



EMC TEST REPORT for Intentional Radiator
No. 140601396SHA-001R01

Applicant : Aruba Networks, Inc
1344 Crossman Ave. Sunnyvale, CA,94089
Manufacturer : Aruba Networks, Inc
1344 Crossman Ave. Sunnyvale, CA,94089
Product Name : Wireless Access Point
Type/Model : APINH103

SUMMARY

The equipment complies with the requirements according to the following standard(s):

47CFR Part 15 (2013): Radio Frequency Devices (Subpart C)

ANSI C63.4 (2009): American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

RSS-210 Issue 8 (December 2010): Low-power Licence-exempt Radio communication Devices (All Frequency Bands): Category I Equipment

RSS-Gen Issue 3 (December 2010): General Requirements and Information for the Certification of Radio communication Equipment

Date of issue: June.26, 2014

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FCC ID: Q9DAPINH103
IC: 4675A-APINH103

Description of Test Facility

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1. General Information

1.1 Applicant Information

Applicant : Aruba Networks, Inc
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Email : rhastings@arubanetworks.com
Manufacturer : Aruba Networks, Inc
1344 Crossman Ave. Sunnyvale, CA,94089

1.2 Identification of the EUT

Product Name : Wireless Access Point
Type/model : APINH103
FCC ID : Q9DAPINH103
IC : 4675A-APINH103

1.3 Technical specification

Operation Frequency : 2412~2462 MHz;
Band : 5745~5825 MHz

Type of Modulation : CCK,BPSK,QPSK,DSSS,OFDM

EUT Modes of : 802.11a/b/g;
Modulation : 802.11n HT20,HT40;

Channel Number : 11Channel for 2412MHz~2462MHz for 11b,11g,11n HT20;
7 Channel for 2422MHz~2452MHz for 11n HT40;
5745MHz~5825MHz for 11a&11n HT20: channel 149 - 165
5755~5795MHz for 11n HT40: channel 151 - 159

Description of EUT : The EUT is a wireless access point, and it is a MIMO product.

Port identification : power port 1;
RJ45 ports 5

Antenna : 1: R-AN-WLL-ARB-1:
Integral, 3.5dBi for 2.4GHz band, 3.7dBi for 5GHz band;
2: R-AN-WLL-ARB-3:
Integral, 3.6dBi for 2.4GHz band, 3.3dBi for 5GHz band;

Rating : DC 12V, 1A (Adaptor) or DC 57V, 350 mA(PoE)

Declared : 0°C ~ 40°C
Temperature range

Category of EUT : Class B

EUT type : ☒ Table top ☐ Floor standing

Sample received date : May. 13, 2014

Sample Identification : /
No

Date of test : May. 14, 2014 – June. 26, 2014

MIMO Function Description:

Model	Type	Gain (dBi)	Modulation Type	Beam forming	Array Gain (dBi)	Frequency Band (MHz)
R-AN-WLL-ARB-1	Omni	3.5	802.11b	No	0	2400-2500
			802.11g	No	0	
			802.11n HT20	No	0	
			802.11n HT40	No	0	
		3.7	802.11a	No	0	4900-5875
			802.11n HT20	No	0	
			802.11n HT40	No	0	
R-AN-WLL-ARB-3	Omni	3.6	802.11b	No	0	2400-2500
			802.11g	No	0	
			802.11n HT20	No	0	
			802.11n HT40	No	0	
		3.3	802.11a	No	0	4900-5875
			802.11n HT20	No	0	
			802.11n HT40	No	0	

Note 1: For CDD transmissions, according KDB 662911 D01 Multiple Transmitter Output v02r01 f), the power measurements on IEEE 802.11 devices, Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$.

Note 2: when 802.11n have beam forming function the Beam forming gain should calculate according KDB 662911 D01 Multiple Transmitter Output v02r01 c) (ii).

2. Test Specification

2.1 Instrument list

Equipment	Type	Manu.	Internal no.	Cal. Date	Due date
Test Receiver	ESCS 30	R&S	EC 2107	2013-10-21	2014-10-20
Test Receiver	ESIB 26	R&S	EC 3045	2013-10-20	2014-10-19
Test Receiver	ESCI 7	R&S	EC4501	2013-12-29	2014-12-28
Spectrum Analyzer	N9010	Agilent	EC4890	2013-10-21	2014-10-20
Spectrum Analyzer	E4446	Agilent	/	2013-10-21	2014-10-20
Power meter	ML 2495A	Anritsu	EC 4895	2013-10-21	2014-10-20
A.M.N.	ESH2-Z5	R&S	EC 3119	2014-1-9	2015-1-8
Bilog Antenna	CBL 6112D	TESEQ	EC 4206	2014-5-15	2015-5-14
Horn antenna	HF 906	R&S	EC 3049	2014-5-12	2015-5-11
Pre-amplifier	Pre-amp 18	R&S	EC 3222	2014-4-11	2015-4-10
Pre-amplifier	Tpa0118-40	R&S	EC 4792-2	2014-4-11	2015-4-10
Log-period antenna	AT 1080	AR	EC 3044-7	2014-5-21	2015-5-20
Biconical antenna	3109PX	ETS	EC3564	2013-8-25	2014-8-24
Semi-anechoic chamber	-	Albatross project	EC 3048	2014-5-20	2015-5-19
Shielded room	-	Zhongyu	EC 2838	2014-1-12	2015-1-9
Shielded room	-	Zhongyu	EC 2839	2014-1-12	2015-1-9
High Pass Filter	WHKX 1.0/15G-10SS	Wainwright	EC4297-1	2014-2-1	2015-1-31
High Pass Filter	WHKX 2.8/18G-12SS	Wainwright	EC4297-2	2014-2-1	2015-1-31
High Pass Filter	WHKX 7.0/1.8G-8SS	Wainwright	EC4297-3	2014-2-1	2015-1-31
Band Reject Filter	WRCGV 2400/2483-2390/2493-35/10SS	Wainwright	EC4297-4	2014-2-1	2015-1-31

2.2 Test Standard

47CFR Part 15 (2013)
ANSI C63.4 (2009)
KDB 558074 (V03R02)
KDB 662911 (V02R01)
RSS-210 Issue 8 (December 2010)
RSS-Gen Issue 3 (December 2010)

2.3 Mode of operation during the test / Test peripherals used

While testing transmitting mode of EUT, the internal modulation and continuously transmission was applied.

The lowest, middle and highest channel were tested as representatives.

Freq. Band	Modulation	Lowest(MHz)	Middle(MHz)	Highest(MHz)
2412-2462MHz	802.11b	2412	2437	2462
	802.11g	2412	2437	2462
	802.11n HT20	2412	2437	2462
	802.11n HT40	2422	2437	2452
5745-5825MHz	802.11a	5745	5785	5825
	802.11n HT20	5745	5785	5825
	802.11n HT40	5755	/	5795

The following test mode(s) were pre-test:

Mode No.	Main Equipment	2.4G antenna	5G antenna
1	APINH103	R-AN-WLL-ARB-1	R-AN-WLL-ARB-1
2	APINH103	R-AN-WLL-ARB-3	R-AN-WLL-ARB-3

After pre-test,the following test mode were used to the final test:

Final Test case	Test Mode	
	2.4G Band	5G Band
Minimum 6dB Bandwidth	Mode 2	Mode 1
Maximum Output power	Mode 2	Mode 1
Power spectrum density	Mode 2	Mode 1
Emissions in non-restricted frequency bands	Mode 2	Mode 1
Radiated Emissions in restricted frequency bands	Mode 2	Mode 1
Occupied bandwidth	Mode 2	Mode 1

Test software setting:

The power level setting for 802.11a/b/g/n is used with ART software offered by the manufactory.

For 2.4G Band:

Mode 1	Frequency (MHz)	ART Setting	Note
802.11b	2412	19.0	
	2437	19.0	
	2462	19.0	
802.11g	2412	16.5	
	2437	19.0	
	2462	17.0	
802.11n20	2412	17.0	
	2437	19.0	
	2462	17.0	
802.11n40	2422	12.5	
	2437	19.0	
	2452	14.5	

For 5.8G Band:

Mode 1	Frequency (MHz)	ART Setting	Note
802.11a	5745	20.0	
	5785	20.0	
	5825	20.0	
802.11n20	5745	20.0	
	5785	20.0	
	5825	20.0	
802.11n40	5755	20.0	
	5795	20.0	

Data rate VS Power

The pre-scan for the conducted power with all rates in each modulation and bands was used, and the worst case was found and used in all test cases.

2.4GHz Band:

After this pre-scan, we choose the following table of the data rate as the worst case.

Freq. Band	Modulation	Worst case data rate
2400-2483.5MHz	802.11b	1Mbps
	802.11g	6Mbps
	802.11n HT20	MCS8
	802.11n HT40	MCS8

5.8GHz Band:

After this pre-scan, we choose the following table of the data rate as the worst case.

Freq. Band	Modulation	Worst case data rate
5725-5850MHz	802.11a	6Mbps
	802.11n HT20	MCS8
	802.11n HT40	MCS8

Test peripherals used:

Item No	Name	Band and Model	Description	S/No
1	Laptop computer	HP ProBook 6470b	100-240V AC 50/60Hz	NA
2	Controller	Aruba 3600	100-240V AC 50/60Hz	NA
3	AC/DC Adaptor	Sunny SYS1357-1812	Input:100-240V~1.0A MAX,50-60Hz Output:+12V DC 1.0A	NA
4	POE DC Power	PowerDsine PD-6555G300	Input:100-240Vac,50/60Hz,0.5A Output:57VDC 0.35A	NA
5	LAN Cable	/	1.5m un-shielding *2 10m un-shielding *4	NA

Duty cycle:

Freq. Band	Duty cycle	On(ms)	On+Off (ms)	Duty cycle(x)	Duty cycle factor(dB)
2400-2483.5MHz	802.11b	8.219	8.26	1.00	0.02
	802.11g	1.38	1.48	0.93	0.30
	802.11n20	0.672	0.716	0.94	0.28
	802.11n40	0.352	0.384	0.92	0.38

Freq. Band	Duty cycle	On(ms)	On+Off (ms)	Duty cycle(x)	Duty cycle factor(dB)
5725-5850MHz	802.11a	1.362	1.408	0.97	0.14
	802.11n20	0.662	0.708	0.94	0.29
	802.11n40	0.345	0.375	0.92	0.36

2.4 Test Summary

This report applies to tested sample only. This report shall not be reproduced in part without written approval of Intertek Testing Service Shanghai Limited.

TEST ITEM	FCC REFERENCE	IC REFERENCE	RESULT
Minimum 6dB Bandwidth & Occupied bandwidth	15.247(a)(2)	RSS-210 Issue 8 Annex 8 RSS-Gen Issue 3 Clause 4.6.1	Pass
Maximum peak output power	15.247(b)	RSS-210 Issue 8 Annex 8	Pass
Power spectrum density	15.247(e)	RSS-210 Issue 8 Annex 8	Pass
Radiated emission	15.205 & 15.209	RSS-210 Issue 8 Clause 2	Pass
Emission outside the frequency band	15.247(d)	RSS-210 Issue 8 Annex 8	Pass
Power line conducted emission	15.207	RSS-Gen Issue 3 Clause 7.2.4	Pass

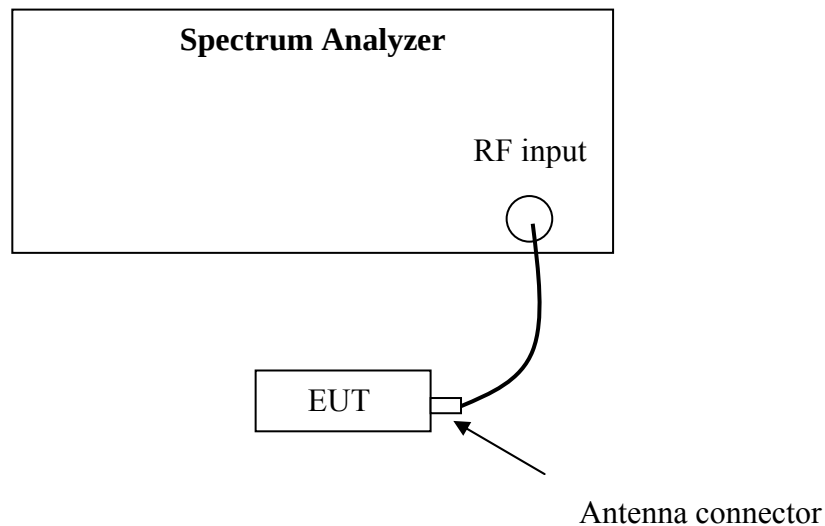
3. Minimum 6dB Bandwidth & Occupied bandwidth

Test result: PASS

3.1 Limit

For systems using digital modulation techniques that may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz and 5725 - 5850 MHz bands, the minimum 6 dB bandwidth shall be at least 500 kHz.

3.2 Test Configuration



3.3 Test Procedure and test setup

The minimum 6dB bandwidth per FCC §15.247(a)(2) is measured using the Spectrum Analyzer according to DTS test procedure of “KDB558074 D01 DTS Meas Guidance v03r02” for compliance to FCC 47CFR 15.247 requirements (clause 8.2).

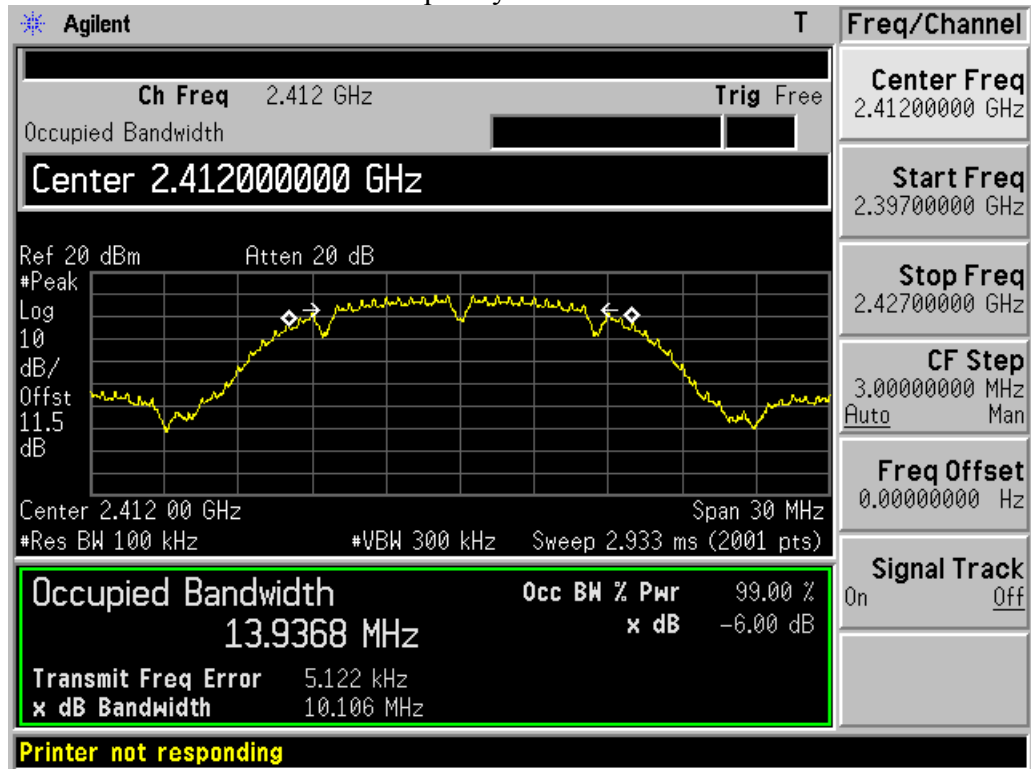
3.4 Test Protocol

Temperature : 25°C
 Relative Humidity : 55%

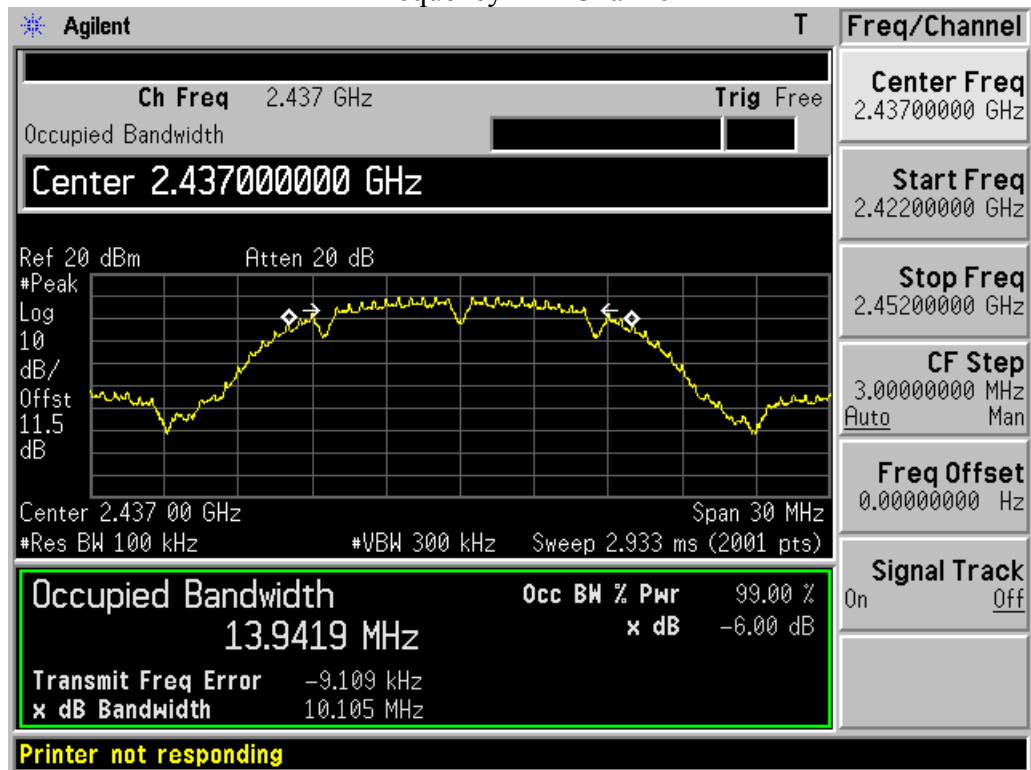
Mode	CH	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11b – chain 0	L	10.1060	13.9368	≥0.5
	M	10.1050	13.9419	
	H	10.0960	13.9627	

Mode	CH	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11b – chain 1	L	10.1010	13.9597	≥0.5
	M	10.0950	13.9446	
	H	10.0890	13.9452	

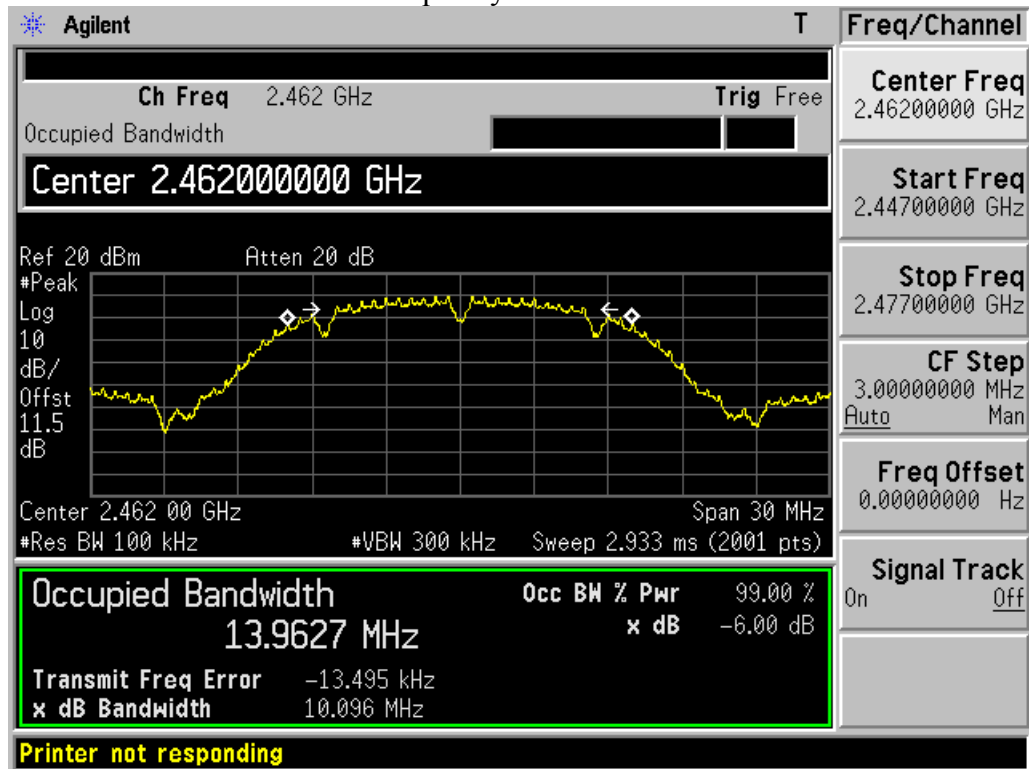
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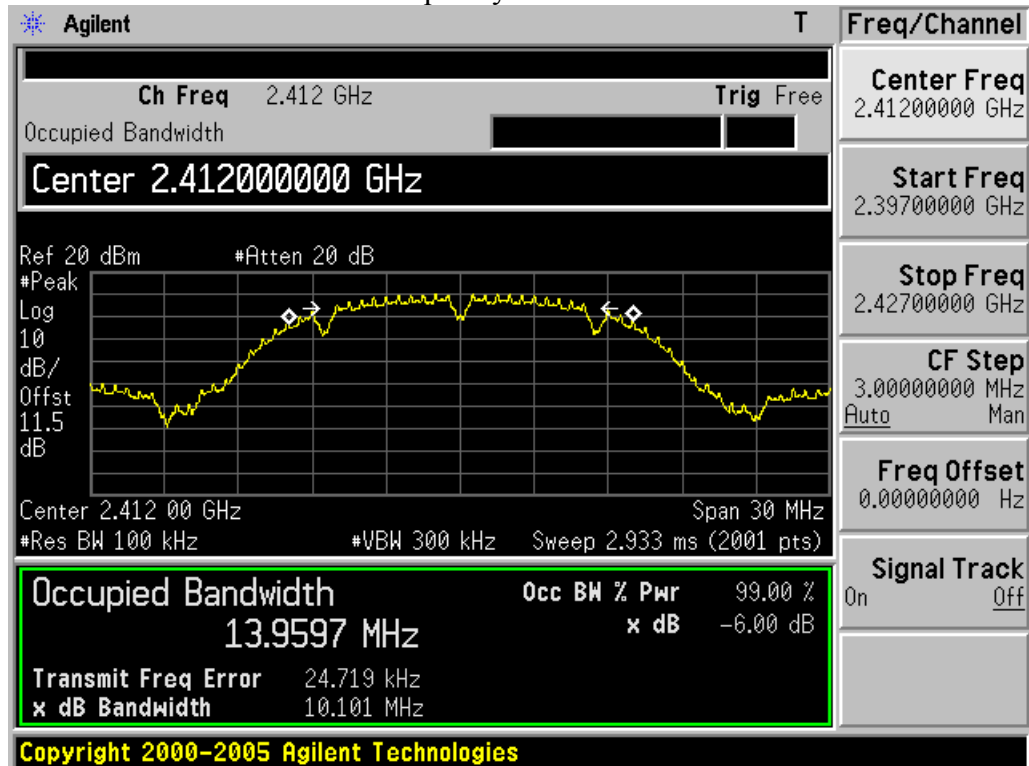
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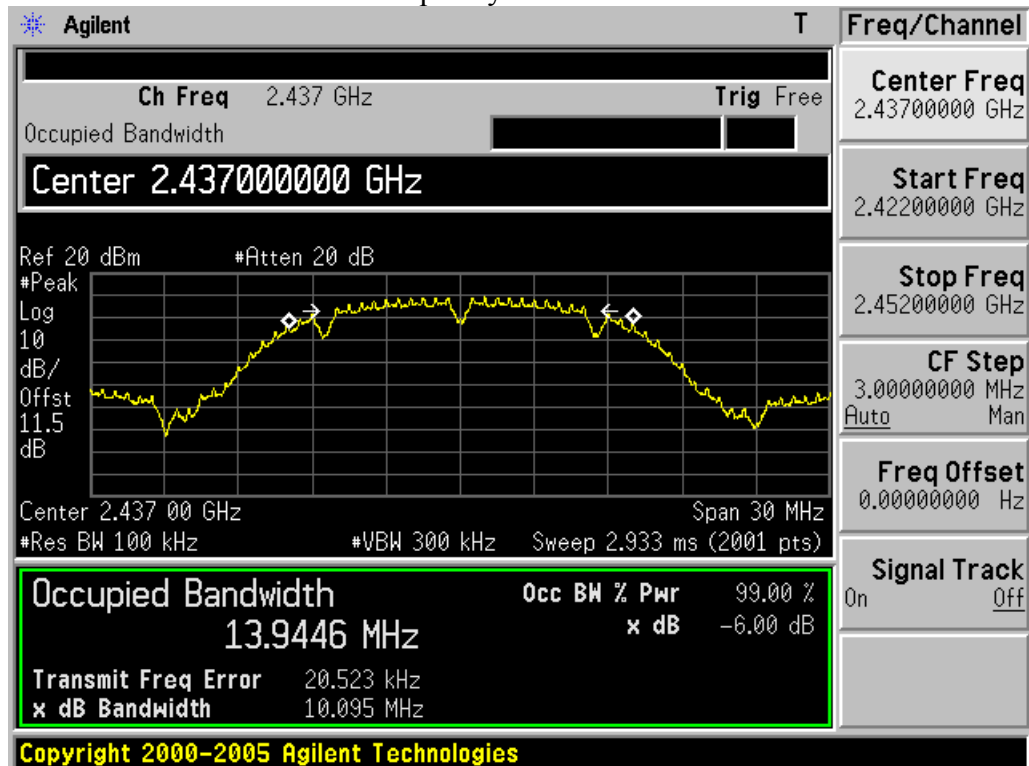
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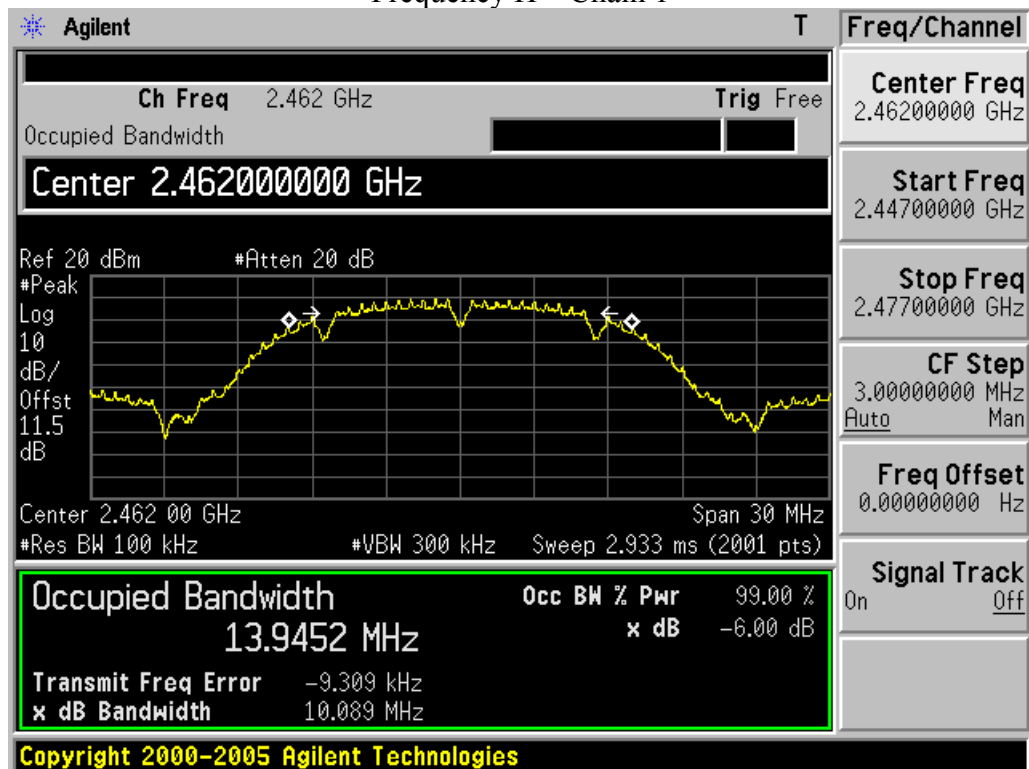
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Frequency M – Chain 1



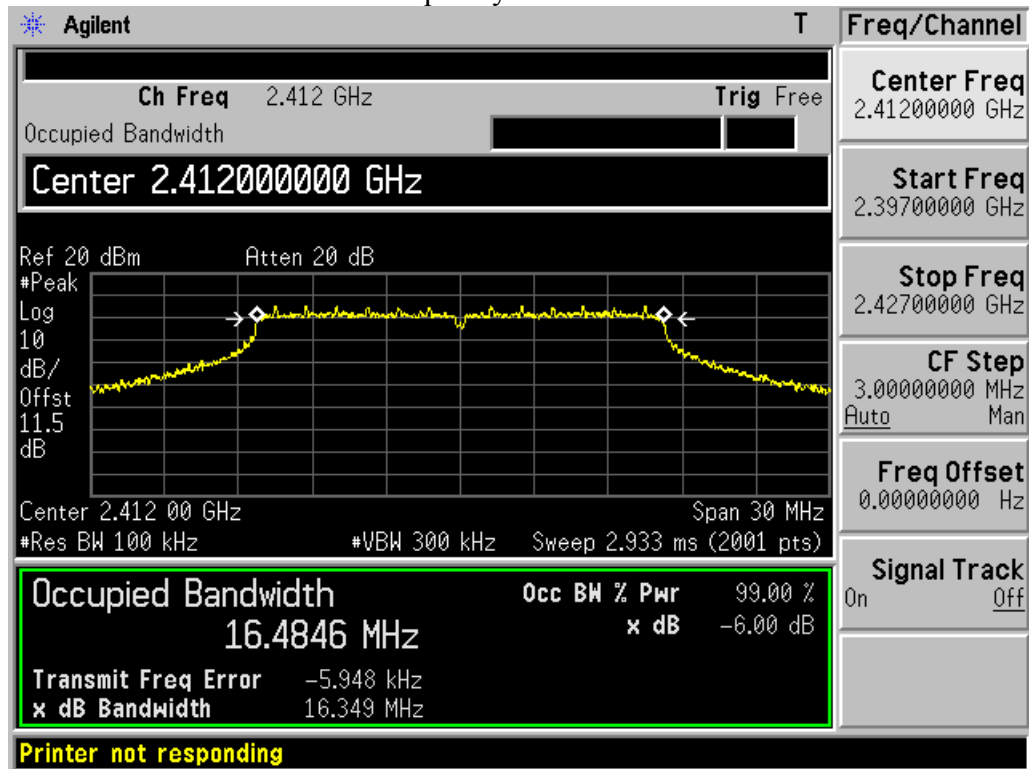
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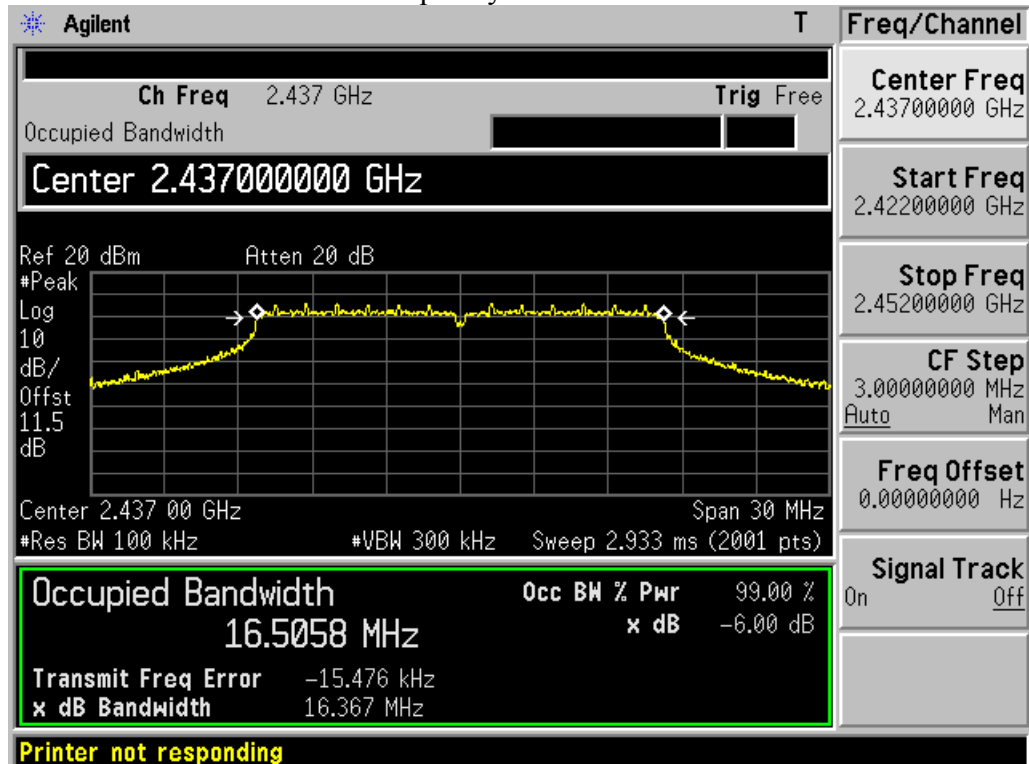
Mode	CH	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11g – chain 0	L	16.3490	16.4846	≥ 0.5
	M	16.3670	16.5058	
	H	16.3590	16.4909	

Mode	CH	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11g – chain 1	L	16.3580	16.4963	≥ 0.5
	M	16.3520	16.4817	
	H	16.3420	16.4845	

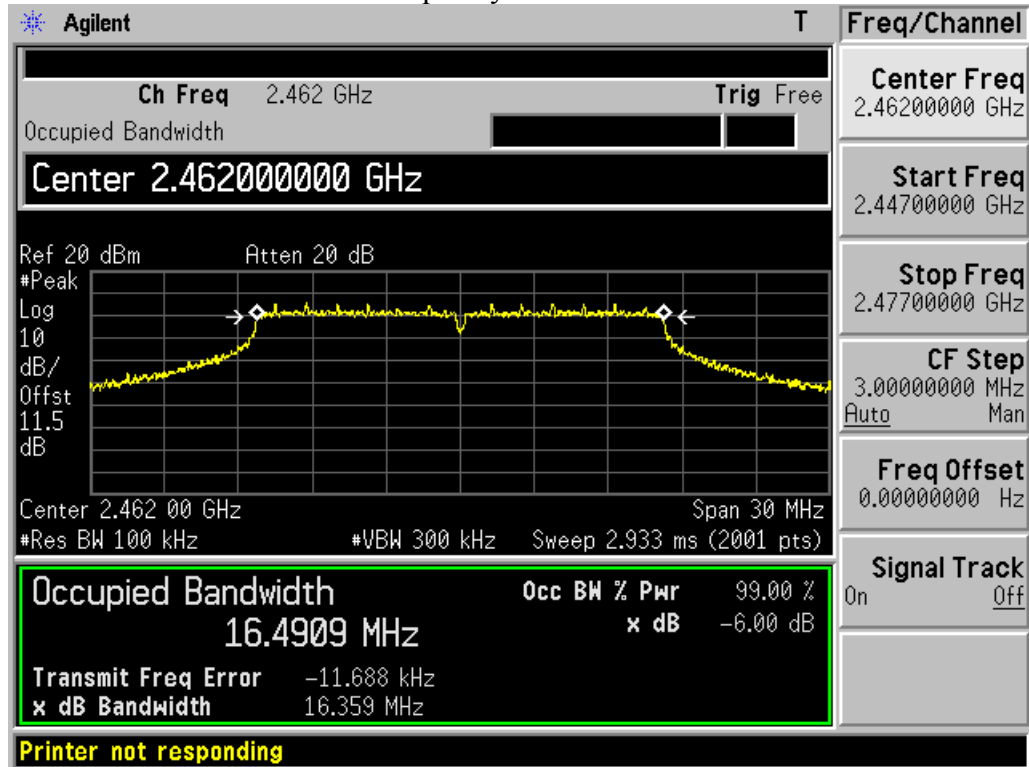
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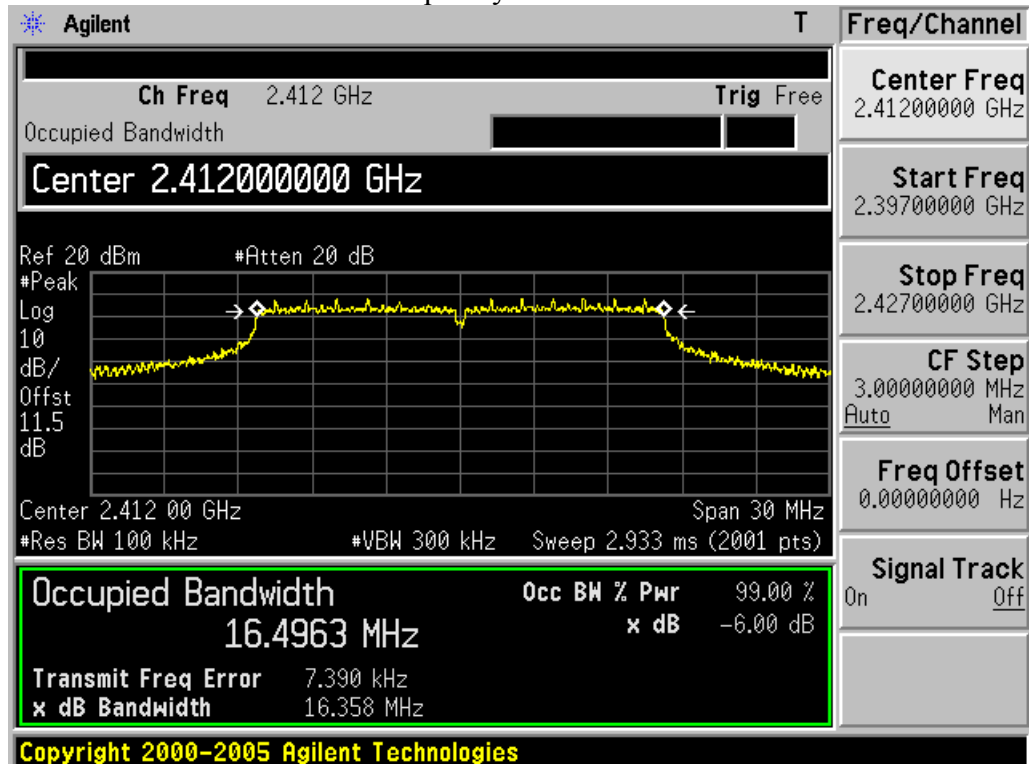
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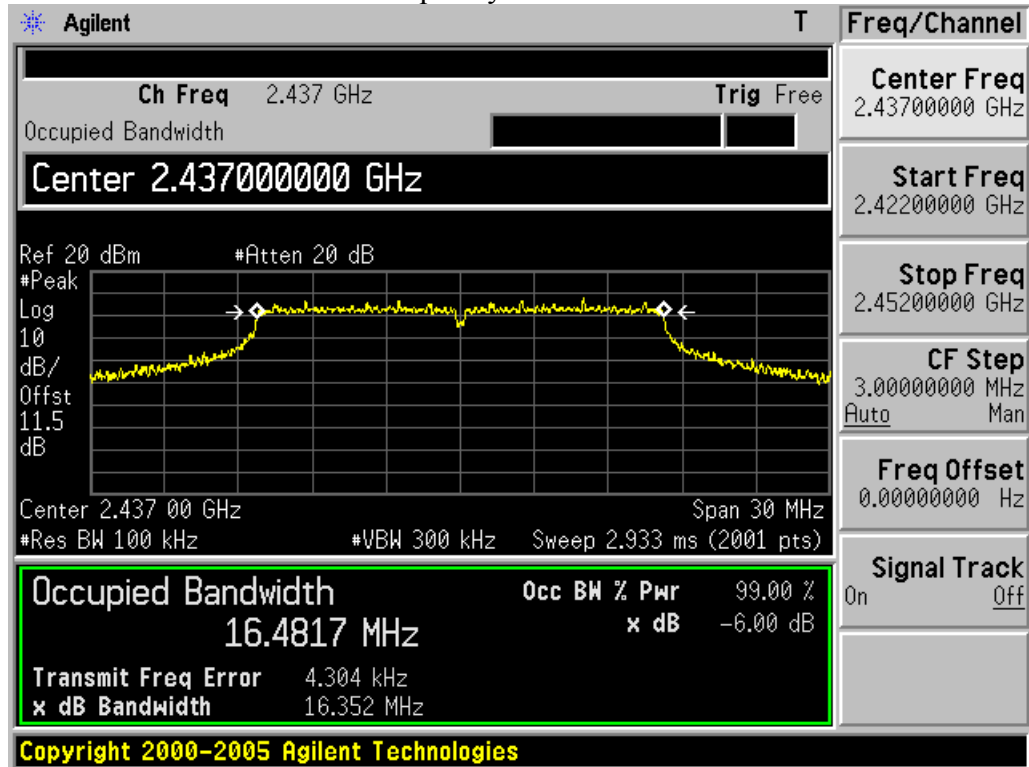
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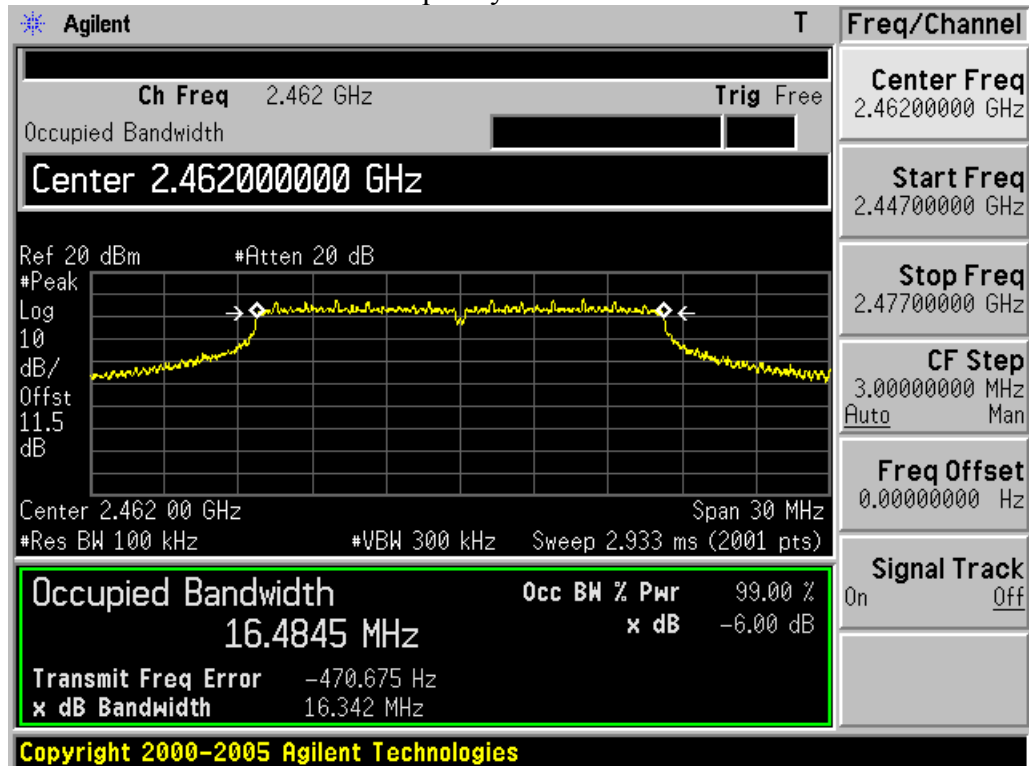
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Frequency M – Chain 1



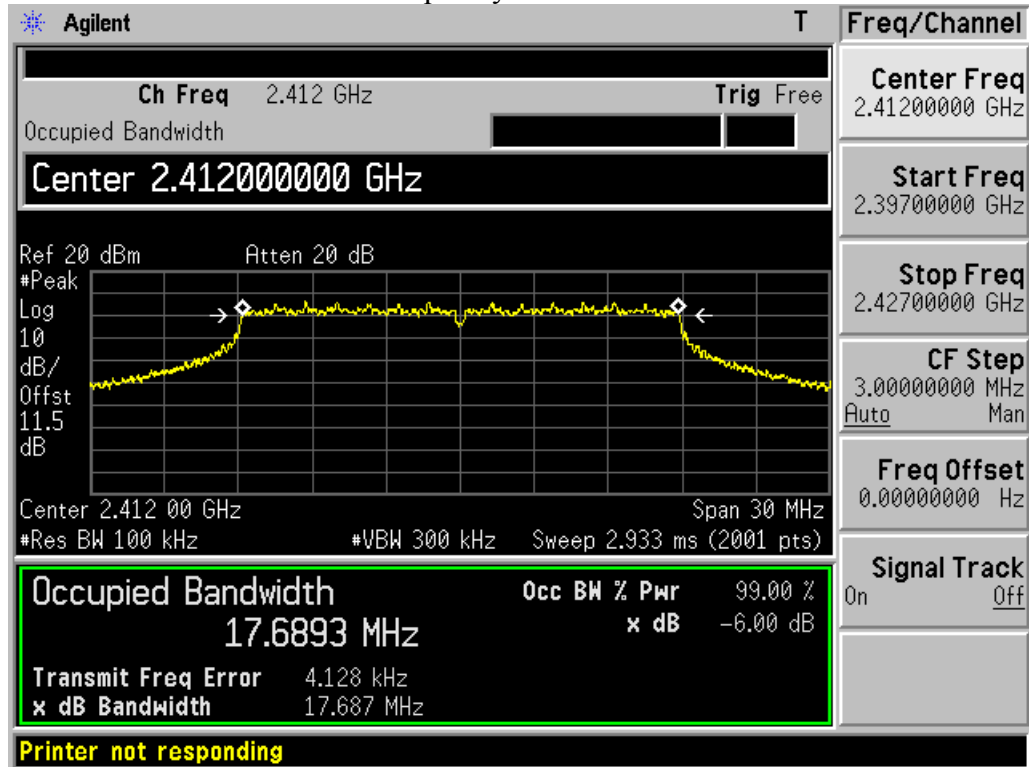
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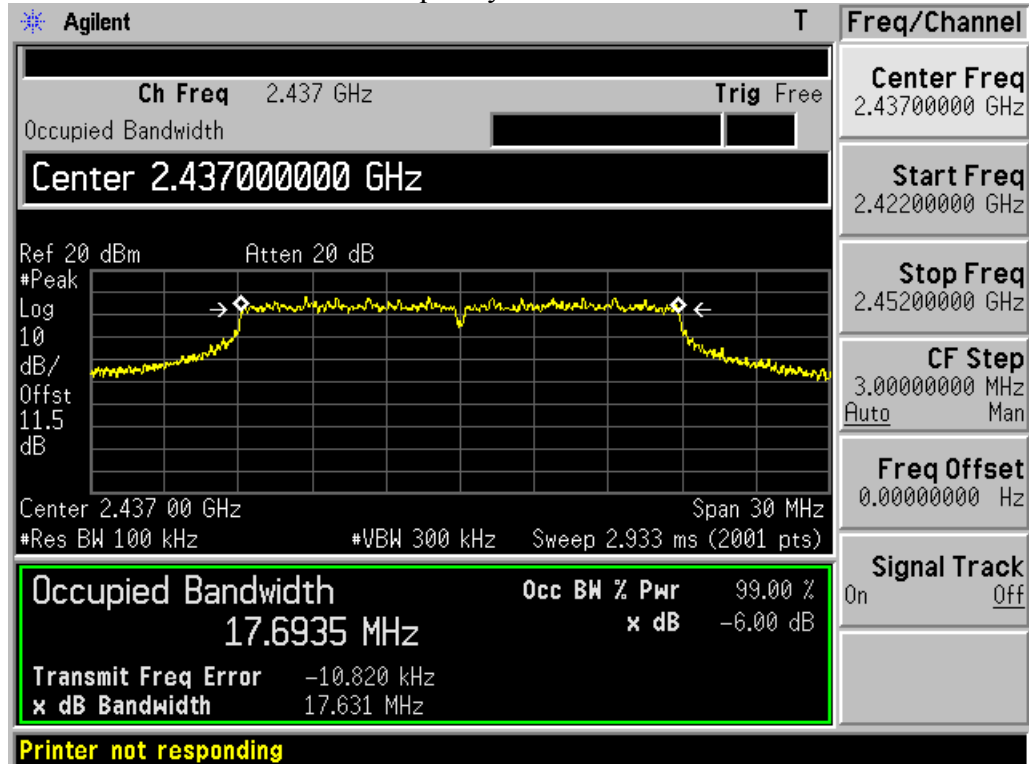
Mode	CH	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11n20 – chain 0	L	17.6870	17.6893	≥0.5
	M	17.6310	17.6935	
	H	17.6660	17.6775	

Mode	CH	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11n20 – chain 1	L	17.6290	17.6991	≥0.5
	M	17.6310	17.6857	
	H	17.6160	17.6721	

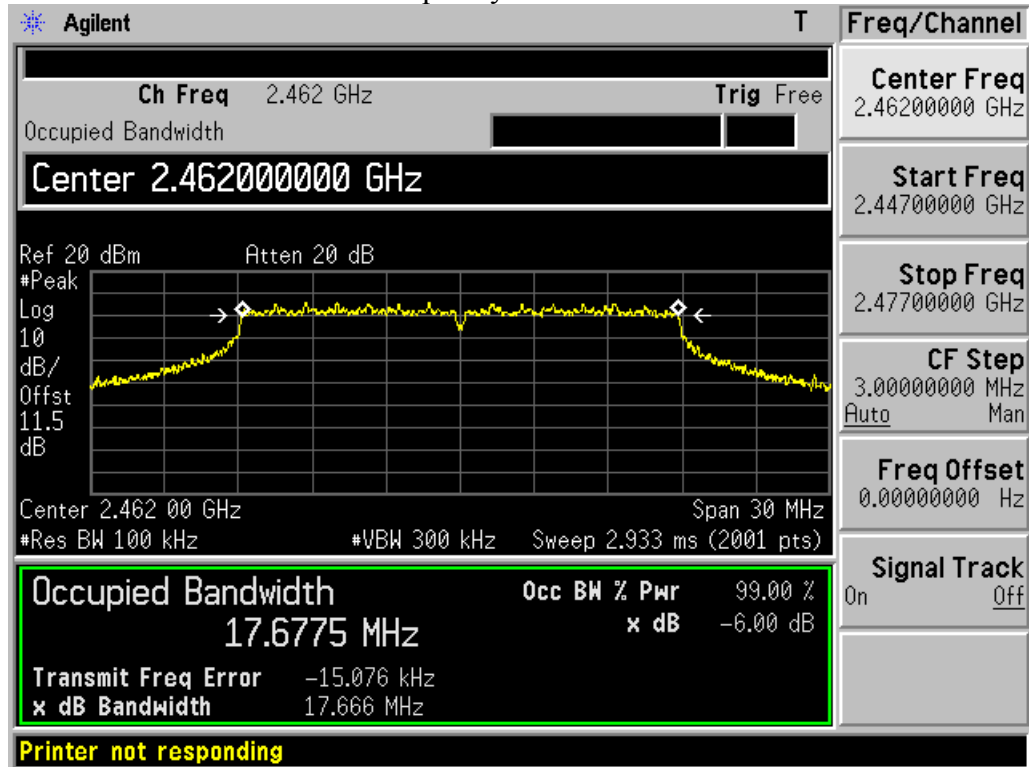
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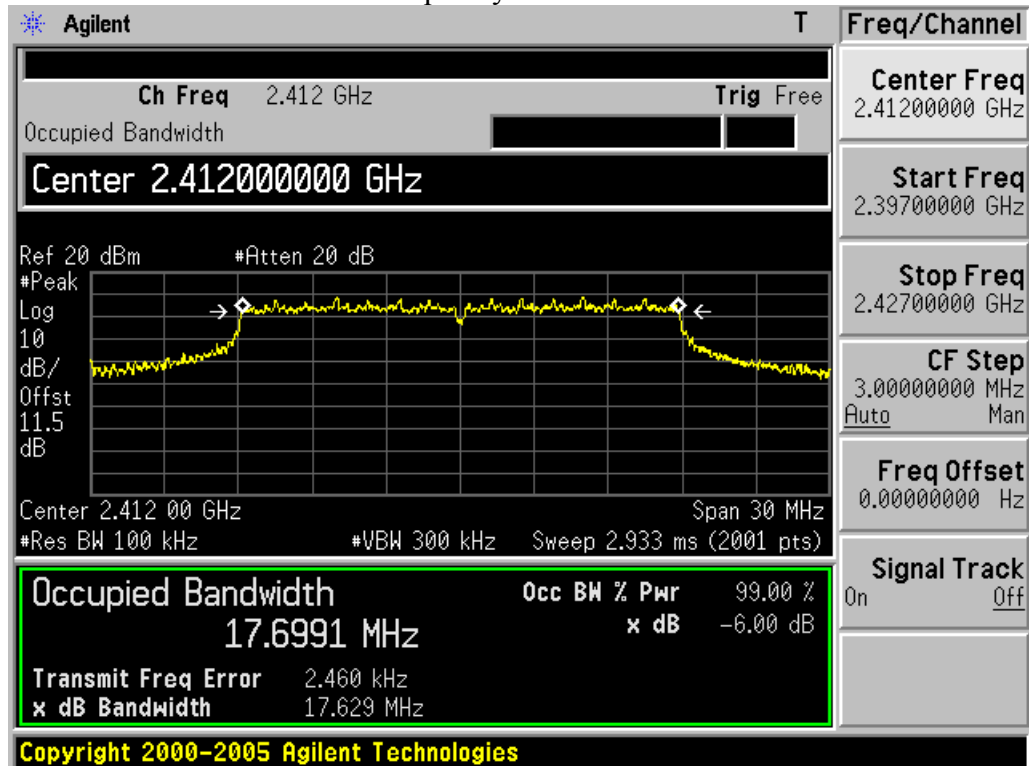
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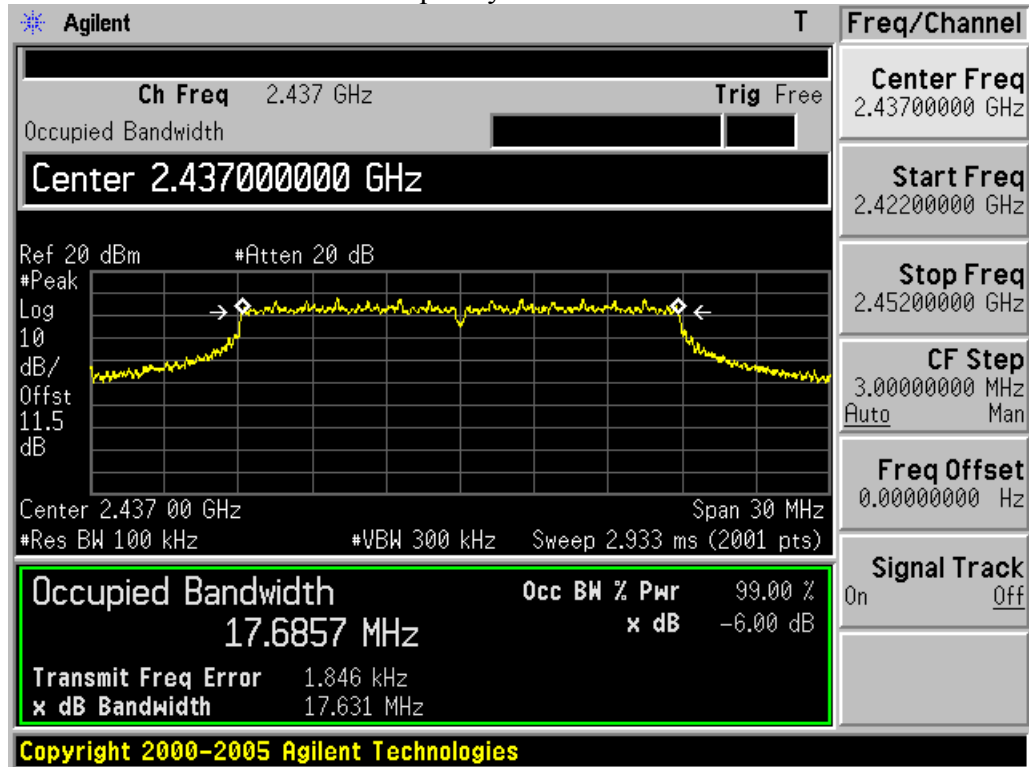
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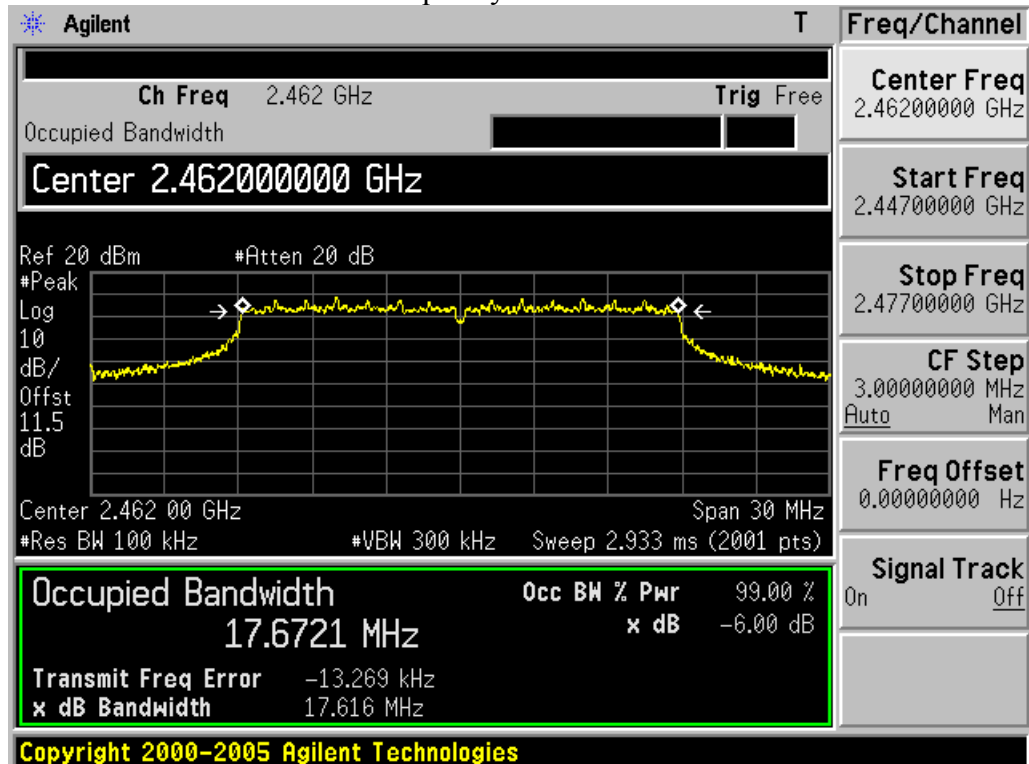
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Frequency M – Chain 1



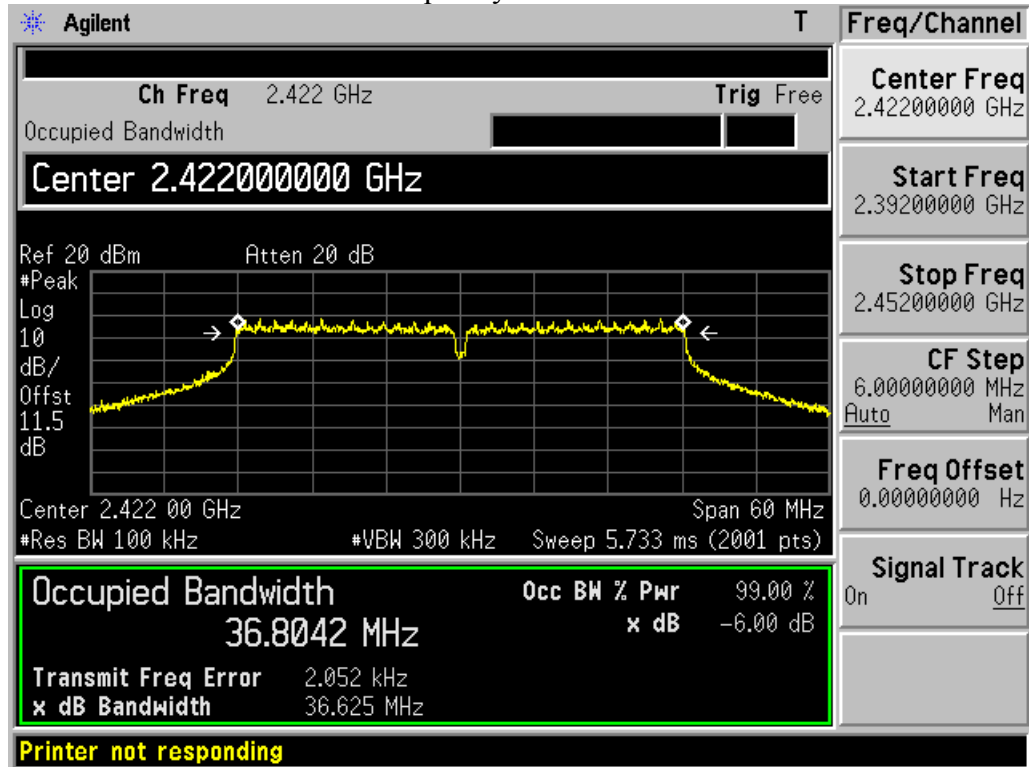
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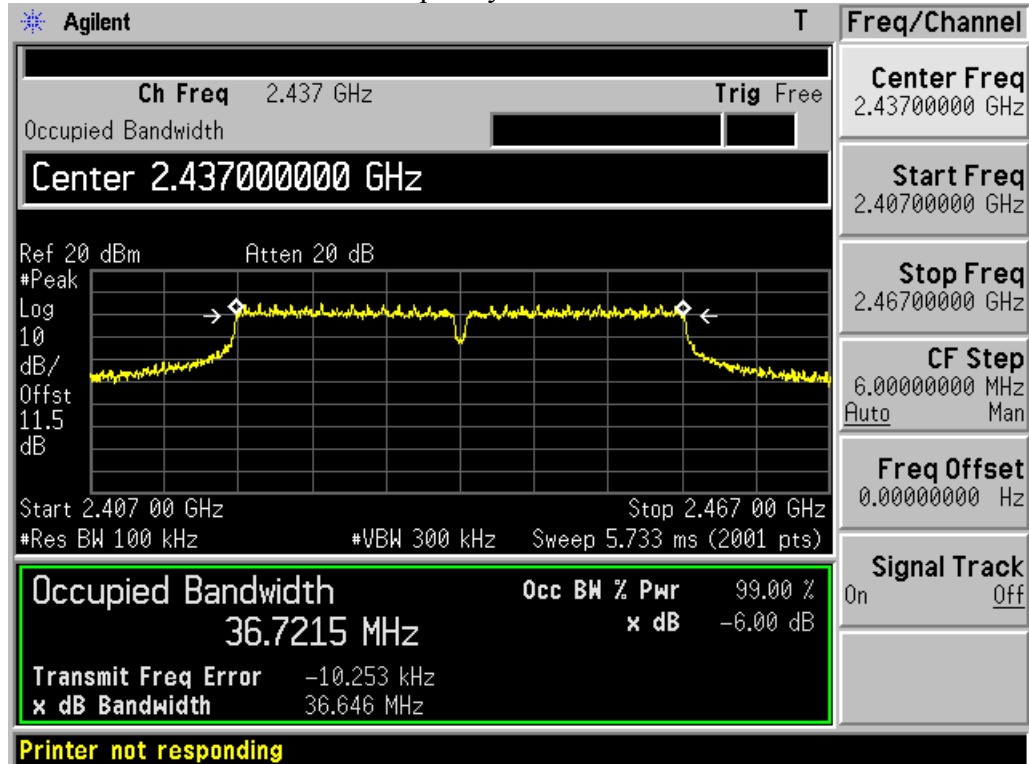
Mode	CH	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11n40 – chain 0	L	36.6250	36.8042	≥ 0.5
	M	36.6460	36.7215	
	H	36.4520	36.4931	

Mode	CH	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11n40 – chain 1	L	36.1310	36.2360	≥ 0.5
	M	36.3730	36.3968	
	H	36.5130	36.5965	

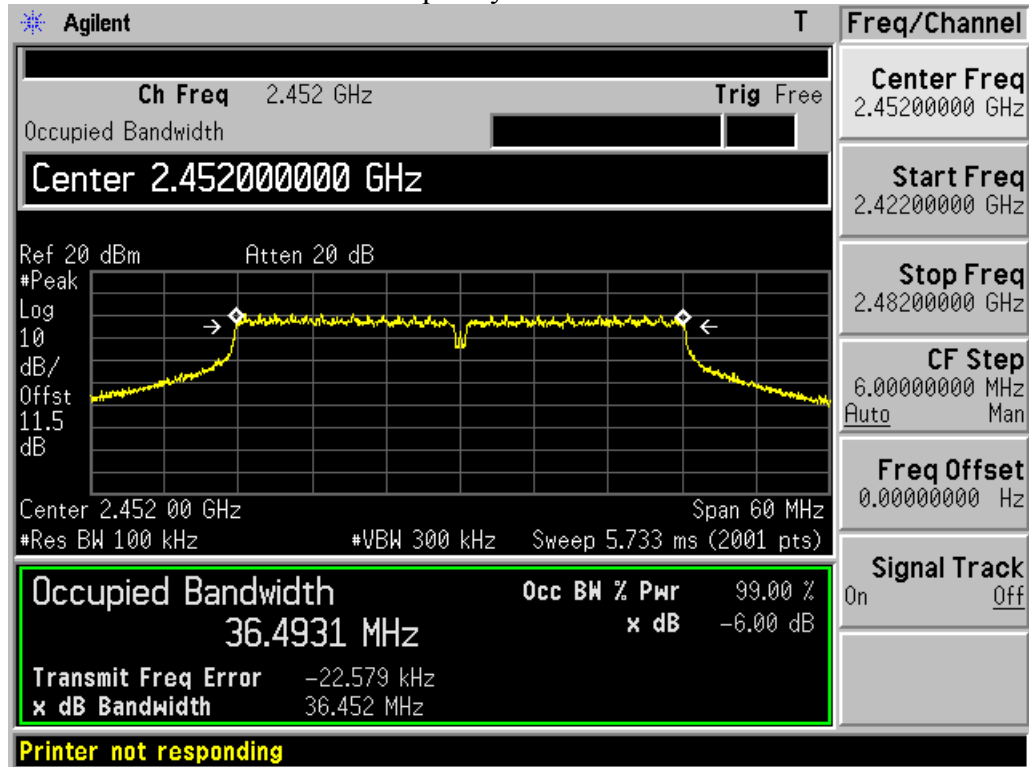
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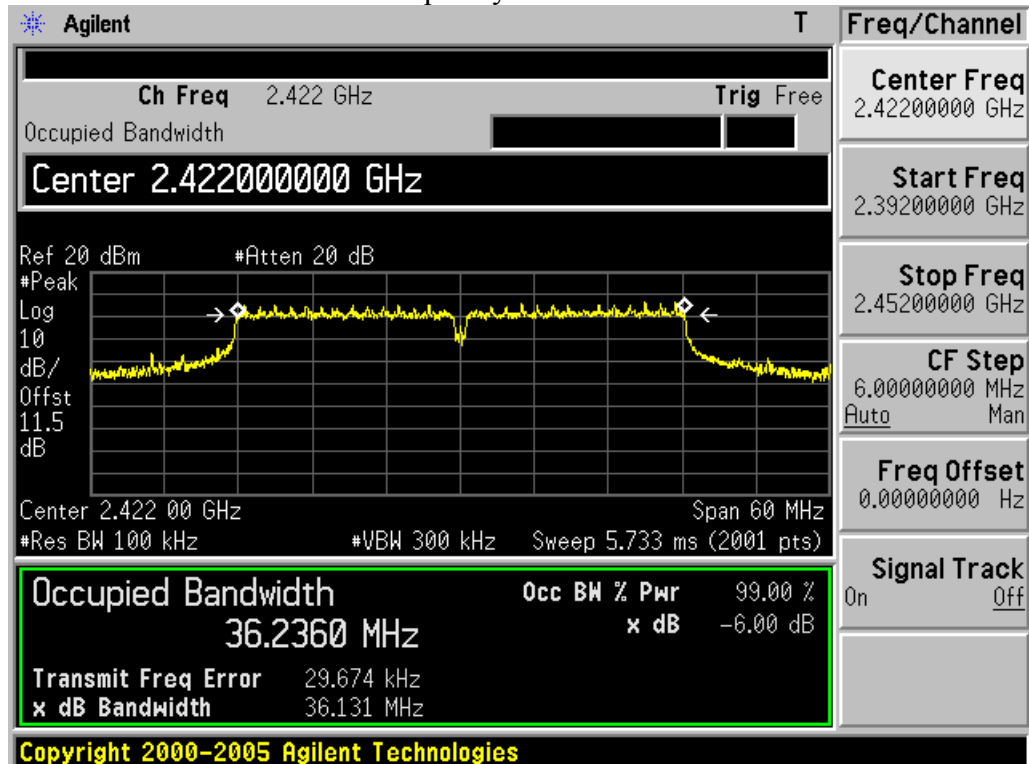
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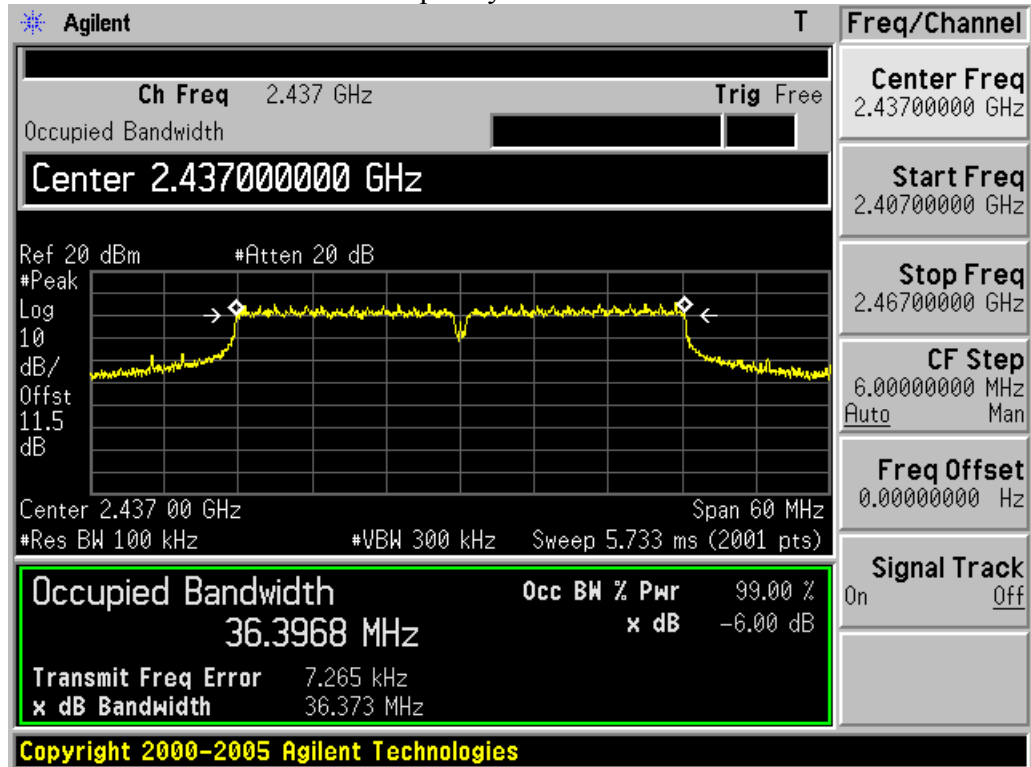
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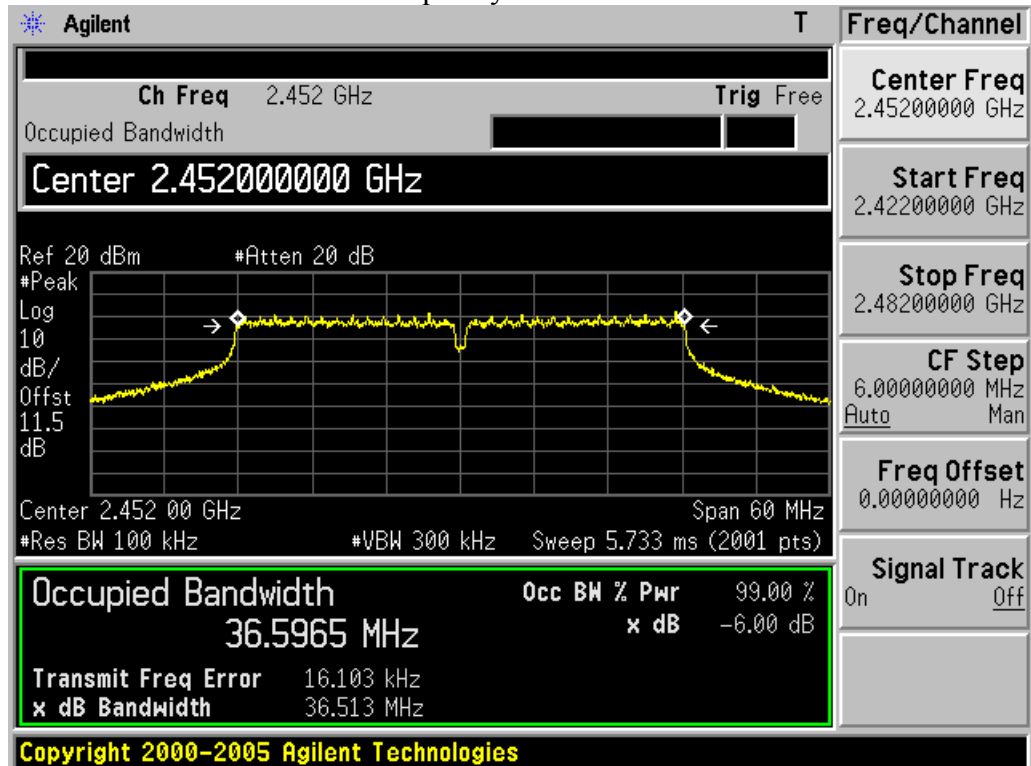
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Frequency M – Chain 1



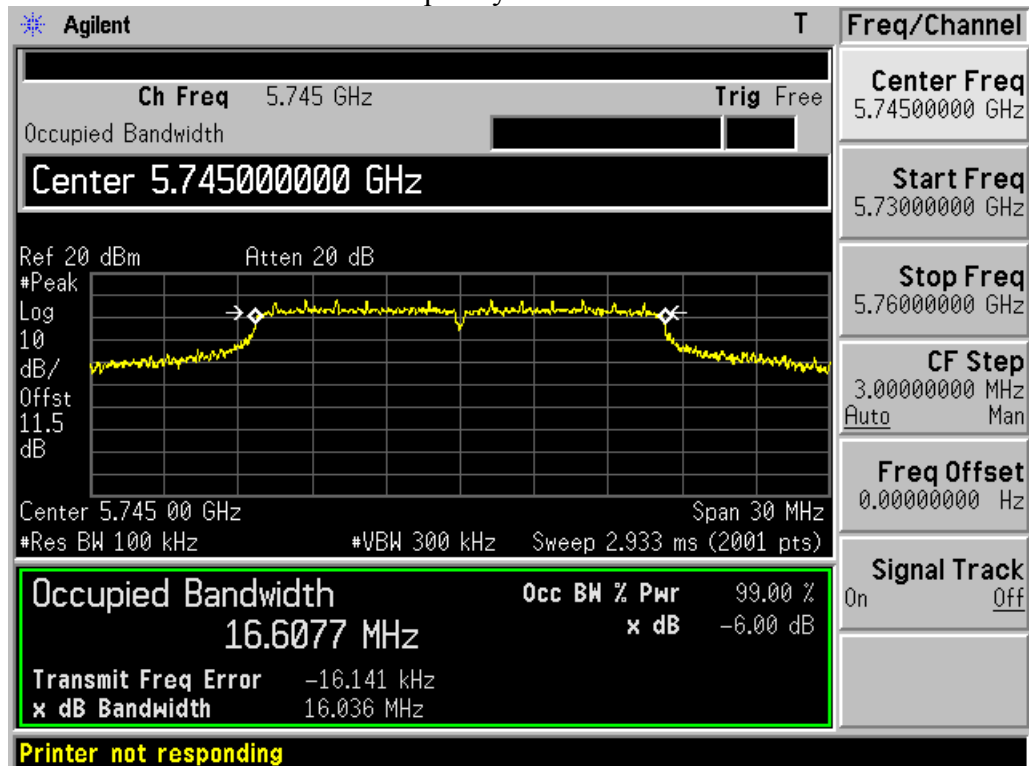
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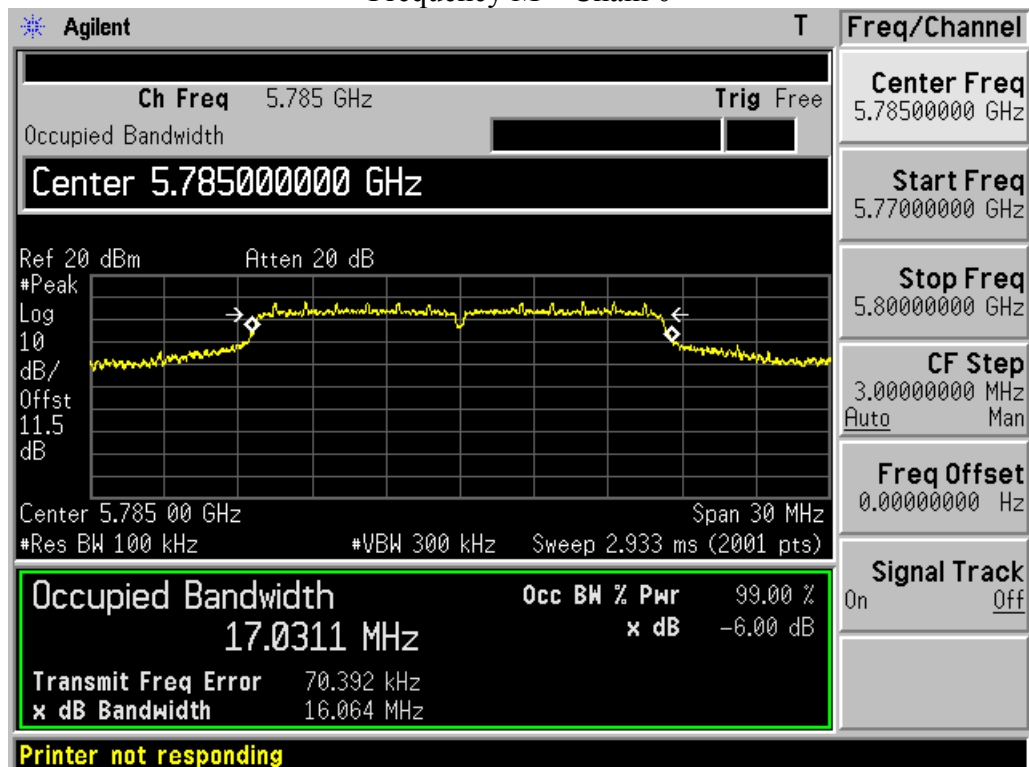
Mode	CH	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11a – chain 0	L	16.0360	16.6077	≥0.5
	M	16.0640	17.0311	
	H	16.3220	17.4153	

Mode	CH	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11a – chain 1	L	15.7100	16.4458	≥0.5
	M	16.3090	16.4818	
	H	16.0510	16.6075	

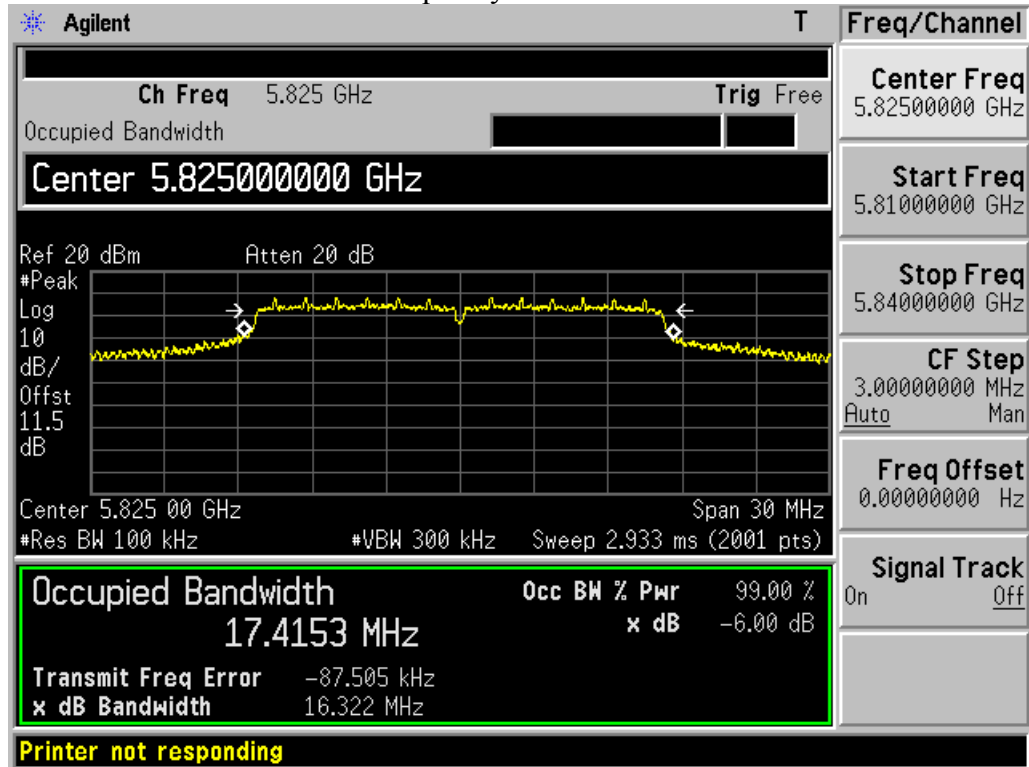
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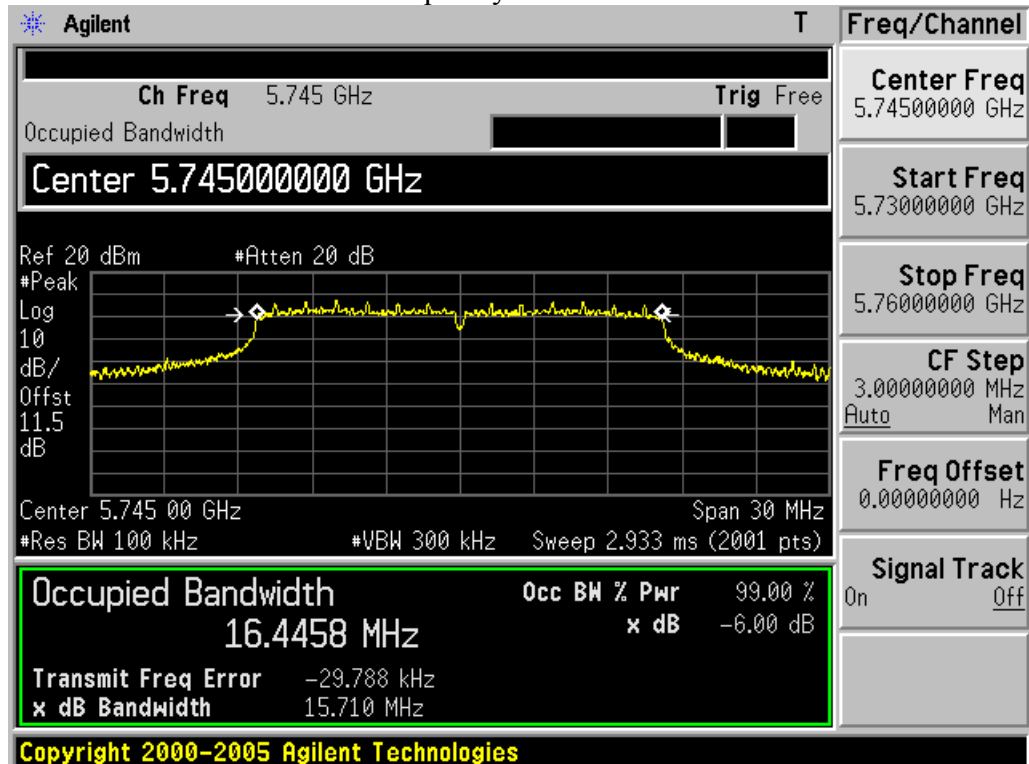
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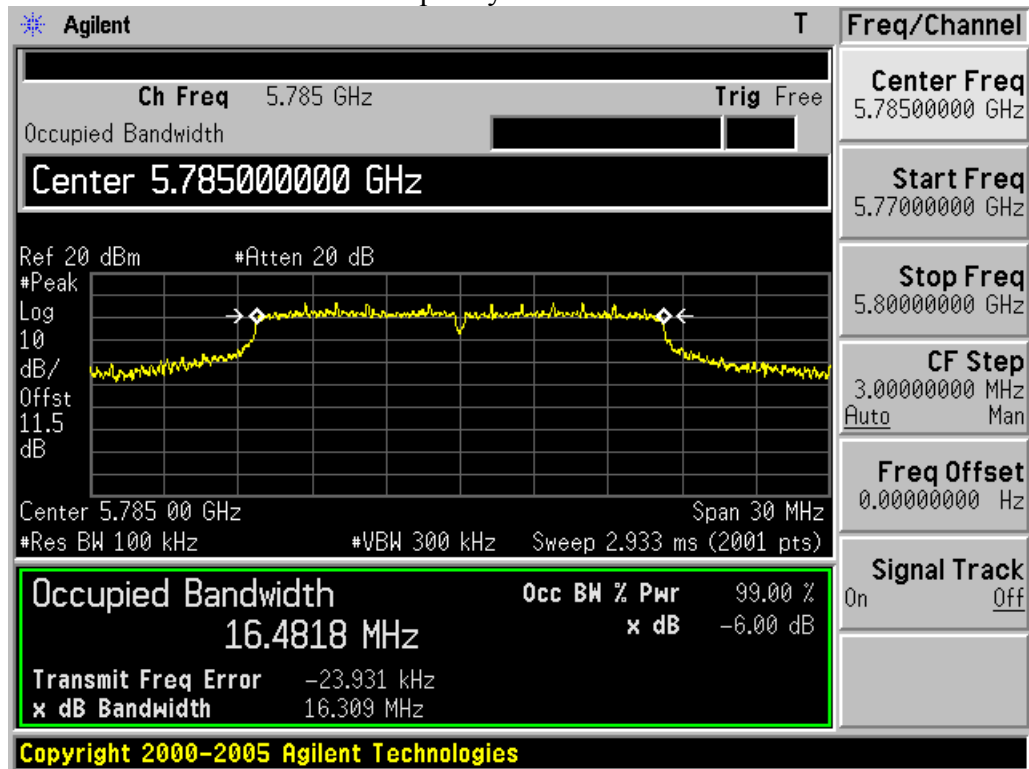
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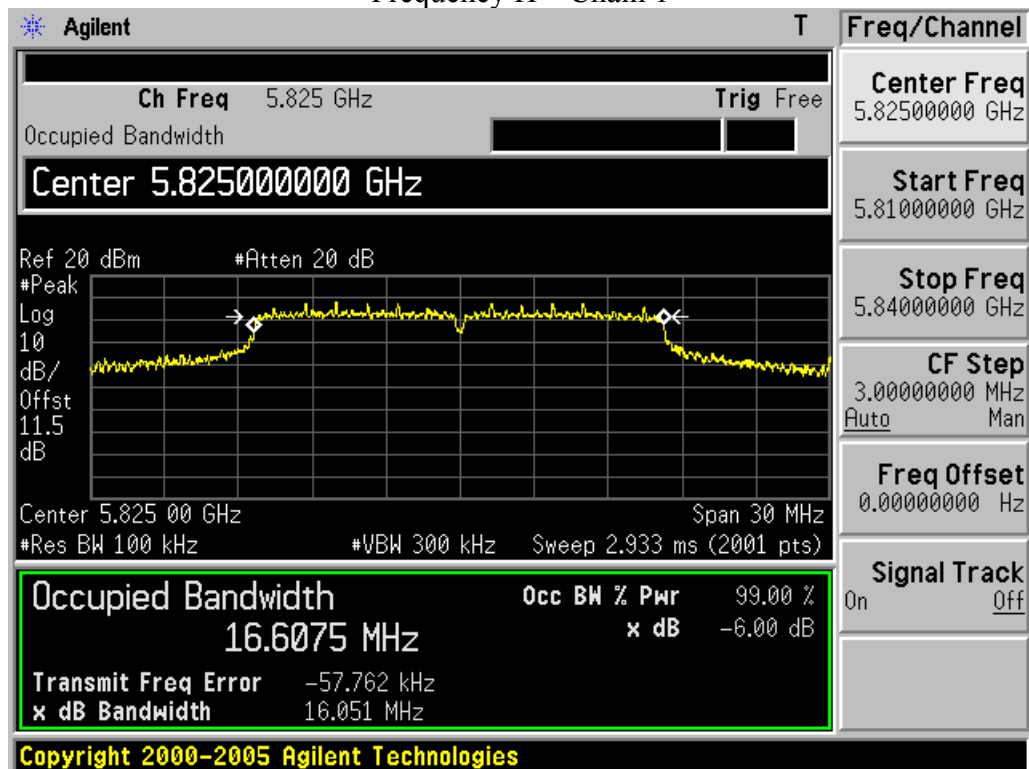
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Frequency M – Chain 1



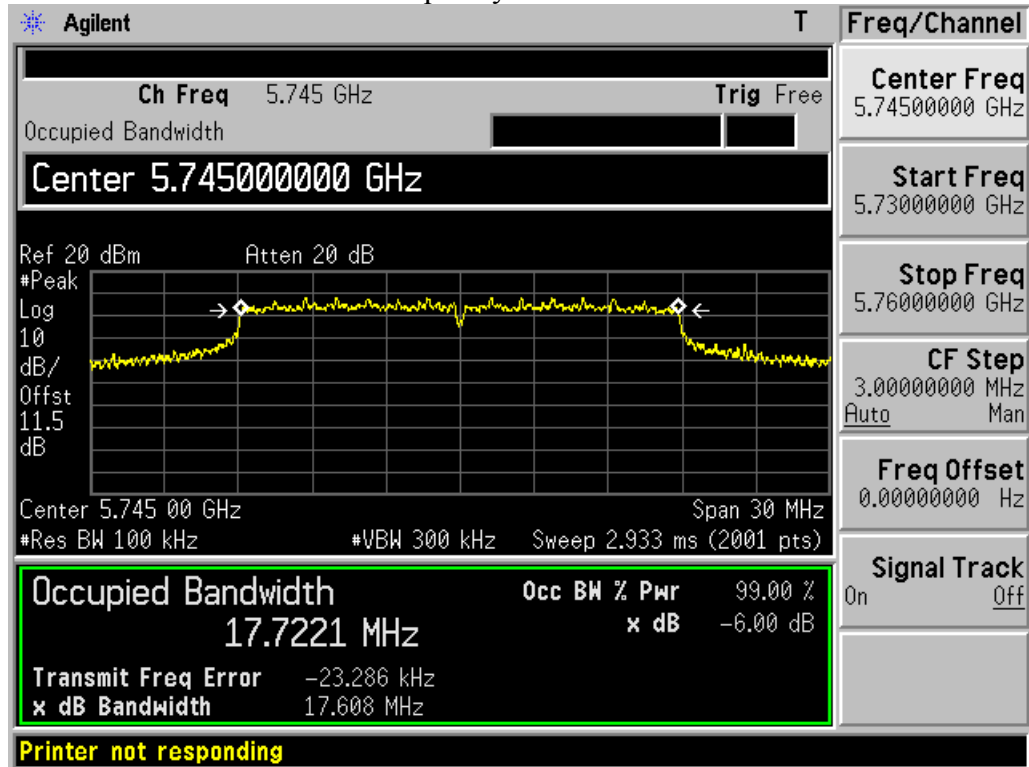
Frequency H – Chain 1



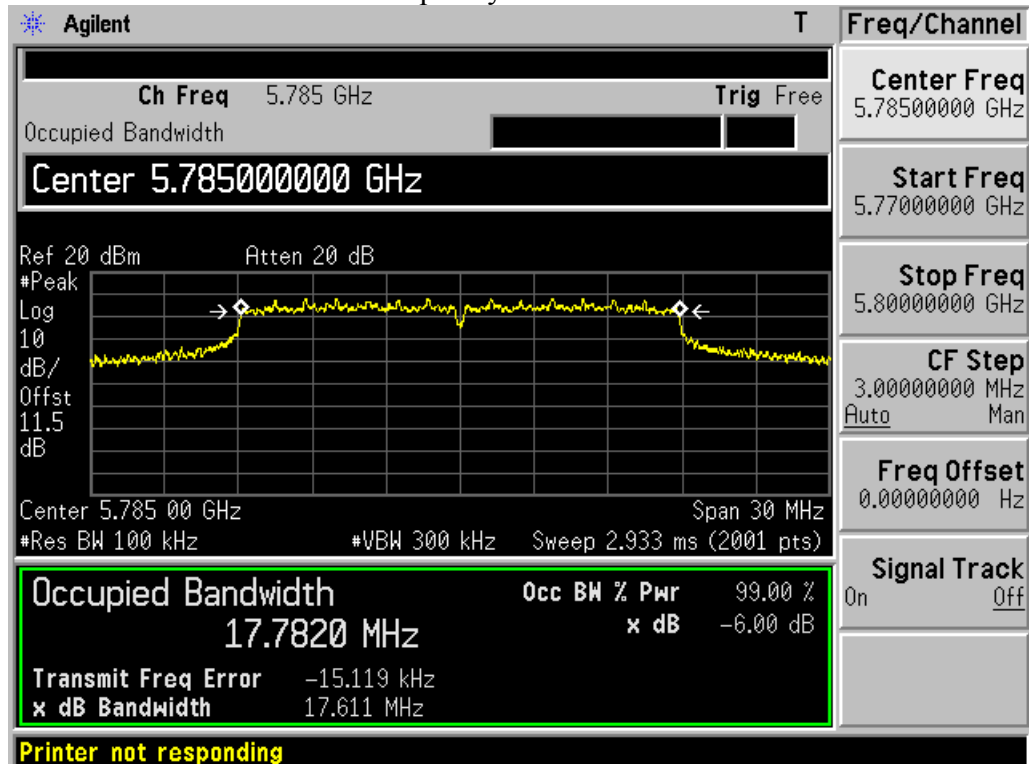
Mode	CH	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11n20 – chain 0	L	17.6080	17.7221	≥ 0.5
	M	17.6110	17.7820	
	H	17.5990	17.7694	

Mode	CH	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11n20 – chain 1	L	16.7030	17.6022	≥ 0.5
	M	17.6190	17.6761	
	H	17.5680	17.7043	

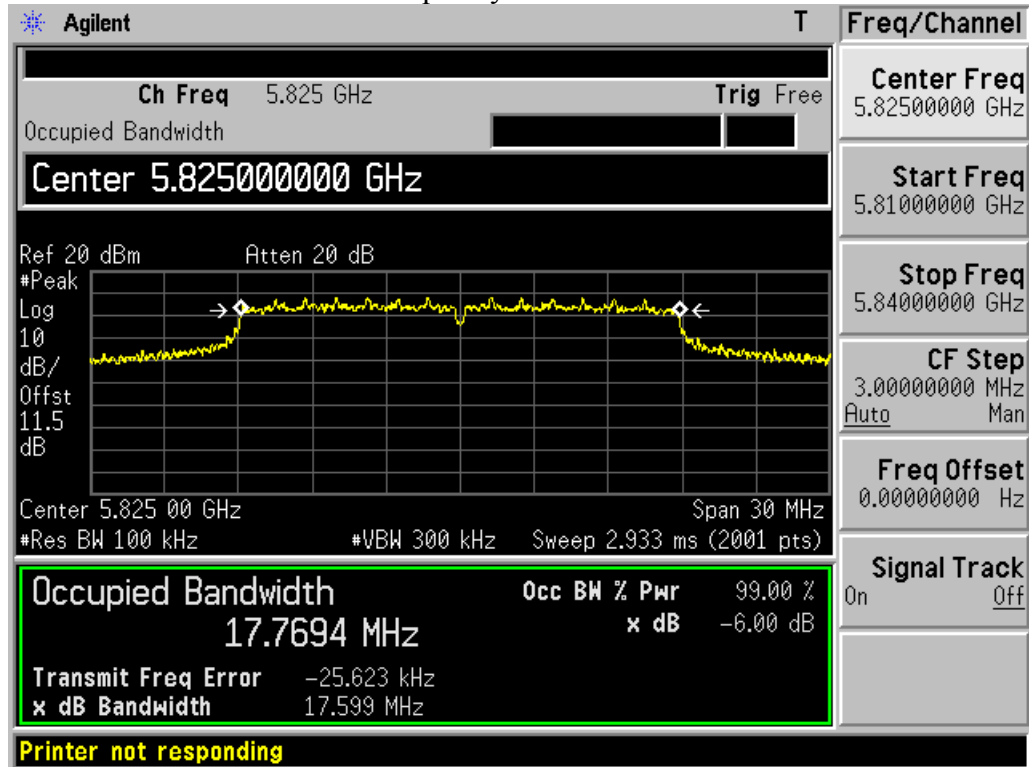
Frequency L – Chain 0



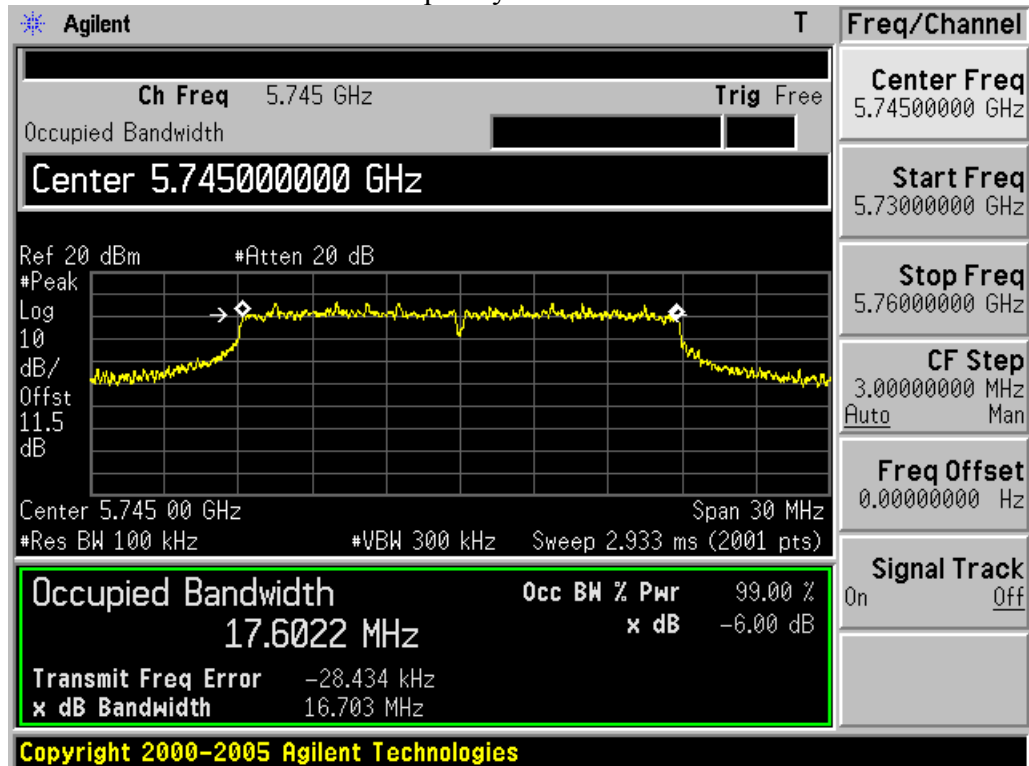
Frequency M – Chain 0



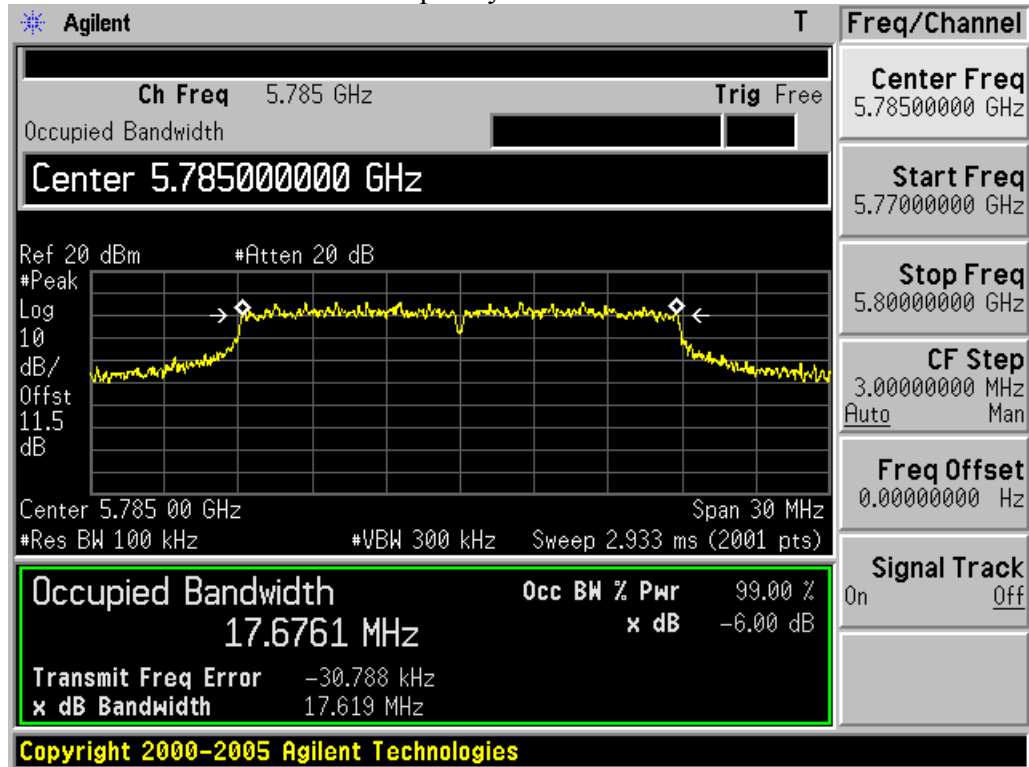
Frequency H – Chain 0



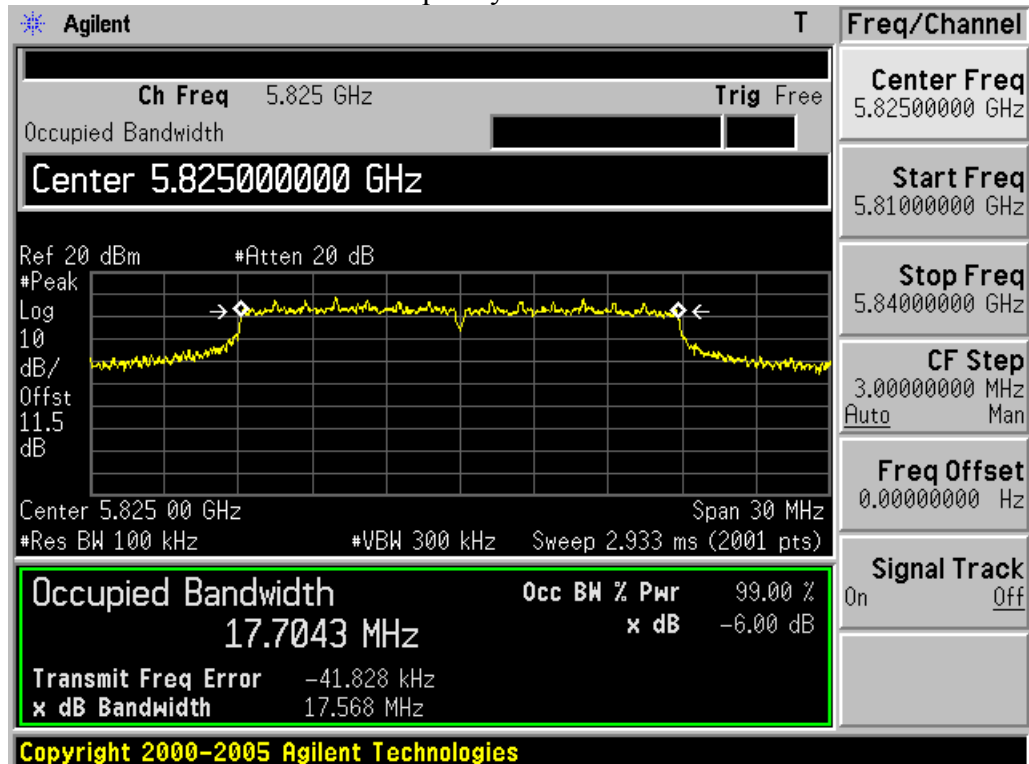
Frequency L – Chain 1



Frequency M – Chain 1



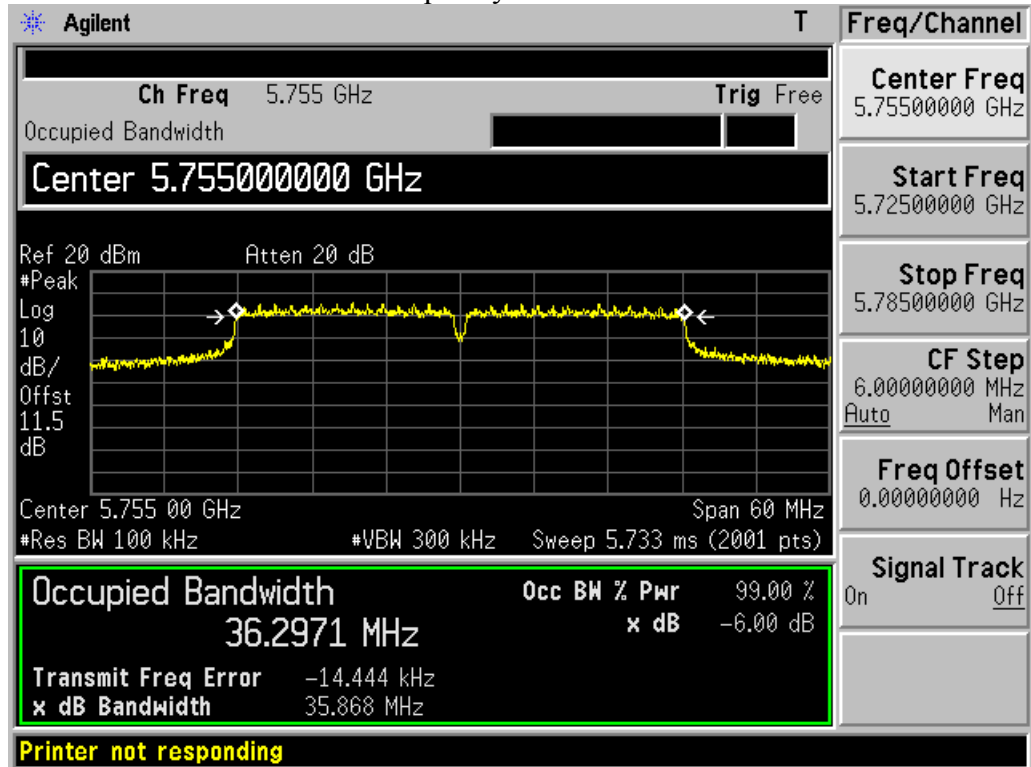
Frequency H – Chain 1



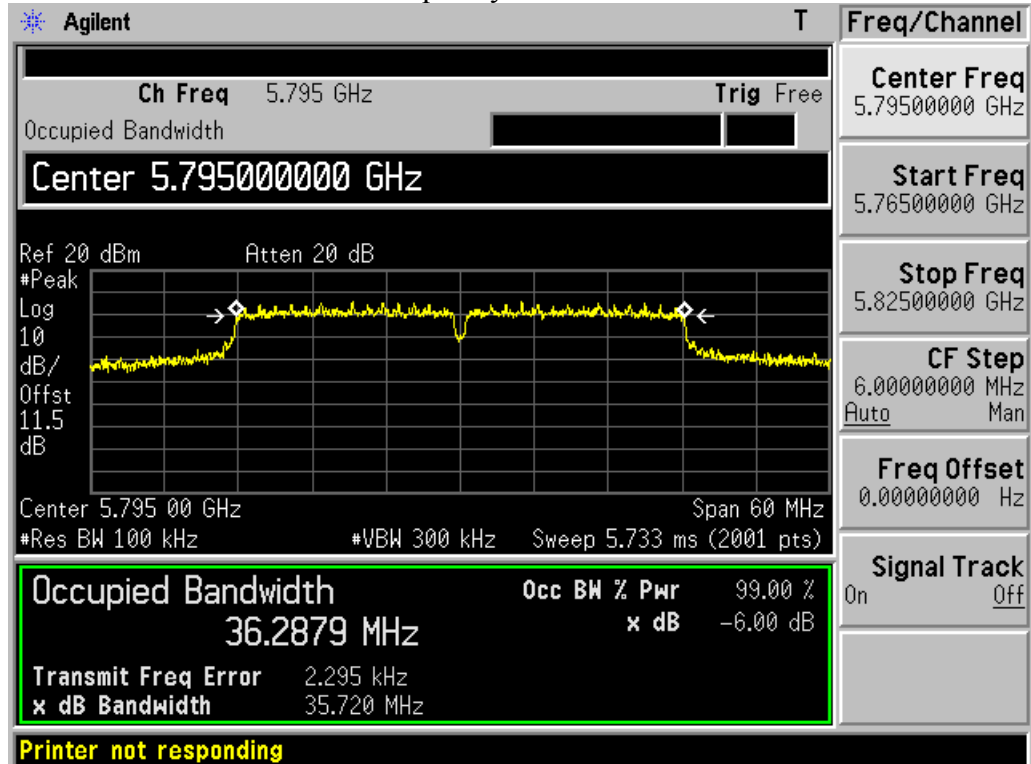
Mode	CH	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11n40 – chain 0	L	35.8680	36.2971	≥ 0.5
	H	35.7200	36.2879	

Mode	CH	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11n40 – chain 1	L	35.7290	36.1774	≥ 0.5
	H	35.4440	36.1940	

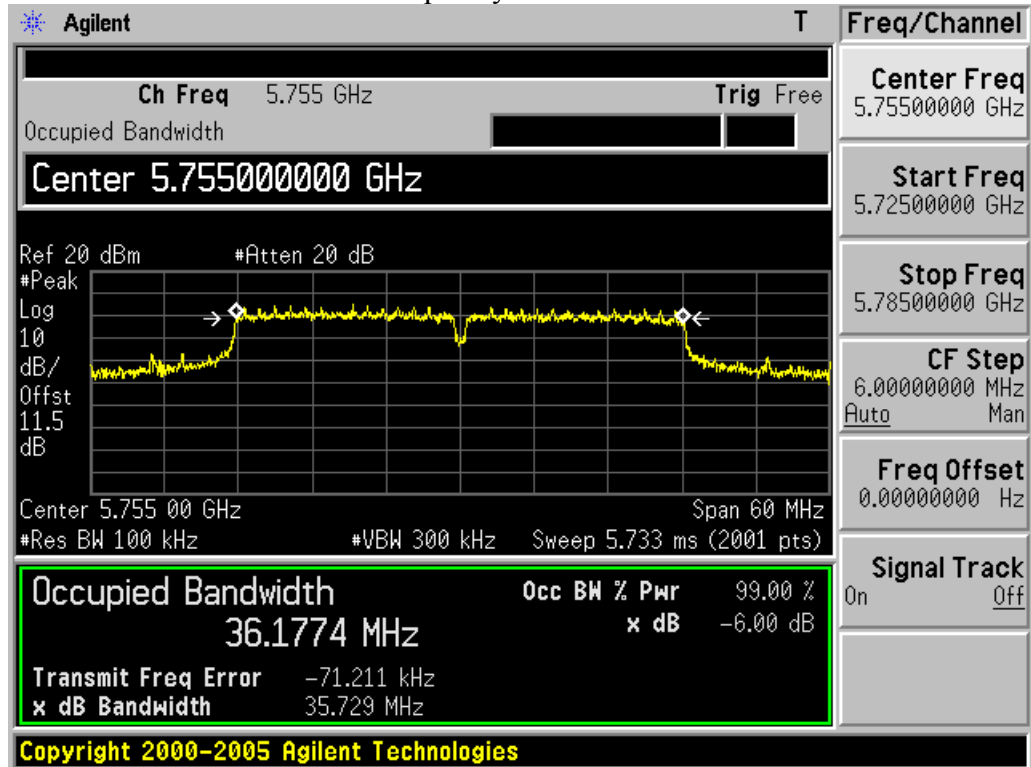
Frequency L – Chain 0



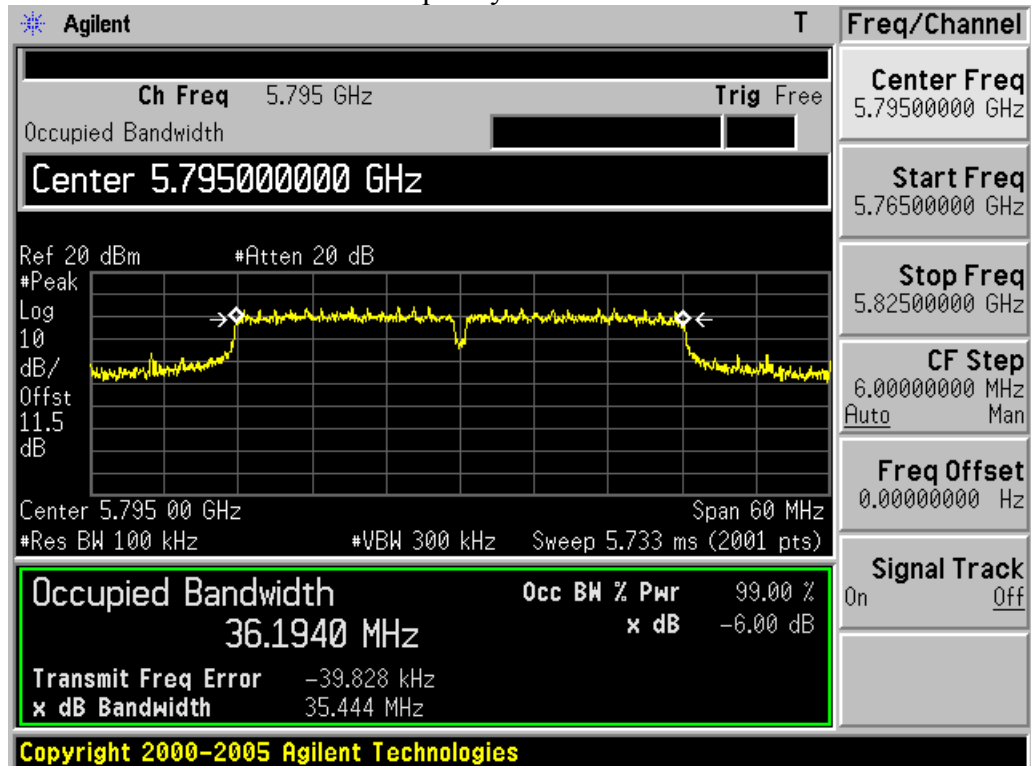
Frequency H – Chain 0



Frequency L – Chain 1



Frequency H – Chain 1



4. Maximum peak output power

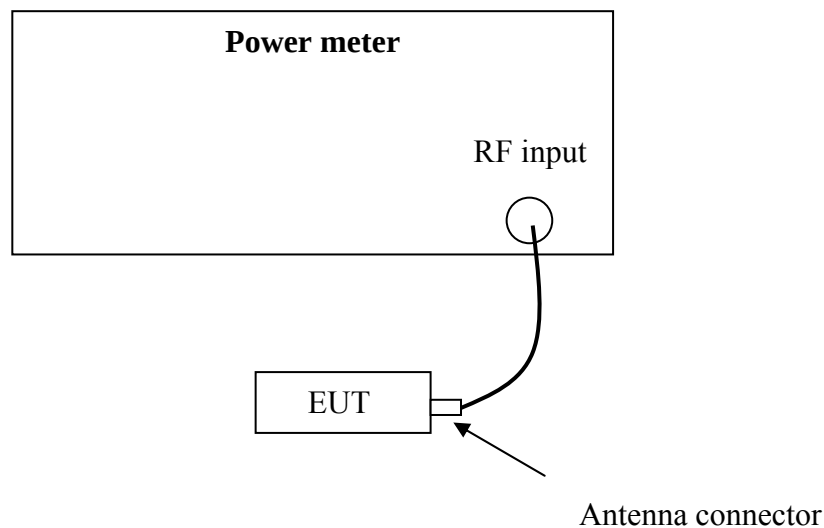
Test result: Pass

4.1 Test 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
- ☒ For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.

If the transmitting antenna of directional gain greater than 6dBi is used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.2 Test Configuration



4.3 Test procedure and test setup

The EUT was tested according to DTS test procedure of “KDB558074 D01 DTS Meas Guidance v03r02” for compliance to FCC 47CFR 15.247 requirements (clause 9.1.2).

4.4 Test protocol

Temperature : 25 °C

Relative Humidity : 55 %

Mode	Freq. (MHz)	Cable loss	Reading (dBm)		Total Peak power (dBm)	Limit (dBm)	Margin (dB)
			Port 0	Port 1			
802.11b	2412	1.5	21.04	20.86	23.96	30.00	6.04
	2437	1.5	20.46	19.78	23.14	30.00	6.86
	2462	1.5	20.62	20.01	23.34	30.00	6.66
802.11g	2412	1.5	25.03	25.16	28.11	30.00	1.89
	2437	1.5	25.42	25.21	28.33	30.00	1.67
	2462	1.5	25.75	25.01	28.41	30.00	1.59
802.11n20	2412	1.5	25.76	25.69	28.74	30.00	1.26
	2437	1.5	25.52	25.21	28.38	30.00	1.62
	2462	1.5	25.32	25.17	28.26	30.00	1.74
802.11n40	2422	1.5	22.10	22.91	25.53	30.00	4.47
	2437	1.5	25.18	25.04	28.12	30.00	1.88
	2452	1.5	24.25	23.62	26.96	30.00	3.04

Mode	Freq. (MHz)	Cable loss	Reading (dBm)		Total Peak power (dBm)	Limit (dBm)	Margin (dB)
			Port 0	Port 1			
802.11a	5745	2.0	23.62	23.17	26.41	30.00	3.59
	5785	2.0	23.24	22.78	26.03	30.00	3.97
	5825	2.0	23.01	22.96	26.00	30.00	4.00
802.11n20	5745	2.0	23.65	23.01	26.35	30.00	3.65
	5785	2.0	23.20	23.01	26.12	30.00	3.88
	5825	2.0	23.04	22.78	25.92	30.00	4.08
802.11n40	5755	2.0	23.26	23.03	26.16	30.00	3.84
	5795	2.0	23.12	22.34	25.76	30.00	4.24

The maximum EIRP of the EUT = 28.74dBm + 3.60dBi = 32.34dBm = 1713.96mW which is lower than the EIRP limit of RSS-210.

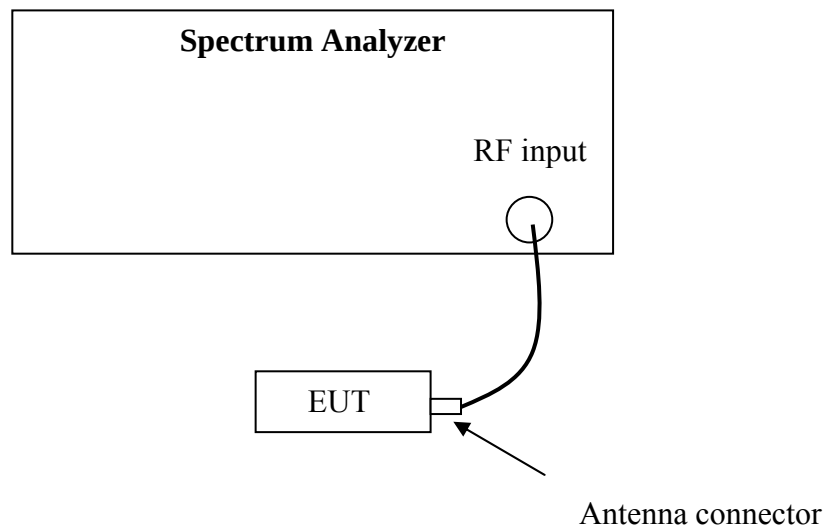
5. Power spectrum density

Test result: Pass

5.1 Test limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

5.2 Test Configuration



5.3 Test procedure and test setup

The power output per FCC §15.247(e) was tested according to DTS test procedure of “KDB558074 D01 DTS Meas Guidance v03r02” (clause 10.2) for compliance to FCC 47CFR 15.247 requirements.

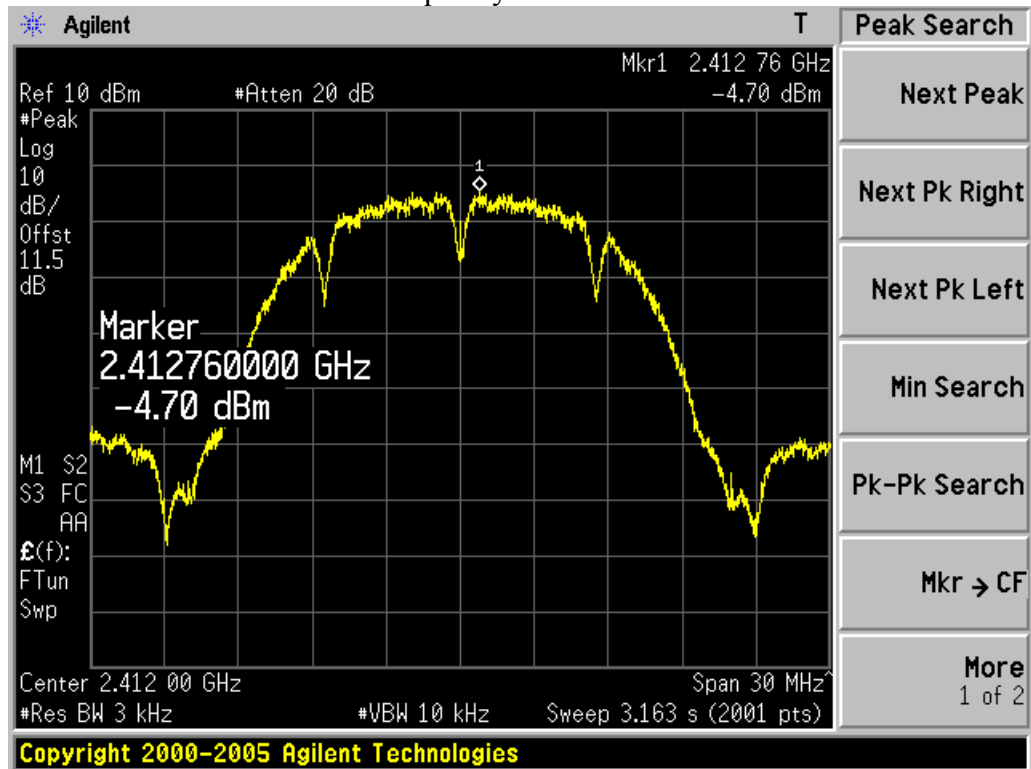
5.4 Test Protocol

Temperature : 25 °C

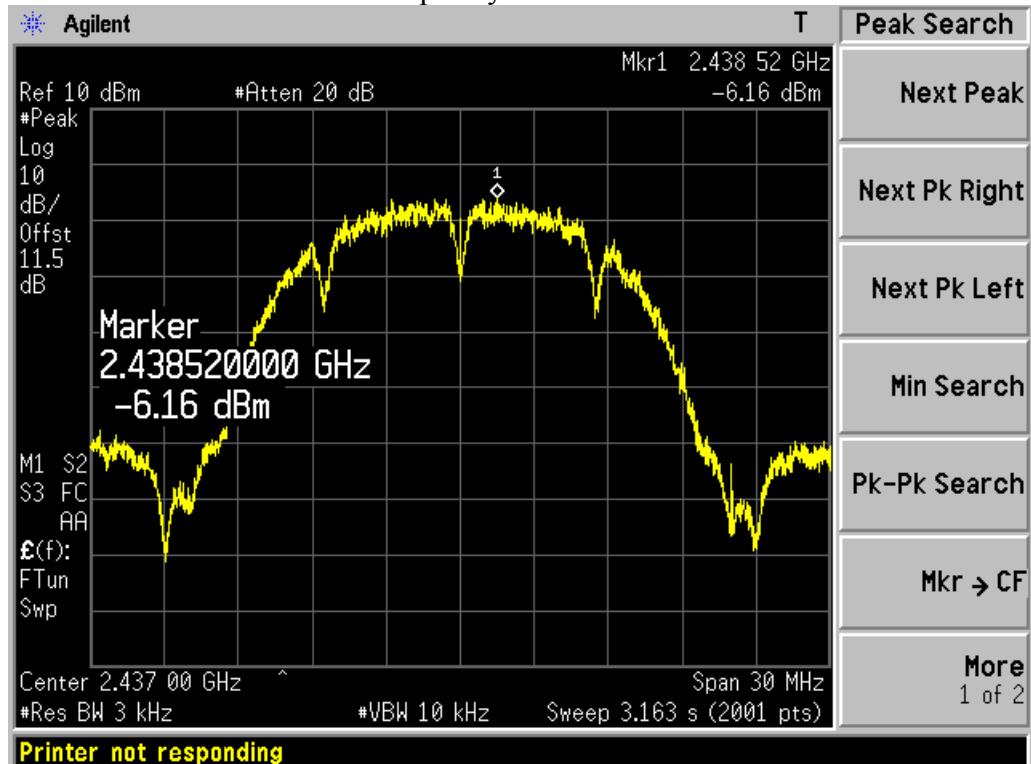
Relative Humidity: 55 %

Mode	CH	Cable loss (dB)	PSD (dBm/3kHz)		Duty cycle factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)
			Port 0	Port 1			
802.11b	L	1.5	-4.70	-5.18	0.02	-1.90	≤8.00
	M	1.5	-6.16	-6.19	0.02	-3.14	
	H	1.5	-5.52	-5.40	0.02	-2.43	

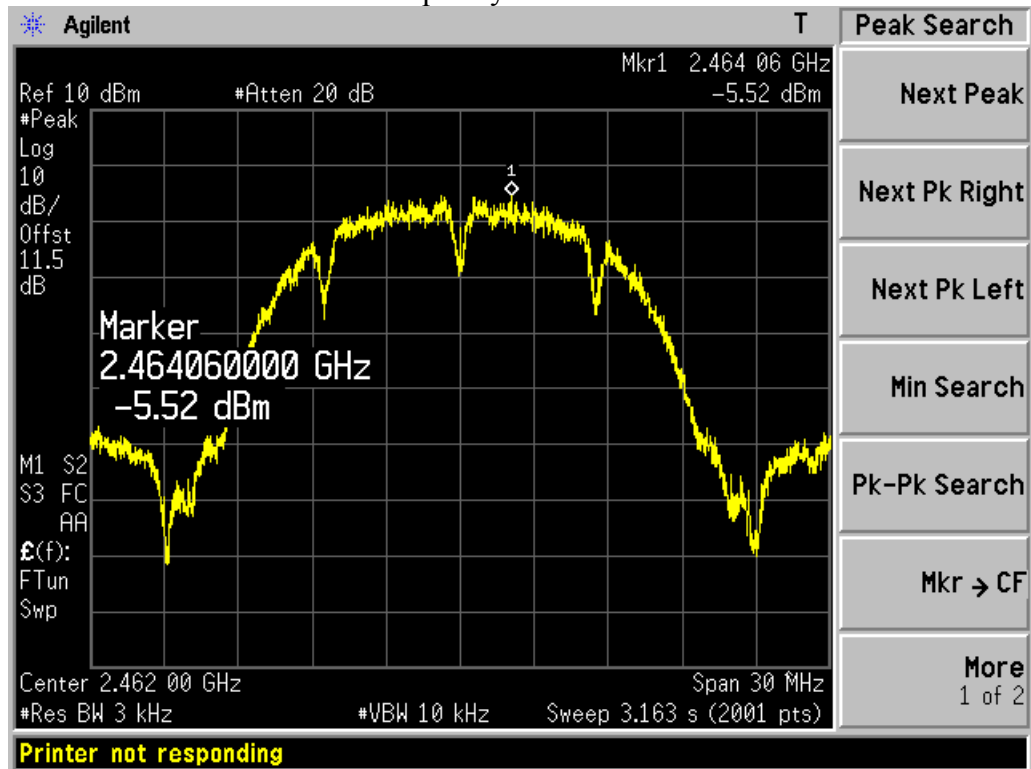
Frequency L – Chain 0



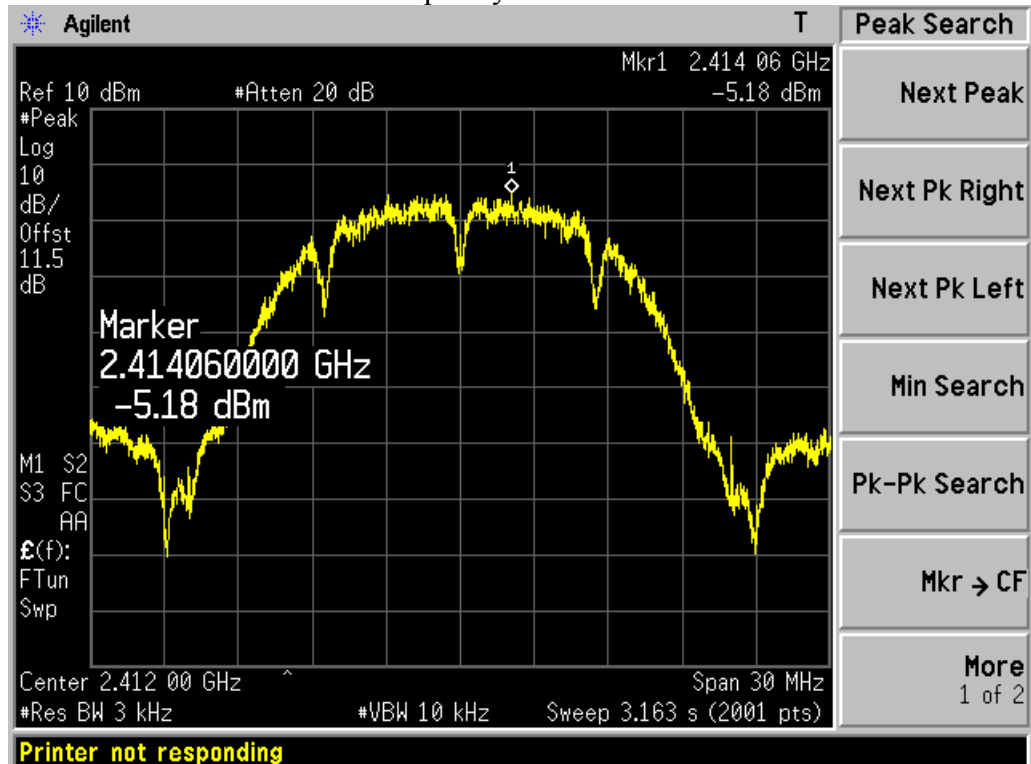
Frequency M – Chain 0



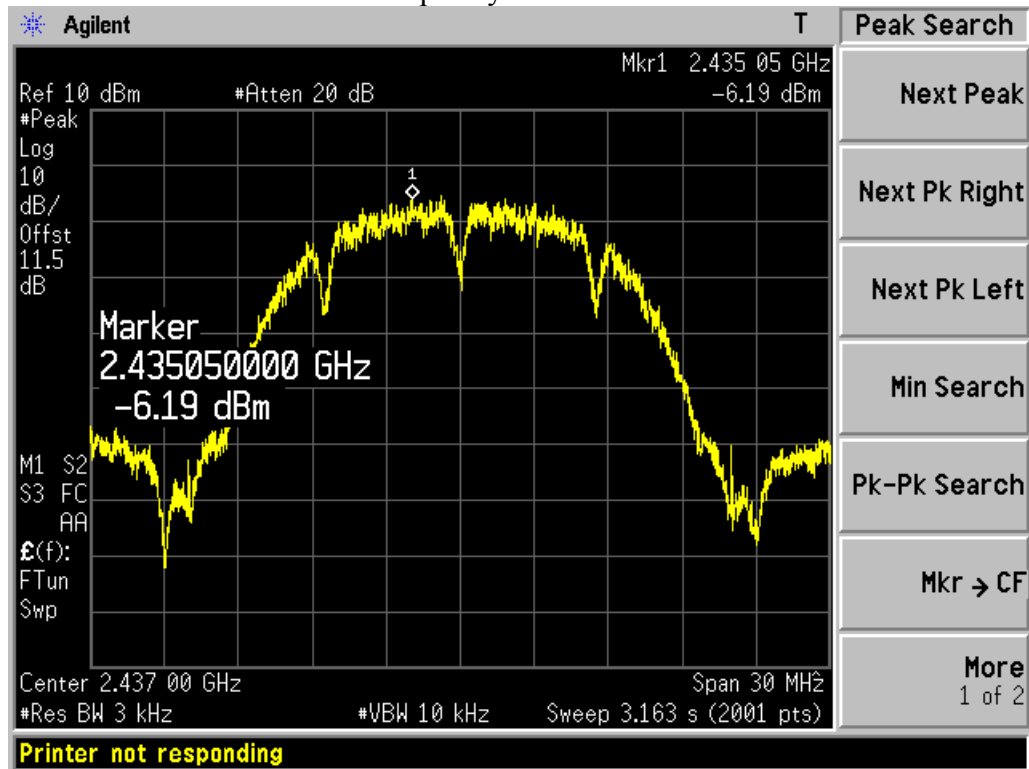
Frequency H – Chain 0



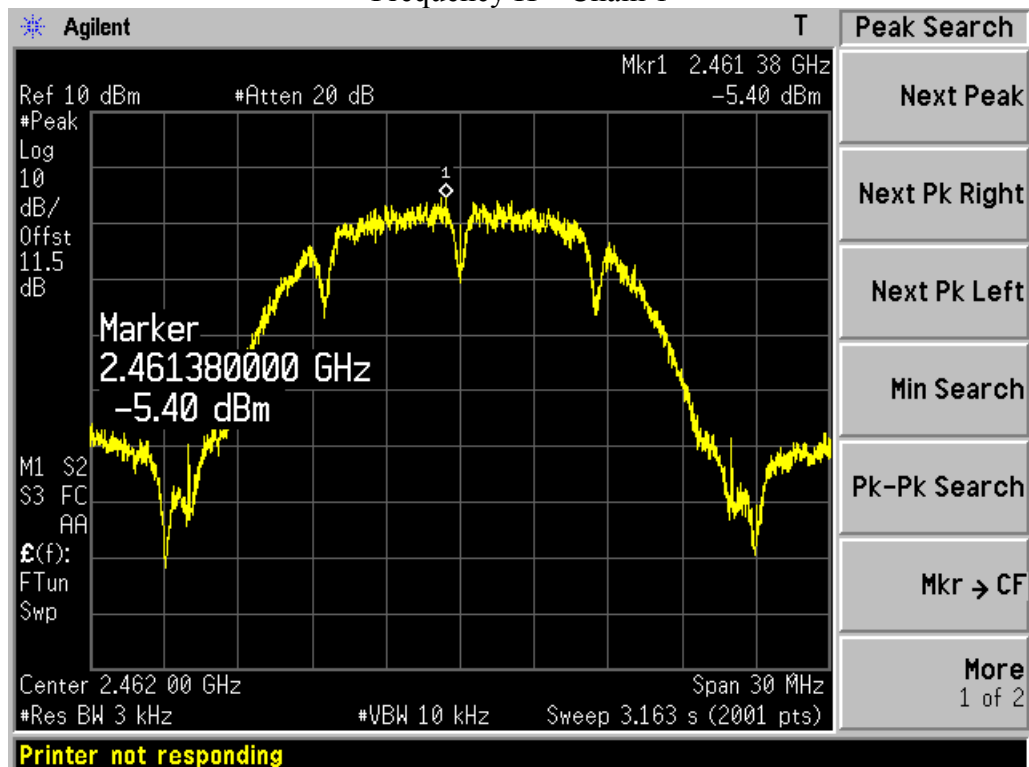
Frequency L – Chain 1



Frequency M – Chain 1

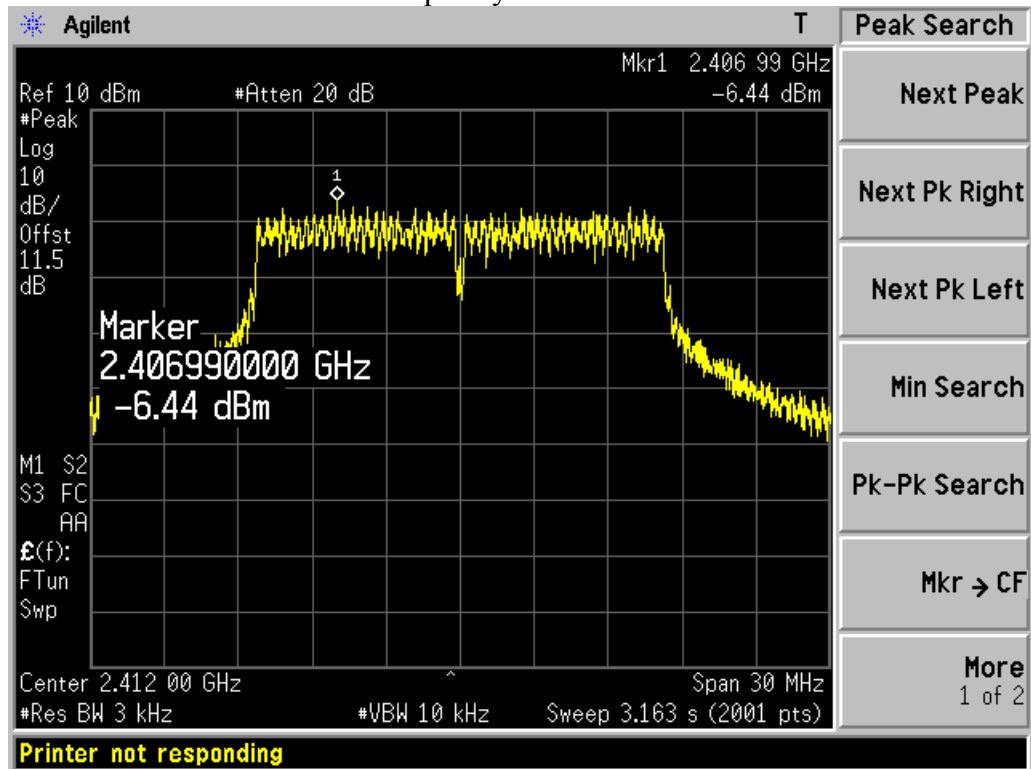


Frequency H – Chain 1

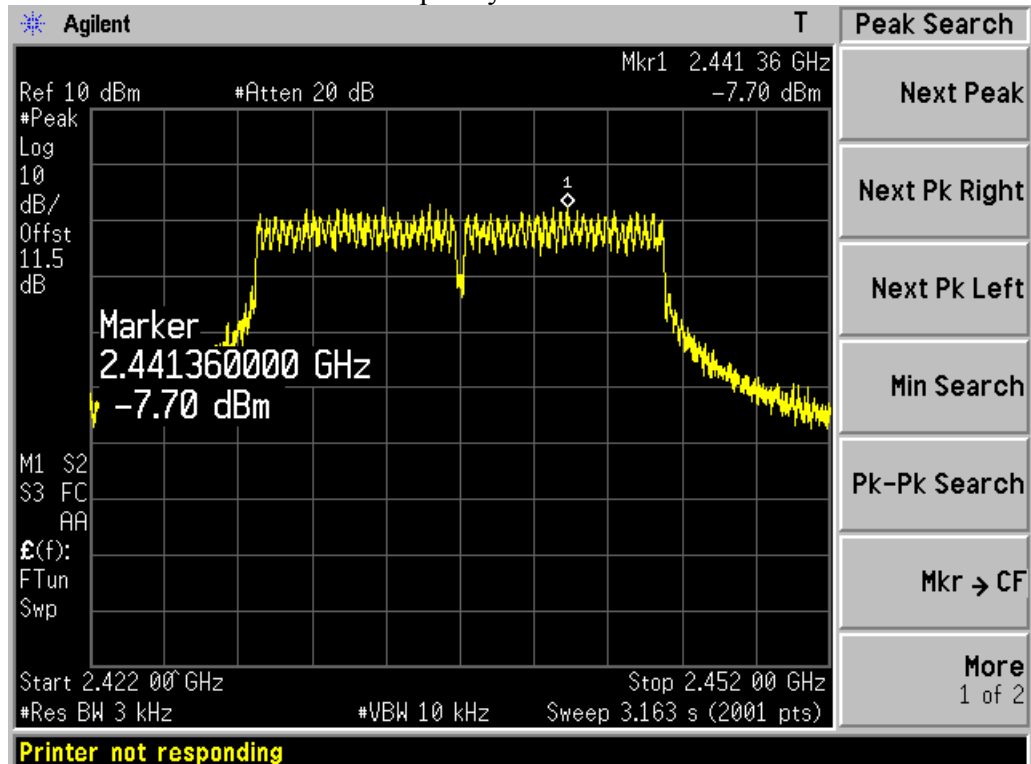


Mode	CH	Cable loss (dB)	PSD (dBm/3kHz)		Duty cycle factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)
			Port 0	Port 1			
802.11g	L	1.5	-6.44	-6.58	0.30	-3.20	≤8.00
	M	1.5	-7.70	-7.26	0.30	-4.16	
	H	1.5	-7.66	-7.02	0.30	-4.01	

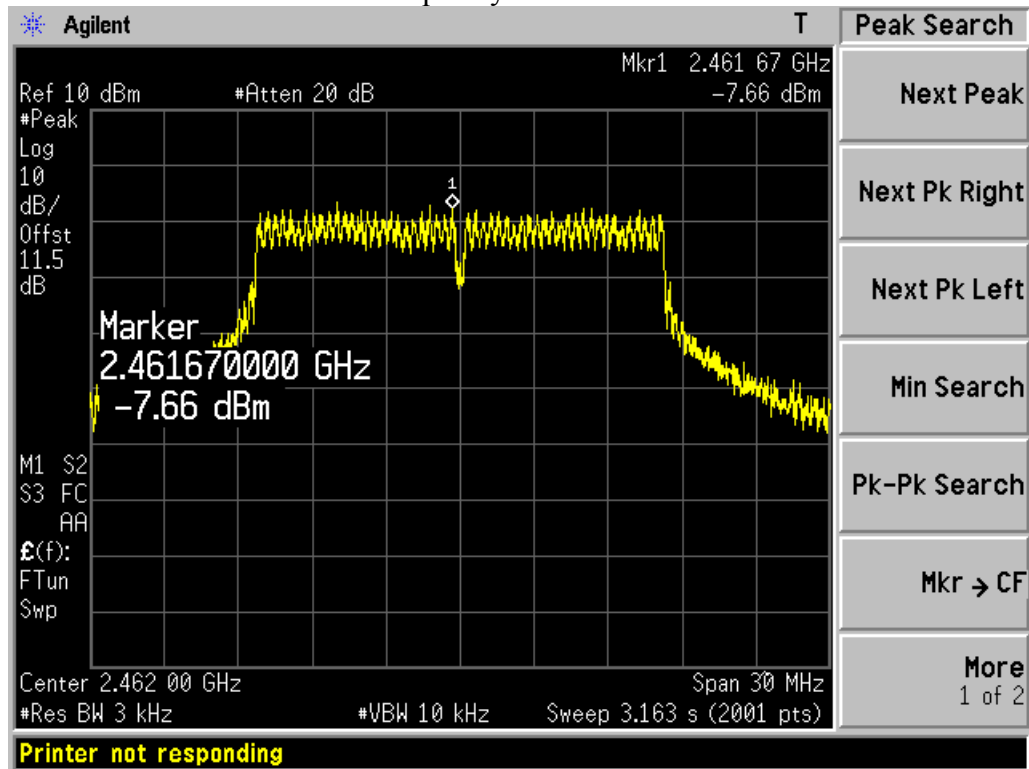
Frequency L – Chain 0



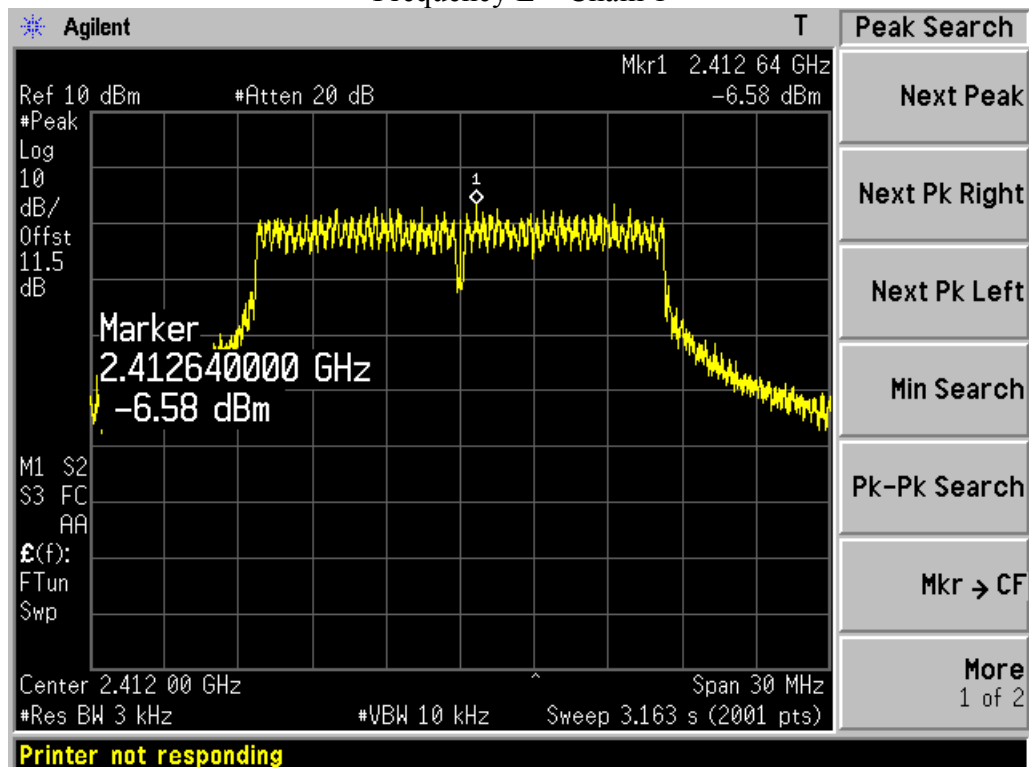
Frequency M – Chain 0



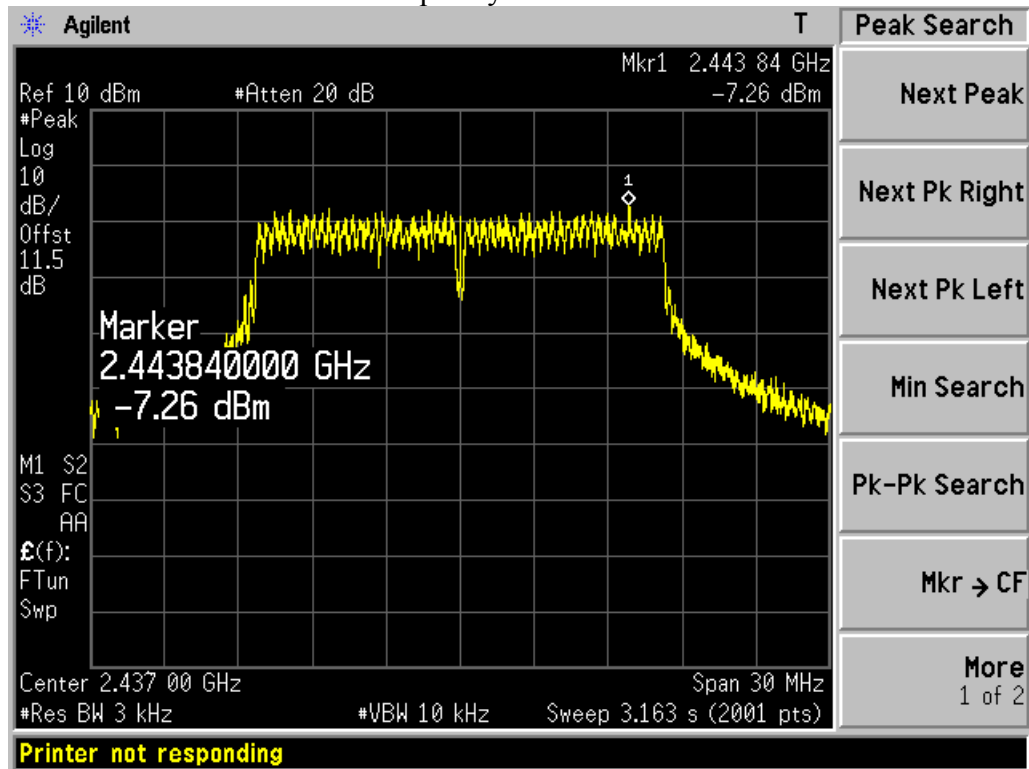
Frequency H – Chain 0



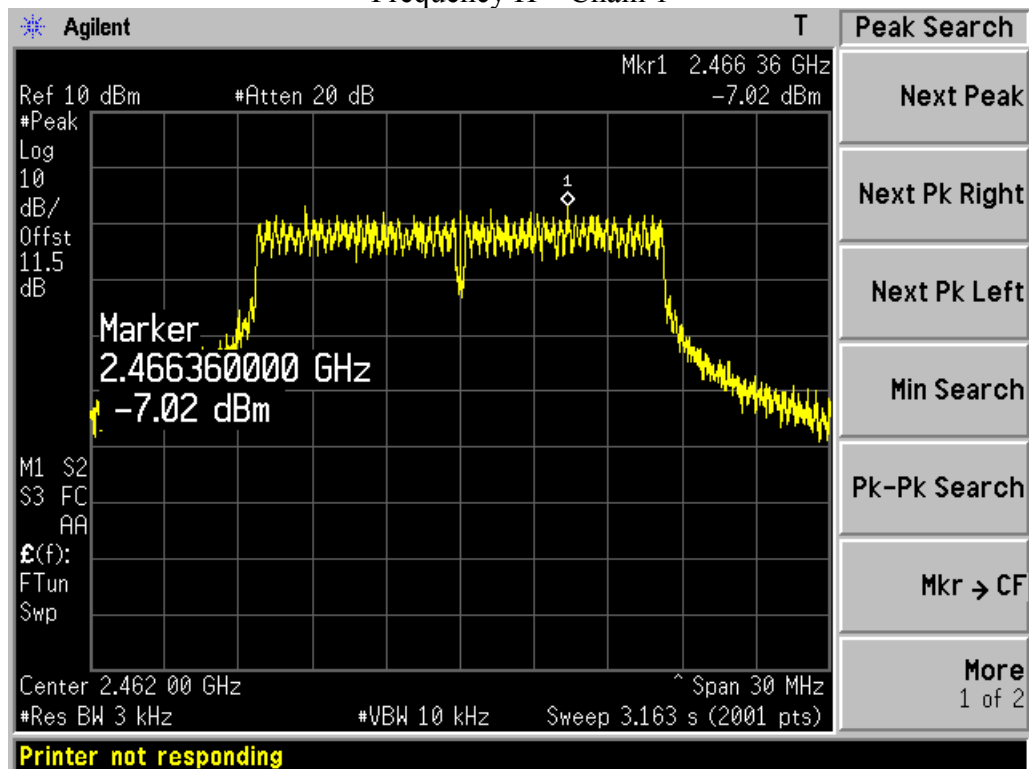
Frequency L – Chain 1



Frequency M – Chain 1

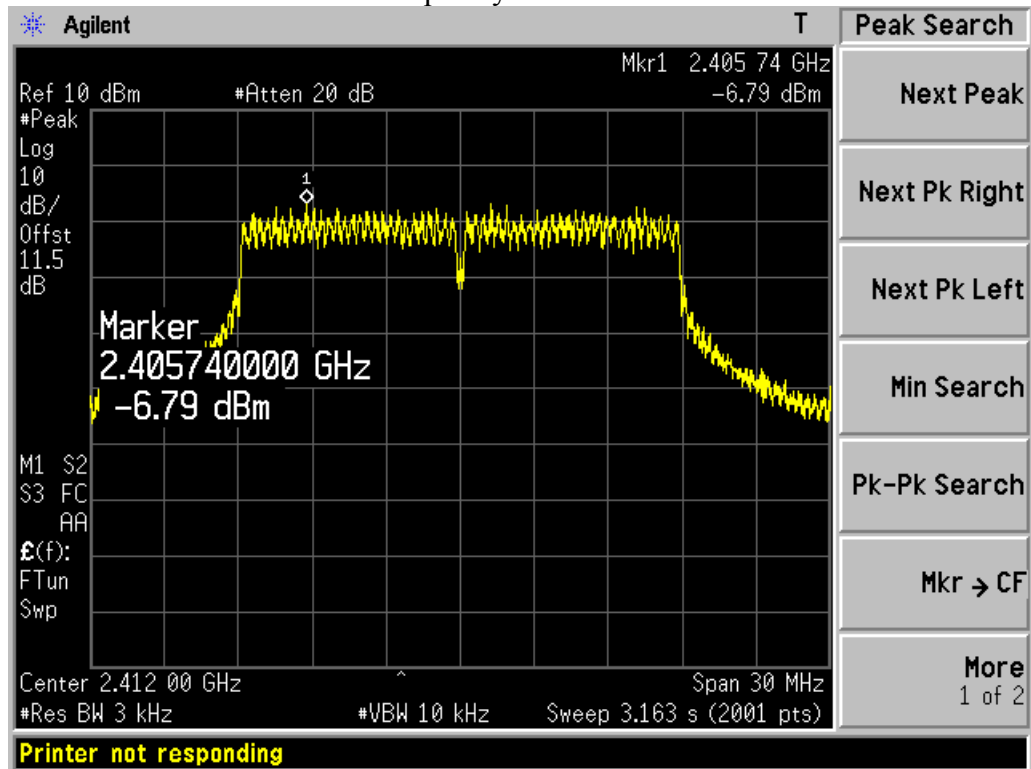


Frequency H – Chain 1

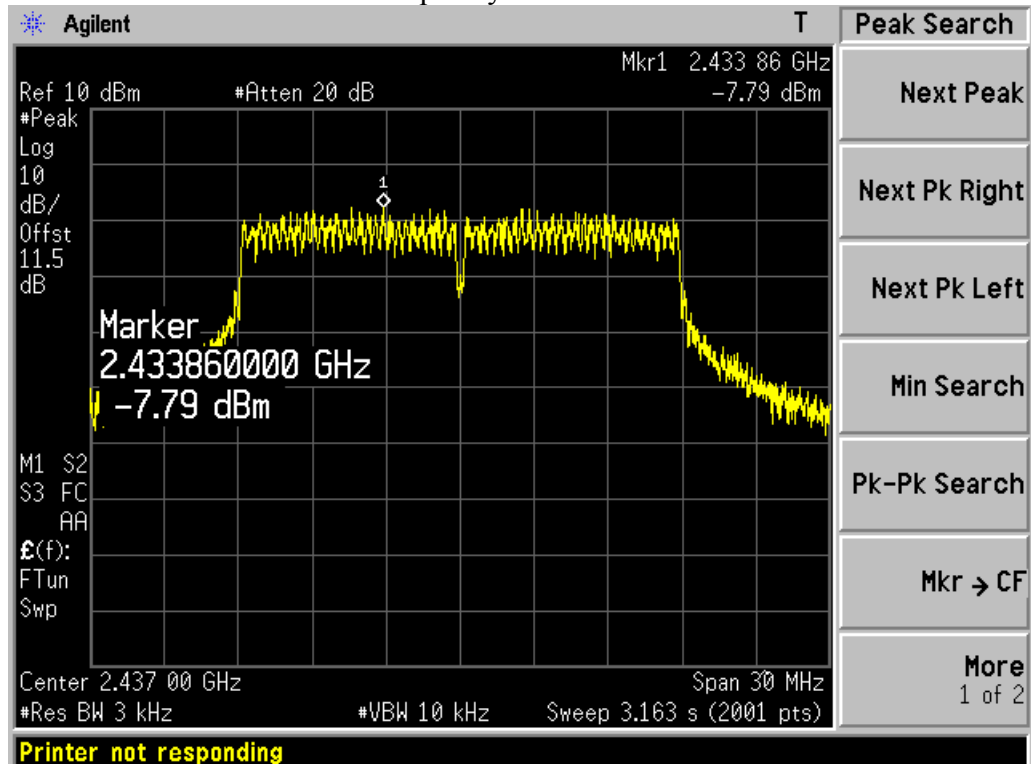


Mode	CH	Cable loss (dB)	PSD (dBm/3kHz)		Duty cycle factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)
			Port 0	Port 1			
802.11 n20	L	1.5	-6.79	-5.90	0.28	-3.04	≤8.00
	M	1.5	-7.79	-7.89	0.28	-4.55	
	H	1.5	-6.98	-7.20	0.28	-3.80	

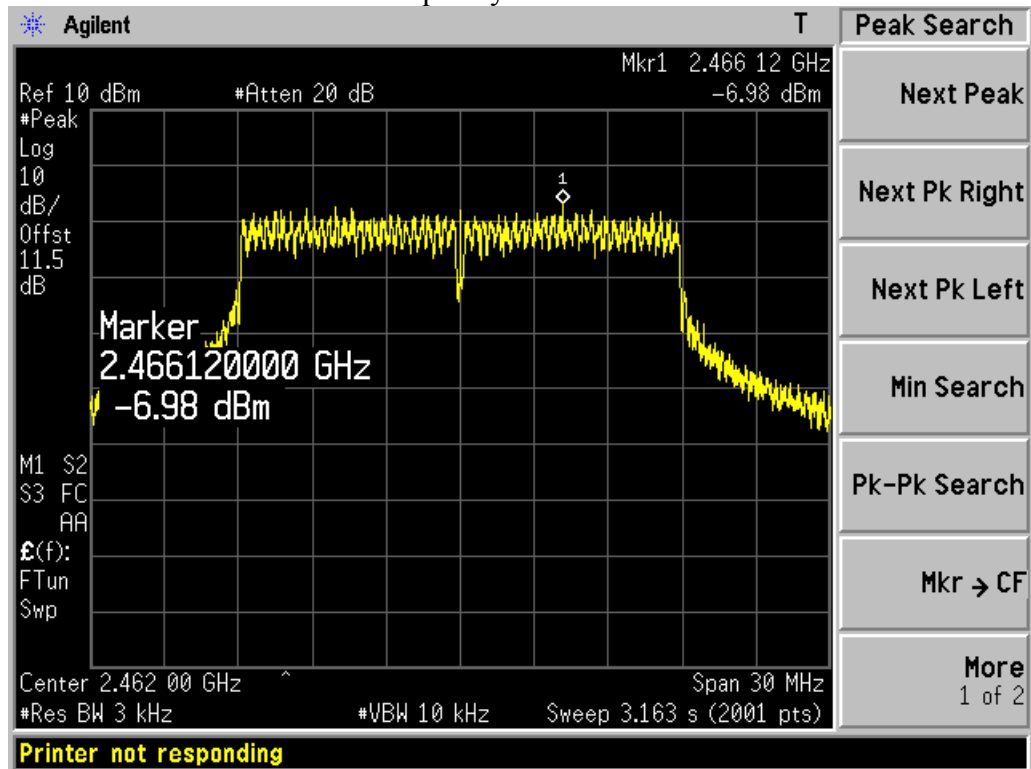
Frequency L – Chain 0



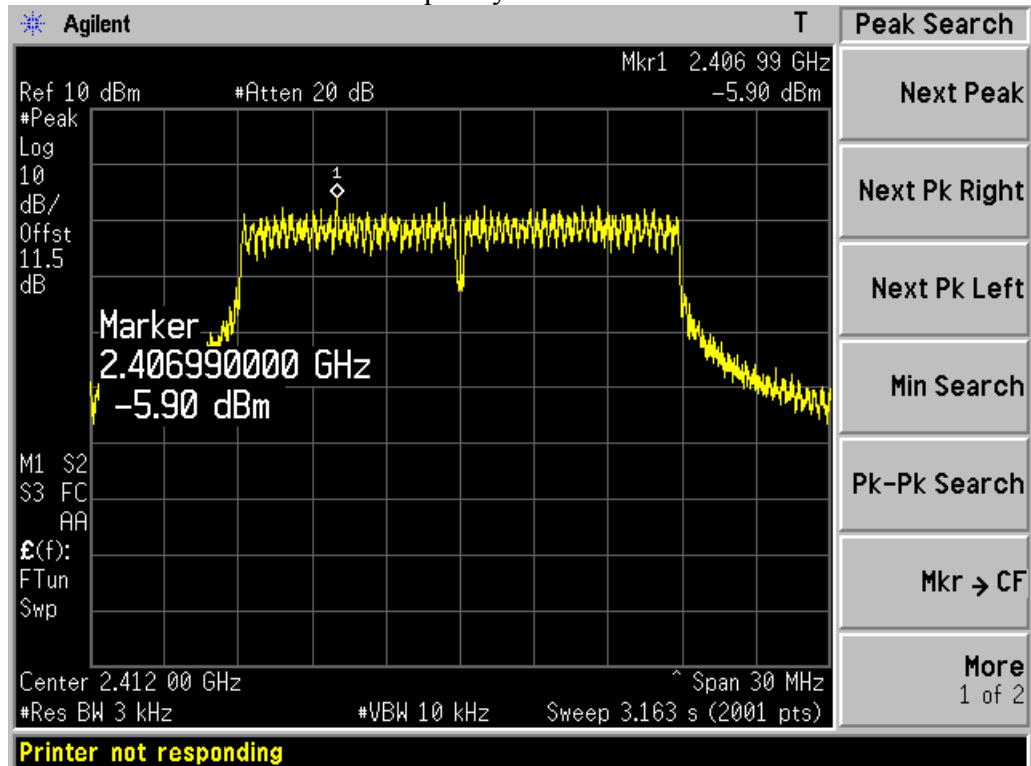
Frequency M – Chain 0



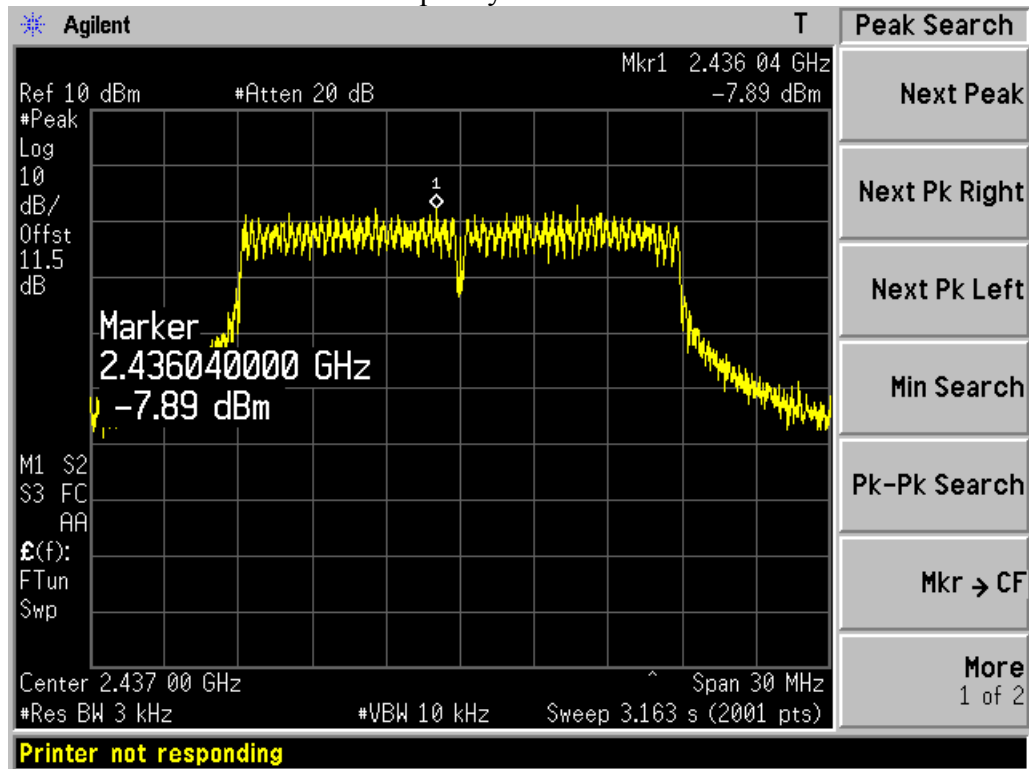
Frequency H – Chain 0



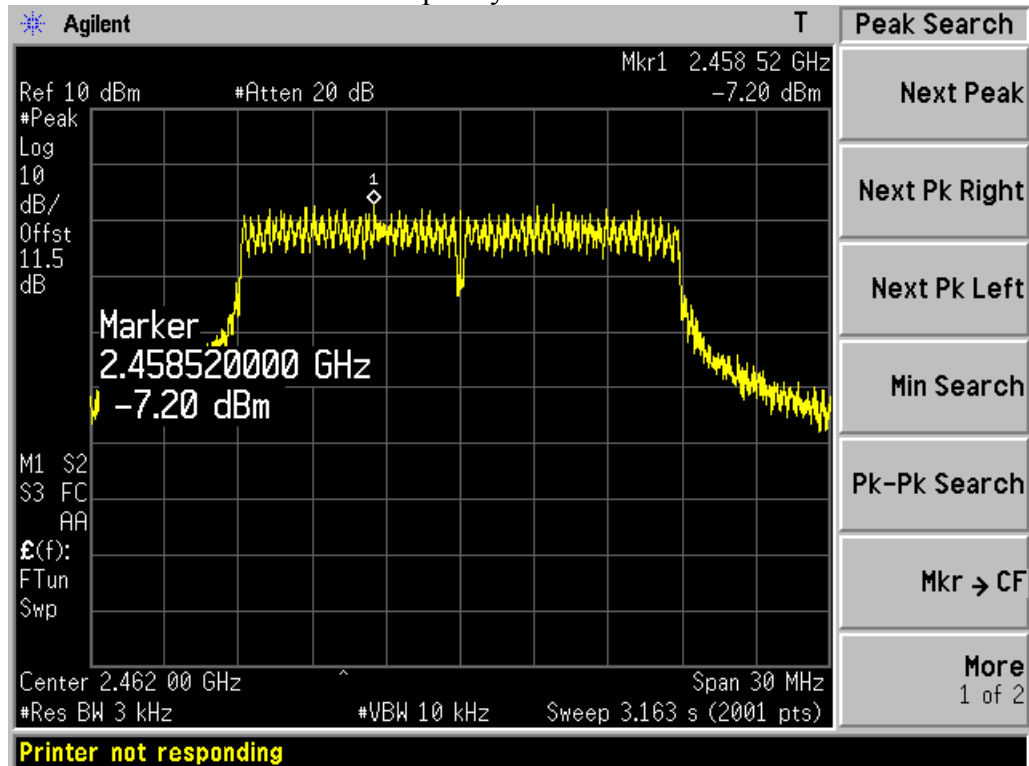
Frequency L – Chain 1



Frequency M – Chain 1

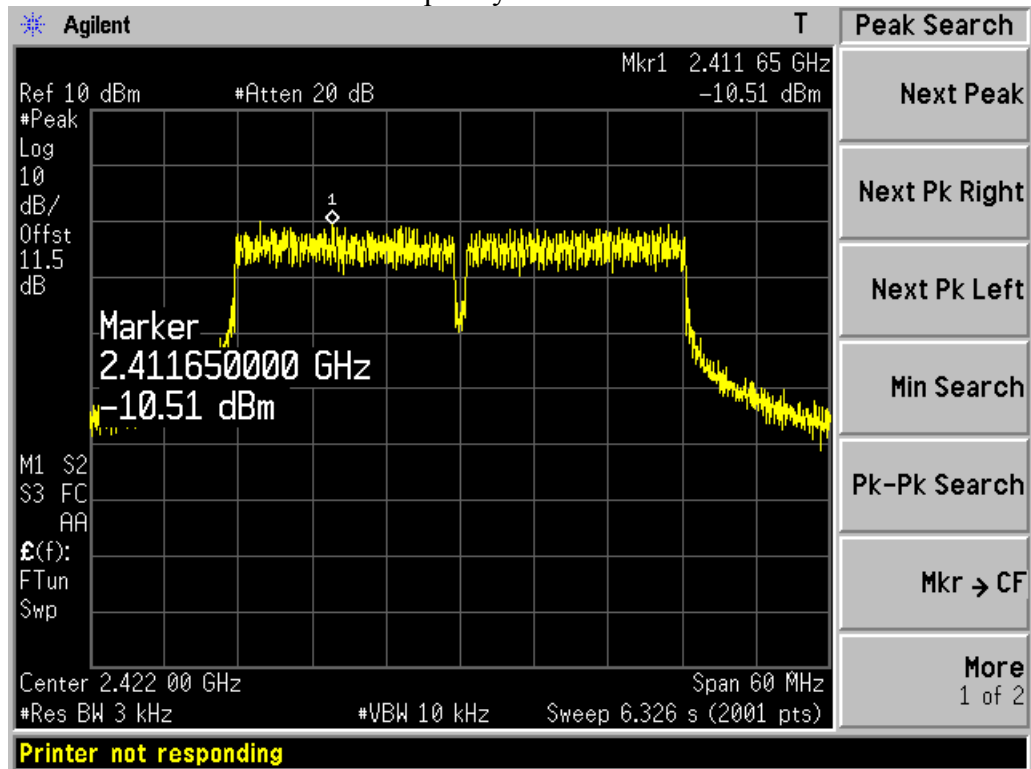


Frequency H – Chain 1

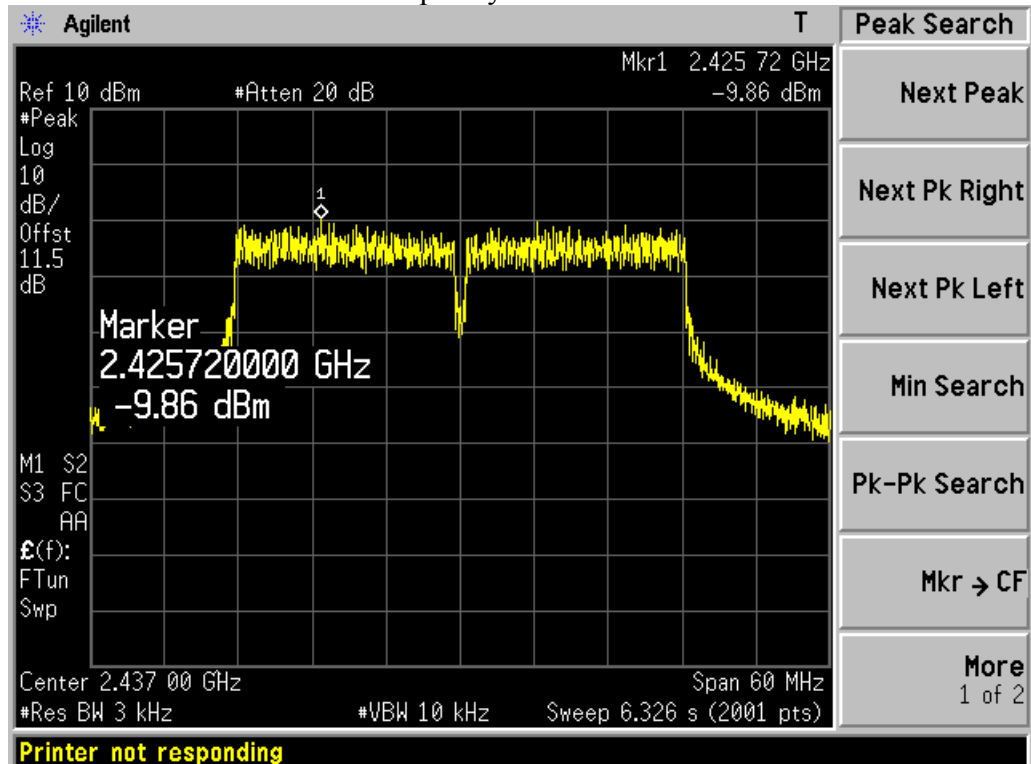


Mode	CH	Cable loss (dB)	PSD (dBm/3kHz)		Duty cycle factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)
			Port 0	Port 1			
802.11 n40	L	1.5	-10.51	-8.97	0.38	-6.28	≤8.00
	M	1.5	-9.86	-10.16	0.38	-6.62	
	H	1.5	-9.72	-9.51	0.38	-6.23	

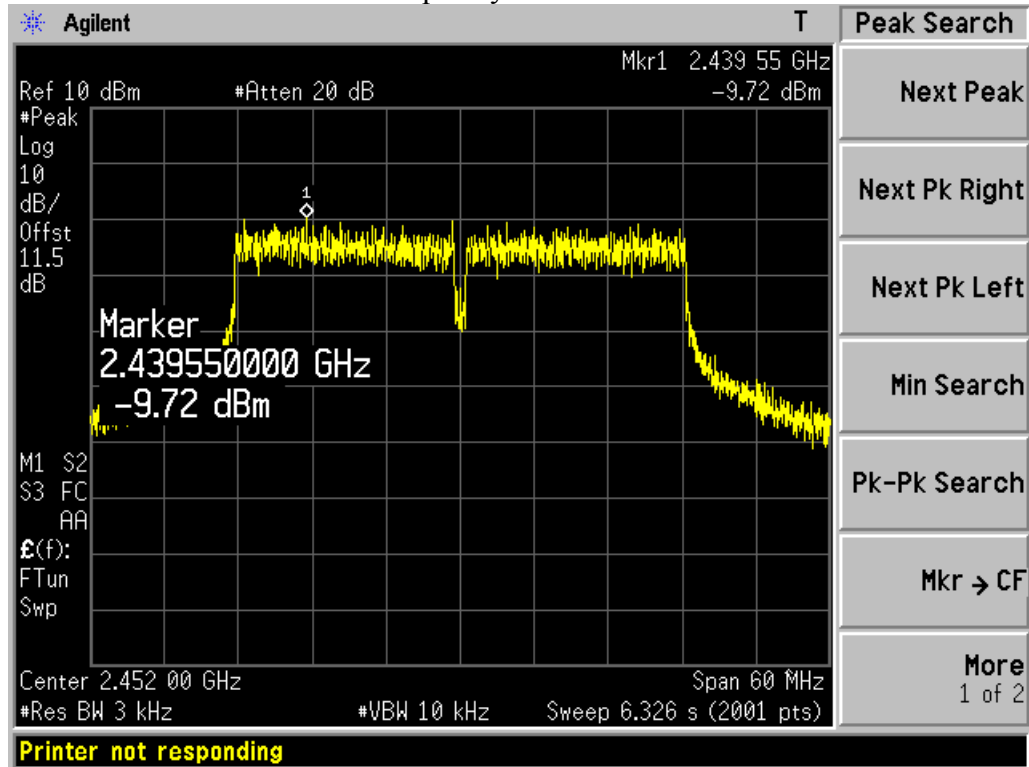
Frequency L – Chain 0



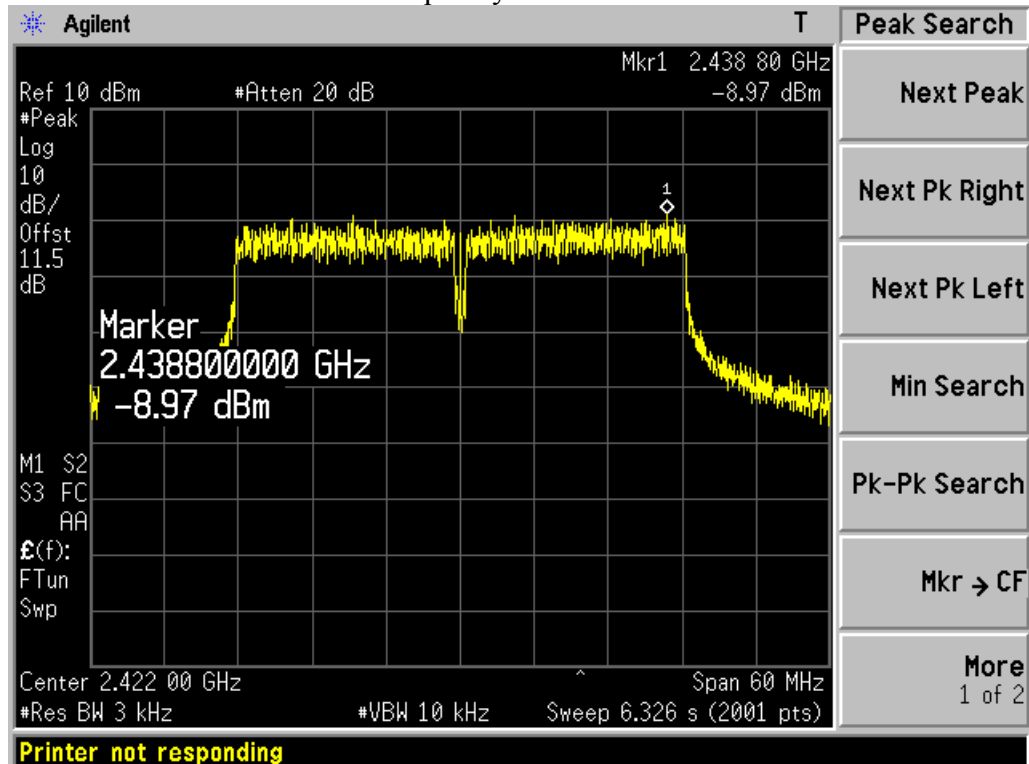
Frequency M – Chain 0



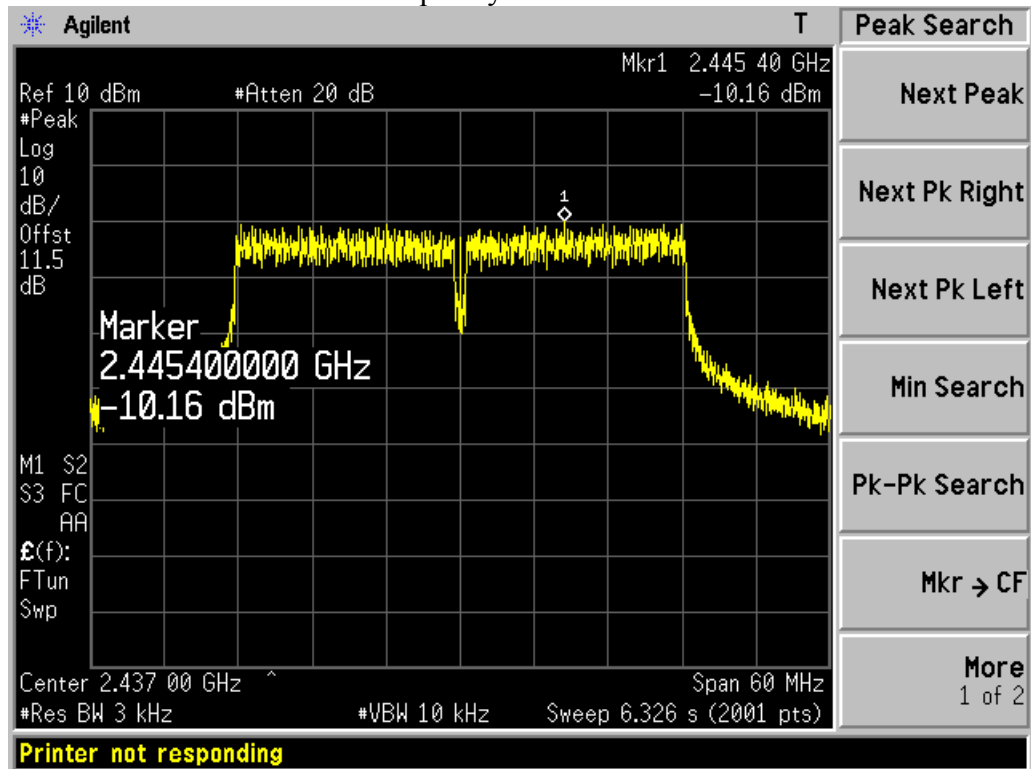
Frequency H – Chain 0



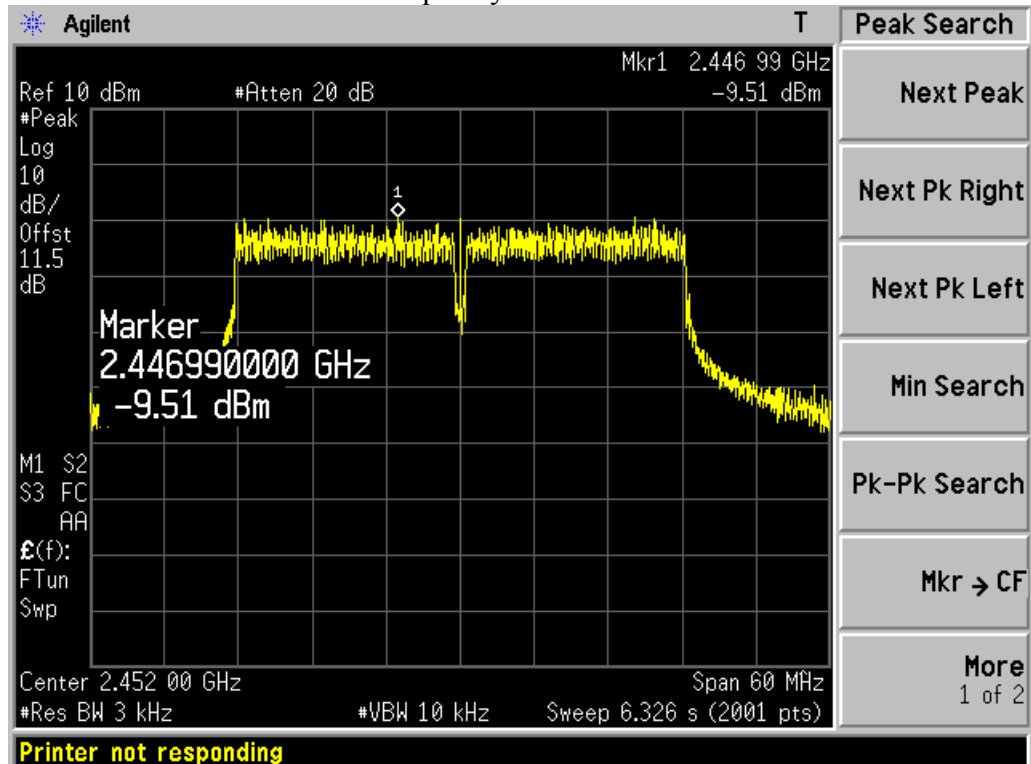
Frequency L – Chain 1



Frequency M – Chain 1

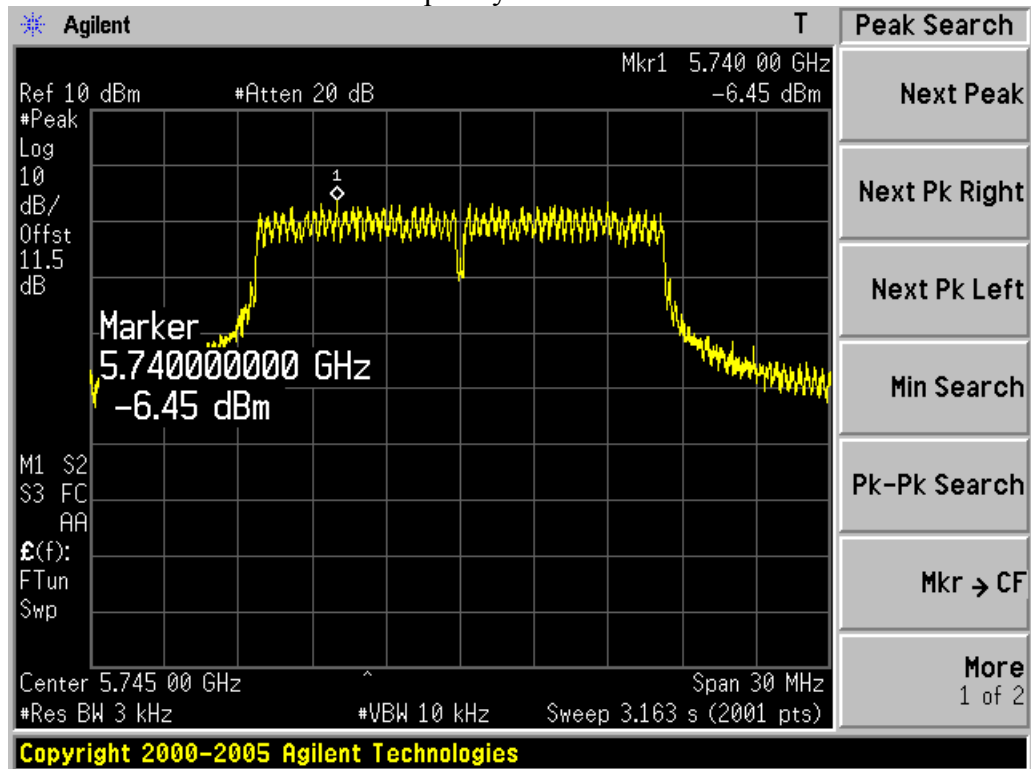


Frequency H – Chain 1

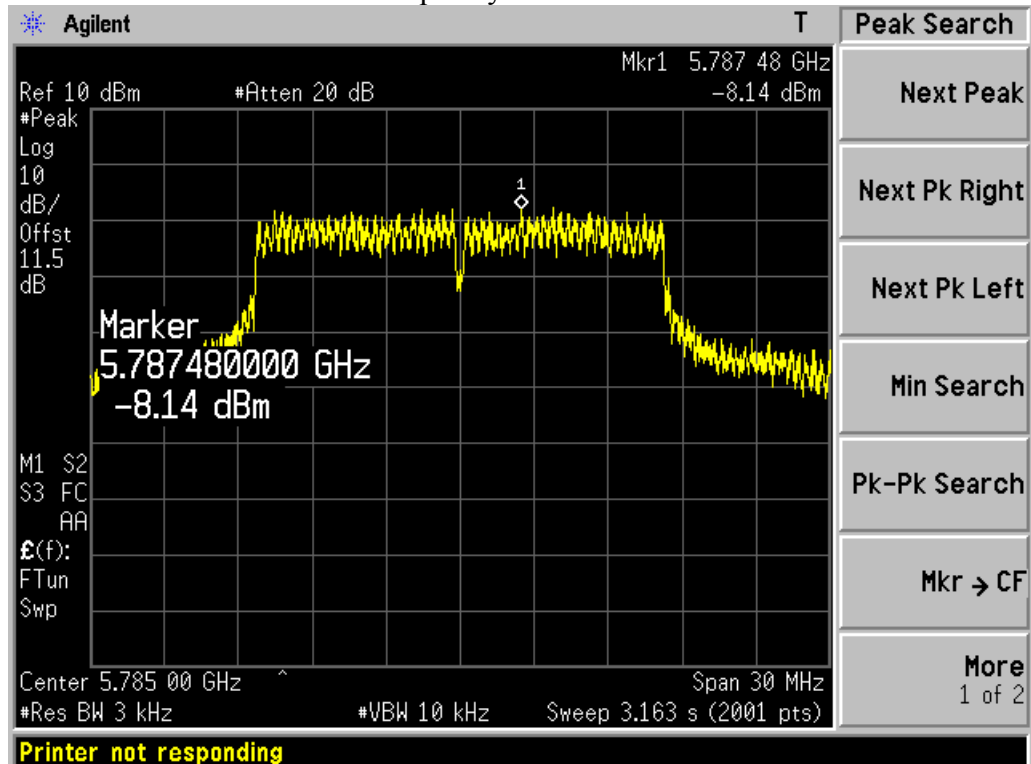


Mode	CH	Cable loss (dB)	PSD (dBm/3kHz)		Duty cycle factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)
			Port 0	Port 1			
802.11 a	L	2.0	-6.45	-8.93	0.14	-4.37	≤8.00
	M	2.0	-8.14	-8.35	0.14	-5.09	
	H	2.0	-7.15	-6.88	0.14	-3.86	

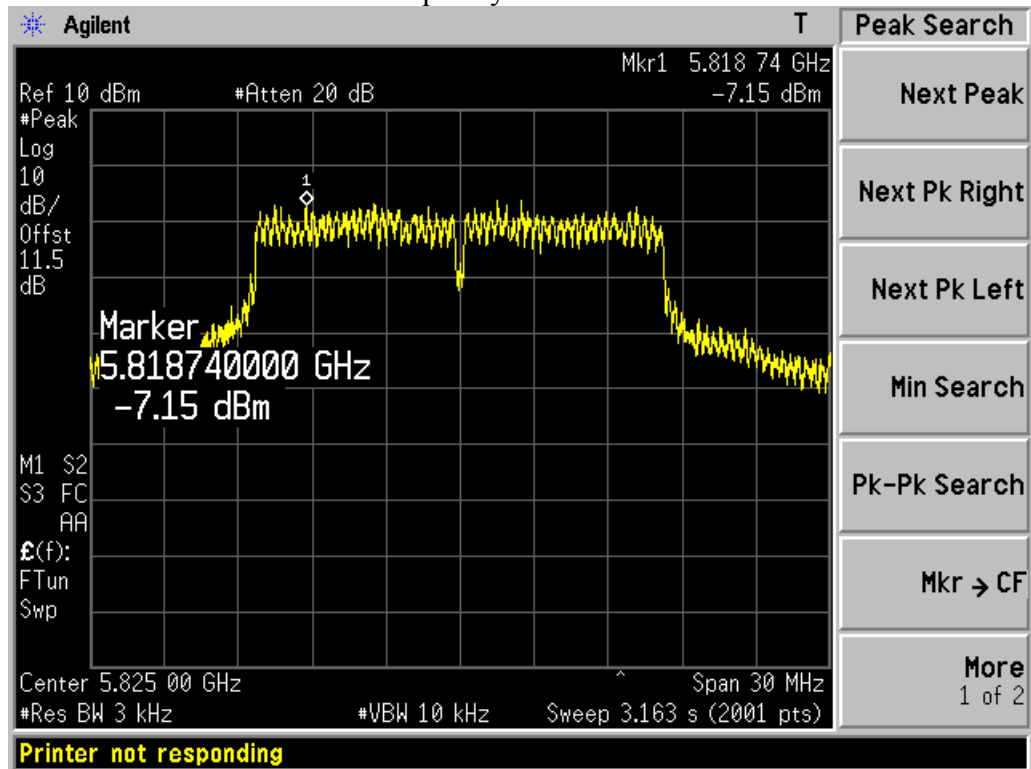
Frequency L – Chain 0



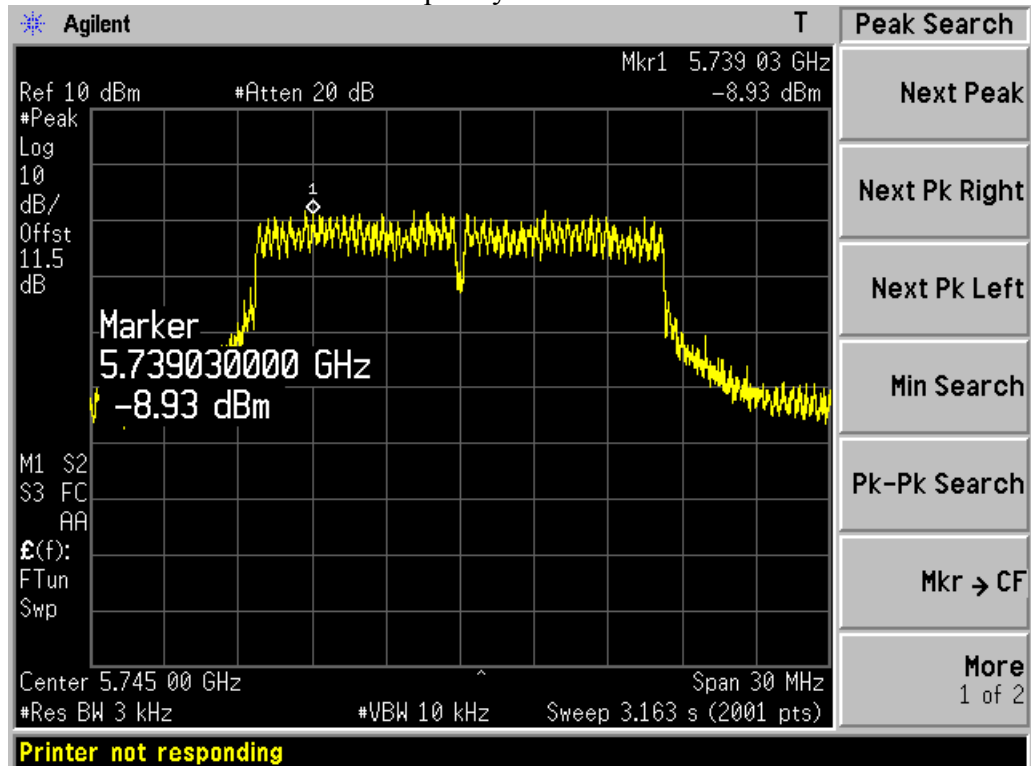
Frequency M – Chain 0



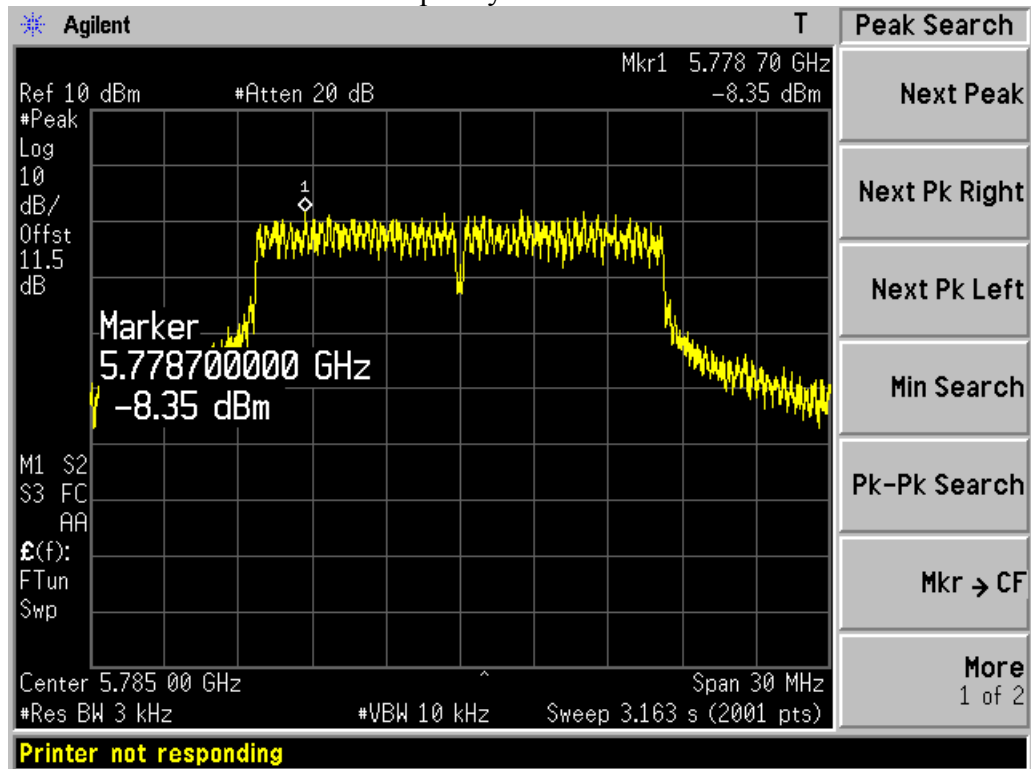
Frequency H – Chain 0



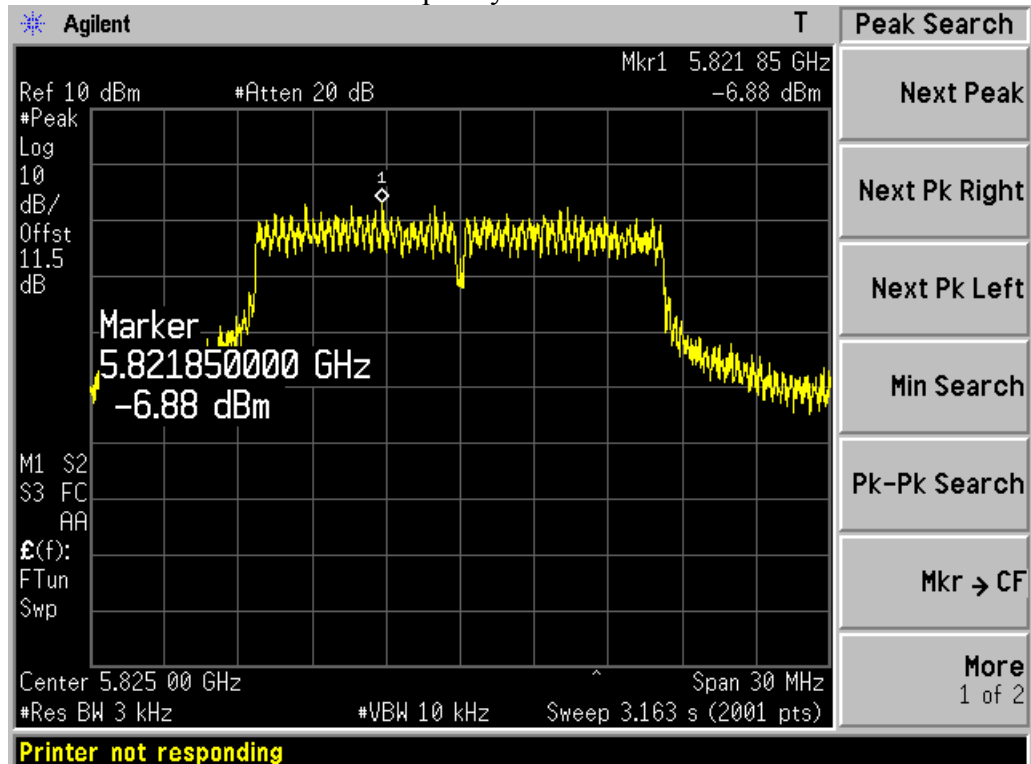
Frequency L – Chain 1



Frequency M – Chain 1

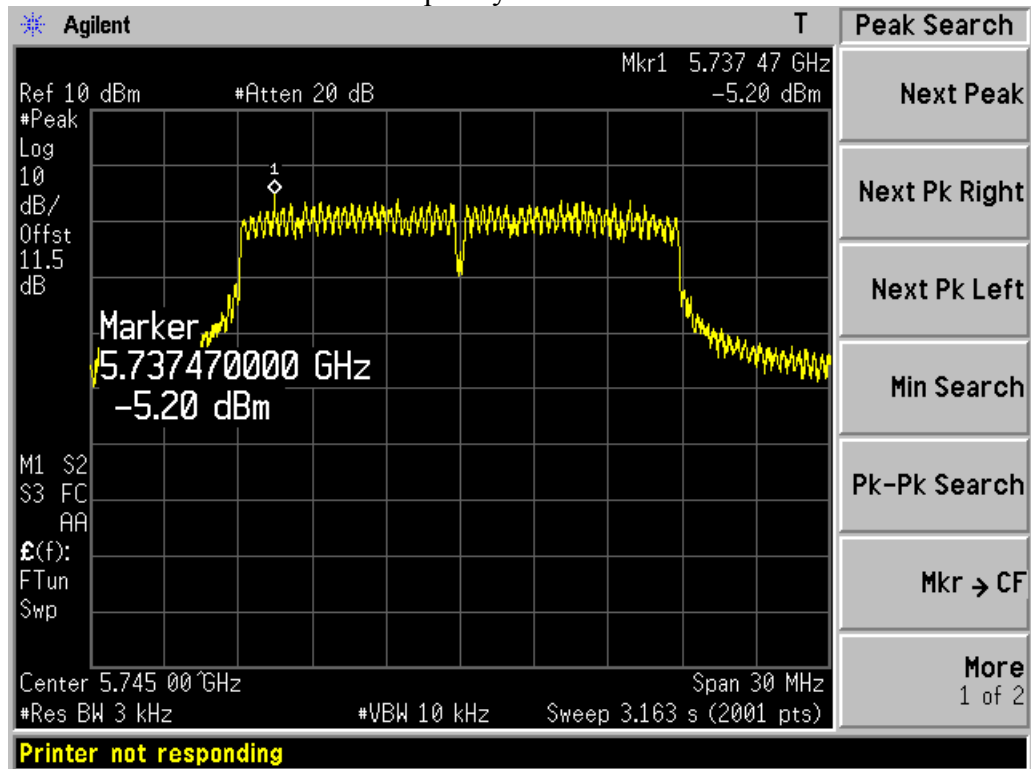


Frequency H – Chain 1

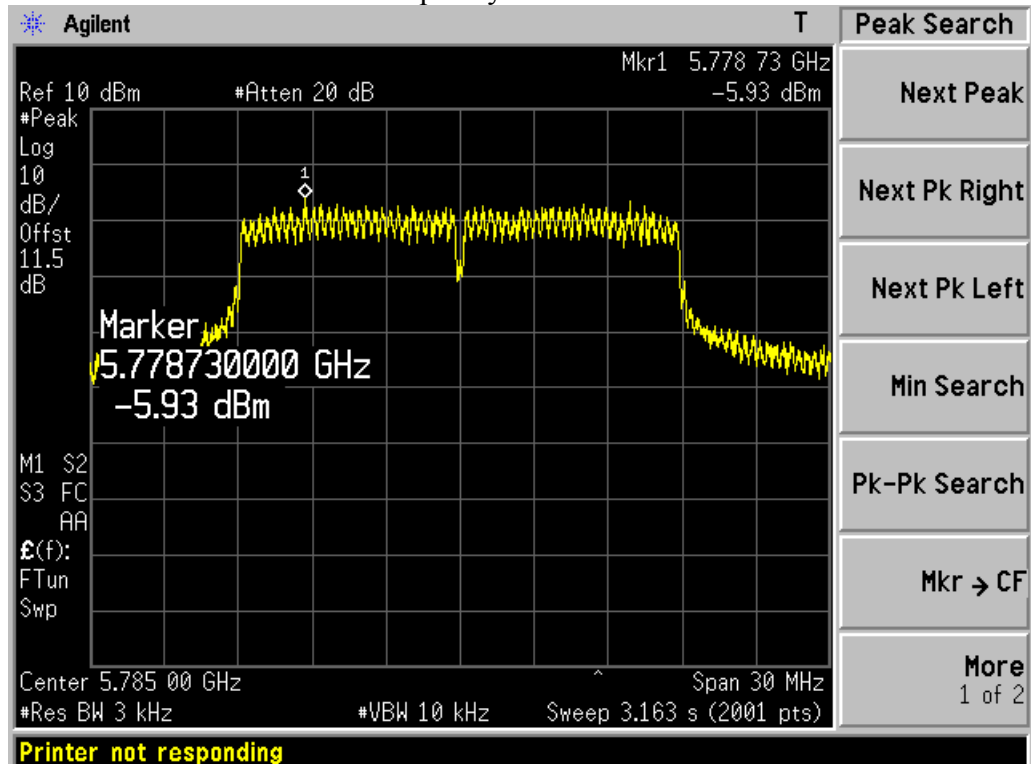


Mode	CH	Cable loss (dB)	PSD (dBm/3kHz)		Duty cycle factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)
			Port 0	Port 1			
802.11 n20	L	2.0	-5.20	-8.97	0.29	-3.39	≤8.00
	M	2.0	-5.93	-7.88	0.29	-3.50	
	H	2.0	-6.06	-7.45	0.29	-3.40	

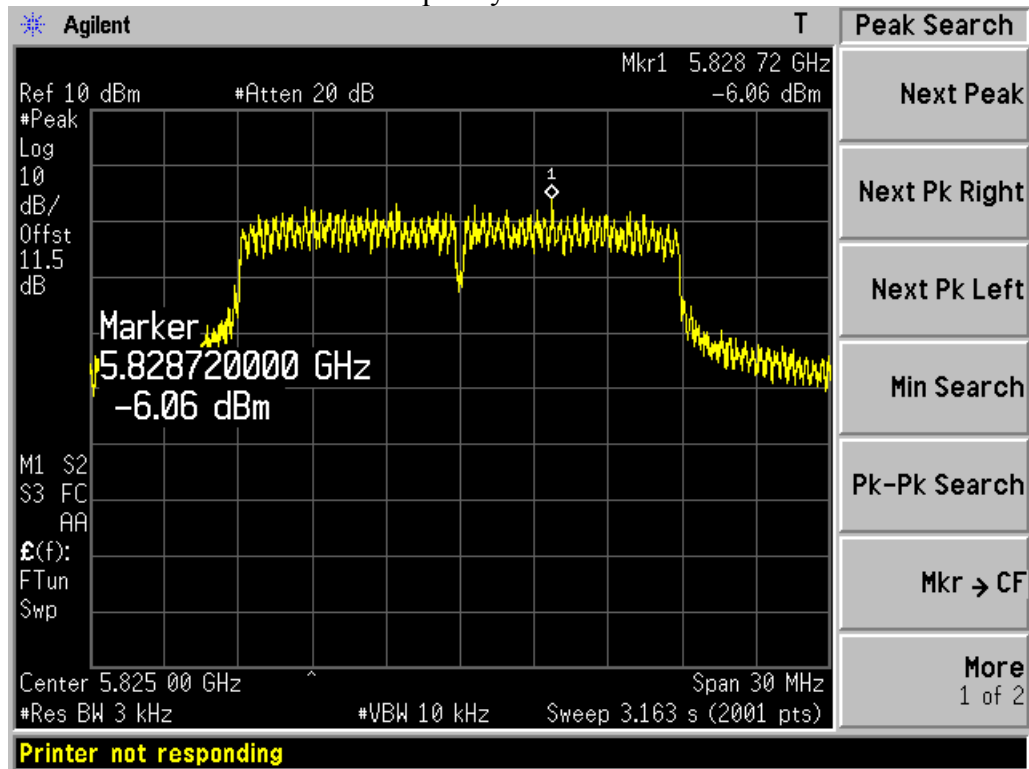
Frequency L – Chain 0



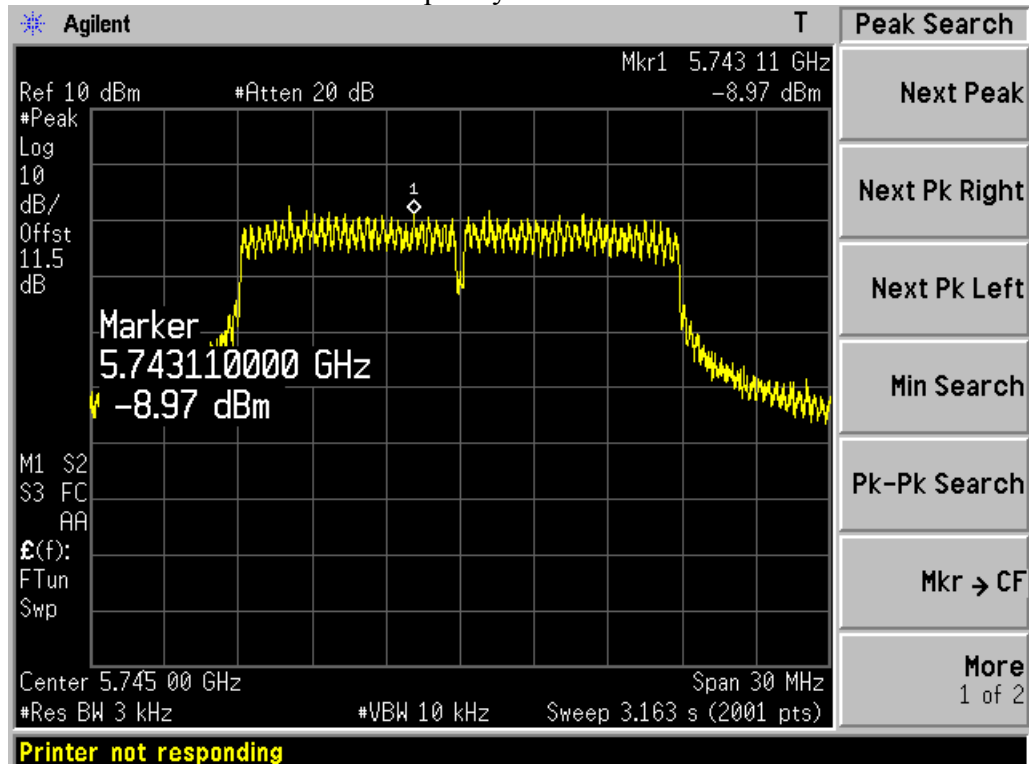
Frequency M – Chain 0



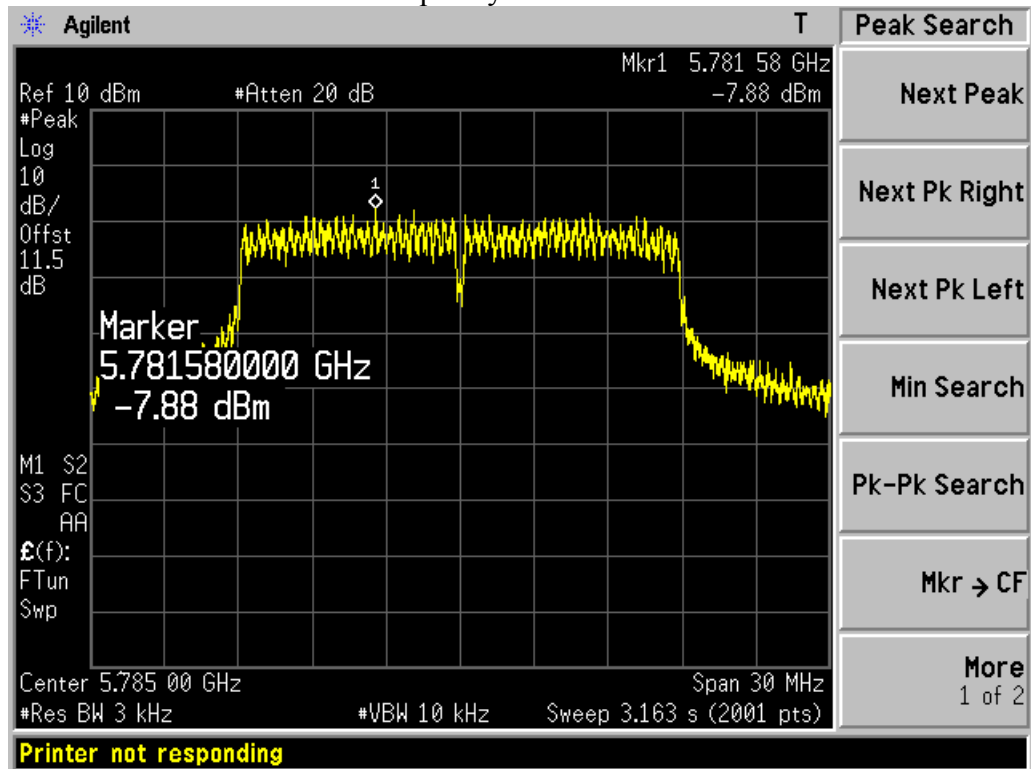
Frequency H – Chain 0



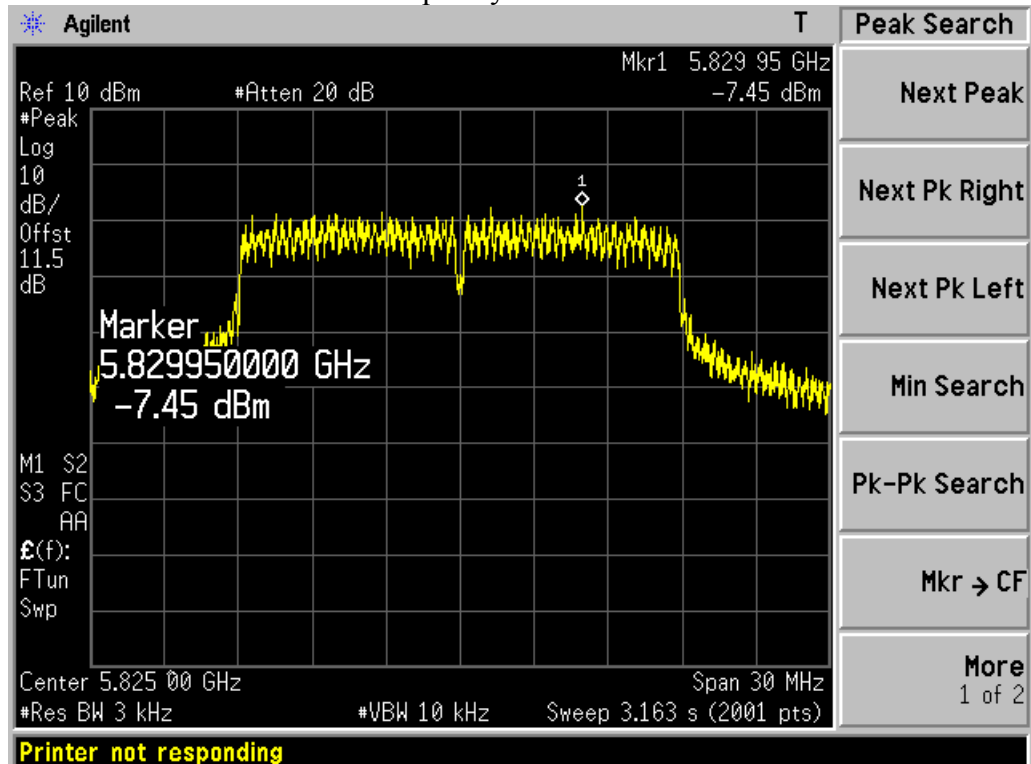
Frequency L – Chain 1



Frequency M – Chain 1

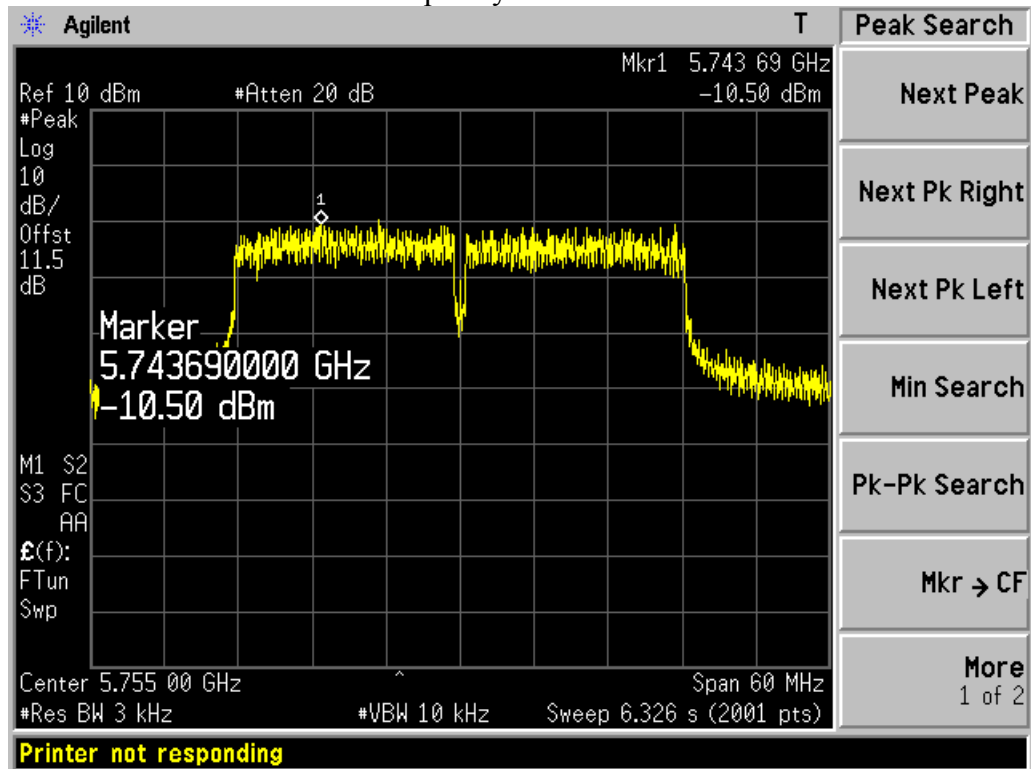


Frequency H – Chain 1

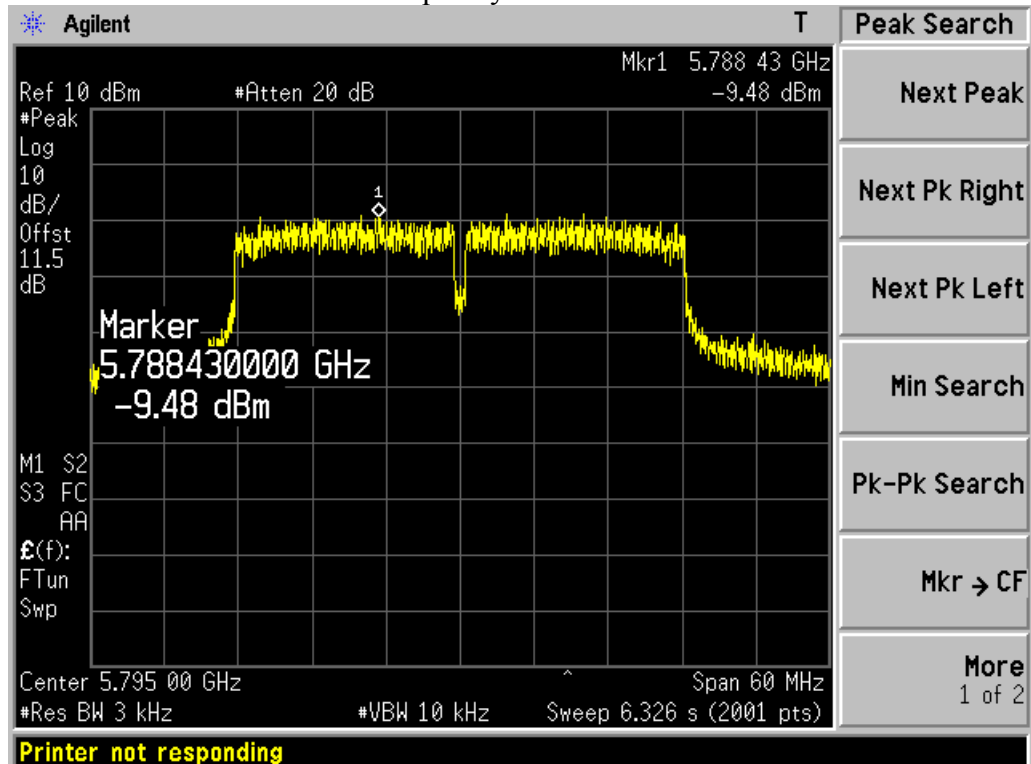


Mode	CH	Cable loss (dB)	PSD (dBm/3kHz)		Duty cycle factor (dB)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)
			Port 0	Port 1			
802.11 n40	L	2.0	-10.50	-12.47	0.36	-8.00	≤8.00
	H	2.0	-9.48	-10.76	0.36	-6.70	

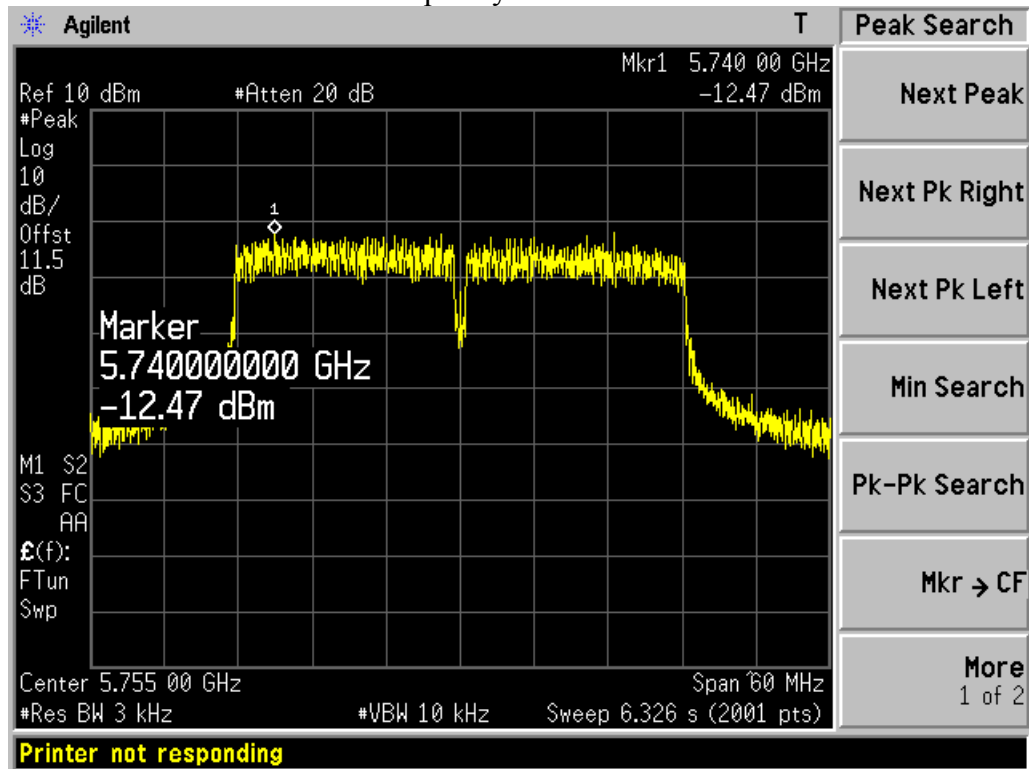
Frequency L – Chain 0



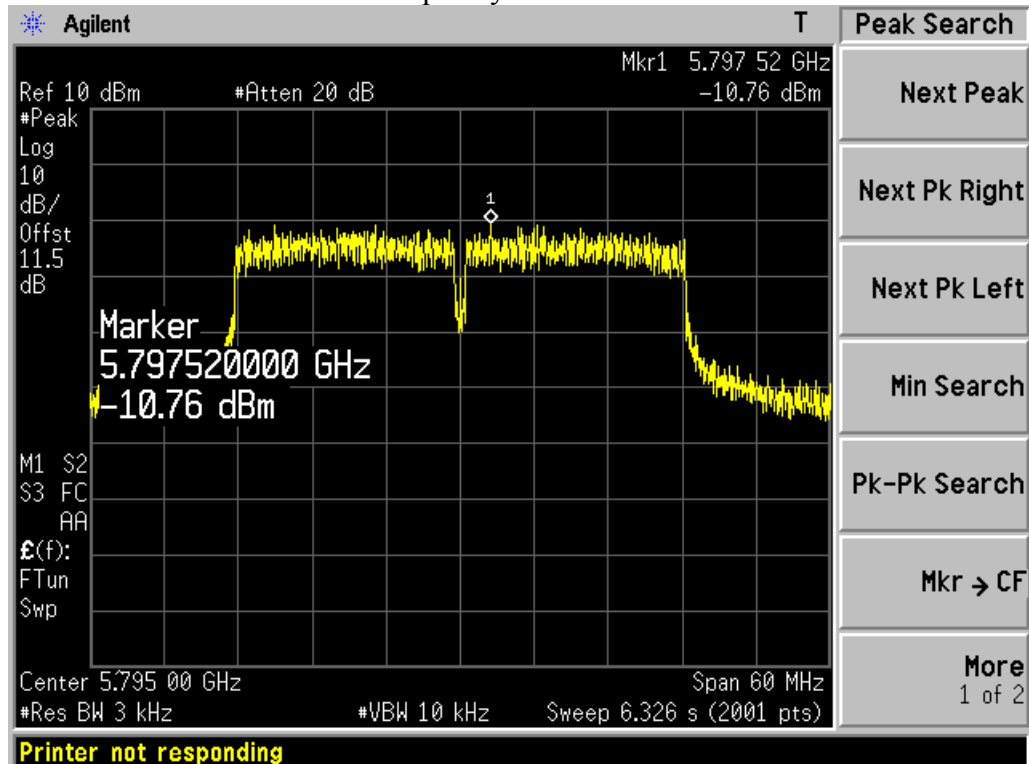
Frequency H – Chain 0



Frequency L – Chain 1



Frequency H – Chain 1



6. Radiated emission in the restricted bands

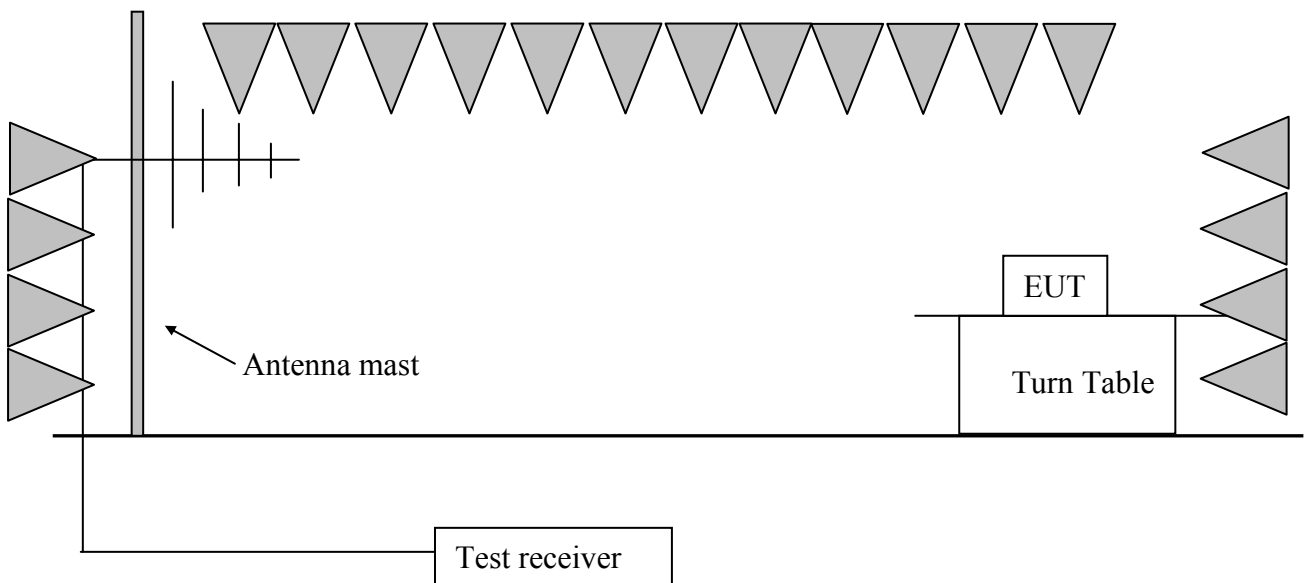
Test result: **PASS**

6.1 Test limit

The radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) showed as below:

Frequency (MHz)	Field Strength (dBuV/m)	Measurement Distance (m)
30 - 88	40.0	3
88 - 216	43.5	3
216 - 960	46.0	3
Above 960	54.0	3

6.2 Test Configuration



6.3 Test procedure and test setup

The measurement was applied in a semi-anechoic chamber. While testing for spurious emission higher than 1GHz, if applied, the pre-amplifier would be equipped just at the output terminal of the antenna.

The EUT and simulators were placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mast. The antenna moved up and down between from 1meter to 4 meters to find out the maximum emission level.

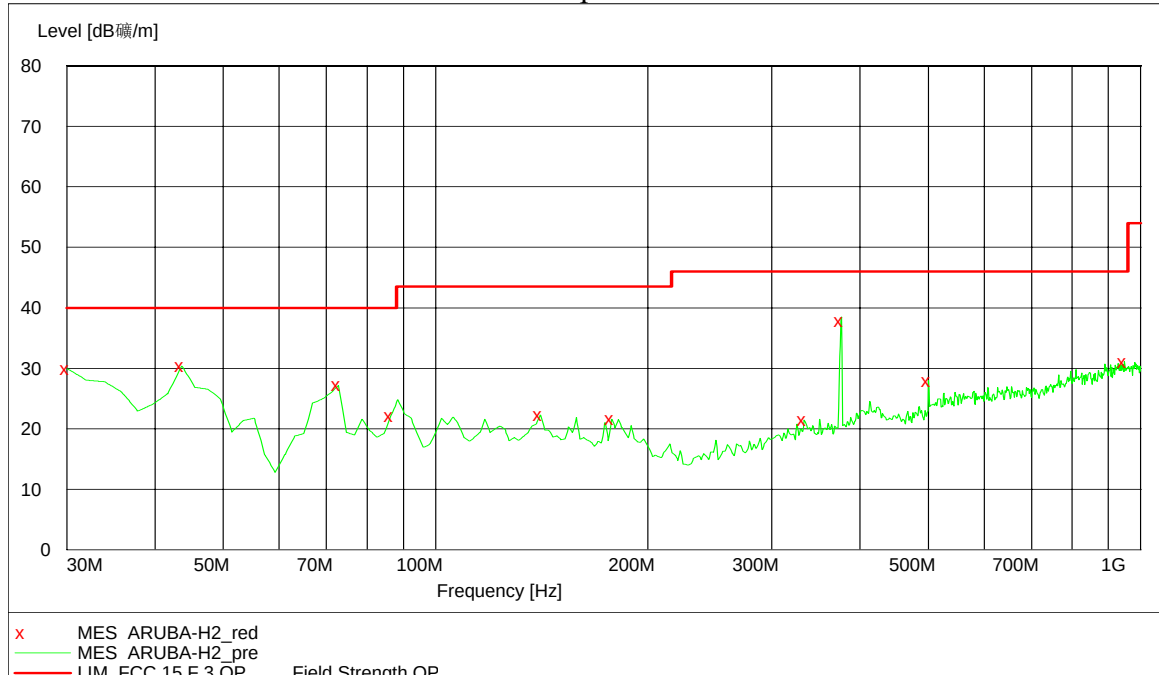
The EUT was tested according to DTS test procedure of KDB558074 D01 DTS “Meas Guidance v03r02” (clause 12) for compliance to FCC 47CFR 15.247 requirements.

6.4 Test protocol

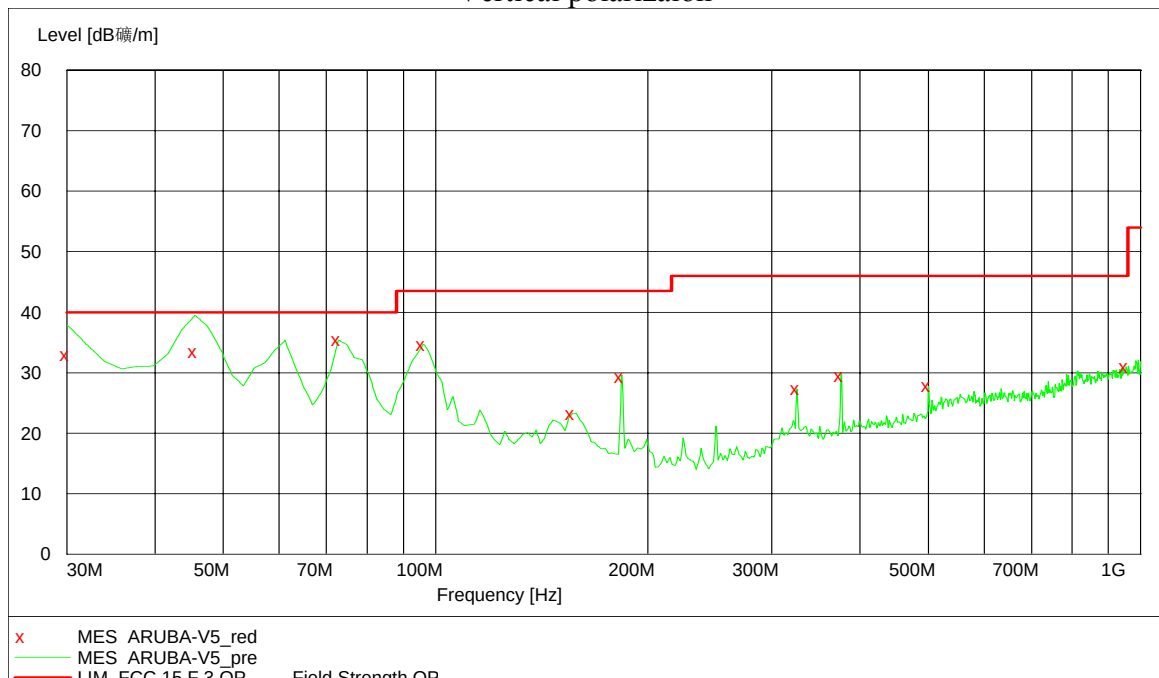
Temperature : 25 °C
Relative Humidity : 55 %

Test graph < 1GHz: (Worst case: POE Mode)

Horizontal polarization



Vertical polarizaion



Test data:

Polarization	Frequency (MHz)	Emission level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB μ V/m)	Detector
V	30.00	32.90	40.00	7.10	QP
	45.55	33.50	40.00	6.50	QP
	72.77	35.40	40.00	4.60	PK
	96.09	34.70	43.50	8.80	PK
	183.57	29.30	43.50	14.20	PK
	953.35	31.00	46.00	15.00	PK
H	30.00	29.90	40.00	10.10	PK
	43.61	30.40	40.00	9.60	PK
	72.77	27.20	40.00	12.80	PK
	86.37	22.10	40.00	17.90	PK
	376.01	37.80	46.00	8.20	PK
	949.46	31.10	46.00	14.90	PK

Test data > 1GHz:

1: 2.4GHz band 802.11b

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	2390.00	62.13	25.48	-11.87	74.00	36.65	PK	
	2412.00	105.33	68.47	/	74.00	36.86	PK	
	2390.00	48.73	12.08	-5.27	54.00	36.65	AV	
	2412.00	100.19	63.34	/	54.00	36.85	AV	
	4825.00	39.70	33.15	-34.30	74.00	6.55	PK	
	7236.00	33.86	24.60	-40.14	74.00	9.26	PK	
	9648.00	37.64	27.16	-36.37	74.00	10.48	PK	
V	2330.50	66.30	30.59	-7.70	74.00	35.71	PK	
	2390.00	62.10	26.11	-11.90	74.00	35.99	PK	
	2412.00	110.68	74.58	/	74.00	36.10	PK	
	2334.36	49.08	13.35	-4.92	54.00	35.74	AV	
	2390.00	48.72	12.73	-5.28	54.00	35.99	AV	
	2412.00	106.07	69.97	/	54.00	36.10	AV	
	4824.00	37.68	31.22	-36.32	74.00	6.47	PK	
	7236.00	35.22	25.97	-38.78	74.00	9.25	PK	
	9648.00	38.51	27.97	-35.49	74.00	10.54	PK	
Note:		2412MHz is fundamental signal.						

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	2437.00	105.30	68.25	/	74.00	37.05	PK	
	4874.00	38.83	32.23	-35.17	74.00	6.60	PK	
	7311.00	34.47	25.21	-39.53	74.00	9.26	PK	
	9748.00	36.91	26.32	-37.09	74.00	10.59	PK	
V	2437.00	108.23	71.18	/	74.00	37.05	PK	
	4876.00	39.42	32.82	-34.58	74.00	6.60	PK	
	7311.00	35.59	26.34	-38.41	74.00	9.26	PK	
	9748.00	37.14	26.45	-36.86	74.00	10.69	PK	
Note:		2437MHz is fundamental signal.						

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	2462.00	105.30	68.01	/	74.00	37.29	PK	
	2483.50	63.57	26.15	-10.43	74.00	37.42	PK	
	2462.00	101.17	63.88	/	54.00	37.29	AV	
	2483.50	49.86	12.44	-4.14	54.00	37.42	AV	
	4924.00	40.30	33.64	-33.70	74.00	6.66	PK	
	7386.00	35.63	26.37	-38.37	74.00	9.26	PK	
	9848.00	36.00	25.22	-38.00	74.00	10.78	PK	
V	2462.00	113.71	77.37	/	74.00	36.34	PK	
	2483.50	62.96	26.57	-11.04	74.00	36.39	PK	
	2462.00	109.44	73.10	/	54.00	36.34	AV	
	2483.50	49.66	13.27	-4.34	54.00	36.39	AV	
	4924.00	40.03	33.29	-33.97	74.00	6.74	PK	
	7386.00	36.68	27.42	-37.32	74.00	9.26	PK	
	9848.00	37.23	26.39	-36.77	74.00	10.84	PK	
Note:		2462MHz is fundamental signal.						

2: 2.4GHz band 802.11g

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	2390.00	72.95	36.30	-1.05	74.00	36.65	PK	
	2412.00	114.45	76.33	/	74.00	36.08	PK	
	2390.00	53.82	17.17	-0.18	54.00	36.65	AV	
	2406.10	100.04	63.24	/	54.00	36.80	AV	
	4824.00	36.29	29.74	-37.71	74.00	6.55	PK	
	7236.00	34.62	25.36	-39.38	74.00	9.26	PK	
	9648.00	37.23	26.75	-36.78	74.00	10.48	PK	
V	2390.00	72.25	36.26	-1.75	74.00	35.99	PK	
	2412.00	112.41	76.33	/	74.00	36.08	PK	
	2390.00	52.46	16.47	-1.54	54.00	35.99	AV	
	2412.00	99.37	63.29	/	54.00	36.08	AV	
	4824.00	35.76	29.30	-38.24	74.00	6.47	PK	
	7236.00	34.18	24.94	-39.82	74.00	9.25	PK	
	9648.00	37.70	27.16	-36.31	74.00	10.54	PK	
Note:		2412MHz is fundamental signal.						

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	2437.00	110.22	73.17	/	74.00	37.05	PK	
	4874.00	39.01	32.41	-34.99	74.00	6.60	PK	
	7311.00	34.45	25.20	-39.55	74.00	9.26	PK	
	9748.00	37.08	26.49	-36.92	74.00	10.59	PK	
V	2437.00	107.67	70.62	/	74.00	37.05	PK	
	4874.00	37.68	31.08	-36.32	74.00	6.60	PK	
	7311.00	34.92	25.67	-39.08	74.00	9.26	PK	
	9748.00	37.48	26.79	-36.52	74.00	10.69	PK	
Note:		2437MHz is fundamental signal.						

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	2462.00	109.73	72.44	/	74.00	37.29	PK	
	2483.50	72.09	34.66	-1.91	74.00	37.42	PK	
	2462.00	96.59	59.33	/	54.00	37.26	AV	
	2483.50	53.85	16.43	-0.15	54.00	37.42	AV	
	4924.00	36.18	29.53	-37.82	74.00	6.65	PK	
	7386.00	35.28	26.03	-38.72	74.00	9.26	PK	
	9848.00	36.41	25.62	-37.60	74.00	10.78	PK	
V	2462.00	113.35	77.01	/	74.00	36.34	PK	
	2483.50	72.02	35.63	-1.98	74.00	36.39	PK	
	2462.00	97.80	61.46	/	54.00	36.34	AV	
	2483.50	50.00	13.61	-4.00	54.00	36.39	AV	
	4924.00	36.11	29.38	-37.89	74.00	6.73	PK	
	7386.00	36.00	26.74	-38.00	74.00	9.26	PK	
	9848.00	36.43	25.59	-37.57	74.00	10.84	PK	
Note:		2462MHz is fundamental signal.						

3: 2.4GHz band 802.11n20

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	2389.46	73.89	37.24	-0.12	74.00	36.65	PK	
	2390.00	70.99	34.34	-3.01	74.00	36.65	PK	
	2412.00	108.89	72.02	/	74.00	36.87	PK	
	2389.46	51.23	14.58	-2.77	54.00	36.65	AV	
	2390.00	52.36	15.71	-1.64	54.00	36.65	AV	
	2412.00	92.57	55.69	/	54.00	36.88	AV	
	4824.00	35.86	29.32	-38.14	74.00	6.55	PK	
	7236.00	33.88	24.62	-40.12	74.00	9.26	PK	
	9648.00	37.28	26.80	-36.72	74.00	10.48	PK	
V	2389.41	73.79	37.81	-0.21	74.00	35.99	PK	
	2390.00	72.83	36.84	-1.17	74.00	35.99	PK	
	2412.00	111.65	75.57	/	74.00	36.08	PK	
	2389.41	52.56	15.91	-1.44	54.00	36.65	AV	
	2390.00	53.86	17.87	-0.14	54.00	35.99	AV	
	2412.00	94.45	58.33	/	54.00	36.12	AV	
	4824.00	35.55	29.08	-38.45	74.00	6.47	PK	
	7236.00	33.85	24.60	-40.15	74.00	9.25	PK	
	9648.00	37.64	27.11	-36.36	74.00	10.54	PK	
Note:	2412MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	2437.00	108.23	71.18	/	74.00	37.05	PK	
	4874.00	37.06	30.46	-36.94	74.00	6.60	PK	
	7311.00	34.83	25.58	-39.17	74.00	9.26	PK	
	9748.00	37.48	26.89	-36.52	74.00	10.59	PK	
V	2437.00	111.22	74.17	/	74.00	37.05	PK	
	4874.00	36.86	30.26	-37.14	74.00	6.60	PK	
	7311.00	35.41	26.16	-38.59	74.00	9.26	PK	
	9748.00	36.89	26.20	-37.11	74.00	10.69	PK	
Note:	2437MHz is fundamental signal.							

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	2462.00	107.48	70.18	/	74.00	37.31	PK	
	2483.50	68.47	31.05	-5.53	74.00	37.42	PK	
	2462.00	92.07	54.76	/	54.00	37.31	AV	
	2483.50	51.96	14.54	-2.04	54.00	37.42	AV	
	4924.00	35.84	29.19	-38.16	74.00	6.65	PK	
	7386.00	36.27	27.02	-37.73	74.00	9.26	PK	
	9848.00	36.13	25.35	-37.87	74.00	10.78	PK	
V	2462.00	111.44	75.10	/	74.00	36.34	PK	
	2483.50	73.12	36.74	-0.88	74.00	36.39	PK	
	2485.05	73.84	37.45	-0.16	74.00	36.40	PK	
	2462.00	93.63	57.29	/	54.00	36.34	AV	
	2483.50	53.47	17.08	-0.53	54.00	36.39	AV	
	2485.05	52.32	15.92	-1.68	54.00	36.40	AV	
	4924.00	36.20	29.47	-37.80	74.00	6.73	PK	
	7386.00	35.71	26.45	-38.29	74.00	9.26	PK	
	9848.00	36.61	25.77	-37.39	74.00	10.84	PK	
Note:	2462MHz is fundamental signal.							

4: 2.4GHz band 802.11n40

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	2390.00	72.27	35.62	-1.73	74.00	36.65	PK	
	2422.00	105.33	68.33	/	74.00	37.00	PK	
	2390.00	52.84	16.19	-1.16	54.00	36.65	AV	
	2422.00	86.81	49.79	/	54.00	37.02	AV	
	4844.00	35.42	28.85	-38.58	74.00	6.57	PK	
	7266.00	34.55	25.33	-39.45	74.00	9.22	PK	
	9688.00	37.15	26.52	-36.85	74.00	10.62	PK	
V	2390.00	71.46	35.47	-2.54	74.00	35.99	PK	
	2422.00	106.85	70.68	/	74.00	36.17	PK	
	2390.00	53.36	17.37	-0.64	54.00	35.99	AV	
	2422.00	87.57	51.39	/	54.00	36.18	AV	
	4844.00	35.54	29.02	-38.46	74.00	6.52	PK	
	7266.00	34.54	25.32	-39.46	74.00	9.22	PK	
	9688.00	36.71	26.01	-37.29	74.00	10.70	PK	
Note:		2422MHz is fundamental signal.						

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	2437.00	102.44	65.39	/	74.00	37.05	PK	
	4874.00	36.40	29.80	-37.60	74.00	6.60	PK	
	7311.00	34.65	25.39	-39.35	74.00	9.26	PK	
	9748.00	36.76	26.16	-37.24	74.00	10.59	PK	
V	2437.00	108.87	71.82	/	74.00	37.05	PK	
	4874.00	35.69	29.09	-38.32	74.00	6.60	PK	
	7311.00	34.67	25.42	-39.33	74.00	9.26	PK	
	9748.00	36.81	26.12	-37.20	74.00	10.69	PK	
Note:		transmit at 2437MHz						

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	2452.00	101.91	64.60	/	74.00	37.30	PK	
	2483.50	68.39	30.97	-5.61	74.00	37.42	PK	
	2452.00	85.07	47.77	/	54.00	37.30	AV	
	2483.50	52.04	14.62	-1.96	54.00	37.42	AV	
	4904.00	36.02	29.44	-37.98	74.00	6.58	PK	
	7356.00	34.77	25.55	-39.23	74.00	9.22	PK	
	9808.00	36.04	25.38	-37.96	74.00	10.66	PK	
V	2452.00	106.18	69.84	/	74.00	36.34	PK	
	2483.50	72.14	35.75	-1.86	74.00	36.39	PK	
	2452.00	88.36	52.02	/	54.00	36.34	AV	
	2483.50	53.53	17.14	-0.47	54.00	36.39	AV	
	2484.56	53.50	17.11	-0.50	54.00	36.39	AV	
	4904.00	36.06	29.43	-37.95	74.00	6.63	PK	
	7356.00	35.44	26.22	-38.56	74.00	9.22	PK	
	9808.00	36.30	25.56	-37.70	74.00	10.74	PK	
Note:		2452MHz is fundamental signal.						

5: 5GHz band 802.11a

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	5745.00	105.32	97.78	/	74.00	7.54	PK	
	7700.00	35.42	25.91	-38.58	74.00	9.51	PK	
	11490.00	38.88	24.99	-35.12	74.00	13.89	PK	
	17235.00	42.85	21.36	-31.15	74.00	21.49	PK	
V	5745.00	109.33	101.79	/	74.00	7.54	PK	
	7700.00	35.43	26.00	-38.57	74.00	9.43	PK	
	11490.00	38.96	25.17	-35.04	74.00	13.79	PK	
	17235.00	42.76	21.19	-31.24	74.00	21.57	PK	
Note:		5745MHz is fundamental signal.						

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	5785.00	106.67	98.99	/	74.00	7.68	PK	
	7700.00	35.20	25.69	-38.80	74.00	9.51	PK	
	11570.00	39.10	24.52	-34.90	74.00	14.58	PK	
	17355.00	43.72	21.99	-30.28	74.00	21.73	PK	
V	5785.00	110.92	103.24	/	74.00	7.68	PK	
	7700.00	35.09	25.66	-38.91	74.00	9.43	PK	
	11570.00	40.39	25.90	-33.62	74.00	14.48	PK	
	17355.00	43.47	21.63	-30.53	74.00	21.83	PK	
Note:		5785MHz is fundamental signal.						

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	5825.00	106.99	99.26	/	74.00	7.73	PK	
	7700.00	35.49	25.98	-38.51	74.00	9.51	PK	
	11650.00	38.06	23.51	-35.94	74.00	14.55	PK	
	17475.00	42.01	20.01	-31.99	74.00	22.00	PK	
V	5825.00	108.76	101.03	/	74.00	7.73	PK	
	7700.00	35.26	25.83	-38.74	74.00	9.43	PK	
	11650.00	41.24	26.79	-32.76	74.00	14.45	PK	
	17475.00	42.67	20.57	-31.33	74.00	22.10	PK	
Note:		5825MHz is fundamental signal.						

6: 5GHz band 802.11n20

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	5745.00	109.34	101.80	/	74.00	7.54	PK	
	7700.00	34.89	25.38	-39.11	74.00	9.51	PK	
	11490.00	38.45	24.56	-35.55	74.00	13.89	PK	
	17235.00	42.71	21.22	-31.29	74.00	21.49	PK	
V	5745.00	113.43	105.89	/	74.00	7.54	PK	
	7700.00	35.24	25.81	-38.76	74.00	9.43	PK	
	11490.00	38.00	24.21	-36.00	74.00	13.79	PK	
	17235.00	43.57	22.00	-30.43	74.00	21.57	PK	
Note:		5745MHz is fundamental signal.						

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	5785.00	108.44	100.76	/	74.00	7.68	PK	
	7700.00	35.91	26.40	-38.09	74.00	9.51	PK	
	11570.00	39.58	25.00	-34.42	74.00	14.58	PK	
	17355.00	43.84	22.11	-30.16	74.00	21.73	PK	
V	5785.00	113.87	106.19	/	74.00	7.68	PK	
	7700.00	35.30	25.87	-38.70	74.00	9.43	PK	
	11570.00	39.13	24.65	-34.87	74.00	14.48	PK	
	17355.00	44.13	22.29	-29.87	74.00	21.83	PK	
Note:		5785MHz is fundamental signal.						

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	5825.00	105.34	97.61	/	74.00	7.73	PK	
	7700.00	35.22	25.71	-38.78	74.00	9.51	PK	
	11650.00	37.92	23.36	-36.08	74.00	14.55	PK	
	17475.00	42.60	20.60	-31.41	74.00	22.00	PK	
V	5825.00	109.39	101.66	/	74.00	7.73	PK	
	7700.00	35.23	25.80	-38.77	74.00	9.43	PK	
	11650.00	38.71	24.26	-35.29	74.00	14.45	PK	
	17475.00	43.36	21.26	-30.64	74.00	22.10	PK	
Note:		5825MHz is fundamental signal.						

7: 5GHz band 802.11n40

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	5755.00	107.22	99.64	/	74.00	7.58	PK	
	7700.00	35.63	26.12	-38.37	74.00	9.51	PK	
	11510.00	38.96	24.78	-35.04	74.00	14.18	PK	
	17265.00	43.93	22.29	-30.07	74.00	21.64	PK	
V	5755.00	109.32	101.74	/	74.00	7.58	PK	
	7700.00	35.45	26.02	-38.55	74.00	9.43	PK	
	11506.00	41.17	27.19	-32.83	74.00	13.97	PK	
	17265.00	44.21	22.47	-29.79	74.00	21.74	PK	
Note:		5755MHz is fundamental signal.						

Polarity	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Type	Note
H	5795.00	105.76	98.05	/	74.00	7.71	PK	
	7700.00	35.15	25.64	-38.85	74.00	9.51	PK	
	11590.00	38.59	24.39	-35.41	74.00	14.20	PK	
	17385.00	43.51	21.69	-30.49	74.00	21.81	PK	
V	5795.00	108.33	100.62	/	74.00	7.71	PK	
	7700.00	35.50	26.07	-38.50	74.00	9.43	PK	
	11590.00	40.35	26.25	-33.65	74.00	14.10	PK	
	17385.00	43.97	22.06	-30.03	74.00	21.91	PK	
Note:		5795MHz is fundamental signal.						

Remark:

1. Factor= Antenna Factor + Cable Loss (-Amplifier, is employed)
2. Measure level= Reading level + Factor
3. Over Limit = Limit – Measure level
4. If the PK measured level is lower than AV limit, the AV test can be elided.

Example:

Assuming Antenna Factor = 30.20dB/m, Cable Loss = 2.00dB,
Gain of Preamplifier = 32.00dB, Original Receiver Reading level = 10dBuV.
Then Factor = 30.20 + 2.00 – 32.00 = 0.20dB/m;
Measure level = 10dBuV + 0.20dB/m = 10.20dBuV/m
Assuming limit = 54dBuV/m, Measure level = 10.20dBuV/m,
then Over Limit = 10.20 - 54= -43.80dBuV/m

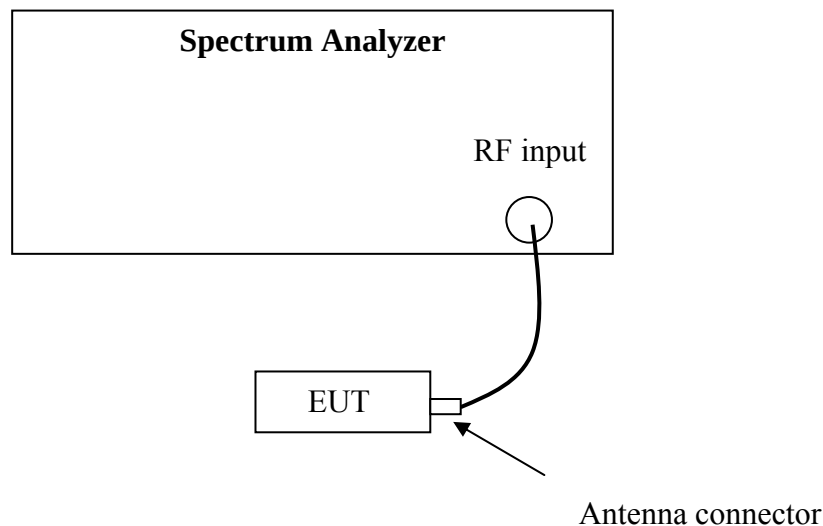
7. Emission outside the frequency Band

Test result: PASS

7.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.

7.2 Test Configuration



7.3 Test procedure and test setup

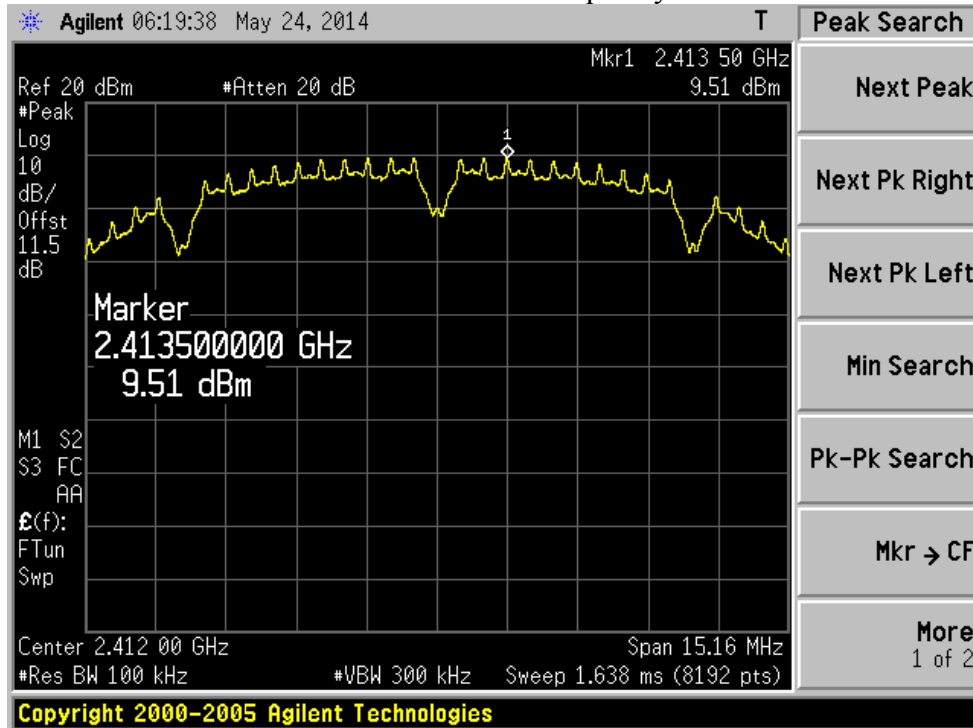
The Emission outside the frequency Band per FCC §15.247(d) is measured using the Spectrum Analyzer with the resolutions bandwidth set at 100kHz, the video bandwidth set at 300kHz, and the SPAN>>RBW.

The EUT was tested according to DTS test procedure of "KDB558074 D01 DTS Meas Guidance v03r02" (clause 11.0) for compliance to FCC 47CFR 15.247 requirements.

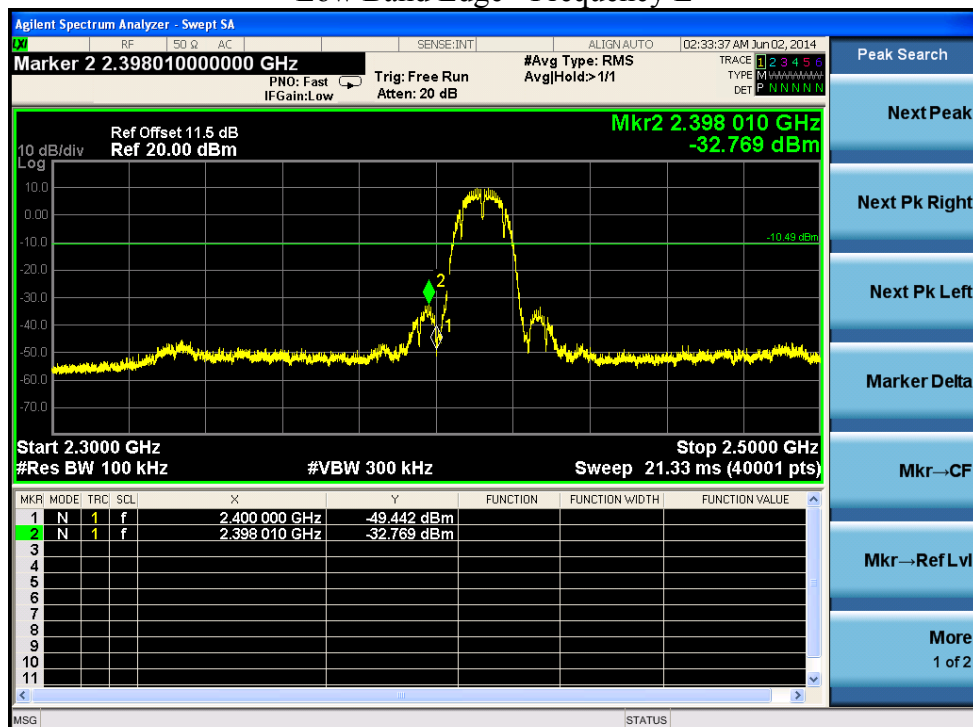
7.4 Test protocol

Temperature : 18 °C
Relative Humidity : 54 %

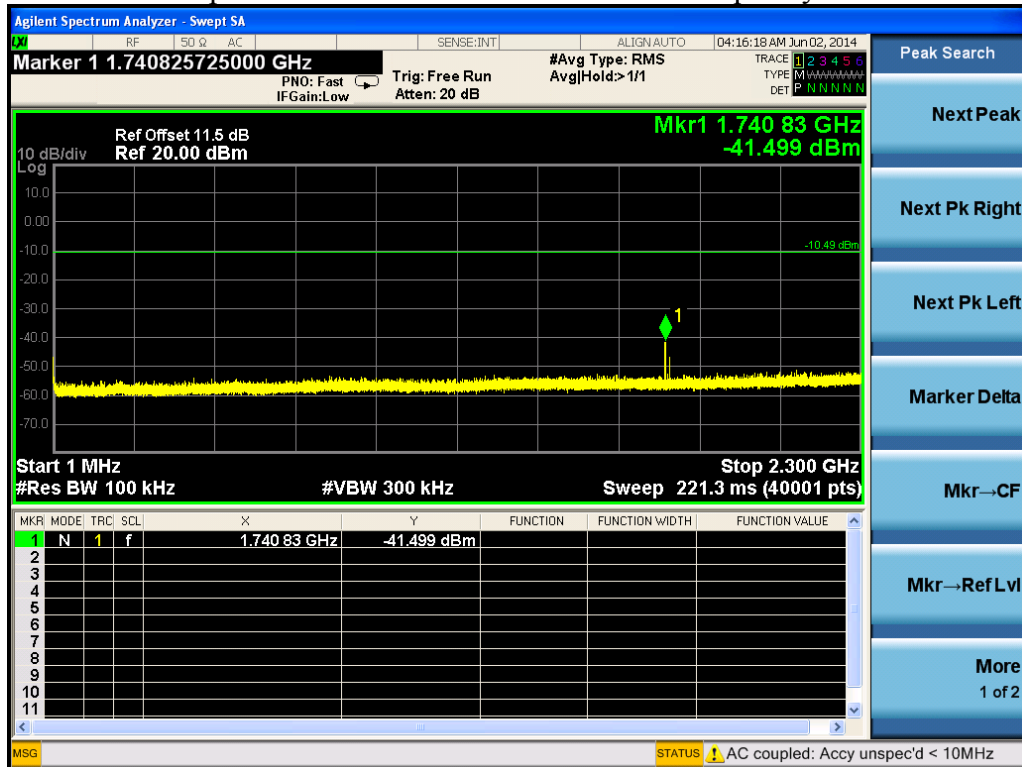
802.11b Out-of-Band Emissions – Chain 0 Reference Level – Frequency L



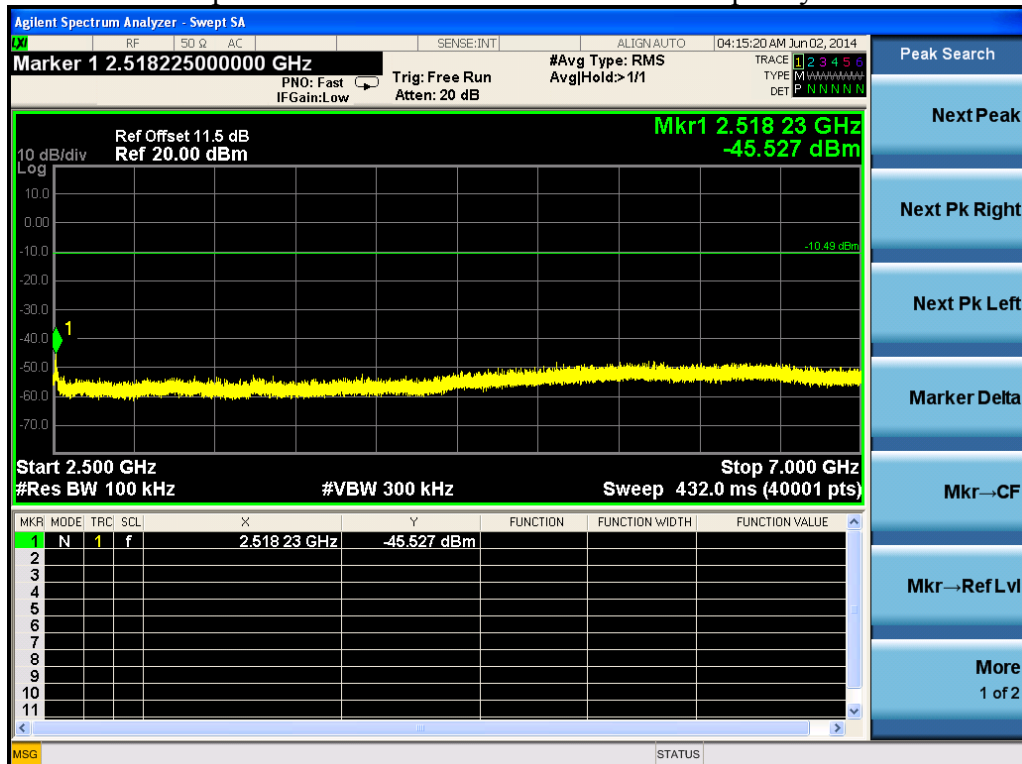
Low Band Edge - Frequency L



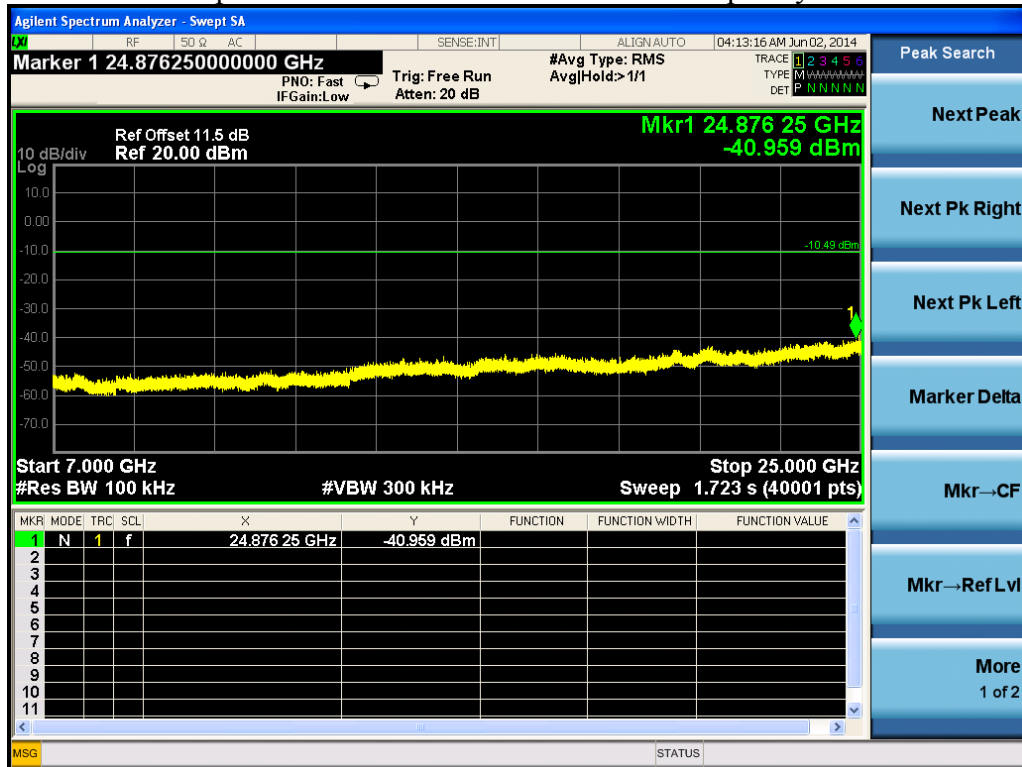
Spurious Emission 1MHz ~ 2.3GHz - Frequency L



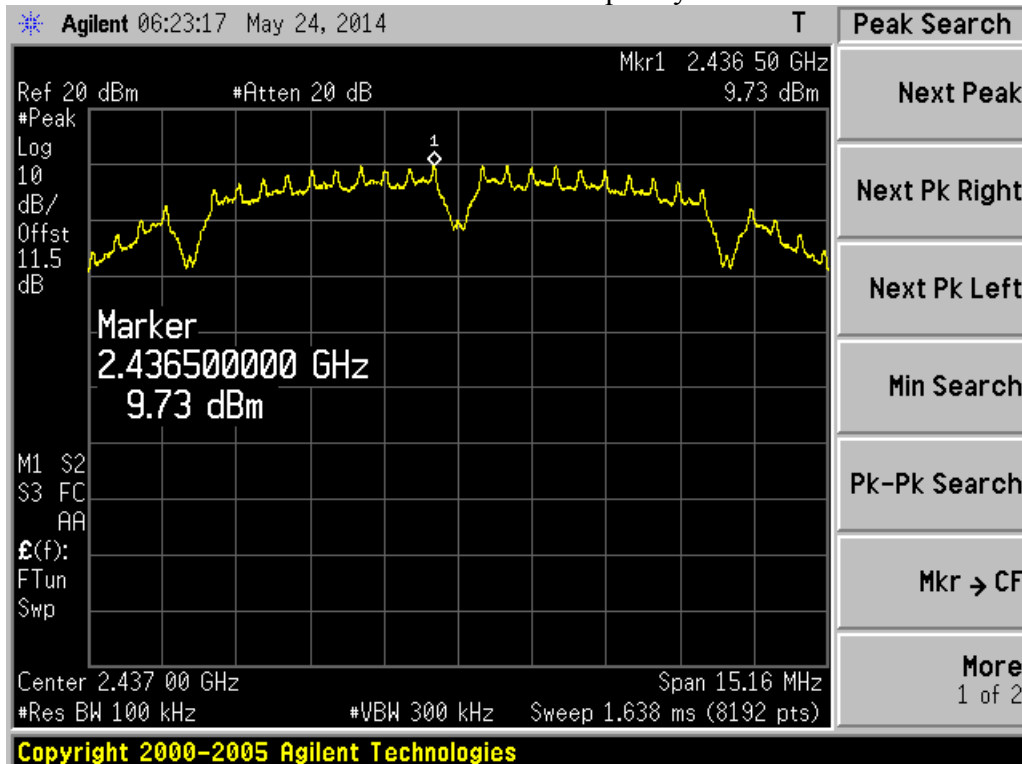
Spurious Emission 2.5GHz ~ 7GHz - Frequency L



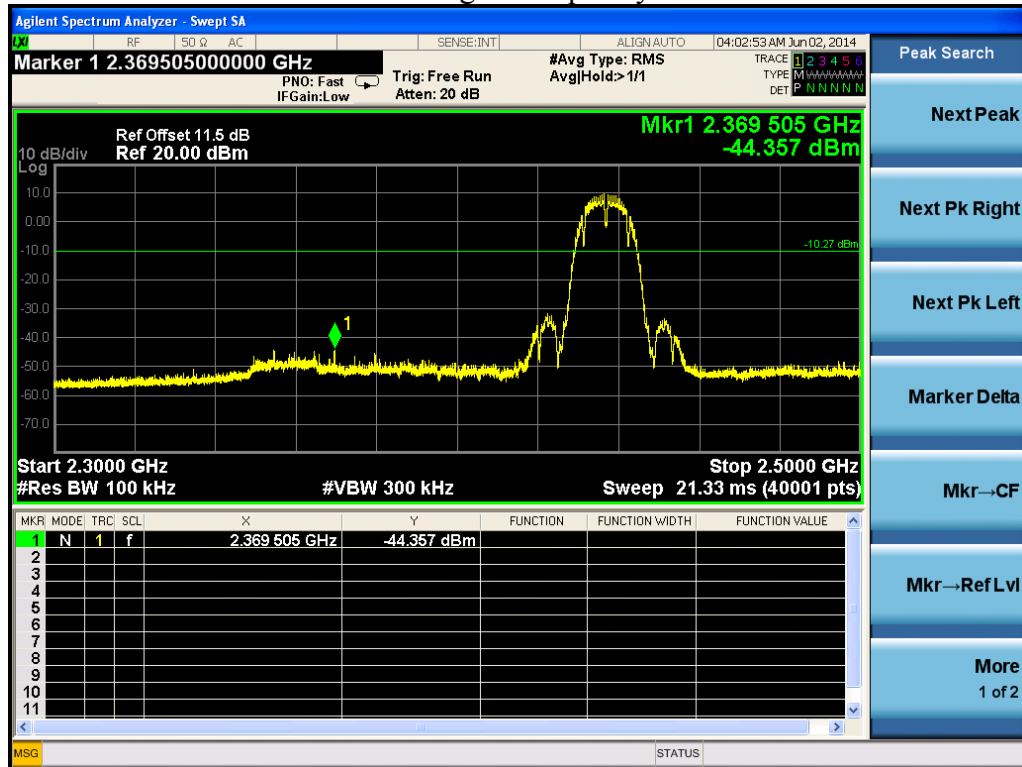
Spurious Emission 7GHz ~ 25GHz - Frequency L



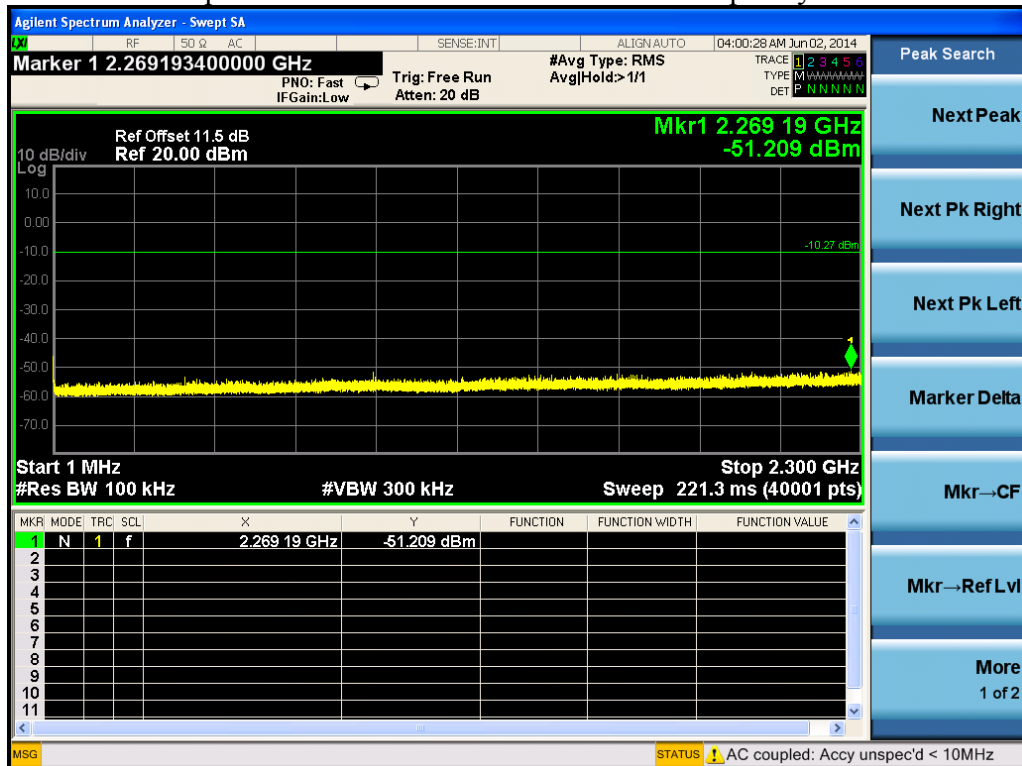
Reference Level – Frequency M



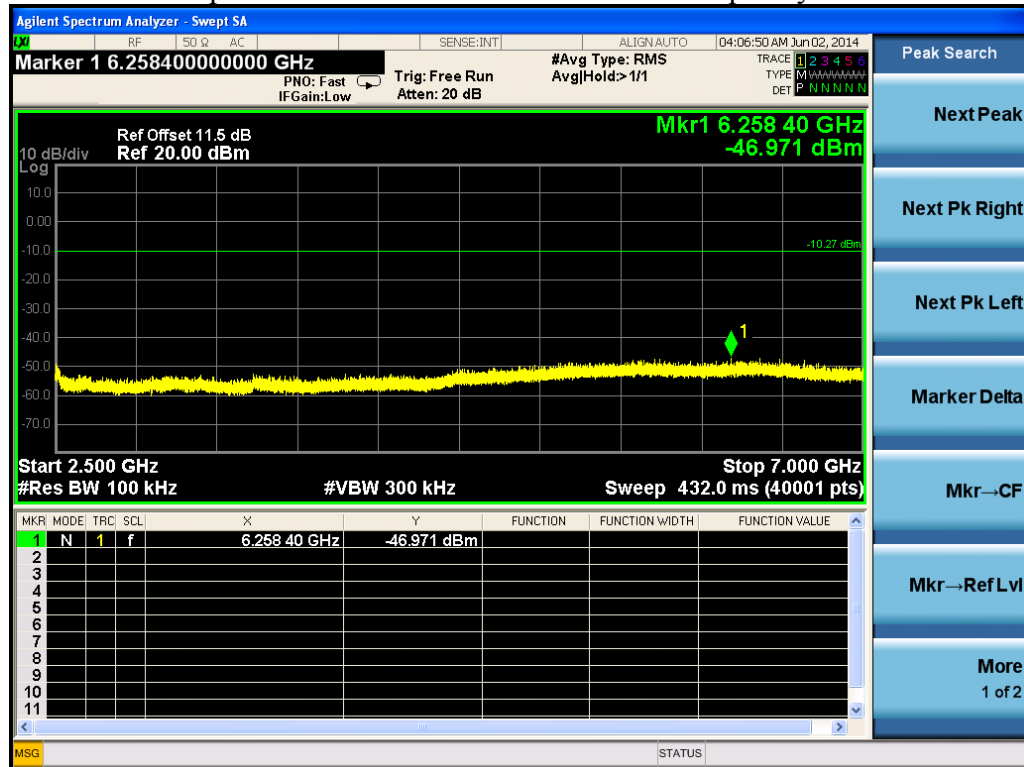
Band Edge - Frequency M



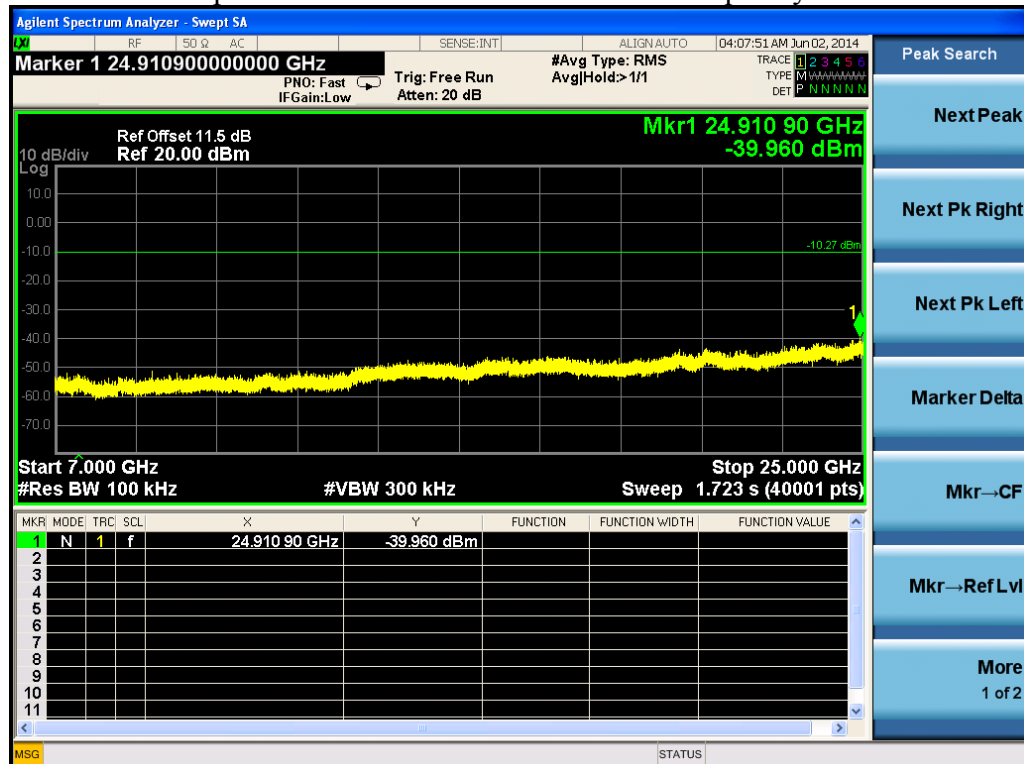
Spurious Emission 1MHz ~ 2.3GHz - Frequency M



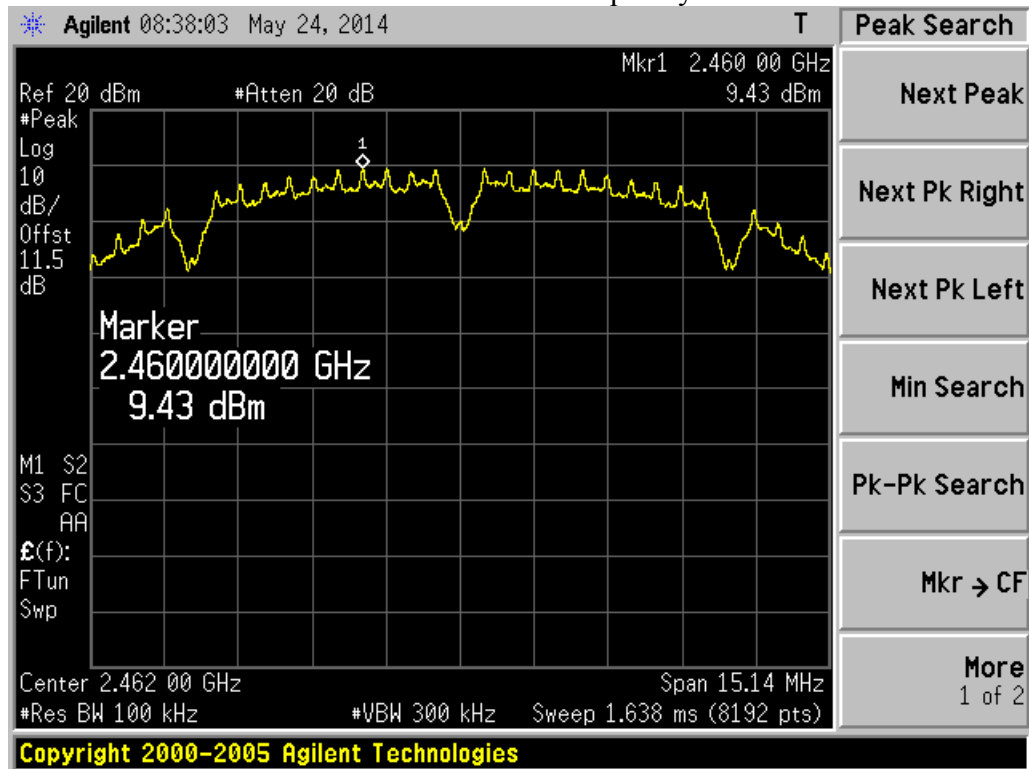
Spurious Emission 2.5GHz ~ 7GHz - Frequency M



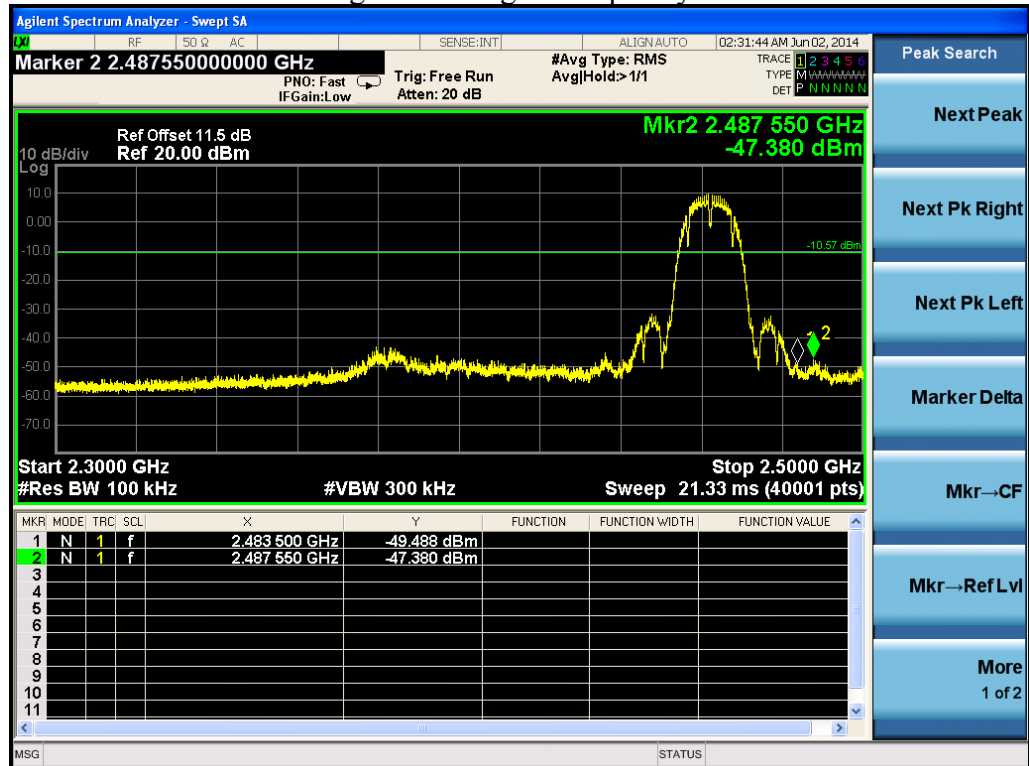
Spurious Emission 7GHz ~ 25GHz - Frequency M



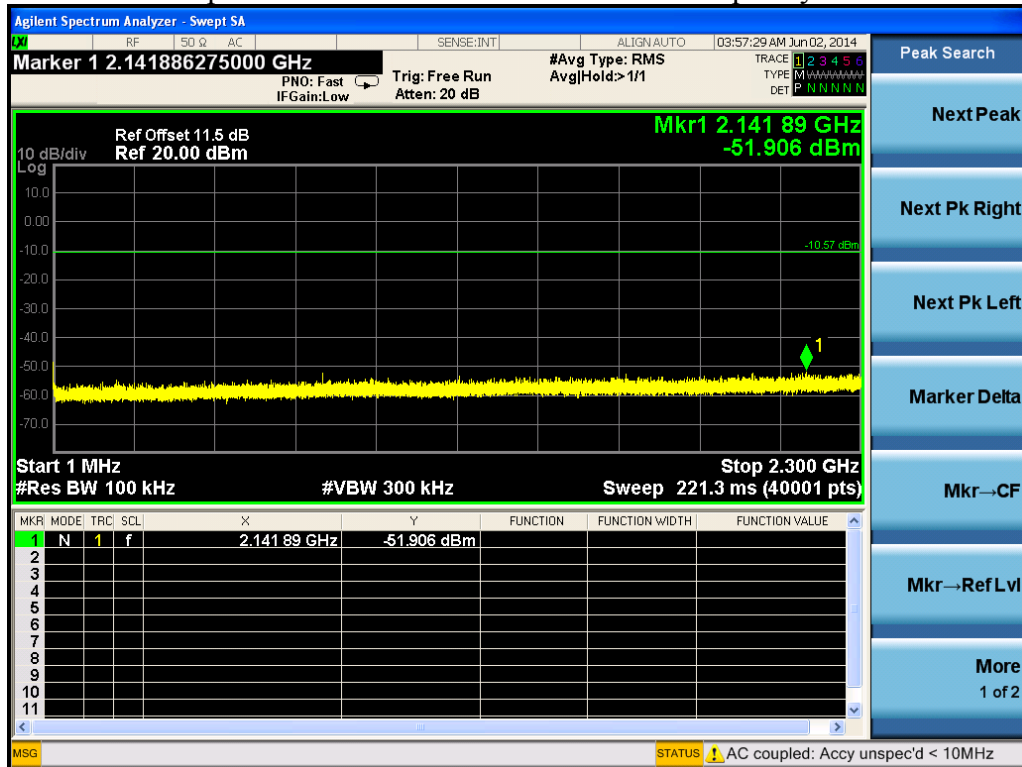
Reference Level – Frequency H



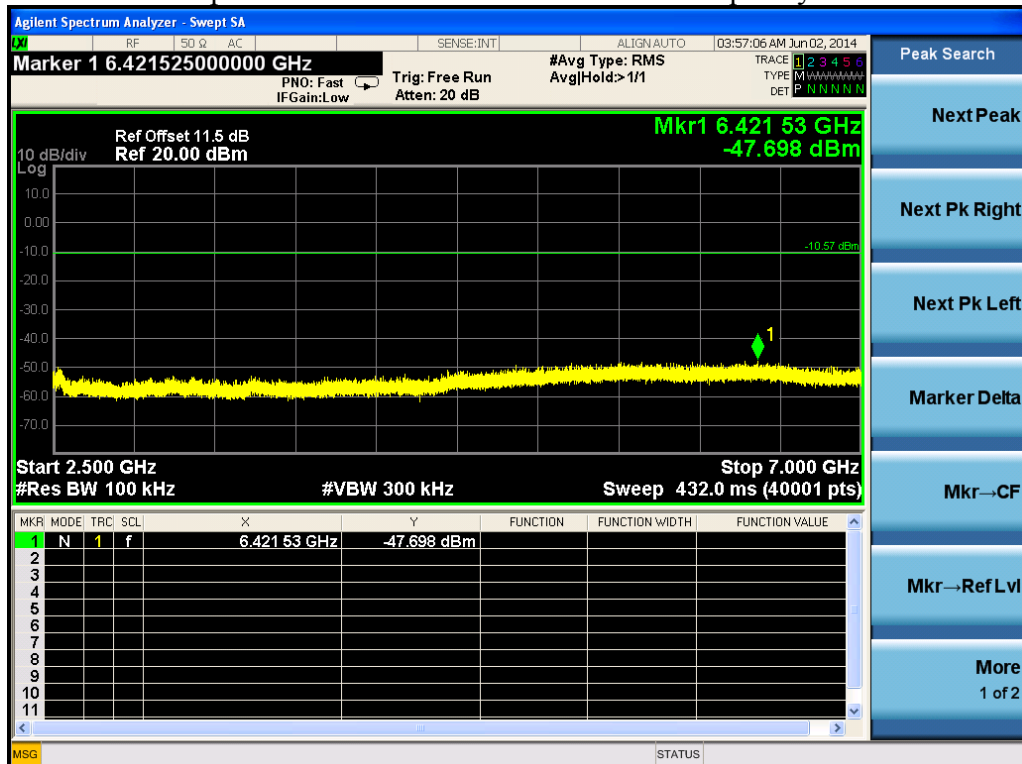
High Band Edge - Frequency H



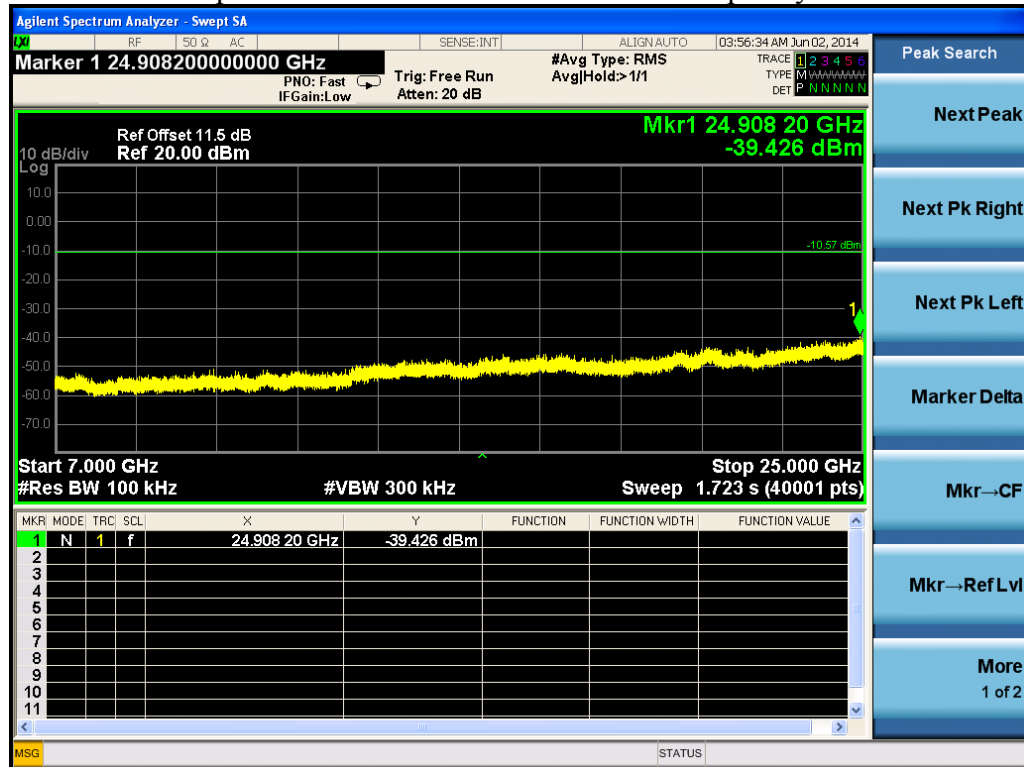
Spurious Emission 1MHz ~ 2.3GHz - Frequency H



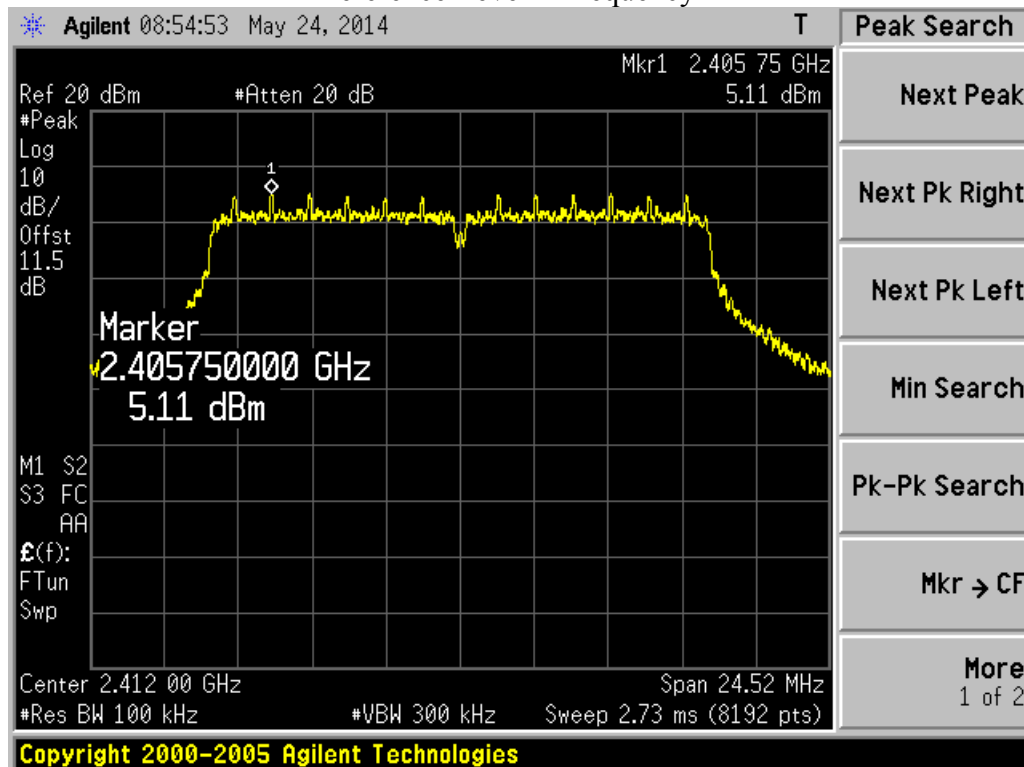
Spurious Emission 2.5GHz ~ 7GHz - Frequency H



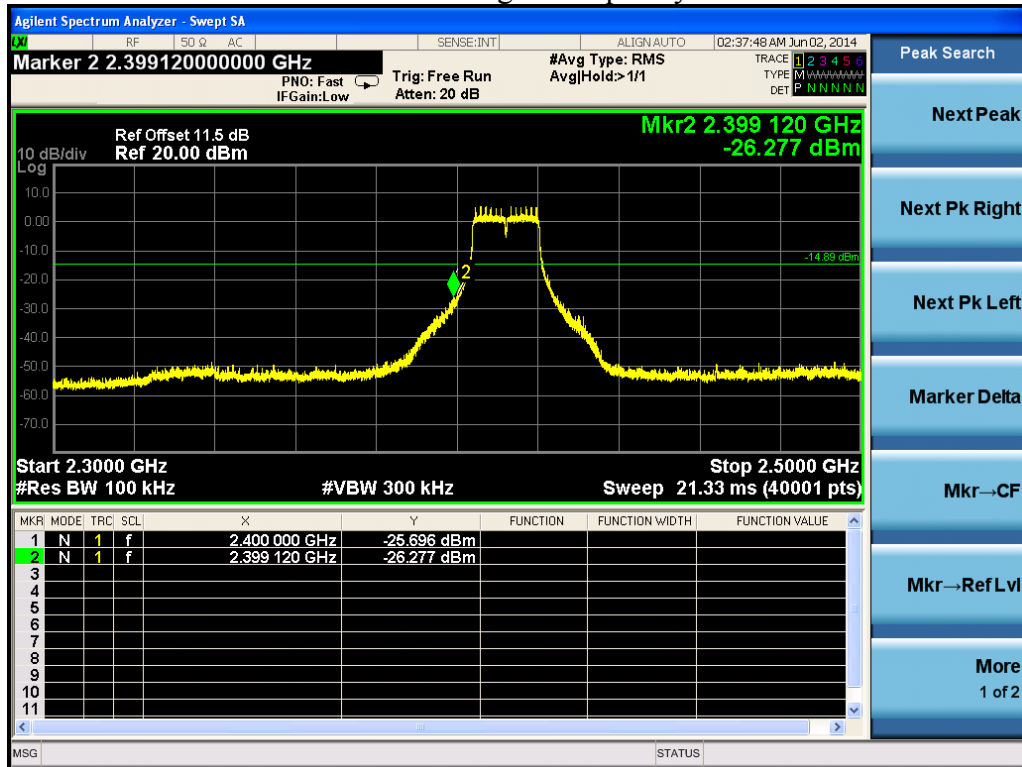
Spurious Emission 7GHz ~ 25GHz - Frequency H



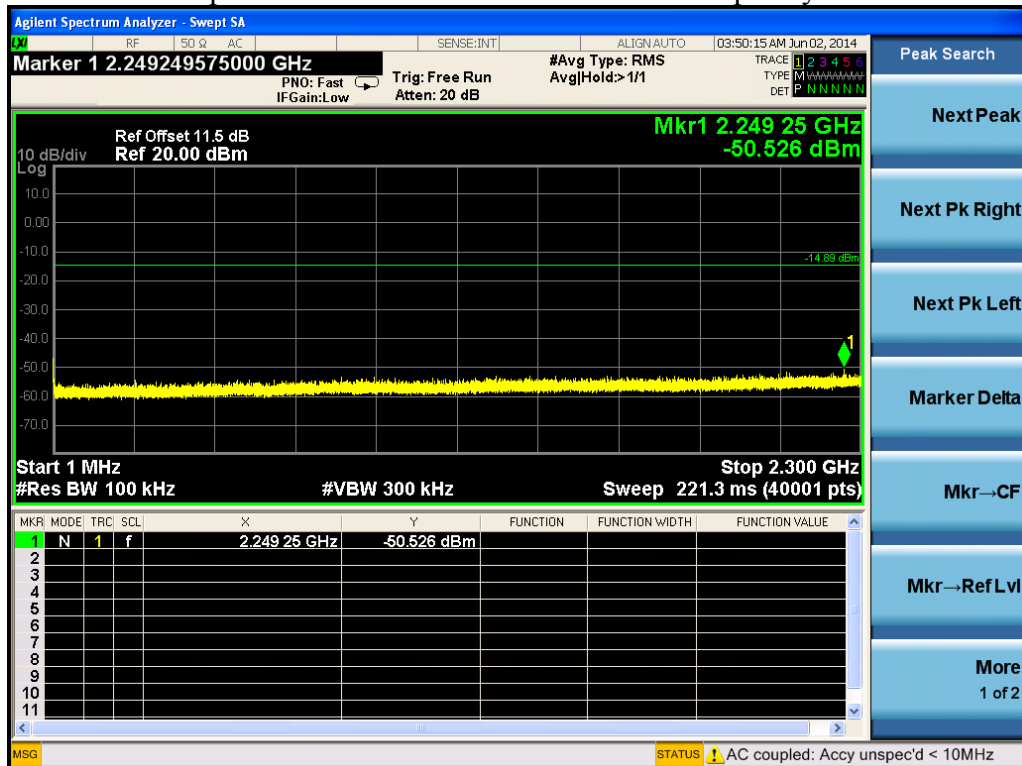
802.11g Out-of-Band Emissions – Chain 0 Reference Level – Frequency L



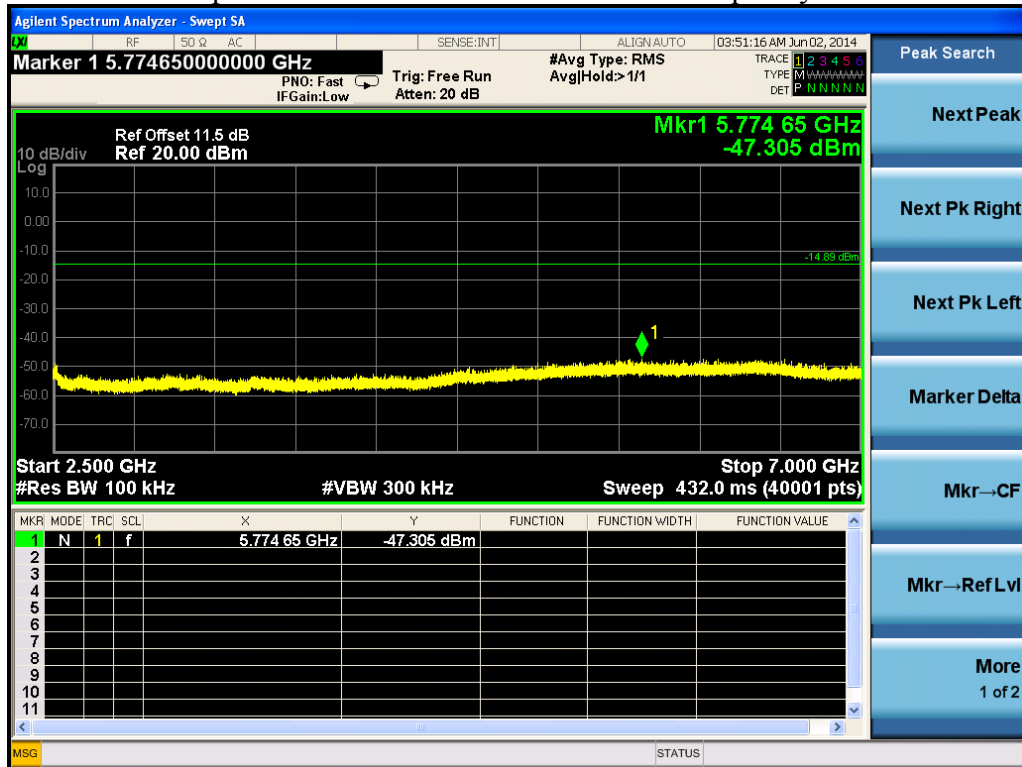
Low Band Edge - Frequency L



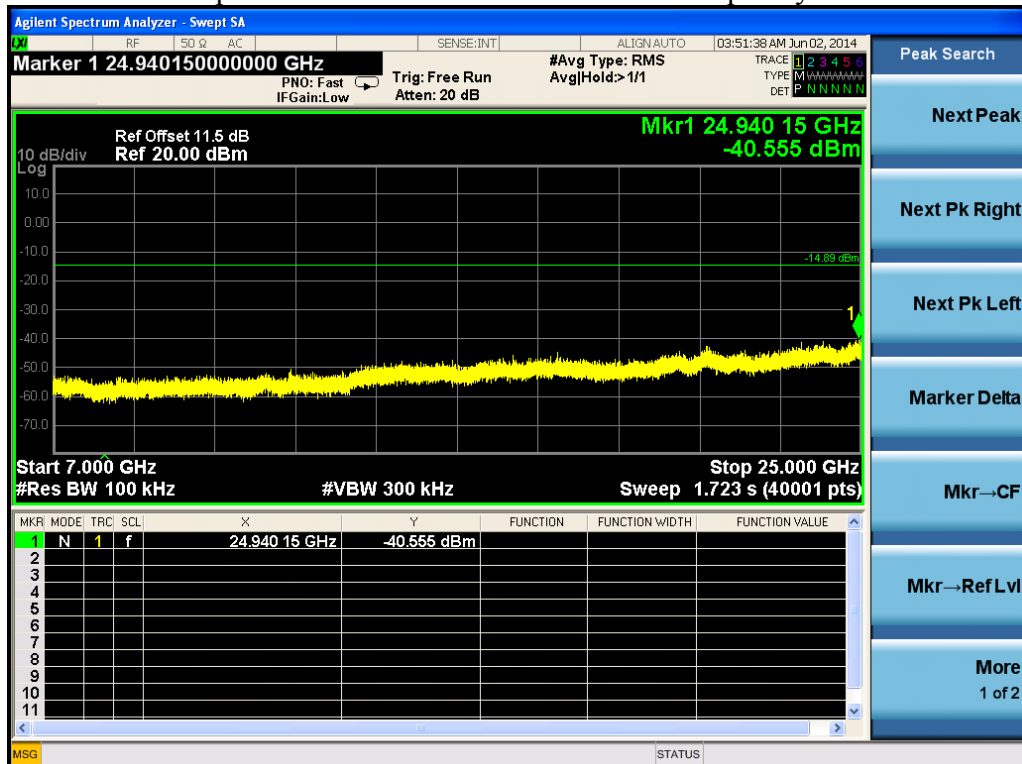
Spurious Emission 1MHz ~ 2.3GHz - Frequency L



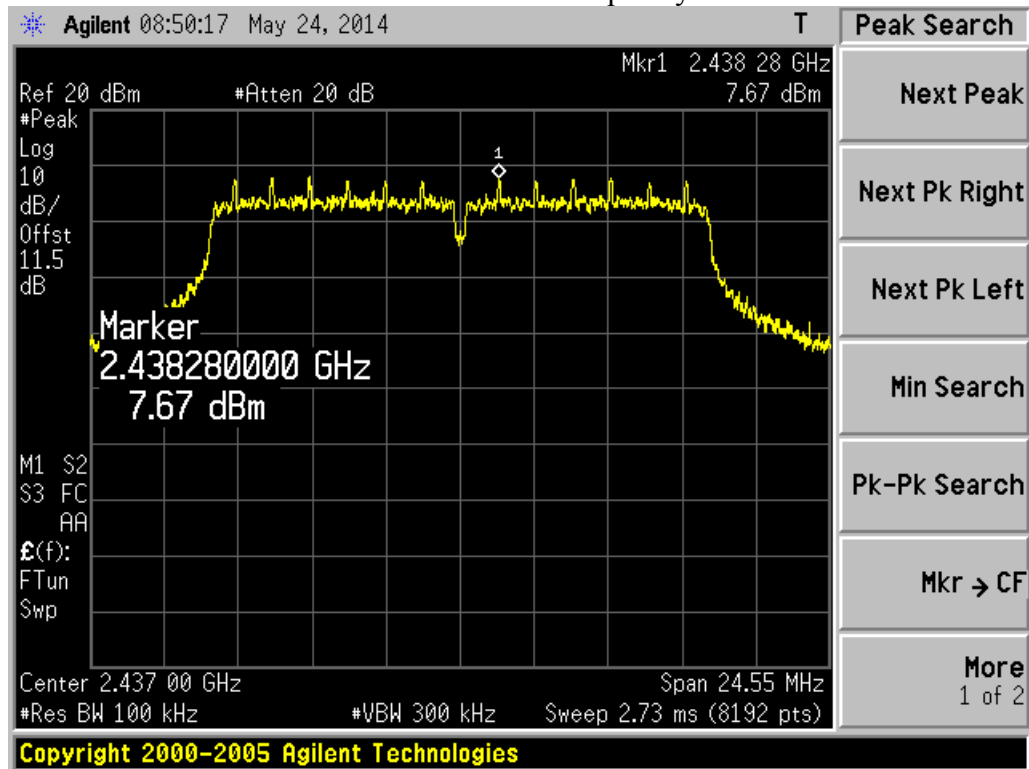
Spurious Emission 2.5GHz ~ 7GHz - Frequency L



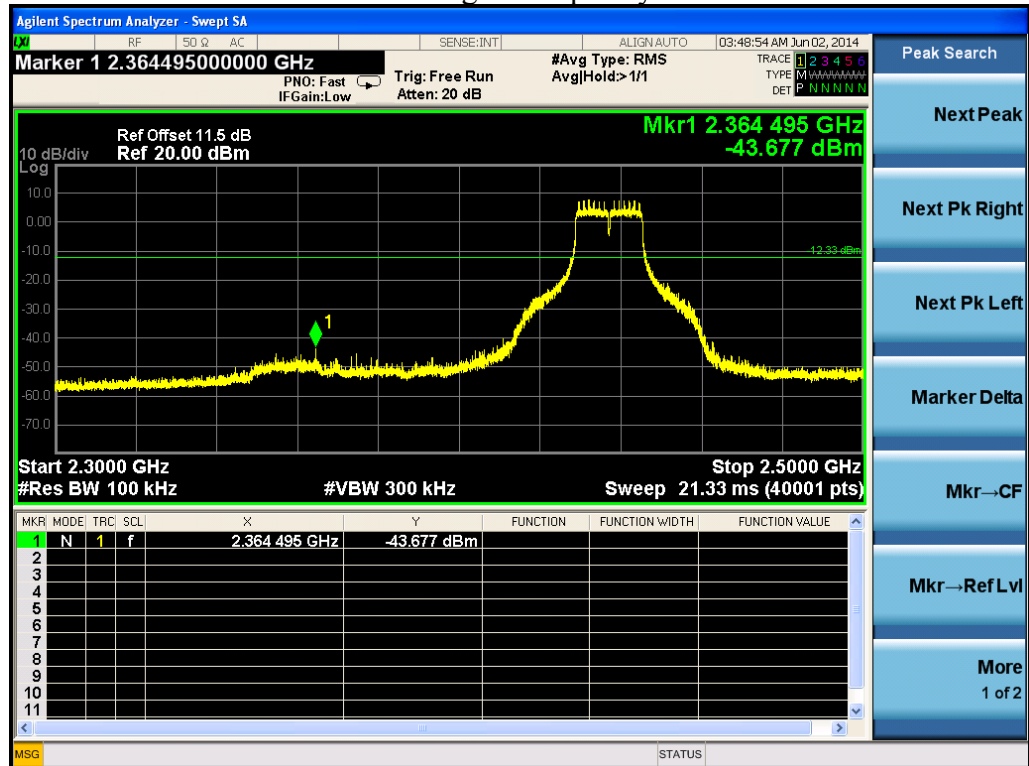
Spurious Emission 7GHz ~ 25GHz - Frequency L



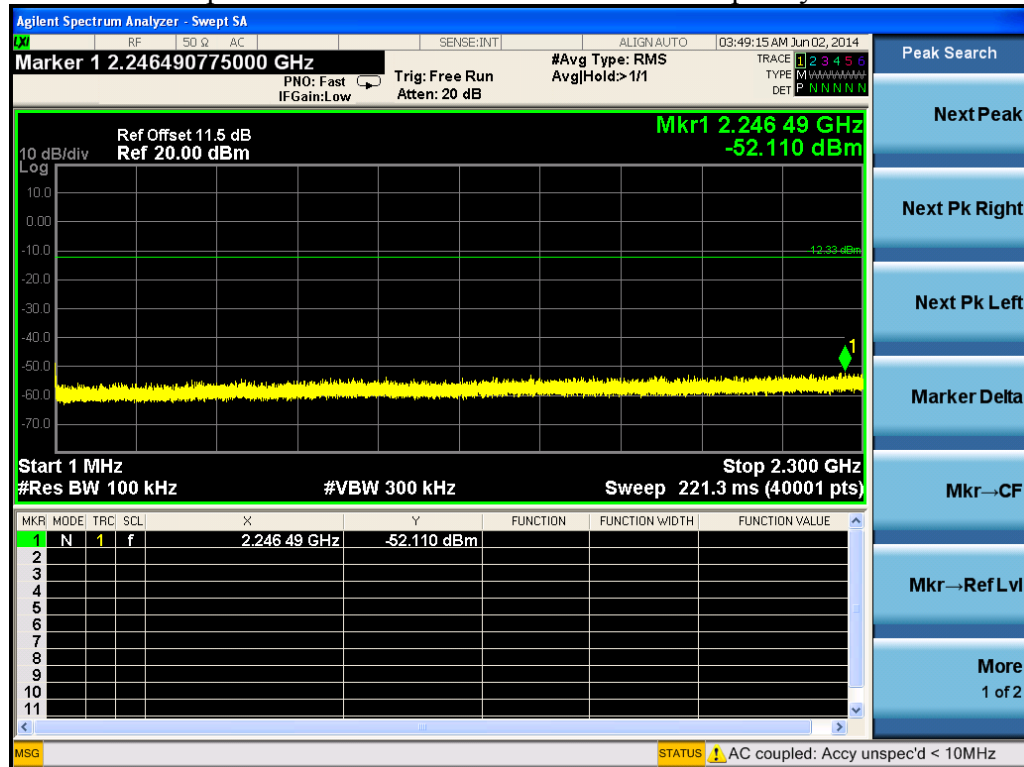
Reference Level – Frequency M



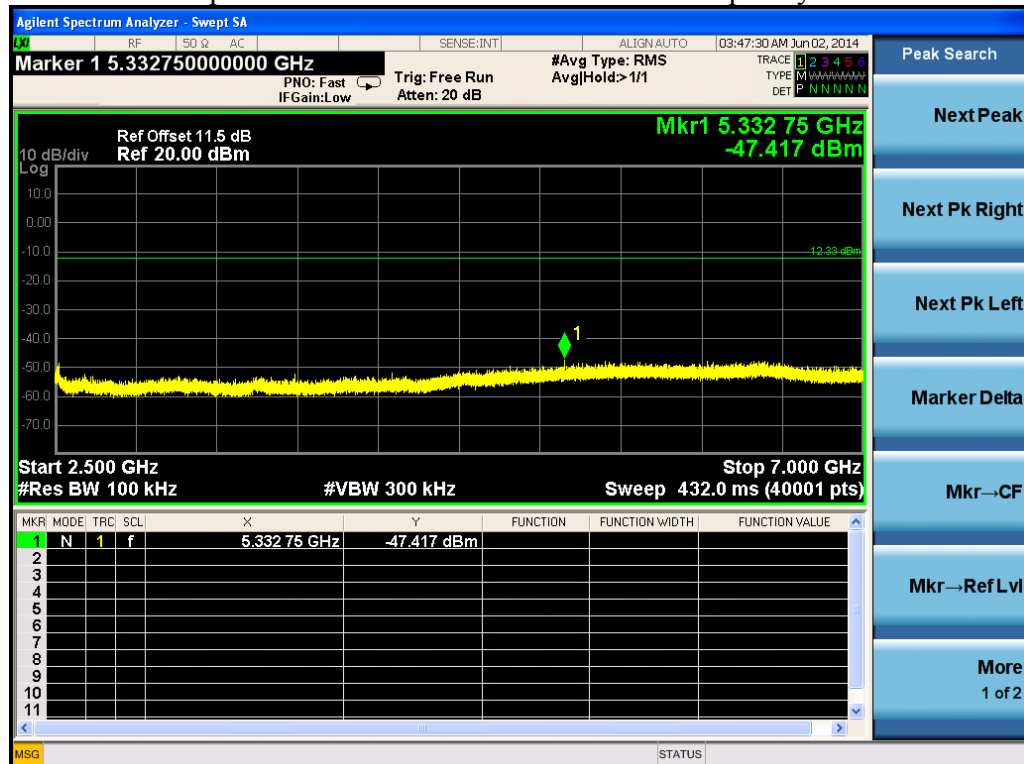
Band Edge - Frequency M



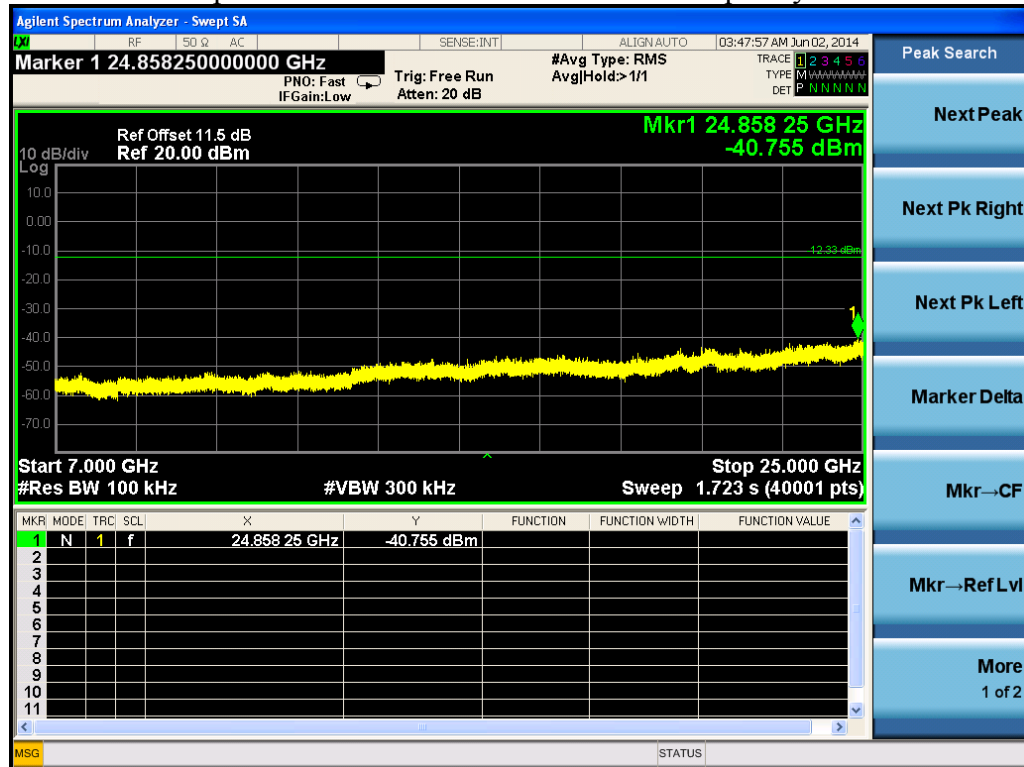
Spurious Emission 1MHz ~ 2.3GHz - Frequency M



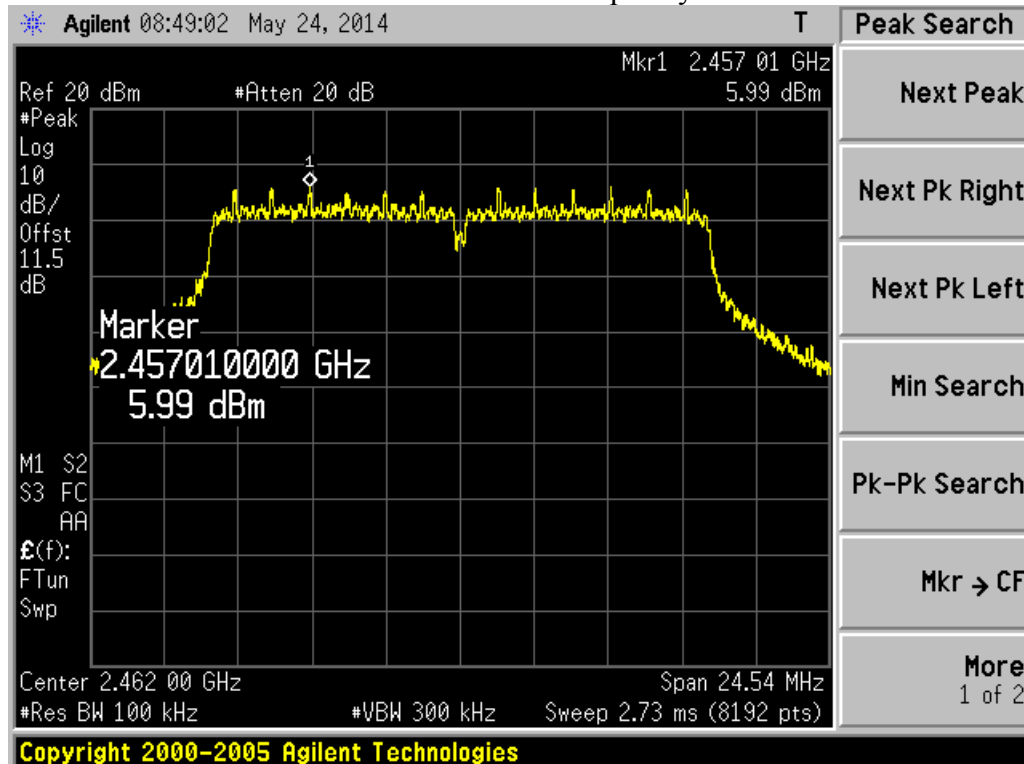
Spurious Emission 2.5GHz ~ 7GHz - Frequency M



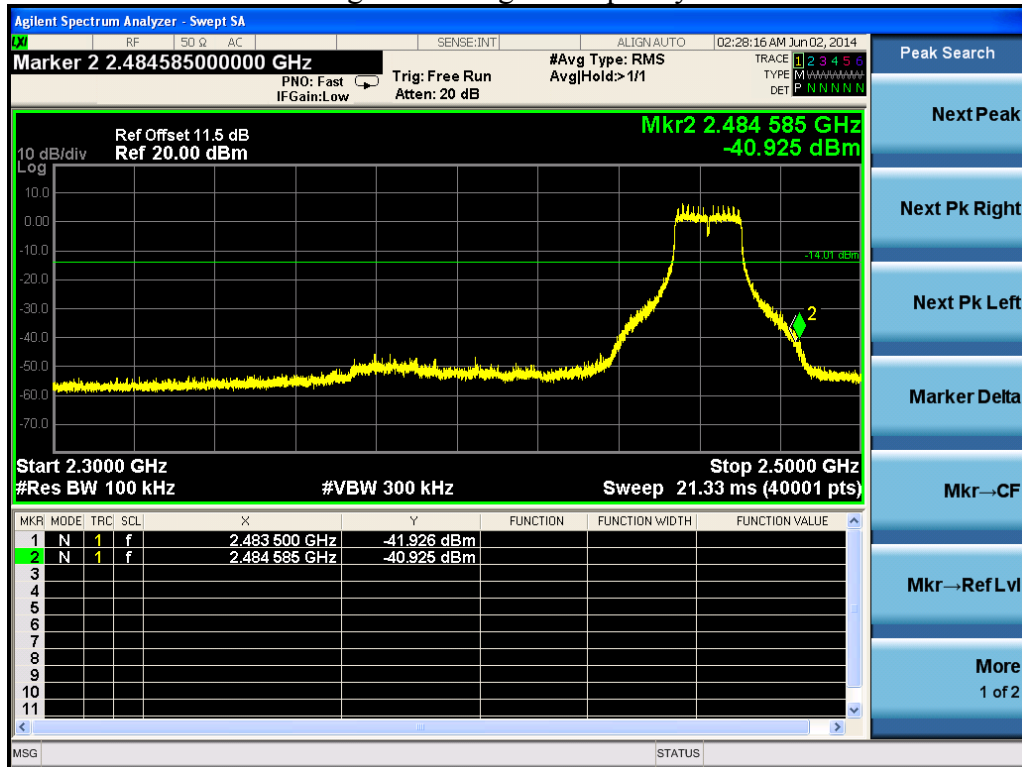
Spurious Emission 7GHz ~ 25GHz - Frequency M



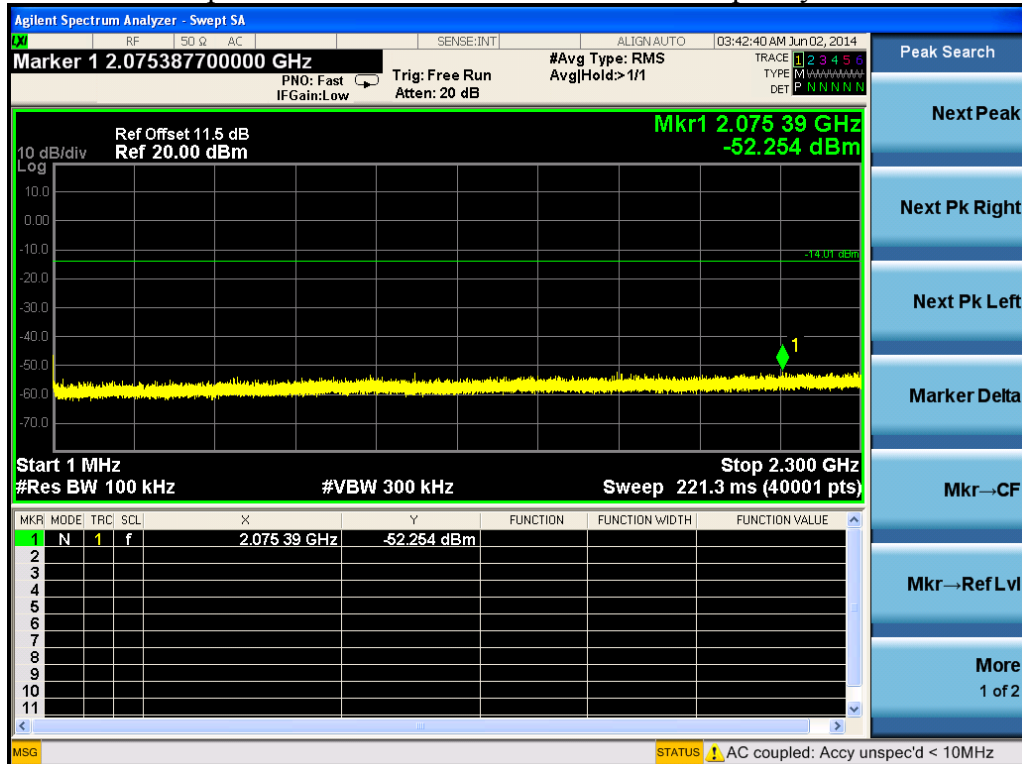
Reference Level – Frequency H



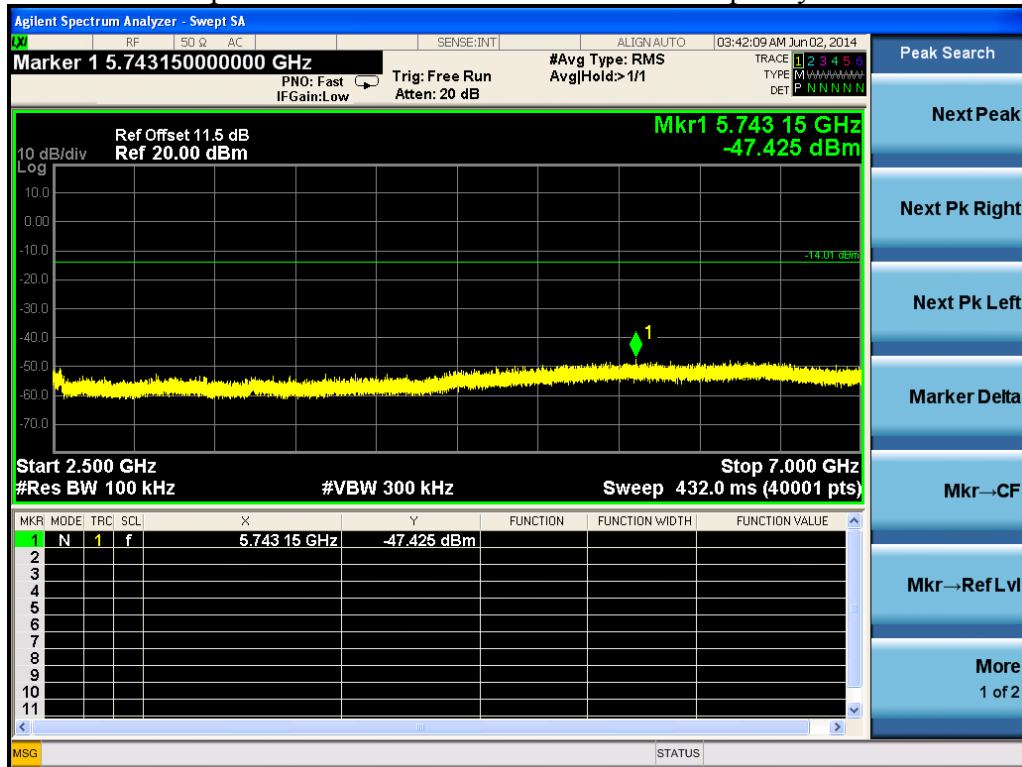
High Band Edge - Frequency H



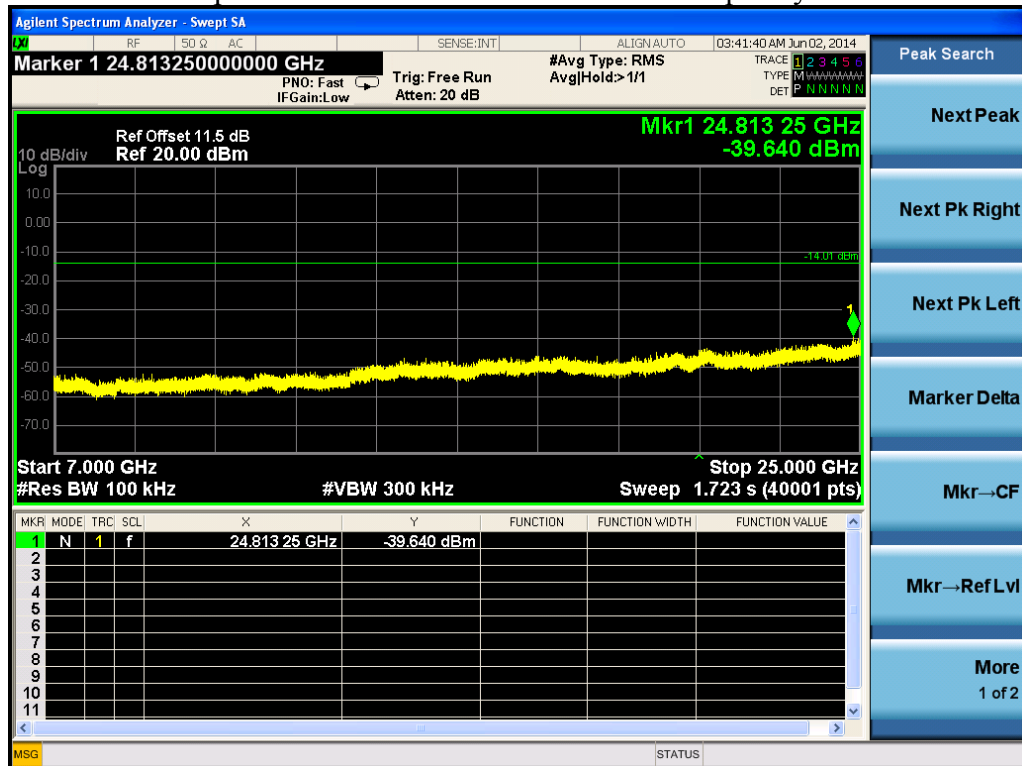
Spurious Emission 1MHz ~ 2.3GHz - Frequency H



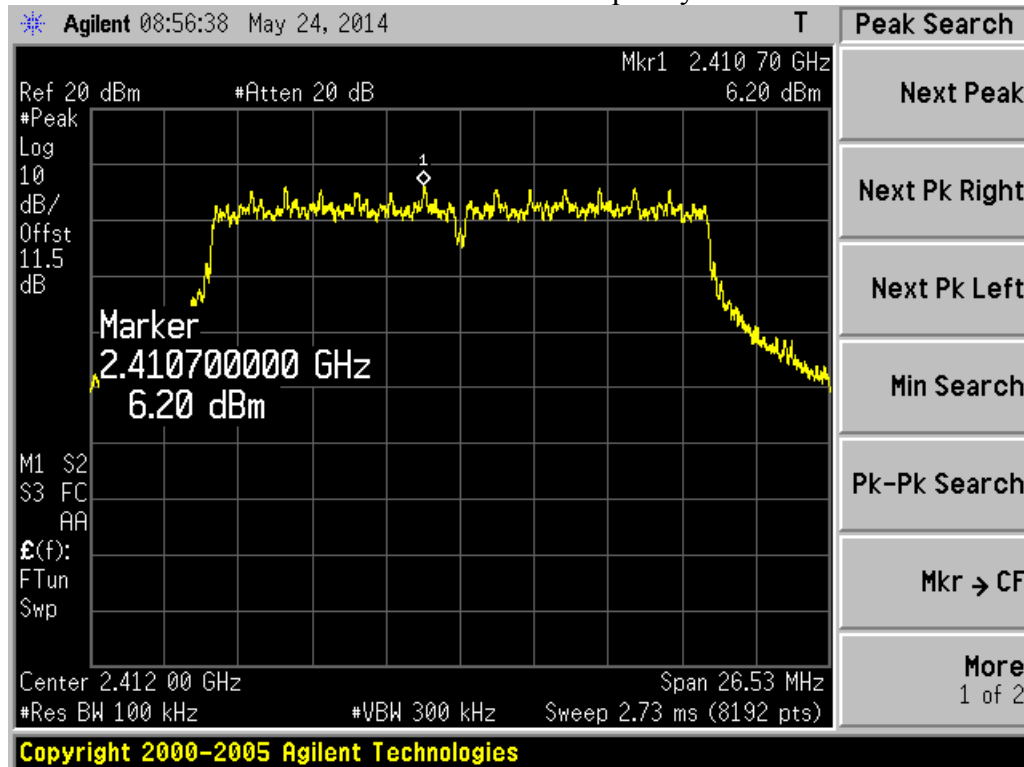
Spurious Emission 2.5GHz ~ 7GHz - Frequency H



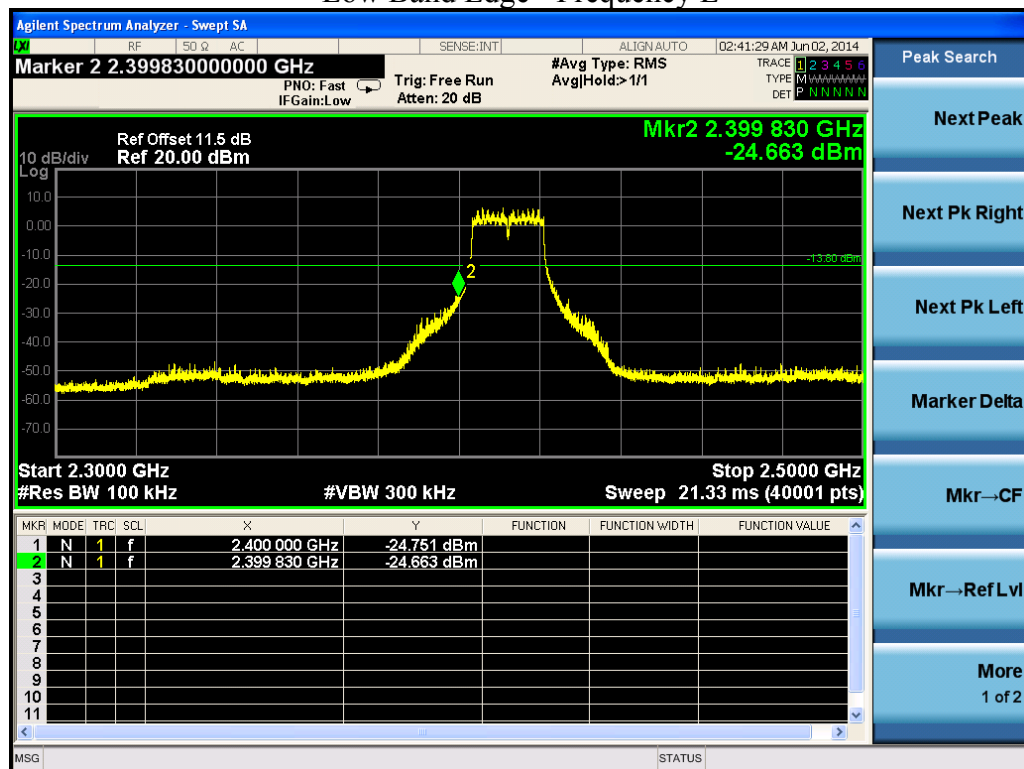
Spurious Emission 7GHz ~ 25GHz - Frequency H



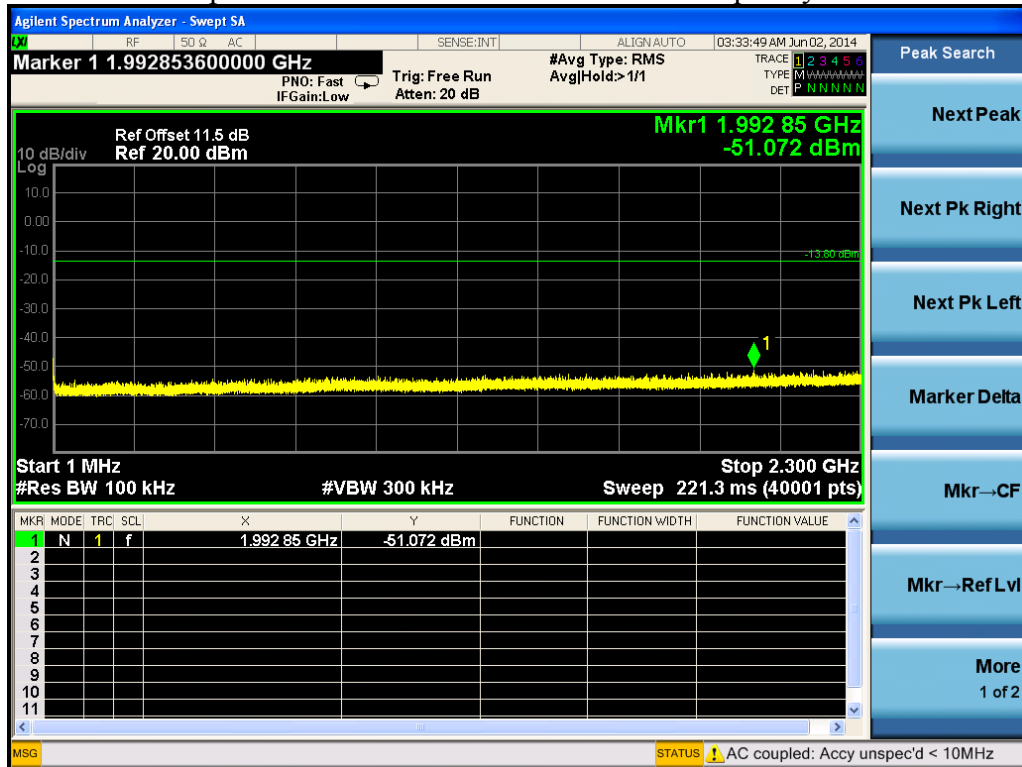
802.11n20 Out-of-Band Emissions – Chain 0 Reference Level – Frequency L



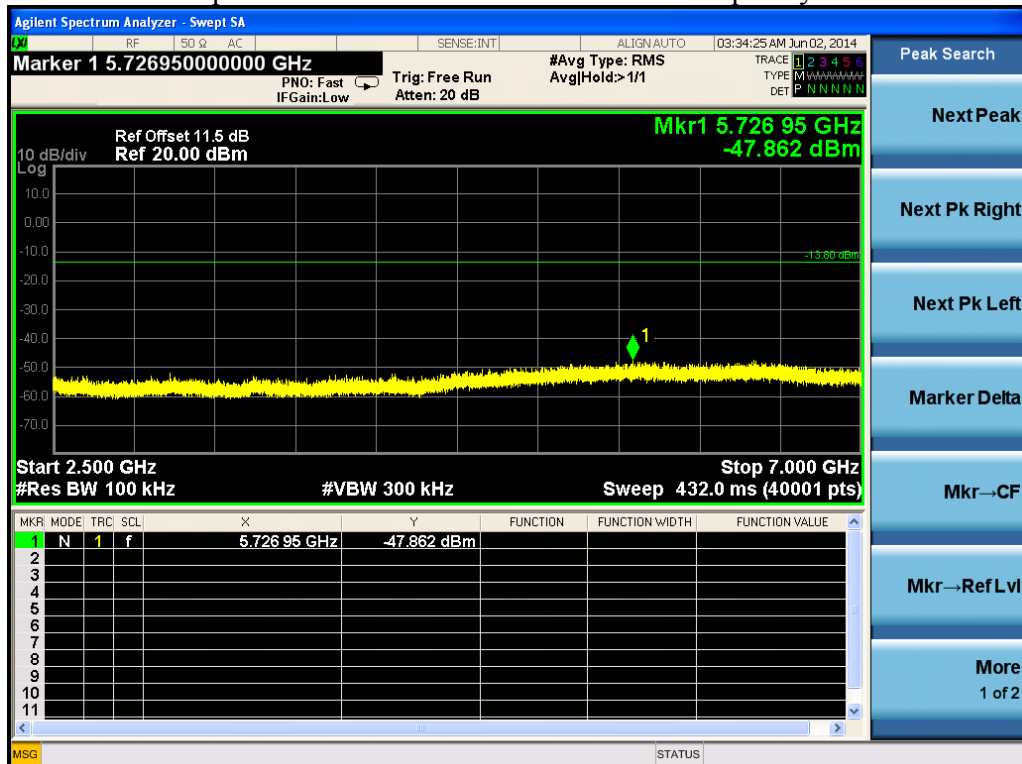
Low Band Edge - Frequency L



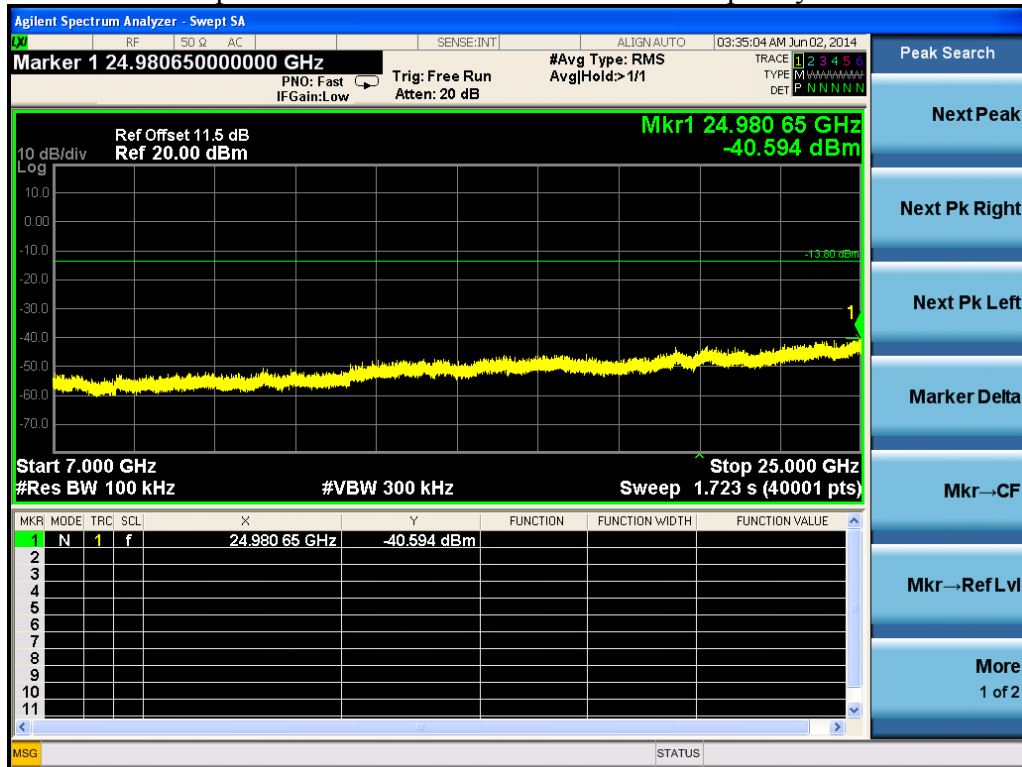
Spurious Emission 1MHz ~ 2.3GHz - Frequency L



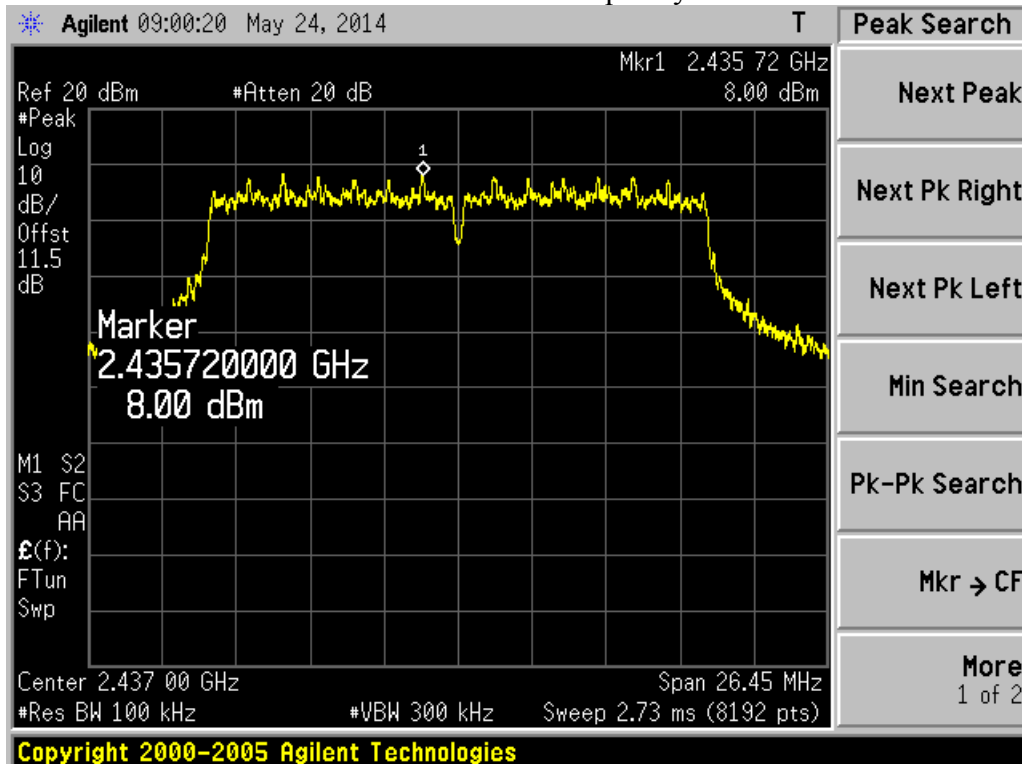
Spurious Emission 2.5GHz ~ 7GHz - Frequency L



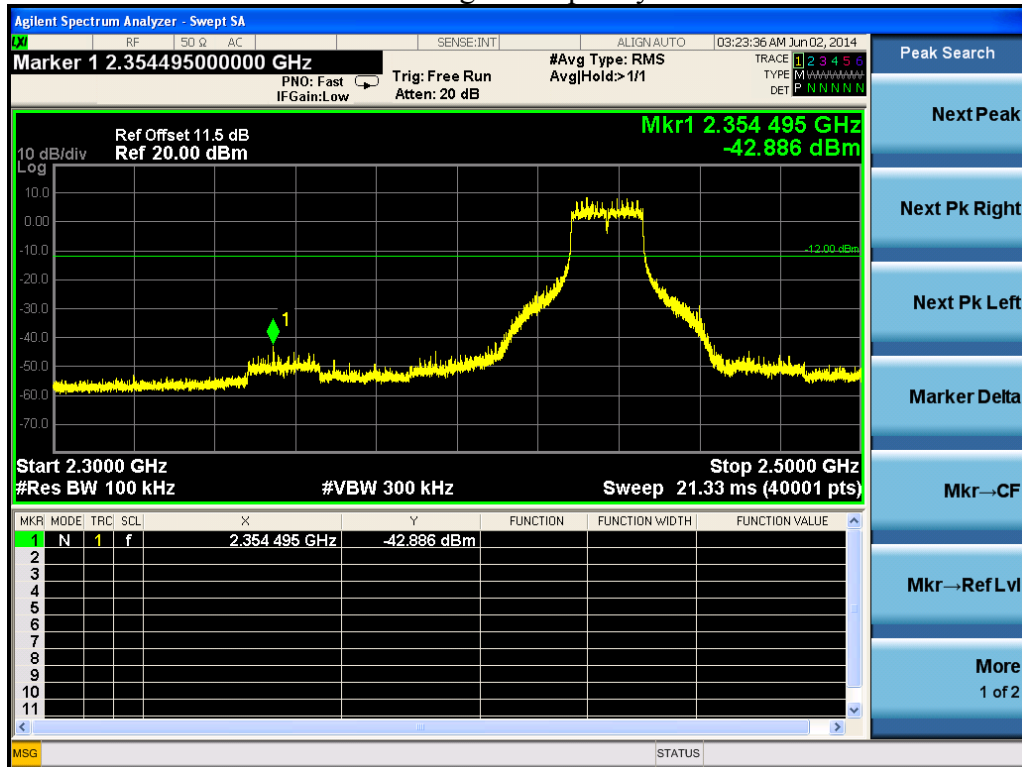
Spurious Emission 7GHz ~ 25GHz - Frequency L



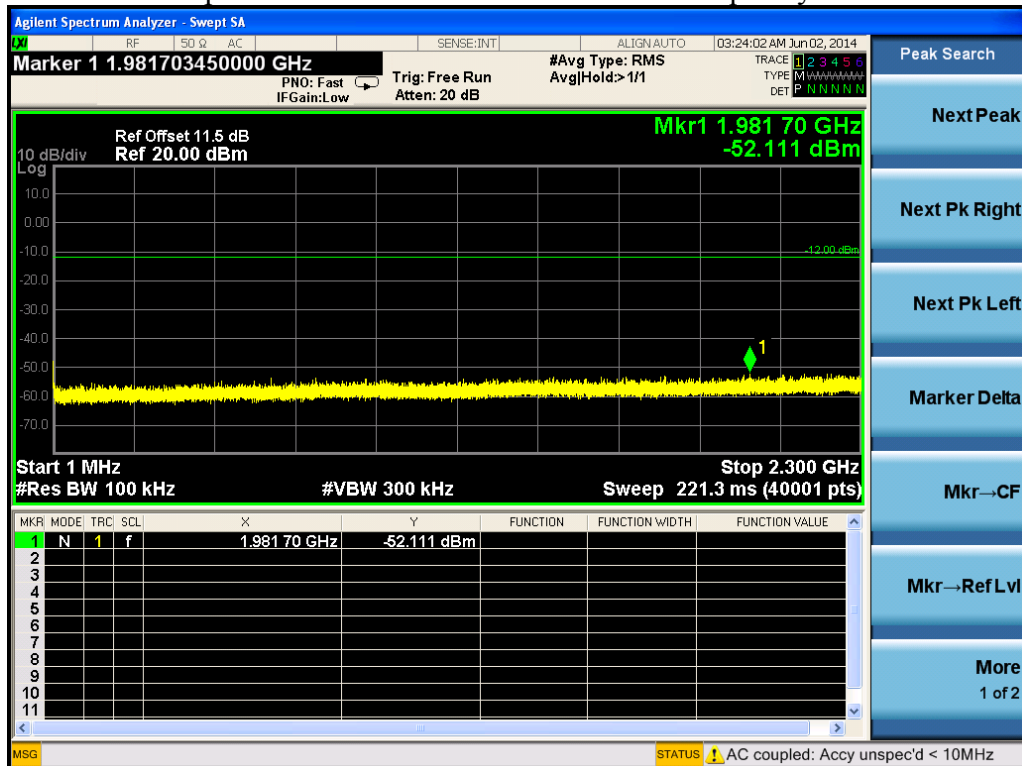
Reference Level – Frequency M



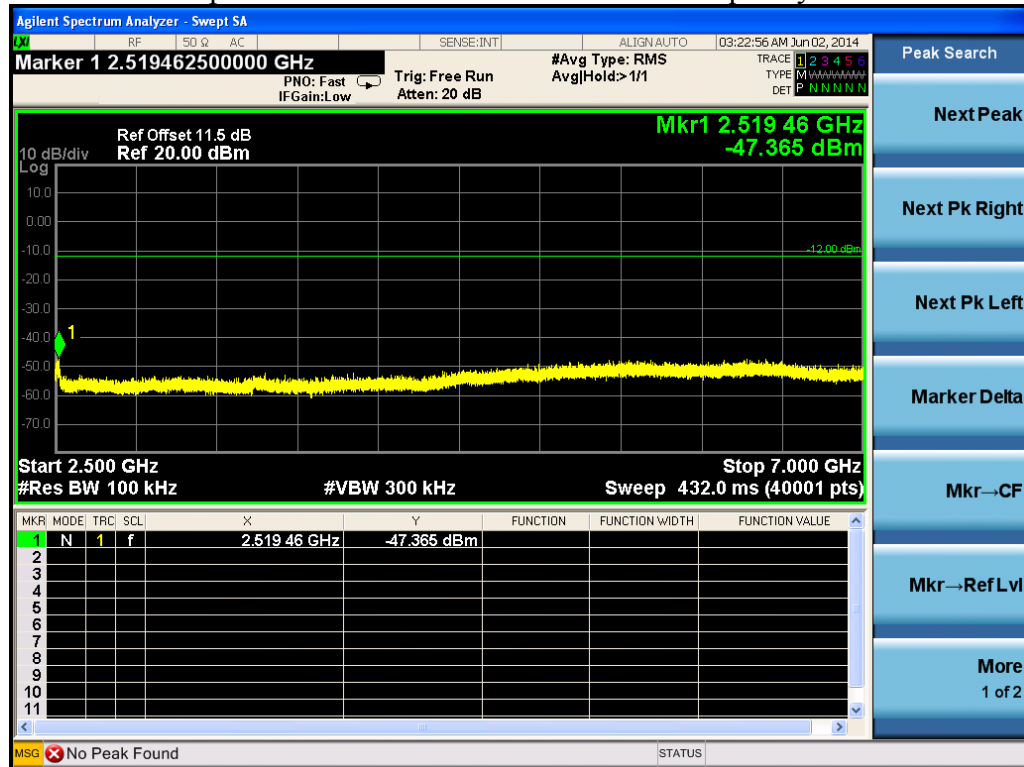
Band Edge - Frequency M



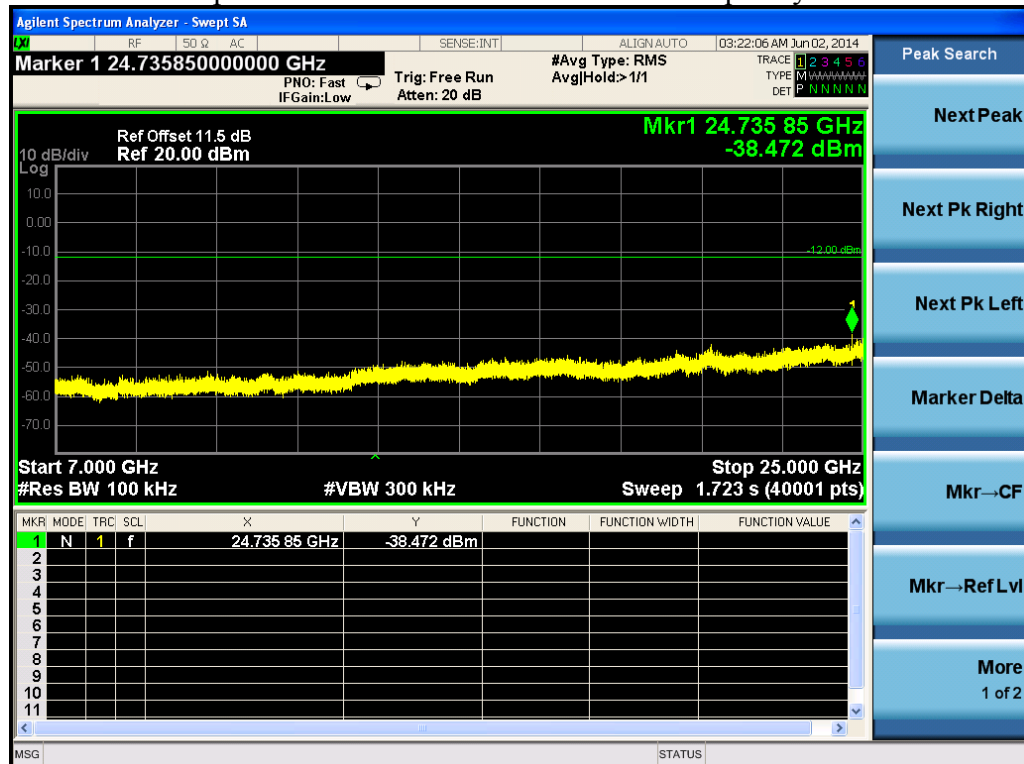
Spurious Emission 1MHz ~ 2.3GHz - Frequency M



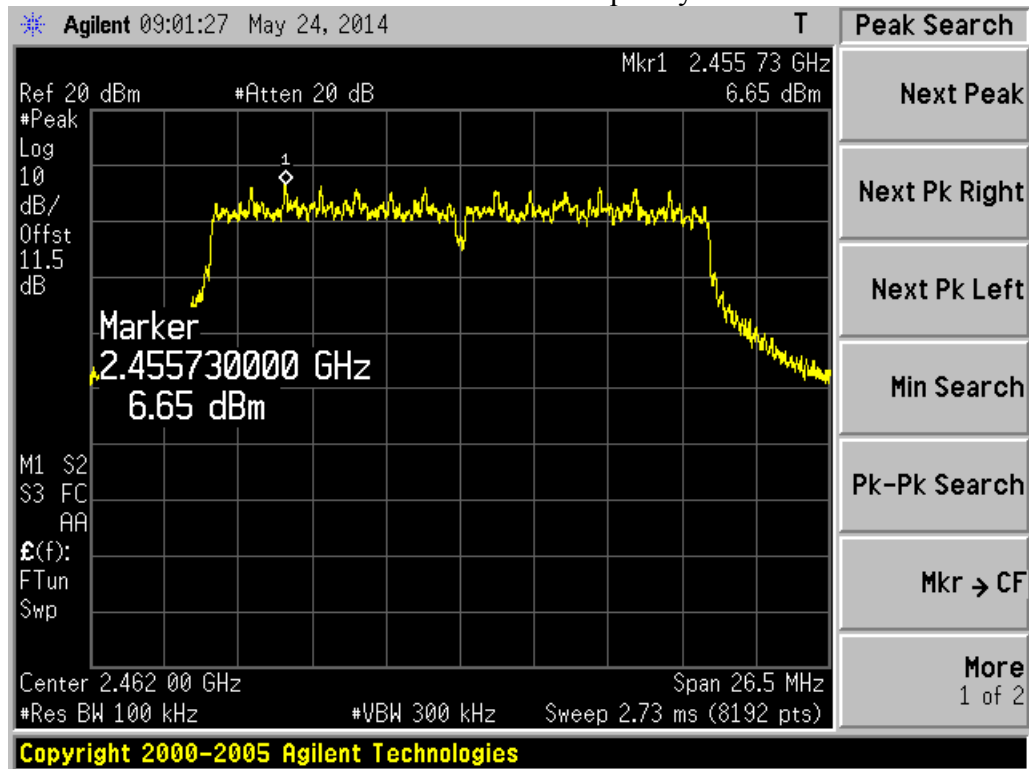
Spurious Emission 2.5GHz ~ 7GHz - Frequency M



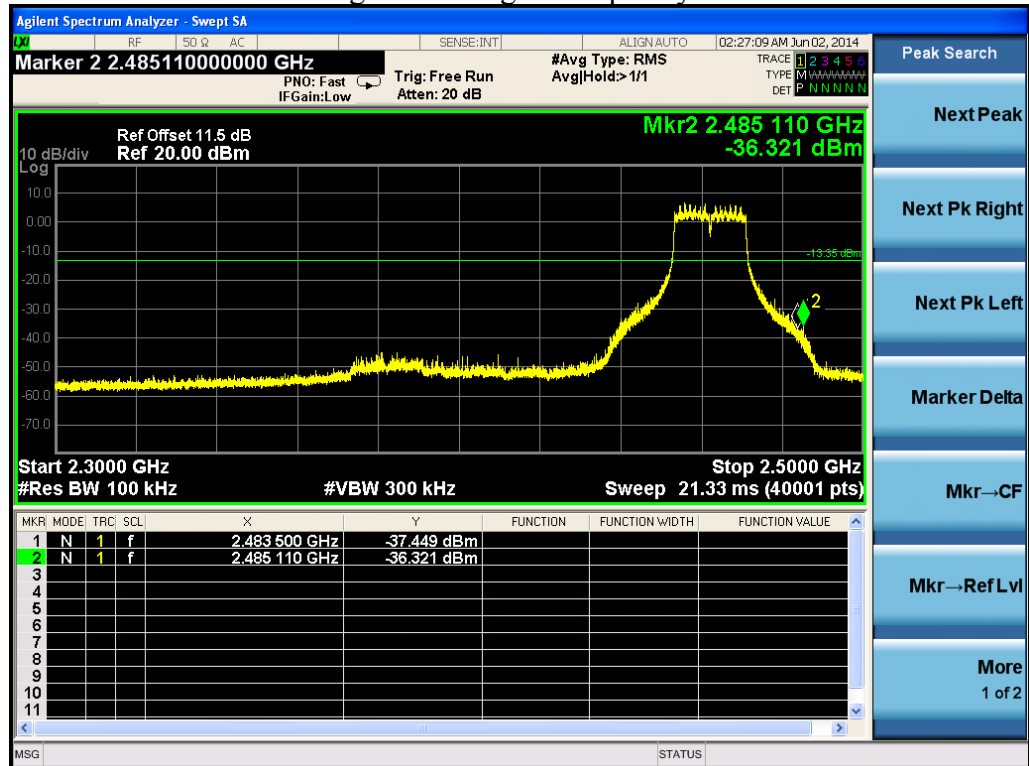
Spurious Emission 7GHz ~ 25GHz - Frequency M



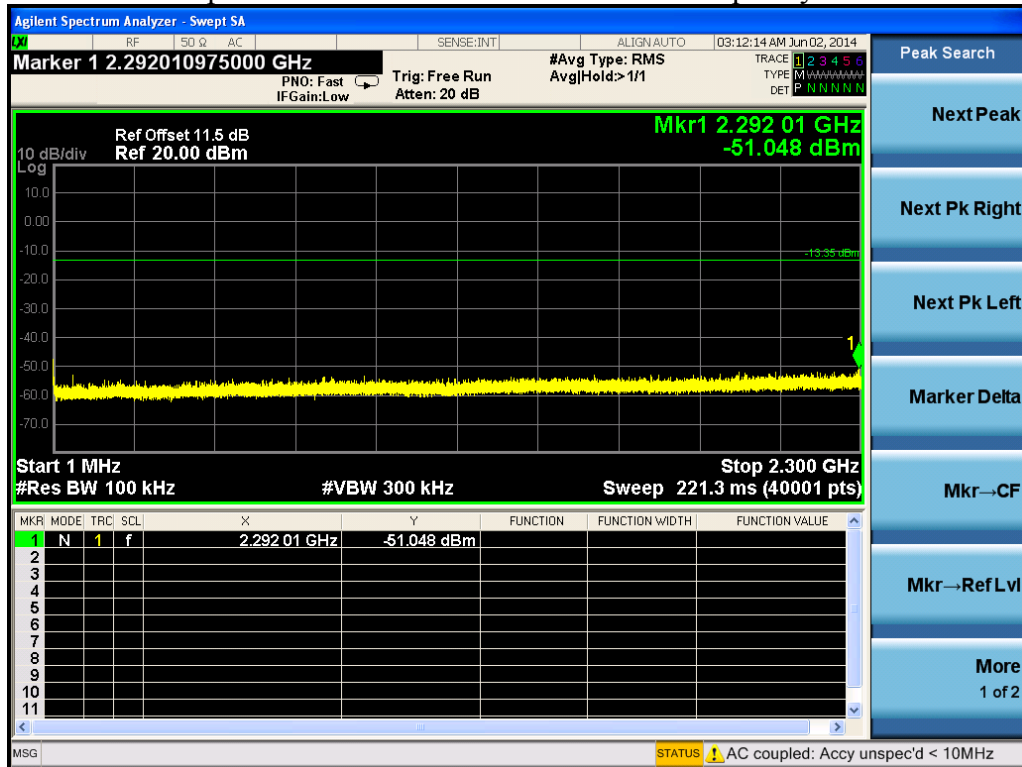
Reference Level – Frequency H



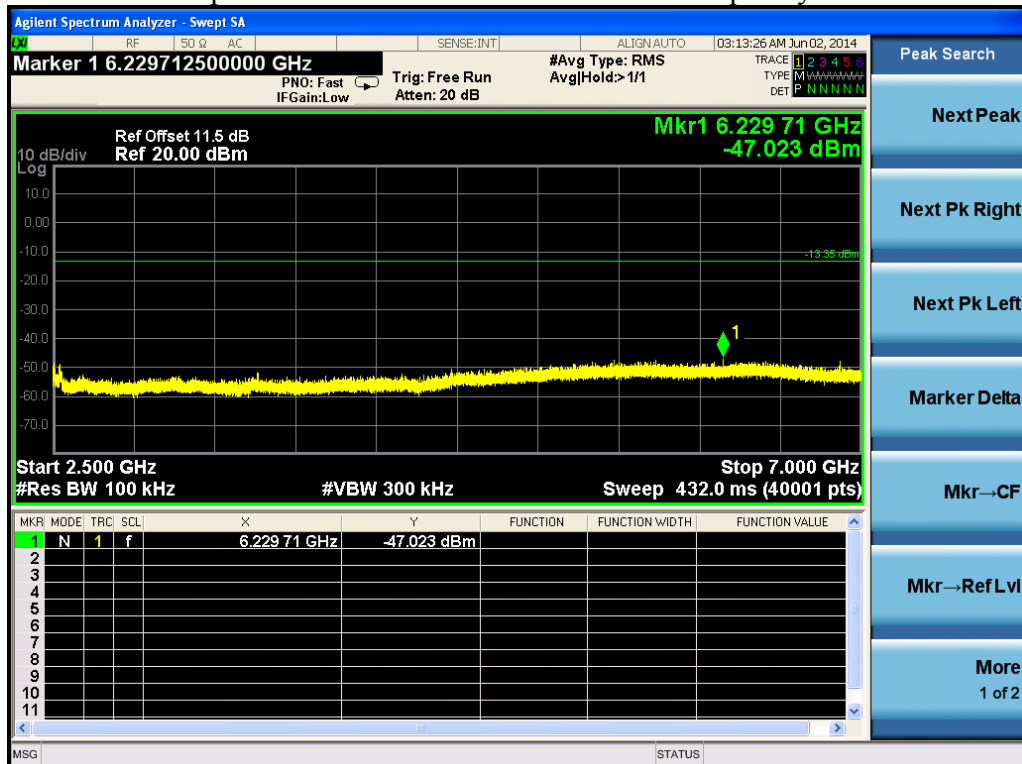
High Band Edge - Frequency H



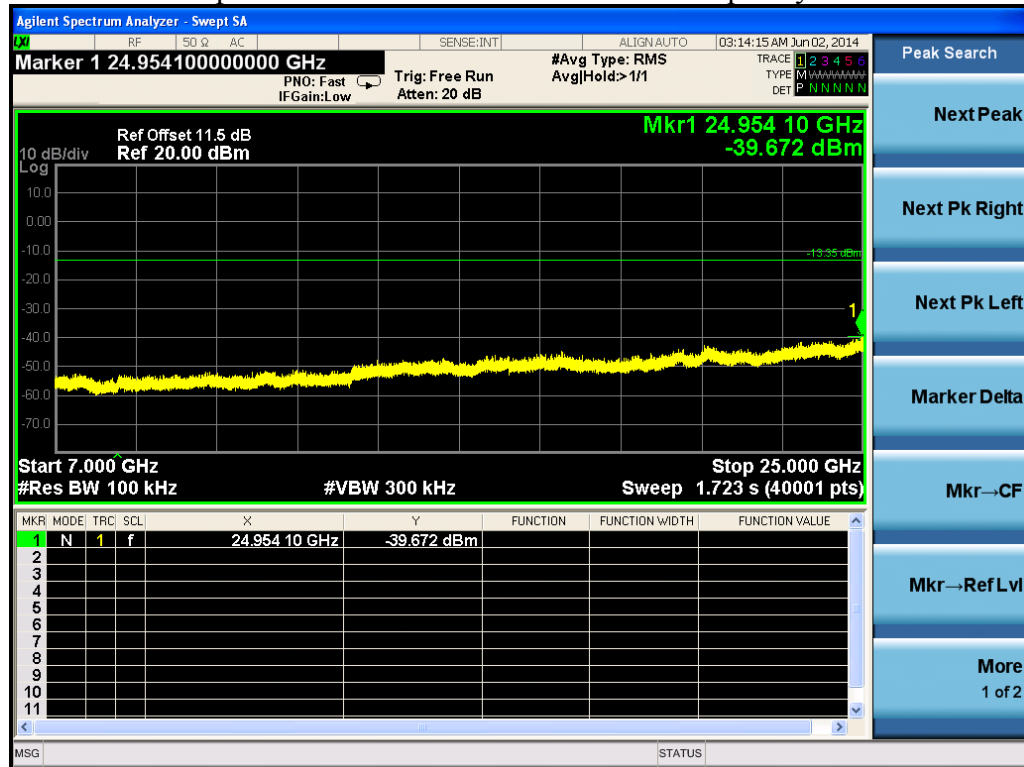
Spurious Emission 1MHz ~ 2.3GHz - Frequency H



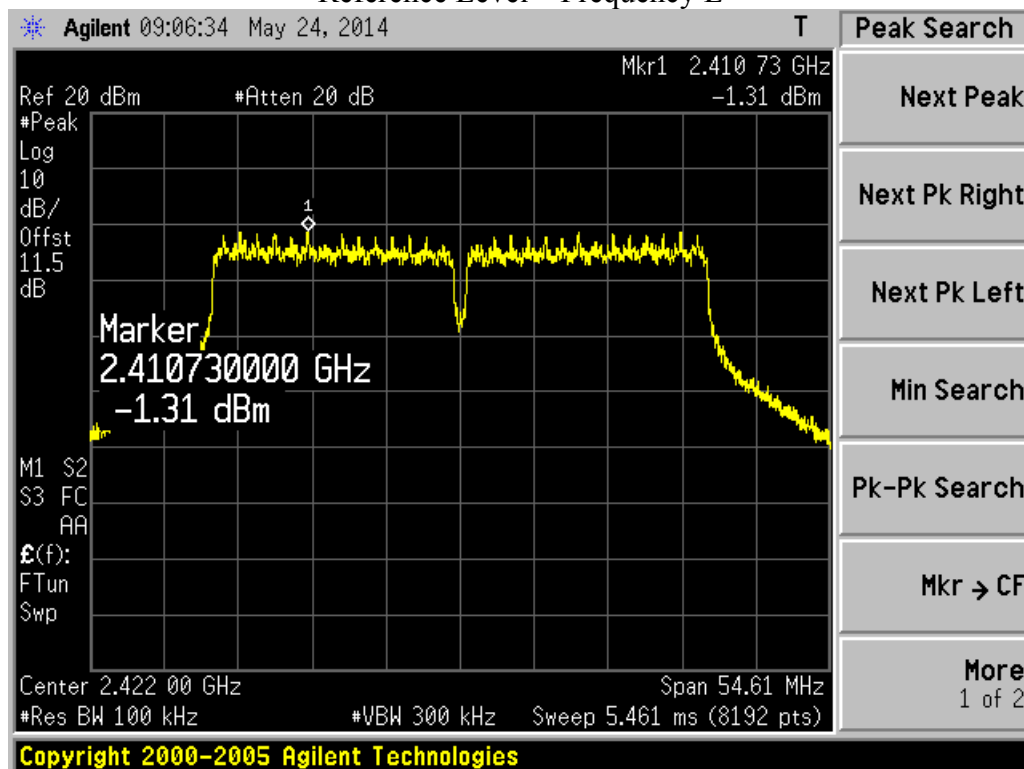
Spurious Emission 2.5GHz ~ 7GHz - Frequency H



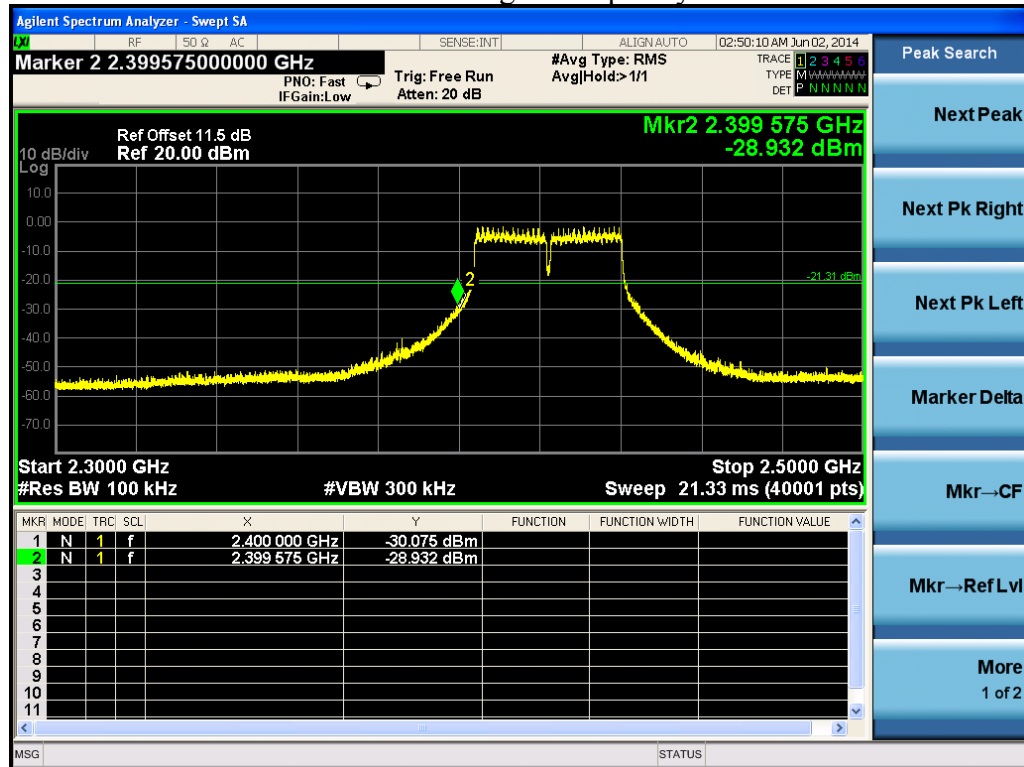
Spurious Emission 7GHz ~ 25GHz - Frequency H



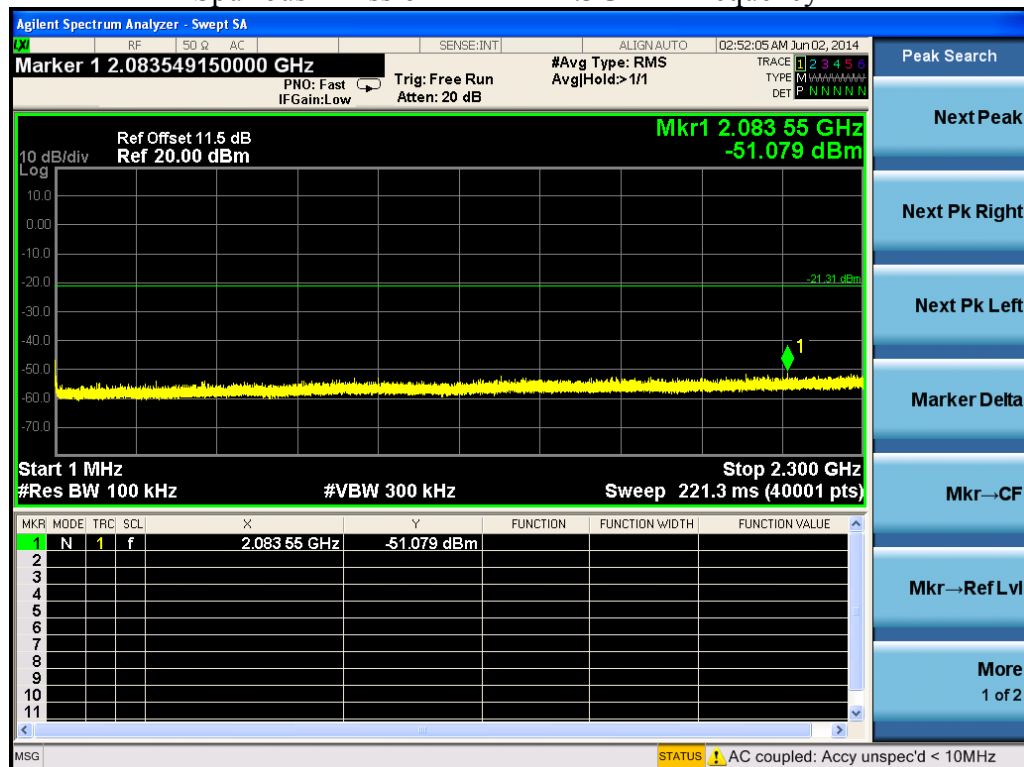
802.11n40 Out-of-Band Emissions – Chain 0 Reference Level – Frequency L



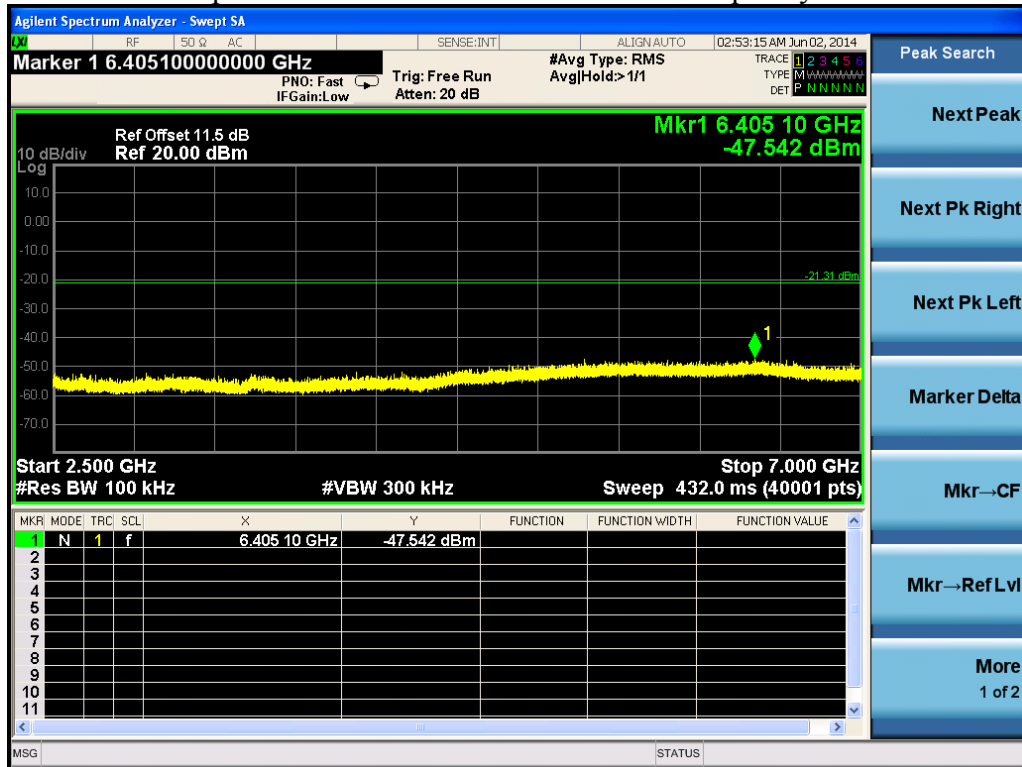
Low Band Edge - Frequency L



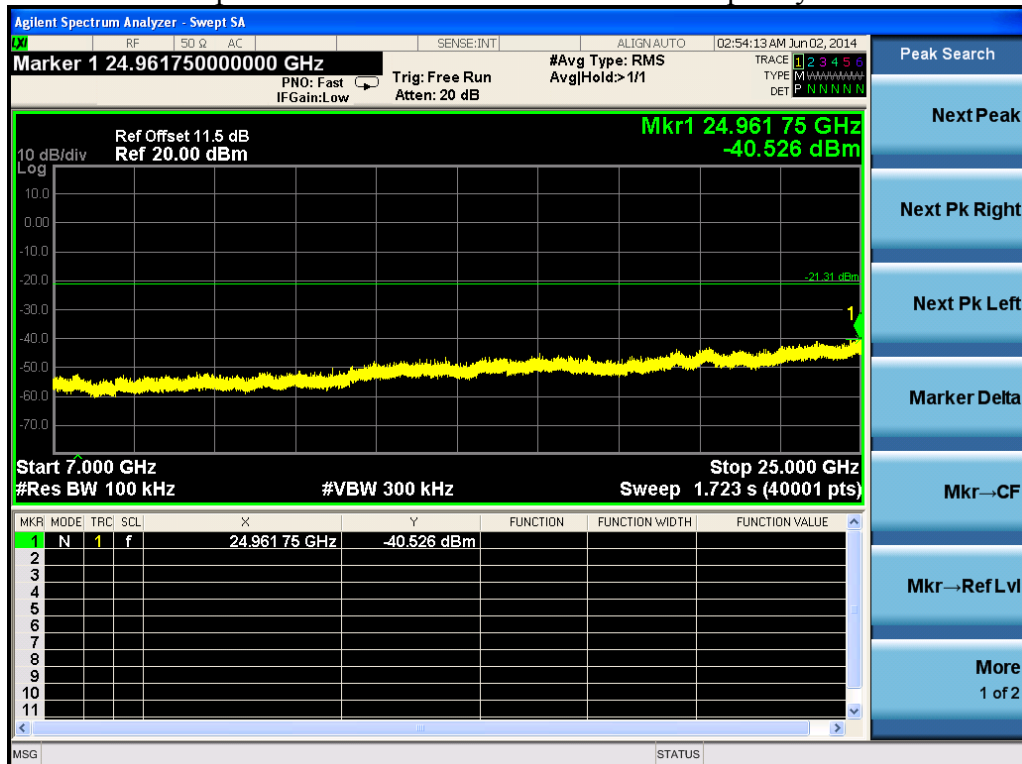
Spurious Emission 1MHz ~ 2.3GHz - Frequency L



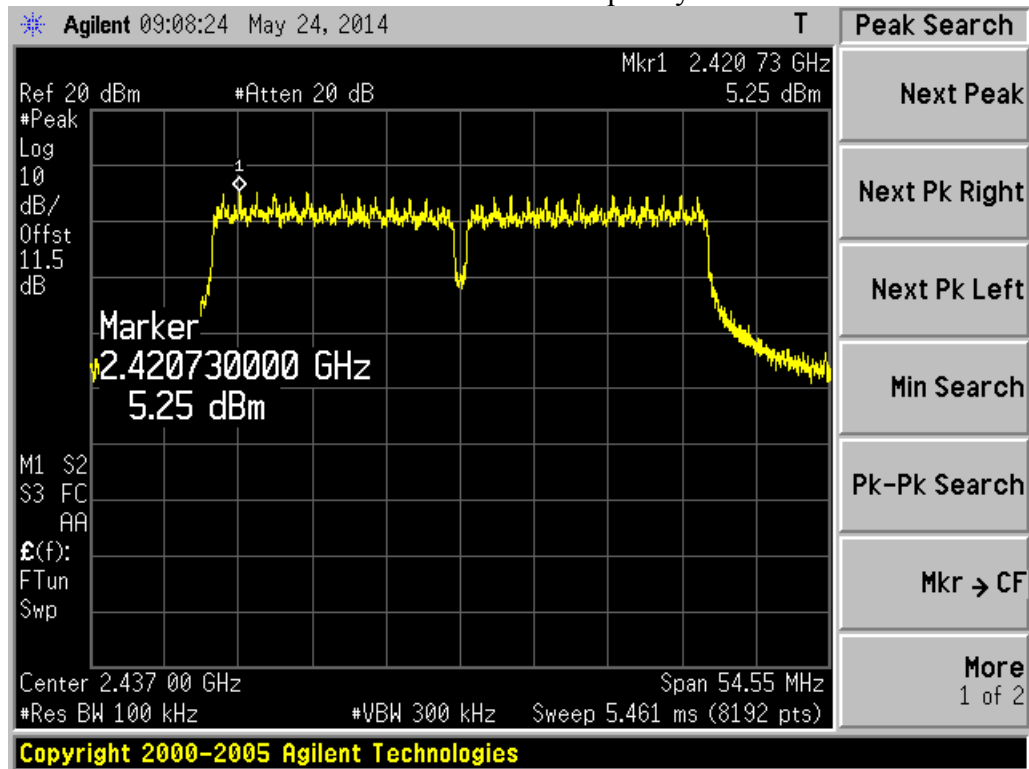
Spurious Emission 2.5GHz ~ 7GHz - Frequency L



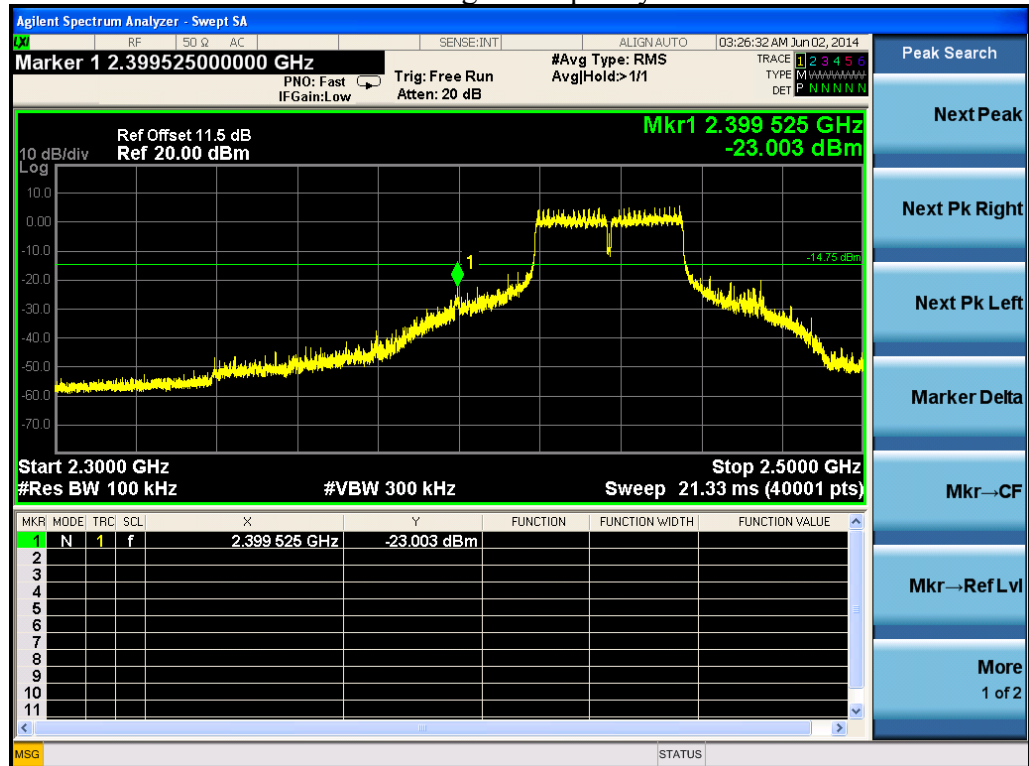
Spurious Emission 7GHz ~ 25GHz - Frequency L



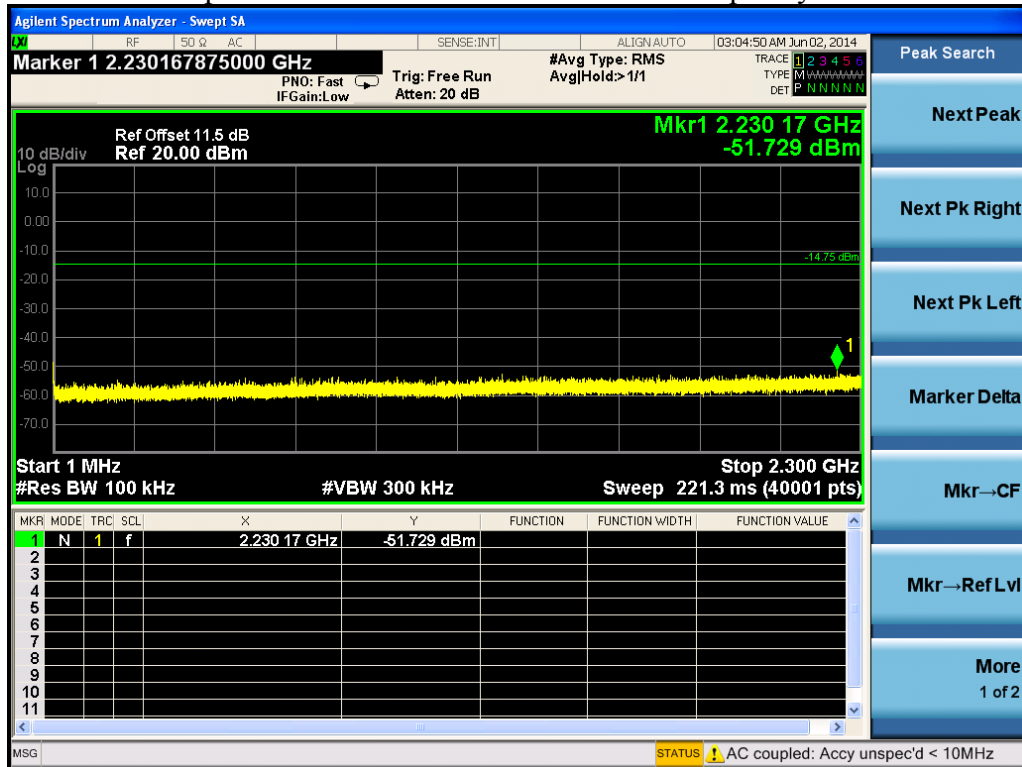
Reference Level – Frequency M



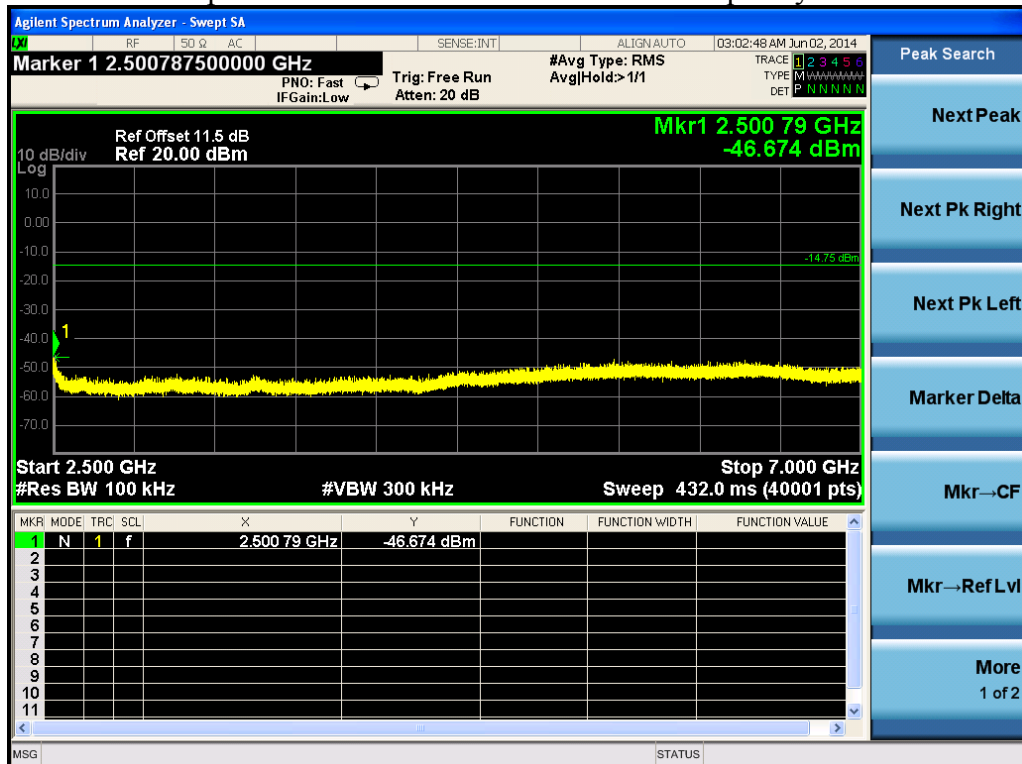
Band Edge - Frequency M



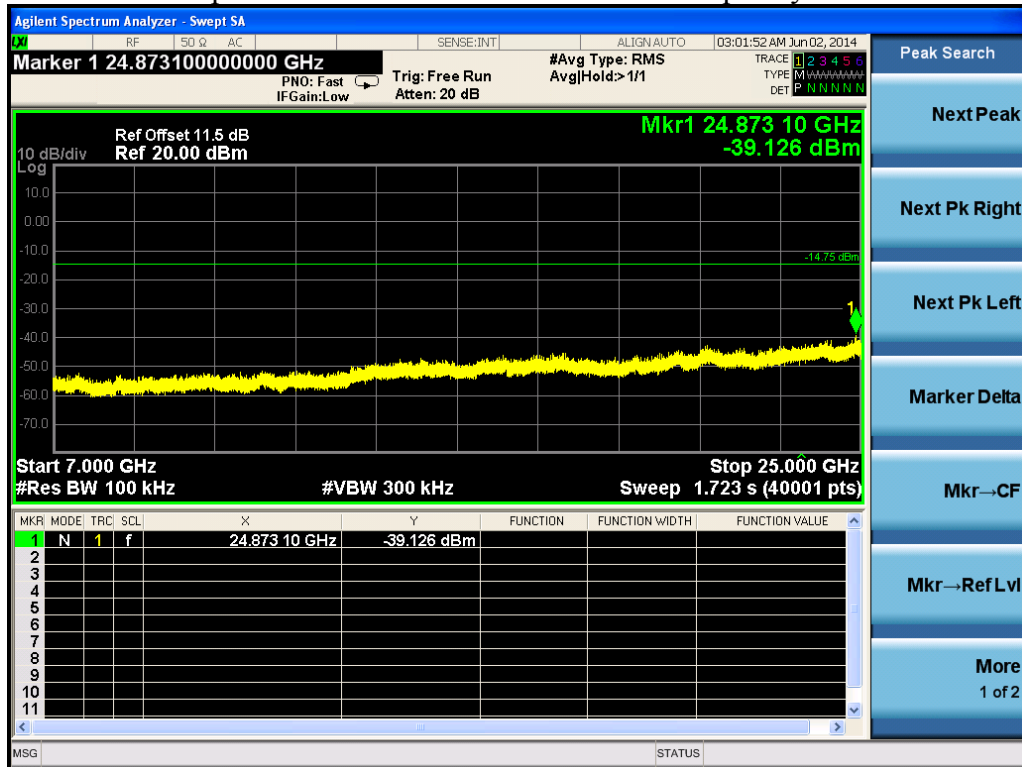
Spurious Emission 1MHz ~ 2.3GHz - Frequency M



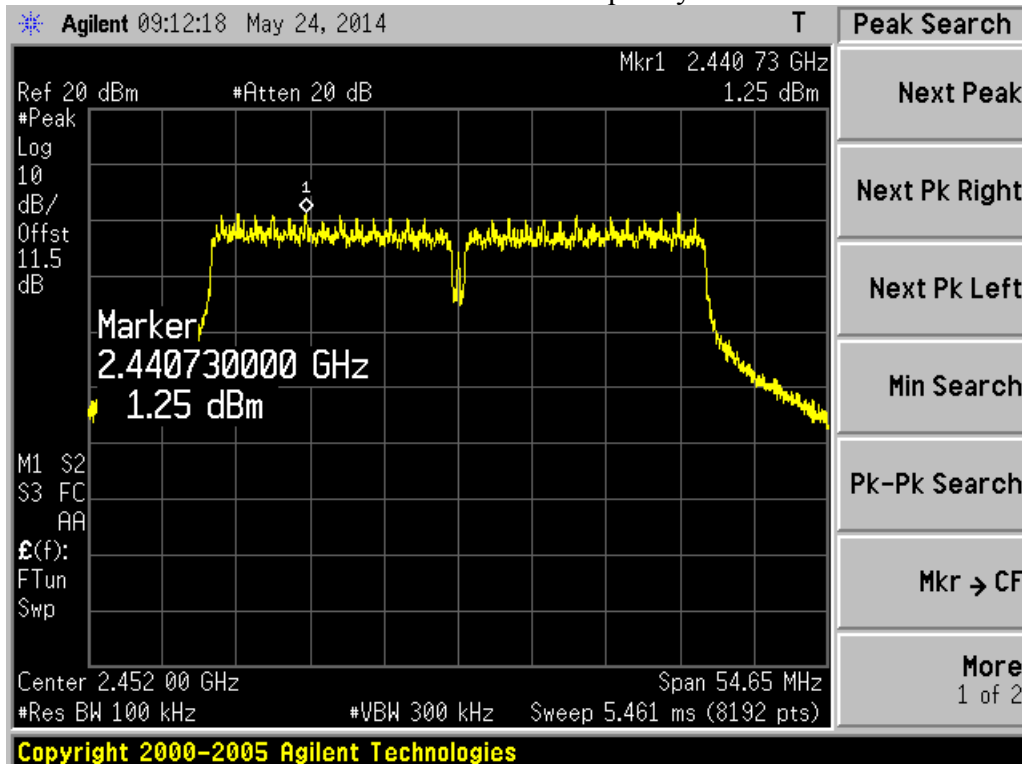
Spurious Emission 2.5GHz ~ 7GHz - Frequency M



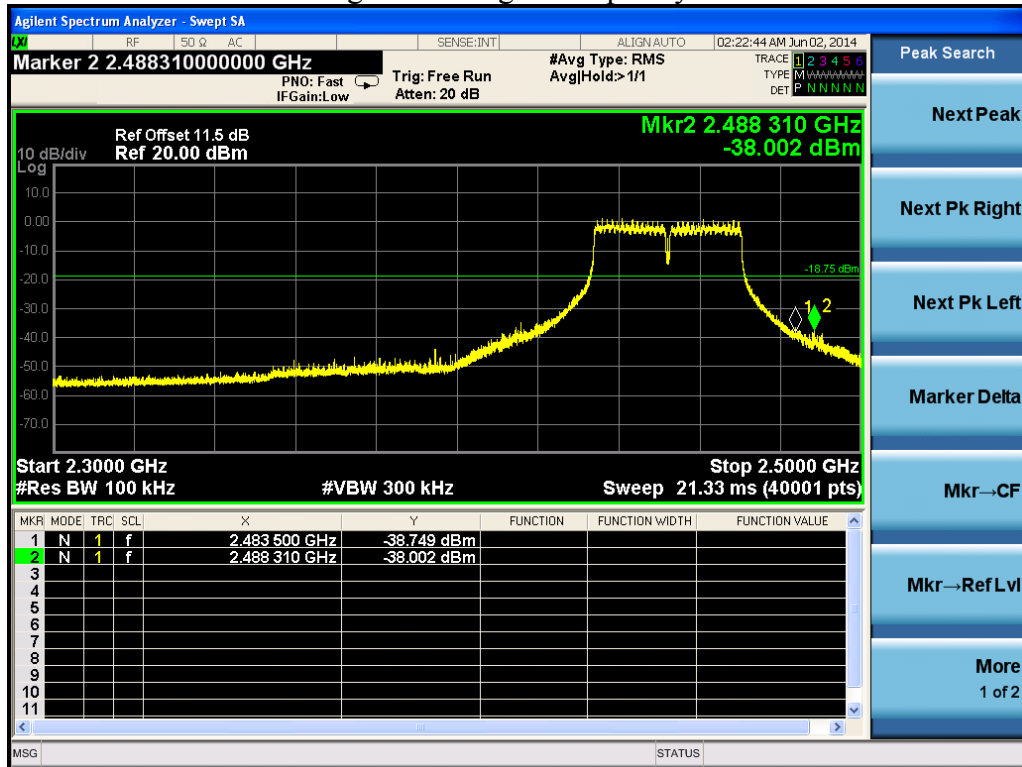
Spurious Emission 7GHz ~ 25GHz - Frequency M



Reference Level – Frequency H



High Band Edge - Frequency H



Spurious Emission 1MHz ~ 2.3GHz - Frequency H

