

FCC RF Test Report

**Product Name: HSPA /UMTS/GPRS/GSM/EDGE
Mobile Phone**

Product Model: HUAWEI U8686, U8686

Report Number: SYBH(Z-RF)006122012-2003

FCC ID: QISU8686

Reliability Laboratory of Huawei Technologies Co., Ltd.

Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District,
Shenzhen, 518129, P.R.C

Tel: +86 755 28780808

Fax: +86 755 89652518

Notice

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2. The laboratory has Passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01.
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5. The laboratory has been listed by the VCCI to perform EMC measurements. The accreditation numbers of test site No.1 are R-2364, G-415, C-2583, and T-256, and the accreditation numbers of test site No.2 are R-3760, G-485, C-4210 and T-1237.
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7. The test report is invalid if there is any evidence of erasure and/or falsification.
8. The test report is only valid for the test samples.
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Applicant: Huawei Technologies Co., Ltd.
Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District, Shenzhen, 518129, P.R.C

Date of Receipt Sample: 2012-12-06
Start Date of Test: 2012-12-07
End Date of Test: 2012-12-14

Test Result: Pass

Approved by Senior Engineer: 2013-1-17
Date

Dai Linjun
Name


Signature

Prepared by: 2013-1-17
Date

Feng Nianwei
Name


Signature



Modification Record

No.	Last Report No.	Modification Description
		First report



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1 General Information

1.1 Applied Standard

Applied Rules: 47 CFR FCC Part 2, Subpart J (2011-10-1 Edition)
47 CFR FCC Part 15, Subpart C (2011-10-1 Edition)

Test Method: FCC KDB 558074 D01 DTS Meas Guidance v02

1.2 Test Location

Test Location 1: Reliability Laboratory of Huawei Technologies Co., Ltd.
Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District, Shenzhen, 518129, P.R.C

1.3 Test Environment Condition

Ambient Temperature: 19.5to 25 °C
Ambient Relative Humidity: 40 to 55 %
Atmospheric Pressure: Not applicable

2 Test Summary

Test Item	FCC Part No.	IC Standard No.	Requirements	Test Result	Verdict (NOTE 2)
DTS (6 dB) Bandwidth	15.247(a)(2)	RSS-210, A8.2(a)	≥ 500 kHz.	Appendix A	Pass
Maximum Peak Conducted Output Power	15.247(b)(3)	RSS-210, A8.4(4)	For directional gain: < 30 dBm – (G[dBi] – 6 [dB]), peak; Otherwise: < 30 dBm, peak.	Appendix B	Pass
Maximum Power Spectral Density Level	15.247(e)	RSS-210, A8.2(b)	For directional gain: < 8 dBm/3 kHz – (G[dBi] – 6 [dB]), peak. Otherwise: < 8 dBm/3 kHz, peak.	Appendix C	Pass
Band Edges Compliance	15.247(d)	RSS-210, A8.5	< -20 dBm/100 kHz if total peak power $\leq$ power limit.	Appendix D	Pass
Unwanted Emissions into Non-Restricted Frequency Bands				Appendix E	
Radiated Spurious Emission & Spurious in Restricted Band	15.247(d)	RSS-210, A8.5	< -20 dBm/100 kHz if total peak power $\leq$ power limit.	Appendix F	Pass
	15.247(d) 15.209 (NOTE 1)	RSS-210, A8.5 RSS-210, 2.2 RSS-Gen, 7.2.2 RSS-Gen, 7.2.5 (NOTE 1)	FCC Part 15.209 field strength limit; RSS-Gen 7.2.5 field strength limit.		
Conducted Emission at Power Port	15.207	RSS-Gen, 7.2.4	FCC Part 15.207 conducted limit; RSS-Gen, 7.2.4 conducted limit.	Appendix G	Pass
NOTE 1: According to KDB 558074, antenna-port conducted measurements are acceptable as an alternative to radiated measurements for demonstrating compliance to the limits in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case emissions will also be required. NOTE 2: For the verdict, the “N/A” denotes “not applicable”, the “N/T” denotes “not tested”.					

3 Description of the Equipment under Test (EUT)

3.1 General Description

HUAWEI U8686, U8686 is subscriber equipment in the WCDMA/GSM system. The HSPA/UMTS frequency band is Band II and Band IV and Band V. The GSM/GPRS/EDGE frequency band includes GSM850 and GSM900 and DCS1800 and PCS1900. The Mobile Phone implements such functions as RF signal receiving/transmitting, HSPA/UMTS and GSM/GPRS/EDGE protocol processing, voice, video MMS service, GPS, AGPS and WIFI etc. Externally it provides micro SD card interface, earphone port (to provide voice service) and USIM card interface. It also provides Bluetooth module to synchronize data between a PC and the phone, or to use the built-in modem of the phone to access the Internet with a PC, or to exchange data with other Bluetooth devices.

3.2 EUT Identity

NOTE: Unless otherwise noted in the report, the functional boards installed in the units shall be selected from the below list, but not means all the functional boards listed below shall be installed in one unit.

3.2.1 Board

Hardware V	Board	
	Serial	Description
HD1H867GM	C9F01A92B1000431	Broadband Control Card

3.2.2 Adapter

AC/DCAdapter Model	HW-050055U1W
Manufacturer	Huawei Technologies Co., Ltd.
Input Voltage	~100-240V 50/60Hz 0.2A
Output Voltage	5V  550mA
Rated Power	2.75W

3.2.3 Battery

Name	Qty.	Manufacture	Description
Rechargeable Li-ion	1	Huawei Technologies Co., Ltd.	Battery Model: HB4W1H Rated capacity: 1750mAh Nominal Voltage:  +3.7V Charging Voltage:  +4.2V

3.3 Technical Description

Characteristics	Description			
IEEE 802.11 WLAN Mode Supported	☒ 802.11b (20 MHz channel bandwidth), ☒ 802.11g (20 MHz channel bandwidth) ☒ 802.11n (20 MHz channel bandwidth)			
TX/RX Operating Range	2412-2462 MHz band	fc = 2407 MHz + N * 5 MHz, where: - fc = “Operating Frequency” in MHz, - N = “Channel Number” with the range from 1 to 11 for the 20 MHz channel bandwidth		
Data Rate	802.11b	1 Mbps, 2 Mbps, 5.5 Mbps, 11 Mbps		
	802.11g	6 Mbps, 9 Mbps, 12 Mbps, 18 Mbps, 24 Mbps, 36 Mbps, 48 Mbps, 54 Mbps		
	802.11n (SISO)	MCS 0 to MCS 7		
Modulation Type	DBPSK/DQPSK/CCK (DSSS), BPSK/QPSK/16QAM/64QAM (OFDM).			
Emission Designator	8M8G1D (for 802.11b mode), 16M4G7D (for 802.11g mod), 15M7G7D (for 802.11n mode)			
TX Power Control	☒ Supported, ☐ Not Supported			
Standby Mode	☐ Supported, ☒ Not Supported			
Equipment Type	☐ Stand-alone equipment, ☐ Plug-in radio device, ☒ Combined equipment			
Antenna	Description	Isotropic Antenna		
	Type	☐ External, ☒ Integrated		
	Ports	☒ Ant 1, ☐ Ant 2, ☐ Ant 3		
	Smart System	☒ SISO (for 802.11b/g/n), ☐ MIMO (for 802.11n): 2 Tx & 2 Rx, ☐ Diversity (for 802.11b/g) : Tx & Rx		
	Gain	0.5 dBi (per antenna port, max.)		
	Remark	When the EUT is put into service, the practical maximum antenna gain should NOT exceed the value as described above.		
Power Supply	Type	☒ AC/DC Adapter	☐ PoE:	☐ Other:



3.4 Test Modes

NOTE: Typical working modes for each IEEE 802.11 mode are selected to perform tests.

Test Mode	Test Modes Description
11B	IEEE 802.11b with data rate of 11 Mbps using SISO mode.
11G	IEEE 802.11g with data rate of 54 Mbps using SISO mode.
11N20	IEEE 802.11n with data date of MCS7 and bandwidth of 20 MHz using SISO mode.

3.5 EUT Configurations

3.5.1 General Configurations

Configuration	Description
Test Antenna Ports	Until otherwise specified, - All TX tests are performed at all TX antenna ports of the EUT, and - All RX tests are performed at all RX antenna ports of the EUT.
Multiple RF Sources	Other than the tested RF source of the EUT, other RF source(s) are disabled or shutdown during measurements.

3.5.2 Customized Configurations

Test Mode	RF Ch.	Antenna Port	TX Freq. [MHz]	RX Freq. [MHz]	Ch. BW [MHz]	Power Conf., per Port	Duty Cycle
11B	B	Ant 1	Ch No. 1 / 2412 MHz	---	20	19	0.93
11B	M	Ant 1	Ch No. 6 / 2437 MHz	---	20	19	0.93
11B	T	Ant 1	Ch No. 11 / 2462 MHz	---	20	19	0.93
11G	B	Ant 1	Ch No. 1 / 2412 MHz	---	20	17	0.70
11G	M	Ant 1	Ch No. 6 / 2437 MHz	---	20	17	0.70
11G	T	Ant 1	Ch No. 11 / 2462 MHz	---	20	17	0.70
11N20	B	Ant 1	Ch No. 1 / 2412 MHz	---	20	15	0.68
11N20	M	Ant 1	Ch No. 6 / 2437 MHz	---	20	15	0.68
11N20	T	Ant 1	Ch No. 11 / 2462 MHz	---	20	15	0.68



3.6 Test Environments

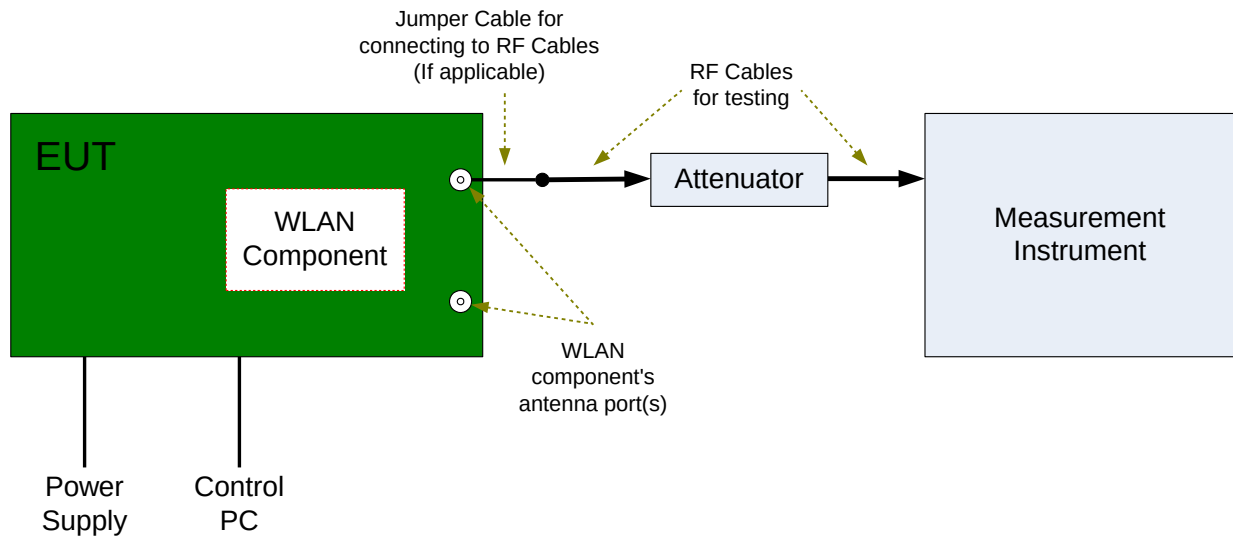
NOTE: The values used in the test report may be stringent than the declared.

Environment Parameter	Selected Values During Tests		
	Temperature	Voltage	Relative Humidity
NTNV	Ambient	3.7 VDC	Ambient

3.7 Test Setups

3.7.1 Test Setup 1

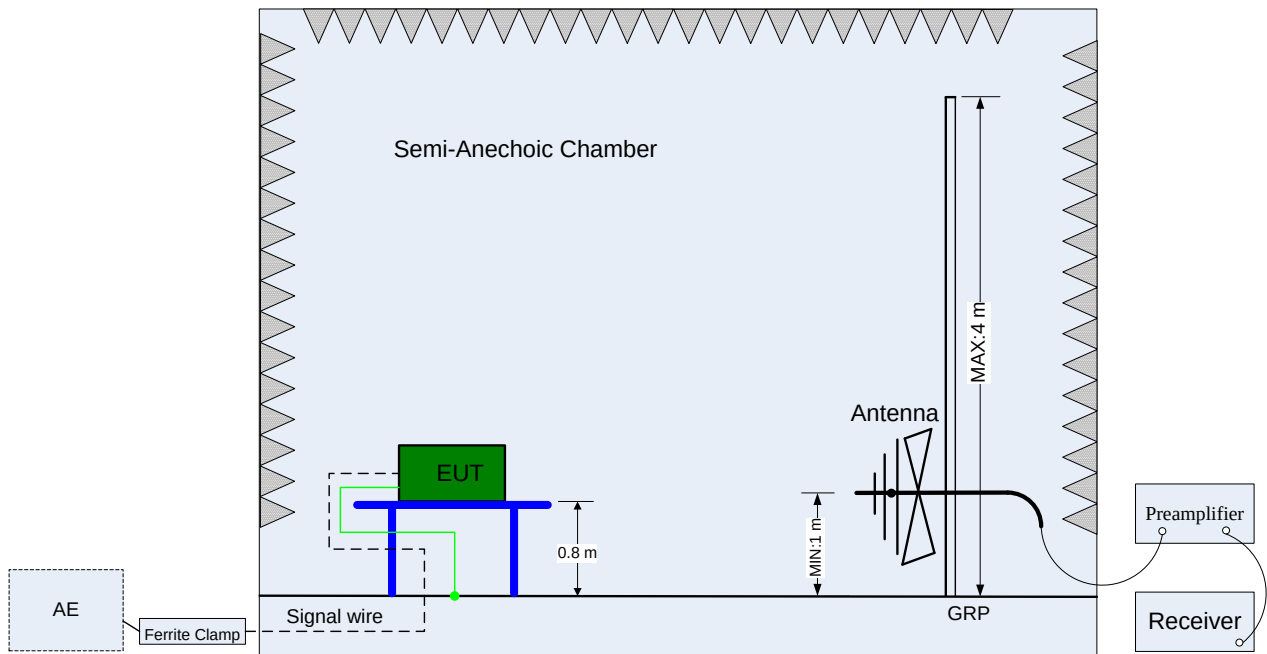
The WLAN component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by PC/software to emit the specified signals for the purpose of measurements.



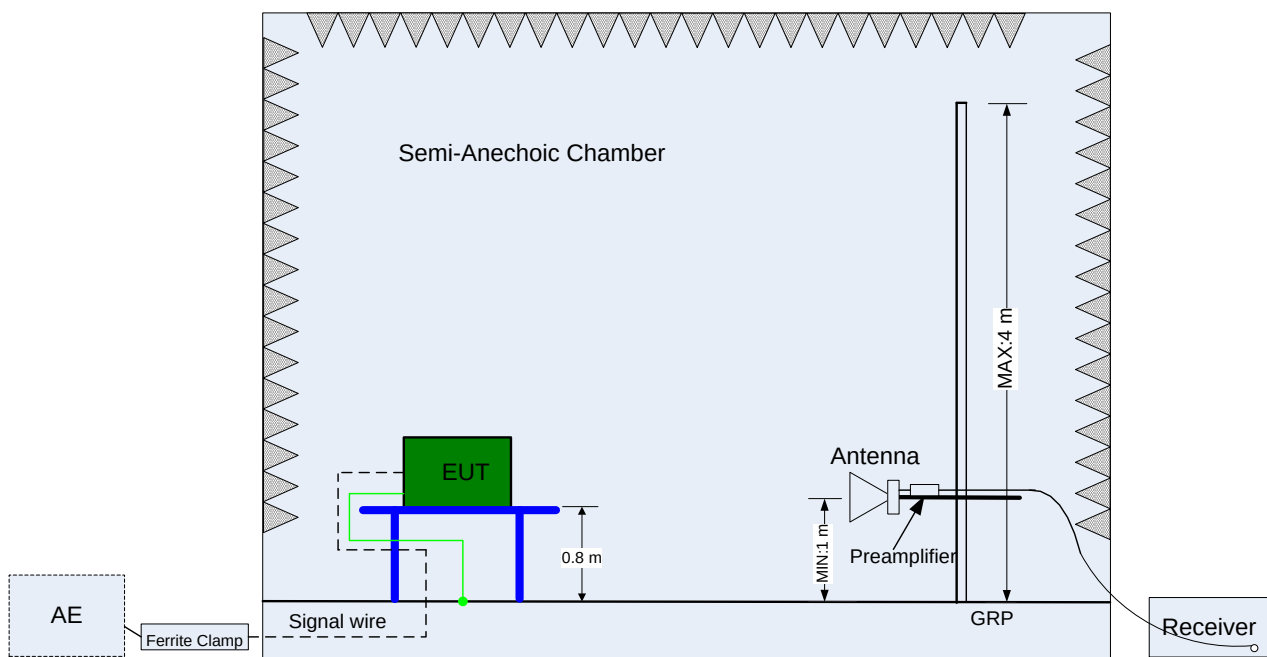
3.7.2 Test Setup 2

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.4. The test distance is 3m. The setup is according to ANSI C63.4 and CAN/CSA-CEI/IEC CISPR 22.

The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).



(Below 1 GHz)

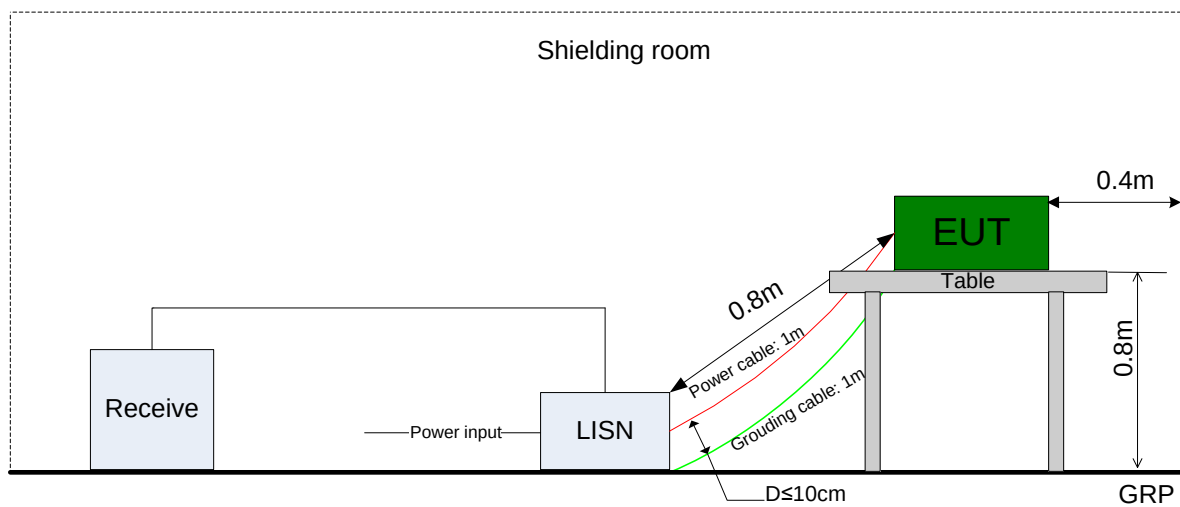


(Above 1 GHz)

3.7.3 Test Setup 3

The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.



3.8 Test Conditions

Test Case	Test Conditions	
	Configuration	Description
DTS (6 dB) Bandwidth	Measurement Method	FCC KDB 558074 §7.1.1 Option 1.
	Test Environment	NTNV
	Test Setup	Test Setup 1
	EUT Configuration	11B_B, 11B_M, 11B_T 11G_B, 11G_M, 11G_T 11N20_B, 11 N20_M, 11 N20_T
Occupied Bandwidth (Only for IC requirement)	Measurement Method	RSS-Gen, 4.6.1.
	Test Environment	NTNV
	Test Setup	Test Setup 1
	EUT Configuration	-----
Maximum Peak Conducted Output Power	Measurement Method	FCC KDB 558074 §7.2.1.2 Option 2 (integrated band power method).
	Test Environment	NTNV
	Test Setup	Test Setup 1
	EUT Configuration	11B_B, 11B_M, 11B_T 11G_B, 11G_M, 11G_T 11N20_B, 11 N20_M, 11 N20_T
Maximum Power Spectral Density Level	Measurement Method	FCC KDB 558074 §7.3.1 Option 1 (peak PSD).
	Test Environment	NTNV
	Test Setup	Test Setup 1
	EUT Configuration	11B_B, 11B_M, 11B_T 11G_B, 11G_M, 11G_T 11N20_B, 11 N20_M, 11 N20_T
Unwanted Emissions into Non-Restricted Frequency Bands	Measurement Method	FCC KDB 558074 §7.4.1, use Peak PSD.
	Test Environment	NTNV
	Test Setup	Test Setup 1
	EUT Configuration	11B_B, 11B_M, 11B_T 11G_B, 11G_M, 11G_T 11N20_B, 11 N20_M, 11 N20_T
Unwanted Emissions into Restricted Frequency Bands (Conducted)	Measurement Method	FCC KDB 558074 §7.4.2, Conducted (antenna-port).
	Test Environment	NTNV
	Test Setup	Test Setup 1
	EUT Configuration	11B_B, 11B_M, 11B_T 11G_B, 11G_M, 11G_T 11N20_B, 11 N20_M, 11 N20_T
Unwanted Emissions into Restricted Frequency Bands	Measurement Method	FCC KDB 558074 §7.4.2, Radiated (cabinet/case emissions with impedance matching for antenna-port).
	Test Environment	NTNV
	Test Setup	Test Setup 2



Test Case	Test Conditions	
	Configuration	Description
(Radiated)	EUT Placement	☒ Flatwise, ☐ Upright, ☐ Hung
	EUT Configuration	(1) 30 MHz to 1 GHz: 11B_B (Worst Conf.). (2) 1 GHz to 3 GHz: 11B_B, 11B_T 11G_B, 11G_T 11N20_B, 11 N20_T (3) 3 GHz to 18 GHz: 11B_B (Worse Conf.), 11B_T (Worse Conf.). (4) 18 GHz to 26.5 GHz: 11B_B (Worse Conf.), 11B_T (Worse Conf.).
Receiver Spurious Emissions (Only for IC requirement)	Measurement Method	Radiated.
	Test Environment	NTNV
	Test Setup	Test Setup 2
	EUT Configuration	-----
AC Power Line Conducted Emissions	Measurement Method	AC mains conducted.
	Test Environment	NTNV
	Test Setup	Test Setup 3
	EUT Configuration	11B_B (Worst Conf.).

4 Main Test Instruments

Equipment Name	Manufacturer	Model	Serial Number	Cal Date	Cal. Due
Power supply	KEITHLEY	2303	1288003	2012-11-09	2013-11-08
Spectrum Analyzer	Agilent	E4440A	MY48250119	2012-07-18	2013-07-17
Signal Analyzer	R&S	FSQ31	200021	2012-11-09	2013-11-08
Spectrum Analyzer	Agilent	N9030A	MY49431698	2012-11-09	2013-11-08
Temperature Chamber	WEISS	WKL64	24600294	2012-02-14	2013-02-13
Signal generator	Agilent	E8257D	MY49281095	2012-07-10	2013-07-09
Spectrum analyzer	R&S	FSU3	200474	2012-03-06	2013-03-05
Spectrum analyzer	R&S	FSU43	100144	2012-04-06	2013-04-05
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100304	2012-04-06	2013-04-05
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100391	2012-07-18	2013-07-17
Trilog Broadband Antenna (30M~3GHz)	SCHWARZBE CK	VULB 9163	9163-521	2012-02-28	2013-02-27
Pyramidal Horn Antenna(26GHz-40GHz)	ETS-Lindgren	3160-10	00123940	2012-02-28	2013-02-27
Pyramidal Horn Antenna(18GHz-26.5GHz)	ETS-Lindgren	3160-09	00125912	2012-02-28	2013-02-27
EMI Test receiver	R&S	ESCI	101163	2012-03-06	2013-03-05
Artificial Mains Network	R&S	ENV216	100382	2012-03-22	2013-03-21
LOOP Antennas(9kHz-30MHz)	R&S	HFH2-Z2	100263	2012-3-11	2013-3-10

END



Appendix for Test report



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Appendix A: DTS (6 dB) Bandwidth



In this document, the “DTS6dBBW” refers to the measured “DTS (6 dB) Bandwidth” value. In this Appendix, the “fc(DTS6dBBW)” refers to the centre of the measured “DTS6dBBW”. The introduction of the “fc(DTS6dBBW)” is due to that other measurements use it as the spectrum analyzer setting.

For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain, and used as respective results for each chain.

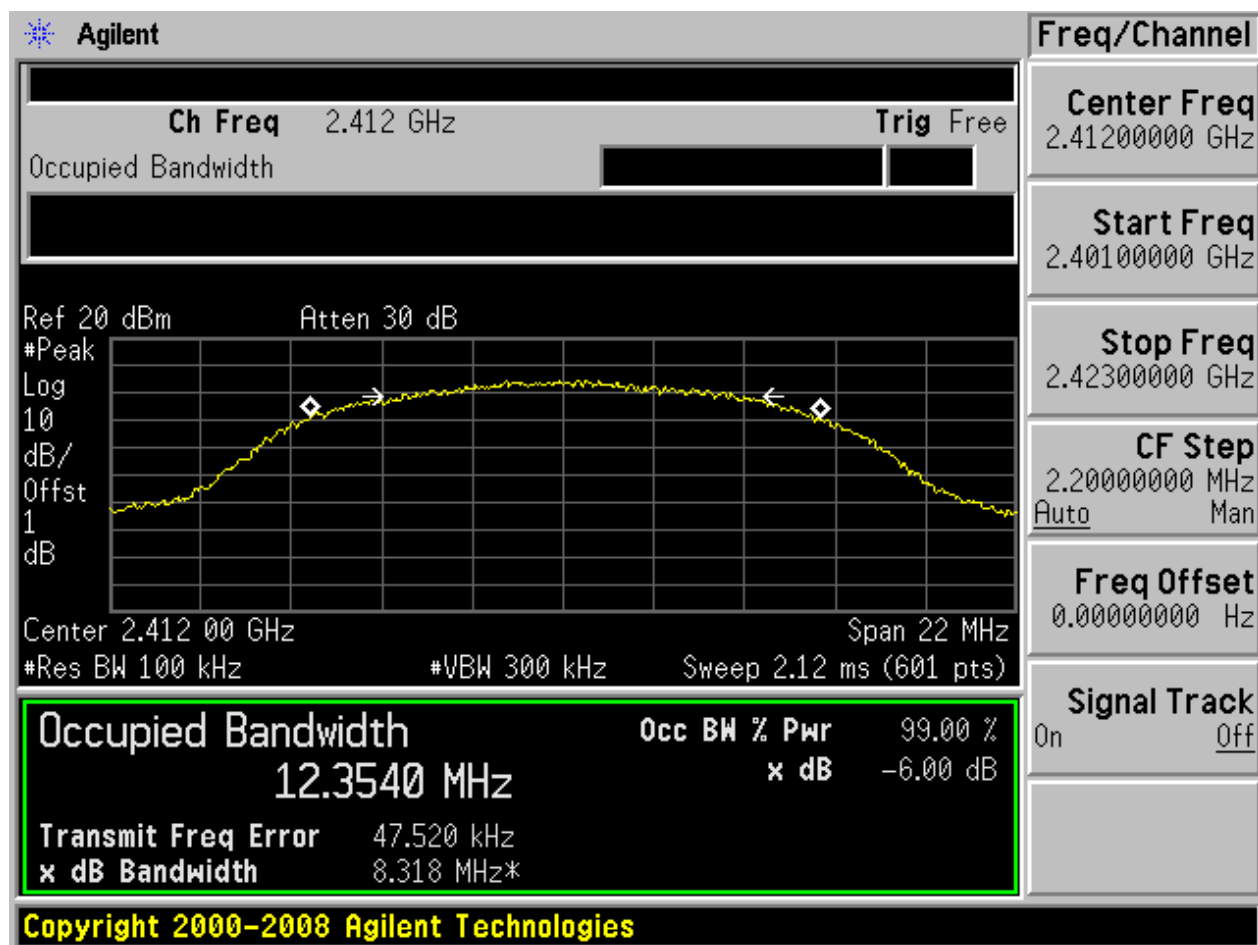
1 Result Table

EUT Conf.	Channel	Fc [MHz]	DTS6dBBW [MHz]	Verdict
11B	B	2412	8.318	pass
11B	M	2437	7.988	pass
11B	T	2462	8.043	pass
11G	B	2412	16.282	pass
11G	M	2437	15.465	pass
11G	T	2462	15.727	pass
11N20	B	2412	15.156	pass
11N20	M	2437	16.034	pass
11N20	T	2462	16.418	pass



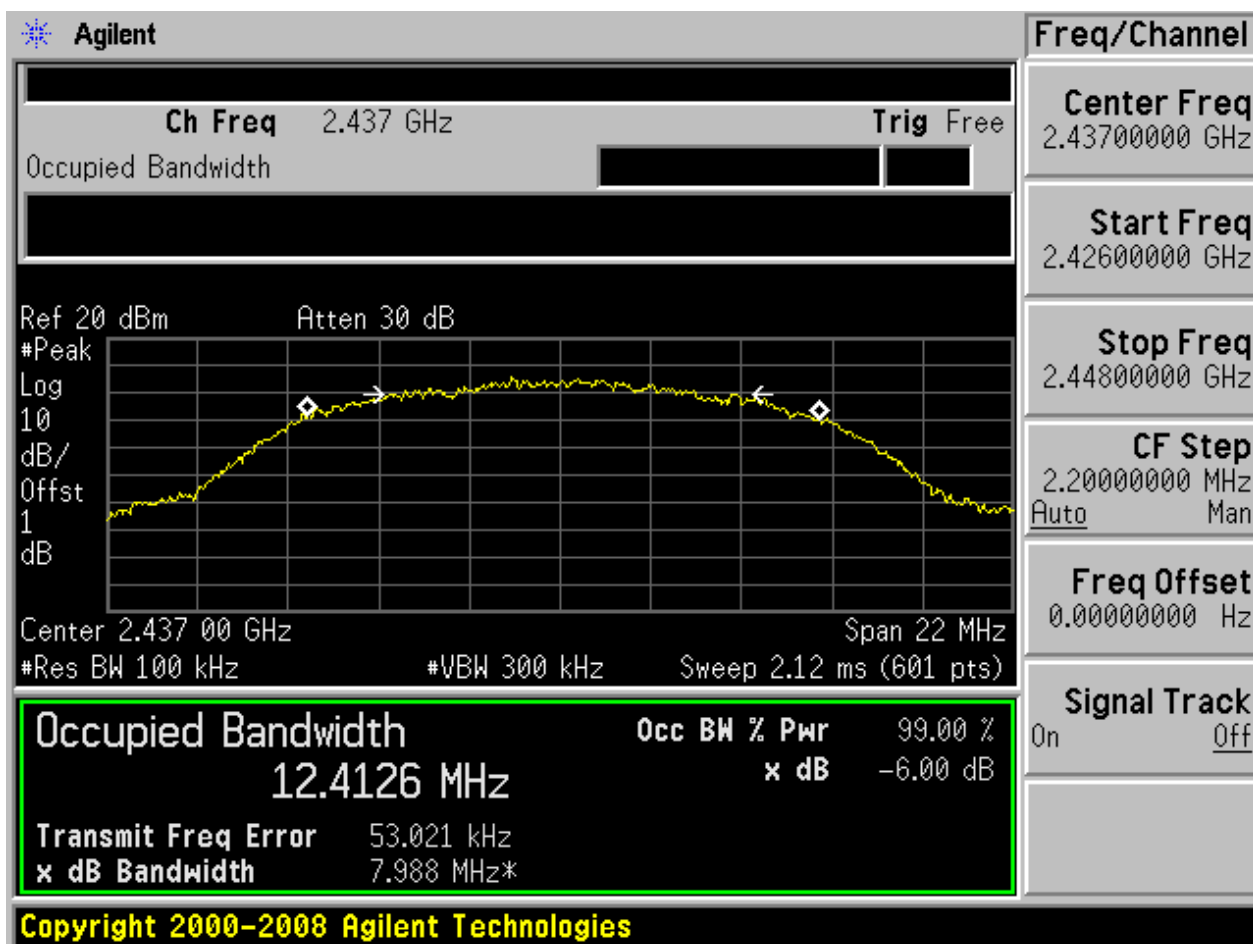
2 Test Plots

2.1 11B_L



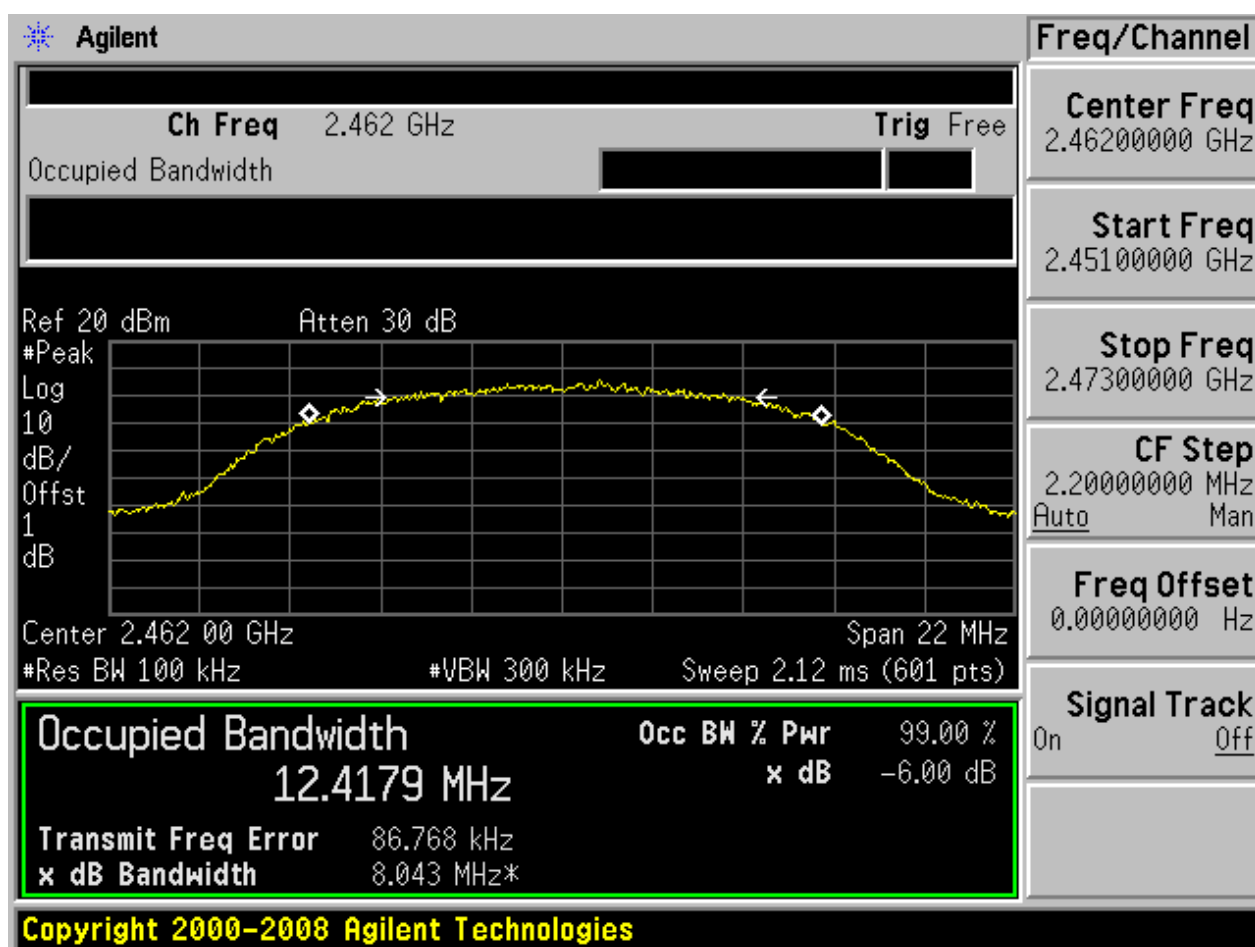


2.2 11B_M



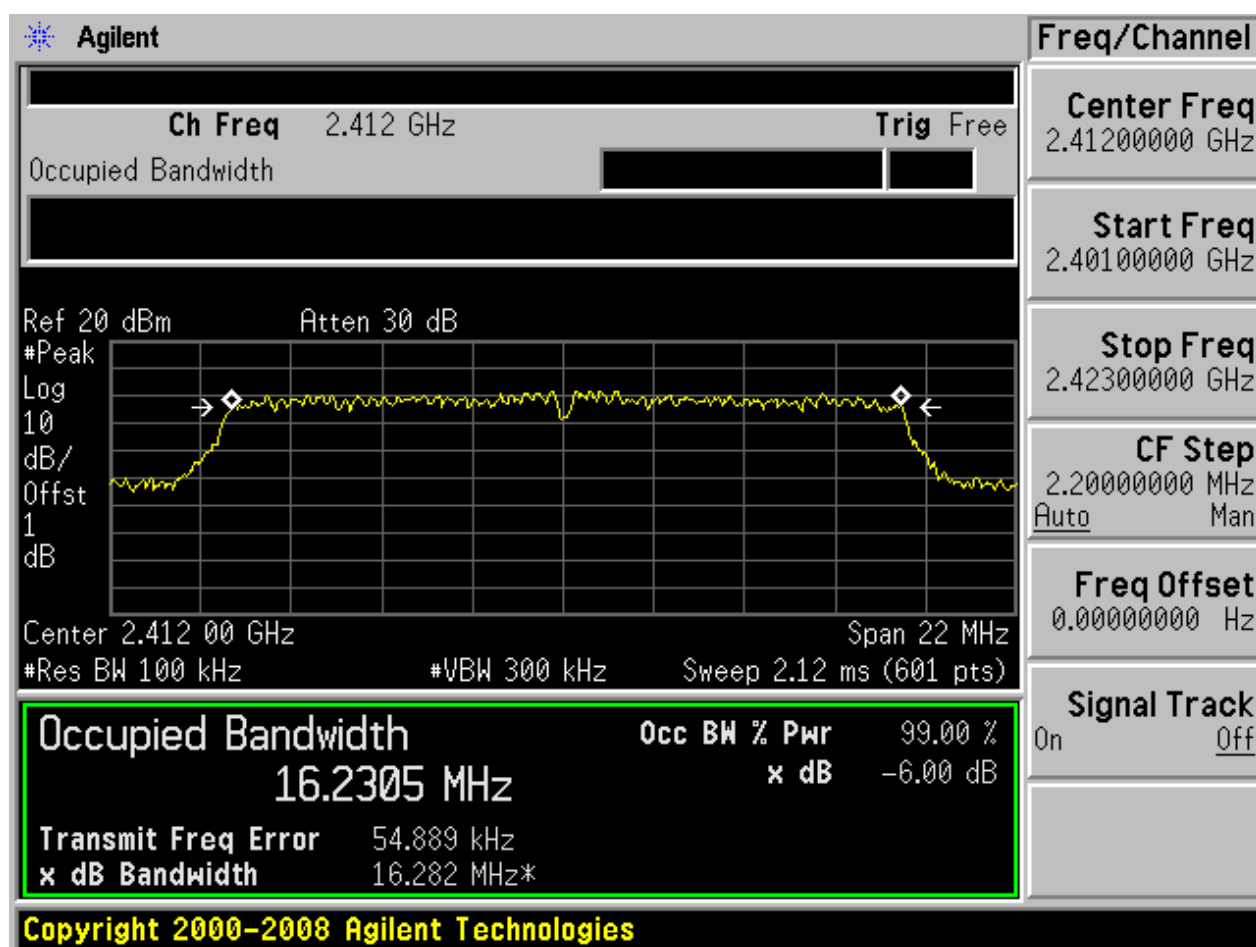


2.3 11B_H



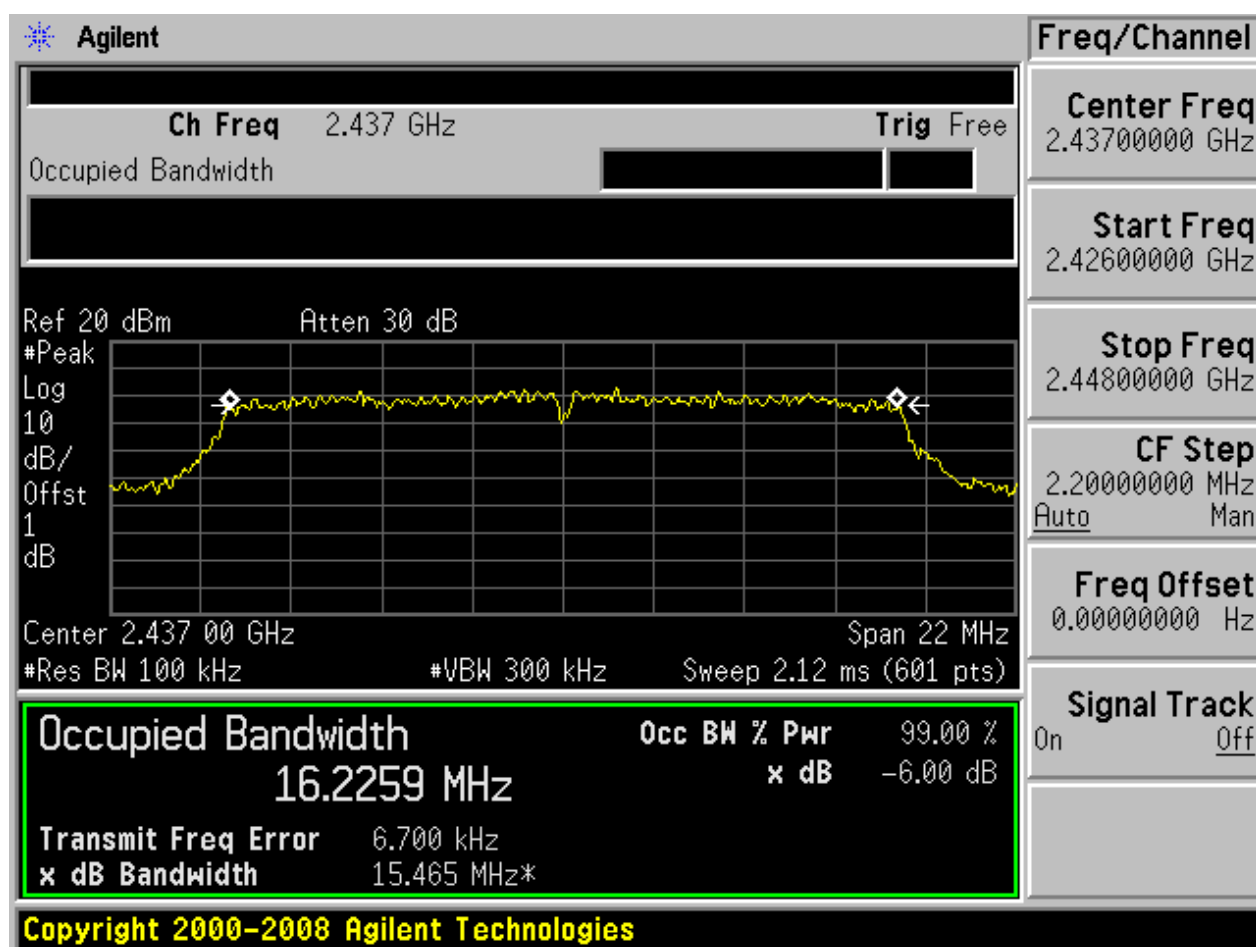


2.4 11G_L



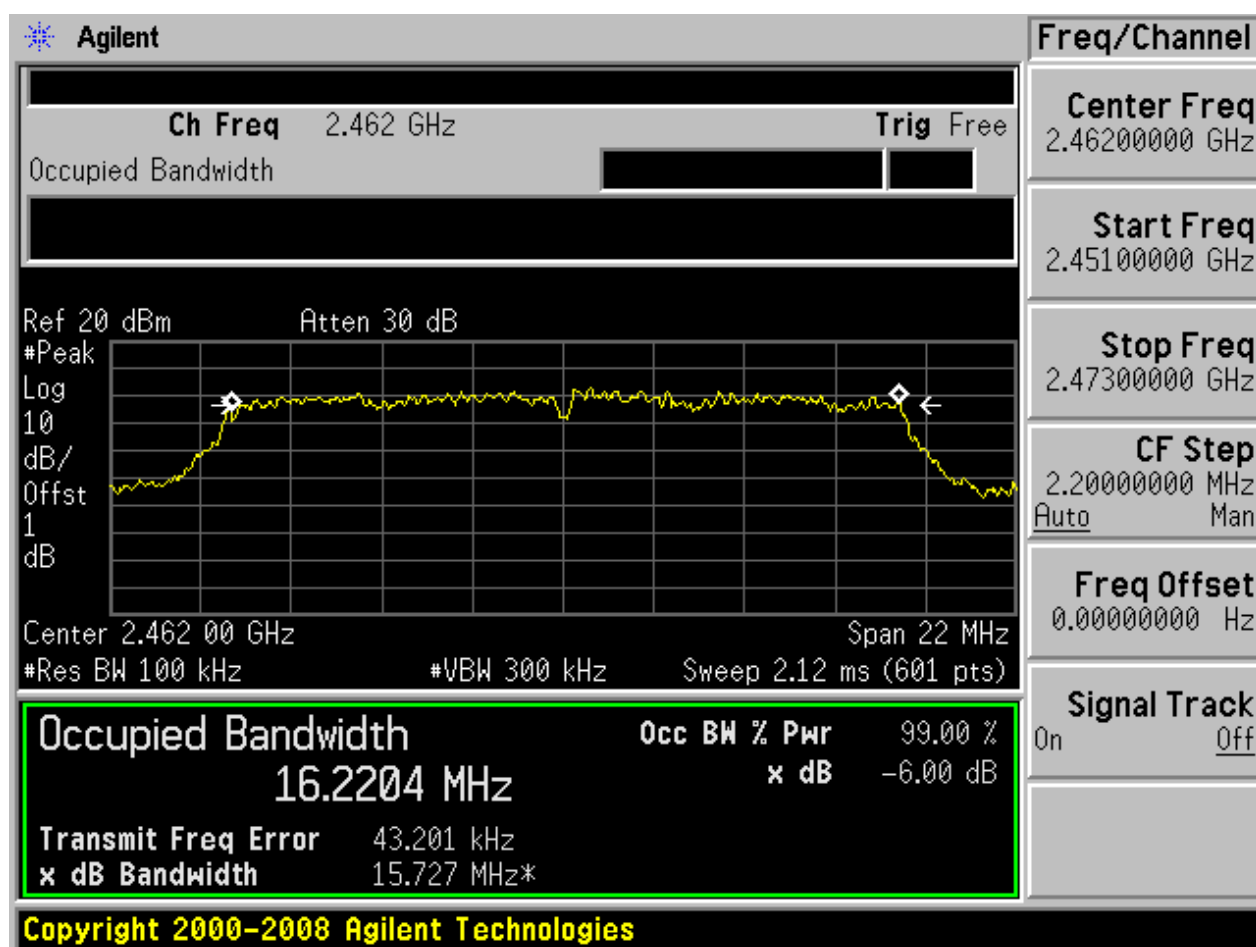


2.5 11G_M



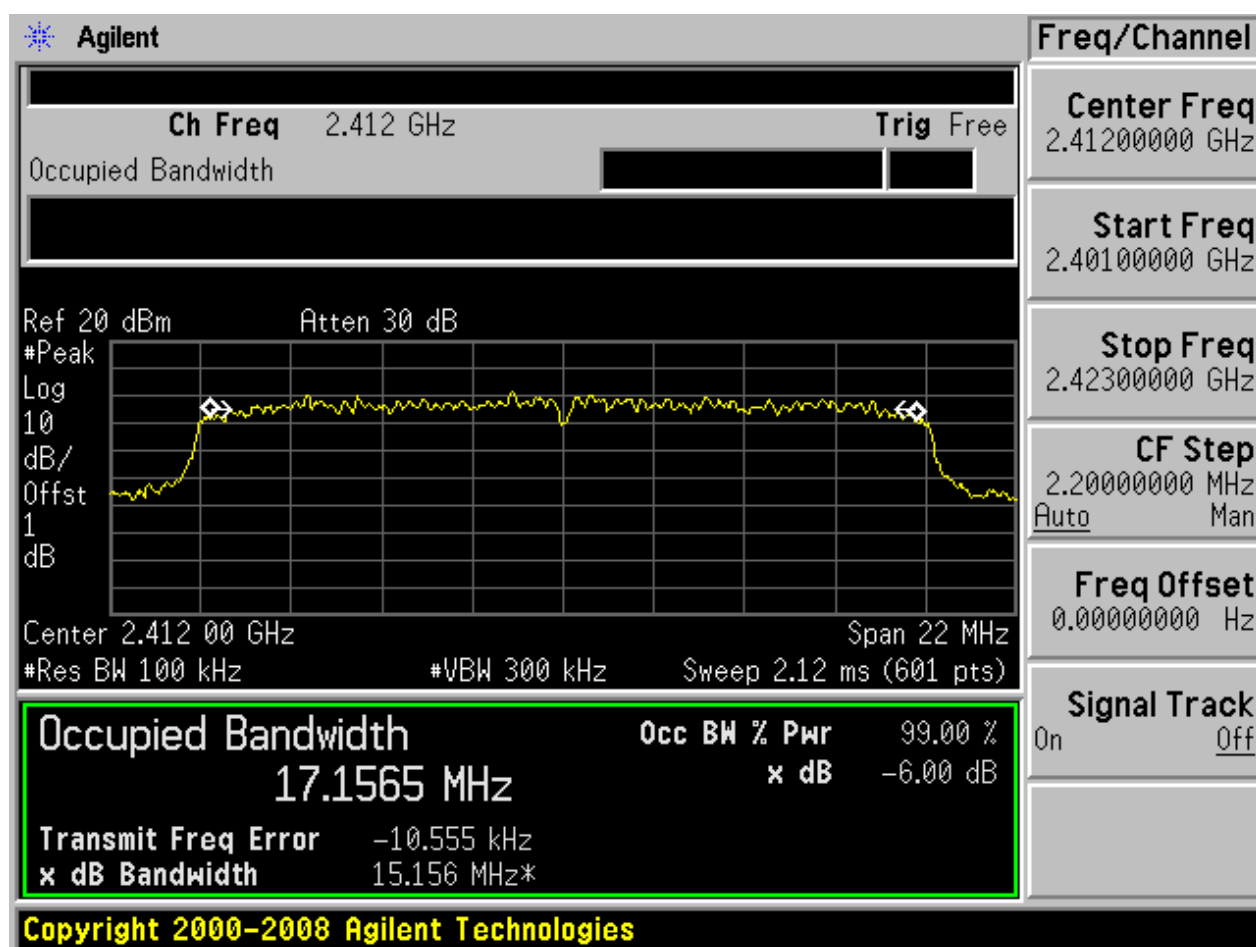


2.6 11G_H



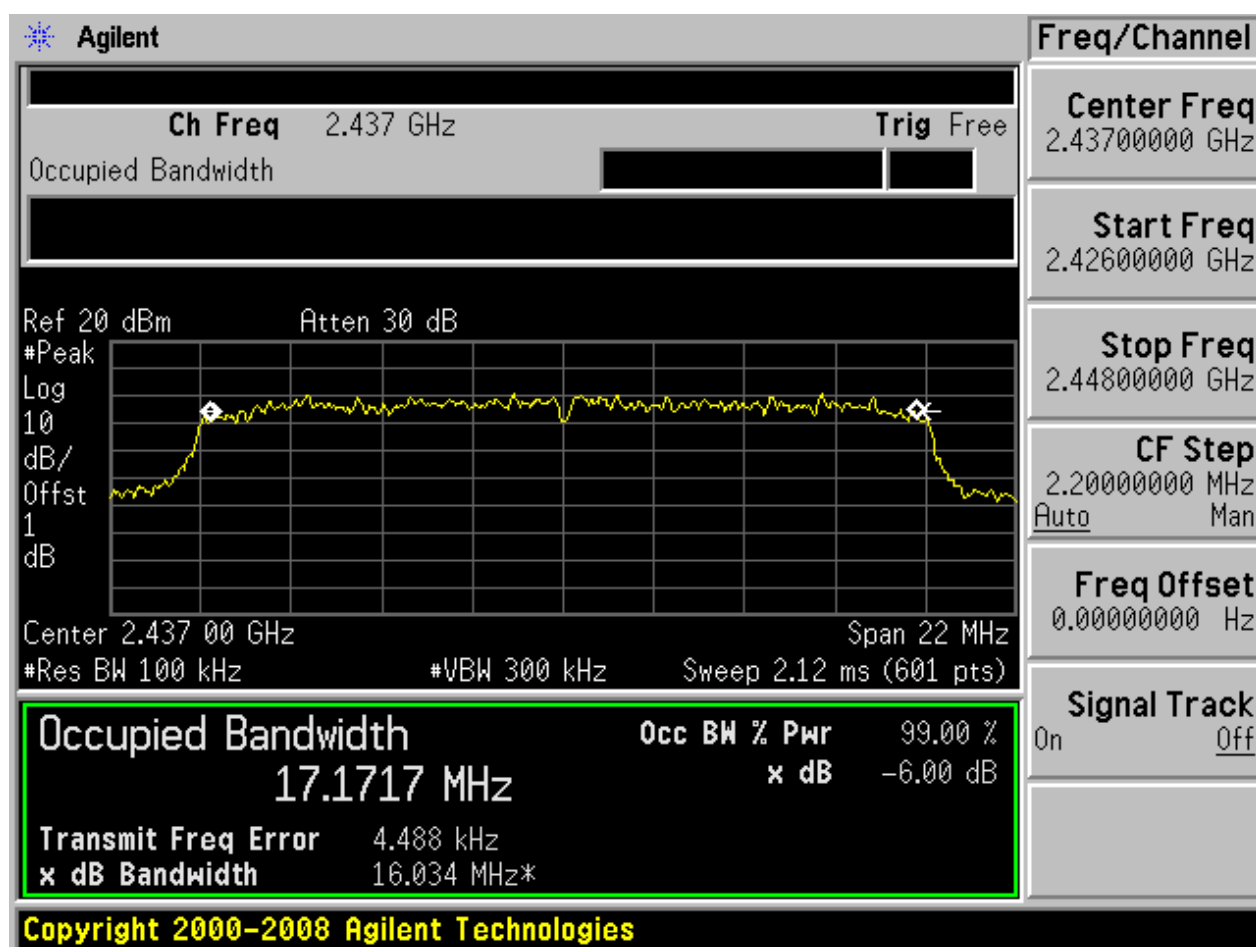


2.7 11N20_L



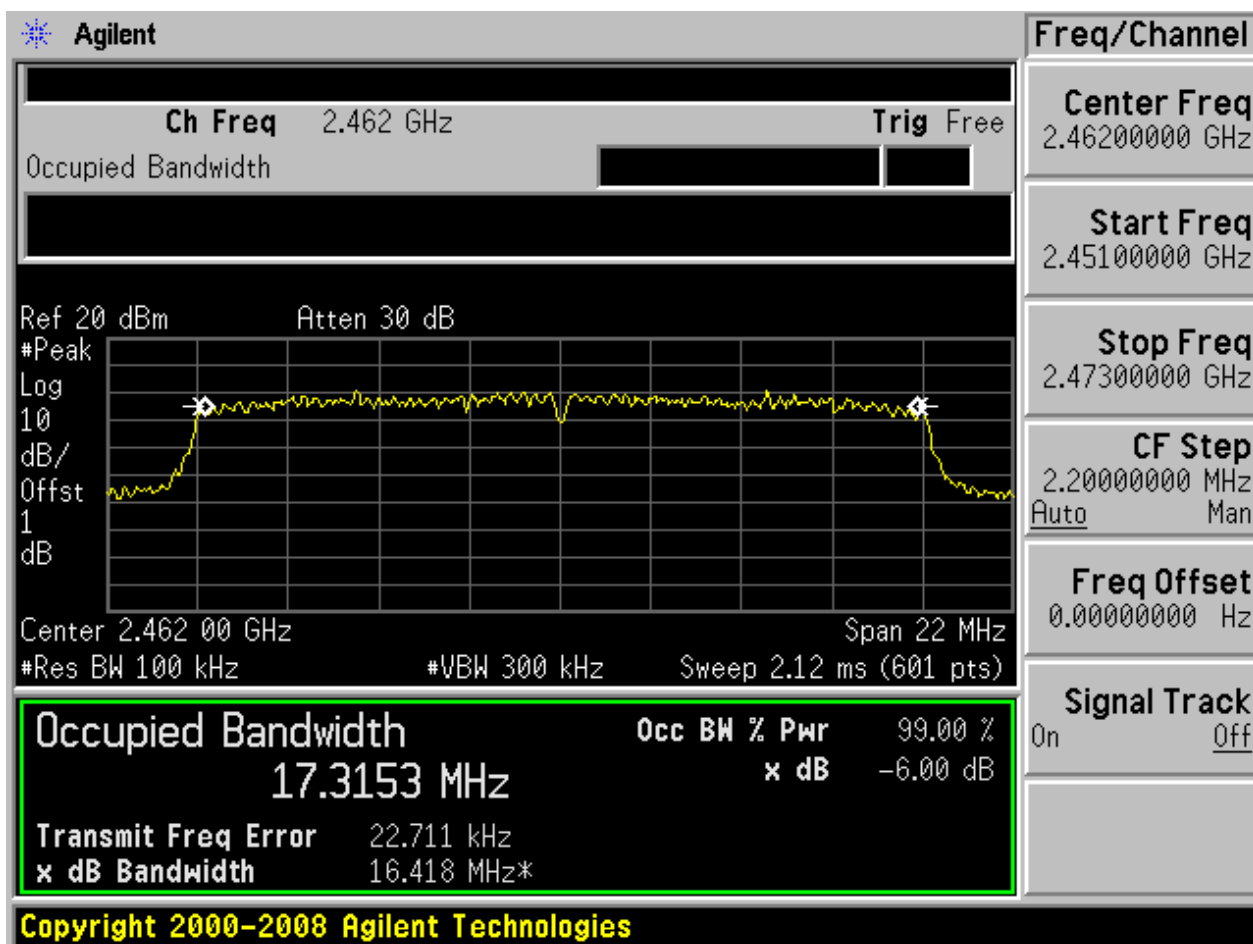


2.8 11N20_M





2.9 11N20_H





Appendix B: Maximum Peak Conducted Output Power



In this Appendix, the “Pmax” refers to the measured “Maximum Peak Conducted Output Power” value. The “fc(DTS6dBBW)” and “DTS6dBBW” in “DTS (6 dB) Bandwidth” are used to determine the integrated band power.

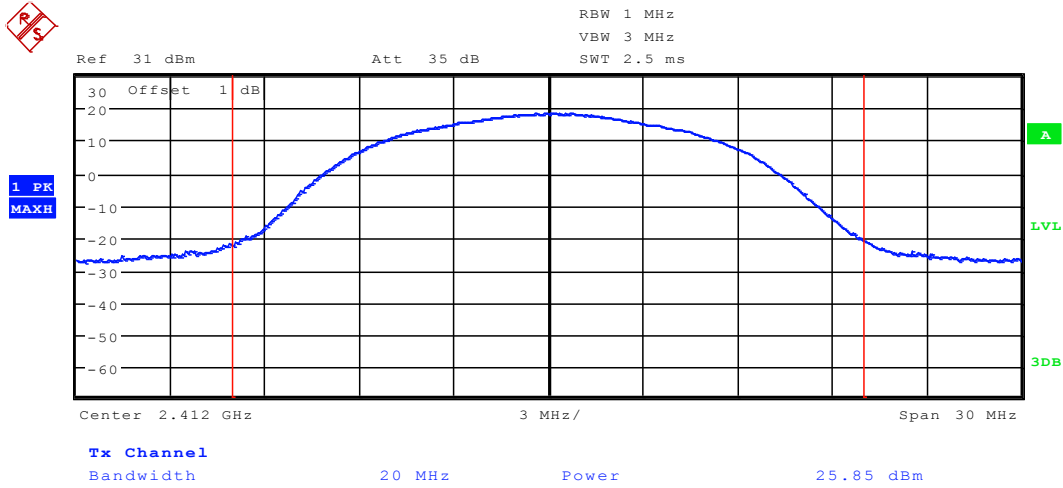
1 Result Table

EUT Conf.	Channel	Fc [MHz]	Meas. Level (Cond.) [dBm]	Verdict
11B	B	2412	25.85	pass
11B	M	2437	24.92	pass
11B	T	2462	26.05	pass
11G	B	2412	28.70	pass
11G	M	2437	28.50	pass
11G	T	2462	28.51	pass
11N20_SISO	B	2412	27.08	pass
11N20_SISO	M	2437	27.15	pass
11N20_SISO	T	2462	27.52	pass



2 Test Plots

2.1 11B_L



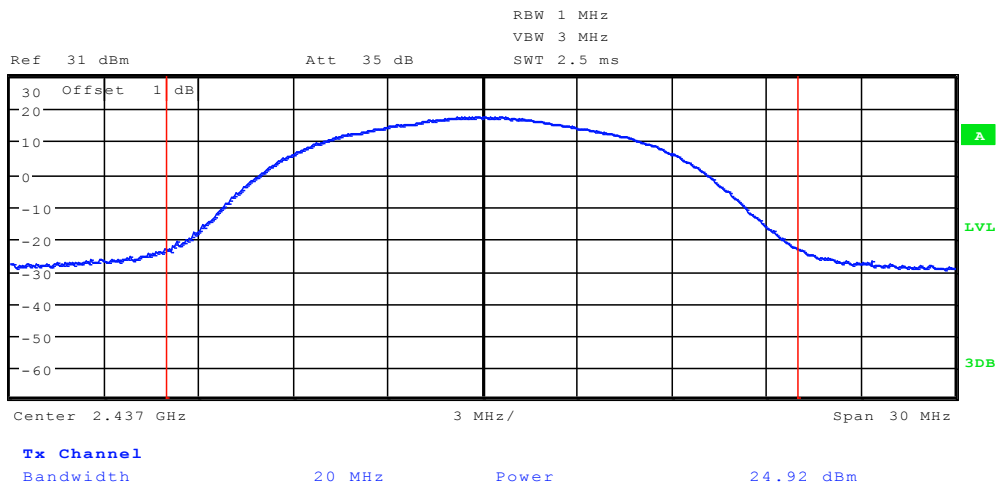
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2.2 11B_M



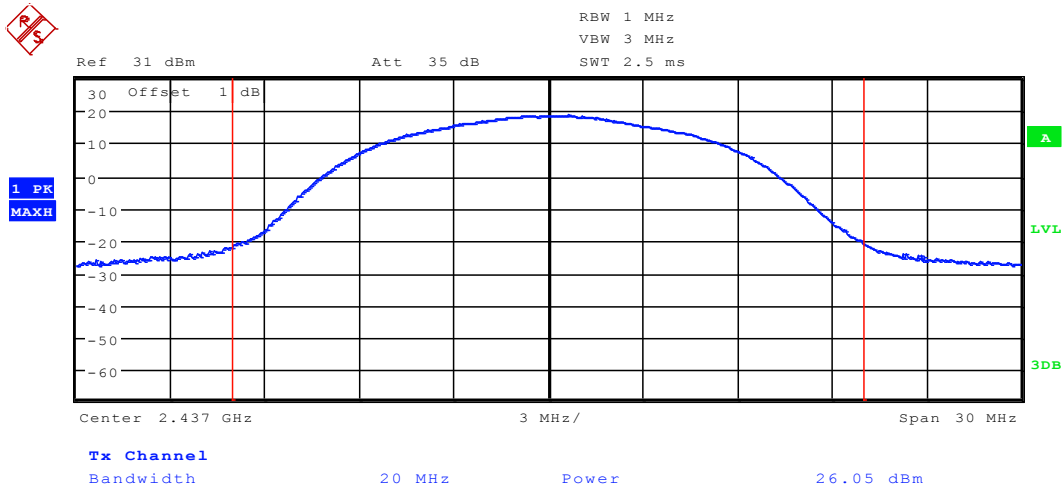
1 PK
MAXH



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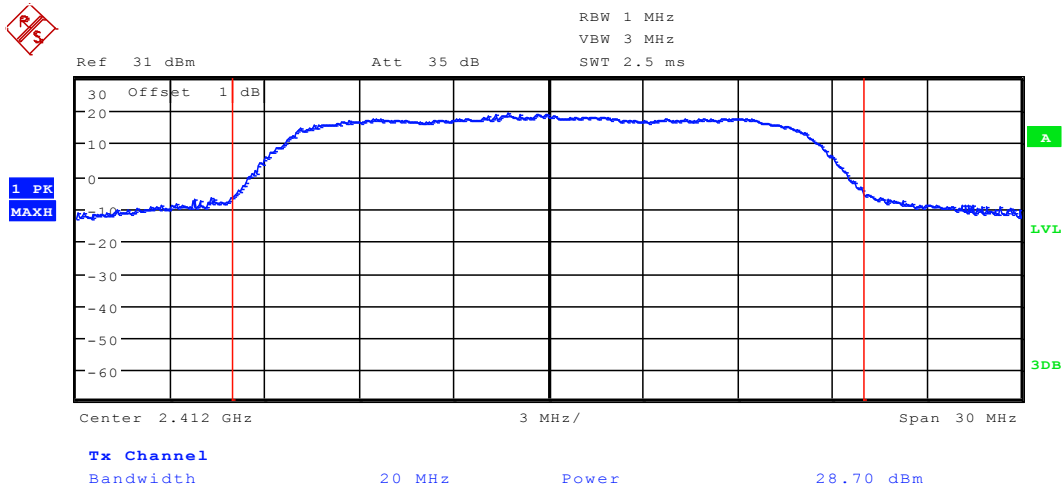
2.3 11B_H



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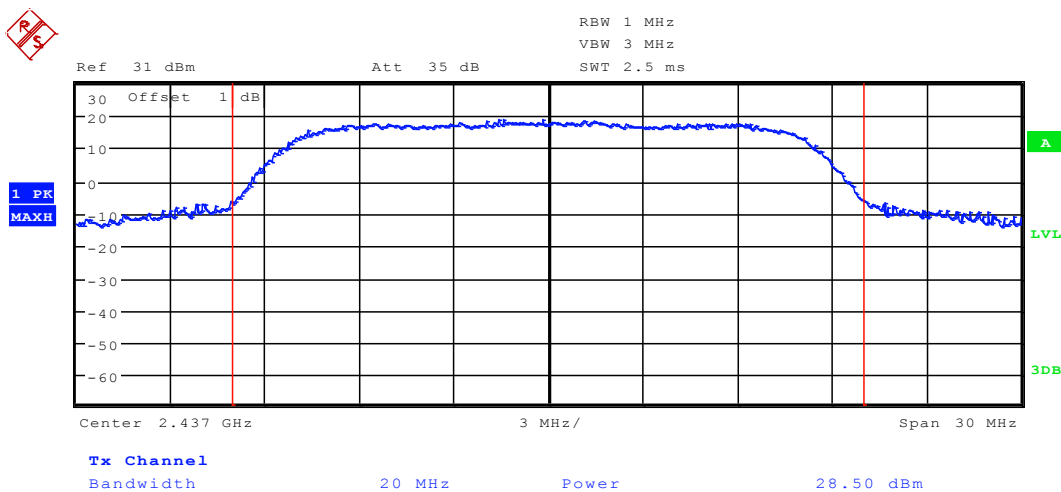
2.4 11G_L



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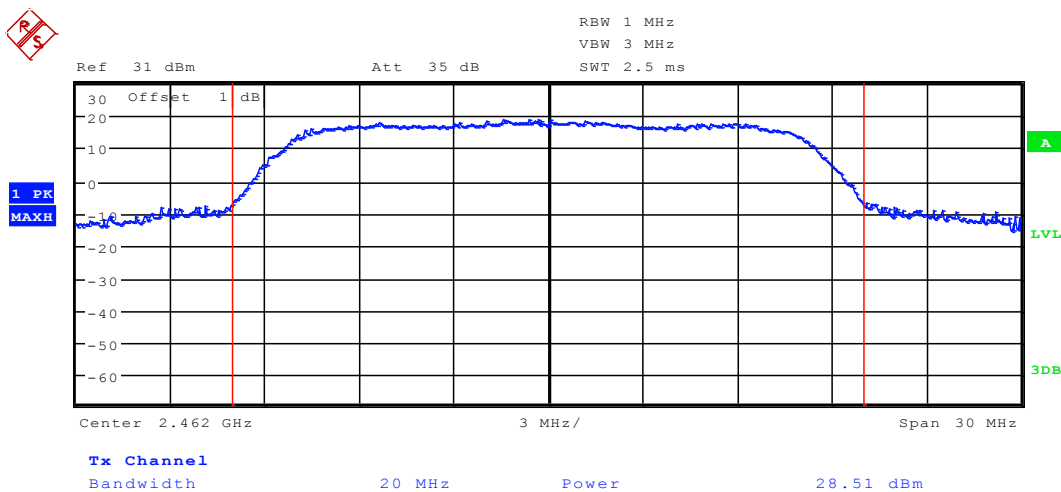
2.5 11G_M



Date: 22.JAN.2013 22:22:33



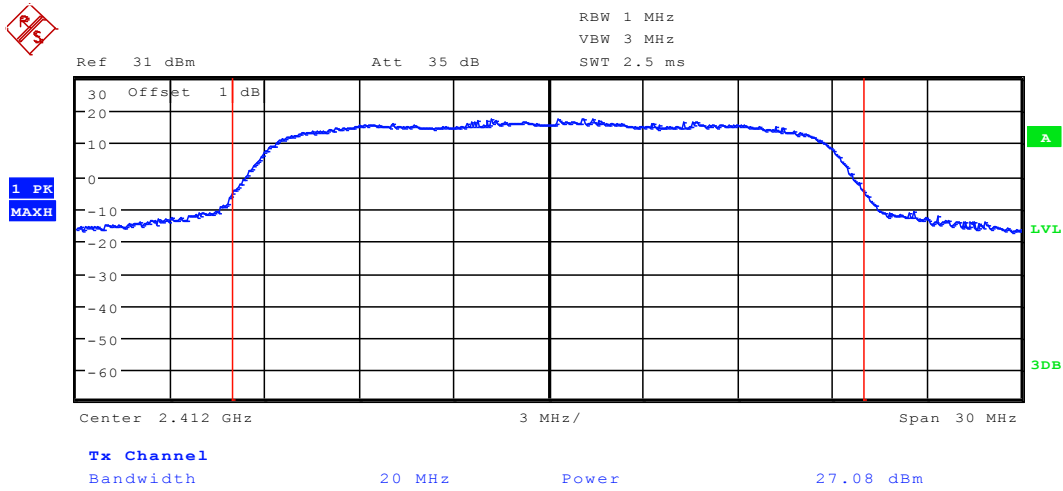
2.6 11G_H



Date: 22.JAN.2013 22:23:25



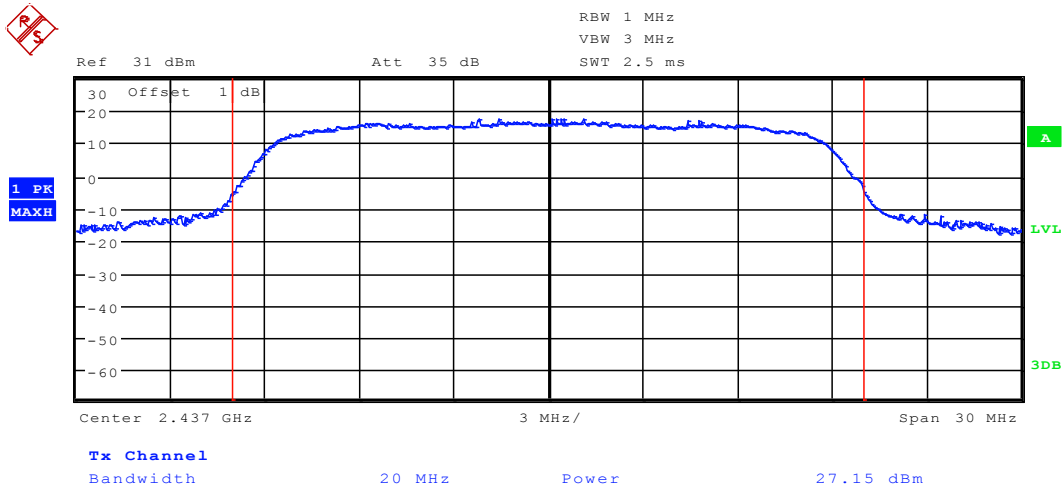
2.7 11N20_L



Date: 22.JAN.2013 22:25:37



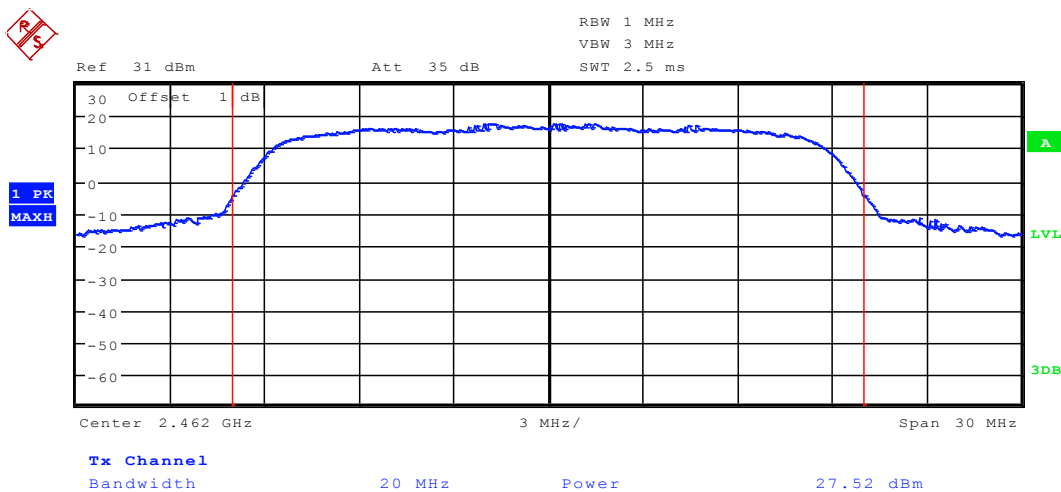
2.8 11N20_M



Date: 22.JAN.2013 22:27:04



2.9 11N20_H



Date: 22.JAN.2013 22:29:28



Appendix C: Maximum Power Spectral Density Level

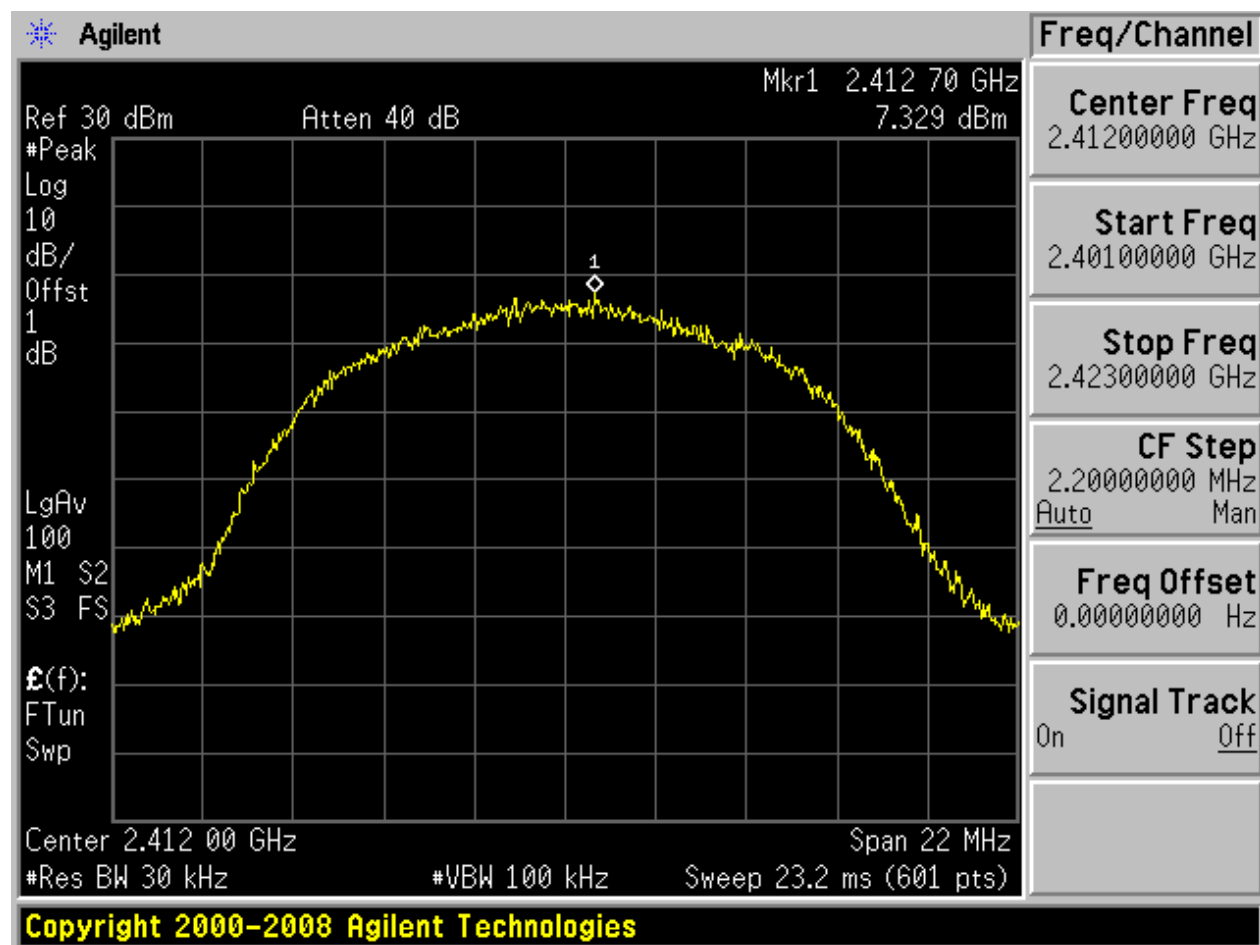


1 Result Table

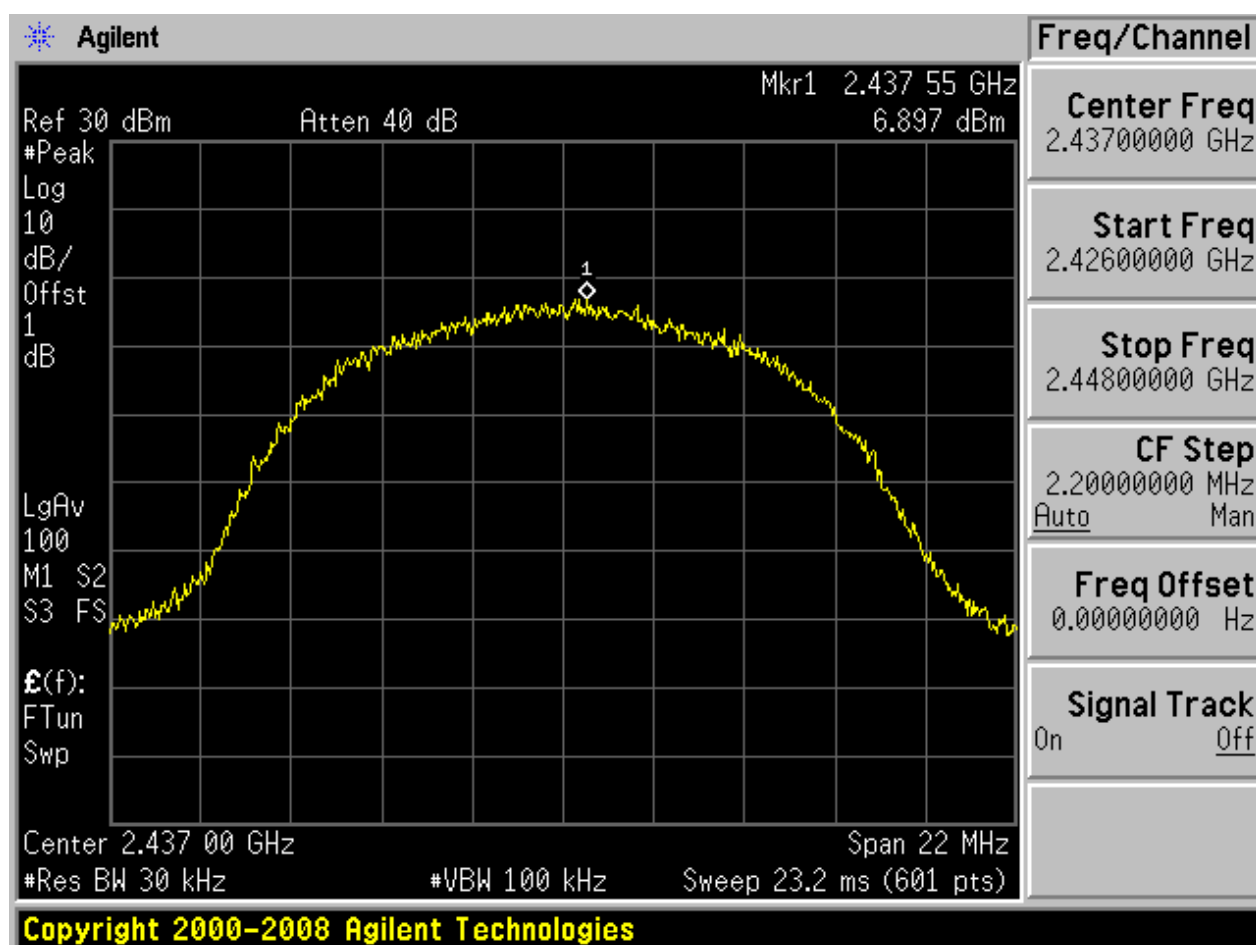
EUT.conf.	Channel	Fc (MHz)	PD [dBm]	Verdict
11B	B	2412	7.329	pass
11B	M	2437	6.897	pass
11B	T	2462	7.645	pass
11G	B	2412	4.783	pass
11G	M	2437	4.940	pass
11G	T	2462	5.100	pass
11N20	B	2412	3.328	pass
11N20	M	2437	4.083	pass
11N20	T	2462	3.564	pass

2 Test Plot

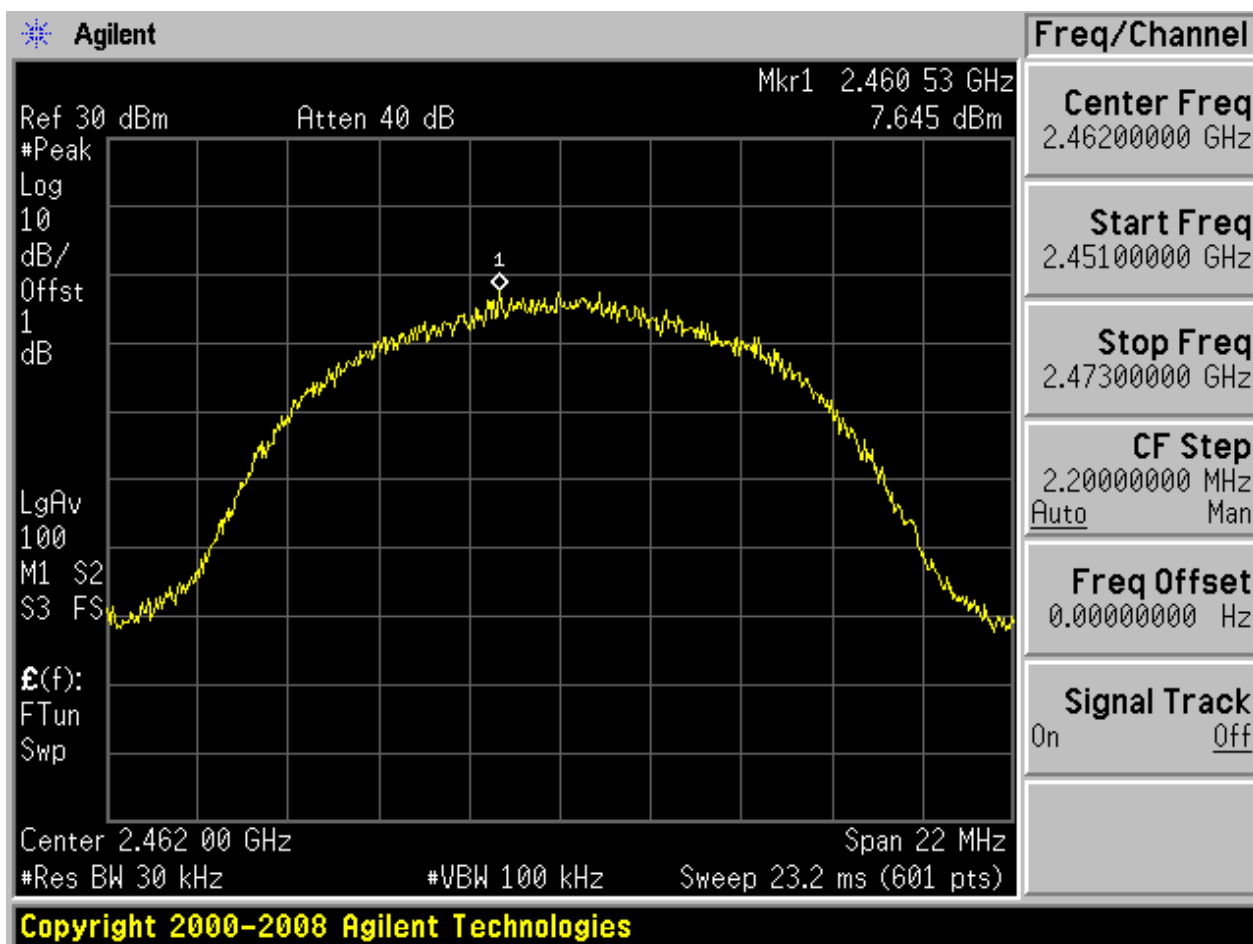
2.1 11B_L



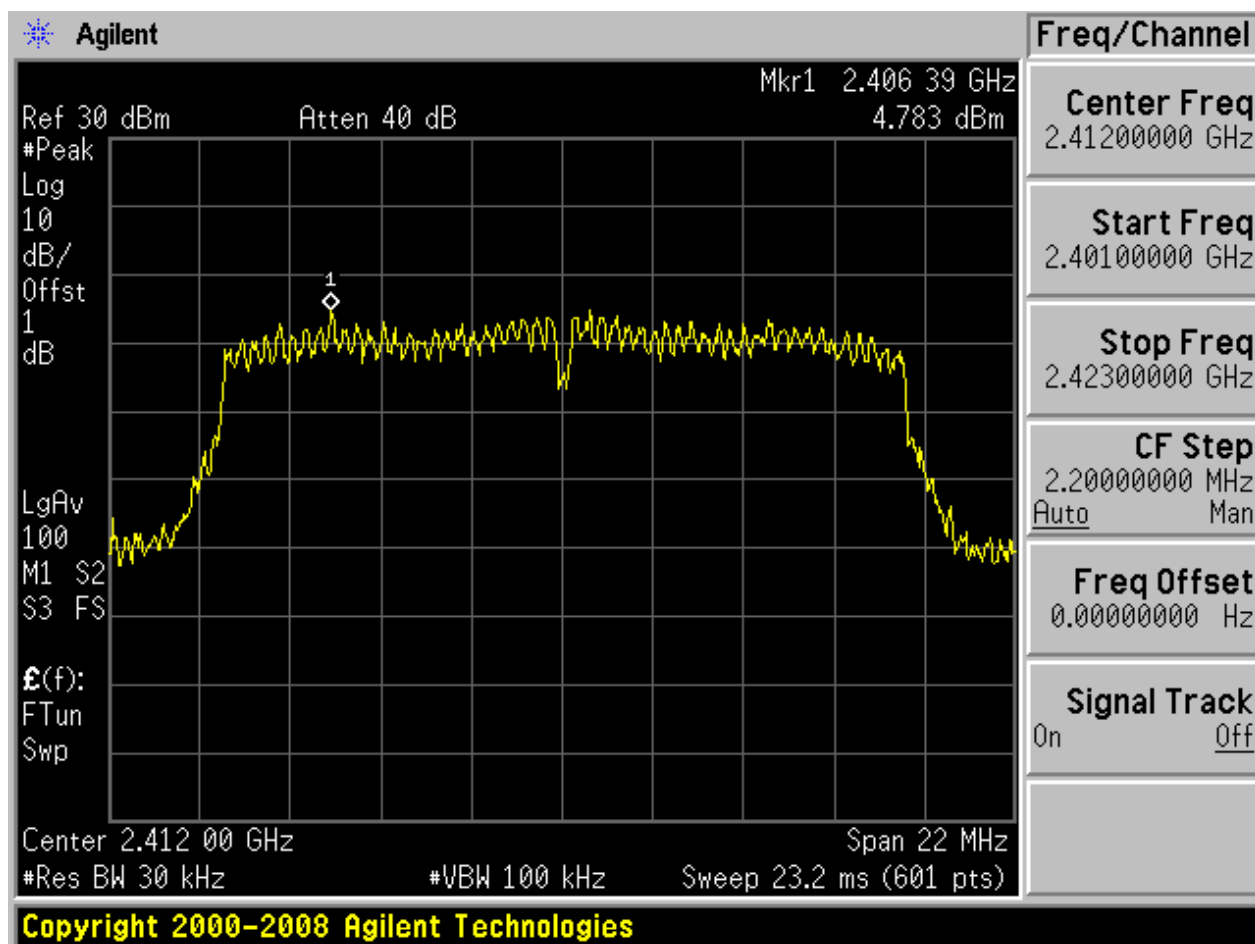
2.2 11B_M



2.3 11B_H

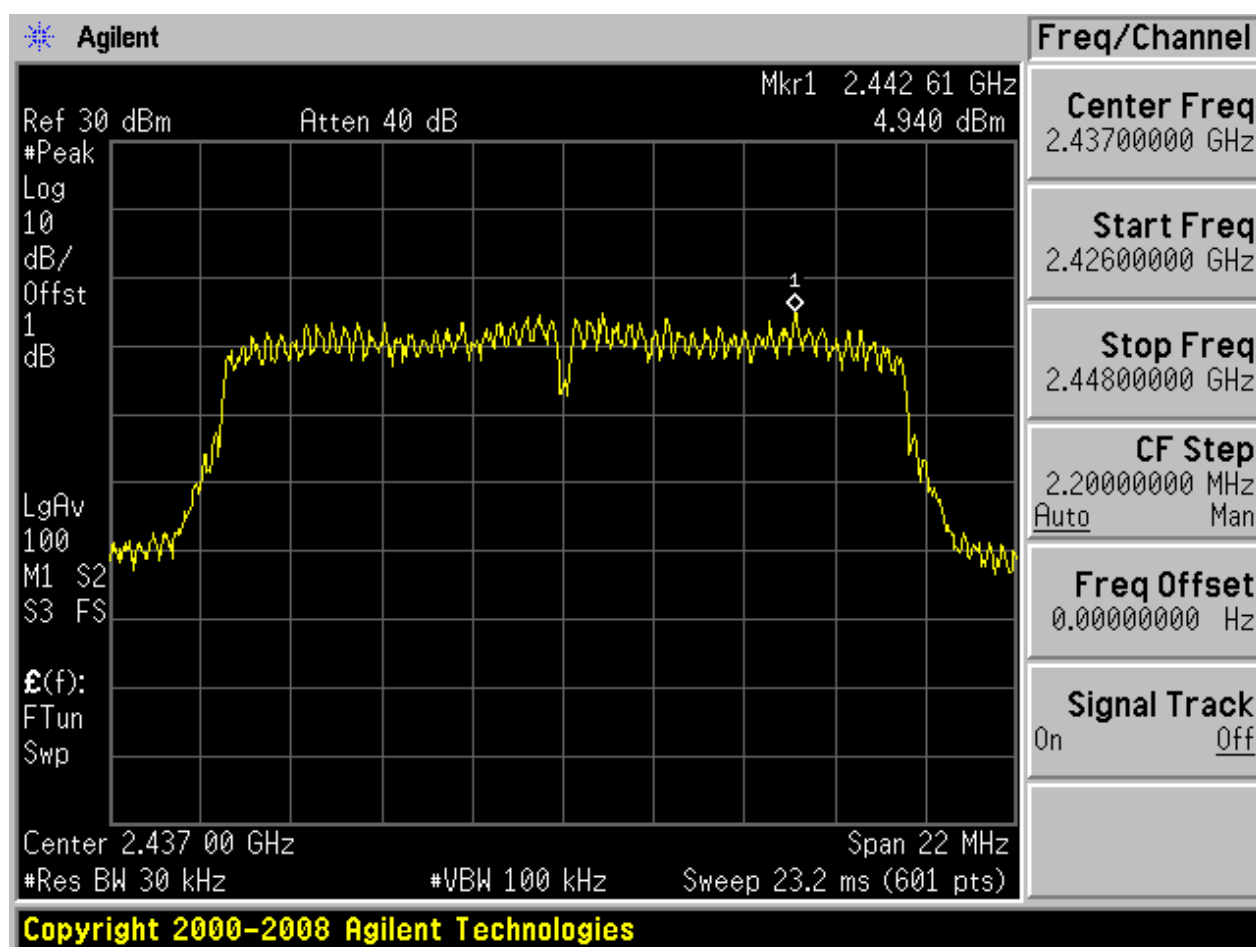


2.4 11G_L

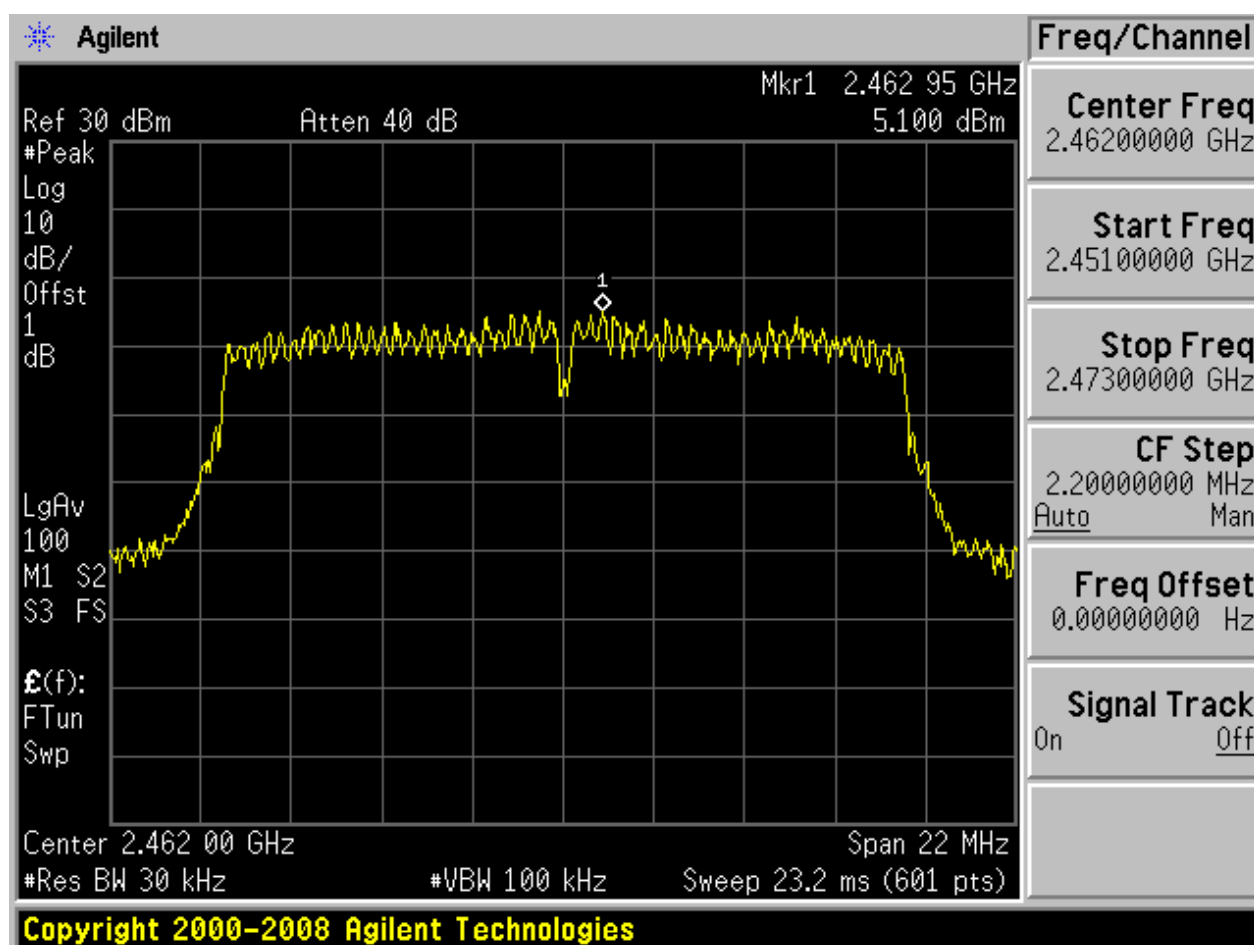




2.5 11G_M

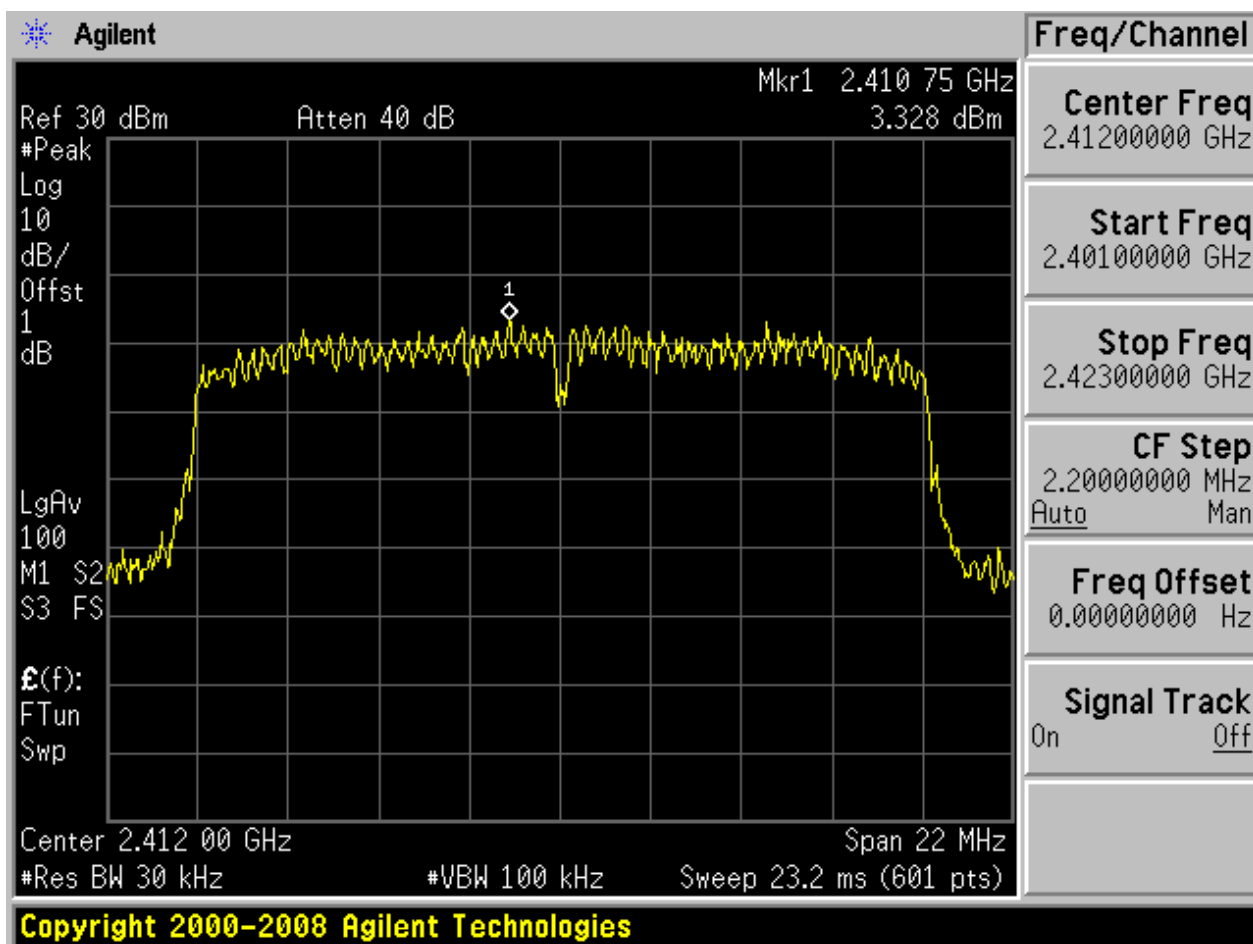


2.6 11G_H



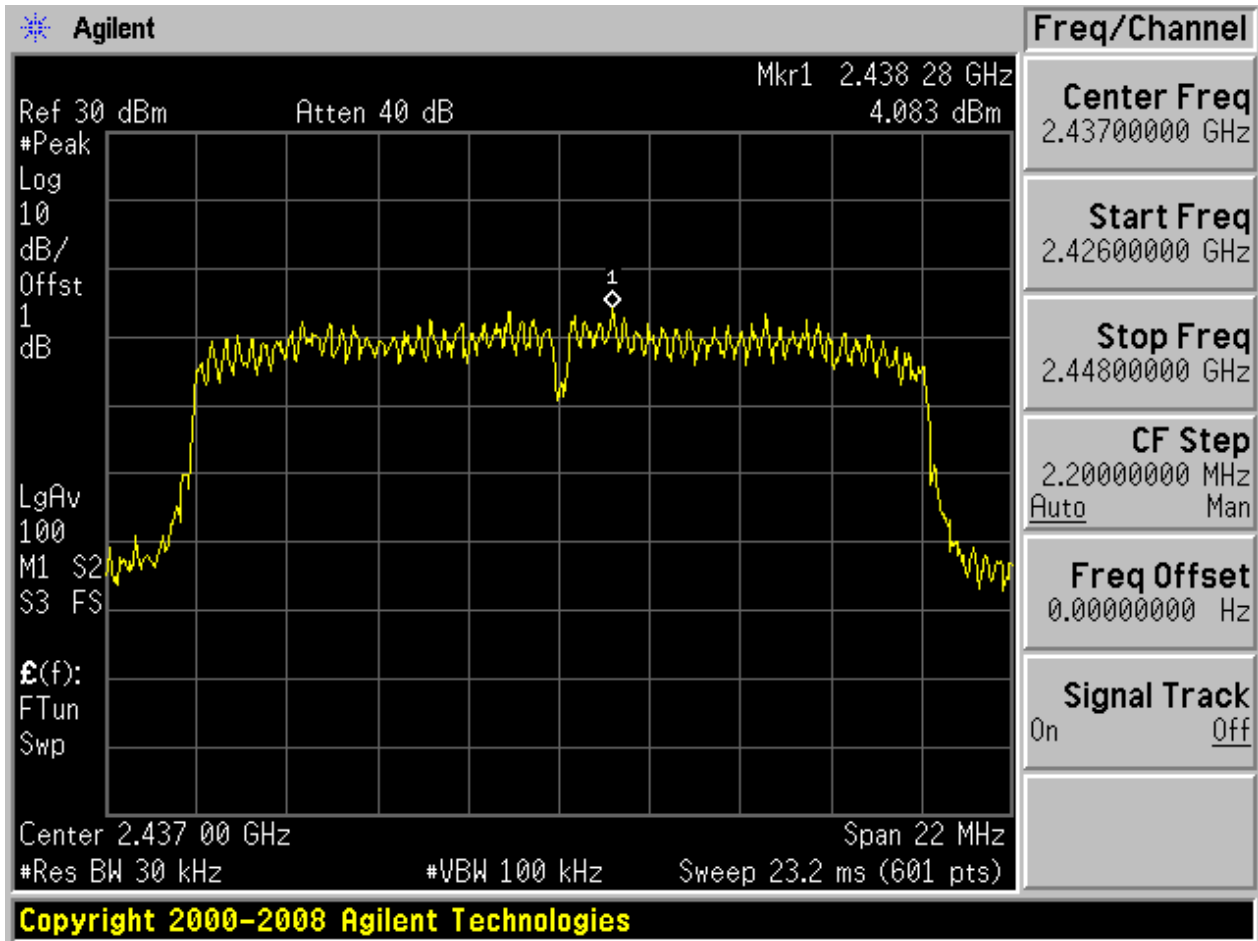


2.7 11N20_L



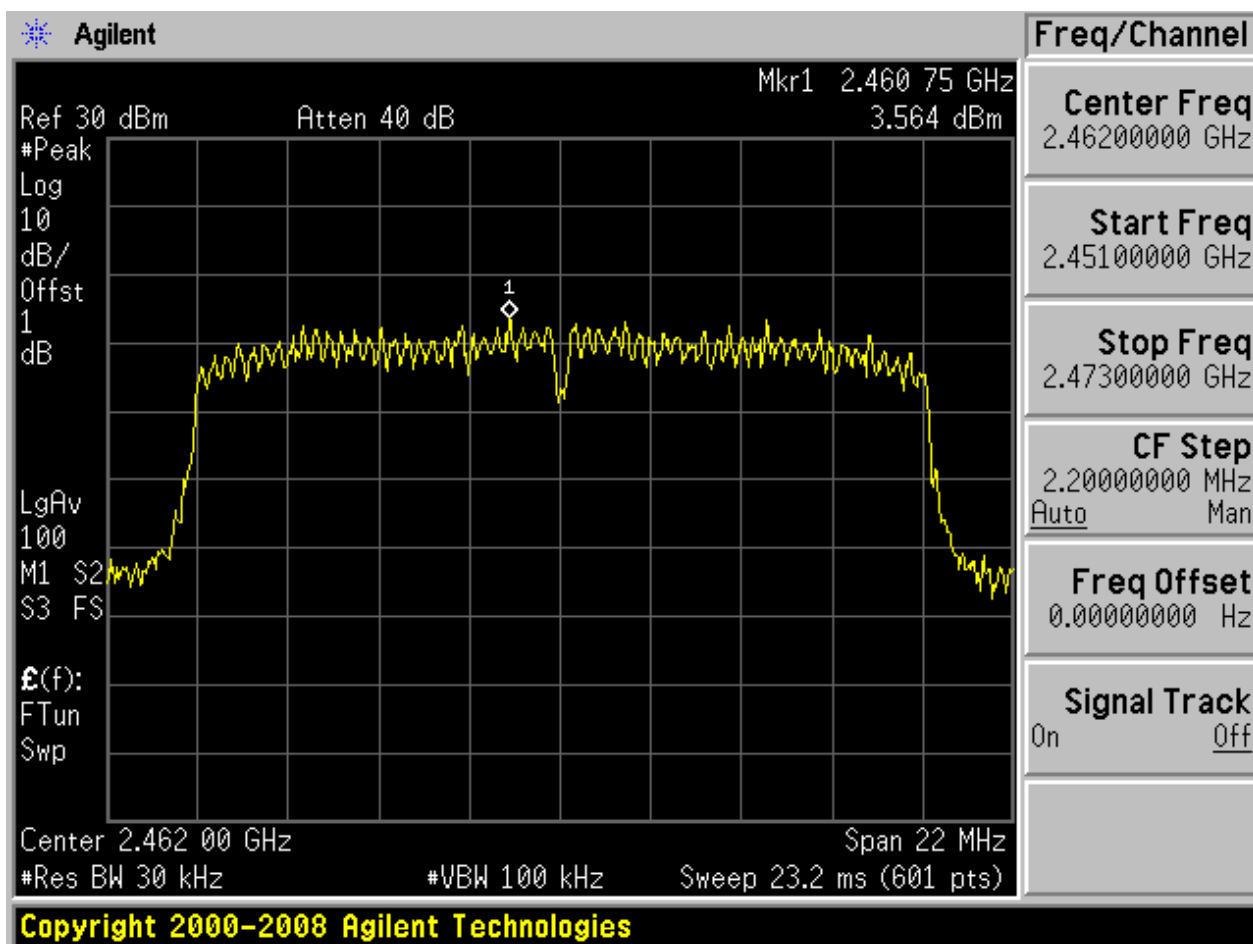


2.8 11N20_M





2.9 11N20_H





Appendix D: Band Edges Compliance



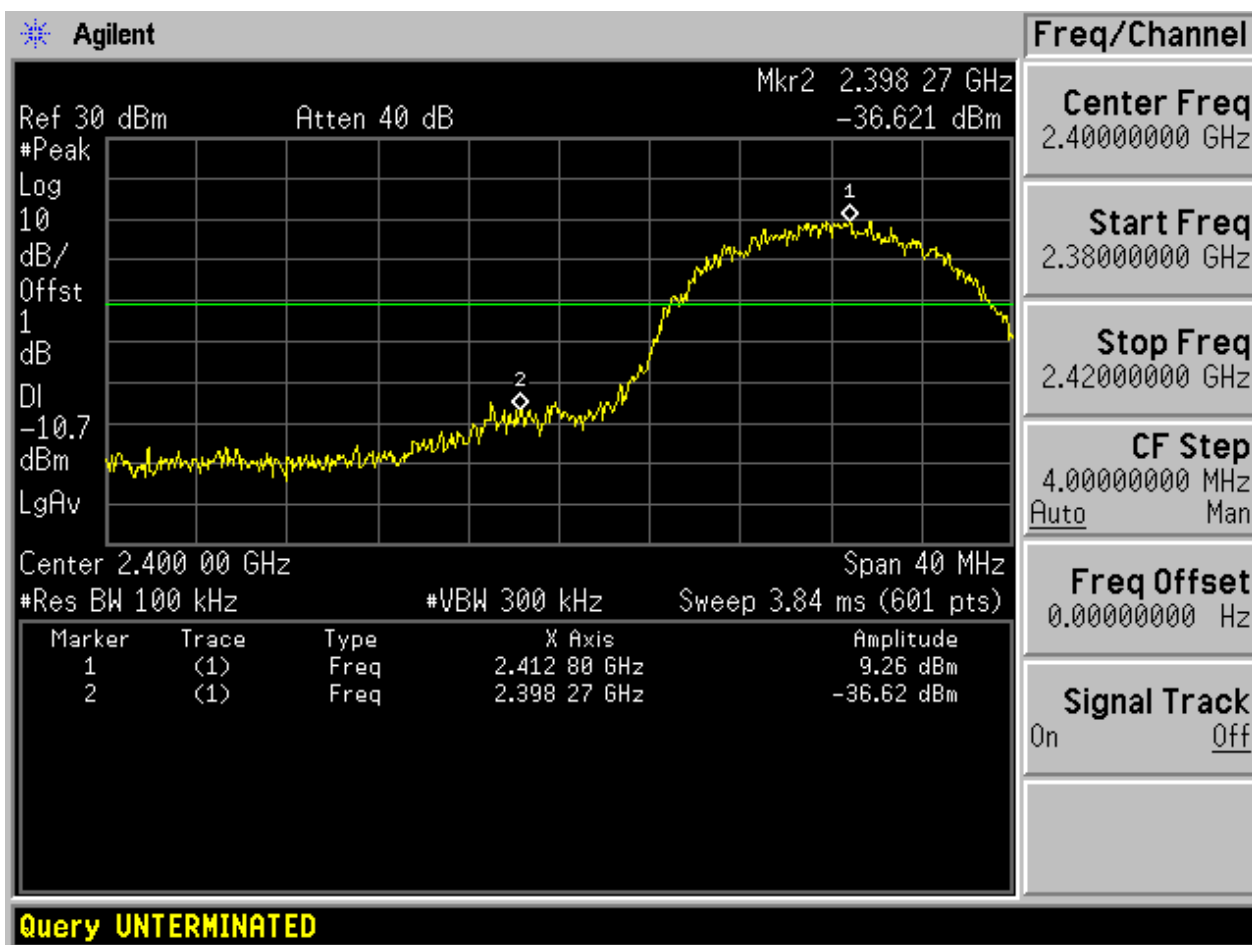
1 Result Table

Eut.conf	Channel	Fc (MHz)	Carrier Power [dBm]	Max. Spurious Level [dBm]	verdict
11B	B	2412	9.26	-36.62	pass
	T	2462	12.28	-38.59	pass
11G	B	2412	8.36	-25.76	pass
	T	2462	8.49	-28.25	pass
11N20	B	2412	7.04	-32.72	pass
	T	2462	6.61	-30.58	pass



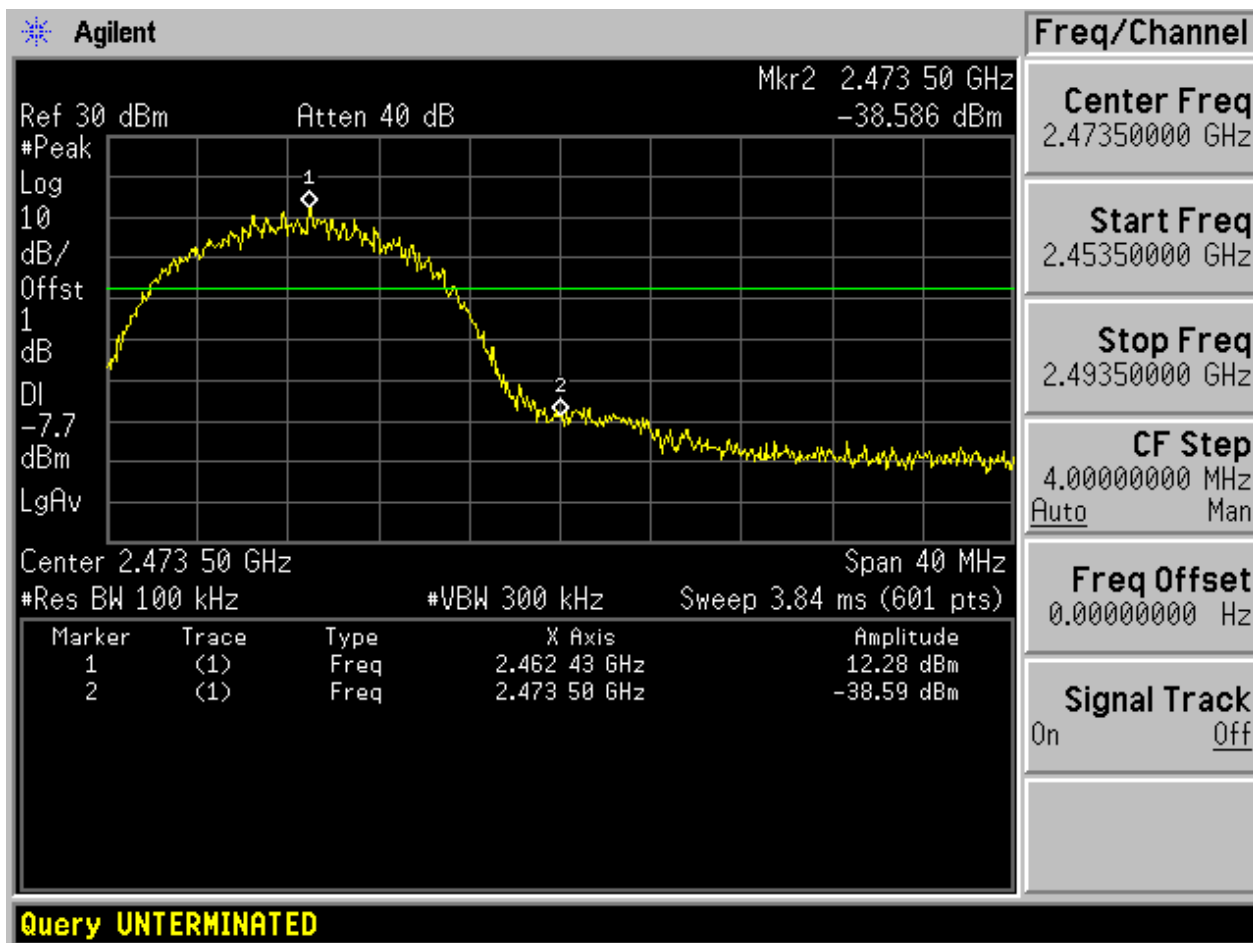
2 Test Plot

2.1 11B_L

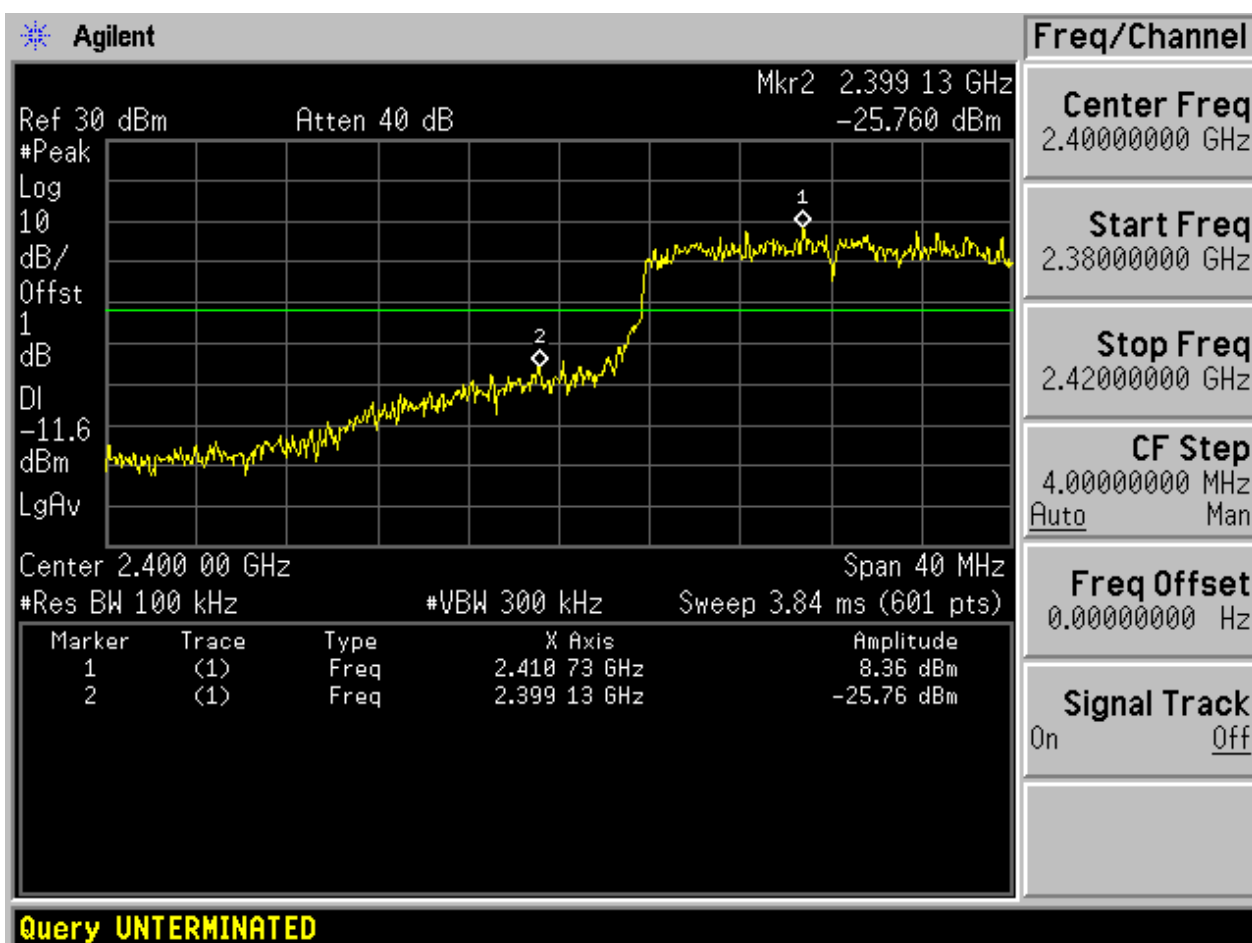




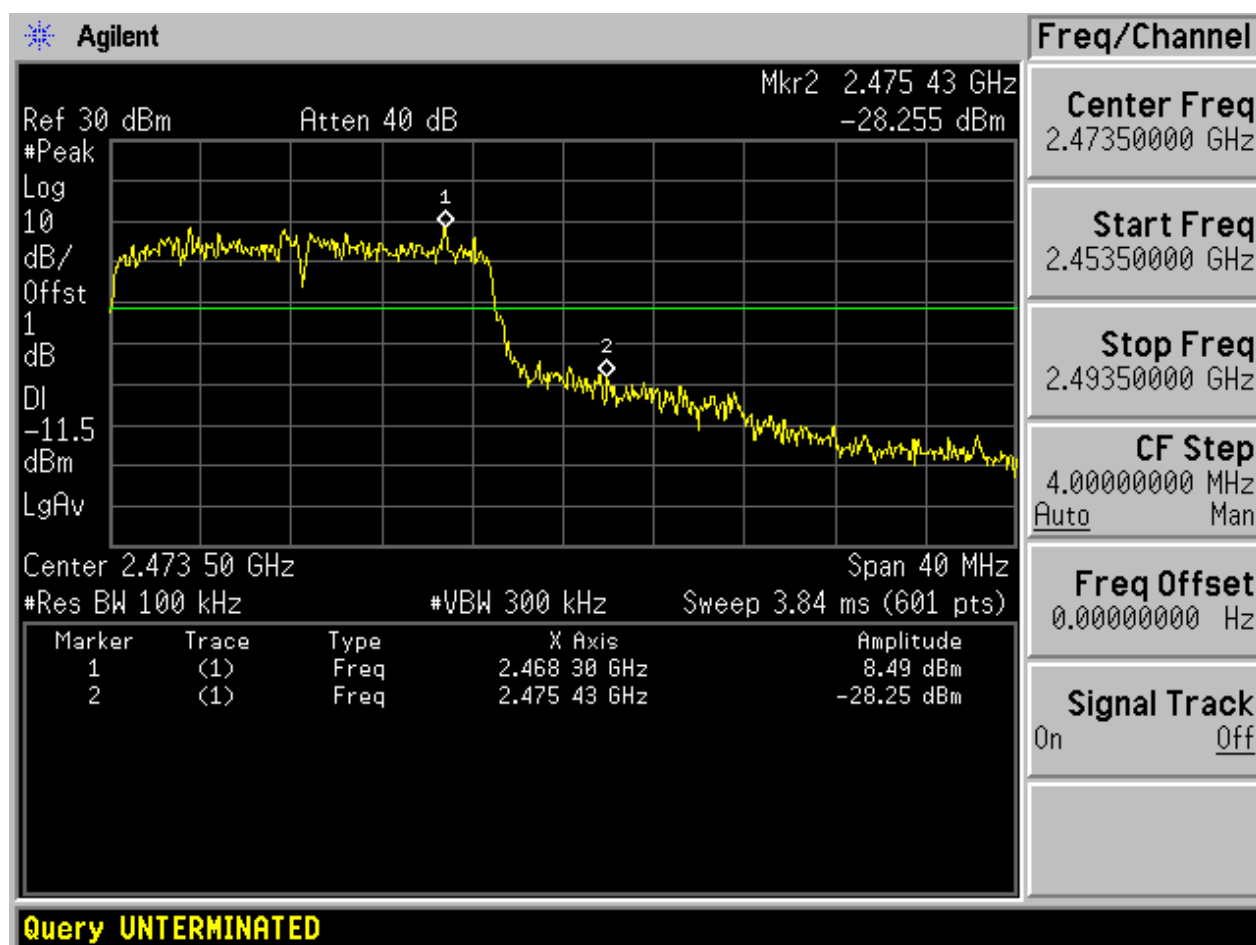
2.2 11B_H



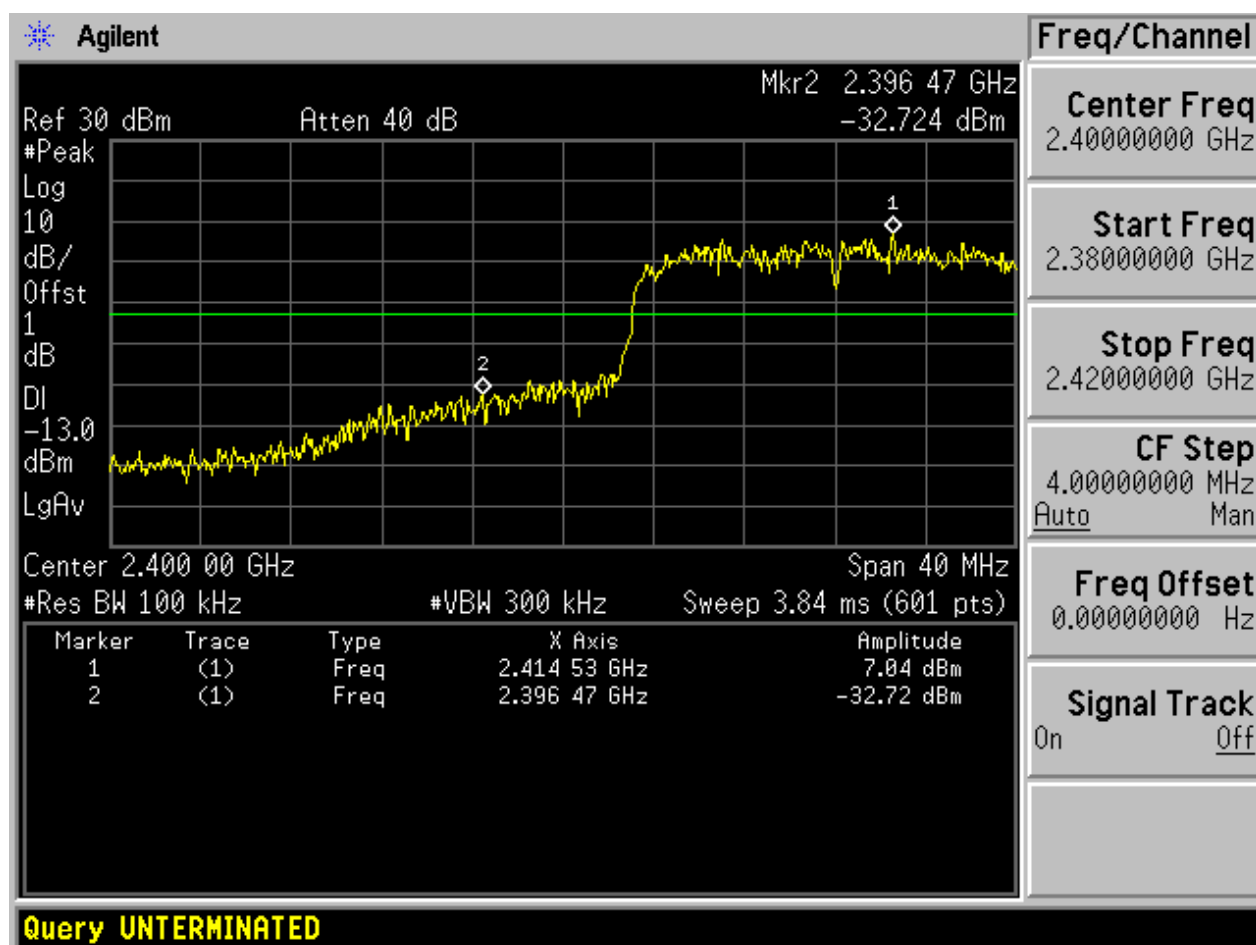
2.3 11G_L



2.4 11G_H

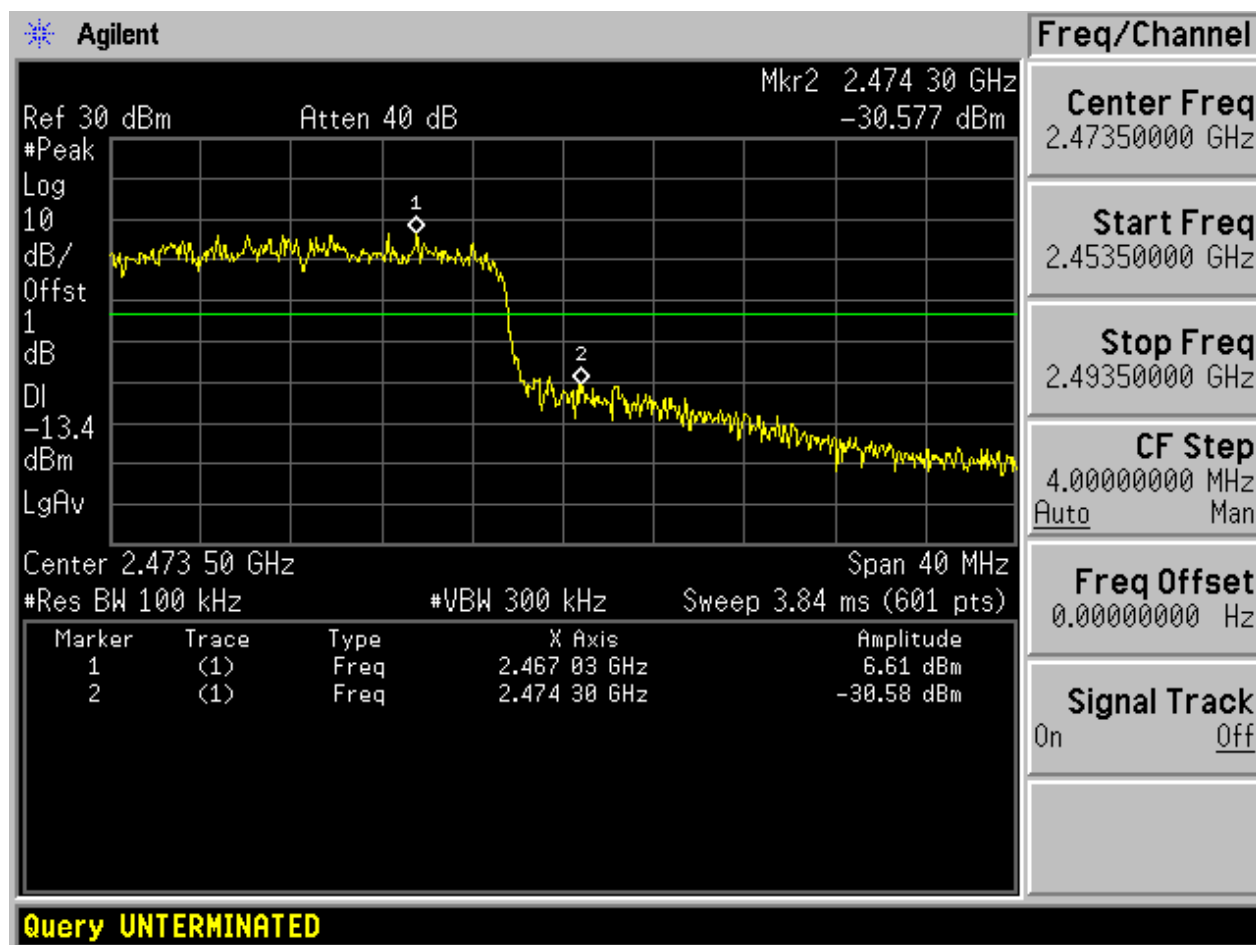


2.5 11N20_L





2.6 11N20_H





Appendix E: Unwanted Emissions into Non-Restricted Frequency Bands

In this Appendix, the “Pref”, which is used as the reference level, refers to the peak power level in any 100 kHz bandwidth within the fundamental emission, the “Puw” refers to the maximum emission power in 100 kHz band segments outside of the authorized frequency band.

Considering that the higher ratio of RBW to the span for the frequency ranges below 30 MHz makes the results determination be complicated, a narrower RBW other than 100 kHz is used for these ranges. The measured value should add a RBW correction factor (RBWCF) where $RBWCF [dB] = 10 \times \lg(100 [kHz]/\text{narrower RBW [kHz]})$. As to this Appendix, the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

For measurements on smart antenna systems (devices with multiple transmit chains), the test is performed at each chain and used as respective results for each chain, due to the relative-limit requirement.

In the result table, the “< Limit” denotes that “The Puw [dBm] is less than Pref [dBm] – 20 [dBm], see test plots for detailed”.

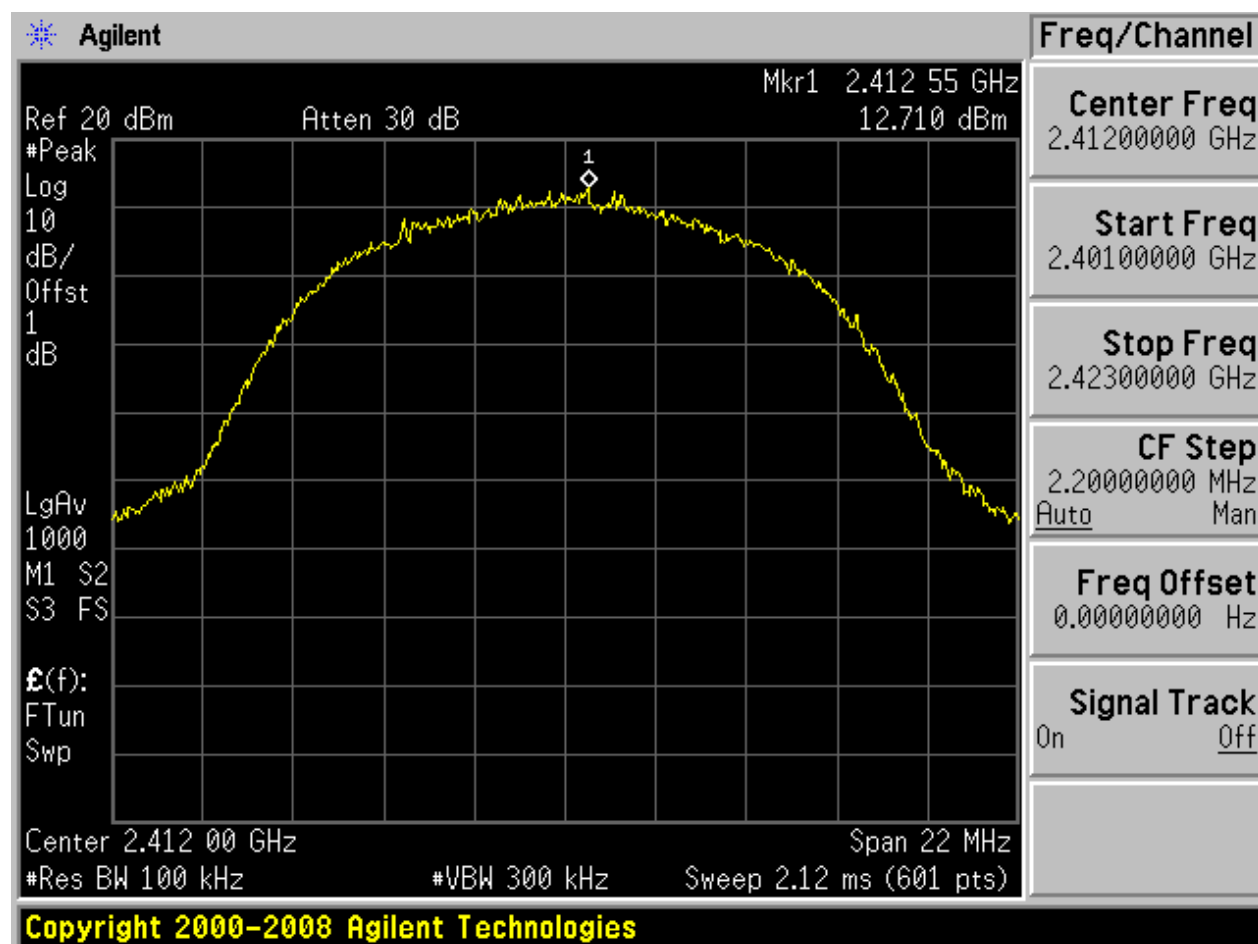
1 Result Table

Eut.conf	Channel	Fc (MHz)	Pref [dBm]	Puw [dBm]	Verdict
11B	B	2412	12.710	<limit	pass
11B	M	2437	12.337	<limit	pass
11B	T	2462	12.508	<limit	pass
11G	B	2412	9.566	<limit	pass
11G	M	2437	9.720	<limit	pass
11G	T	2462	9.833	<limit	pass
11N20	B	2412	8.262	<limit	pass
11N20	M	2437	8.483	<limit	pass
11N20	T	2462	8.589	<limit	pass

2 Test Plot

2.1 11B_L

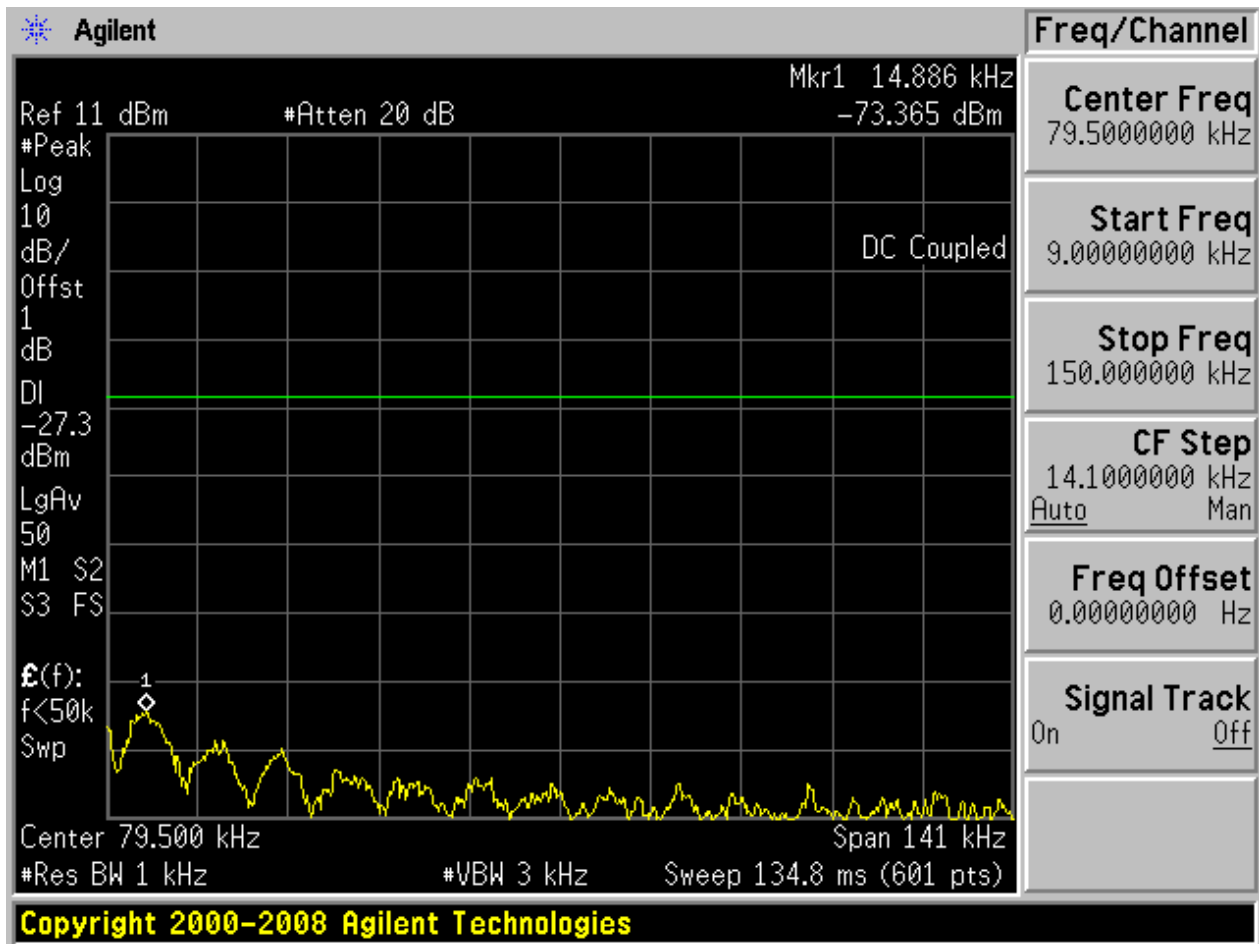
2.1.1 Pref:





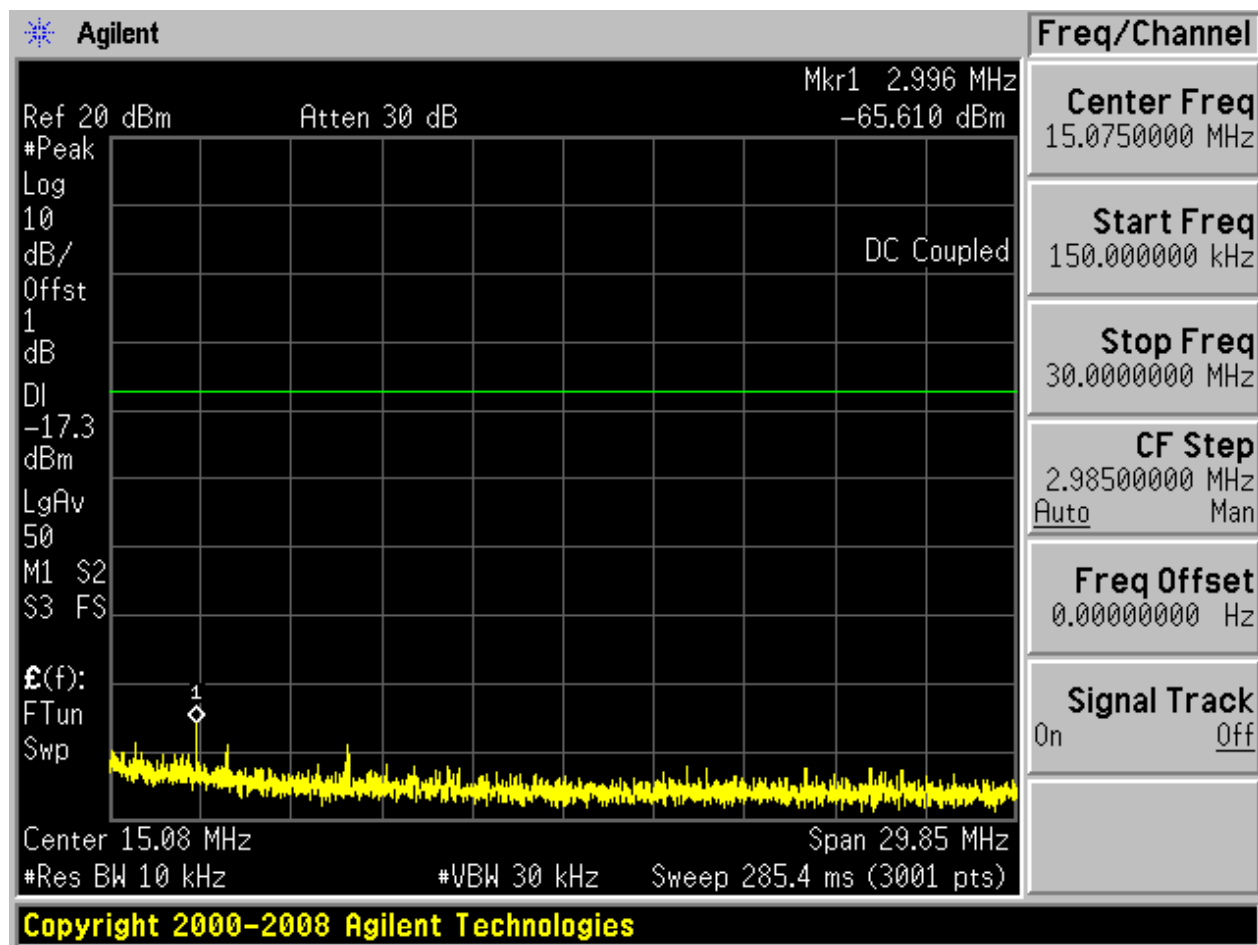
2.1.2 Puw:

9k - 150k



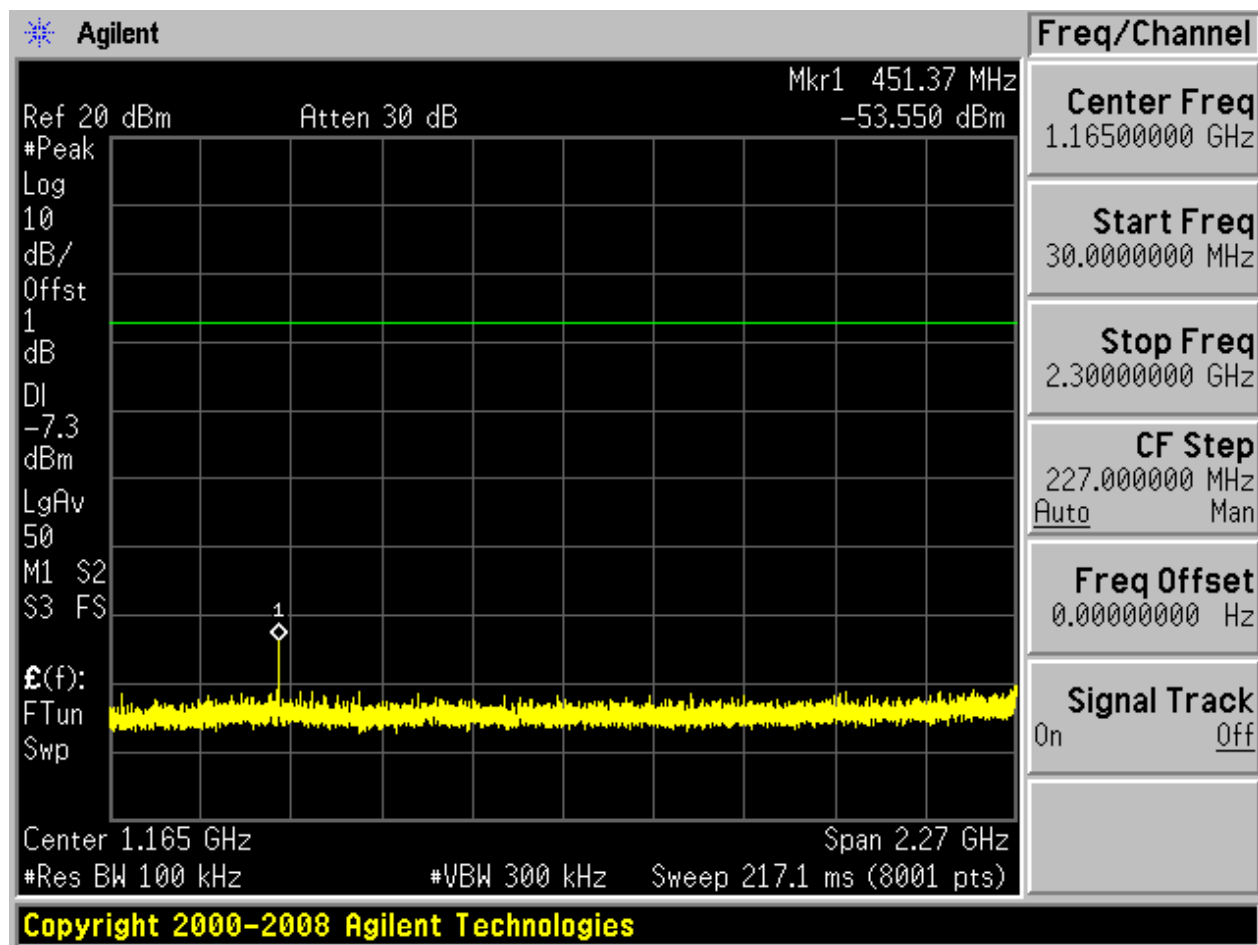


150k - 30M



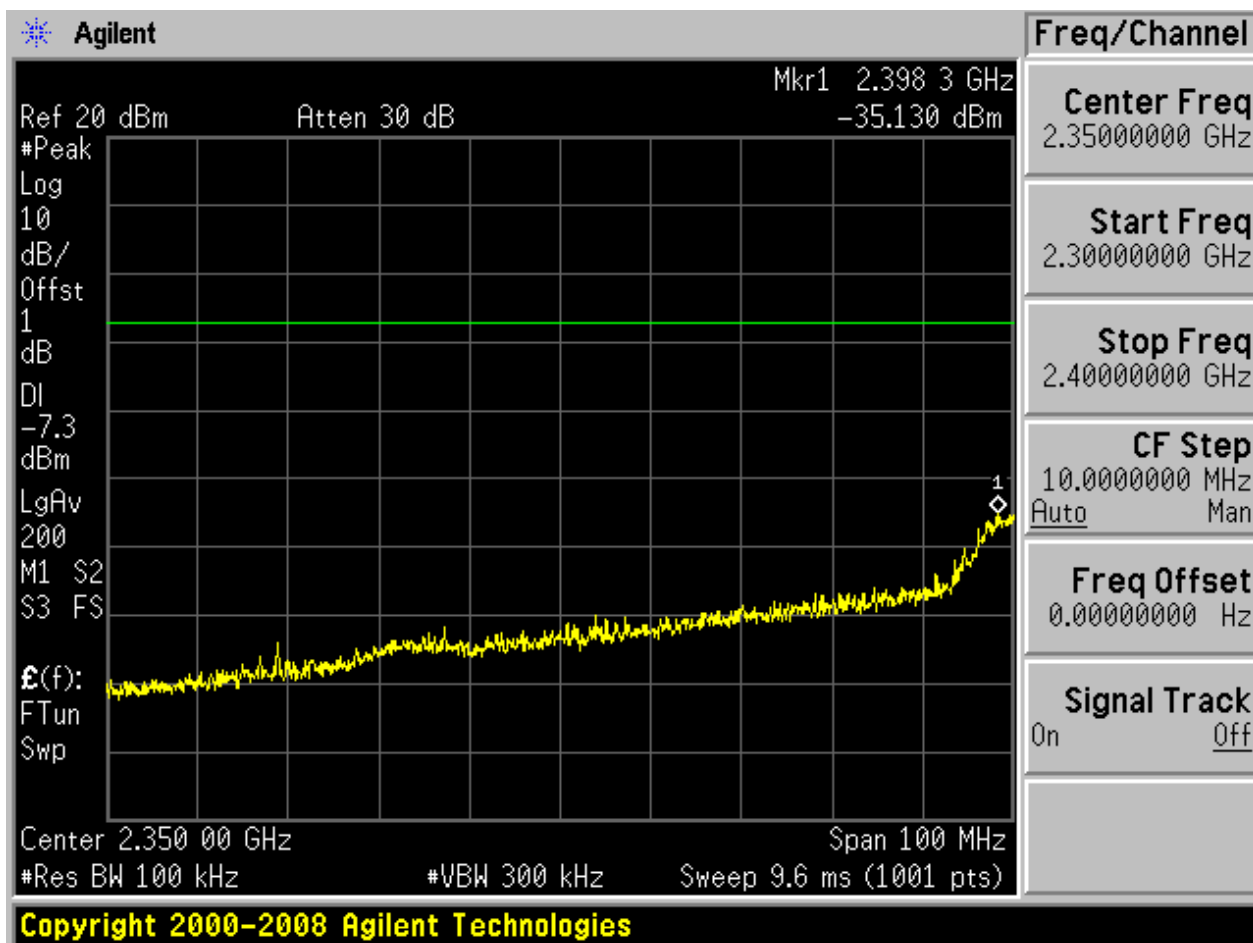


30M - 2.3G



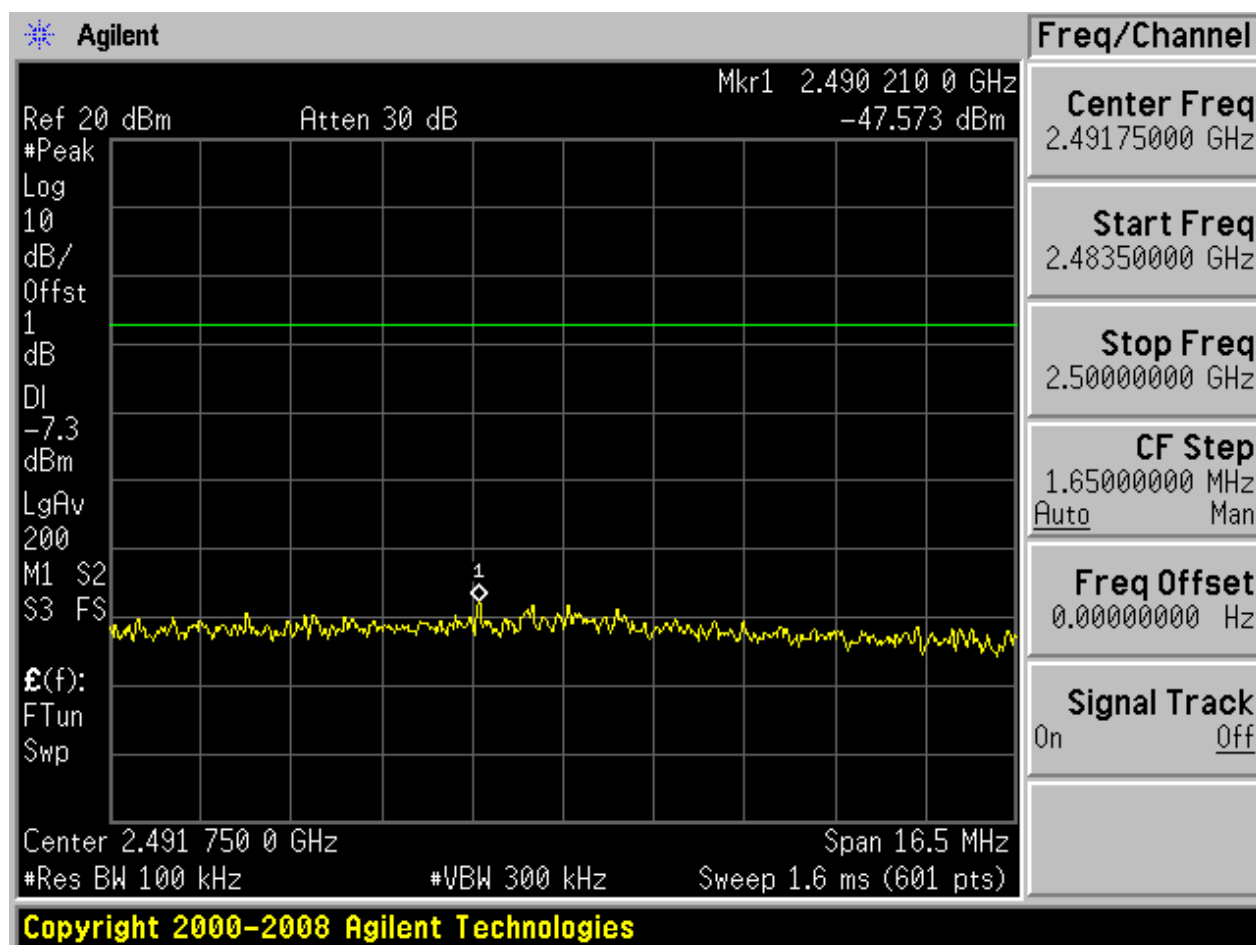


2.3G - 2.4G



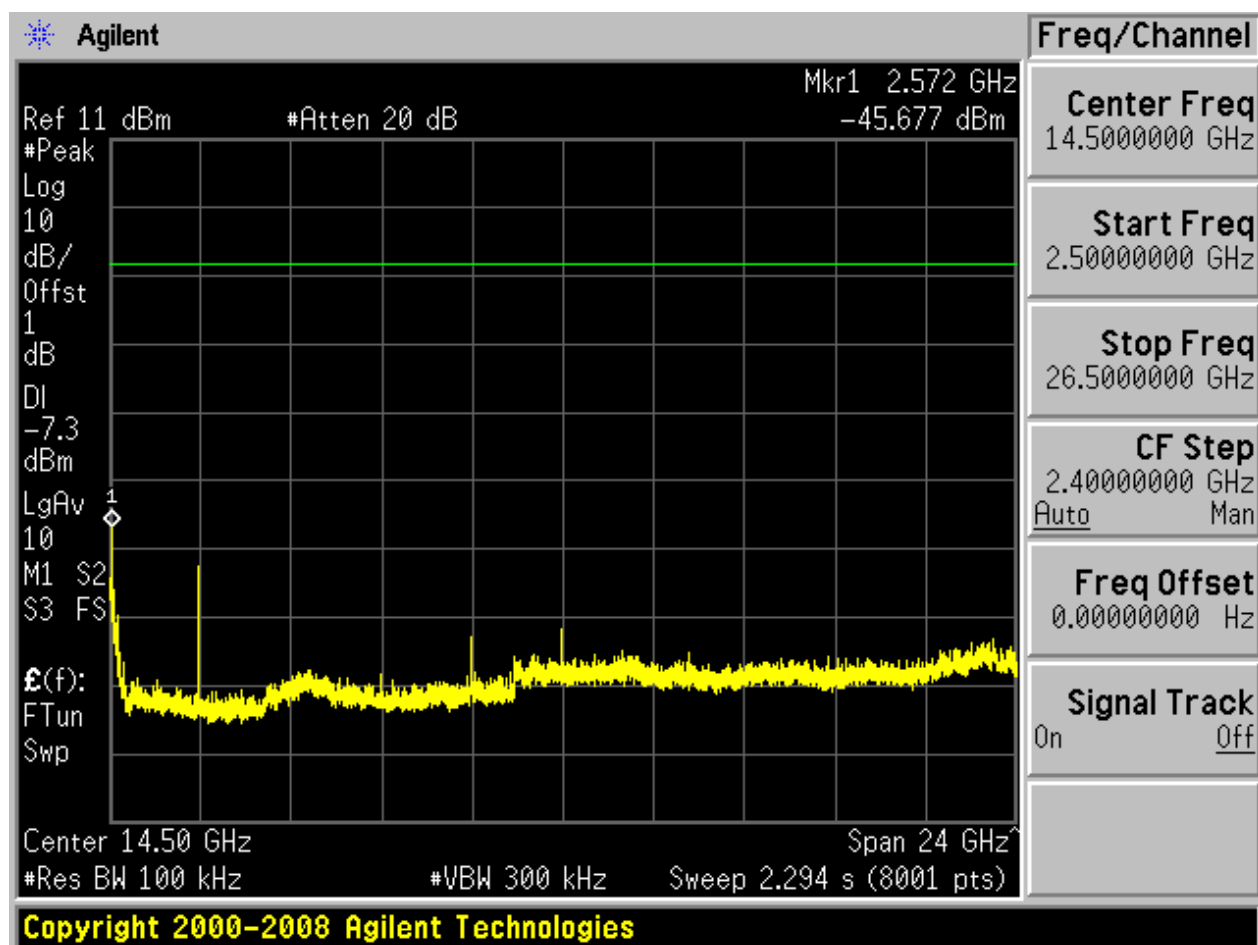


2.4835G - 2.5G



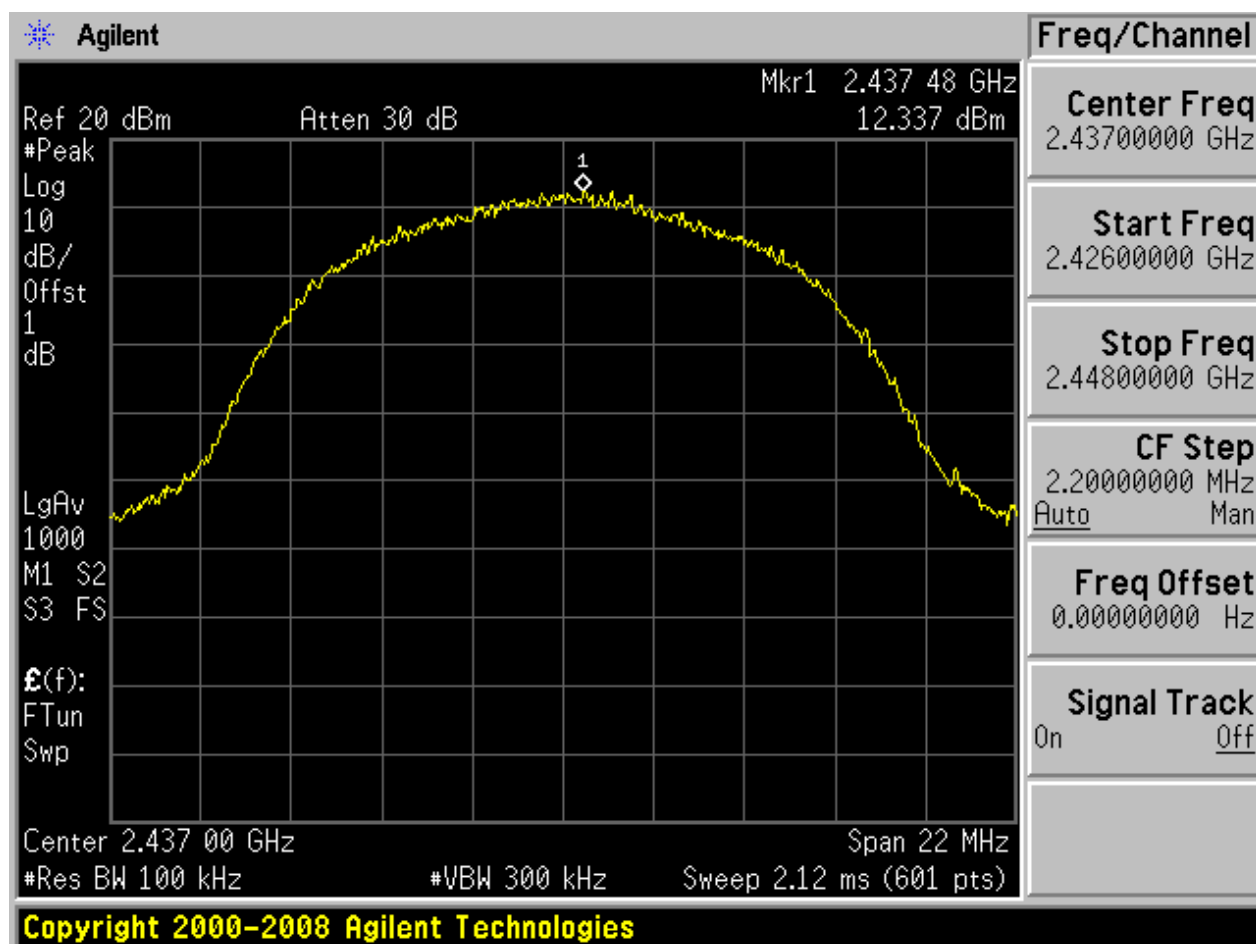


2.5G - 26.5G



2.2 11B_M

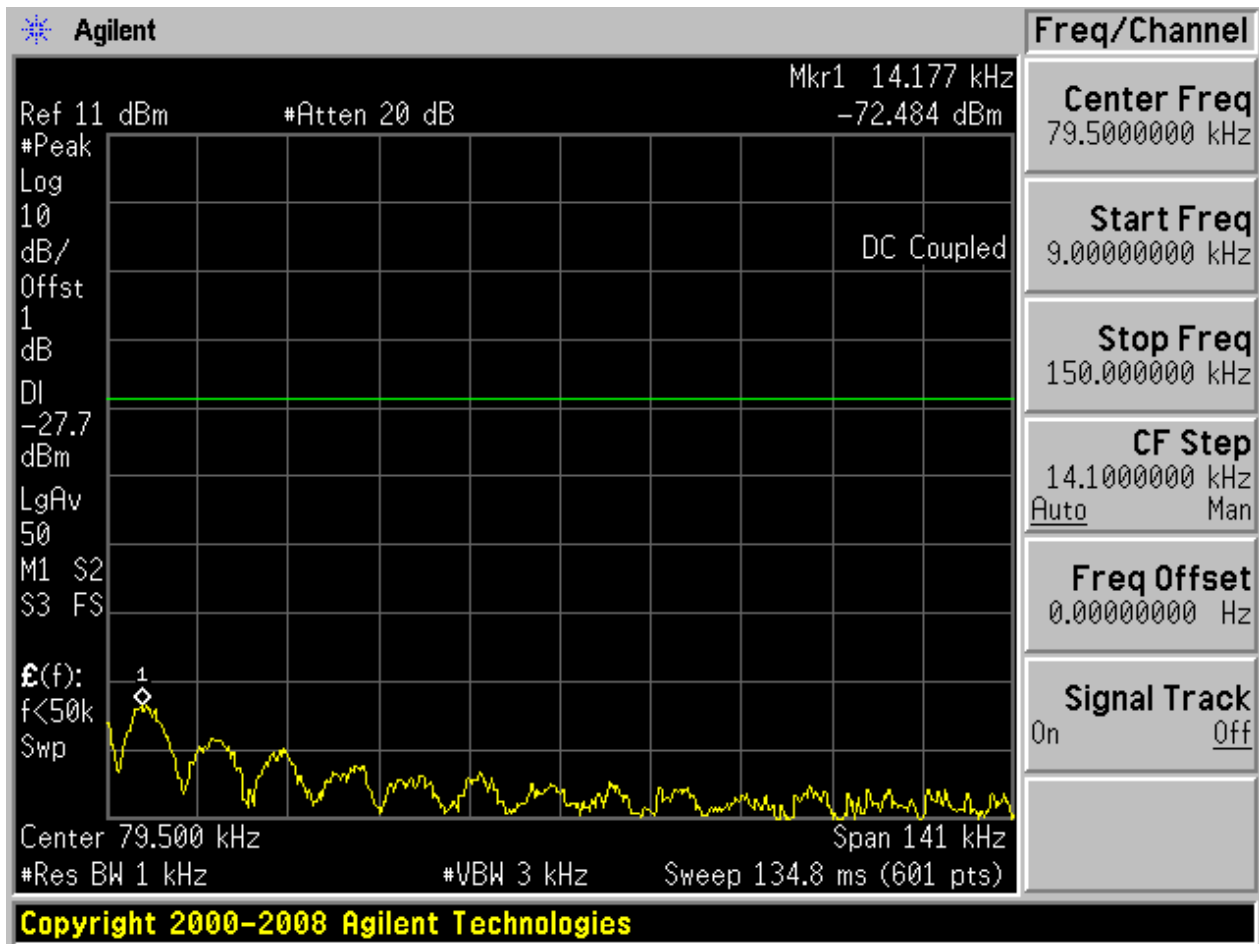
2.2.1 Pref:





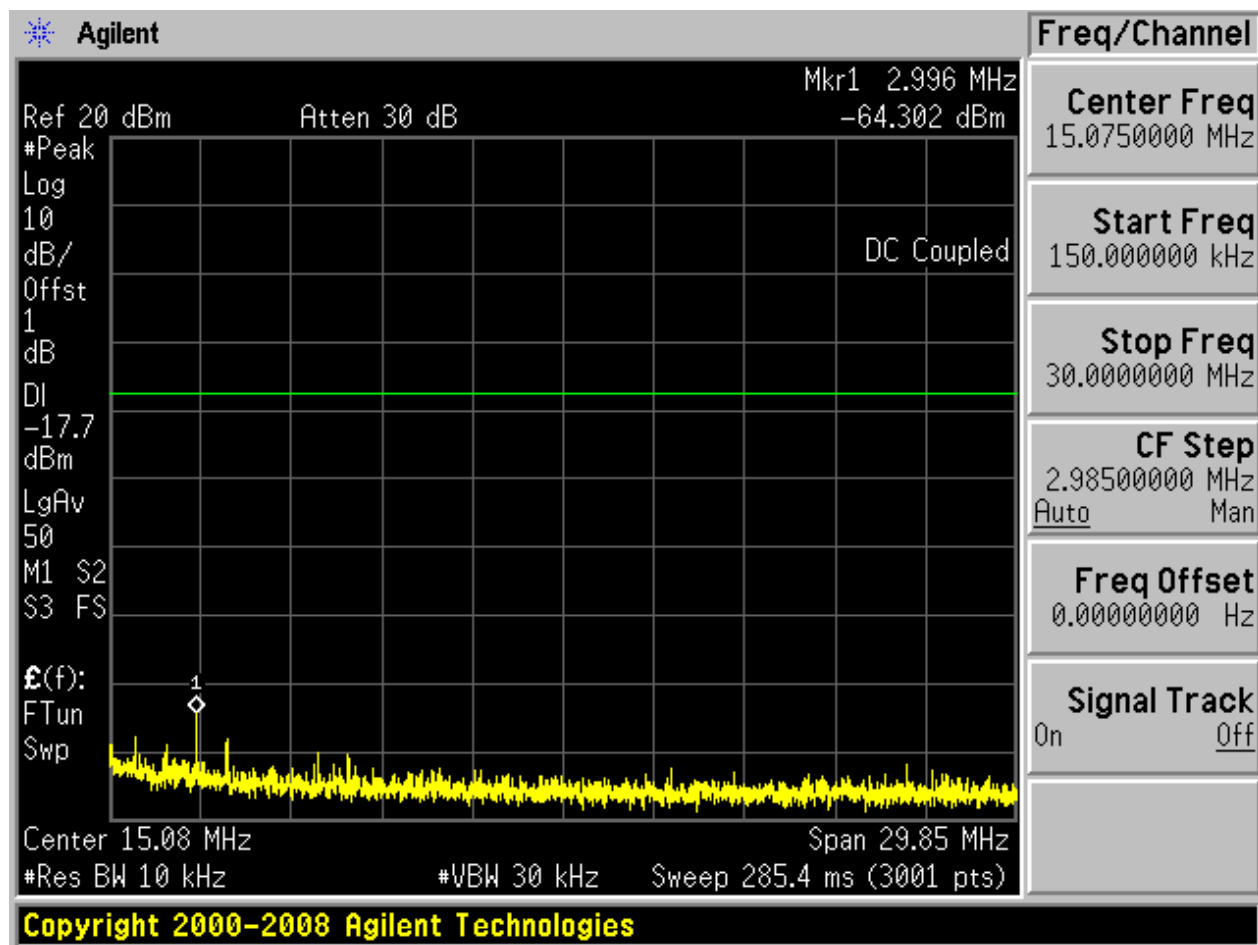
2.2.2 Puw:

9k - 150k



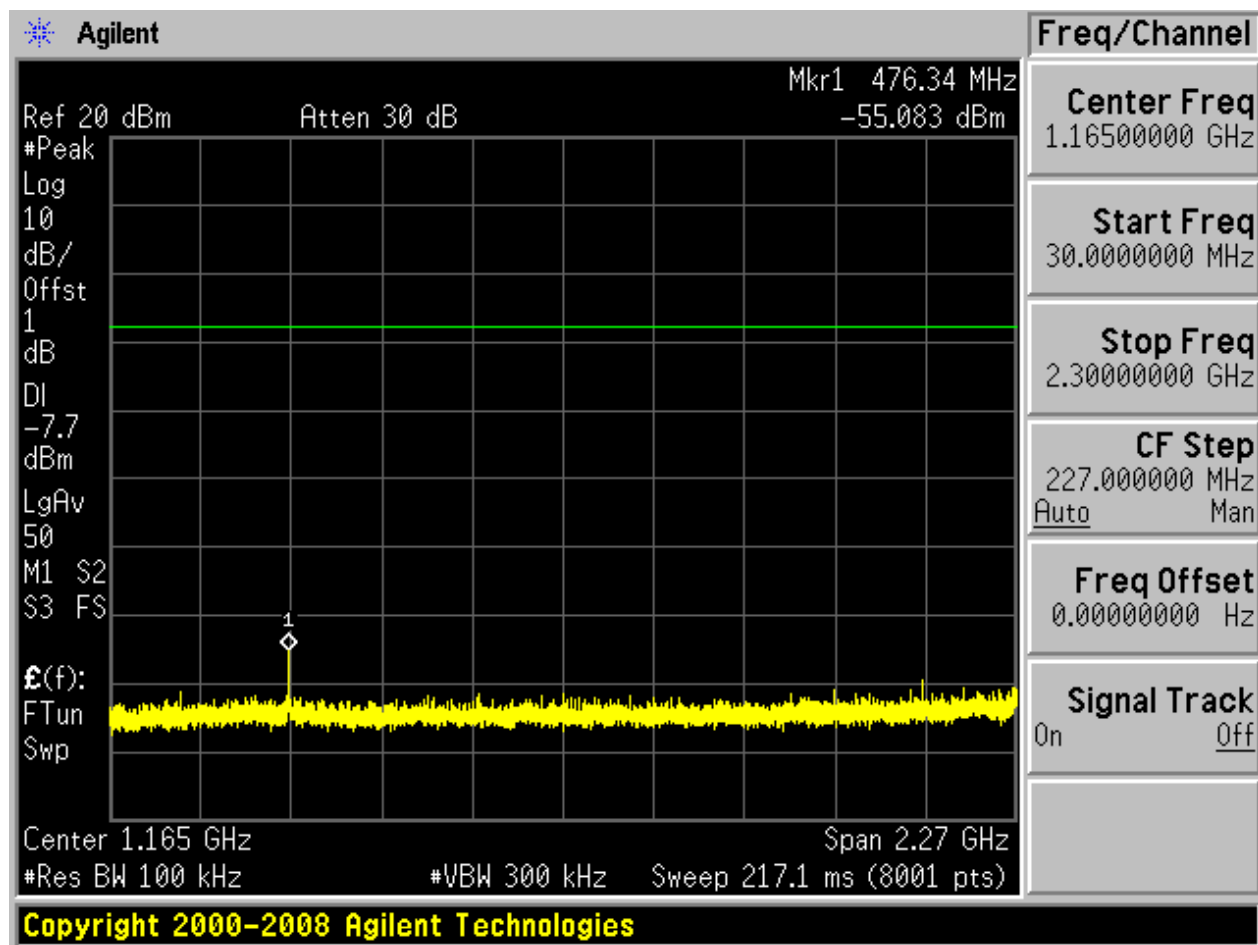


150k - 30M



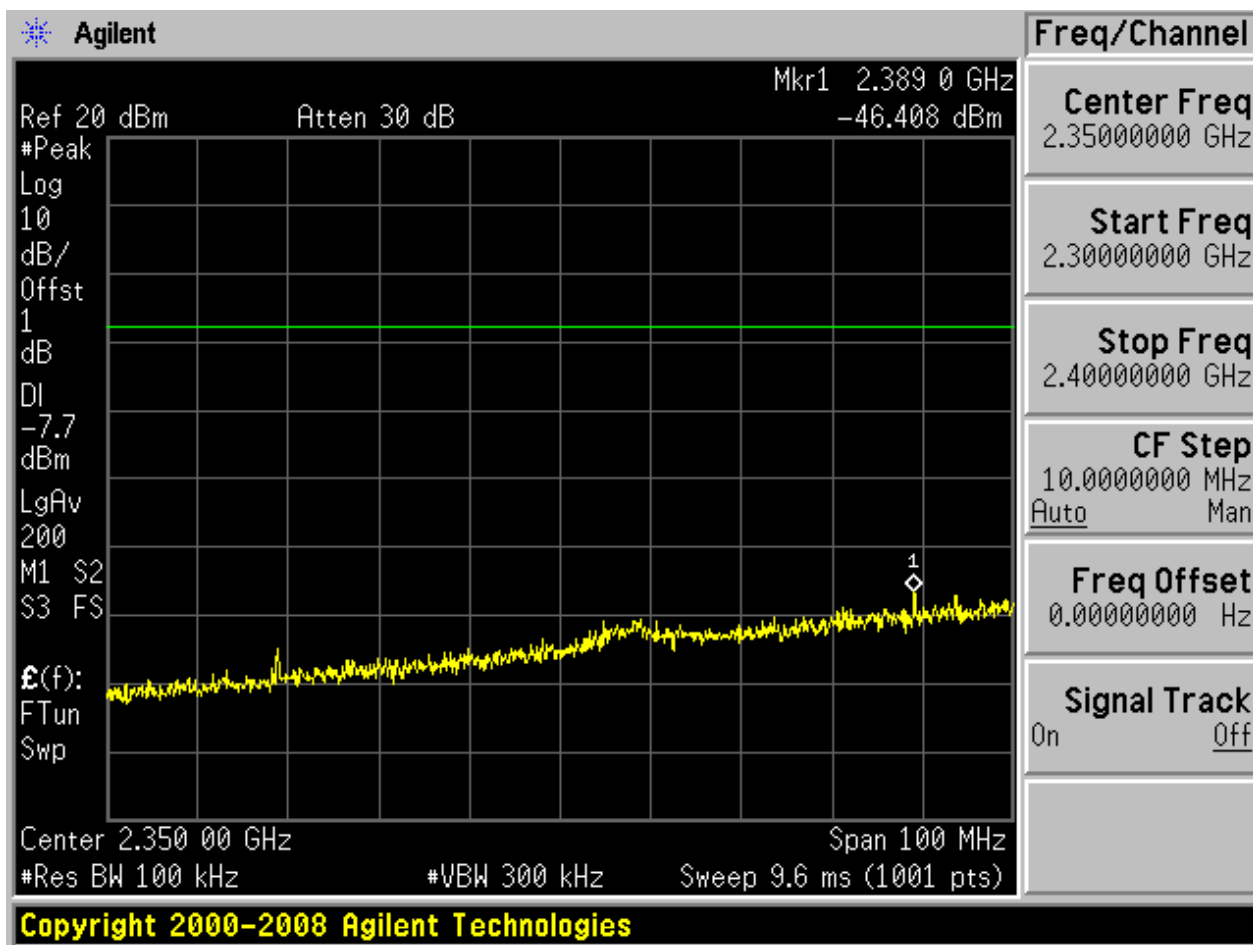


30M - 2.3G



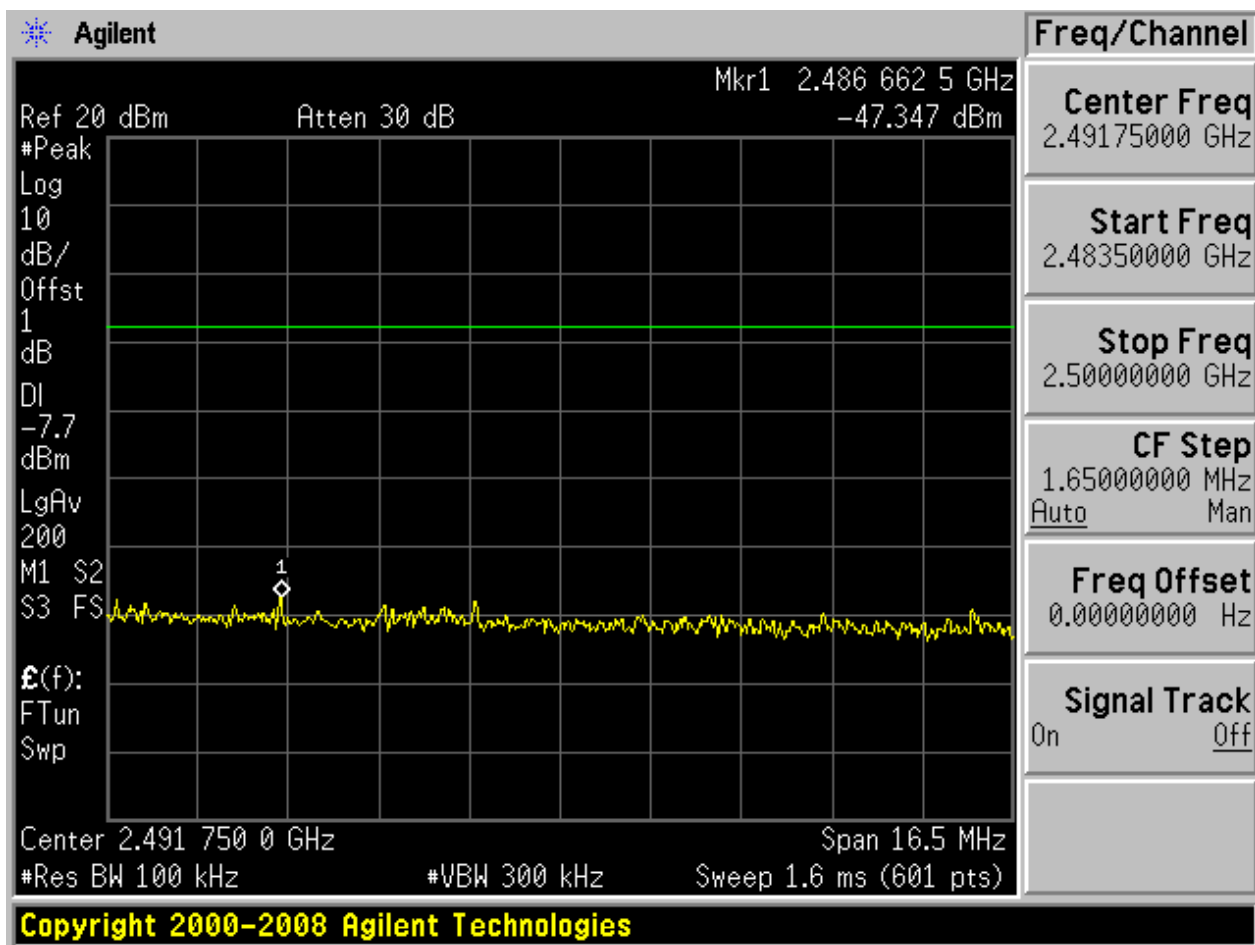


2.3G - 2.4G



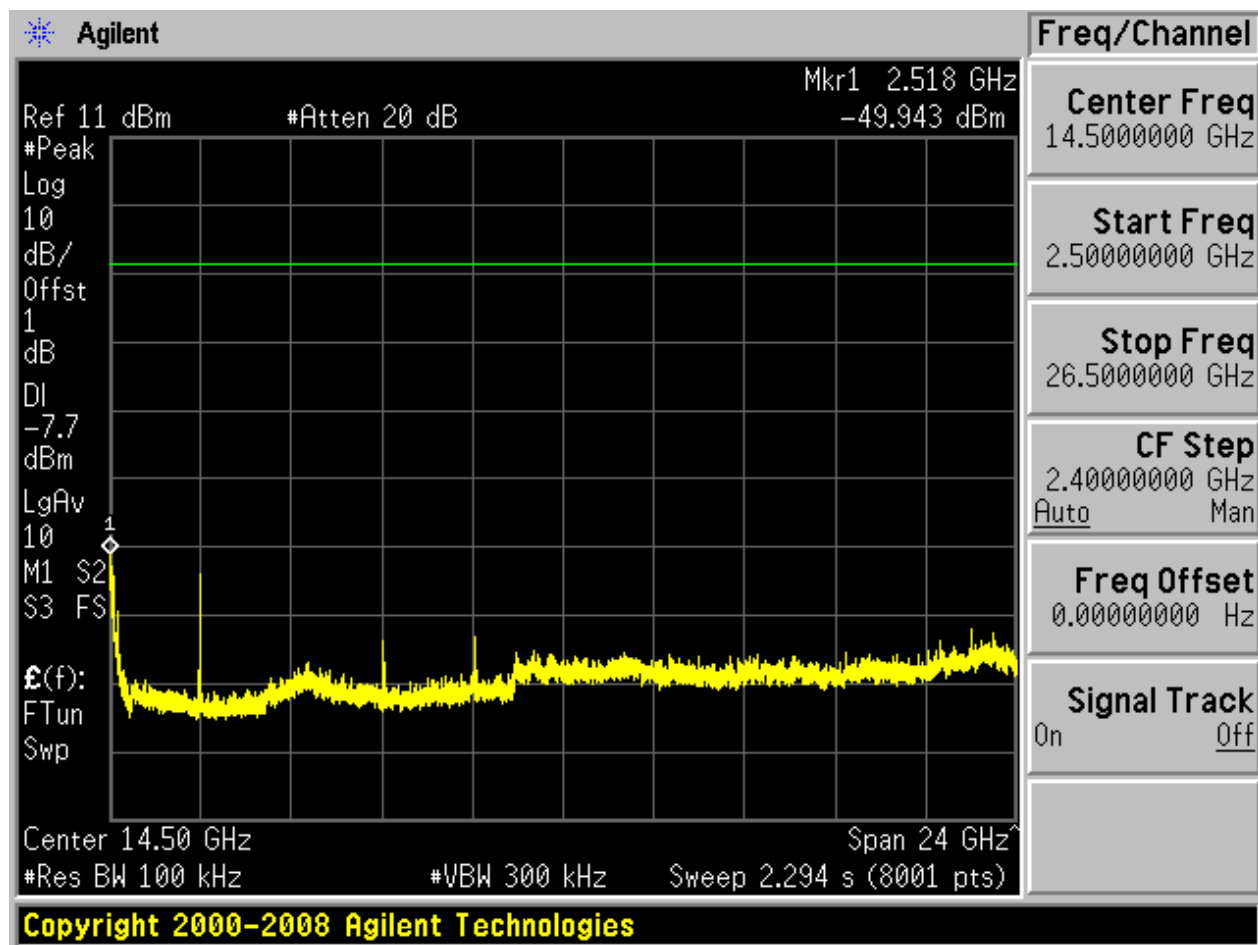


2.4835G - 2.5G





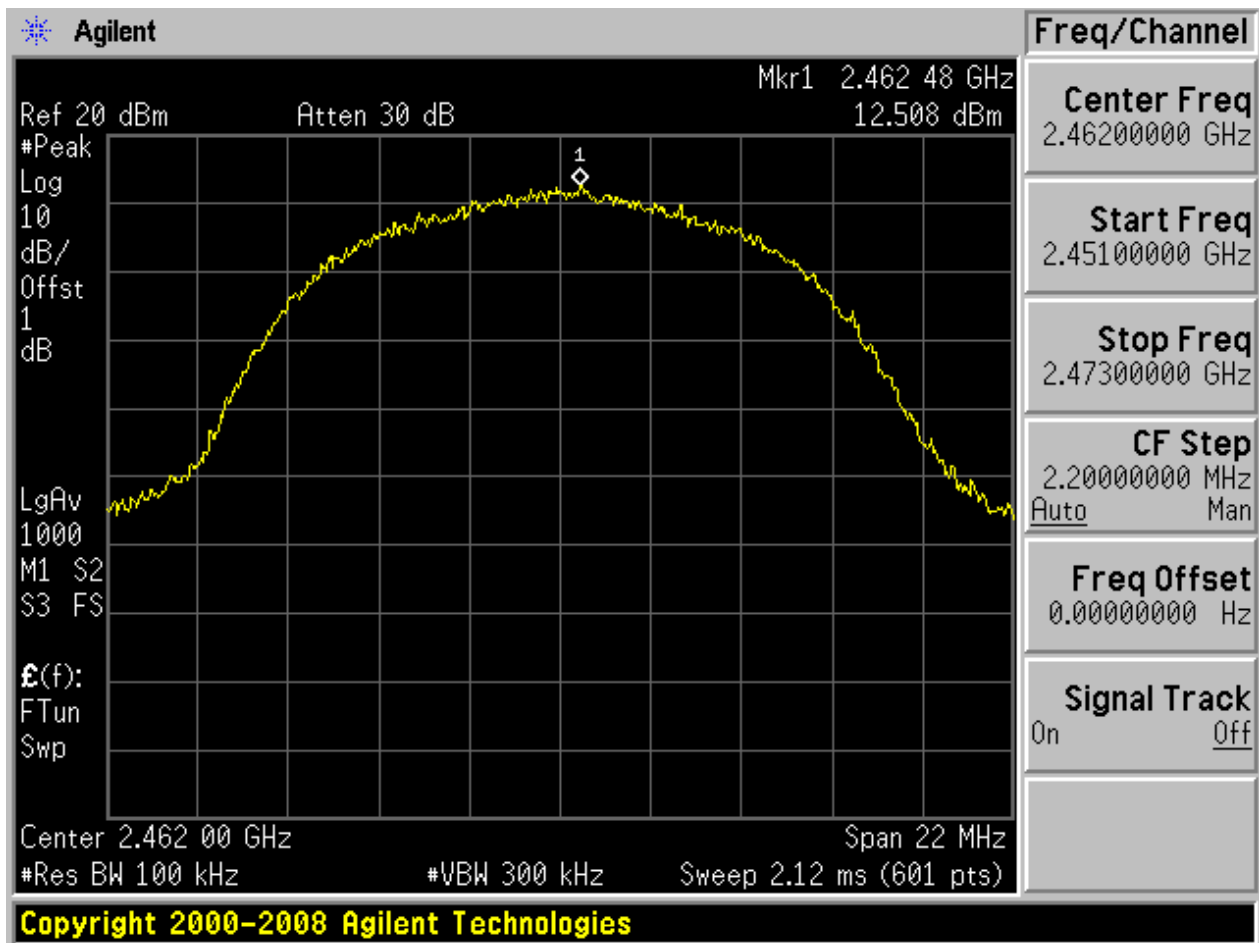
2.5G - 26.5G





2.3 11B_H

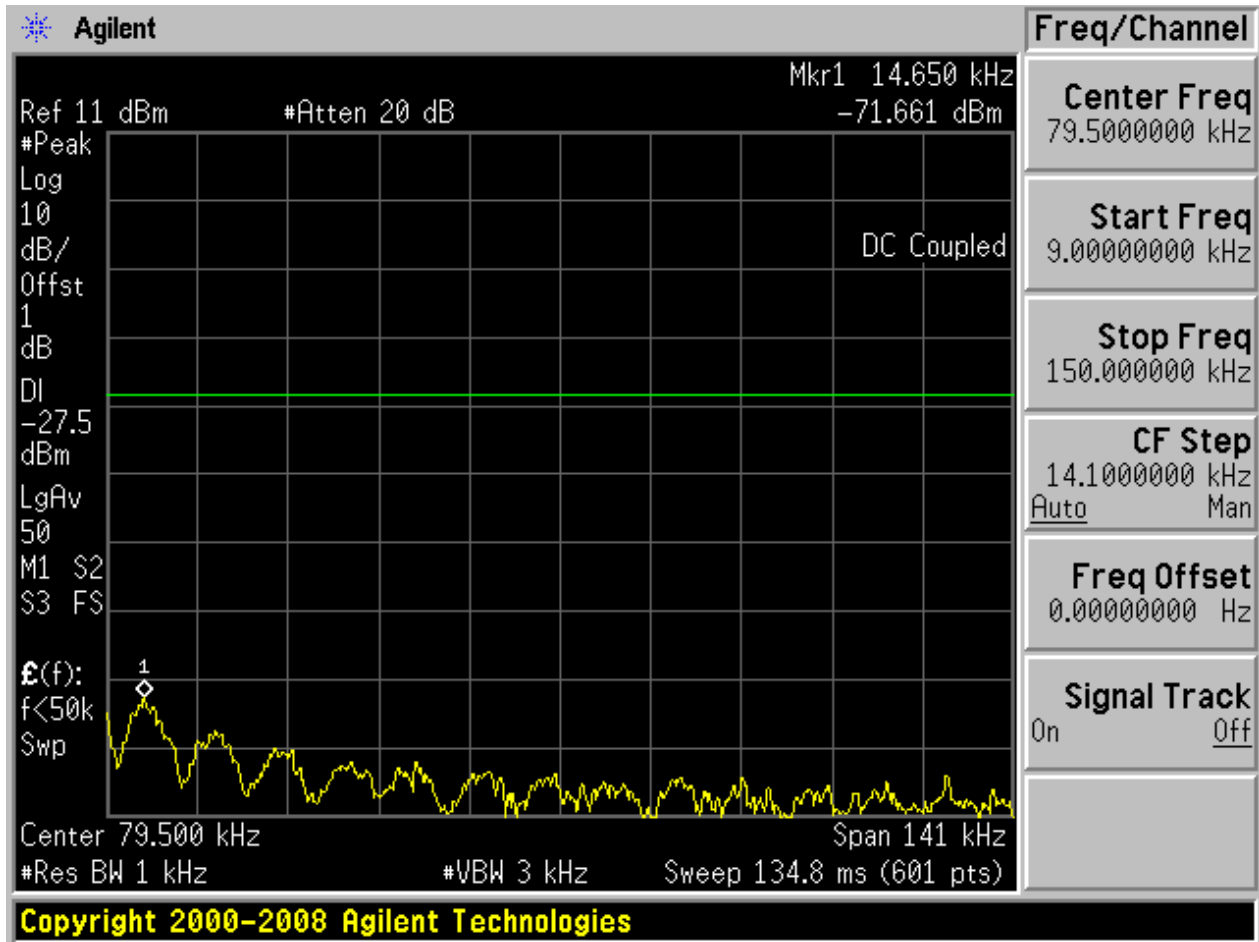
2.3.1 Pref:





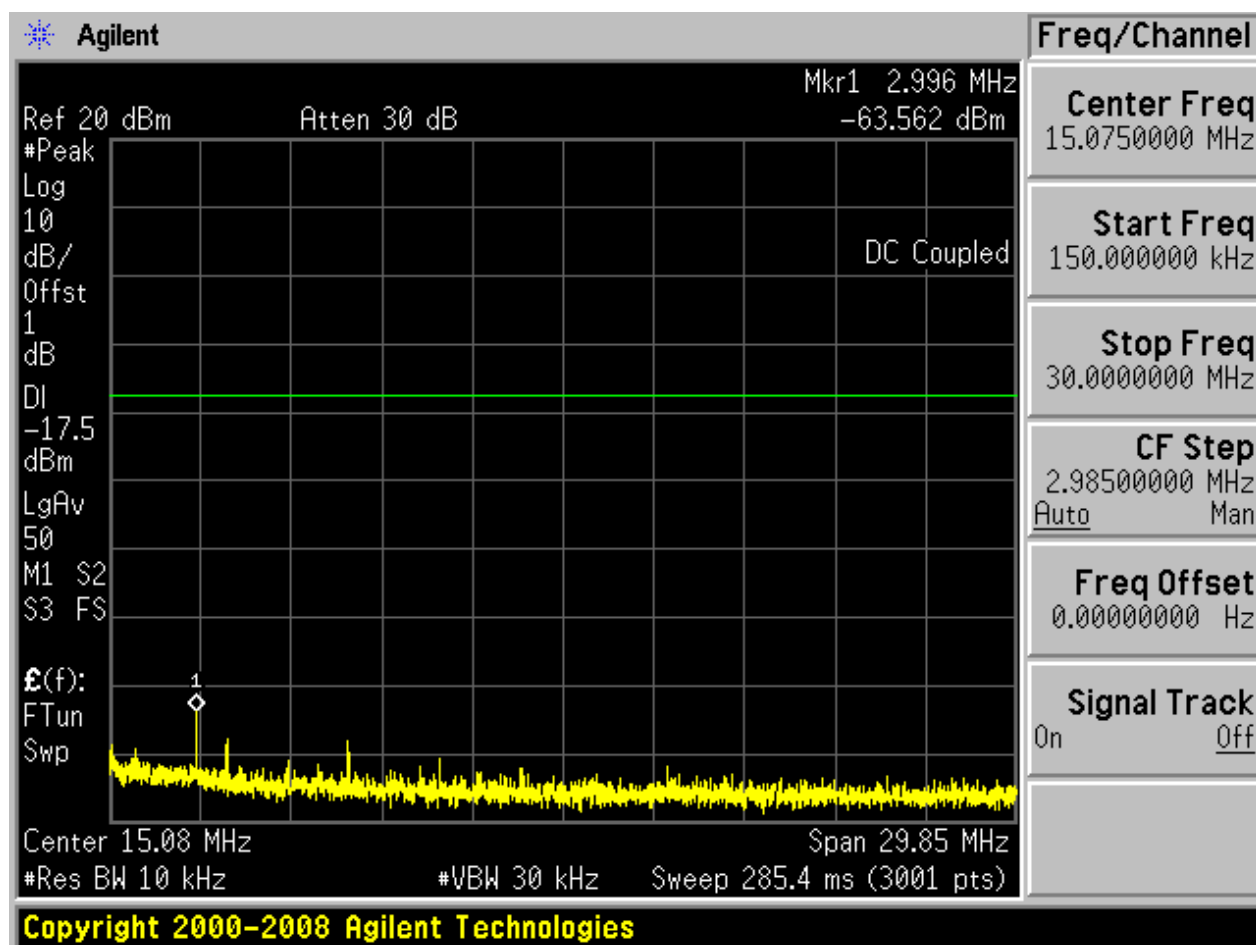
2.3.2 Puw:

9k - 150k



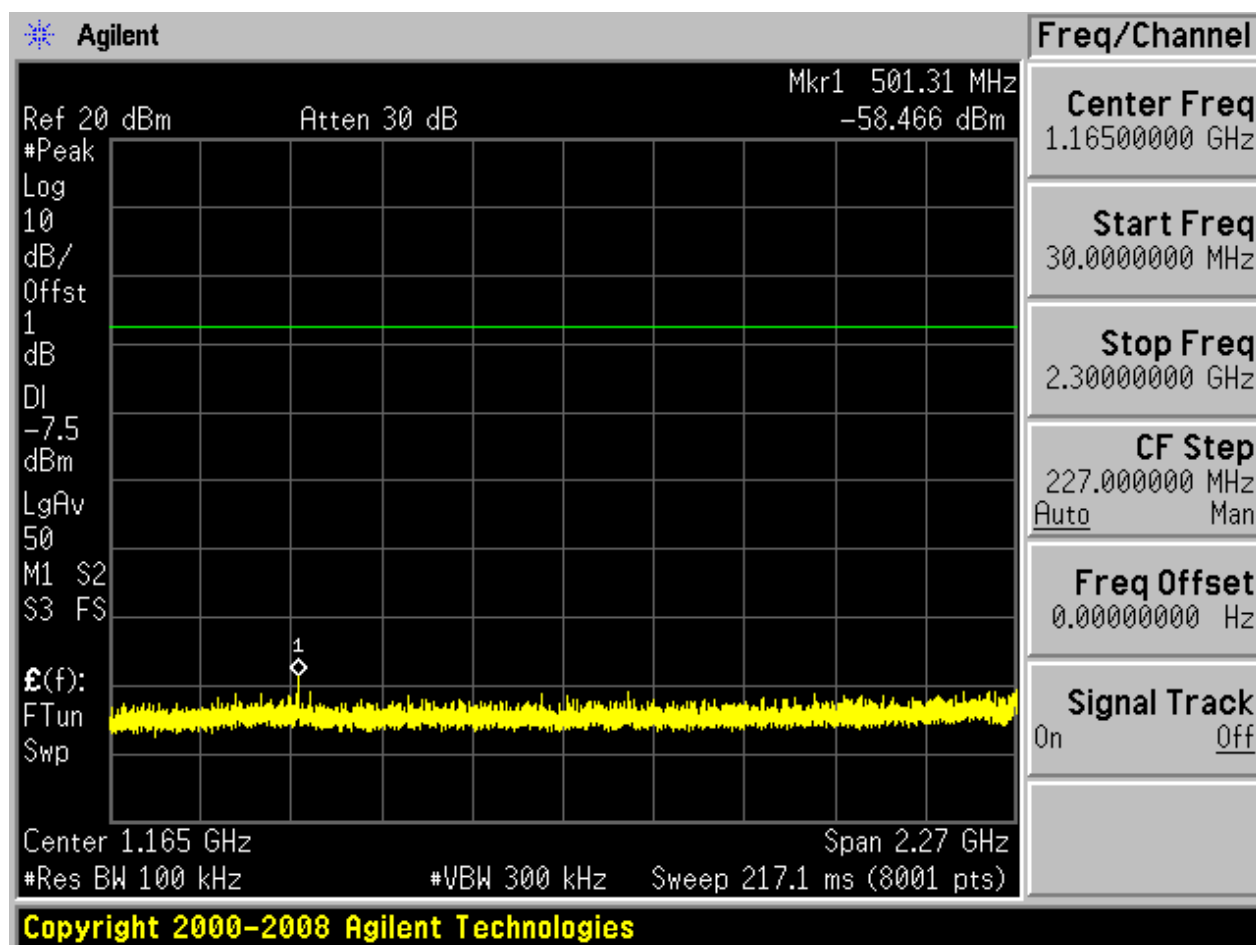


150k - 30M



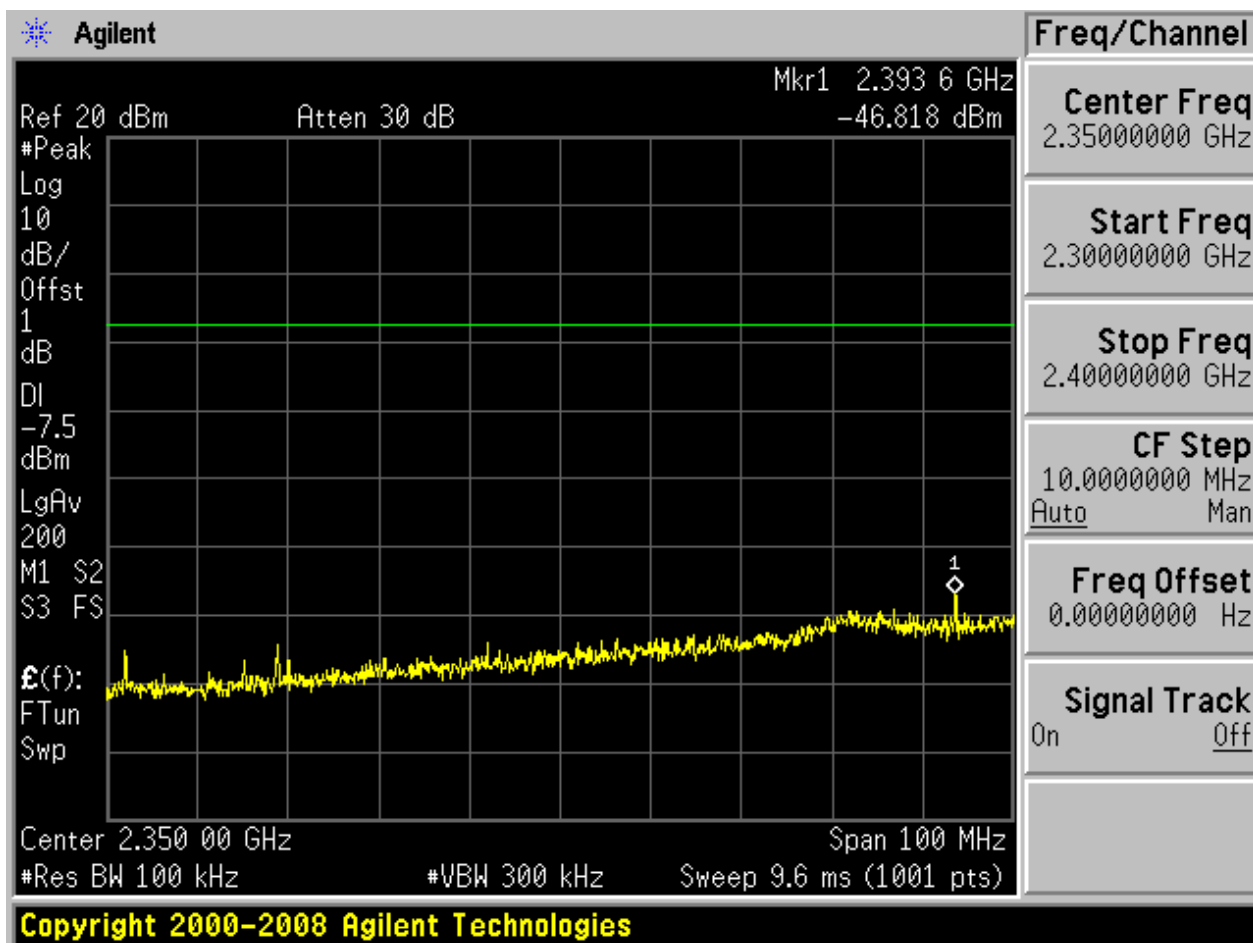


30M - 2.3G



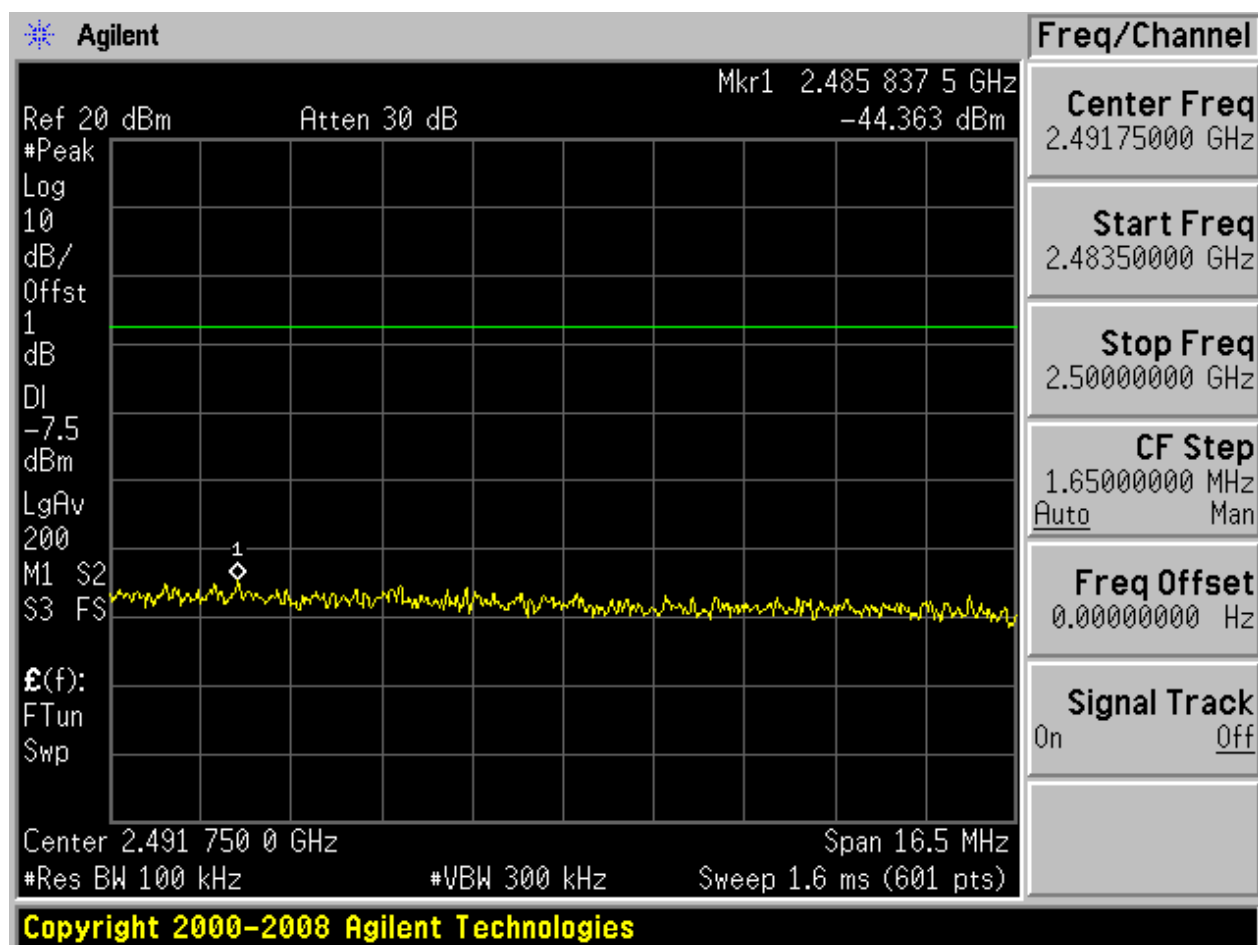


2.3G - 2.4G



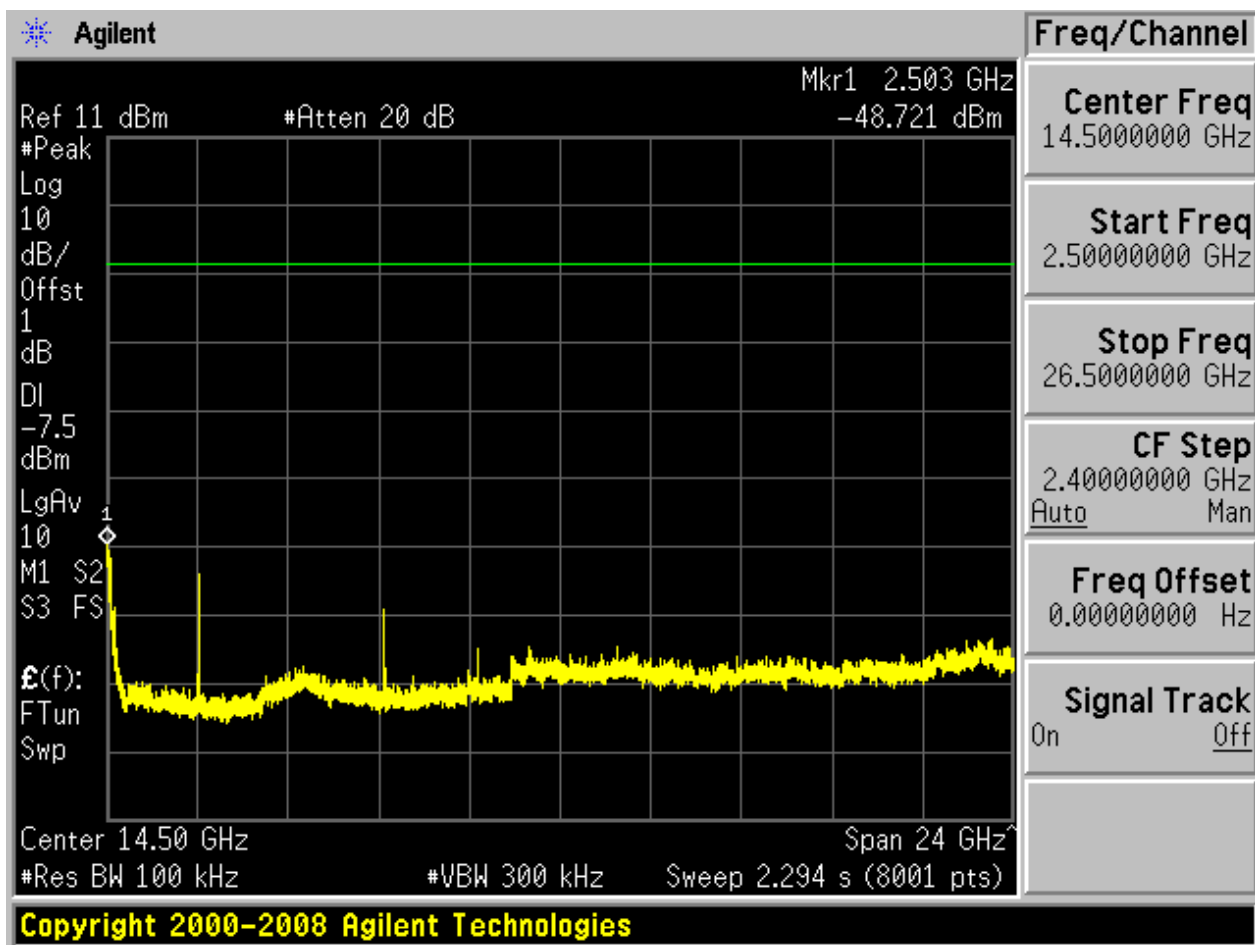


2.4835G - 2.5G



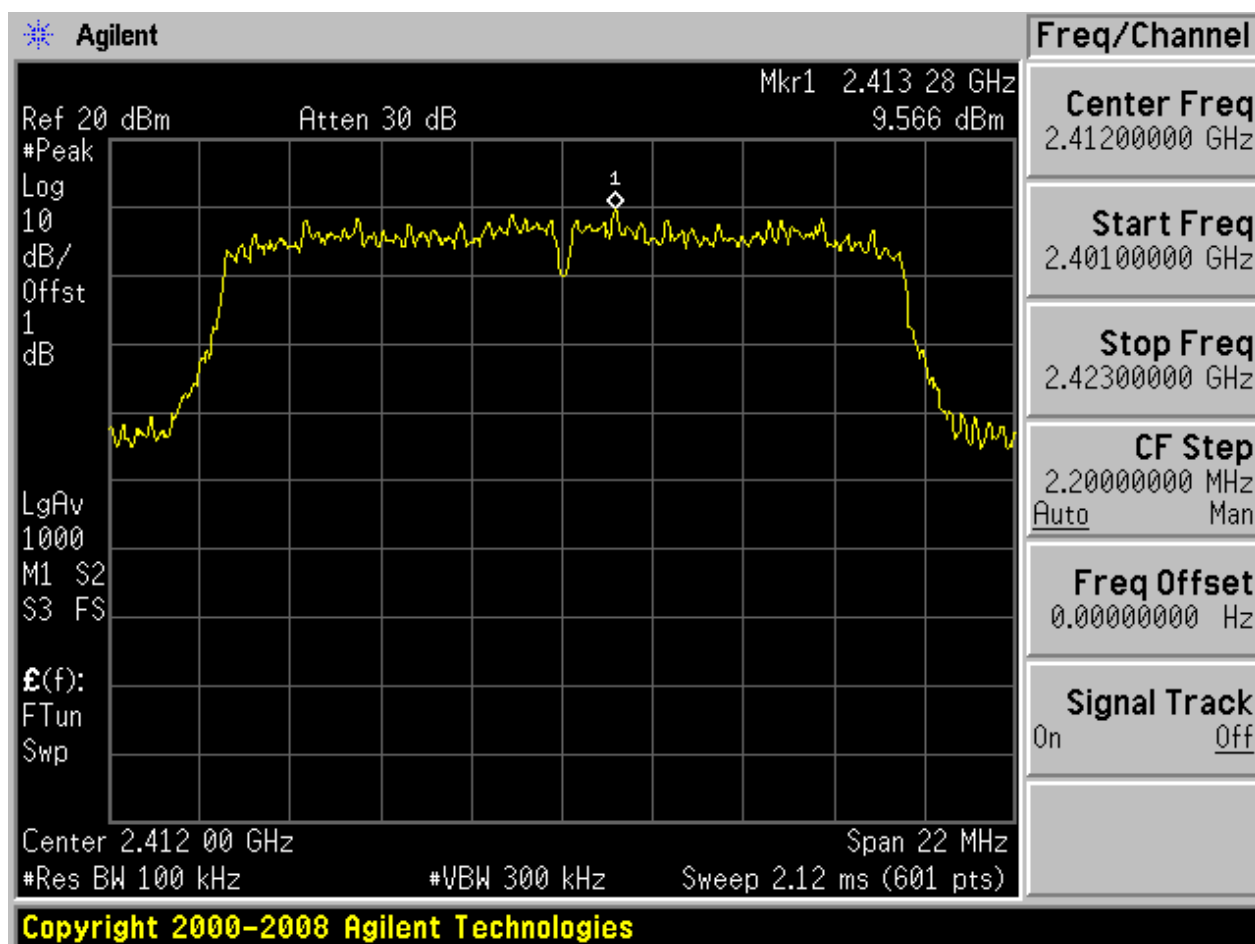


2.5G - 26.5G



2.4 11G_L

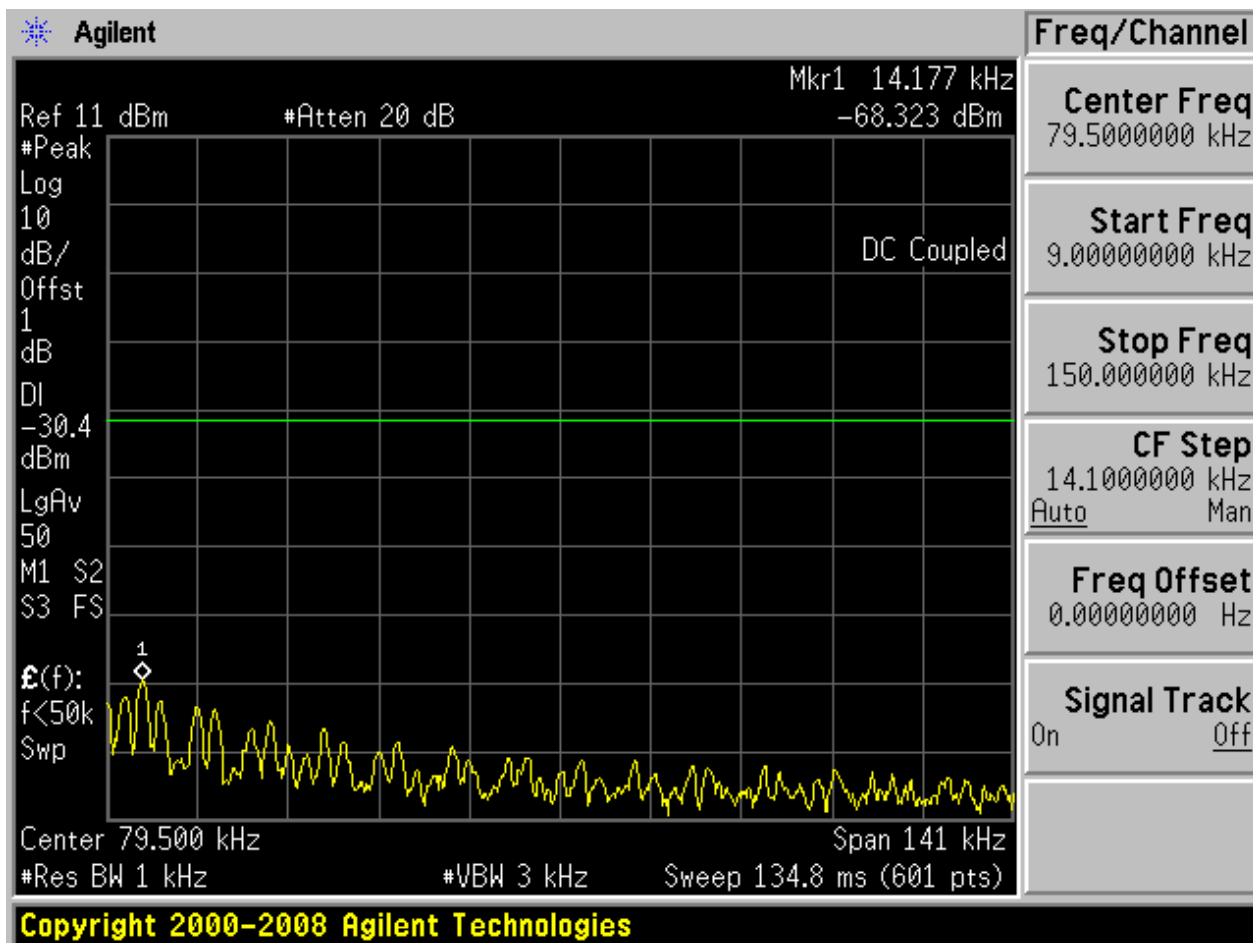
2.4.1 Pref:





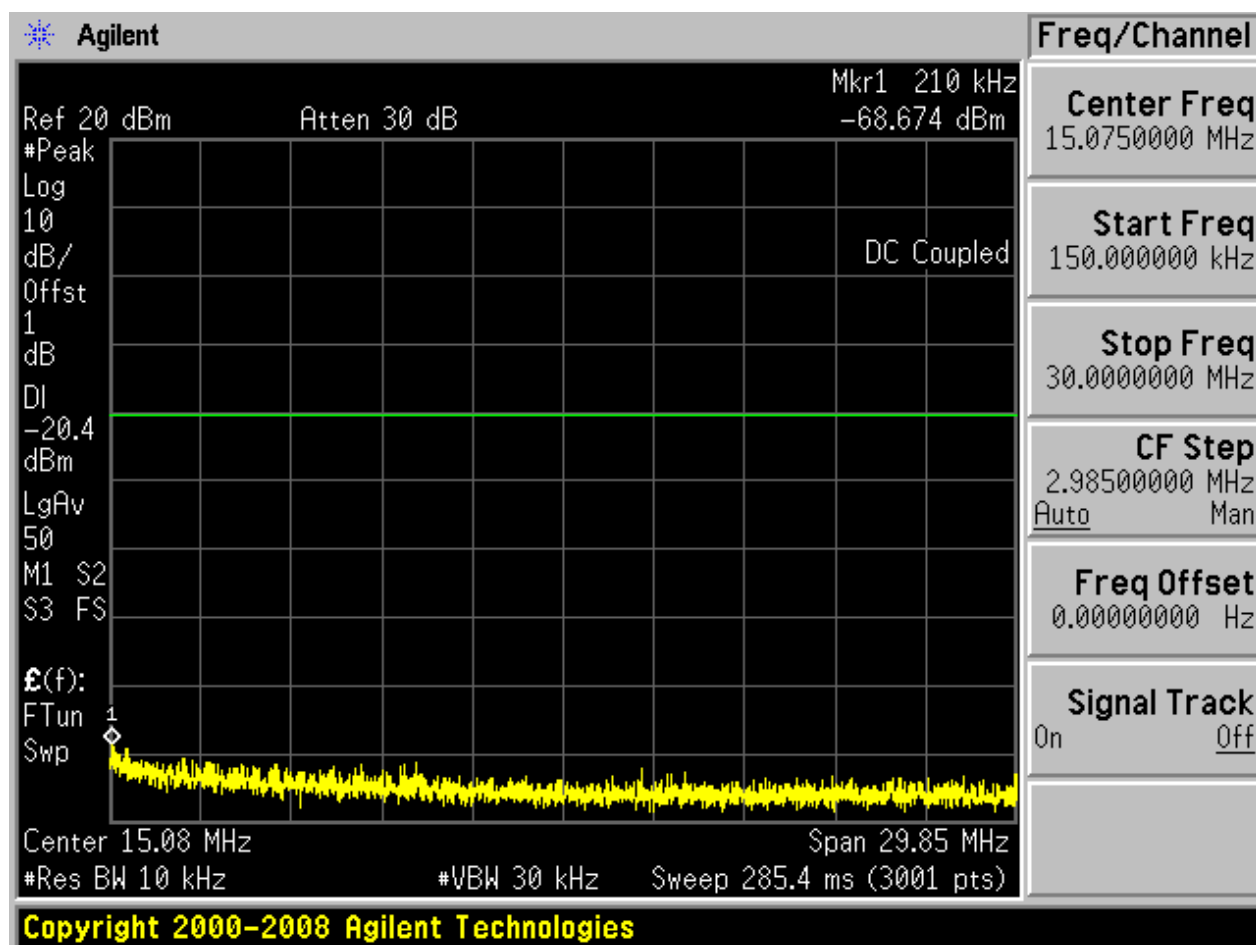
2.4.2 Puw:

9k - 150k



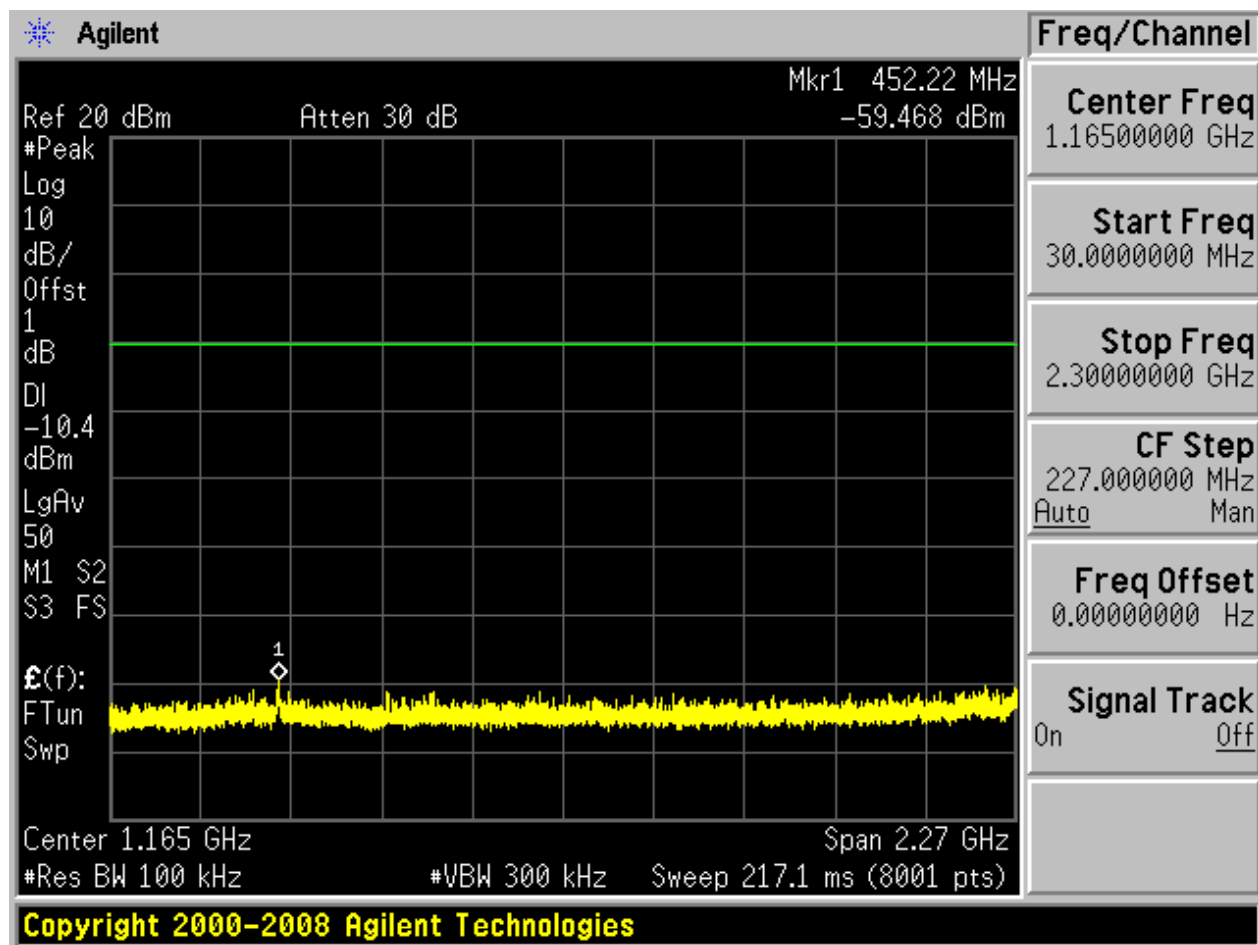


150k - 30M



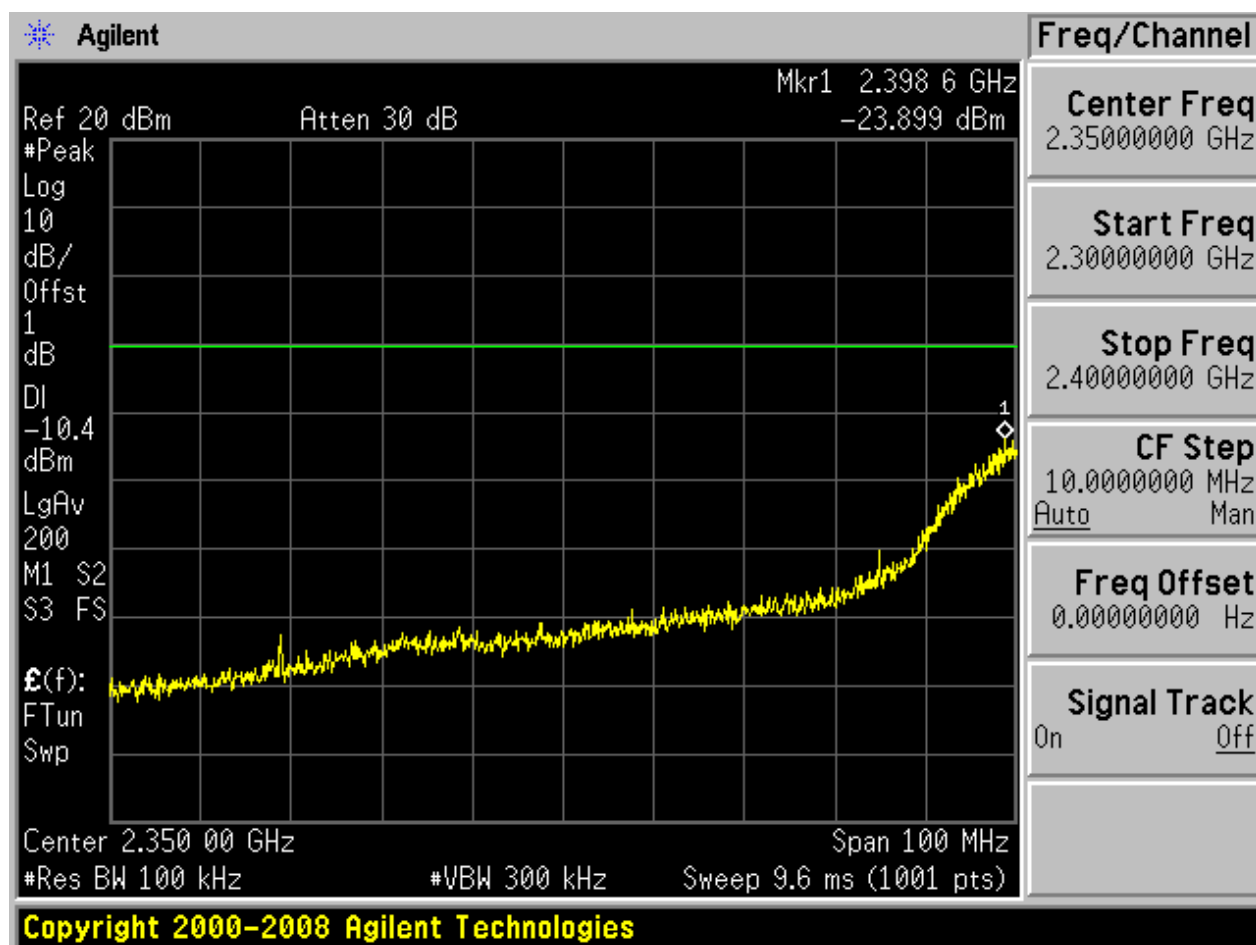


30M - 2.3G



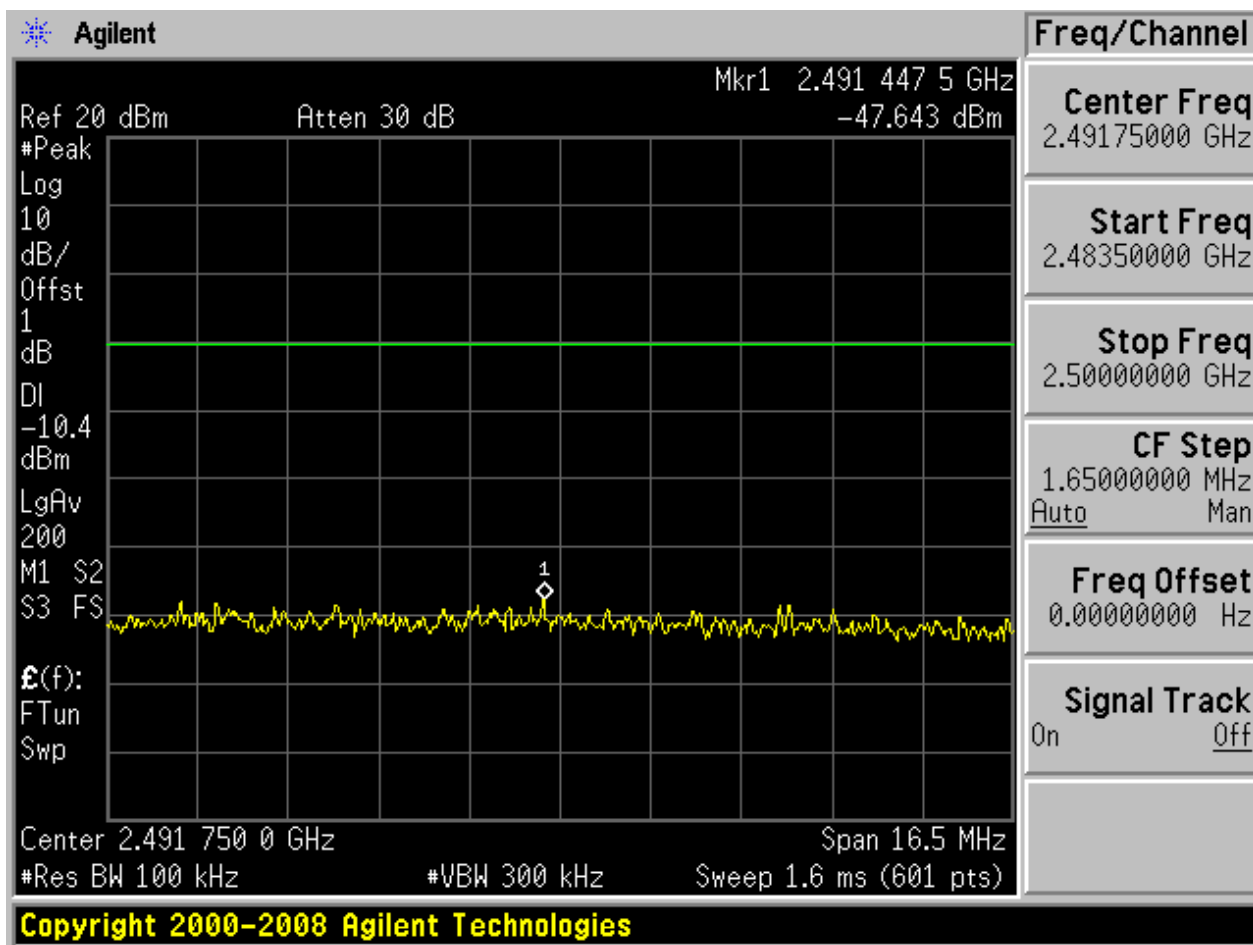


2.3G - 2.4G



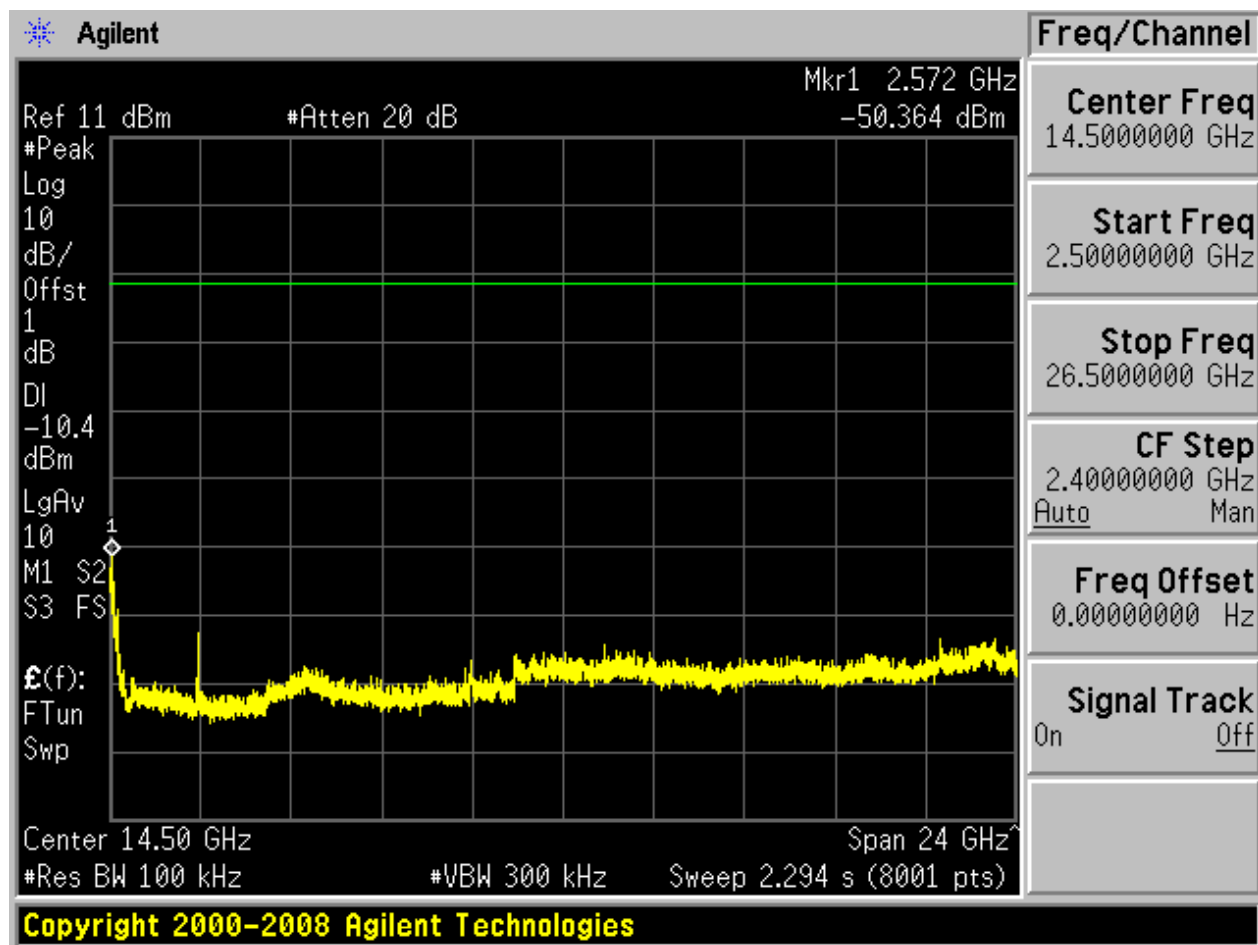


2.4835G - 2.5G





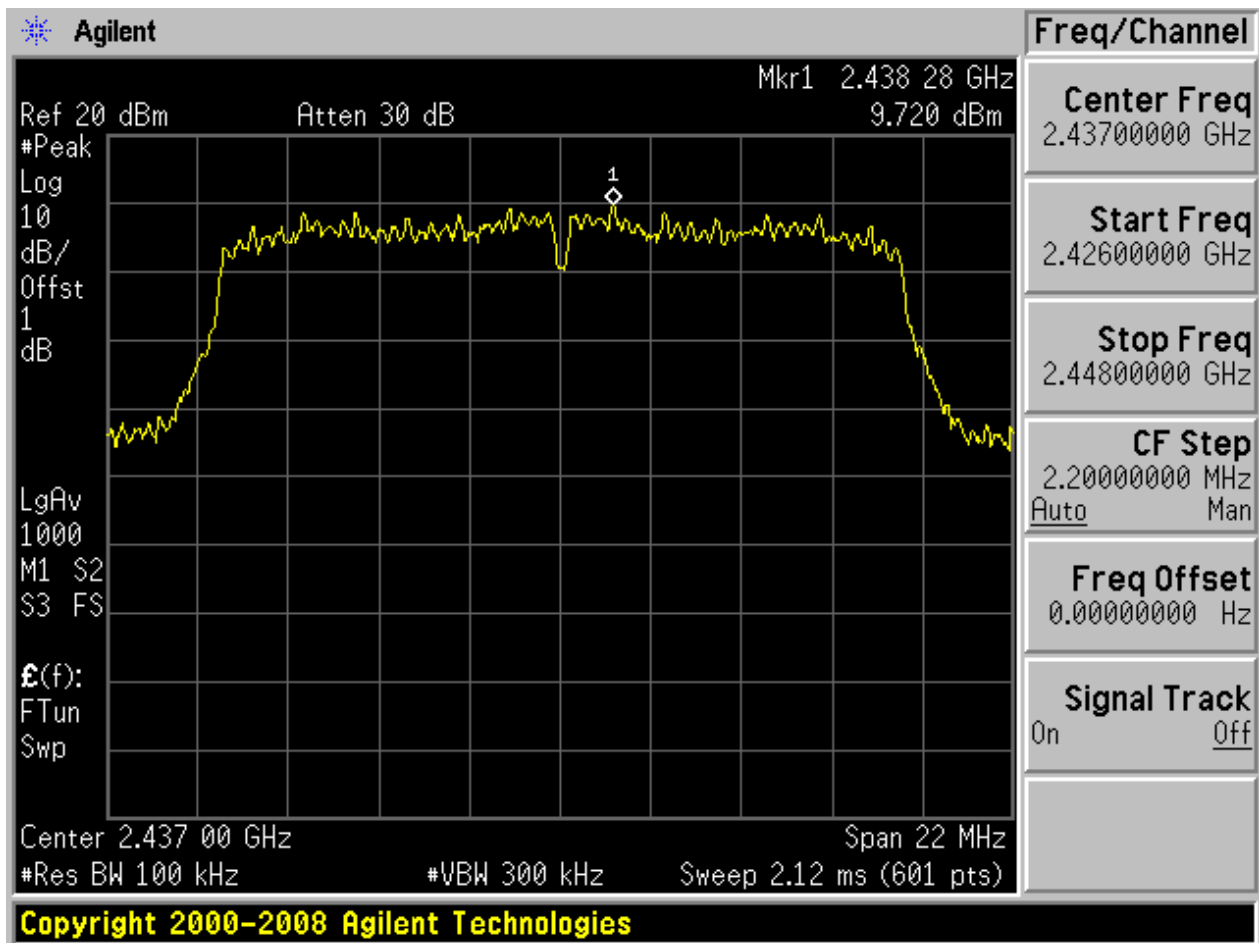
2.5G - 26.5G





2.5 11G_M

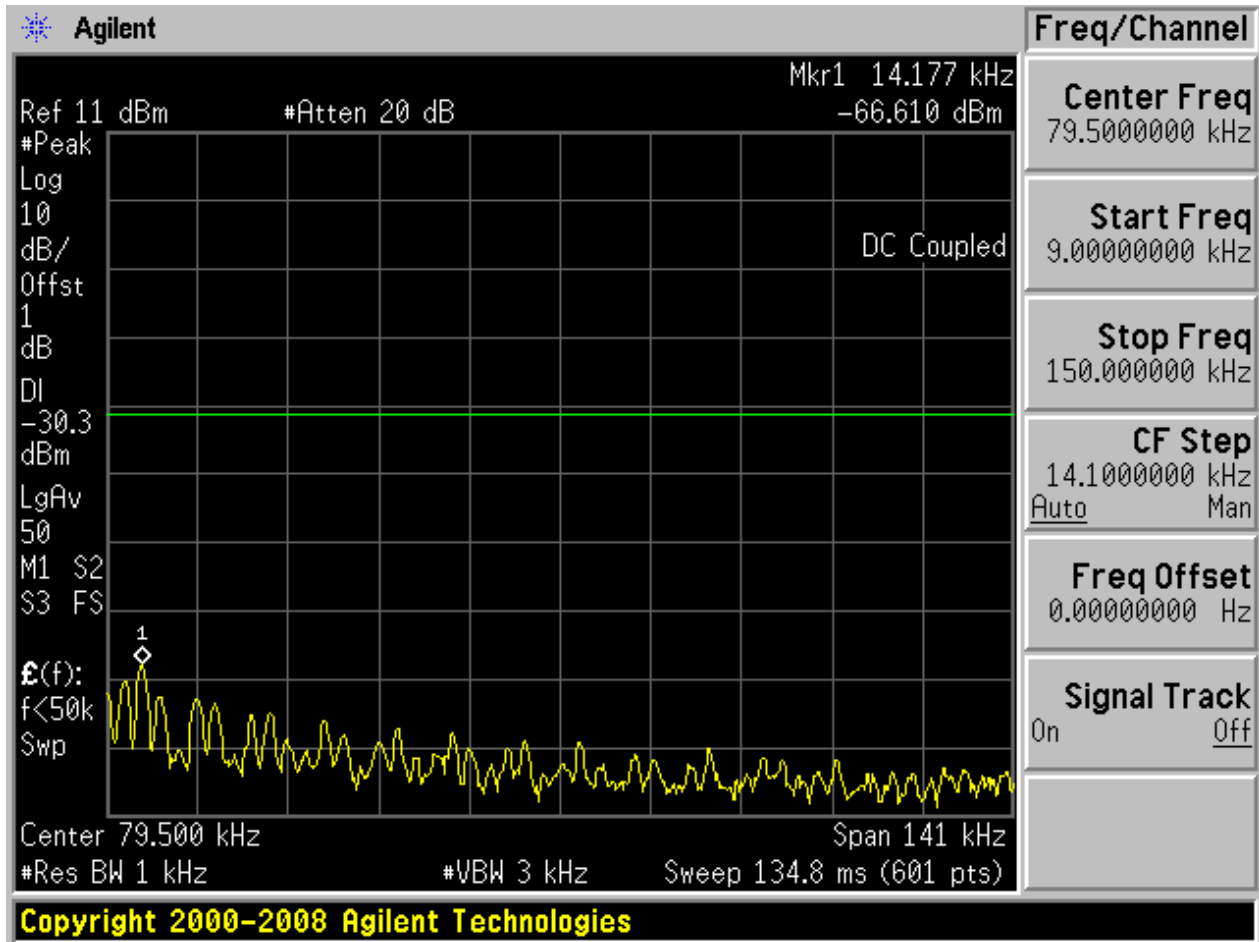
2.5.1 Pref:





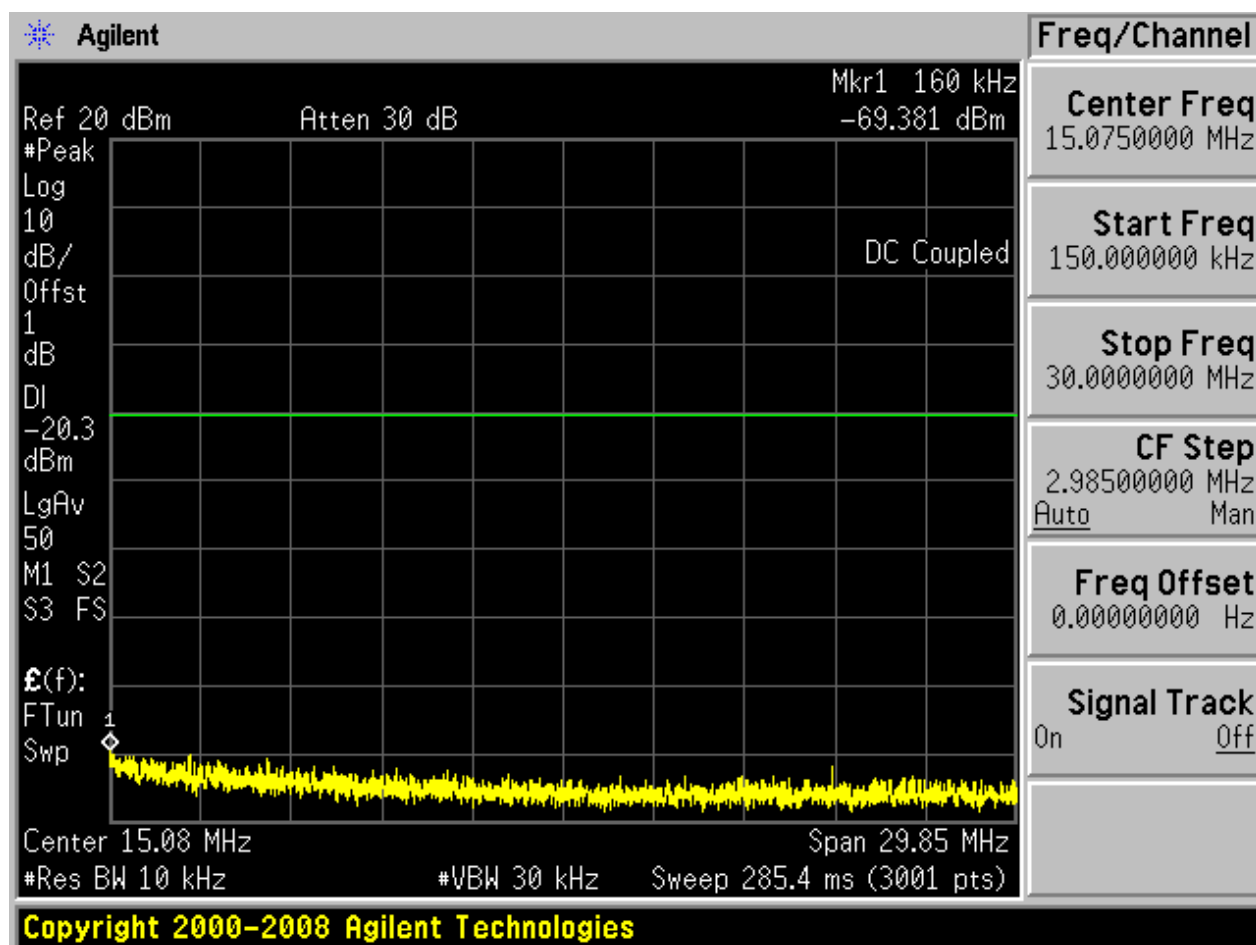
2.5.2 Puw:

9k - 150k



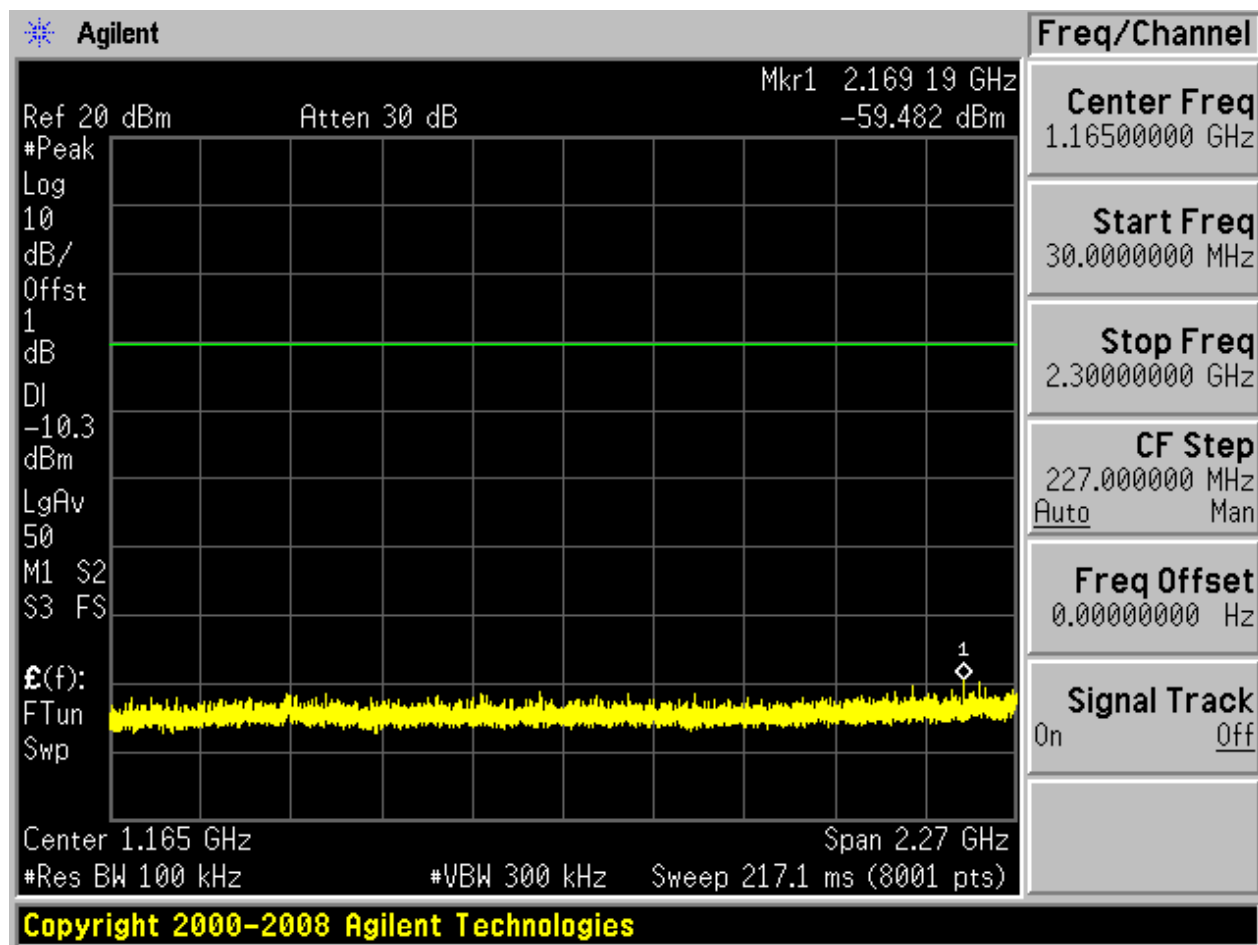


150k - 30M



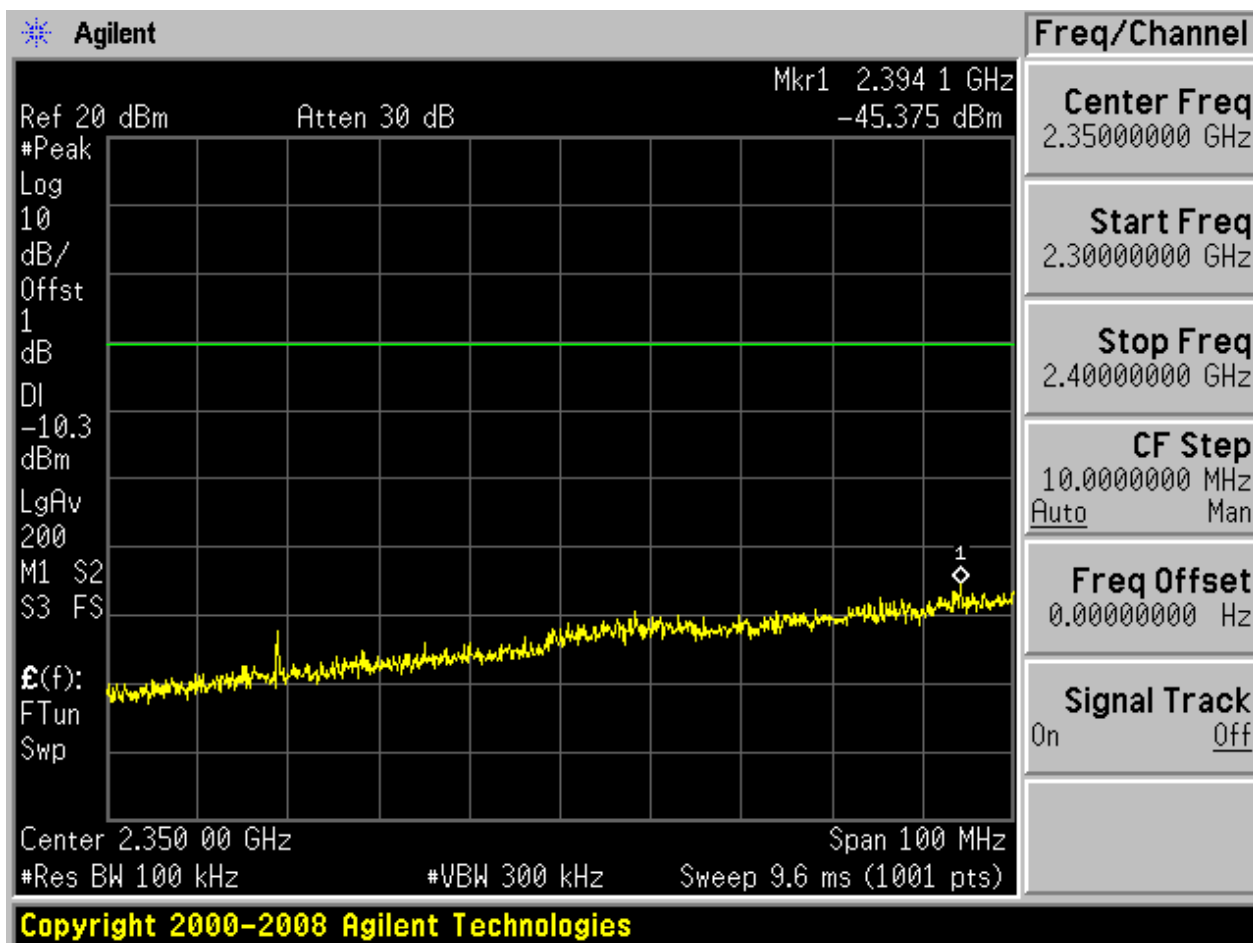


30M - 2.3G



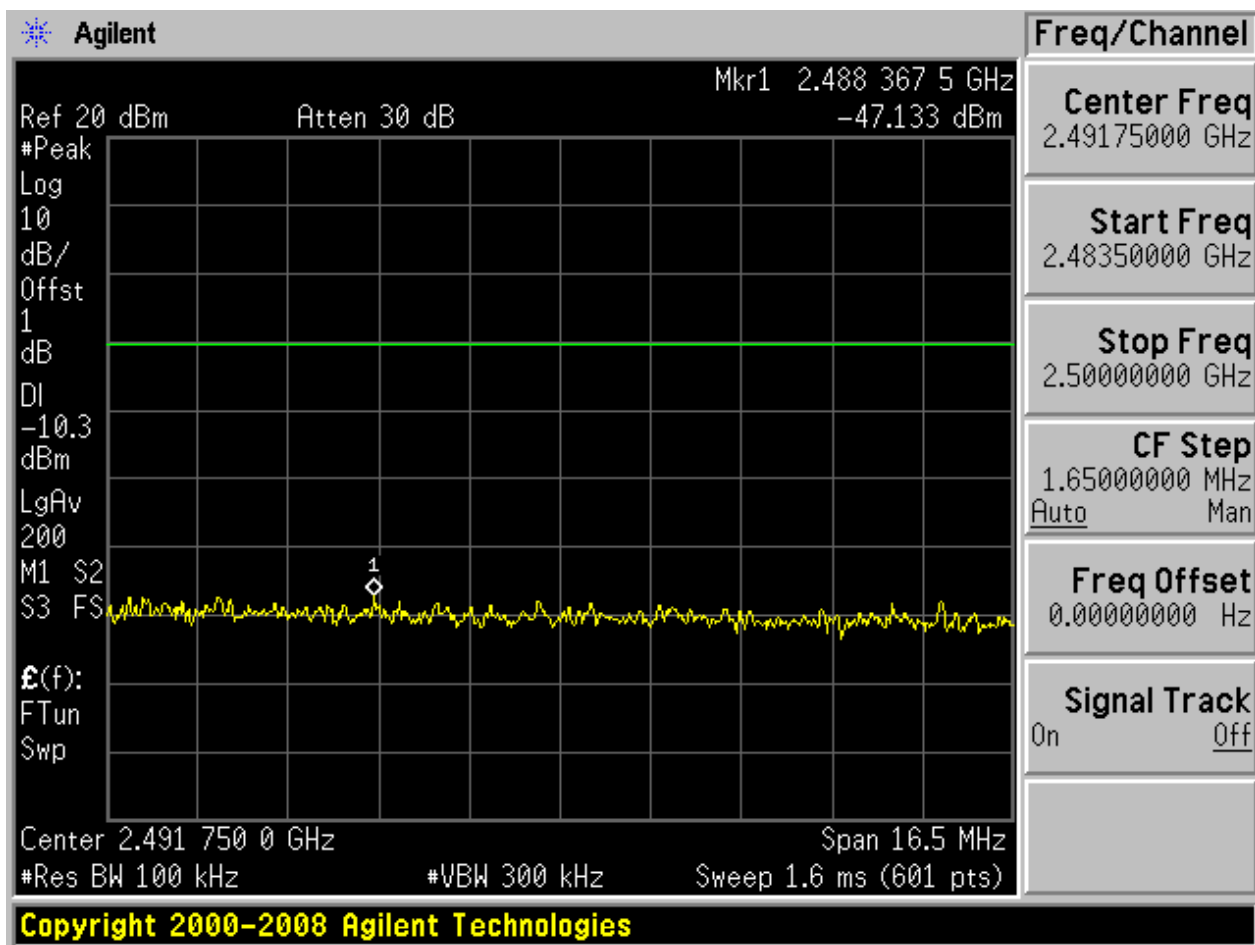


2.3G - 2.4G



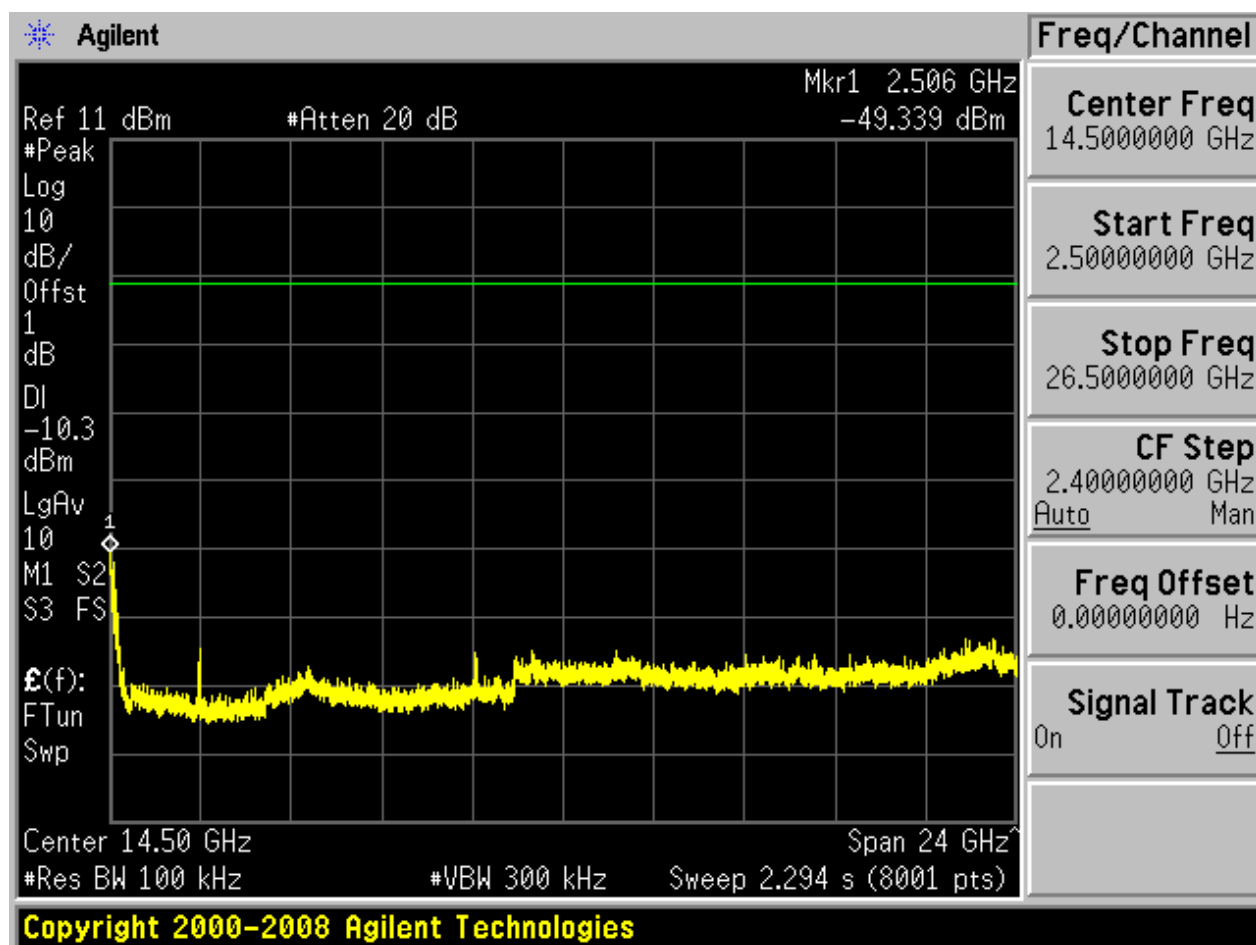


2.4835G - 2.5G



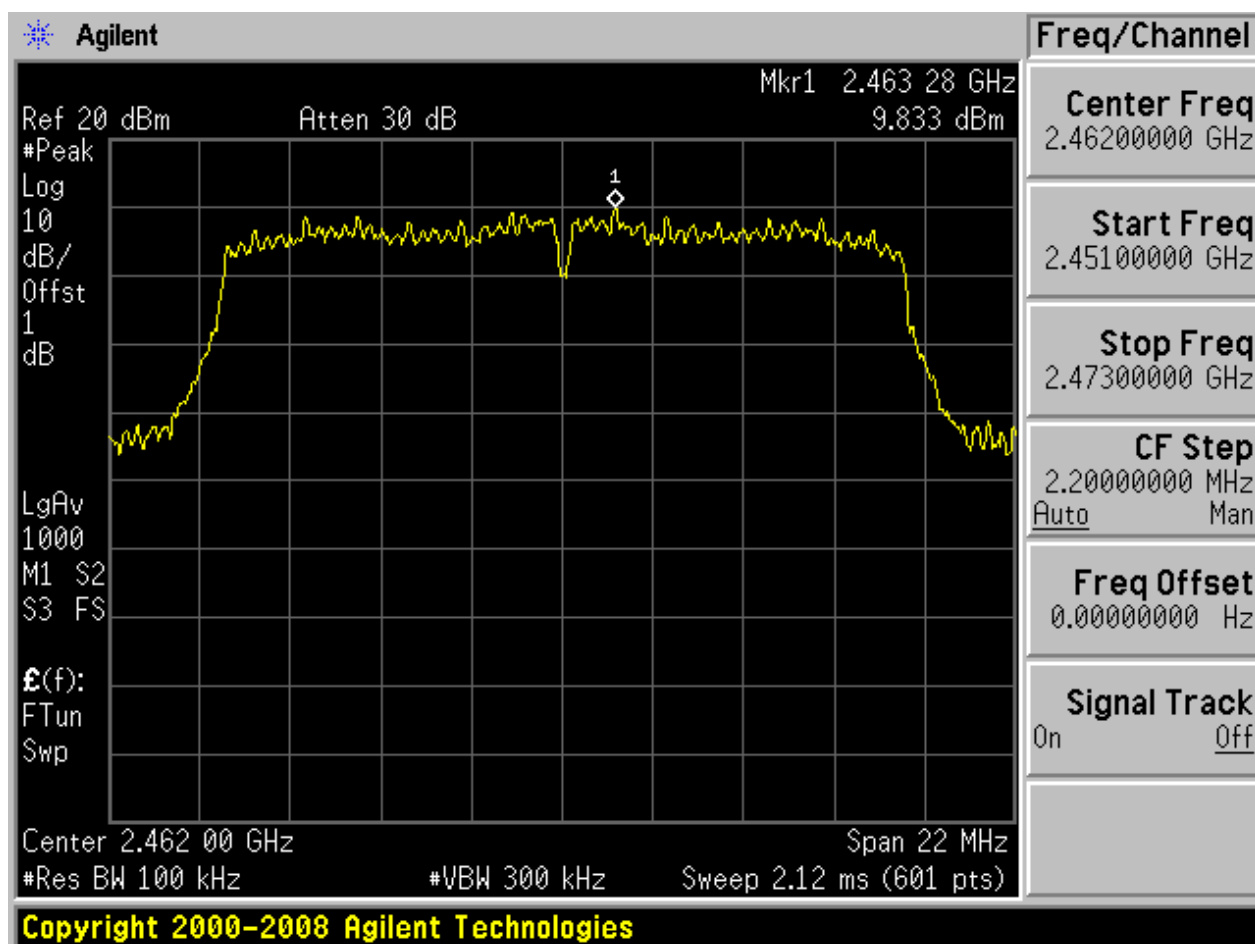


2.5G - 26.5G



2.6 11G_H

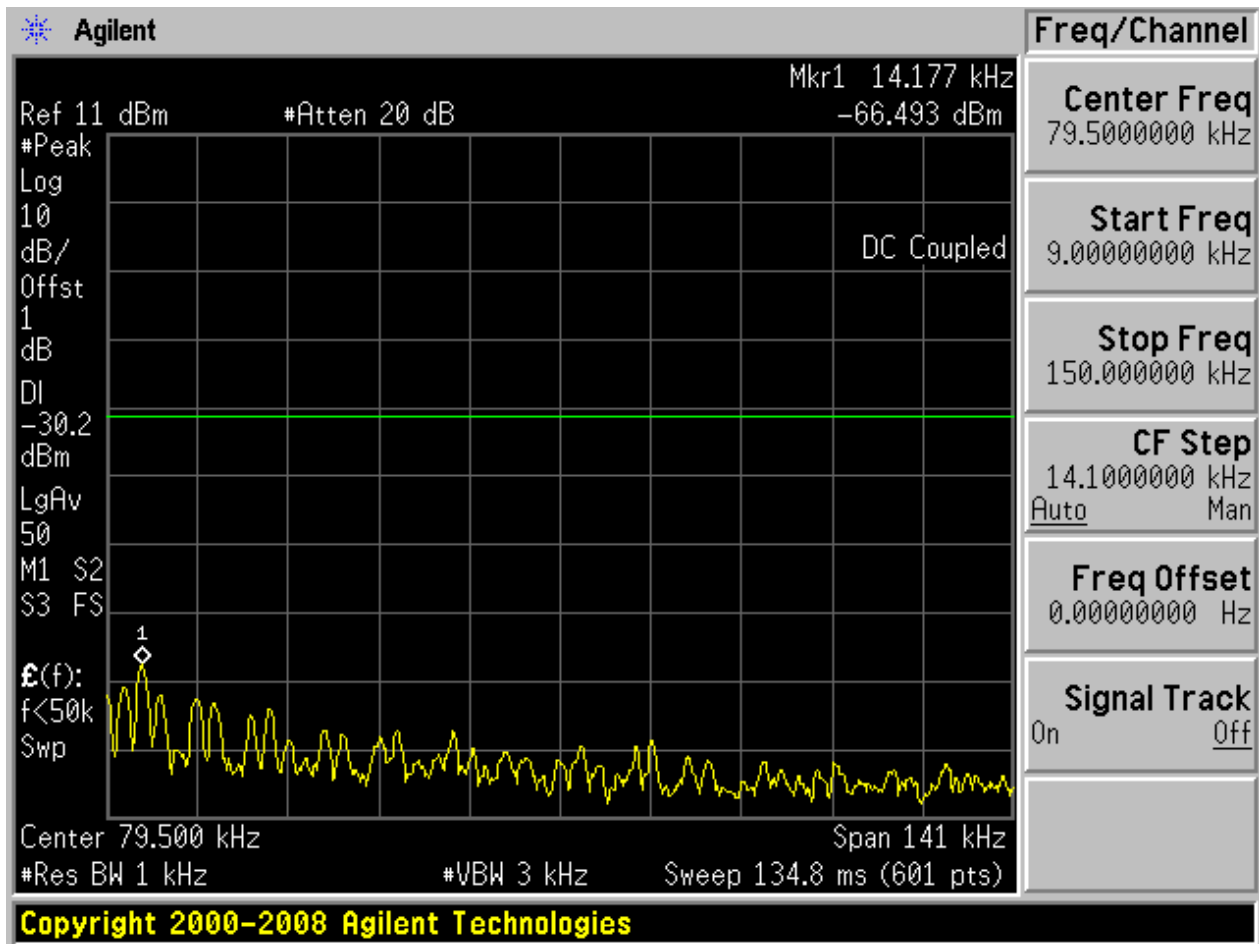
2.6.1 Pref:





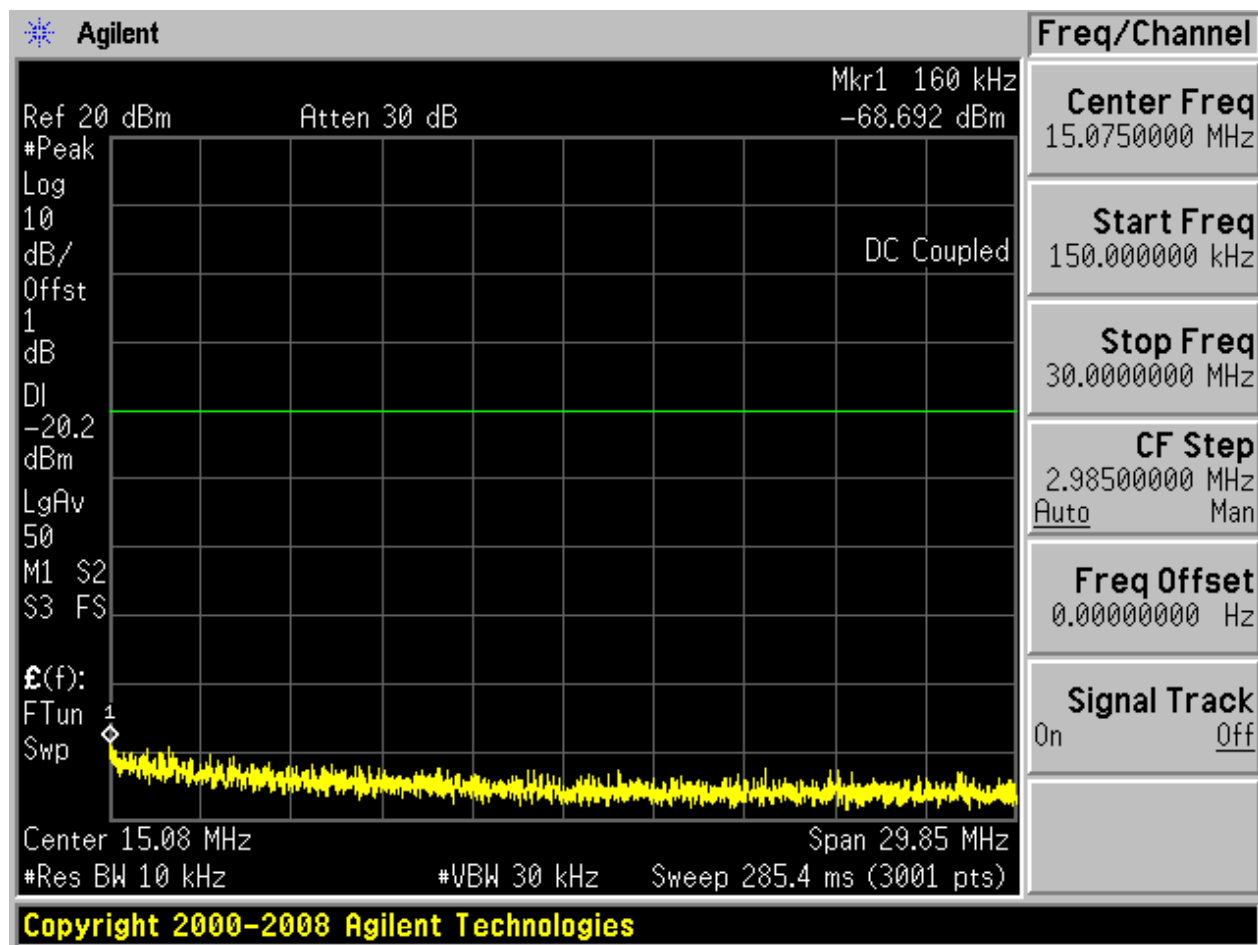
2.6.2 Puw:

9k - 150k



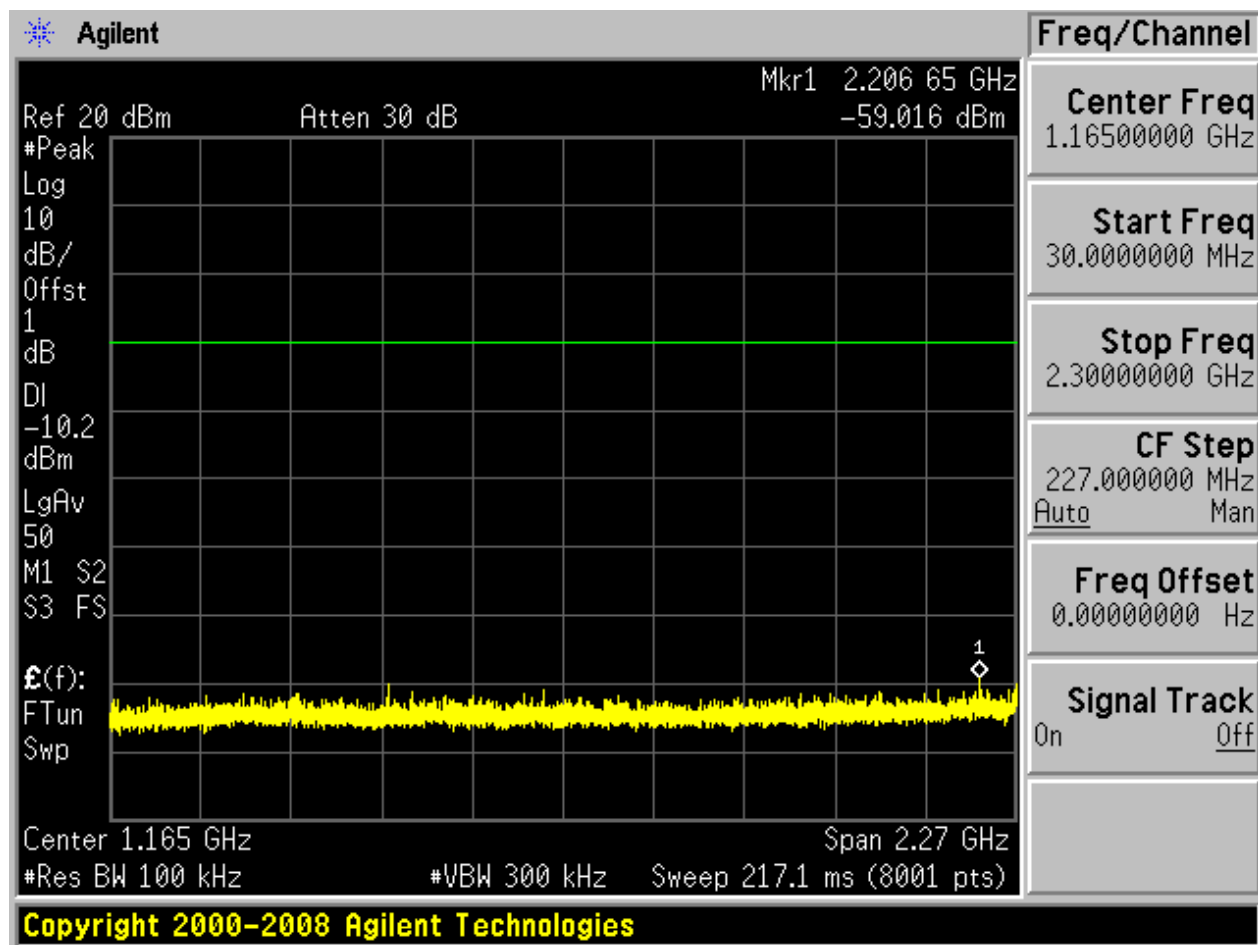


150k - 30M



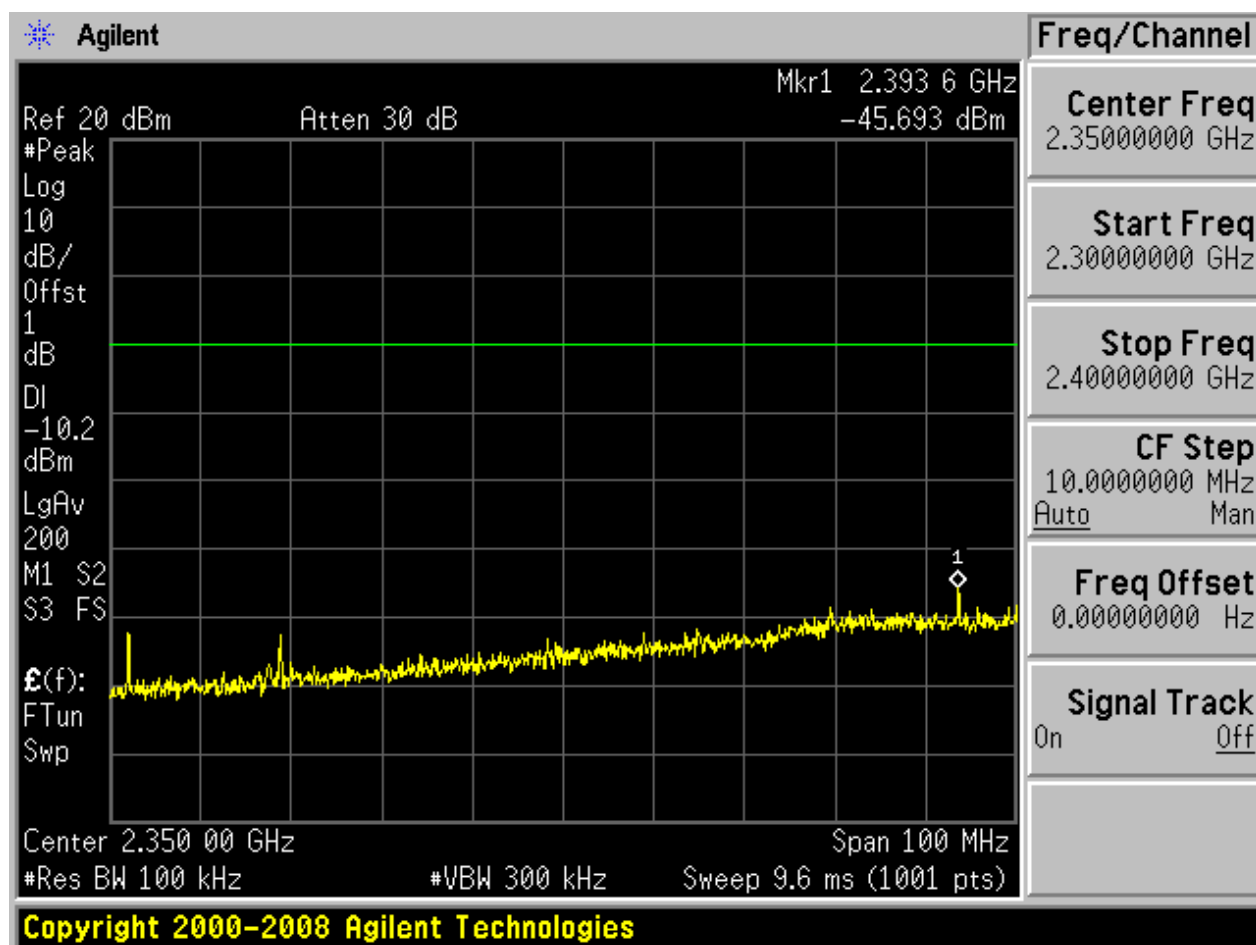


30M - 2.3G



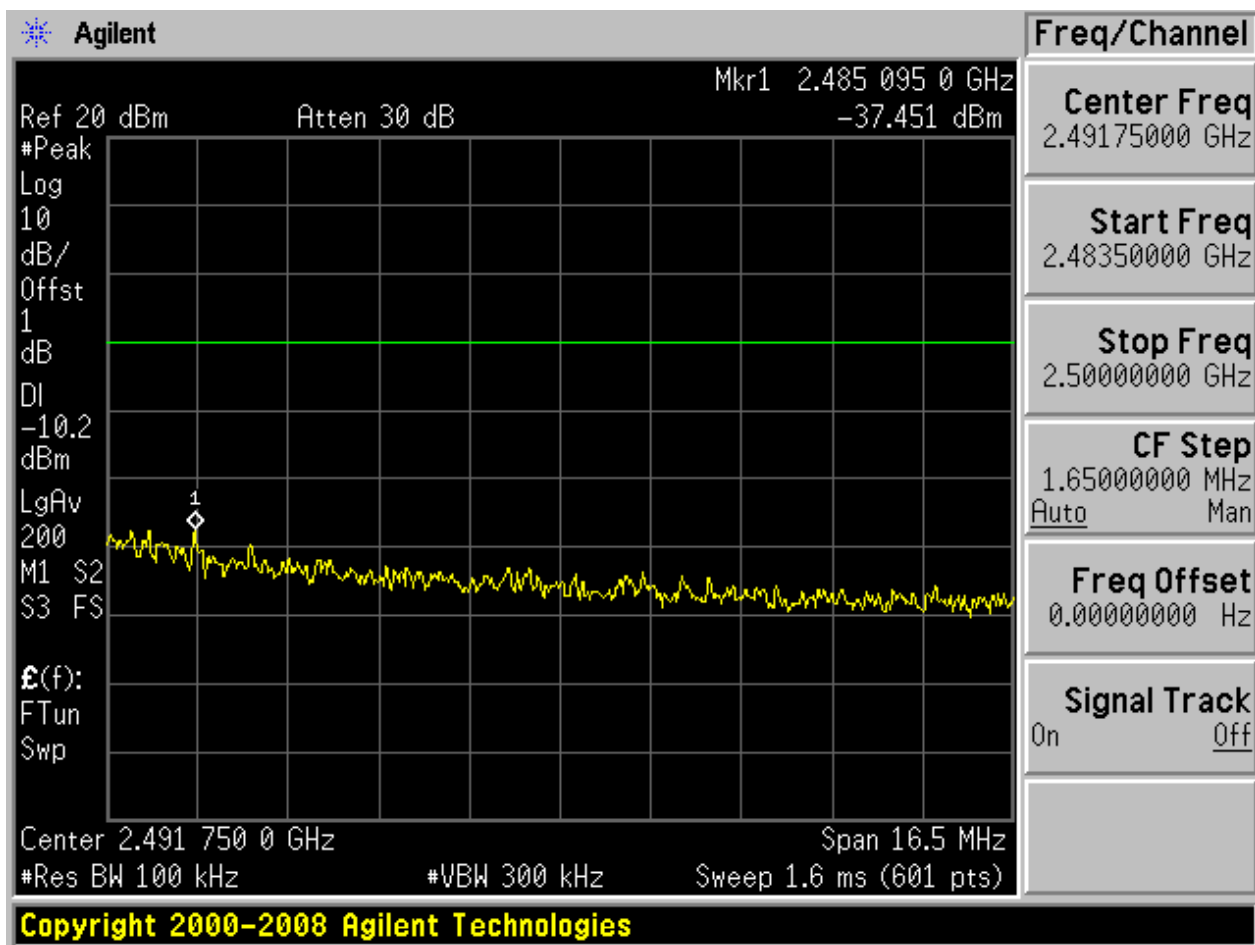


2.3G - 2.4G



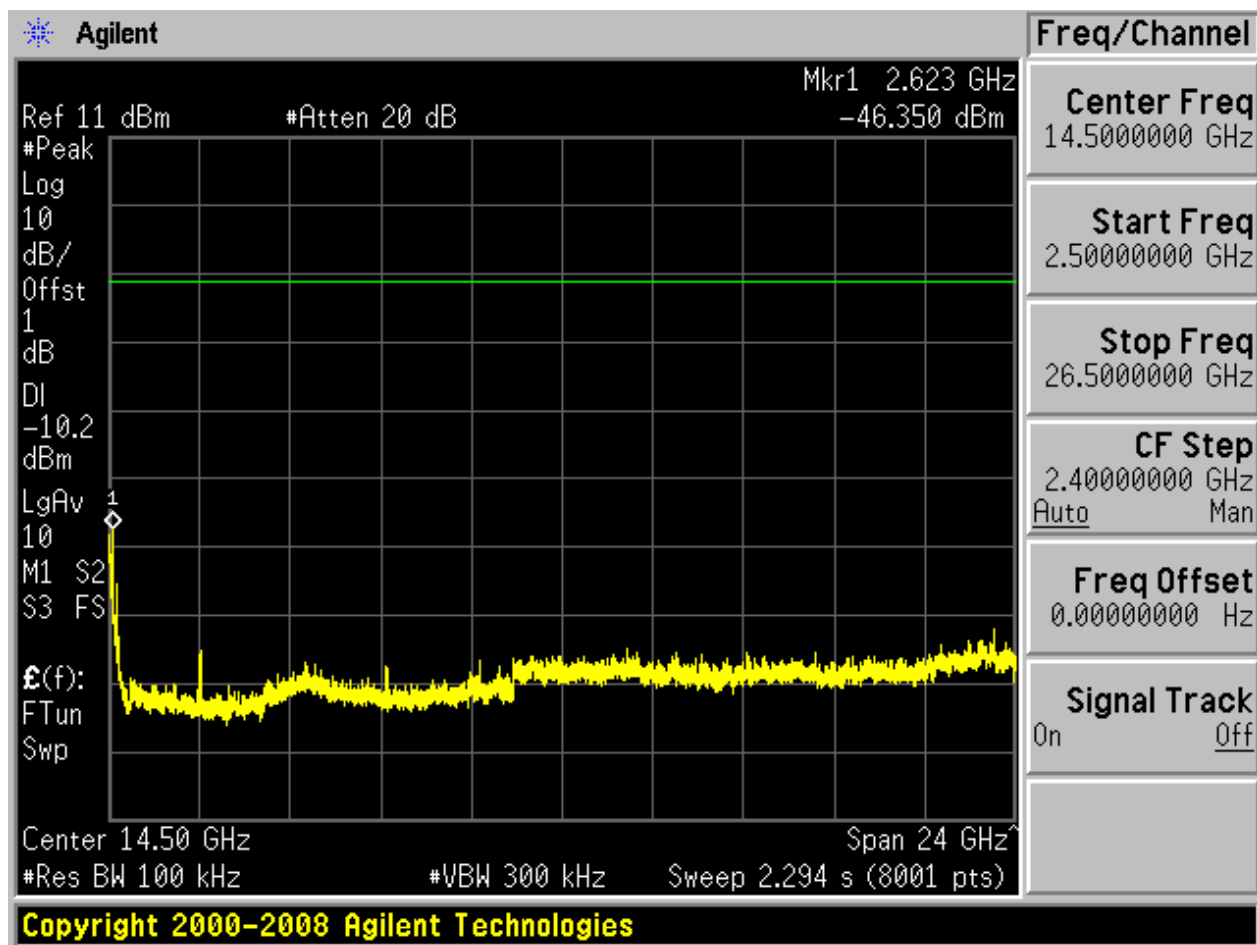


2.4835G - 2.5G



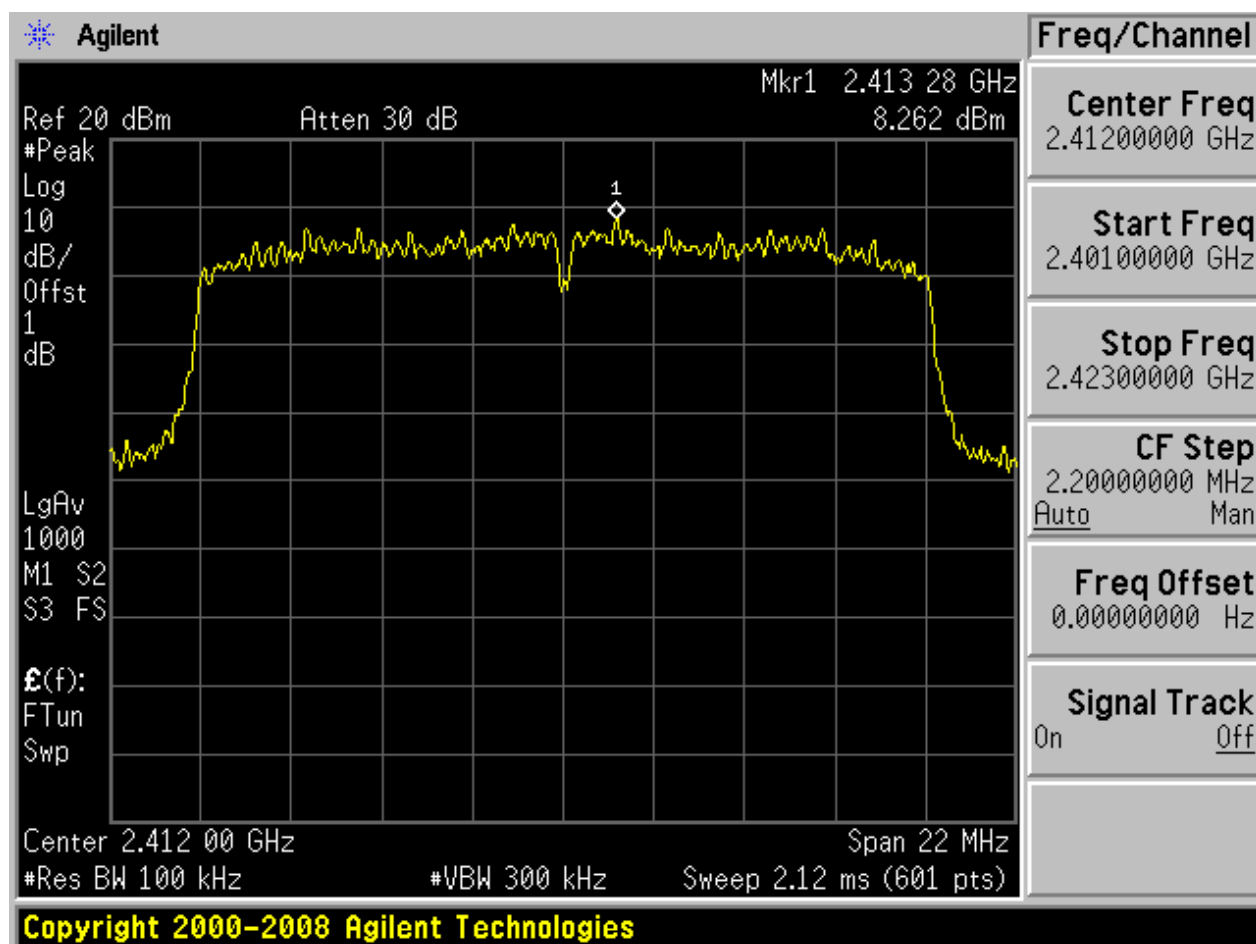


2.5G - 26.5G



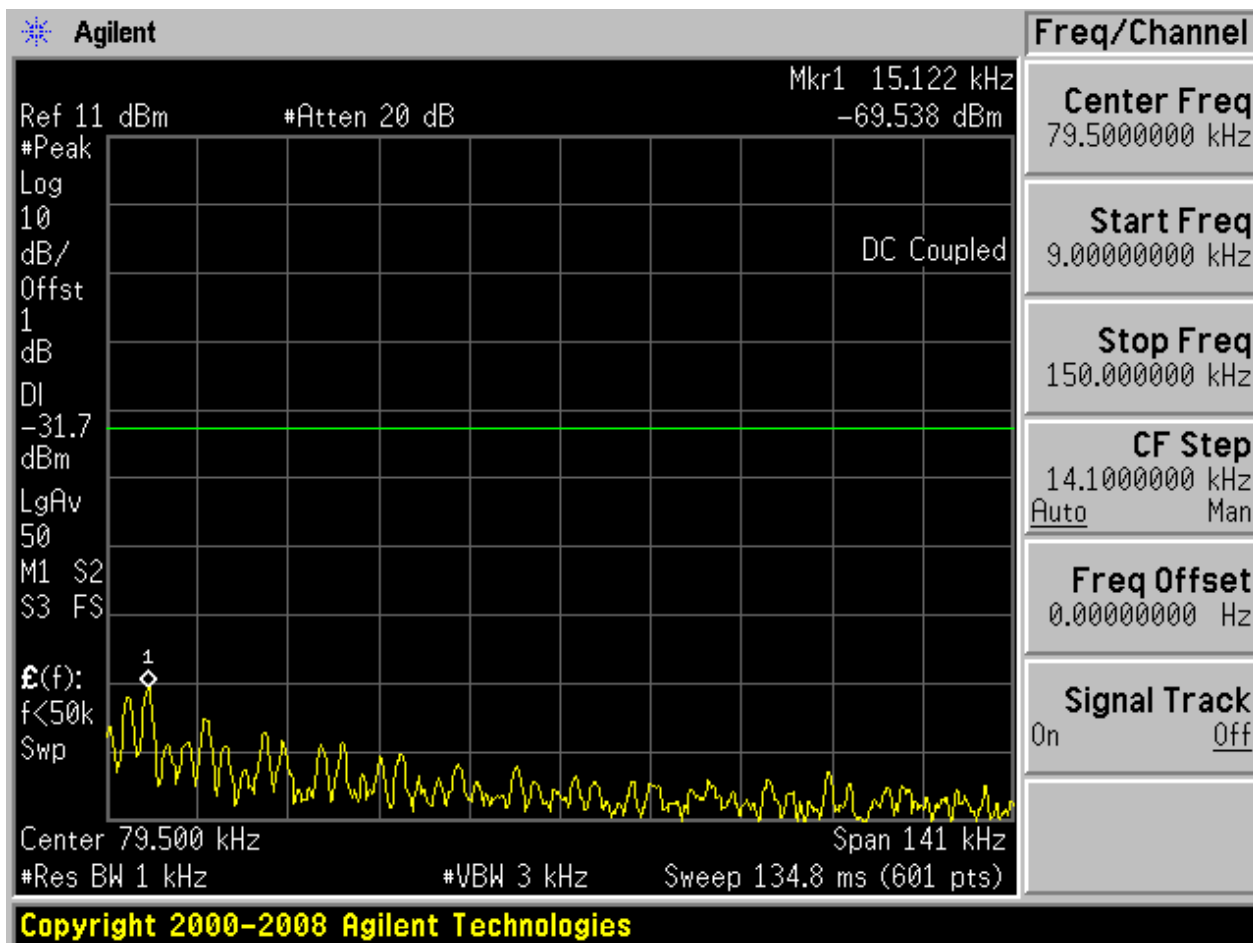
2.7 11N20_L

2.7.1 Pref:



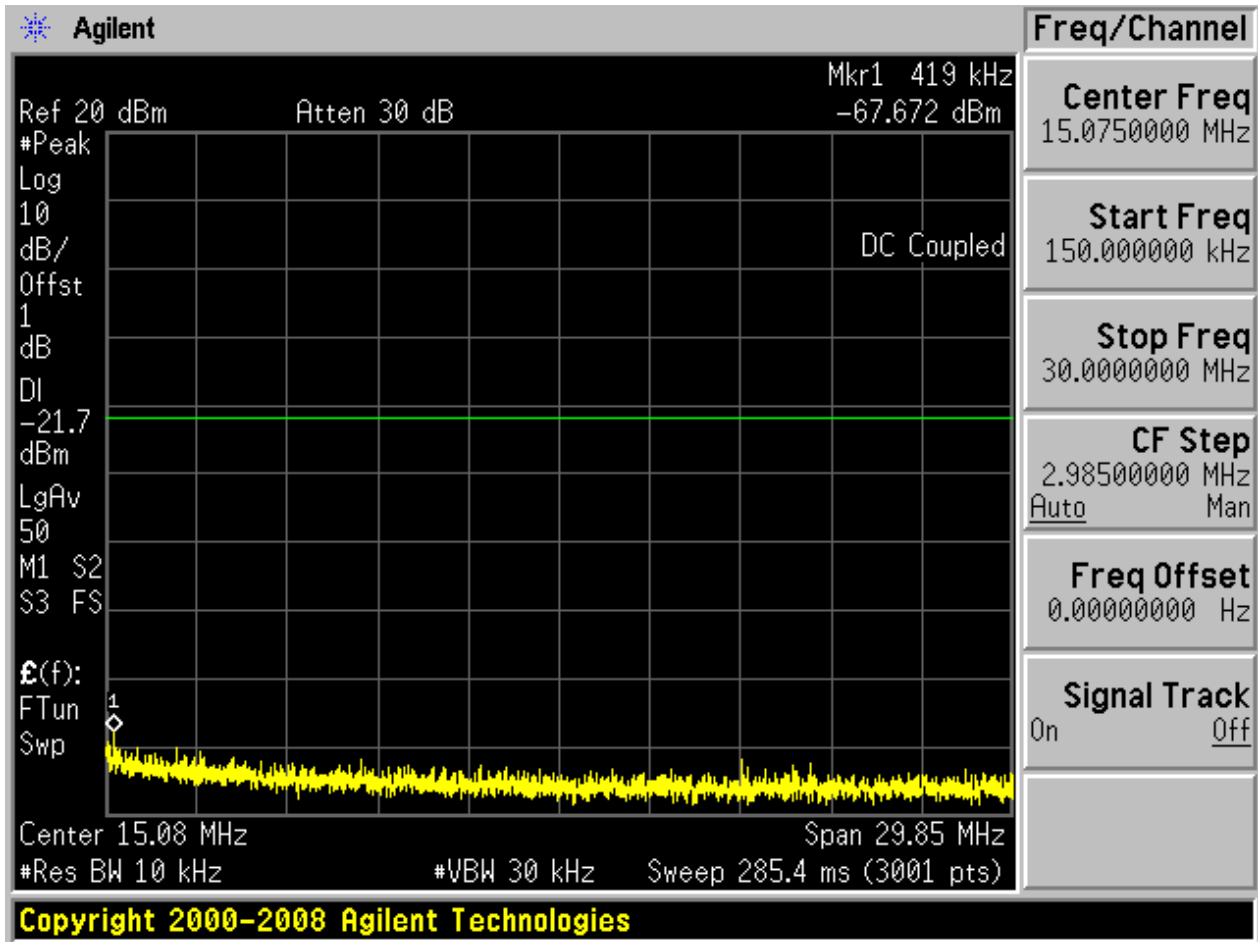
2.7.2 Puw:

9k - 150k



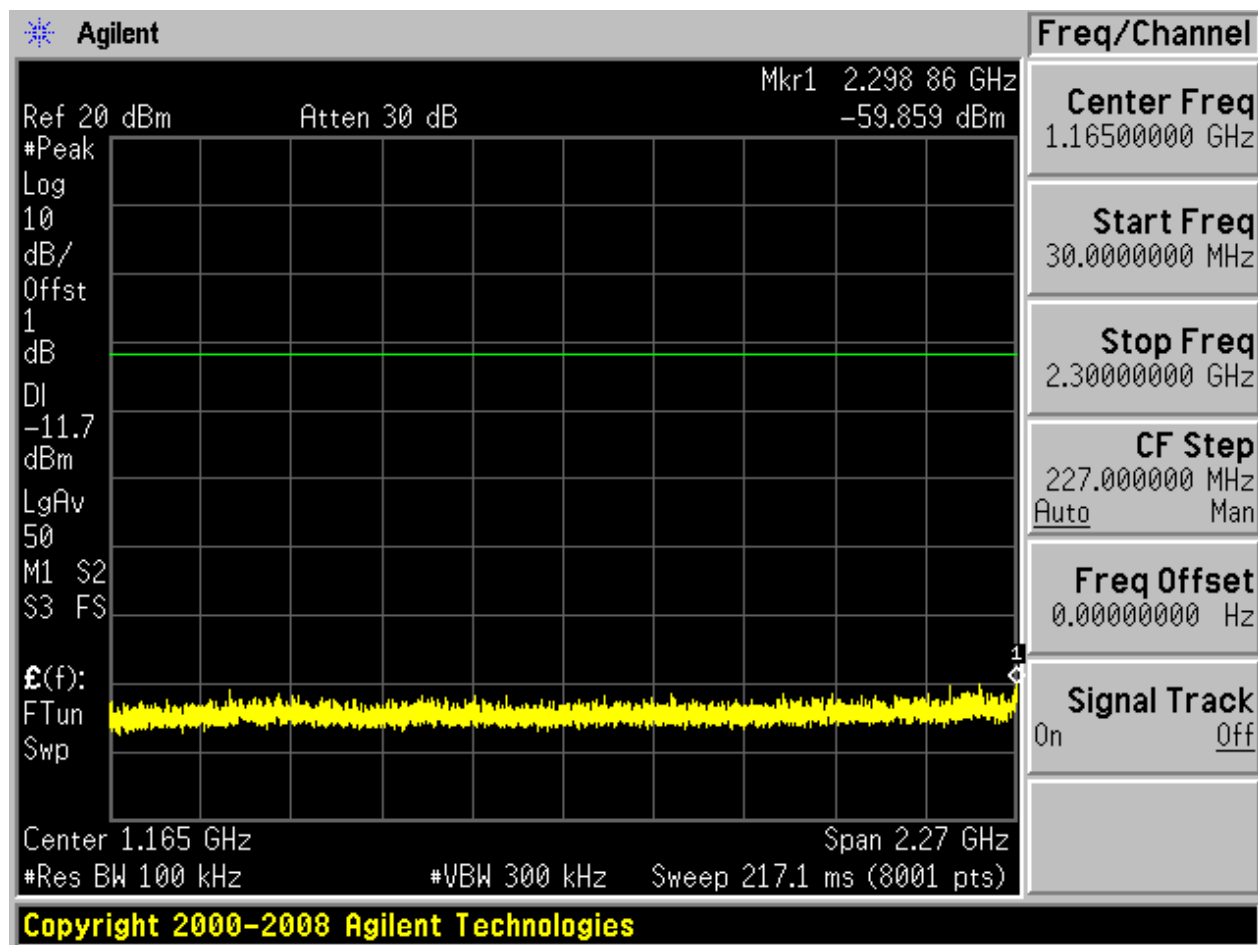


150k - 30M



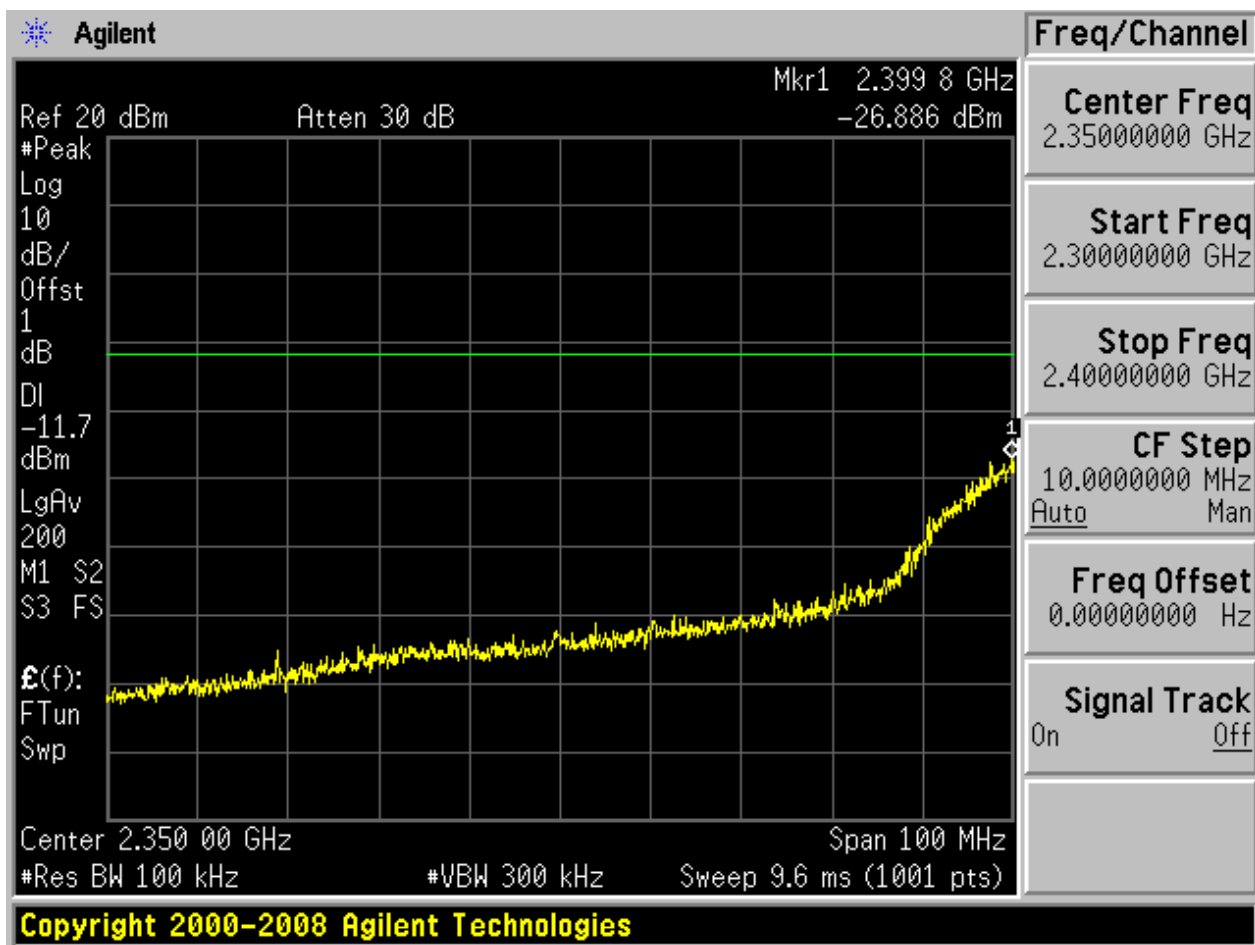


30M - 2.3G



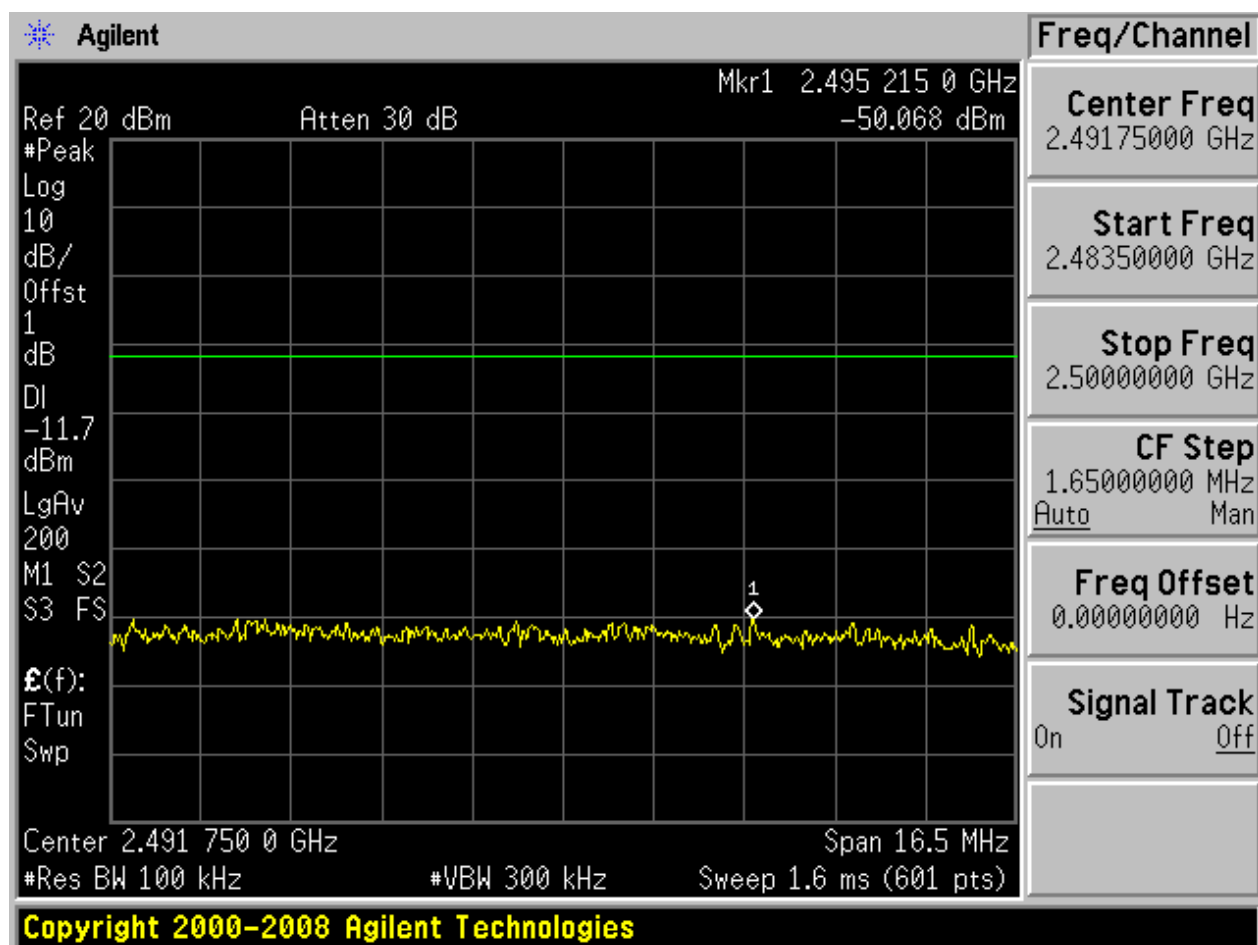


2.3G - 2.4G



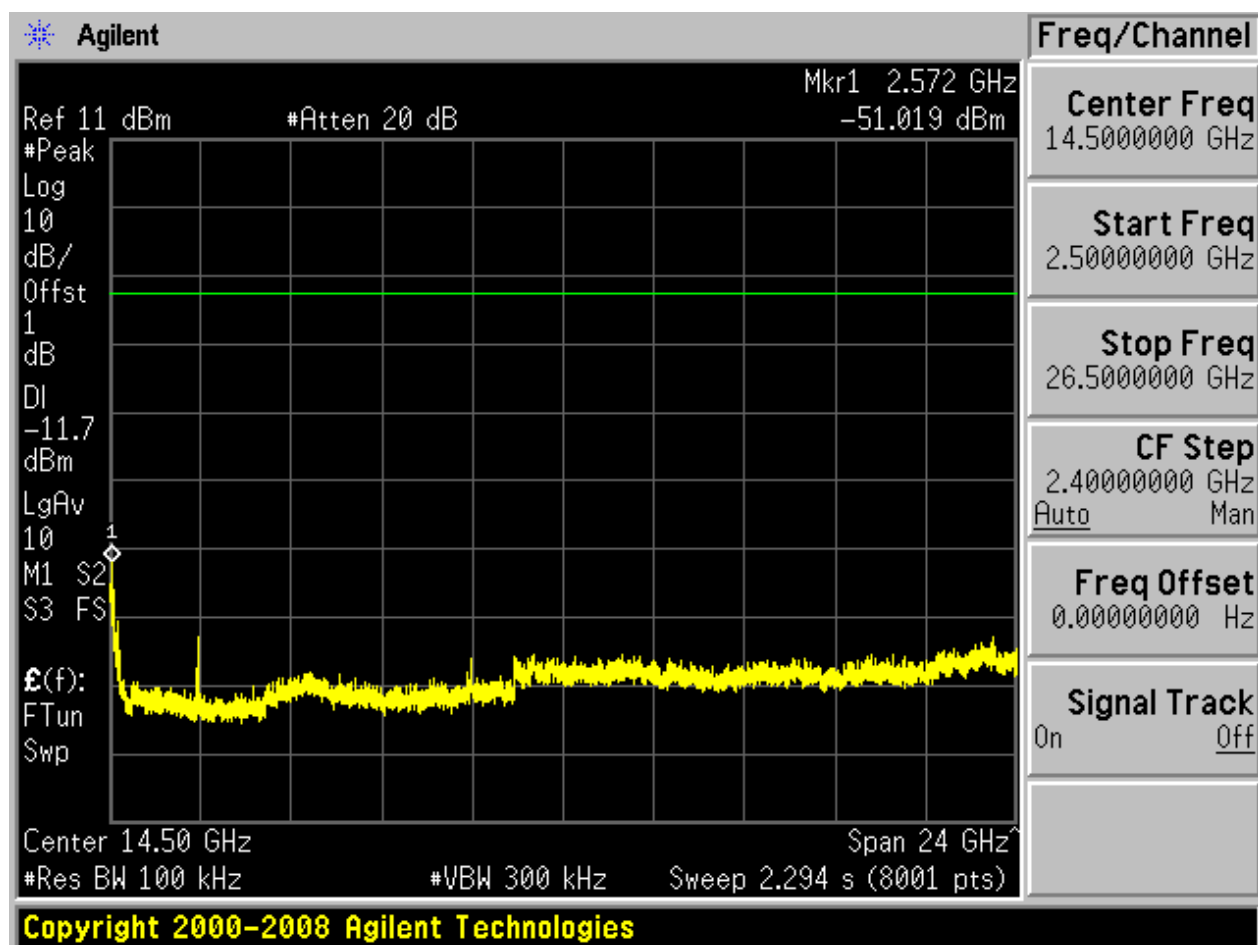


2.4835G - 2.5G



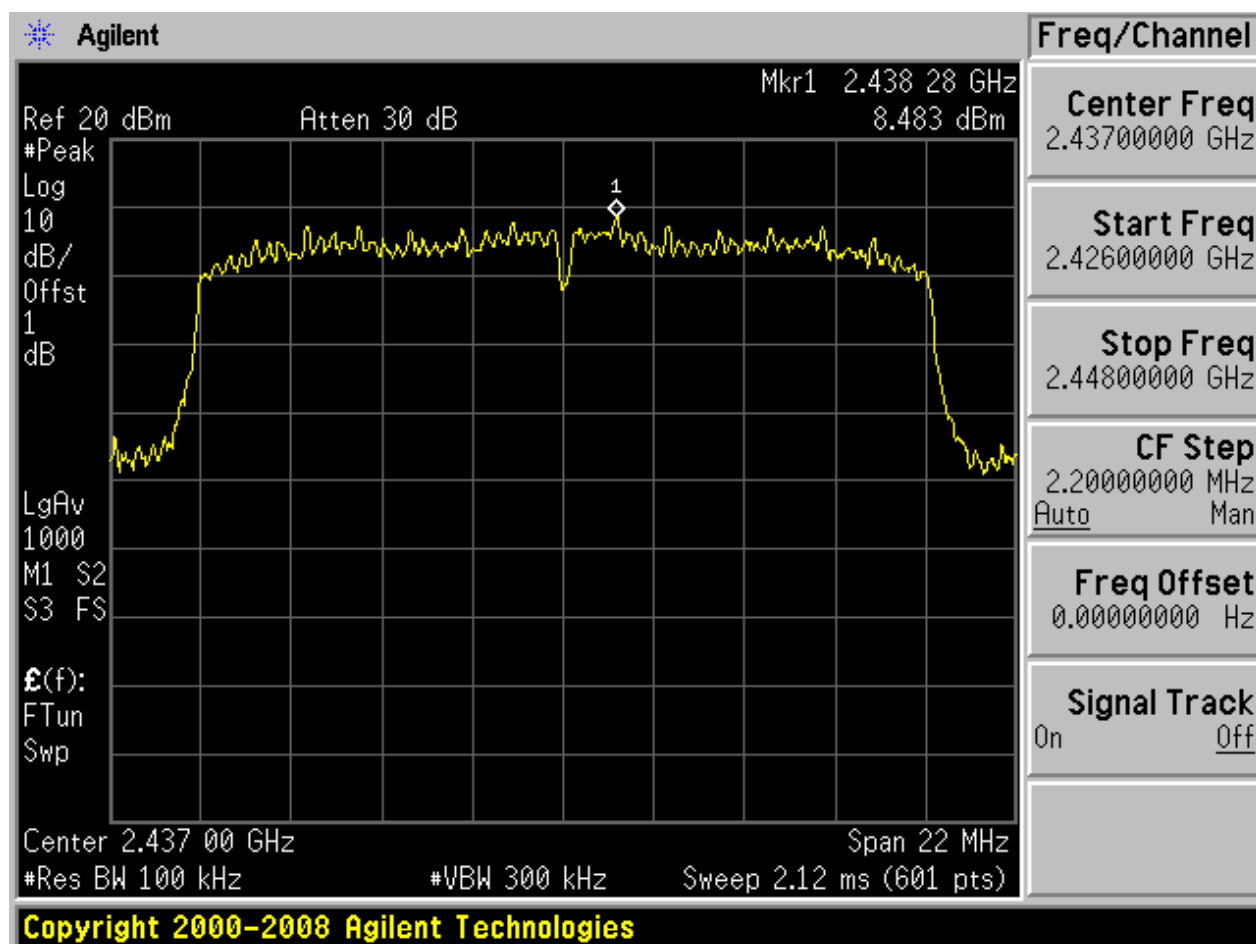


2.5G - 26.5G



2.8 11N20_M

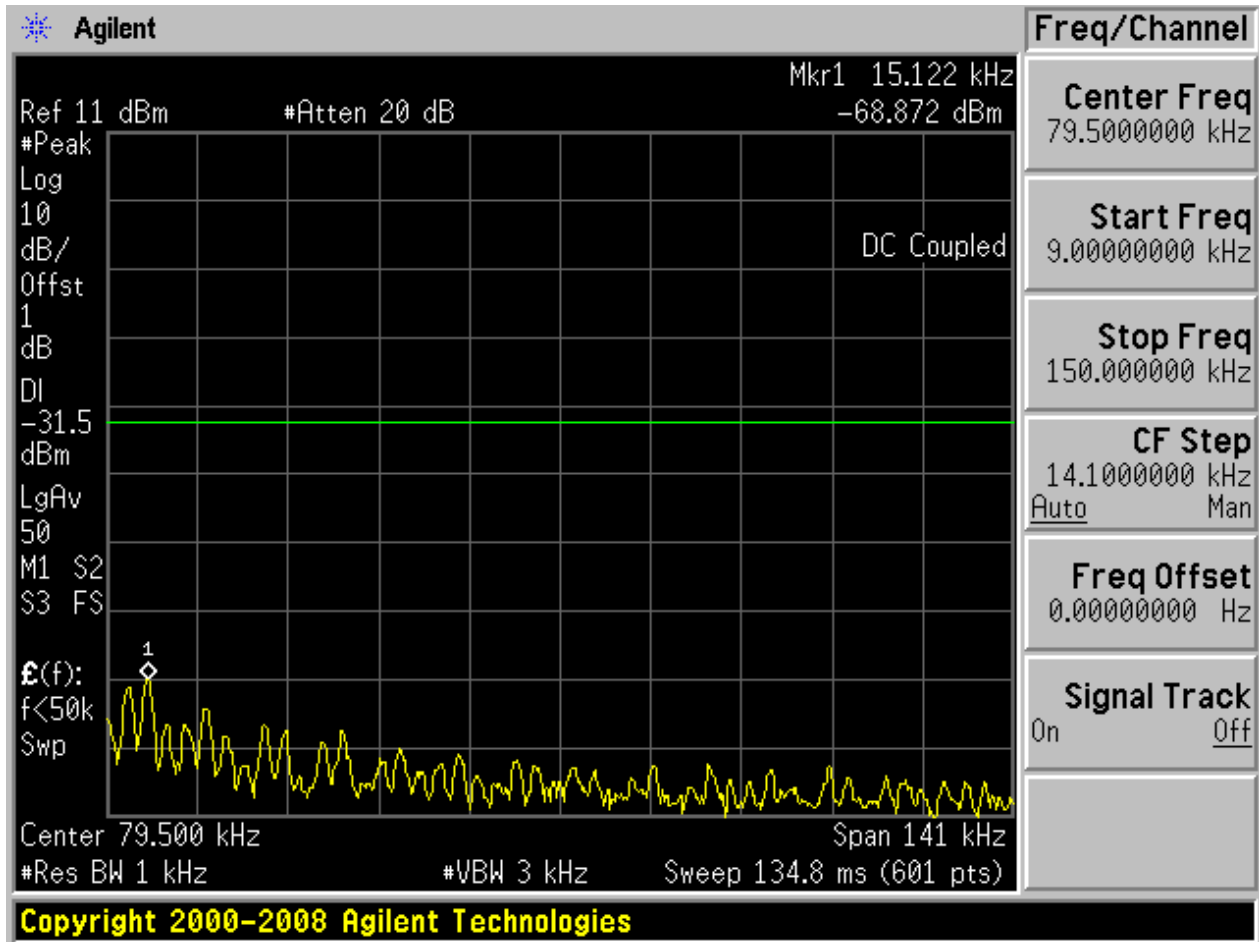
2.8.1 Pref:





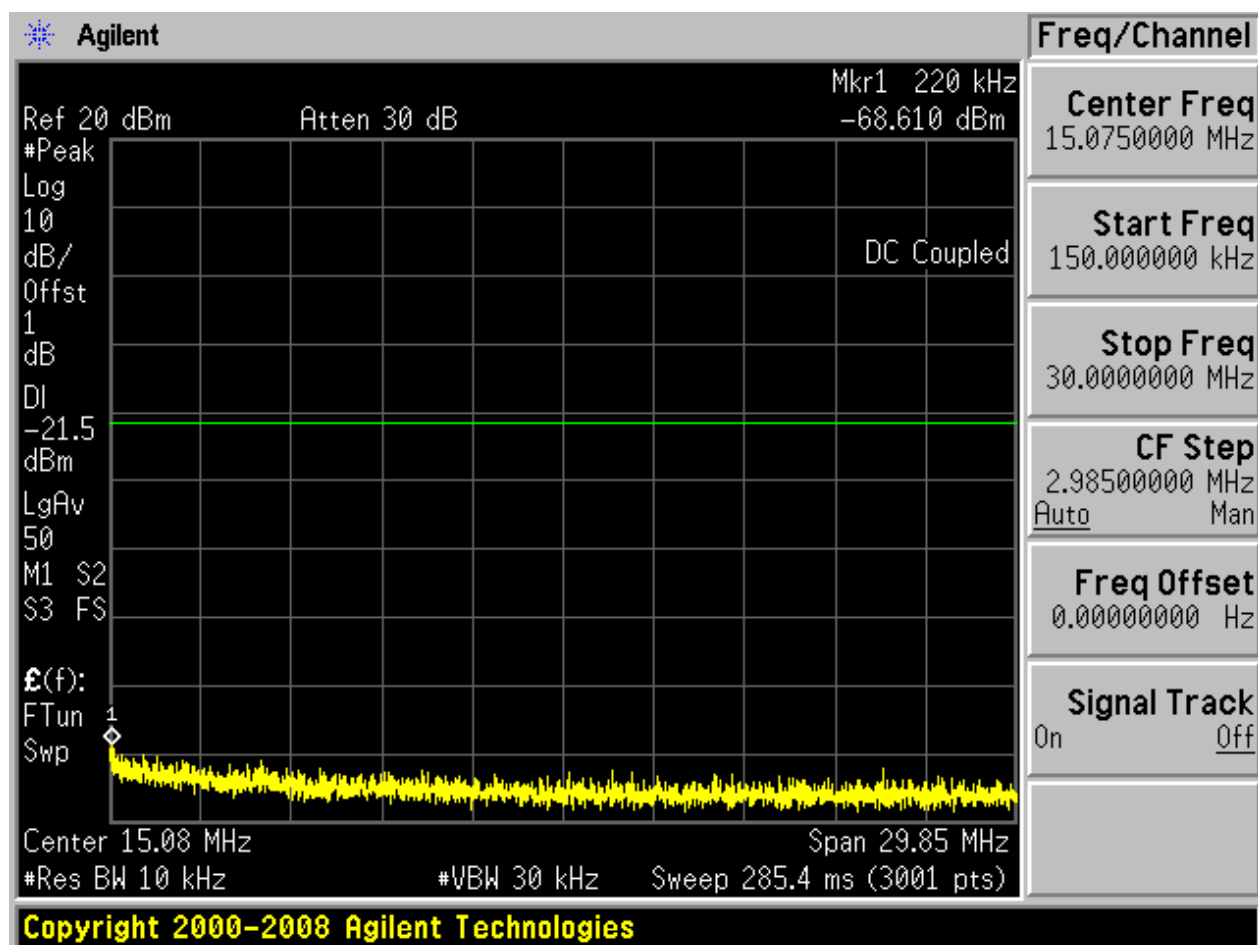
2.8.2 Puw:

9k - 150k



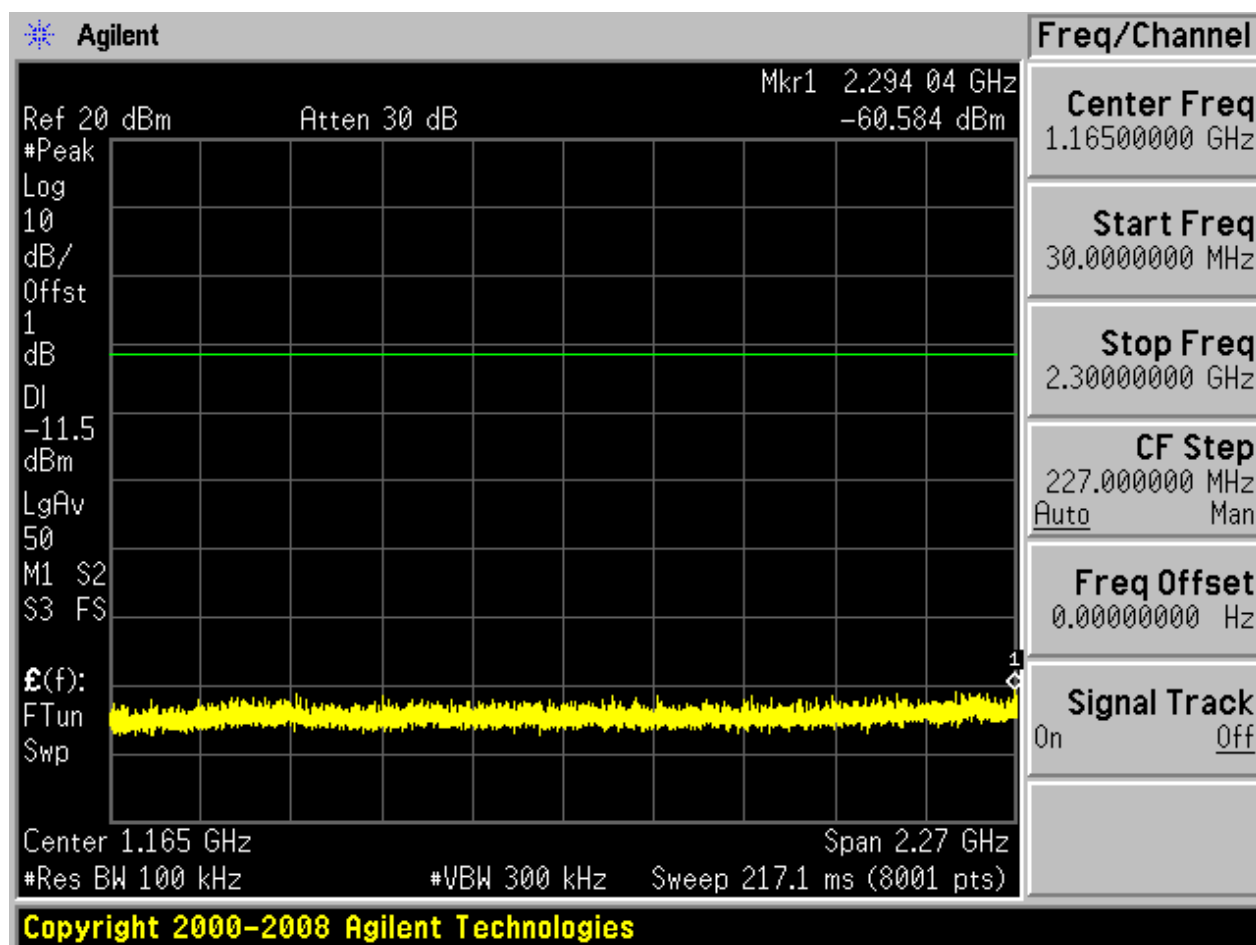


150k - 30M



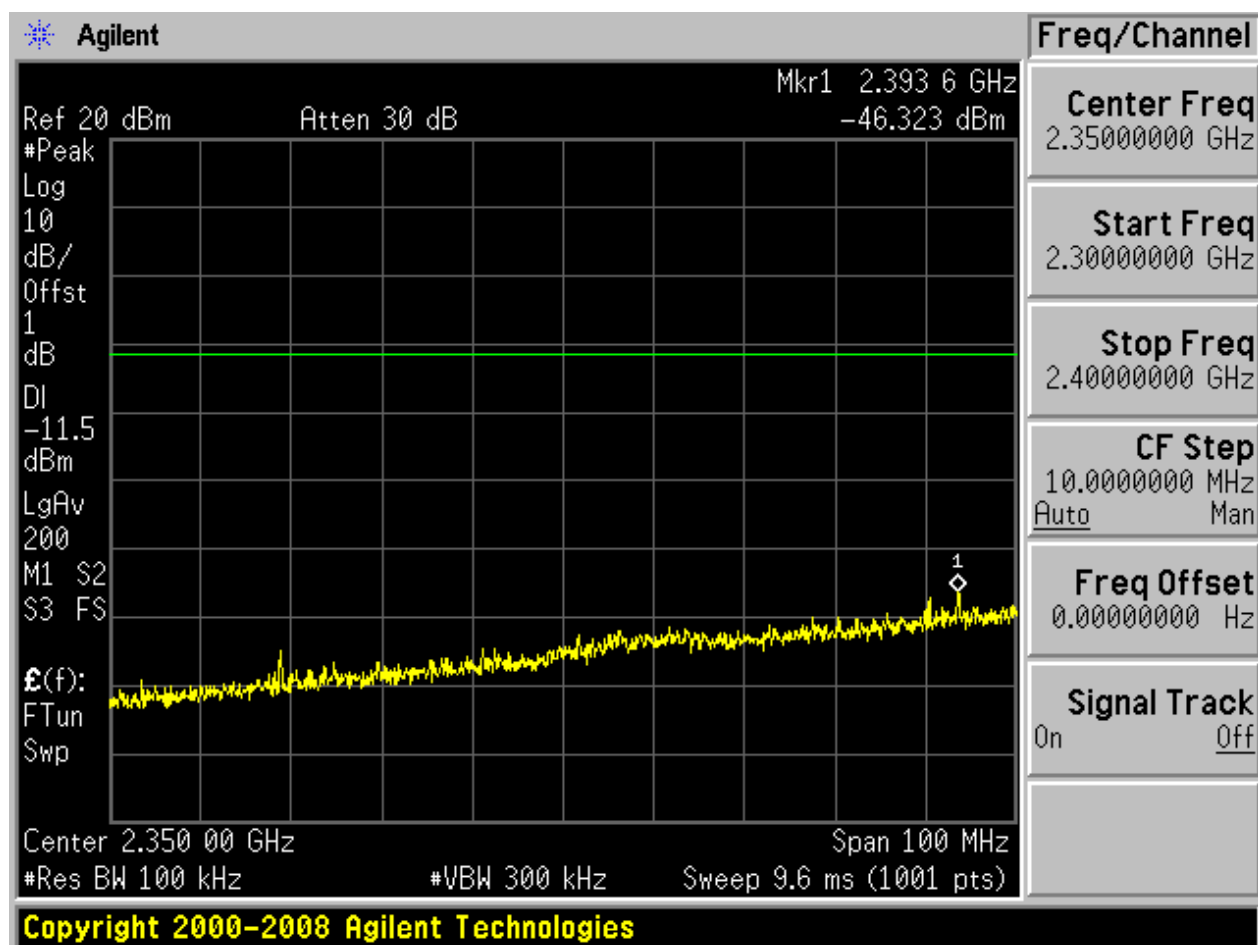


30M - 2.3G



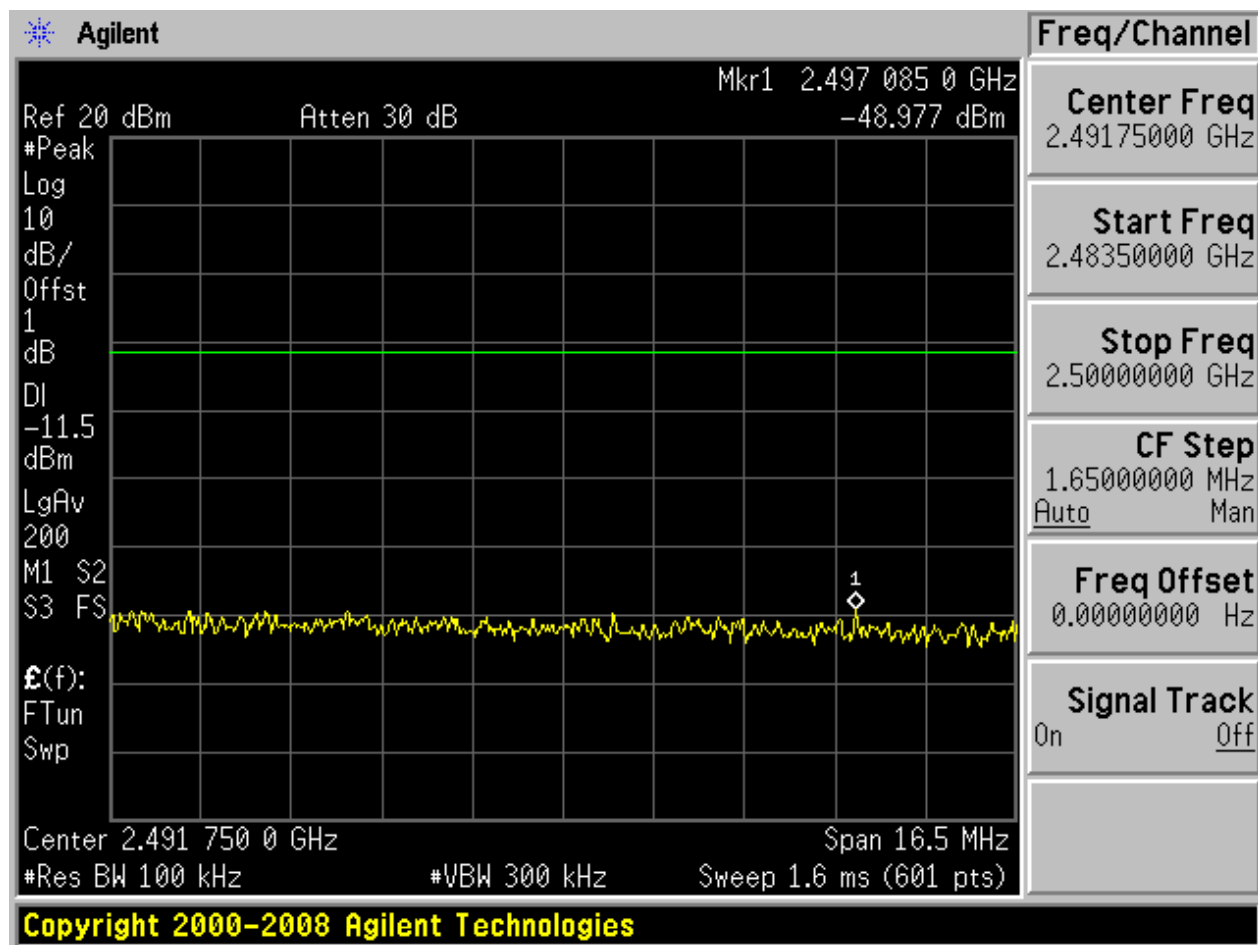


2.3G - 2.4G



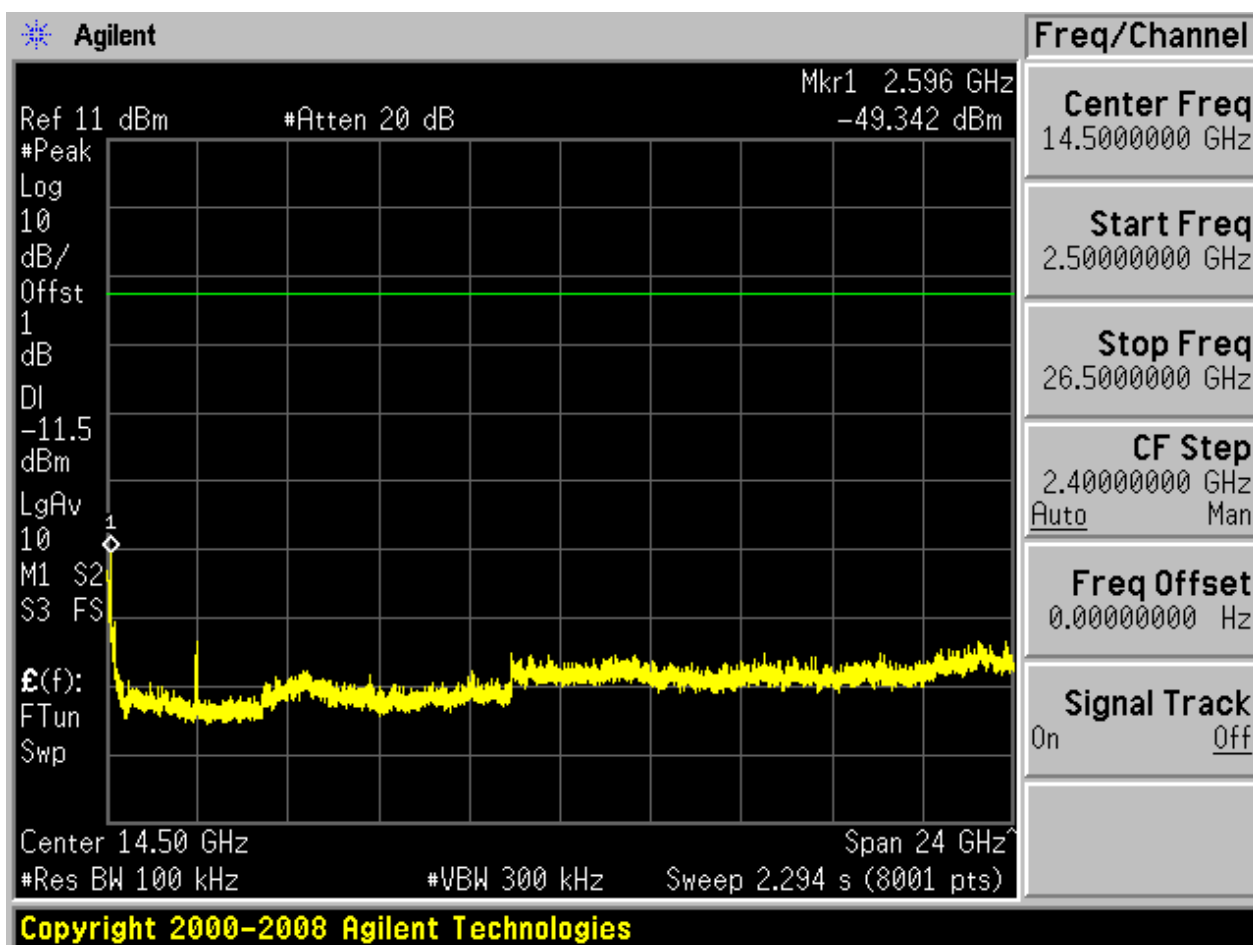


2.4835G - 2.5G



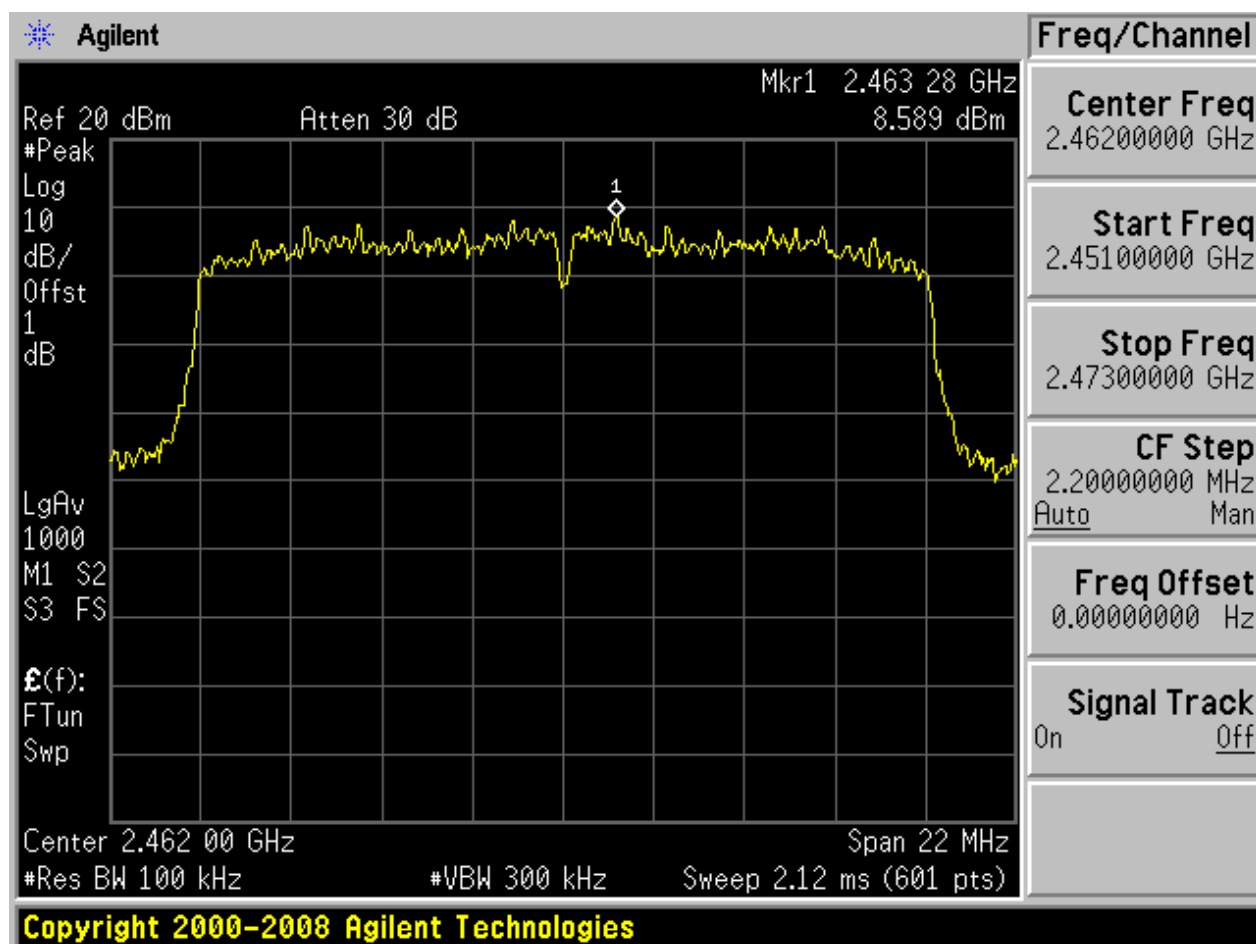


2.5G-26.5G



2.9 11N20_H

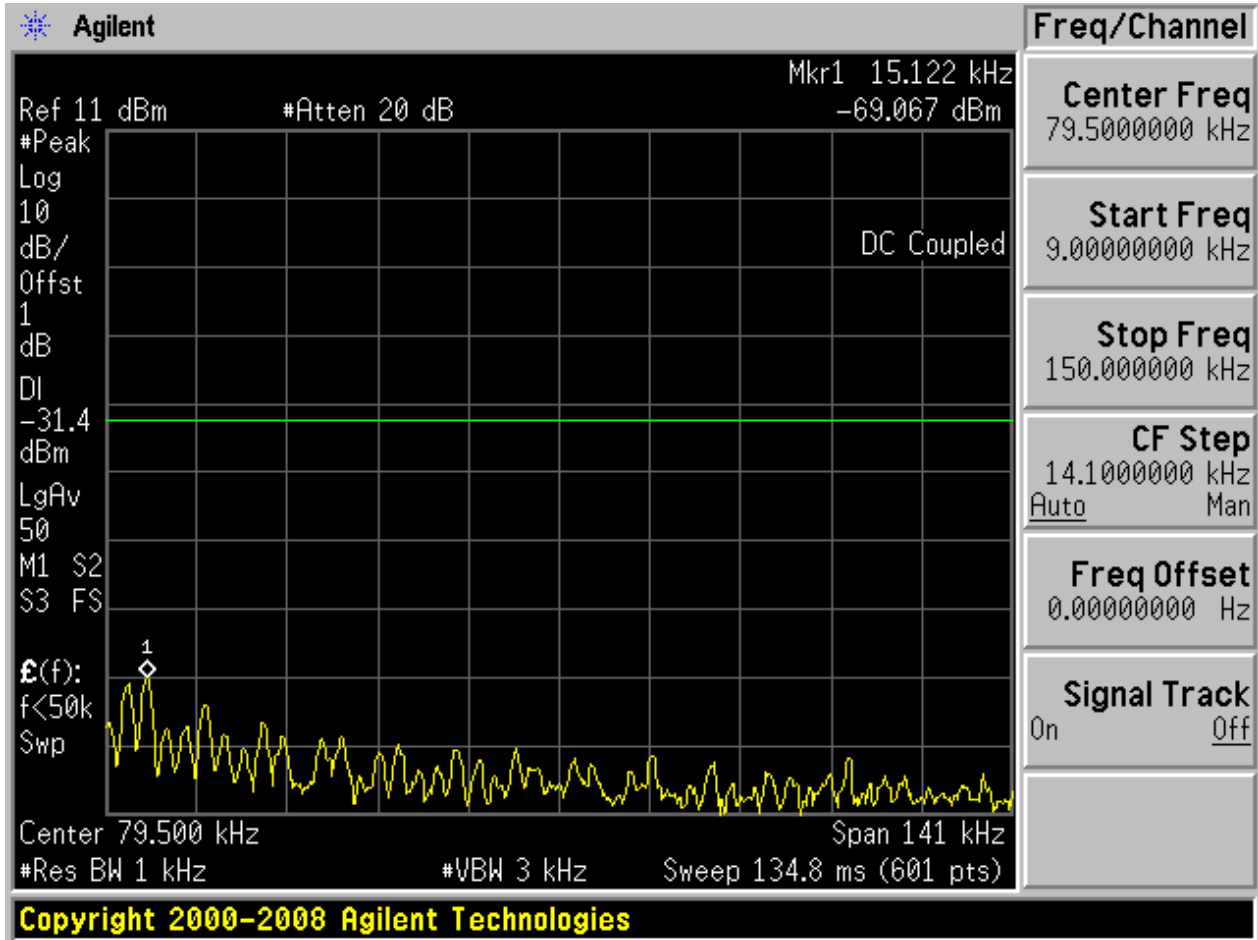
2.9.1 Pref:





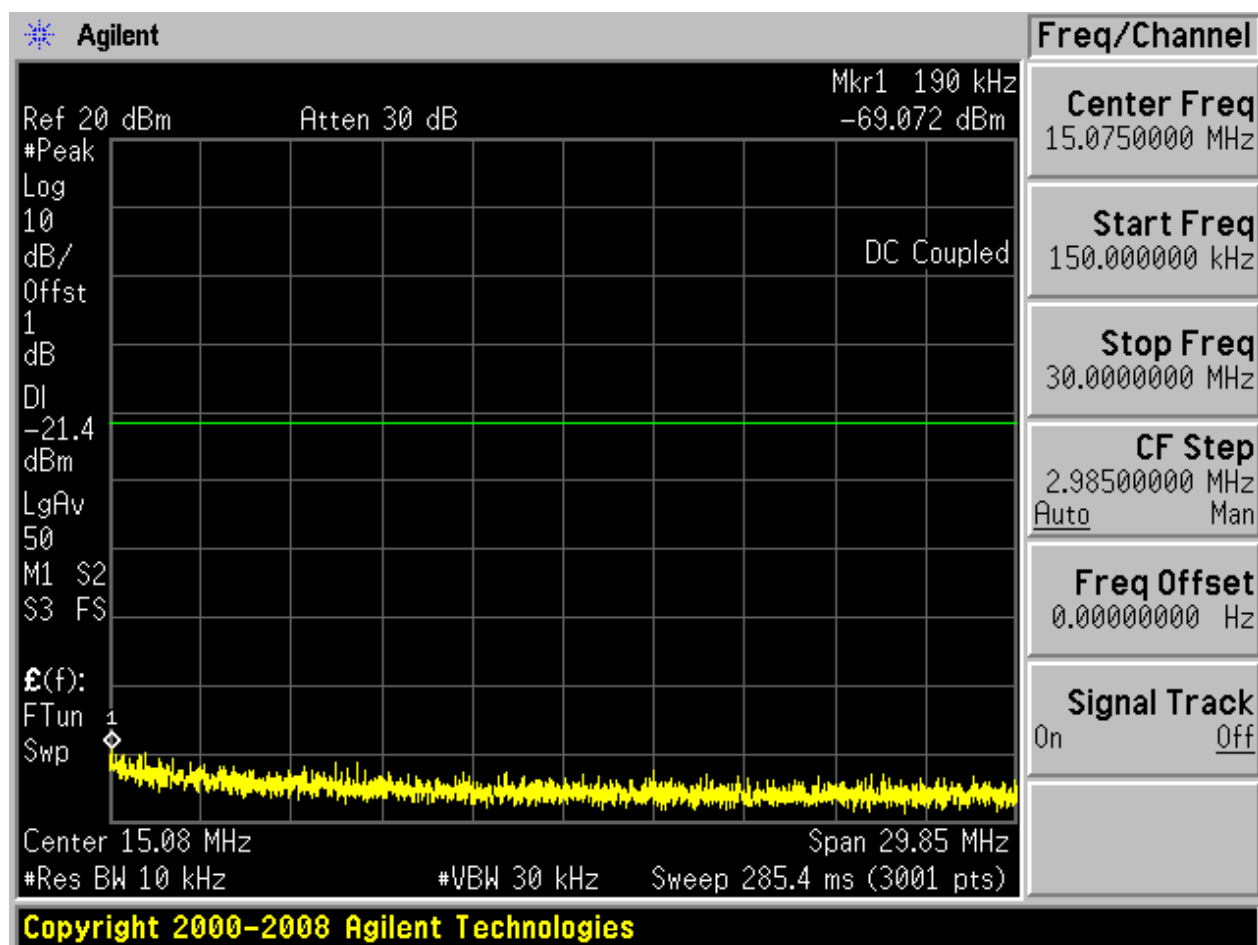
2.9.2 Puw:

9k - 150k



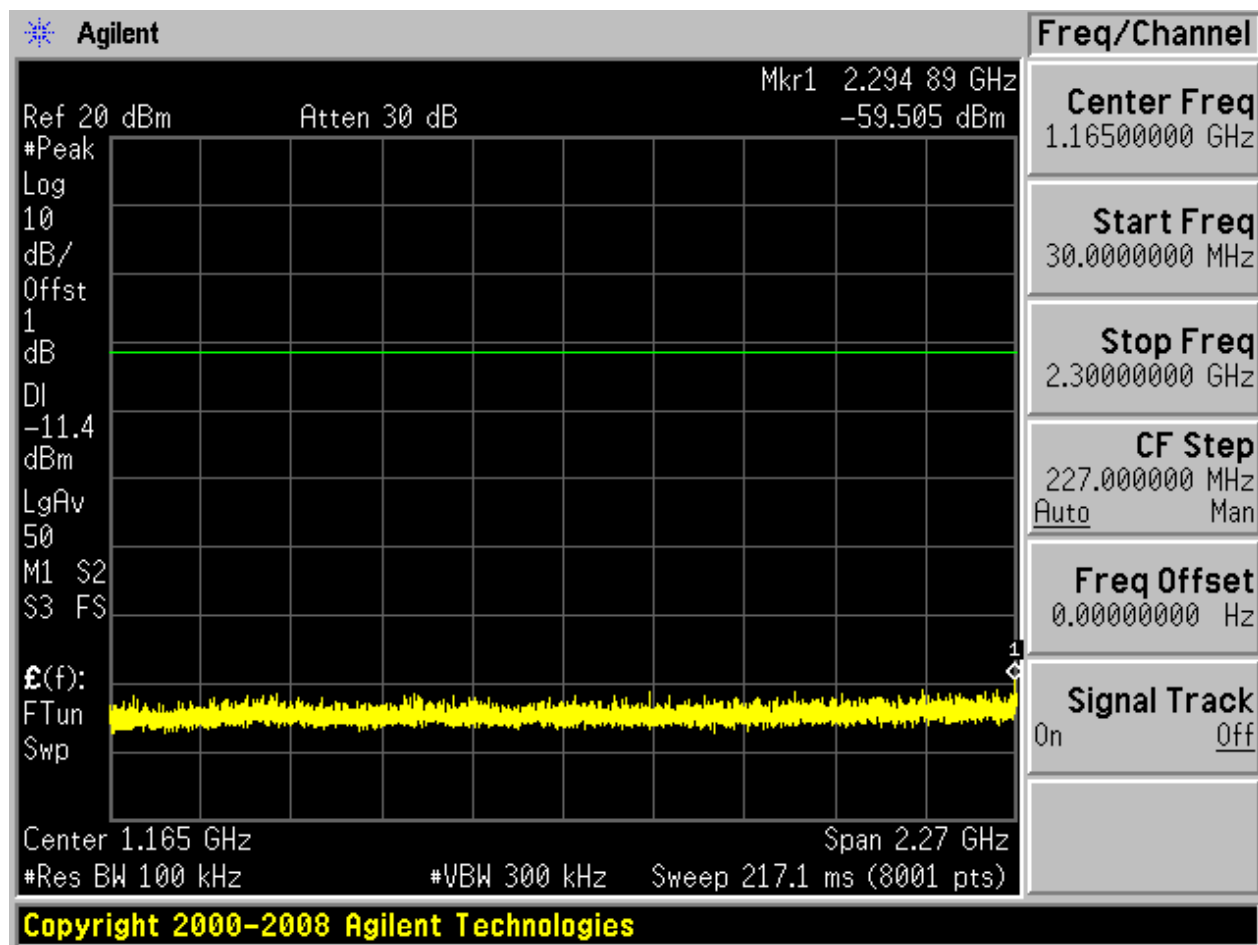


150k - 30M



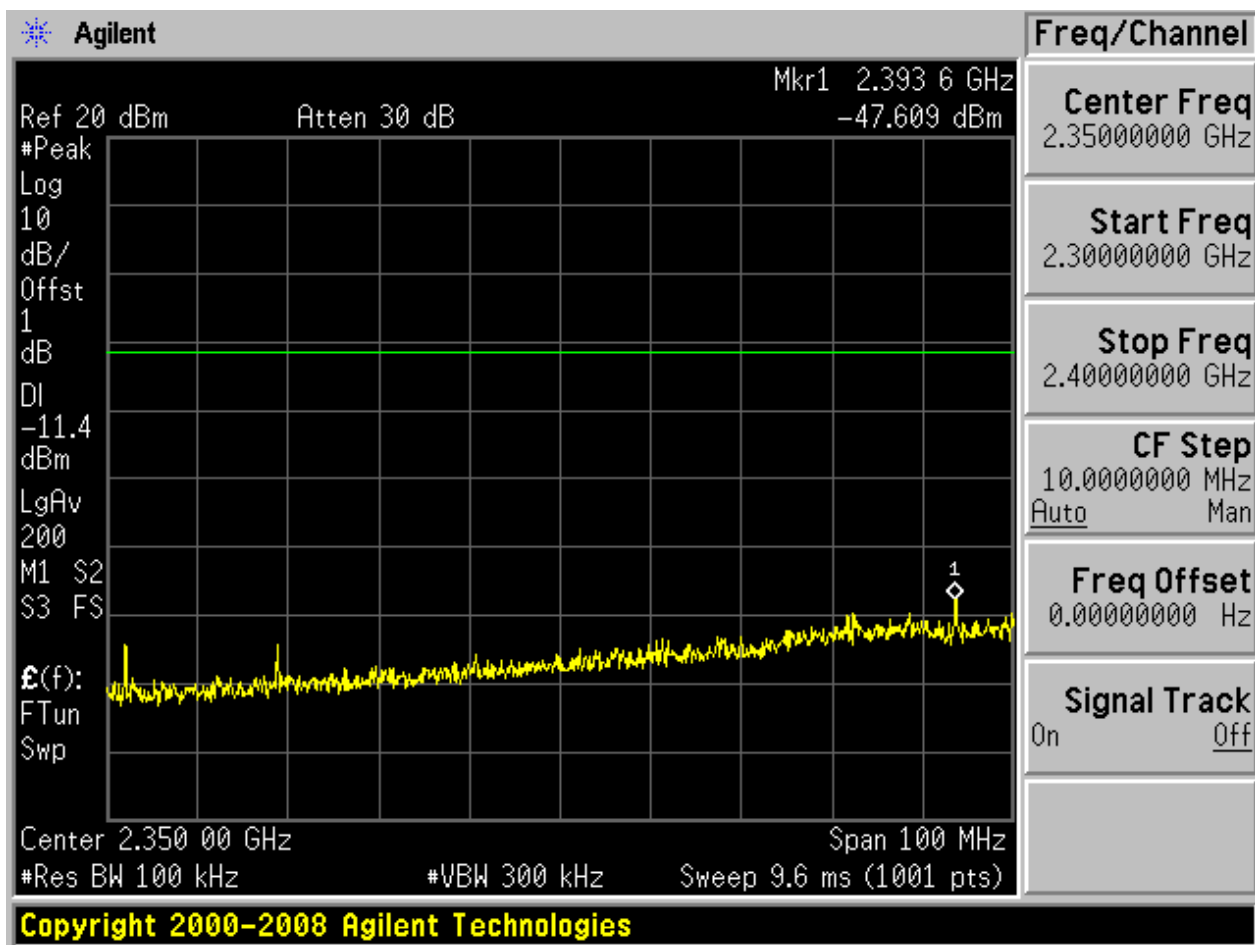


30M - 2.3G



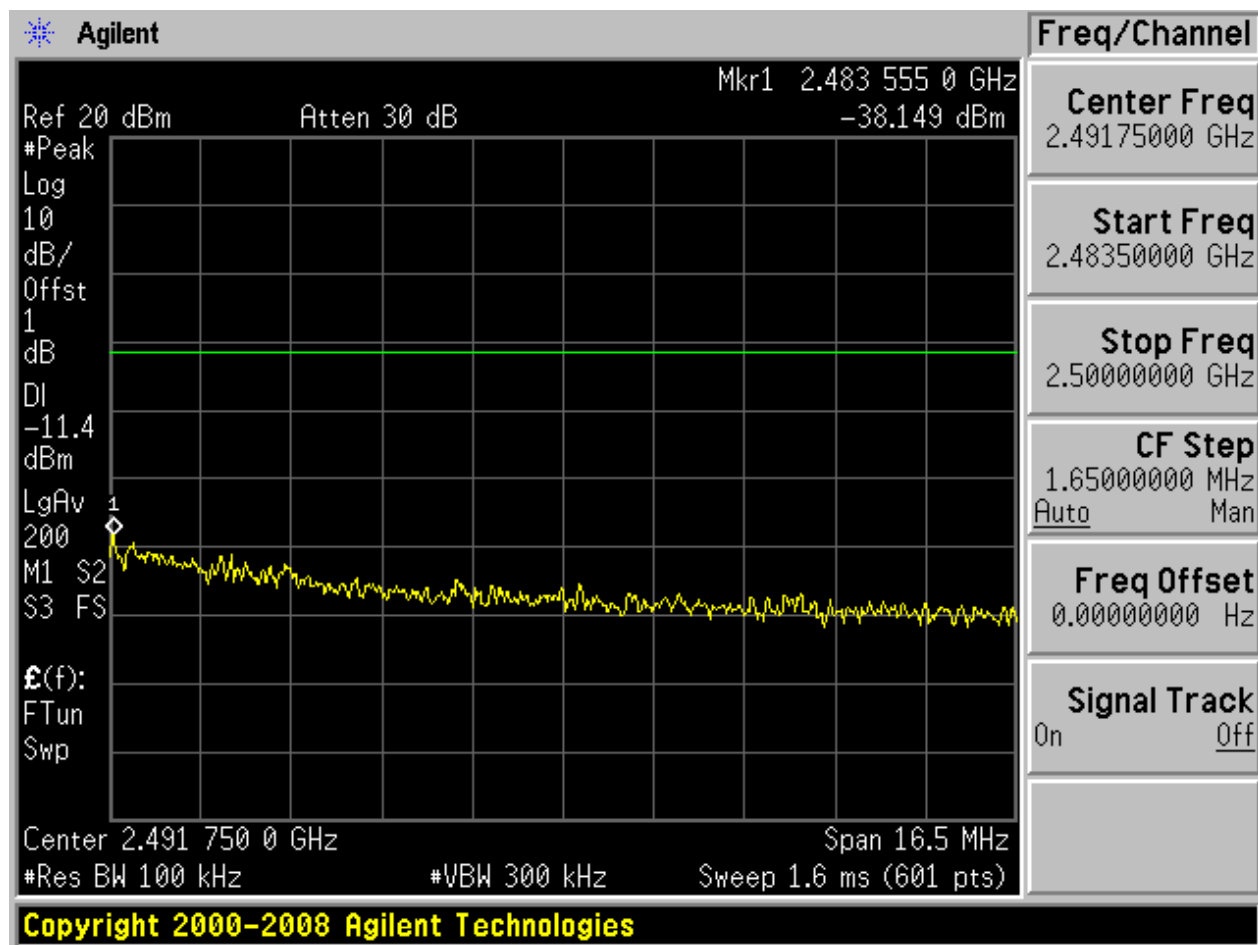


2.3G - 2.4G



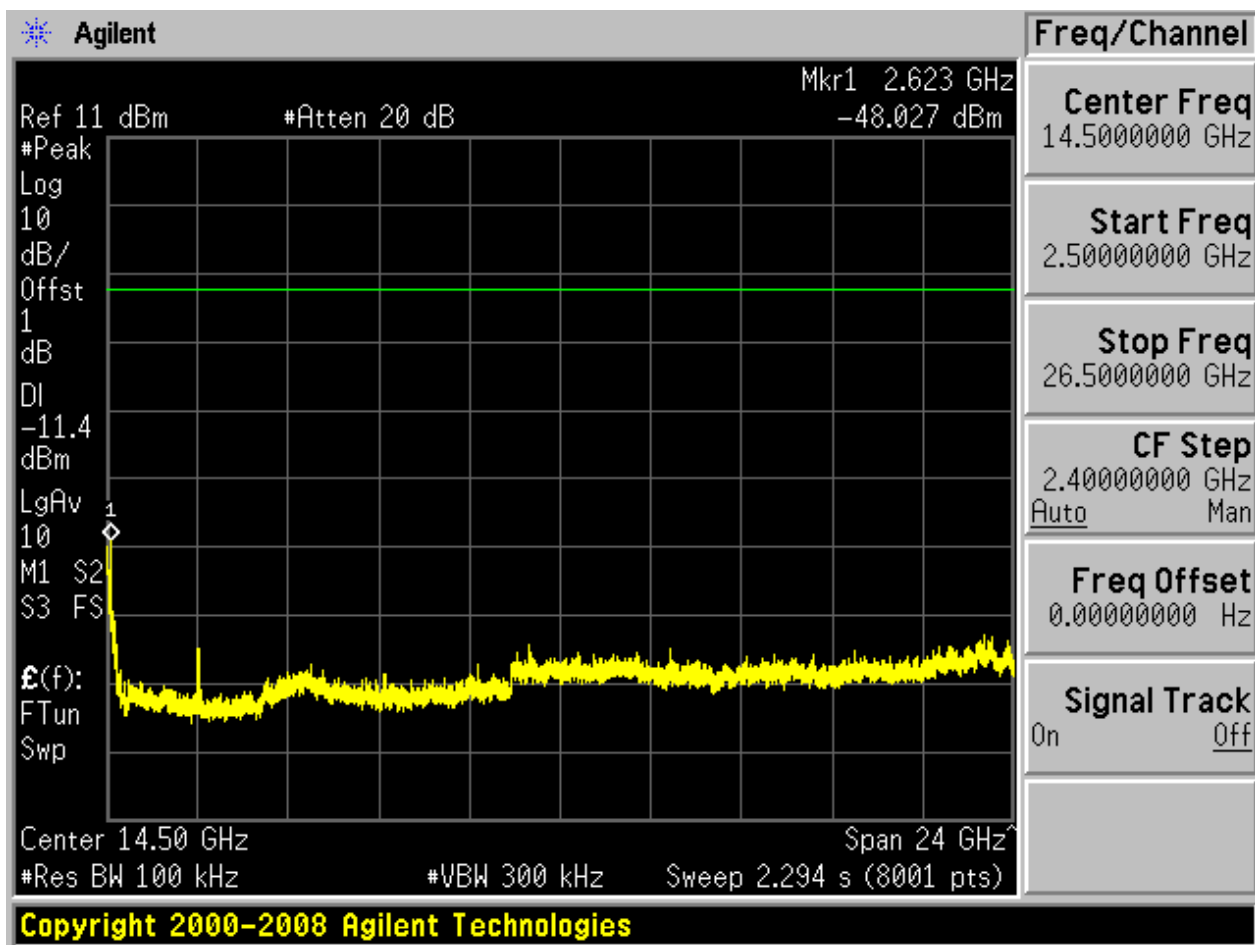


2.4835G - 2.5G





2.5G - 26.5G

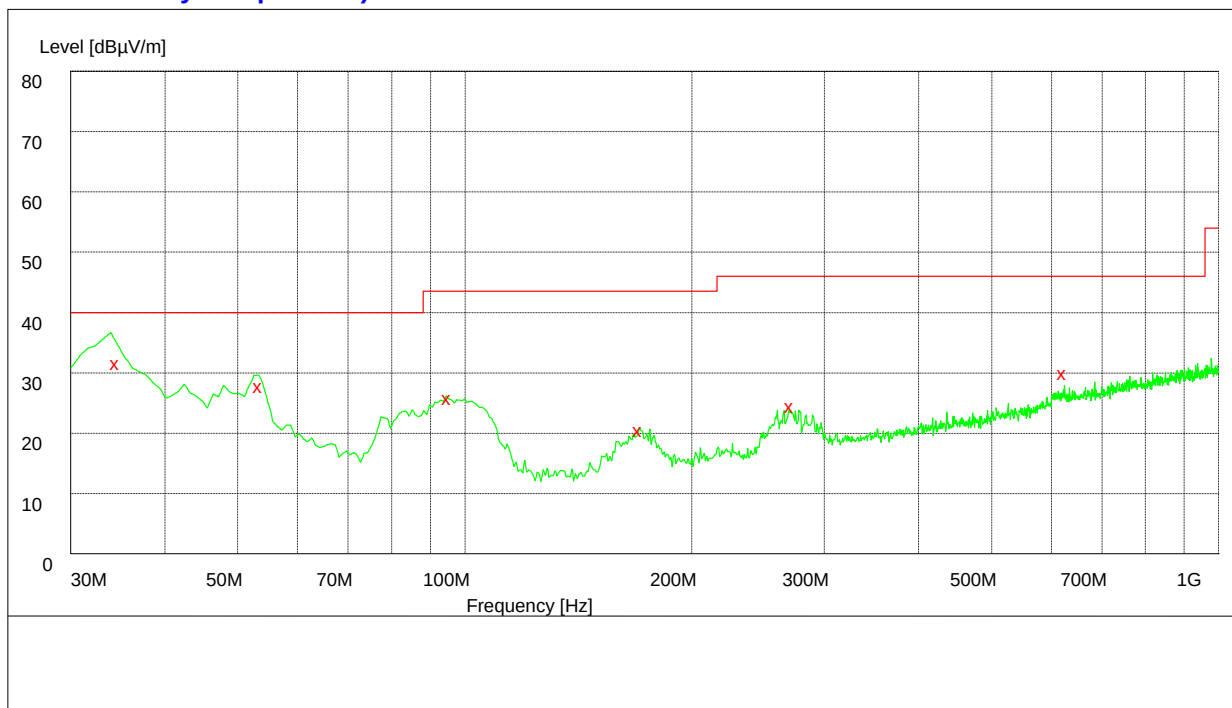




Appendix F: Radiated Spurious Emission & Spurious in Restricted Band

Part 1: Testing Range of “30 MHz to 1 GHz”

- Note 1: The test results and plot for testing range of “30 MHz to 1 GHz” showed as below is **the WORST case for all Test Modes and Channels**. This range will not be presented for each Test Mode and each Channel.
- Note 2: **The emissions in this range are mainly from the Platform Device (Notepad PC and its ancillary components).**

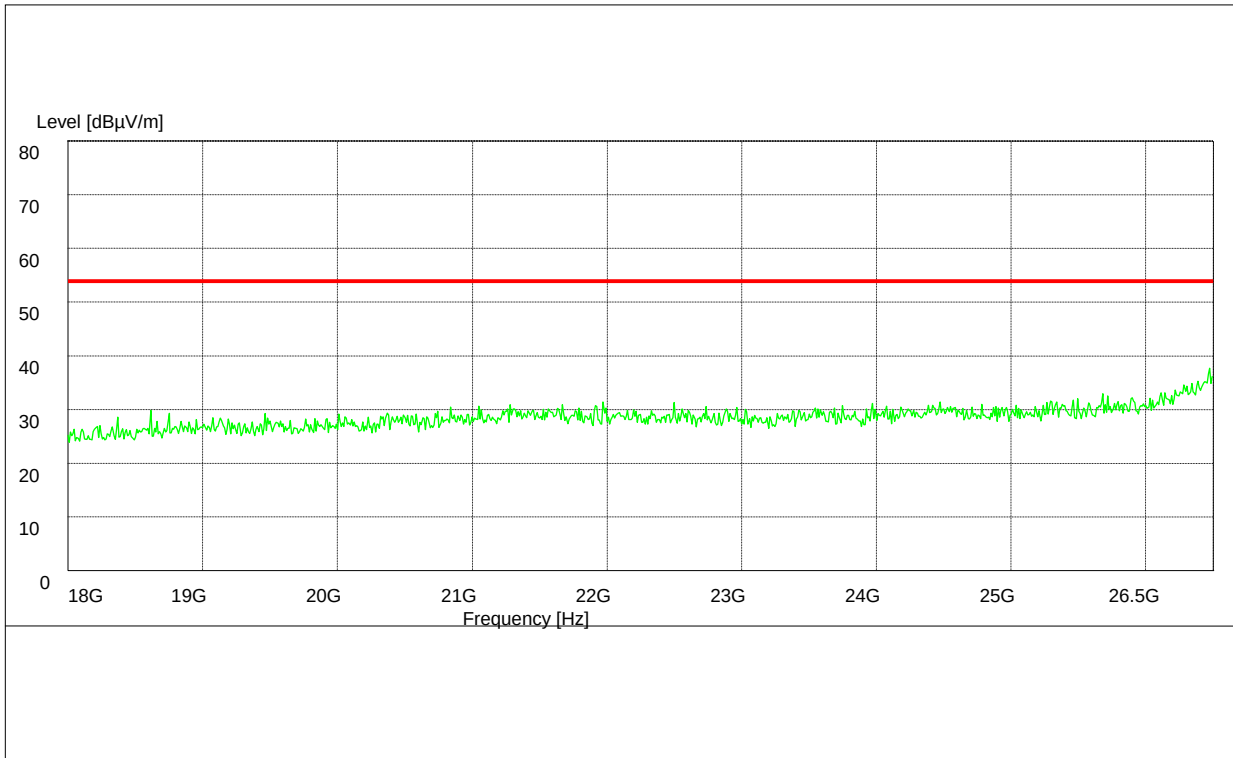


Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Plarization
34.620000	31.20	15.0	40.0	8.8	100.0	45.00	VERTICAL
53.520000	27.40	14.7	40.0	12.6	100.0	290.00	VERTICAL
95.280000	25.40	12.9	43.5	18.1	131.0	79.00	VERTICAL
170.640000	20.10	10.7	43.5	23.4	100.0	103.00	VERTICAL
271.260000	24.00	14.4	46.0	22.0	100.0	325.00	HORIZONTAL
625.080000	29.50	21.7	46.0	16.5	173.0	297.00	HORIZONTAL



Part 2: Testing Range of “18 GHz to 26.5 GHz”

Note: No peak found in pre- test.



Part 3: Testing Range of “1GHz to 3GHz”

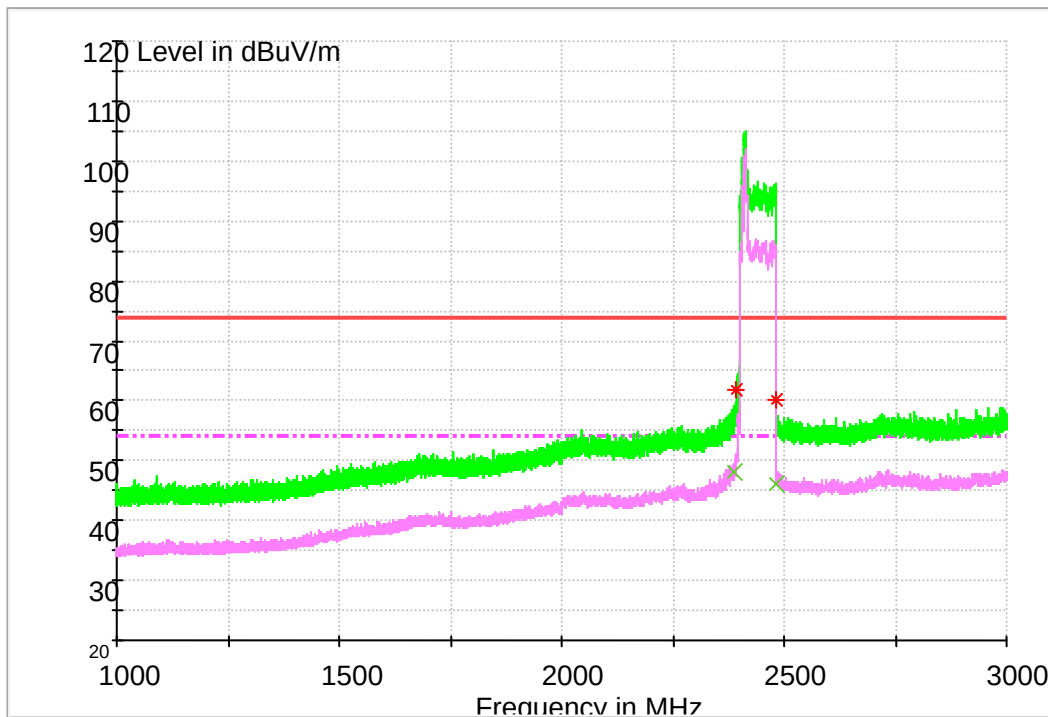
Note 1: The testing range of “2.3 GHz to 2.5 GHz” is for checking radiated emissions located in restricted bands near the EUT operating bands.

Note 2: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB μ V/m) and Average Limit (54 dB μ V/m).

Note 3: The peak spike exceeds the limit line is EUT’s operating frequency.

Test Mode: 11b

Channel 01



Note: The peak exceeds the limit line is carrier frequency.

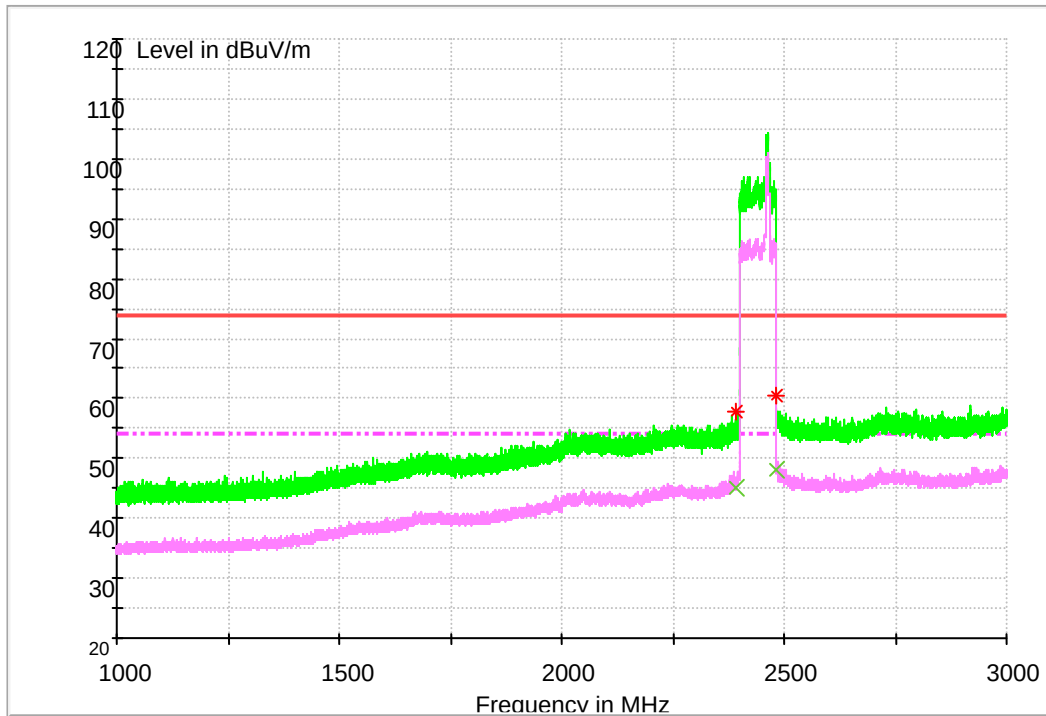
MEASUREMENT RESULT: PK Detector

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarization
2390.000000	61.90	38.3	74.0	12.1	100.0	234.0	HORIZONTAL
2483.500000	60.30	40.5	74.0	13.7	100.0	45.0	VERTICAL

MEASUREMENT RESULT: AVDetector

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarization
2390.000000	48.2	38.3	54.0	5.8	100.0	234.0	HORIZONTAL
2483.500000	46.2	40.6	54.0	7.8	100.0	0.0	VERTICAL

Channel 11



Note: The peak exceeds the limit line is carrier frequency.

MEASUREMENT RESULT: PK Detector

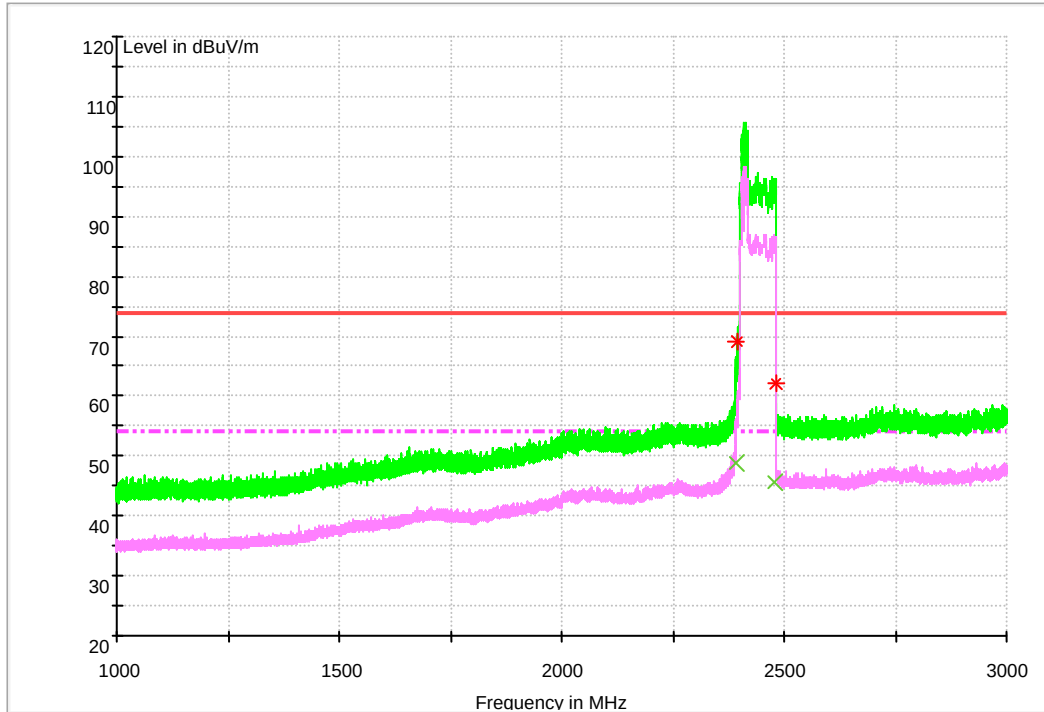
Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarization
2390.000000	57.7	38.3	74.0	16.3	113.0	41.0	VERTICAL
2483.500000	60.4	40.1	74.0	13.6	100.0	45.0	VERTICAL

MEASUREMENT RESULT: AVDetector

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarization
2390.000000	45.0	38.3	54.0	9.0	100.0	232.0	HORIZONTAL
2483.500000	48.1	40.6	54.0	5.9	100.0	250.0	HORIZONTAL

Test Mode: 11g

Channel 01



Note: The peak exceeds the limit line is carrier frequency.

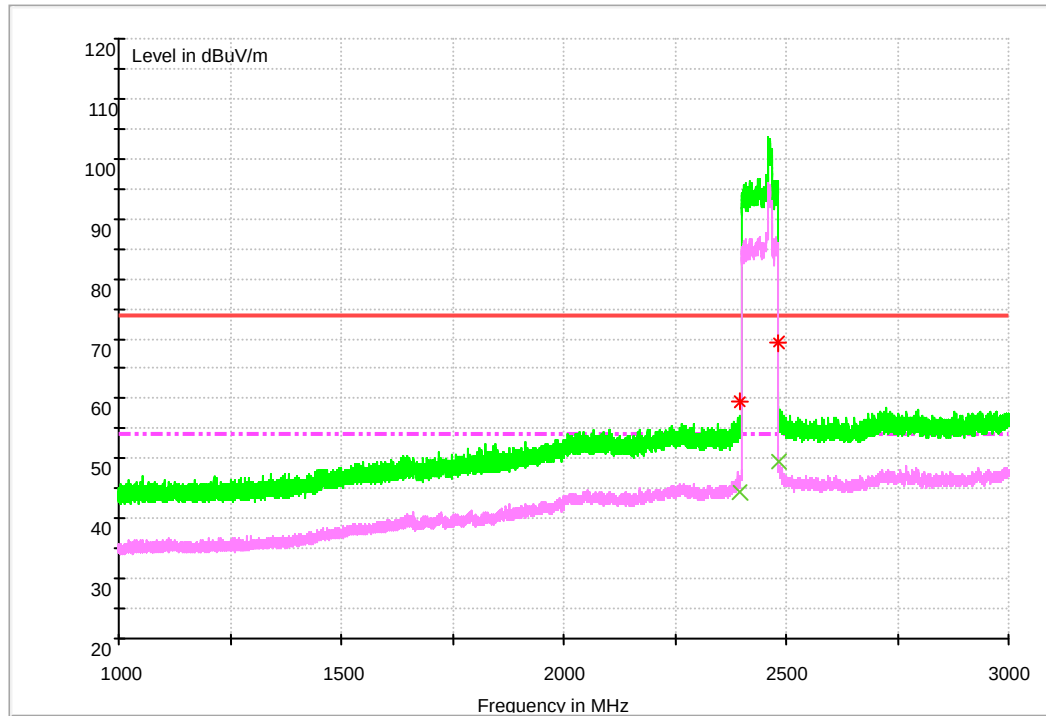
MEASUREMENT RESULT: PK Detector

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarization
2390.000000	68.4	38.3	74.0	5.6	100.0	21.0	VERTICAL
2483.500000	59.9	40.3	74.0	14.0	100.0	73.0	VERTICAL

MEASUREMENT RESULT: AVDetector

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarization
2390.000000	48.4	38.3	54.0	5.6	100.0	0.0	VERTICAL
2483.500000	45.6	40.8	54.0	8.4	100.0	149.0	HORIZONTAL

Channel 11



Note:

The peak exceeds the limit line is carrier frequency.

MEASUREMENT RESULT: PK Detector

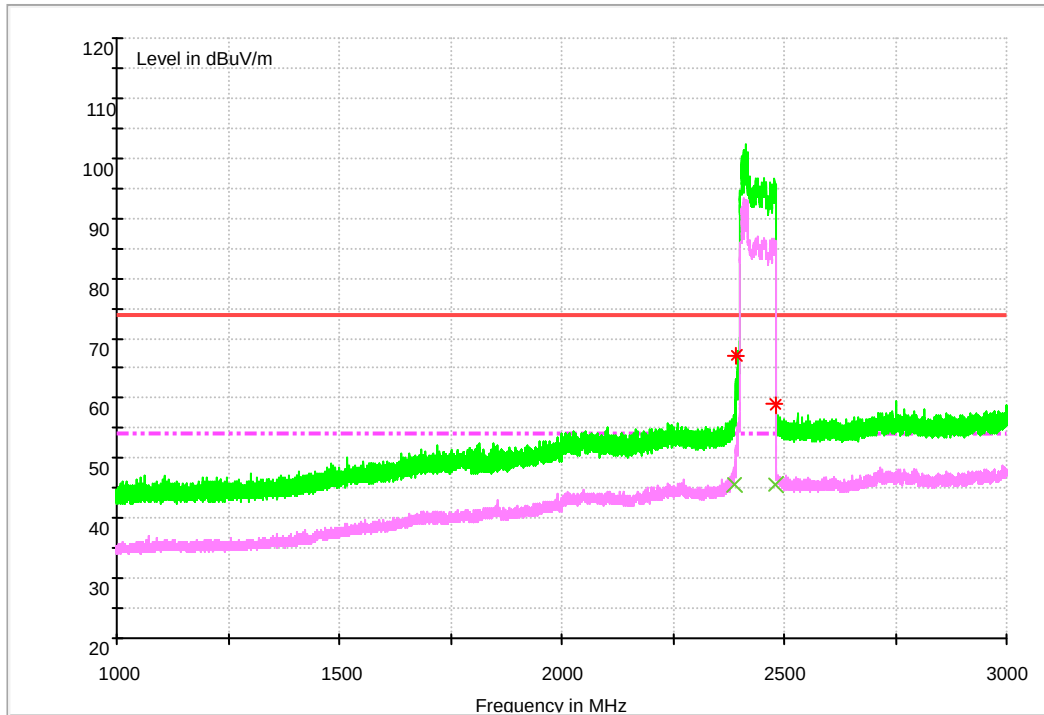
Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarization
2390.000000	59.0	38.3	74.0	15.0	100.0	244.0	HORIZONTAL
2483.500000	69.5	40.8	74.0	4.5	100.0	22.0	VERTICAL

MEASUREMENT RESULT: AVDetector

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarization
2390.000000	44.3	38.3	54.0	9.7	100.0	216.0	HORIZONTAL
2483.500000	49.4	40.8	54.0	4.6	100.0	0.0	VERTICAL

Test Mode: 11n

Channel 01



Note: The peak exceeds the limit line is carrier frequency.

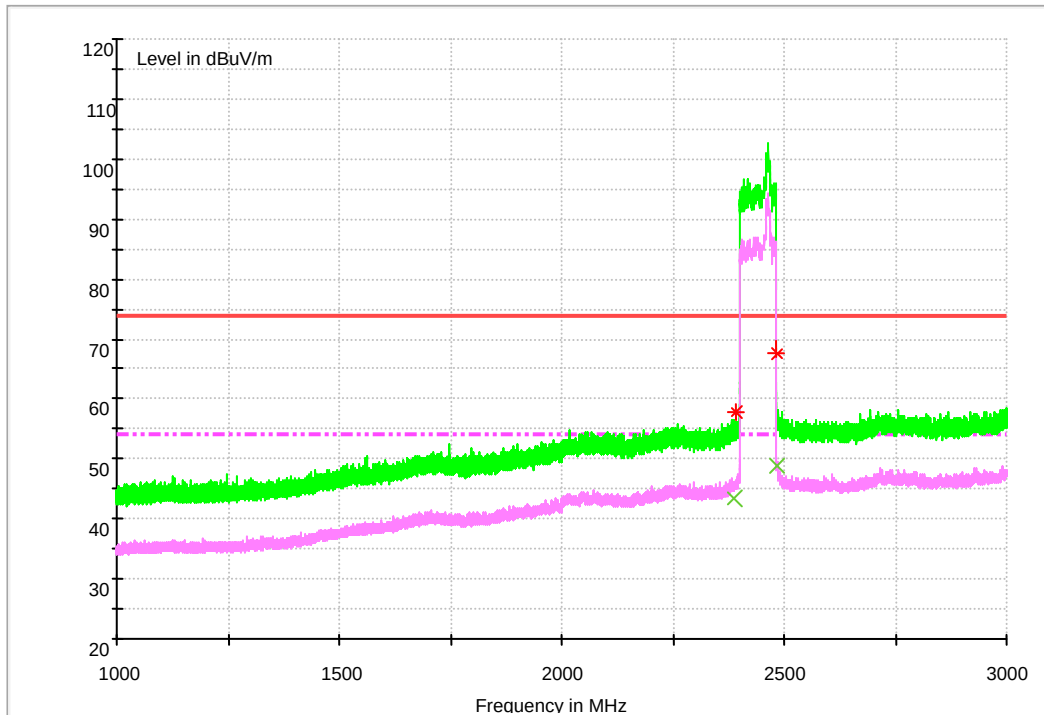
MEASUREMENT RESULT: PK Detector

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarization
2390.000000	67.3	38.3	74.0	6.7	100.0	21.0	VERTICAL
2483.500000	59.4	40.3	74.0	14.6	100.0	208.0	HORIZONTAL

MEASUREMENT RESULT: AVDetector

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarization
2390.000000	45.2	38.3	54.0	8.8	100.0	37.0	VERTICAL
2483.500000	45.5	40.8	54.0	8.5	100.0	217.0	HORIZONTAL

Channel 11



Note: The peak exceeds the limit line is carrier frequency.

MEASUREMENT RESULT: PK Detector

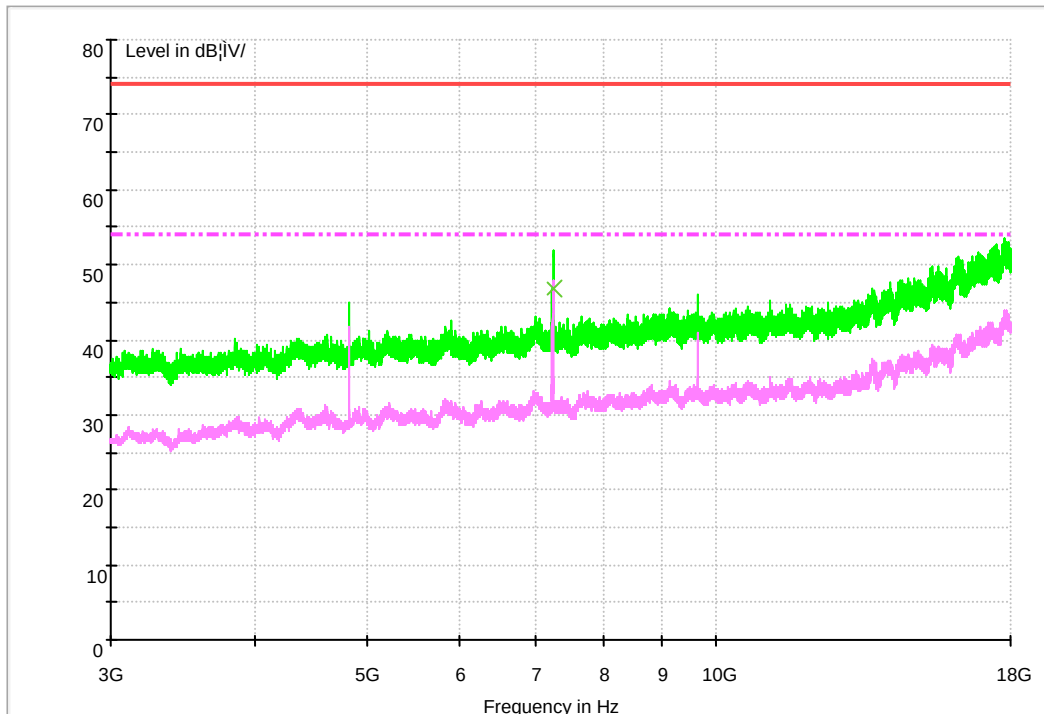
Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarization
2390.000000	57.8	38.3	74.0	16.2	113.0	41.0	VERTICAL
2483.500000	66.7	40.8	74.0	7.3	100.0	28.0	VERTICAL

MEASUREMENT RESULT: AVDetector

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarization
2390.000000	43.4	38.3	54.0	10.6	100.0	68.0	HORIZONTAL
2483.500000	48.0	40.7	54.0	6.0	100.0	0.0	VERTICAL

Part 4: Testing Range of “1 GHz to 18 GHz”

- Note 1: The test results and plot for testing range of “1 GHz to 18 GHz” showed as below is **the WORST case for all Test Modes and Channels**. This range will not be presented for each Test Mode and each Channel.
- Note 2: The testing range of “1 GHz to 18 GHz” is for checking radiated emissions located in restricted bands faraway from the EUT operating bands.
- Note 3: Two limits are required in the testing range above 1 GHz, that is Peak limit (74 dB μ V/m) and Average Limit (54 dB μ V/m).



Note: The peak exceeds the limit line is carrier frequency.

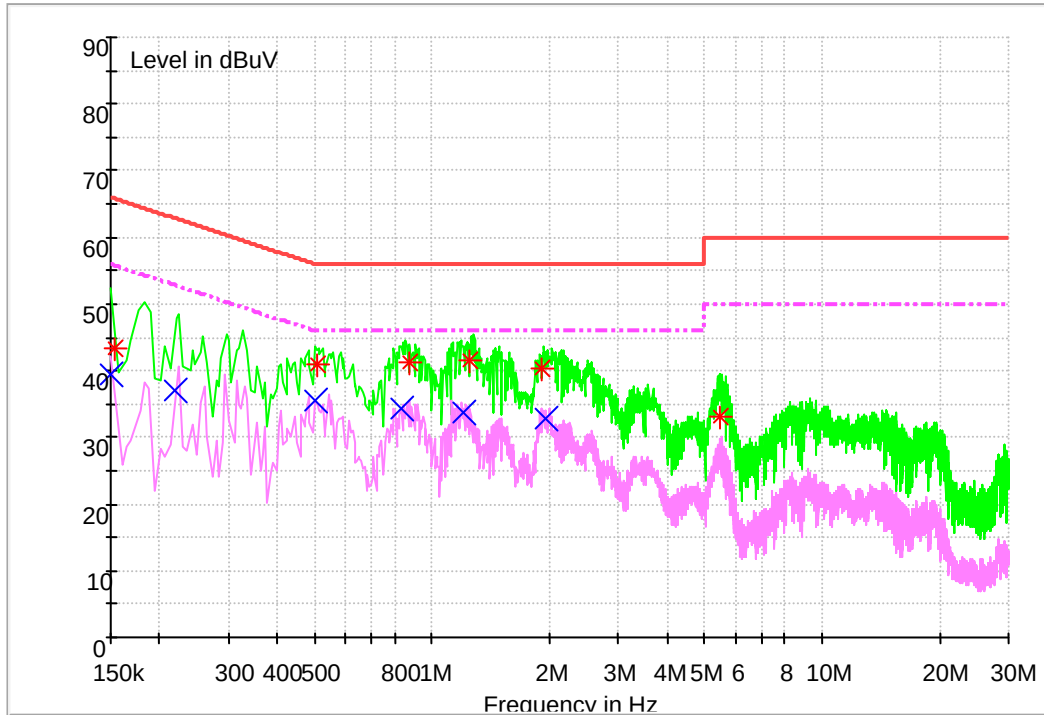
MEASUREMENT RESULT: AVDetector

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarization
7236.624000	46.8	5.7	54.0	7.2	100.0	354.0	VERTICAL



Appendix G: Conducted Emission at Power Port

Channel 6



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.153128	43.4	9.7	65.8	22.4	L1	FLO
0.504383	40.9	9.7	56.0	15.1	N	FLO
0.874984	41.3	9.7	56.0	14.7	N	FLO
1.244441	41.4	9.7	56.0	14.6	L1	FLO
1.915710	40.5	9.7	56.0	15.5	N	FLO
5.451195	33.0	9.8	60.0	27.0	N	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150412	39.5	9.7	56.0	16.5	N	FLO
0.219514	37.0	9.7	52.8	15.8	N	FLO
0.501866	35.5	9.7	46.0	10.5	N	FLO
0.835657	34.4	9.7	46.0	11.6	N	FLO
1.205573	33.6	9.7	46.0	12.4	N	FLO
1.955202	32.9	9.7	46.0	13.1	N	FLO

END