



FCC CFR47 PART 27 SUBPART M

CERTIFICATION TEST REPORT

FOR

TD-CDMA PCIE MINI MODULE WITH PANASONIC TABLET PC CF-H2

MODEL NUMBER: WW11A

FCC ID: ACJ9TGWW11A

REPORT NUMBER: 11J13998-1B

ISSUE DATE: JANUARY 11, 2012

Prepared for

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NVLAP LAB CODE 200065-0

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
---	31/10/11	Initial issue	T. Chan
A	13/12/11	Re-measure 6.1.1 Remove 7.1.1	T. Chan
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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: PANASONIC CORPORATION OF NORTH AMERICA
 ONE PANASONIC WAY, 4B-8, GUNPOSI
 SECAUCUS, NJ 07094, U.S.A.

EUT DESCRIPTION: TD-CDMA PCIE MINI MODULE WITH PANASONIC TABLET PC
 CF-H2

MODEL: WW11A

SERIAL NUMBER: 1DKSA00107 (CONDUCTED); 1DKSA00086 (RADIATED)

DATE TESTED: OCTOBER 09 TO OCTOBER 14, 2011
 DECEMBER 10 TO DECEMBER 13, 2011
 JANUARY 11, 2012

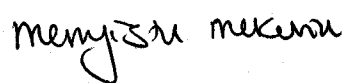
APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 27 SUBPART M	PASS

Compliance Certification Services (UL CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL CCS By:

Tested By:

THU CHAN
 ENGINEERING MANAGER
 UL CCS

MENGISTU MEKURIA
 EMC ENGINEER
 UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA/EIA 603C (2004), FCC CFR 47 Part 2, and FCC CFR 47 Part 27M.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a TD-CDMA PCIE Mini module embedded inside Panasonic Tablet PC CF-H2.

The TD-CDMA PCIE Mini module is manufactured by IPWireless.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Band	Mode	Frequency Range (MHz)	Conducted Output power (dBm)	Conducted Output power (mW)
5MHz	QPSK	2498.8 - 2687.2	24.41	276.06
	16QAM		24.22	264.24
	64QAM		24.19	262.42
10MHz	QPSK	2501.4 - 2684.6	24.56	285.76
	16QAM		24.64	291.07
	64QAM		24.42	276.69

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an integrated PCB antenna, with a maximum peak gain of 8.0dBi.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was ipwpcon.exe, Ver. 1c.

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power.

To determine the worst-case, the EUT was investigated for X, Y and Z Positions, and the worst position among them with AC Adapter. After the investigation the worst case is turned out to be Z position with AC Adapter for both 5MHZ and 10MHZ Bands.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Panasonic	CF-AA6373A M1	6373AM111202870A	DoC

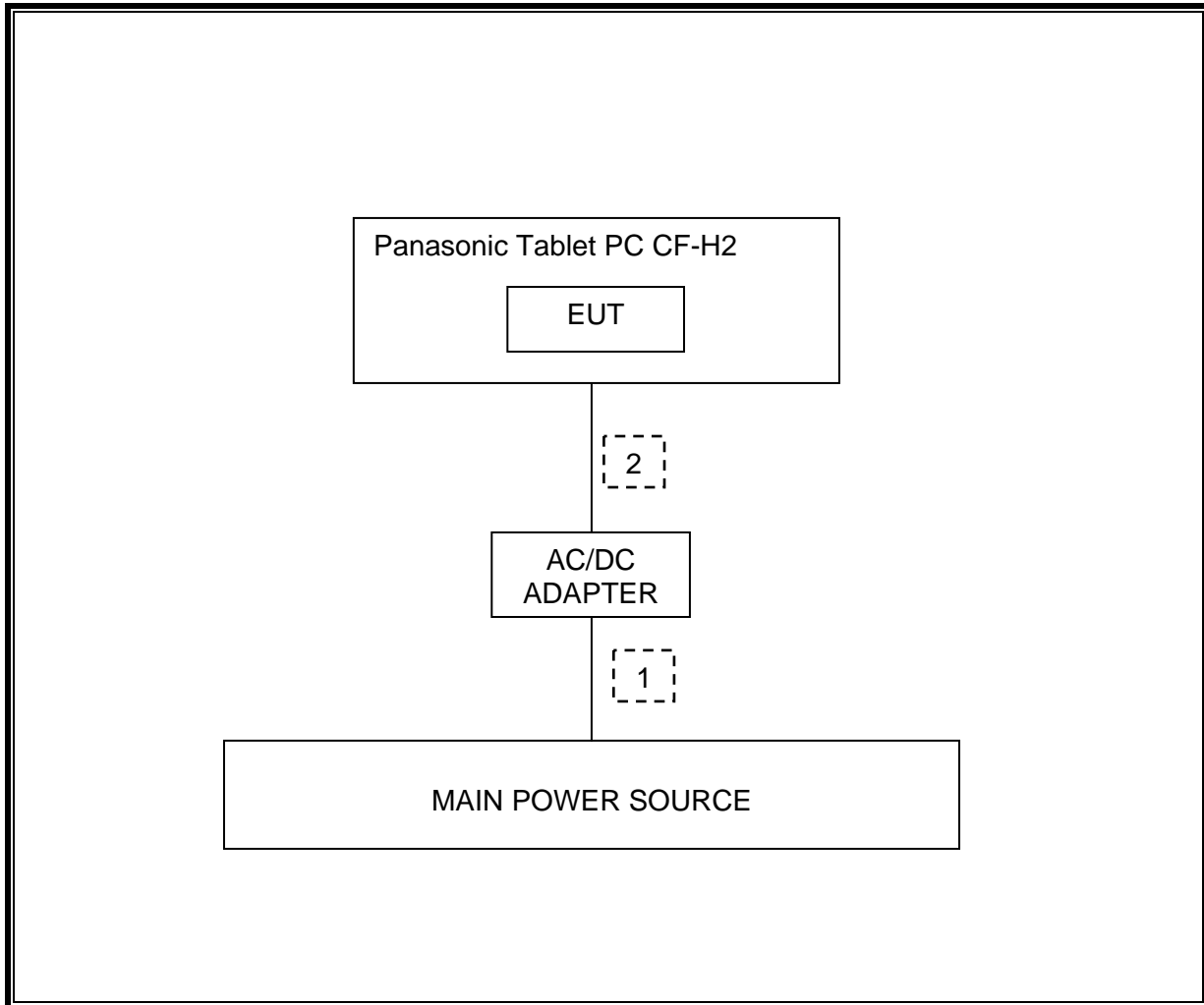
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identic Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	1.5m	N/A
2	DC	1	DC	Un-shielded	2.0m	N/A

TEST SETUP

The EUT is a standalone device. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01176	08/15/12
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	04/07/12
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	07/12/12
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01052	07/12/12
Antenna, Horn, 18 GHz	EMCO	3115	C00783	06/29/12
Antenna, Horn, 18 GHz	EMCO	3115	C00945	10/06/12
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00778	01/27/12
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01011	07/16/12
Temperature / Humidity Chamber	Thermotron	SE 600-10-10	C00930	04/20/12
Highpass Filter, 4.0 GHz	Micro-Tronics	HPM13351	N02706	CNR
Vector Signal Generator	Agilent / HP	E4438C	None	12/11/11

7. LIMITS AND RESULTS

7.1. ANTENNA PORT TEST RESULTS

7.1.1. 26 dB and 99% BANDWIDTH

LIMITS

§2.1049 & §27.53 (m)(6)

TEST PROCEDURE

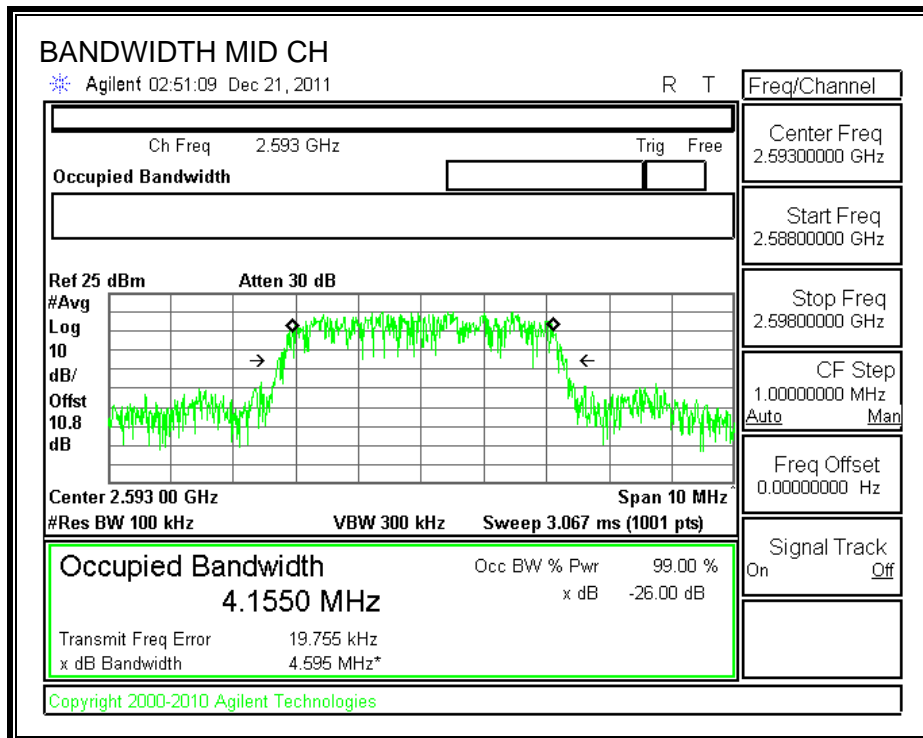
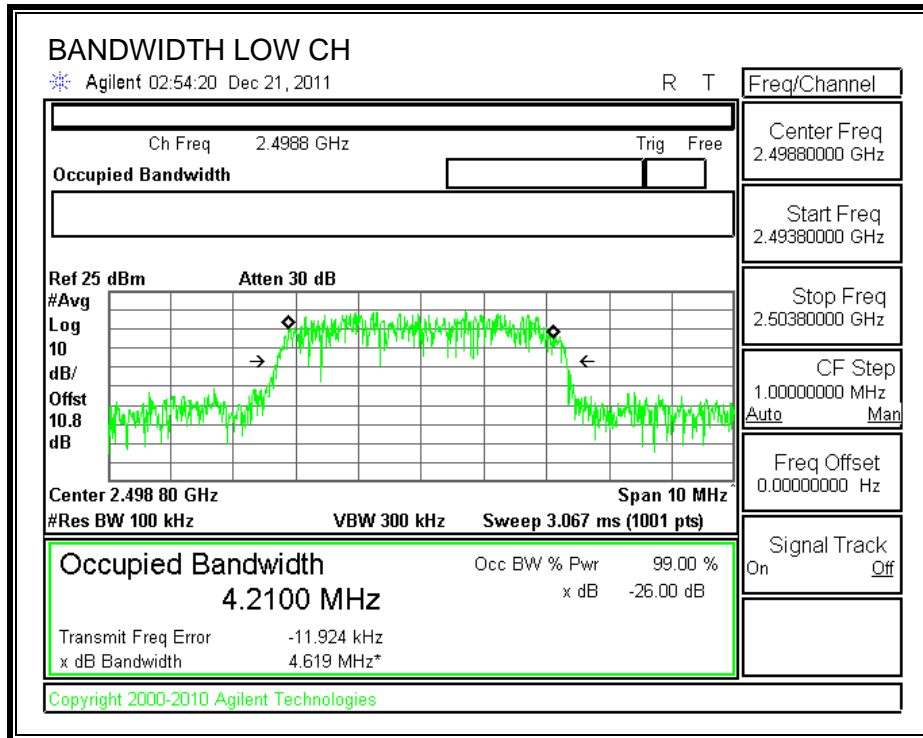
The transmitter outputs are connected to the spectrum analyzer via a combiner. The RBW is set to 1% to 3% of the measured bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal bandwidth function is utilized.

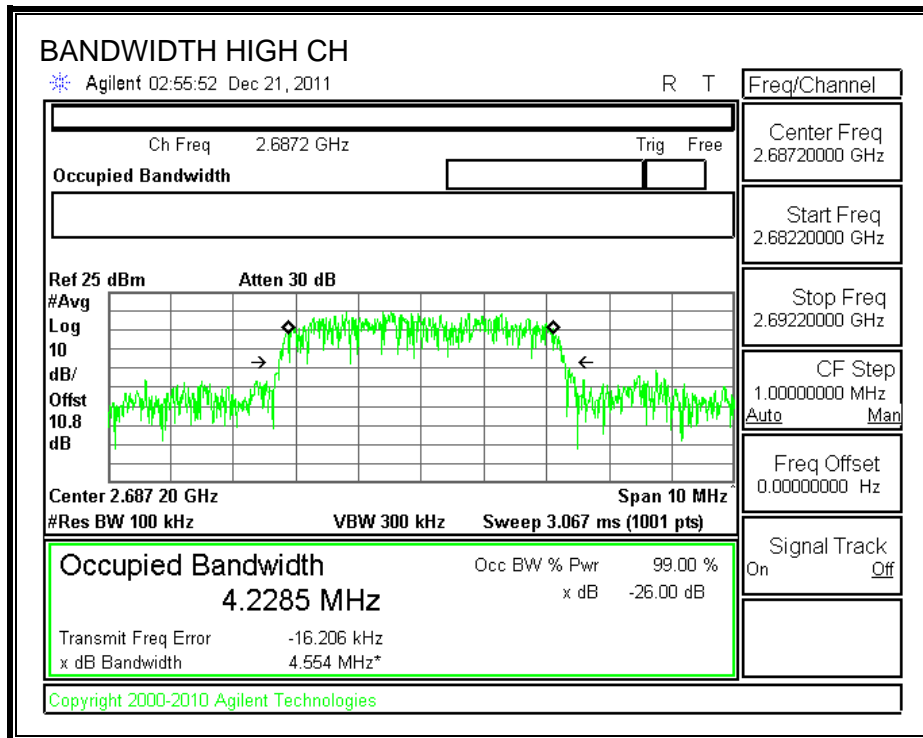
RESULTS

Mode		Channel	Frequency (MHz)	99% Bandwidth (MHz)	26 dB Bandwidth (MHz)
5MHz	QPSK	Low	2498.8	4.2100	4.6190
		Middle	2593.0	4.1550	4.5950
		High	2687.2	4.2285	4.5540
	16QAM	Low	2498.8	4.2495	4.6190
		Middle	2593.0	4.2355	4.5890
		High	2687.2	4.3596	4.6240
	64QAM	Low	2498.8	4.1524	4.6390
		Middle	2593.0	4.1938	4.6030
		High	2687.2	4.1589	4.5890
10MHz	QPSK	Low	2501.4	8.2582	9.3160
		Middle	2593.0	8.2121	9.2340
		High	2684.6	8.2353	9.2680
	16QAM	Low	2501.4	8.3930	9.2380
		Middle	2593.0	8.3625	9.3470
		High	2684.6	8.3897	9.2790
	64QAM	Low	2501.4	8.2808	9.2310
		Middle	2593.0	8.3296	9.3950
		High	2684.6	8.3895	9.3040

5MHz_QPSK

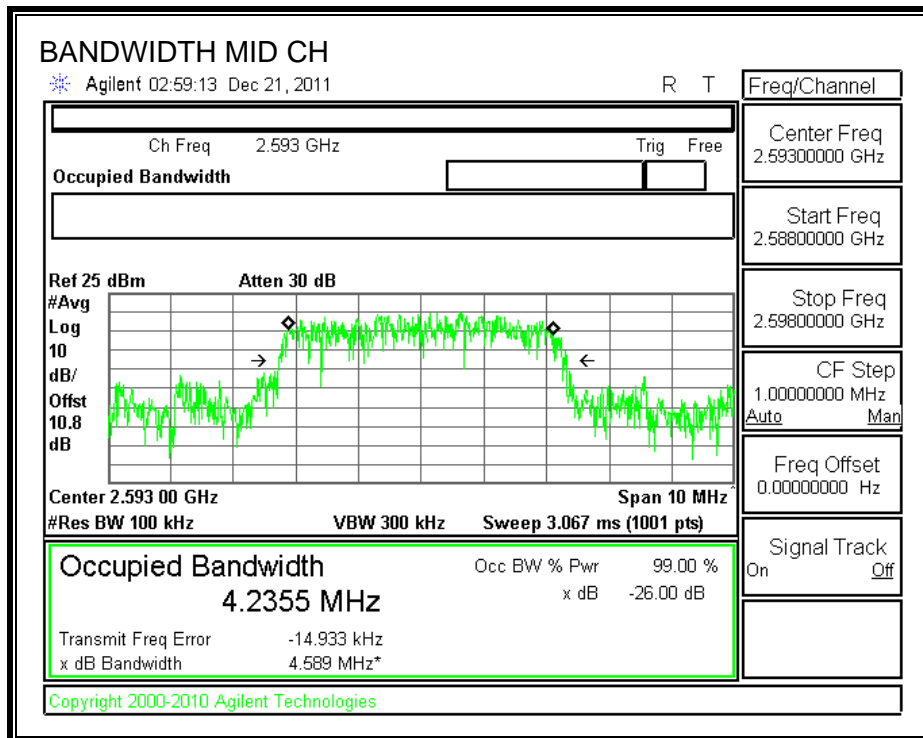
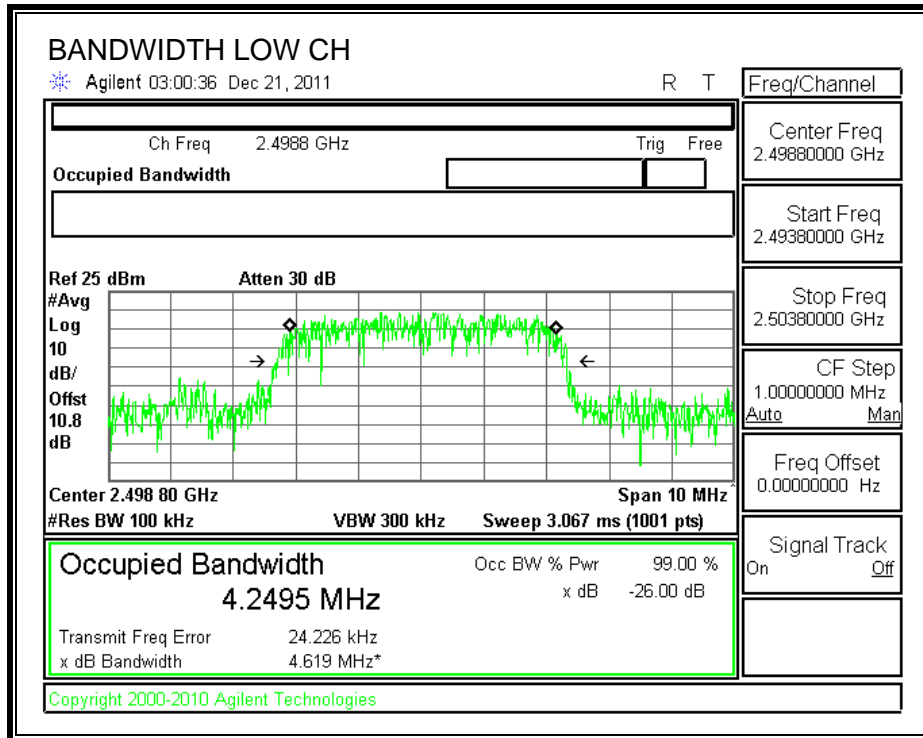
26 dB and 99% BANDWIDTH

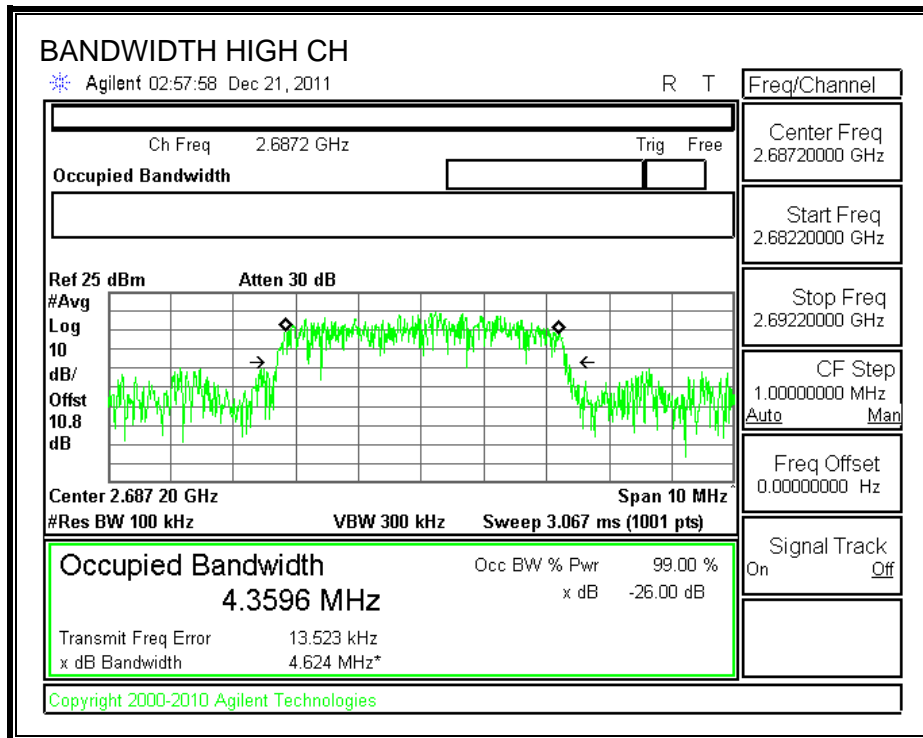




5MHz_16QAM

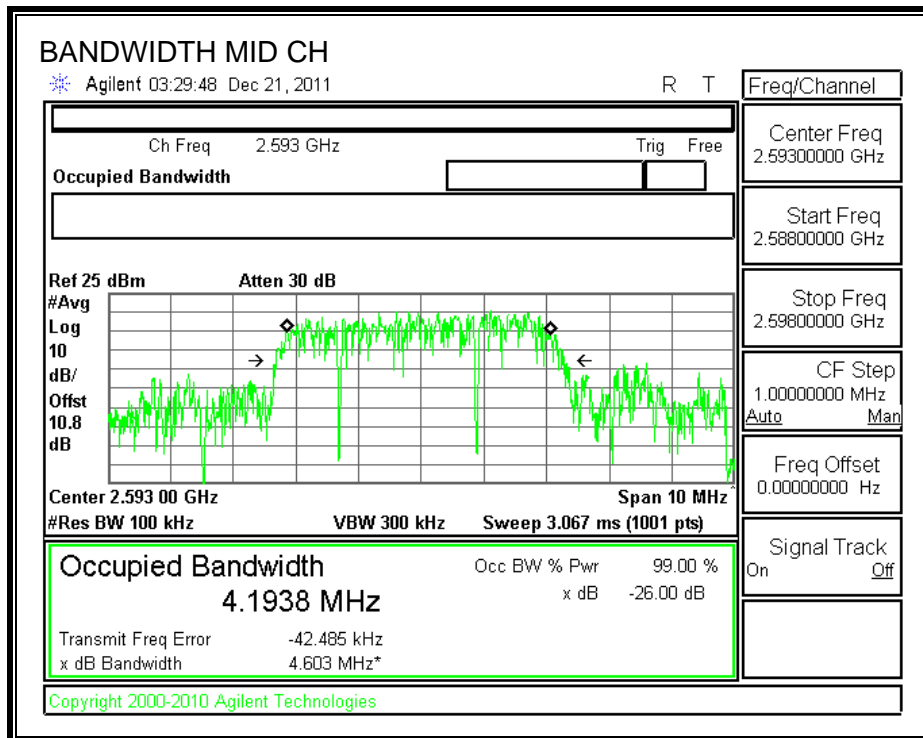
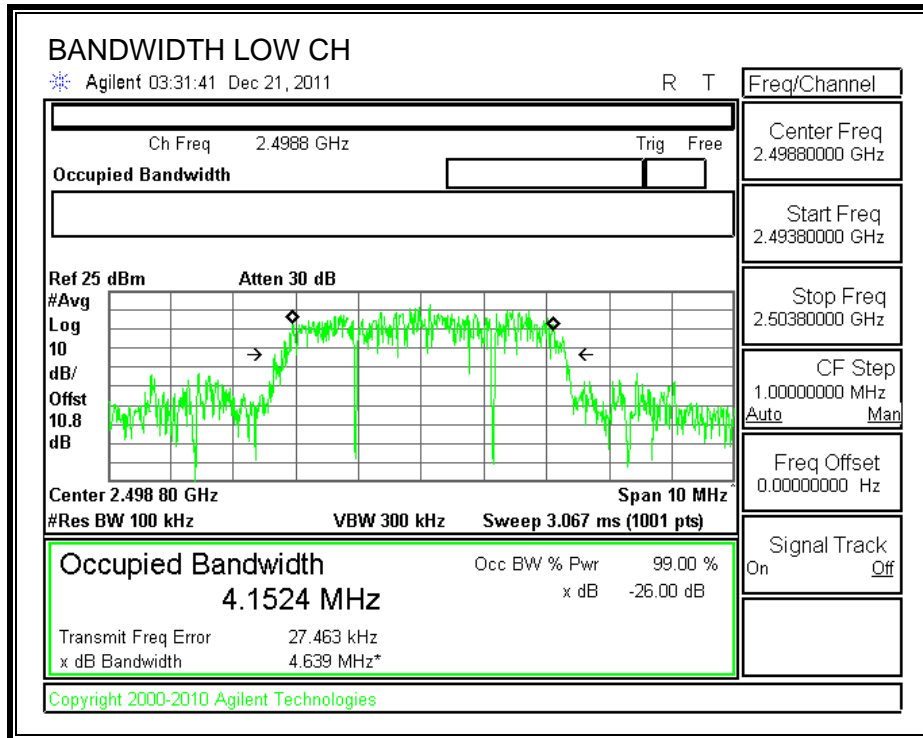
26 dB and 99% BANDWIDTH

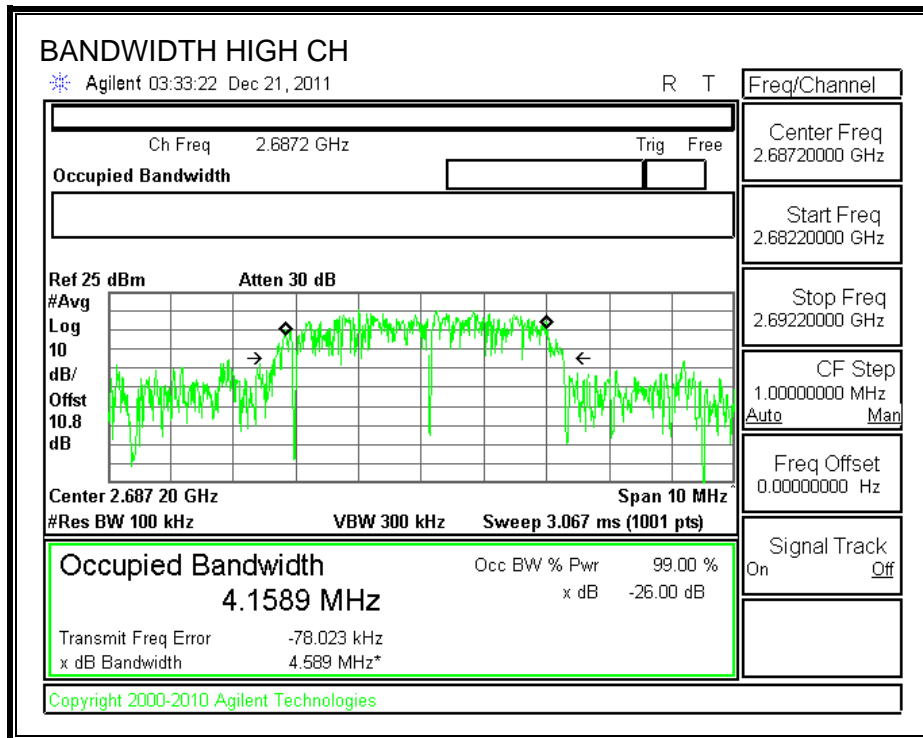




5MHz_64QAM

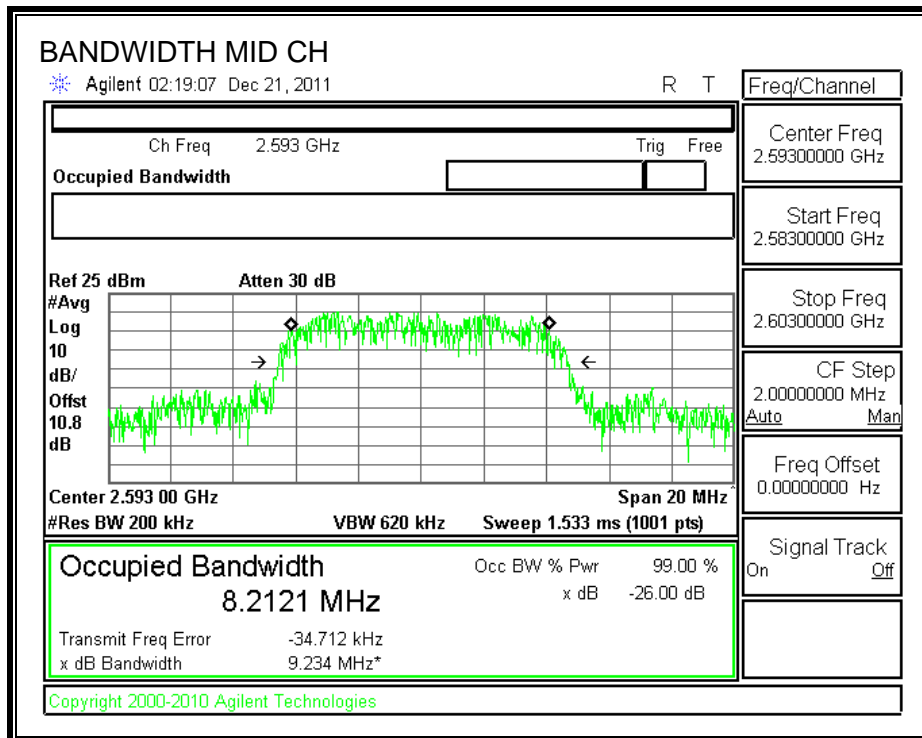
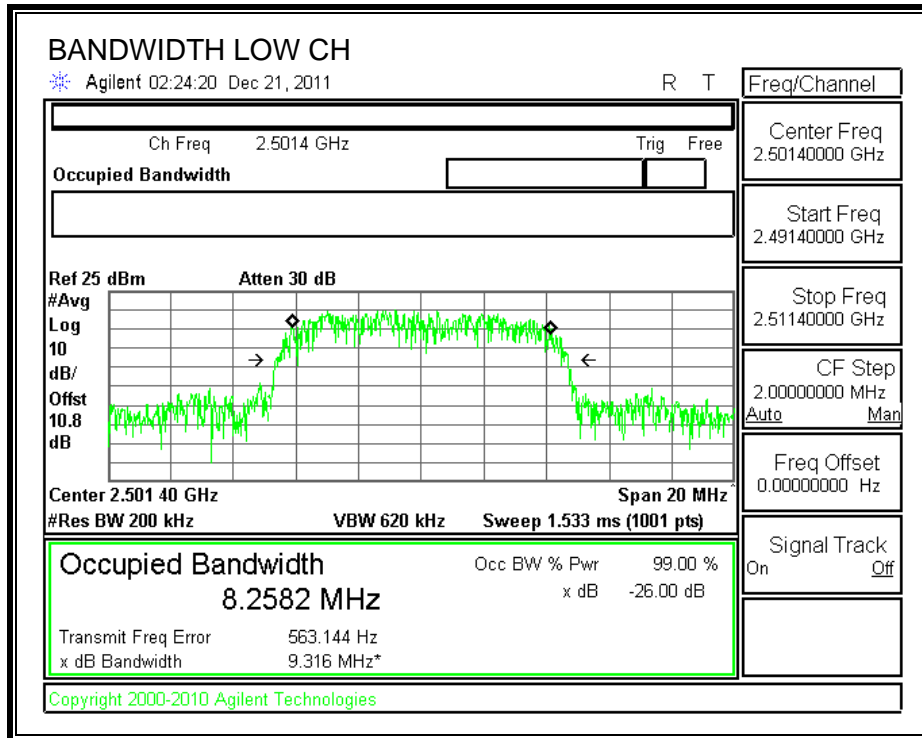
26 dB and 99% BANDWIDTH

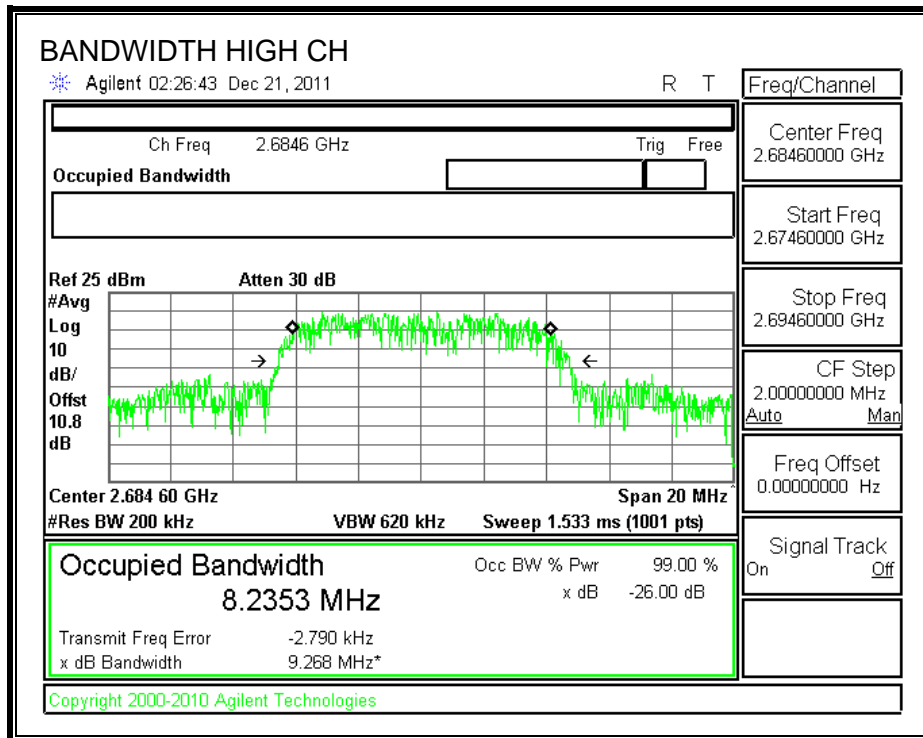




10MHz_QPSK

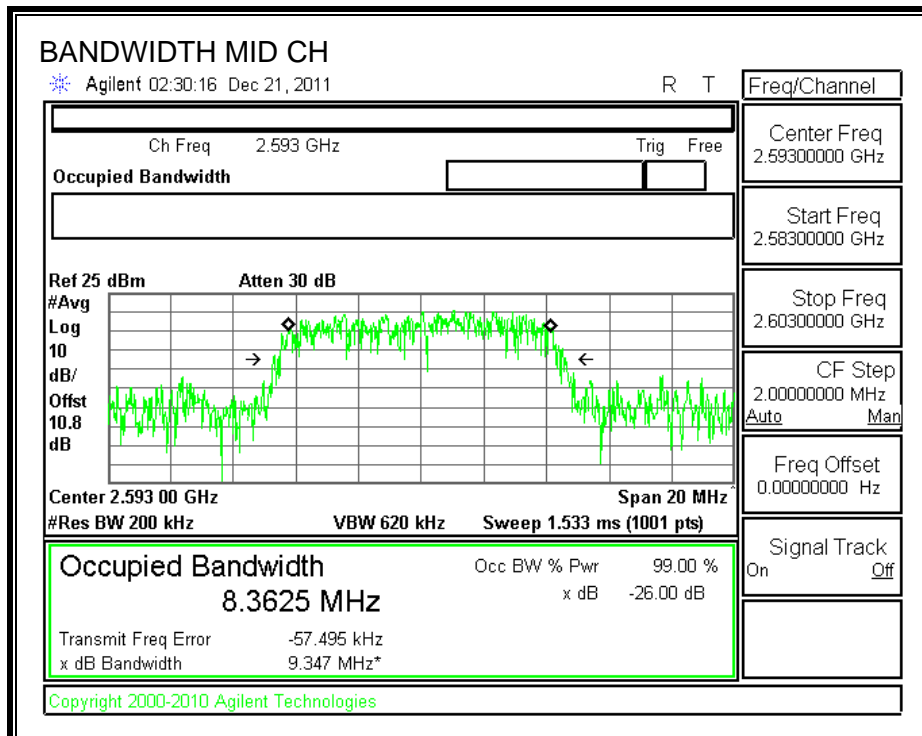
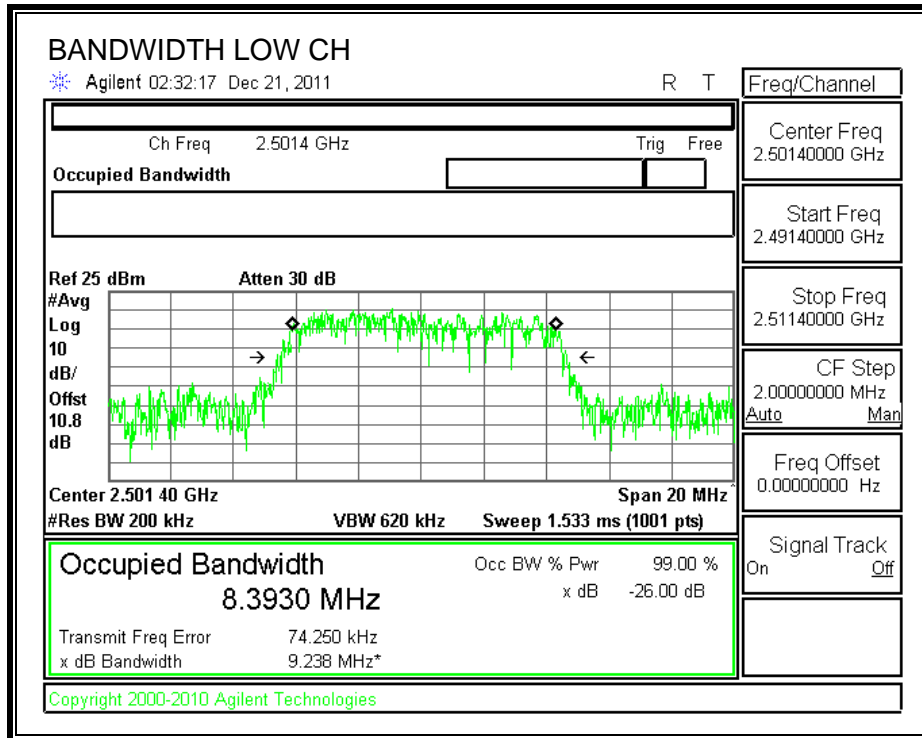
26 dB and 99% BANDWIDTH

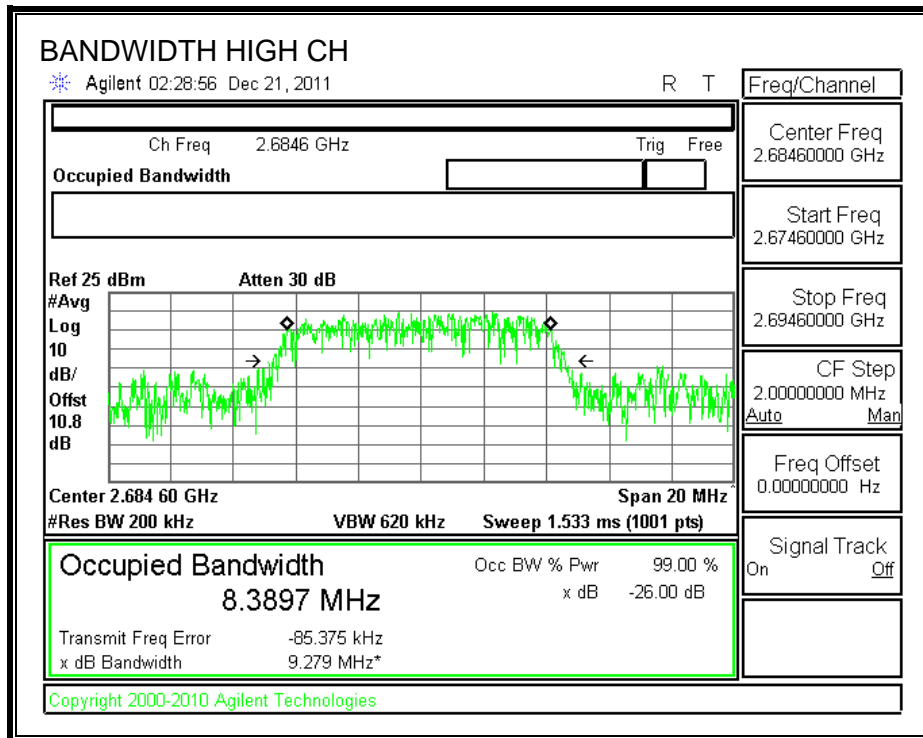




10MHz_16QAM

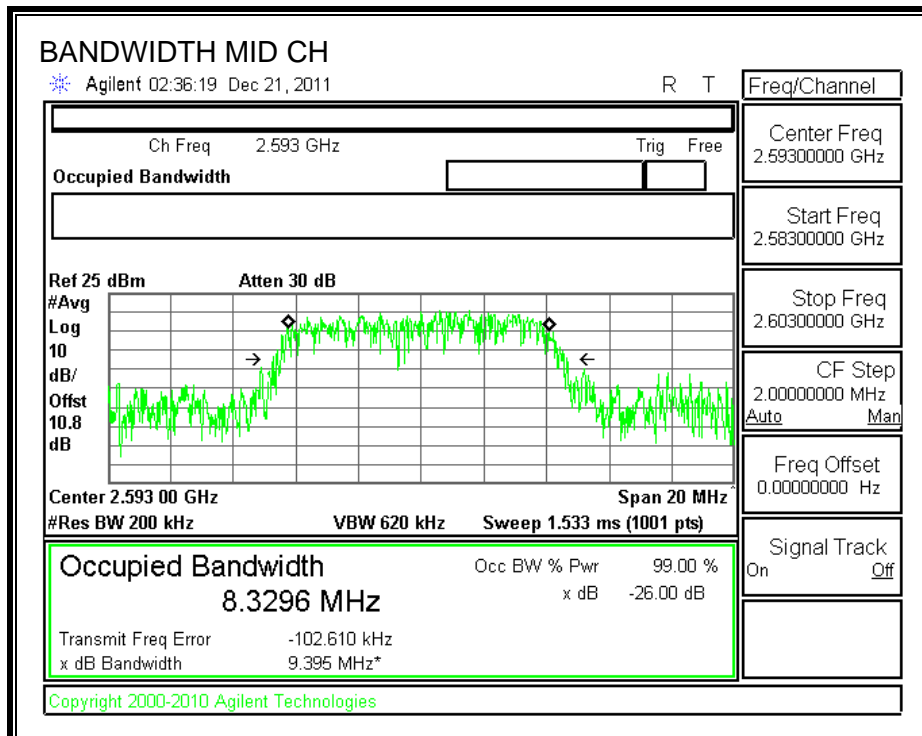
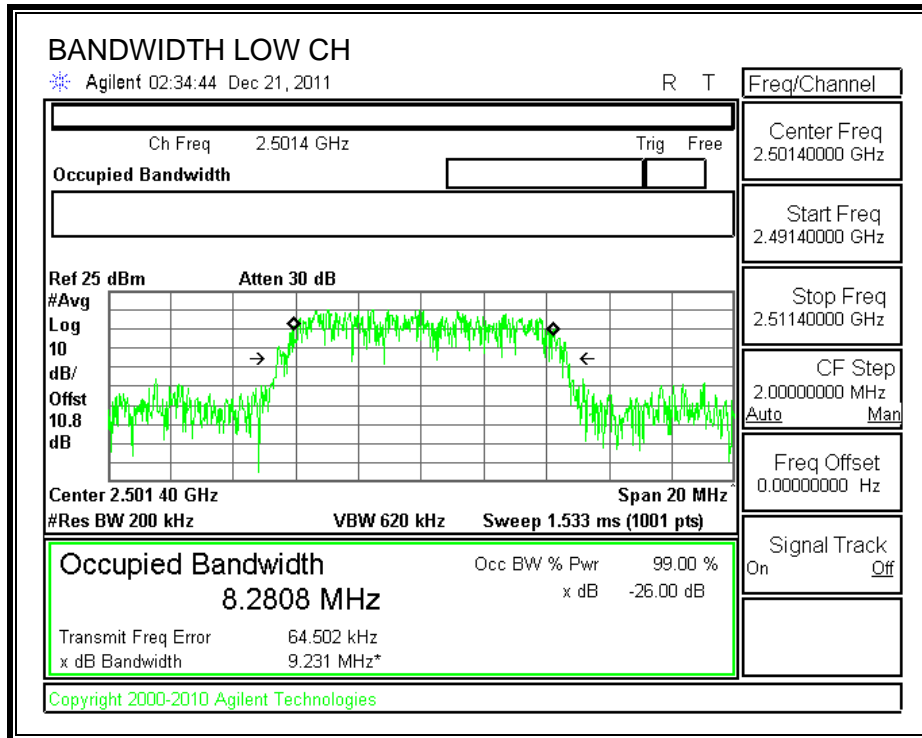
26 dB and 99% BANDWIDTH

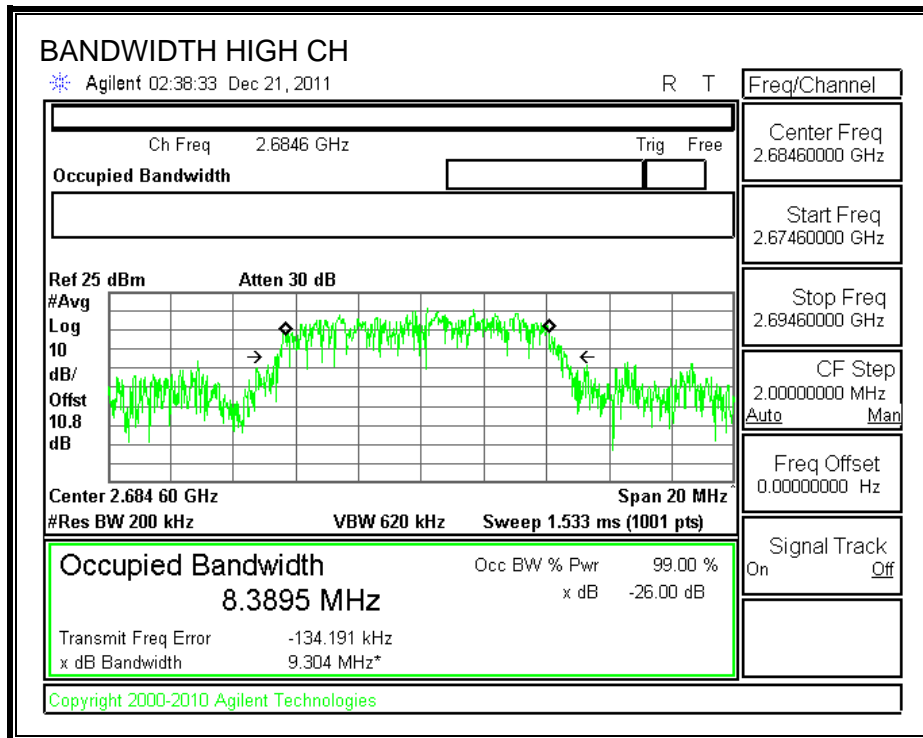




10MHz_64QAM

26 dB and 99% BANDWIDTH





7.1.1. RF POWER OUTPUT AT THE ANTENNA TERMINALS

LIMITS

§2.1046 & §27.50 (h)(2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

TEST PROCEDURE

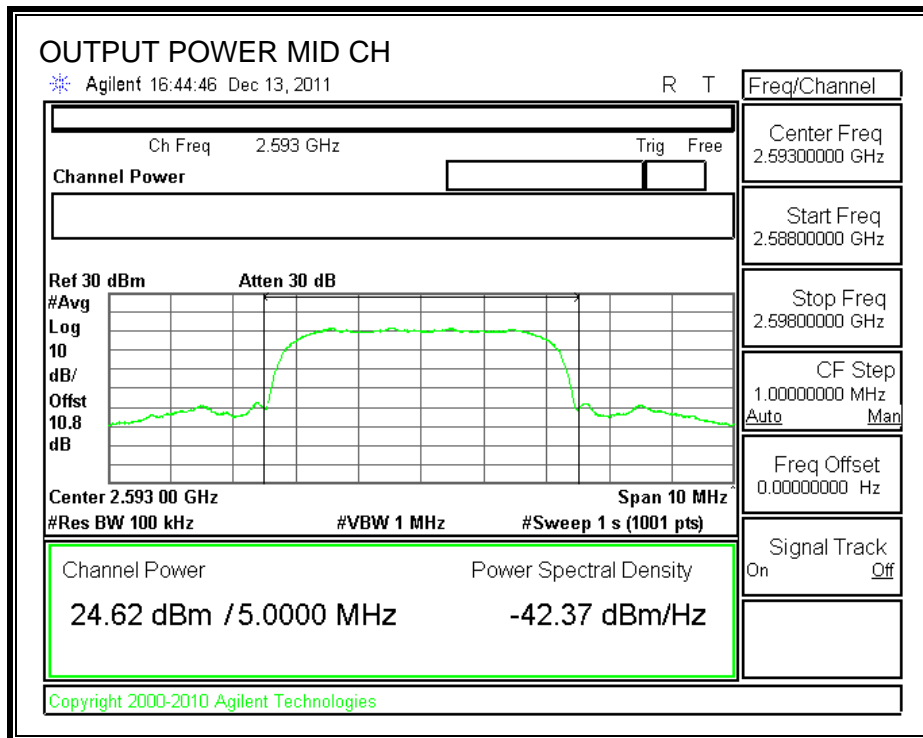
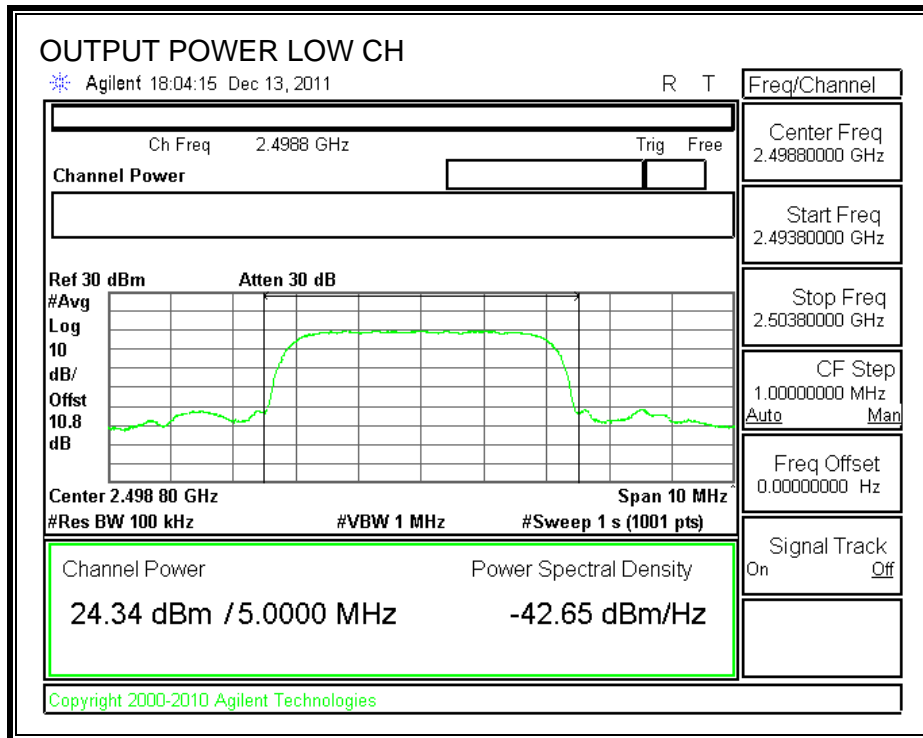
ANSI / TIA / EIA 603 Clause 2.2.17 and §27.50 (i) and KDB 971168

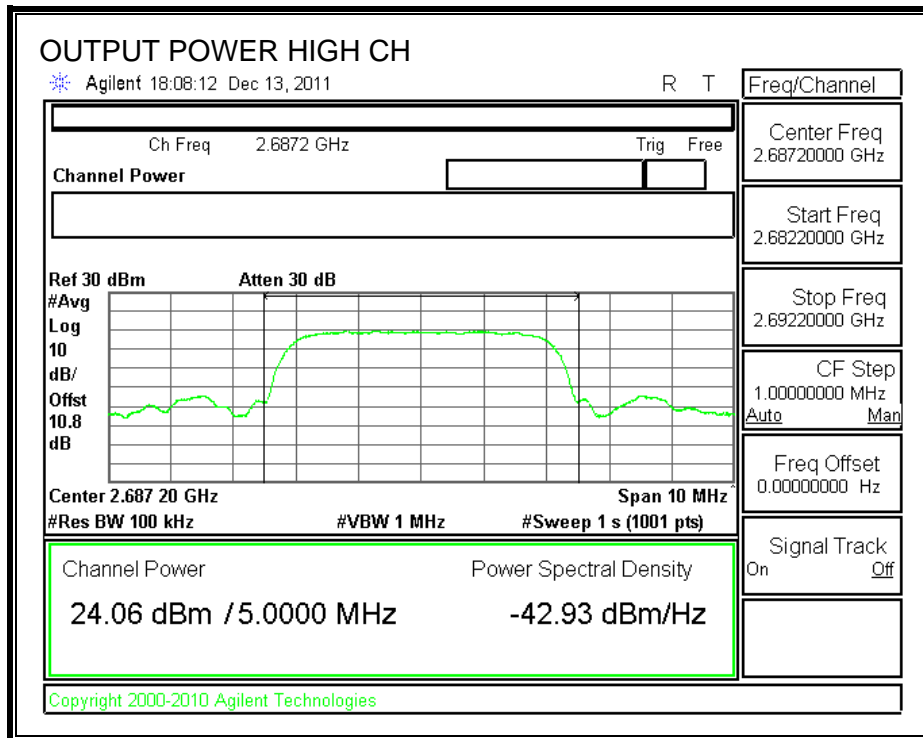
RESULTS

Mode	Mode	Channel	Frequency (MHz)	Conducted Output power (dBm)	Antenna Gain (dBi)	EIRP Output power (dBm)	EIRP Output power (mW)
5MHz	QPSK	Low	2498.8	24.34	8.00	32.34	1713.96
		Middle	2593.0	24.62	8.00	32.62	1828.10
		High	2687.2	24.06	8.00	32.06	1606.94
	16QAM	Low	2498.8	24.36	8.00	32.36	1721.87
		Middle	2593.0	24.64	8.00	32.64	1836.54
		High	2687.2	24.07	8.00	32.07	1610.65
	64QAM	Low	2498.8	24.31	8.00	32.31	1702.16
		Middle	2593.0	24.64	8.00	32.64	1836.54
		High	2687.2	24.07	8.00	32.07	1610.65
10MHz	QPSK	Low	2501.4	24.36	8.00	32.36	1721.87
		Middle	2593.0	24.67	8.00	32.67	1849.27
		High	2684.6	24.26	8.00	32.26	1682.67
	16QAM	Low	2501.4	24.37	8.00	32.37	1725.84
		Middle	2593.0	24.66	8.00	32.66	1845.02
		High	2684.6	24.20	8.00	32.20	1659.59
	64QAM	Low	2501.4	24.37	8.00	32.37	1725.84
		Middle	2593.0	24.61	8.00	32.61	1823.90
		High	2684.6	24.17	8.00	32.17	1648.16

5MHz_QPSK

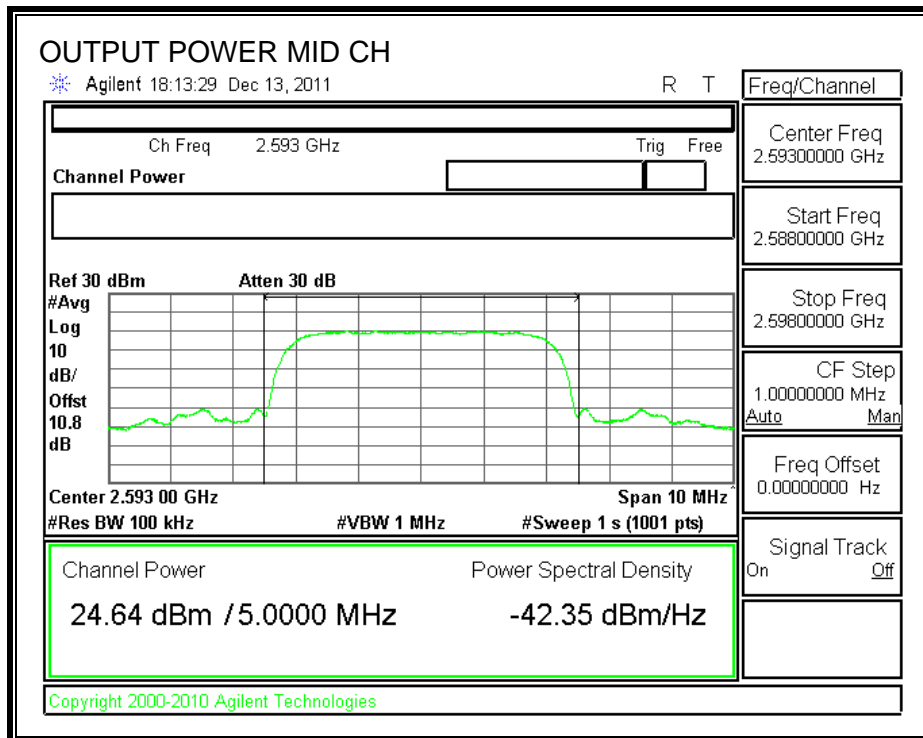
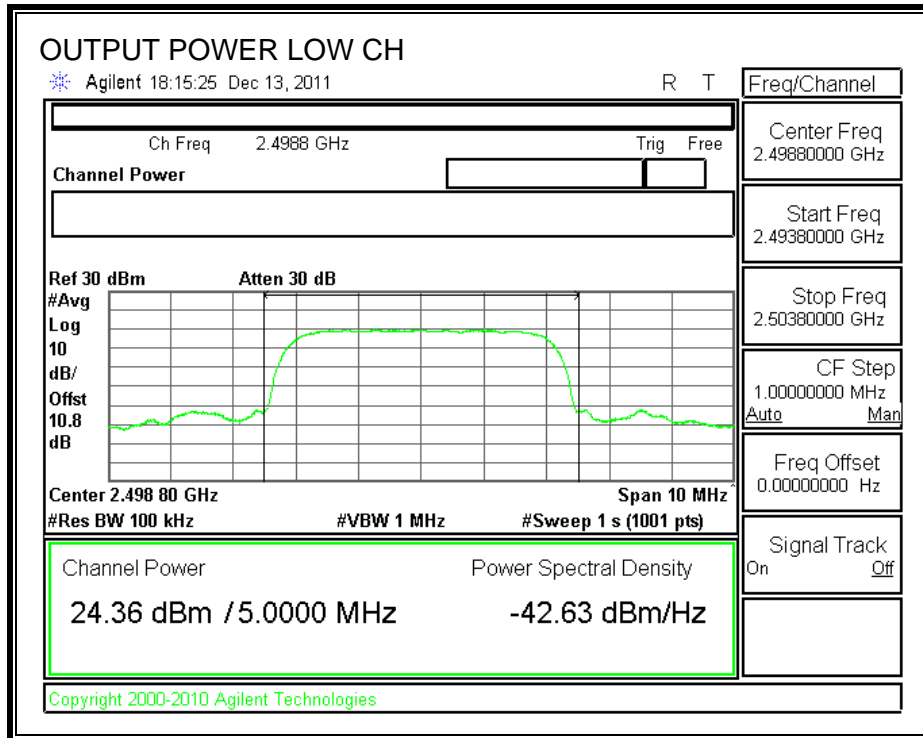
OUTPUT POWER

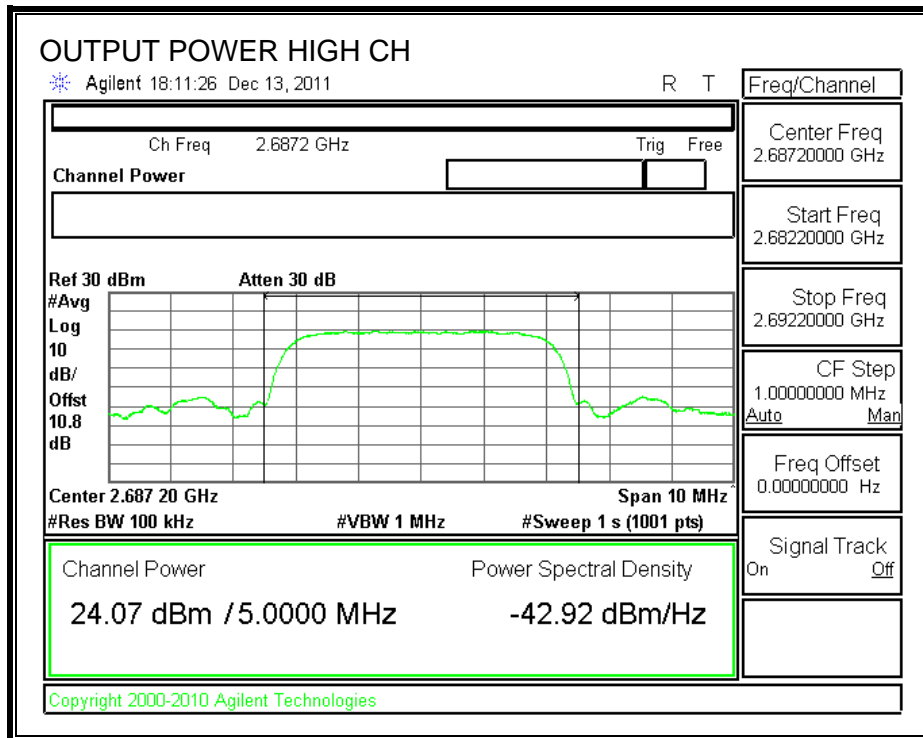




5MHz_16QAM

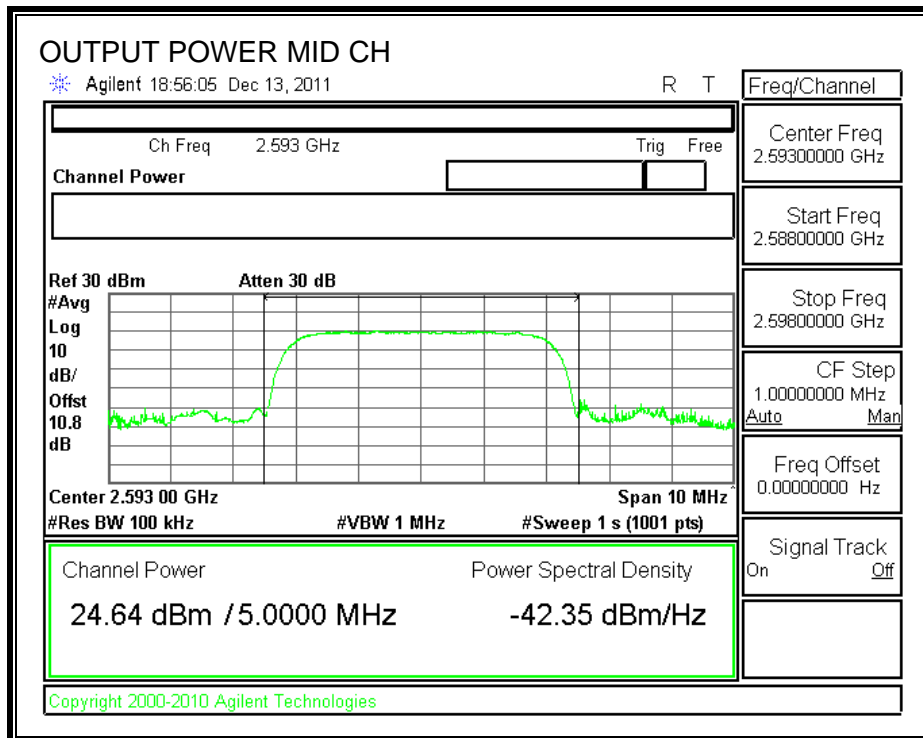
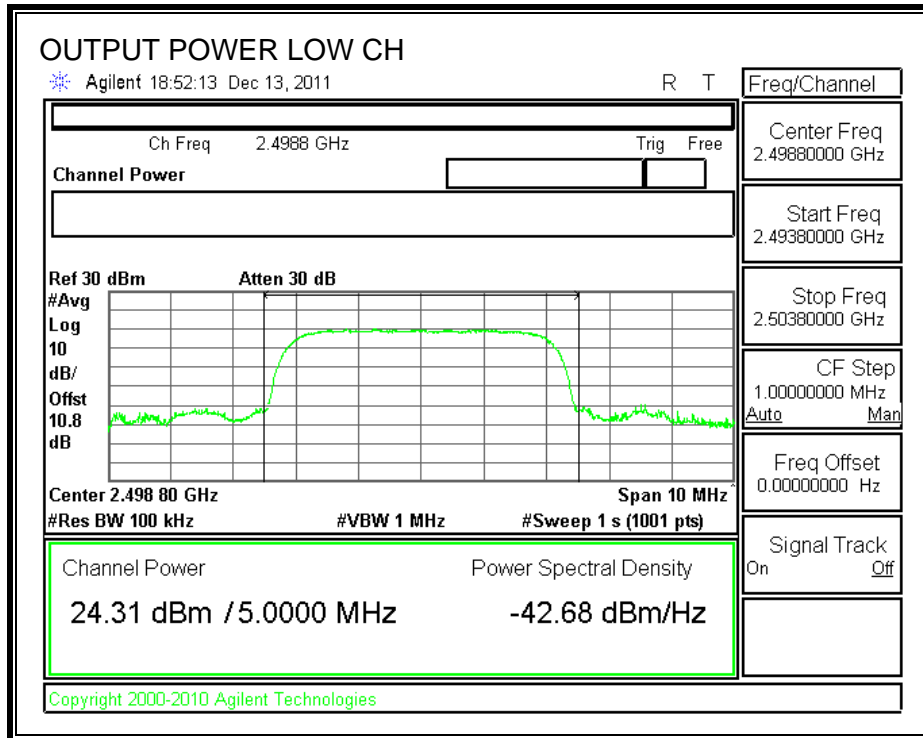
OUTPUT POWER

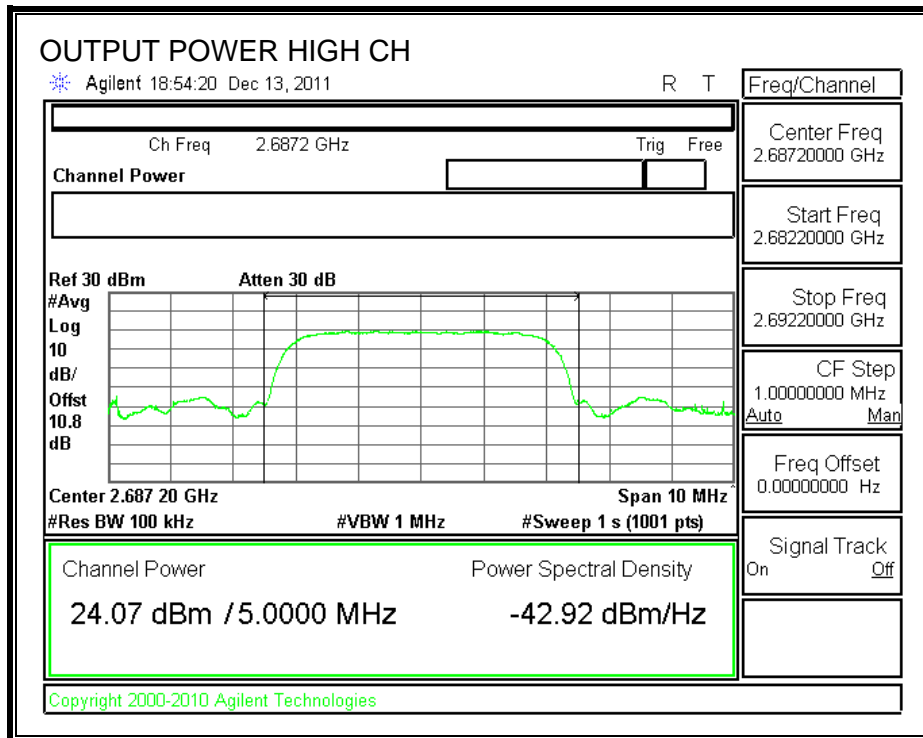




5MHz_64QAM

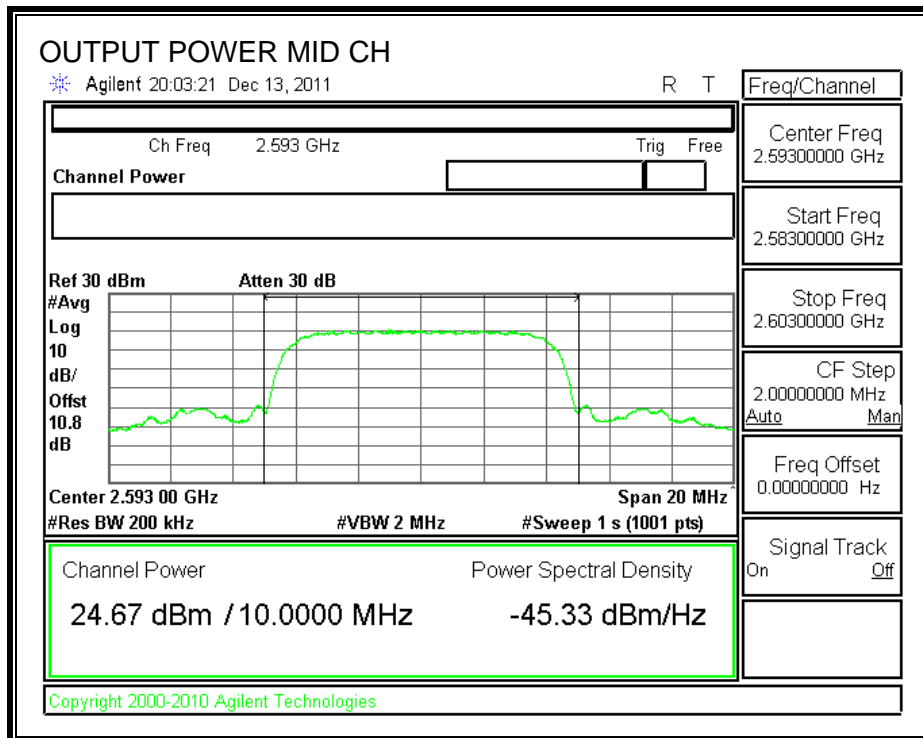
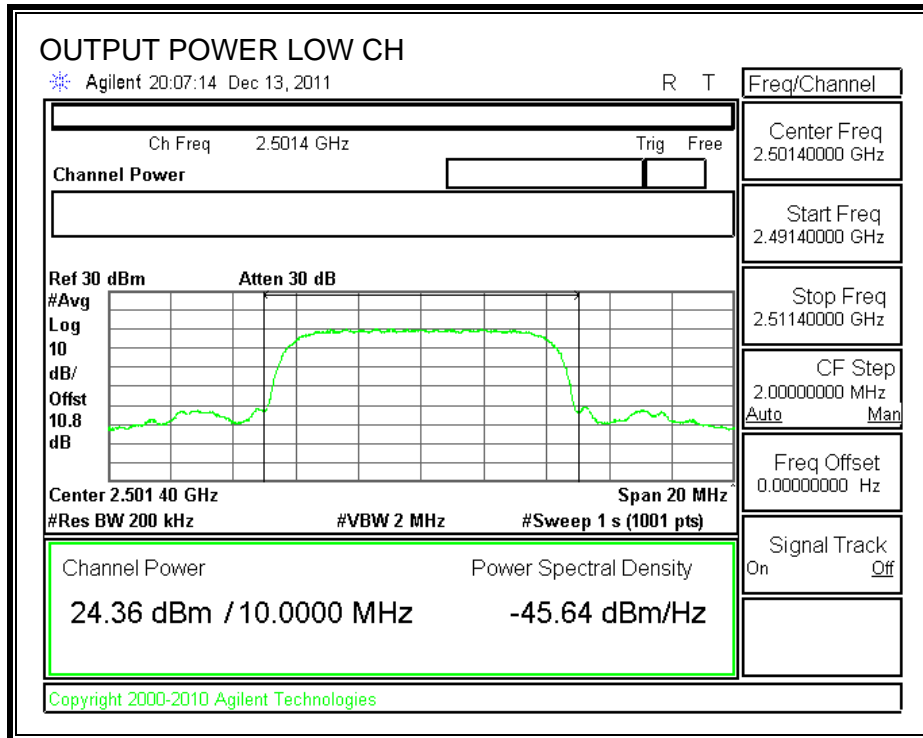
OUTPUT POWER

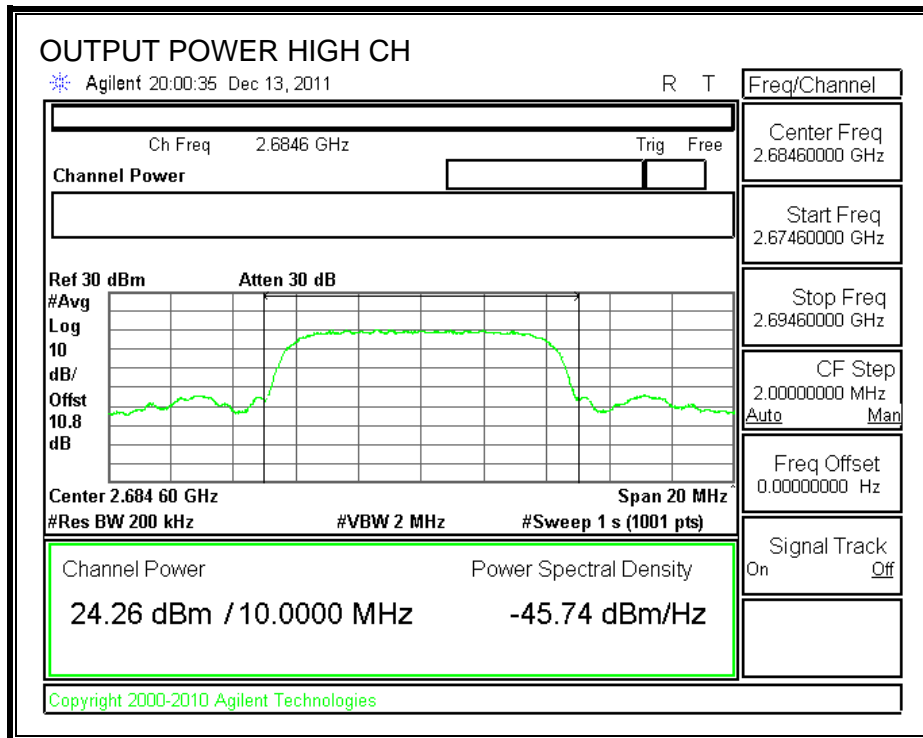




10MHz_QPSK

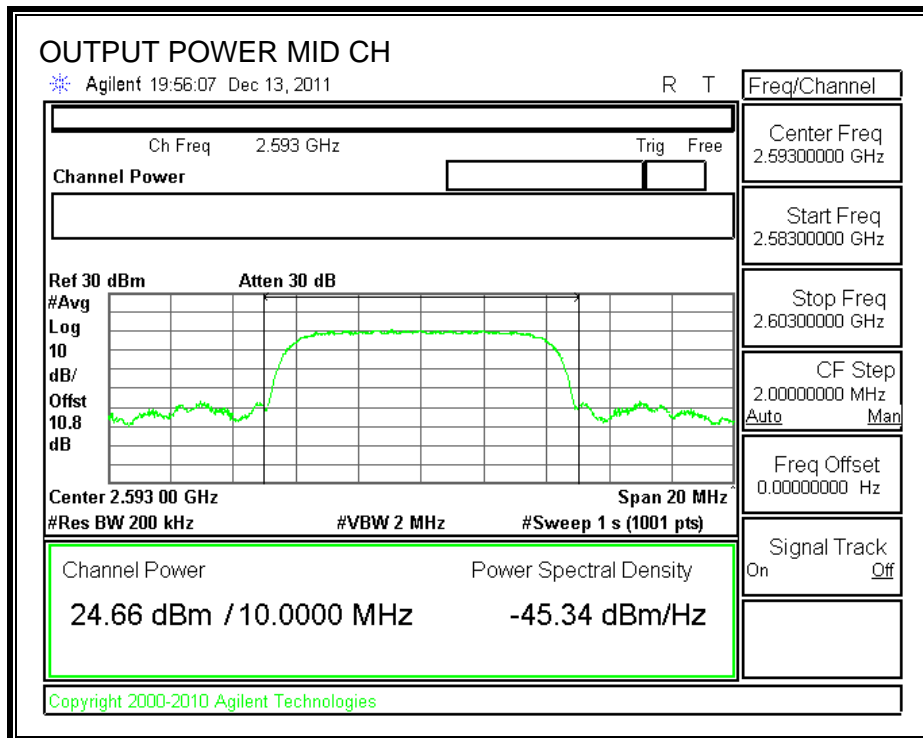
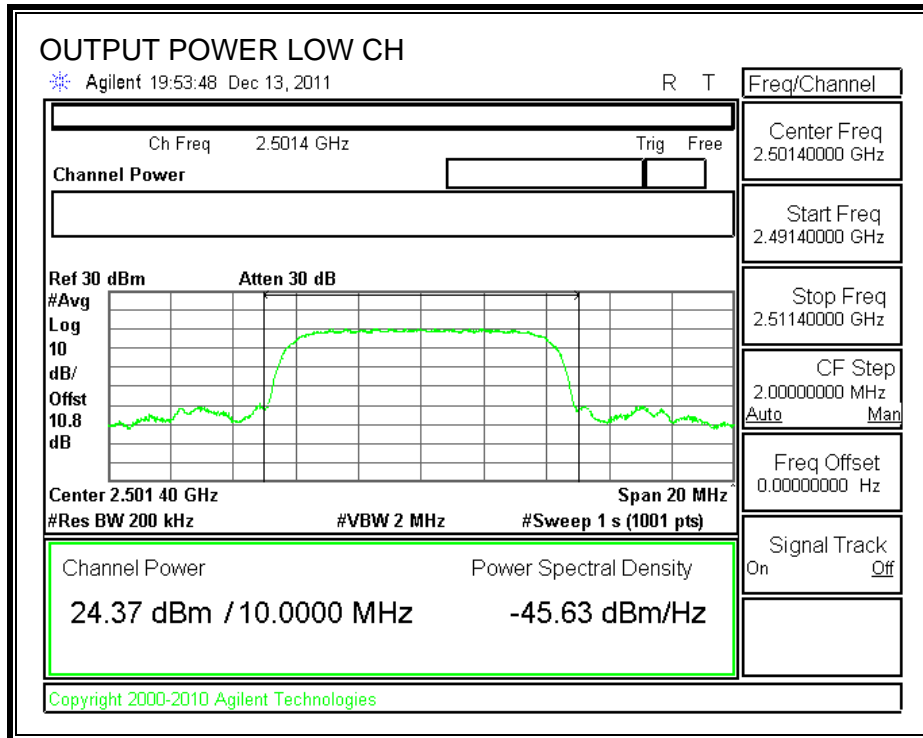
OUTPUT POWER

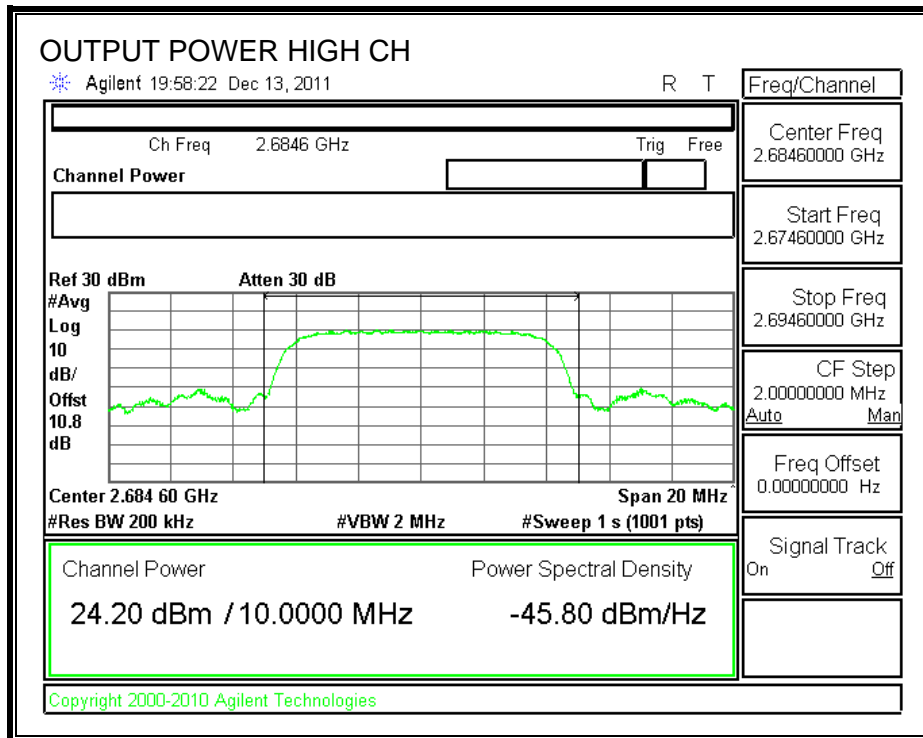




10MHz_16QAM

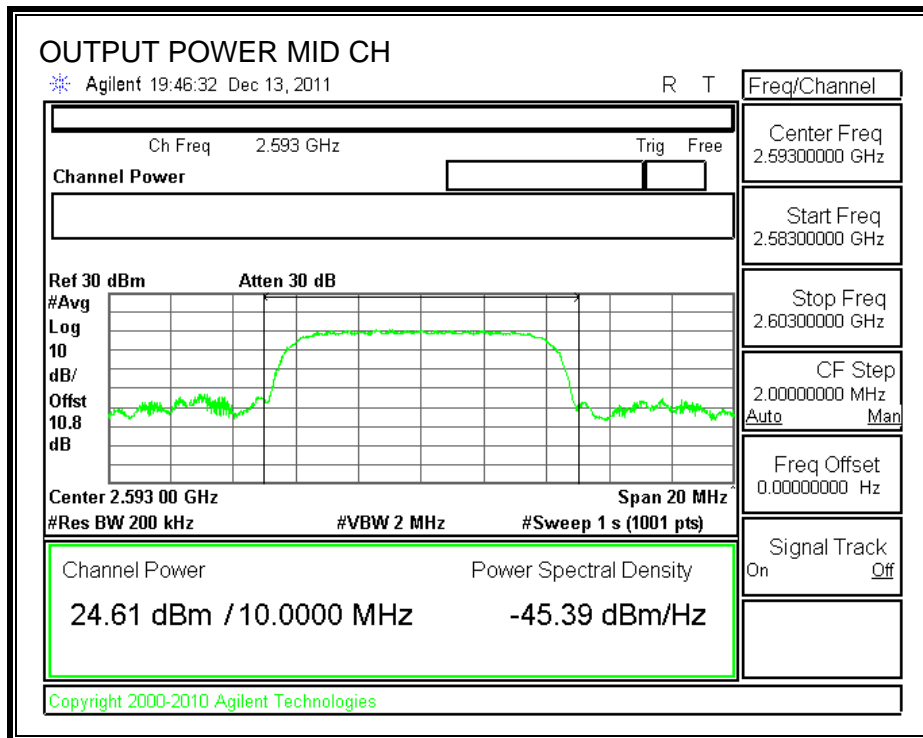
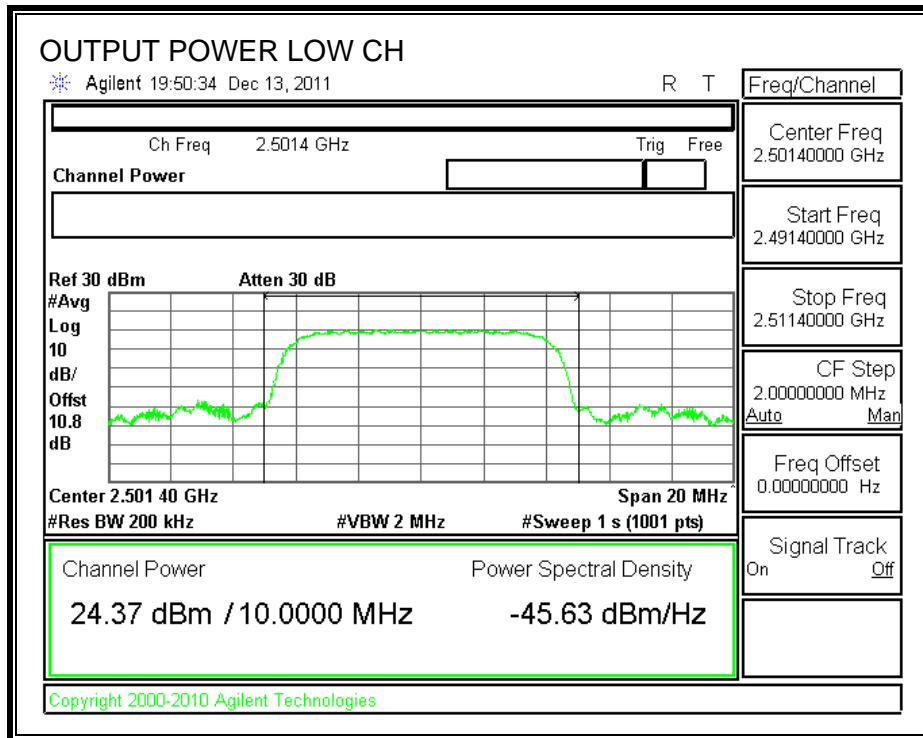
OUTPUT POWER

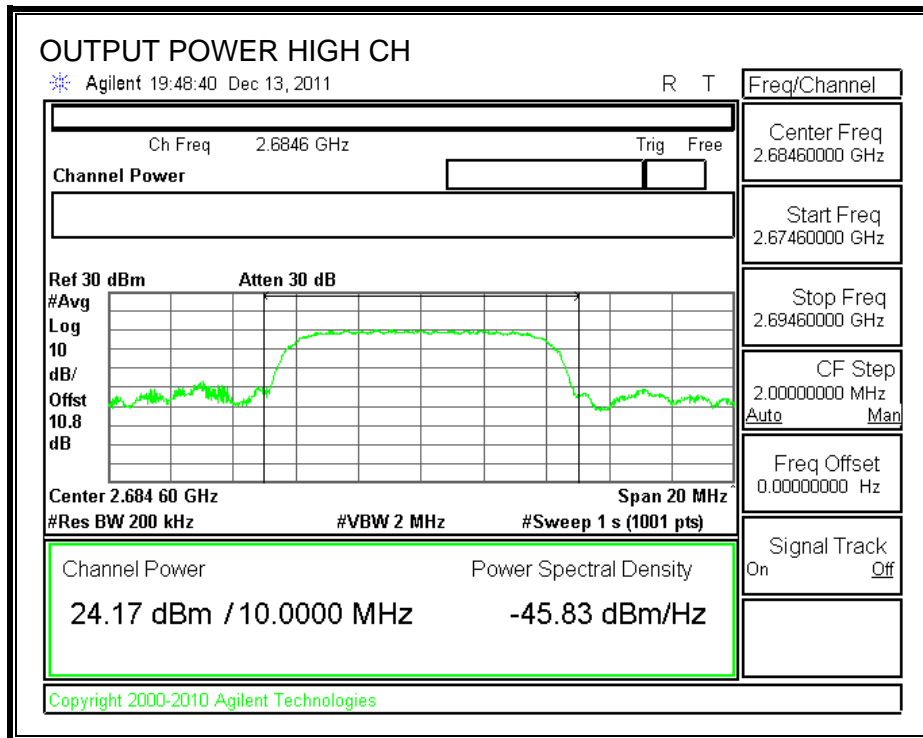




10MHz_64QAM

OUTPUT POWER



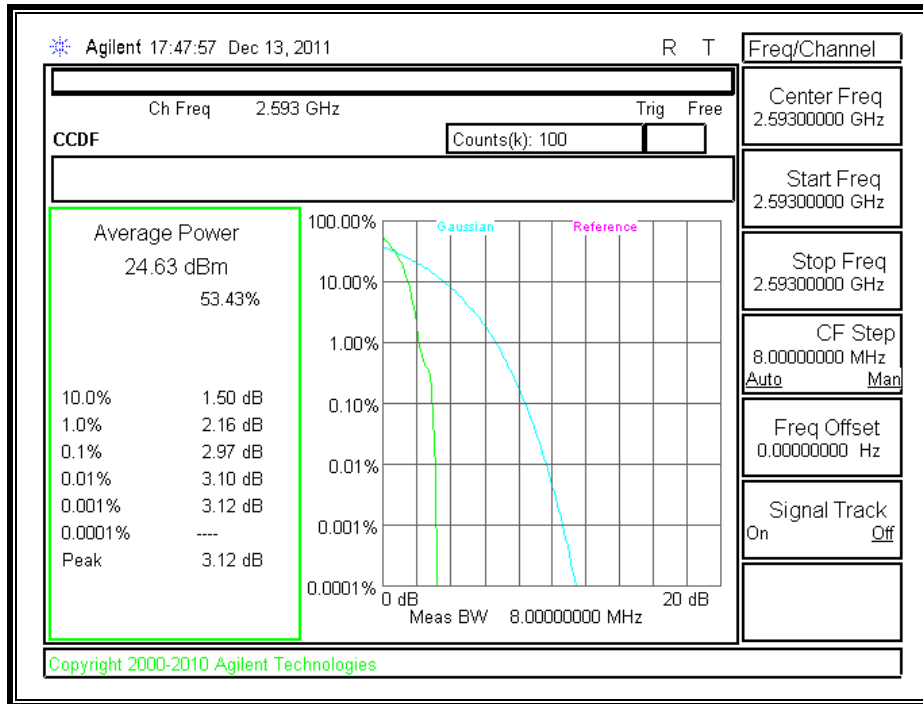


Peak-To-Average Ratio:

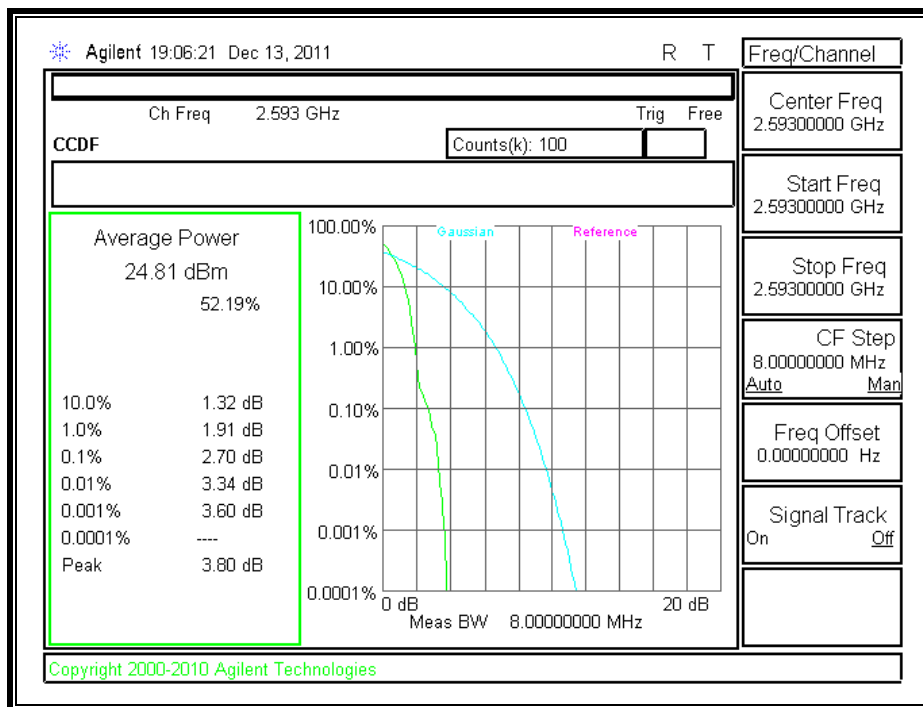
Offset: 0.9 (cable) + 10 (pad) = 10.90 dB

Mode	Channel Band-width (MHZ)	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
QPSK	5		2593.0	27.8	24.63	3.12
Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	5		2593.0	28.61	24.81	3.80
Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
64QAM	5		2593.0	28.99	24.8	4.19
Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
QPSK	10		2593.0	28.01	24.32	3.69
Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	10		2593.0	29.57	24.33	5.24
Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
64QAM	10		2593.0	29.52	24.36	5.16
*Peak Reading = Average Reading + Peak-to-Average Ratio						

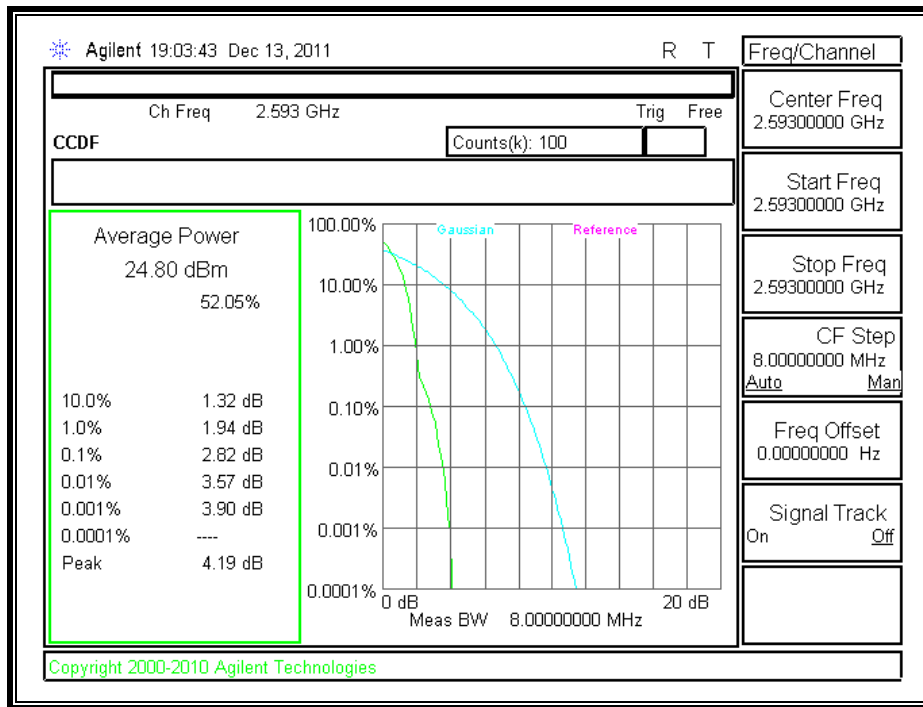
5MHz QPSK



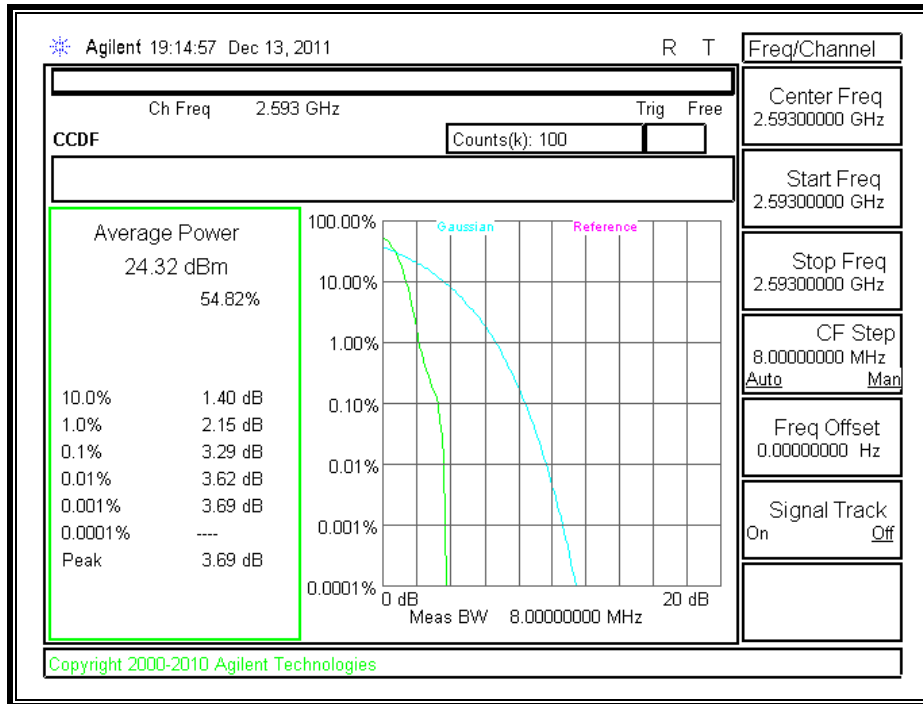
5MHz 16QAM



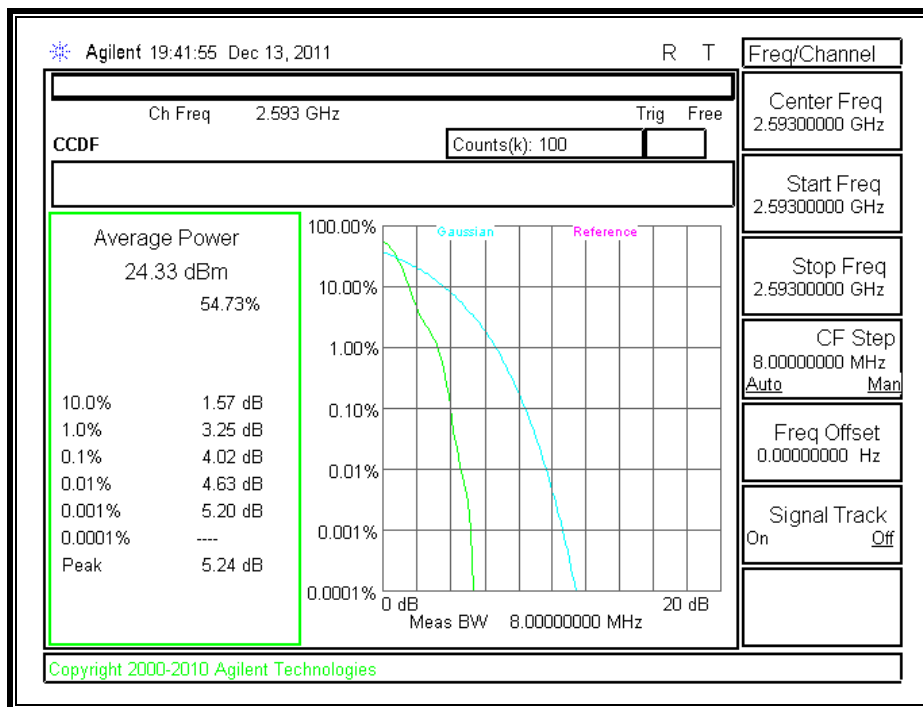
5MHz 64QAM



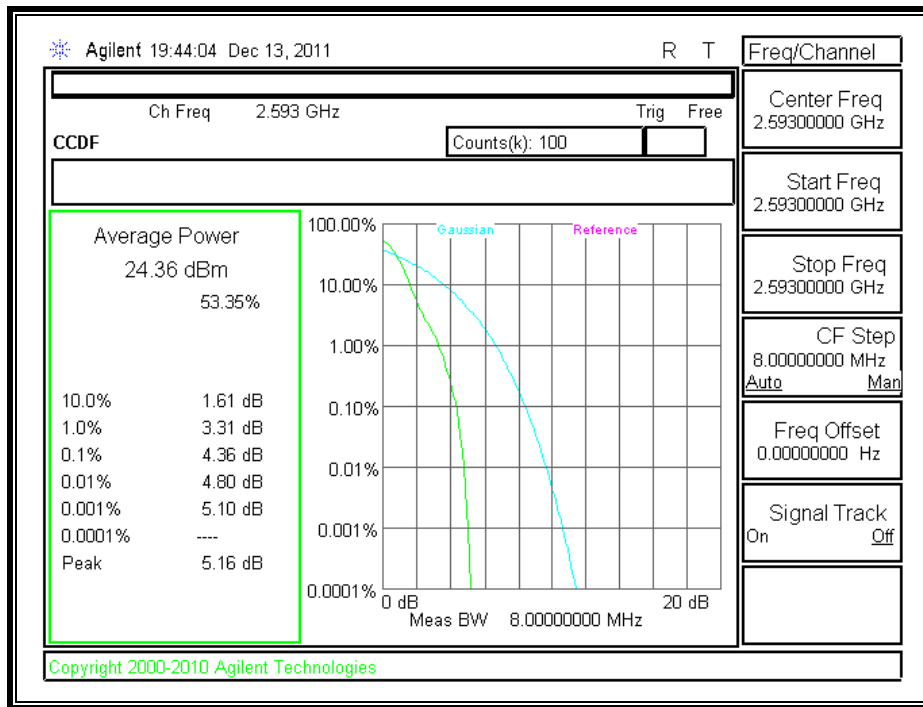
10MHz QPSK



10MHz 16QAM



10MHz 64QAM



7.1.1. LIMITS OF CHANNEL EDGE

LIMITs

§2.1051

§27.53 (m)(4)(6) For mobile digital stations, the attenuation factor shall be not less than $43 + 10 \log (P)$ dB at the channel edge, the limit of emission equal to -13dBm, and $55 + 10 \log (P)$ dB at 5.5 megahertz from the channel edges, the limit of emission equal to -25dBm.

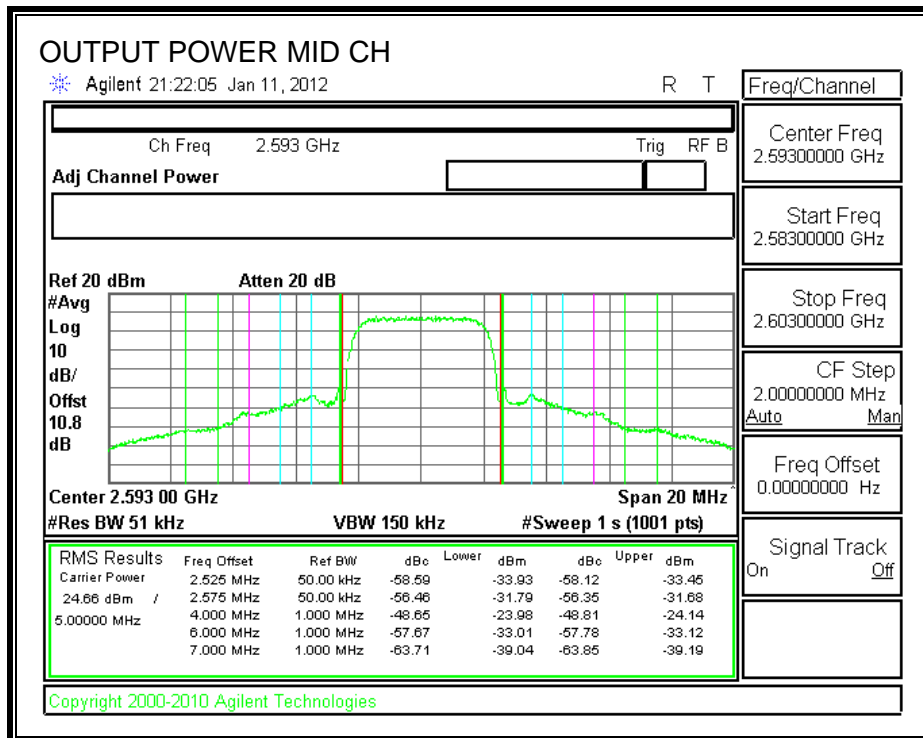
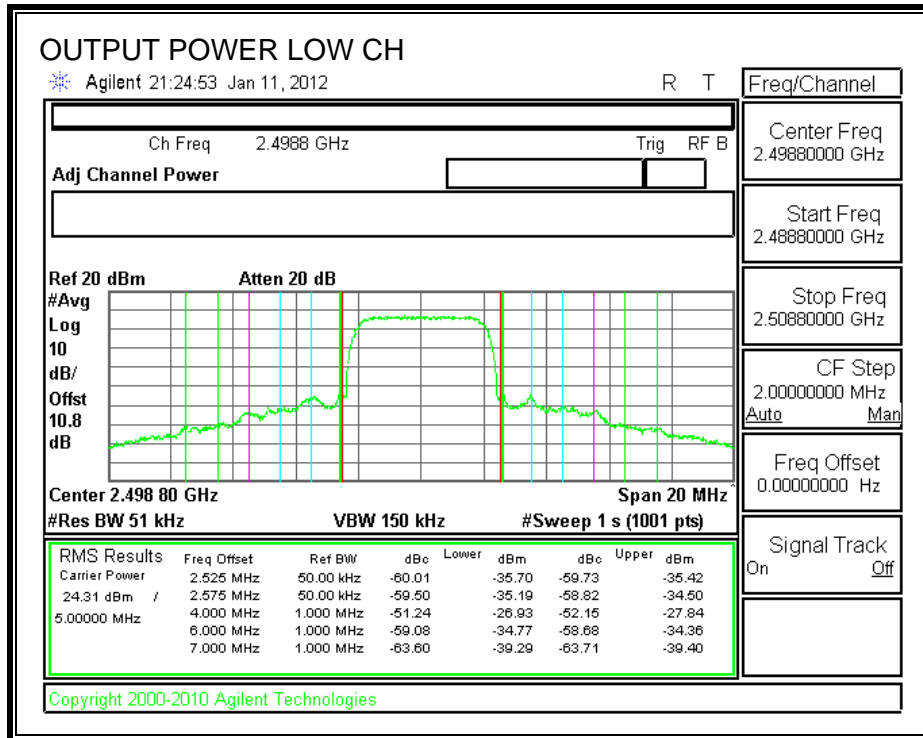
TEST PROCEDURE

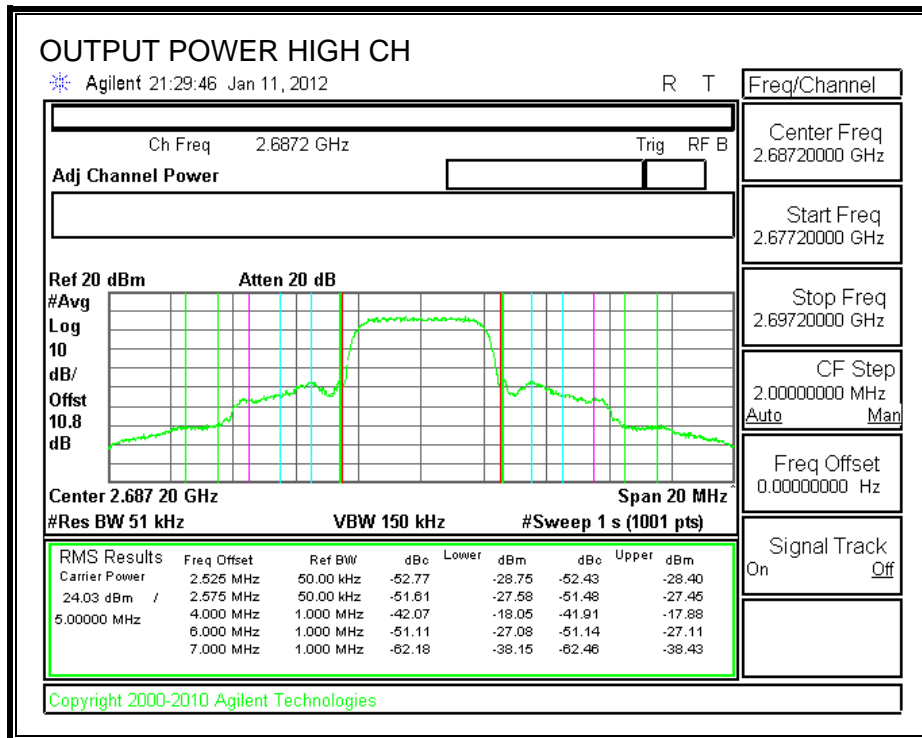
ANSI / TIA / EIA 603 Clause 3.2.12

RESULTS

5MHz_QPSK

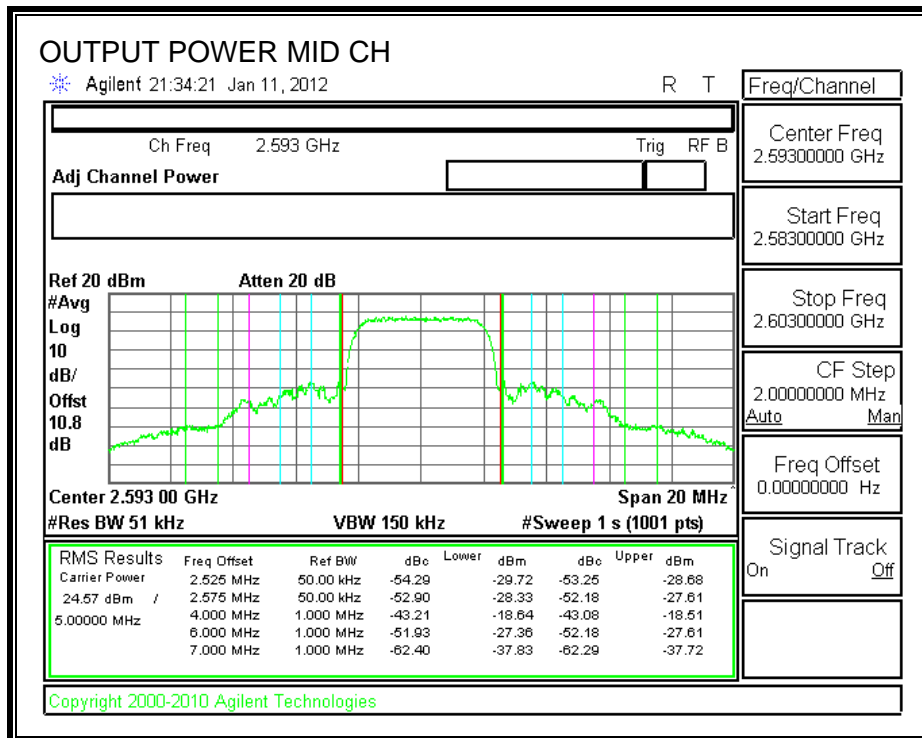
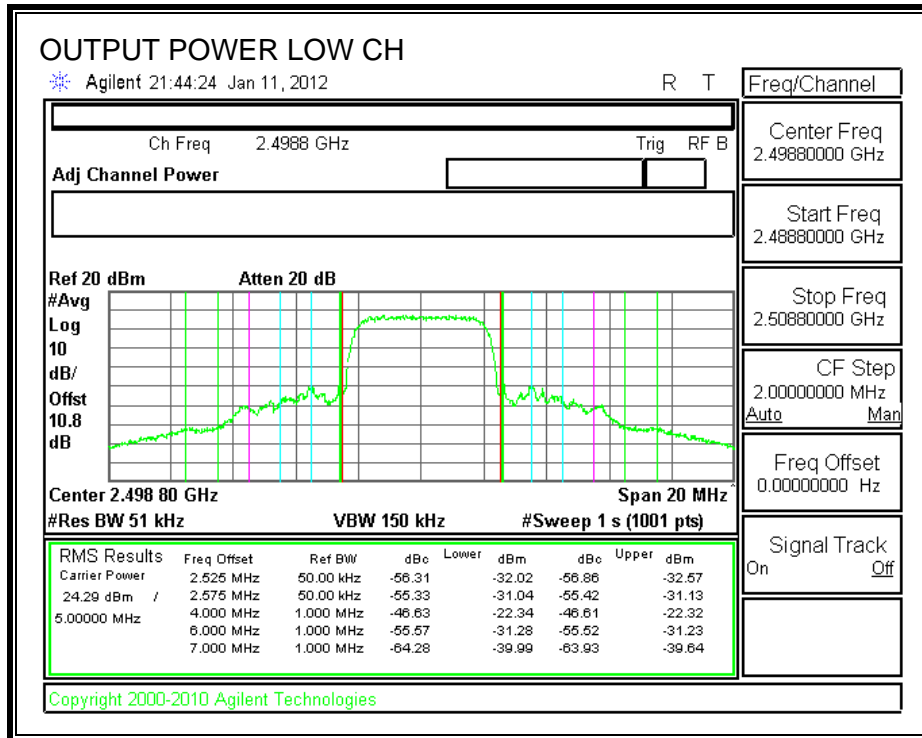
OUTPUT POWER

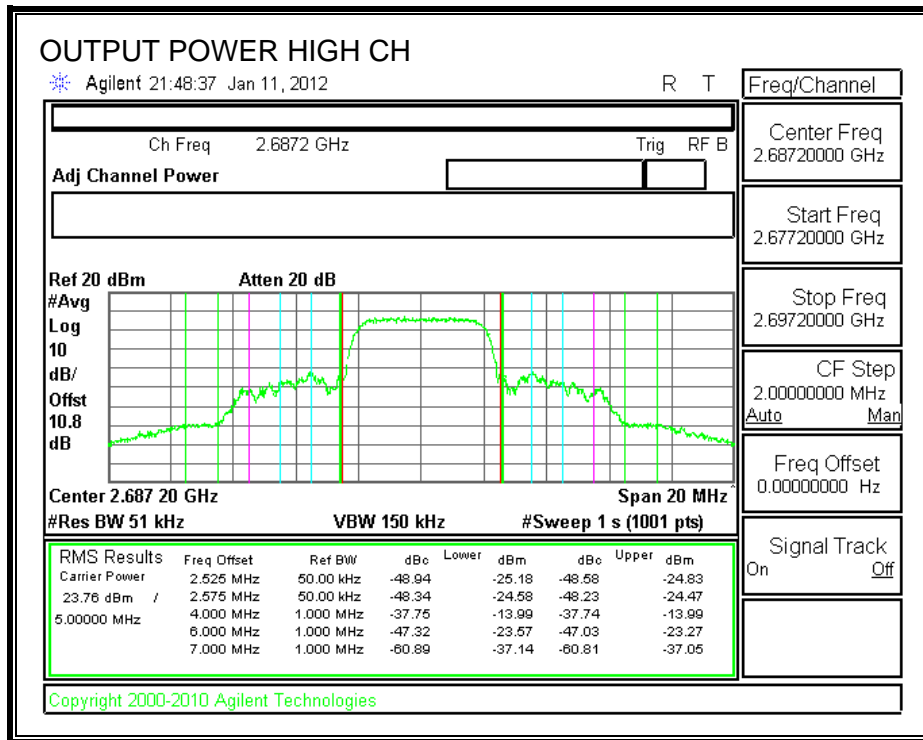




5MHz_16QAM

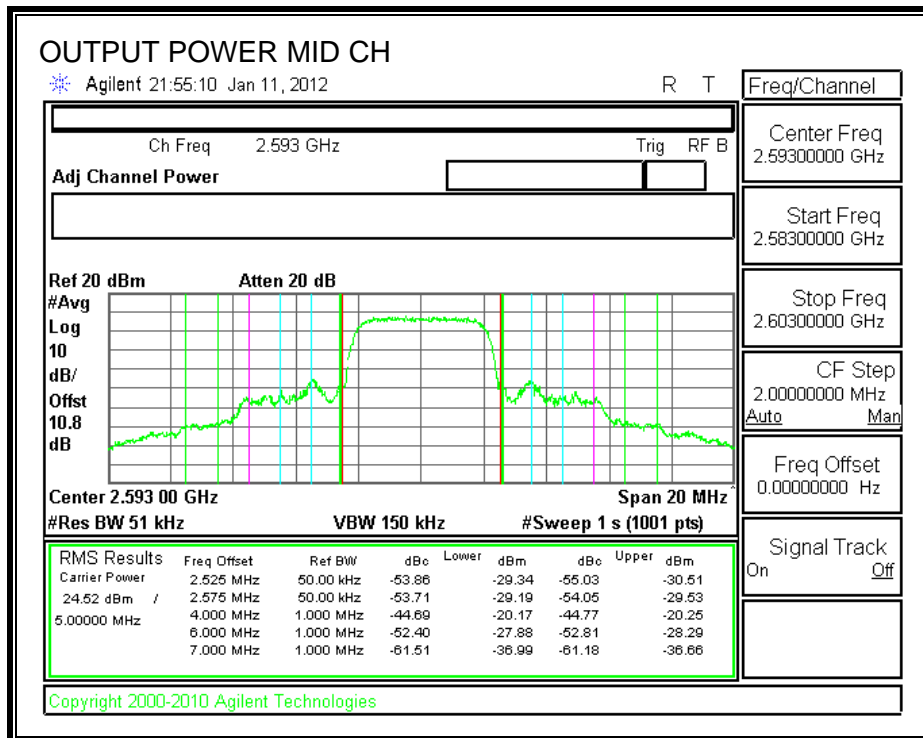
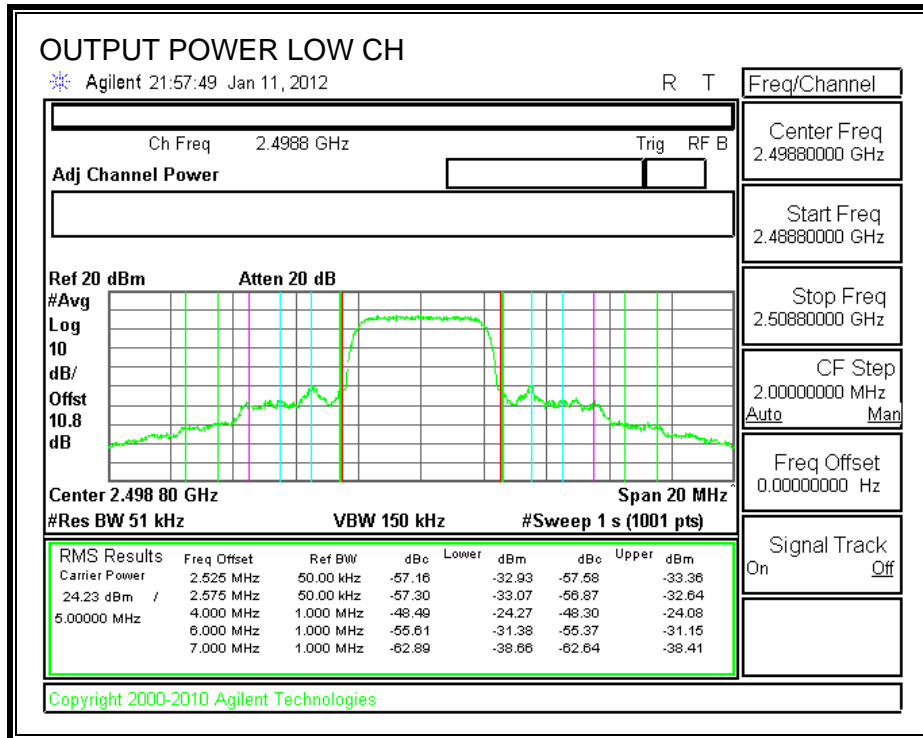
OUTPUT POWER

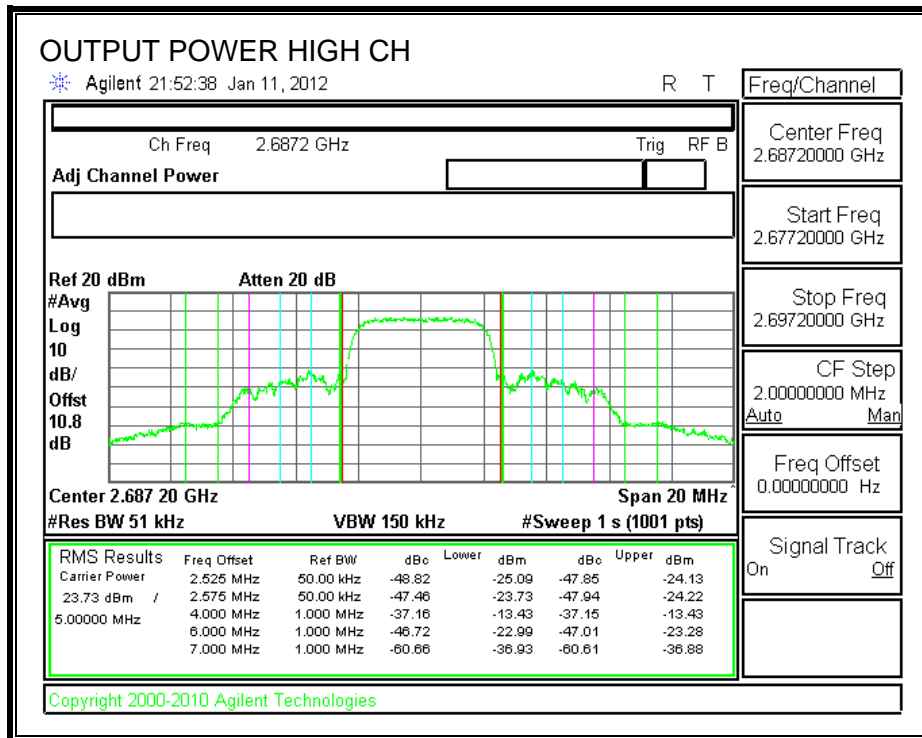




5MHz_64QAM

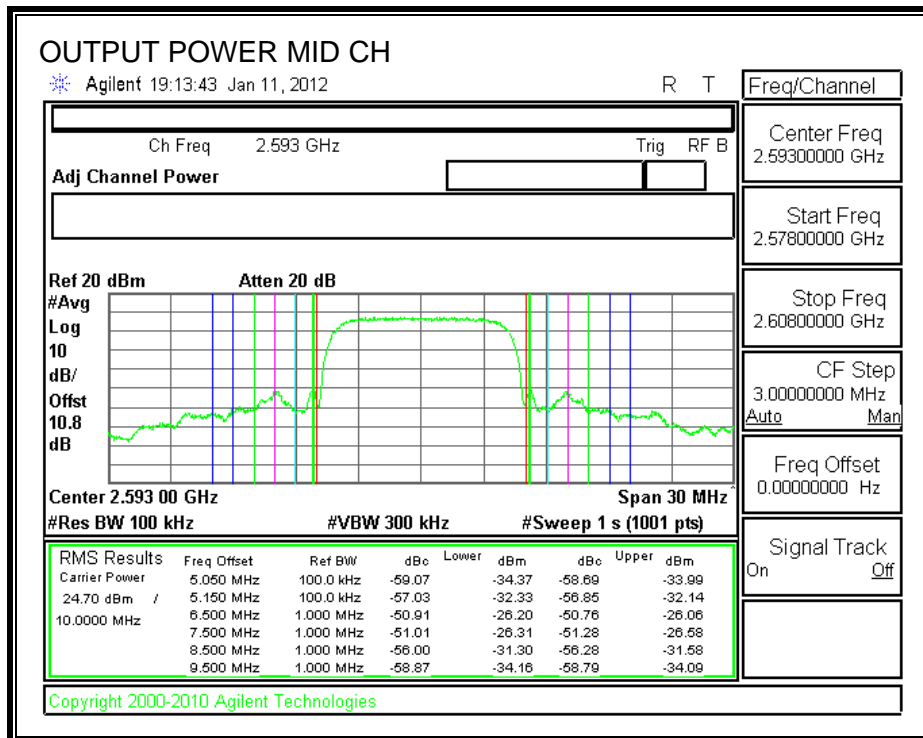
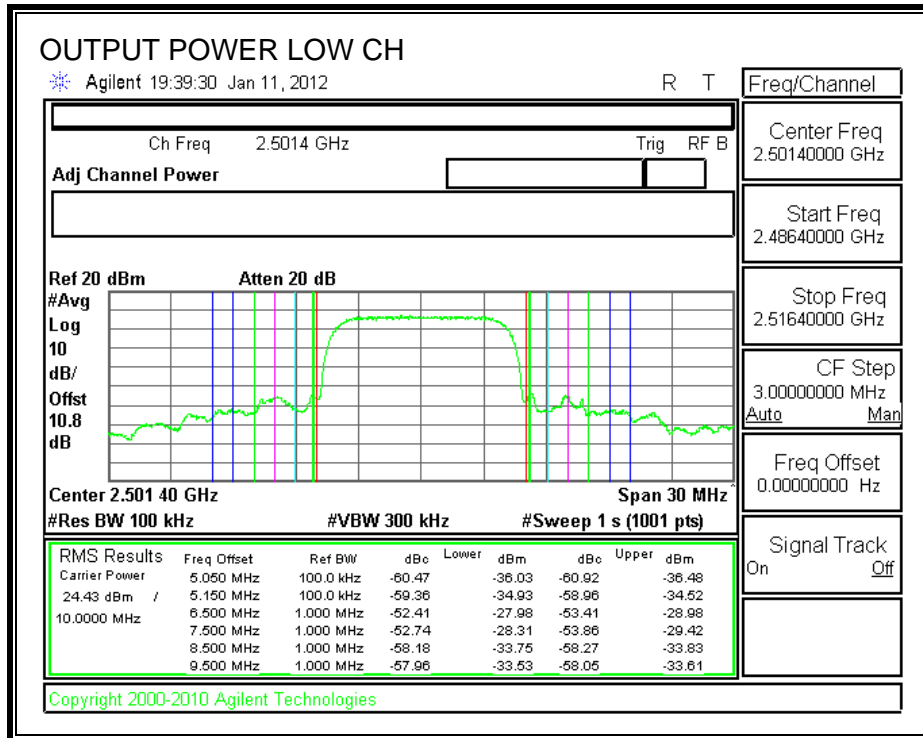
OUTPUT POWER

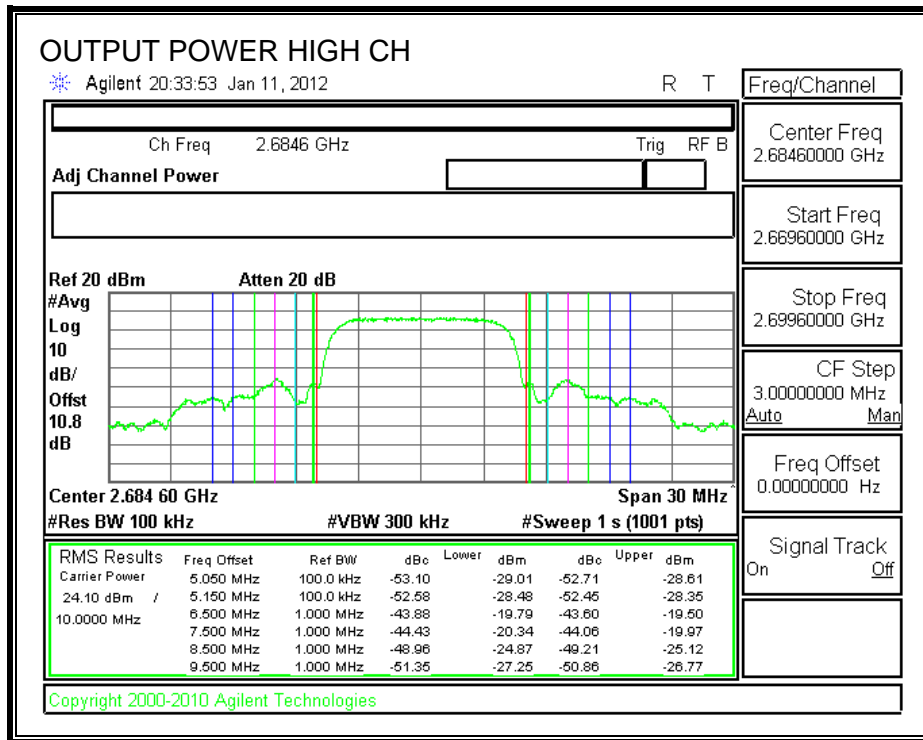




10MHz_QPSK

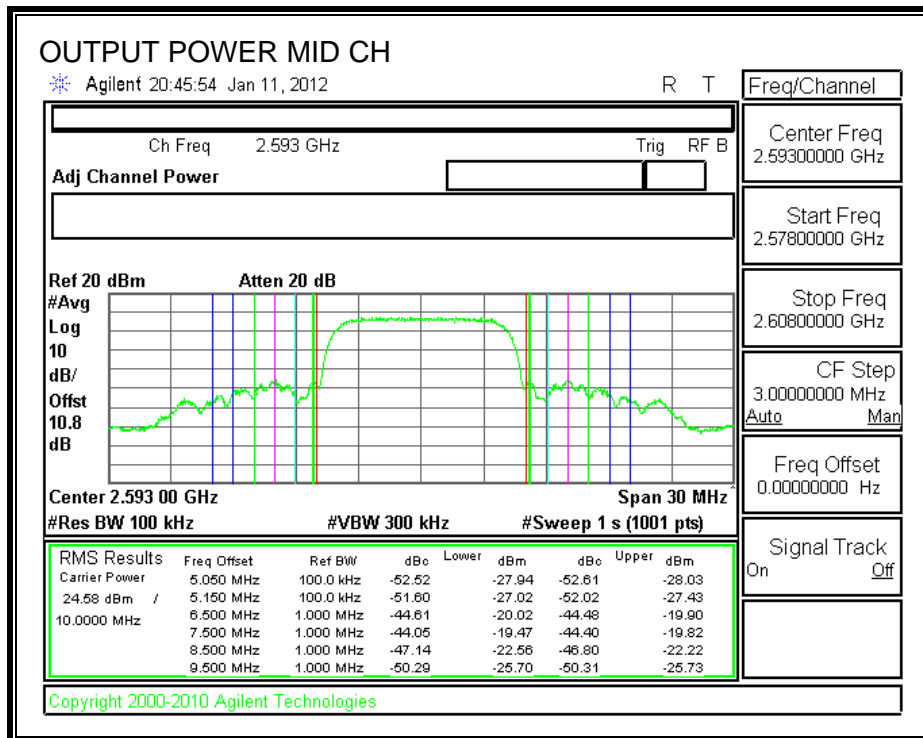
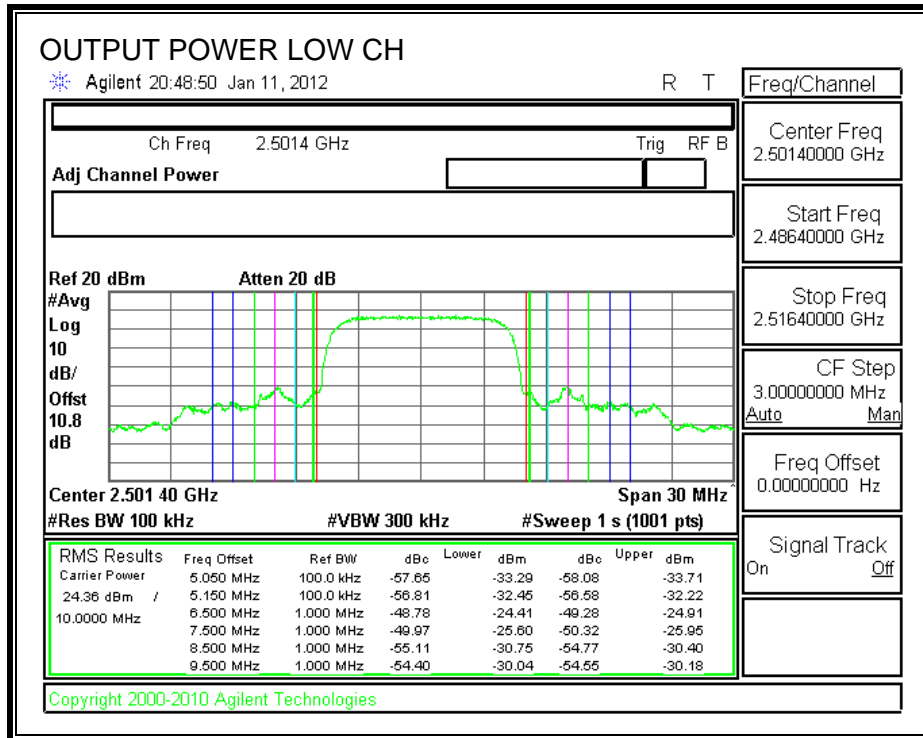
OUTPUT POWER

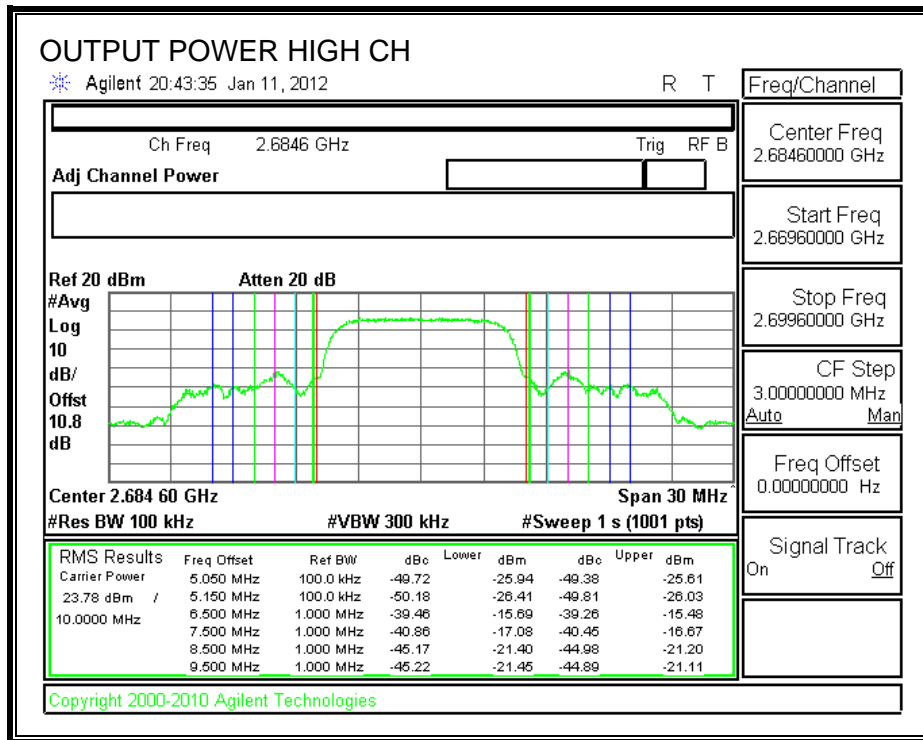




10MHz_16QAM

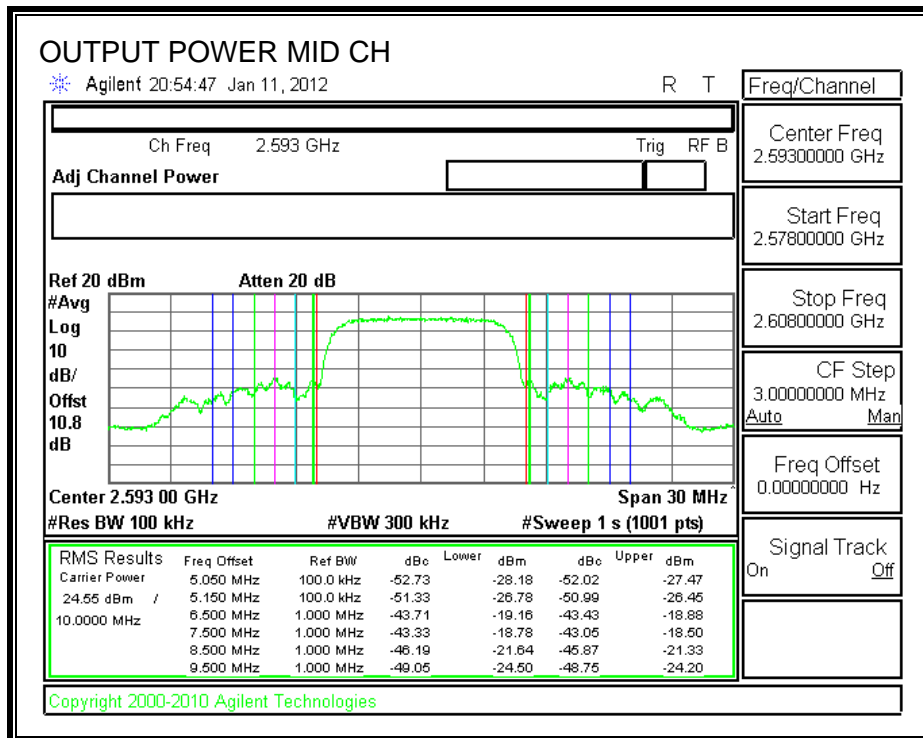
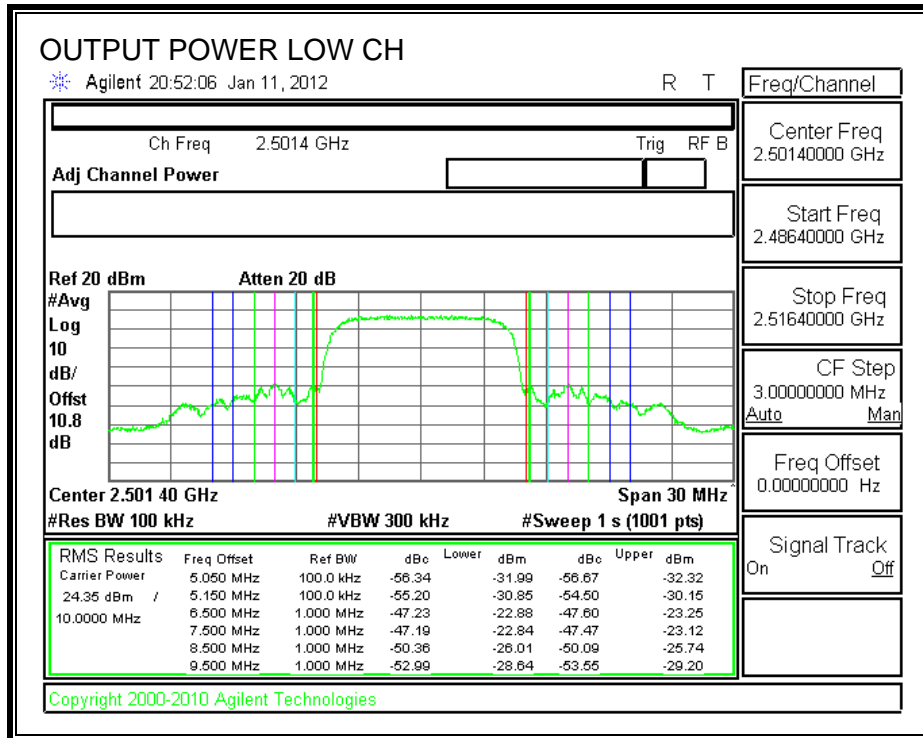
OUTPUT POWER

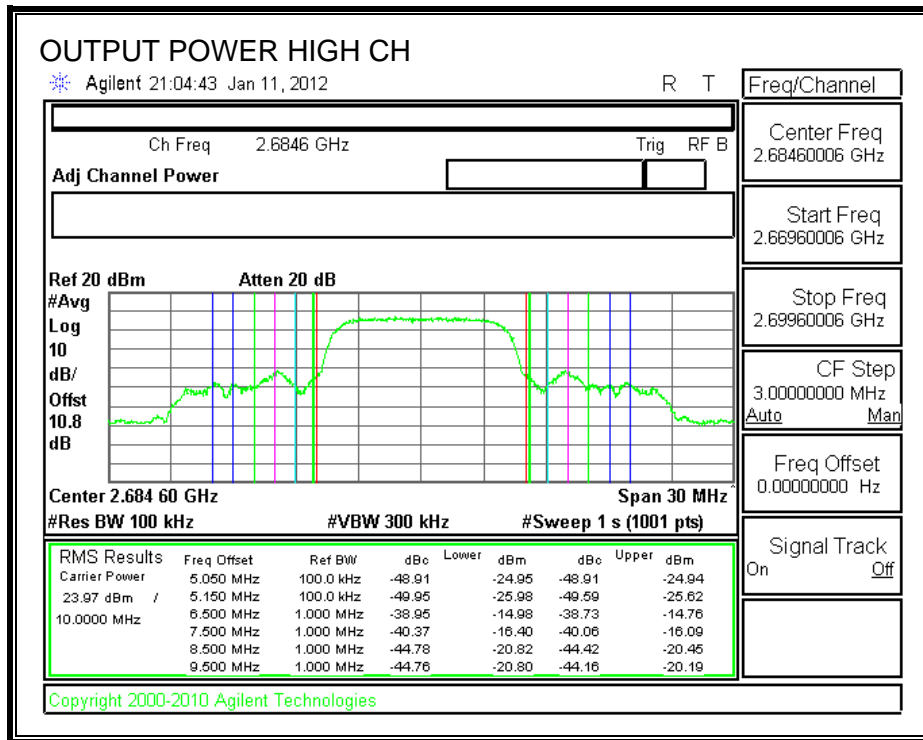




10MHz_64QAM

OUTPUT POWER





7.1.1. CONDUCTED SPURIOUS EMISSIONS

LIMIT

§2.1051

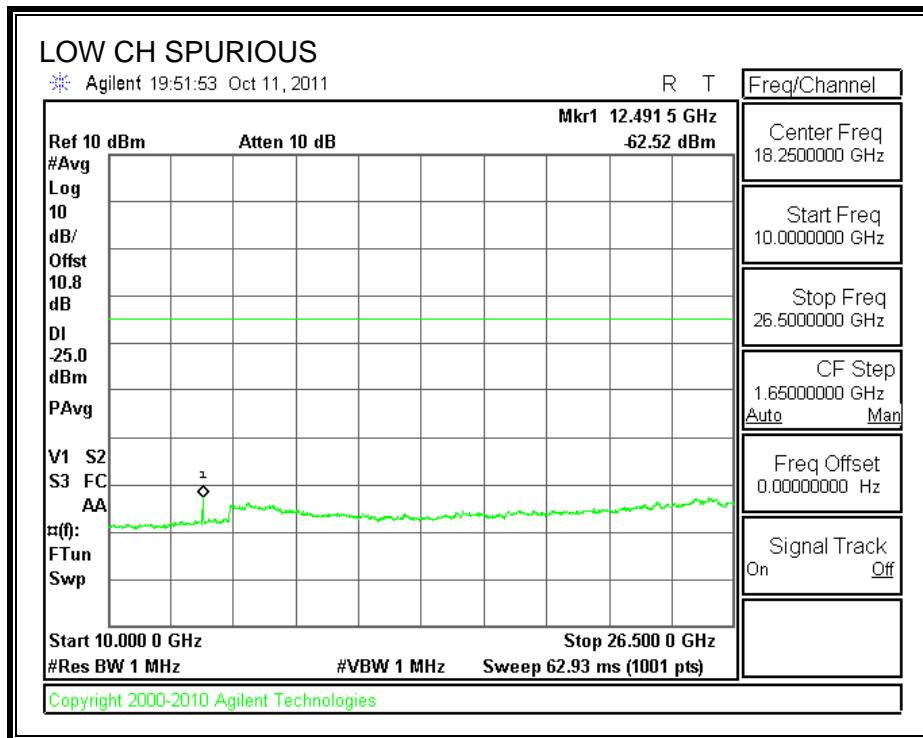
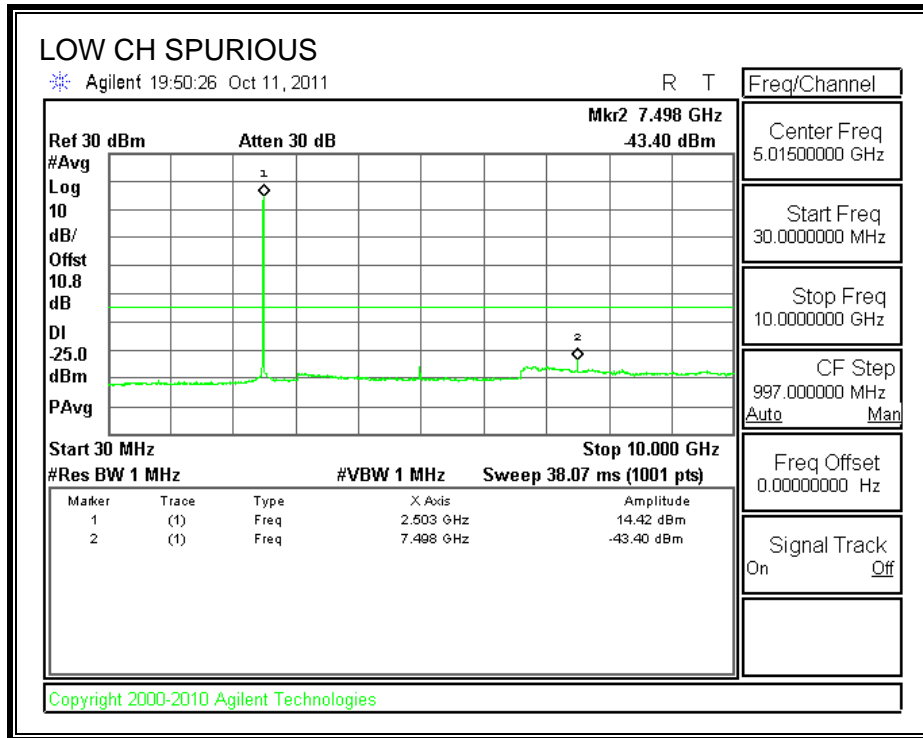
§27.53 (m)(4)(6) For mobile digital stations, the attenuation factor shall be not less than $43 + 10 \log (P)$ dB at the channel edge and $55 + 10 \log (P)$ dB at 5.5 megahertz from the channel edges.

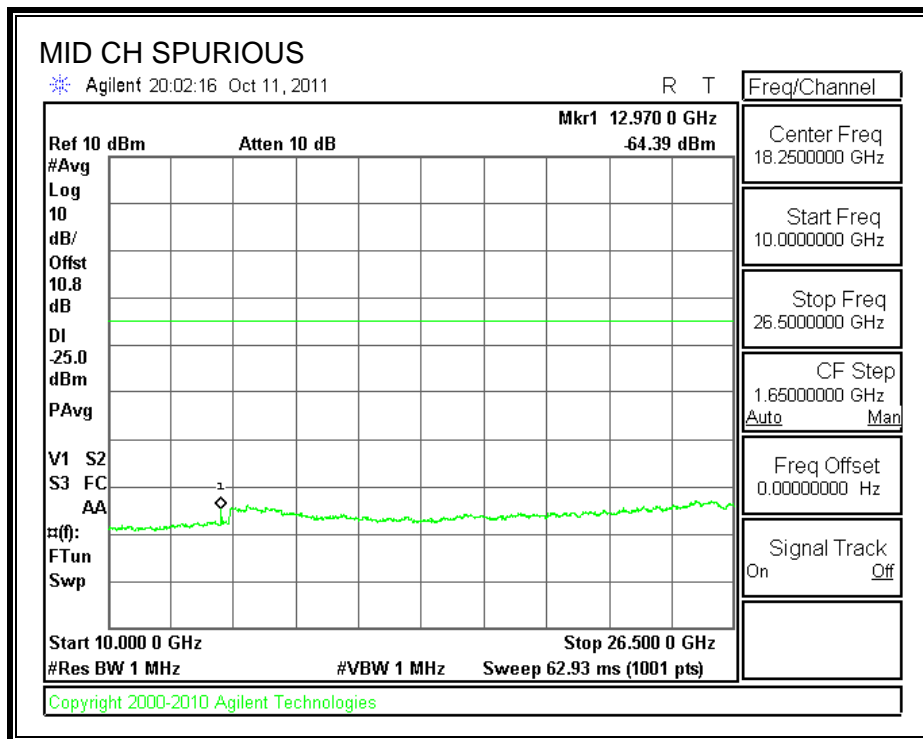
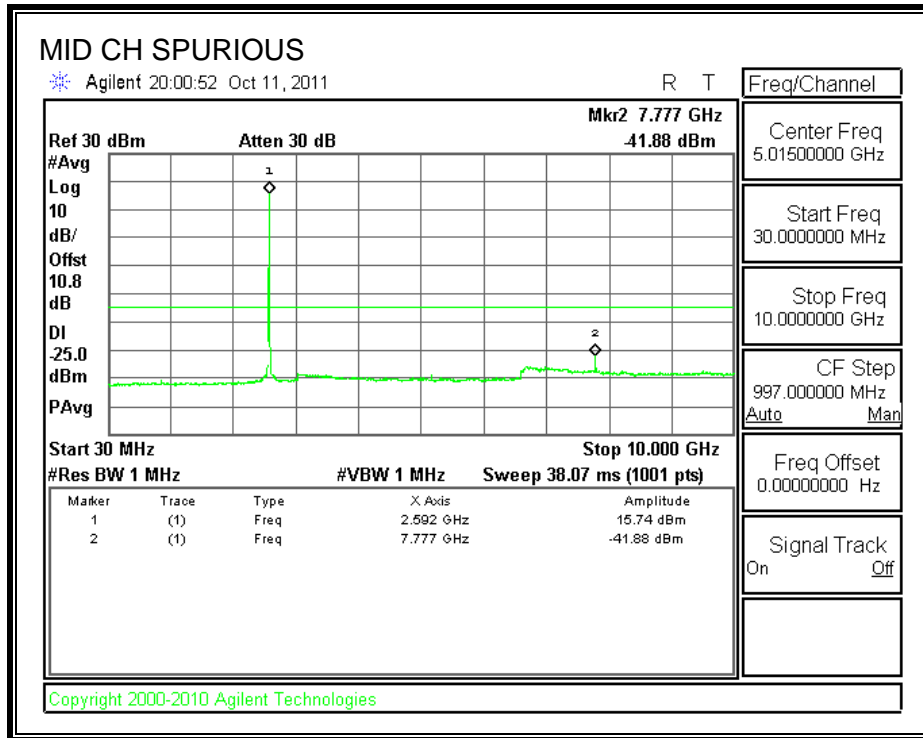
TEST PROCEDURE

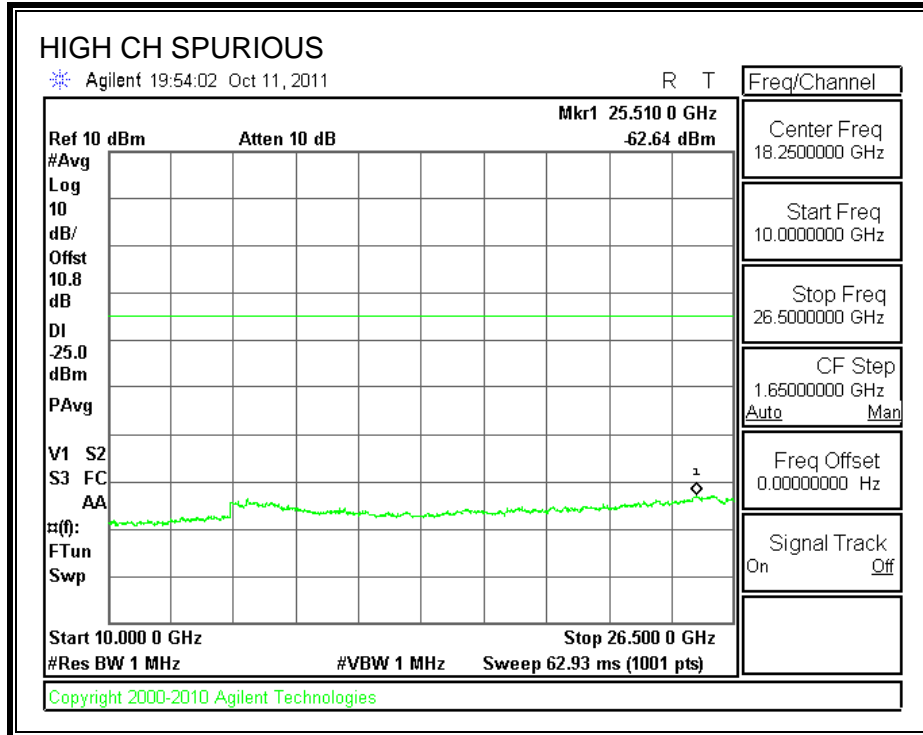
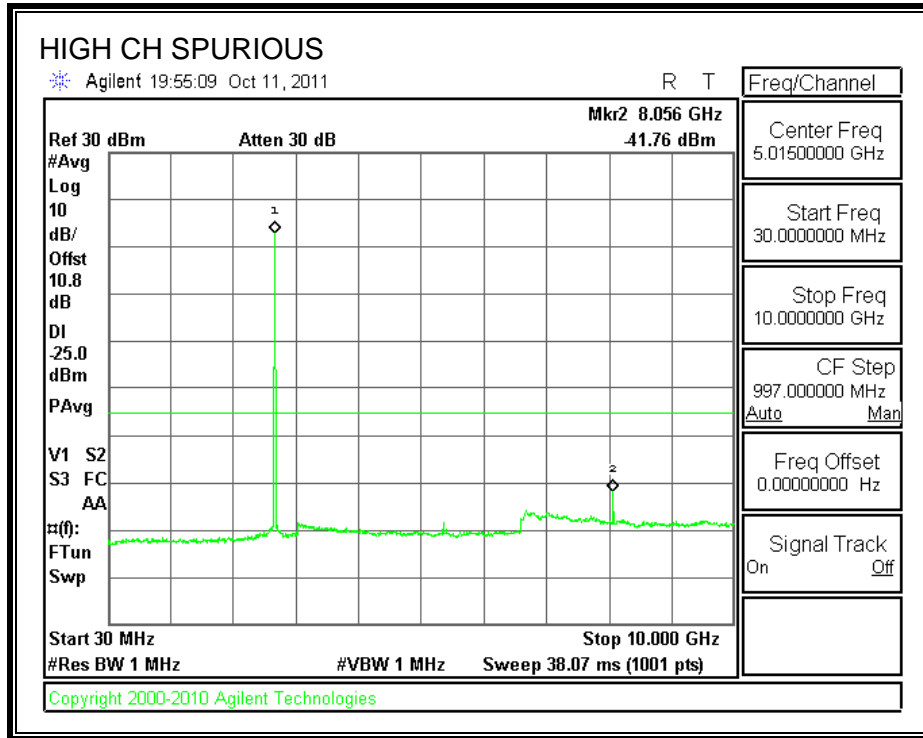
ANSI / TIA / EIA 603 Clause 3.2.12 & FCC 27

RESULTS

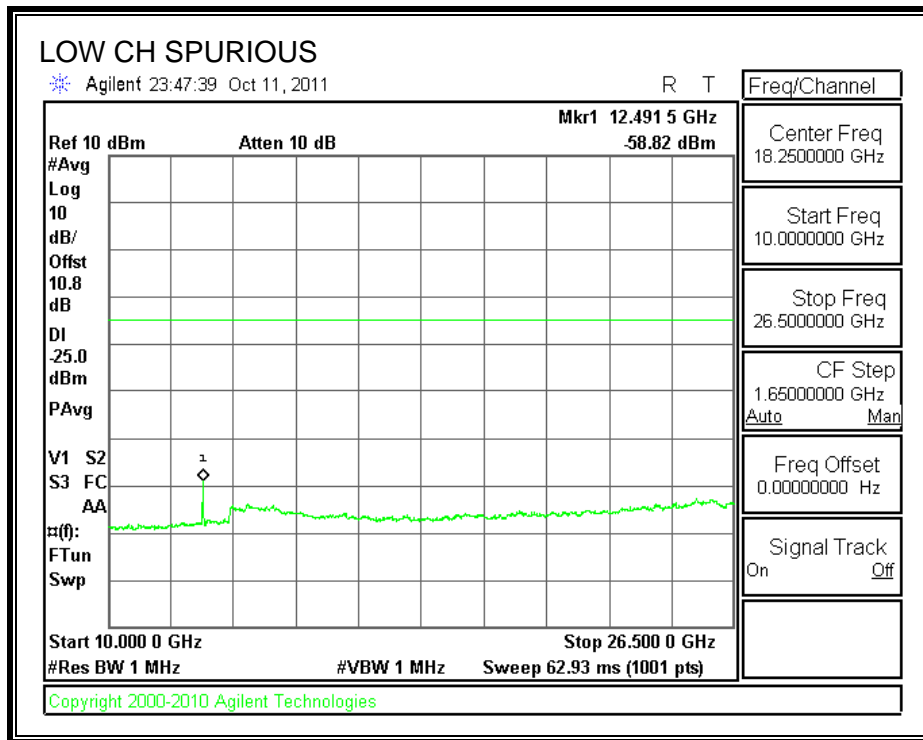
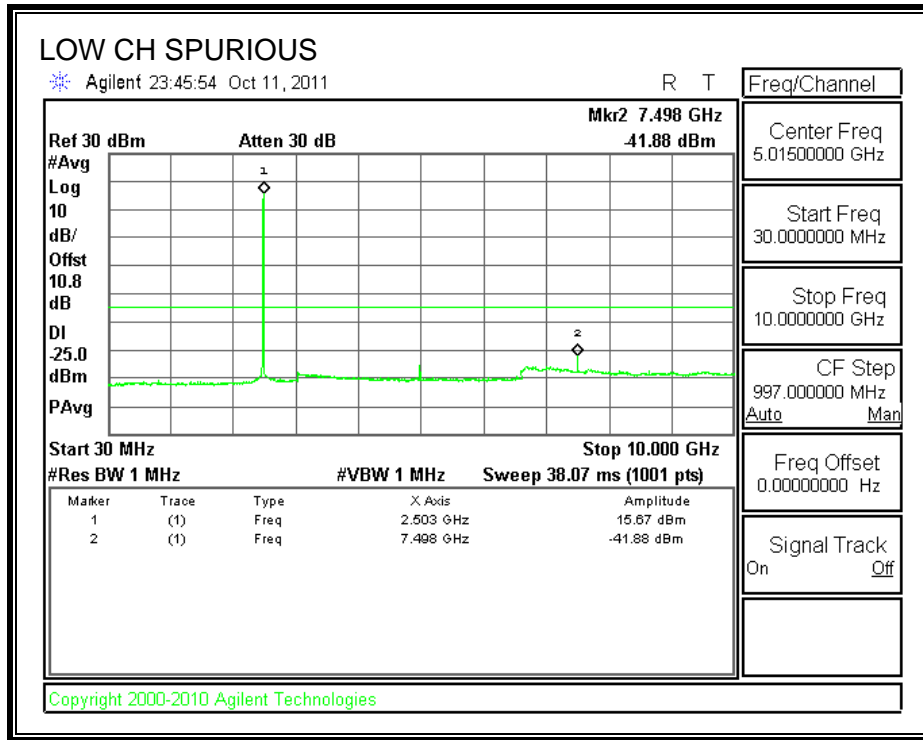
5MHz_QPSK

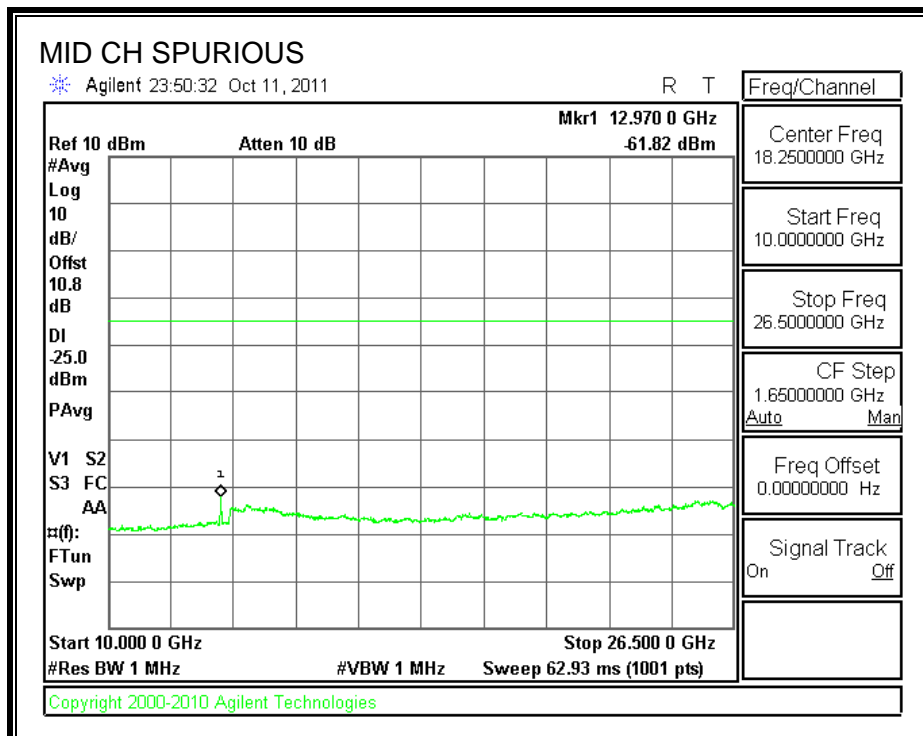
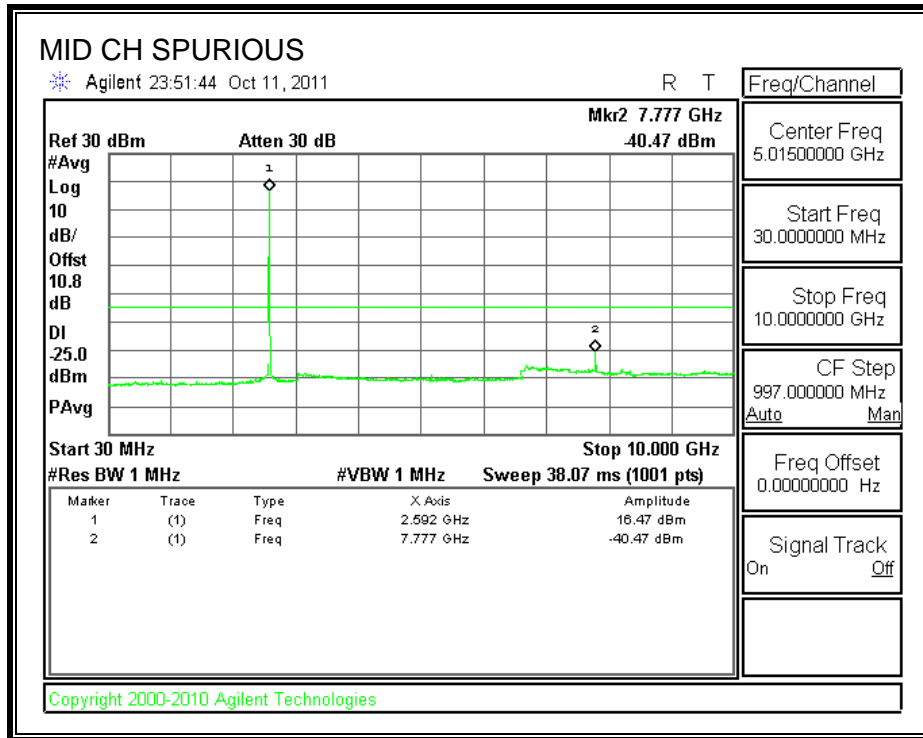


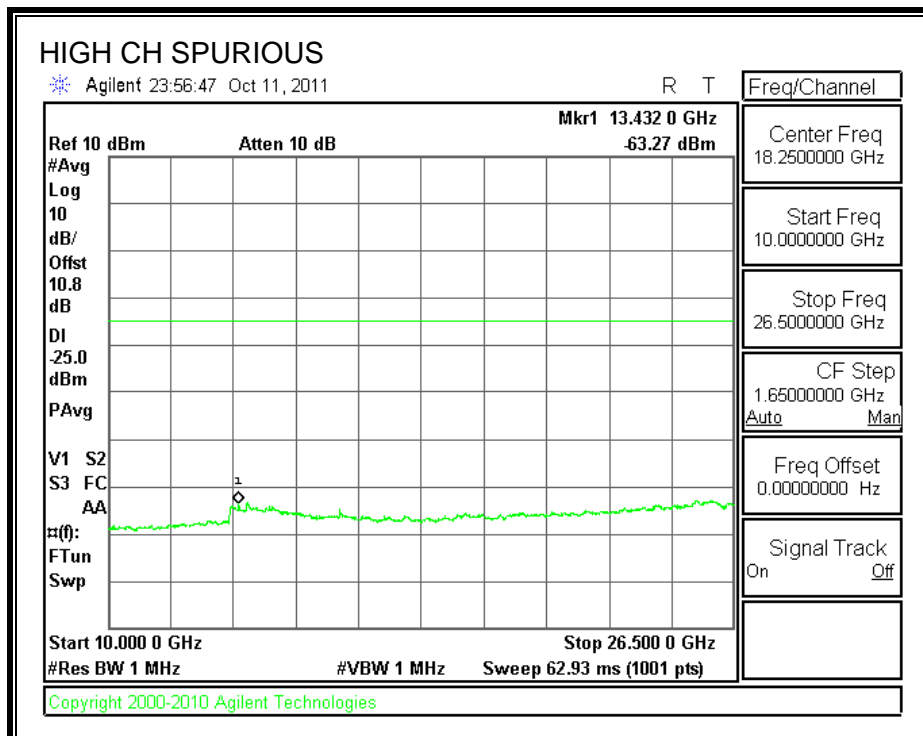
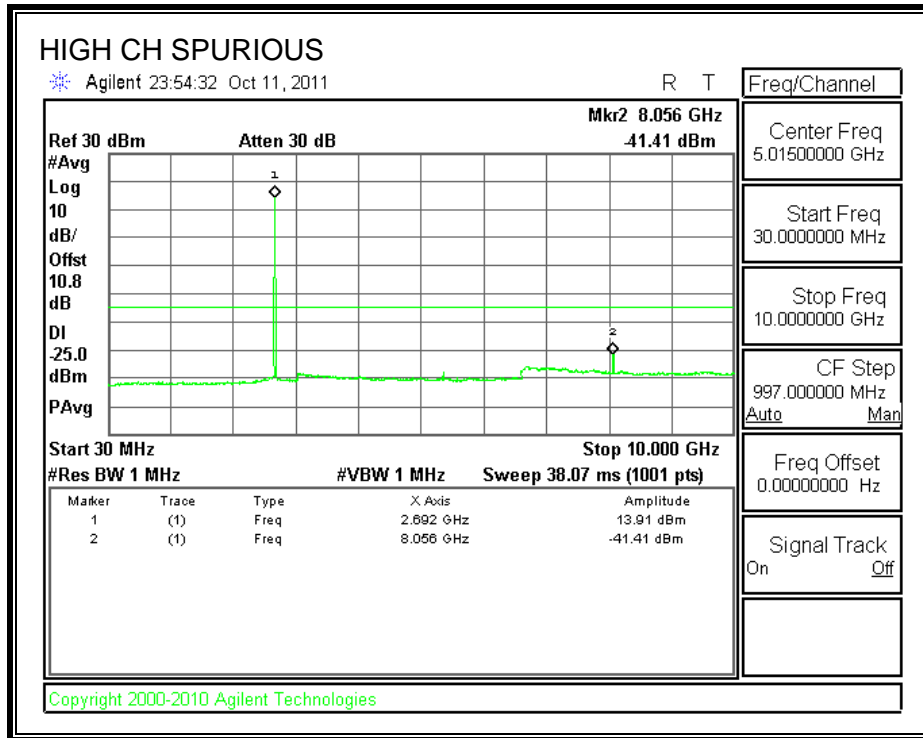




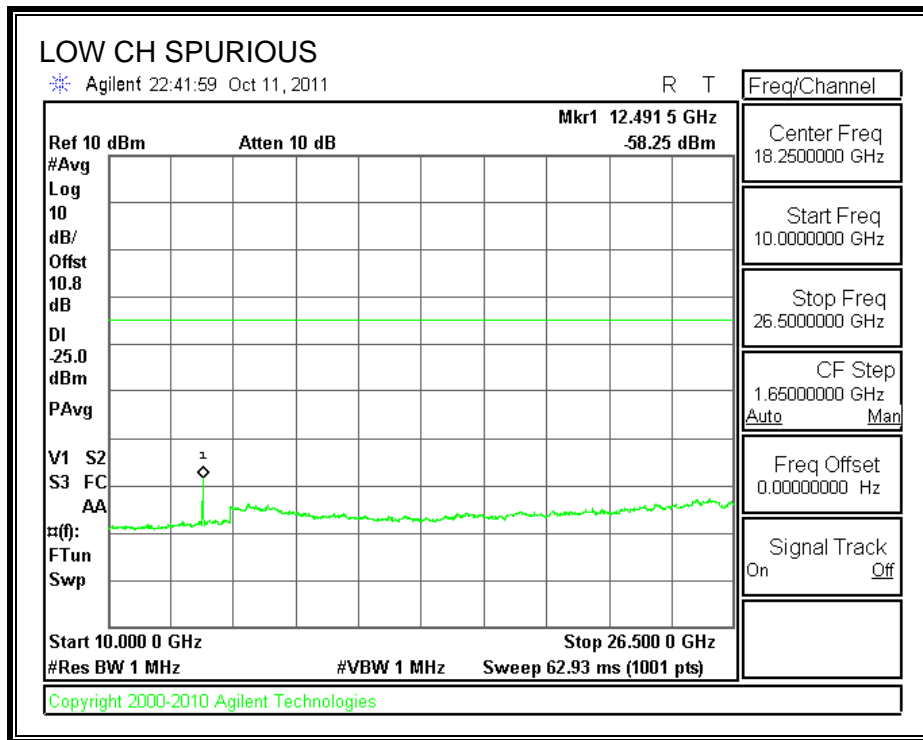
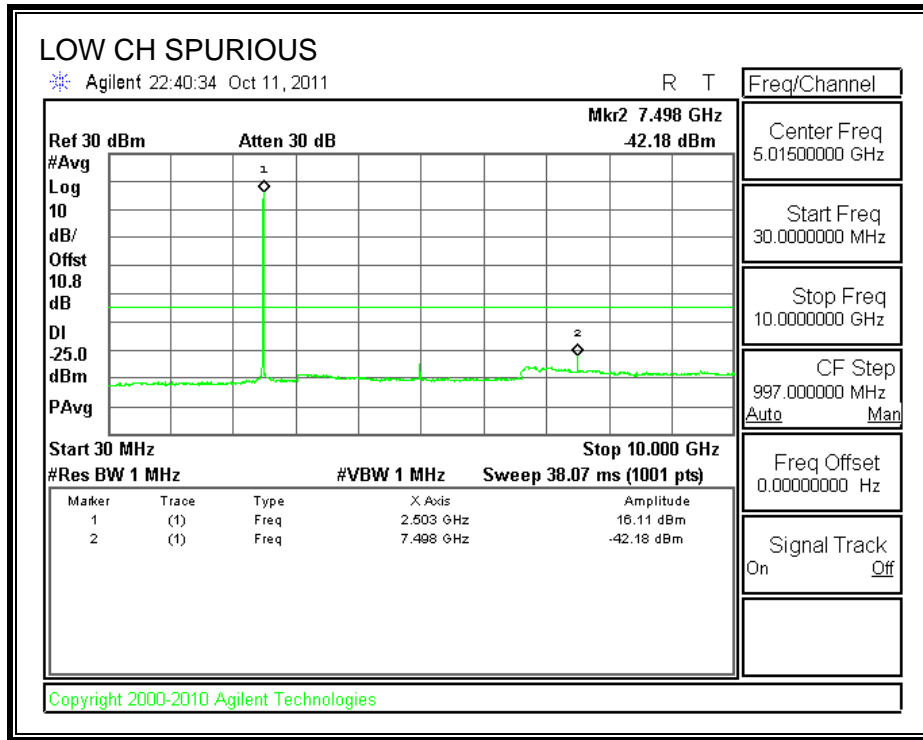
5MHz_16QAM

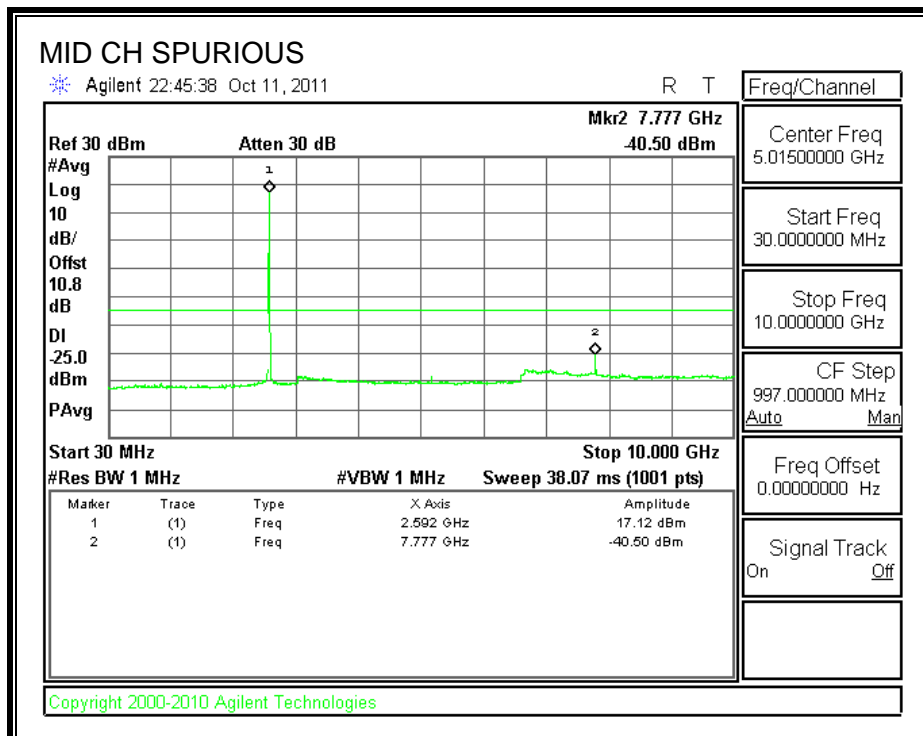
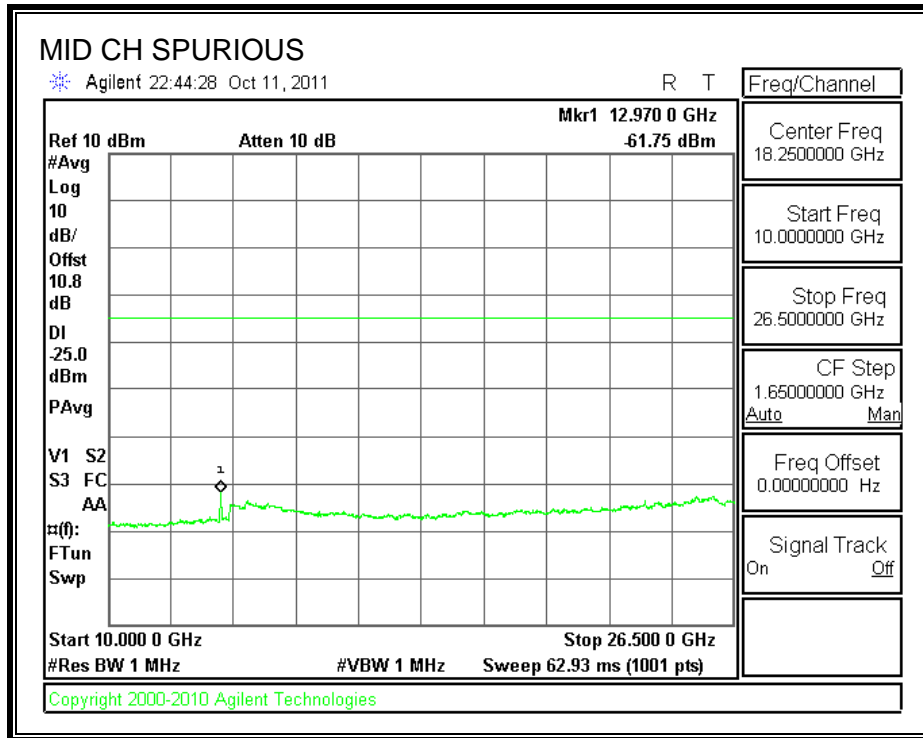


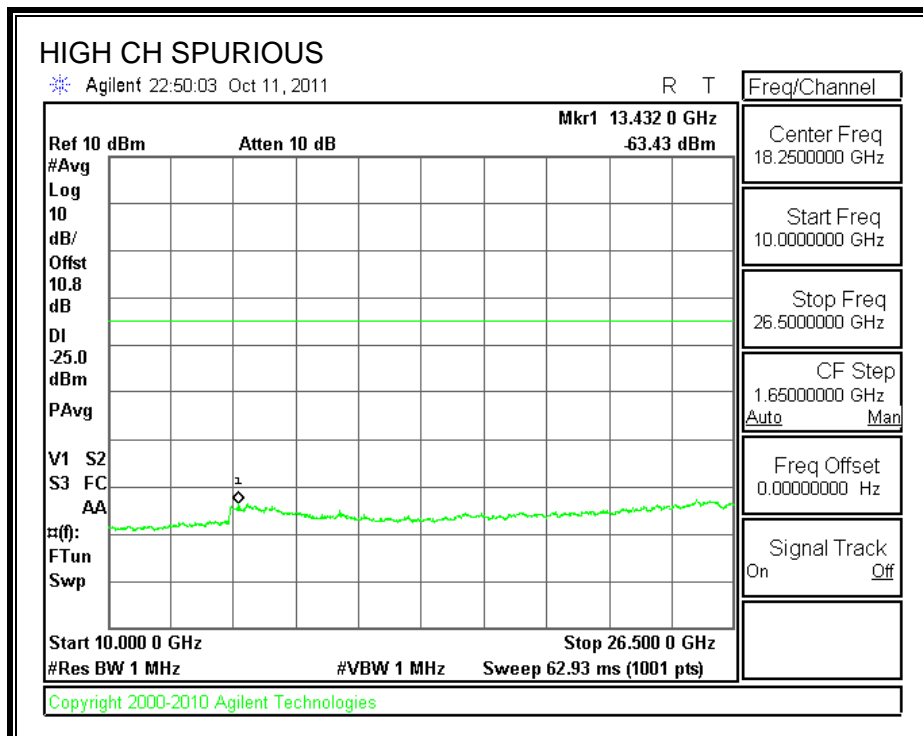
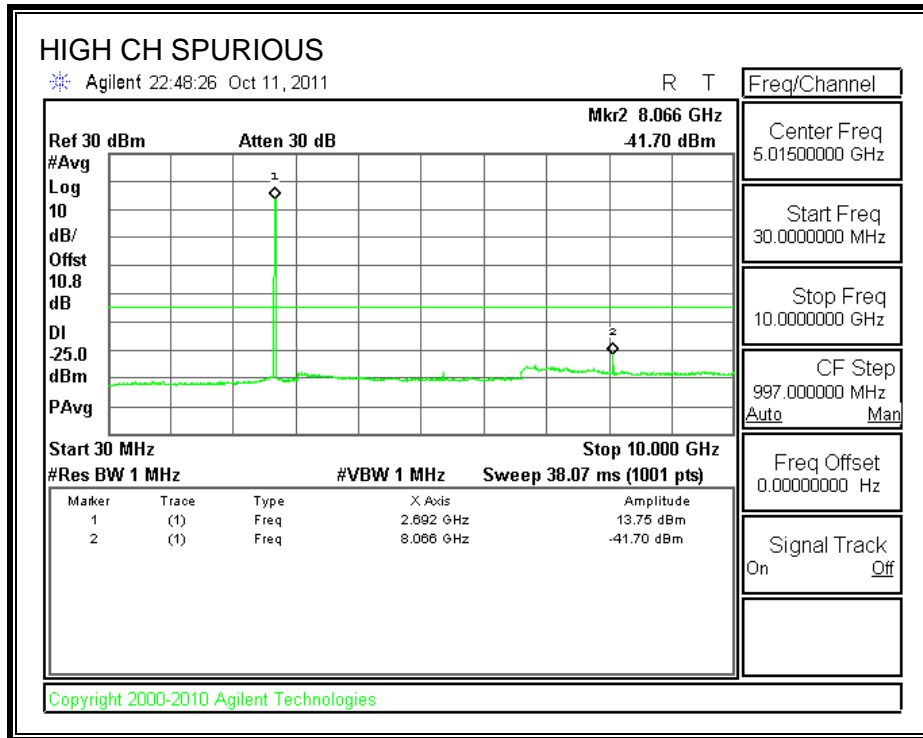




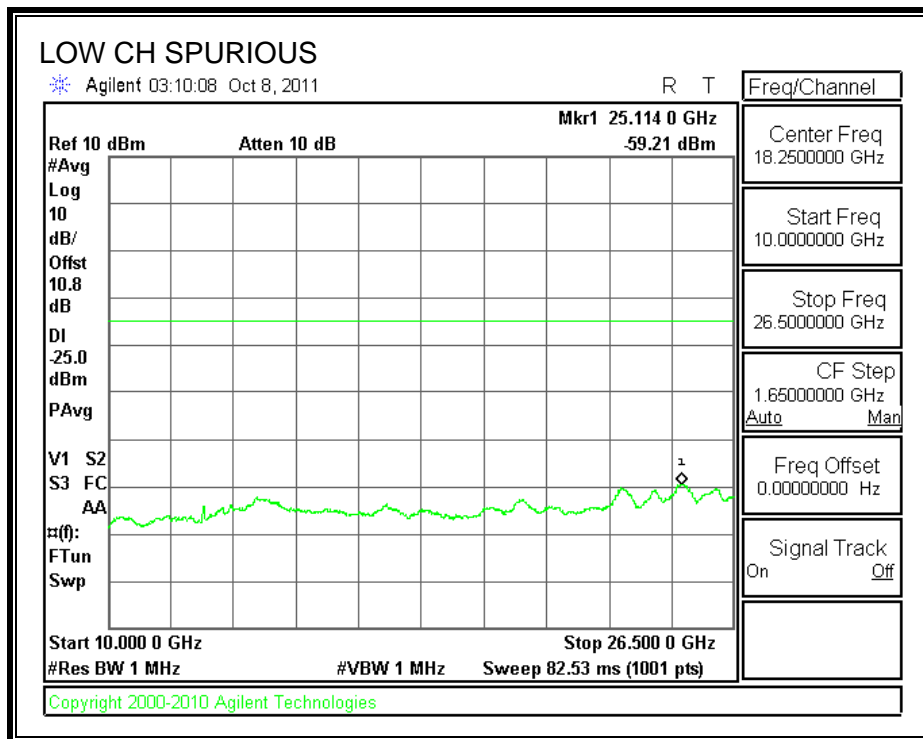
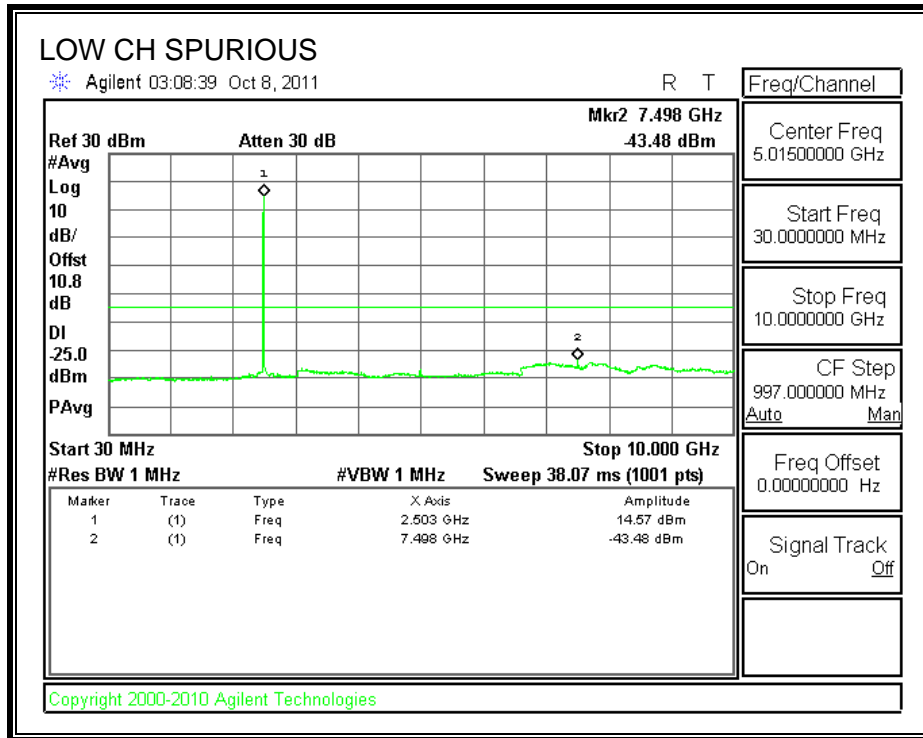
5MHz_64QAM

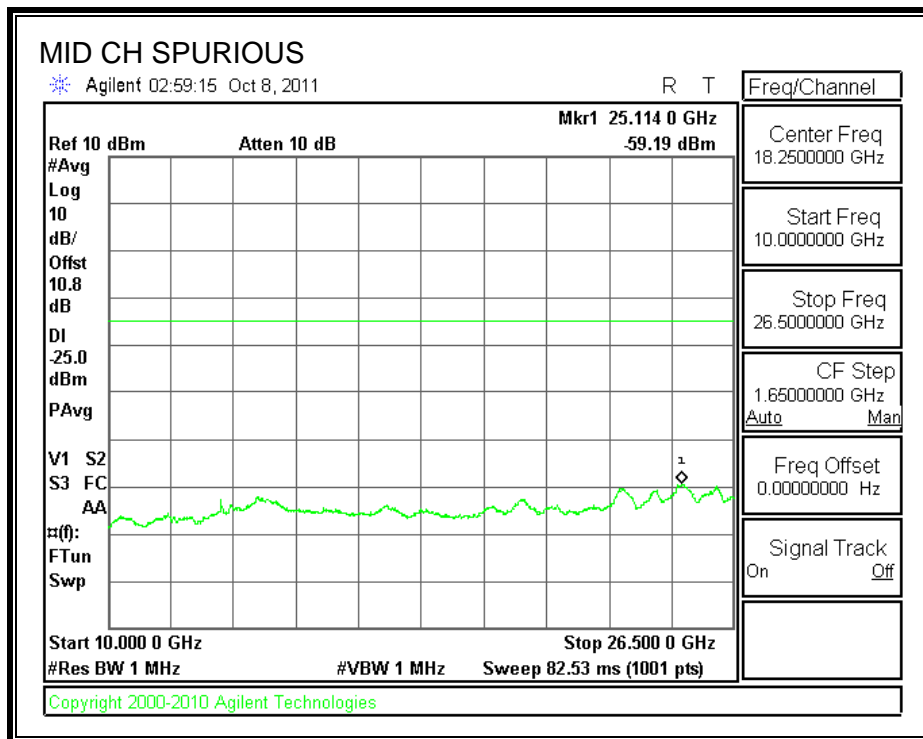
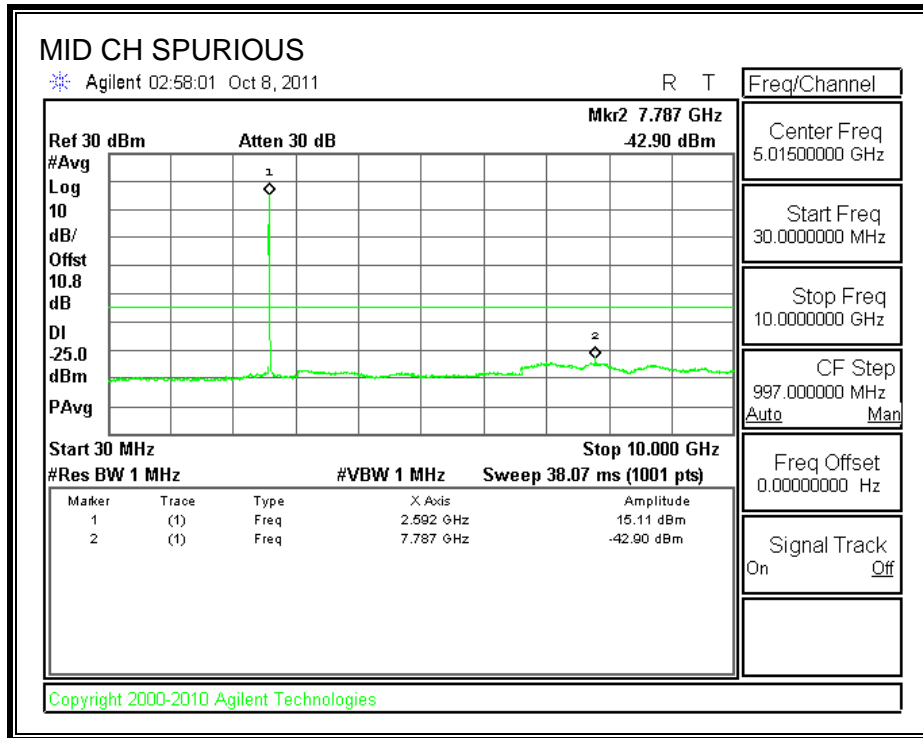


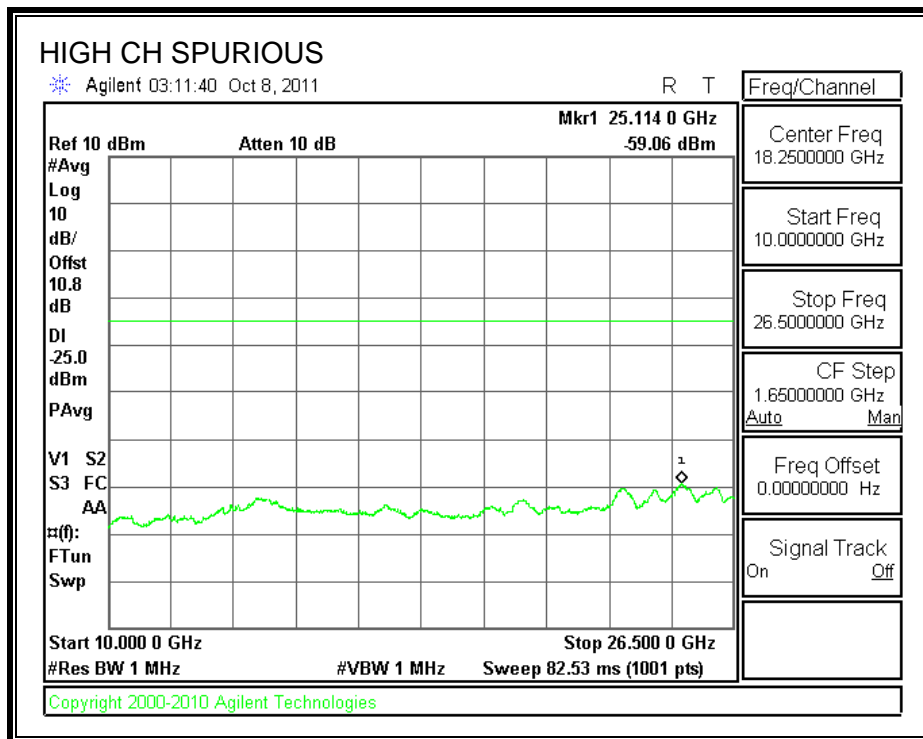
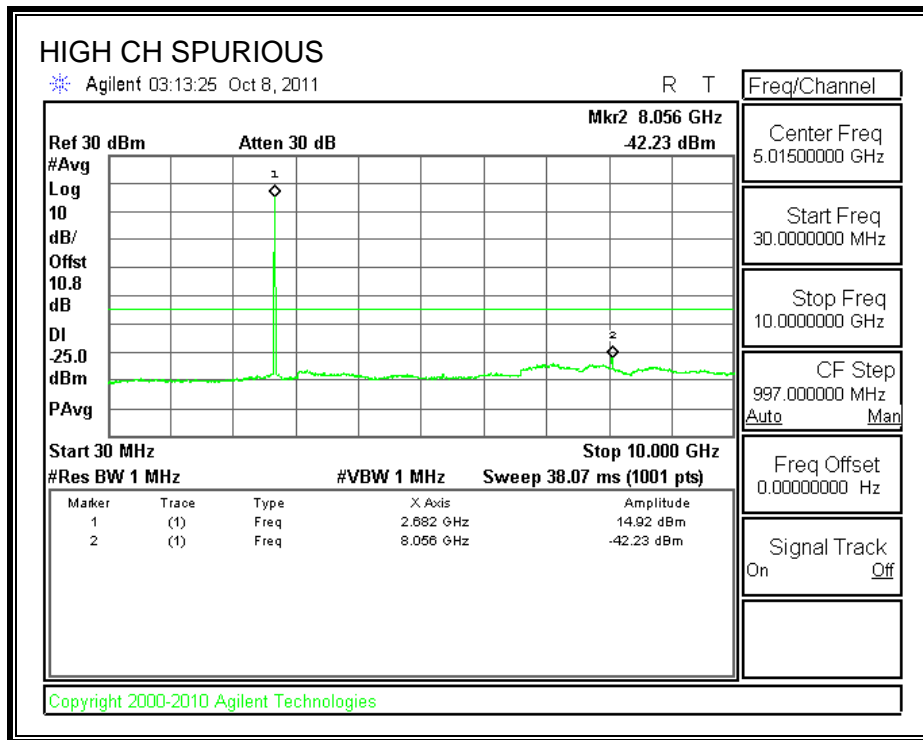




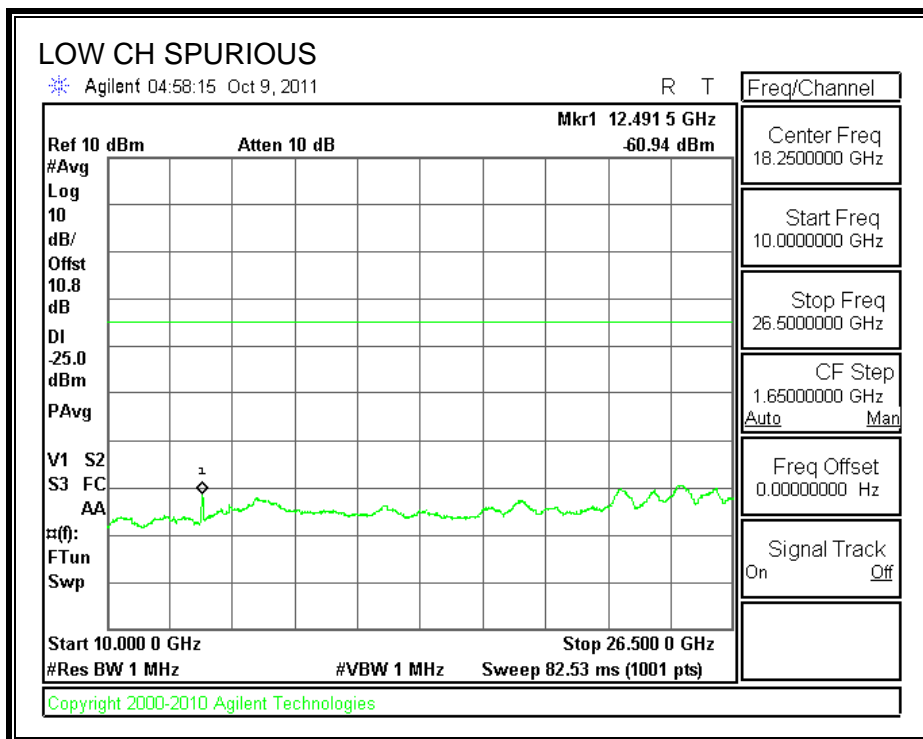
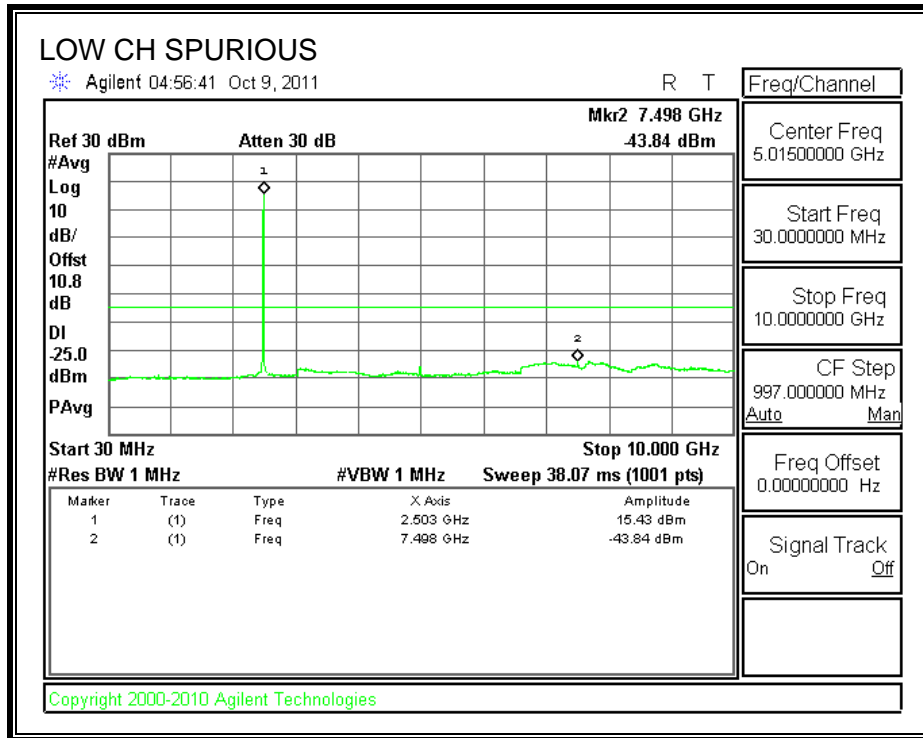
10MHz_QPSK

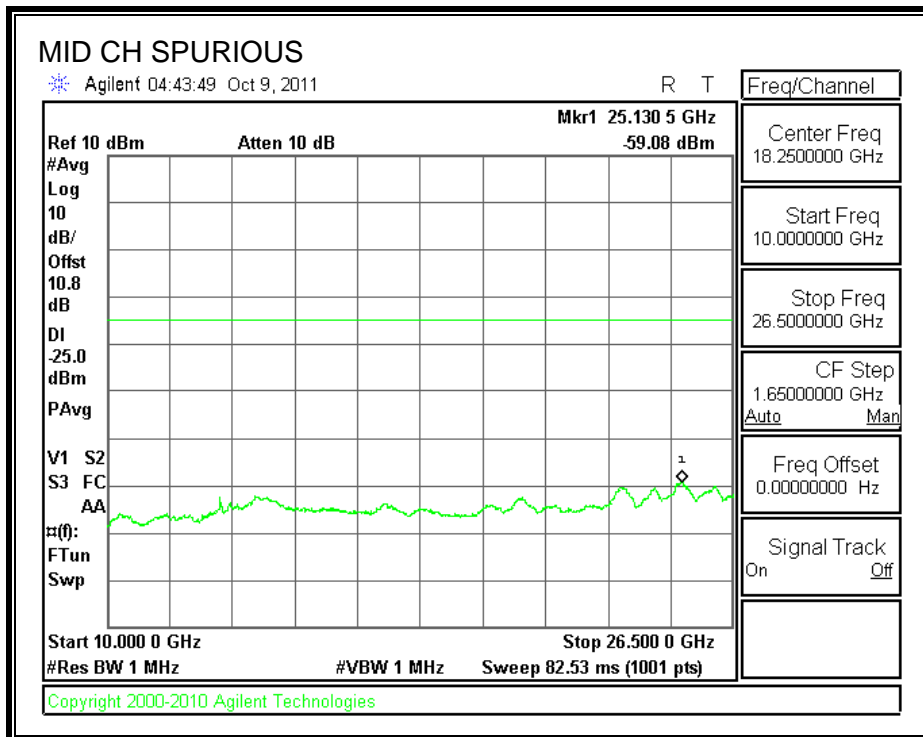
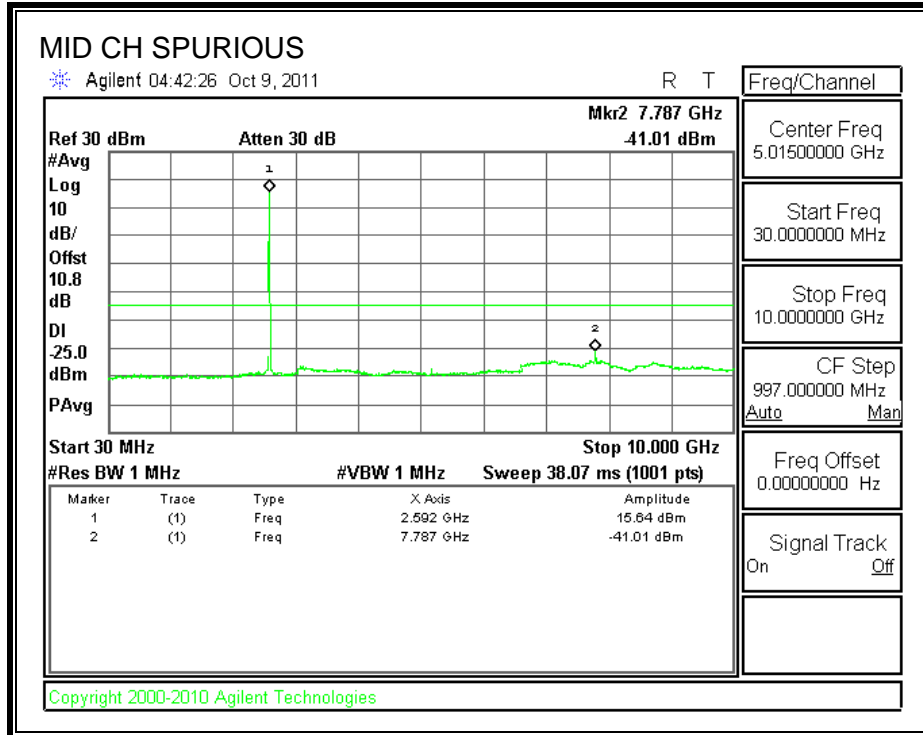


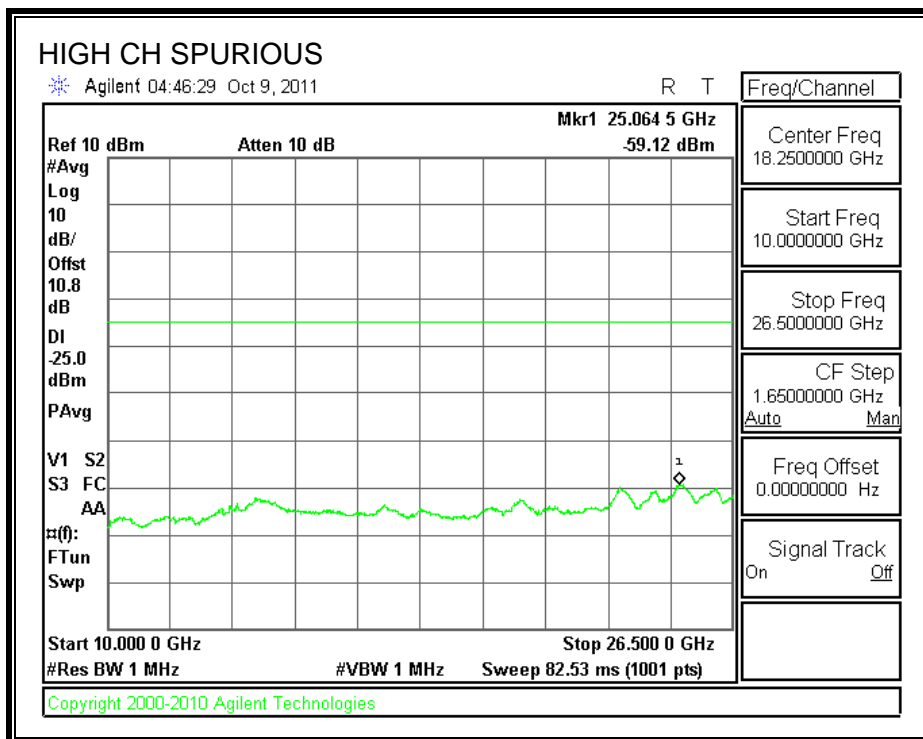
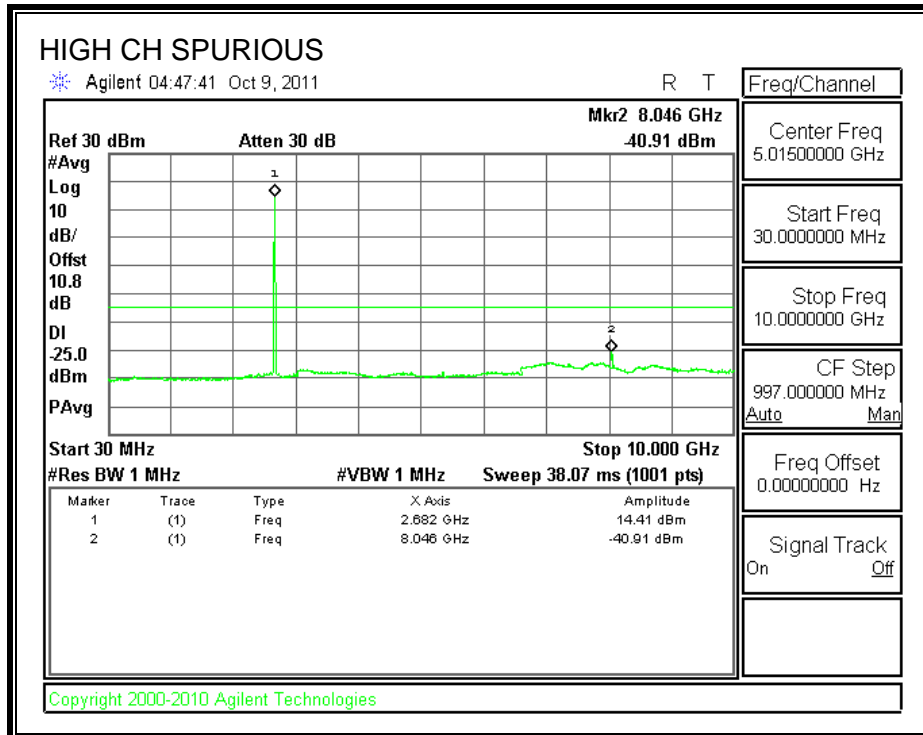




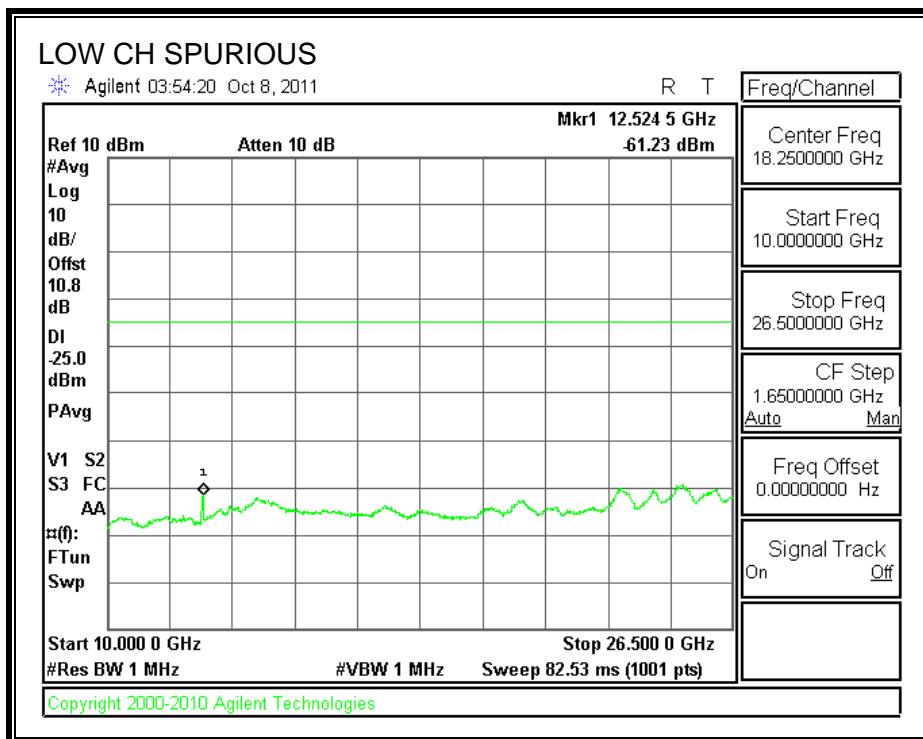
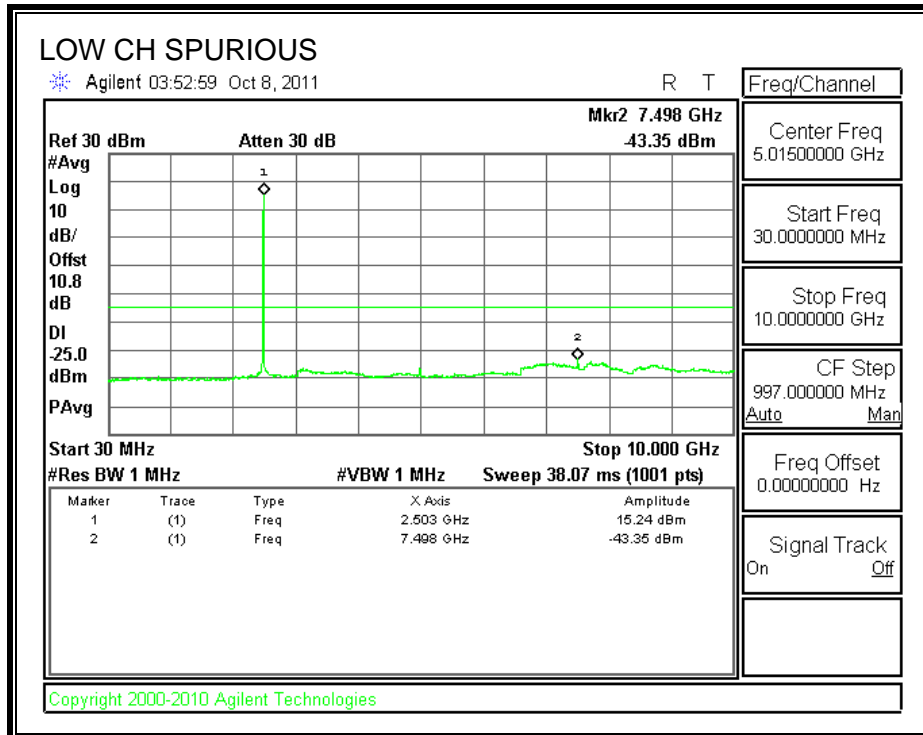
10MHz_16QAM

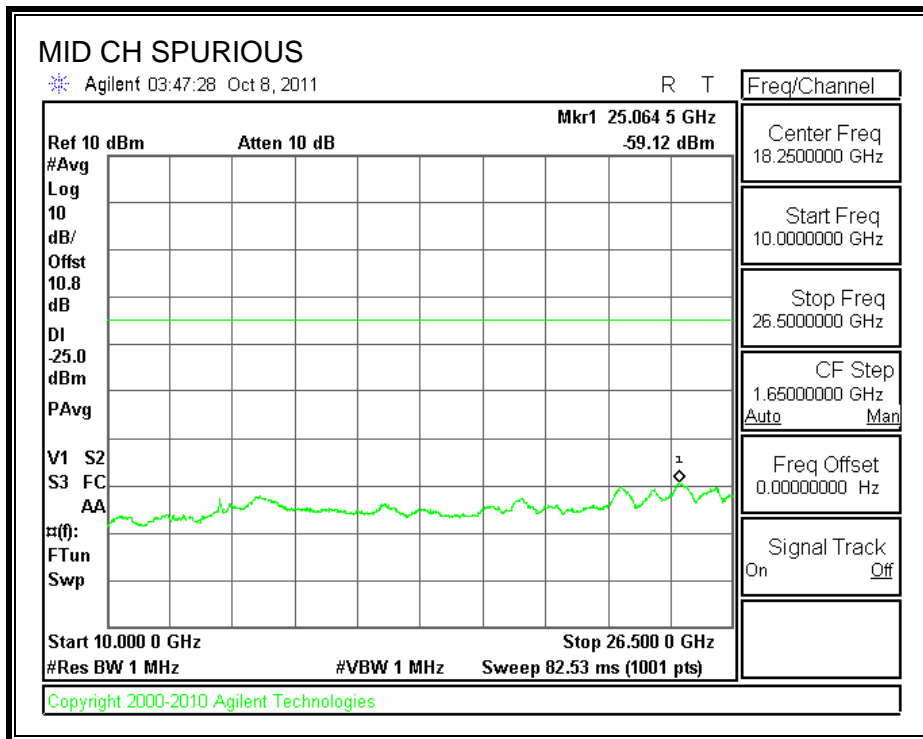
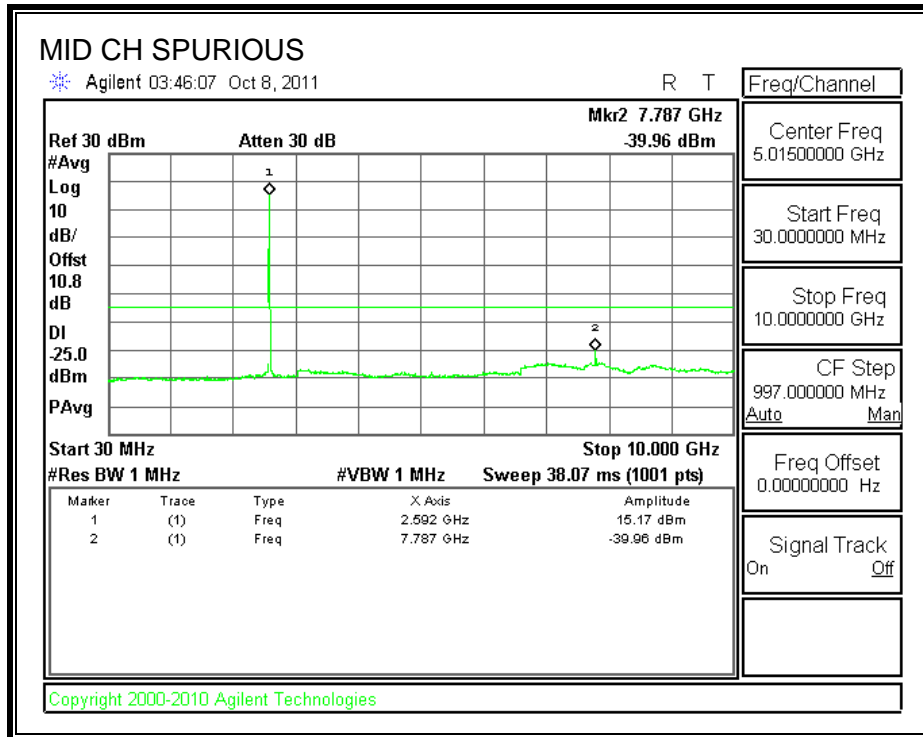


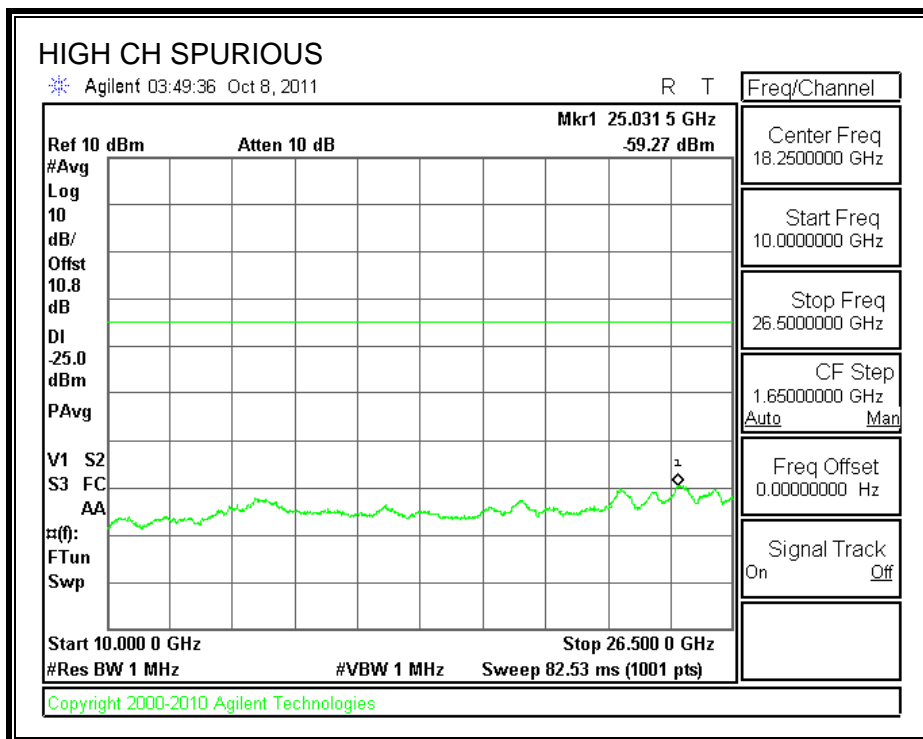
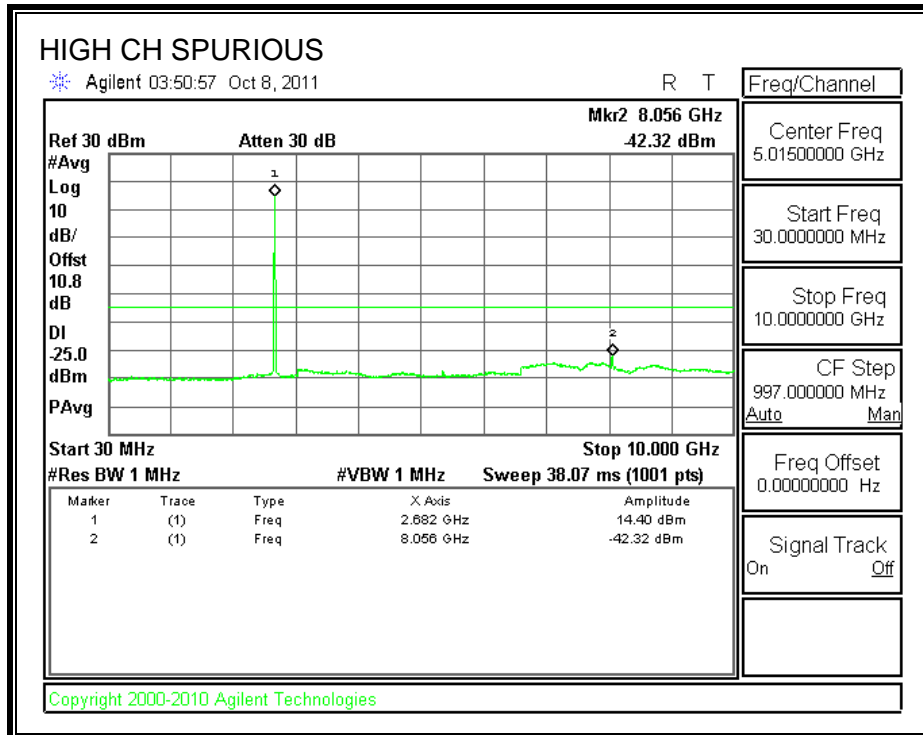




10MHz_64QAM







7.1.1. FREQUENCY STABILITY MEASUREMENT

LIMIT

§27.54 & 2.1055 Frequency stability.

Manufacturers of wireless medical telemetry devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all of the manufacturer's specified conditions.

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.3.1 and 2.3.2

TEST RESULTS

5MHz_QPSK

Reference Frequency: 2593.000000 MHz @ 20°C				
Limit: ± 20 ppm = 51860 Hz				
Power (Vac)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
115.00	50	2592.999996	0.001	Within the authorized frequency band
115.00	40	2592.999989	0.004	
115.00	30	2592.999994	0.002	
115.00	20	2593.000000	0.000	
115.00	10	2592.999998	0.001	
115.00	0	2592.999996	0.001	
115.00	-10	2592.999996	0.001	
115.00	-20	2593.000000	0.000	
115.00	-30	2592.999993	0.003	
85%	20	2592.999999	0.004	
115%	20	2593.000000	0.000	

5MHz_16QAM

Reference Frequency: 2592.999989 MHz @ 20°C				
Limit: ± 20 ppm = 51860 Hz				
Power (Vac)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
115.00	50	2593.000026	-0.014	Within the authorized frequency band
115.00	40	2593.000008	-0.007	
115.00	30	2592.999999	-0.004	
115.00	20	2592.999989	0.000	
115.00	10	2592.999993	-0.002	
115.00	0	2593.000000	-0.004	
115.00	-10	2593.000011	-0.009	
115.00	-20	2593.000004	-0.006	
115.00	-30	2593.000041	-0.020	
85%	20	2592.999970	0.007	
115%	20	2593.000011	-0.009	

5MHz_64QAM

Reference Frequency: 2593.000004 MHz @ 20°C				
Limit: ± 20 ppm = 51860 Hz				
Power (Vac)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
115.00	50	2593.000004	0.000	Within the authorized frequency band
115.00	40	2592.999996	0.003	
115.00	30	2592.999999	0.002	
115.00	20	2593.000004	0.000	
115.00	10	2593.000002	0.001	
115.00	0	2593.000000	0.002	
115.00	-10	2593.000041	-0.014	
115.00	-20	2593.000038	-0.013	
115.00	-30	2593.000019	-0.006	
85%	20	2593.000000	0.002	
115%	20	2592.999993	0.004	

10MHz_QPSK

Reference Frequency: 2592.998178 MHz @ 20°C				
Limit: ± 20 ppm = 51860 Hz				
Power (Vac)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
115.00	50	2592.998178	0.000	Within the authorized frequency band
115.00	40	2592.998178	0.000	
115.00	30	2592.998178	0.000	
115.00	20	2592.998170	0.003	
115.00	10	2592.998170	0.003	
115.00	0	2592.998178	0.000	
115.00	-10	2592.998178	0.000	
115.00	-20	2592.998178	0.000	
115.00	-30	2592.998178	0.000	
85%	20	2592.998185	-0.003	
115%	20	2592.998178	0.000	

10MHz_16QAM

Reference Frequency: 2592.998223 MHz @ 20°C				
Limit: ± 20 ppm = 51860 Hz				
Power (Vac)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
115.00	50	2592.998230	-0.003	Within the authorized frequency band
115.00	40	2592.998228	-0.002	
115.00	30	2592.998225	-0.001	
115.00	20	2592.998223	0.000	
115.00	10	2592.998218	0.002	
115.00	0	2592.998215	0.003	
115.00	-10	2592.998210	0.005	
115.00	-20	2592.998205	0.007	
115.00	-30	2592.998200	0.009	
85%	20	2592.998208	0.006	
115%	20	2592.998215	0.003	

10MHz_64QAM

Reference Frequency: 2592.998208 MHz @ 20°C				
Limit: ± 20 ppm = 51860 Hz				
Power (Vac)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
115.00	50	2592.998215	-0.003	Within the authorized frequency band
115.00	40	2592.998215	-0.003	
115.00	30	2592.998213	-0.002	
115.00	20	2592.998208	0.000	
115.00	10	2592.998198	0.004	
115.00	0	2592.998185	0.009	
115.00	-10	2592.998185	0.009	
115.00	-20	2592.998193	0.006	
115.00	-30	2592.998200	0.003	
85%	20	2592.998208	0.000	
115%	20	2592.998208	0.000	

8. RADIATED TEST RESULTS

8.1.1. FIELD STRENGTH OF SPURIOUS RADIATION

LIMIT

§2.1053

§27.53 (m)(4) For mobile digital stations, the attenuation factor shall be not less than 43 + 10 log (P) dB at the channel edge and 55 + 10 log (P) dB at 5.5 megahertz from the channel edges.

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 3.2.12 & FCC 27

RESULTS

Below 1GHz (Worst Case)

Compliance Certification Services
30 - 1000MHz Substitution Measurement

Company: PANASONIC
Project #: 11J13398
Date: 10/15/2011
Test Engineer: MENGISTU MEKURIA
Configuration: EUT with AC Adapter
Mode: TX, worst

Chamber

5m Chamber B

Pre-amplifier

T10 8447D

Filter

Limit

ETSI 300 328 Tx

f MHz	SA reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Path Loss (dB)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
155.10	-51.0	H	3.0	20.9	29.3		-59.5	-36.0	-23.5	
222.10	-51.3	H	3.0	17.9	29.1		-62.4	-36.0	-26.4	
258.90	-50.4	H	3.0	20.0	28.9		-59.4	-36.0	-23.4	
291.90	-57.1	H	3.0	21.7	28.8		-64.2	-36.0	-28.2	
894.30	-65.5	H	3.0	32.1	28.8		-62.3	-36.0	-26.3	
159.00	-46.7	V	3.0	23.9	29.3		-52.1	-36.0	-16.1	
214.30	-52.9	V	3.0	21.6	29.1		-60.4	-36.0	-24.4	
258.90	-50.5	V	3.0	21.5	28.9		-57.9	-36.0	-21.9	
291.90	-59.5	V	3.0	22.9	28.8		-65.4	-36.0	-29.4	
894.30	-65.7	V	3.0	33.5	28.8		-61.0	-36.0	-25.0	

Rev. 03.03.09

Above 1GHz at 5MHz Bandwidth

5MHz_QPSK

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: PANASONIC
Project #: 11J13998
Date: 12/10/2011
Test Engineer: MENGISTU MEKURIA
Configuration: EUT ALONE
Mode: TX, QPSK_5MHz BAND

Chamber	Pre-amplifier	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch (2498.8MHz)									
4.998	-9.4	V	3.0	35.3	1.0	-43.8	-25.0	-18.8	
7.496	-8.4	V	3.0	35.7	1.0	-43.1	-25.0	-18.1	
9.995	-17.2	V	3.0	35.5	1.0	-51.7	-25.0	-26.7	
12.494	-18.3	V	3.0	34.1	1.0	-51.4	-25.0	-26.4	
4.998	-1.1	H	3.0	35.3	1.0	-35.4	-25.0	-10.4	
7.496	5.4	H	3.0	35.7	1.0	-29.3	-25.0	-4.3	
9.995	-18.2	H	3.0	35.5	1.0	-52.7	-25.0	-27.7	
12.494	-18.6	H	3.0	34.1	1.0	-51.7	-25.0	-26.7	
Mid Ch (2593MHz)									
5.186	-11.5	V	3.0	35.3	1.0	-45.8	-25.0	-20.8	
7.779	-12.0	V	3.0	35.7	1.0	-46.6	-25.0	-21.6	
10.372	-17.7	V	3.0	35.3	1.0	-52.0	-25.0	-27.0	
5.186	-7.1	H	3.0	35.3	1.0	-41.4	-25.0	-16.4	
7.779	3.8	H	3.0	35.7	1.0	-30.9	-25.0	-5.9	
10.372	-17.8	H	3.0	35.3	1.0	-52.1	-25.0	-27.1	
High Ch (26872MHz)									
5.374	-17.2	V	3.0	35.4	1.0	-51.6	-25.0	-26.6	
8.062	-8.2	V	3.0	35.7	1.0	-42.9	-25.0	-17.9	
10.749	-18.6	V	3.0	35.0	1.0	-52.6	-25.0	-27.6	
13.436	-17.4	V	3.0	33.9	1.0	-50.3	-25.0	-25.3	
5.374	-9.8	H	3.0	35.4	1.0	-44.2	-25.0	-19.2	
8.062	2.5	H	3.0	35.7	1.0	-32.2	-25.0	-7.2	
10.749	-17.5	H	3.0	35.0	1.0	-51.5	-25.0	-26.5	

Rev. 03.03.09
 Note: No other emissions were detected above the system noise floor.

5MHz_16QAM

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: PANASONIC
Project #: 11J13998
Date: 12/10/2011
Test Engineer: MENGISTU MEKURIA
Configuration: EUT ALONE
Mode: TX, 16QAM_5MHz BAND

Chamber	Pre-amplifier	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch (2498.8MHz)									
4.998	-2.7	V	3.0	35.3	1.0	-37.0	-25.0	-12.0	
7.496	-2.8	V	3.0	35.7	1.0	-37.5	-25.0	-12.5	
9.995	-20.0	V	3.0	35.5	1.0	-54.5	-25.0	-29.5	
12.494	-75.4	V	3.0	34.1	1.0	-108.5	-25.0	-83.5	
4.998	-0.7	H	3.0	35.3	1.0	-35.0	-25.0	-10.0	
7.496	5.3	H	3.0	35.7	1.0	-29.4	-25.0	-4.4	
9.995	-18.8	H	3.0	35.5	1.0	-53.4	-25.0	-28.4	
12.494	-18.9	H	3.0	34.1	1.0	-52.0	-25.0	-27.0	
Mid Ch (2593.0MHz)									
5.186	-11.4	V	3.0	35.3	1.0	-45.7	-25.0	-20.7	
7.779	-13.6	V	3.0	35.7	1.0	-48.3	-25.0	-23.3	
10.372	-18.4	V	3.0	35.3	1.0	-52.7	-25.0	-27.7	
5.186	-7.3	H	3.0	35.3	1.0	-41.7	-25.0	-16.7	
7.779	4.0	H	3.0	35.7	1.0	-30.7	-25.0	-5.7	
10.372	-18.6	H	3.0	35.3	1.0	-52.9	-25.0	-27.9	
High Ch (2687.2MHz)									
5.374	-15.7	V	3.0	35.4	1.0	-50.1	-25.0	-25.1	
8.062	-7.8	V	3.0	35.7	1.0	-42.4	-25.0	-17.4	
10.749	-17.5	V	3.0	35.0	1.0	-51.5	-25.0	-26.5	
13.436	-15.9	V	3.0	33.9	1.0	-48.9	-25.0	-23.9	
5.374	-12.2	H	3.0	35.4	1.0	-46.5	-25.0	-21.5	
8.062	3.0	H	3.0	35.7	1.0	-31.6	-25.0	-6.6	
10.749	-17.5	H	3.0	35.0	1.0	-51.5	-25.0	-26.5	

Rev. 03.03.09

Note: No other emissions were detected above the system noise floor.

5MHz_64QAM

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: PANASONIC
Project #: 11J13998
Date: 12/10/2011
Test Engineer: MENGISTU MEKURIA
Configuration: EUT ALONE
Mode: TX, 64QAM_5MHz BAND

Chamber	Pre-amplifier	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch (2498.8MHz)									
4.998	-3.3	V	3.0	35.3	1.0	-37.6	-25.0	-12.6	
7.496	-2.5	V	3.0	35.7	1.0	-37.2	-25.0	-12.2	
9.995	-15.1	V	3.0	35.5	1.0	-49.6	-25.0	-24.6	
12.494	-13.4	V	3.0	34.1	1.0	-46.5	-25.0	-21.5	
4.998	1.3	H	3.0	35.3	1.0	-33.0	-25.0	-8.0	
7.496	-0.4	H	3.0	35.7	1.0	-35.1	-25.0	-10.1	
9.995	-14.3	H	3.0	35.5	1.0	-48.8	-25.0	-23.8	
Mid Ch (2593MHz)									
5.186	-4.4	V	3.0	35.3	1.0	-38.7	-25.0	-13.7	
7.779	-9.1	V	3.0	35.7	1.0	-43.8	-25.0	-18.8	
10.372	-12.6	V	3.0	35.3	1.0	-46.9	-25.0	-21.9	
5.186	-8.3	H	3.0	35.3	1.0	-42.6	-25.0	-17.6	
7.779	-1.7	H	3.0	35.7	1.0	-36.4	-25.0	-11.4	
10.372	-14.8	H	3.0	35.3	1.0	-49.1	-25.0	-24.1	
High Ch (2687.2MHz)									
5.374	-8.7	V	3.0	35.4	1.0	-43.1	-25.0	-18.1	
8.062	-3.4	V	3.0	35.7	1.0	-38.1	-25.0	-13.1	
10.749	-13.7	V	3.0	35.0	1.0	-47.7	-25.0	-22.7	
13.436	-11.6	V	3.0	33.9	1.0	-44.5	-25.0	-19.5	
5.374	-6.8	H	3.0	35.4	1.0	-41.2	-25.0	-16.2	
8.062	1.2	H	3.0	35.7	1.0	-33.5	-25.0	-8.5	
10.749	133.4	H	3.0	35.0	1.0	99.3	-25.0	124.3	
13.436	-13.6	H	3.0	33.9	1.0	-46.5	-25.0	-21.5	

Rev. 03.03.09

Note: No other emissions were detected above the system noise floor.

Above 1GHz at 10MHz Bandwidth

10MHz_QPSK

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: PANASONIC
Project #: 11J13998
Date: 12/10/2011
Test Engineer: MENGISTU MEKURIA
Configuration: EUT ALONE
Mode: TX, QPSK_10MHz BAND

Chamber	Pre-amplifier	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch (2501.4MHz)									
5.003	0.0	V	3.0	35.3	1.0	-34.4	-25.0	-9.4	
7.504	-1.9	V	3.0	35.7	1.0	-36.6	-25.0	-11.6	
10.006	-18.7	V	3.0	35.5	1.0	-53.2	-25.0	-28.2	
12.507	-16.1	V	3.0	34.1	1.0	-49.2	-25.0	-24.2	
5.003	-0.1	H	3.0	35.3	1.0	-34.4	-25.0	-9.4	
7.504	-2.0	H	3.0	35.7	1.0	-36.6	-25.0	-11.6	
10.006	-16.7	H	3.0	35.5	1.0	-51.2	-25.0	-26.2	
12.507	-16.8	H	3.0	34.1	1.0	-49.9	-25.0	-24.9	
Mid Ch (2593MHz)									
5.186	-11.0	V	3.0	35.3	1.0	-45.3	-25.0	-20.3	
7.779	-10.7	V	3.0	35.7	1.0	-45.3	-25.0	-20.3	
10.372	-16.9	V	3.0	35.3	1.0	-51.2	-25.0	-26.2	
5.186	-10.8	H	3.0	35.3	1.0	-45.1	-25.0	-20.1	
7.779	-3.0	H	3.0	35.7	1.0	-37.7	-25.0	-12.7	
10.372	-17.5	H	3.0	35.3	1.0	-51.8	-25.0	-26.8	
12.965	-16.4	H	3.0	34.0	1.0	-49.4	-25.0	-24.4	
High Ch (2684.6MHz)									
5.369	-15.0	V	3.0	35.4	1.0	-49.3	-25.0	-24.3	
8.054	-6.1	V	3.0	35.7	1.0	-40.7	-25.0	-15.7	
10.738	-17.5	V	3.0	35.0	1.0	-51.5	-25.0	-26.5	
13.423	-15.2	V	3.0	33.9	1.0	-48.1	-25.0	-23.1	
5.369	-10.2	H	3.0	35.4	1.0	-44.6	-25.0	-19.6	
8.054	-3.9	H	3.0	35.7	1.0	-38.6	-25.0	-13.6	
10.738	-16.8	H	3.0	35.0	1.0	-50.9	-25.0	-25.9	

Rev. 03.03.09
 Note: No other emissions were detected above the system noise floor.

10MHz_16QAM

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: PANASONIC
 Project #: 11J13998
 Date: 12/10/2011
 Test Engineer: MENGISTU MEKURIA
 Configuration: EUT ALONE
 Mode: TX, 16QAM_10MHz BAND

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch (2501.4MHz)									
5.003	-14.3	V	3.0	35.3	1.0	-48.6	-25.0	-23.6	
7.504	-16.7	V	3.0	35.7	1.0	-51.4	-25.0	-26.4	
10.006	-24.9	V	3.0	35.5	1.0	-59.4	-25.0	-34.4	
12.507	-23.6	V	3.0	34.1	1.0	-56.7	-25.0	-31.7	
5.003	-12.8	H	3.0	35.3	1.0	-47.1	-25.0	-22.1	
7.504	-9.0	H	3.0	35.7	1.0	-43.7	-25.0	-18.7	
10.006	-23.8	H	3.0	35.5	1.0	-58.3	-25.0	-33.3	
12.507	-24.2	H	3.0	34.1	1.0	-57.3	-25.0	-32.3	
Mid Ch (2593MHz)									
5.186	-20.6	V	3.0	35.3	1.0	-54.9	-25.0	-29.9	
7.779	-24.4	V	3.0	35.7	1.0	-59.1	-25.0	-34.1	
10.372	-23.4	V	3.0	35.3	1.0	-57.7	-25.0	-32.7	
5.186	-19.7	H	3.0	35.3	1.0	-54.0	-25.0	-29.0	
7.779	-17.7	H	3.0	35.7	1.0	-52.4	-25.0	-27.4	
10.372	-24.2	H	3.0	35.3	1.0	-58.5	-25.0	-33.5	
High Ch (2684.6MHz)									
5.369	-25.2	V	3.0	35.4	1.0	-59.6	-25.0	-34.6	
8.054	-18.2	V	3.0	35.7	1.0	-52.8	-25.0	-27.8	
10.738	-23.6	V	3.0	35.0	1.0	-57.7	-25.0	-32.7	
13.423	-21.7	V	3.0	33.9	1.0	-54.6	-25.0	-29.6	
5.369	-20.3	H	3.0	35.4	1.0	-54.7	-25.0	-29.7	
8.054	-14.0	H	3.0	35.7	1.0	-48.7	-25.0	-23.7	
10.738	-21.1	H	3.0	35.0	1.0	-55.2	-25.0	-30.2	
13.423	-23.6	H	3.0	33.9	1.0	-56.5	-25.0	-31.5	

Rev. 03.03.09

Note: No other emissions were detected above the system noise floor.

10MHz_64QAM

Above 1GHz High Frequency Substitution Measurement

Company: PANASONIC
 Project #: 11J13998
 Date: 12/10/2011
 Test Engineer: MENGISTU MEKURIA
 Configuration: EUT ALONE
 Mode: TX, 64QAM_10MHz BAND

Chamber	Pre-amplifier	Filter	Limit
5m Chamber B	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch (2501.4MHz)									
5.003	0.1	V	3.0	35.3	1.0	-34.2	-25.0	-9.2	
7.504	-0.8	V	3.0	35.7	1.0	-35.5	-25.0	-10.5	
10.006	-17.5	V	3.0	35.5	1.0	-52.1	-25.0	-27.1	
12.507	-15.3	V	3.0	34.1	1.0	-48.4	-25.0	-23.4	
5.003	-0.5	H	3.0	35.3	1.0	-34.8	-25.0	-9.8	
7.504	-1.6	H	3.0	35.7	1.0	-36.3	-25.0	-11.3	
10.006	-16.9	H	3.0	35.5	1.0	-51.4	-25.0	-26.4	
12.507	-18.0	H	3.0	34.1	1.0	-51.2	-25.0	-26.2	
15.008		H	3.0	33.6	1.0	-32.6	-25.0	-7.6	
Mid Ch (2593MHz)									
5.186	-11.3	V	3.0	35.3	1.0	-45.6	-25.0	-20.6	
7.779	-10.9	V	3.0	35.7	1.0	-45.6	-25.0	-20.6	
10.372	-16.5	V	3.0	35.3	1.0	-50.8	-25.0	-25.8	
5.186	-9.1	H	3.0	35.3	1.0	-43.4	-25.0	-18.4	
7.779	-6.9	H	3.0	35.7	1.0	-41.6	-25.0	-16.6	
10.372	-17.2	H	3.0	35.3	1.0	-51.5	-25.0	-26.5	
High Ch (2684.6MHz)									
5.369	-16.5	V	3.0	35.4	1.0	-50.9	-25.0	-25.9	
8.054	-3.6	V	3.0	35.7	1.0	-38.2	-25.0	-13.2	
10.738	-16.5	V	3.0	35.0	1.0	-50.6	-25.0	-25.6	
13.423	-15.4	V	3.0	33.9	1.0	-48.3	-25.0	-23.3	
5.369	-9.9	H	3.0	35.4	1.0	-44.2	-25.0	-19.2	
8.054	-1.8	H	3.0	35.7	1.0	-36.4	-25.0	-11.4	
10.738	-15.3	H	3.0	35.0	1.0	-49.4	-25.0	-24.4	
13.423	-16.3	H	3.0	33.9	1.0	-49.2	-25.0	-24.2	

Rev. 03.03.09

Note: No other emissions were detected above the system noise floor.