Test Report

Product Name	Moxa IEEE 802.11a/b/g/n MiniPCI Module
Model No	WAPN001
FCC ID	SLE-WAPN001

Applicant	Moxa Inc.
Address	Fl.4, No. 135, Lane 235, Pao-Chiao Rd., Shing Tien City, Taipei, Taiwan, R.O.C.

Date of Receipt	June 28, 2010
Issued Date	Aug. 04, 2010
Report No.	107007R-RFUSP46V01
Report Version	V1.0

The test results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of QuieTek Corporation.
This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Test Report Certification

Issued Date: Aug. 04, 2010
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Applicant	Moxa Inc.
Address	Fl.4, No. 135, Lane 235, Pao-Chiao Rd., Shing Tien City, Taipei, Taiwan, R.O.C.
Manufacturer	Moxa Inc.
Model No.	WAPN001
FCC ID.	SLE-WAPN001
EUT Rated Voltage	DC 3.3V/2A
EUT Test Voltage	AC 120V/60Hz
Trade Name	MOXA
Applicable Standard	FCC CFR Title 47 Part 15 Subpart E: 2009 ANSI C63.4: 2003 NVLAP Lab Code: 200533-0
Test Result	Complied

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Documented By : Rita Huang
(Senior Adm. Specialist / Rita Huang)

Tested By : Joe Guo
(Engineer / Joe Guo)

Approved By :
(Manager / Vincent Lin)

Testing Laboratory
0914

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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Moxa IEEE 802.11a/b/g/n MiniPCI Module
Trade Name	MOXA
FCC ID.	SLE-WAPN001
Model No.	WAPN001
Frequency Range	802.11a/n-20MHz: 5180-5320MHz, 5500-5700MHz 802.11n-40MHz: 5190-5310MHz, 5510-5670MHz
Number of Channels	802.11a/n-20MHz: 19; 802.11n-40MHz: 9
Data Rate	802.11a: 6 - 54Mbps , 802.11n: up to 300Mbps
Channel Control	Auto
Type of Modulation	802.11a/n:OFDM, BPSK, QPSK, 16QAM, 64QAM
Antenna type	Dipole
Antenna Gain	Refer to the table “Antenna List”

Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	KINSUN	ANT-WDB-O-2	2.0dBi in 5GHz
2	KINSUN	ANT-WDB-ANM-0502	2.0dBi in 5GHz

Note:

1. The antenna of EUT is conform to FCC 15.203
2. The final test antenna is ANT-WDB-ANM-0502.

802.11a/n-20MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 36:	5180 MHz	Channel 40:	5200 MHz	Channel 44:	5220 MHz	Channel 48:	5240 MHz
Channel 52:	5260 MHz	Channel 56:	5280 MHz	Channel 60:	5300 MHz	Channel 64:	5320 MHz
Channel 100:	5500 MHz	Channel 104:	5520 MHz	Channel 108:	5540 MHz	Channel 112:	5560 MHz
Channel 116:	5580 MHz	Channel 120:	5600 MHz	Channel 124:	5620 MHz	Channel 128:	5640 MHz
Channel 132:	5660 MHz	Channel 136:	5680 MHz	Channel 140:	5700 MHz		

802.11n-40MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 38:	5190 MHz	Channel 46:	5230 MHz	Channel 54:	5270 MHz	Channel 62:	5310 MHz
Channel 102:	5510 MHz	Channel 110:	5550 MHz	Channel 118:	5590 MHz	Channel 126:	5630 MHz
Channel 134:	5670 MHz						

Note:

1. This device is a Moxa IEEE 802.11a/b/g/n MiniPCI Module with a built-in WLAN transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11a is 6Mbps, 802.11n-20BW is 14.4Mbps and 802.11n-40BW are 30Mbps)
3. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart E for Unlicensed National Information Infrastructure devices.
4. The device is applied for modular approval.

1.2. Operational Description

The EUT is a Moxa IEEE 802.11a/b/g/n MiniPCI Module with a built-in 2.4GHz and 5GHz WLAN card. This device provided four kinds of transmitting speed 1, 2, 5.5 and 11Mbps and the device of RF carrier is DBPSK, DQPSK and CCK (IEEE 802.11b). The device provided of eight kinds of transmitting speed 6, 9, 12, 18, 24, 36, 48 and 54Mbps the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11a/g).

The device provided of eight kinds of transmitting speed 14.4,28.8,43.4,57.8,86.6,115.6,130 and 144.4Mbps in 802.11n(20M-BW) mode and 30,60,90,120,180,240,270 and 300 Mbps(40M-BW) the device of RF carrier is BPSK, QPSK, 16QAM and 64QAM (IEEE 802.11n), the IEEE 802.11n is Multiple In, Multiple Out" (MIMO) technology.

The device adapts direct sequence spread spectrum modulation. The antenna provides diversity function to improve the receiving function and the antennas to support 2(Transmit) × 2(Receive) MIMO technology.

This Moxa IEEE 802.11a/b/g/n MiniPCI Module, compliant with IEEE 802.11b and IEEE 802.11a/g/n, is a high-efficiency Wireless LAN adapter. It allows your computer to connect to a wireless network and to share resources, such as files or printers without being bound to the network wires. Operation in 2.4GHz/5GHz Direst Sequence Spread Spectrum (DSSS) radio transmission, the Moxa IEEE 802.11a/b/g/n MiniPCI Module Wired Equivalent Protection (WEP) algorithm is used. In addition, its standard compliance ensures that it can communicate with any IEEE 802.11b and IEEE 802.11a/g/n network.

The Device no radar detection and no ad-hoc operation in the DFS band, another information please refer to users manual

Test Mode	Mode 1: Transmit (802.11a-6Mbps) Mode 2: Transmit (802.11n-20BW 14.4Mbps) Mode 3: Transmit (802.11n-40BW 30Mbps)

Note: The mode1 is tested by Chain A.

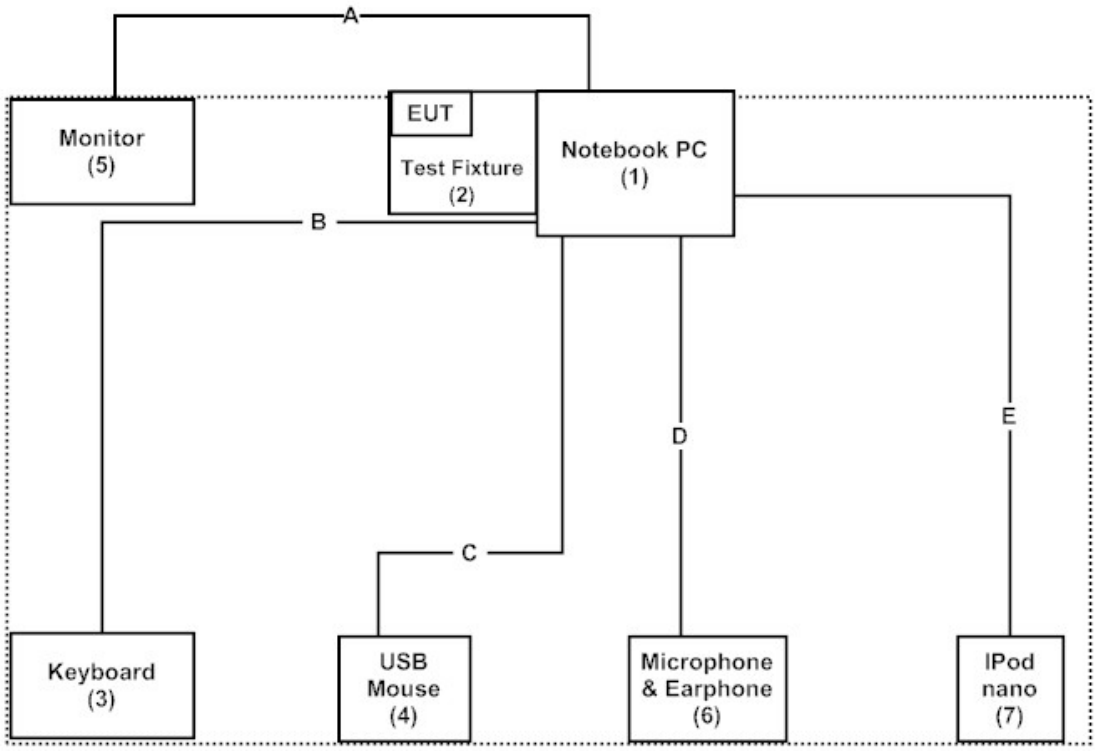
1.3. Tested System Datails

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
(1)	Notebook PC	DELL	PP18L	42649348672	Non-Shielded, 0.8m
(2)	Test Fixture	N/A	N/A	N/A	N/A
(3)	Keyboard	DELL	SK-8115	MY-0DJ325-71619-7A2-0327	N/A
(4)	USB Mouse	DELL	MO56UC	G0X01JK0	N/A
(5)	Monitor	DELL	U2410	CN-0J257M-728-01I-04NL	Non-Shielded, 1.8m
(6)	Microphone & Earphone	PCHOME	N/A	N/A	N/A
(7)	IPod nano	Apple	A1199	YM7088TVVQ5	N/A

Signal Cable Type		Signal cable Description
A	D-SUB Cable	Shielded, 1.8m, with two ferrite cores bonded.
B	Keyboard Cable	Shielded, 1.8m
C	USB Mouse Cable	Non-Shielded, 1.8m
D	Microphone & Earphone Cable	Non-Shielded, 1.5m
E	USB Cable	Non-Shielded, 1.5m

1.4. Configuration of tested System



1.5. EUT Exercise Software

(1) Setup the EUT as shown in Section 1.4

(2) Execute the ART program (Version 0_9_b27) on the EUT

(3) Configure the test mode, the test channel, and the data rate.

(4) Press “OK” to start the continuous Transmitter.

(5) Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site : http://www.quietek.com/tw/ctg/cts/accreditations.htm

The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site : http://www.quietek.com/

Site Description: File on
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046
Registration Number: 92195

Accreditation on NVLAP
NVLAP Lab Code: 200533-0

Site Name: Quietek Corporation
Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
Lin-Kou Shiang, Taipei,
Taiwan, R.O.C.
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : service@quietek.com

FCC Accreditation Number: TW1014

Testing Laboratory
0914

2. Conducted Emission

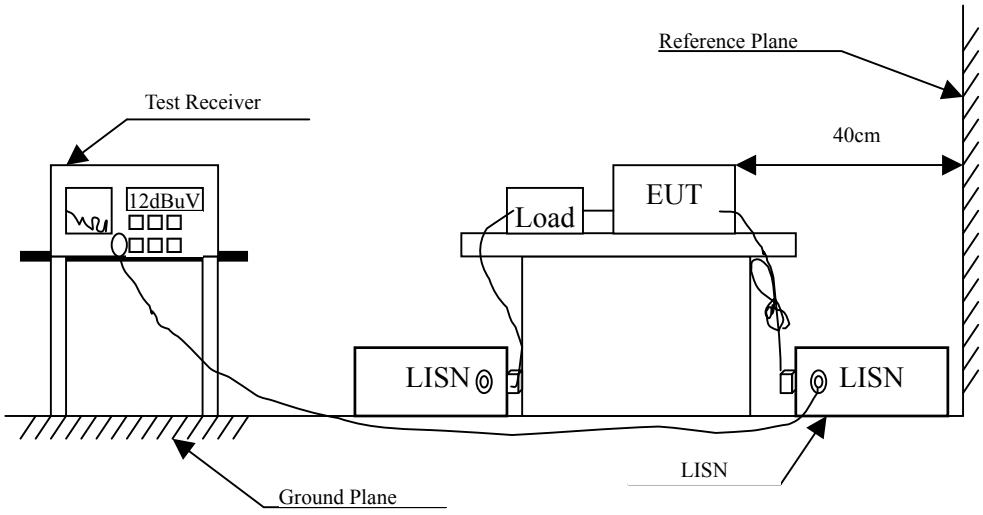
2.1. Test Equipment

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/825442/17	May, 2010	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2010	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2010	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2010	
5	No.1 Shielded Room			N/A	

Note: All equipments are calibrated every one year.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2003 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

The EUT was setup to ANSI C63.4, 2003; tested to DTS test procedure of Aug 2002 DA 02-2138 for compliance to FCC 47CFR Subpart E requirements.

2.5. Uncertainty

± 2.26 dB

2.6. Test Result of Conducted Emission

Product : Moxa IEEE 802.11a/b/g/n MiniPCI Module
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5190MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 1					
Quasi-Peak					
0.158	9.756	36.510	46.266	-19.505	65.771
0.216	9.696	32.010	41.706	-22.408	64.114
0.279	9.657	33.790	43.447	-18.867	62.314
0.380	9.650	25.090	34.740	-24.689	59.429
0.517	9.640	22.270	31.910	-24.090	56.000
0.584	9.638	27.150	36.788	-19.212	56.000
Average					
0.158	9.756	23.630	33.386	-22.385	55.771
0.216	9.696	17.610	27.306	-26.808	54.114
0.279	9.657	15.560	25.217	-27.097	52.314
0.380	9.650	13.730	23.380	-26.049	49.429
0.517	9.640	15.690	25.330	-20.670	46.000
0.584	9.638	27.140	36.778	-9.222	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Moxa IEEE 802.11a/b/g/n MiniPCI Module
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5190MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 2					
Quasi-Peak					
0.170	9.742	36.160	45.903	-19.526	65.429
0.197	9.719	33.810	43.529	-21.128	64.657
0.220	9.703	32.600	42.303	-21.697	64.000
0.279	9.667	33.840	43.507	-18.807	62.314
0.420	9.650	24.020	33.670	-24.616	58.286
0.638	9.650	20.460	30.110	-25.890	56.000
Average					
0.170	9.742	20.700	30.443	-24.986	55.429
0.197	9.719	17.490	27.209	-27.448	54.657
0.220	9.703	18.390	28.093	-25.907	54.000
0.279	9.667	27.400	37.067	-15.247	52.314
0.420	9.650	12.380	22.030	-26.256	48.286
0.638	9.650	8.890	18.540	-27.460	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Moxa IEEE 802.11a/b/g/n MiniPCI Module
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5270MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 1					
Quasi-Peak					
0.158	9.756	36.470	46.226	-19.545	65.771
0.181	9.724	35.310	45.034	-20.080	65.114
0.248	9.677	31.480	41.157	-22.043	63.200
0.279	9.657	35.290	44.947	-17.367	62.314
0.451	9.640	23.300	32.940	-24.460	57.400
0.580	9.640	25.040	34.680	-21.320	56.000
Average					
0.158	9.756	27.320	37.076	-18.695	55.771
0.181	9.724	15.560	25.284	-29.830	55.114
0.248	9.677	23.910	33.587	-19.613	53.200
0.279	9.657	35.280	44.937	-7.377	52.314
0.451	9.640	10.950	20.590	-26.810	47.400
0.580	9.640	25.030	34.670	-11.330	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Moxa IEEE 802.11a/b/g/n MiniPCI Module
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5270MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 2					
Quasi-Peak					
0.177	9.736	35.450	45.186	-20.043	65.229
0.263	9.677	31.480	41.157	-21.614	62.771
0.365	9.651	24.010	33.661	-26.196	59.857
0.502	9.640	22.570	32.210	-23.790	56.000
0.572	9.640	23.130	32.770	-23.230	56.000
0.783	9.670	22.650	32.320	-23.680	56.000
Average					
0.177	9.736	26.570	36.306	-18.923	55.229
0.263	9.677	29.590	39.267	-13.504	52.771
0.365	9.651	15.720	25.371	-24.486	49.857
0.502	9.640	11.590	21.230	-24.770	46.000
0.572	9.640	21.850	31.490	-14.510	46.000
0.783	9.670	19.800	29.470	-16.530	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Moxa IEEE 802.11a/b/g/n MiniPCI Module
Test Item : Conducted Emission Test
Power Line : Line 1
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5590MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 1					
Quasi-Peak					
0.160	9.752	37.190	46.942	-18.772	65.714
0.177	9.730	35.840	45.569	-19.660	65.229
0.201	9.706	33.420	43.126	-21.417	64.543
0.248	9.677	31.780	41.457	-21.743	63.200
0.380	9.650	24.170	33.820	-25.609	59.429
0.486	9.640	23.120	32.760	-23.640	56.400
Average					
0.160	9.752	21.340	31.092	-24.622	55.714
0.177	9.730	20.120	29.849	-25.380	55.229
0.201	9.706	17.300	27.006	-27.537	54.543
0.248	9.677	19.470	29.147	-24.053	53.200
0.380	9.650	9.560	19.210	-30.219	49.429
0.486	9.640	9.210	18.850	-27.550	46.400

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Moxa IEEE 802.11a/b/g/n MiniPCI Module
Test Item : Conducted Emission Test
Power Line : Line 2
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps) (5590MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV	dB	dBuV
LINE 2					
Quasi-Peak					
0.158	9.756	36.490	46.246	-19.525	65.771
0.177	9.736	35.090	44.826	-20.403	65.229
0.252	9.685	31.730	41.415	-21.671	63.086
0.435	9.648	24.240	33.888	-23.969	57.857
0.630	9.650	20.750	30.400	-25.600	56.000
0.779	9.670	20.050	29.720	-26.280	56.000
Average					
0.158	9.756	16.140	25.896	-29.875	55.771
0.177	9.736	21.880	31.616	-23.613	55.229
0.252	9.685	13.710	23.395	-29.691	53.086
0.435	9.648	13.250	22.898	-24.959	47.857
0.630	9.650	9.680	19.330	-26.670	46.000
0.779	9.670	10.750	20.420	-25.580	46.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. " " means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

3. Peak Transmit Power

3.1. Test Equipment

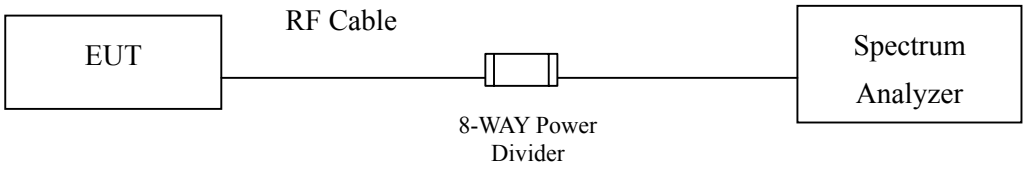
	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2010
X	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2010
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2010
X	8-WAY Power Divider	JFW	50PD-647 / 526770 0916	Apr., 2010

Note:

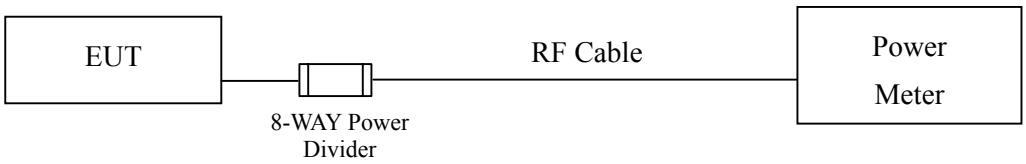
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with "X" are used to measure the final test results.

3.2. Test Setup

26dBc Occupied Bandwidth



Conduction Power Measurement



3.3. Limits

(1) For the band 5.15-5.25 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

(2) For the band 5.25-5.35 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 250 mW or 11 dBm + 10log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.825 GHz, the peak transmit power over the frequency band of operation shall not exceed the lesser of 1W or 17 dBm + 10log B, where B is the 26-dB emission bandwidth in MHz. If transmitting antenna of directional gain greater than 6 dBi are used, the peak transmit power shall be reduced by the amount in dB that directional gain of the antenna exceeds 6 dBi.

3.4. Test Procedur

As an alternative to DA 02-2138, the EUT peak power was measured with a peak power meter employing a video bandwidth greater than 6dB BW of the emission under test. Peak output power was read directly from the meter across all data rates, and across three channels within each sub-band. Special care was used to make sure that the EUT was transmitting in continuous mode. This method exceeds the limitations of DA 02-2138, and provides more accurate measurements.

3.5. Uncertainty

± 1.27 dB

3.6. Test Result of Peak Transmit Power

Product : Moxa IEEE 802.11a/b/g/n MiniPCI Module
Test Item : Peak Transmit Power
Test Site : No.3 OATS
Test Mode : Mode 1: Transmit (802.11a-6Mbps)

Cable loss=1dB		Peak Power Output								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		6	9	12	18	24	36	48	54	
		Measurement Level (dBm)								
36	5180	16.54	16.5	16.48	16.42	16.37	16.35	16.33	16.28	<17dBm
44	5220	16.74	--	--	--	--	--	--	--	<17dBm
48	5240	16.92	--	--	--	--	--	--	--	<17dBm
52	5260	17	--	--	--	--	--	--	--	<24dBm
60	5300	17.3	--	--	--	--	--	--	--	<24dBm
64	5320	16.94	--	--	--	--	--	--	--	<24dBm
100	5500	16.96	16.95	16.92	16.88	16.85	16.83	16.81	16.77	<24dBm
120	5600	16.97	--	--	--	--	--	--	--	<24dBm
140	5700	10.03	--	--	--	--	--	--	--	<24dBm

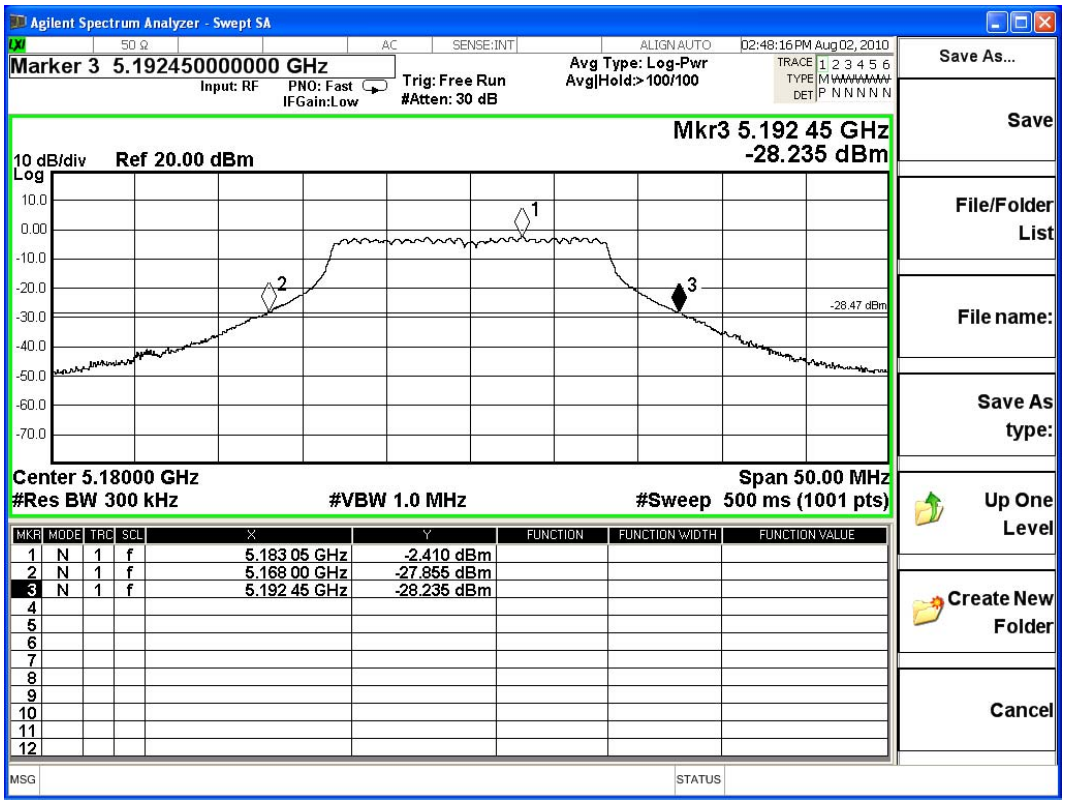
Note: Peak Power Output Value =Reading value on peak power meter + cable loss

Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
36	5180	24.45	16.54	17	17.88	Pass

26dBc Occupied Bandwidth:

Channel 36

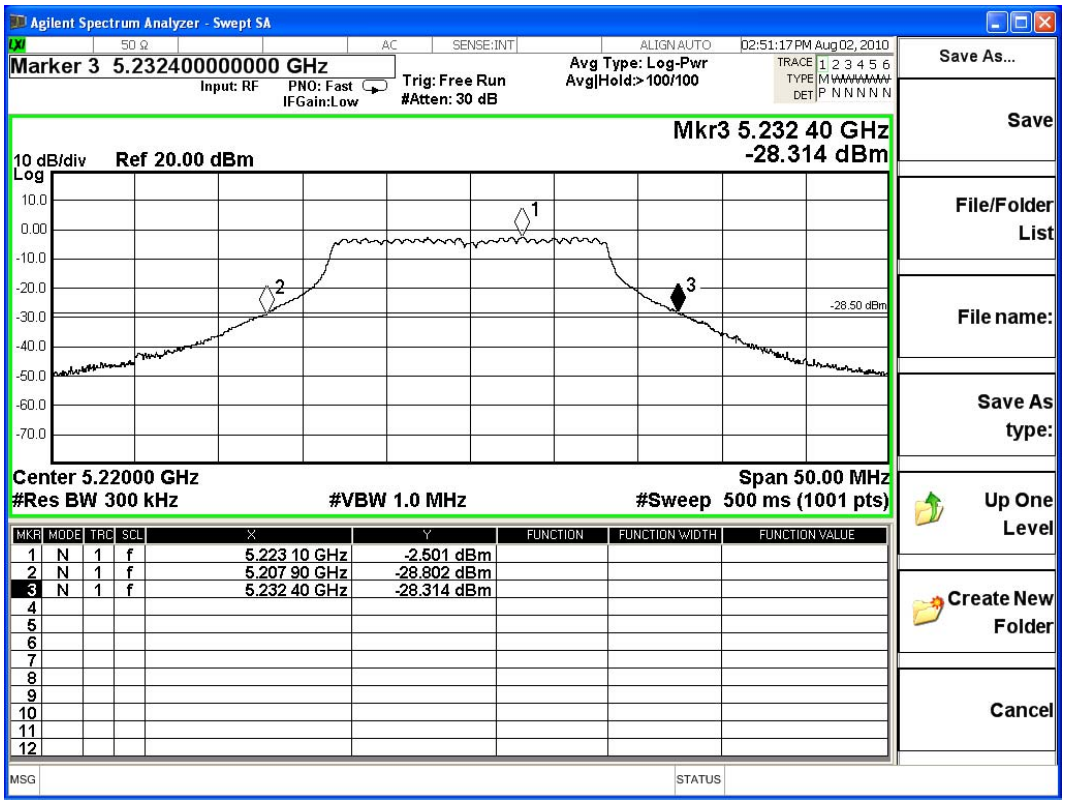


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
44	5220	24.5	16.74	17	17.89	Pass

26dBc Occupied Bandwidth:

Channel 40

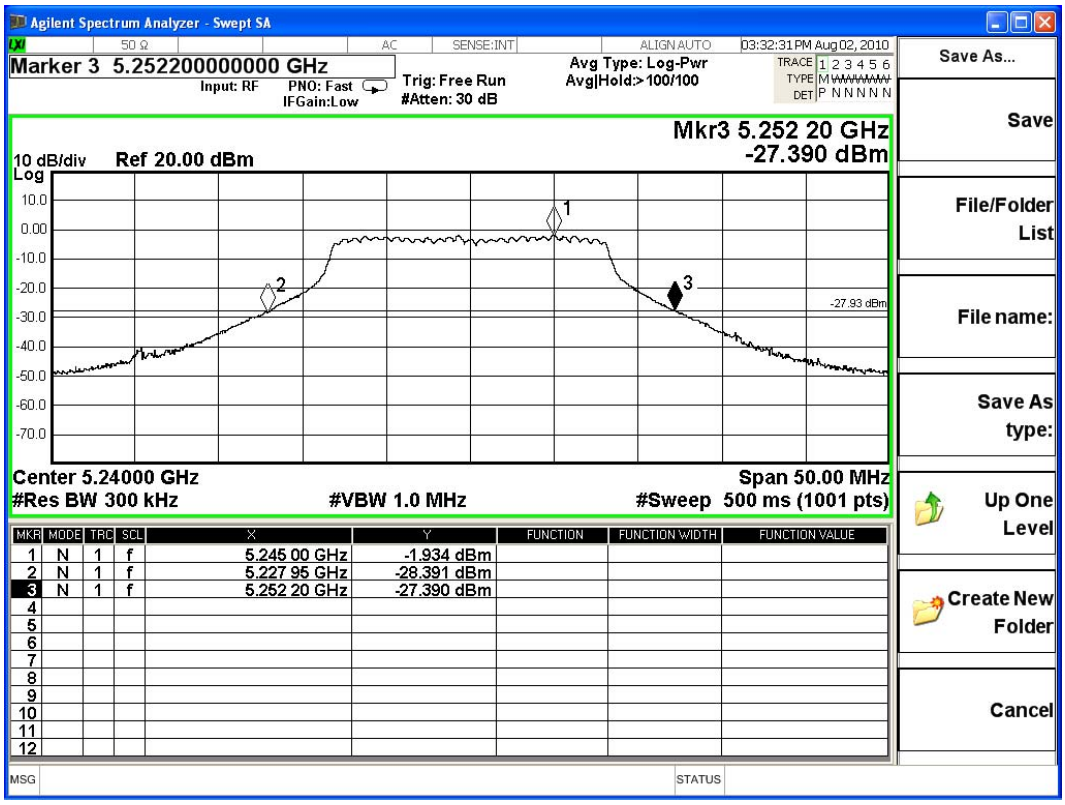


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
48	5240	24.25	16.92	17	17.85	Pass

26dBc Occupied Bandwidth:

Channel 48

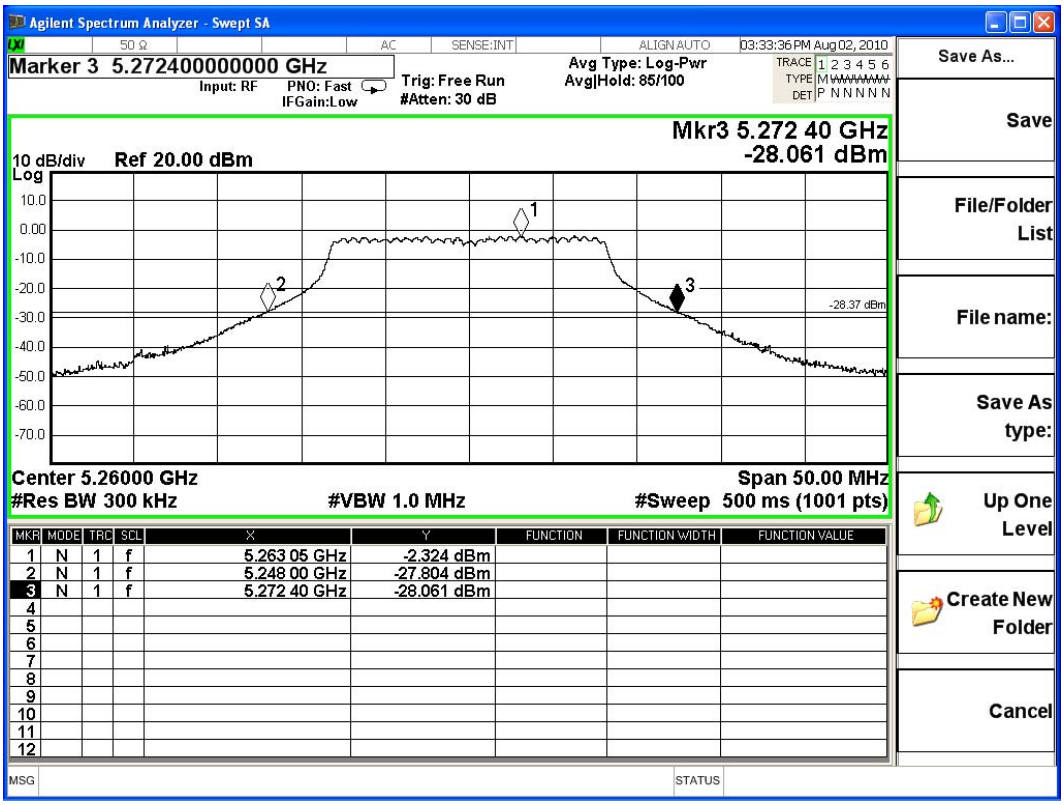


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
52	5260	24.4	17	24	24.87	Pass

26dBc Occupied Bandwidth:

Channel 52

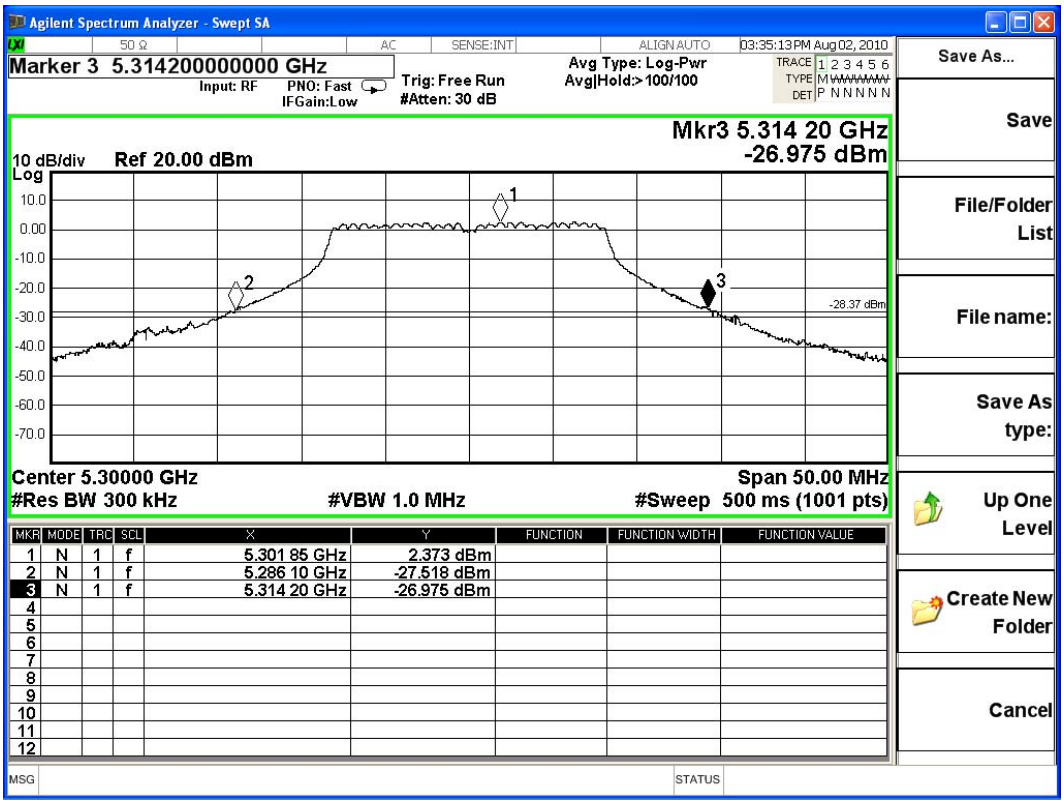


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
60	5300	28.1	17.3	24	25.49	Pass

26dBc Occupied Bandwidth:

Channel 60

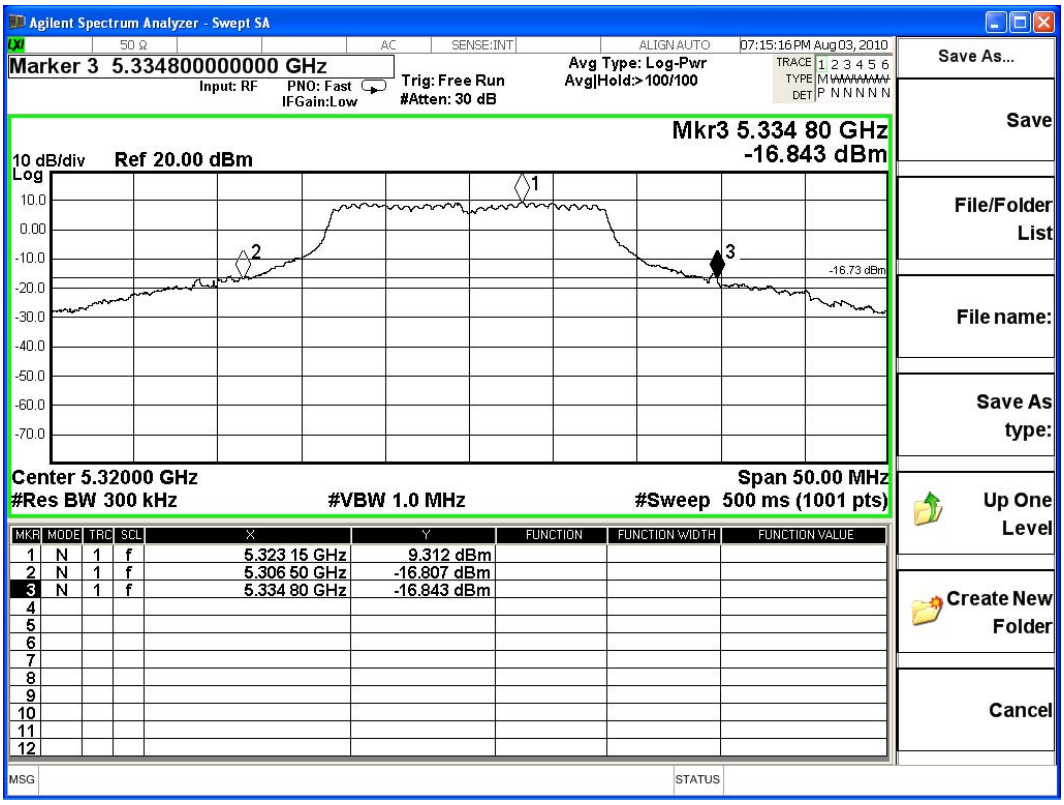


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
64	5320	28.3	16.94	24	25.52	Pass

26dBc Occupied Bandwidth:

Channel 64

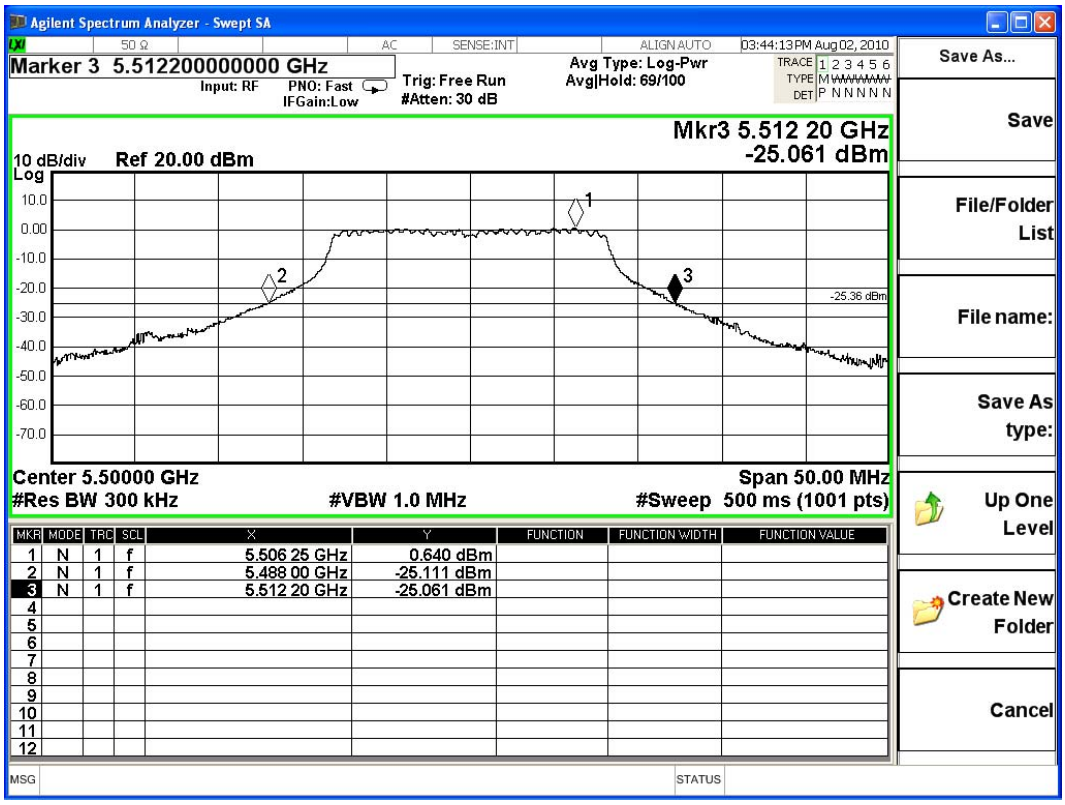


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
100	5500	25.56	16.96	24	25.08	Pass

26dBc Occupied Bandwidth:

Channel 100

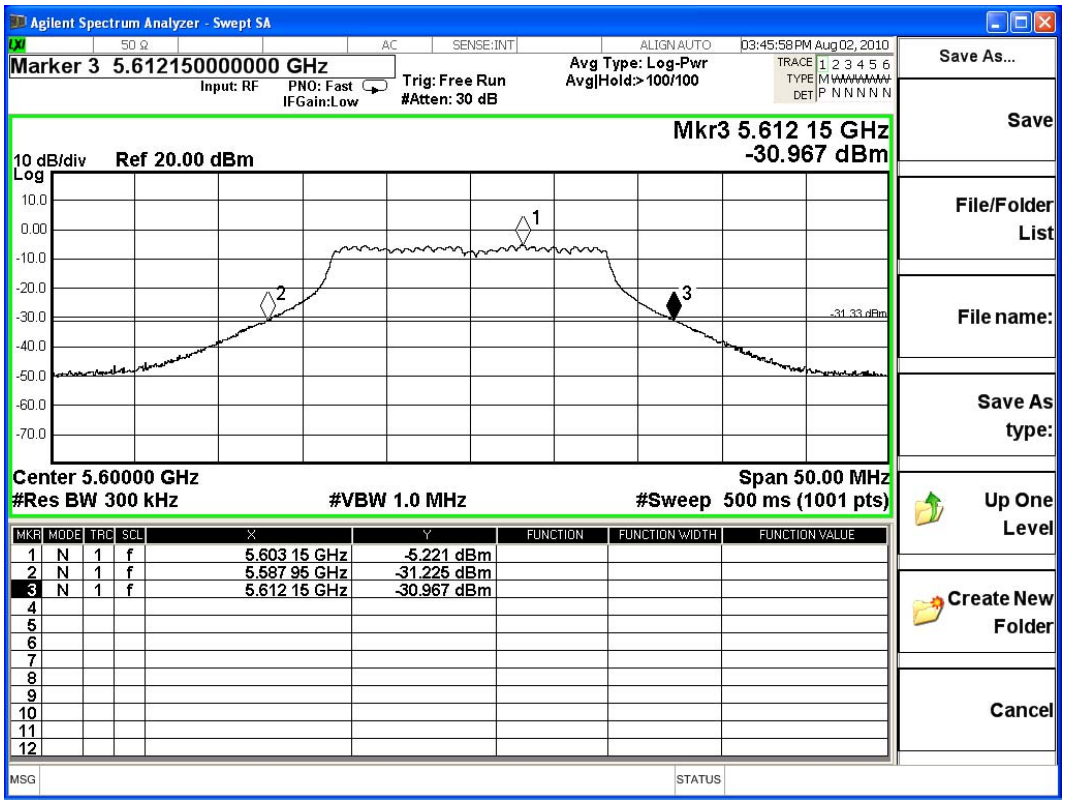


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
120	5600	24.04	16.97	24	24.81	Pass

26dBc Occupied Bandwidth:

Channel 120

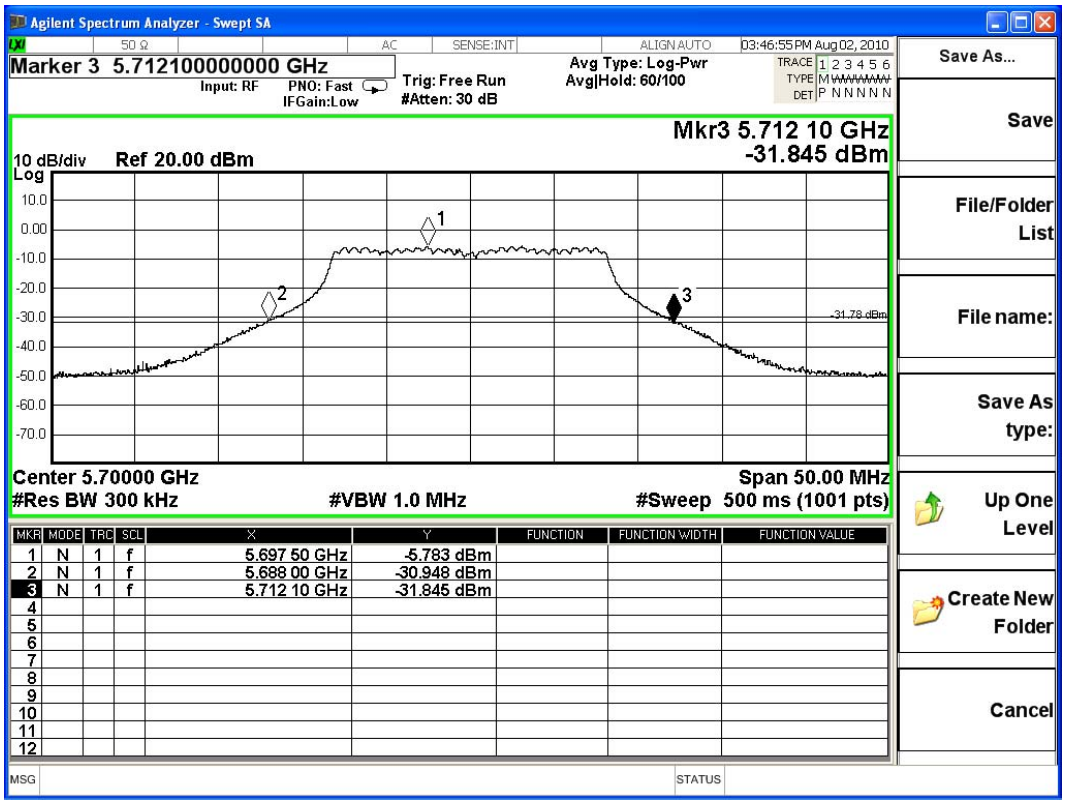


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
140	5700	25.28	10.03	24	25.03	Pass

26dBc Occupied Bandwidth:

Channel 140



Product : Moxa IEEE 802.11a/b/g/n MiniPCI Module
Test Item : Peak Transmit Power
Test Site : No.3 OATS
Test Mode : Mode 2: Transmit (802.11n-20BW 14.4Mbps)

Cable loss=1dB		Peak Power Output								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		14.4	28.8	43.4	57.8	86.6	115.6	130	144.4	
		Measurement Level (dBm)								
36	5180	13.13	13.09	13.05	13.02	12.98	12.95	12.89	12.85	<17dBm
44	5220	13.2	--	--	--	--	--	--	--	<17dBm
48	5240	13.06	--	--	--	--	--	--	--	<17dBm
52	5260	13.02	--	--	--	--	--	--	--	<24dBm
60	5300	13.09	--	--	--	--	--	--	--	<24dBm
64	5320	13.26	--	--	--	--	--	--	--	<24dBm
100	5500	13.12	13.08	13.05	13.01	12.98	12.95	12.91	12.87	<24dBm
120	5600	13.1	--	--	--	--	--	--	--	<24dBm
140	5700	13.02	--	--	--	--	--	--	--	<24dBm

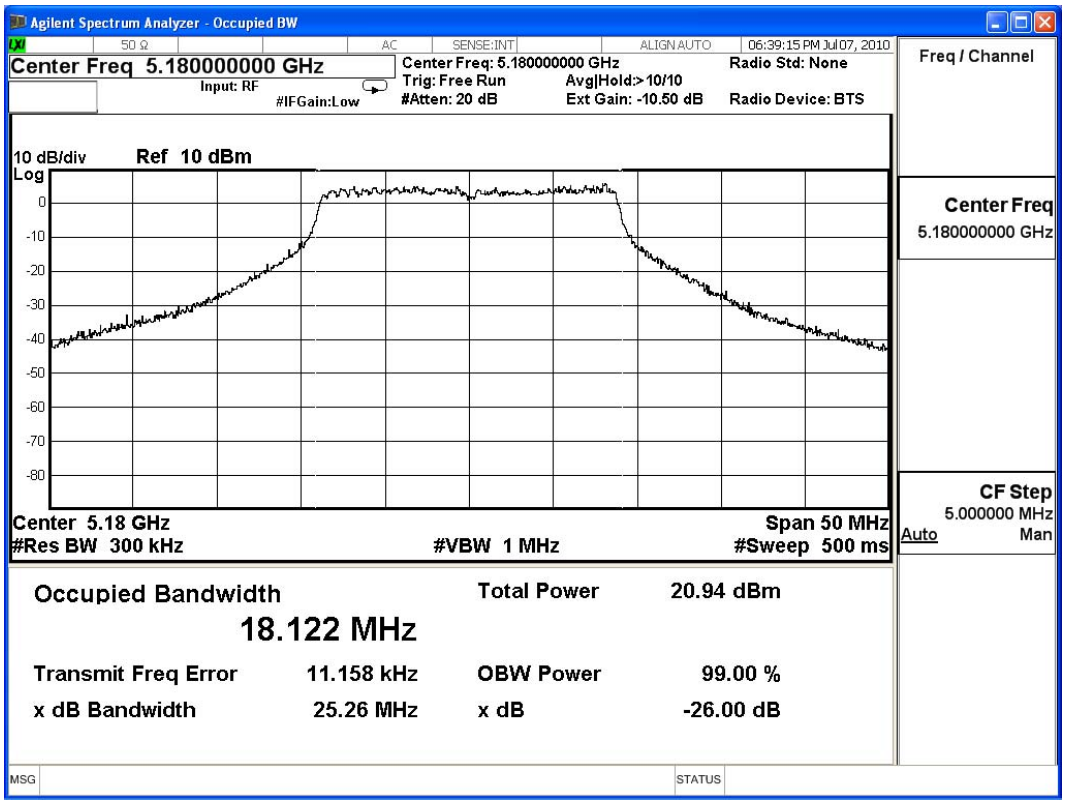
Note: Peak Power Output Value =Reading value on peak power meter + cable loss

Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
36	5180	25.26	13.13	17	18.02	Pass

26dBc Occupied Bandwidth:

Channel 36

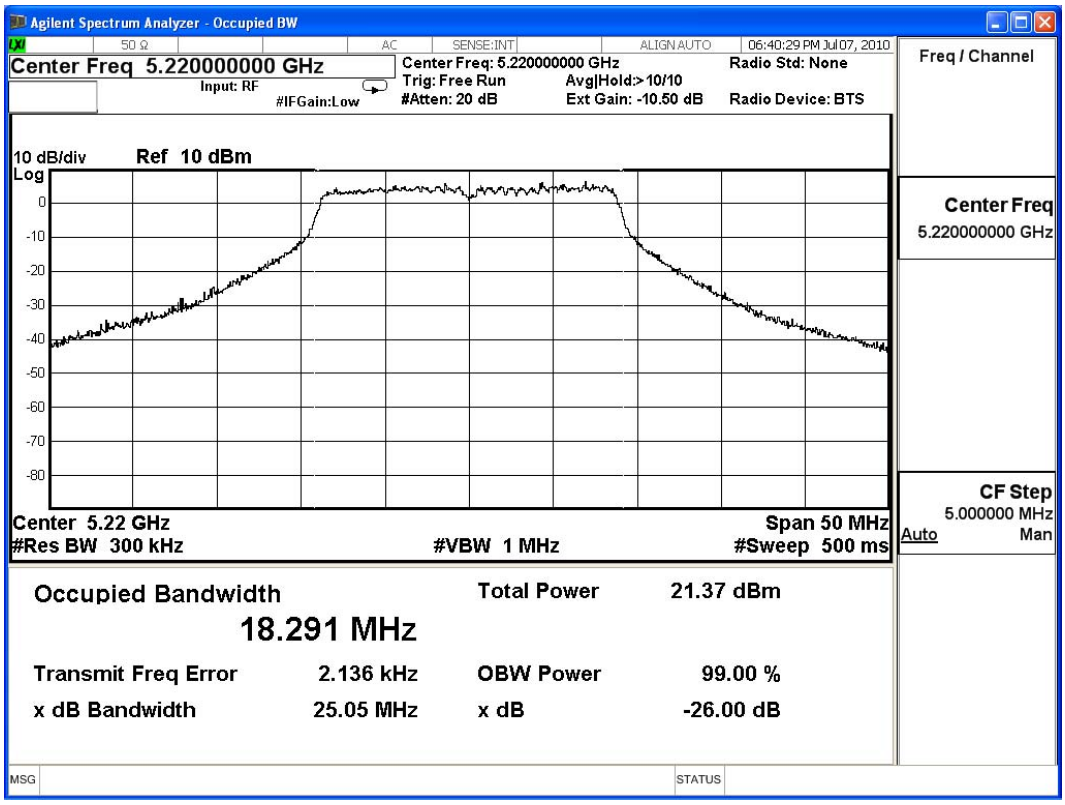


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
44	5220	25.05	13.2	17	17.99	Pass

26dBc Occupied Bandwidth:

Channel 44

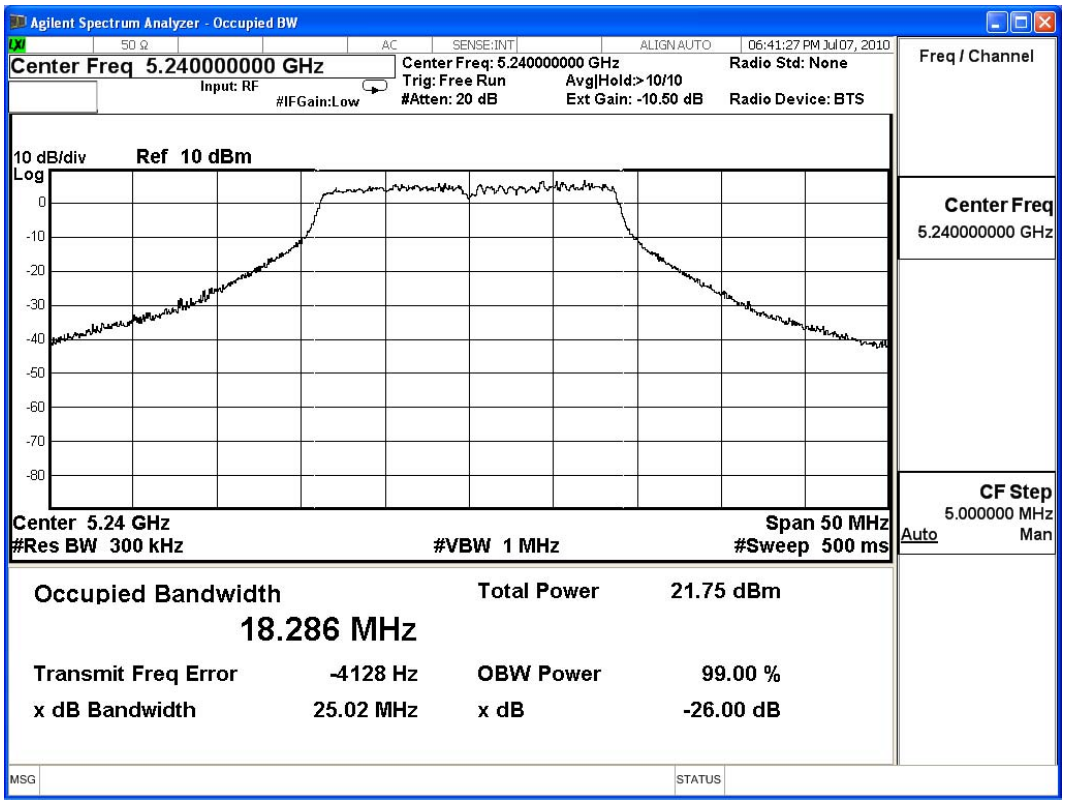


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
48	5240	25.02	13.06	17	17.98	Pass

26dBc Occupied Bandwidth:

Channel 48

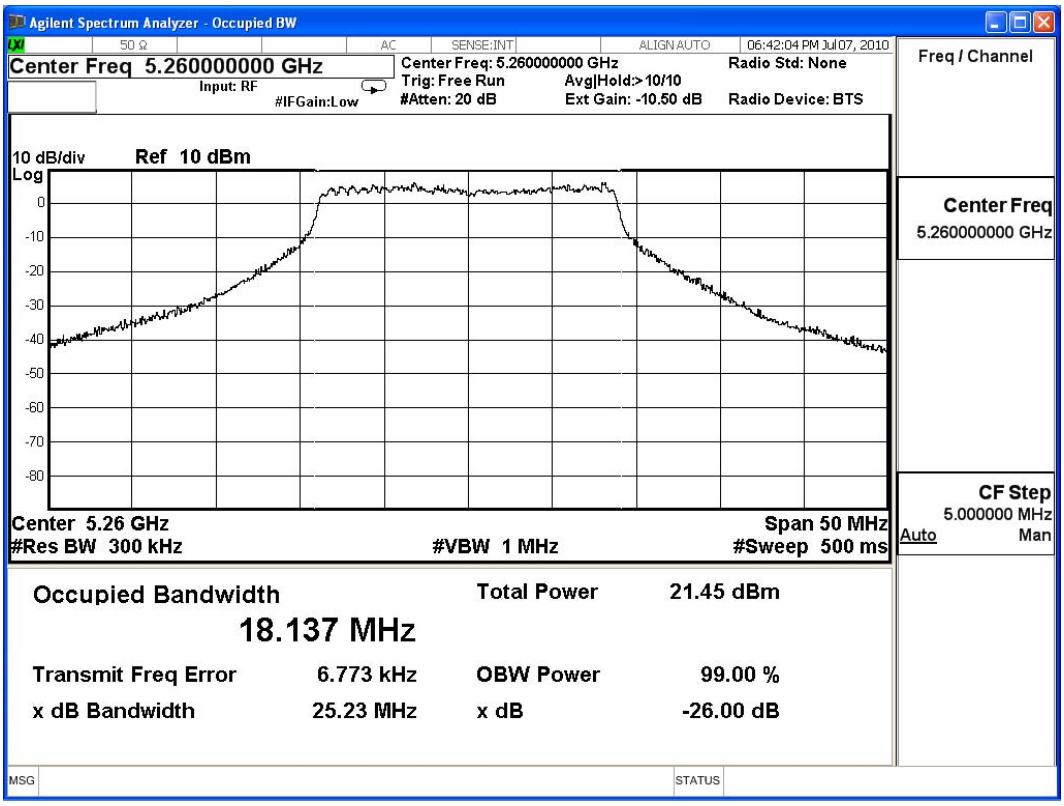


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
52	5260	25.23	13.02	24	25.02	Pass

26dBc Occupied Bandwidth:

Channel 52

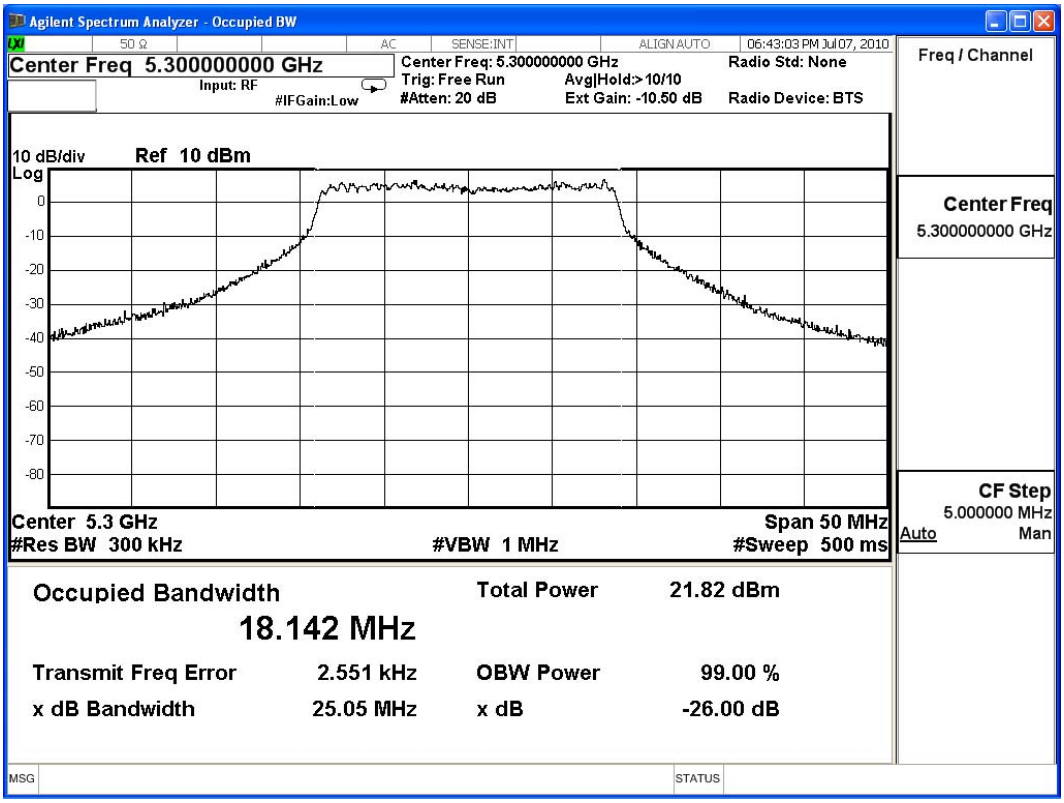


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
60	5300	25.05	13.09	24	24.99	Pass

26dBc Occupied Bandwidth:

Channel 60

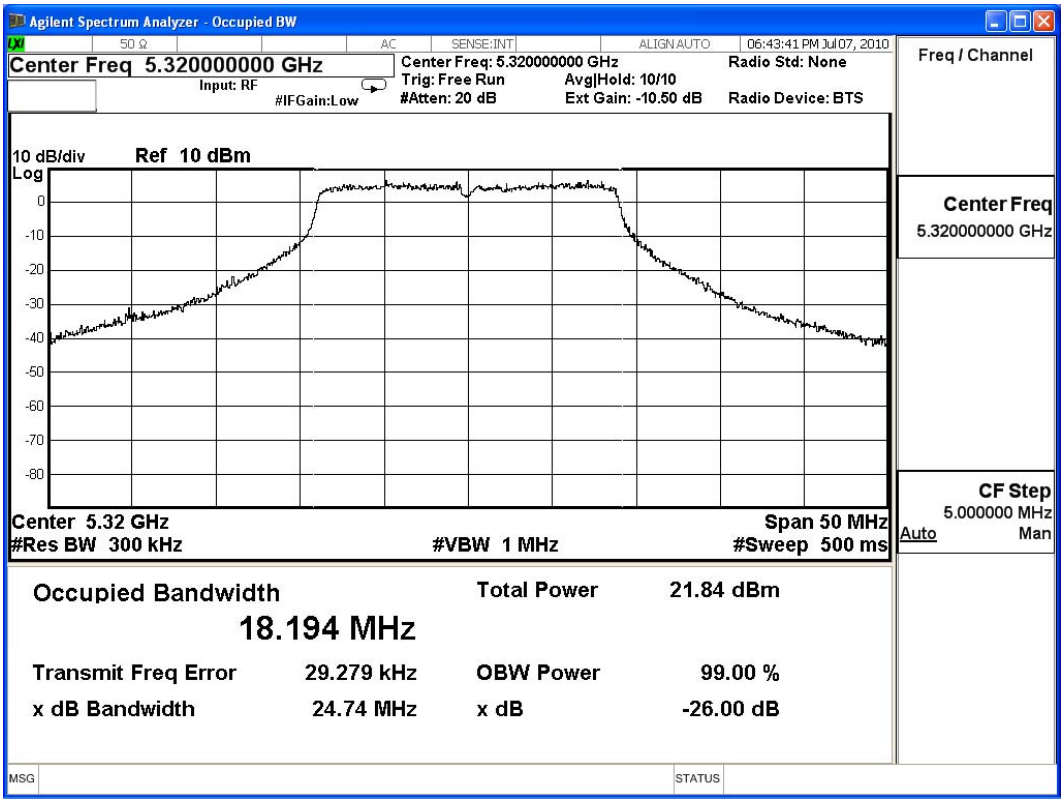


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
64	5320	24.74	13.26	24	24.93	Pass

26dBc Occupied Bandwidth:

Channel 64

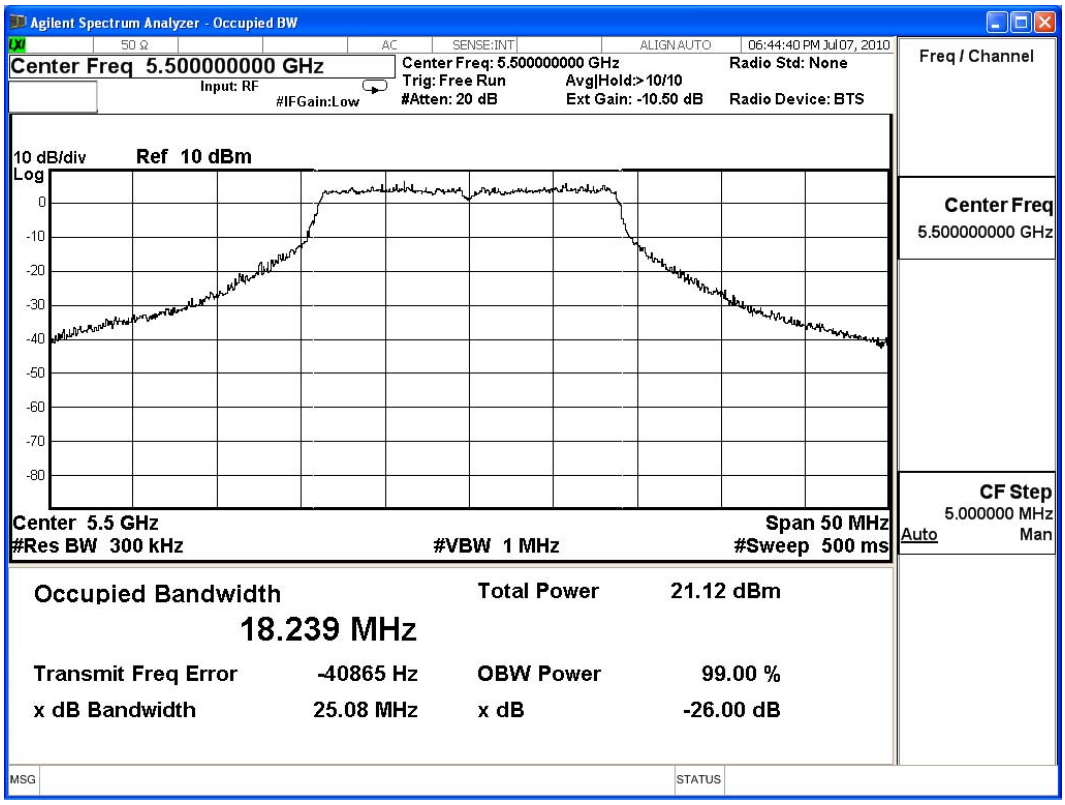


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
100	5500	25.08	13.12	24	24.99	Pass

26dBc Occupied Bandwidth:

Channel 100

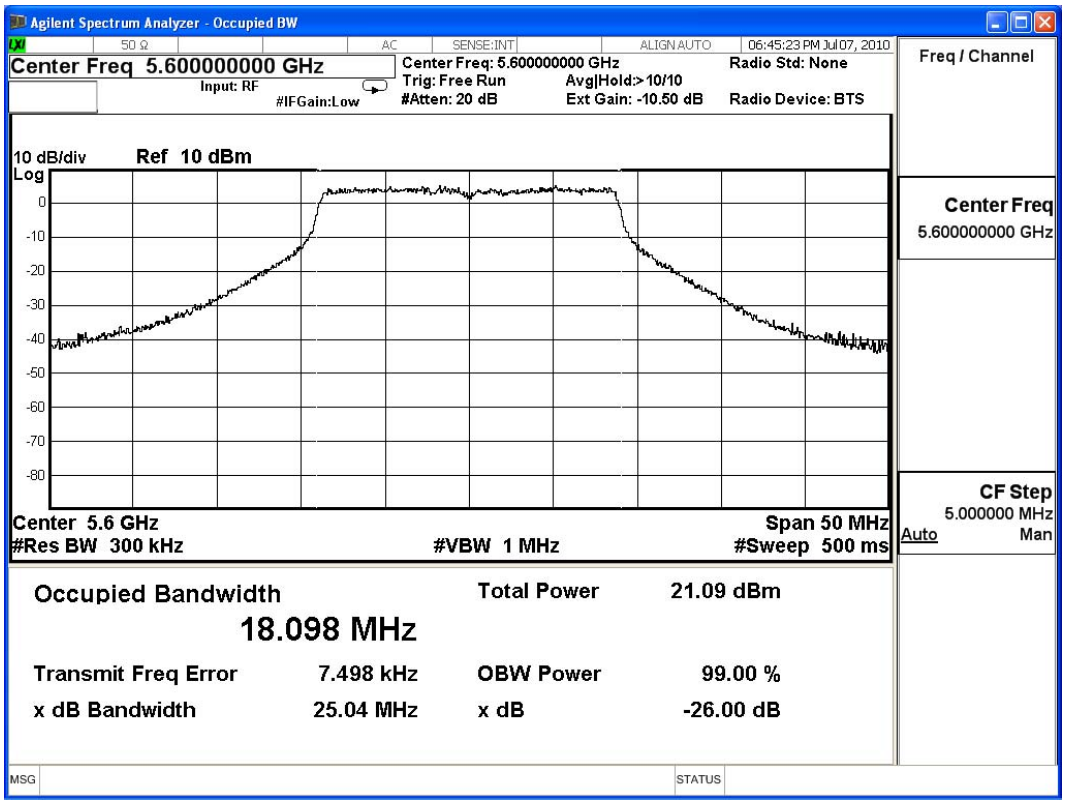


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
120	5600	25.04	13.1	24	24.99	Pass

26dBc Occupied Bandwidth:

Channel 120

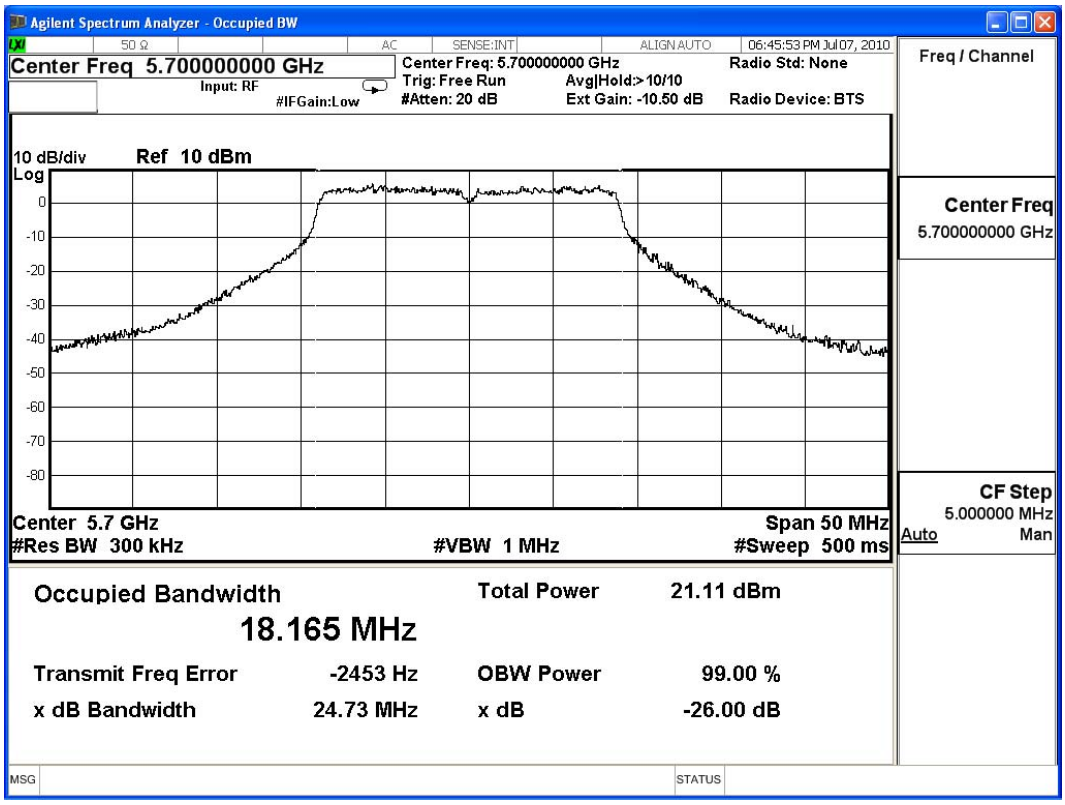


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
140	5700	24.73	13.02	24	24.93	Pass

26dBc Occupied Bandwidth:

Channel 140



Product : Moxa IEEE 802.11a/b/g/n MiniPCI Module
Test Item : Peak Transmit Power
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n-40BW 30Mbps)

Cable loss=1dB		Peak Power Output								
Channel No.	Frequency (MHz)	Data Rate (Mbps)								Required Limit
		30	60	90	120	180	240	270	300	
		Measurement Level (dBm)								
38	5190	13.08	13.05	13.01	12.95	12.89	12.85	12.81	12.78	<17dBm
46	5230	13.04	--	--	--	--	--	--	--	<17dBm
54	5270	13.1	--	--	--	--	--	--	--	<24dBm
62	5310	12.95	--	--	--	--	--	--	--	<24dBm
102	5510	13.3	13.27	13.22	13.17	13.14	13.11	13.07	12.95	<24dBm
118	5590	13.5	--	--	--	--	--	--	--	<24dBm
134	5670	13.24	--	--	--	--	--	--	--	<24dBm

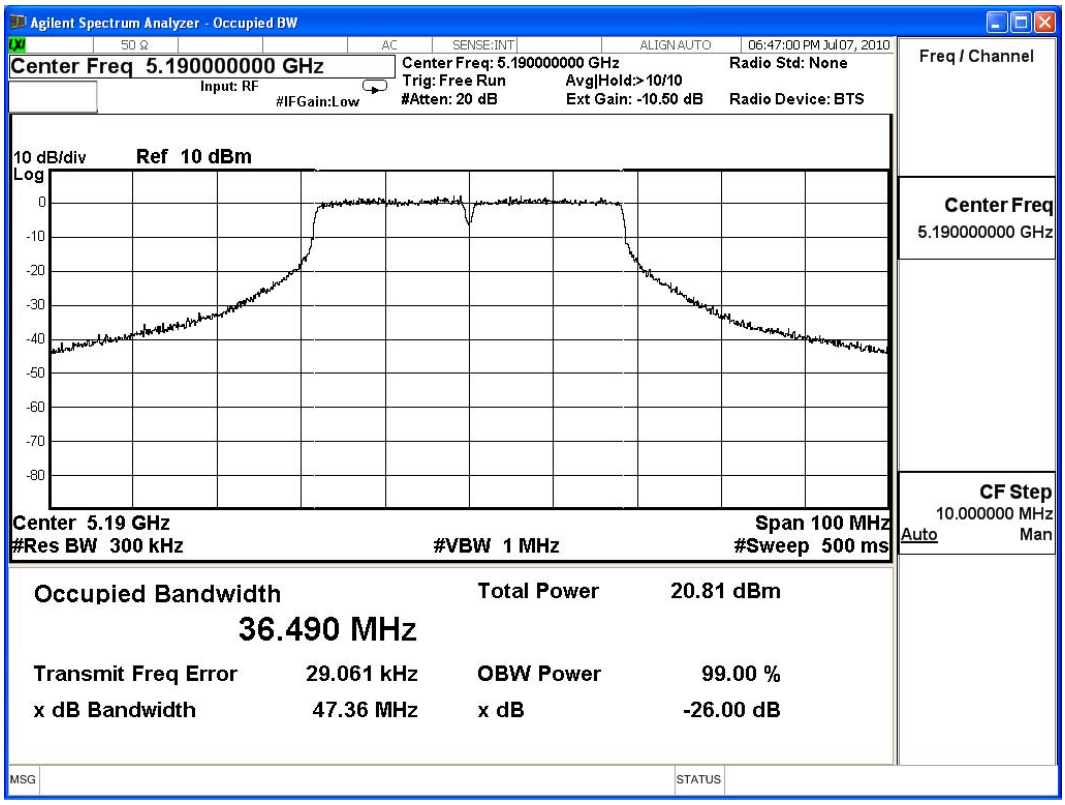
Note: Peak Power Output Value =Reading value on peak power meter + cable loss

Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
38	5190	47.36	13.08	17	20.75	Pass

26dBc Occupied Bandwidth:

Channel 38

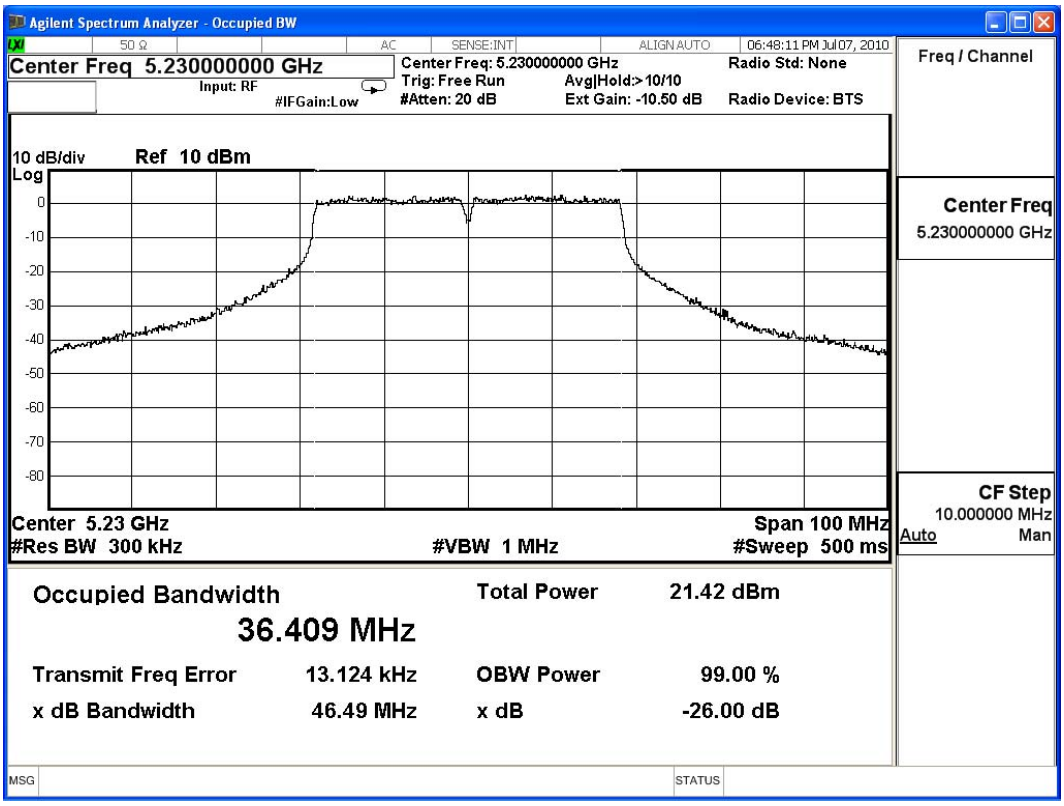


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
46	5230	46.49	13.04	17	20.67	Pass

26dBc Occupied Bandwidth:

Channel 46

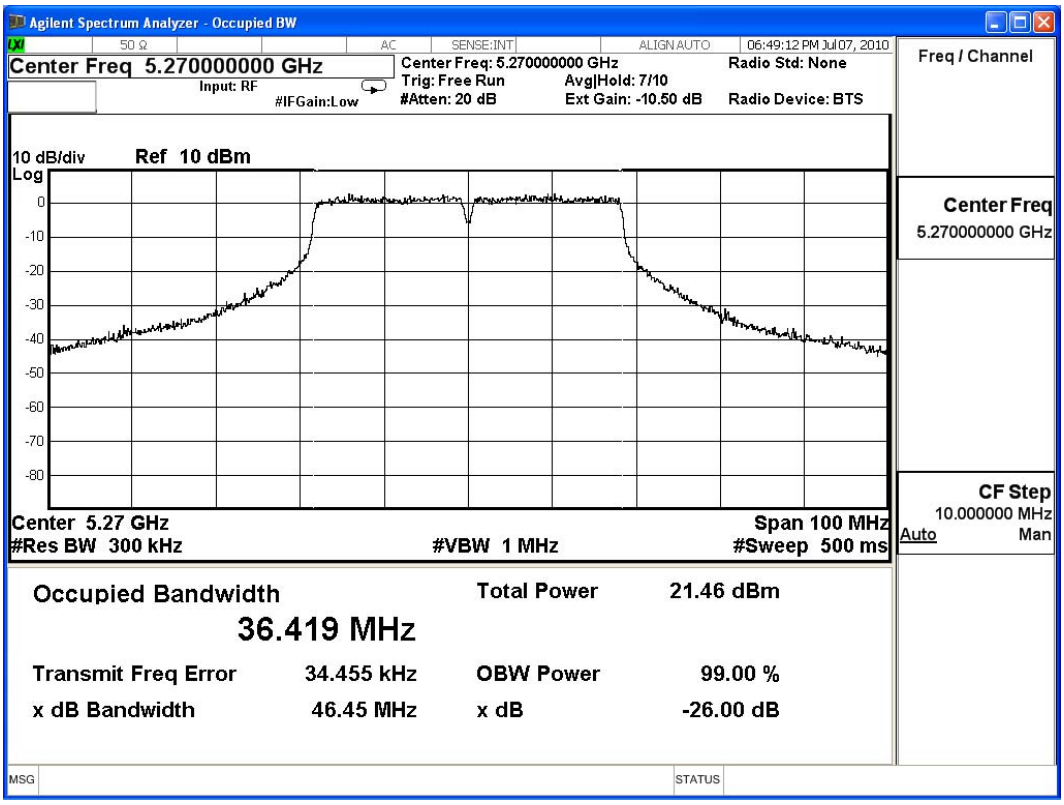


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
54	5270	46.45	13.1	24	27.67	Pass

26dBc Occupied Bandwidth:

Channel 54

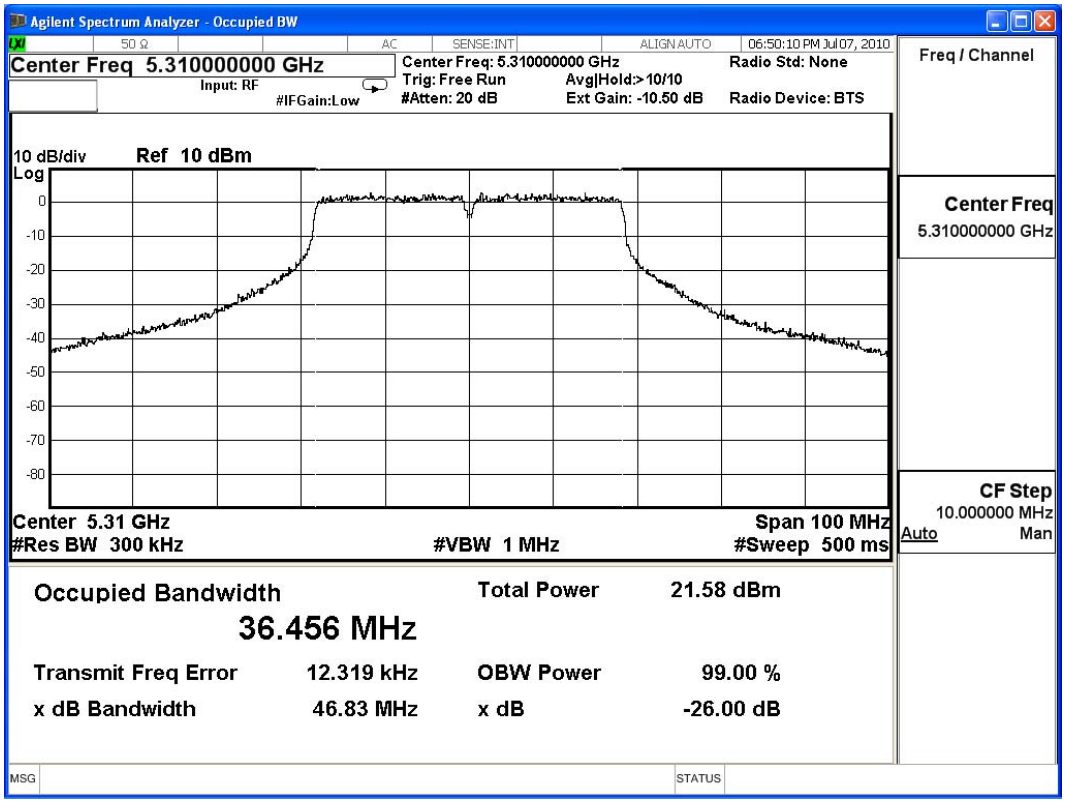


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
62	5310	46.83	12.95	24	27.71	Pass

26dBc Occupied Bandwidth:

Channel 62

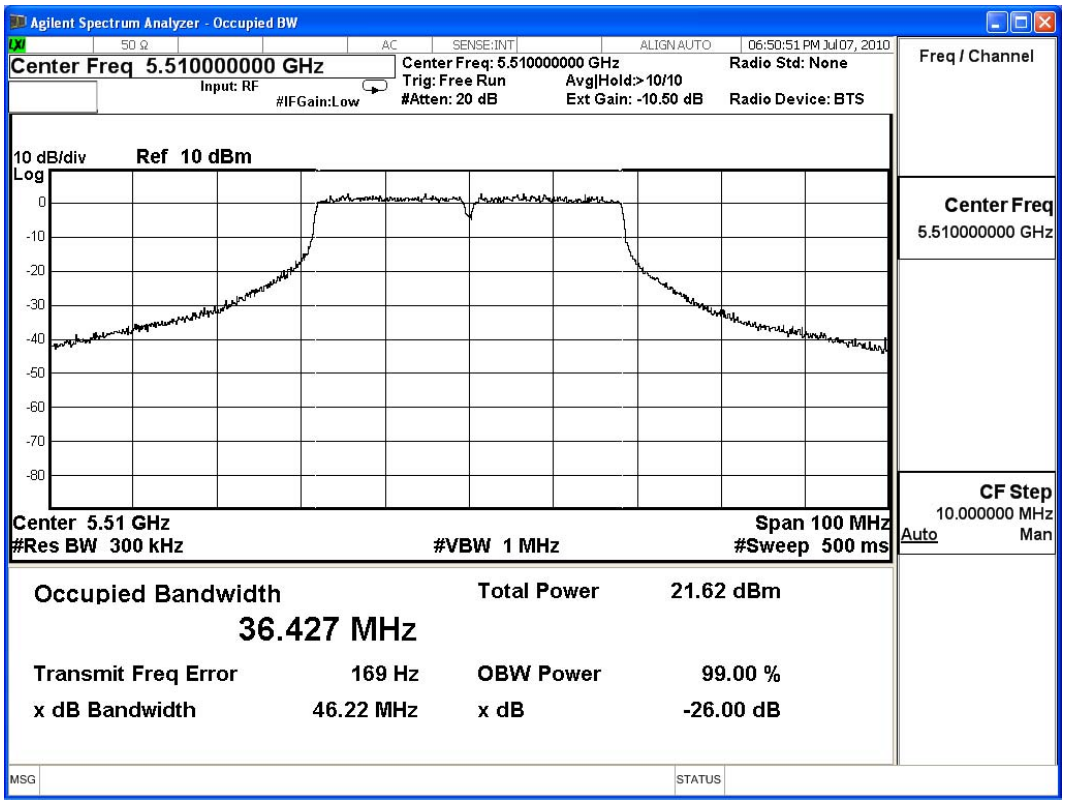


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
102	5510	46.22	13.3	24	27.65	Pass

26dBc Occupied Bandwidth:

Channel 102

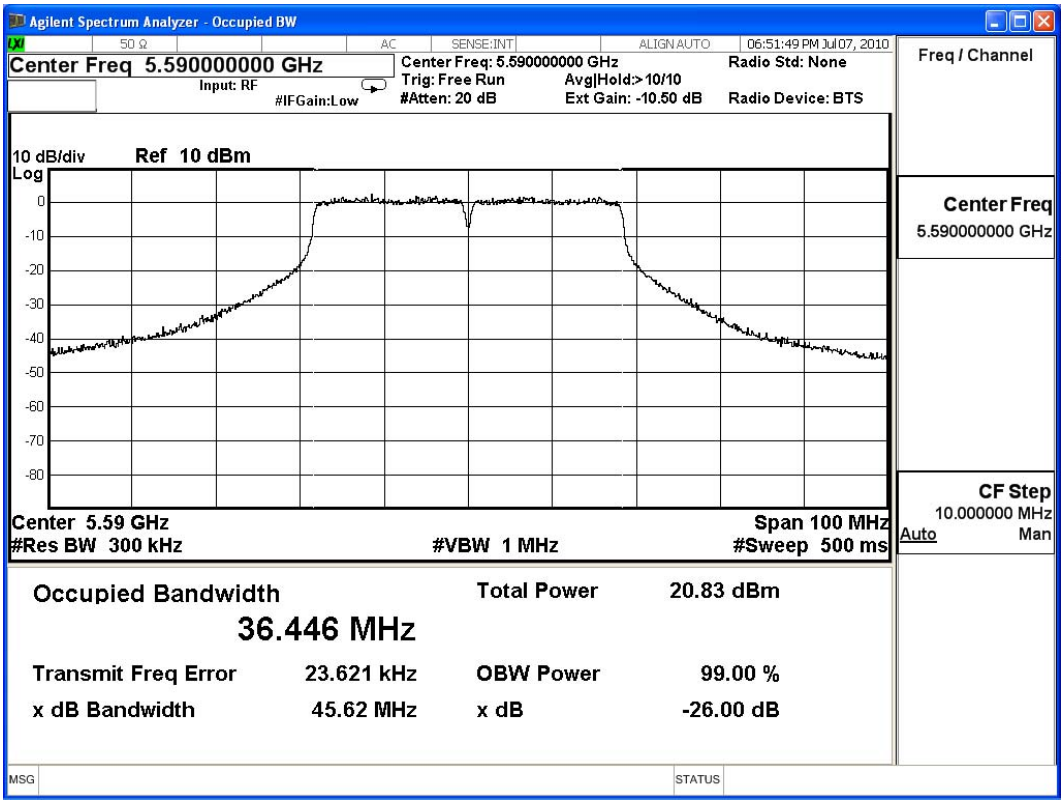


Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
118	5590	45.62	13.5	24	27.59	Pass

26dBc Occupied Bandwidth:

Channel 118



Peak Transmit Power Measurement:

Channel No	Frequency Range (MHz)	26dB Bandwidth (MHz)	Output Power (dBm)	Output Power Limit		Result
				(dBm)	dBm+10log(BW)	
134	5670	46.03	13.24	24	27.63	Pass

26dBc Occupied Bandwidth:

Channel 134