CONFORMANCE TEST REPORT
FOR
FCC 47 CFR, Part 15 Subpart E
and
Canada RSS-210

Report No.: 11-02-MAS-043-03

Client:	OpenPeak Inc.
Product:	Cisco Cius
Model:	CIUS-7-K9
FCC ID:	VGBCSCOT0710
IC ID:	2461B-CSCOT0710
Manufacturer:	Celestica Thailand Ltd.

Date test item received:	2010/12/23
Date test campaign completed:	2011/03/28
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Total number of pages of this test report: 255 pages
Total number of pages of photos: External photos 5 pages
Internal photos 8 pages
Setup photos 4 pages

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Manufacturer	: Celestica Thailand Ltd.
Address	: 49/18 laem Chabang Industrial Estate Moo 5, Tungsukhla Sriracha, Chanburi, Thailand 20230
EUT	: Cisco Cius
Brand/Trade name	: Cisco Systems, Inc.
Model No.	: CIUS-7-K9
Power Source	: Adapter 1: (APD / DA-20A05) Input: 100-240Vac, 50-60Hz, 1.0A Max Output: 5V, 4A Max Adapter 2: (ENG / 3A-204DB05) Input: 100-240Vac, 50-60Hz, 0.5A Output: 5V, 4.0A
Regulations applied	: FCC 47 CFR, Part 15 Subpart E Canada RSS-210 Issue 8 / RSS-Gen Issue 3

The testing described in this report has been carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to believe the sellers from their legal and/or contractual obligations.

The compliance test is only certified for the test equipment and the results of the testing report relate only to the item tested. The compliance test of this report was conducted in accordance with the appropriate standards. It's not intention to assure the quality and performance of the product. This report shall not be reproduced except in full, without the approval of ETC. This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

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① ISO9001: TüV Product Service

② ISO/IEC 17025: BSMI, CNLA, DGT, NVLAP, CCIBLAC, UL, Compliance

③ Filing: FCC, Industry Canada, VCCI

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⑤ FCC Registration Number: 90588, 91094, 91095

⑥ Industry Canada Site Regisitation number: IC 2949A-1

NVLAP Lab Code 200133-0

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1 GENERAL INFORMATION

1.1 Product Description

a) Type of EUT : Cisco Cius
b) Trade Name : Cisco Systems, Inc.
c) Model No. : CIUS-7-K9
d) FCC ID : VGBCSCOT0710
e) IC ID : 2461B-CSCOT0710

1.2 Characteristics of Device

The EUT is a Mobile Collaboration Tablet. It conforms to the IEEE 802.11a/b/g/n protocal and operates in the unlicensed ISM Band at 2.4 GHz and 5.8 GHz, and in the unlicensed U-NII Band at 5.2 GHz, 5.3GHz and 5.6GHz.

RF chain	1T1R
Frequency Range	IEEE 802.11b/g, 802.11gn HT20: 2412MHz~2462MHz IEEE 802.11gn HT40: 2422MHz~2462MHz IEEE 802.11a, 802.11an HT20: 5.2GHz: 5180MHz ~5240MHz, 5.3G: 5260MHz ~5320MHz, 5.6GHz: 5500MHz~5700 MHz, 5.8G: 5745MHz ~5825MHz IEEE 802.11an HT40: 5.2GHz: 5190MHz ~5230MHz, 5.3G: 5270MHz ~5310MHz, 5.6GHz: 5510MHz~5670 MHz, 5.8G: 5745MHz ~5825MHz
Channel Spacing	IEEE 802.11b/g, 802.11gn HT20/HT40: 5MHz IEEE 802.11a, 802.11an HT20/ 40: 5MHz
Channel Number	IEEE 802.11b/g, 802.11gn HT20:13 Channels IEEE 802.11gn HT40: 9 Channels IEEE 802.11a, 802.11an HT20: 5.2GHz:13 Channels, 5.3GHz:13 Channels, 5.6GHz: 41Channels, 5.8G: 16Channels IEEE 802.11an HT40: 5.2GHz:9 Channels, 5.3GHz:9 Channels, 5.6GHz: 33 Channels,5.8G: 16Channels
Transmit Data Rate	IEEE 802.11b: 11, 5.5, 2, 1 Mbps IEEE 802.11g: 54, 48, 36, 24, 18, 12, 11, 9, 6 Mbps IEEE 802.11gn HT20: 65, 58.5, 52, 39, 26, 19.5, 13, 6.5Mbps IEEE 802.11gn HT40: 135, 121.5, 108, 81, 54, 40.5, 27, 13.5 Mbps IEEE 802.11a: 54, 48, 36, 24, 18, 12, 11, 9, 6 Mbps IEEE 802.11an HT20: 65, 58.5, 52, 39, 26, 19.5, 13, 6.5Mbps IEEE 802.11an HT40: 135, 121.5, 108, 81, 54, 40.5, 27, 13.5 Mbps
Type of Modulation	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11gn HT20/40: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11an HT20/40: OFDM (64QAM, 16QAM, QPSK, BPSK)

One antenna is used for this device:

	Antenna Type
Ant	802.11abgn WLAN Antenna

1.3 Test Methodology

All testing were performed according to the procedures in ANSI C63.4 (2003) and FCC CFR 47 Part 2 and Part 15.

1.4 Test Facility

The semi-anechoic chamber and conducted measurement facility used to collect the radiated and conducted data are located inside the Building at No.8, Lane 29, Wen-ming Road, Lo-shan Tsun, Kweishan Hsiang, Taoyuan, Taiwan, R.O.C.

This site has been accreditation as a FCC filing site.

1.5 Test Summary

Requirement	IC Paragraph #	FCC Paragraph #	Test Pass
Antenna Requirement	RSS-Gen_7.1.2	15.203	☒
Conducted Emission	RSS-Gen_7.2.4	15.207	☒
Emission Bandwidth	RSS-210_A9.4 (2)	15.407 (a)(1)(2)	☒
Output Power Requirement	RSS-210_A9.2	15.407 (a)(1)(2)	☒
Power Density Requirement	RSS-210_A9.2	15.407 (a)(1)(2)	☒
Peak Excursion	N/A	15.407 (a)(6)	☒
Spurious Emissions	RSS-210_A9.2	15.407 (b)	☒
Radiated Emission	RSS-210_A9.2	15.407 (b), 15.209	☒
Transmit Power Control (TPC)	RSS-210_A9.1	15.407 (h)(1)	☒
Dynamic Frequency Selection (DFS)	RSS-210_A9.3	15.407 (h)(2)	☒

2 PROVISIONS APPLICABLE

2.1 Definition

Unintentional radiator:

A device that intentionally generates and radio frequency energy for use within the device, or that sends radio frequency signals by conduction to associated equipment via connecting wiring, but which is not intended to emit RF energy by radiation or induction.

Class A Digital Device:

A digital device which is marketed for use in commercial or business environment; exclusive of a device which is market for use by the general public, or which is intended to be used in the home.

Class B Digital Device :

A digital device which is marketed for use in a residential environment notwithstanding use in a commercial, business of industrial environment. Example of such devices that are marketed for the general public.

Note : A manufacturer may also qualify a device intended to be marketed in a commercial, business, or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

Intentional radiator:

A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Requirement for Compliance

(1) Conducted Emission Requirement

For unintentional device, according to §15.107(a) Line Conducted Emission Limits is as following:

Frequency MHz	Quasi Peak dBμV	Average dBμV
0.15 - 0.5	66-56*	56-46*
0.5 - 5.0	56	46
5.0 - 30.0	60	50

*Decreases with the logarithm of the frequency.

For intentional device, according to §15.207(a) Line Conducted Emission Limits is same as above table.

(2) Radiated Emission Requirement

According to §15.407 (b)(6), unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in Section 15.207.

According to §15.407 (b), the provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

For unintentional device, according to §15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency MHz	Distance Meters	Radiated dBμV/m	Radiated μV/m
30 - 88	3	40.0	100
88 - 216	3	43.5	150
216 - 960	3	46.0	200
above 960	3	54.0	500

For intentional device, according to §15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

(3) Antenna Requirement

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

(4) Bandwidth Requirement

None; for reporting purposes only.

(5) Output Power Requirement

According to 15.407(a)(1) for the band 5.15-58.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

According to 15.407(a)(2) for the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(6) Spurious Emissions Measurement

According to 15.407 (b)(1), for transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15- 5.35 GHz band shall not exceed an EIRP of –27 dBm /MHz.

According to 15.407 (b)(2), for transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15- 5.35 GHz band shall not exceed an EIRP of –27 dBm /MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of –27 dBm / MHz in the 5.15-5.25 GHz band.

According to 15.407 (b)(3), for transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47- 5.725 GHz band shall not exceed an EIRP of –27 dBm /MHz.

According to 15.407 (b)(5), the above emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

According to 15.407 (b)(6), unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in Section 15.207.

According to 15.407 (b)(7), the provisions of Section 15.205 of the part apply to intentional radiators operating under this section.

According to 15.407 (b)(8), when measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

(7) Power Density Requirement

Refer to Section 2.2(5), Output Power Requirement.

(8) Peak Excursion Requirement

According to 15.407 (a)(6), the ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

(9) Transmit Power Control (TPC)

According to 15.407 (h)(1), Transmit power control (TPC). U-NII devices operating in the 5.25-5.35 GHz band and the 5.47-5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

(10) Dynamic Frequency Selection (DFS)

According to 15.407 (h)(2), Radar Detection Function of Dynamic Frequency Selection (DFS). U-NII devices operating in the 5.25-5.35 GHz band and the 5.47-5.725 GHz bands shall employ a DFS radar detection mechanism to detect the presence of radar systems and to avoid co-channel operation with radar systems. The minimum DFS detection threshold for devices with a maximum e.i.r.p. of 200 mW to 1 W is -64 dBm. For devices that operate with less than 200 mW e.i.r.p. the minimum detection threshold is -62dBm. The detection threshold is the received power averaged over 1 microsecond referenced to a 0 dBi antenna. The DFS process shall be required to provide a uniform spreading of the loading over all the available channels.

(i) Operational Modes. The DFS requirement applies to the following operational modes:

(A) The requirement for channel availability check time applies in the master operational mode.

(B) The requirement for channel move time applies in both the master and slave operational modes.

(ii) Channel Availability Check Time. A U-NII device shall check if there is a radar system already operating on the channel before it can initiate a transmission on a channel and when it has to move to a new channel. The U-NII device may start using the channel if no radar signal with a power level greater than the interference threshold values listed above is detected within 60 seconds.

(iii) Channel Move Time. After a radar's presence is detected, all transmissions shall cease on the operating channel within 10 seconds. Transmissions during this period shall consist of normal traffic for a maximum of 200 ms after detection of the radar signal. In addition, intermittent management and control signals can be sent during the remaining time to facilitate vacating the operating channel.

(iv) Non-occupancy Period. A channel that has been flagged as containing a radar system, either by a channel availability check or in-service monitoring, is subject to a non-occupancy period of at least 30 minutes. The non-occupancy period starts at the time when the radar system is detected.

2.3 Restricted Bands of Operation

According to 15.205, only spurious emissions are permitted in any of the frequency bands listed below :

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42-16.423	399.9-410	4.5-5.25
0.495 - 0.505 **	16.69475 - 16.69525	608-614	5.35-5.46
2.1735 - 2.1905	16.80425 - 16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475 - 156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2655-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

** : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2.4 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device :

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.5 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual.

The Federal Communications Commission Radio Frequency Interference Statement includes the following paragraph.

This equipment has been tested and found to comply with the limits for a Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio / TV technician for help.

3. SYSTEM TEST CONFIGURATION

3.1 Devices for Tested System

Device	Manufacture	Model No.	Cable Description
* Cisco Cius	Celestica Thailand Ltd.	CIUS-7-K9	1.8m*1, Unshielded Power Line / Adapter
Test Jig	N/A	N/A	1.8m*1, Unshielded Power Line 1.8m*1 Unshielded Signal Line
Notebook	HP	nx6320	3.1m*1, Unshielded Power Line

Note:
1.Remark "*" means equipment under test.
2.

Test Software:	Tx Batch File		
Power setting:	IEEE 802.11a 5.2 GHz	Low	15
		Mid	15
		High	15
	IEEE 802.11a 5.3 GHz	Low	15
		Mid	15
		High	15
	IEEE 802.11a 5.6 GHz	Low	15
		Mid	15
		High	15
		High	15
	IEEE 802.11an, HT40 5.2 GHz	Low	15
		High	15
	IEEE 802.11an, HT40 5.3 GHz	Low	15
		High	15
	IEEE 802.11an, HT40 5.6 GHz	Low	15
		Mid	15
		High	15

3.2 Dscription of Test modes

3.2.1 IEEE 802.11a mode, IEEE 802.11an HT20 mode::

3.2.1.1 5.2GHz Band

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low = 36	5180
Middle = 40	5200
High = 48	5240

3.2.1.2 5.3GHz Band

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low = 52	5260
Middle = 60	5300
High = 64	5320

3.2.1.3 5.6GHz Band

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low = 100	5500
Middle = 120	5600
High = 140	5700

IEEE 802.11a mode: 6 Mbps data rate is the worse case for full testing.

3.2.2 IEEE 802.11an HT40 mode:

3.2.2.1 5.2GHz Band

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low = 38	5190
High = 46	5230

3.2.2.2 5.3GHz Band

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low = 54	5270
High = 62	5310

3.2.2.3 5.6GHz Band

There are three channels have been tested as following:

Channel	Frequency (MHz)
Low = 102	5510
Middle = 118	5590
High = 134	5670

IEEE 802.11an HT40 mode: MCS0 13.5 Mbps data rate is the worse case for full testing.

4 CONDUCTED EMISSION MEASUREMENT

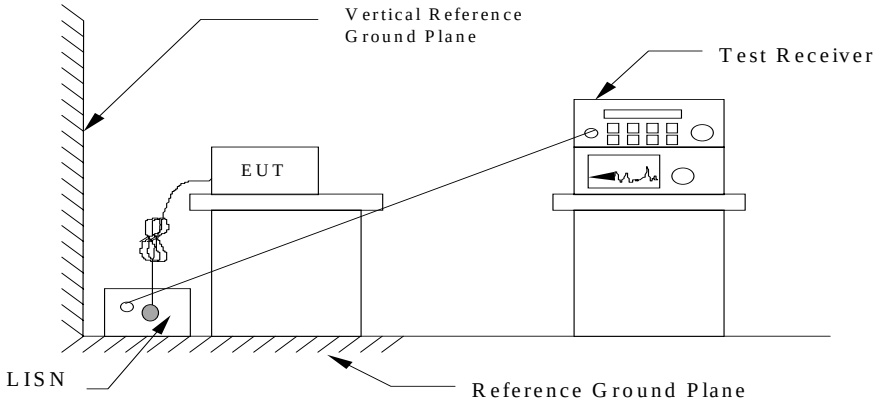
4.1 Standard Applicable

For unintentional and intentional device, Line Conducted Emission Limits are in accordance to § 15.107(a) and §15.207(a) respectively. Both Limits are identical specification.

4.2 Measurement Procedure

1. Setup the configuration per figure 1.
2. A preliminary scan with a spectrum monitor is performed to identify the frequency of emission that has the highest amplitude relative to the limit by operating the EUT in selected modes of operation, typical cable positions, and with a typical system configuration.
3. Record the 6 highest emissions relative to the limit.
4. Measure each frequency obtained from step 3 by a test receiver set on quasi peak detector function, and then record the accuracy frequency and emission level. If all emissions measured in the specified band are attenuated more than 20 dB from the limit, this step would be ignored, and the peak detector function would be used.
5. Confirm the highest three emissions with variation of the EUT cable configuration and record the final data.
6. Repeat all above procedures on measuring each operation mode of EUT.

Figure 1 : Conducted emissions measurement configuration



4.3 Conducted Emission Data

File: 1103 **Data:** #26 **Date:** 2011/1/20 **Temperature:** 20 ℃
Time: PM 12:49:07 **Humidity:** 69 %

Condition: **Phase:** L1
EUT: **Power:**

No.	Frequency (MHz)	Reading (dBuV)	Detector	Corrected dB	Result (dBuV)	Limit (dBuV)	Margin (dB)
1	0.1719	37.08	AVG	0.12	37.20	54.87	-17.67
2	0.1734	60.92	peak	0.12	61.04	64.80	-3.76
3	0.2359	51.96	peak	0.10	52.06	62.24	-10.18
4	0.2362	33.28	AVG	0.10	33.38	52.23	-18.85
5	0.2906	46.73	peak	0.10	46.83	60.51	-13.68
6	4.5117	38.10	peak	0.18	38.28	56.00	-17.72
7	4.7656	37.91	peak	0.19	38.10	56.00	-17.90
8	20.2813	27.89	peak	0.75	28.64	60.00	-31.36

Note:

1. Place of measurement: EMC LAB. of the ETC.
2. “***” means the value was too low to be measured.
3. If the data table appeared symbol of "----" means the Q.P. value is under the limit of AVG. so, the AVG. value doesn't need to be measured.
4. “#” means the noise was too low, so record the peak value.
5. The estimated measurement uncertainty of the result measurement is ±2.5dB.

File: 1103 **Data:** #27 **Date:** 2011/1/20 **Temperature:** 20 ℃

Time: PM 12:53:04 **Humidity:** 69 %

Condition: **Phase:** L2

EUT: **Power:**

No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBuV)		dB	(dBuV)	(dBuV)	(dB)
1	0.1734	59.72	peak	0.12	59.84	64.80	-4.96
2	0.1758	40.67	AVG	0.12	40.79	54.68	-13.89
3	0.2281	50.58	peak	0.11	50.69	62.52	-11.83
4	0.2984	45.66	peak	0.10	45.76	60.29	-14.53
5	3.6133	30.58	peak	0.16	30.74	56.00	-25.26
6	4.7773	38.07	peak	0.19	38.26	56.00	-17.74
7	5.0898	37.27	peak	0.20	37.47	60.00	-22.53

Note:

1. Place of measurement: EMC LAB. of the ETC.
2. “***” means the value was too low to be measured.
3. If the data table appeared symbol of "----" means the Q.P. value is under the limit of AVG. so, the AVG. value doesn't need to be measured.
4. “#” means the noise was too low, so record the peak value.
5. The estimated measurement uncertainty of the result measurement is ±2.5dB.

4.4 Result Data Calculation

The result data is calculated by adding the LISN Factor to the measured reading. The basic equation with a sample calculation is as follows:

RESULT = READING + LISN FACTOR (Included Cable Loss)

4.5 Conducted Measurement Equipment

The following test equipment are used during the conducted test.

Equipment	Manufacturer	Model No.	Next Cal. Due
RF Test Receiver	Rohde and Schwarz	ESCS30	09/06/2011
LISN	EMCO	37100/2M	03/04/2011

5 ANTENNA REQUIREMENT

5.1 Standard Applicable

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
And according to §15.247 (b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.2 Antenna Construction and Directional Gain

The radio utilizes with one type of antenna, with the maximum gain as table below:

	Antenna Type	Peak gain (dBi)		
		5150~5250MHz	5250~5350MHz	5740~5725MHz
Ant	802.11abgn WLAN Antenna	3.5	3.5	3.5

The highest gains of each type of antennas for all legacy / SISO modes test.

Band	Ant gain (dBi)
5.2GHz: 5150~5250MHz	3.5
5.3GHz: 5250~5350MHz	3.5
5.6GHz: 5740~5725MHz	3.5

6 EMISSION BANDWIDTH MEASUREMENT

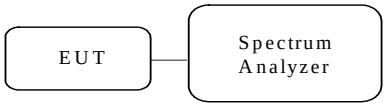
6.1 Standard Applicable

None; for reporting purposes only.

6.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in figure 2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 26 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

Figure 2: Emission bandwidth measurement configuration.



6.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Agilent	E4446A	09/26/2011

6.4 Measurement Data

6.4.1 IEEE 802.11a

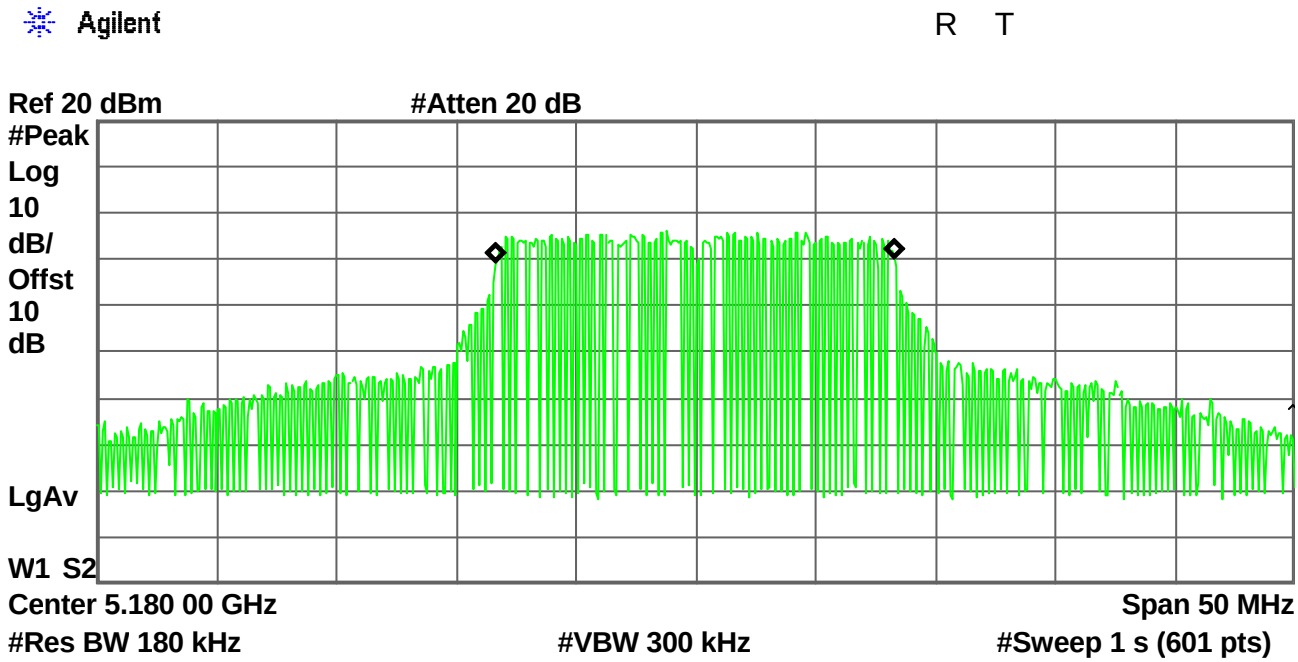
6.4.1.1 5.2GHz

Test Date: Mar. 25, 2011 Temperature: 26℃ Humidity: 57%

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Chart
36	5180	19.935	Page 23
40	5200	19.793	Page 24
48	5240	19.829	Page 25

Note:

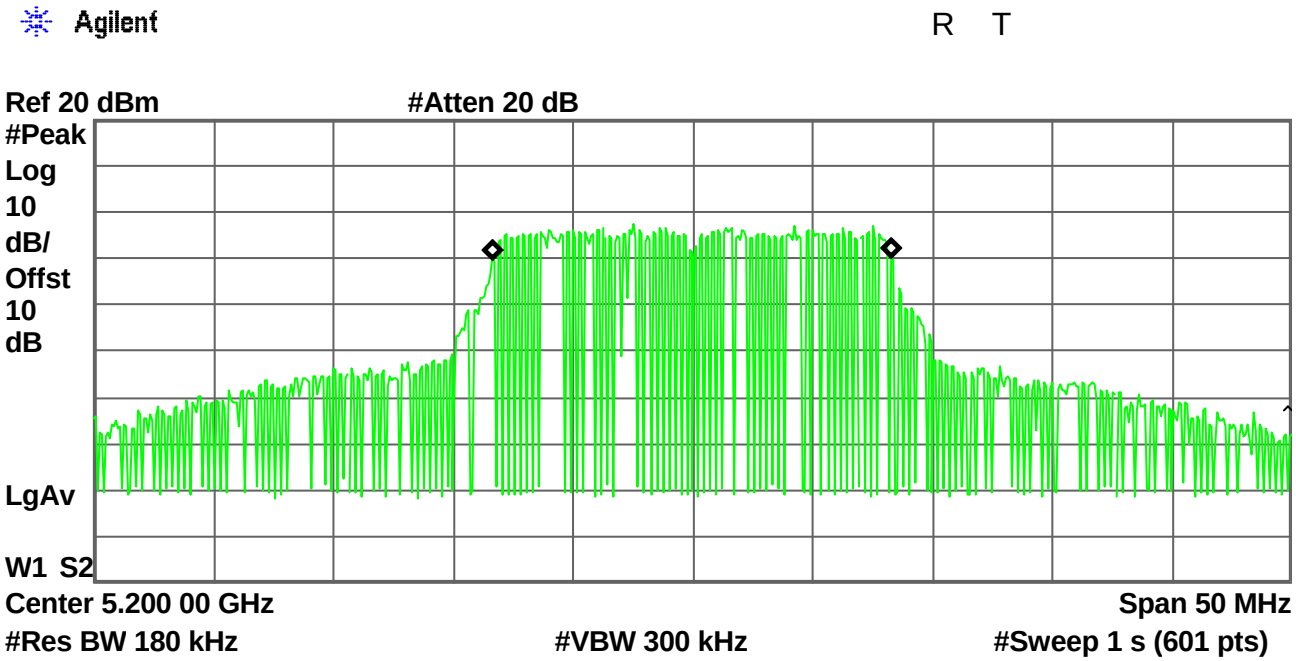
1.Please refer to page 23 to page 25 for chart
2. The estimated measurement uncertainty of the result measurement is 8.25×10^{-7} *(1GHz≦f≦ 18GHz)*



Occupied Bandwidth
16.5840 MHz

Occ BW % Pwr	99.00 %
x dB	-26.00 dB

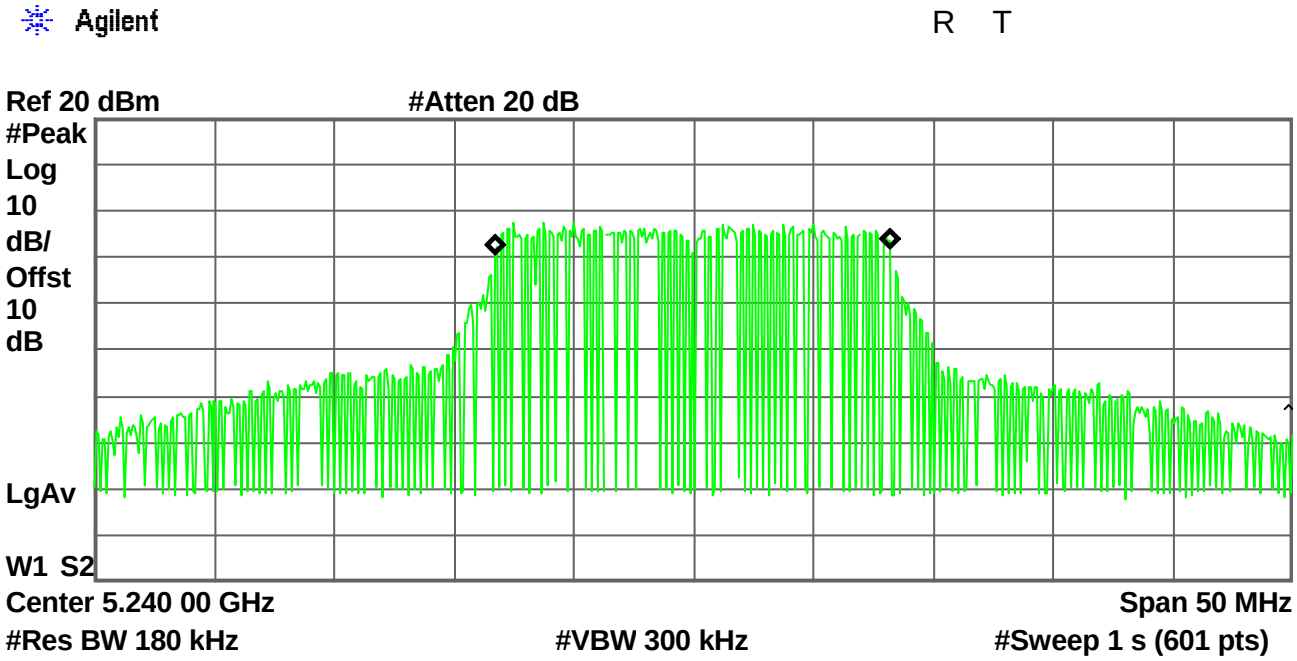
Transmit Freq Error	-14.268 kHz
x dB Bandwidth	19.935 MHz*



Occupied Bandwidth
16.6126 MHz

Occ BW % Pwr	99.00 %
x dB	-26.00 dB

Transmit Freq Error	-46.419 kHz
x dB Bandwidth	19.793 MHz*



Occupied Bandwidth
16.4202 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	-41.148 kHz
x dB Bandwidth	19.829 MHz*

6.4.1.2 5.3GHz

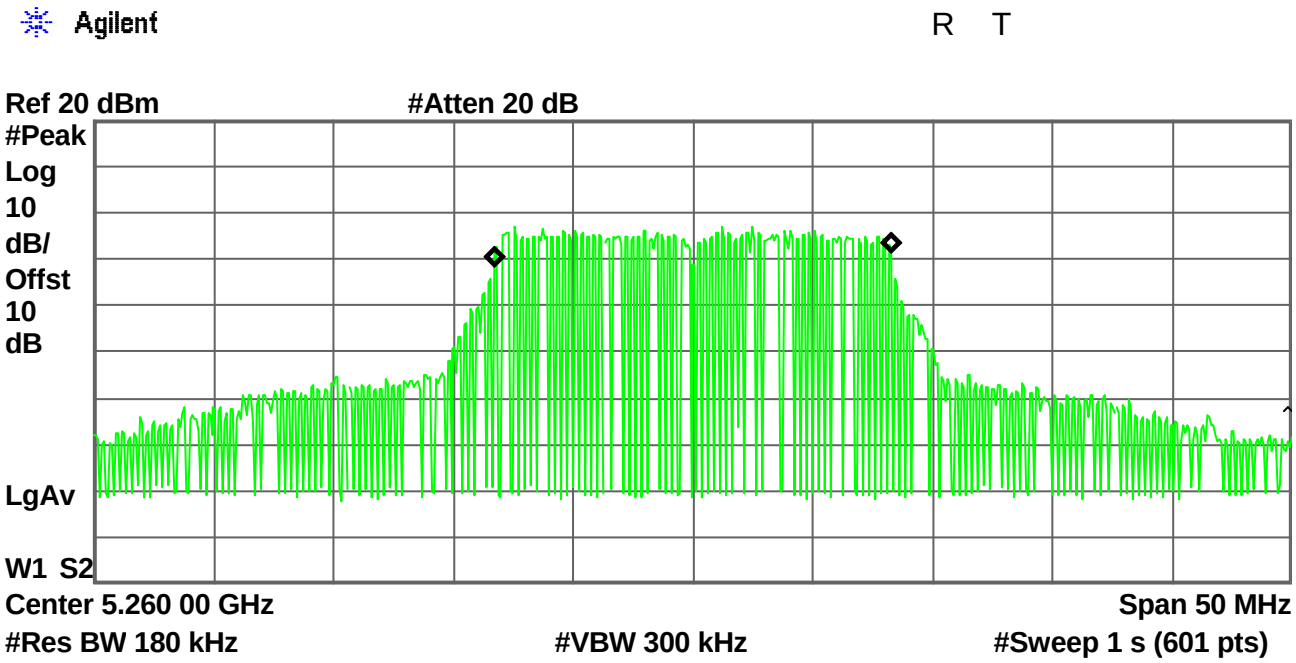
Test Date: Mar. 25, 2011 Temperature: 26℃ Humidity: 57%

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Chart
52	5260	19.568	Page 27
60	5300	19.768	Page 28
64	5320	19.601	Page 29

Note:

1.Please refer to page 27 to page 29 for chart

2. The estimated measurement uncertainty of the result measurement is 8.25×10^{-7} *(1GHz≦f≦ 18GHz)*

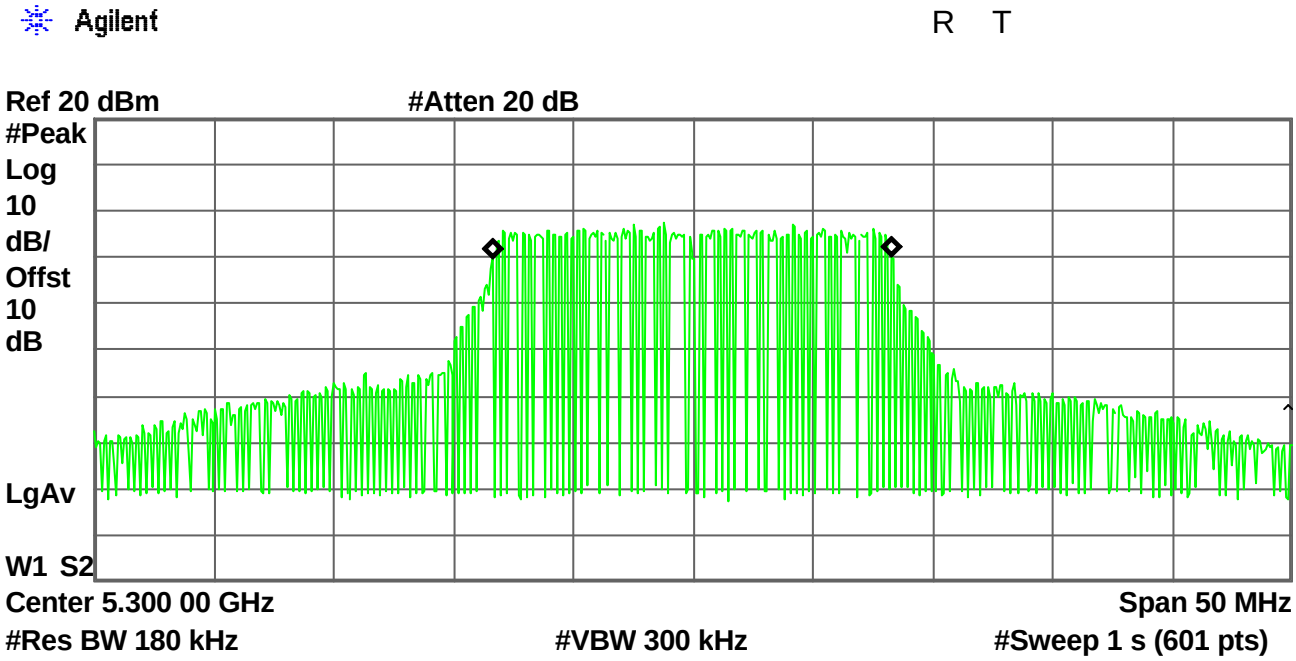


Occupied Bandwidth

16.4919 MHz

Occ BW % Pwr	99.00 %
x dB	-26.00 dB

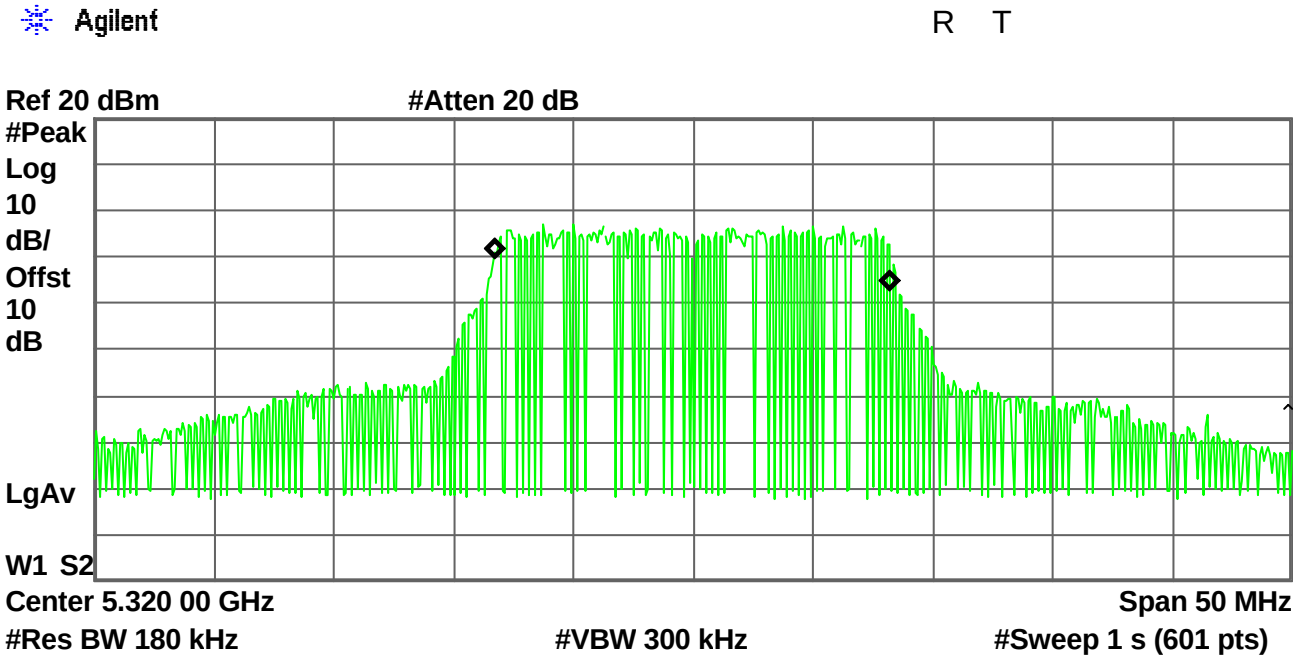
Transmit Freq Error	-8.721 kHz
x dB Bandwidth	19.568 MHz*



Occupied Bandwidth
16.6007 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	-42.010 kHz
x dB Bandwidth	19.768 MHz*



Occupied Bandwidth
16.4737 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	-54.501 kHz
x dB Bandwidth	19.601 MHz*

6.4.1.3 5.6GHz

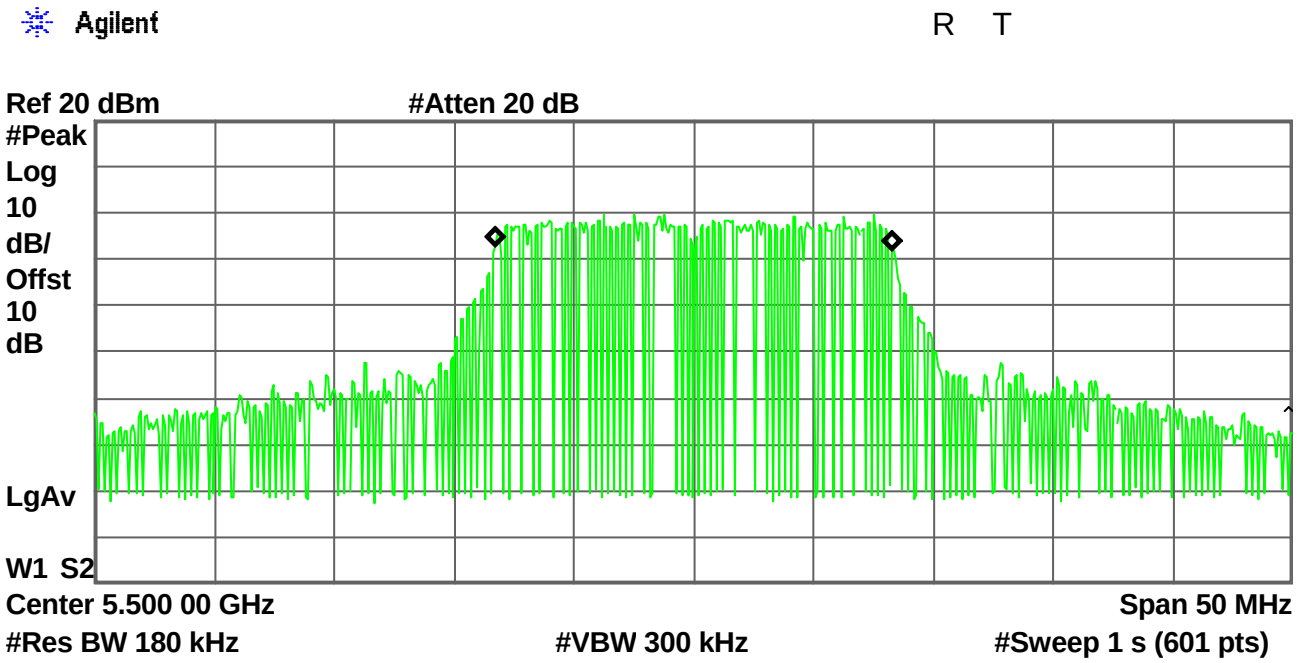
Test Date: Mar. 25, 2011 Temperature: 26℃ Humidity: 57%

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Chart
100	5500	19.557	Page 31
120	5600	19.558	Page 32
140	5700	19.536	Page 33

Note:

1.Please refer to page 31 to page 33 for chart

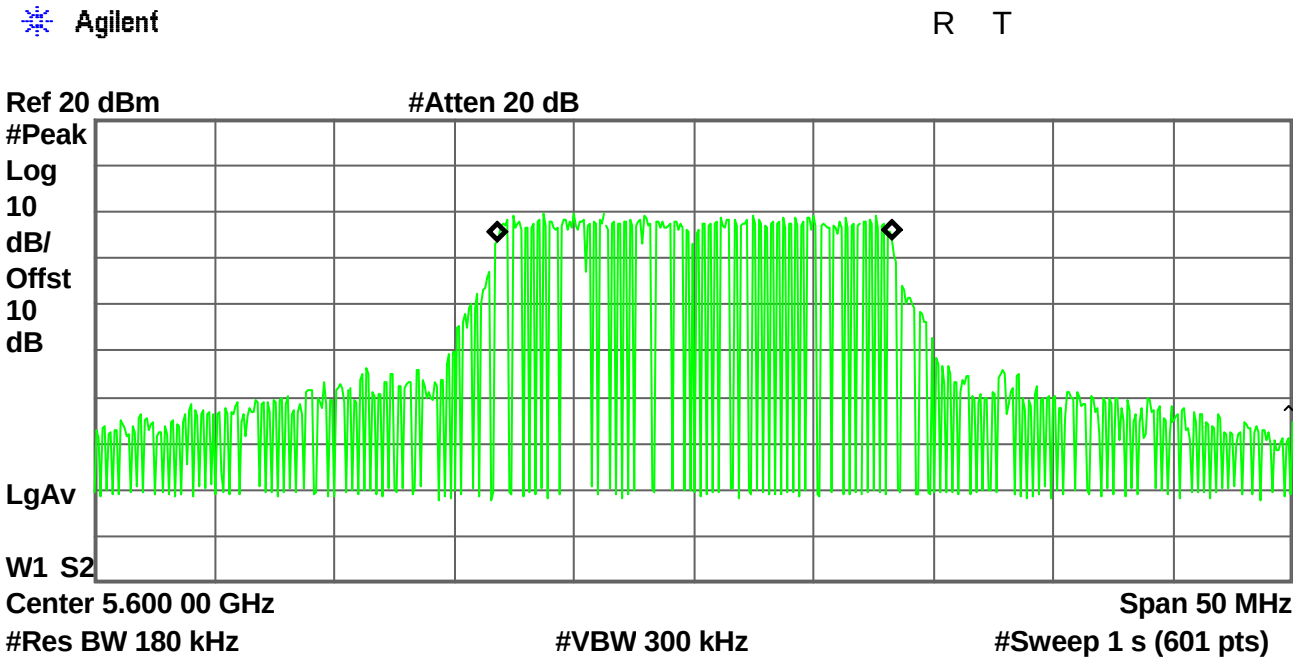
2. The estimated measurement uncertainty of the result measurement is 8.25×10^{-7} *(1GHz≦f≦ 18GHz)*



Occupied Bandwidth
16.5500 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

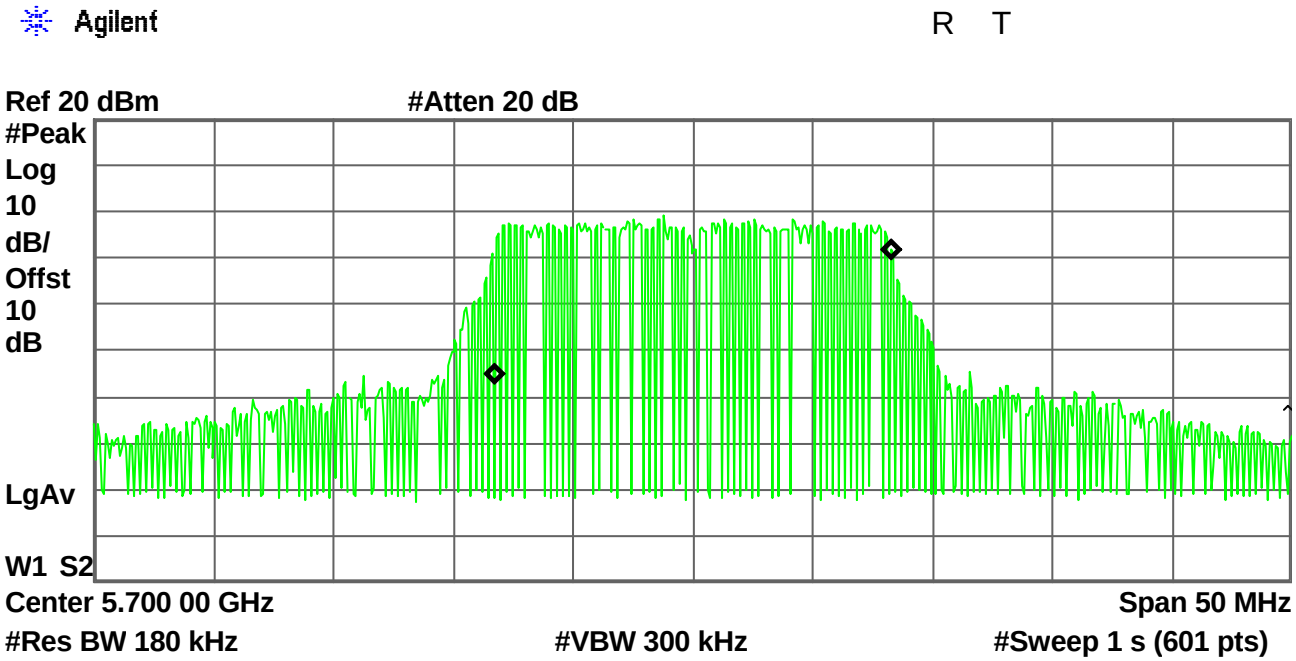
Transmit Freq Error	12.371 kHz
x dB Bandwidth	19.557 MHz*



Occupied Bandwidth
16.4574 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	25.486 kHz
x dB Bandwidth	19.558 MHz*



Occupied Bandwidth
16.5354 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	-21.137 kHz
x dB Bandwidth	19.536 MHz*

6.4.2 IEEE 802.11an, HT20

6.4.2.1 5.2GHz

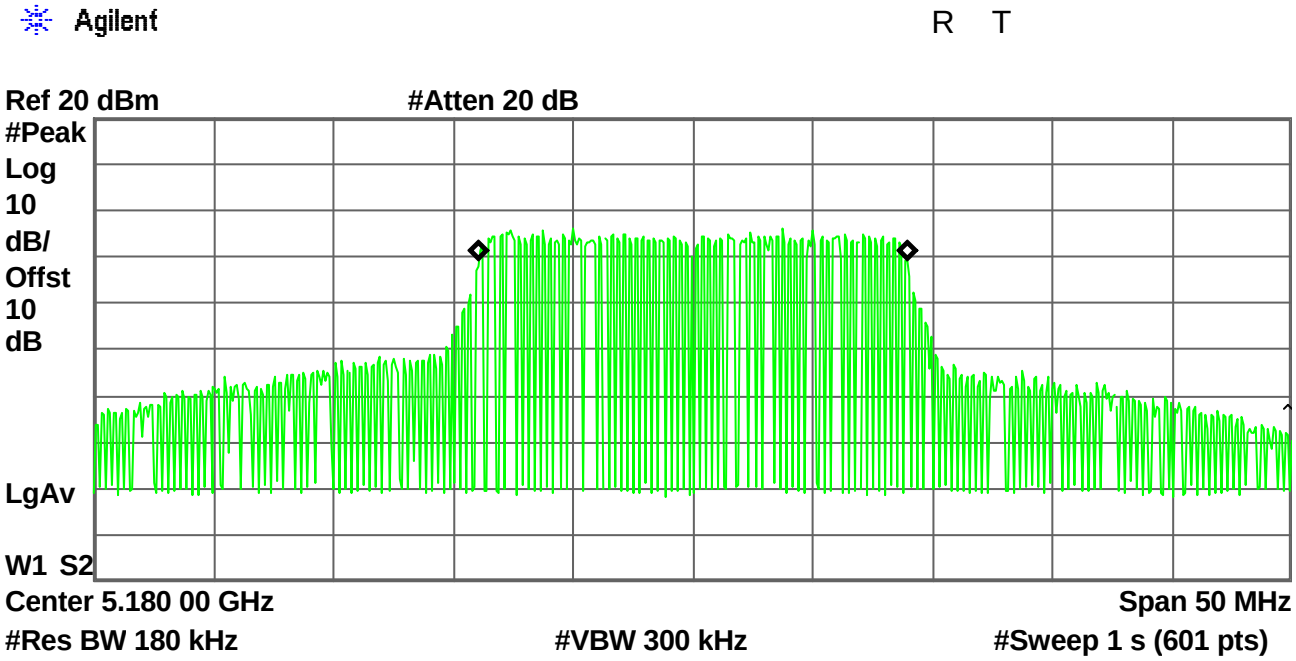
Test Date: Mar. 25, 2011 Temperature: 26℃ Humidity: 57%

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Chart
36	5180	20.372	Page 35
40	5200	20.062	Page 36
48	5240	20.110	Page 37

Note:

1.Please refer to page 35 to page 37 for chart

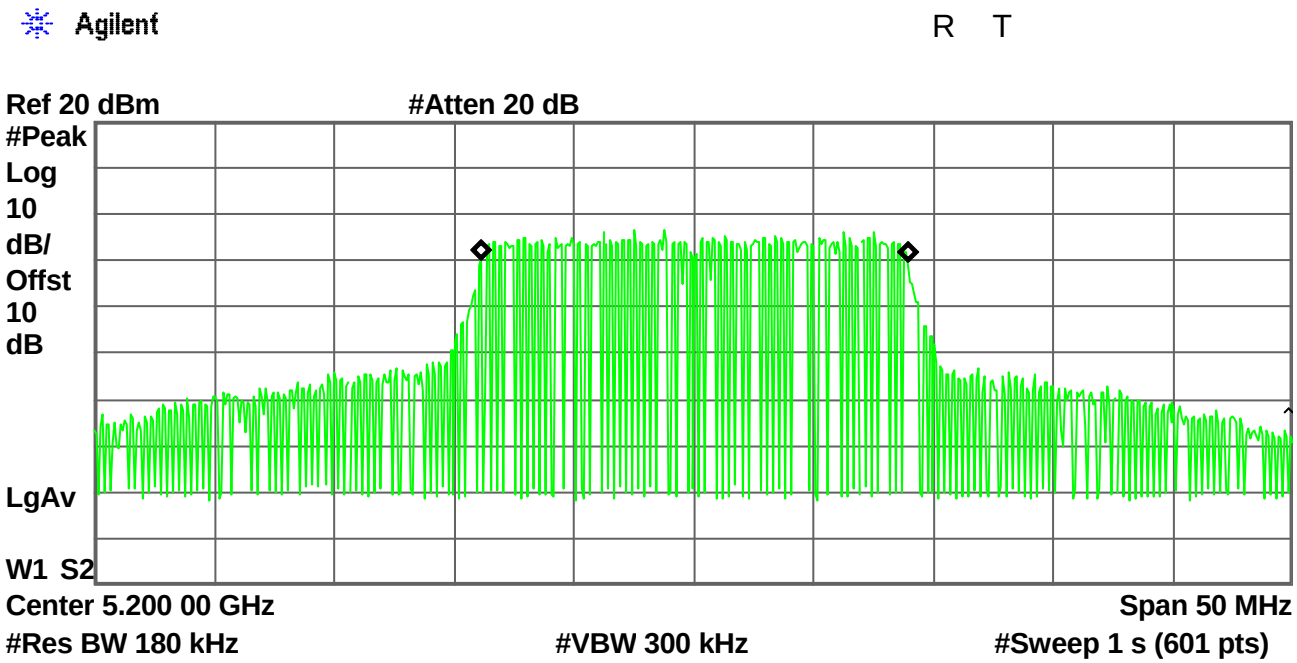
2. The estimated measurement uncertainty of the result measurement is 8.25×10^{-7} *(1GHz≦f≦ 18GHz)*



Occupied Bandwidth
17.7609 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

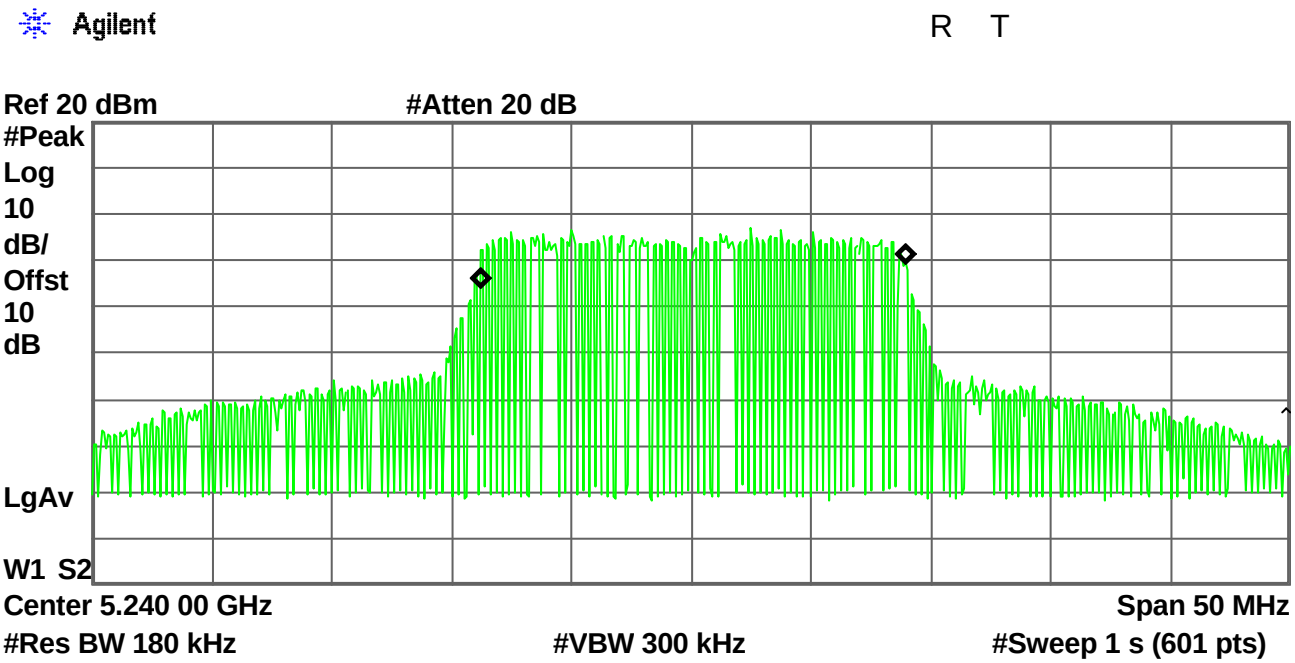
Transmit Freq Error	-3.519 kHz
x dB Bandwidth	20.372 MHz*



Occupied Bandwidth
17.7476 MHz

Occ BW % Pwr	99.00 %
x dB	-26.00 dB

Transmit Freq Error	17.121 kHz
x dB Bandwidth	20.062 MHz*



Occupied Bandwidth
17.6580 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	66.188 kHz
x dB Bandwidth	20.110 MHz*

6.4.2.2 5.3GHz

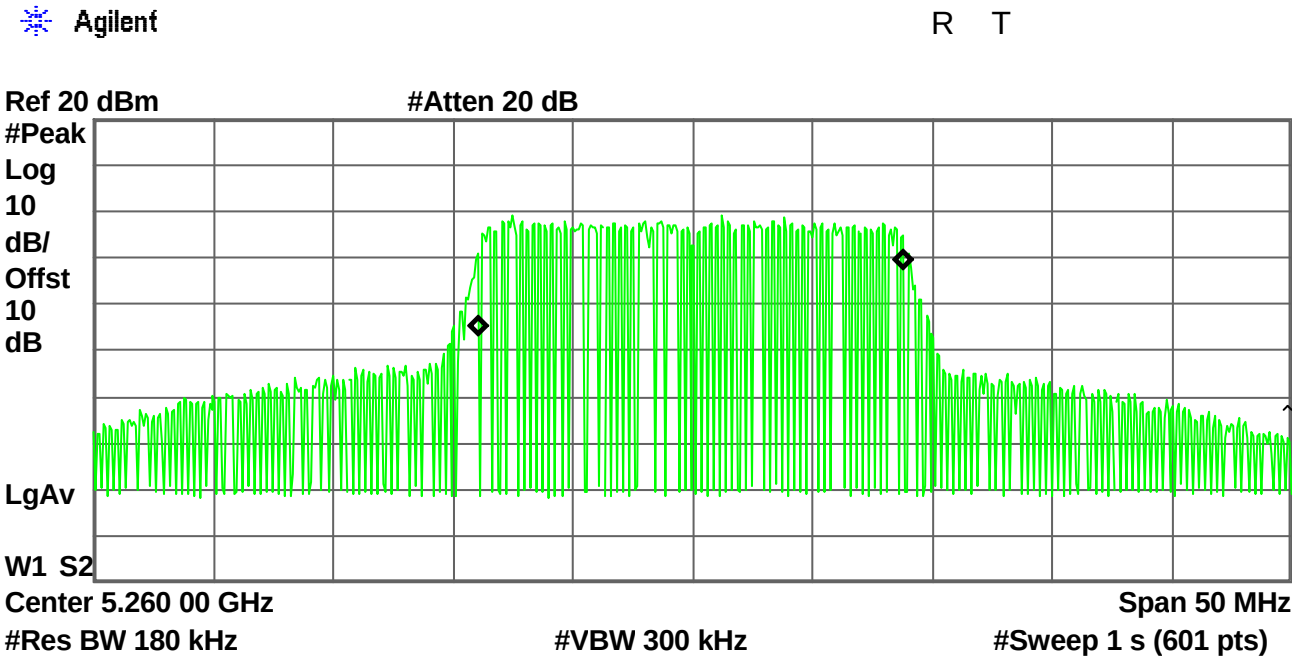
Test Date: Mar. 25, 2011 Temperature: 26℃ Humidity: 57%

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Chart
52	5260	20.062	Page 39
60	5300	19.892	Page 40
64	5320	19.909	Page 41

Note:

1.Please refer to page 39 to page 41 for chart

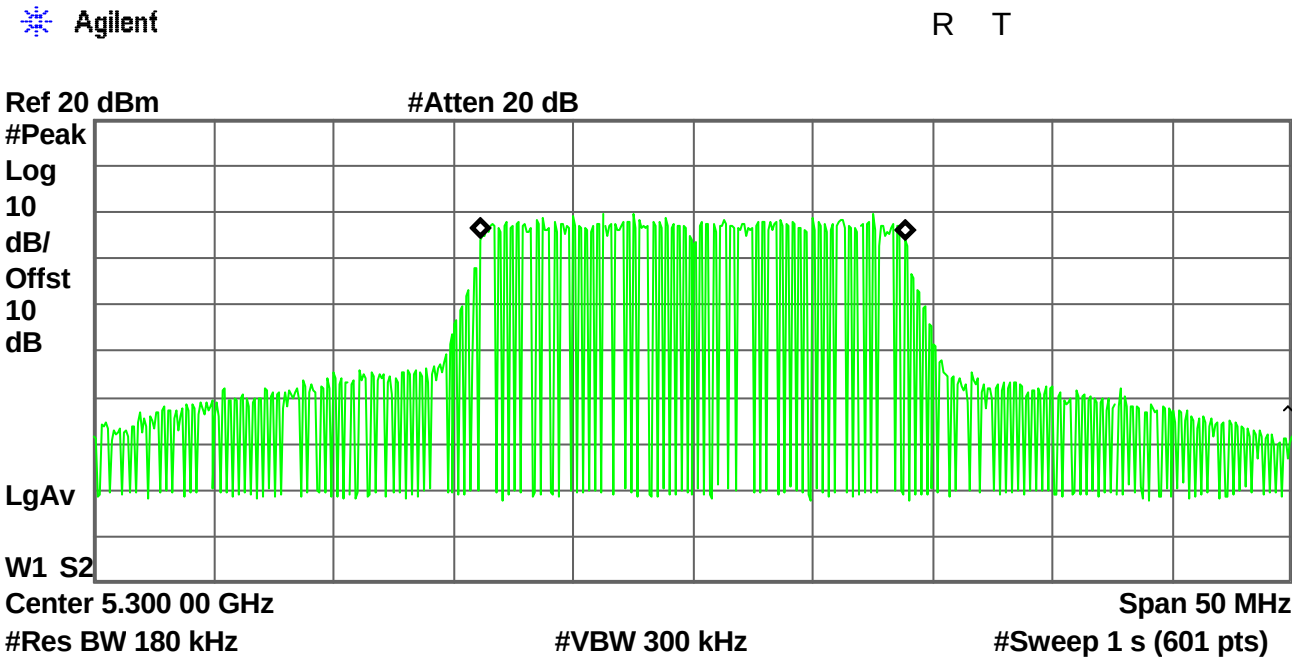
2. The estimated measurement uncertainty of the result measurement is 8.25×10^{-7} *(1GHz≦f≦ 18GHz)*



Occupied Bandwidth
17.6490 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

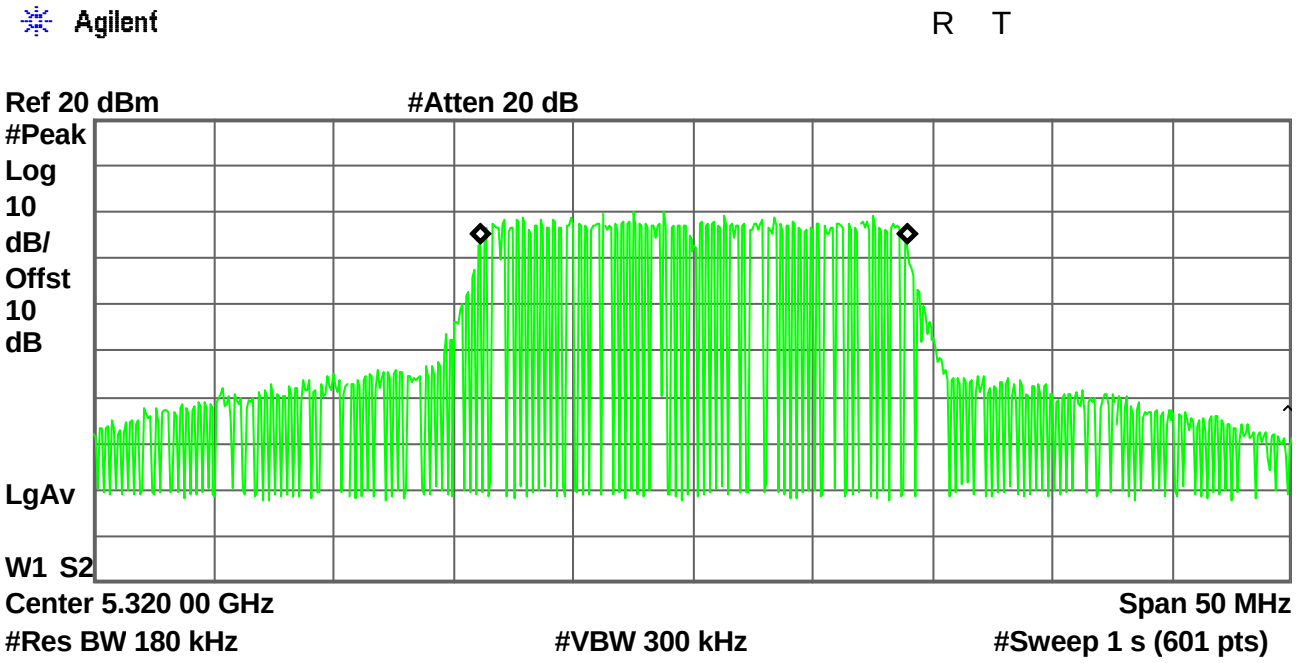
Transmit Freq Error	-63.404 kHz
x dB Bandwidth	20.062 MHz*



Occupied Bandwidth
17.6470 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	23.252 kHz
x dB Bandwidth	19.892 MHz*



Occupied Bandwidth
17.7401 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	15.852 kHz
x dB Bandwidth	19.909 MHz*

6.4.2.3 5.6GHz

Test Date: Mar. 25, 2011 Temperature: 26℃ Humidity: 57%

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Chart
100	5500	20.024	Page 43
120	5600	20.007	Page 44
140	5700	19.842	Page 45

Note:

1.Please refer to page 43 to page 45 for chart

2. The estimated measurement uncertainty of the result measurement is 8.25×10^{-7} *(1GHz≦f≦ 18GHz)*

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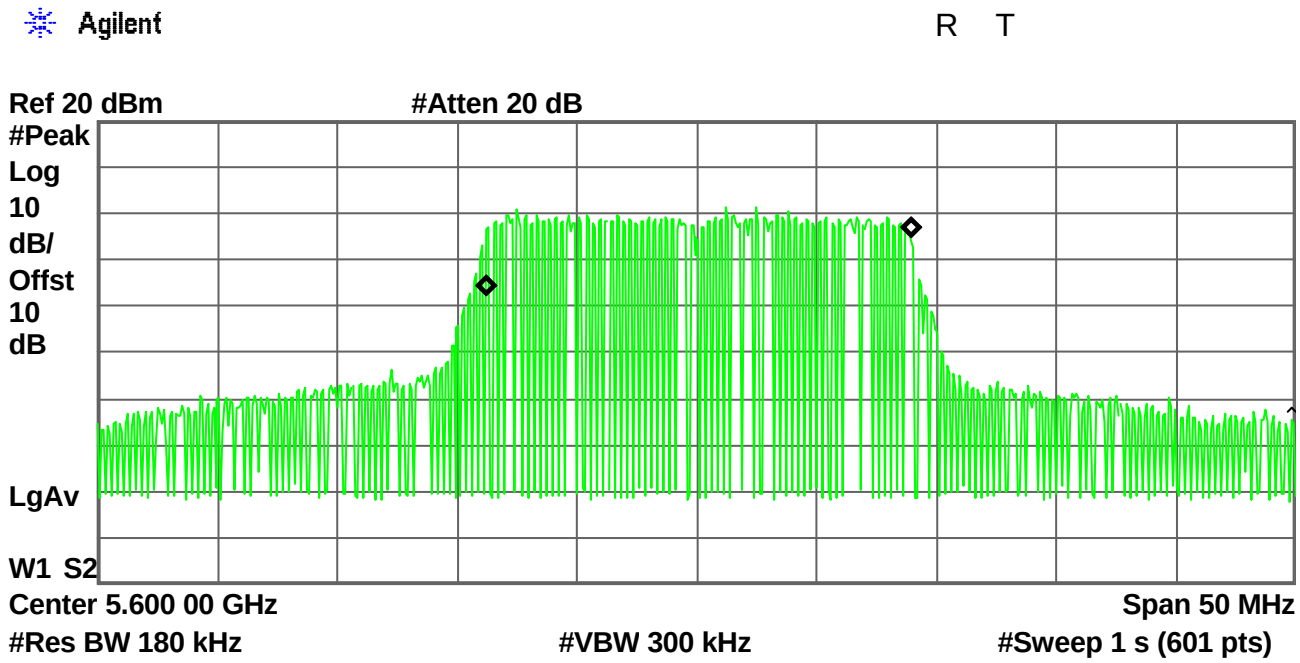
Occupied Bandwidth
17.6854 MHz

Occ BW % Pwr	99.00 %
x dB	-26.00 dB

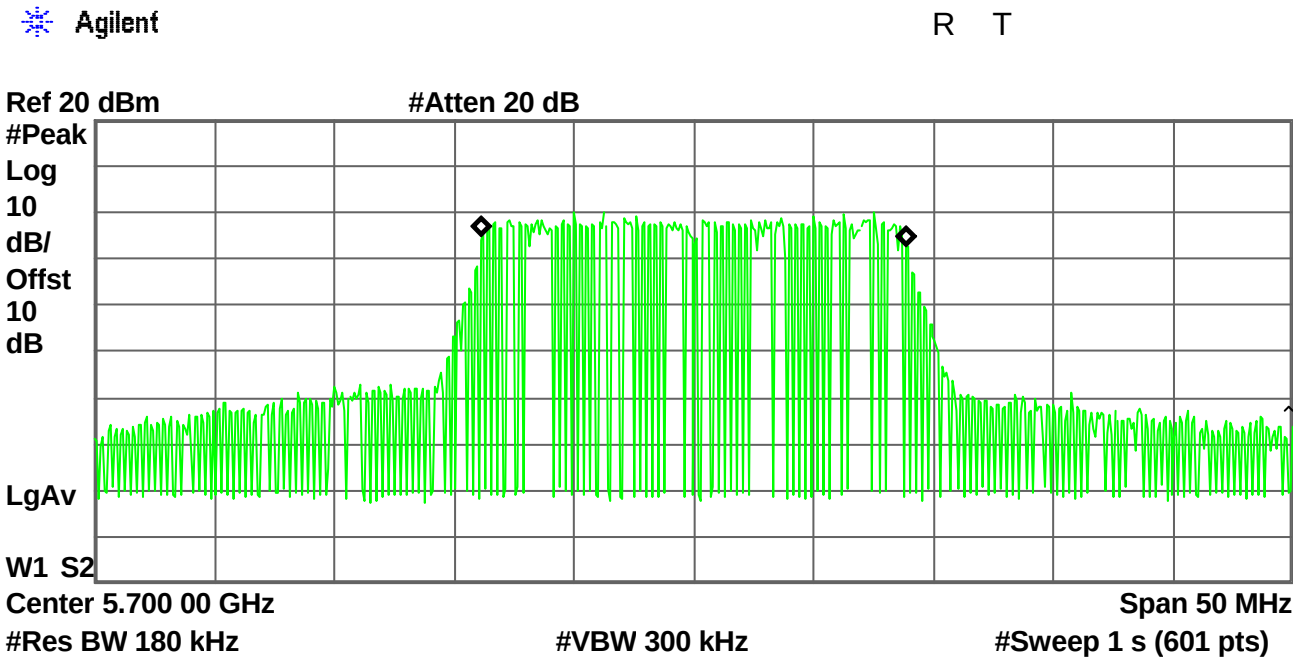
Transmit Freq Error	28.770 kHz
x dB Bandwidth	20.024 MHz*



Occupied Bandwidth
17.6477 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	52.629 kHz
x dB Bandwidth	20.007 MHz*



Occupied Bandwidth
17.6319 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	20.780 kHz
x dB Bandwidth	19.842 MHz*

6.4.3 IEEE 802.11an, HT40

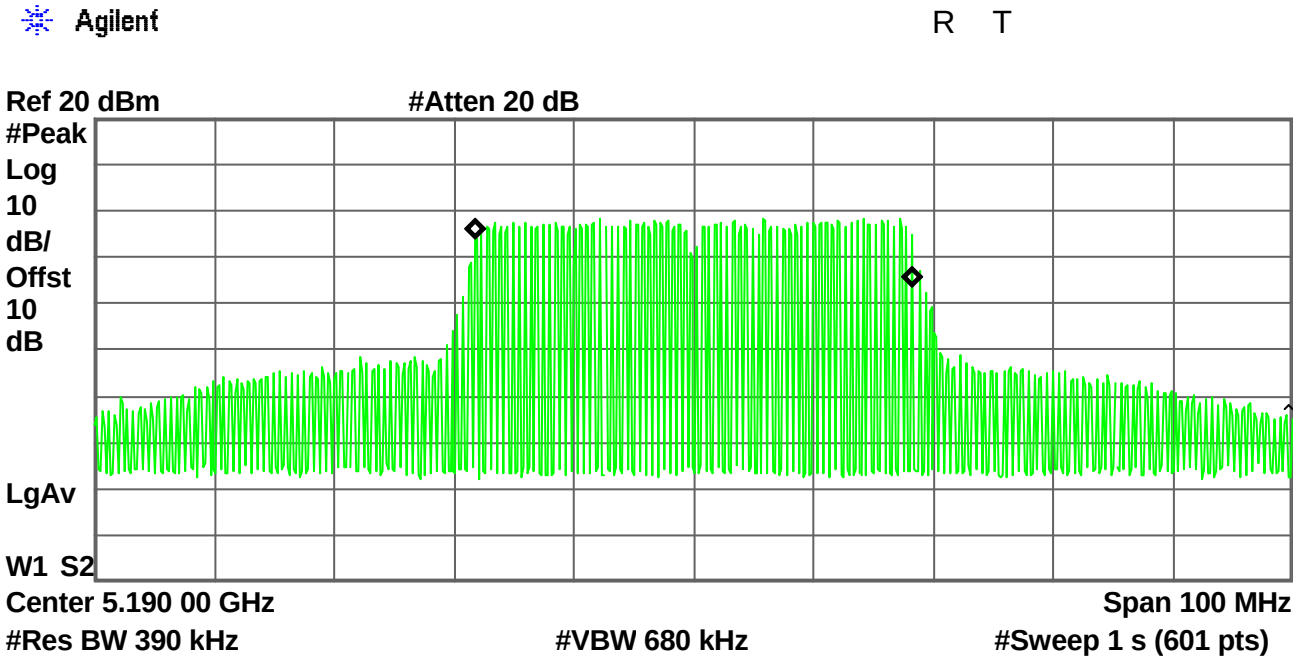
6.4.3.1 5.2GHz

Test Date: Mar. 25, 2011 Temperature: 26℃ Humidity: 57%

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Chart
38	5190	40.561	Page 47
46	5230	40.197	Page 48

Note:

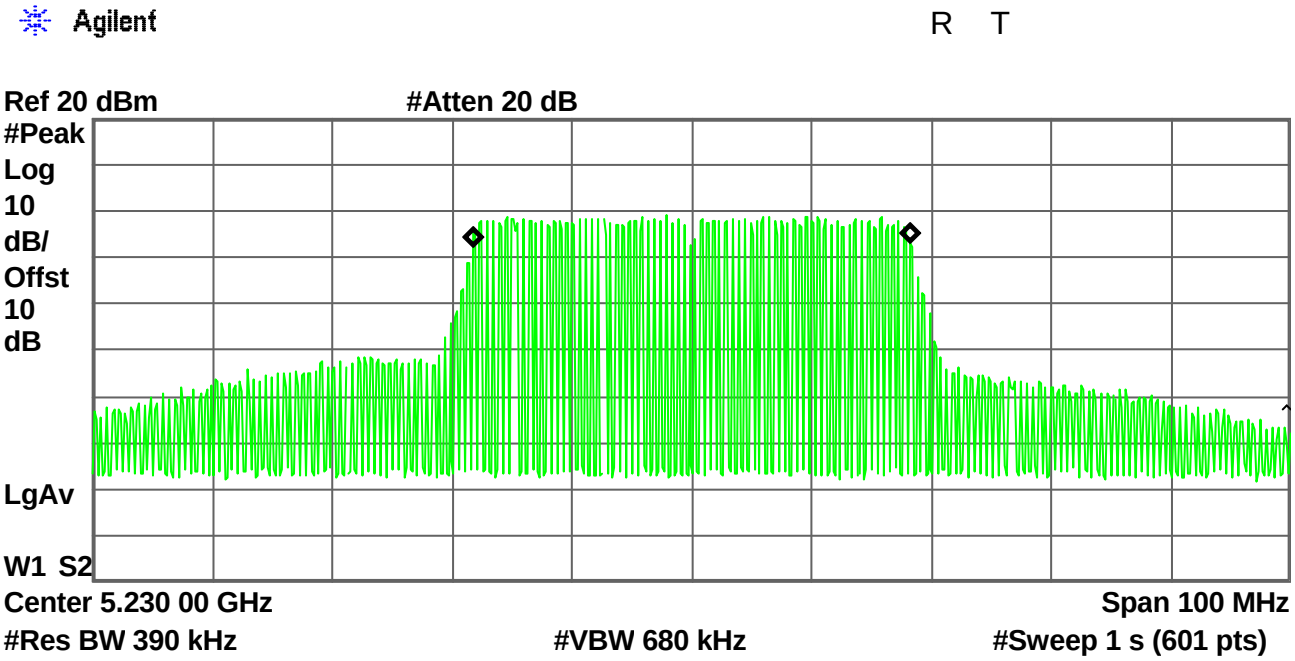
1.Please refer to page 47 to page 48 for chart
2. The estimated measurement uncertainty of the result measurement is 8.25×10^{-7} *(1GHz≦f≦ 18GHz)*



Occupied Bandwidth
36.2964 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	-18.280 kHz
x dB Bandwidth	40.561 MHz*



Occupied Bandwidth
36.3503 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	-1.608 kHz
x dB Bandwidth	40.197 MHz*

6.4.3.2 5.3GHz

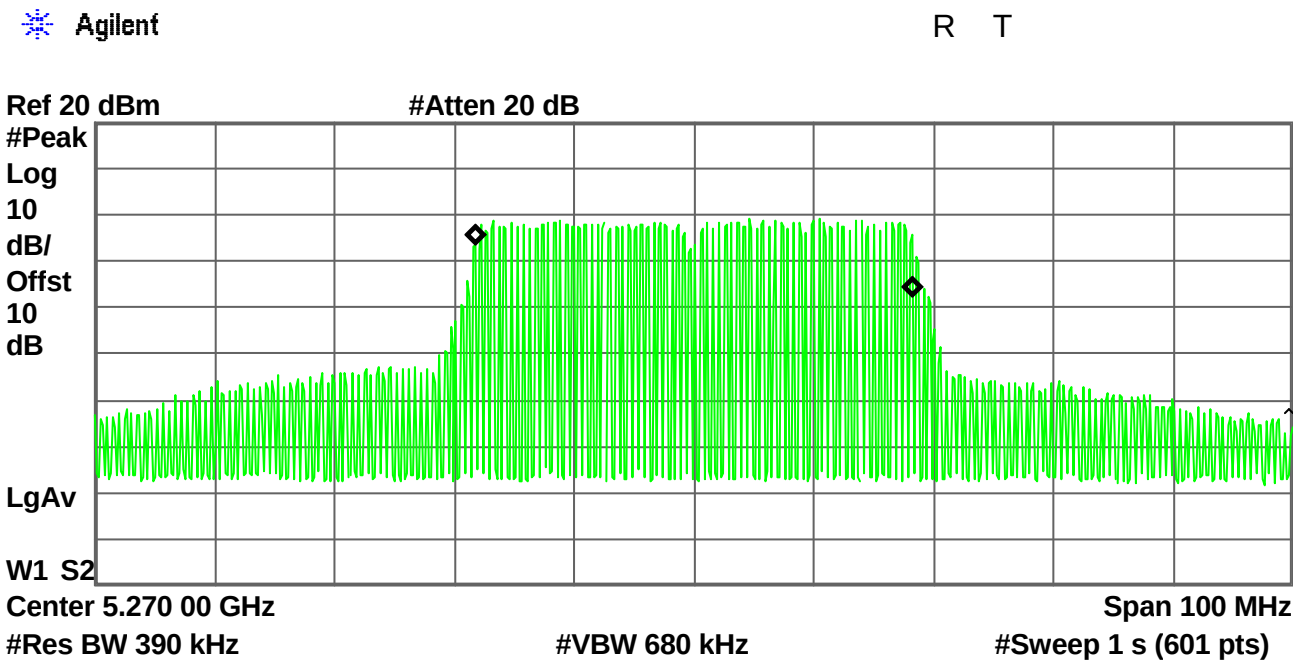
Test Date: Mar. 25, 2011 Temperature: 26℃ Humidity: 57%

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Chart
54	5270	40.638	Page 50
62	5310	41.068	Page 51

Note:

1.Please refer to page 50 to page 51 for chart

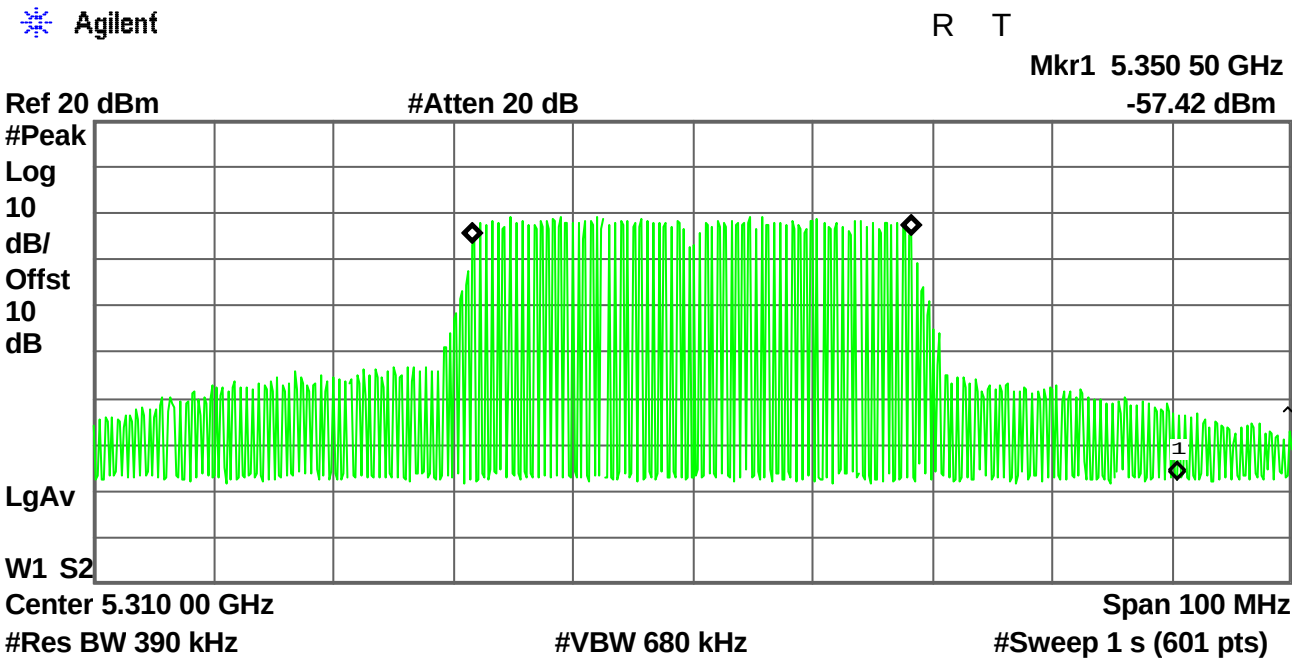
2. The estimated measurement uncertainty of the result measurement is 8.25×10^{-7} *(1GHz≦f≦ 18GHz)*



Occupied Bandwidth
36.4227 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	-1.769 kHz
x dB Bandwidth	40.638 MHz*



Occupied Bandwidth
36.4221 MHz

Occ BW % Pwr	99.00 %
x dB	-26.00 dB

Transmit Freq Error	-59.245 kHz
x dB Bandwidth	41.068 MHz*

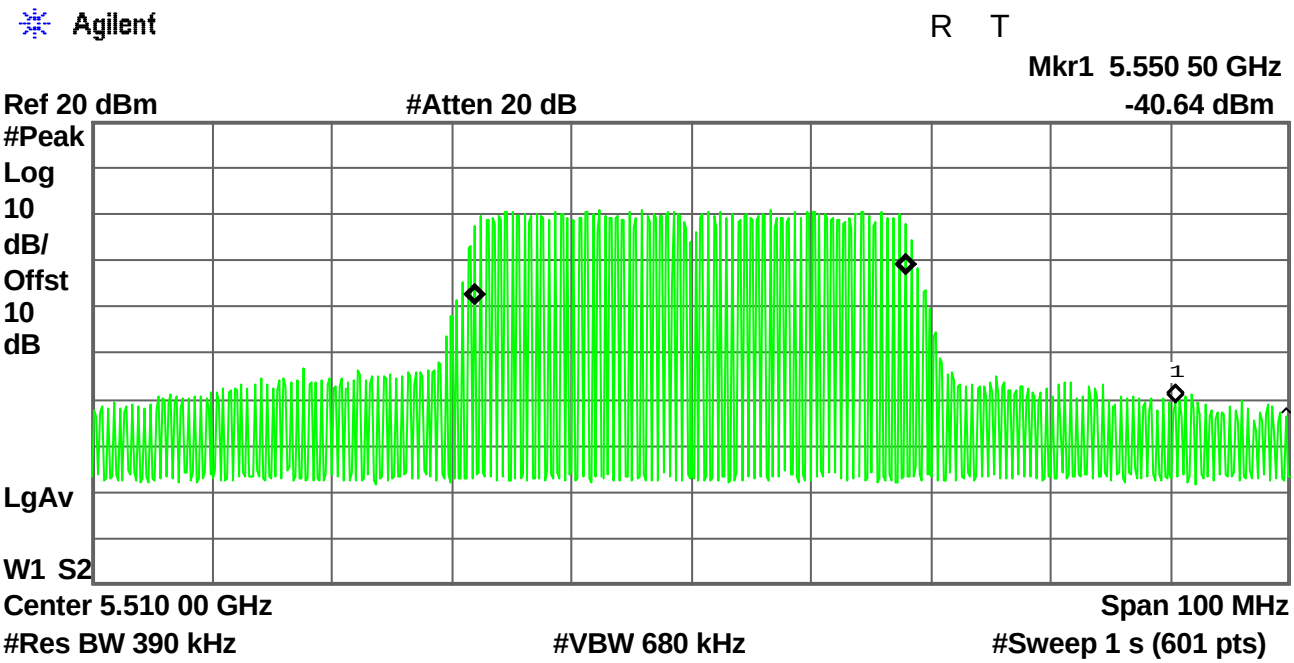
6.4.3.3 5.6GHz

Test Date: Mar. 25, 2011 Temperature: 26℃ Humidity: 57%

Channel	Frequency (MHz)	26dB Bandwidth (MHz)	Chart
102	5510	40.032	Page 53
118	5590	41.037	Page 54
134	5670	40.591	Page 55

Note:

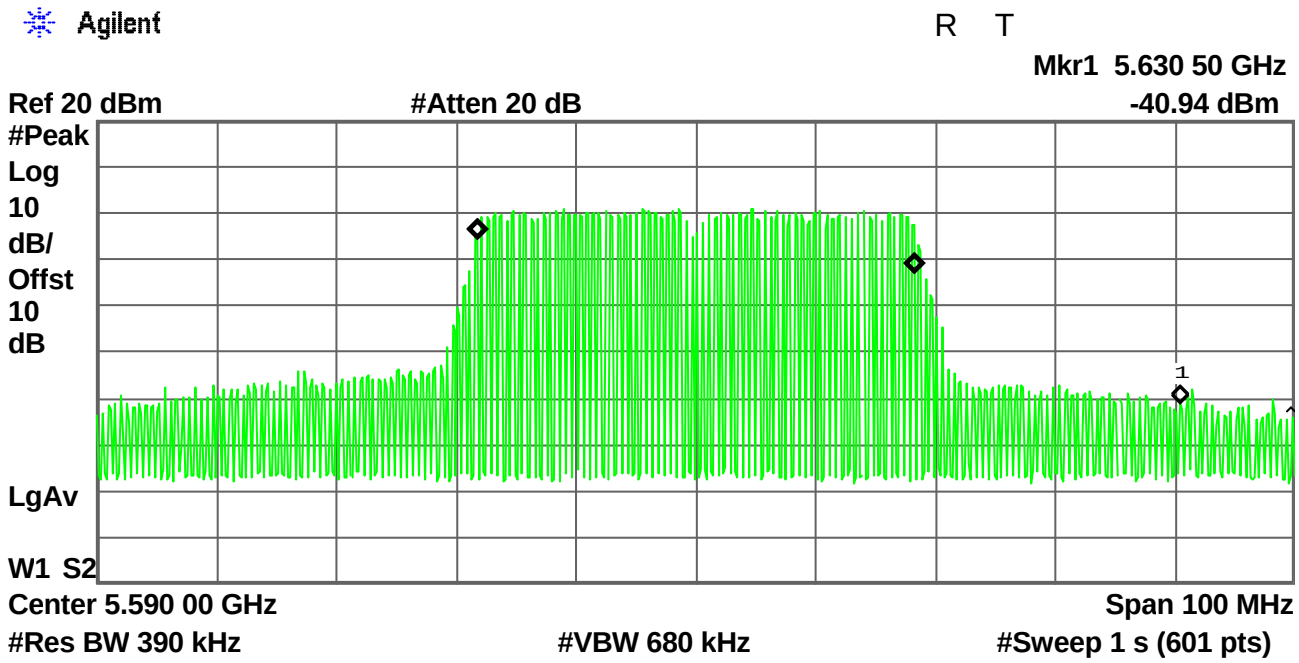
1.Please refer to page 53 to page 55 for chart
2. The estimated measurement uncertainty of the result measurement is 8.25×10^{-7} *(1GHz≦f≦ 18GHz)*



Occupied Bandwidth
35.9189 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

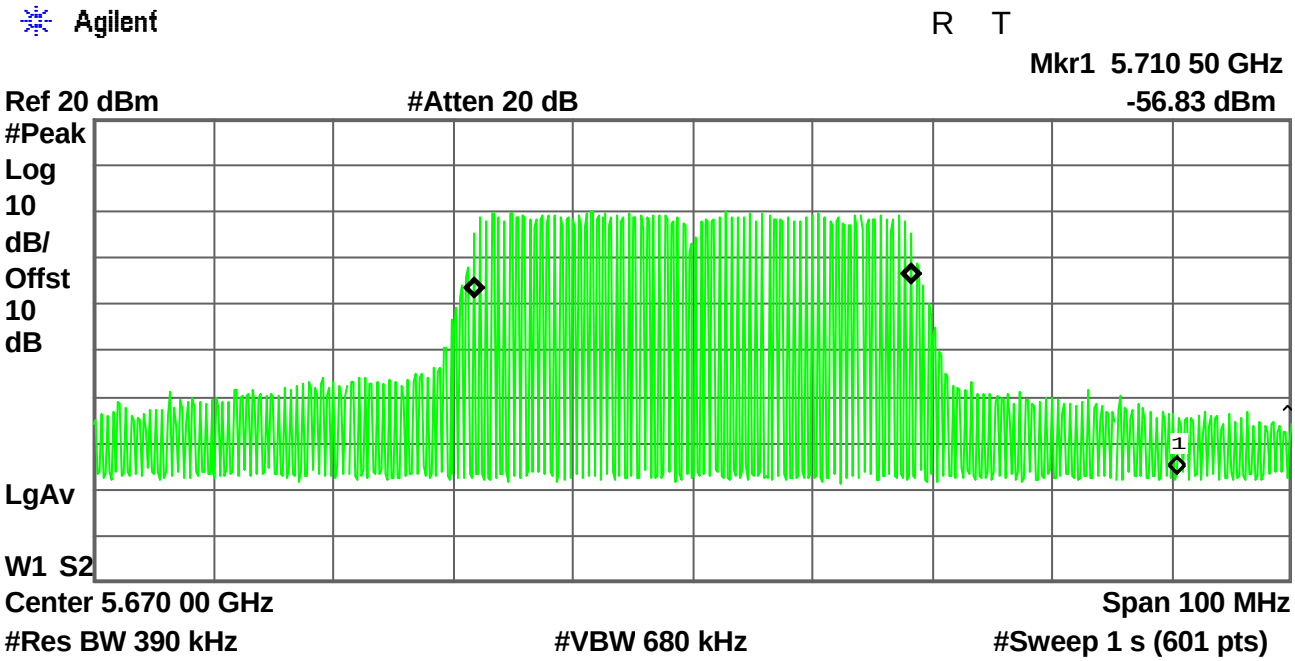
Transmit Freq Error	-92.712 kHz
x dB Bandwidth	40.032 MHz*



Occupied Bandwidth
36.3777 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	8.450 kHz
x dB Bandwidth	41.037 MHz*



Occupied Bandwidth
36.2531 MHz

Occ BW % Pwr 99.00 %
x dB -26.00 dB

Transmit Freq Error	5.088 kHz
x dB Bandwidth	40.591 MHz*

7 OUTPUT POWER MEASUREMENT

7.1 Standard Applicable

According to 15.407(a)(1) for the band 5.15-58.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

According to 15.407(a)(2) for the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.2 Measurement Procedure

1. The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.
2. Position the EUT as shown in figure 2

7.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Agilent	E4446A	09/26/2011

7.4 Measurement Data

7.4.1 IEEE 802.11a

7.4.1.1 5.2GHz

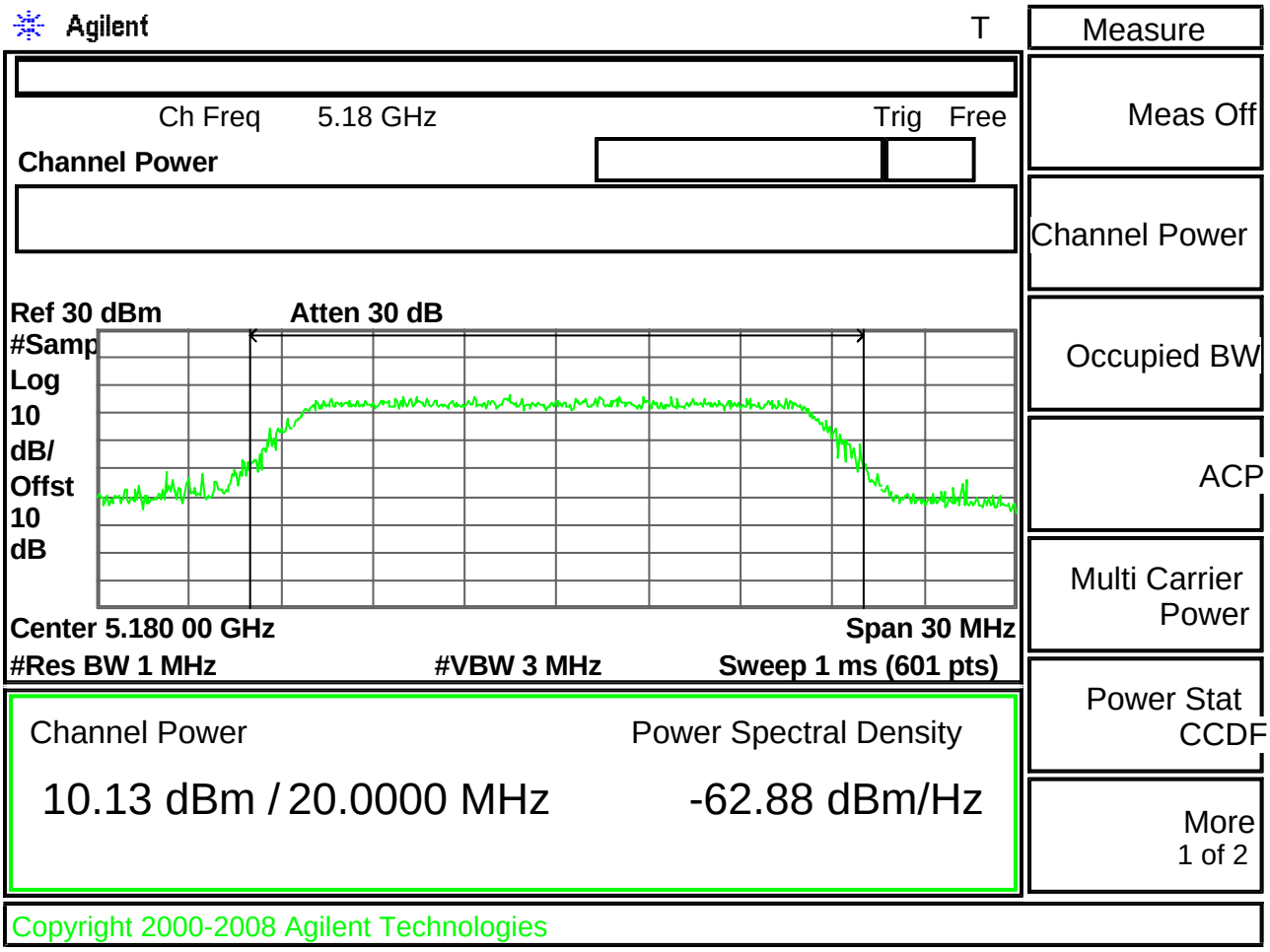
Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

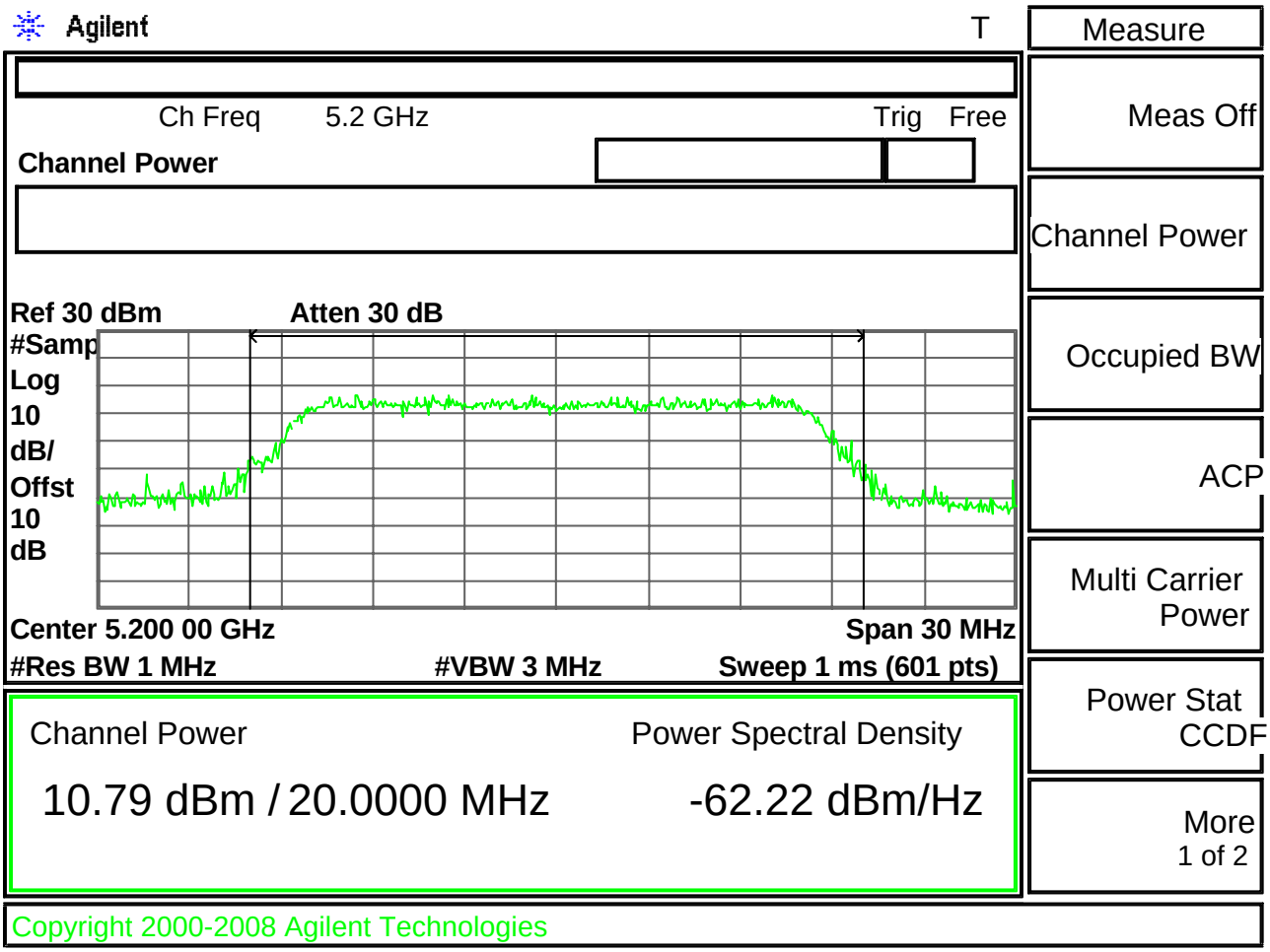
The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

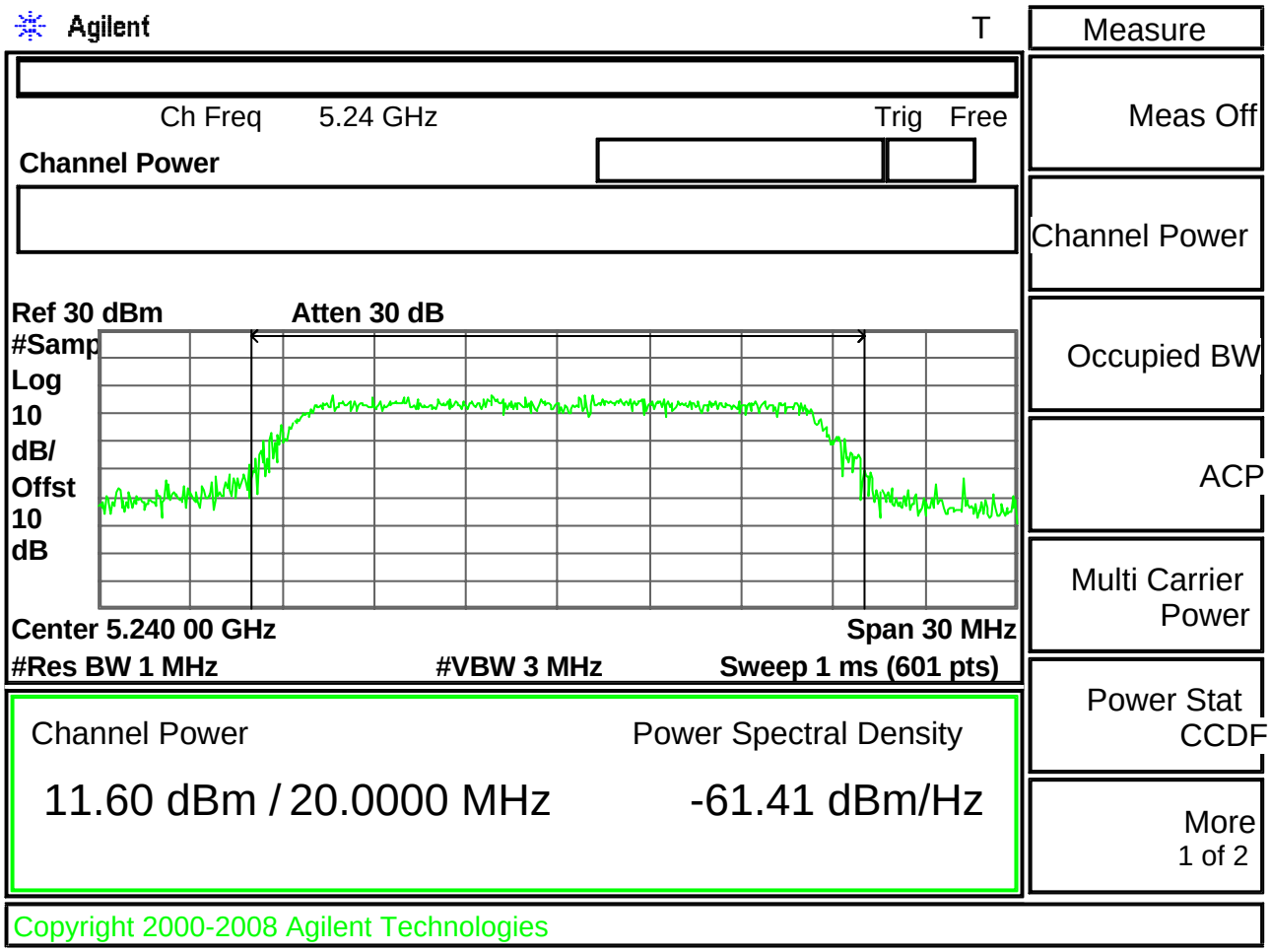
Channel	Frequency (MHz)	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Peak Power (dBm)	FCC Limit (dBm)	Chart
36	5180	17	19.935	17.00	10.13	17.00	Page 58
40	5200	17	19.793	16.97	10.79	16.97	Page 59
48	5240	17	19.829	16.97	11.60	16.97	Page 60

Note:

1. *Please refer to page 58 to page 60 for chart.*
2. *Fixed Limit = 50mW=17dBm*
3. *Caculated Limit = 4dBm + 10 log (26dB BW)*
4. *If antenna gain ≦ 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm*
5. *If antenna gain > 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)*
6. *The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)*


Agilent
T
Measure
Ch Freq 5.18 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.180 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
10.13 dBm / 20.0000 MHz
Power Spectral Density
-62.88 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent
T
Measure
Ch Freq 5.2 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.200 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
10.79 dBm / 20.0000 MHz
Power Spectral Density
-62.22 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent
T
Measure
Ch Freq 5.24 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.240 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
11.60 dBm / 20.0000 MHz
Power Spectral Density
-61.41 dBm/Hz
Copyright 2000-2008 Agilent Technologies

7.4.1.2 5.3GHz

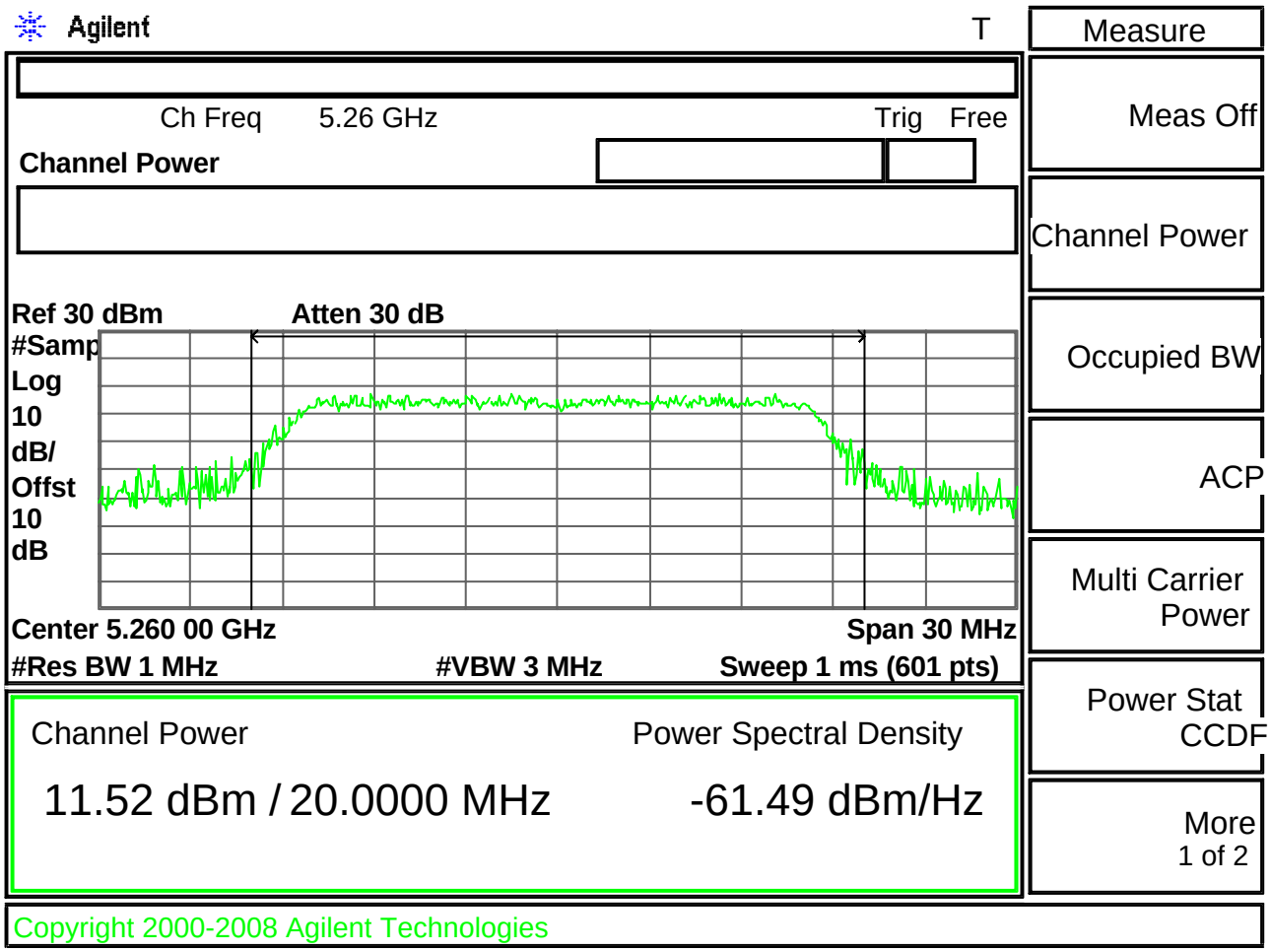
Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

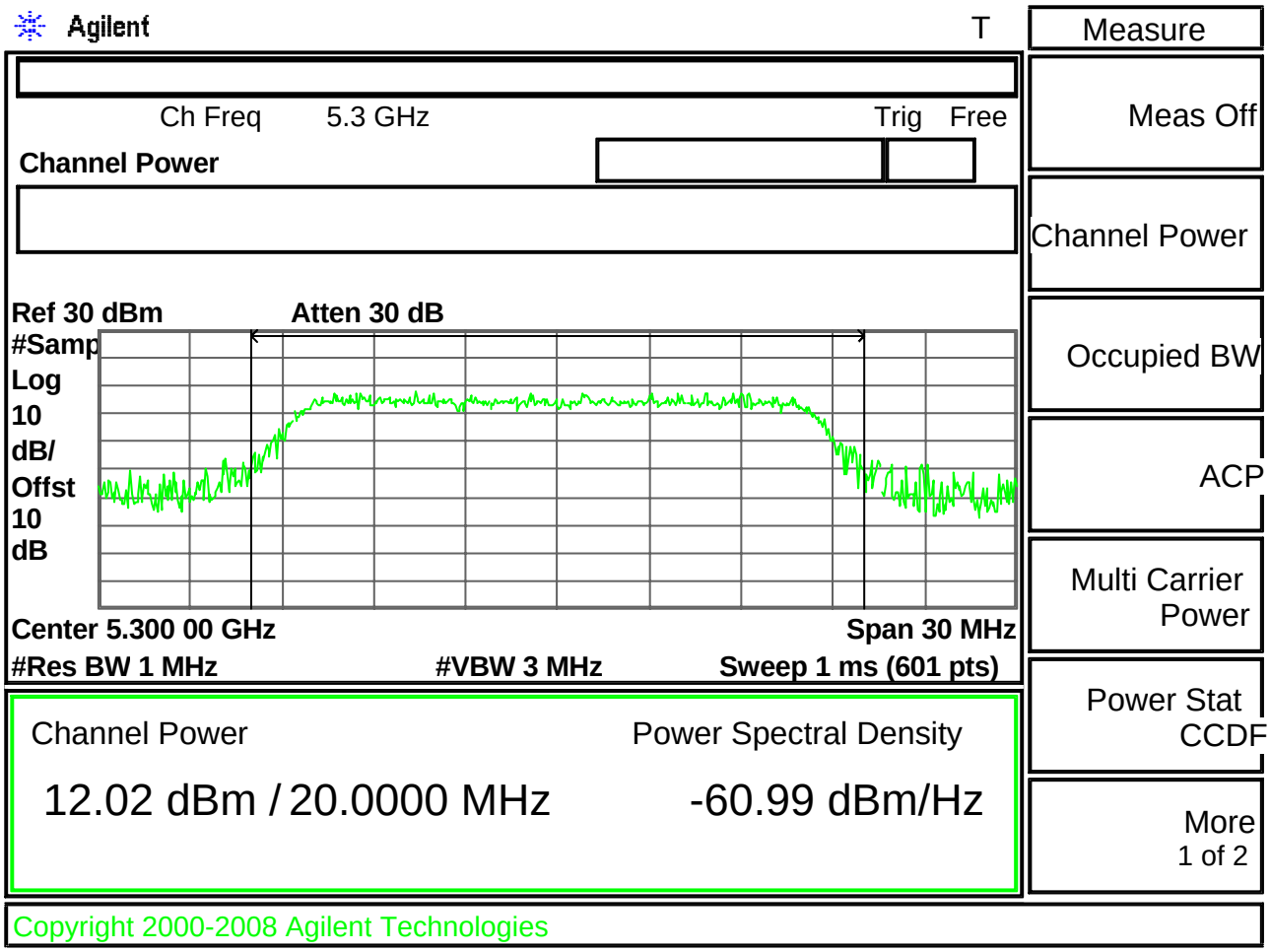
The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

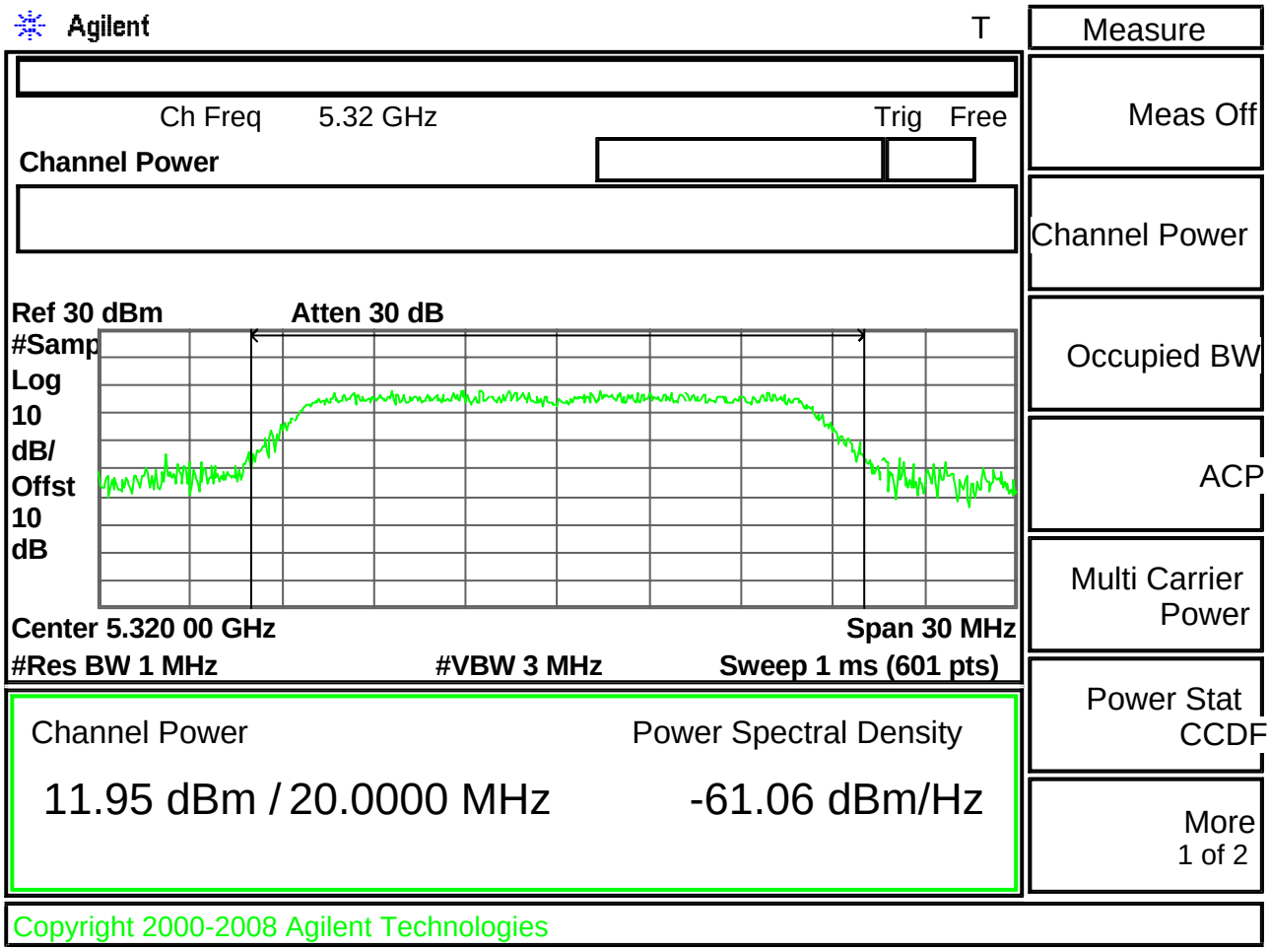
Channel	Frequency (MHz)	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Peak Power (dBm)	FCC Limit (dBm)	Chart
52	5260	17	19.568	16.91	11.52	16.91	Page 62
60	5300	17	19.768	16.96	12.02	16.96	Page 63
64	5320	17	19.601	16.92	11.95	16.92	Page 64

Note:

1.Please refer to page 62 to page 64 for chart
2. Fixed Limit = 50mW=17dBm
3. Caculated Limit = 4dBm + 10 log (26dB BW)
4. If antenna gain ≦ 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm
5. If antenna gain > 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)
6. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)


Agilent
T
Measure
Ch Freq 5.26 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.260 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
11.52 dBm / 20.0000 MHz
Power Spectral Density
-61.49 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent
T
Measure
Ch Freq 5.3 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.300 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
12.02 dBm / 20.0000 MHz
Power Spectral Density
-60.99 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent
T
Measure
Ch Freq 5.32 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.320 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
11.95 dBm / 20.0000 MHz
Power Spectral Density
-61.06 dBm/Hz
Copyright 2000-2008 Agilent Technologies

7.4.1.3 5.6GHz

Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

Channel	Frequency (MHz)	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Peak Power (dBm)	FCC Limit (dBm)	Chart
100	5500	24	19.557	23.91	10.46	23.91	Page 66
120	5600	24	19.558	23.91	11.29	23.91	Page 67
140	5700	24	19.536	23.91	11.73	23.91	Page 68

Note:

1.Please refer to page 66 to page 68 for chart

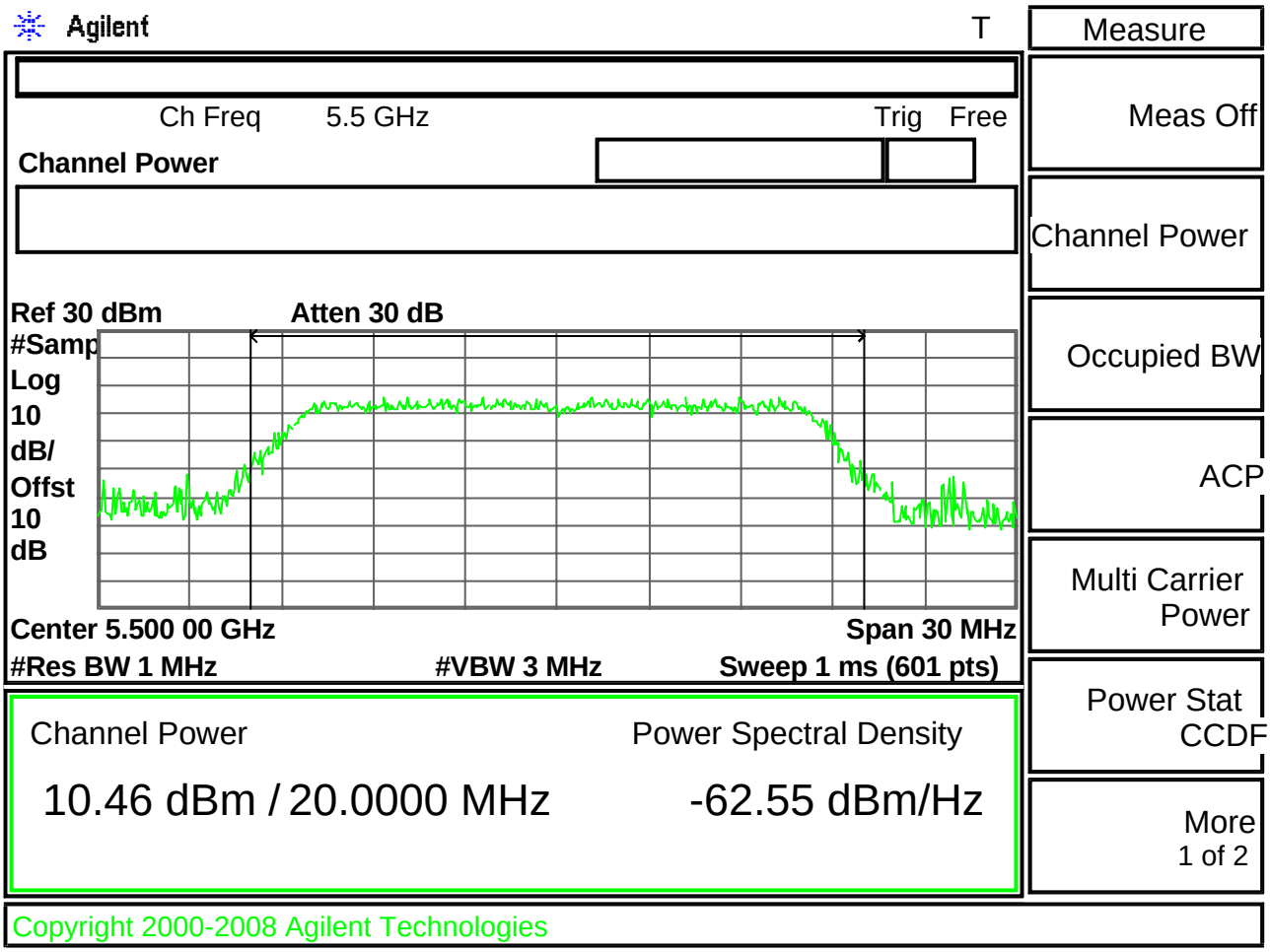
2. Fixed Limit = 50mW=17dBm

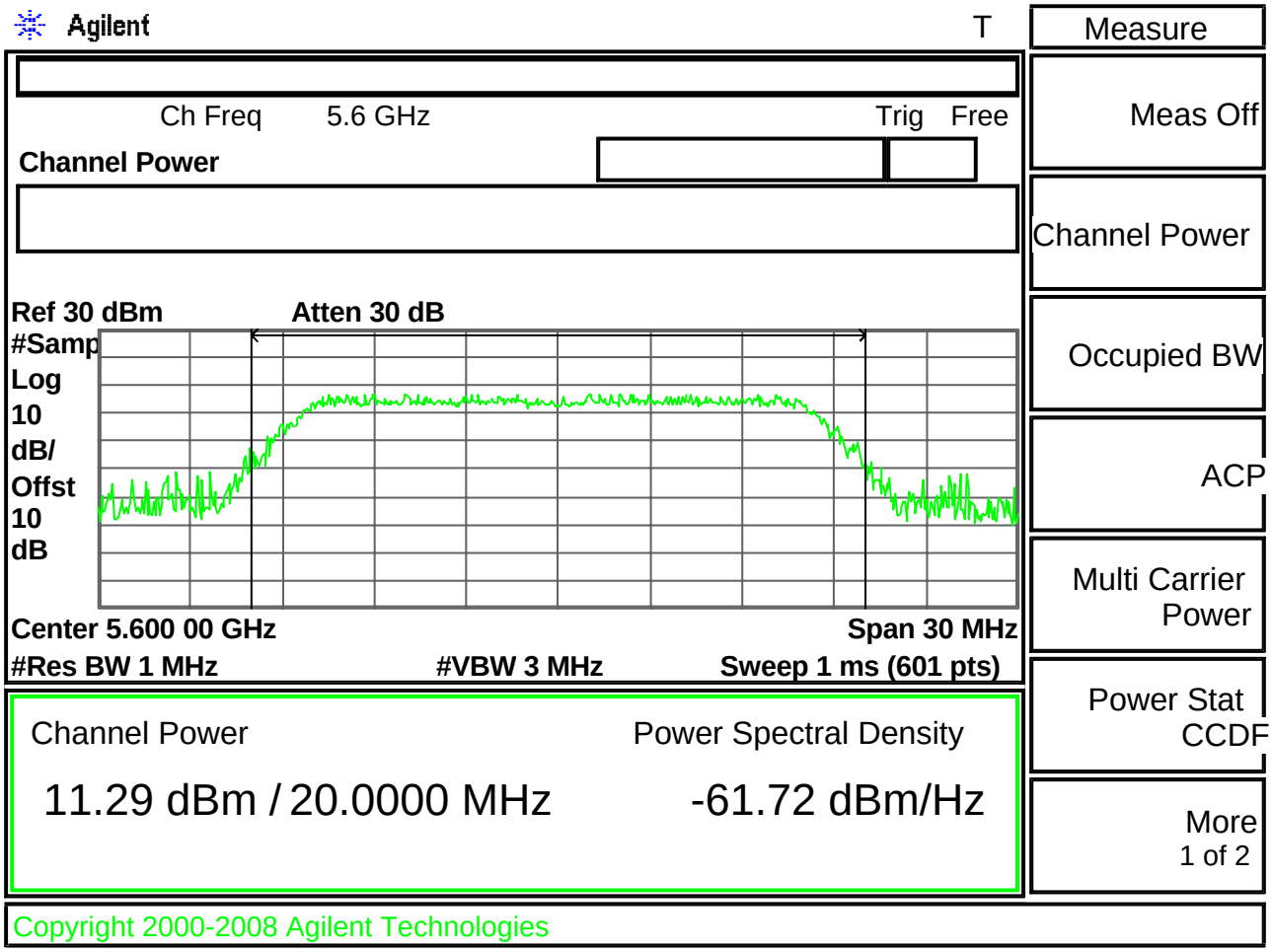
3. Caculated Limit = 11dBm + 10 log (26dB BW)

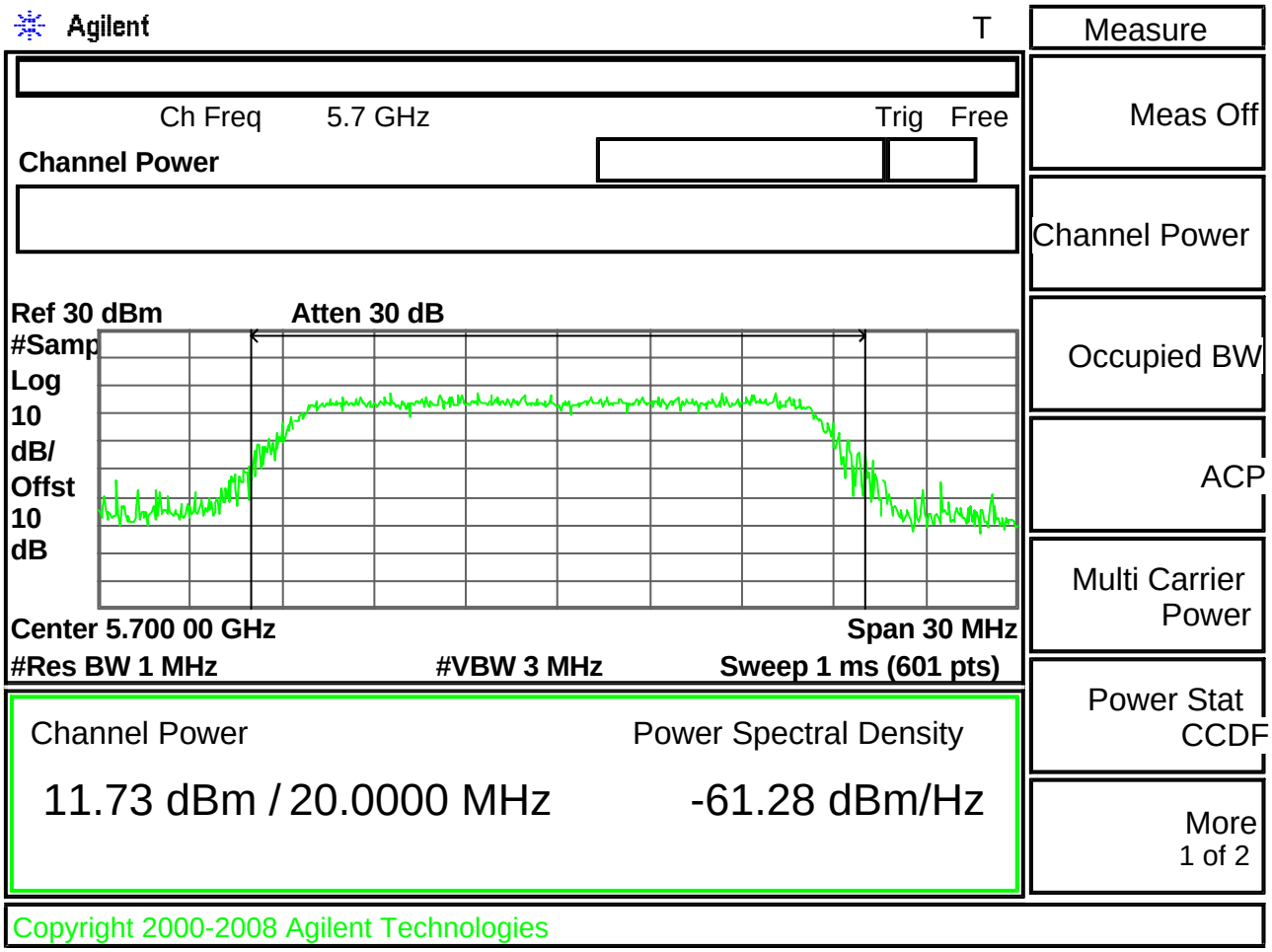
4. If antenna gain ≦ 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm

5. If antenna gain > 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)

6. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)


Agilent
T
Measure
Ch Freq 5.5 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.500 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
10.46 dBm / 20.0000 MHz
Power Spectral Density
-62.55 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent
T
Measure
Ch Freq 5.6 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.600 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
11.29 dBm / 20.0000 MHz
Power Spectral Density
-61.72 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent
T
Measure
Ch Freq 5.7 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.700 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
11.73 dBm / 20.0000 MHz
Power Spectral Density
-61.28 dBm/Hz
Copyright 2000-2008 Agilent Technologies

7.4.2 IEEE 802.11an, HT20

7.4.2.1 5.2GHz

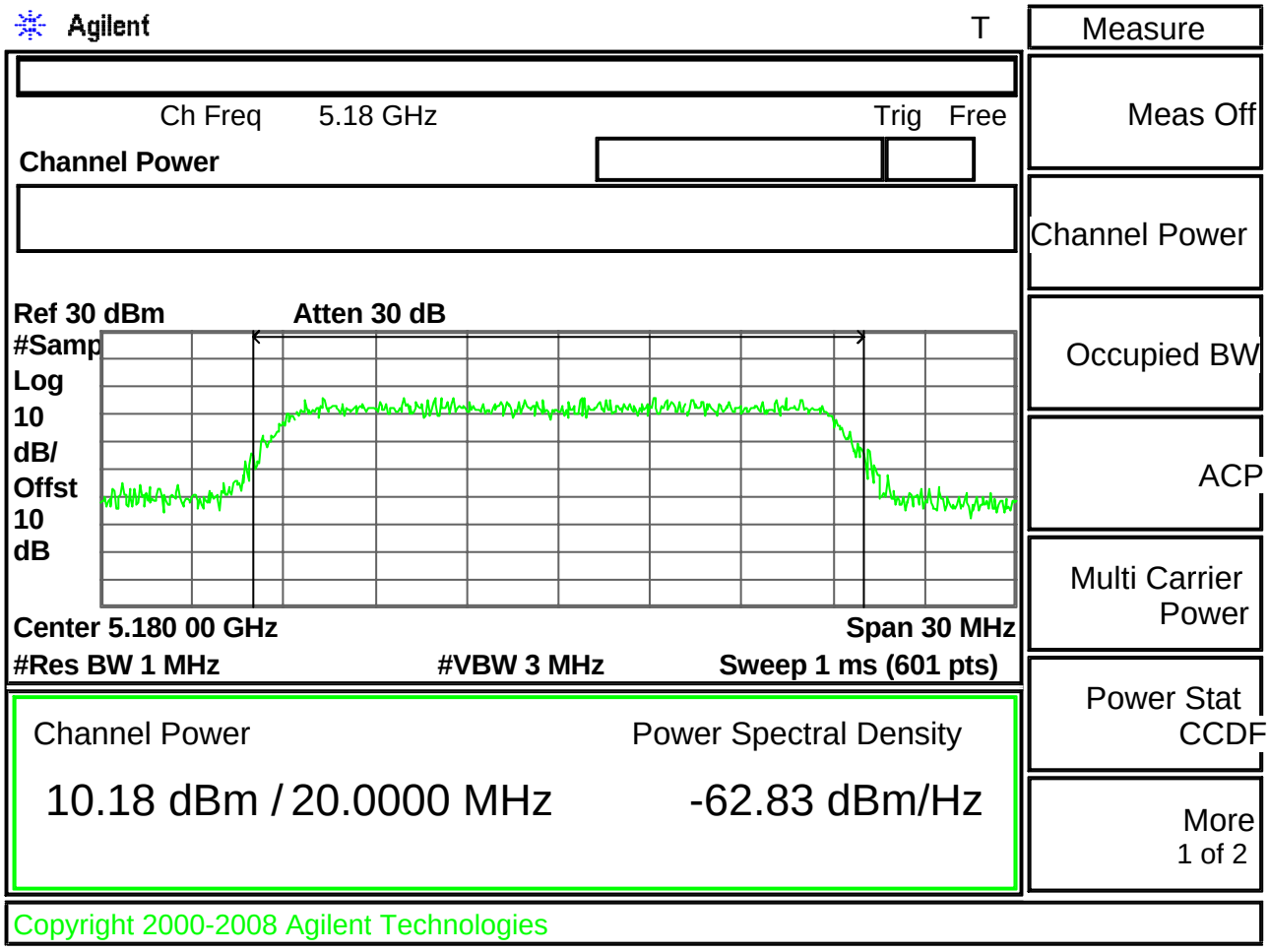
Test Date: Mar. 21, 2011 Temperature: 17℃ Humidity: 54%

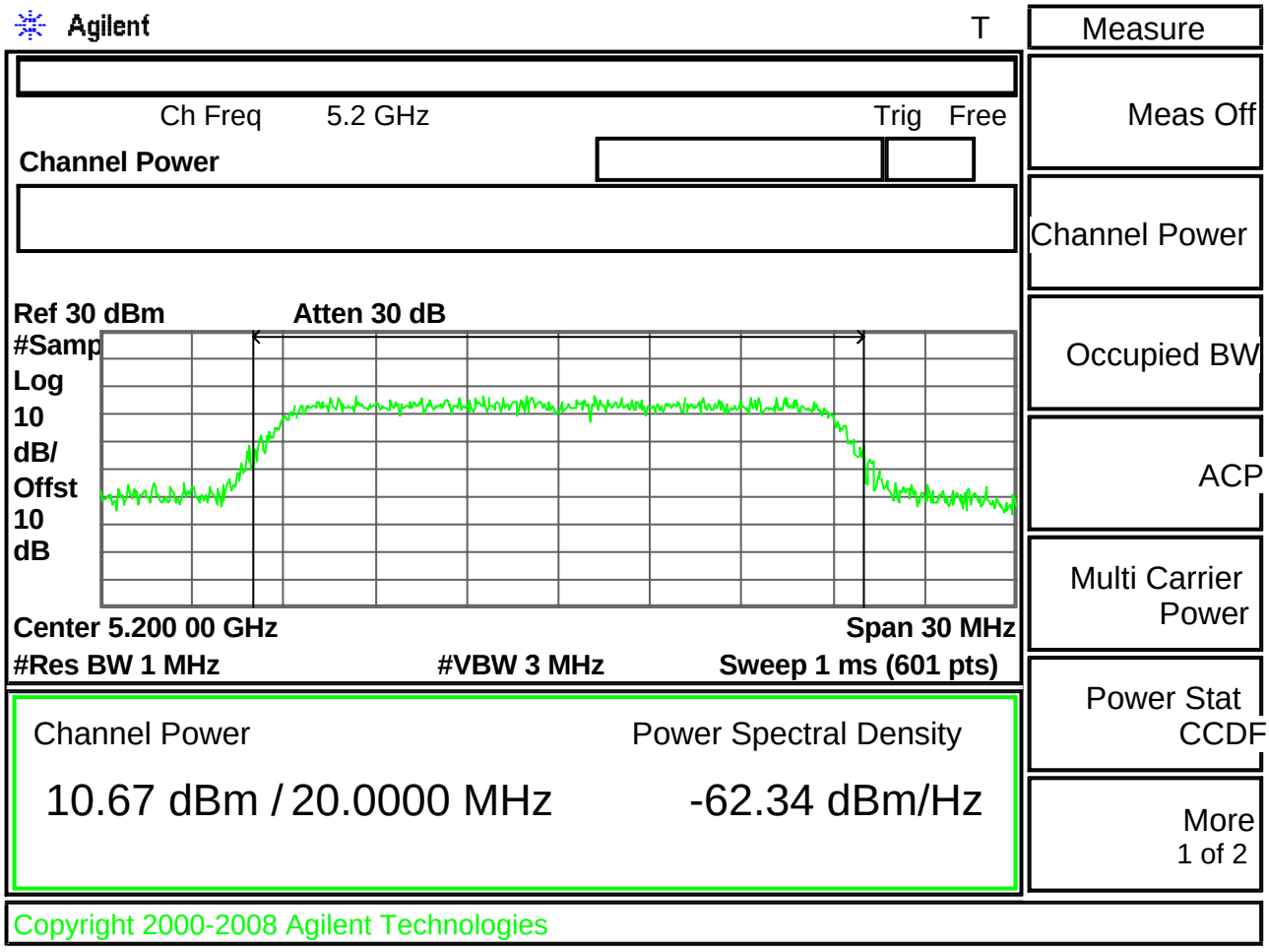
The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

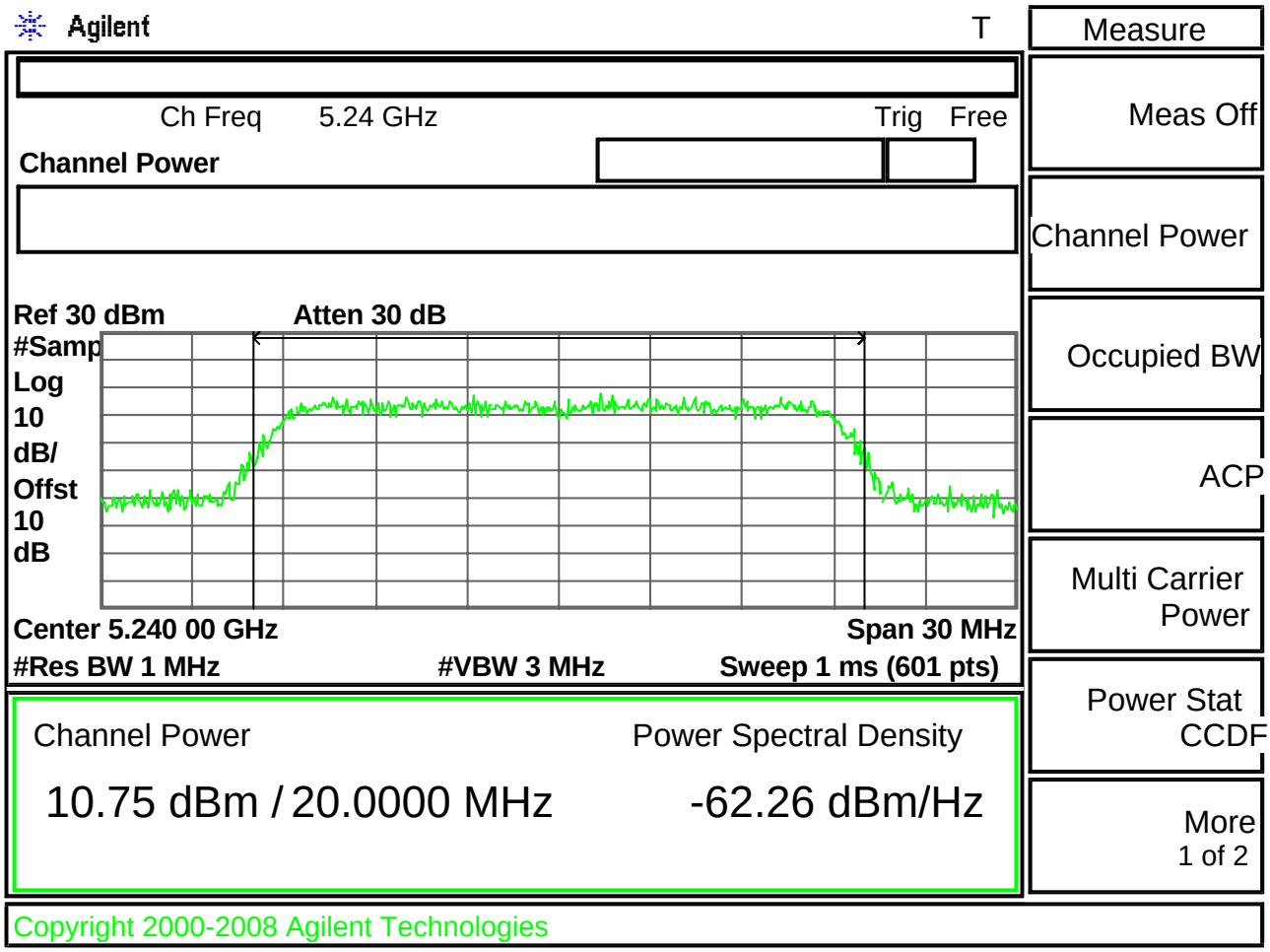
Channel	Frequency (MHz)	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Peak Power (dBm)	FCC Limit (dBm)	Chart
36	5180	17	20.372	17.09	10.18	17.00	Page 70
40	5200	17	20.062	17.02	10.67	17.00	Page 71
48	5240	17	20.110	17.03	10.75	17.00	Page 72

Note:

1. *Please refer to page 70 to page 72 for chart.*
2. *Fixed Limit = 50mW=17dBm*
3. *Caculated Limit = 4dBm + 10 log (26dB BW)*
4. *If antenna gain ≦ 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm*
5. *If antenna gain > 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)*
6. *The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)*


Agilent
T
Measure
Ch Freq 5.18 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.180 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
10.18 dBm / 20.0000 MHz
Power Spectral Density
-62.83 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent
T
Measure
Ch Freq 5.2 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.200 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
10.67 dBm / 20.0000 MHz
Power Spectral Density
-62.34 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent
T
Measure
Ch Freq 5.24 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.240 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
10.75 dBm / 20.0000 MHz
Power Spectral Density
-62.26 dBm/Hz
Copyright 2000-2008 Agilent Technologies

7.4.2.2 5.3GHz

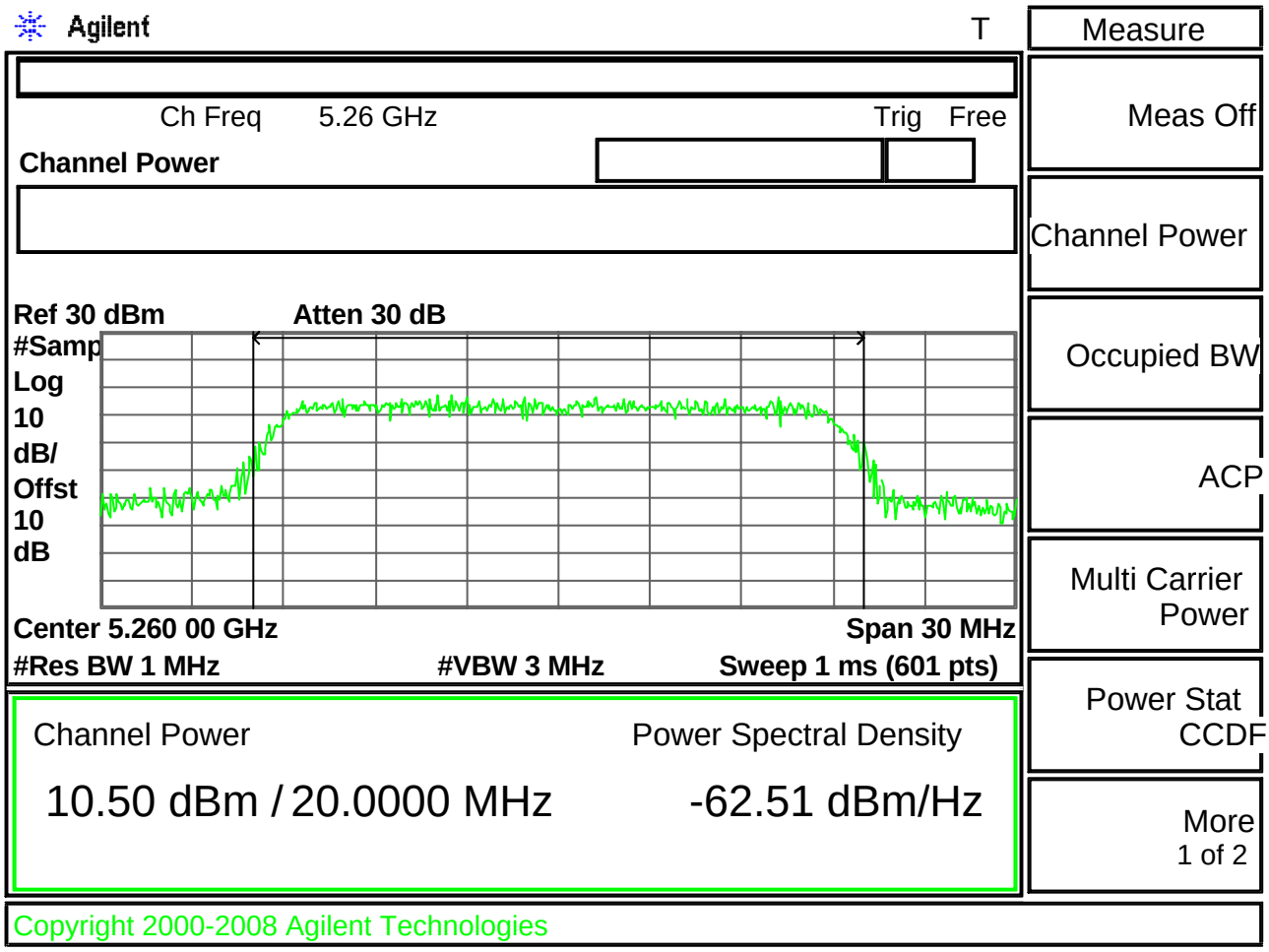
Test Date: Mar. 21, 2011 Temperature: 17°C Humidity: 54%

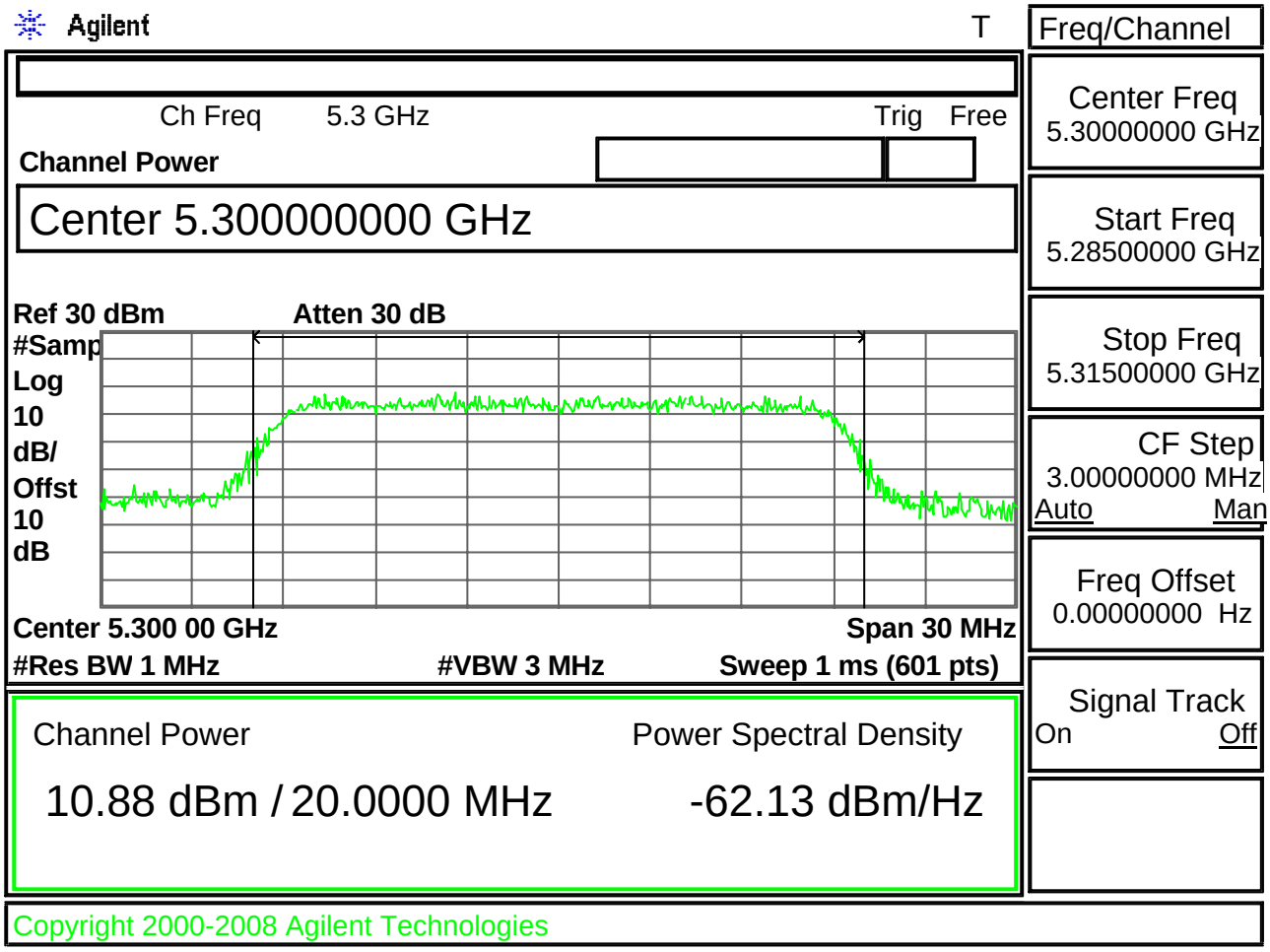
The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

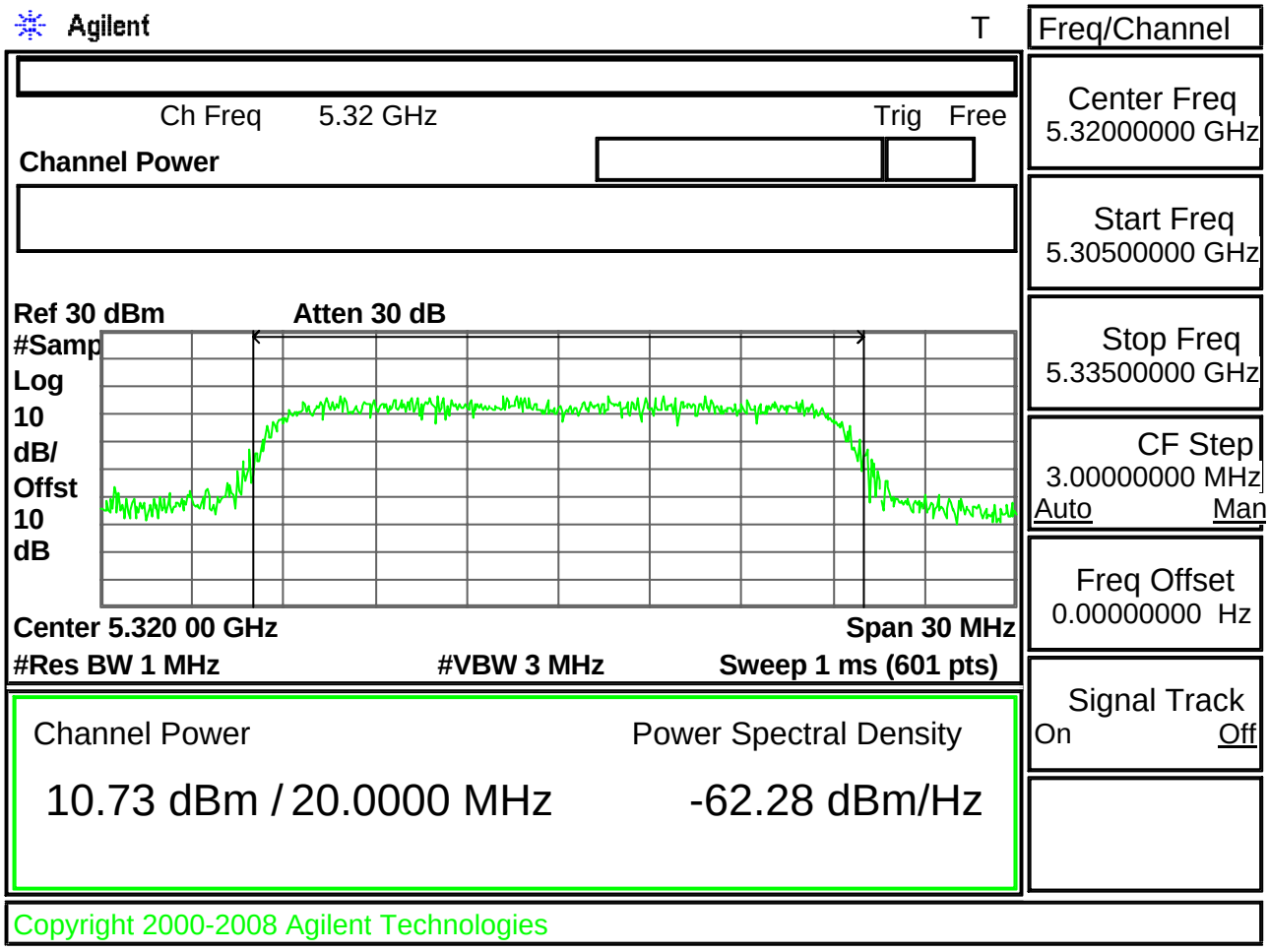
Channel	Frequency (MHz)	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Peak Power (dBm)	FCC Limit (dBm)	Chart
52	5260	17	20.062	17.02	10.50	17.00	Page 74
60	5300	17	19.892	16.99	10.88	16.99	Page 75
64	5320	17	19.909	16.99	10.73	16.99	Page 76

Note:

1.Please refer to page 74 to page 76 for chart
2. Fixed Limit = 50mW=17dBm
3. Caculated Limit = 4dBm + 10 log (26dB BW)
4. If antenna gain ≦ 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm
5. If antenna gain > 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)
6. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)


Agilent
T
Measure
Ch Freq 5.26 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.260 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
10.50 dBm / 20.0000 MHz
Power Spectral Density
-62.51 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent
T
Freq/Channel
Ch Freq 5.3 GHz
Trig Free
Channel Power
Center 5.300000000 GHz
Center Freq
5.30000000 GHz
Start Freq
5.28500000 GHz
Stop Freq
5.31500000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.300 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
10.88 dBm / 20.0000 MHz
Power Spectral Density
-62.13 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent
T
Freq/Channel
Ch Freq 5.32 GHz
Trig Free
Channel Power
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.320 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
10.73 dBm / 20.0000 MHz
Power Spectral Density
-62.28 dBm/Hz
Center Freq
5.32000000 GHz
Start Freq
5.30500000 GHz
Stop Freq
5.33500000 GHz
CF Step
3.00000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

7.4.2.3 5.6GHz

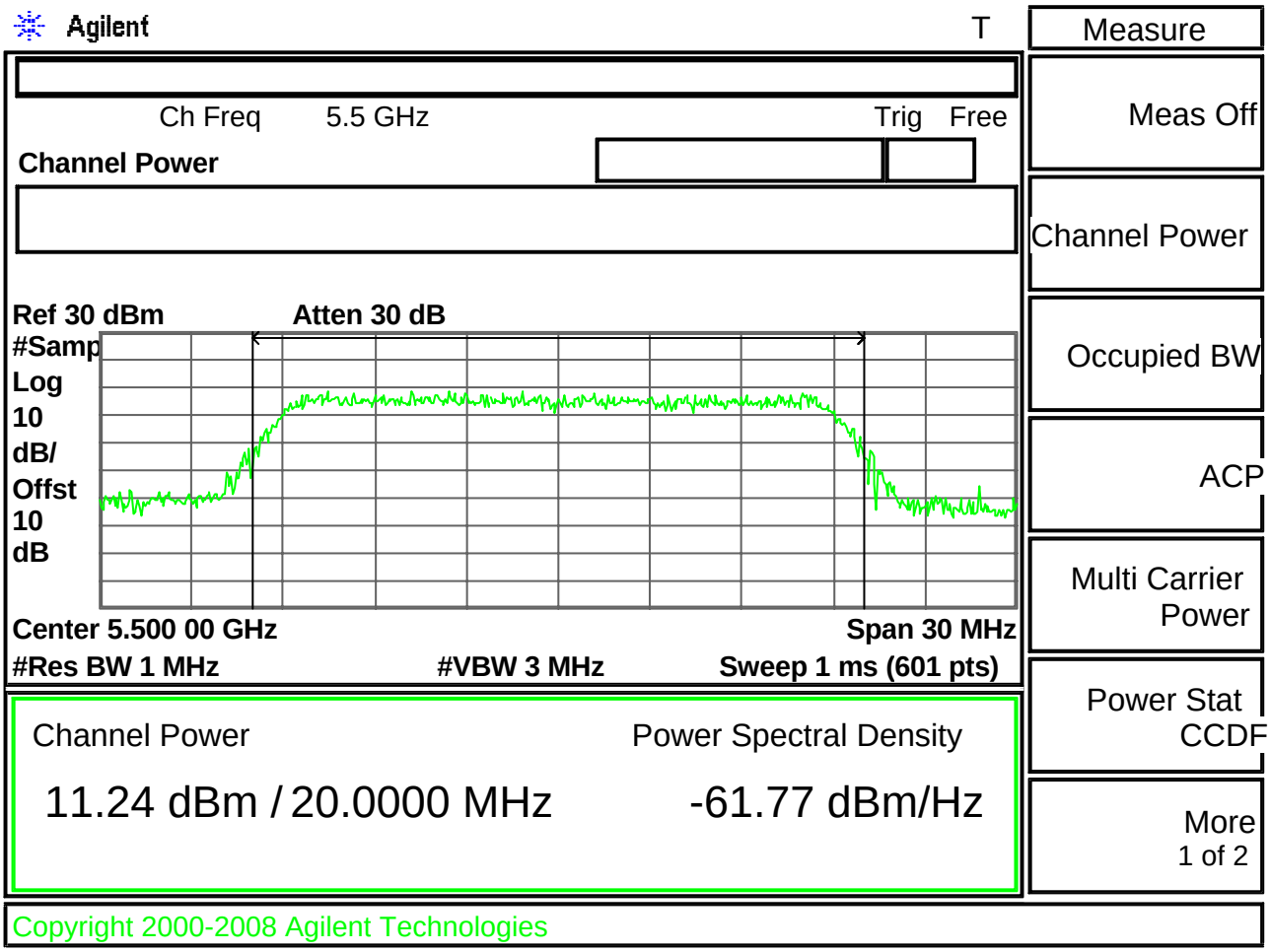
Test Date: Mar. 21, 2011 Temperature: 17℃ Humidity: 54%

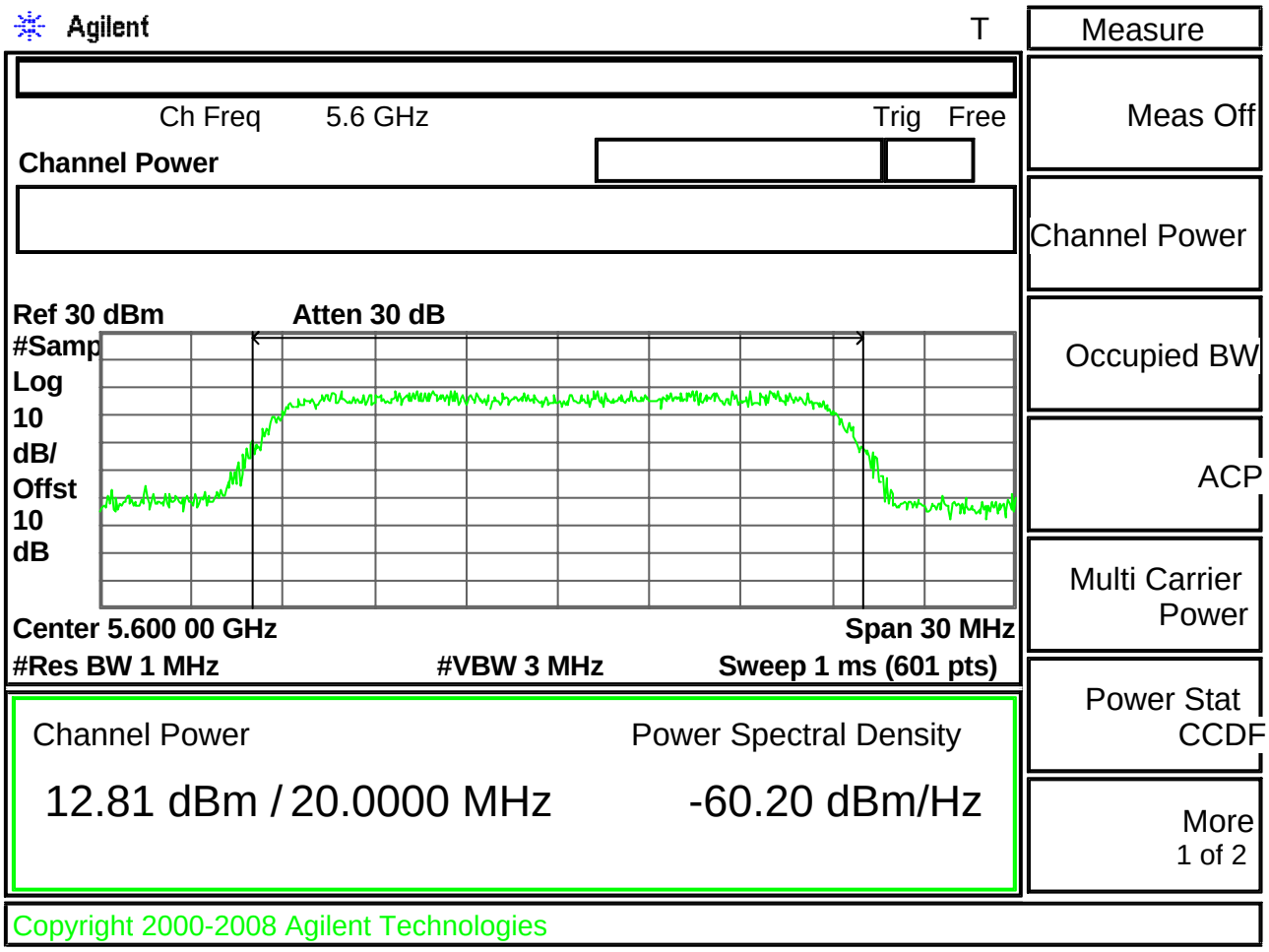
The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

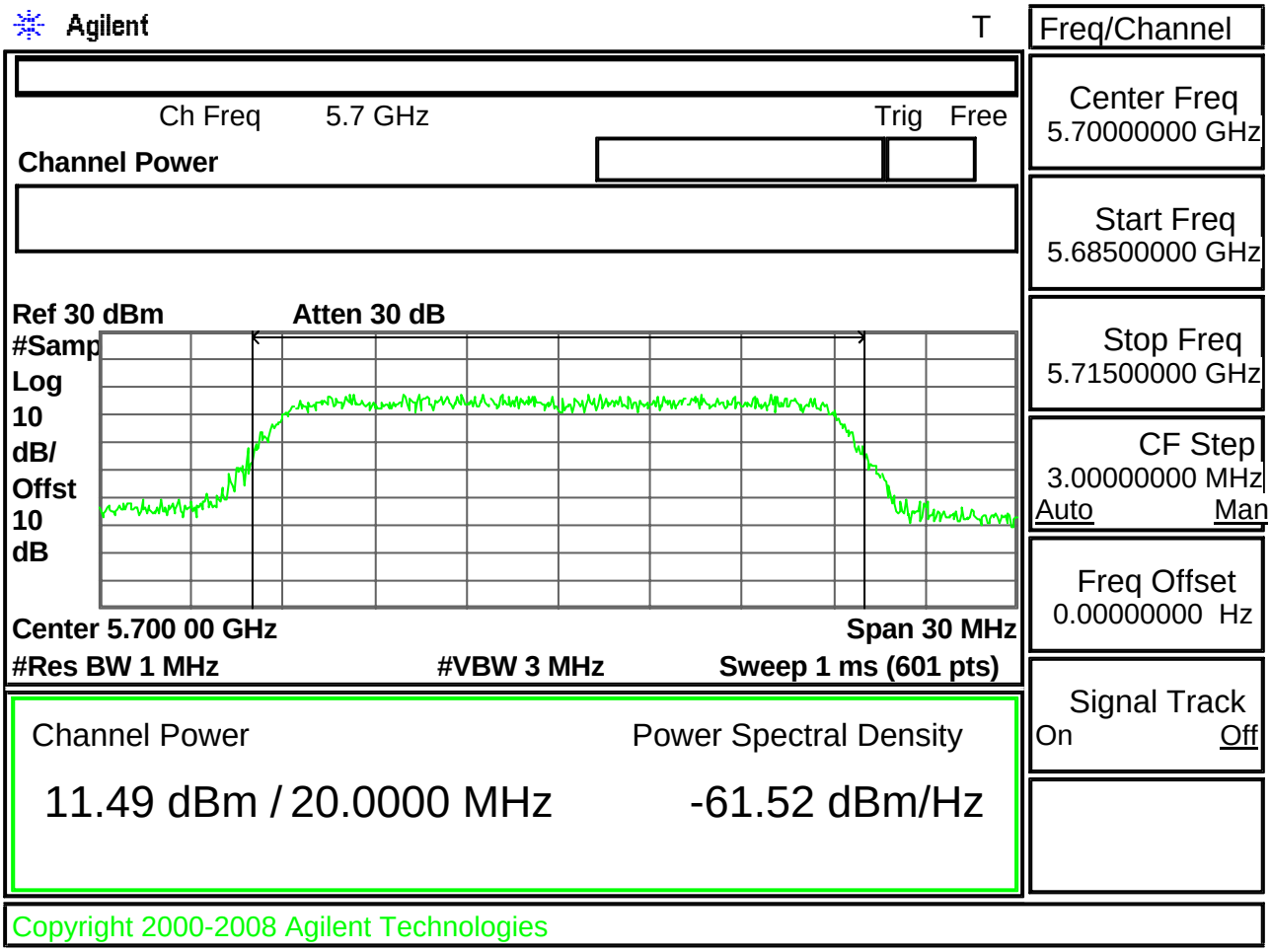
Channel	Frequency (MHz)	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Peak Power (dBm)	FCC Limit (dBm)	Chart
100	5500	24	20.024	24.02	11.24	24.00	Page 78
120	5600	24	20.007	24.01	12.81	24.00	Page 79
140	5700	24	19.842	23.98	11.49	23.98	Page 80

Note:

1.Please refer to page 78 to page 80 for chart
2. Fixed Limit = 50mW=17dBm
3. Caculated Limit = 11dBm + 10 log (26dB BW)
4. If antenna gain ≦ 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm
5. If antenna gain > 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)
6. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)


Agilent
T
Measure
Ch Freq 5.5 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.500 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
11.24 dBm / 20.0000 MHz
Power Spectral Density
-61.77 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent
T
Measure
Ch Freq 5.6 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.600 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
12.81 dBm / 20.0000 MHz
Power Spectral Density
-60.20 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent
T
Freq/Channel
Ch Freq 5.7 GHz
Trig Free
Channel Power
Center Freq
5.70000000 GHz
Start Freq
5.68500000 GHz
Stop Freq
5.71500000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.700 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
11.49 dBm / 20.0000 MHz
Power Spectral Density
-61.52 dBm/Hz
Copyright 2000-2008 Agilent Technologies

7.4.3 IEEE 802.11an, HT40

7.4.3.1 5.2GHz

Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

Channel	Frequency (MHz)	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Peak Power (dBm)	FCC Limit (dBm)	Chart
38	5190	17	40.561	20.08	10.22	17.00	Page 82
46	5230	17	40.197	20.04	11.05	17.00	Page 83

Note:

1.Please refer to page 82 to page 83 for chart

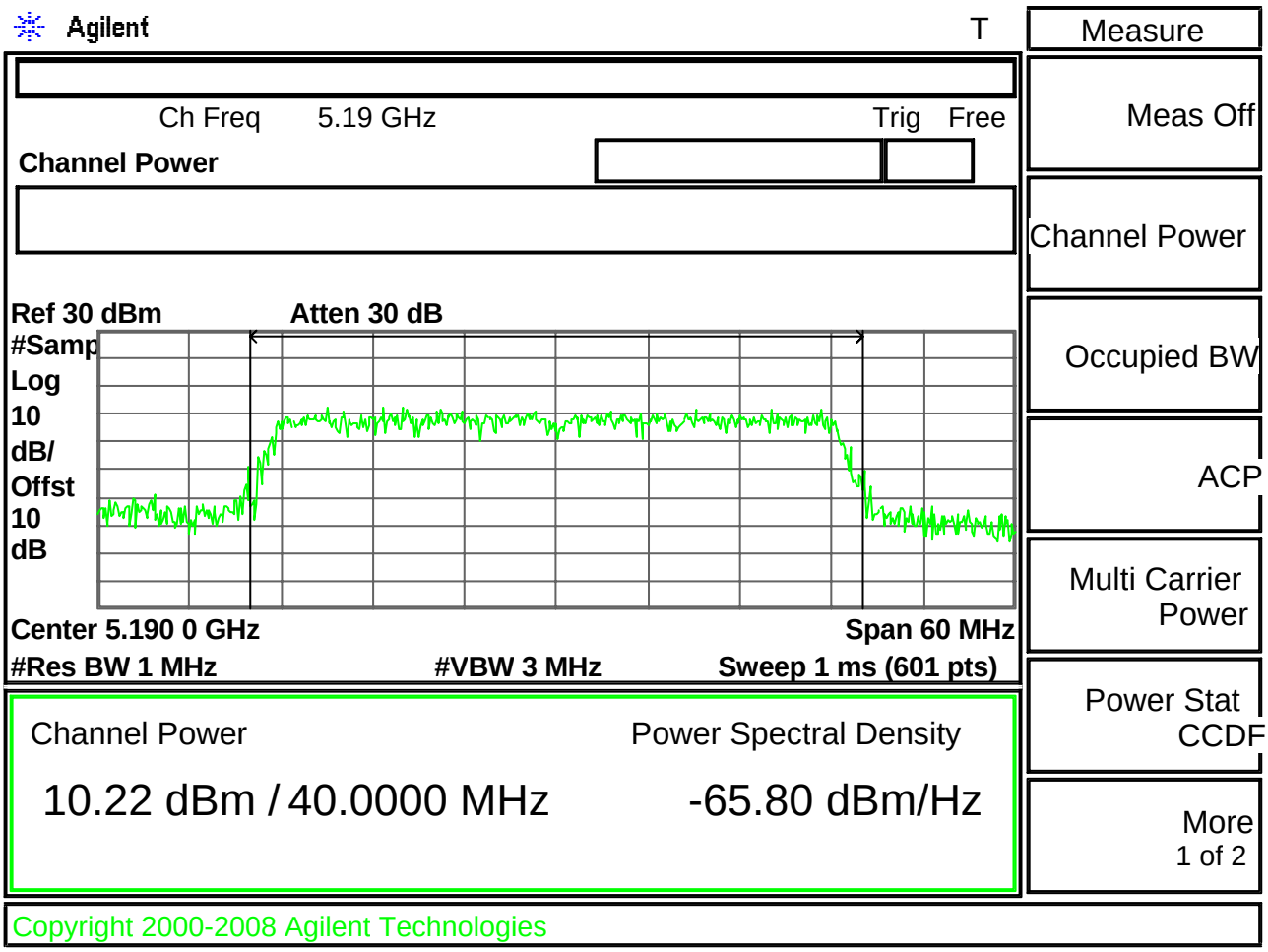
2. Fixed Limit = 50mW=17dBm

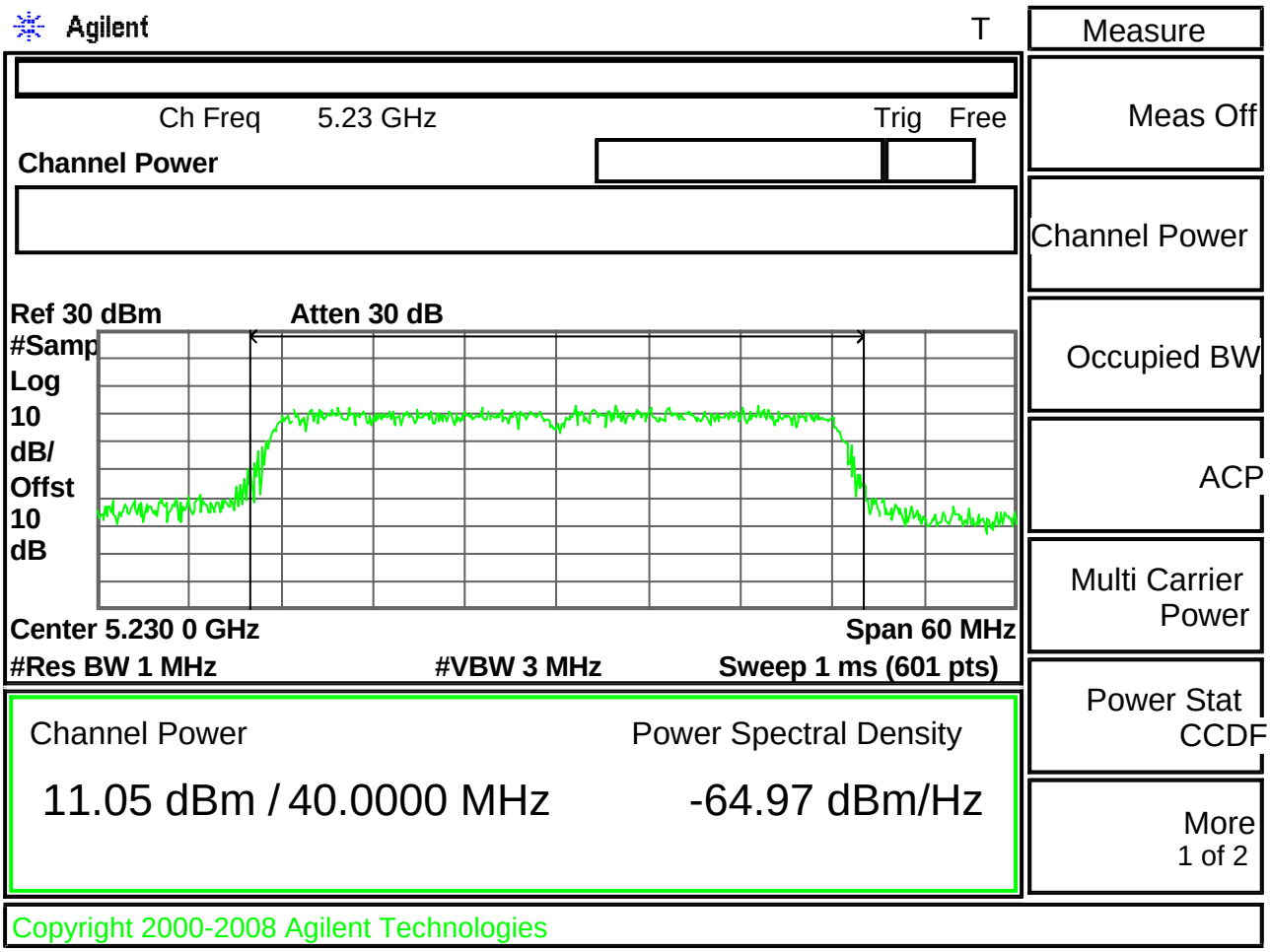
3. Caculated Limit = 4dBm + 10 log (26dB BW)

4. If antenna gain ≦ 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm

5. If antenna gain > 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)

6. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)


Agilent
T
Measure
Ch Freq 5.19 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.190 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
10.22 dBm / 40.0000 MHz
Power Spectral Density
-65.80 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent
T
Measure
Ch Freq 5.23 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Occupied BW
ACP
Multi Carrier Power
Center 5.230 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Power Stat CCDF
Channel Power
Power Spectral Density
11.05 dBm / 40.0000 MHz
-64.97 dBm/Hz
More
1 of 2
Copyright 2000-2008 Agilent Technologies

7.4.3.2 5.3GHz

Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

Channel	Frequency (MHz)	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Peak Power (dBm)	FCC Limit (dBm)	Chart
54	5270	17	40.638	20.09	11.25	17.00	Page 85
62	5310	17	41.068	20.14	11.30	17.00	Page 86

Note:

1.Please refer to page 85 to page 86 for chart

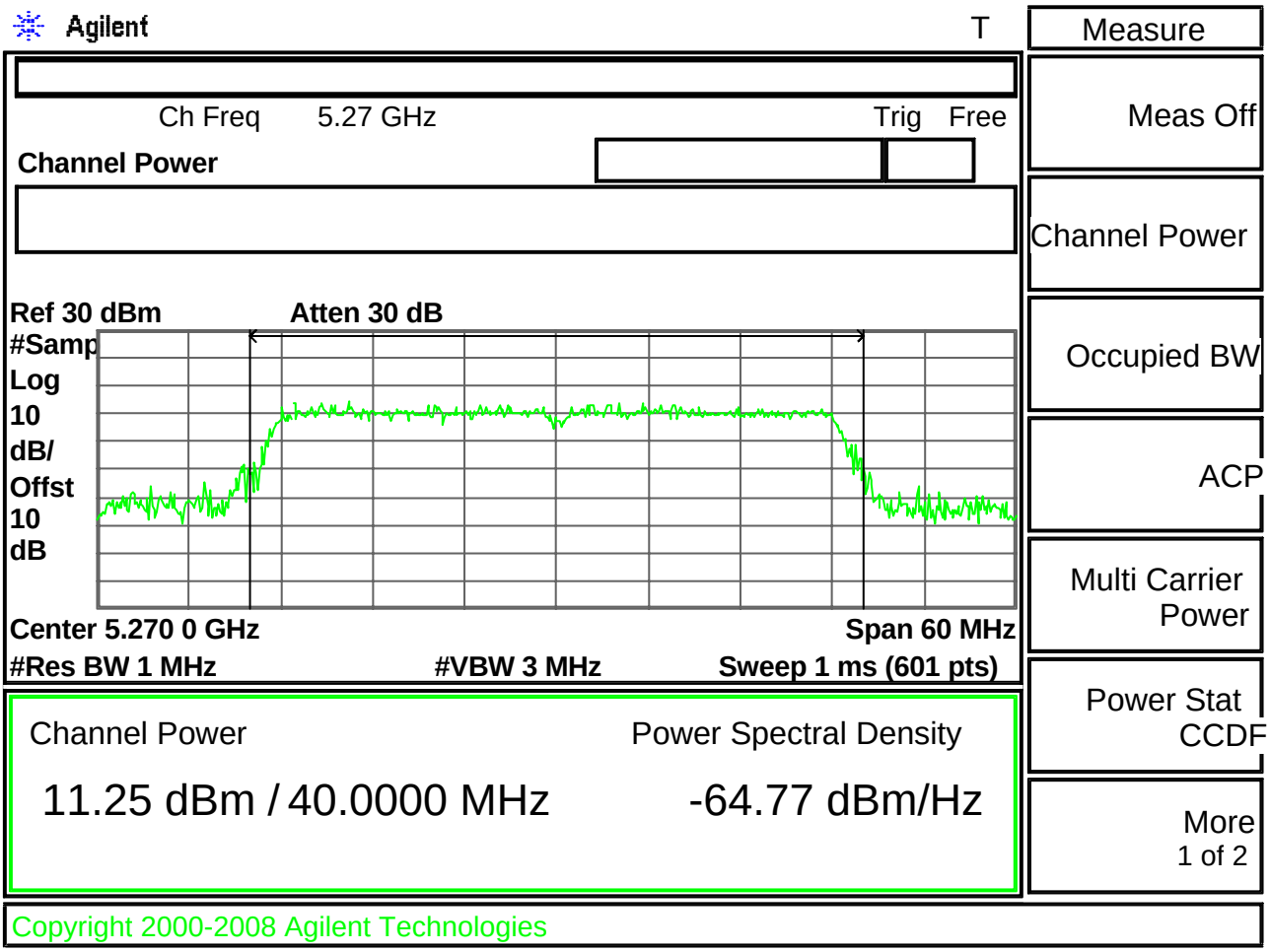
2. Fixed Limit = 50mW=17dBm

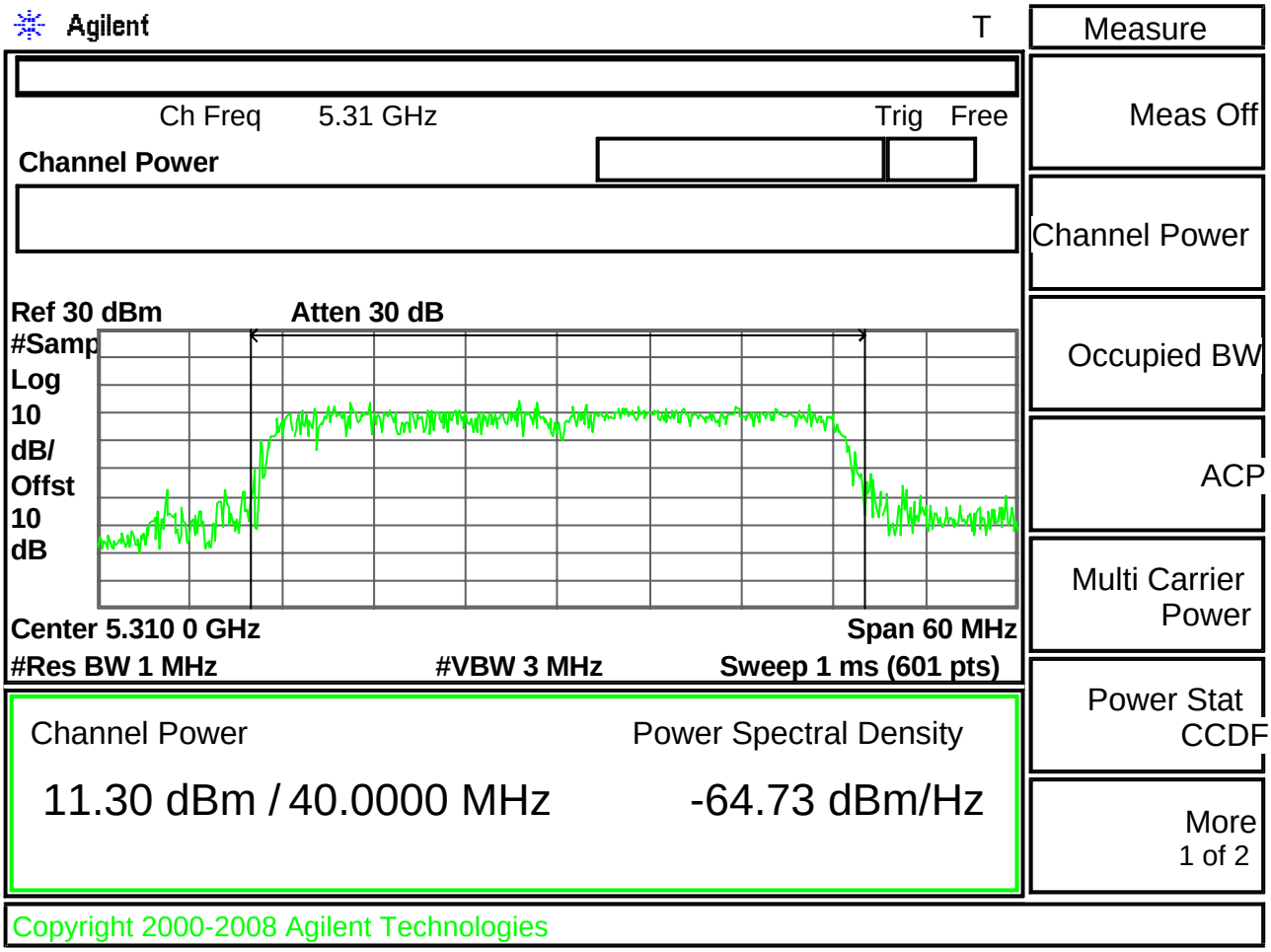
3. Caculated Limit = 4dBm + 10 log (26dB BW)

4. If antenna gain ≦ 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm

5. If antenna gain > 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)

6. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)


Agilent
T
Measure
Ch Freq 5.27 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.270 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
11.25 dBm / 40.0000 MHz
Power Spectral Density
-64.77 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent
T
Measure
Ch Freq 5.31 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.310 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
11.30 dBm / 40.0000 MHz
Power Spectral Density
-64.73 dBm/Hz
Copyright 2000-2008 Agilent Technologies

7.4.3.3 5.6GHz

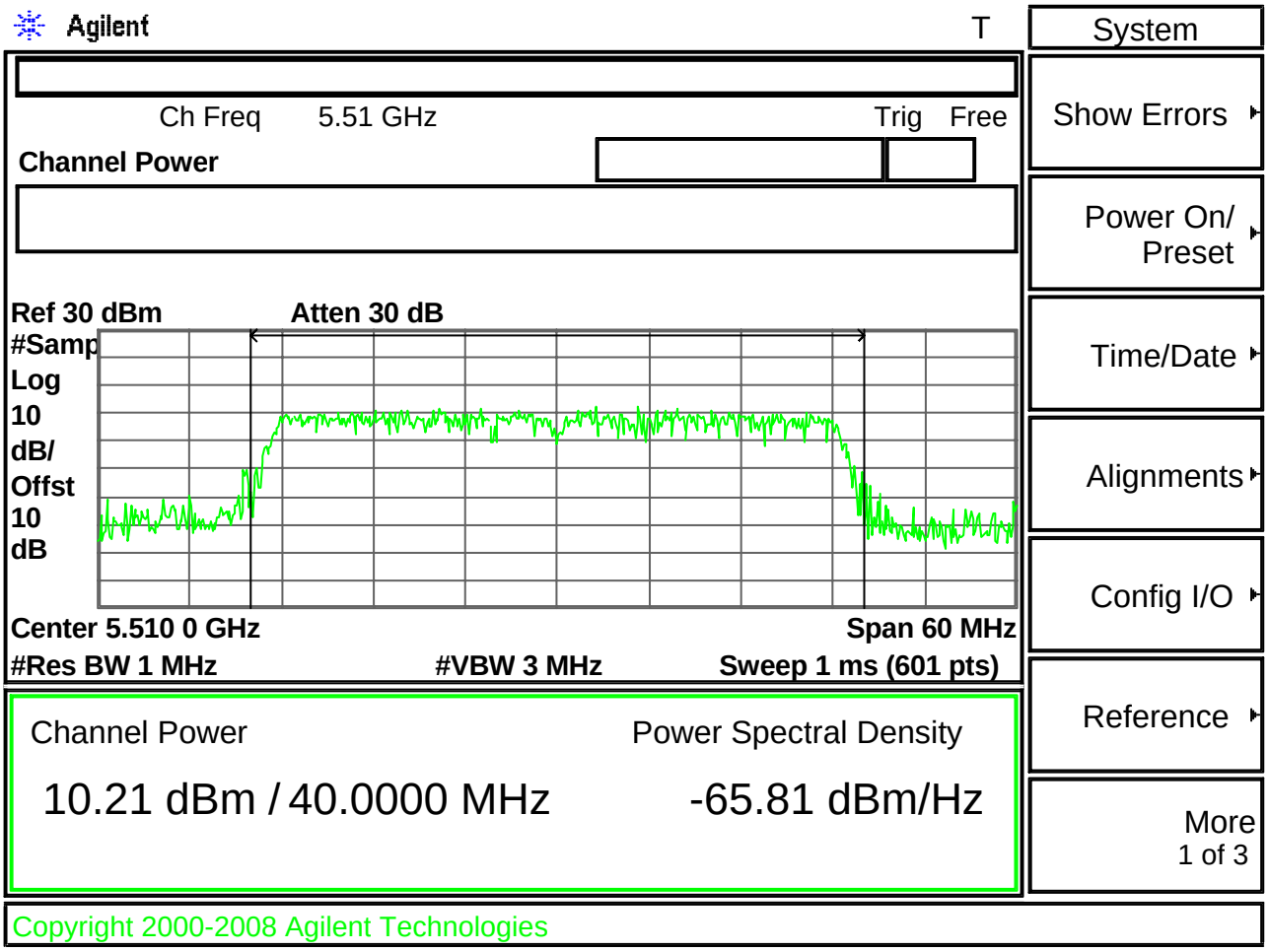
Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

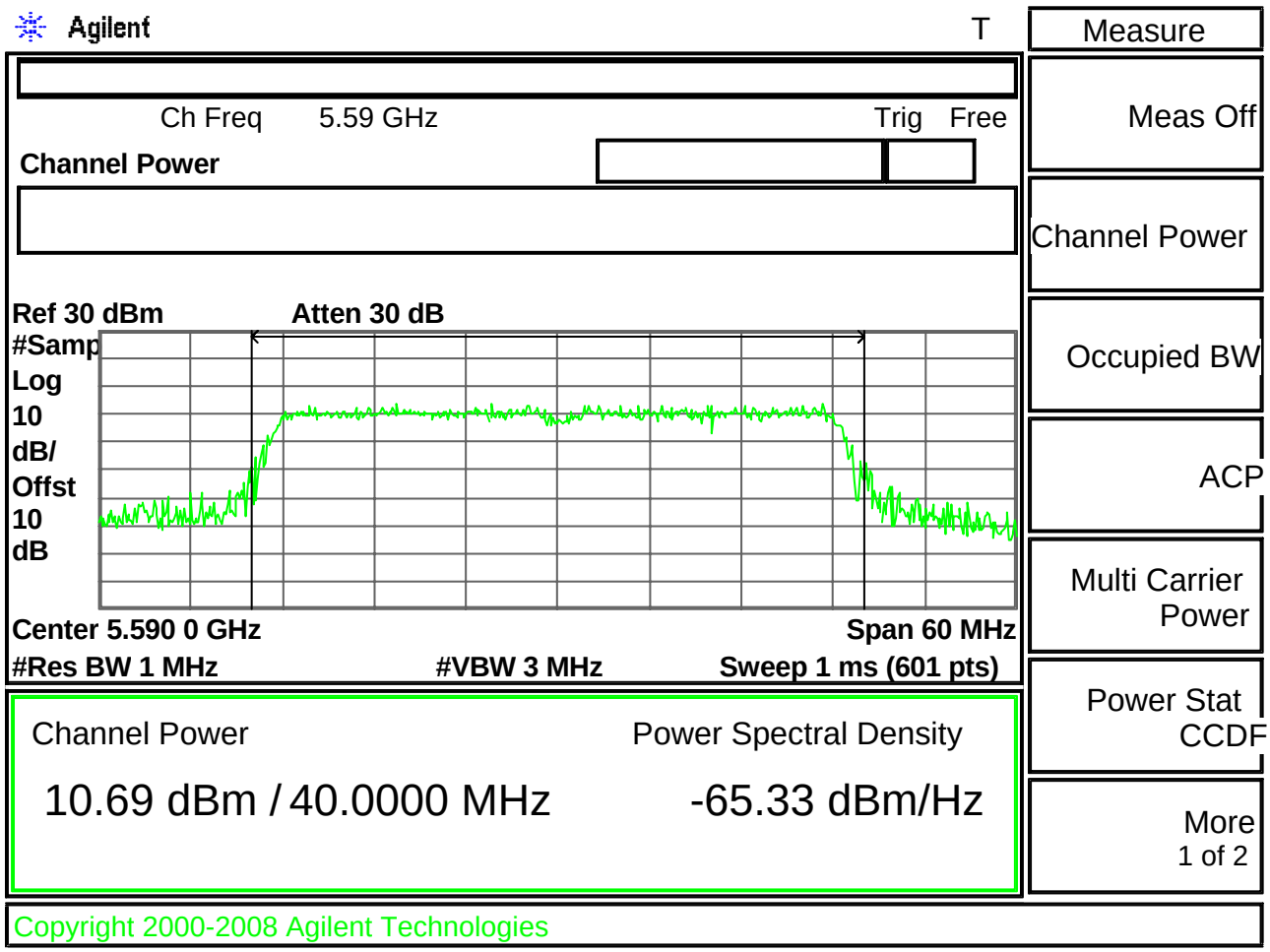
The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

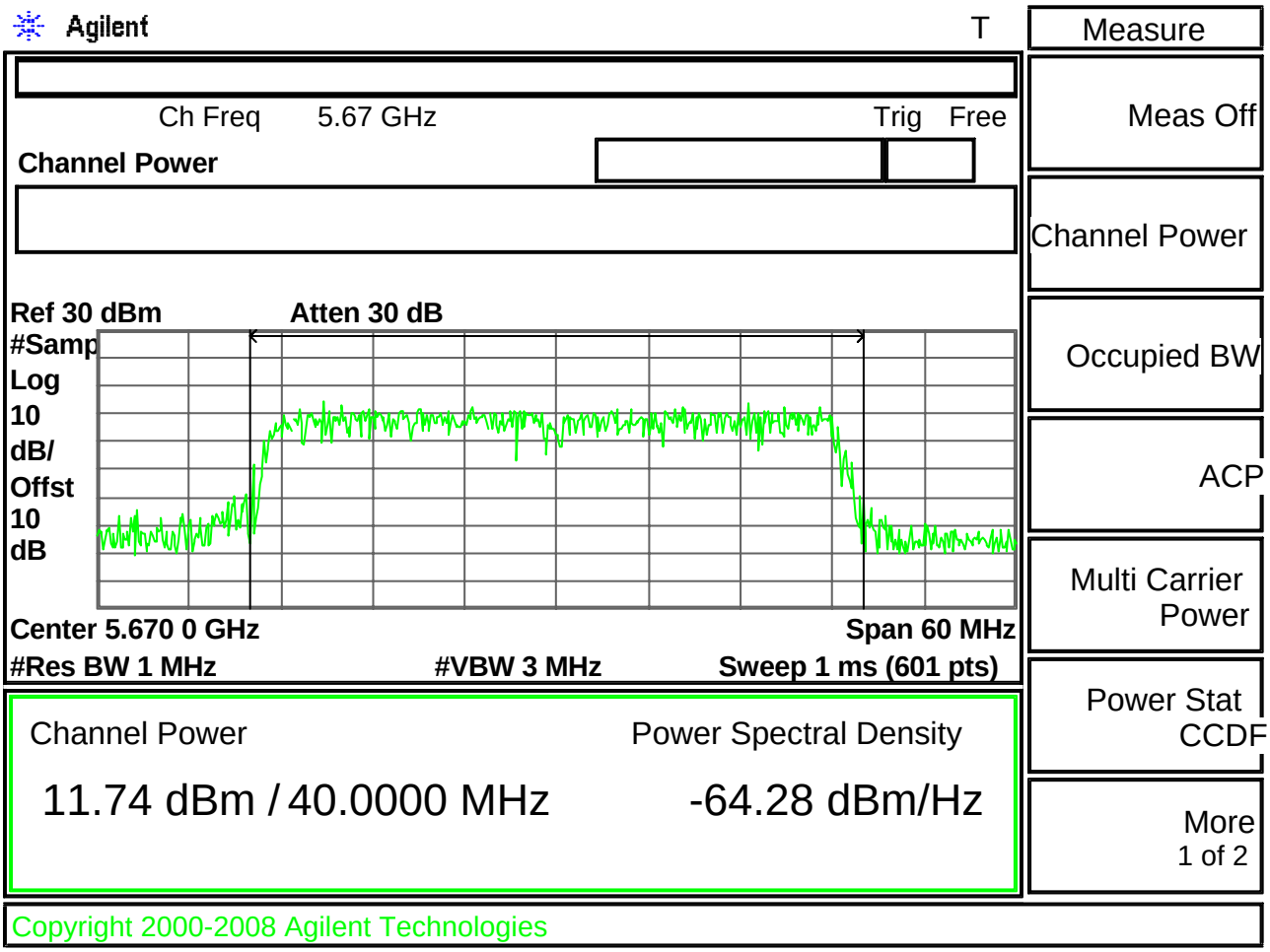
Channel	Frequency (MHz)	Fixd limit (dBm)	26dB BW (MHz)	Limit (dBm)	Peak Power (dBm)	FCC Limit (dBm)	Chart
102	5510	24	40.032	27.02	10.21	24.00	Page 88
118	5590	24	41.037	27.13	10.69	24.00	Page 89
134	5670	24	40.591	27.08	11.74	24.00	Page 90

Note:

1.Please refer to page 88 to page 90 for chart
2. Fixed Limit = 50mW=17dBm
3. Caculated Limit = 11dBm + 10 log (26dB BW)
4. If antenna gain ≦ 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm
5. If antenna gain > 6dBi, FCC Limit = (Minimum of Fixed Limit and Caculated Limit) dBm – (highest antenna gain – 6 dBi)
6. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)


Agilent
T
Ch Freq 5.51 GHz
Trig Free
Channel Power
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.510 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
10.21 dBm / 40.0000 MHz
Power Spectral Density
-65.81 dBm/Hz
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More
1 of 3
Copyright 2000-2008 Agilent Technologies


Agilent
T
Measure
Ch Freq 5.59 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.590 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
10.69 dBm / 40.0000 MHz
Power Spectral Density
-65.33 dBm/Hz
Copyright 2000-2008 Agilent Technologies


Agilent
T
Measure
Ch Freq 5.67 GHz
Trig Free
Channel Power
Meas Off
Channel Power
Occupied BW
ACP
Multi Carrier Power
Power Stat CCDF
More 1 of 2
Ref 30 dBm
Atten 30 dB
#Samp
Log
10
dB/
Offst
10
dB
Center 5.670 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Channel Power
11.74 dBm / 40.0000 MHz
Power Spectral Density
-64.28 dBm/Hz
Copyright 2000-2008 Agilent Technologies

8 POWER DENSITY MEASUREMENT

8.1 Standard Applicable

According to 15.407(a)(1) for the band 5.15-58.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 50 mW or 4 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 4 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

According to 15.407(a)(2) for the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. In addition, the peak power spectral density shall not exceed 11 dBm in any 1-MHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

8.2 Measurement Procedure

1. The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002. PPSD method #2 is used.
2. Position the EUT as shown in figure 2

8.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Agilent	E4446A	09/26/2011

8.4 Measurement Data

8.4.1 IEEE 802.11a

8.4.1.1 5.2GHz

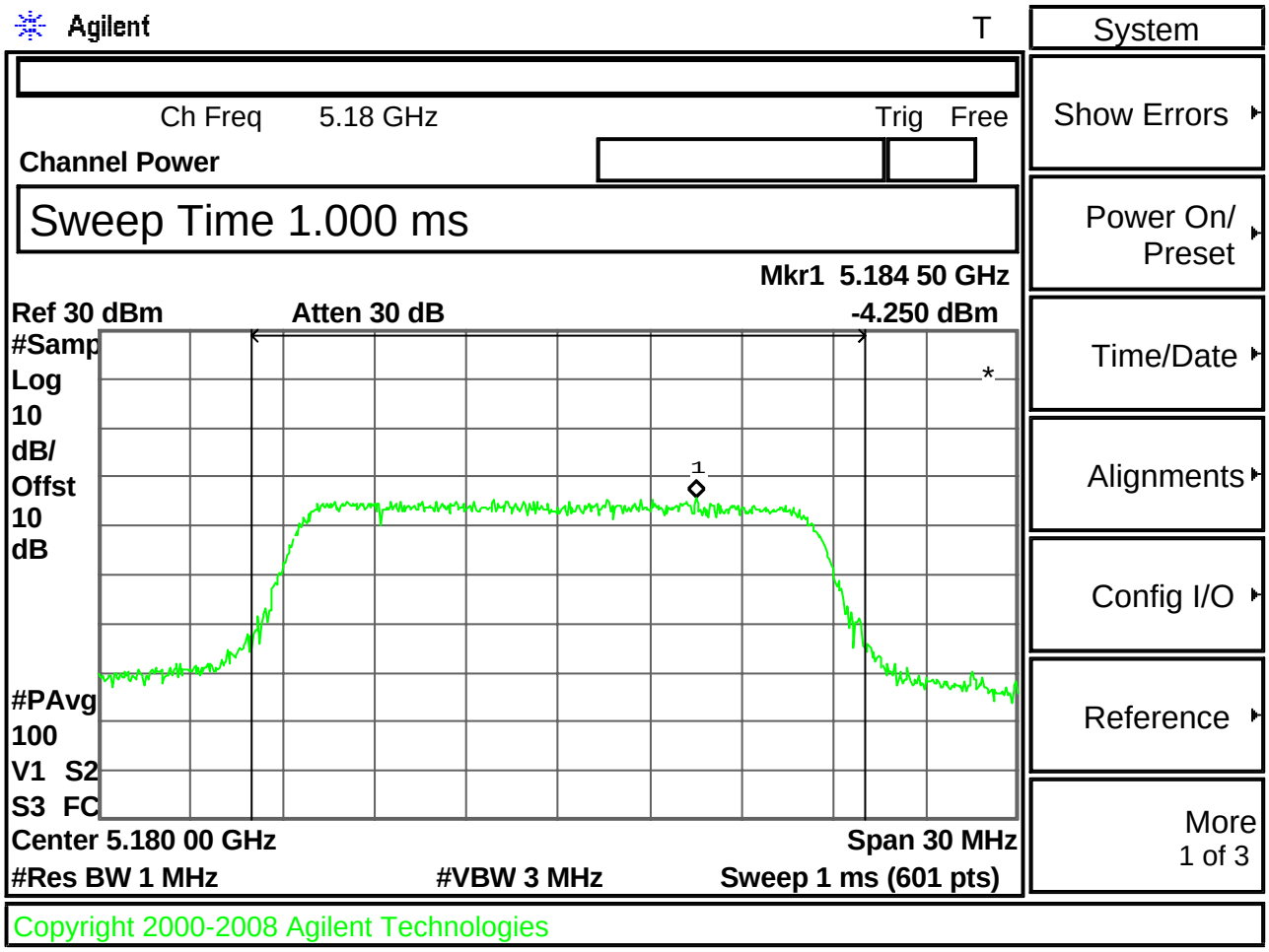
Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

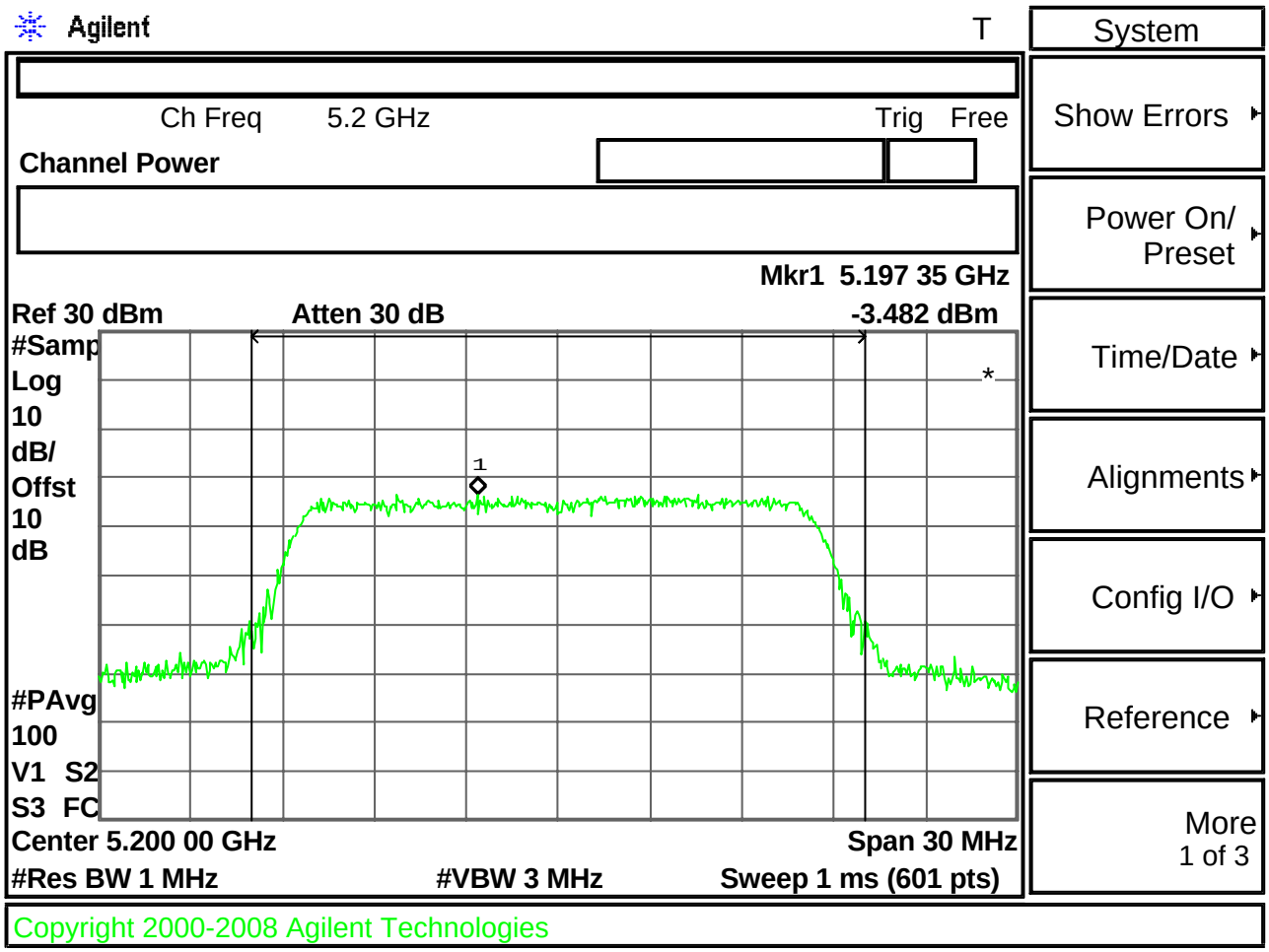
The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

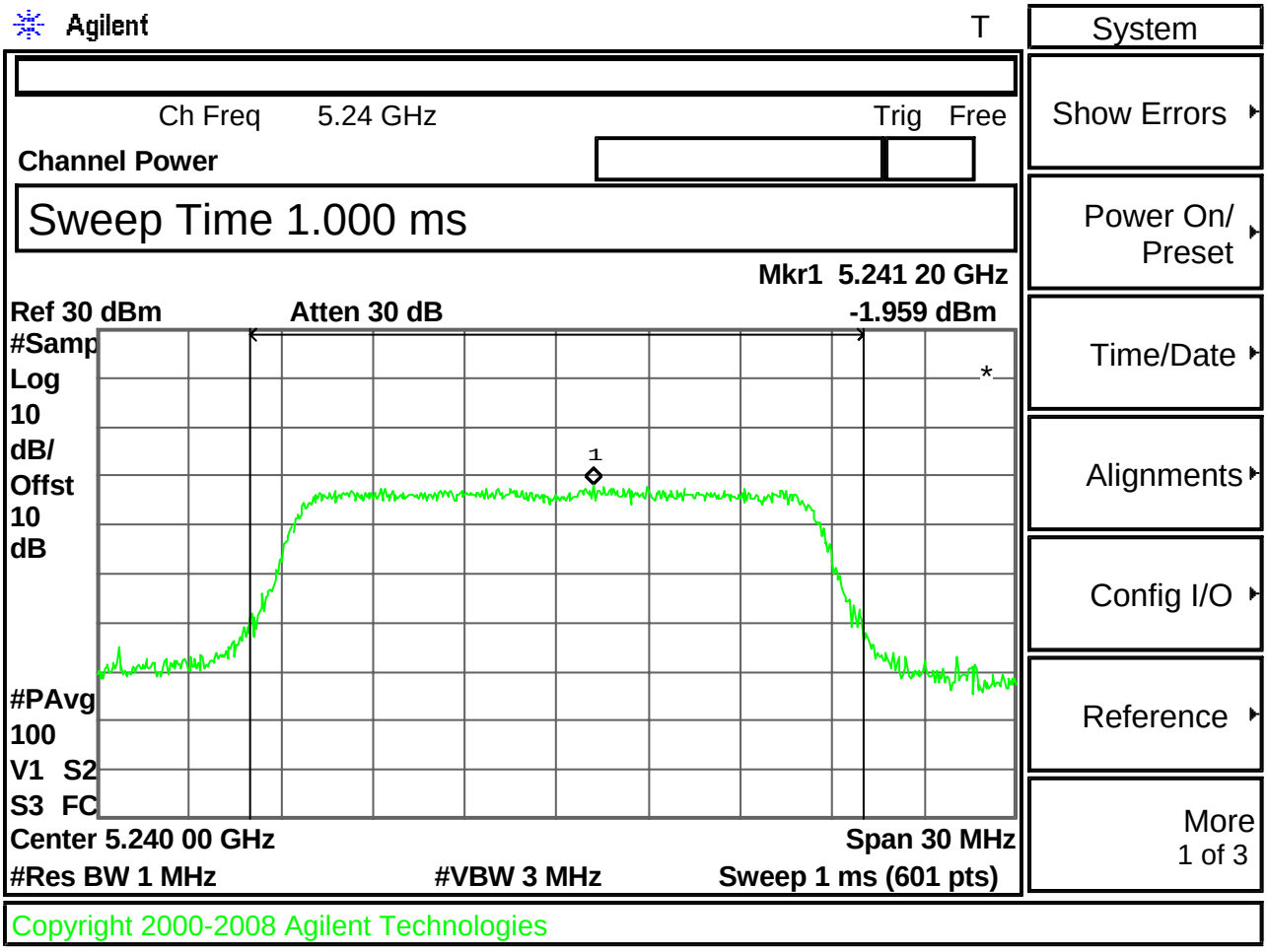
Channel	Frequency (MHz)	Peak Power Spectral Density (dBm)	FCC Limit (dBm)	Chart
36	5180	-4.25	4	Page 93
40	5200	-3.48	4	Page 94
48	5240	-1.96	4	Page 95

Note:

1. Please refer to page 93 to page 95 for chart
2. If antenna gain ≦ 6dBi, FCC Limit =4 dBm
3. If antenna gain > 6dBi, FCC Limit =4 dBm – (highest antenna gain – 6 dBi)
4. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)


Agilent
T
System
Ch Freq 5.18 GHz
Trig Free
Channel Power
Sweep Time 1.000 ms
Mkr1 5.184 50 GHz
Ref 30 dBm
Atten 30 dB
-4.250 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
S3 FC
Center 5.180 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More
1 of 3
Copyright 2000-2008 Agilent Technologies


Agilent
T
System
Ch Freq 5.2 GHz
Trig Free
Channel Power
Show Errors
Power On/ Preset
Mkr1 5.197 35 GHz
Ref 30 dBm
Atten 30 dB
-3.482 dBm
#Samp
Log
10
dB/
Offst
10
dB
Time/Date
Alignments
Config I/O
Reference
#PAvg
100
V1 S2
S3 FC
More
1 of 3
Center 5.200 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Copyright 2000-2008 Agilent Technologies



8.4.1.2 5.3GHz

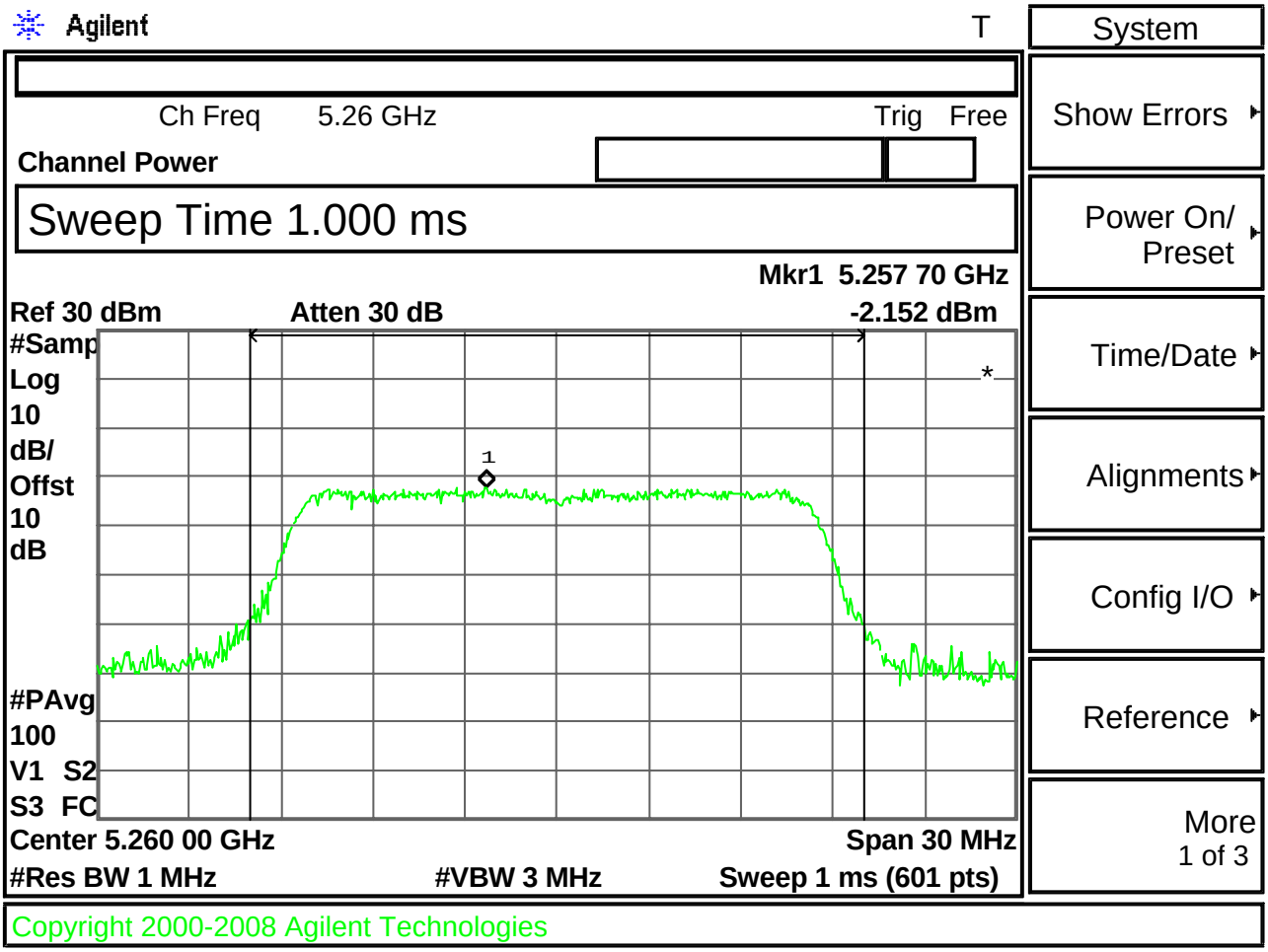
Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

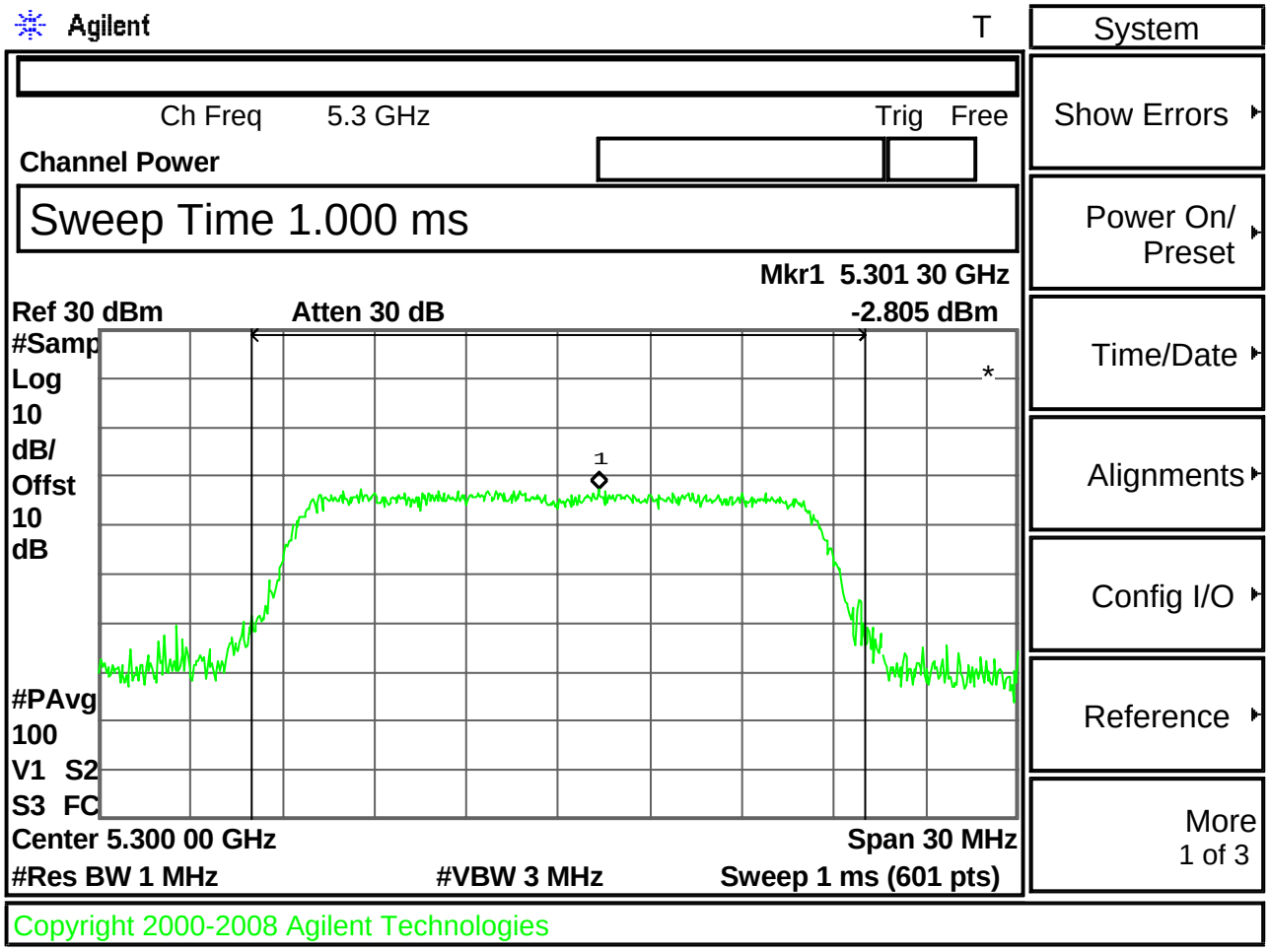
The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

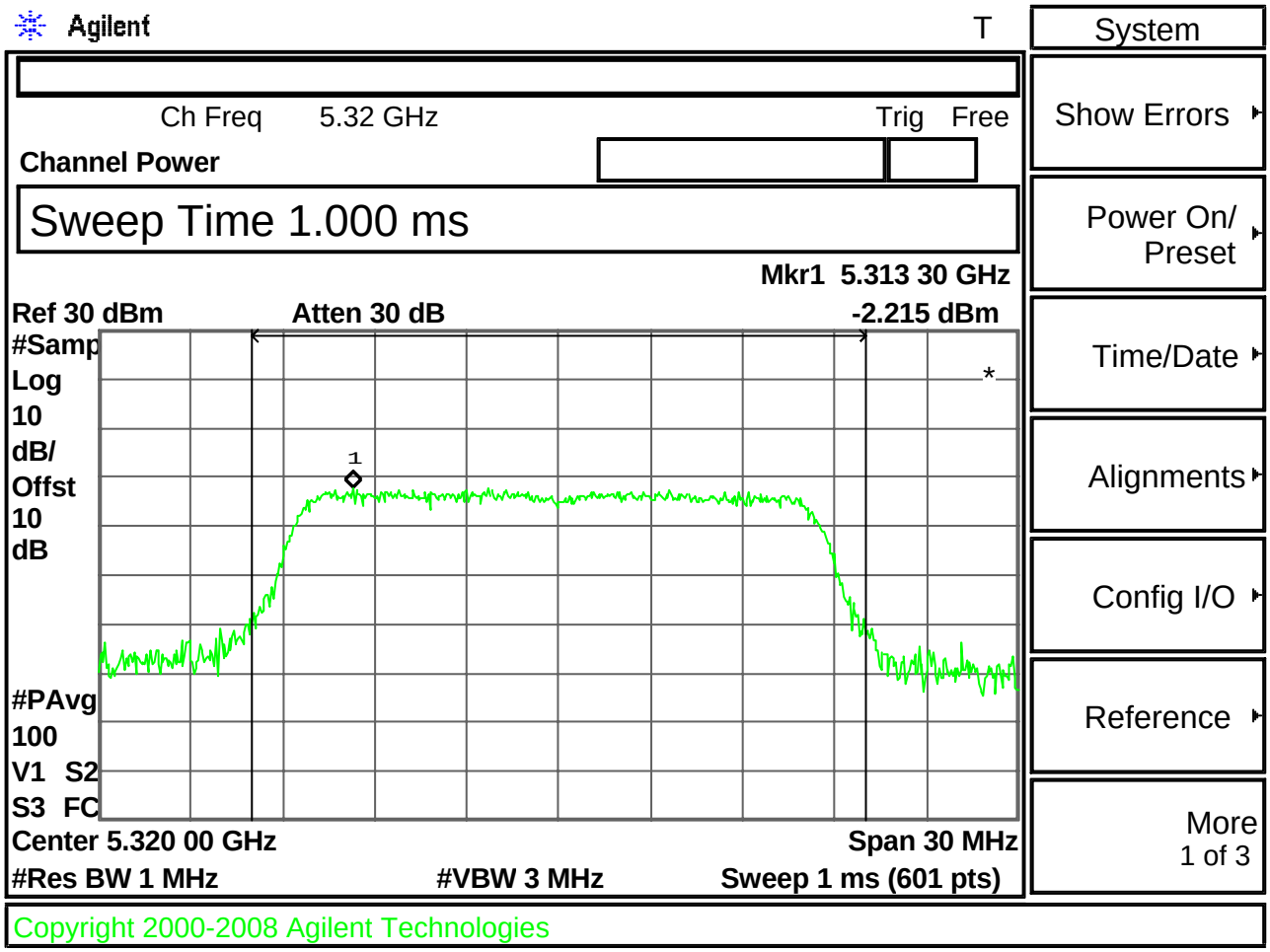
Channel	Frequency (MHz)	Peak Power Spectral Density (dBm)	FCC Limit (dBm)	Chart
52	5260	-2.15	4	Page 97
60	5300	-2.81	4	Page 98
64	5320	-2.22	4	Page 99

Note:

1. Please refer to page 97 to page 99 for chart
2. If antenna gain ≦ 6dBi, FCC Limit =4 dBm
3. If antenna gain > 6dBi, FCC Limit =4 dBm – (highest antenna gain – 6 dBi)
4. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)


Agilent
T
System
Ch Freq 5.26 GHz
Trig Free
Channel Power
Sweep Time 1.000 ms
Mkr1 5.257 70 GHz
Ref 30 dBm
Atten 30 dB
-2.152 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
S3 FC
Center 5.260 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More
1 of 3
Copyright 2000-2008 Agilent Technologies


Agilent
T
System
Ch Freq 5.3 GHz
Trig Free
Channel Power
Sweep Time 1.000 ms
Mkr1 5.301 30 GHz
Ref 30 dBm
Atten 30 dB
-2.805 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
S3 FC
Center 5.300 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies


Agilent
T
Ch Freq 5.32 GHz
Trig Free
Channel Power
Sweep Time 1.000 ms
Mkr1 5.313 30 GHz
Ref 30 dBm
Atten 30 dB
-2.215 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
S3 FC
Center 5.320 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More
1 of 3
Copyright 2000-2008 Agilent Technologies

8.4.1.3 5.6GHz

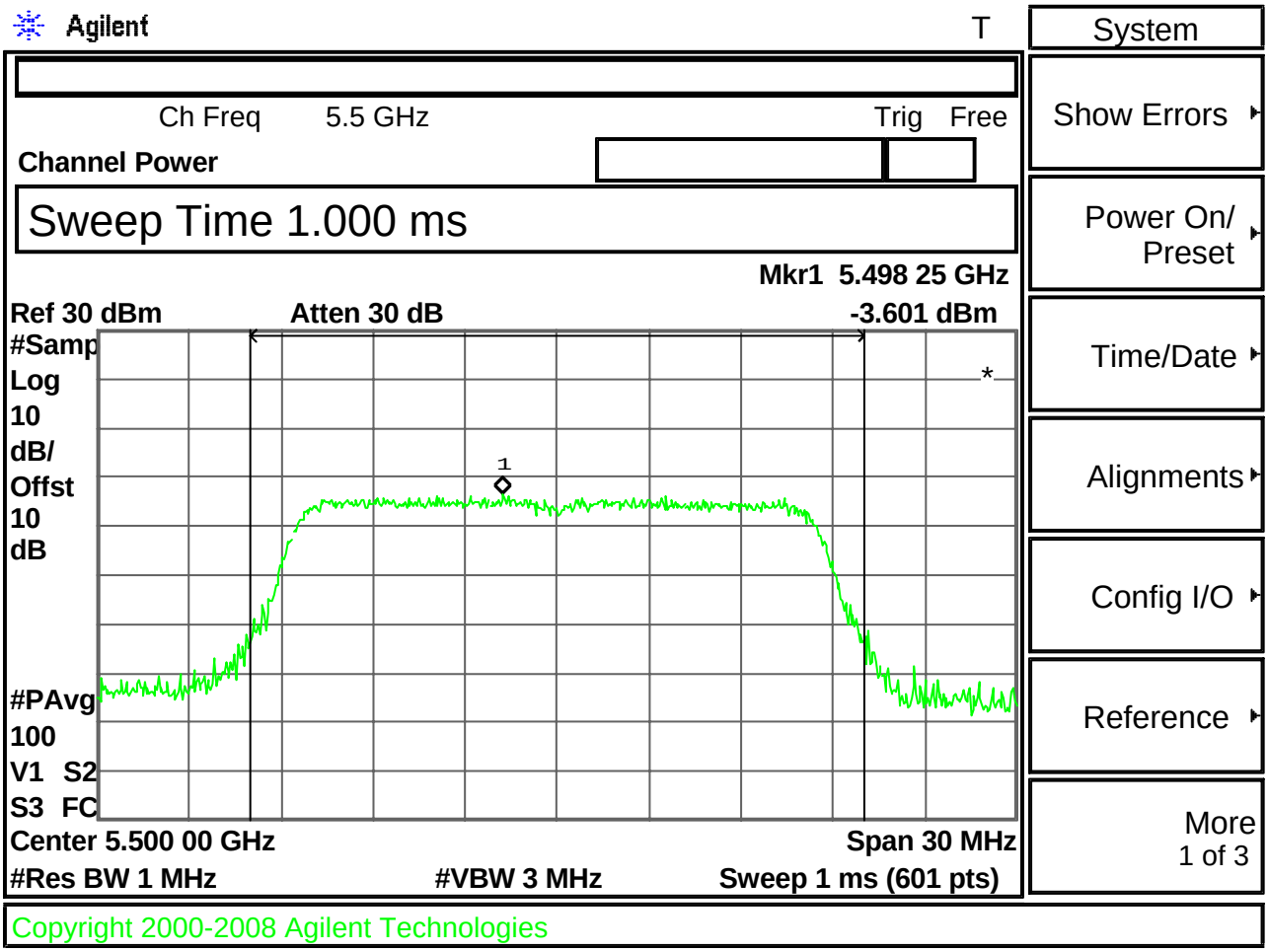
Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

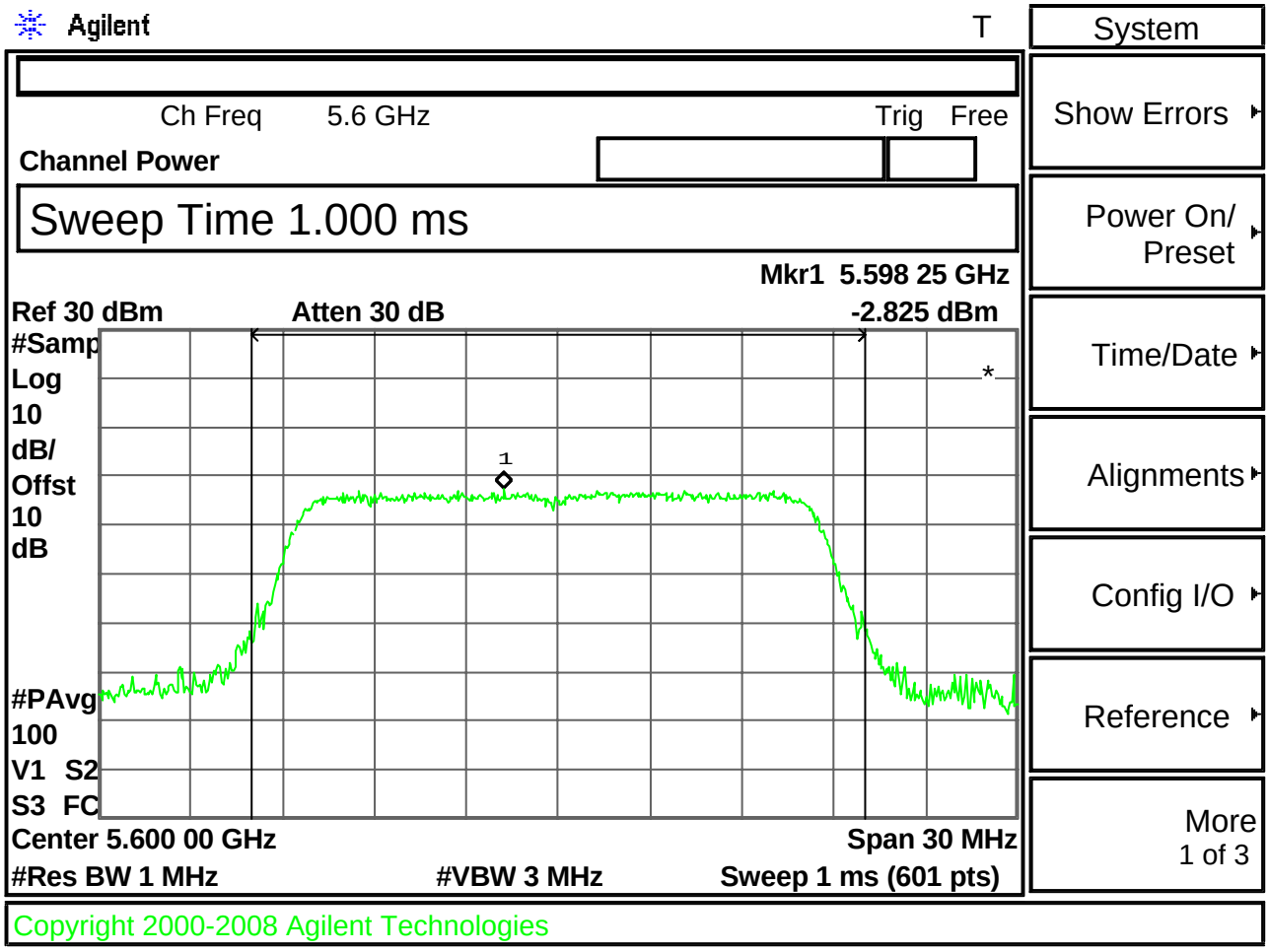
The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

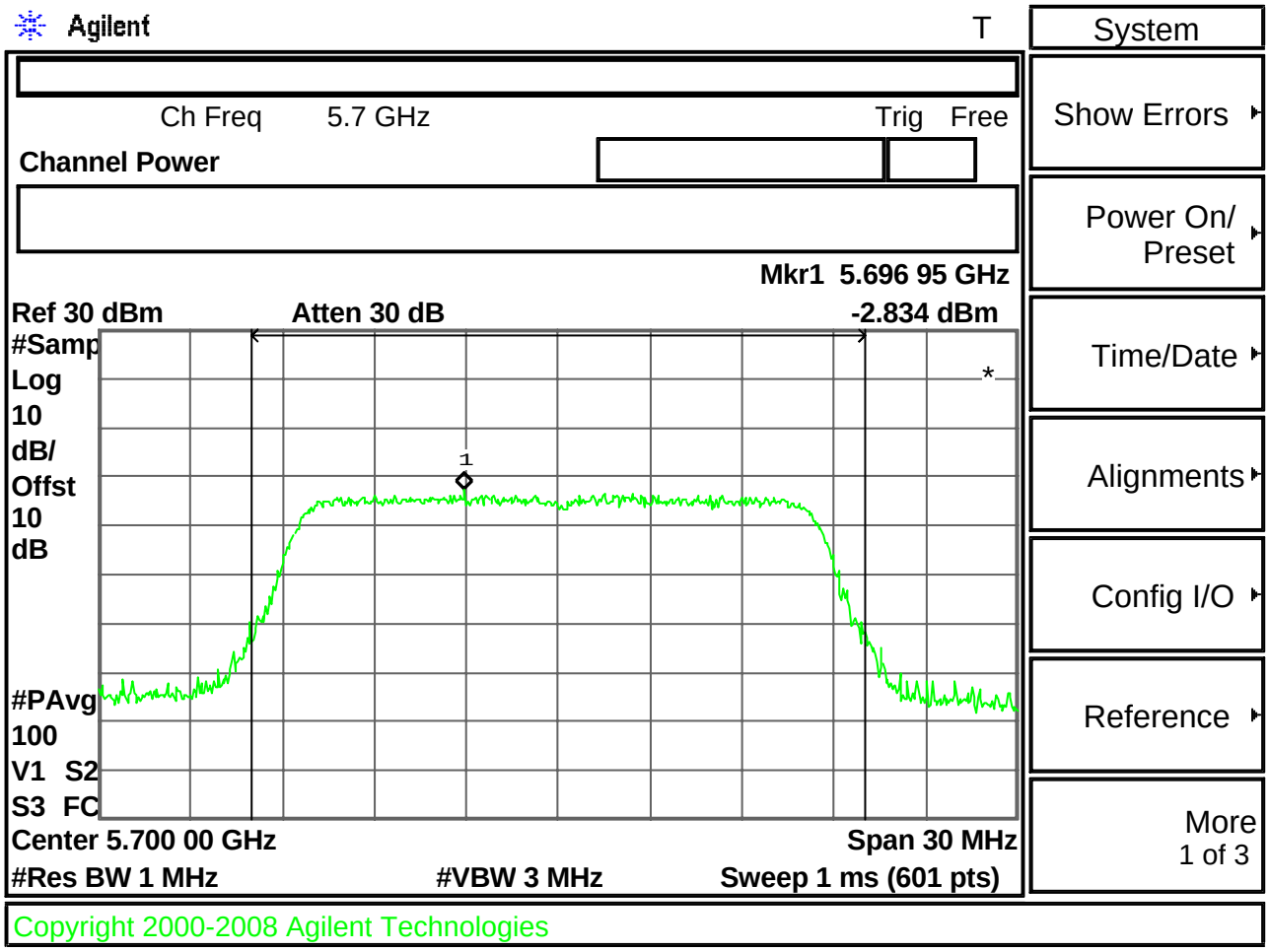
Channel	Frequency (MHz)	Peak Power Spectral Density (dBm)	FCC Limit (dBm)	Chart
100	5500	-3.60	4	Page 101
120	5600	-2.83	4	Page 102
140	5700	-2.83	4	Page 103

Note:

1. Please refer to page 101 to page 103 for chart
2. If antenna gain ≦ 6dBi, FCC Limit =4 dBm
3. If antenna gain > 6dBi, FCC Limit =4 dBm – (highest antenna gain – 6 dBi)
4. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)


Agilent
T
Ch Freq 5.5 GHz
Trig Free
Channel Power
Sweep Time 1.000 ms
Mkr1 5.498 25 GHz
Ref 30 dBm
Atten 30 dB
-3.601 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
S3 FC
Center 5.500 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies


Agilent
T
System
Ch Freq 5.6 GHz
Trig Free
Channel Power
Sweep Time 1.000 ms
Mkr1 5.598 25 GHz
Ref 30 dBm
Atten 30 dB
-2.825 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
S3 FC
Center 5.600 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies


Agilent
T
Ch Freq 5.7 GHz
Trig Free
Channel Power
Mkr1 5.696 95 GHz
Ref 30 dBm
Atten 30 dB
-2.834 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
S3 FC
Center 5.700 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
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8.4.2 IEEE 802.11an, HT20

8.4.2.1 5.2GHz

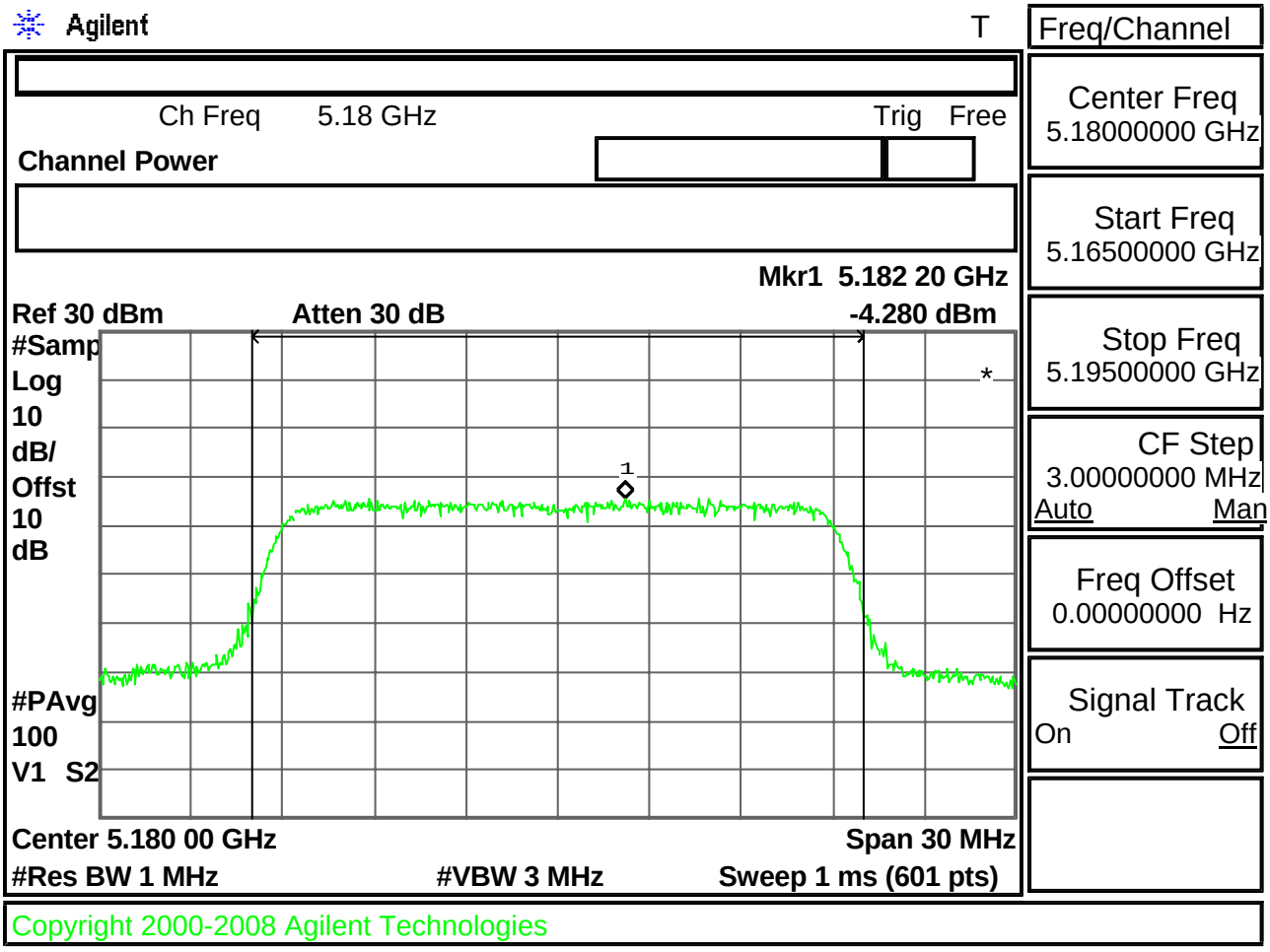
Test Date: Mar. 21, 2011 Temperature: 17℃ Humidity: 54%

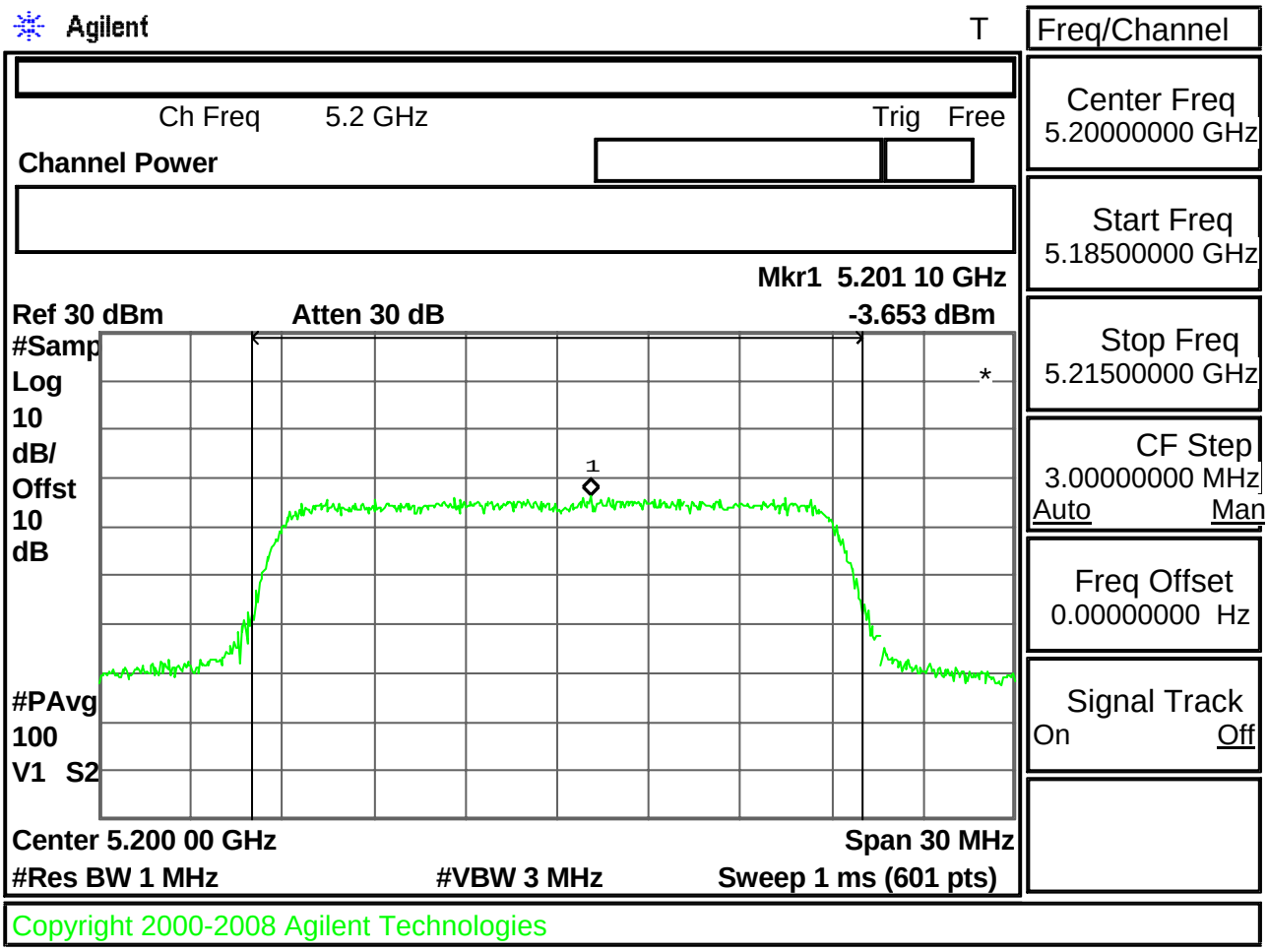
The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

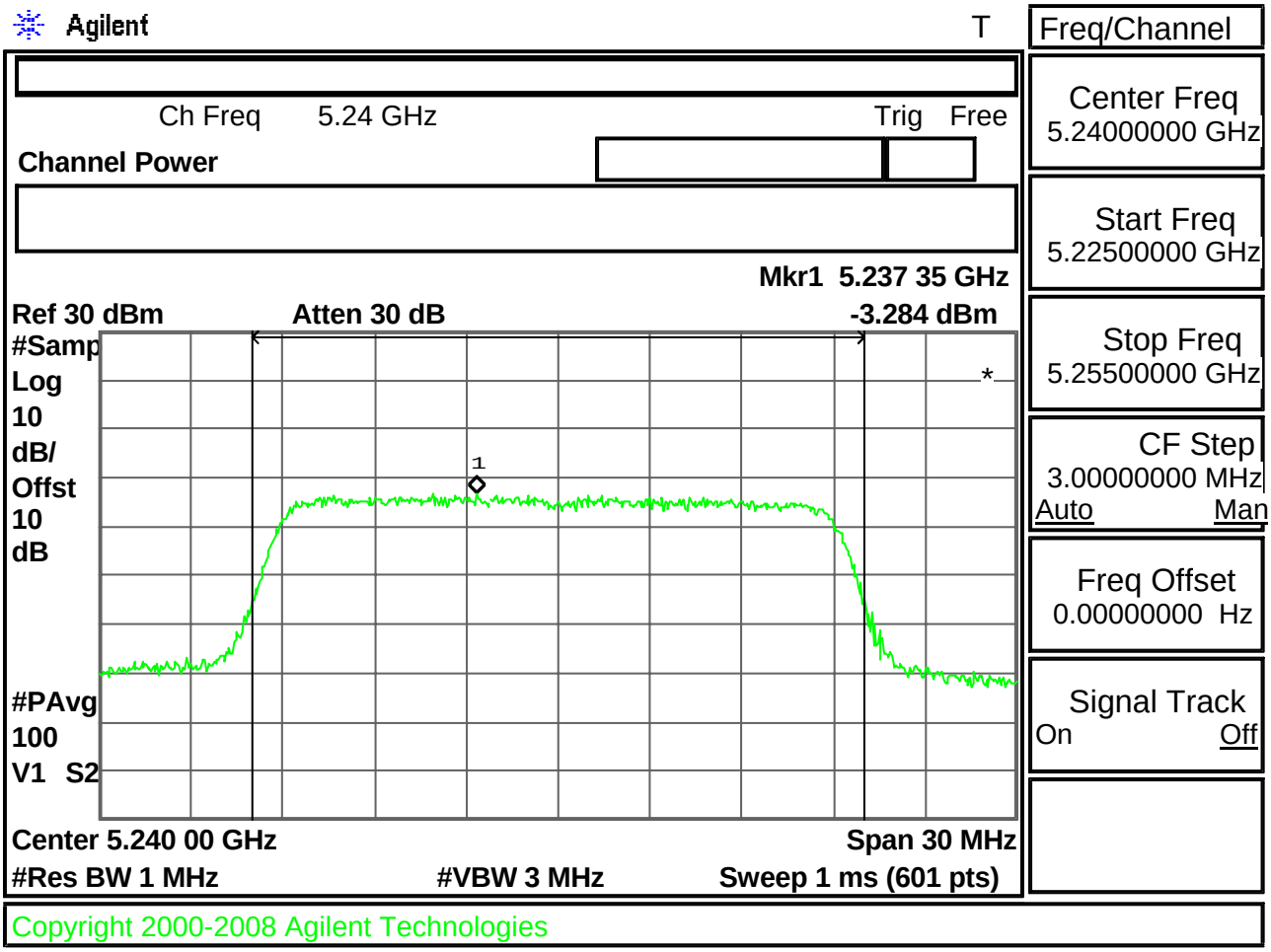
Channel	Frequency (MHz)	Peak Power Spectral Density (dBm)	FCC Limit (dBm)	Chart
36	5180	-4.280	4	Page 105
40	5200	-3.653	4	Page 106
48	5240	-3.284	4	Page 107

Note:

1. Please refer to page 105 to page 107 for chart
2. If antenna gain ≦ 6dBi, FCC Limit =4 dBm
3. If antenna gain > 6dBi, FCC Limit =4 dBm – (highest antenna gain – 6 dBi)
4. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)




Agilent
T
Freq/Channel
Ch Freq 5.2 GHz
Trig Free
Channel Power
Mkr1 5.201 10 GHz
Ref 30 dBm
Atten 30 dB
-3.653 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
Center 5.200 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Center Freq
5.20000000 GHz
Start Freq
5.18500000 GHz
Stop Freq
5.21500000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Copyright 2000-2008 Agilent Technologies



8.4.2.2 5.3GHz

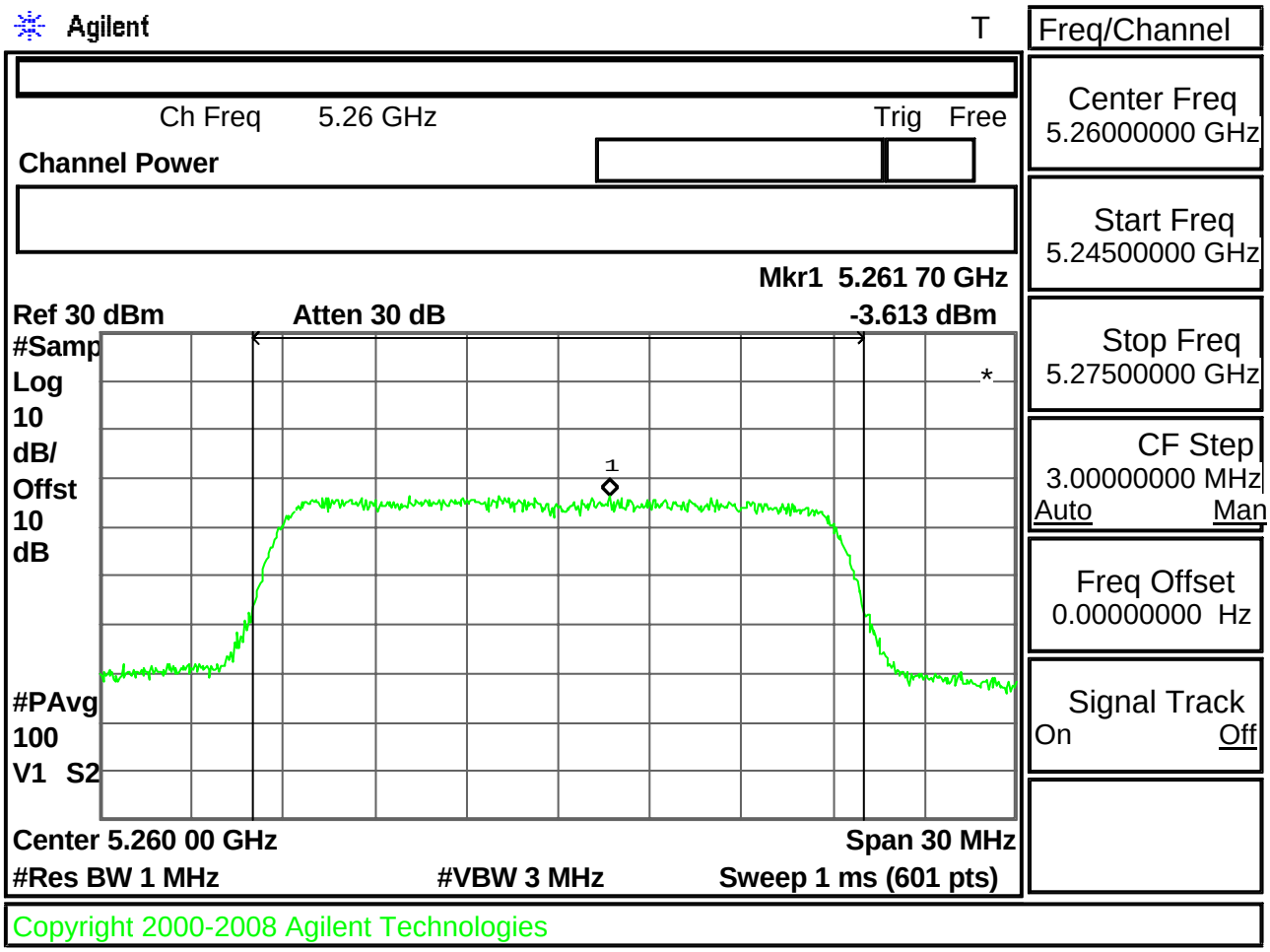
Test Date: Mar. 21, 2011 Temperature: 17℃ Humidity: 54%

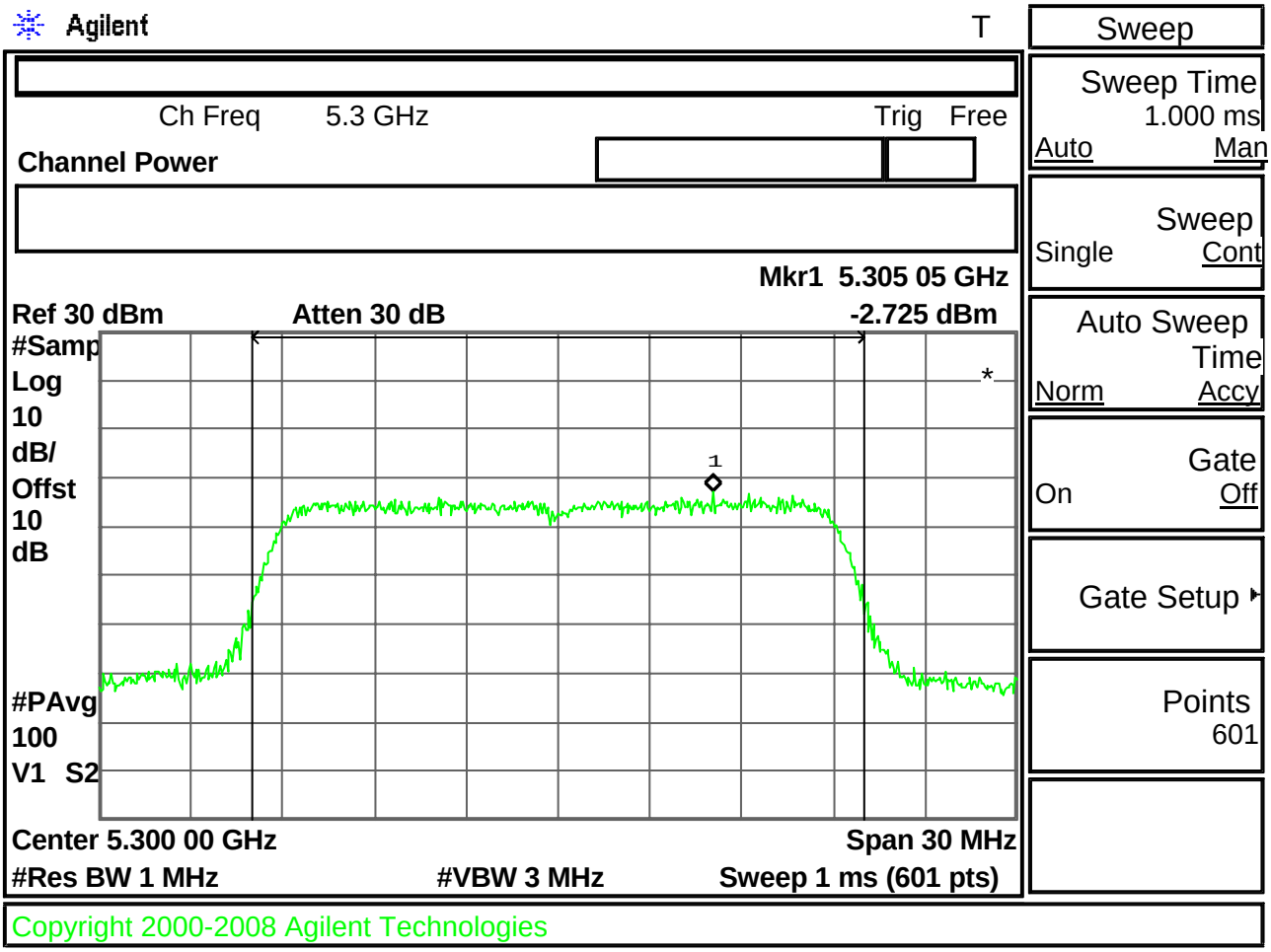
The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

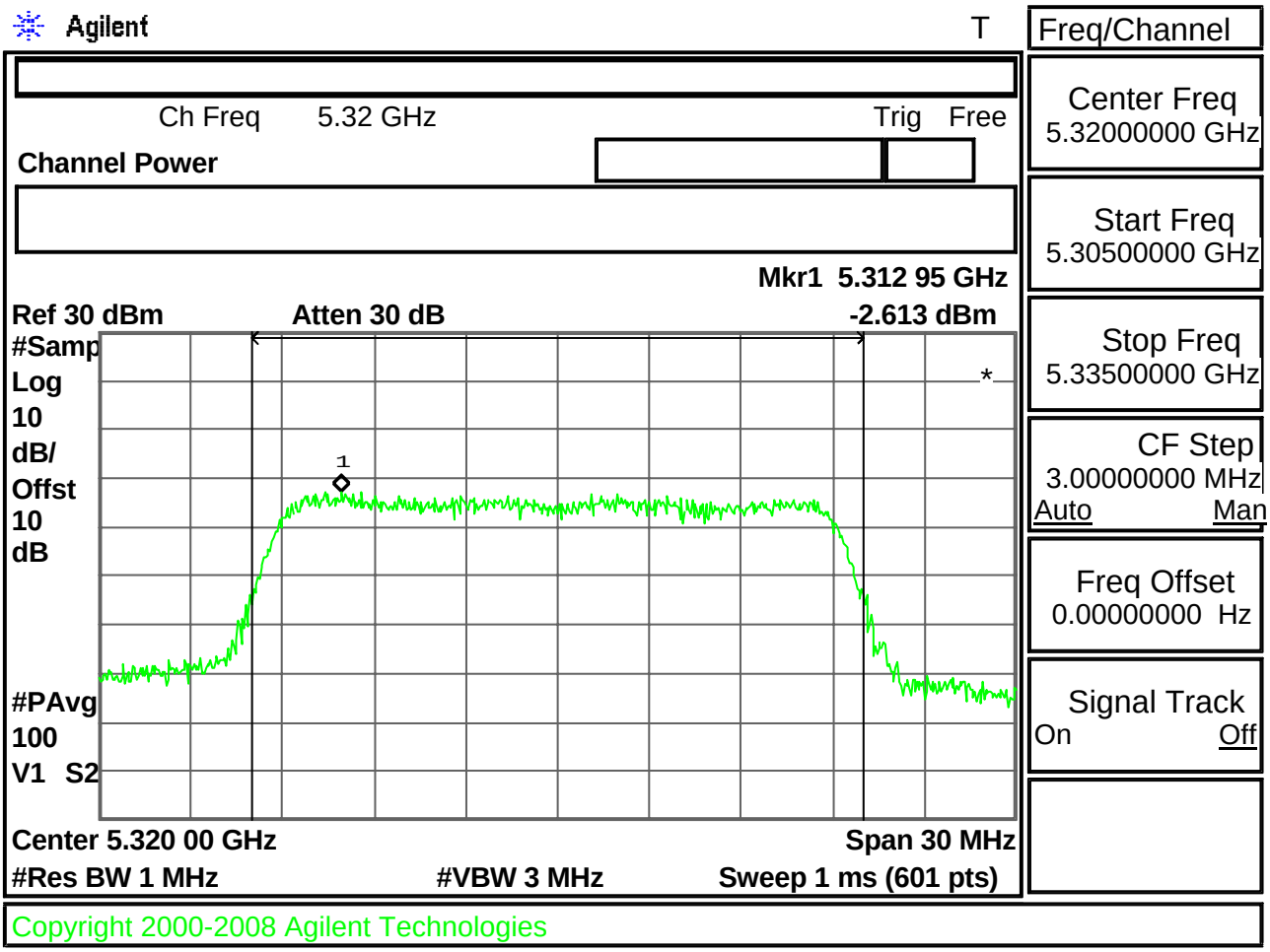
Channel	Frequency (MHz)	Peak Power Spectral Density (dBm)	FCC Limit (dBm)	Chart
52	5260	-3.613	4	Page 109
60	5300	-2.725	4	Page 110
64	5320	-2.613	4	Page 111

Note:

1. Please refer to page 109 to page 111 for chart
2. If antenna gain ≦ 6dBi, FCC Limit =4 dBm
3. If antenna gain > 6dBi, FCC Limit =4 dBm – (highest antenna gain – 6 dBi)
4. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)


Agilent
T
Freq/Channel
Ch Freq 5.26 GHz
Trig Free
Channel Power
Mkr1 5.261 70 GHz
Ref 30 dBm
Atten 30 dB
-3.613 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
Center 5.260 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Center Freq
5.26000000 GHz
Start Freq
5.24500000 GHz
Stop Freq
5.27500000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Copyright 2000-2008 Agilent Technologies


Agilent
T
Sweep
Ch Freq 5.3 GHz
Trig Free
Channel Power
Sweep Time
1.000 ms
Auto Man
Sweep
Single Cont
Mkr1 5.305 05 GHz
Ref 30 dBm
Atten 30 dB
-2.725 dBm
#Samp
Log
10
dB/
Offst
10
dB
Auto Sweep Time
Norm Accy
Gate
On Off
Gate Setup
#PAvg
100
V1 S2
Points
601
Center 5.300 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Copyright 2000-2008 Agilent Technologies


Agilent
T
Freq/Channel
Ch Freq 5.32 GHz
Trig Free
Channel Power
Mkr1 5.312 95 GHz
Ref 30 dBm
Atten 30 dB
-2.613 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
Center 5.320 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Center Freq
5.32000000 GHz
Start Freq
5.30500000 GHz
Stop Freq
5.33500000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Copyright 2000-2008 Agilent Technologies

8.4.2.3 5.6GHz

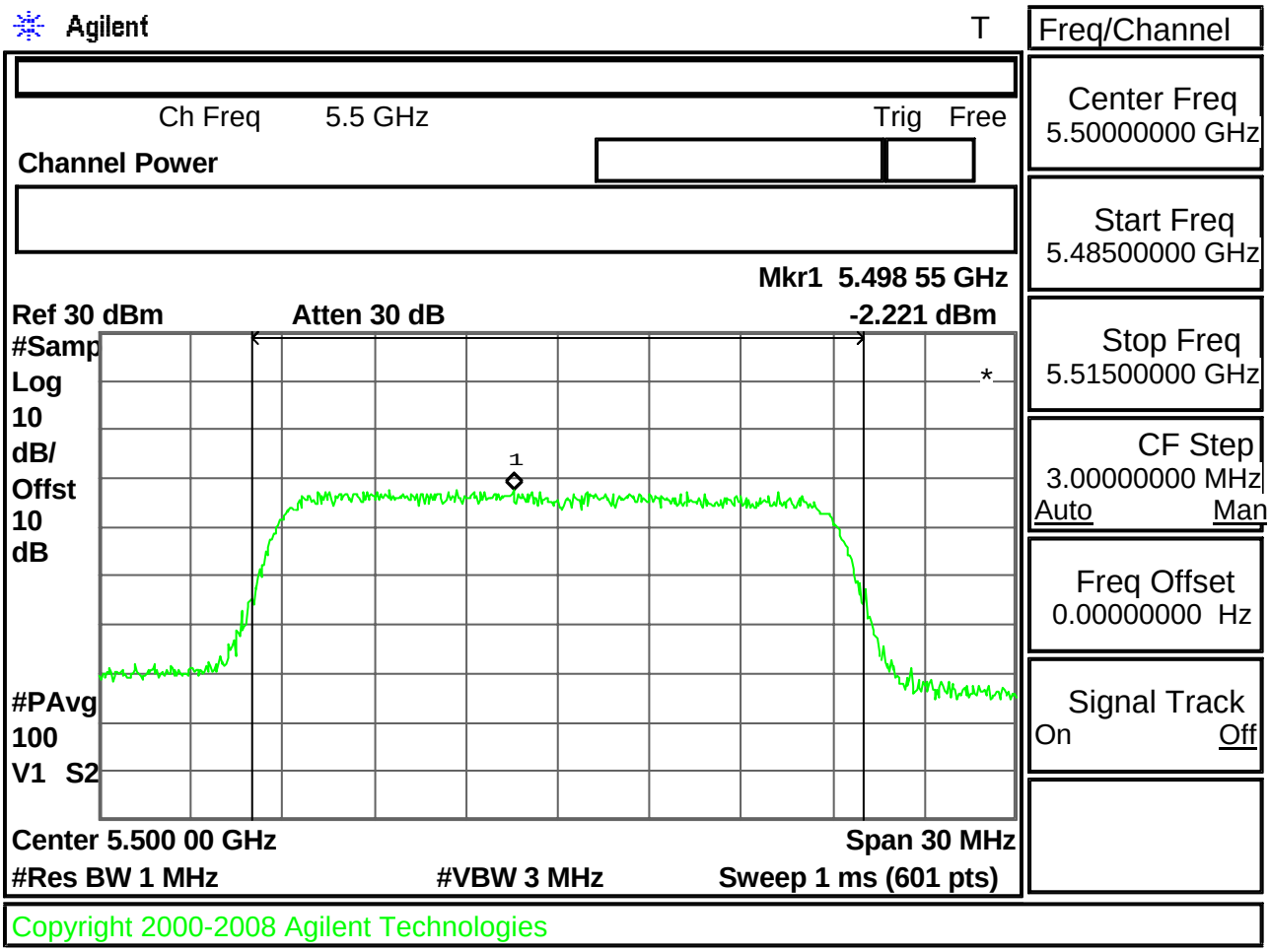
Test Date: Mar. 21, 2011 Temperature: 17℃ Humidity: 54%

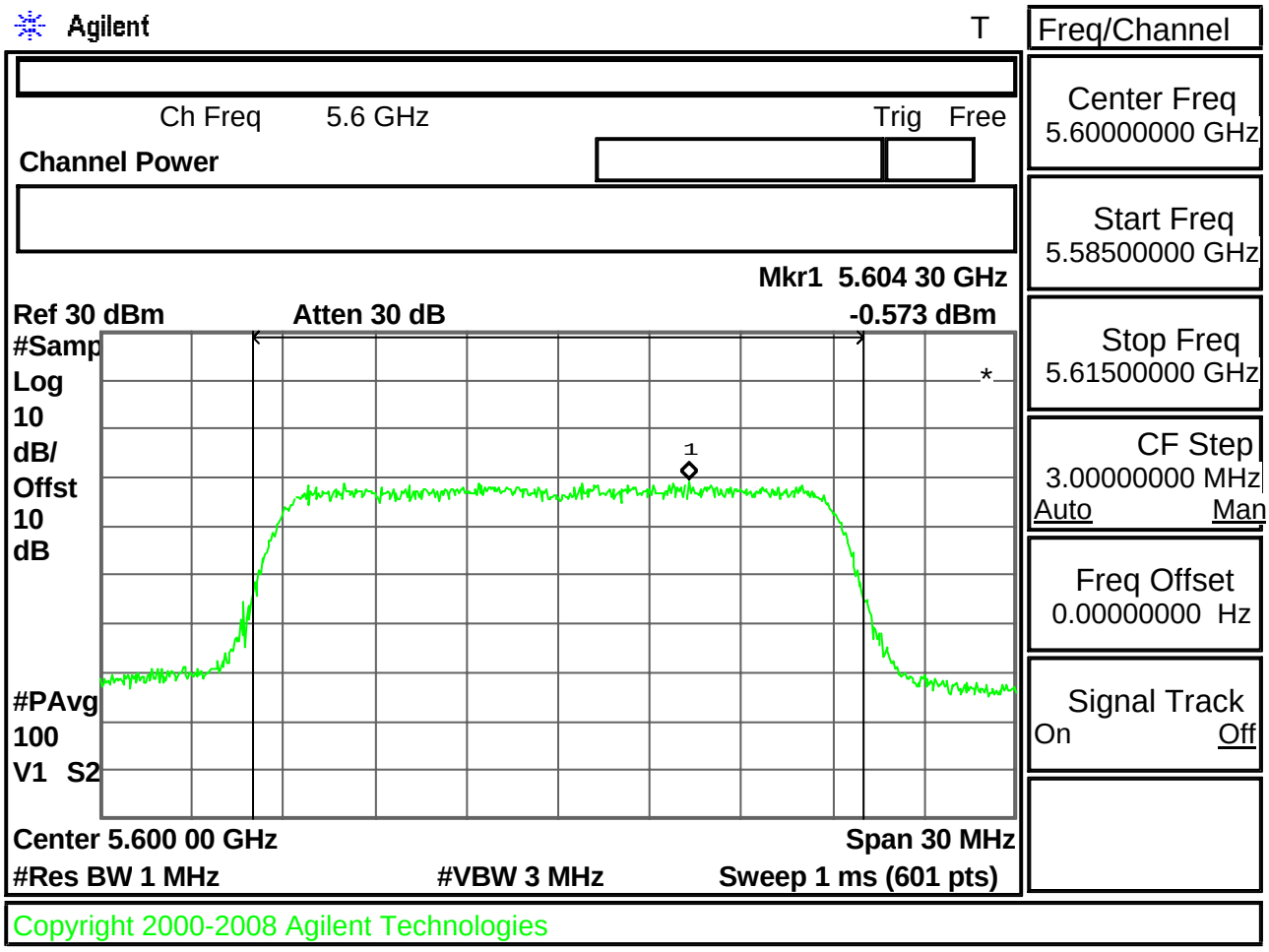
The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

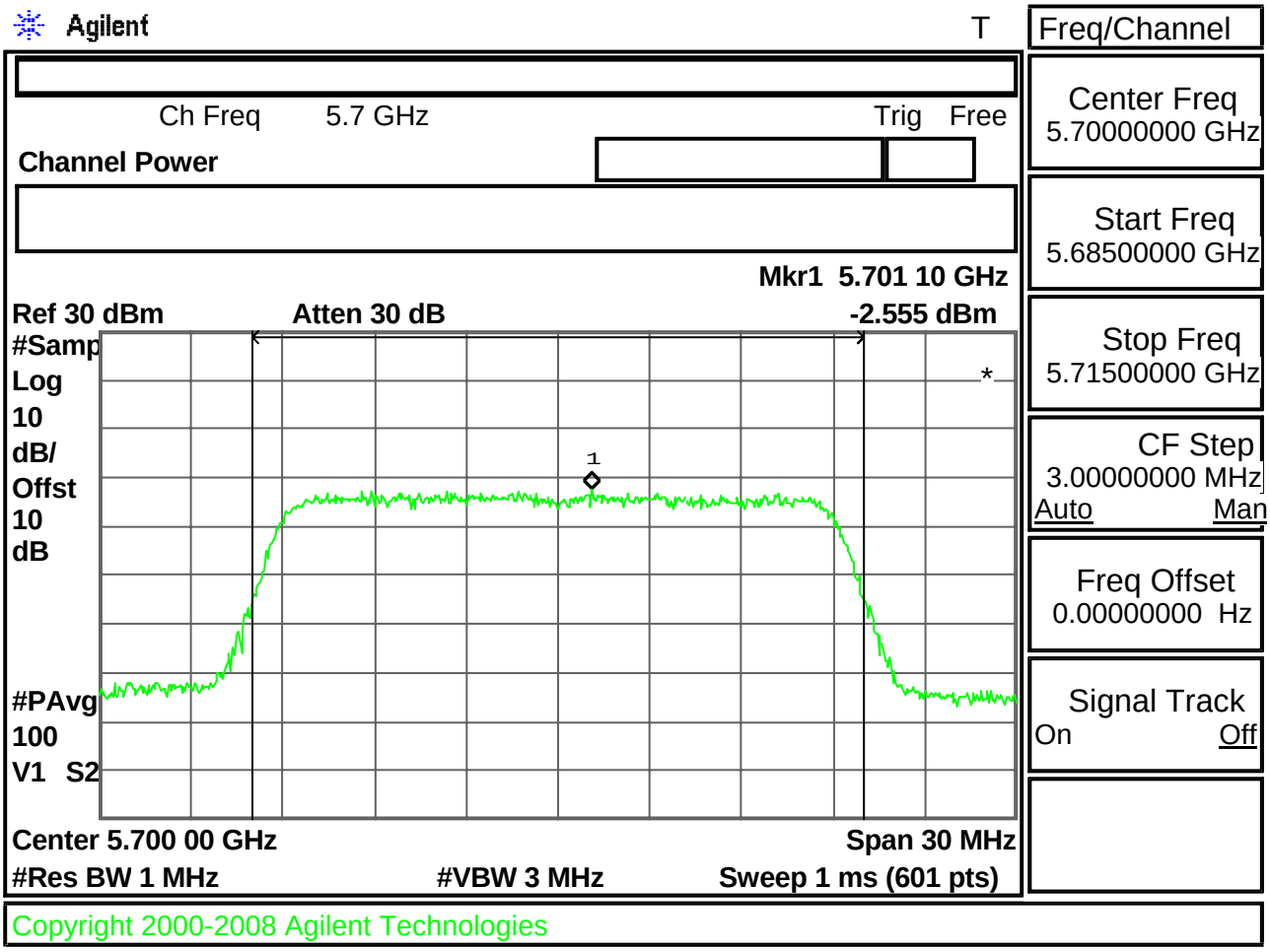
Channel	Frequency (MHz)	Peak Power Spectral Density (dBm)	FCC Limit (dBm)	Chart
100	5500	-2.221	4	Page 113
120	5600	-0.573	4	Page 114
140	5700	-2.555	4	Page 115

Note:

1. Please refer to page 113 to page 115 for chart
2. If antenna gain ≦ 6dBi, FCC Limit =4 dBm
3. If antenna gain > 6dBi, FCC Limit =4 dBm – (highest antenna gain – 6 dBi)
4. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)




Agilent
T
Freq/Channel
Ch Freq 5.6 GHz
Trig Free
Channel Power
Mkr1 5.604 30 GHz
Ref 30 dBm
Atten 30 dB
-0.573 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
Center 5.600 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Center Freq
5.60000000 GHz
Start Freq
5.58500000 GHz
Stop Freq
5.61500000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Copyright 2000-2008 Agilent Technologies


Agilent
T
Freq/Channel
Ch Freq 5.7 GHz
Trig Free
Channel Power
Mkr1 5.701 10 GHz
Ref 30 dBm
Atten 30 dB
-2.555 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
Center 5.700 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Center Freq
5.70000000 GHz
Start Freq
5.68500000 GHz
Stop Freq
5.71500000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Copyright 2000-2008 Agilent Technologies

8.4.3 IEEE 802.11an, HT40

8.4.3.1 5.2GHz

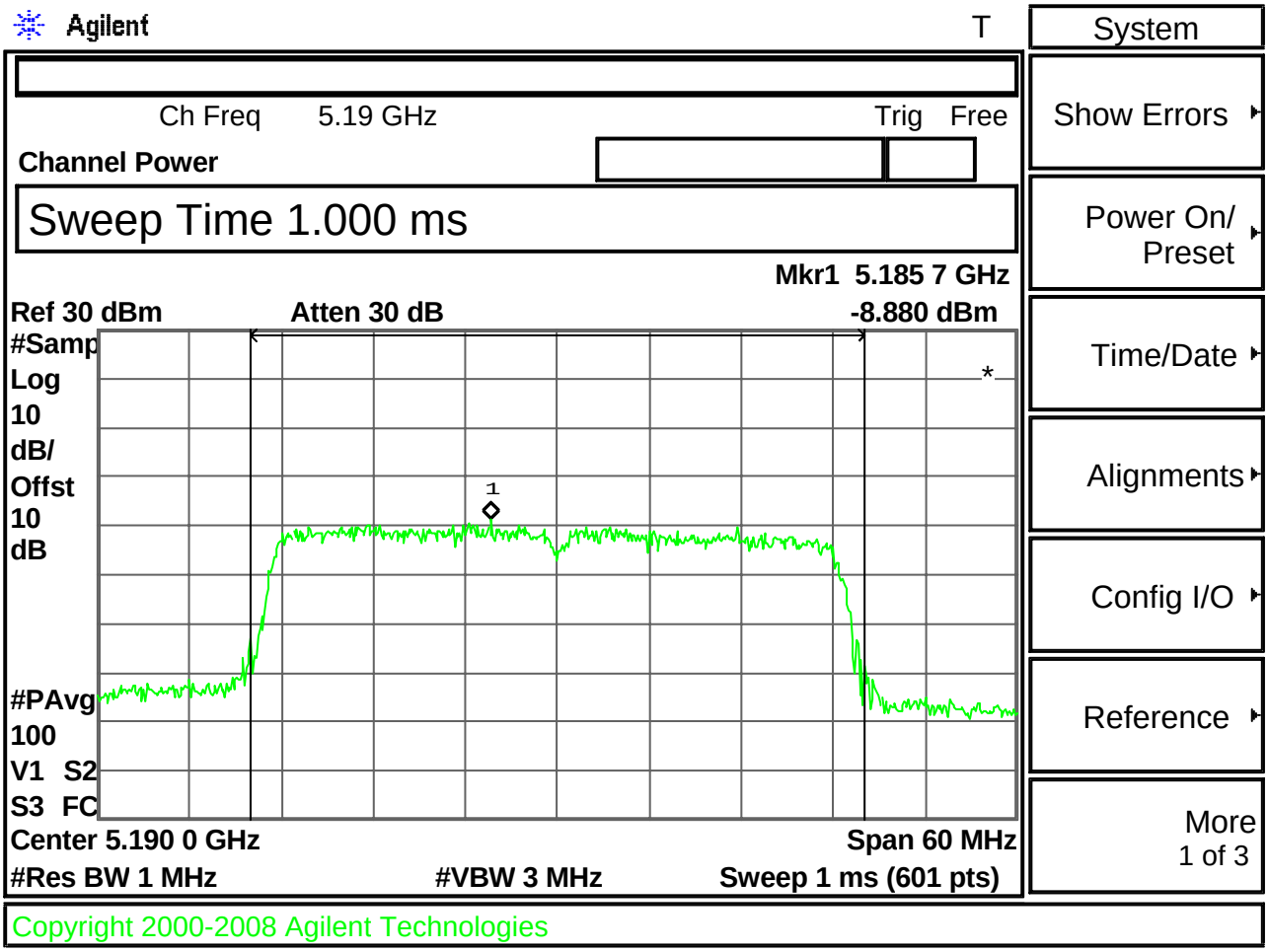
Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

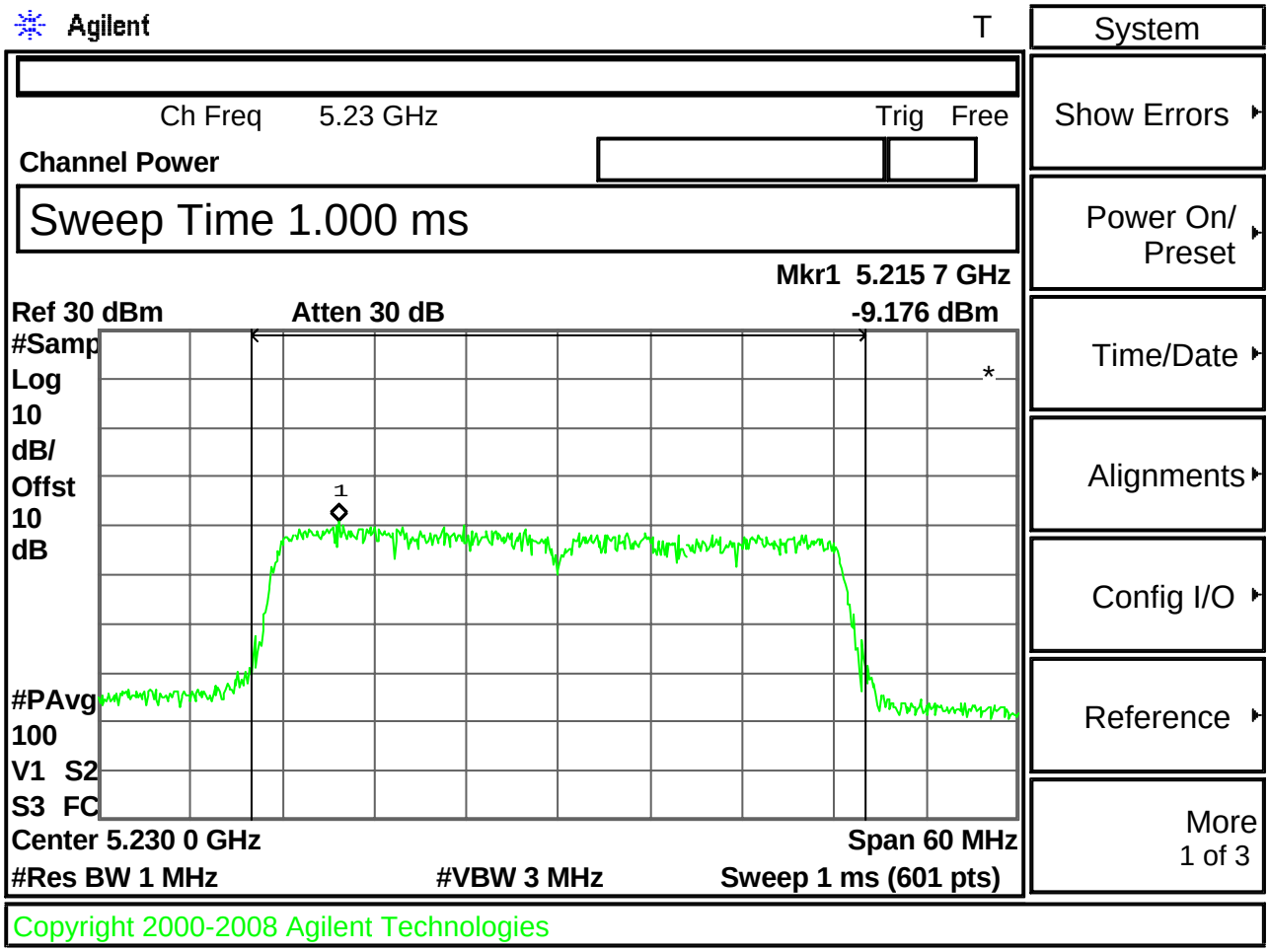
The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

Channel	Frequency (MHz)	Peak Power Spectral Density (dBm)	FCC Limit (dBm)	Chart
38	5190	-8.88	4.00	Page 117
46	5230	-9.18	4.00	Page 118

Note:

1. Please refer to page 117 to page 118 for chart
2. If antenna gain ≦ 6dBi, FCC Limit =4 dBm
3. If antenna gain > 6dBi, FCC Limit =4 dBm – (highest antenna gain – 6 dBi)
4. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)


Agilent
T
System
Ch Freq 5.19 GHz
Trig Free
Channel Power
Sweep Time 1.000 ms
Mkr1 5.185 7 GHz
Ref 30 dBm
Atten 30 dB
-8.880 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
S3 FC
Center 5.190 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies


Agilent
T
System
Ch Freq 5.23 GHz
Trig Free
Channel Power
Sweep Time 1.000 ms
Mkr1 5.215 7 GHz
Ref 30 dBm
Atten 30 dB
-9.176 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
S3 FC
Center 5.230 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies

8.4.3.2 5.3GHz

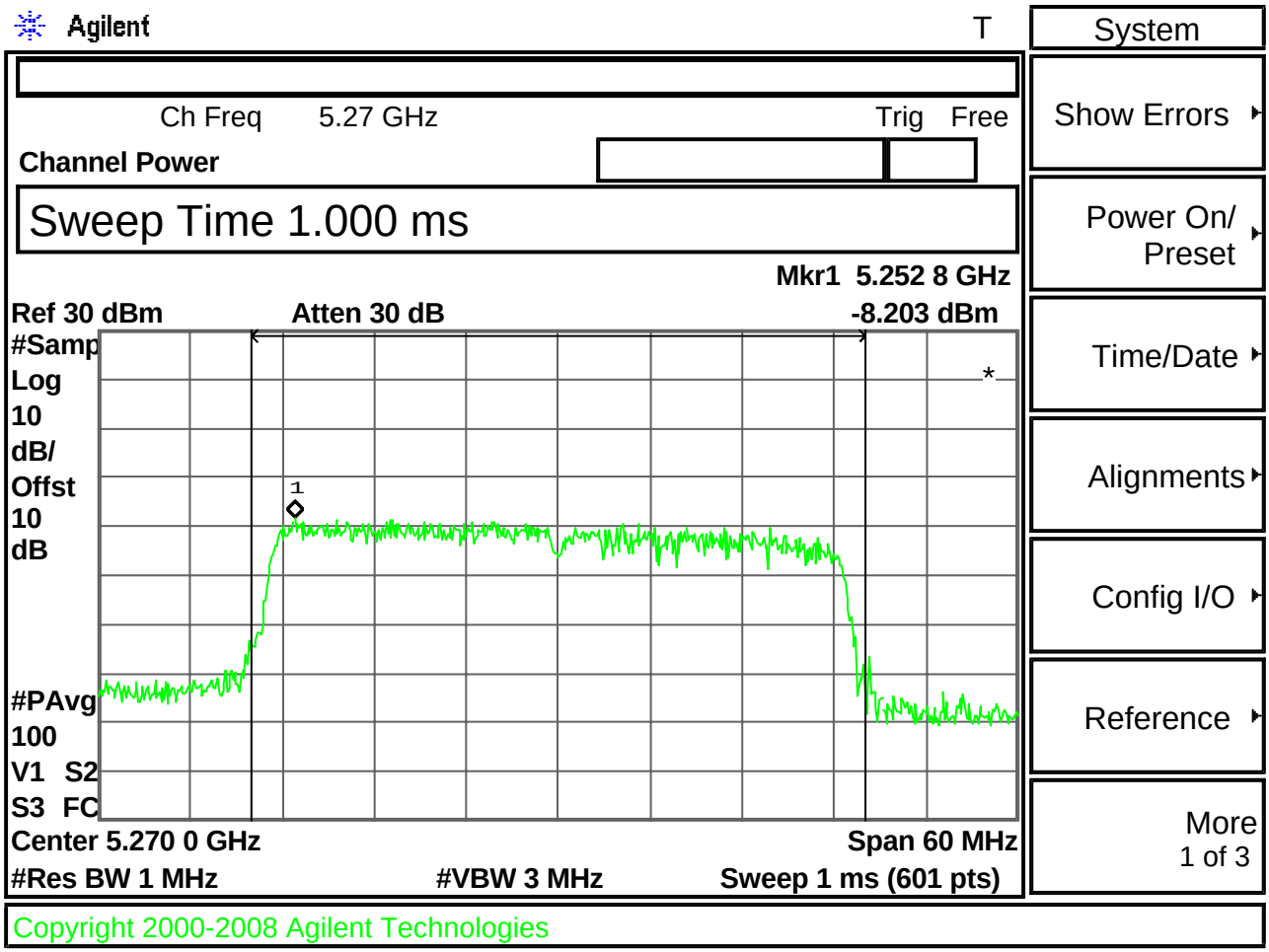
Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

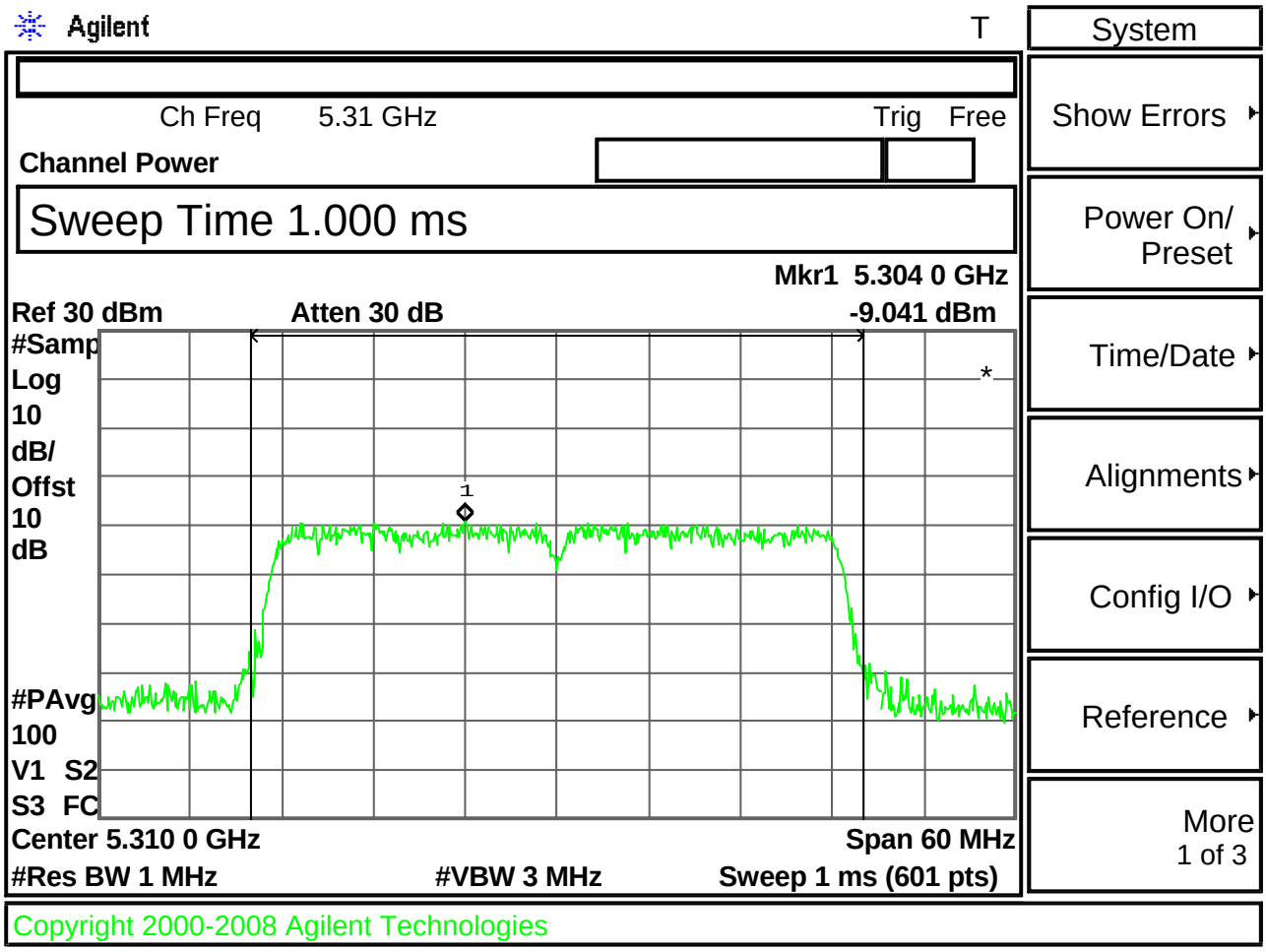
The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

Channel	Frequency (MHz)	Peak Power Spectral Density (dBm)	FCC Limit (dBm)	Chart
54	5270	-8.20	4.00	Page 120
62	5310	-9.04	4.00	Page 121

Note:

1. Please refer to page 120 to page 121 for chart
2. If antenna gain ≦ 6dBi, FCC Limit =4 dBm
3. If antenna gain > 6dBi, FCC Limit =4 dBm – (highest antenna gain – 6 dBi)
4. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)


Agilent
T
Ch Freq 5.27 GHz
Trig Free
Channel Power
Sweep Time 1.000 ms
Mkr1 5.252 8 GHz
Ref 30 dBm
Atten 30 dB
-8.203 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
S3 FC
Center 5.270 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More
1 of 3
Copyright 2000-2008 Agilent Technologies


Agilent
T
Ch Freq 5.31 GHz
Trig Free
Channel Power
Sweep Time 1.000 ms
Mkr1 5.304 0 GHz
Ref 30 dBm
Atten 30 dB
-9.041 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
S3 FC
Center 5.310 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies

8.4.3.3 5.6GHz

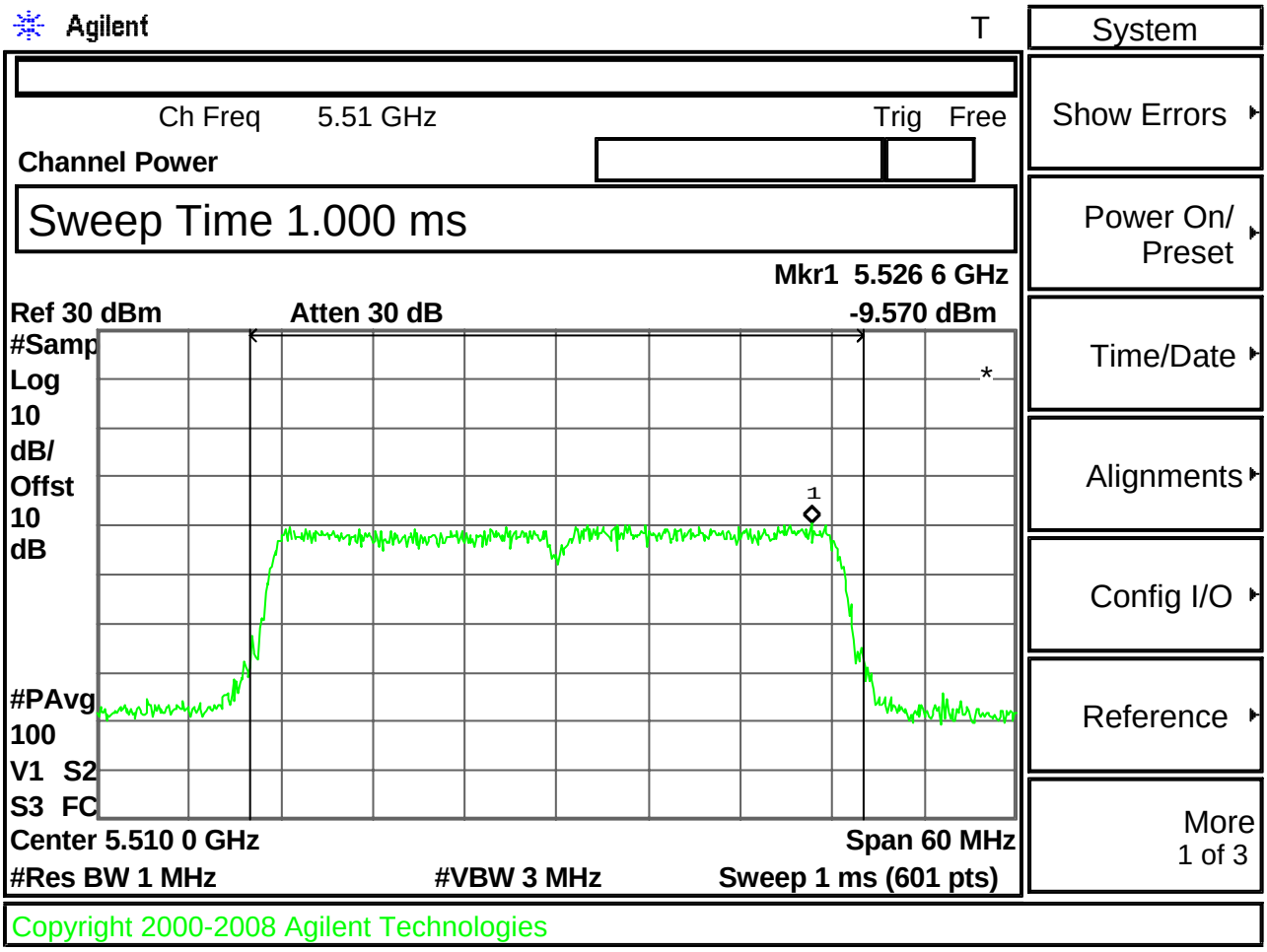
Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

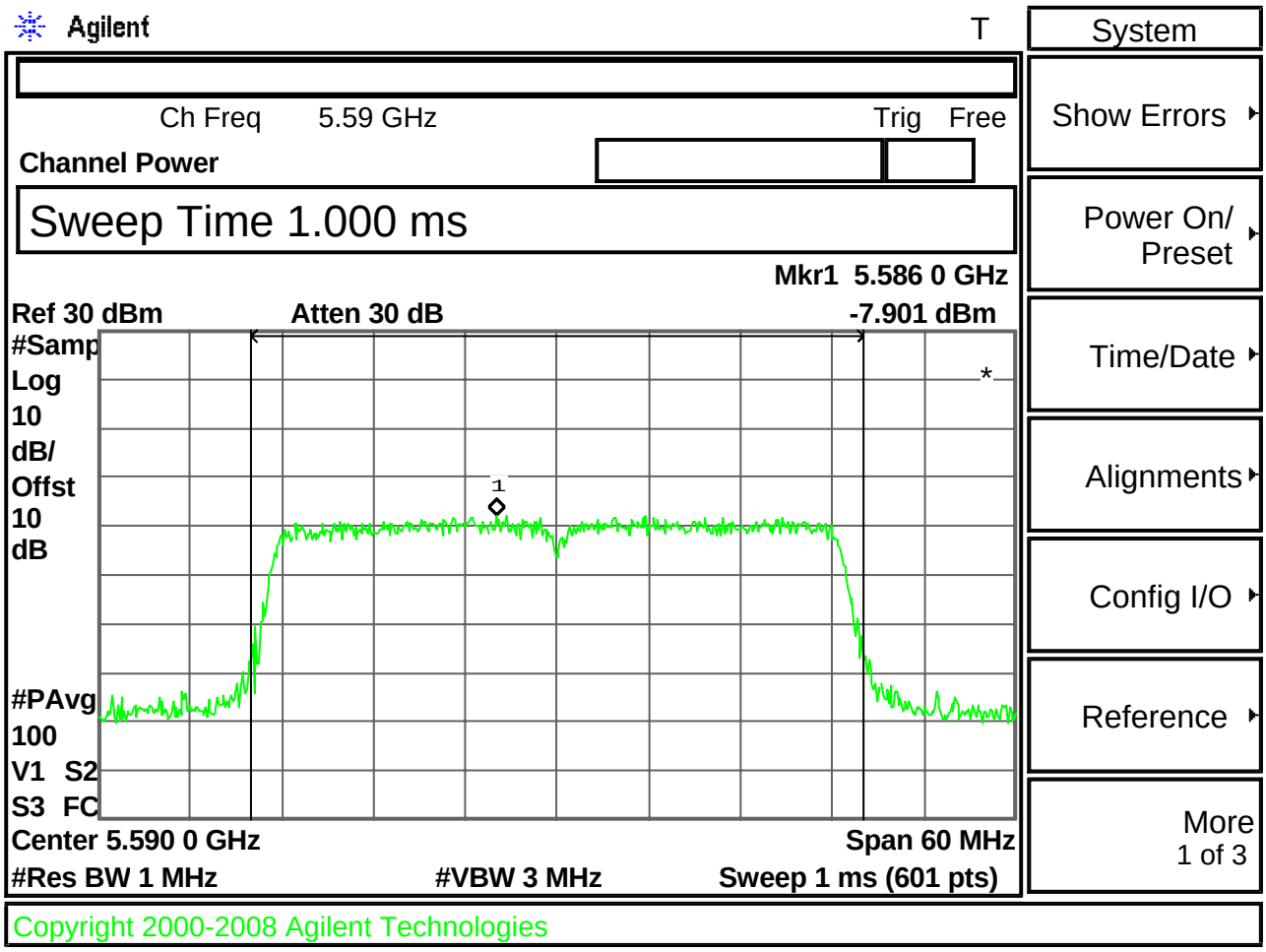
The highest antenna gain is equal to 3.5 dBi, therefore the FCC limit is as follow.

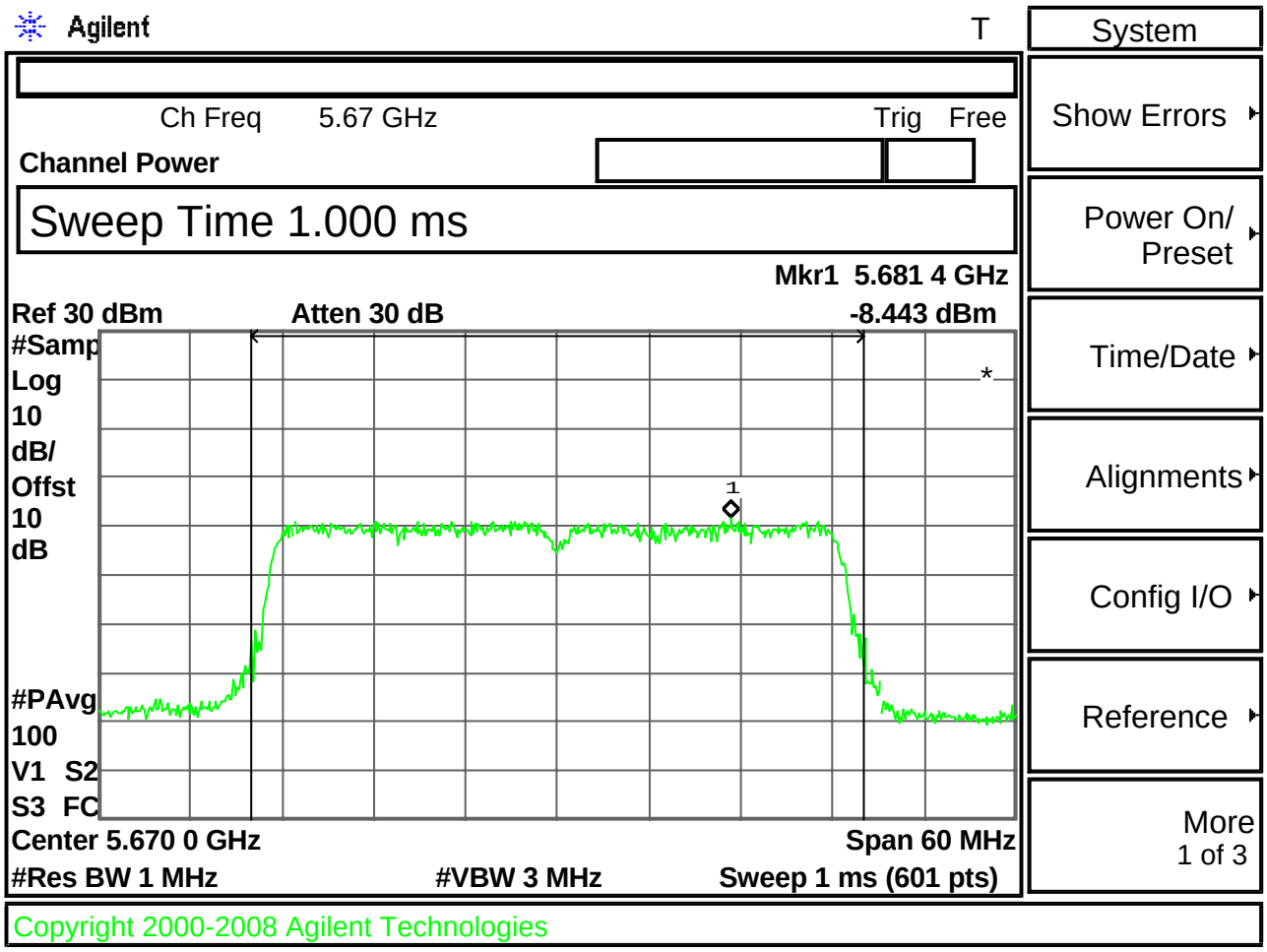
Channel	Frequency (MHz)	Peak Power Spectral Density (dBm)	FCC Limit (dBm)	Chart
102	5510	-9.57	11.00	Page 123
118	5590	-7.90	11.00	Page 124
134	5670	-8.44	11.00	Page 125

Note:

1. Please refer to page 123 to page 125 for chart
2. If antenna gain ≦ 6dBi, FCC Limit =4 dBm
3. If antenna gain > 6dBi, FCC Limit =4 dBm – (highest antenna gain – 6 dBi)
4. The estimated measurement uncertainty of the result measurement is ±1.5dB(1GHz≦f≦18GHz)




Agilent
T
System
Ch Freq 5.59 GHz
Trig Free
Channel Power
Sweep Time 1.000 ms
Mkr1 5.586 0 GHz
Ref 30 dBm
Atten 30 dB
-7.901 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
S3 FC
Center 5.590 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies


Agilent
T
System
Ch Freq 5.67 GHz
Trig Free
Channel Power
Sweep Time 1.000 ms
Mkr1 5.681 4 GHz
Ref 30 dBm
Atten 30 dB
-8.443 dBm
#Samp
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 S2
S3 FC
Center 5.670 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies

9 PEAK EXCURSION MEASUREMENT

9.1 Standard Applicable

According to 15.407 (a)(6), the ratio of the peak excursion of the modulation envelope (measured using a peak hold function) to the maximum conducted output power (measured as specified above) shall not exceed 13 dB across any 1 MHz bandwidth or the emission bandwidth whichever is less.

9.2 Measurement Procedure

The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E, August 2002.

Since Method # 1 is used for peak power measurements, Method # 1 settings are used for the second PPSD trace.

9.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Agilent	E4446A	09/26/2011

9.4 Measurement Data

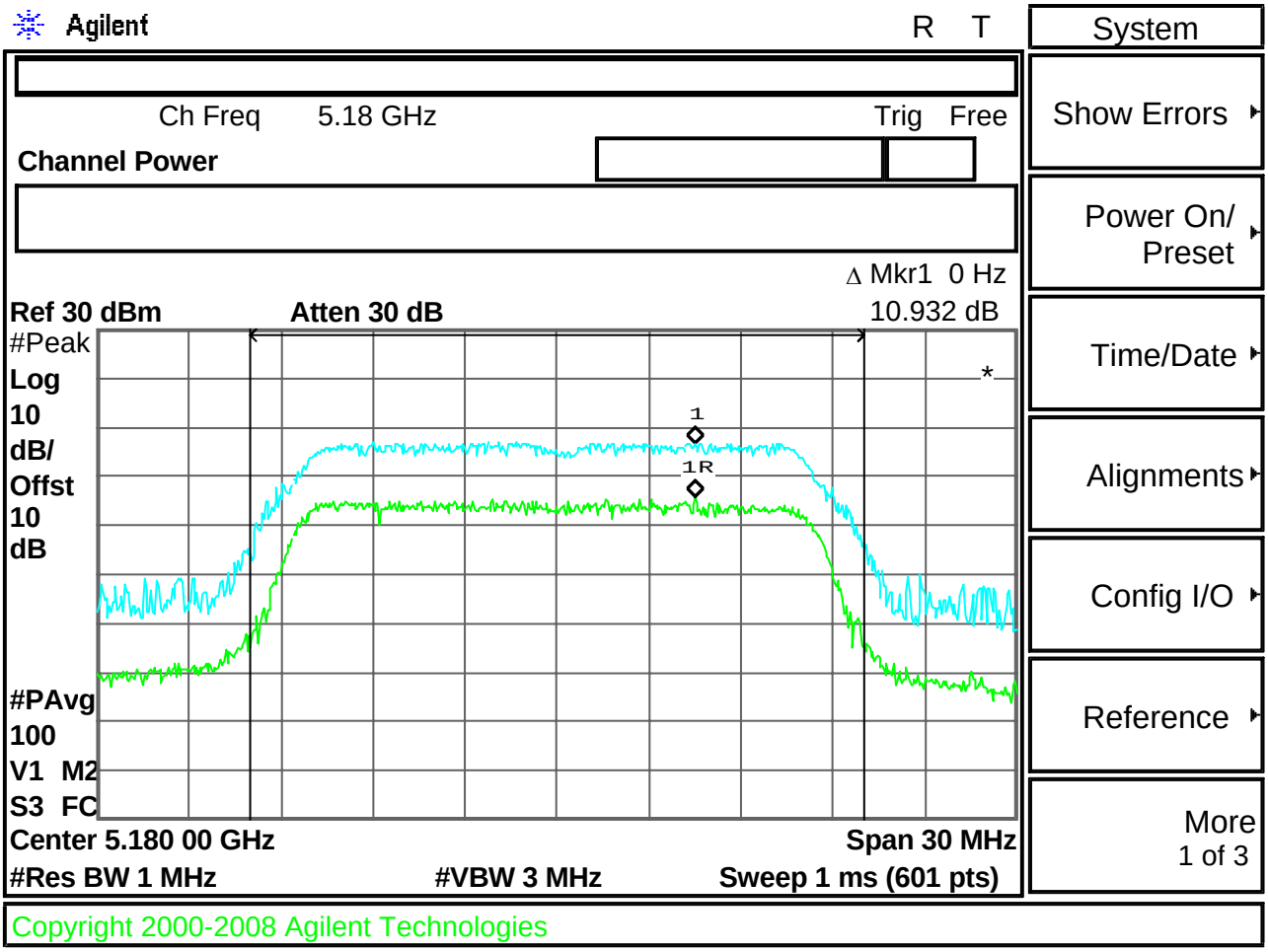
9.4.1 IEEE 802.11a

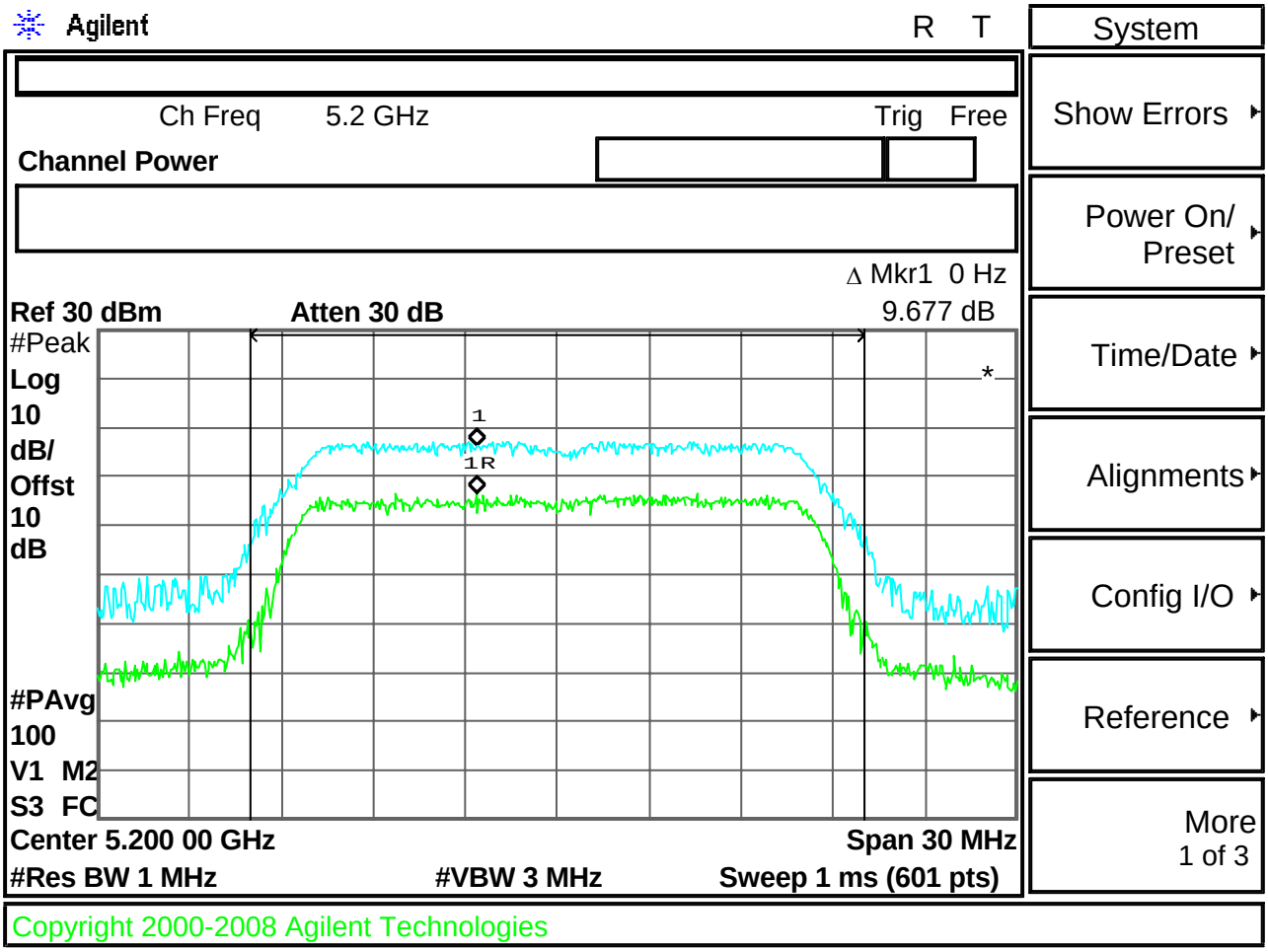
9.4.1.1 5.2GHz

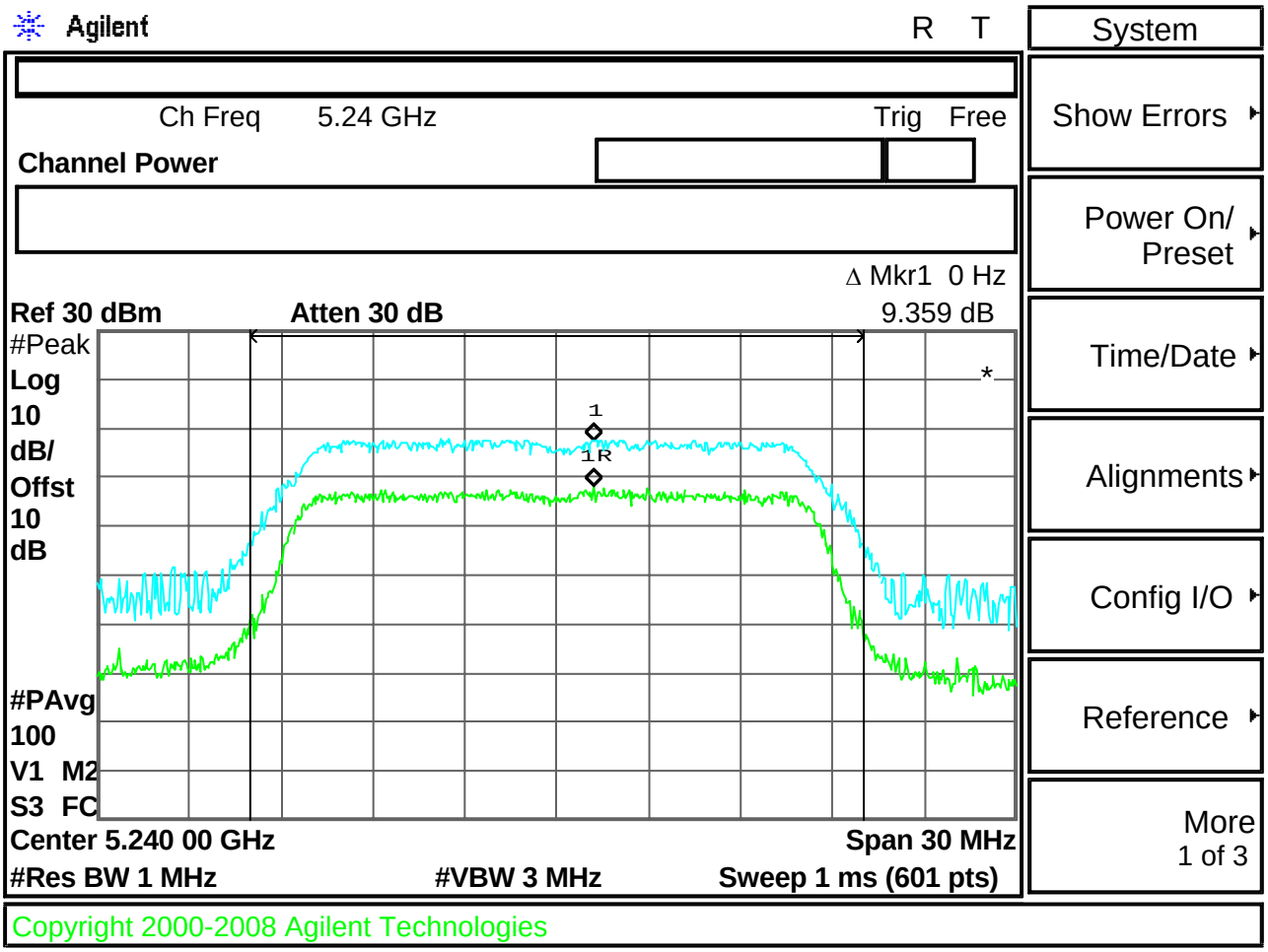
Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

Channel	Frequency (MHz)	Peak Excursion (dB)	FCC Limit (dB)	Chart
36	5180	10.932	13	Page 128
40	5200	9.677	13	Page 129
48	5240	9.359	13	Page 130

Note: Please refer to page 128 to page 130 for chart


Agilent
R T
Ch Freq 5.18 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
10.932 dB
Ref 30 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.180 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More
1 of 3
Copyright 2000-2008 Agilent Technologies


Agilent
R T
Ch Freq 5.2 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
9.677 dB
Ref 30 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.200 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies

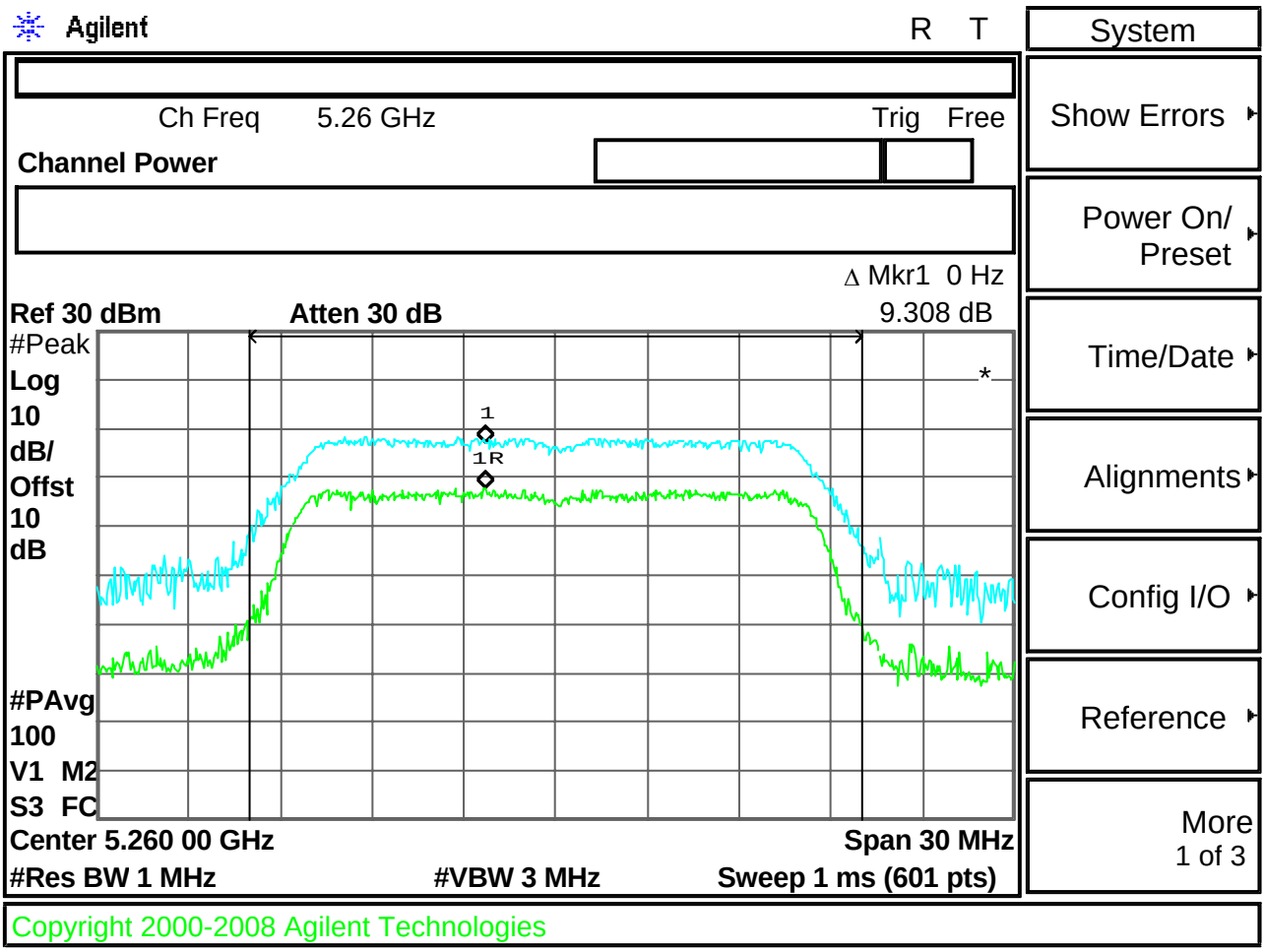

Agilent
R T
Ch Freq 5.24 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
Ref 30 dBm
Atten 30 dB
9.359 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.240 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More
1 of 3
Copyright 2000-2008 Agilent Technologies

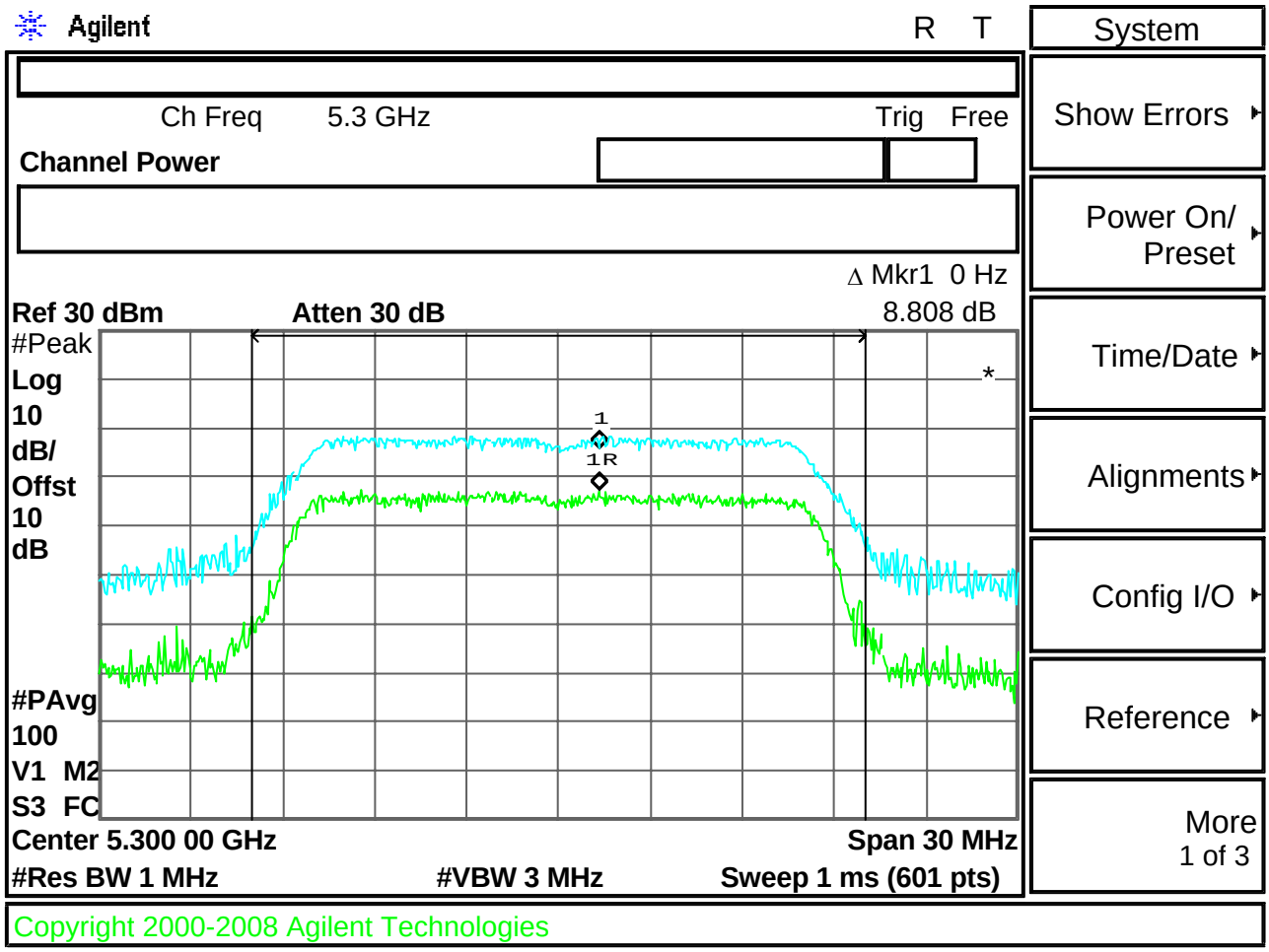
9.4.1.2 5.3GHz

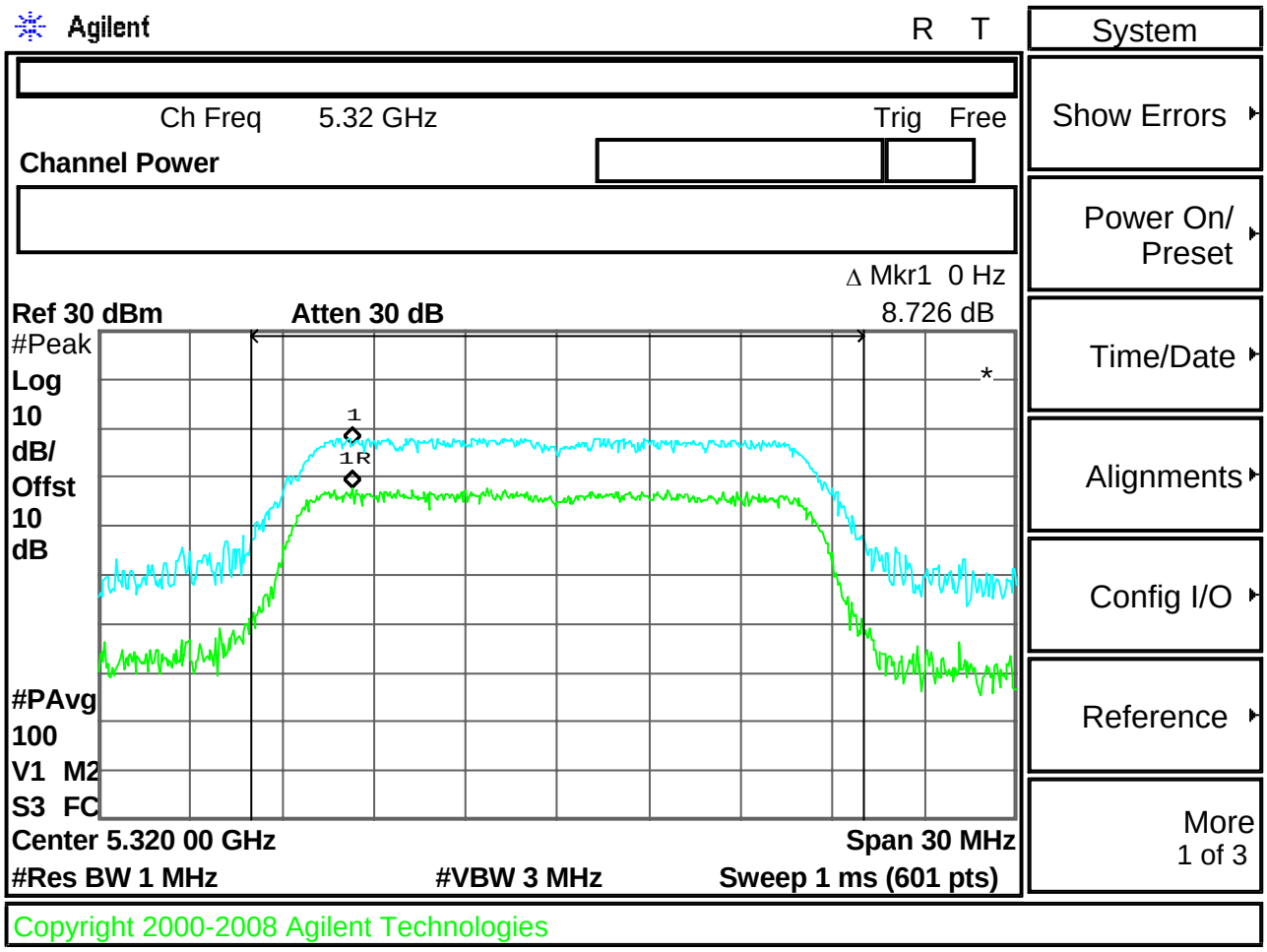
Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

Channel	Frequency (MHz)	Peak Excursion (dB)	FCC Limit (dB)	Chart
52	5260	9.308	13	Page 132
60	5300	8.808	13	Page 133
64	5320	8.726	13	Page 134

Note: Please refer to page 132 to page 134 for chart


Agilent
R T
Ch Freq 5.26 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
Ref 30 dBm
Atten 30 dB
9.308 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.260 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies


Agilent
R T
Ch Freq 5.3 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
Ref 30 dBm
Atten 30 dB
8.808 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.300 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies

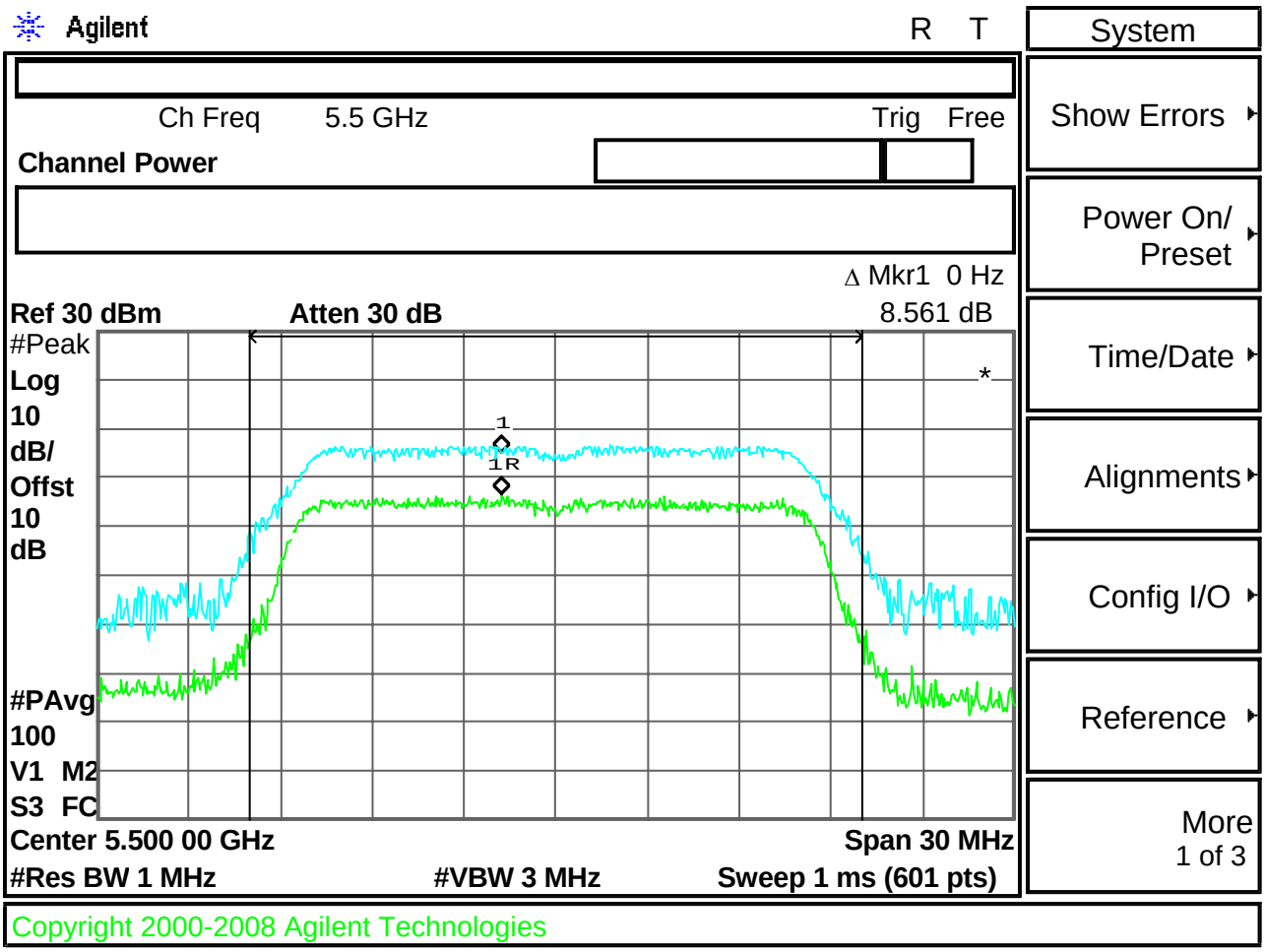

Agilent
R T
Ch Freq 5.32 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
8.726 dB
Ref 30 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.320 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies

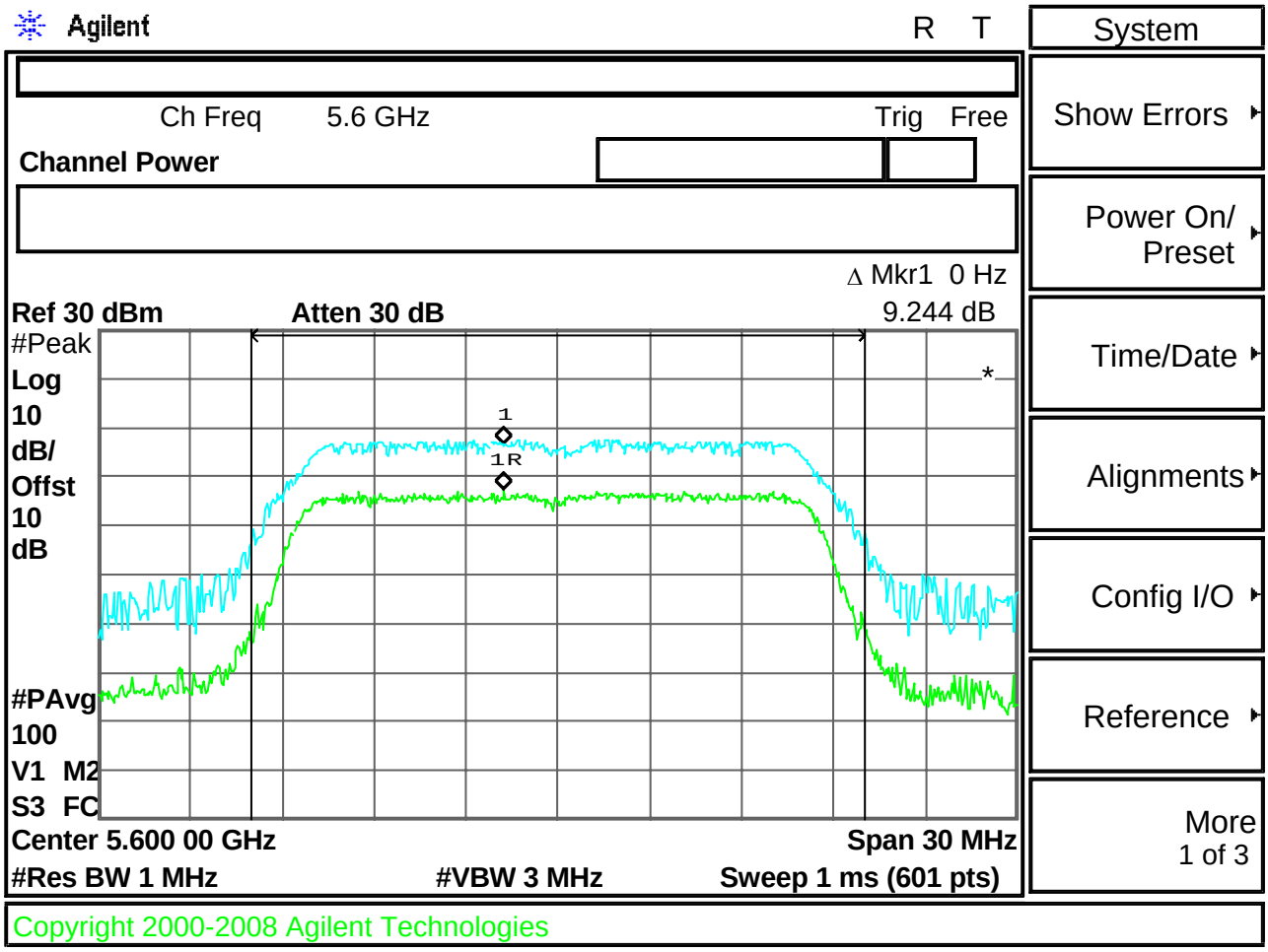
9.4.1.3 5.6GHz

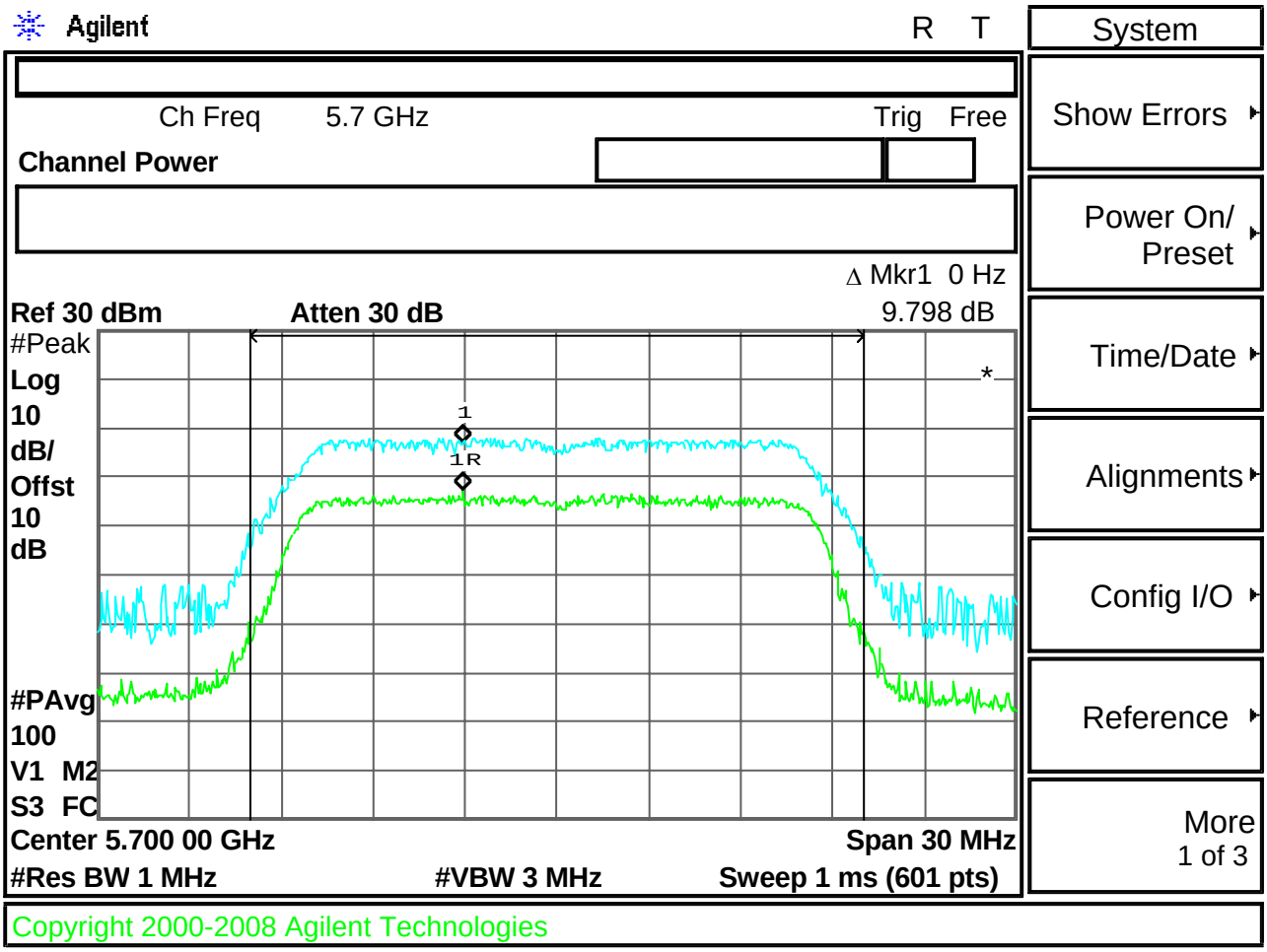
Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

Channel	Frequency (MHz)	Peak Excursion (dB)	FCC Limit (dB)	Chart
100	5500	8.561	13	Page 136
120	5600	9.244	13	Page 137
140	5700	9.798	13	Page 138

Note: Please refer to page136 to page 138 for chart


Agilent
R T
Ch Freq 5.5 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
8.561 dB
Ref 30 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.500 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More
1 of 3
Copyright 2000-2008 Agilent Technologies


Agilent
R T
Ch Freq 5.6 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
Ref 30 dBm
Atten 30 dB
9.244 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.600 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Copyright 2000-2008 Agilent Technologies
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3


Agilent
R T
Ch Freq 5.7 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
9.798 dB
Ref 30 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.700 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies

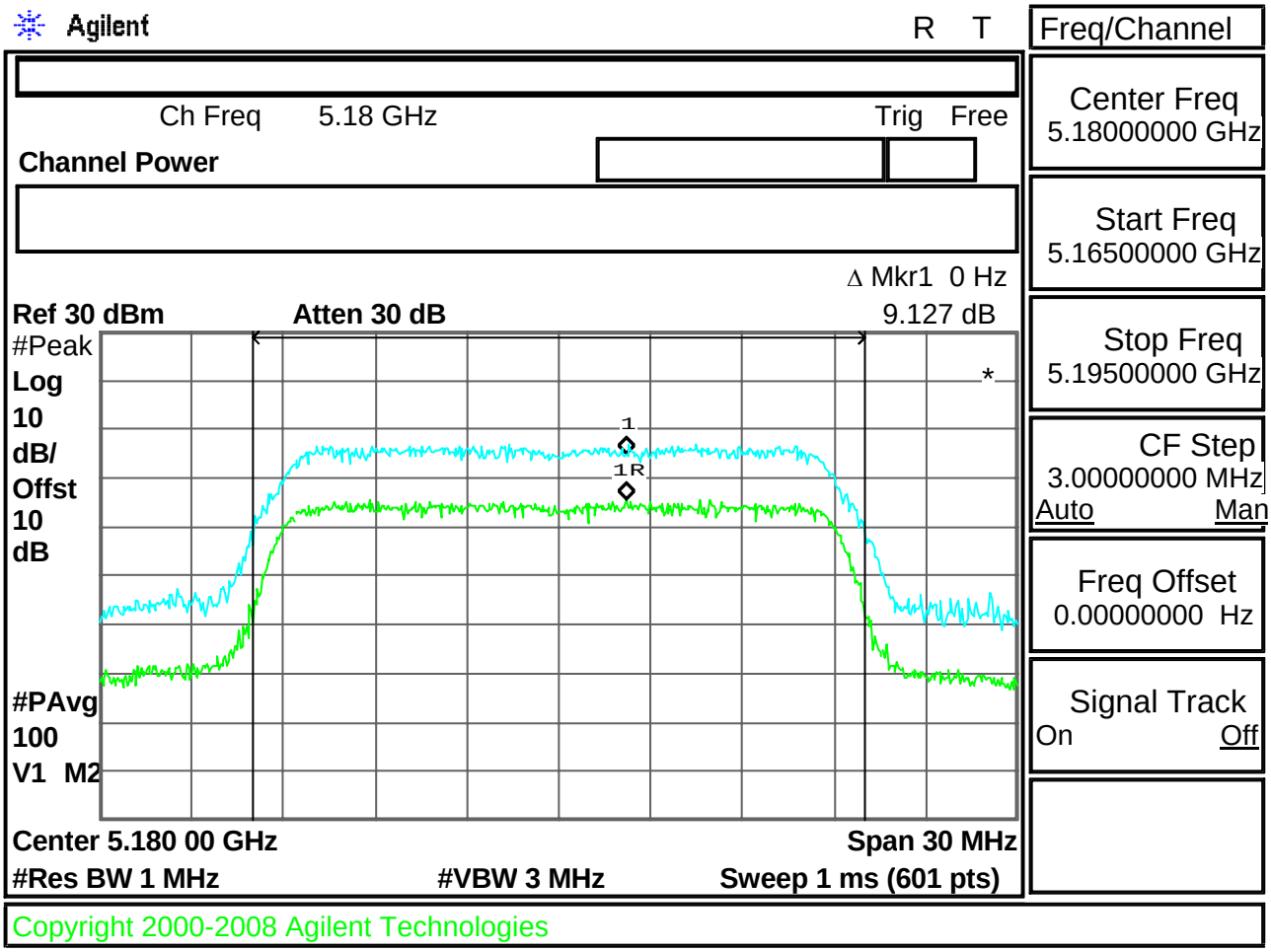
9.4.2 IEEE 802.11a , HT20

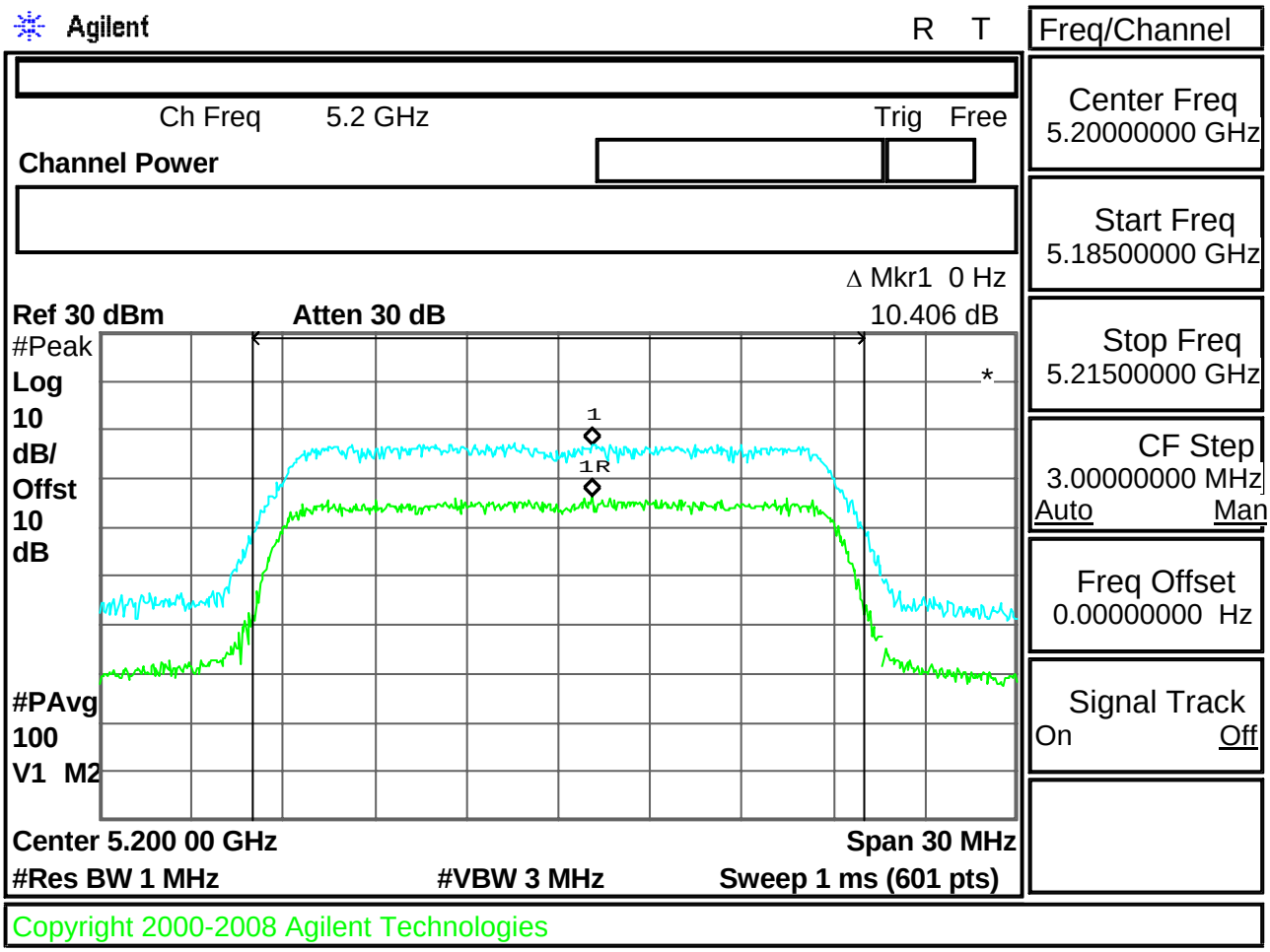
9.4.2 .1 5.2GHz

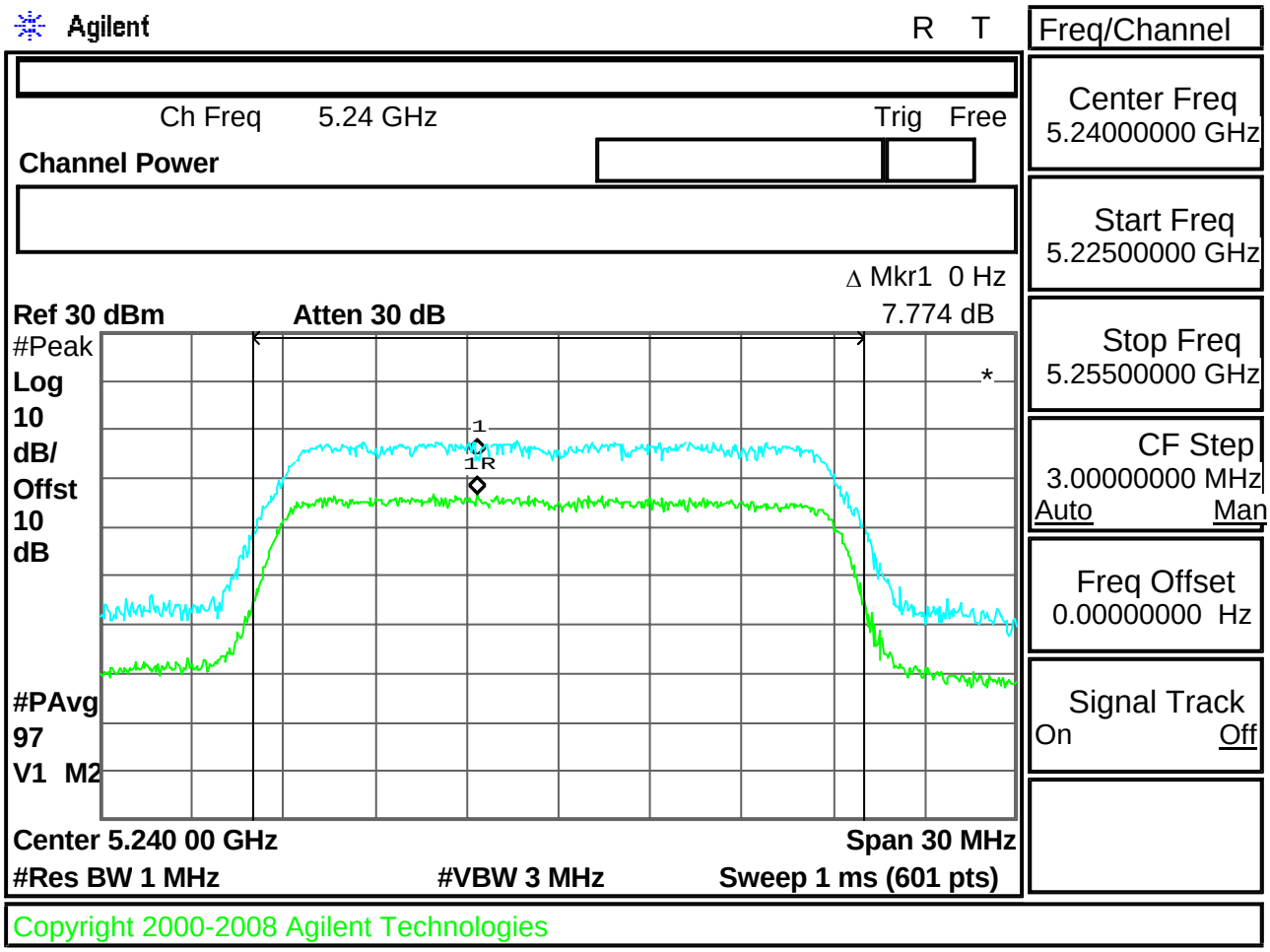
Test Date: Mar. 21, 2011 Temperature: 17℃ Humidity: 54%

Channel	Frequency (MHz)	Peak Excursion (dB)	FCC Limit (dB)	Chart
36	5180	9.127	13	Page 140
40	5200	10.406	13	Page 141
48	5240	7.774	13	Page 142

Note: Please refer to page 140 to page 142 for chart


Agilent
R T
Freq/Channel
Ch Freq 5.18 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
Ref 30 dBm
Atten 30 dB
9.127 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
Center 5.180 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Center Freq
5.18000000 GHz
Start Freq
5.16500000 GHz
Stop Freq
5.19500000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Copyright 2000-2008 Agilent Technologies



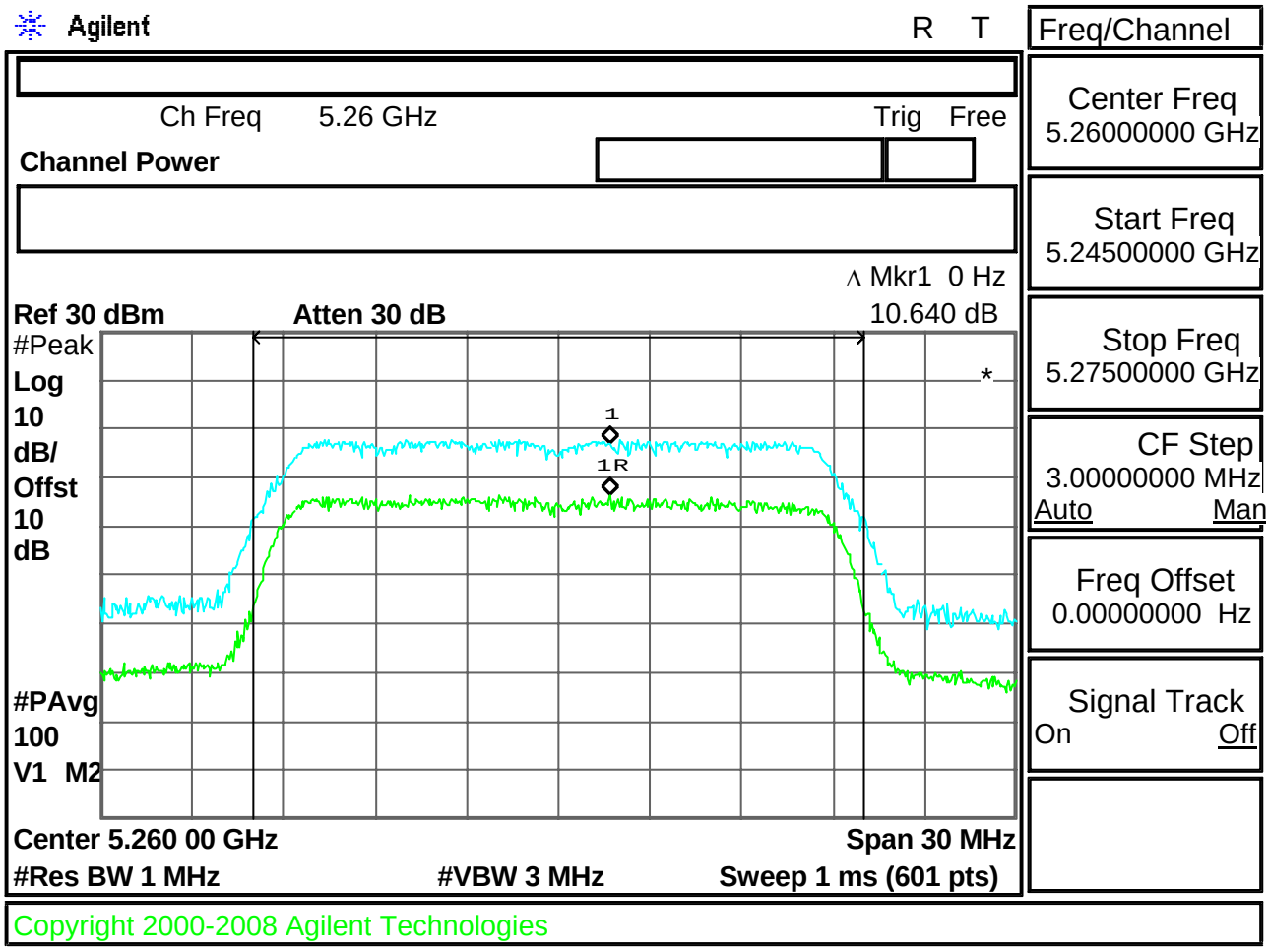


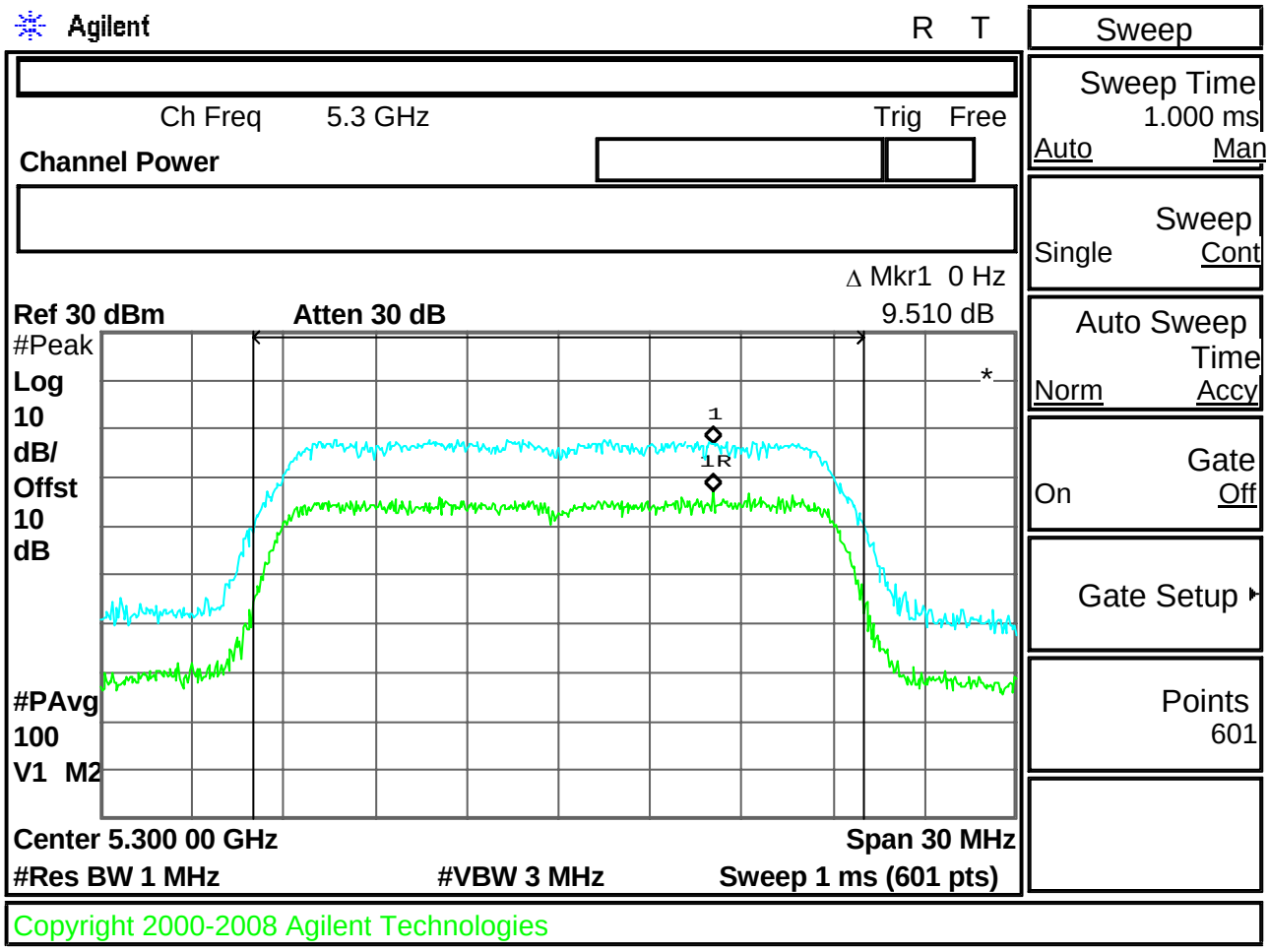
9.4.2.2 5.3GHz

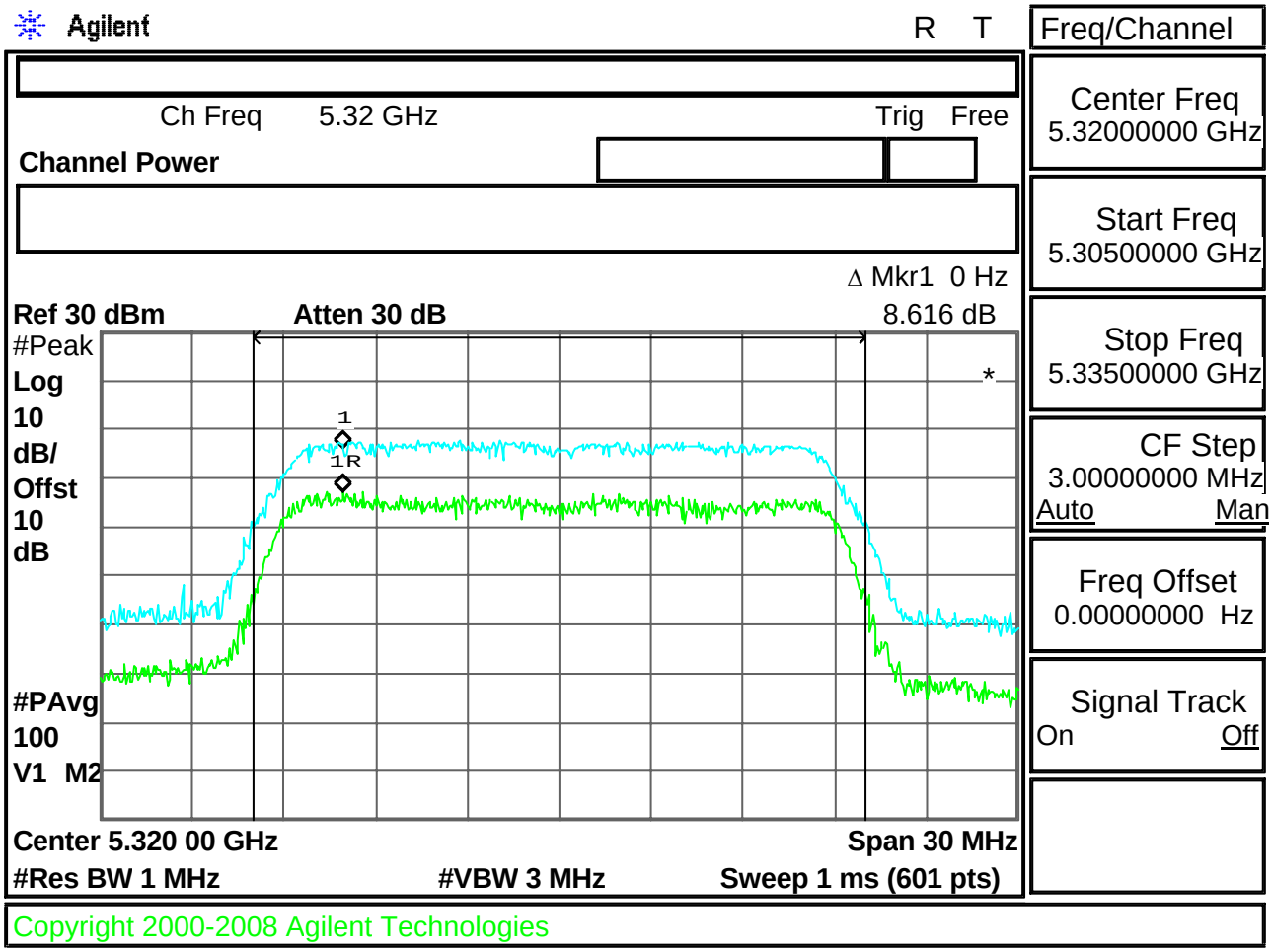
Test Date: Mar. 21, 2011 Temperature: 17℃ Humidity: 54%

Channel	Frequency (MHz)	Peak Excursion (dB)	FCC Limit (dB)	Chart
52	5260	10.640	13	Page 144
60	5300	9.510	13	Page 145
64	5320	8.616	13	Page 146

Note: Please refer to page 144 to page 146 for chart


Agilent
R T
Ch Freq 5.26 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
Ref 30 dBm
Atten 30 dB
10.640 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
1
1R
Center 5.260 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Freq/Channel
Center Freq
5.26000000 GHz
Start Freq
5.24500000 GHz
Stop Freq
5.27500000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Copyright 2000-2008 Agilent Technologies


Agilent
R T
Ch Freq 5.3 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
Ref 30 dBm
Atten 30 dB
9.510 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
1
1R
Center 5.300 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Sweep
Sweep Time
1.000 ms
Auto Man
Sweep
Single Cont
Auto Sweep Time
Norm Accy
Gate
On Off
Gate Setup
Points
601
Copyright 2000-2008 Agilent Technologies

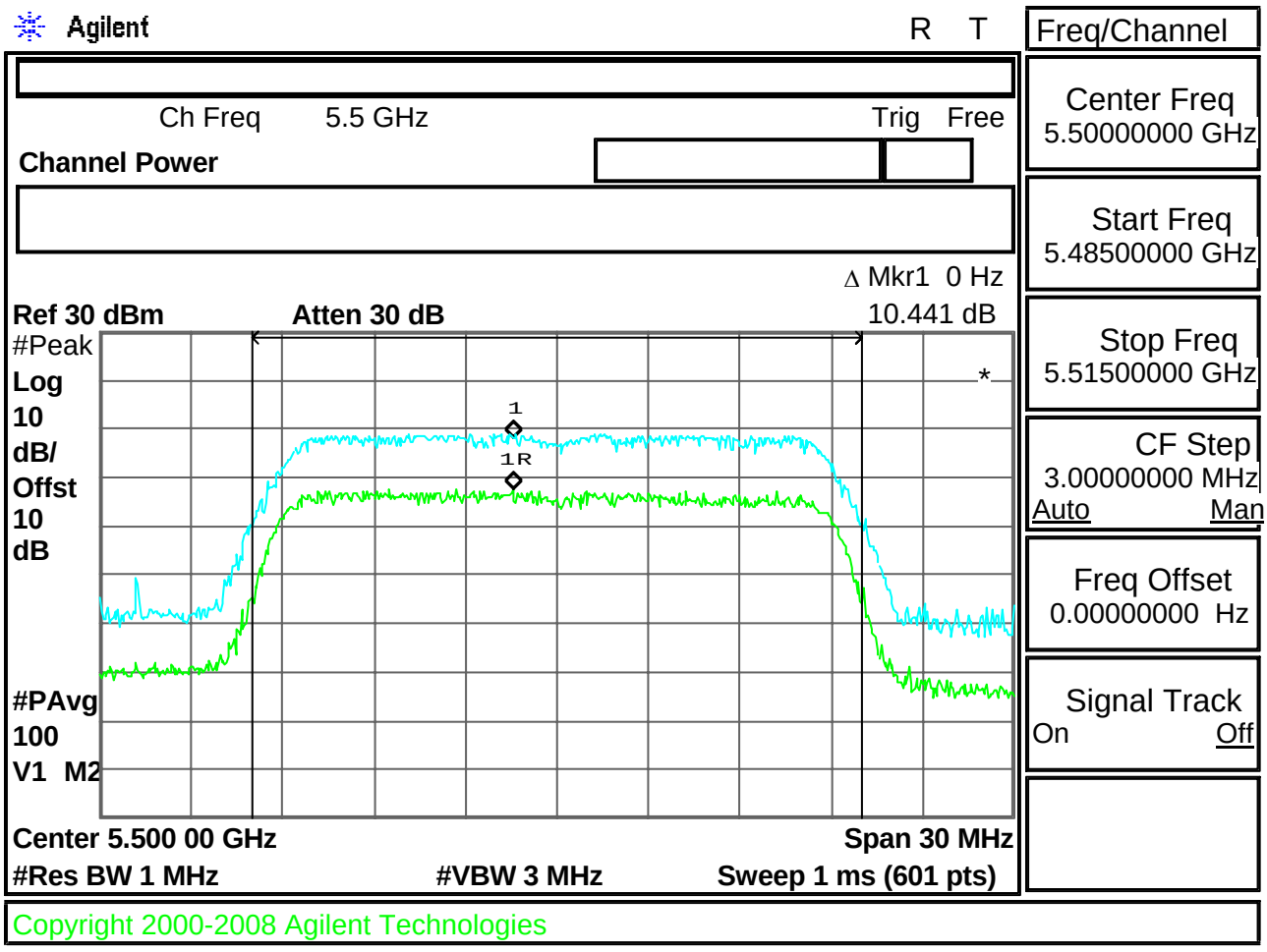

Agilent
R T
Freq/Channel
Ch Freq 5.32 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
Ref 30 dBm
Atten 30 dB
8.616 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
Center 5.320 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Center Freq
5.32000000 GHz
Start Freq
5.30500000 GHz
Stop Freq
5.33500000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Copyright 2000-2008 Agilent Technologies

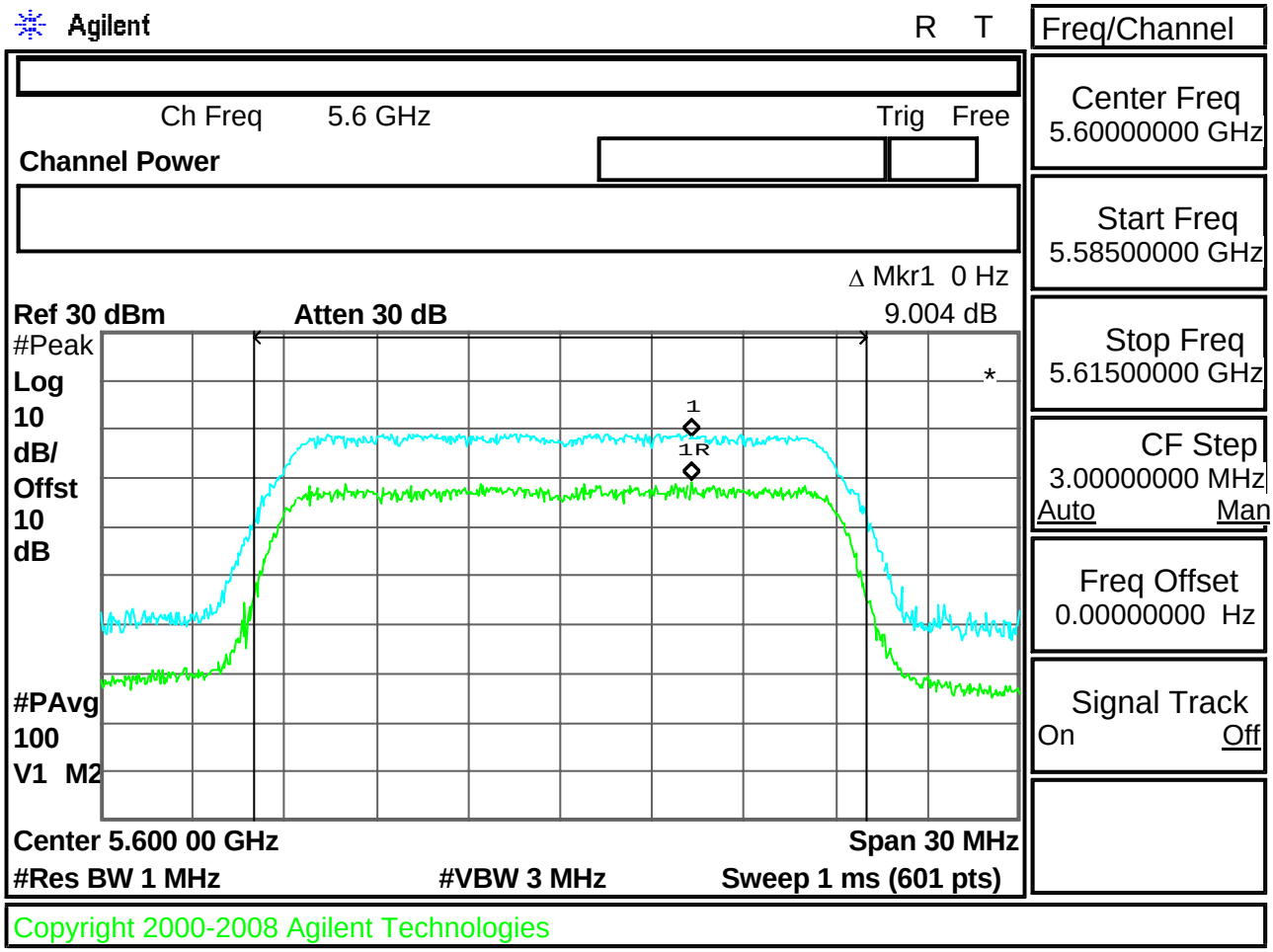
9.4.2.3 5.6GHz

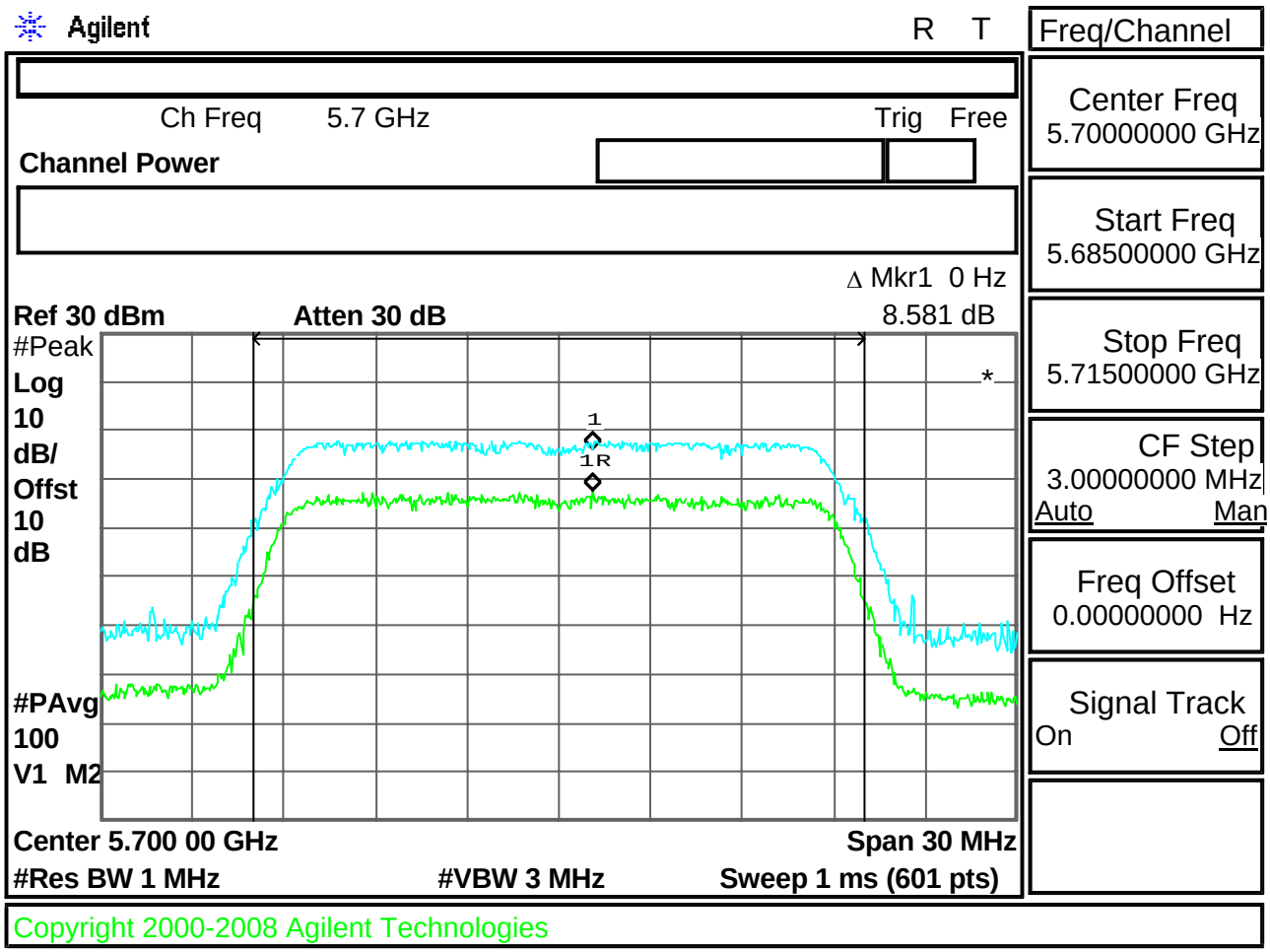
Test Date: Mar. 21, 2011 Temperature: 17℃ Humidity: 54%

Channel	Frequency (MHz)	Peak Excursion (dB)	FCC Limit (dB)	Chart
100	5500	10.441	13	Page 148
120	5600	9.004	13	Page 149
140	5700	8.581	13	Page 150

Note: Please refer to page 148 to page 150 for chart


Agilent
R T
Freq/Channel
Ch Freq 5.5 GHz
Trig Free
Channel Power
Center Freq
5.50000000 GHz
Start Freq
5.48500000 GHz
Δ Mkr1 0 Hz
Ref 30 dBm
Atten 30 dB
10.441 dB
#Peak
Log
10
dB/
Offst
10
dB
Stop Freq
5.51500000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
#PAvg
100
V1 M2
Signal Track
On Off
Center 5.500 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Copyright 2000-2008 Agilent Technologies




Agilent
R T
Freq/Channel
Ch Freq 5.7 GHz
Trig Free
Channel Power
Center Freq
5.70000000 GHz
Start Freq
5.68500000 GHz
Stop Freq
5.71500000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Δ Mkr1 0 Hz
8.581 dB
Ref 30 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
1
1R
Center 5.700 00 GHz
Span 30 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Copyright 2000-2008 Agilent Technologies

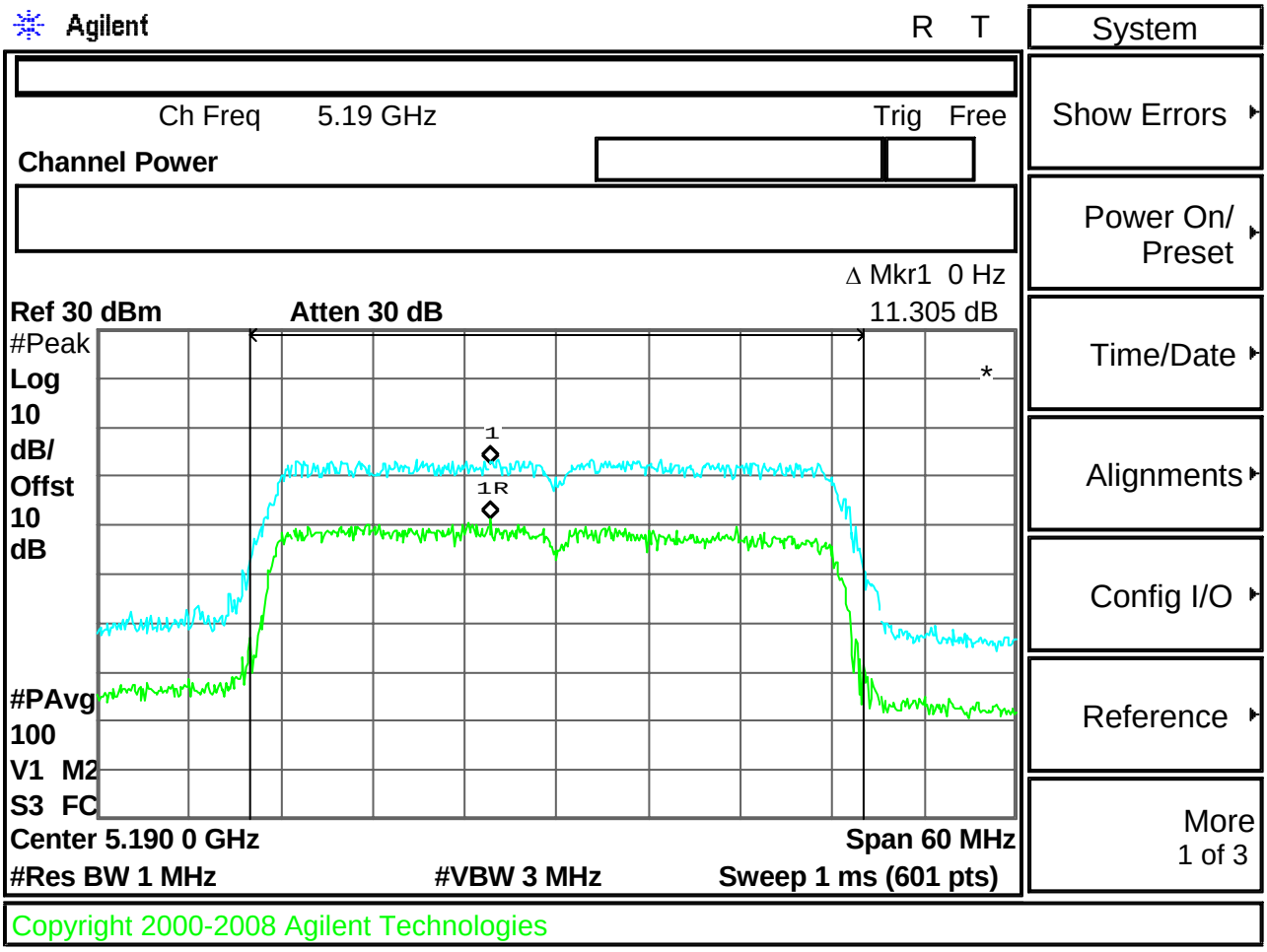
9.4.3 IEEE 802.11a , HT40

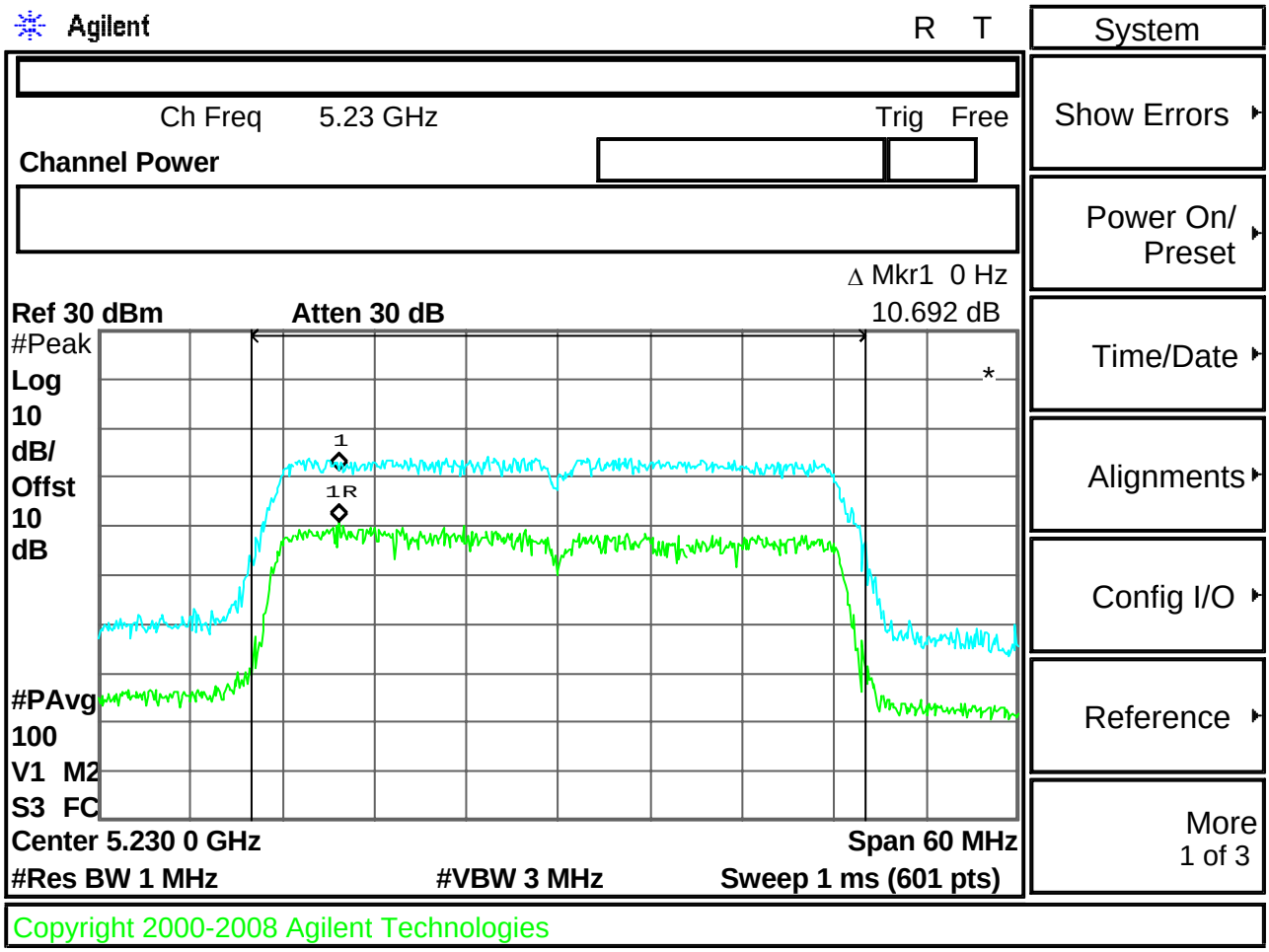
9.4.3.1 5.2GHz

Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

Channel	Frequency (MHz)	Peak Excursion (dB)	FCC Limit (dB)	Chart
38	5190	11.305	13	Page 152
46	5230	10.692	13	Page 153

Note: Please refer to page 152 to page 153 for chart


Agilent
R T
Ch Freq 5.19 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
Ref 30 dBm
Atten 30 dB
11.305 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.190 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies

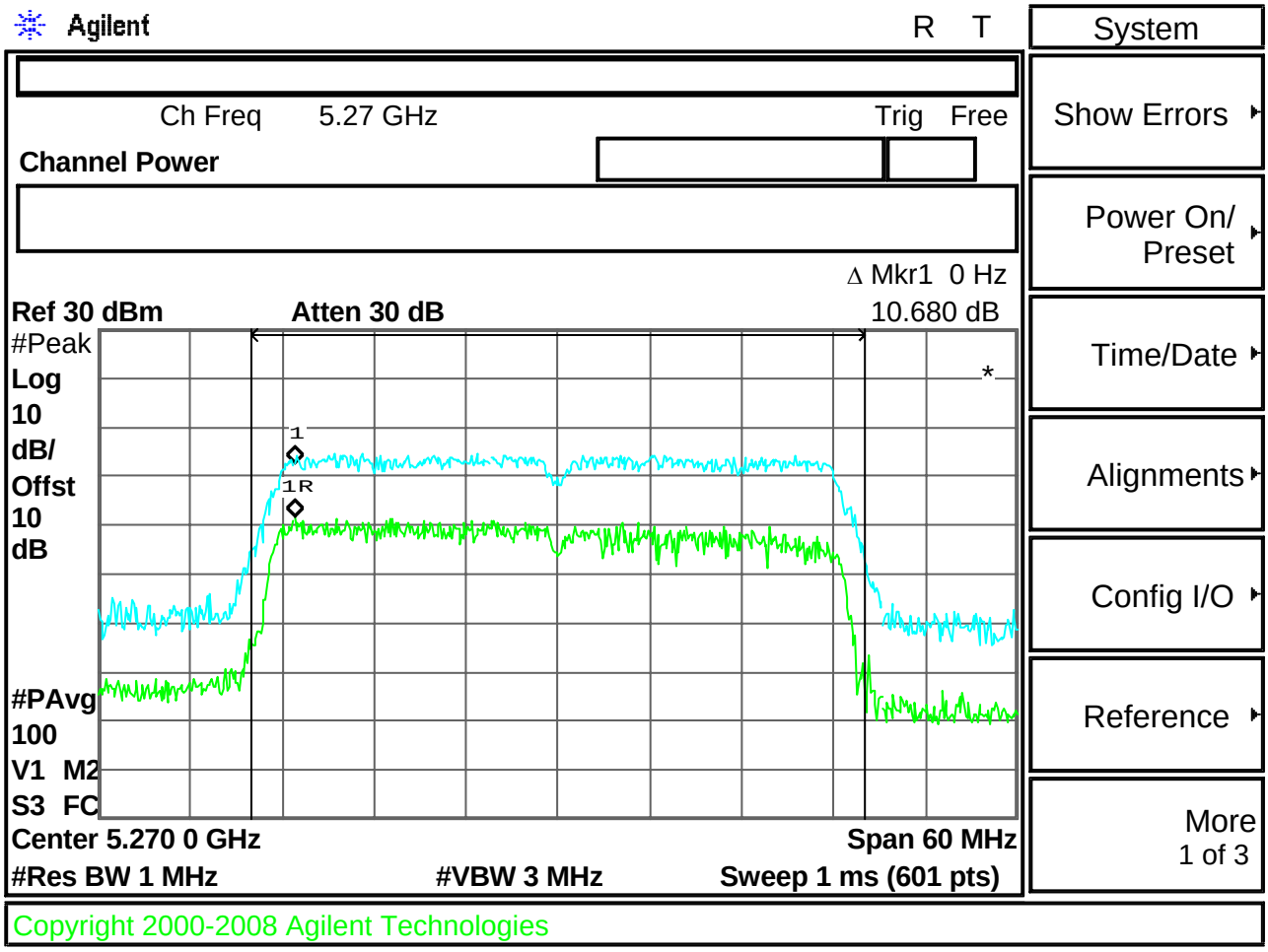

Agilent
R T
Ch Freq 5.23 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
10.692 dB
Ref 30 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.230 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Copyright 2000-2008 Agilent Technologies
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More
1 of 3

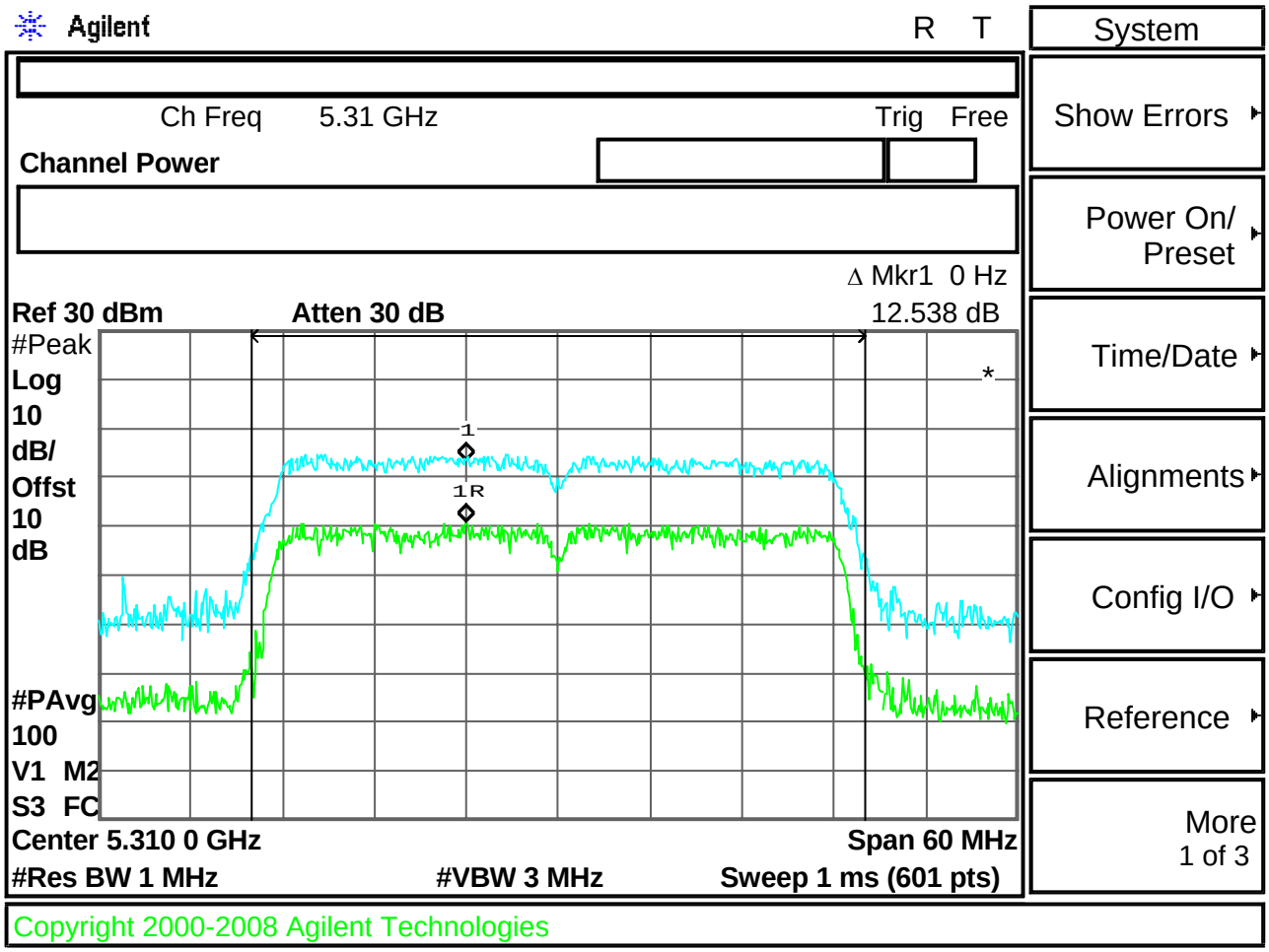
9.4.3.2 5.3GHz

Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

Channel	Frequency (MHz)	Peak Excursion (dB)	FCC Limit (dB)	Chart
54	5270	10.68	13	Page 155
62	5310	12.538	13	Page 156

Note: Please refer to page 155 to page 156 for chart


Agilent
R T
Ch Freq 5.27 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
10.680 dB
Ref 30 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.270 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
Copyright 2000-2008 Agilent Technologies
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More
1 of 3

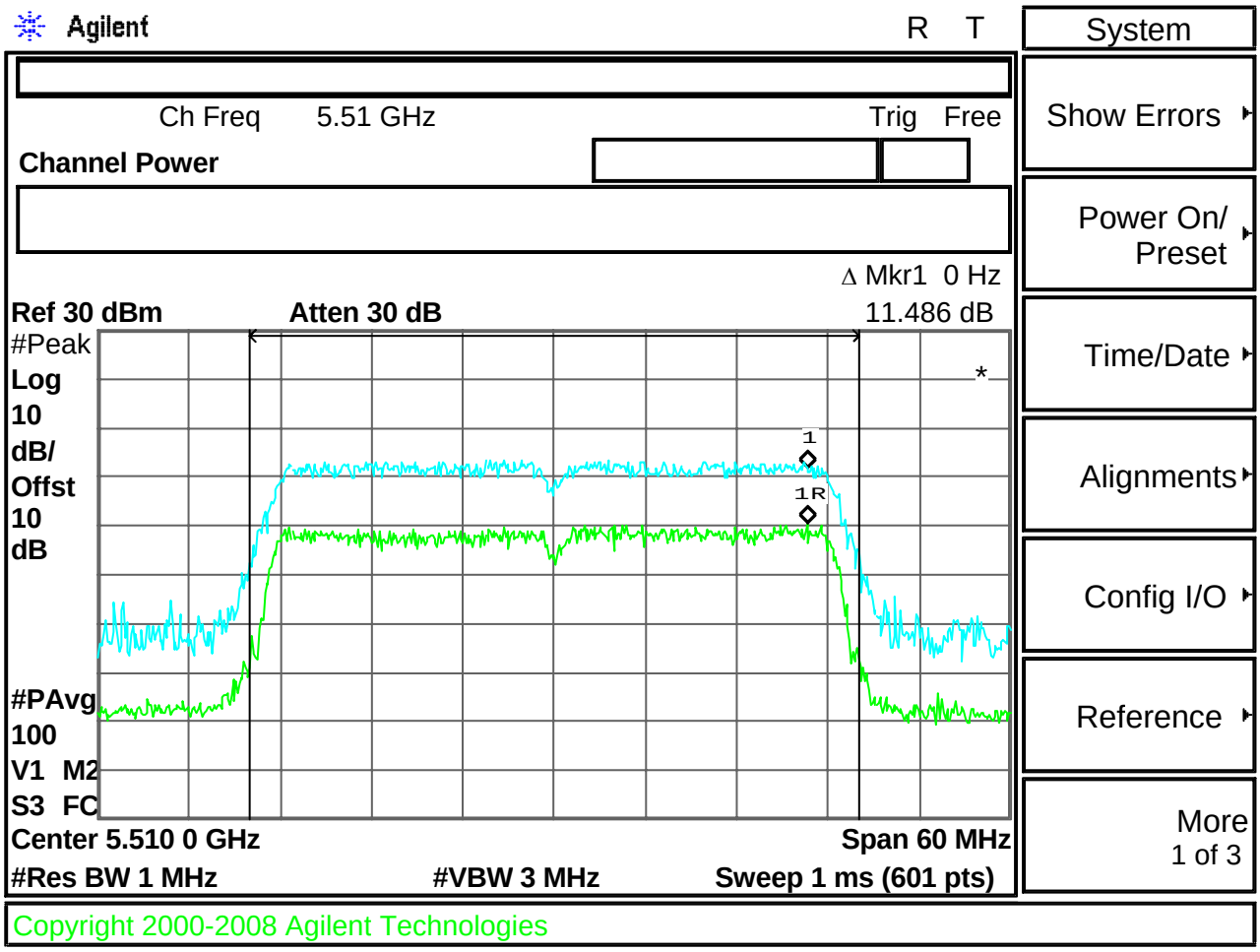

Agilent
R T
Ch Freq 5.31 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
12.538 dB
Ref 30 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.310 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies

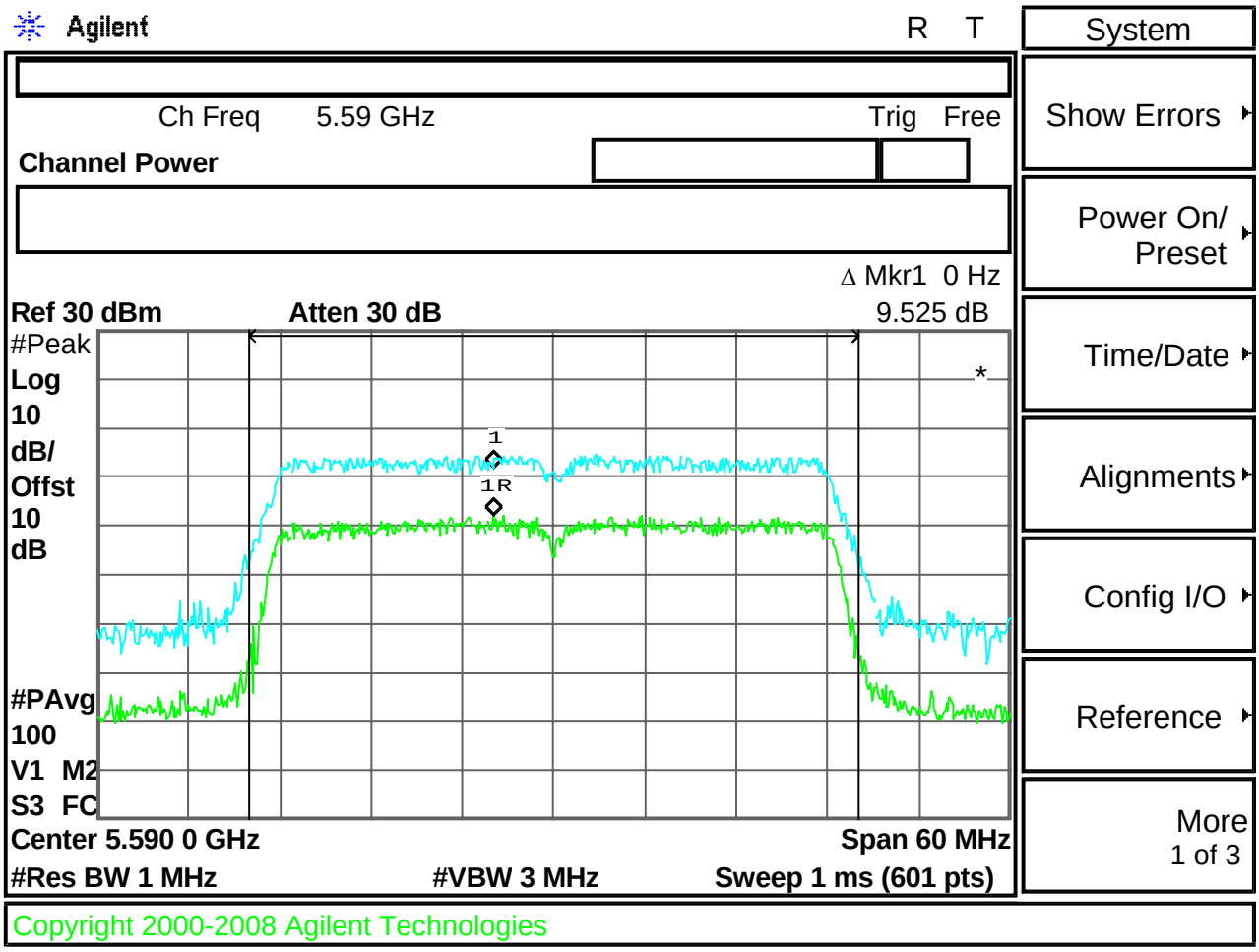
9.4.3.3 5.6GHz

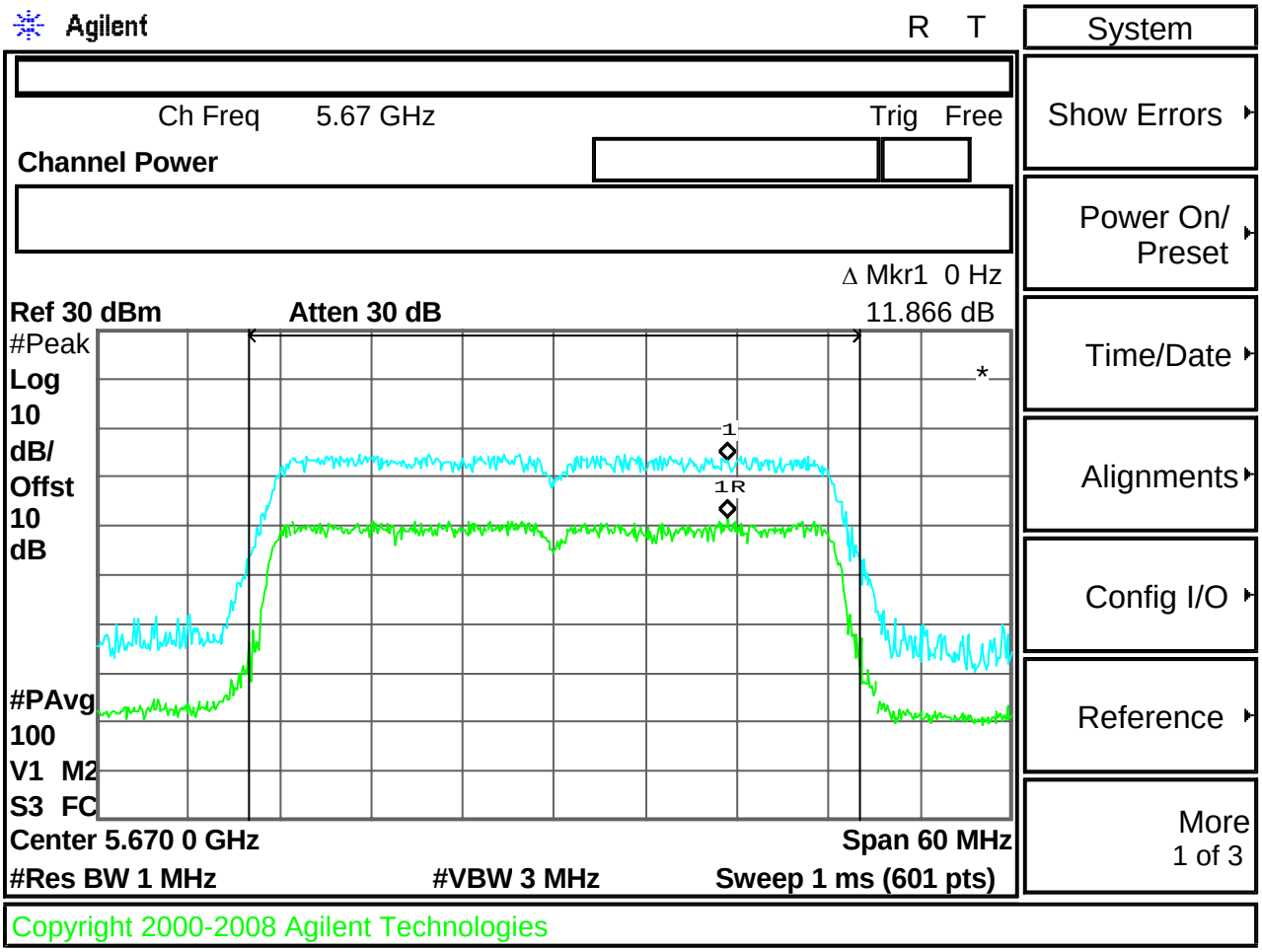
Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

Channel	Frequency (MHz)	Peak Excursion (dB)	FCC Limit (dB)	Chart
102	5510	11.486	13	Page 158
118	5590	9.525	13	Page 159
134	5670	11.866	13	Page 160

Note: Please refer to page 158 to page 160 for chart


Agilent
R T
Ch Freq 5.51 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
Ref 30 dBm
Atten 30 dB
11.486 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.510 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies


Agilent
R T
Ch Freq 5.59 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
9.525 dB
Ref 30 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.590 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies


Agilent
R T
Ch Freq 5.67 GHz
Trig Free
Channel Power
Δ Mkr1 0 Hz
Ref 30 dBm
Atten 30 dB
11.866 dB
#Peak
Log
10
dB/
Offst
10
dB
#PAvg
100
V1 M2
S3 FC
Center 5.670 0 GHz
Span 60 MHz
#Res BW 1 MHz
#VBW 3 MHz
Sweep 1 ms (601 pts)
System
Show Errors
Power On/ Preset
Time/Date
Alignments
Config I/O
Reference
More 1 of 3
Copyright 2000-2008 Agilent Technologies

10 SPURIOUS EMISSION - RF CONDUCTED MEASUREMENT

10.1 Standard Applicable

According to 15.407 (b)(1), for transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15- 5.35 GHz band shall not exceed an EIRP of –27 dBm /MHz.

According to 15.407 (b)(2), for transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15- 5.35 GHz band shall not exceed an EIRP of –27 dBm /MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of –27 dBm / MHz in the 5.15-5.25 GHz band.

According to 15.407 (b)(3), for transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47- 5.725 GHz band shall not exceed an EIRP of –27 dBm /MHz.

According to 15.407 (b)(5), the above emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

According to 15.407 (b)(6), unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in Section 15.207.

According to 15.407 (b)(7), the provisions of Section 15.205 of the part apply to intentional radiators operating under this section.

According to 15.407 (b)(8), when measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.

10.2 Measurement Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in figure 2. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 1MHz with a convenient frequency span including 1MHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

10.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Agilent	E4446A	09/26/2011

10.4 Measurement Data

10.4.1 IEEE 802.11a

10.4.1.1 5.2GHz

Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

Channel	Frequency(MHz)	Chart
36	5180	Page 165, Page 166
40	5200	Page 167, Page 168
48	5240	Page 169, Page 170

Frequency Band: 5150 MHz ~ 5250 MHz

All out-of –band conducted emissions were more than EIRP of –27 dBm /MHz.

Note: 1. Please refer to page 165 to page 170 for chart
2. An external attenuator is used as part of the test system for these measurements, the attenuation introduced by the external attenuator has not been explicitly compensated in the measured power level as it is irrelevant to these specific measurement results.

10.4.1.2 5.3GHz

Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

Channel	Frequency(MHz)	Chart
52	5260	Page 171, Page 172
60	5300	Page 173, Page 174
64	5320	Page 175, Page 176

Frequency Band: 5250 MHz ~ 5350 MHz

All out-of –band conducted emissions were more than EIRP of –27 dBm /MHz.

Note: 1. Please refer to page 171 to page 176 for chart
2. An external attenuator is used as part of the test system for these measurements, the attenuation introduced by the external attenuator has not been explicitly compensated in the measured power level as it is irrelevant to these specific measurement results.

10.4.1.3 5.6GHz

Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

Channel	Frequency(MHz)	Chart
100	5500	Page 177, Page 178
120	5600	Page 179, Page 180
140	5700	Page 181, Page 182

Frequency Band: 5470 MHz ~ 5725 MHz

All out-of –band conducted emissions were more than EIRP of –27 dBm /MHz.

Note: 1.Please refer to page 177 to page 182 for chart
2. An external attenuator is used as part of the test system for these measurements, the attenuation introduced by the external attenuator has not been explicitly compensated in the measured power level as it is irrelevant to these specific measurement results.

10.4.2 IEEE 802.11an, HT20

10.4.2.1 5.2GHz

Test Date: Mar. 21, 2011 Temperature: 17℃ Humidity: 54%

Channel	Frequency(MHz)	Chart
36	5180	Page 183, Page 184
40	5200	Page 185, Page 186
48	5240	Page 187, Page 188

Frequency Band: 5150 MHz ~ 5250 MHz

All out-of –band conducted emissions were more than EIRP of –27 dBm /MHz.

Note: 1. Please refer to page 183 to page 188 for chart
2. An external attenuator is used as part of the test system for these measurements, the attenuation introduced by the external attenuator has not been explicitly compensated in the measured power level as it is irrelevant to these specific measurement results.

10.4.2.2 5.3GHz

Test Date: Mar. 21, 2011 Temperature: 17℃ Humidity: 54%

Channel	Frequency(MHz)	Chart
52	5260	Page 189, Page 190
60	5300	Page 191, Page 192
64	5320	Page 193, Page 194

Frequency Band: 5250 MHz ~ 5350 MHz

All out-of –band conducted emissions were more than EIRP of –27 dBm /MHz.

Note: 1. Please refer to page 189 to page 194 for chart
2. An external attenuator is used as part of the test system for these measurements, the attenuation introduced by the external attenuator has not been explicitly compensated in the measured power level as it is irrelevant to these specific measurement results.

10.4.2.3 5.6GHz

Test Date: Mar. 21, 2011 Temperature: 17℃ Humidity: 54%

Channel	Frequency(MHz)	Chart
100	5500	Page 195, Page 196
120	5600	Page 197, Page 198
140	5700	Page 199, Page 200

Frequency Band: 5470 MHz ~ 5725 MHz

All out-of –band conducted emissions were more than EIRP of –27 dBm /MHz.

Note: 1.Please refer to page 195 to page 200 for chart
2. An external attenuator is used as part of the test system for these measurements, the attenuation introduced by the external attenuator has not been explicitly compensated in the measured power level as it is irrelevant to these specific measurement results.

10.4.3 IEEE 802.11an, HT40

10.4.3.1 5.2GHz

Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

Channel	Frequency(MHz)	Chart
38	5190	Page 201, Page 202
46	5230	Page 203, Page 204

Frequency Band: 5150 MHz ~ 5250 MHz
All out-of –band conducted emissions were more than EIRP of –27 dBm /MHz.

Note: 1.Please refer to page 201 to page 204 for chart
2. An external attenuator is used as part of the test system for these measurements, the attenuation introduced by the external attenuator has not been explicitly compensated in the measured power level as it is irrelevant to these specific measurement results.

10.4.3.2 5.3GHz

Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

Channel	Frequency(MHz)	Chart
54	5270	Page 205, Page 206
62	5310	Page 207, Page 208

Frequency Band: 5250 MHz ~ 5350 MHz
All out-of –band conducted emissions were more than EIRP of –27 dBm /MHz.

Note: 1.Please refer to page 205 to page 208 for chart
2. An external attenuator is used as part of the test system for these measurements, the attenuation introduced by the external attenuator has not been explicitly compensated in the measured power level as it is irrelevant to these specific measurement results.

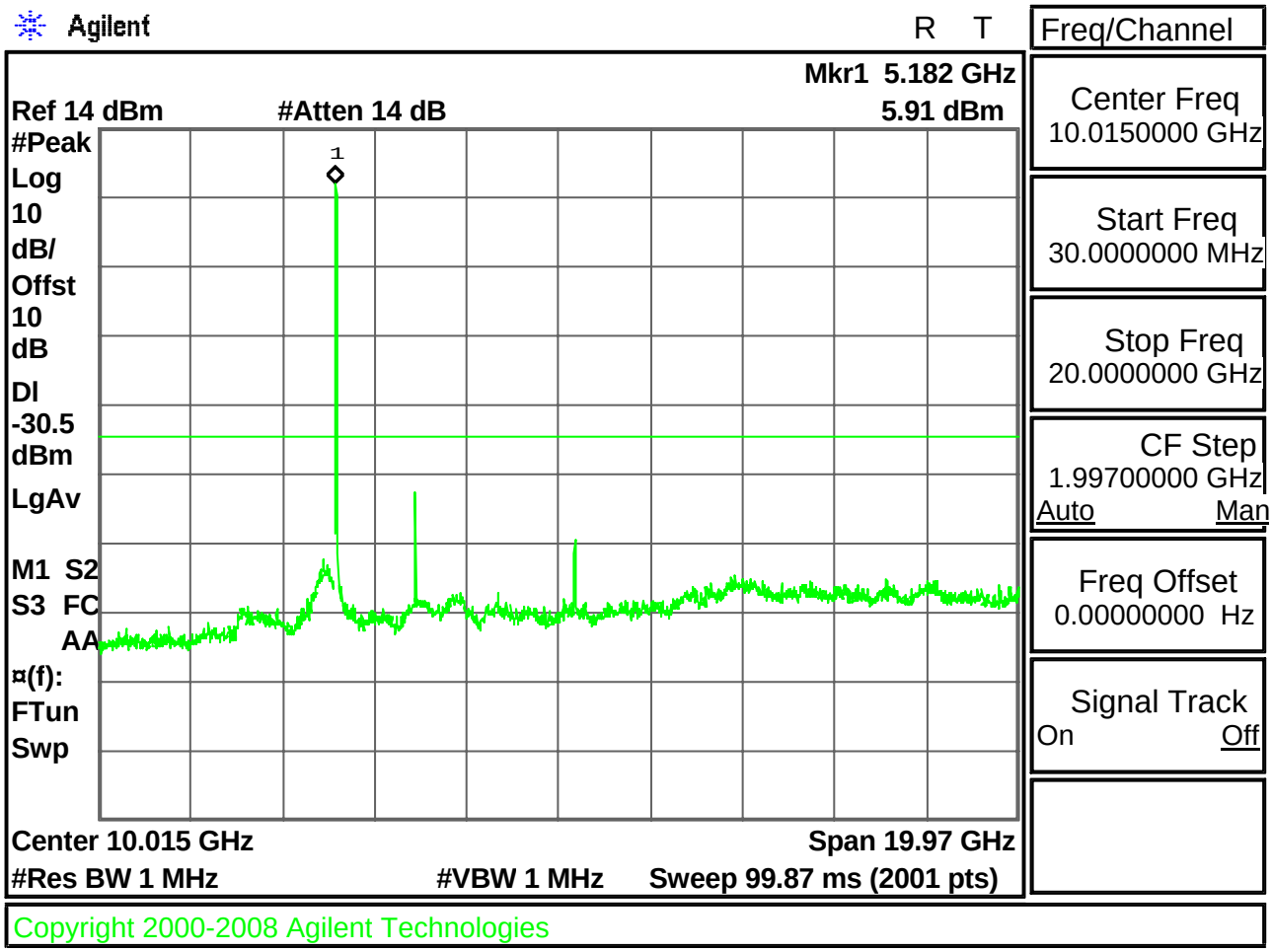
10.4.3.3 5.6GHz

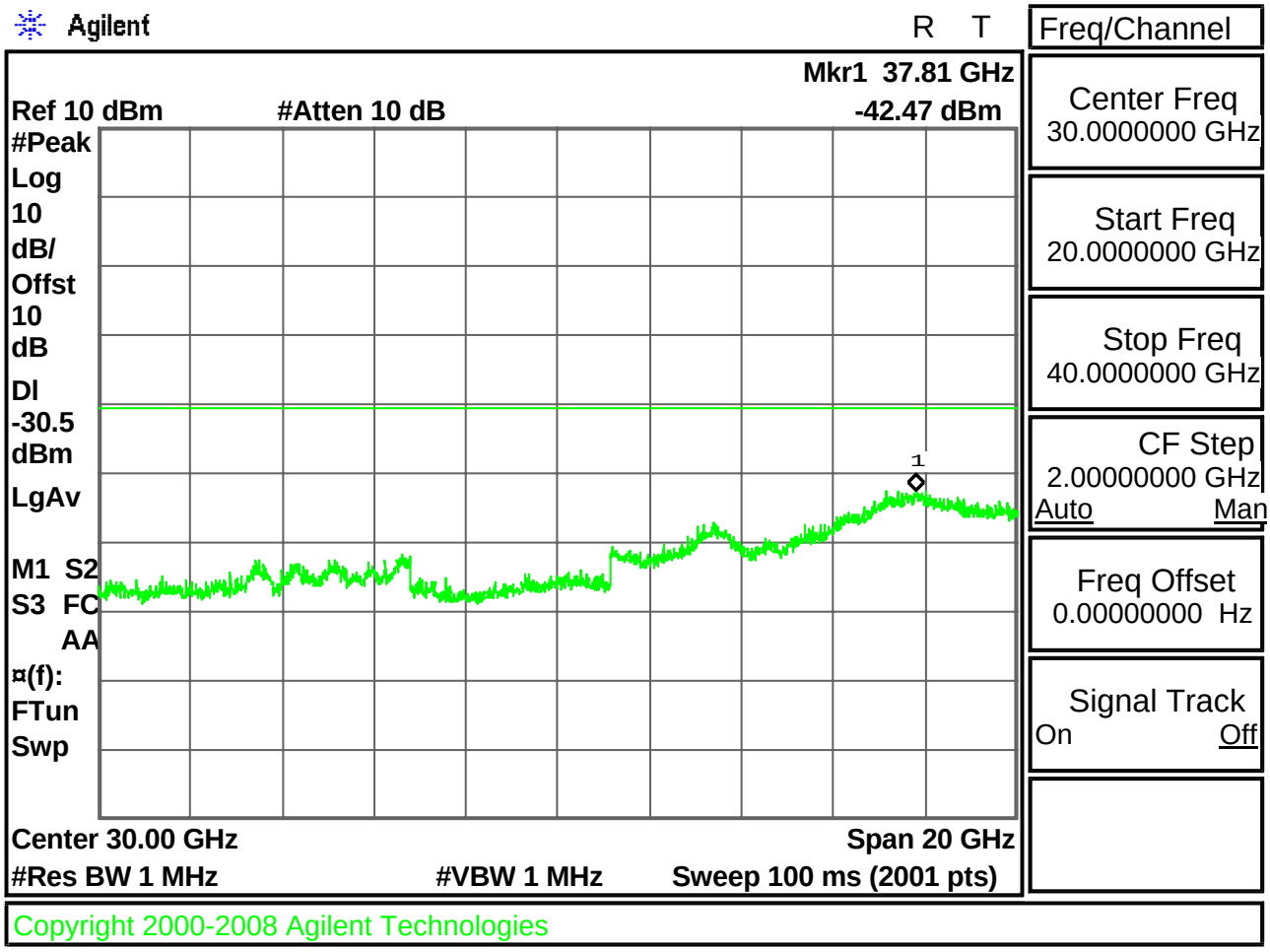
Test Date: Dec. 27, 2010 Temperature: 20℃ Humidity: 56%

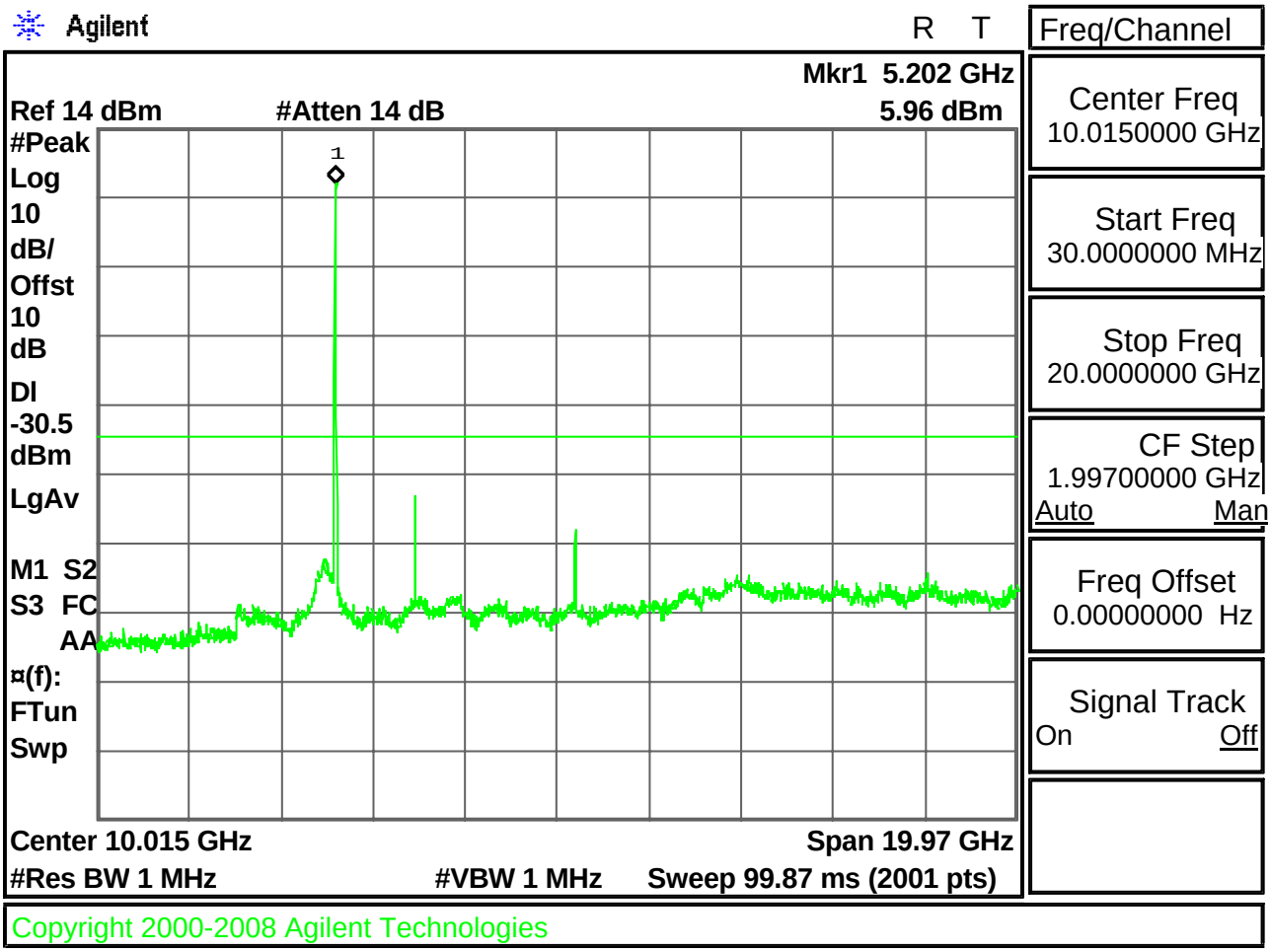
Channel	Frequency(MHz)	Chart
102	5510	Page 209, Page 210
118	5590	Page 211, Page 212
134	5670	Page 213, Page 214

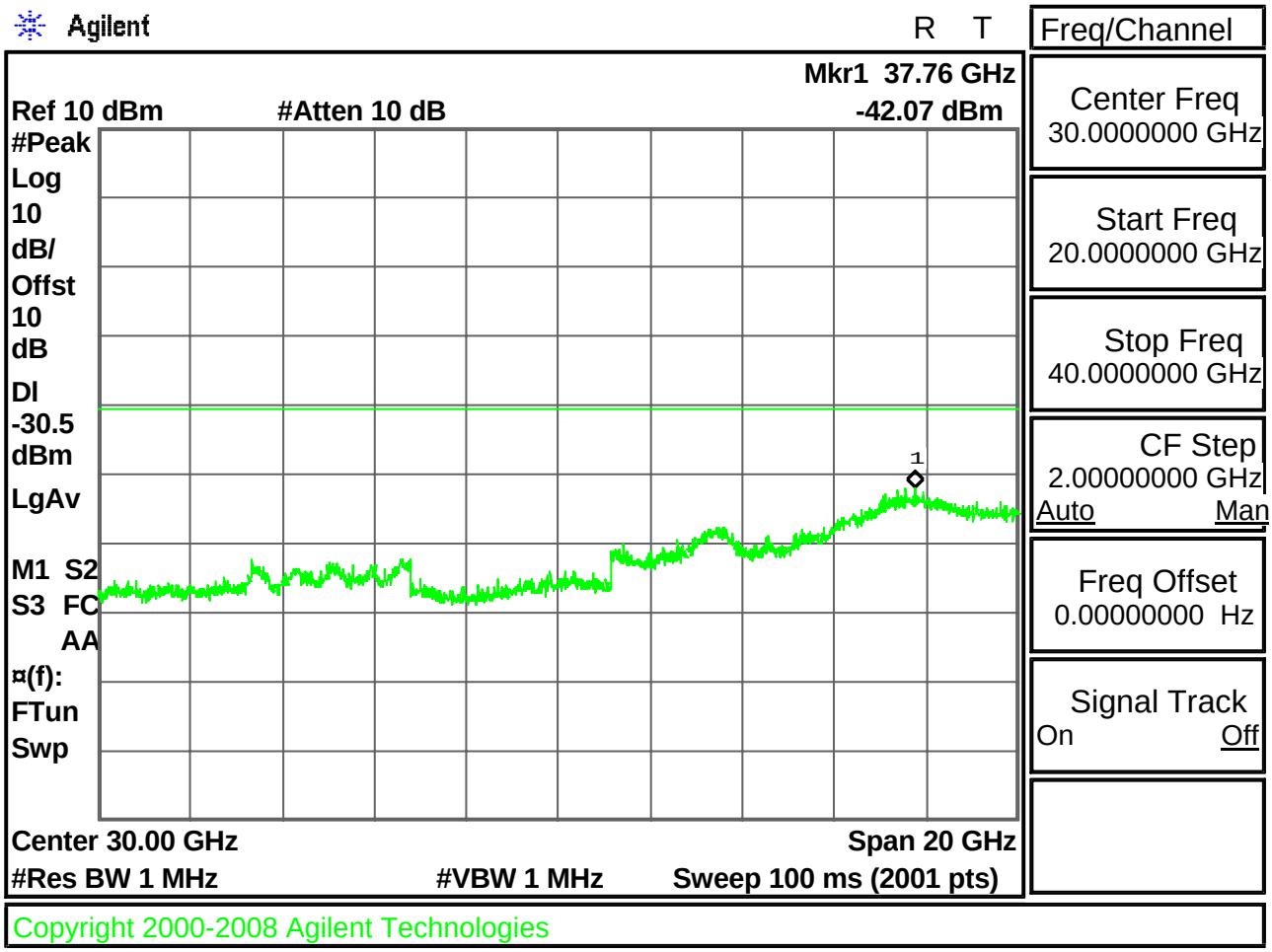
Frequency Band: 5470 MHz ~ 5725 MHz
All out-of –band conducted emissions were more than EIRP of –27 dBm /MHz.

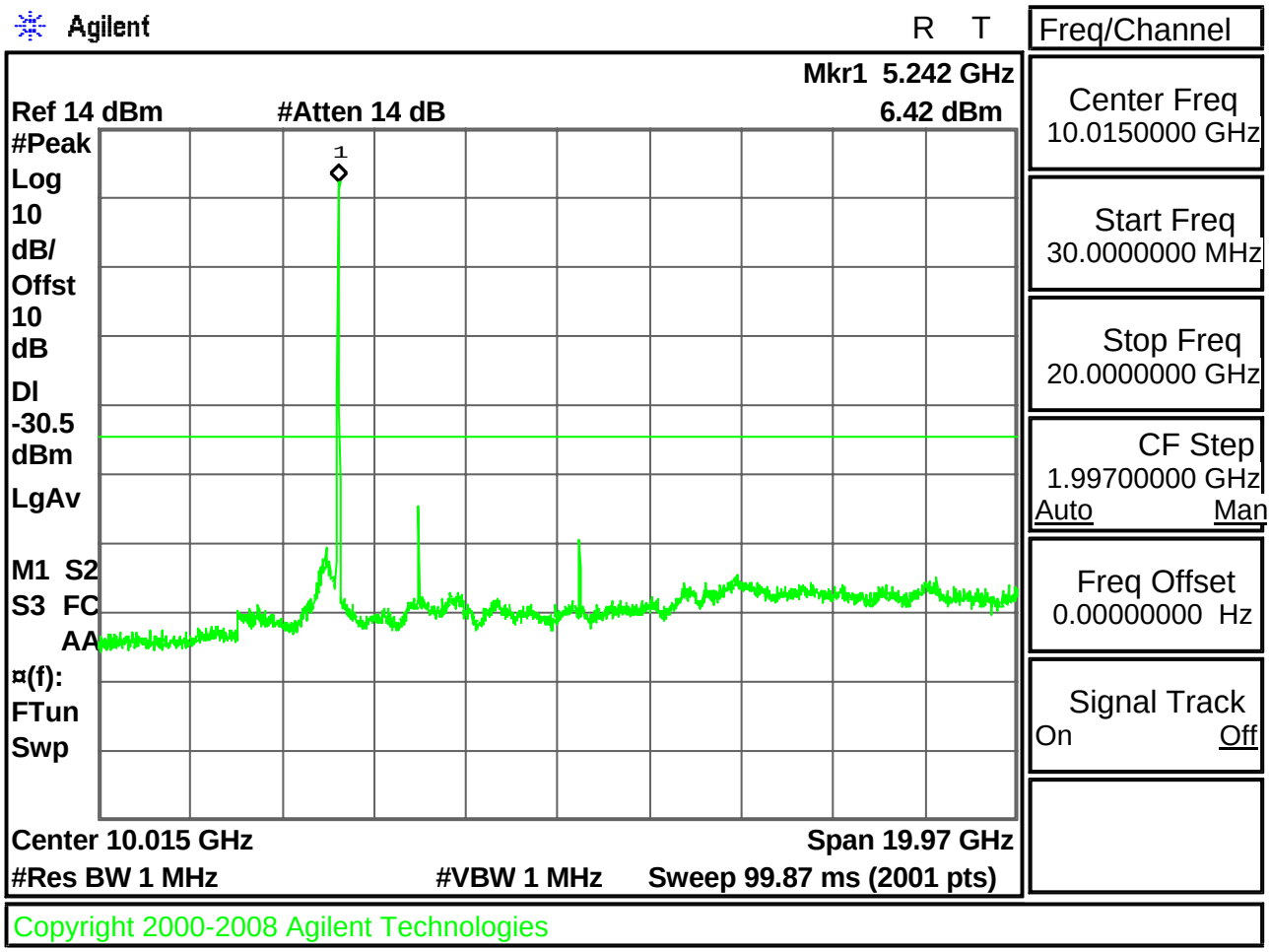
Note: 1.Please refer to page 209 to page 214 for chart
2. An external attenuator is used as part of the test system for these measurements, the attenuation introduced by the external attenuator has not been explicitly compensated in the measured power level as it is irrelevant to these specific measurement results.

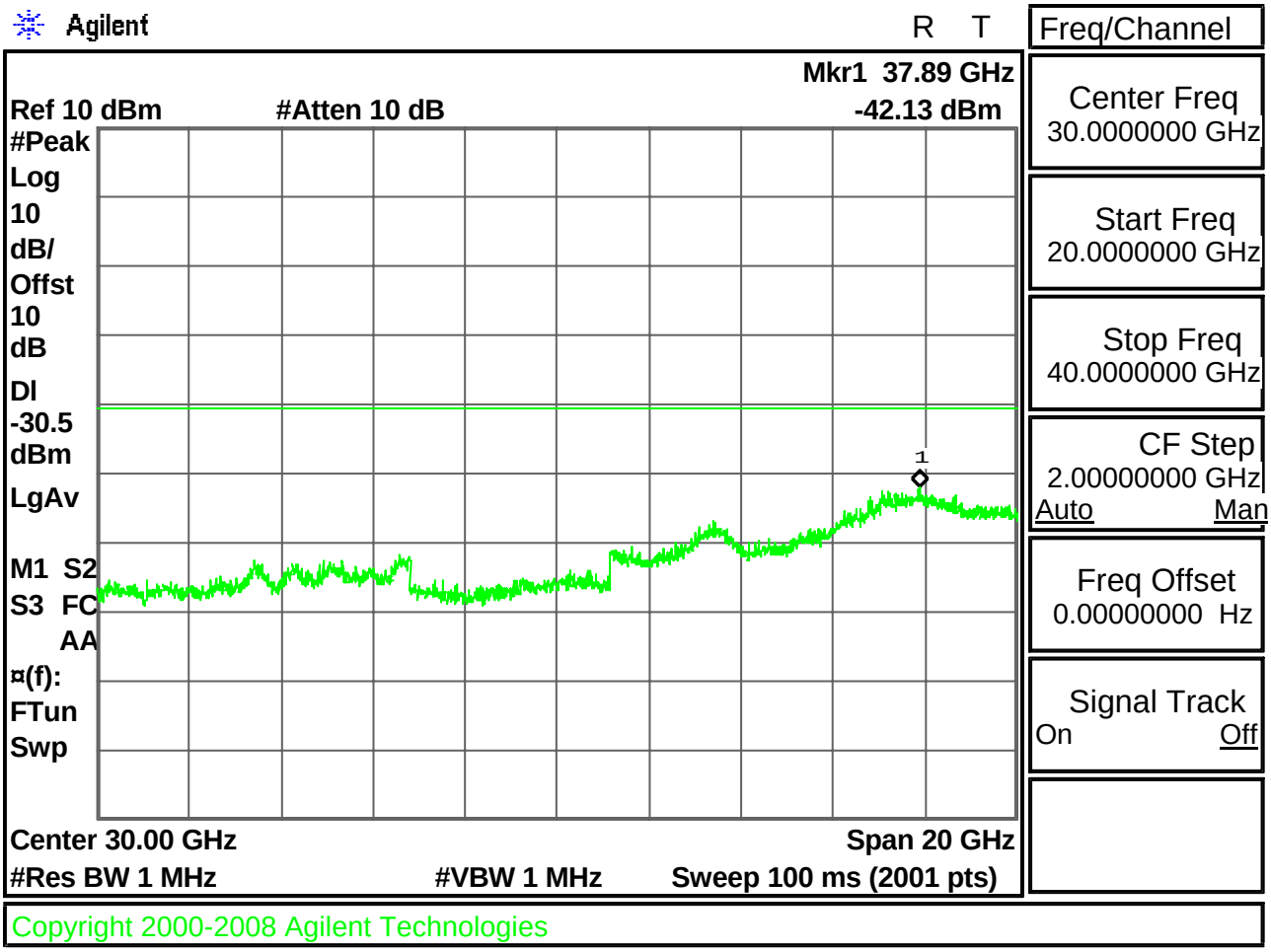

Agilent
R T
Freq/Channel
Mkr1 5.182 GHz
Ref 14 dBm
#Atten 14 dB
5.91 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Copyright 2000-2008 Agilent Technologies

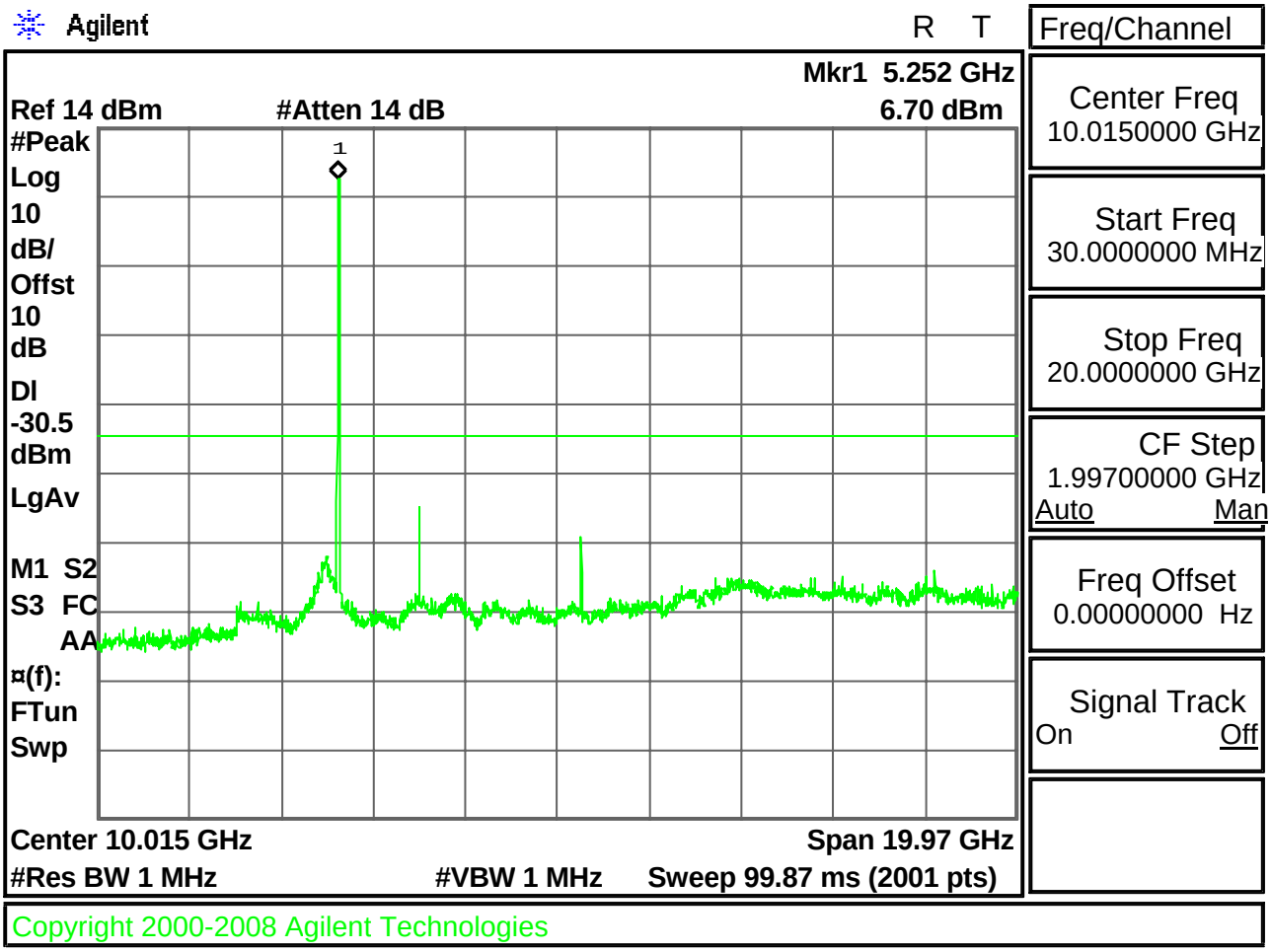

Agilent
R T
Mkr1 37.81 GHz
Ref 10 dBm
#Atten 10 dB
-42.47 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Freq/Channel
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

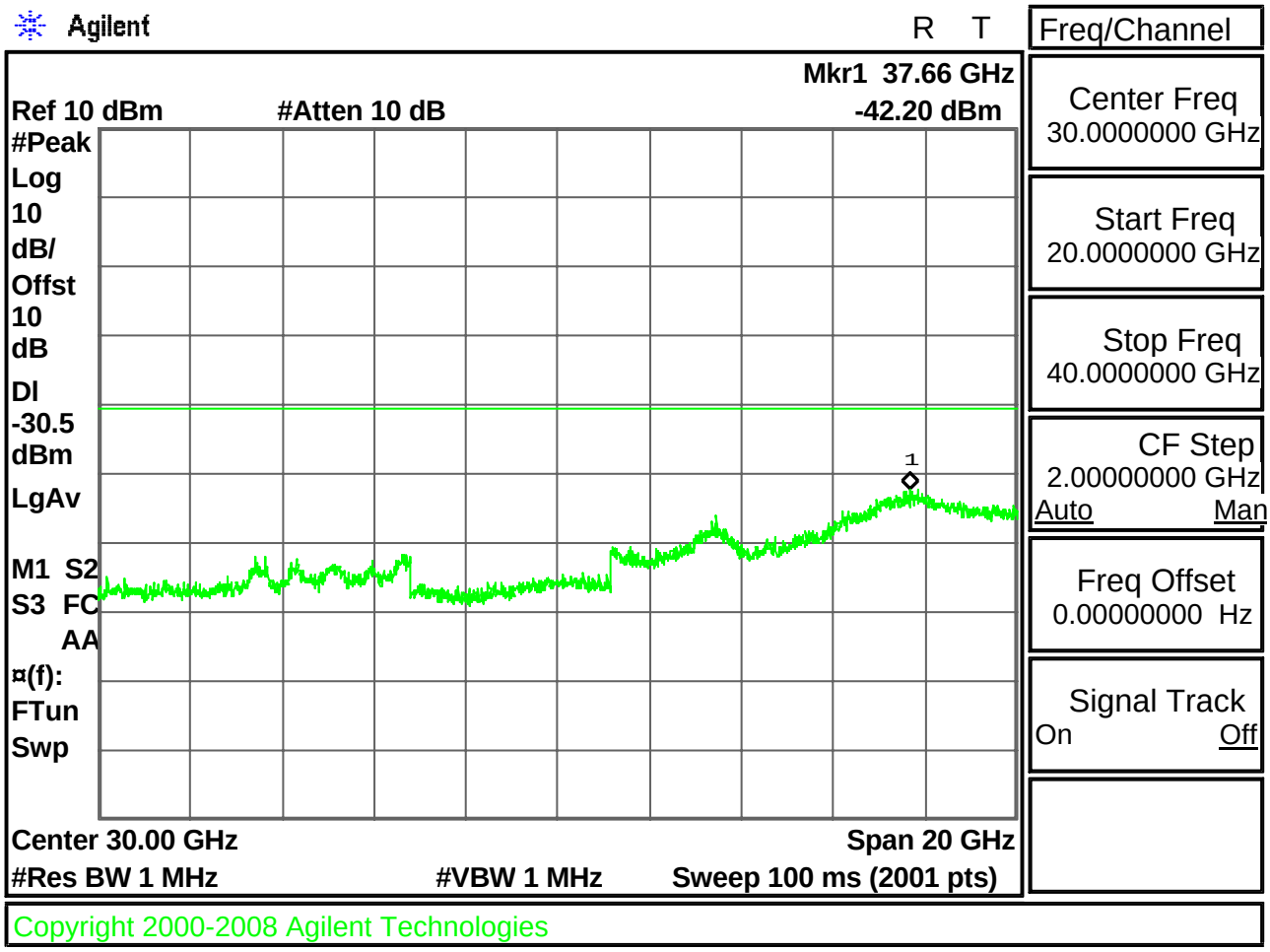

Agilent
R T
Freq/Channel
Mkr1 5.202 GHz
Ref 14 dBm
#Atten 14 dB
5.96 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Copyright 2000-2008 Agilent Technologies

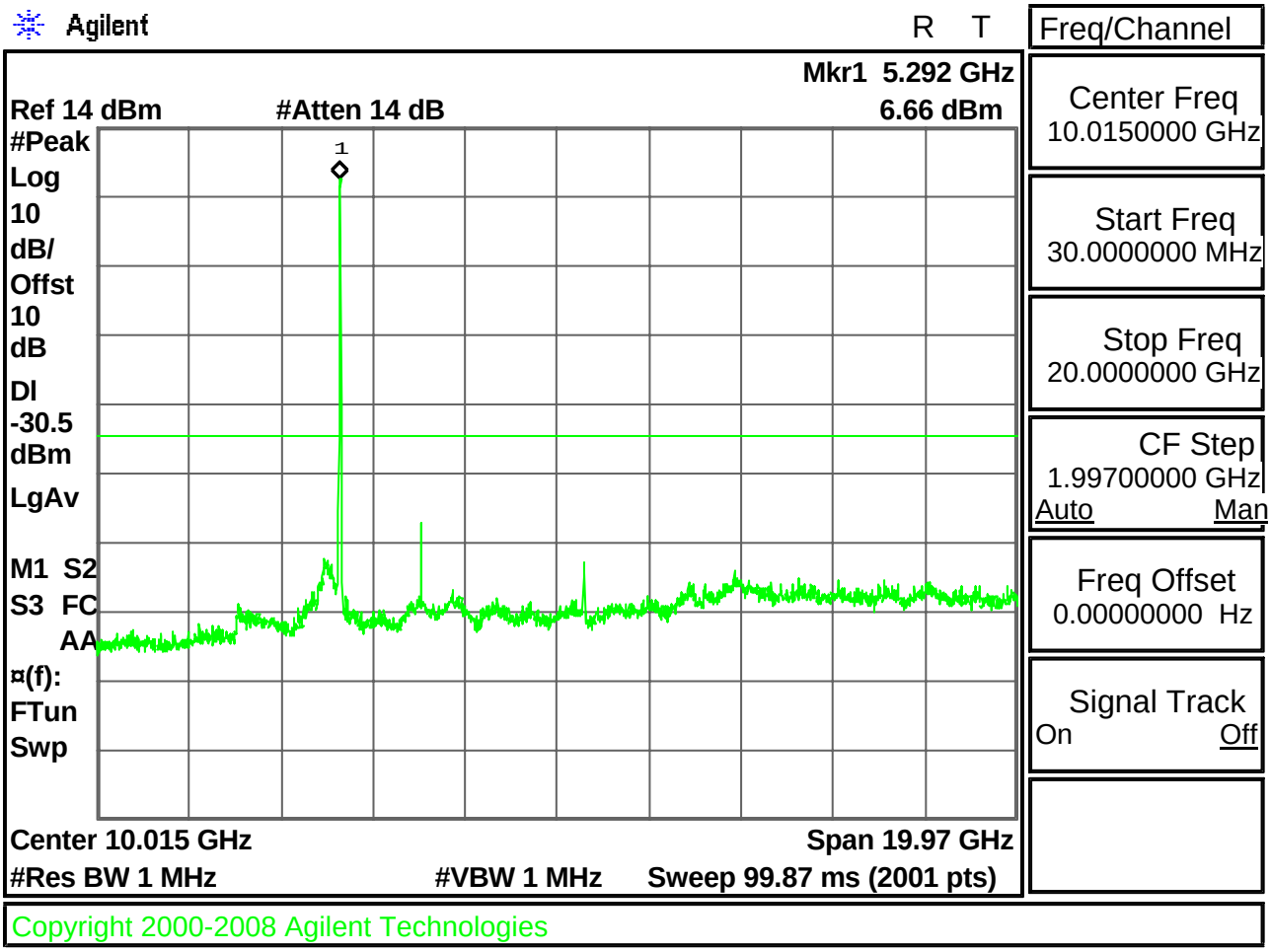

Agilent
R T
Freq/Channel
Mkr1 37.76 GHz
Ref 10 dBm
#Atten 10 dB
-42.07 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

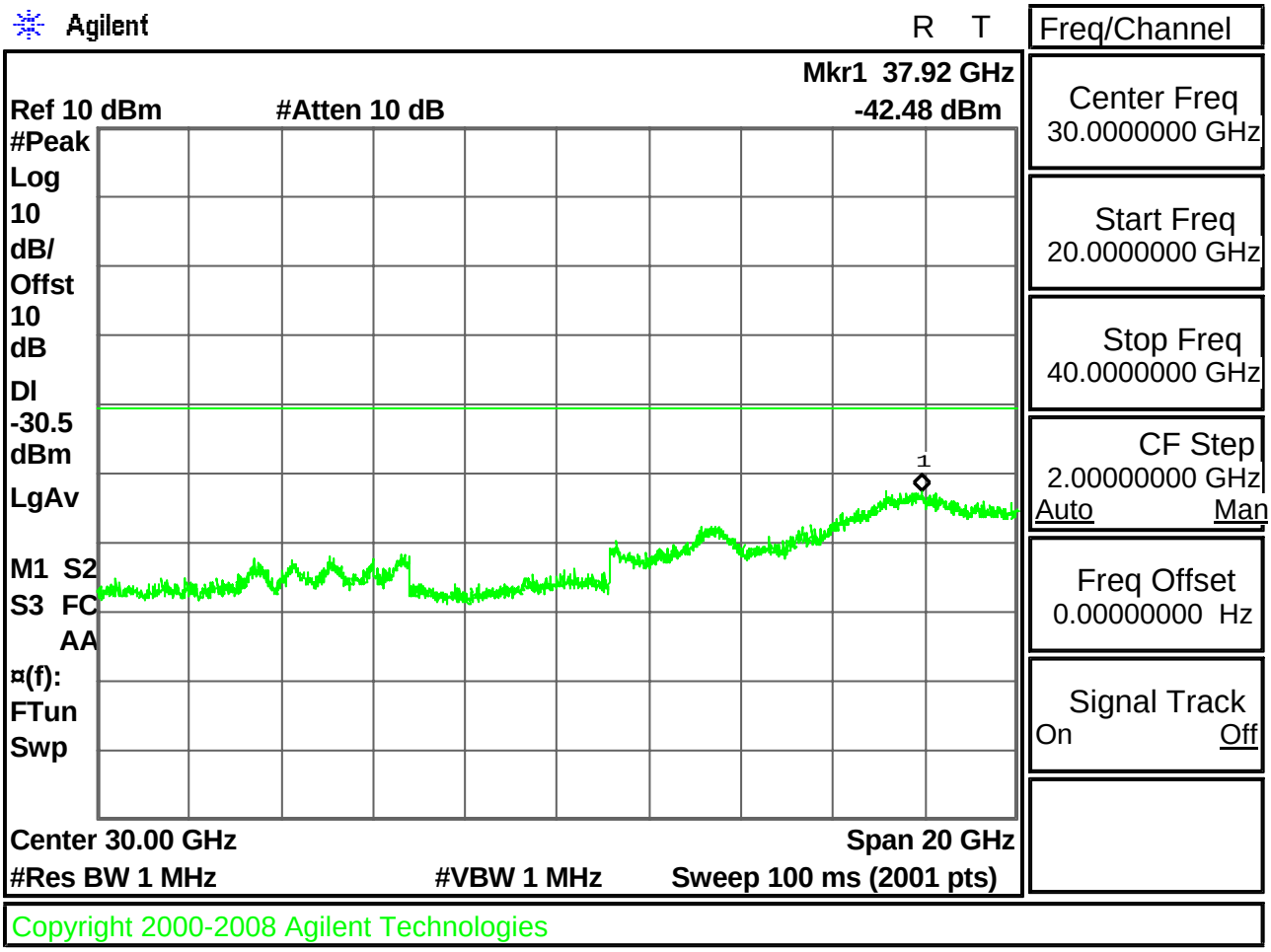

Agilent
R T
Mkr1 5.242 GHz
Ref 14 dBm
#Atten 14 dB
6.42 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

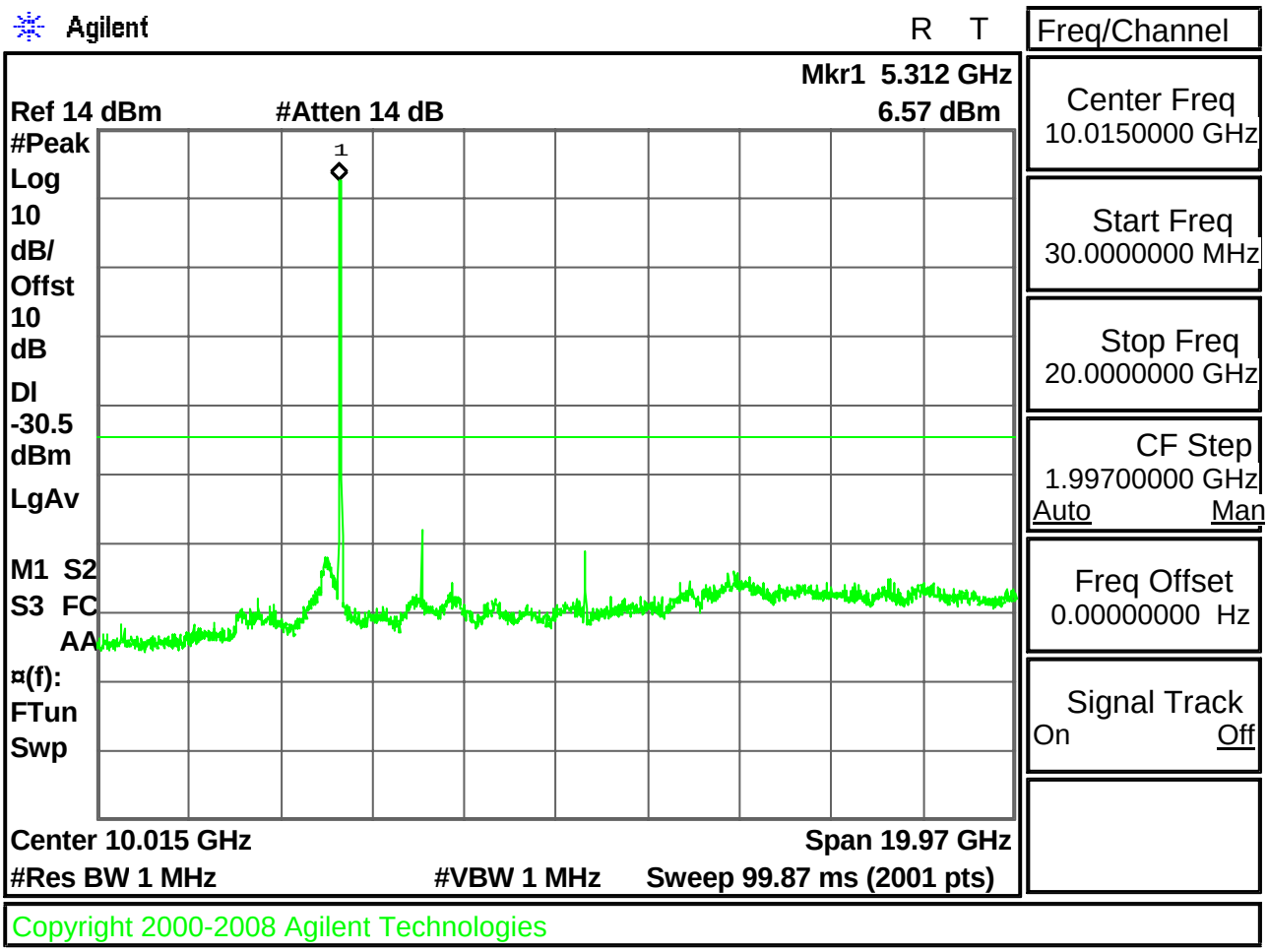


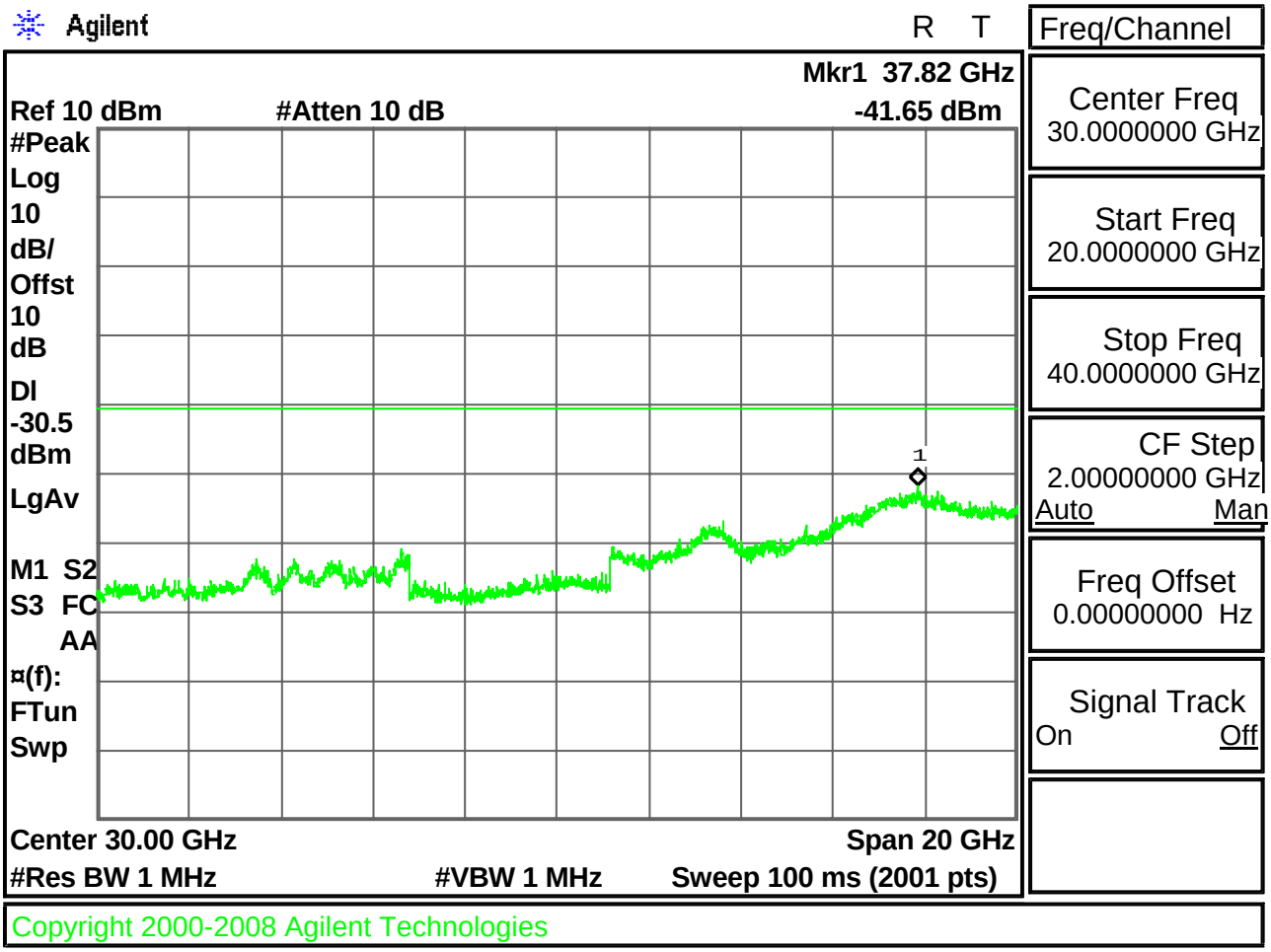

Agilent
R T
Mkr1 5.252 GHz
Ref 14 dBm
#Atten 14 dB
6.70 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

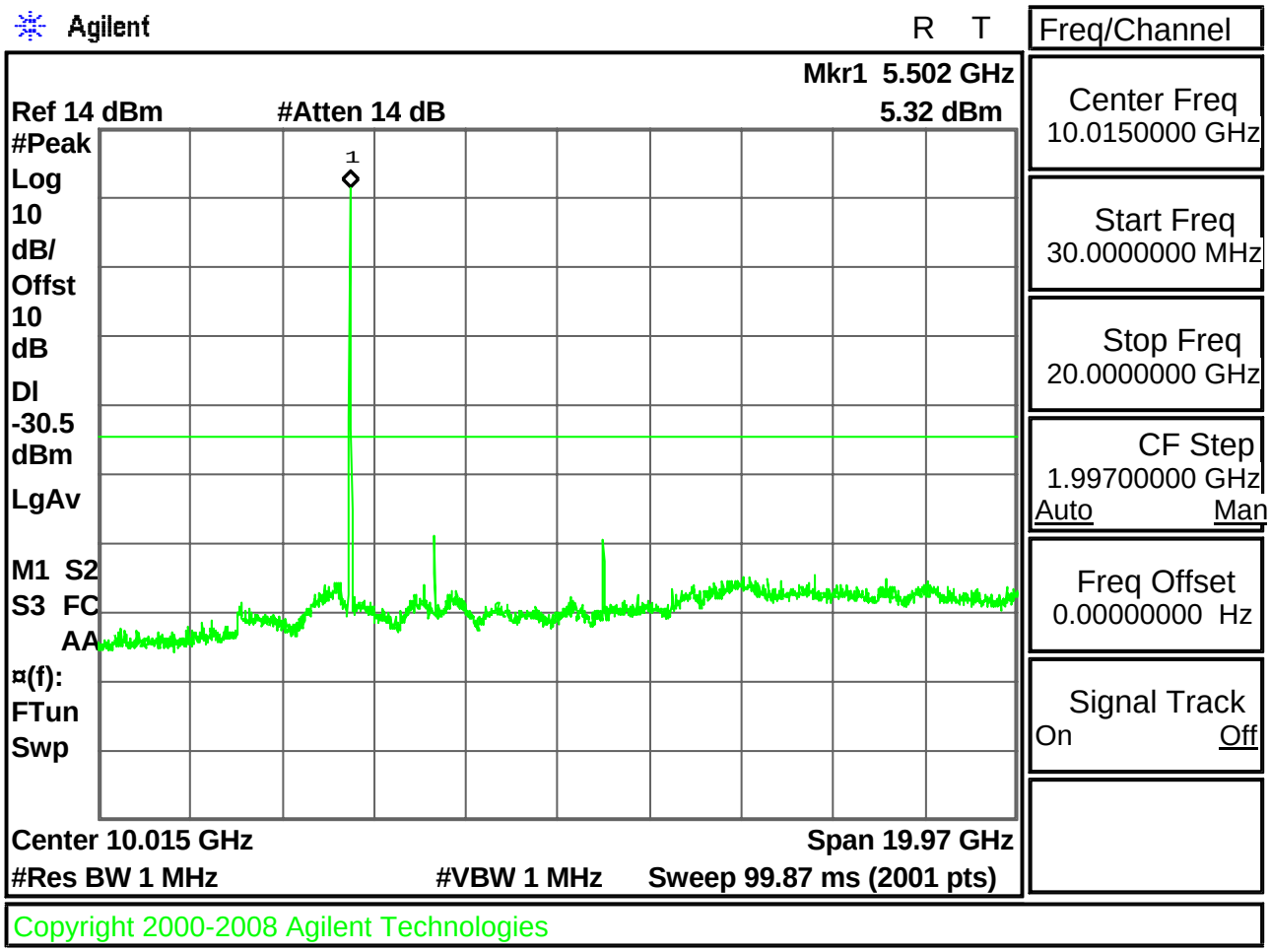

Agilent
R T
Mkr1 37.66 GHz
Ref 10 dBm
#Atten 10 dB
-42.20 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Freq/Channel
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

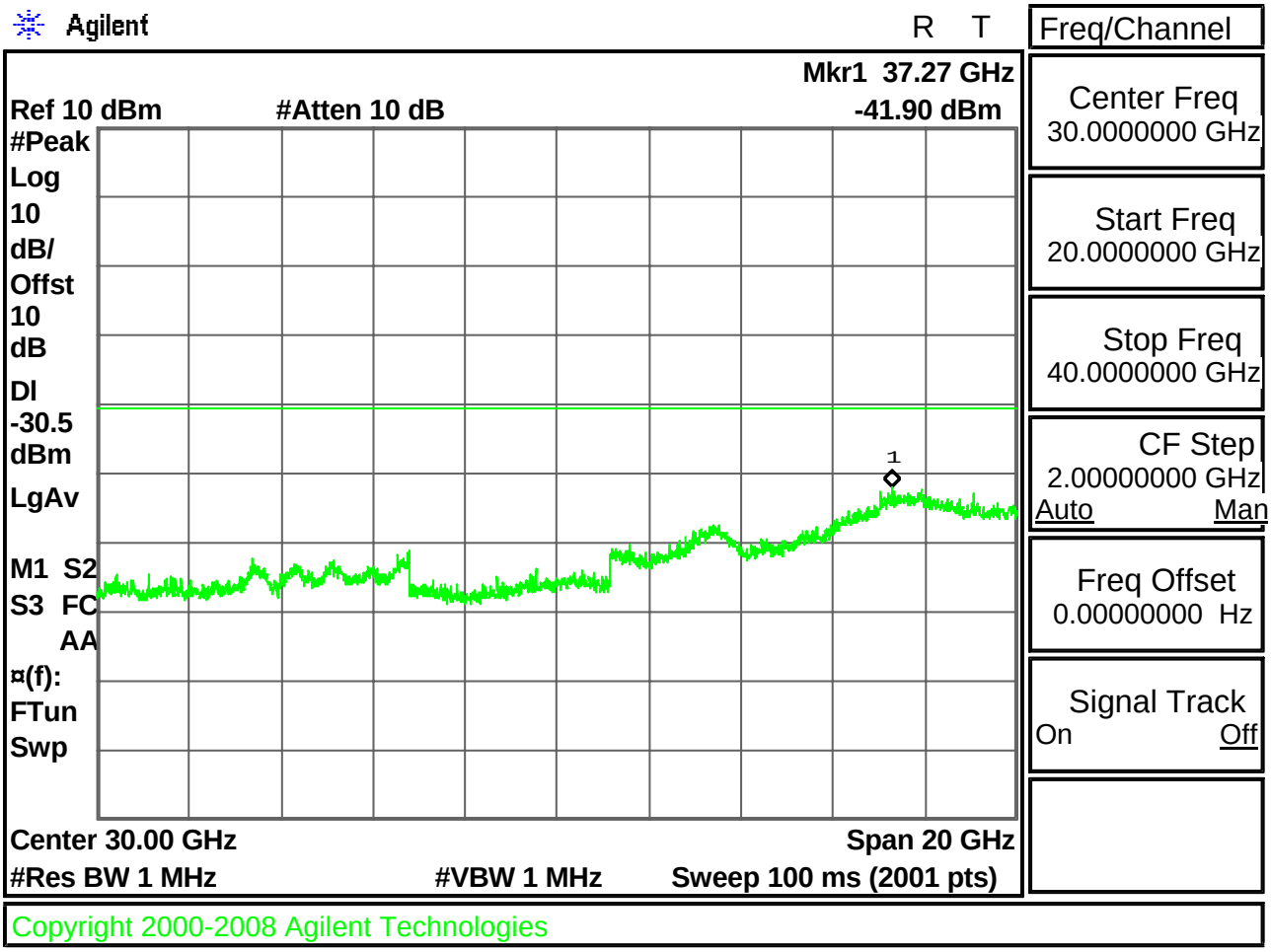

Agilent
R T
Mkr1 5.292 GHz
Ref 14 dBm
#Atten 14 dB
6.66 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

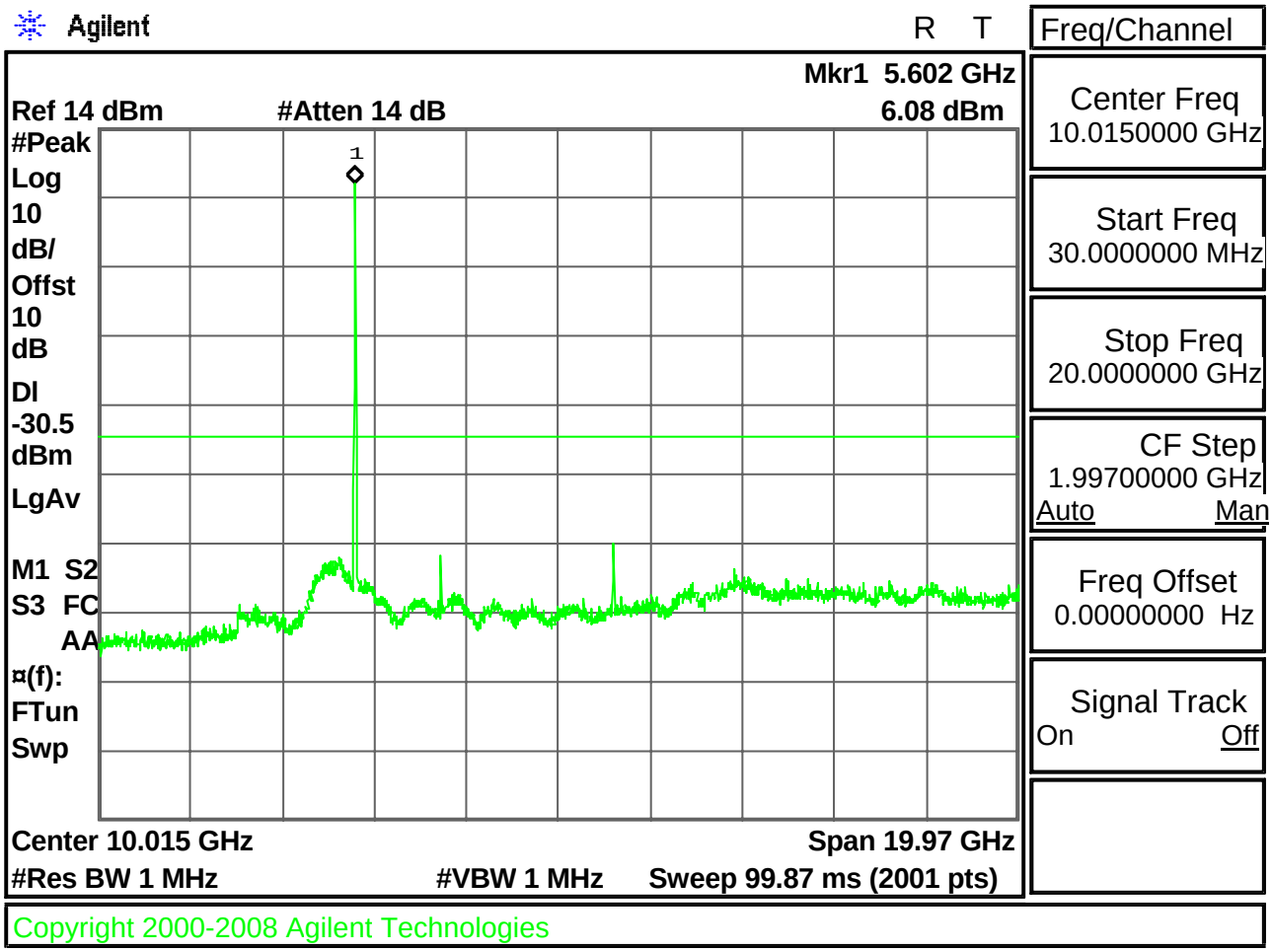


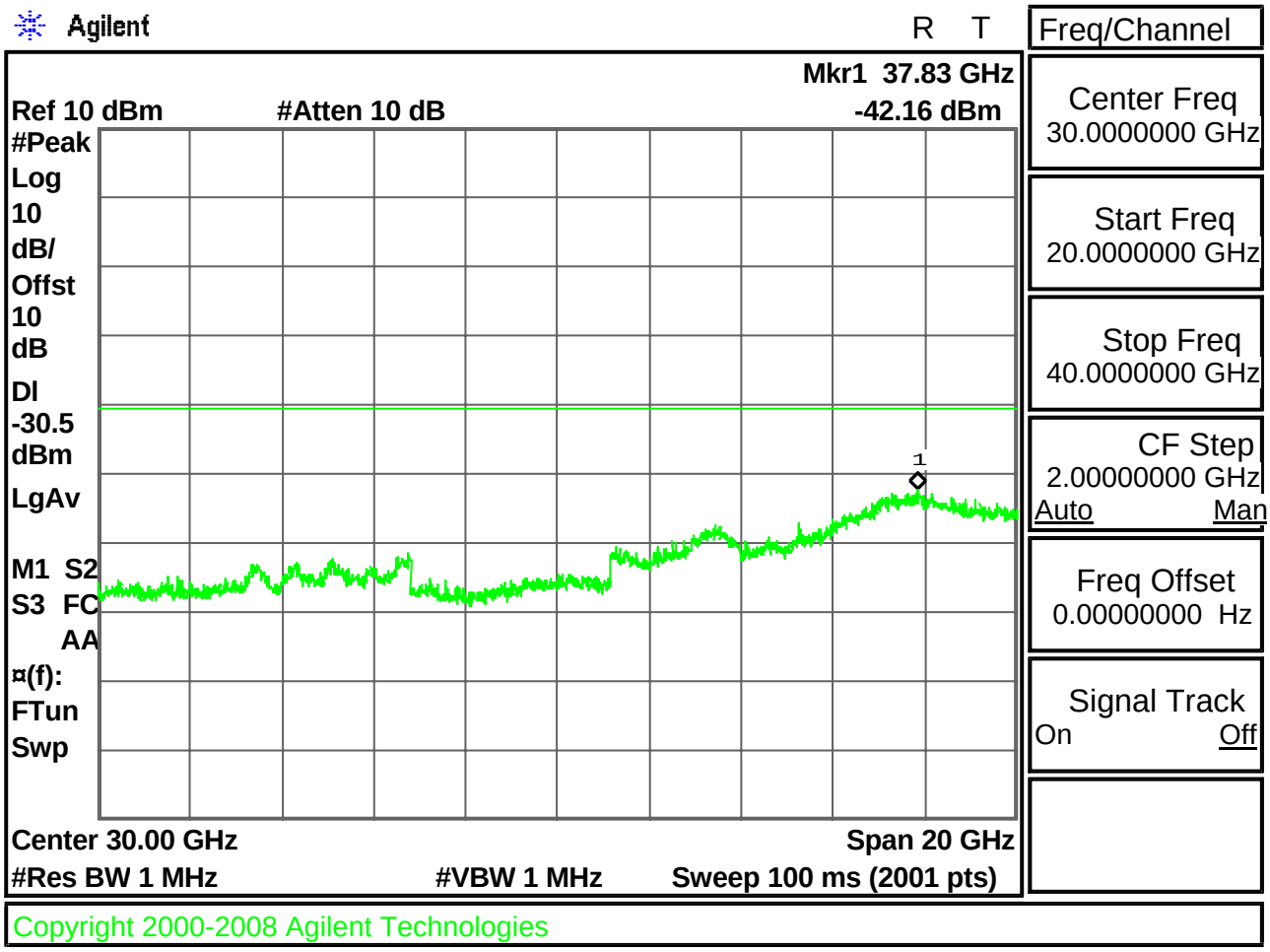

Agilent
R T
Freq/Channel
Mkr1 5.312 GHz
Ref 14 dBm
#Atten 14 dB
6.57 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Copyright 2000-2008 Agilent Technologies

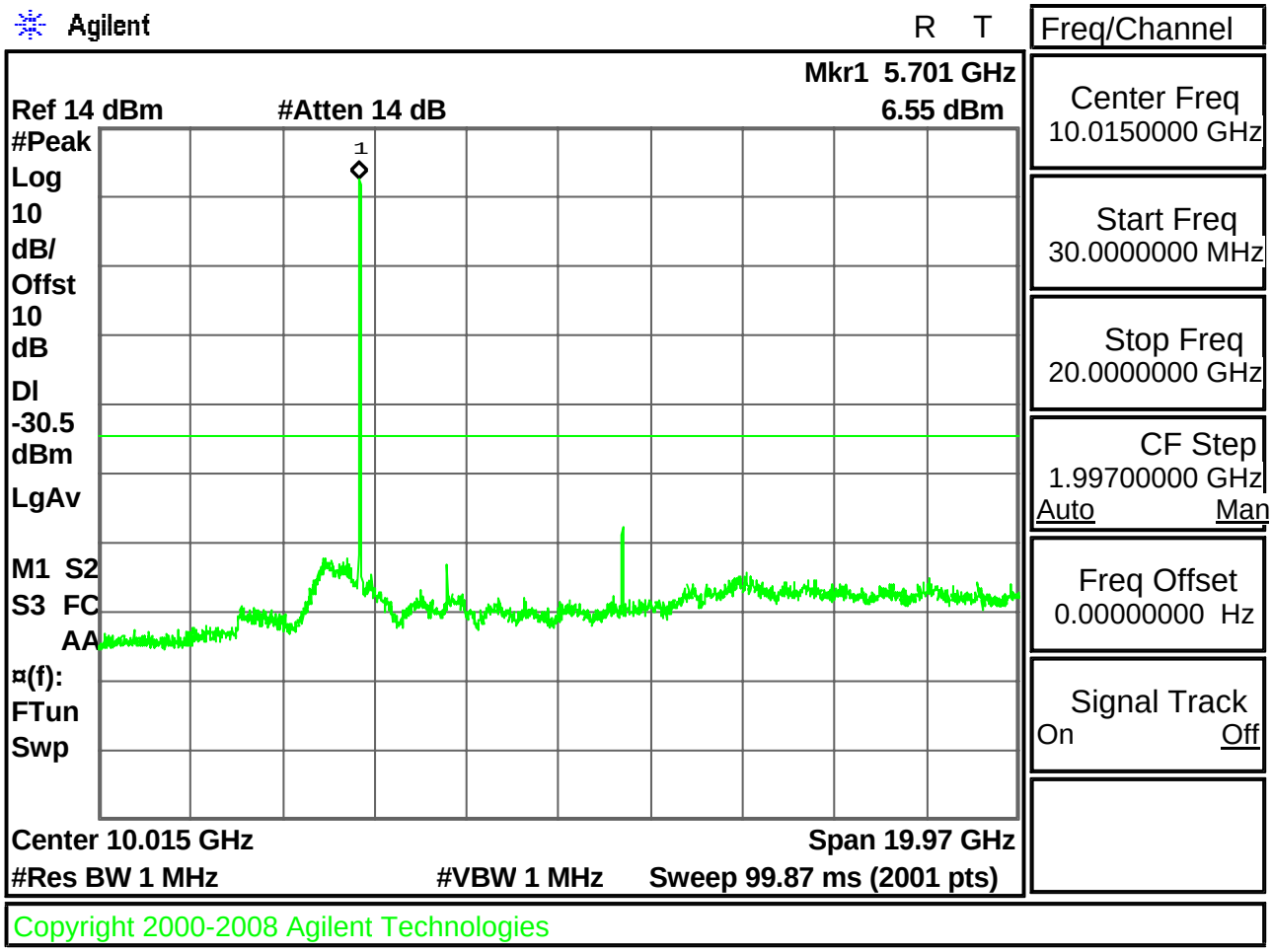

Agilent
R T
Mkr1 37.82 GHz
Ref 10 dBm
#Atten 10 dB
-41.65 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Freq/Channel
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

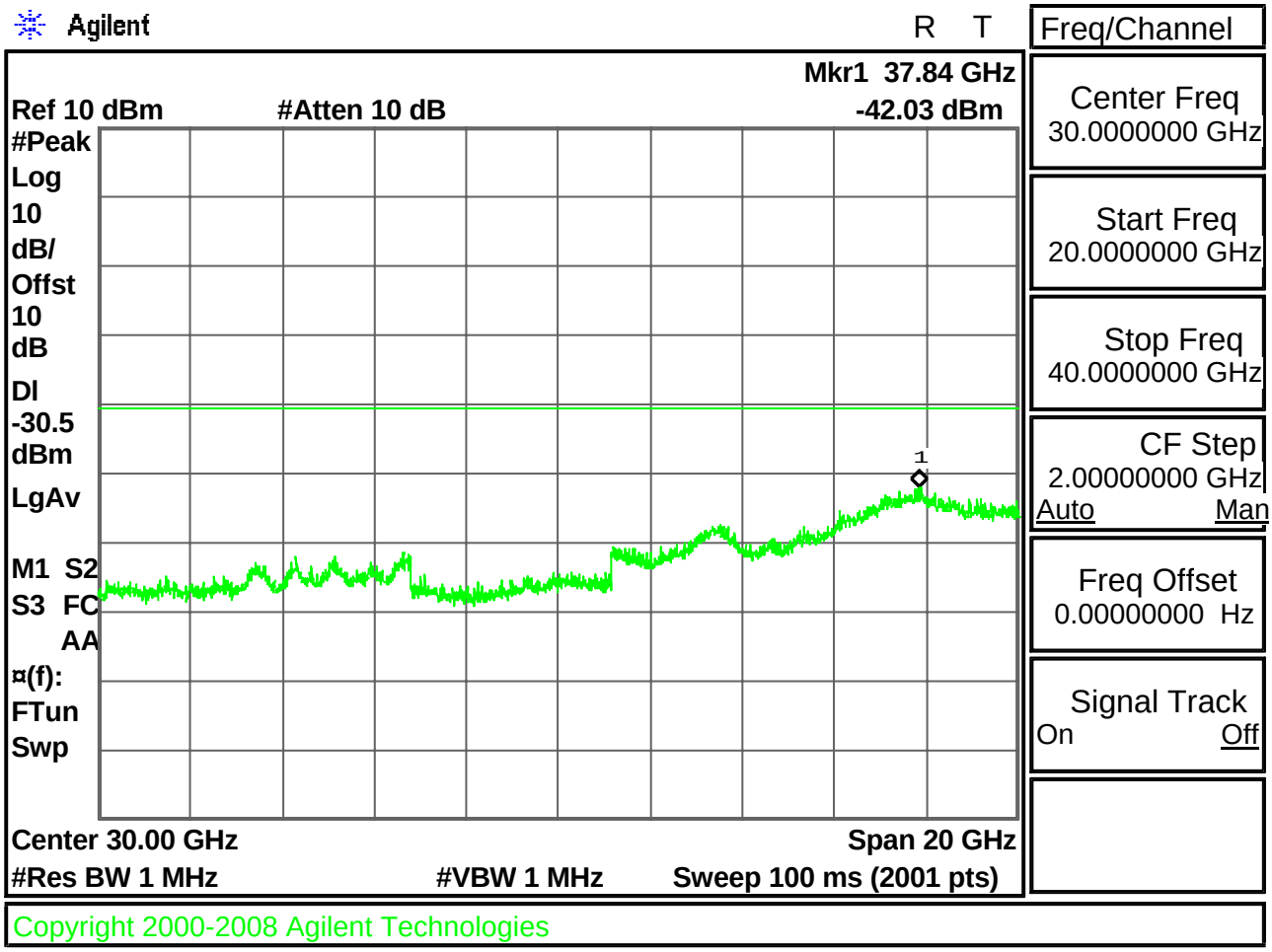

Agilent
R T
Mkr1 5.502 GHz
Ref 14 dBm
#Atten 14 dB
5.32 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

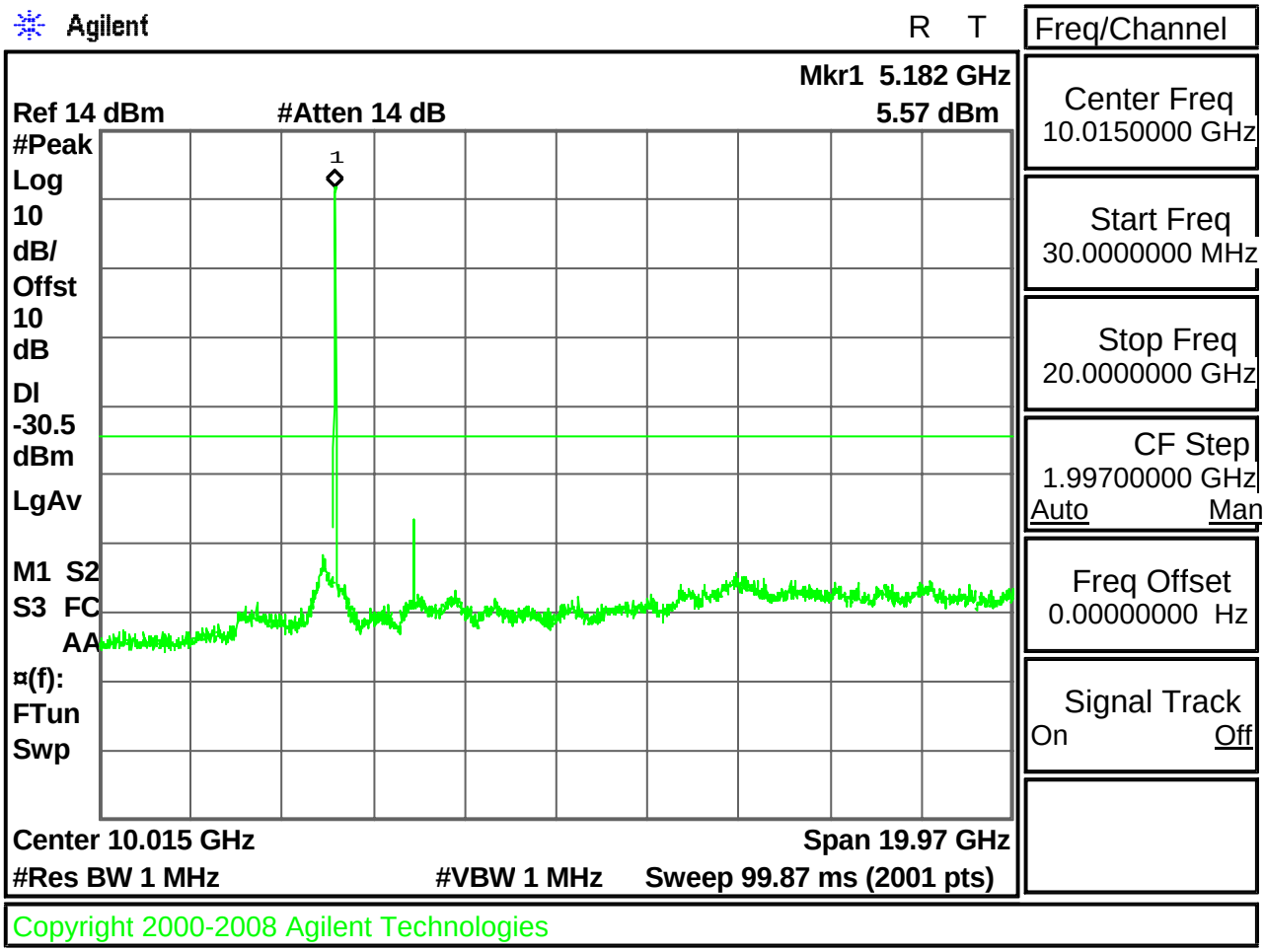

Agilent
R T
Freq/Channel
Mkr1 37.27 GHz
Ref 10 dBm
#Atten 10 dB
-41.90 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

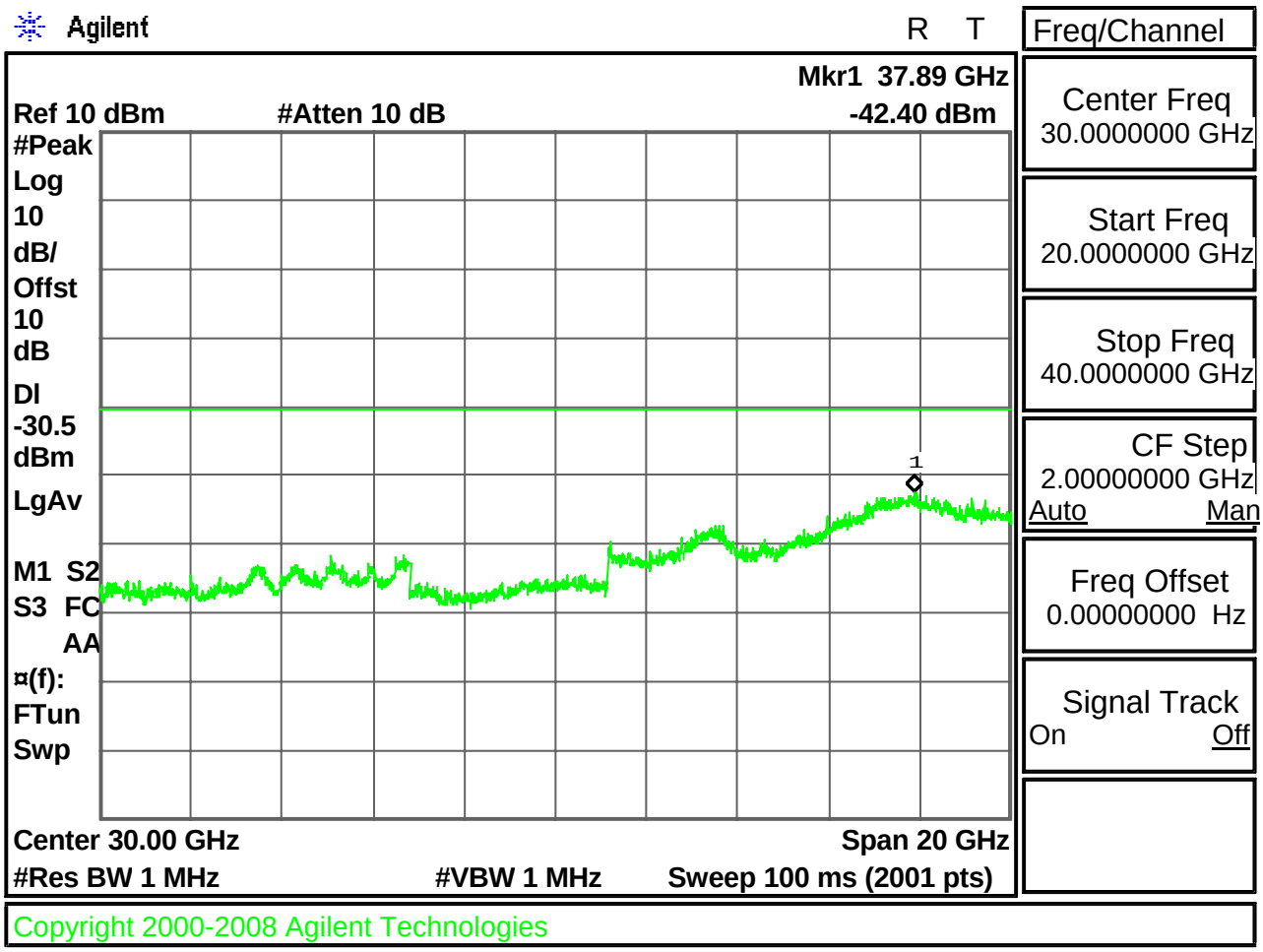

Agilent
R T
Mkr1 5.602 GHz
Ref 14 dBm
#Atten 14 dB
6.08 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

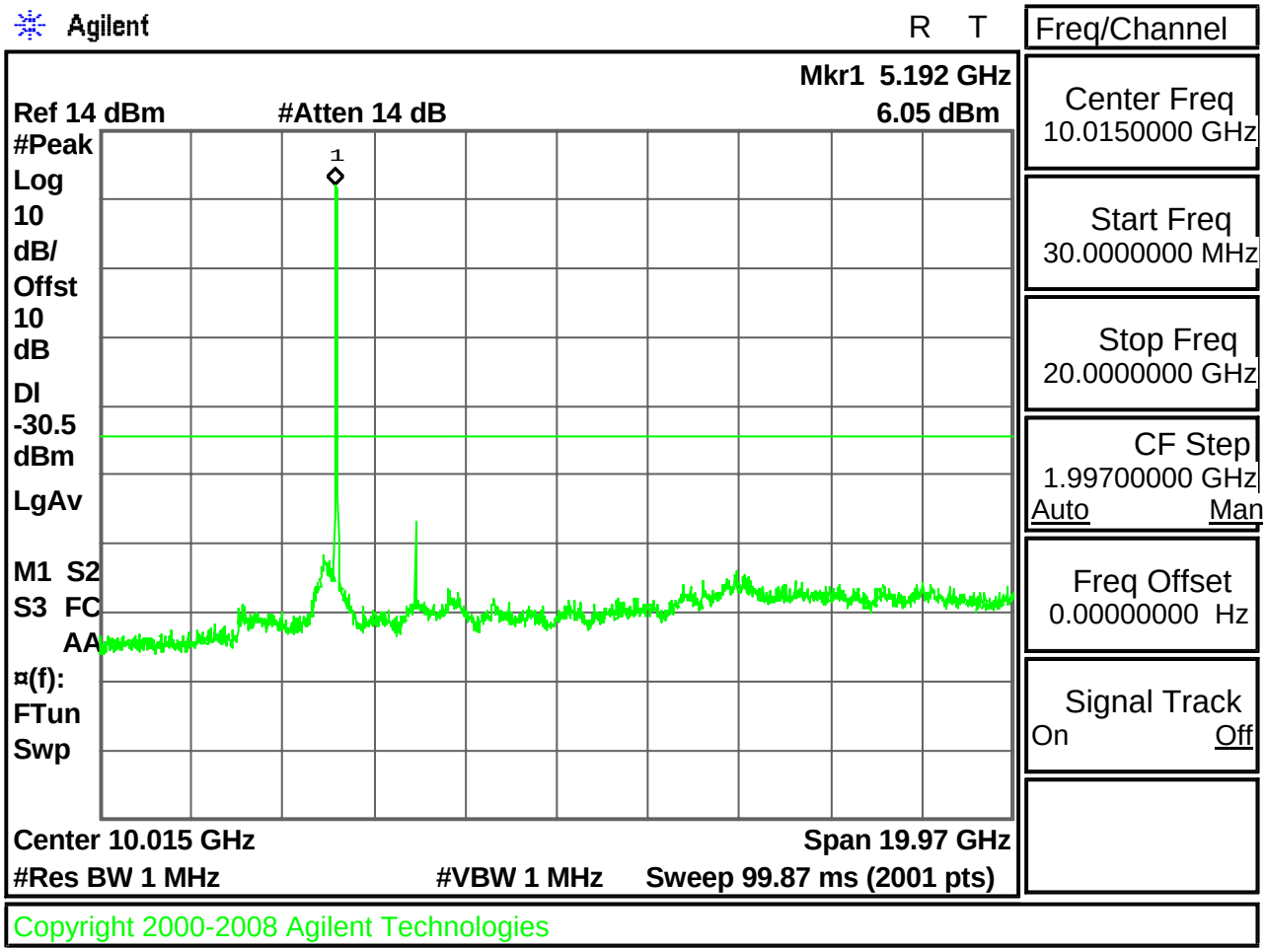

Agilent
R T
Freq/Channel
Mkr1 37.83 GHz
Ref 10 dBm
#Atten 10 dB
-42.16 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

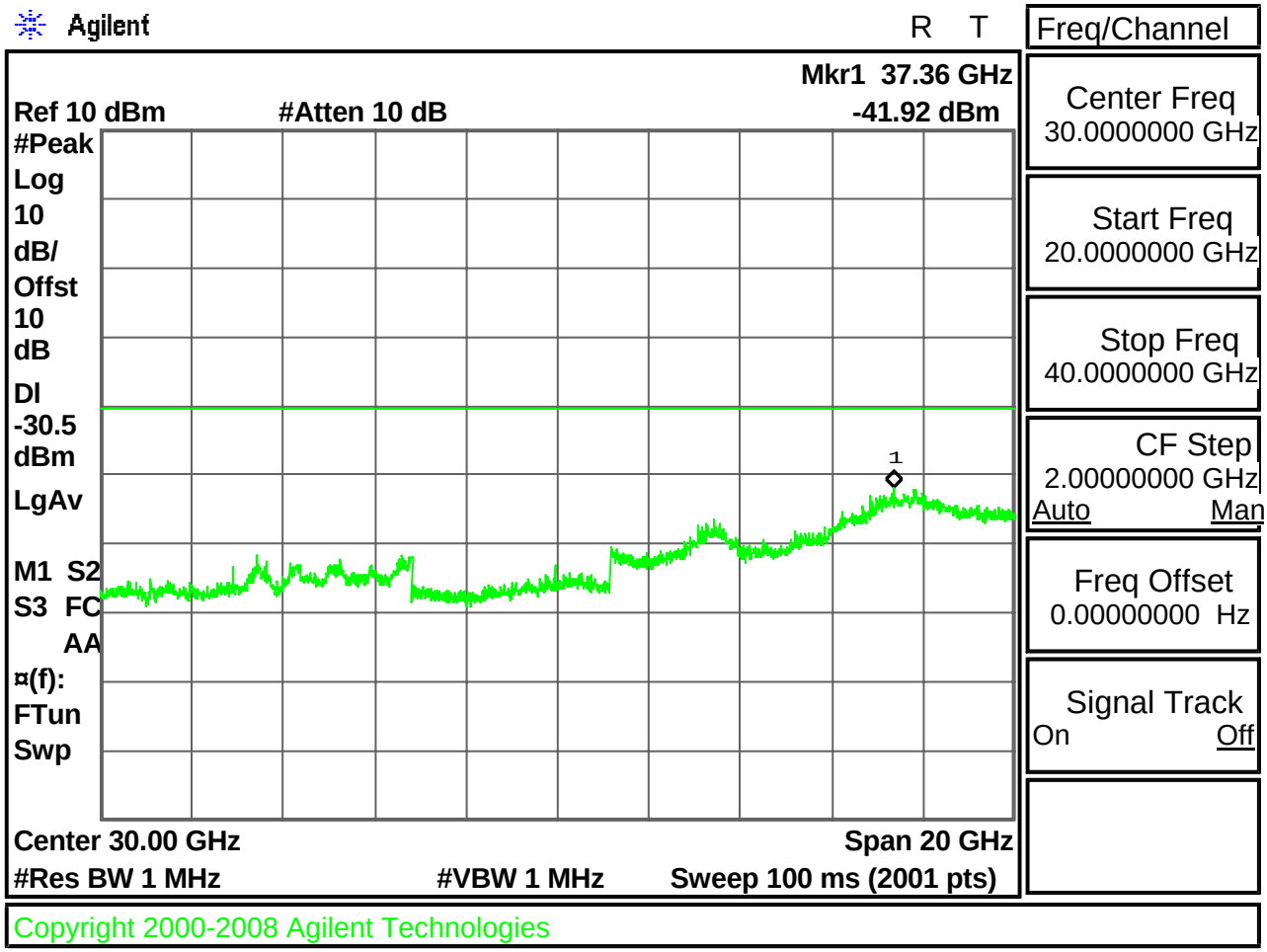

Agilent
R T
Mkr1 5.701 GHz
Ref 14 dBm
#Atten 14 dB
6.55 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

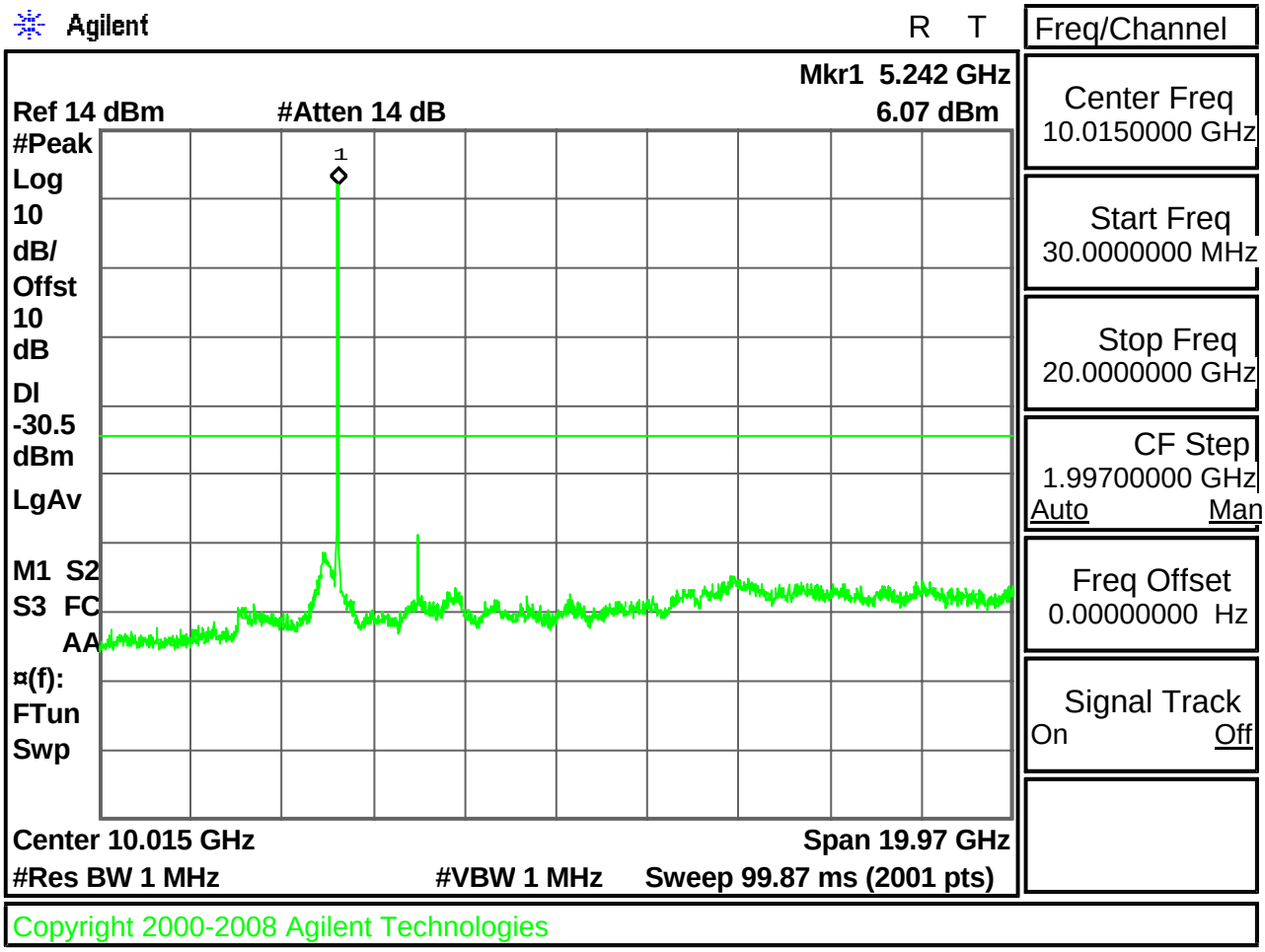

Agilent
R T
Freq/Channel
Mkr1 37.84 GHz
Ref 10 dBm
#Atten 10 dB
-42.03 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

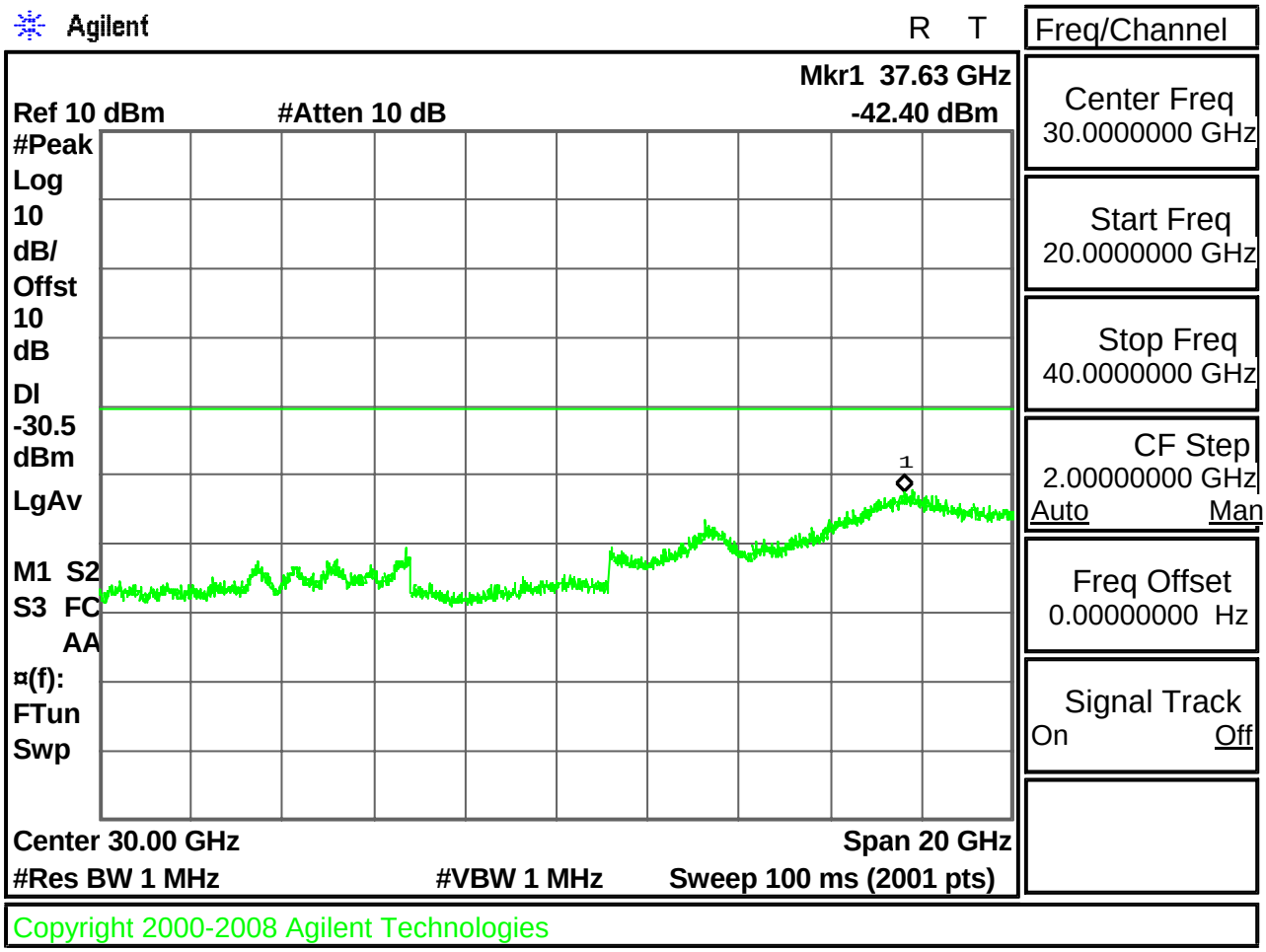

Agilent
R T
Mkr1 5.182 GHz
Ref 14 dBm
#Atten 14 dB
5.57 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

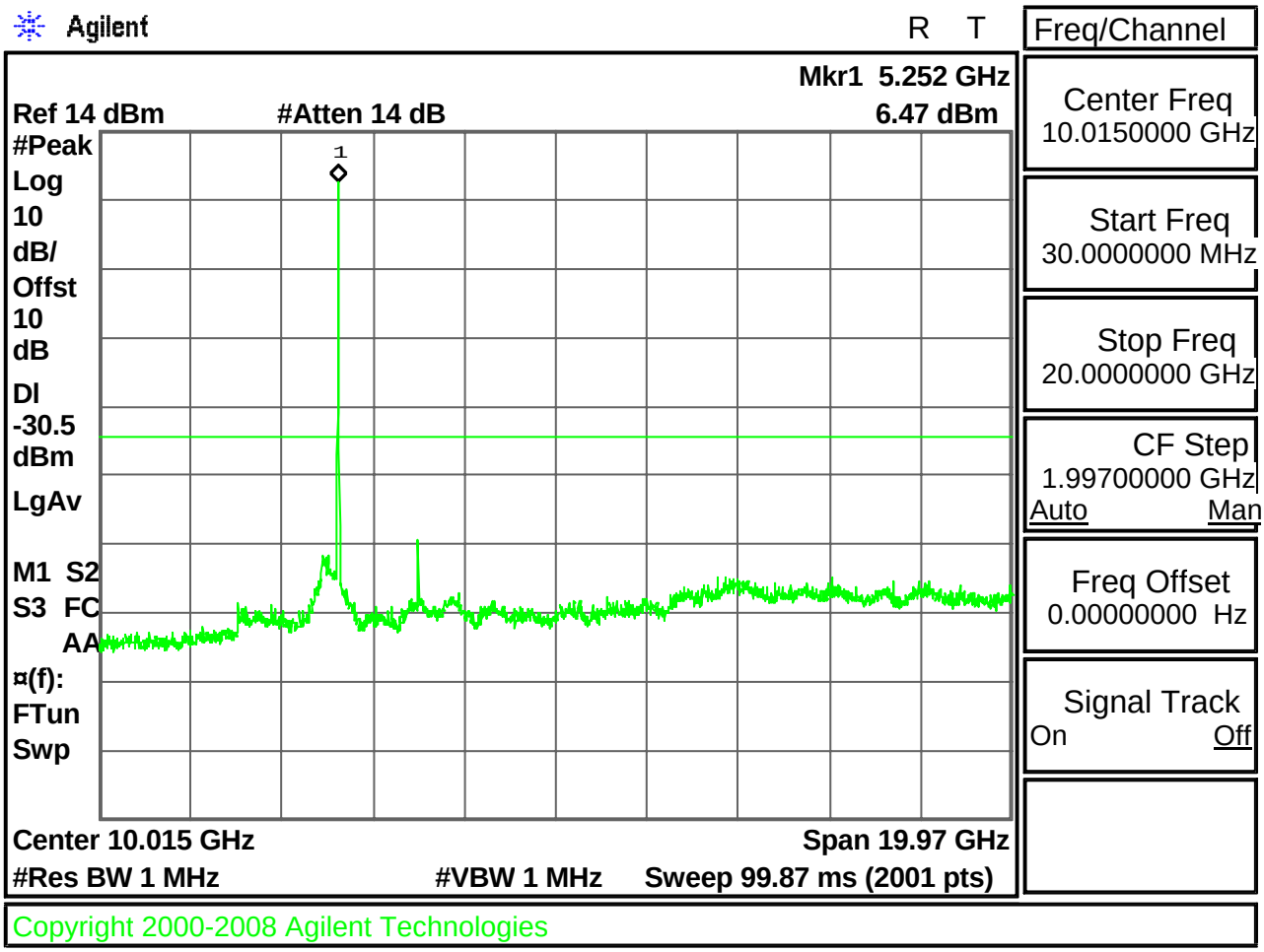

Agilent
R T
Mkr1 37.89 GHz
Ref 10 dBm
#Atten 10 dB
-42.40 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Freq/Channel
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

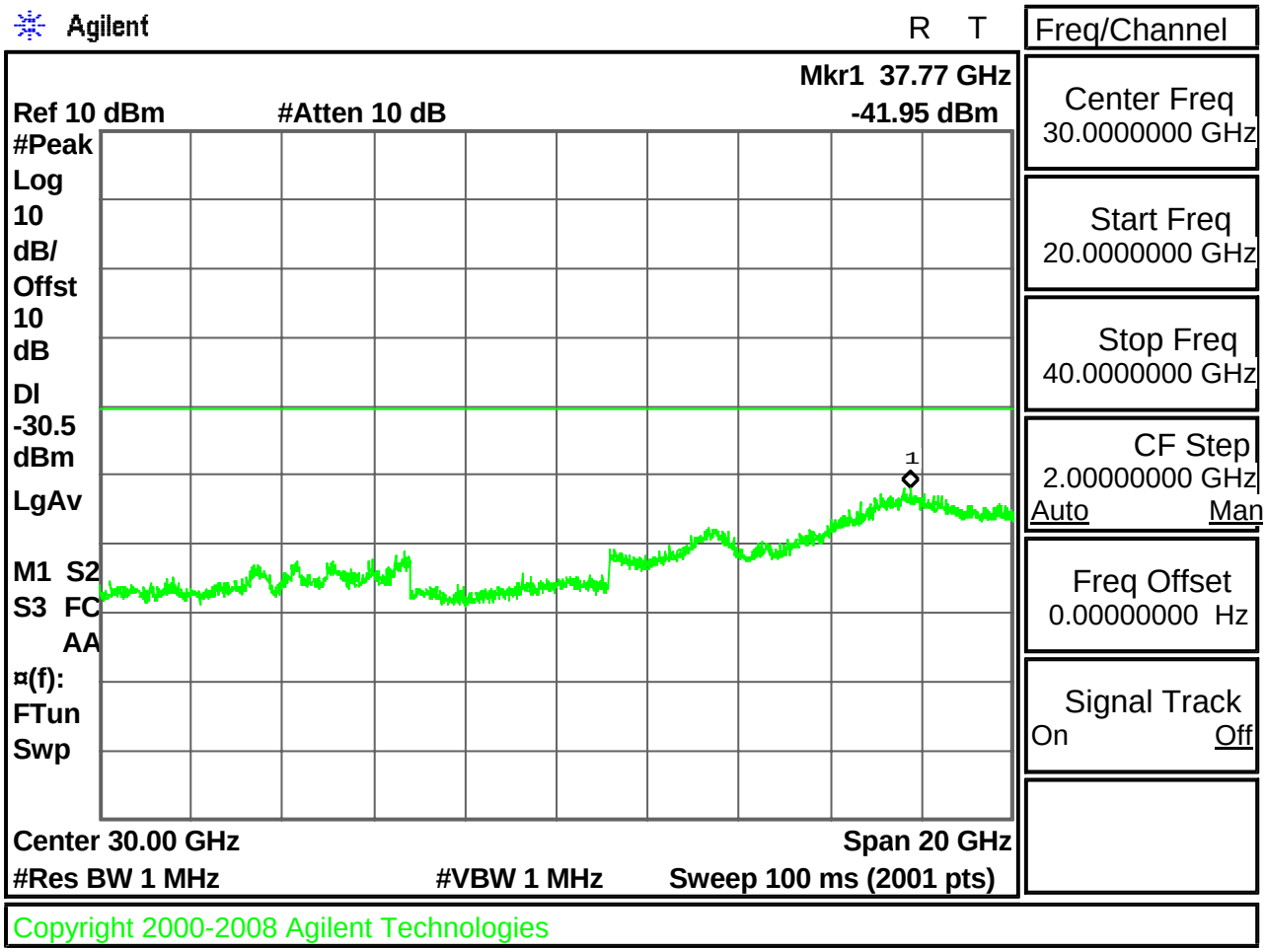

Agilent
R T
Mkr1 5.192 GHz
Ref 14 dBm
#Atten 14 dB
6.05 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

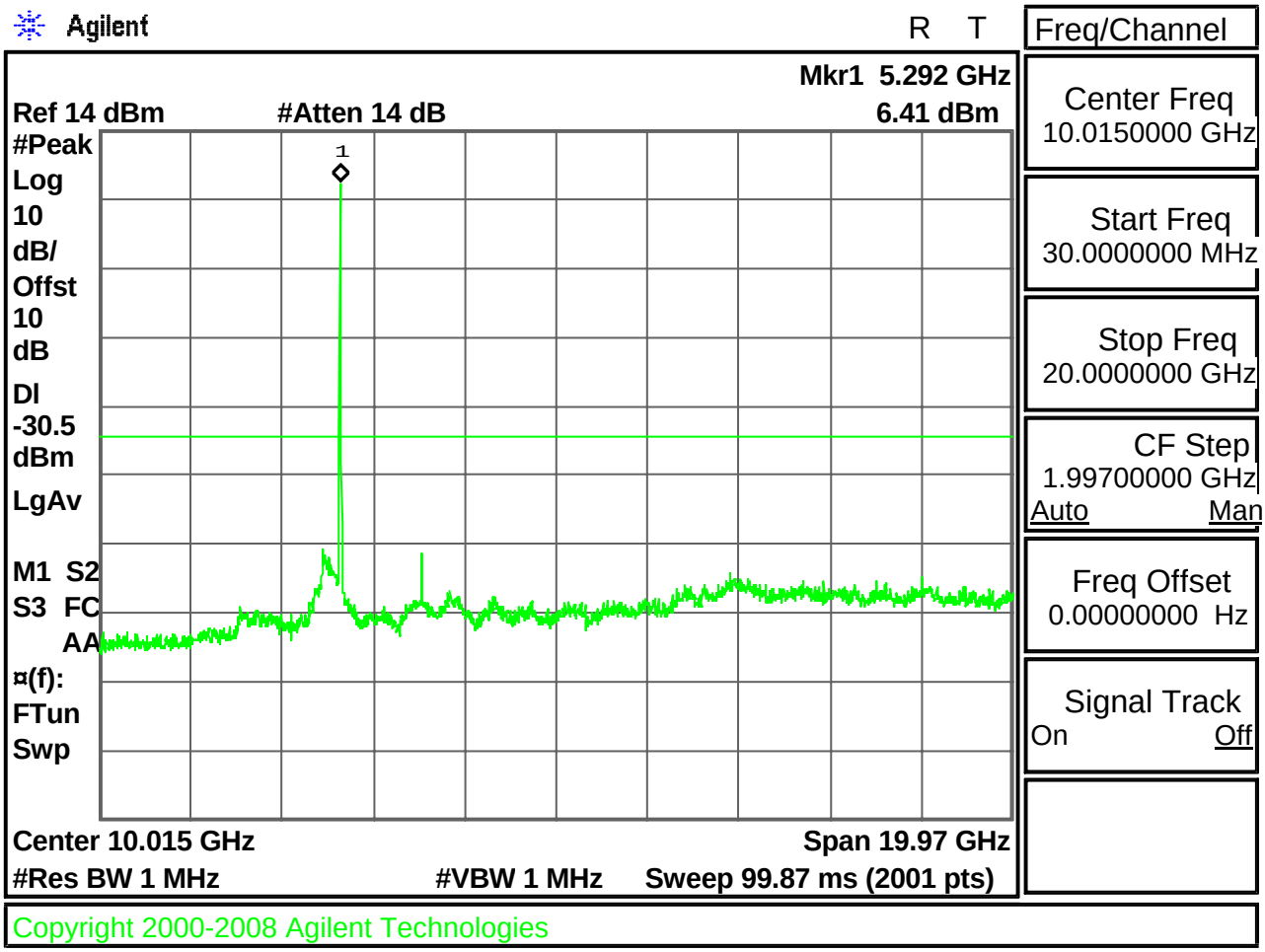

Agilent
R T
Freq/Channel
Mkr1 37.36 GHz
Ref 10 dBm
#Atten 10 dB
-41.92 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Copyright 2000-2008 Agilent Technologies

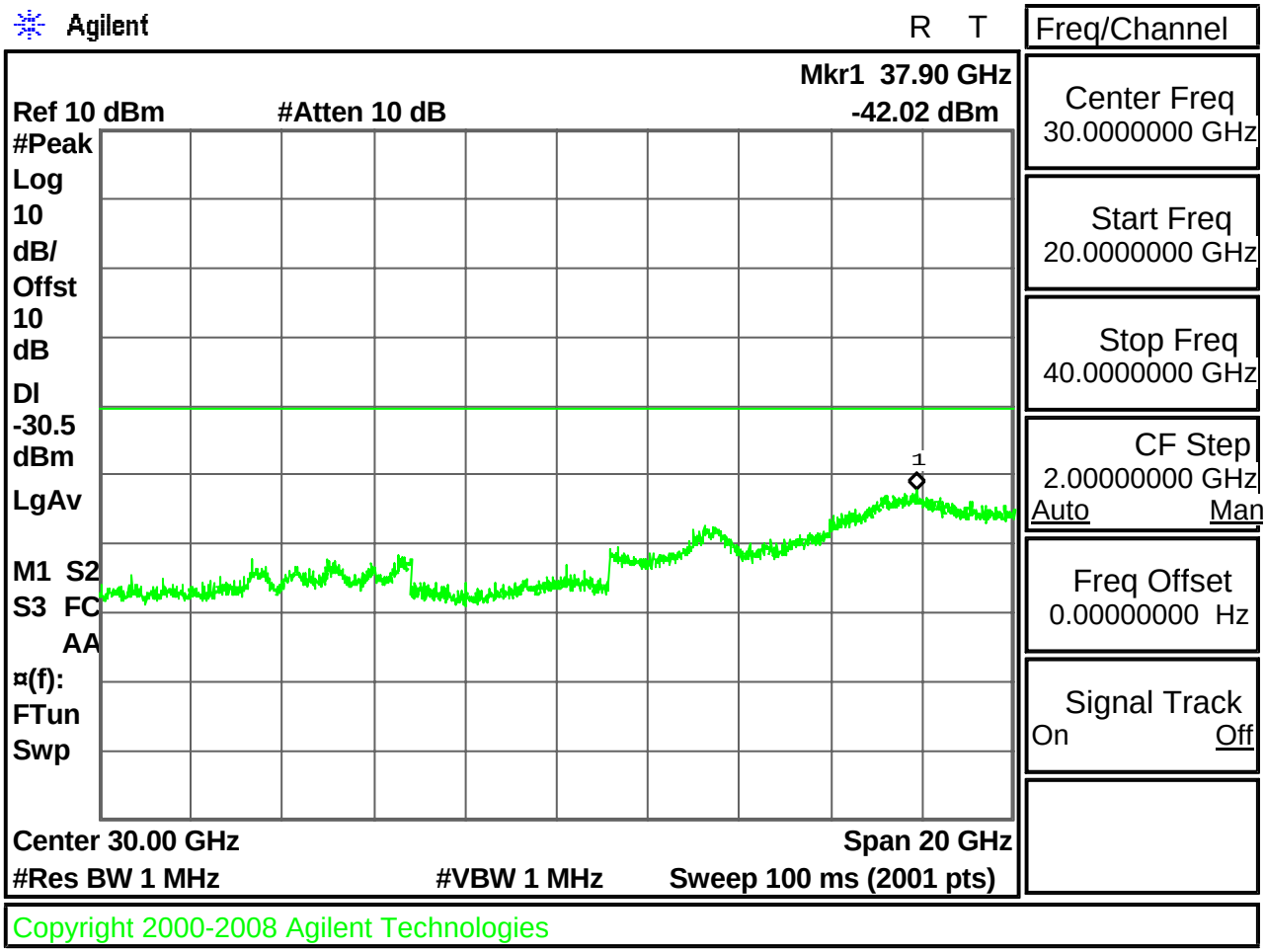

Agilent
R T
Mkr1 5.242 GHz
Ref 14 dBm
#Atten 14 dB
6.07 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

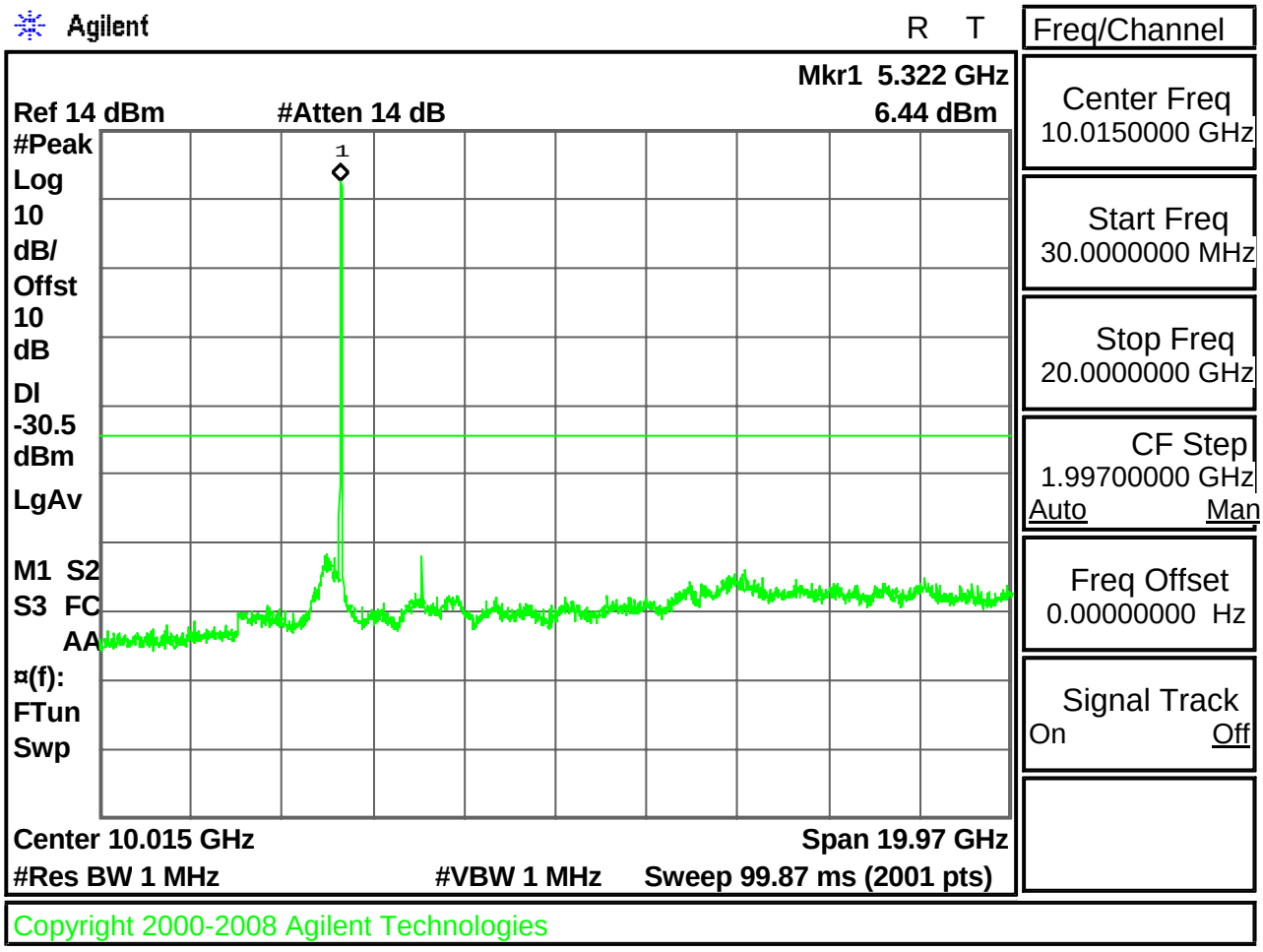

Agilent
R T
Freq/Channel
Mkr1 37.63 GHz
Ref 10 dBm
#Atten 10 dB
-42.40 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

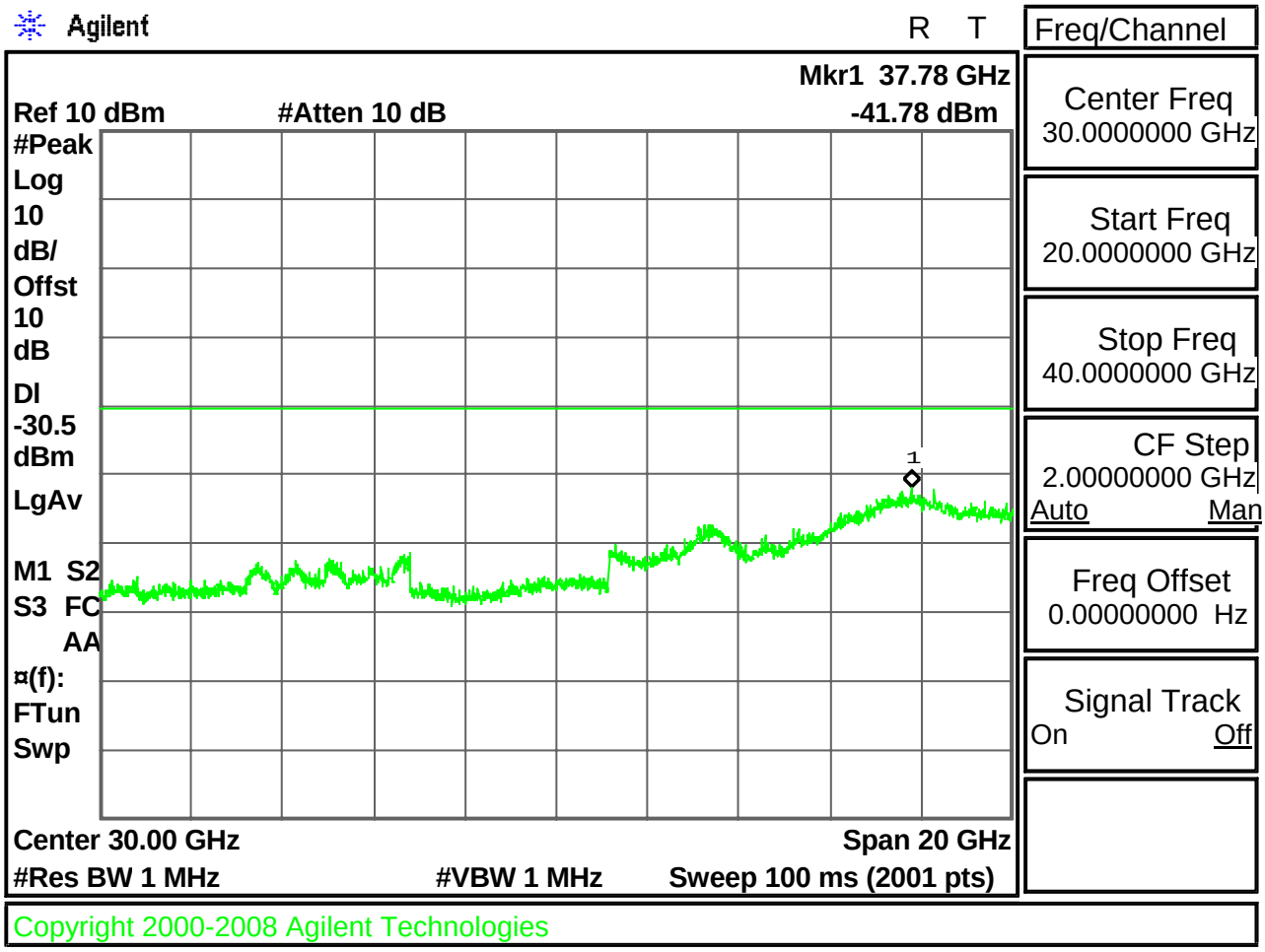

Agilent
R T
Freq/Channel
Mkr1 5.252 GHz
Ref 14 dBm
#Atten 14 dB
6.47 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Copyright 2000-2008 Agilent Technologies

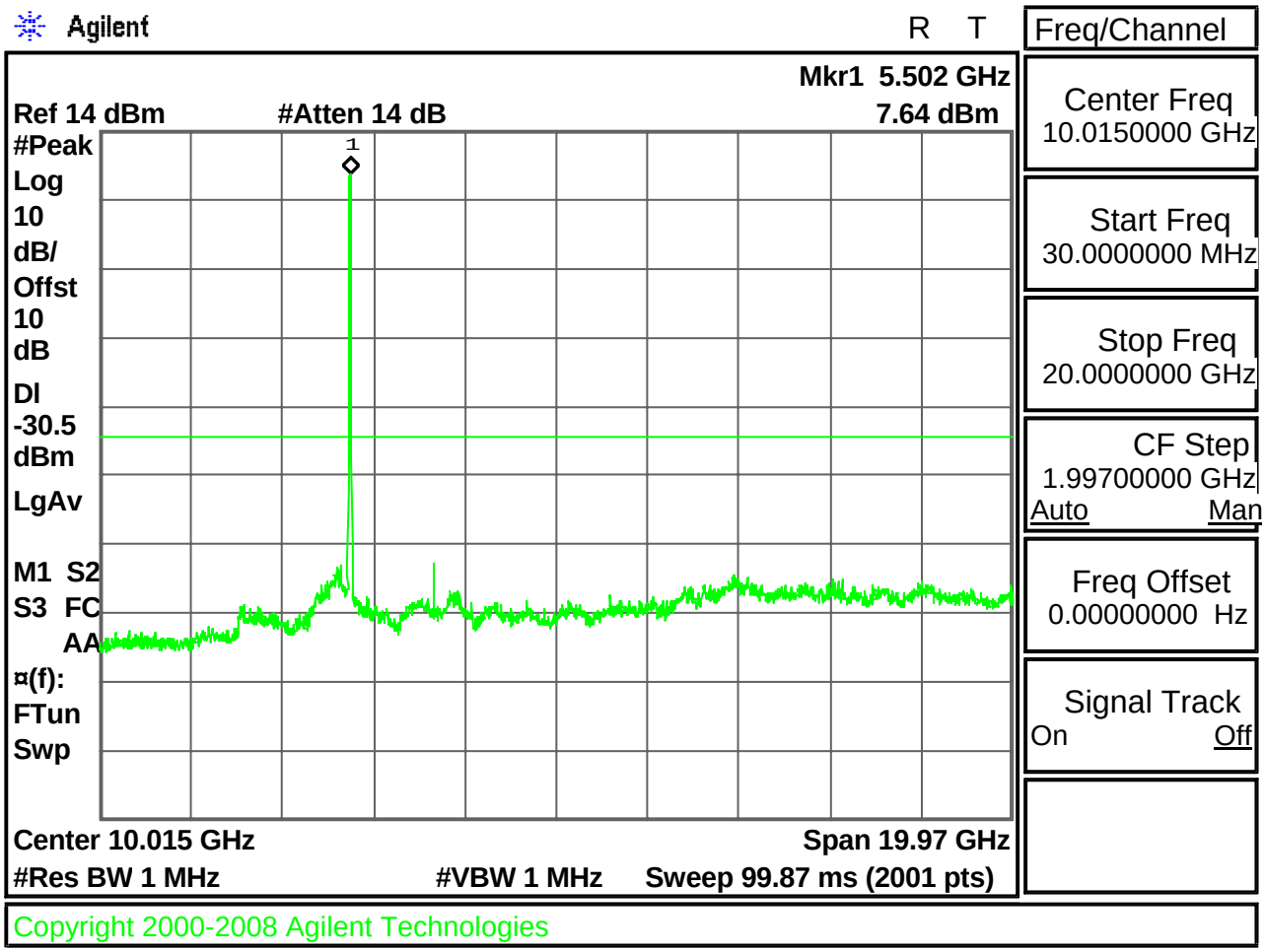

Agilent
R T
Freq/Channel
Mkr1 37.77 GHz
Ref 10 dBm
#Atten 10 dB
-41.95 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

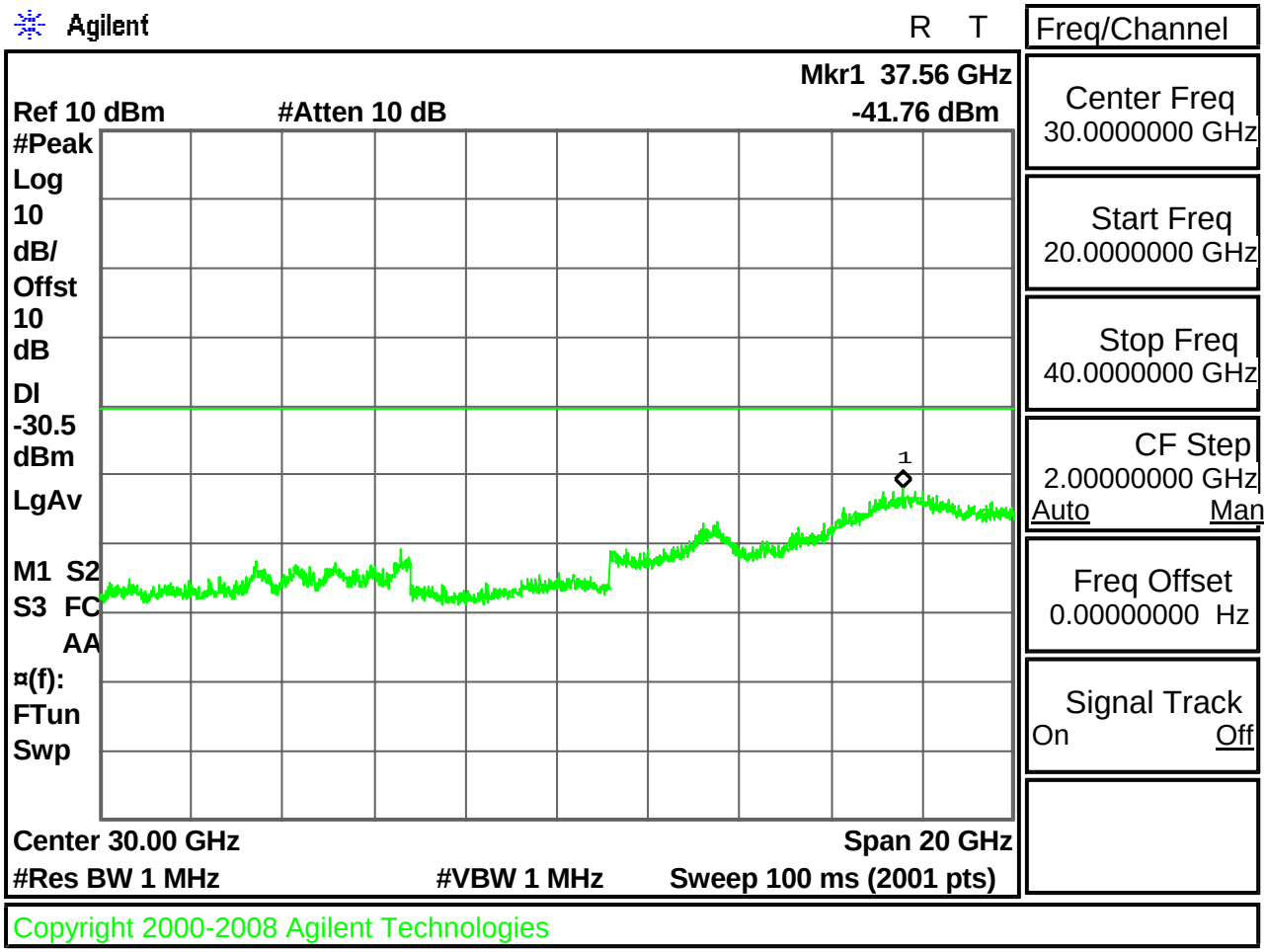

Agilent
R T
Freq/Channel
Mkr1 5.292 GHz
Ref 14 dBm
#Atten 14 dB
6.41 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Copyright 2000-2008 Agilent Technologies

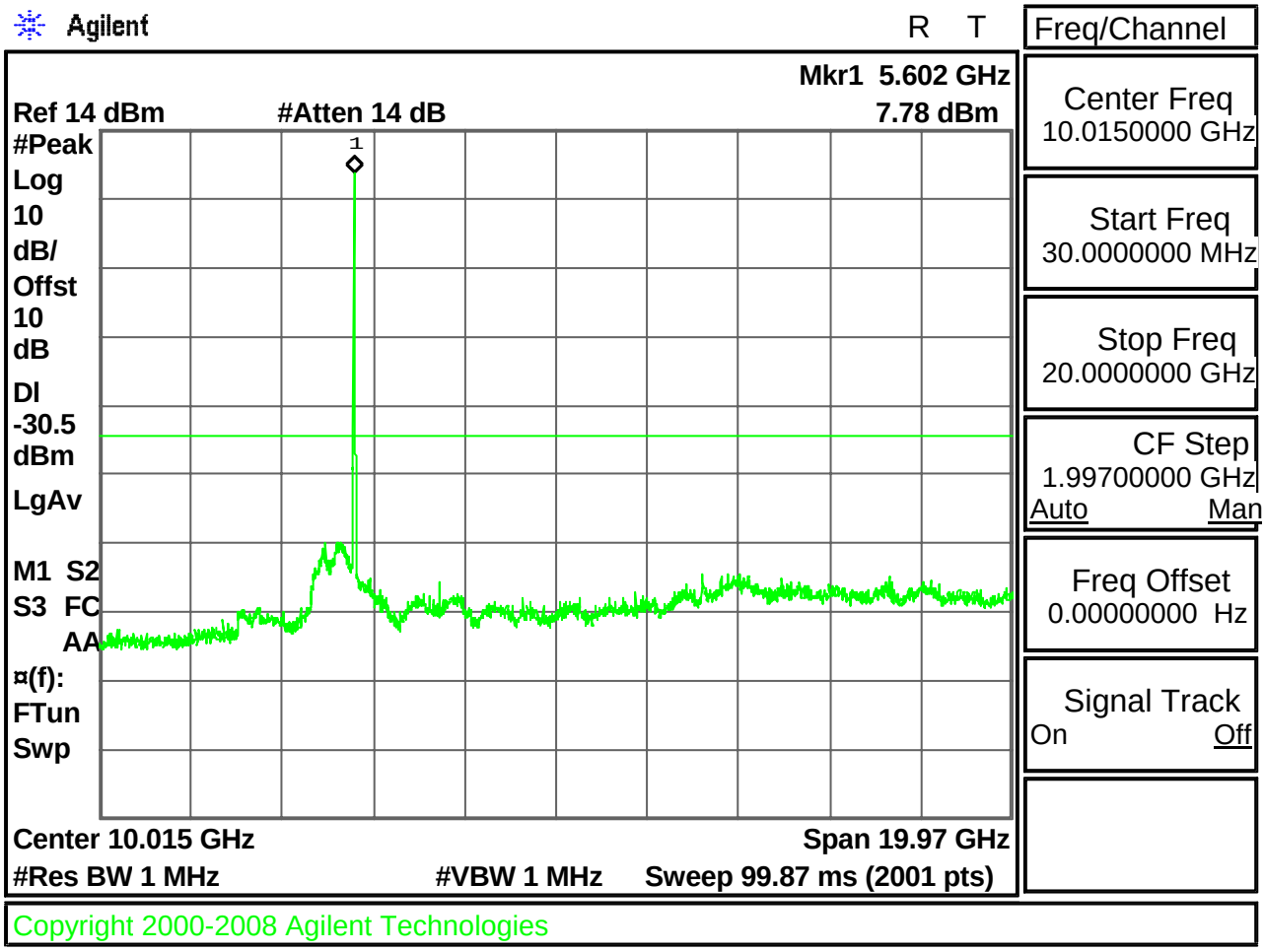

Agilent
R T
Mkr1 37.90 GHz
Ref 10 dBm
#Atten 10 dB
-42.02 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Freq/Channel
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

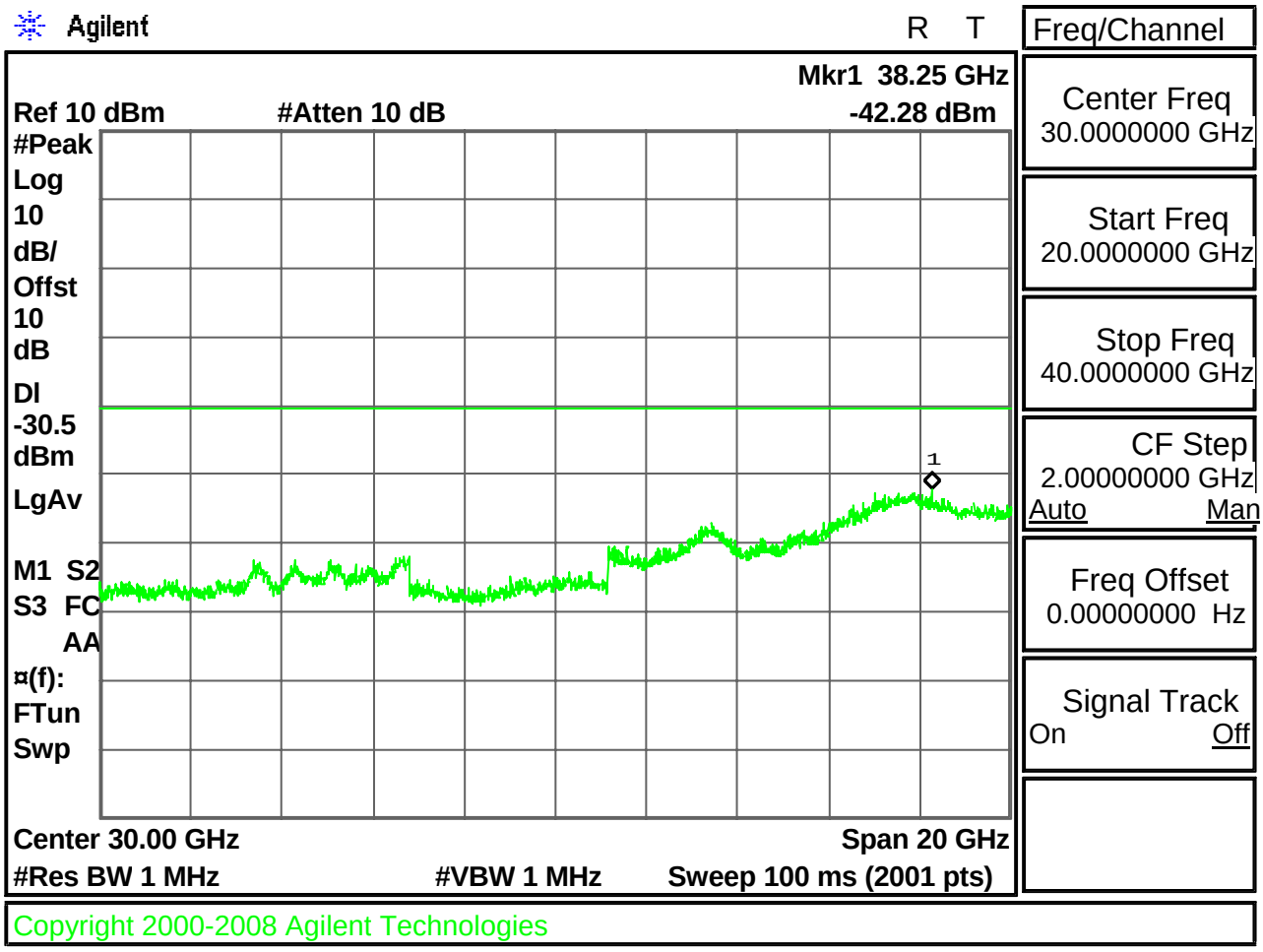

Agilent
R T
Freq/Channel
Mkr1 5.322 GHz
Ref 14 dBm
#Atten 14 dB
6.44 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

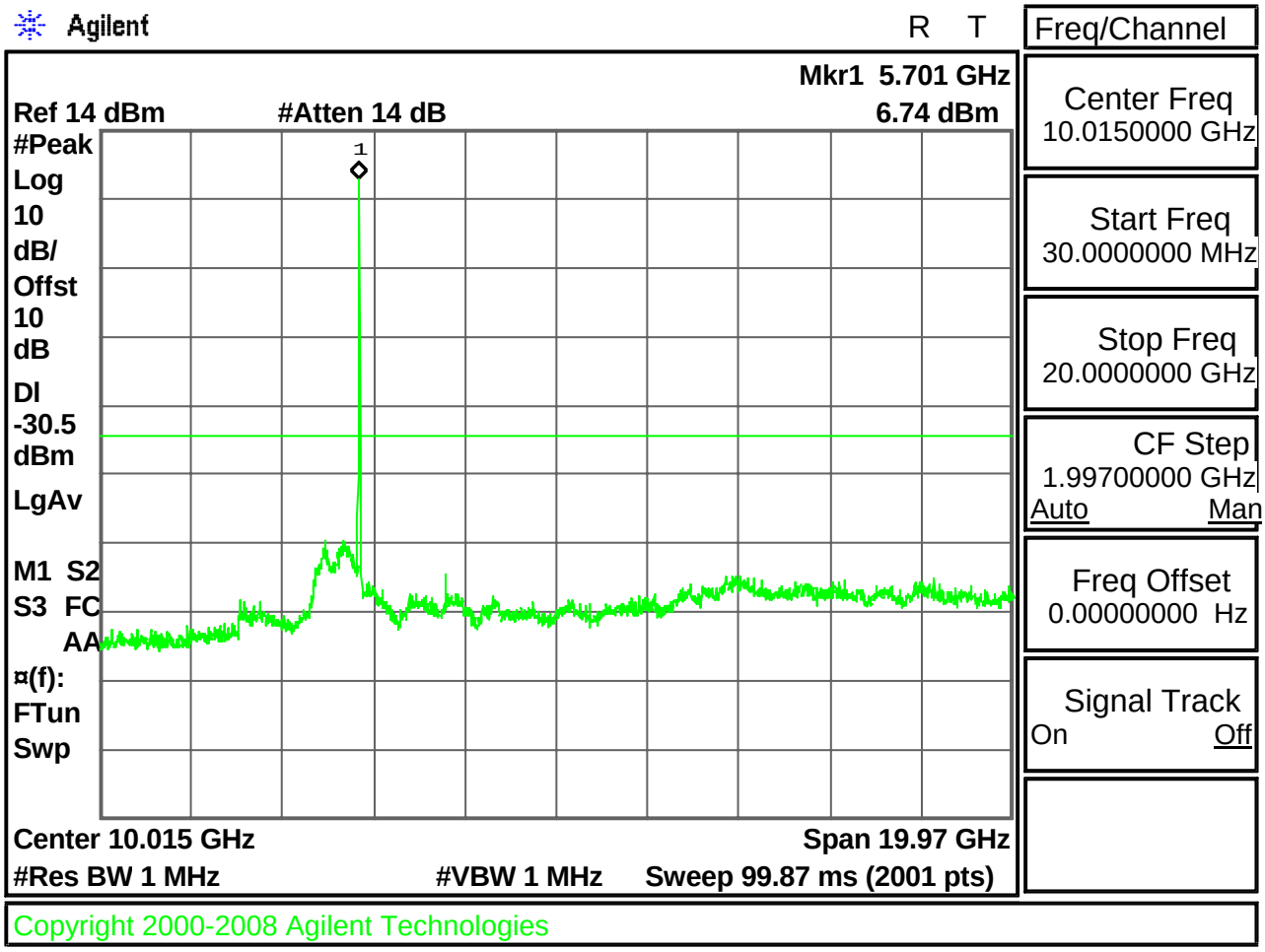

Agilent
R T
Freq/Channel
Mkr1 37.78 GHz
Ref 10 dBm
#Atten 10 dB
-41.78 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

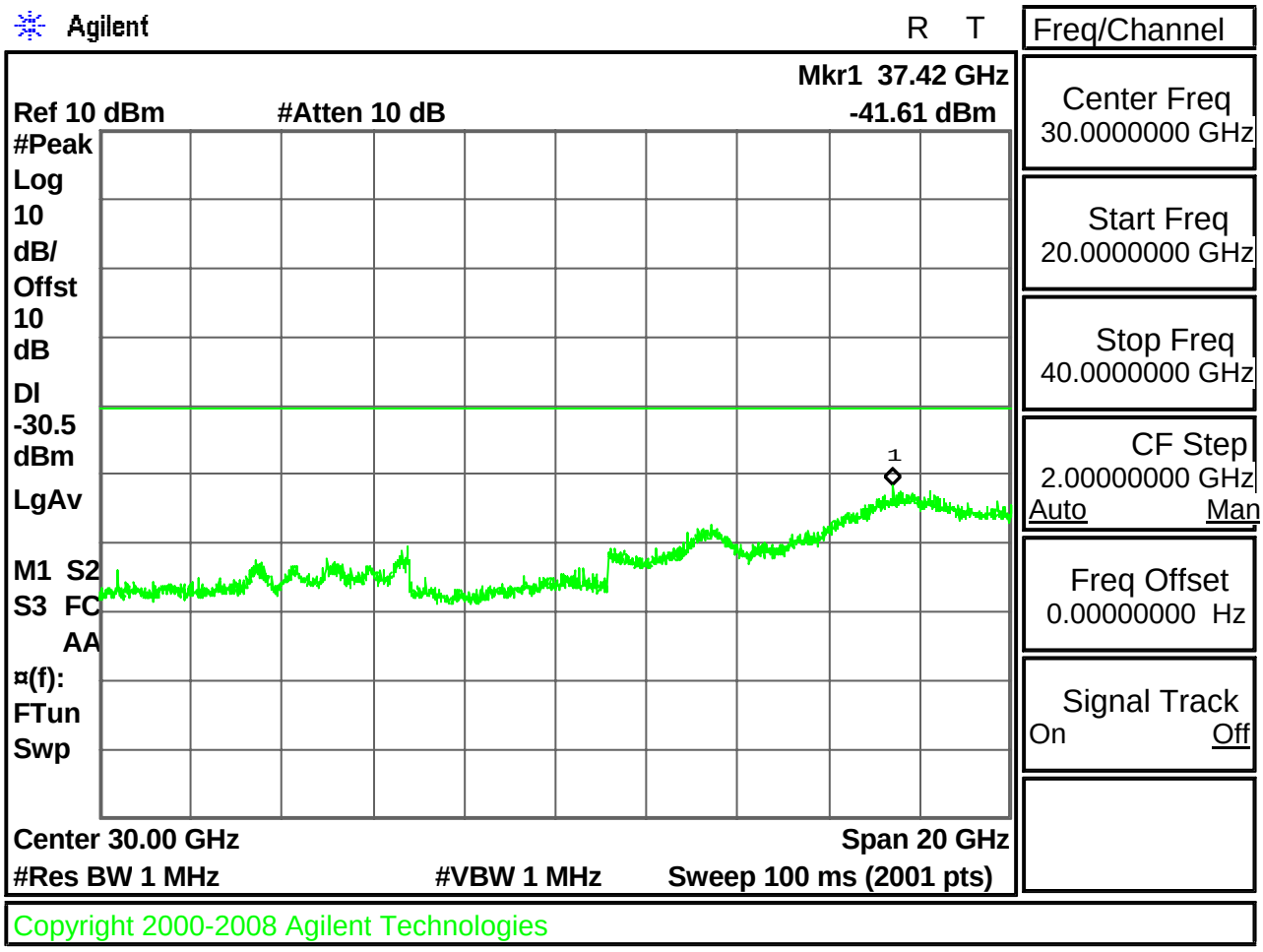

Agilent
R T
Mkr1 5.502 GHz
Ref 14 dBm
#Atten 14 dB
7.64 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

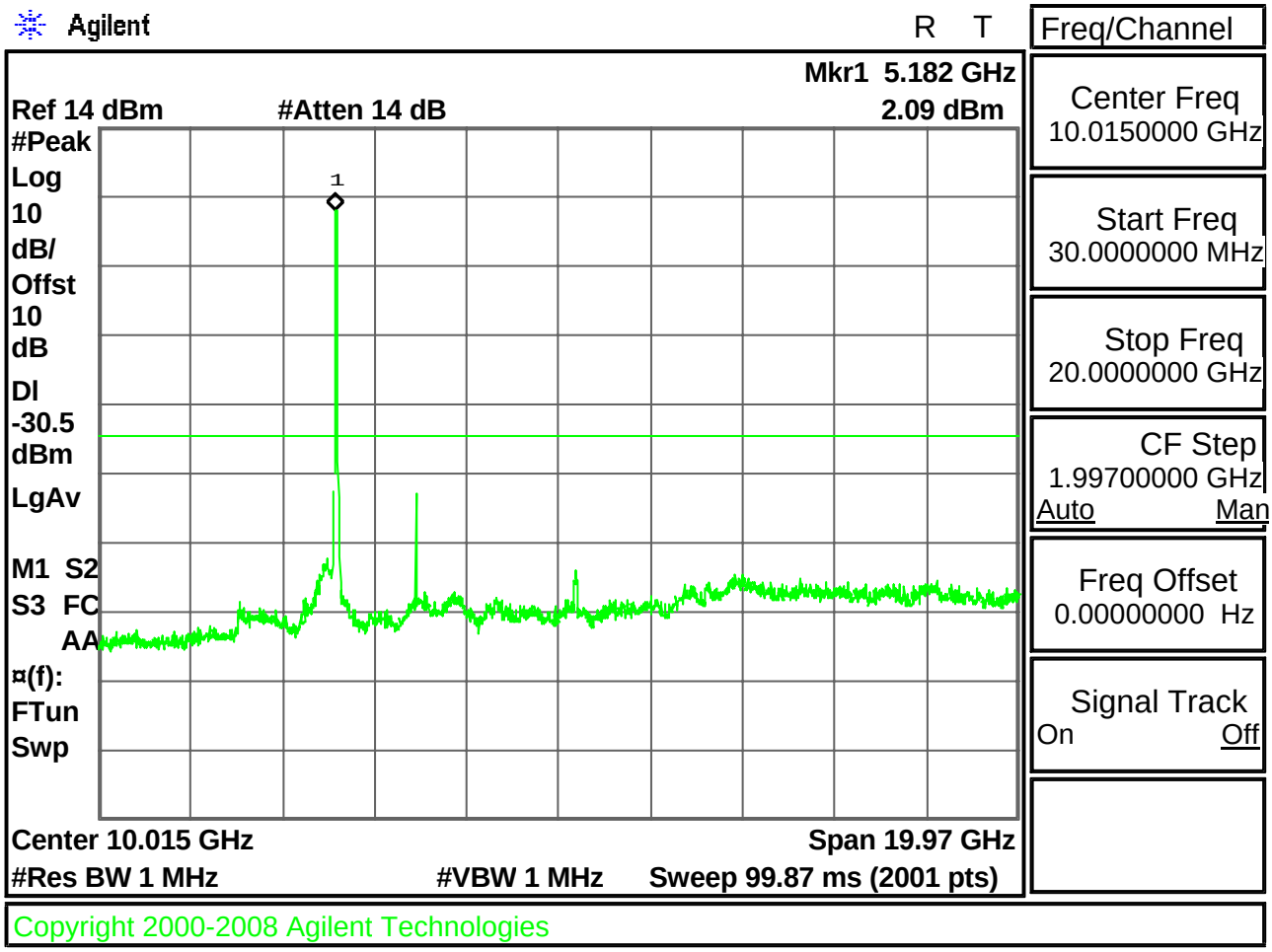

Agilent
R T
Freq/Channel
Mkr1 37.56 GHz
Ref 10 dBm
#Atten 10 dB
-41.76 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

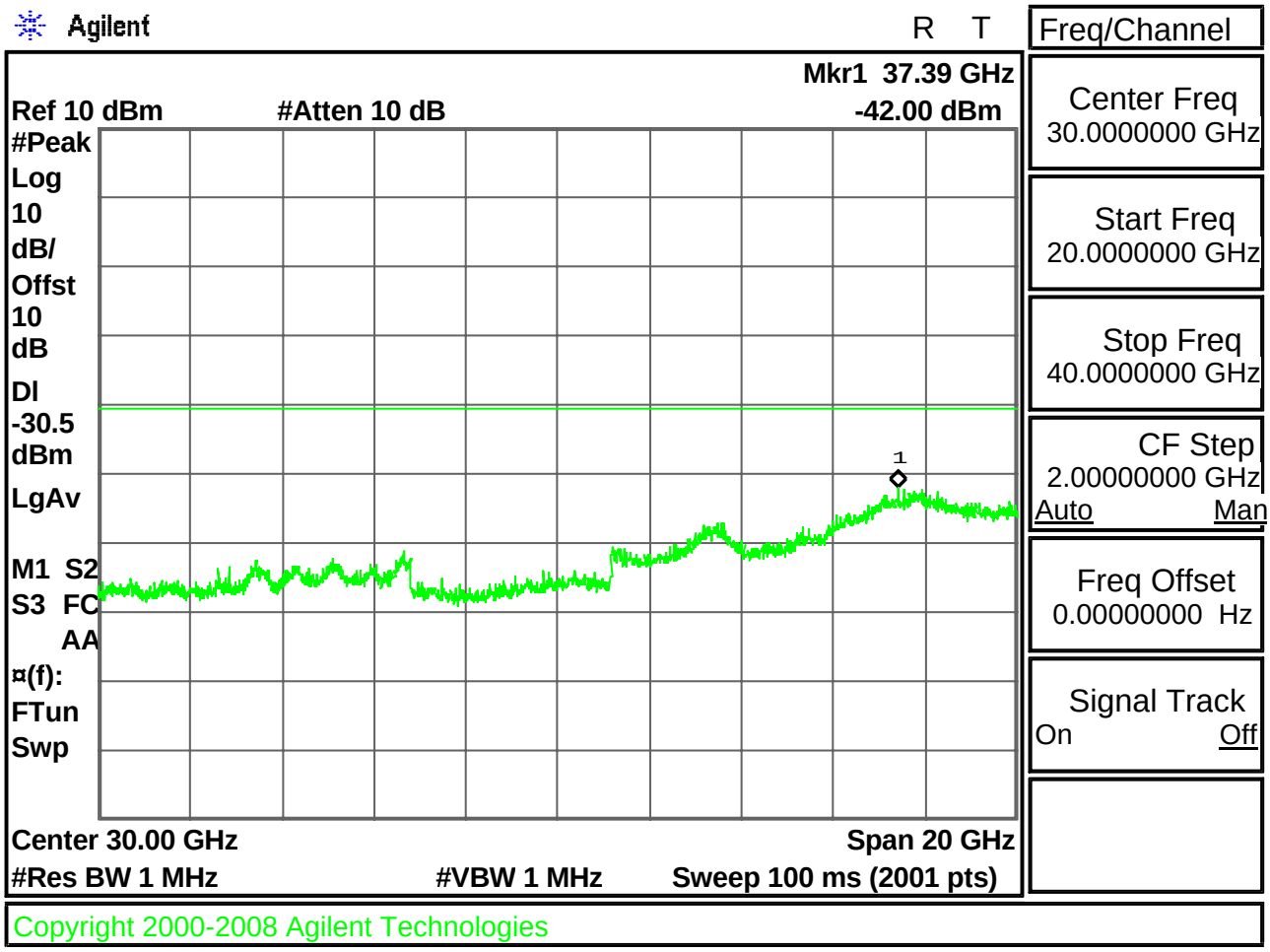

Agilent
R T
Freq/Channel
Mkr1 5.602 GHz
Ref 14 dBm
#Atten 14 dB
7.78 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Copyright 2000-2008 Agilent Technologies

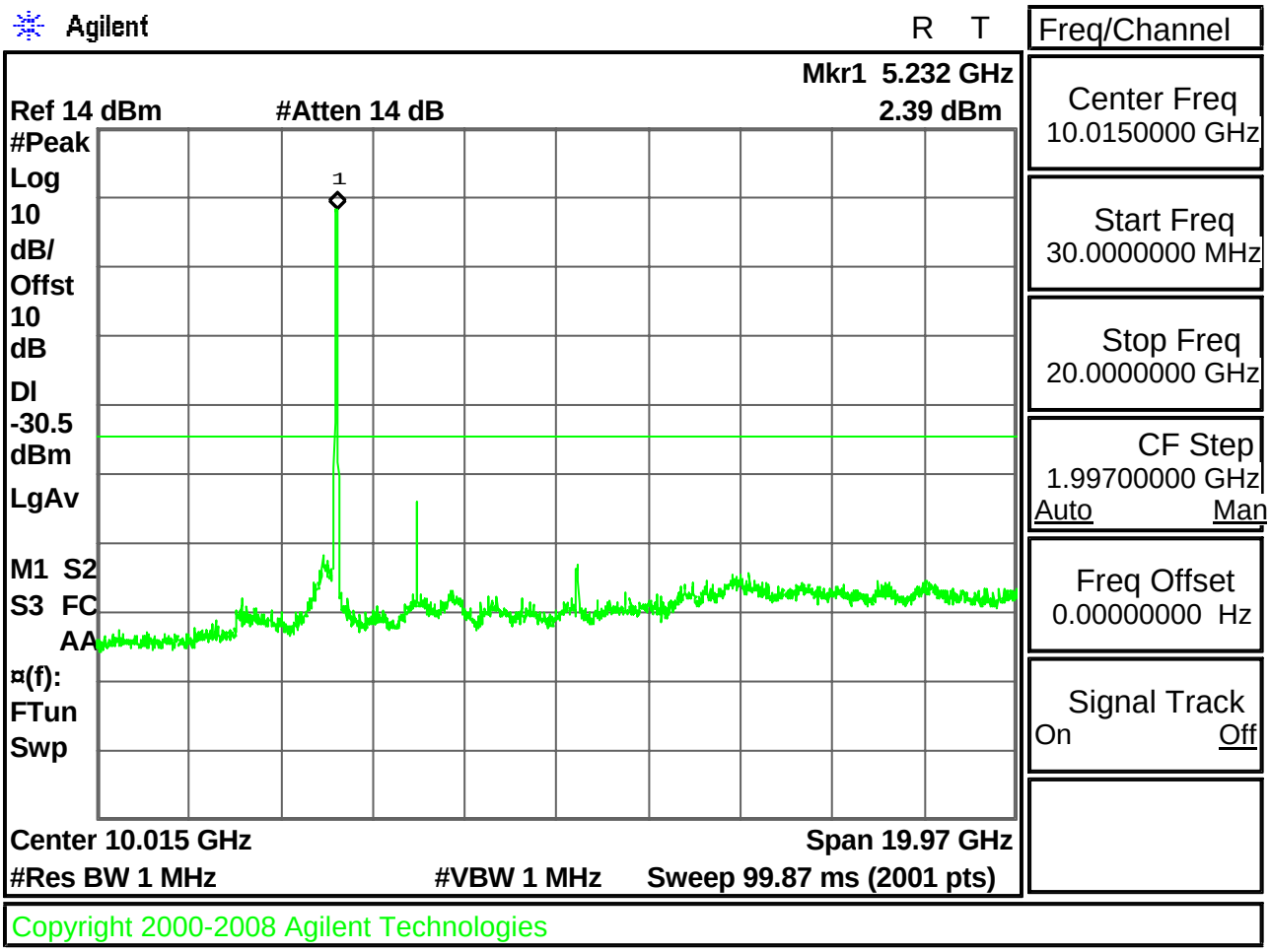

Agilent
R T
Mkr1 38.25 GHz
Ref 10 dBm
#Atten 10 dB
-42.28 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Freq/Channel
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

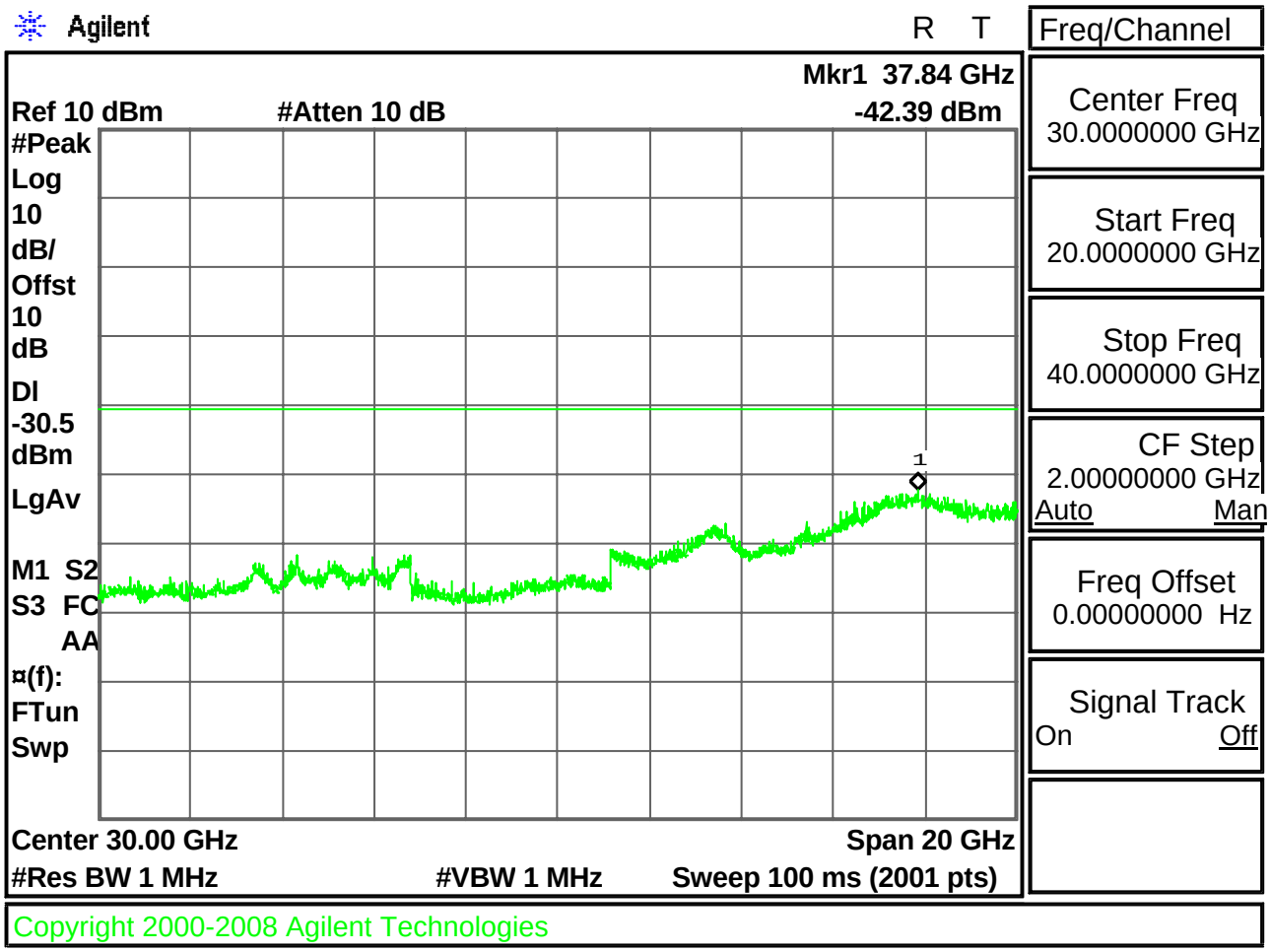

Agilent
R T
Freq/Channel
Mkr1 5.701 GHz
Ref 14 dBm
#Atten 14 dB
6.74 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Copyright 2000-2008 Agilent Technologies

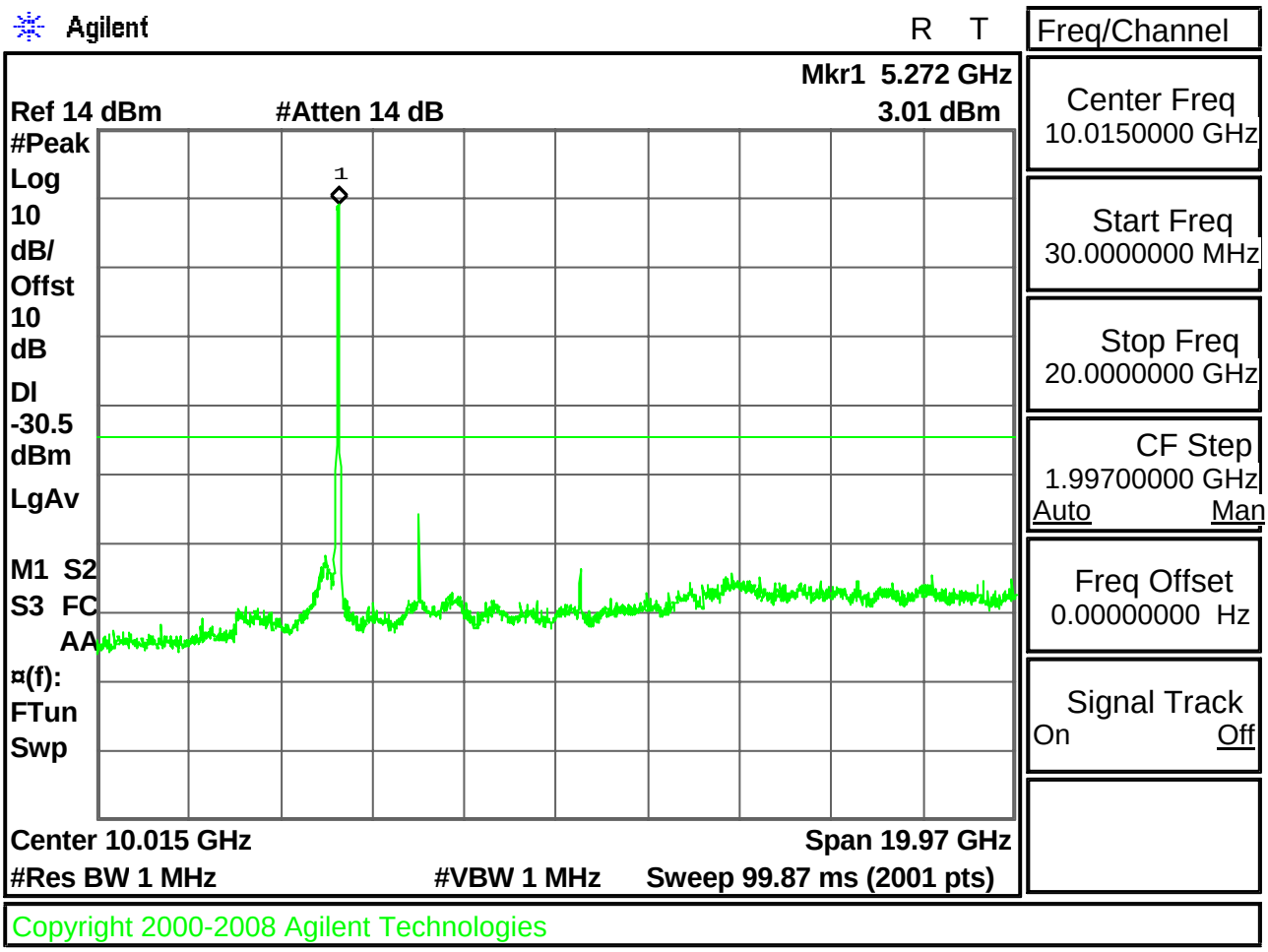

Agilent
R T
Freq/Channel
Mkr1 37.42 GHz
Ref 10 dBm
#Atten 10 dB
-41.61 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Copyright 2000-2008 Agilent Technologies

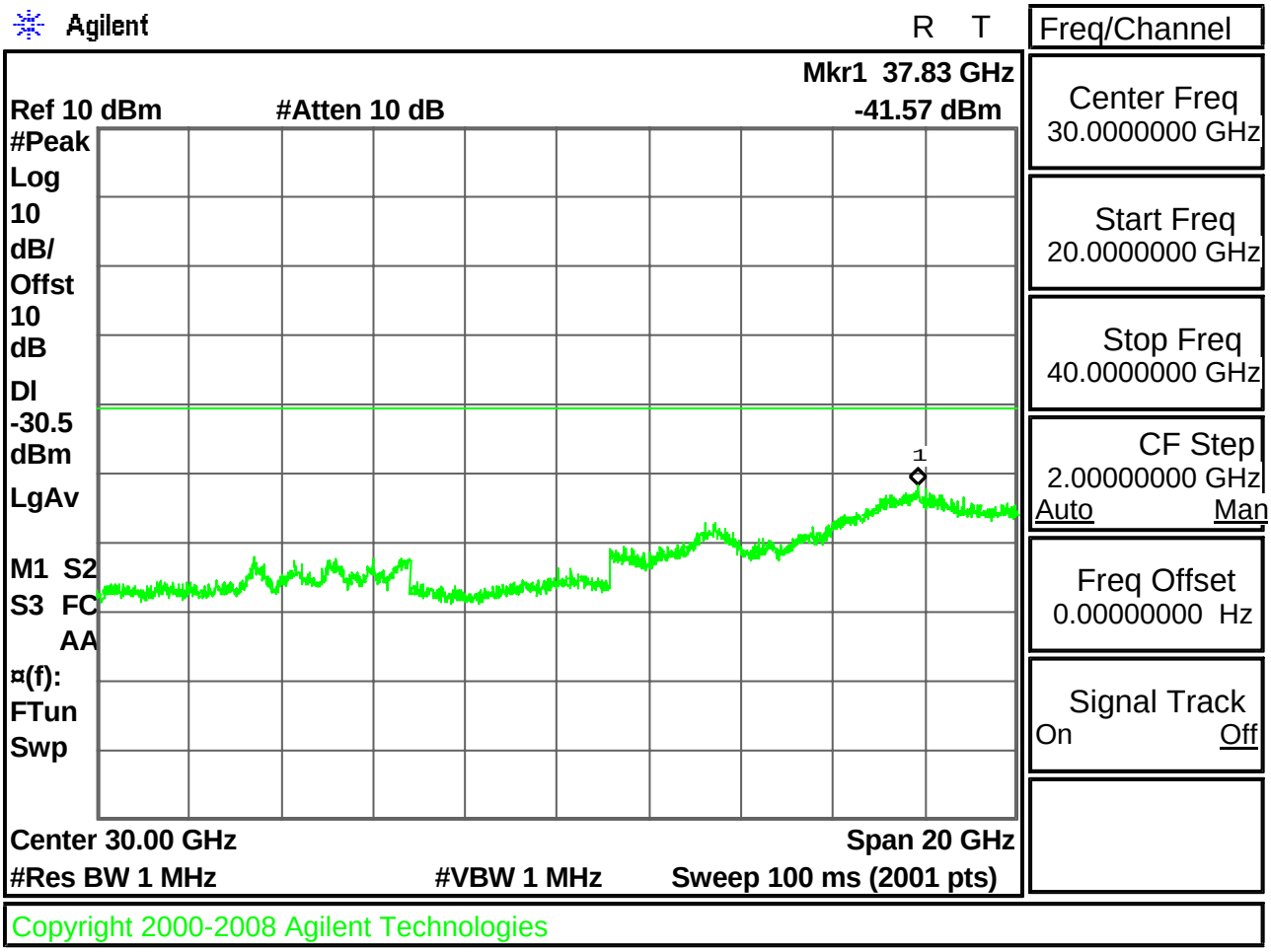

Agilent
R T
Mkr1 5.182 GHz
Ref 14 dBm
#Atten 14 dB
2.09 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

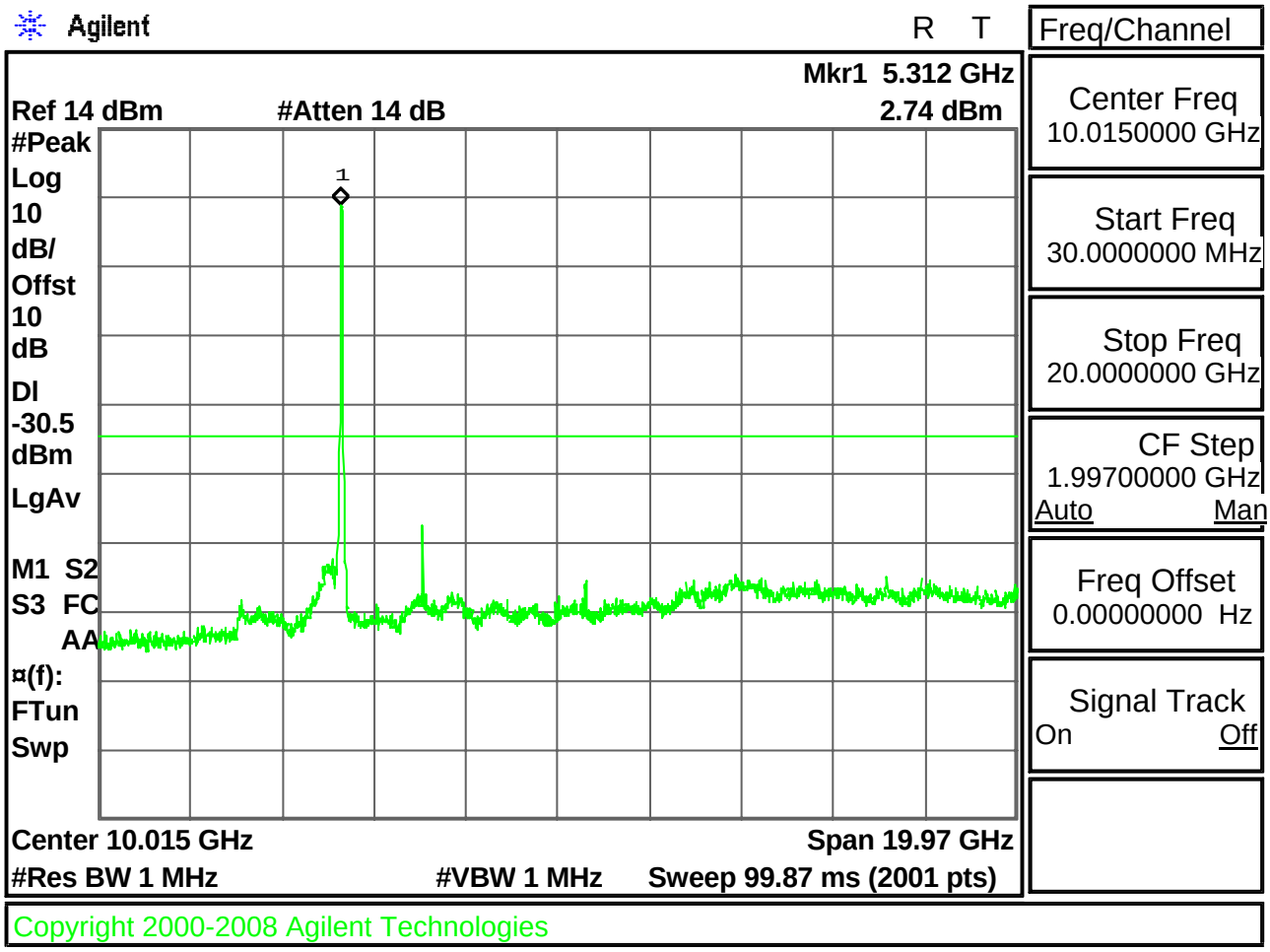

Agilent
R T
Mkr1 37.39 GHz
Ref 10 dBm
#Atten 10 dB
-42.00 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Freq/Channel
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

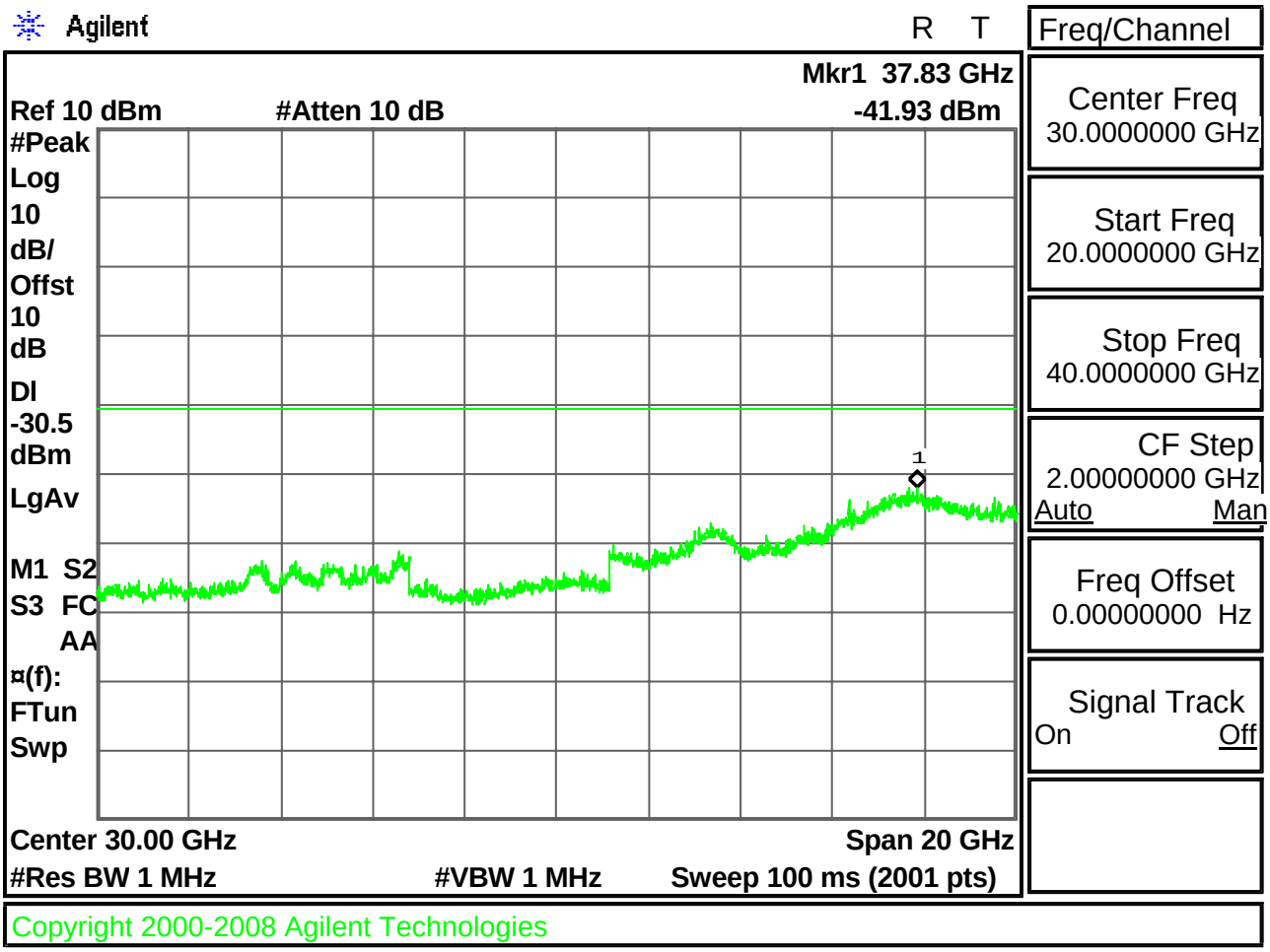

Agilent
R T
Mkr1 5.232 GHz
Ref 14 dBm
#Atten 14 dB
2.39 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

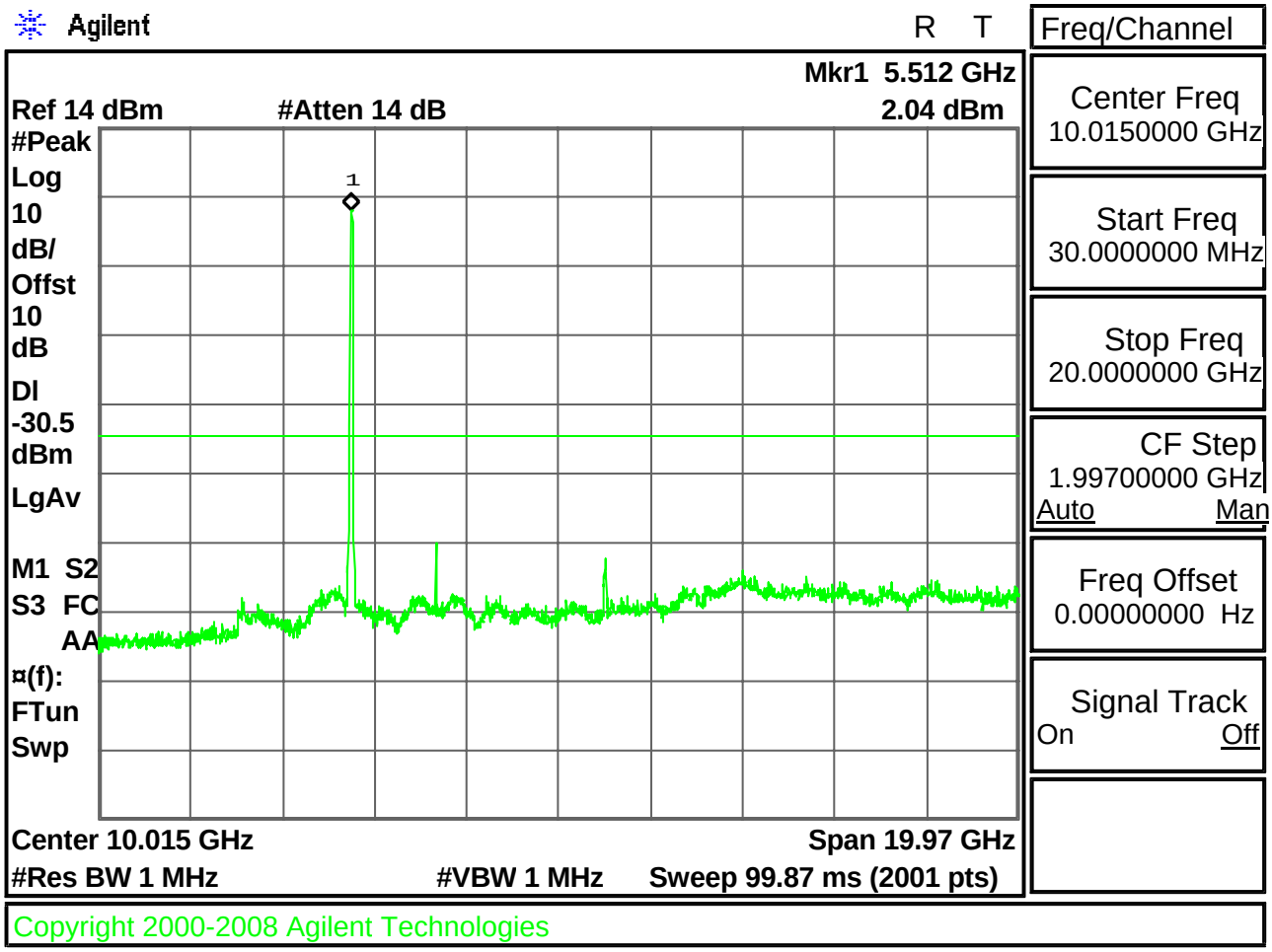

Agilent
R T
Mkr1 37.84 GHz
Ref 10 dBm
#Atten 10 dB
-42.39 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Freq/Channel
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

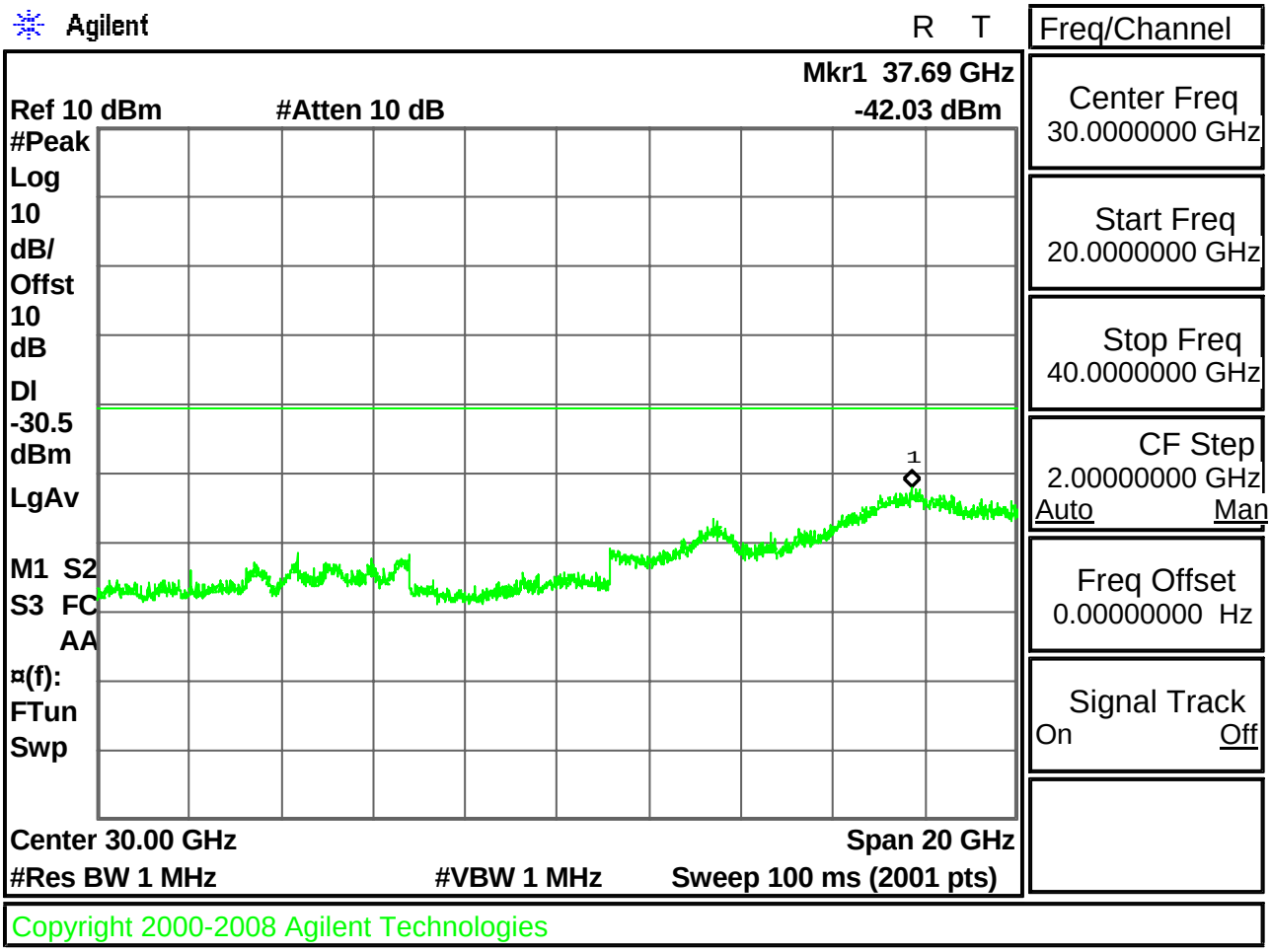

Agilent
R T
Mkr1 5.272 GHz
Ref 14 dBm
#Atten 14 dB
3.01 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

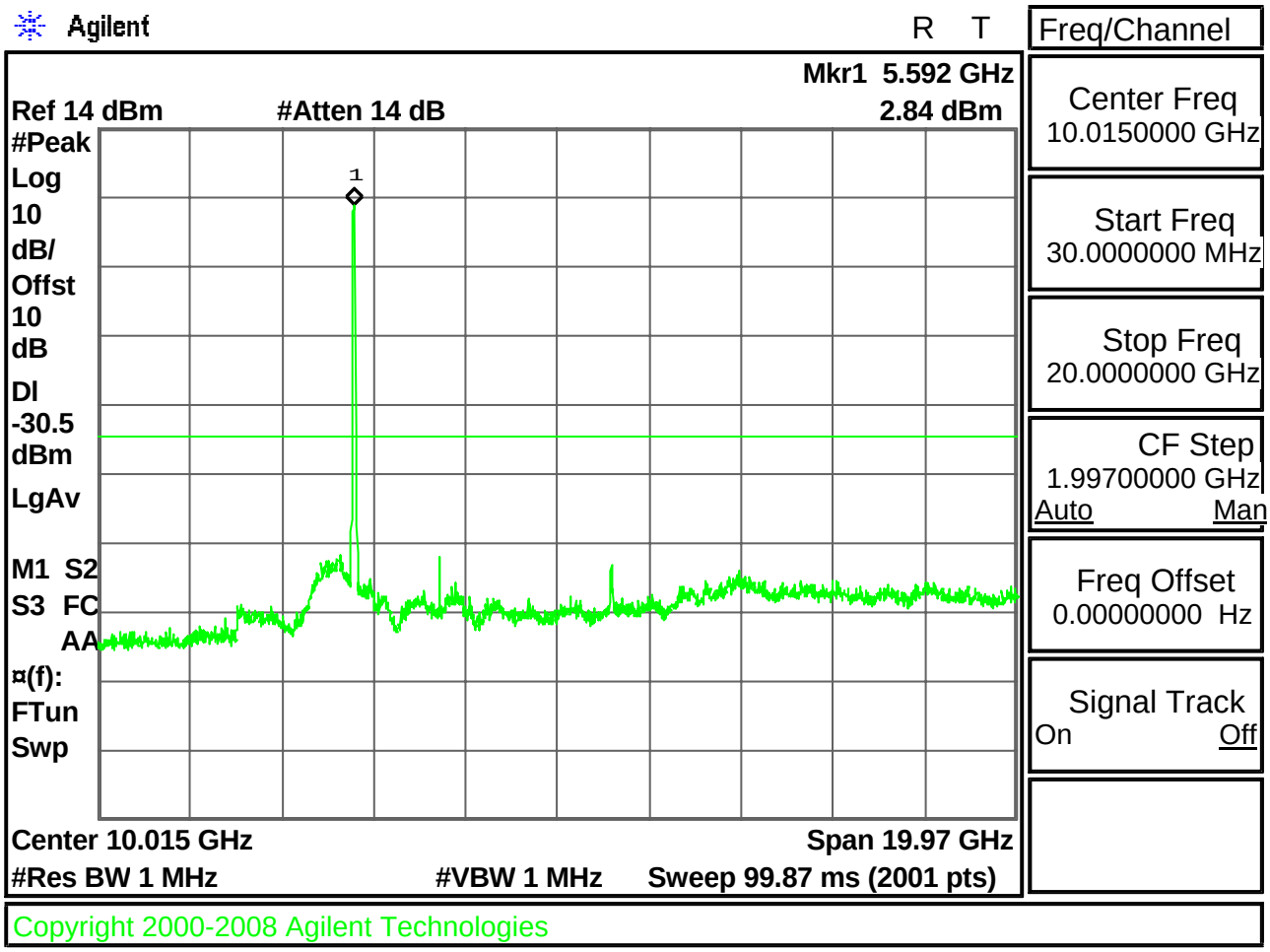

Agilent
R T
Mkr1 37.83 GHz
Ref 10 dBm
#Atten 10 dB
-41.57 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Freq/Channel
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

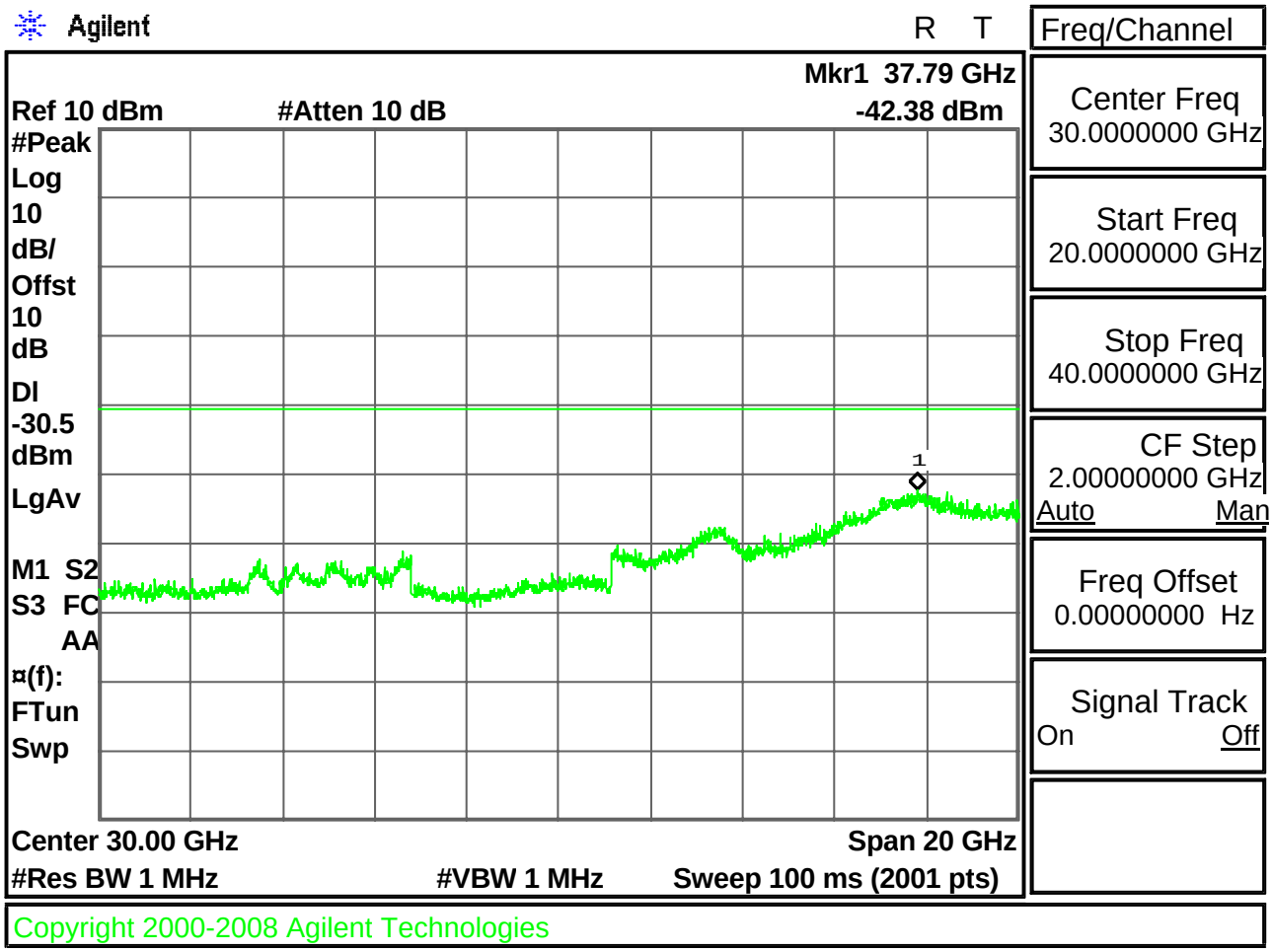

Agilent
R T
Mkr1 5.312 GHz
Ref 14 dBm
#Atten 14 dB
2.74 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

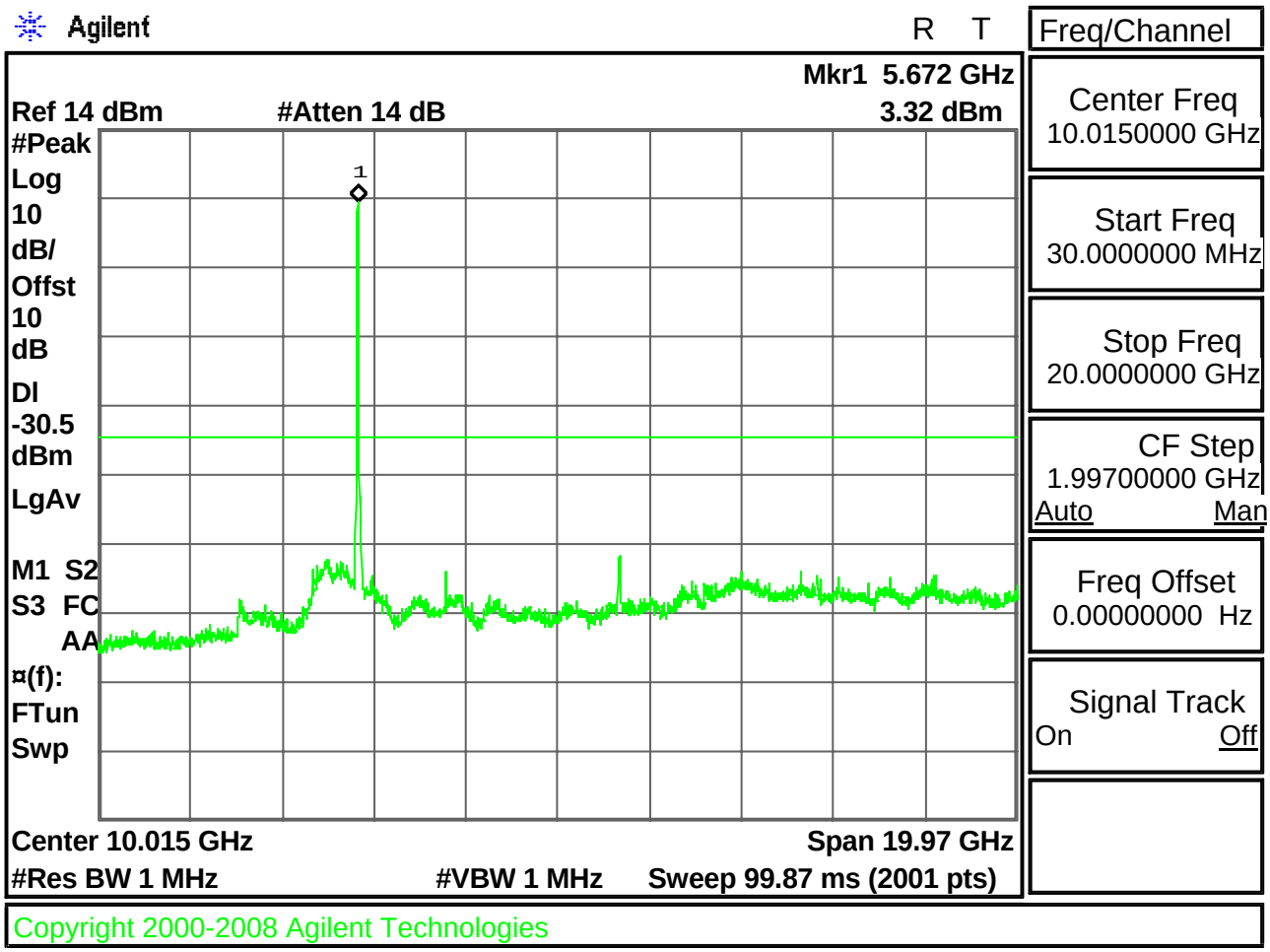

Agilent
R T
Mkr1 37.83 GHz
Ref 10 dBm
#Atten 10 dB
-41.93 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Freq/Channel
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies

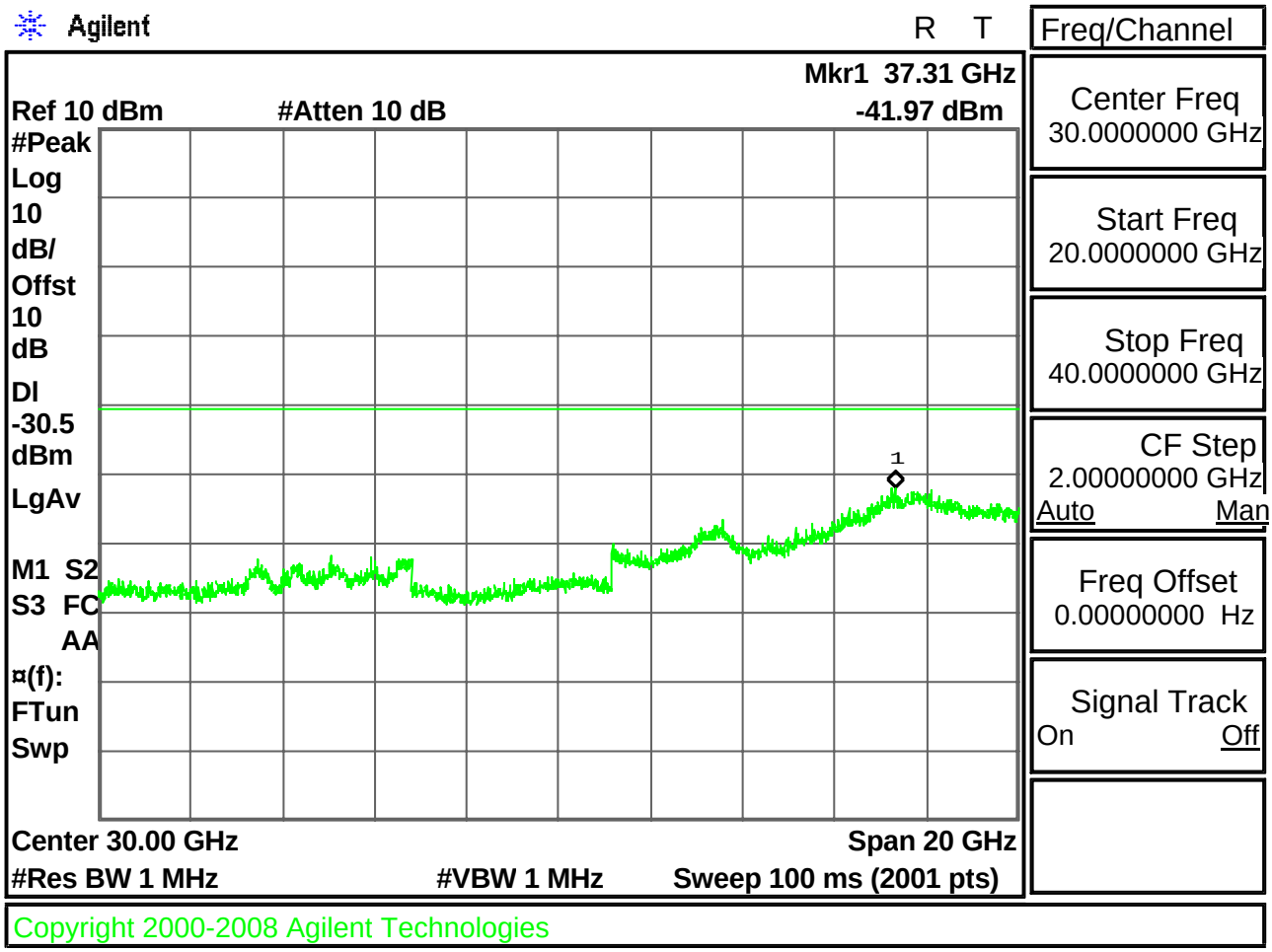

Agilent
R T
Mkr1 5.512 GHz
Ref 14 dBm
#Atten 14 dB
2.04 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies


Agilent
R T
Mkr1 37.69 GHz
Ref 10 dBm
#Atten 10 dB
-42.03 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Freq/Channel
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies


Agilent
R T
Mkr1 5.592 GHz
Ref 14 dBm
#Atten 14 dB
2.84 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Freq/Channel
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies


Agilent
R T
Mkr1 37.79 GHz
Ref 10 dBm
#Atten 10 dB
-42.38 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center 30.00 GHz
Span 20 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 100 ms (2001 pts)
Freq/Channel
Center Freq
30.0000000 GHz
Start Freq
20.0000000 GHz
Stop Freq
40.0000000 GHz
CF Step
2.00000000 GHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2008 Agilent Technologies


Agilent
R T
Freq/Channel
Mkr1 5.672 GHz
Ref 14 dBm
#Atten 14 dB
3.32 dBm
#Peak
Log
10
dB/
Offst
10
dB
Dl
-30.5
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
FTun
Swp
1
Center Freq
10.0150000 GHz
Start Freq
30.0000000 MHz
Stop Freq
20.0000000 GHz
CF Step
1.99700000 GHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 10.015 GHz
Span 19.97 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 99.87 ms (2001 pts)
Copyright 2000-2008 Agilent Technologies



11 RADIATED EMISSION MEASUREMENT

11.1 Standard Applicable

According to §15.407 (b)(6), unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in Section 15.207.

According to §15.407 (b), the provisions of Section 15.205 of this part apply to intentional radiators operating under this section.

11.2 Measurement rocedure

A.Preliminary Measurement For Portable Devices.

For portable devices, the following procedure was performed to determine the maximum emission axis of EUT (X, Y and Z axis):

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antennna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. The axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.
4. The position in which the maximum noise occurred was “X axis”. (Please see the test setup photos)

B. Final Measurement

1. Setup the configuration per figure 3 and 4 for frequencies measured below and above 1 GHz respectively.
2. For emission frequencies measured below 1 GHz, it is performed in a semi-anechoic chamber to determine the accurate frequencies of higher emissions. For emission frequencies measured above 1 GHz, a pre-scan be performed with a 1 meter measuring distance before final test.
3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 120 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0° to 360° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.

   Note : A filter was used to avoid pre-amplifier saturated when measure TX operation mode.
5. Repeat step 4 until all frequencies need to be measured were complete.
6. Repeat step 5 with search antenna in vertical polarized orientations.
7. Check the three frequencies of highest emission with varying the datarate, placement of ANT. cables associated with EUT to obtain the worse case and record the result.

Figure 3 : Frequencies measured below 1 GHz configuration

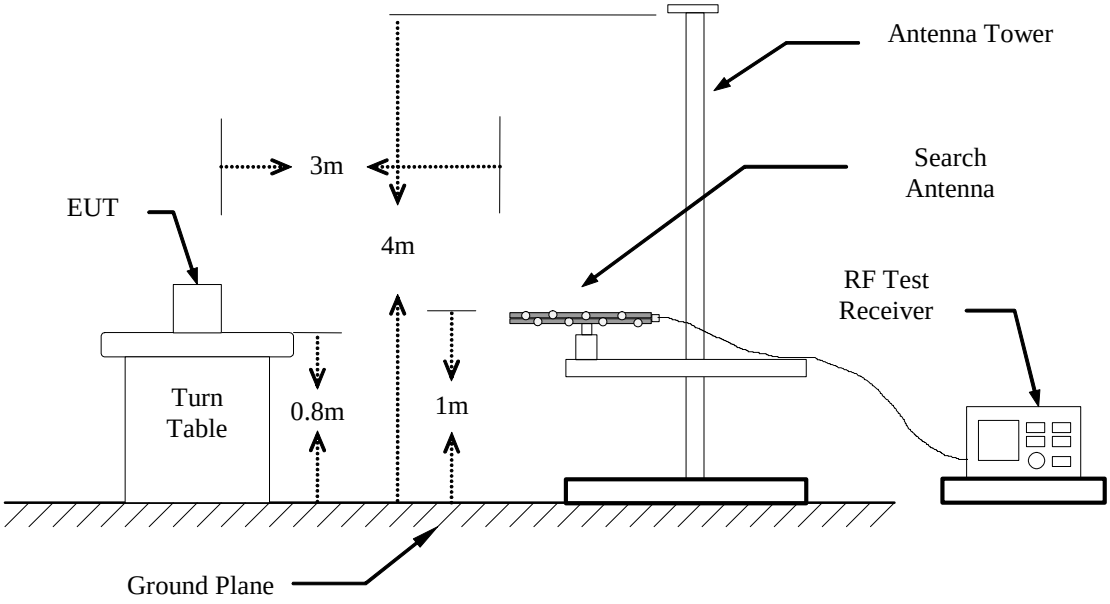
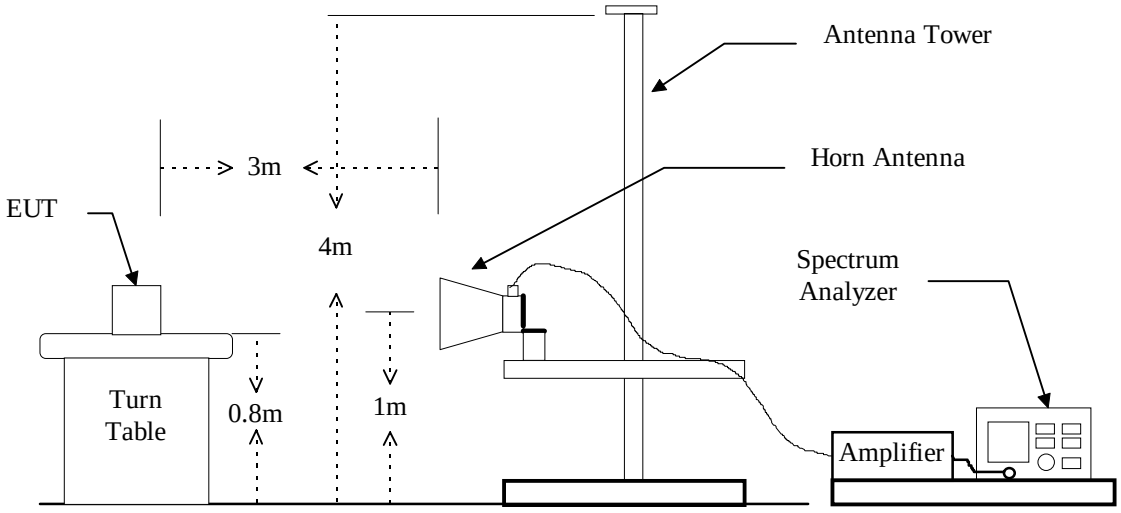


Figure 4 : Frequencies measured above 1 GHz configuration



11.3 Measuring Instrument

The following instrument are used for radiated emissions measurement :

Equipment	Manufacturer	Model No.	Next Cal. Due
EMI Test Receiver	R&S	ESIB7	07/19/2011
Spectrum Analyzer	Rohde & Schwarz	FSU46	11/25/2011
Horn Antenna	EMCO	3115	07/18/2011
BiLog Antenna	Schaffner	CBL 6112B	09/02/2011
Horn Antenna	EMCO	3116	07/16/2011
Preamplifier	Hewlett-Packard	8449B	10/10/2011
Preamplifier	TRC	IJ07	09/27/2011

Measuring instrument setup in measured frequency band when specified detector function is used :

Frequency Band (MHz)	Instrument	Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	300 kHz
	Spectrum Analyzer	Peak	120 kHz	300 kHz
Above 1000	Spectrum Analyzer	Peak	1 MHz	1 MHz
	Spectrum Analyzer	Average	1 MHz	10 Hz

11.4 Radiated Emission Data

11.4.1 Harmonic

10.4.1.1 Operation Mode: TX

11.4.1.1.1 IEEE 802.11a
Operation Mode: 5.2GHz
Test Date: Dec. 23, 2010 Temperature: 26℃ Humidity: 57%

a) Channel Low
Fundamental Frequency: 5180 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
15540.000	---	---	---	---	3.5	---	---	74.0	54.0
20720.000	---	---	---	---	-5.6	---	---	74.0	54.0

b) Channel Mid
Fundamental Frequency: 5200 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
15600.000	---	---	---	---	3.5	---	---	74.0	54.0
20800.000	---	---	---	---	-5.1	---	---	74.0	54.0
31200.000	---	---	---	---	-1.3	---	---	74.0	54.0

c) Channel High
Fundamental Frequency: 5240 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
15720.000	---	---	---	---	3.5	---	---	74.0	54.0
20960.000	---	---	---	---	-5.1	---	---	74.0	54.0
31440.000	---	---	---	---	-0.9	---	---	74.0	54.0

Note :

1. Item of margin shown in above table refer to average limit.
2. Remark "---" means that the emissions level is too low to be measured.

Operation Mode: 5.3GHz
Test Date: Dec. 23, 2010 Temperature: 26℃ Humidity: 57%

a) Channel Low
Fundamental Frequency: 5260 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
15780.000	---	---	---	---	3.0	---	---	74.0	54.0
21040.000	---	---	---	---	-5.1	---	---	74.0	54.0
31560.000	---	---	---	---	-0.9	---	---	74.0	54.0

b) Channel Mid
Fundamental Frequency: 5300 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
10600.000	---	---	51.3	46.0	3.1	54.4	49.1	74.0	54.0
15900.000	---	---	---	---	3.0	---	---	74.0	54.0
21200.000	---	---	---	---	-5.1	---	---	74.0	54.0
31800.000	---	---	---	---	-1.4	---	---	74.0	54.0

c) Channel High
Fundamental Frequency: 5320 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
10640.000	---	---	51.8	46.1	3.1	54.9	49.2	74.0	54.0
15960.000	---	---	---	---	3.0	---	---	74.0	54.0
21280.000	---	---	---	---	-4.4	---	---	74.0	54.0

Note :
1. Item of margin shown in above table refer to average limit.
2. Remark "---" means that the emissions level is too low to be measured.

Operation Mode: 5.6GHz
Test Date: Dec. 23, 2010 Temperature: 26℃ Humidity: 57%

a) Channel Low
Fundamental Frequency: 5500 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
11000.000	---	---	---	---	3.8	---	---	74.0	54.0

b) Channel Mid
Fundamental Frequency: 5600 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
11200.000	---	---	---	---	3.8	---	---	74.0	54.0
22400.000	---	---	---	---	-4.7	---	---	74.0	54.0
39200.000	---	---	---	---	-2.8	---	---	74.0	54.0

c) Channel High
Fundamental Frequency: 5700 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
11400.000	---	---	---	---	4.3	---	---	74.0	54.0
22800.000	---	---	---	---	-4.8	---	---	74.0	54.0
39900.000	---	---	---	---	5.7	---	---	74.0	54.0

Note :

1. Item of margin shown in above table refer to average limit.
2. Remark "---" means that the emissions level is too low to be measured.

11.4.1.1.2 IEEE 802.11an, HT20
Operation Mode: 5.2GHz
Test Date: Mar. 21, 2011 Temperature: 17℃ Humidity: 54%

a) Channel Low
Fundamental Frequency: 5180 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
15540.000	---	---	---	---	3.5	---	---	74.0	54.0
20720.000	---	---	---	---	-5.6	---	---	74.0	54.0

b) Channel Mid
Fundamental Frequency: 5200 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
15600.000	---	---	---	---	3.5	---	---	74.0	54.0
20800.000	---	---	---	---	-5.1	---	---	74.0	54.0
31200.000	---	---	---	---	-1.3	---	---	74.0	54.0

c) Channel High
Fundamental Frequency: 5240 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
15720.000	---	---	---	---	3.5	---	---	74.0	54.0
20960.000	---	---	---	---	-5.1	---	---	74.0	54.0
31440.000	---	---	---	---	-0.9	---	---	74.0	54.0

Note :
1. Item of margin shown in above table refer to average limit.
2. Remark "---" means that the emissions level is too low to be measured.

Operation Mode: 5.3GHz
Test Date: Dec. 23, 2010 Temperature: 26℃ Humidity: 57%

a) Channel Low
Fundamental Frequency: 5260 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
15780.000	---	---	---	---	3.0	---	---	74.0	54.0
21040.000	---	---	---	---	-5.1	---	---	74.0	54.0
31560.000	---	---	---	---	-0.9	---	---	74.0	54.0

b) Channel Mid
Fundamental Frequency: 5300 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
10600.000	---	---	51.3	49.7	3.1	54.4	48.8	74.0	54.0
15900.000	---	---	---	---	3.0	---	---	74.0	54.0
21200.000	---	---	---	---	-5.1	---	---	74.0	54.0
31800.000	---	---	---	---	-1.4	---	---	74.0	54.0

c) Channel High
Fundamental Frequency: 5320 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
10640.000	---	---	51.8	45.7	3.1	54.9	48.8	74.0	54.0
15960.000	---	---	---	---	3.0	---	---	74.0	54.0
21280.000	---	---	---	---	-4.4	---	---	74.0	54.0

Note :
1. Item of margin shown in above table refer to average limit.
2. Remark "---" means that the emissions level is too low to be measured.

Operation Mode: 5.6GHz
Test Date : Dec. 23, 2010 Temperature: 26℃ Humidity : 57%

a) Channel Low
Fundamental Frequency: 5500 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
11000.000	---	---	---	---	3.8	---	---	74.0	54.0

b) Channel Mid
Fundamental Frequency: 5600 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
11200.000	---	---	---	---	3.8	---	---	74.0	54.0
22400.000	---	---	---	---	-4.7	---	---	74.0	54.0
39200.000	---	---	---	---	-2.8	---	---	74.0	54.0

c) Channel High
Fundamental Frequency: 5700 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
11400.000	---	---	---	---	4.3	---	---	74.0	54.0
22800.000	---	---	---	---	-4.8	---	---	74.0	54.0
39900.000	---	---	---	---	5.7	---	---	74.0	54.0

Note :

1. Item of margin shown in above table refer to average limit.
2. Remark "---" means that the emissions level is too low to be measured.

11.4.1.1.3 IEEE 802.11an, HT40
Operation Mode: 5.2GHz
Test Date: Dec. 23, 2010 Temperature: 26℃ Humidity: 57%

a) Channel Low
Fundamental Frequency: 5190 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
15570.000	---	---	---	---	3.5	---	---	74.0	54.0
20760.000	---	---	---	---	-5.1	---	---	74.0	54.0

b) Channel High
Fundamental Frequency: 5230 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
15690.000	---	---	---	---	3.5	---	---	74.0	54.0
20920.000	---	---	---	---	-5.1	---	---	74.0	54.0
31380.000	---	---	---	---	-0.9	---	---	74.0	54.0

Note :
1. Item of margin shown in above table refer to average limit.
2. Remark "---" means that the emissions level is too low to be measured.

Operation Mode: 5.3GHz
Test Date: Dec. 23, 2010 Temperature: 26℃ Humidity: 57%

a) Channel Low
Fundamental Frequency: 5270 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
15810.000	---	---	---	---	3.0	---	---	74.0	54.0
21080.000	---	---	---	---	-5.1	---	---	74.0	54.0
31620.000	---	---	---	---	-0.9	---	---	74.0	54.0

b) Channel High
Fundamental Frequency: 5310 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
10620.000	---	---	---	---	3.1	---	---	74.0	54.0
15930.000	---	---	---	---	3.0	---	---	74.0	54.0
21240.000	---	---	---	---	-5.1	---	---	74.0	54.0

Note :
1. Item of margin shown in above table refer to average limit.
2. Remark "---" means that the emissions level is too low to be measured.

Operation Mode: 5.6GHz
Test Date : Dec. 23, 2010 Temperature: 26℃ Humidity : 57%

a) Channel Low
Fundamental Frequency: 5510 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
11020.000	---	---	---	---	3.8	---	---	74.0	54.0
22040.000	---	---	---	---	-4.5	---	---	74.0	54.0

b) Channel Mid
Fundamental Frequency: 5590 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
11180.000	---	---	---	---	3.8	---	---	74.0	54.0
22360.000	---	---	---	---	-4.7	---	---	74.0	54.0
39130.000	---	---	---	---	-2.8	---	---	74.0	54.0

c) Channel High
Fundamental Frequency: 5670 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
11340.000	---	---	---	---	4.3	---	---	74.0	54.0
22680.000	---	---	---	---	-4.7	---	---	74.0	54.0
39690.000	---	---	---	---	0.9	---	---	74.0	54.0

Note :
1. Item of margin shown in above table refer to average limit.
2. Remark "---" means that the emissions level is too low to be measured.

10.4.1.2 Operation Mode: WiFi IEEE 802.11an, HT20, Ch 120+ BT, Ch0 (Worse Case)

Operation Mode: 5.6GHz

Channel Mid
Fundamental Frequency: 5600 MHz

Frequency	Reading (dBuV)				Factor	Result @3m		Limit @3m	
	H		V		(dB)	(dBuV/m)		(dBuV/m)	
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
11200.000	---	---	---	---	3.8	---	---	74.0	54.0
22400.000	---	---	---	---	-4.7	---	---	74.0	54.0
39200.000	---	---	---	---	-2.8	---	---	74.0	54.0

Note :

1. Item of margin shown in above table refer to average limit.
2. Remark “---” means that the emissions level is too low to be measured.

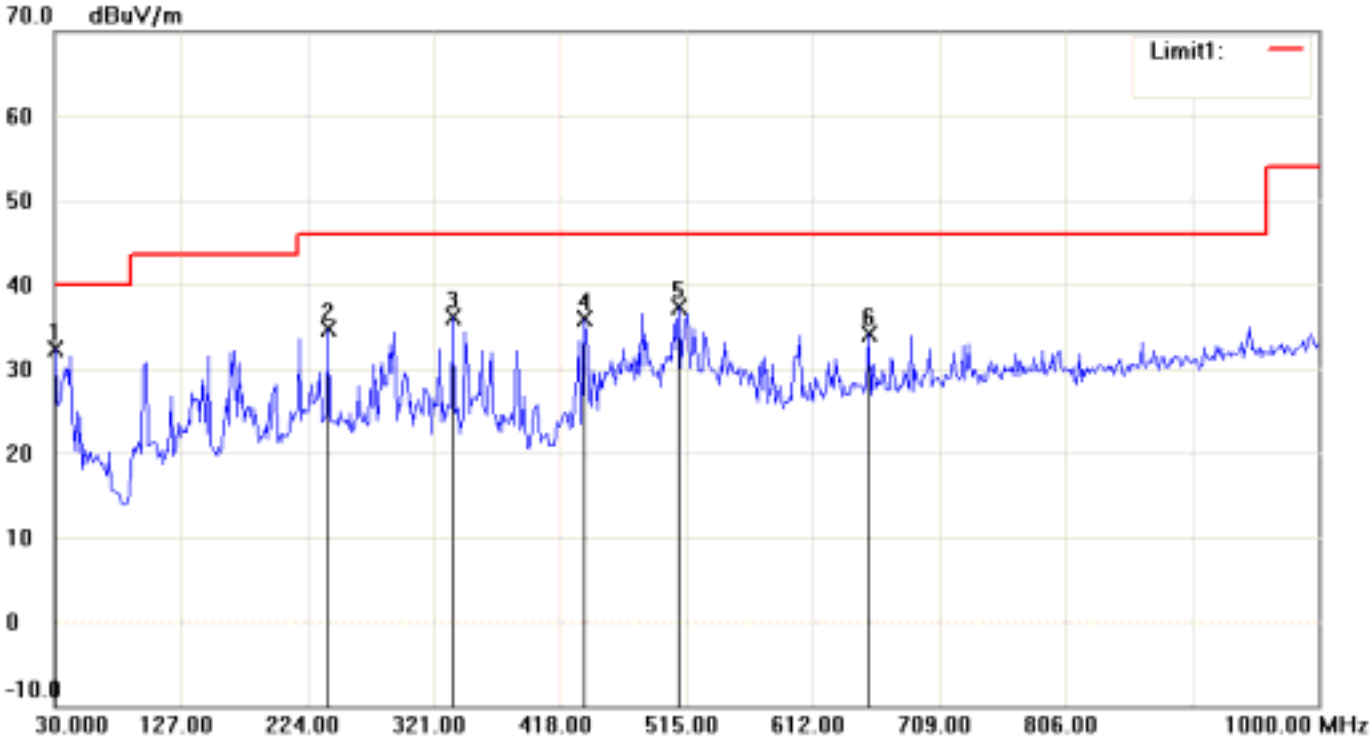
11.4.2 Spurious Emission

11.4.2.1 Operation Mode: Tx

a) Emission frequencies below 1 GHz

File: 837 **Data:** #13 **Date:** 2011/3/20 **Temperature:** 16 ℃

Time: PM 03:03:12 **Humidity:** 58 %



Condition:

EUT:

Model:

Test Mode:

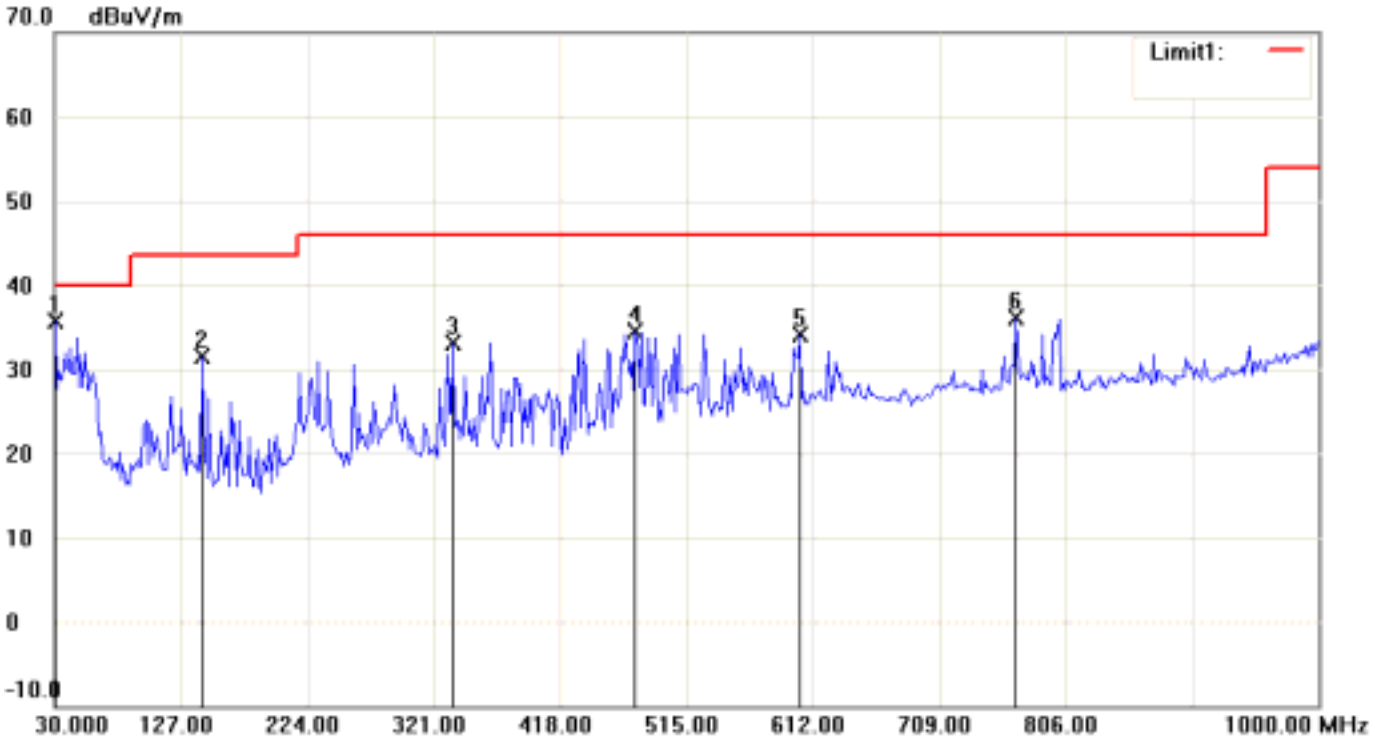
Polarization: Horizontal

Distance: 3m

No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBuV/m)		dB/m	(dBuV/m)	(dBuV/m)	(dB)
1	30.0000	12.26	peak	19.97	32.23	40.00	-7.77
2	239.8557	20.45	peak	14.30	34.75	46.00	-11.25
3	336.2340	17.98	peak	18.03	36.01	46.00	-9.99
4	437.2756	15.14	peak	20.75	35.89	46.00	-10.11
5	508.7820	13.29	peak	24.02	37.31	46.00	-8.69
6	654.9038	8.94	peak	25.13	34.07	46.00	-11.93

File: 837 **Data:** #14 **Date:** 2011/3/20 **Temperature:** 16 ℃

Time: PM 03:04:14 **Humidity:** 58 %



Condition:

EUT:

Model:

Test Mode:

Note:

Polarization: Vertical

Distance: 3m

No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBuV/m)		dB/m	(dBuV/m)	(dBuV/m)	(dB)
1	30.0000	15.66	peak	19.97	35.63	40.00	-4.37
2	143.4774	18.17	peak	13.41	31.58	43.50	-11.92
3	336.2340	15.05	peak	18.03	33.08	46.00	-12.92
4	476.1378	11.89	peak	22.70	34.59	46.00	-11.41
5	602.0511	9.97	peak	24.07	34.04	46.00	-11.96
6	768.3813	8.78	peak	27.31	36.09	46.00	-9.91

b) Emission frequencies above 1 GHz

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)
Radiated emission frequencies above 1 GHz to 40 GHz were too low to be measured.						

Note:

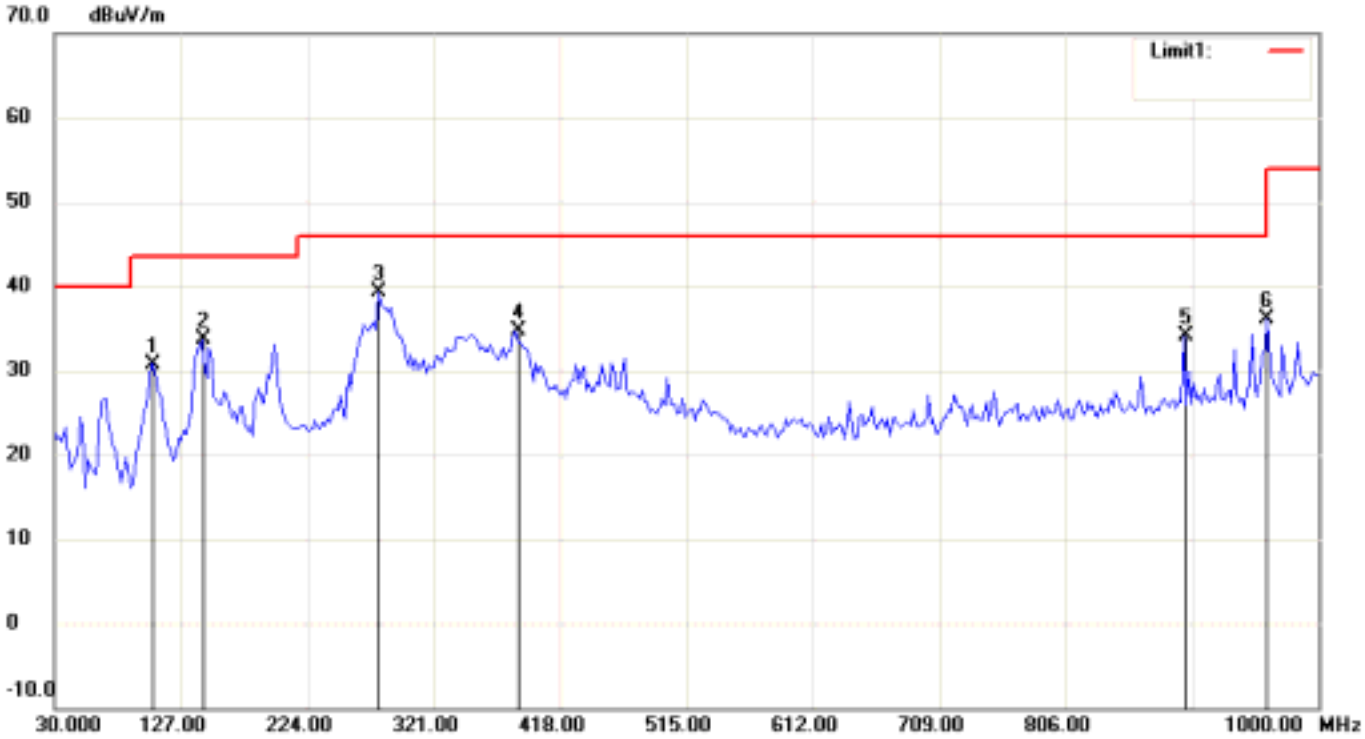
1. Place of Measurement: Measuring site of the ETC.
2. If the data table appeared symbol of "***" means the value was too low to be measured.
3. The estimated measurement uncertainty of the result measurement is
   ±4.6dB (30MHz≦f<300MHz).
   ±4.4dB (300MHz≦f<1000MHz).
   ±2.9dB (1GHz≦f<18GHz).
   ±3.5dB (18GHz≦f≦40GHz).

11.4.2.2 Operation Mode: WiFi IEEE 802.11an, HT20, Ch 120+ BT, Ch0 (Worse Case)

a) Emission frequencies below 1 GHz

File: 837 **Data:** #5 **Date:** 2011/3/21 **Temperature:** 18 ℃

Time: AM 08:03:13 **Humidity:** 63 %



Condition: FCC Part15 RE-Class B_30-1000MHz **Polarization:** Horizontal

EUT: **Distance:** 3m

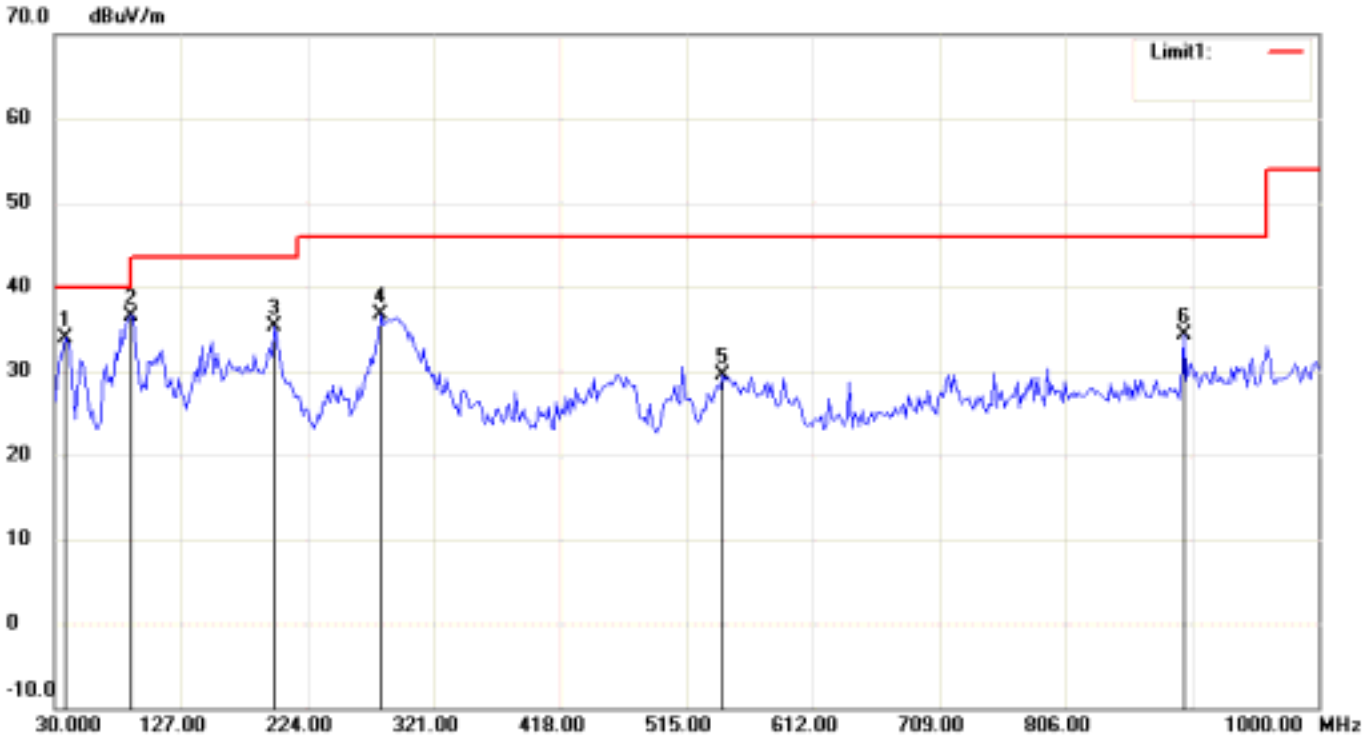
Model:

Test Mode:

No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBuV/m)		dB/m	(dBuV/m)	(dBuV/m)	(dB)
1	103.8677	19.78	peak	11.02	30.80	43.50	-12.70
2	142.7455	20.79	peak	12.98	33.77	43.50	-9.73
3	278.8176	23.26	peak	15.98	39.24	46.00	-6.76
4	383.7876	16.46	peak	18.28	34.74	46.00	-11.26
5	896.9740	6.93	peak	27.12	34.05	46.00	-11.95
6	961.1222	7.90	peak	28.13	36.03	54.00	-17.97

File: 837 **Data:** #4 **Date:** 2011/3/21 **Temperature:** 18 ℃

Time: AM 08:00:25 **Humidity:** 63 %



Condition: FCC Part15 RE-Class B_30-1000MHz **Polarization:** Vertical

EUT: **Distance:** 3m

Model:

Test Mode:

No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBuV/m)		dB/m	(dBuV/m)	(dBuV/m)	(dB)
1	37.7755	17.82	peak	16.17	33.99	40.00	-6.01
2	88.3165	26.40	peak	10.20	36.60	43.50	-6.90
3	199.1182	20.80	peak	14.57	35.37	43.50	-8.13
4	280.7615	21.17	peak	15.61	36.78	46.00	-9.22
5	543.1864	7.90	peak	21.65	29.55	46.00	-16.45
6	896.9738	8.68	peak	25.54	34.22	46.00	-11.78

b) Emission frequencies above 1 GHz

Frequency (MHz)	Ant-Pol H/V	Meter Reading (dBuV)	Corrected Factor (dB)	Result @3m (dBuV/m)	Limit @3m (dBuV/m)	Margin (dB)
Radiated emission frequencies above 1 GHz to 40 GHz were too low to be measured.						

Note:

1. Place of Measurement: Measuring site of the ETC.
2. If the data table appeared symbol of "***" means the value was too low to be measured.
3. The estimated measurement uncertainty of the result measurement is
   ±4.6dB (30MHz≦f<300MHz).
   ±4.4dB (300MHz≦f<1000MHz).
   ±2.9dB (1GHz≦f<18GHz).
   ±3.5dB (18GHz≦f≦40GHz).

11.4.3 Radiated Measurement at Bandedge with Fundamental Frequencies and co-location

Test Date : Dec. 23, 2010 Temperature: 26℃ Humidity : 57%

11.4.3.1 Operation Mode: TX

11.4.3.1.1 UNII Band I

11.4.3.1.1.1 IEEE 802.11a, ch 36

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5150.000	28.27	11.27	32.60	16.20	30.3	62.90	46.50	74	54

11.4.3.1.1.2 IEEE 802.11an, HT20, ch 36

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5150.000	30.27	10.39	36.81	19.40	30.3	67.11	49.70	74	54

11.4.3.1.1.3 IEEE 802.11an, HT40, ch 38

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5150.000	32.67	11.38	37.70	20.05	30.3	68.00	50.35	74	54

Note :

1. Remark "---" means that the emissions level is too low to be measured.
2. The result is the highest value of radiated emission from restrict band of 4500 ~ 5150 MHz and 5350 ~ 5460 MHz.

11.4.3.1.2 UNII Band II

11.4.3.1.2.1 IEEE 802.11a, ch 64

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5350.000	29.15	16.20	31.68	16.23	30.3	61.98	46.53	74	54

11.4.3.1.2.2 IEEE 802.11an, HT20, ch 64

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5350.000	30.29	13.57	35.15	17.21	30.3	65.45	47.51	74	54

11.4.3.1.2.3 IEEE 802.11an, HT40, ch 62

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5350.000	30.18	14.23	35.07	18.18	30.3	65.37	48.48	74	54

Note :

1. Remark “---” means that the emissions level is too low to be measured.
2. The result is the highest value of radiated emission from restrict band of 4500 ~ 5150 MHz and 5350 ~ 5460 MHz.

11.4.3.1.3 UNII Band III

11.4.3.1.3.1 IEEE 802.11a, ch 100

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5460.000	28.63	15.57	28.99	15.59	30.3	59.29	45.89	74	54

11.4.3.1.3.2 IEEE 802.11an, HT20, ch 100

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5460.000	28.51	15.44	29.30	15.80	30.3	59.60	46.10	74	54

11.4.3.1.3.3 IEEE 802.11an, HT40, ch 102

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5460.000	28.63	15.47	29.25	15.89	30.3	59.55	46.19	74	54

Note :

1. Remark "---" means that the emissions level is too low to be measured.
2. The result is the highest value of radiated emission from restrict band of 4500 ~ 5150 MHz and 5350 ~ 5460 MHz.

11.4.3.2 Operation Mode: WiFi + BT, Ch0 (Worse Case)

11.4.3.2.1 UNII Band I

11.4.3.2.1.1 IEEE 802.11a, ch 36

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5150.000	28.22	11.26	32.38	16.21	30.3	62.68	46.51	74	54

11.4.3.2.1.2 IEEE 802.11an, HT20, ch 36

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5150.000	30.33	10.38	36.84	19.41	30.3	67.14	49.71	74	54

11.4.3.2.1.3 IEEE 802.11an, HT40, ch 38

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5150.000	32.68	11.38	37.74	20.06	30.3	68.04	50.36	74	54

Note :

1. Remark "---" means that the emissions level is too low to be measured.
2. The result is the highest value of radiated emission from restrict band of 4500 ~ 5150 MHz and 5350 ~ 5460 MHz.

11.4.3.2.2 UNII Band II

11.4.3.2.2.1 IEEE 802.11a, ch 64

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5350.000	29.11	16.20	31.67	16.23	30.3	61.97	46.53	74	54

11.4.3.2.2.2 IEEE 802.11an, HT20, ch 64

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5350.000	30.22	13.58	35.65	17.20	30.3	65.95	47.50	74	54

11.4.3.2.2.3 IEEE 802.11an, HT40, ch 62

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5350.000	30.11	14.23	35.08	18.20	30.3	65.38	48.50	74	54

Note :

1. Remark “---” means that the emissions level is too low to be measured.
2. The result is the highest value of radiated emission from restrict band of 4500 ~ 5150 MHz and 5350 ~ 5460 MHz.

11.4.3.2.3 UNII Band III

11.4.3.2.3.1 IEEE 802.11a, ch 100

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5460.000	28.66	15.58	29.05	15.60	30.3	59.35	45.90	74	54

11.4.3.2.3.2 IEEE 802.11an, HT20, ch 100

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5460.000	28.50	15.43	29.31	15.81	30.3	59.61	46.11	74	54

11.4.3.2.3.3 IEEE 802.11an, HT40, ch 102

Test Frequency	Reading (dBuV)				Factor	Result @3m (dBuV/m)		Limit @3m (dBuV/m)	
	H		V		(dB)				
(MHz)	Peak	Ave	Peak	Ave	Corr.	Peak	Ave	Peak	Ave.
5460.000	28.66	15.46	29.31	15.90	30.3	59.61	46.20	74	54

Note :

1. Remark "---" means that the emissions level is too low to be measured.
2. The result is the highest value of radiated emission from restrict band of 4500 ~ 5150 MHz and 5350 ~ 5460 MHz.

11.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor, High Pass Filter Loss(if used) and Cable Loss, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

where

Corrected Factor = Antenna Factor + Cable Loss + High Pass Filter Loss - Amplifier Gain

12 Transmit Power Control (TPC)

12.1 Standard Applicable

According to 15.407 (h) (1), Transmit power control (TPC). U-NII devices operating in the 5.25-5.35 GHz band and the 5.47-5.725 GHz band shall employ a TPC mechanism. The U-NII device is required to have the capability to operate at least 6 dB below the mean EIRP value of 30 dBm. A TPC mechanism is not required for systems with an e.i.r.p. of less than 500 mW.

12.2 Measurement Procedure

1. The test is performed in accordance with FCC Public Notice: APPENDIX A Guidelines for Assessing Unlicensed National Information Infrastructure (U-NII) Devices – Part 15, Subpart E,

   August 2002.

2. Position the EUT as shown in figure 2

12.3 Measurement Equipment

Equipment	Manufacturer	Model No.	Next Cal. Due
Spectrum Analyzer	Agilent	E4446A	09/26/2011

12.4 Applicability

Highest Power Level in DFS Band (EIRP)		12.81 dBm + 3.5 dBi = 16.31 dBi =42.76mW
☒	EIRP < 500 mW	Not Applicable
☐	EIRP ≧500 mW	Applicable

13 Dynamic Frequency Selection (DFS)

13.1 Requirement

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
Uniform Spreading	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode		
	Master	Client Without Radar Detection	Client With Radar Detection
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required	Yes

13.2 Limits

Table 3: DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

Maximum Transmit Power	Value (See Notes 1 and 2)
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.	

Table 4: DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.
U-NII Detection Bandwidth	Minimum 80% of the U-NII 99% transmission power bandwidth. See Note 3.

Note 1: The instant that the *Channel Move Time* and the *Channel Closing Transmission Time* begins is as follows:

- For the Short Pulse Radar Test Signals this instant is the end of the *Burst*.
- For the Frequency Hopping radar Test Signal, this instant is the end of the last radar *Burst* generated.
- For the Long Pulse Radar Test Signal this instant is the end of the 12 second period defining the *Radar Waveform*.

Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the *U-NII Detection Bandwidth* detection test, radar type 1 is used and for each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
1	1	1428	18	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Table 6 – Long Pulse Radar Test Waveform

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per *Burst*	Number of *Bursts*	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 7 – Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

13.3 Description of EUT

13.3.1 EUT

DFS Band	☒ 5250MHz~5350 MHz ☒ 5470MHz~5725 MHz
Operation Mode	☐ Master
	☒ Client without In-Service Monitoring
	☐ Client with In-Service Monitoring
Channel Loading Method	☒IP Based System
	☐Frame Based System
	☐Other System _____

13.3.2 Master Device

Device	Cisco Access Point, AIR-AP1252AG-A-K9	
DFS software Revision	12.4 (10b) JDA3(fc1)	
Minimum Antenna Gain	3.5dBi	
Highest Power Level in DFS band (Pm)	26dBm	
☒ Pm≧23dBm	Conducted Threshold = -64dBm + 3.5dBi + 1dB = -59.5 dBm	
☐ Pm<23dBm	Conducted Threshold = n/a	
Calibarated conducted DFS Detection Threshold		-60 dBm

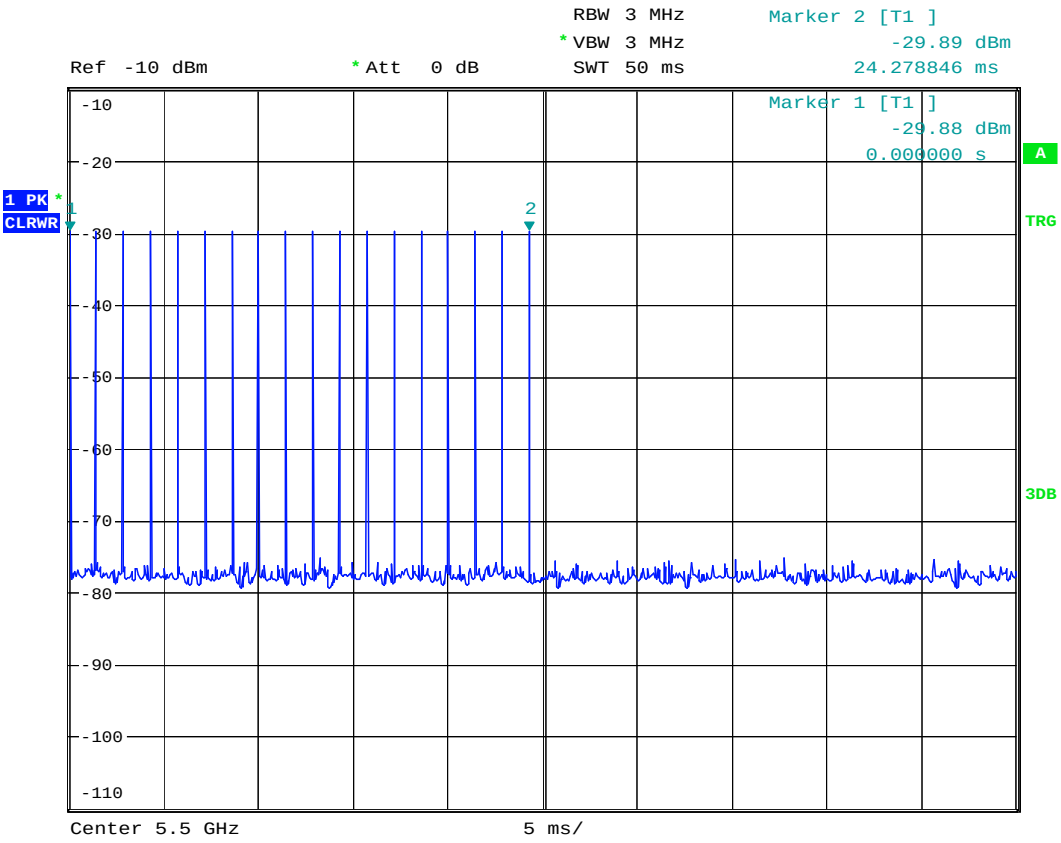
Note: The tested level is lower than the required level hence it provides margin to the limit.

13.4 DFS Test System

13.4.1 System Description

13.4.1.1 Radar Test Signals

Type 1

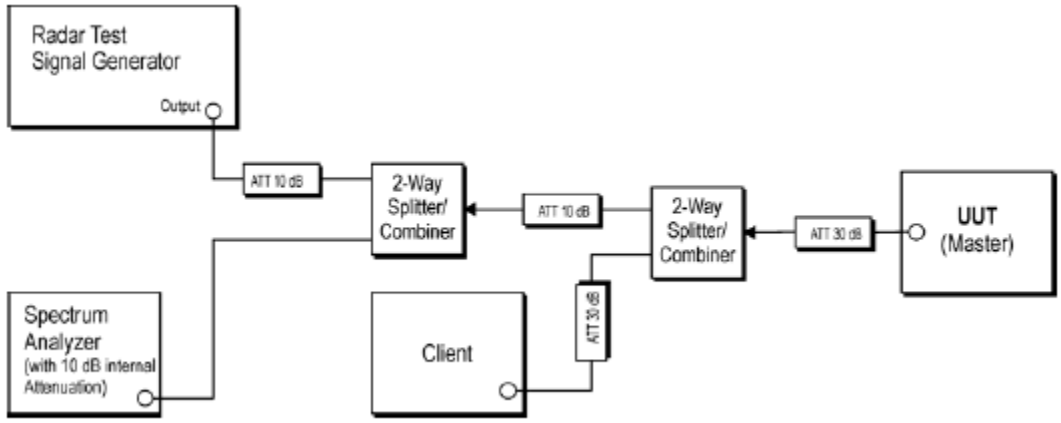


13.4.1.2 Traffic Signal

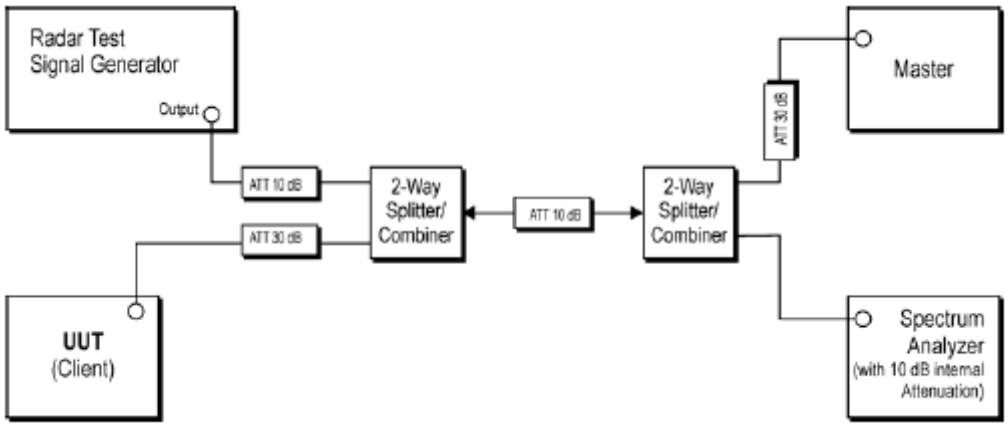
Transmission Direction is from the Master device to the Client device. The client device is seted to play the MPEG file ($6\frac{1}{2}$ Magic Hours) from the Master device, the MPEG test file and instructions are located at website: http://ntiacsd.ntia.doc.gov/dfs/.

13.4.2 Setup Configuration

13.4.2.1 Setup for Master with injection at the Master

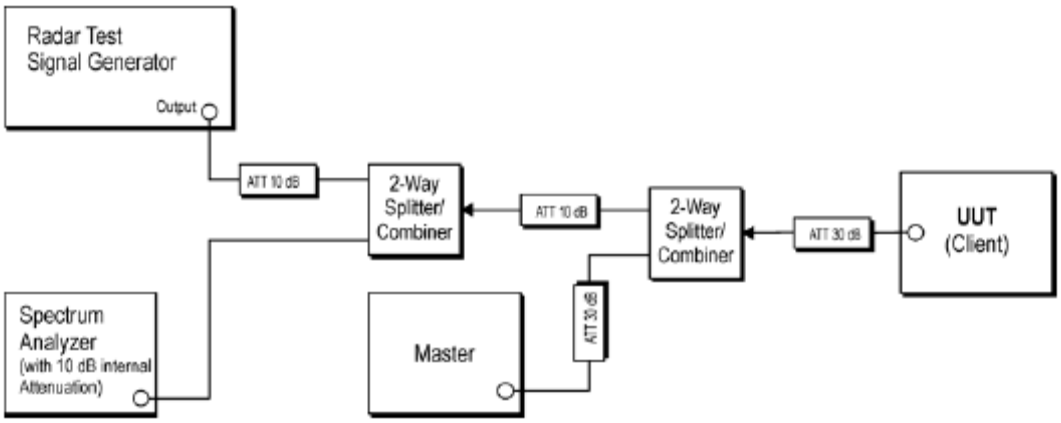


13.4.2.2 Setup for Client with injection at the Master



Client without In-Service Monitoring

13.4.2.3 Setup for Client with injection at the Client



Client with In-Service Monitoring

13.4.3 System Description

Equipment	Manufacturer	Model No.	Calibrated until
Spectrum Analyzer	R&S	FSU46	11/17/2011
Vector Signal Generator	R&S	SMU200A	12/12/2011

13.4.4 Devices for Tested System

Device	Manufacturer	Model No.	Cable Description
Notebook	Dell	Inspiron 1420	Unshielded Power Line 3.3m*1 / Adaptor Unshielded Signal Cable 1.0m*1/RJ45
Notebook	HP	nx6320	Unshielded Power Line 3.3m*1 / Adaptor Unshielded Signal Cable 1.0m*1/RJ45
Personal Computer	Lemel	PD-820	Unshielded Power Line 1.8m*1 Unshielded Signal Cable 1.0m*1/RJ45
Monitor	Lemel	LE510	Unshielded Power Line 1.8m*1 Unshielded Signal Cable 1.0m*1/VGA
WLAN card	Cisco	CB21AG	----
Access Point	Cisco	AIR-AP1252AG-A-K9	Unshielded Power Line 1.8m*1 / Adaptor Unshielded Signal Cable 1.0m*1/RJ45

13.5 Test Result

13.5.1 Test Summary

Clause	Test Parameter	Remarks	Pass / Fail
15.407	DFS Detection Threshold	Not Applicable	N/A
15.407	Channel Availability Check Time	Not Applicable	N/A
15.407	Channel Move Time	Applicable	Pass
15.407	Channel Closing Transmission Time	Applicable	Pass
15.407	Non-Occupancy Period(Associated Test)	Applicable	Pass
15.407	Uniform Spreading	Not Applicable	N/A
15.407	U-NII Detection Bandwidth	Not Applicable	N/A

13.5.2 Channel Move Time

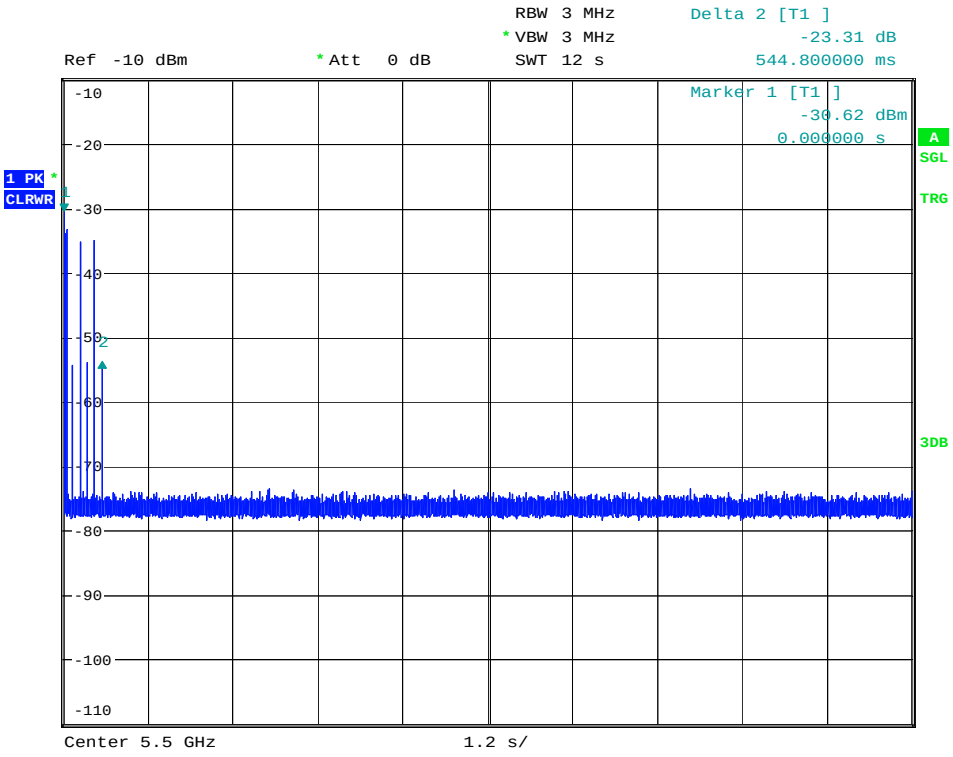
LIMIT:

The Channel Move Time shall not exceed the limit defined in table 4.

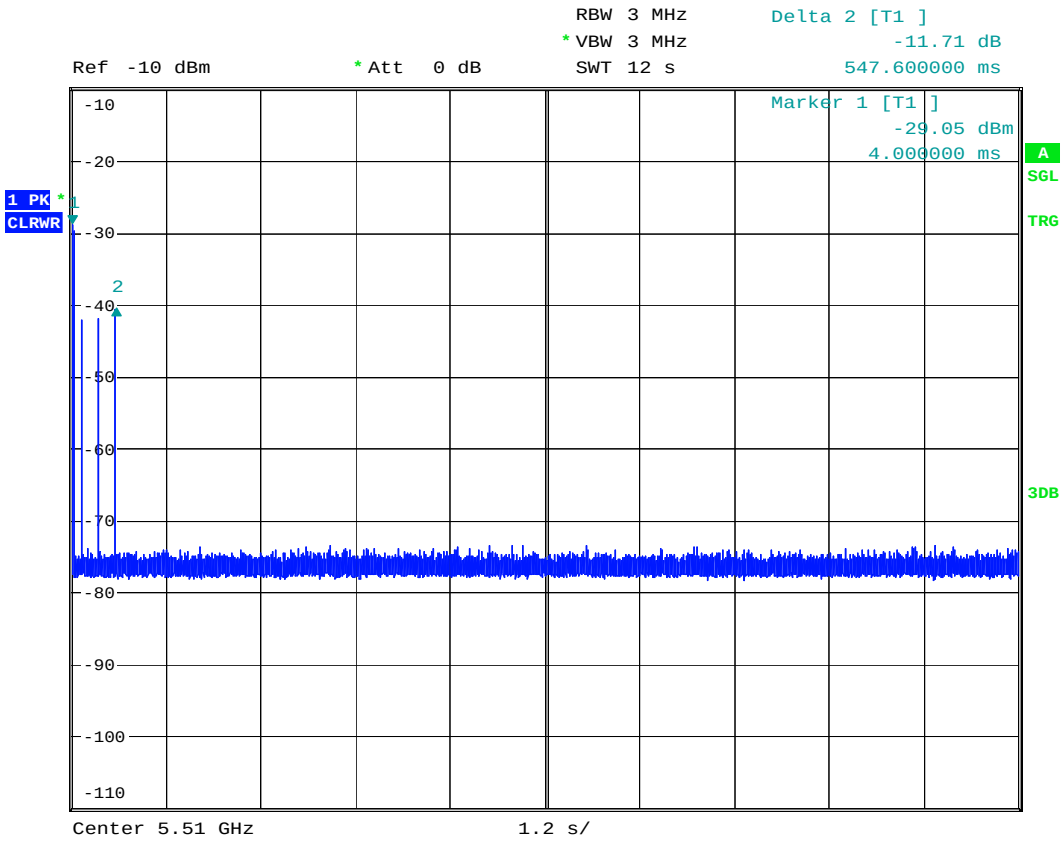
The Channel Closing Transmission Time shall not exceed the limit defined in table 4.

Result:

Modulation	Operation Frequency (MHz)	Channel Move Time (CMT) (s)	Limit (s)
IEEE 802.11a	5500	0.545	10



Modulation	Operation Frequency (MHz)	Channel Move Time (CMT) (s)	Limit (s)
IEEE 802.11an HT40	5500	0.548	10



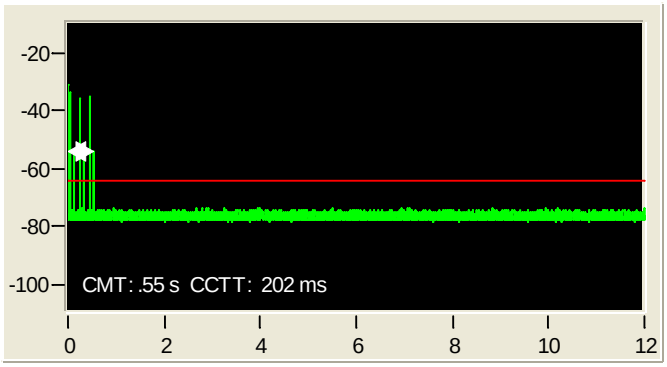
13.5.3 Channel Closing Transmission Time

LIMIT:

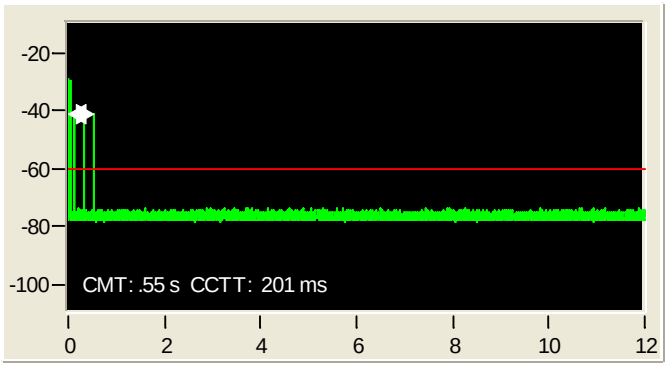
The Channel Closing Transmission Time shall not exceed the limit defined in table 4.

Result:

Modulation	Operation Frequency (MHz)	Channel Closing Transmission Time (CCTT) (ms)	Limit (ms)
IEEE 802.11a	5500	202	260



Modulation	Operation Frequency (MHz)	Channel Closing Transmission Time (CCTT) (ms)	Limit (ms)
IEEE 802.11an HT40	5500	201	260



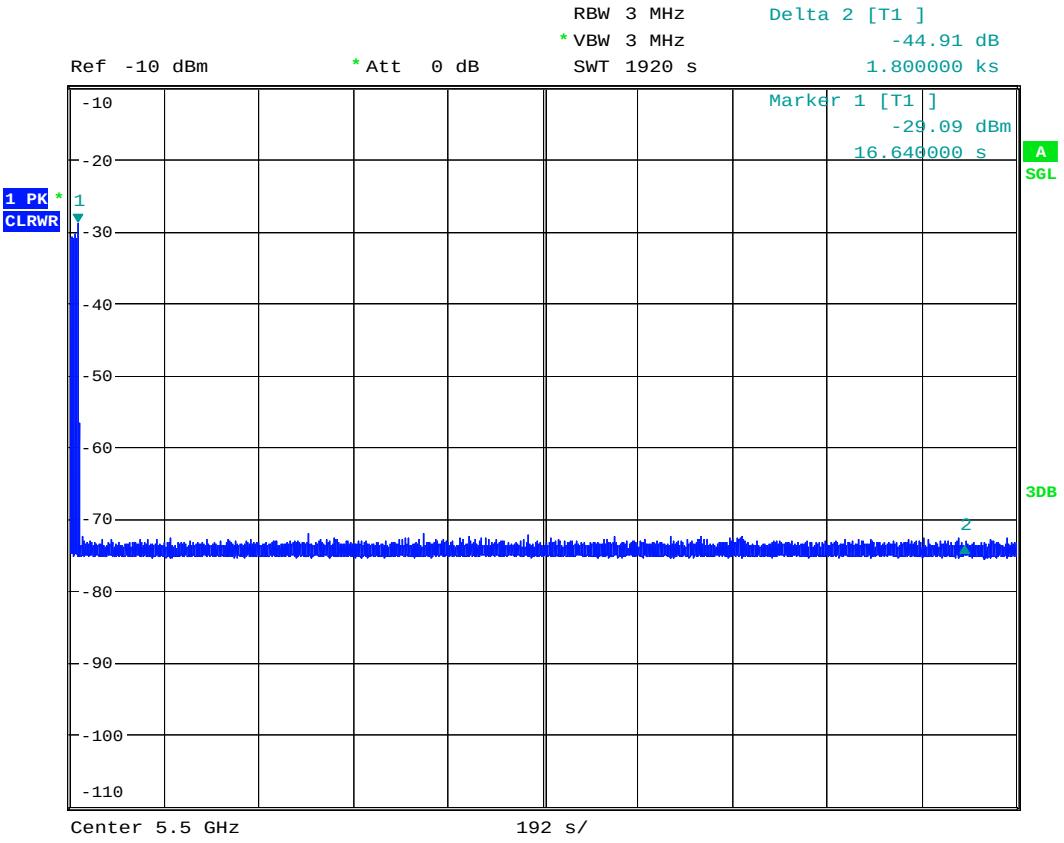
13.5.4 Non-occupancy Period (Associated Test)

LIMIT:

The Non-Occupancy Period shall not be less than the value defined in table 4.

Result: No EUT Transmissions is observed on the previously active channel during 30 minutes observation time.

IEEE 802.11a:



IEEE 802.11an HT40: