



# RF Test Report

**Product Name: LTE/UMTS Smart Phone**

**Product Model: Y301-A2, Y301-A2, HUAWEI  
Y301A2, Y301A2**

**Report Number: SYBH(Z-RF)014052013-2002**

**FCC ID: QISY301-A2**

**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.
9. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.



**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:** 2013-05-22  
**Start Date of Test:** 2013-05-24  
**End Date of Test:** 2013-06-03

**Test Result:** Pass

<b>Approved by Senior Engineer:</b>	2013-06-08	Dai Linjun	
	Date	Name	Signature

<b>Prepared by:</b>	2013-06-08	Zhang Guocai	
	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 2012  
47 CFR FCC Part 15, Subpart C 2012

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.	Requirements	Test Result	Verdict (NOTE)
20dB Emission Bandwidth (EBW)	15.247(a)(1)	No limit.	Appendix A	Pass
Carrier Frequency Separation	15.247(a)(1)	$\geq \text{MAX} \{25\text{kHz}, \text{IIF}\{\text{output power} \leq 125\text{mW}, 2/3 * 20\text{dB EBW}, 20\text{dB EBW}\}\}$ .	Appendix B	Pass
Number of Hopping Channel	15.247(a)(1)(iii)	$\geq 15$ channels.	Appendix C	Pass
Time of Occupancy (Dwell Time)	15.247(a)(1)(iii)	$< 0.4\text{s}$ within a period of $(0.4\text{s} * \text{hopping number})$ .	Appendix D	Pass
Maximum Peak Conducted Output Power	15.247(b)(1)	$< 1\text{ W}$ if using $\geq 75$ non-overlapping channels.	Appendix E	Pass
Band edge spurious emission	15.247(d)	$< -20\text{ dBm}/100\text{ kHz}$ if total peak power $\leq$ power limit.	Appendix F	Pass
Conducted RF Spurious Emission			Appendix G	Pass
Radiated Emissions in the Restricted Bands	15.247(d) 15.209	FCC Part 15.209 field strength limit;	Appendix H	Pass
AC Power Line Conducted Emissions	15.207	FCC Part 15.207 conducted limit;	Appendix I	Pass



### 3 Description of the Equipment under Test (EUT)

#### 3.1 General Description

HUAWEI Y301-A2, Y301-A2, HUAWEI Y301A2, Y301A2 is subscriber equipment in the LTE/UMTS system. The HSPA/UMTS frequency band is Band II and Band IV and Band V. The LTE frequency band is Band 4. 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, LTE/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 Micro-SIM 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

Board		
Description	Hardware Version	Software Version
Main Board	HL1Y301A2M	Y301-A2 V100R001C85B115

##### 3.2.2 Sub-Assembly

Sub-Assembly			
Sub-Assembly Name	Model	Manufacturer	Description
AC/DC Adapter	HW-050100 U2W	Huawei Technologies Co., Ltd.	Input voltage: ~100 V-240 V/50-60 Hz 0.2A Output voltage:  5V, 1 A Rate power: 5W
Rechargeable Li-ion	HB4W1H	Huawei Technologies Co., Ltd.	Rated capacity: 1750mAh Nominal Voltage:  +3.7V Charging Voltage:  +4.2V



### 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.
	Carrier	Frequency Hopping Spread Spectrum (FHSS)
Modulation Type	Digital	GFSK, $\pi/4$ -DQPSK, 8DPSK
	Emission Designator	GFSK: 1M02GXD $\pi/4$ -DQPSK: 1M34GXD 8DPSK: 1M32GXD
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, - 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 Antenna requirements

### Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.”

The antennas of the Huawei Mobile Phone are permanently attached.  
There are no provisions for connection to an external antenna.

### Conclusion:

The Huawei Mobile Phone FCC ID: QISY301-A2 unit complies with the requirement of §15.203.

### Ch. Frequency (MHz)

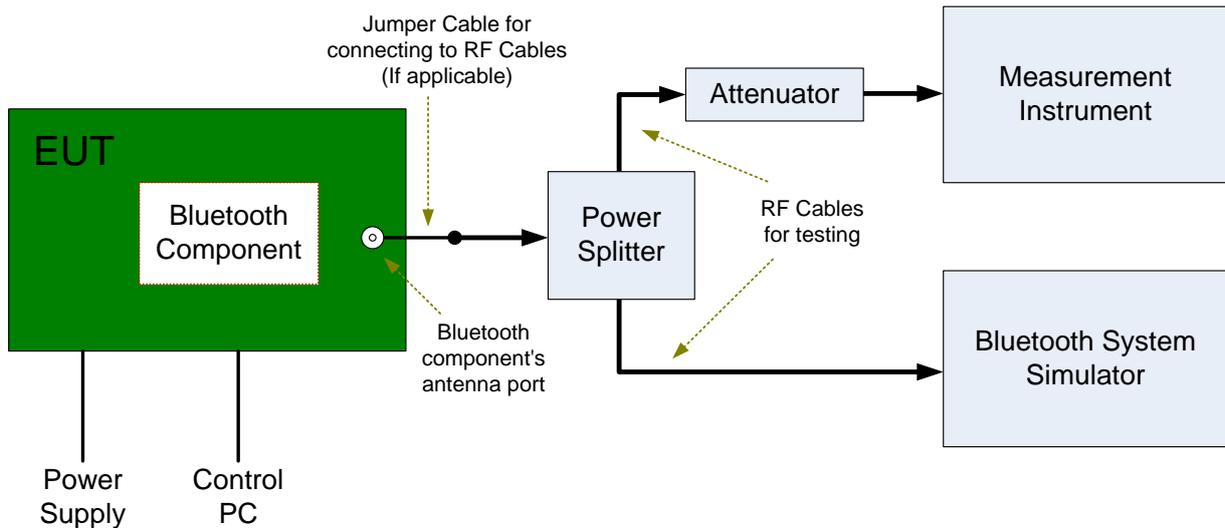
Ch.	Frequency (MHz)
00	2402
.	.
.	.
39	2441
.	.
.	.
78	2480

### Frequency/ Channel Operations

## 4.4 Test Setups

### 4.4.1 Test Setup 1

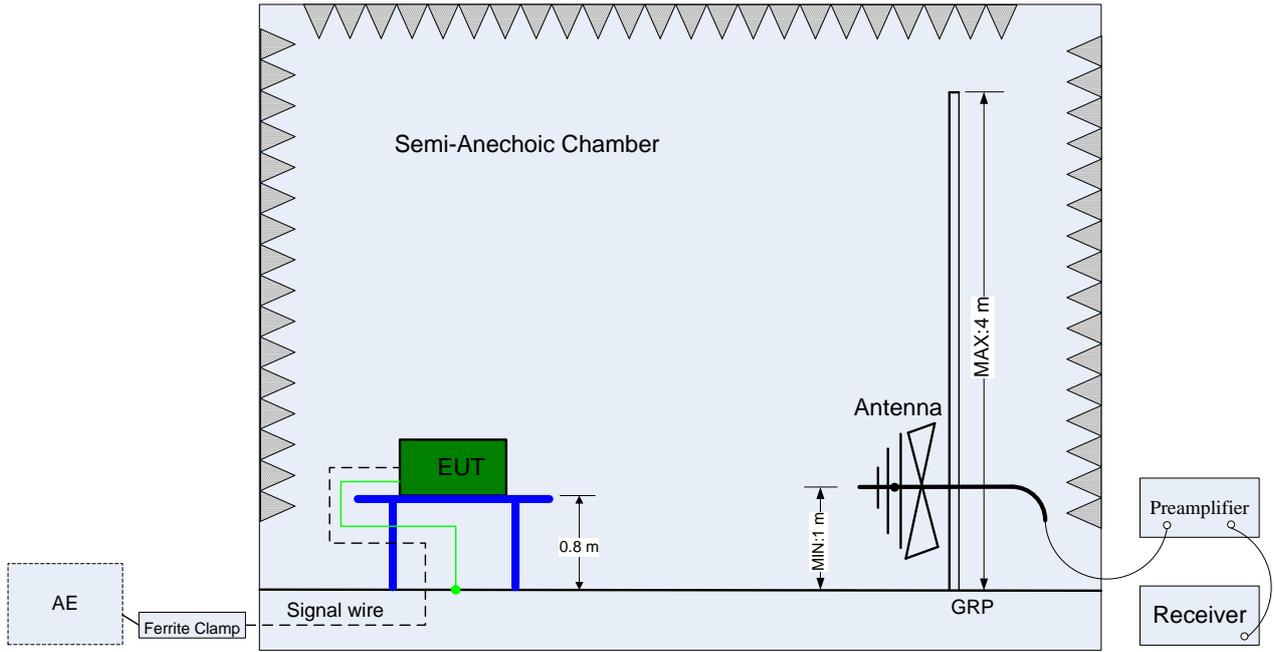
The Bluetooth component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by Bluetooth System Simulator and/or PC/software to emit the specified signals for the purpose of measurements.



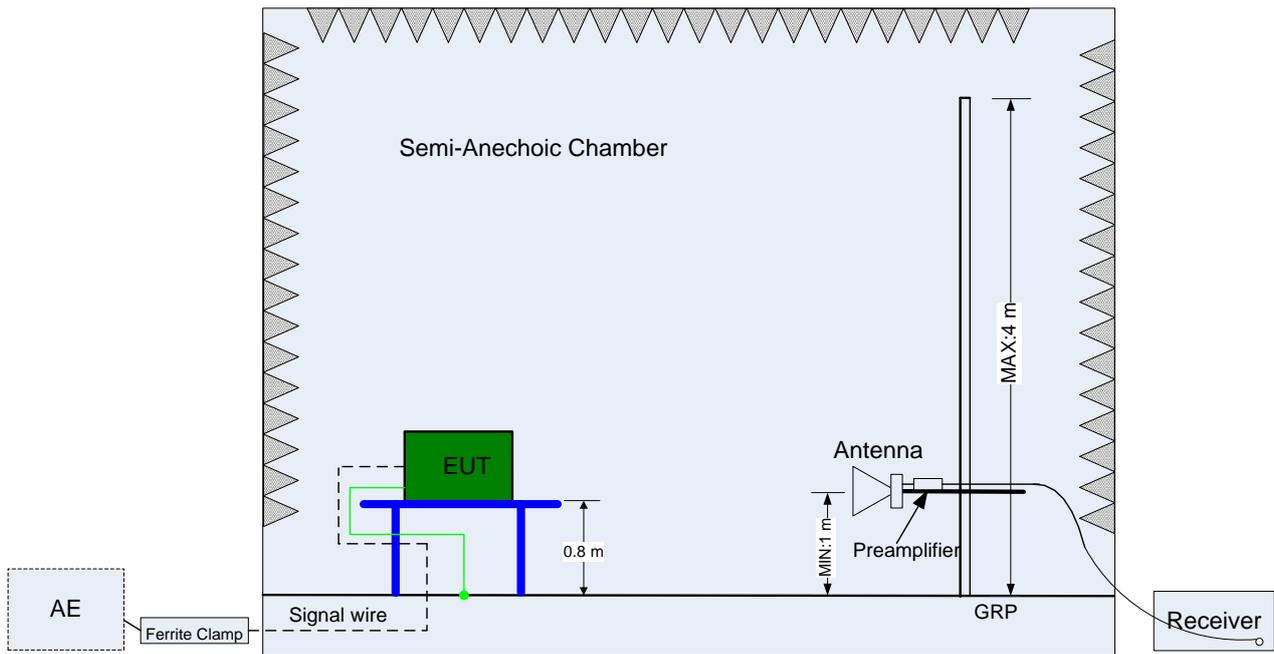
### 4.4.2 Test Setup 2

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)

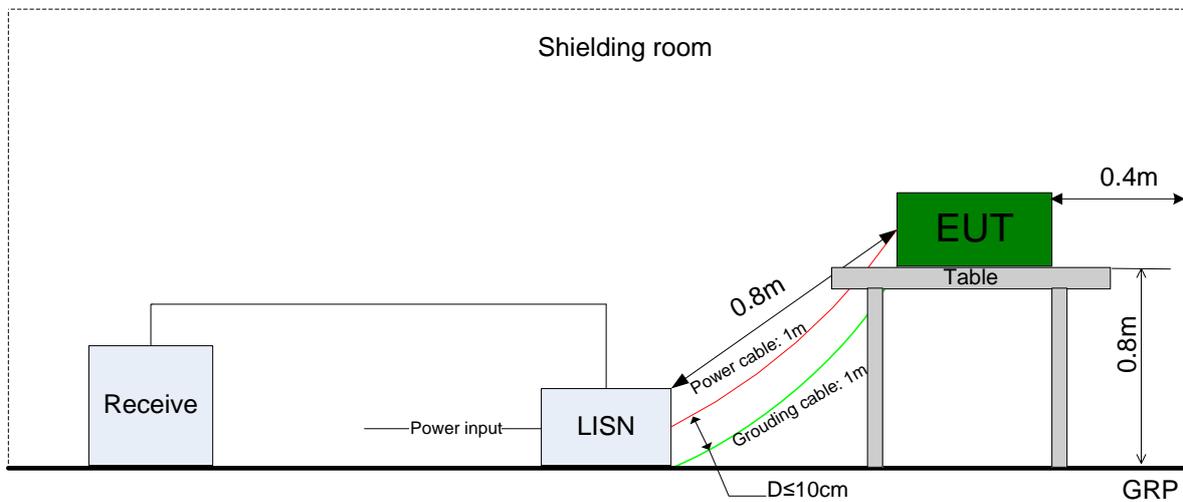


(Above 1 GHz)

### 4.4.3 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.



#### 4.5 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.
Band edge spurious emission	Meas. Method	DA 00-705
	Test Env.	NTNV
	Test Setup	Test Setup 1
	EUT Conf.	TM1_DH5_Ch0, TM1_DH5_Ch78, TM2_2DH5_Ch0, TM2_2DH5_Ch78, TM3_3DH5_Ch0, TM3_3DH5_Ch78.
Conducted RF Spurious Emission	Meas. Method	DA 00-705
	Test Env.	NTNV

Test Case	Test Conditions		
	Configuration	Description	
	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.	
	Meas. Method	DA 00-705, C63.4, C63.10.  (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 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	
Radiated Emissions in the Restricted Bands	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.).
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	
	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	2012-11-19	2014-11-18
Wireless Communication Test set	Agilent	N4010A	MY49081592	2012-11-09	2013-11-08
Spectrum Analyzer	Agilent	E4440A	MY48250119	2012-08-20	2013-08-19
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	56246002940010	2013-01-29	2014-01-28
Signal generator	Agilent	E8257D	MY49281095	2012-09-14	2013-09-13
Test receiver	R&S	ESU26	100150	2013-05-15	2014-05-14
Spectrum analyzer	R&S	FSU3	200474	2013-01-29	2014-01-28
Spectrum analyzer	R&S	FSU43	100144	2013-01-29	2014-01-28
Double-Ridged Waveguide Horn Antenna (1G~18GHz)	R&S	HF907	100304	2013-02-02	2014-02-01
Trilog Broadband Antenna (30M~3GHz)	SCHWARZBECK	VULB 9163	9163-521	2011-12-09	2013-12-08
Pyramidal Horn Antenna(18GHz-26.5 GHz)	ETS-Lindgren	3160-09	00091989	2011-10-20	2013-10-19

END



# Appendix A: 20dB Emission Bandwidth (EBW)



## 1 Result Table

EUT Conf.	EBW [MHz]	Verdict
TM1_DH5_Ch0	1.018	Pass
TM1_DH5_Ch39	1.016	Pass
TM1_DH5_Ch78	1.017	Pass
TM2_2DH5_Ch0	1.335	Pass
TM2_2DH5_Ch39	1.335	Pass
TM2_2DH5_Ch78	1.335	Pass
TM3_3DH5_Ch0	1.311	Pass
TM3_3DH5_Ch39	1.310	Pass
TM3_3DH5_Ch78	1.318	Pass



## 2 Test Plot

### 2.1 TM1\_DH5\_Ch0





### 2.3 TM1\_DH5\_Ch78

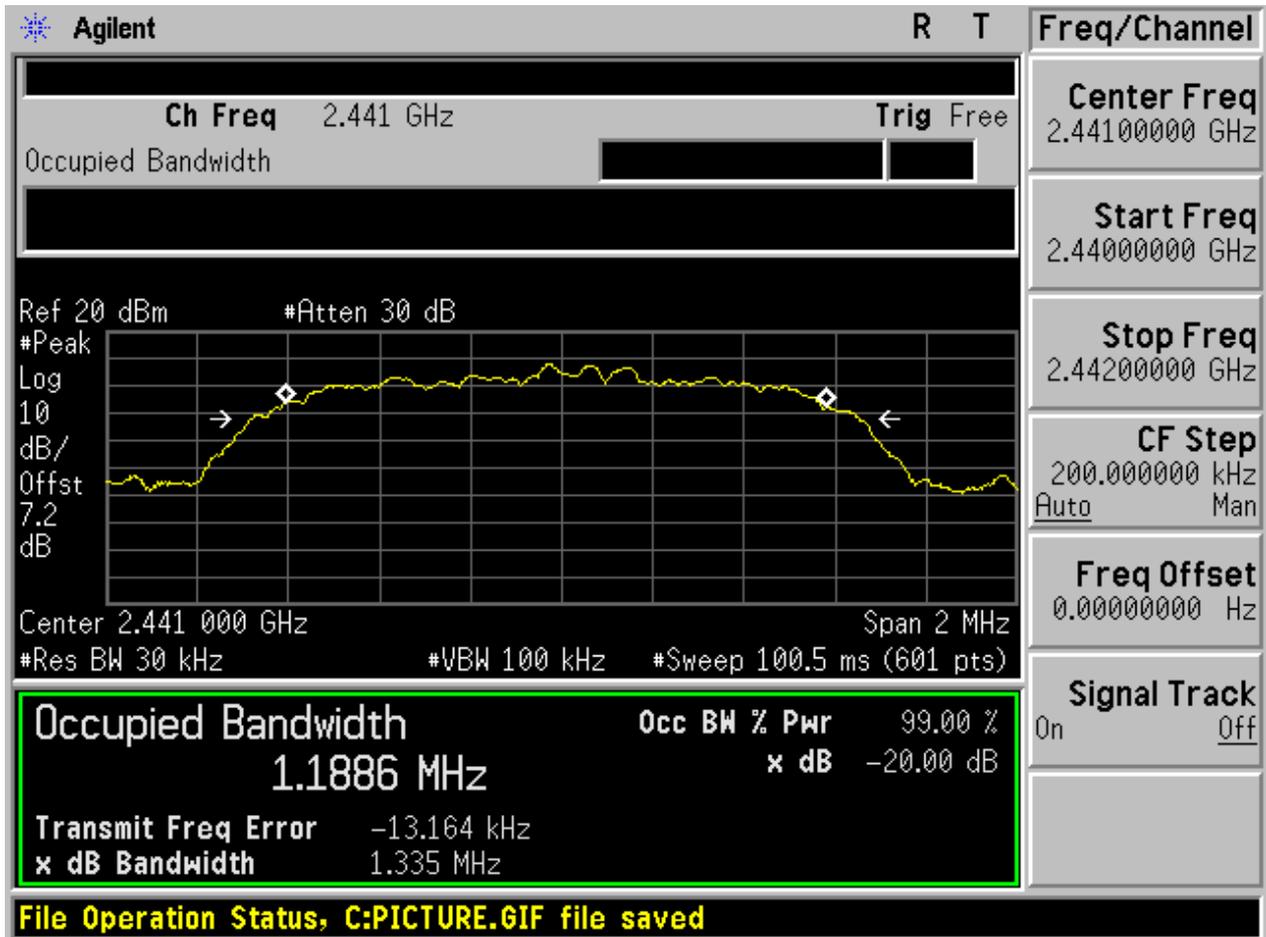


2.4 TM2\_2DH5\_Ch0



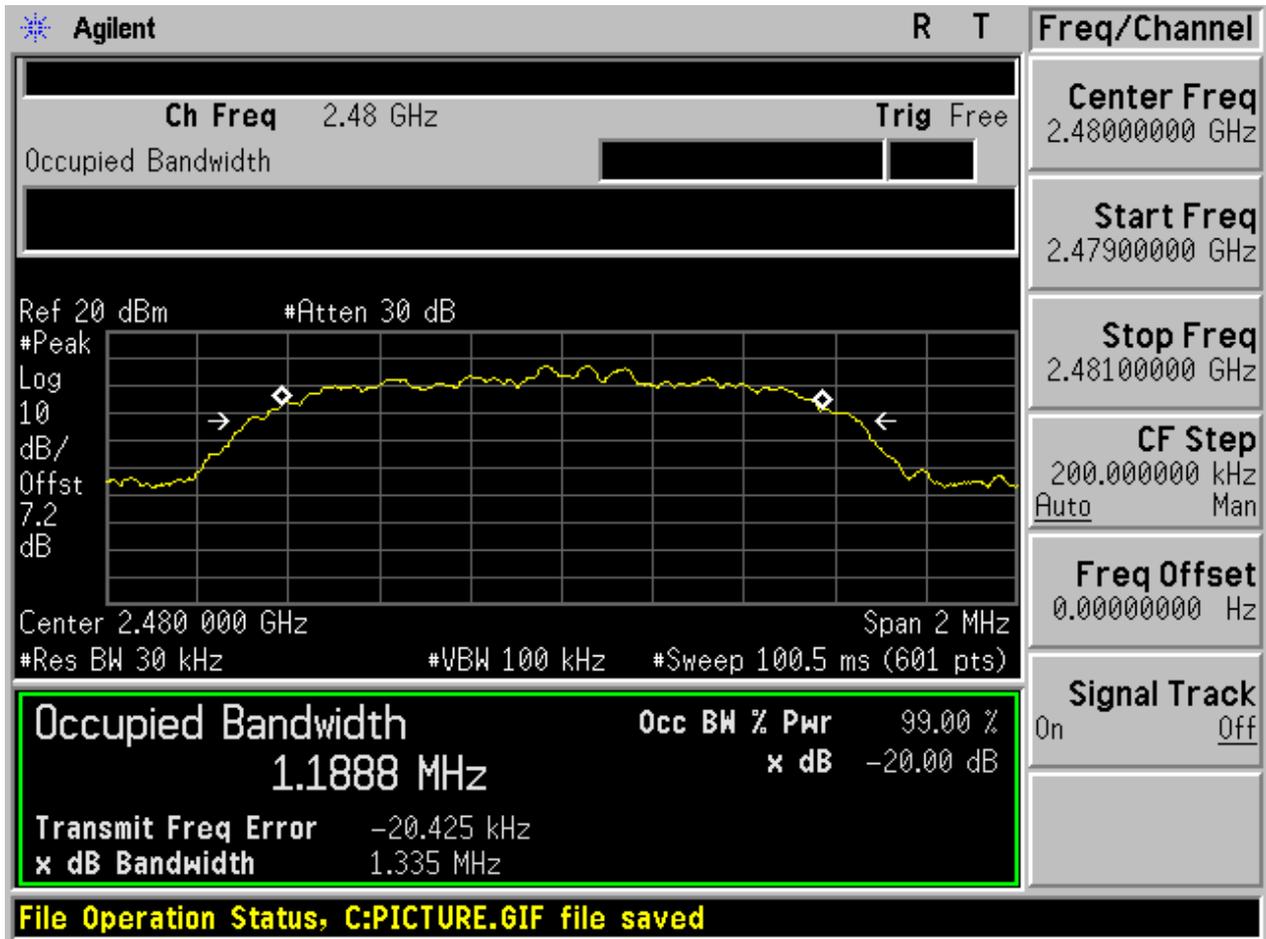


### 2.5 TM2\_2DH5\_Ch39



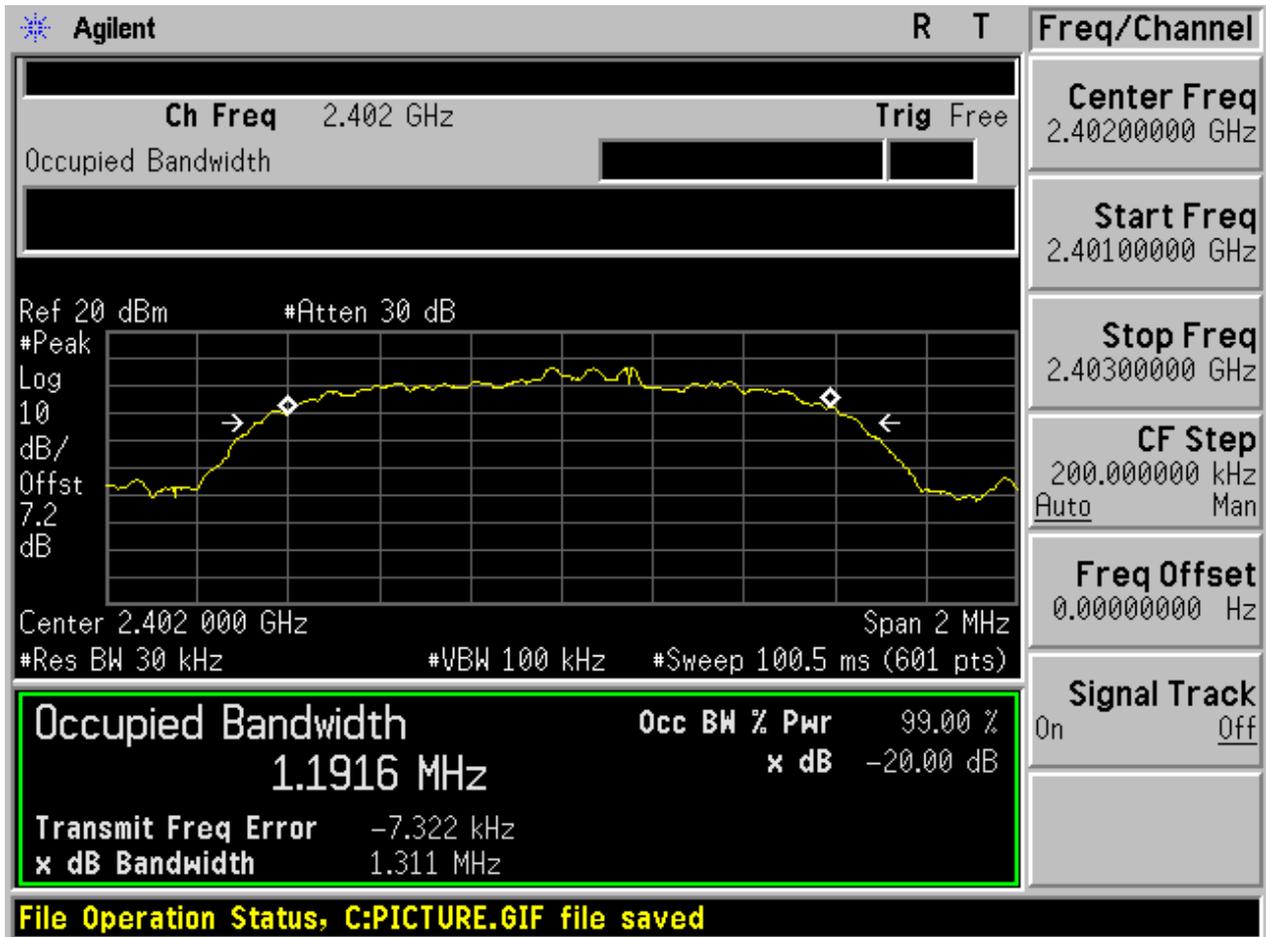


2.6 TM2\_2DH5\_Ch78



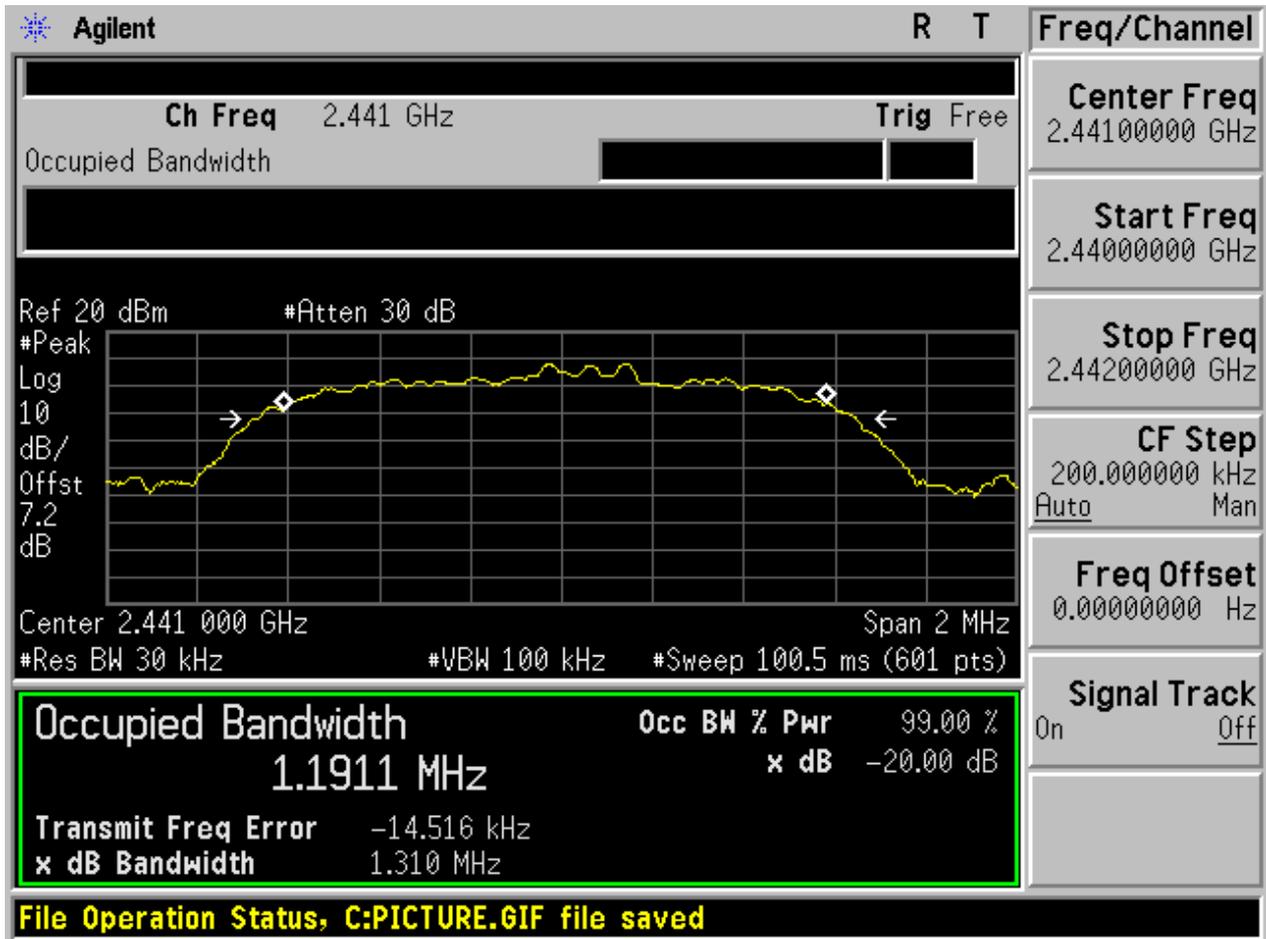


2.7 TM3\_3DH5\_Ch0



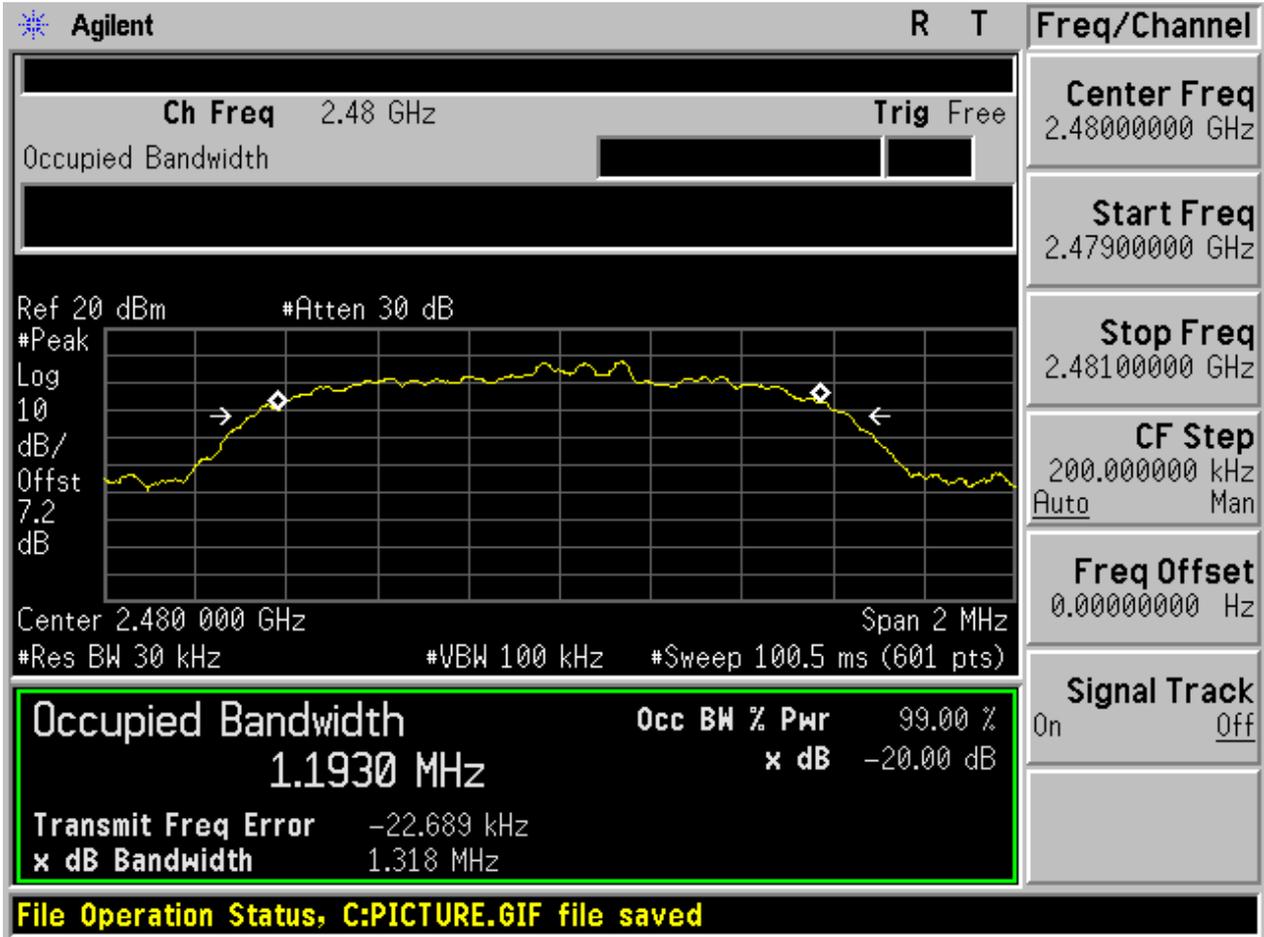


2.8 TM3\_3DH5\_Ch39





2.9 TM3\_3DH5\_Ch78





# Appendix B: Carrier Frequency Separation

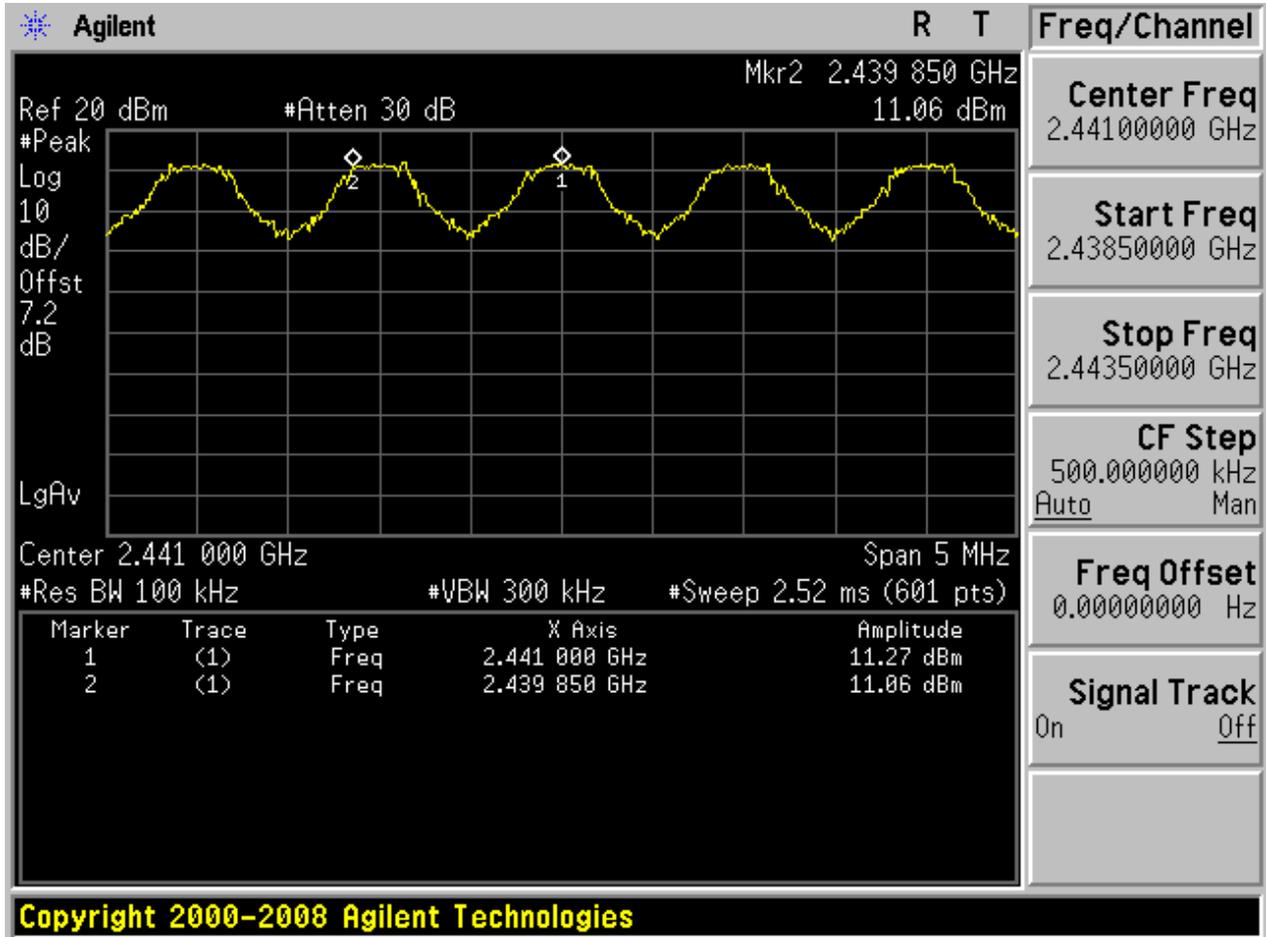


## 1 Result Table

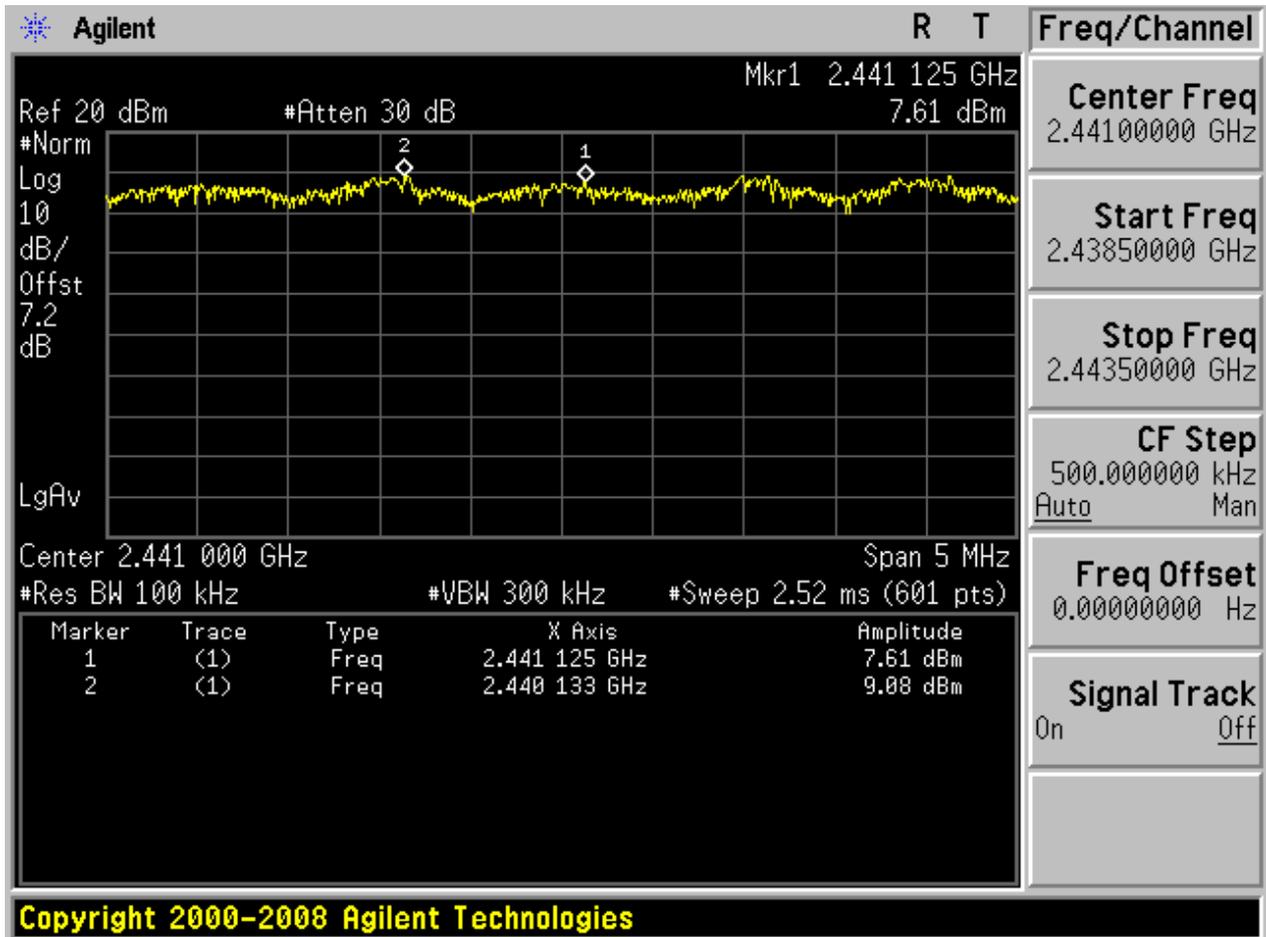
EUT Conf.	Carrier Frequency Separation [MHz]	Verdict
TM1_DH5_Hop	1.15	Pass
TM2_2DH5_Hop	0.99	Pass
TM3_3DH5_Hop	0.95	Pass

## 2 Test Plot

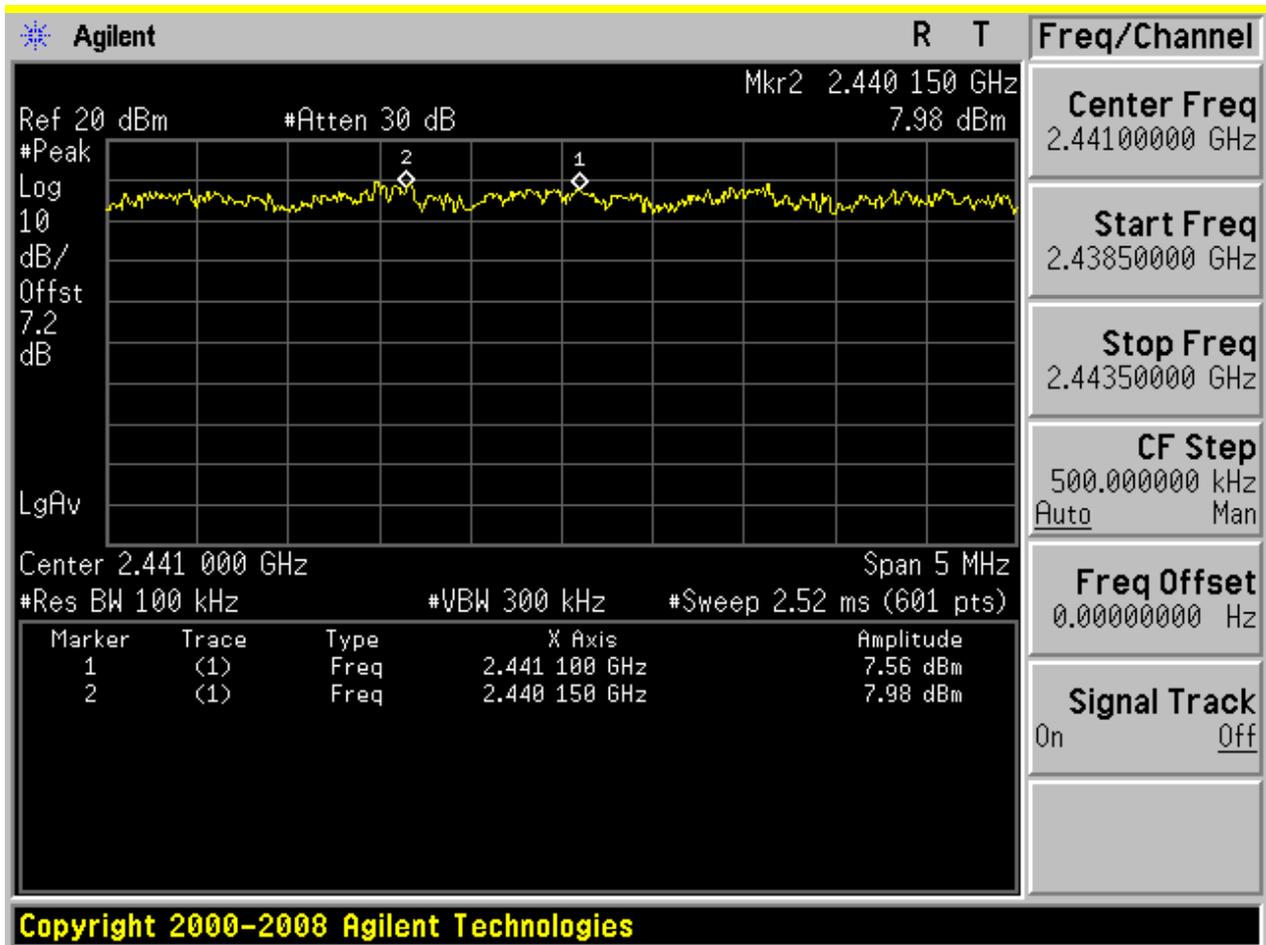
### 2.1 TM1\_DH5\_Hop



## 2.2 TM2\_2DH5\_Hop



### 2.3 TM3\_3DH5\_Hop





# Appendix C: Number of Hopping Channel



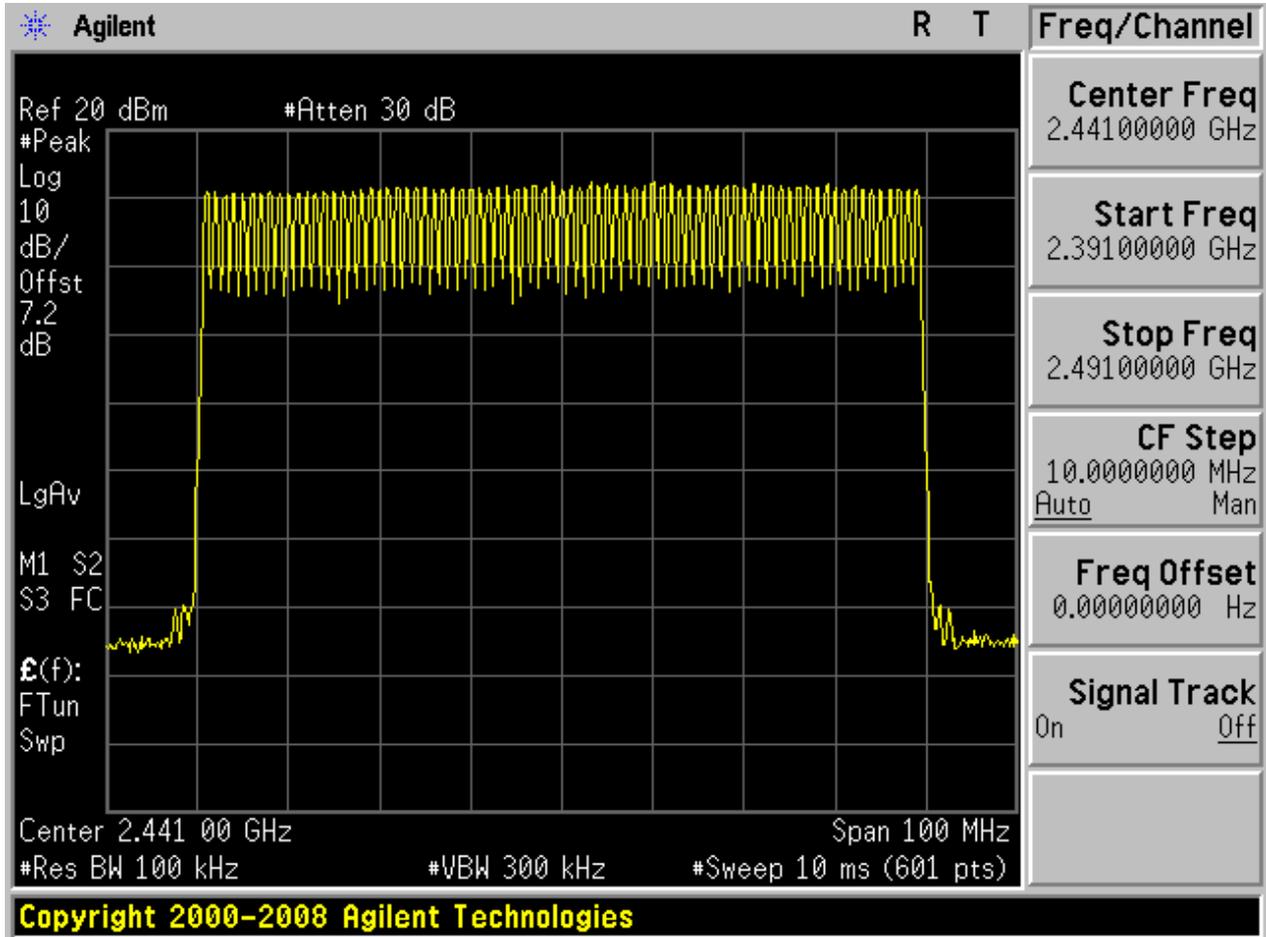
## 1 Result Table

EUT Conf.	Number of Hopping Channel	Verdict
TM1_DH5_Hop	79	Pass
TM2_2DH5_Hop	79	Pass
TM3_3DH5_Hop	79	Pass

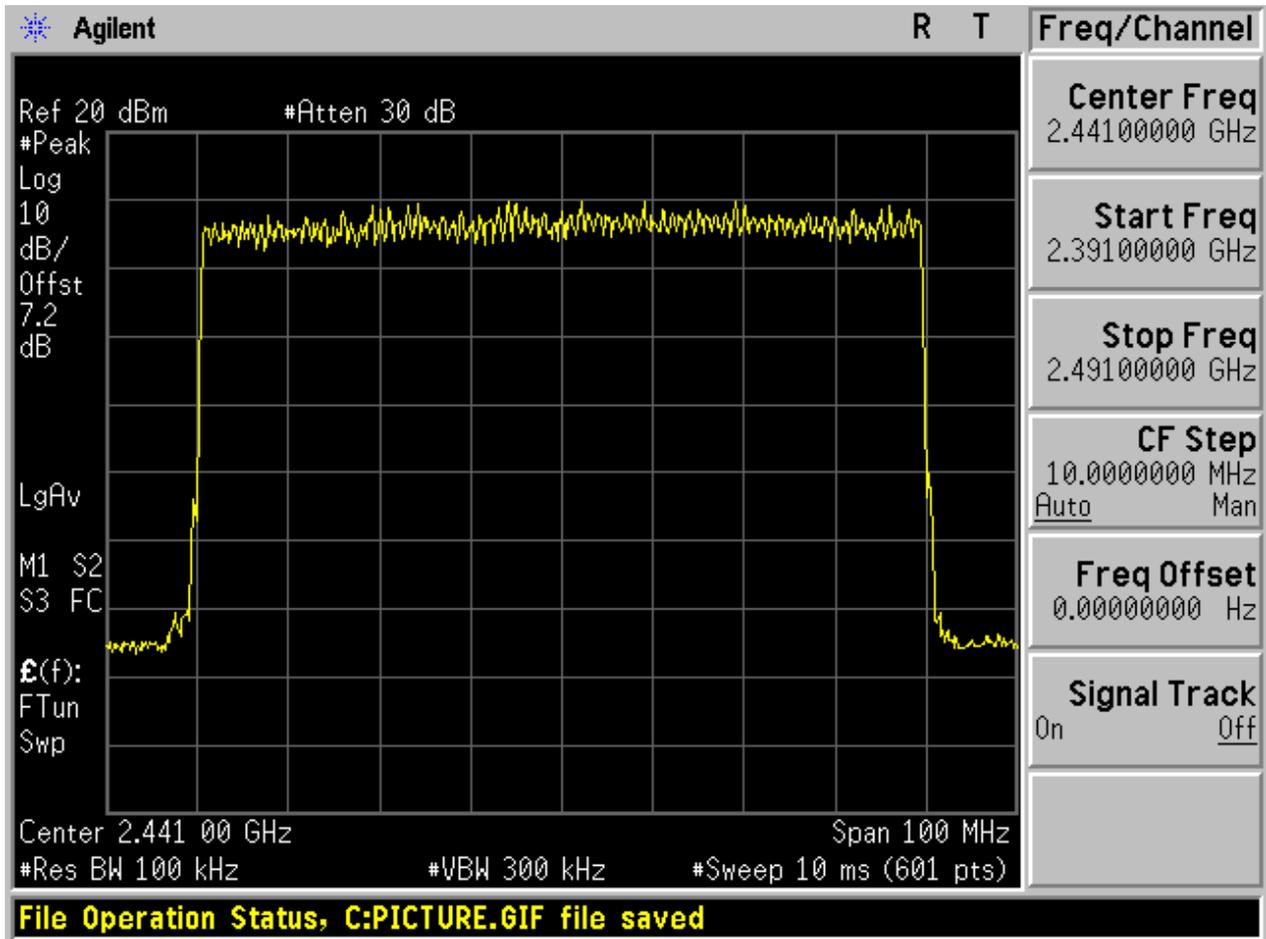


## 2 Test Plot

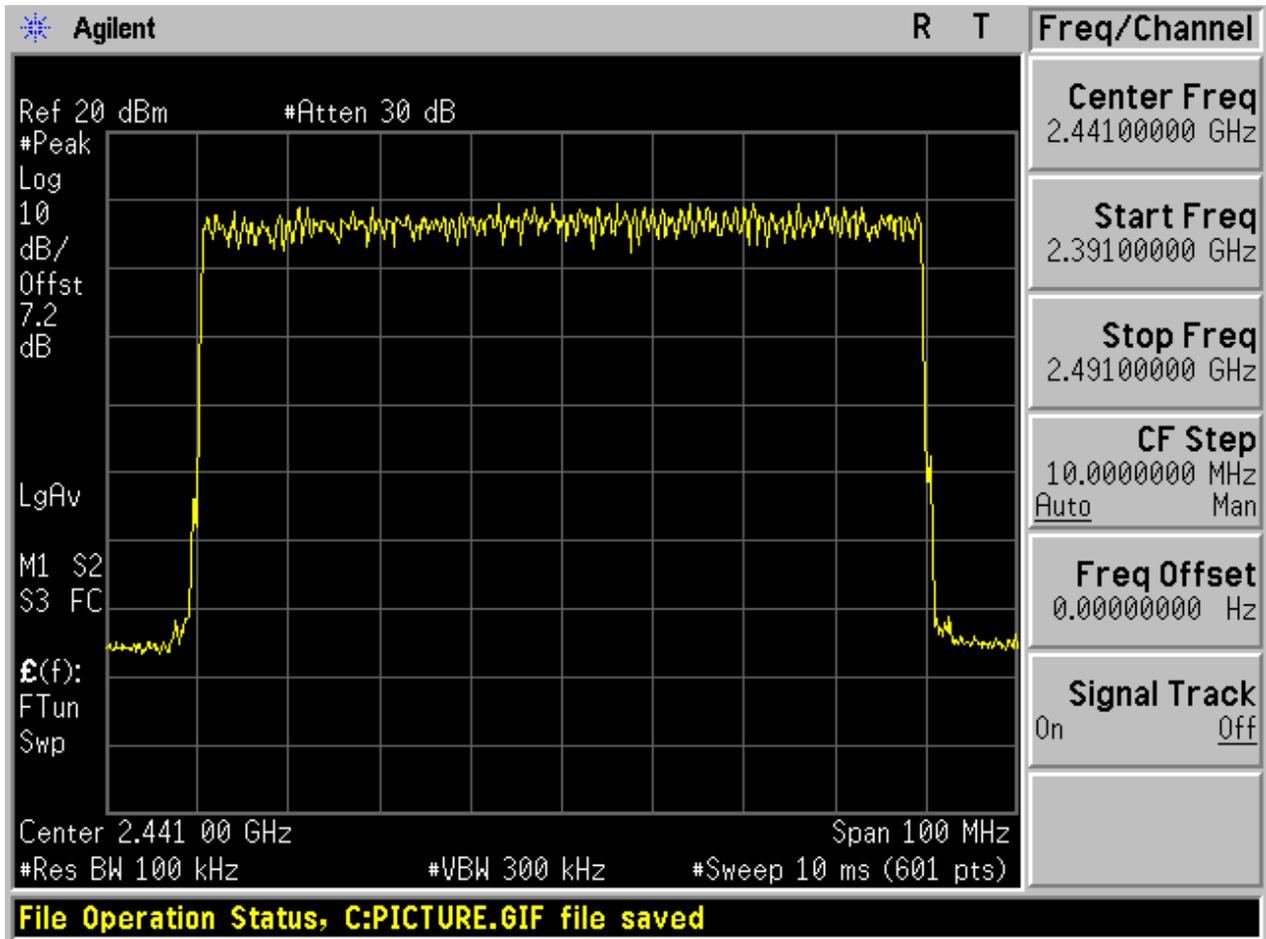
### 2.1 TM1\_DH5\_Hop



## 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:

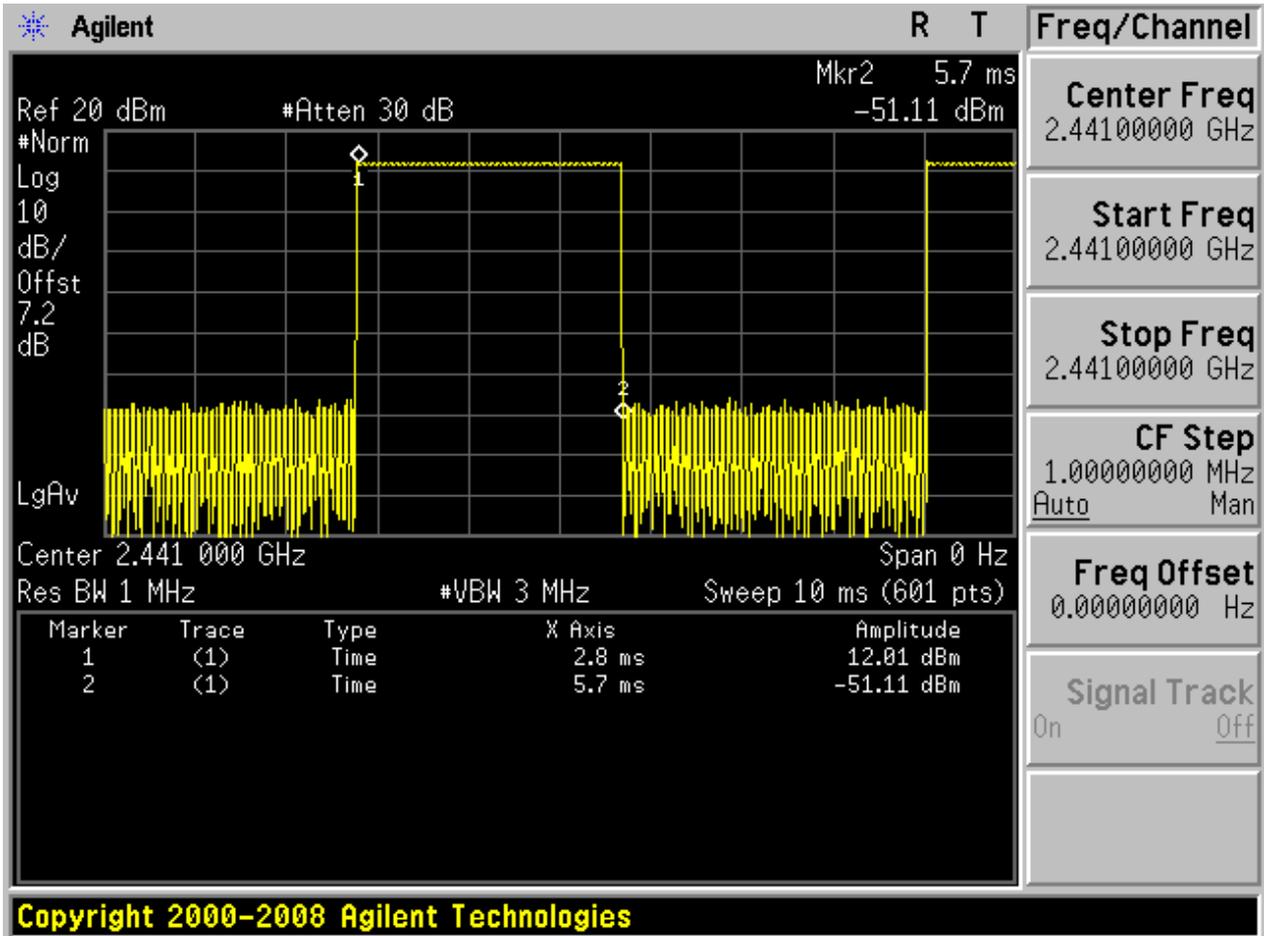
- The duration for dwell time calculation:  $0.4 \text{ [s]} * \text{hopping number} = 0.4 \text{ [s]} * 79 \text{ [ch]} = 31.6 \text{ [s*ch]}$ ;
- The burst width [ms/hop/ch], which is directly measured, refers to the duration on one channel hop.
- The hops per second for all channels: The selected 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	3.000	106.67	0.320	Pass
TM3_3DH5_Ch39	3.000	106.67	0.320	Pass

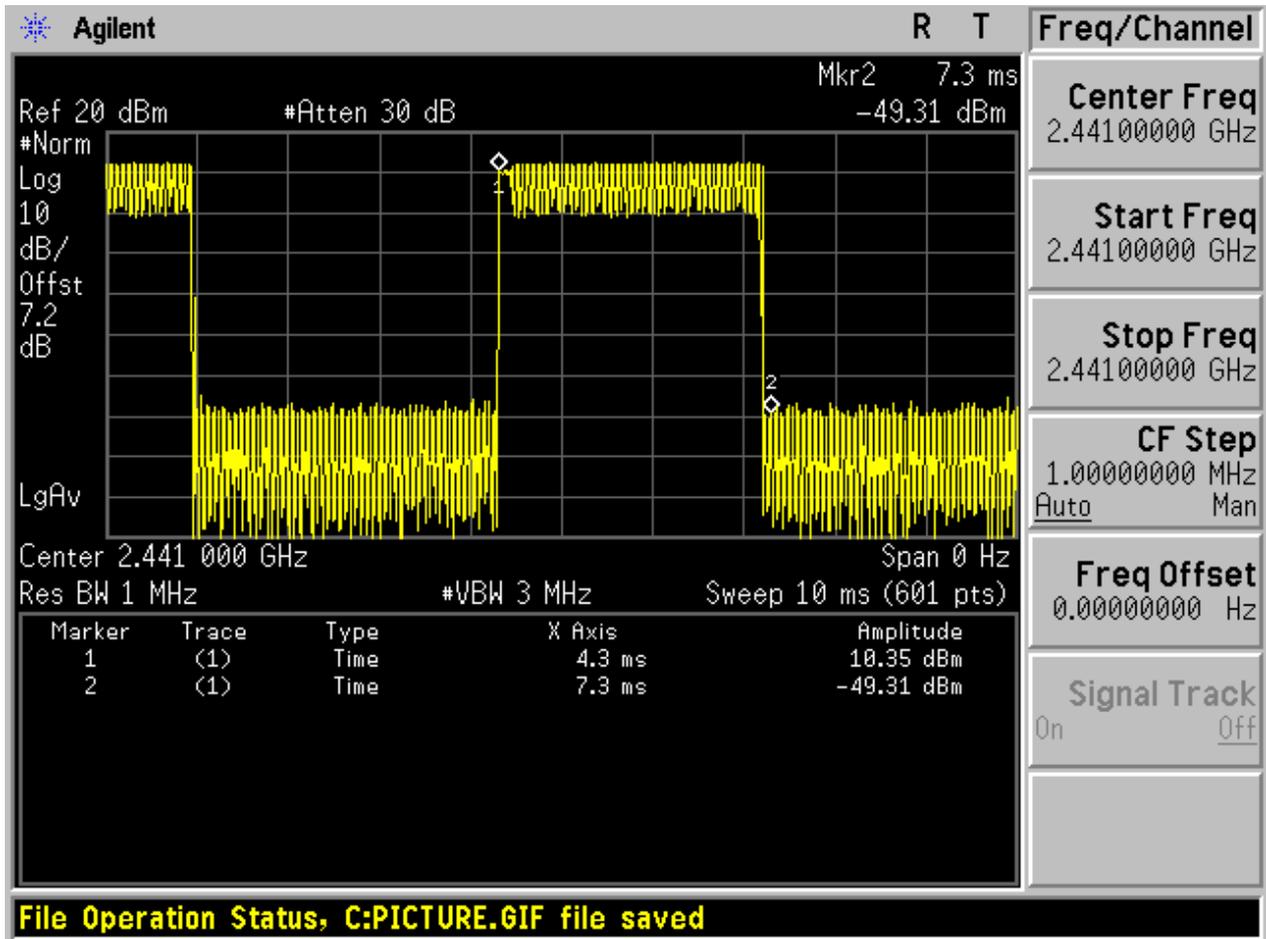
## 2 Test Plot

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

### 2.1 TM1\_DH5\_Ch39

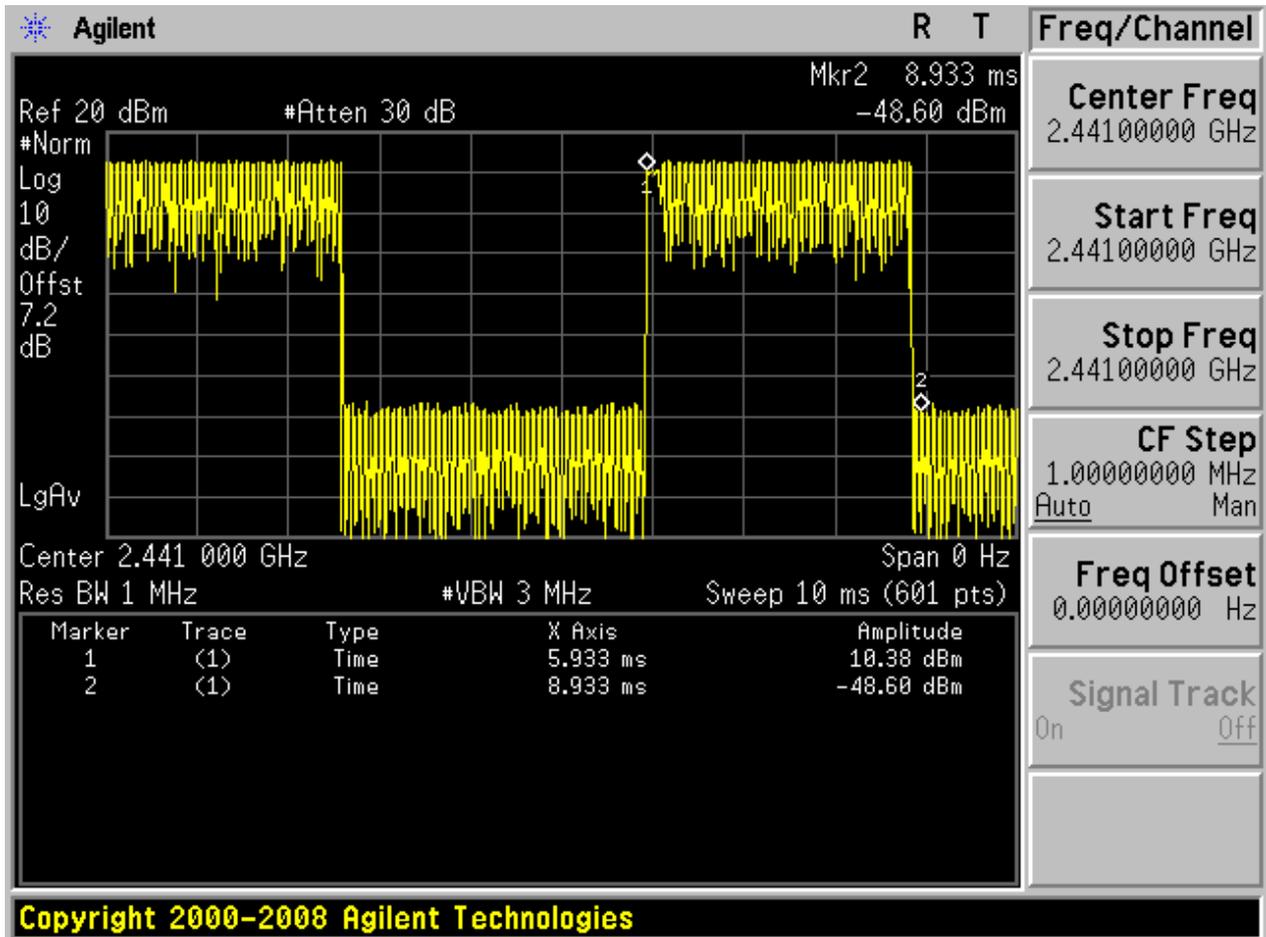


2.2 TM2\_2DH5\_Ch39





2.3 TM3\_3DH5\_Ch39





# Appendix E: Maximum Peak Conducted Output Power



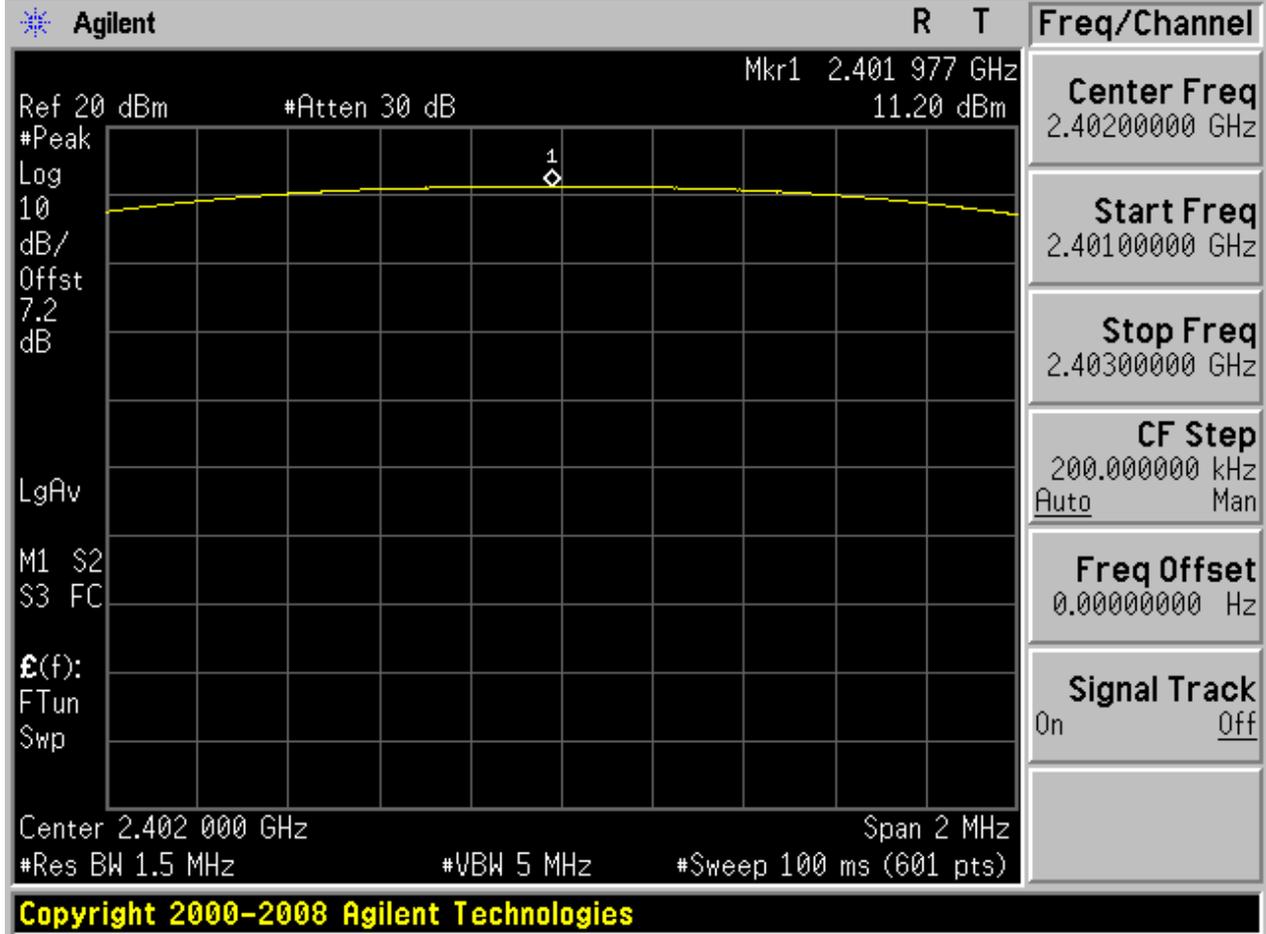
## 1 Result Table

EUT Conf.	Max. Peak Power [dBm]	Verdict
TM1_DH5_Ch0	11.2	Pass
TM1_DH5_Ch39	12.53	Pass
TM1_DH5_Ch78	11.88	Pass
TM2_2DH5_Ch0	11.03	Pass
TM2_2DH5_Ch39	12.34	Pass
TM2_2DH5_Ch78	11.73	Pass
TM3_3DH5_Ch0	11.47	Pass
TM3_3DH5_Ch39	12.78	Pass
TM3_3DH5_Ch78	12.15	Pass



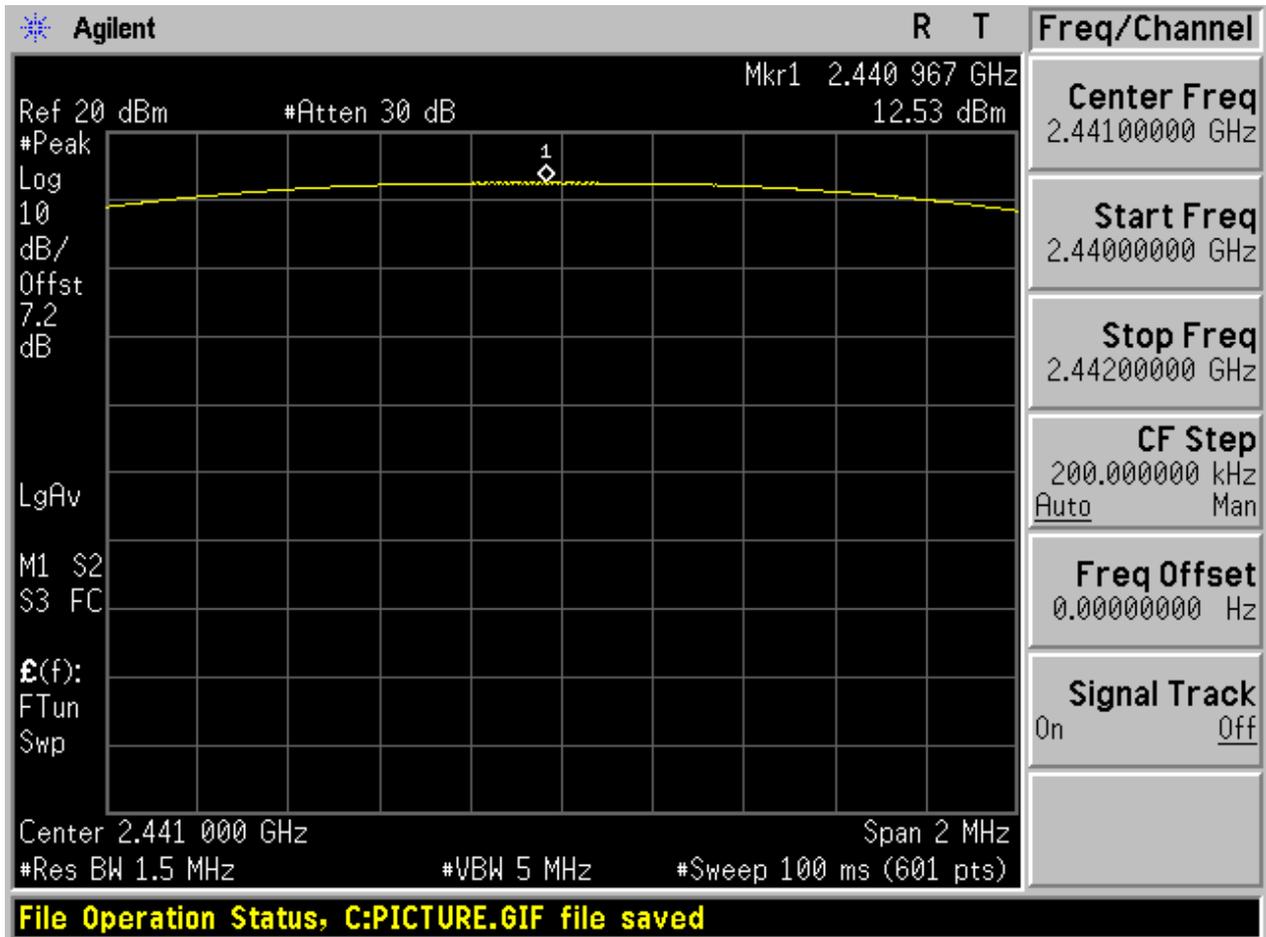
## 2 Test Plot

### 2.1 TM1\_DH5\_Ch0



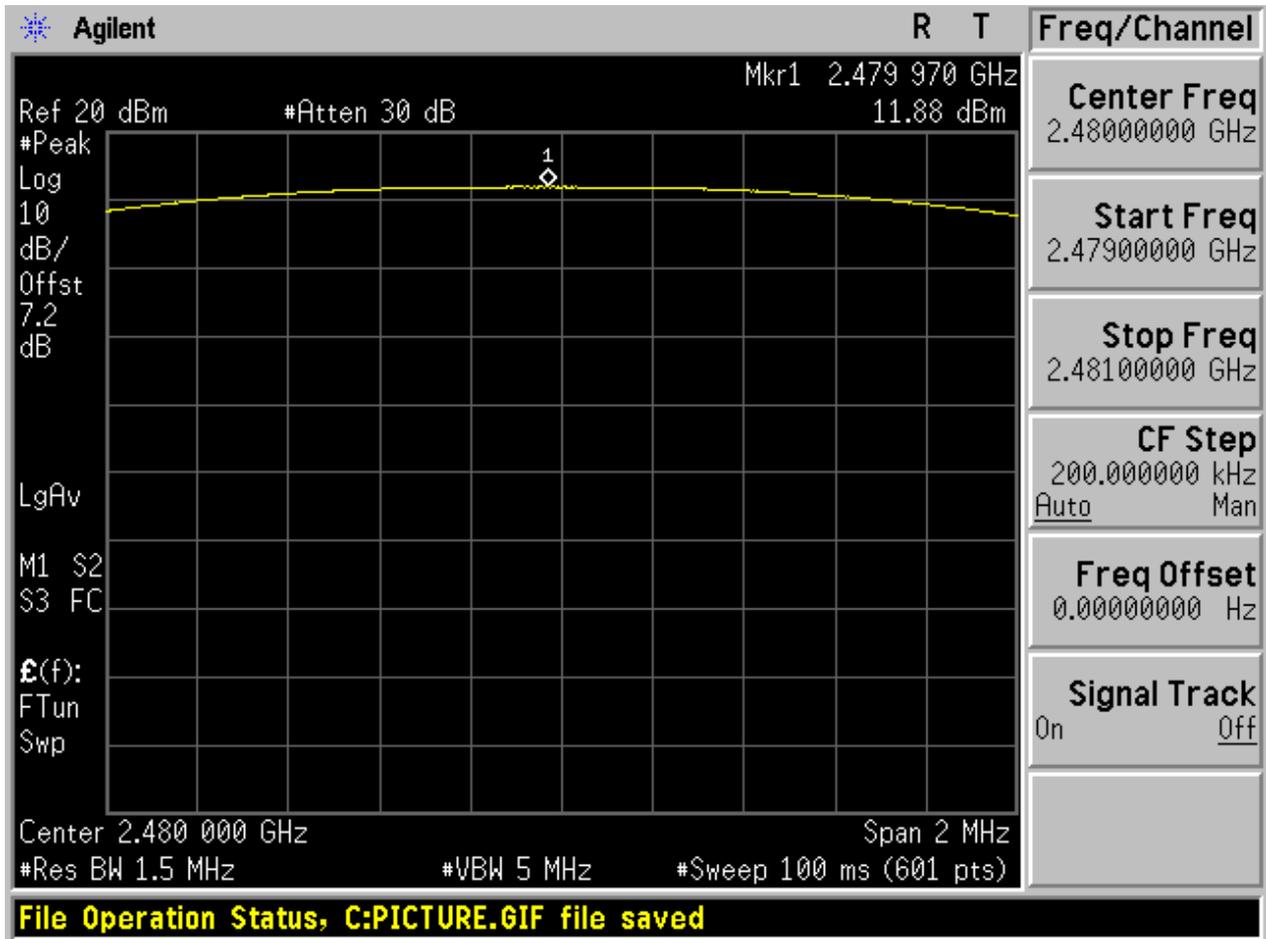


## 2.2 TM1\_DH5\_Ch39



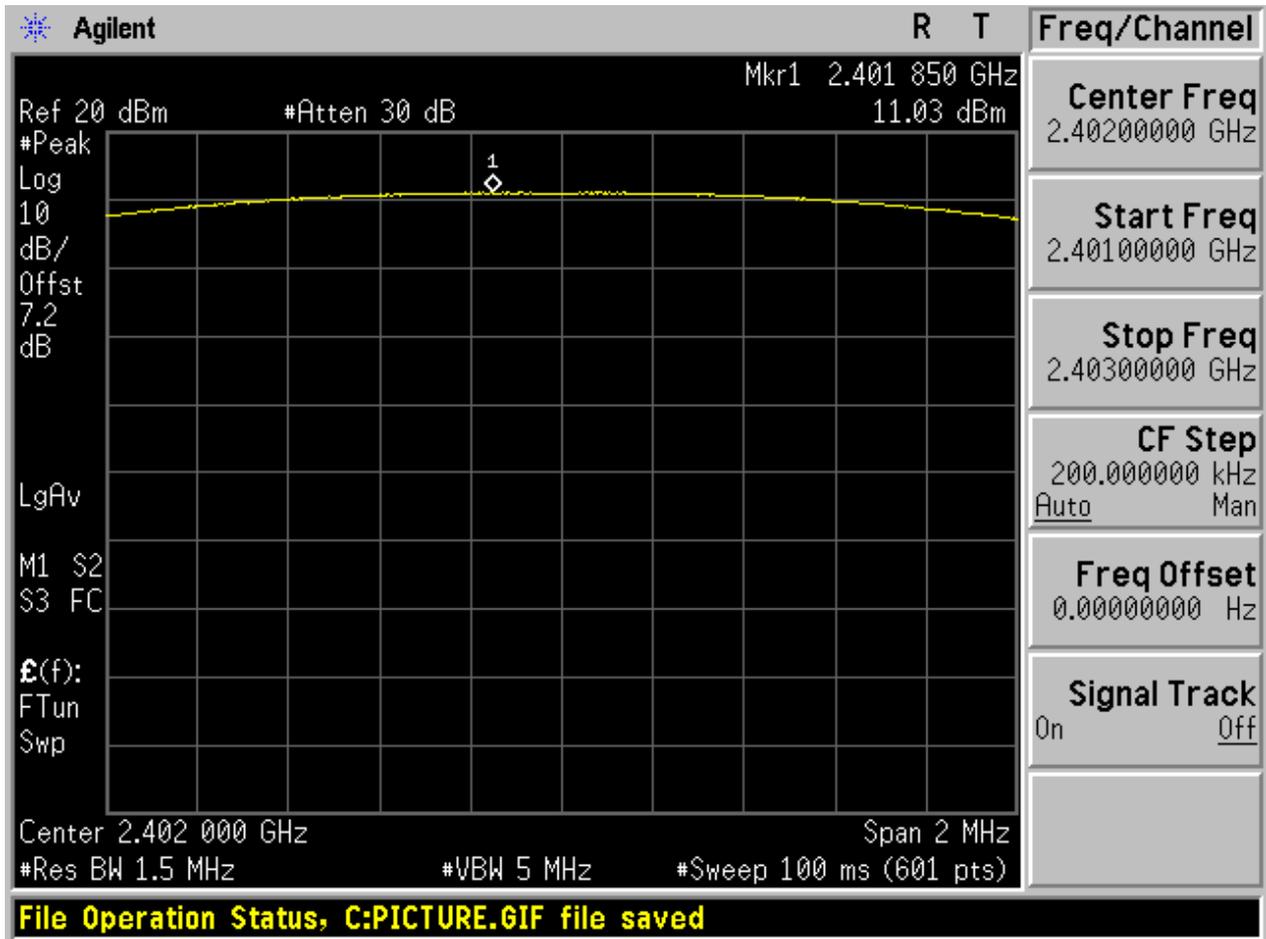


2.3 TM1\_DH5\_Ch78



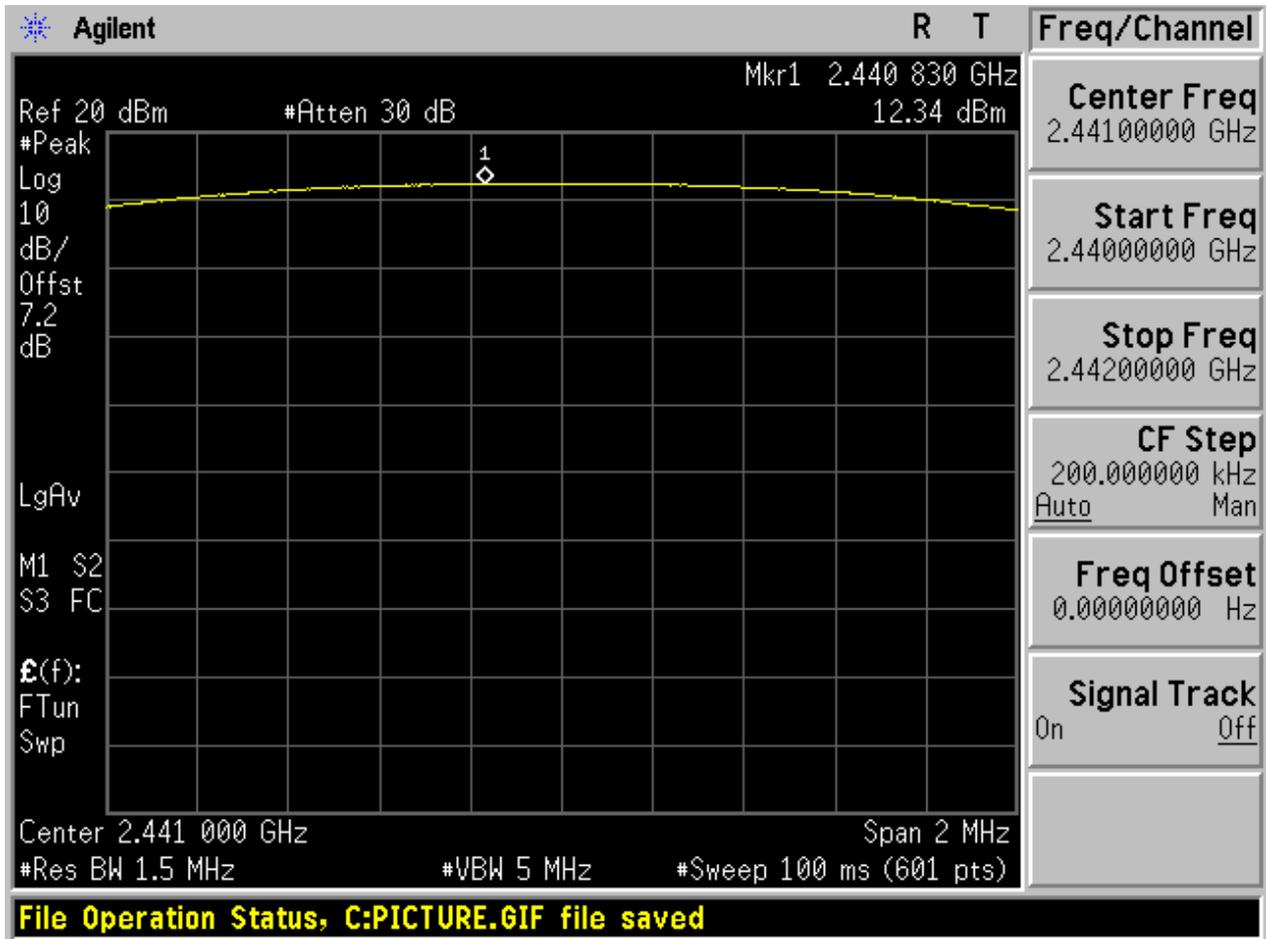


## 2.4 TM2\_2DH5\_Ch0



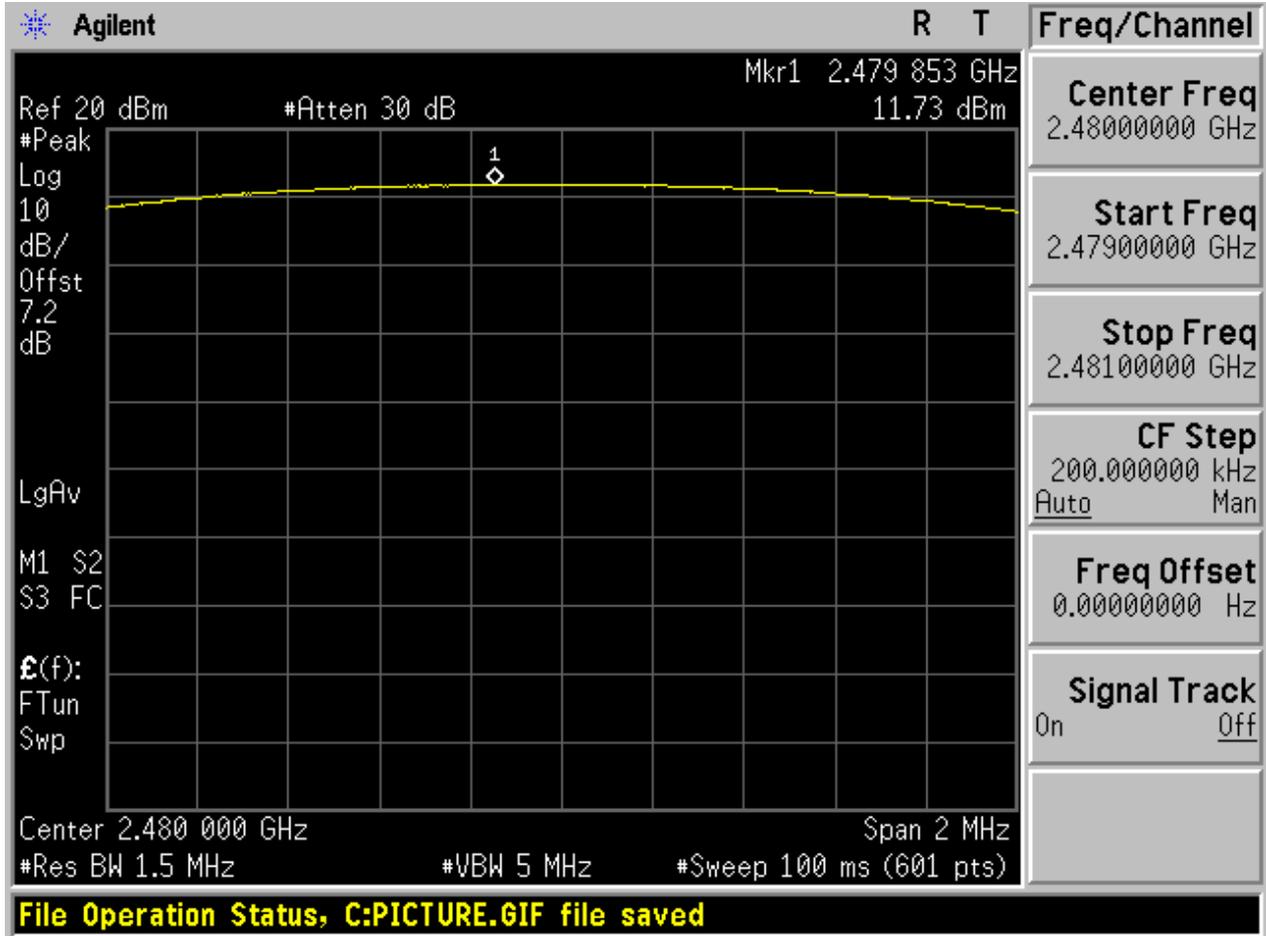


## 2.5 TM2\_2DH5\_Ch39



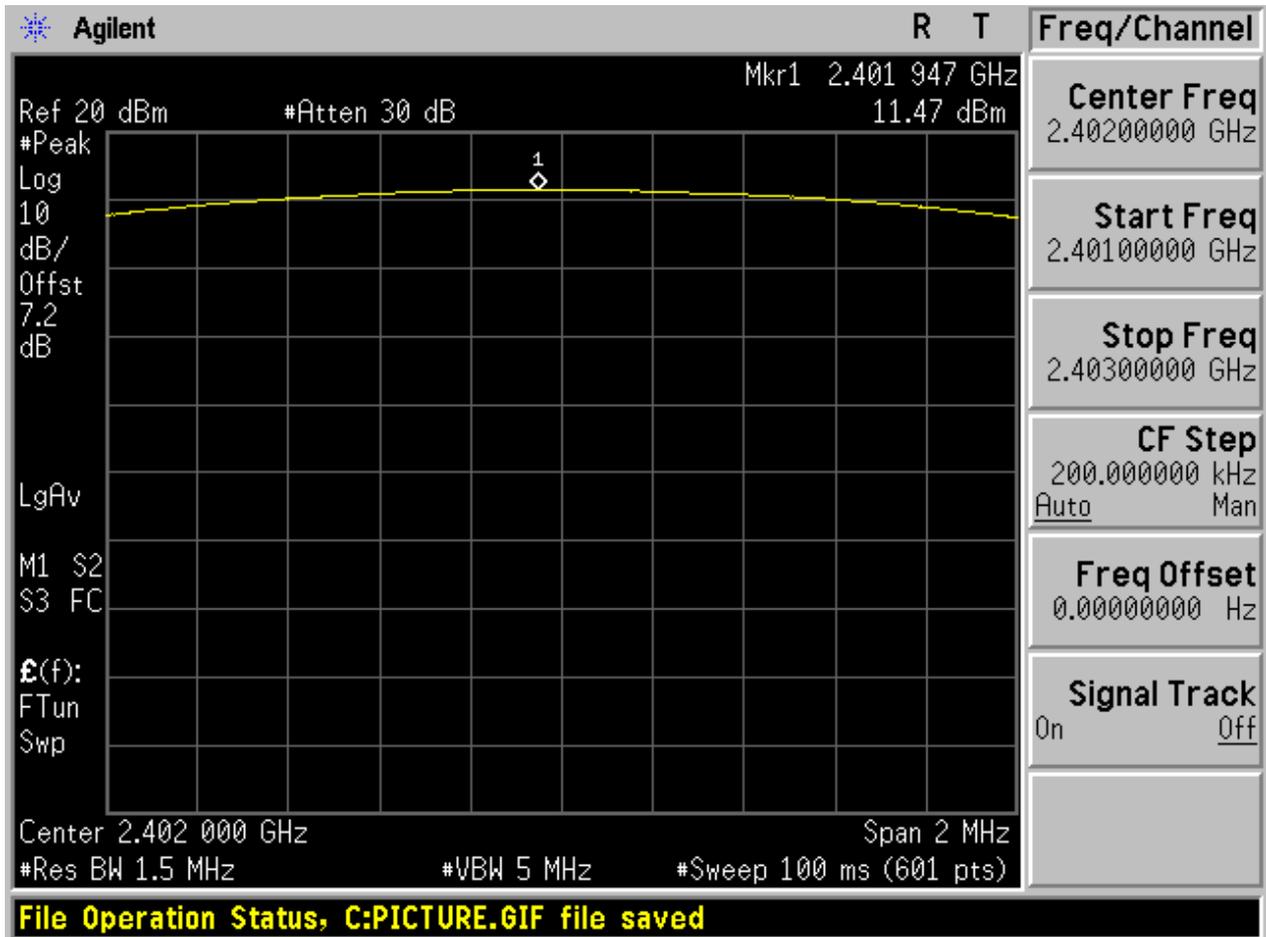


2.6 TM2\_2DH5\_Ch78



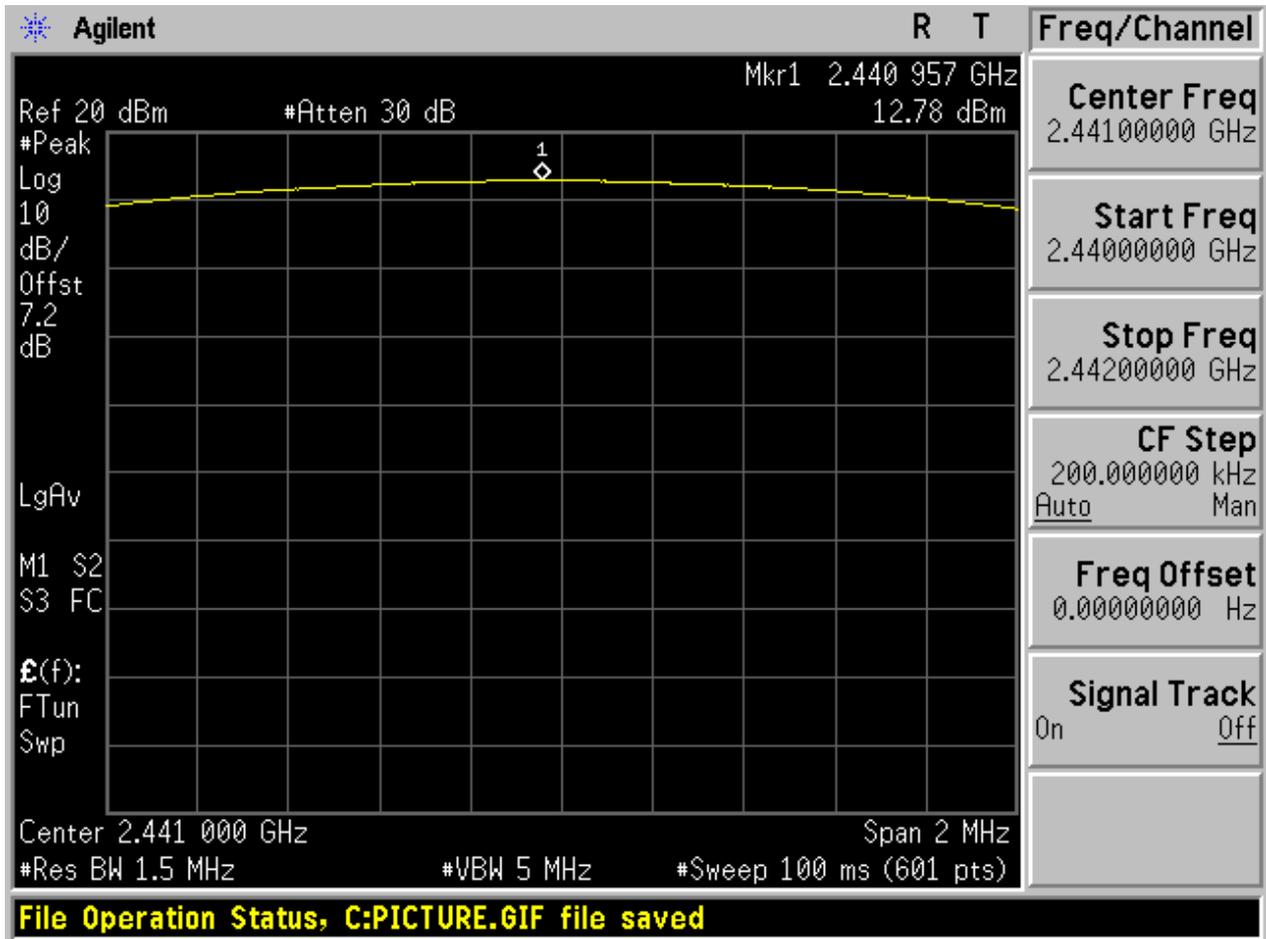


## 2.7 TM3\_3DH5\_Ch0



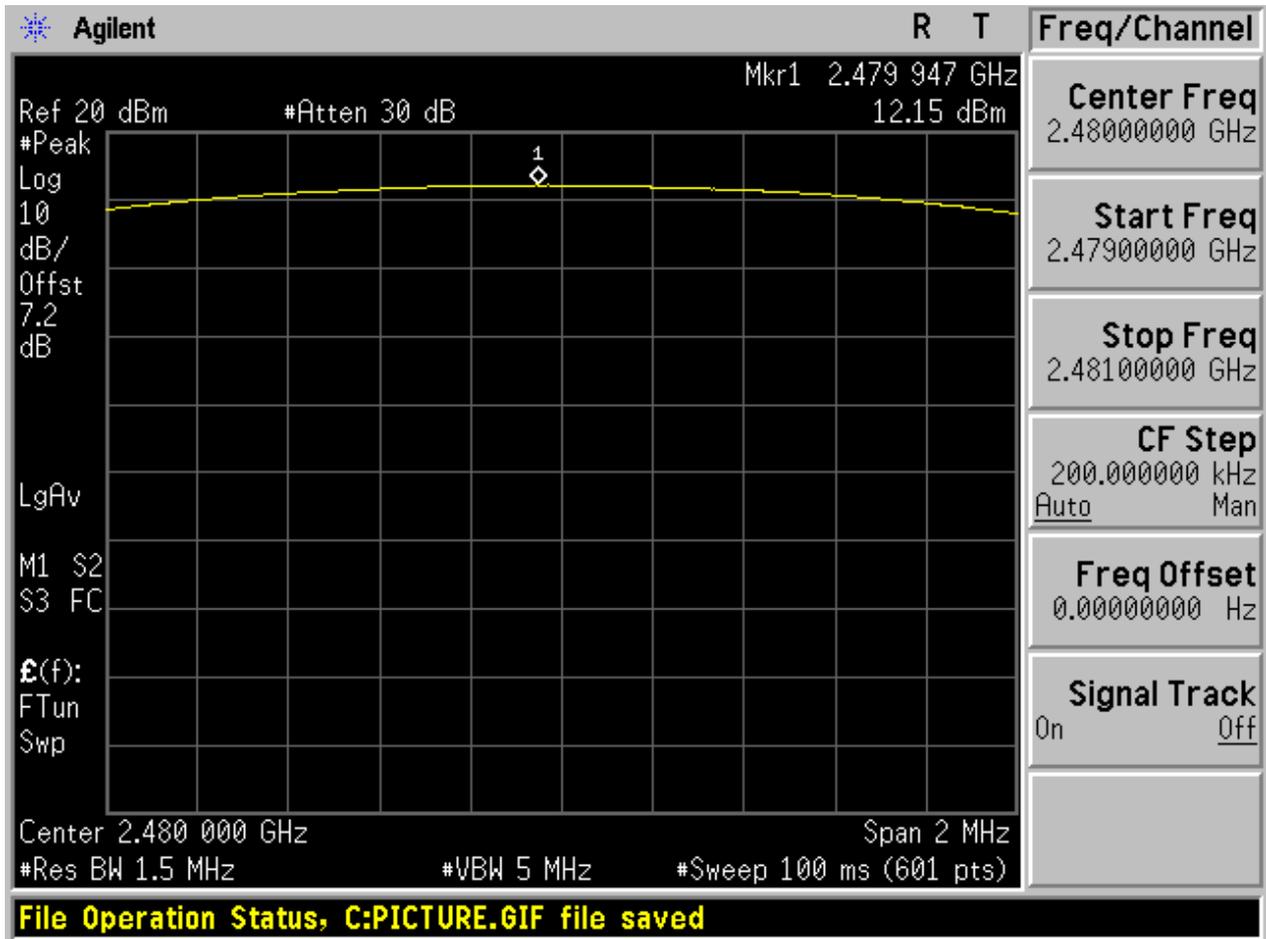


## 2.8 TM3\_3DH5\_Ch39





## 2.9 TM3\_3DH5\_Ch78





# Appendix F: Band edge spurious emission



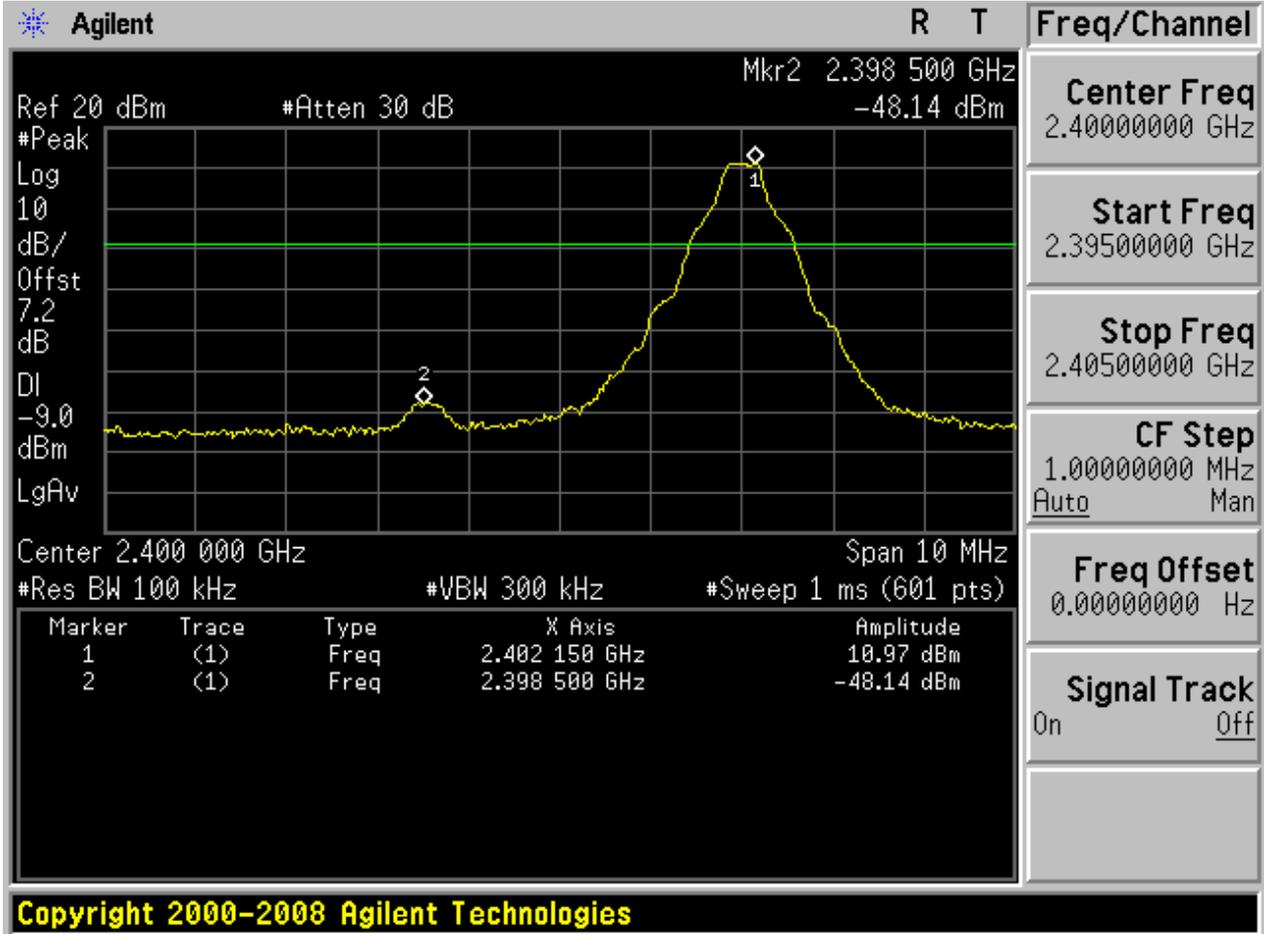
## 1 Result Table

EUT Conf.	Channel No.	Carrier Frequency [MHz]	Carrier Power [dBm]	Frequency Hopping	Max. Spurious Level [dBm]	Limit [dBm]	Result
TM1_DH5 _Ch0	0	2402	-48.14	Off	10.97	-9.03	Pass
	-	-	-49.65	On	10.49	-9.51	Pass
TM1_DH5 _Ch78	78	2480	-48.28	Off	11.58	-8.42	Pass
	-	-	-52.89	On	11.43	-8.57	Pass
TM2_2DH 5_Ch0	0	2402	-49.85	Off	8.49	-11.51	Pass
	-	-	-50.79	On	6.62	-13.38	Pass
TM2_2DH 5_Ch78	78	2480	-50.49	Off	9.34	-10.66	Pass
	-	-	-52.73	On	8.26	-11.74	Pass
TM3_3DH 5_Ch0	0	2402	-49.38	Off	8.56	-11.44	Pass
	-	-	-50.8	On	8.54	-11.46	Pass
TM3_3DH 5_Ch78	78	2480	-49.9	Off	9.30	-10.7	Pass
	-	-	-52.35	On	9.20	-10.8	Pass

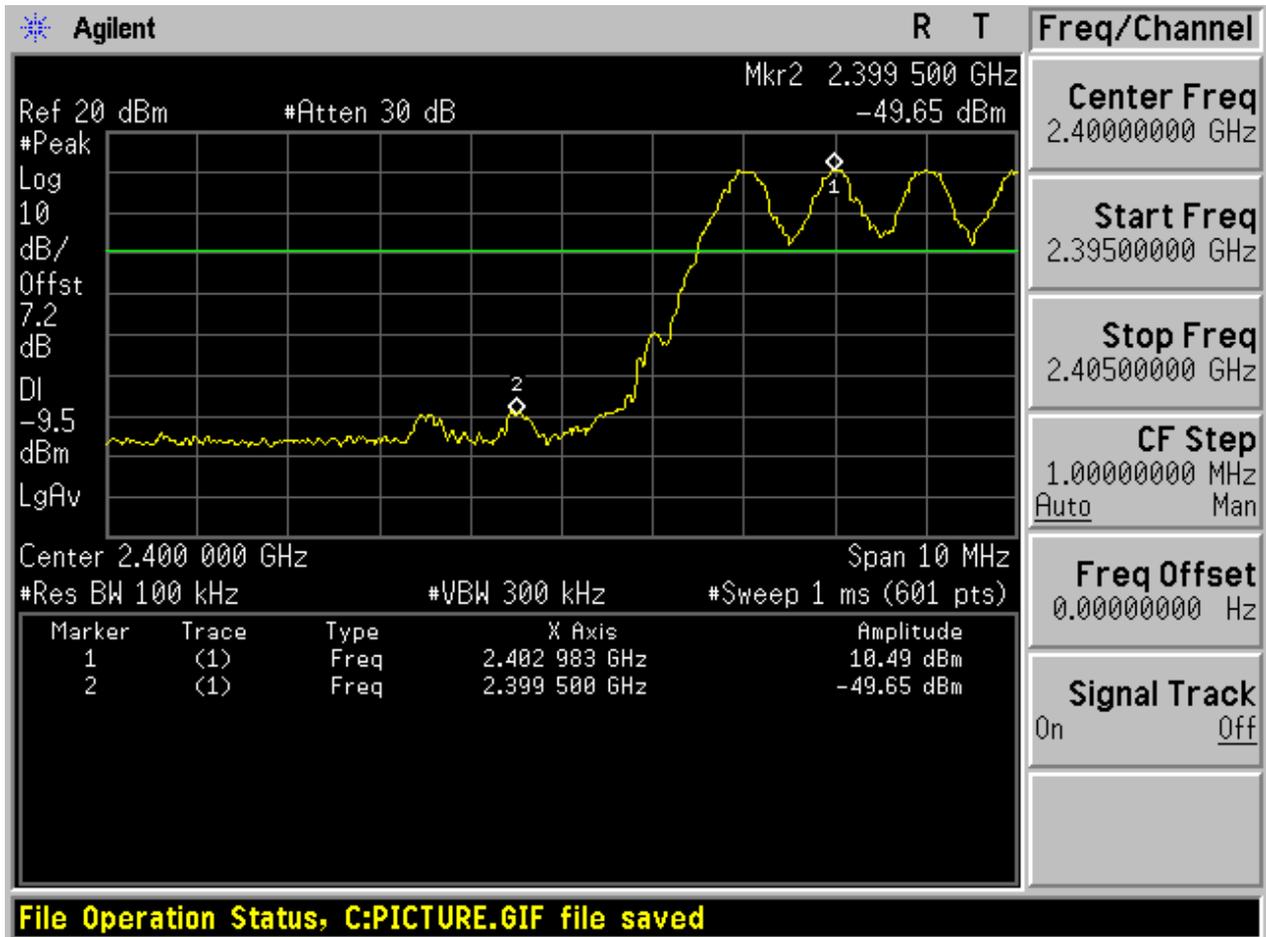
## 2 Test Plot

### 2.1 TM1\_DH5\_Ch0

No hopping

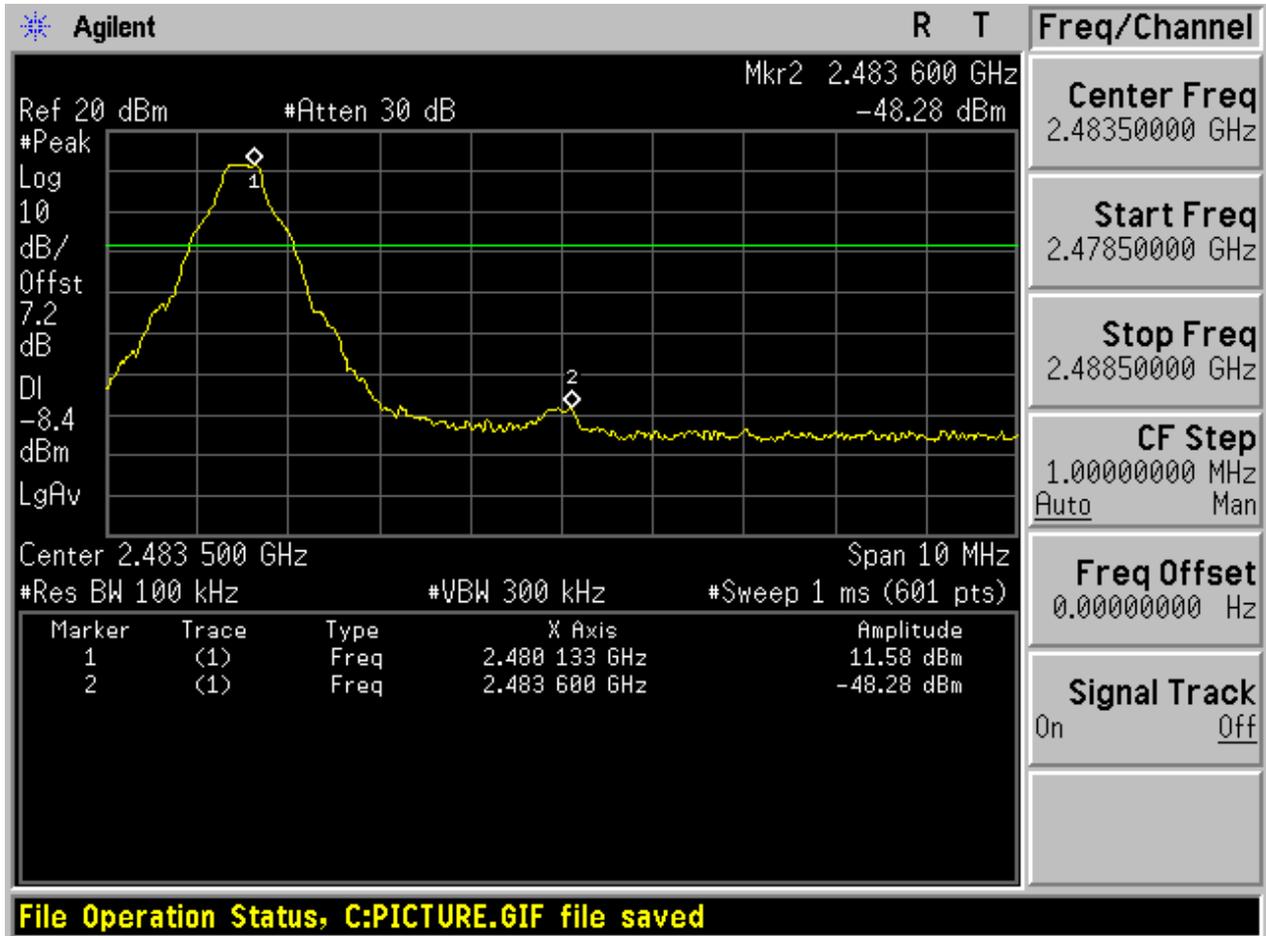


With hopping

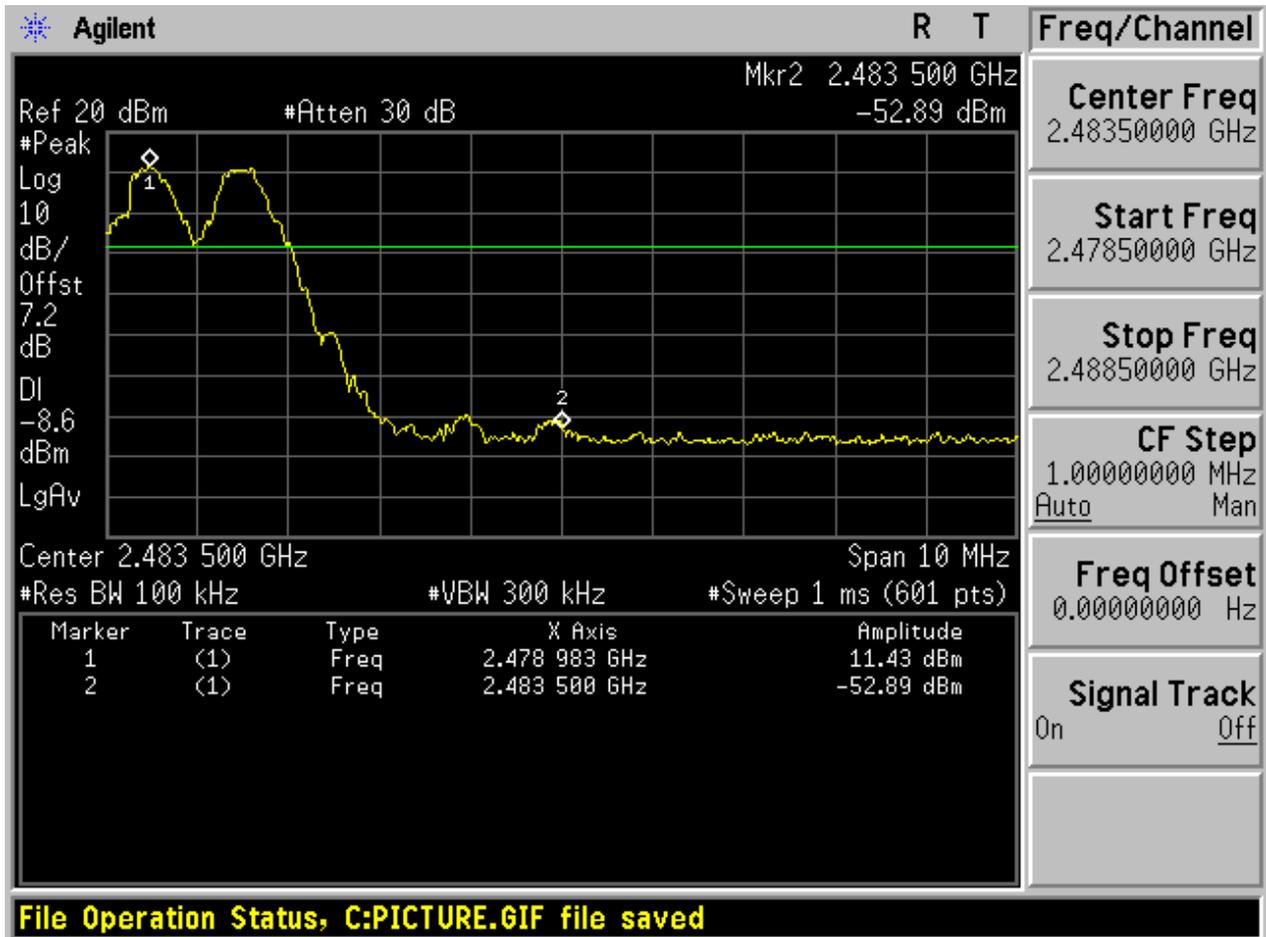


## 2.2 TM1\_DH5\_Ch78

No hopping

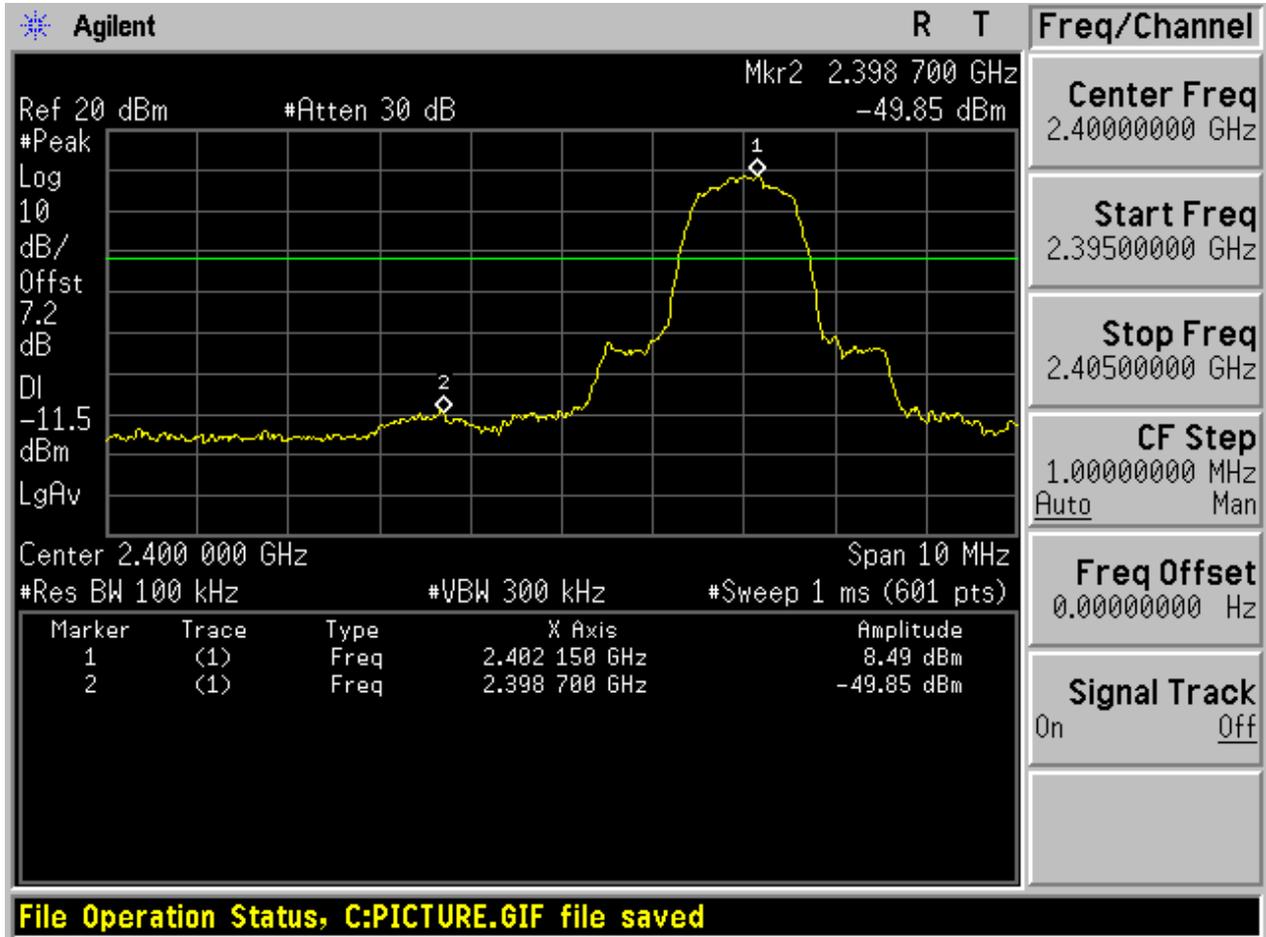


With hopping

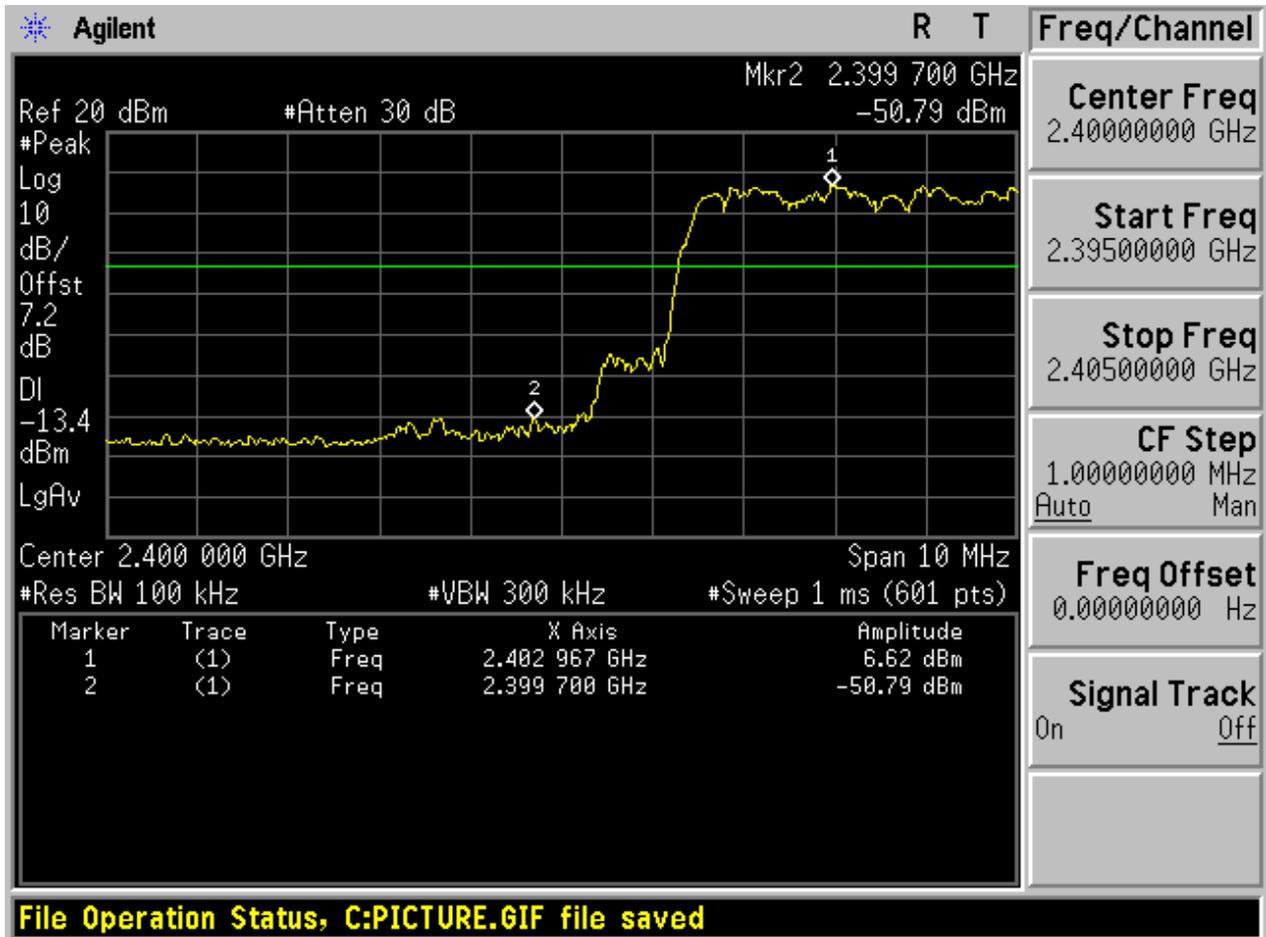


2.3 TM2\_2DH5\_Ch0

No hopping

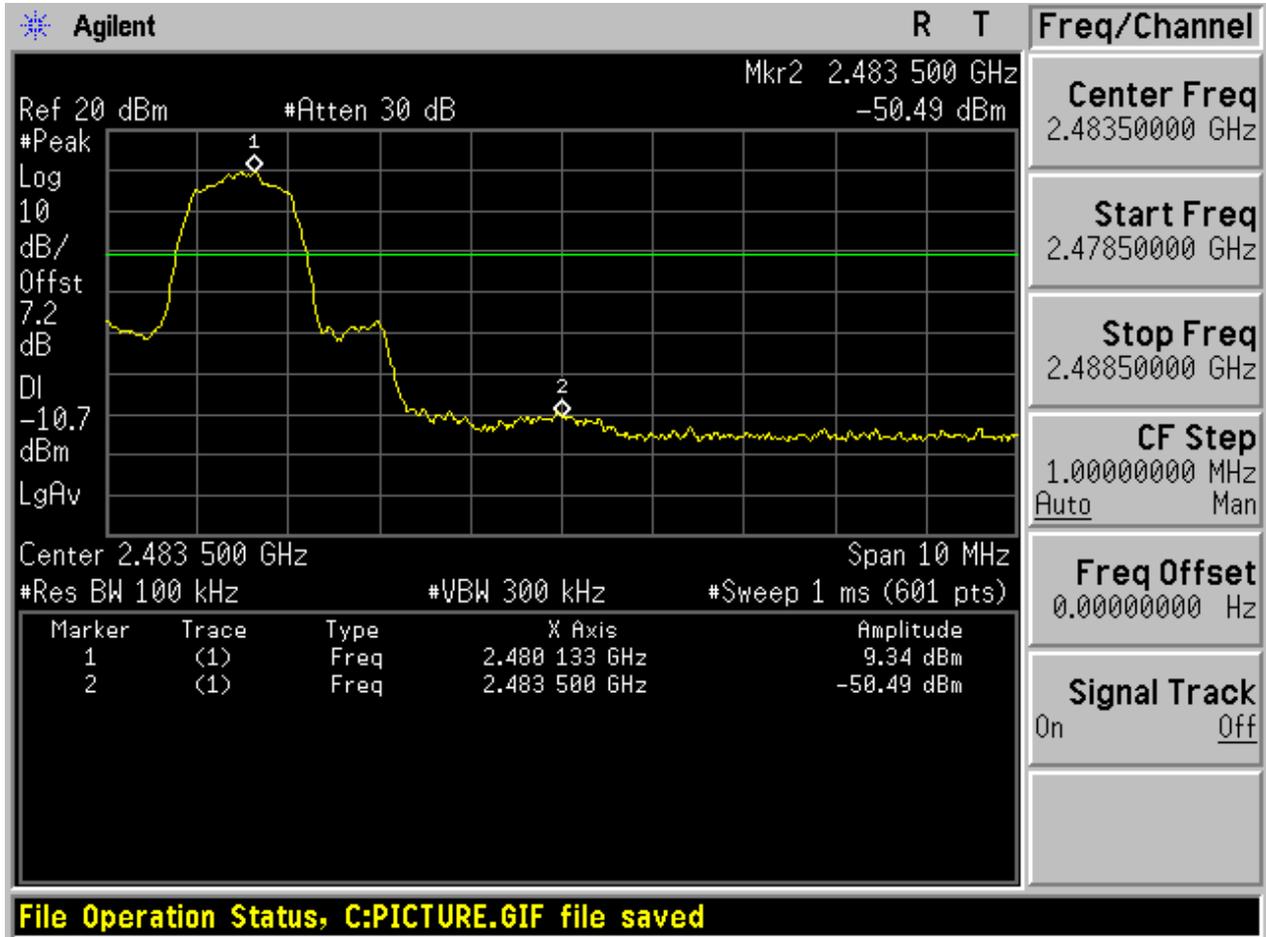


With hopping

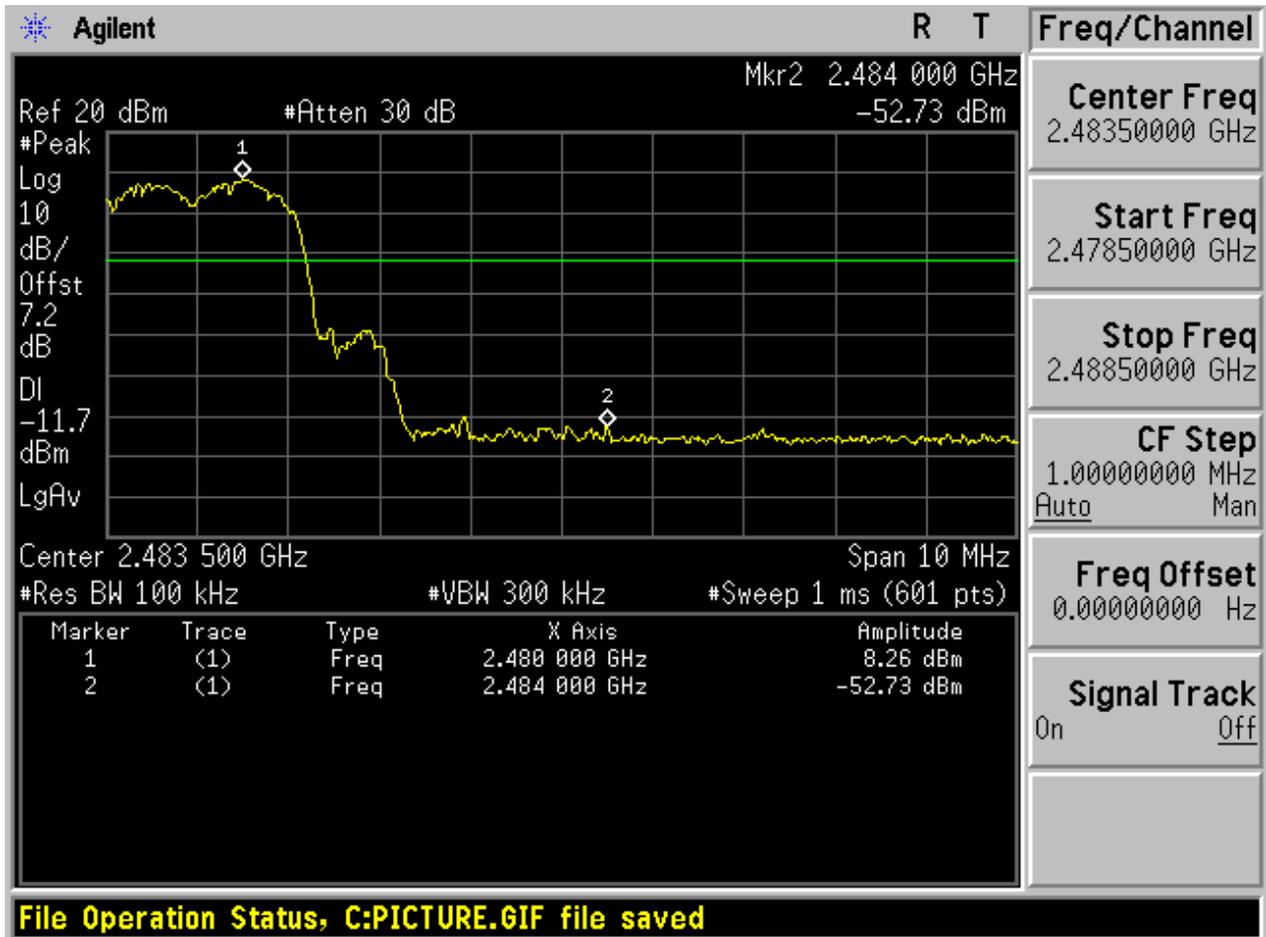


2.4 TM2\_2DH5\_Ch78

No hopping

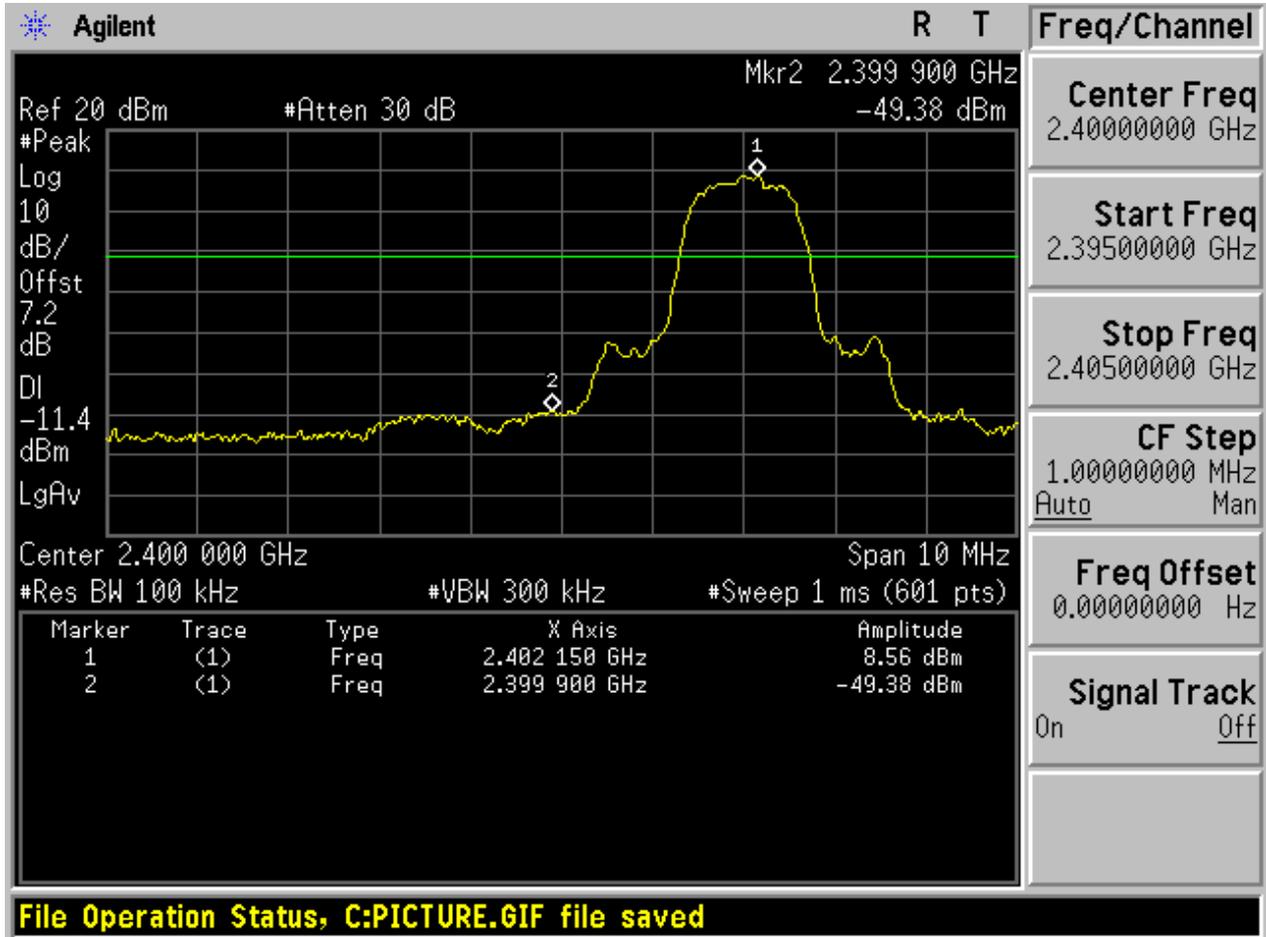


With hopping

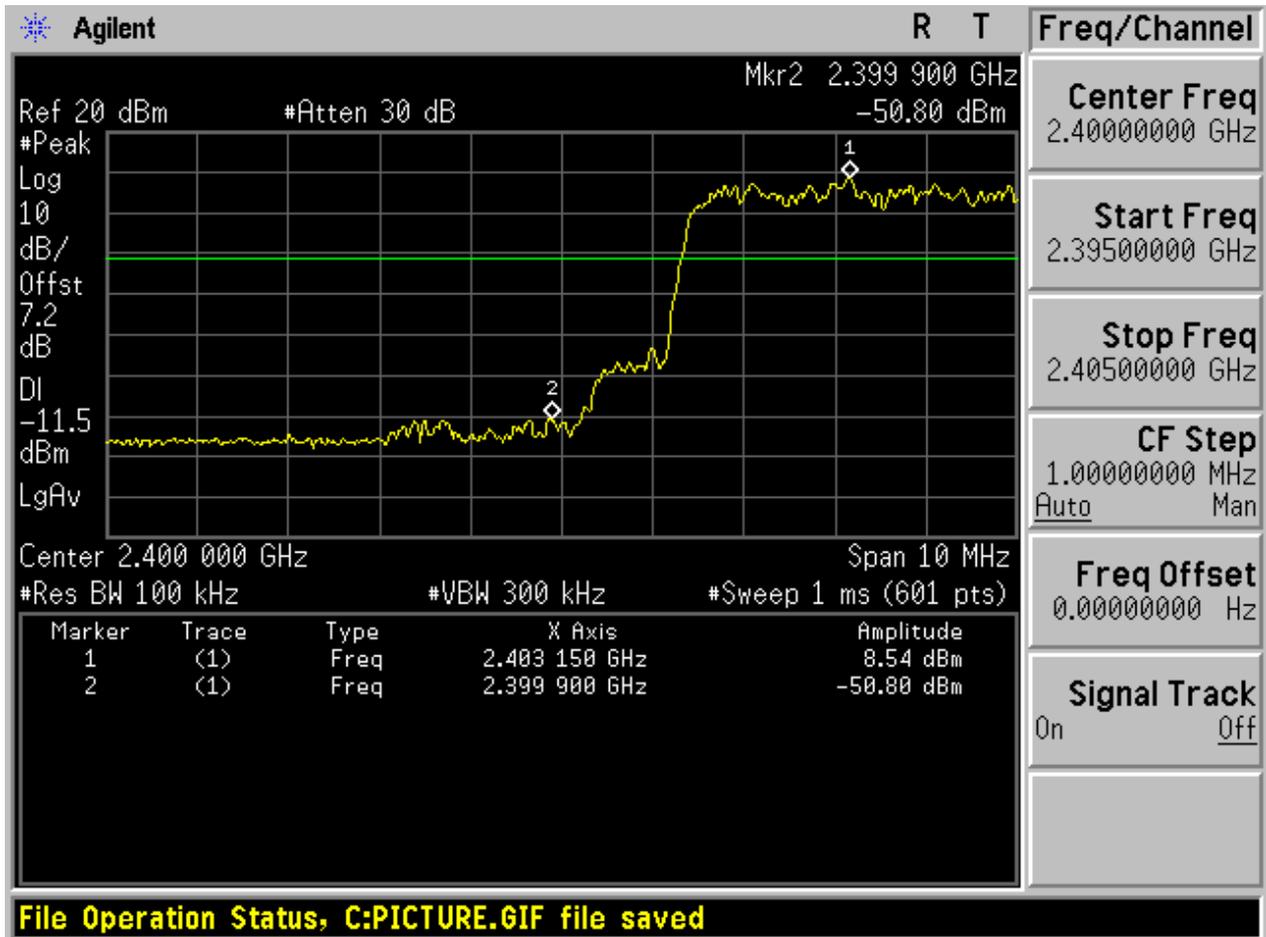


2.5 TM3\_3DH5\_Ch0

No hopping

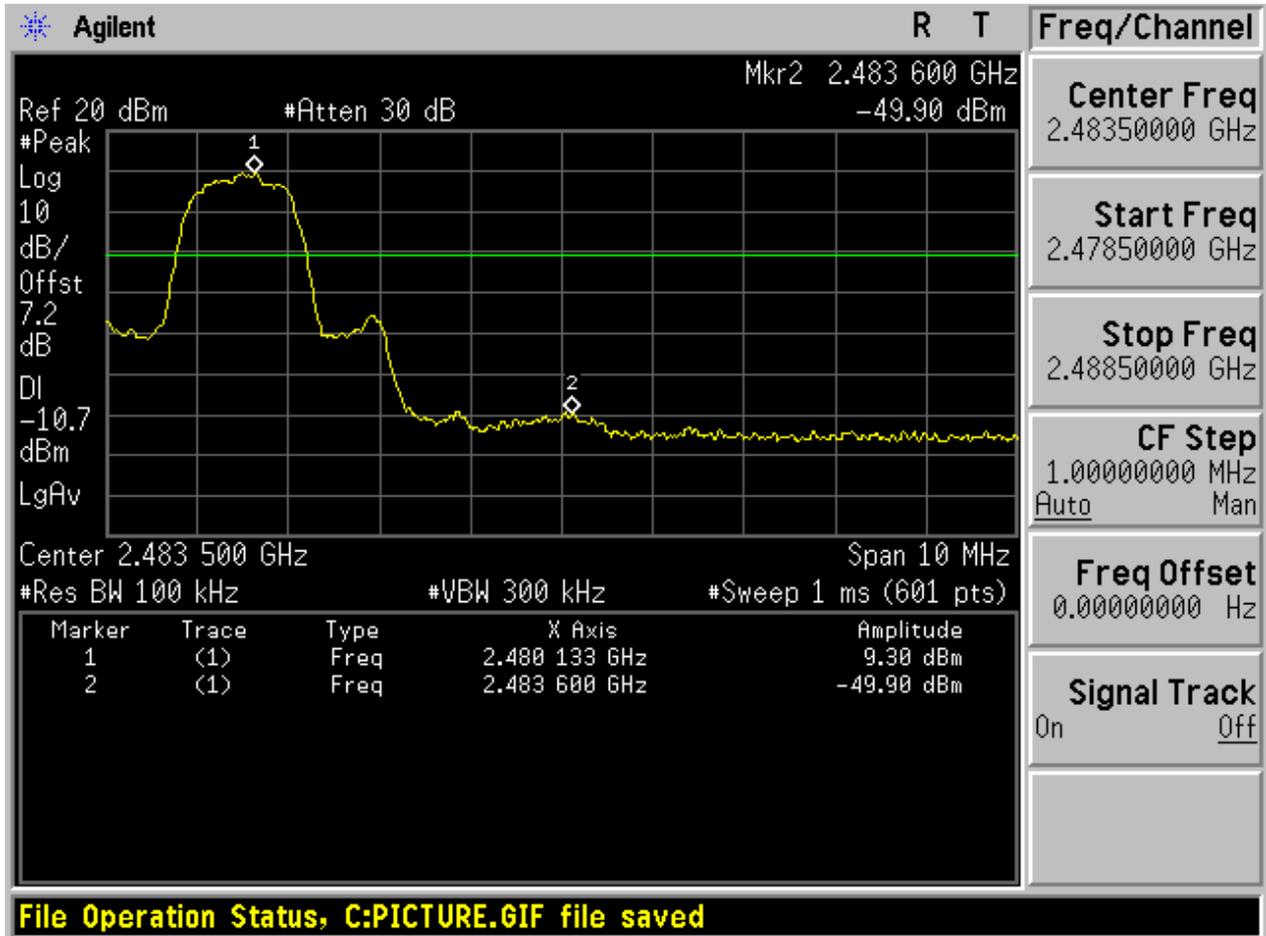


With hopping



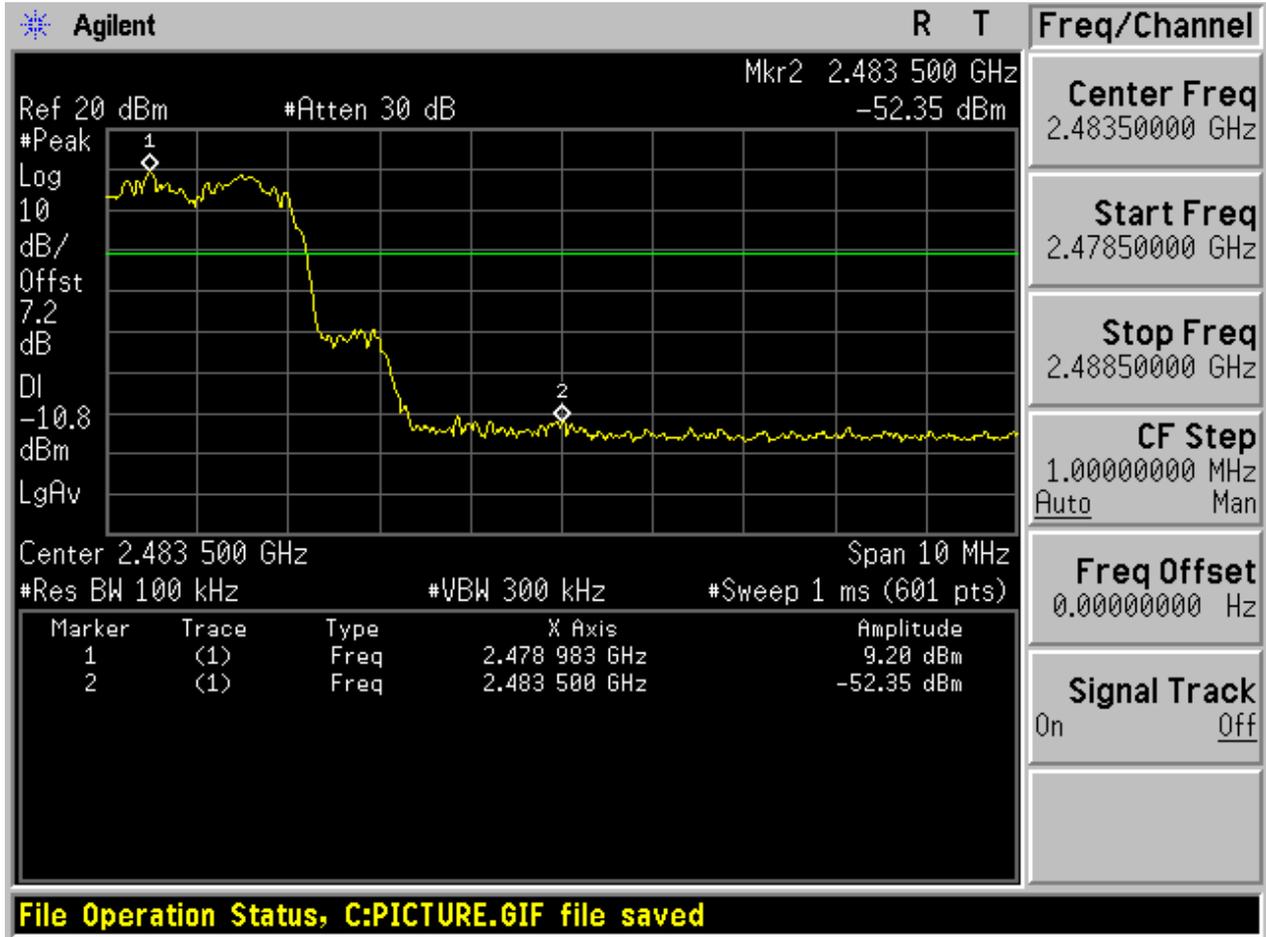
## 2.6 TM3\_3DH5\_Ch78

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”.

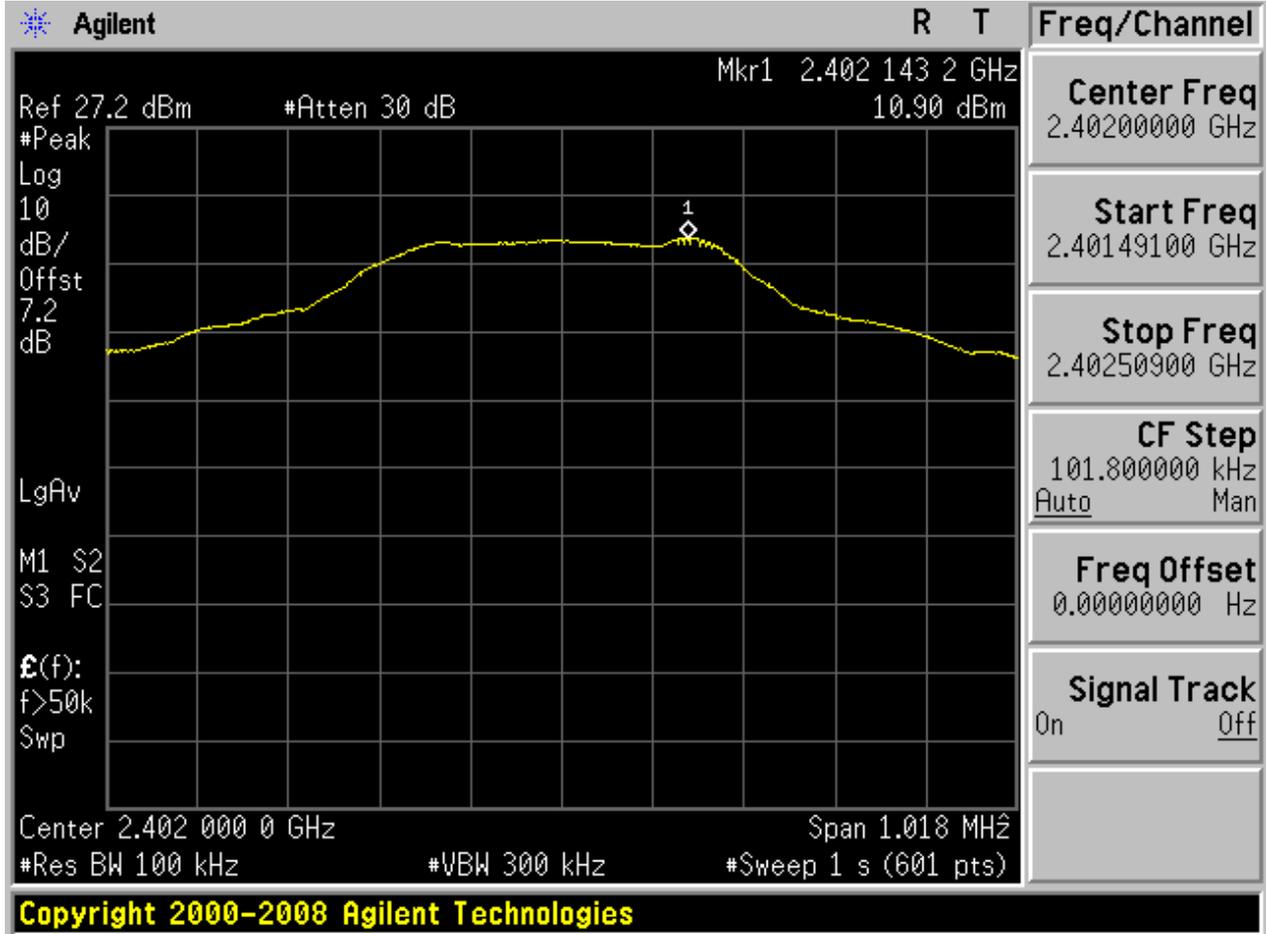
EUT Conf.	Pref [dBm/100 kHz]	Puw [dBm/100 kHz]	Verdict
TM1_DH5_Ch0	10.90	< Limit	Pass
TM1_DH5_Ch39	12.21	< Limit	Pass
TM1_DH5_Ch78	11.59	< Limit	Pass
TM2_2DH5_Ch0	8.49	< Limit	Pass
TM2_2DH5_Ch39	9.80	< Limit	Pass
TM2_2DH5_Ch78	9.30	< Limit	Pass
TM3_3DH5_Ch0	8.51	< Limit	Pass
TM3_3DH5_Ch39	9.82	< Limit	Pass
TM3_3DH5_Ch78	9.30	< Limit	Pass



## 2 Test Plot

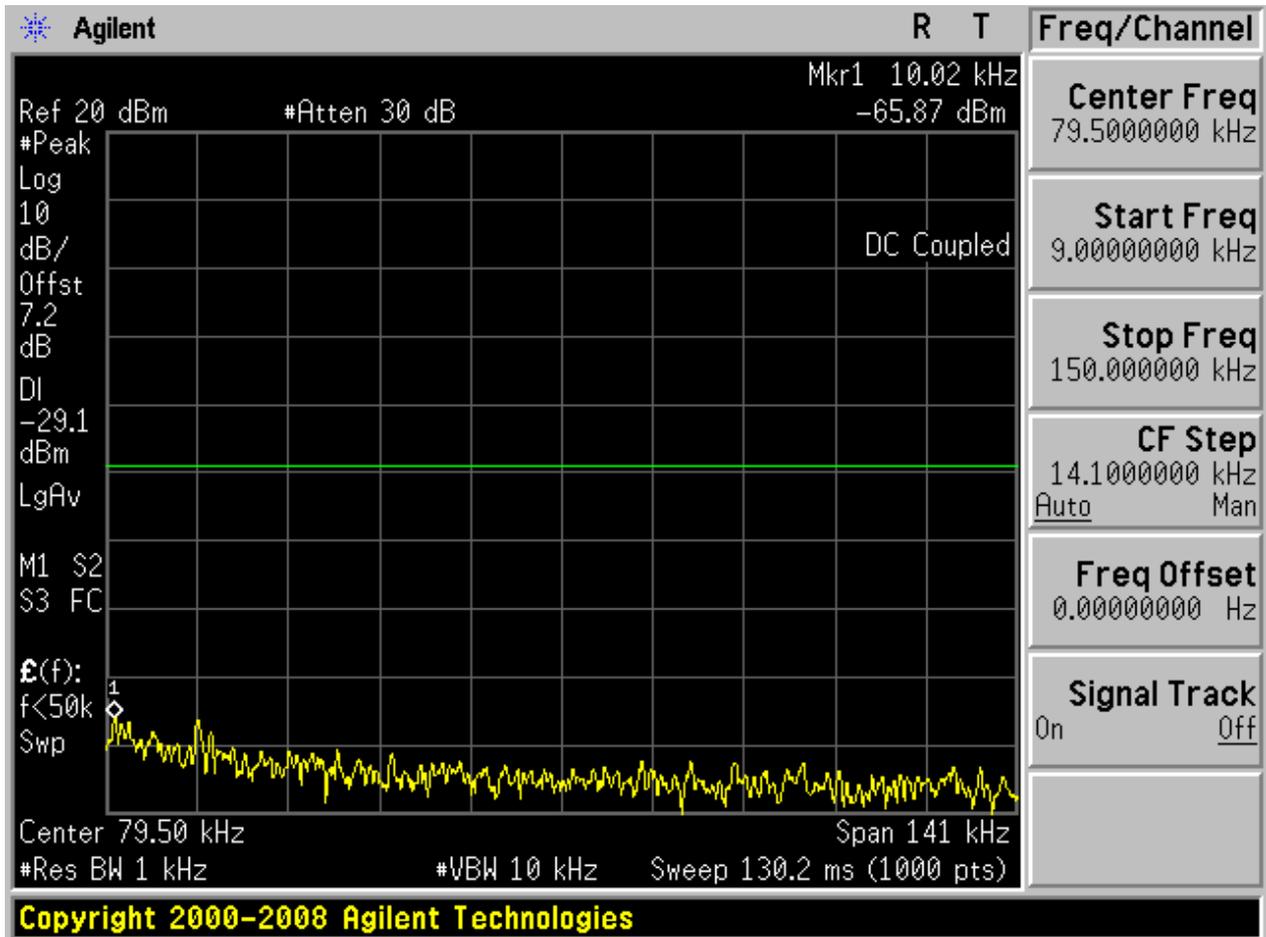
### 2.1 TM1\_DH5\_Ch0

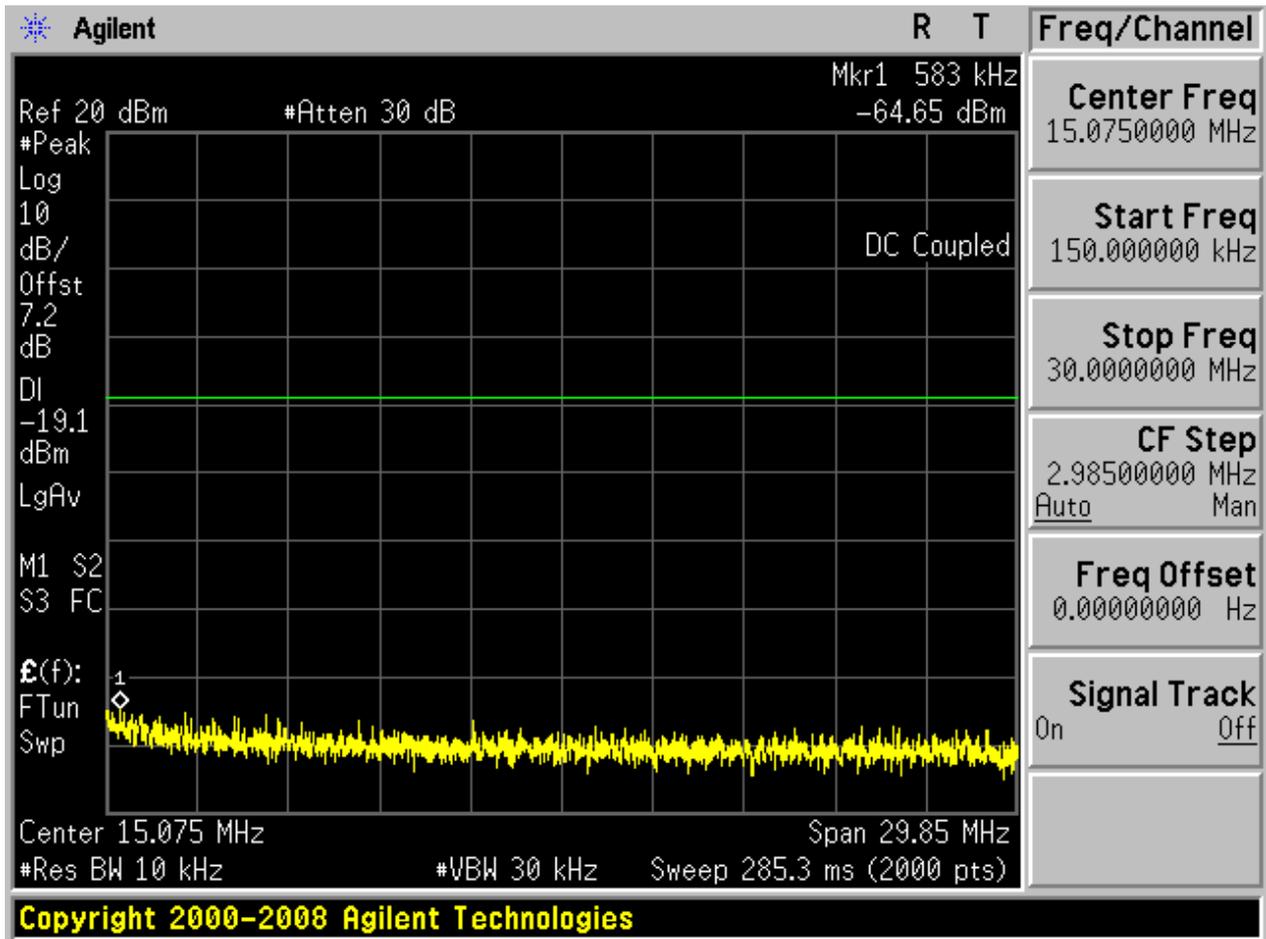
#### 2.1.1 Pref

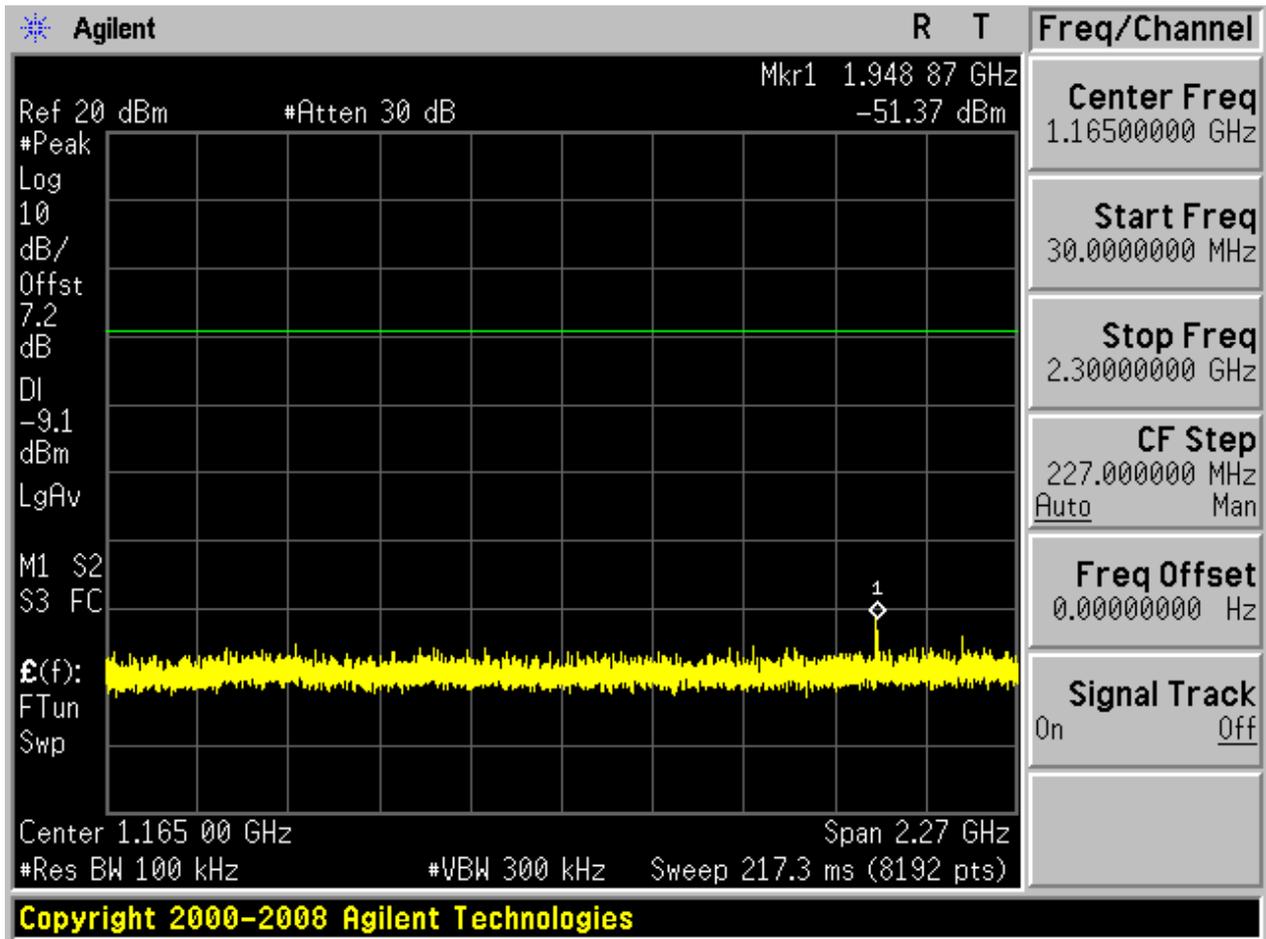


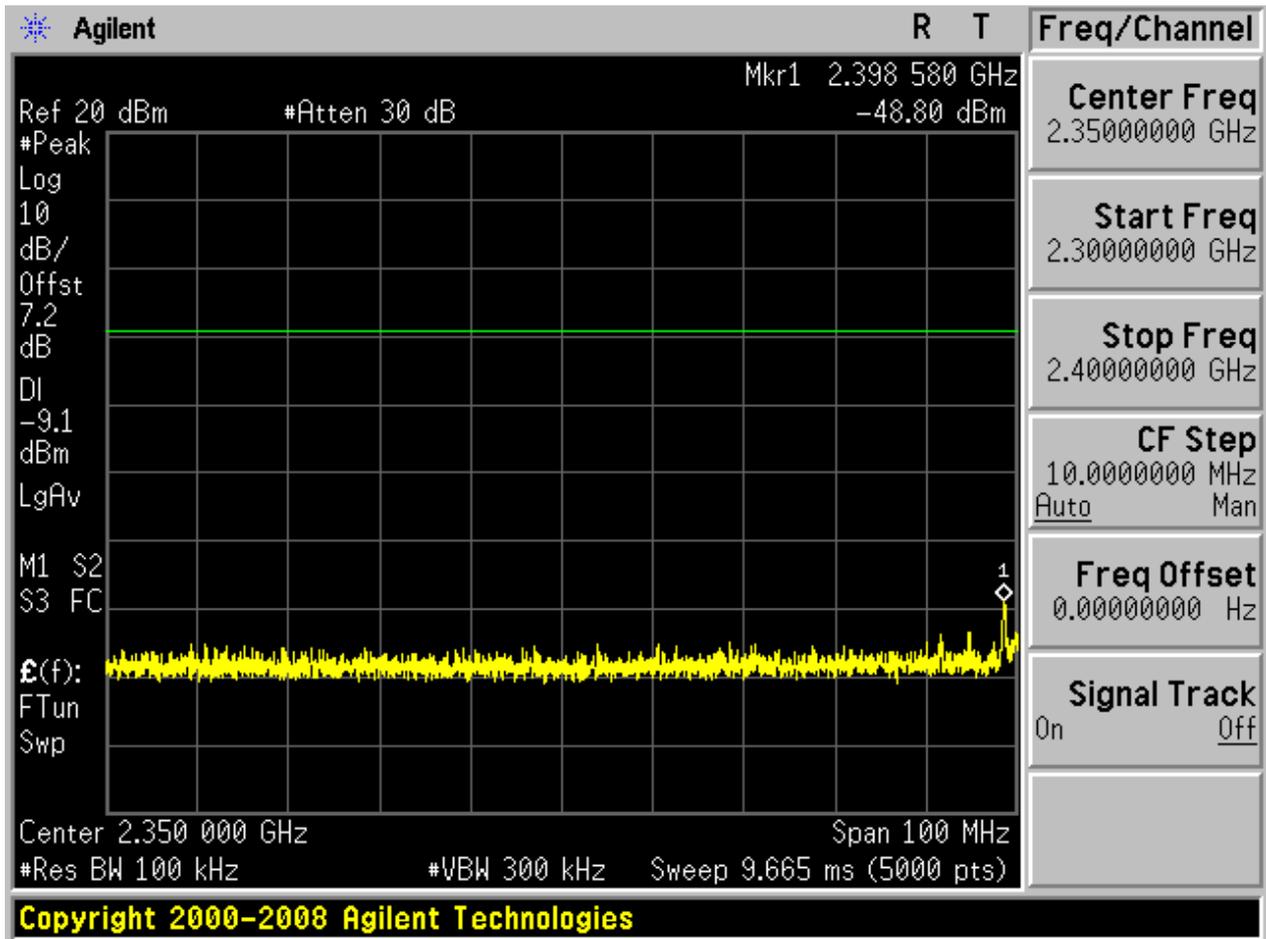


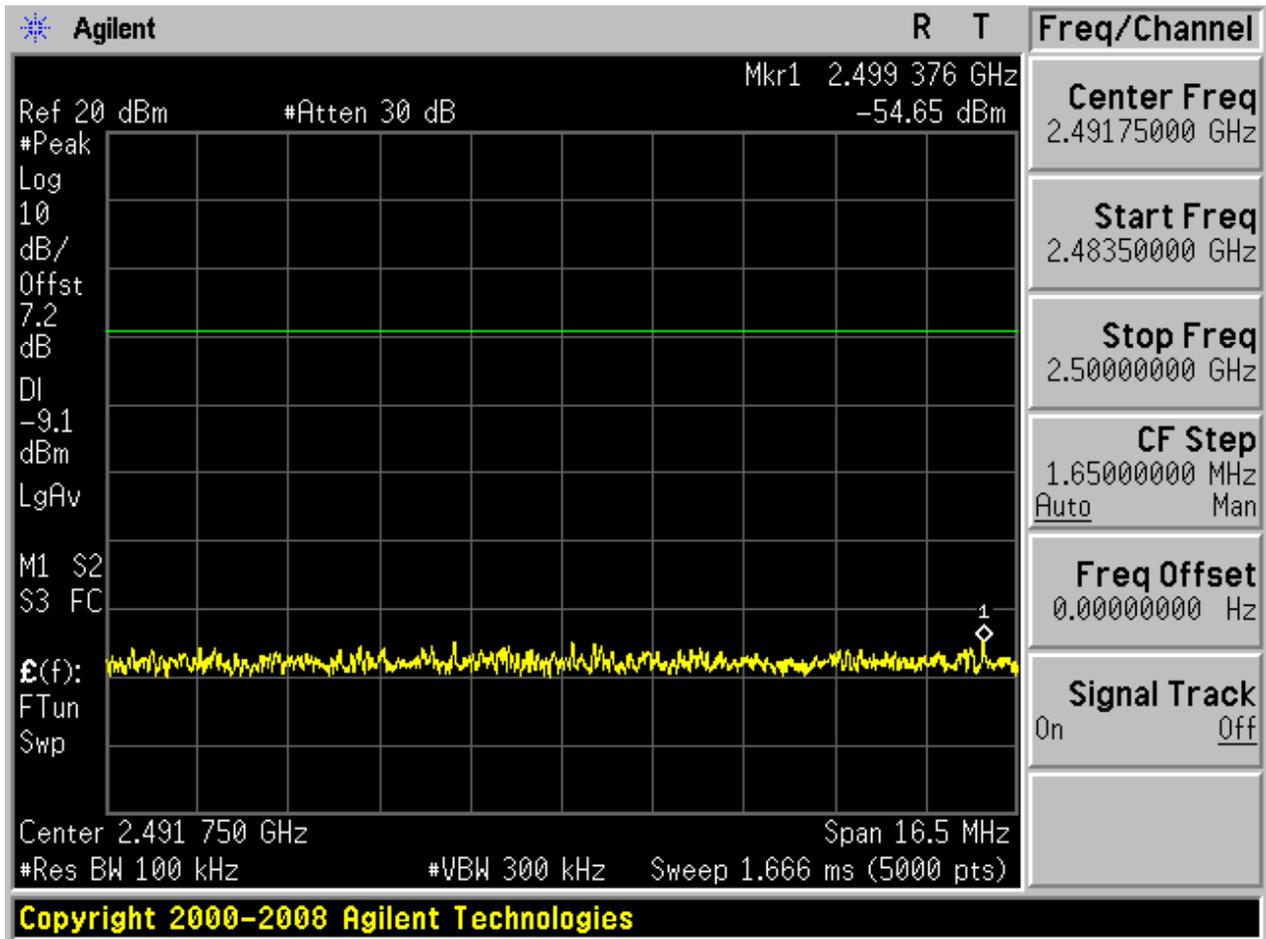
2.1.2 Puw

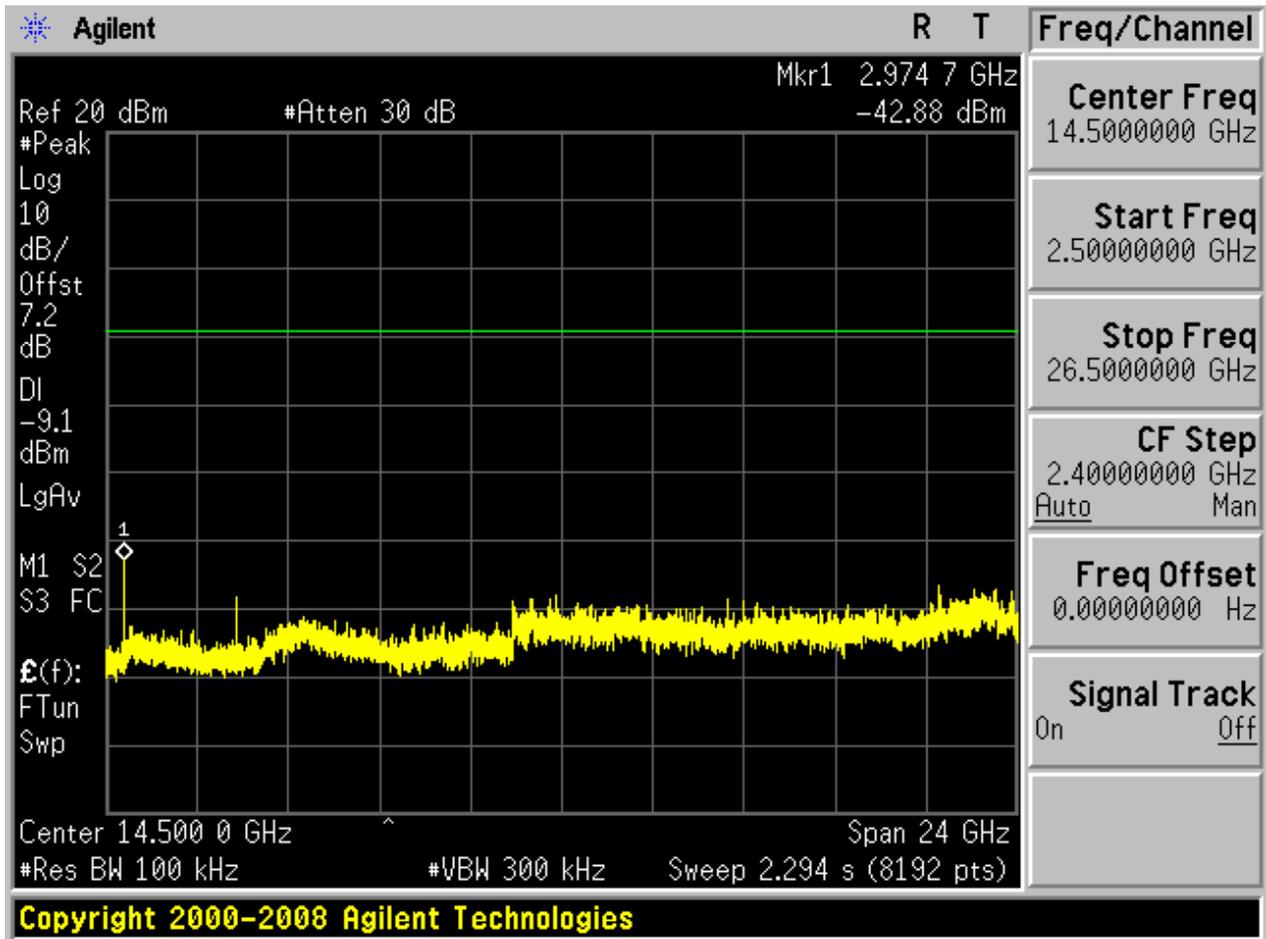








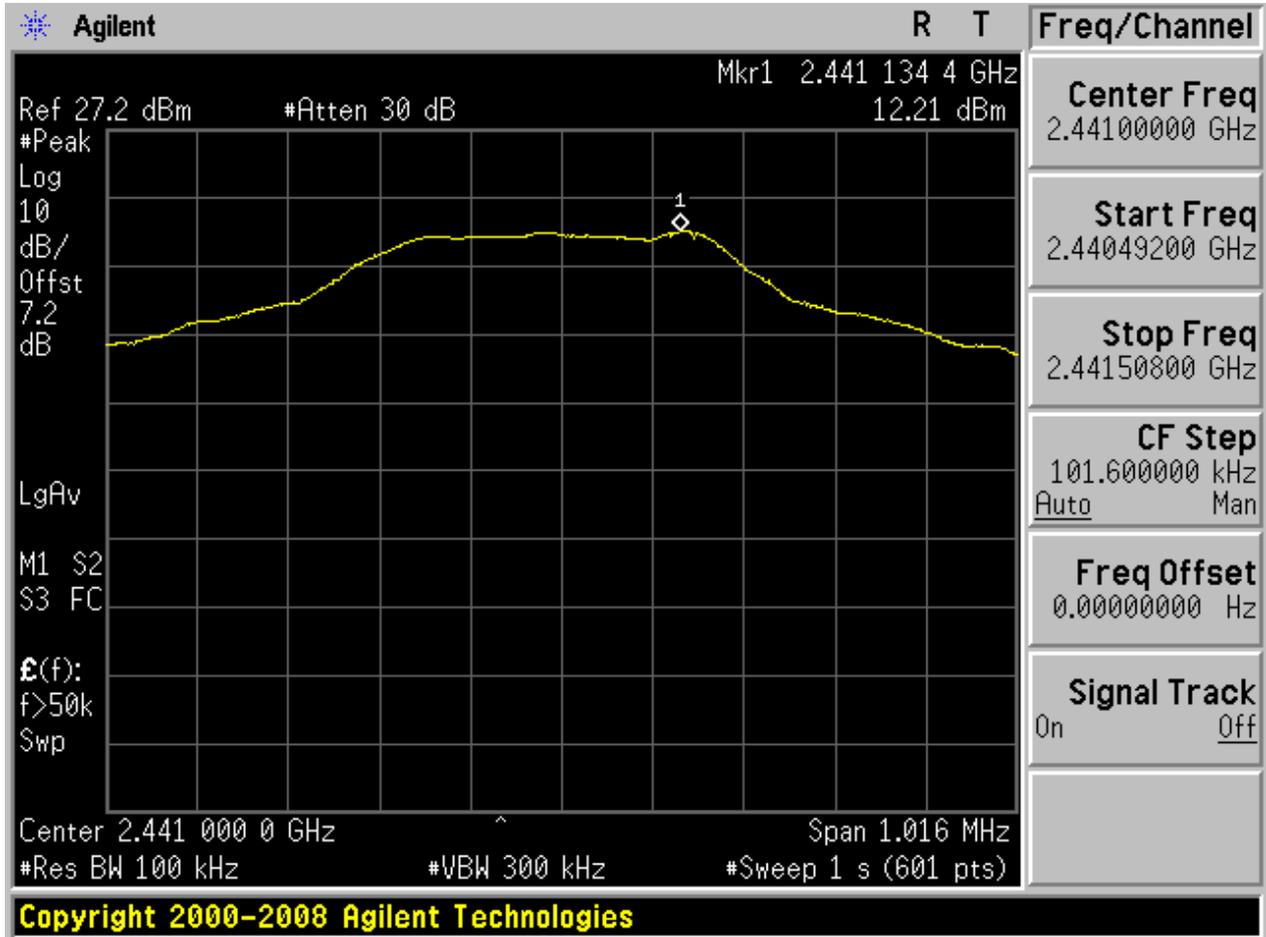






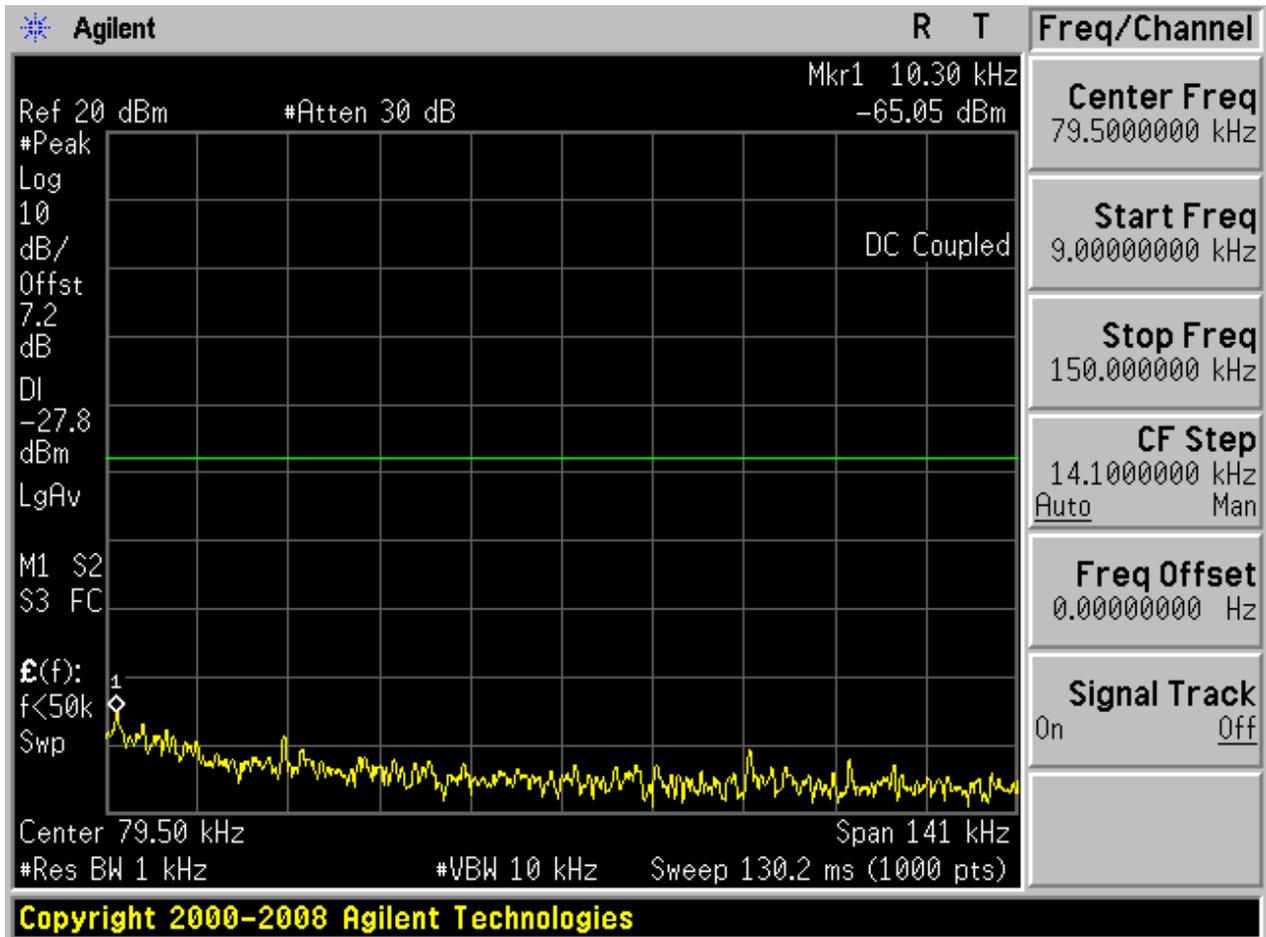
## 2.2 TM1\_DH5\_Ch39

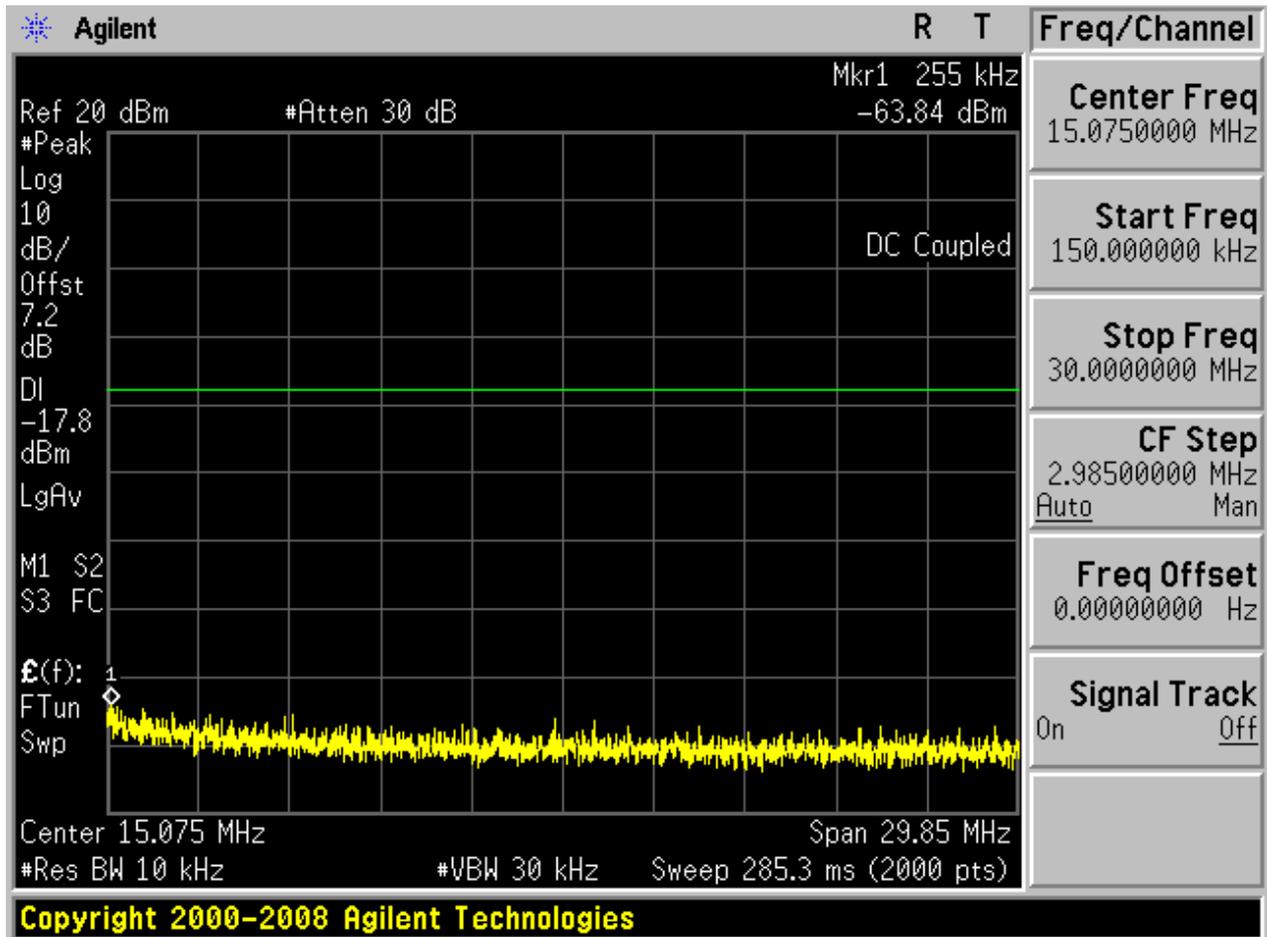
### 2.2.1 Pref

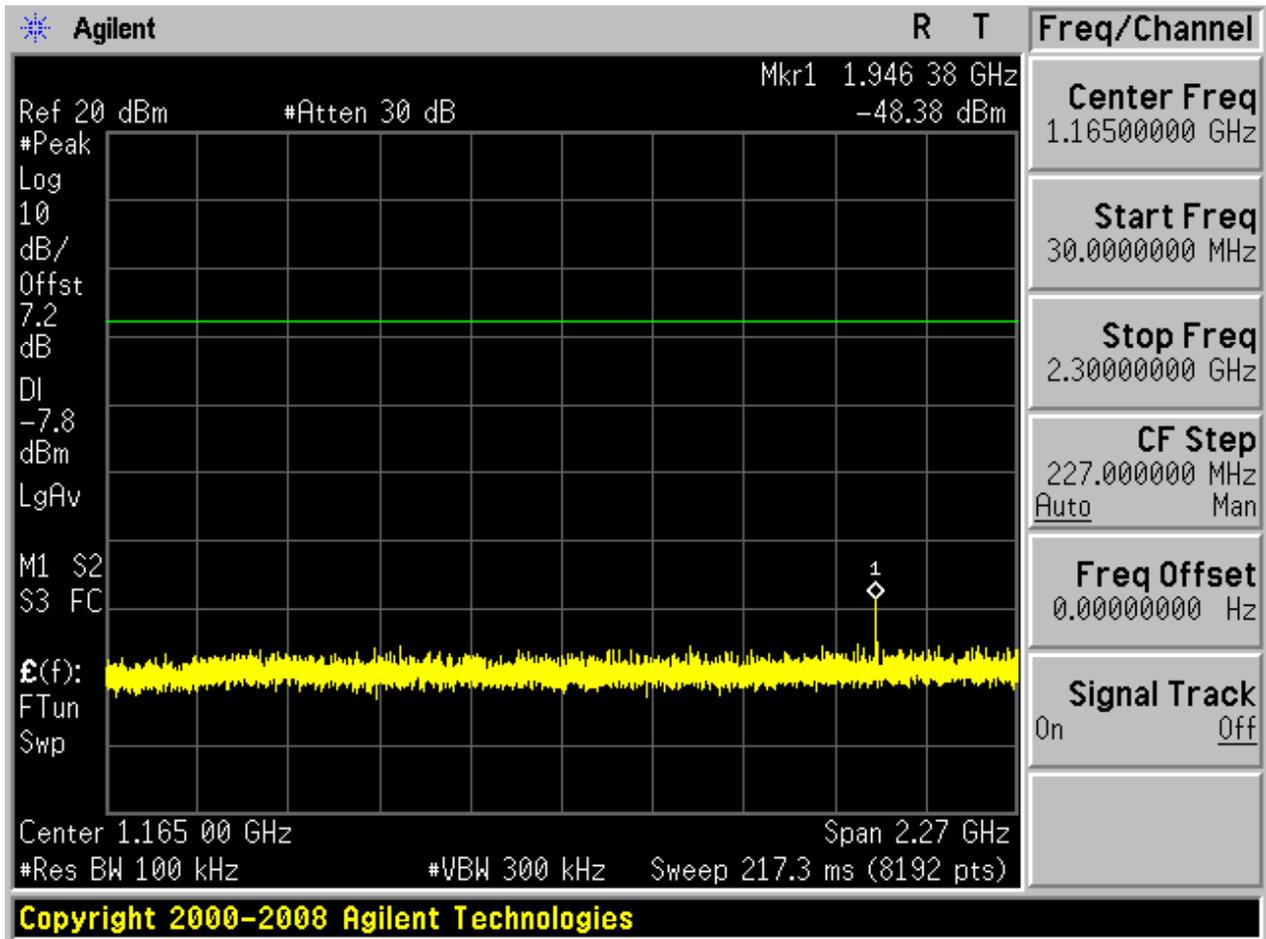


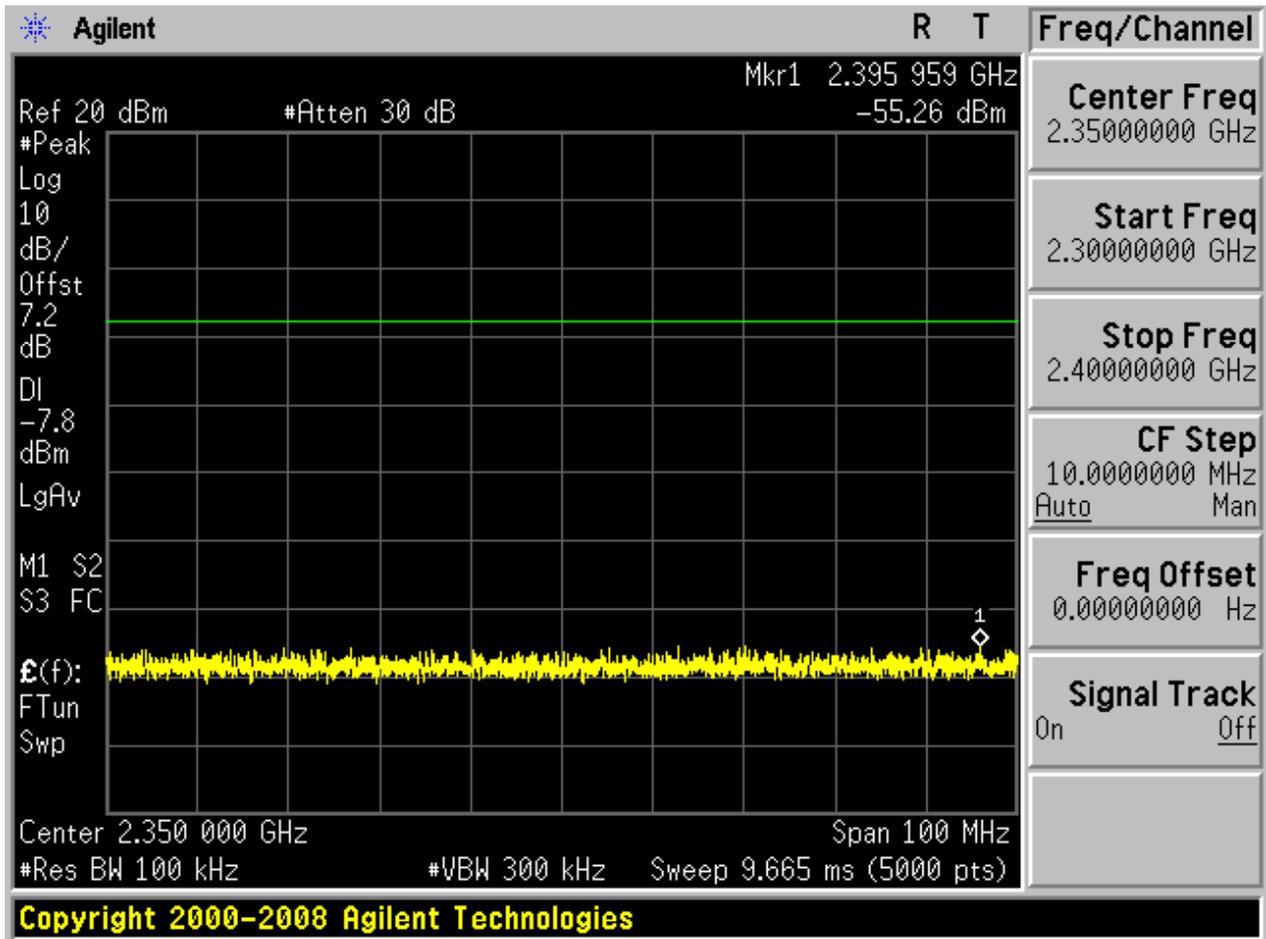


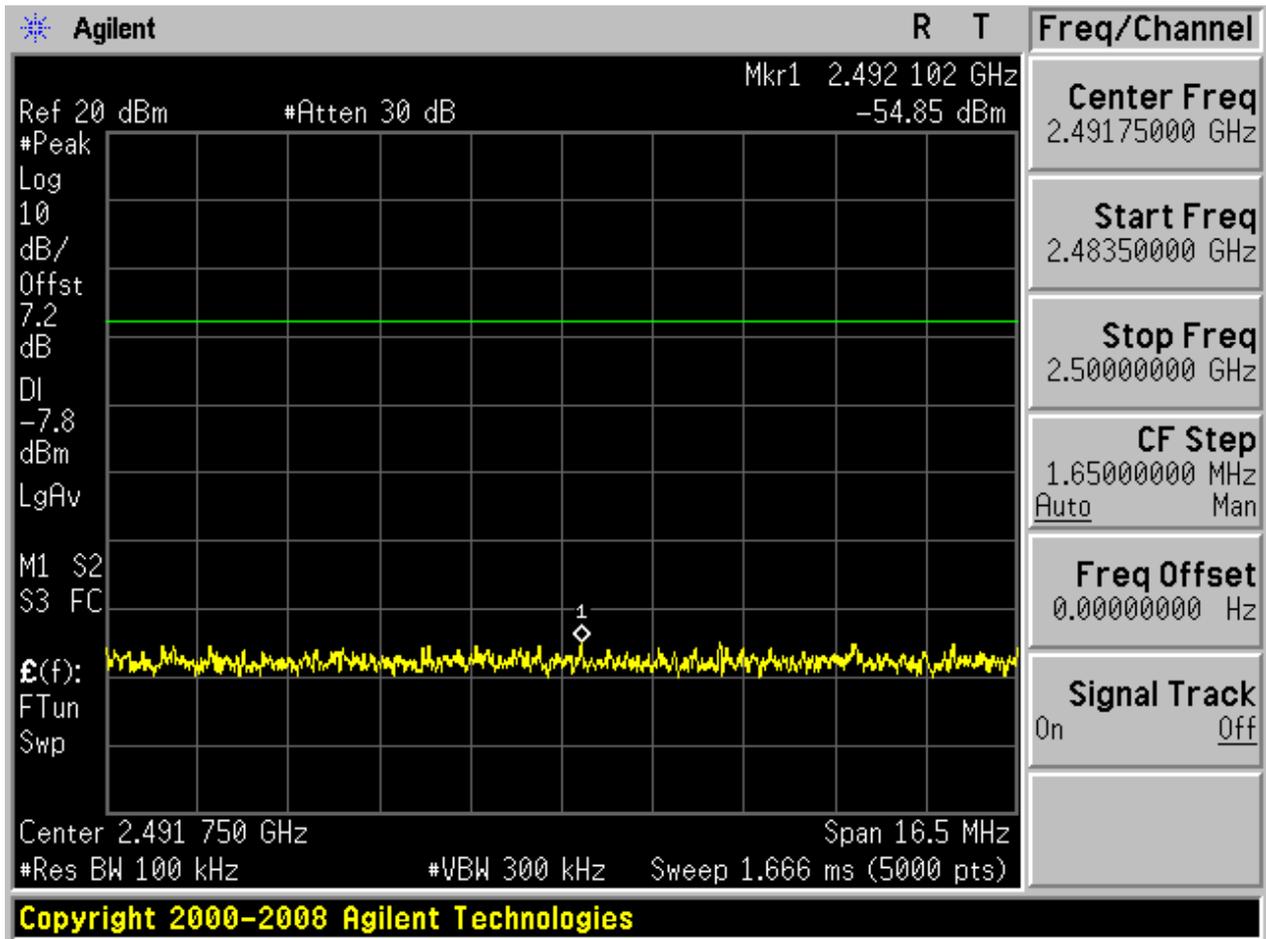
2.2.2 Puw

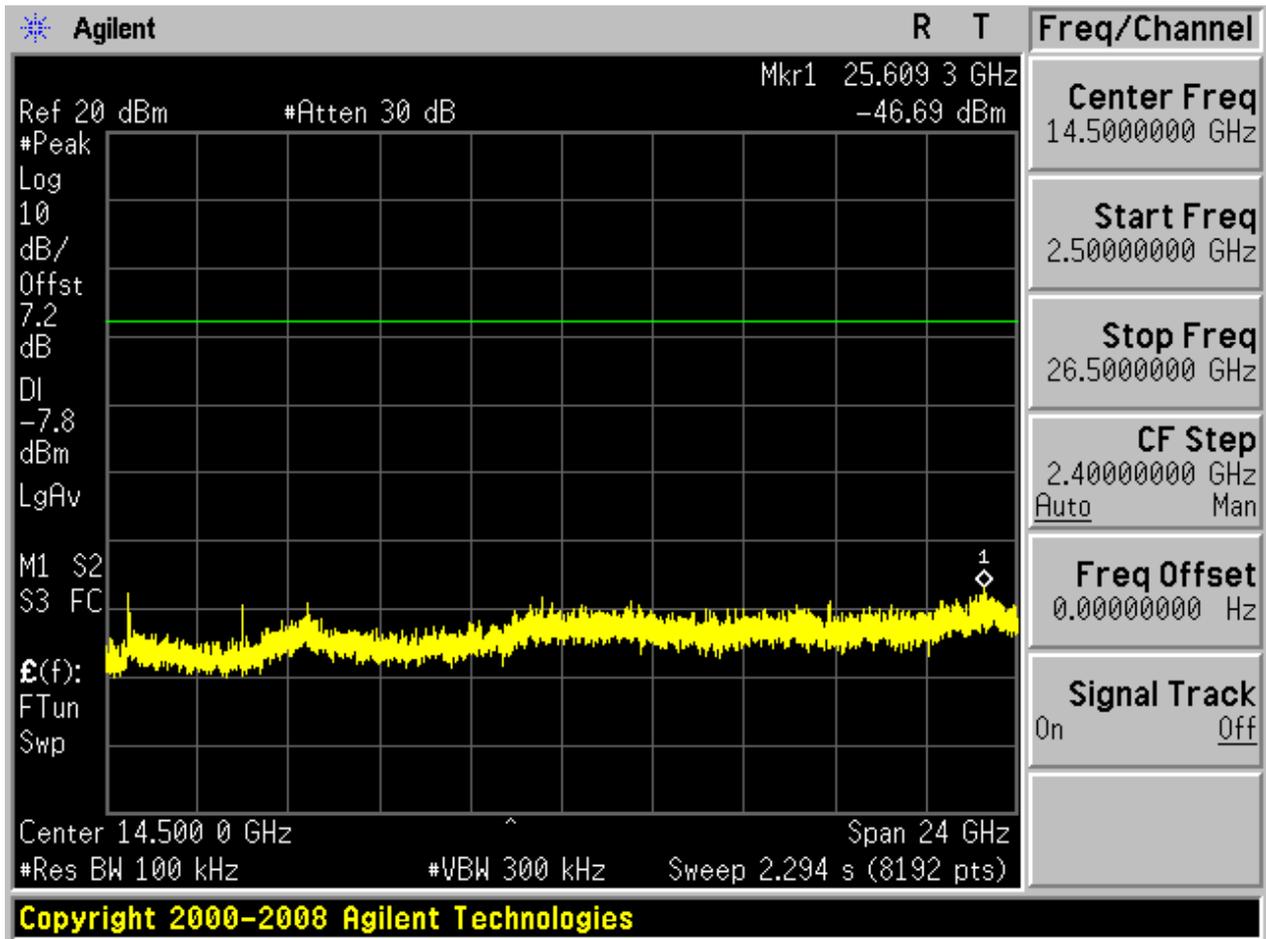








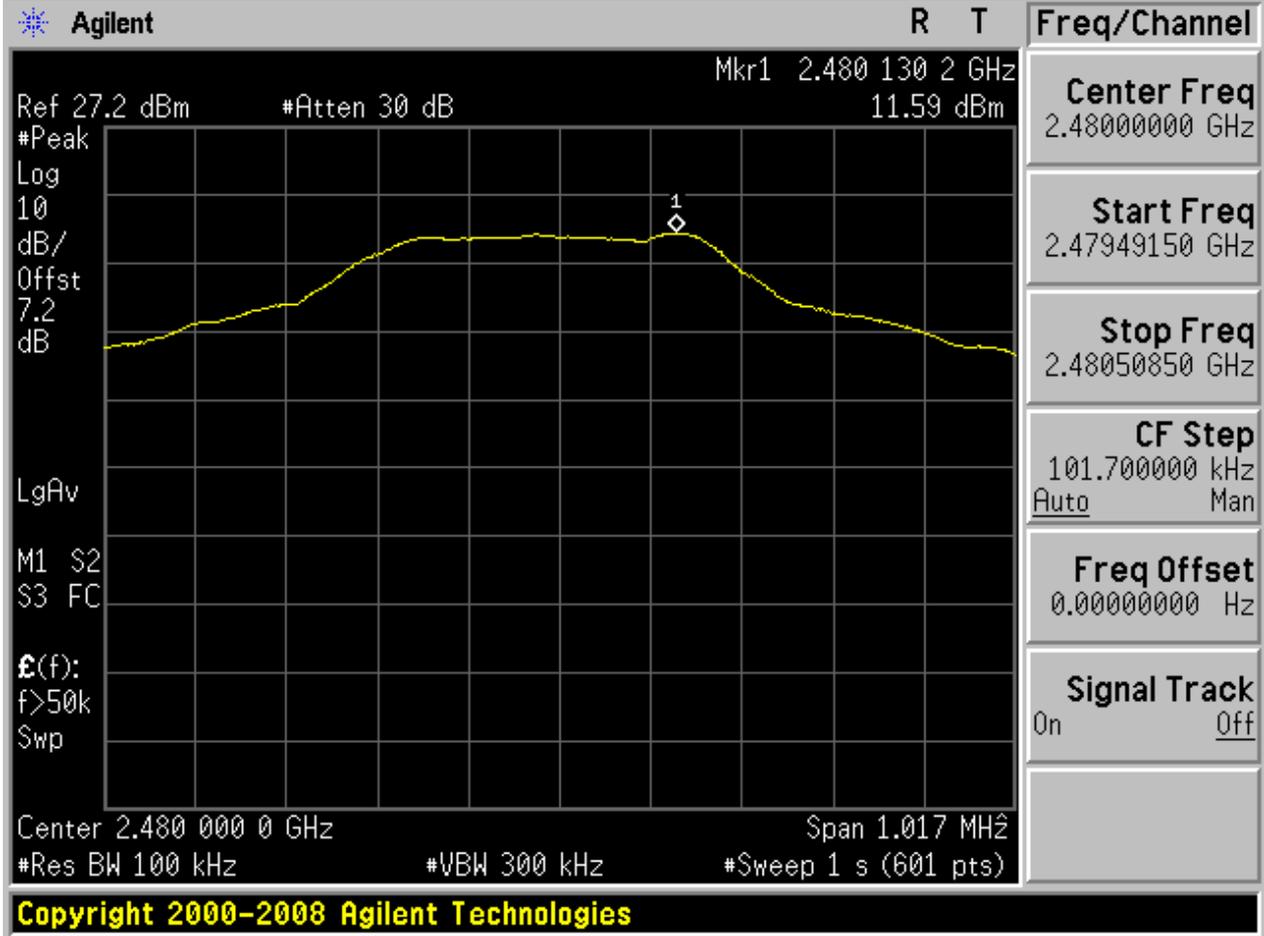






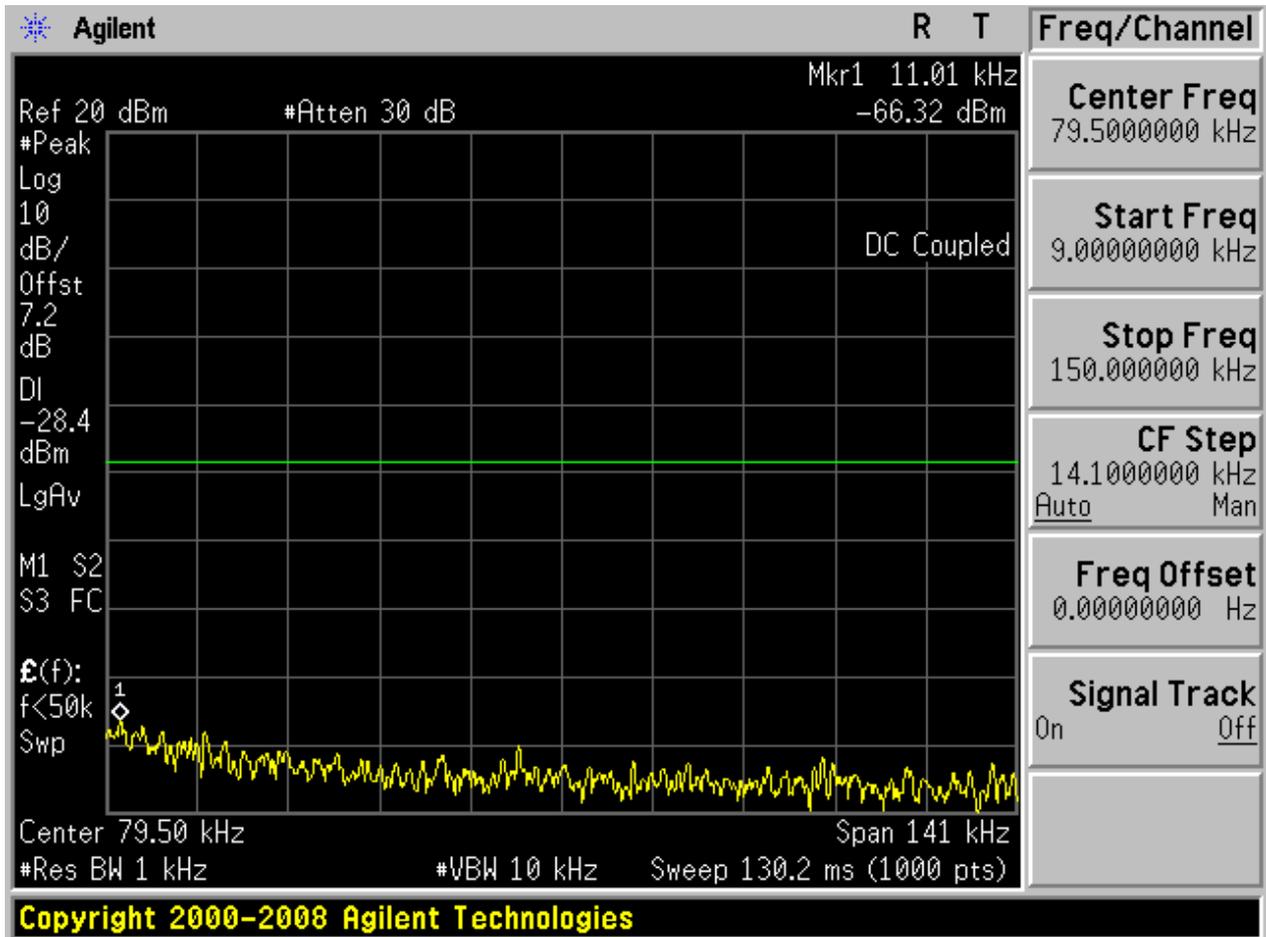
### 2.3 TM1\_DH5\_Ch78

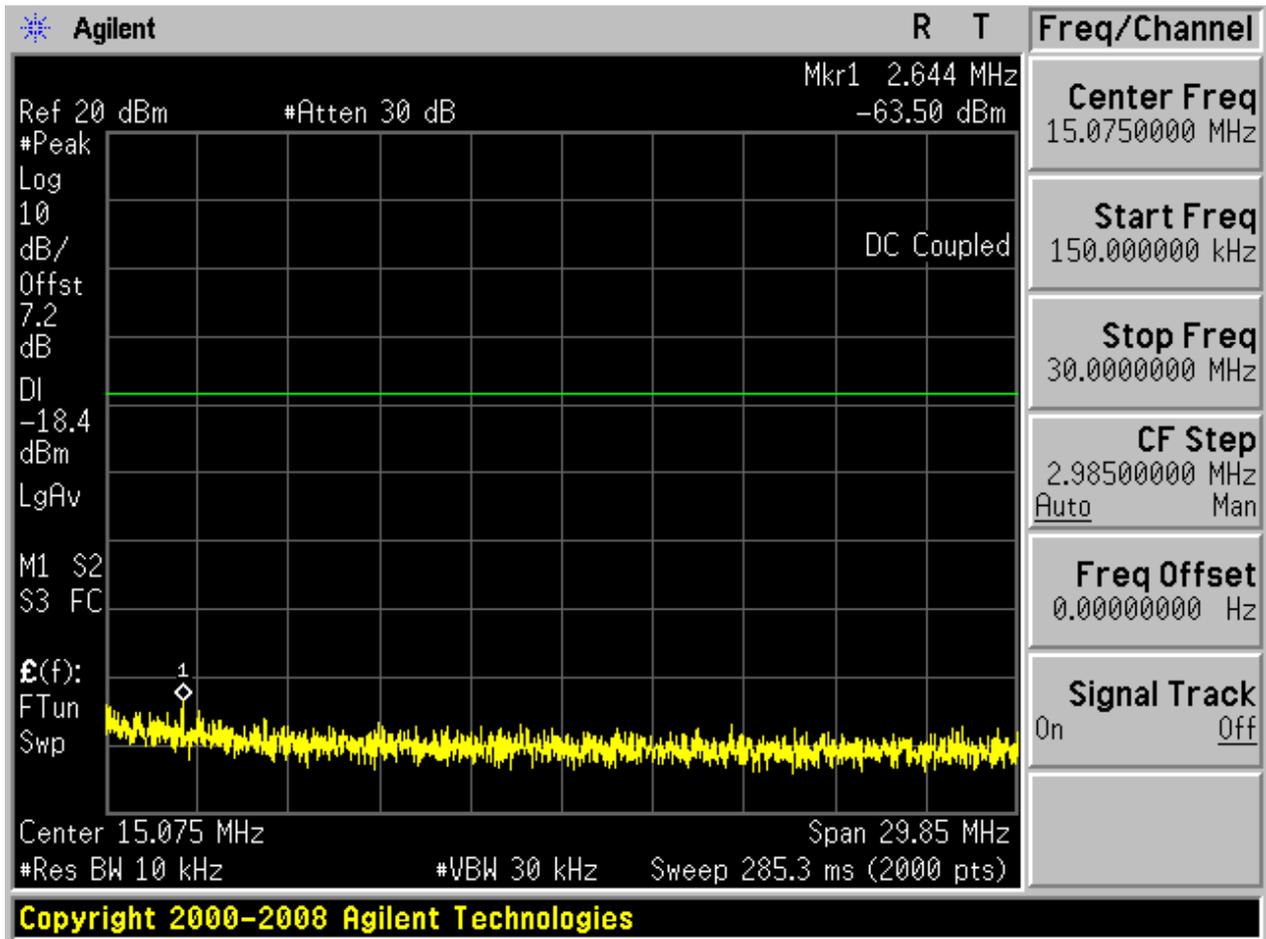
#### 2.3.1 Pref

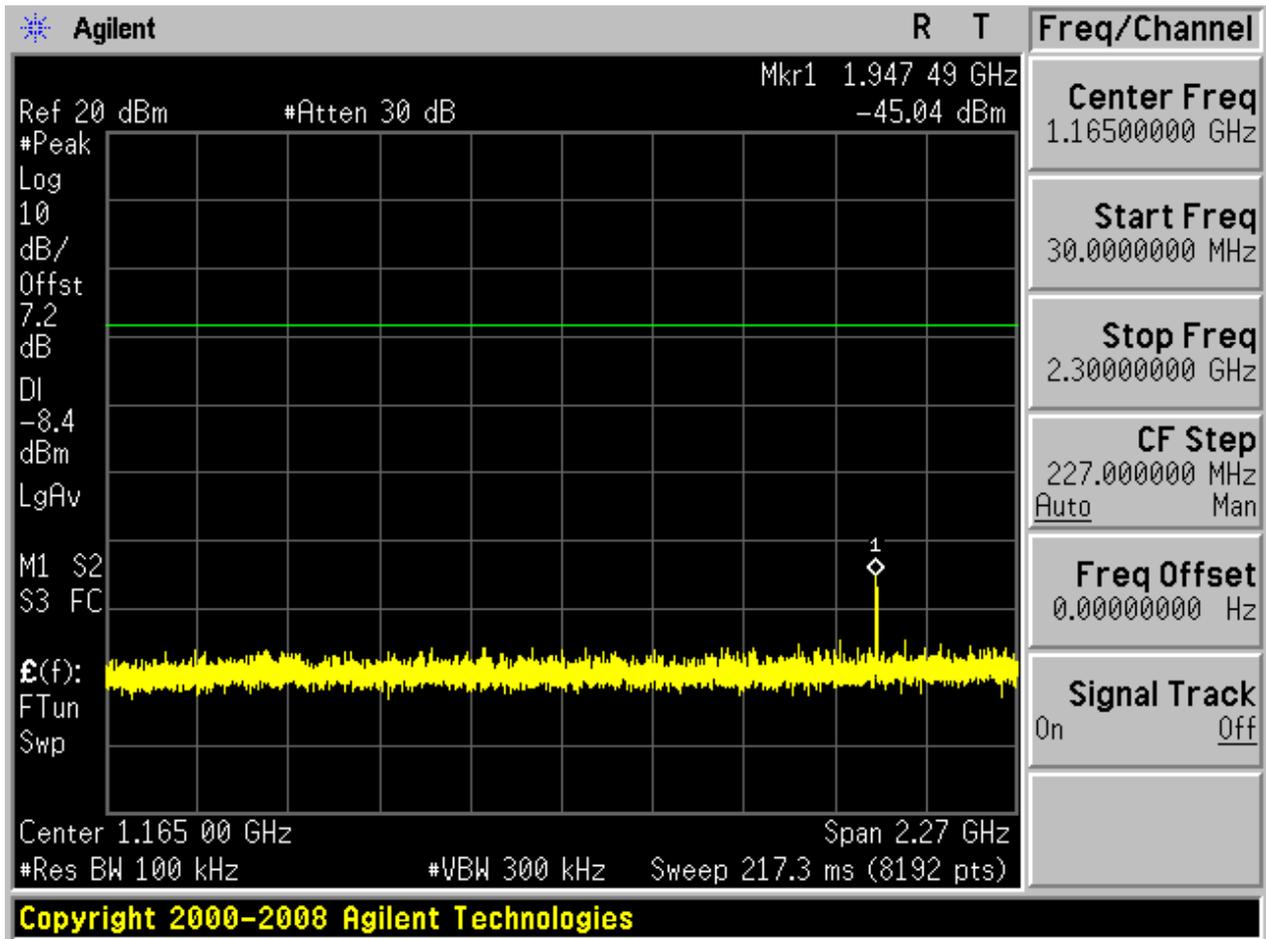


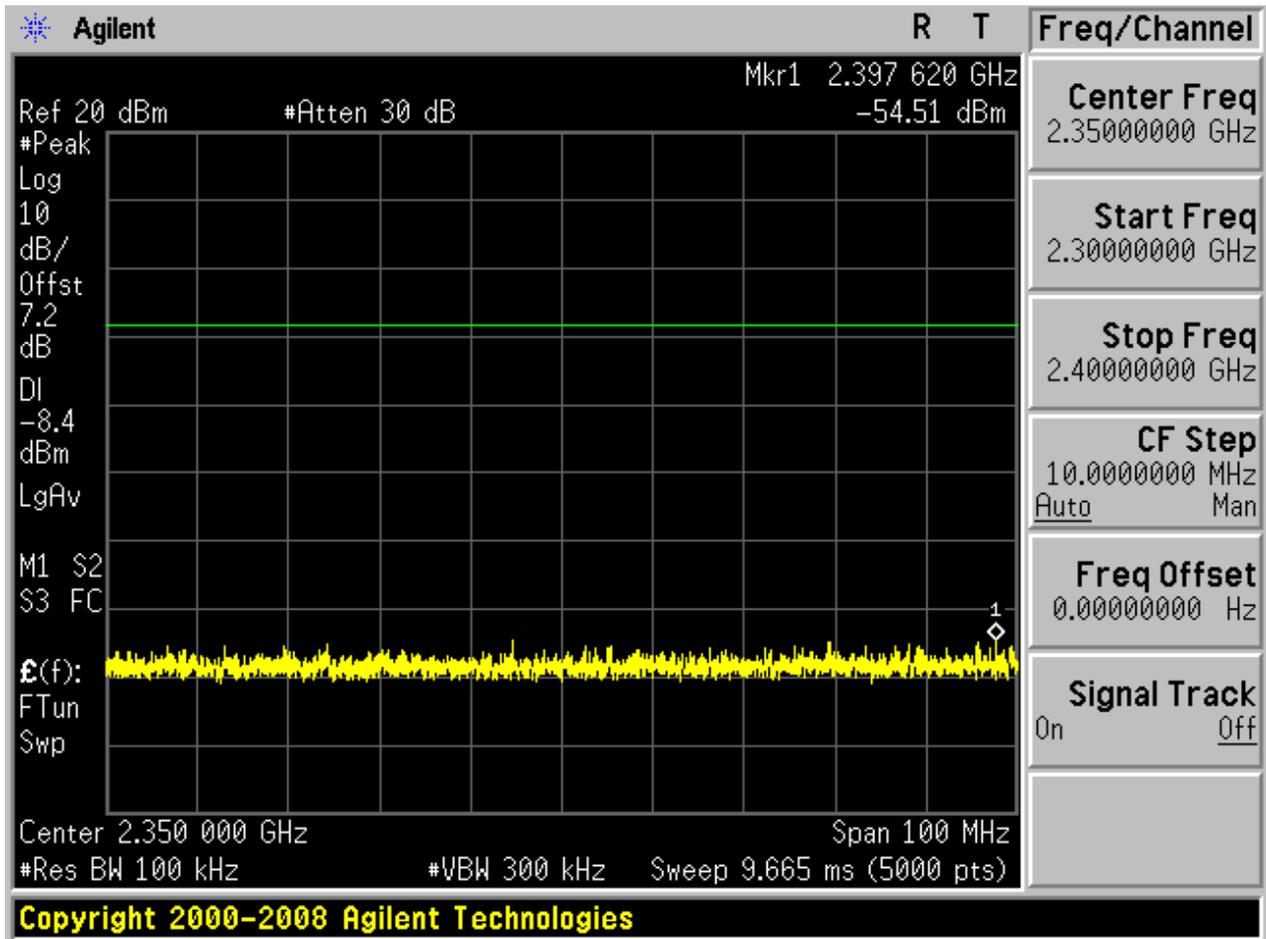


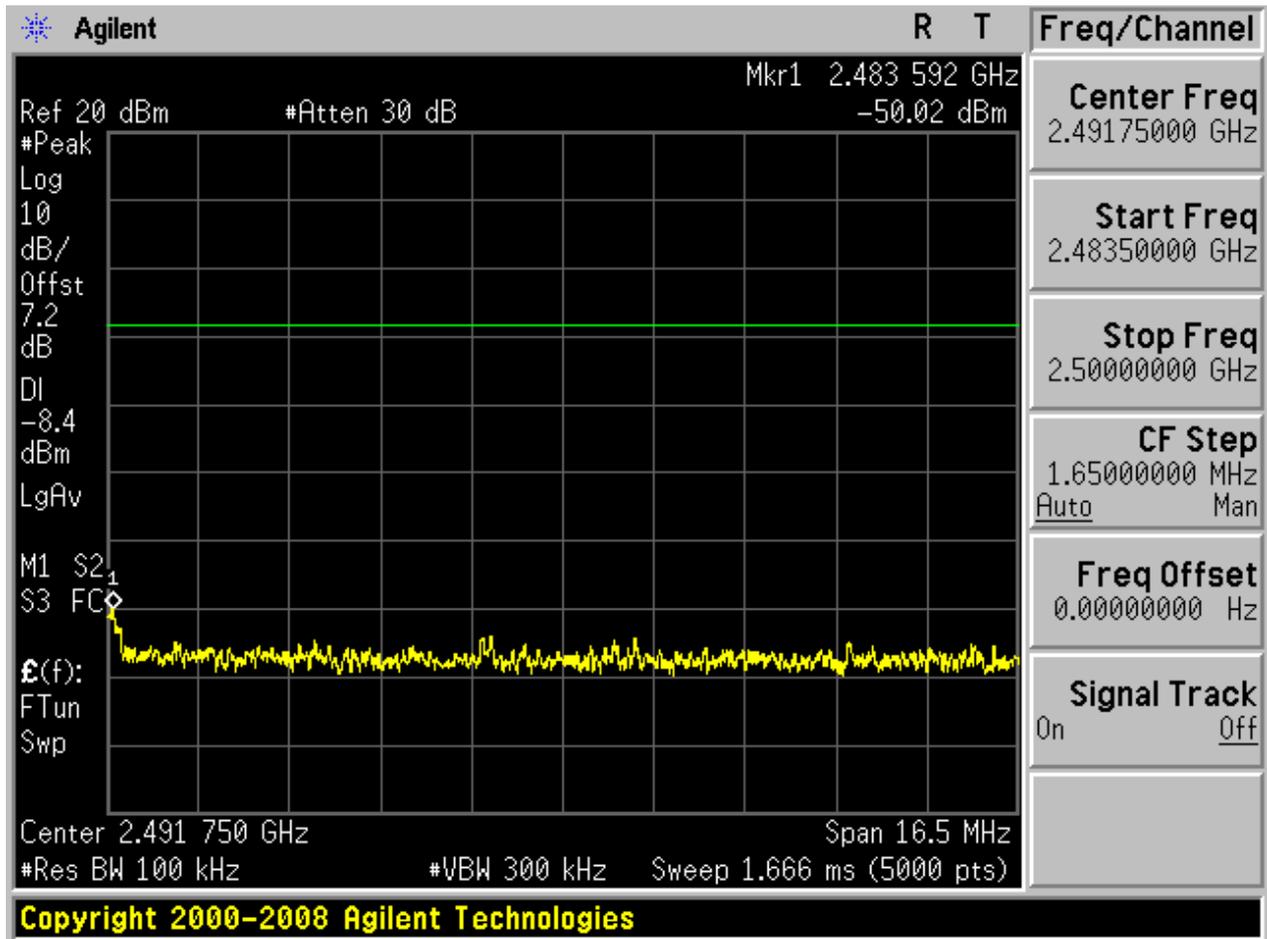
2.3.2 Puw

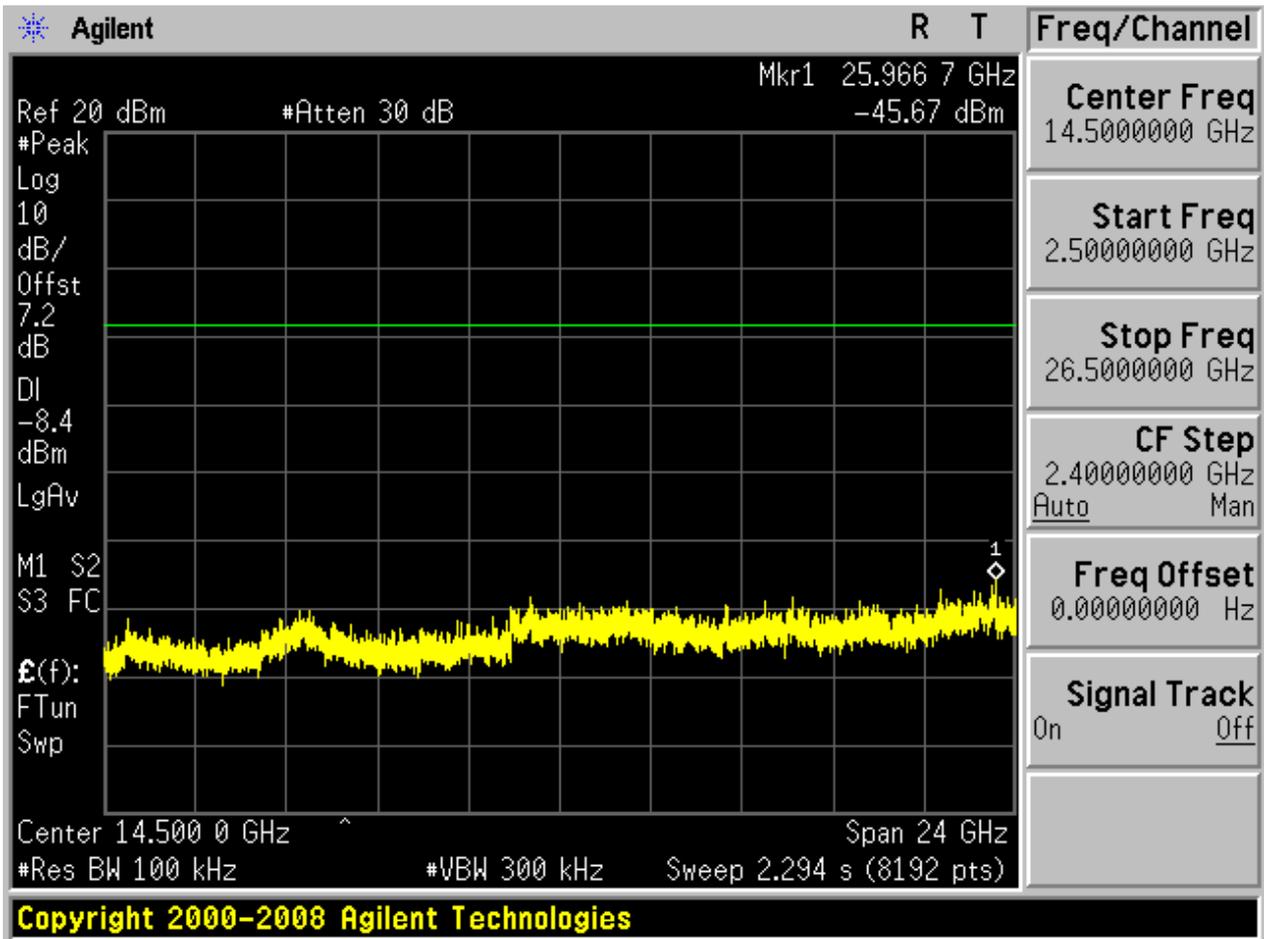








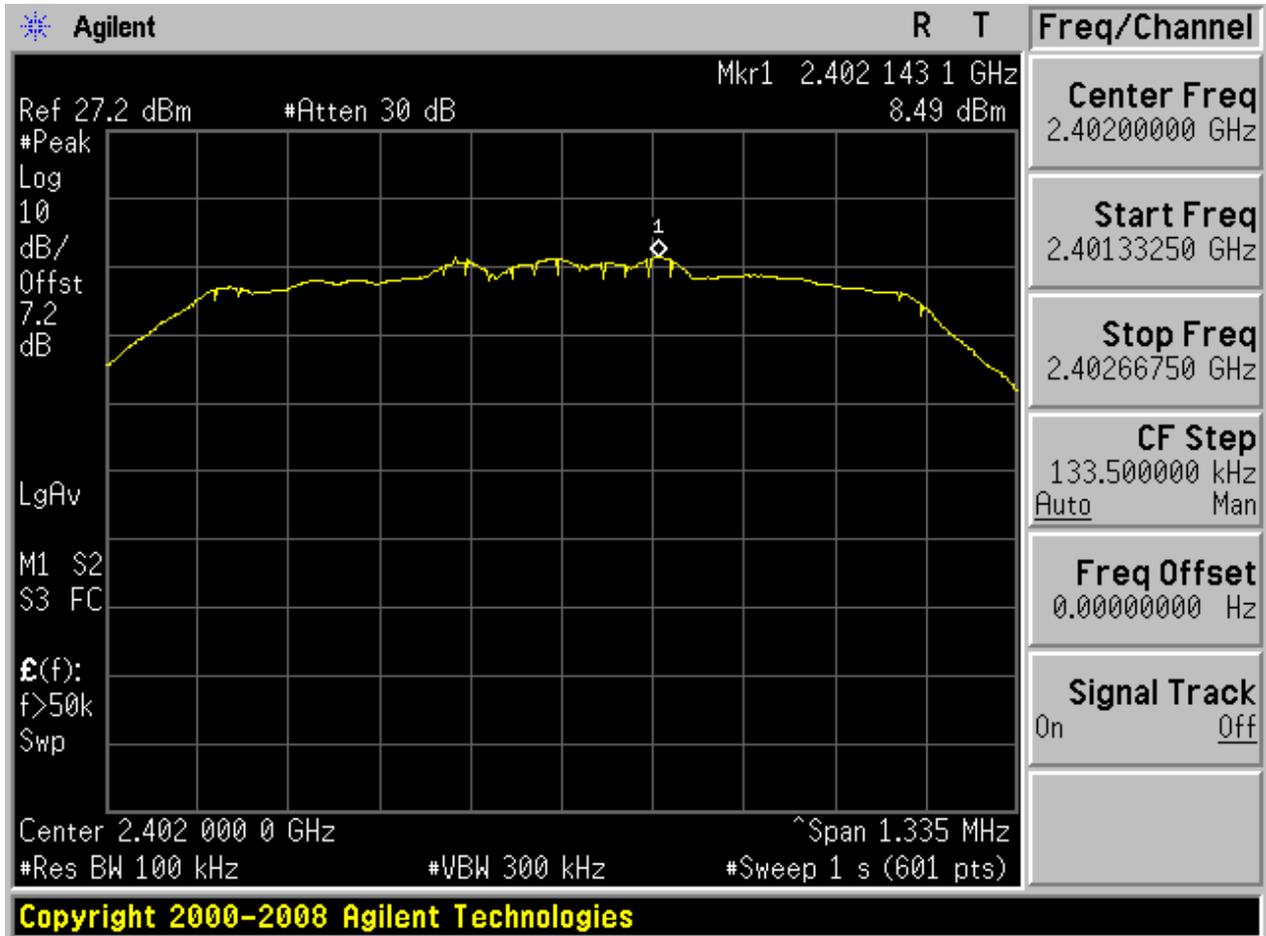






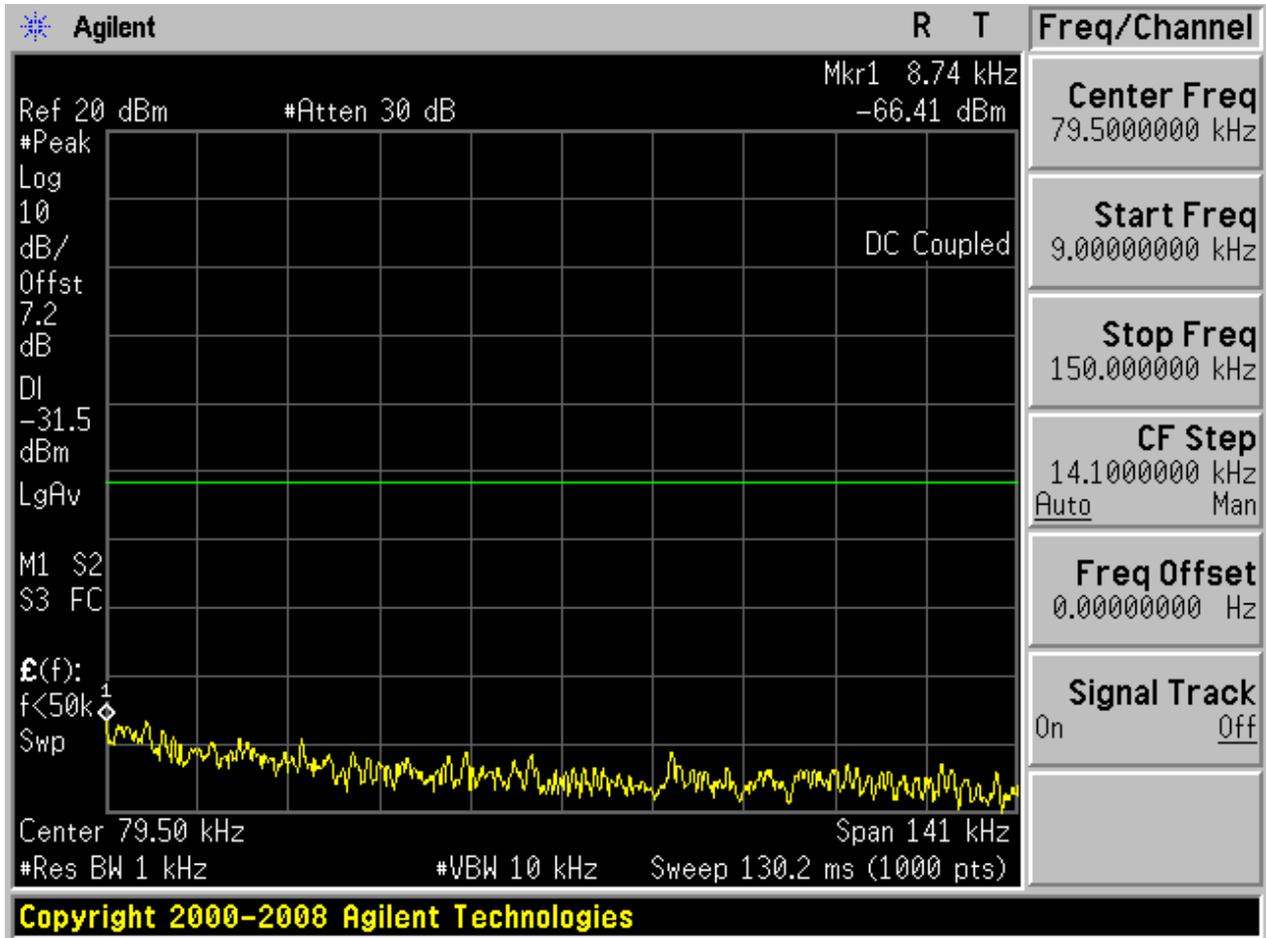
## 2.4 TM2\_2DH5\_Ch0

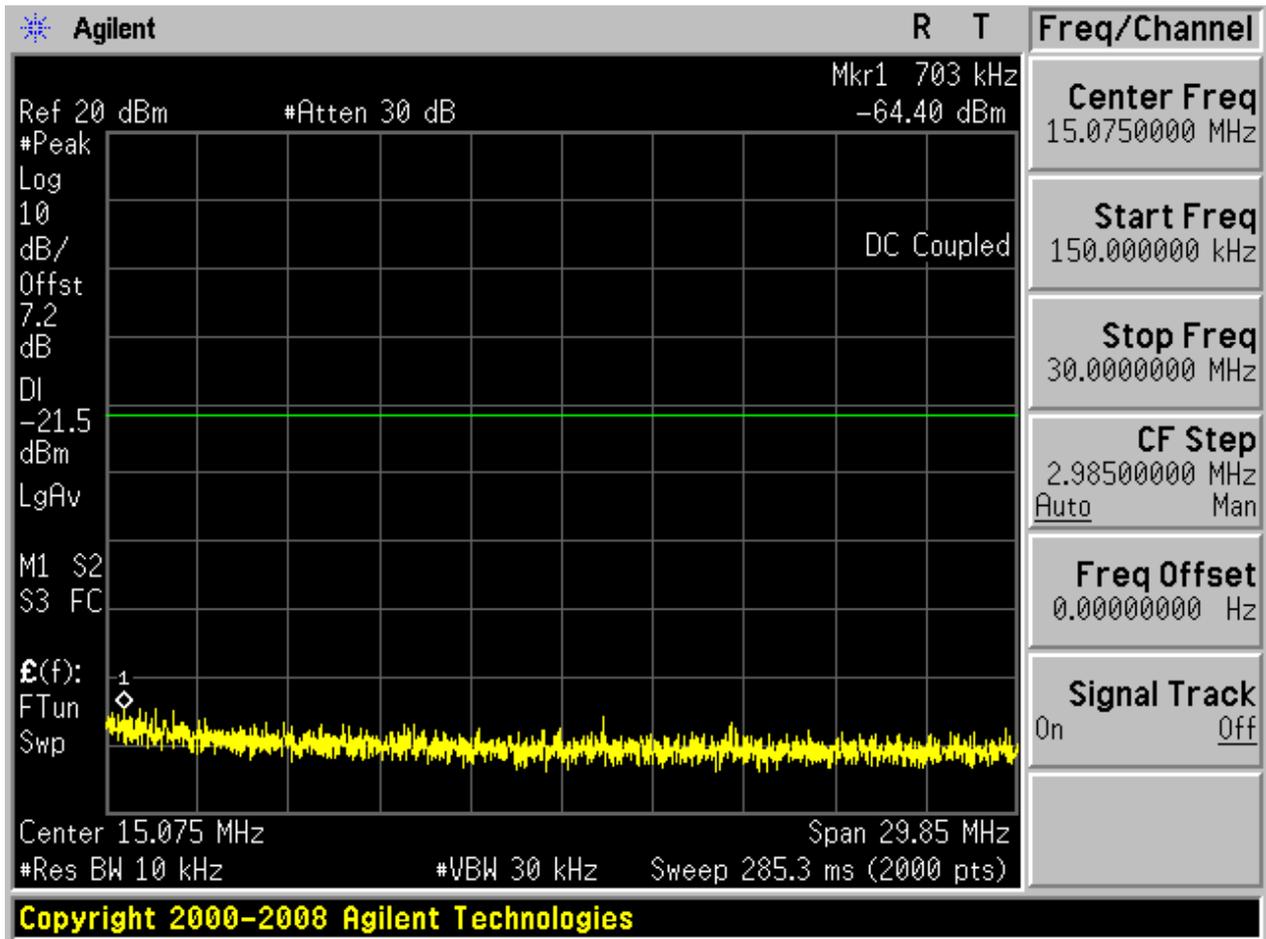
### 2.4.1 Pref

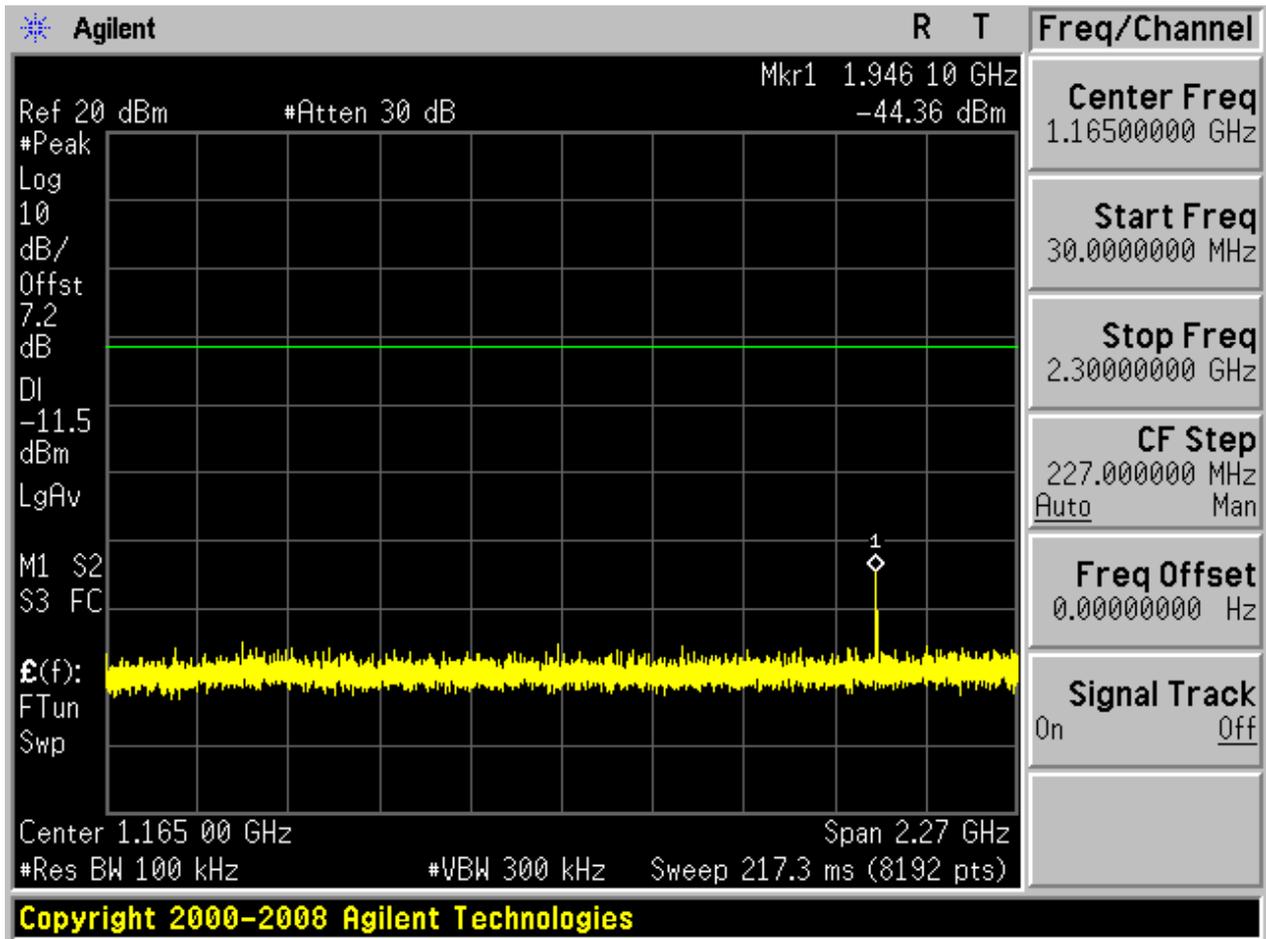


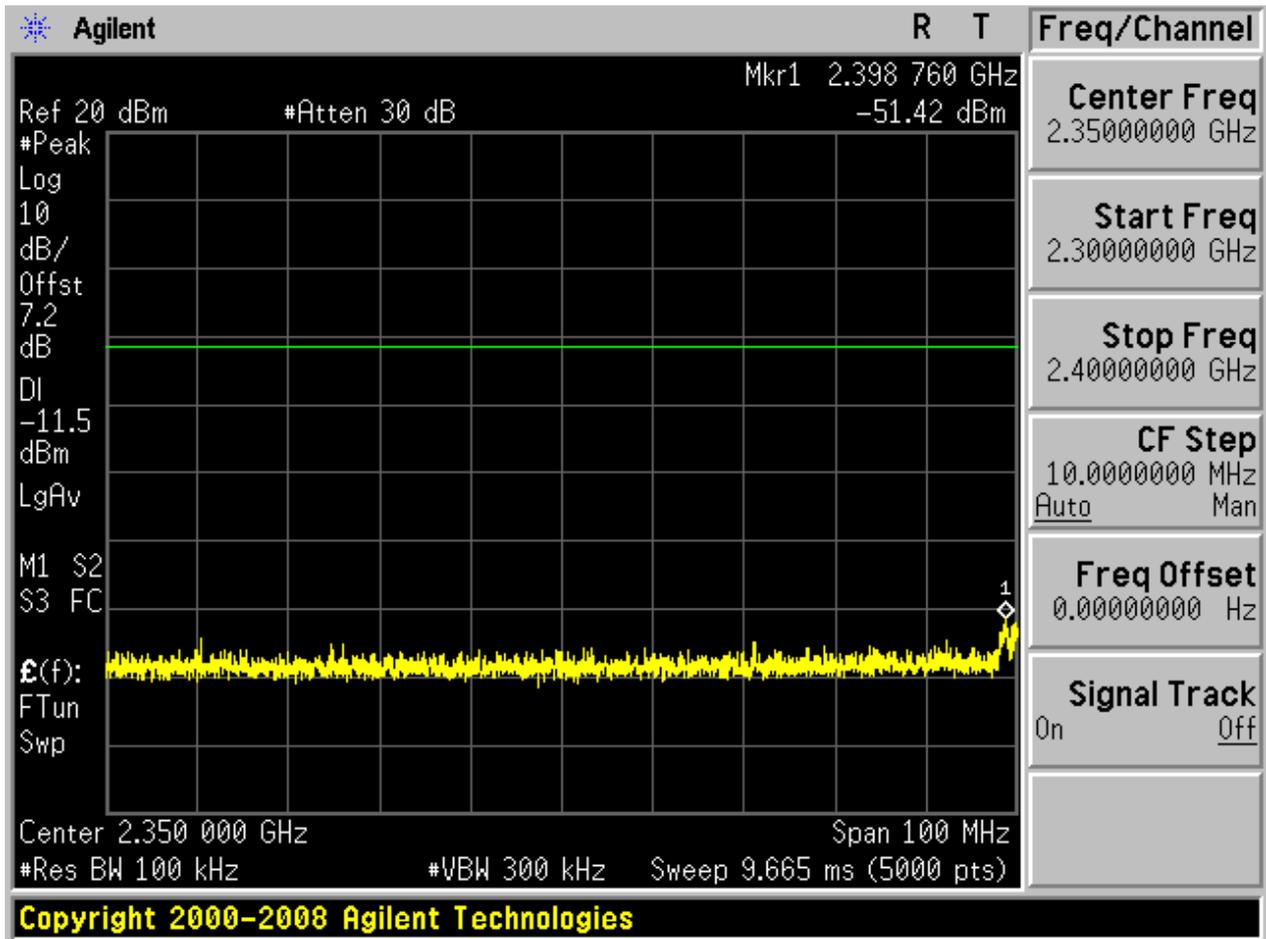


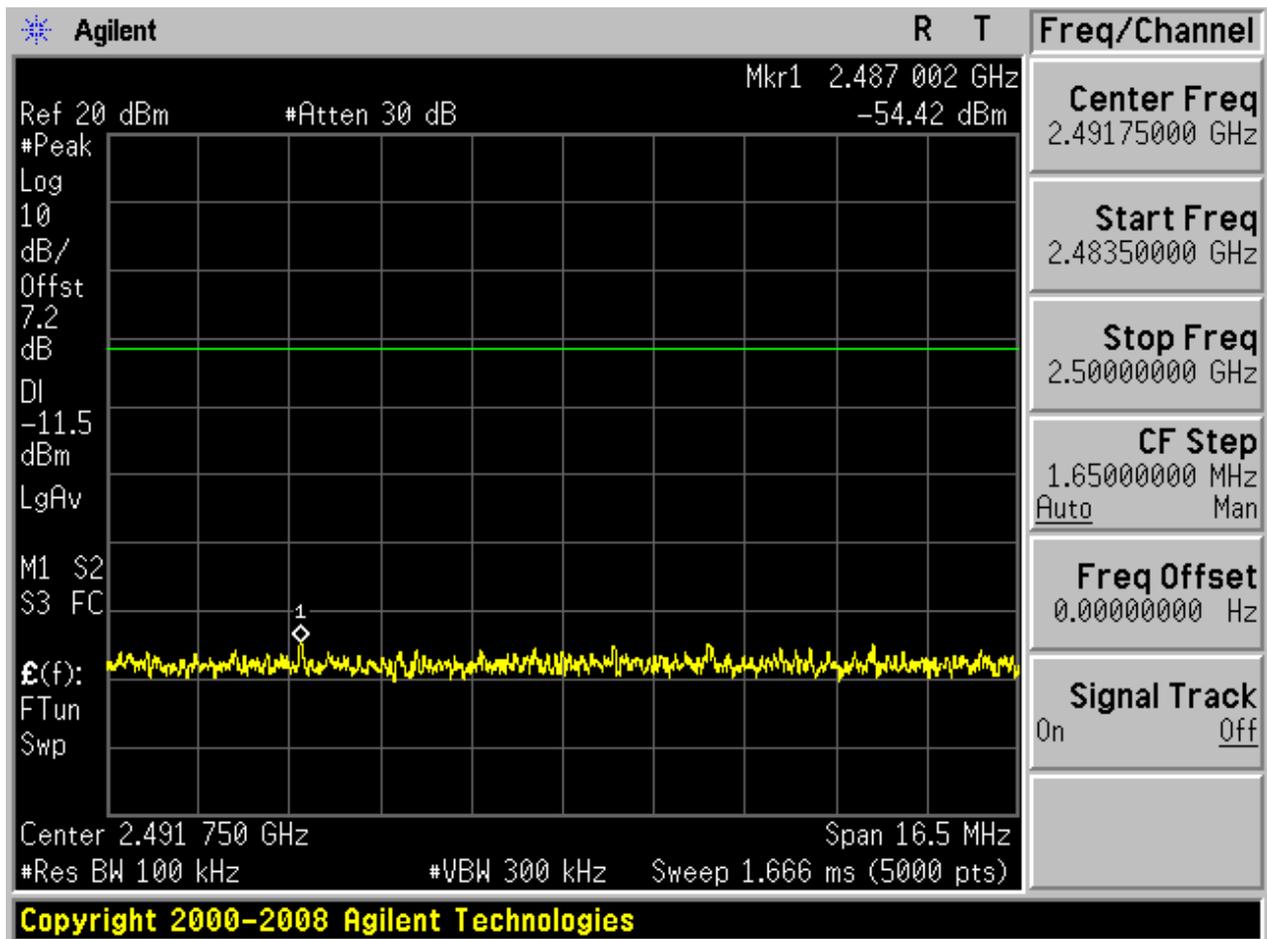
2.4.2 Puw

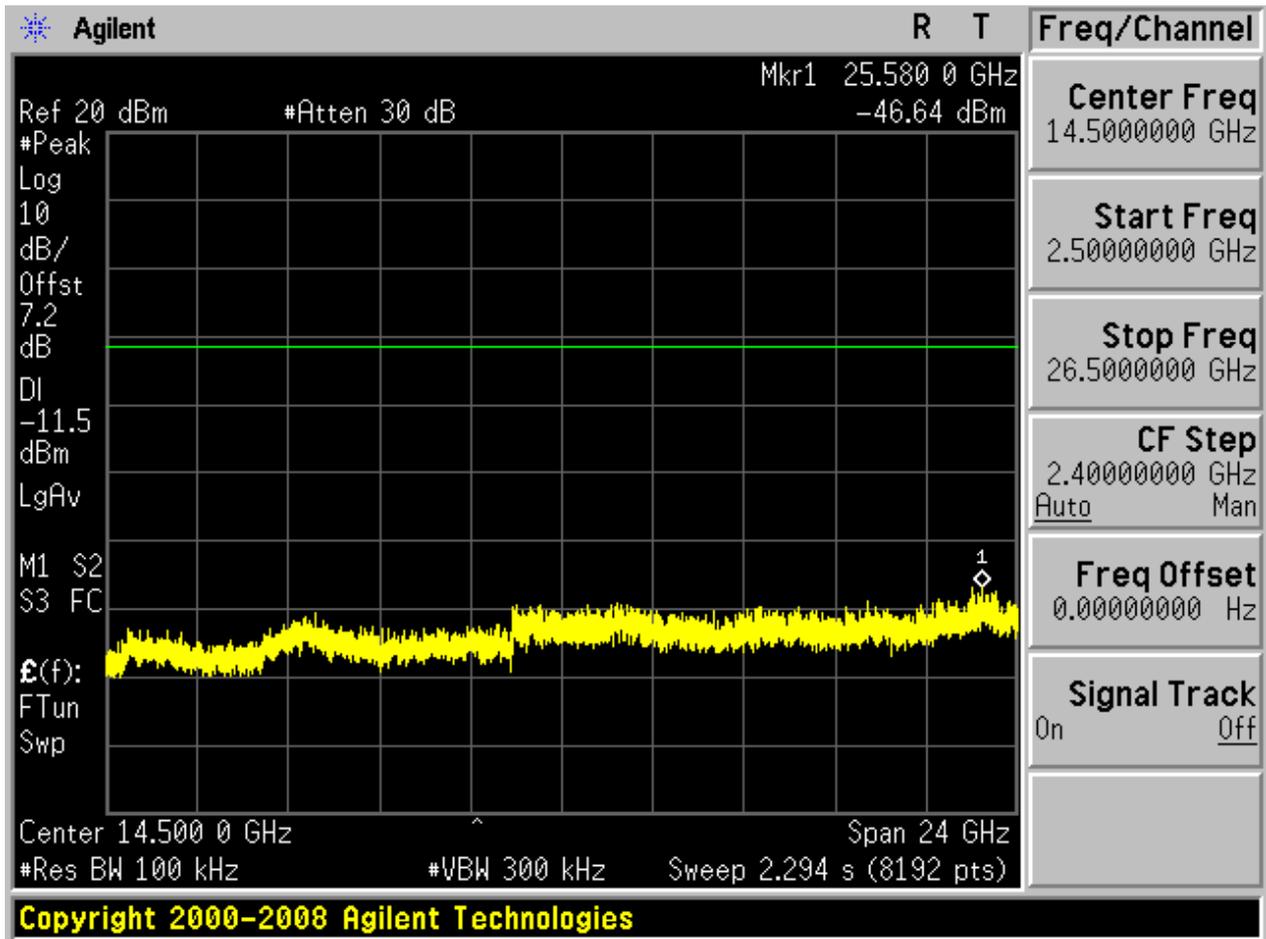








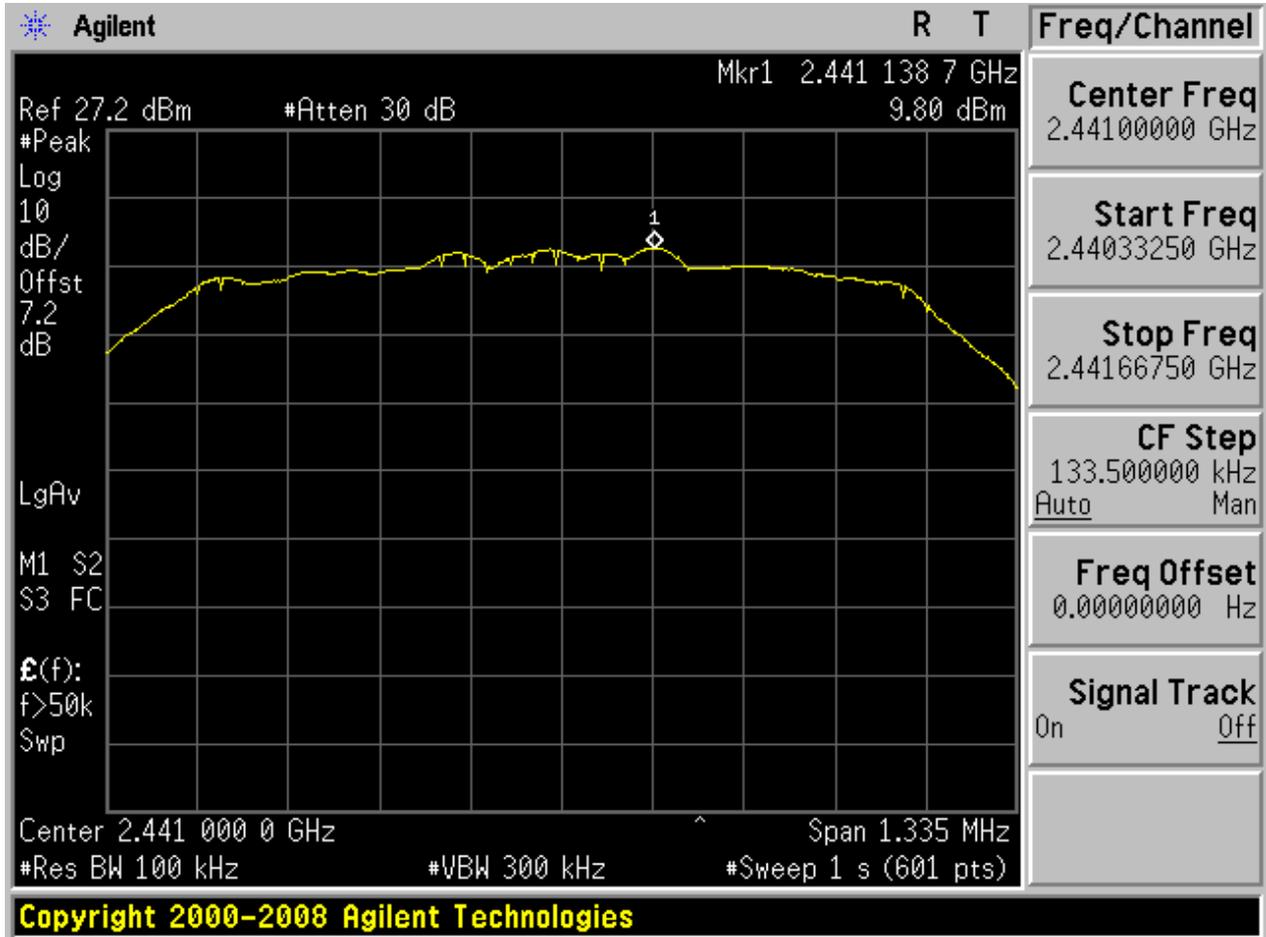






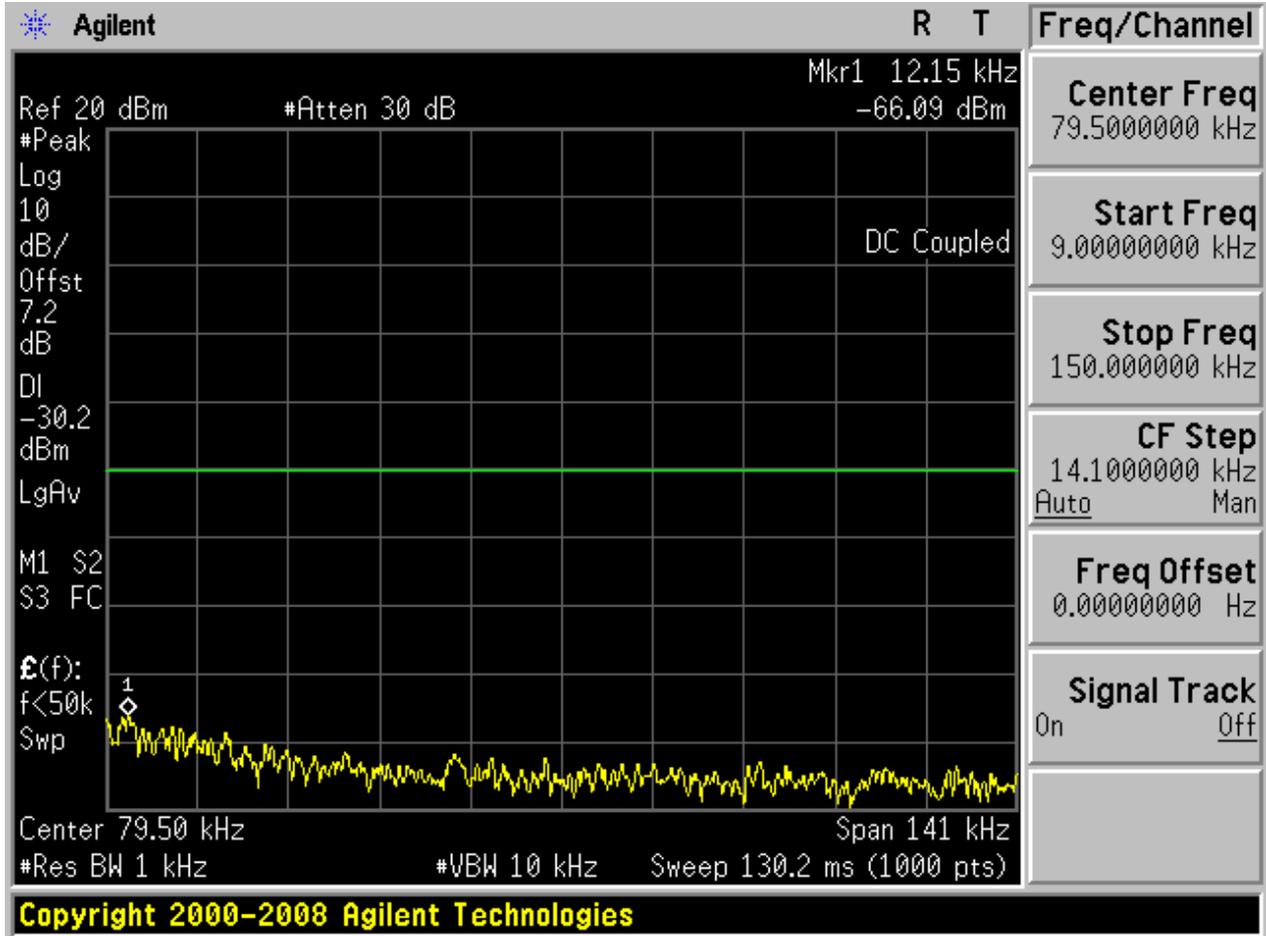
## 2.5 TM2\_2DH5\_Ch39

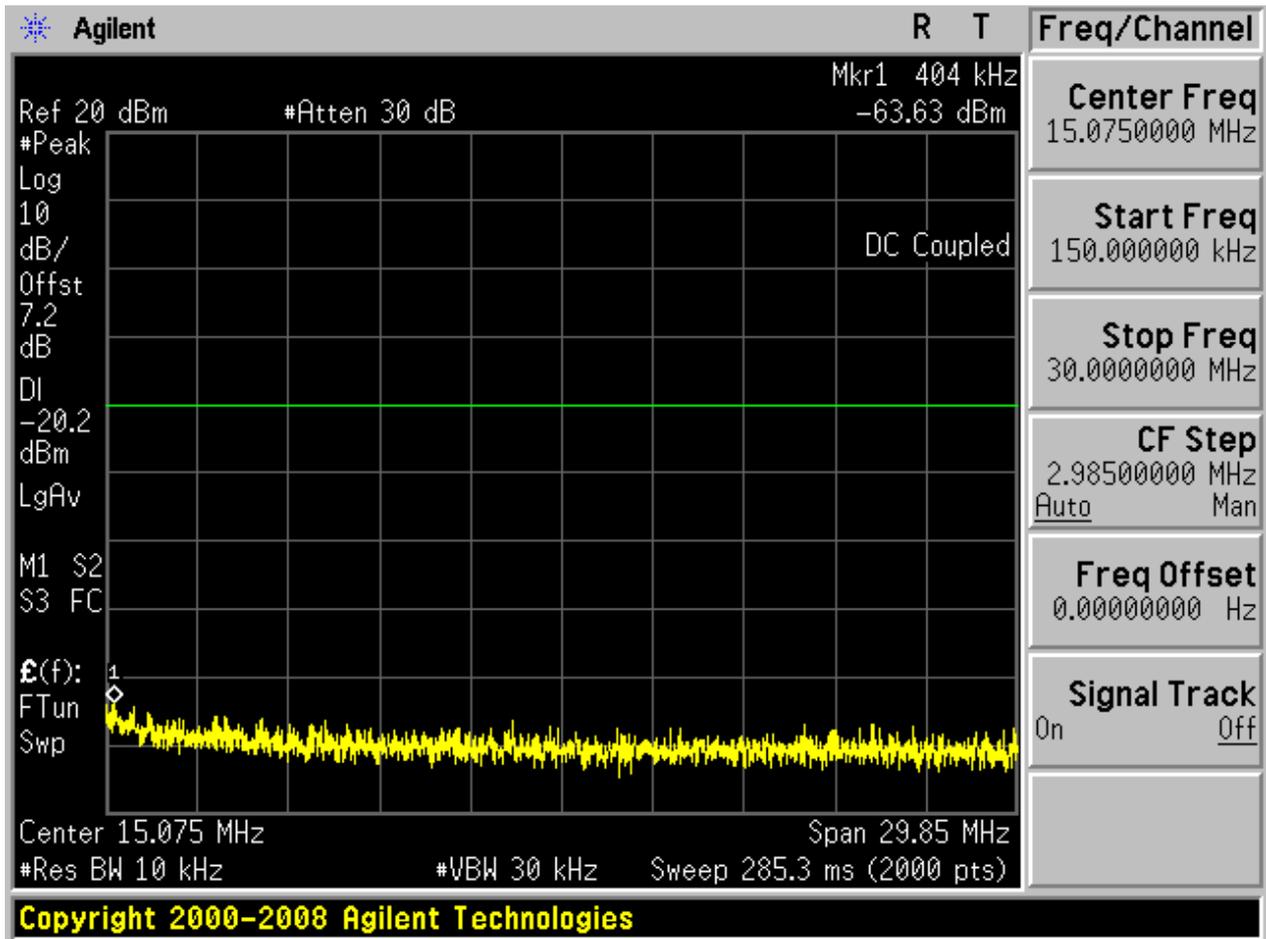
### 2.5.1 Pref

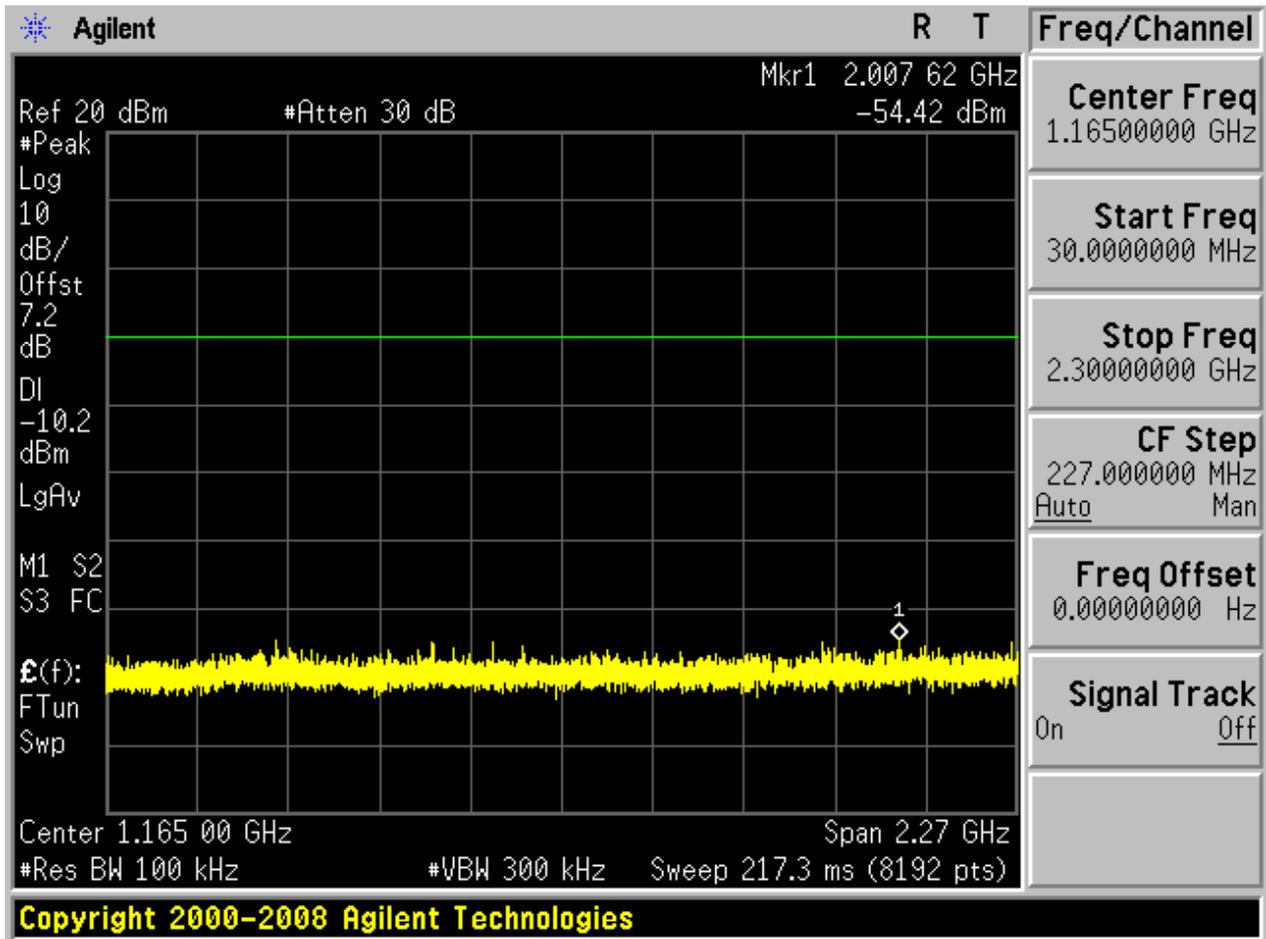


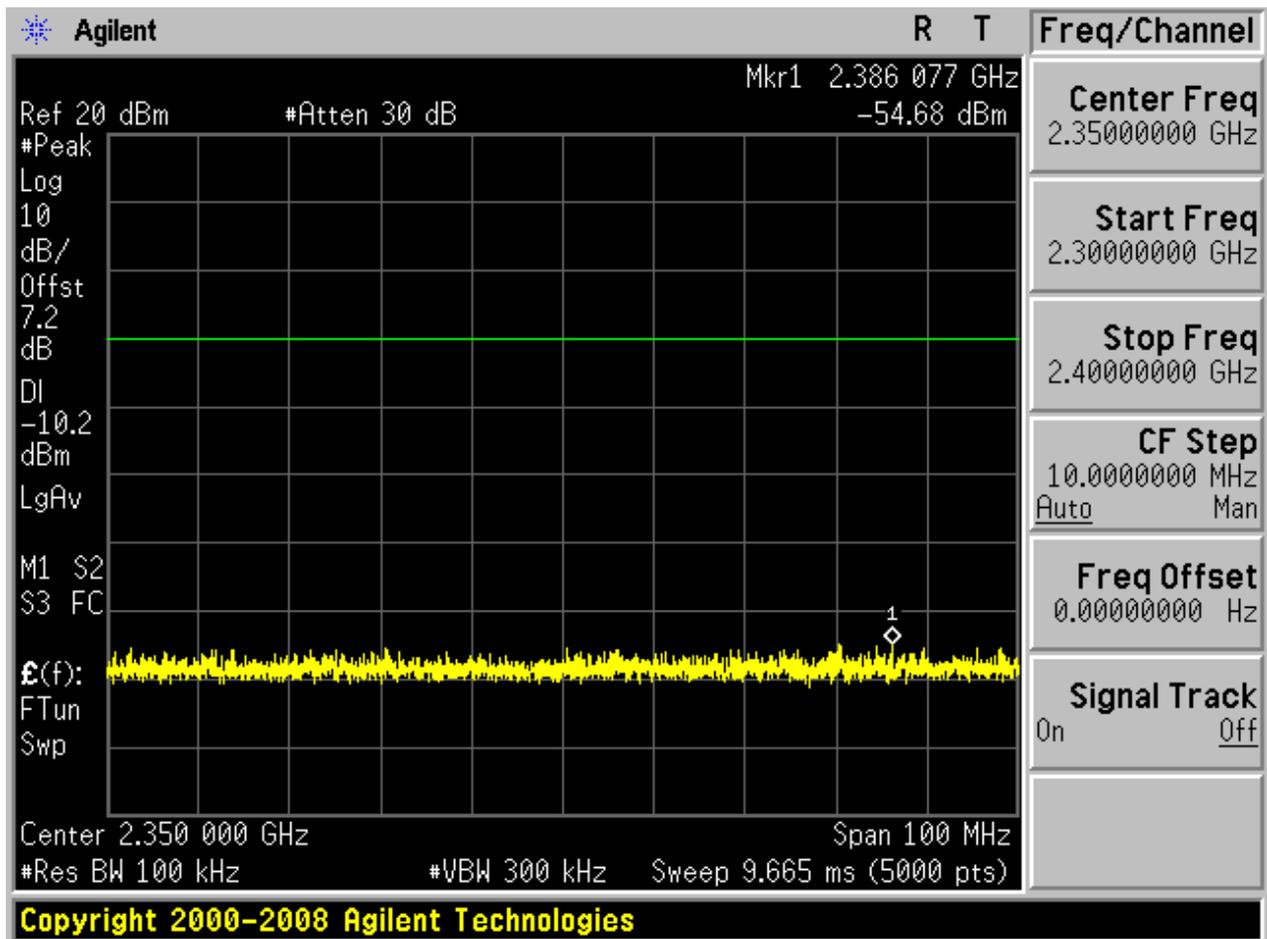


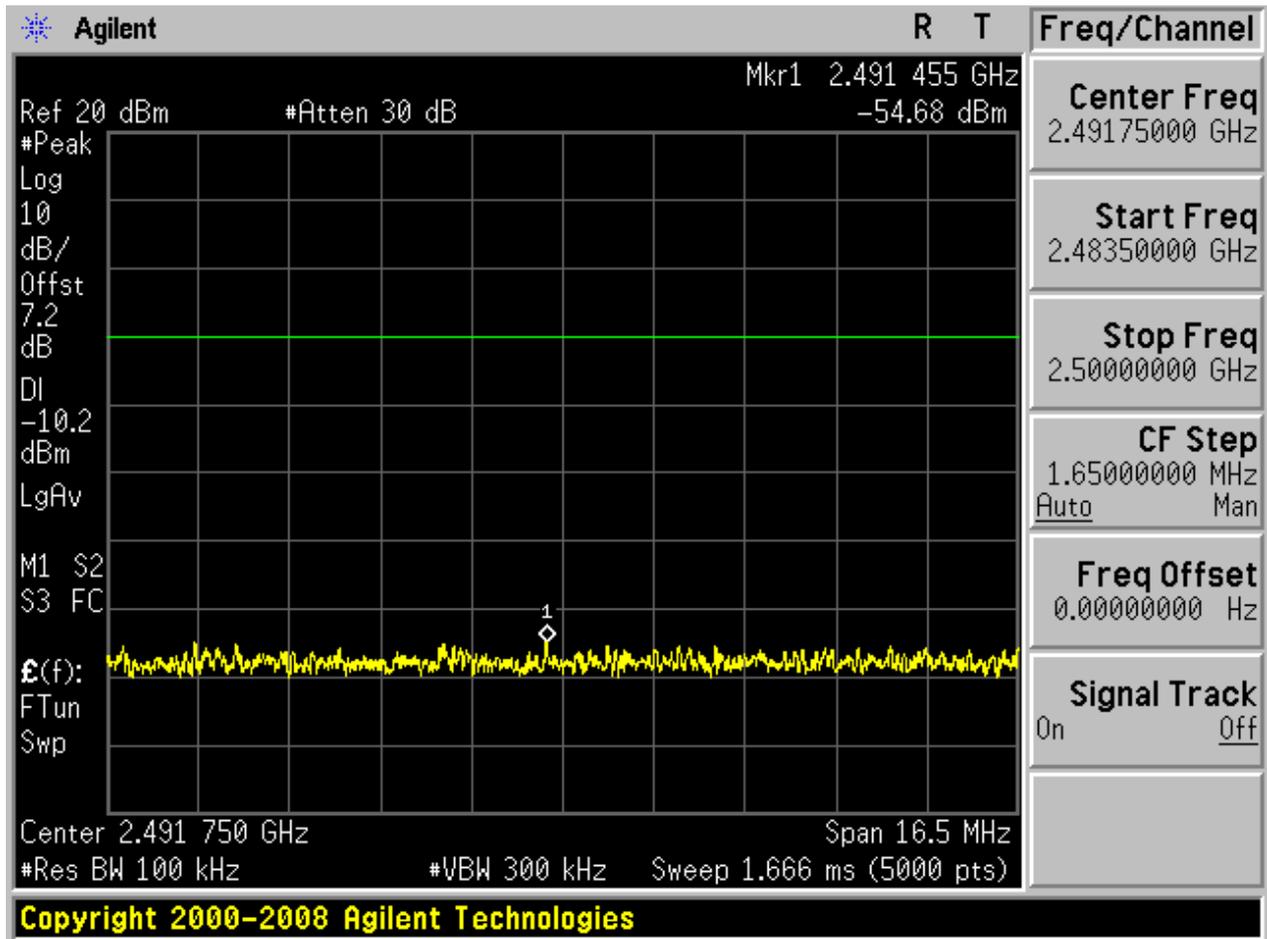
2.5.2 Puw

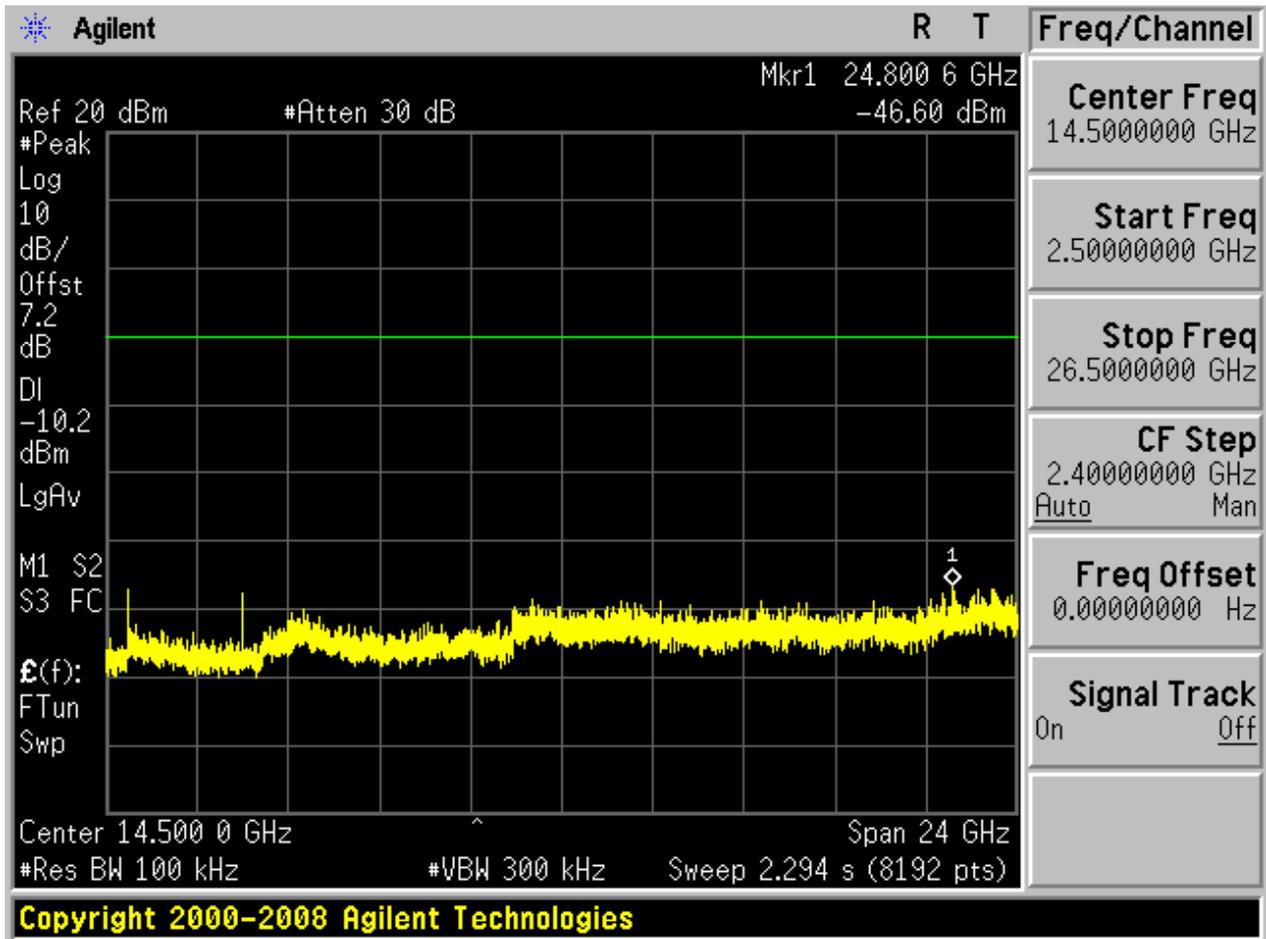








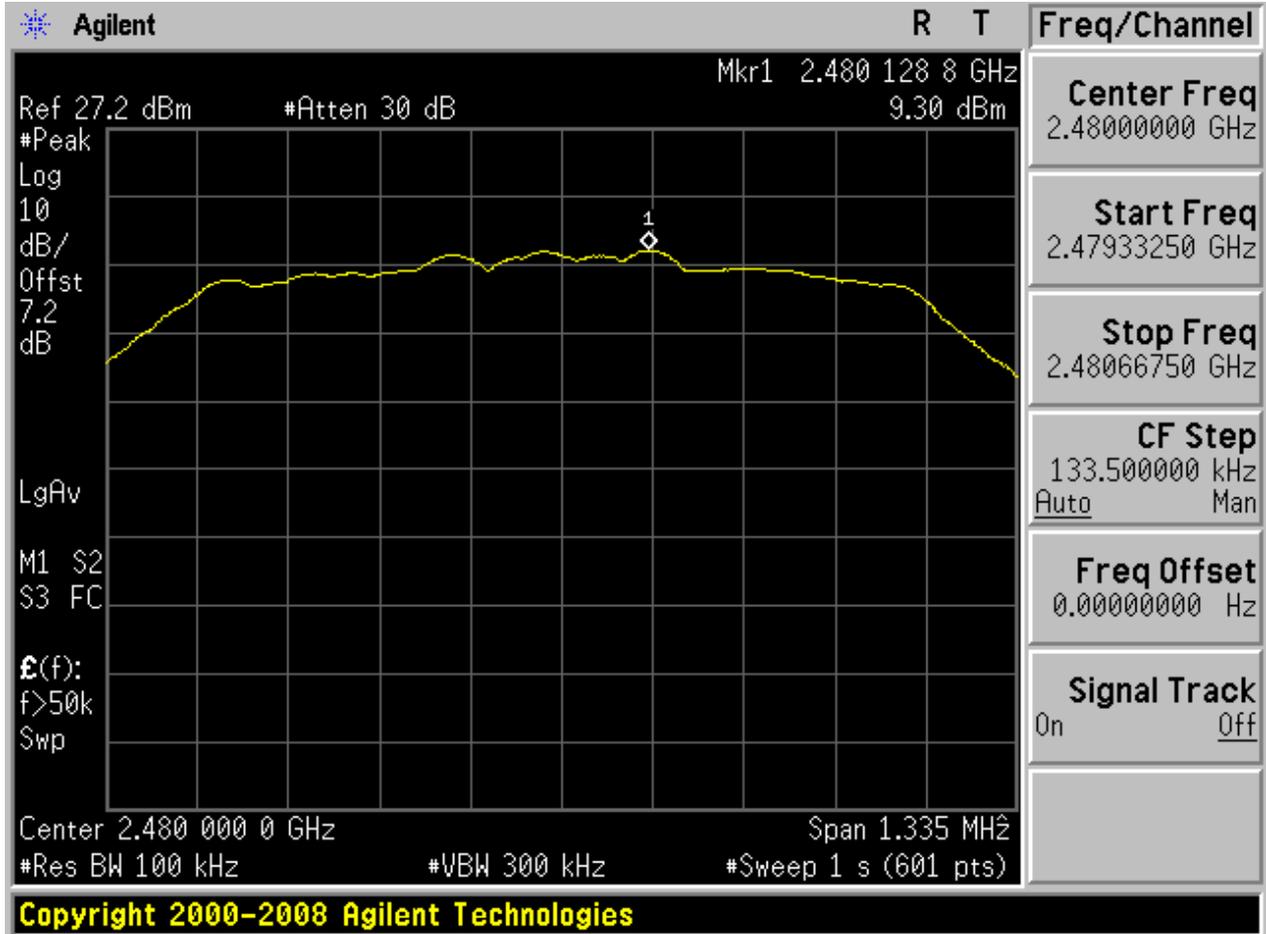






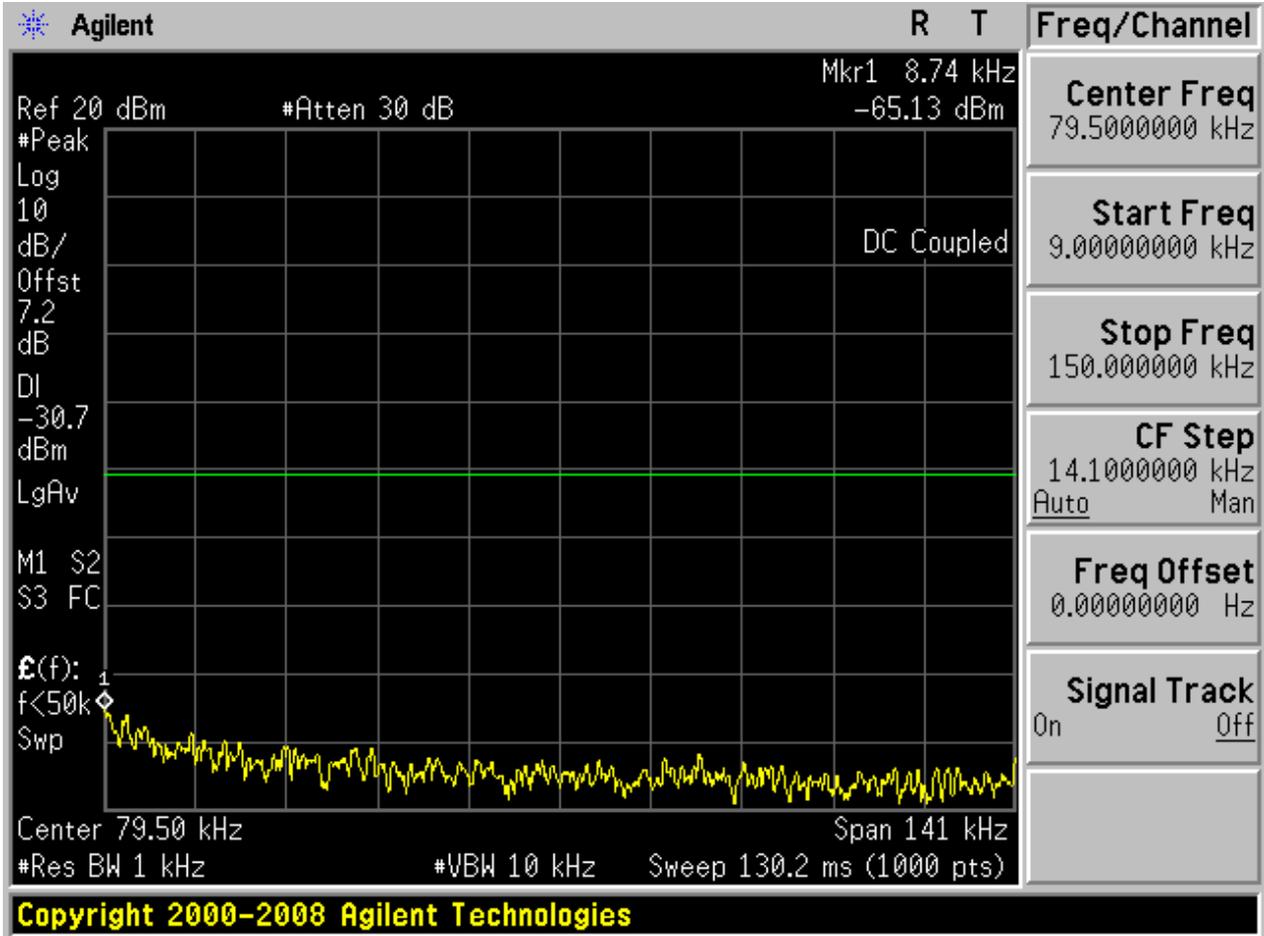
## 2.6 TM2\_2DH5\_Ch78

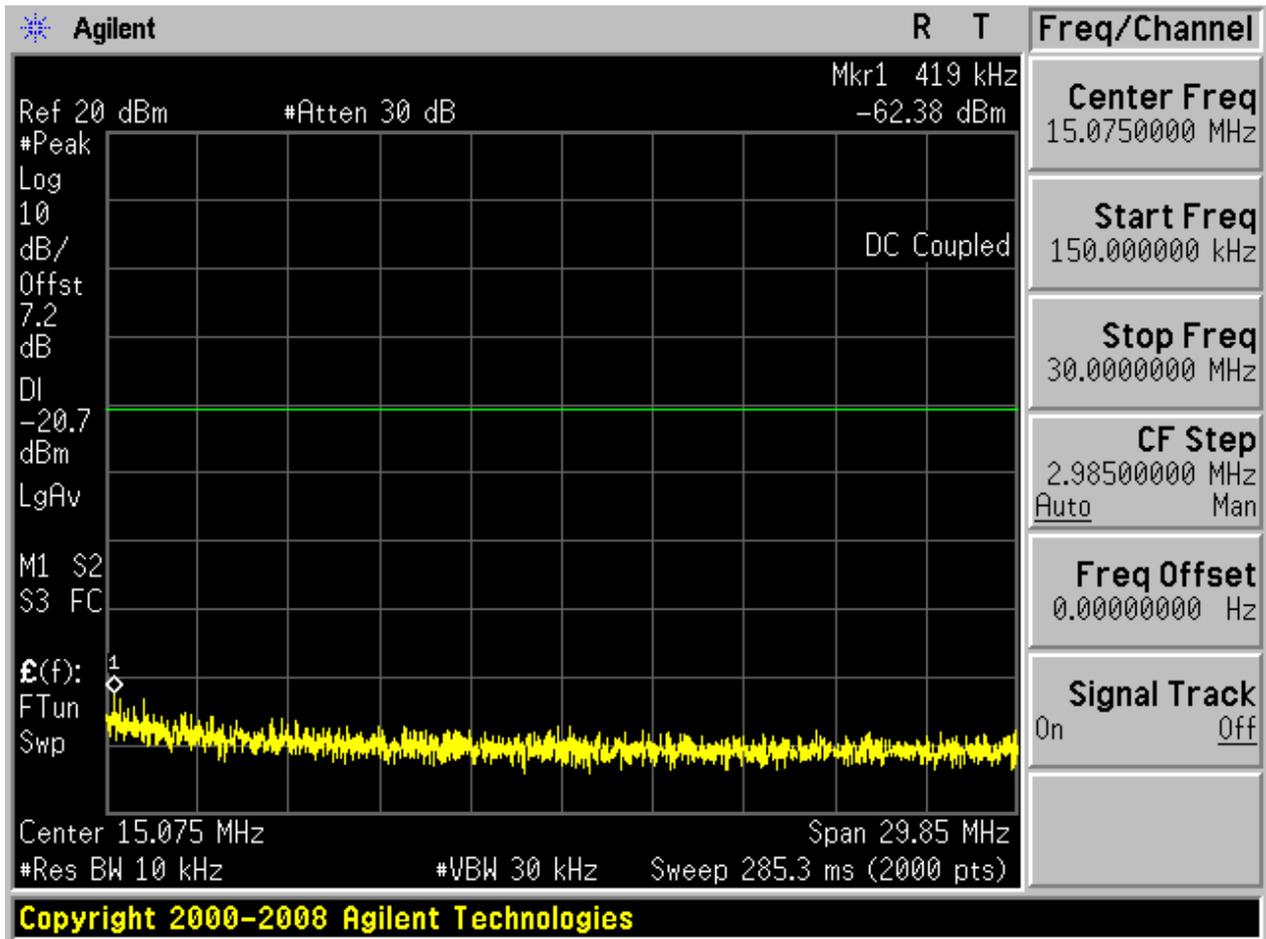
### 2.6.1 Pref

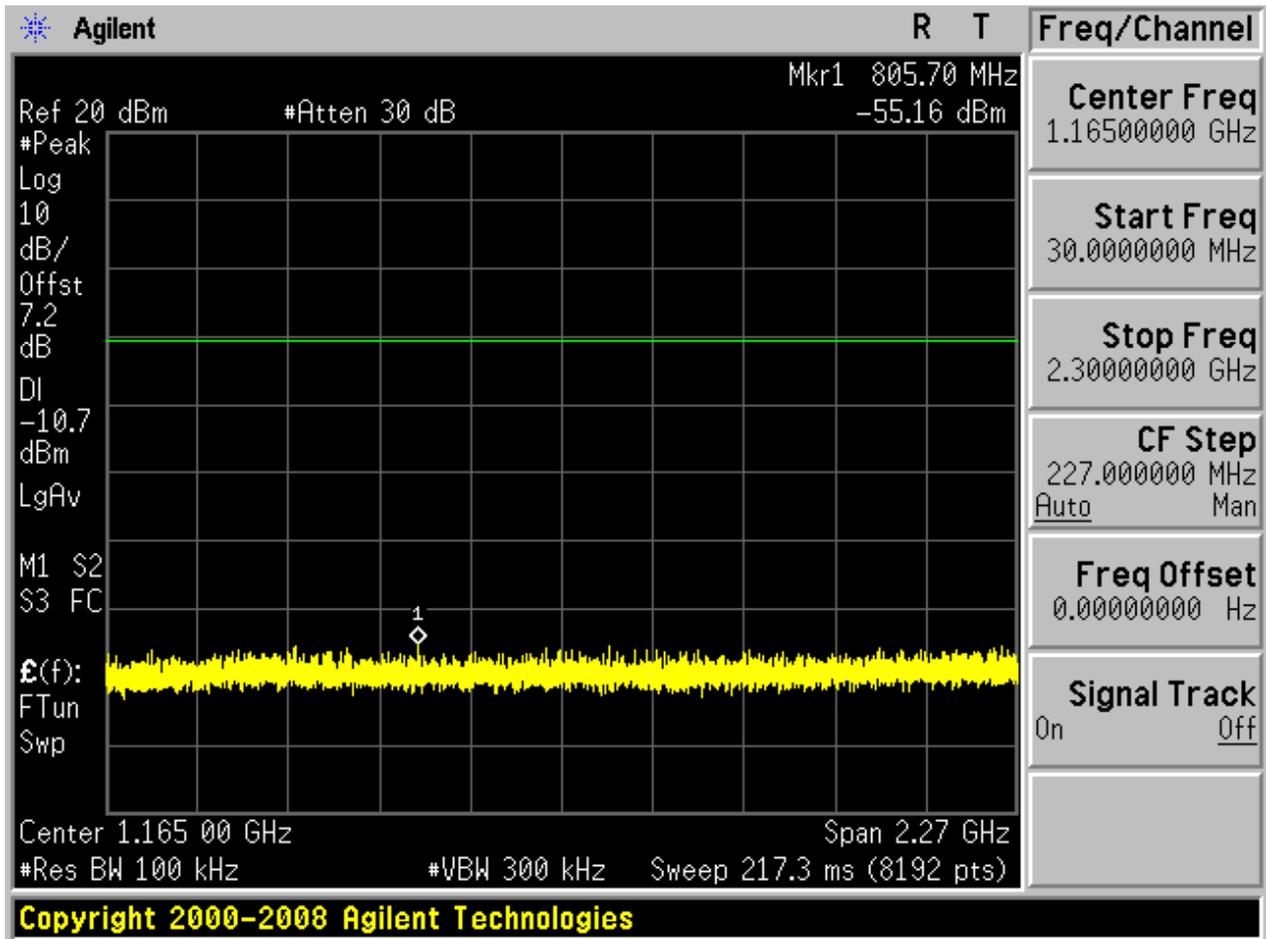


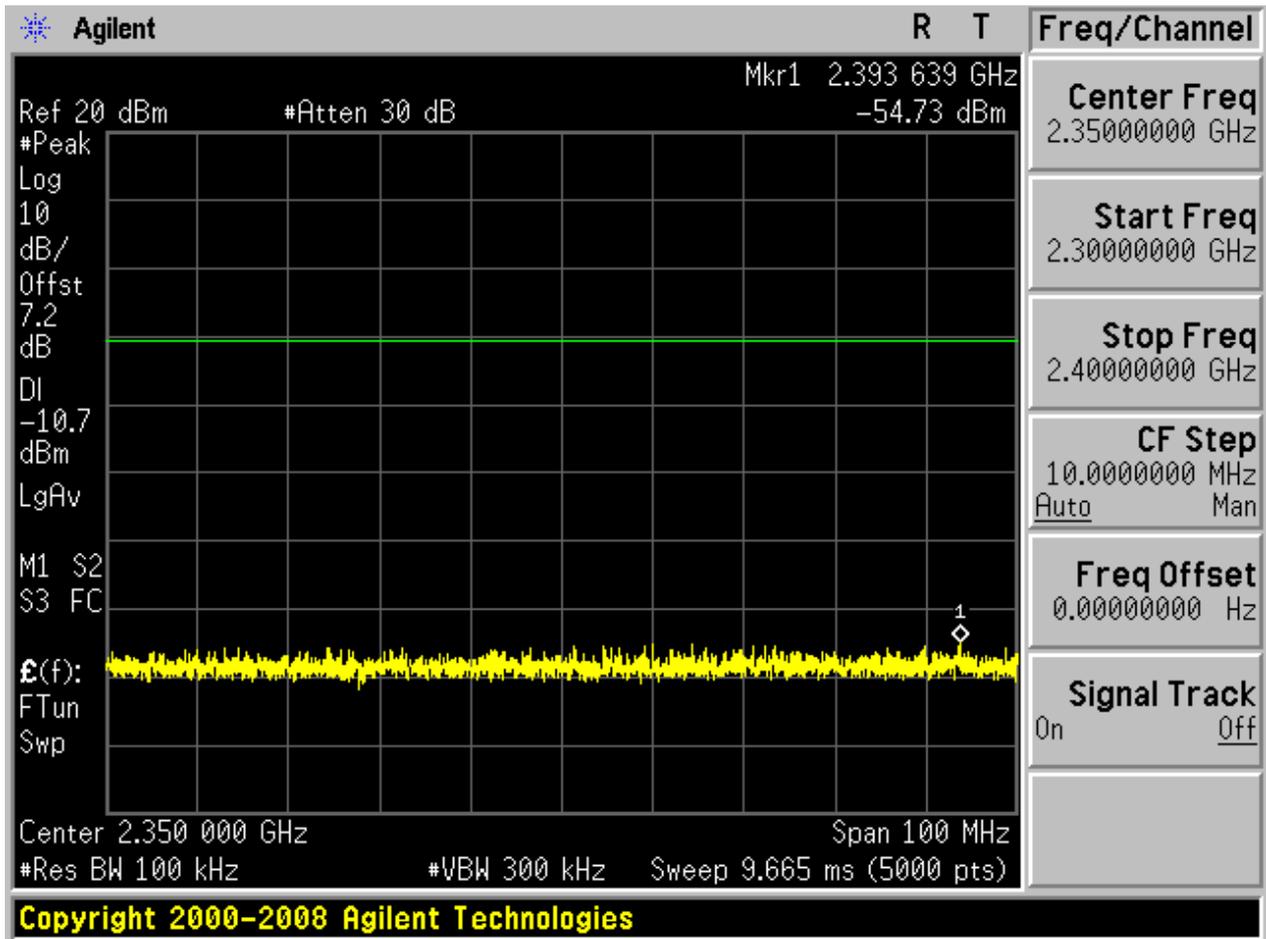


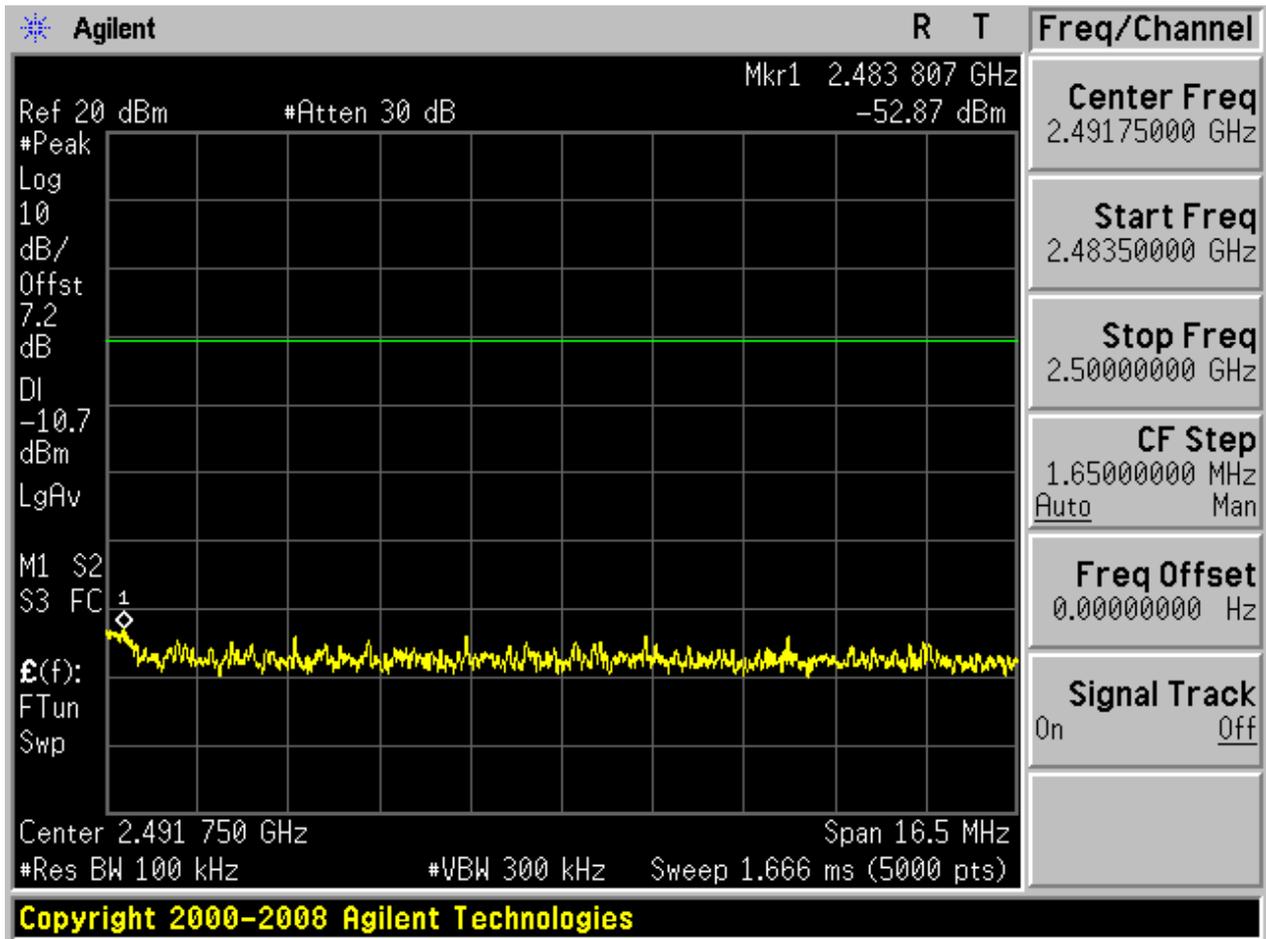
2.6.2 Puw

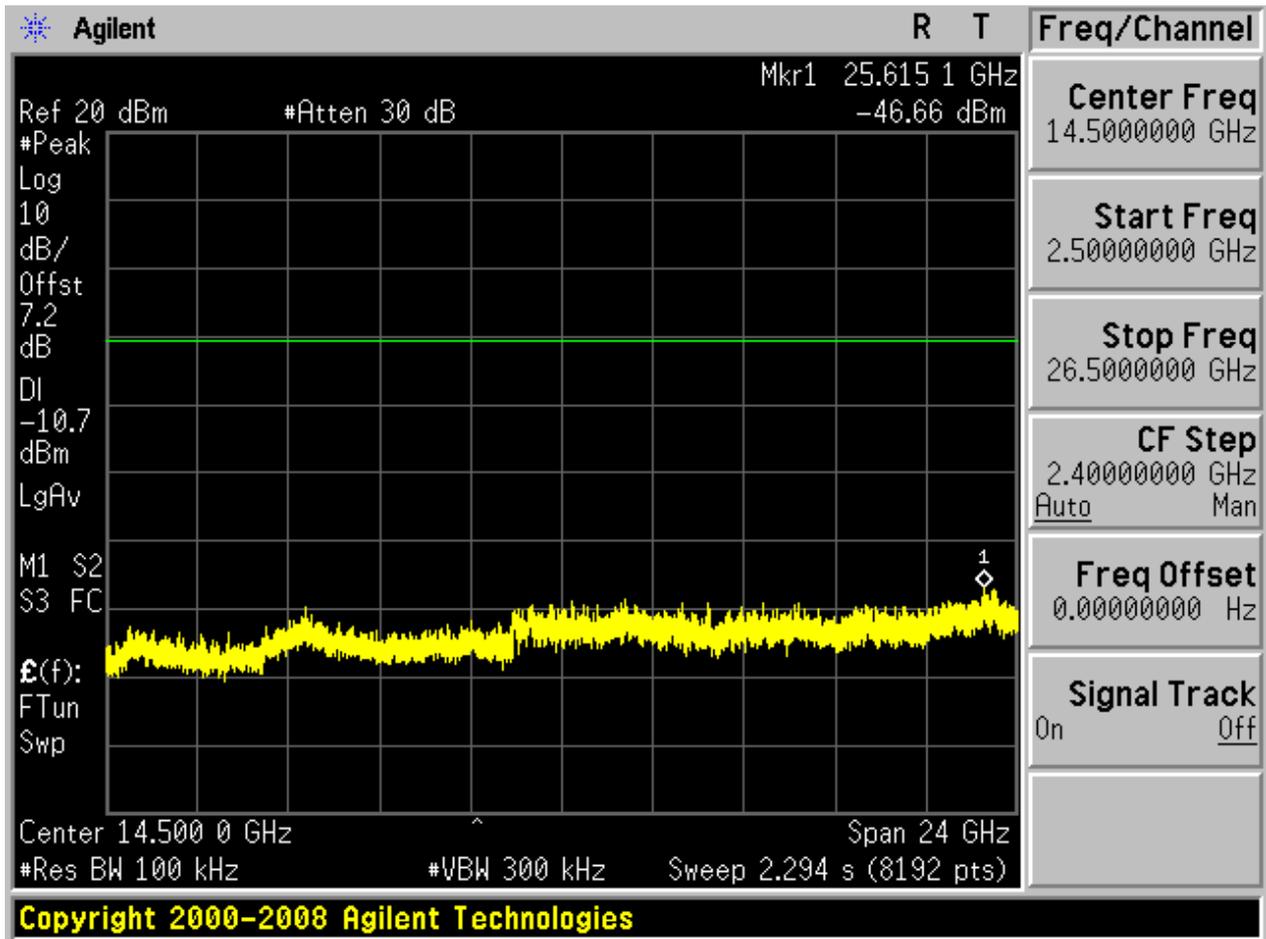








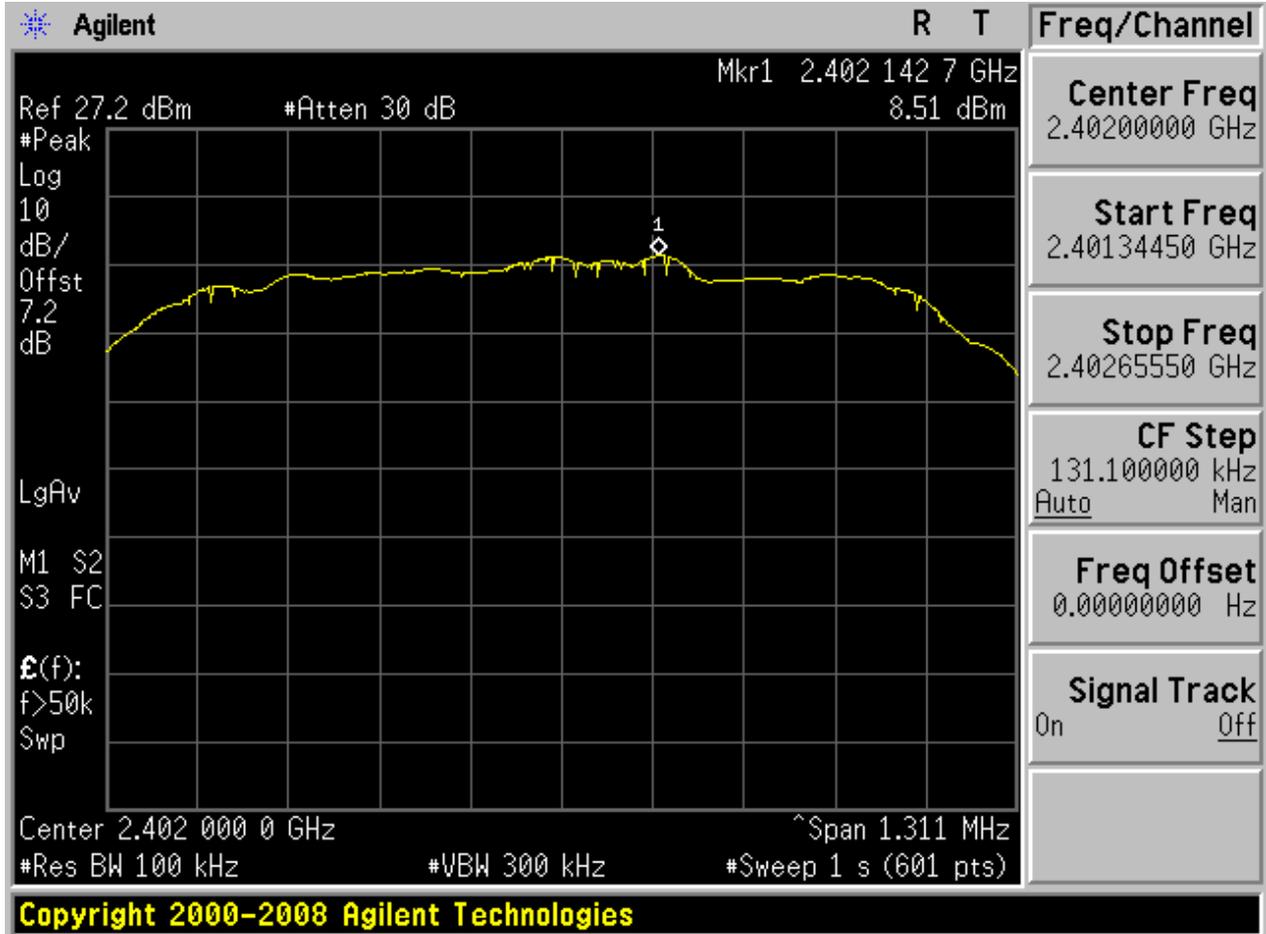






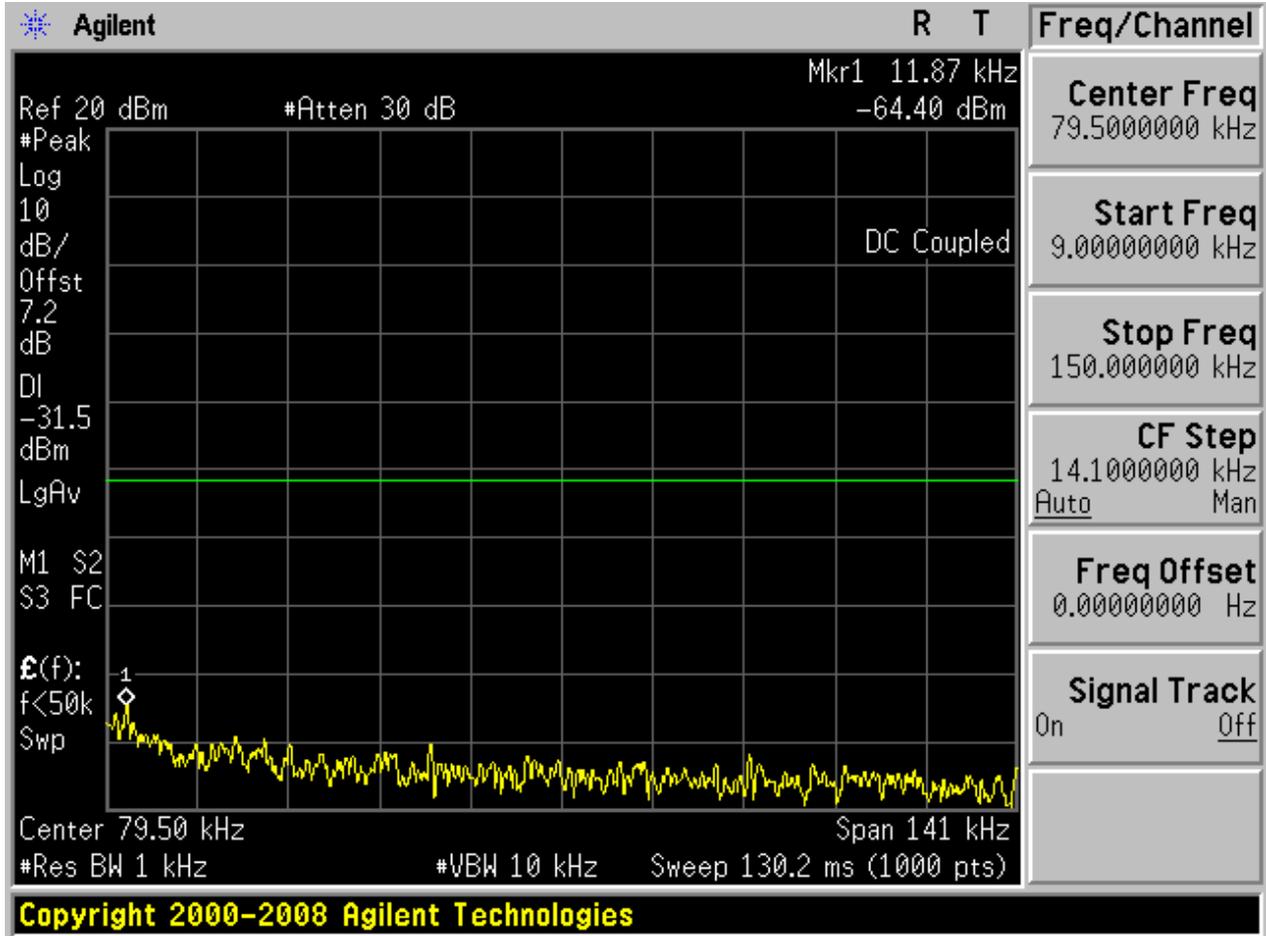
## 2.7 TM3\_3DH5\_Ch0

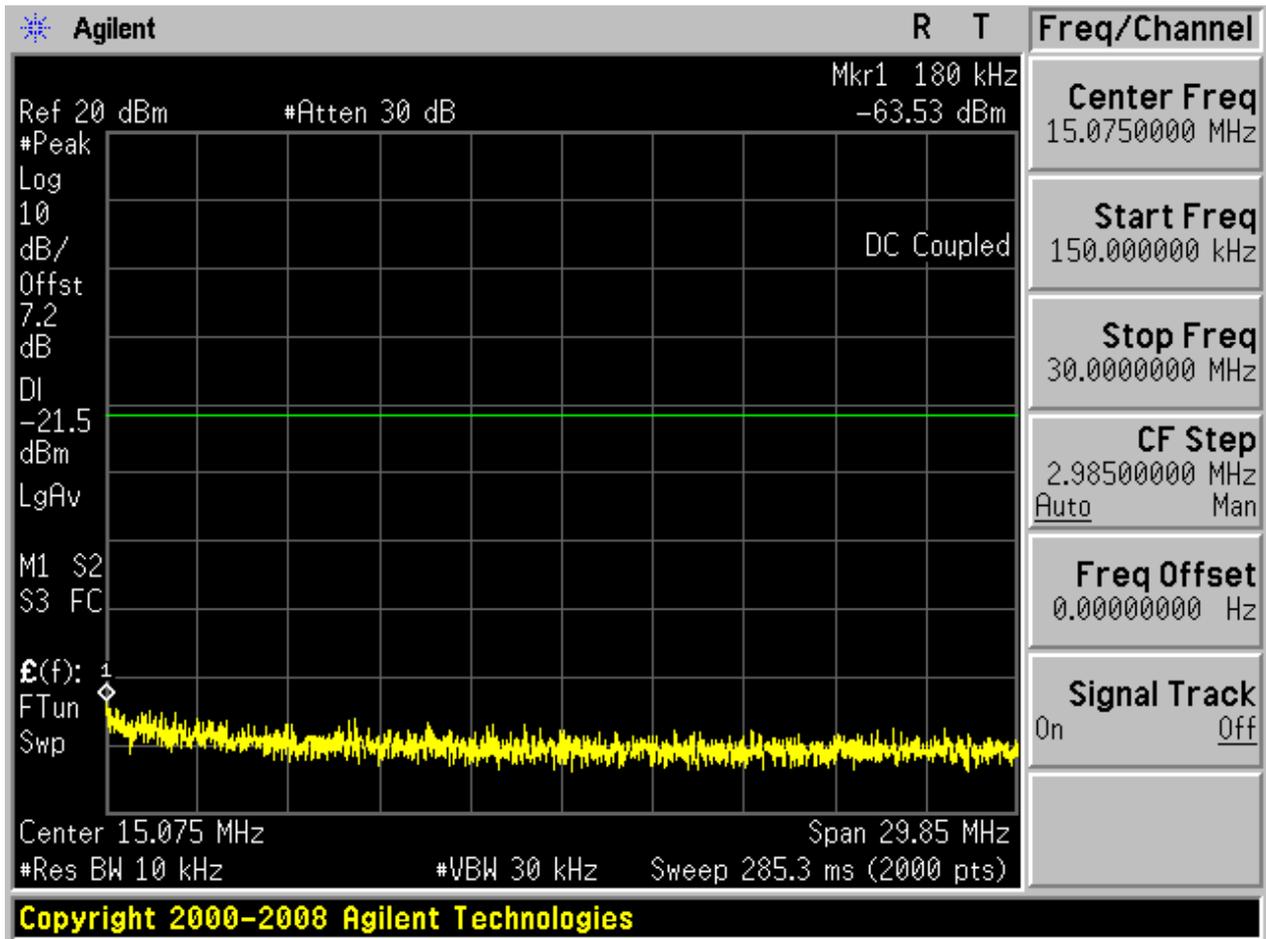
### 2.7.1 Pref

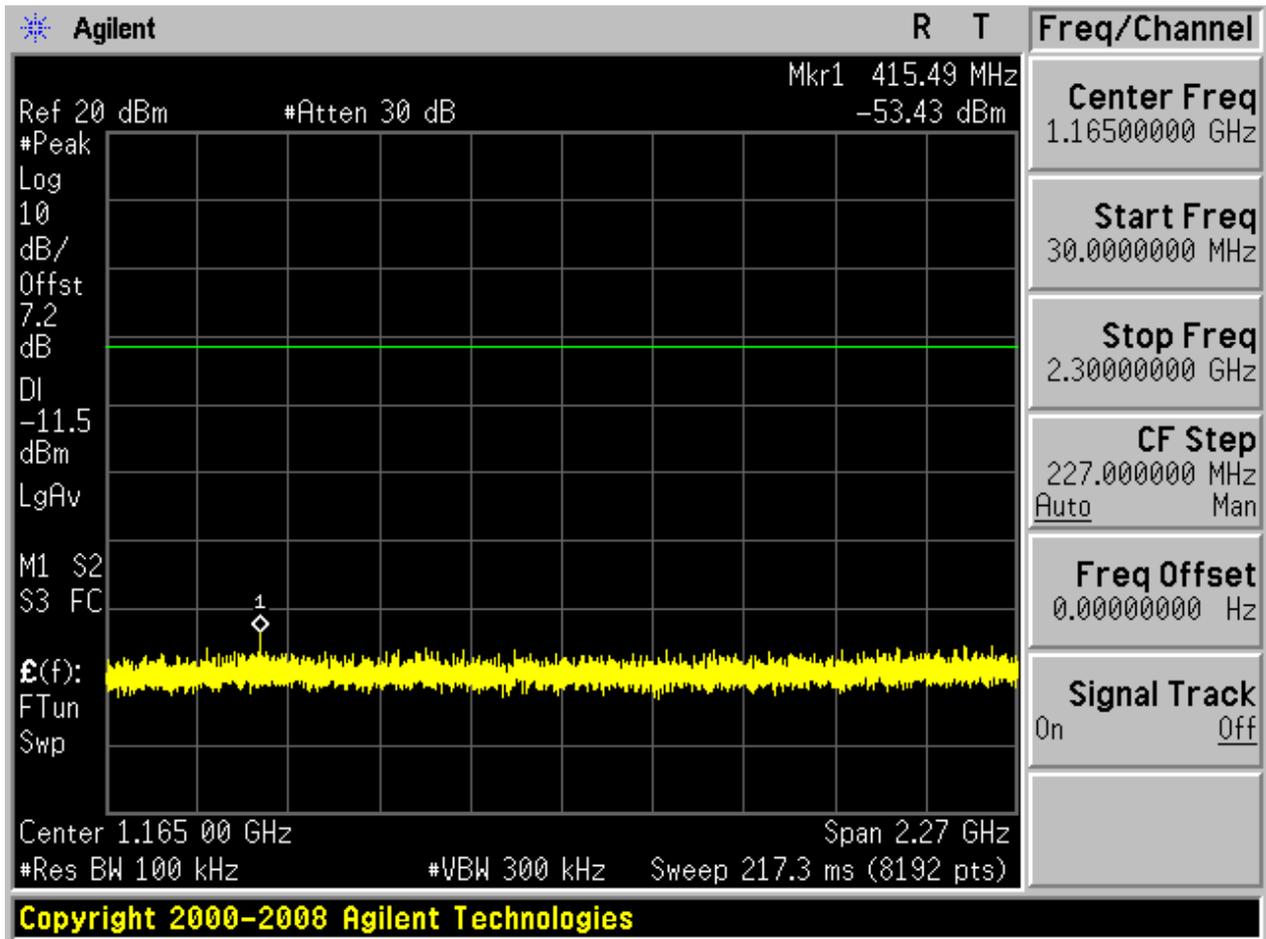


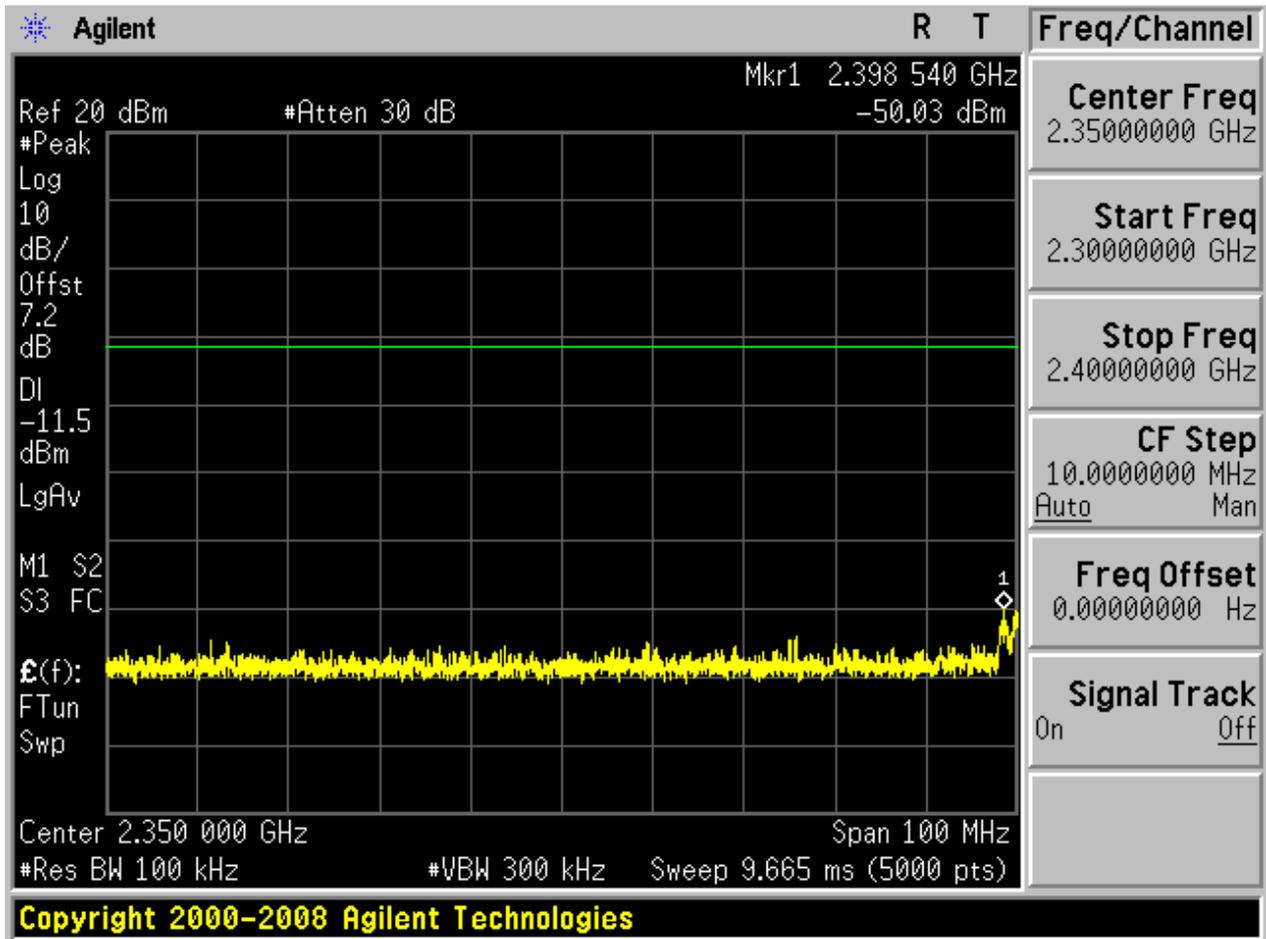


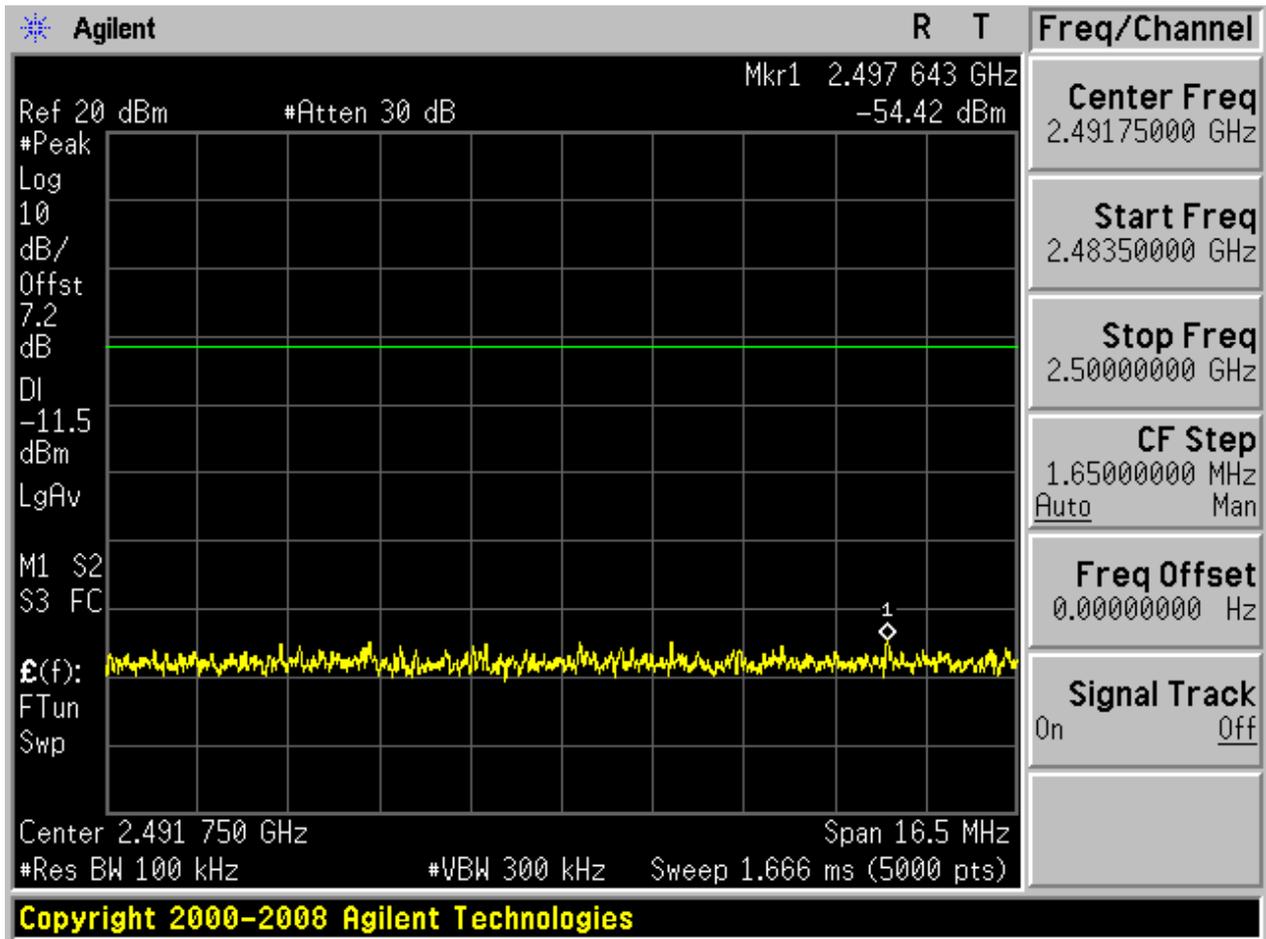
2.7.2 Puw

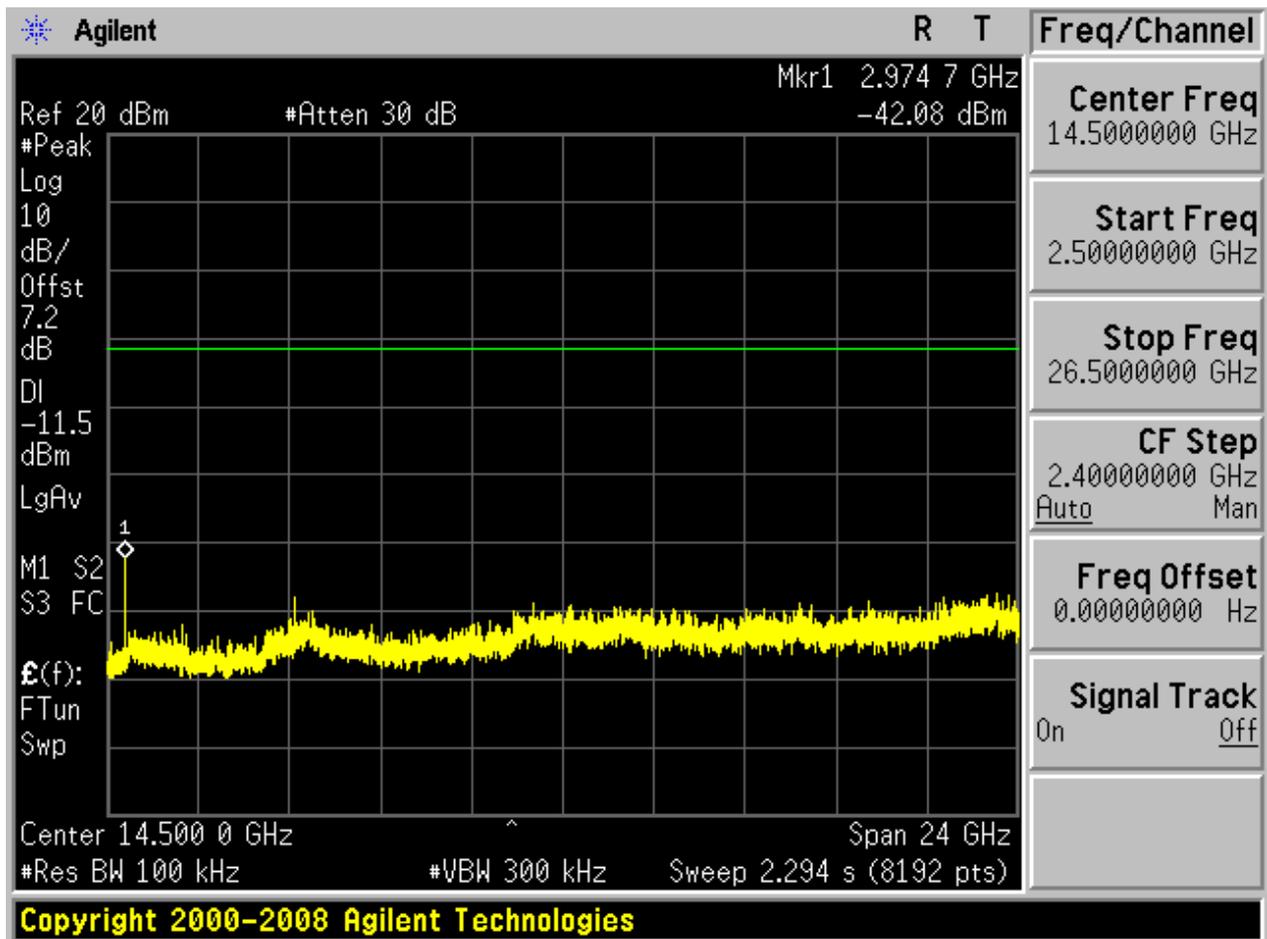








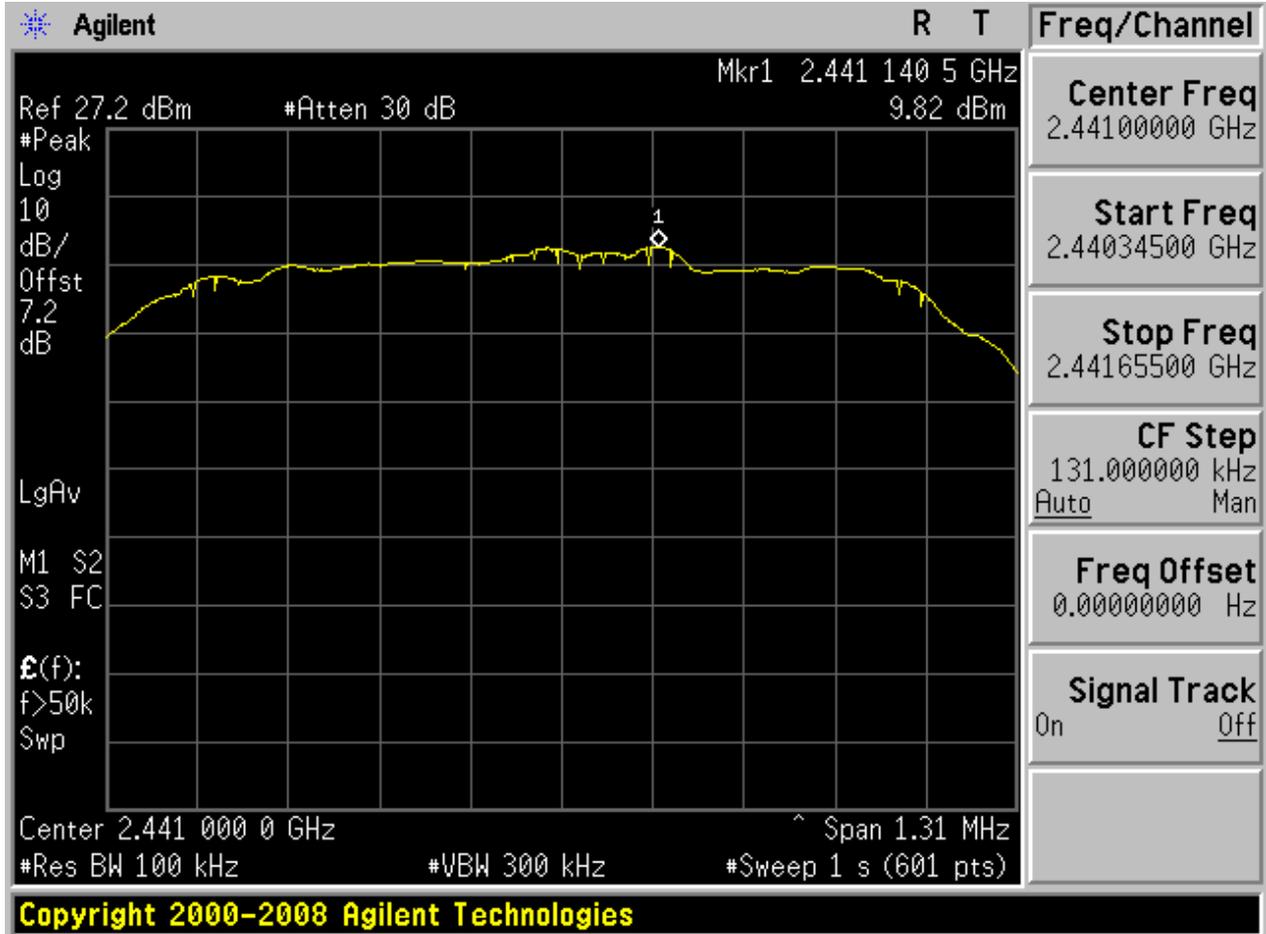






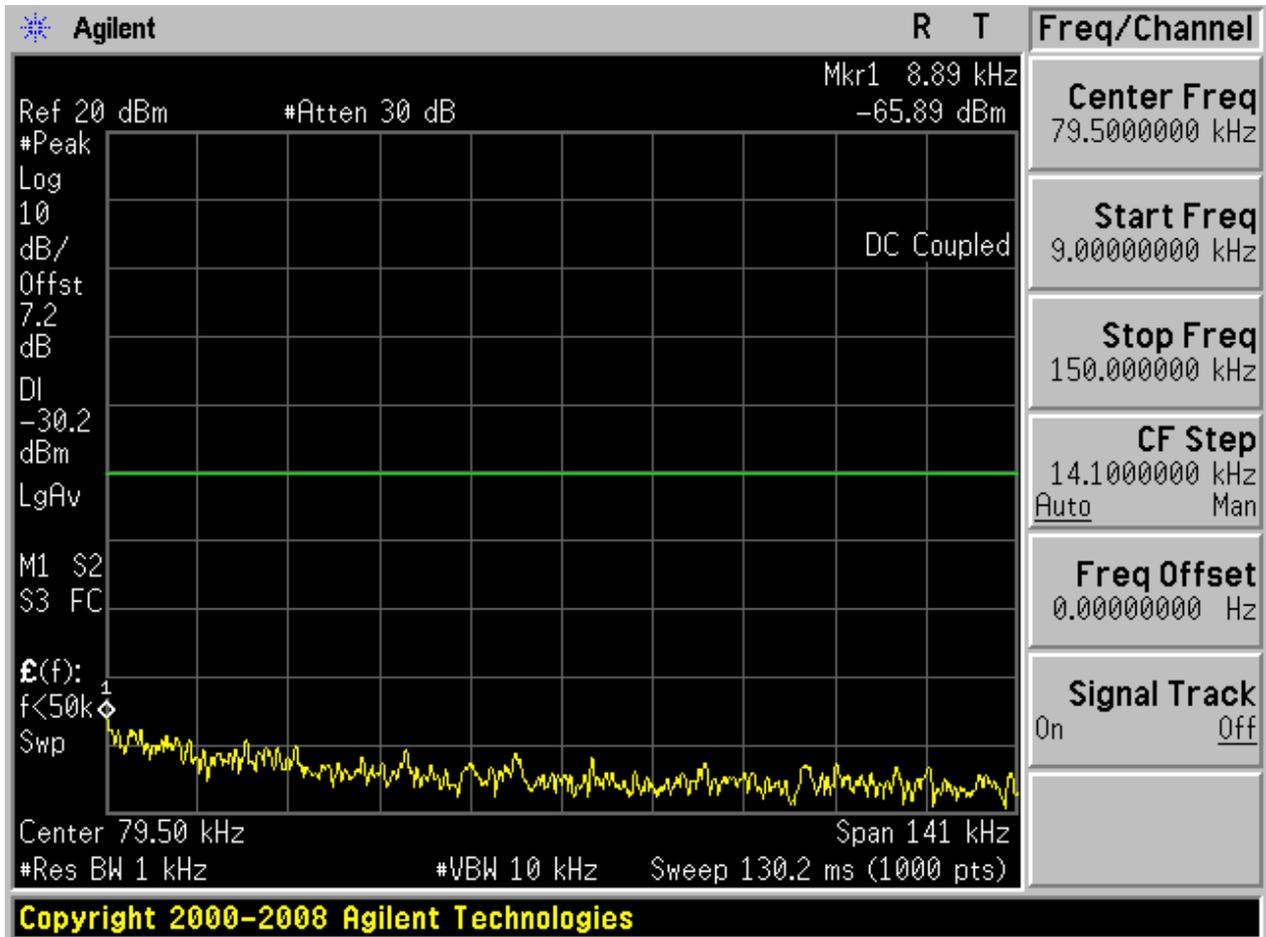
## 2.8 TM3\_3DH5\_Ch39

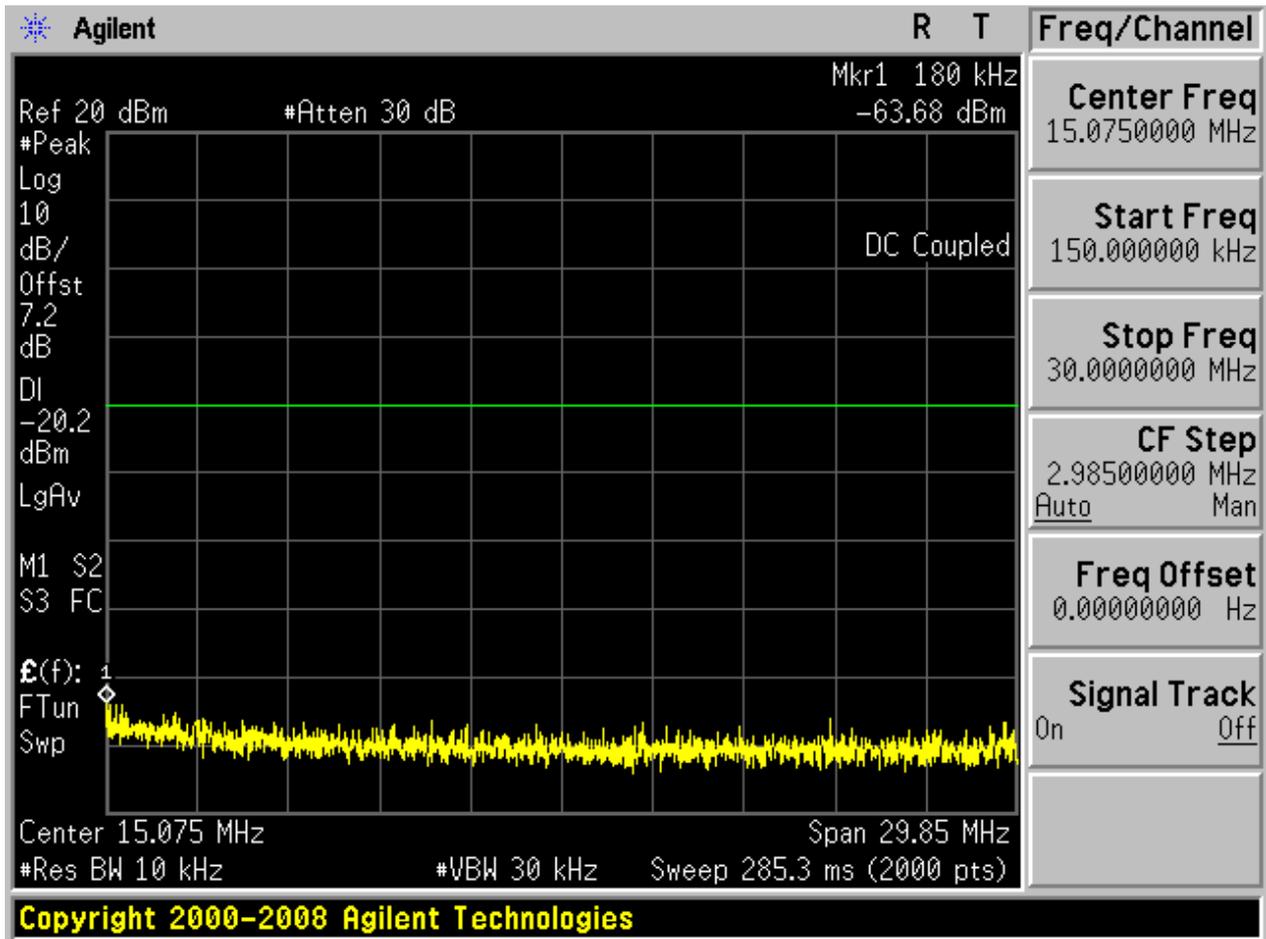
### 2.8.1 Pref

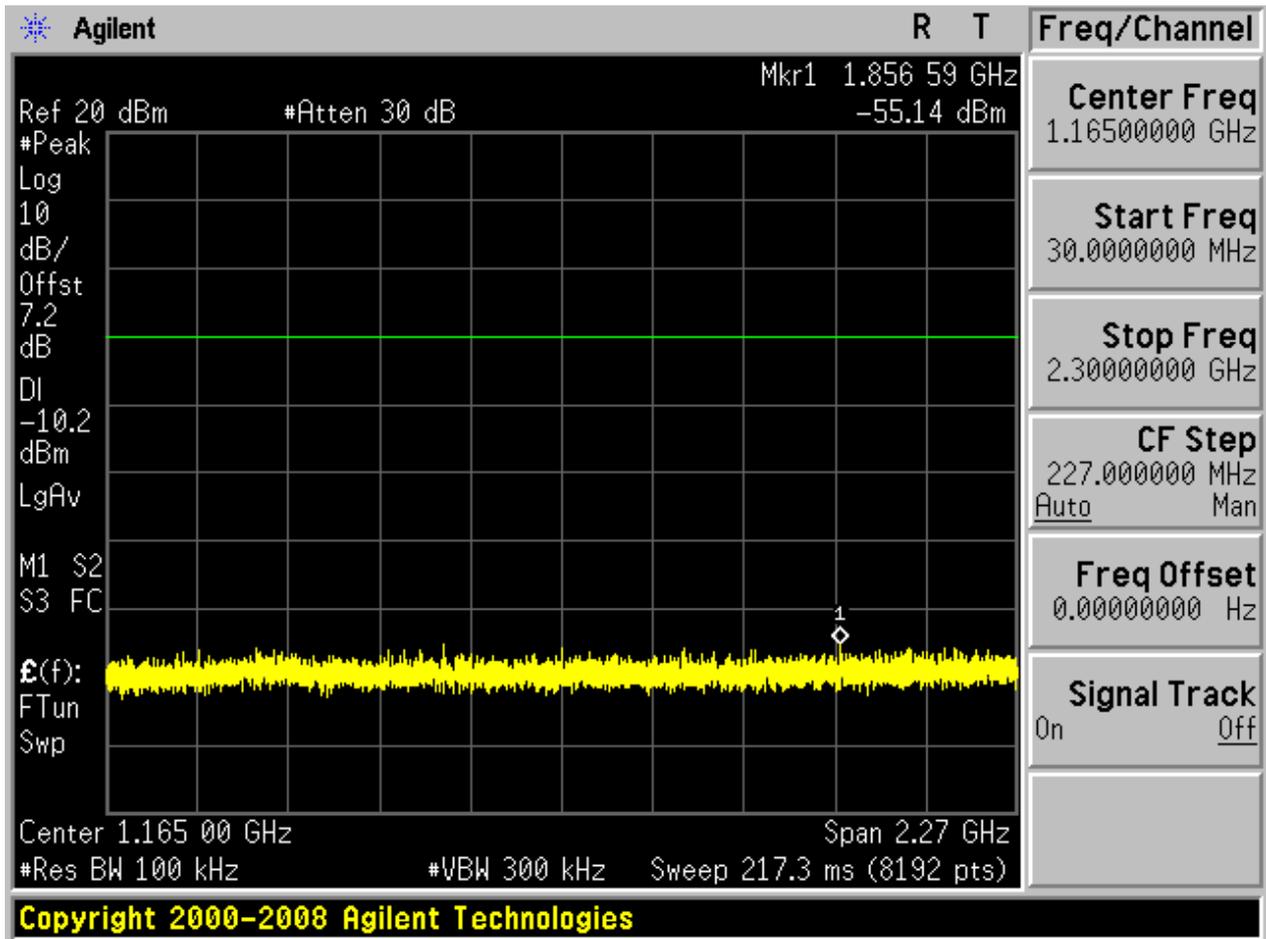


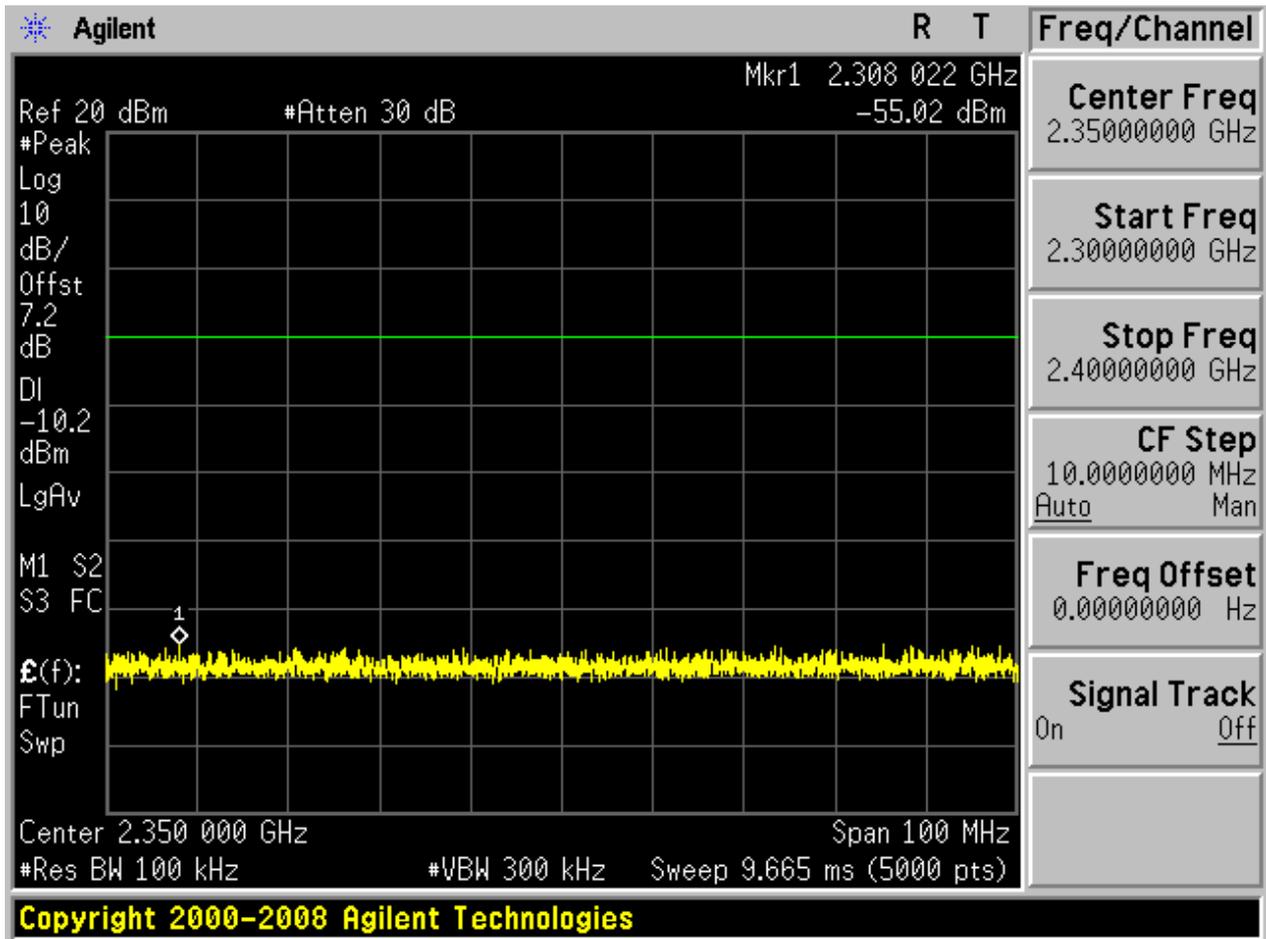


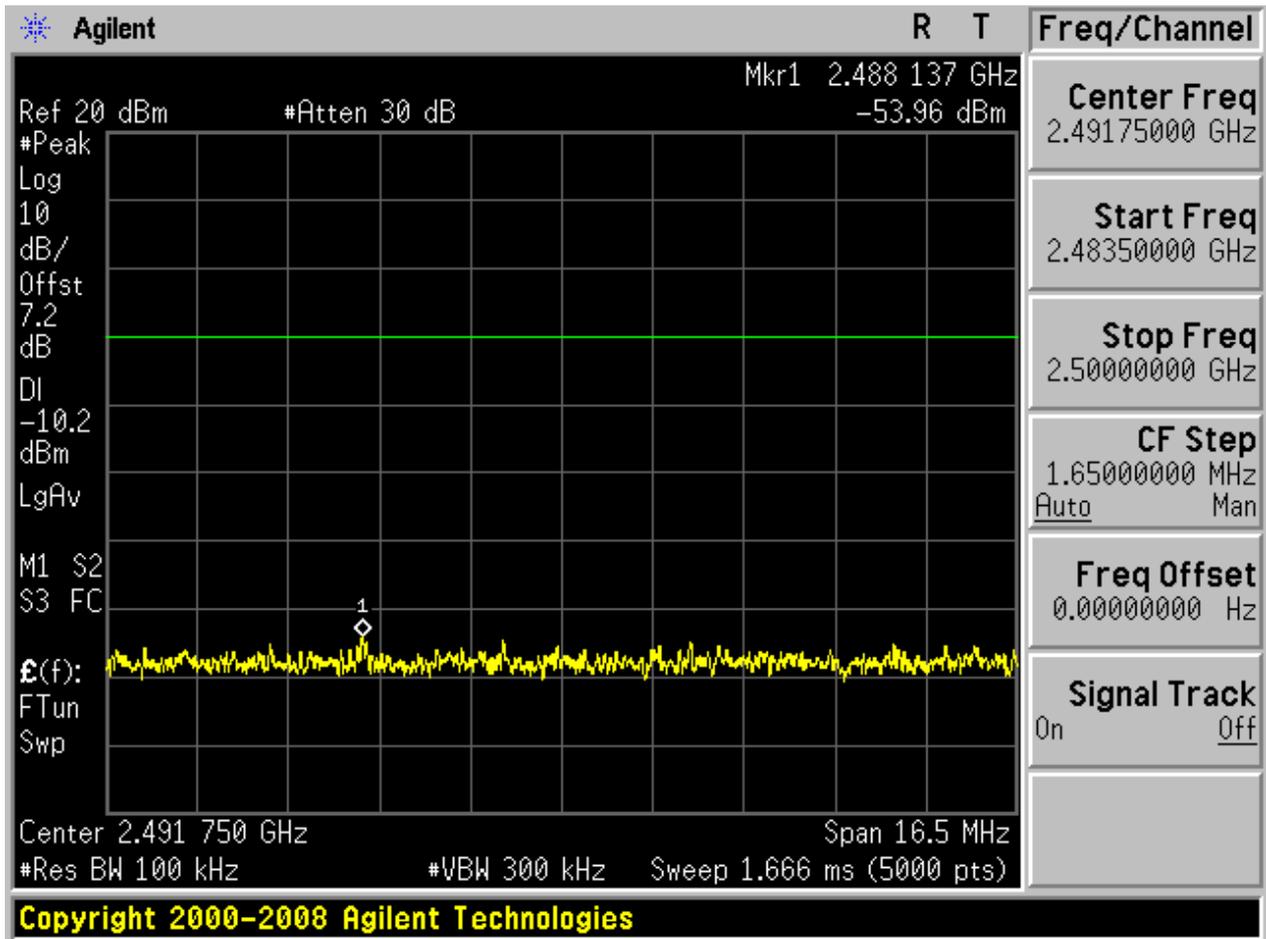
2.8.2 Puw

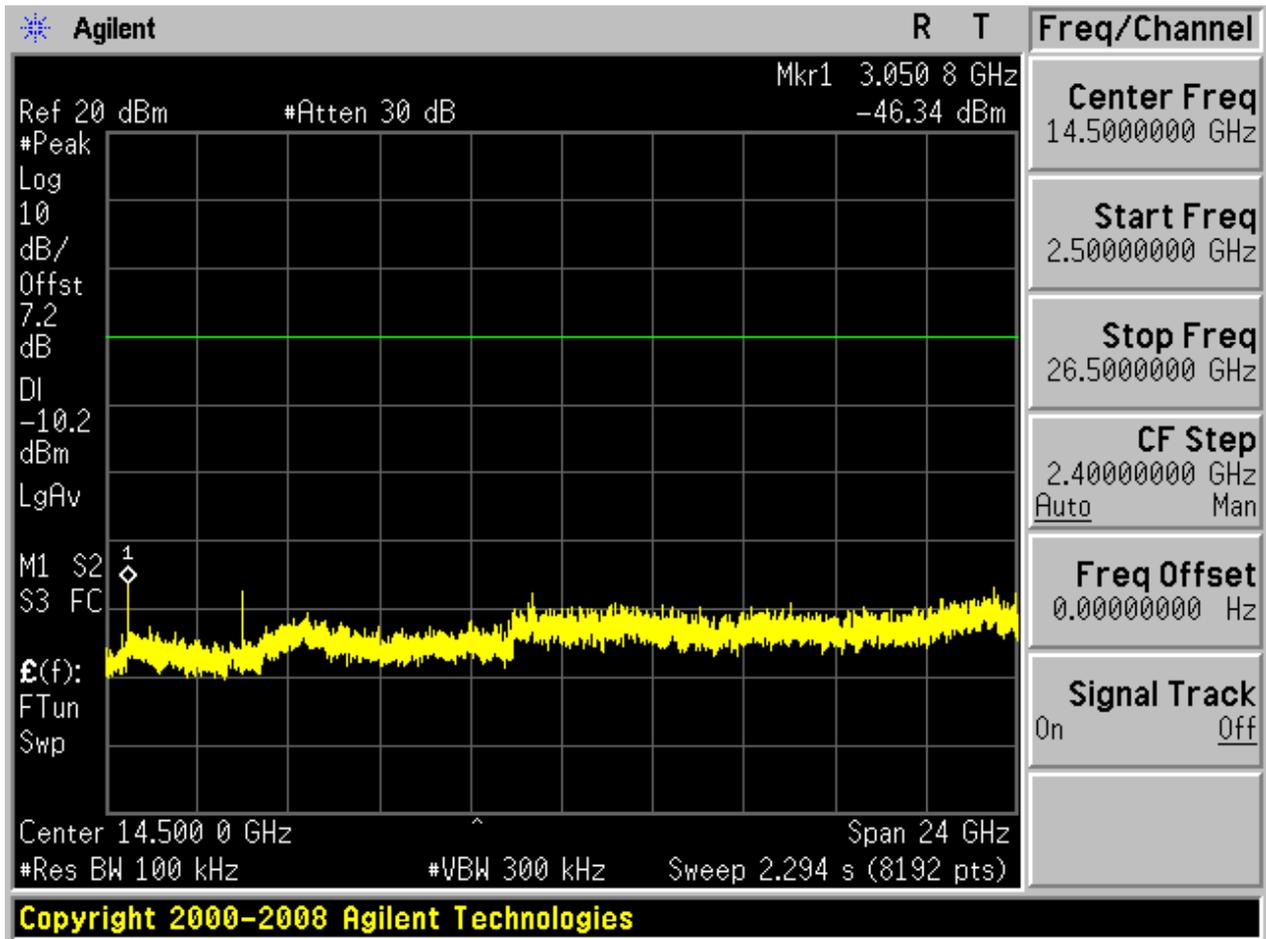








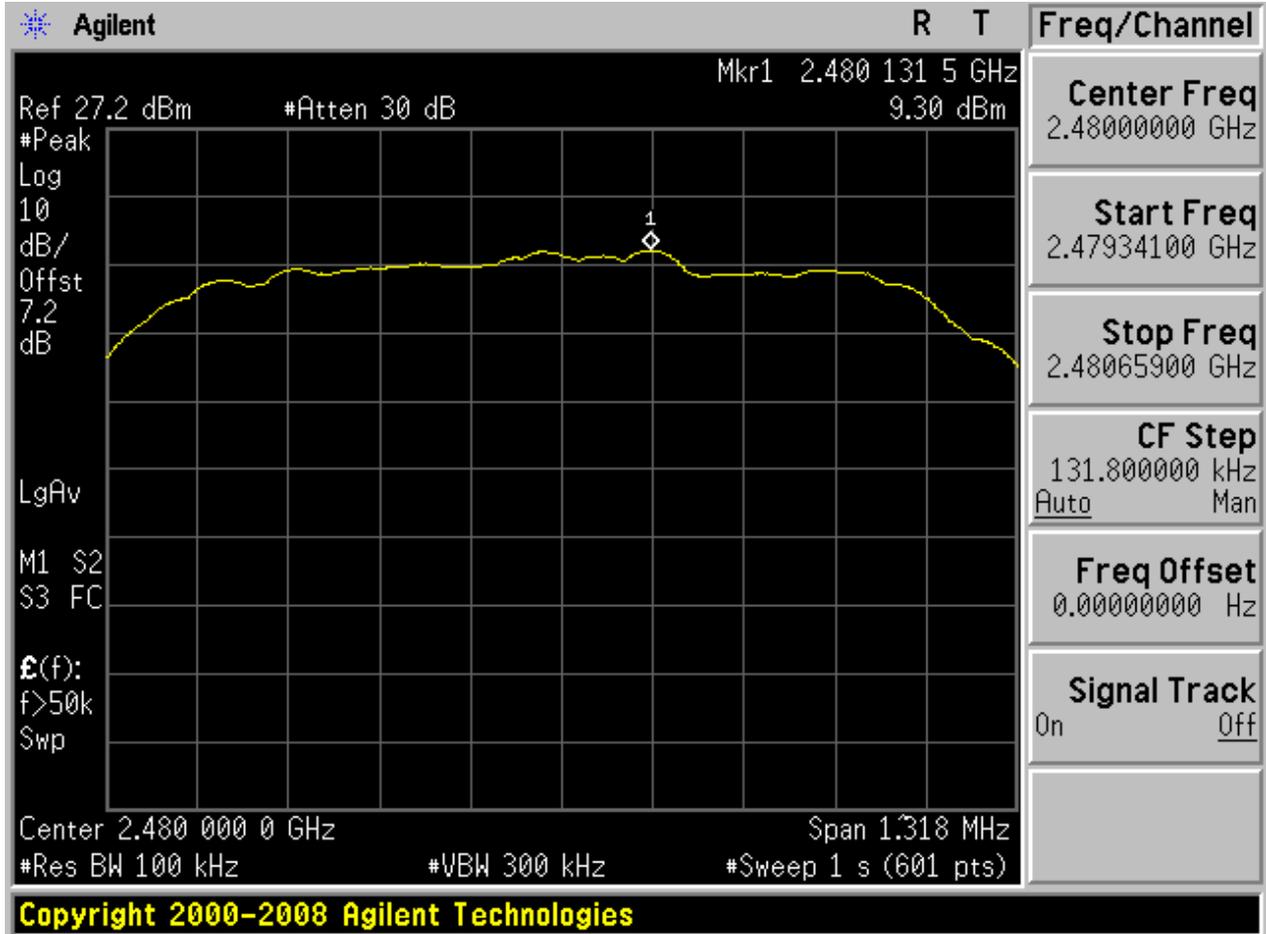






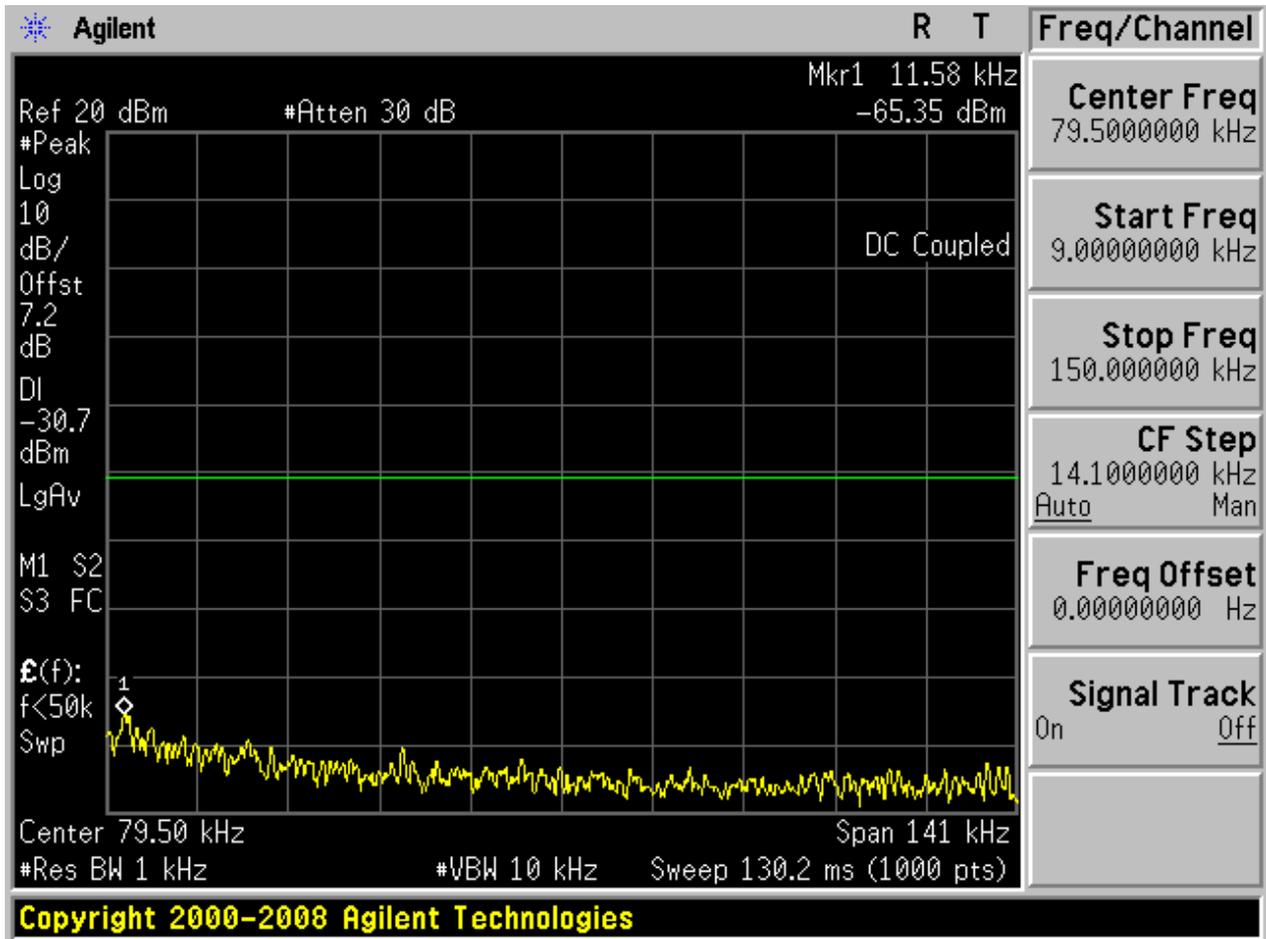
## 2.9 TM3\_3DH5\_Ch78

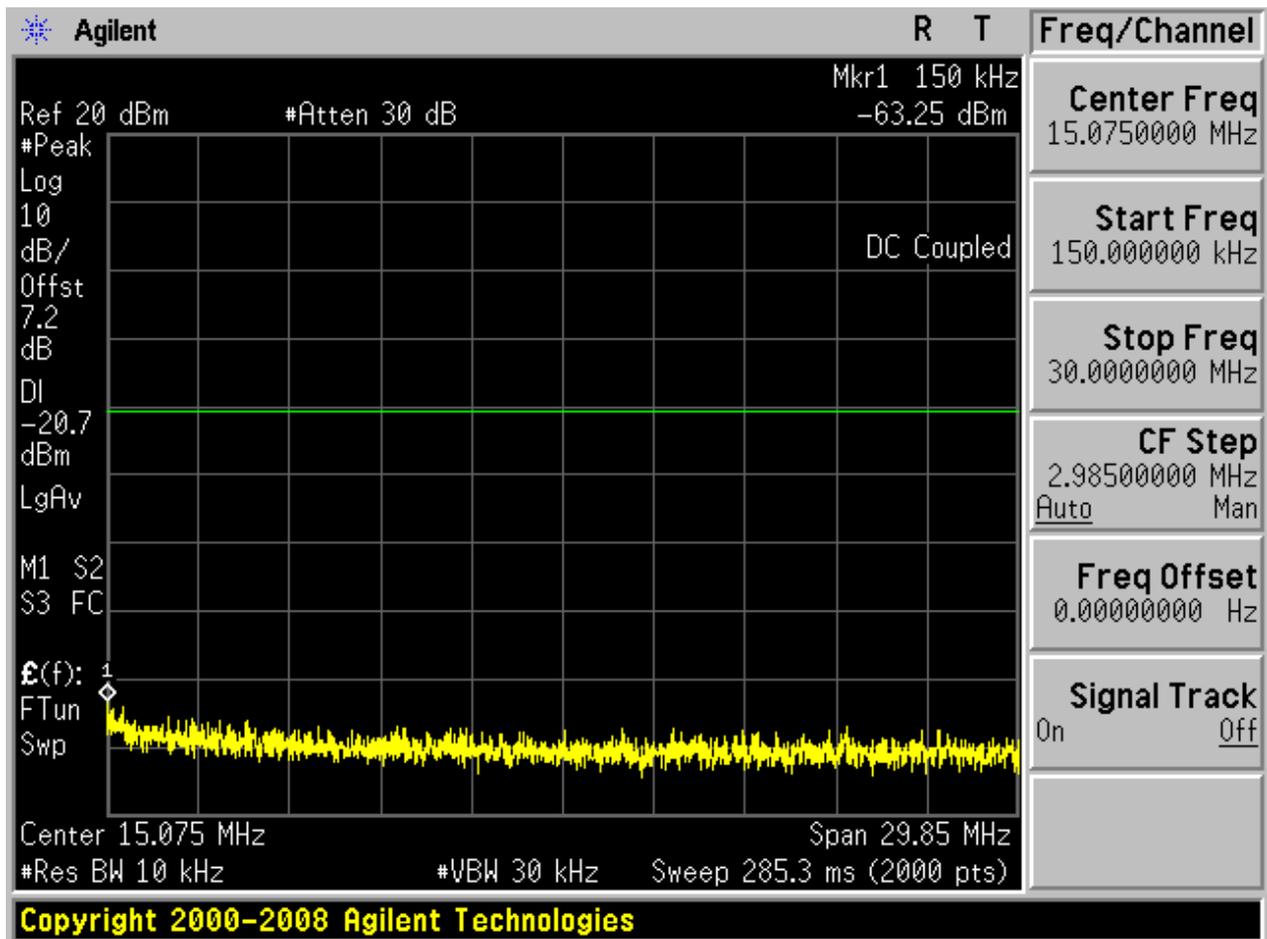
### 2.9.1 Pref

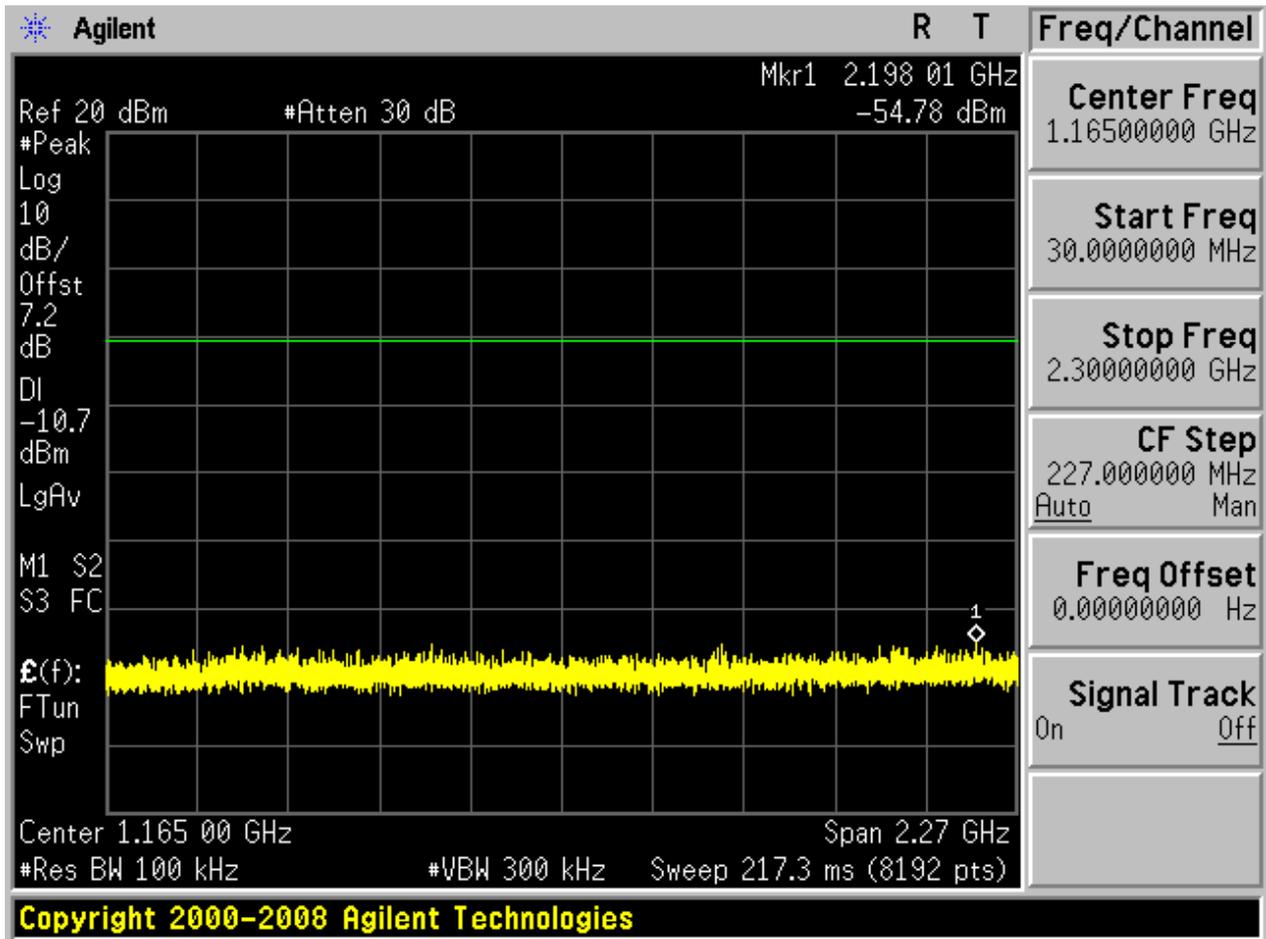


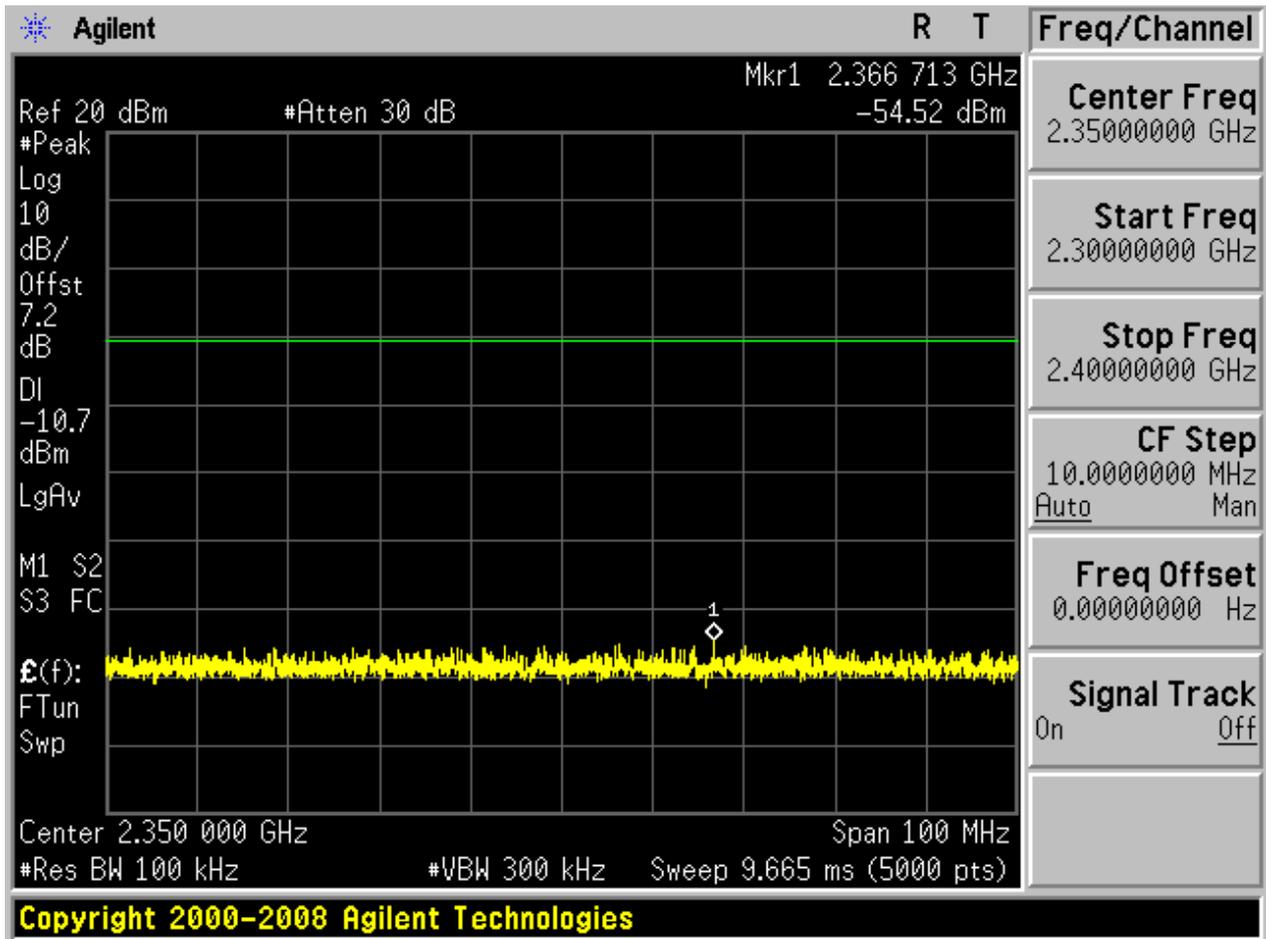


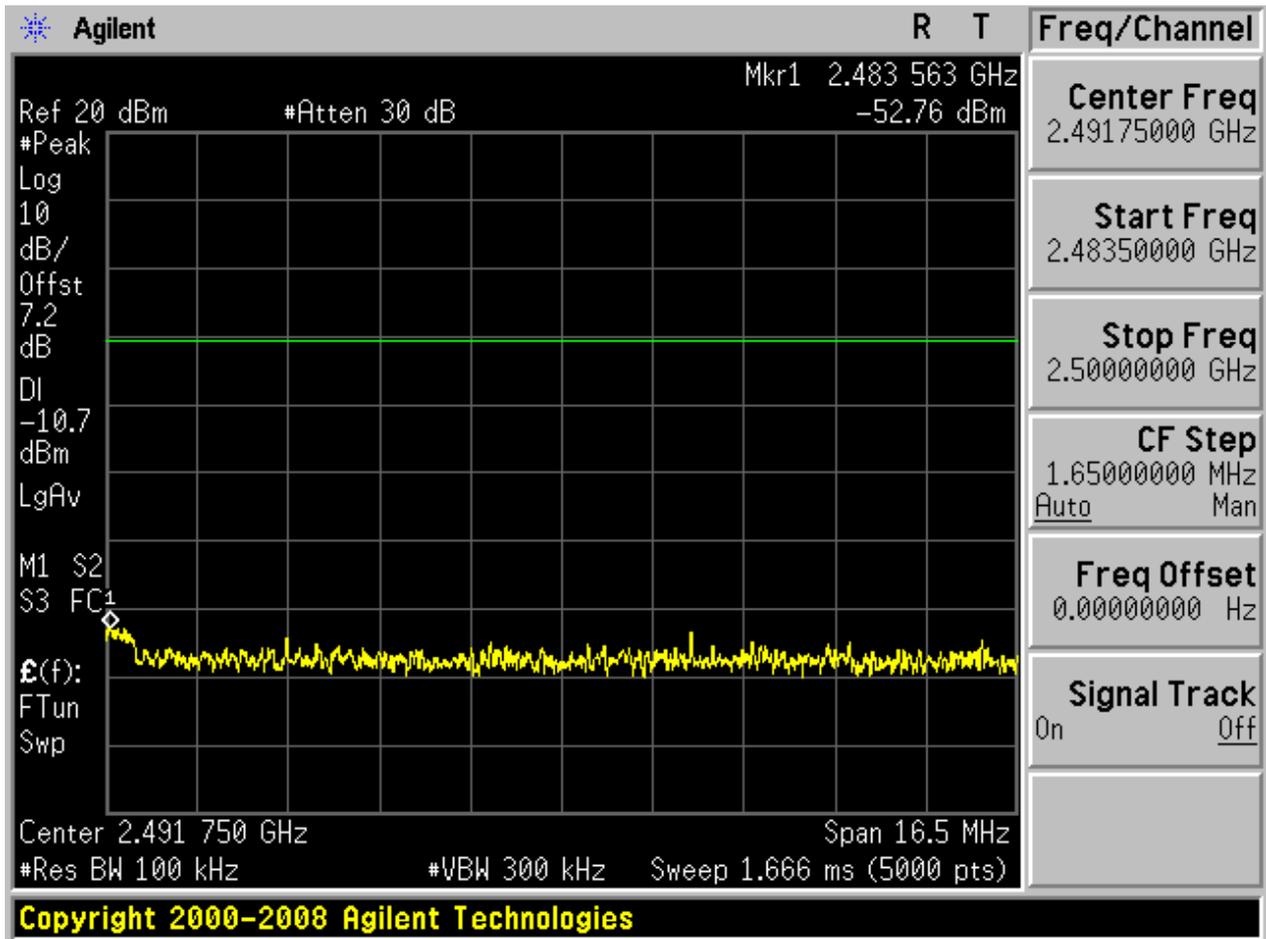
2.9.2 Puw

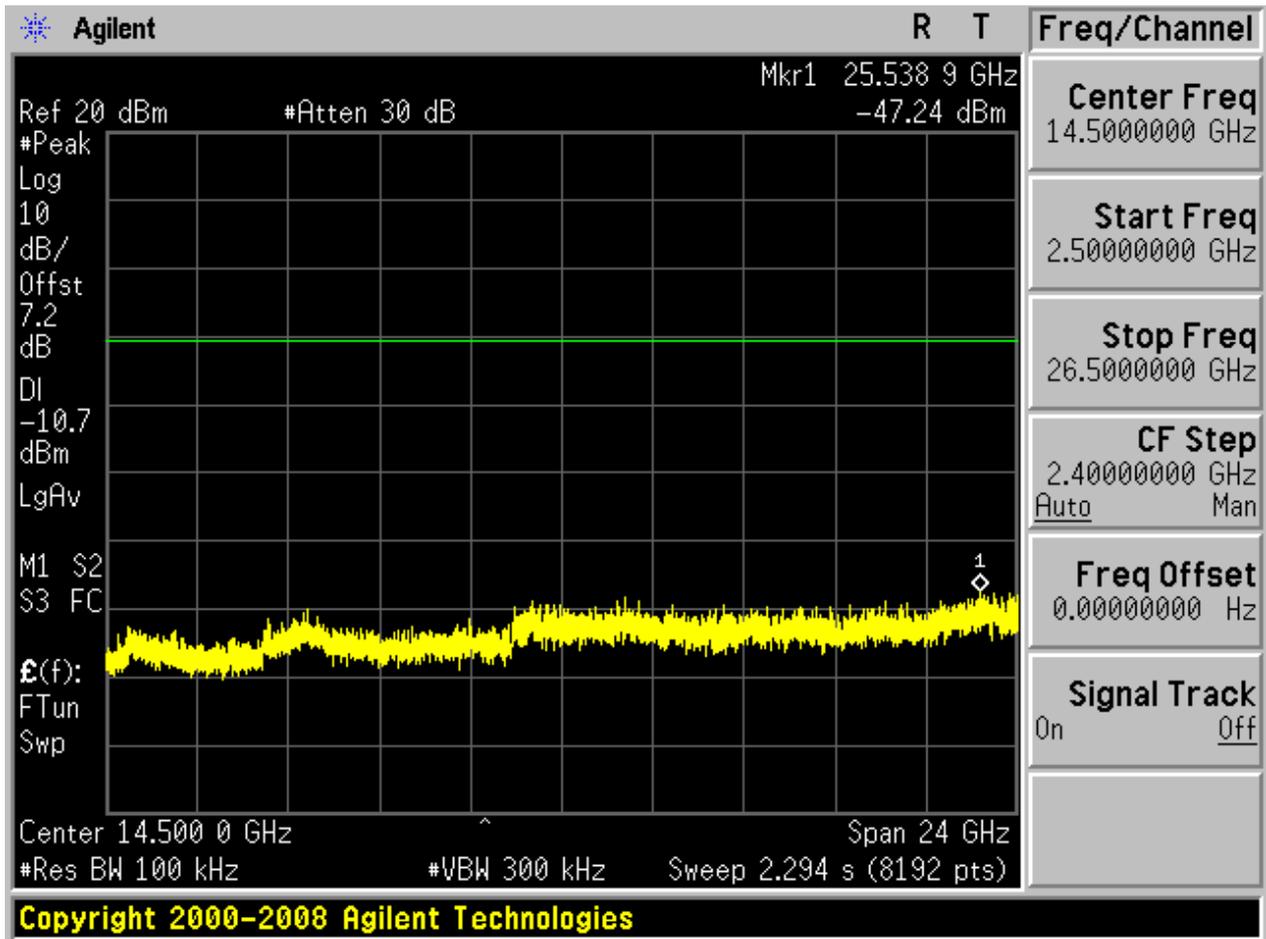














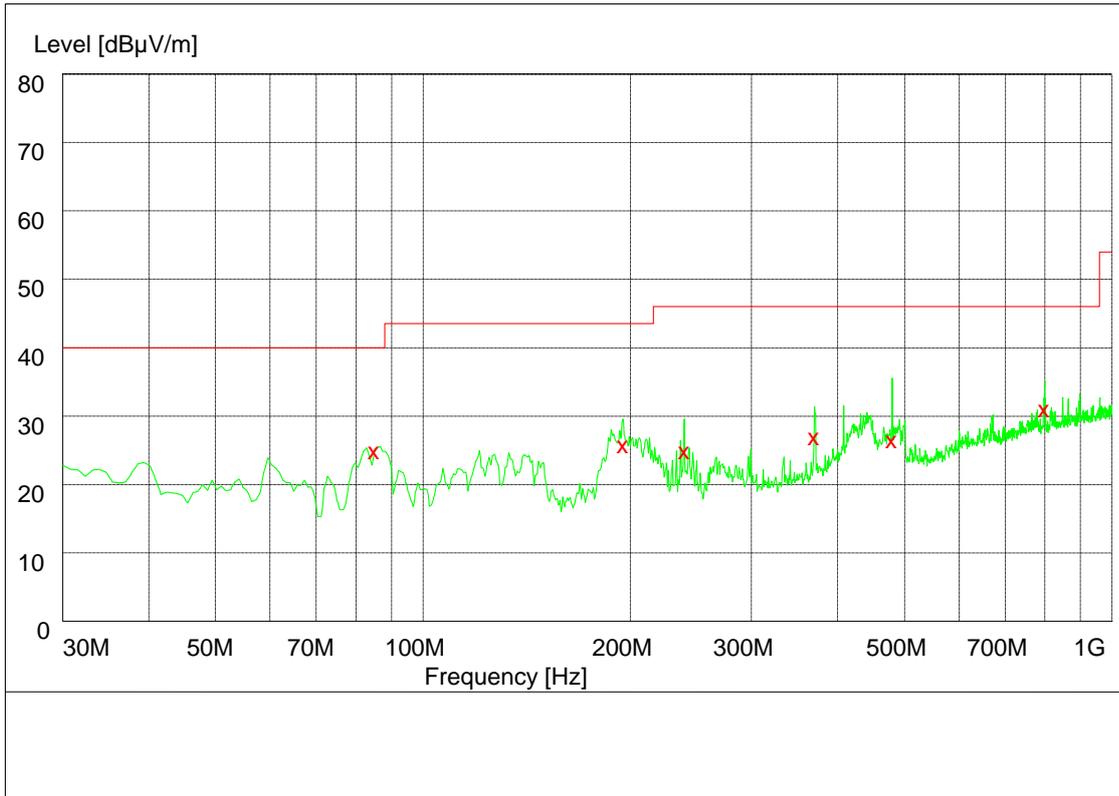
# Appendix H: Radiated Emissions in the Restricted Bands

### 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)**.

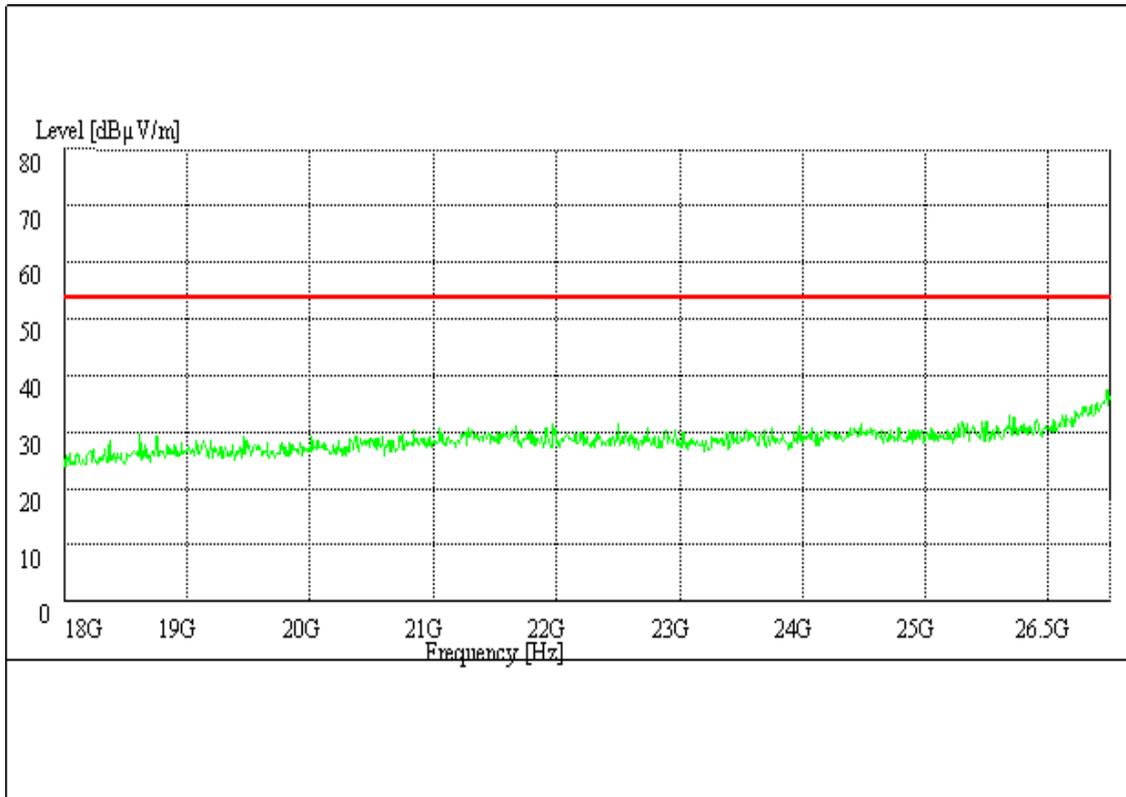
#### 2.9.3 30MHz~1GHz



#### MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height deg	Azimuth	Polarization
85.080000	26.30	11.1	40.0	13.7	144.0	164.00	VERTICAL
195.480000	27.10	12.3	43.5	16.4	163.0	199.00	HORIZONTAL
240.000000	26.20	13.8	46.0	19.8	112.0	215.00	HORIZONTAL
370.320000	28.30	16.8	46.0	17.7	141.0	125.00	VERTICAL
480.120000	27.80	18.8	46.0	18.2	100.0	245.00	VERTICAL
799.140000	32.40	23.6	46.0	13.6	108.0	338.00	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 2.51GHz”

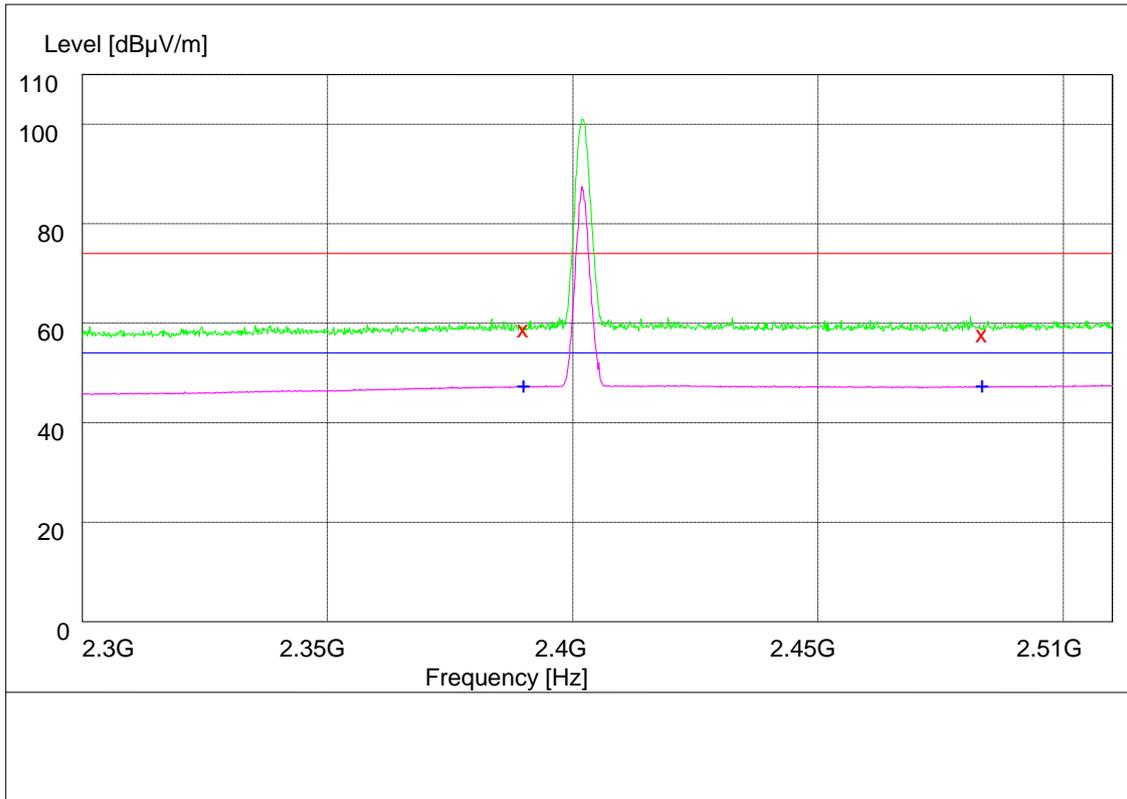
Note 1: The testing range of “2.3 GHz to 2.51 GHz” is for checking radiated emissions located in restricted bands near the EUT operating bands.

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

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

### 3 Test Mode:

#### 3.1 Channel 00



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

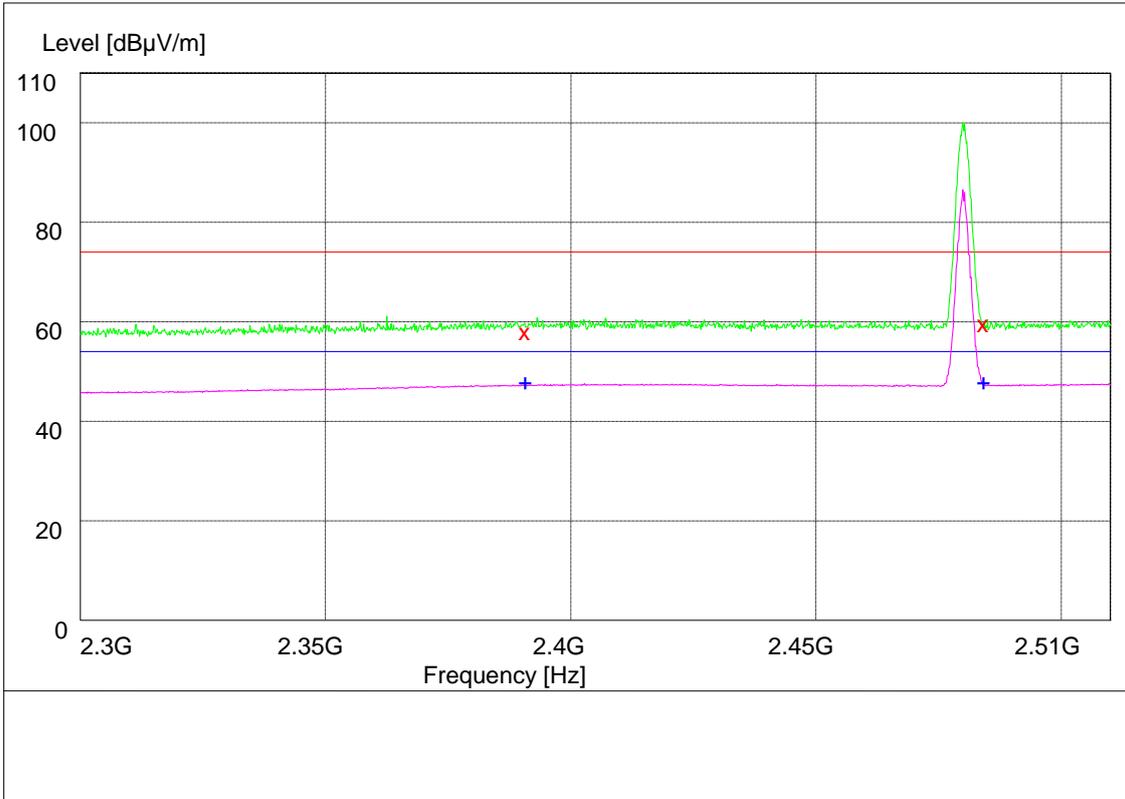
MEASUREMENT RESULT: PK Detector

Frequency MHz	Level dB $\mu$ V/m	Transd dB	Limit dB $\mu$ V/m	Margin dB	Height deg	Azimuth	Polarization
2390.000000	58.90	34.8	74.0	15.1	118.0	7.00	HORIZONTAL
2483.500000	57.90	35.1	74.0	16.1	100.0	215.00	HORIZONTAL

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dB $\mu$ V/m	Transd dB	Limit dB $\mu$ V/m	Margin dB	Height deg	Azimuth	Polarization
2390.000000	47.80	34.8	54.0	6.2	100.0	2.00	VERTICAL
2483.500000	47.70	35.1	54.0	6.3	101.0	204.00	HORIZONTAL

### 3.2 Channel 78



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

#### MEASUREMENT RESULT: PK Detector

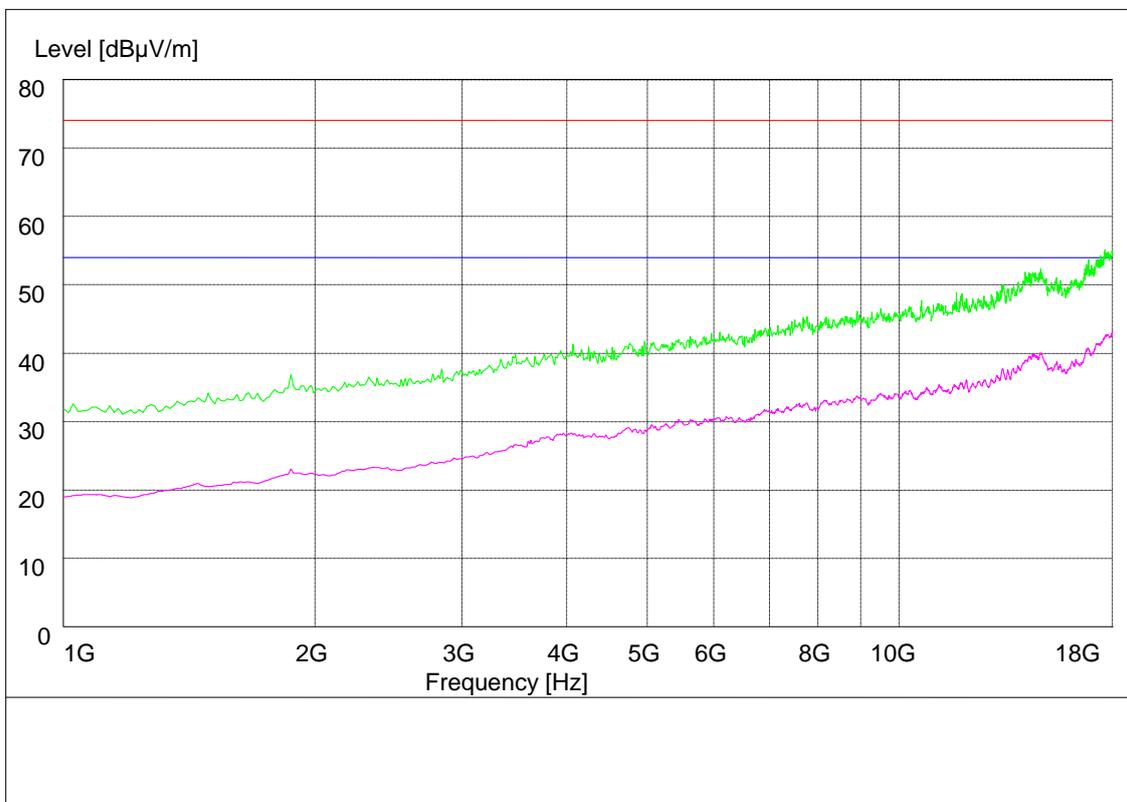
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height deg	Azimuth	Polarization
2390.000000	57.70	34.8	74.0	16.3	100.0	126.00	HORIZONTAL
2483.500000	59.30	35.1	74.0	14.7	133.0	318.00	HORIZONTAL

#### MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height deg	Azimuth	Polarization
2390.000000	47.70	34.8	54.0	6.3	100.0	92.00	HORIZONTAL
2483.500000	47.90	35.1	54.0	6.1	100.0	112.00	VERTICAL

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

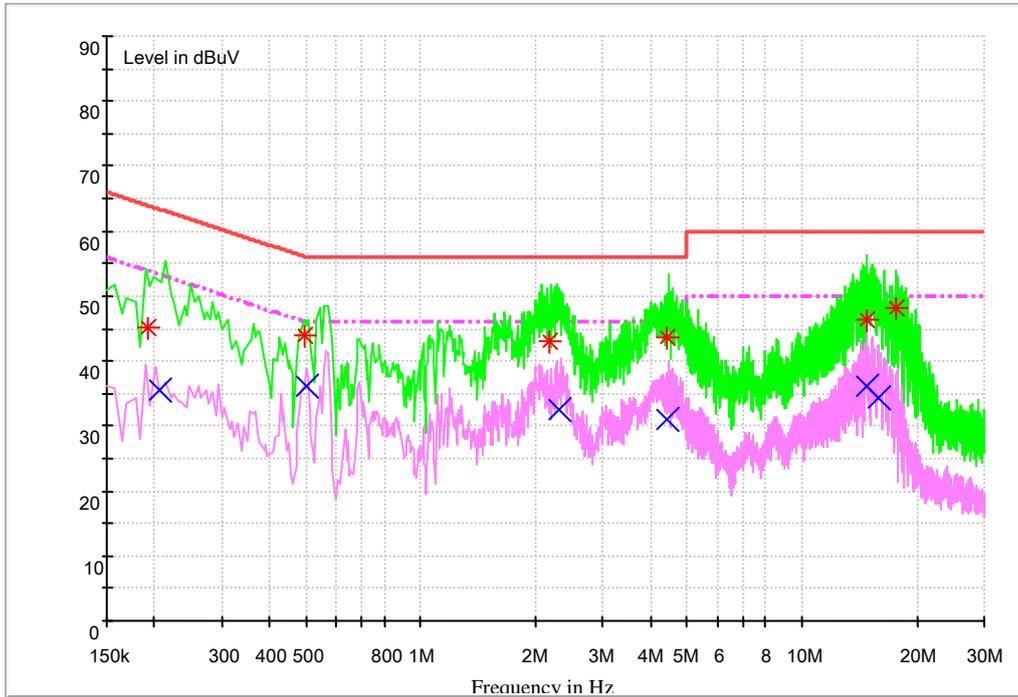
- Note 1: The test results and plot for testing range of “1 GHz to 18 GHz” showed as below is **the WORST case for all Test Modes and Channels**. This range will not be presented for each Test Mode and each Channel.
- Note 2: The testing range of “1 GHz to 18 GHz” is for checking radiated emissions located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





# Appendix I: AC Power Line Conducted Emissions

# Channel 39



## MEASUREMENT RESULT: QP Detector

Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	PE
0.192347	45.2	L1	9.7	18.7	63.9	FLO
0.496698	44.0	N	9.7	12.1	56.1	FLO
2.177767	43.0	N	9.7	13.0	56.0	FLO
4.405462	43.8	N	9.8	12.2	56.0	FLO
14.725844	46.2	N	10.1	13.8	60.0	FLO
17.627498	48.2	N	10.1	11.8	60.0	FLO

## MEASUREMENT RESULT: AV Detector

Frequency (MHz)	CAverage (dB $\mu$ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB $\mu$ V)	PE
0.205864	35.5	L1	9.7	17.9	53.4	FLO
0.499954	36.2	N	9.7	9.8	46.0	FLO
2.296305	32.6	N	9.7	13.4	46.0	FLO
4.421572	31.1	N	9.8	14.9	46.0	FLO
14.713672	36.2	N	10.1	13.8	50.0	FLO
15.831510	34.3	N	10.1	15.7	50.0	FLO

END