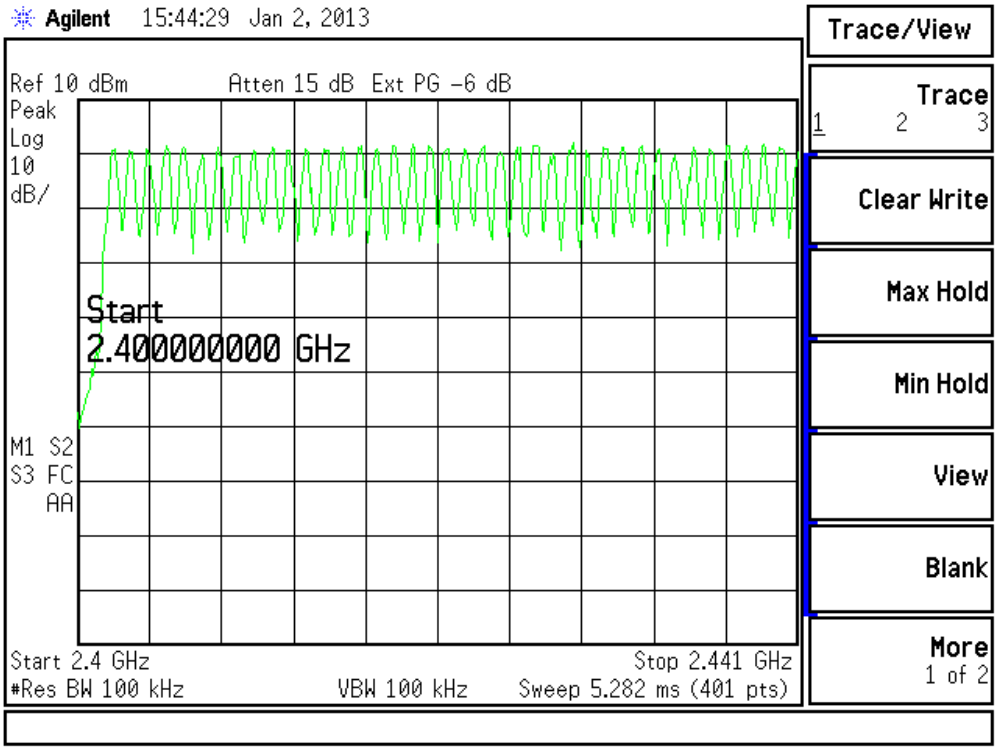


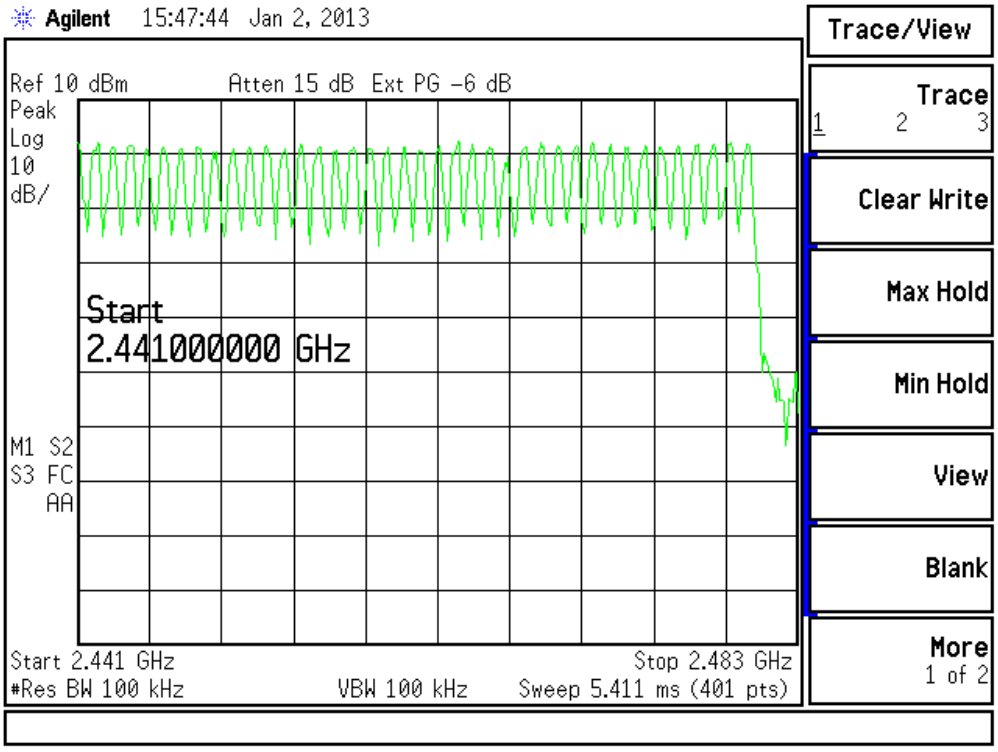
Data Rate : 2Mbps





Data Rate : 3Mbps



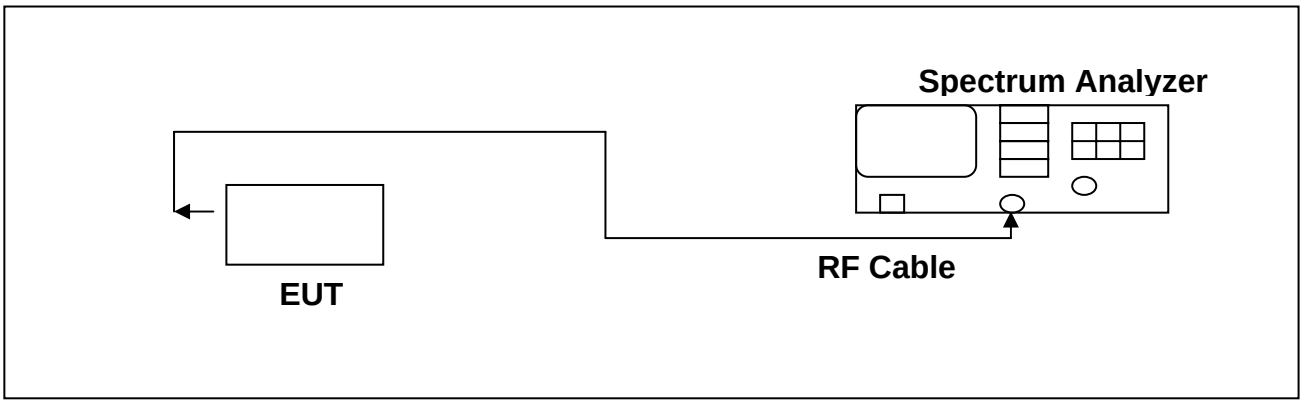


7. Dwell Time of Each Channel Requirements

7.1 Test Condition & Setup:

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW and VBW was set to 100 kHz. The 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.

7.2 Test Instruments Configuration:



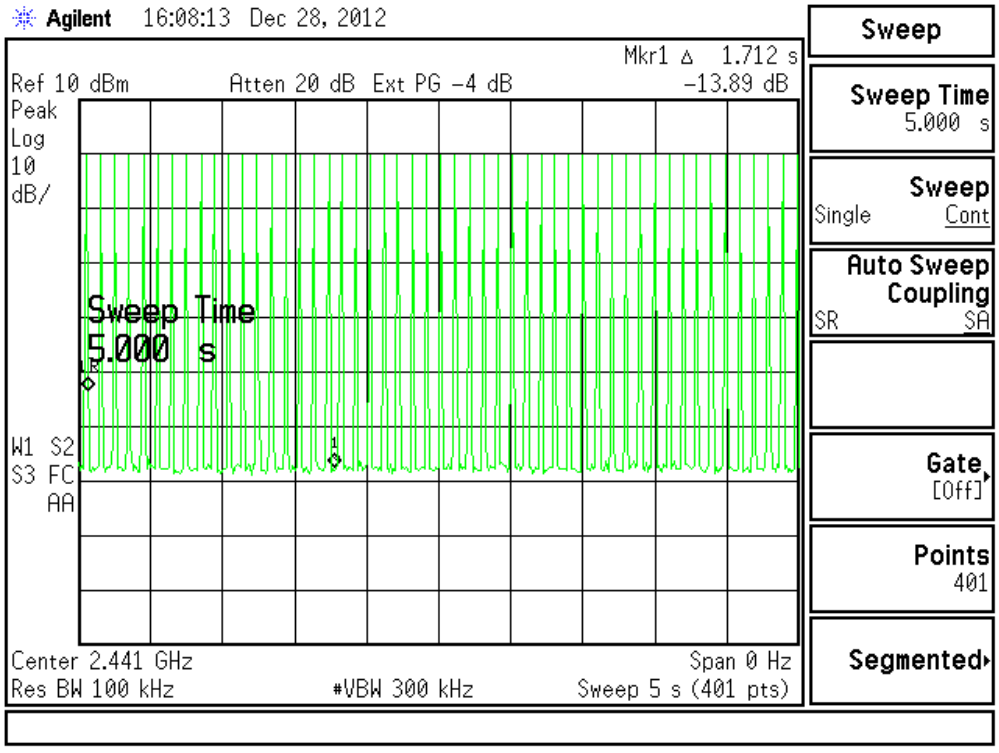
7.3 Test Equipment List:

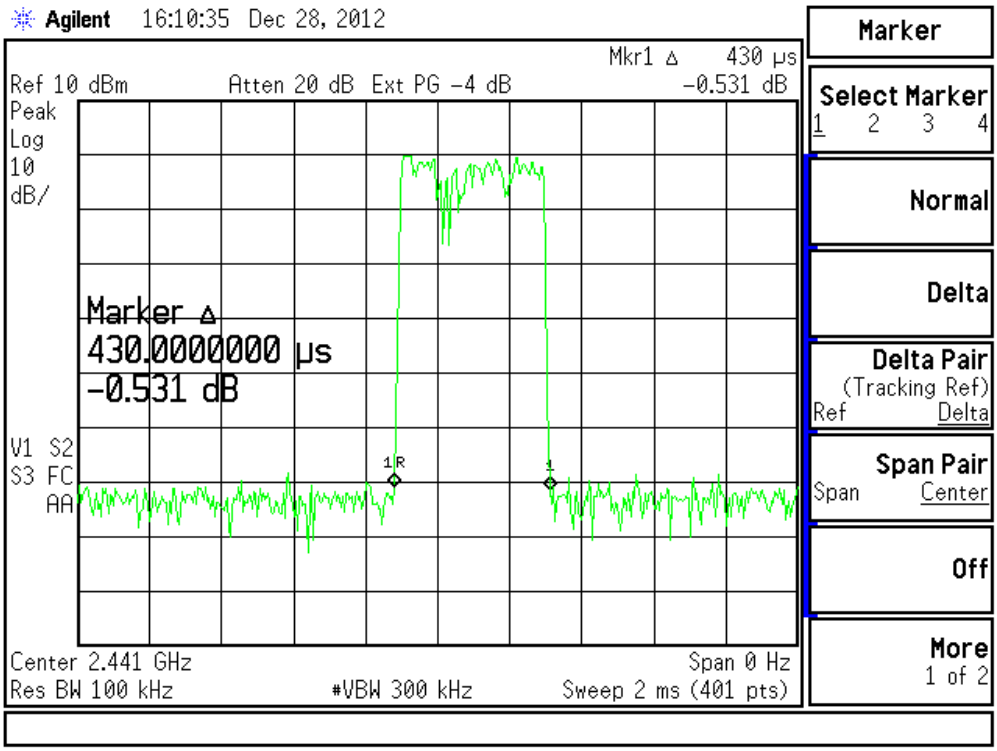
Item	Mfr/Brand	Instruments	Serial No.	Model/Type No.	Calibrated Date	Next Cal. Date
1.	Agilent	Spectrum Analyzer	US39240419	E4407B	2012/1/31	2013/1/31

7.4 Test Result:

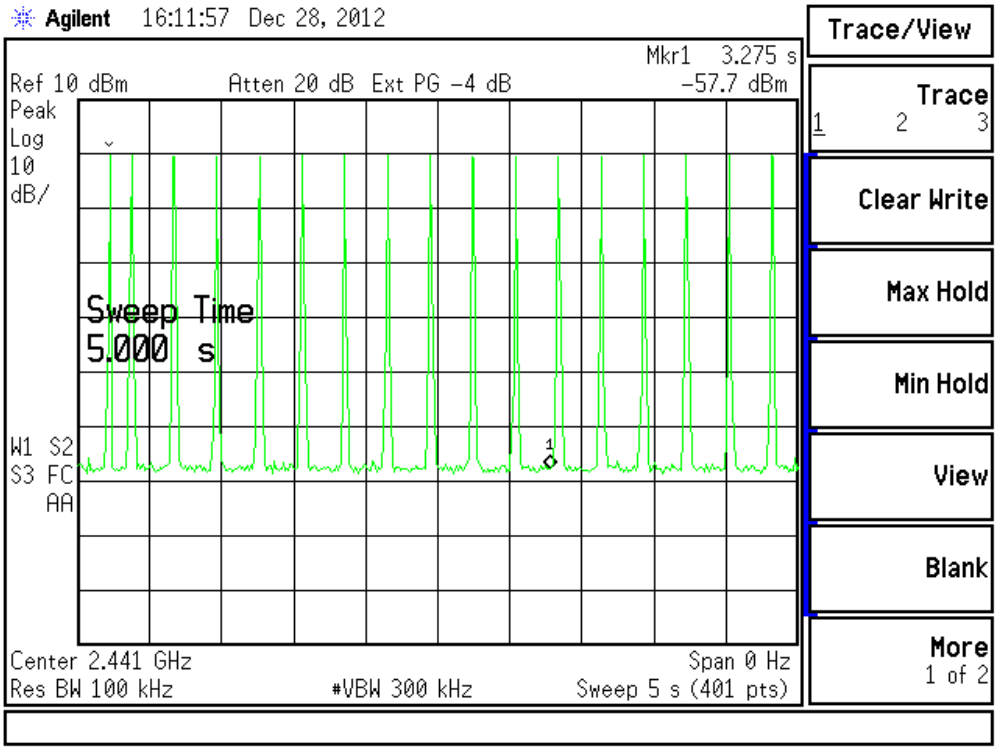
Mode	Number of transmission in a 31.6 (79Hopping * 0.4) times time	Length of transmission m sec	Result m sec	Limit m sec
DH1	51	0.43	21.93	400
DH3	17	1.725	29.325	400
DH5	10	2.95	29.5	400

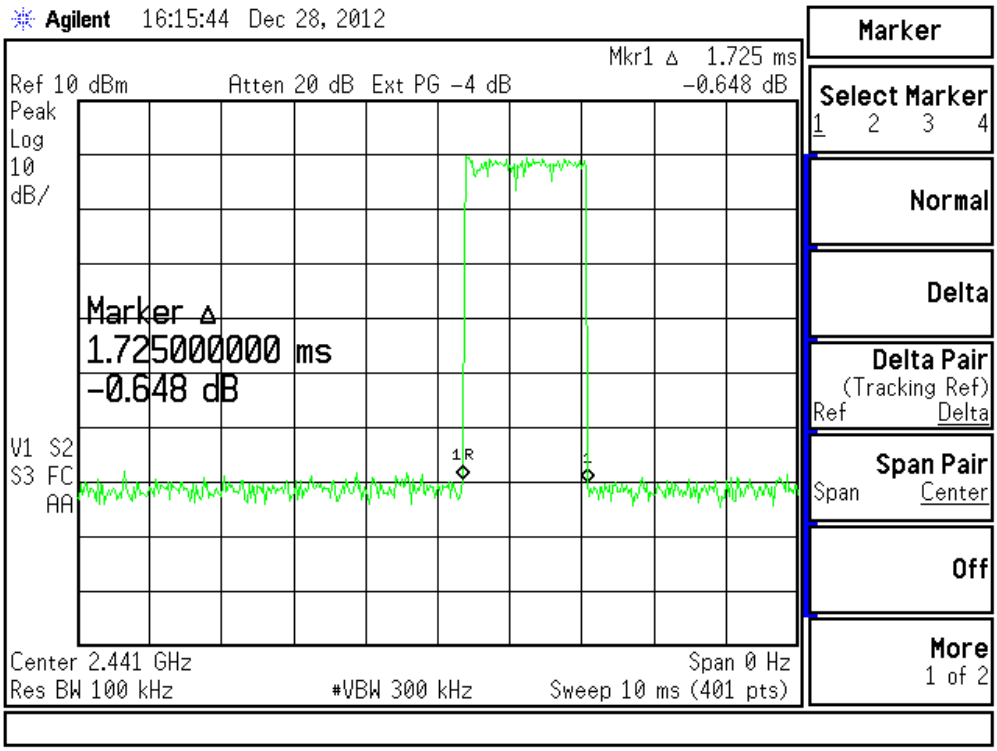
DH1



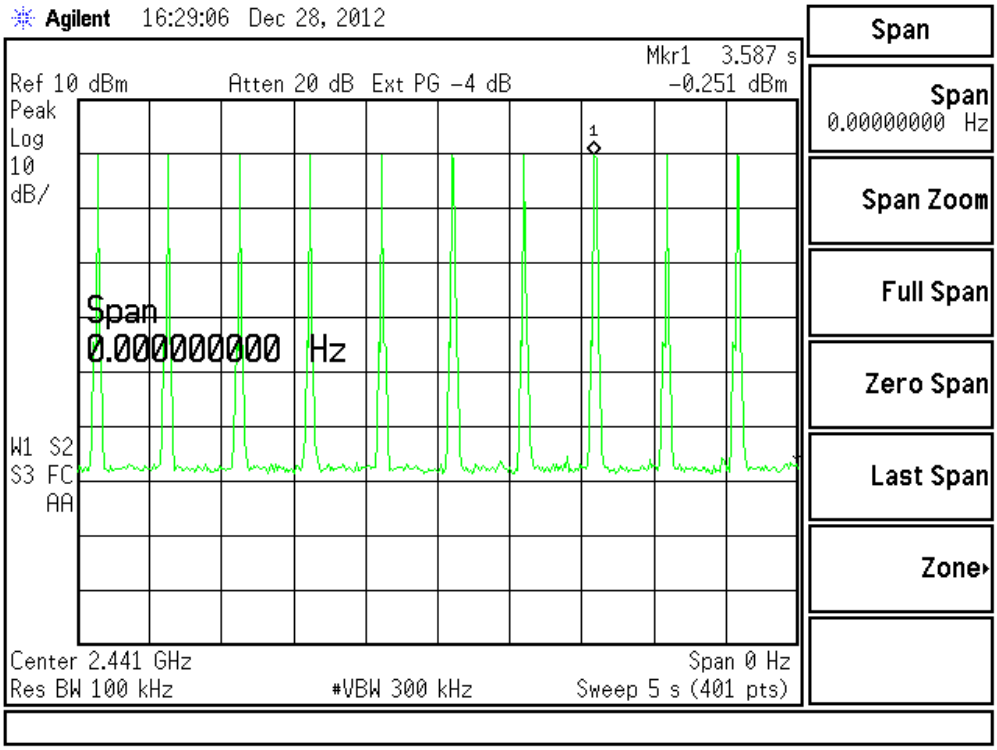

Agilent 16:10:35 Dec 28, 2012
Mkr1 Δ 430 µs
Ref 10 dBm Atten 20 dB Ext PG -4 dB -0.531 dB
Peak
Log
10
dB/
Marker Δ
430.0000000 µs
-0.531 dB
V1 S2
S3 FC
AA
Center 2.441 GHz
Res BW 100 kHz
#VBW 300 kHz
Span 0 Hz
Sweep 2 ms (401 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

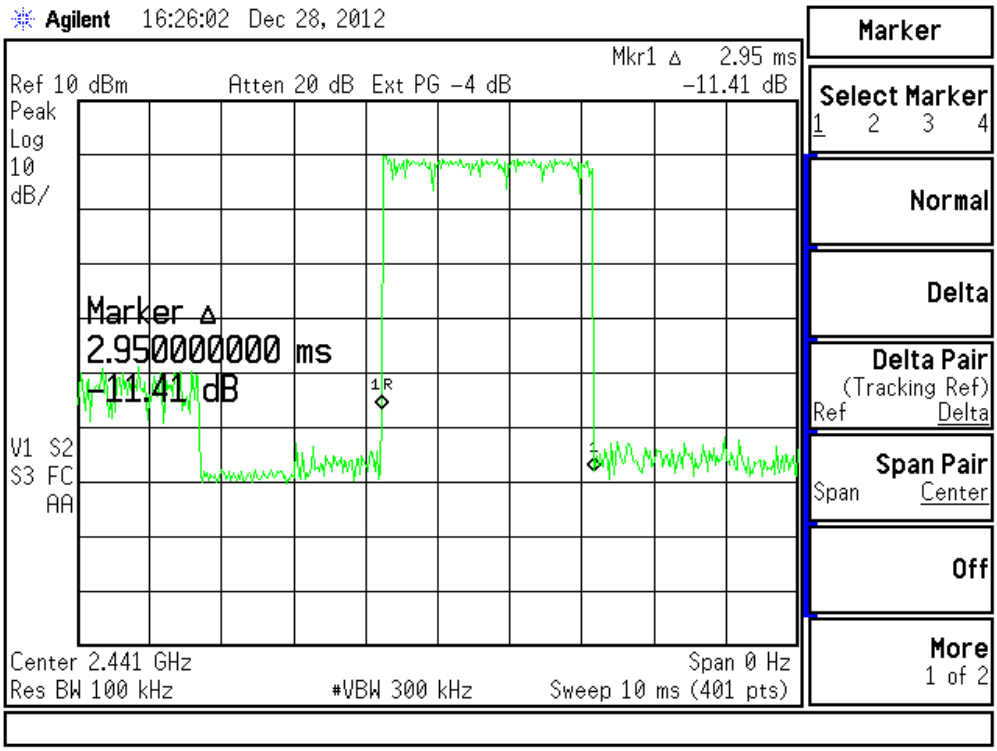
DH3


Agilent 16:11:57 Dec 28, 2012
Mkr1 3.275 s
Ref 10 dBm Atten 20 dB Ext PG -4 dB -57.7 dBm
Peak
Log
10
dB/
Sweep Time
5.000 s
W1 S2
S3 FC
AA
Center 2.441 GHz
Res BW 100 kHz
#VBW 300 kHz
Span 0 Hz
Sweep 5 s (401 pts)
Trace/View
Trace
1 2 3
Clear Write
Max Hold
Min Hold
View
Blank
More
1 of 2


Agilent 16:15:44 Dec 28, 2012
Mkr1 Δ 1.725 ms
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
-0.648 dB
Peak
Log
10
dB/
Marker Δ
1.725000000 ms
-0.648 dB
V1 S2
S3 FC
AA
Center 2.441 GHz
Res BW 100 kHz
#VBW 300 kHz
Span 0 Hz
Sweep 10 ms (401 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

DH5


Agilent 16:29:06 Dec 28, 2012
Mkr1 3.587 s
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
-0.251 dBm
Peak
Log
10
dB/
Span
0.000000000 Hz
W1 S2
S3 FC
AA
Center 2.441 GHz
Res BW 100 kHz
#VBW 300 kHz
Span 0 Hz
Sweep 5 s (401 pts)
Span
Span
0.00000000 Hz
Span Zoom
Full Span
Zero Span
Last Span
Zone


Agilent 16:26:02 Dec 28, 2012
Mkr1 Δ 2.95 ms
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
-11.41 dB
Peak
Log
10
dB/
Marker Δ
2.950000000 ms
-11.41 dB
1R
V1 S2
S3 FC
AA
Center 2.441 GHz
Res BW 100 kHz
#VBW 300 kHz
Span 0 Hz
Sweep 10 ms (401 pts)
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

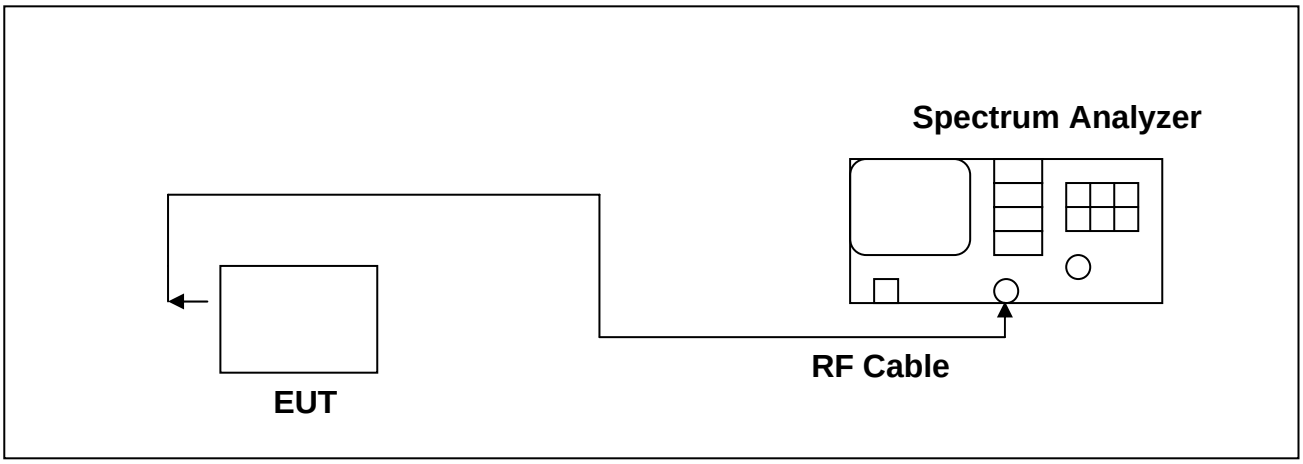
8. Out of Band Conducted Spurious Emissions Requirements

8.1 Test Condition & Setup:

In any 100 kHz bandwidth outside the EUT pass band, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20 dB below that of the maximum in-band 100 kHz emission, antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the pass band. The test was performed at 3 channels (Channel 0, 39, 78)

8.2 Test Instruments Configuration:



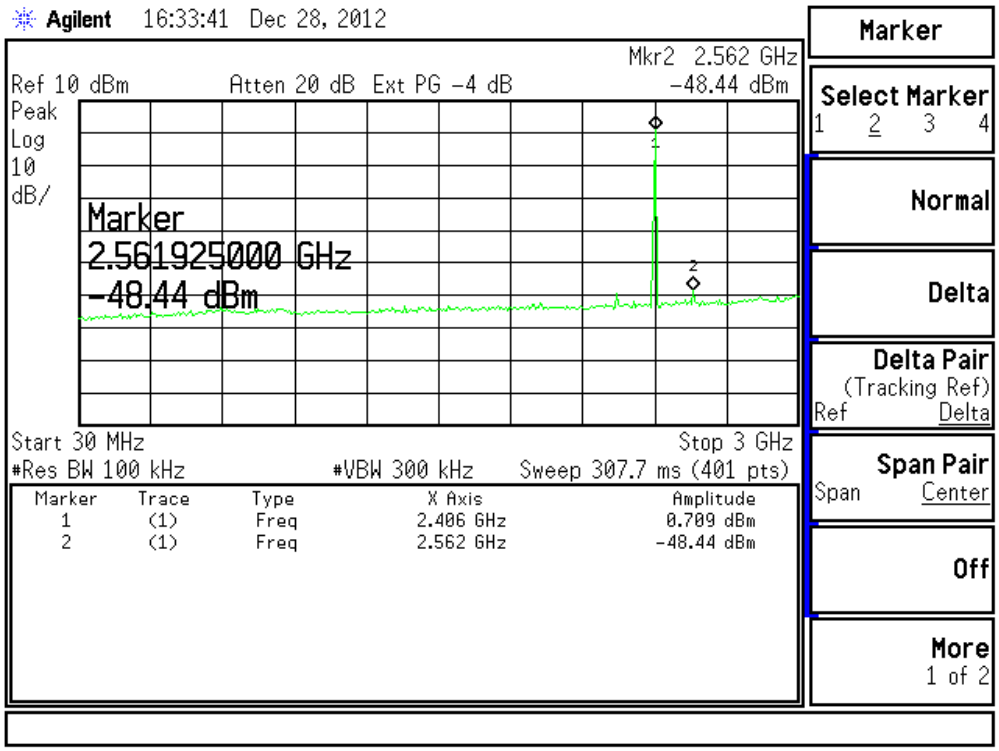
8.3 Test Equipment List:

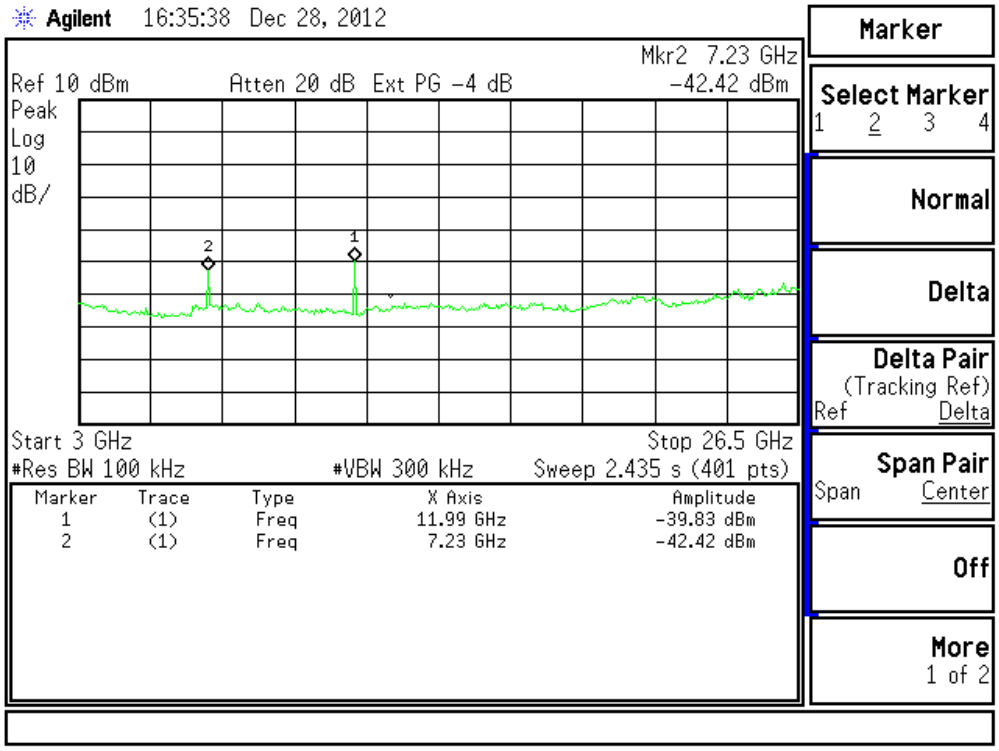
Item	Mfr/Brand	Instruments	Serial No.	Model/Type No.	Calibrated Date	Next Cal. Date
1.	Agilent	Spectrum Analyzer	US39240419	E4407B	2012/1/31	2013/1/31

8.4 Test Result:

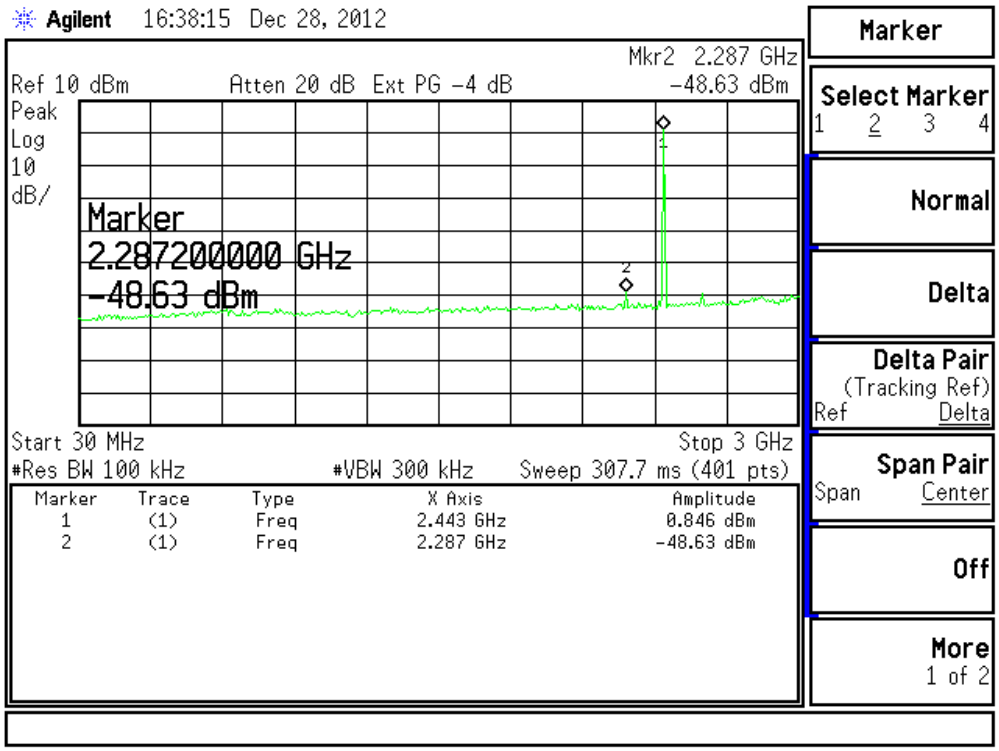
Refer to attached data sheets. Data shows out of band emissions are suppressed well below the -20 dB minimum required by the Rules.

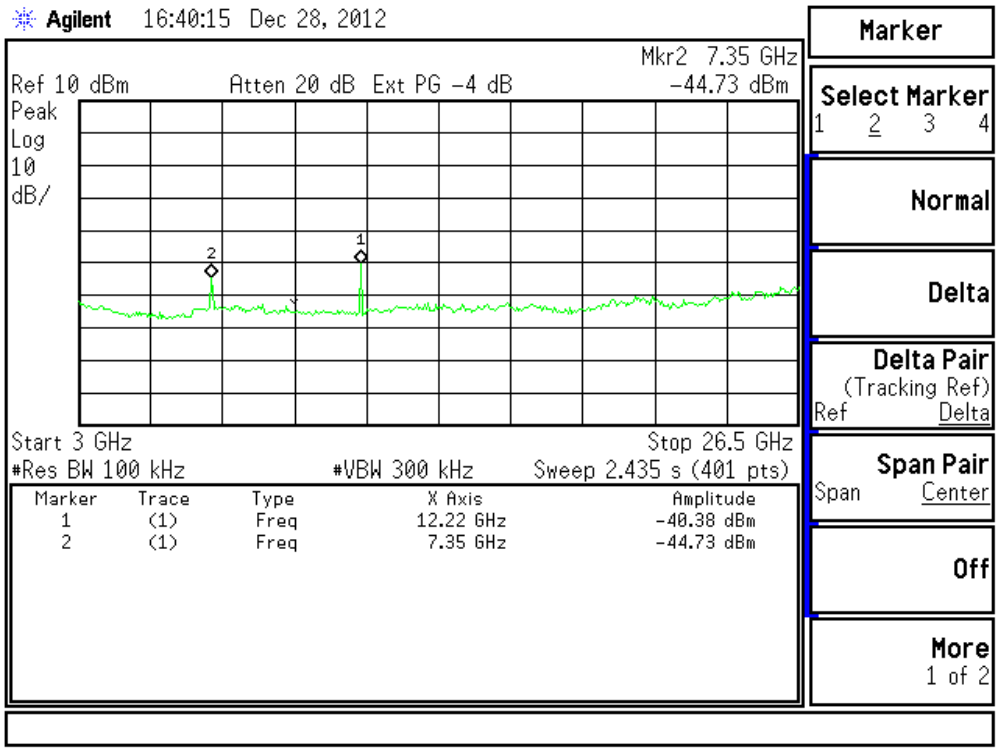
Data Rate : 1Mbps
(2402MHz)



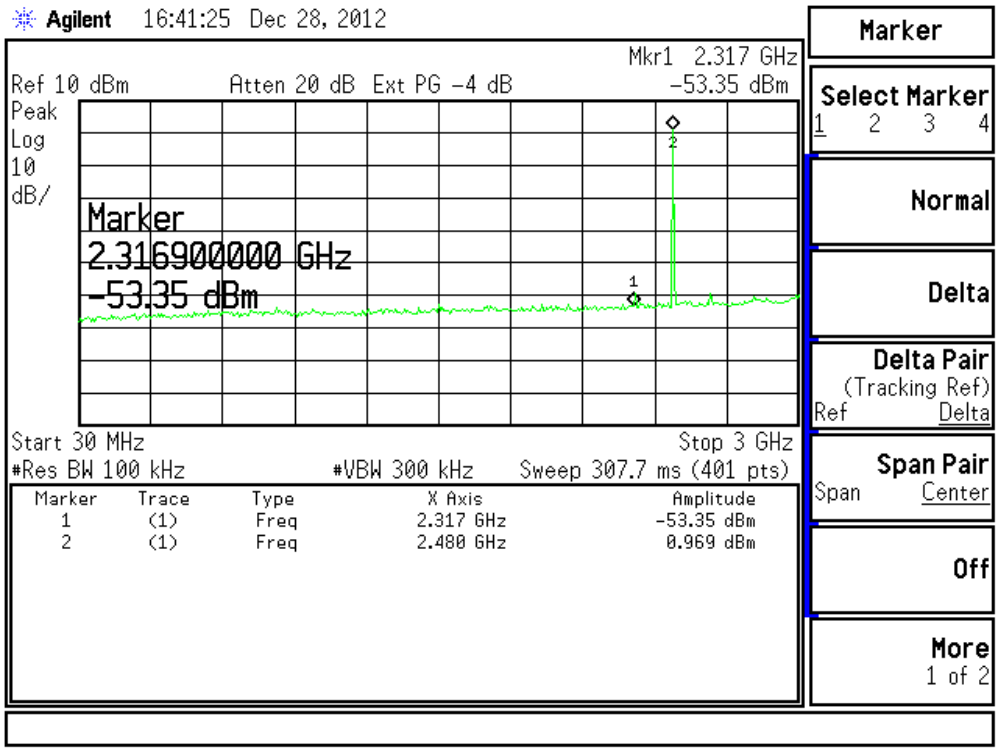


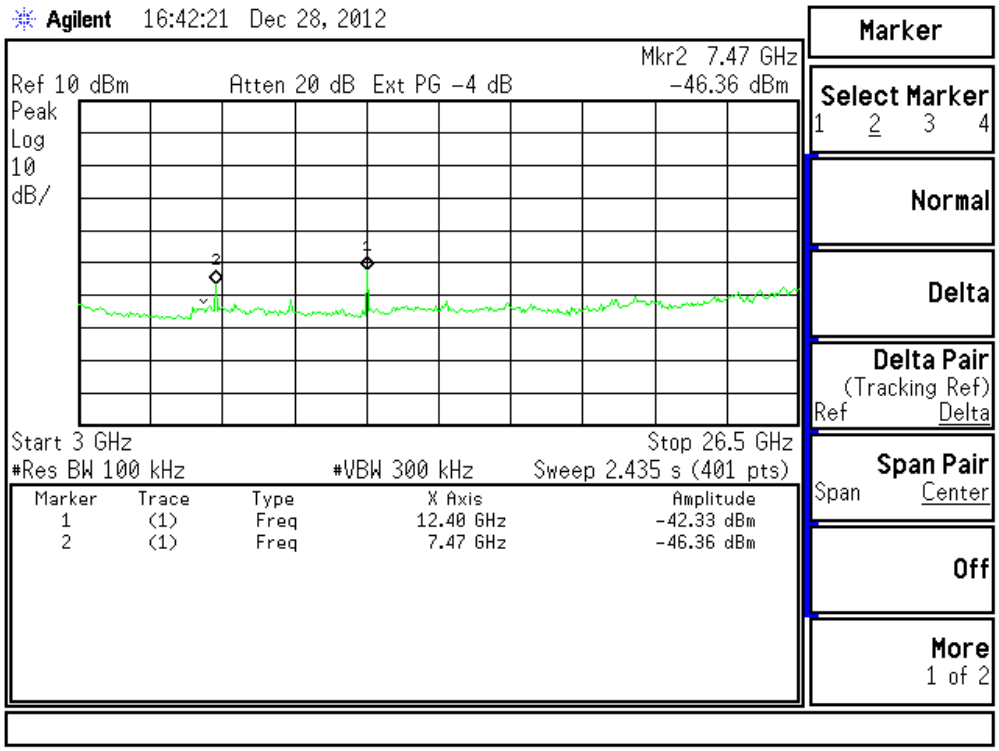
(2441MHz)


Agilent 16:38:15 Dec 28, 2012
Mkr2 2.287 GHz
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
-48.63 dBm
Peak
Log
10
dB/
Marker
2.287200000 GHz
-48.63 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3 GHz
Sweep 307.7 ms (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.443 GHz 0.846 dBm
2 (1) Freq 2.287 GHz -48.63 dBm
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

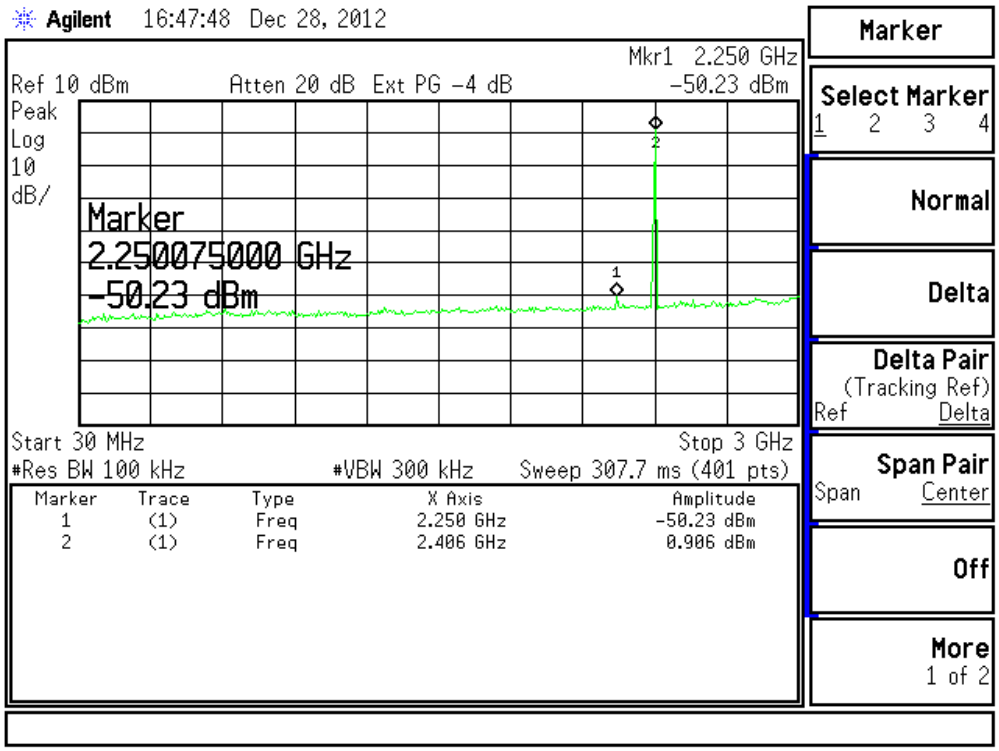

Agilent 16:40:15 Dec 28, 2012
Mkr2 7.35 GHz
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
-44.73 dBm
Peak
Log
10
dB/
Start 3 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.5 GHz
Sweep 2.435 s (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 12.22 GHz -40.38 dBm
2 (1) Freq 7.35 GHz -44.73 dBm
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

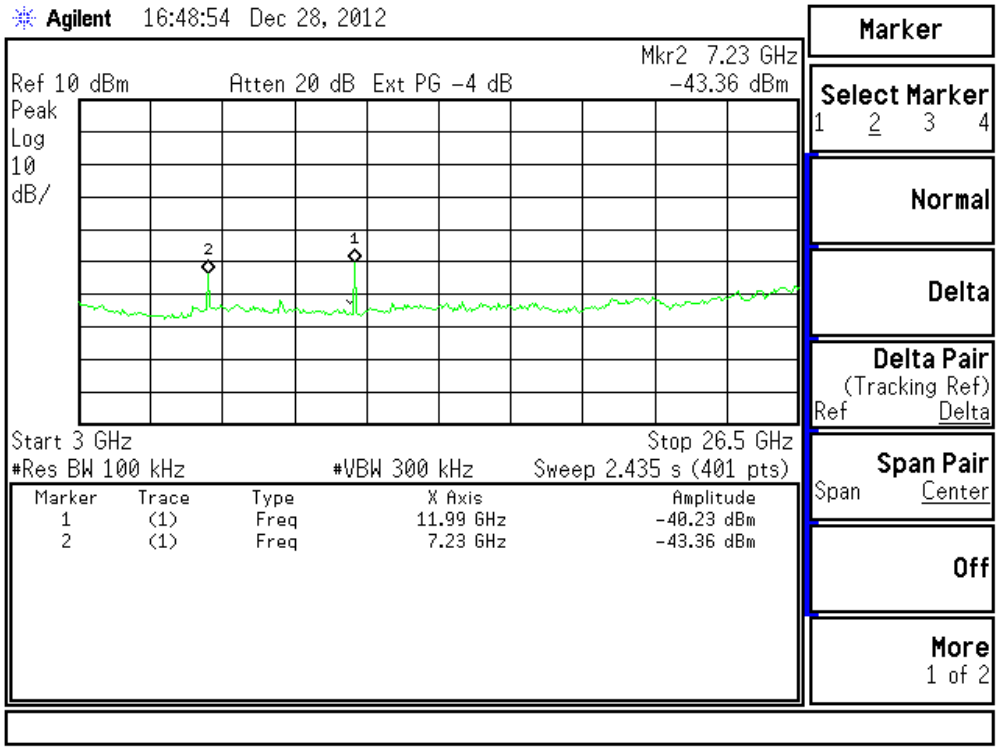
(2480MHz)


Agilent 16:41:25 Dec 28, 2012
Mkr1 2.317 GHz
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
-53.35 dBm
Peak
Log
10
dB/
Marker
2.316900000 GHz
-53.35 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3 GHz
Sweep 307.7 ms (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.317 GHz -53.35 dBm
2 (1) Freq 2.480 GHz 0.969 dBm
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

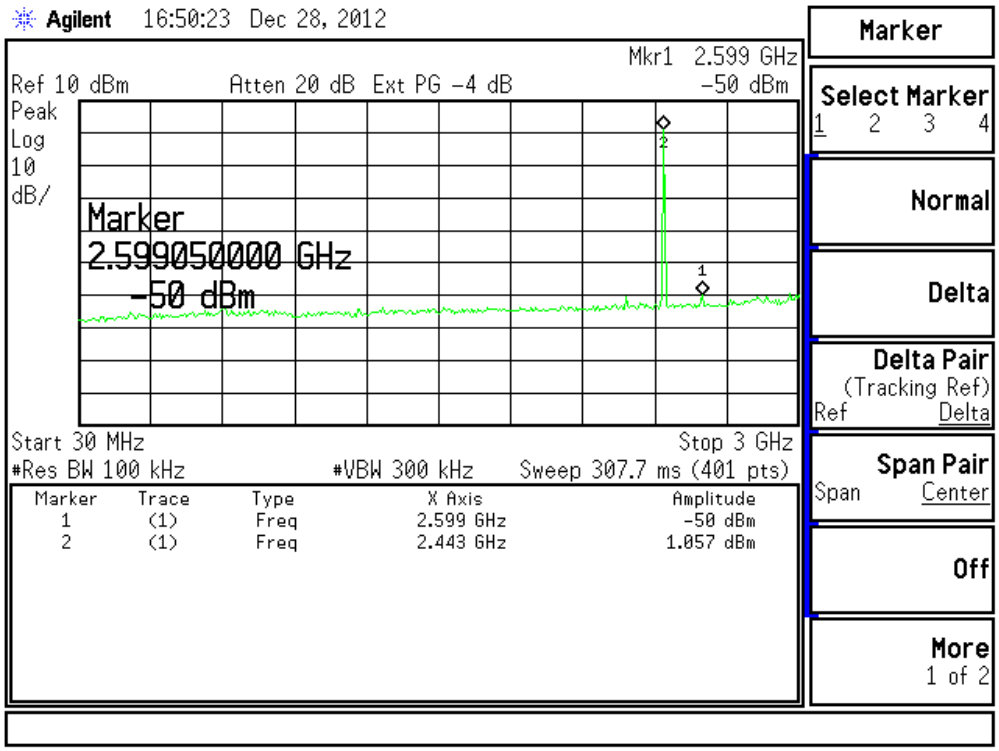

Agilent 16:42:21 Dec 28, 2012
Mkr2 7.47 GHz
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
-46.36 dBm
Peak
Log
10
dB/
Start 3 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.5 GHz
Sweep 2.435 s (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 12.40 GHz -42.33 dBm
2 (1) Freq 7.47 GHz -46.36 dBm
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

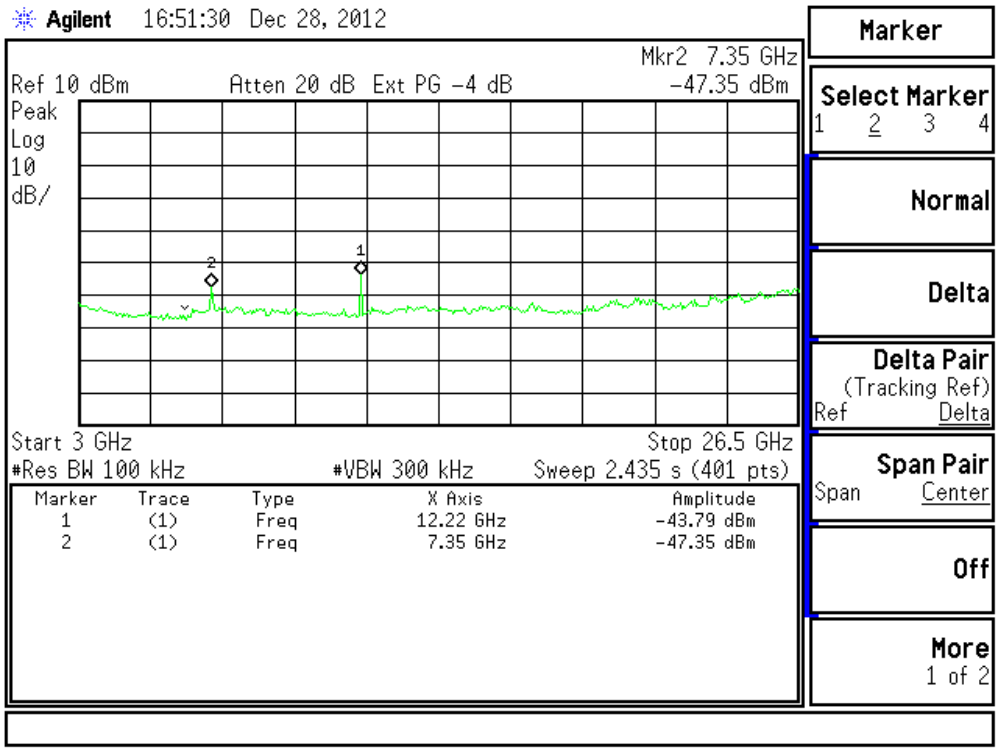
Data Rate : 2Mbps
(2402MHz)



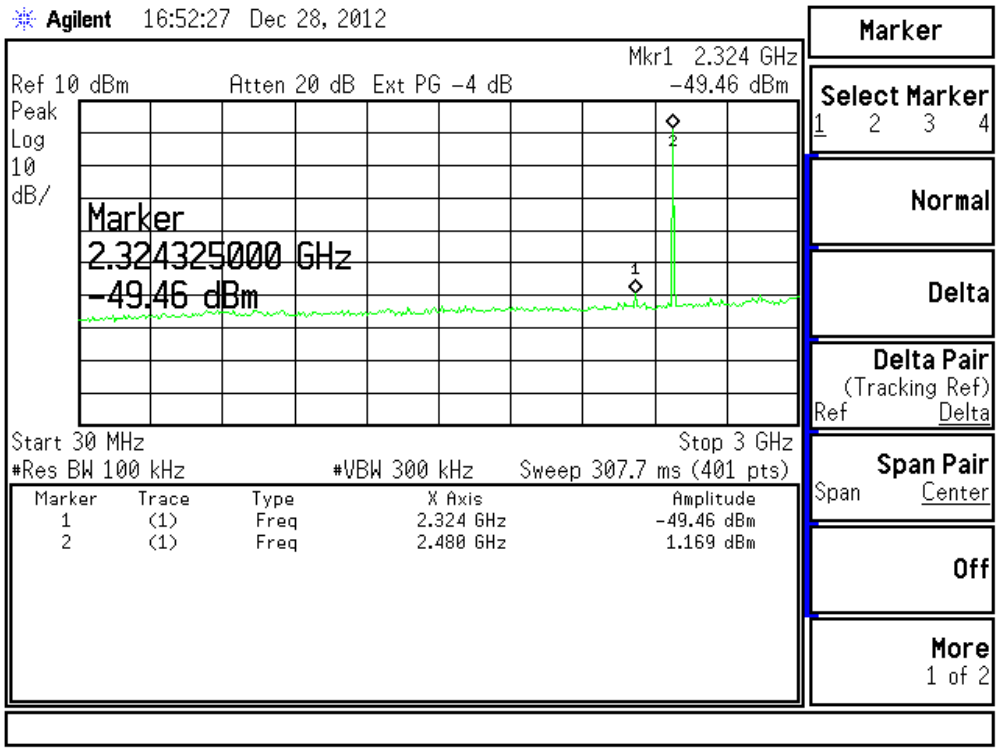


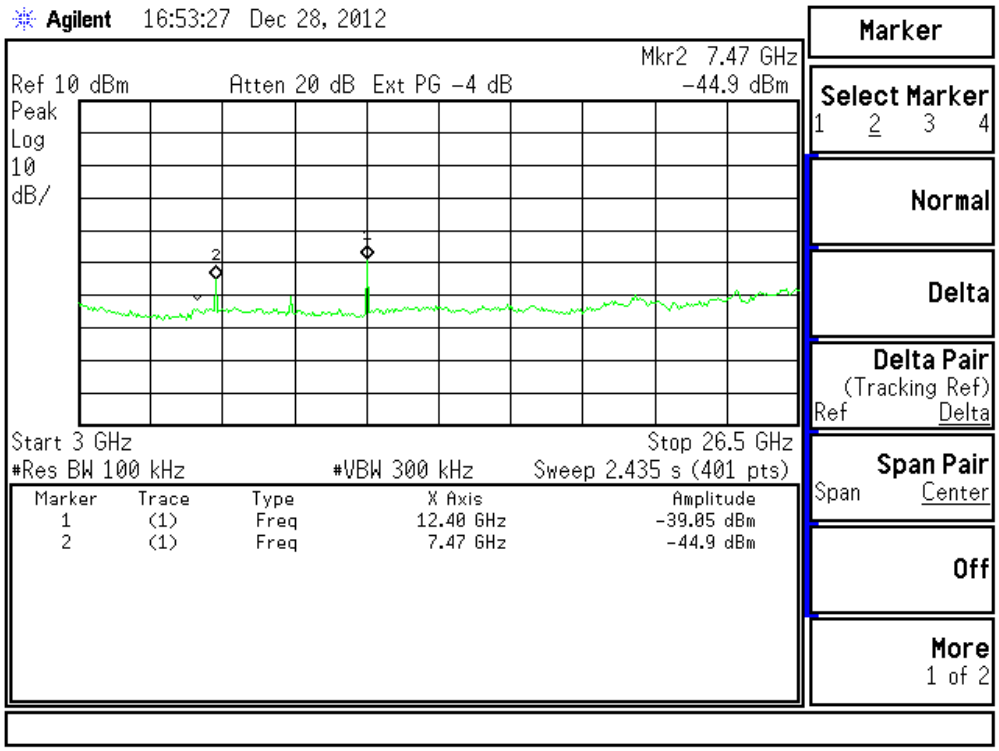
(2441MHz)


Agilent 16:50:23 Dec 28, 2012
Mkr1 2.599 GHz
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
-50 dBm
Peak
Log
10
dB/
Marker
2.599050000 GHz
-50 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3 GHz
Sweep 307.7 ms (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.599 GHz -50 dBm
2 (1) Freq 2.443 GHz 1.057 dBm
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

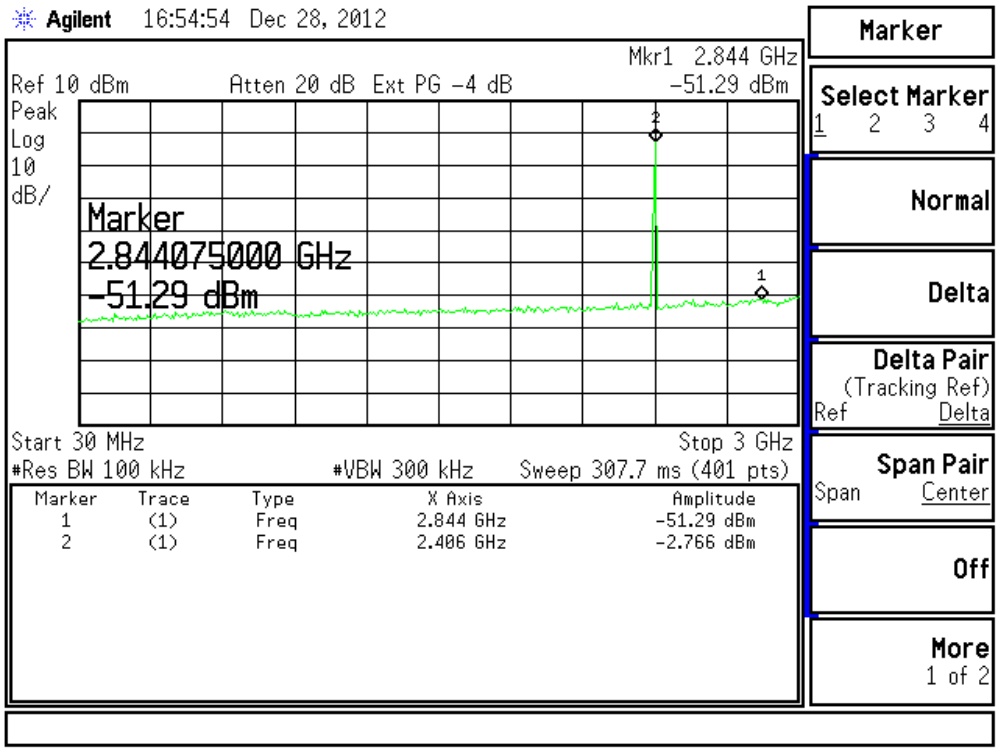

Agilent 16:51:30 Dec 28, 2012
Mkr2 7.35 GHz
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
-47.35 dBm
Peak
Log
10
dB/
Start 3 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.5 GHz
Sweep 2.435 s (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 12.22 GHz -43.79 dBm
2 (1) Freq 7.35 GHz -47.35 dBm
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

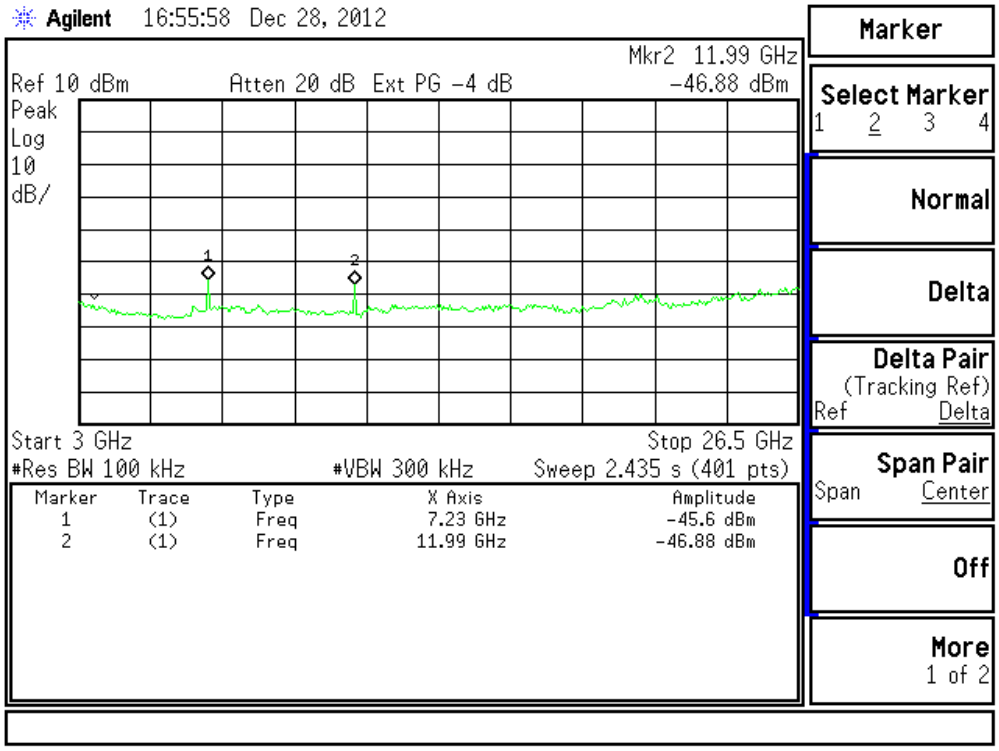
(2480MHz)


Agilent 16:52:27 Dec 28, 2012
Mkr1 2.324 GHz
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
-49.46 dBm
Peak
Log
10
dB/
Marker
2.324325000 GHz
-49.46 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3 GHz
Sweep 307.7 ms (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.324 GHz -49.46 dBm
2 (1) Freq 2.480 GHz 1.169 dBm
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

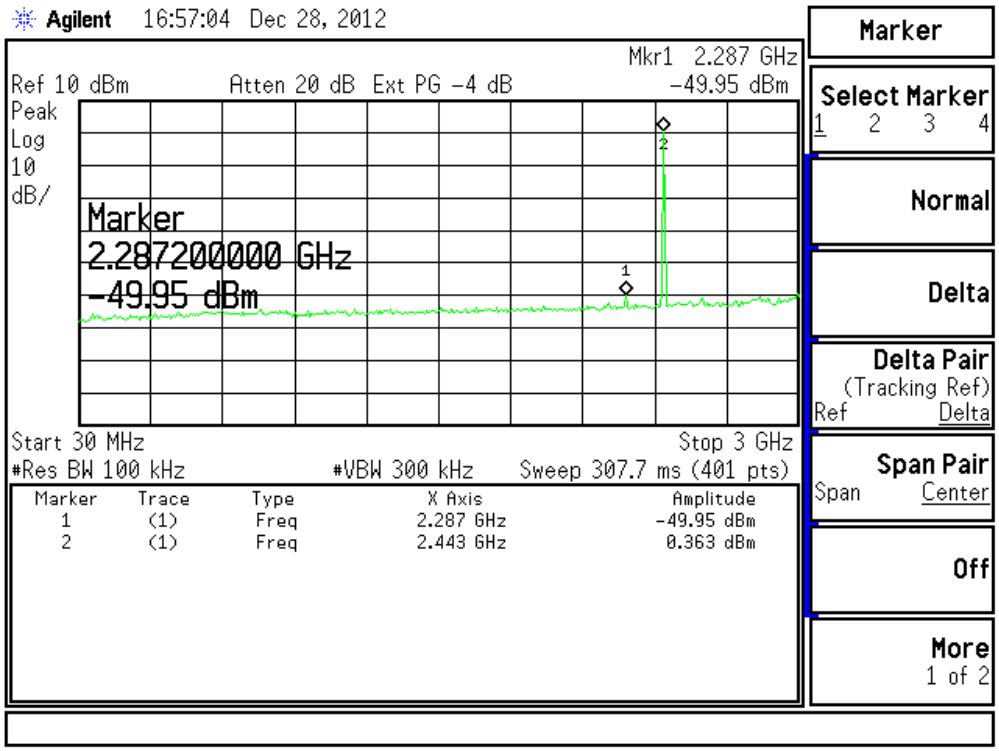

Agilent 16:53:27 Dec 28, 2012
Mkr2 7.47 GHz
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
-44.9 dBm
Peak
Log
10
dB/
Start 3 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.5 GHz
Sweep 2.435 s (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 12.40 GHz -39.85 dBm
2 (1) Freq 7.47 GHz -44.9 dBm
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

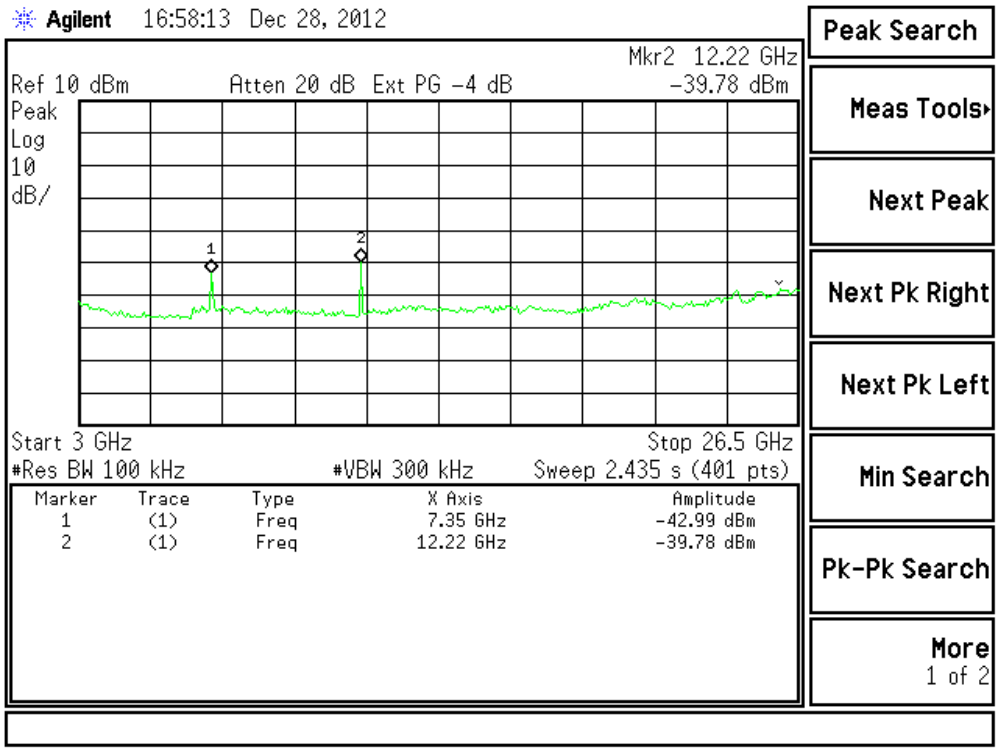
Data Rate : 3Mbps
(2402MHz)



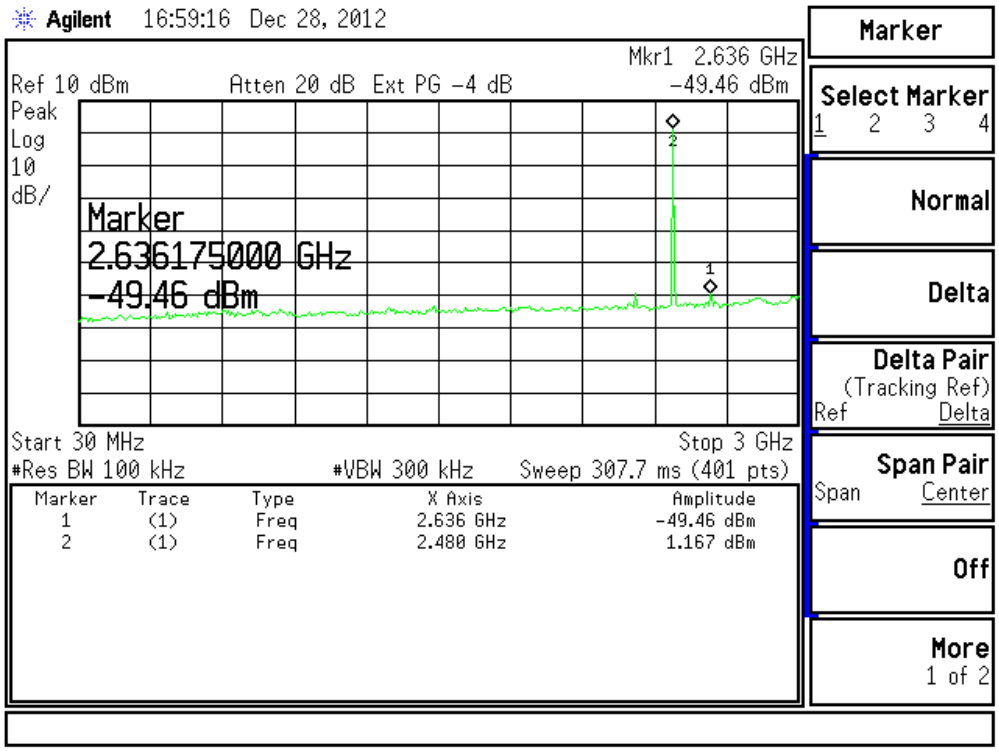


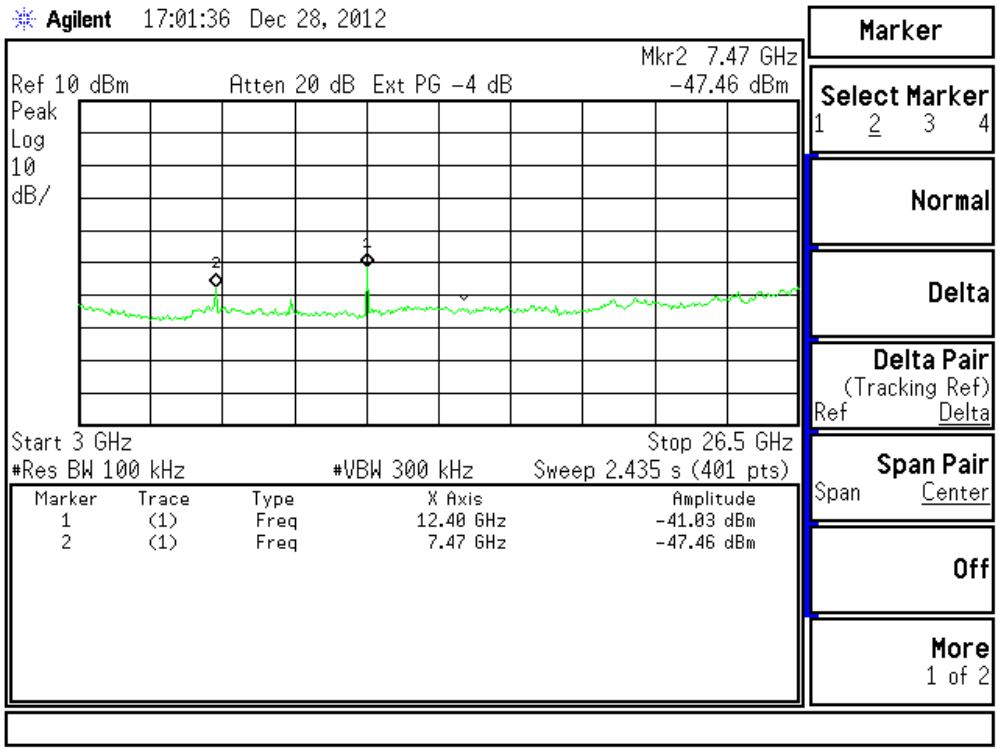
(2441MHz)


Agilent 16:57:04 Dec 28, 2012
Mkr1 2.287 GHz
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
-49.95 dBm
Peak
Log
10
dB/
Marker
2.287200000 GHz
-49.95 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3 GHz
Sweep 307.7 ms (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.287 GHz -49.95 dBm
2 (1) Freq 2.443 GHz 0.363 dBm
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2


Agilent 16:58:13 Dec 28, 2012
Mkr2 12.22 GHz
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
-39.78 dBm
Peak
Log
10
dB/
Start 3 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.5 GHz
Sweep 2.435 s (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 7.35 GHz -42.99 dBm
2 (1) Freq 12.22 GHz -39.78 dBm
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

(2480MHz)


Agilent 16:59:16 Dec 28, 2012
Mkr1 2.636 GHz
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
-49.46 dBm
Peak
Log
10
dB/
Marker
2.636175000 GHz
-49.46 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 3 GHz
Sweep 307.7 ms (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.636 GHz -49.46 dBm
2 (1) Freq 2.480 GHz 1.167 dBm
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2


Agilent 17:01:36 Dec 28, 2012
Mkr2 7.47 GHz
Ref 10 dBm
Atten 20 dB Ext PG -4 dB
-47.46 dBm
Peak
Log
10
dB/
Start 3 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.5 GHz
Sweep 2.435 s (401 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 12.40 GHz -41.03 dBm
2 (1) Freq 7.47 GHz -47.46 dBm
Marker
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref Delta
Span Pair
Span Center
Off
More
1 of 2

9. Maximum Conducted Output Power Requirements

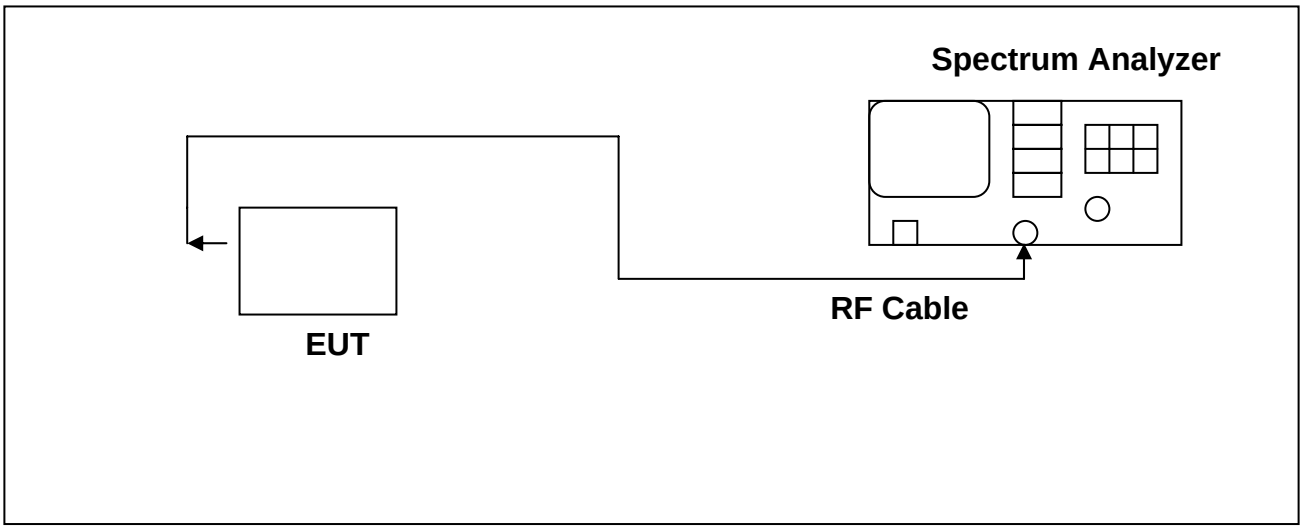
9.1 Test Condition & Setup:

While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to spectrum analyzer. The maximum peak output power shall not exceed 1 watt.

The antenna port of the EUT was connected to the input of a power meter. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm). For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to (GAIN - 6)/3 dBm.

9.2 Test Instruments Configuration:



9.3 Test Equipment List:

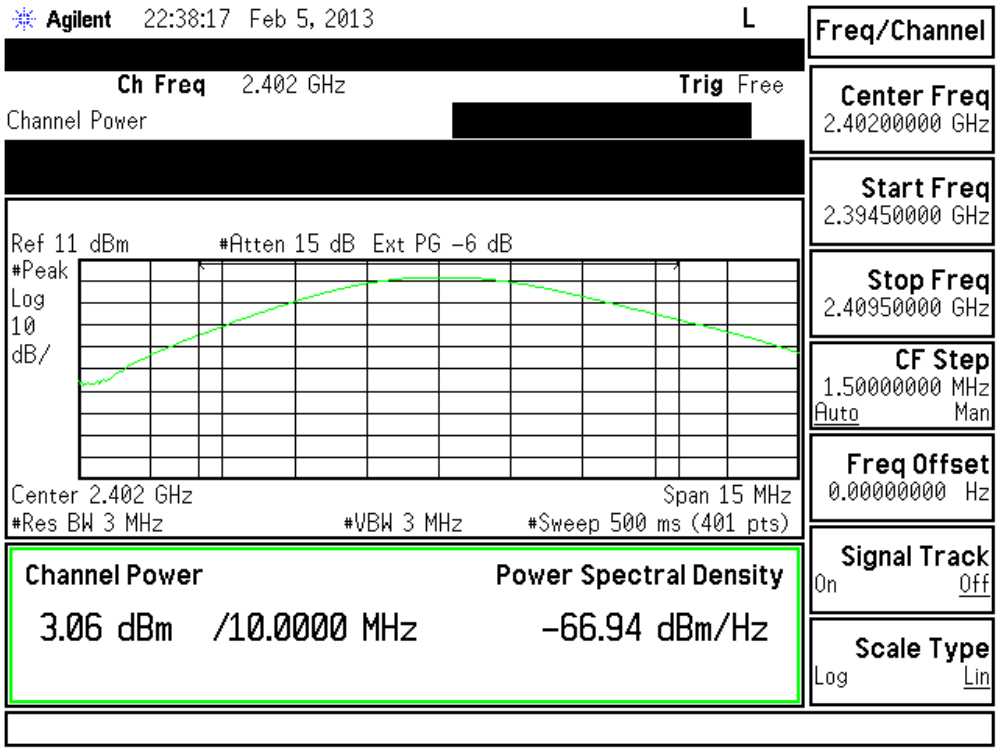
Item	Mfr/Brand	Instruments	Serial No.	Model/Type No.	Calibrated Date	Next Cal. Date
1.	Agilent	Spectrum Analyzer	US39240419	E4407B	2012/1/31	2013/1/31

9.4 Test Result:

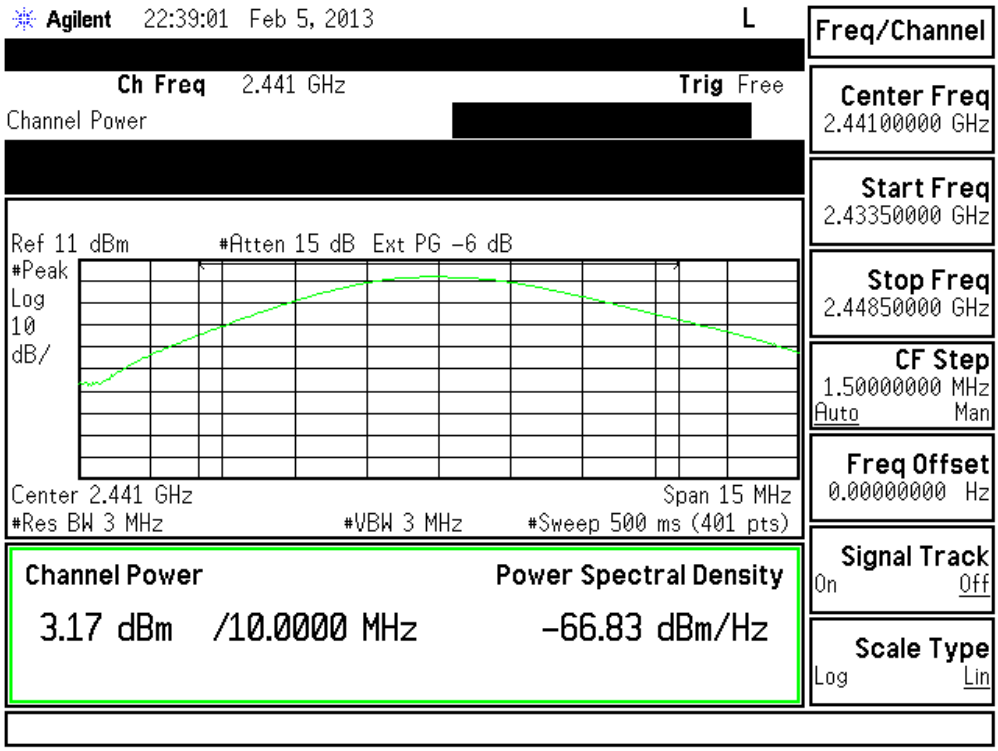
Channel	Frequency (MHz)	Data Rate (Mbps)	Results (dBm)	Limit (dBm)
0	2402	1	3.06	<30
		2	2.03	<30
		3	2.09	<30
39	2441	1	3.17	<30
		2	2.61	<30
		3	2.61	<30
78	2480	1	3.20	<30
		2	2.78	<30
		3	2.82	<30

Note : 1. Cable Loss = 6.00dB.
2. Result= Instrument reading value + Cable Loss.

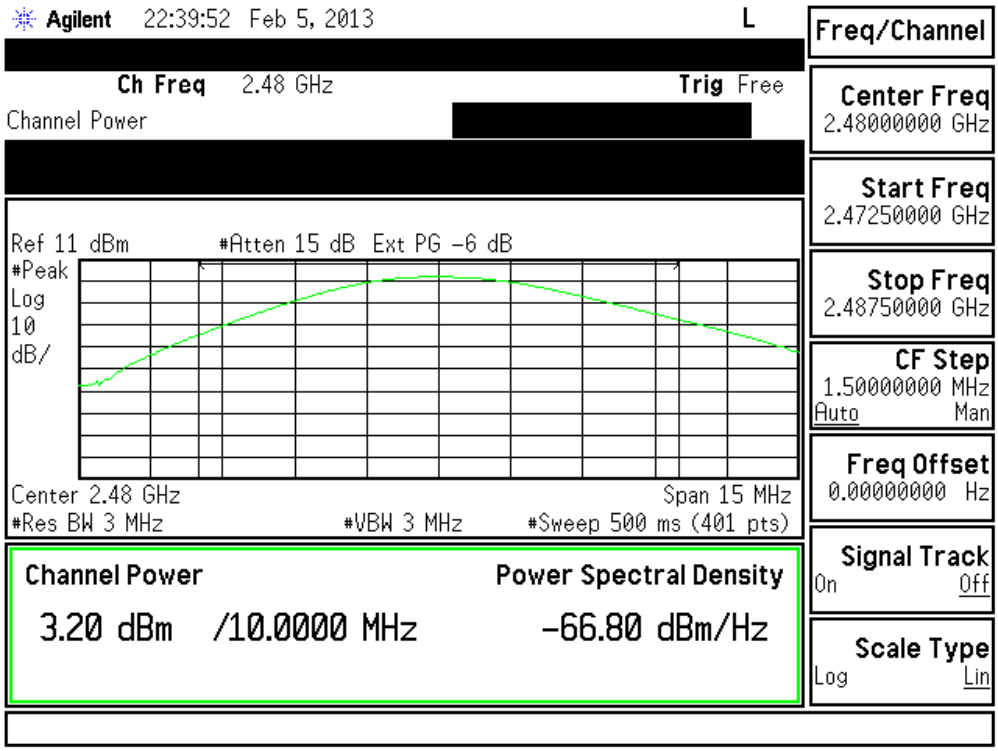
Data Rate : 1Mbps
(2402MHz)



(2441MHz)

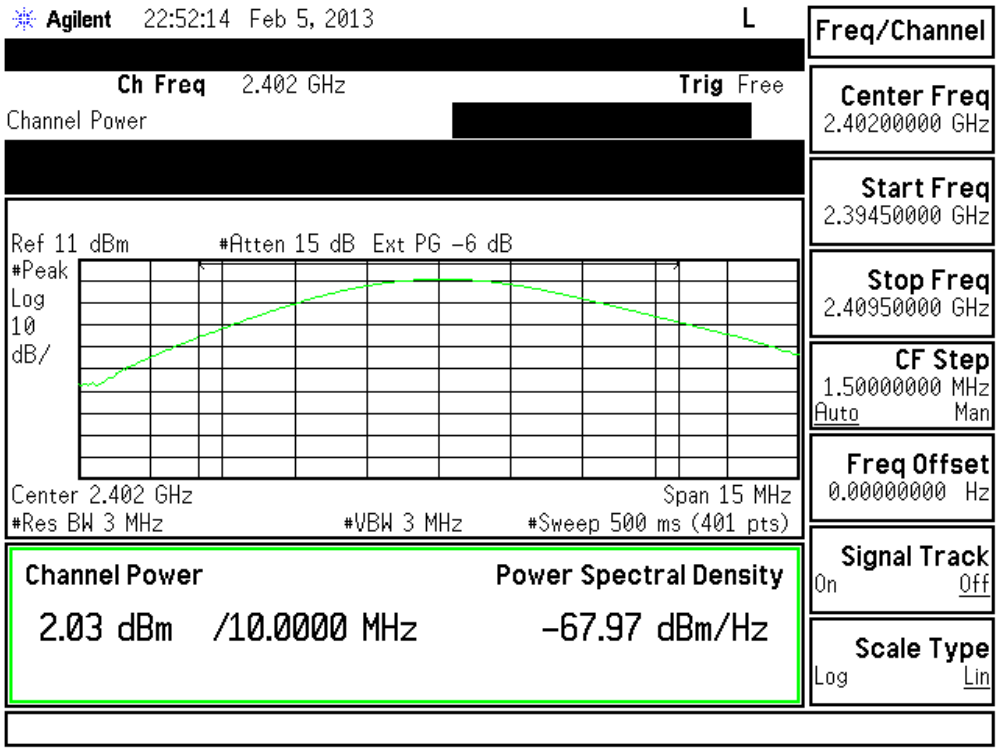


(2480MHz)

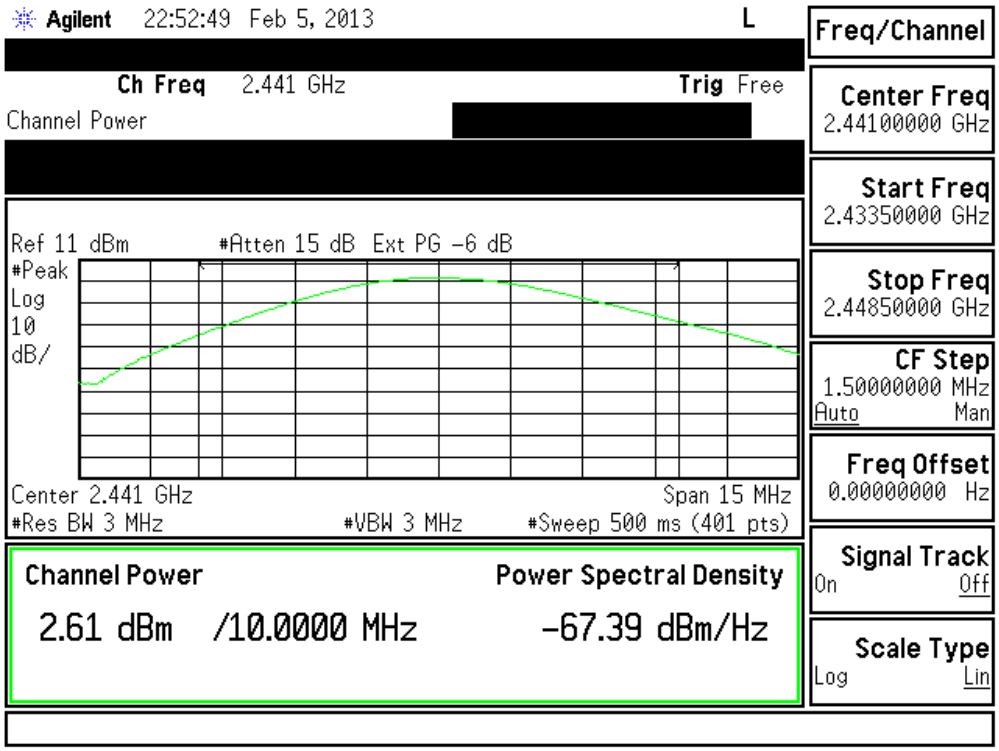


Data Rate : 2Mbps

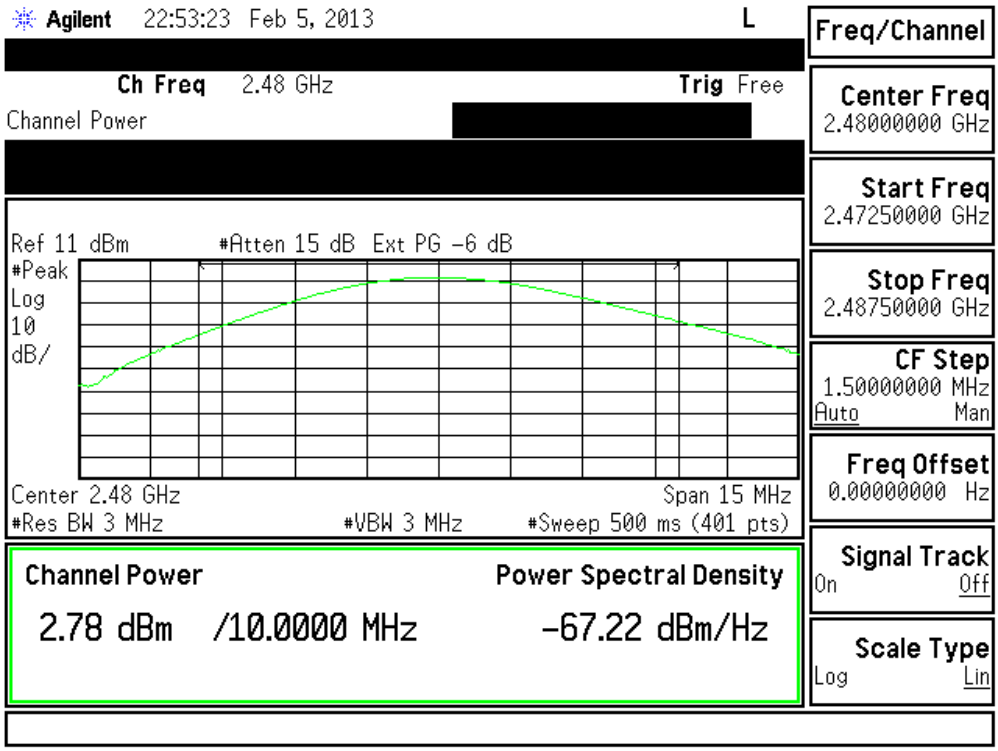
(2402MHz)



(2441MHz)

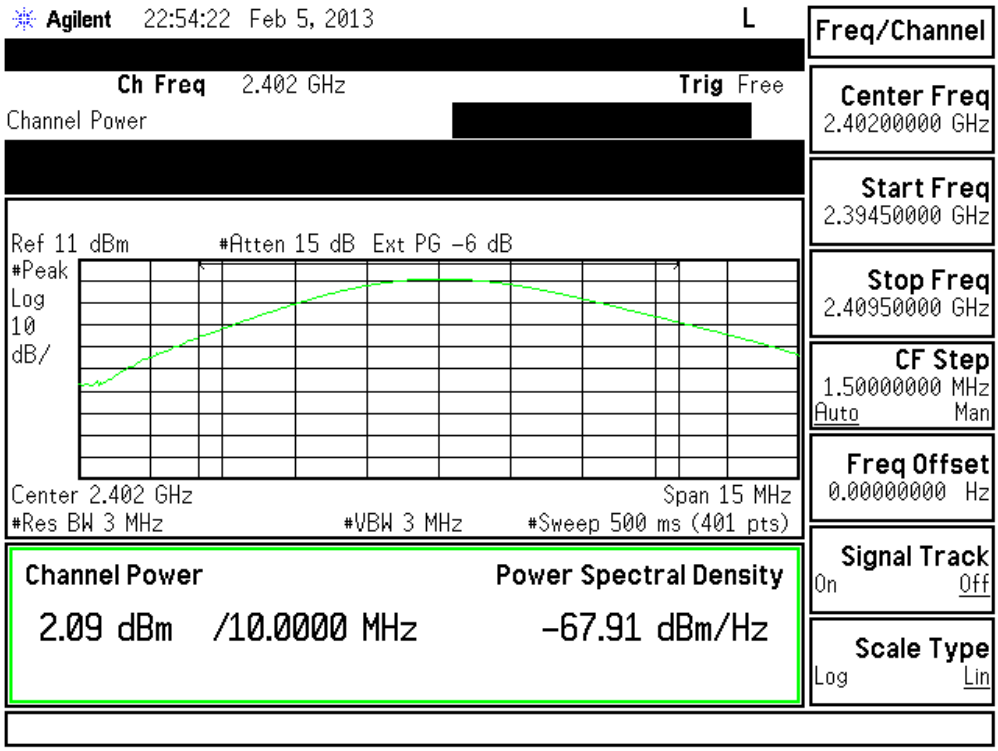


(2480MHz)

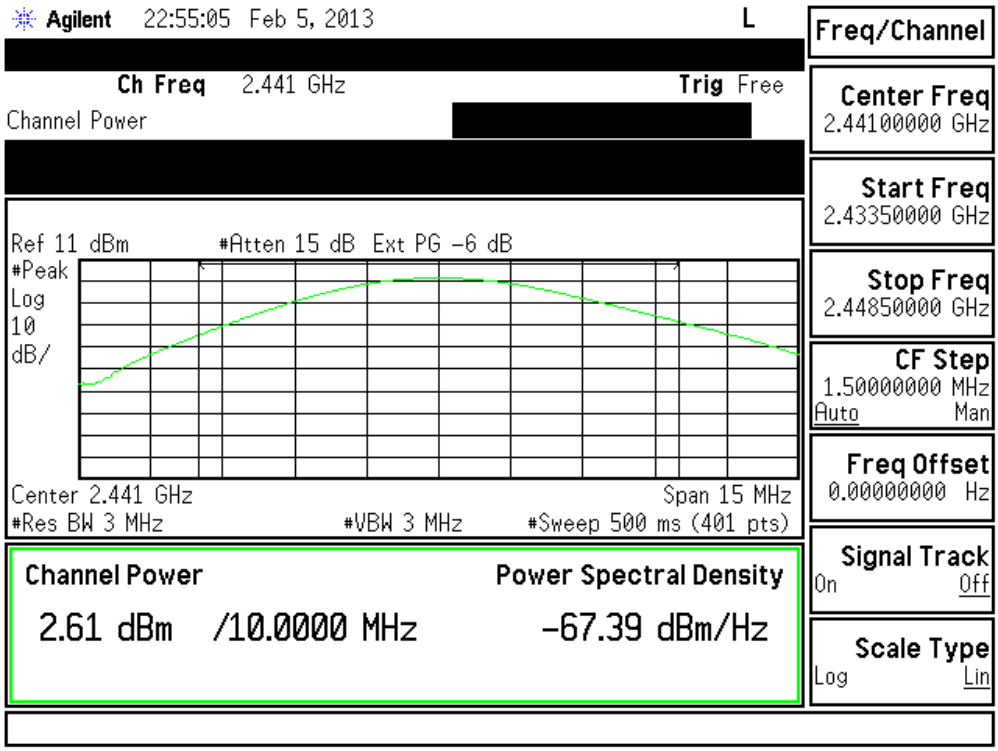


Data Rate : 3Mbps

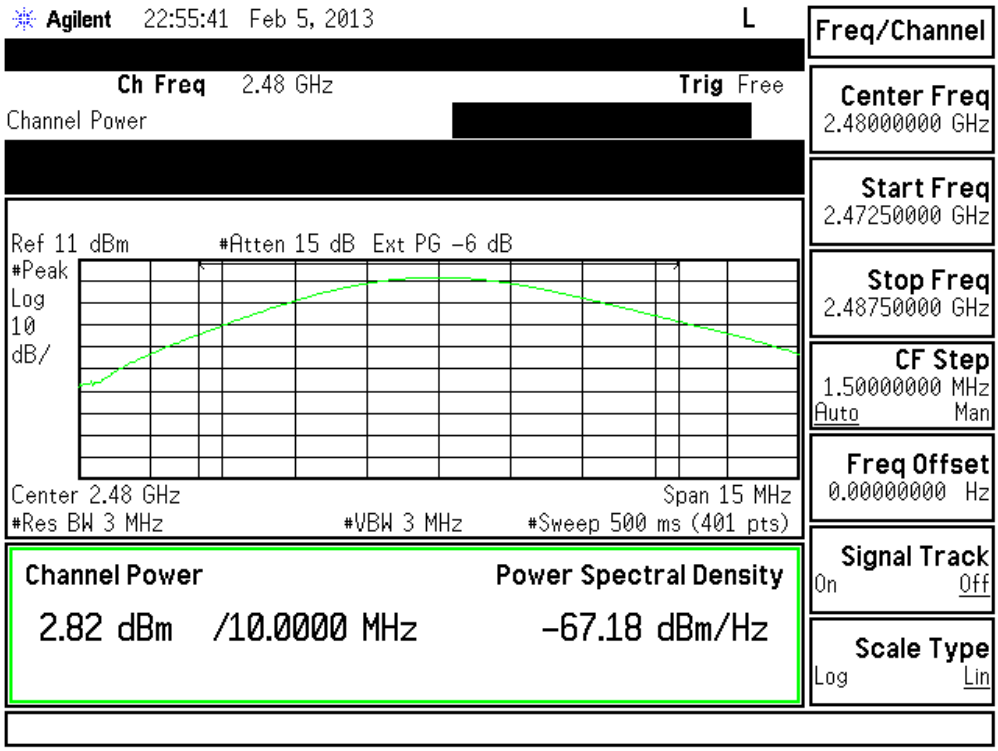
(2402MHz)



(2441MHz)



(2480MHz)



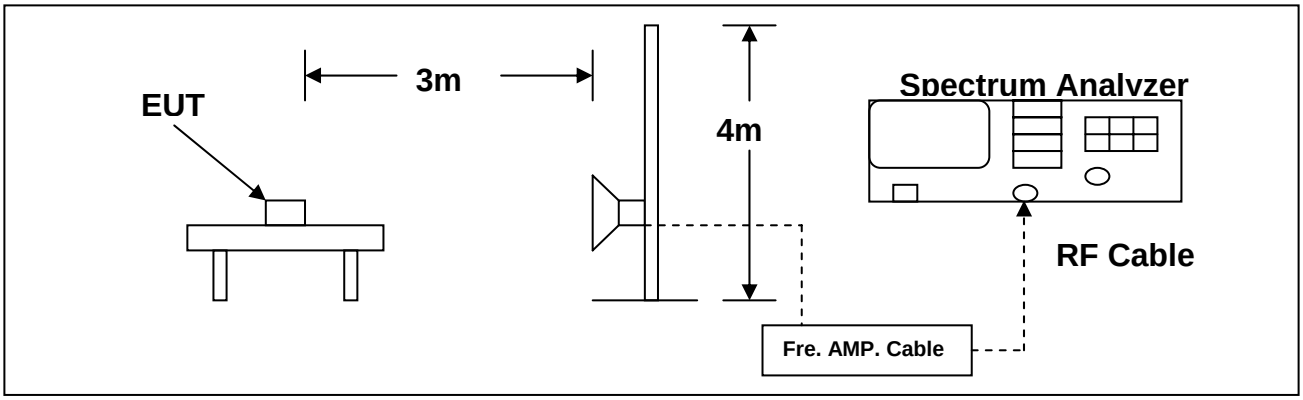
10. Band Edge Requirements

10.1 Test Condition & Setup:

The emissions on the harmonics frequencies, the limits, and the margin of compliance are presented. These tests were made when the transmitter was in full radiated power. The additional test was performed to show compliance with the requirement at the band edge frequency 2400 MHz and up to 2483.5 MHz.

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.

10.2 Test Instruments Configuration:



10.3 Test Equipment List:

Item	Mfr/Brand	Instruments	Serial No.	Model/Type No.	Calibrated Date	Next Cal. Date
1.	Agilent	Spectrum Analyzer	US44300422	E4446A	2012/12/14	2013/12/14
2.	TA	Pre Amplifier	RF01	0.10~19.1GHz 60dBm	2012/8/24	2013/8/24
3.	SCHWARZBECK	Horn Antenna	304	BBHA 9120 D	2012/10/15	2013/10/15
4.	Agilent	Spectrum Analyzer	US39240419	E4407B	2012/1/31	2013/1/31
5.	MLT	Pre Amplifier	20110209	PREAMP6G-01	2012/3/3	2013/3/3

10.4 Test Result :

Data Rate : 1Mbps

Radiated Emissions (HORIZONTAL) CH00						
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Duty (dB)	Limit (dBuV/m)	Margin (dB)
2399.2	38.0 (PK)	1	223	0	74.0(PK)	-36.0
2399.2	27.0 (AV)	1	223	0	54.0(AV)	-27.0

Radiated Emissions (VERTICAL) CH00						
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Duty (dB)	Limit (dBuV/m)	Margin (dB)
2399.2	37.9 (PK)	1	160	0	74.0(PK)	-36.1
2399.2	23.9 (AV)	1	160	0	54.0(AV)	-30.1

Radiated Emissions (HORIZONTAL) CH78						
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Duty (dB)	Limit (dBuV/m)	Margin (dB)
2484.6	38.4 (PK)	1	112	0	74.0(PK)	-35.6
2484.6	27.1 (AV)	1	112	0	54.0(AV)	-26.9

Radiated Emissions (VERTICAL) CH78						
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Duty (dB)	Limit (dBuV/m)	Margin (dB)
2484.2	35.1 (PK)	1	170	0	74.0(PK)	-38.9
2484.2	23.6 (AV)	1	170	0	54.0(AV)	-30.4

Notes : 1. Margin= Amplitude - Limits

2. Height of table for EUT placed: 0.8 Meter.
3. ANT= Antenna height.
4. Duty= Duty cycle correction factor.
5. Amplitude= Reading Amplitude – Amplifier gain+ Cable loss+ Antenna factor (Auto calculate in spectrum analyzer)

Data Rate : 2Mbps

Radiated Emissions (HORIZONTAL) CH00						
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Duty (dB)	Limit (dBuV/m)	Margin (dB)
2399.8	34.8 (PK)	1	230	0	74.0(PK)	-39.2
2399.8	23.5 (AV)	1	230	0	54.0(AV)	-30.5

Radiated Emissions (VERTICAL) CH00						
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Duty (dB)	Limit (dBuV/m)	Margin (dB)
2399.3	33.5 (PK)	1	220	0	74.0(PK)	-40.5
2399.3	23.5 (AV)	1	220	0	54.0(AV)	-30.5

Radiated Emissions (HORIZONTAL) CH78						
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Duty (dB)	Limit (dBuV/m)	Margin (dB)
2484.7	33.8 (PK)	1	115	0	74.0(PK)	-40.2
2484.7	23.5 (AV)	1	115	0	54.0(AV)	-30.5

Radiated Emissions (VERTICAL) CH78						
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Duty (dB)	Limit (dBuV/m)	Margin (dB)
2484.3	34.1 (PK)	1	160	0	74.0(PK)	-39.9
2484.3	23.6 (AV)	1	160	0	54.0(AV)	-30.4

Notes : 1. Margin= Amplitude - Limits

2. Height of table for EUT placed: 0.8 Meter.
3. ANT= Antenna height.
4. Duty= Duty cycle correction factor.
5. Amplitude= Reading Amplitude – Amplifier gain+ Cable loss+ Antenna factor (Auto calculate in spectrum analyzer)

Data Rate : 3Mbps

Radiated Emissions (HORIZONTAL) CH00						
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Duty (dB)	Limit (dBuV/m)	Margin (dB)
2398.6	34.7 (PK)	1	230	0	74.0(PK)	-39.3
2398.6	23.5 (AV)	1	230	0	54.0(AV)	-30.5

Radiated Emissions (VERTICAL) CH00						
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Duty (dB)	Limit (dBuV/m)	Margin (dB)
2398.5	35.3 (PK)	1	155	0	74.0(PK)	-38.7
2398.5	23.6 (AV)	1	155	0	54.0(AV)	-30.4

Radiated Emissions (HORIZONTAL) CH78						
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Duty (dB)	Limit (dBuV/m)	Margin (dB)
2484.1	34.6 (PK)	1	220	0	74.0(PK)	-39.4
2484.1	23.6 (AV)	1	220	0	54.0(AV)	-30.4

Radiated Emissions (VERTICAL) CH78						
Frequency (MHz)	Amplitude (dBuV/m)	Ant. (m)	Table (Degree)	Duty (dB)	Limit (dBuV/m)	Margin (dB)
2484.6	34.3 (PK)	1	160	0	74.0(PK)	-39.7
2484.6	23.6 (AV)	1	160	0	54.0(AV)	-30.4

Notes : 1. Margin= Amplitude - Limits

2. Height of table for EUT placed: 0.8 Meter.
3. ANT= Antenna height.
4. Duty= Duty cycle correction factor.
5. Amplitude= Reading Amplitude – Amplifier gain+ Cable loss+ Antenna factor (Auto calculate in spectrum analyzer)

11. Radiated Emissions Requirements (Above 1GHz)

11.1 General and setup:

Prior to open-field testing, the EUT was placed in a shielded enclosure and scanned at a close distance to determine its emission characteristics. The physical arrangement of the EUT was varied (within the scope of arrangements likely to be encountered in actual use) to determine the effect on the unit's emanations in amplitude, directivity, and frequency. The exact system configuration which produced the highest emissions was noted so it could be reproduced later during the open field tests. This was done to ensure that the final measurements would demonstrate the worst-case interference potential of the EUT.

Final radiation measurements were made on a three-meter, open-field test site. The EUT system was placed on a nonconductive turntable which was 0.8 meters height, top surface 1.0 x 1.5 meter. During the test, EUT was set to transmit continuously & measurements spectrum range from 30 MHz to 26.5 GHz is investigated.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

A nonconductive material surrounded the EUT to supporting the EUT for standing on tree orthogonal planes. At each condition, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to find the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarization.

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.

Appropriate preamplifiers were used for improving sensitivity and precautions were taken to avoid overloading or desensitizing the spectrum analyzer. No post – detector video filters were used in the test.

The spectrum analyzer’s 6 dB bandwidth was set to 1 MHz, and the analyzer was operated in the peak detection mode, for frequencies both below and up 1 GHz. The average levels were obtained by subtracting the duty cycle correction factor from the peak readings.

The following procedures were used to convert the emission levels measured in decibels referenced to 1 microvlt (dBuV) into field intensity in microvolts pre meter(uV/m).

The actual field intensity in decibels referenced to 1 microvolt in to field intensity in microcolts per meter (dBuV/m).

The actual field is intensity in referenced to 1 microvolt per meter (dBuV/m) is determined by algebraically adding the measured reading in dBuV, the antenna factor (dB), and cable loss (dB) and Subtracting the gain of preamplifier (dB) is auto calculate in spectrum analyzer.

Amplitude (dBuV/m)= FI(dBuV)+AF(dBuV)+CL(dBuV)-Gain(dB)

FI= Reading of the field intensity.
AF= Antenna factor.
CL= Cable loss.

P.S Amplitude is auto calculate in spectrum analyzer.

The FCC specified emission limits were calculated according the EUT operating frequency and by following linear interpolation equations:

(1) For fundamental frequency : Transmitter Output < +30dBm

(2) For spurious frequency : Spurious emission limits = fundamental emission limit /10

11.2 Test Equipment List:

Item	Mfr/Brand	Instruments	Serial No.	Model/Type No.	Calibrated Date	Next Cal. Date
1.	Agilent	Spectrum Analyzer	US44300422	E4446A	2012/12/14	2013/12/14
2.	TA	Pre Amplifier	RF01	0.10~19.1GHz 60dBm	2012/8/24	2013/8/24
3.	Herotek	Pre Amplifier	30690	A402-417	2012/11/2	2013/11/2
4.	SCHWARZBECK	Horn Antenna	181	BBHA 9170	2012/11/18	2013/11/18
5.	SCHWARZBECK	Horn Antenna	304	BBHA 9120 D	2012/10/15	2013/10/15
6.	Agilent	Spectrum Analyzer	US39240419	E4407B	2012/1/31	2013/1/31
7.	MLT	Pre Amplifier	TA010-190-30	RF03	2012/7/20	2013/7/20

11.3 Test Condition:

EUT tested in accordance with the specifications given by the manufacturer, and exercised in the most unfavorable manner.

Peak Measurement RBW set to 1MHz , VBW set to 1MHz

Average Measurement RBW set to 1MHz , VBW set to 10Hz

The X axial at Pre-test procedure is the worst case, the final result shown on this report is based on this condition.

11.4 Radiated Emissions Limits:

Frequency range (MHz)	Peak (dBuV/m)	Average (dBuV/m)
Above 1000	74	54

11.5 Measurement Data Of Radiated Emissions:

11.5.1 Open Field Radiated Emissions (Subpart C)

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following

Test Mode : (Rate:1M) 2402MHz

Radiated Emissions (VERTICAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
4800.0	77.01	76.49	-28.51	48.50	47.98	74.00	54.00	-25.50	-6.02
7200.0	74.70	73.90	-20.04	54.66	53.86	74.00	54.00	-19.34	-0.14
9615.0	63.90	61.14	-16.18	47.72	44.96	74.00	54.00	-26.28	-9.04

Radiated Emissions (HORIZONTAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
7200.0	60.29	58.31	-20.04	40.25	38.27	74.00	54.00	-33.75	-15.73
10515.0	56.26	52.13	-13.76	42.50	38.37	74.00	54.00	-31.50	-15.63
12015.0	60.32	57.90	-17.92	42.40	39.98	74.00	54.00	-31.60	-14.02

Notes : 1.Margin= Amplitude - Limits
2.Distance of Measurement : 3 Meter
3.Height of table for EUT placed: 0.8 Meter.
4.Amplitude= Reading Amplitude – Amplifier gain + Cable loss + Antenna factor
(Auto calculate in spectrum analyzer)
5.The other emission levels were very low against the limit.
6. Pre Amplifier (RF01) Gain :63dB to 69dB
7. Pre Amplifier (30690) Gain :38dB to 50dB

11.5.2 Open Field Radiated Emissions (Subpart C)

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following

Test Mode : (Rate:1M) 2441MHz

Radiated Emissions (VERTICAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
4875.0	71.91	71.15	-28.42	43.49	42.73	74.00	54.00	-30.51	-11.27
7320.0	62.19	61.45	-19.89	42.30	41.56	74.00	54.00	-31.70	-12.44
12195.0	63.72	62.85	-17.67	46.05	45.18	74.00	54.00	-27.95	-8.82

Radiated Emissions (HORIZONTAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
8025.0	58.31	56.46	-18.69	39.62	37.77	74.00	54.00	-34.38	-16.23
10515.0	58.79	57.44	-13.76	45.03	43.68	74.00	54.00	-28.97	-10.32
12195.0	59.07	57.12	-17.67	41.40	39.45	74.00	54.00	-32.60	-14.55

Notes : 1.Margin= Amplitude - Limits
2.Distance of Measurement : 3 Meter
3.Height of table for EUT placed: 0.8 Meter.
4.Amplitude= Reading Amplitude – Amplifier gain + Cable loss + Antenna factor
(Auto calculate in spectrum analyzer)
5.The other emission levels were very low against the limit.
6. Pre Amplifier (RF01) Gain :63dB to 69dB
7. Pre Amplifier (30690) Gain :38dB to 50dB

11.5.3 Open Field Radiated Emissions (Subpart C)

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following

Test Mode : (Rate:1M) 2480MHz

Radiated Emissions (VERTICAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
4950.0	72.59	71.59	-28.19	44.40	43.40	74.00	54.00	-29.60	-10.60
7425.0	59.61	58.74	-19.66	39.95	39.08	74.00	54.00	-34.05	-14.92
12390.0	62.82	62.78	-17.24	45.58	45.54	74.00	54.00	-28.42	-8.46

Radiated Emissions (HORIZONTAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
4950.0	66.88	64.87	-28.19	38.69	36.68	74.00	54.00	-35.31	-17.32
10515.0	63.13	60.12	-13.76	49.37	46.36	74.00	54.00	-24.63	-7.64
12390.0	59.60	58.14	-17.24	42.36	40.90	74.00	54.00	-31.64	-13.10

Notes : 1.Margin= Amplitude - Limits
2.Distance of Measurement : 3 Meter
3.Height of table for EUT placed: 0.8 Meter.
4.Amplitude= Reading Amplitude – Amplifier gain + Cable loss + Antenna factor
(Auto calculate in spectrum analyzer)
5.The other emission levels were very low against the limit.
6. Pre Amplifier (RF01) Gain :63dB to 69dB
7. Pre Amplifier (30690) Gain :38dB to 50dB

11.5.4 Open Field Radiated Emissions (Subpart C)

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following

Test Mode : (Rate:2M) 2402MHz

Radiated Emissions (VERTICAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
4800.0	77.01	76.49	-28.51	48.50	47.98	74.00	54.00	-25.50	-6.02
7200.0	74.70	73.90	-20.04	54.66	53.86	74.00	54.00	-19.34	-0.14
12015.0	64.52	63.42	-17.92	46.60	45.50	74.00	54.00	-27.40	-8.50

Radiated Emissions (HORIZONTAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
4800.0	74.16	73.47	-28.51	45.65	44.96	74.00	54.00	-28.35	-9.04
9615.0	64.71	64.53	-16.18	48.53	48.35	74.00	54.00	-25.47	-5.65
12015.0	65.23	64.34	-17.92	47.31	46.42	74.00	54.00	-26.69	-7.58

Notes : 1.Margin= Amplitude - Limits
2.Distance of Measurement : 3 Meter
3.Height of table for EUT placed: 0.8 Meter.
4.Amplitude= Reading Amplitude – Amplifier gain + Cable loss + Antenna factor
(Auto calculate in spectrum analyzer)
5.The other emission levels were very low against the limit.
6. Pre Amplifier (RF01) Gain :63dB to 69dB
7. Pre Amplifier (30690) Gain :38dB to 50dB

11.5.5 Open Field Radiated Emissions (Subpart C)

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following

Test Mode : (Rate:2M) 2441MHz

Radiated Emissions (VERTICAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
4875.0	77.75	77.20	-28.42	49.33	48.78	74.00	54.00	-24.67	-5.22
7320.0	70.38	70.02	-19.89	50.49	50.13	74.00	54.00	-23.51	-3.87
12195.0	64.94	64.00	-17.67	47.27	46.33	74.00	54.00	-26.73	-7.67

Radiated Emissions (HORIZONTAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
4875.0	73.48	73.34	-28.42	45.06	44.92	74.00	54.00	-28.94	-9.08
9765.0	64.65	63.60	-15.79	48.86	47.81	74.00	54.00	-25.14	-6.19
12195.0	66.29	65.68	-17.67	48.62	48.01	74.00	54.00	-25.38	-5.99

Notes : 1.Margin= Amplitude - Limits
2.Distance of Measurement : 3 Meter
3.Height of table for EUT placed: 0.8 Meter.
4.Amplitude= Reading Amplitude – Amplifier gain + Cable loss + Antenna factor (Auto calculate in spectrum analyzer)
5.The other emission levels were very low against the limit.
6. Pre Amplifier (RF01) Gain :63dB to 69dB
7. Pre Amplifier (30690) Gain :38dB to 50dB

11.5.6 Open Field Radiated Emissions (Subpart C)

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following

Test Mode : (Rate:2M) 2480MHz

Radiated Emissions (VERTICAL)									
Frequency (MHz)	**Read (dBuV/m)**		**Factor**	**Amplitude (dBuV/m)**		**Limits (dBuV/m)**		**Margin (dB)**	
	PK	**AV**		**PK**	**AV**	**PK**	**AV**	**PK**	**AV**
4950.0	75.22	74.54	-28.19	47.03	46.35	74.00	54.00	-26.97	-7.65
7425.0	66.62	65.08	-19.66	46.96	45.42	74.00	54.00	-27.04	-8.58
17340.0	55.00	53.77	-4.47	50.53	49.30	74.00	54.00	-23.47	-4.70

Radiated Emissions (HORIZONTAL)									
Frequency (MHz)	**Read (dBuV/m)**		**Factor**	**Amplitude (dBuV/m)**		**Limits (dBuV/m)**		**Margin (dB)**	
	PK	**AV**		**PK**	**AV**	**PK**	**AV**	**PK**	**AV**
9915.0	60.72	59.16	-15.83	44.89	43.33	74.00	54.00	-29.11	-10.67
12390.0	69.43	69.86	-17.24	52.19	52.62	74.00	54.00	-21.81	-1.38
17340.0	55.65	55.40	-4.47	51.18	50.93	74.00	54.00	-22.82	-3.07

Notes : 1.Margin= Amplitude - Limits
2.Distance of Measurement : 3 Meter
3.Height of table for EUT placed: 0.8 Meter.
4.Amplitude= Reading Amplitude – Amplifier gain + Cable loss + Antenna factor (Auto calculate in spectrum analyzer)
5.The other emission levels were very low against the limit.
6. Pre Amplifier (RF01) Gain :63dB to 69dB
7. Pre Amplifier (30690) Gain :38dB to 50dB

11.5.7 Open Field Radiated Emissions (Subpart C)

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following

Test Mode : (Rate:3M) 2402MHz

Radiated Emissions (VERTICAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
4800.0	71.54	70.45	-28.51	43.03	41.94	74.00	54.00	-30.97	-12.06
9615.0	58.65	57.63	-16.18	42.47	41.45	74.00	54.00	-31.53	-12.55
12015.0	69.19	67.35	-17.92	51.27	49.43	74.00	54.00	-22.73	-4.57

Radiated Emissions (HORIZONTAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
7200.0	72.40	71.60	-20.04	52.36	51.56	74.00	54.00	-21.64	-2.44
9615.0	62.39	60.97	-16.18	46.21	44.79	74.00	54.00	-27.79	-9.21
16815.0	56.13	53.52	-5.80	50.33	47.72	74.00	54.00	-23.67	-6.28

Notes : 1.Margin= Amplitude - Limits
2.Distance of Measurement : 3 Meter
3.Height of table for EUT placed: 0.8 Meter.
4.Amplitude= Reading Amplitude – Amplifier gain + Cable loss + Antenna factor (Auto calculate in spectrum analyzer)
5.The other emission levels were very low against the limit.
6. Pre Amplifier (RF01) Gain :63dB to 69dB
7. Pre Amplifier (30690) Gain :38dB to 50dB

11.5.8 Open Field Radiated Emissions (Subpart C)

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following

Test Mode : (Rate:3M) 2441MHz

Radiated Emissions (VERTICAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
2286.0	43.88	41.27	0.23	44.11	41.50	74.00	54.00	-29.89	-12.50
4875.0	71.70	71.00	-28.42	43.28	42.58	74.00	54.00	-30.72	-11.42
12195.0	66.34	64.56	-17.67	48.67	46.89	74.00	54.00	-25.33	-7.11

Radiated Emissions (HORIZONTAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
7320.0	70.57	70.10	-19.89	50.68	50.21	74.00	54.00	-23.32	-3.79
12195.0	68.62	66.89	-17.67	50.95	49.22	74.00	54.00	-23.05	-4.78
17070.0	54.87	53.23	-4.94	49.93	48.29	74.00	54.00	-24.07	-5.71

Notes : 1.Margin= Amplitude - Limits
2.Distance of Measurement : 3 Meter
3.Height of table for EUT placed: 0.8 Meter.
4.Amplitude= Reading Amplitude – Amplifier gain + Cable loss + Antenna factor (Auto calculate in spectrum analyzer)
5.The other emission levels were very low against the limit.
6. Pre Amplifier (RF01) Gain :63dB to 69dB
7. Pre Amplifier (30690) Gain :38dB to 50dB

11.5.9 Open Field Radiated Emissions (Subpart C)

The highest peak values of radiated emissions from the EUT at various antenna heights, antenna polarization, EUT orientation, etc. are recorded on the following

Test Mode : (Rate:3M) 2480MHz

Radiated Emissions (VERTICAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
4950.0	71.37	70.28	-28.19	43.18	42.09	74.00	54.00	-30.82	-11.91
12390.0	70.34	70.31	-17.24	53.10	53.07	74.00	54.00	-20.90	-0.93
17340.0	53.58	51.09	-4.47	49.11	46.62	74.00	54.00	-24.89	-7.38

Radiated Emissions (HORIZONTAL)									
Frequency (MHz)	Read (dBuV/m)		Factor	Amplitude (dBuV/m)		Limits (dBuV/m)		Margin (dB)	
	PK	AV		PK	AV	PK	AV	PK	AV
7425.0	67.82	67.13	-19.66	48.16	47.47	74.00	54.00	-25.84	-6.53
12390.0	67.76	67.52	-17.24	50.52	50.28	74.00	54.00	-23.48	-3.72
17340.0	55.44	53.82	-4.47	50.97	49.35	74.00	54.00	-23.03	-4.65

Notes : 1.Margin= Amplitude - Limits
2.Distance of Measurement : 3 Meter
3.Height of table for EUT placed: 0.8 Meter.
4.Amplitude= Reading Amplitude – Amplifier gain + Cable loss + Antenna factor (Auto calculate in spectrum analyzer)
5.The other emission levels were very low against the limit.
6. Pre Amplifier (RF01) Gain :63dB to 69dB
7. Pre Amplifier (30690) Gain :38dB to 50dB

12. Antenna Requirements

12.1 Standard Applicable:

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.

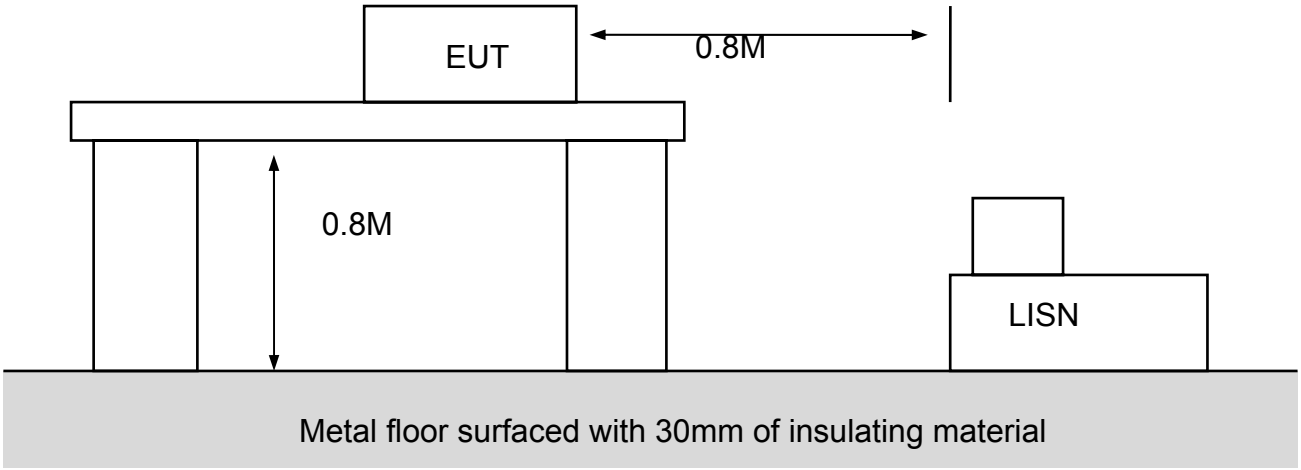
And According to 15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

12.2 Antenna Construction:

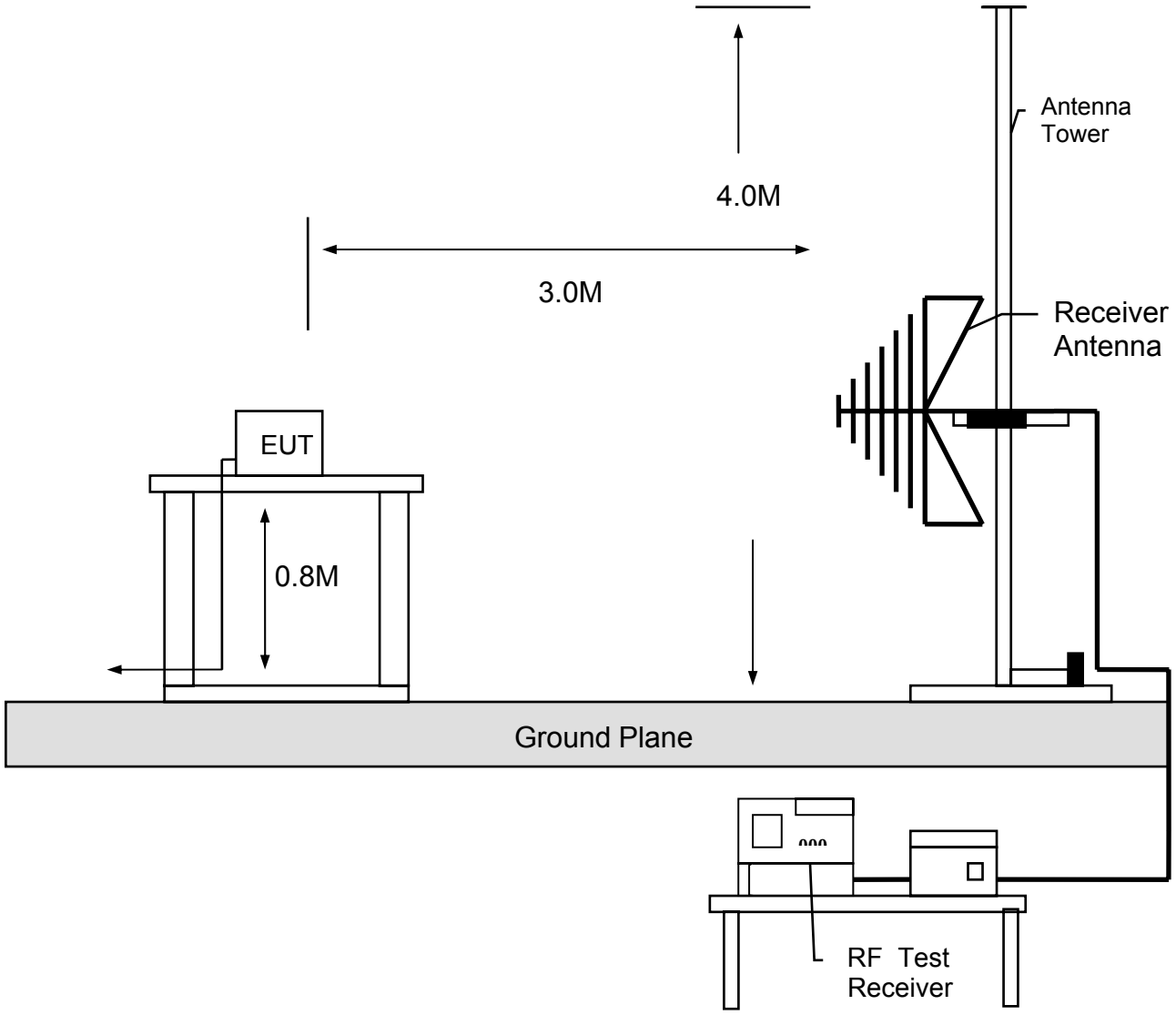
Ant. TYPE	Gain	type of connector
Chip antenna	2.2 dBi	Chip

Appendix I - EUT Test Setup

MEASUREMENT OF POWER LINE CONDUCTED RFI VOLTAGE



MEASUREMENT OF RADIATED EMISSION



Appendix II - Brand / Trade Name & Model No. Multiple Listee

Model No.	Trade Name
SilverCare	MG100LSL MG100RSR MG100FSF MG100WSW MP100WSW MP100BSB MP100WSB MV100BSB MV100WSW MV100BBB MV100TST

Note: All the different Trade Name above have the identical PCB, component; the differences are shape and color.