

FCC RF Test Report

**Product Name: HSPA/UMTS/GPRS/GSM/EDGE Mobile
Phone with Bluetooth; Ascend W1**

**Product Model: HUAWEI H883G, HUAWEI W1-U34, H883G,
W1-U34**

Report Number: SYBH(Z-RF)020122012-2002

FCC ID: QISH883G

Reliability Laboratory of Huawei Technologies Co., Ltd.

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Notice

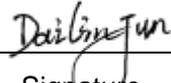
1. The laboratory has Passed the accreditation by China National Accreditation Service for Conformity Assessment (CNAS). The accreditation number is L0310.
2. The laboratory has Passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01.
3. The laboratory has been listed by the US Federal Communications Commission to perform electromagnetic emission measurements. The site recognition number is 97456.
4. The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 6369A-2.
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.
6. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
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
Product Name: HSPA/UMTS/GPRS/GSM/EDGE Mobile Phone with Bluetooth; Ascend W1
Product Model: HUAWEI H883G, HUAWEI W1-U34, H883G, W1-U34

Date of Receipt Sample: 2012-12-23
Start Date of Test: 2012-12-24
End Date of Test: 2013-01-08

Test Result: Pass

Approved by Senior Engineer:	2013-01-12	Dai Linjun	
	Date	Name	Signature

Prepared by:	2013-01-12	Zhong Yaning	
	Date	Name	Signature



Modification Record

No.	Last Report No.	Modification Description
1		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 PUBLIC NOTICE DA 00-705 Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems (Released March 30, 2000)

ANSI C63.4-2003/-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

ANSI C63.10-2009, American National Standard for Testing Unlicensed Wireless Devices.

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: 19.5 to 25 °C
Ambient Relative Humidity: 45 to 55 %
Atmospheric Pressure: Not applicable



2 Test Summary

Test Item	FCC Part No.	IC Standard No.	Requirements	Test Result	Verdict (NOTE)
20dB Emission Bandwidth (EBW)	15.247(a)(1)	RSS-210 A8.1(a)	No limit.	Appendix A	Pass
Carrier Frequency Separation	15.247(a)(1)	RSS-210 A8.1(b)	$\geq \text{MAX} \{25\text{kHz}, \text{IIF}\{\text{output power} \leq 125\text{mW}, 2/3 * 20\text{dB EBW}, 20\text{dB EBW}\}\}$.	Appendix B	Pass
Number of Hopping Channel	15.247(a)(1)(iii)	RSS-210 A8.1(d)	≥ 15 channels.	Appendix C	Pass
Time of Occupancy (Dwell Time)	15.247(a)(1)(iii)	RSS-210 A8.1(d)	$< 0.4\text{s}$ within a period of $(0.4\text{s} * \text{hopping number})$.	Appendix D	Pass
Maximum Peak Conducted Output Power	15.247(b)(1)	RSS-210 A8.4(2)	$< 1\text{ W}$ if using ≥ 75 non-overlapping channels.	Appendix E	Pass
Band edge spurious emission	15.247(d)	RSS-210, A8.5	$< -20\text{ dBc}/100\text{ kHz}$ if total peak power \leq power limit.	Appendix F	Pass
Conducted RF Spurious Emission	15.247(d)	RSS-210, A8.5	$< -20\text{ dBc}/100\text{ kHz}$ if total peak power \leq power limit.	Appendix G	Pass
Radiated Emissions in the Restricted Bands	15.247(d) 15.209	RSS-210, A8.5 RSS-210, 2.2 RSS-Gen, 7.2.2 RSS-Gen, 7.2.5	FCC Part 15.209 field strength limit; RSS-Gen 7.2.5 field strength limit.	Appendix H	Pass
Receiver Spurious Emissions	---	RSS-210, 2.3 RSS-Gen, 6.1	RSS-Gen 6.1 radiated limit.	---	N/T
AC Power Line Conducted Emissions	15.207	RSS-Gen, 7.2.4	FCC Part 15.207 conducted limit; RSS-Gen, 7.2.4 conducted limit.	Appendix I	Pass
NOTE: 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 H883G, HUAWEI W1-U34, H883G, W1-U34 is subscriber equipment in the WCDMA/GSM system. The HSPA/UMTS frequency band is Band IV and Band II 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.

NOTE: Only Bluetooth test data included in this report.

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

Board		
Software Version	Hardware Version	Description
1030.56.37800.04800	HD1H883GM	Main board of Mobile Phone

3.2.2 Sub-Assembly

Sub-Assembly			
Sub-Assembly Name	Model	Manufacturer	Description
AC/DC Adapter	HW-050100U1W	Huawei Technologies Co., Ltd.	Input voltage: ~100-240V 50/60Hz 0.2A Output voltage: 5V  1A Rate power: 5W

3.3 Technical Description

Characteristics	Description	
TX/RX Operating Range	2400-2483.5 MHz band	$f_c = 2402 \text{ MHz} + N * 1 \text{ MHz}$, where: - f_c = "Operating Frequency" in MHz, - N = "Channel Number" with the range from 0 to 78.
Modulation Type	Carrier	Frequency Hopping Spread Spectrum (FHSS)
	Digital	GFSK, $\pi/4$ -DQPSK, 8DPSK
Emission Designator	GFSK: 0M95GXD $\pi/4$ -DQPSK: 1M29GXD 8DPSK: 1M28GXD	
Bluetooth Power Class	Class 1,	

4 General Test Conditions / Configurations

4.1 EUT Configurations

4.1.1 General Configurations

Configuration	Description
Test Antenna Ports	Until otherwise specified, <ul style="list-style-type: none"> - 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.

4.1.2 Customized Configurations

# EUT Conf.	Signal Description	Operating Frequency
TM1_DH5_Hop	GFSK modulation, package type DH5, hopping on.	---
TM1_DH5_Ch0	GFSK modulation, package type DH5, hopping off.	Ch No. 0 / 2402 MHz
TM1_DH5_Ch39	GFSK modulation, package type DH5, hopping off.	Ch No. 39 / 2441 MHz
TM1_DH5_Ch78	GFSK modulation, package type DH5, hopping off.	Ch No. 78 / 2480 MHz
TM2_2DH5_Hop	$\pi/4$ -DQPSK modulation, package type 2DH5, hopping on.	---
TM2_2DH5_Ch0	$\pi/4$ -DQPSK modulation, package type 2DH5, hopping off.	Ch No. 0 / 2402 MHz
TM2_2DH5_Ch39	$\pi/4$ -DQPSK modulation, package type 2DH5, hopping off.	Ch No. 39 / 2441 MHz
TM2_2DH5_Ch78	$\pi/4$ -DQPSK modulation, package type 2DH5, hopping off.	Ch No. 78 / 2480 MHz
TM3_3DH5_Hop	8DPSK modulation, package type 3DH5, hopping on.	---
TM3_3DH5_Ch0	8DPSK modulation, package type 3DH5, hopping off.	Ch No. 0 / 2402 MHz
TM3_3DH5_Ch39	8DPSK modulation, package type 3DH5, hopping off.	Ch No. 39 / 2441 MHz
TM3_3DH5_Ch78	8DPSK modulation, package type 3DH5, hopping off.	Ch No. 78 / 2480 MHz
RX	Receiver Continues Receiving mode.	Ch No. 39 / 2441 MHz



4.2 Test Environments

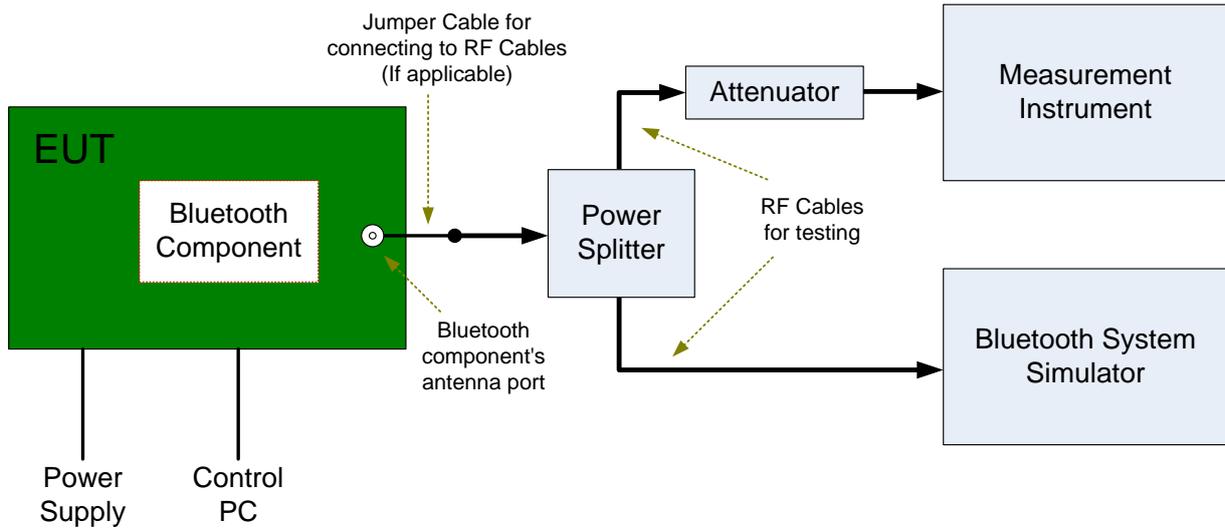
NOTE: The values used in the test report may be stringent than the declared.

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

4.3 Test Setups

4.3.1 Test Setup 1

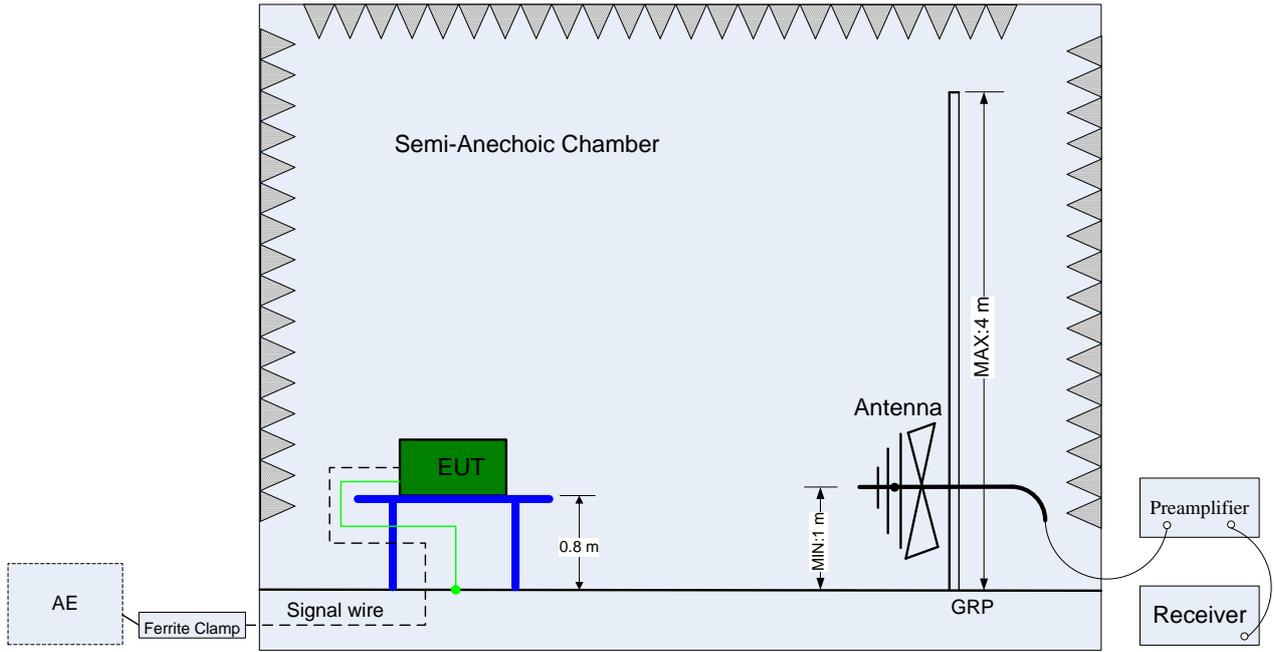
The Bluetooth component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by Bluetooth System Simulator and/or PC/software to emit the specified signals for the purpose of measurements.



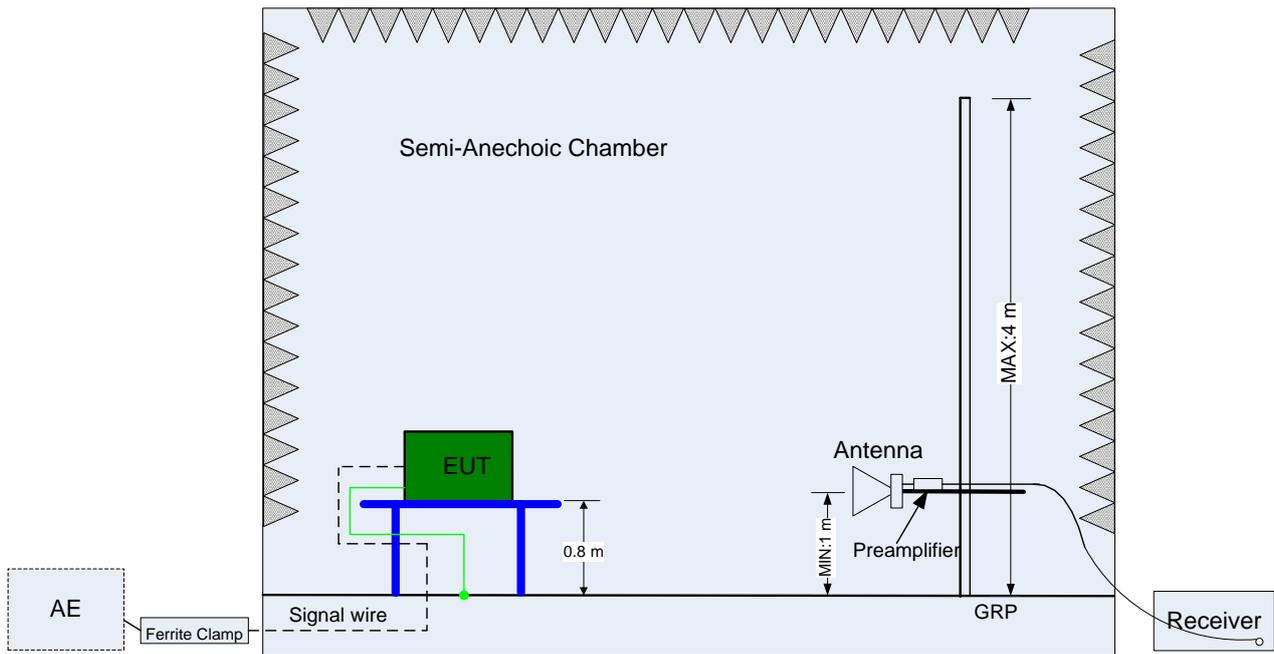
4.3.2 Test Setup 2

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)

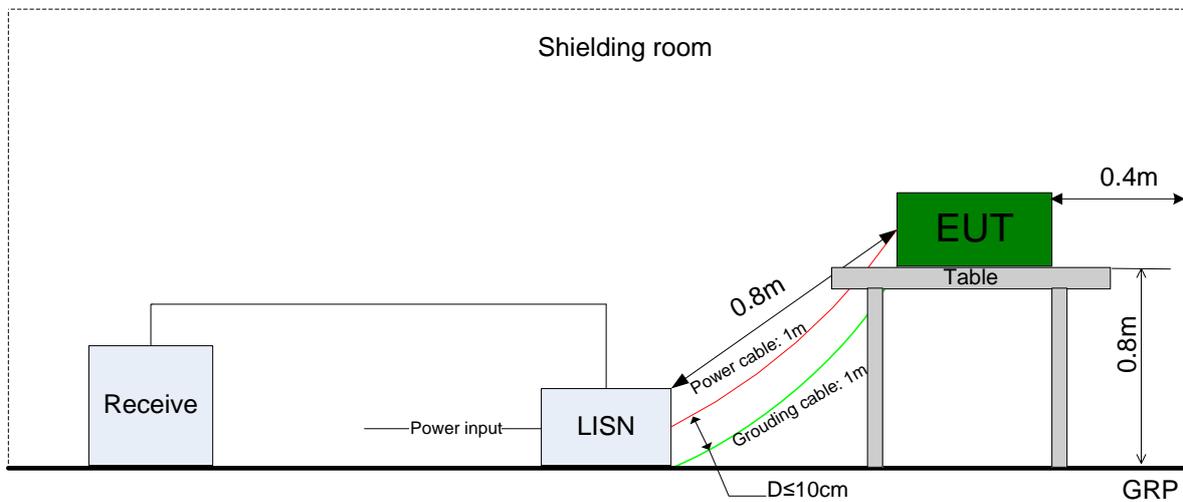


(Above 1 GHz)

4.3.3 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.



4.4 Test Conditions

Test Case	Test Conditions	
	Configuration	Description
20dB Emission Bandwidth (EBW)	Meas. Method	DA 00-705
	Test Env.	NTNV
	Test Setup	Test Setup 1
	EUT Conf.	TM1_DH5_Ch0, TM1_DH5_Ch39, TM1_DH5_Ch78, TM2_2DH5_Ch0, TM2_2DH5_Ch39, TM2_2DH5_Ch78, TM3_3DH5_Ch0, TM3_3DH5_Ch39, TM3_3DH5_Ch78.
Carrier Frequency Separation	Meas. Method	DA 00-705
	Test Env.	NTNV
	Test Setup	Test Setup 1
	EUT Conf.	TM1_DH5_Hop, TM2_2DH5_Hop, TM3_3DH5_Hop.
Number of Hopping Channel	Meas. Method	DA 00-705
	Test Env.	NTNV
	Test Setup	Test Setup 1
	EUT Conf.	TM1_DH5_Hop, TM2_2DH5_Hop, TM3_3DH5_Hop.
Time of Occupancy (Dwell Time)	Meas. Method	DA 00-705
	Test Env.	NTNV
	Test Setup	Test Setup 1
	EUT Conf.	TM1_DH5_Ch39, TM2_2DH5_Ch39, TM3_3DH5_Ch39.
Maximum Peak Conducted Output Power	Meas. Method	DA 00-705
	Test Env.	NTNV
	Test Setup	Test Setup 1
	EUT Conf.	TM1_DH5_Ch0, TM1_DH5_Ch39, TM1_DH5_Ch78, TM2_2DH5_Ch0, TM2_2DH5_Ch39, TM2_2DH5_Ch78, TM3_3DH5_Ch0, TM3_3DH5_Ch39, TM3_3DH5_Ch78.
Conducted RF Spurious Emission	Meas. Method	DA 00-705
	Test Env.	NTNV
	Test Setup	Test Setup 1
	EUT Conf.	TM1_DH5_Ch0, TM1_DH5_Ch39, TM1_DH5_Ch78, TM2_2DH5_Ch0, TM2_2DH5_Ch39, TM2_2DH5_Ch78, TM3_3DH5_Ch0, TM3_3DH5_Ch39, TM3_3DH5_Ch78.
Radiated Emissions in the Restricted	Meas. Method	DA 00-705, C63.4, C63.10. (1) 30 MHz to 1 GHz:

Test Case	Test Conditions		
	Configuration	Description	
Bands		Pre: RBW = 100 kHz; VBW = 300 kHz; Det. = Peak. Final: RBW = 120 kHz; Det. = CISPR Quasi-Peak. (2) 1 GHz to 26.5 GHz: Average: RBW = 1 MHz; VBW = 10 Hz; Det. = Peak; Sweep-time = Auto; Trace = Single. Peak: RBW = 1 MHz; VBW = 3 MHz; Det. = Peak; Sweep-time = Auto; Trace ≥ Max Hold * 100.	
	Test Env.	NTNV	
	Test Setup	Test Setup 2	
	EUT Conf.	30 MHz -1 GHz	TM1_DH5_Ch0 (Worst Conf.).
		1-3 GHz	TM1_DH5_Ch0, TM1_DH5_Ch39, TM1_DH5_Ch78, TM2_2DH5_Ch0, TM2_2DH5_Ch39, TM2_2DH5_Ch78, TM3_3DH5_Ch0, TM3_3DH5_Ch39, TM3_3DH5_Ch78.
3-18 GHz		TM1_DH5_Ch0 (Worse Conf.), TM1_DH5_Ch39 (Worse Conf.), TM1_DH5_Ch78 (Worse Conf.).	
18-26.5 GHz		TM1_DH5_Ch0 (Worst Conf.).	
Receiver Spurious Emissions	Meas. Method	<input type="checkbox"/> Antenna-conducted, <input type="checkbox"/> Radiated. NOTE: If the receiver has a detachable antenna of known impedance, antenna conducted spurious emissions measurement is permitted as an alternative to radiated measurement. However, the radiated method is recommended. The antenna conducted test shall be performed with the antenna disconnected and the receiver antenna terminals connected to a measuring instrument having equal impedance to that specified for the antenna. (1) 30 MHz to 1 GHz: Pre: RBW = 100 kHz; VBW = 300 kHz; Det. = Peak. Final: RBW = 120 kHz; Det. = CISPR Quasi-Peak. (2) 1 GHz to 8 GHz: Pre: RBW = 1 MHz; VBW = 3 MHz; Det. = Peak. Final: RBW = 1 MHz; Det. = Average.	
	Test Env.	NTNV	
	Test Setup	Test Setup 2	
	EUT Conf.	RX.	
	AC Power Line Conducted Emissions	Meas. Method	AC mains conducted. Pre: RBW = 10 kHz; Det. = Peak. Final: RBW = 9 kHz; Det. = CISPR Quasi-Peak & Average.
Test Env.		NTNV	
Test Setup		Test Setup 3	



Test Case	Test Conditions	
	Configuration	Description
	EUT Conf.	TM1_DH5_Ch39.



5 Main Test Instruments

NOTE: Unless otherwise specified, the calibration intervals for test instruments were Annual (per year). The other intervals, if applicable, are marked with (##y), which denotes ## years calibration interval.

Equipment Name	Manufacturer	Model	Serial Number	Cal Date	Cal. Due
Power supply	KEITHLEY	2303	1288003	2012-11-09	2013-11-08
Wireless Communication Test set	Agilent	N4010A	MY49081592	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
Test receiver	R&S	ESU26	100150	2012-09-30	2013-09-29
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	2012-10-12	2013-10-11
Trilog Broadband Antenna (30M~3GHz)	SCHWARZBE CK	VULB 9163	9163-521	2012-12-09	2013-12-08
Pyramidal Horn Antenna(26GHz-40GH z)	ETS-Lindgren	3160-10	00123940	2012-02-28	2013-02-27
Pyramidal Horn Antenna(18GHz-26.5G Hz)	ETS-Lindgren	3160-09	00125912	2012-02-28	2013-02-27

END



Appendix for Test report



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2.2.1	<i>Pref</i>	65
2.2.2	<i>Puw</i>	66
2.3	TM1_DH5_CH78.....	72
2.3.1	<i>Pref</i>	72
2.3.2	<i>Puw</i>	73
2.4	TM2_2DH5_CH0.....	79
2.4.1	<i>Pref</i>	79
2.4.2	<i>Puw</i>	80
2.5	TM2_2DH5_CH39.....	86
2.5.1	<i>Pref</i>	86
2.5.2	<i>Puw</i>	87
2.6	TM2_2DH5_CH78.....	93
2.6.1	<i>Pref</i>	93
2.6.2	<i>Puw</i>	94
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Appendix A: 20dB Emission Bandwidth (EBW)



1 Result Table

EUT Conf.	EBW [MHz]	Verdict
TM1_DH5_Ch0	0.947	Pass
TM1_DH5_Ch39	0.948	Pass
TM1_DH5_Ch78	0.948	Pass
TM2_2DH5_Ch0	1.287	Pass
TM2_2DH5_Ch39	1.287	Pass
TM2_2DH5_Ch78	1.286	Pass
TM3_3DH5_Ch0	1.279	Pass
TM3_3DH5_Ch39	1.277	Pass
TM3_3DH5_Ch78	1.276	Pass

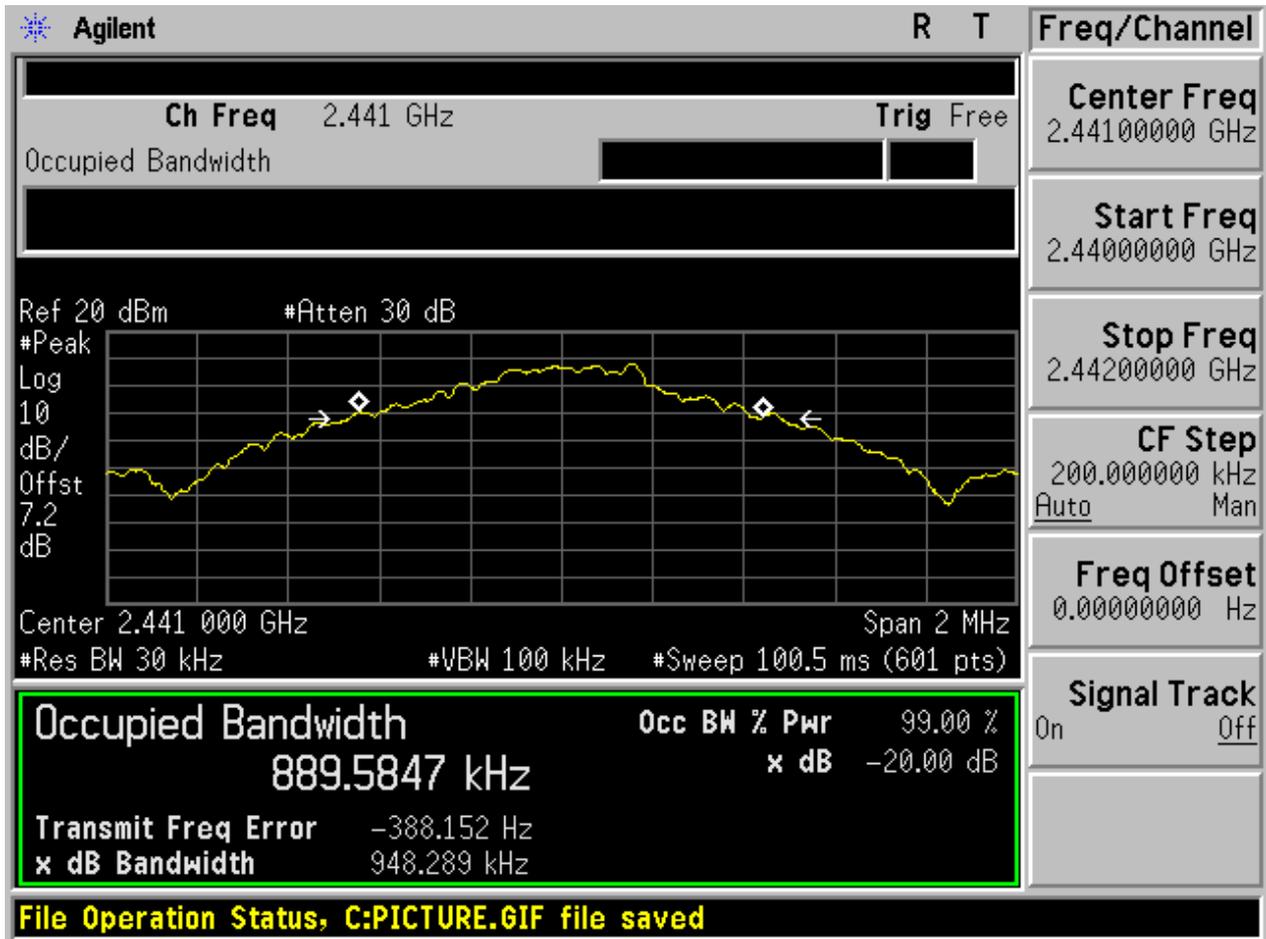
2 Test Plot

2.1 TM1_DH5_Ch0





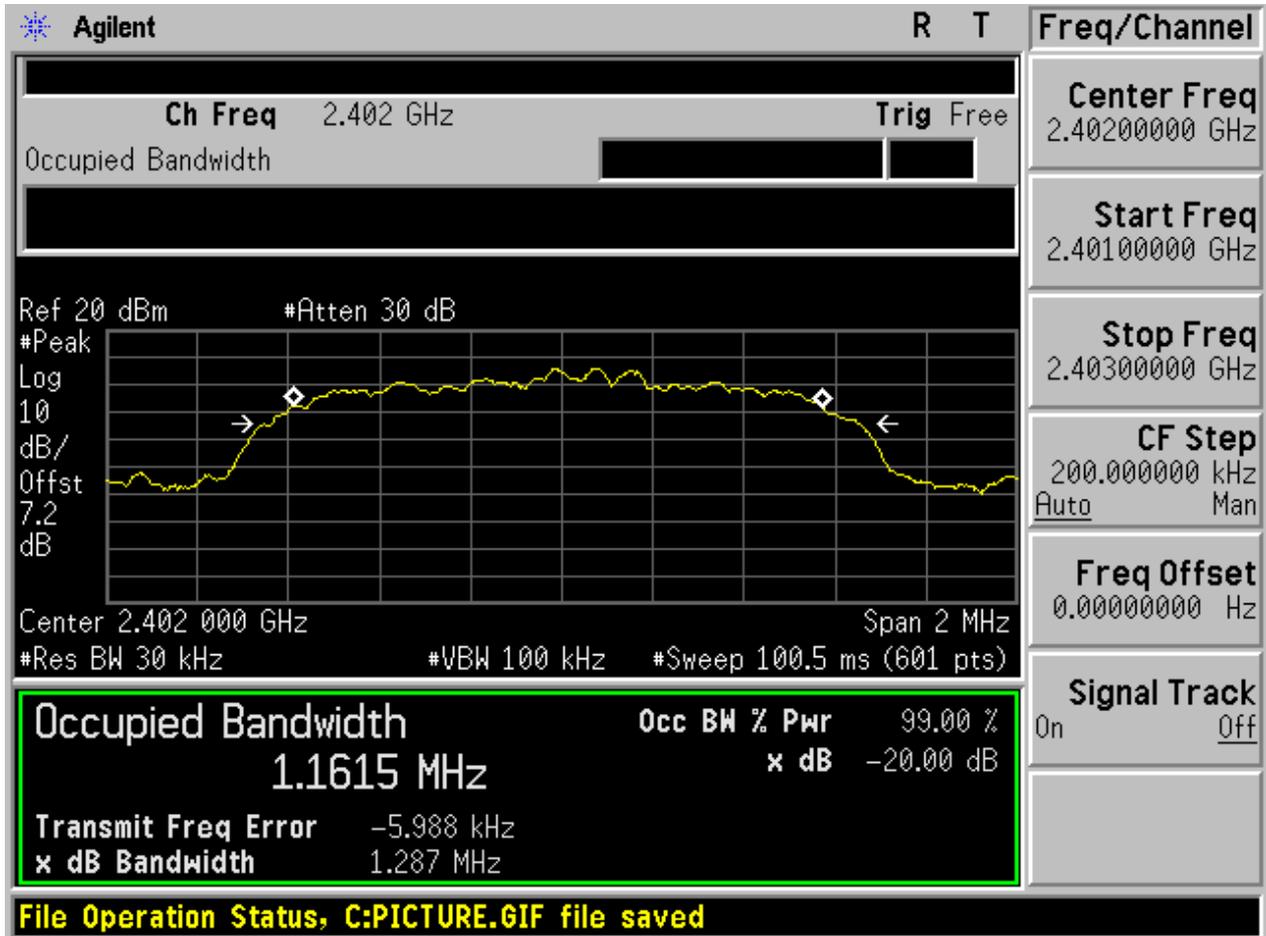
2.2 TM1_DH5_Ch39



2.3 TM1_DH5_Ch78

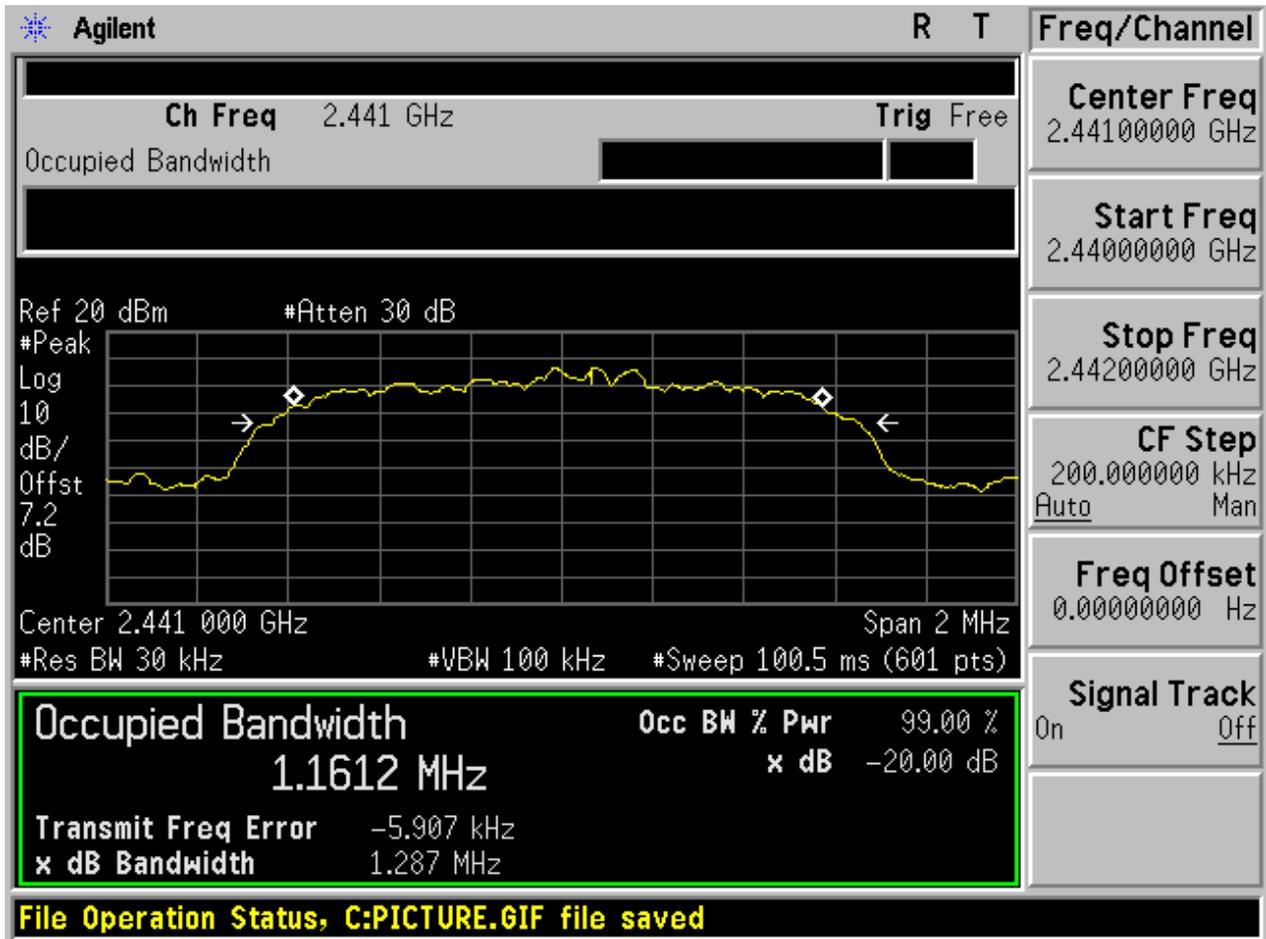


2.4 TM2_2DH5_Ch0

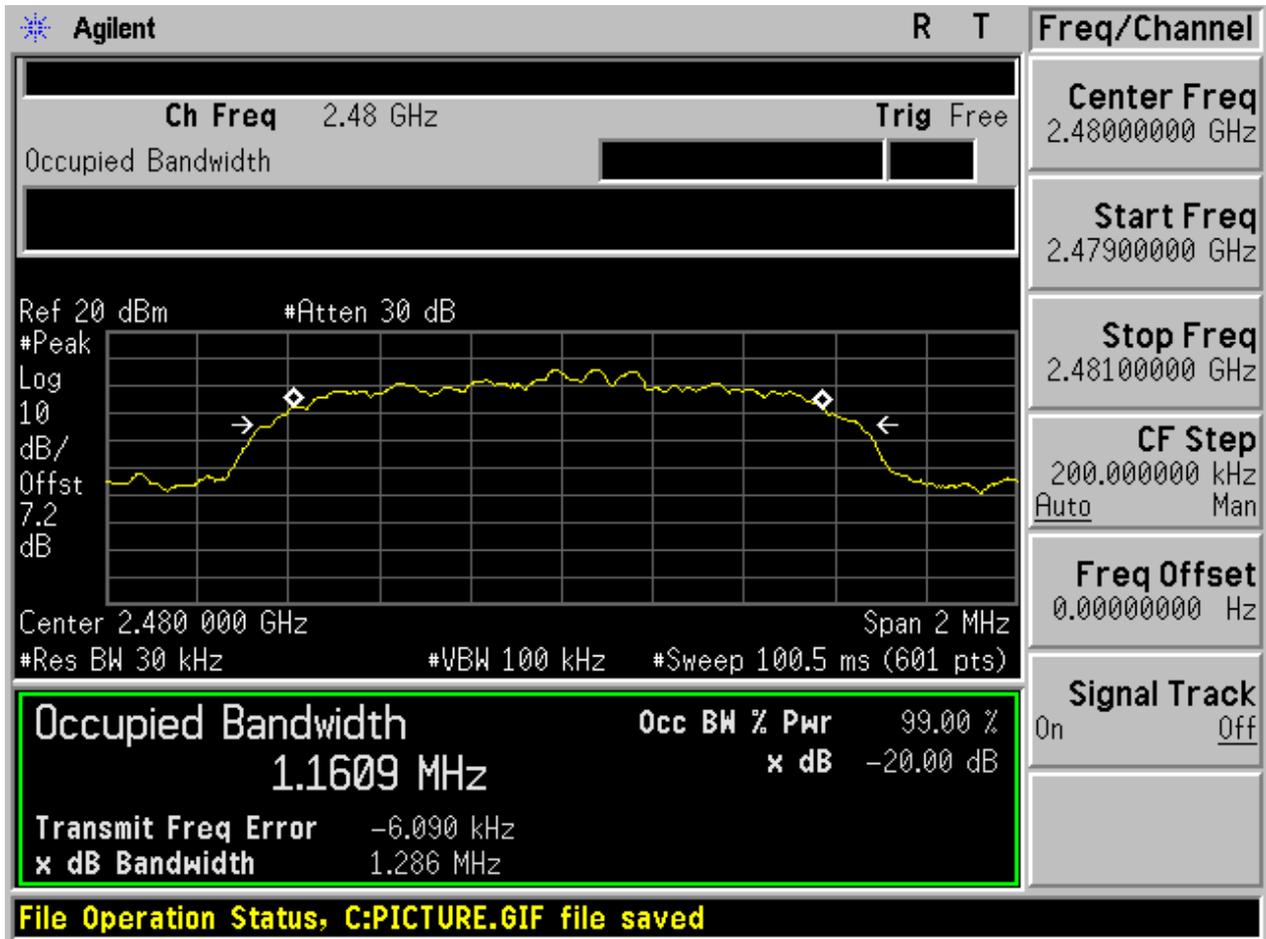




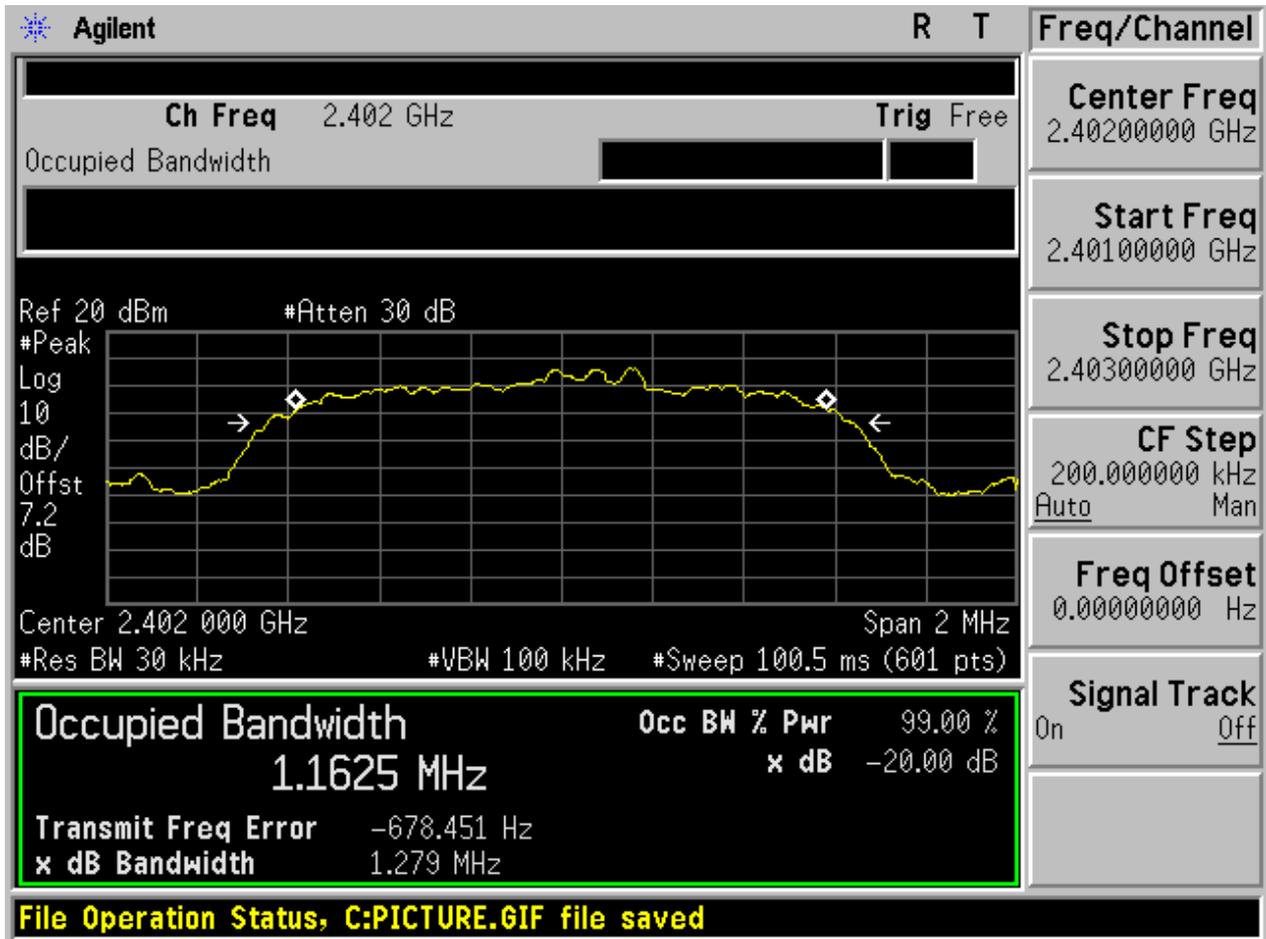
2.5 TM2_2DH5_Ch39



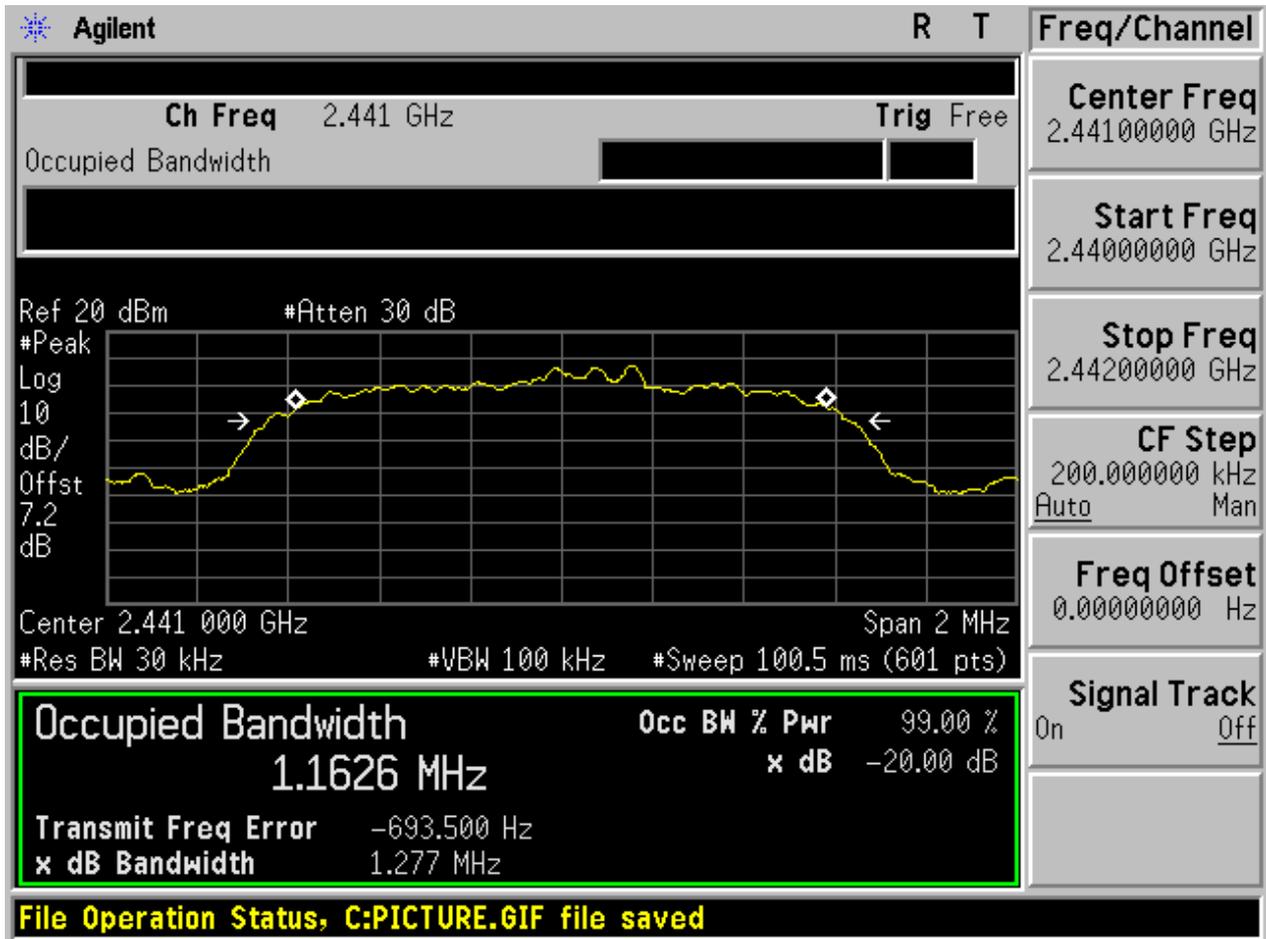
2.6 TM2_2DH5_Ch78



2.7 TM3_3DH5_Ch0

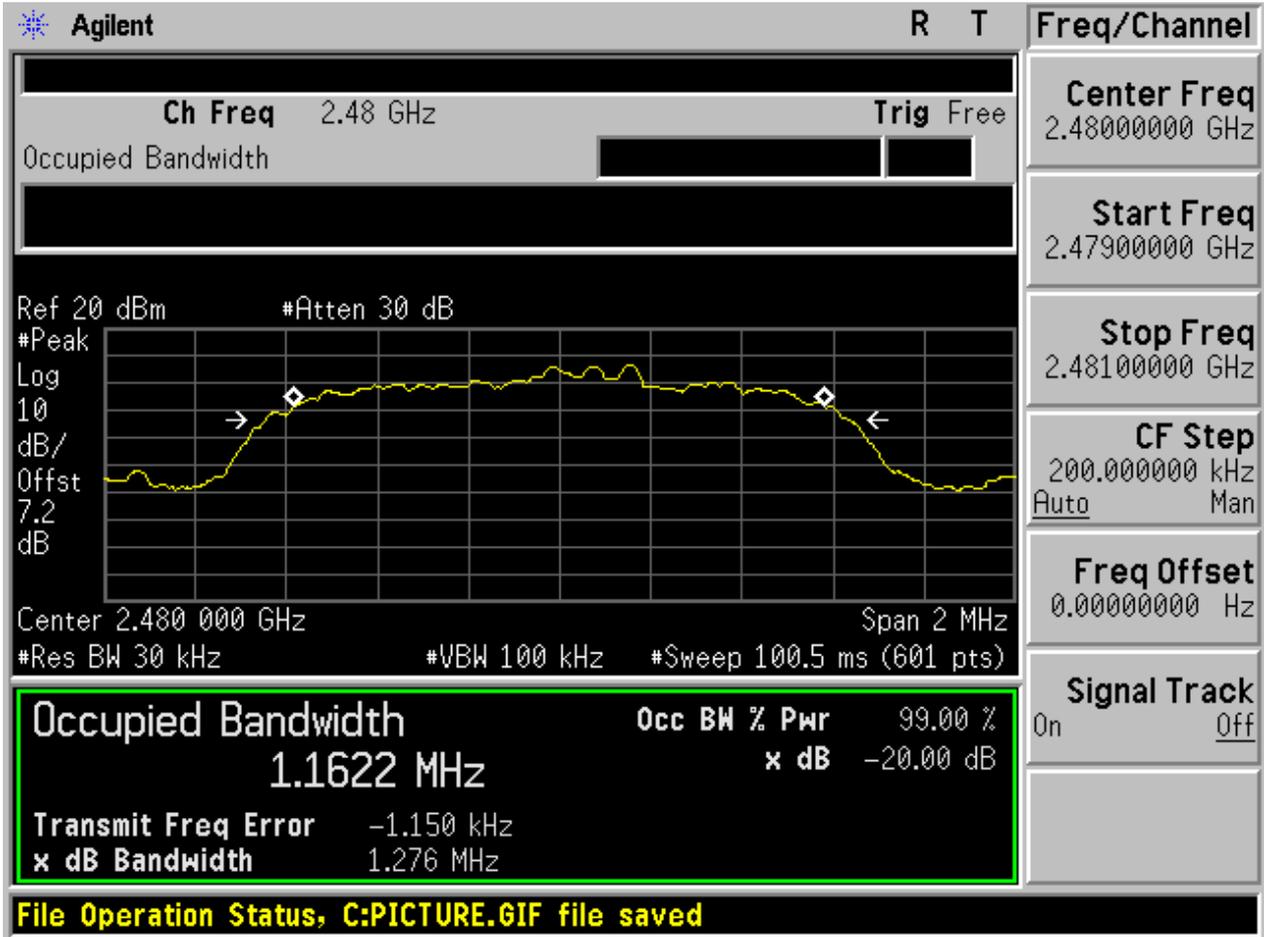


2.8 TM3_3DH5_Ch39





2.9 TM3_3DH5_Ch78





Appendix B: Carrier Frequency Separation



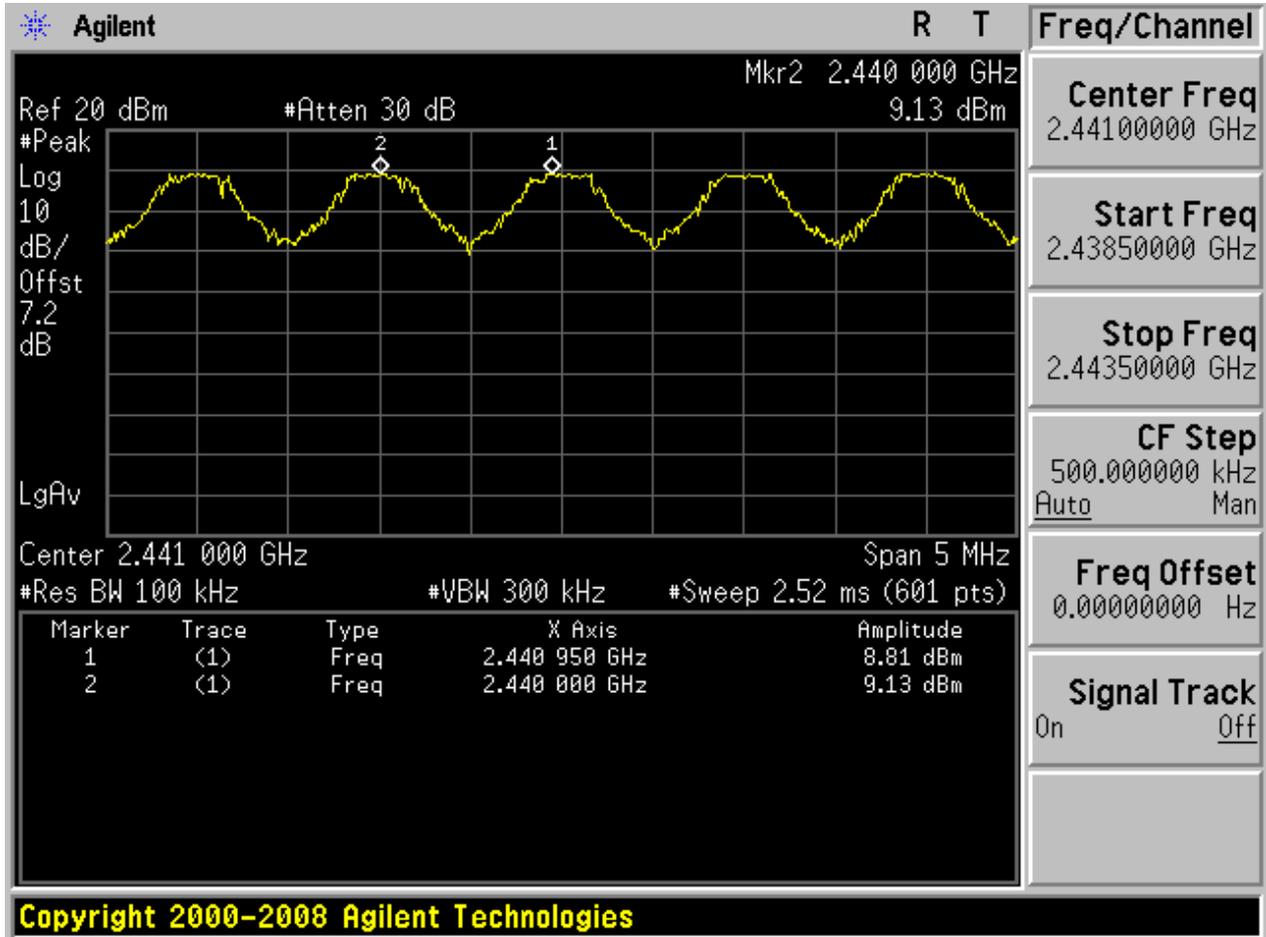
1 Result Table

EUT Conf.	Carrier Frequency Separation [MHz]	Verdict
TM1_DH5_Hop	0.950	Pass
TM2_2DH5_Hop	1.000	Pass
TM3_3DH5_Hop	1.050	Pass

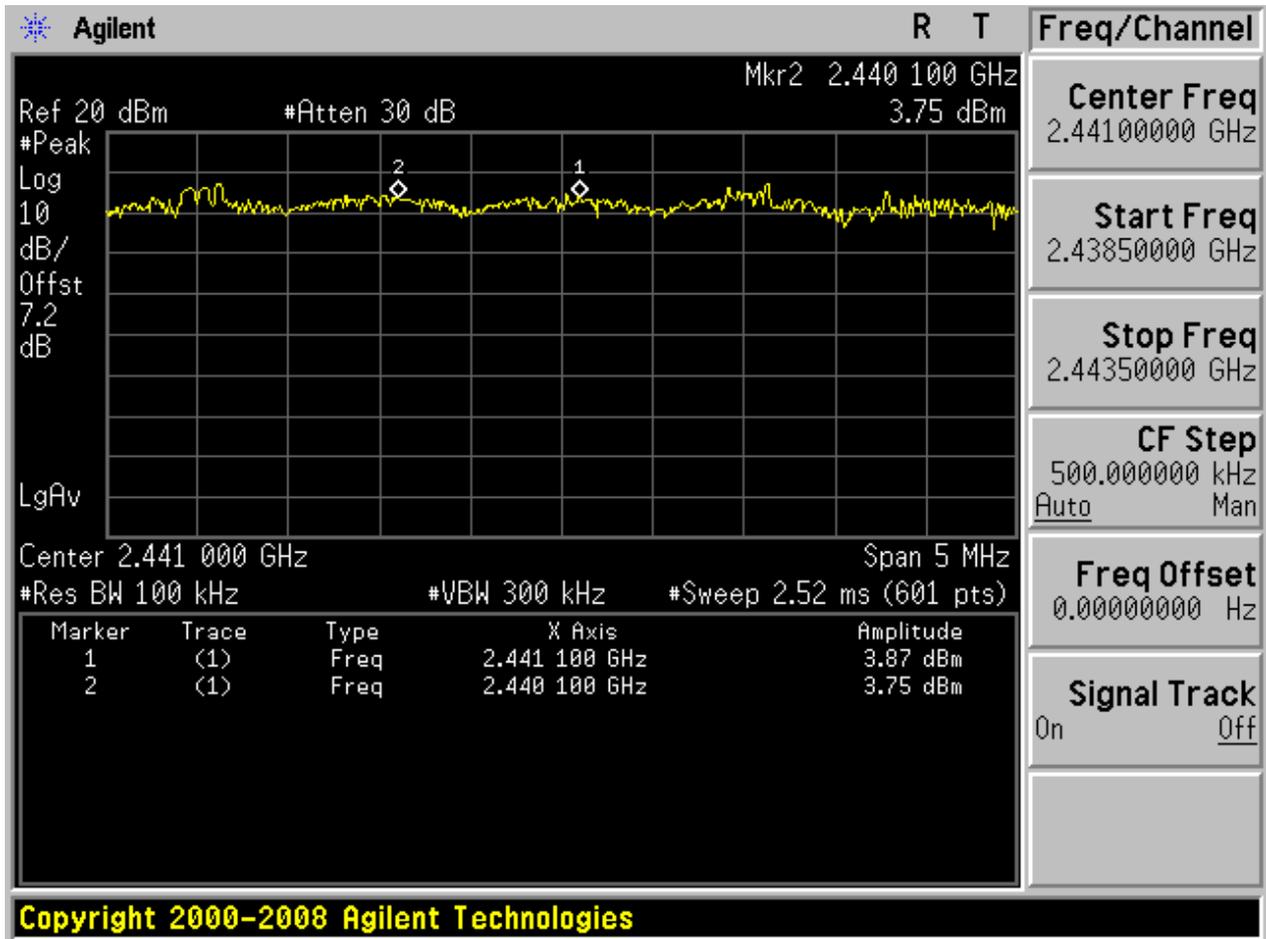


2 Test Plot

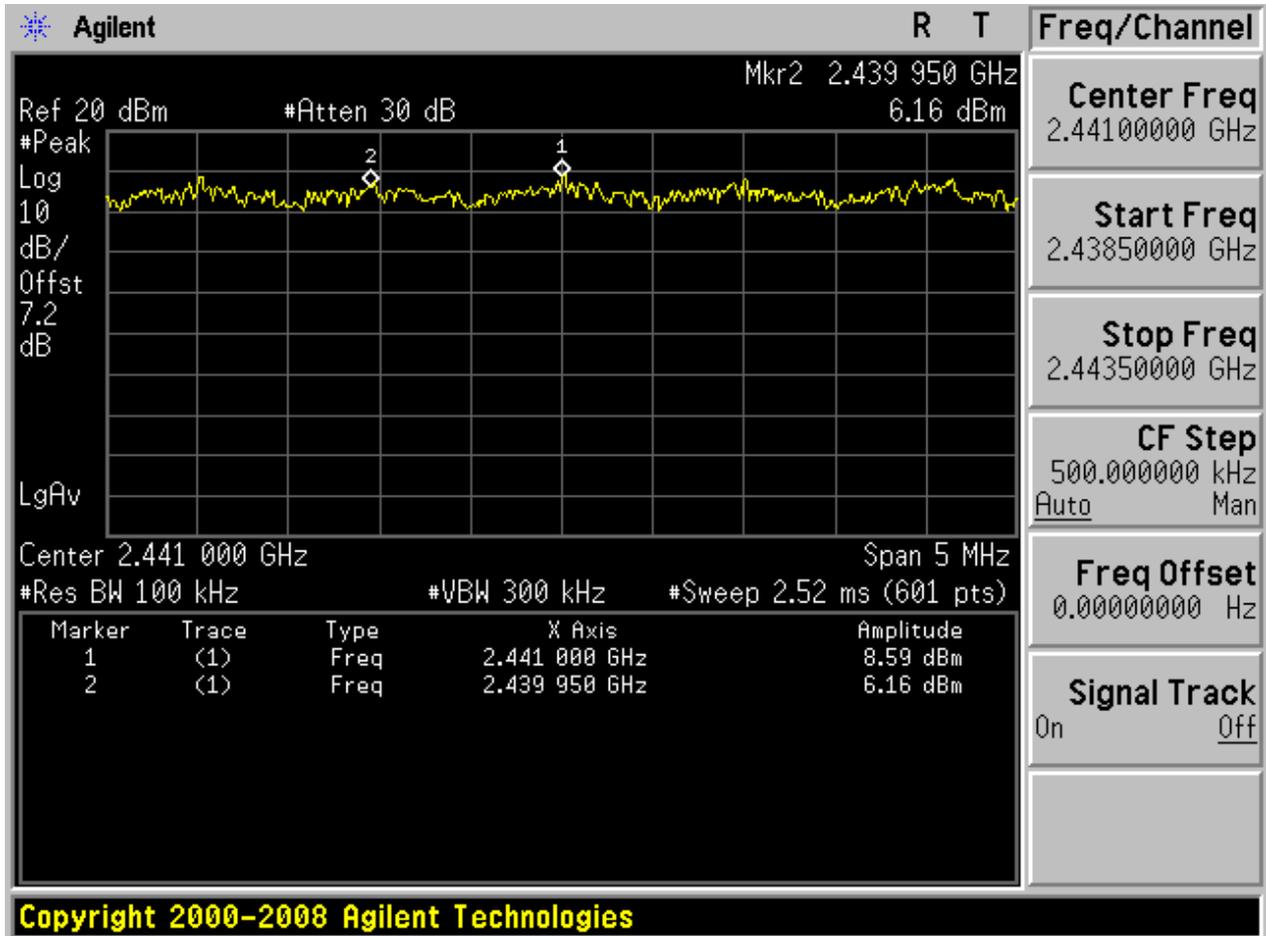
2.1 TM1_DH5_Hop



2.2 TM2_2DH5_Hop



2.3 TM3_3DH5_Hop





Appendix C: Number of Hopping Channel



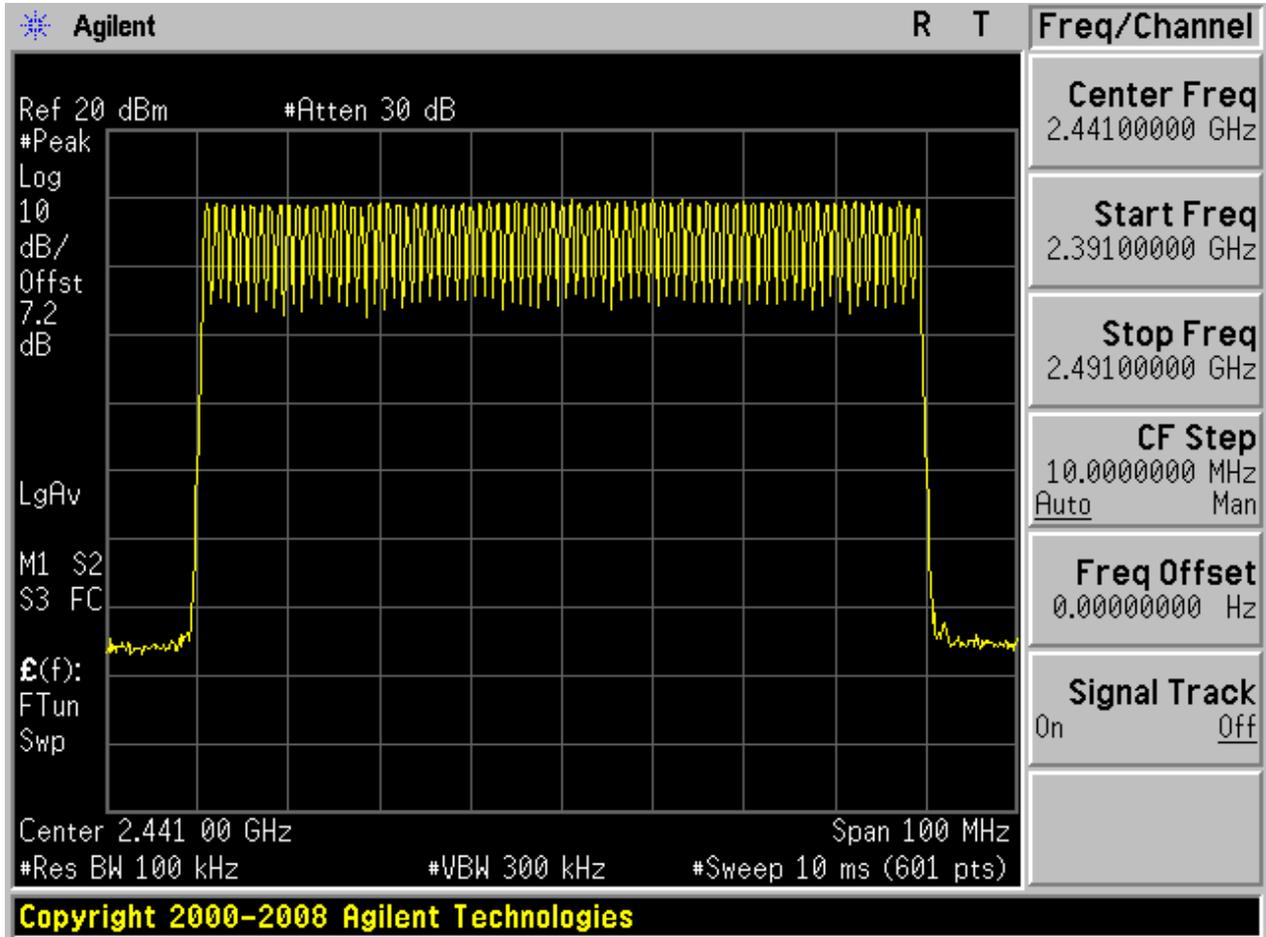
1 Result Table

EUT Conf.	Number of Hopping Channel	Verdict
TM1_DH5_Hop	78	Pass
TM2_2DH5_Hop	78	Pass
TM3_3DH5_Hop	78	Pass

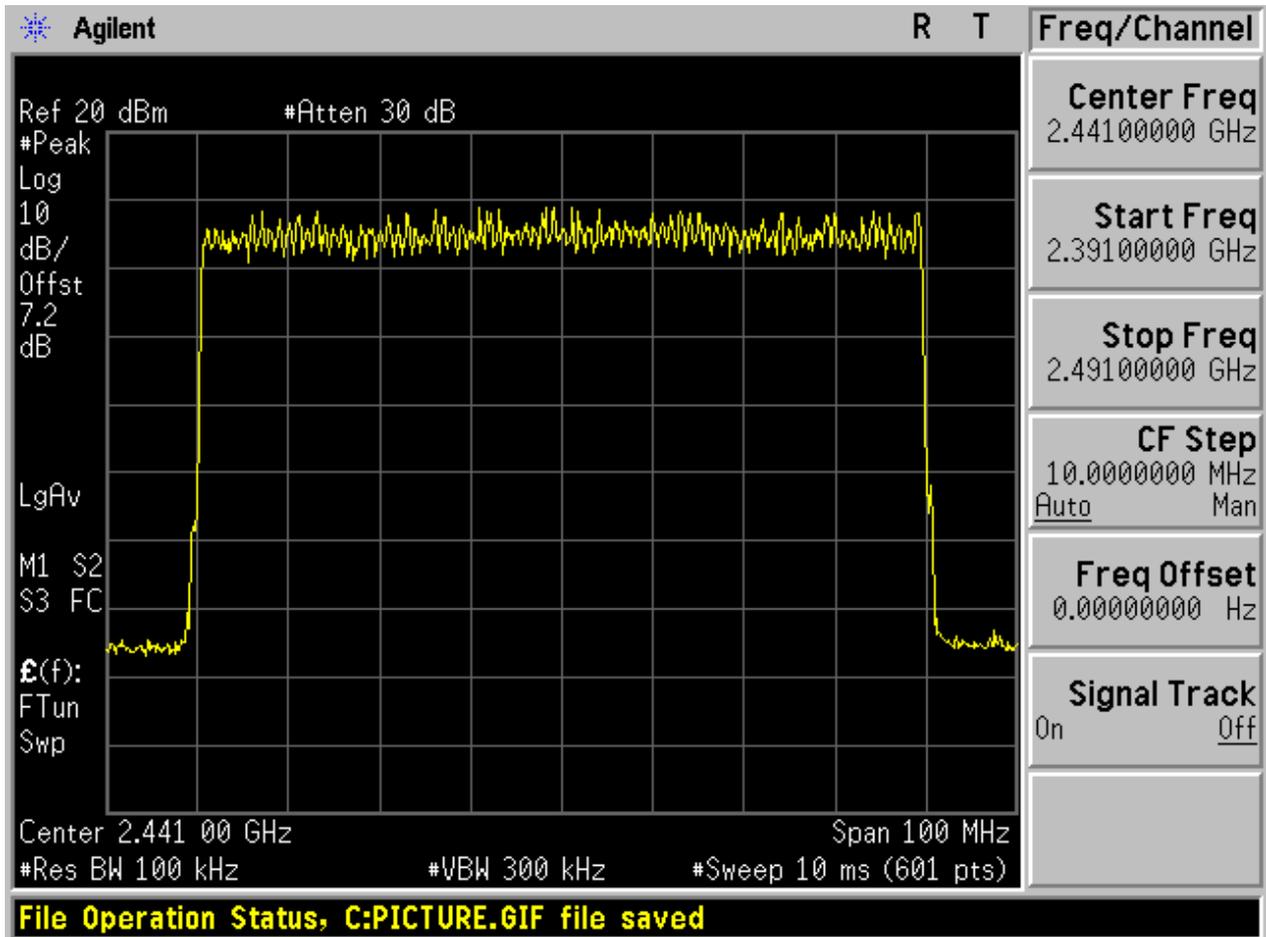


2 Test Plot

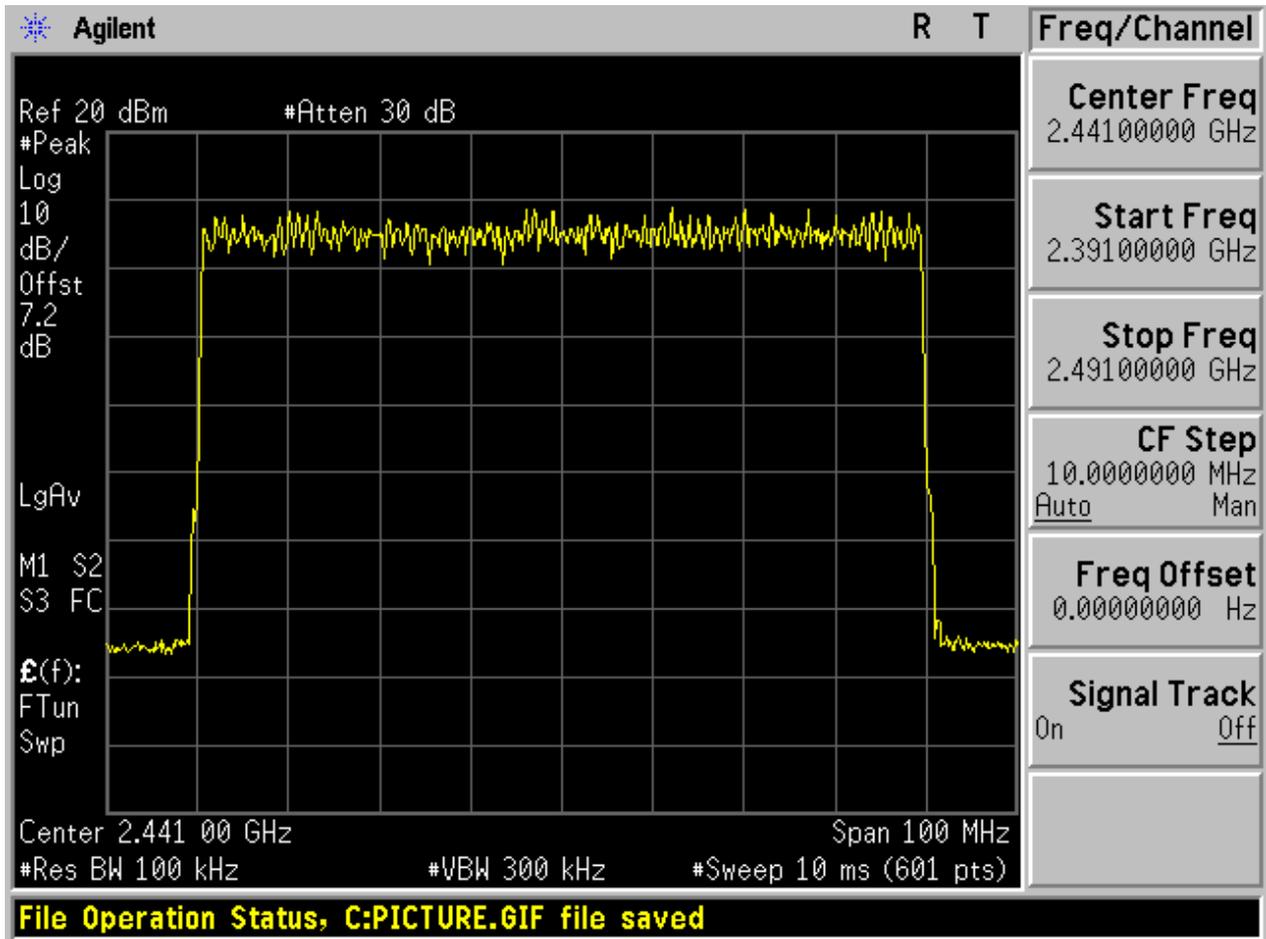
2.1 TM1_DH5_Hop



2.2 TM2_2DH5_Hop



2.3 TM3_3DH5_Hop





Appendix D: Time of Occupancy (Dwell Time)

1 Result Table

The Dwell Time = Burst Width * Total Hops. The detailed calculations are showed as follows:

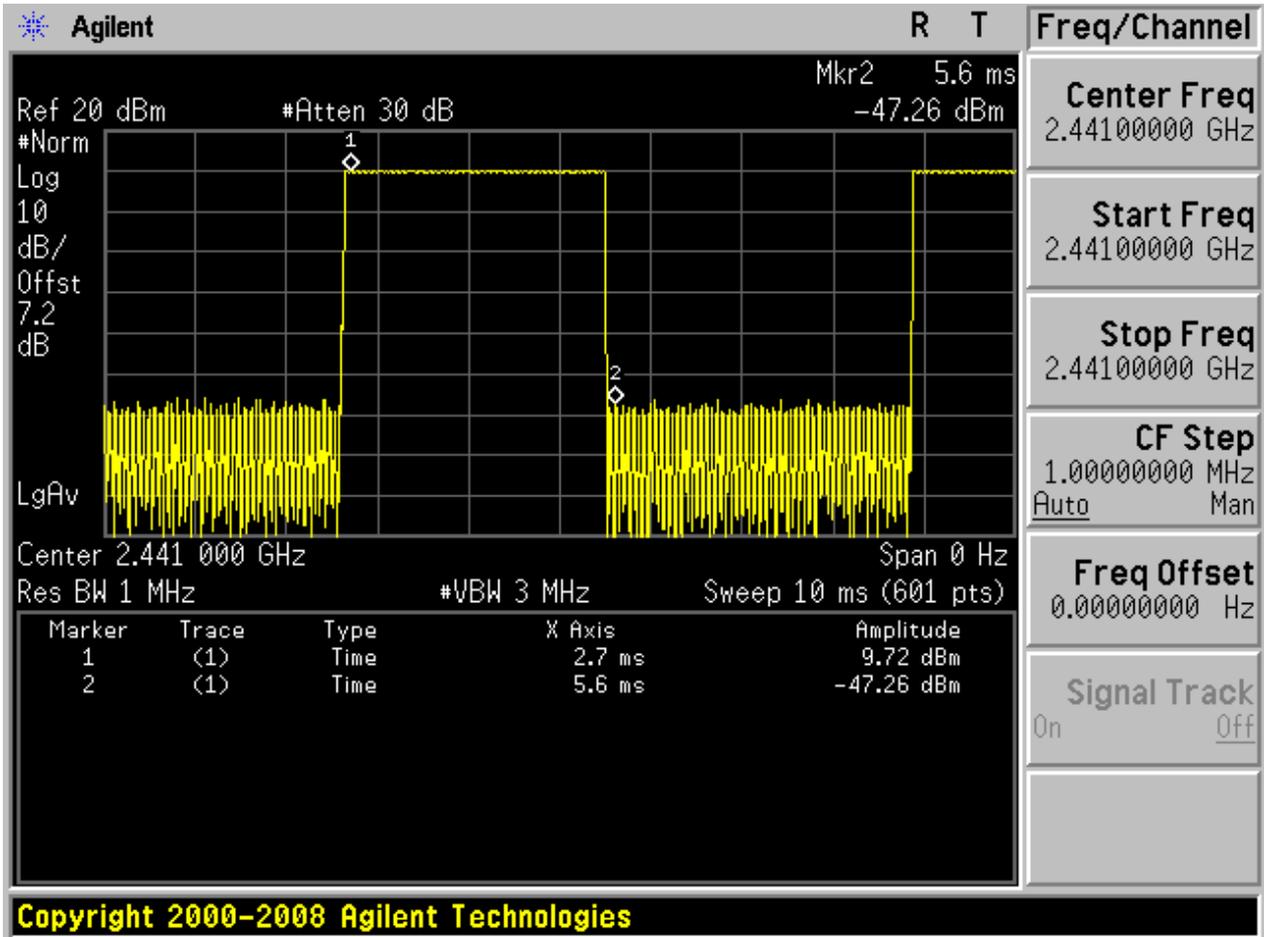
- The duration for dwell time calculation: $0.4 \text{ [s]} * \text{hopping number} = 0.4 \text{ [s]} * 79 \text{ [ch]} = 31.6 \text{ [s*ch]}$;
- The burst width [ms/hop/ch], which is directly measured, refers to the duration on one channel hop.
- The hops per second for all channels: The selected EUT Conf uses a slot type of 5-Tx&1-Rx and a hopping rate of 1600 [ch*hop/s] for all channels. So the final hopping rate for all channels is $1600 / 6 = 266.67 \text{ [ch*hop/s]}$;
- The hops per second on one channel: $266.67 \text{ [ch*hop/s]} / 79 \text{ [ch]} = 3.38 \text{ [hop/s]}$;
- The total hops for all channels within the dwell time calculation duration: $3.38 \text{ [hop/s]} * 31.6 \text{ [s*ch]} = 106.67 \text{ [hop*ch]}$;
- The dwell time for all channels hopping: $106.67 \text{ [hop*ch]} * \text{Burst Width [ms/hop/ch]}$.

EUT Conf.	Burst Width [ms/hop/ch]	Total Hops [hop*ch]	Dwell Time [ms]	Verdict
TM1_DH5_Ch39	2.900	106.67	0.309	Pass
TM2_2DH5_Ch39	2.900	106.67	0.309	Pass
TM3_3DH5_Ch39	1.900	106.67	0.203	Pass

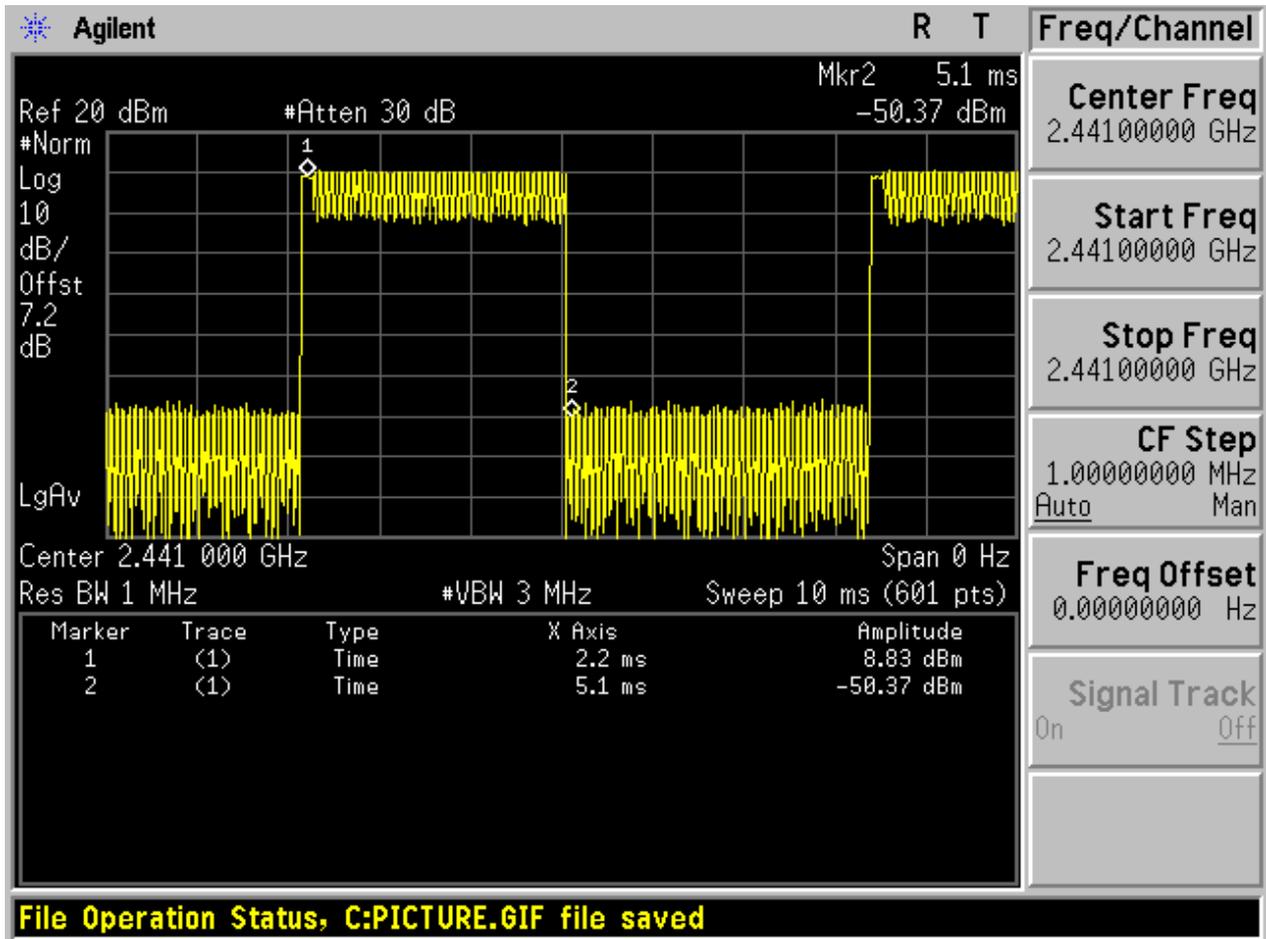
2 Test Plot

NOTE: The test plots are only for Burst Width measurements.

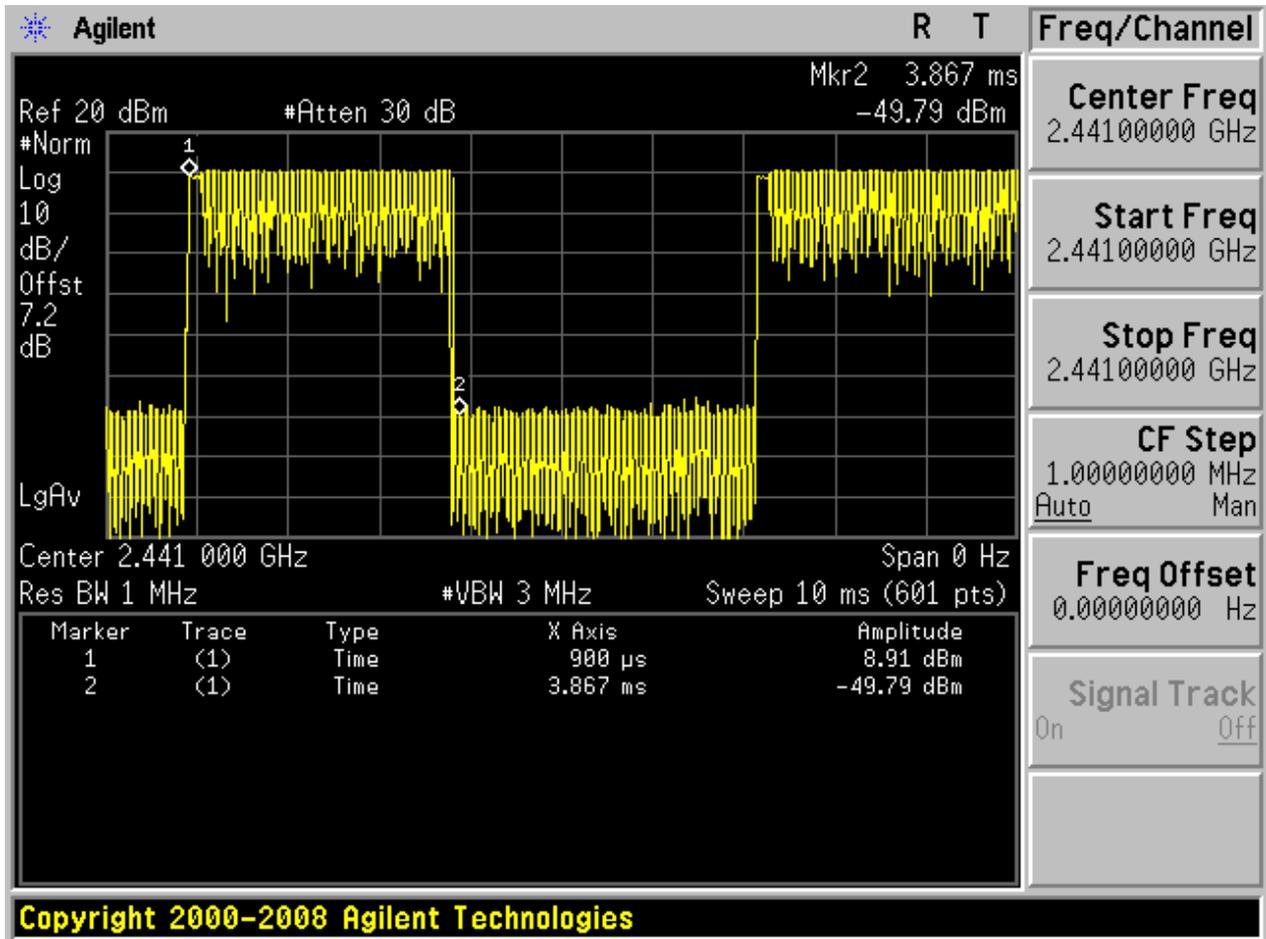
2.1 TM1_DH5_Ch39



2.2 TM2_2DH5_Ch39



2.3 TM3_3DH5_Ch39





Appendix E: Maximum Peak Conducted Output Power

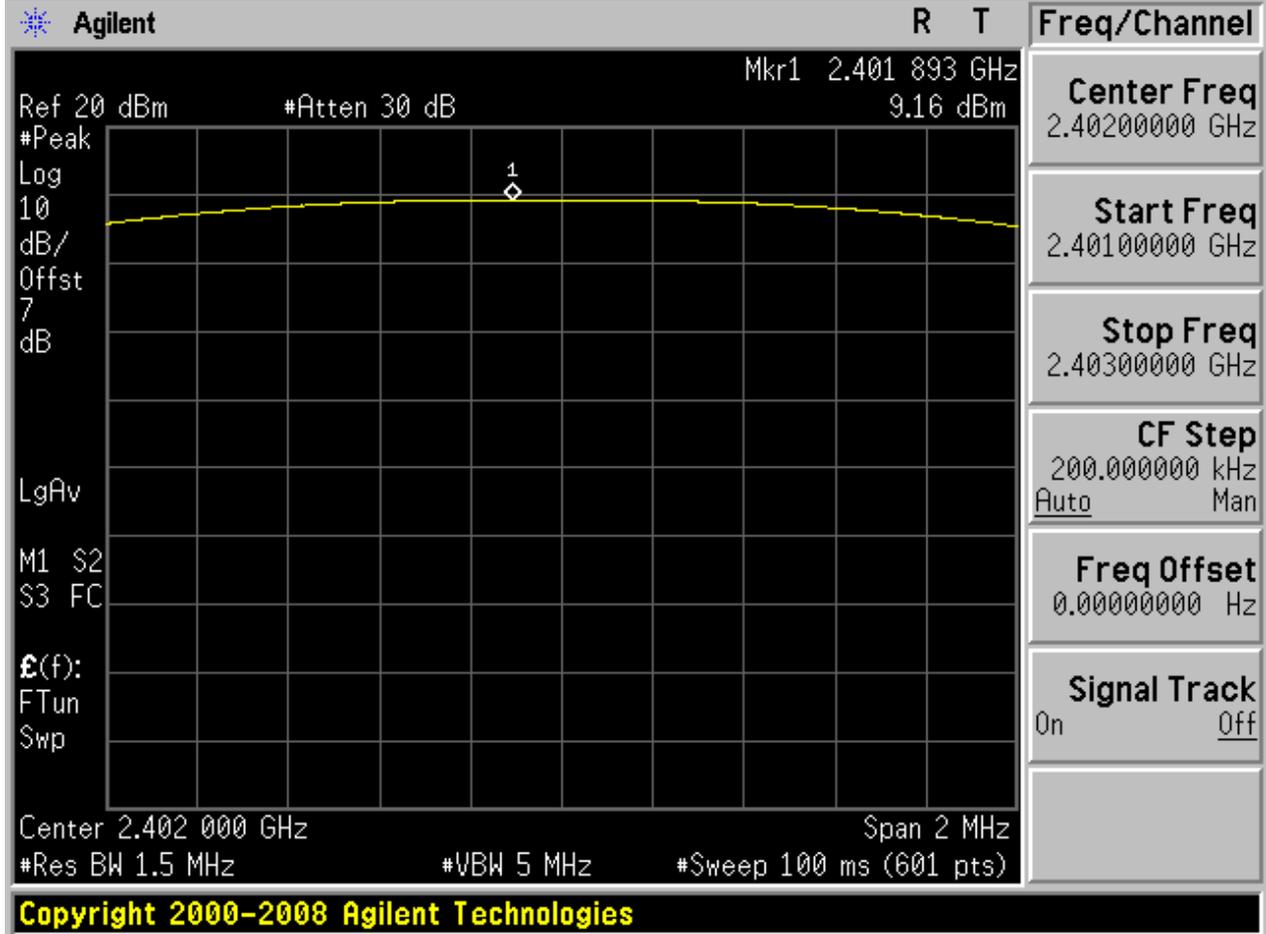


1 Result Table

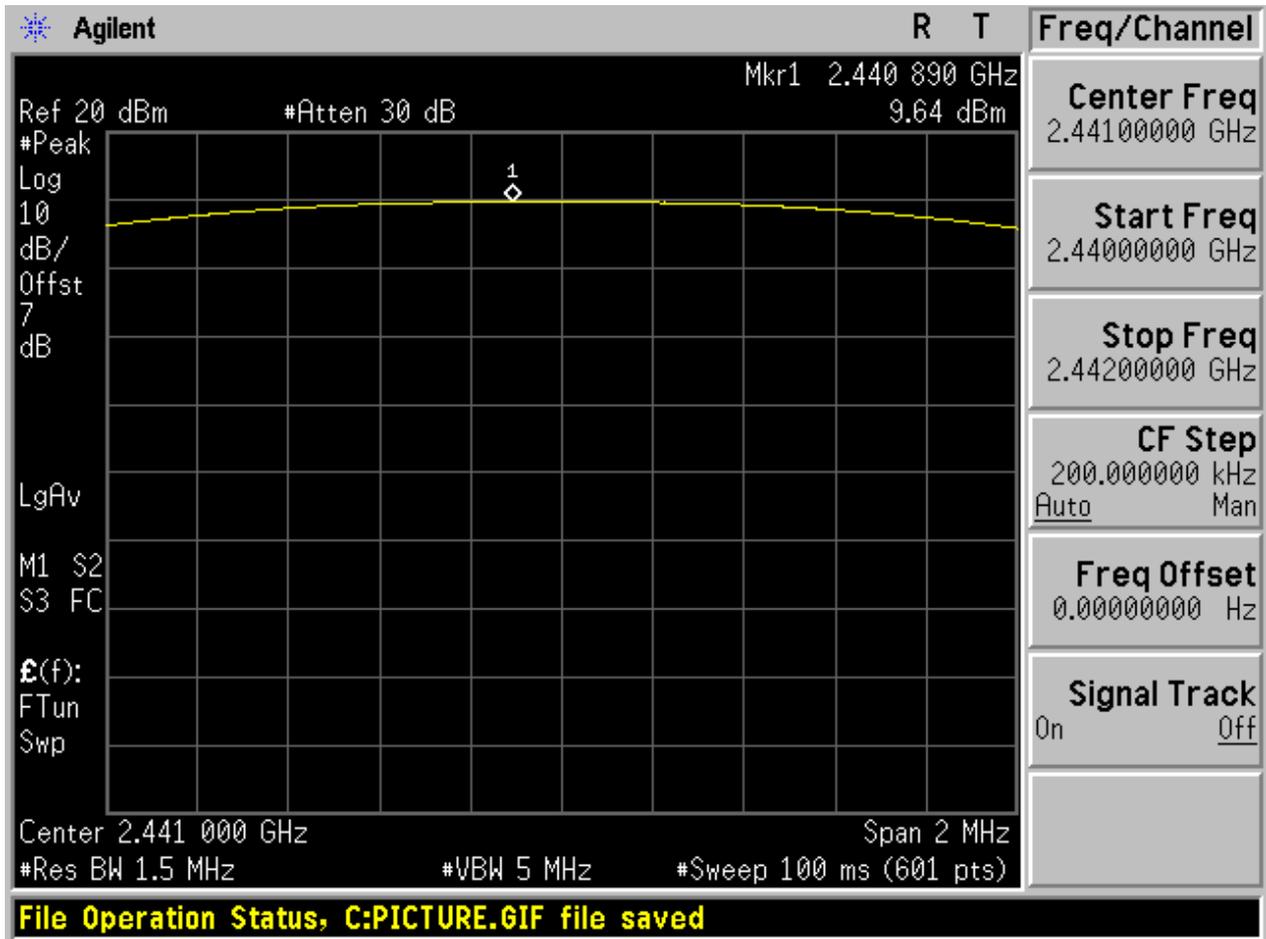
EUT Conf.	Max. Peak Power [dBm]	Verdict
TM1_DH5_Ch0	9.16	Pass
TM1_DH5_Ch39	9.64	Pass
TM1_DH5_Ch78	9.20	Pass
TM2_2DH5_Ch0	10.00	Pass
TM2_2DH5_Ch39	10.45	Pass
TM2_2DH5_Ch78	9.99	Pass
TM3_3DH5_Ch0	10.25	Pass
TM3_3DH5_Ch39	10.69	Pass
TM3_3DH5_Ch78	10.22	Pass

2 Test Plot

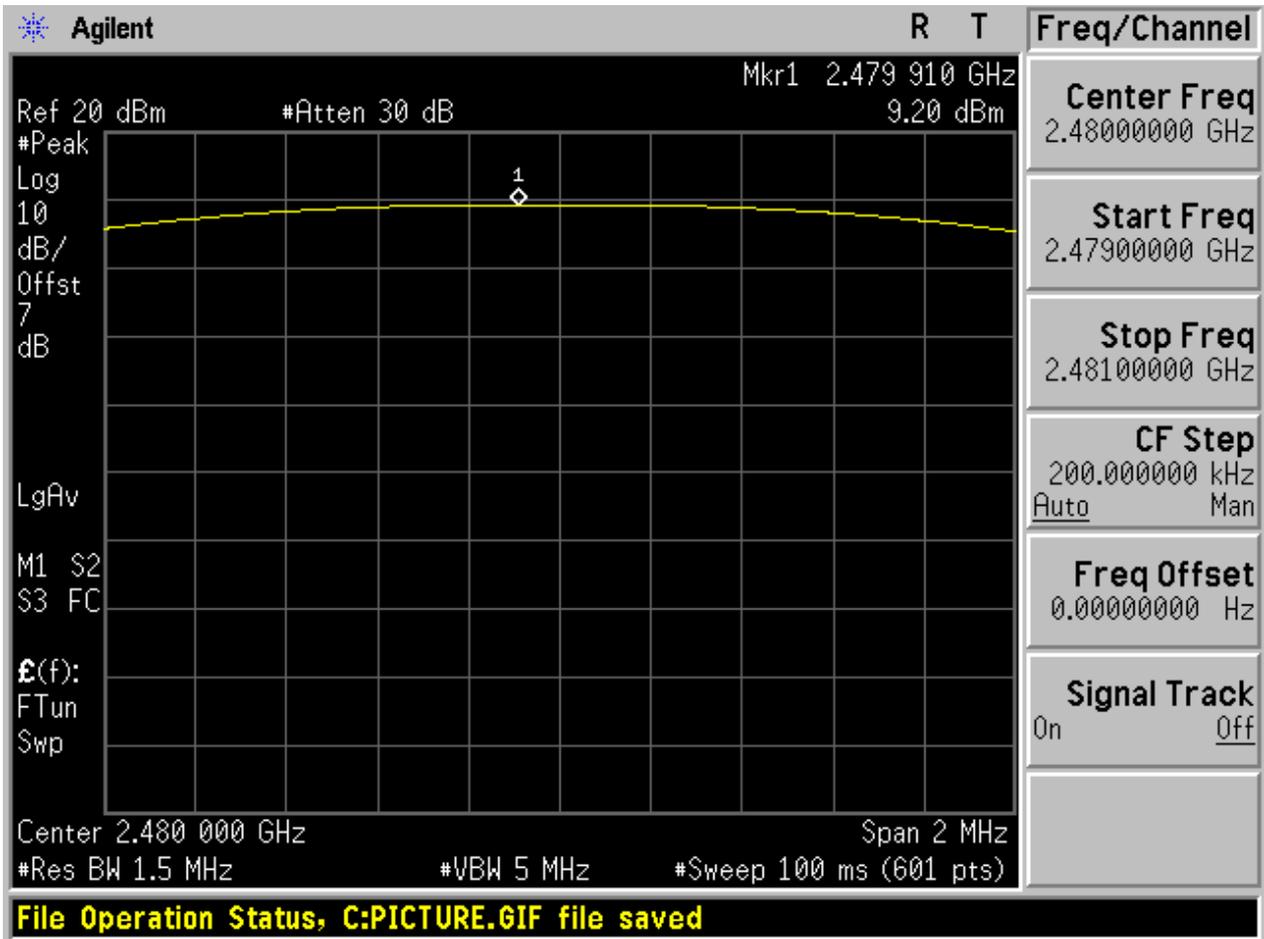
2.1 TM1_DH5_Ch0



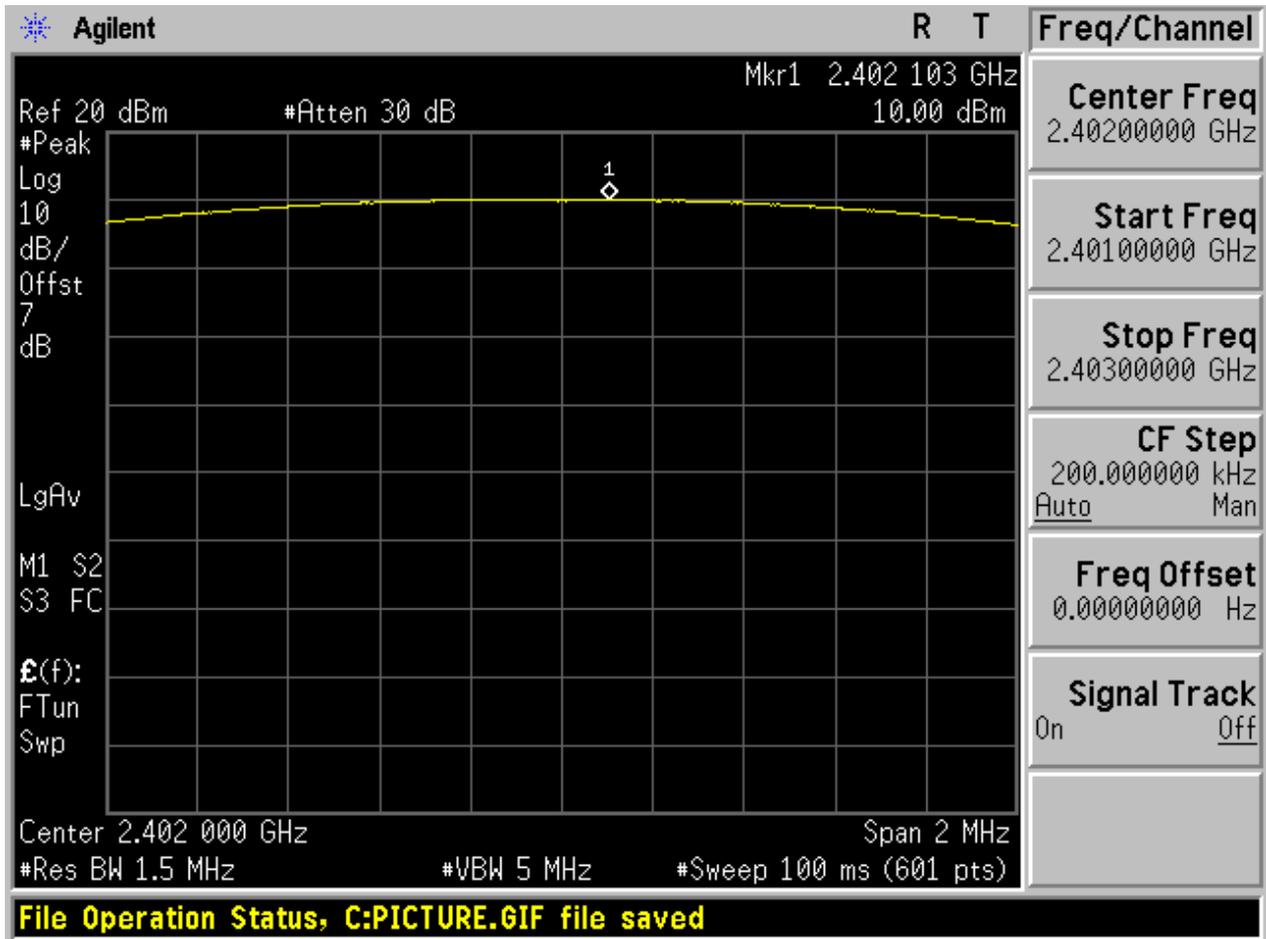
2.2 TM1_DH5_Ch39



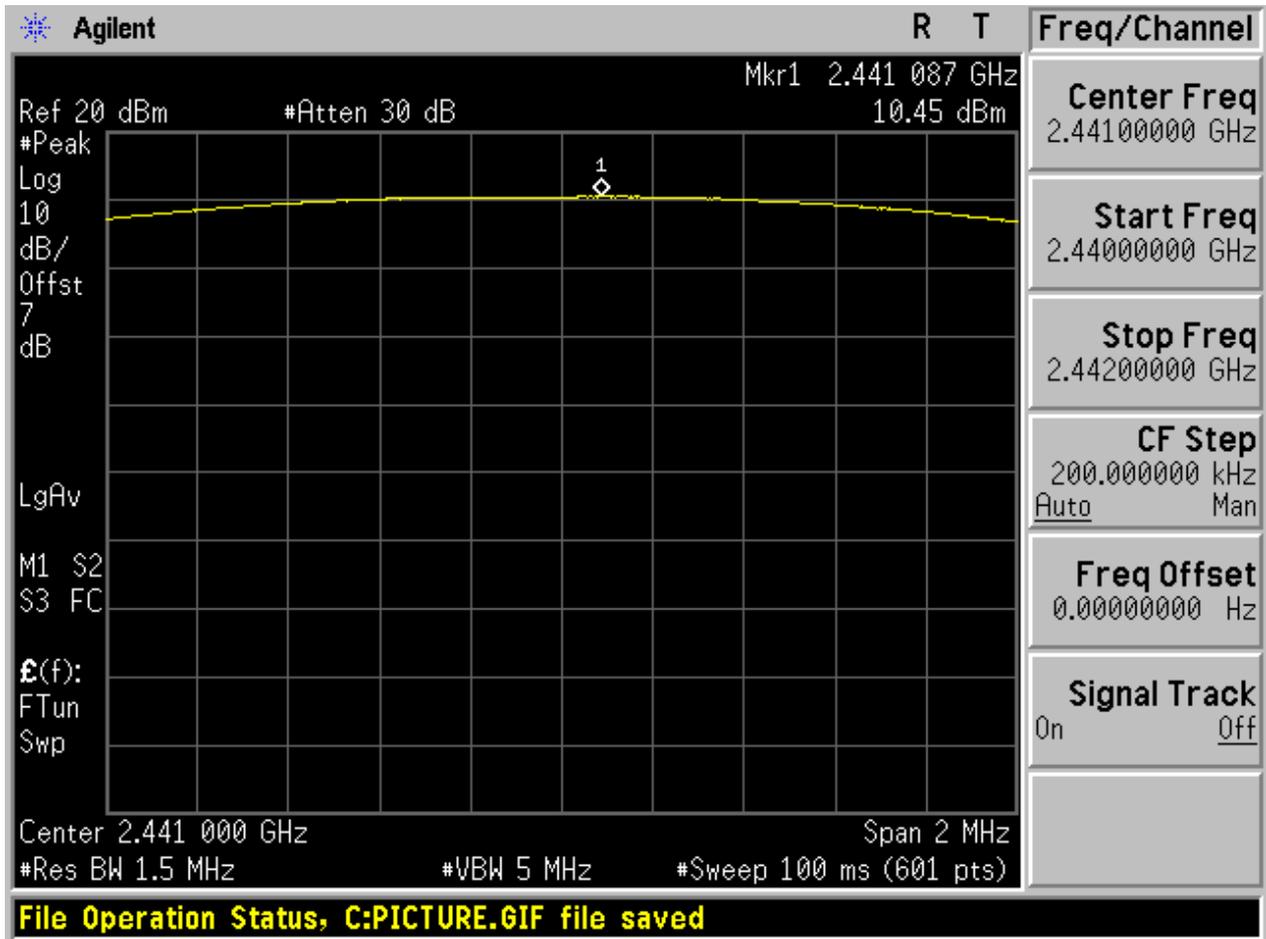
2.3 TM1_DH5_Ch78



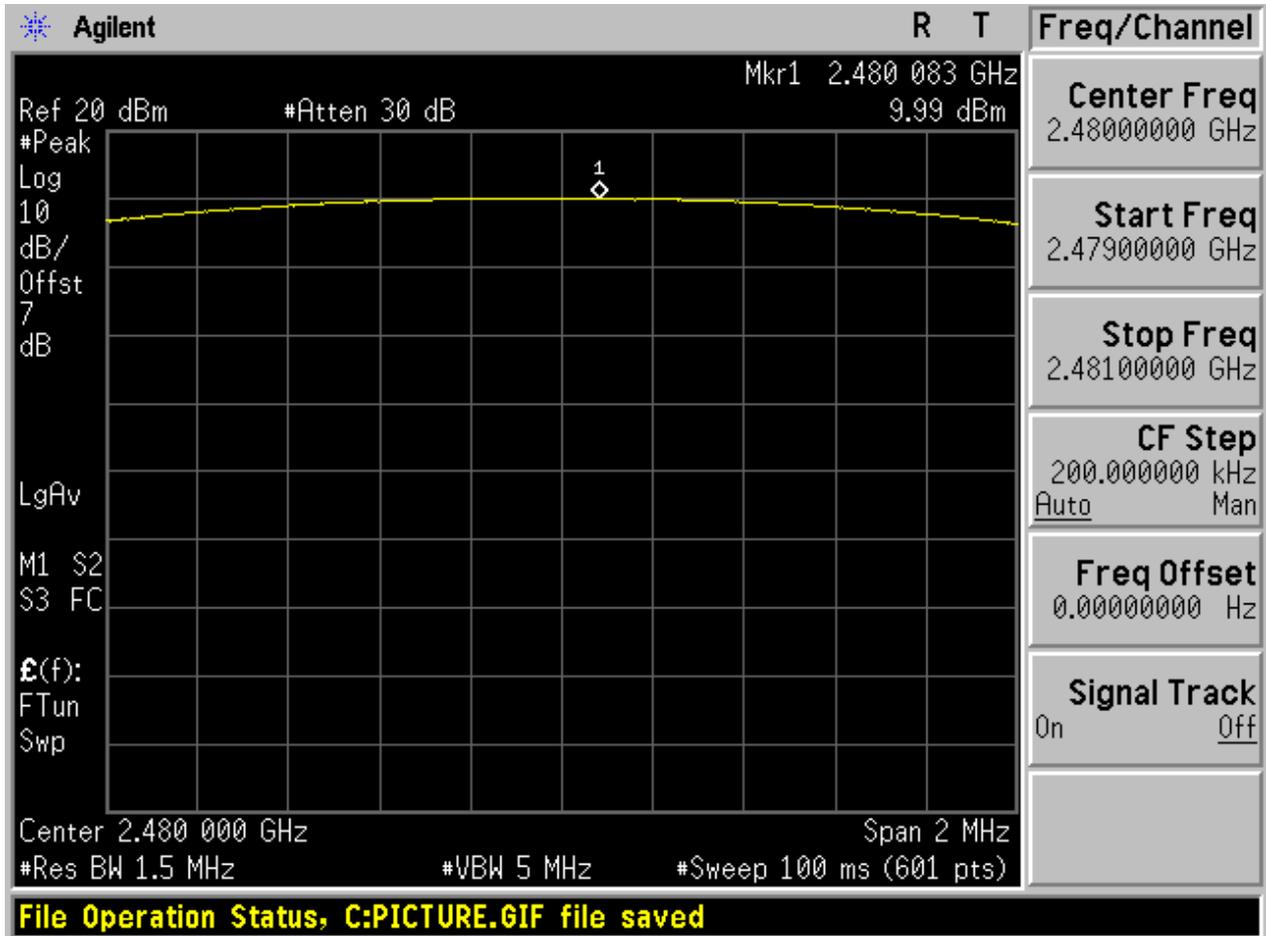
2.4 TM2_2DH5_Ch0



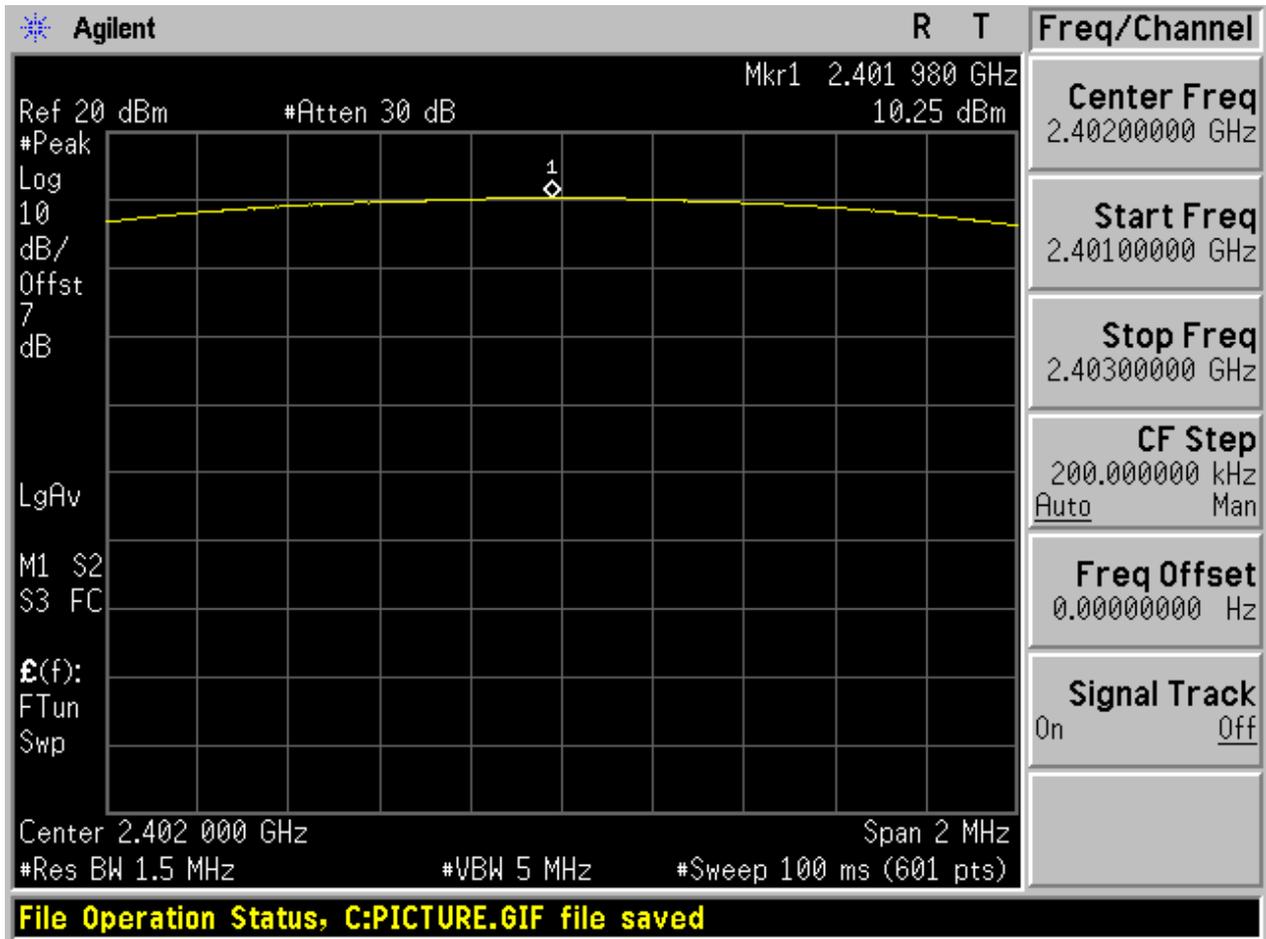
2.5 TM2_2DH5_Ch39



2.6 TM2_2DH5_Ch78

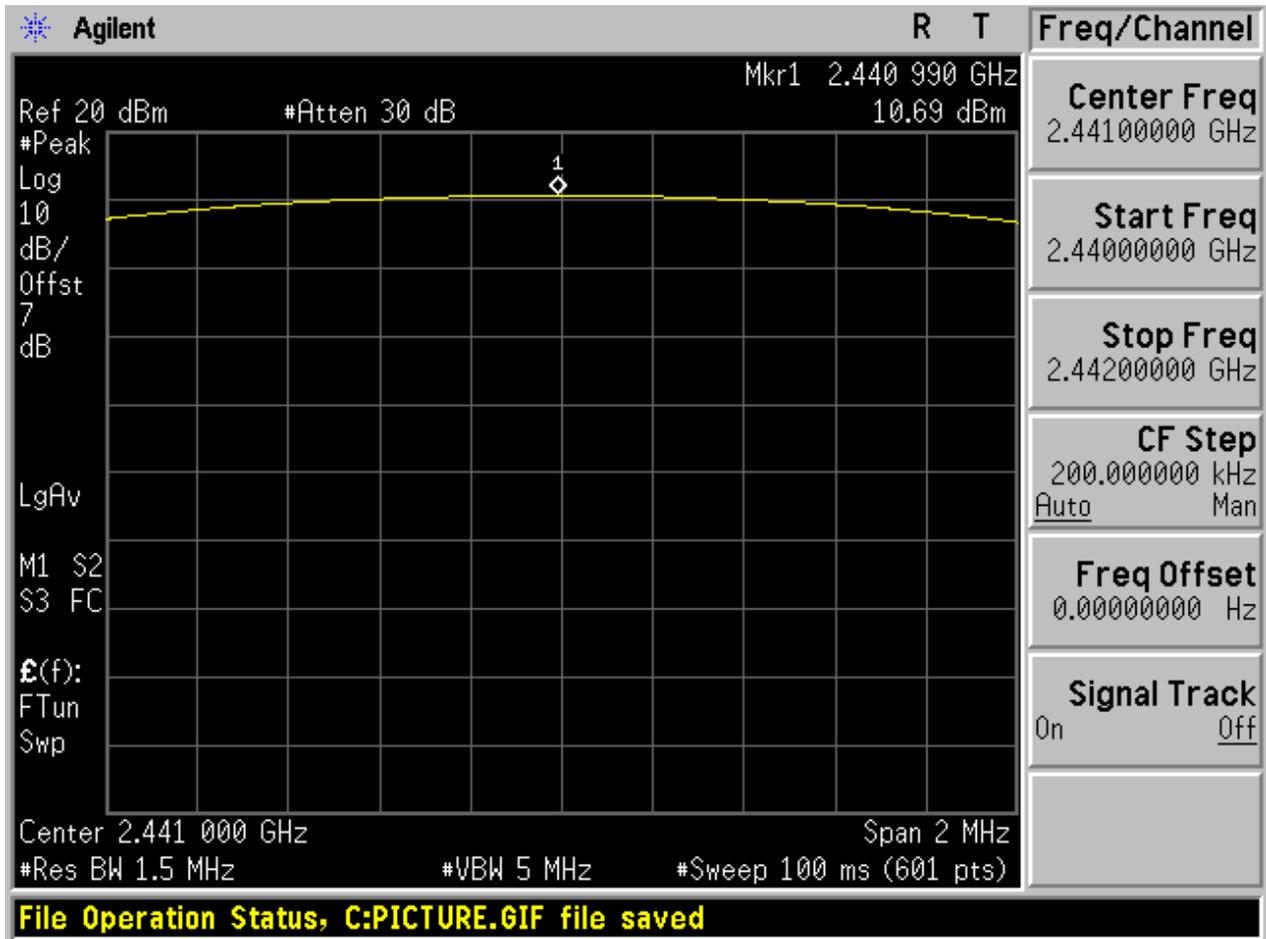


2.7 TM3_3DH5_Ch0

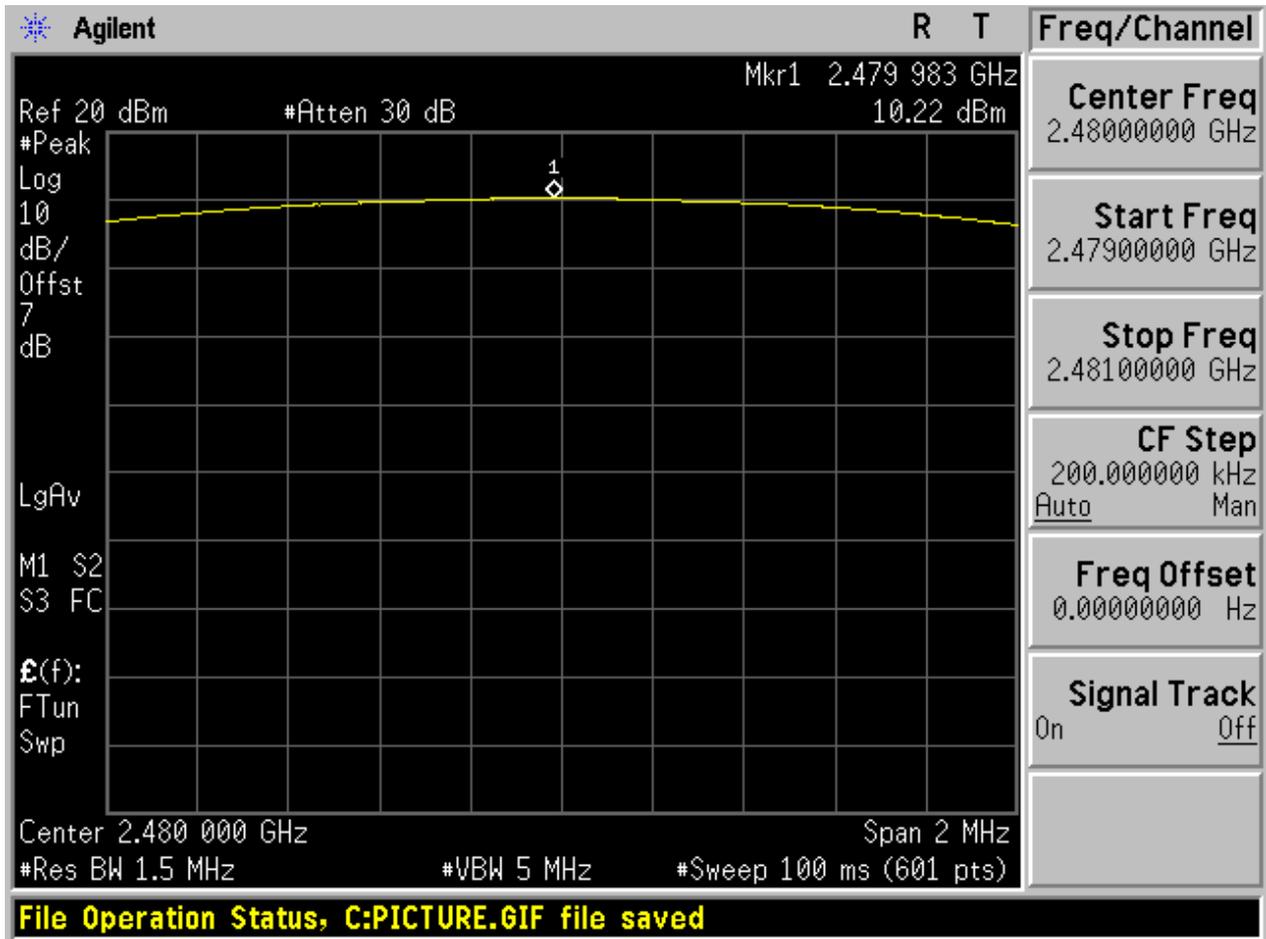




2.8 TM3_3DH5_Ch39



2.9 TM3_3DH5_Ch78





Appendix F: Band edge spurious emission

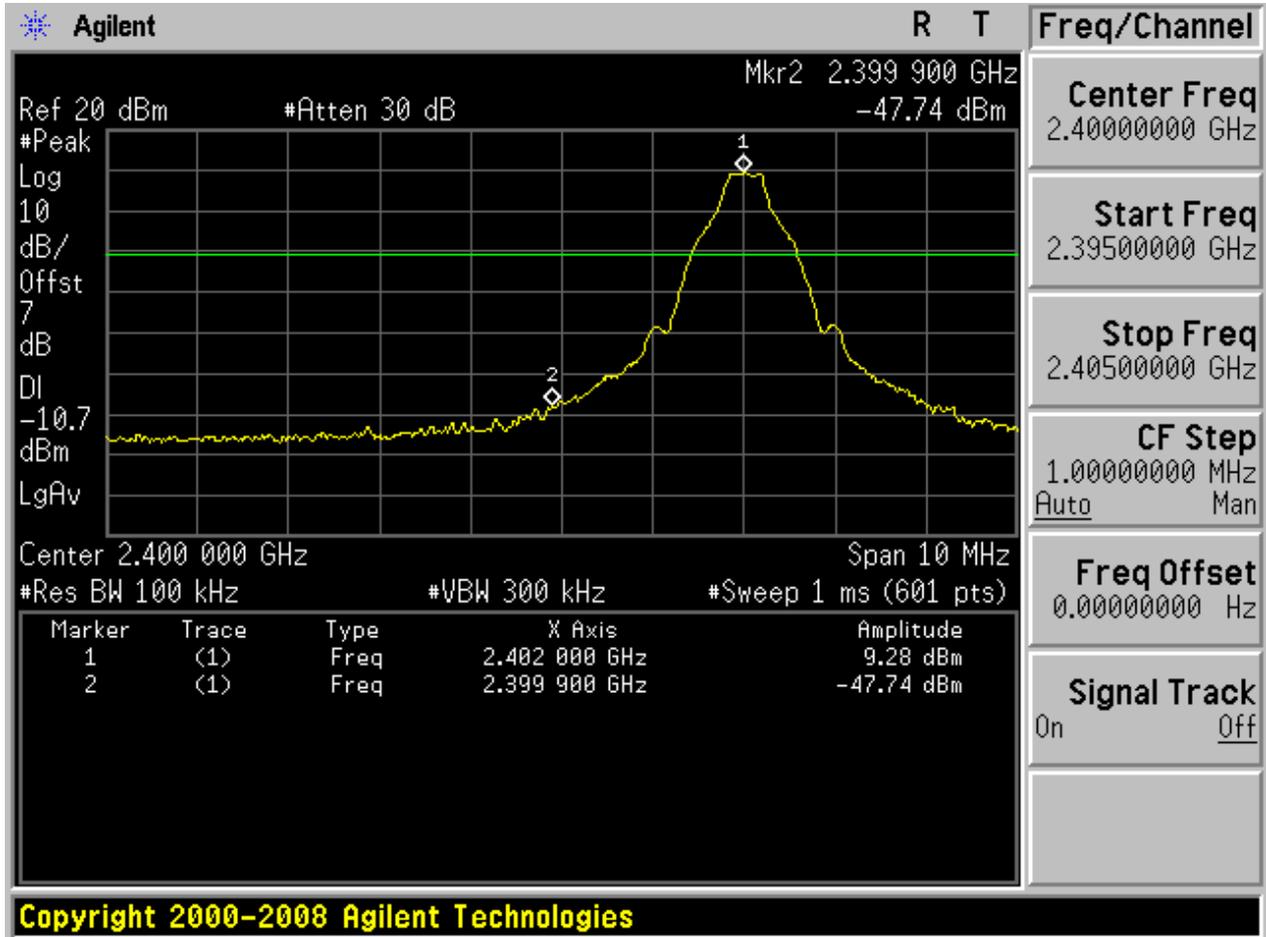
1 Result Table

EUT Conf.	Channel No.	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max. Spurious Level [dBm]	Limit [dBm]	Result
TM1_DH5 _Ch0	0	2402	9.28	Off	-47.74	-10.72	Pass
	-	-	8.85	On			Pass
TM1_DH5 _Ch78	78	2480	9.30	Off	-51.80	-11.15	Pass
	-	-	8.75	On	-54.20	-10.7	Pass
TM2_2DH 5_Ch0	0	2402	8.33	Off			Pass
	-	-	7.03	On	-53.38	-11.25	Pass
TM2_2DH 5_Ch78	78	2480	8.39	Off	-48.87	-11.67	Pass
	-	-	7.04	On			Pass
TM3_3DH 5_Ch0	0	2402	8.33	Off	-53.01	-12.97	Pass
	-	-	7.78	On	-53.77	-11.61	Pass
TM3_3DH 5_Ch78	78	2480	8.40	Off			Pass
	-	-	7.56	On	-54.17	-12.96	Pass

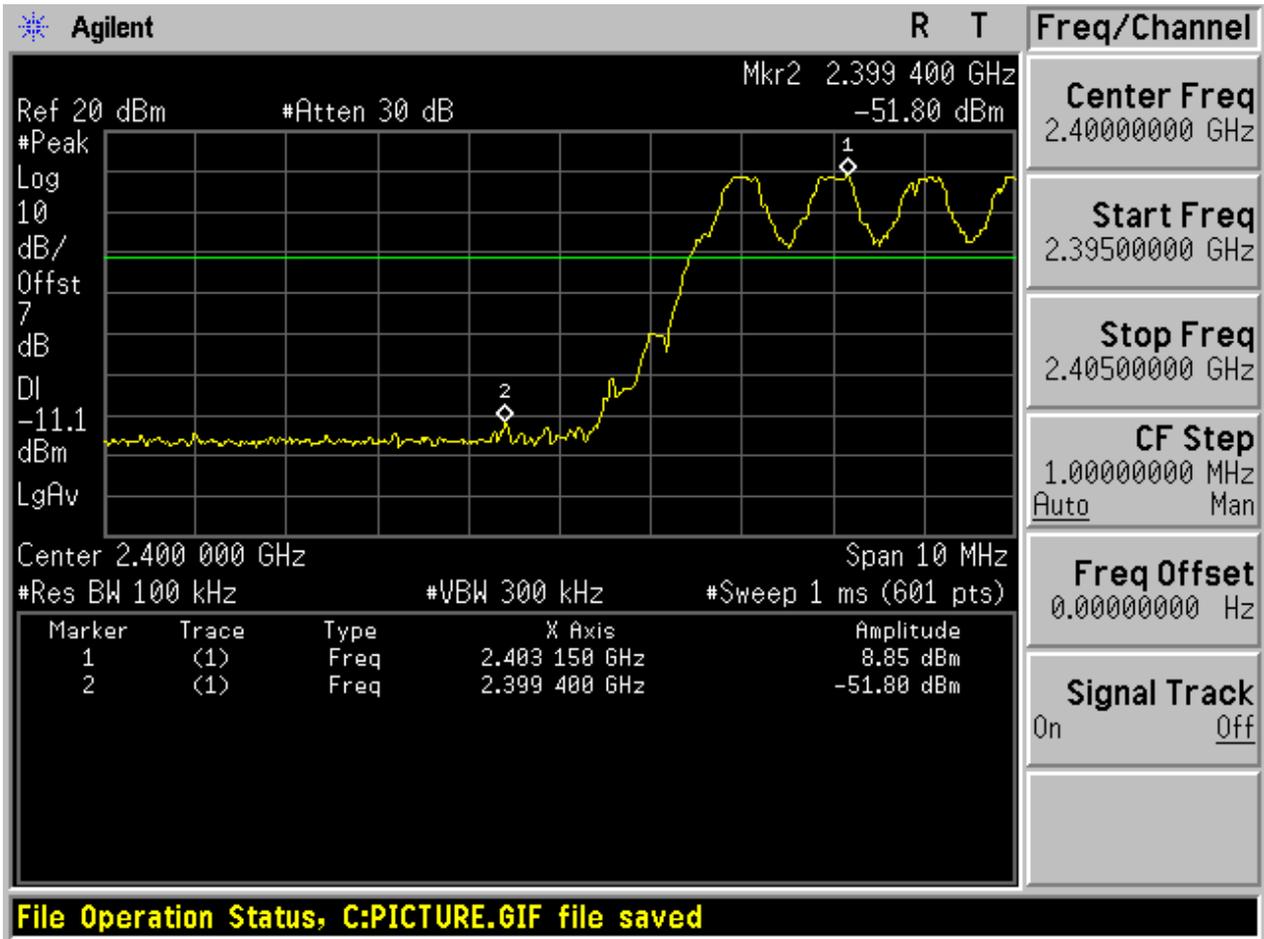
2 Test Plot

2.1 TM1_DH5_Ch0

No hopping

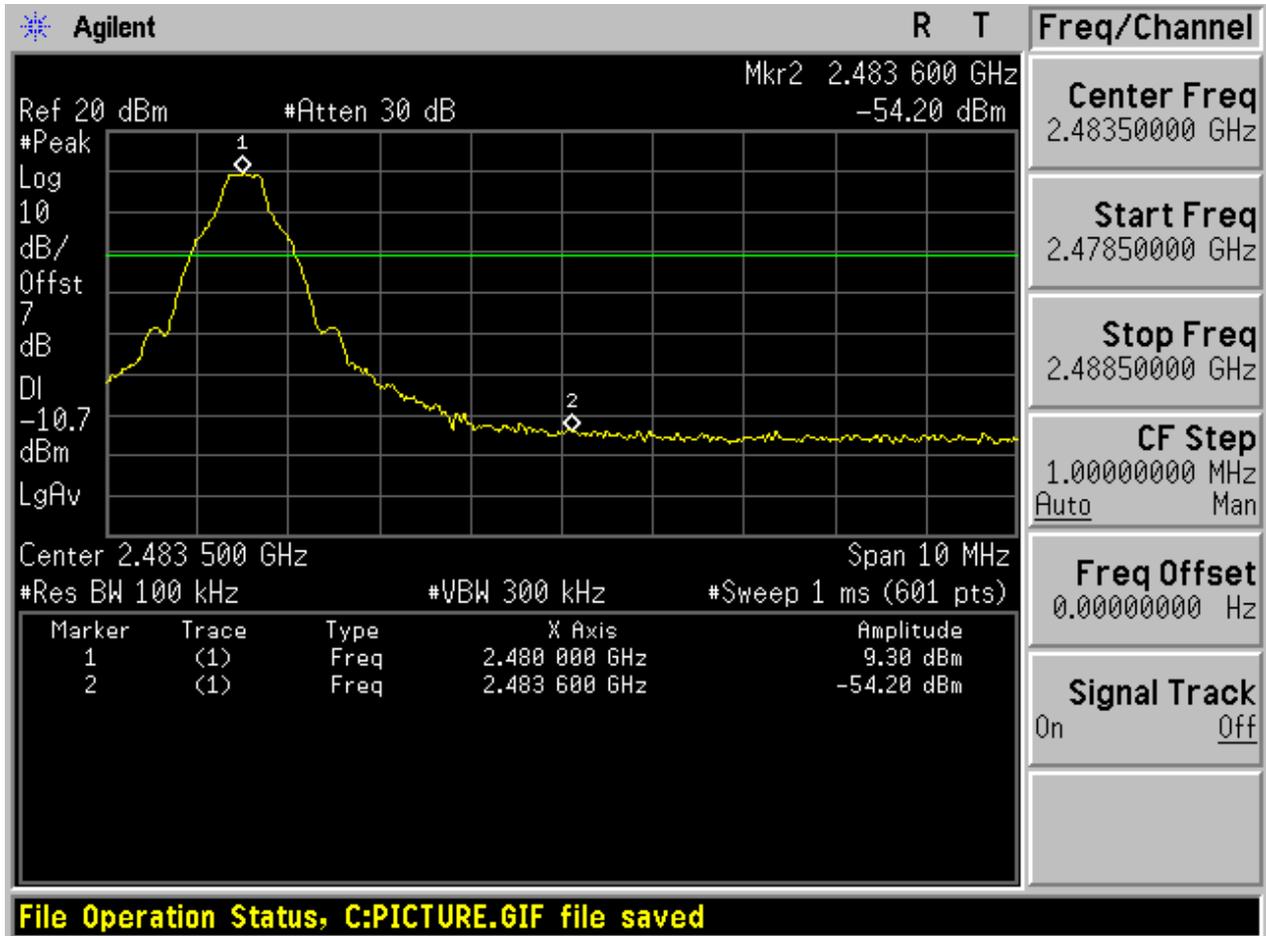


With hopping

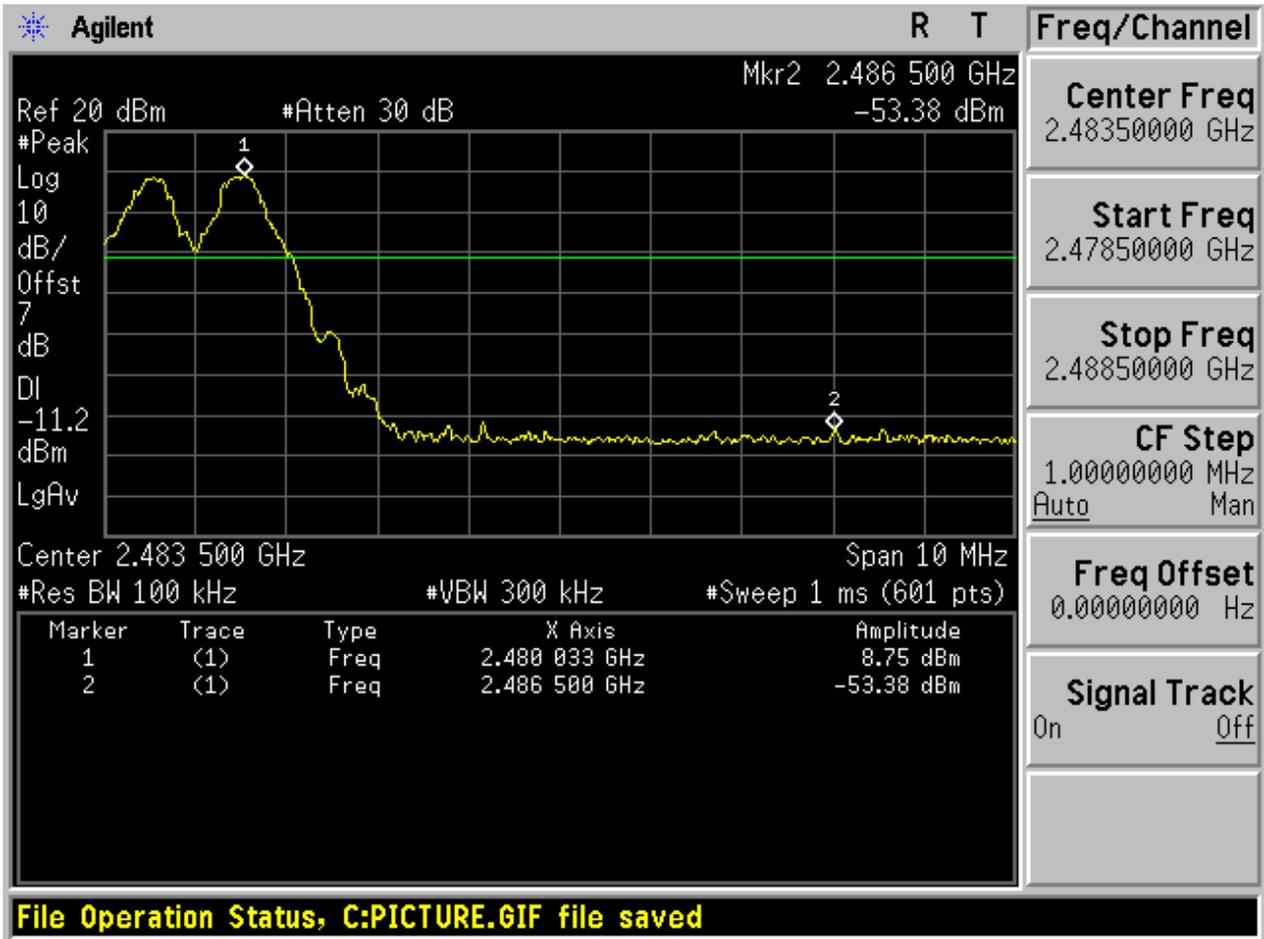


2.2 TM1_DH5_Ch78

No hopping

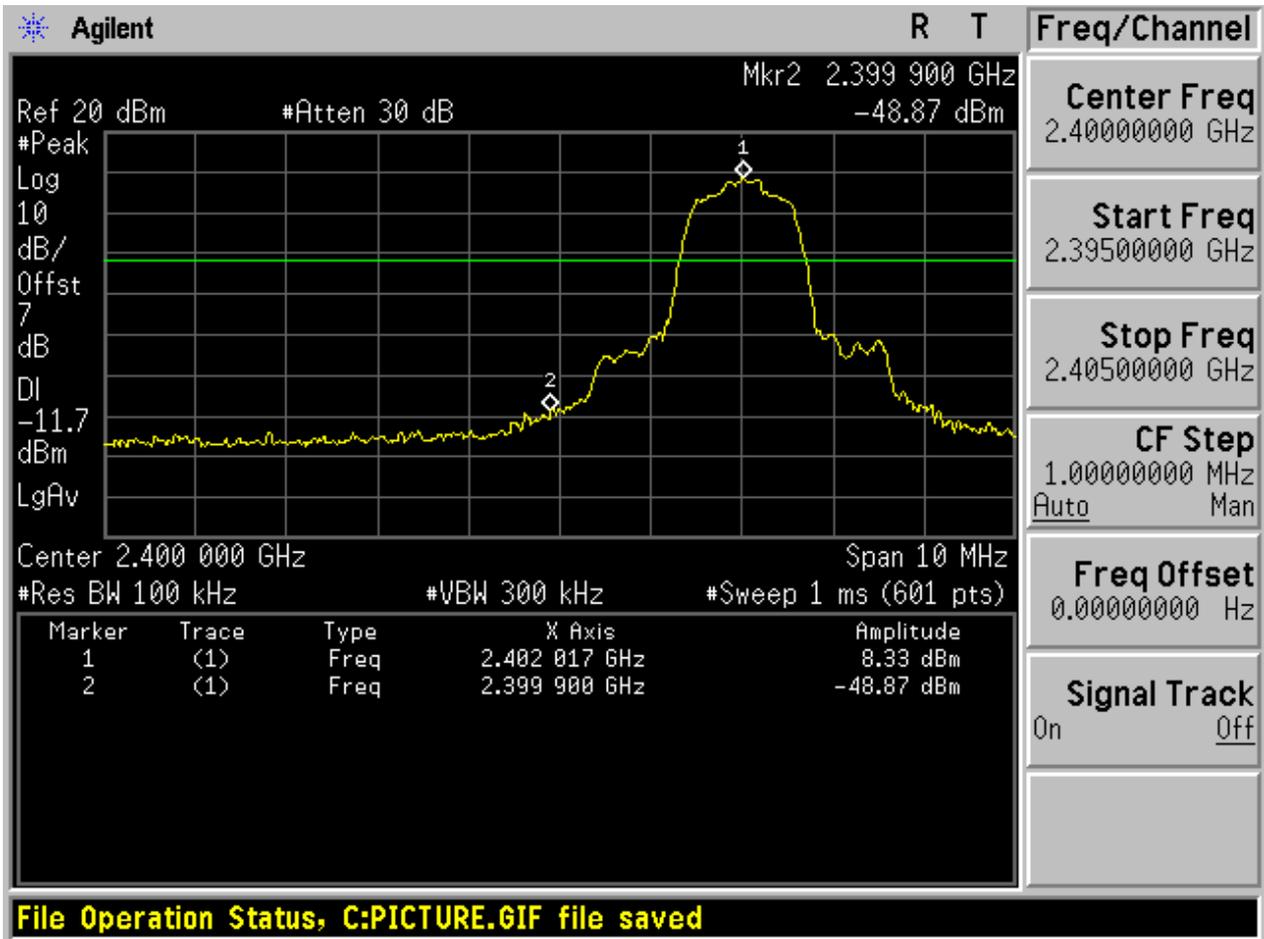


With hopping

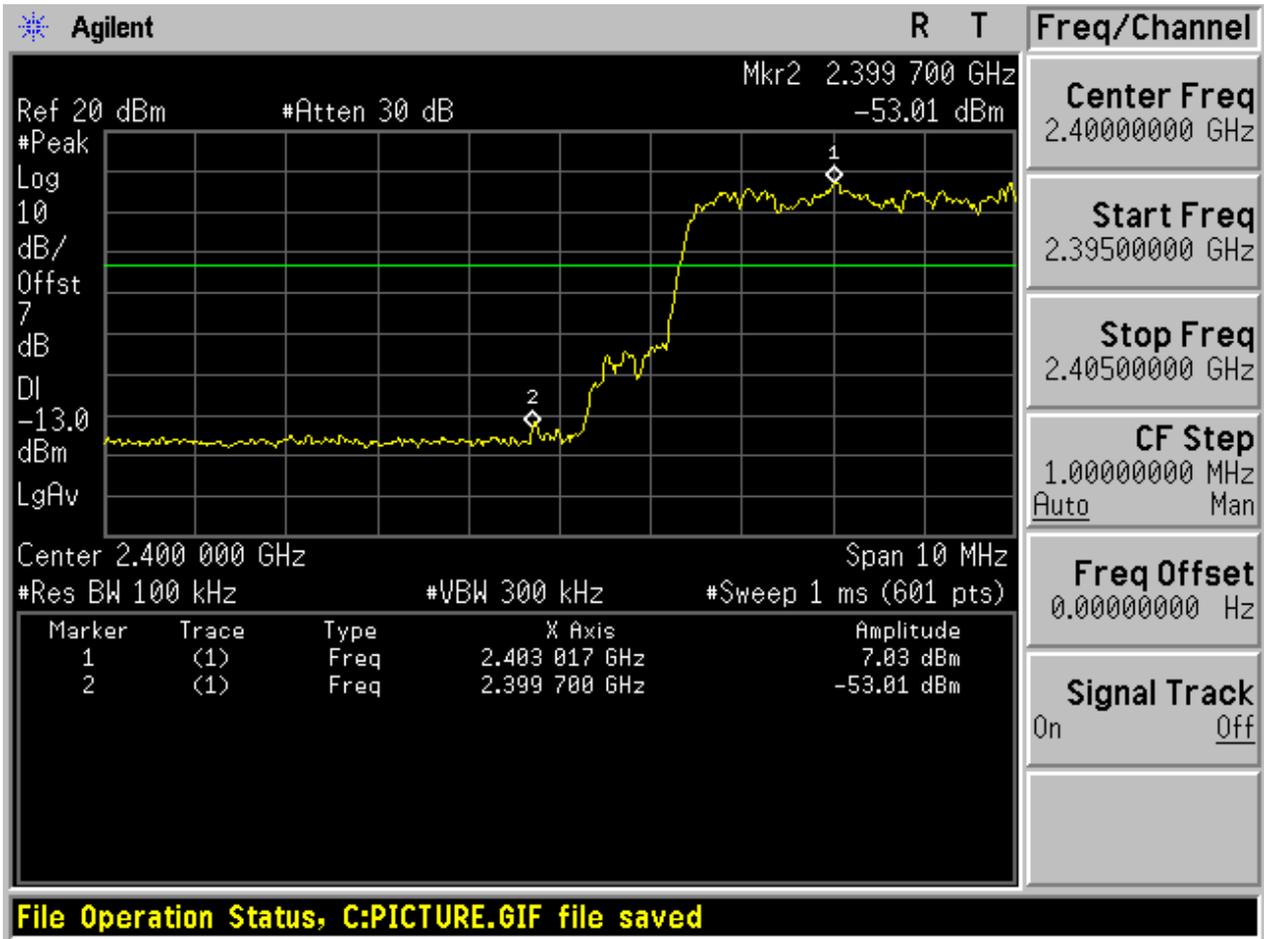


2.3 TM2_2DH5_Ch0

No hopping

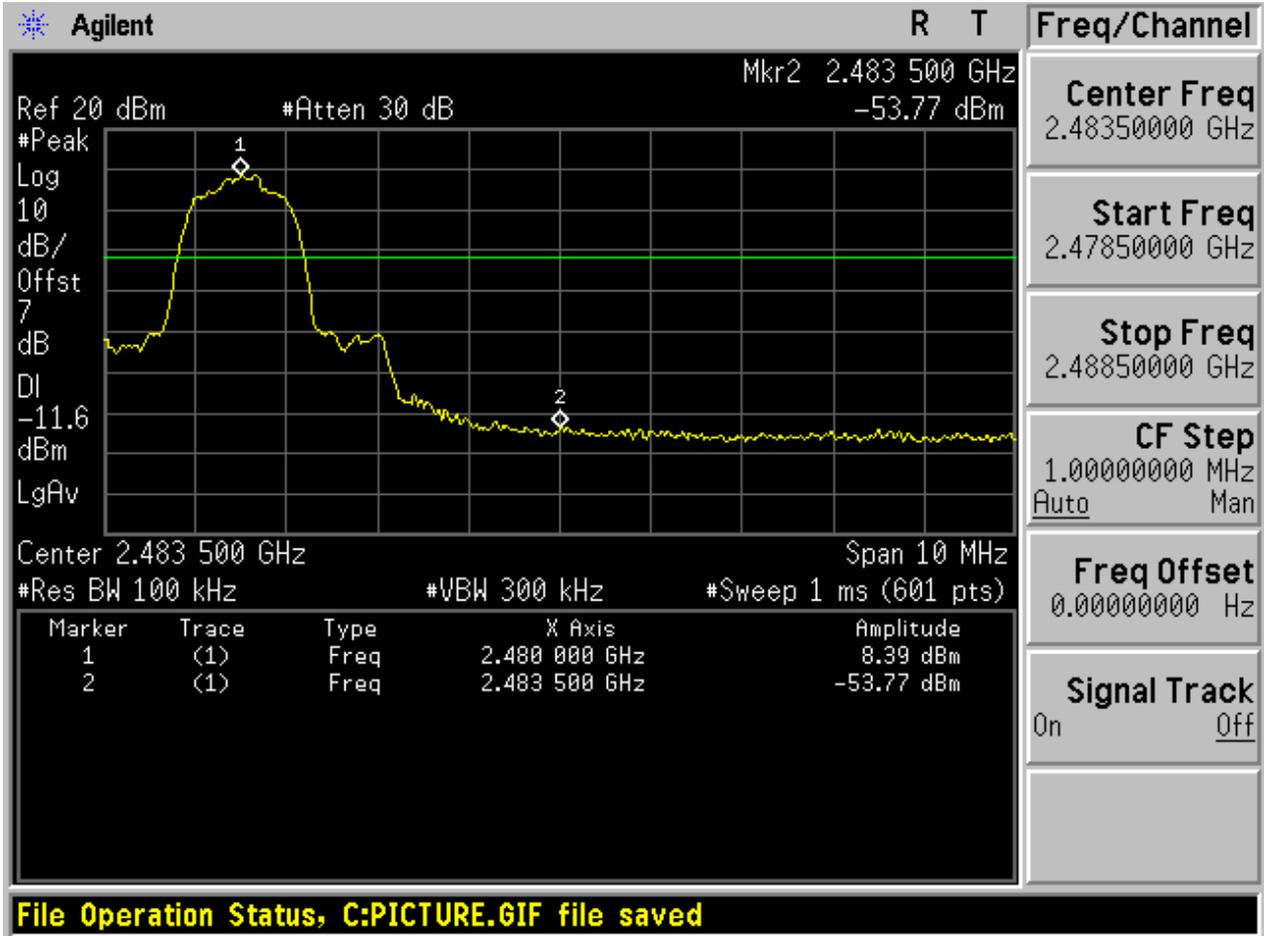


With hopping

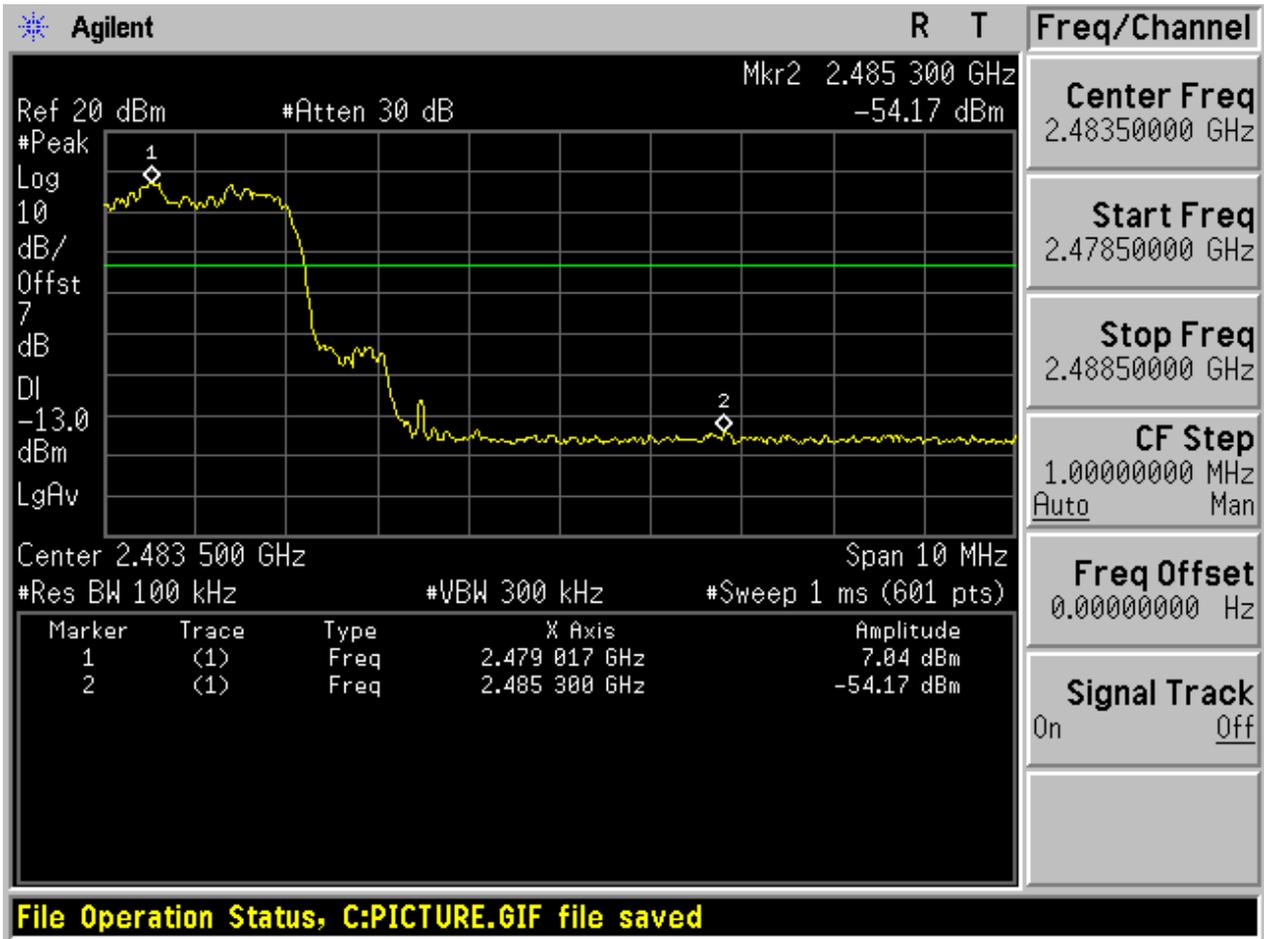


2.4 TM2_2DH5_Ch78

No hopping

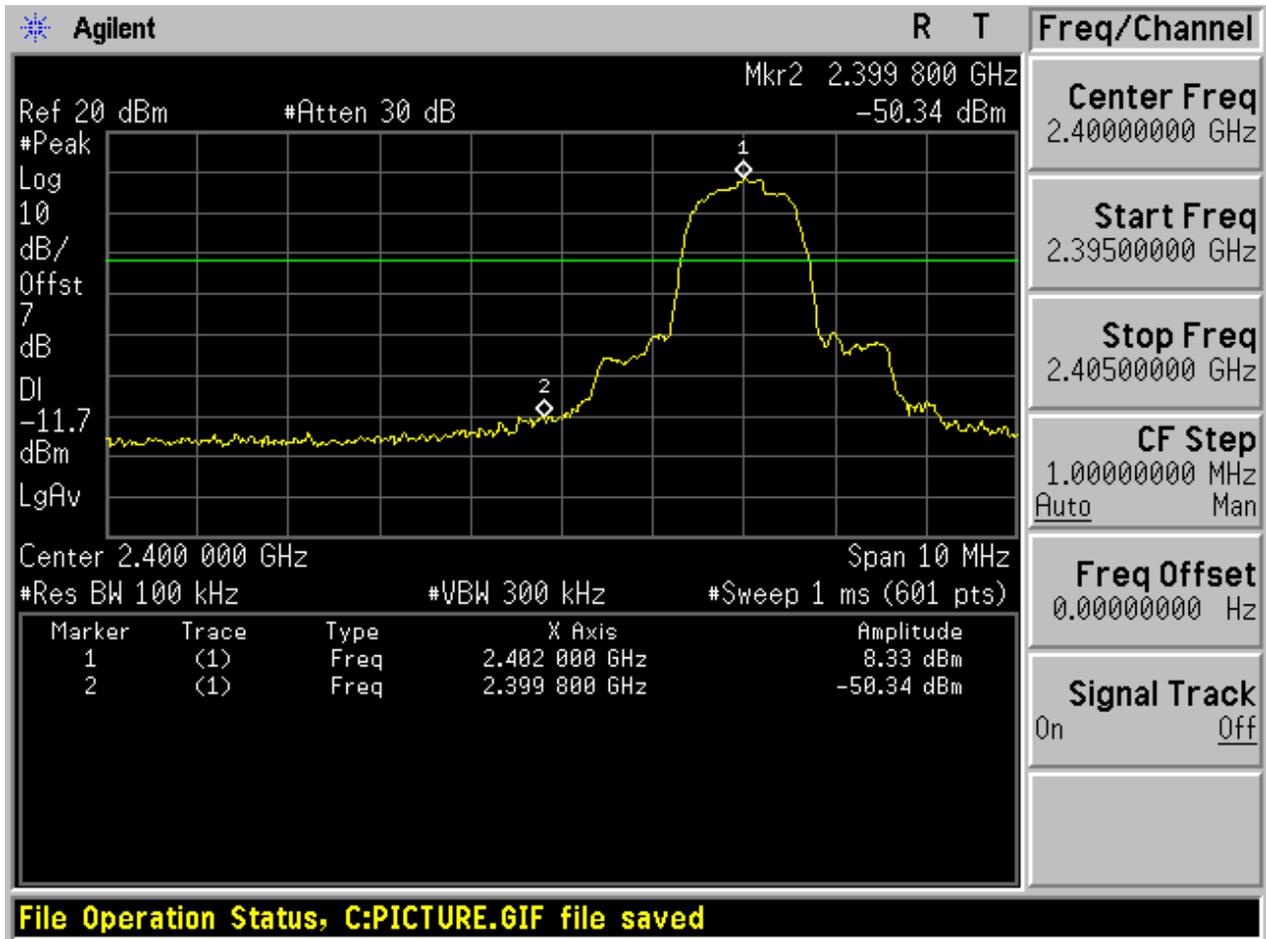


With hopping

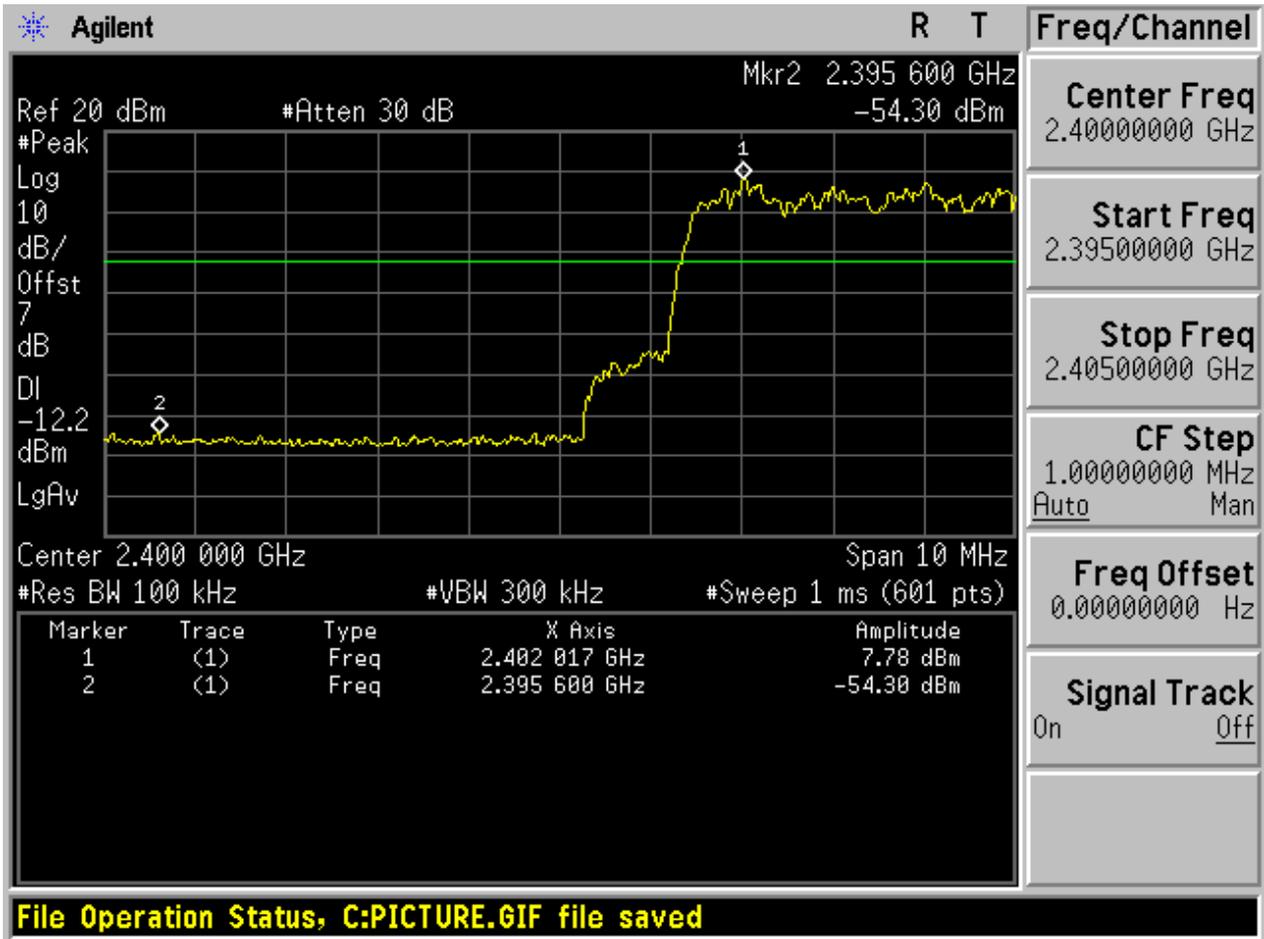


2.5 TM3_3DH5_Ch0

No hopping

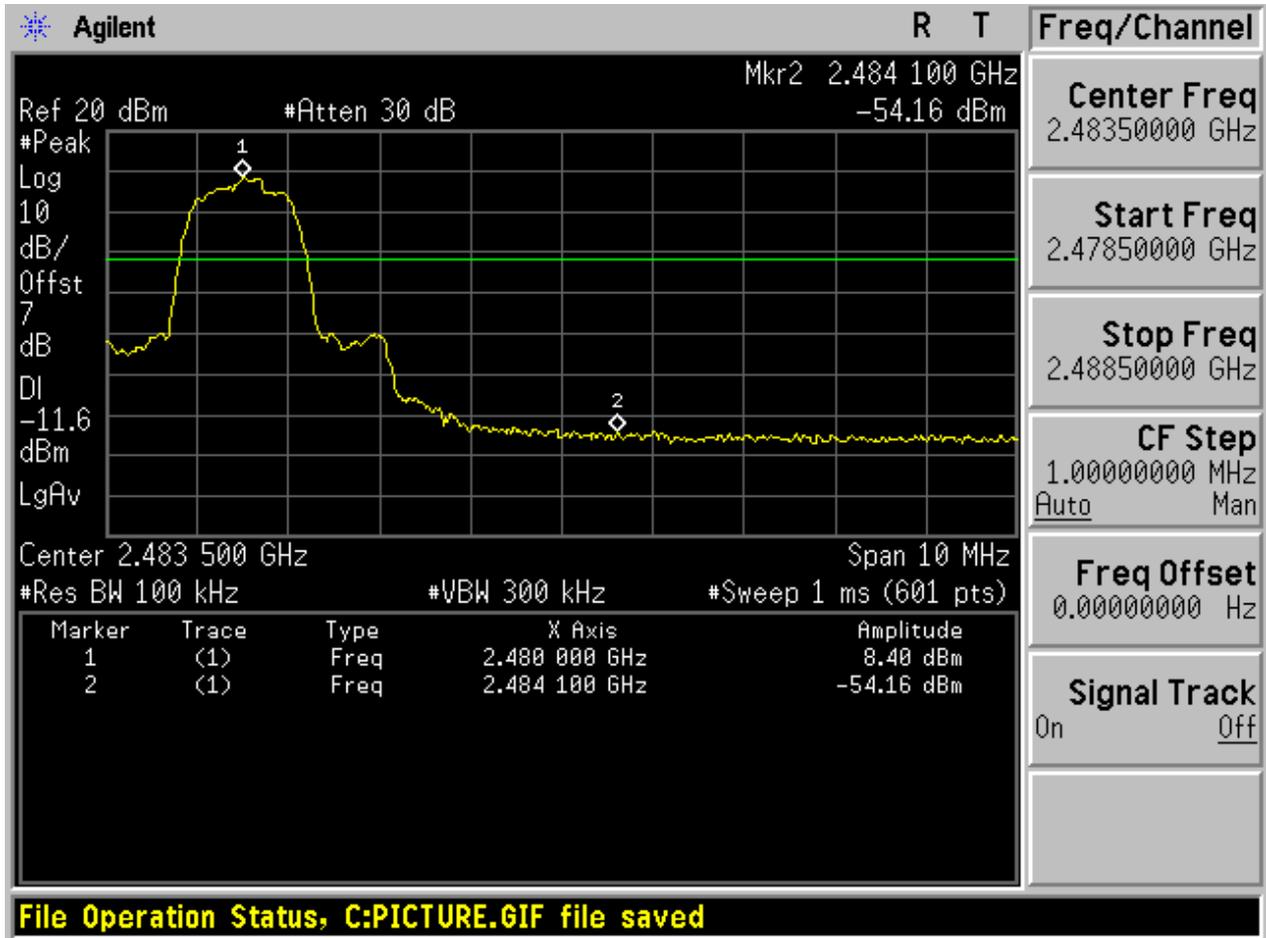


With hopping

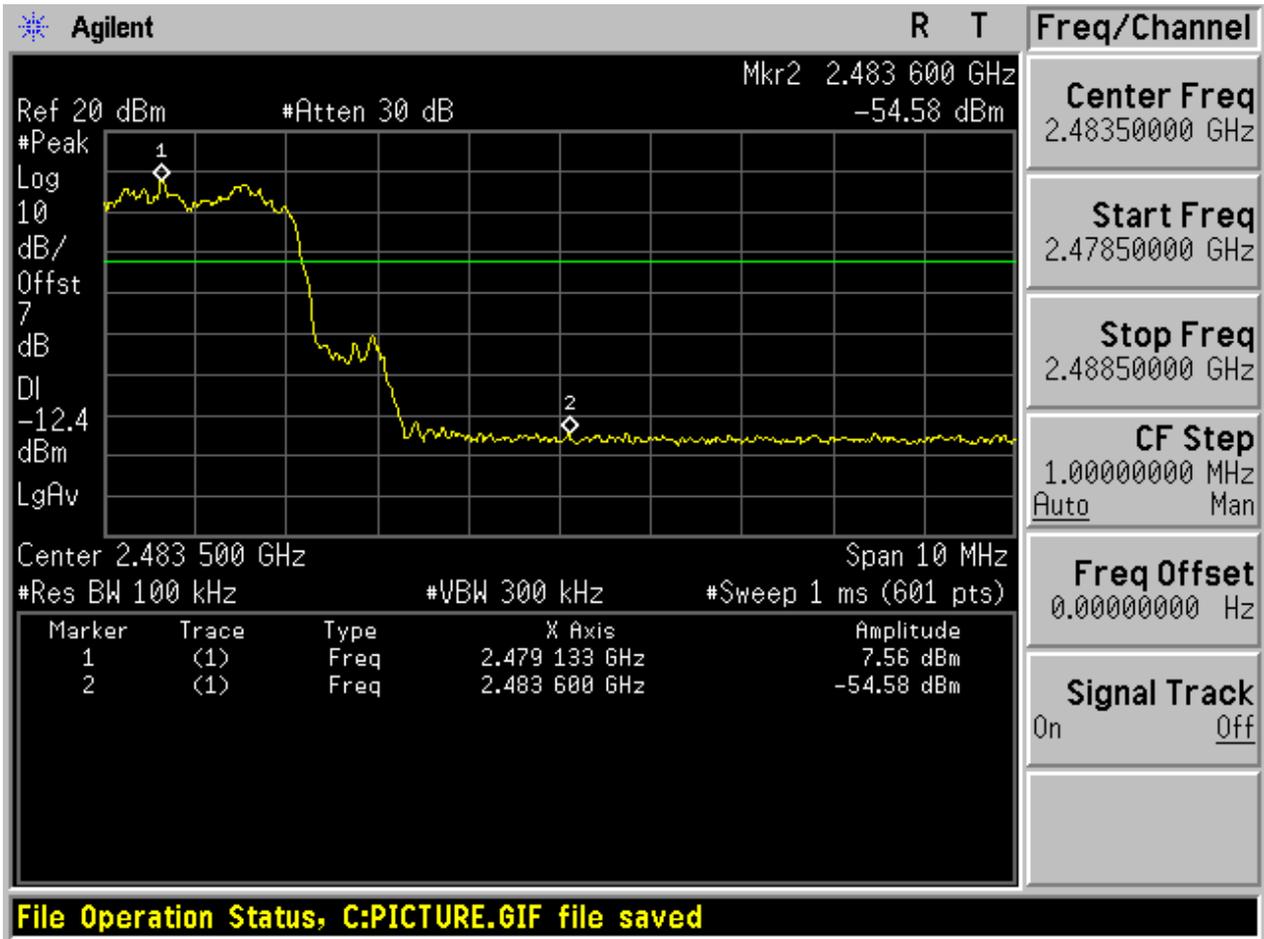


2.6 TM3_3DH5_Ch78

No hopping



With hopping





Appendix G: Conducted RF Spurious Emission

1 Result Table

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

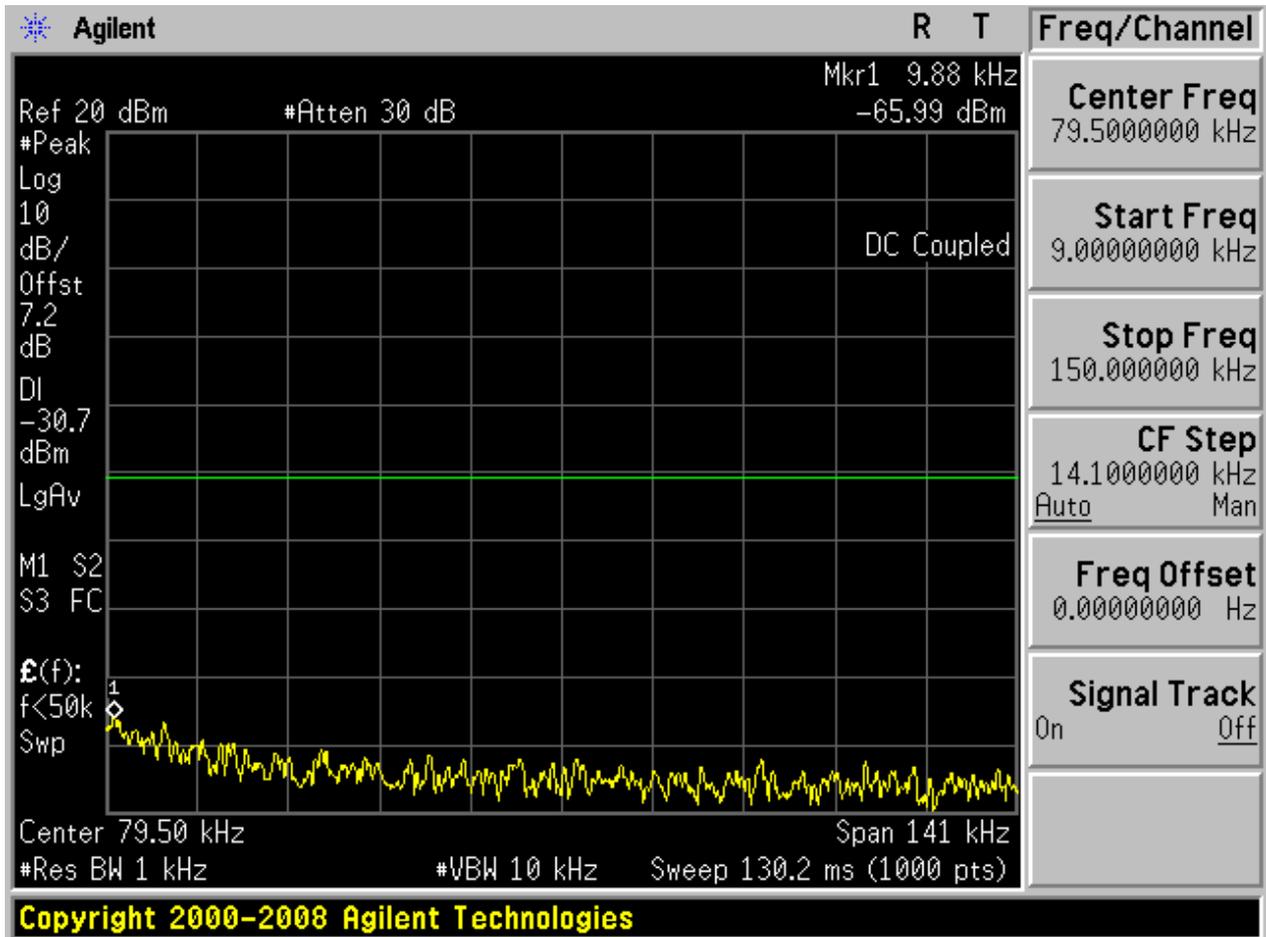
Considering that the higher ratio of RBW to the span for the frequency ranges below 30 MHz makes the results determination be complicated, a narrower RBW other than 100 kHz is used for these ranges. The measured value should add a RBW correction factor (RBWCF) where $RBWCF [dB] = 10 \times \lg(100 [kHz]/\text{narrower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

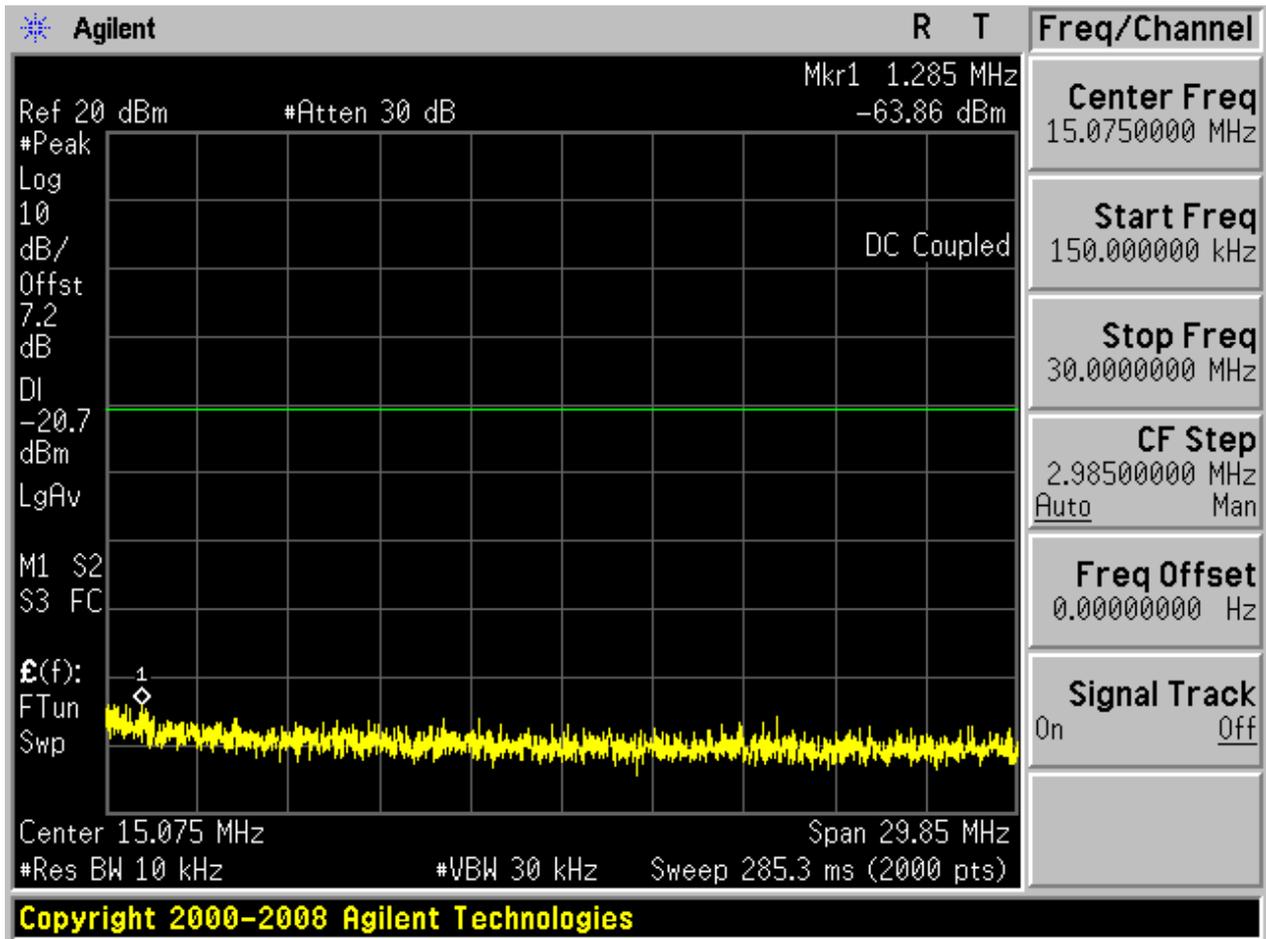
In the result table, the “< Limit” denotes that “The Puw [dBm] is less than Pref [dBm] - 20 [dB], see test plots for detailed”.

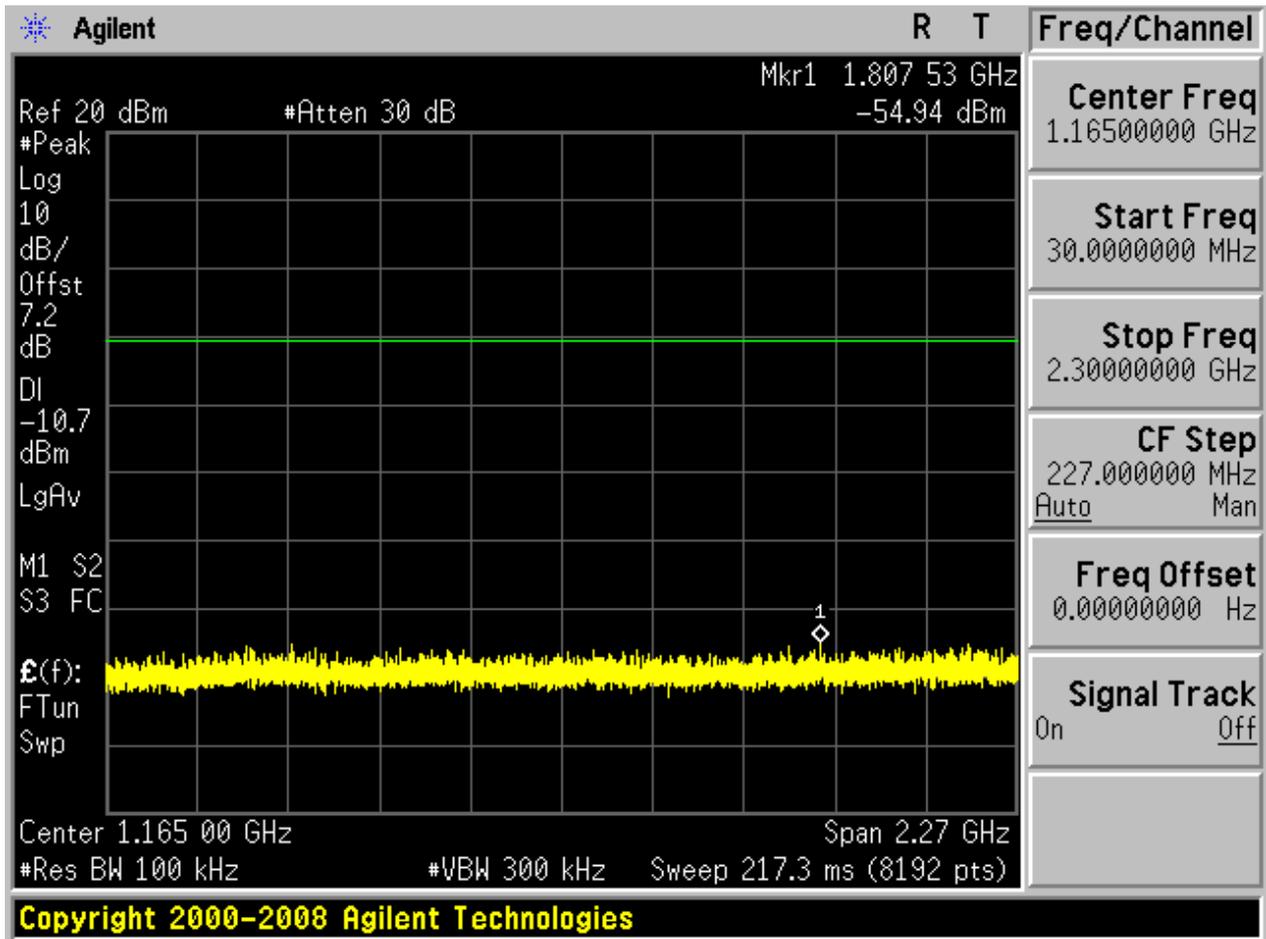
EUT Conf.	Pref [dBm/100 kHz]	Puw [dBm/100 kHz]	Verdict
TM1_DH5_Ch0	9.27	< Limit	Pass
TM1_DH5_Ch39	9.74	< Limit	Pass
TM1_DH5_Ch78	9.31	< Limit	Pass
TM2_2DH5_Ch0	8.35	< Limit	Pass
TM2_2DH5_Ch39	8.81	< Limit	Pass
TM2_2DH5_Ch78	8.39	< Limit	Pass
TM3_3DH5_Ch0	8.34	< Limit	Pass
TM3_3DH5_Ch39	8.82	< Limit	Pass
TM3_3DH5_Ch78	8.38	< Limit	Pass

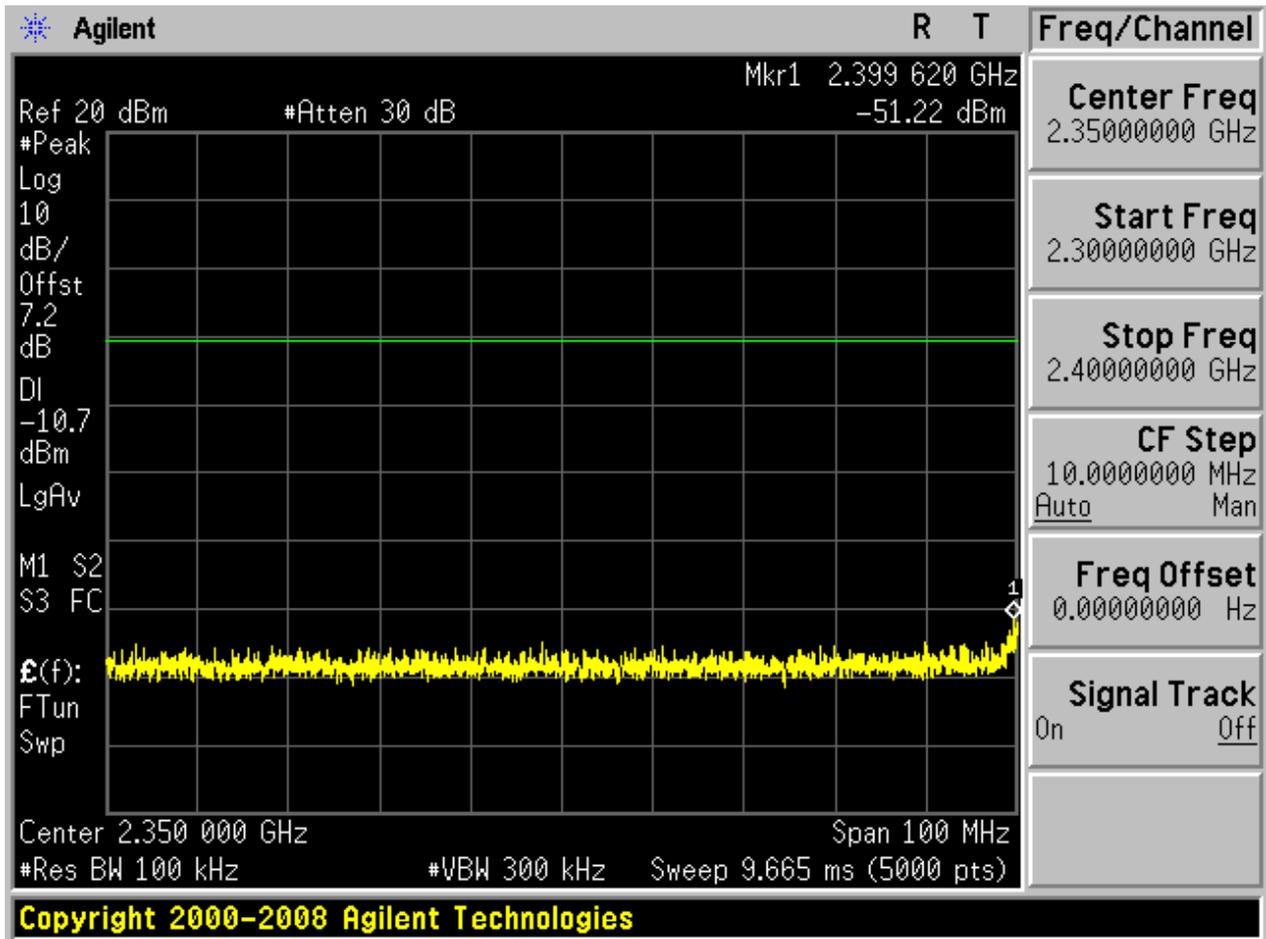


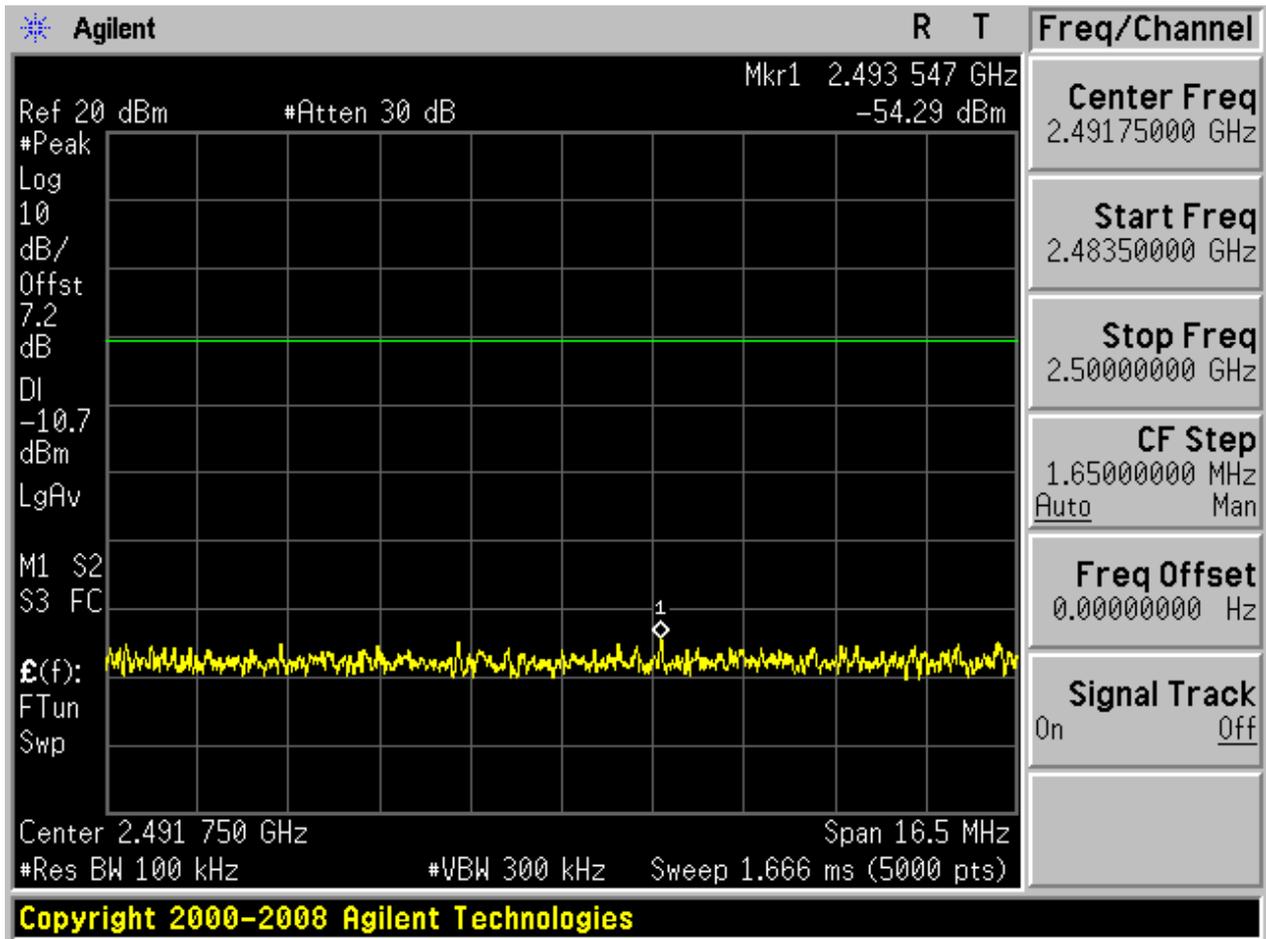
2.1.2 Puw

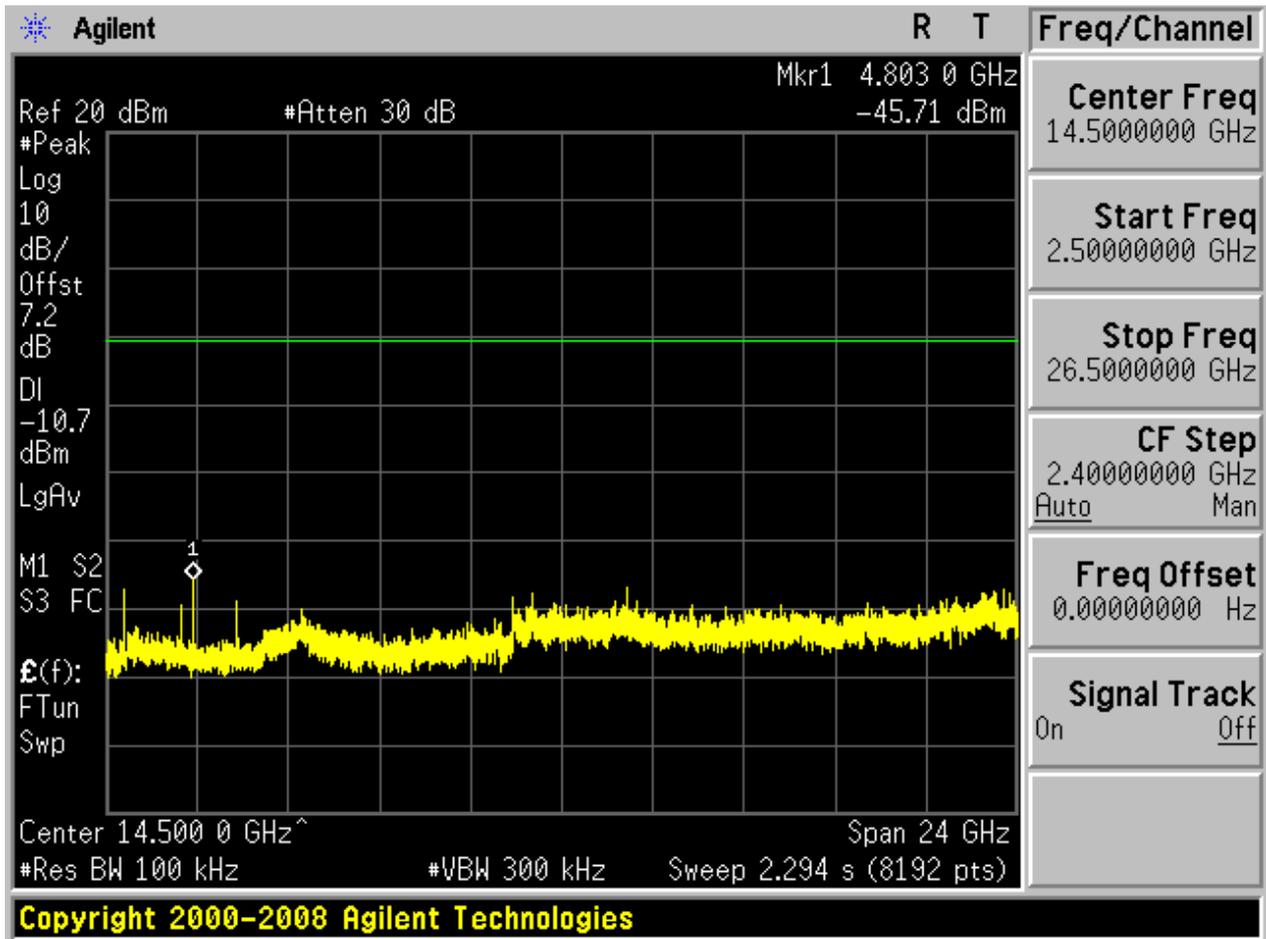






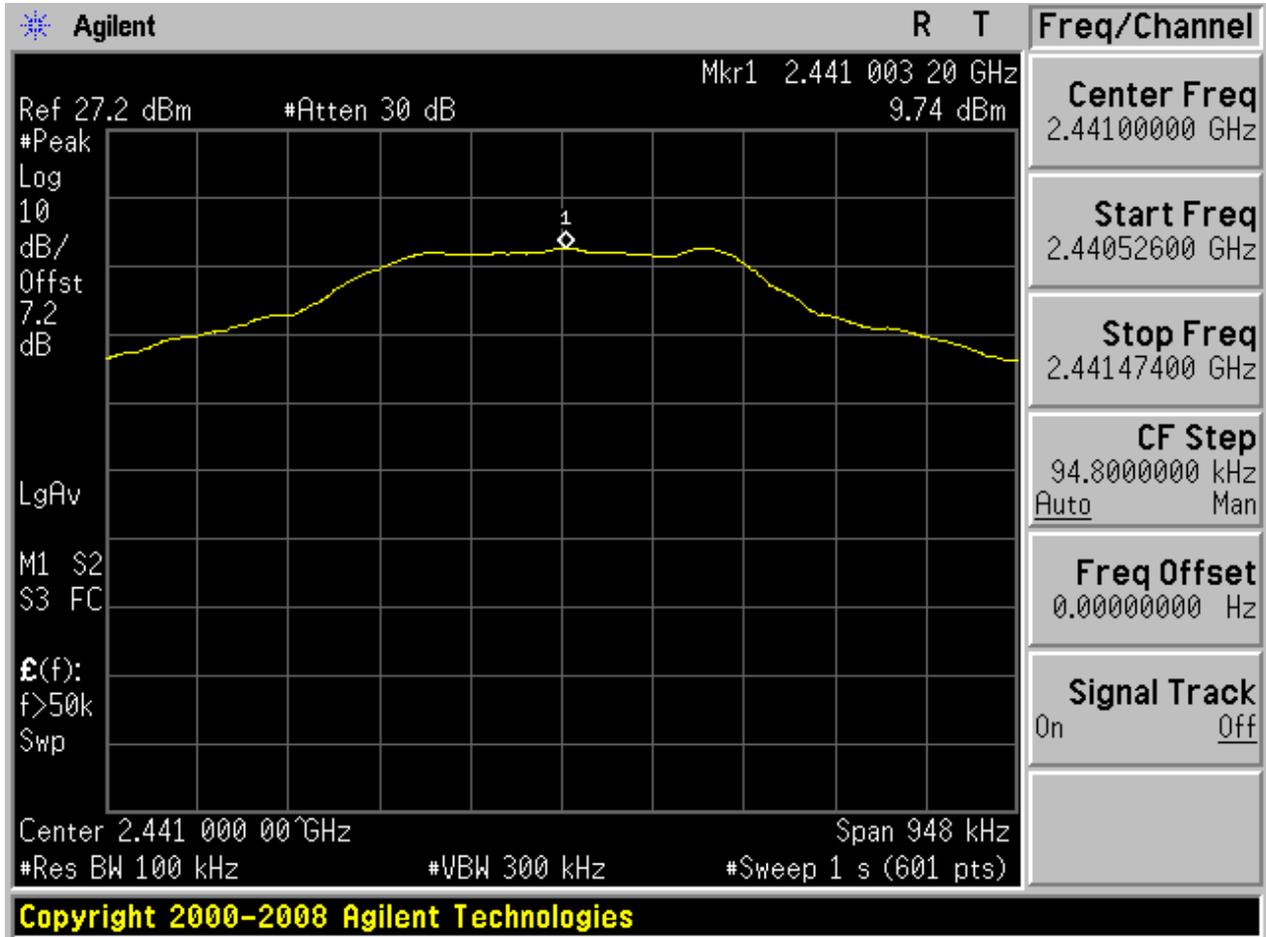




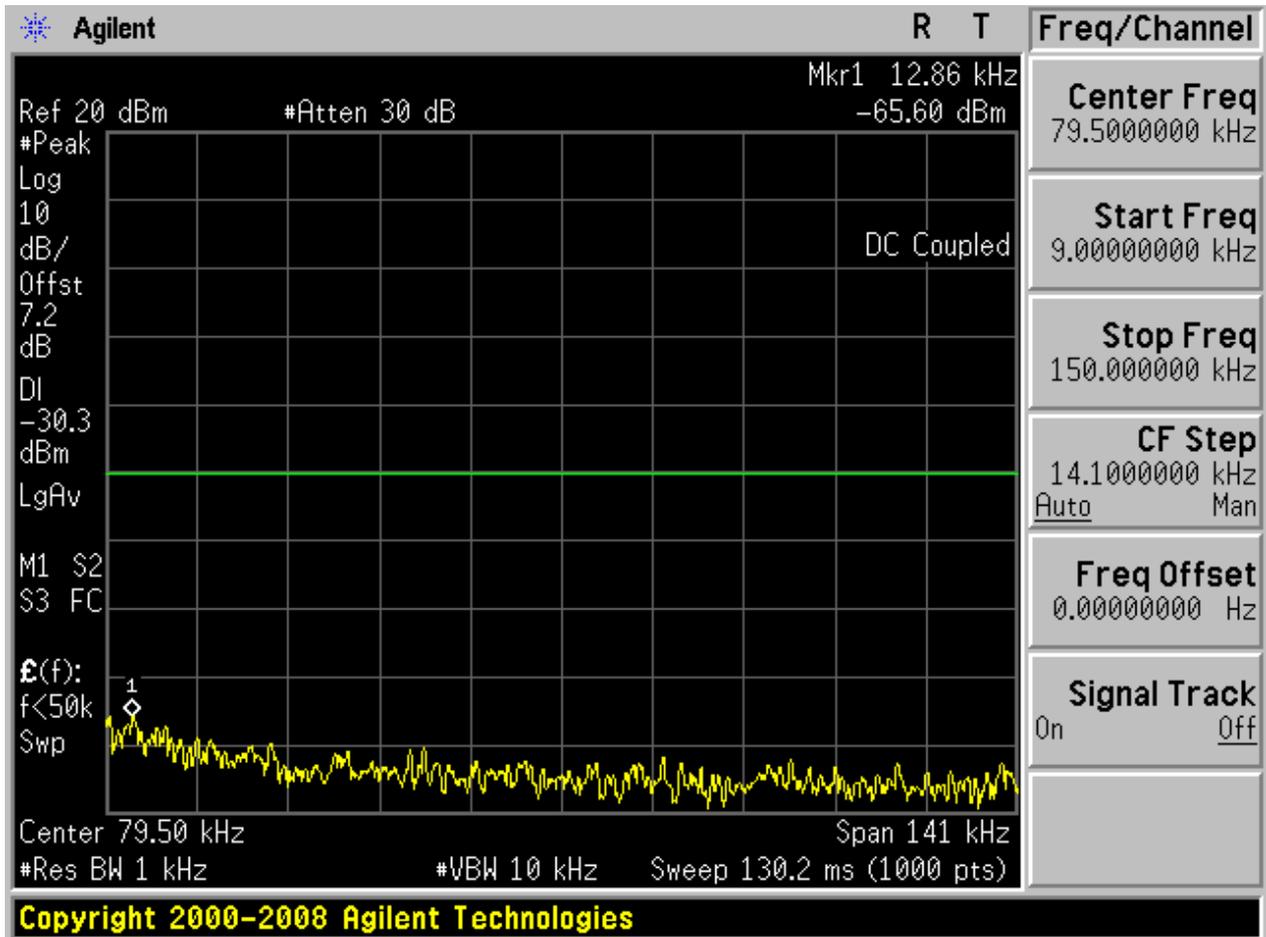


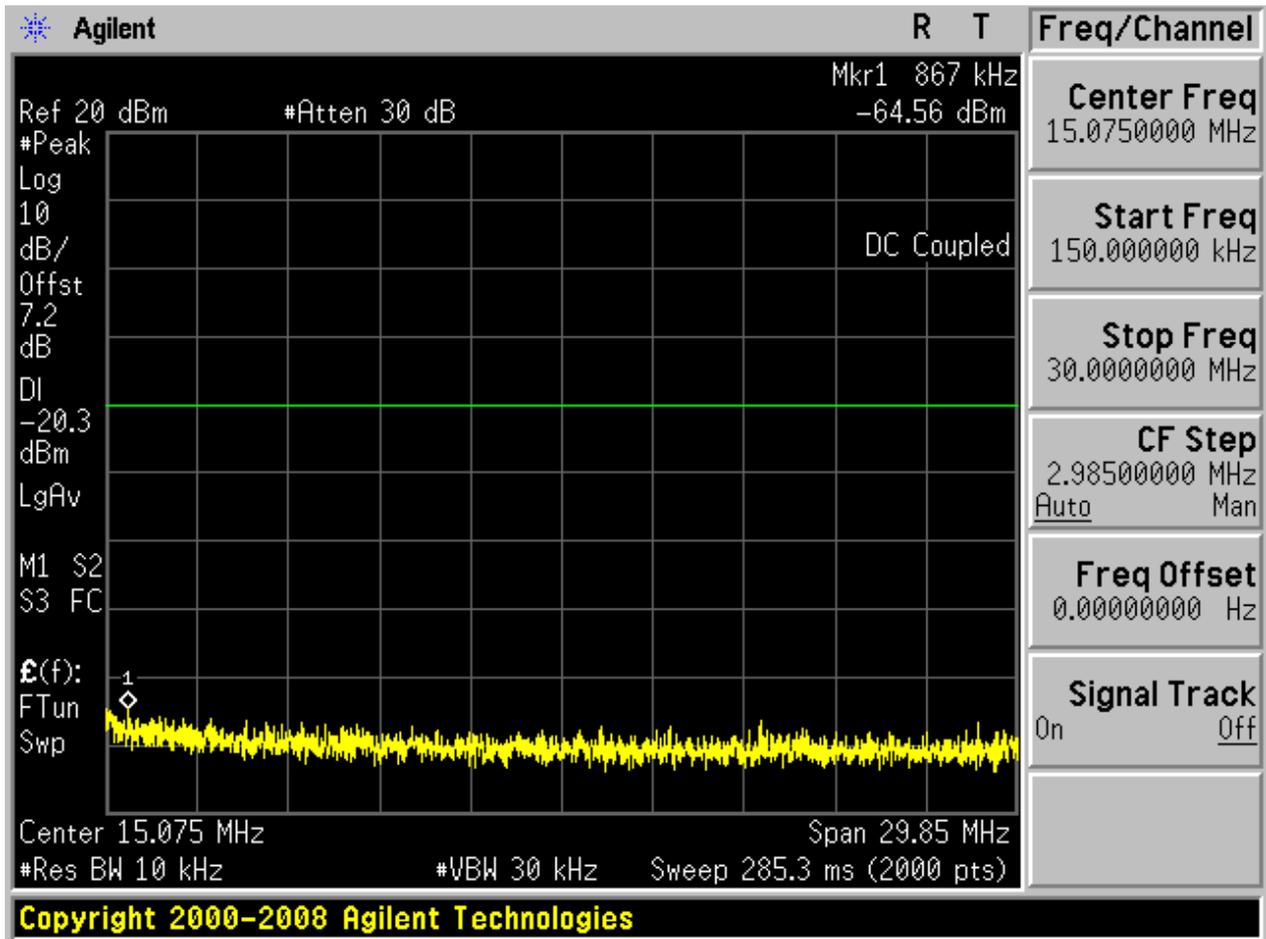
2.2 TM1_DH5_Ch39

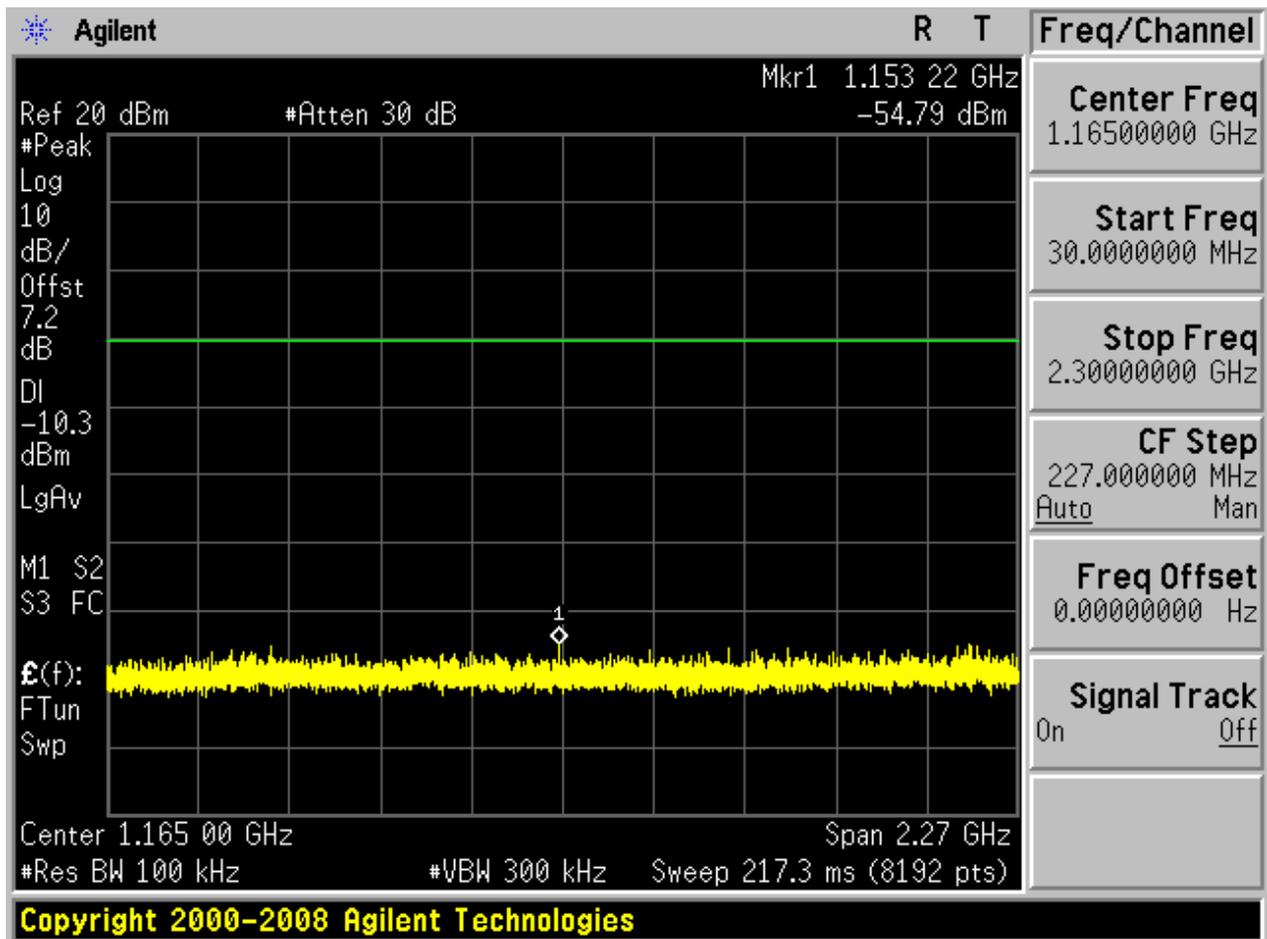
2.2.1 Pref

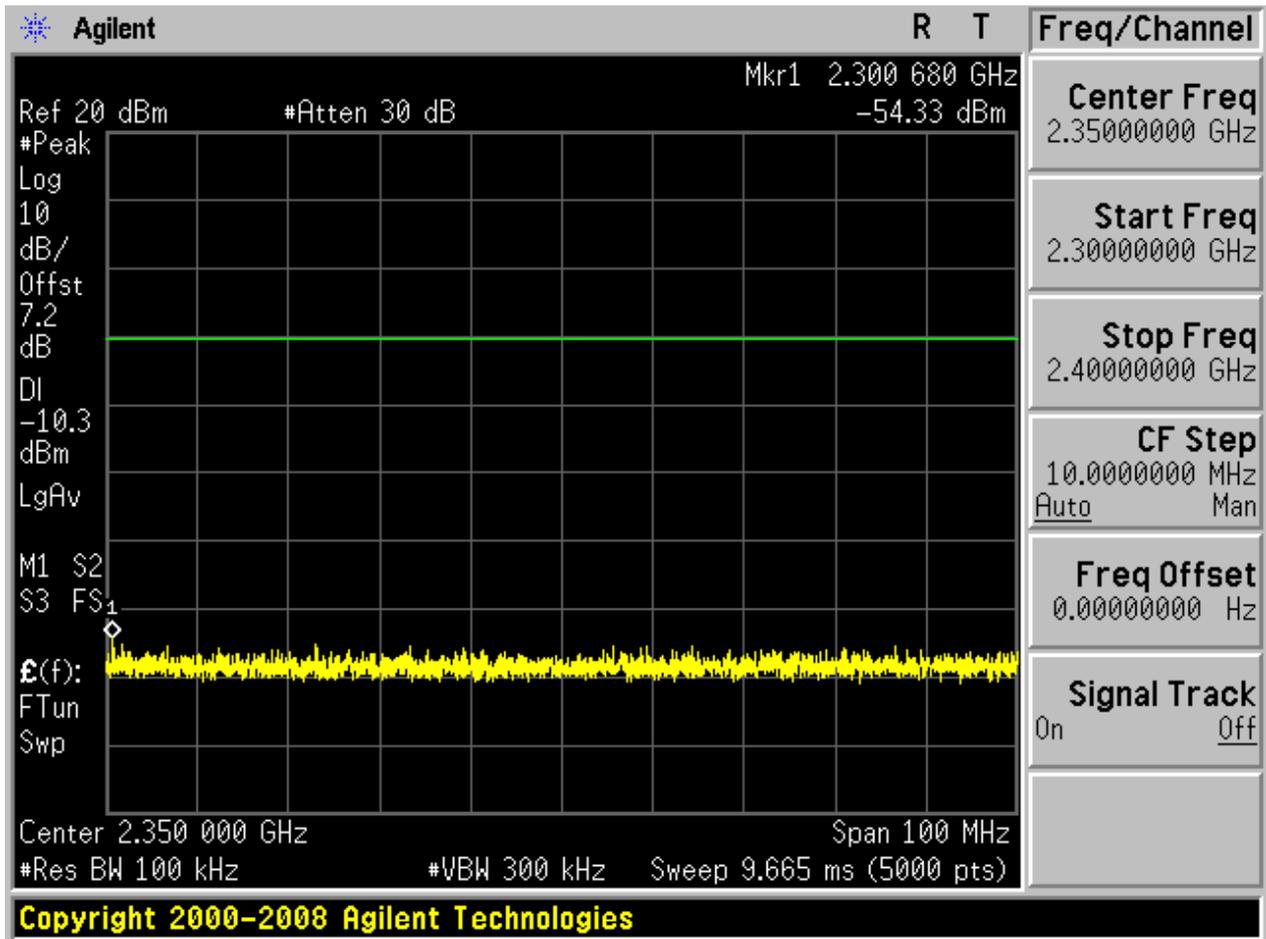


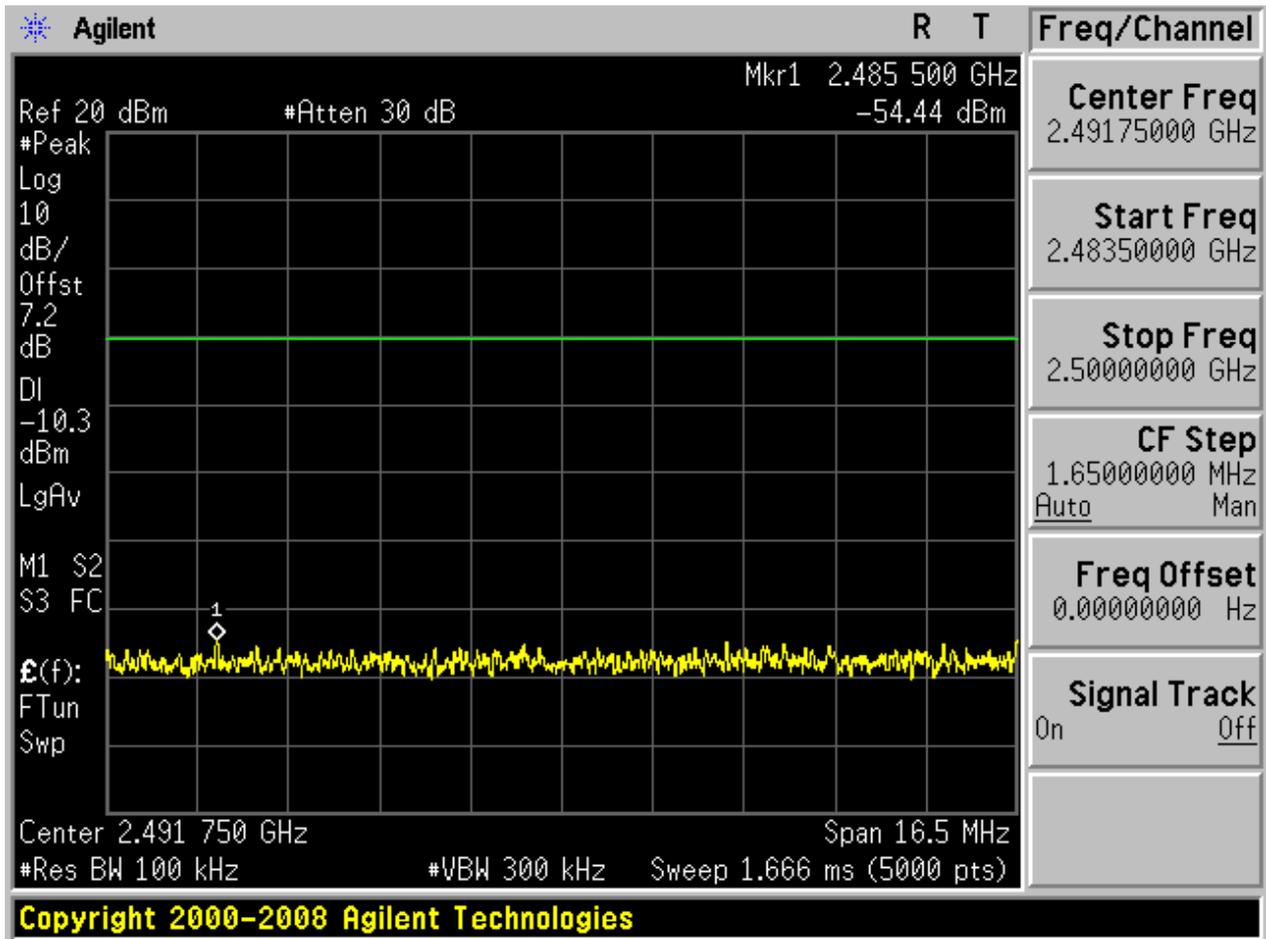
2.2.2 Puw

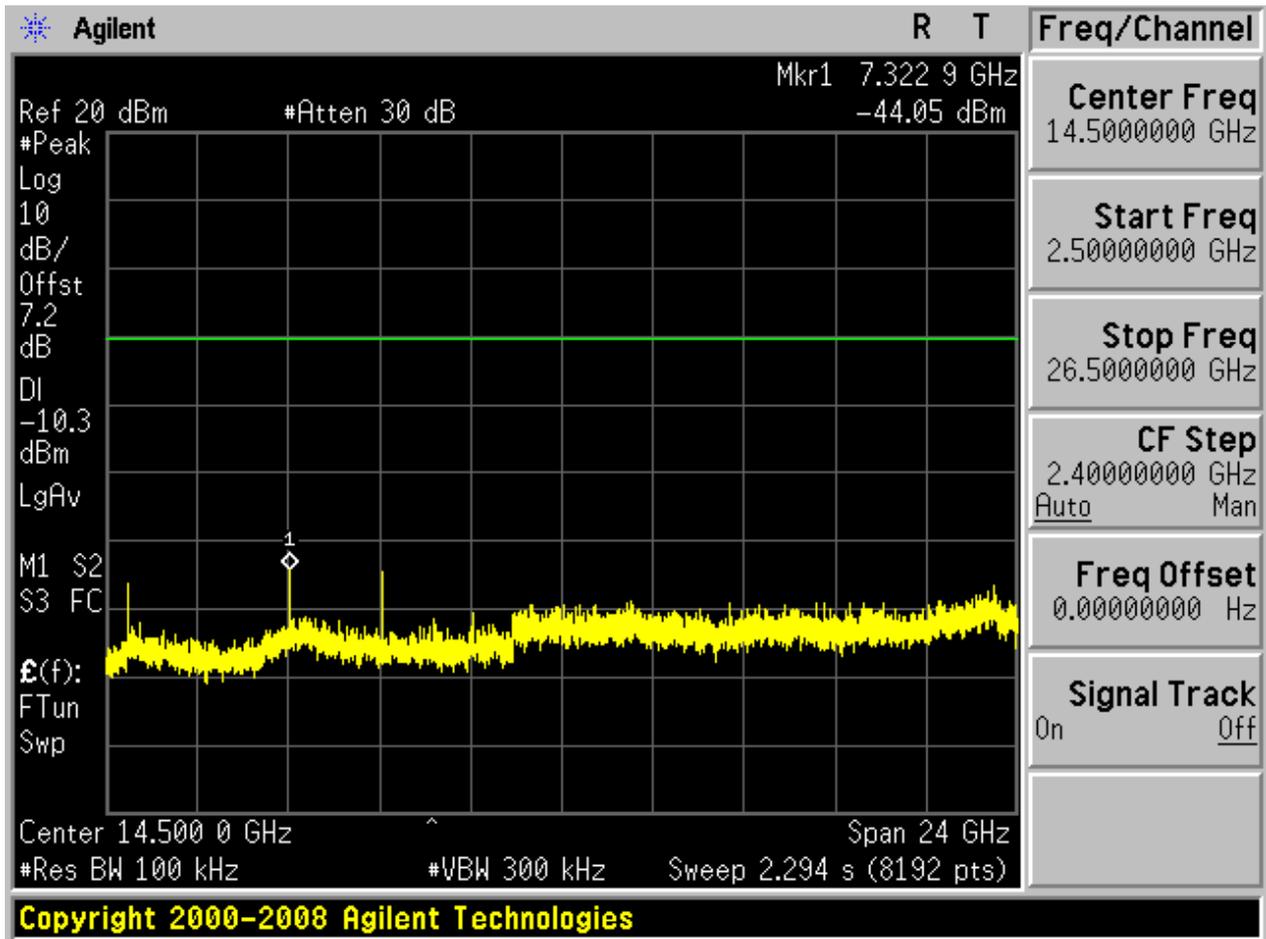






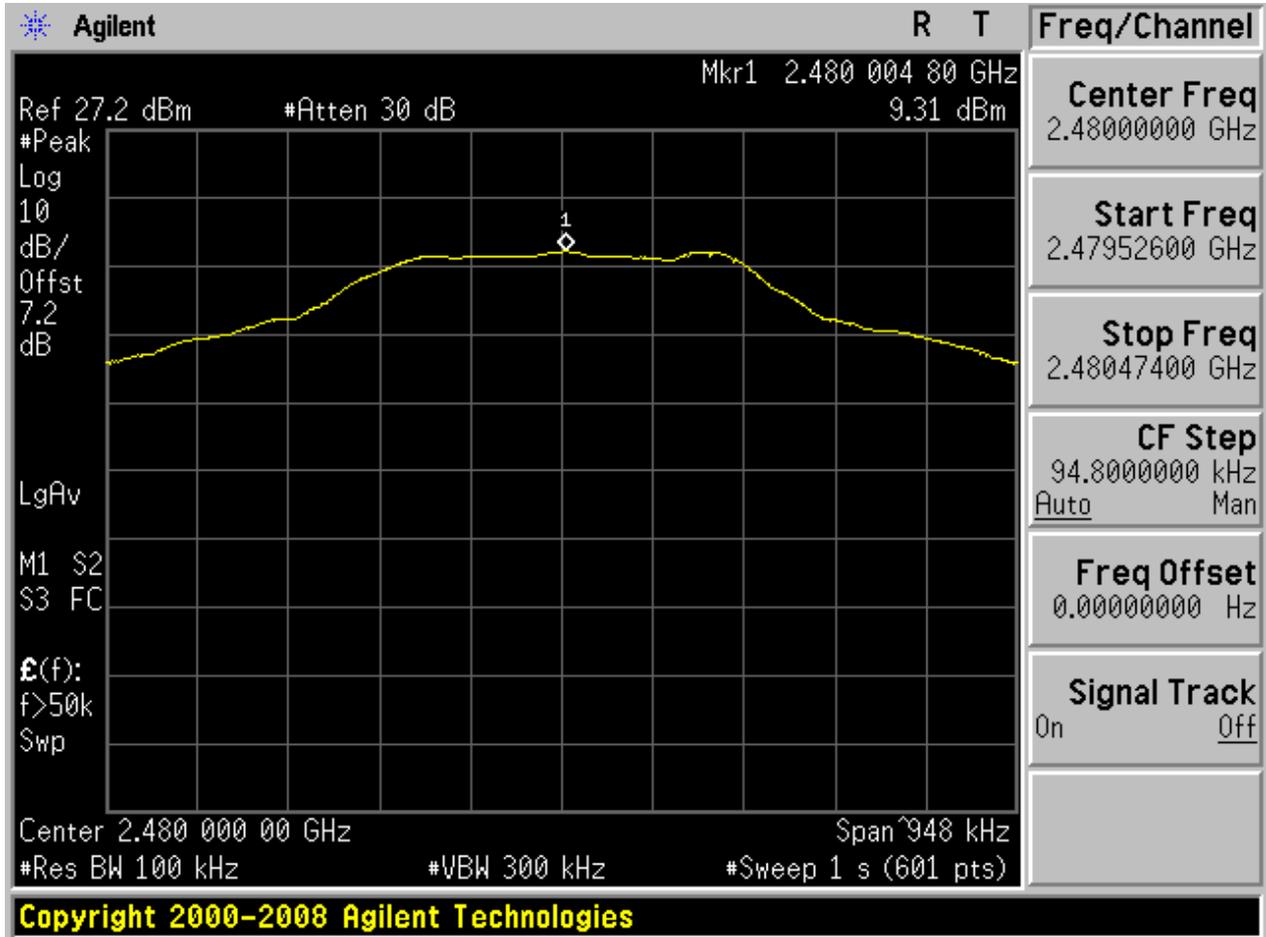




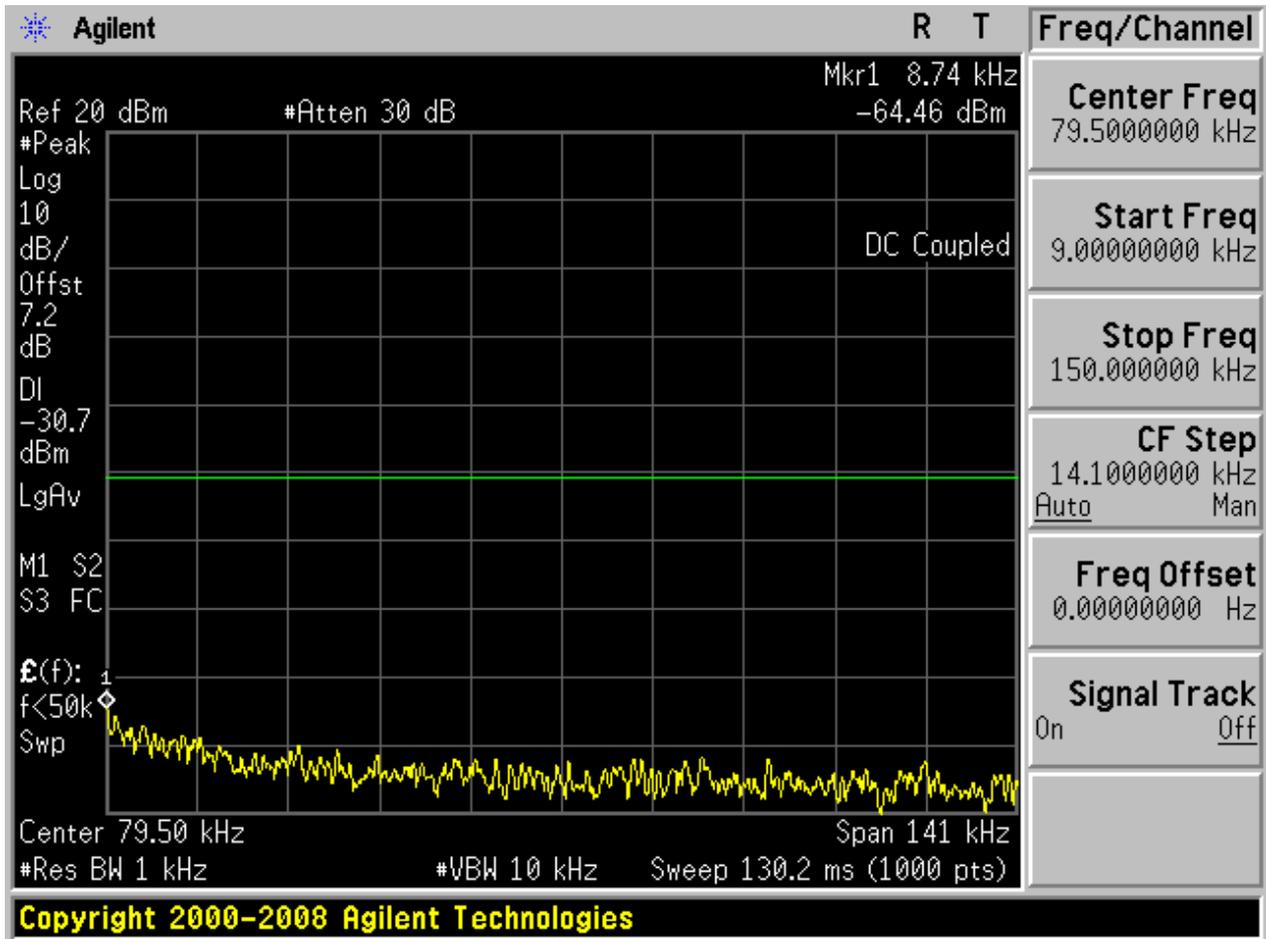


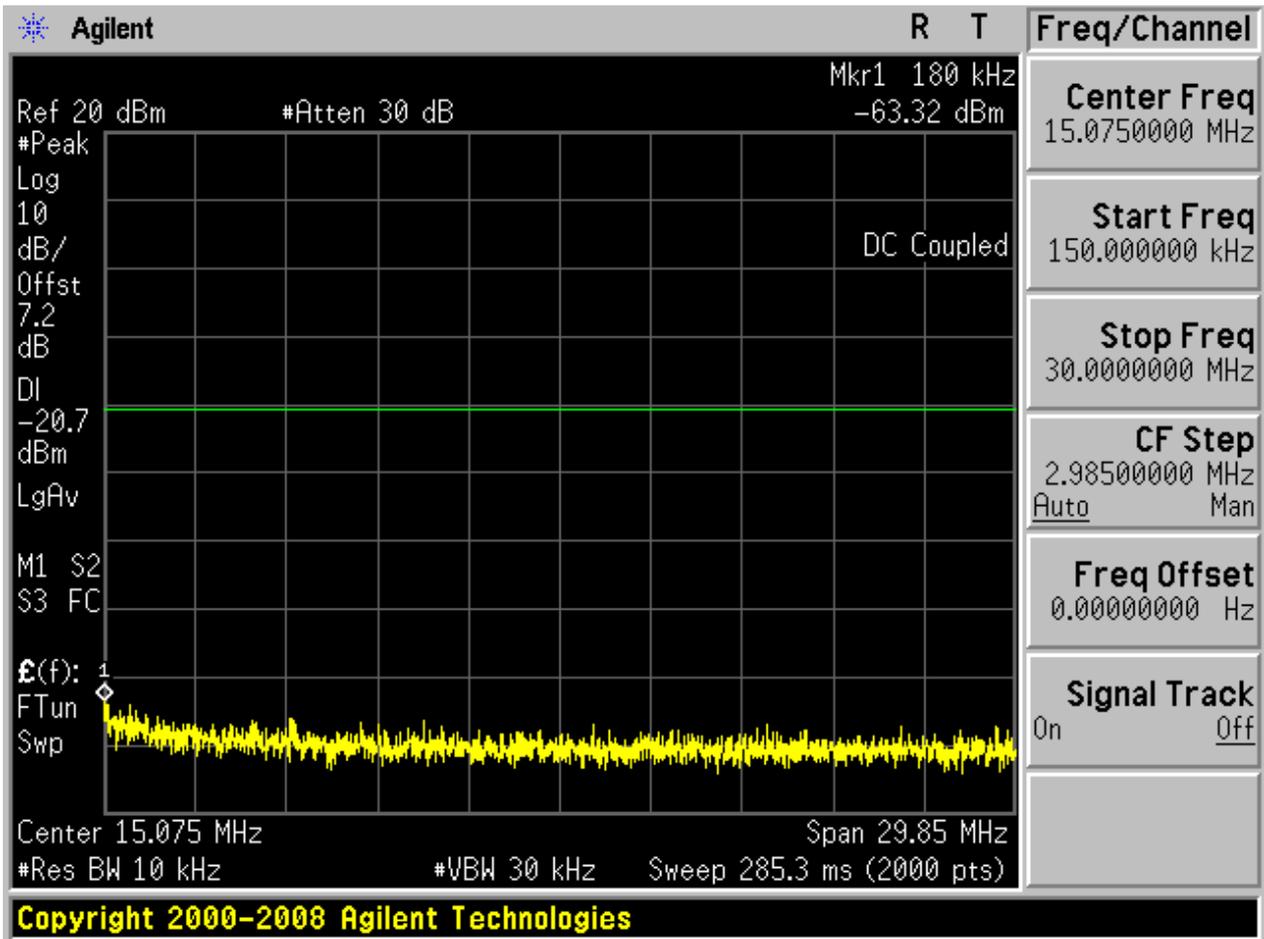
2.3 TM1_DH5_Ch78

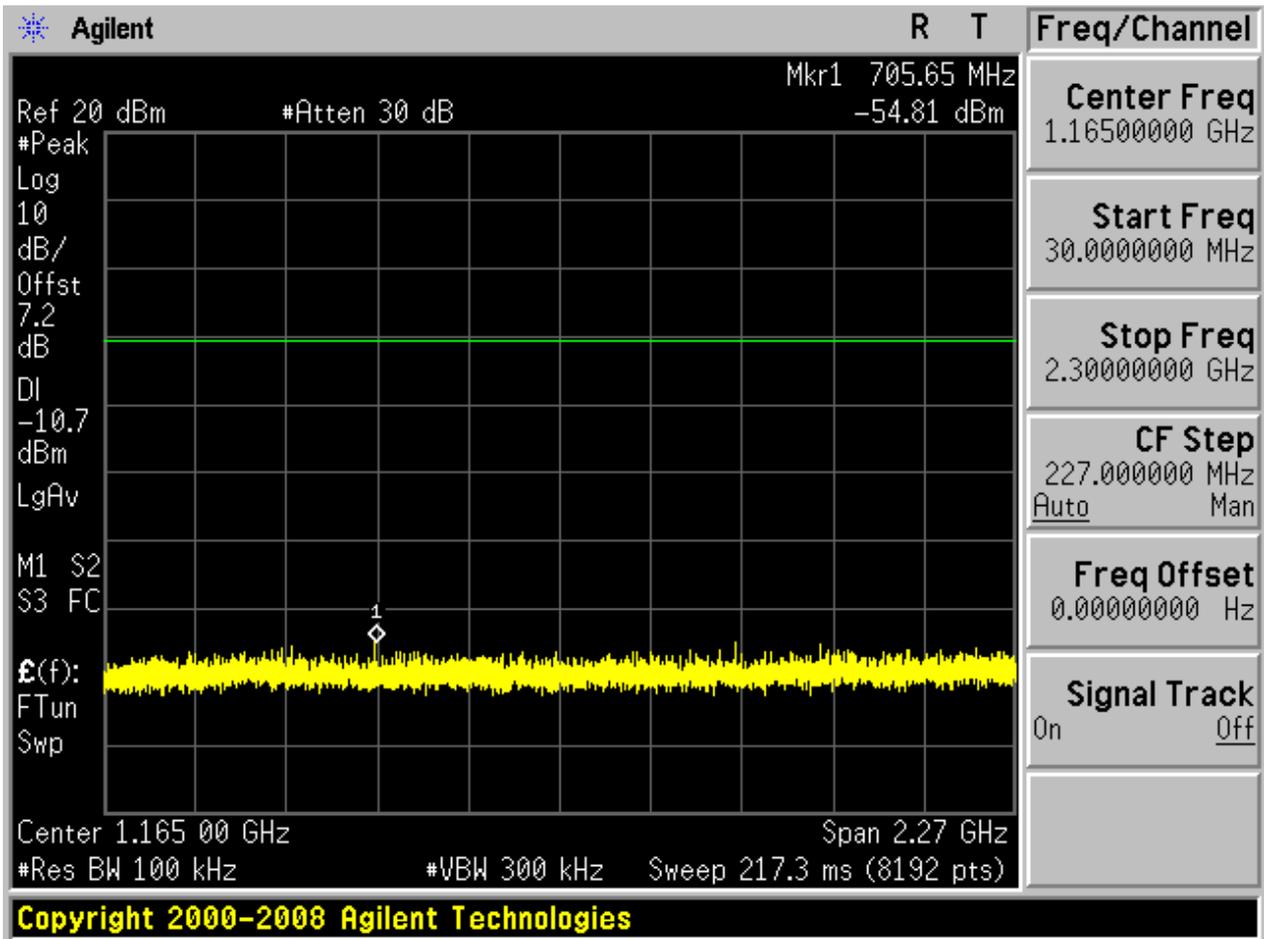
2.3.1 Pref

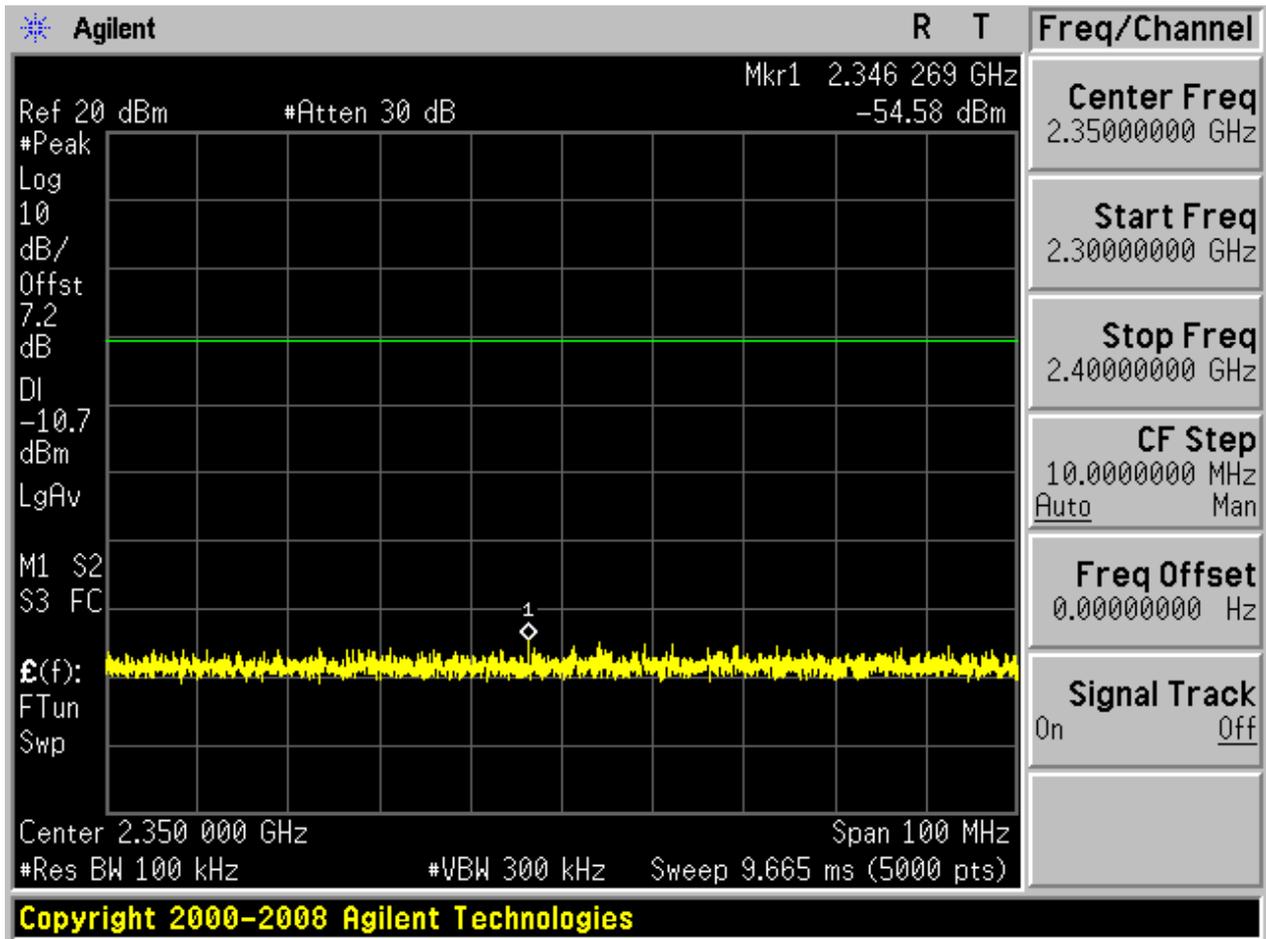


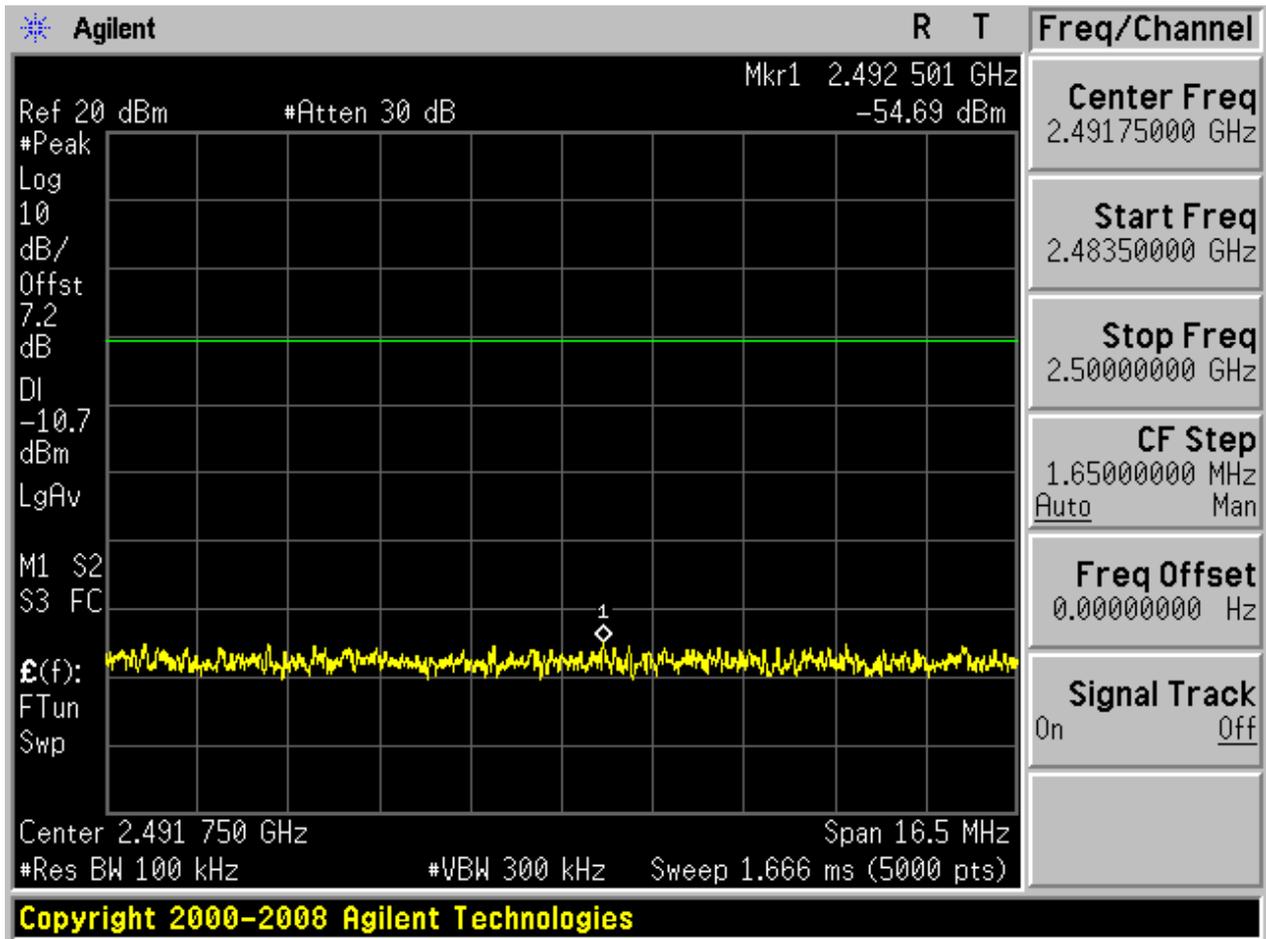
2.3.2 P_{uw}

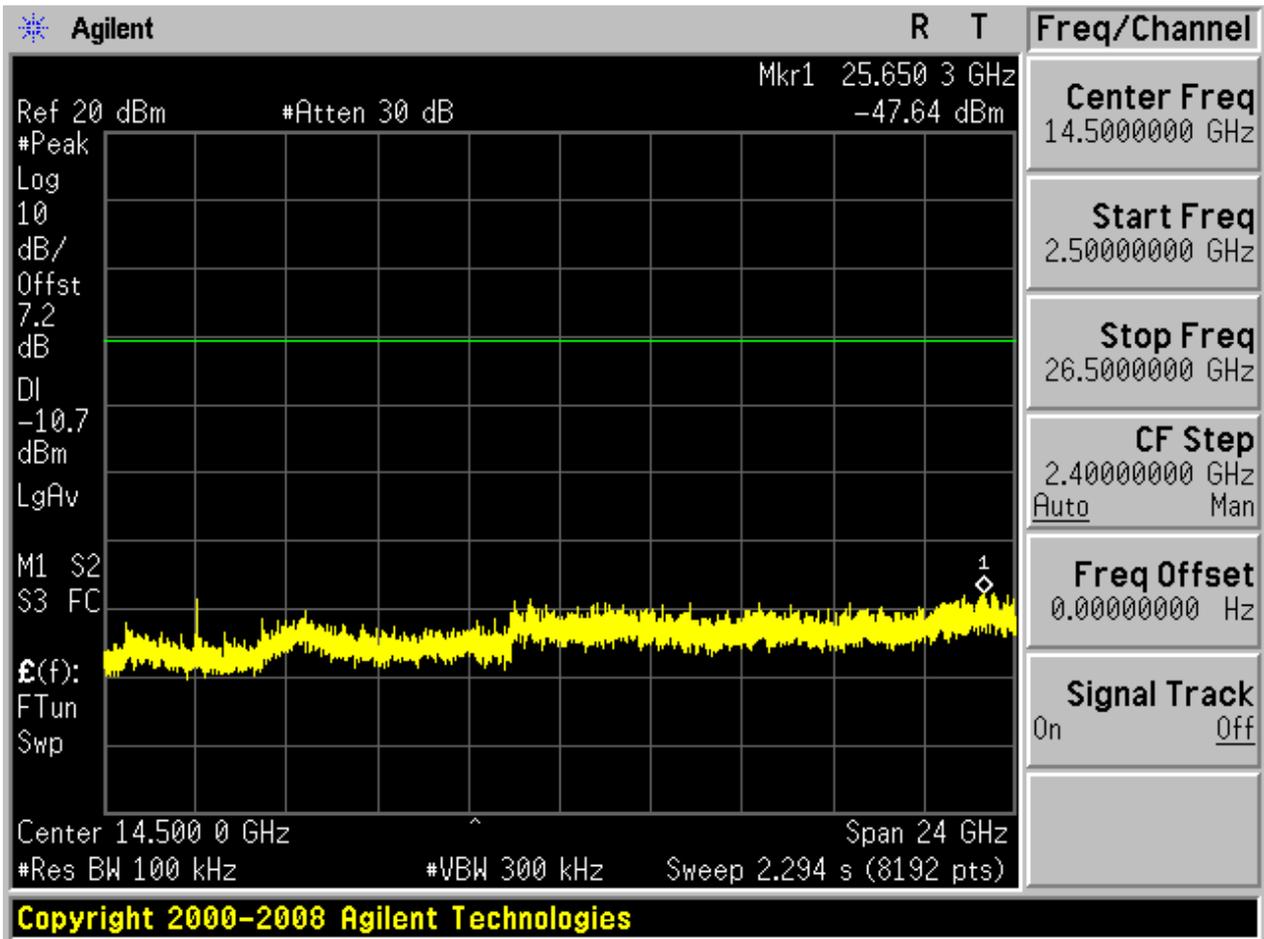








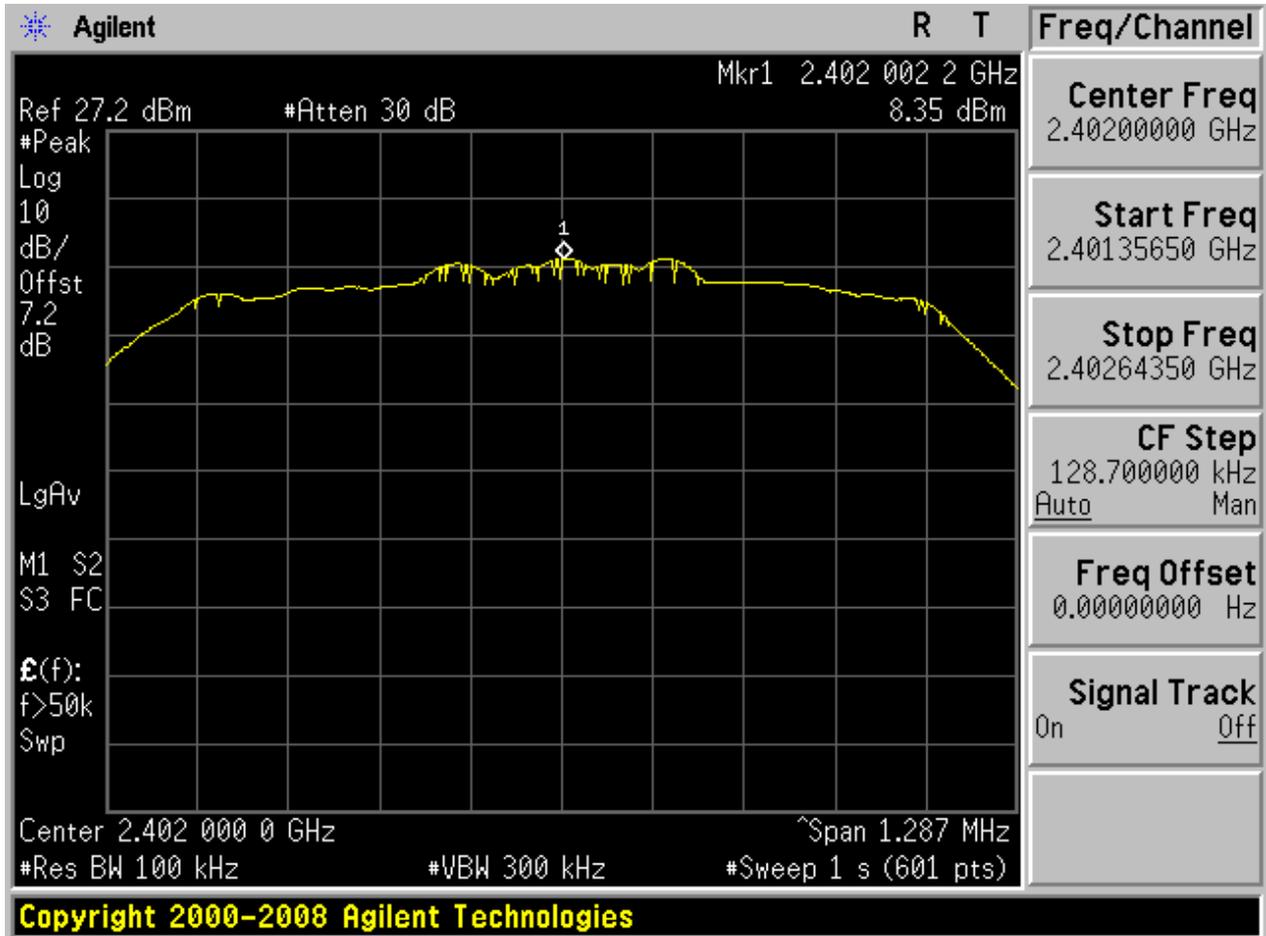




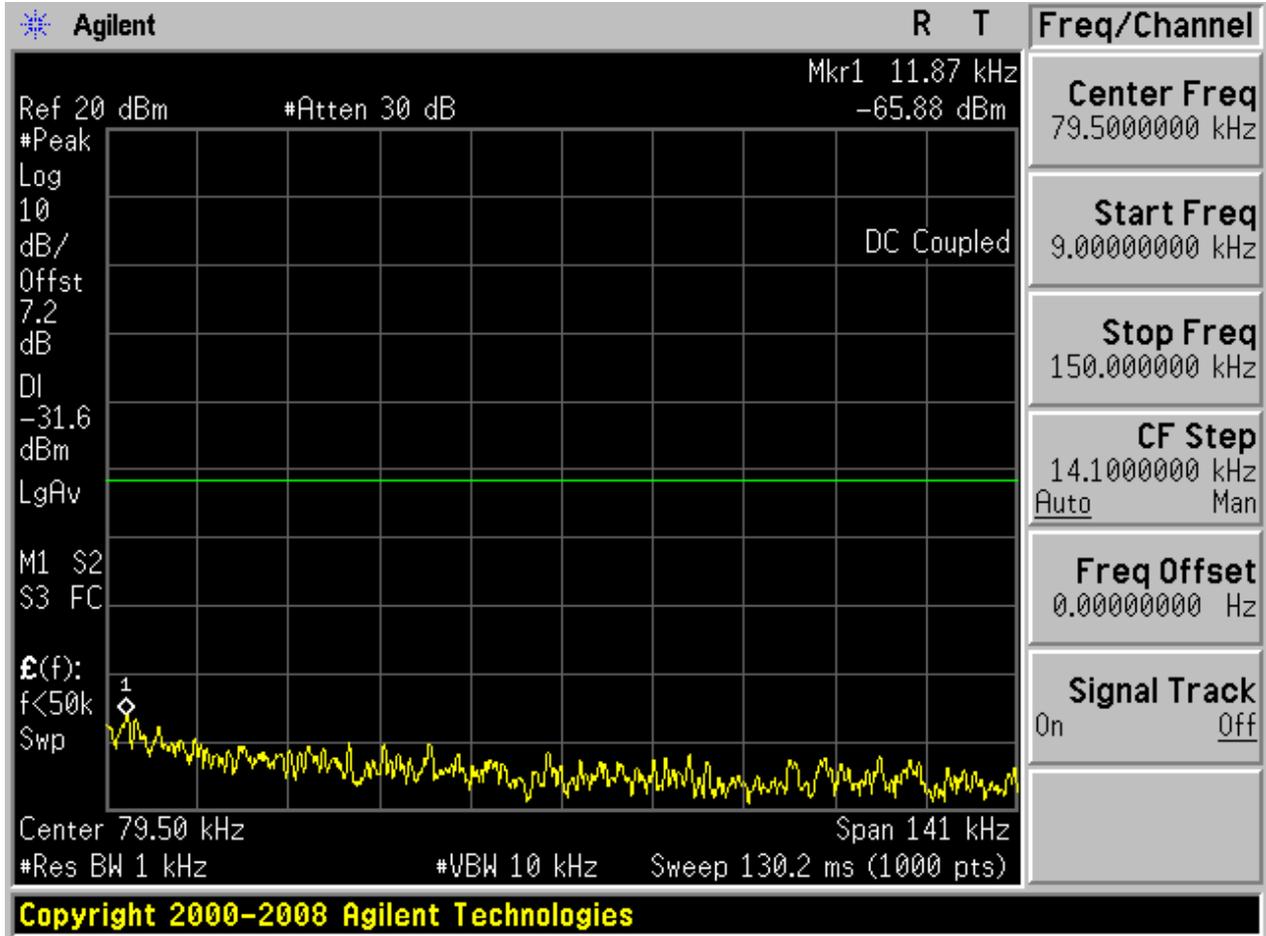


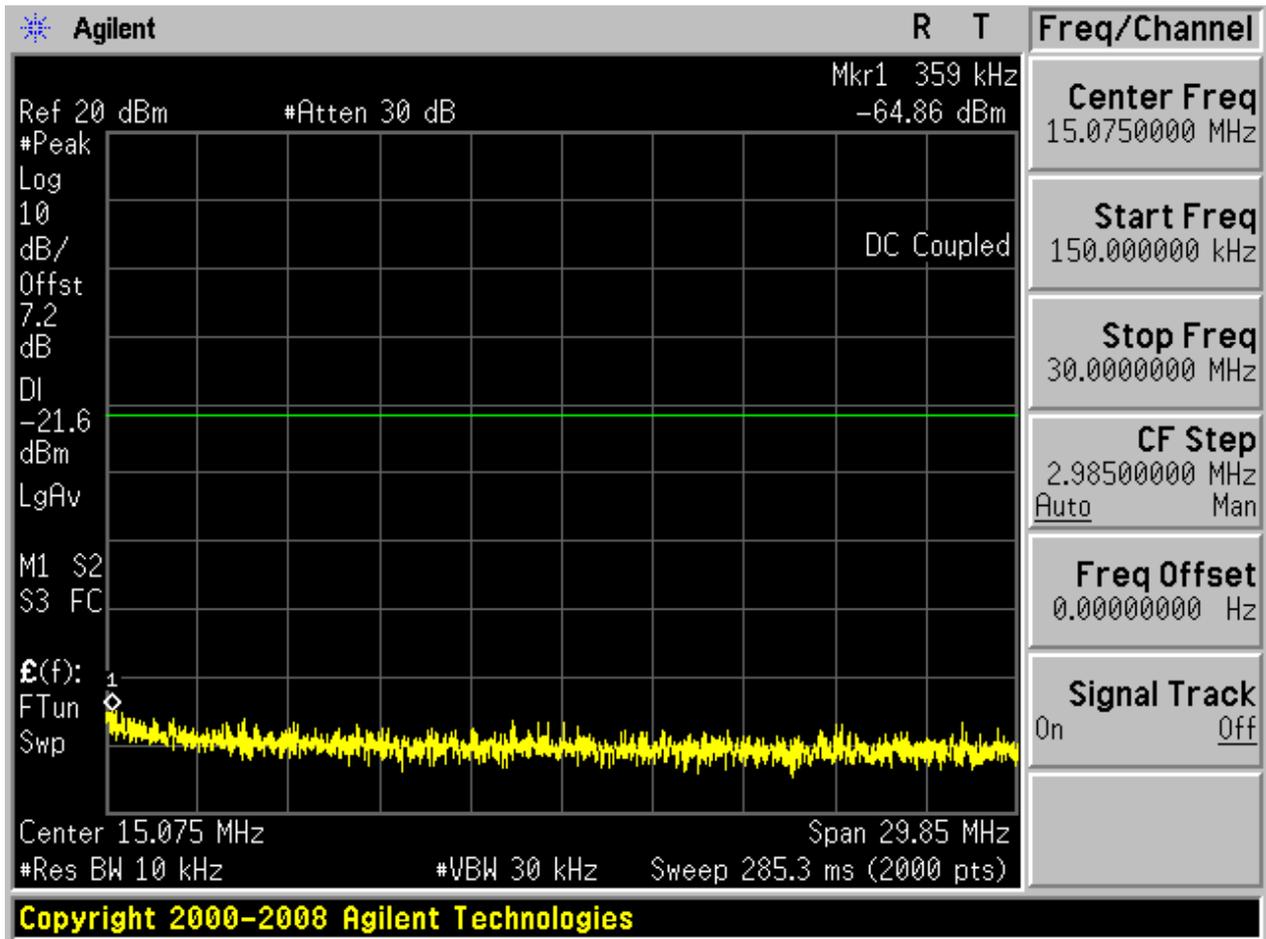
2.4 TM2_2DH5_Ch0

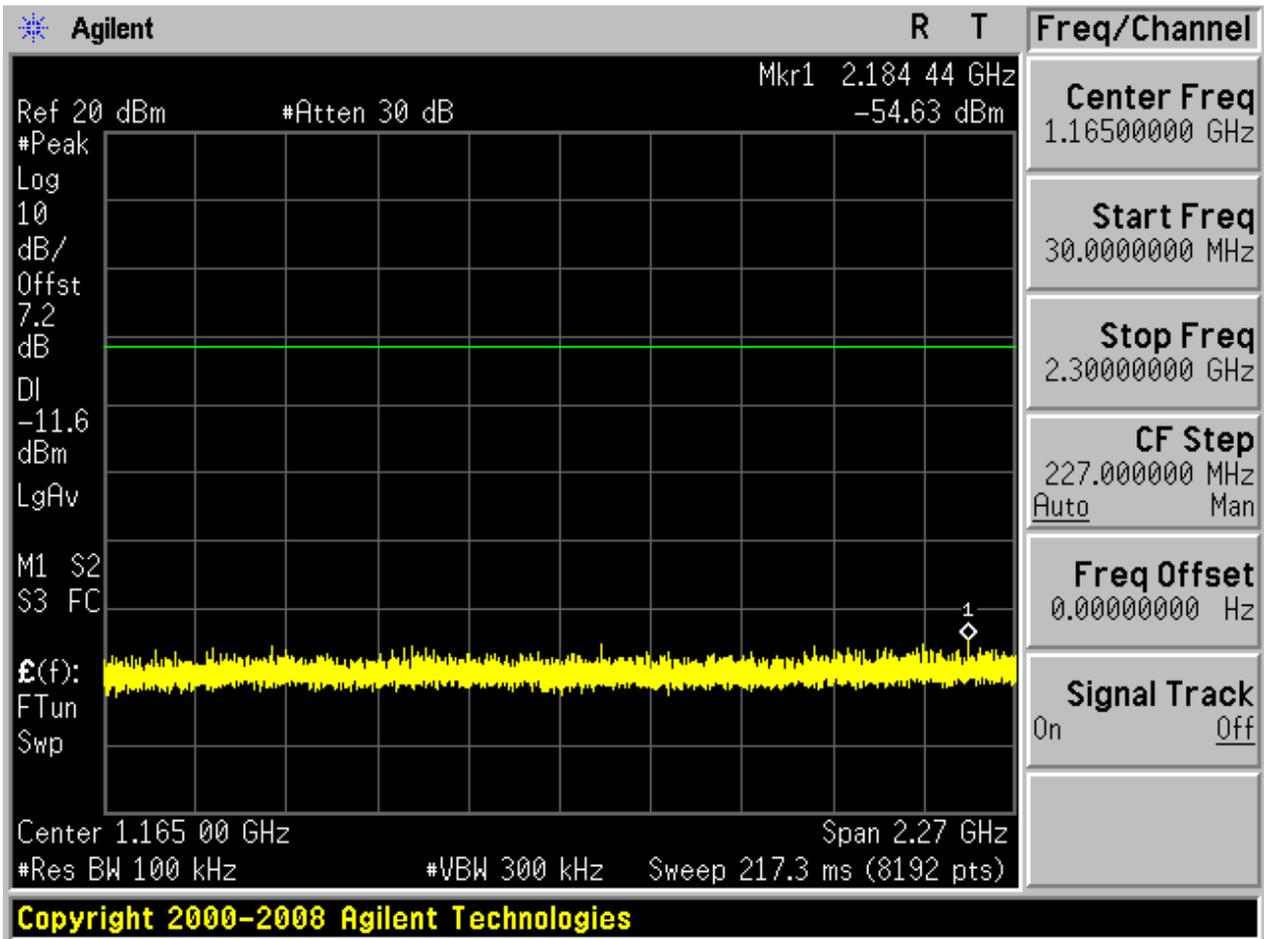
2.4.1 Pref

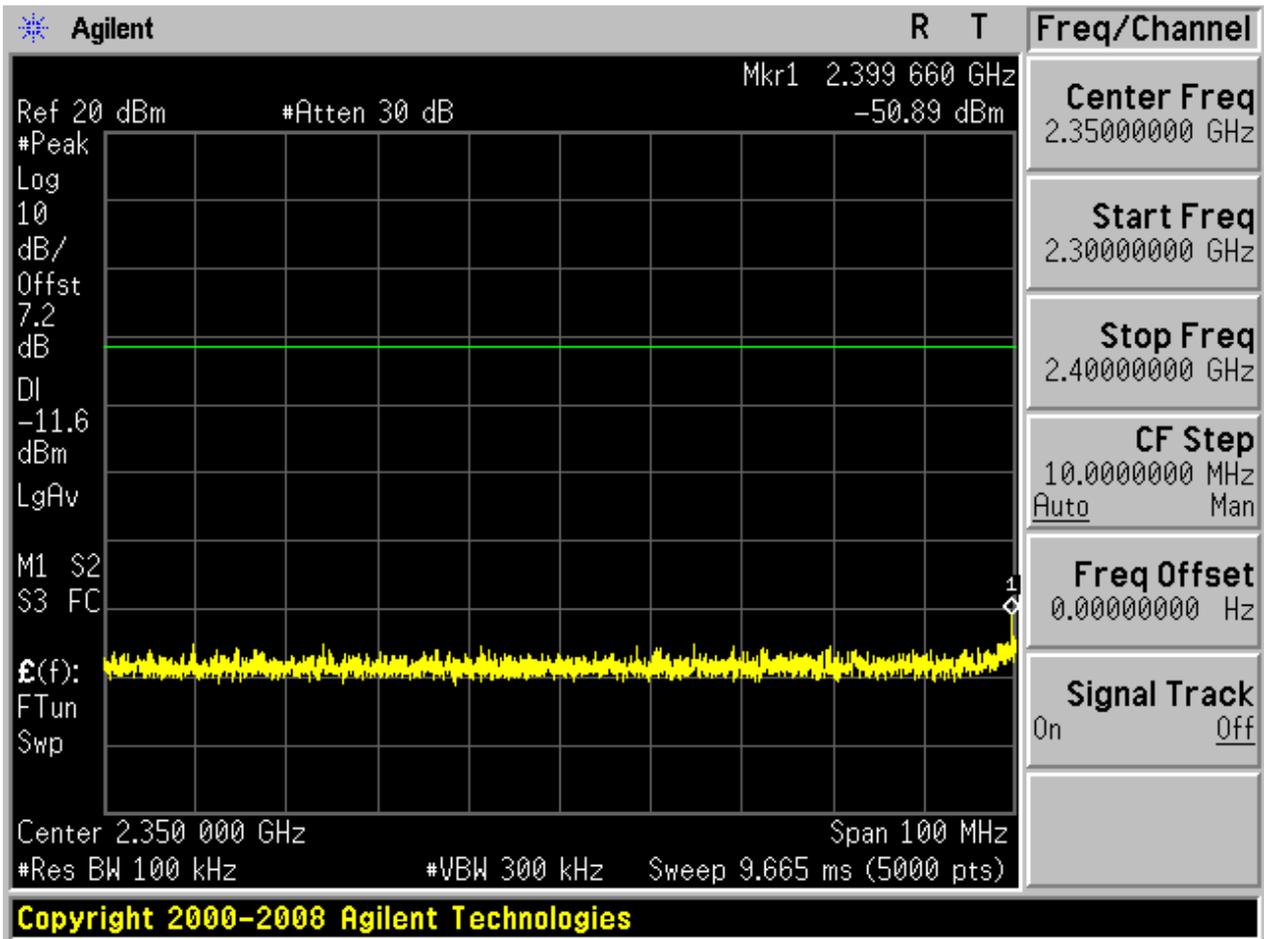


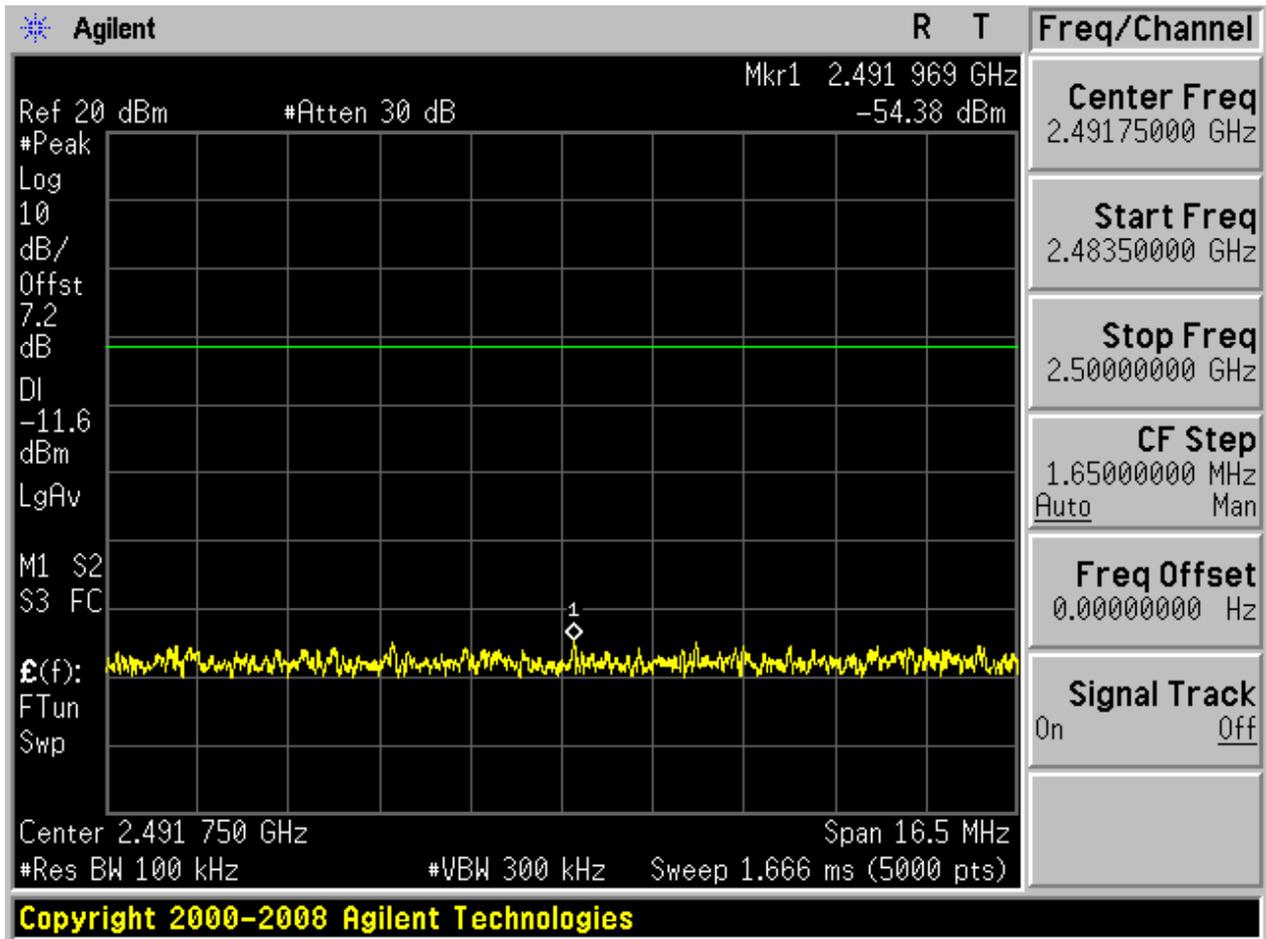
2.4.2 Puw

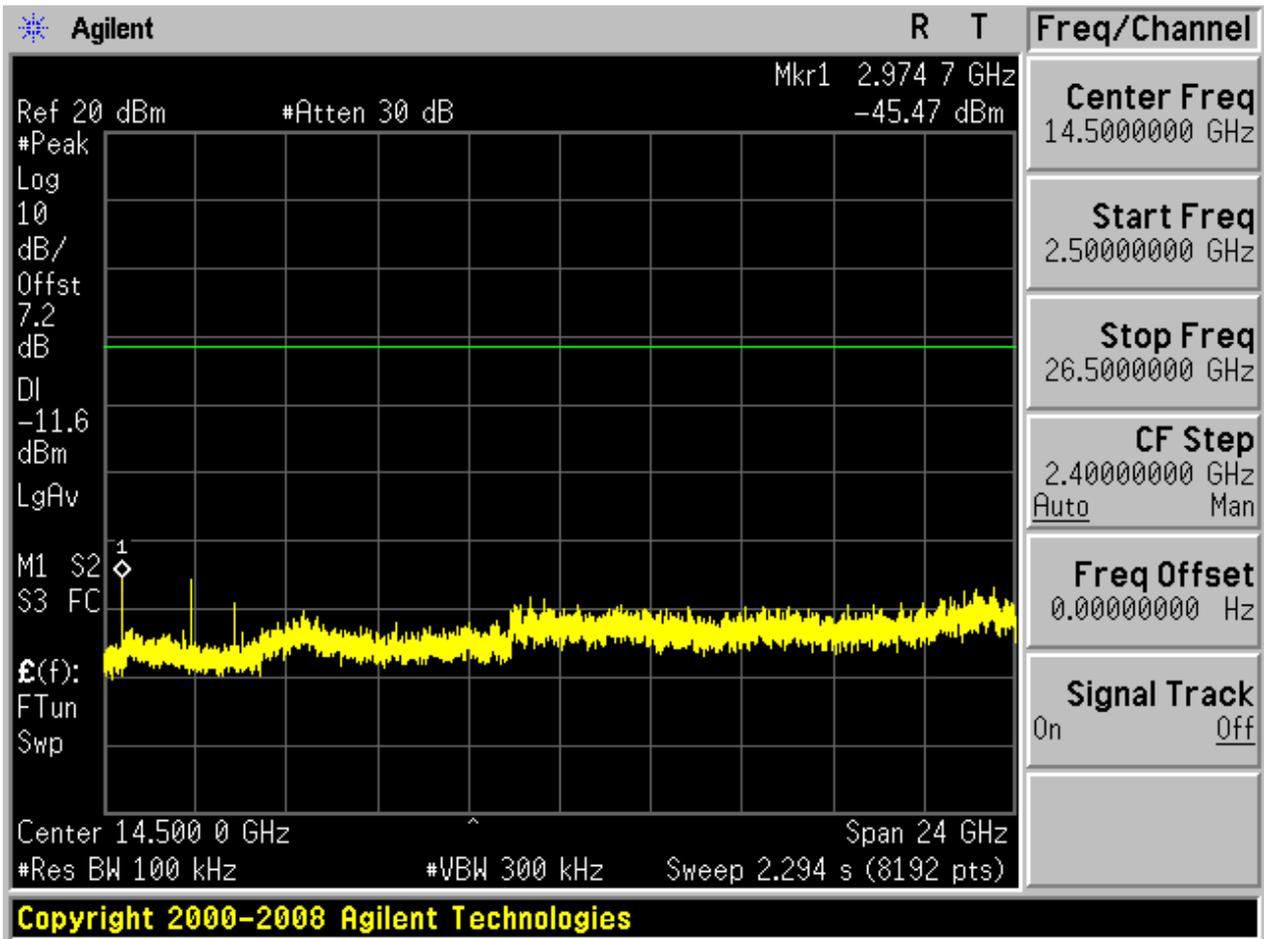








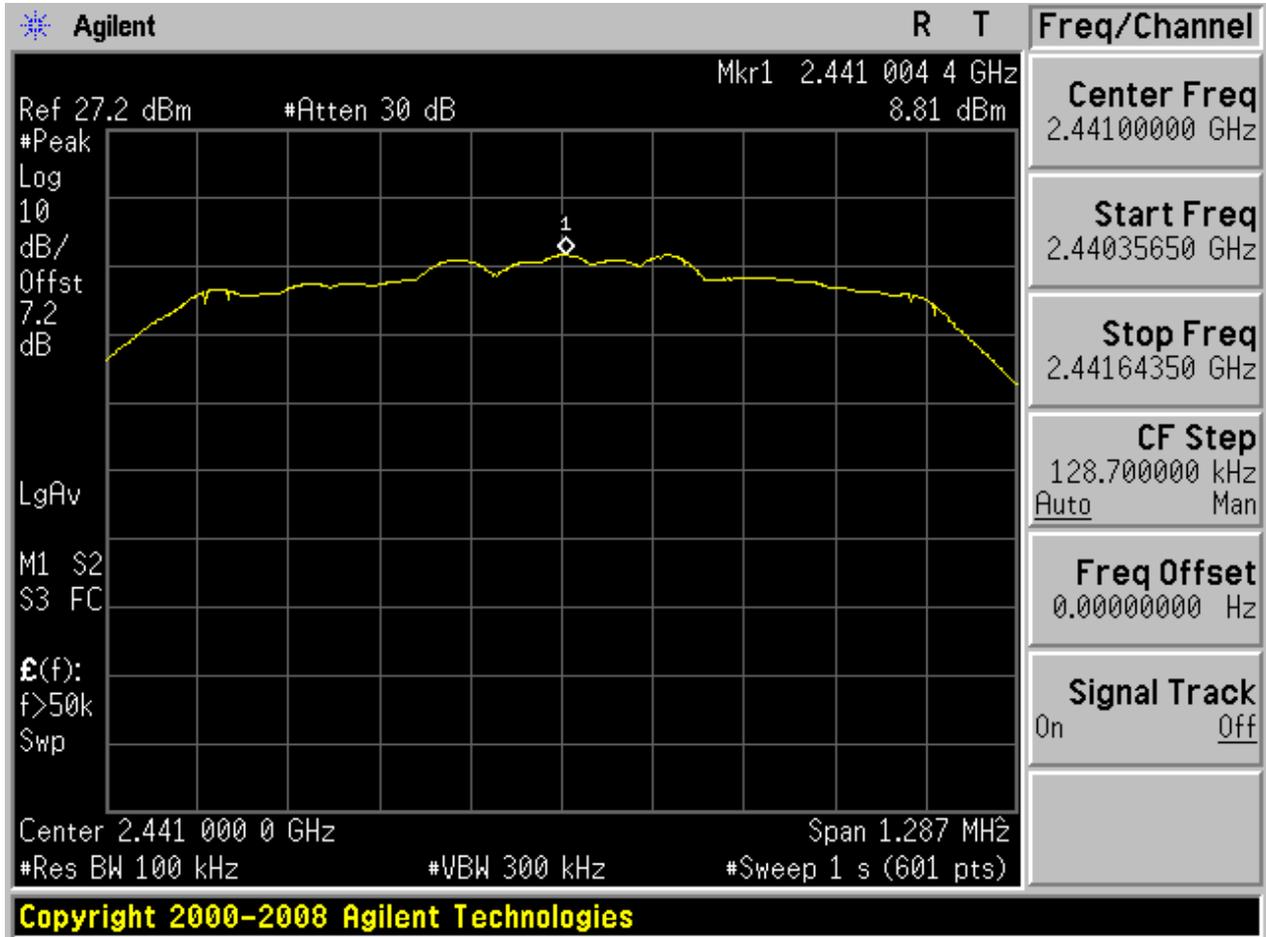






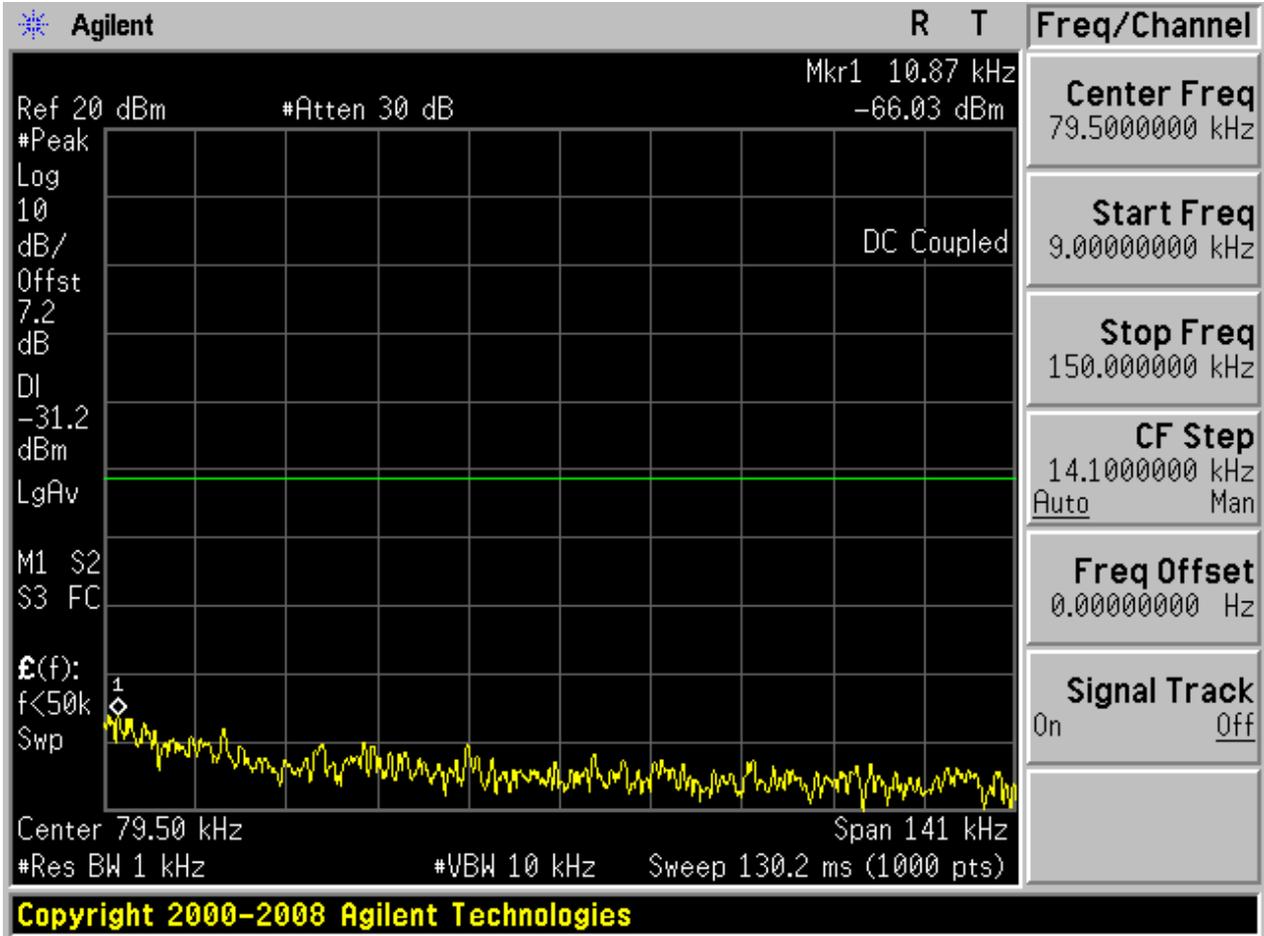
2.5 TM2_2DH5_Ch39

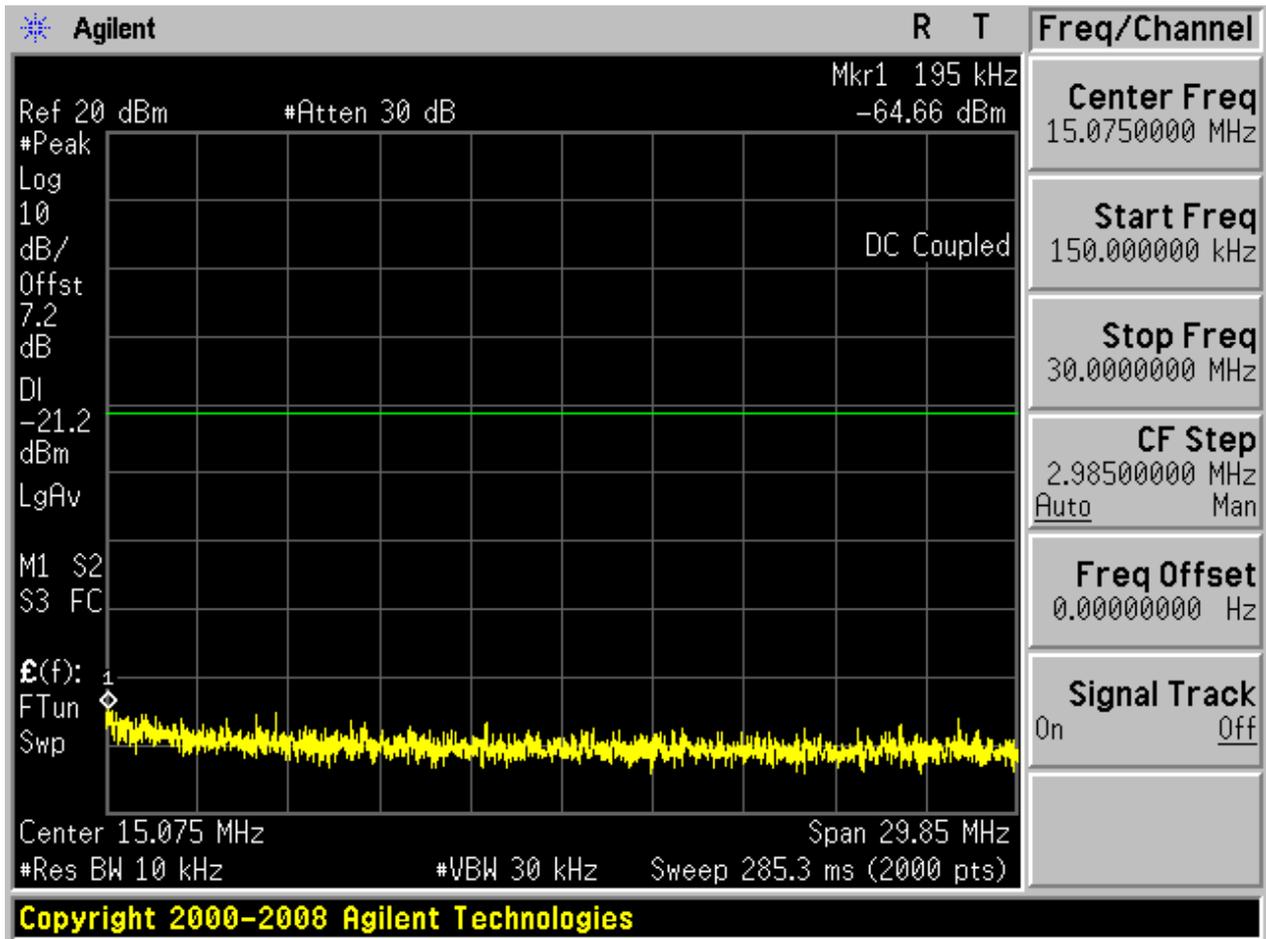
2.5.1 Pref

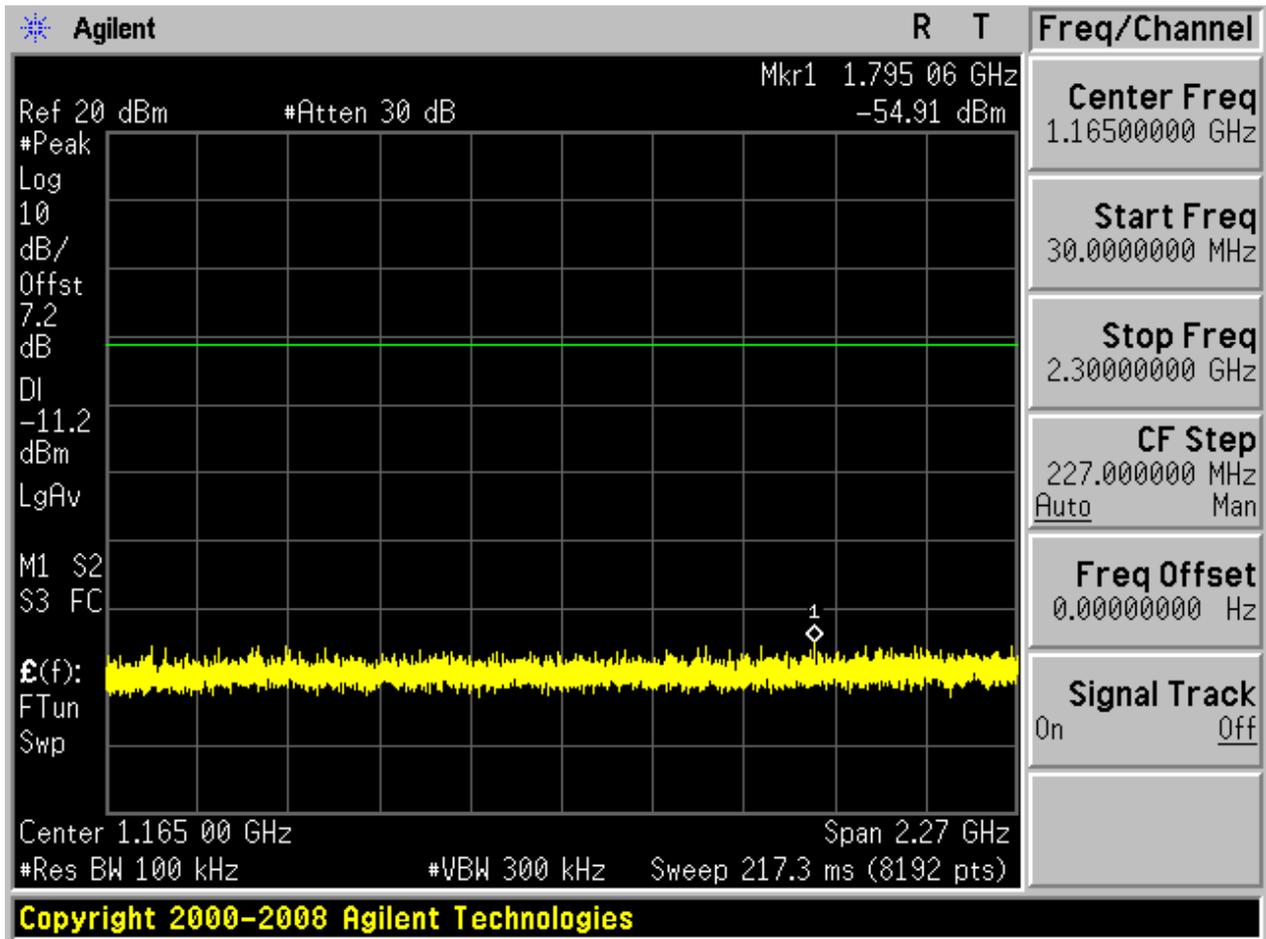


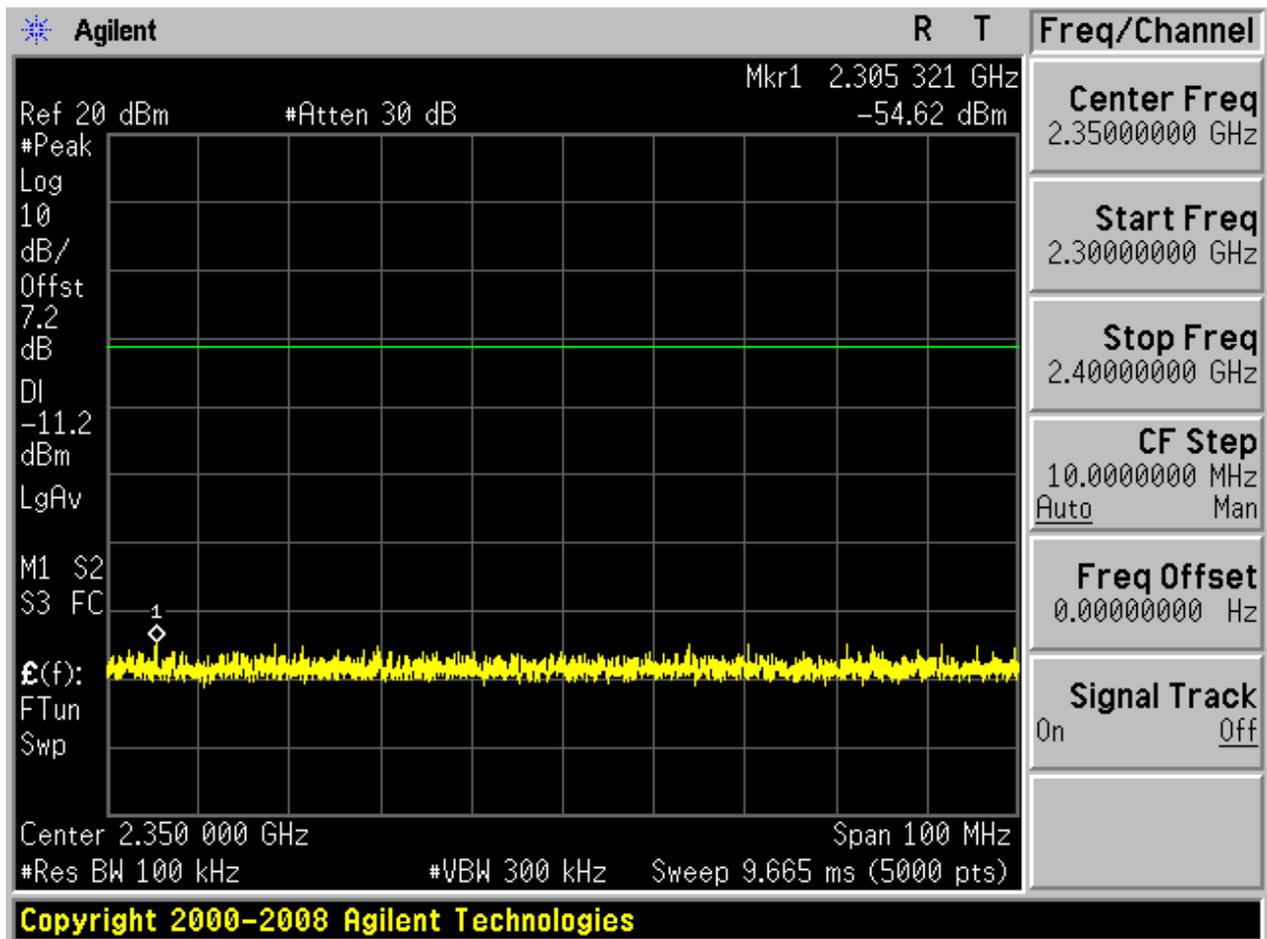


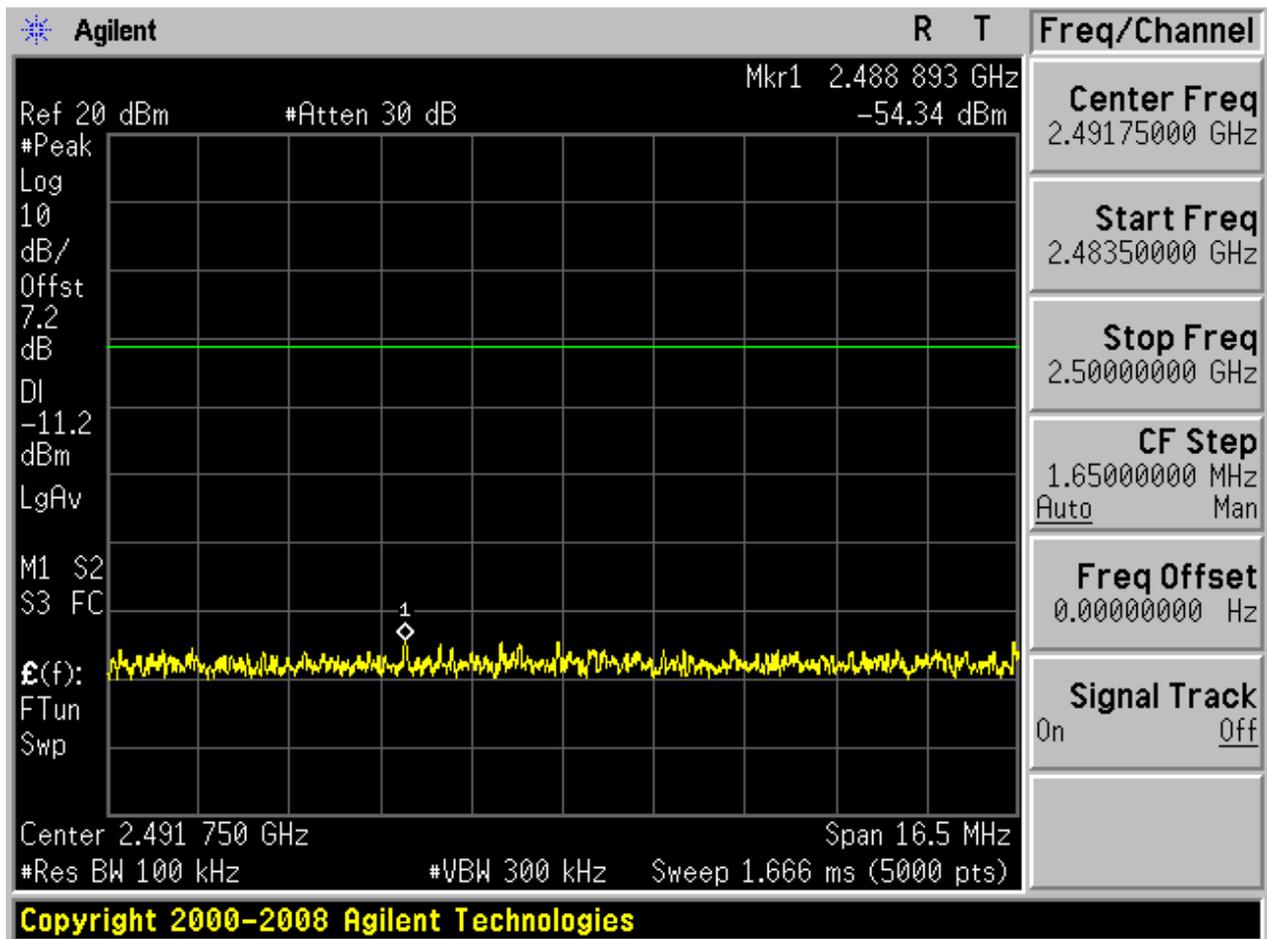
2.5.2 Puw

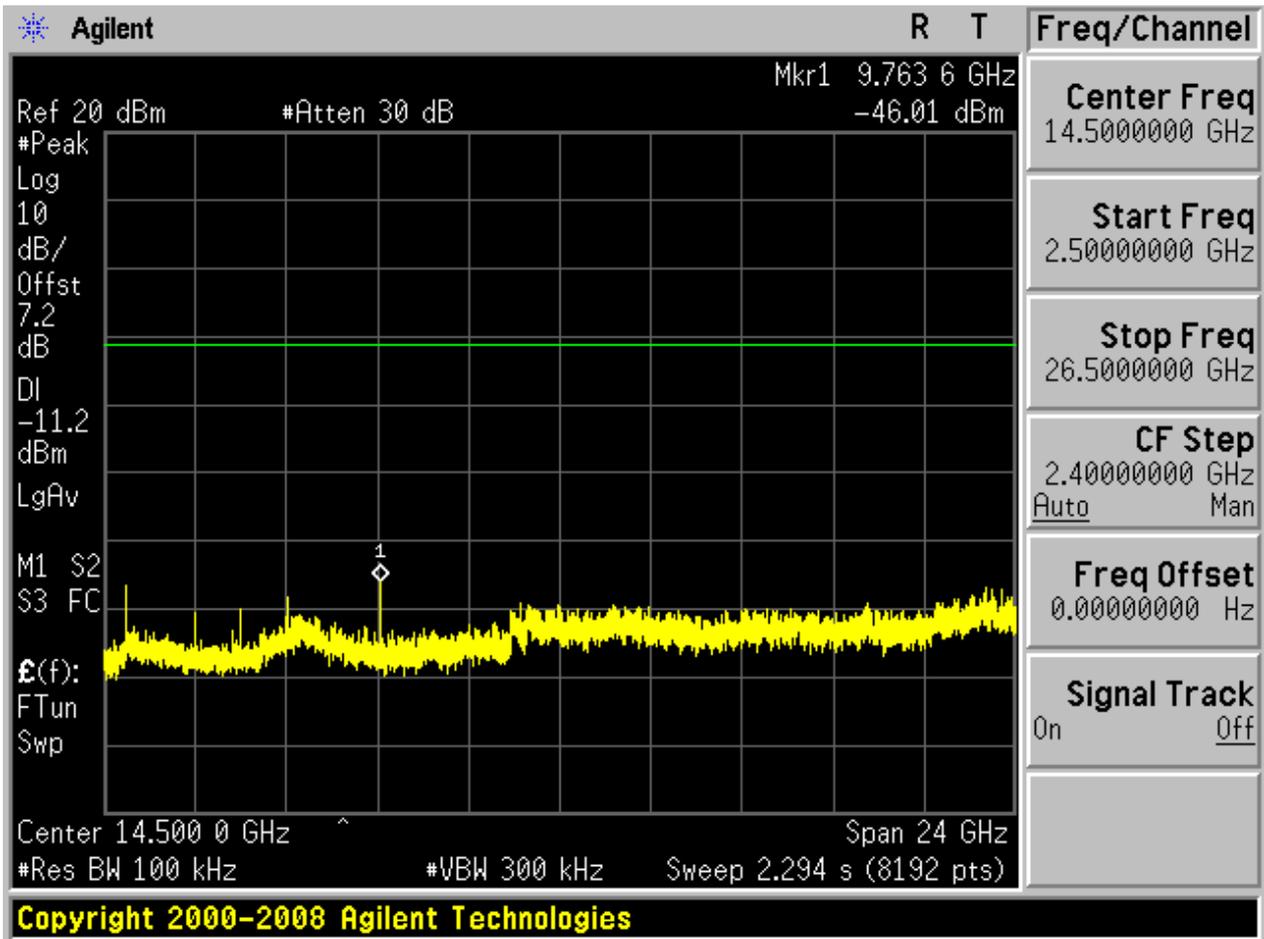






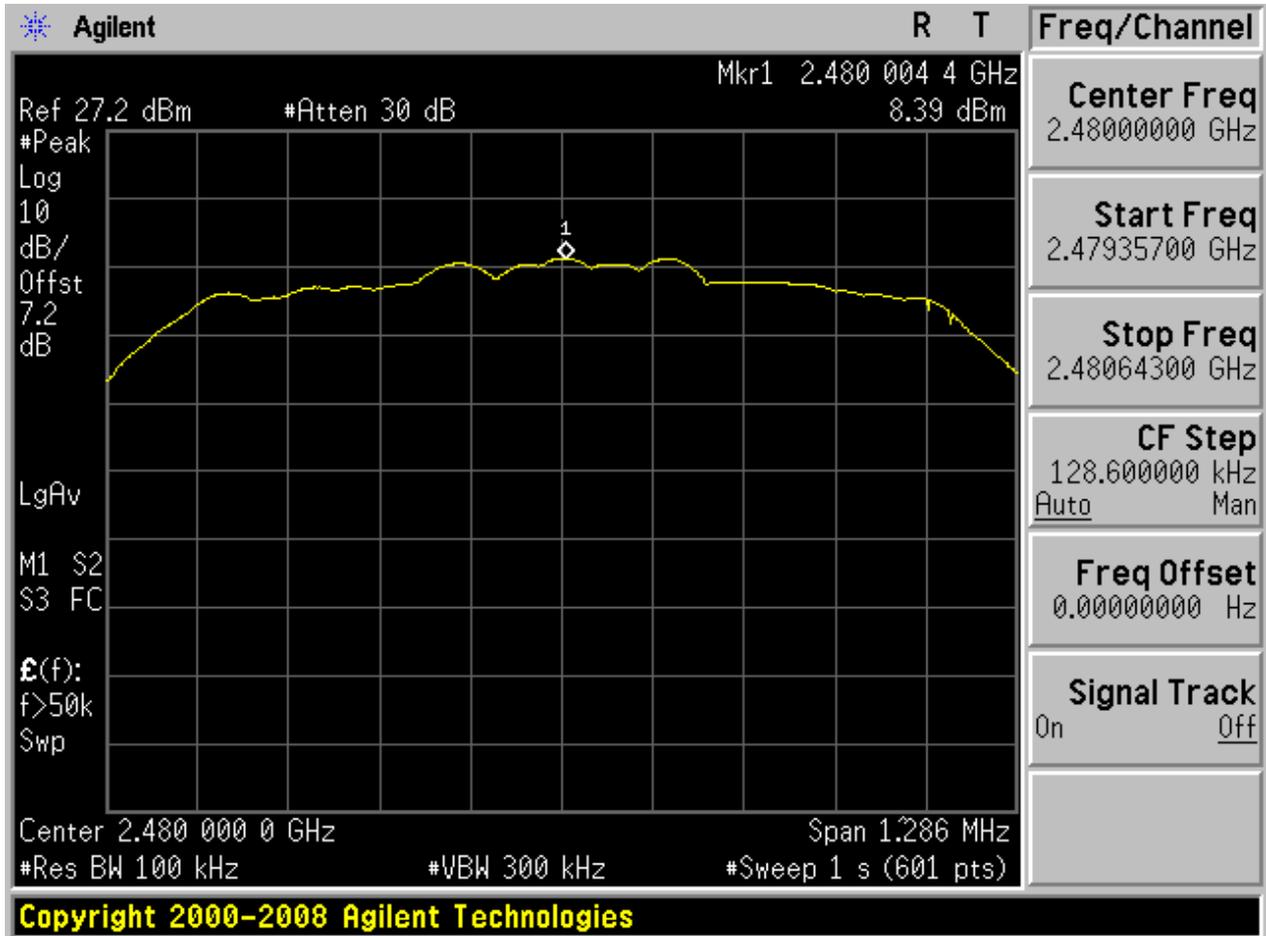




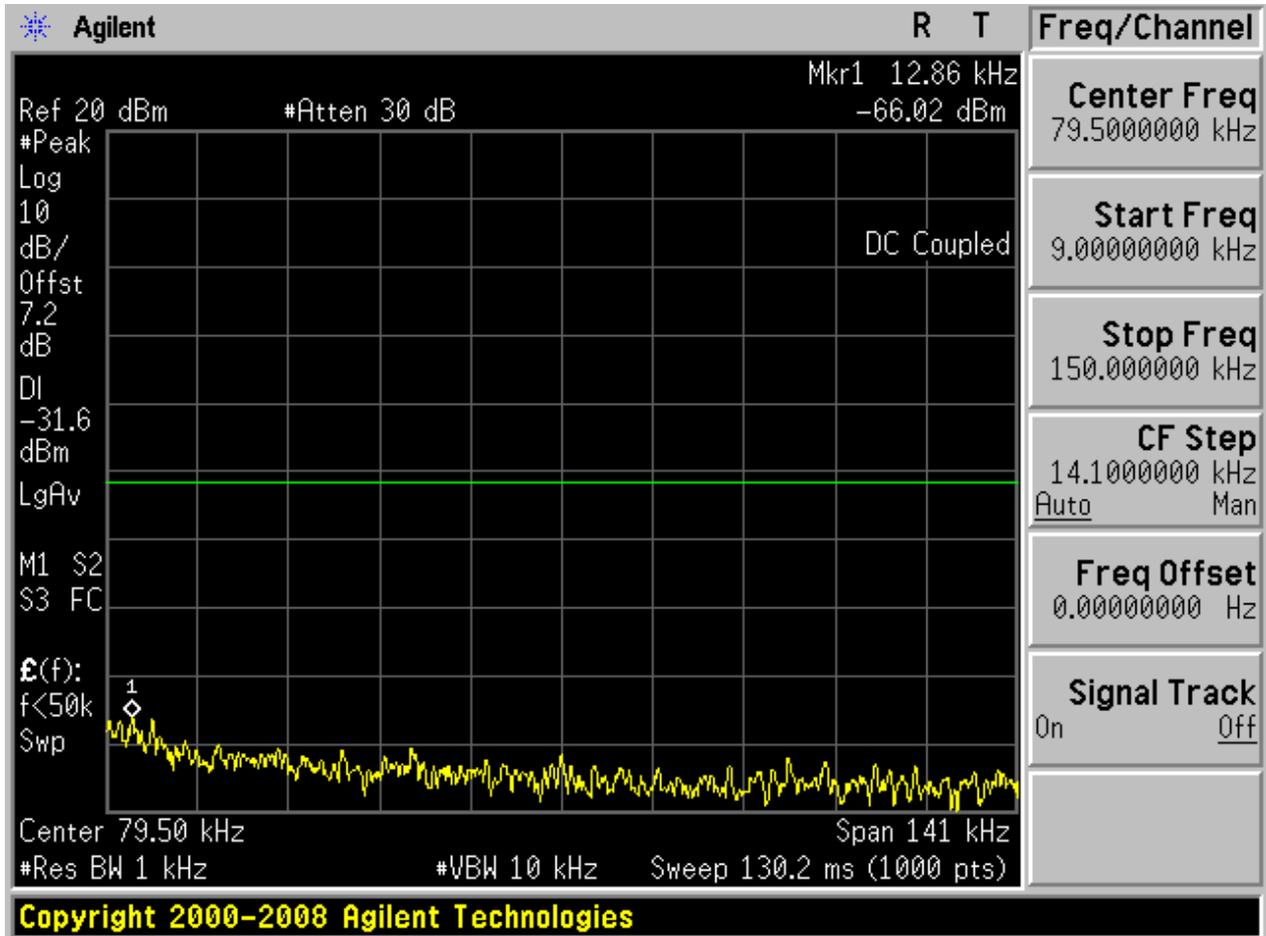


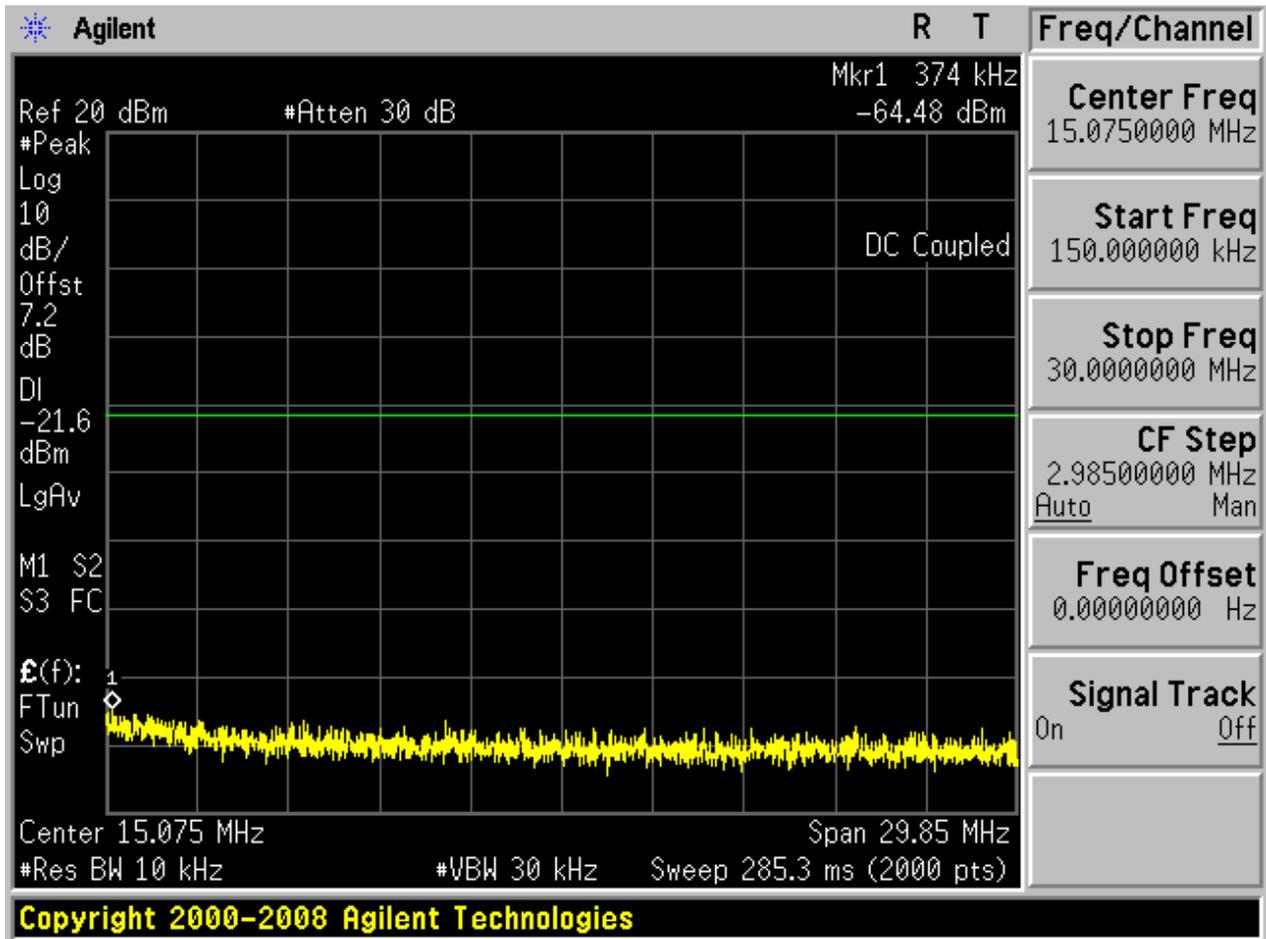
2.6 TM2_2DH5_Ch78

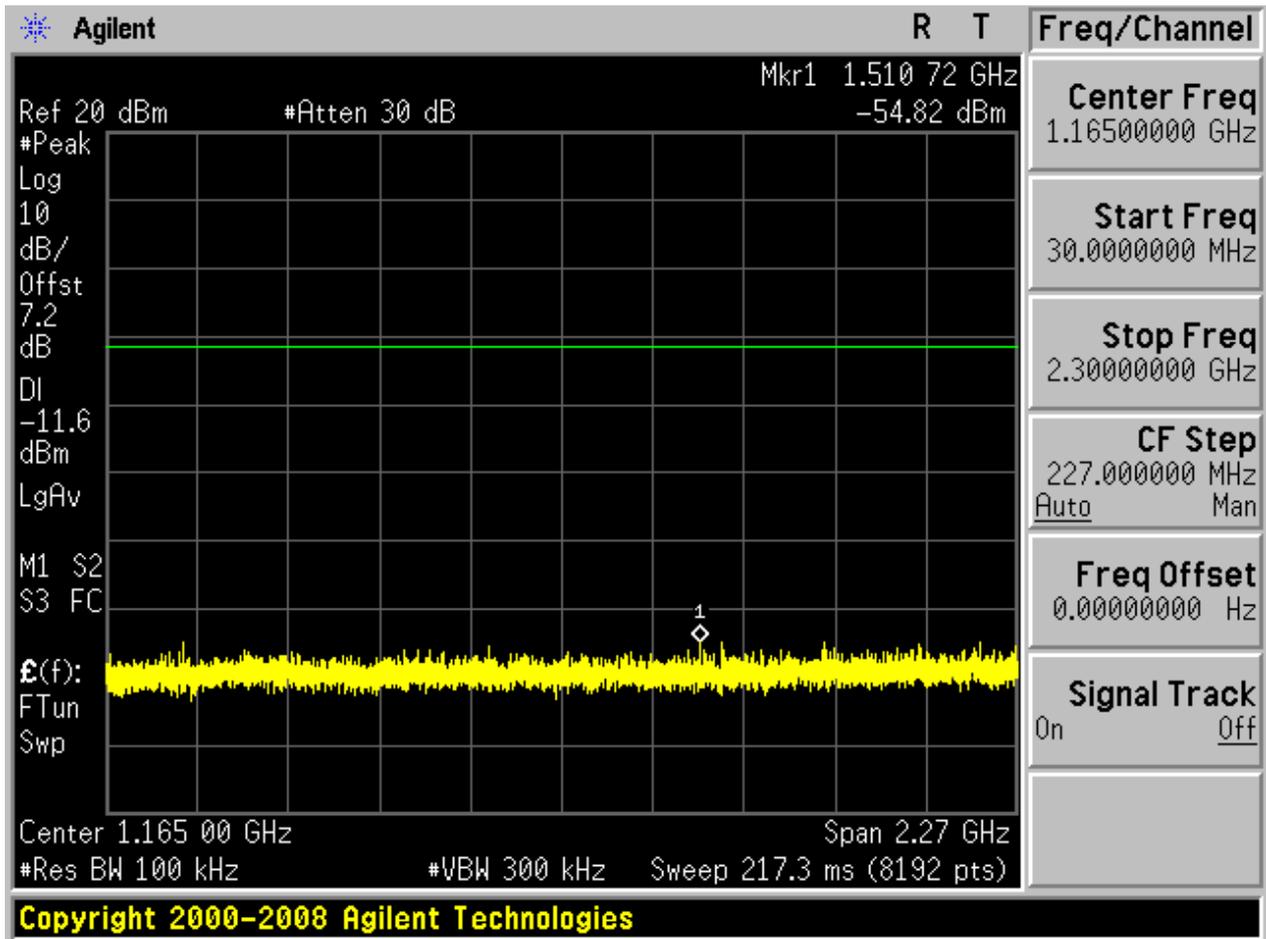
2.6.1 Pref

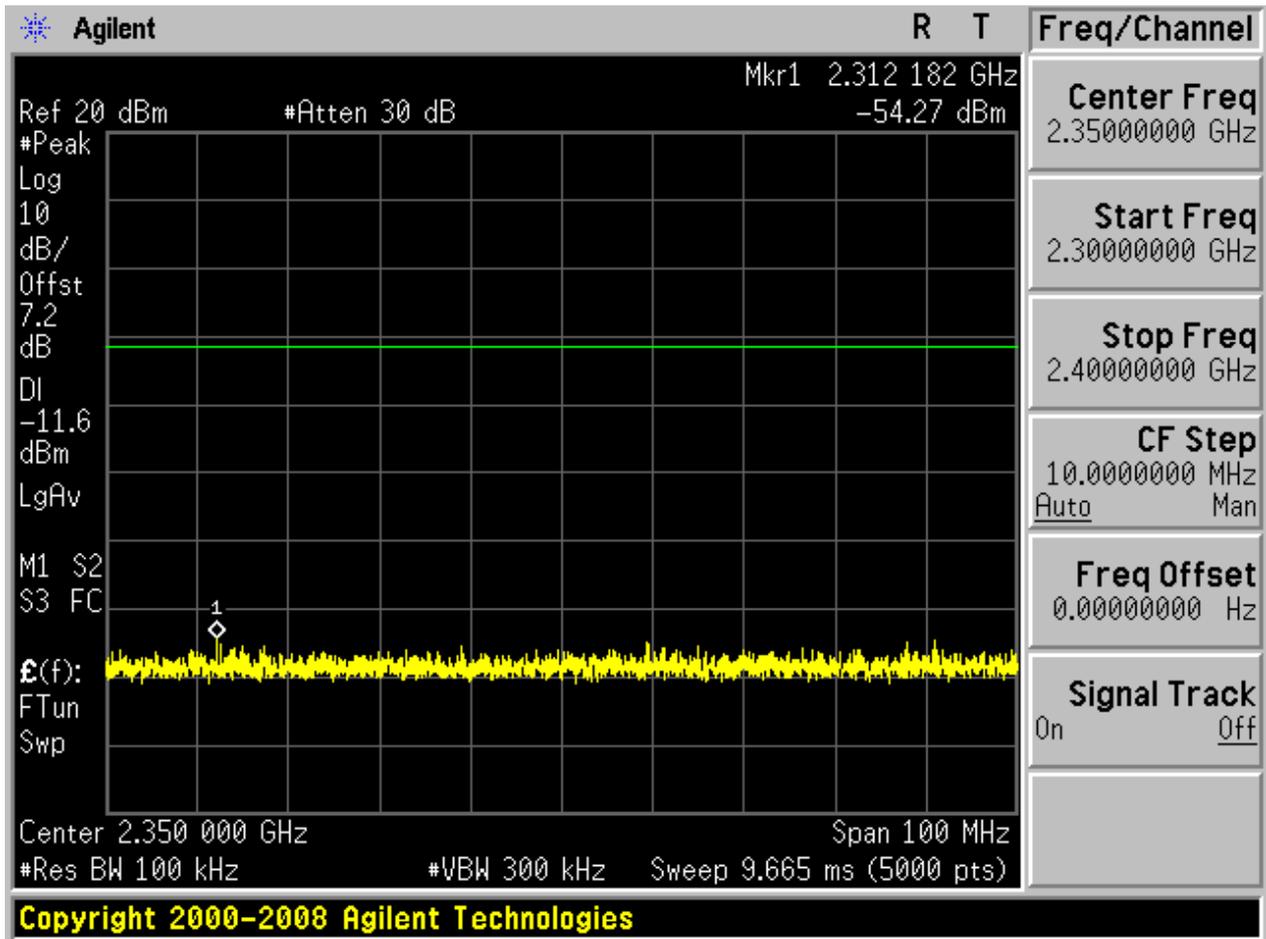


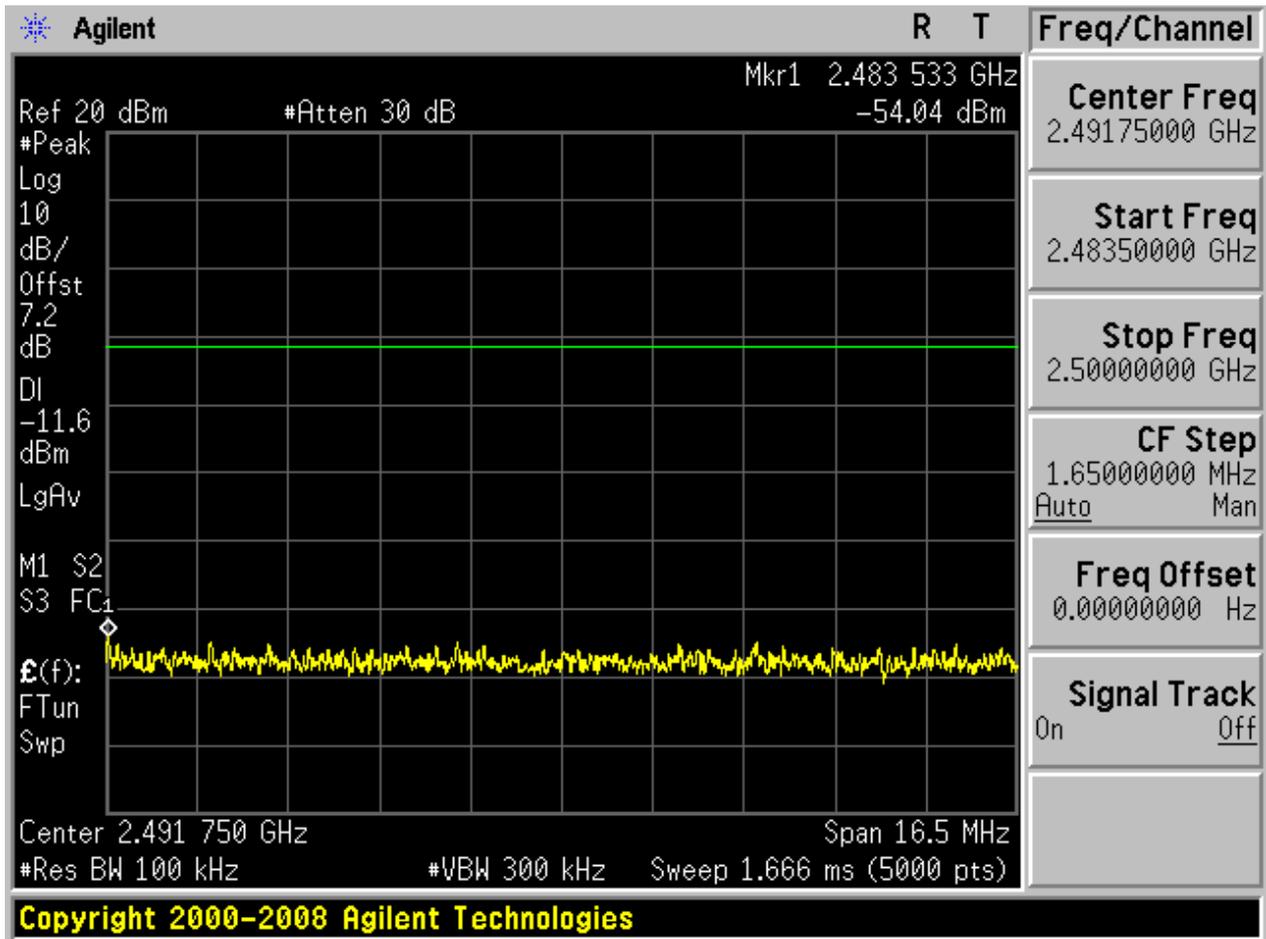
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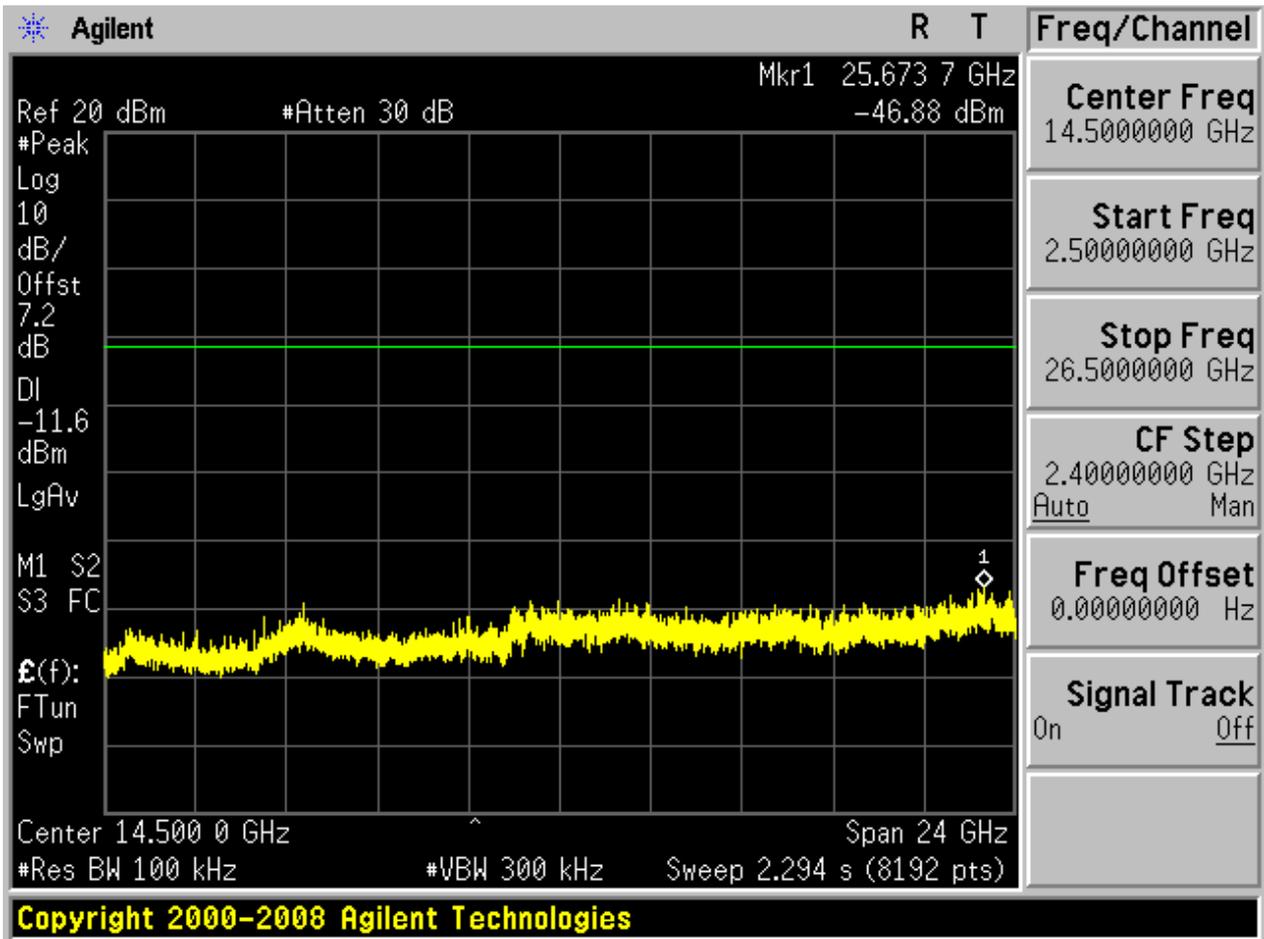






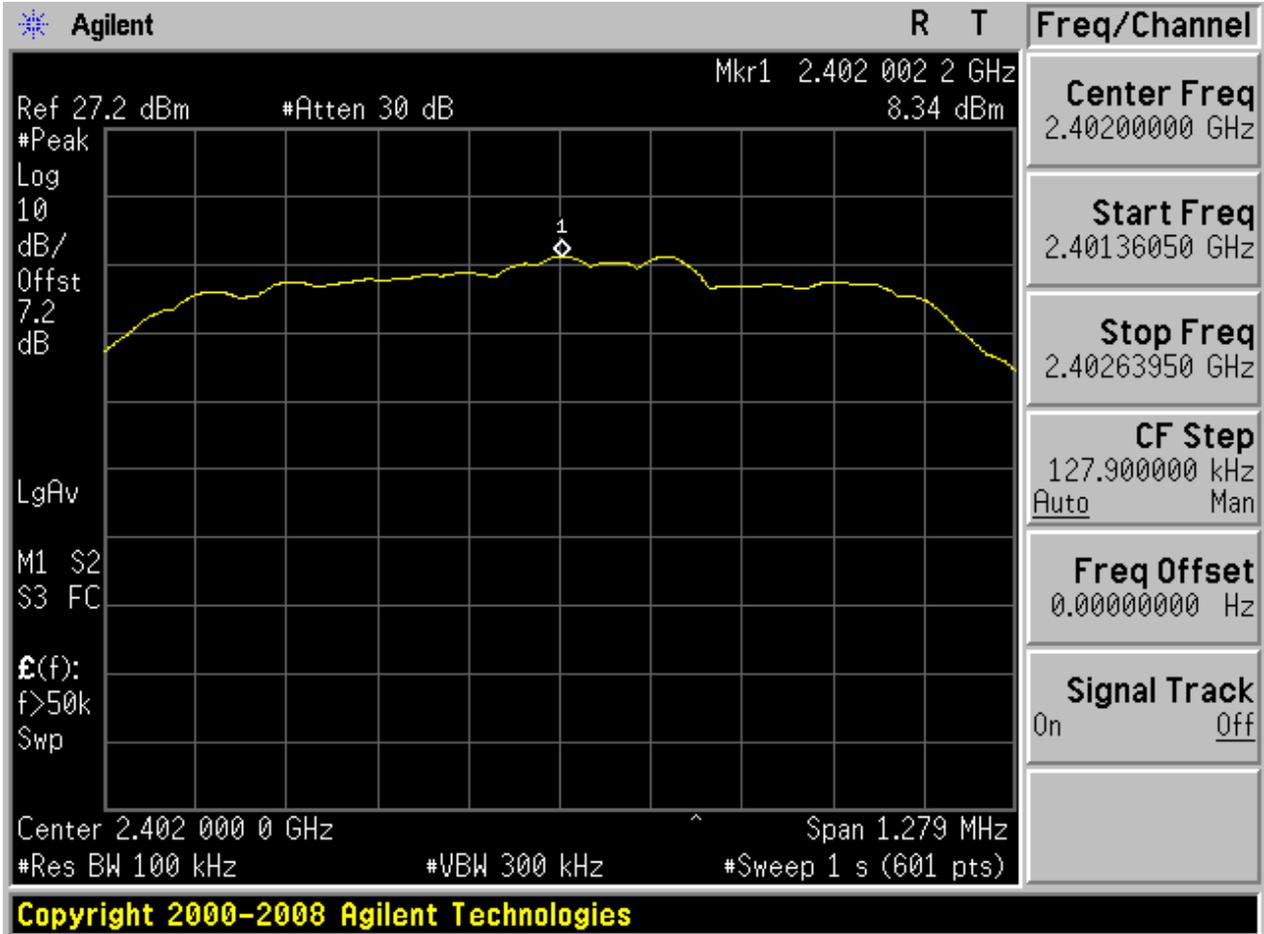






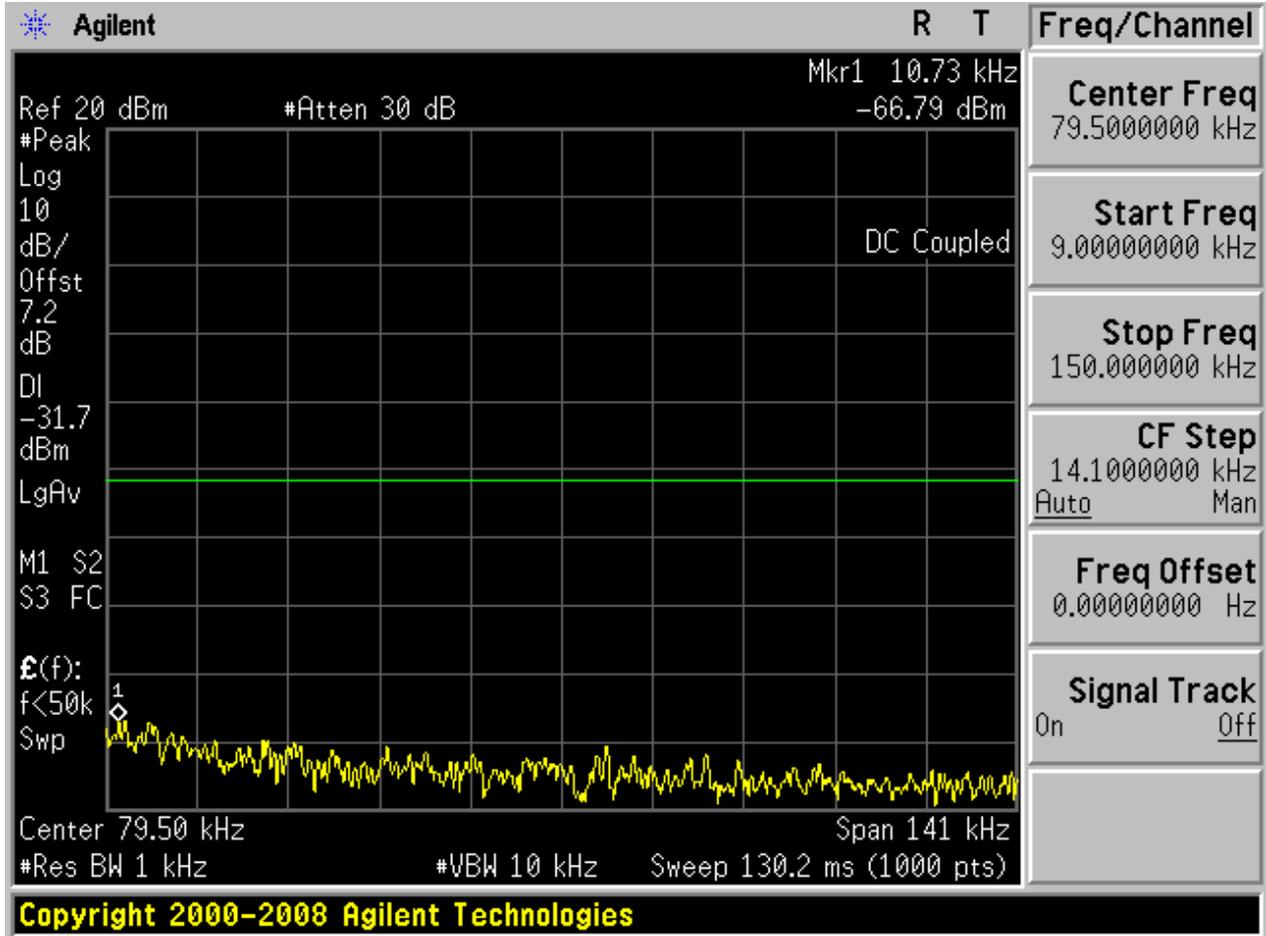
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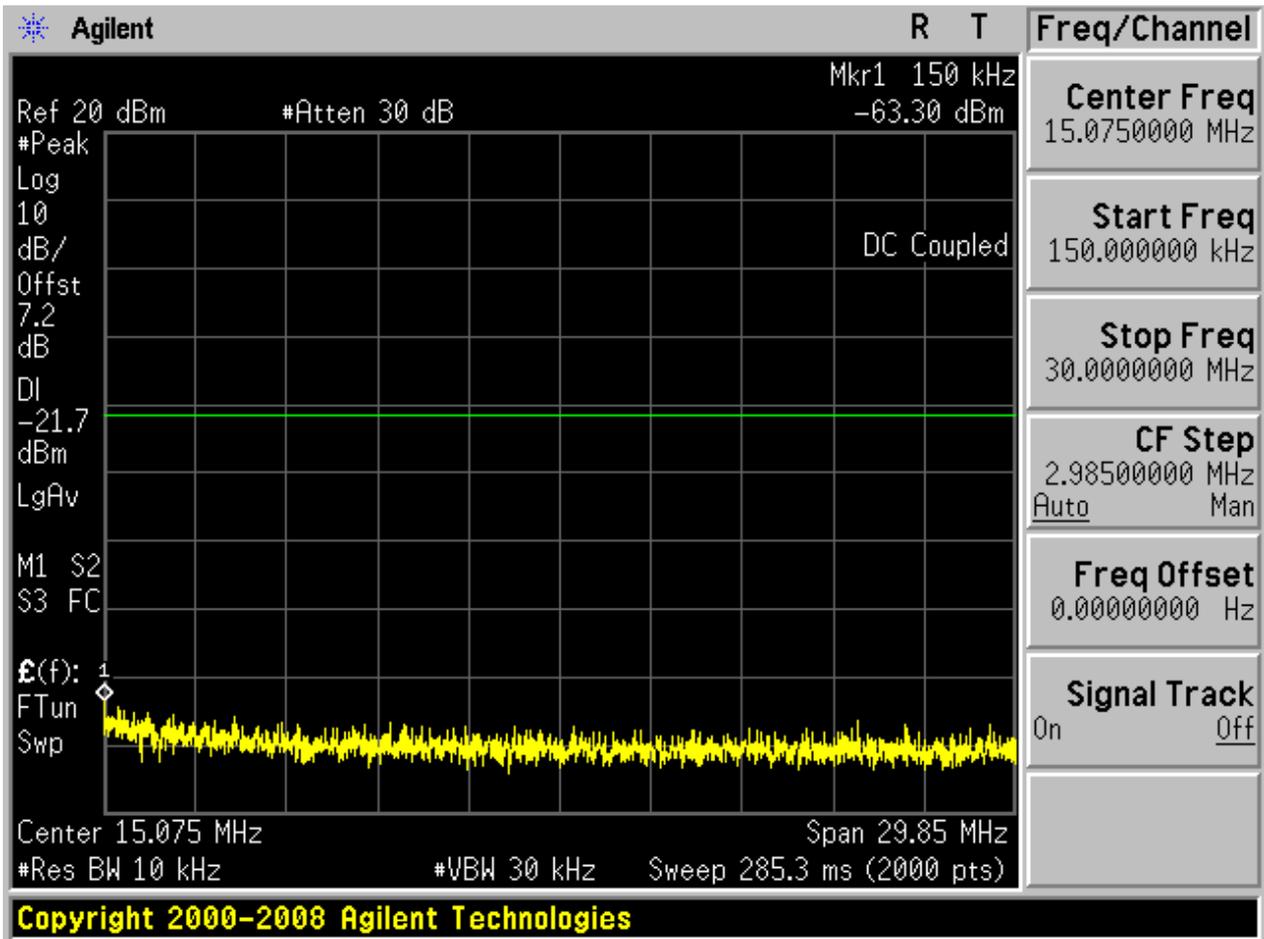
2.7.1 Pref

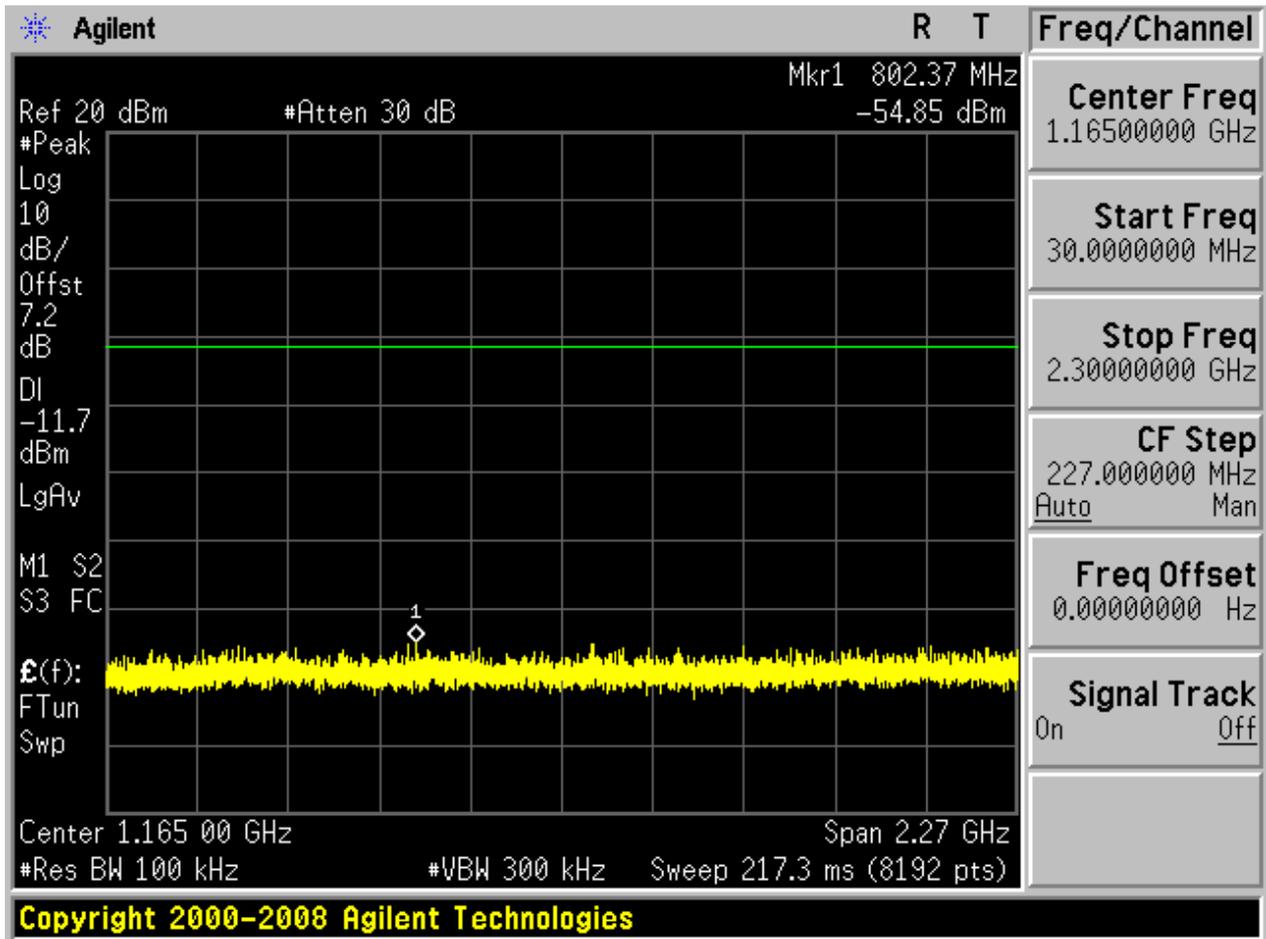


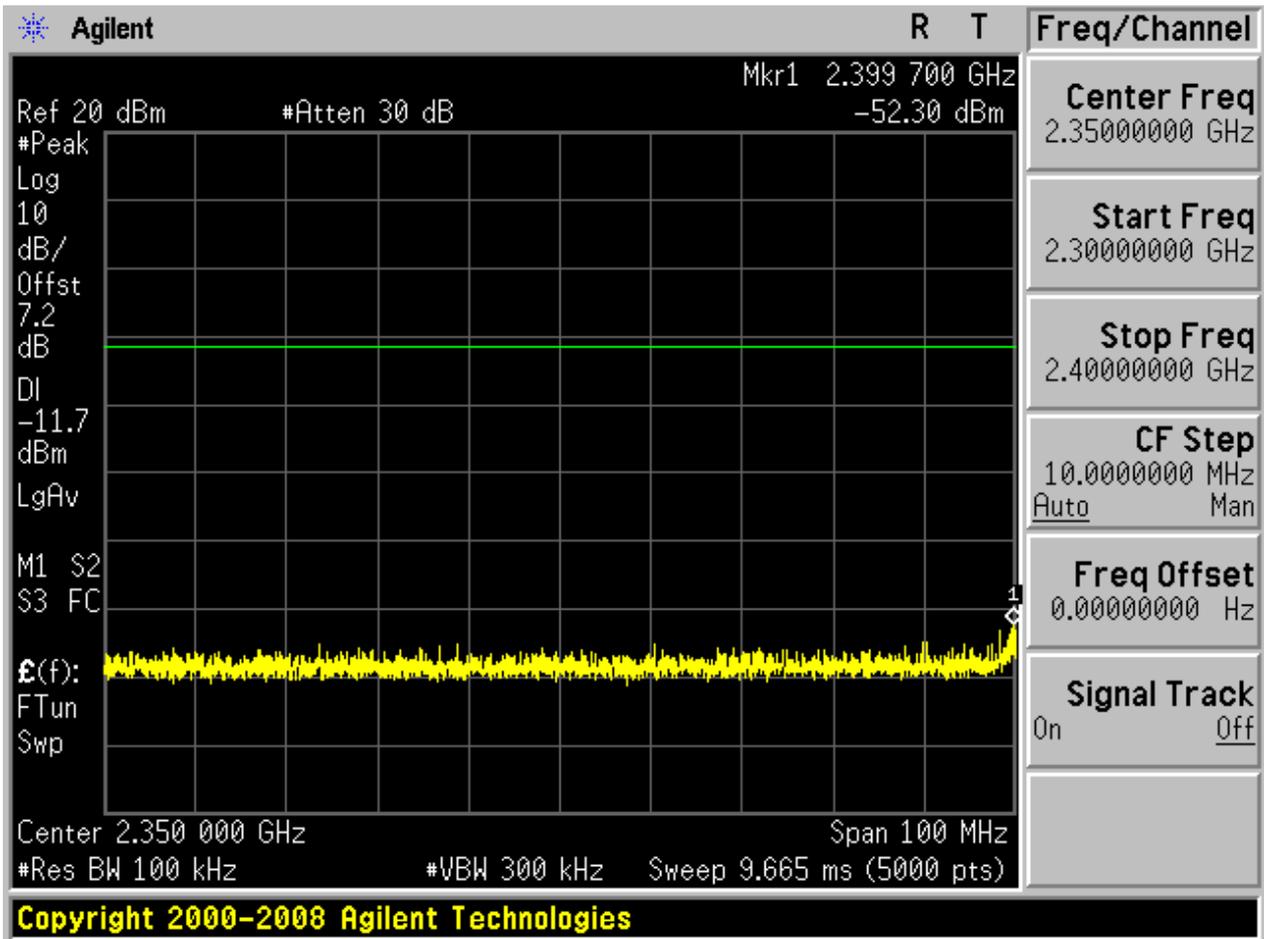


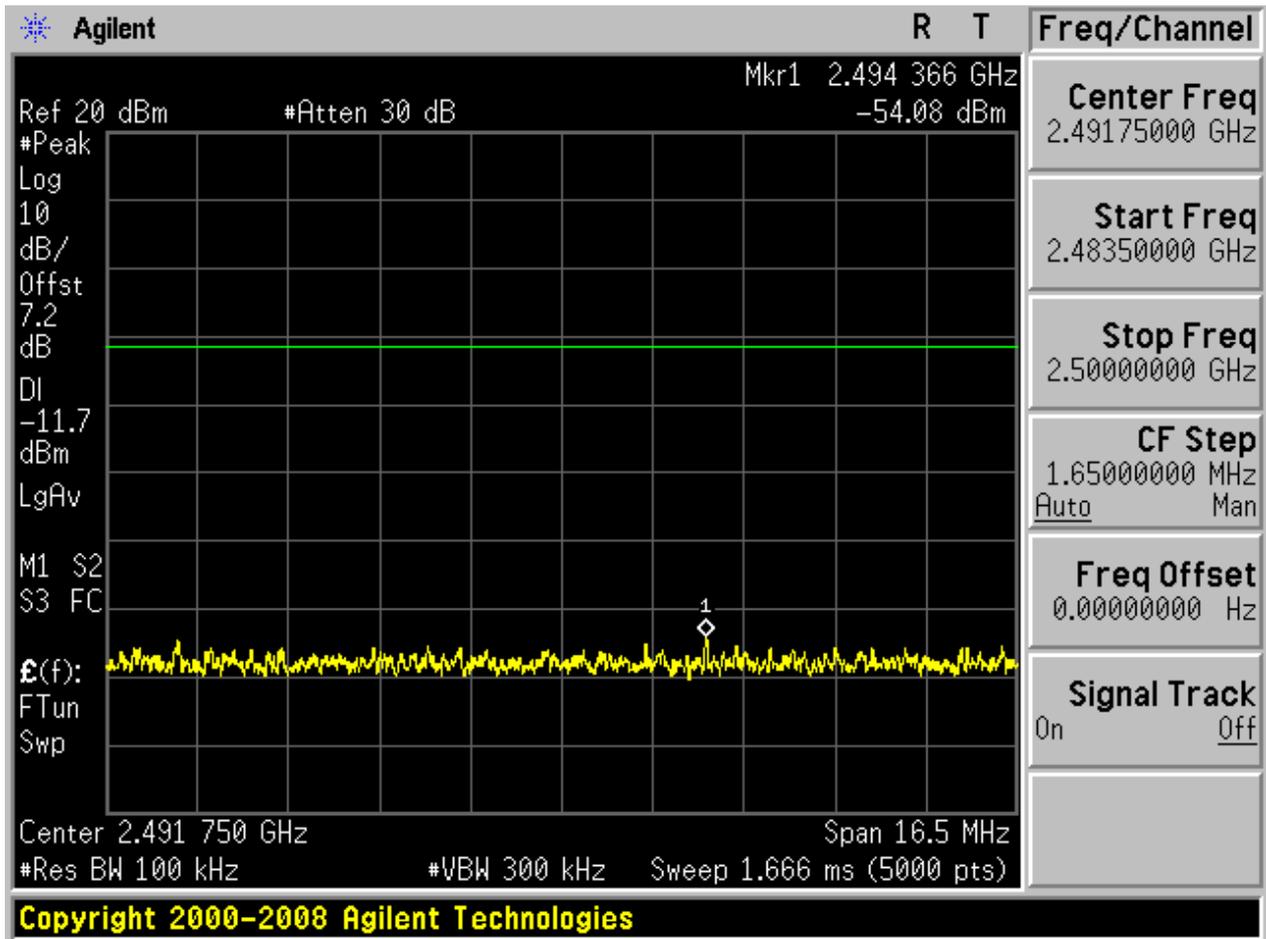
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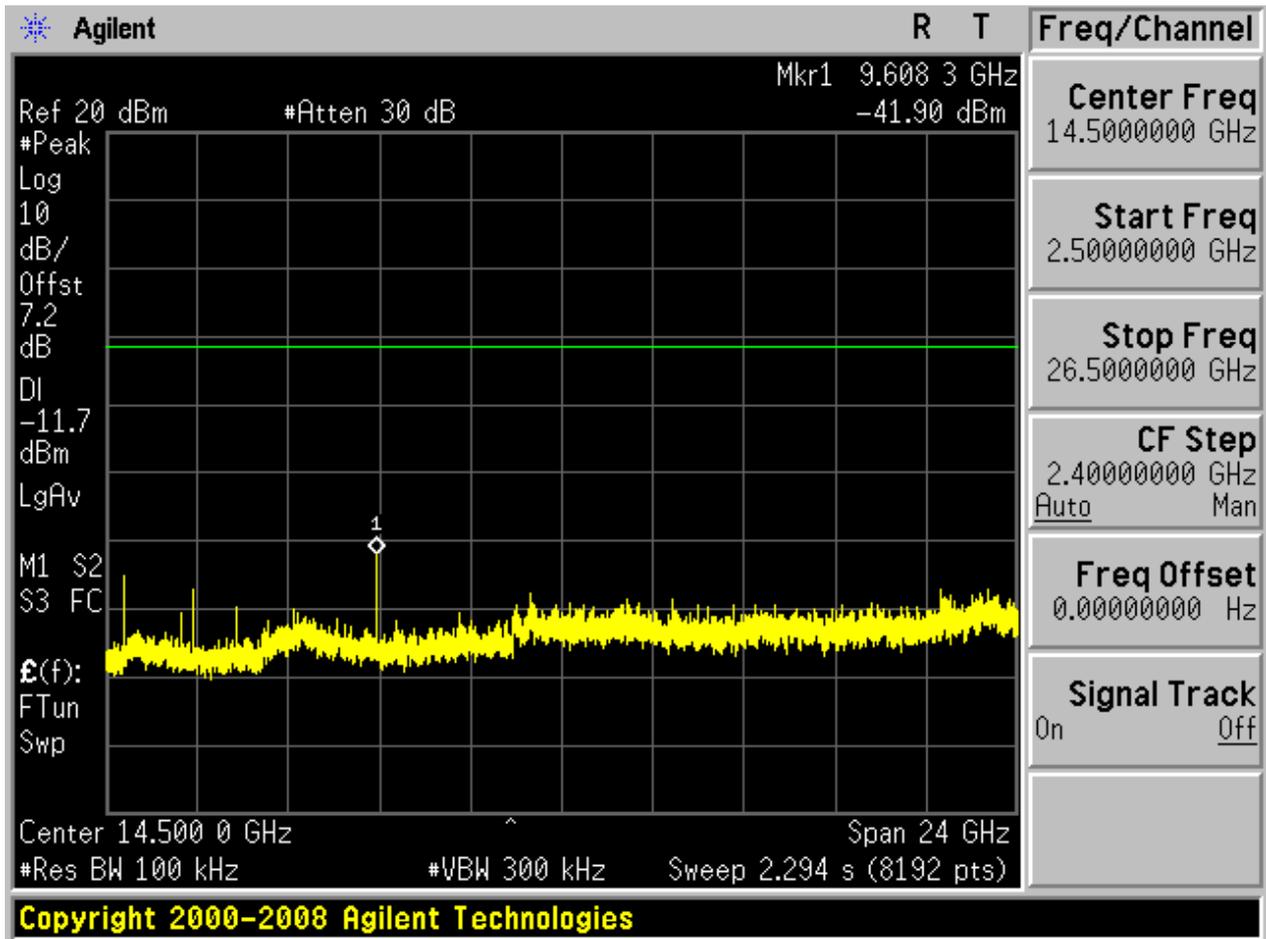








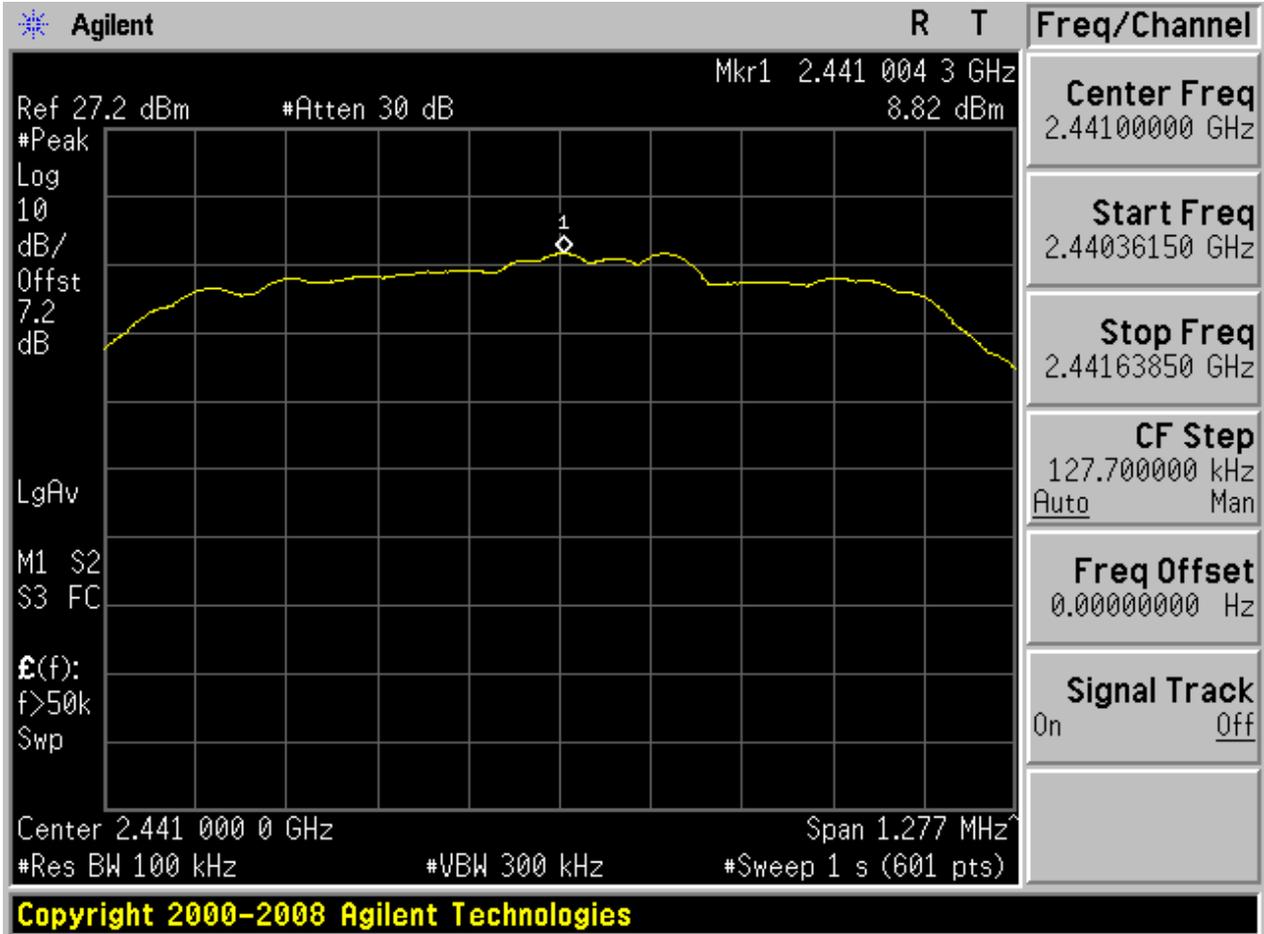




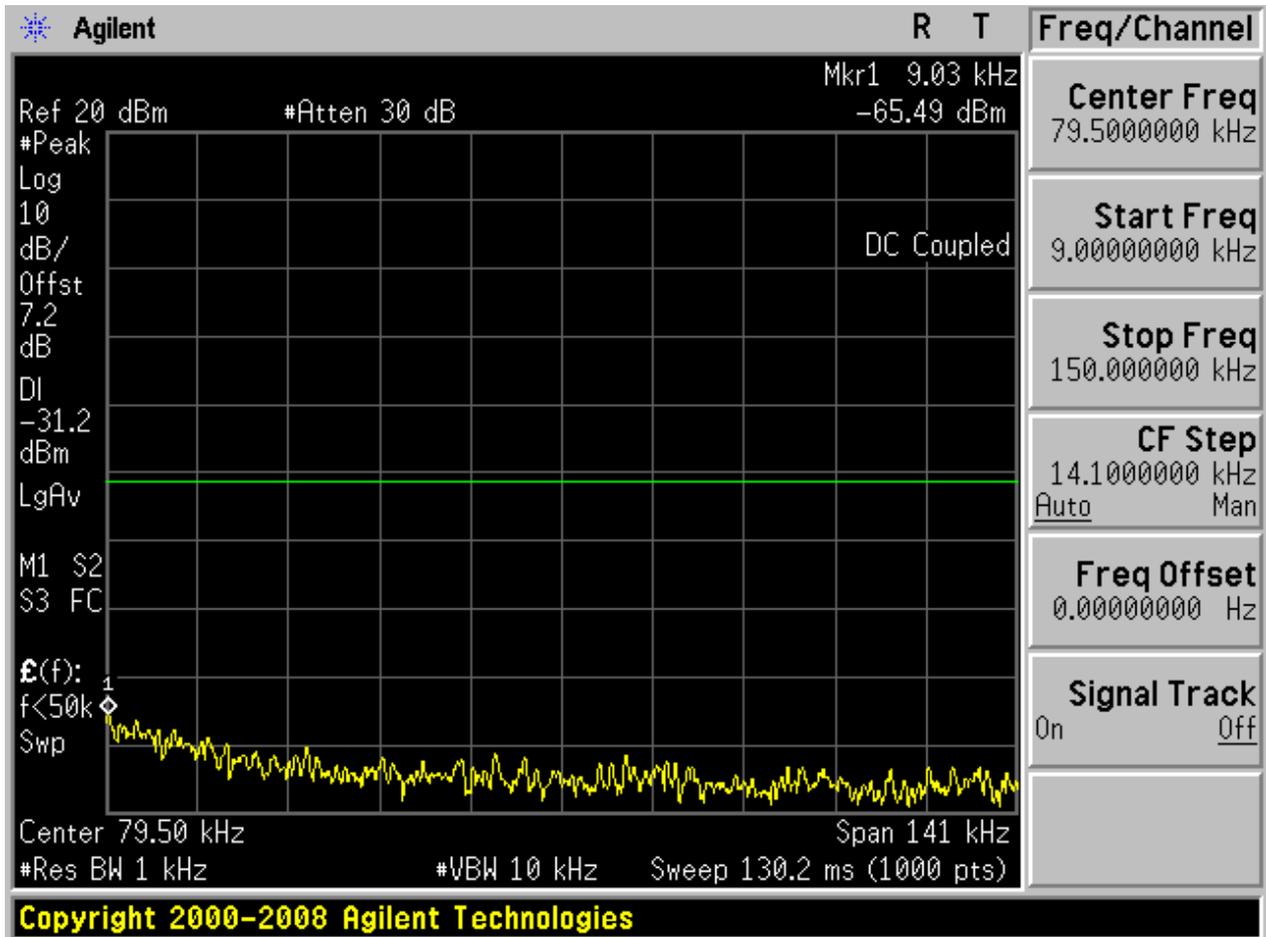


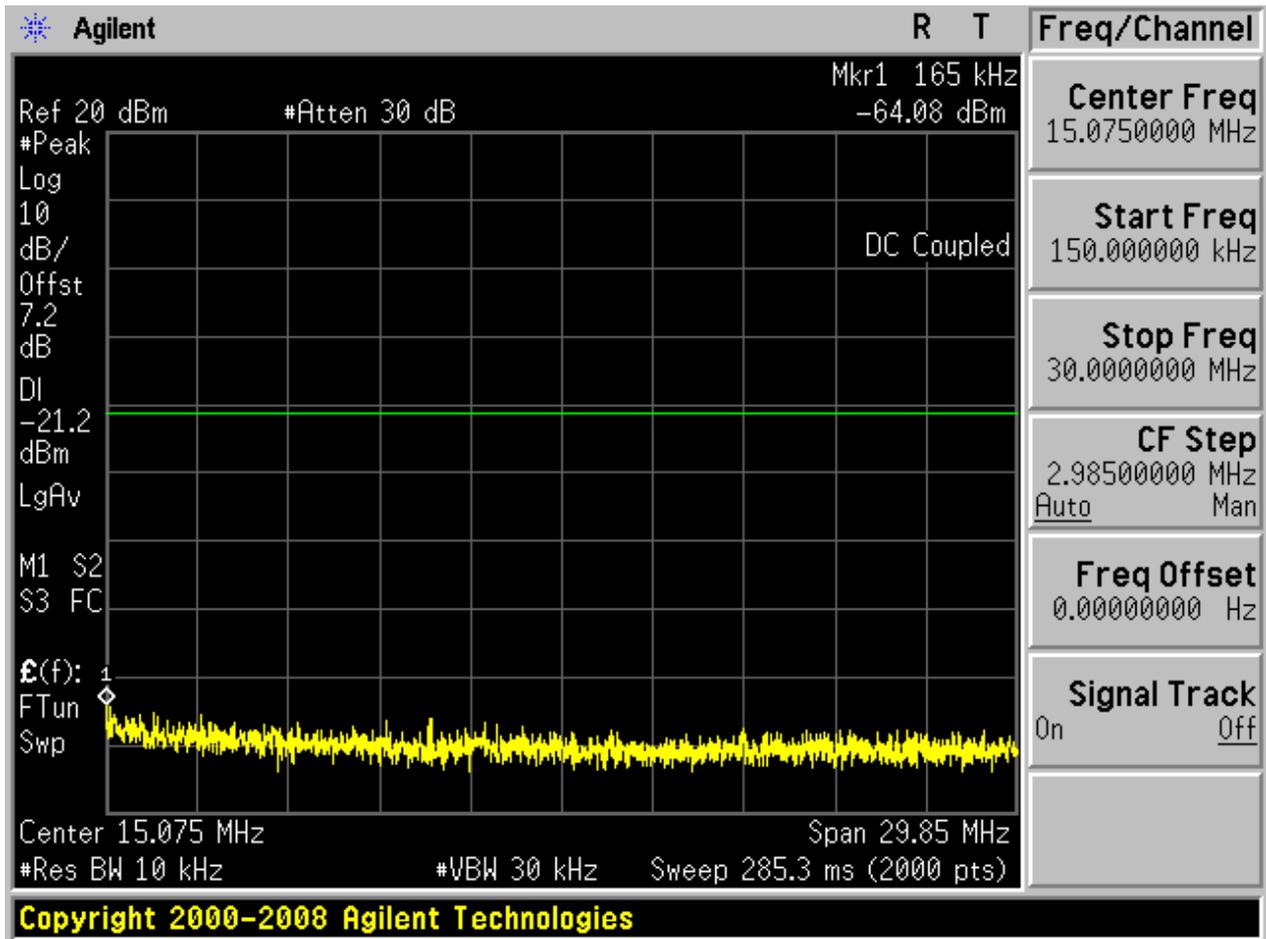
2.8 TM3_3DH5_Ch39

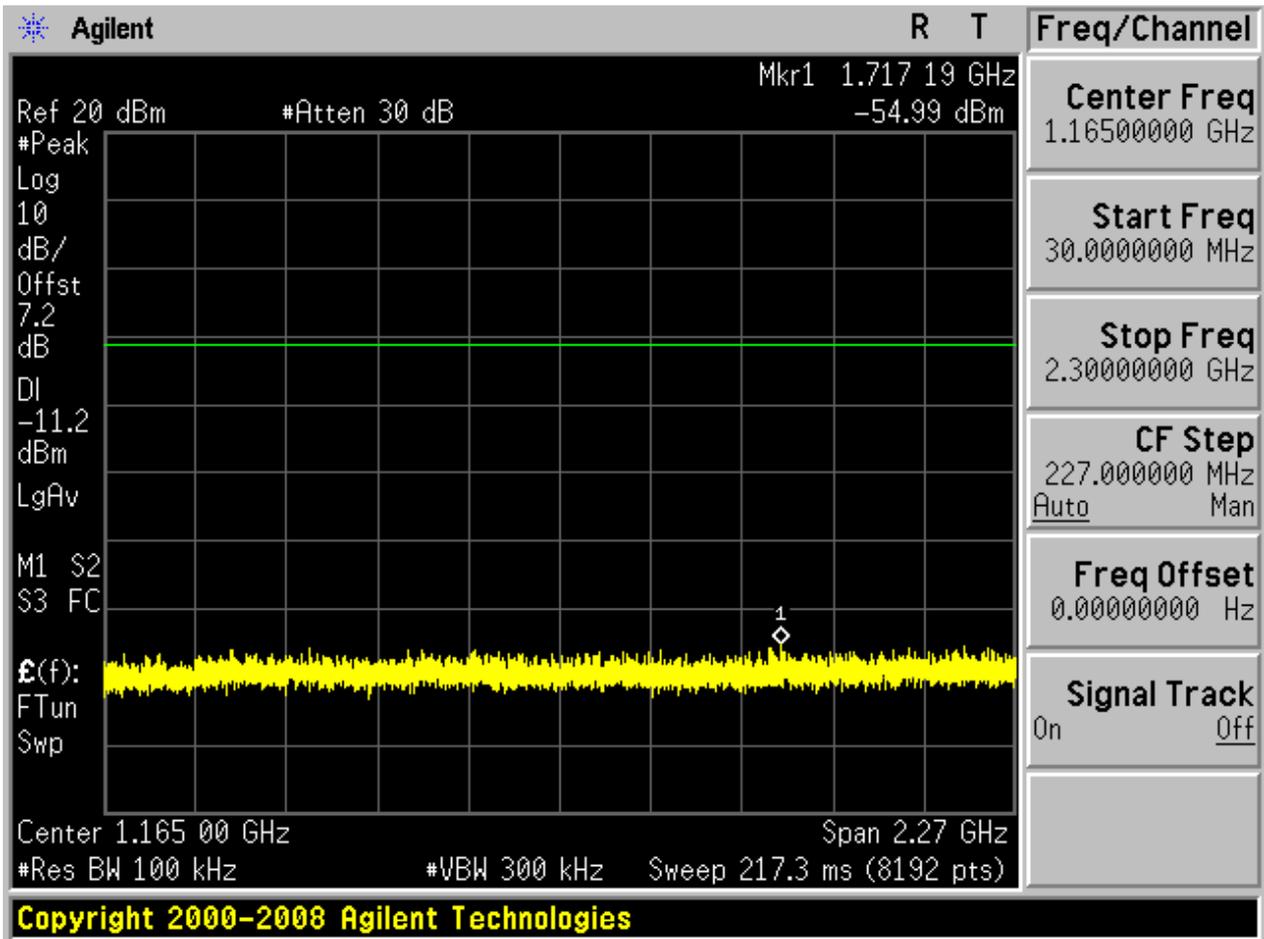
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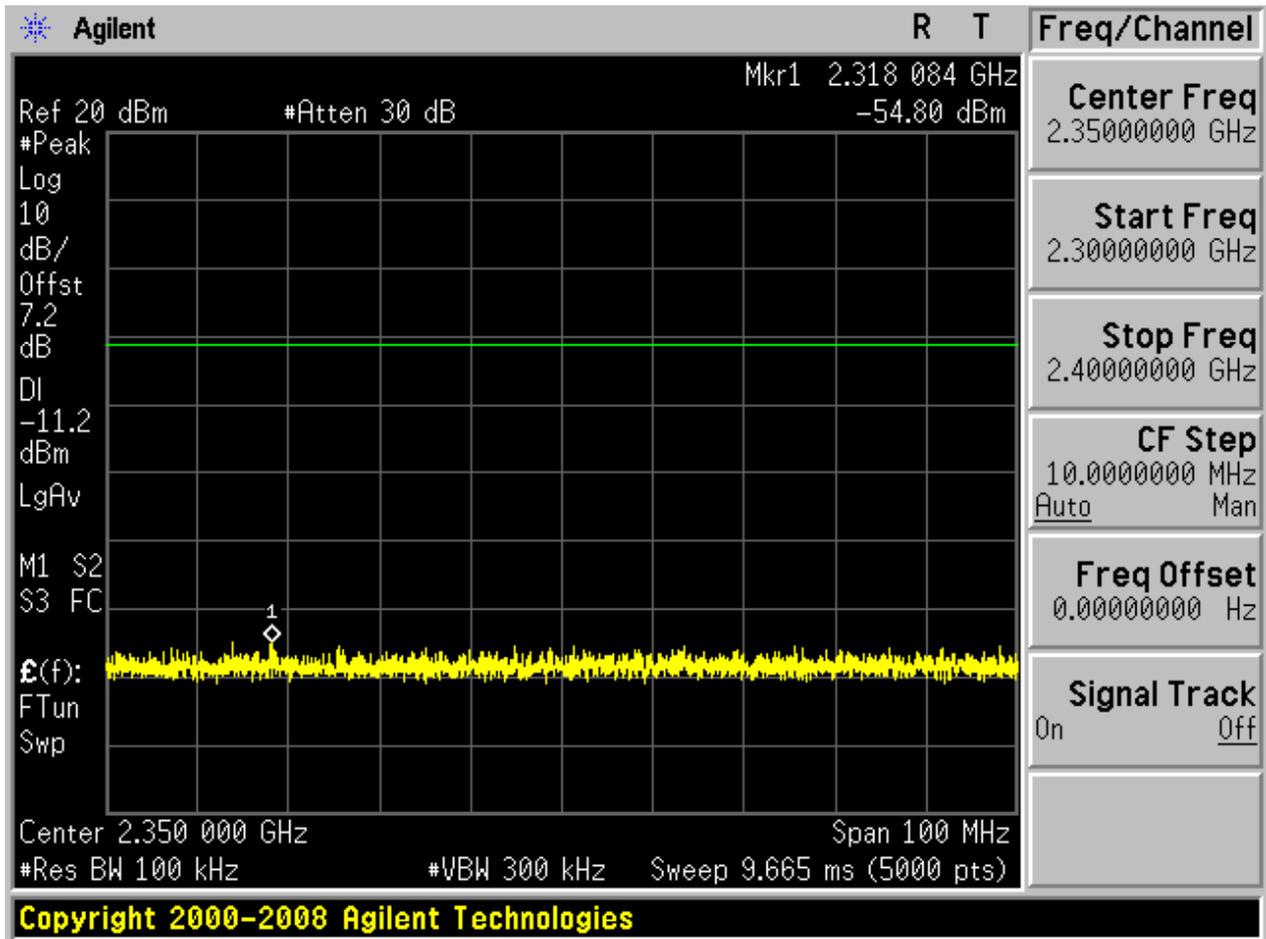


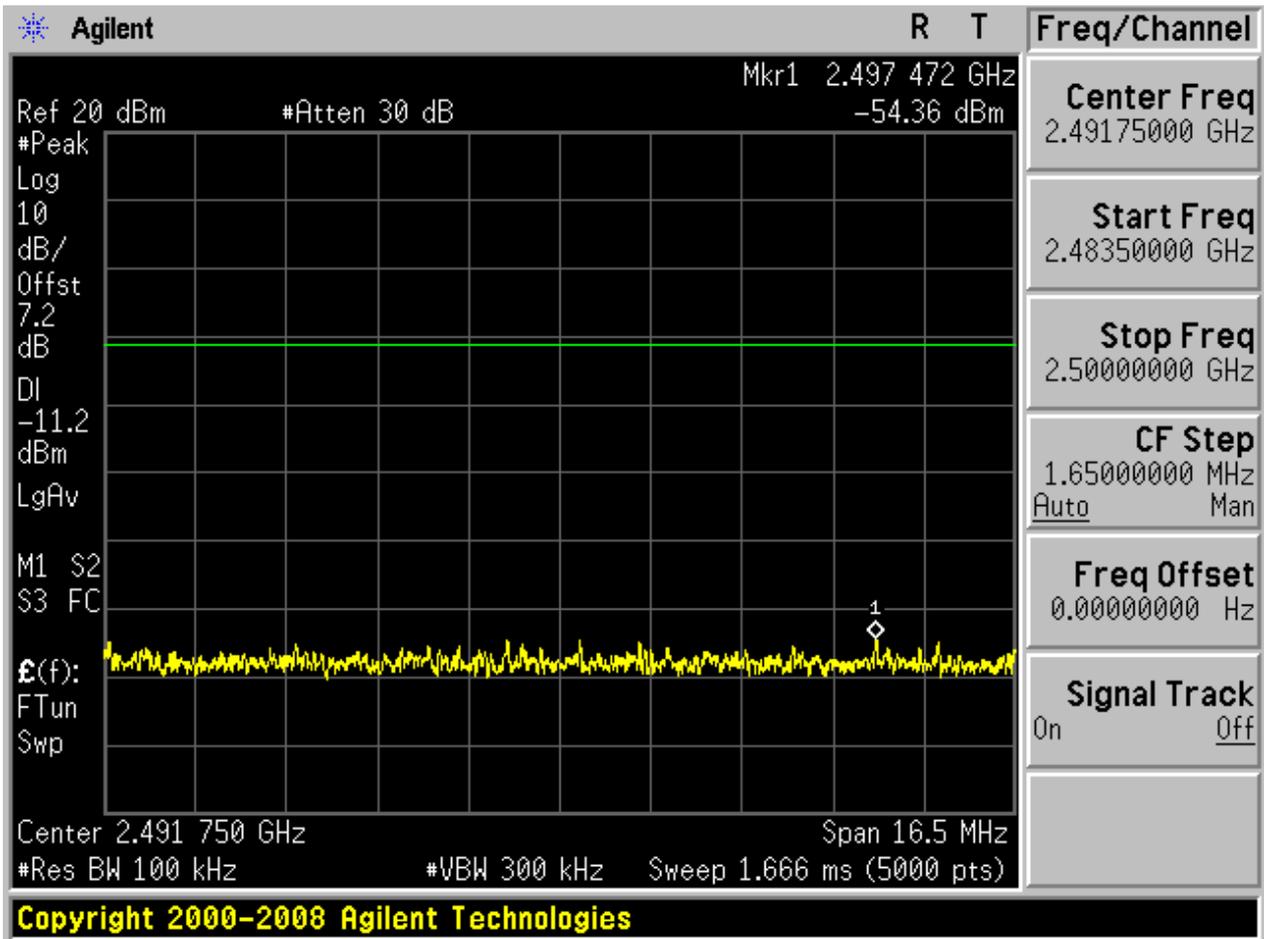
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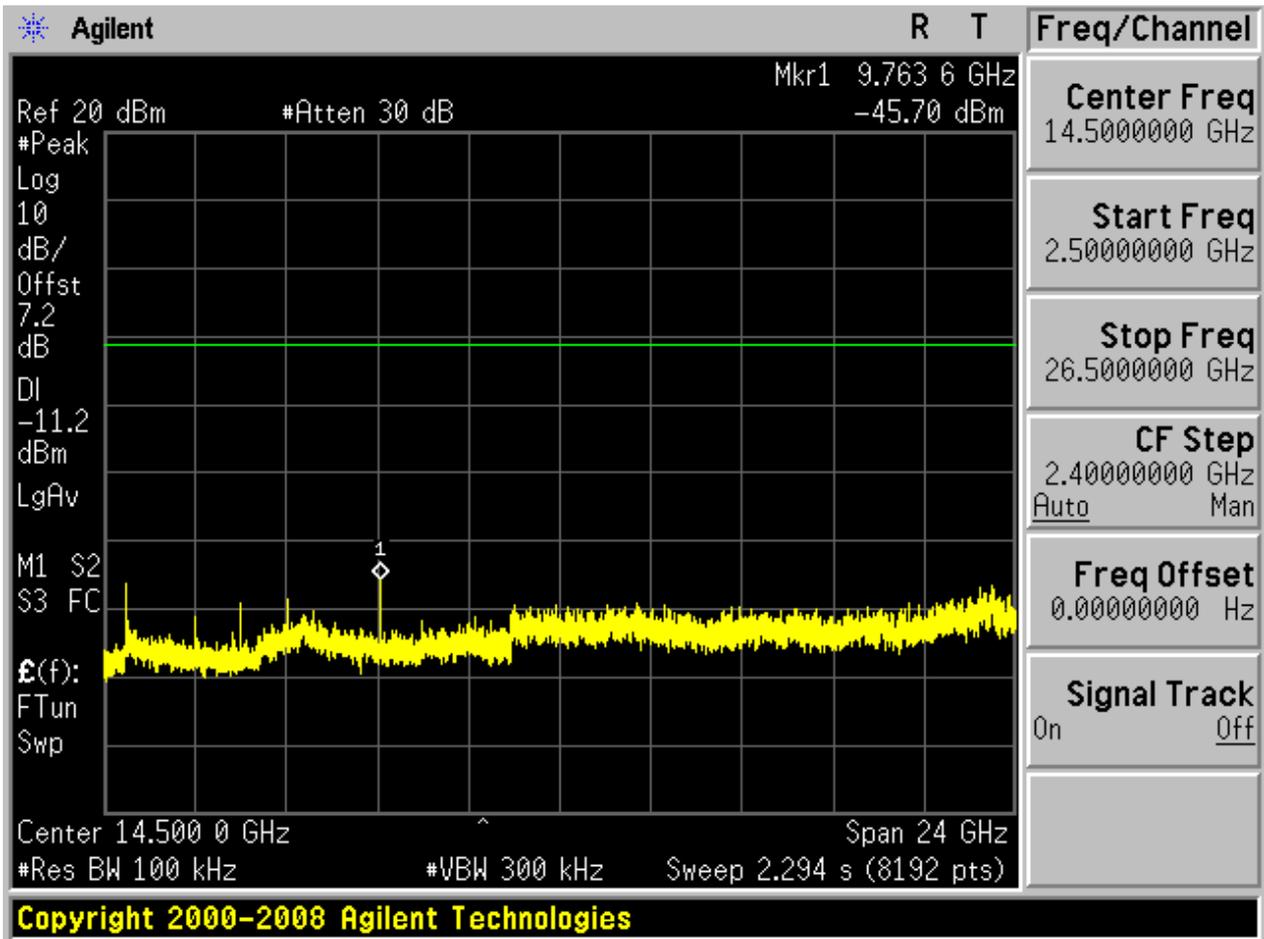






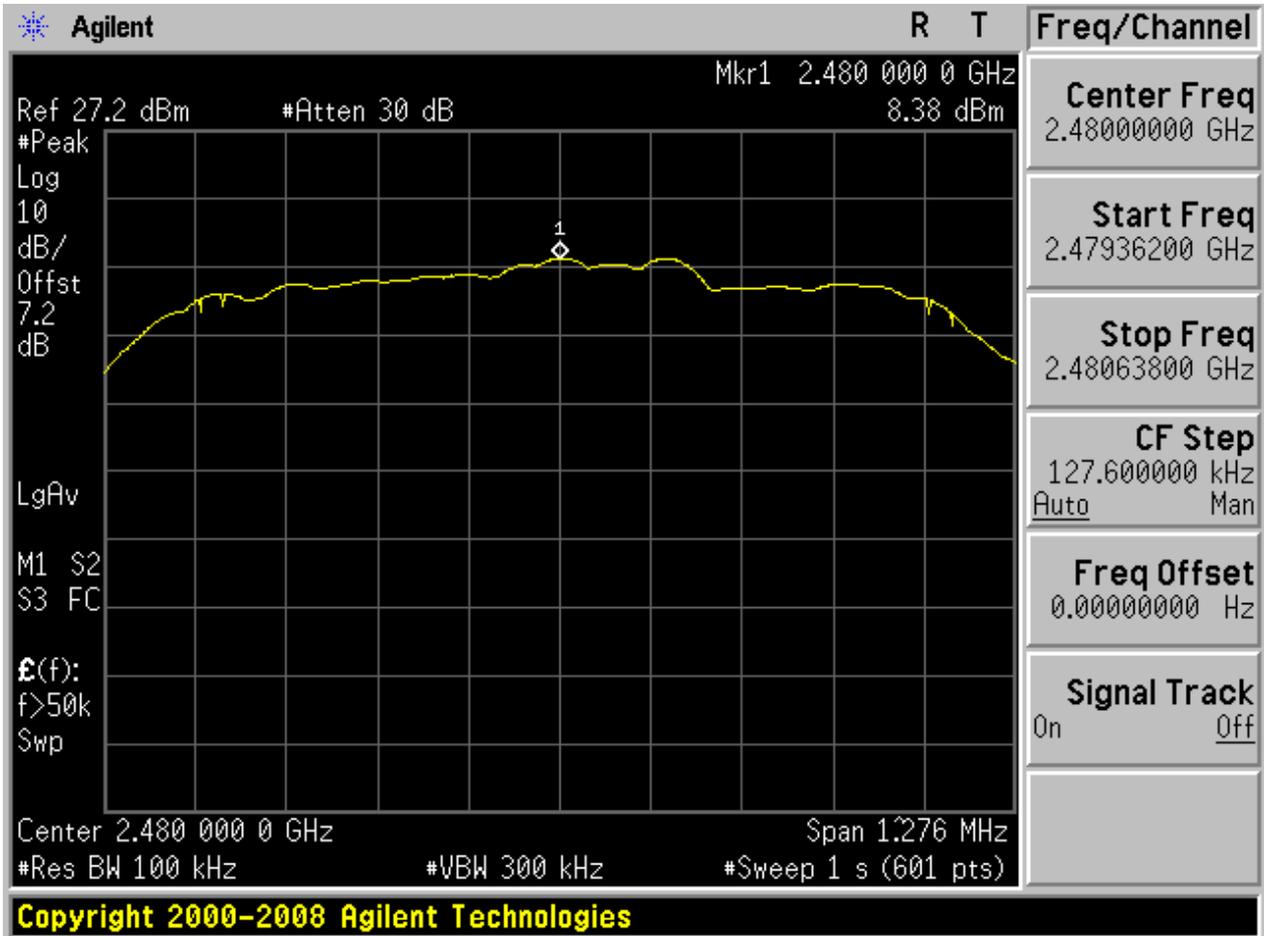






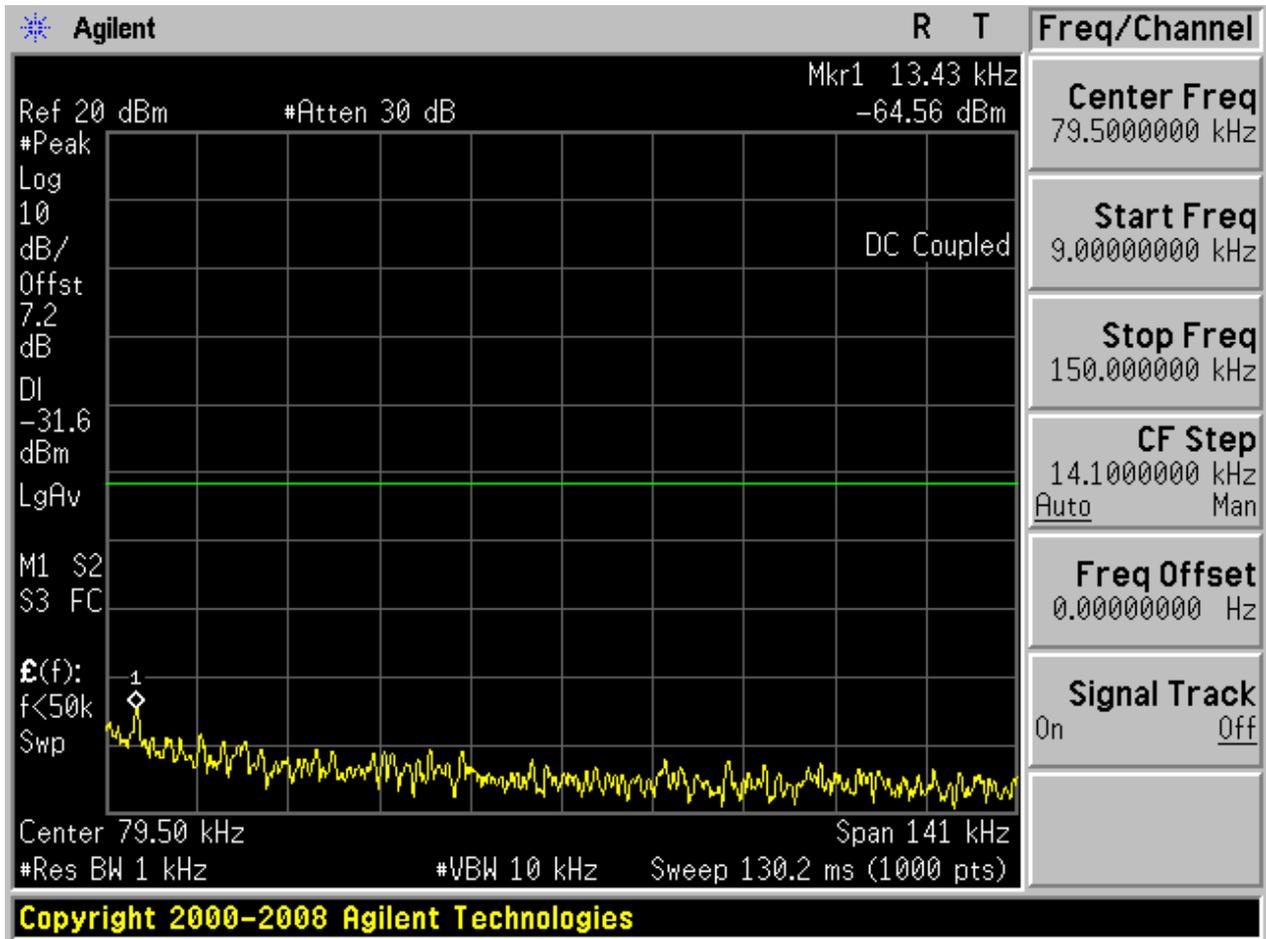
2.9 TM3_3DH5_Ch78

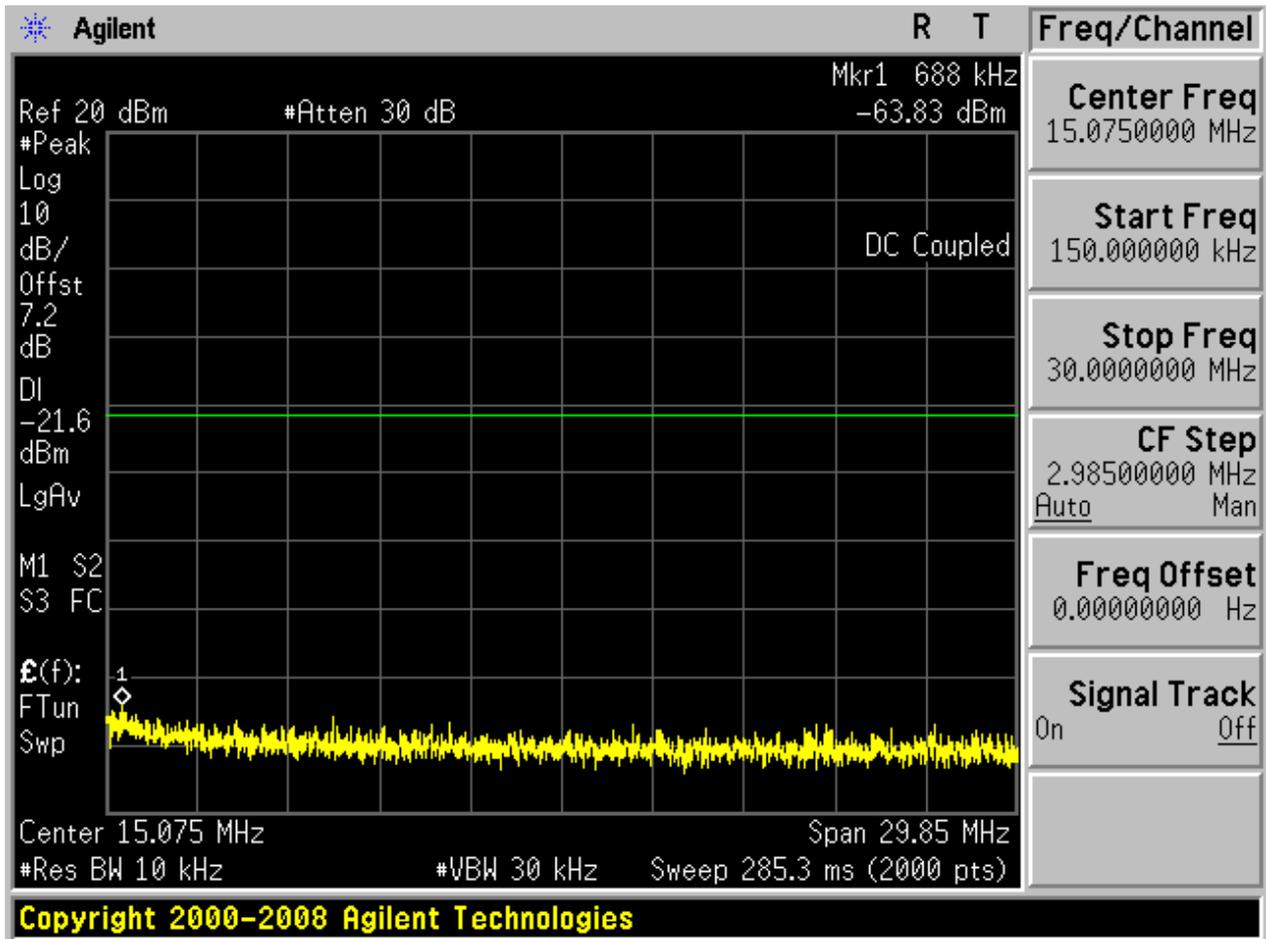
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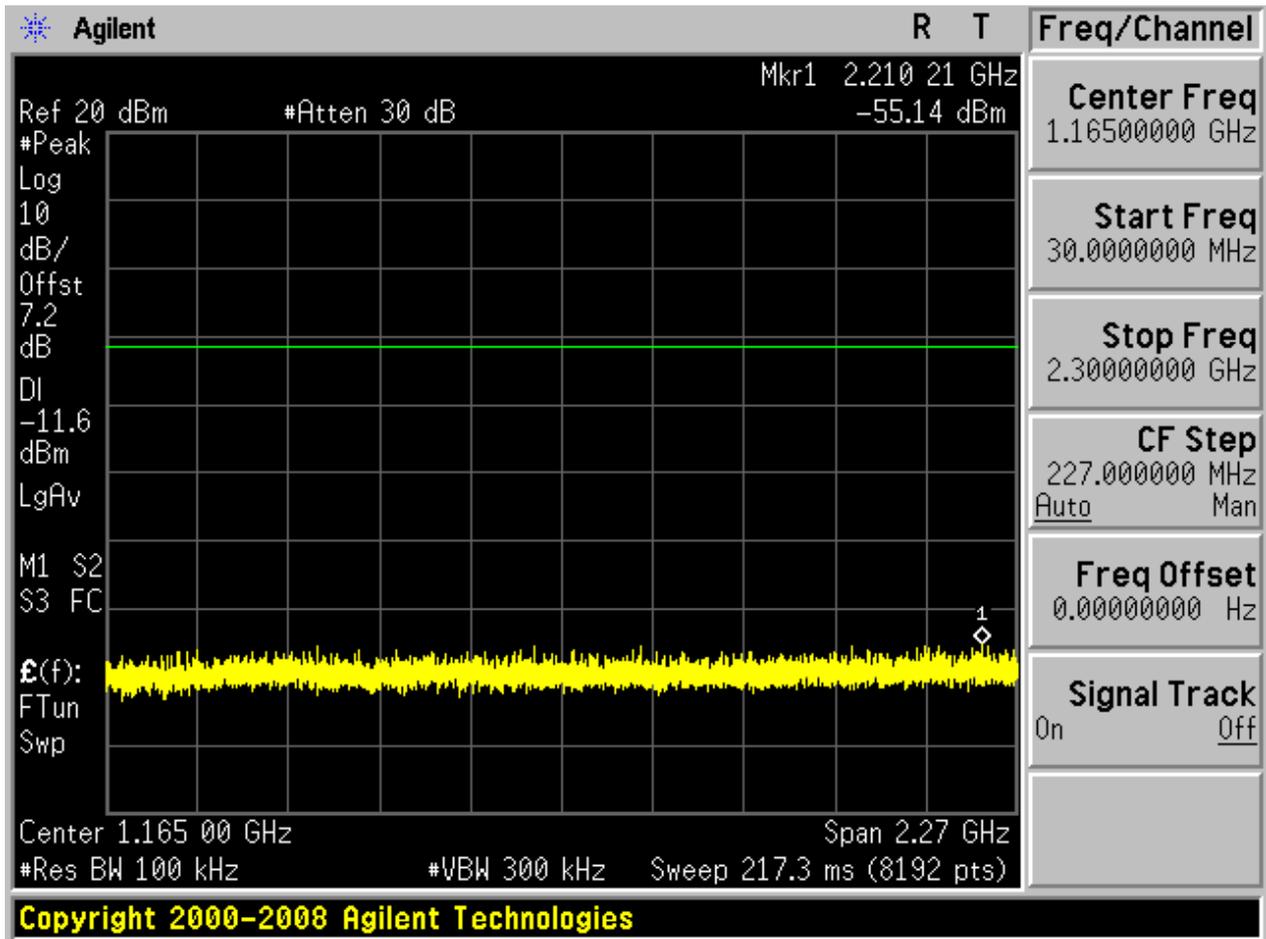


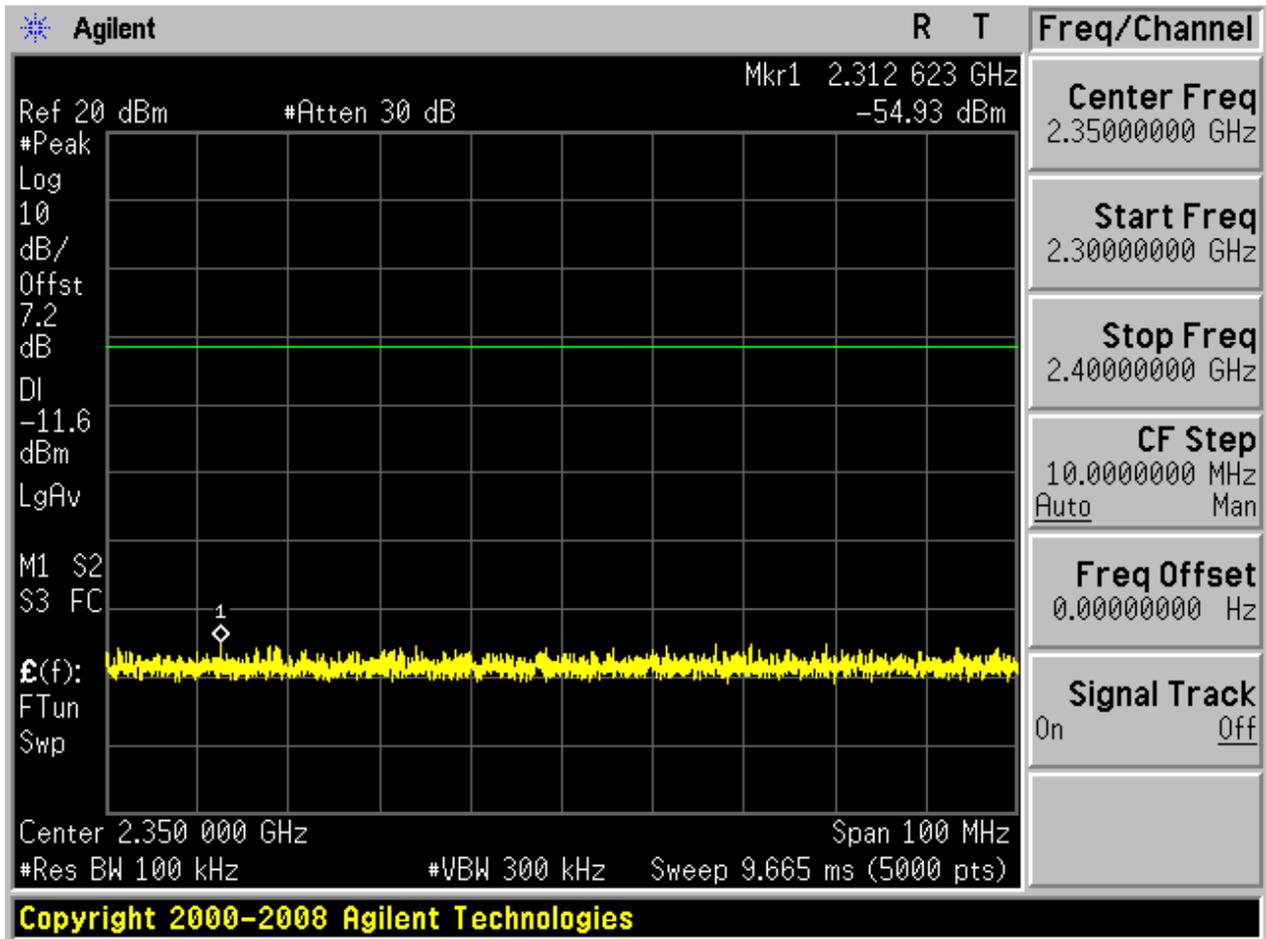


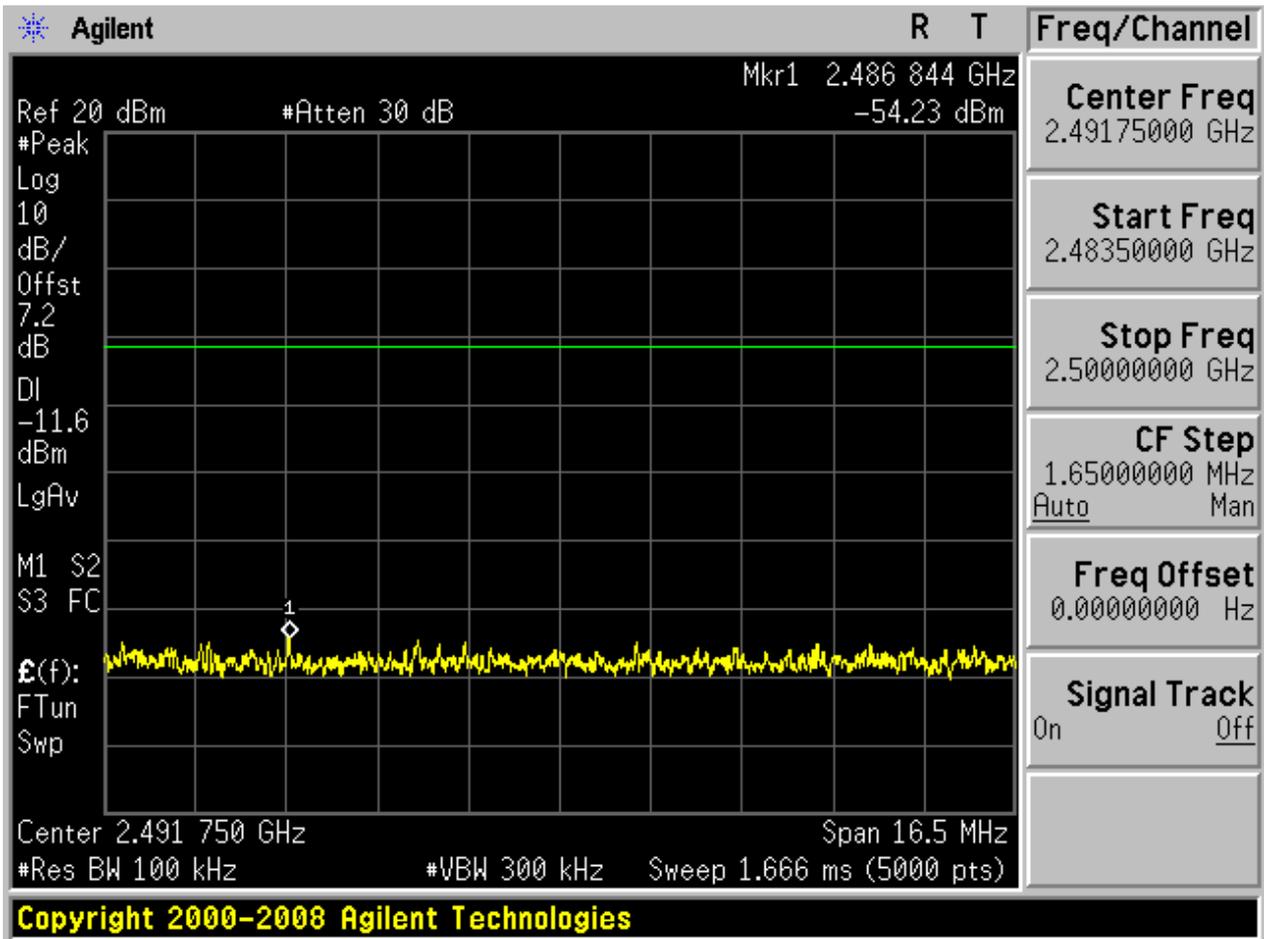
2.9.2 Puw

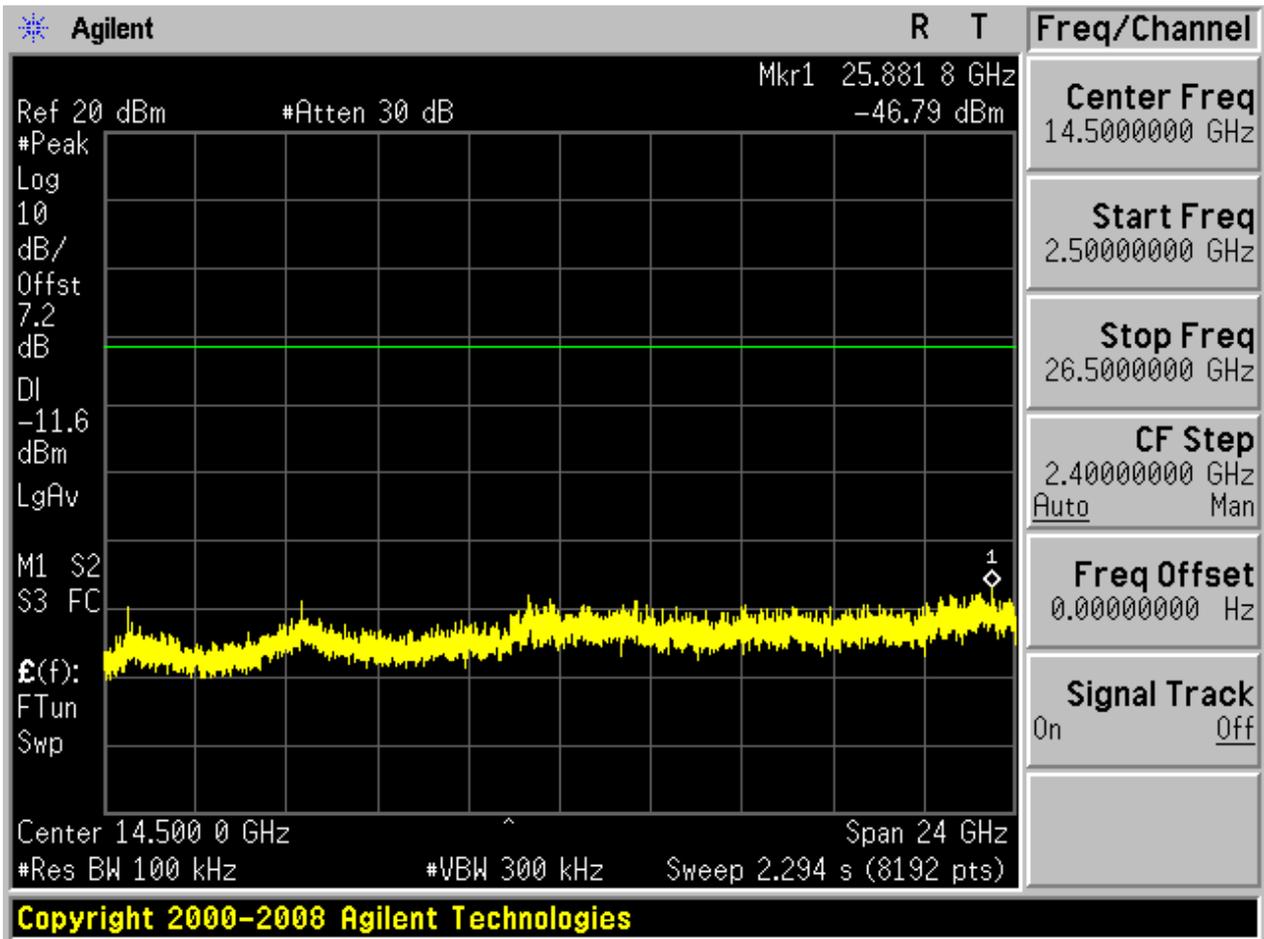










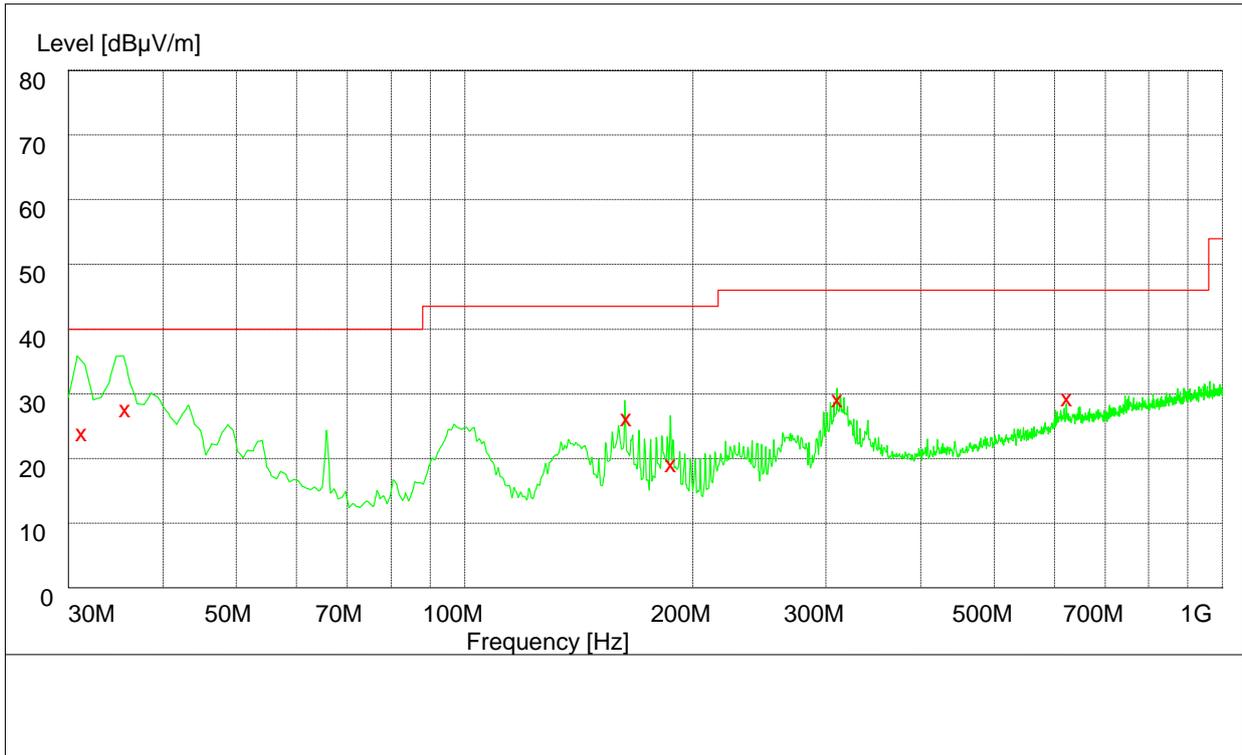




Appendix H: Radiated Emissions in the Restricted Bands

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

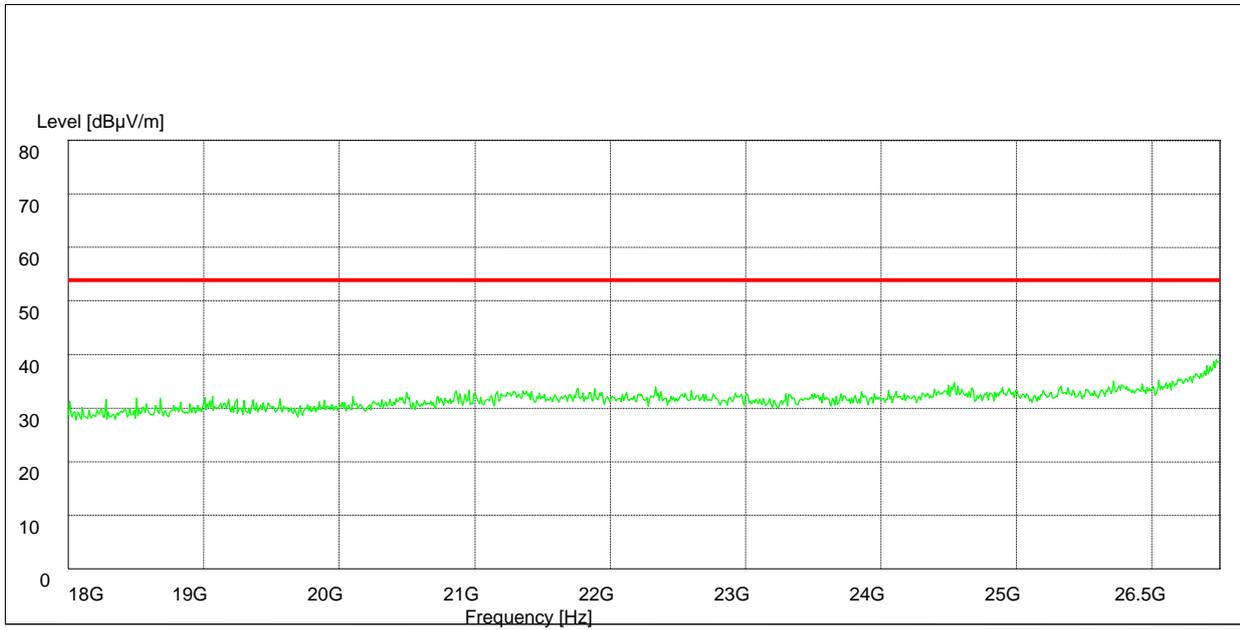
- Note 1: The test results and plot for testing range of “30 MHz to 1 GHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.
- Note 2: The emissions in this range are mainly from the Platform Device (Notepad PC and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



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Plarization
31.200000	24.10	14.6	40.0	15.9	121.0	225.00	VERTICAL
35.580000	27.90	15.1	40.0	12.1	100.0	0.00	VERTICAL
163.200000	26.40	10.3	43.5	17.1	100.0	118.00	VERTICAL
186.780000	19.40	11.9	43.5	24.1	100.0	336.00	VERTICAL
310.380000	29.40	15.4	46.0	16.6	100.0	105.00	HORIZONTAL
622.740000	29.50	21.7	46.0	16.5	100.0	176.00	HORIZONTAL

Part 2: Testing Range of "18 GHz to 26.5 GHz"

Note: No peak found in pre- test.

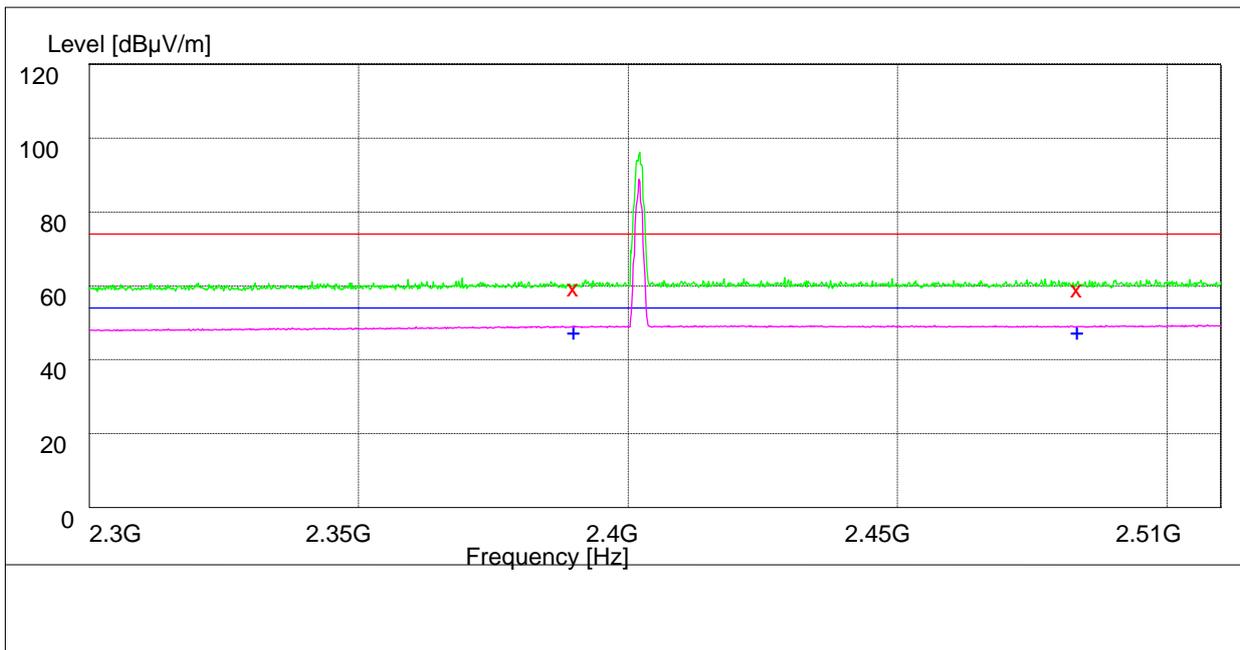


Part 3: Testing Range of “2.3GHz to 2.5GHz”

- 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:

Channel 0



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

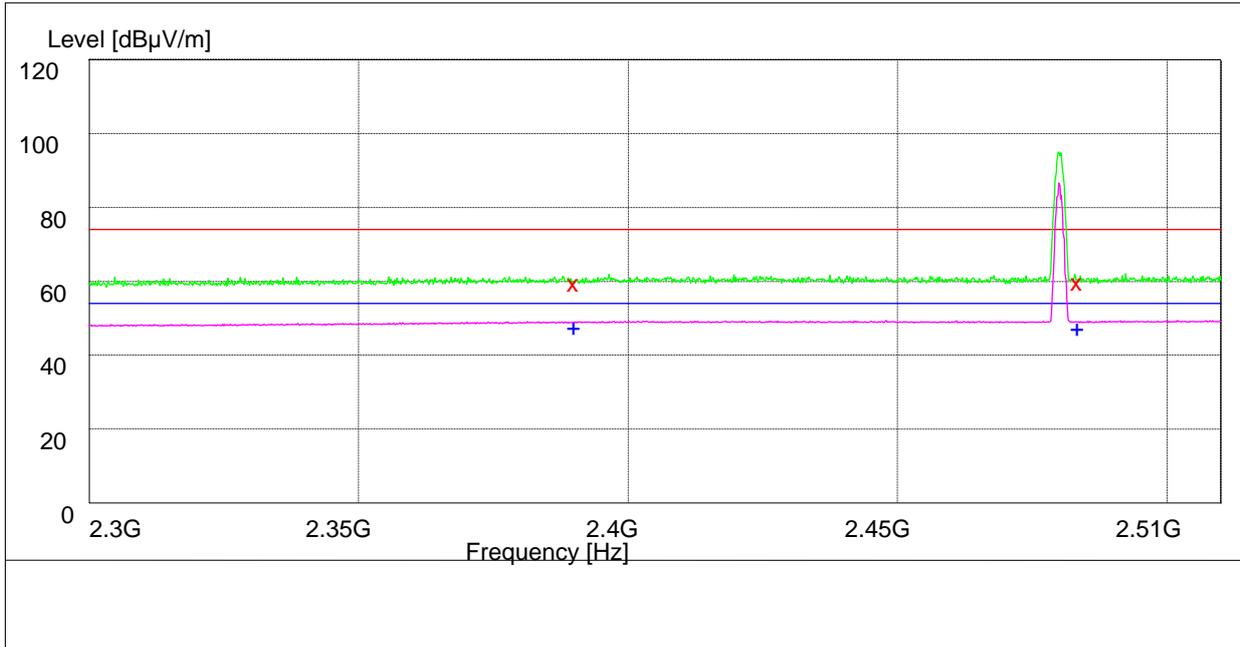
MEASUREMENT RESULT: PK Detector

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarization
2390.000000	59.60	34.8	74.0	14.4	100.0	164.00	HORIZONTAL
2483.500000	59.30	35.1	74.0	14.7	130.0	74.00	HORIZONTAL

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	47.90	34.8	54.0	6.1	131.0	103.00	VERTICAL
2483.500000	47.70	35.1	54.0	6.3	100.0	14.00	VERTICAL

Channel 78



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

MEASUREMENT RESULT: PK Detector

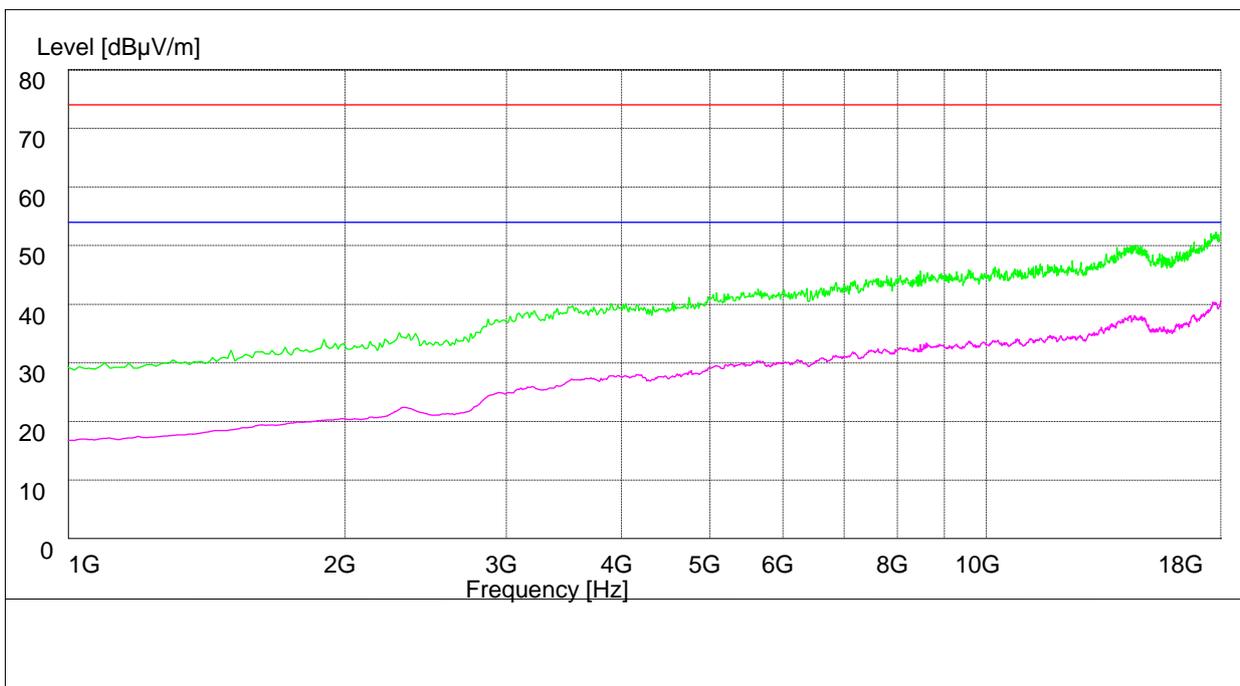
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarization
2390.000000	59.60	34.8	74.0	14.4	115.0	315.00	HORIZONTAL
2483.500000	59.90	35.1	74.0	14.1	150.0	107.00	HORIZONTAL

MEASUREMENT RESULT: AVDetector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarization
2390.000000	47.80	34.8	54.0	6.2	100.0	228.00	HORIZONTAL
2483.500000	47.60	35.1	54.0	6.3	100.0	176.00	HORIZONTAL

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

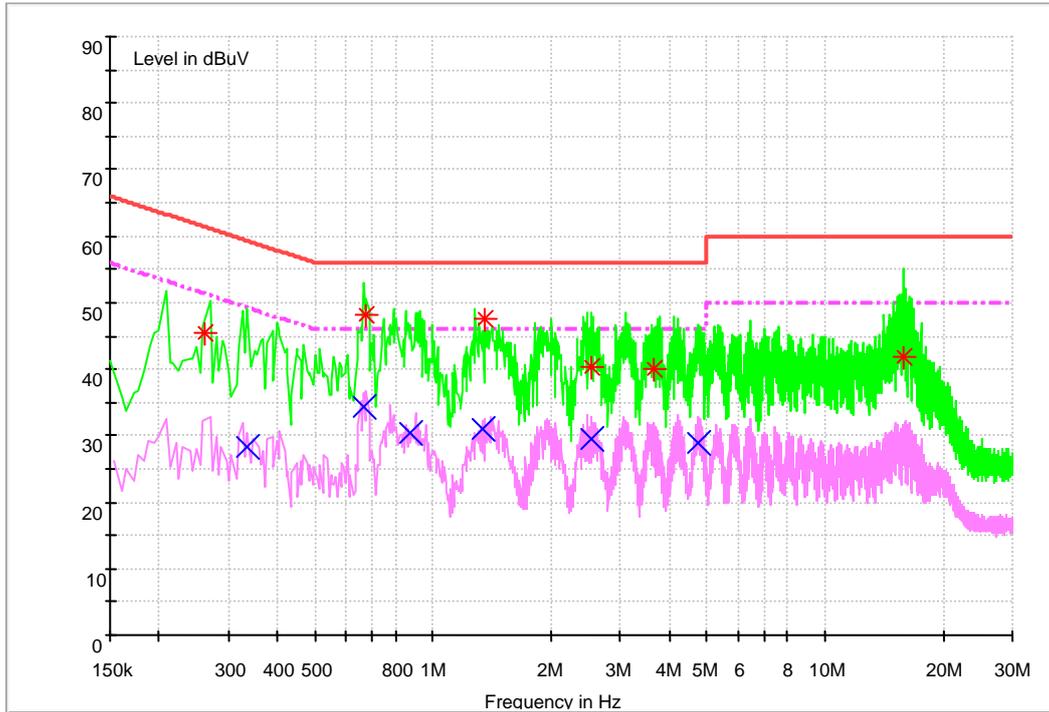
- Note 1: The test results and plot for testing range of “1 GHz to 18 GHz” showed as below is the WORST case for all Test Modes and Channels. This range will not be presented for each Test Mode and each Channel.
- Note 2: The testing range of “1 GHz to 18 GHz” is for checking radiated emissions located 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).





Appendix I: AC Power Line Conducted Emissions

Channel 40



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Line	PE
0.260085	45.4	9.7	61.4	16.0	N	FLO
0.669949	48.2	9.7	56.0	7.8	N	FLO
1.355966	47.6	9.7	56.0	8.4	N	FLO
2.538262	40.2	9.7	56.0	15.8	N	FLO
3.672754	40.1	9.7	56.0	15.9	N	FLO
15.869070	41.9	10.1	60.0	18.1	N	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Line	PE
0.333345	28.4	9.7	49.4	21.0	N	FLO
0.668478	34.2	9.7	46.0	11.8	N	FLO
0.875568	30.3	9.7	46.0	15.7	N	FLO
1.338772	31.1	9.7	46.0	14.9	N	FLO
2.534988	29.5	9.7	46.0	16.5	N	FLO
4.731604	28.7	9.8	46.0	17.3	N	FLO

END