



## Test Report (Class II Permissive Change)

Product Name	WHDI Tx Stick
Model No	WV400A
FCC ID.	PPQ-WV400A

Applicant	LITE-ON Technology Corp.
Address	4F, No.90, Chien 1 Rd., Chung-Ho, Taipei Hsien, Taiwan 235

Date of Receipt	Dec. 21, 2011
Issue Date	Dec. 29, 2011
Report No.	11C384R-RFUSP28V01
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

Issue Date: Dec. 29, 2011

Report No.: 11C384R-RFUSP28V01



**Accredited by NIST (NVLAP)**  
NVLAP Lab Code: 200533-0

Product Name	WHDI Tx Stick	
Applicant	LITE-ON Technology Corp.	
Address	4F, No.90, Chien 1 Rd., Chung-Ho, Taipei Hsien, Taiwan 235	
Manufacturer	DONG GUAN G-COM COMPUTER CO., LTD.	
Model No.	WV400A	
EUT Rated Voltage	DC 5V (Power by USB)	
EUT Test Voltage	AC 120V/60Hz	
Trade Name	LITE-ON	
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2010 ANSI C63.4: 2009	 <small>NVLAP Lab Code: 200533-0</small>
Test Result	Complied	

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

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

Tested By : Jack Hsu  
 ( Assistant Engineer / Jack Hsu )

Approved By : Vincent Lin  
 ( Manager / Vincent Lin )

# TABLE OF CONTENTS

Description	Page
<b>1. GENERAL INFORMATION .....</b>	<b>5</b>
1.1. EUT Description .....	5
1.2. Operational Description .....	7
1.3. Tested System Details .....	8
1.4. Configuration of Tested System .....	8
1.5. EUT Exercise Software .....	9
1.6. Test Facility .....	10
<b>2. Conducted Emission.....</b>	<b>11</b>
2.1. Test Equipment .....	11
2.2. Test Setup .....	11
2.3. Limits .....	12
2.4. Test Procedure .....	12
2.5. Uncertainty .....	12
2.6. Test Result of Conducted Emission.....	13
<b>3. Peak Power Output .....</b>	<b>15</b>
3.1. Test Equipment .....	15
3.2. Test Setup .....	15
3.3. Limits .....	15
3.4. Test Procedure .....	15
3.5. Uncertainty .....	15
3.6. Test Result of Peak Power Output .....	16
<b>4. Radiated Emission.....</b>	<b>18</b>
4.1. Test Equipment .....	18
4.2. Test Setup .....	19
4.3. Limits .....	20
4.4. Test Procedure .....	21
4.5. Uncertainty .....	21
4.6. Test Result of Radiated Emission.....	22
<b>5. RF antenna conducted test.....</b>	<b>29</b>
5.1. Test Equipment .....	29
5.2. Test Setup .....	29
5.3. Limits .....	29
5.4. Test Procedure .....	30
5.5. Uncertainty .....	30
5.6. Test Result of RF antenna conducted test.....	31
<b>6. Band Edge .....</b>	<b>53</b>
6.1. Test Equipment .....	53
6.2. Test Setup .....	54
6.3. Limits .....	54
6.4. Test Procedure .....	55
6.5. Uncertainty .....	55
6.6. Test Result of Band Edge .....	56

---

<b>7.</b>	<b>Occupied Bandwidth.....</b>	<b>64</b>
7.1.	Test Equipment.....	64
7.2.	Test Setup .....	64
7.3.	Limits .....	64
7.4.	Test Procedure .....	64
7.5.	Uncertainty .....	64
7.6.	Test Result of Occupied Bandwidth .....	65
<b>8.</b>	<b>Power Density .....</b>	<b>75</b>
8.1.	Test Equipment.....	75
8.2.	Test Setup .....	75
8.3.	Limits .....	75
8.4.	Test Procedure .....	75
8.5.	Uncertainty .....	75
8.6.	Test Result of Power Density .....	76
<b>9.</b>	<b>EMI Reduction Method During Compliance Testing .....</b>	<b>86</b>

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	WHDI Tx Stick
Trade Name	LITE-ON
Model No.	WV400A
FCC ID.	PPQ-WV400A
Frequency Range	20MHz-BW:5745-5825MHz , 40MHz-BW:5755-5795MHz
Number of Channels	20MHz-BW: 5, 40MHz-BW: 2
Data Speed	20MHz mode: 31.5Mbps, 40MHz mode: 63Mbps
Channel separation	20MHz-BW: 20MHz, 40MHz-BW: 40MHz
Type of Modulation	OFDM
Antenna Type	Chip Antenna
Antenna Gain	Refer to the table "Antenna List"
Channel Control	Auto

#### Antenna List

No.	Manufacturer	Part No.	Peak Gain
1	Walsin	RFECA3216060K1T	2.86dBi for 5GHz

Note: The antenna of EUT is conform to FCC 15.203

20MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 149:	5745 MHz	Channel 153:	5765 MHz	Channel 157:	5785 MHz	Channel 161:	5805 MHz
Channel 165:	5825 MHz						

40MHz Center Working Frequency of Each Channel:

Channel	Frequency	Channel	Frequency
Channel 151:	5755 MHz	Channel 159:	5795 MHz

Note:

1. This device is a WHDI Tx Stick with a built-in and 5GHz transceiver.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. These tests are conducted on a sample for the purpose of demonstrating compliance of 5GHz transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.
4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
5. This is to request a Class II permissive change for FCC ID: PPQ-WV400A, originally granted on 11/23/2011.

The major change filed under this application is:

Change #1: Addition new antenna, antenna gain: 2.86dBi.

Change #2: Modify the match circuit between amplifier to antenna. Others circuit and layout are identical with original granted.

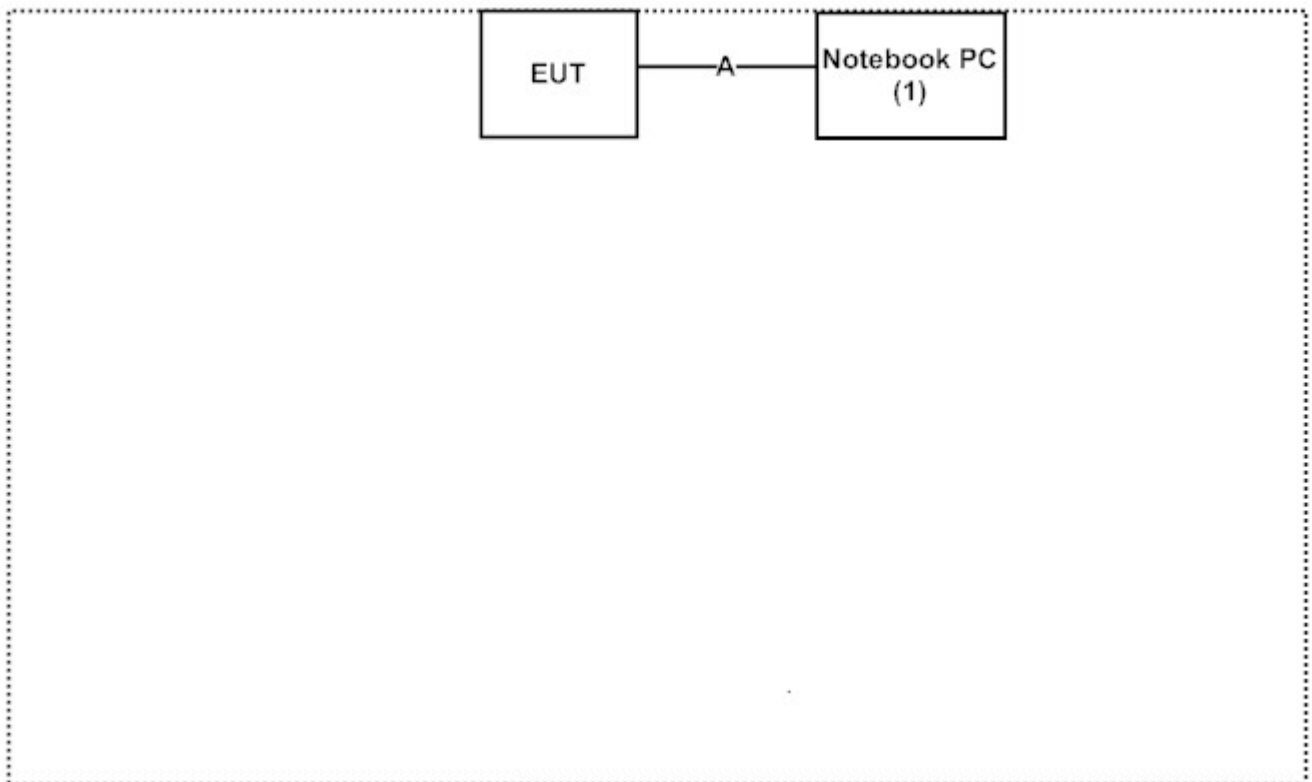
### 1.3. Tested System Details

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	PPT	N/A	Non-Shielded, 0.8m

Signal Cable Type	Signal cable Description
A USB Cable (STD-A to Micxo-B)	Non-Shielded, 1.0m

### 1.4. Configuration of Tested System



## 1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4
- (2) Execute “APPcom” program on the Notebook.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Press “OK” to start the continuous Transmit.
- (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, Ruishukeng Linkou Dist., New Taipei City  
24451, Taiwan, R.O.C.  
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789  
E-Mail : [service@quietek.com](mailto:service@quietek.com)

FCC Accreditation Number: TW1014

## 2. Conducted Emission

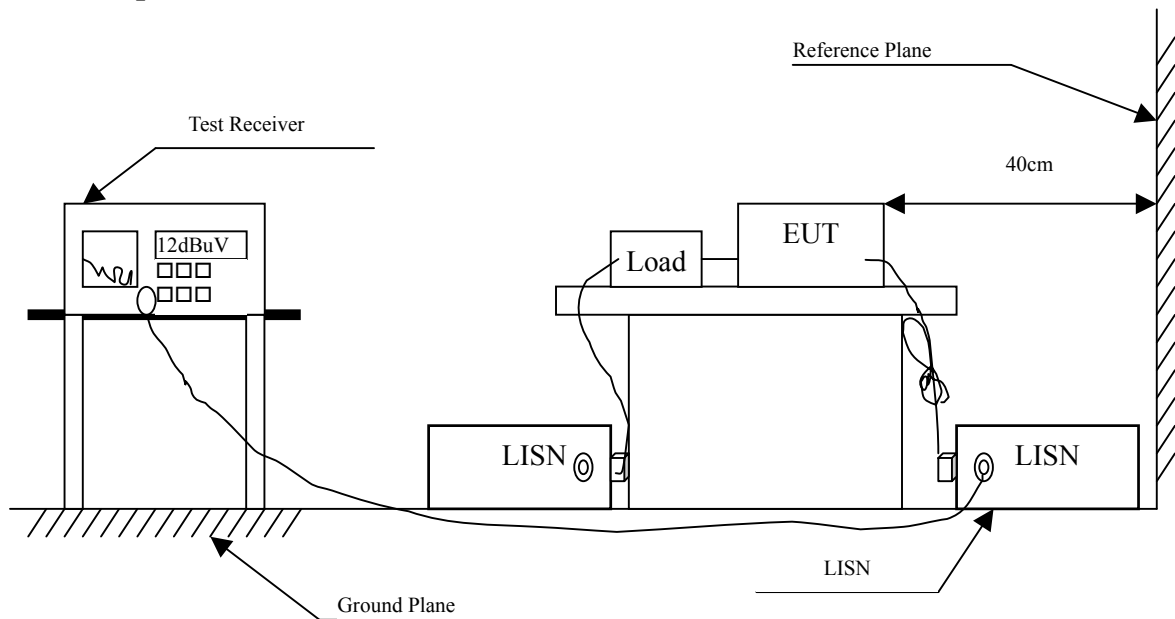
### 2.1. Test Equipment

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, 2011	
2	L.I.S.N.	R & S	ESH3-Z5/825016/6	May, 2011	EUT
3	L.I.S.N.	Kyoritsu	KNW-407/8-1420-3	May, 2011	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2011	
5	No.1 Shielded Room			N/A	

Note: All instruments are calibrated every one year.

### 2.2. Test Setup



**2.3. Limits**

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

**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: 2009 on conducted measurement.

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

**2.5. Uncertainty**

± 2.26 dB

## 2.6. Test Result of Conducted Emission

Product : WHDI Tx Stick  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 2: Transmit - 40BW (5755MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
<b>Line 1</b>					
<b>Quasi-Peak</b>					
0.158	9.730	43.840	53.570	-12.201	65.771
0.189	9.706	37.680	47.386	-17.500	64.886
0.318	9.650	31.600	41.250	-19.950	61.200
0.451	9.651	27.800	37.451	-19.949	57.400
0.716	9.655	36.920	46.575	-9.425	56.000
7.767	9.771	9.720	19.491	-40.509	60.000
<b>Average</b>					
0.158	9.730	29.860	39.590	-16.181	55.771
0.189	9.706	20.130	29.836	-25.050	54.886
0.318	9.650	21.060	30.710	-20.490	51.200
0.451	9.651	15.880	25.531	-21.869	47.400
0.716	9.655	27.450	37.105	-8.895	46.000
7.767	9.771	3.180	12.951	-37.049	50.000

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 : WHDI Tx Stick  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Mode : Mode 2: Transmit - 40BW (5755MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
<b>Line 2</b>					
<b>Quasi-Peak</b>					
0.158	9.730	42.260	51.990	-13.781	65.771
0.232	9.675	34.960	44.635	-19.022	63.657
0.357	9.650	31.480	41.130	-18.956	60.086
0.709	9.650	36.980	46.630	-9.370	56.000
1.466	9.689	19.180	28.869	-27.131	56.000
7.025	9.775	7.820	17.595	-42.405	60.000
<b>Average</b>					
0.158	9.730	29.140	38.870	-16.901	55.771
0.232	9.675	19.170	28.845	-24.812	53.657
0.357	9.650	14.320	23.970	-26.116	50.086
0.709	9.650	27.970	37.620	-8.380	46.000
1.466	9.689	10.520	20.209	-25.791	46.000
7.025	9.775	-0.020	9.755	-40.245	50.000

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 Power Output

#### 3.1. Test Equipment

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Power Meter	Anritsu	ML2495A/6K00003357	May, 2011
X	Power Sensor	Anritsu	MA2411B/0738448	Jun, 2011

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

Conducted Measurement



#### 3.3. Limits

The maximum peak power shall be less 1 Watt.

#### 3.4. Test Procedure

The EUT was tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

#### 3.5. Uncertainty

± 1.27 dB

### 3.6. Test Result of Peak Power Output

Product : WHDI Tx Stick  
 Test Item : Peak Power Output Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit - 20BW

#### CHAIN A+B

Channel	Frequency (MHz)	Data Rate (Mbps)	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
149	5745	31.5	-0.31	-0.22	2.75	<30dBm	Pass
157	5785	31.5	-0.54	-0.72	2.38	<30dBm	Pass
165	5825	31.5	-1.06	-1.09	1.94	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10\*LOG (Chain A (mW)+ Chain B (mW))

Product : WHDI Tx Stick  
 Test Item : Peak Power Output Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit - 40BW

**CHAIN A+B**

Channel	Frequency (MHz)	Data Rate (Mbps)	Chain A Power (dBm)	Chain B Power (dBm)	Chain A+B Power (dBm)	Limit (dBm)	Result
151	5755	63	1.00	1.19	4.11	<30dBm	Pass
159	5795	63	-0.22	1.60	3.79	<30dBm	Pass

Note: Peak Power Output Value (dBm) = 10\*LOG (Chain A (mW)+ Chain B (mW))



## 4. Radiated Emission

### 4.1. Test Equipment

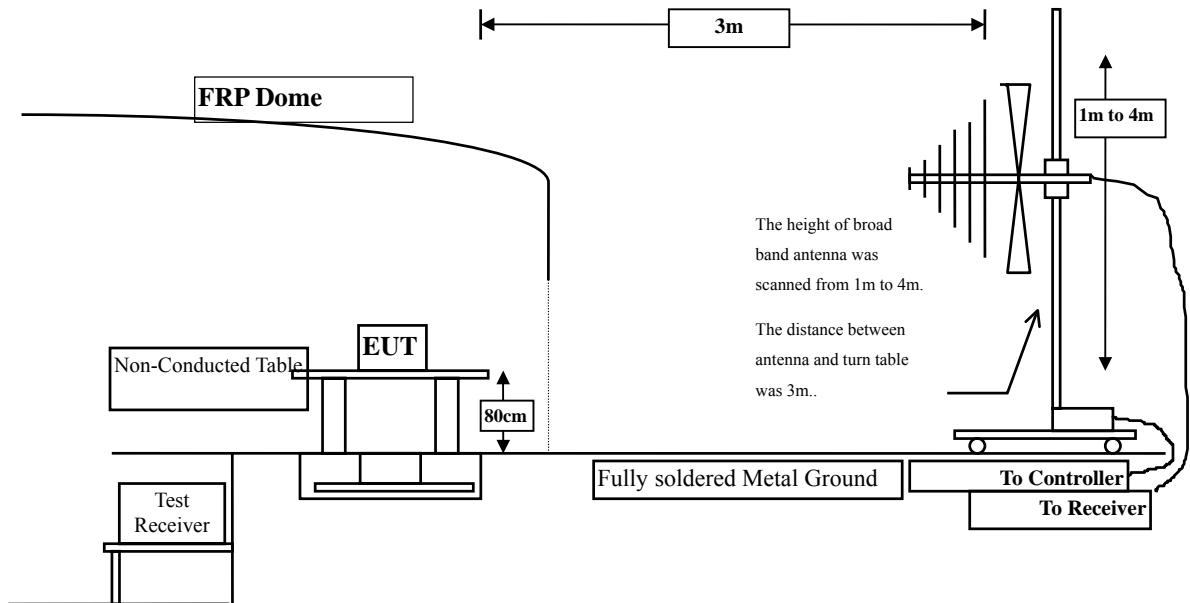
The following test equipment are used during the radiated emission test:

Test Site		Equipment	Manufacturer	Model No./Serial No.	Last Cal.
☒ Site # 3	X	Bilog Antenna	Schaffner Chase	CBL6112B/2673	Sep., 2011
	X	Horn Antenna	Schwarzbeck	BBHA9120D/D305	Sep., 2011
	X	Horn Antenna	Schwarzbeck	BBHA9170/208	Jul., 2011
	X	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2011
	X	Pre-Amplifier	QTK	AP-180C / CHM_0906076	Sep., 2011
	X	Pre-Amplifier	MITEQ	AMF-4D-180400-45-6P/ 925975	Mar, 2011
	X	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2011
	X	Test Receiver	R & S	ESCS 30/ 825442/018	Sep., 2011
	X	Coaxial Cable	Quietek	QTK-CABLE/ CAB5	Feb., 2011
	X	Controller	Quietek	QTK-CONTROLLER/ CTRL3	N/A
	X	Coaxial Switch	Anritsu	MP59B/6200265729	N/A

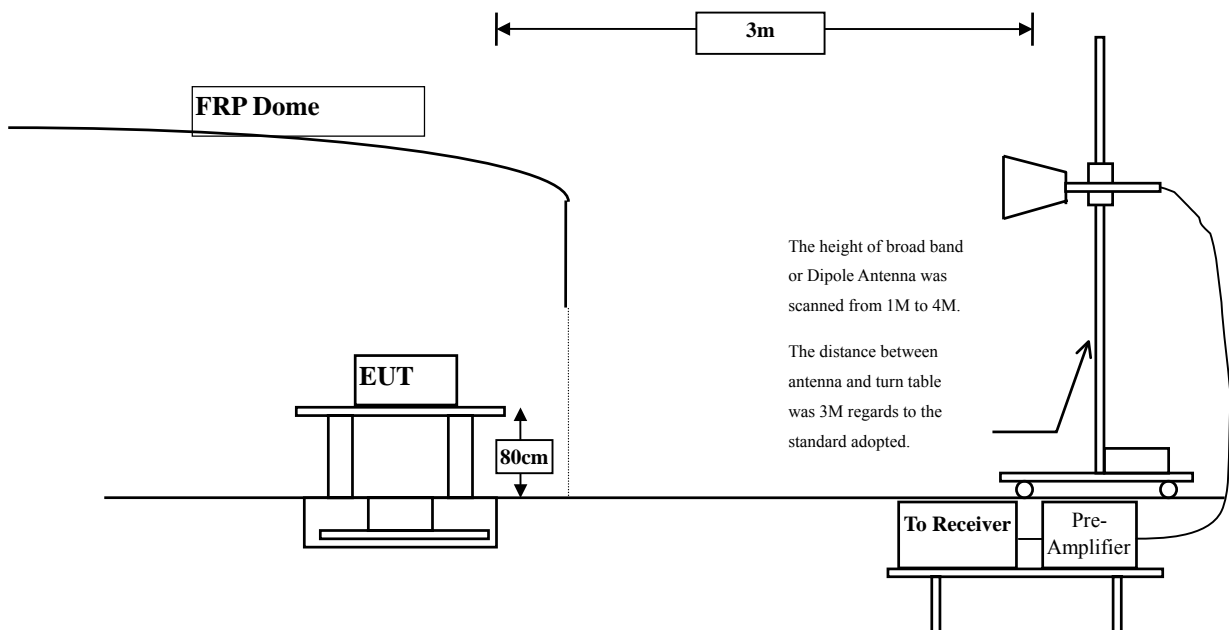
- Note:
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
  2. The test instruments marked with "X" are used to measure the final test results.

## 4.2. Test Setup

### Radiated Emission Below 1GHz



### Radiated Emission Above 1GHz



### 4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

<b>FCC Part 15 Subpart C Paragraph 15.209(a) Limits</b>		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

#### 4.4. Test Procedure

The EUT was setup according to ANSI C63.4, 2009 and tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2009 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range form 30MHz - 10th Harmonic of fundamental was investigated.

#### 4.5. Uncertainty

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

#### 4.6. Test Result of Radiated Emission

Product : WHDI Tx Stick  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit - 20BW (5745 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11490.000	17.106	43.930	61.037	-12.963	74.000
<b>Average Detector:</b>					
11490.000	17.106	29.060	46.167	-7.833	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11490.000	18.034	43.300	61.335	-12.665	74.000
<b>Average Detector:</b>					
11490.000	18.034	28.980	47.015	-6.985	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WHDI Tx Stick  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit - 20BW (5785 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBUV	Measurement Level dBUV/m	Margin dB	Limit dBUV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11570.000	16.809	43.300	60.109	-13.891	74.000
<b>Average Detector:</b>					
11570.000	16.809	28.950	45.759	-8.241	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11570.000	17.698	43.010	60.708	-13.292	74.000
<b>Average Detector:</b>					
11570.000	17.698	28.710	46.408	-7.592	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WHDI Tx Stick  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit - 20BW (5825 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBUV	Measurement Level dBUV/m	Margin dB	Limit dBUV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11650.000	16.158	42.580	58.738	-15.262	74.000
<b>Average Detector:</b>					
11650.000	16.158	28.280	44.438	-9.562	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11650.000	17.274	42.630	59.905	-14.095	74.000
<b>Average Detector:</b>					
11650.000	17.274	28.200	45.475	-8.525	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WHDI Tx Stick  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit - 40BW (5755MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11510.000	17.124	43.300	60.424	-13.576	74.000
<b>Average Detector:</b>					
11510.000	17.124	29.150	46.274	-7.726	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11510.000	18.081	43.540	61.621	-12.379	74.000
<b>Average Detector:</b>					
11510.000	18.081	29.010	47.091	-6.909	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product : WHDI Tx Stick  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit - 40BW (5795 MHz)

Frequency MHz	Correct Factor dB	Reading Level dBUV	Measurement Level dBUV/m	Margin dB	Limit dBUV/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
11590.000	16.701	43.070	59.770	-14.230	74.000
<b>Average Detector:</b>					
11590.000	16.701	28.800	45.500	-8.500	54.000
<b>Vertical</b>					
<b>Peak Detector:</b>					
11590.000	17.567	43.360	60.926	-13.074	74.000
<b>Average Detector:</b>					
11590.000	17.567	28.660	46.226	-7.774	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WHDI Tx Stick  
 Test Item : General Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit - 20BW (5785MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
191.020	-10.040	42.570	32.530	-10.970	43.500
299.660	-3.585	31.201	27.616	-18.384	46.000
433.520	-1.972	35.621	33.649	-12.351	46.000
565.440	1.611	28.560	30.171	-15.829	46.000
664.380	2.062	33.570	35.632	-10.368	46.000
796.300	5.161	28.322	33.483	-12.517	46.000
<b>Vertical</b>					
200.720	-7.835	40.556	32.721	-10.779	43.500
396.660	-4.356	30.220	25.864	-20.136	46.000
530.520	-0.517	29.313	28.796	-17.204	46.000
689.600	2.538	25.632	28.170	-17.830	46.000
833.160	2.263	28.503	30.766	-15.234	46.000
967.020	8.071	26.085	34.156	-19.844	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : WHDI Tx Stick  
 Test Item : General Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit - 40BW (5755MHz)

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
189.080	-10.289	43.310	33.021	-10.479	43.500
249.220	-6.014	34.385	28.371	-17.629	46.000
433.520	-1.972	35.004	33.032	-12.968	46.000
600.360	3.977	28.046	32.023	-13.977	46.000
666.320	2.031	29.890	31.922	-14.078	46.000
798.240	5.148	29.632	34.780	-11.220	46.000
<b>Vertical</b>					
202.660	-7.739	38.505	30.766	-12.734	43.500
398.600	-4.678	33.817	29.139	-16.861	46.000
530.520	-0.517	29.188	28.671	-17.329	46.000
666.320	-1.809	32.086	30.278	-15.722	46.000
798.240	2.808	32.091	34.899	-11.101	46.000
965.080	7.932	25.477	33.409	-20.591	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

**5. RF antenna conducted test**

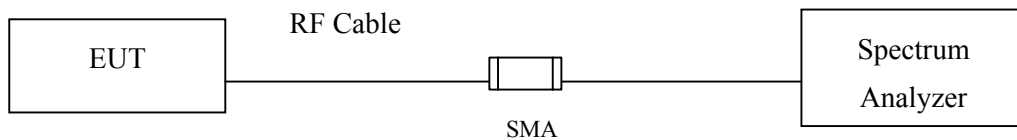
**5.1. Test Equipment**

	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X	Spectrum Analyzer	R&S	FSP40 / 100170	Jun, 2011
	Spectrum Analyzer	Agilent	E4407B / US39440758	Jun, 2011
X	Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2011

- 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.

**5.2. Test Setup**

**RF antenna Conducted Measurement:**



**5.3. Limits**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

#### 5.4. Test Procedure

The EUT was tested according to DTS test procedure of Mar. 2005 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

#### 5.5. Uncertainty

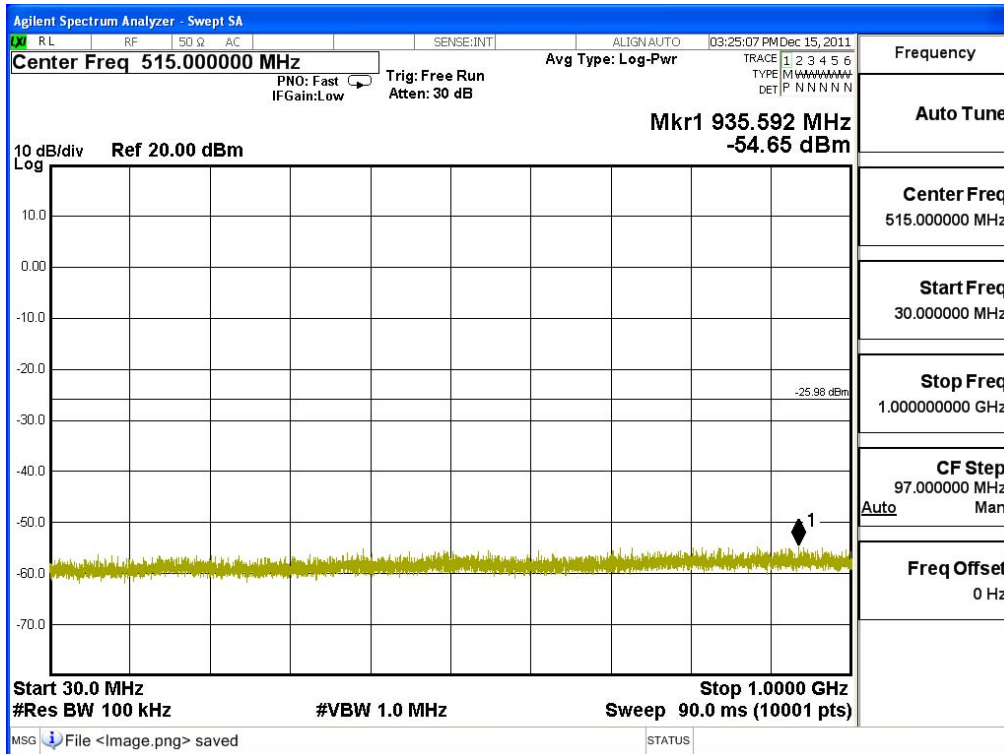
The measurement uncertainty

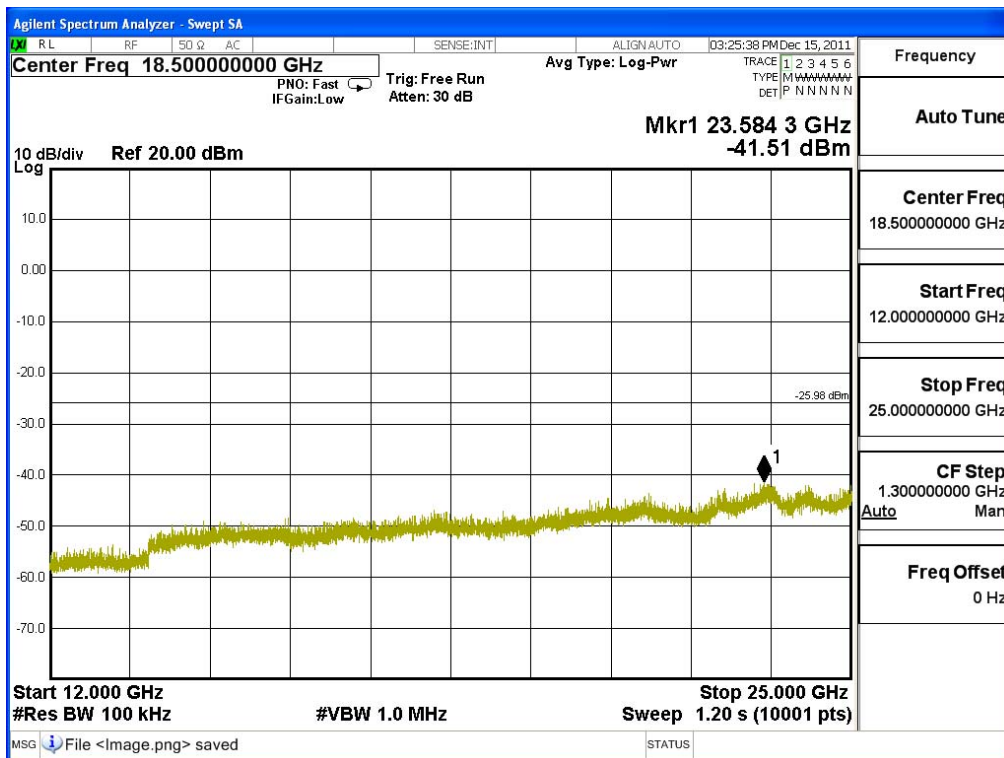
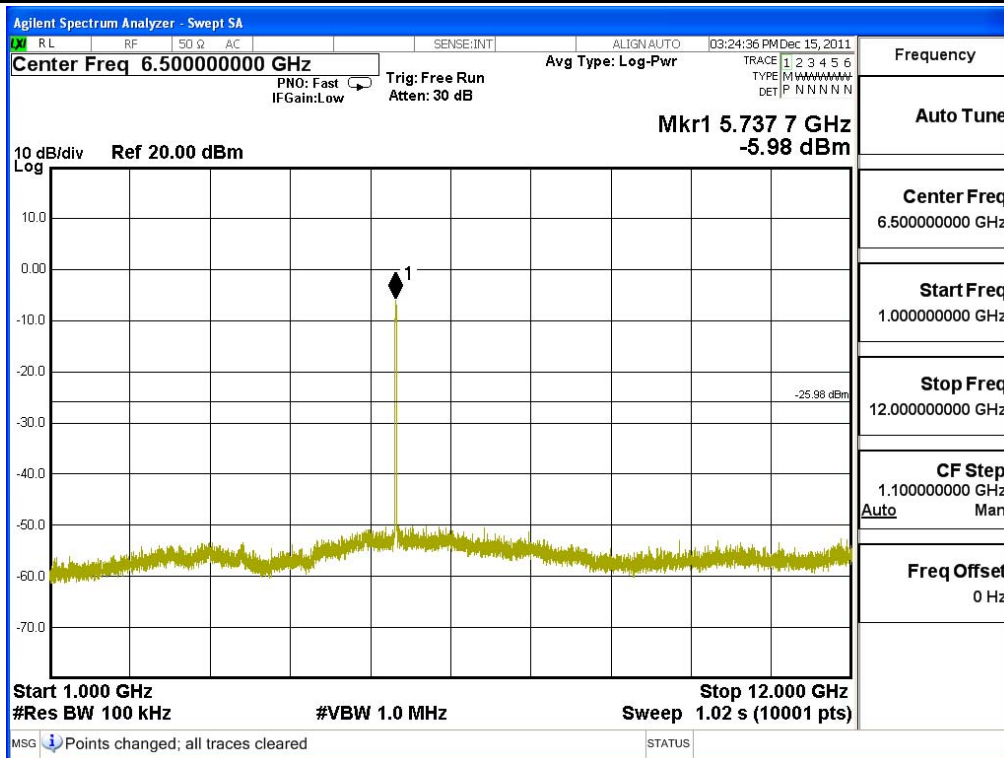
Conducted is defined as  $\pm 1.27\text{dB}$

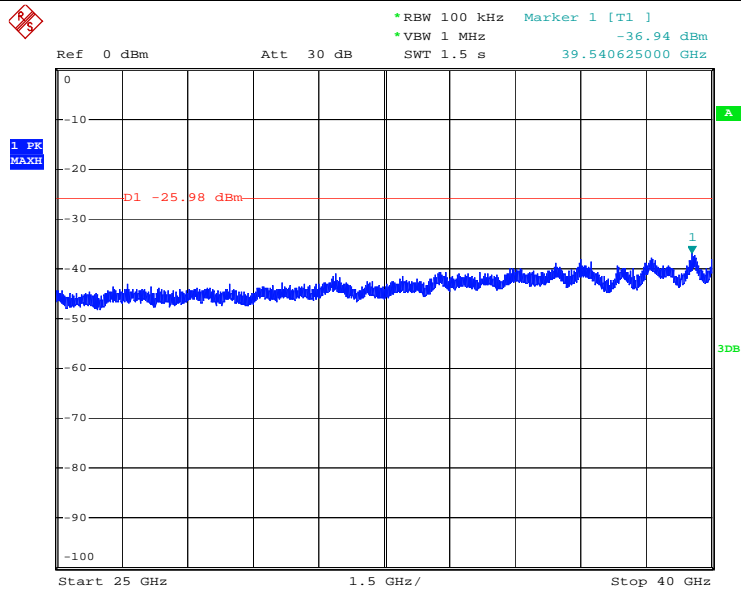
**5.6. Test Result of RF antenna conducted test**

Product : WHDI Tx Stick  
 Test Item : RF Antenna Conducted Spurious  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit - 20BW

**Channel 149 (5745MHz) 30MHz -40GHz-Chain A**



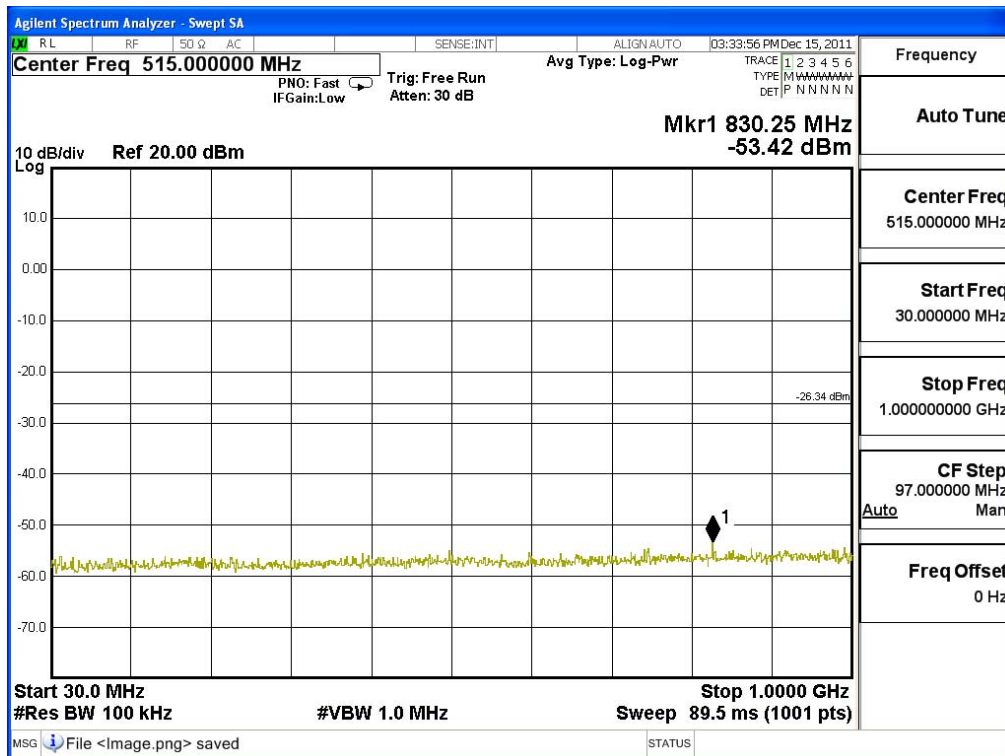




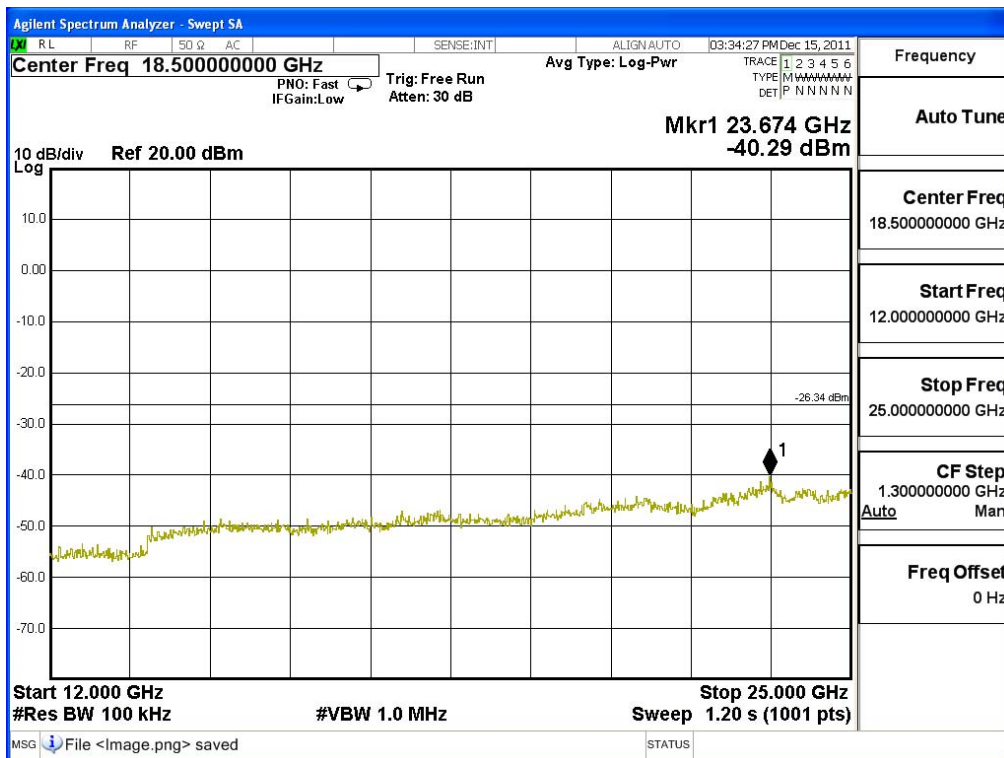
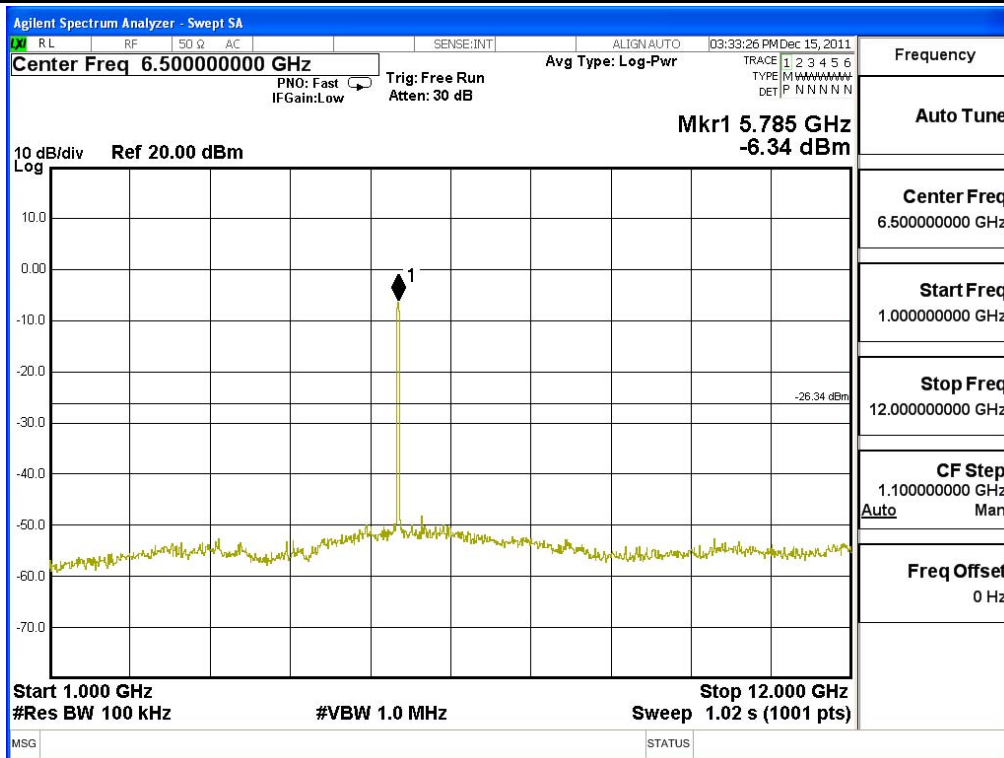
5190B-2

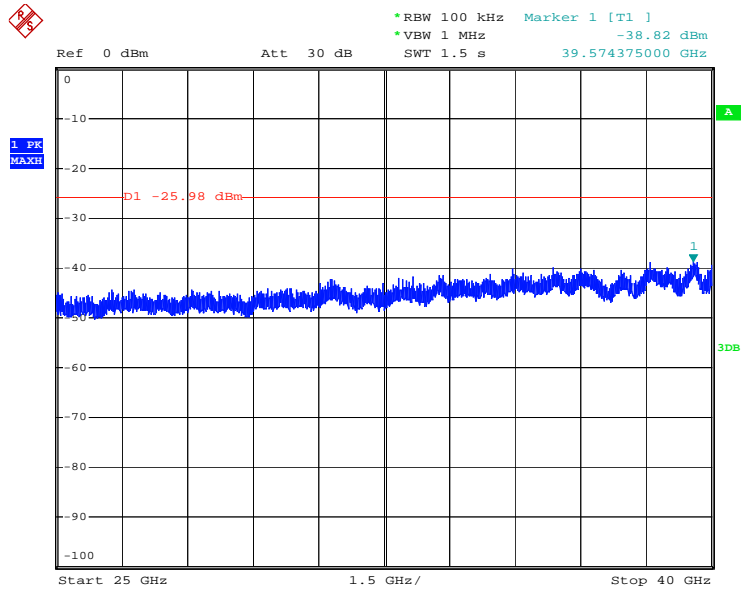
Date: 28.DEC.2011 04:59:32

### Channel 157 (5785MHz) 30MHz -40GHz-Chain A





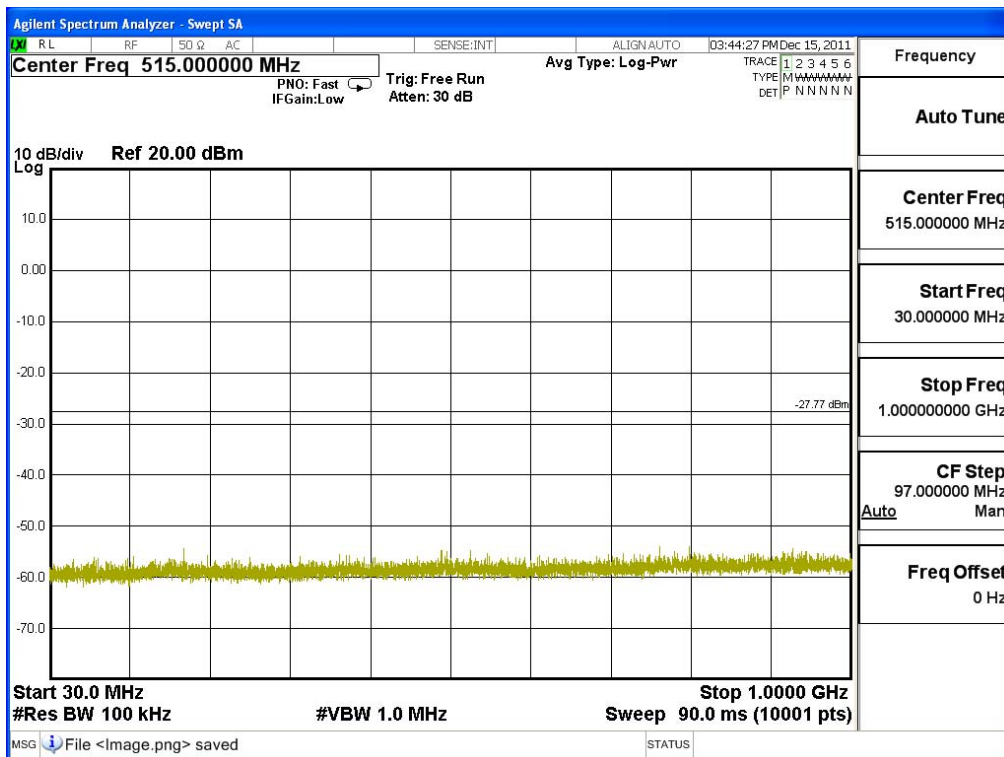


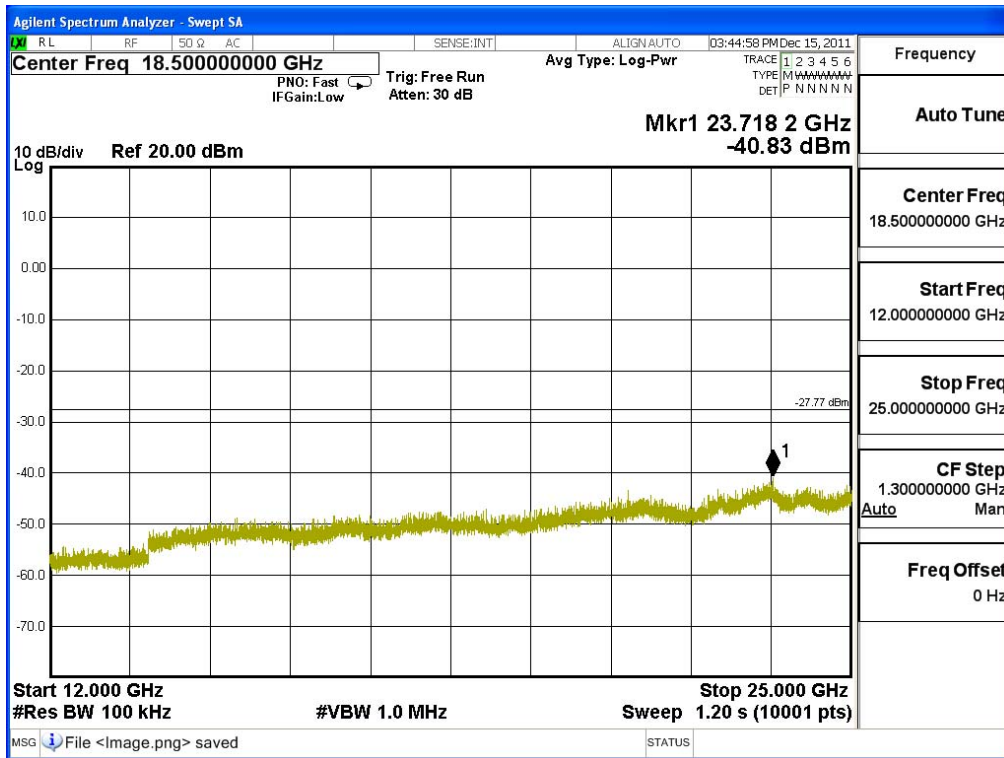
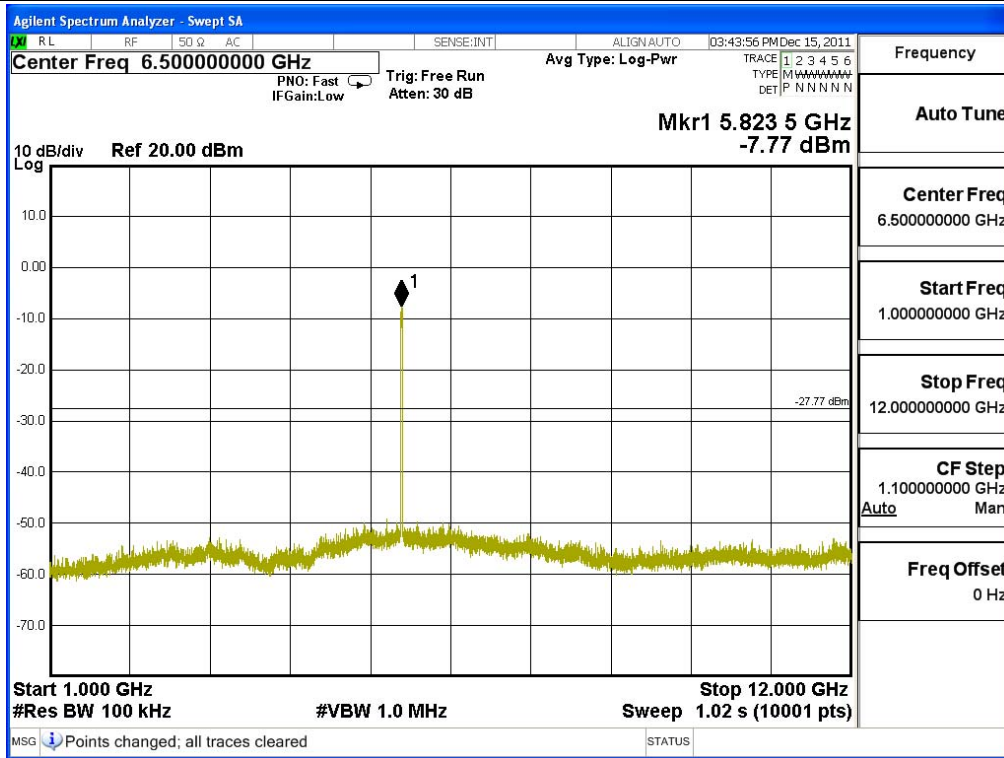


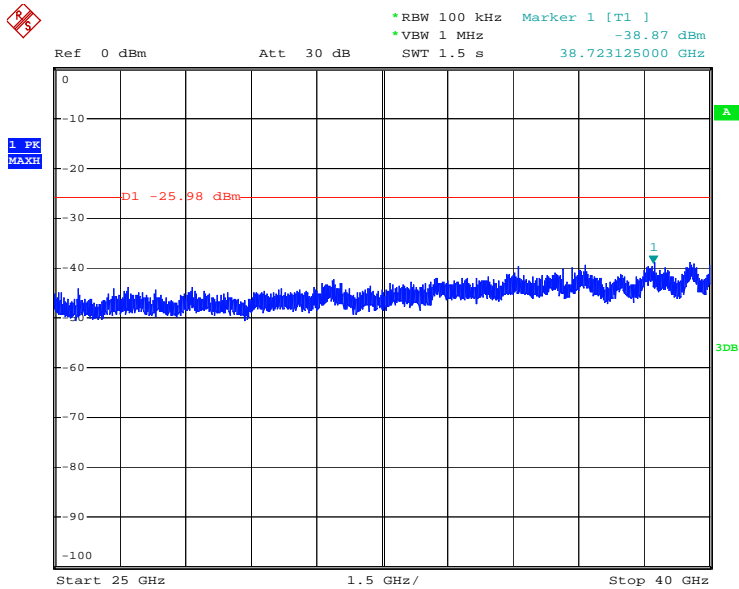
5190B-2

Date: 28.DEC.2011 05:06:32

Channel 165 (5825MHz) 30MHz -40GHz-Chain A

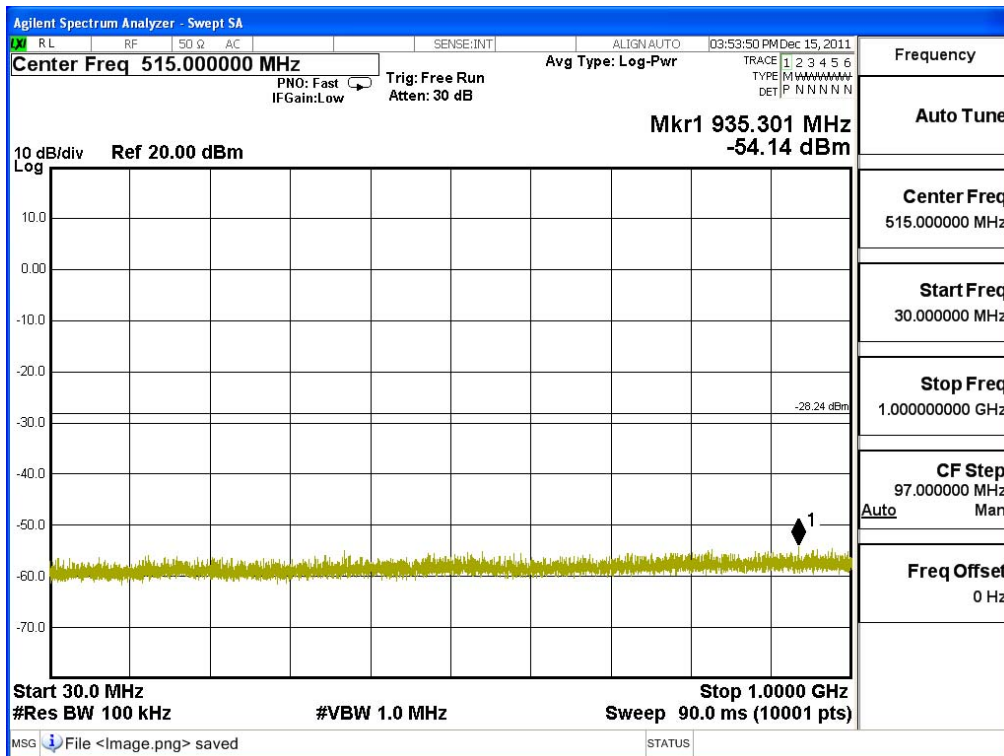


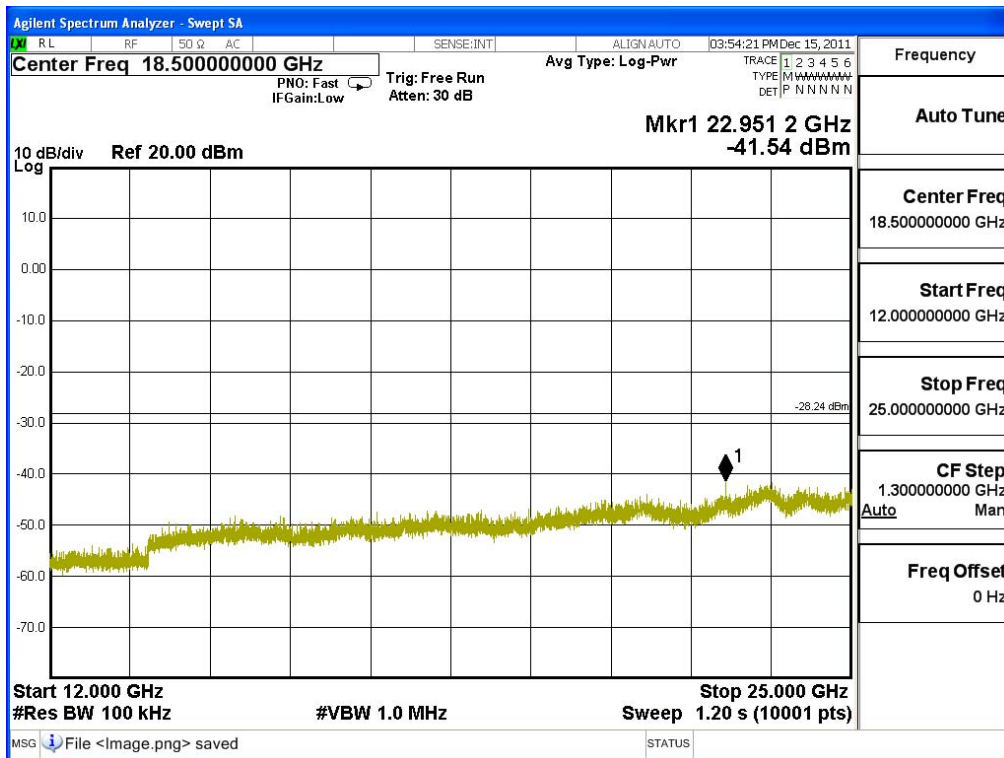
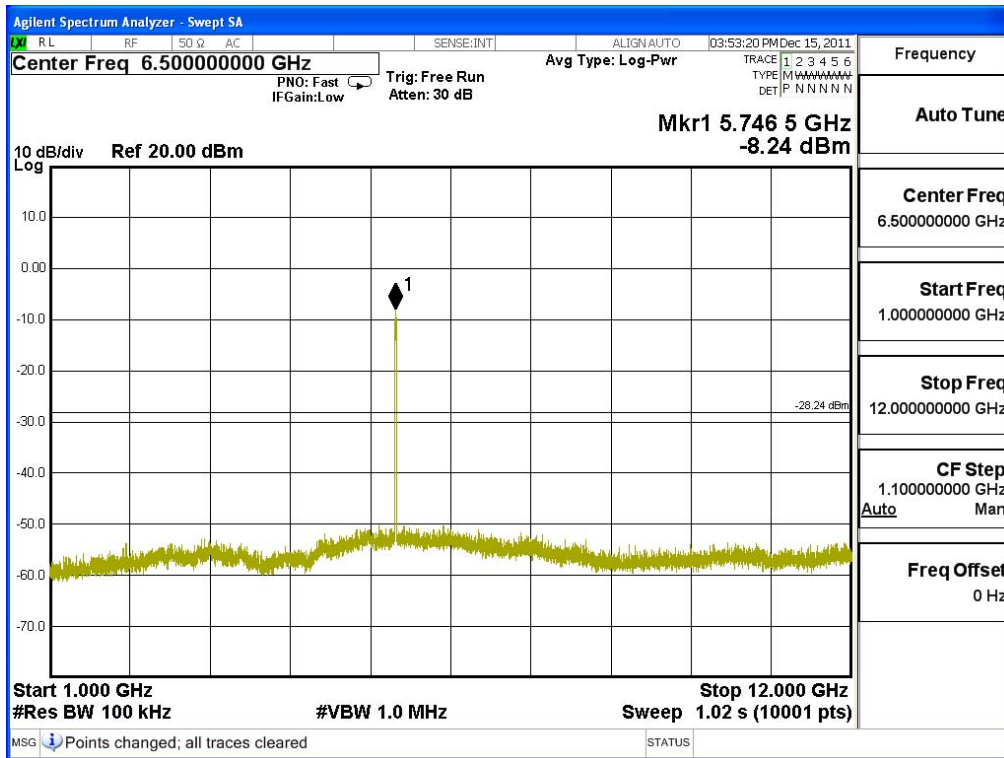


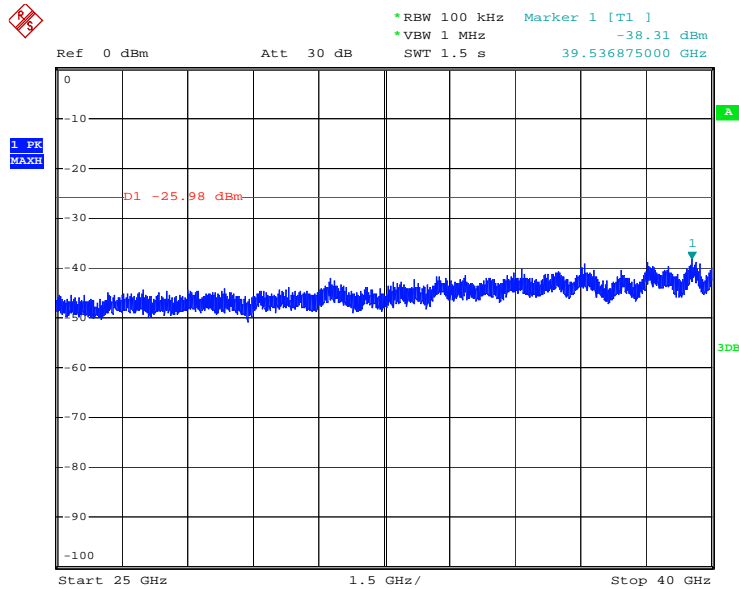


5190B-2  
Date: 28.DEC.2011 05:09:27

**Channel 149 (5745MHz) 30MHz -40GHz-Chain B**



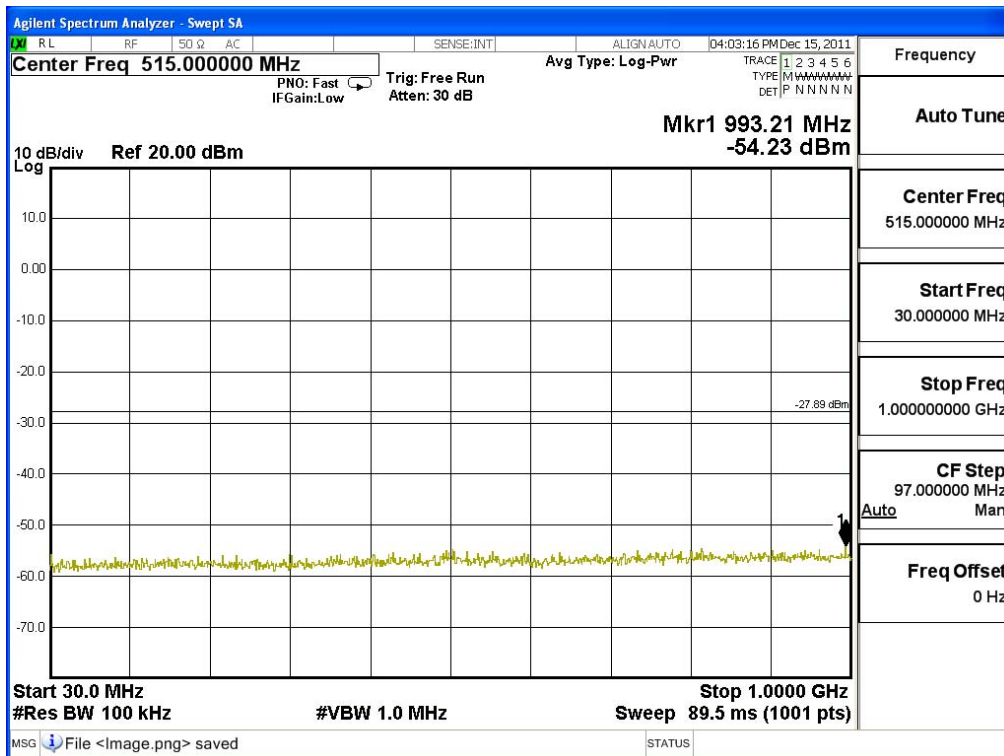


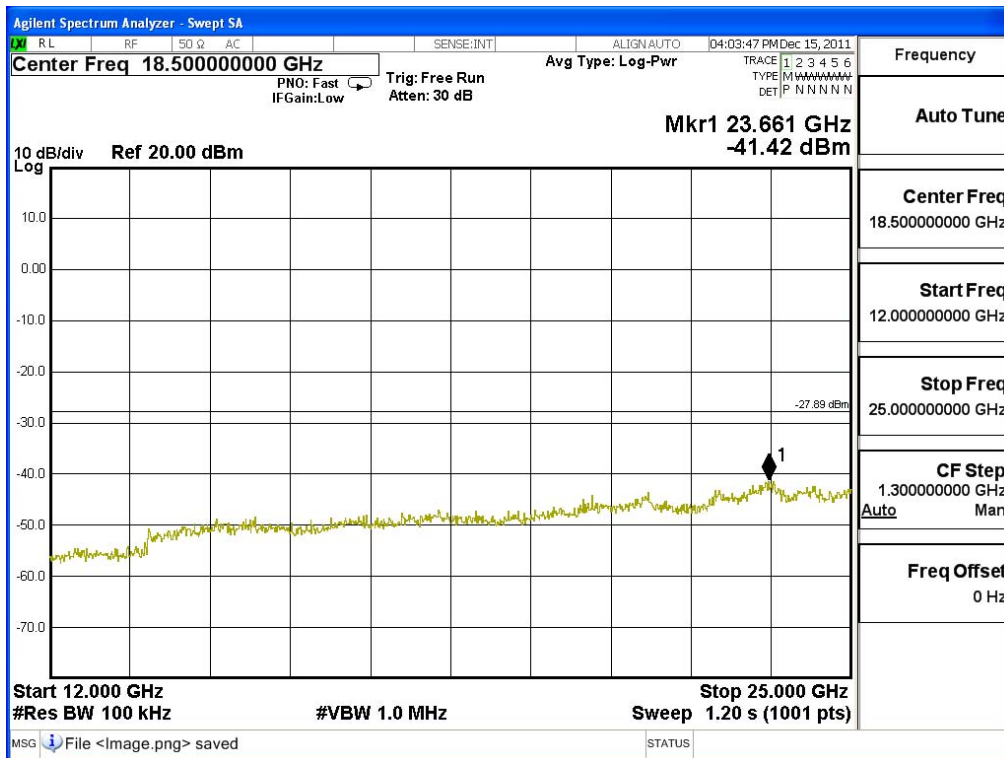
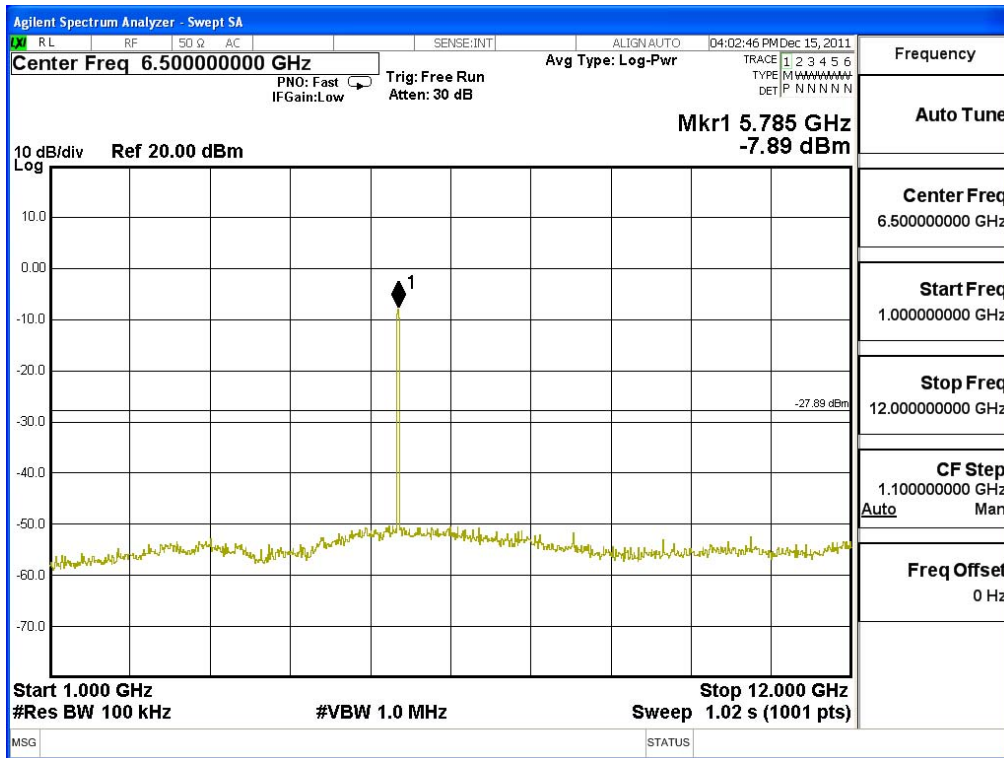


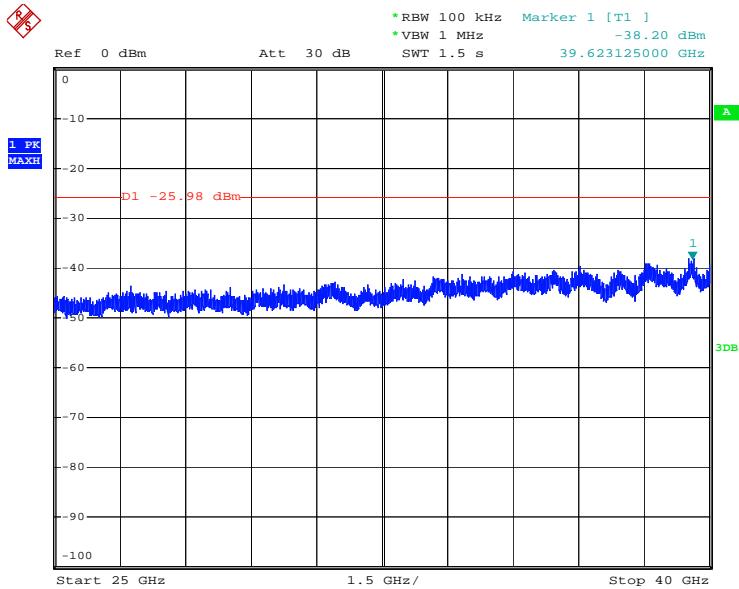
5190B-2

Date: 28.DEC.2011 05:02:02

**Channel 157 (5785MHz) 30MHz -40GHz-Chain B**

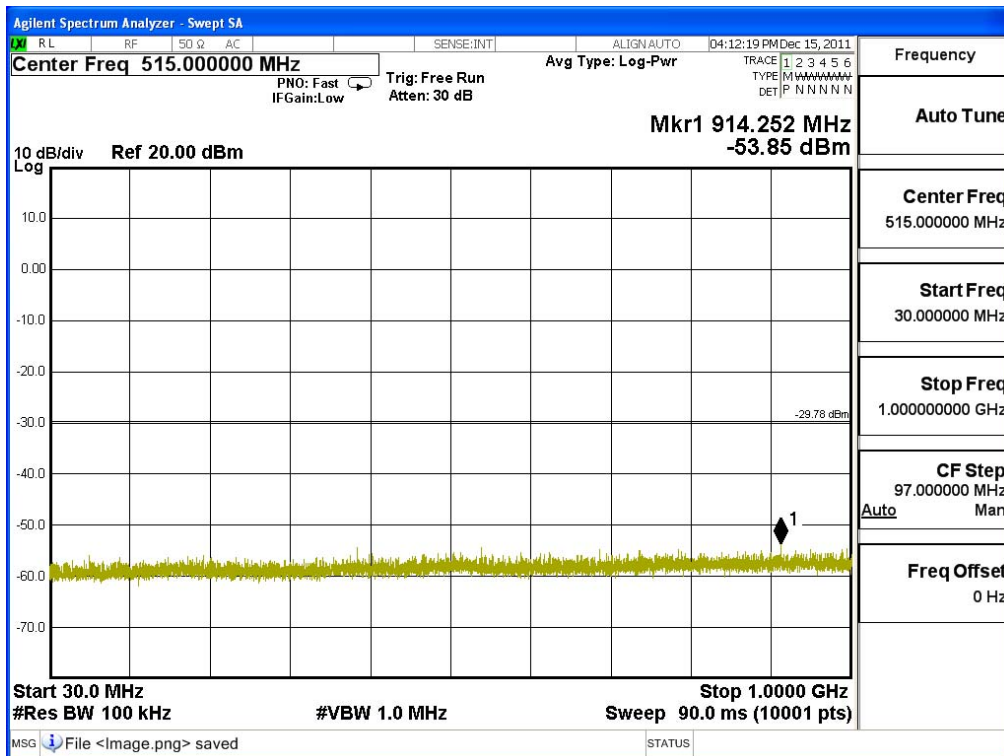




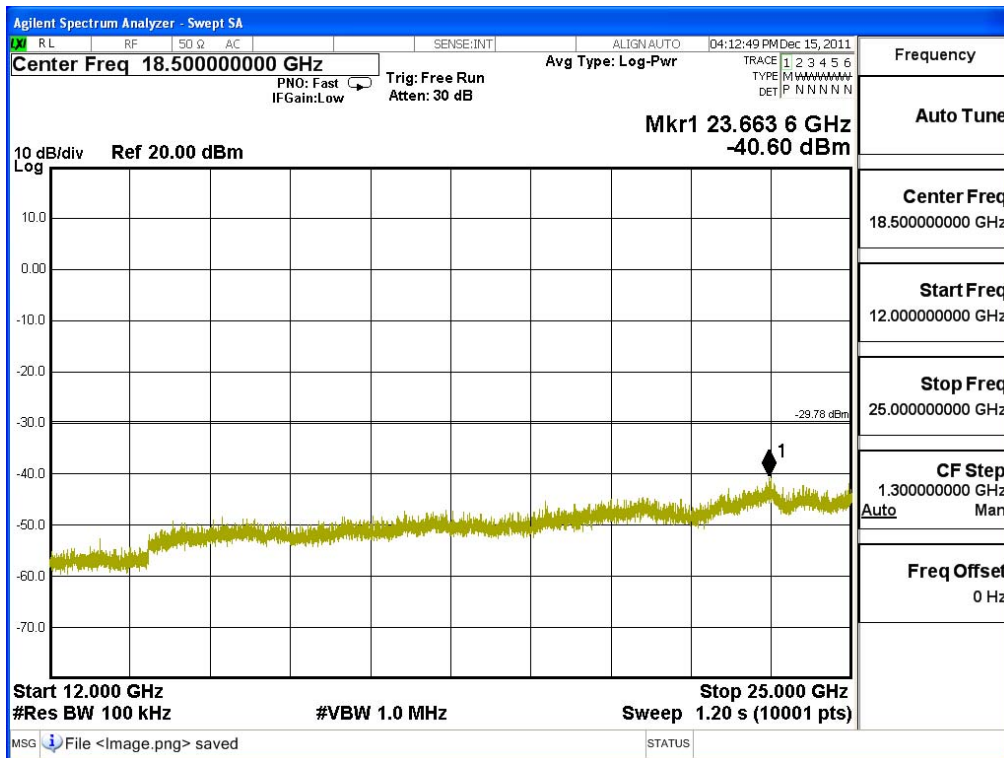
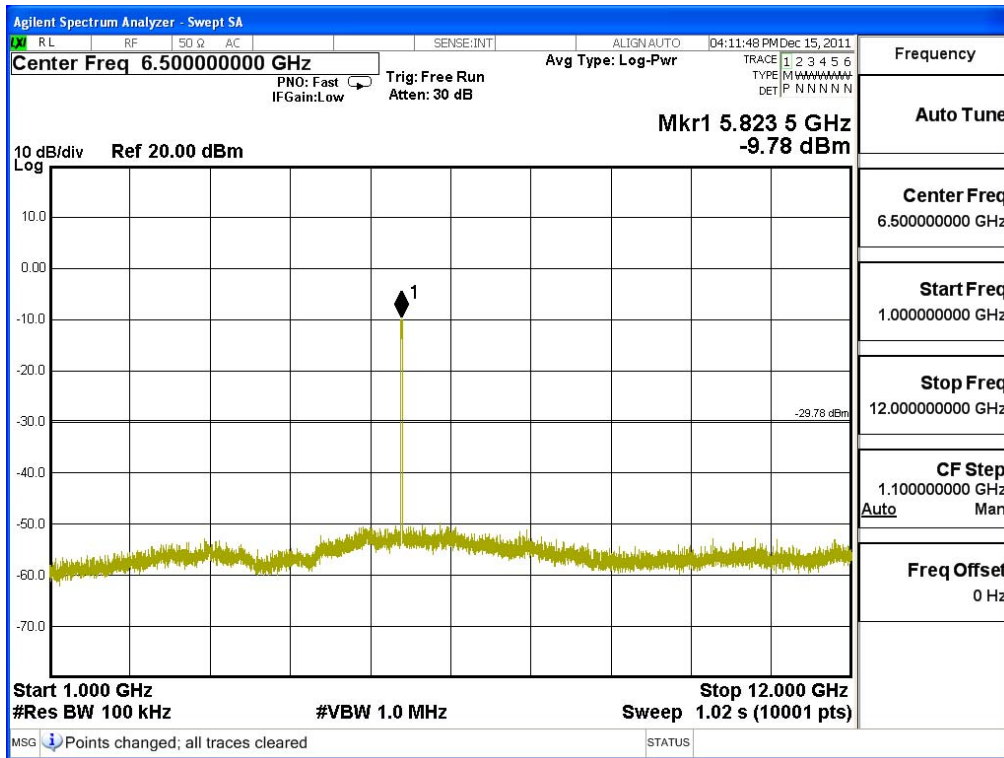


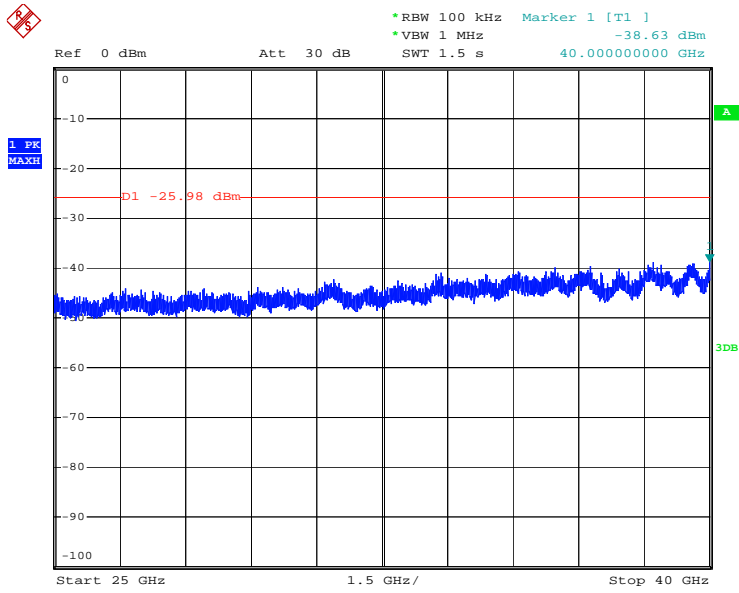
5190B-2  
Date: 28.DEC.2011 05:05:21

**Channel 165 (5825MHz) 30MHz -40GHz-Chain B**







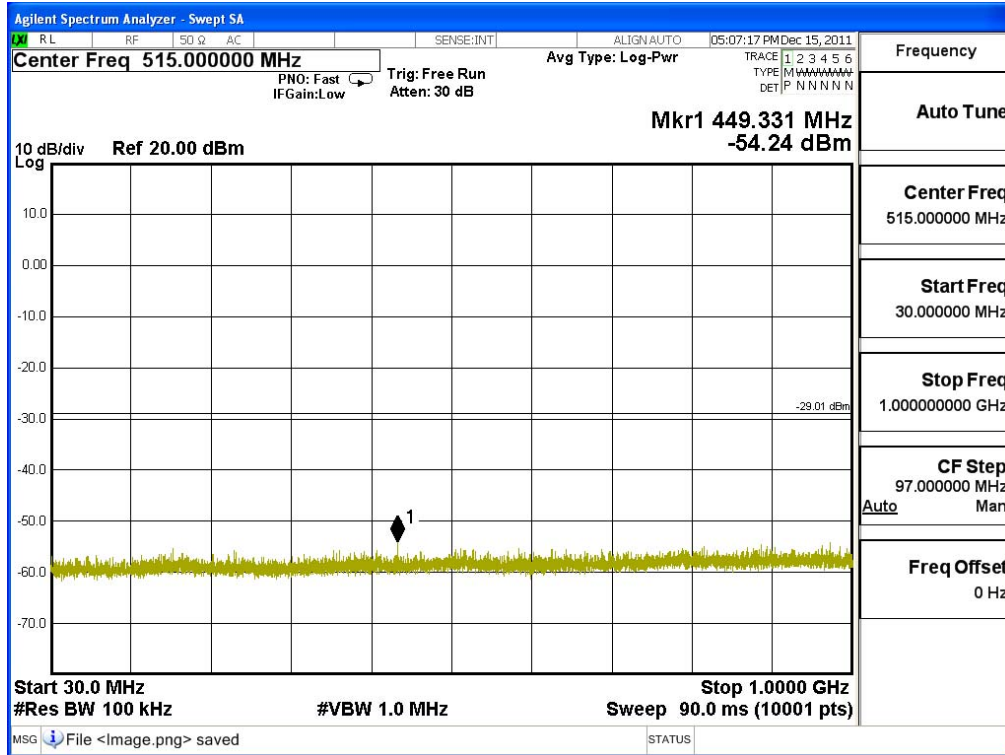


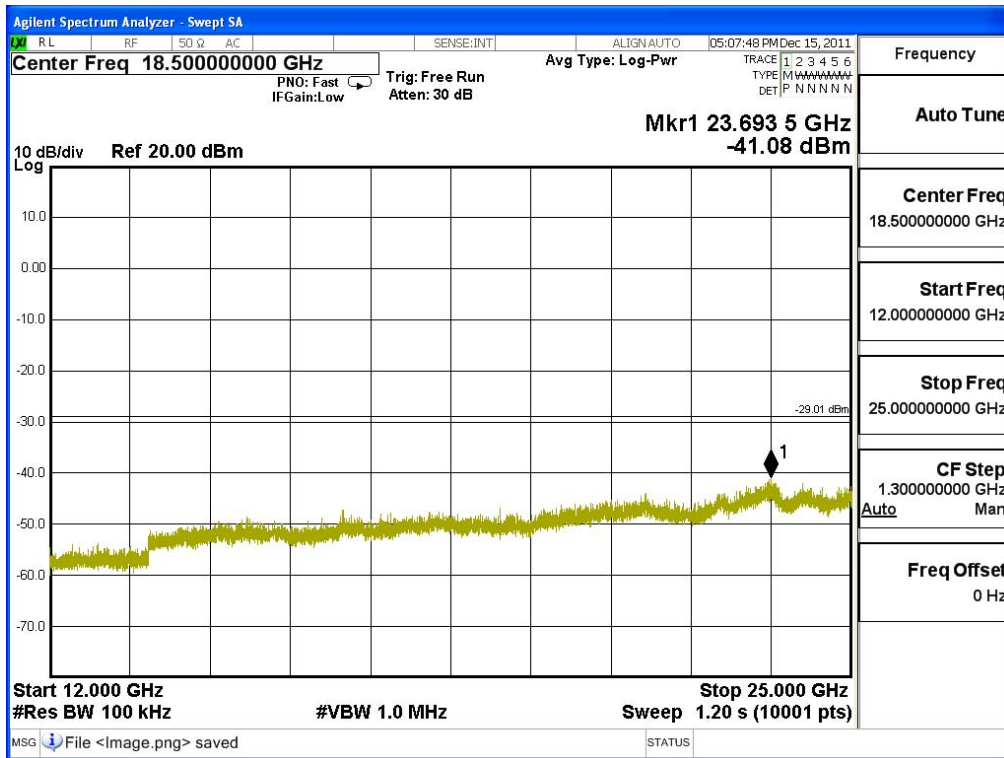
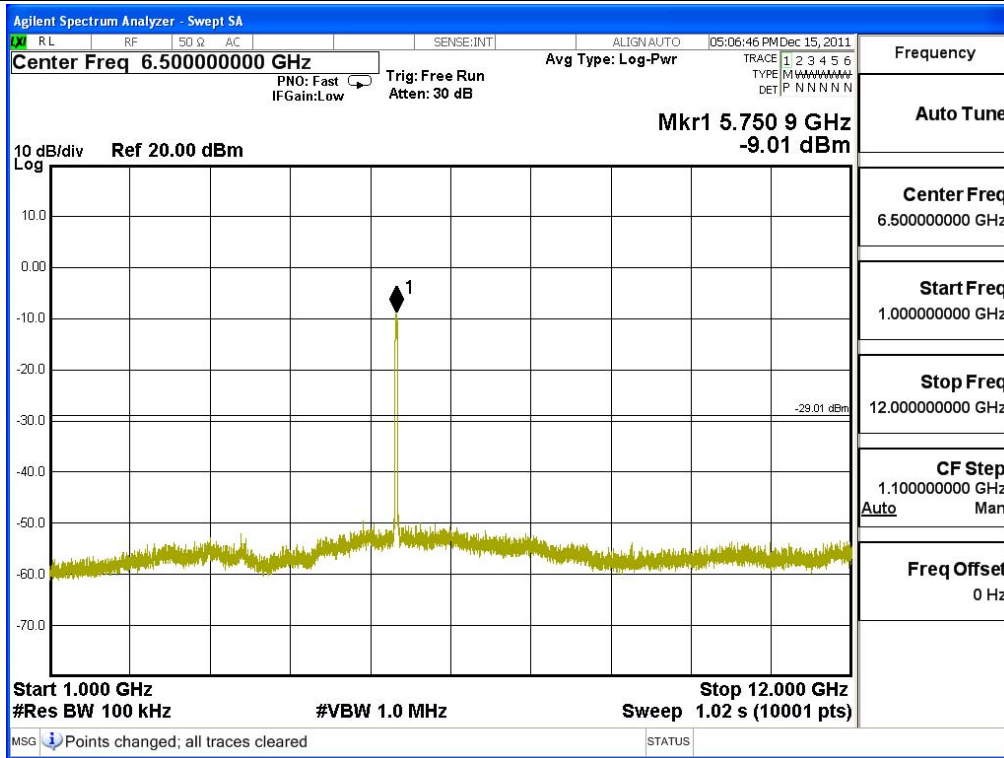
5190B-2

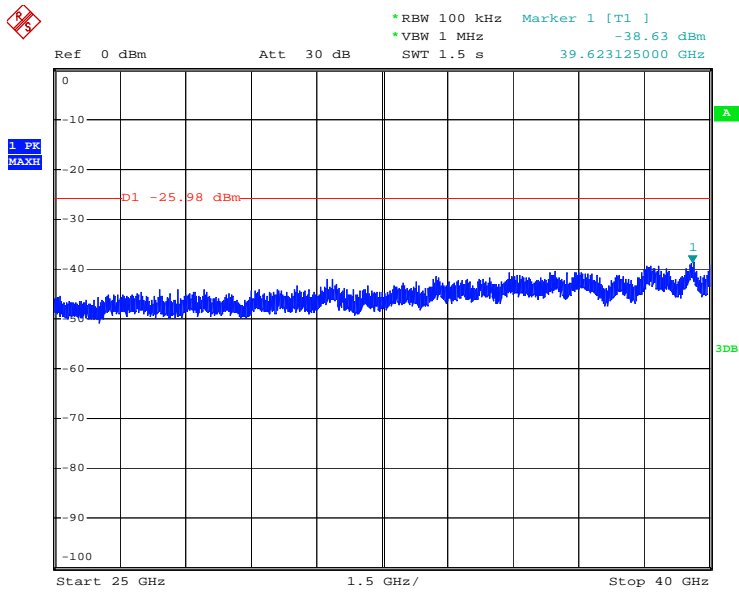
Date: 28.DEC.2011 05:10:36

Product : WHDI Tx Stick  
 Test Item : RF Antenna Conducted Spurious  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit - 40BW

**Channel 151 (5755MHz) 30MHz -40GHz-Chain A**



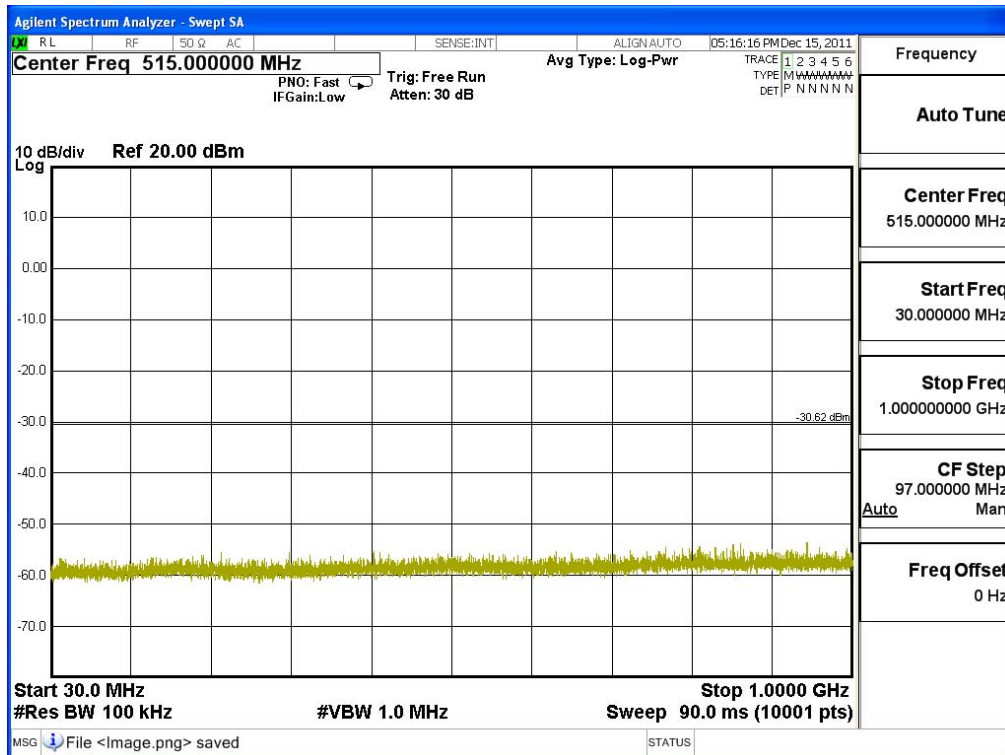


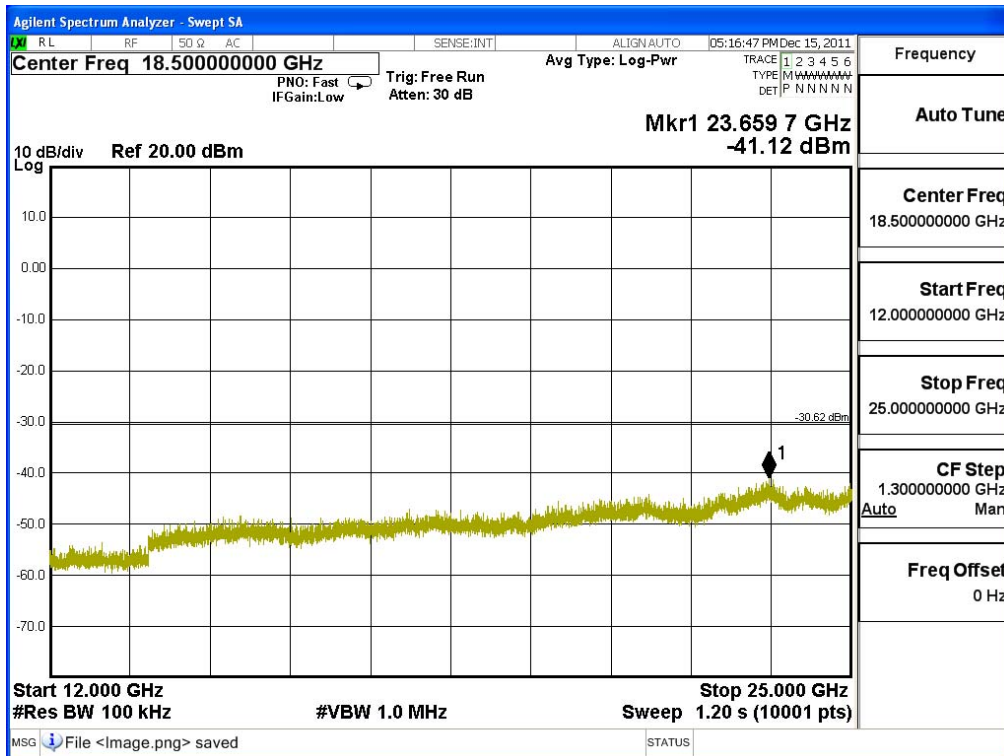
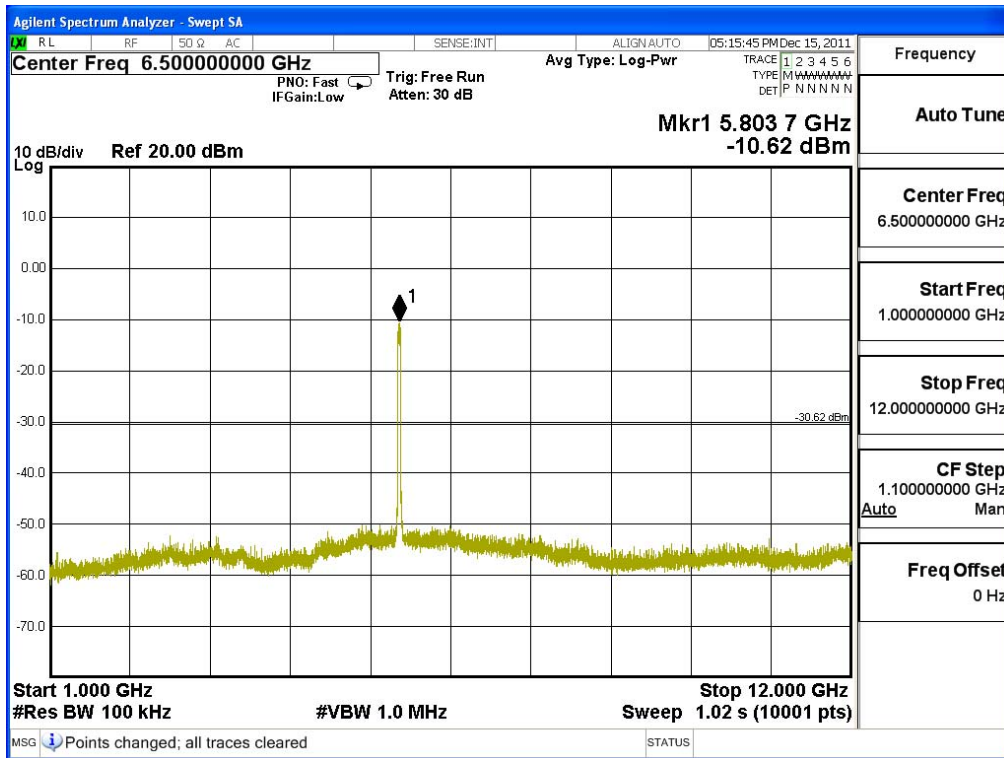


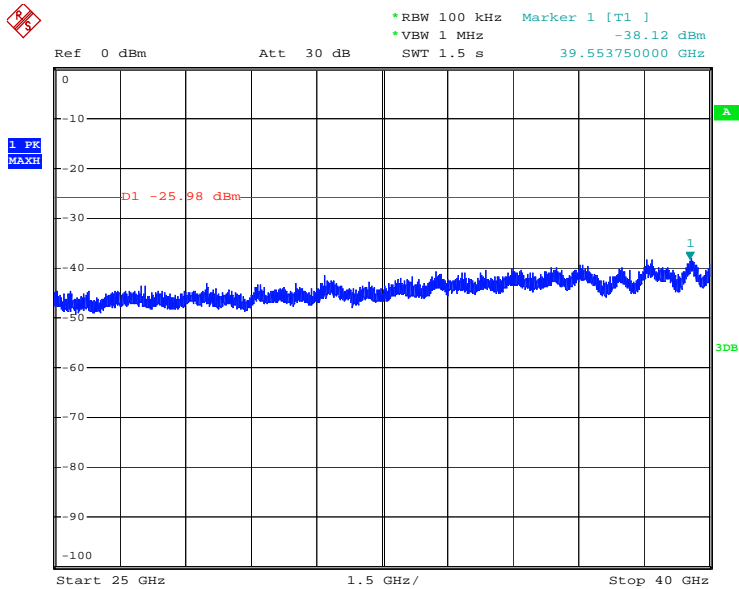
5190B-2

Date: 28.DEC.2011 05:19:31

**Channel 159 (5795MHz) 30MHz -40GHz-Chain A**



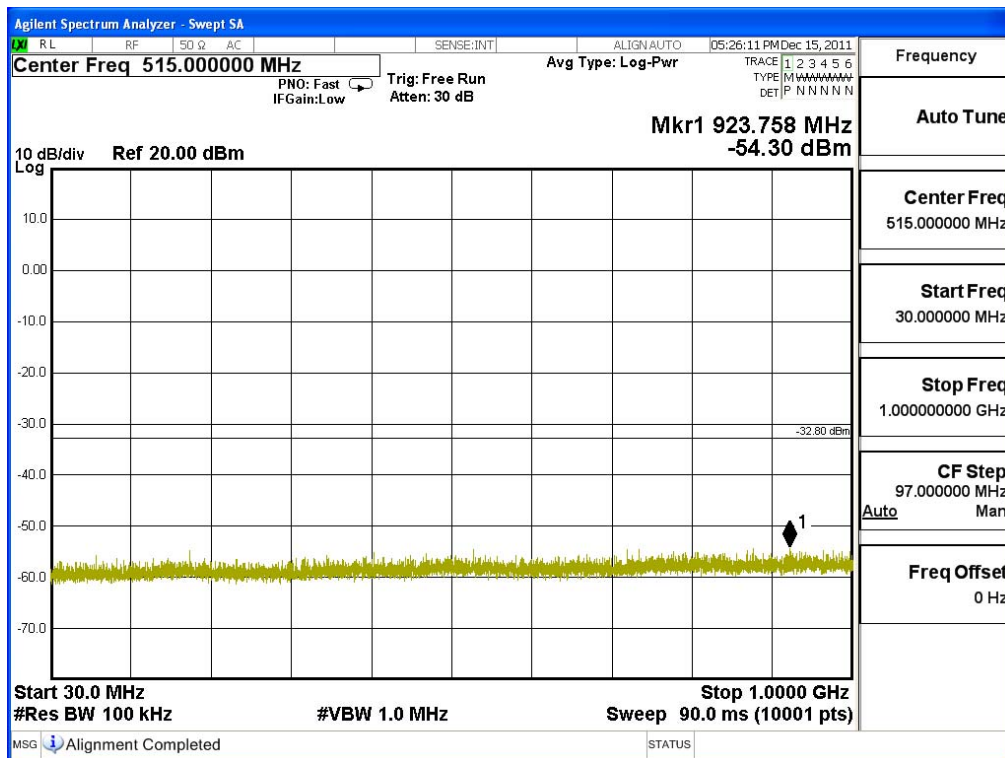


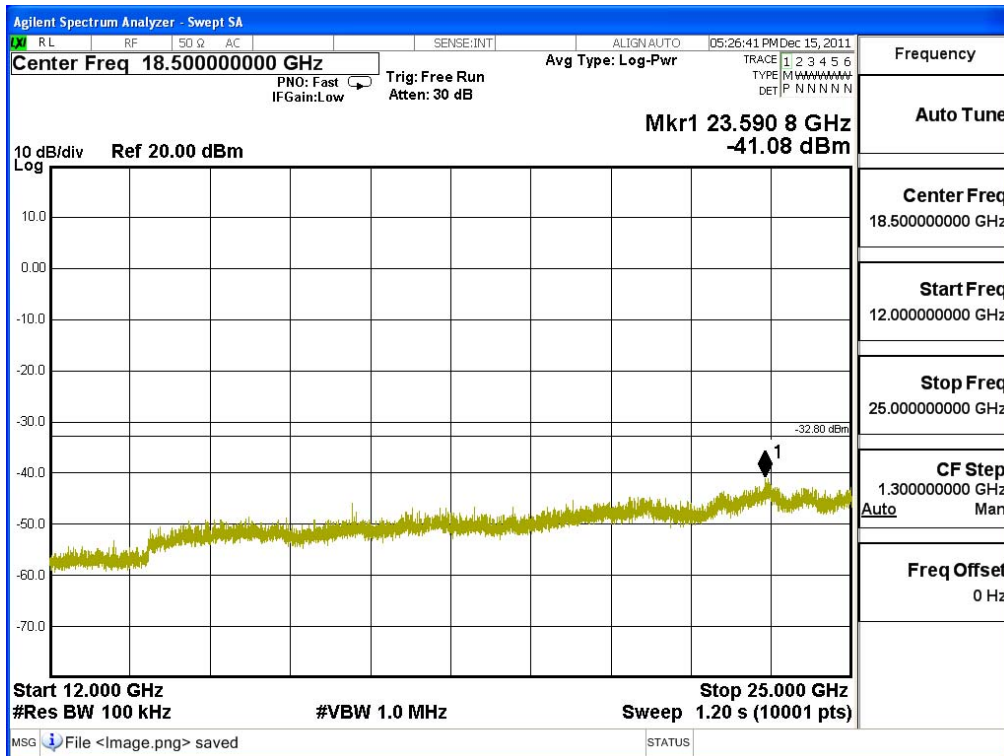
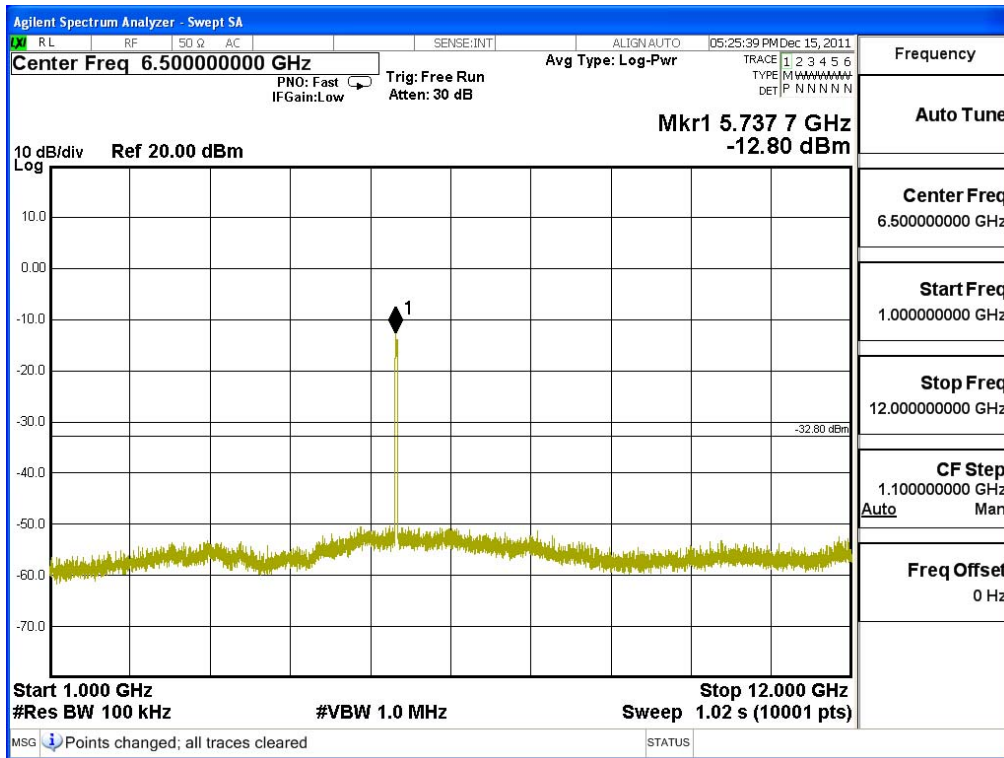


5190B-2

Date: 28.DEC.2011 05:23:22

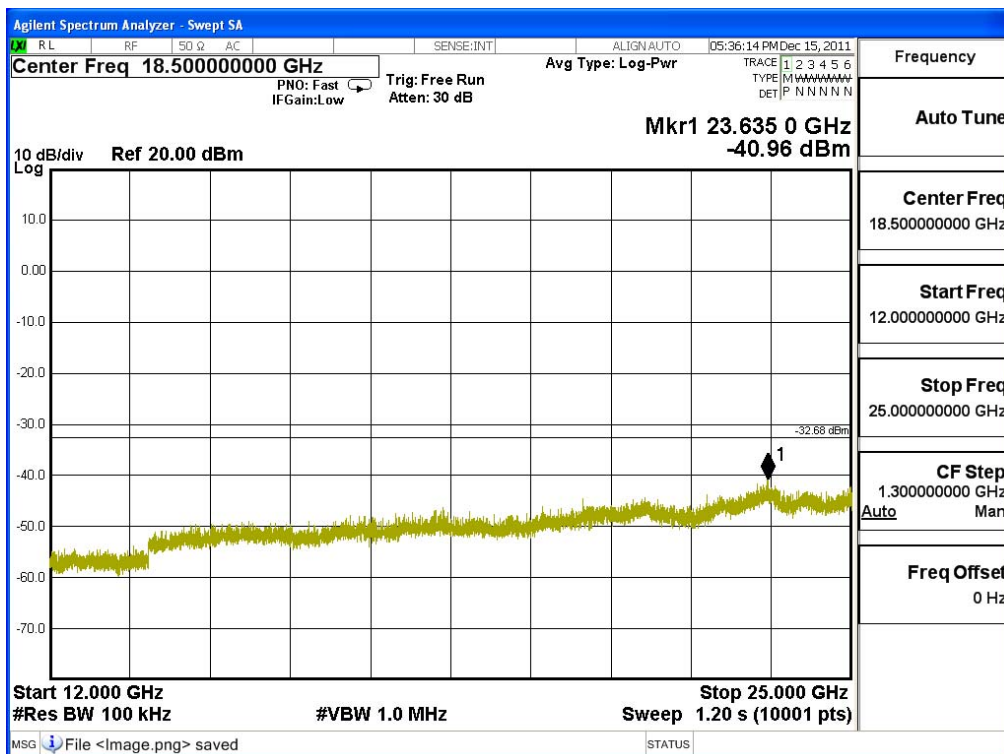
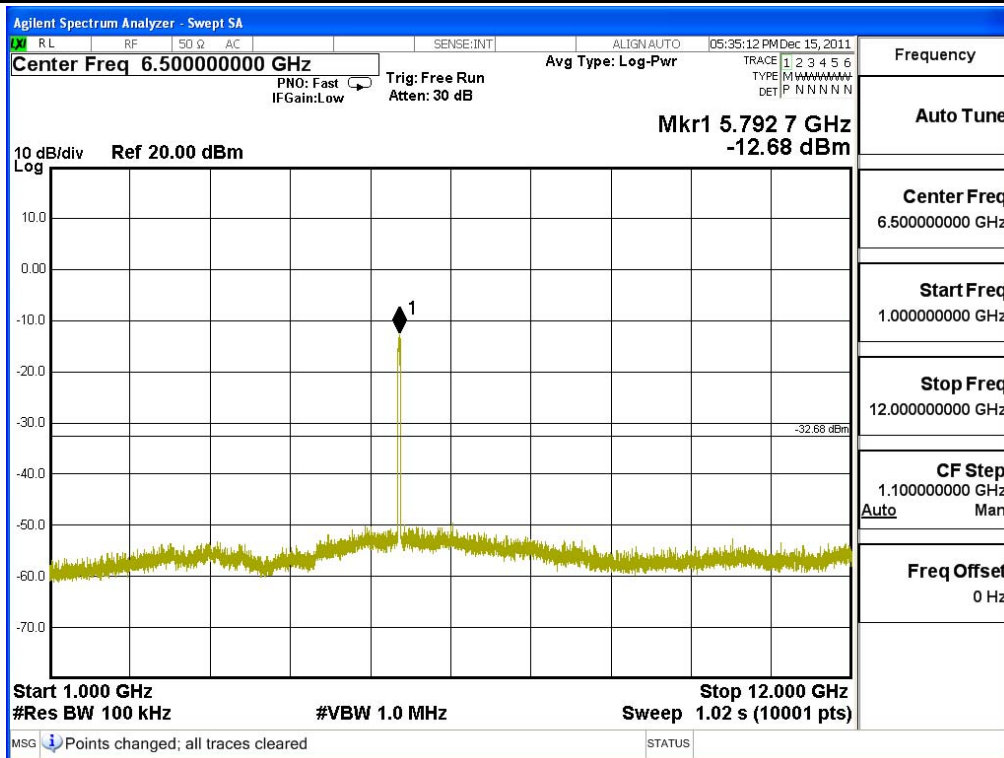
### Channel 151 (5755MHz) 30MHz -40GHz-Chain B

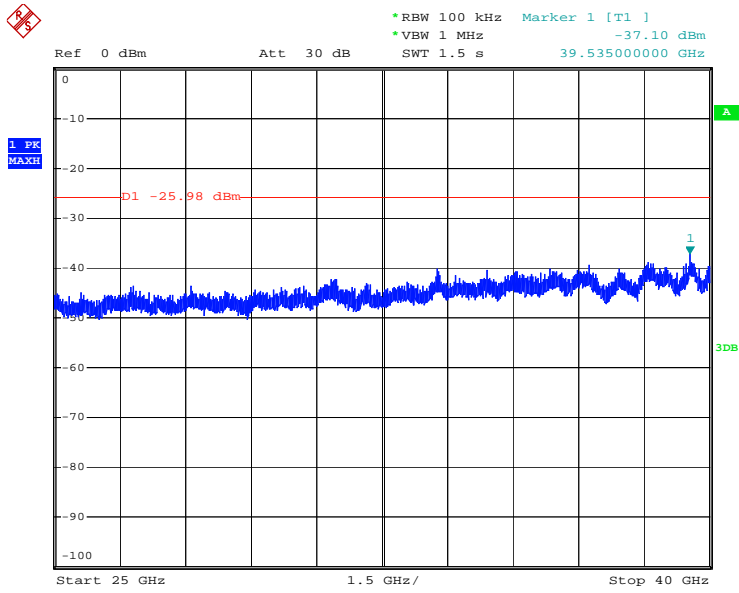












5190B-2

Date: 28.DEC.2011 05:24:22