VERIWAVE

WF1101

TEST REPORT A

FCC ID: YATA001Y10

IC: 8936A-A001Y10

2.400-2.4835 MHz
5.725-5.875 GHz

Veriwave, Inc.

8770 S.W. Nimbus Ave.

Beaverton, OR 97008

Contents

0.1 Introduction

A summary of the measurements made of the VeriWave WF1101 to support application for FCC ID YATA001Y10 and IC ID 8936A-A001Y10 .

All testing in this document was performed April 15 through 23, 2010 at VeriWave for unit with controller serial number 00-13-E9-1D-00-E3 and radio serial number M33142-001-0007 .

0.2 Test Equipment

Manufacturer	Model	Description	Next Cal Date
Agilent	E4445A	Spectrum Analyzer 3Hz-13.2GHz	10 Aug 10
Agilent	E4405B	Spectrum Analyzer 9kHz-13.2GHz	26 Feb 11
Agilent	E4418B	Power Meter	10 Aug 10
Agilent	E4412A	Power Sensor	10 Aug 10
Cisco	AIR-RM1252G-A-K9 FCC ID: LDK102061	802.11a Access Point	N/A
Tenney	T10C	Temperature Chamber	N/A
Watlow	942	Temperature Controller	N/A
Partlow	MRC5000	Chart Recorder	17 Jun 10
Fluke	177	Multimeter	24 Sep 10
Technipower	Variac	W20MT3A	N/A

Table 1: Equipment List

0.3 Average Power

0.3.1 Specification

15.247 (b) (3) For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

Specification is +30 dBm.

0.3.2 Measurement Procedure

Measurements performed Apr 15 2010.

The unit is connected to the power meter. Testing was performed with the radio in continuous transmit mode. Power out is read from the power meter and compensated for system loss.

Freq (MHz)	Operating Mode	Data Rate	Power (dBm)	Limit	Margin
2412.0	20MHz DSSS	1	19.0	30.0	11.0
2437.0	20MHz DSSS	1	19.3	30.0	10.7
2462.0	20MHz DSSS	1	18.2	30.0	11.8
2412.0	20MHz CCK	11	18.3	30.0	11.7
2437.0	20MHz CCK	11	18.6	30.0	11.4
2462.0	20MHz CCK	11	17.5	30.0	12.5
2412.0	20MHz OFDM	54	17.5	30.0	12.5
2437.0	20MHz OFDM	54	17.9	30.0	12.1
2462.0	20MHz OFDM	54	16.8	30.0	13.2
2412.0	40MHz M7	M7	14.9	30.0	15.1
2437.0	40MHz M7	M7	15.3	30.0	14.7
2462.0	40MHz M7	M7	15.2	30.0	14.8
2412.0	40MHz M7	M7	14.7	30.0	15.3
2437.0	40MHz M7	M7	15.0	30.0	15.0
2462.0	40MHz M7	M7	15.0	30.0	15.0
5745.0	20MHz OFDM	54	17.2	30.0	12.8
5785.0	20MHz OFDM	54	17.6	30.0	12.4
5825.0	20MHz OFDM	54	17.7	30.0	12.3
5745.0	40MHz M7	M7	16.7	30.0	13.3
5785.0	40MHz M7	M7	17.2	30.0	12.8
5825.0	40MHz M7	M7	17.3	30.0	12.7
5745.0	40MHz M7	M7	16.6	30.0	13.4
5785.0	40MHz M7	M7	17.0	30.0	13.0
5825.0	40MHz M7	M7	17.1	30.0	12.9

Table 2: Output Power

0.4 Peak Power

0.4.1 Specification

15.247 (b) (3) For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

0.4.2 Measurement Procedure

Reference ANSI C63.10-2009 6.10.3.1

Measurements performed Apr 15 2010.

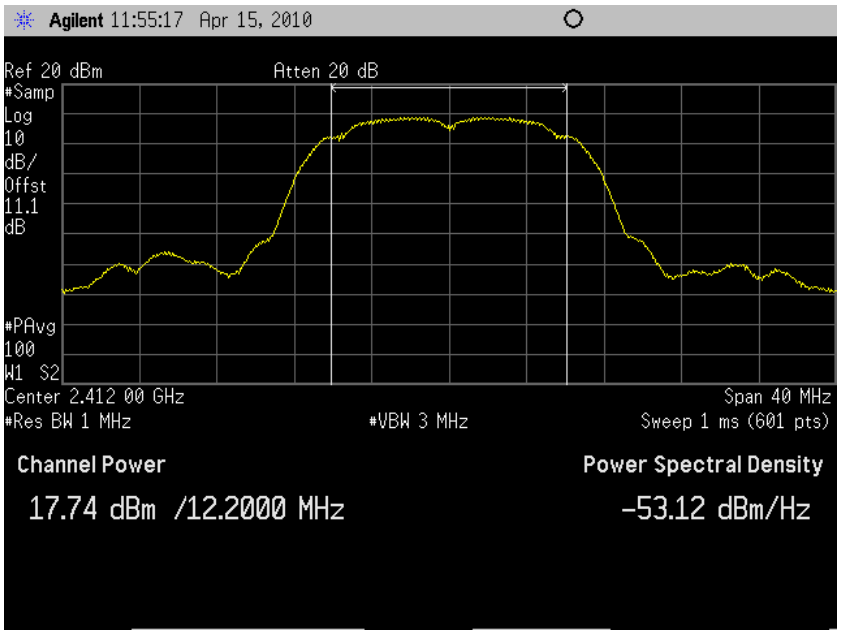
Testing was performed with the radio in continuous transmit mode.

1. Ref Level Offset = DUT/Spectrum Analyzer path loss
2. Detector ← Peak
3. Enable Spectrum Analyzer “Channel Power Measurement mode”
4. Ref Level ← +20dBm
5. x dB ← 6dB
6. RBW ← 1MHz
7. VBW ← 3MHz
8. Sweep Time ← AUTO
9. Query “Channel Power Measurement mode” for measurement result

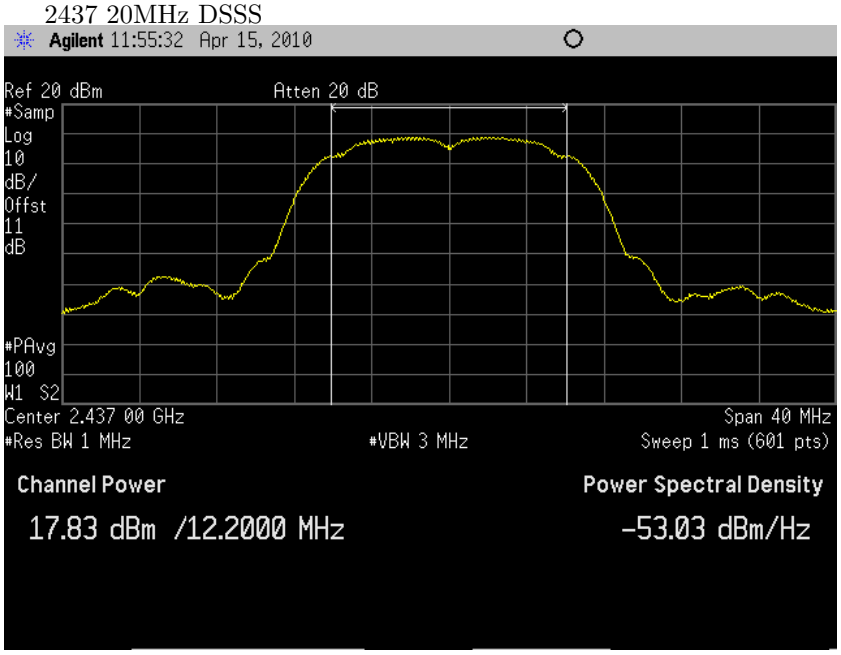
Freq (MHz)	Operating Mode	Data Rate	Power (dBm)
2412.0	20MHz DSSS	1	17.7
2437.0	20MHz DSSS	1	17.8
2462.0	20MHz DSSS	1	16.8
2412.0	20MHz CCK	11	17.3
2437.0	20MHz CCK	11	17.5
2462.0	20MHz CCK	11	16.4
2412.0	20MHz OFDM	54	15.7
2437.0	20MHz OFDM	54	15.9
2462.0	20MHz OFDM	54	14.9
2412.0	40MHz M7	M7	12.9
2437.0	40MHz M7	M7	13.3
2462.0	40MHz M7	M7	13.3
2412.0	40MHz M7	M7	12.8
2437.0	40MHz M7	M7	13.1
2462.0	40MHz M7	M7	13.1
5745.0	20MHz OFDM	54	15.3
5785.0	20MHz OFDM	54	15.7
5825.0	20MHz OFDM	54	15.8
5745.0	40MHz M7	M7	14.9
5785.0	40MHz M7	M7	15.3
5825.0	40MHz M7	M7	15.5
5745.0	40MHz M7	M7	14.8
5785.0	40MHz M7	M7	15.2
5825.0	40MHz M7	M7	15.3

Table 3: Output Power

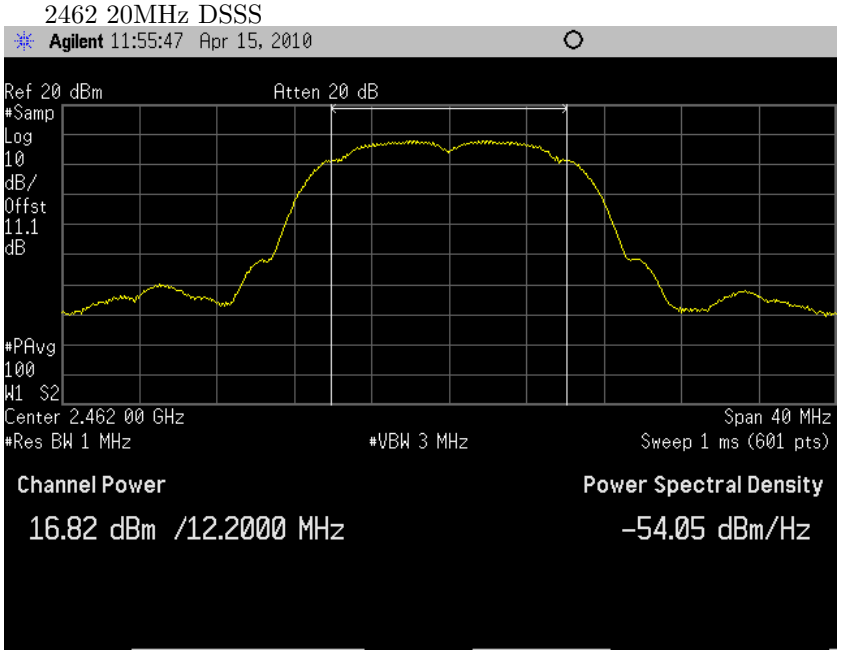
2412 20MHz DSSS



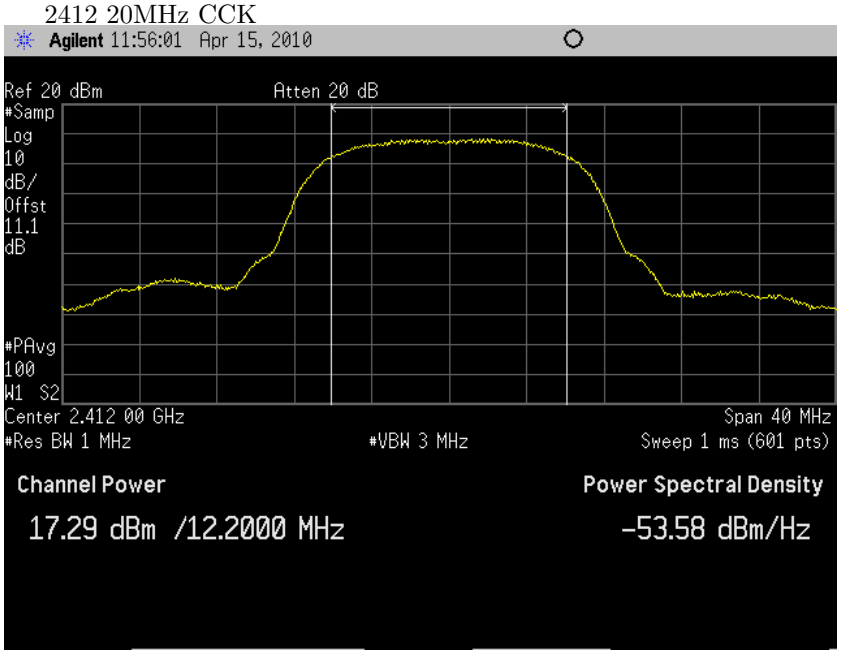
2437 20MHz DSSS



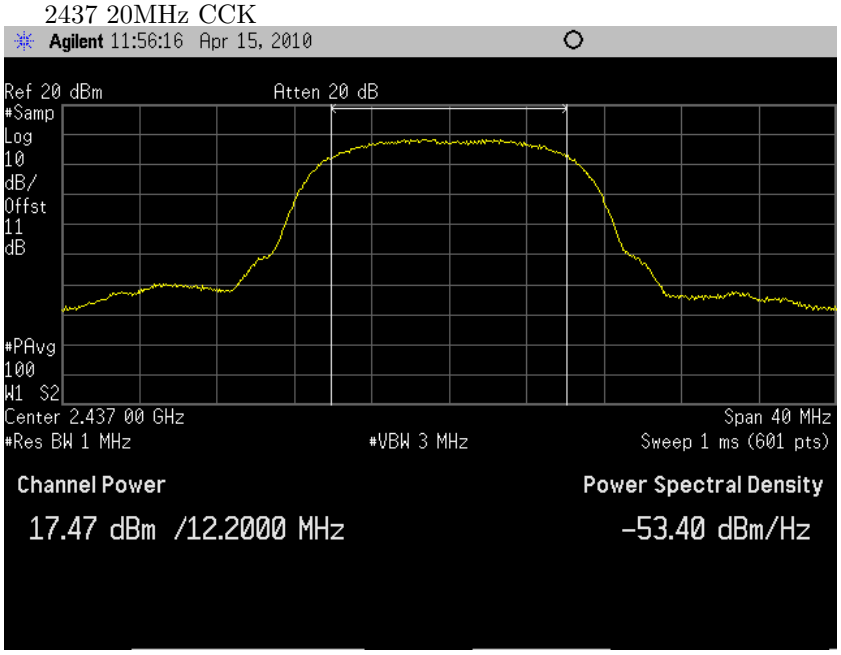
2462 20MHz DSSS



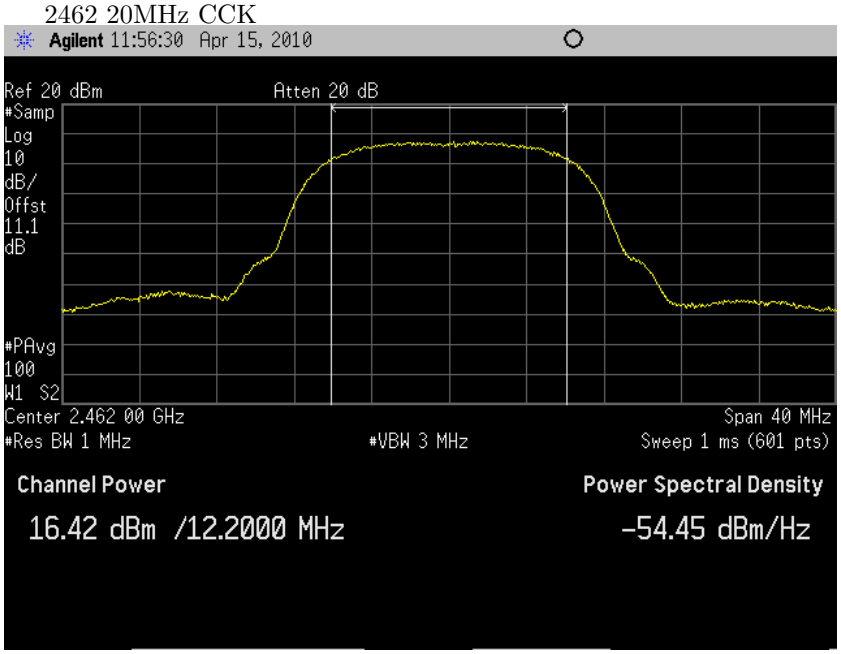
2412 20MHz CCK



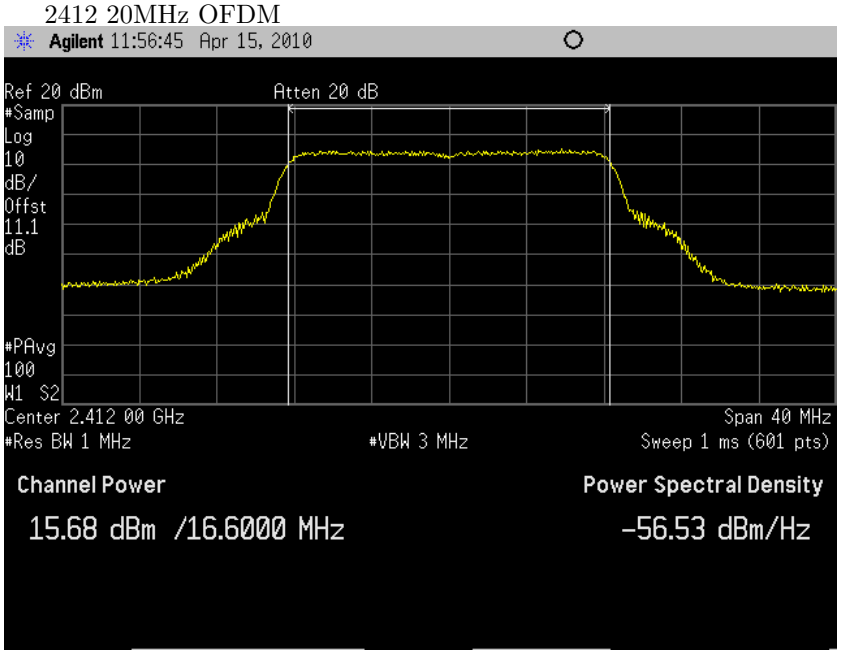
2437 20MHz CCK



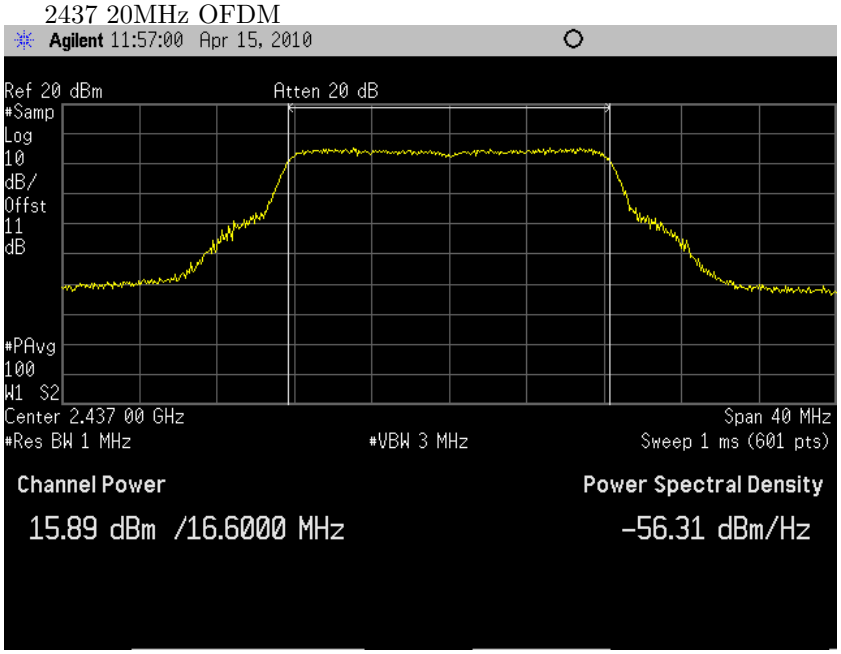
2462 20MHz CCK



2412 20MHz OFDM



2437 20MHz OFDM



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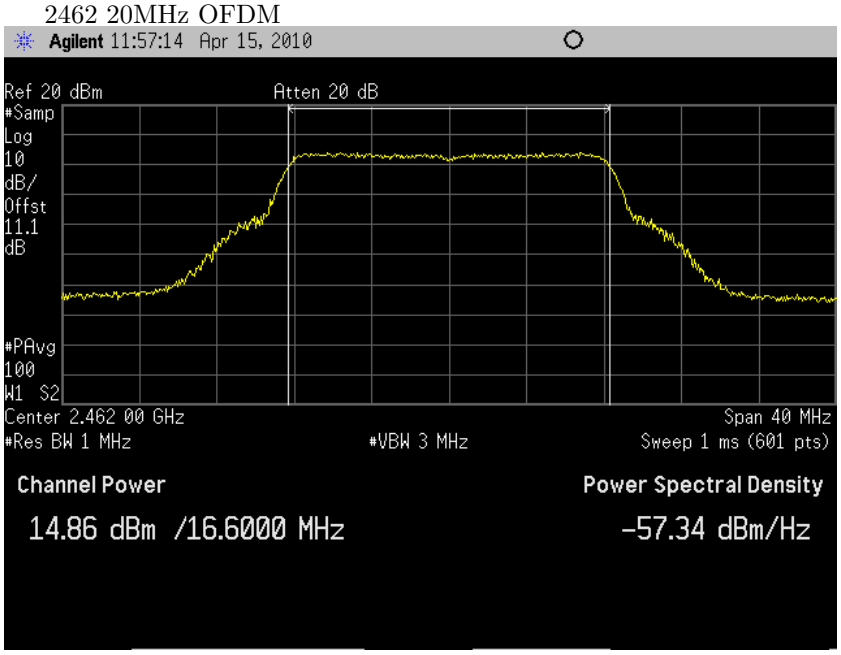
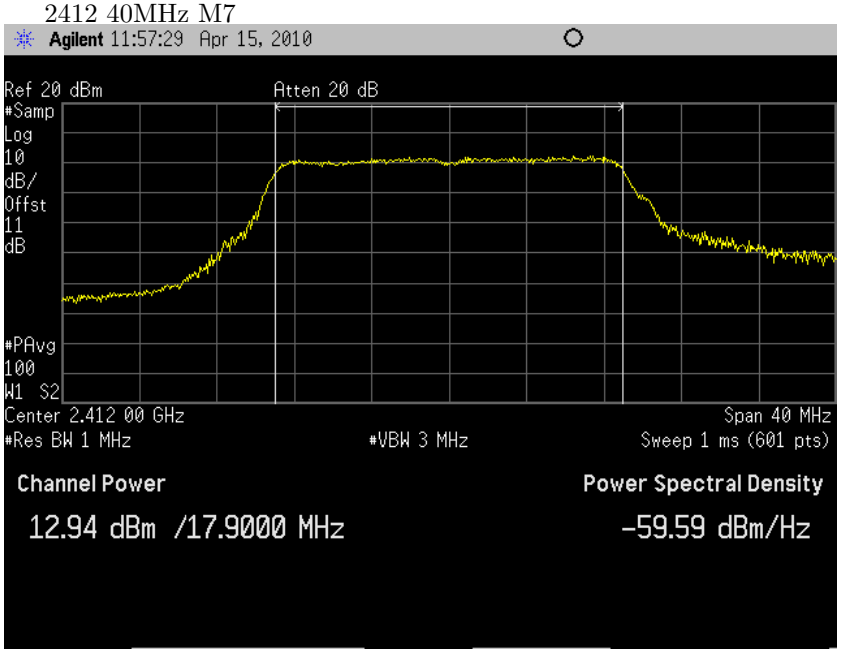
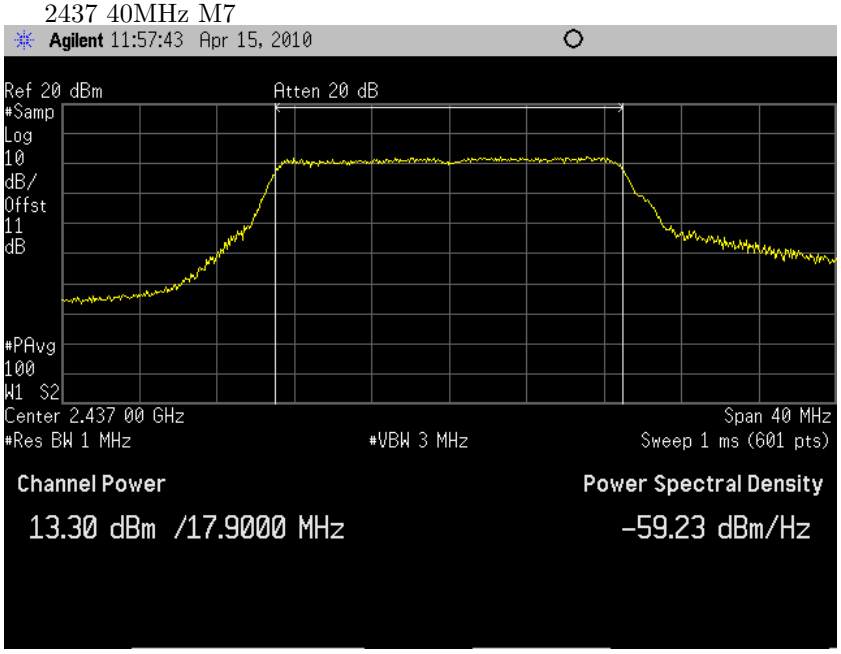


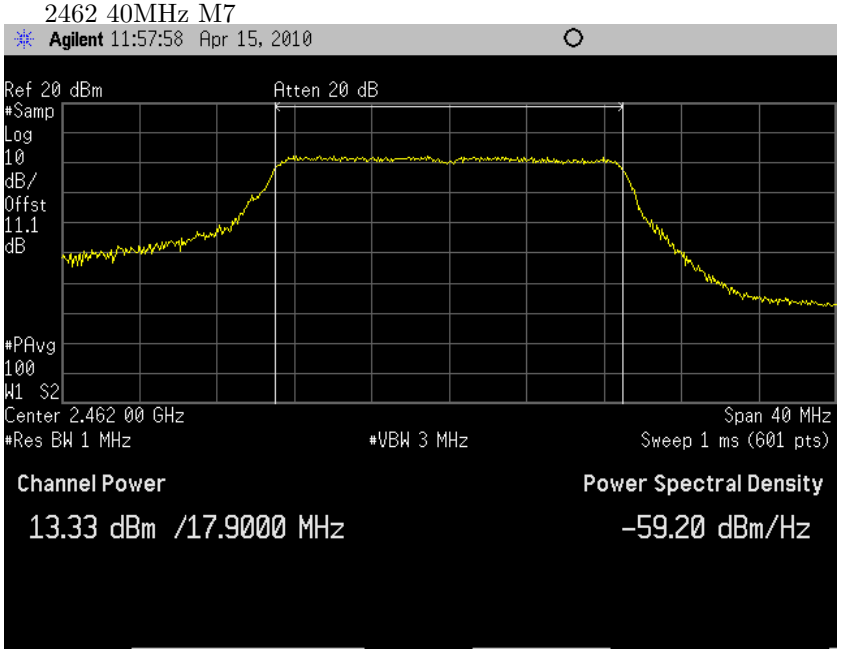
2412 40MHz M7



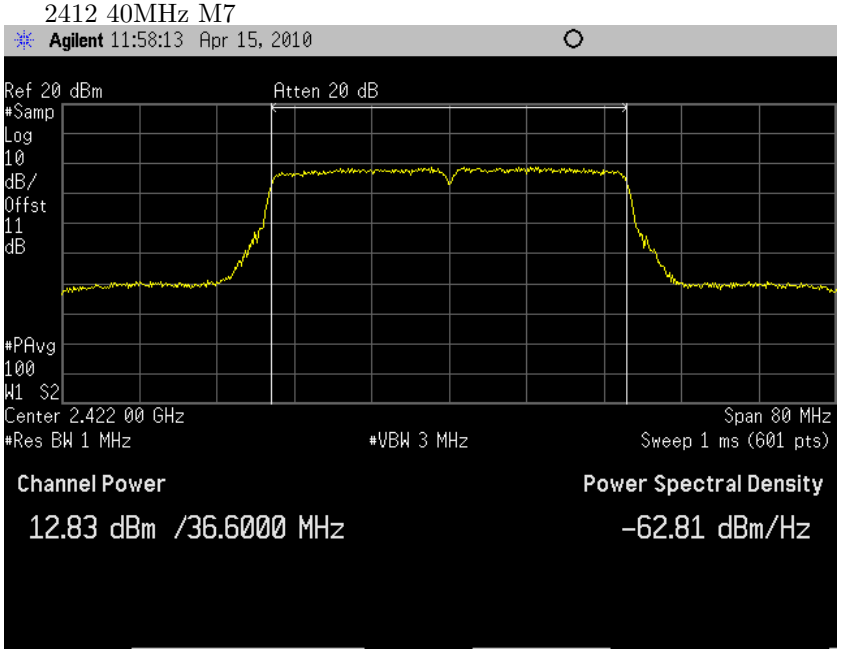
2437 40MHz M7



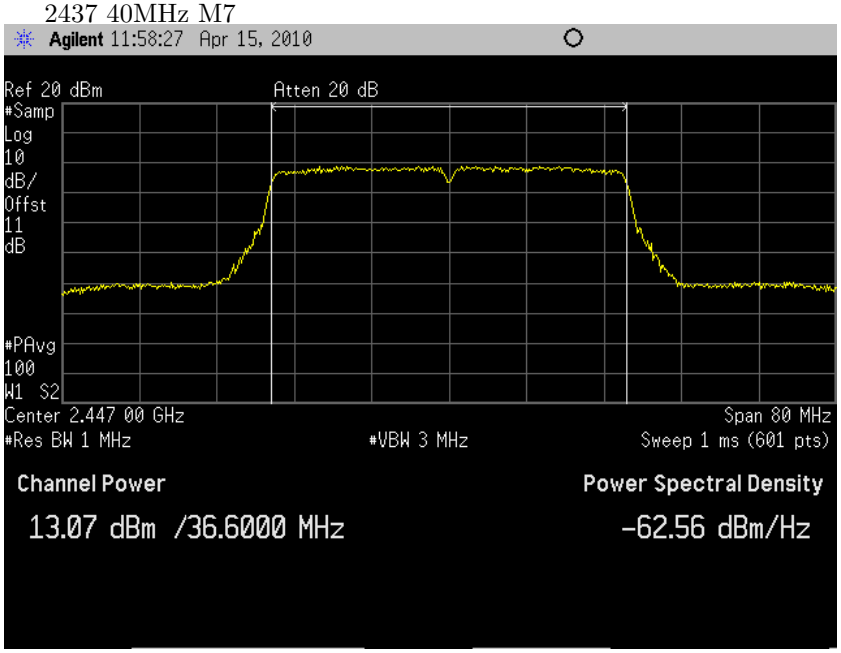
2462 40MHz M7



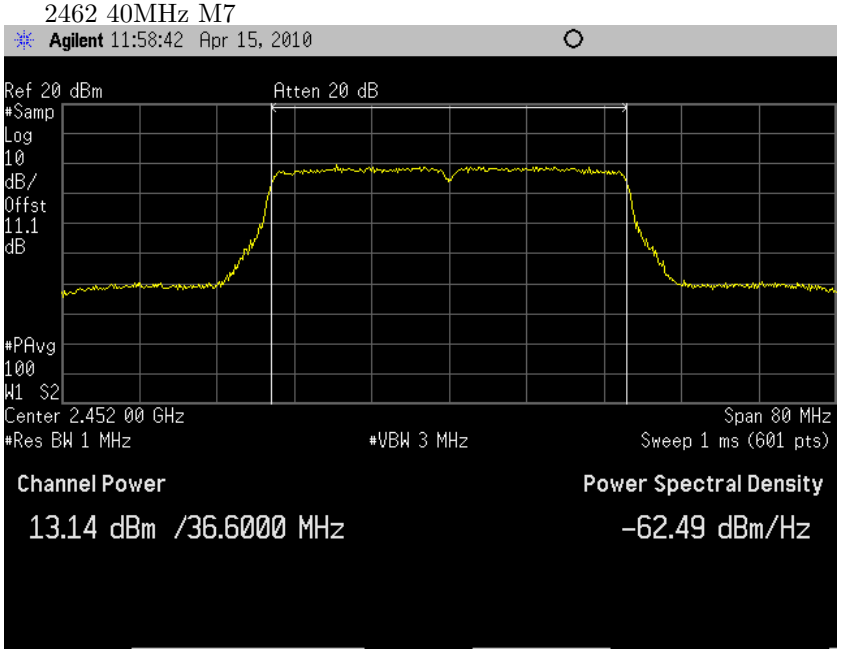
2412 40MHz M7



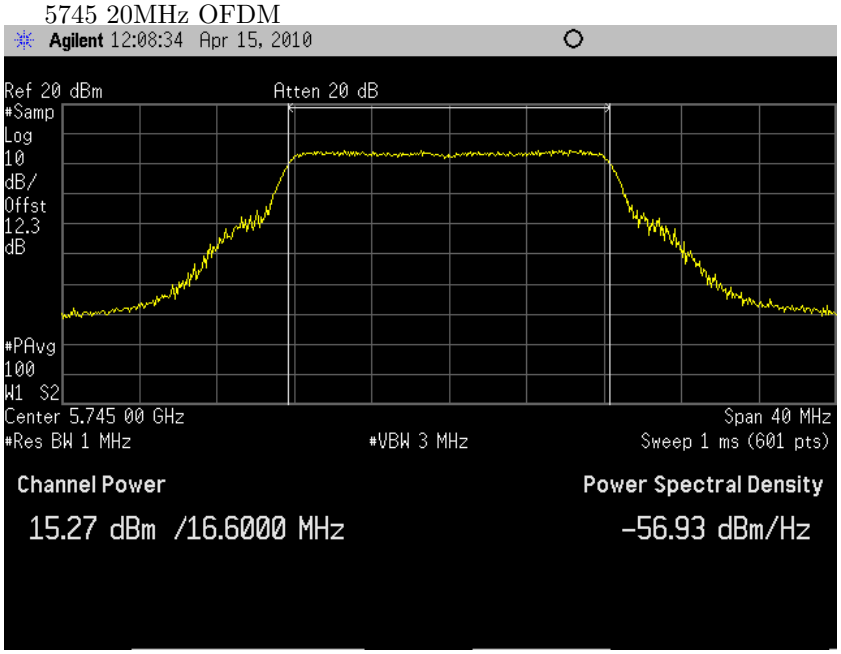
2437 40MHz M7



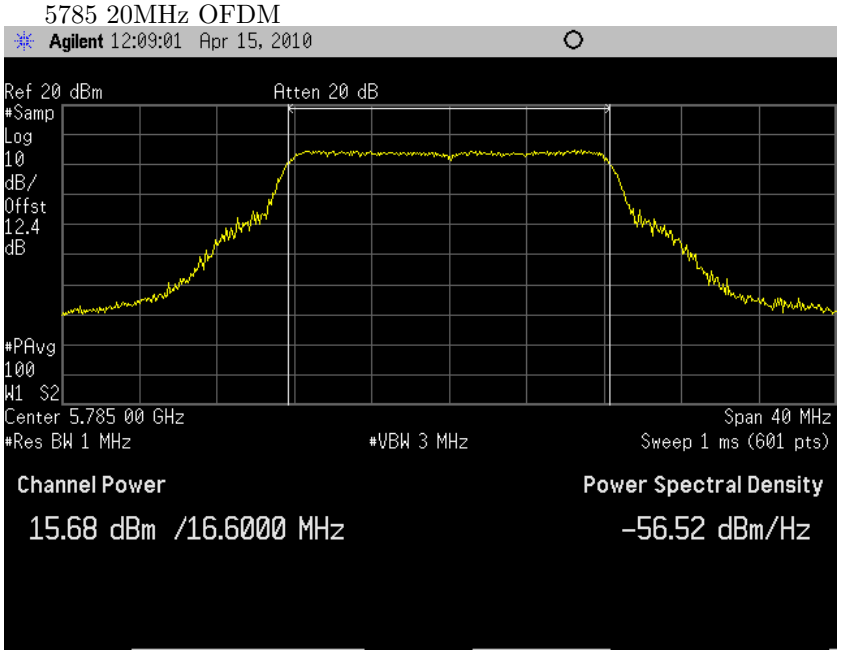
2462 40MHz M7



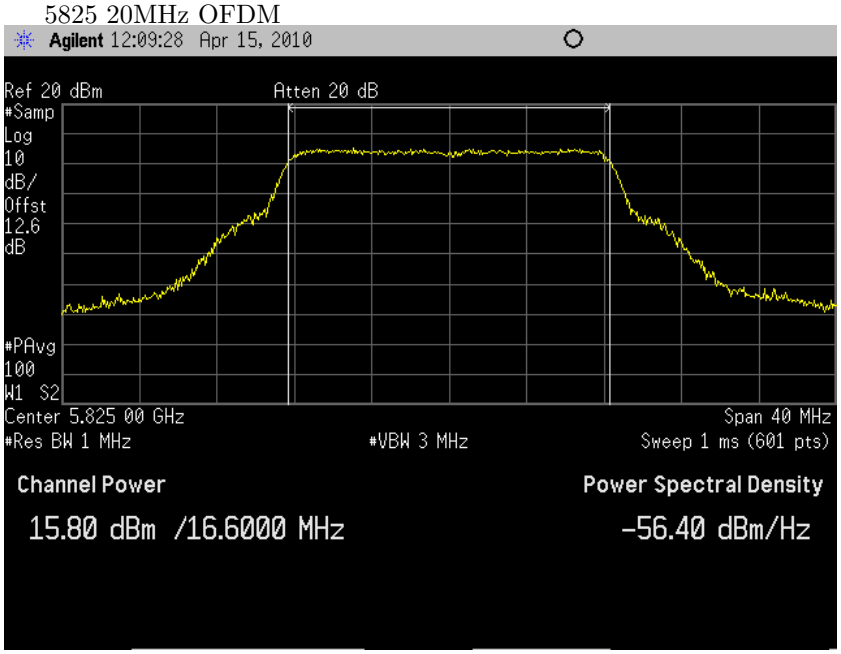
5745 20MHz OFDM



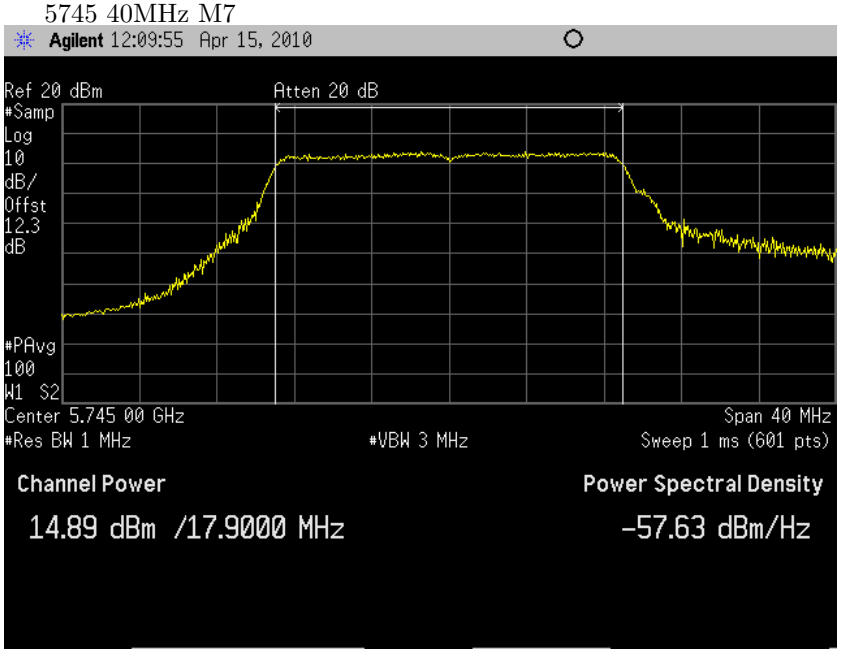
5785 20MHz OFDM



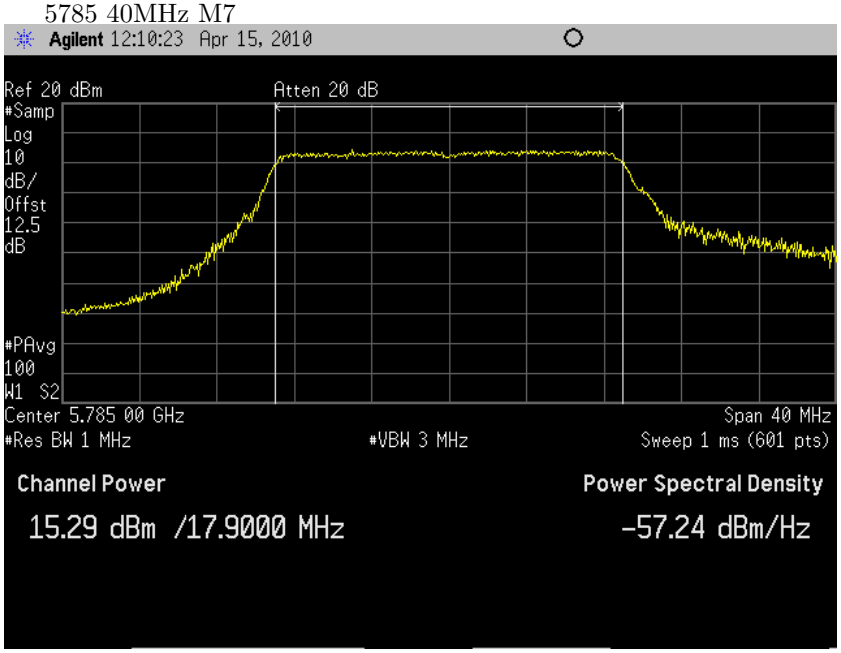
5825 20MHz OFDM



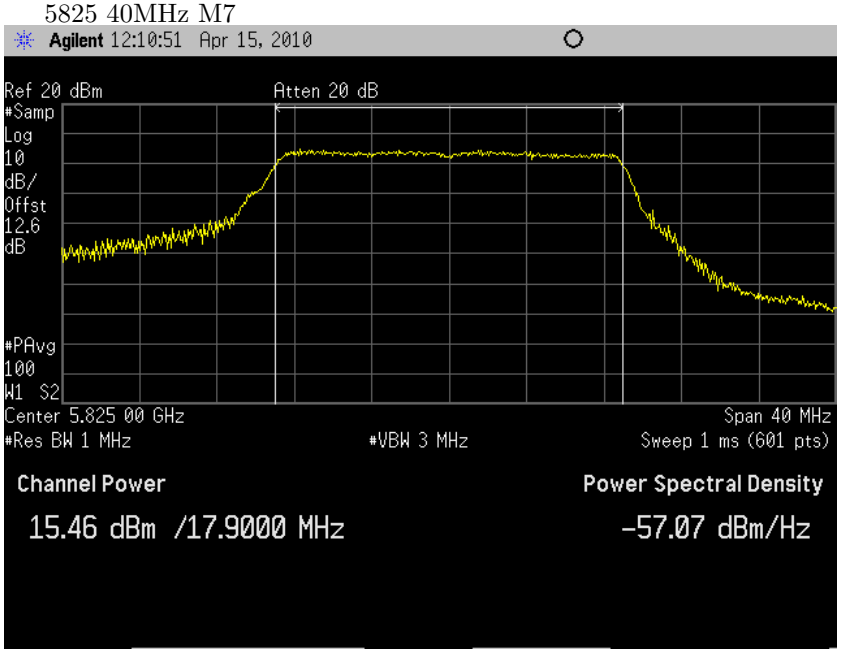
5745 40MHz M7



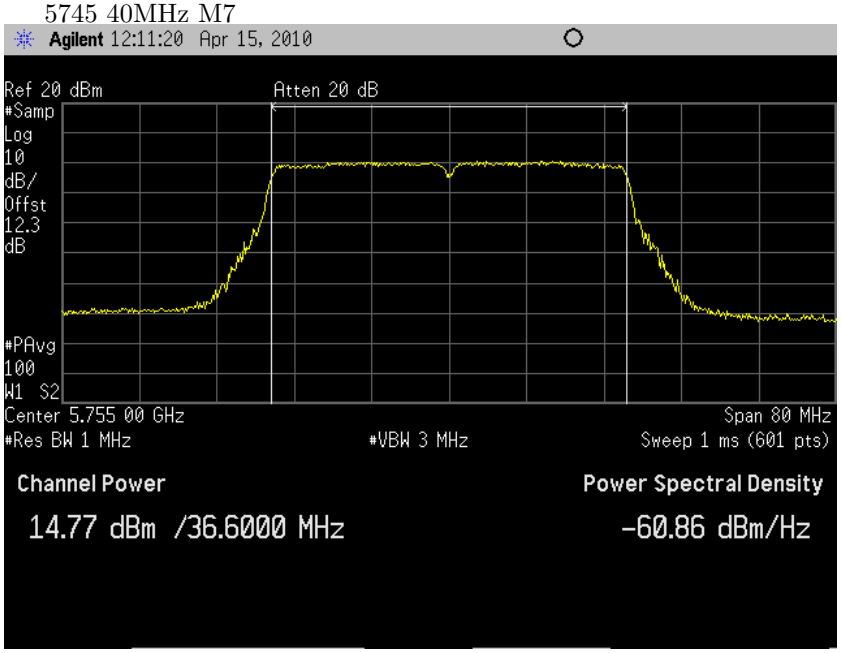
5785 40MHz M7



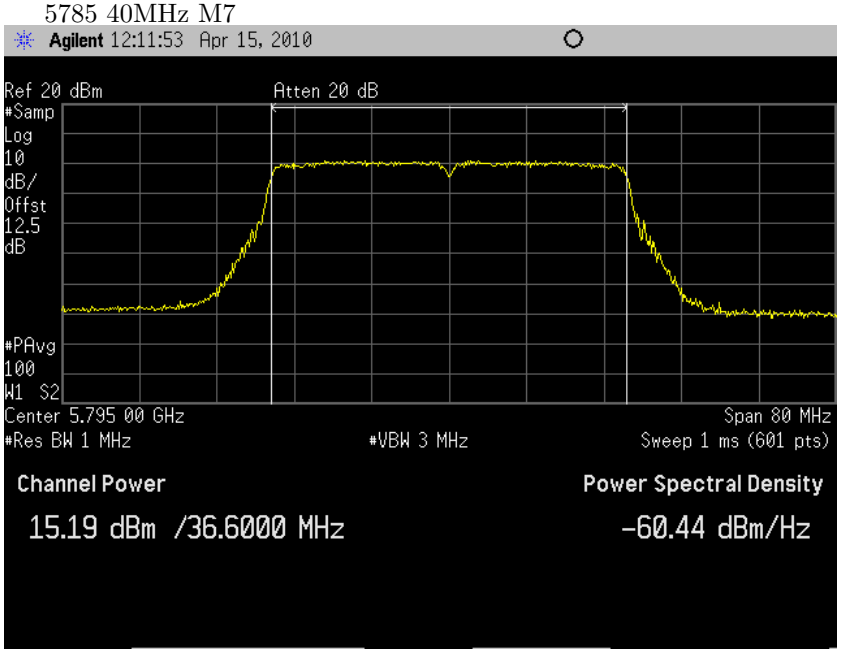
5825 40MHz M7



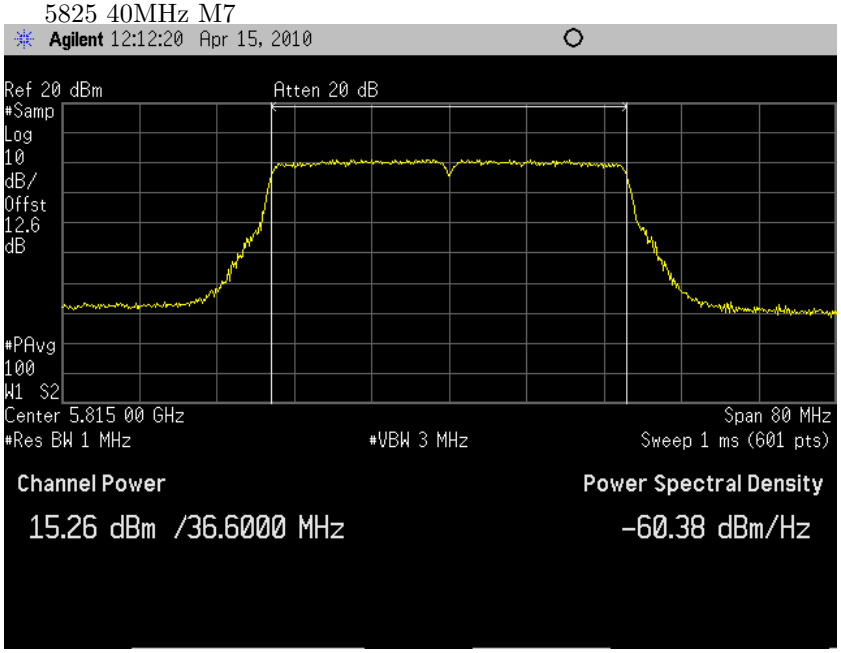
5745 40MHz M7



5785 40MHz M7



5825 40MHz M7



0.5 Occupied Bandwidth, 6dB Threshold

Occupied Bandwidth Measurement where the bandwidth is defined by a 6dB reduction in the spectrum relative to the peak power.

0.5.1 Specification

15.247 (2) Systems using digital modulation techniques 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.

0.5.2 Measurement Procedure

Reference ANSI C63.10-2009 6.9

Measurements performed Apr 15 2010.

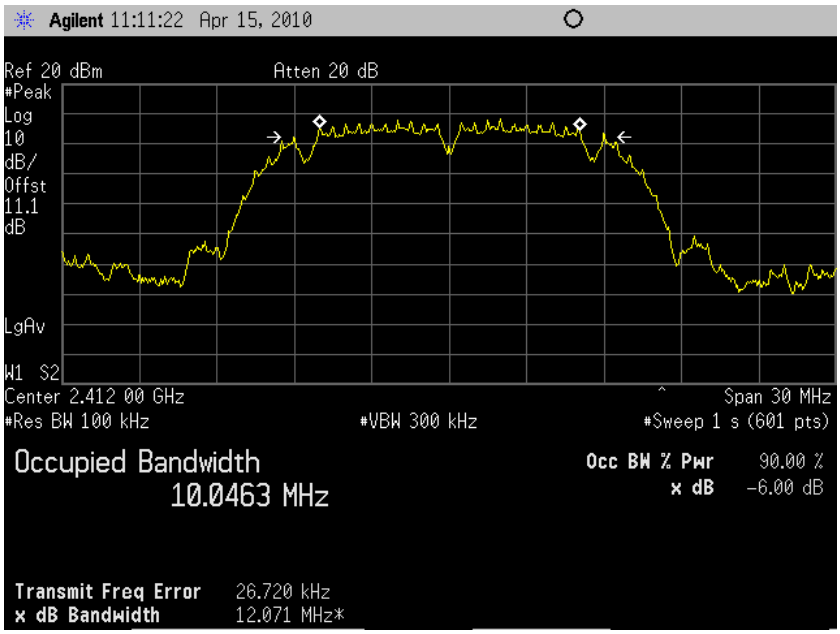
Testing was performed with the radio in continuous transmit mode.

1. Ref Level Offset = DUT/Spectrum Analyzer path loss
2. Detector ← Peak
3. Enable Spectrum Analyzer "Occupied Bandwidth Measurement mode"
4. Ref Level ← +20dBm
5. x dB ← 6dB
6. RBW ← 100kHz
7. VBW ← 300kHz
8. Sweep Time ← 1s
9. Query "Occupied Bandwidth Measurement mode" for x dB bandwidth

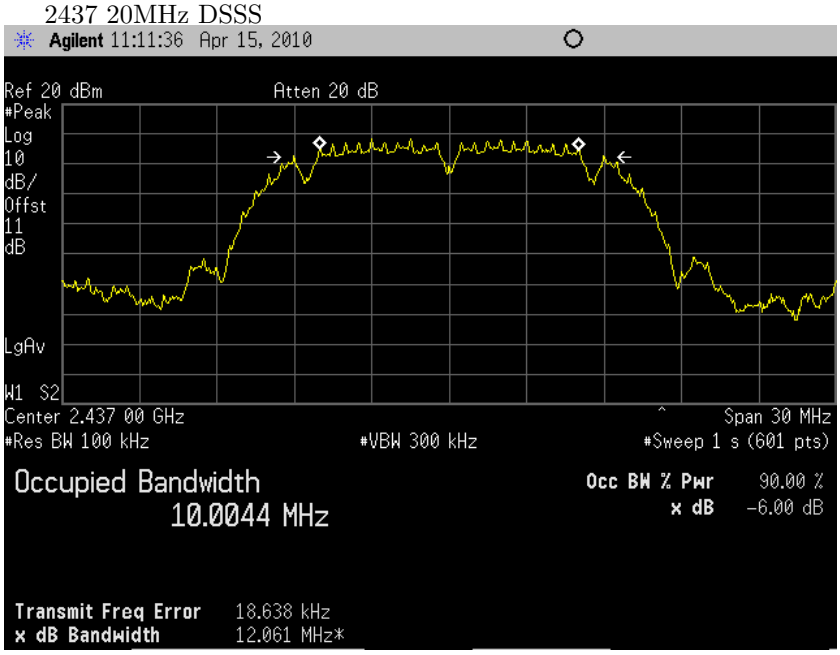
Freq (MHz)	Operating Mode	Data Rate	6dB BW (MHz)	Limit	Margin
2412.0	20MHz DSSS	1	12.1	0.5	11.6
2437.0	20MHz DSSS	1	12.1	0.5	11.6
2462.0	20MHz DSSS	1	12.0	0.5	11.5
2412.0	20MHz CCK	11	11.9	0.5	11.4
2437.0	20MHz CCK	11	12.1	0.5	11.6
2462.0	20MHz CCK	11	12.0	0.5	11.5
2412.0	20MHz OFDM	54	16.5	0.5	16.0
2437.0	20MHz OFDM	54	16.5	0.5	16.0
2462.0	20MHz OFDM	54	16.5	0.5	16.0
2412.0	40MHz M7	M7	17.8	0.5	17.3
2437.0	40MHz M7	M7	17.8	0.5	17.3
2462.0	40MHz M7	M7	17.8	0.5	17.3
2412.0	40MHz M7	M7	36.6	0.5	36.1
2437.0	40MHz M7	M7	36.6	0.5	36.1
2462.0	40MHz M7	M7	36.5	0.5	36.0
5745.0	20MHz OFDM	54	16.6	0.5	16.1
5785.0	20MHz OFDM	54	16.5	0.5	16.0
5825.0	20MHz OFDM	54	16.6	0.5	16.1
5745.0	40MHz M7	M7	17.8	0.5	17.3
5785.0	40MHz M7	M7	17.8	0.5	17.3
5825.0	40MHz M7	M7	17.8	0.5	17.3
5745.0	40MHz M7	M7	36.5	0.5	36.0
5785.0	40MHz M7	M7	36.6	0.5	36.1
5825.0	40MHz M7	M7	36.5	0.5	36.0

Table 4: Occupied Bandwidth 6dB

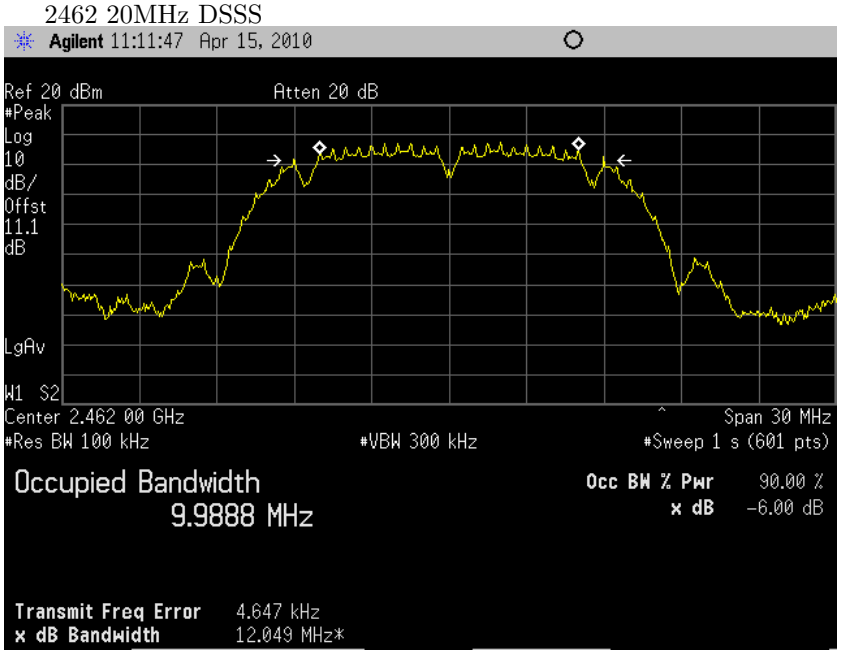
2412 20MHz DSSS



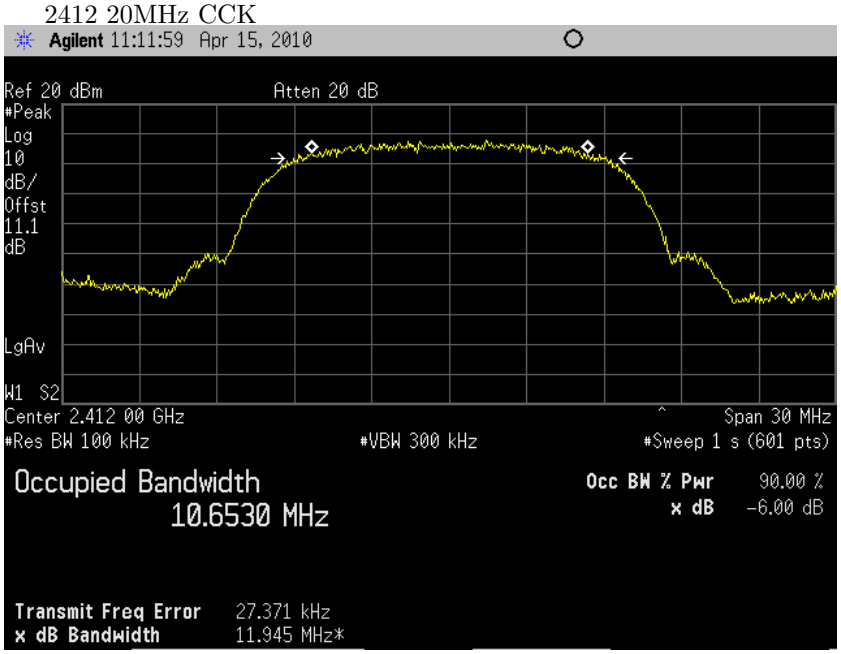
2437 20MHz DSSS



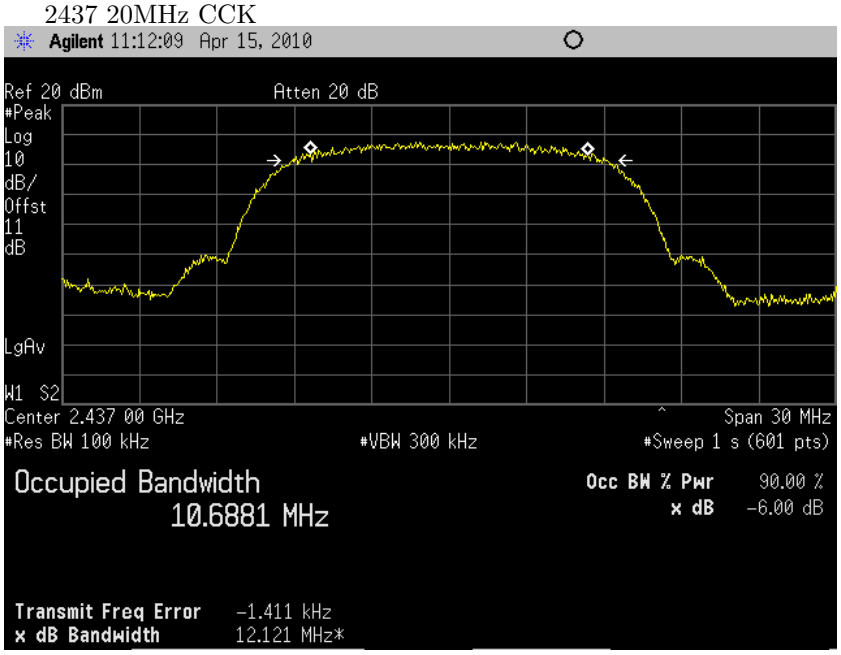
2462 20MHz DSSS



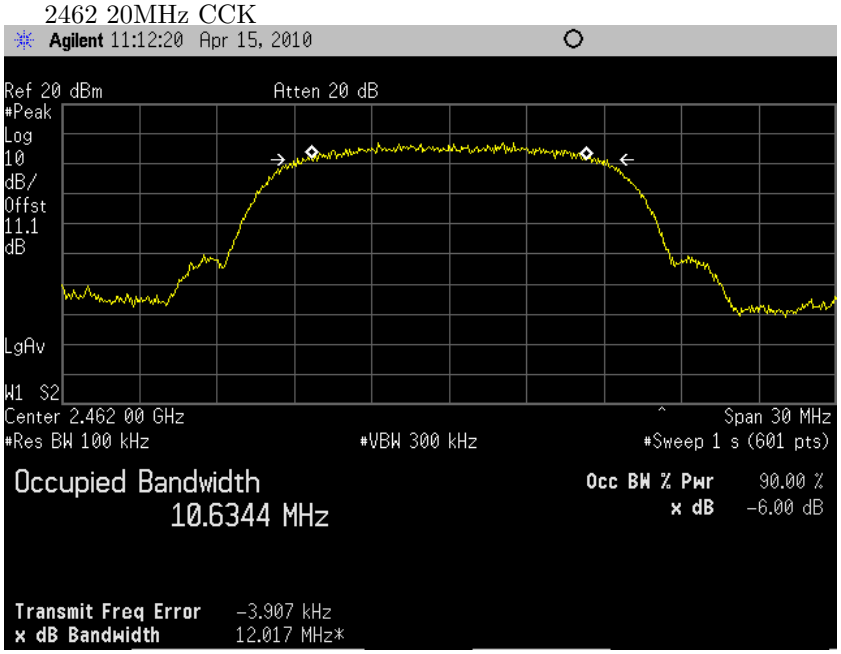
2412 20MHz CCK



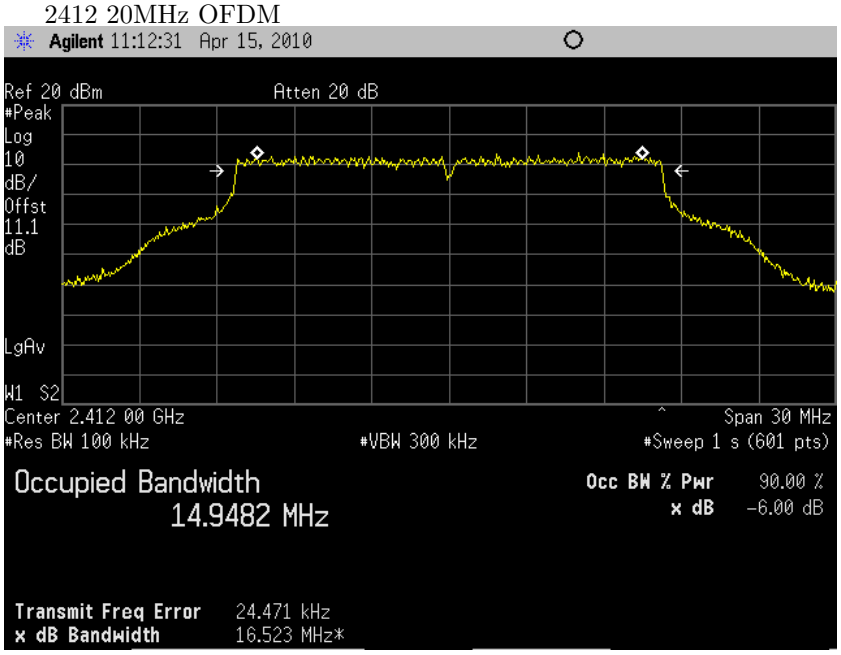
2437 20MHz CCK



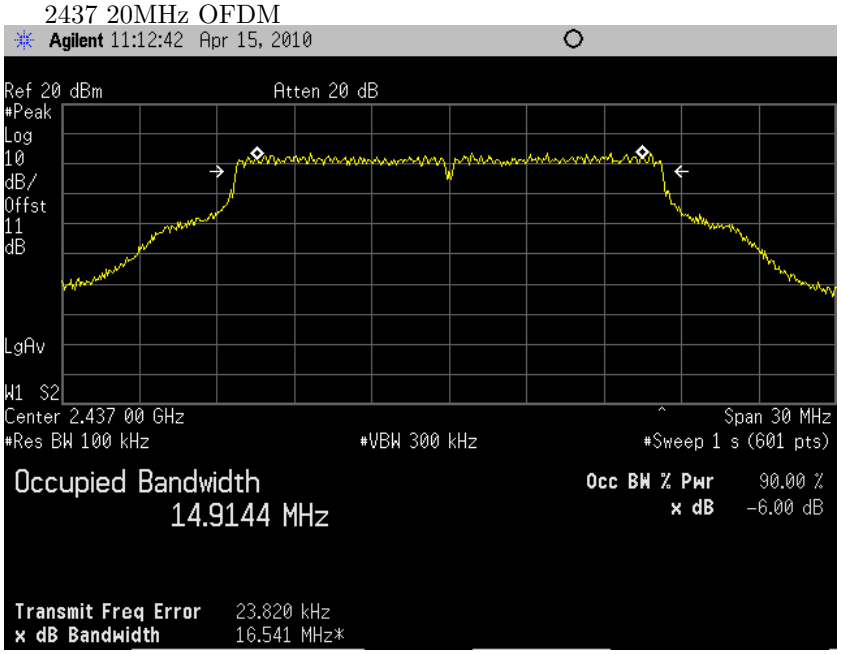
2462 20MHz CCK



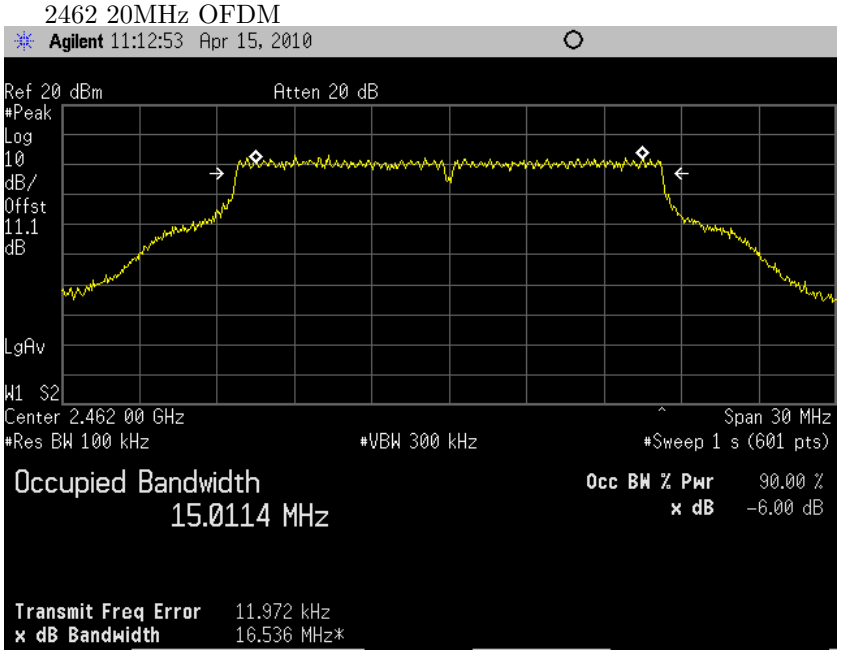
2412 20MHz OFDM



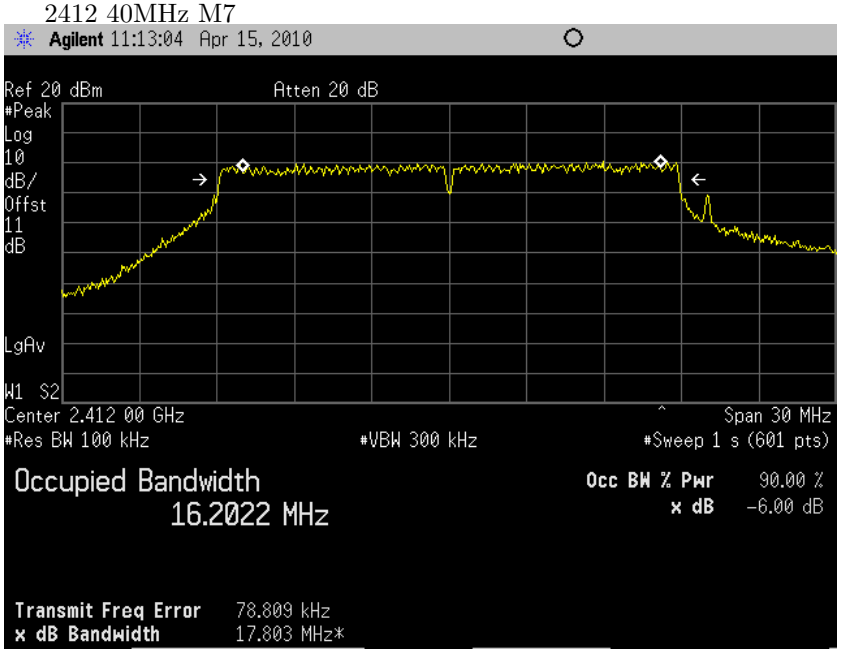
2437 20MHz OFDM



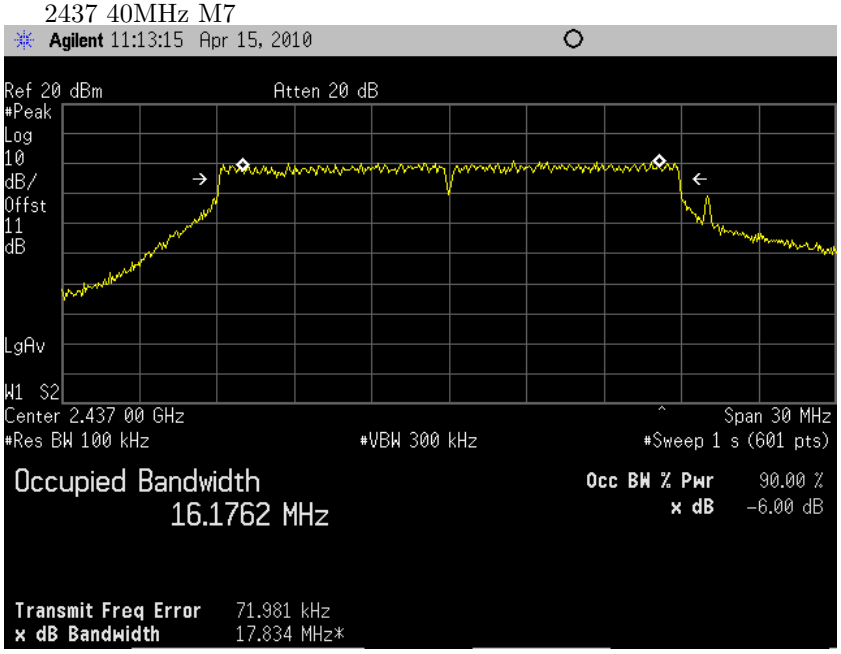
2462 20MHz OFDM



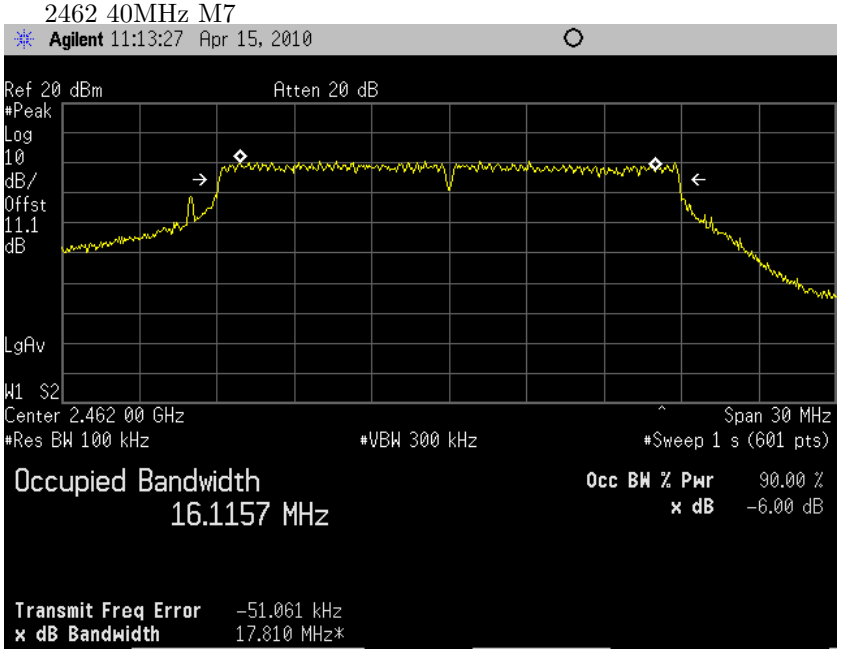
2412 40MHz M7



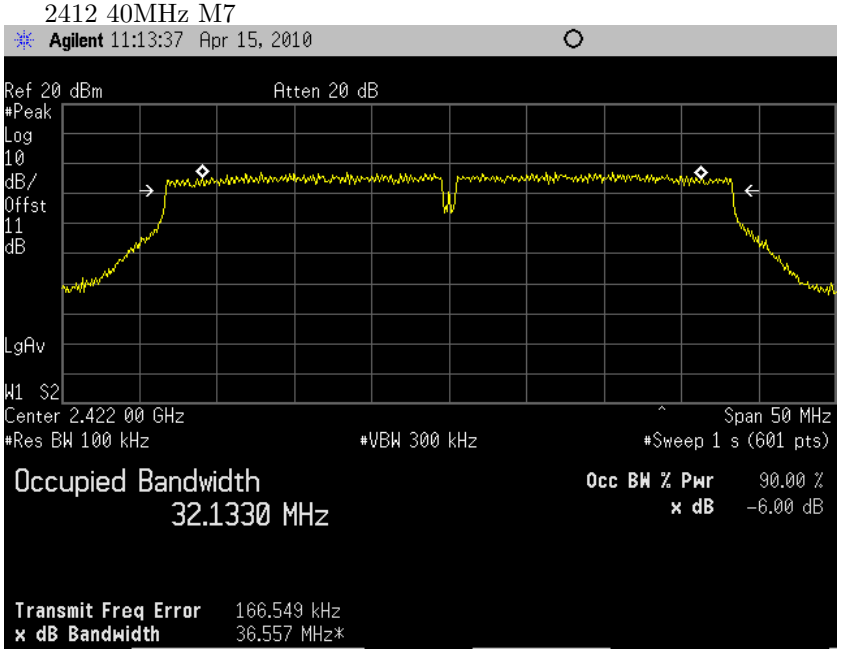
2437 40MHz M7



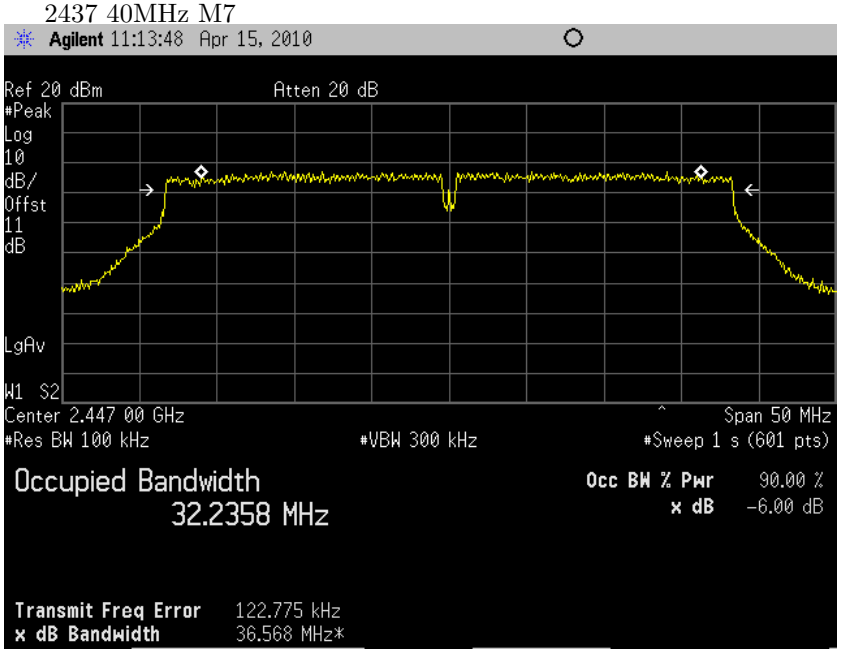
2462 40MHz M7



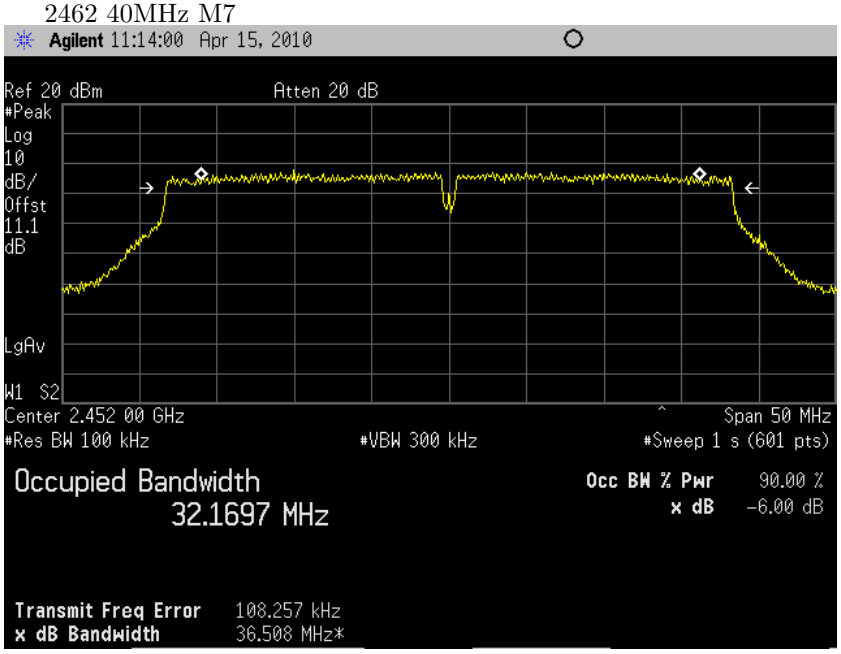
2412 40MHz M7



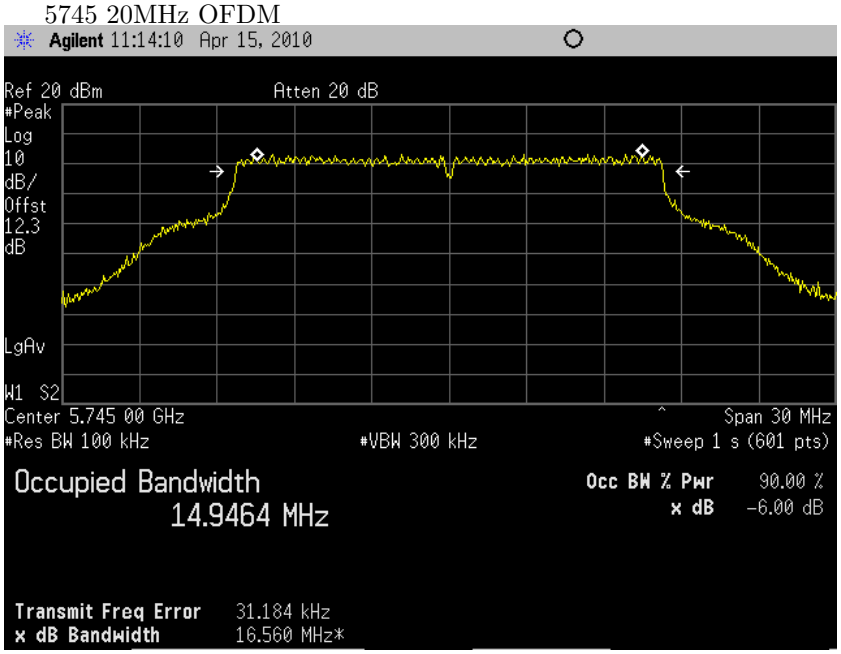
2437 40MHz M7



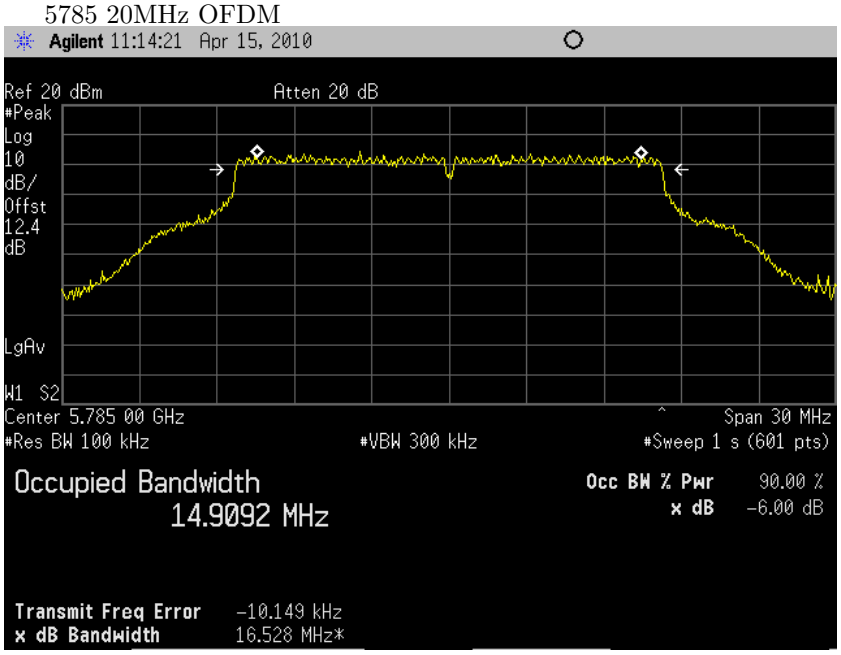
2462 40MHz M7



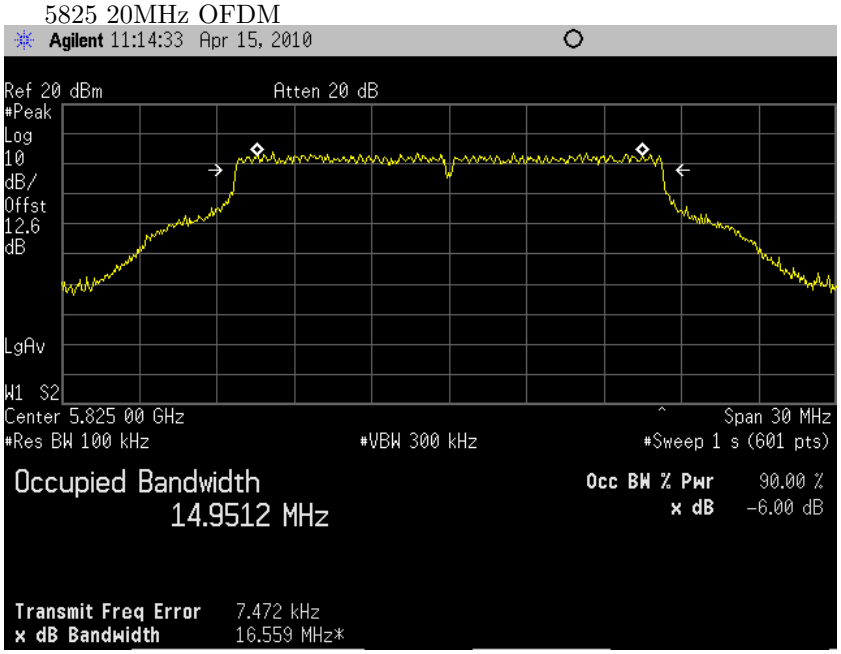
5745 20MHz OFDM



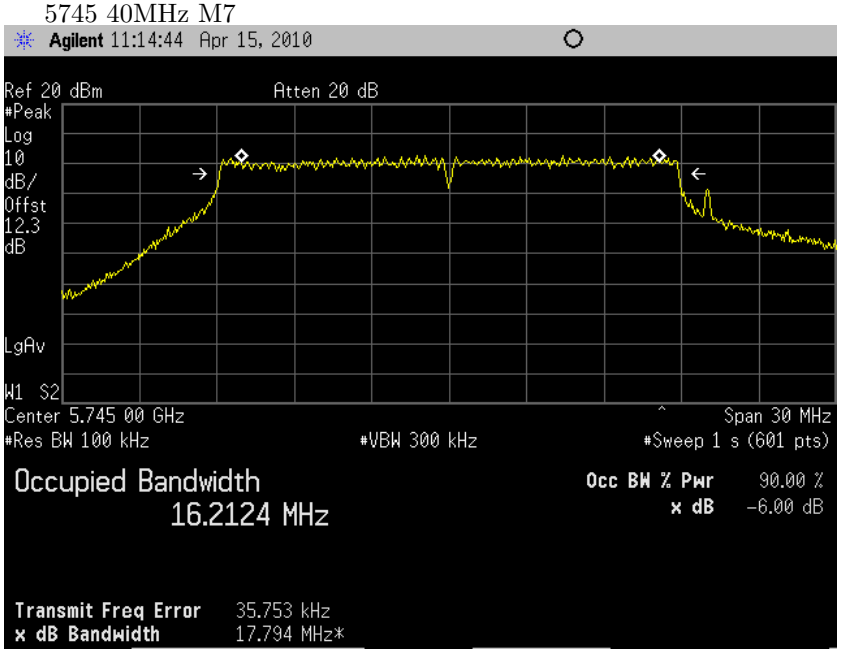
5785 20MHz OFDM



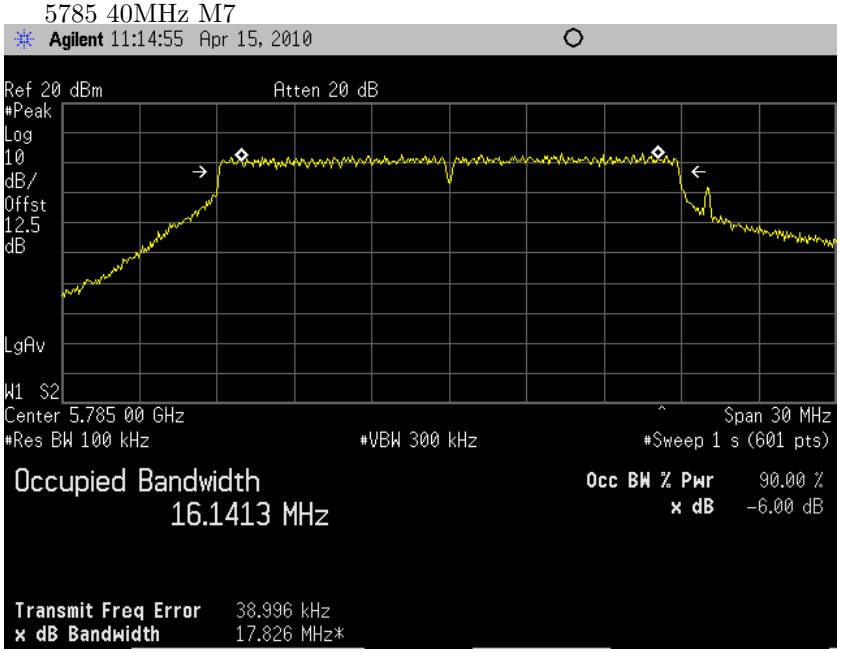
5825 20MHz OFDM



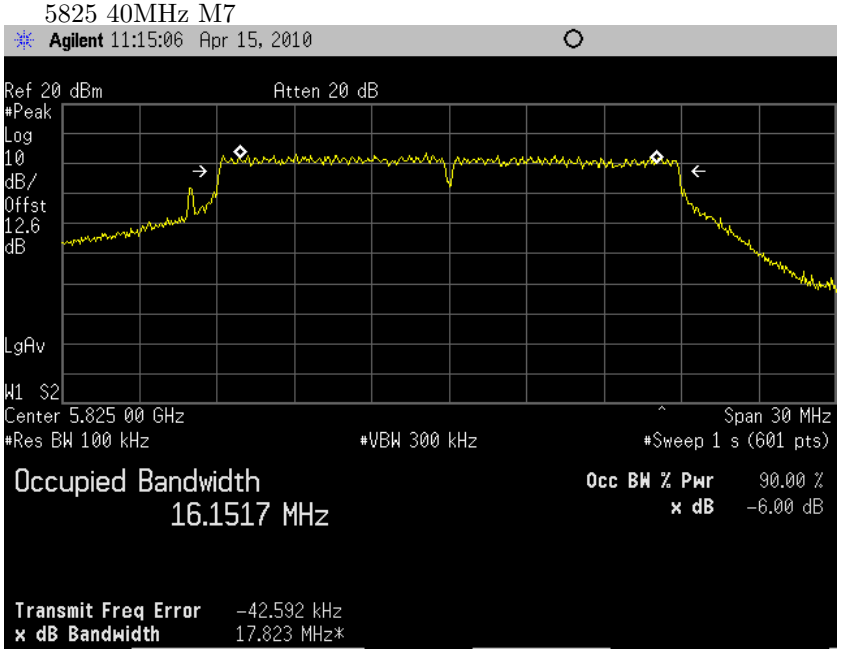
5745 40MHz M7



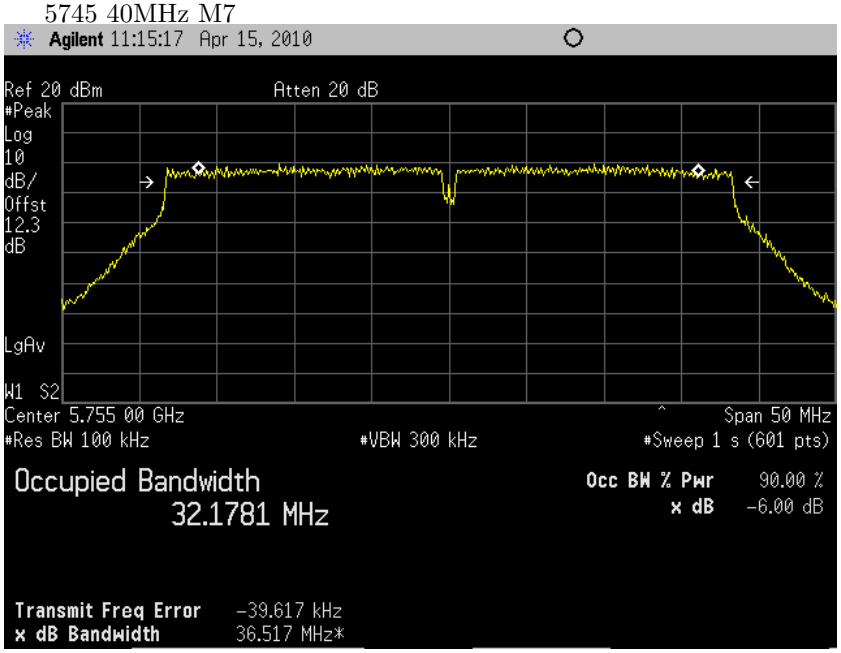
5785 40MHz M7



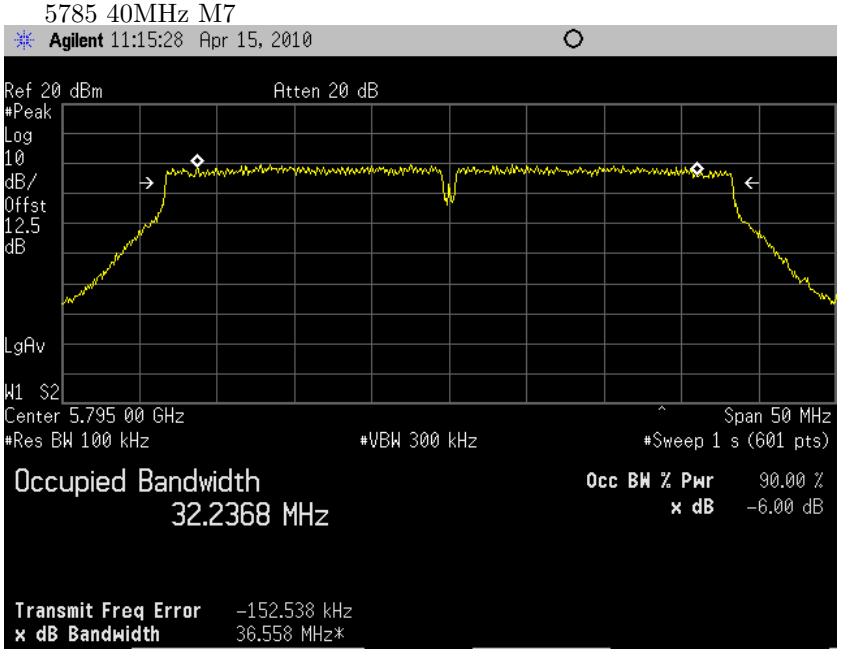
5825 40MHz M7



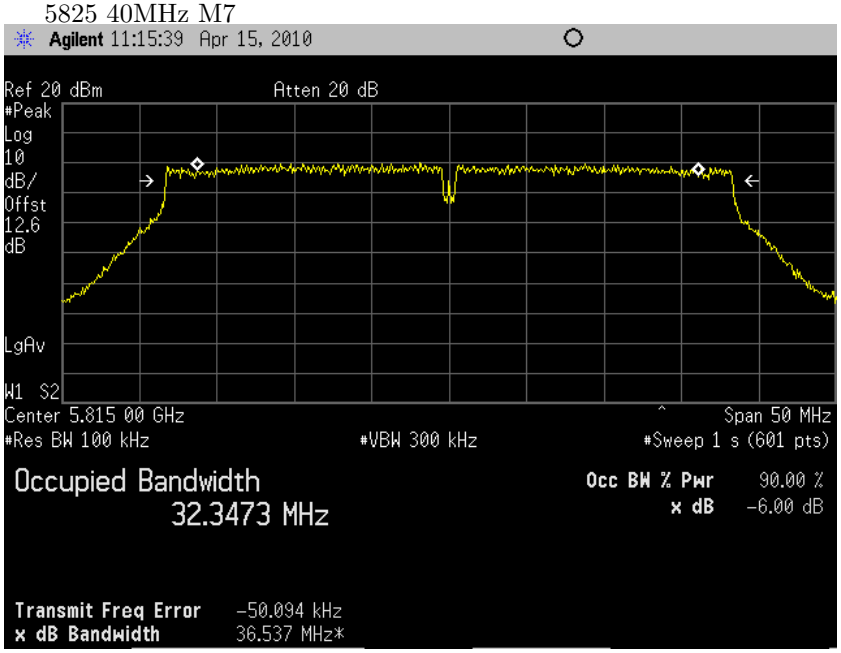
5745 40MHz M7



5785 40MHz M7



5825 40MHz M7



0.6 Power Spectral Density

0.6.1 Specification

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

0.6.2 Measurement Procedure

Reference ANSI C63.10-2009 6.11.2.4

Measurements performed May 14 2010.

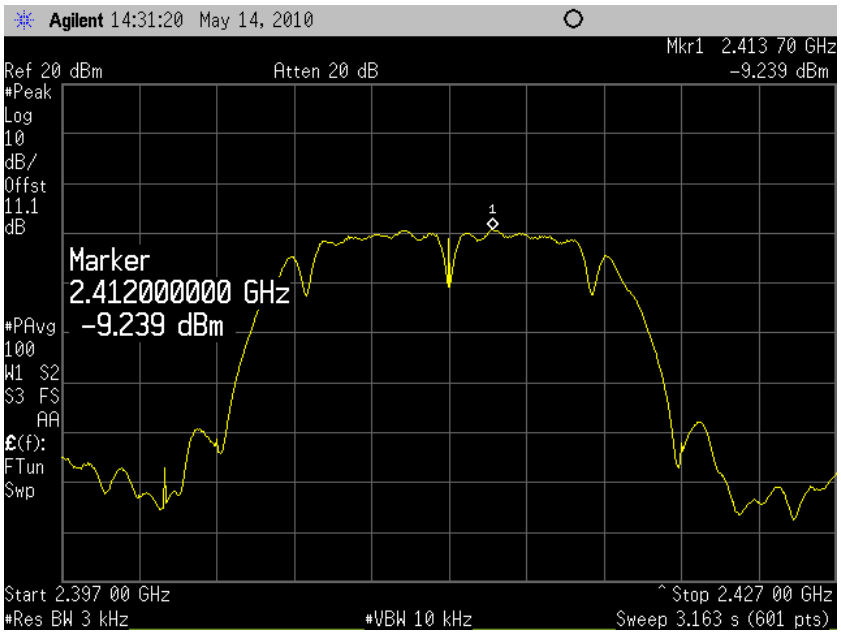
Testing was performed with the radio in continuous transmit mode.

1. Ref Level Offset = DUT/Spectrum Analyzer path loss
2. Detector ← Peak
3. Ref Level ← +20dBm
4. RBW ← 3kHz
5. VBW ← 10kHz
6. Averaging ← Power
7. Number of averages ← 100
8. Sweep Time ← AUTO
9. Marker 1 → Peak Trace 1

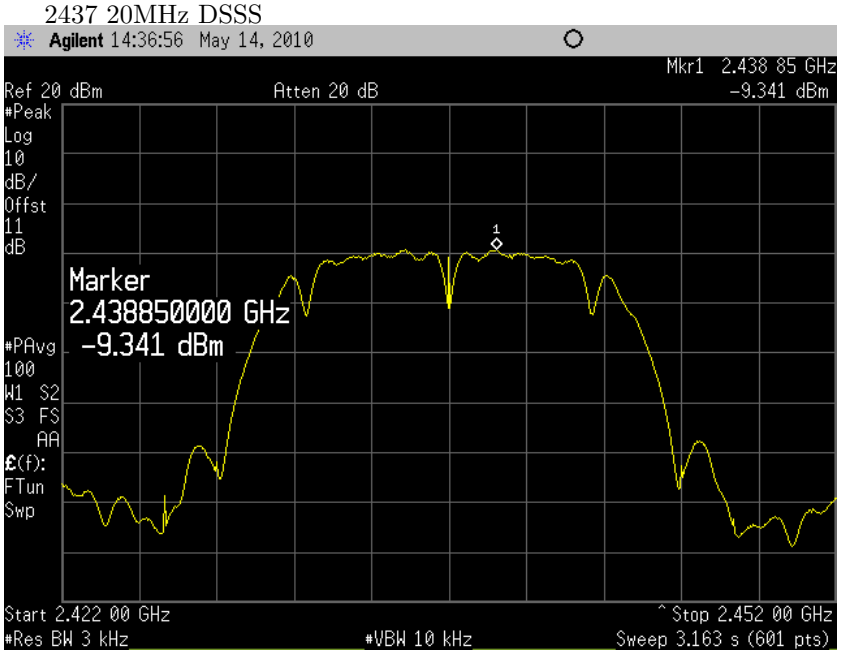
Freq (MHz)	Operating Mode	Data Rate	PSD (dBm/3 kHz)	Limit	Margin
2412.0	20MHz DSSS	1	-9.2	8.0	17.2
2437.0	20MHz DSSS	1	-9.3	8.0	17.3
2462.0	20MHz DSSS	1	-10.2	8.0	18.2
2412.0	20MHz CCK	11	-8.9	8.0	16.9
2437.0	20MHz CCK	11	-8.9	8.0	16.9
2462.0	20MHz CCK	11	-10.1	8.0	18.1
2412.0	20MHz OFDM	54	-10.8	8.0	18.8
2437.0	20MHz OFDM	54	-10.8	8.0	18.8
2462.0	20MHz OFDM	54	-12.2	8.0	20.2
2412.0	40MHz M7	M7	-13.4	8.0	21.4
2437.0	40MHz M7	M7	-13.4	8.0	21.4
2462.0	40MHz M7	M7	-12.9	8.0	20.9
2412.0	40MHz M7	M7	-13.2	8.0	21.2
2437.0	40MHz M7	M7	-12.7	8.0	20.7
2462.0	40MHz M7	M7	-12.7	8.0	20.7
5745.0	20MHz OFDM	54	-11.3	8.0	19.3
5785.0	20MHz OFDM	54	-10.9	8.0	18.9
5825.0	20MHz OFDM	54	-10.7	8.0	18.7
5745.0	40MHz M7	M7	-11.3	8.0	19.3
5785.0	40MHz M7	M7	-11.0	8.0	19.0
5825.0	40MHz M7	M7	-10.9	8.0	18.9
5745.0	40MHz M7	M7	-11.2	8.0	19.2
5785.0	40MHz M7	M7	-10.9	8.0	18.9
5825.0	40MHz M7	M7	-10.8	8.0	18.8

Table 5: Power Spectral Density

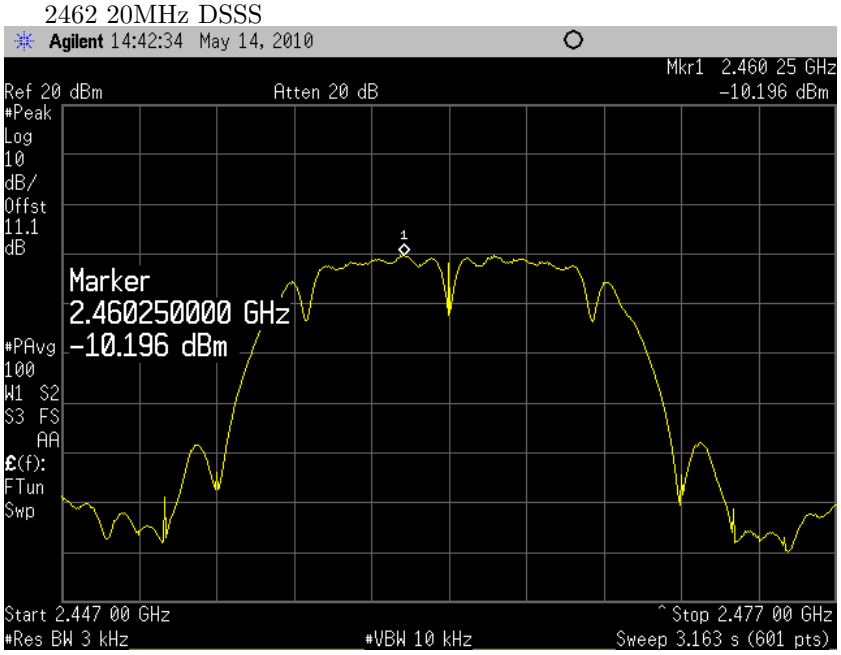
2412 20MHz DSSS



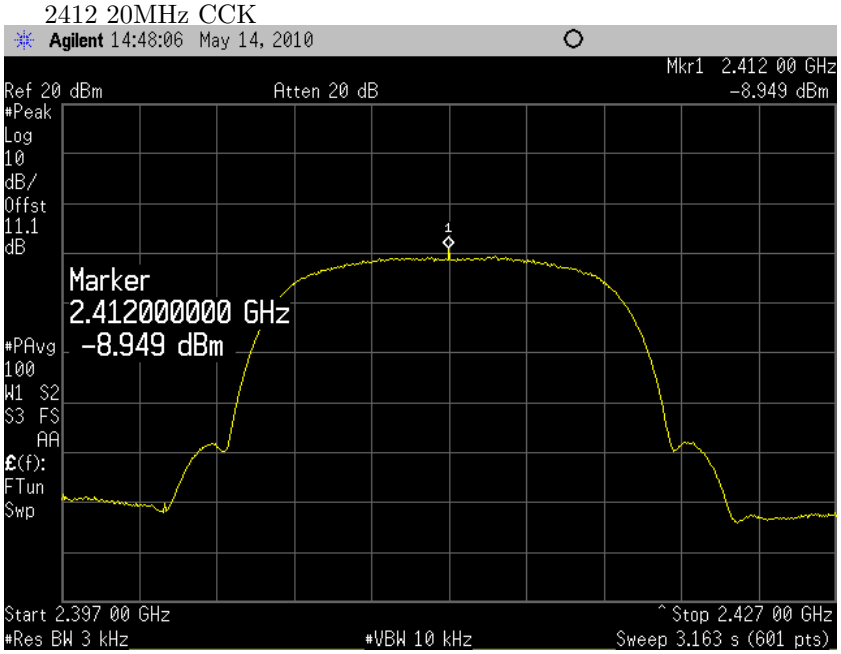
2437 20MHz DSSS



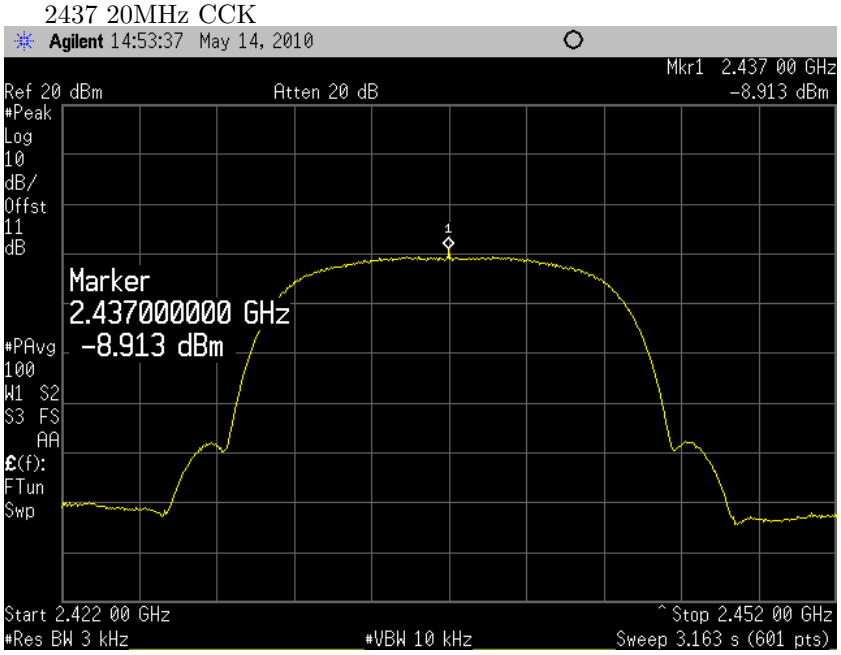
2462 20MHz DSSS



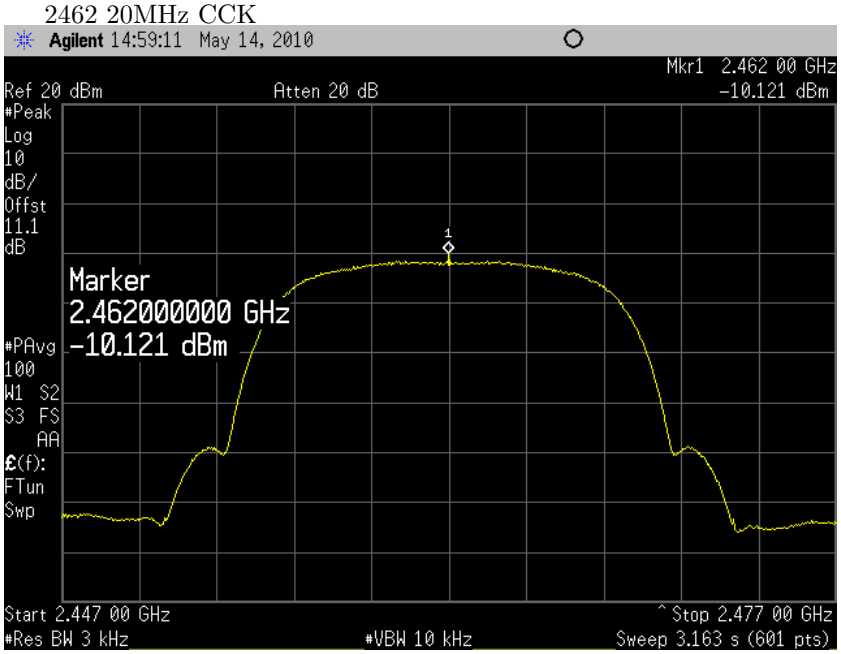
2412 20MHz CCK



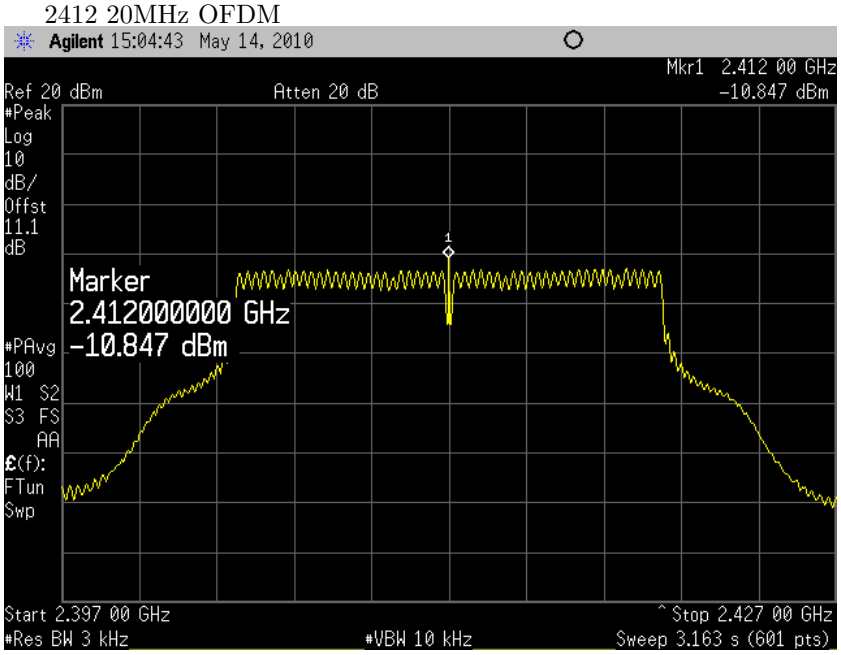
2437 20MHz CCK



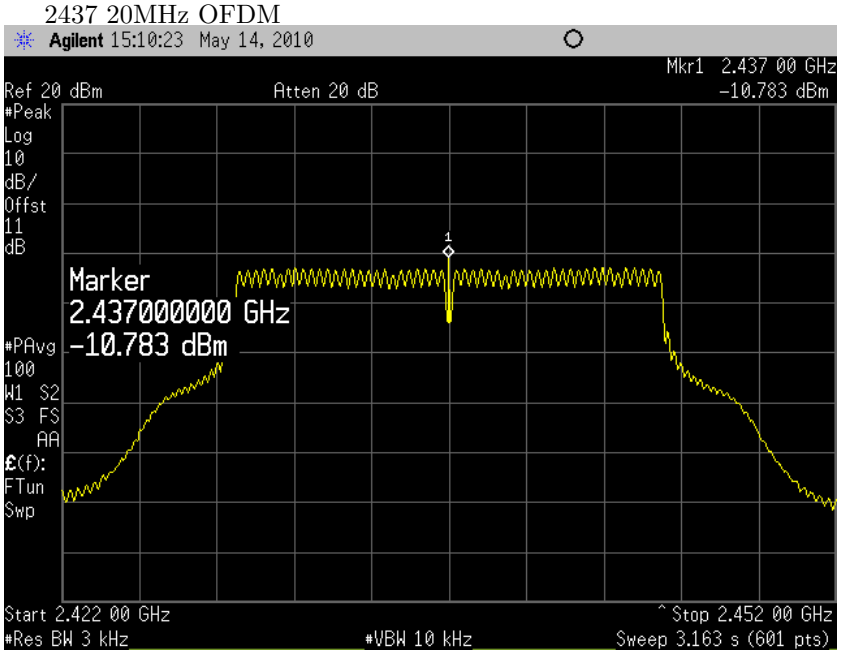
2462 20MHz CCK



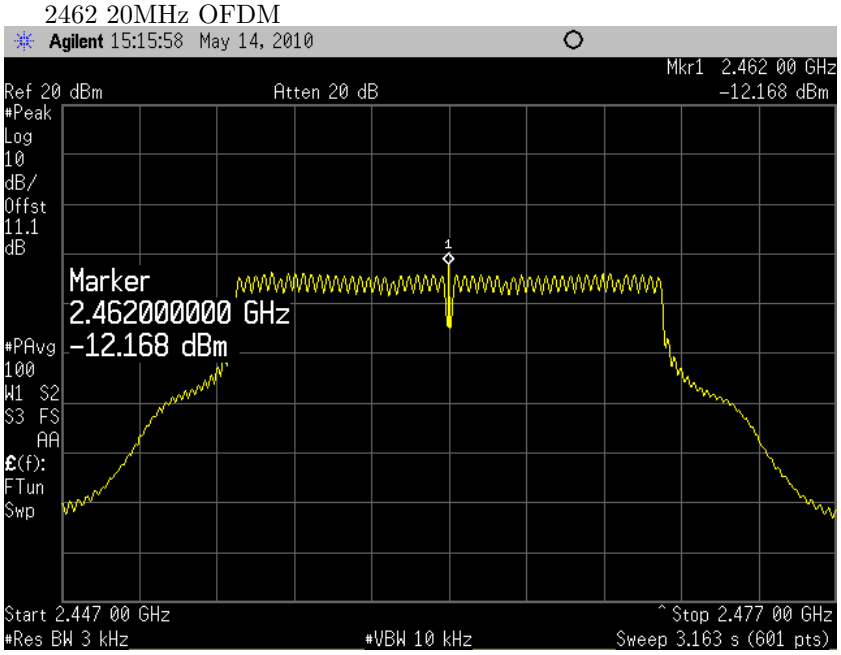
2412 20MHz OFDM



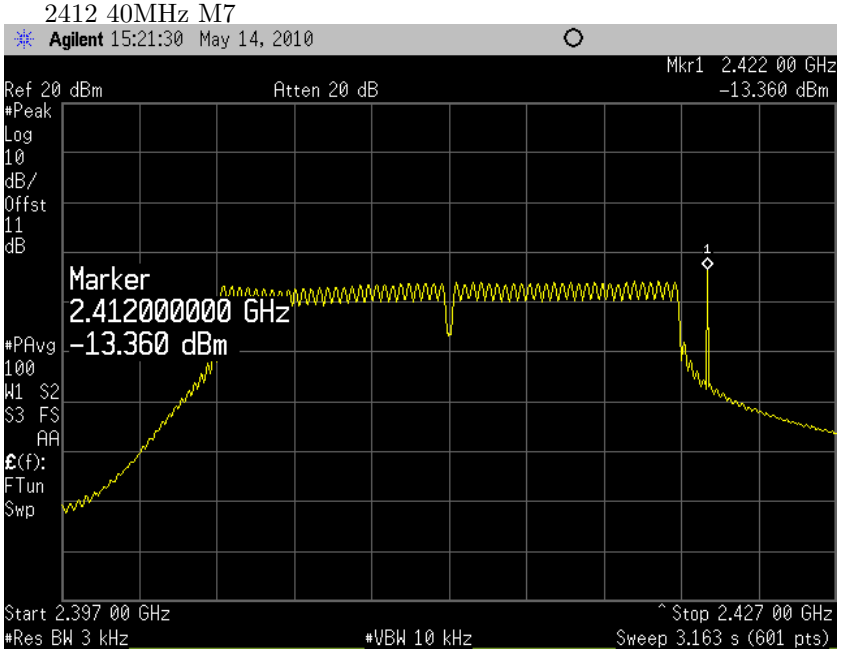
2437 20MHz OFDM



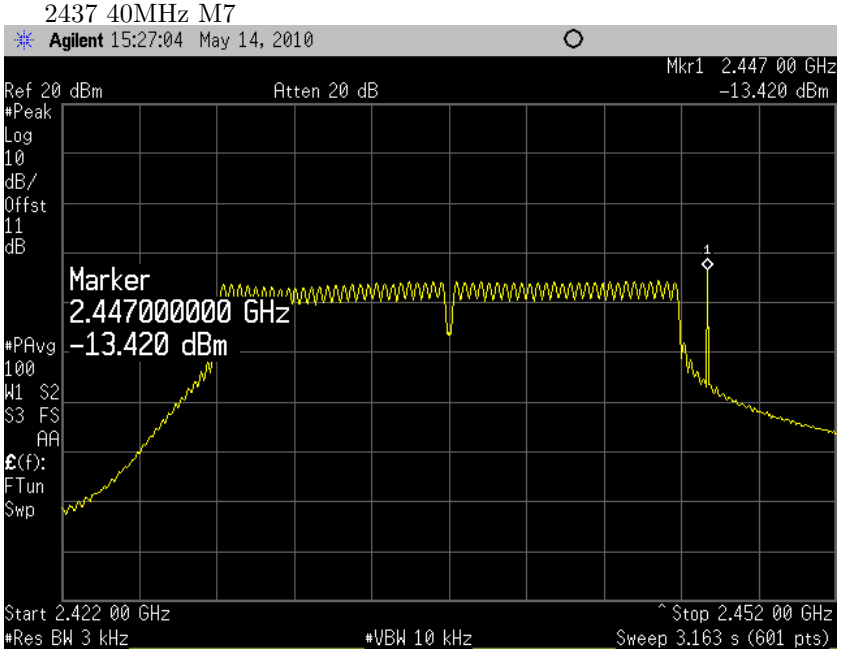
2462 20MHz OFDM



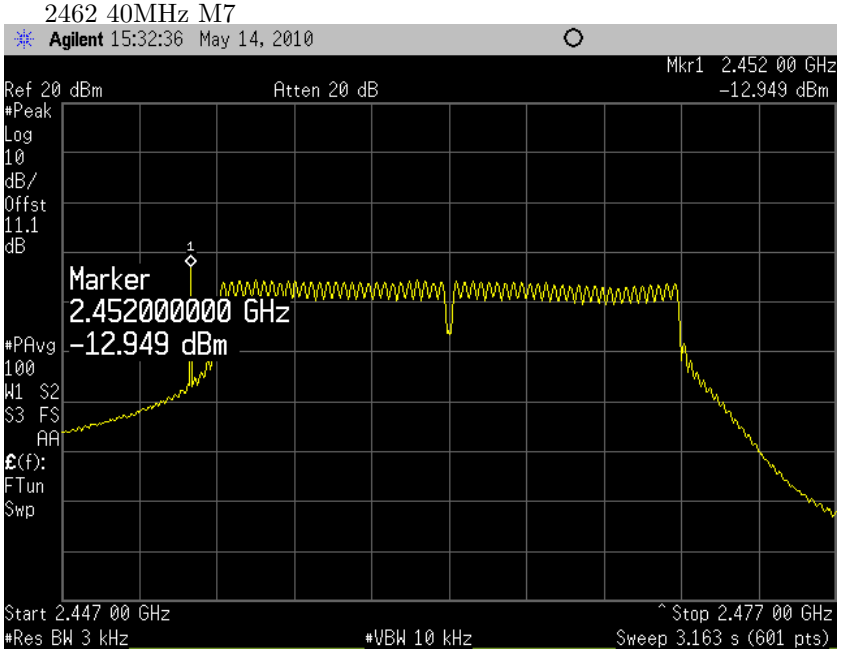
2412 40MHz M7



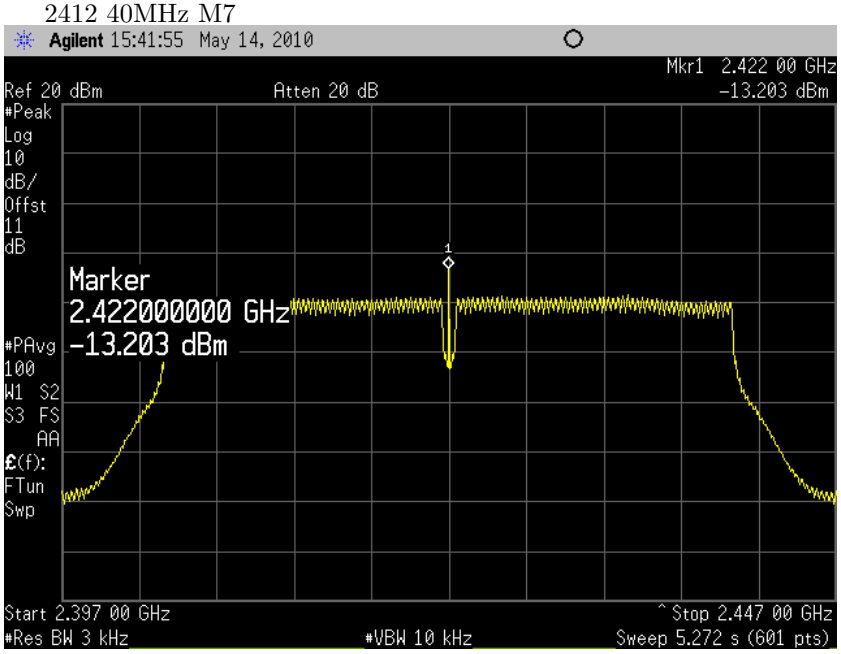
2437 40MHz M7



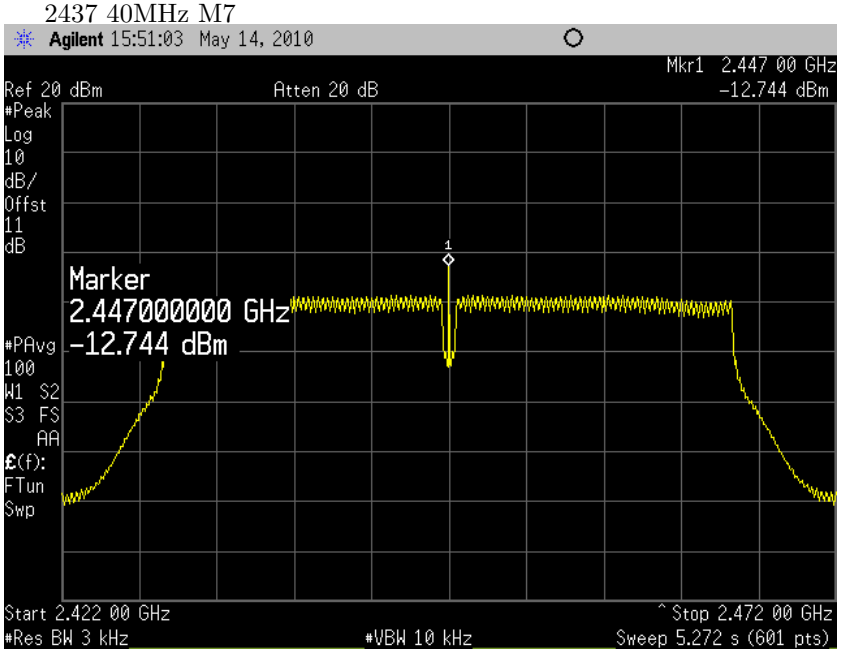
2462 40MHz M7



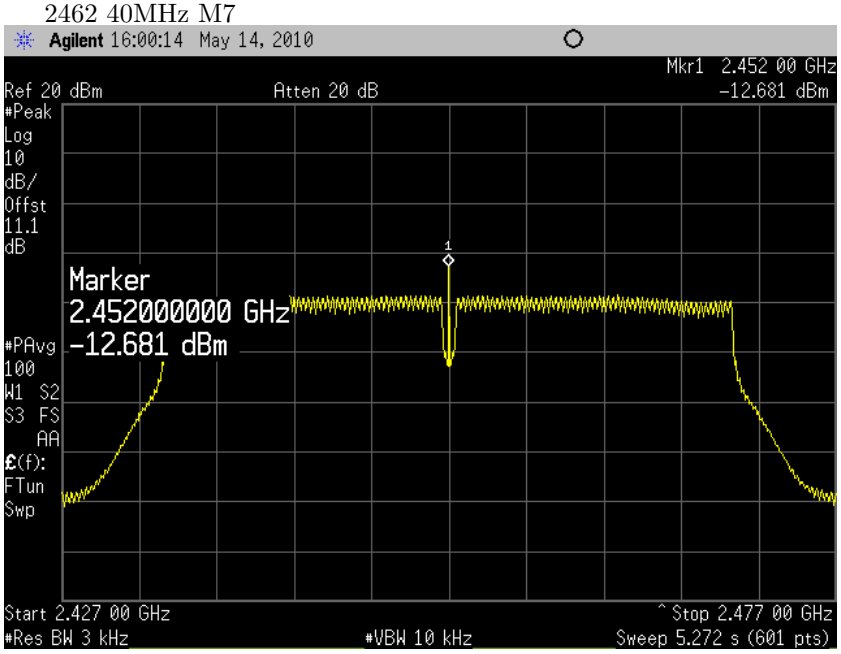
2412 40MHz M7



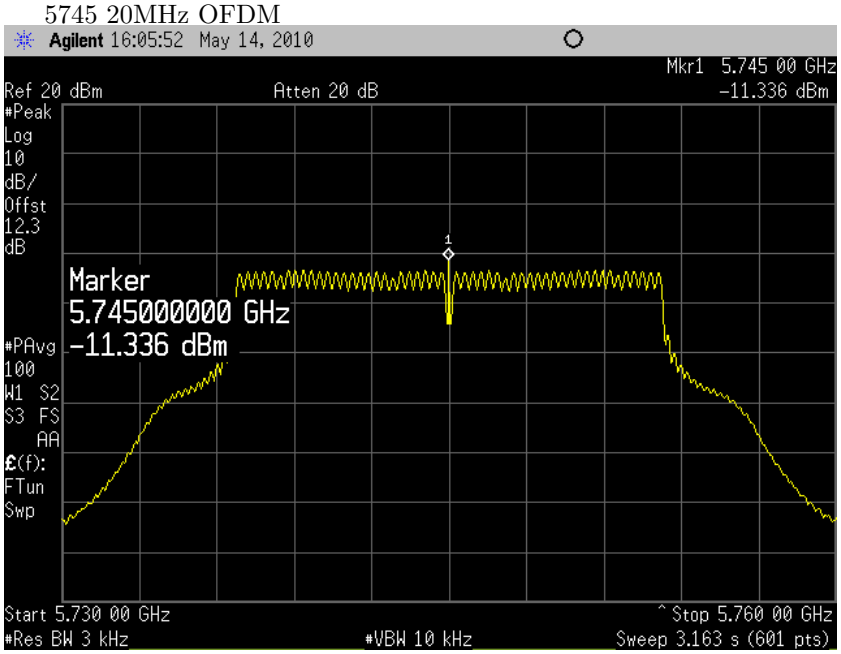
2437 40MHz M7



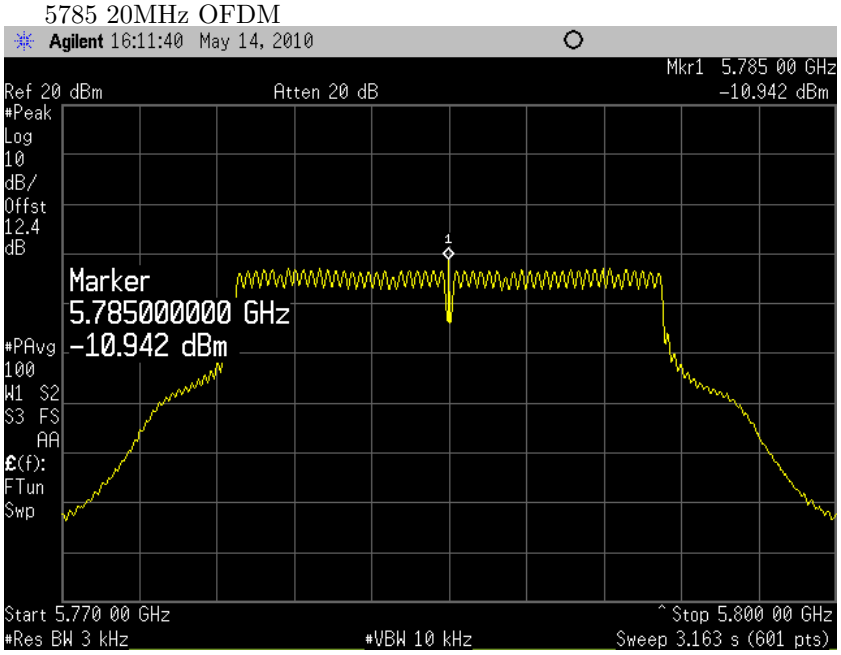
2462 40MHz M7



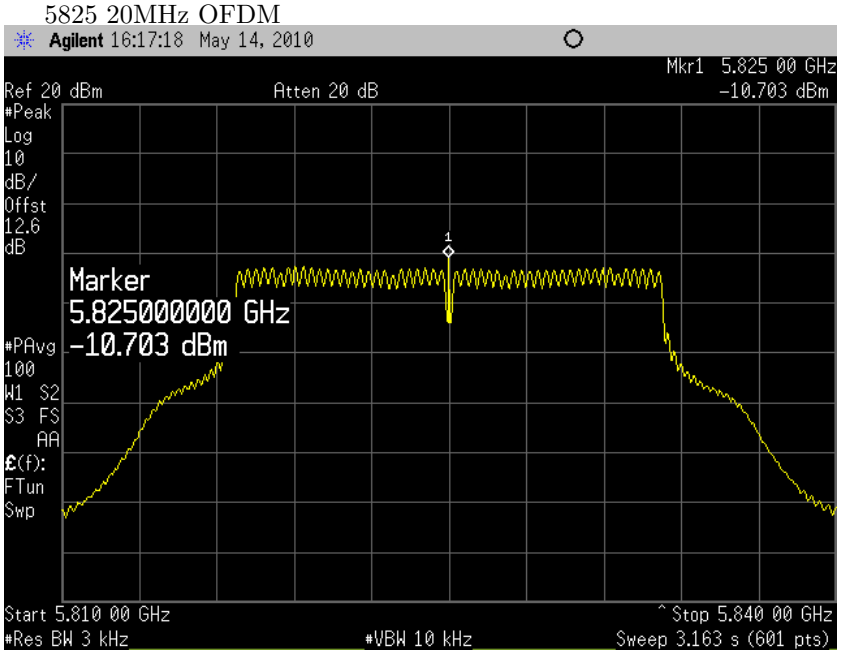
5745 20MHz OFDM



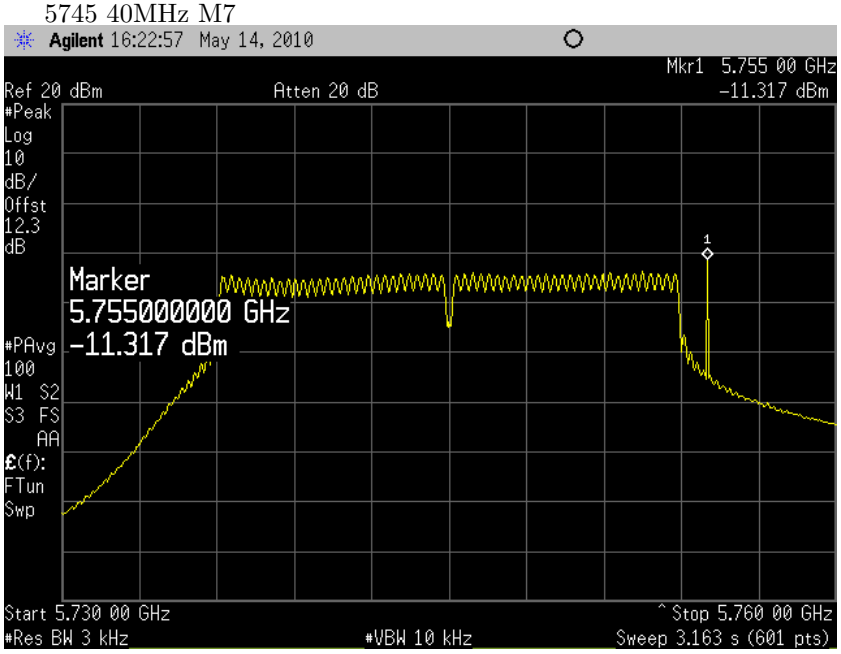
5785 20MHz OFDM



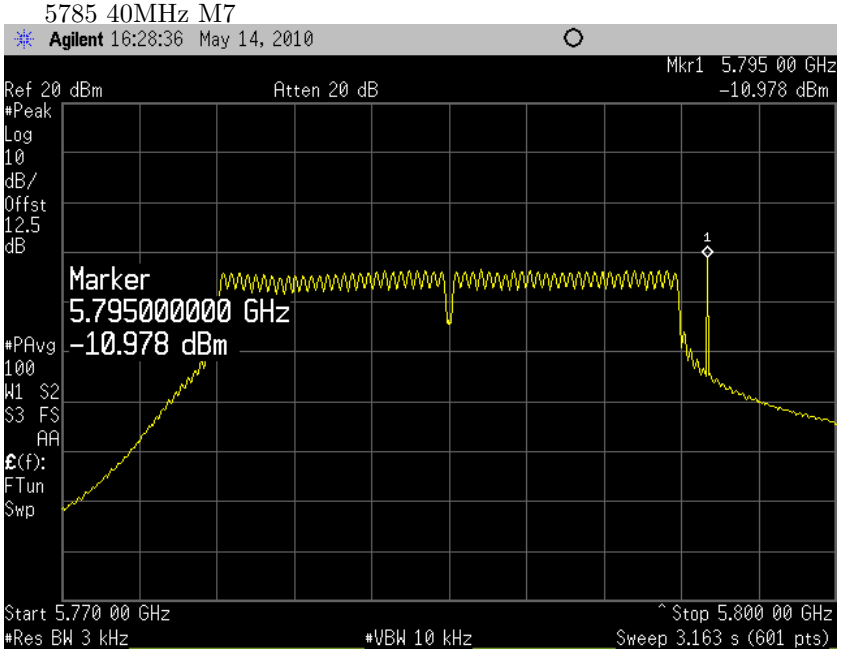
5825 20MHz OFDM



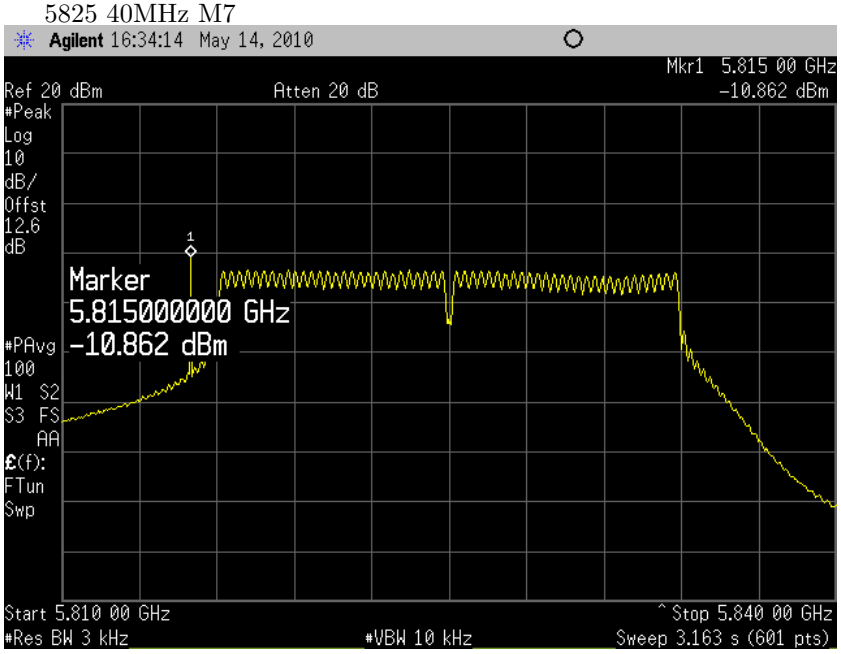
5745 40MHz M7



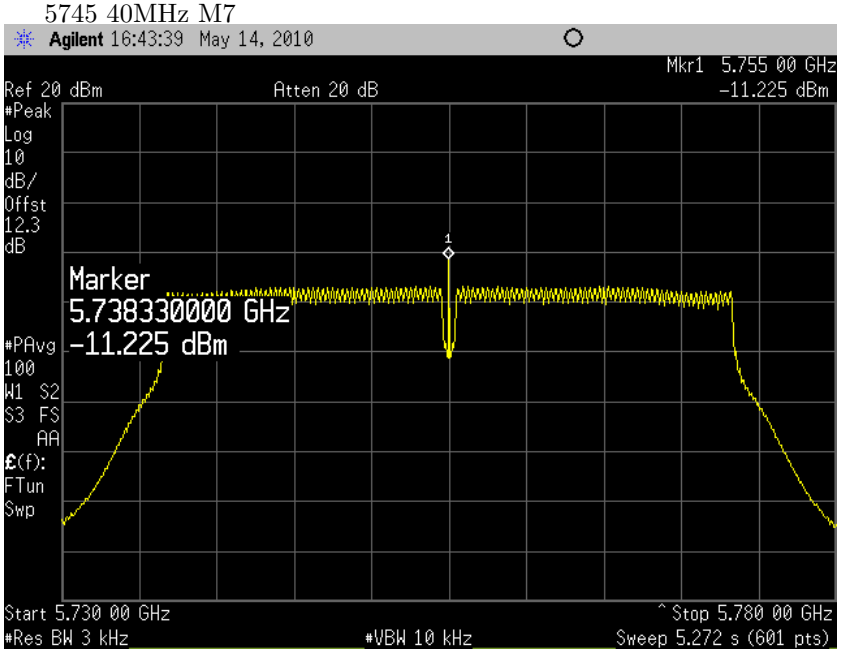
5785 40MHz M7



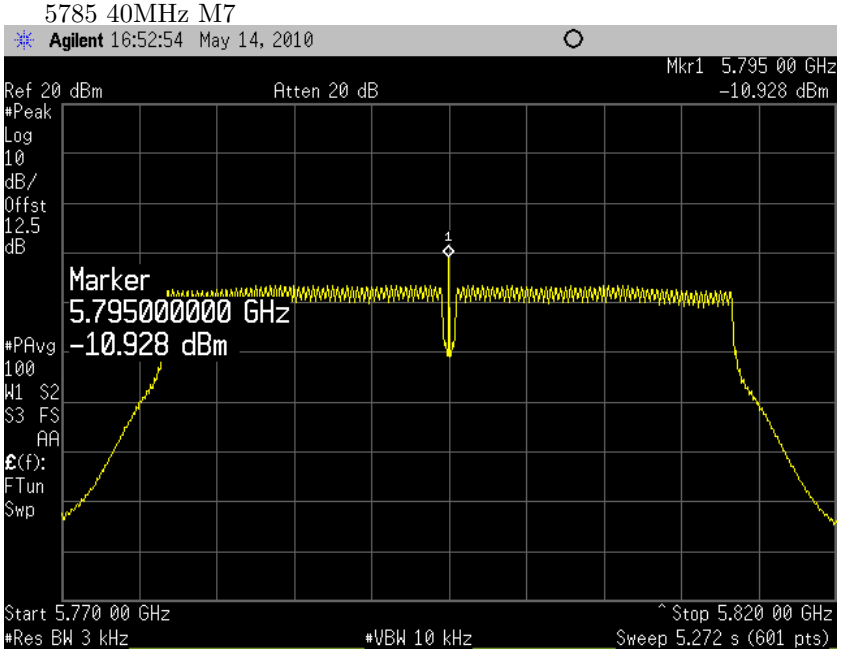
5825 40MHz M7



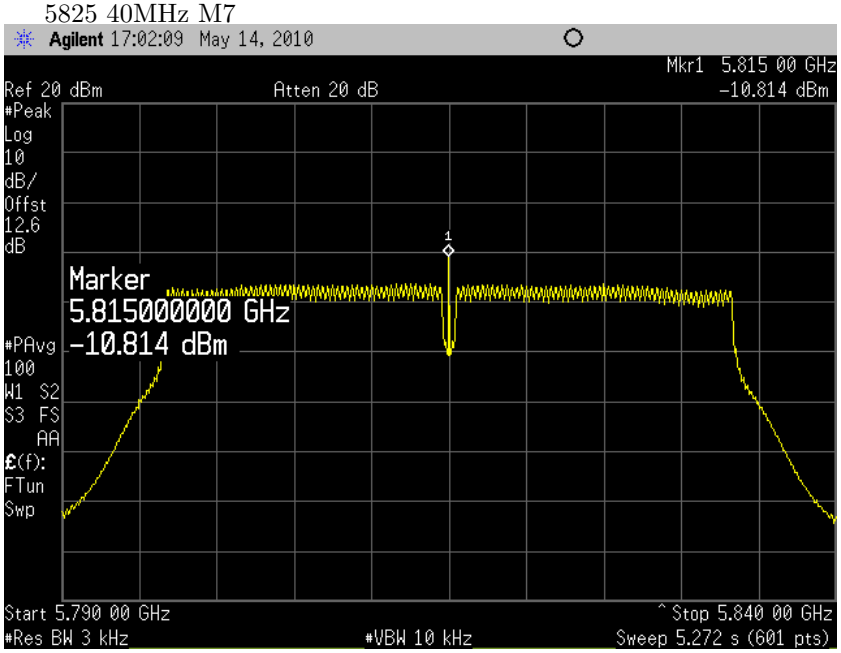
5745 40MHz M7



5785 40MHz M7



5825 40MHz M7



0.7 Conducted Spurious Emissions

0.7.1 Specification

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

0.7.2 Band Edge

Measurement Procedure

Reference ANSI C63.10-2009 6.9

Measurements performed May 17 2010.

The start/stop frequency for each measurement is set to allow measurement of the signal and band edge of interest.

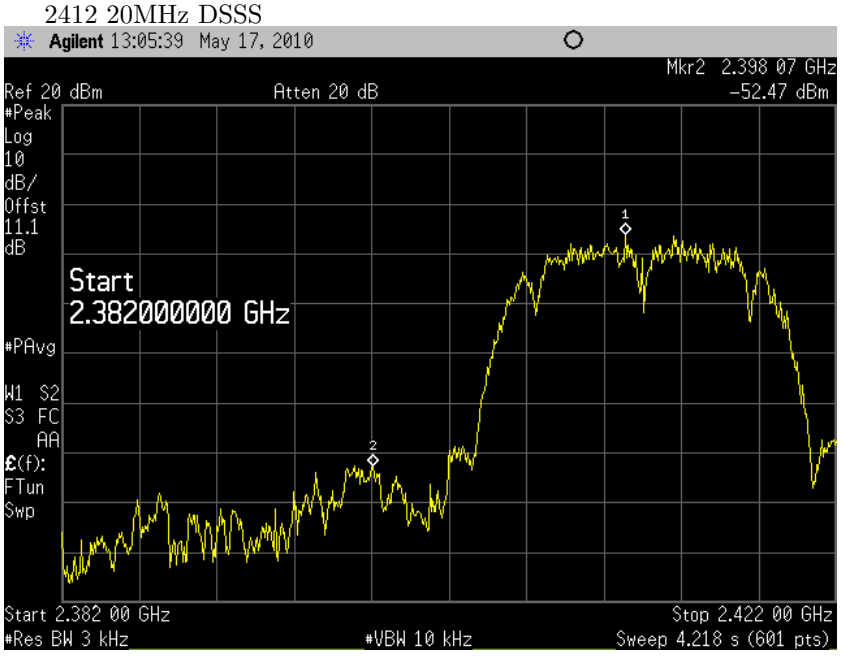
1. detector ← PEAK
2. RBW ← 3kHz
3. VBW ← 10kHz
4. SWEEP TIME ← AUTO
5. REF LEVEL ← 20.0
6. MARKER 1 ← PEAK LEVEL
7. READ TRACE DATA AND DETERMINE PEAK OUT-OF-BAND LEVEL
8. MARKER 2 ← PEAK OUT-OF-BAND LEVEL

For each measurement the trace is examined for the peak power value. The peak *out of band* value is then found. The difference between the two is the measurement of interest.

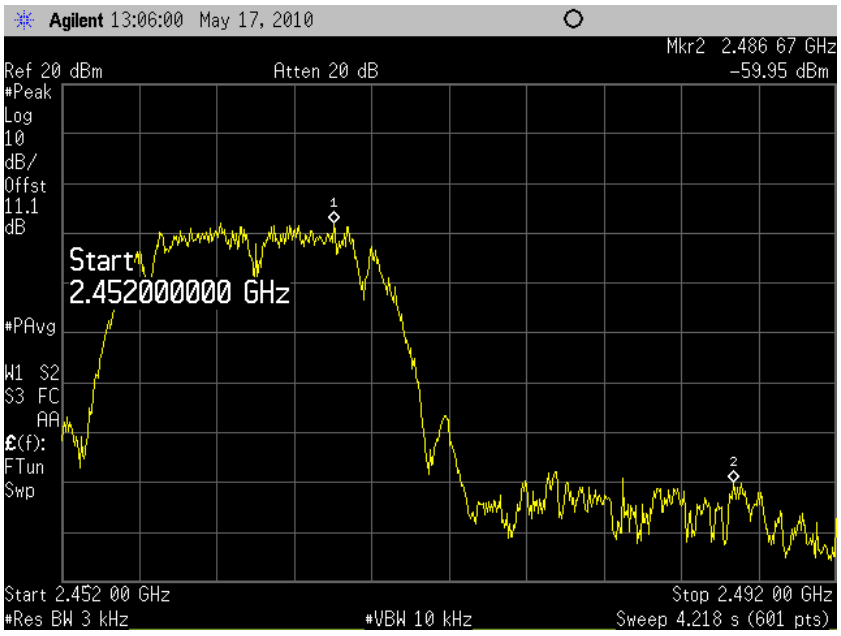
Freq (MHz)	Operating Mode	Data Rate	Spurious - Bandedge (dB)	Limit	Margin
2412.0	20MHz DSSS	1	-46.3	-20.0	26.3
2462.0	20MHz DSSS	1	-52.0	-20.0	32.0
2412.0	20MHz CCK	11	-47.2	-20.0	27.2
2462.0	20MHz CCK	11	-54.9	-20.0	34.9
2412.0	20MHz OFDM	54	-34.7	-20.0	14.7
2462.0	20MHz OFDM	54	-50.1	-20.0	30.1
2412.0	40MHz M7	M7	-36.6	-20.0	16.6
2462.0	40MHz M7	M7	-49.8	-20.0	29.8
2412.0	40MHz M7	M7	-36.8	-20.0	16.8
2462.0	40MHz M7	M7	-42.3	-20.0	22.3
5745.0	20MHz OFDM	54	-56.0	-20.0	36.0
5825.0	20MHz OFDM	54	-55.4	-20.0	35.4
5745.0	40MHz M7	M7	-56.5	-20.0	36.5
5825.0	40MHz M7	M7	-55.6	-20.0	35.6
5745.0	40MHz M7	M7	-52.5	-20.0	32.5
5825.0	40MHz M7	M7	-52.6	-20.0	32.6

Table 6: Spurious Bandedge

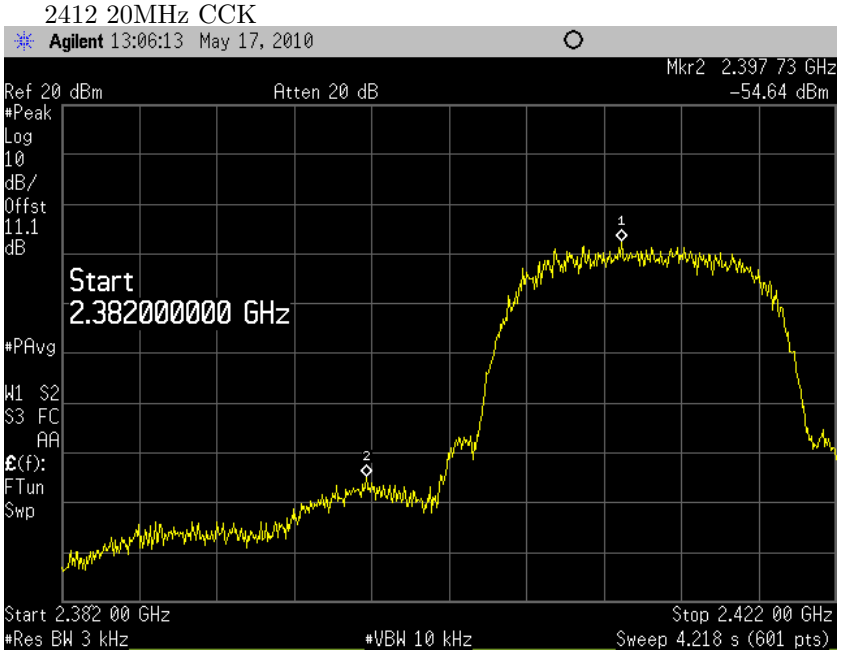
2412 20MHz DSSS



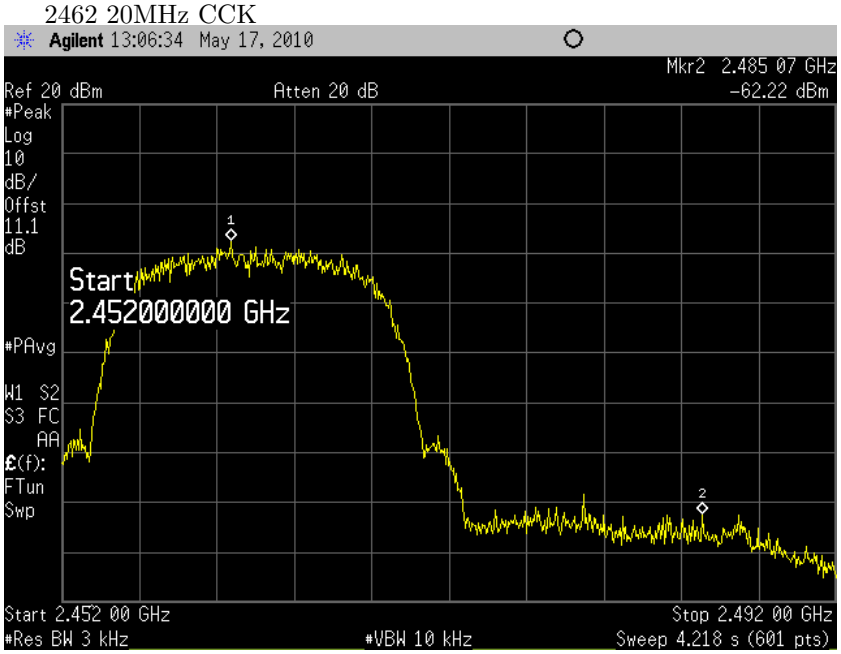
2462 20MHz DSSS


Agilent 13:06:00 May 17, 2010
Mkr2 2.486 67 GHz
Ref 20 dBm
Atten 20 dB
-59.95 dBm
#Peak
Log
10
dB/
Offst
11.1
dB
Start
2.452000000 GHz
#PAvg
W1 S2
S3 FC
AA
£(f):
FTun
Swp
1
2
Start 2.452 00 GHz
Stop 2.492 00 GHz
#Res BW 3 kHz
#VBW 10 kHz
Sweep 4.218 s (601 pts)

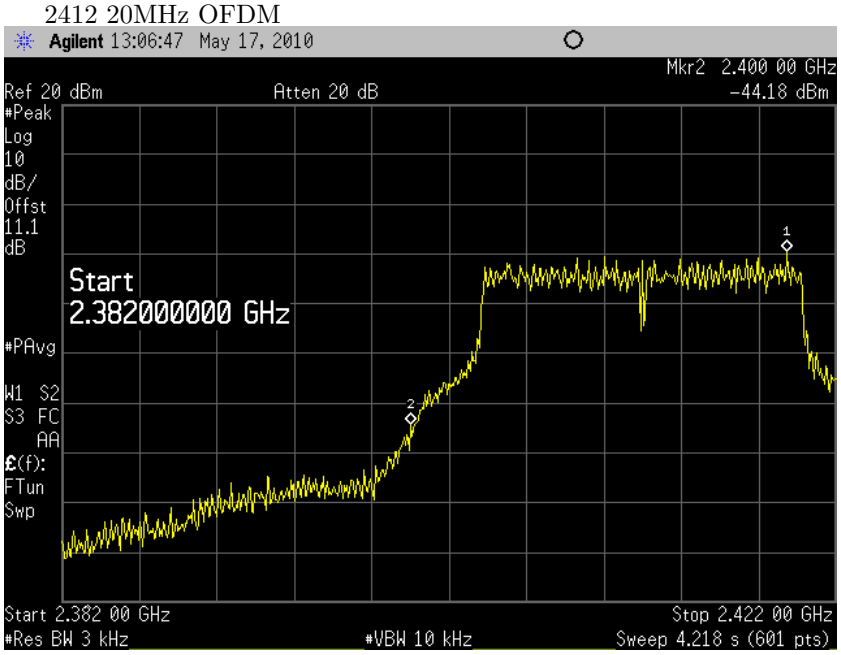
2412 20MHz CCK



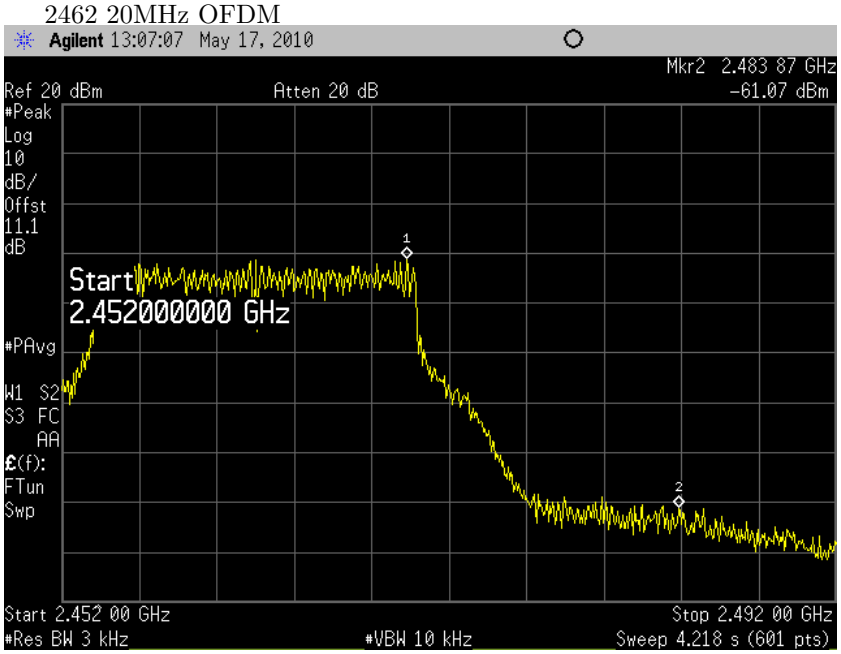
2462 20MHz CCK



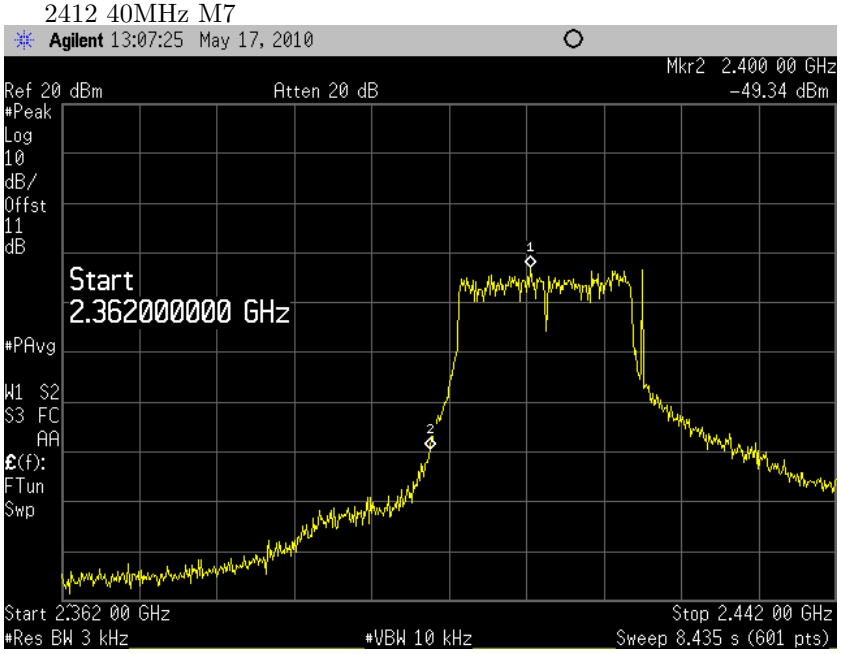
2412 20MHz OFDM



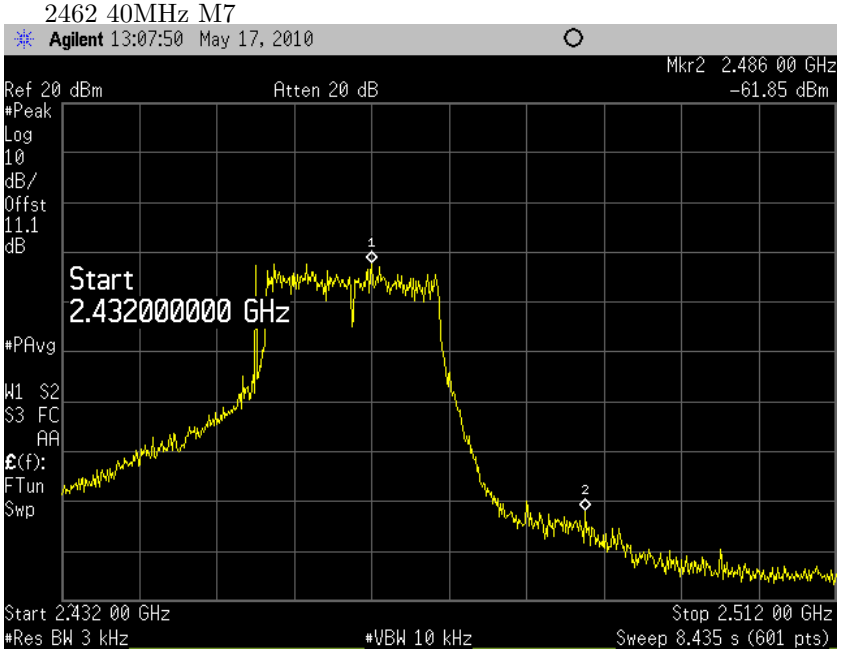
2462 20MHz OFDM



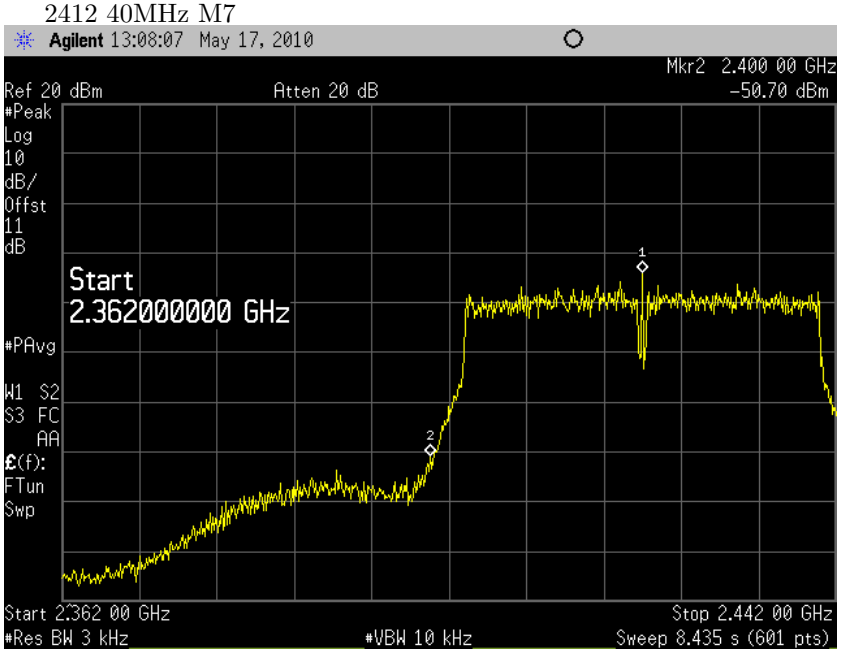
2412 40MHz M7



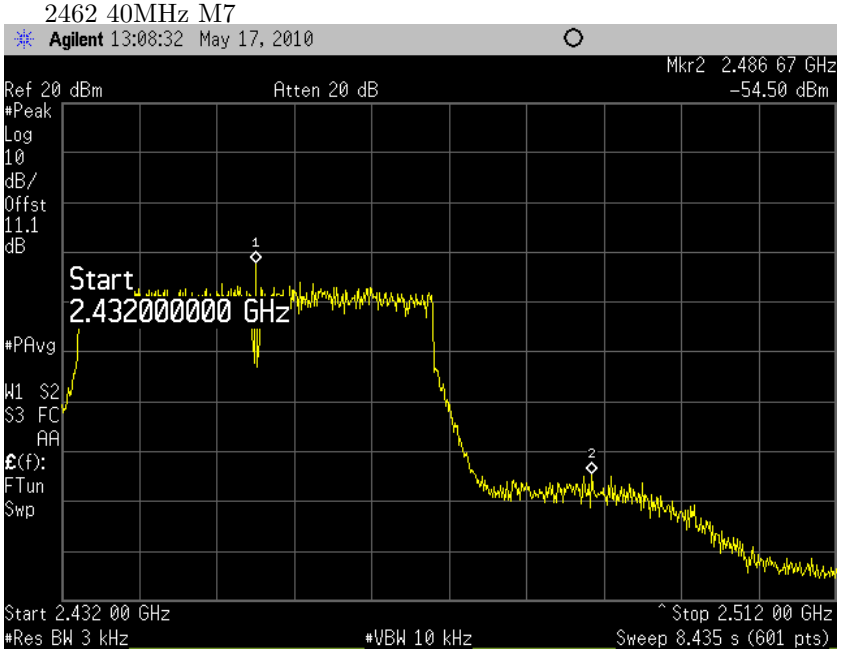
2462 40MHz M7



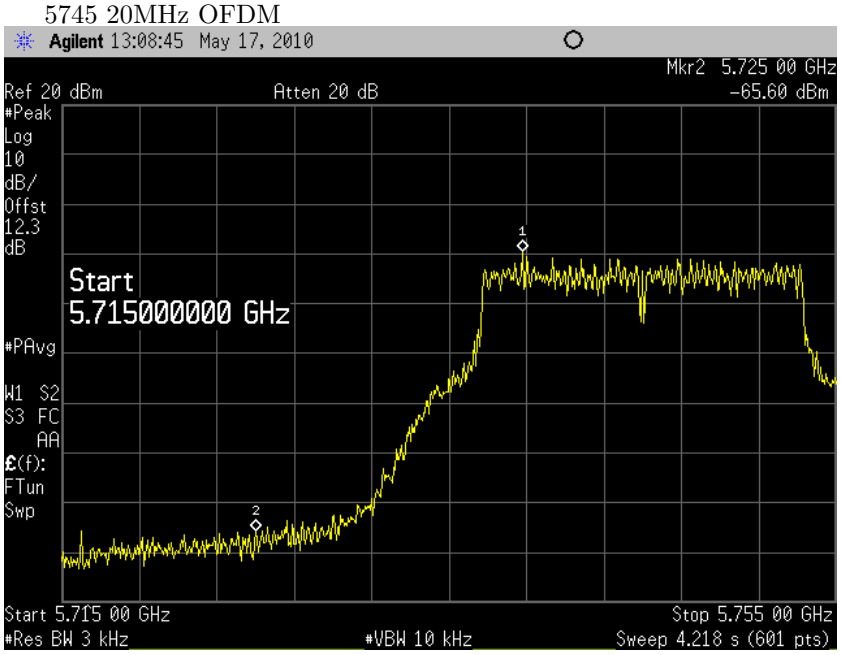
2412 40MHz M7



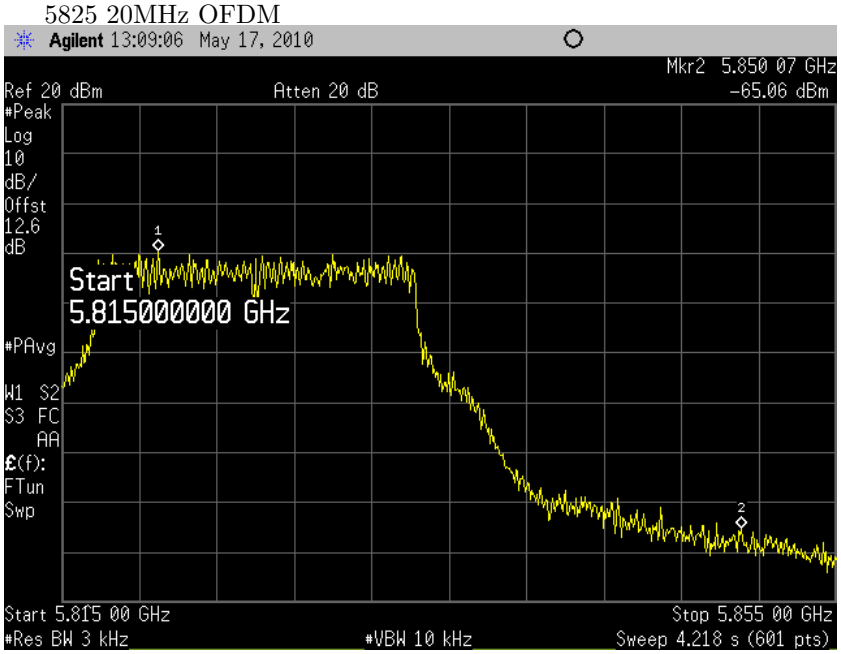
2462 40MHz M7



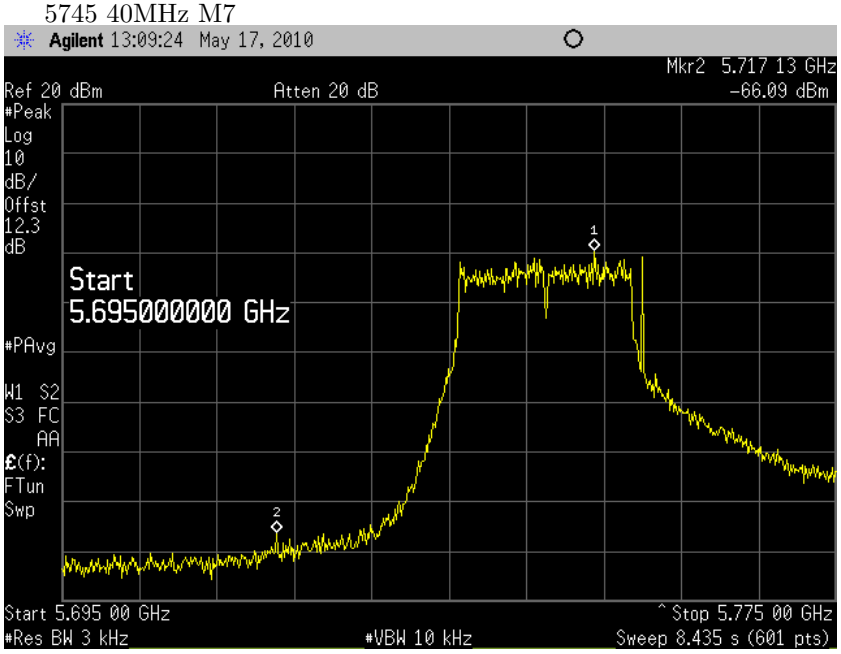
5745 20MHz OFDM



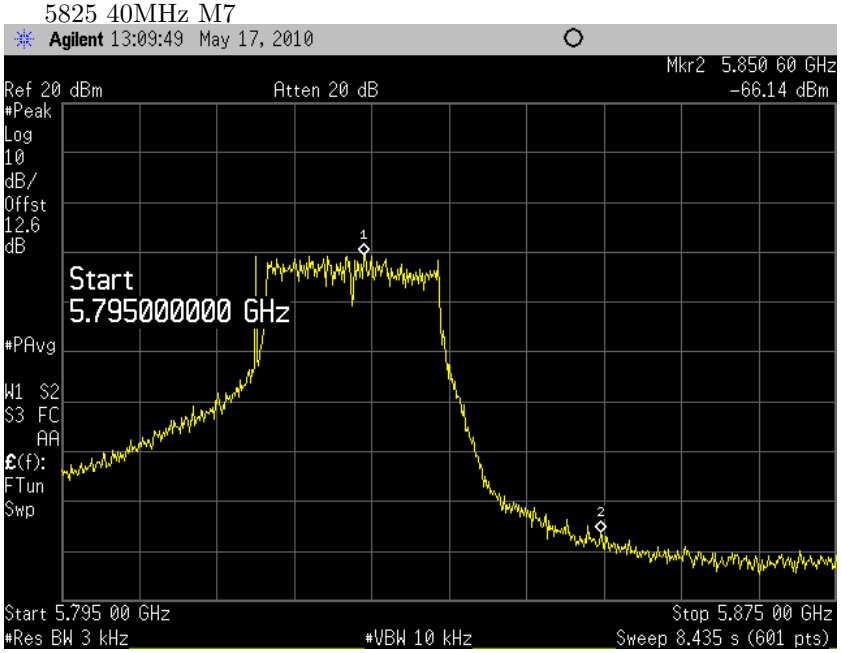
5825 20MHz OFDM



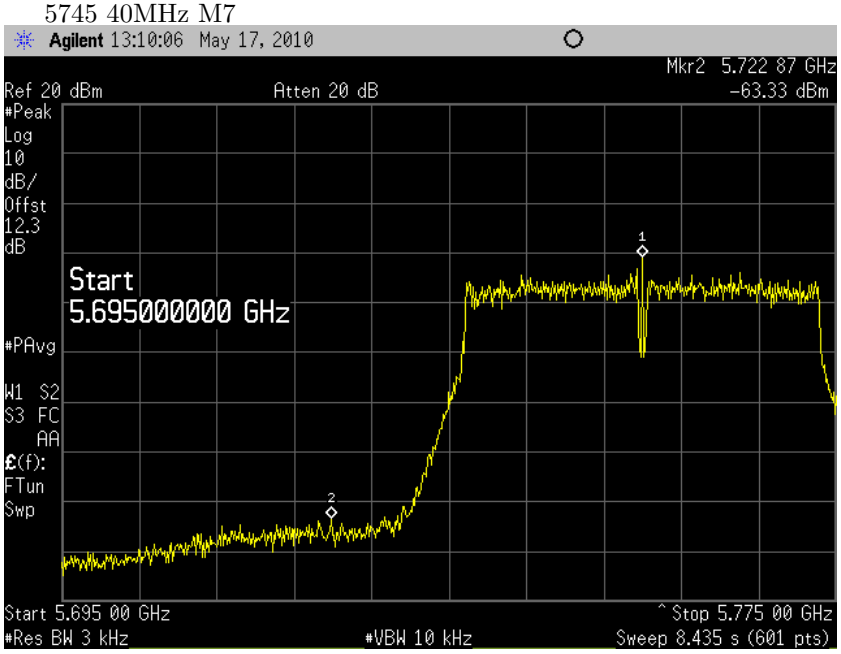
5745 40MHz M7



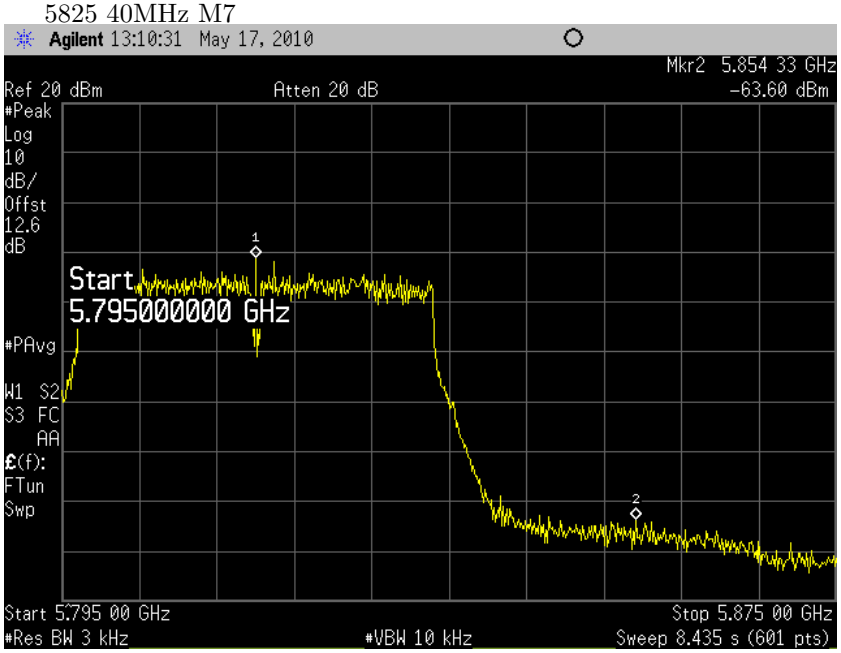
5825 40MHz M7



5745 40MHz M7



5825 40MHz M7

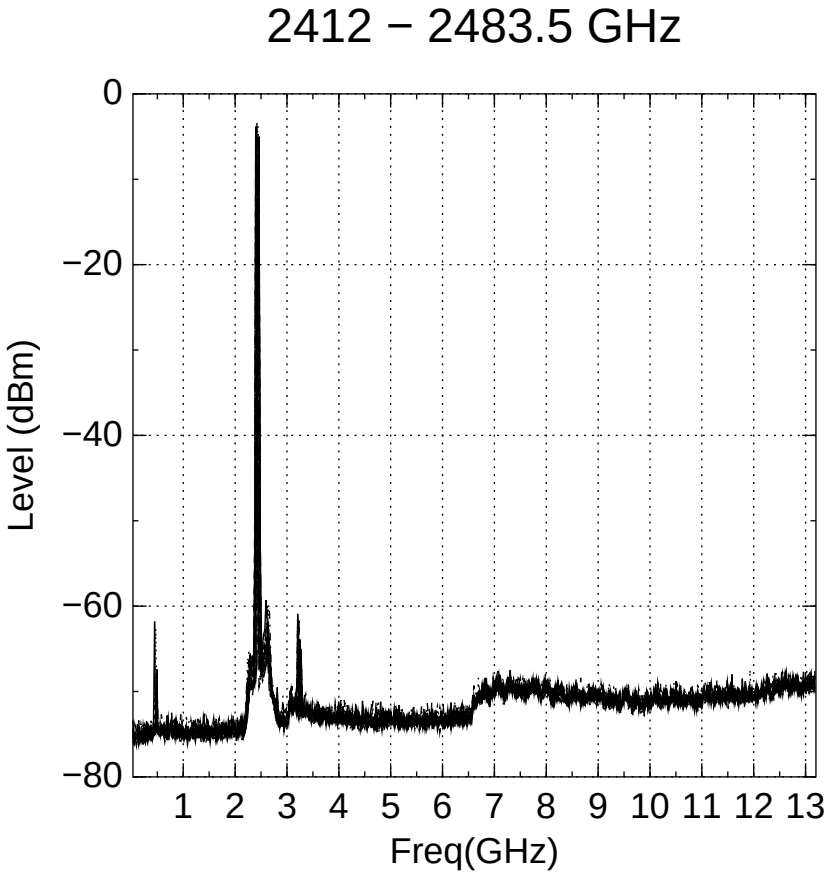


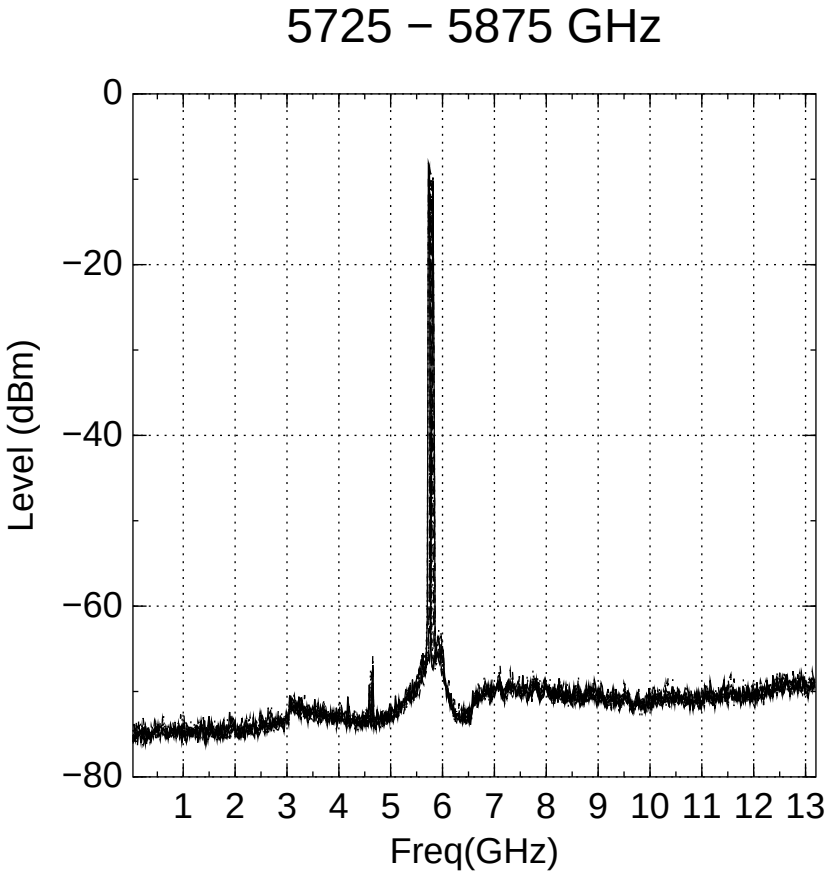
0.7.3 Wideband

Measurement Procedure

Measurements performed Apr 16 2010.

1. Ref Level Offset = DUT/Spectrum Analyzer path loss
2. detector ← PEAK
3. RBW ← 100kHz
4. VBW ← 300kHz
5. Frequency Start/Stop 30 MHz - 13.2 GHz
6. SWEEP TIME ← 10.0s
7. REF LEVEL ← 10.0


2412 − 2483.5 GHz
0
−20
−40
−60
−80
Level (dBm)
1 2 3 4 5 6 7 8 9 10 11 12 13
Freq(GHz)


5725 − 5875 GHz
0
−20
−40
−60
−80
Level (dBm)
1 2 3 4 5 6 7 8 9 10 11 12 13
Freq(GHz)

0.8 Frequency Accuracy

0.8.1 Introduction

2.1055 Measurements required: Frequency stability.

(a) The frequency stability shall be measured with variation of ambient temperature as follows:

(1) From –30 to +50 centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.

All testing in this document was performed May 18, 2010 at CascadeTek for unit with controller serial number 00-13-E9-1D-00-E3 and radio serial number M33142-001-0007 .

The nominal supply voltage to the unit is 120V.

0.8.2 Measurement Procedure - Temperature

The carrier can be observed during OFDM transmit operation if the span is narrow enough. The marker count function can is then used to measure the accuracy of the carrier, which represents the frequency accuracy over all modes of operation.

Dwell time per temperature setting is at least 25 minutes.

1. Detector ← Normal
2. Ref Level ← +20dBm
3. Span ← 50kHz
4. RBW ← AUTO
5. VBW ← AUTO
6. Sweep Time ← AUTO
7. Marker Function ← COUNT

   The marker peak function is used to find the frequency of the carrier.

Freq MHz	Measured Hz	Freq Error Hz	Freq Error ppm
Temp = -30.0 C			
2412	2412001584	1584	0.66
2462	2462001535	1535	0.62
5180	5180003211	3211	0.62
5700	5700003601	3601	0.63
5825	5825003675	3675	0.63
Temp = -20.0 C			
2412	2412001525	1525	0.63
2462	2462001482	1482	0.6
5180	5180003112	3112	0.6
5700	5700003415	3415	0.6
5825	5825003491	3491	0.6
Temp = -10.0 C			
2412	2412000908	908	0.38
2462	2462000880	880	0.36
5180	5180001935	1935	0.37
5700	5700002360	2360	0.41
5825	5825002519	2519	0.43
Temp = 0.0 C			
2412	2412000776	776	0.32
2462	2462000736	736	0.3
5180	5180001596	1596	0.31
5700	5700001867	1867	0.33
5825	5825002029	2029	0.35
Temp = 10.0 C			
2412	2412001037	1037	0.43
2462	2462001044	1044	0.42
5180	5180002338	2338	0.45
5700	5700002778	2778	0.49
5825	5825002961	2961	0.51

Freq MHz	Measured Hz	Freq Error Hz	Freq Error ppm
Temp = Room Temp			
2412	2412000485	485	0.2
2462	2462000422	422	0.17
5180	5180000937	937	0.18
5700	5700000715	715	0.13
5825	5825001103	1103	0.19
Temp = 30 C			
2412	2412000509	509	0.21
2462	2462000247	247	0.1
5180	5180001111	1111	0.21
5700	5700001043	1043	0.18
5825	5825000679	679	0.12
Temp = 40 C			
2412	2411999611	-389	-0.16
2462	2461999513	-487	-0.2
5180	5179998974	-1026	-0.2
5700	5699998928	-1072	-0.19
5825	5824998899	-1101	-0.19
Temp = 50 C			
2412	2411999030	-970	-0.4
2462	2461998937	-1063	-0.43
5180	5179997773	-2227	-0.43
5700	5699997601	-2399	-0.42
5825	5824997527	-2473	-0.42

0.8.3 Measurement Procedure - Supply Variation

2.1055

(d) The frequency stability shall be measured with variation of primary supply voltage as follows:

(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

Using a variac to vary the supply voltage, set the voltage to -15% and +15% of nominal (120V). The actual supply voltage is verified with a multimeter.

The frequency measurement is then made in the same manner as for temperature testing.

Freq MHz	Measured Hz	Freq Error Hz	Freq Error ppm
Supply = Nominal+15% (102V)			
2412	2412001084	1084	0.45
2462	2462000835	835	0.34
5180	5180001920	1920	0.37
5700	5700001808	1808	0.32
5825	5825002162	2162	0.37
Supply = Nominal-15% (138V)			
2412	2412000860	860	0.36
2462	2462000992	992	0.4
5180	5180001751	1751	0.34
5700	5700002141	2141	0.38
5825	5825002274	2274	0.39

0.9 Radiated Measurements

The following measurements were completed at the facilities of NWEMC.

SPURIOUS CONDUCTED EMISSIONS

TEST EQUIPMENT					
Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	1/6/2010	13
Attenuator	Weinschel Corp.	54A-20	RBL	10/9/2009	13
40GHz DC Block	Miteq	DCB4000	AMD	8/19/2009	13
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

NORTHWEST

EMC

SPURIOUS CONDUCTED EMISSIONS

XMit 2010.01.14

EUT:	WF1101			**Work Order:**	VERW0038
Serial Number:				**Date:**	04/01/10
Customer:	Veriwave, Inc.			**Temperature:**	22°C
Attendees:	none			**Humidity:**	38%
Project:	None			**Barometric Pres.:**	30.05
Tested by:	Rod Peloquin	**Power:**	120VAC/60Hz	**Job Site:**	EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

COMMENTS

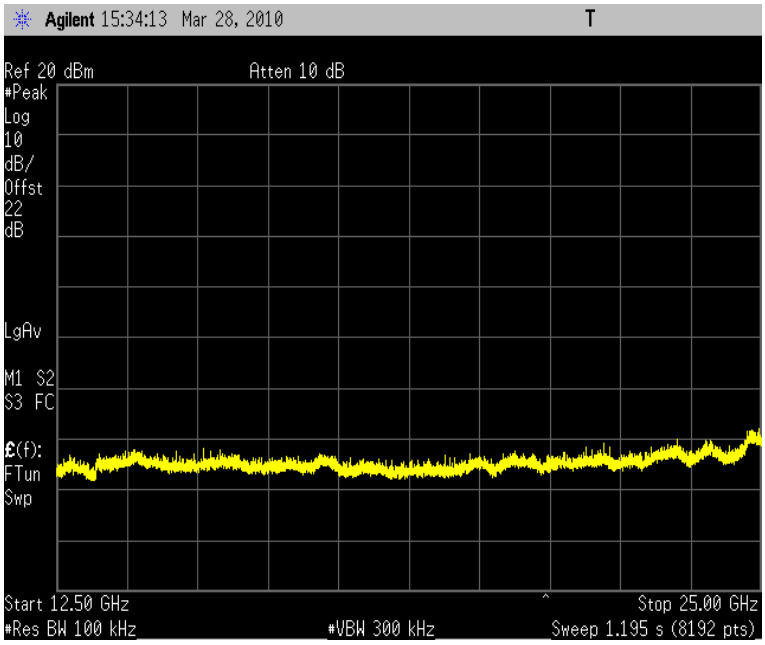
802.11n mode testing done at MCS0

DEVIATIONS FROM TEST STANDARD

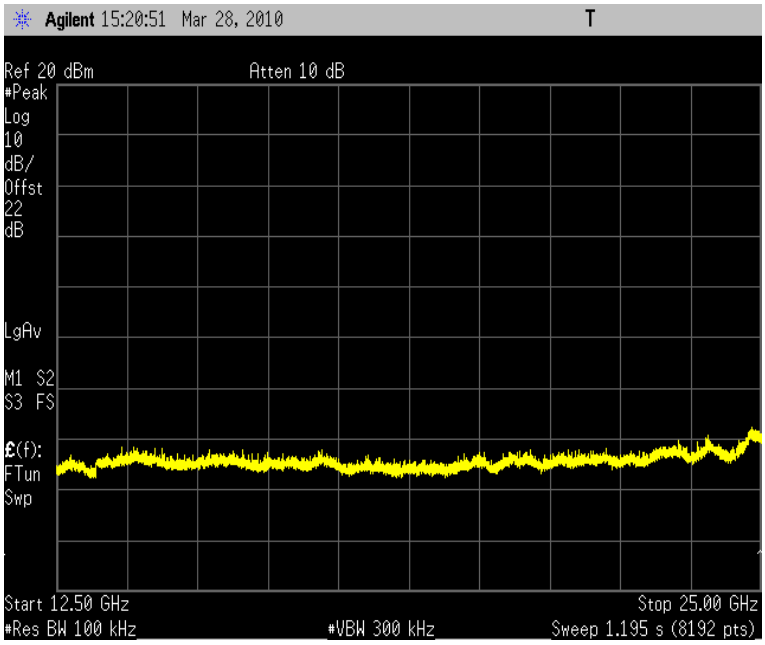
Configuration #	2	Signature

		Value	Limit	Results
802.11(b) 1 Mbps				
	Low Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
	Mid Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
	High Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
802.11(b) 11 Mbps				
	Low Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
	Mid Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
	High Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
802.11(g) 6 Mbps				
	Low Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
	Mid Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
	High Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
802.11(g) 36 Mbps				
	Low Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
	Mid Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
	High Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
802.11(g) 54 Mbps				
	Low Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
	Mid Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
	High Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
802.11(n), 2.4 20MHz, 15 dBm				
	Low Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
	Mid Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
	High Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
802.11(n), 2.4 40MHz, 13 dBm				
	Mid Channel			
	12.5 GHz - 25 GHz	< -40 dBc	= -20 dBc	Pass
802.11(a) 6 Mbps				
	Low Channel			
	12.5 GHz - 26.5 GHz	< -40 dBc	= -20 dBc	Pass
	26.5 GHz - 31 GHz	< -40 dBc	= -20 dBc	Pass
	31 GHz - 40 GHz	< -30 dBc	= -20 dBc	Pass
	Mid Channel			
	12.5 GHz - 26.5 GHz	< -40 dBc	= -20 dBc	Pass
	26.5 GHz - 31 GHz	< -40 dBc	= -20 dBc	Pass
	31 GHz - 40 GHz	< -30 dBc	= -20 dBc	Pass
	High Channel			
	12.5 GHz - 26.5 GHz	< -40 dBc	= -20 dBc	Pass
	26.5 GHz - 31 GHz	< -40 dBc	= -20 dBc	Pass
	31 GHz - 40 GHz	< -30 dBc	= -20 dBc	Pass
802.11(a) 36 Mbps				
	Low Channel			
	12.5 GHz - 26.5 GHz	< -40 dBc	= -20 dBc	Pass
	26.5 GHz - 31 GHz	< -40 dBc	= -20 dBc	Pass
	31 GHz - 40 GHz	< -30 dBc	= -20 dBc	Pass
	Mid Channel			
	12.5 GHz - 26.5 GHz	< -40 dBc	= -20 dBc	Pass
	26.5 GHz - 31 GHz	< -40 dBc	= -20 dBc	Pass
	31 GHz - 40 GHz	< -30 dBc	= -20 dBc	Pass
	High Channel			
	12.5 GHz - 26.5 GHz	< -40 dBc	= -20 dBc	Pass
	26.5 GHz - 31 GHz	< -40 dBc	= -20 dBc	Pass
	31 GHz - 40 GHz	< -30 dBc	= -20 dBc	Pass
802.11(a) 54 Mbps				
	Low Channel			
	12.5 GHz - 26.5 GHz	< -40 dBc	= -20 dBc	Pass
	26.5 GHz - 31 GHz	< -40 dBc	= -20 dBc	Pass
	31 GHz - 40 GHz	< -30 dBc	= -20 dBc	Pass
	Mid Channel			
	12.5 GHz - 26.5 GHz	< -40 dBc	= -20 dBc	Pass
	26.5 GHz - 31 GHz	< -40 dBc	= -20 dBc	Pass
	31 GHz - 40 GHz	< -30 dBc	= -20 dBc	Pass
	High Channel			
	12.5 GHz - 26.5 GHz	< -40 dBc	= -20 dBc	Pass
	26.5 GHz - 31 GHz	< -40 dBc	= -20 dBc	Pass
	31 GHz - 40 GHz	< -30 dBc	= -20 dBc	Pass
802.11(n), 5GHz 20MHz				
	Low Channel			
	12.5 GHz - 26.5 GHz	< -40 dBc	= -20 dBc	Pass
	26.5 GHz - 31 GHz	< -40 dBc	= -20 dBc	Pass
	31 GHz - 40 GHz	< -30 dBc	= -20 dBc	Pass
	Mid Channel			
	12.5 GHz - 26.5 GHz	< -40 dBc	= -20 dBc	Pass
	26.5 GHz - 31 GHz	< -40 dBc	= -20 dBc	Pass
	31 GHz - 40 GHz	< -30 dBc	= -20 dBc	Pass
	High Channel			
	12.5 GHz - 26.5 GHz	< -40 dBc	= -20 dBc	Pass
	26.5 GHz - 31 GHz	< -40 dBc	= -20 dBc	Pass
	31 GHz - 40 GHz	< -30 dBc	= -20 dBc	Pass
802.11(n), 5GHz 40MHz				
	Low Channel			
	12.5 GHz - 26.5 GHz	< -40 dBc	= -20 dBc	Pass
	26.5 GHz - 31 GHz	< -40 dBc	= -20 dBc	Pass
	31 GHz - 40 GHz	< -30 dBc	= -20 dBc	Pass
	Mid Channel			
	12.5 GHz - 26.5 GHz	< -40 dBc	= -20 dBc	Pass
	26.5 GHz - 31 GHz	< -40 dBc	= -20 dBc	Pass
	31 GHz - 40 GHz	< -30 dBc	= -20 dBc	Pass
	High Channel			
	12.5 GHz - 26.5 GHz	< -40 dBc	= -20 dBc	Pass
	26.5 GHz - 31 GHz	< -30 dBc	= -20 dBc	Pass
	31 GHz - 40 GHz	< -40 dBc	= -20 dBc	Pass

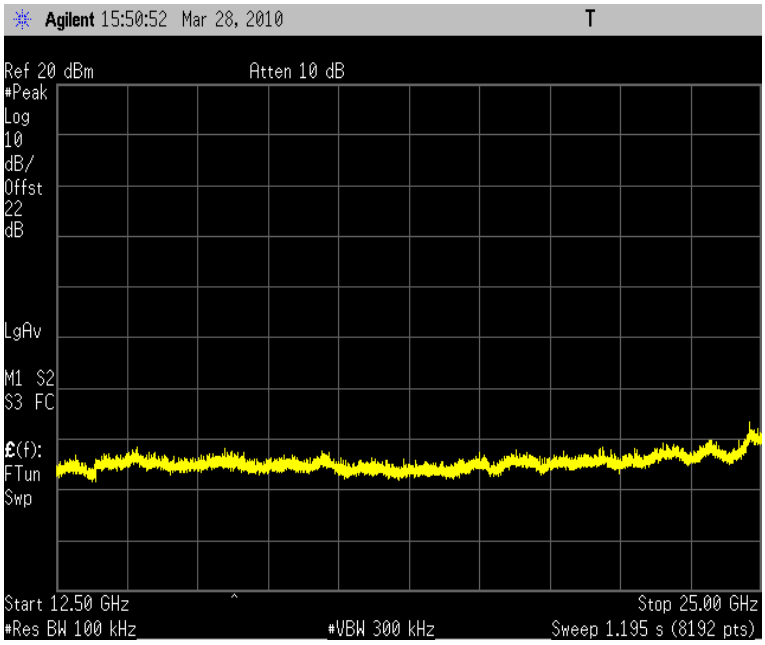
802.11(b) 1 Mbps, Low Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



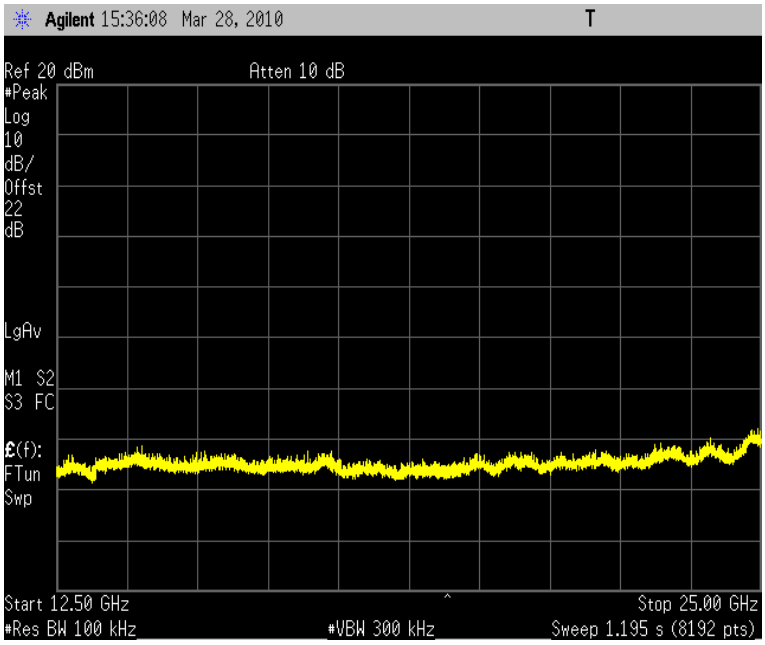
802.11(b) 1 Mbps, Mid Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



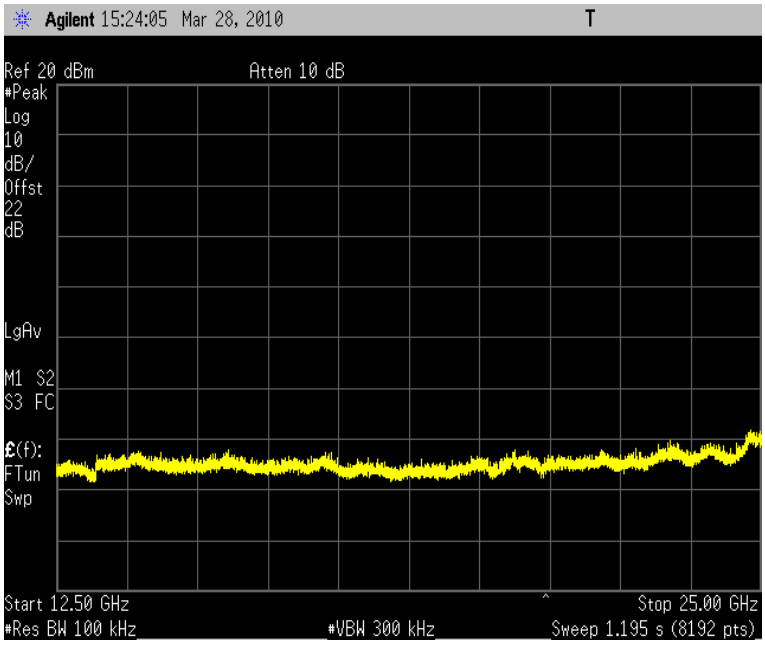
802.11(b) 1 Mbps, High Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



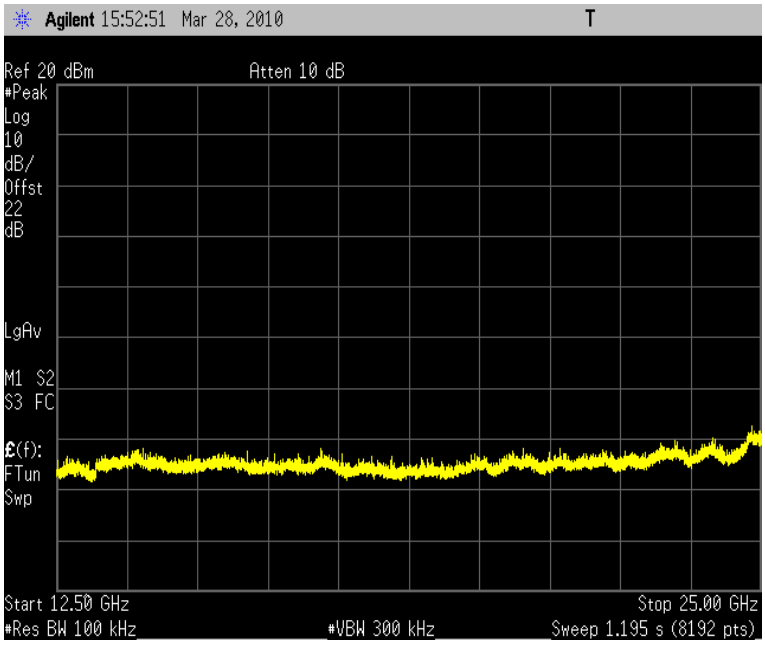
802.11(b) 11 Mbps, Low Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



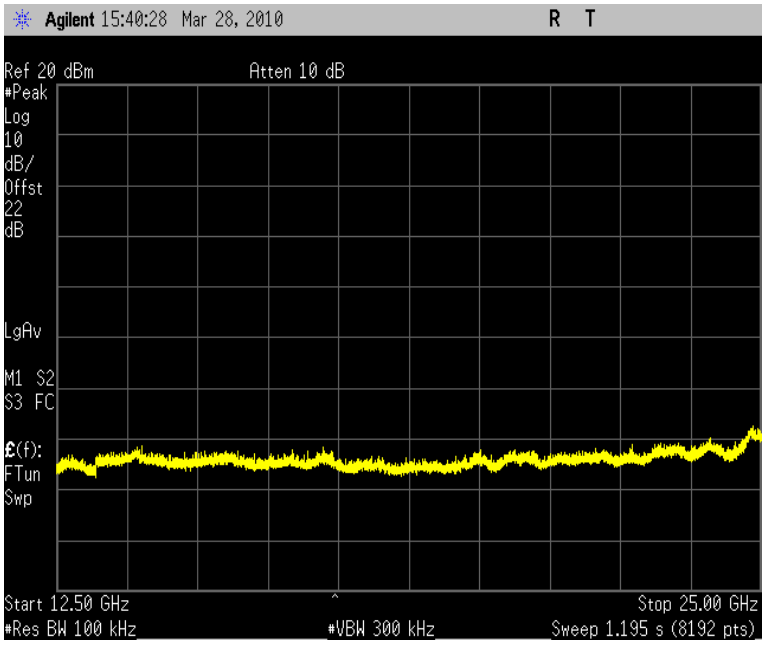
802.11(b) 11 Mbps, Mid Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



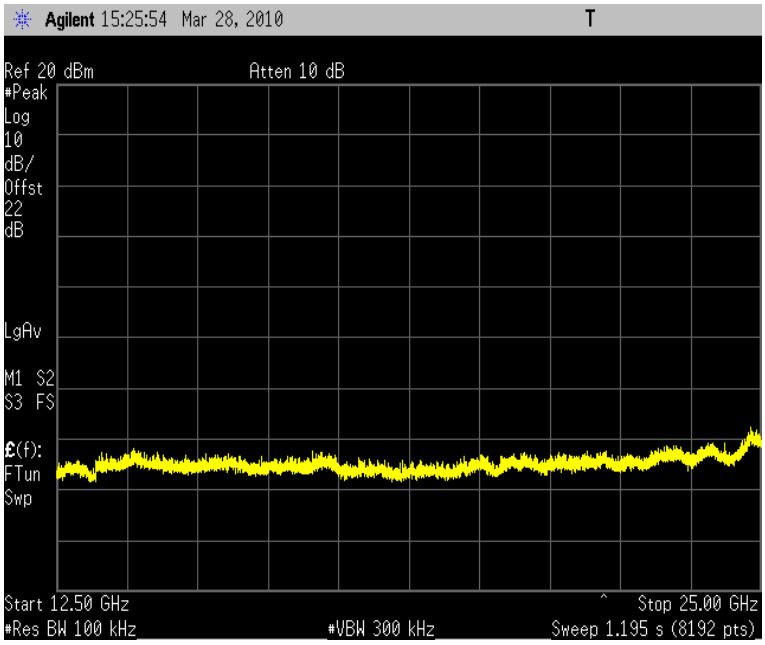
802.11(b) 11 Mbps, High Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



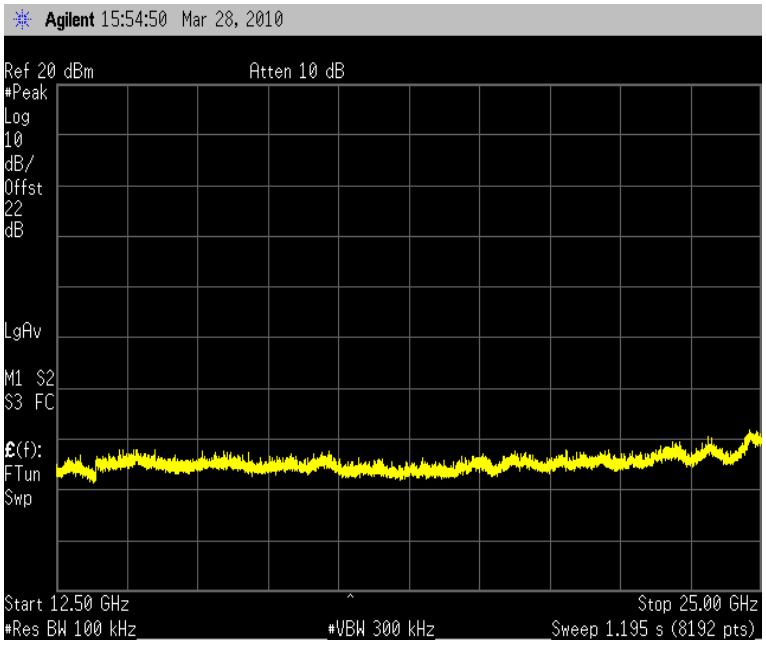
802.11(g) 6 Mbps, Low Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



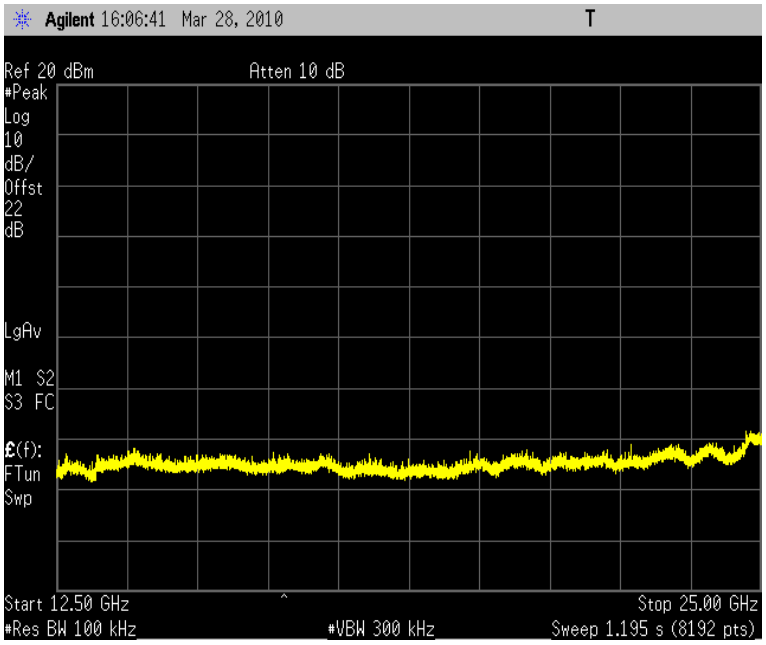
802.11(g) 6 Mbps, Mid Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



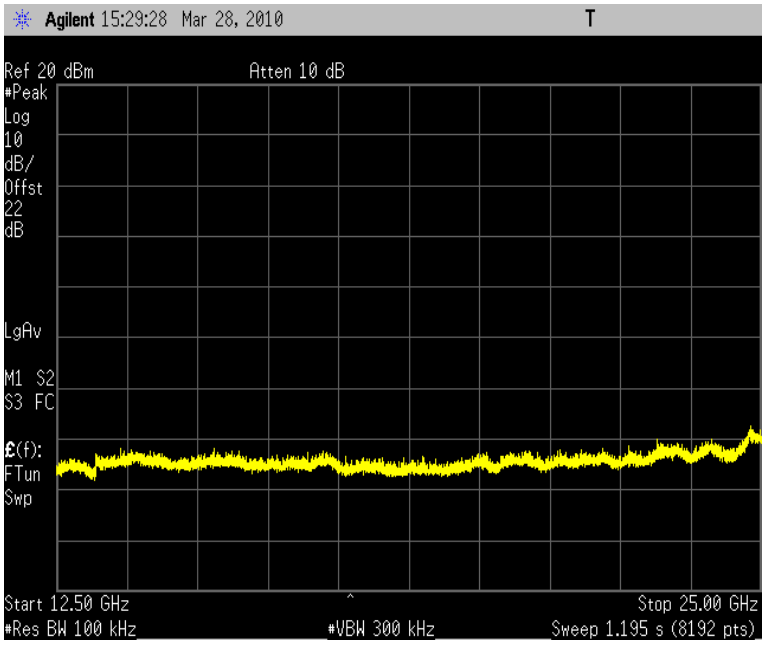
802.11(g) 6 Mbps, High Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



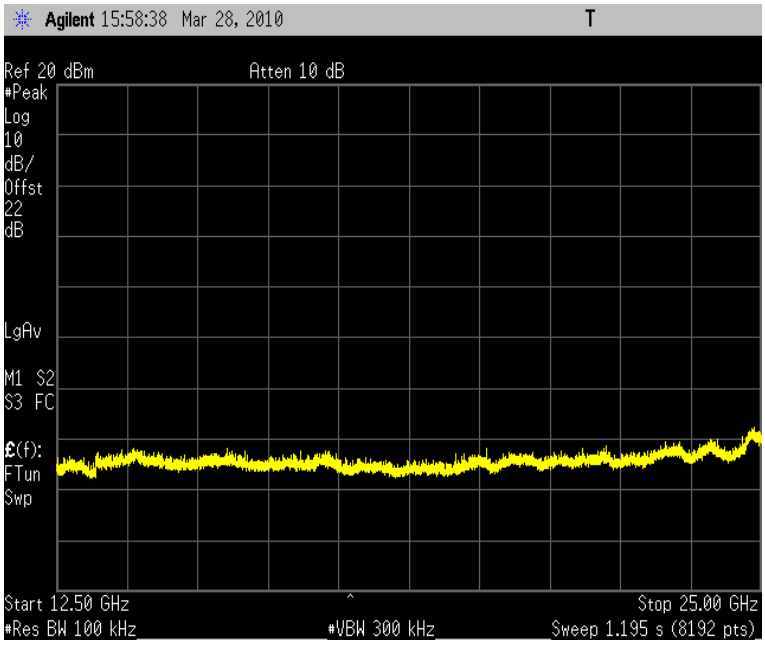
802.11(g) 36 Mbps, Low Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



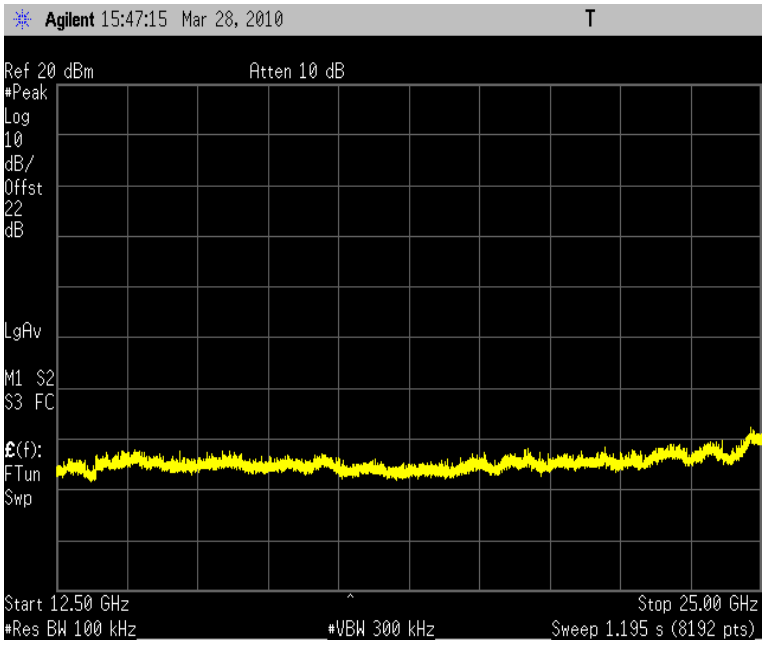
802.11(g) 36 Mbps, Mid Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



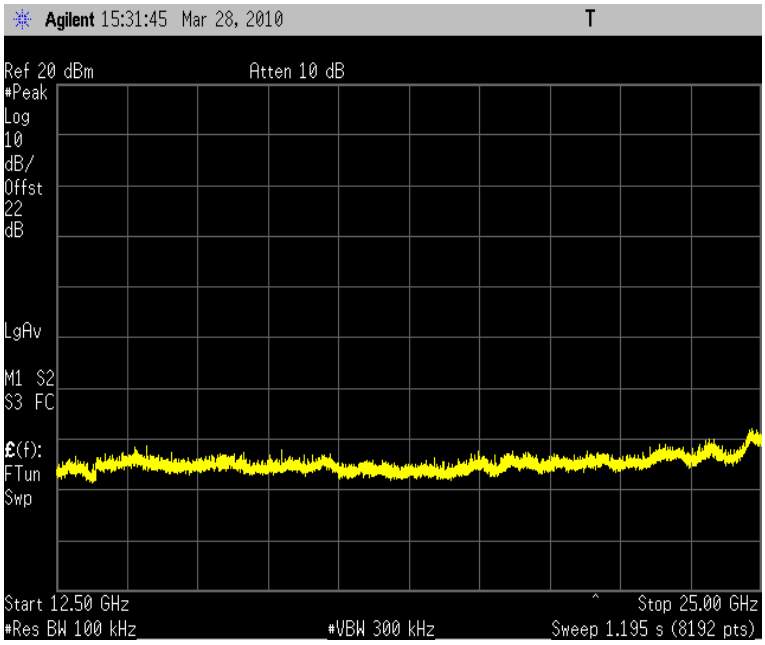
802.11(g) 36 Mbps, High Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



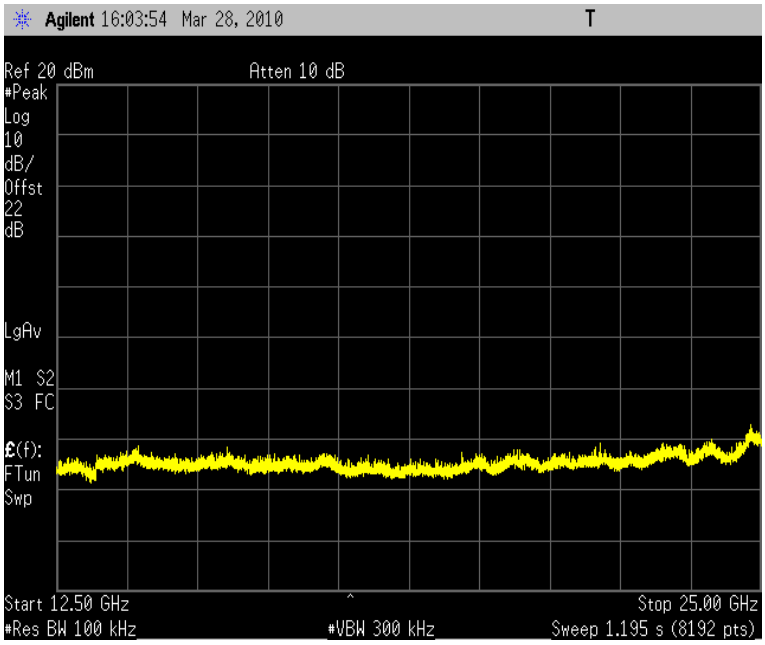
802.11(g) 54 Mbps, Low Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



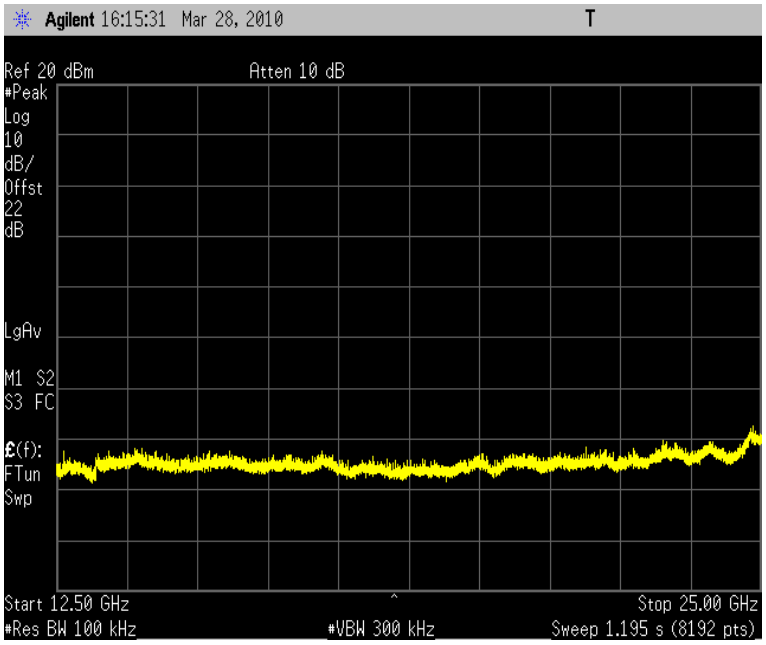
802.11(g) 54 Mbps, Mid Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



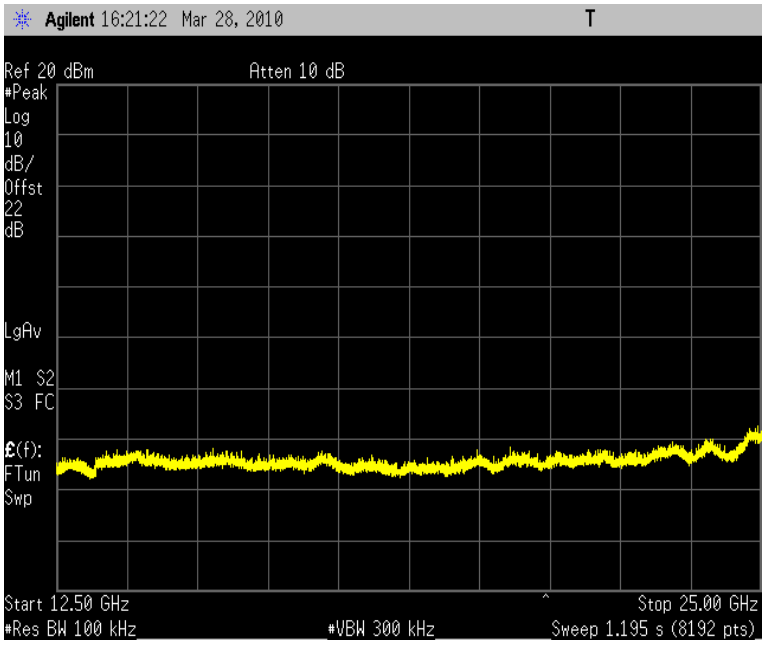
802.11(g) 54 Mbps, High Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



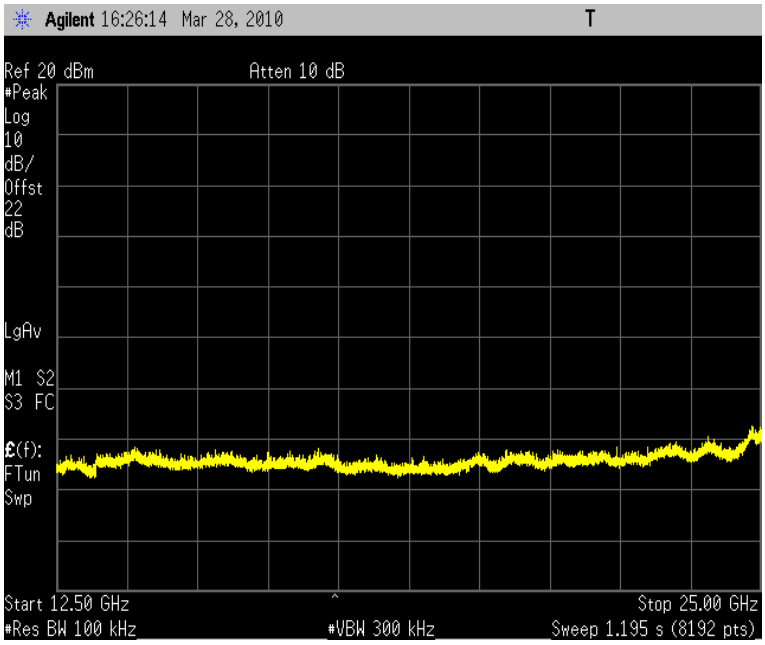
802.11(n), 2.4 20MHz, Low Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



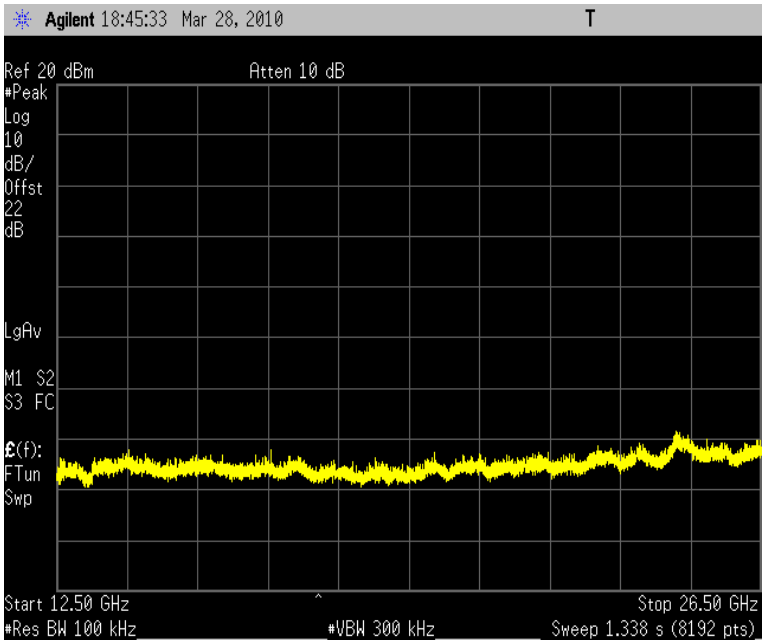
802.11(n), 2.4 20MHz, Mid Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



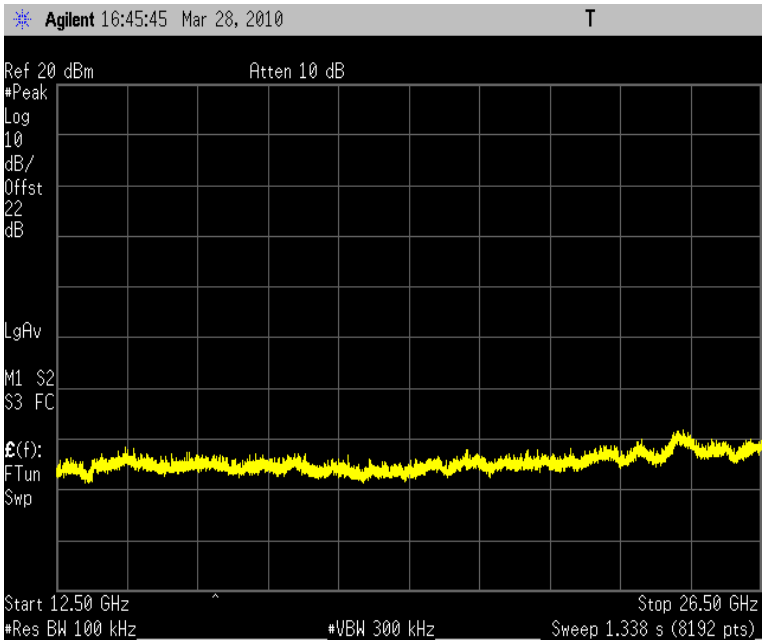
802.11(n), 2.4 20MHz, High Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



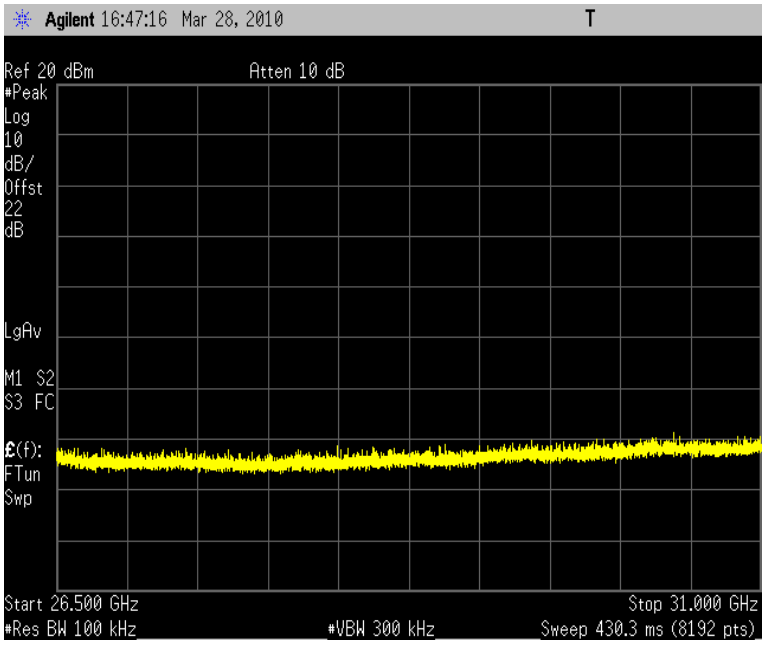
802.11(n), 2.4 40MHz, Mid Channel, 12.5 GHz - 25 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



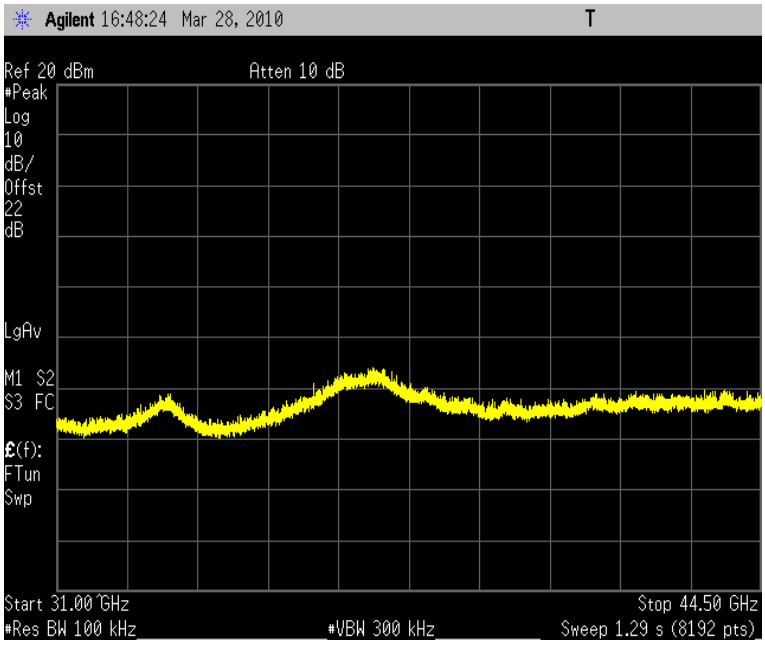
802.11(a) 6 Mbps, Low Channel, 12.5 GHz - 26.5 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



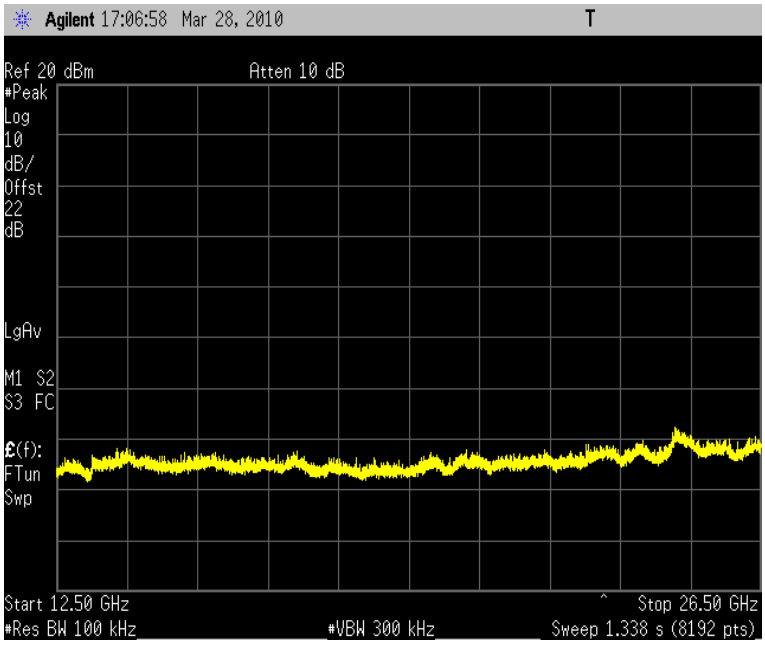
802.11(a) 6 Mbps, Low Channel, 26.5 GHz - 31 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



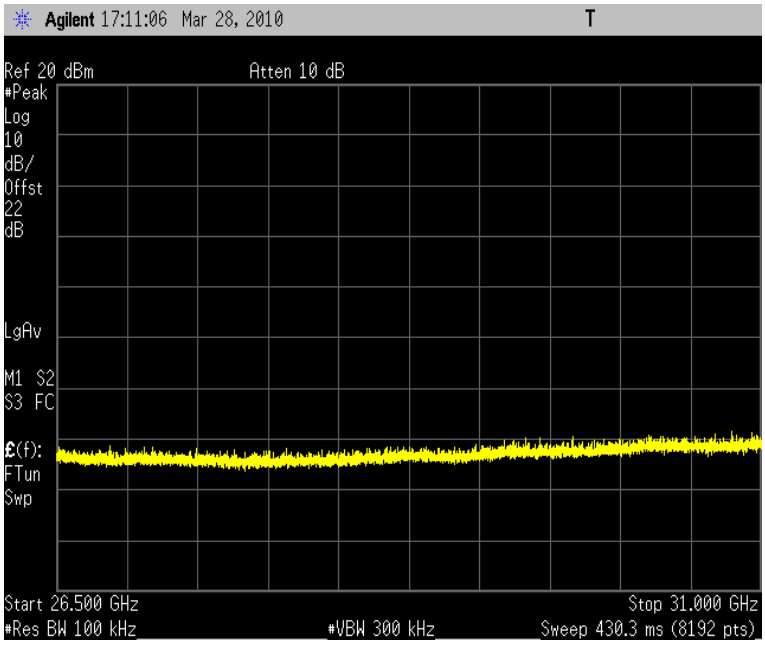
802.11(a) 6 Mbps, Low Channel, 31 GHz - 40 GHz		
Result: Pass	**Value:** < -30 dBc	**Limit:** = -20 dBc



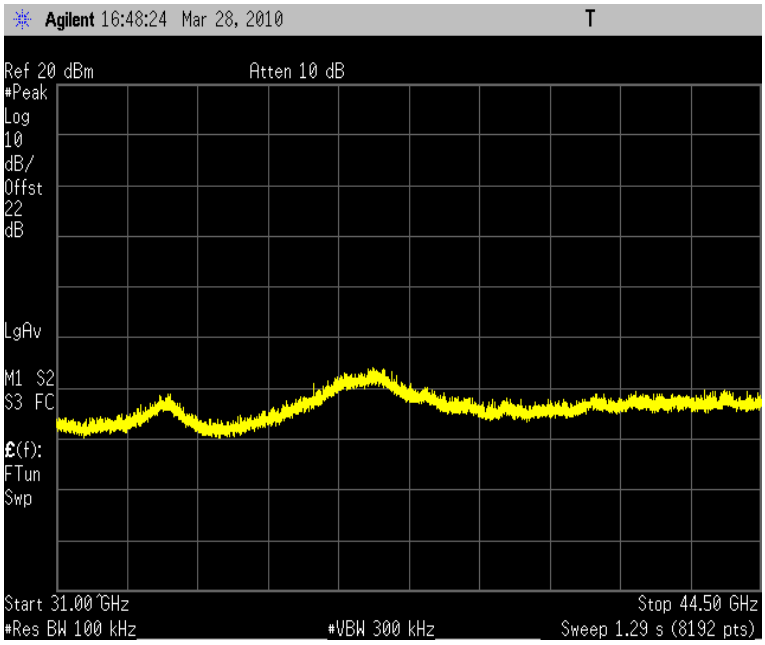
802.11(a) 6 Mbps, Mid Channel, 12.5 GHz - 26.5 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



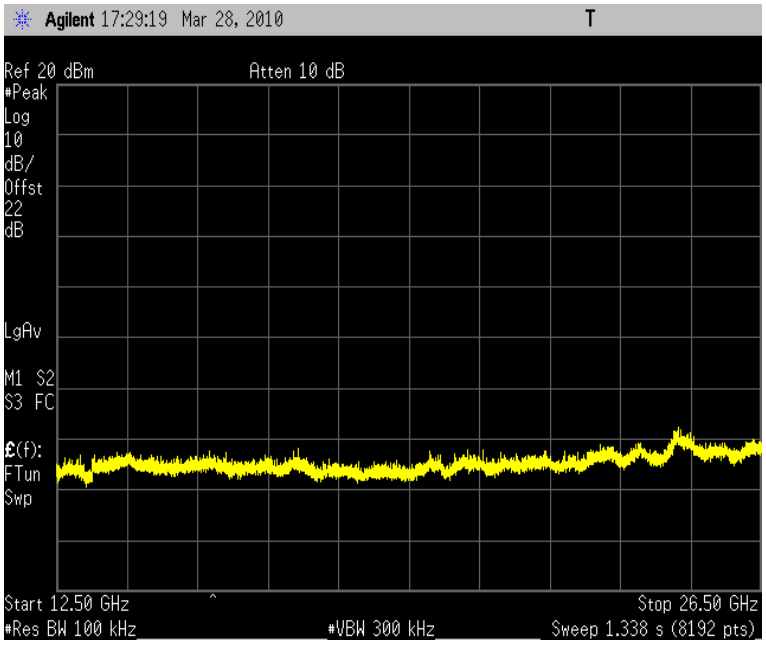
802.11(a) 6 Mbps, Mid Channel, 26.5 GHz - 31 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



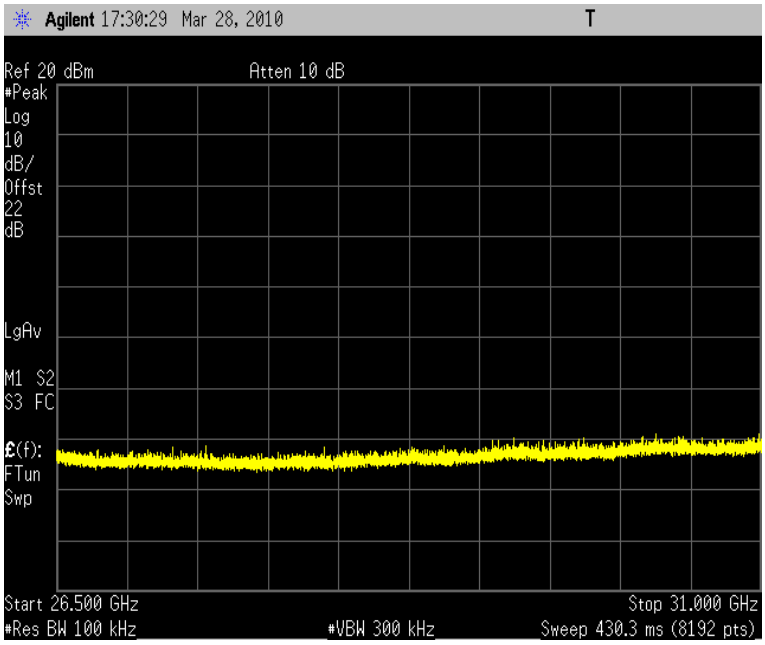
802.11(a) 6 Mbps, Mid Channel, 31 GHz - 40 GHz		
Result: Pass	**Value:** < -30 dBc	**Limit:** = -20 dBc



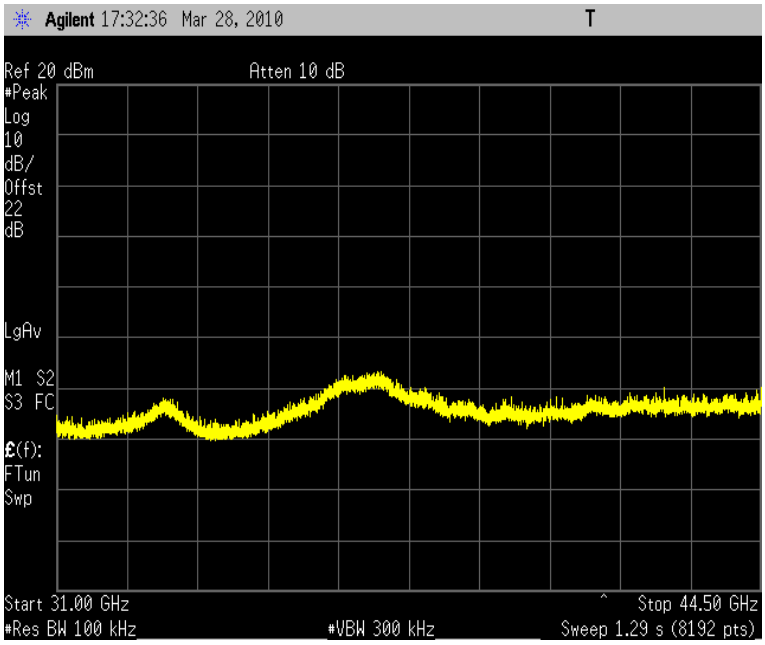
802.11(a) 6 Mbps, High Channel, 12.5 GHz - 26.5 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



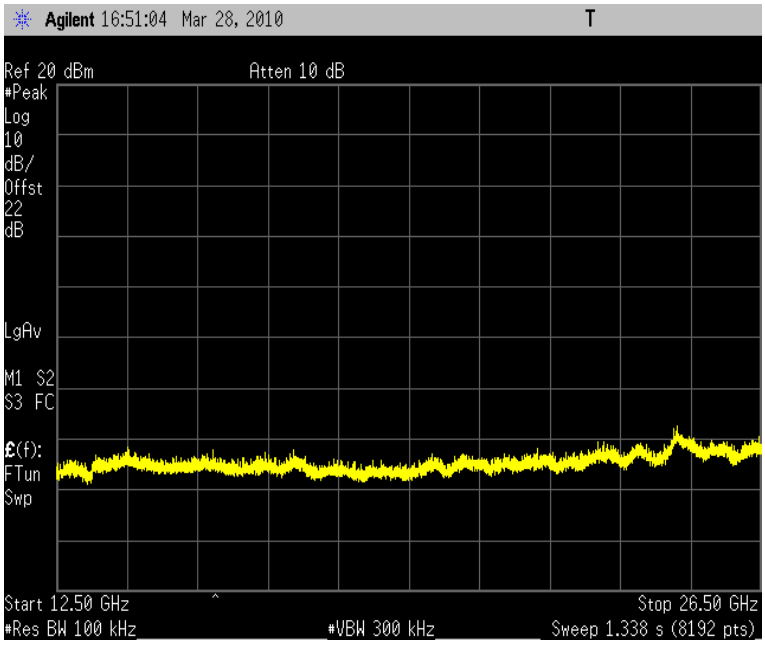
802.11(a) 6 Mbps, High Channel, 26.5 GHz - 31 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



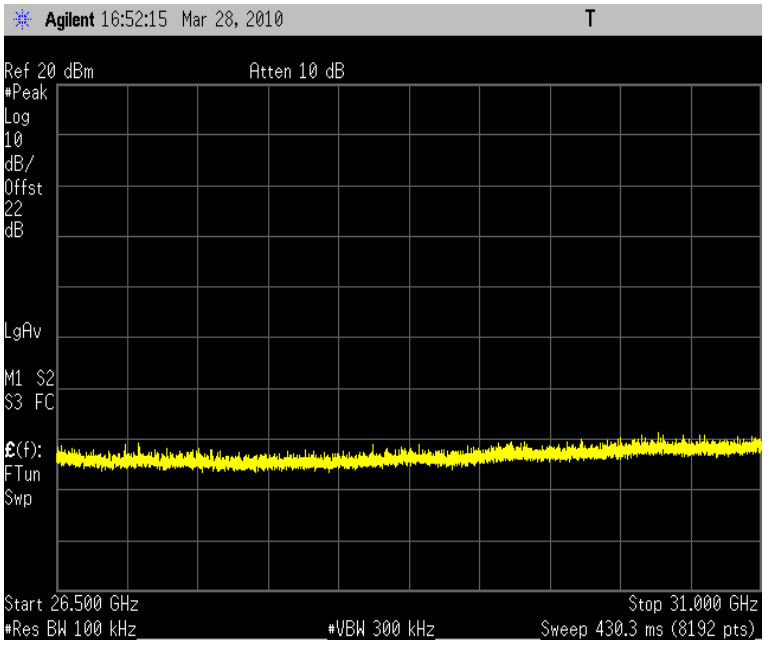
802.11(a) 6 Mbps, High Channel, 31 GHz - 40 GHz		
Result: Pass	**Value:** < -30 dBc	**Limit:** = -20 dBc



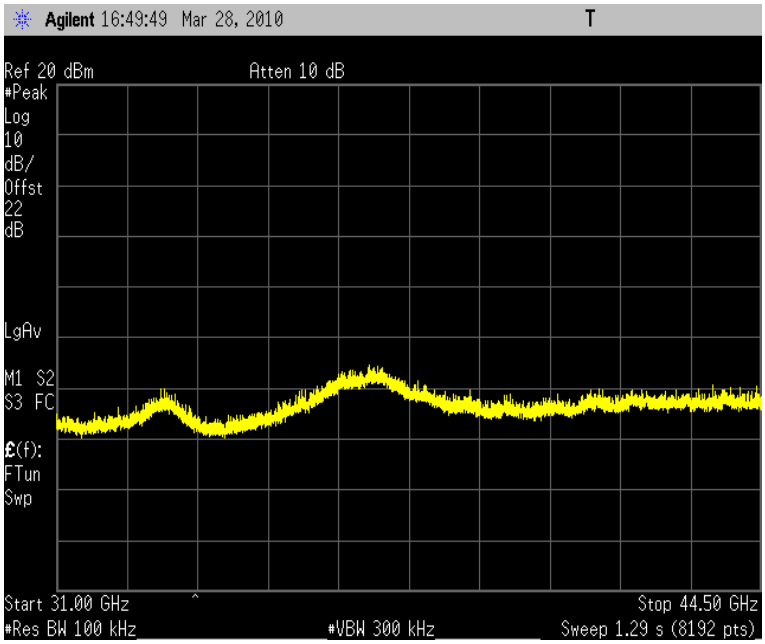
802.11(a) 36 Mbps, Low Channel, 12.5 GHz - 26.5 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



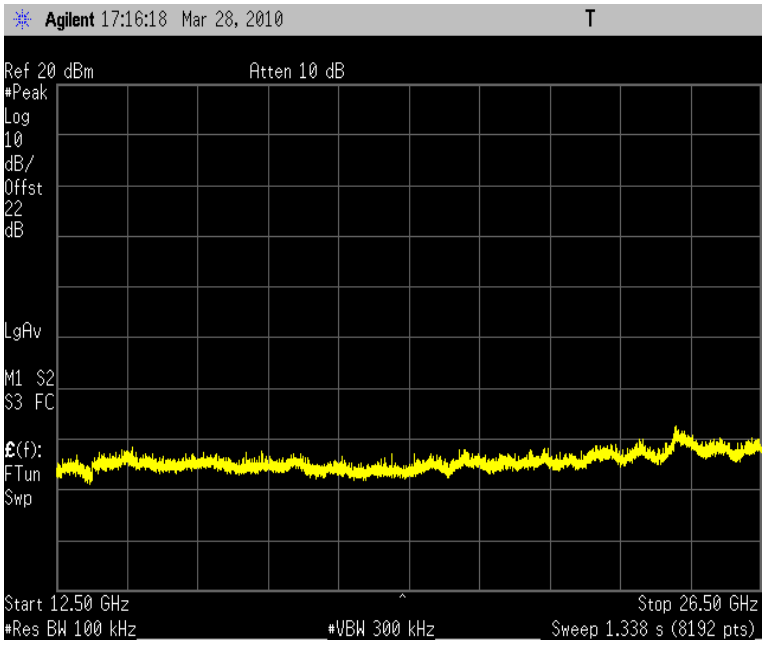
802.11(a) 36 Mbps, Low Channel, 26.5 GHz - 31 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



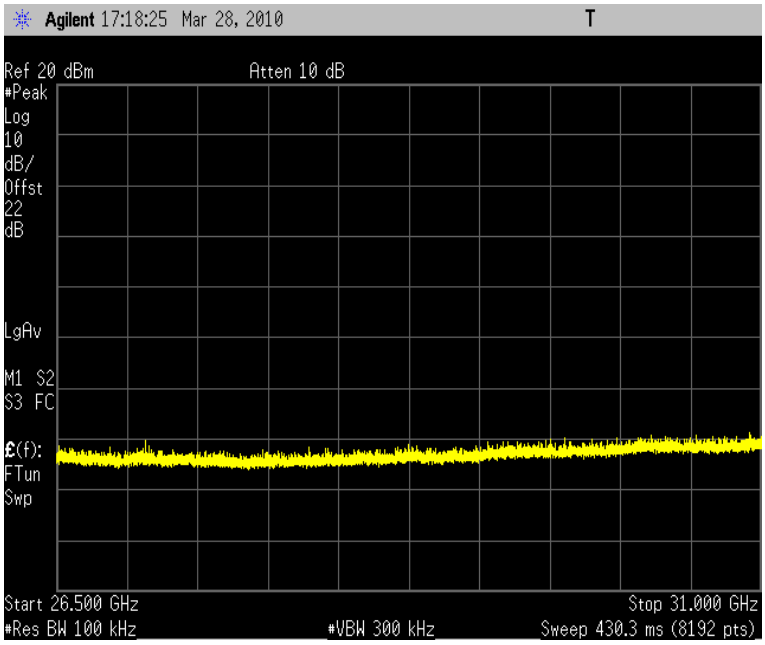
802.11(a) 36 Mbps, Low Channel, 31 GHz - 40 GHz		
Result: Pass	**Value:** < -30 dBc	**Limit:** = -20 dBc



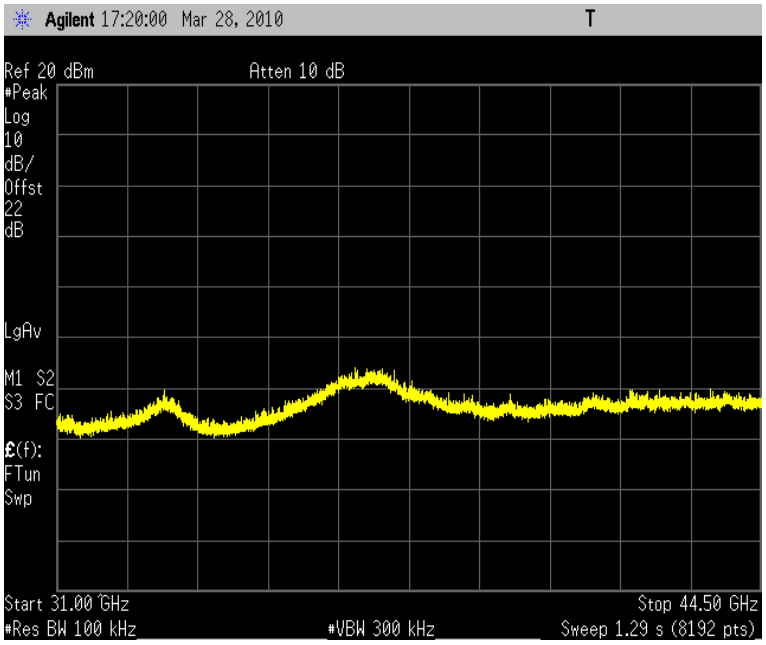
802.11(a) 36 Mbps, Mid Channel, 12.5 GHz - 26.5 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



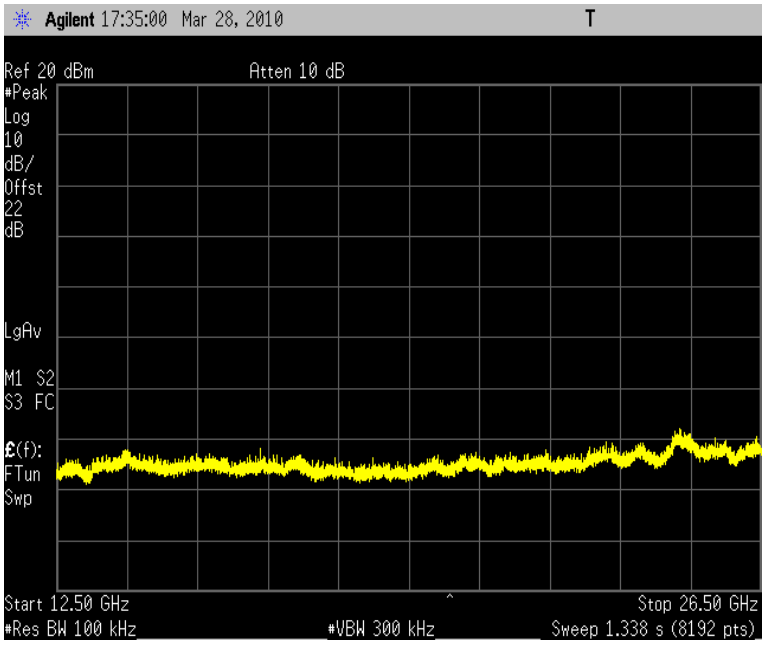
802.11(a) 36 Mbps, Mid Channel, 26.5 GHz - 31 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



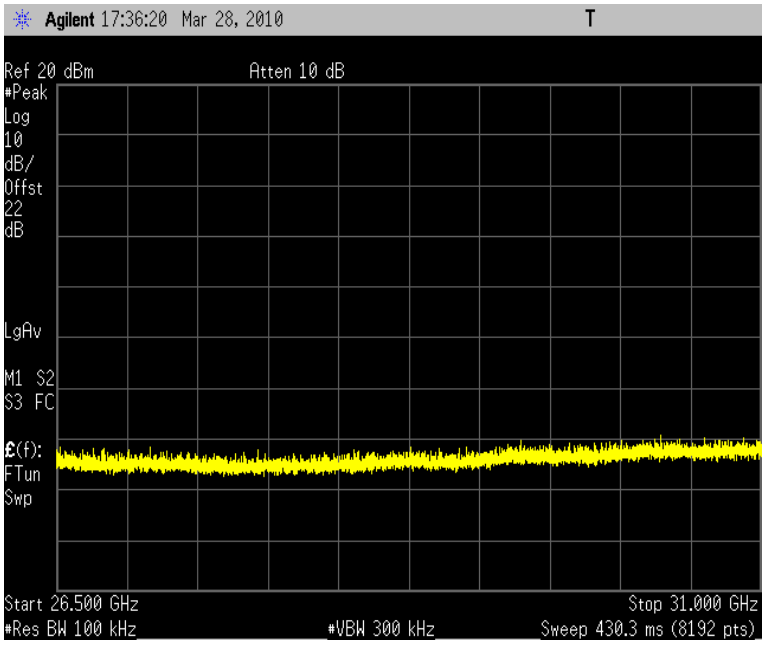
802.11(a) 36 Mbps, Mid Channel, 31 GHz - 40 GHz		
Result: Pass	**Value:** < -30 dBc	**Limit:** = -20 dBc



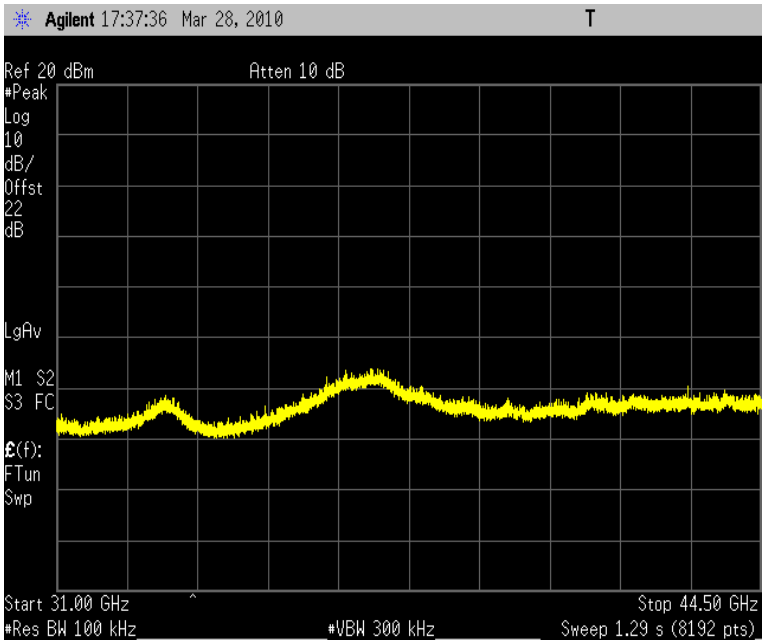
802.11(a) 36 Mbps, High Channel, 12.5 GHz - 26.5 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



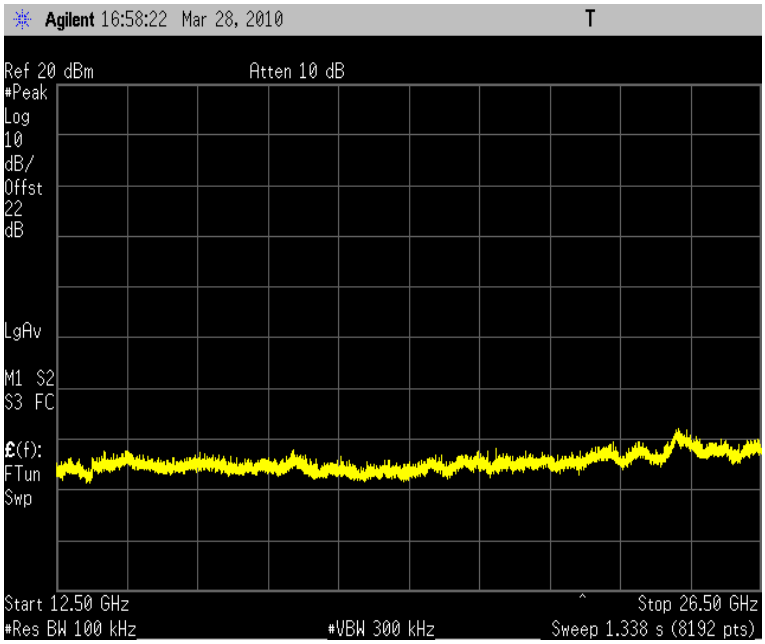
802.11(a) 36 Mbps, High Channel, 26.5 GHz - 31 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



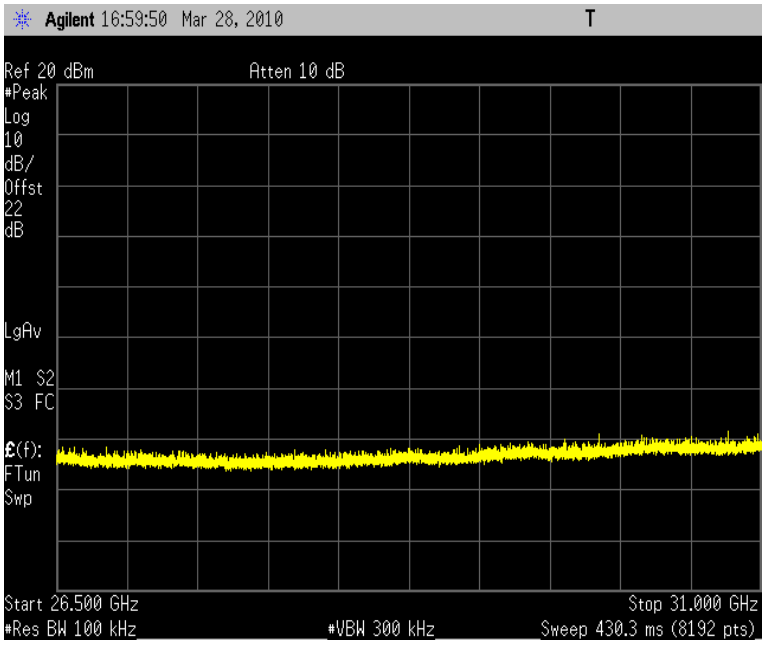
802.11(a) 36 Mbps, High Channel, 31 GHz - 40 GHz		
Result: Pass	**Value:** < -30 dBc	**Limit:** = -20 dBc



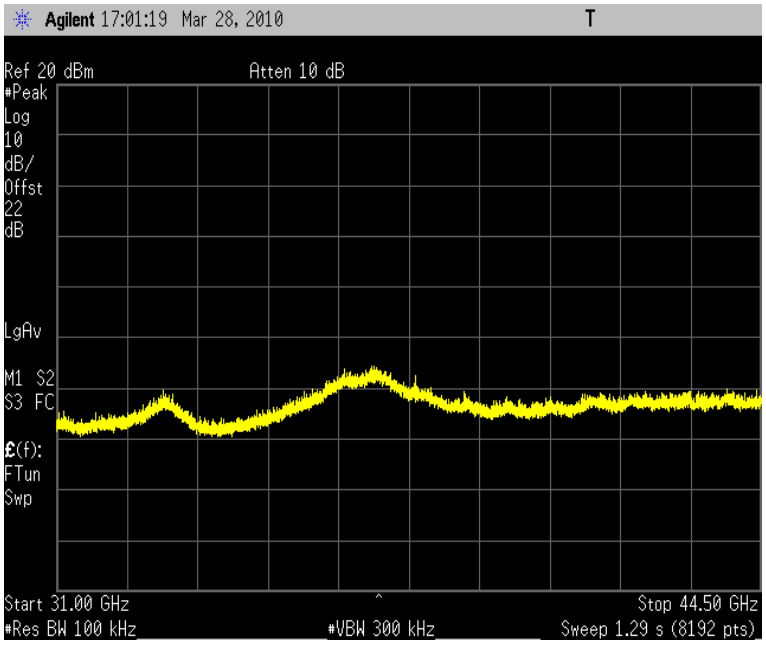
802.11(a) 54 Mbps, Low Channel, 12.5 GHz - 26.5 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



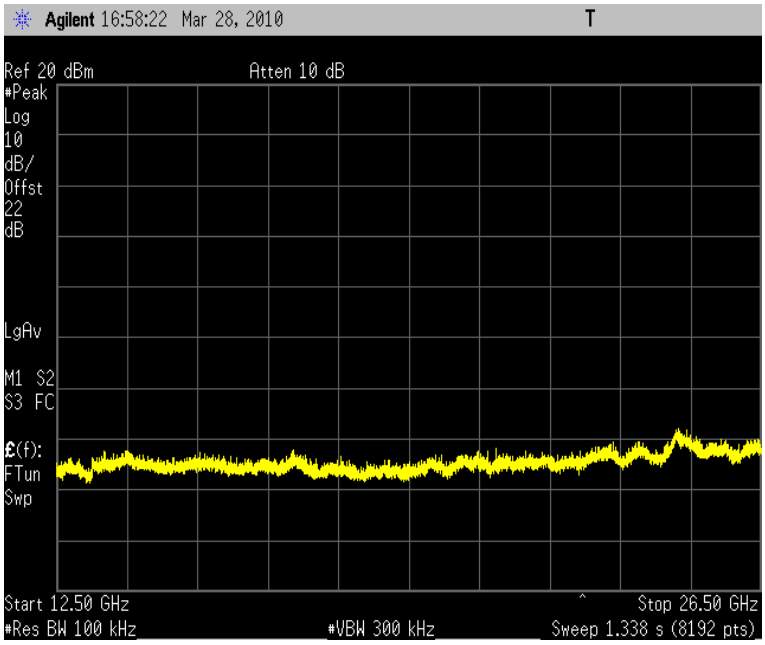
802.11(a) 54 Mbps, Low Channel, 26.5 GHz - 31 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



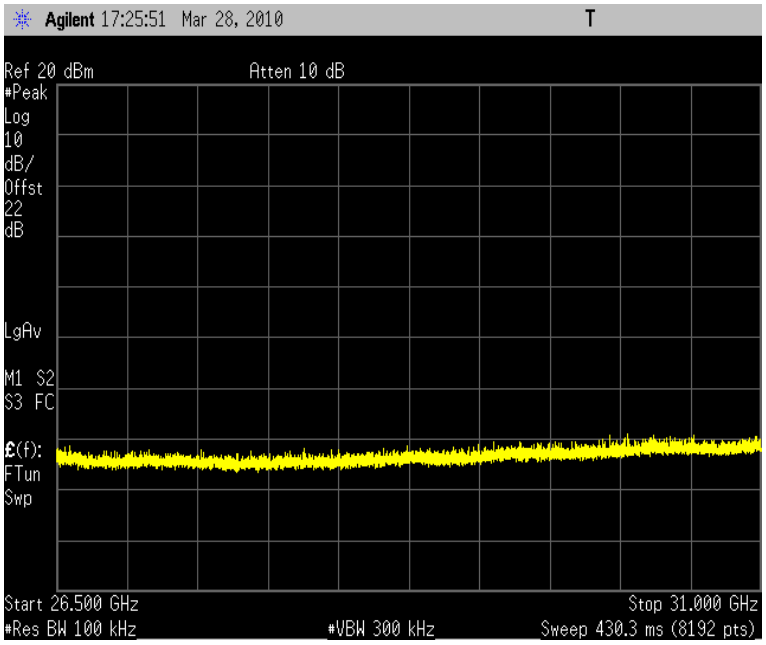
802.11(a) 54 Mbps, Low Channel, 31 GHz - 40 GHz		
Result: Pass	**Value:** < -30 dBc	**Limit:** = -20 dBc



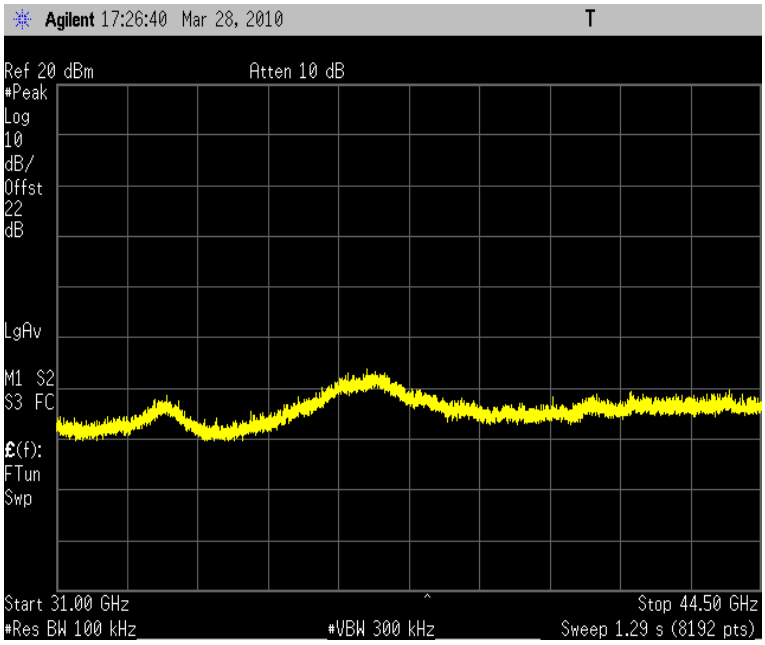
802.11(a) 54 Mbps, Mid Channel, 12.5 GHz - 26.5 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



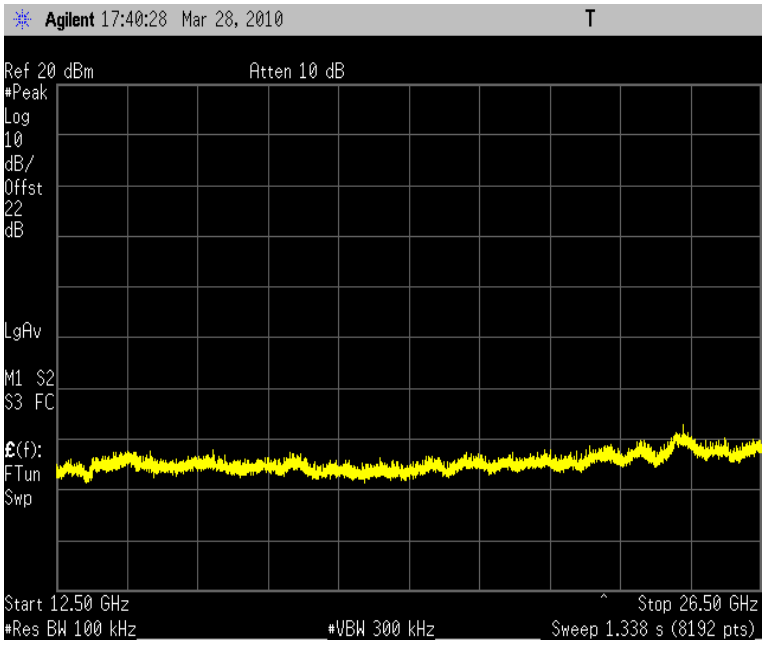
802.11(a) 54 Mbps, Mid Channel, 26.5 GHz - 31 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



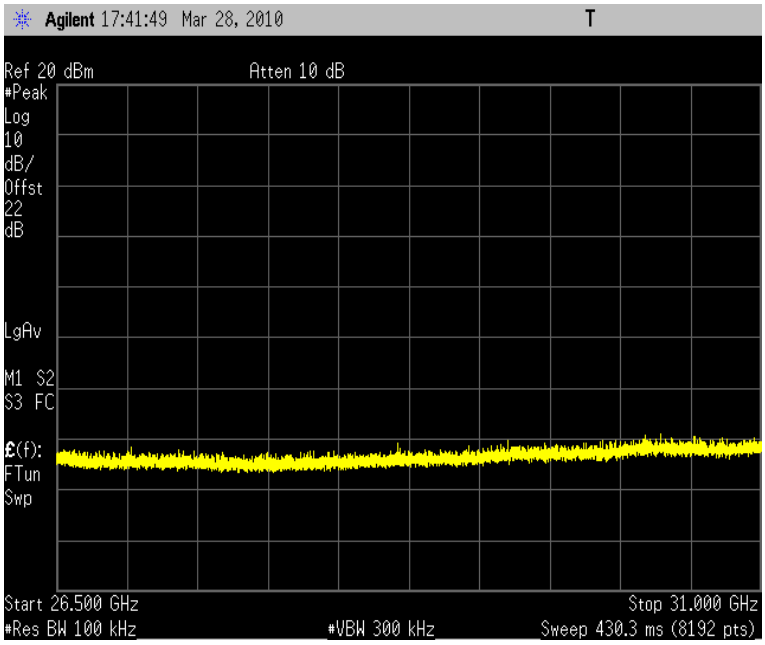
802.11(a) 54 Mbps, Mid Channel, 31 GHz - 40 GHz		
Result: Pass	**Value:** < -30 dBc	**Limit:** = -20 dBc



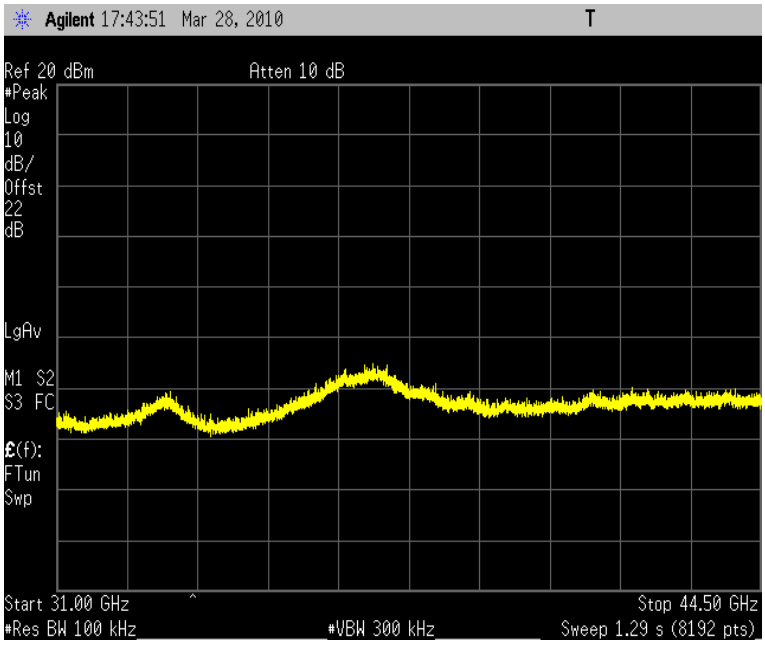
802.11(a) 54 Mbps, High Channel, 12.5 GHz - 26.5 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



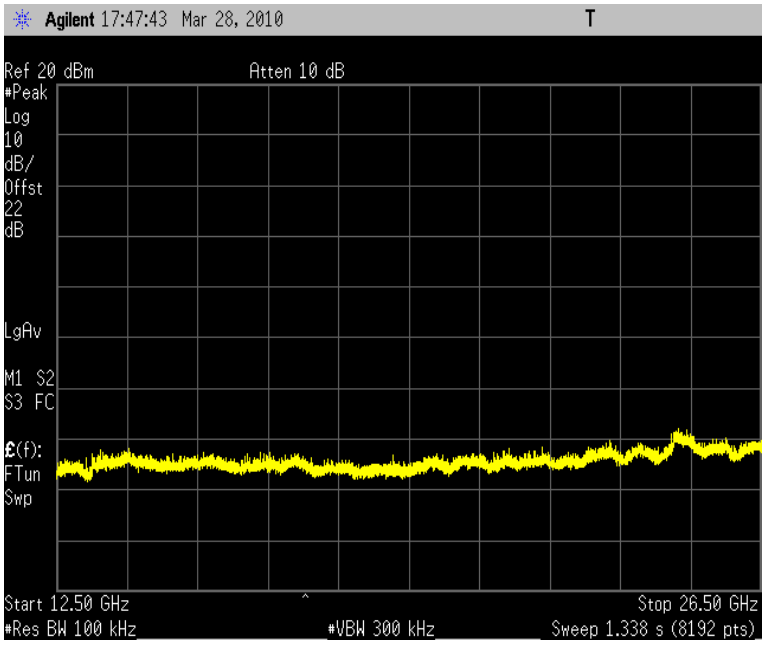
802.11(a) 54 Mbps, High Channel, 26.5 GHz - 31 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



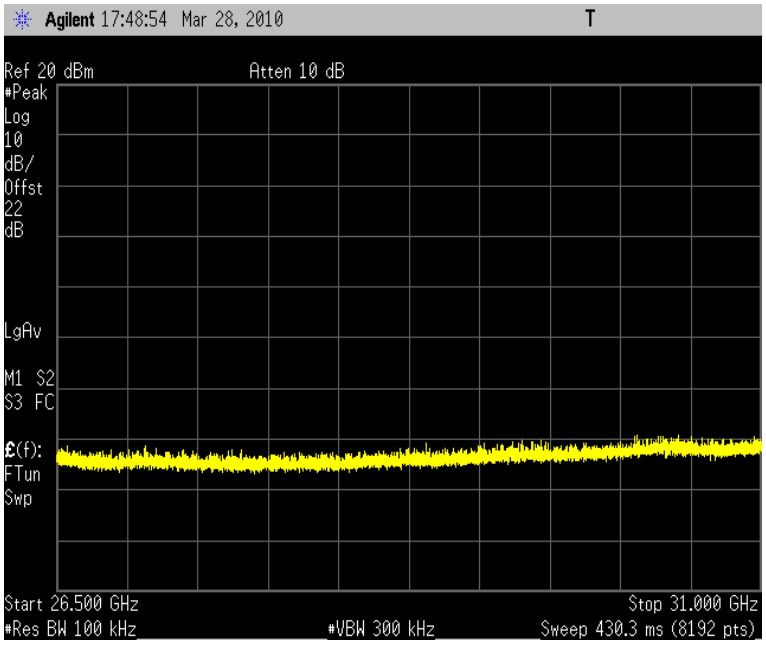
802.11(a) 54 Mbps, High Channel, 31 GHz - 40 GHz		
Result: Pass	**Value:** < -30 dBc	**Limit:** = -20 dBc



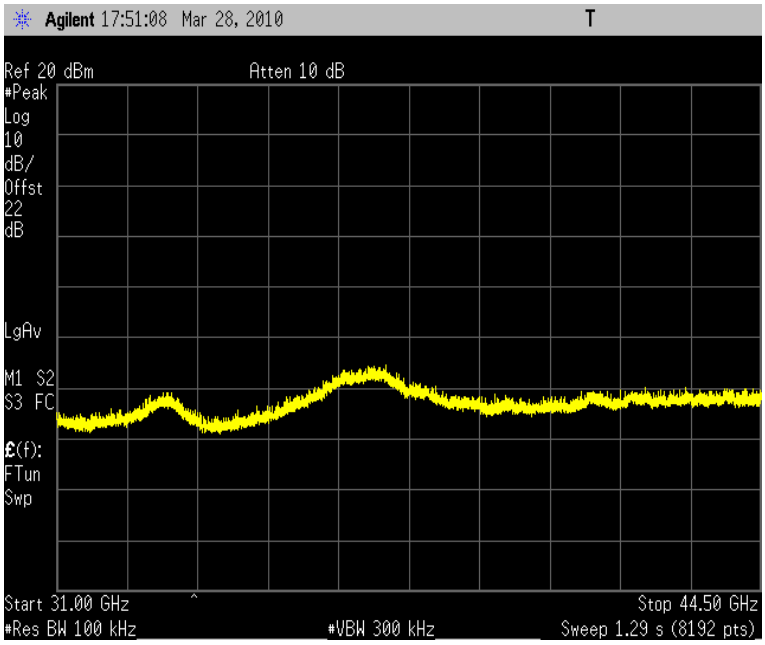
802.11(n), 5GHz 20MHz, Low Channel, 12.5 GHz - 26.5 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



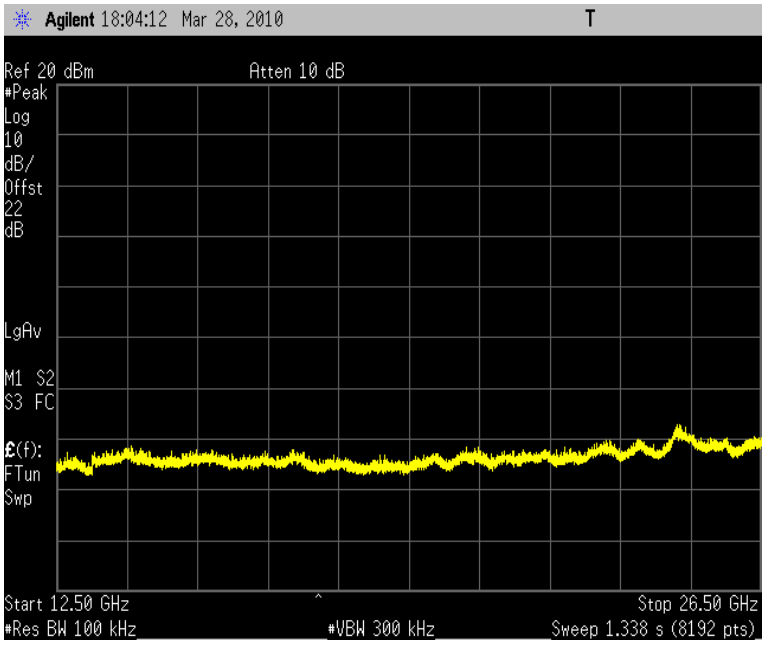
802.11(n), 5GHz 20MHz, Low Channel, 26.5 GHz - 31 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



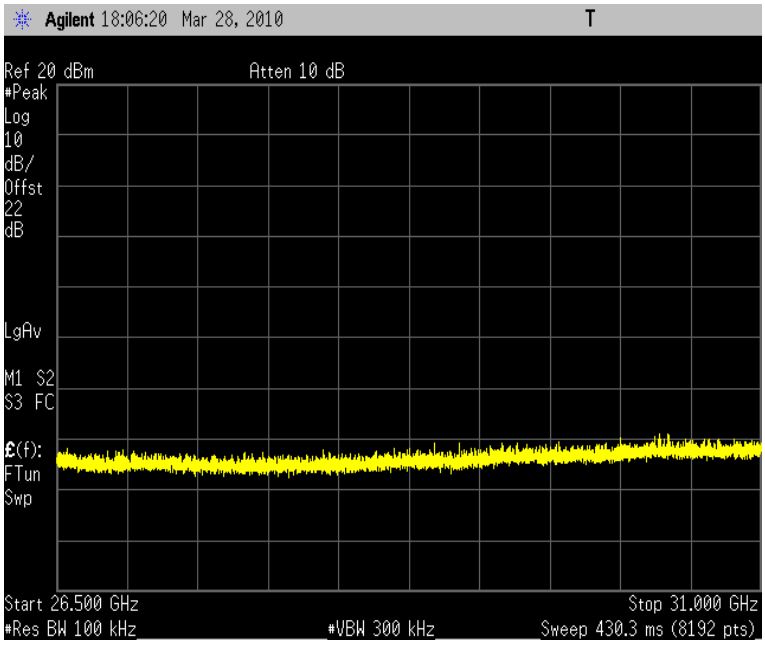
802.11(n), 5GHz 20MHz, Low Channel, 31 GHz - 40 GHz		
Result: Pass	**Value:** < -30 dBc	**Limit:** = -20 dBc



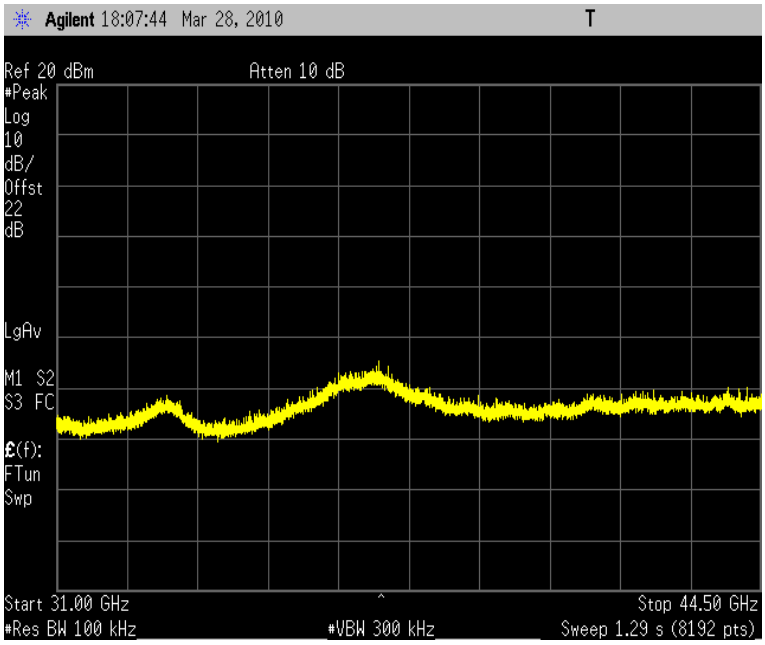
802.11(n), 5GHz 20MHz, Mid Channel, 12.5 GHz - 26.5 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



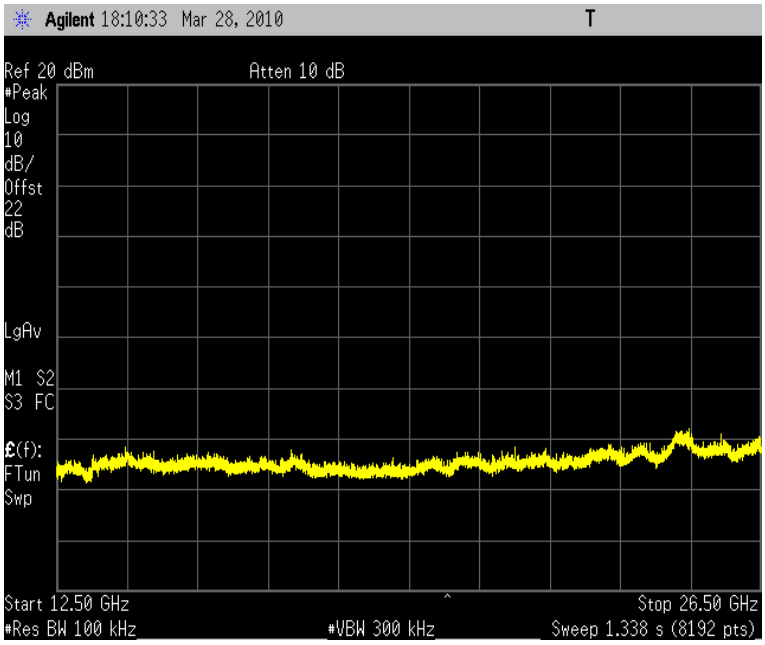
802.11(n), 5GHz 20MHz, Mid Channel, 26.5 GHz - 31 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



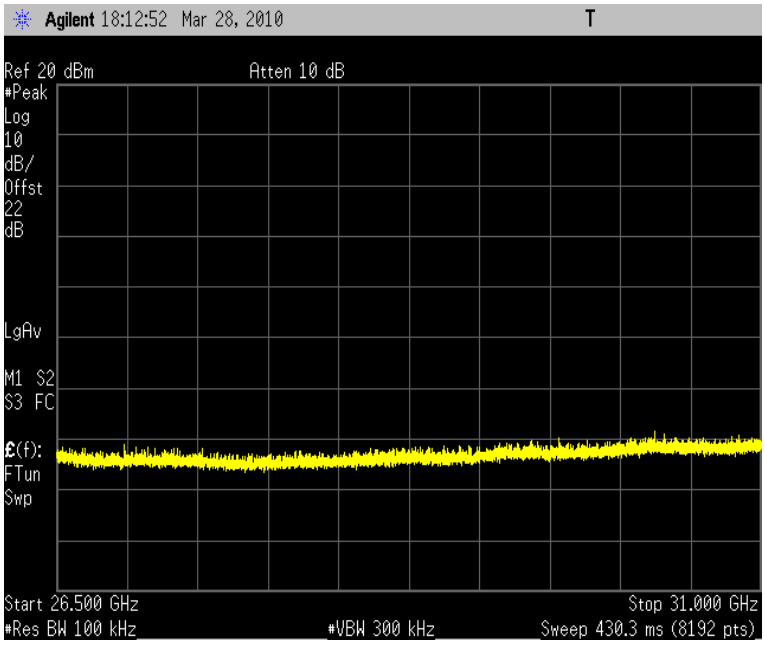
802.11(n), 5GHz 20MHz, Mid Channel, 31 GHz - 40 GHz		
Result: Pass	**Value:** < -30 dBc	**Limit:** = -20 dBc



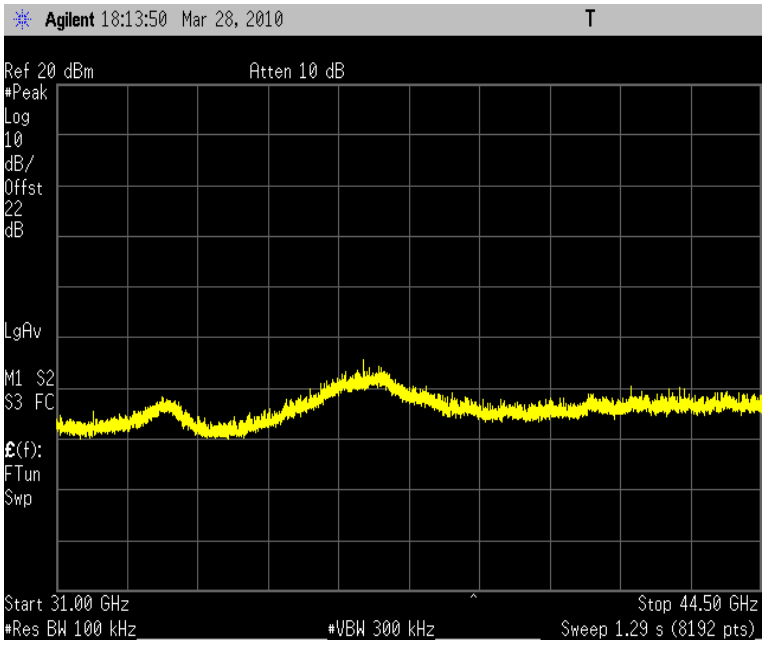
802.11(n), 5GHz 20MHz, High Channel, 12.5 GHz - 26.5 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



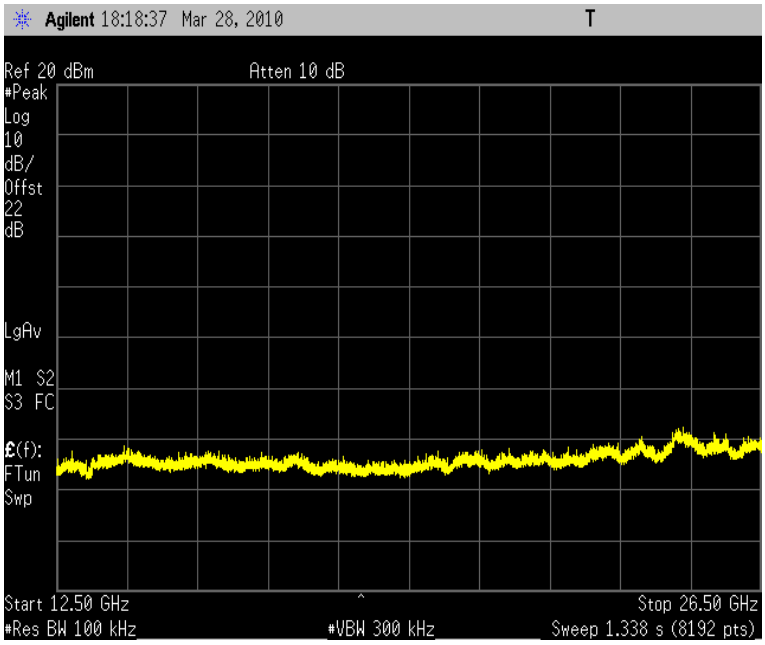
802.11(n), 5GHz 20MHz, High Channel, 26.5 GHz - 31 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



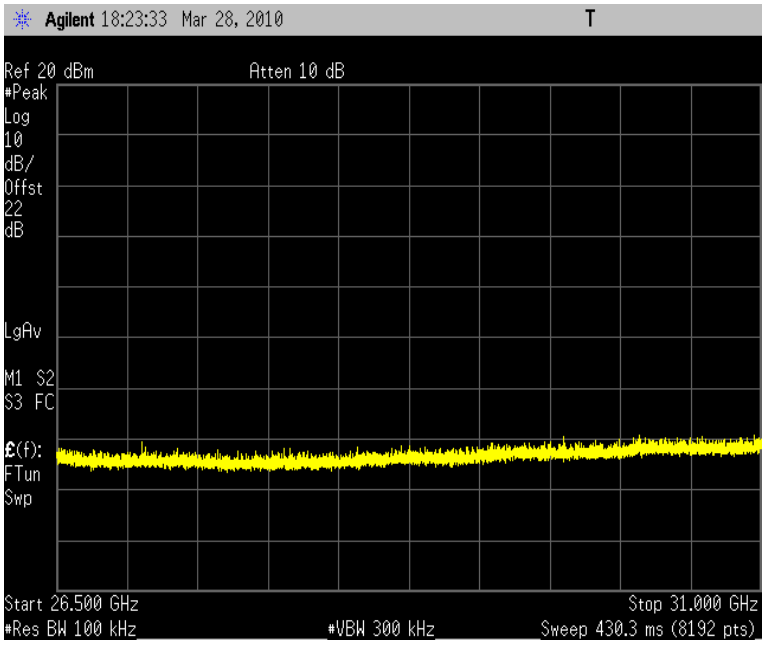
802.11(n), 5GHz 20MHz, High Channel, 31 GHz - 40 GHz		
Result: Pass	**Value:** < -30 dBc	**Limit:** = -20 dBc



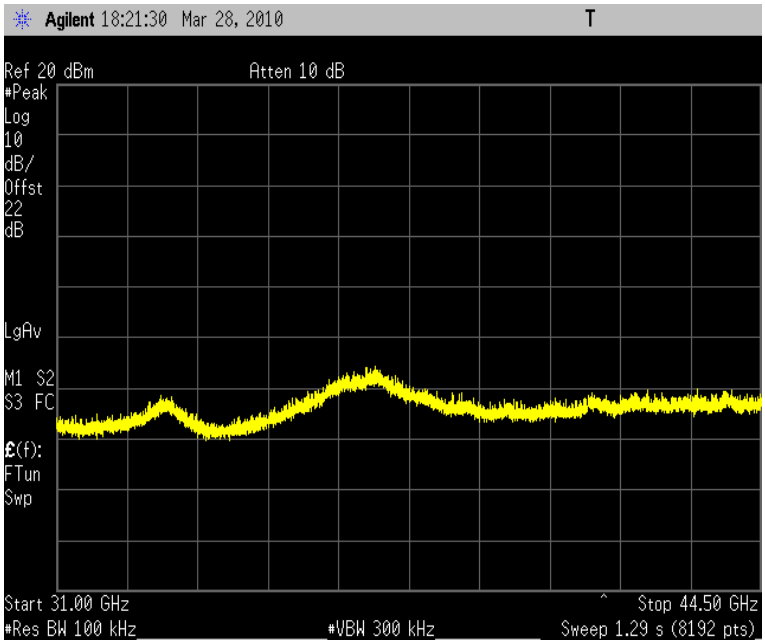
802.11(n), 5GHz 40MHz, Low Channel, 12.5 GHz - 26.5 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



802.11(n), 5GHz 40MHz, Low Channel, 26.5 GHz - 31 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc

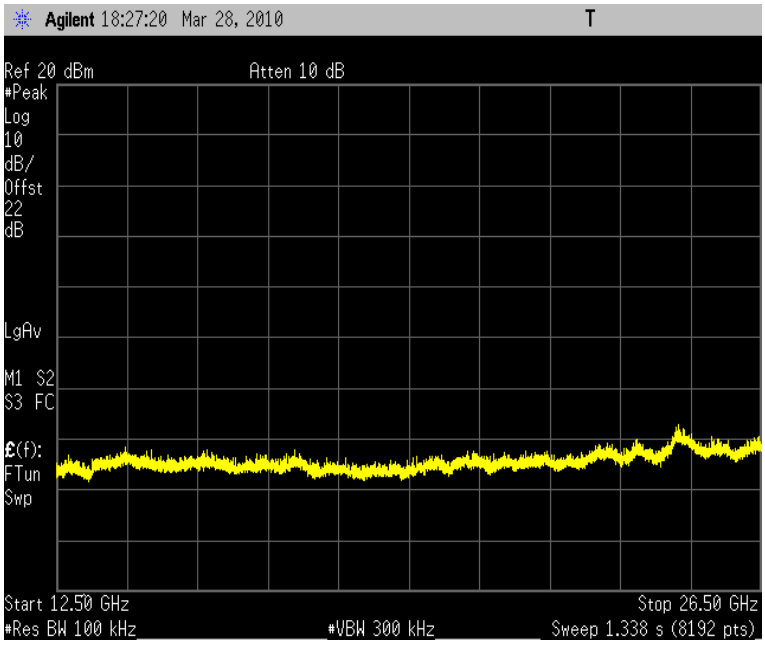


802.11(n), 5GHz 40MHz, Low Channel, 31 GHz - 40 GHz		
Result: Pass	**Value:** < -30 dBc	**Limit:** = -20 dBc

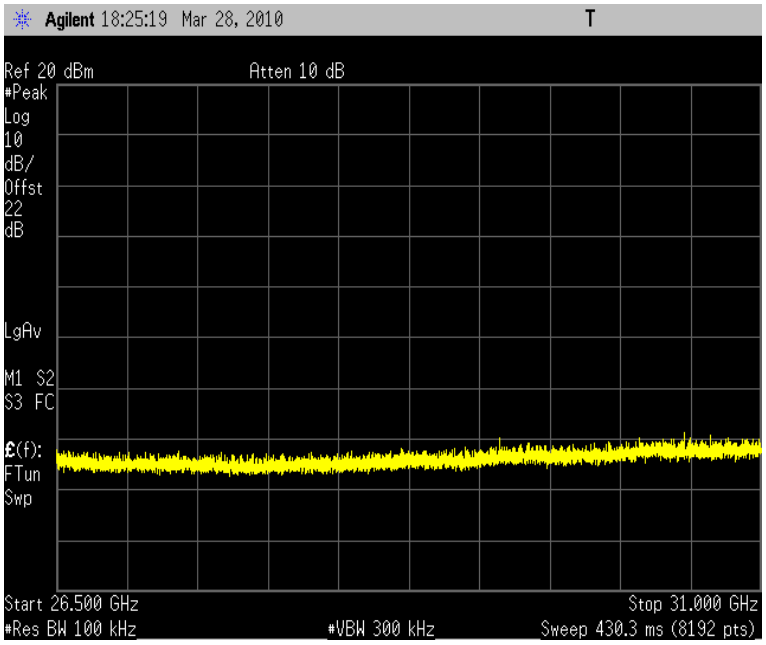


SPURIOUS CONDUCTED EMISSIONS

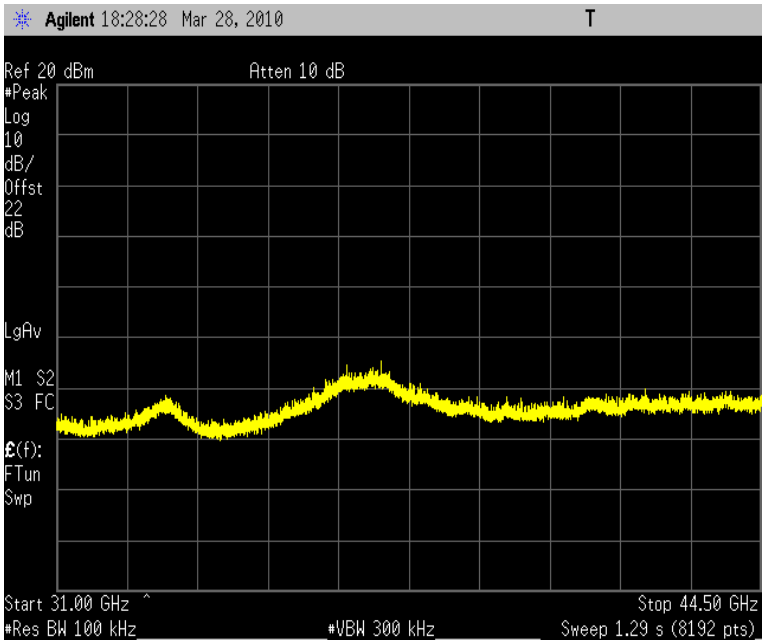
802.11(n), 5GHz 40MHz, Mid Channel, 12.5 GHz - 26.5 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



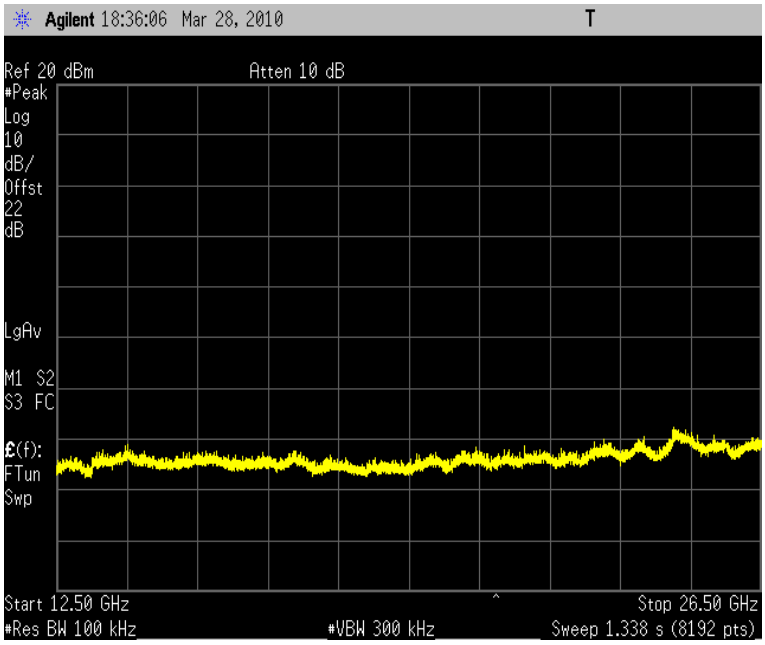
802.11(n), 5GHz 40MHz, Mid Channel, 26.5 GHz - 31 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



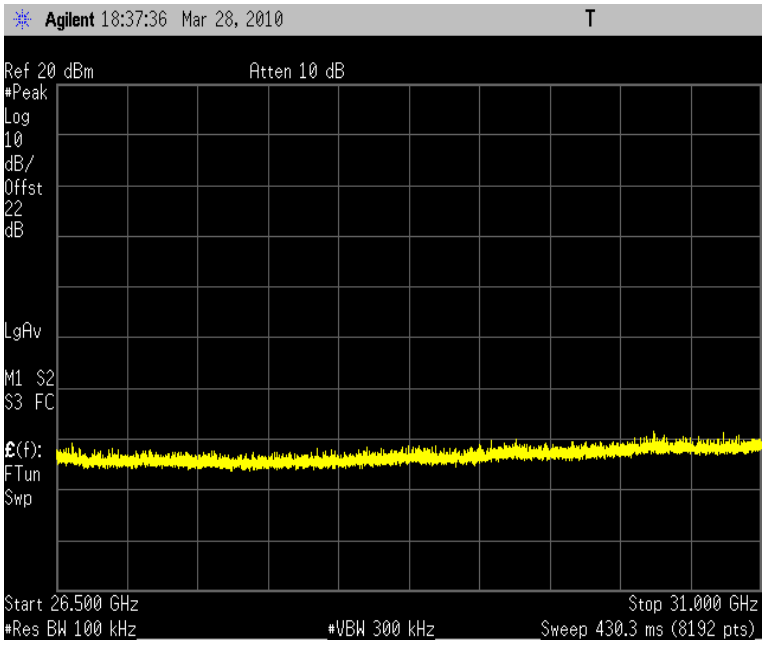
802.11(n), 5GHz 40MHz, Mid Channel, 31 GHz - 40 GHz		
Result: Pass	**Value:** < -30 dBc	**Limit:** = -20 dBc



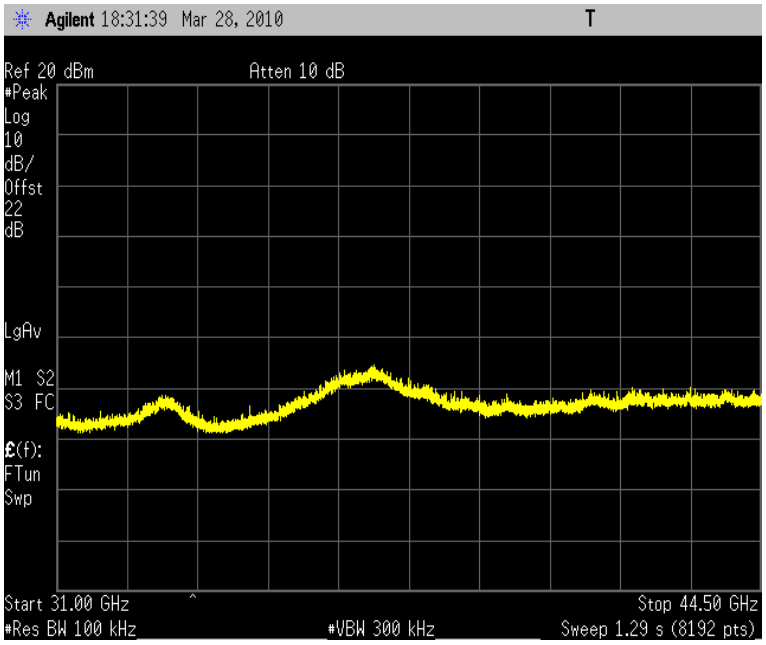
802.11(n), 5GHz 40MHz, High Channel, 12.5 GHz - 26.5 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



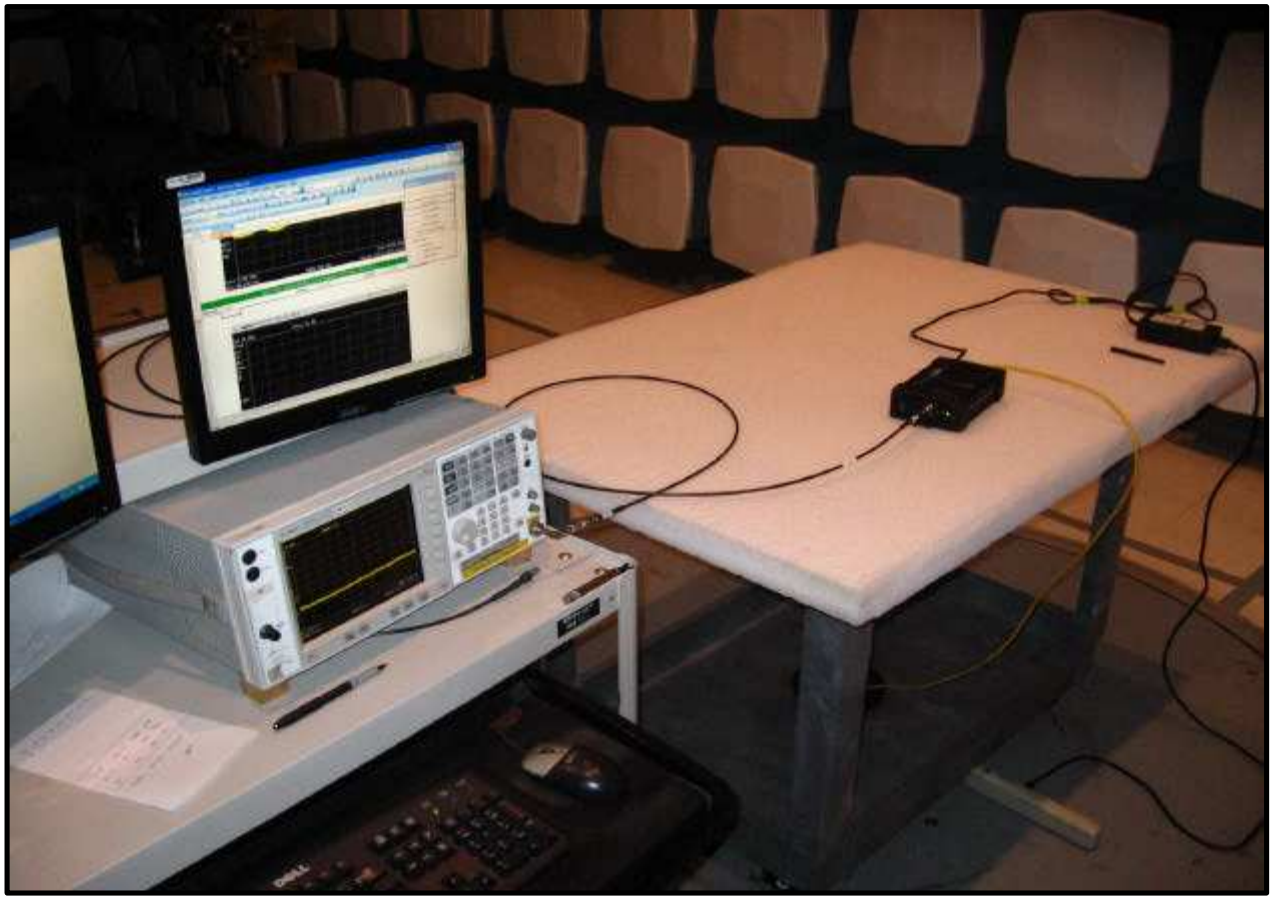
802.11(n), 5GHz 40MHz, High Channel, 26.5 GHz - 31 GHz		
Result: Pass	**Value:** < -30 dBc	**Limit:** = -20 dBc



802.11(n), 5GHz 40MHz, High Channel, 31 GHz - 40 GHz		
Result: Pass	**Value:** < -40 dBc	**Limit:** = -20 dBc



SPURIOUS CONDUCTED EMISSIONS



RADIATED SPURIOUS EMISSIONS

MODES OF OPERATION
Transmitting 802.11(b/g), 2.4 GHz, 17 dBm
Transmitting 802.11(n), 2.4 GHz, 20MHz, 14 dBm
Transmitting 802.11(n), 2.4 GHz, 40MHz, 15 dBm
Transmitting 802.11(a), 17 dBm
Transmitting 802.11(n), 20 MHz, 17 dBm
Transmitting 802.11(n), 40 MHz, 17 dBm

POWER SETTINGS INVESTIGATED
120VAC/60Hz

FREQUENCY RANGE INVESTIGATED			
Start Frequency	30 MHz	Stop Frequency	25 GHz

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAQ	1/6/2010	13
Pre-Amplifier	Miteq	AM-1616-1000	AOL	7/10/2009	13
Antenna, Biconilog	EMCO	3141	AXE	1/14/2010	13
EV01 Cables		Bilog Cables	EVA	7/10/2009	13
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	7/10/2009	13
Antenna, Horn	EMCO	3115	AHC	8/12/2008	24
EV01 Cables		Double Ridge Horn Cables	EVB	7/10/2009	13
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	7/10/2009	13
Antenna, Horn	ETS	3160-07	AHU	NCR	0
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	7/10/2009	13
Antenna, Horn	ETS	3160-08	AHV	NCR	0
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	4/2/2010	13
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	5/19/2009	13
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0
Pre-Amplifier	Miteq	AM-1616-1000	AVY	7/1/2009	13
Low Pass Filter 0-1000 MHz	Micro-Tronics	LPM50004	LFD	7/10/2009	13
High Pass Filter	Micro-Tronics	HPM50111	HFO	7/10/2009	13
Pre-Amplifier	Miteq	JSW45-26004000-40-5P	AVQ	4/15/2009	13

NORTHWEST
EMC

RADIATED SPURIOUS EMISSIONS

PSA 2008.07.21
EMI 2008.1.9

EUT:	WF1101			**Work Order:**	VERW0039
Serial Number:	M33142-001-0007			**Date:**	04/08/10
Customer:	Veriwave, Inc.			**Temperature:**	22
Attendees:	None			**Humidity:**	38%
Project:	None			**Barometric Pres.:**	30.15 in
Tested by:	Rod Peloquin	**Power:**	120VAC/60Hz	**Job Site:**	EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

TEST PARAMETERS

Antenna Height(s) (m)	1 - 4	**Test Distance (m)**	3

COMMENTS

Ethernet to remote PC, standard antennas

EUT OPERATING MODES

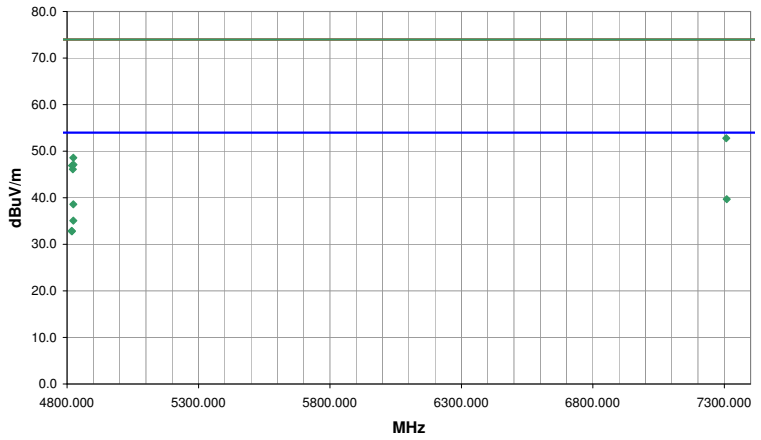
Transmitting 802.11(b/g), 2.4 GHz, 17 dBm

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	1
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
7309.107	23.5	16.2	203.0	3.0	3.0	0.0	V-Horn	AV	0.0	39.7	54.0	-14.3	Antenna 1, Low channel, 1 Mbps, EUT on side, antenna vertical (noise floor)
4823.938	29.0	9.6	263.0	1.1	3.0	0.0	V-Horn	AV	0.0	38.6	54.0	-15.4	Antenna 1, Low channel, 1 Mbps, EUT on side, antenna vertical
4824.024	25.5	9.6	127.0	1.0	3.0	0.0	V-Horn	AV	0.0	35.1	54.0	-18.9	Antenna 2, Low channel, 1 Mbps, EUT on side, antenna vertical
4817.660	23.4	9.5	277.0	1.1	3.0	0.0	V-Horn	AV	0.0	32.9	54.0	-21.1	Antenna 1, Low channel, 6 Mbps, EUT on side, antenna vertical
4818.067	23.2	9.6	126.0	1.1	3.0	0.0	V-Horn	AV	0.0	32.8	54.0	-21.2	Antenna 2, Low channel, 6 Mbps, EUT on side, antenna vertical
7307.387	36.6	16.2	203.0	3.0	3.0	0.0	V-Horn	PK	0.0	52.8	74.0	-21.2	Antenna 1, Low channel, 1 Mbps, EUT on side, antenna vertical (noise floor)
4823.930	39.0	9.6	263.0	1.1	3.0	0.0	V-Horn	PK	0.0	48.6	74.0	-25.4	Antenna 1, Low channel, 1 Mbps, EUT on side, antenna vertical
4824.246	37.5	9.6	127.0	1.0	3.0	0.0	V-Horn	PK	0.0	47.1	74.0	-26.9	Antenna 2, Low channel, 1 Mbps, EUT on side, antenna vertical
4818.980	37.3	9.6	277.0	1.1	3.0	0.0	V-Horn	PK	0.0	46.9	74.0	-27.1	Antenna 1, Low channel, 6 Mbps, EUT on side, antenna vertical
4821.627	36.5	9.6	126.0	1.1	3.0	0.0	V-Horn	PK	0.0	46.1	74.0	-27.9	Antenna 2, Low channel, 6 Mbps, EUT on side, antenna vertical

NORTHWEST
EMC

RADIATED SPURIOUS EMISSIONS

PSA 2008.07.21
EMI 2008.1.9

EUT:	WF1101	**Work Order:**	VERW0039
Serial Number:	M33142-001-0007	**Date:**	04/08/10
Customer:	Veriwave, Inc.	**Temperature:**	22
Attendees:	None	**Humidity:**	38%
Project:	None	**Barometric Pres.:**	30.15 in
Tested by:	Rod Peloquin	**Power:** 120VAC/60Hz	**Job Site:** EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

Ethernet to remote PC, standard antennas

EUT OPERATING MODES

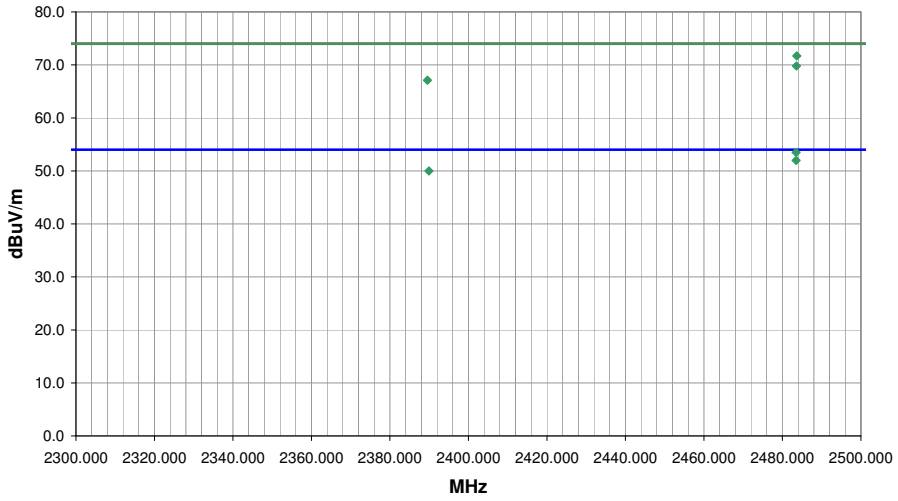
Transmitting 802.11(n), 2.4 GHz, 40MHz

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	2
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
2483.503	30.8	2.7	7.0	1.1	3.0	20.0	H-Horn	AV	0.0	53.5	54.0	-0.5	Antenna 1, Channel 2447 MHz 40U, 15 dBm
2483.500	29.3	2.7	5.0	1.1	3.0	20.0	V-Horn	AV	0.0	52.0	54.0	-2.0	Antenna 1, Channel 2447 MHz 40U, 15 dBm
2483.663	49.0	2.7	7.0	1.1	3.0	20.0	H-Horn	PK	0.0	71.7	74.0	-2.3	Antenna 1, Channel 2447 MHz 40U, 15 dBm
2389.950	27.9	2.1	158.0	1.4	3.0	20.0	V-Horn	AV	0.0	50.0	54.0	-4.0	Antenna 1, Channel 2447 MHz 40U, 15 dBm
2483.588	47.1	2.7	5.0	1.1	3.0	20.0	V-Horn	PK	0.0	69.8	74.0	-4.2	Antenna 1, Channel 2447 MHz 40U, 15 dBm
2389.570	45.0	2.1	158.0	1.4	3.0	20.0	V-Horn	PK	0.0	67.1	74.0	-6.9	Antenna 1, Channel 2447 MHz 40U, 15 dBm

NORTHWEST
EMC

RADIATED SPURIOUS EMISSIONS

PSA 2008.07.21
EMI 2008.1.9

EUT:	WF1101	**Work Order:**	VERW0039
Serial Number:	M33142-001-0007	**Date:**	04/08/10
Customer:	Veriwave, Inc.	**Temperature:**	22
Attendees:	None	**Humidity:**	38%
Project:	None	**Barometric Pres.:**	30.15 in
Tested by:	Rod Peloquin	**Power:** 120VAC/60Hz	**Job Site:** EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

Ethernet to remote PC, standard antennas

EUT OPERATING MODES

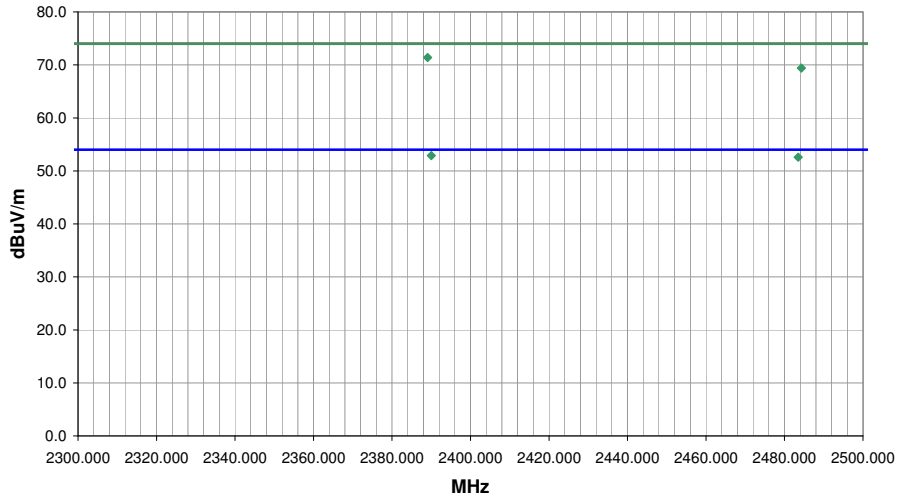
Transmitting 802.11(n), 2.4 GHz, 20MHz

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	3
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
2389.997	30.8	2.1	16.0	1.1	3.0	20.0	H-Horn	AV	0.0	52.9	54.0	-1.1	Antenna 1, Channel 2412MHz 40L, 14 dBm
2483.507	29.9	2.7	6.0	1.1	3.0	20.0	H-Horn	AV	0.0	52.6	54.0	-1.4	Antenna 1, Channel 2462MHz 40U, 14 dBm
2389.080	49.3	2.1	16.0	1.1	3.0	20.0	H-Horn	PK	0.0	71.4	74.0	-2.6	Antenna 1, Channel 2412MHz 40L, 14 dBm
2484.293	46.7	2.7	6.0	1.1	3.0	20.0	H-Horn	PK	0.0	69.4	74.0	-4.6	Antenna 1, Channel 2462MHz 40U, 14 dBm

NORTHWEST EMC

RADIATED SPURIOUS EMISSIONS

PSA 2008.07.21
EMI 2008.1.9

EUT:	WF1101	Work Order:	VERW0037
Serial Number:	M33142-001-0007	Date:	04/14/10
Customer:	Veriwave, Inc.	Temperature:	22
Attendees:	Brian Denheyer	Humidity:	38%
Project:	None	Barometric Pres.:	30.15 in
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

Ethernet to remote PC, standard antenna (unknown)

EUT OPERATING MODES

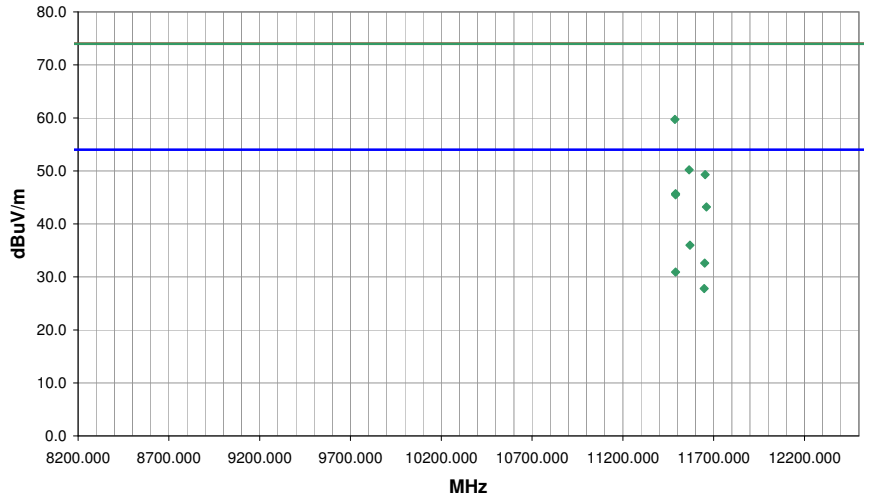
Transmitting 802.11(a), 6 Mbps, 17 dBm

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	10
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
11490.600	52.2	-6.7	67.0	1.4	3.0	0.0	V-Horn	AV	0.0	45.5	54.0	-8.5	Ch. 149, EUT on side, Antenna vertical
11486.950	66.4	-6.7	67.0	1.4	3.0	0.0	V-Horn	PK	0.0	59.7	74.0	-14.3	Ch. 149, EUT on side, Antenna vertical
11569.200	42.3	-6.3	72.0	1.1	3.0	0.0	V-Horn	AV	0.0	36.0	54.0	-18.0	Ch. 157, EUT on side, Antenna vertical
11650.150	38.4	-5.8	251.0	1.0	3.0	0.0	V-Horn	AV	0.0	32.6	54.0	-21.4	Ch. 165, EUT on side, Antenna vertical
11489.900	37.6	-6.7	12.0	1.0	3.0	0.0	H-Horn	AV	0.0	30.9	54.0	-23.1	Ch. 149, EUT horizontal, Antenna horizontal-90
11565.250	56.5	-6.3	72.0	1.1	3.0	0.0	V-Horn	PK	0.0	50.2	74.0	-23.8	Ch. 157, EUT on side, Antenna vertical
11653.100	55.1	-5.8	251.0	1.0	3.0	0.0	V-Horn	PK	0.0	49.3	74.0	-24.7	Ch. 165, EUT on side, Antenna vertical
11647.750	33.6	-5.8	197.0	1.0	3.0	0.0	H-Horn	AV	0.0	27.8	54.0	-26.2	Ch. 165, EUT on side, Antenna vertical
11490.200	52.4	-6.7	12.0	1.0	3.0	0.0	H-Horn	PK	0.0	45.7	74.0	-28.3	Ch. 149, EUT horizontal, Antenna horizontal-90
11660.400	49.0	-5.8	197.0	1.0	3.0	0.0	H-Horn	PK	0.0	43.2	74.0	-30.8	Ch. 165, EUT on side, Antenna vertical

NORTHWEST EMC

RADIATED SPURIOUS EMISSIONS

PSA 2008.07.21
EMI 2008.1.9

EUT:	WF1101	**Work Order:**	VERW0037
Serial Number:	M33142-001-0007	**Date:**	04/14/10
Customer:	Veriwave, Inc.	**Temperature:**	22
Attendees:	Brian Denheyer	**Humidity:**	38%
Project:	None	**Barometric Pres.:**	30.15 in
Tested by:	Rod Peloquin	**Power:** 120VAC/60Hz	**Job Site:** EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

TEST PARAMETERS

Antenna Height(s) (m)	1 - 4	**Test Distance (m)**	3

COMMENTS

Ethernet to remote PC, standard antenna (unknown)

EUT OPERATING MODES

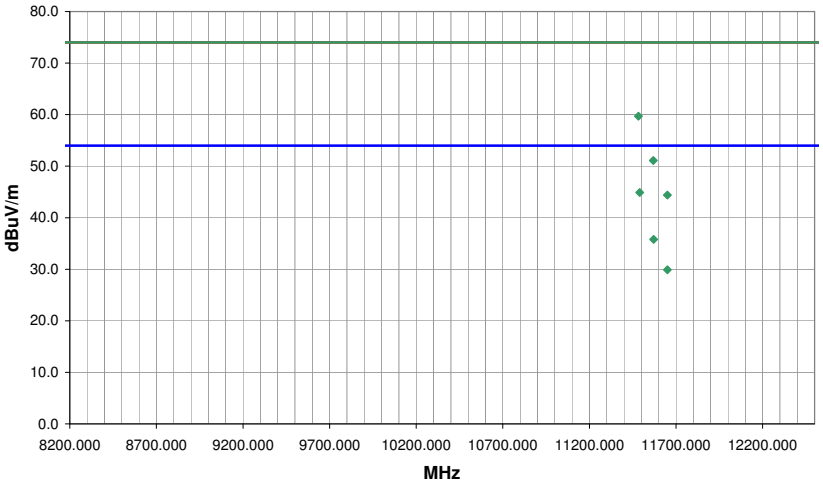
Transmitting 802.11(n), 20 MHz, MCS0, 17 dBm

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	11
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
11490.650	51.6	-6.7	72.0	1.4	3.0	0.0	V-Horn	AV	0.0	44.9	54.0	-9.1	Ch. 149, EUT on side, Antenna vertical
11483.050	66.4	-6.7	72.0	1.4	3.0	0.0	V-Horn	PK	0.0	59.7	74.0	-14.3	Ch. 149, EUT on side, Antenna vertical
11570.300	42.1	-6.3	75.0	1.1	3.0	0.0	V-Horn	AV	0.0	35.8	54.0	-18.2	Ch. 157, EUT on side, Antenna vertical
11568.650	57.4	-6.3	75.0	1.1	3.0	0.0	V-Horn	PK	0.0	51.1	74.0	-22.9	Ch. 157, EUT on side, Antenna vertical
11650.050	35.7	-5.8	250.0	1.0	3.0	0.0	V-Horn	AV	0.0	29.9	54.0	-24.1	Ch. 165, EUT on side, Antenna vertical
11650.250	50.2	-5.8	250.0	1.0	3.0	0.0	V-Horn	PK	0.0	44.4	74.0	-29.6	Ch. 165, EUT on side, Antenna vertical

NORTHWEST EMC

RADIATED SPURIOUS EMISSIONS

PSA 2008.07.21
EMI 2009.8.29

EUT:	WF1101	Work Order:	VERW0037
Serial Number:	M33142-001-0007	Date:	03/31/10
Customer:	Veriwave, Inc.	Temperature:	22
Attendees:	Brian Denheyer	Humidity:	38%
Project:	None	Barometric Pres.:	30.15 in
Tested by:	Rod Peloquin	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

Ethernet to remote PC, standard antenna, Antenna 1

EUT OPERATING MODES

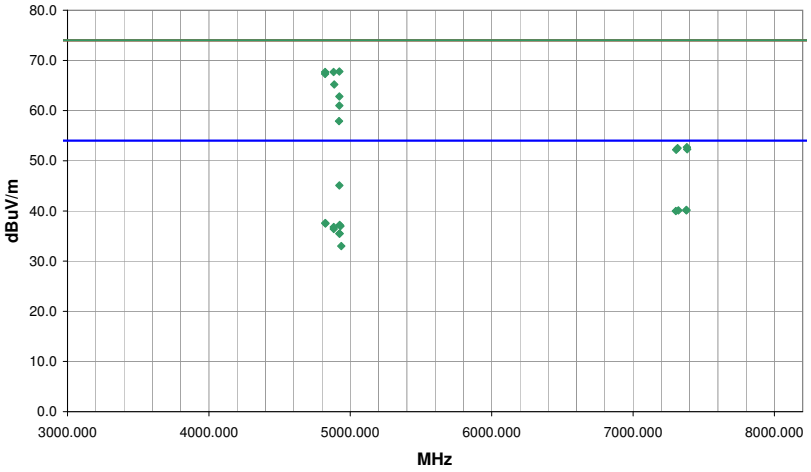
Transmitting 802.11(n), 2.4 GHz, 15 dBm

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	4
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
4922.140	57.9	9.9	73.0	1.0	3.0	0.0	V-Horn	PK	0.0	67.8	74.0	-6.2	High Channel, MCS0, EUT on side, Antenna vertical
4822.200	58.1	9.6	76.0	1.2	3.0	0.0	V-Horn	PK	0.0	67.7	74.0	-6.3	Low Channel, MCS0, EUT on side, Antenna vertical
4881.800	58.0	9.7	339.0	1.0	3.0	0.0	H-Horn	PK	0.0	67.7	74.0	-6.3	Mid Channel, MCS0, EUT horizontal, Antenna horizontal-90
4822.320	57.7	9.6	339.0	1.0	3.0	0.0	H-Horn	PK	0.0	67.3	74.0	-6.7	Low Channel, MCS0, EUT horizontal, Antenna horizontal-90
4886.330	55.5	9.7	54.0	1.2	3.0	0.0	V-Horn	PK	0.0	65.2	74.0	-8.8	Mid Channel, MCS0, EUT on side, Antenna vertical
4922.890	52.9	9.9	329.0	1.0	3.0	0.0	H-Horn	PK	0.0	62.8	74.0	-11.2	High Channel, MCS0, EUT horizontal, Antenna horizontal-90
4922.770	51.1	9.9	72.0	1.0	3.0	0.0	V-Horn	PK	0.0	61.0	74.0	-13.0	High Channel, MCS7, EUT horizontal, Antenna vertical
7377.780	23.7	16.5	360.0	1.3	3.0	0.0	V-Horn	AV	0.0	40.2	54.0	-13.8	High Channel, MCS0, EUT on side Antenna vertical
7320.330	23.9	16.2	260.0	1.5	3.0	0.0	V-Horn	AV	0.0	40.1	54.0	-13.9	Mid Channel, MCS0, EUT on side Antenna vertical
7377.600	23.6	16.5	258.0	1.9	3.0	0.0	H-Horn	AV	0.0	40.1	54.0	-13.9	High Channel, MCS0, EUT horizontal, Antenna horizontal-90
7302.900	23.9	16.1	359.0	1.0	3.0	0.0	H-Horn	AV	0.0	40.0	54.0	-14.0	Mid Channel, MCS0, EUT horizontal, Antenna horizontal-90
4920.640	48.0	9.9	328.0	1.0	3.0	0.0	H-Horn	PK	0.0	57.9	74.0	-16.1	High Channel, MCS7, EUT horizontal, Antenna horizontal-90
4823.460	28.0	9.6	76.0	1.2	3.0	0.0	V-Horn	AV	0.0	37.6	54.0	-16.4	Low Channel, MCS0, EUT on side, Antenna vertical
4824.210	27.9	9.6	339.0	1.0	3.0	0.0	H-Horn	AV	0.0	37.5	54.0	-16.5	Low Channel, MCS0, EUT horizontal, Antenna horizontal-90
4924.660	27.3	9.9	73.0	1.0	3.0	0.0	V-Horn	AV	0.0	37.2	54.0	-16.8	High Channel, MCS0, EUT on side, Antenna vertical
4930.990	27.1	9.9	72.0	1.0	3.0	0.0	V-Horn	AV	0.0	37.0	54.0	-17.0	High Channel, MCS7, EUT horizontal, Antenna vertical
4883.000	27.1	9.7	54.0	1.2	3.0	0.0	V-Horn	AV	0.0	36.8	54.0	-17.2	Mid Channel, MCS0, EUT on side, Antenna vertical
4883.510	26.7	9.7	339.0	1.0	3.0	0.0	H-Horn	AV	0.0	36.4	54.0	-17.6	Mid Channel, MCS0, EUT horizontal, Antenna horizontal-90
4923.580	25.6	9.9	328.0	1.0	3.0	0.0	H-Horn	AV	0.0	35.5	54.0	-18.5	High Channel, MCS7, EUT horizontal, Antenna horizontal-90
4924.360	25.6	9.9	329.0	1.0	3.0	0.0	H-Horn	AV	0.0	35.5	54.0	-18.5	High Channel, MCS0, EUT horizontal, Antenna horizontal-90
4935.940	23.1	9.9	166.0	1.0	3.0	0.0	H-Horn	AV	0.0	33.0	54.0	-21.0	High Channel, MCS0, EUT on side, Antenna horizontal
7380.120	36.1	16.6	360.0	1.3	3.0	0.0	V-Horn	PK	0.0	52.7	74.0	-21.3	High Channel, MCS0, EUT on side Antenna vertical
7314.780	36.3	16.2	260.0	1.5	3.0	0.0	V-Horn	PK	0.0	52.5	74.0	-21.5	Mid Channel, MCS0, EUT on side Antenna vertical
7382.760	35.7	16.6	258.0	1.9	3.0	0.0	H-Horn	PK	0.0	52.3	74.0	-21.7	High Channel, MCS0, EUT horizontal, Antenna horizontal-90
7304.520	36.0	16.2	359.0	1.0	3.0	0.0	H-Horn	PK	0.0	52.2	74.0	-21.8	Mid Channel, MCS0, EUT horizontal, Antenna horizontal-90
4922.710	35.2	9.9	166.0	1.0	3.0	0.0	H-Horn	PK	0.0	45.1	74.0	-28.9	High Channel, MCS0, EUT on side, Antenna horizontal

NORTHWEST
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RADIATED SPURIOUS EMISSIONS

PSA 2008.07.21
EMI 2009.8.29

EUT:	WF1101	**Work Order:**	VERW0037
Serial Number:	M33142-001-0007	**Date:**	03/31/10
Customer:	Veriwave, Inc.	**Temperature:**	22
Attendees:	Brian Denheyer	**Humidity:**	38%
Project:	None	**Barometric Pres.:**	30.15 in
Tested by:	Rod Peloquin	**Power:** 120VAC/60Hz	**Job Site:** EV01

TEST SPECIFICATIONS | **Test Method**

FCC 15.247:2010 | ANSI C63.10:2009

TEST PARAMETERS

Antenna Height(s) (m)	1 - 4	**Test Distance (m)**	3

COMMENTS

Ethernet to remote PC, standard antenna, Antenna 1

EUT OPERATING MODES

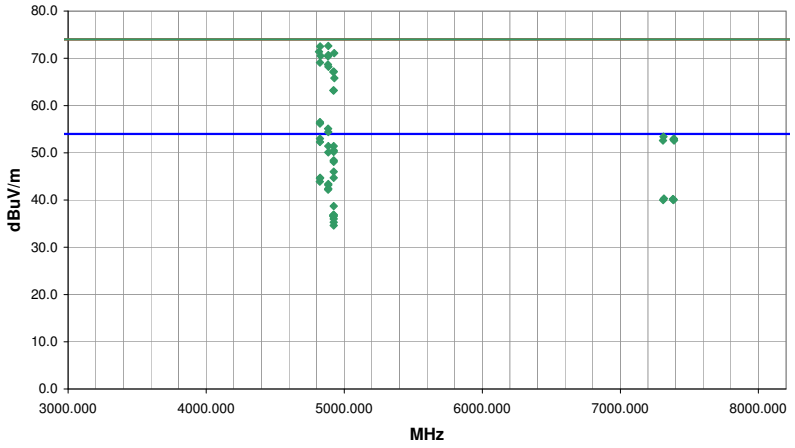
Transmitting 802.11(bg), 2.4 GHz, 17 dBm

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	5
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
4824.035	43.4	9.6	89.0	1.0	3.0	0.0	V-Horn	AV	0.0	53.0	54.0	-1.0	Low Channel, 1 Mbps, EUT on side Antenna vertical
4884.290	62.9	9.7	88.0	1.0	3.0	0.0	V-Horn	PK	0.0	72.6	74.0	-1.4	Mid Channel, 6 Mbps, EUT on side Antenna vertical
4824.860	62.9	9.6	89.0	1.0	3.0	0.0	V-Horn	PK	0.0	72.5	74.0	-1.5	Low Channel, 6 Mbps, EUT on side Antenna vertical
4824.045	42.7	9.6	346.0	1.0	3.0	0.0	H-Horn	AV	0.0	52.3	54.0	-1.7	Low Channel, 1 Mbps, EUT horizontal, Antenna horizontal-90
4883.975	41.7	9.7	88.0	1.0	3.0	0.0	V-Horn	AV	0.0	51.4	54.0	-2.6	Mid Channel, 1 Mbps, EUT on side Antenna vertical
4816.940	61.9	9.5	346.0	1.0	3.0	0.0	H-Horn	PK	0.0	71.4	74.0	-2.6	Low Channel, 6 Mbps, EUT horizontal, Antenna horizontal-90
4927.570	61.2	9.9	344.0	1.0	3.0	0.0	H-Horn	PK	0.0	71.1	74.0	-2.9	High Channel, 6 Mbps, EUT horizontal, Antenna horizontal-90
4884.100	61.0	9.7	88.0	1.0	3.0	0.0	V-Horn	PK	0.0	70.7	74.0	-3.3	Mid Channel, 36 Mbps, EUT on side Antenna vertical
4828.520	60.9	9.6	346.0	1.0	3.0	0.0	H-Horn	PK	0.0	70.5	74.0	-3.5	Low Channel, 36 Mbps, EUT horizontal, Antenna horizontal-90
4883.260	60.7	9.7	348.0	1.0	3.0	0.0	H-Horn	PK	0.0	70.4	74.0	-3.6	Mid Channel, 6 Mbps, EUT horizontal, Antenna horizontal-90
4884.045	40.4	9.7	348.0	1.0	3.0	0.0	H-Horn	AV	0.0	50.1	54.0	-3.9	Mid Channel, 1 Mbps, EUT horizontal, Antenna horizontal-90
4824.680	59.5	9.6	89.0	1.0	3.0	0.0	V-Horn	PK	0.0	69.1	74.0	-4.9	Low Channel, 36 Mbps, EUT on side Antenna vertical
4881.720	59.0	9.7	343.0	1.0	3.0	0.0	V-Horn	PK	0.0	68.7	74.0	-5.3	Mid Channel, 6 Mbps, EUT on side Antenna vertical
4885.140	58.5	9.7	348.0	1.0	3.0	0.0	H-Horn	PK	0.0	68.2	74.0	-5.8	Mid Channel, 36 Mbps, EUT horizontal, Antenna horizontal-90
4923.360	57.3	9.9	343.0	1.0	3.0	0.0	V-Horn	PK	0.0	67.2	74.0	-6.8	High Channel, 36 Mbps, EUT on side Antenna vertical
4921.860	57.2	9.9	343.0	1.0	3.0	0.0	V-Horn	PK	0.0	67.1	74.0	-6.9	High Channel, 6 Mbps, EUT on side Antenna vertical
4924.025	36.1	9.9	84.0	1.0	3.0	0.0	V-Horn	AV	0.0	46.0	54.0	-8.0	High Channel, 1 Mbps, EUT on side Antenna vertical
4928.760	55.9	9.9	350.0	1.0	3.0	0.0	H-Horn	PK	0.0	65.8	74.0	-8.2	High Channel, 36 Mbps, EUT horizontal, Antenna horizontal-90
4924.030	34.8	9.9	344.0	1.0	3.0	0.0	H-Horn	AV	0.0	44.7	54.0	-9.3	High Channel, 1 Mbps, EUT horizontal, Antenna horizontal-90
4825.080	35.1	9.6	89.0	1.0	3.0	0.0	V-Horn	AV	0.0	44.7	54.0	-9.3	Low Channel, 36 Mbps, EUT on side Antenna vertical
4824.540	35.0	9.6	89.0	1.0	3.0	0.0	V-Horn	AV	0.0	44.6	54.0	-9.4	Low Channel, 6 Mbps, EUT on side Antenna vertical
4823.360	34.3	9.6	346.0	1.0	3.0	0.0	H-Horn	AV	0.0	43.9	54.0	-10.1	Low Channel, 36 Mbps, EUT horizontal, Antenna horizontal-90
4884.470	33.7	9.7	88.0	1.0	3.0	0.0	V-Horn	AV	0.0	43.4	54.0	-10.6	Mid Channel, 6 Mbps, EUT on side Antenna vertical
4921.360	53.3	9.9	343.0	1.0	3.0	0.0	V-Horn	PK	0.0	63.2	74.0	-10.8	High Channel, 54 Mbps, EUT on side Antenna vertical
4924.180	53.3	9.9	350.0	1.0	3.0	0.0	H-Horn	PK	0.0	63.2	74.0	-10.8	High Channel, 54 Mbps, EUT horizontal, Antenna horizontal-90
4883.885	33.5	9.7	88.0	1.0	3.0	0.0	V-Horn	AV	0.0	43.2	54.0	-10.8	Mid Channel, 36 Mbps, EUT on side Antenna vertical
4884.100	32.7	9.7	348.0	1.0	3.0	0.0	H-Horn	AV	0.0	42.4	54.0	-11.6	Mid Channel, 6 Mbps, EUT horizontal, Antenna horizontal-90
4883.640	32.5	9.7	348.0	1.0	3.0	0.0	H-Horn	AV	0.0	42.2	54.0	-11.8	Mid Channel, 36 Mbps, EUT horizontal, Antenna horizontal-90
7315.330	24.1	16.2	40.0	1.0	3.0	0.0	H-Horn	AV	0.0	40.3	54.0	-13.7	Mid Channel, 6 Mbps, EUT horizontal, Antenna horizontal-90
7381.130	23.6	16.6	340.0	1.9	3.0	0.0	H-Horn	AV	0.0	40.2	54.0	-13.8	High Channel, 1 Mbps, EUT horizontal, Antenna horizontal-90
7382.720	23.5	16.6	225.0	1.3	3.0	0.0	V-Horn	AV	0.0	40.1	54.0	-13.9	High Channel, 1 Mbps, EUT on side Antenna vertical
7384.990	23.5	16.6	57.0	1.9	3.0	0.0	H-Horn	AV	0.0	40.1	54.0	-13.9	High Channel, 6 Mbps, EUT horizontal, Antenna horizontal-90
7309.500	23.8	16.2	199.0	1.0	3.0	0.0	H-Horn	AV	0.0	40.0	54.0	-14.0	Mid Channel, 1 Mbps, EUT horizontal, Antenna horizontal-90
7384.480	23.4	16.6	170.0	1.8	3.0	0.0	V-Horn	AV	0.0	40.0	54.0	-14.0	High Channel, 6 Mbps, EUT on side Antenna vertical
4924.040	28.8	9.9	288.0	1.6	3.0	0.0	H-Horn	AV	0.0	38.7	54.0	-15.3	High Channel, 1 Mbps, EUT on side Antenna horizontal
4923.580	27.0	9.9	350.0	1.0	3.0	0.0	H-Horn	AV	0.0	36.9	54.0	-17.1	High Channel, 36 Mbps, EUT horizontal, Antenna horizontal-90
4921.880	26.9	9.9	343.0	1.0	3.0	0.0	V-Horn	AV	0.0	36.8	54.0	-17.2	High Channel, 6 Mbps, EUT on side Antenna vertical
4922.900	26.8	9.9	343.0	1.0	3.0	0.0	V-Horn	AV	0.0	36.7	54.0	-17.3	High Channel, 36 Mbps, EUT on side Antenna vertical
4921.660	26.7	9.9	350.0	1.0	3.0	0.0	H-Horn	AV	0.0	36.6	54.0	-17.4	High Channel, 54 Mbps, EUT horizontal, Antenna horizontal-90
4922.580	26.6	9.9	343.0	1.0	3.0	0.0	V-Horn	AV	0.0	36.5	54.0	-17.5	High Channel, 54 Mbps, EUT on side Antenna vertical
4823.830	46.9	9.6	89.0	1.0	3.0	0.0	V-Horn	PK	0.0	56.5	74.0	-17.5	Low Channel, 1 Mbps, EUT on side Antenna vertical
4823.890	46.6	9.6	346.0	1.0	3.0	0.0	H-Horn	PK	0.0	56.2	74.0	-17.8	Low Channel, 1 Mbps, EUT horizontal, Antenna horizontal-90
4923.510	26.1	9.9	344.0	1.0	3.0	0.0	H-Horn	AV	0.0	36.0	54.0	-18.0	High Channel, 6 Mbps, EUT horizontal, Antenna horizontal-90
4923.750	25.4	9.9	344.0	1.0	3.0	0.0	H-Horn	AV	0.0	35.3	54.0	-18.7	High Channel, 11 Mbps, EUT horizontal, Antenna horizontal-90
4883.785	45.4	9.7	88.0	1.0	3.0	0.0	V-Horn	PK	0.0	55.1	74.0	-18.9	Mid Channel, 1 Mbps, EUT on side Antenna vertical
4924.010	24.7	9.9	343.0	1.0	3.0	0.0	V-Horn	AV	0.0	34.6	54.0	-19.4	High Channel, 11 Mbps, EUT on side Antenna vertical
4883.950	44.7	9.7	348.0	1.0	3.0	0.0	H-Horn	PK	0.0	54.4	74.0	-19.6	Mid Channel, 1 Mbps, EUT horizontal, Antenna horizontal-90
7312.640	37.2	16.2	199.0	1.0	3.0	0.0	H-Horn	PK	0.0	53.4	74.0	-20.6	Mid Channel, 1 Mbps, EUT horizontal, Antenna horizontal-90
7387.200	36.4	16.6	170.0	1.8	3.0	0.0	V-Horn	PK	0.0	53.0	74.0	-21.0	High Channel, 6 Mbps, EUT on side Antenna vertical
7385.910	36.2	16.6	225.0	1.3	3.0	0.0	V-Horn	PK	0.0	52.8	74.0	-21.2	High Channel, 1 Mbps, EUT on side Antenna vertical
7386.770	36.2	16.6	340.0	1.9	3.0	0.0	H-Horn	PK	0.0	52.8	74.0	-21.2	High Channel, 1 Mbps, EUT horizontal, Antenna horizontal-90
7308.510	36.4	16.2	40.0	1.0	3.0	0.0	H-Horn	PK	0.0	52.6	74.0	-21.4	Mid Channel, 6 Mbps, EUT horizontal, Antenna horizontal-90
7388.660	36.0	16.6	57.0	1.9	3.0	0.0	H-Horn	PK	0.0	52.6	74.0	-21.4	High Channel, 6 Mbps, EUT horizontal, Antenna horizontal-90
4923.960	41.5	9.9	84.0	1.0	3.0	0.0	V-Horn	PK	0.0	51.4	74.0	-22.6	High Channel, 1 Mbps, EUT on side Antenna vertical
4924.000	40.6	9.9	344.0	1.0	3.0	0.0	H-Horn	PK	0.0	50.5	74.0	-23.5	High Channel, 1 Mbps, EUT horizontal, Antenna horizontal-90
4924.030	40.3	9.9	344.0	1.0	3.0	0.0	H-Horn	PK	0.0	50.2	74.0	-23.8	High Channel, 11 Mbps, EUT horizontal, Antenna horizontal-90
4923.957	38.5	9.9	343.0	1.0	3.0	0.0	V-Horn	PK	0.0	48.4	74.0	-25.6	High Channel, 11 Mbps, EUT on side Antenna vertical
4923.890	38.2	9.9	288.0	1.6	3.0	0.0	H-Horn	PK	0.0	48.1	74.0	-25.9	High Channel, 1 Mbps, EUT on side Antenna horizontal

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RADIATED SPURIOUS EMISSIONS

PSA 2008.07.21
EMI 2009.8.29

EUT:	WF1101			**Work Order:**	VERW0035
Serial Number:	M33142-001-0007			**Date:**	03/17/10
Customer:	Veriwave, Inc.			**Temperature:**	22
Attendees:	Brian Denheyer			**Humidity:**	38%
Project:	None			**Barometric Pres.:**	30.15 in
Tested by:	Ethan Schoonover	**Power:**	120VAC/60Hz	**Job Site:**	EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

TEST PARAMETERS

Antenna Height(s) (m)	1 - 4	**Test Distance (m)**	3

COMMENTS

Ethernet to remote PC, standard antenna.

EUT OPERATING MODES

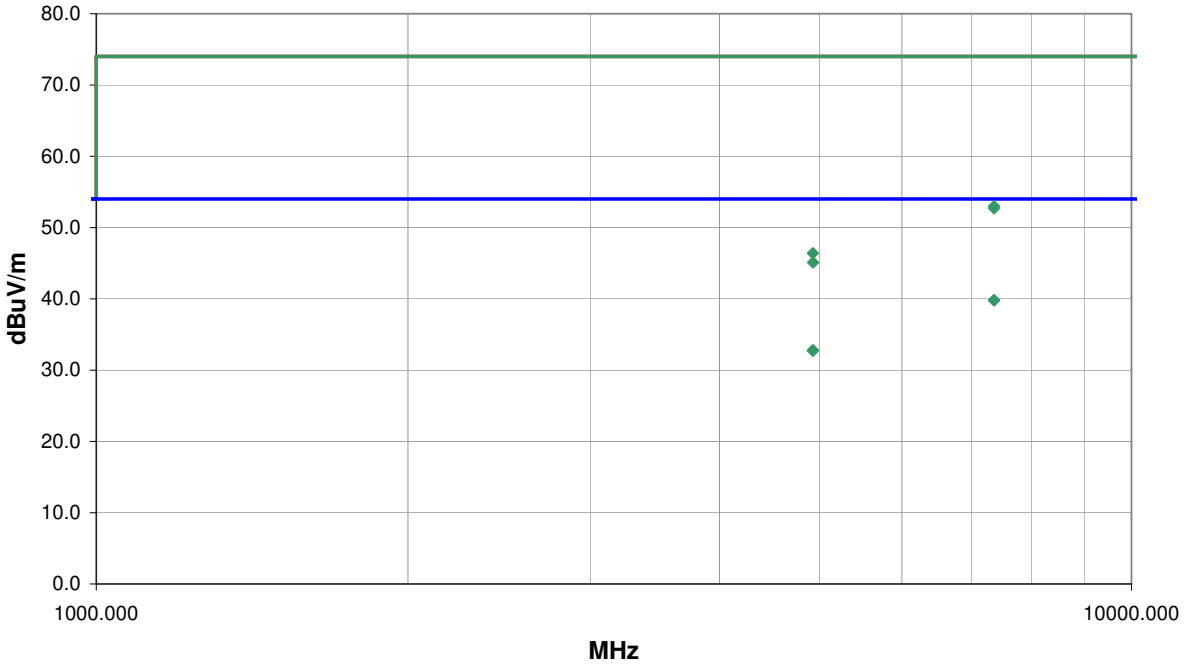
Transmitting 802.11(n), 40 MHz, Channel 11

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	6
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
7365.240	23.3	16.5	288.0	1.0	3.0	0.0	H-Horn	AV	0.0	39.8	54.0	-14.2
7366.797	23.3	16.5	360.0	1.7	3.0	0.0	V-Horn	AV	0.0	39.8	54.0	-14.2
7365.513	36.5	16.5	288.0	1.0	3.0	0.0	H-Horn	PK	0.0	53.0	74.0	-21.0
4922.617	22.9	9.9	164.0	1.0	3.0	0.0	V-Horn	AV	0.0	32.8	54.0	-21.2
4924.297	22.8	9.9	244.0	1.0	3.0	0.0	H-Horn	AV	0.0	32.7	54.0	-21.3
7366.183	36.2	16.5	360.0	1.7	3.0	0.0	V-Horn	PK	0.0	52.7	74.0	-21.3
4923.613	36.5	9.9	244.0	1.0	3.0	0.0	H-Horn	PK	0.0	46.4	74.0	-27.6
4924.540	35.2	9.9	164.0	1.0	3.0	0.0	V-Horn	PK	0.0	45.1	74.0	-28.9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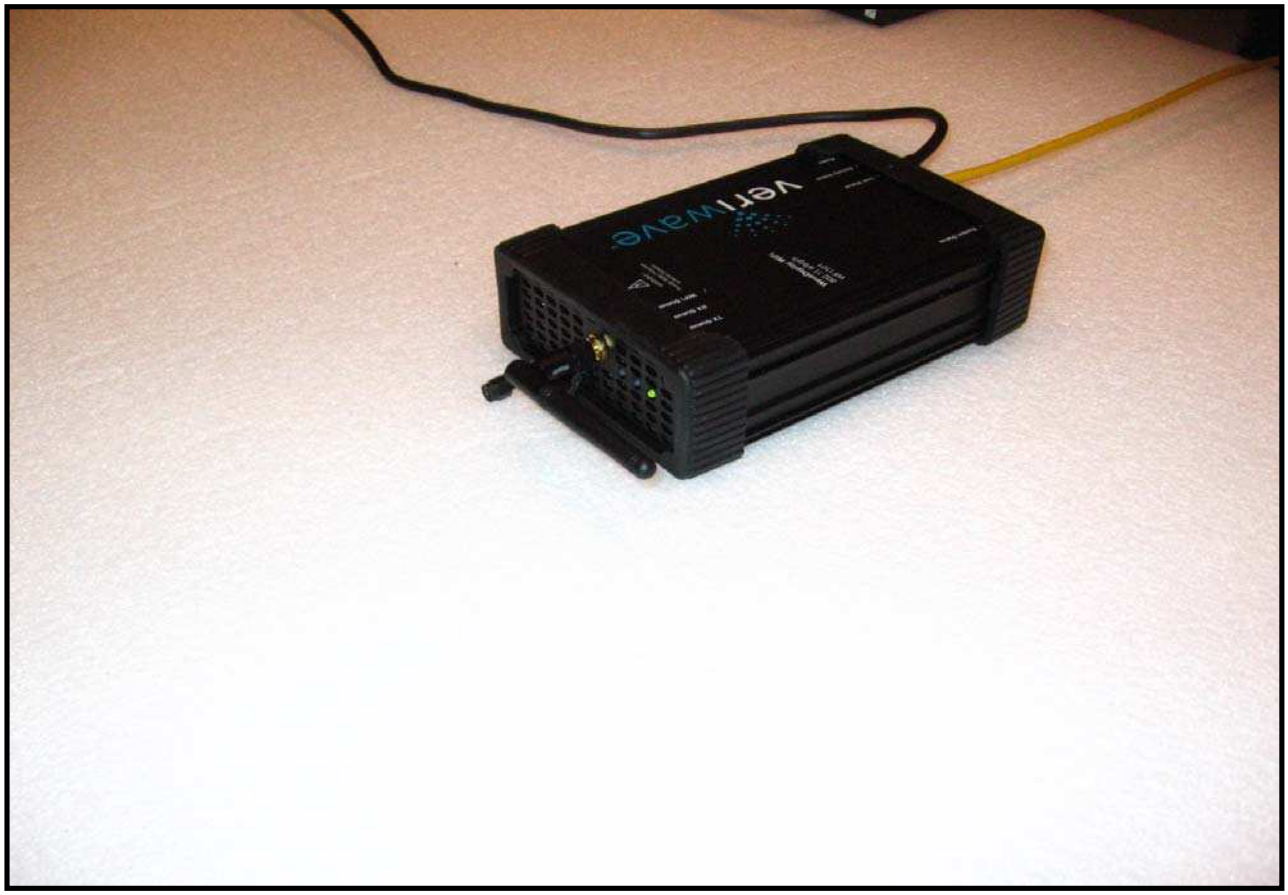
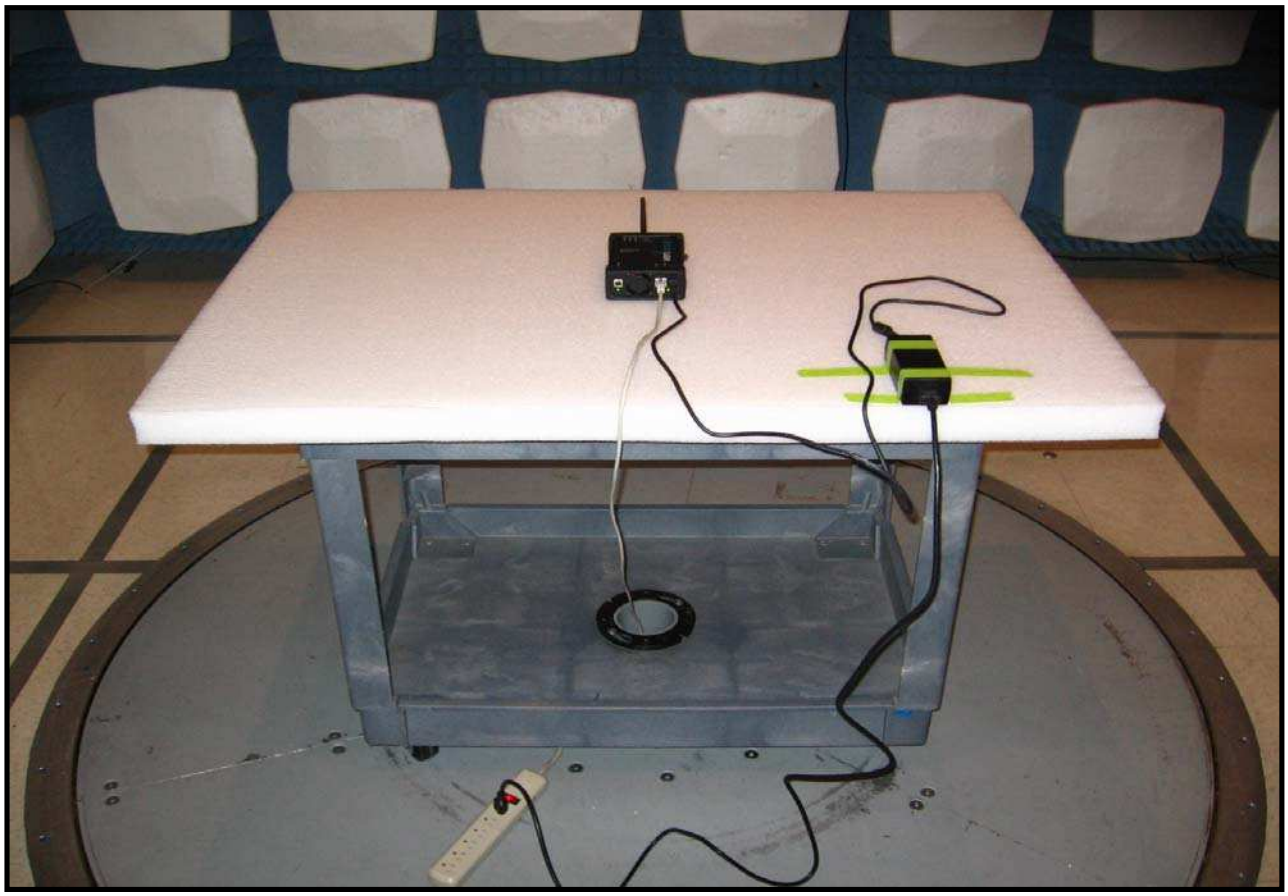

VeriWave

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