



FCC&IC RF Test Report

Product Name: Wireless Gateway

Model Number: B683

Report No: SYBH(Z-RF) 015082011-2004

FCC ID: QISB683-74V

IC ID: 6369A-B68374V

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REGULATION	FCC CFR47 Part 2: Subpart J
	FCC 47CFR part 15 subpart C
	RSS-Gen Issue 3
	RSS-210 Issue 8
START OF TEST	Aug.12, 2011
END OF TEST	Aug.17, 2011
Final Judgement:	Pass

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1 Summary

The table below summarizes the measurements and results for the EUT. Detailed results and descriptions are shown in the following pages.

Table 1 Summary of results

FCC Measurement Specification	RSS-210 Issue 8	Description	Result
15.247 (a) (2)	Annex 8 A8.2 (a)	6dB bandwidth measurement	PASS
15.247 (b) (3)	Annex 8 A8.4 (4)	Conducted Peak output power	PASS
15.247 (d)	Annex 8 A8.5	Band edge compliance measurement	PASS
15.247 (d)	Annex 8 A8.5	Conducted RF spurious	PASS
15.247 (e)	Annex 8 A8.2 (b)	Power spectral density	PASS
15.247 (d) / 15.205 & 15.209	2.5, 2.2	Radiated spurious emission & Radiated restricted band measurement	PASS
15.207	2.1, RSS-GEN	Conducted emission test for power port	PASS



2 Product Description

2.1 Production Information

2.1.1 General Description

The B683 wireless gateway (hereinafter referred to as the B683) is a wireless HSPA+3G gateway, which provides users with flexible and diversified 3G and 2G data access services, routing function, and network address translation (NAT) function.

The WCDMA frequency is Band I and Band VIII. The GSM frequency is GSM900/ 1800. The WLAN frequency is 2.4G.

GSM900 transmit frequency is 880-915MHz .and Receive Frequency is 925-960 MHz ;GSM1800 transmit frequency is 1710-1785MHz .and Receive Frequency is 1805-1880 MHz;WCDMA 2100 transmit frequency is 1920-1980MHz .and Receive Frequency is 2110-2170 MHz. The WLAN frequency range is 2410-2483.5MHz.WCDMA 900 transmit frequency is 880-915MHz .and Receive Frequency is 925-960MHz.

B683 implements such functions as RF signal receiving/transmitting, HSPA+ / WCDMA / GPRS/EDGE protocol processing, data service ,etc. Externally it provides USB type B interface (For power supply) ,one USB host interface, USIM card interface, four auto-sensing Ethernet interfaces, external antenna interface. And RJ11 interface (to connect to fixed telephone),provide voice service.It has four internal antennas as default.

Note: Only WLAN function was considered in this report.

2.1.2 Support function and Service

The EUT support the function and service as follows:

Table 2 Service and Test mode List

Service Name	mode	Characteristic	Note
Data	11b	IEEE 802.11b with data rate of 11 Mbps	TM1
Data	11g	IEEE 802.11g with data rate of 54 Mbps	TM2
Data	11n20	IEEE 802.11n with 20 MHz bandwidth and data rate of MCS-7, not using MIMO	TM3
Data	11n40	IEEE 802.11n with 40 MHz bandwidth and data rate of MCS-7, not using MIMO	TM4
Data	11n20-mimo	IEEE 802.11n with 20 MHz bandwidth and data rate of MCS-15, using MIMO	TM5
Data	11n40-mimo	IEEE 802.11n with 40 MHz bandwidth and data rate of MCS-15, using MIMO	TM6

2.2 Modification Information

For original equipment, following table is not application.

Table 3 Modification Information

Model Number	Board/Module	Original Version	New Version	Modify Information
Not applicable!				
Not applicable!				
Not applicable!				



3 Test Site Description

Test Site

Site 1:

RF LABORATORY OF RELIABILITY LABORATORY OF HUAWEI TECHNOLOGIES CO., LTD



4 Product Description

4.1 Technical Characteristics

4.1.1 Frequency Range

Table 4 Frequency Range

Uplink band:	2400 to 2483.5 MHz	
Downlink band:	2400 to 2483.5 MHz	
Hop frequency support:	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO

4.1.2 Channel Spacing / Separation

Table 5 Channel Spacing / raster

Channel spacing:	22 MHz
Channel raster:	5 MHz

4.1.3 Antenna Information

Table 6 Antenna Information

Type:	Integrated / Internal
Maximum Gain(dBi):	0.6(from 2400MHz to 2500MHz)

4.1.4 Environmental Requirements

Table 7 Environmental Requirements

Minimum temperature:	- 10 °C
Maximum temperature:	+ 55 °C
Relative Humidity:	5%-95%

4.1.5 Power Source

Table 8 Power Source

AC voltage nominal:	~120V
AC voltage range	~100V-240V
AC current maximal:	0.2 A

4.1.6 Tune-up Procedure

According to CFR (FCC) part 2, subpart 2, section 2.1033(c) (9).

Please reference the document Tune-up Procedure in TCF.

4.1.7 Applied DC Voltages and Currents

According to CFR (FCC) part 2, subpart 2, section 2.1033(c) (8).

The voltage and current in the final RF stage is:

Table 9 Applied RF module DC Voltages and Currents

Voltage:	 +5.0 V
Current:	1 A According to CFR (FCC) part 2, subpart 2, section 2.1033(c) (8)



4.2 EUT Identification List

4.2.1 Board Information

4.2.2

Table 10 Board Information

Wireless Gateway	
B683	
Board and Module	
Hardware Version	S/N
WL1B683I002	020SJG2105000038

4.2.3 Adapter Technical Data

Name	Manufacture	Serials number	Description
Adapter	Huawei Technologies CO.,LTD	BYA9B1100006	Adapter Model: HW-050200E2W voltage nominal: ~230V Input Voltage : 100-240V ~50/60Hz, 0.2A Output Voltage: == 5.0V 2A Rated Power: 10W

4.2.4 FCC Identification

Grantee Code: QIS
 Product Code: B683-74V
 FCC Identification: QISB683-74V

4.2.5 IC Identification

IC Identification: 6369A-B68374V

5 Main Test Instruments

Table 11 Main Test Equipments

Equipment Description	Manufacturer	Model	Serial Number	Calibrated until
Power supply	KEITHLEY	2303	1288003	Sep.27,2011
Universal Radio Communication Tester	R&S	CMU200	105822	Oct.24,2011
Universal Radio Communication Tester	Agilent	E5515C	MY50260239	Aug.04,2012
Spectrum Analyzer	Agilent	E4440A	MY49420179	Apr.24,2012
Signal Analyzer	R&S	FSQ40	100025	Oct.09,2012
Signal Analyzer	R&S	FSQ31	200021	Sep.27,2011
Temperature Chamber	ESPEC	MW3030	611403	May.12,2012
Signal Generator	R&S	SMR40	100325	May.12,2012
Vector Signal Generator	R&S	SMU200A	104162	Sep.07,2011
Spectrum Analyzer	R&S	FSU26	EG26725	Mar.07,2012
Tunable Dipole	Schwarzbeck	D69250-UHAP/D69250-VHAP	919/1009	Dec.13.2011
Tunable Dipole	Schwarzbeck	D69250-UHAP/D69250-VHAP	979/917	Dec.13.2011
Horn Antenna	R & S	HF906	359287/005	May.07, 2012
Horn Antenna	R & S	HF906	359287/006	April.27, 2012
Broadband Antenna	SCHAFFNER	CBL 6112B	2536	Sep.21, 2011
Broadband Antenna	SCHAFFNER	CBL 6112B	2941	Jun.11, 2012
Test receiver	R&S	ESU26	36090302083	Jun.17.2012
Horn Antenna	ETS-LINDGREN	3160	60008	Sep.20.2011
Horn Antenna	ETS-LINDGREN	3160	60006	Oct.27.2011



6 Transmitter Measurements

6.1 6dB bandwidth measurement

6.1.1 Test Conditions

Table 12 Test Conditions

Preconditioning:	0.5 hour
Measured at:	Antenna connector
Ambient temperature:	25°C
Relative humidity:	55%
Test Configurations:	TM1/TM2/TM3/TM4/TM5/TM6 at channel No. B,M,T

6.1.2 Test Specifications and Limits

6.1.2.1 Specification

CFR 47 (FCC) part 15.247 (a) (2) and ANSI C63.4-2009 & ANSI C63.10-2009.

6.1.2.2 Supporting Standards

Table 13 Supporting Standards:

ANSI/TIA-603-C:2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
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6.1.2.3 Limits

Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Table 14 Limits

Limits	≥ 500kHz
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6.1.3 Test Method and Setup

- (a) Connect test port of EUT to spectrum analyzer.
- (b) Set the EUT to transmit maximum output power at 2.4GHz, then set the measured frequency number and test the 6dB bandwidth with spectrum analyzer.

Test setup

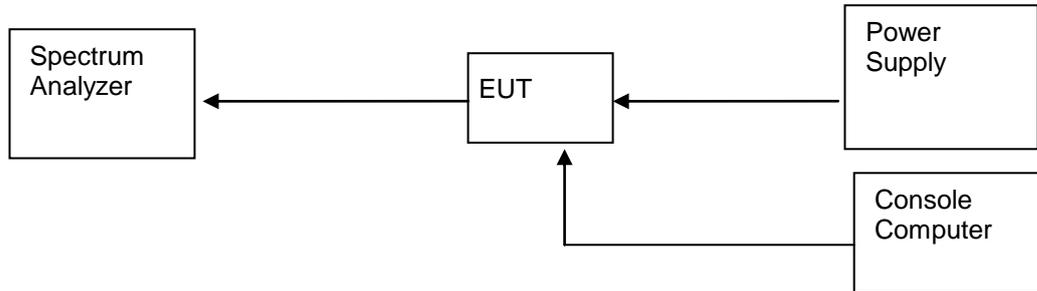


Figure 1. Test Set-up

6.1.4 Measurement Results

Table 15 Measurement Results

Test condition	Chain	Channel Position	Channel Number	Frequency [GHz]	Measured Bandwidth [MHz]	Limit [MHz]	Result
TM1	1	B	1	2.412	9.35	≥ 0.5	Pass
		M	6	2.437	9.35	≥ 0.5	Pass
		T	11	2.462	9.35	≥ 0.5	Pass
TM2	1	B	1	2.412	16.58	≥ 0.5	Pass
		M	6	2.437	16.57	≥ 0.5	Pass
		T	11	2.462	16.53	≥ 0.5	Pass
TM3	1	B	1	2.412	17.78	≥ 0.5	Pass
		M	6	2.437	17.75	≥ 0.5	Pass
		T	11	2.462	17.78	≥ 0.5	Pass
TM4	1	B	3	2.422	36.35	≥ 0.5	Pass
		M	6	2.437	36.34	≥ 0.5	Pass
		T	9	2.452	36.36	≥ 0.5	Pass
TM5	1	B	1	2.412	17.78	≥ 0.5	Pass
		M	6	2.437	17.77	≥ 0.5	Pass
		T	11	2.462	17.78	≥ 0.5	Pass
	2	B	1	2.412	17.69	≥ 0.5	Pass
		M	6	2.437	17.70	≥ 0.5	Pass
		T	11	2.462	17.73	≥ 0.5	Pass
TM6	1	B	3	2.422	36.24	≥ 0.5	Pass
		M	6	2.437	36.32	≥ 0.5	Pass
		T	9	2.452	36.21	≥ 0.5	Pass
	2	B	3	2.422	36.36	≥ 0.5	Pass
		M	6	2.437	36.43	≥ 0.5	Pass
		T	9	2.452	36.23	≥ 0.5	Pass

6.1.5 Conclusion

The equipment **PASSED** the requirement of this clause.
 For the measurement results refer to appendix A.

6.2 Peak output power

6.2.1 Test Conditions

Table 16 Test Conditions

Preconditioning:	0.5 hour
Measured at:	Antenna connector
Ambient temperature:	25°C
Relative humidity:	55%
Test Configurations:	TM1/TM2/TM3/TM4/TM5/TM6 at channel No. B,M,T

6.2.2 Test Specifications and Limits

6.2.2.1 Specification

CFR 47 (FCC) part 15.247 (b) (3) and ANSI C63.4-2009 & ANSI C63.10-2009.

6.2.2.2 Supporting Standards

Table 17 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
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6.2.2.3 Limits

Compliance with part 15.247 (b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level.

Table 18 Limits

2.4GHz and 5.8GHz system using digital modulation	1 Watt / 30 dBm
---	-----------------

6.2.3 Test Method and Setup

- (a) Connect test port of EUT to power meter.
- (b) Set the EUT to transmit maximum output power.
- (c) Then set the EUT to transmit at high, middle and low frequency and measure the conducted output power separately.

Test setup

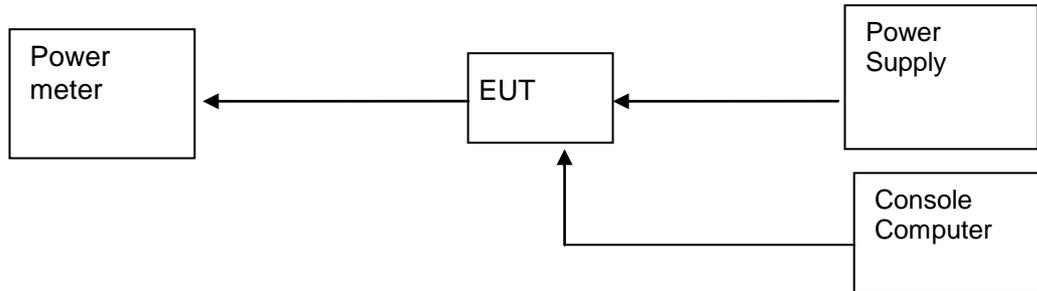


Figure 2. Test Set-up

6.2.4 Measurement Results

Table 19 Measurement Results

Test condition	Chain	Channel Position	Channel Number	Frequency [MHz]	Meas. Level (Cond.) [dBm]	Limit [dBm]	Result
TM1	1	B	1	2412	20.28	< 30	Pass
		M	6	2437	20.50	< 30	Pass
		T	11	2462	20.83	< 30	Pass
TM2	1	B	1	2412	19.06	< 30	Pass
		M	6	2437	16.83	< 30	Pass
		T	11	2462	17.04	< 30	Pass
TM3	1	B	1	2412	17.25	< 30	Pass
		M	6	2437	15.65	< 30	Pass
		T	11	2462	17.93	< 30	Pass
TM4	1	B	3	2422	16.73	< 30	Pass
		M	6	2437	15.40	< 30	Pass
		T	9	2452	16.20	< 30	Pass
TM5	1	B	1	2412	16.63	---	---
		M	6	2437	15.04	---	---
		T	11	2462	17.43	---	---
	2	B	1	2412	17.69	---	---
		M	6	2437	16.72	---	---
		T	11	2462	15.91	---	---
	1+2	B	1	2412	20.20	< 30	Pass
		M	6	2437	18.97	< 30	Pass
		T	11	2462	19.75	< 30	Pass
TM6	1	B	3	2422	16.59	---	---
		M	6	2437	15.20	---	---
		T	9	2452	15.97	---	---
	2	B	3	2422	16.10	---	---
		M	6	2437	16.37	---	---
		T	9	2452	16.26	---	---
	1+2	B	3	2422	19.36	< 30	Pass
		M	6	2437	18.83	< 30	Pass
		T	9	2452	19.13	< 30	Pass



6.2.5 Conclusion

The equipment **PASSED** the requirement of this clause.
For the measurement results refer to appendix B.

6.3 Band edge spurious emission

6.3.1 Test Conditions

Table 20 Test Conditions

Preconditioning:	0.5 hour
Measured at:	Antenna connector
Ambient temperature:	25°C
Relative humidity:	55%
Test Configurations:	TM1/TM2/TM3/TM4/TM5/TM6 at channel No. B ,T

6.3.2 Test Specifications and Limits

6.3.2.1 Specification

CFR 47 (FCC) part 15.247(d) and ANSI C63.4-2009 & ANSI C63.10-2009.

6.3.2.2 Supporting Standards

Table 21 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
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6.3.2.3 Limits

Compliance with part 15.247 (d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required.

Table 22 Limits

Band edge spurious:	20 dBc/100kHz
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6.3.3 Test Method and Setup

- (a) Connect test port of EUT to spectrum analyzer
- (b) Set the EUT to transmit maximum output power at 2.4GHz
- (c) Then set the EUT to transmit at high, low frequency and measure the conducted band edge spurious separately.

Test setup

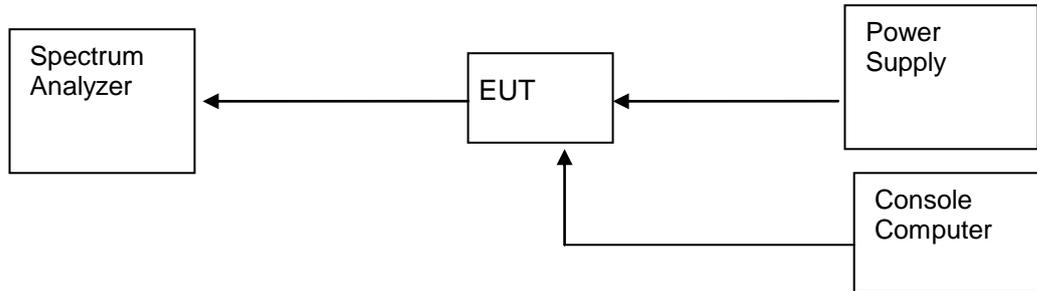


Figure 3. Test Set-up

6.3.4 Measurement Results

Table 23 Measurement Results

Test condition	Chain	Channel Position	Channel Number	Frequency [MHz]	0dBc Level [dBm]	Max. Spurious Level [dBm]	-20dBc Limit [dBm]	Result
TM1	1	B	1	2412	5.28	-34.36	<-14.72	Pass
		T	11	2462	5.79	-27.26	<-14.21	Pass
TM2	1	B	1	2412	0.81	-36.23	<-19.19	Pass
		T	11	2462	-1.59	-28.94	<-21.59	Pass
TM3	1	B	1	2412	-1.07	-38.31	<-20.93	Pass
		T	11	2462	-0.58	-26.12	<-20.58	Pass
TM4	1	B	3	2422	-4.04	-50.35	< -24.04	Pass
		T	9	2452	-4.10	-48.19	< -24.10	Pass
TM5	1	B	1	2412	-1.53	-52.22	< -21.53	Pass
		T	11	2462	-0.94	-48.85	<-20.94	Pass
	2	B	1	2412	-0.53	-51.38	< -16.11	Pass
		T	11	2462	-2.98	-50.84	< -22.98	Pass
TM6	1	B	3	2422	-4.27	-50.95	< -24.27	Pass
		T	9	2452	-4.23	-47.63	< -24.23	Pass
	2	B	3	2422	-4.61	-50.54	< -24.61	Pass
		T	9	2452	-4.67	-49.81	< -24.67	Pass

6.3.5 Conclusion

The equipment **PASSED** the requirement of this clause.
 For the measurement results refer to appendix C.

6.4 Conducted RF spurious

6.4.1 Test Conditions

Table 24 Test Conditions

Preconditioning:	0.5 hour
Measured at:	Antenna connector
Ambient temperature:	25°C
Relative humidity:	55%
Test Configurations:	TM1/TM2/TM3/TM4/TM5/TM6 at channel No. B,M,T

6.4.2 Test Specifications and Limits

6.4.2.1 Specification

CFR 47 (FCC) part 15.247 (d) and ANSI C63.4-2009 & ANSI C63.10-2009

6.4.2.2 Supporting Standards

Table 25 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
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6.4.2.3 Limits

Compliance with part 15.247 (d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required.

Table 26 Limits

Band edge spurious:	20 dBc/100kHz
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6.4.3 Test Method and Setup

- Connect test port of EUT to spectrum analyzer
- Set the EUT to transmit maximum output power at 2.4GHz and.
- Then set the EUT to transmit at high, middle and low frequency and measure the conducted band edge spurious separately.

Test setup

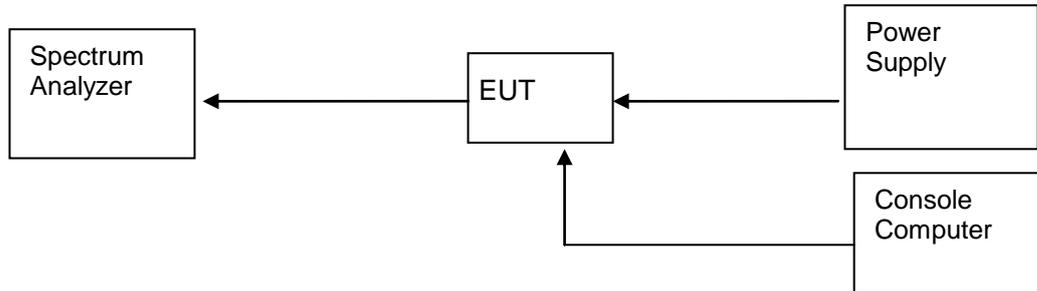


Figure 4. Test Set-up

6.4.4 Measurement Results

Table 27 Measurement Results

Test condition	Chain	Channel Position	Channel Number	Frequency [MHz]	OdBc Level [dBm]	Meas. Level (Cond.) [dBm]	-20dBc Limit [dBm]	Result
TM1	1	B	1	2412	11.87	-37.50	< -8.13	Pass
		M	6	2437	12.75	-37.80	< -7.25	Pass
		T	11	2462	12.34	-37.46	< -7.66	Pass
TM2	1	B	1	2412	9.20	-36.53	< -10.80	Pass
		M	6	2437	7.61	-37.45	< -12.39	Pass
		T	11	2462	7.17	-37.47	< -12.83	Pass
TM3	1	B	1	2412	6.17	-37.97	< -13.83	Pass
		M	6	2437	5.47	-37.18	< -14.53	Pass
		T	11	2462	7.78	-37.70	< -12.22	Pass
TM4	1	B	3	2422	2.79	-37.18	< -17.21	Pass
		M	6	2437	1.86	-36.86	< -18.14	Pass
		T	9	2452	2.91	-37.45	< -17.09	Pass
TM5	1	B	1	2412	5.81	-37.08	< -14.16	Pass
		M	6	2437	4.31	-37.43	< -15.69	Pass
		T	11	2462	6.30	-37.59	< -13.70	Pass
	2	B	1	2412	7.33	-37.33	< -12.63	Pass
		M	6	2437	6.49	-37.24	< -13.51	Pass
		T	11	2462	4.59	-37.43	< -15.41	Pass
TM6	1	B	3	2422	2.58	-37.68	< -17.42	Pass
		M	6	2437	1.72	-37.44	< -18.28	Pass
		T	9	2452	2.45	-38.19	< -17.55	Pass
	2	B	3	2422	2.86	-38.18	< -17.14	Pass
		M	6	2437	2.74	-37.50	< -17.26	Pass
		T	9	2452	3.41	-38.12	< -16.59	Pass



6.4.5 Conclusion

The equipment **PASSED** the requirement of this clause.
For the measurement results refer to appendix D.

6.5 Power spectral density

6.5.1 Test Conditions

Table 28 Test Conditions

Preconditioning:	0.5 hour
Measured at:	Antenna connector
Ambient temperature:	25°C
Relative humidity:	55%
Test Configurations:	TM1/TM2/TM3/TM4/TM5/TM6 at channel No. B,M,T

6.5.2 Test Specifications and Limits

6.5.2.1 Specification

CFR 47 (FCC) part 15.247 (e) and ANSI C63.4-2009 & ANSI C63.10-2009.

6.5.2.2 Supporting Standards

Table 29 Supporting Standards:

ANSI/TIA-603-C: 2004	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
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6.5.2.3 Limits

Compliance with part 15.247 (e), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. The same method of determining the conducted output power shall be used to determine the power spectral density.

Table 30 Limits

Band edge spurious:	8 dBm/3kHz
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6.5.3 Test Method and Setup

- Connect test port of EUT to spectrum analyzer
- Set the EUT to transmit maximum output power at 2.4GHz and.
- Then set the EUT to transmit at high, middle and low frequency and measure the conducted band edge spurious separately.

Test setup

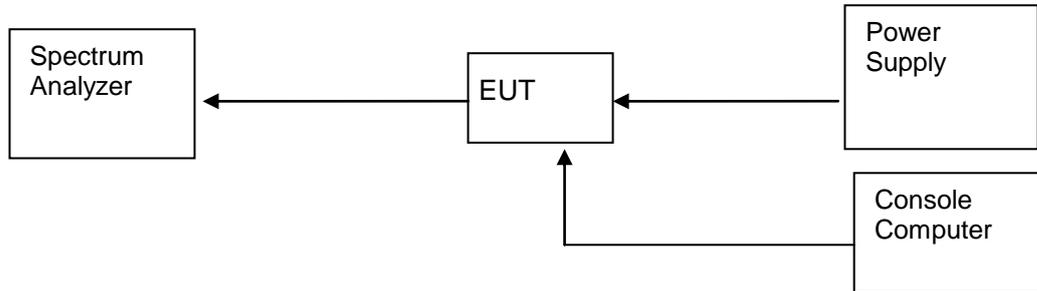


Figure 5. Test Set-up

6.5.4 Measurement Results

Table 31 Measurement Results

Test condition	Chain	Channel Position	Channel Number	Frequency [MHz]	Measured Power spectral density [dBm]	Limit [dBm/3kHz]	Result
TM1	1	B	1	2412	6.47	< 8	Pass
		M	6	2437	6.88	< 8	Pass
		T	11	2462	7.28	< 8	Pass
TM2	1	B	1	2412	-17.75	< 8	Pass
		M	6	2437	-20.27	< 8	Pass
		T	11	2462	-20.75	< 8	Pass
TM3	1	B	1	2412	-20.07	< 8	Pass
		M	6	2437	-21.77	< 8	Pass
		T	11	2462	-18.91	< 8	Pass
TM4	1	B	3	2422	-24.09	< 8	Pass
		M	6	2437	-20.52	< 8	Pass
		T	9	2452	-19.93	< 8	Pass
TM5	1	B	1	2412	-19.92	---	---
		M	6	2437	-21.17	---	---
		T	11	2462	-19.43	---	---
	2	B	1	2412	-20.06	---	---
		M	6	2437	-20.70	---	---
		T	11	2462	-22.09	---	---
	1+2	B	1	2412	-16.98	< 8	Pass
		M	6	2437	-17.92	< 8	Pass
		T	11	2462	-17.55	< 8	Pass
TM6	1	B	3	2422	-19.59	---	---
		M	6	2437	-20.92	---	---
		T	9	2452	-20.32	---	---
	2	B	3	2422	-20.59	---	---
		M	6	2437	-20.24	---	---
		T	9	2452	-20.22	---	---
	1+2	B	3	2422	-17.05	< 8	Pass
		M	6	2437	-17.56	< 8	Pass
		T	9	2452	-17.26	< 8	Pass



6.5.5 Conclusion

The equipment **PASSED** the requirement of this clause.
For the measurement results refer to appendix E.

6.6 Radiated spurious emission & spurious in restricted band

6.6.1 Test Conditions

Table 32 Test Conditions

Preconditioning:	0.5 hour
Measured at:	enclosure
Ambient temperature:	25 °C
Relative humidity:	55%
Test Configurations:	TM1/TM2/TM3/TM4/TM5/TM6 at channel B,M,T

6.6.2 Test Specifications and Limits

6.6.2.1 Specification

CFR 47 (FCC) part 15.247 (d), 15.205 & 15.209 and ANSI C63.4-2009 & ANSI C63.10-2009

6.6.2.2 Supporting Standards

Table 33 Supporting Standards:

ANSI/TIA-603-C: 2009	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards
ANSI C63.4: 2009	Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

6.6.2.3 Limits

According to part 15.247 (d) / 15.205 & 15.209, all spurious emission in the frequency range from 30MHz to 10th harmonics of carrier frequency should be meet the requirement of following table.

Table 34 Limits

Frequency (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance (meters)	Detector
0.009 - 0.490	2400/F(kHz)	20*lg(2400/F(kHz))	300	QP
0.490 - 1.705	24000/F(kHz)	20*lg(24000/F(kHz))	30	QP
1.705 - 30	30	29.5	30	QP
30 – 88	100	40	3	QP
88 – 216	150	43.5	3	QP
216 – 960	200	46	3	QP
960 -1000	500	54	3	QP
Above 1000	500	54	3	AV
Above 1000	500	74	3	PK

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), also should comply with the radiated emission limits specified in Section 15.209(a)(above table 42).

6.6.3 Test Method and Setup

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4dB according to the standards: ANSI C63.4 (2009). The EUT was set-up on insulator 80cm above the Ground Plane. The set-up and test methods were according to ANSI C63.4. The Radiated Disturbance measurements were

made using a Rohde and Schwarz Test Receiver and control software.

A preliminary scan and a final scan of the emissions were made by using test script of software; the emissions were measured using a Quasi-Peak Detector below 1GHz, Peak Detector and AV detector above 1GHz. The maximal emission value was acquired by adjusting the antenna height, polarisation and turntable azimuth in accordance with the software setup. Normally, the height range of antenna was 1m to 4m, the azimuth range of turntable was 0°to 360°, The receive antenna has two polarizations V and H.

The EUT was communicated with the BTS simulator through Air interface. The EUT operated on the typical channel.

Measurement bandwidth: 30 MHz – 1000 MHz: 120 kHz

Measurement bandwidth: 1000 MHz – 10th Carrier Frequency: 1 MHz

Test set up

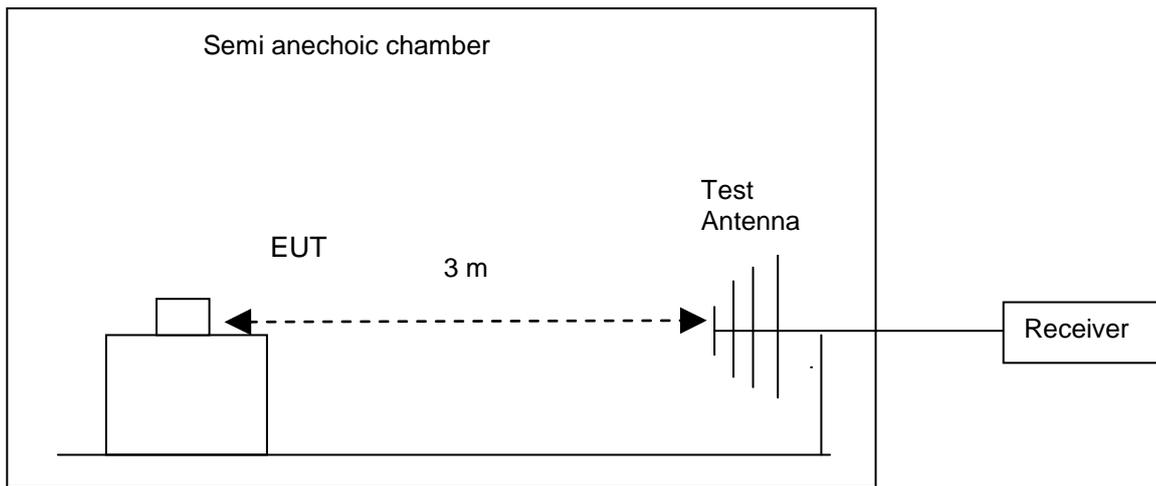


Figure 6. Test Set up

6.6.4 Measurement Results

Note 1: The following measurement results exceed the limit line is the carrier frequency.

Note 2: This test was carried out in all the test modes, here only the worst test result was shown.

Measured Result of channel: 1 (2412MHz)

(30MHz-1GHz)

Table 35 MEASUREMENT RESULT

Frequency (MHz)	Level (dBμV/m)	Transd (dB)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Polarisation
33.420000	31.20	11.7	40.0	8.8	100.0	30.00	VERTICAL
53.280000	21.90	12.7	40.0	18.1	100.0	21.00	VERTICAL
101.390000	22.10	13.0	43.5	21.4	100.0	54.00	VERTICAL
151.900000	23.40	9.1	43.5	20.1	100.0	127.00	VERTICAL
249.600000	24.60	14.1	46.0	21.4	121.0	133.00	HORIZONTAL
500.000000	33.20	20.2	46.0	12.8	105.0	274.00	VERTICAL



(1GHz-18GHz)

MEASUREMENT RESULT:PK DECTER

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarization
4827.000000	54.20	-3.6	74.0	19.8	100.0	348.00	VERTICAL
7229.000000	52.90	1.3	74.0	21.1	101.0	345.00	HORIZONTAL
9317.000000	44.40	5.2	74.0	29.6	186.0	202.00	HORIZONTAL

MEASUREMENT RESULT:AV DECTER

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarization
4825.500000	32.00	-3.6	54.0	22.0	100.0	354.00	VERTICAL
7232.000000	31.20	1.3	54.0	22.8	119.0	0.00	HORIZONTAL
17694.000000	38.10	18.9	54.0	15.9	154.0	102.00	VERTICAL

(2GHz-3GHz)

MEASUREMENT RESULT:PK DECTER

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarization
2310.000000	53.10	35.5	74.0	20.9	200.0	240.00	VERTICAL
2390.000000	54.40	36.1	74.0	19.6	197.0	292.00	HORIZONTAL
2483.500000	57.40	39.9	74.0	16.6	181.0	344.00	VERTICAL
2500.000000	54.20	36.3	74.0	19.8	110.0	311.00	VERTICAL

MEASUREMENT RESULT:AV DECTER

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarization
2310.000000	40.60	35.5	54.0	13.4	136.0	32.00	VERTICAL
2390.000000	41.90	36.1	54.0	12.1	100.0	344.00	VERTICAL
2483.500000	45.70	39.9	54.0	8.3	100.0	21.00	VERTICAL
2500.000000	42.30	36.3	54.0	11.7	128.0	19.00	VERTICAL



Measured Result of channel: 6 (2437MHz)

(30MHz-1GHz)

Table 36 MEASUREMENT RESULT

Frequency (MHz)	Level (dBµV/m)	Transd (dB)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Polarisation
33.420000	31.30	11.7	40.0	8.7	100.0	30.00	VERTICAL
54.070000	22.70	12.7	40.0	17.3	100.0	21.00	VERTICAL
101.390000	23.20	13.0	43.5	20.3	100.0	54.00	VERTICAL
151.700000	23.20	9.1	43.5	20.3	100.0	127.00	VERTICAL
249.500000	24.80	14.1	46.0	21.2	121.0	133.00	HORIZONTAL
500.200000	34.10	20.2	46.0	11.9	105.0	274.00	VERTICAL

(1GHz-18GHz)

MEASUREMENT RESULT:PK DECTER

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarization
4874.000000	50.60	-3.4	74.0	23.4	100.0	34.00	HORIZONTAL
7311.000000	57.80	2.2	74.0	16.2	109.0	9.00	VERTICAL
14477.500000	48.30	14.5	74.0	25.7	140.0	315.00	VERTICAL

MEASUREMENT RESULT:AV DECTER

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarization
4874.000000	35.50	-3.4	54.0	18.5	100.0	0.00	HORIZONTAL
7313.500000	44.10	2.1	54.0	9.9	171.0	16.00	VERTICAL
14482.000000	36.10	14.5	54.0	17.9	100.0	316.00	HORIZONTAL

Measured Result of channel: 11 (2462MHz)

(30MHz-1GHz)

Table 37 MEASUREMENT RESULT

Frequency (MHz)	Level (dBµV/m)	Transd (dB)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Azimuth (deg)	Polarisation
33.520000	32.00	11.7	40.0	8.0	100.0	32.00	VERTICAL
54.170000	20.60	12.7	40.0	19.4	100.0	24.00	VERTICAL
101.420000	22.20	13.0	43.5	21.3	100.0	138.00	VERTICAL
151.640000	22.30	9.1	43.5	21.2	100.0	110.00	VERTICAL
249.500000	24.40	14.1	46.0	21.6	111.0	243.00	HORIZONTAL
500.000000	32.00	20.2	46.0	14.0	100.0	317.00	VERTICAL



(1GHz-18GHz)

MEASUREMENT RESULT:PK DECTER

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarization
3190.000000	41.60	-6.5	74.0	32.4	101.0	39.00	VERTICAL
4924.000000	45.90	-3.3	74.0	28.1	101.0	55.00	HORIZONTAL
17684.000000	51.20	18.8	74.0	22.8	101.0	351.00	VERTICAL

MEASUREMENT RESULT:AV DECTER

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarization
3188.000000	25.50	-6.6	54.0	28.5	101.0	44.00	VERTICAL
4924.000000	28.60	-3.3	54.0	25.4	177.0	30.00	HORIZONTAL
17692.500000	38.10	18.9	54.0	15.9	200.0	113.00	VERTICAL

(2GHz-3GHz)

MEASUREMENT RESULT:PK DECTER

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarization
2310.000000	52.30	35.5	74.0	21.7	102.0	78.00	VERTICAL
2390.000000	53.40	36.1	74.0	20.6	100.0	108.00	VERTICAL
2483.500000	60.10	39.9	74.0	13.9	152.0	28.00	VERTICAL
2500.000000	54.10	36.3	74.0	19.9	106.0	201.00	VERTICAL

MEASUREMENT RESULT:AV DECTER

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Height cm	Azimuth deg	Polarization
2310.000000	40.60	35.5	54.0	13.4	100.0	83.00	VERTICAL
2390.000000	41.60	36.1	54.0	12.4	100.0	109.00	VERTICAL
2483.500000	46.30	39.9	54.0	7.7	100.0	21.00	VERTICAL
2500.000000	43.10	36.3	54.0	10.9	100.0	214.00	VERTICAL

6.6.5 Conclusion

The equipment **PASSED** the requirement of this clause.
 For the measurement results refer to appendix F.

6.7 Conducted Emission at Power Port

6.7.1 Test Conditions

Table 38 Test Conditions

Preconditioning:	0.5 hour
Measured at:	Power port
Ambient temperature:	25 °C
Relative humidity:	55%
Test Configurations:	TM1 at channel No. 6

6.7.2 Test Specifications and Limits

6.7.2.1 Specification

CFR 47 (FCC) part 15.207 and KDB 558074

6.7.2.2 Supporting Standards

Table 39 Supporting Standards:

ANSI C63.4: 2009	Methods of Measurement of Radio-Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
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6.7.2.3 Limits

Compliance with part15.207, conducted emission must meet the requirement of following table.

Table 40 Limits

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

Note: * Decreases with the logarithm of the frequency.

6.7.3 Test Method and Setup

The Table-top EUT was placed upon a non-metallic table 0.8 m above the horizontal metal reference ground plane. EUT was connected to LISN and LISN was connected to reference Ground Plane. EUT was 80cm from LISN. The set-up and test methods were according to ANSI C63.4: 2009.

Conducted Disturbance at AC Port measurements were undertaken on the L and N Lines. The emissions were measured using a Quasi-Peak Detector and Average Detector.

The EUT was communicated with the BTS simulator through Air interface, the BTS simulator controls the Wireless Modem to transmitter the maximum power which defined in specification of product. The Wireless Modem operated on the typical channel.

Measurement bandwidth (RBW) for 150kHz to 30 MHz: 9 kHz;

Test Set-up

The EUT was setup in the screened chamber and operated under nominal conditions.

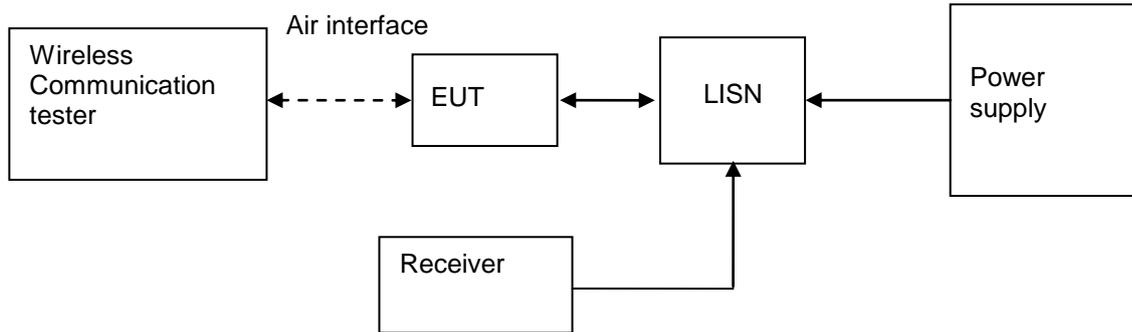


Figure 7. Test Set-up

6.7.4 Measurement Results

Table 41 MEASUREMENT RESULT:QP DECTER

Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Line	PE
0.180000	41.70	10.1	65	23.3	N	FLO
0.794000	40.80	10.1	56	15.2	N	FLO
1.782000	40.00	10.1	56	16.0	N	FLO
4.836000	43.00	10.2	56	13.0	N	FLO
6.156000	44.00	10.2	60	16.0	N	FLO
23.128000	47.50	10.4	60	12.5	L1	FLO

Table 42 MEASUREMENT RESULT:AV DECTER

Frequency MHz	Level dB μ V	Transd dB	Limit dB μ V	Margin dB	Line	PE
0.266000	33.10	10.0	51	17.9	N	FLO
0.798000	33.60	10.1	46	12.4	N	FLO
1.704000	34.00	10.1	46	12.0	N	FLO
4.826000	35.80	10.2	46	10.2	N	FLO
5.354000	36.20	10.2	50	13.8	N	FLO
23.128000	40.00	10.4	50	10.0	L1	FLO

6.7.5 Conclusion

The equipment **PASSED** the requirement of this clause.
 For the measurement results refer to appendix G.



7 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 as following:

Table 43 System Measurement Uncertainty

Items		Extended Uncertainty
20dB bandwidth measurement	Magnitude (%)	U=0.2%; k=2
Peak output power	Power(dBm)	U=0.39dB; k=2
Band edge compliance measurement	Disturbance Power(dBm)	U=2.0dB; k=2
Conducted RF spurious	Disturbance Power(dBm)	U=0.4dB; k=2
Power spectral density	Disturbance Power(dBm)	U=0.4dB; k=2
Radiated spurious emission & Radiated restricted band measurement	Field strength (dB μ V/m)	U=4.1dB; k=2 U=4.1dB; k=2
Conducted emission test for power port	Disturbance Voltage(dB μ V)	U=3.4dB; k=2



8 Appendices

Appendix A	Measurement Results 6dB bandwidth measurement
Appendix B	Measurement Results Peak output power
Appendix C	Measurement Results Band edge compliance measurement
Appendix D	Measurement Results Conducted RF spurious
Appendix E	Measurement Results Power spectral density
Appendix F	Measurement Results Radiated spurious emission
Appendix G	Measurement Results Conducted emission test for power port
Appendix H	Photos of Test Setup

(END OF REPORT)



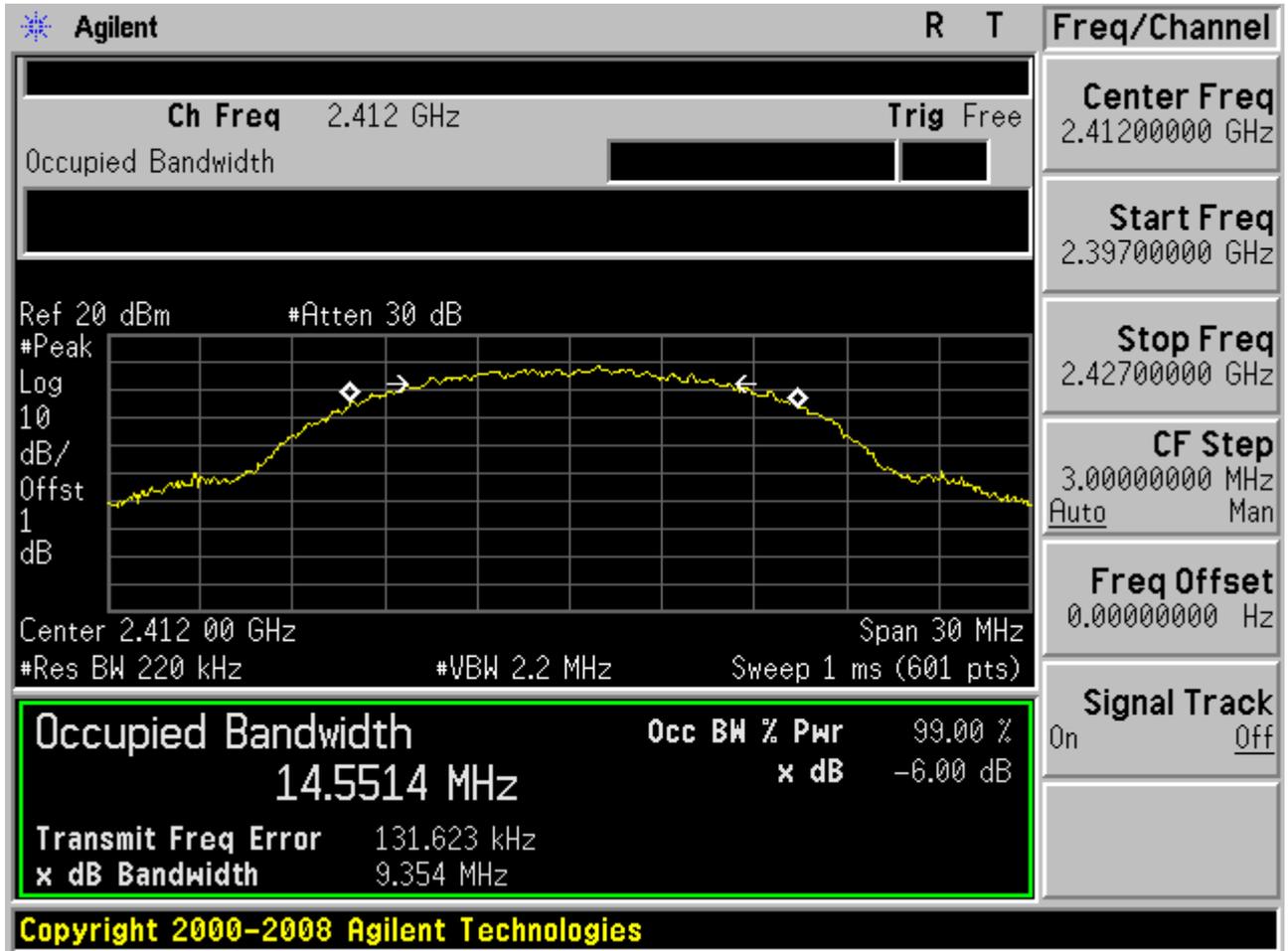
Appendix A

6dB bandwidth measurement

According to FCC Part 15.247 (a) (2) &RSS-210

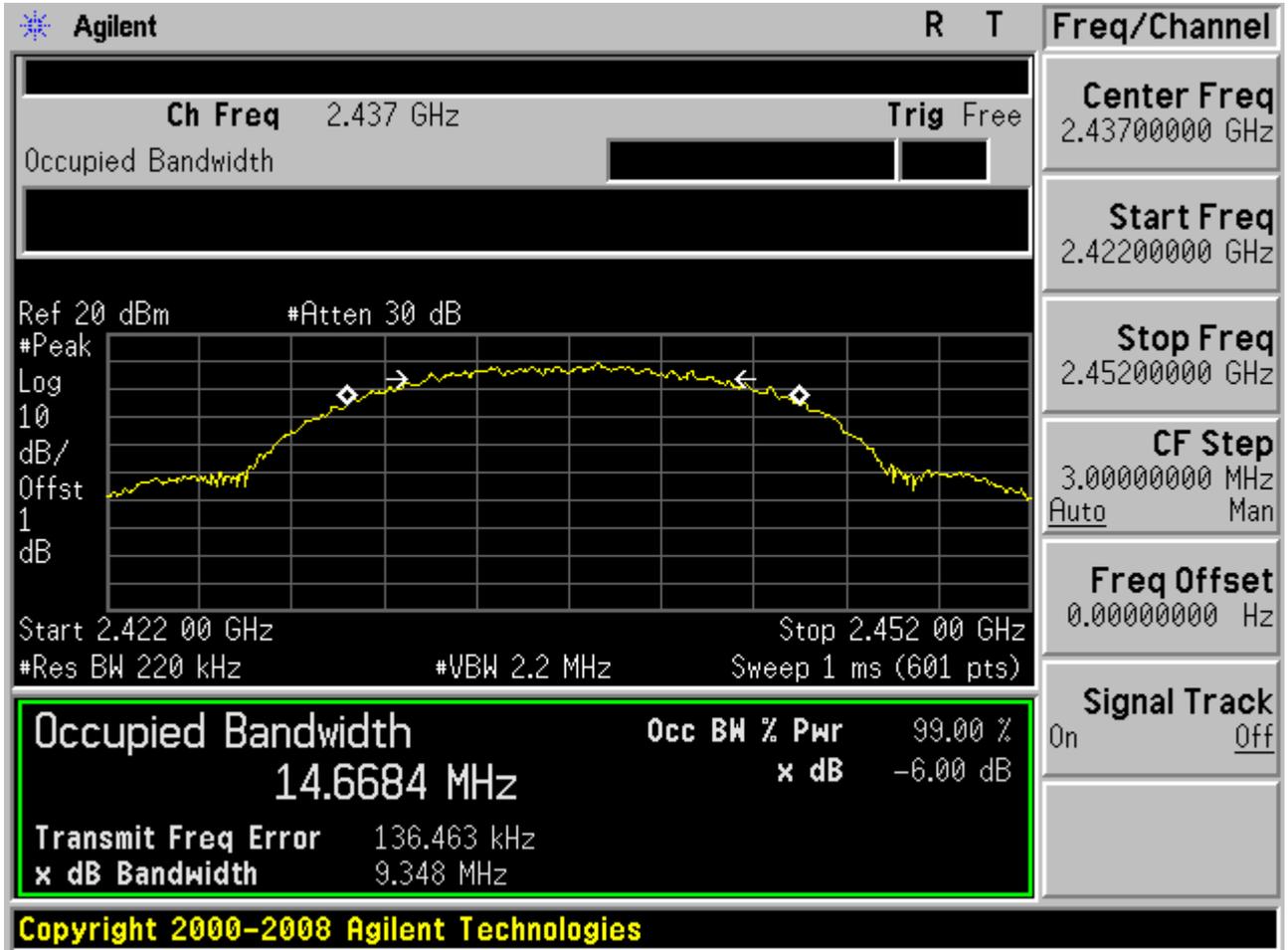


TM1 Chain 1 Channel 01



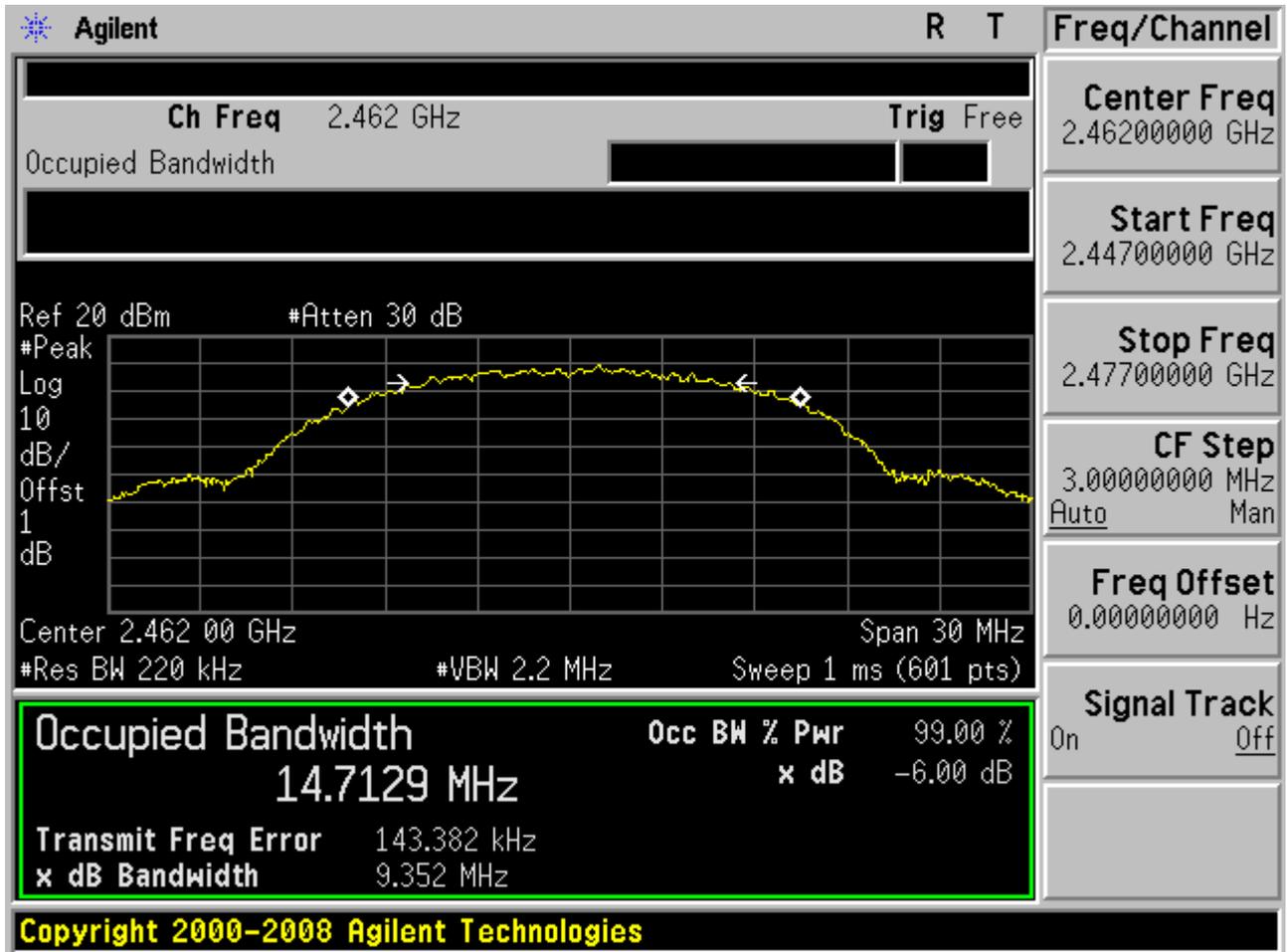


Channel 06



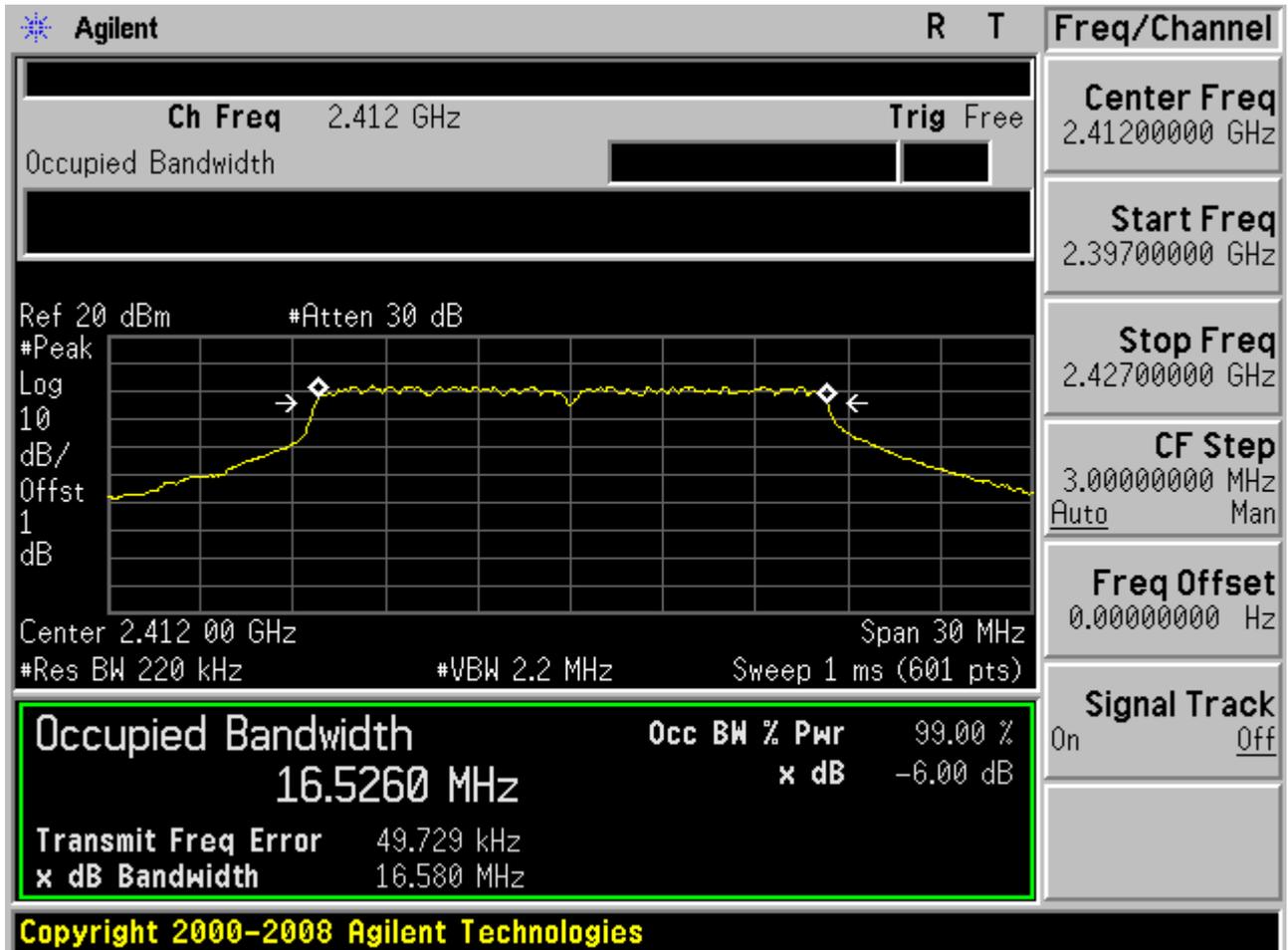


Channel 11



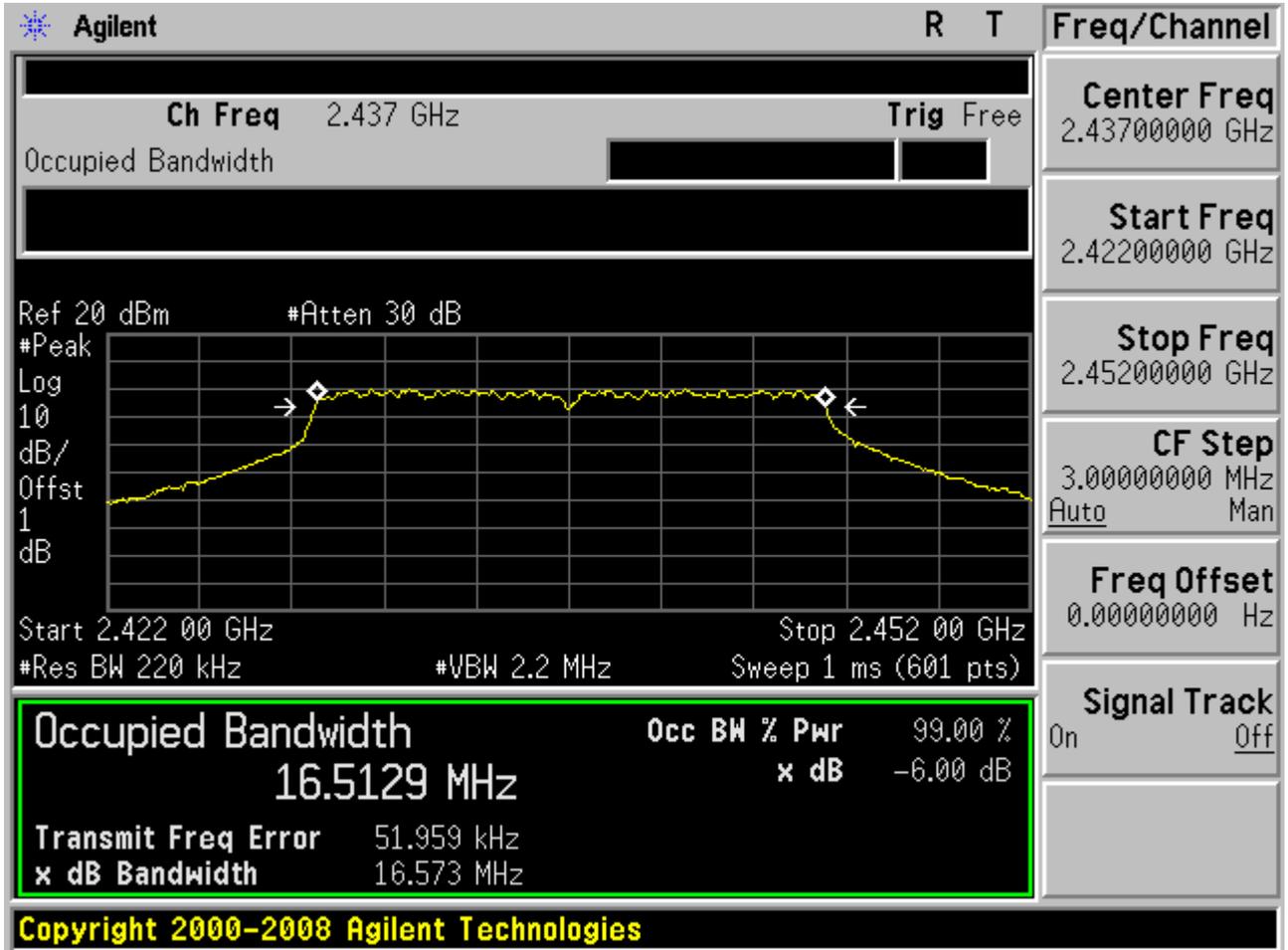


TM2 Chain 1 Channel 01



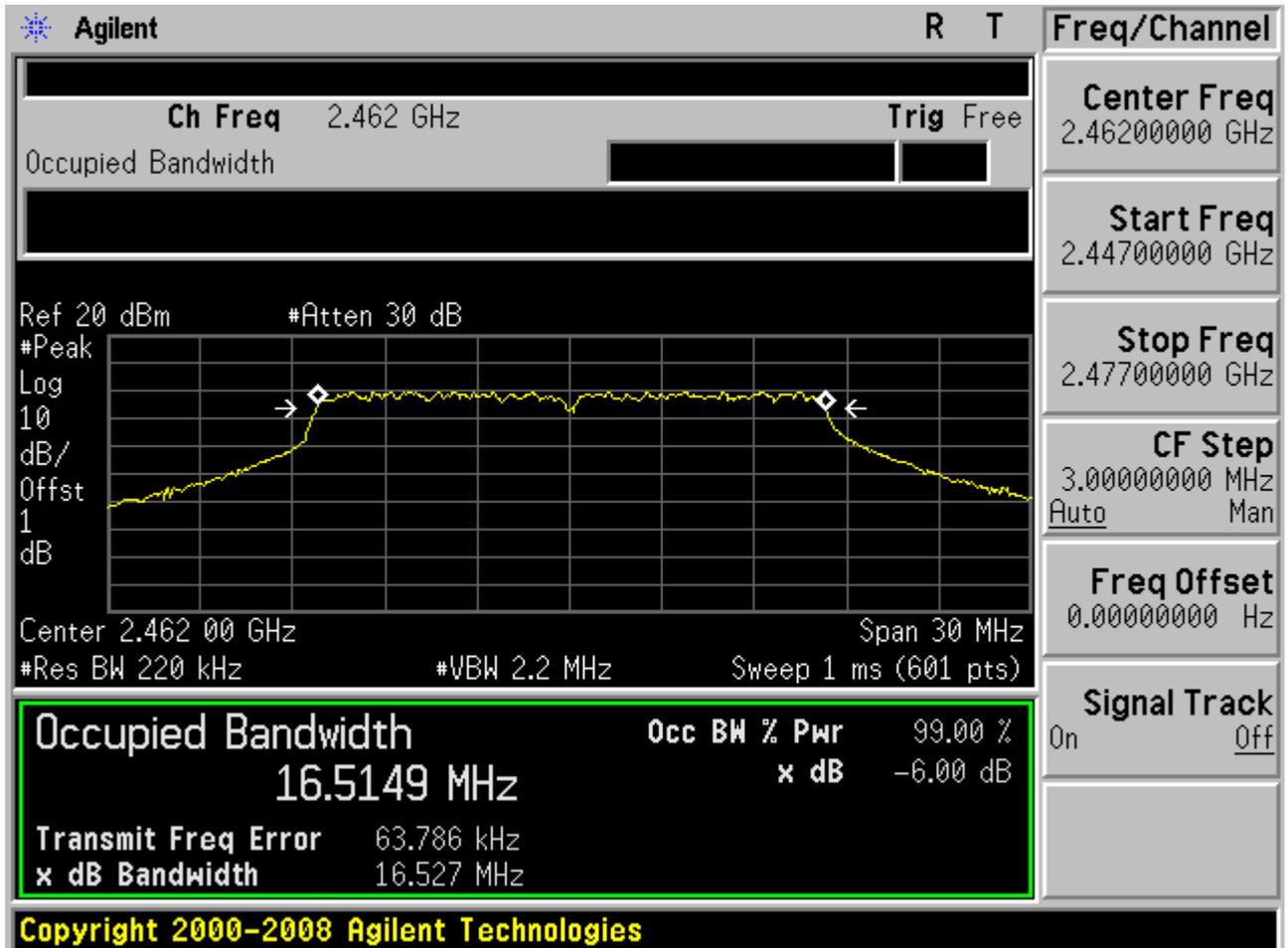


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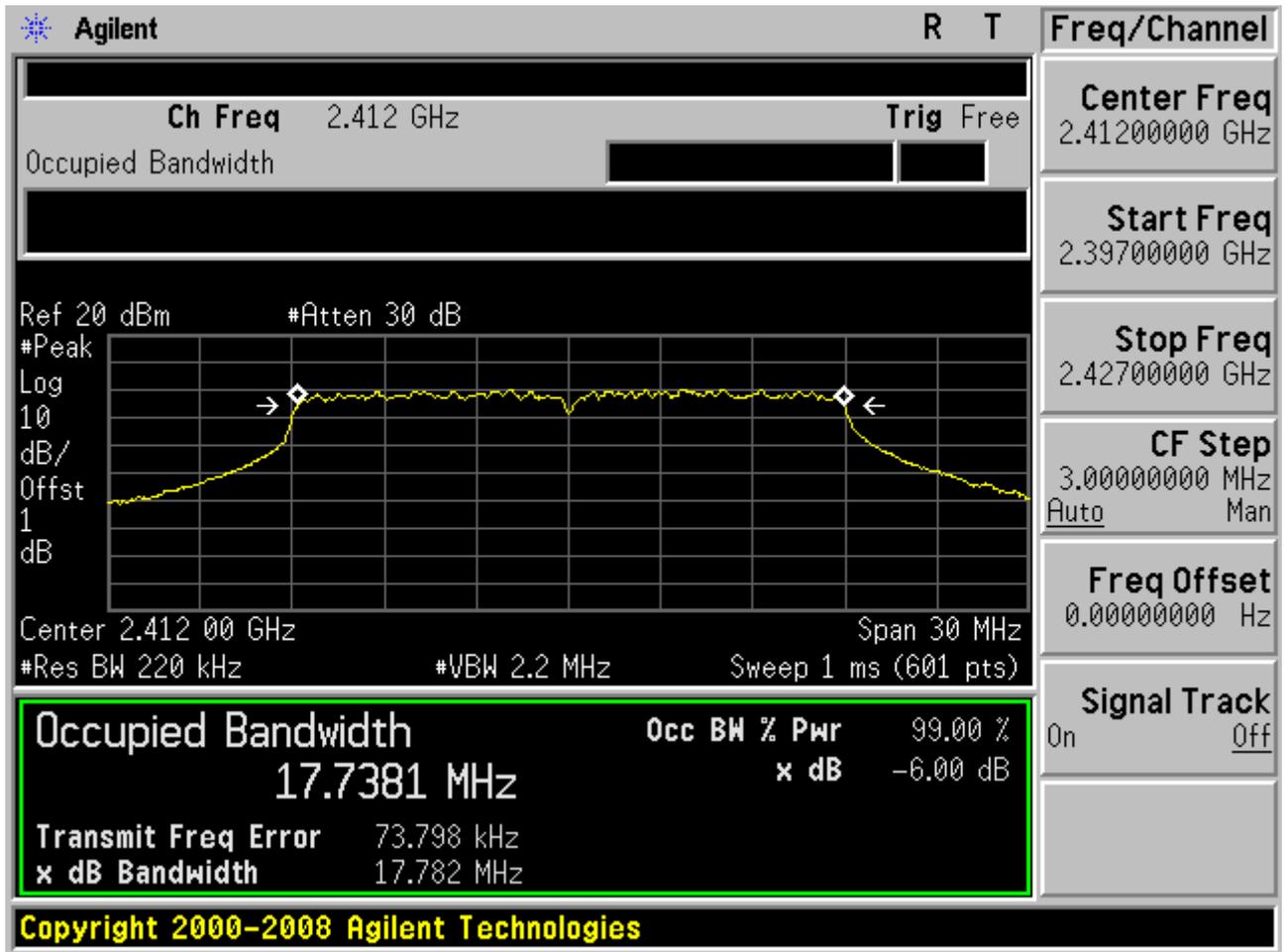


Channel 11



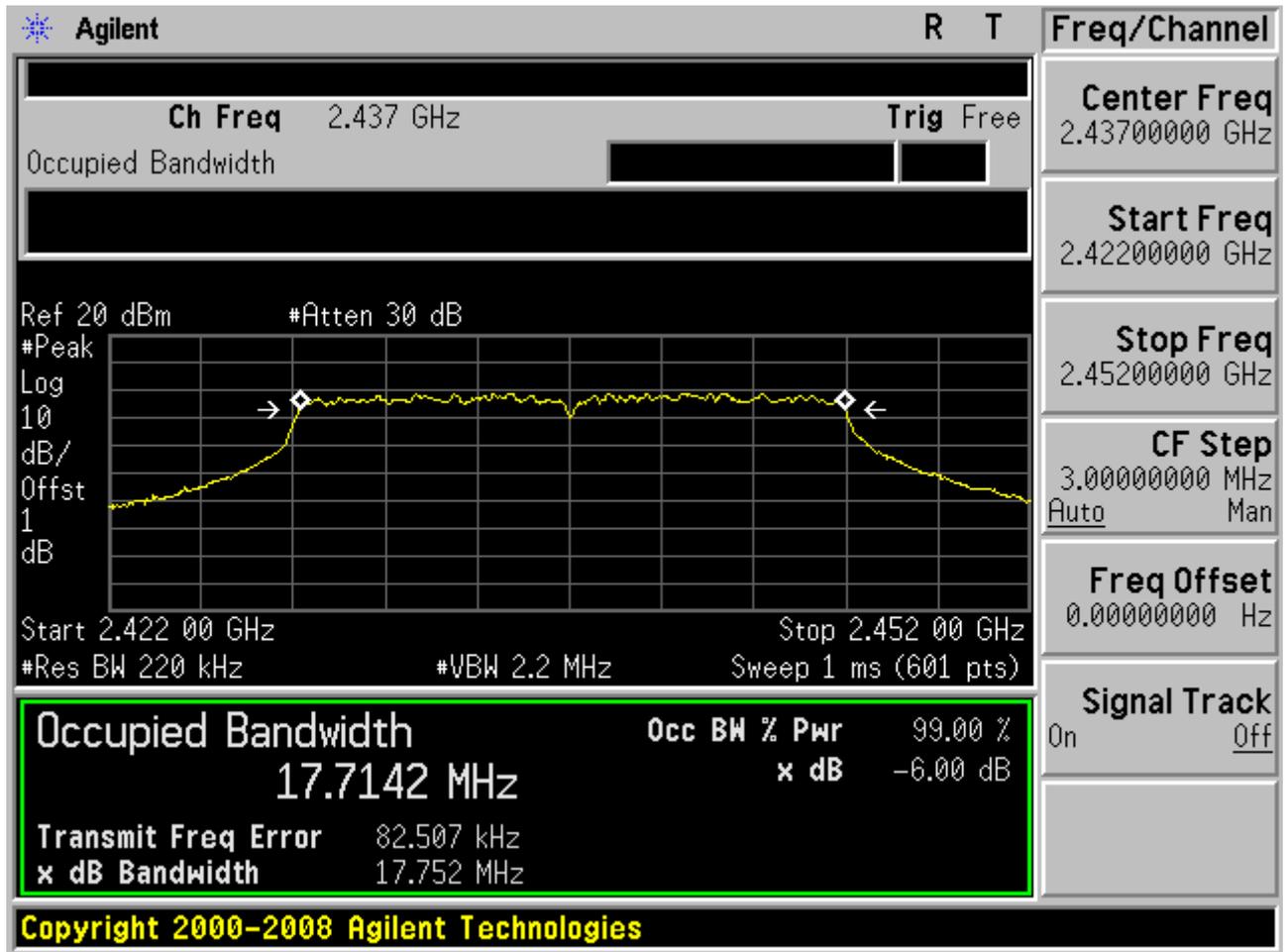


TM3 Chain 1 Channel 01



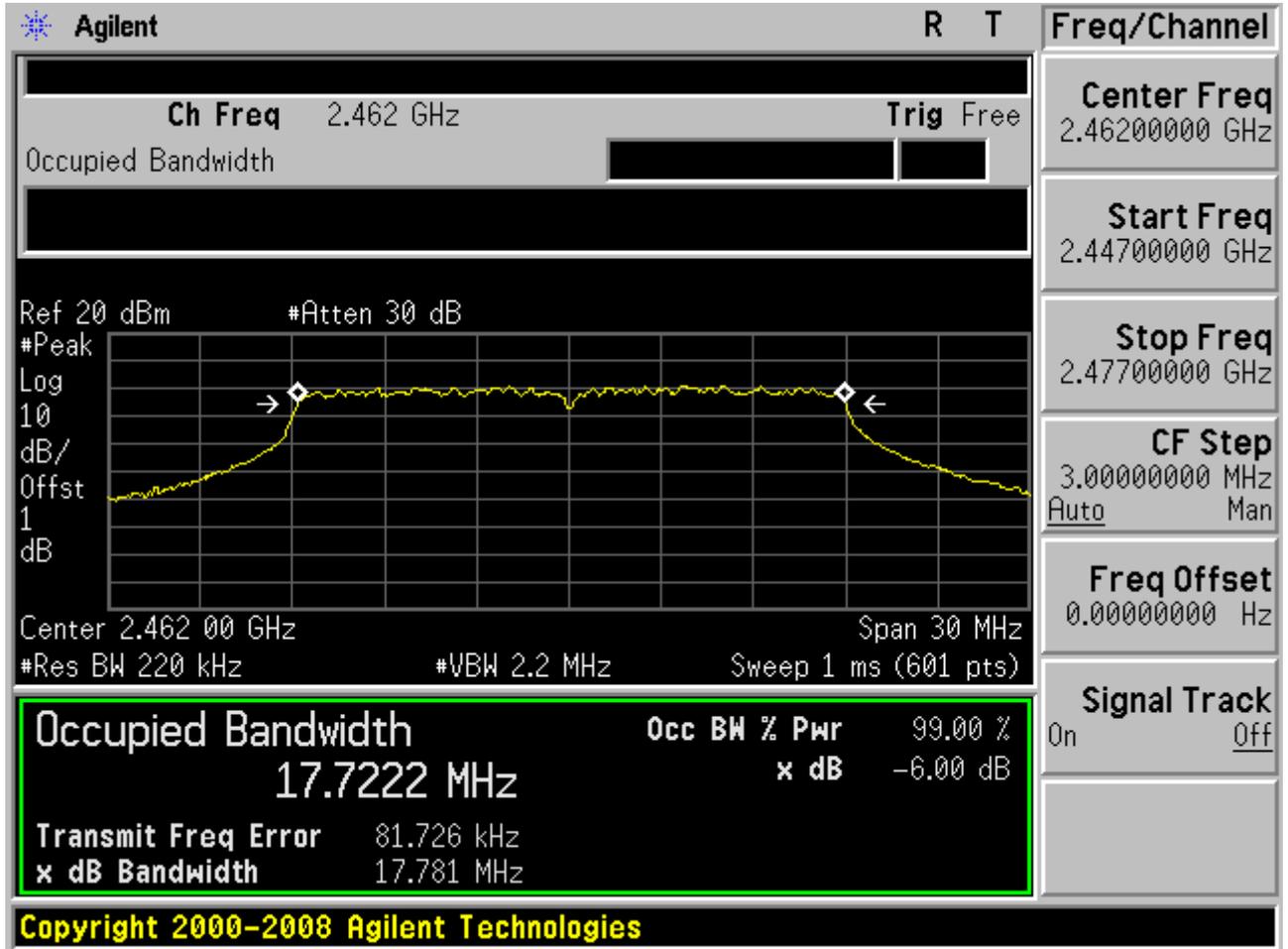


Channel 06





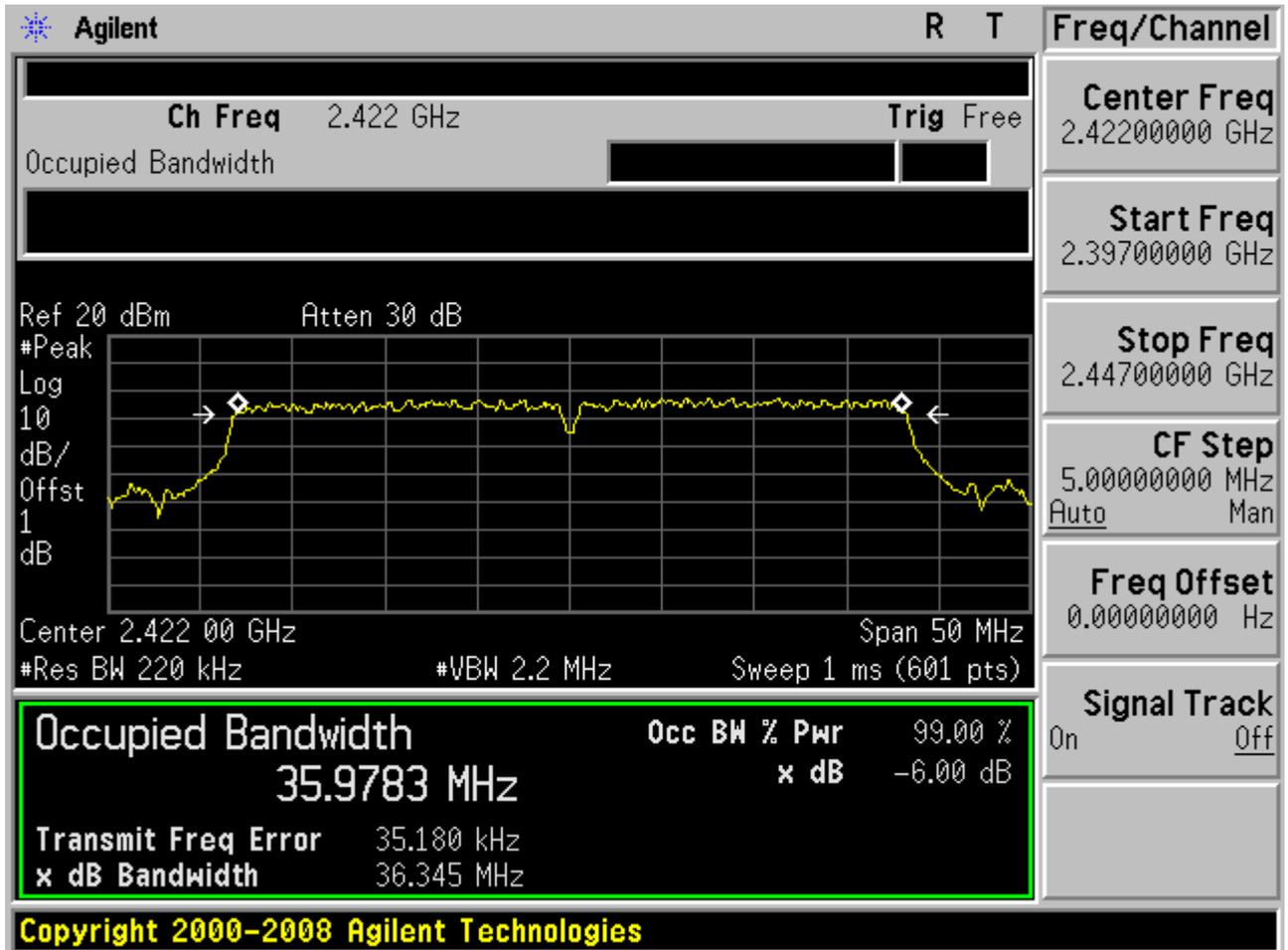
Channel 11





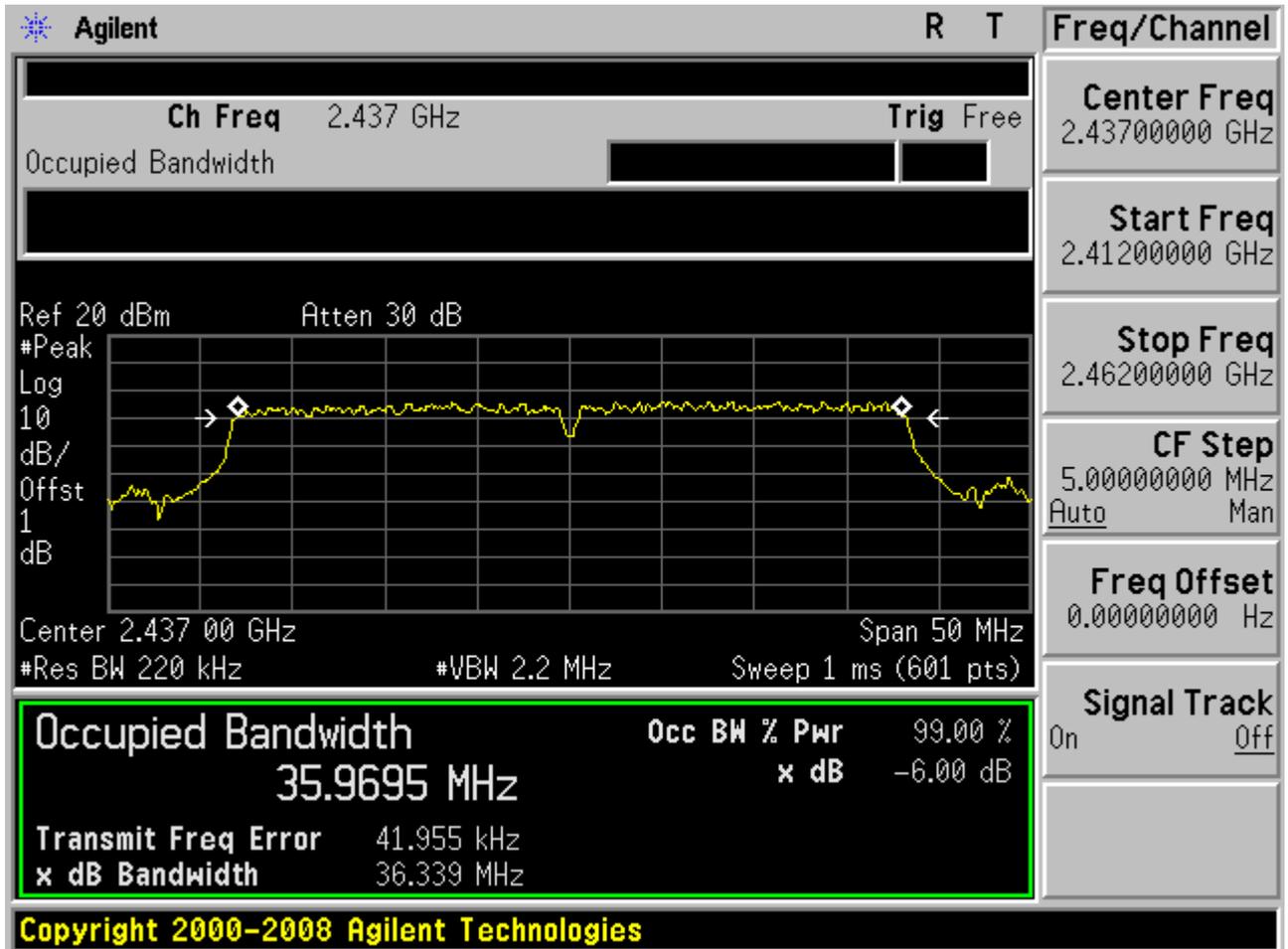
TM4 Chain 1

Channel 03



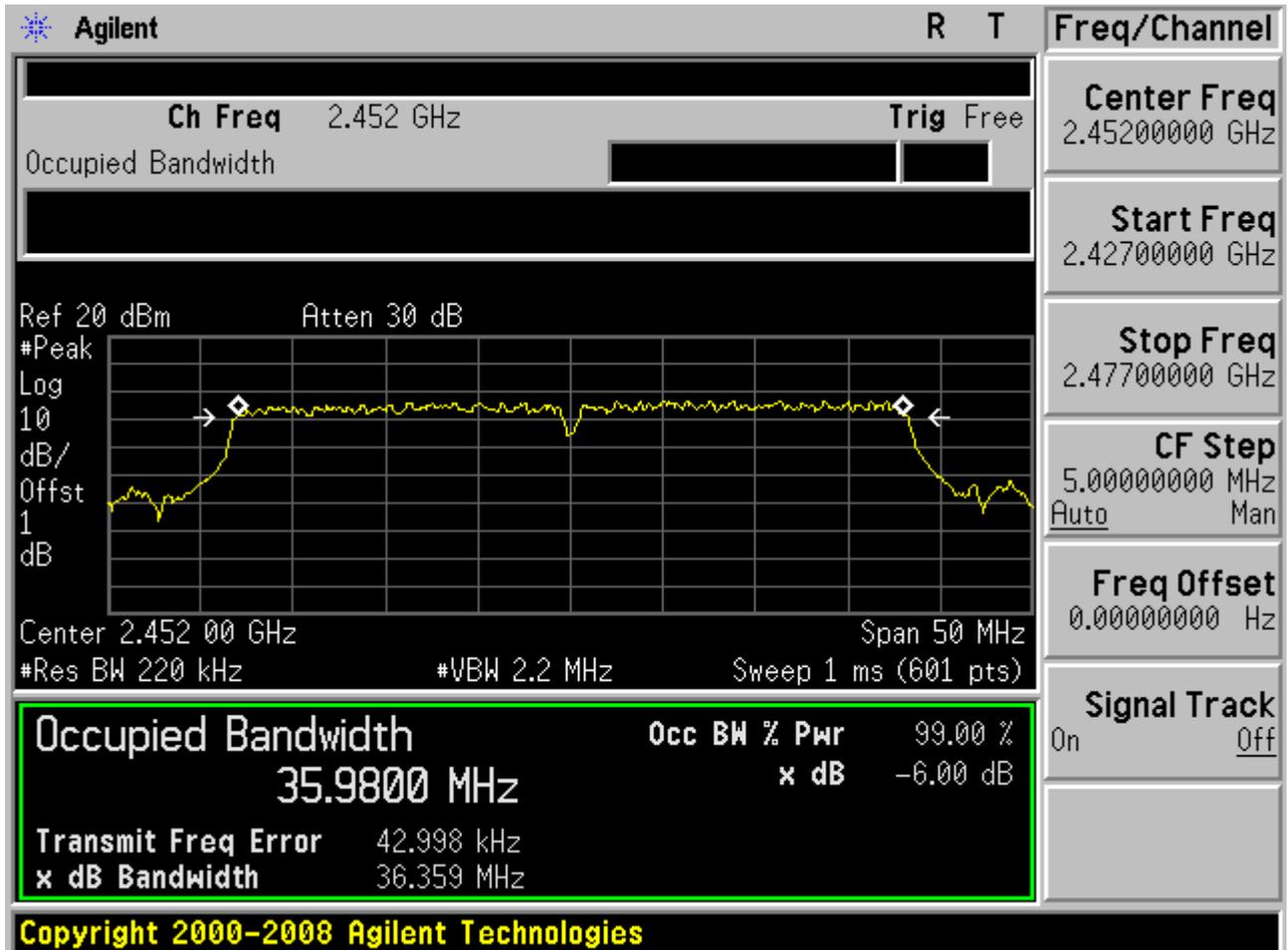


Channel 06





Channel 09

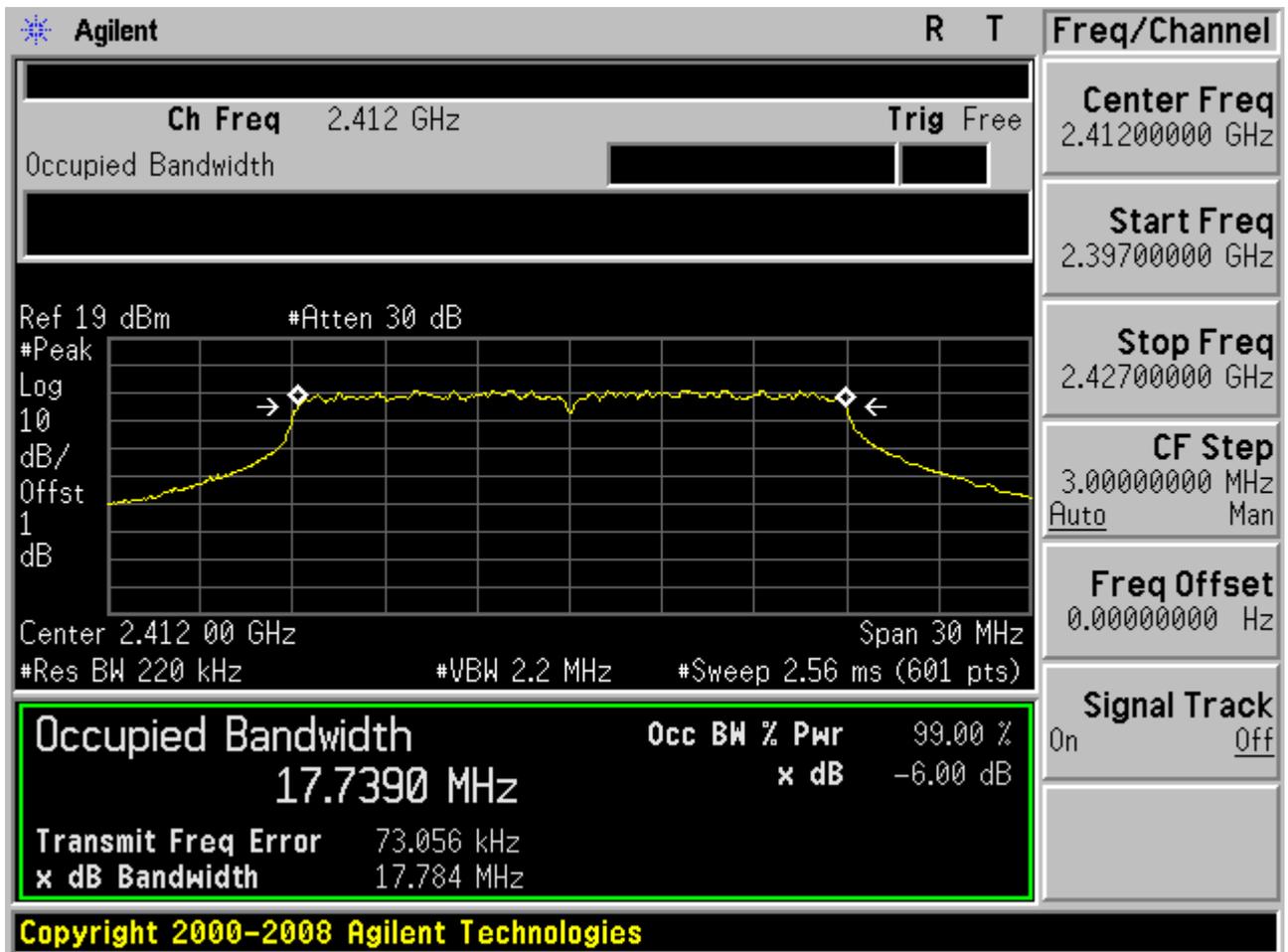




TM5 Chain 1&2

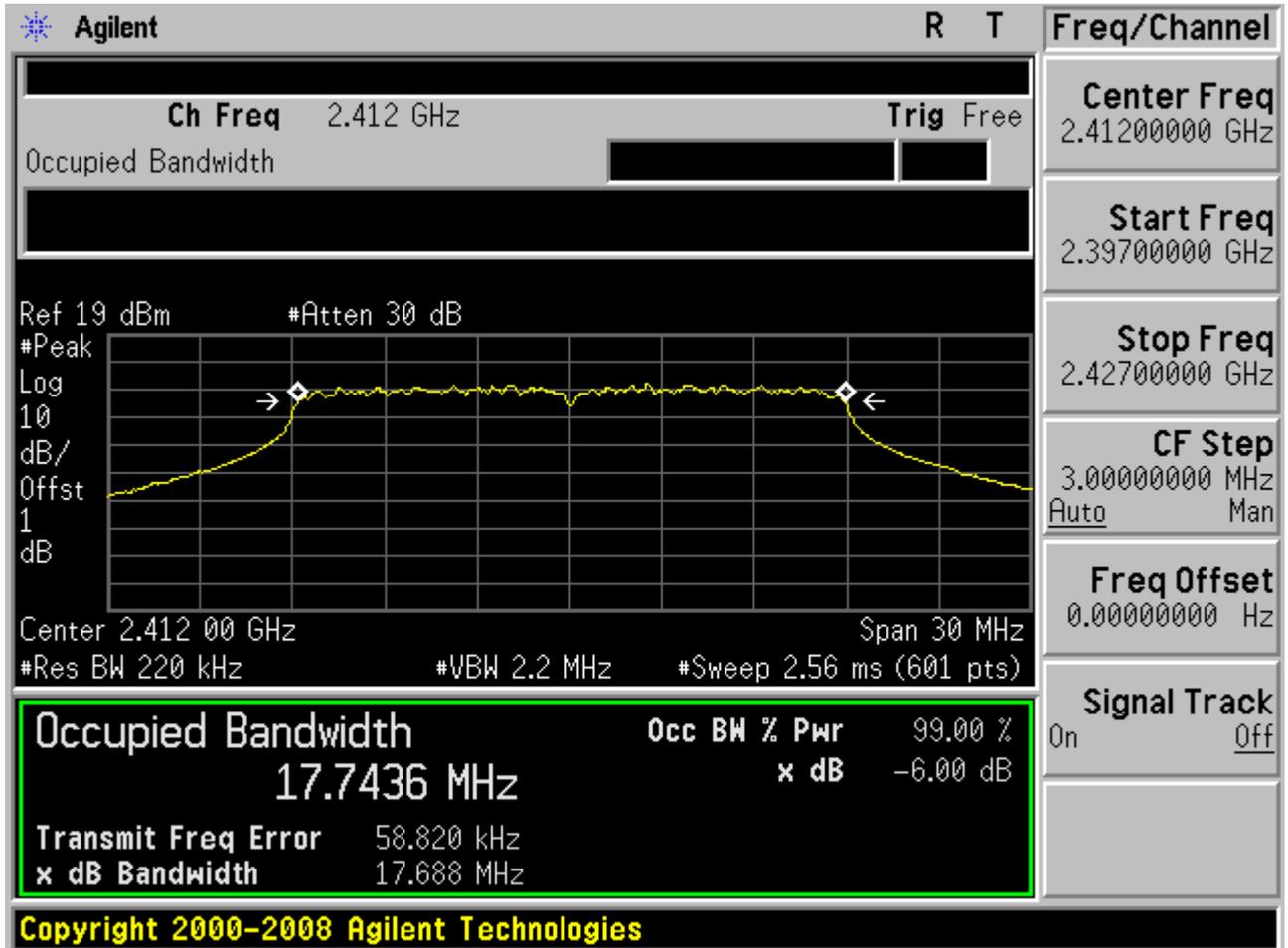
Channel 01

Chain 1





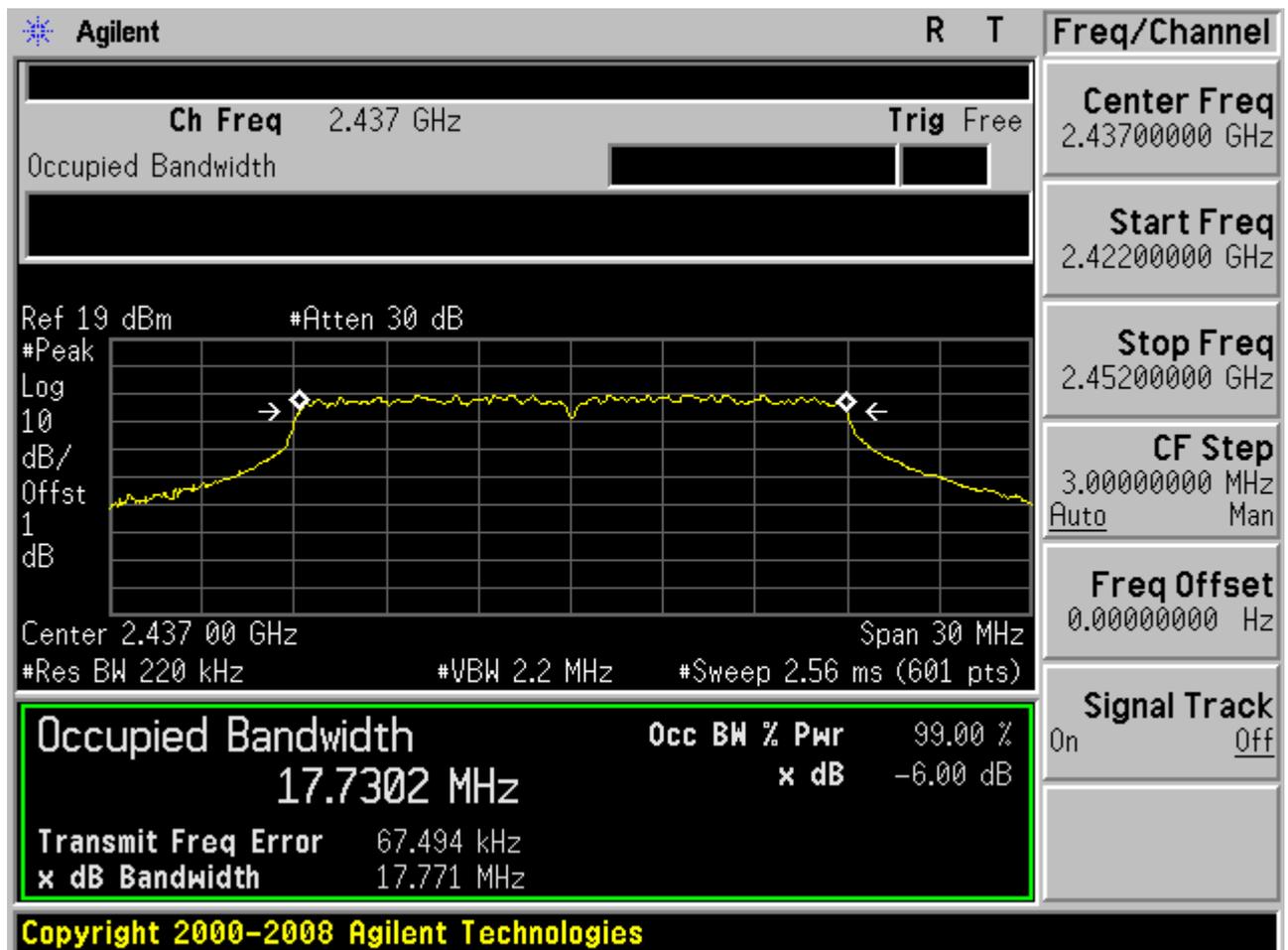
Chain 2





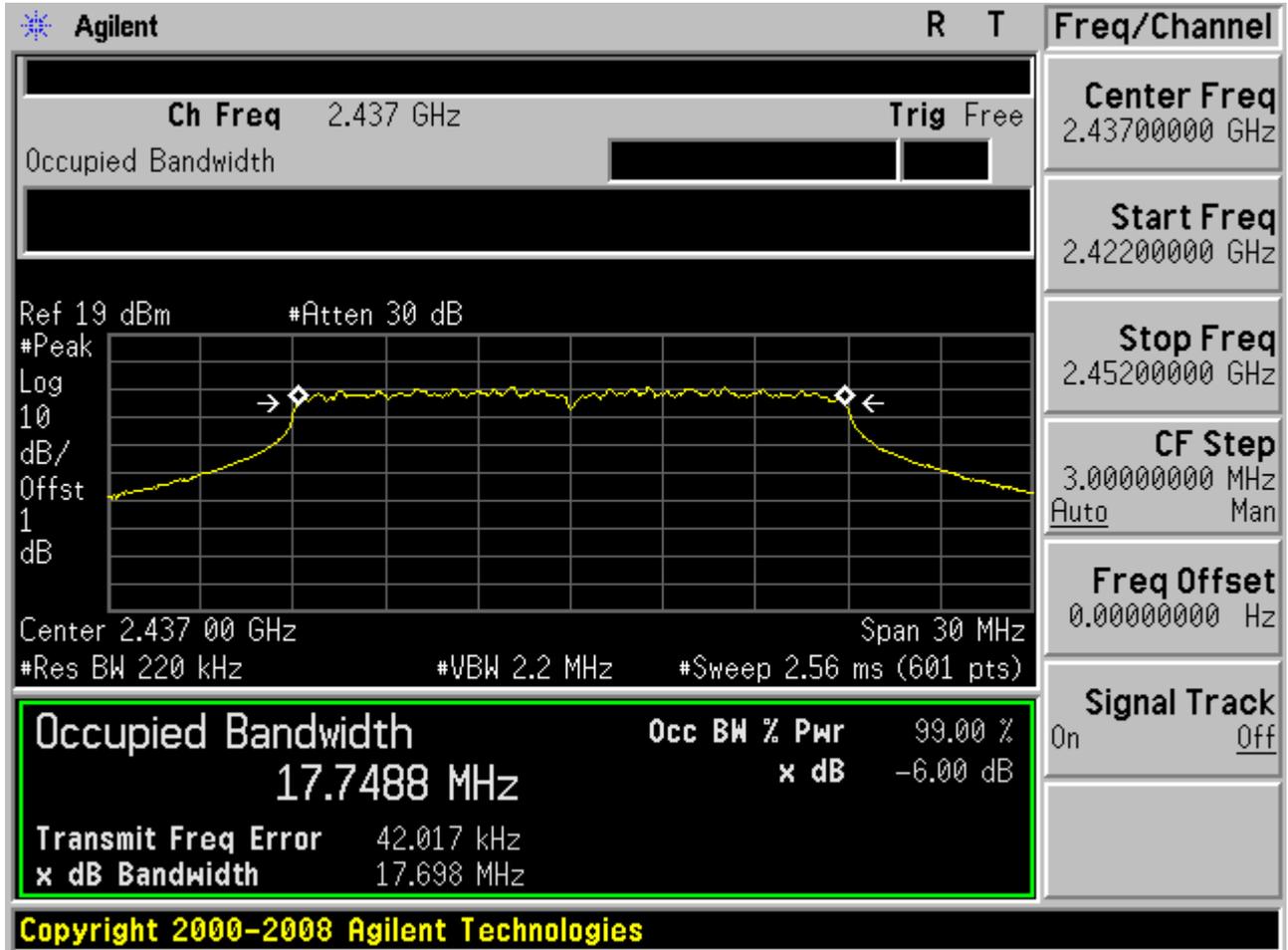
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Chain 1





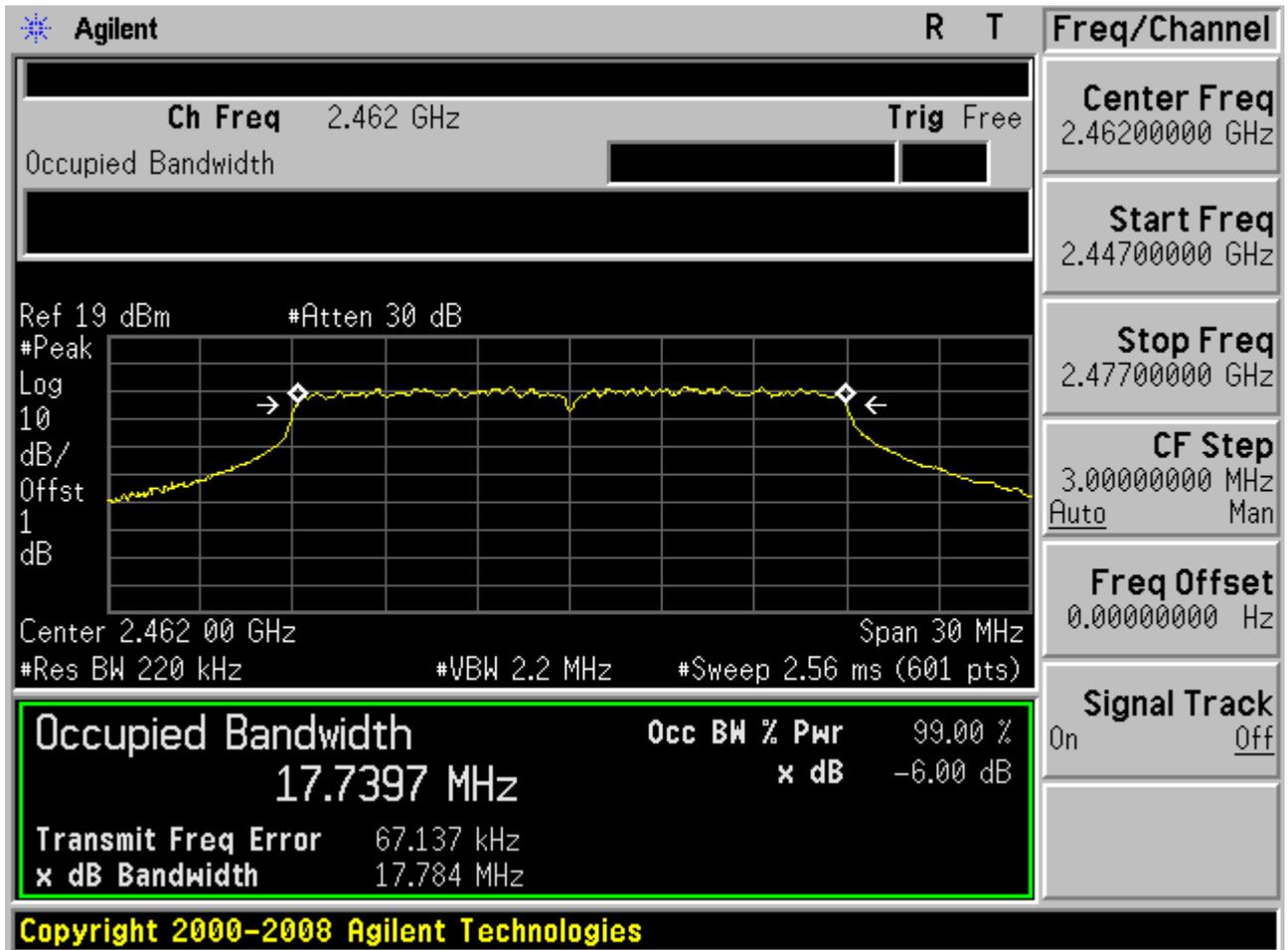
Chain 2





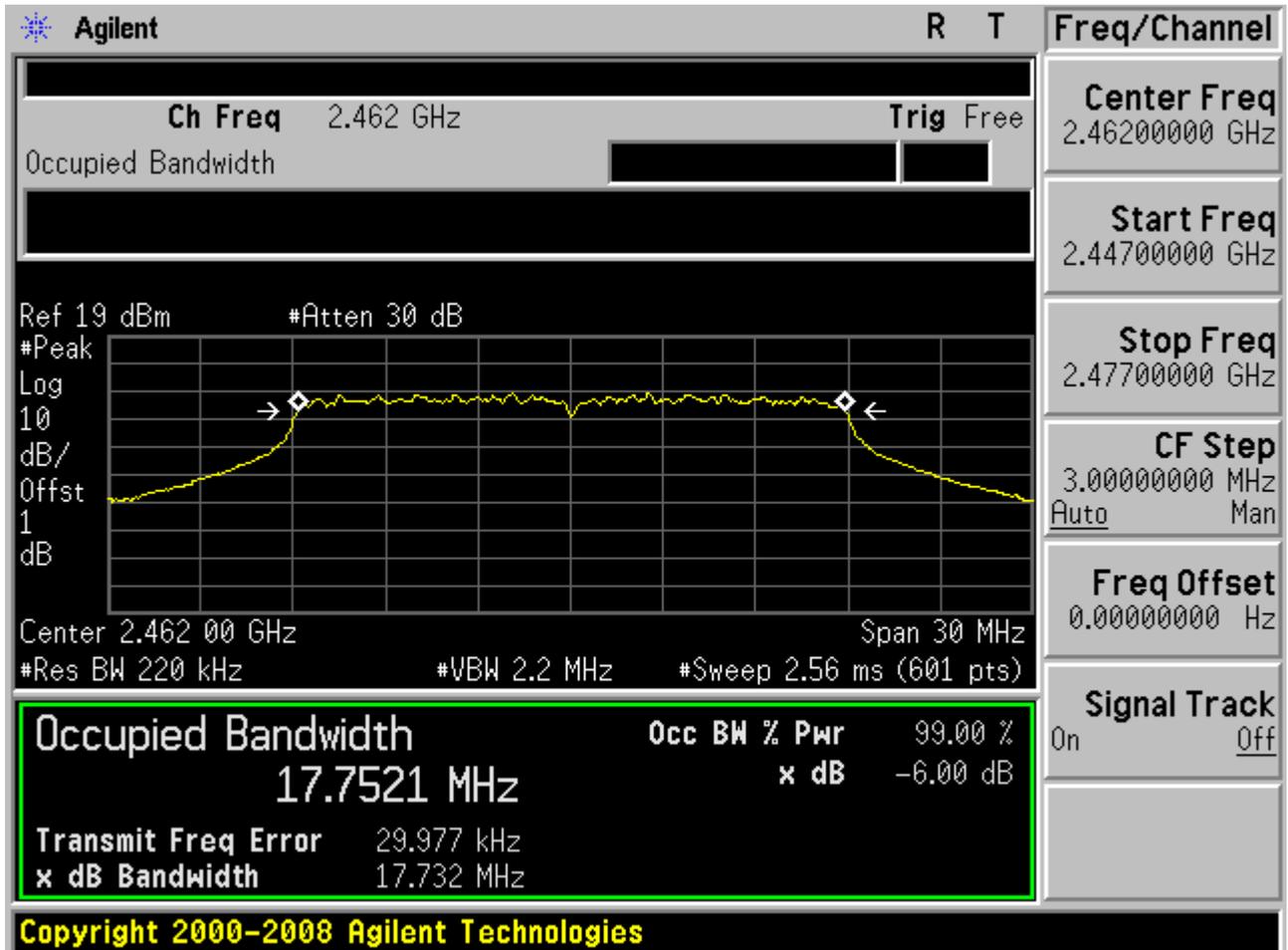
Channel 11

Chain 1





Chain 2

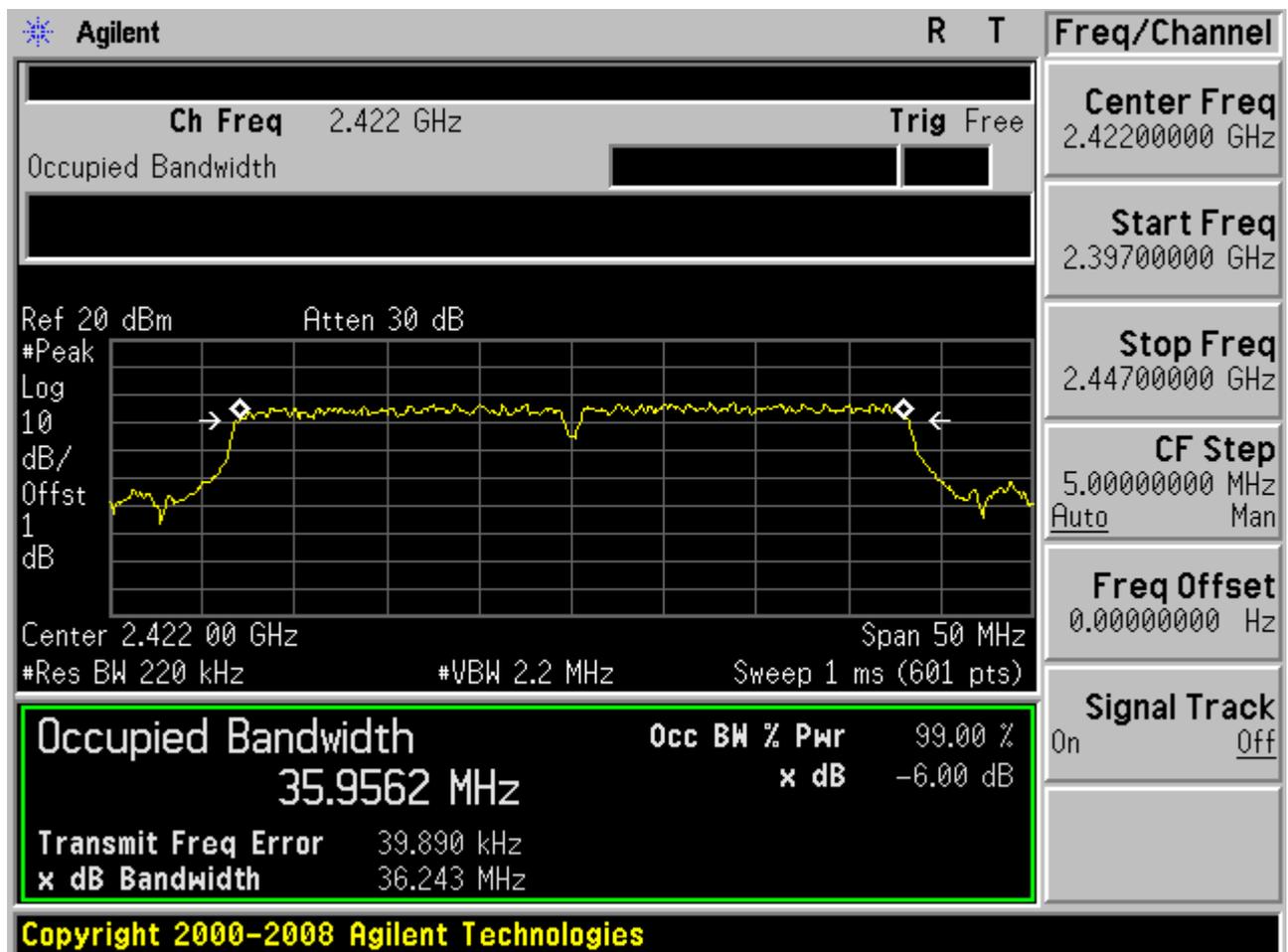




TM6 Chain 1&2

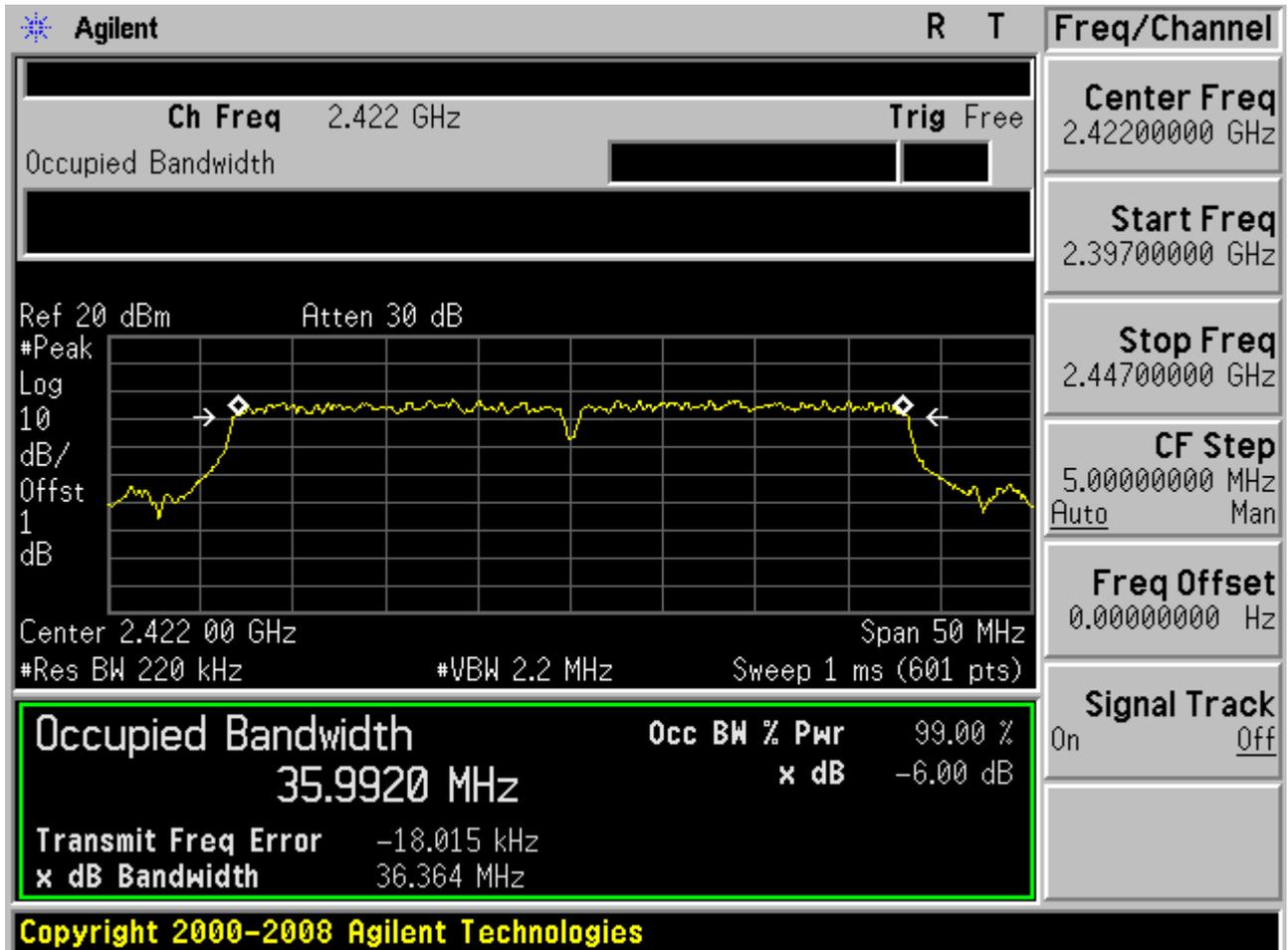
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Chain 1





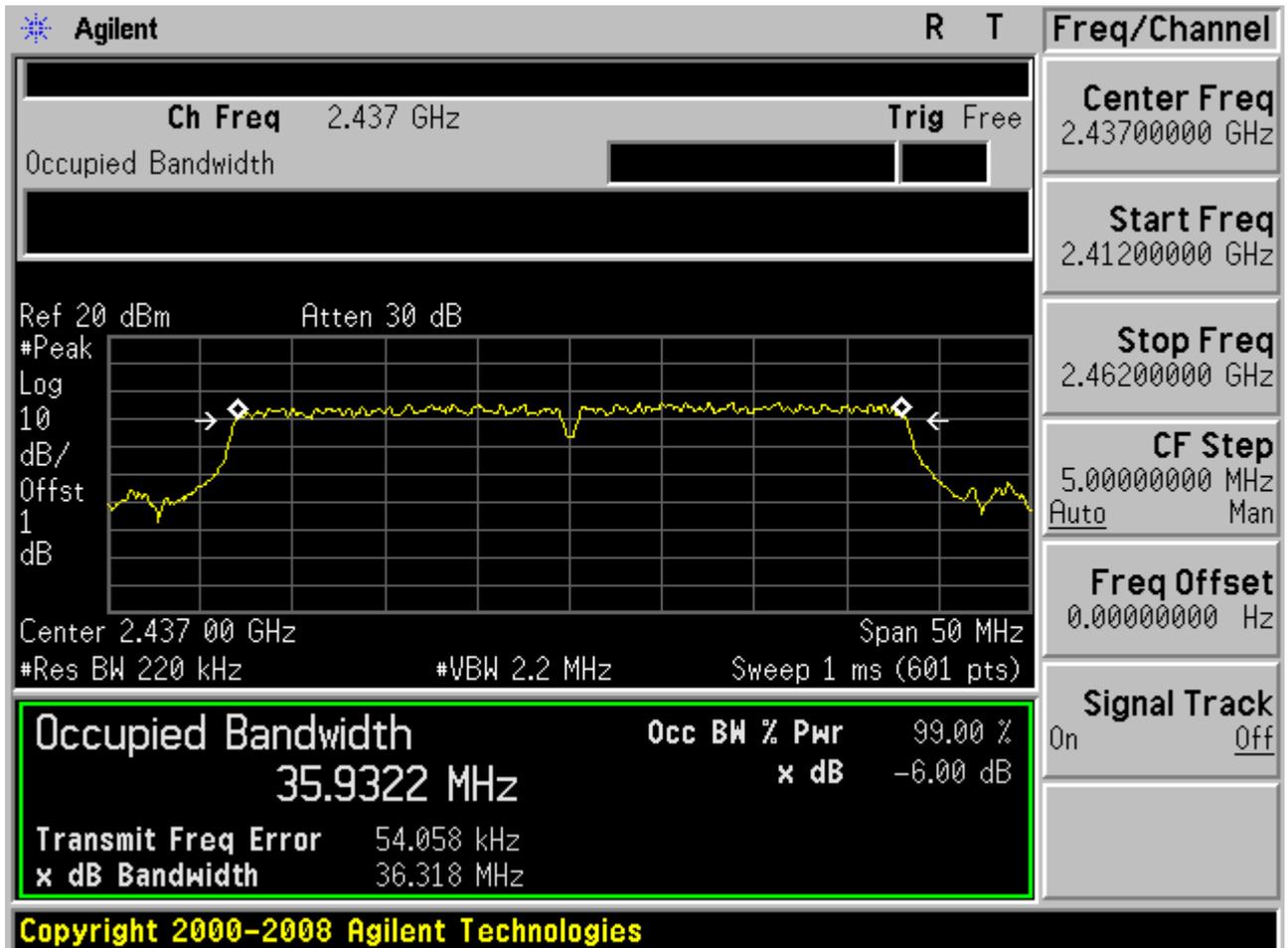
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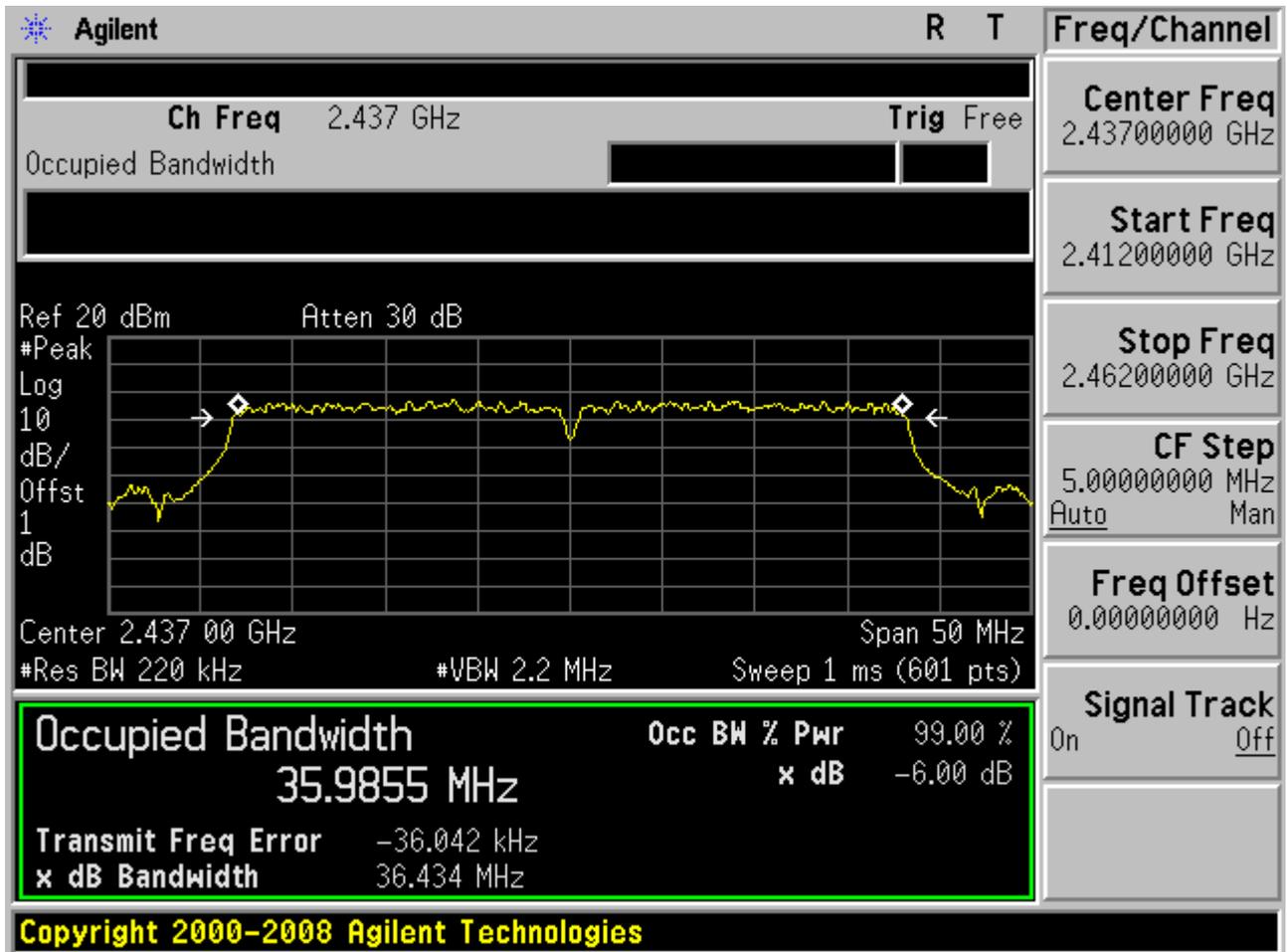
Channel 06

Chain 1





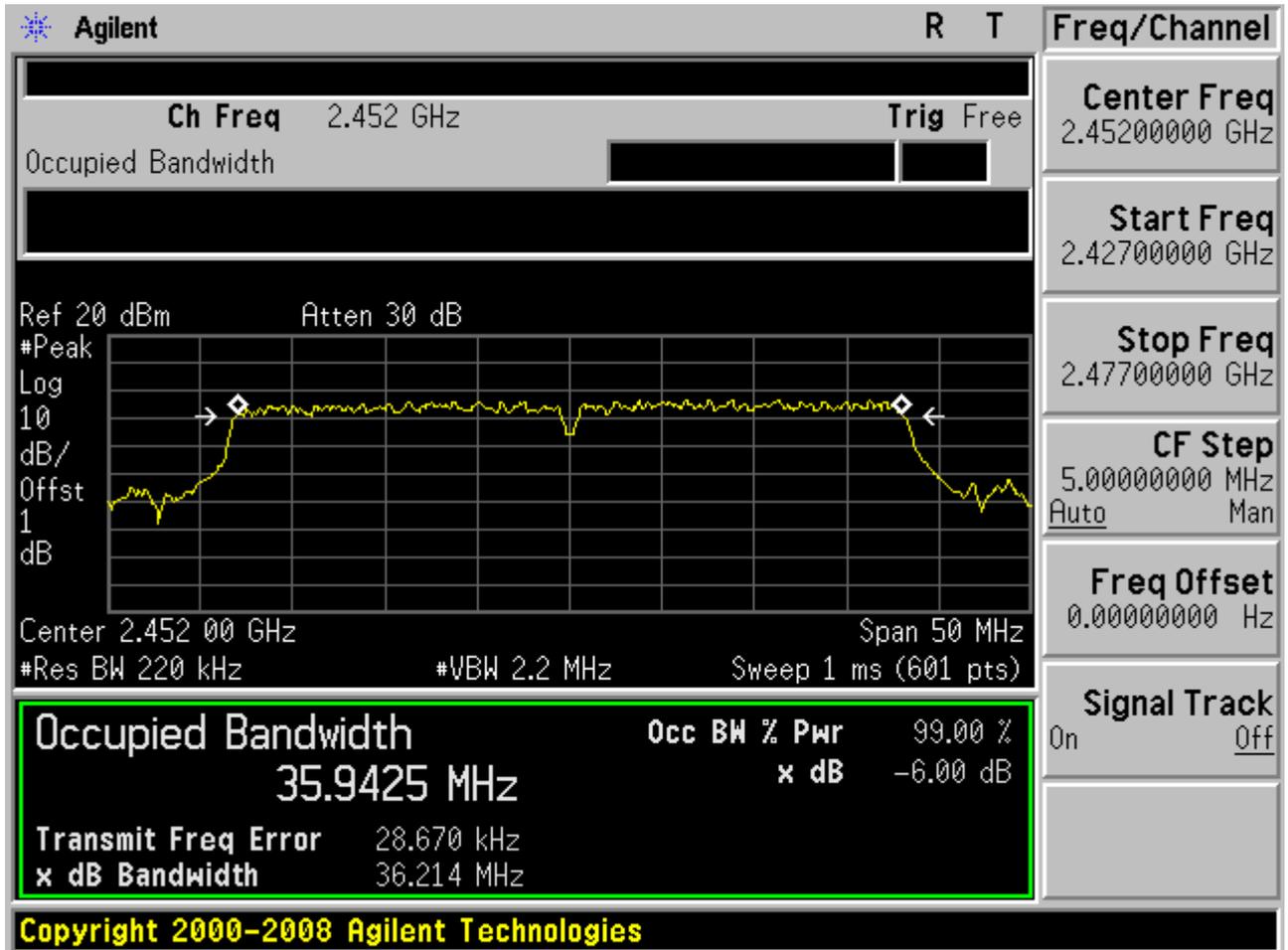
Chain 2





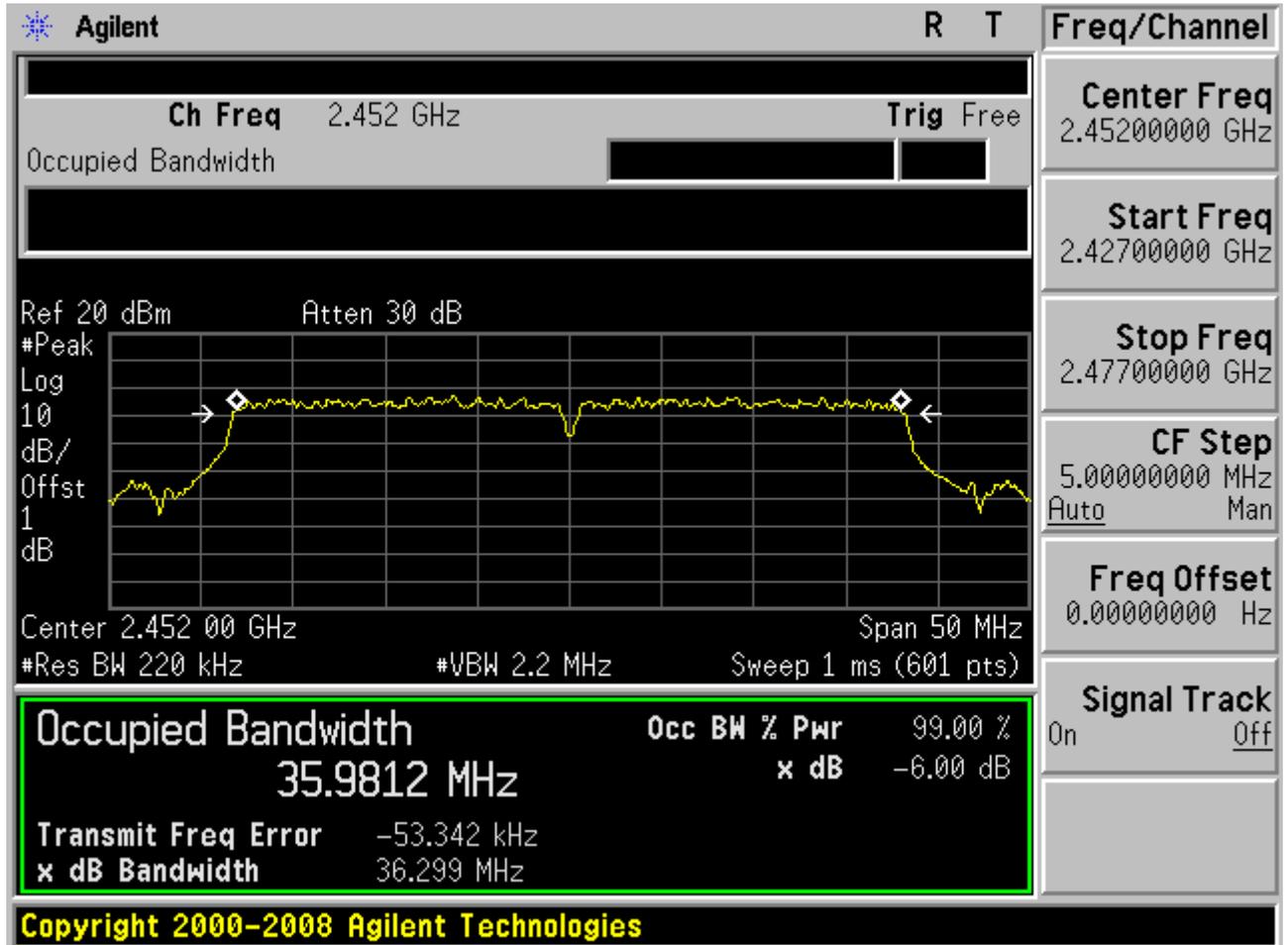
Channel 09

Chain 1





Chain 2





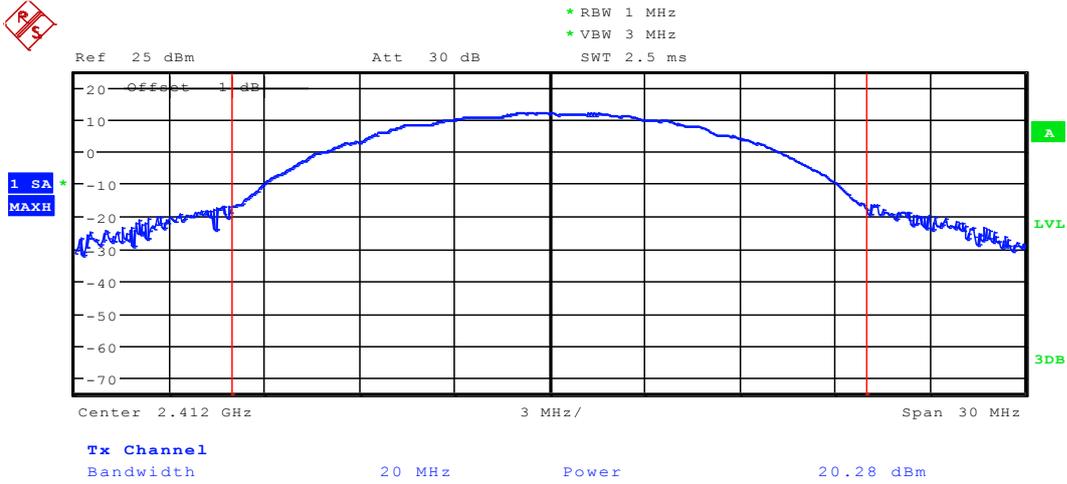
Appendix B

Conducted Peak output power

According to FCC Part 15.247 (b) (3)&RSS-210

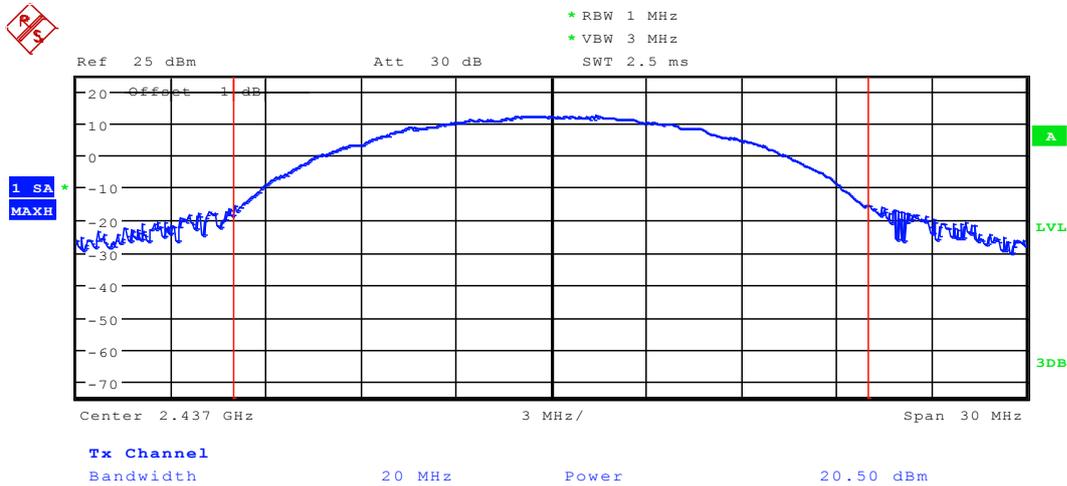


TM1 Channel 01 (2412MHz)



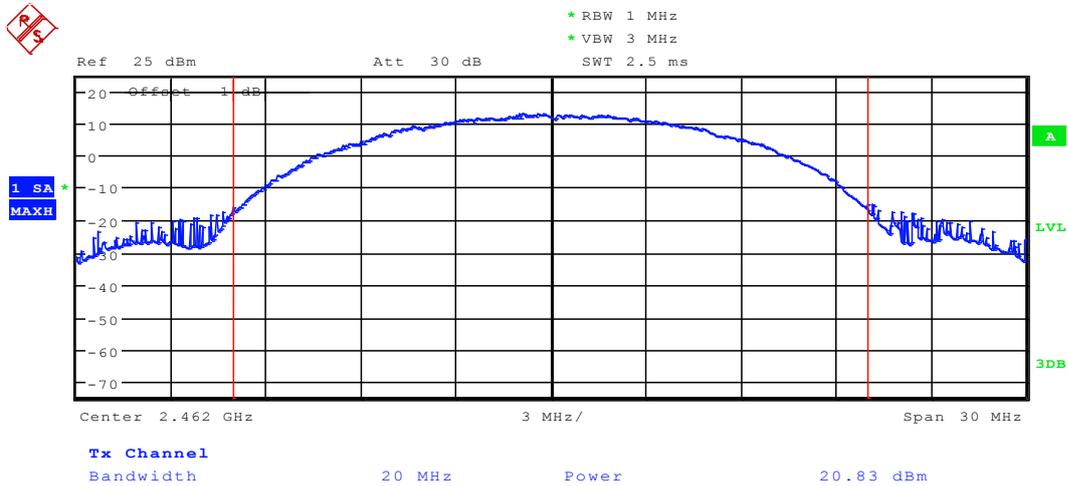


Channel 06 (2437MHz)



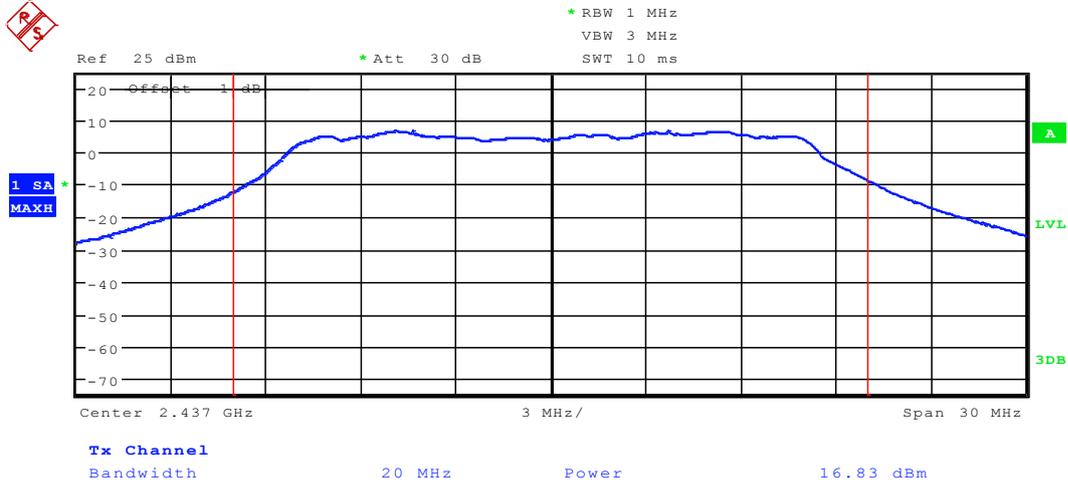


Channel 11 (2462MHz)



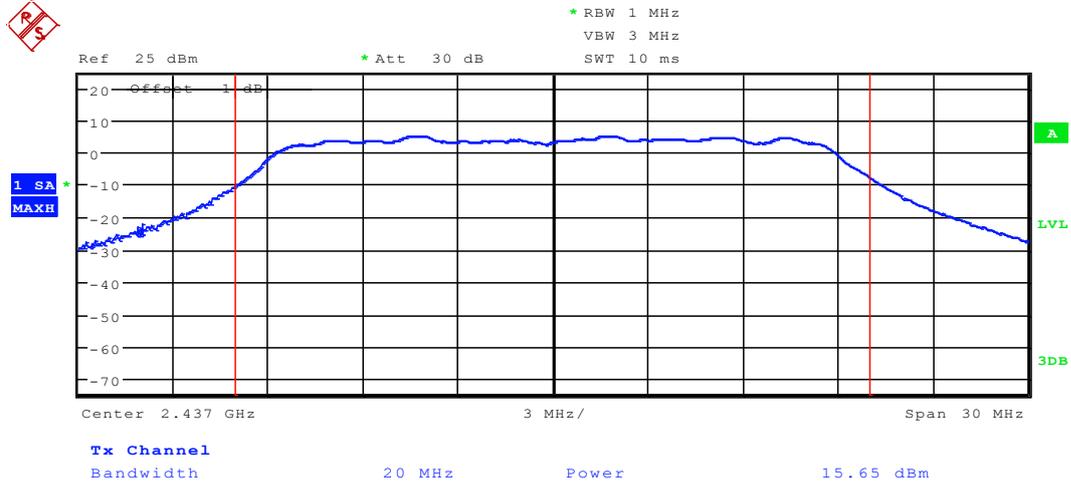


Channel 06 (2437MHz)



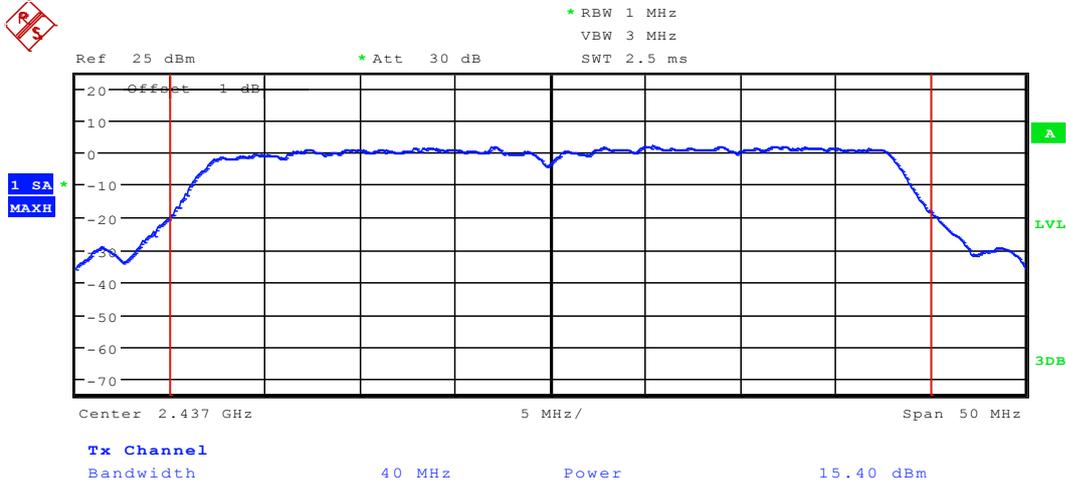


Channel 06 (2437MHz)



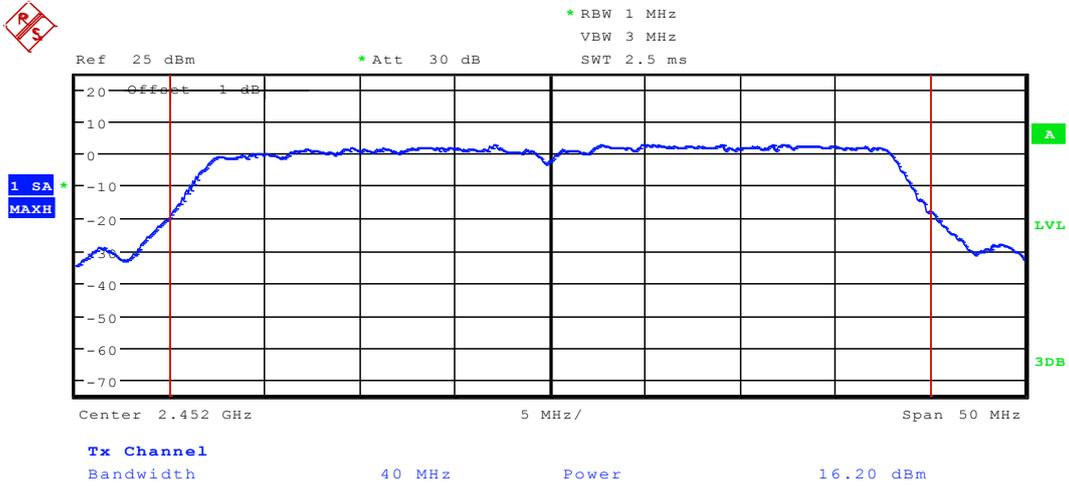


Channel 06 (2437MHz)





Channel 09(2452MHz)

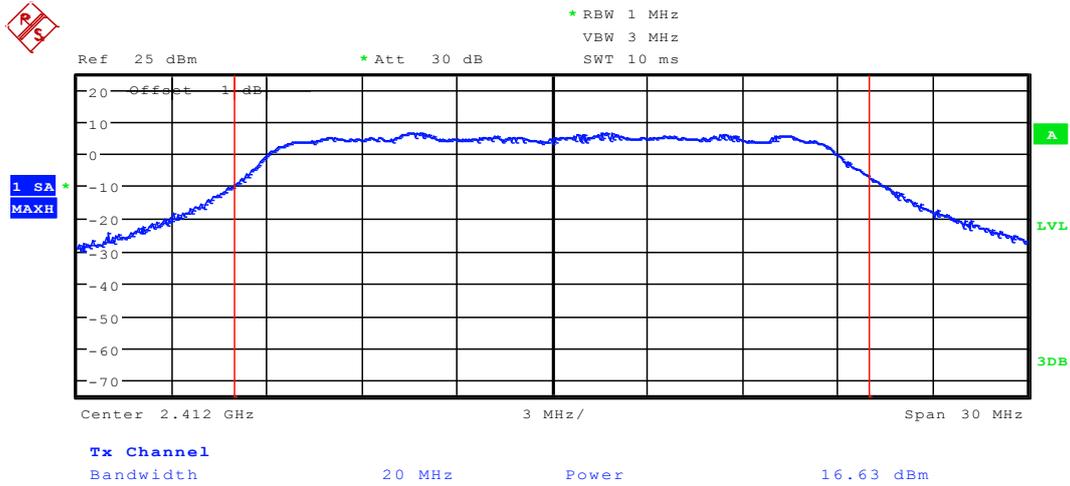




TM5 Chain 1&2

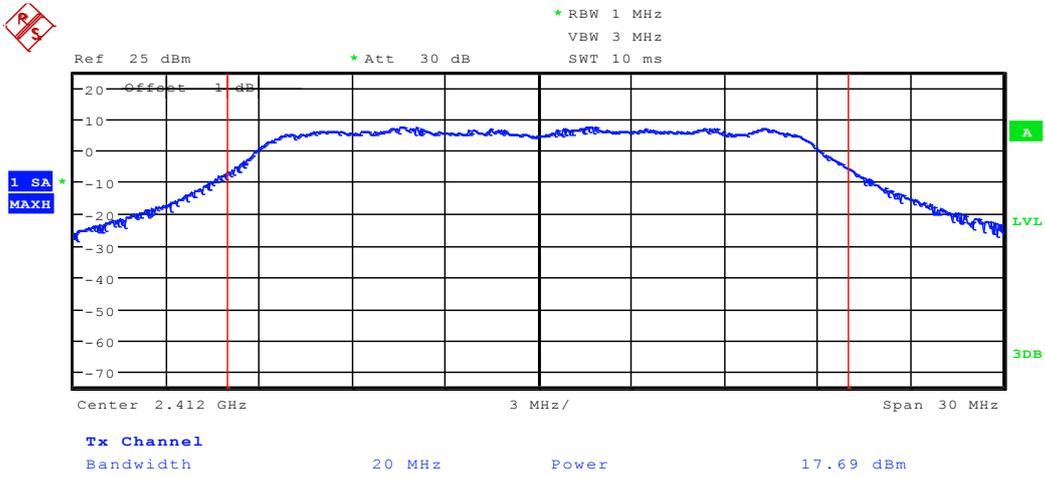
Channel 01(2412MHz)

Chain 1





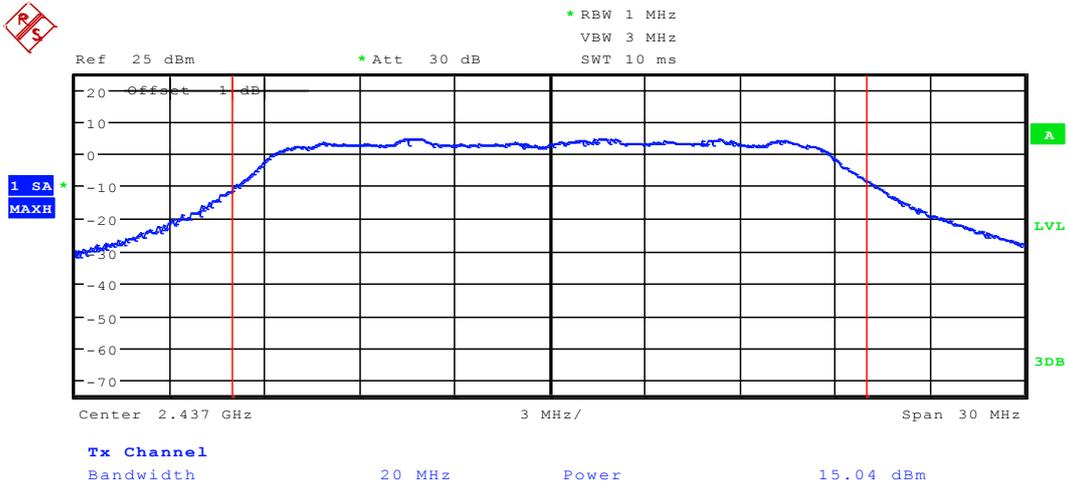
Chain 2





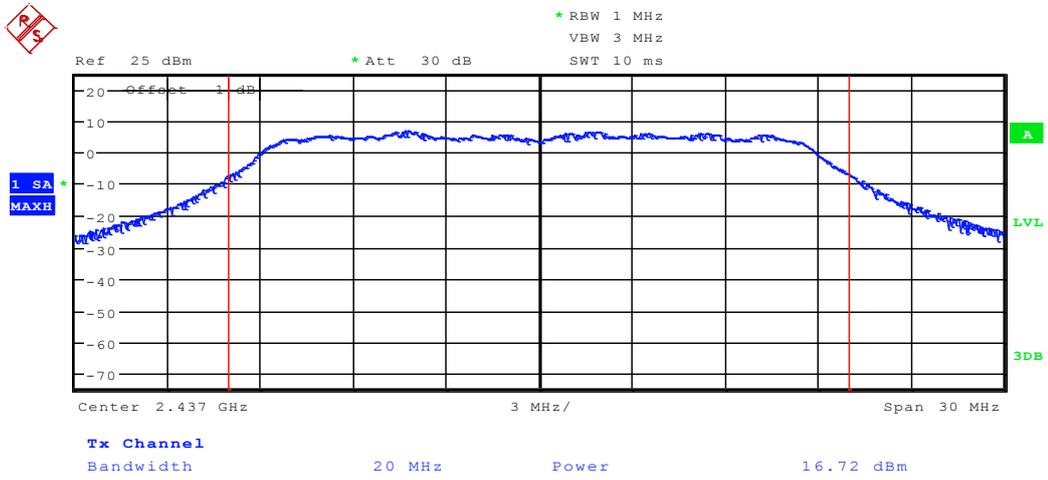
Channel 06(2437MHz)

Chain 1





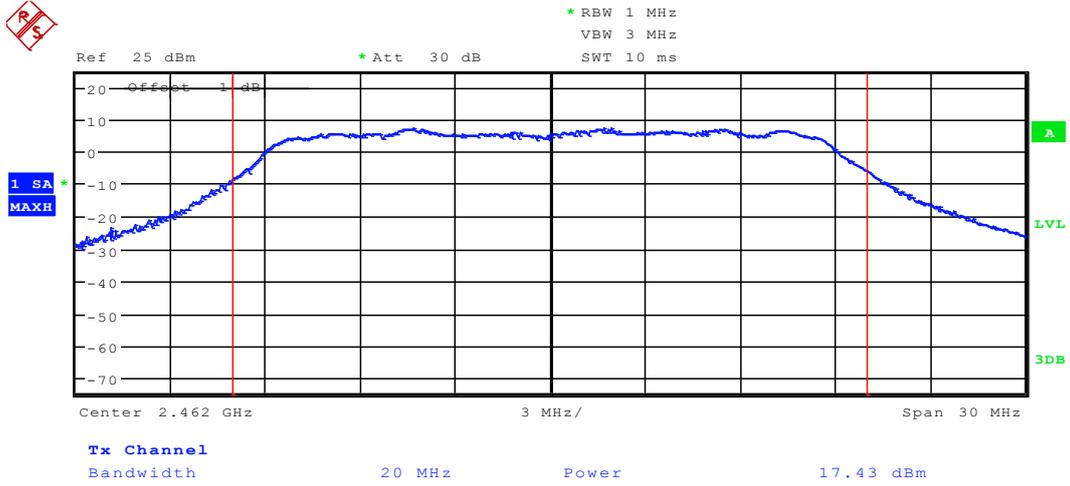
Chain 2





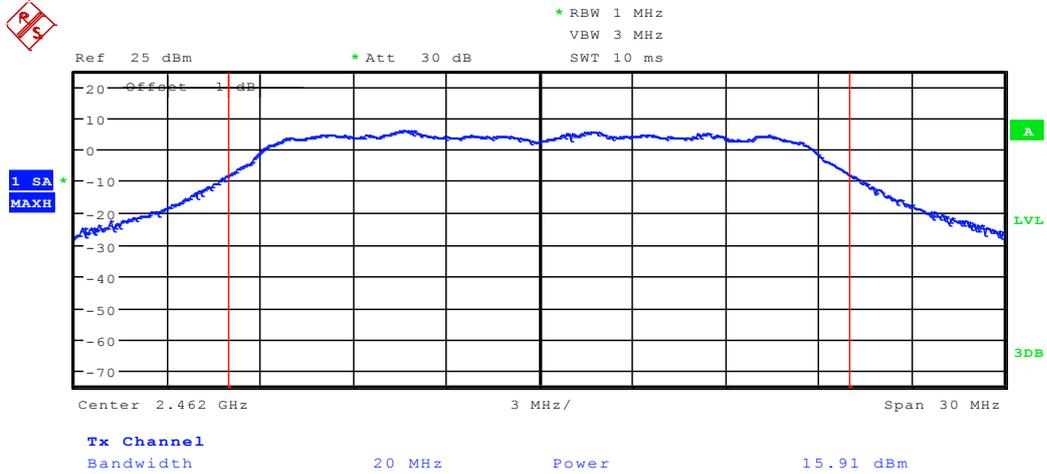
Channel 11(2462MHz)

Chain 1





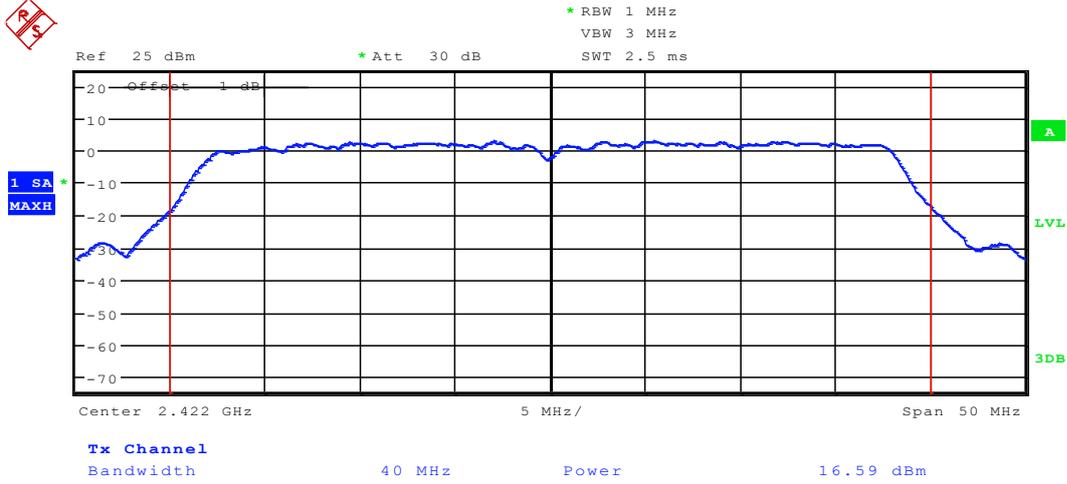
Chain 2





TM6 Chain 1&2 Channel 03(2422MHz)

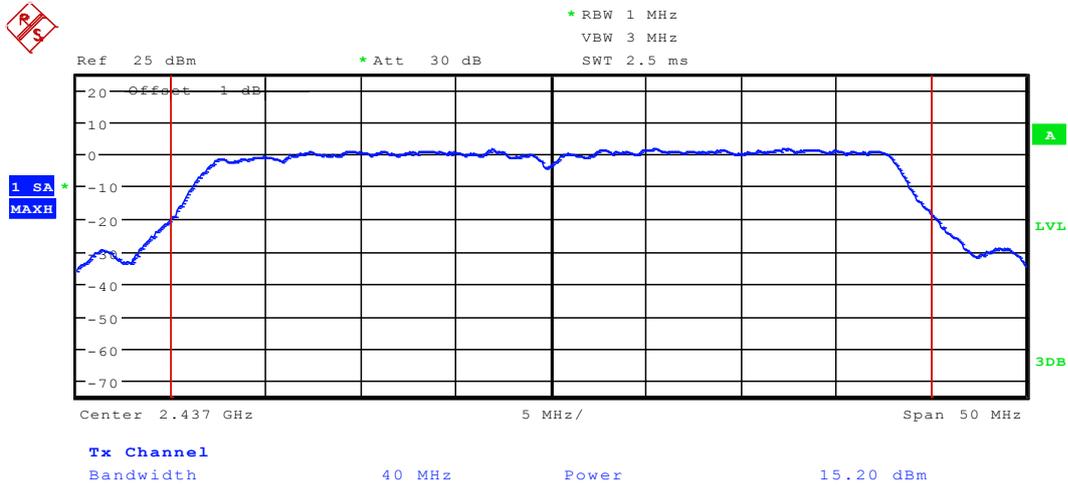
Chain 1





Channel 06(2437MHz)

Chain 1





FCC&IC Test Report of B683
FCC ID: QISB683-74V
IC ID: 6369A-B68374V

Security Level:
Public

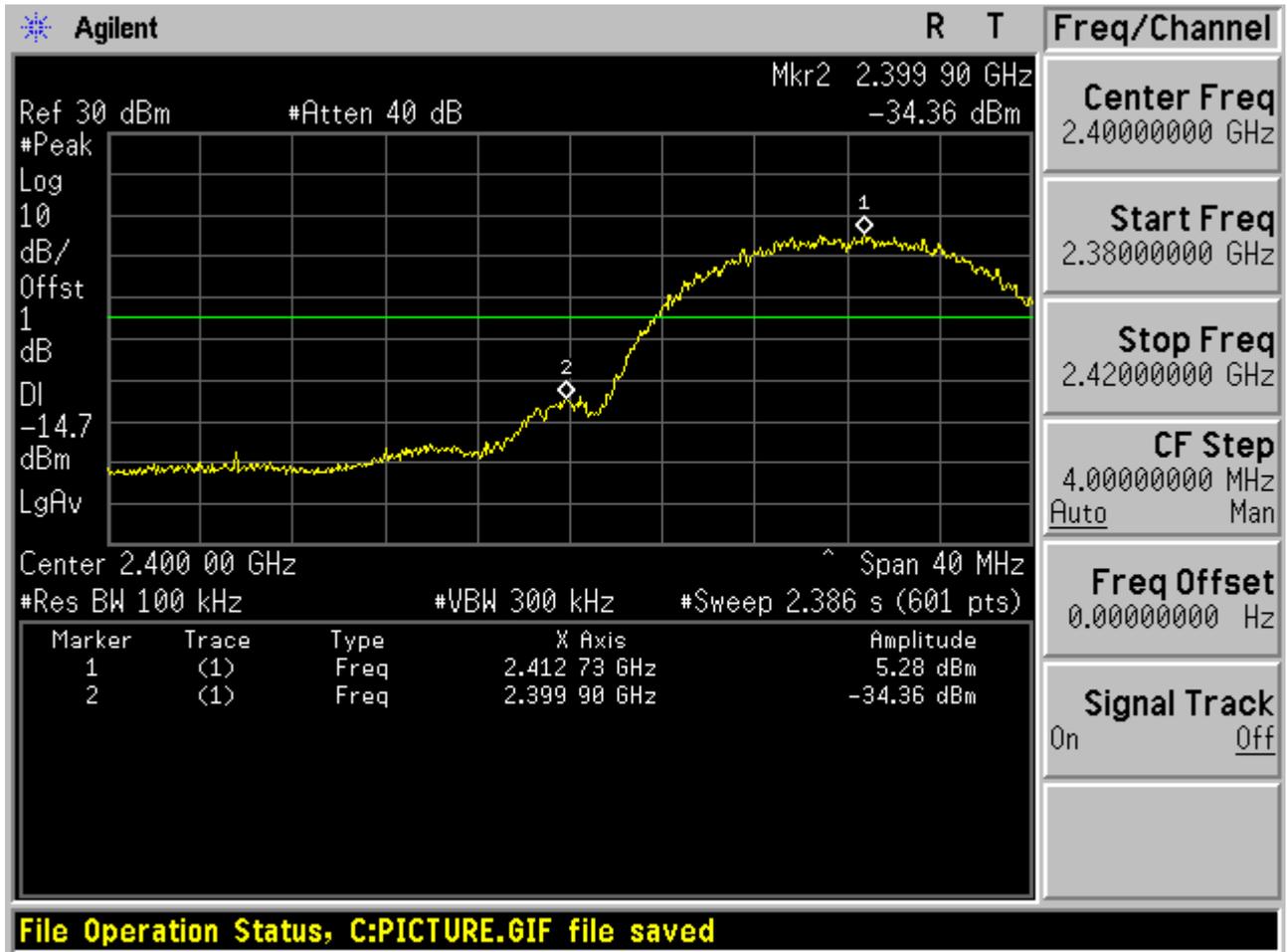
Appendix C

Band edge spurious emission

According to FCC Part 15.247 (d) &RSS-210

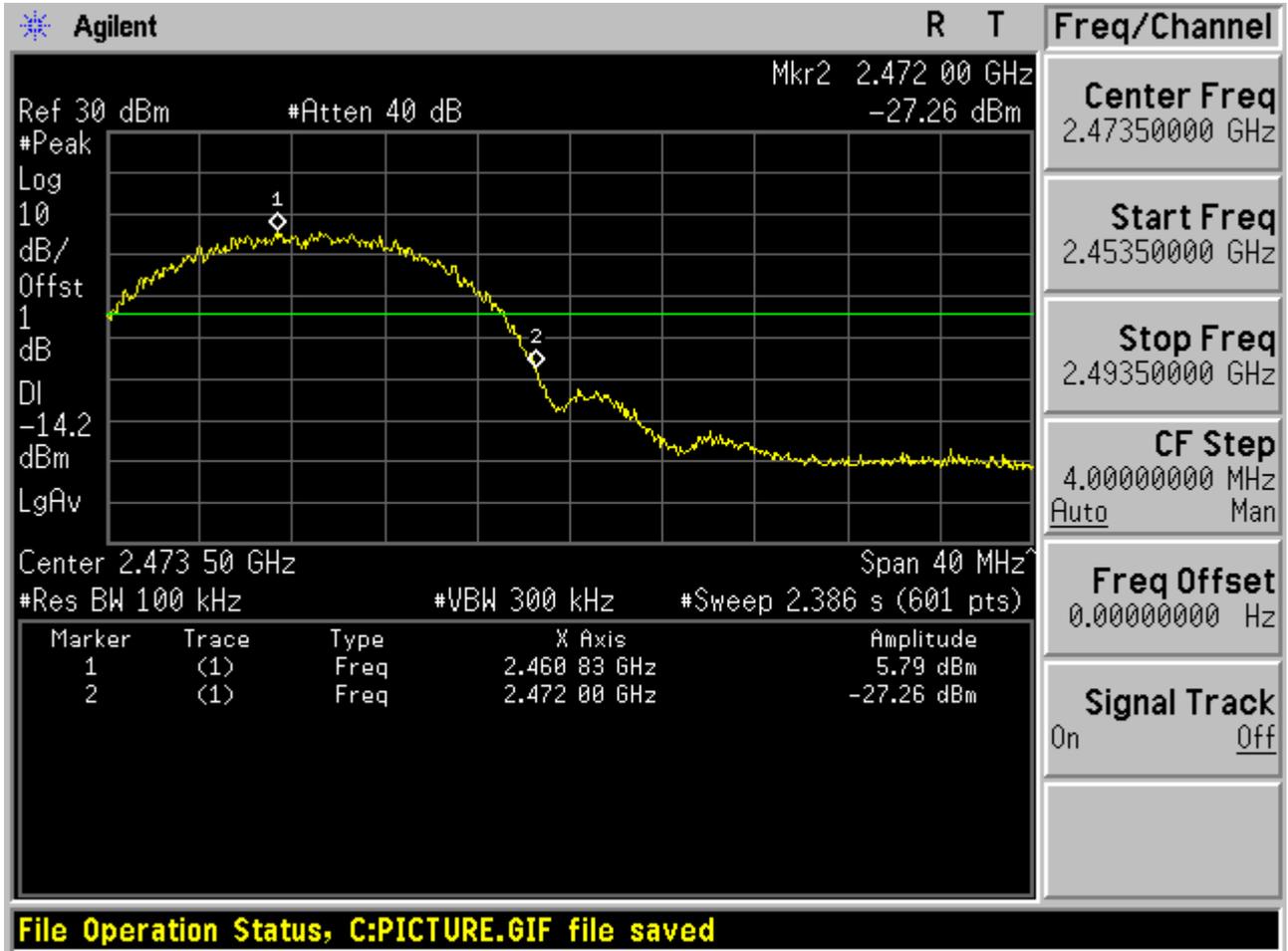


TM1 Chain 1 Low edge





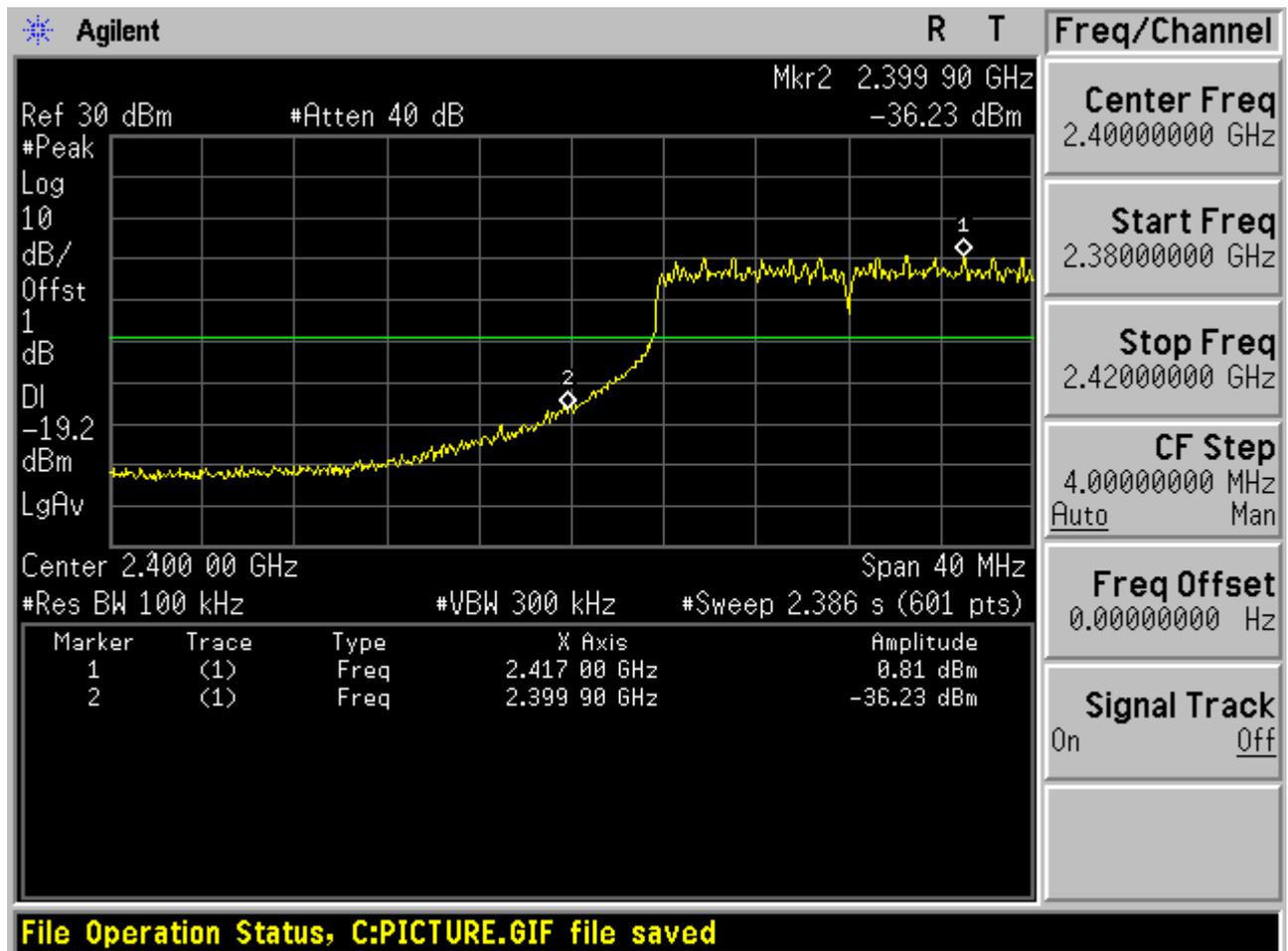
High edge





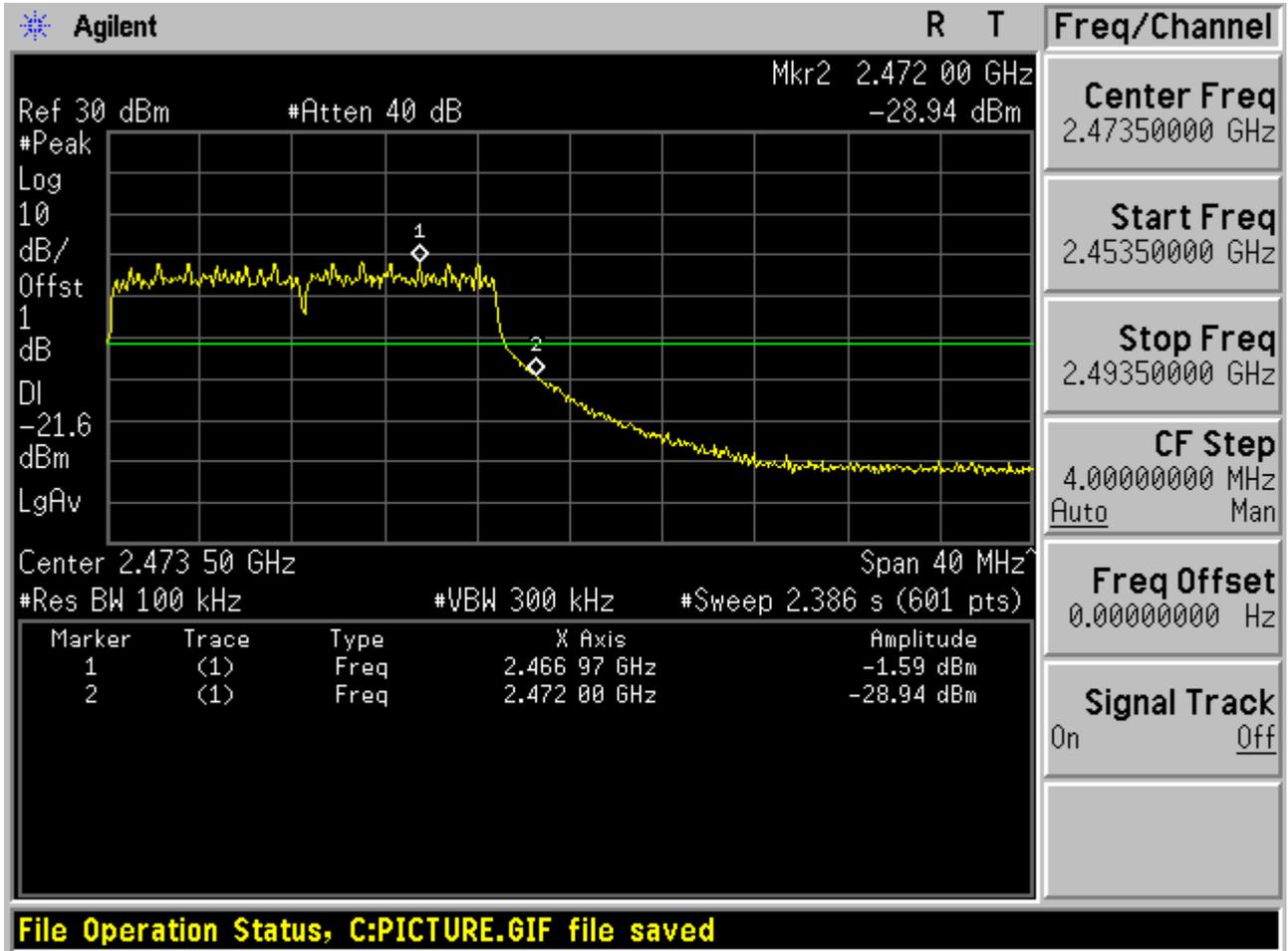
TM2 Chain 1

Low edge





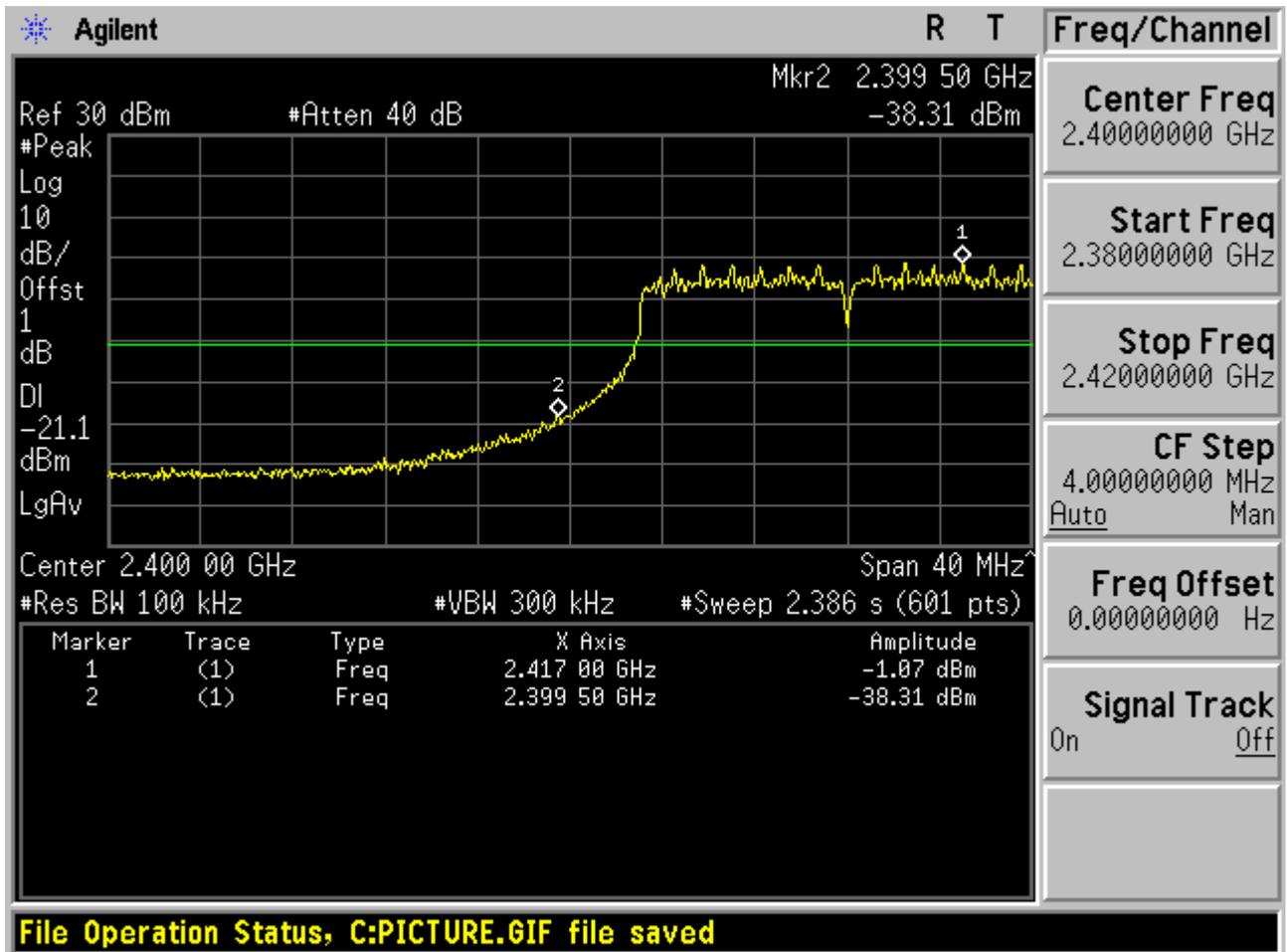
High edge





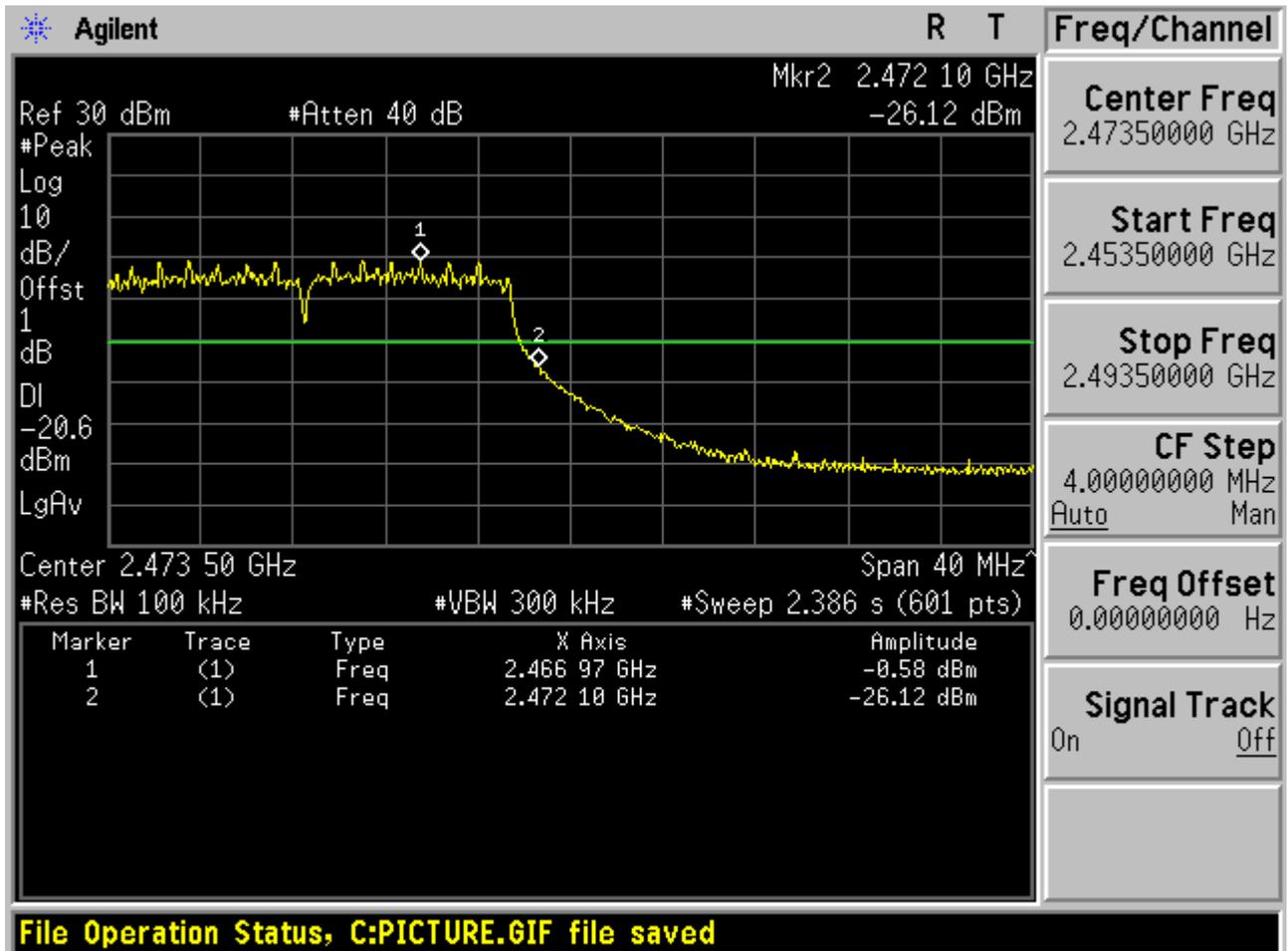
TM3 Chain 1

Low edge





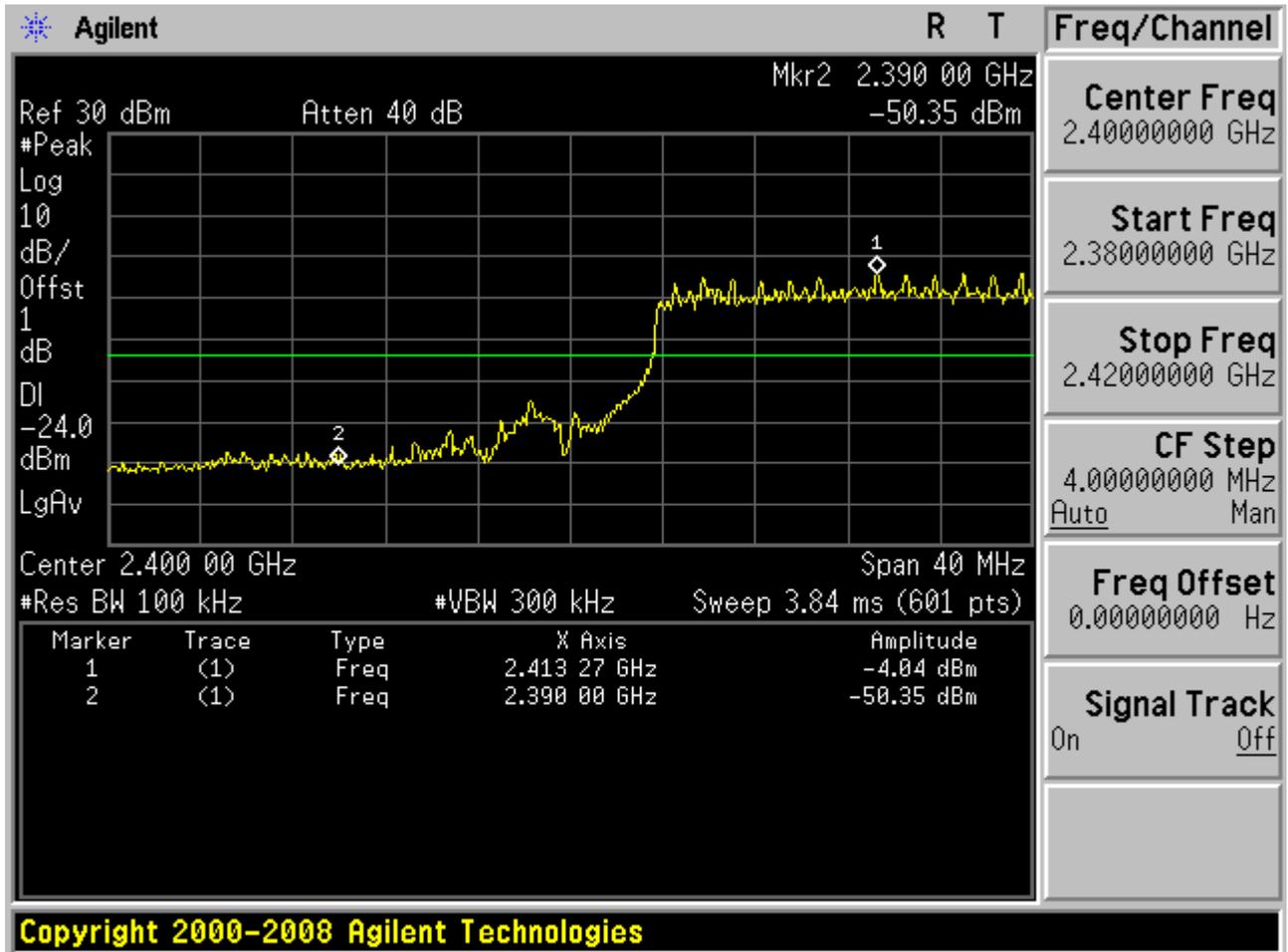
High edge





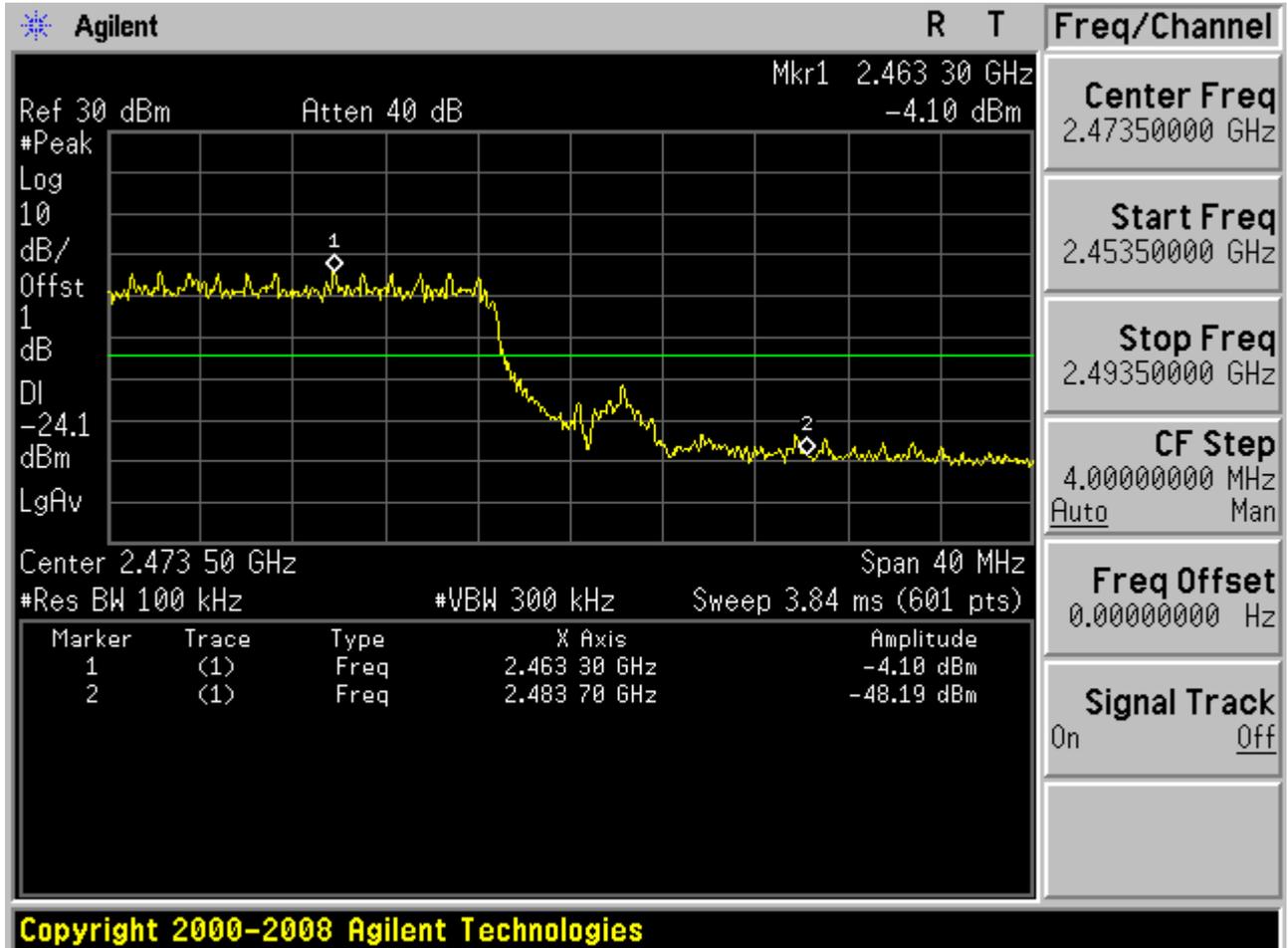
TM4 Chain 1

Low edge





High edge

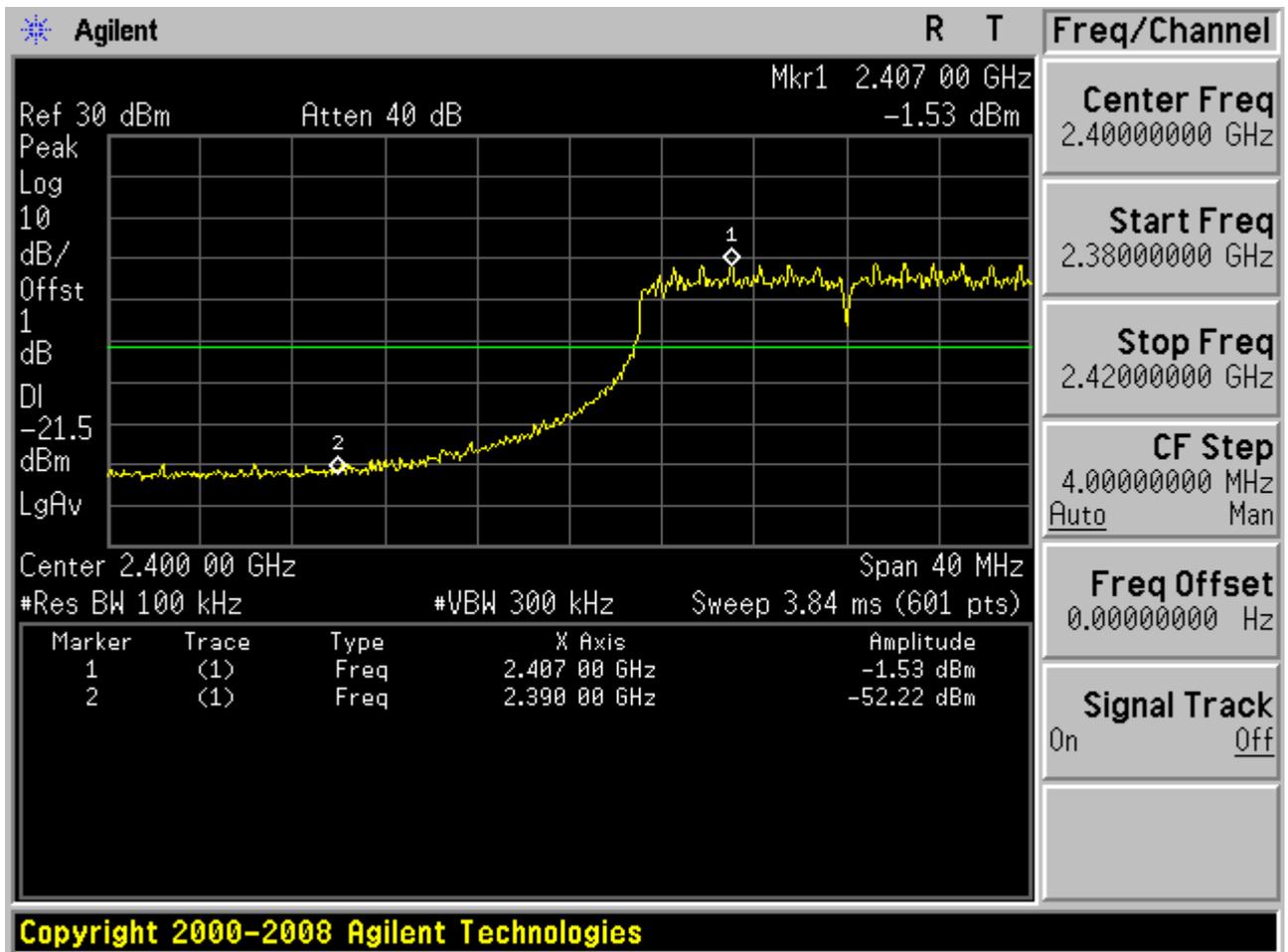




TM5 Chain 1&2

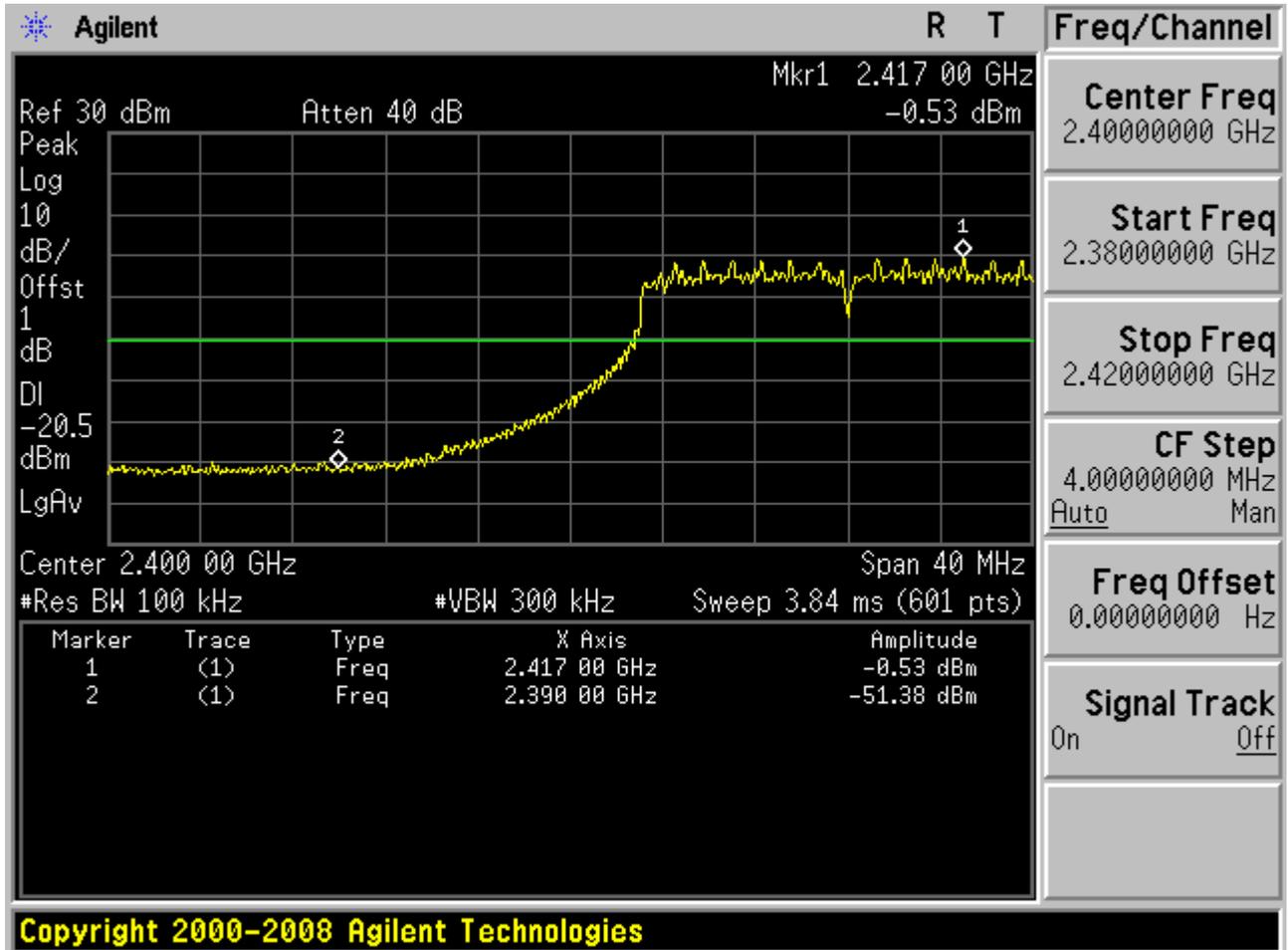
Low edge

Chain 1





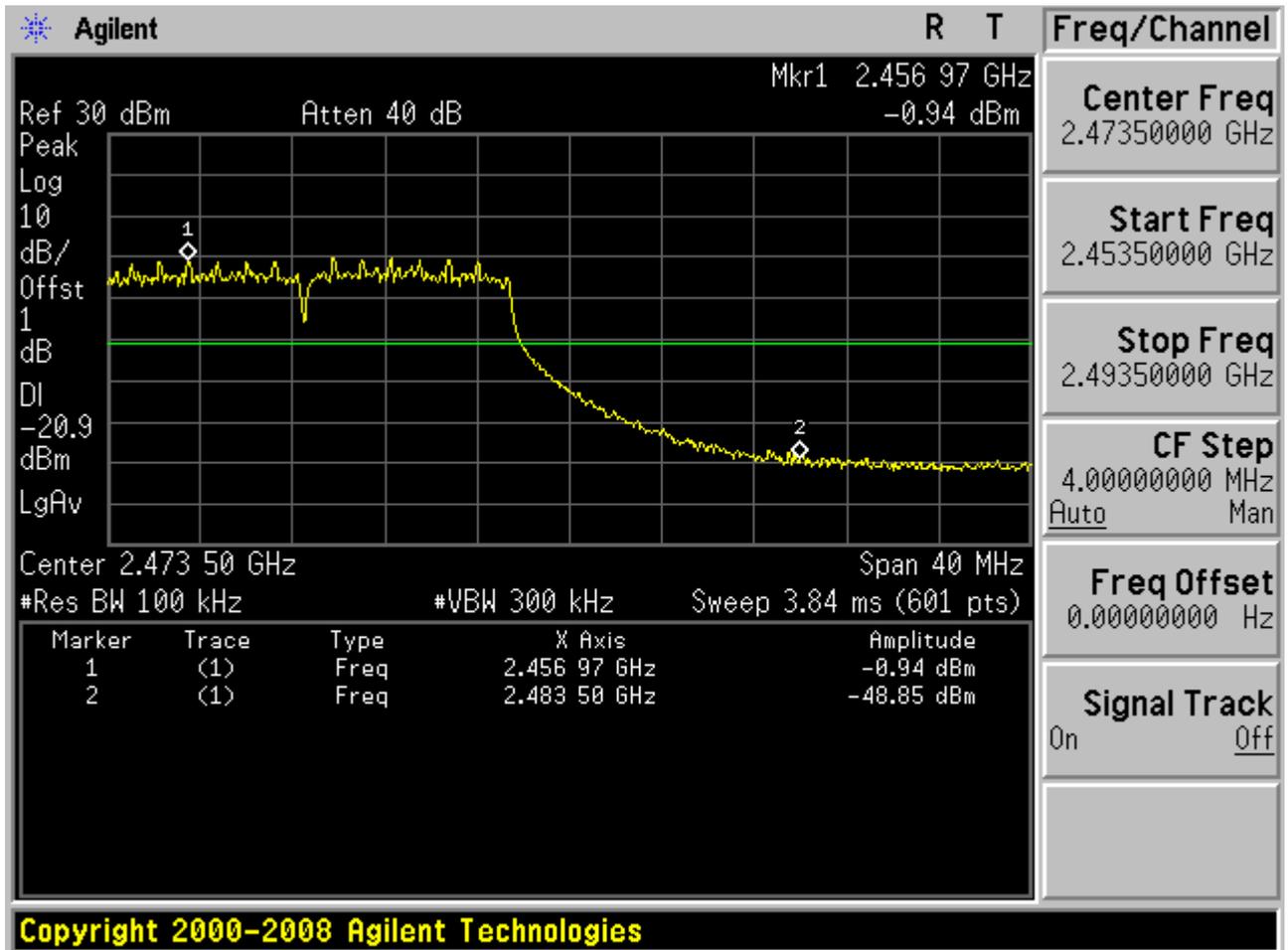
Chain 2





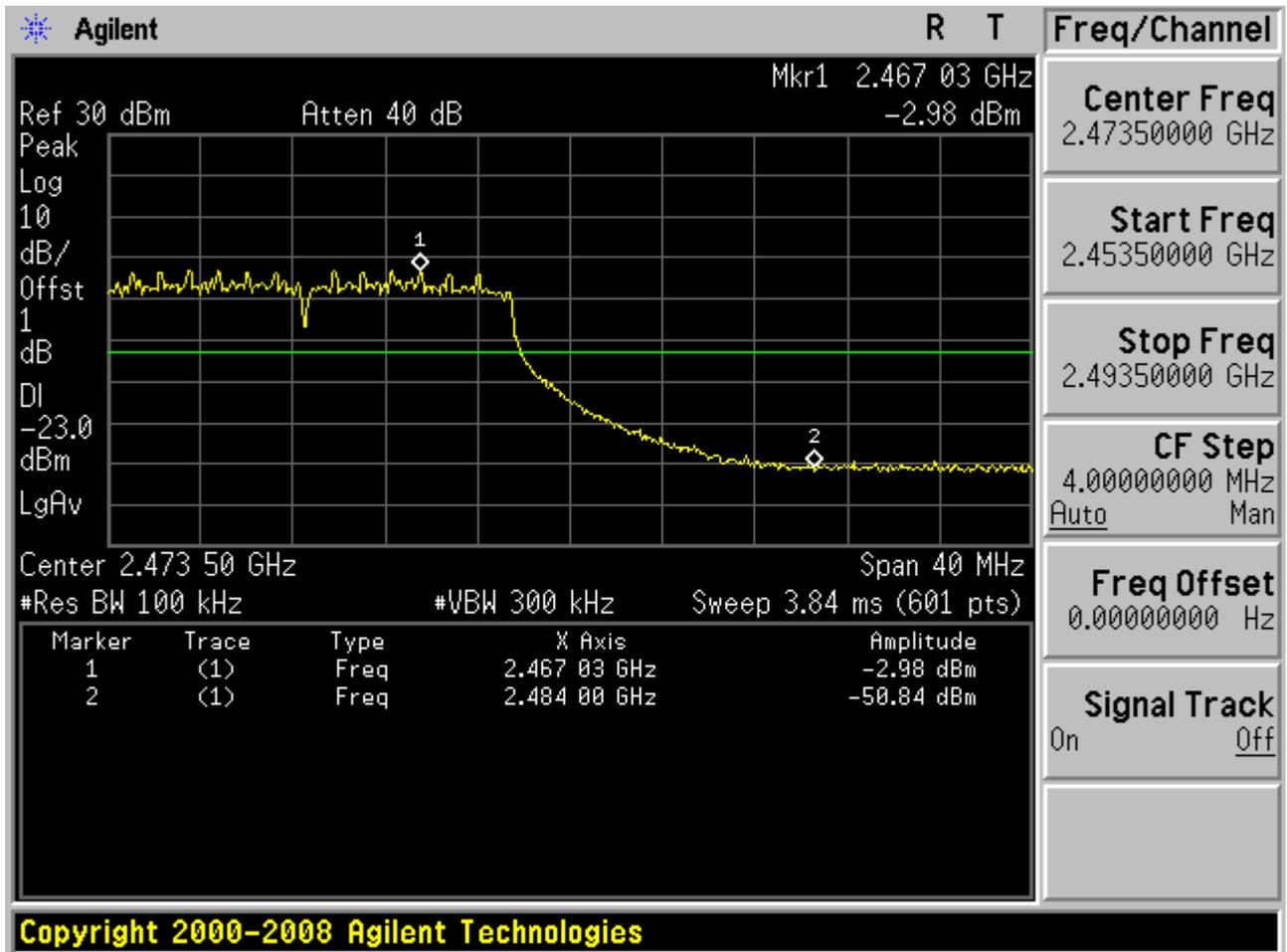
High edge

Chain 1





Chain 2

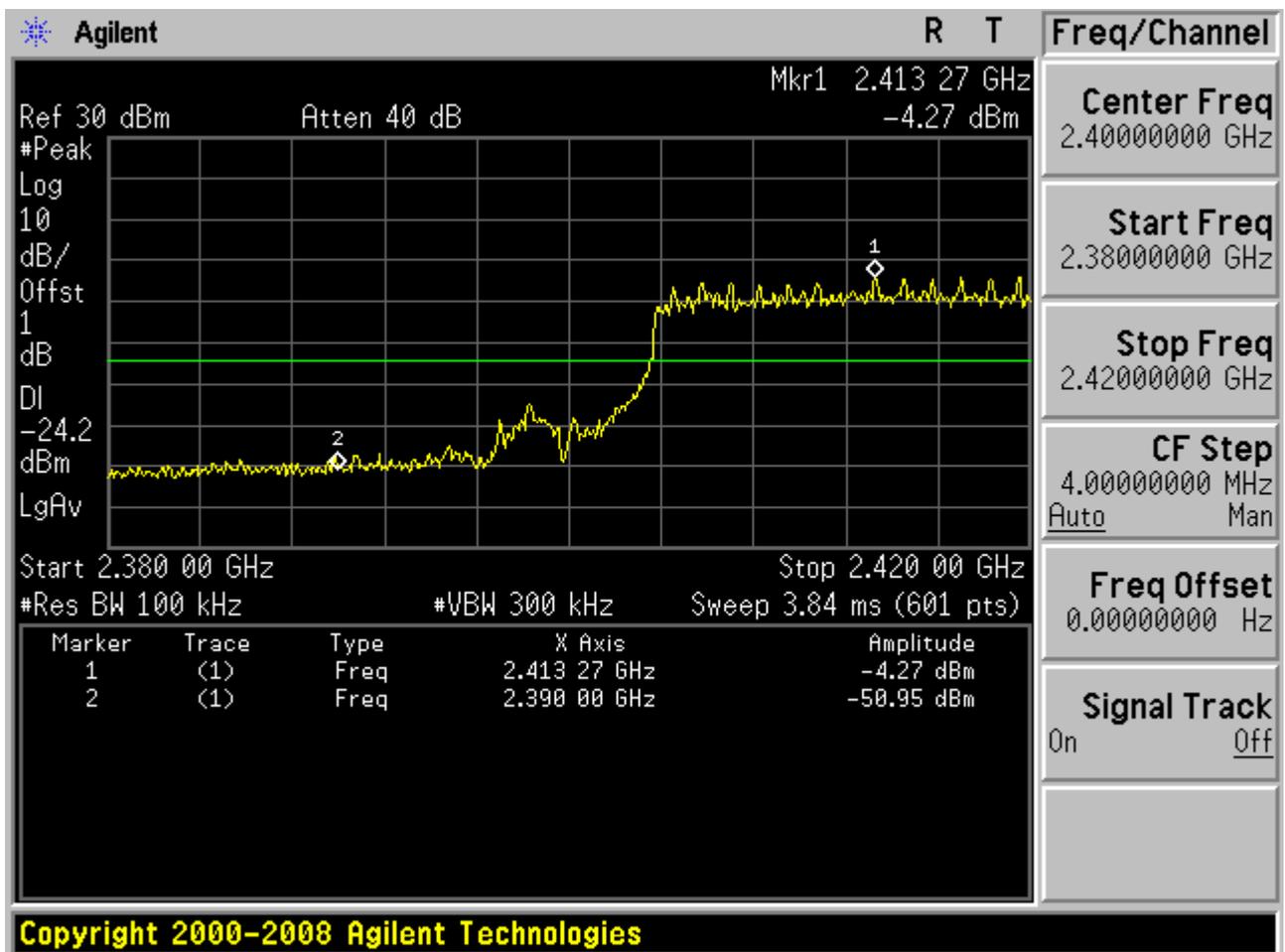




TM6 Chain 1&2

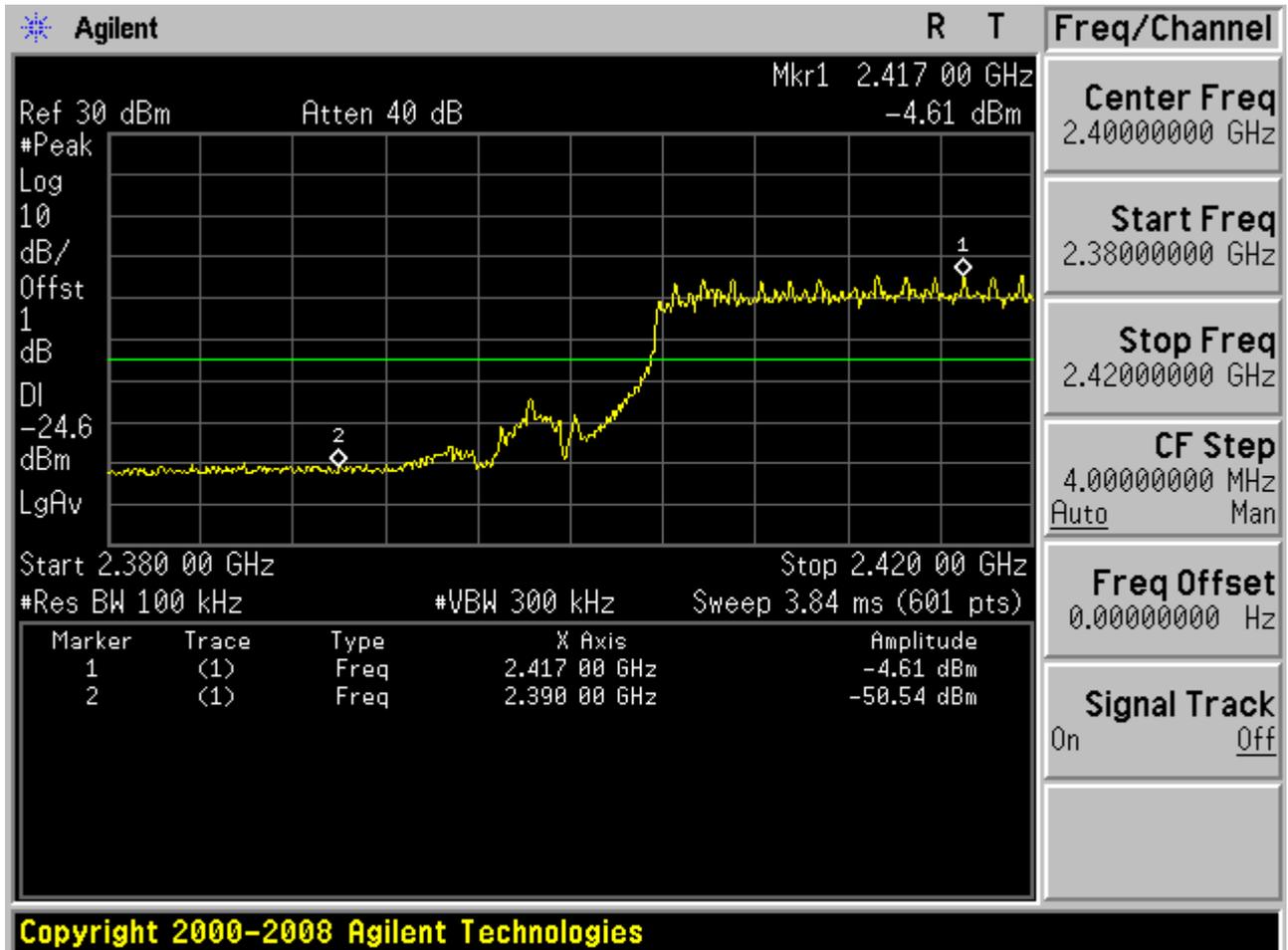
Low edge

Chain 1





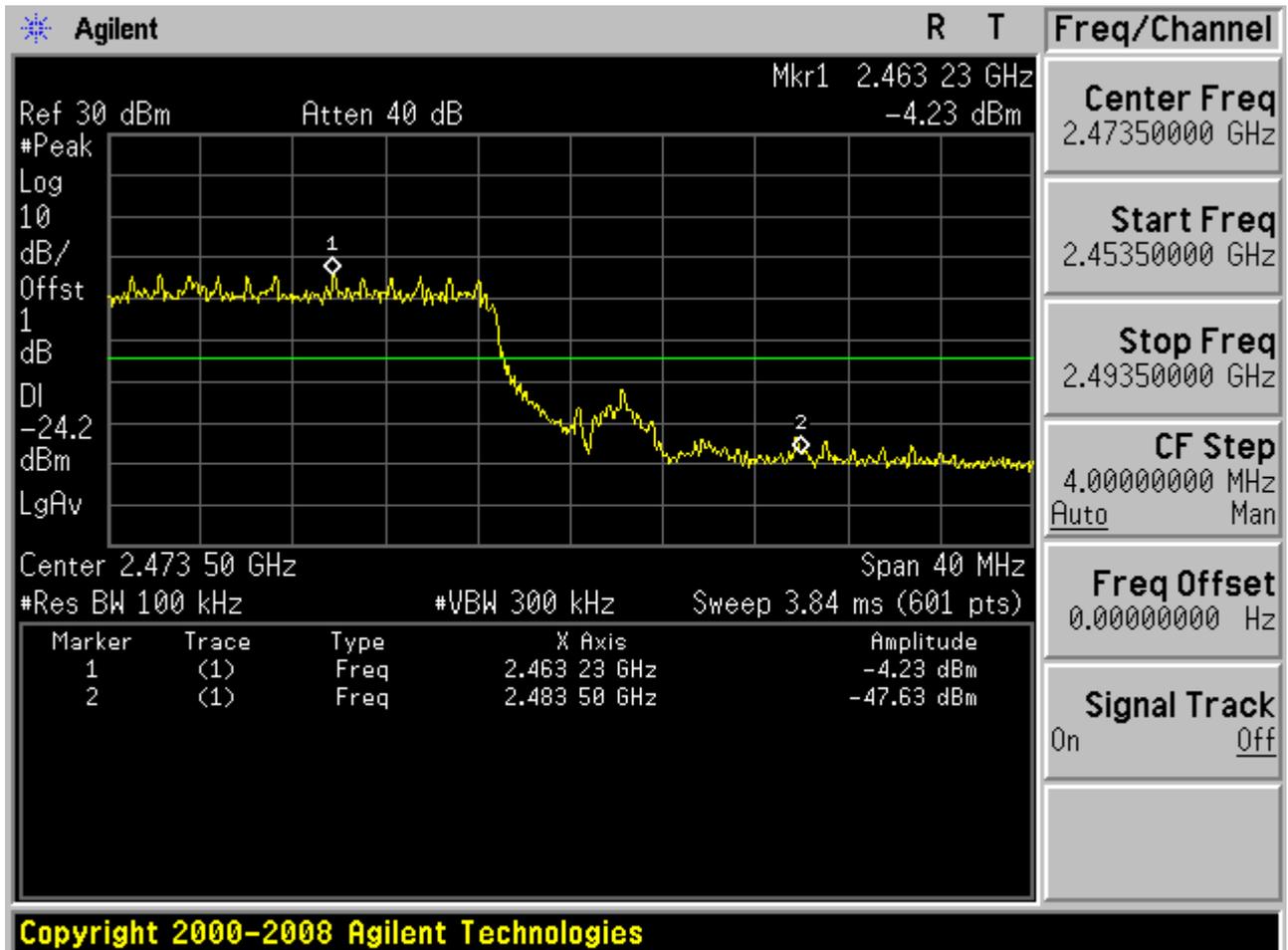
Chain 2





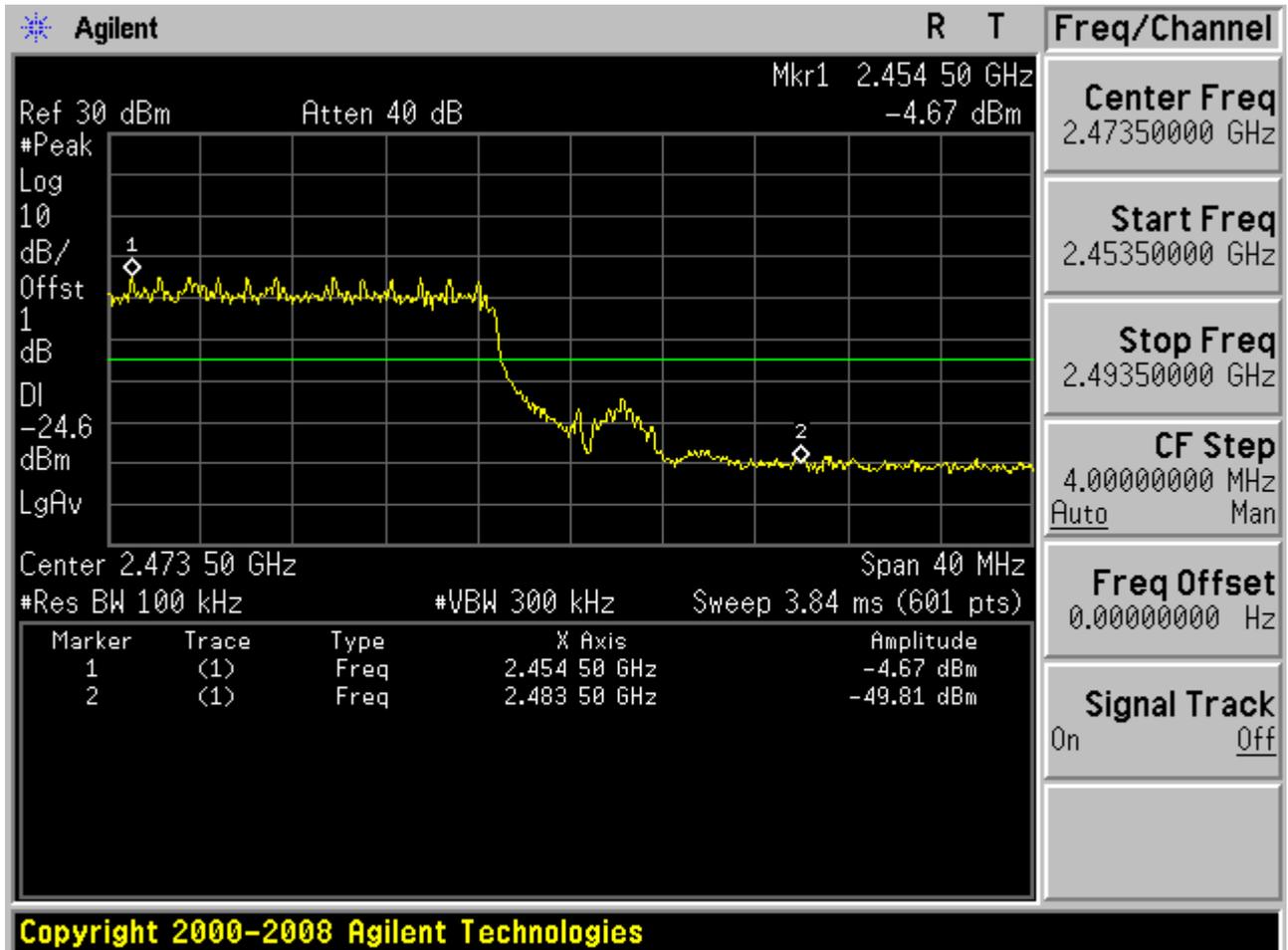
High edge

Chain 1





Chain 2

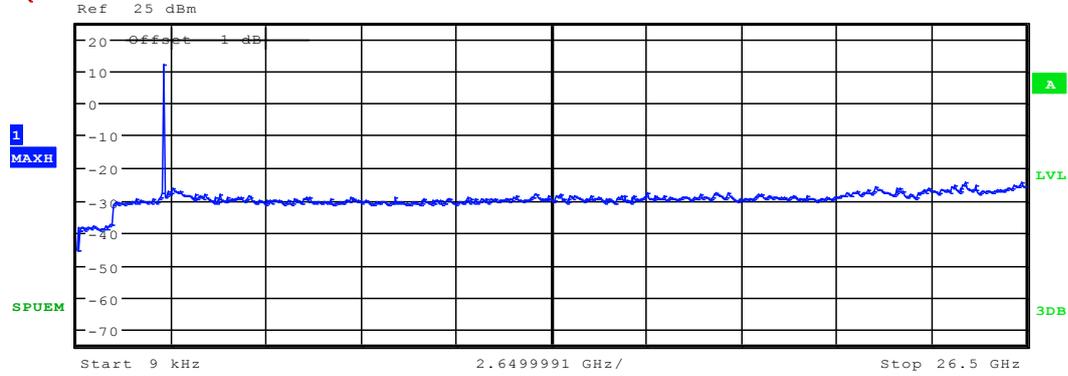




Appendix D

Conducted Spurious Emission according to FCC Part 15.247(d) &RSS-210

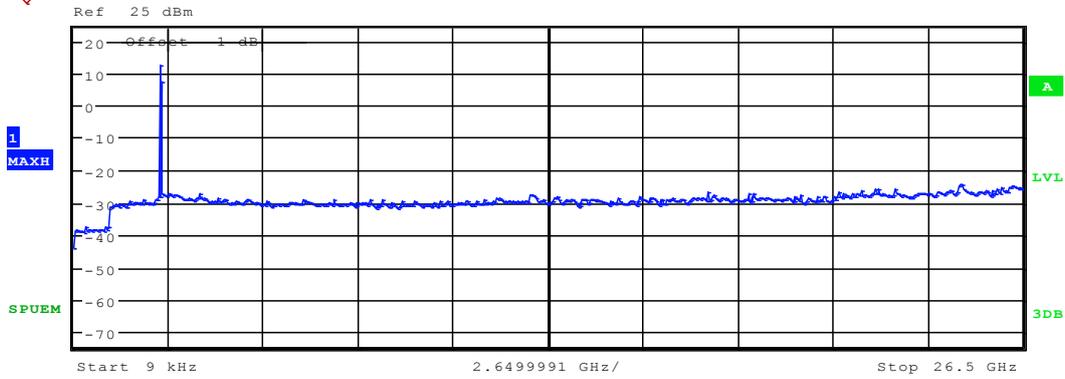
TM1 Chain 1 Channel 01



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
9.000 k	150.000 k	1.00 k	11.259615 k	-48.28	-200.00
150.000 k	30.000 M	10.00 k	197.760000 k	-45.81	-200.00
30.000 M	1.000 G	100.00 k	961.943667 M	-37.50	-200.00
1.000 G	26.500 G	1.00 M	2.411000 G	11.87	-200.00



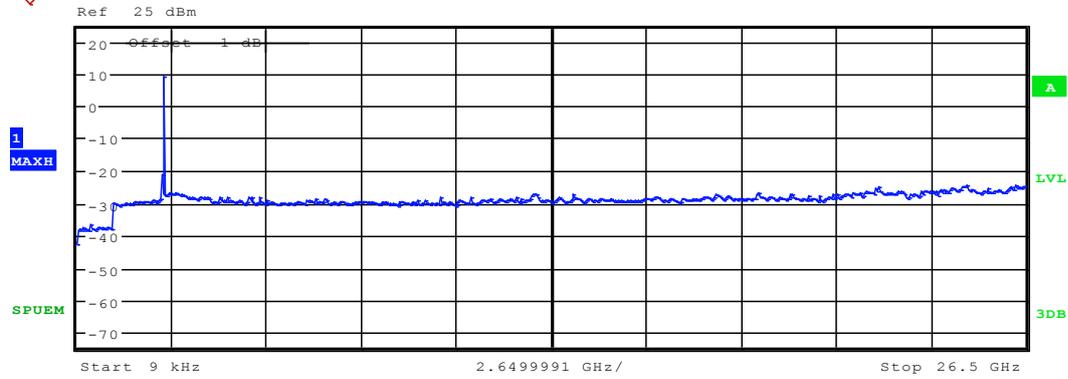
Channel 06



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
9.000 k	150.000 k	1.00 k	9.000000 k	-49.29	-200.00
150.000 k	30.000 M	10.00 k	161.940000 k	-44.12	-200.00
30.000 M	1.000 G	100.00 k	335.032667 M	-37.80	-200.00
1.000 G	26.500 G	1.00 M	2.435650 G	12.75	-200.00

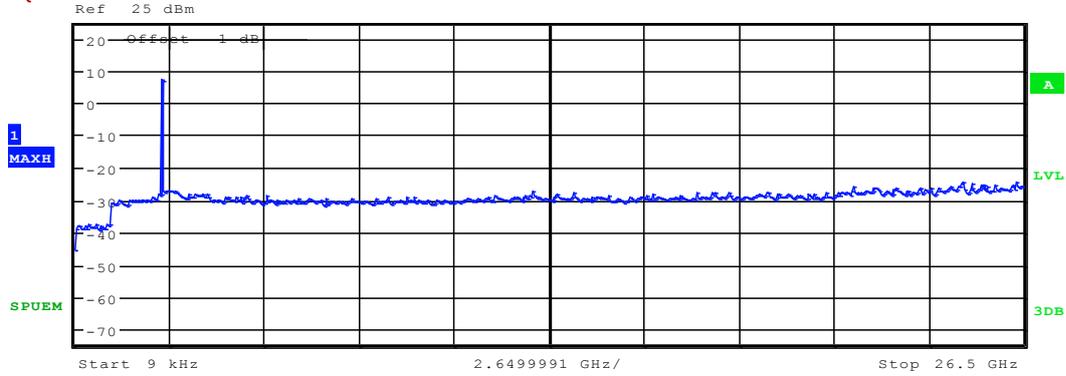
TM2 Chain 1

Channel 01



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
9.000 k	150.000 k	1.00 k	9.000000 k	-48.47	-200.00
150.000 k	30.000 M	10.00 k	197.760000 k	-42.85	-200.00
30.000 M	1.000 G	100.00 k	373.638667 M	-36.53	-200.00
1.000 G	26.500 G	1.00 M	2.407600 G	9.20	-200.00

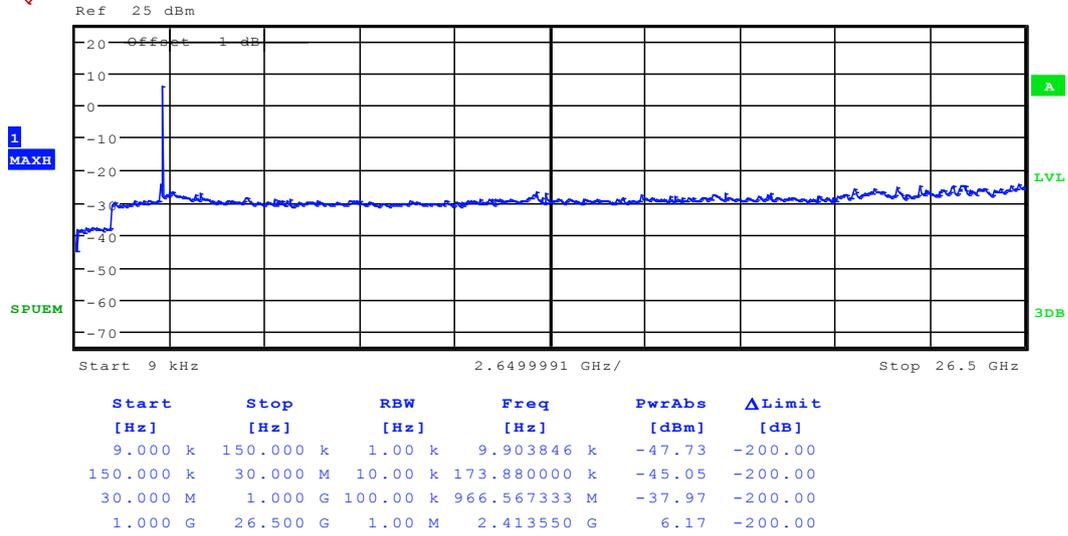
Channel 06



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
9.000 k	150.000 k	1.00 k	9.451923 k	-49.62	-200.00
150.000 k	30.000 M	10.00 k	167.910000 k	-45.66	-200.00
30.000 M	1.000 G	100.00 k	967.052333 M	-37.45	-200.00
1.000 G	26.500 G	1.00 M	2.439900 G	7.61	-200.00

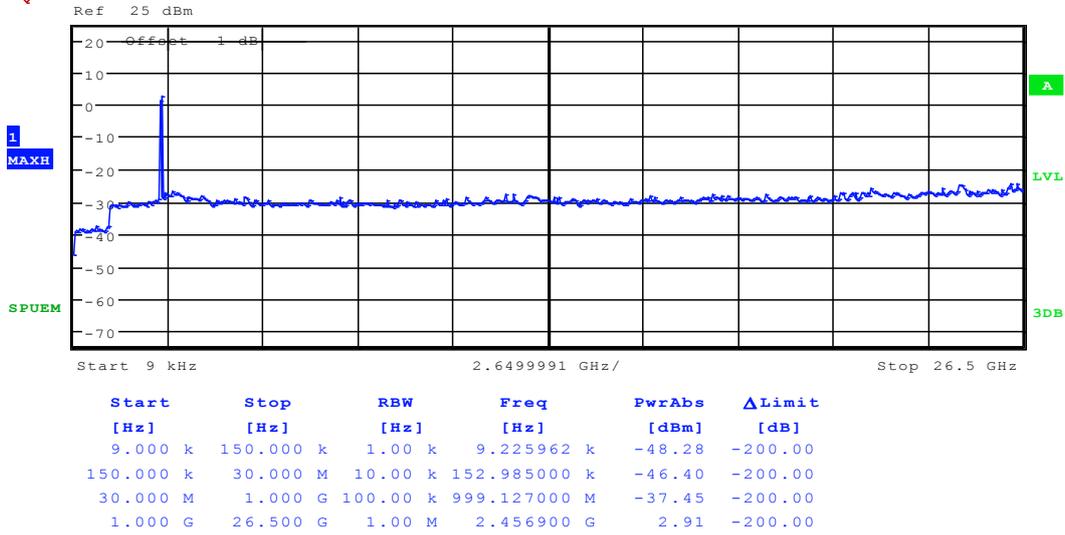


TM3 Chain 1 Channel 01





Channel 09

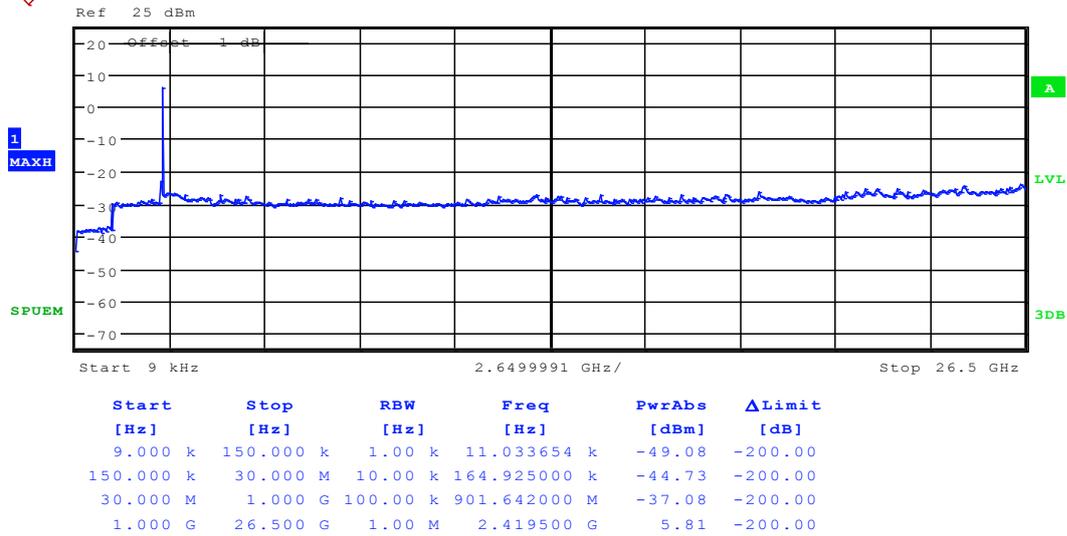




TM5 Chain 1&2

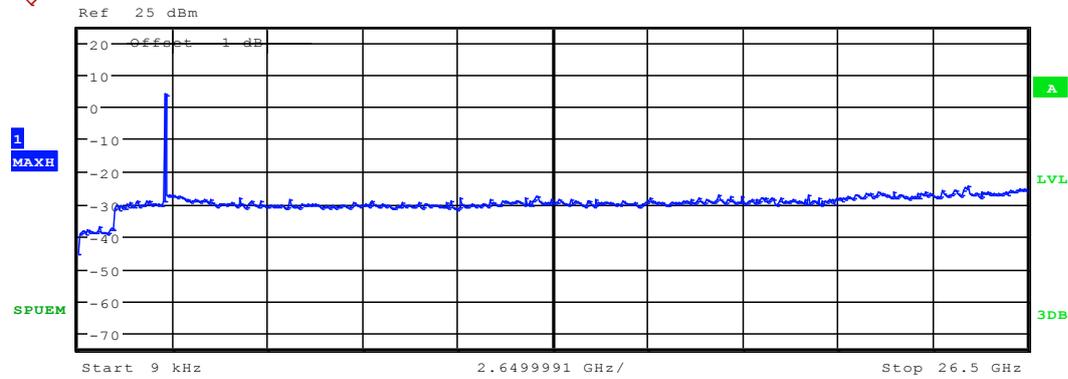
Channel 01

Chain 1



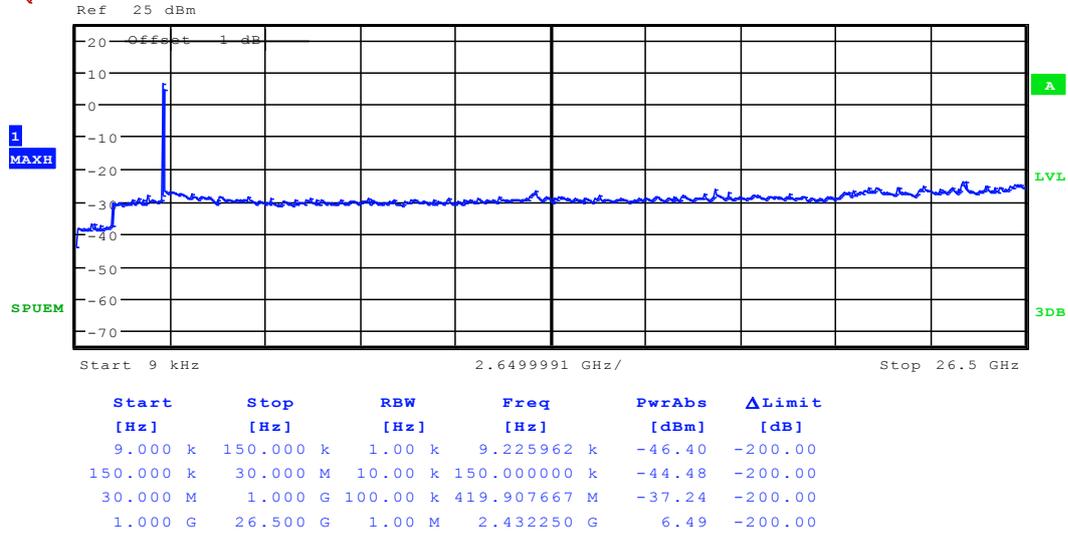
Channel 06

Chain 1



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
9.000 k	150.000 k	1.00 k	9.903846 k	-49.08	-200.00
150.000 k	30.000 M	10.00 k	197.760000 k	-45.46	-200.00
30.000 M	1.000 G	100.00 k	578.923000 M	-37.43	-200.00
1.000 G	26.500 G	1.00 M	2.435650 G	4.31	-200.00

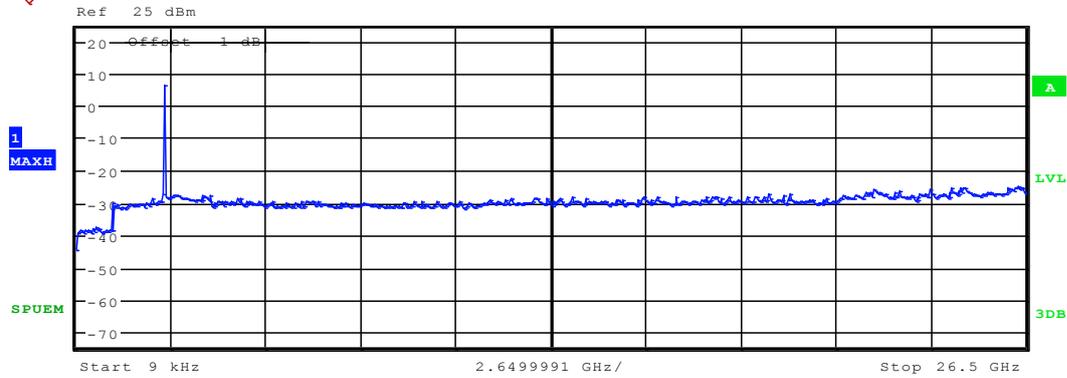
Chain 2





Channel 11

Chain 1



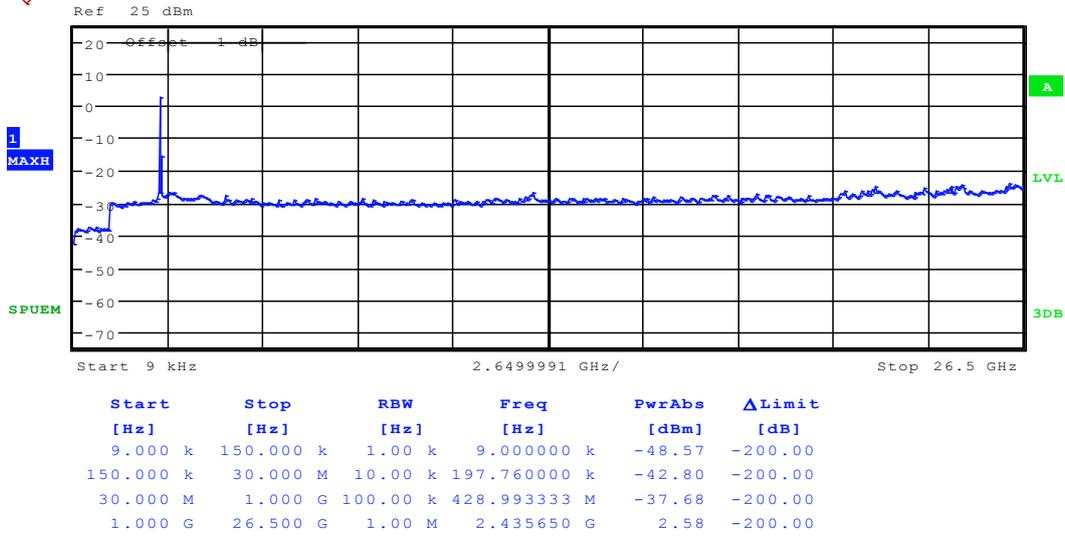
Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
9.000 k	150.000 k	1.00 k	9.000000 k	-49.62	-200.00
150.000 k	30.000 M	10.00 k	185.820000 k	-44.60	-200.00
30.000 M	1.000 G	100.00 k	538.538667 M	-37.59	-200.00
1.000 G	26.500 G	1.00 M	2.465400 G	6.30	-200.00



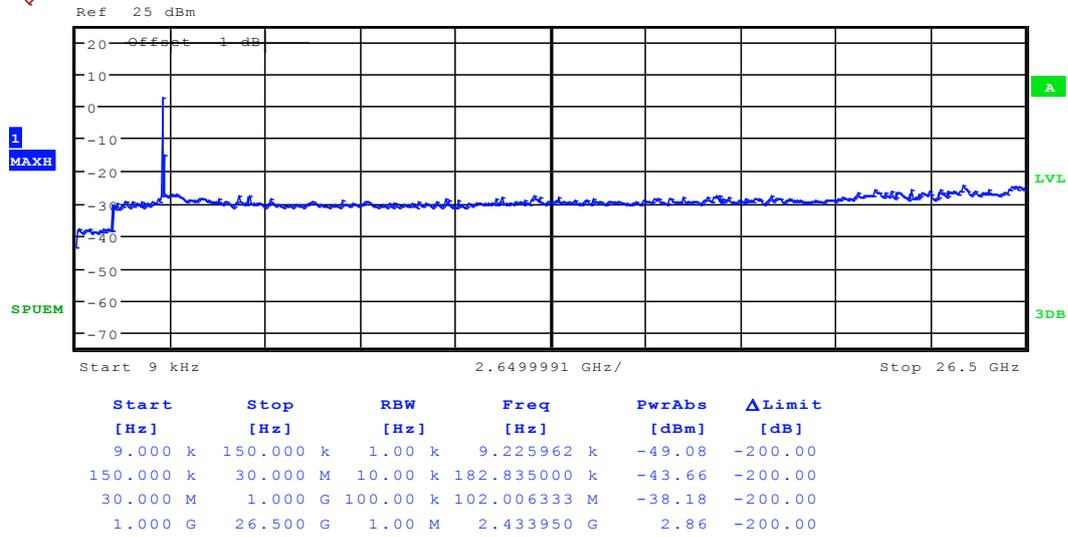
TM6 Chain 1&2

Channel 03

Chain 1



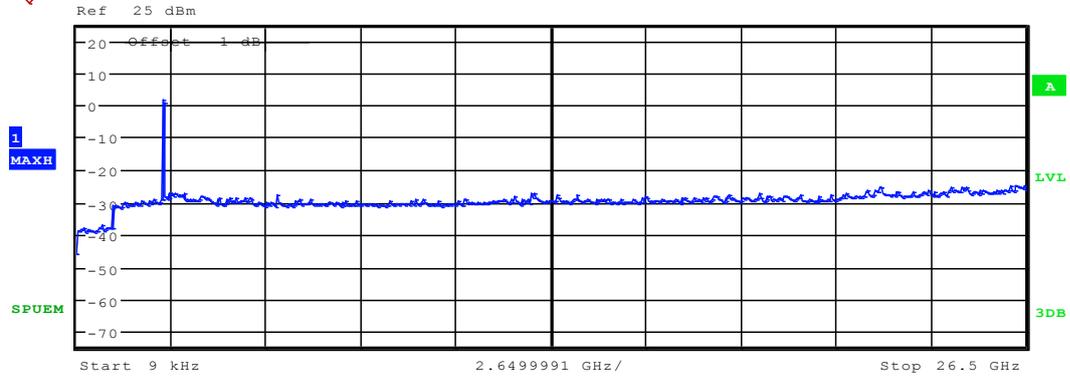
Chain 2





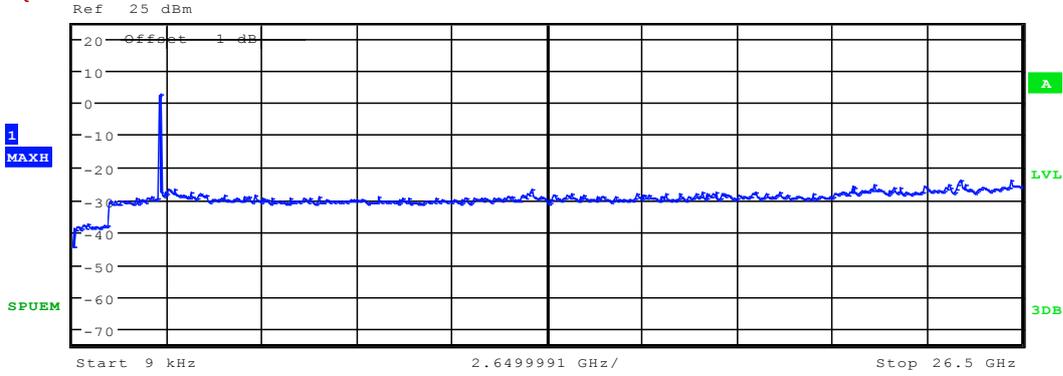
Channel 06

Chain 1



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
9.000 k	150.000 k	1.00 k	9.000000 k	-49.29	-200.00
150.000 k	30.000 M	10.00 k	642.525000 k	-46.02	-200.00
30.000 M	1.000 G	100.00 k	715.208000 M	-37.44	-200.00
1.000 G	26.500 G	1.00 M	2.439900 G	1.72	-200.00

Chain 2

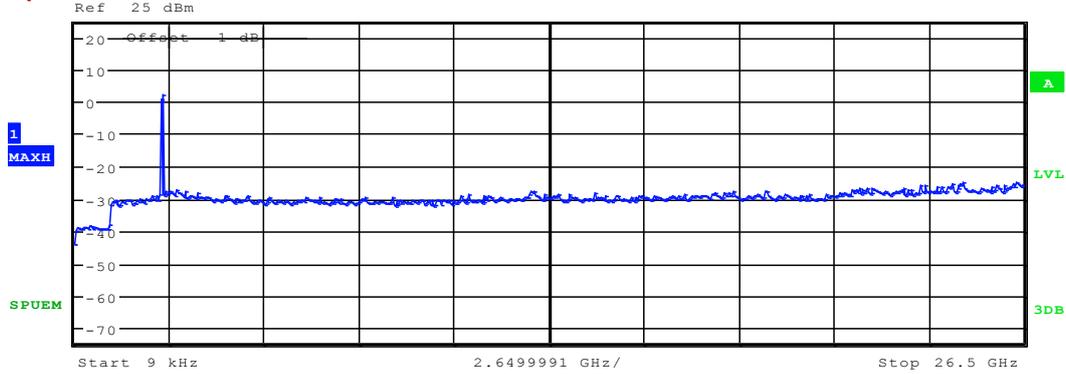


Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
9.000 k	150.000 k	1.00 k	10.581731 k	-47.73	-200.00
150.000 k	30.000 M	10.00 k	197.760000 k	-44.54	-200.00
30.000 M	1.000 G	100.00 k	438.370000 M	-37.50	-200.00
1.000 G	26.500 G	1.00 M	2.445850 G	2.74	-200.00



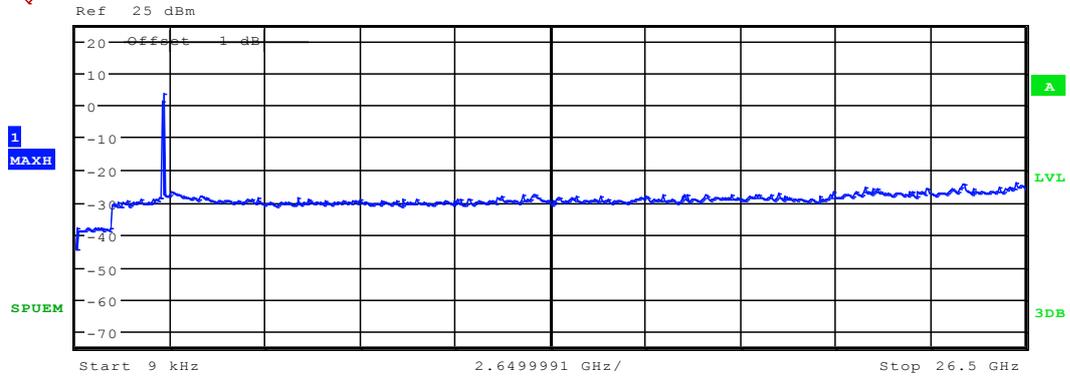
Channel 09

Chain 1



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
9.000 k	150.000 k	1.00 k	9.000000 k	-50.94	-200.00
150.000 k	30.000 M	10.00 k	182.835000 k	-44.12	-200.00
30.000 M	1.000 G	100.00 k	982.798667 M	-38.19	-200.00
1.000 G	26.500 G	1.00 M	2.456900 G	2.45	-200.00

Chain 2



Start [Hz]	Stop [Hz]	RBW [Hz]	Freq [Hz]	PwrAbs [dBm]	ΔLimit [dB]
9.000 k	150.000 k	1.00 k	15.552885 k	-49.08	-200.00
150.000 k	30.000 M	10.00 k	158.955000 k	-44.92	-200.00
30.000 M	1.000 G	100.00 k	345.799667 M	-38.12	-200.00
1.000 G	26.500 G	1.00 M	2.445000 G	3.41	-200.00



FCC&IC Test Report of B683
FCC ID: QISB683-74V
IC ID: 6369A-B68374V

Security Level:
Public

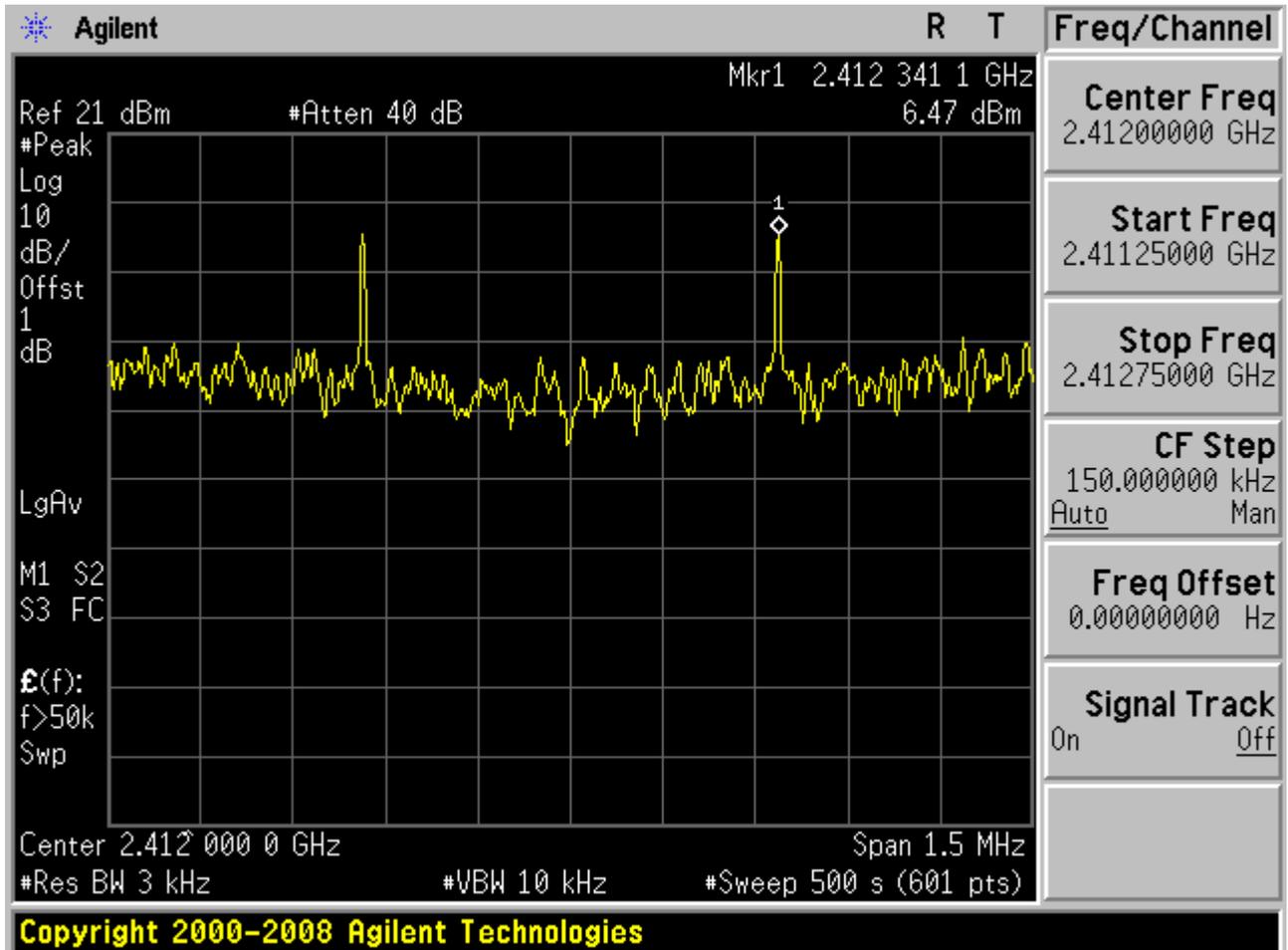
Appendix E

Power spectral density

According to FCC Part 15.247 (e) &RSS-210

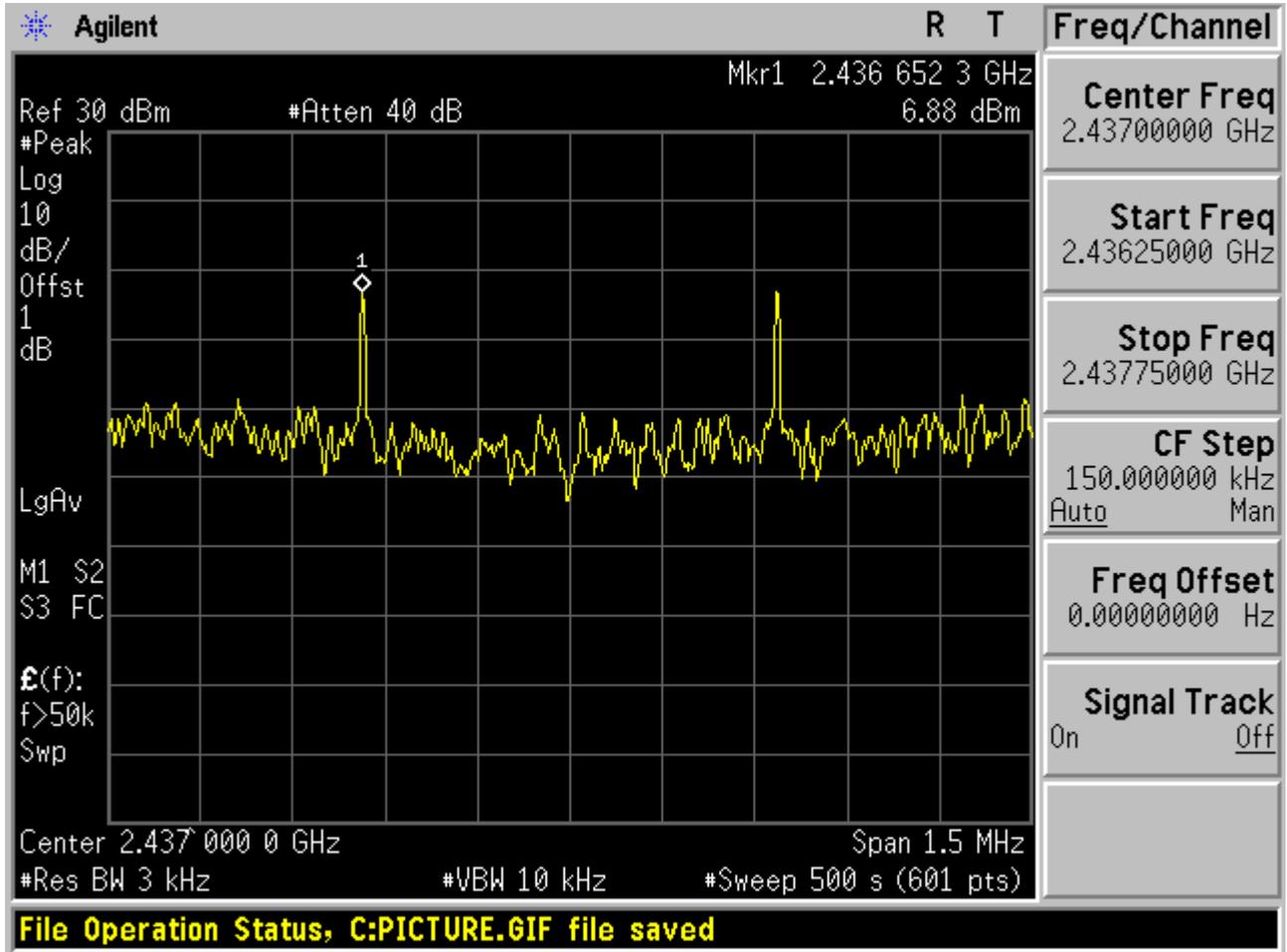


TM1 Chain 1 Channel 01



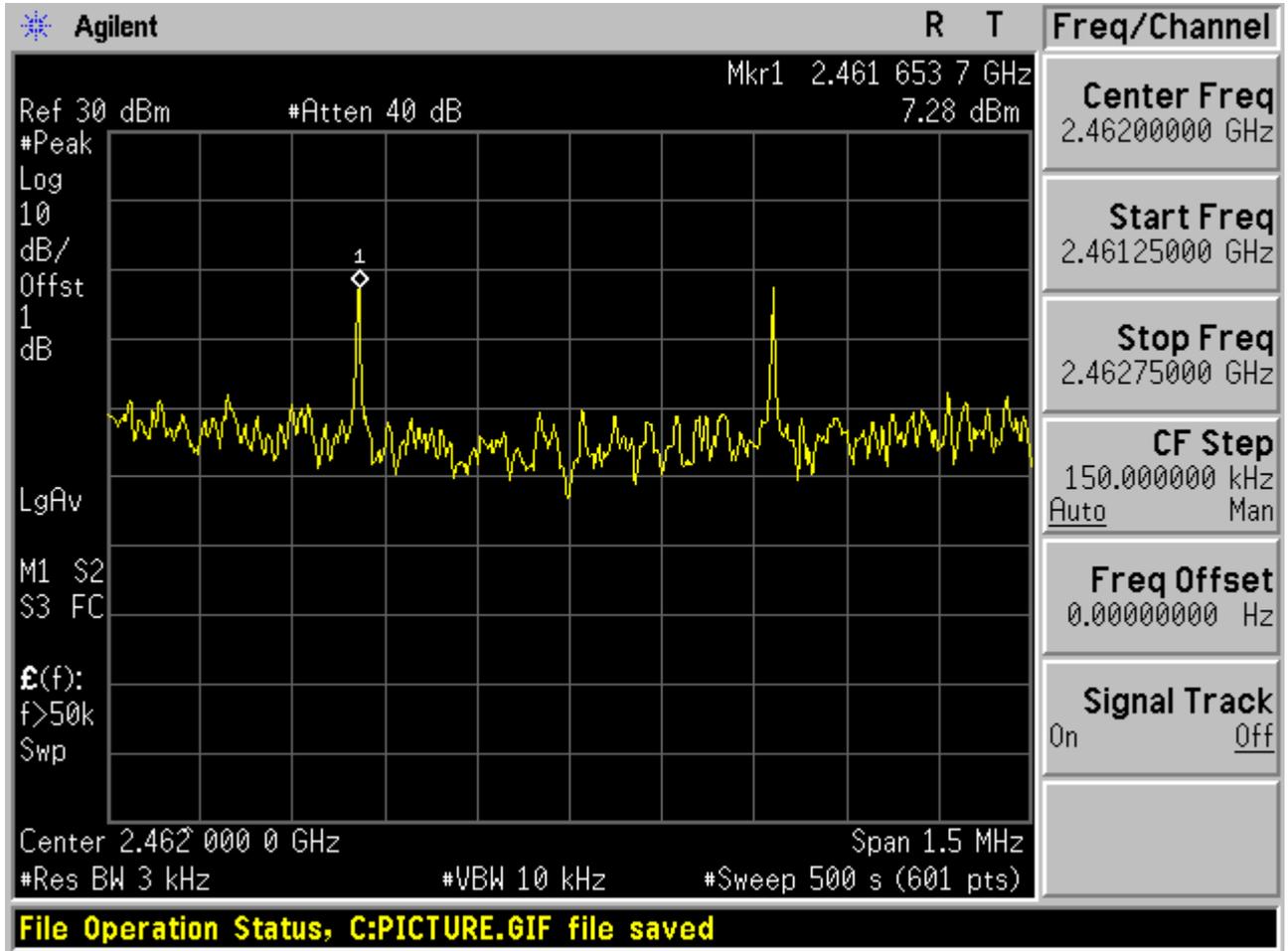


Channel 06



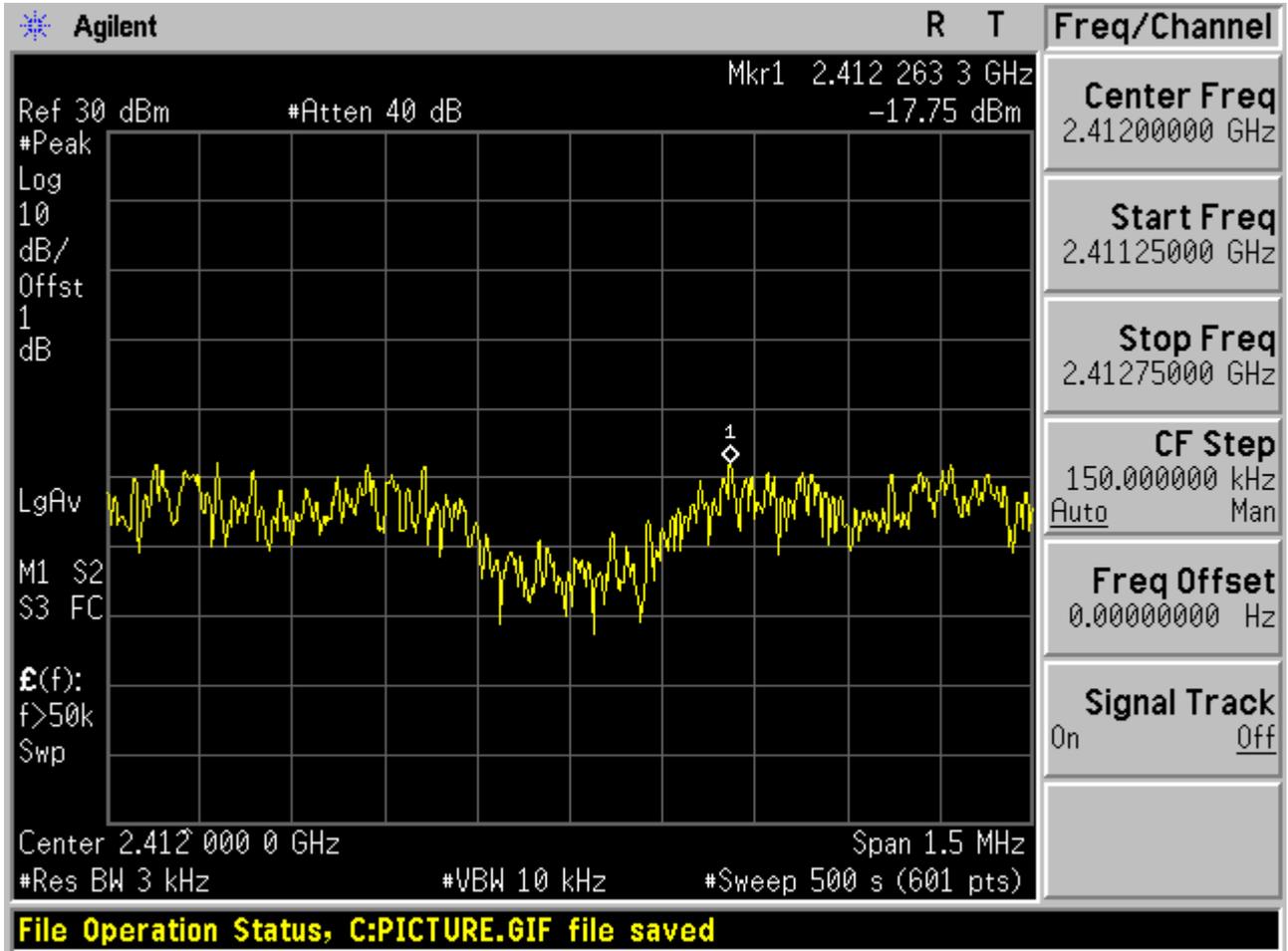


Channel 11



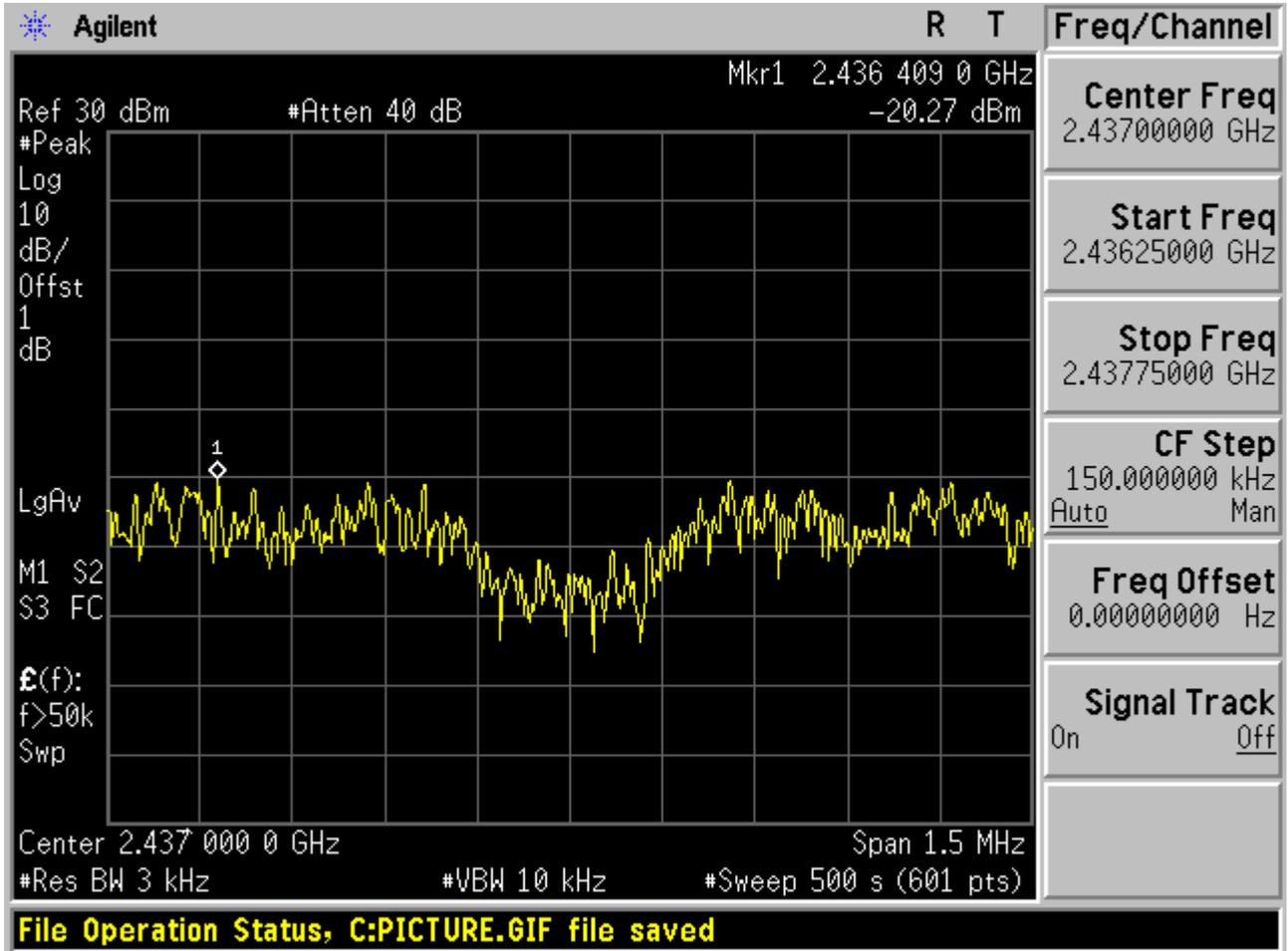


TM2 Chain 1 Channel 01



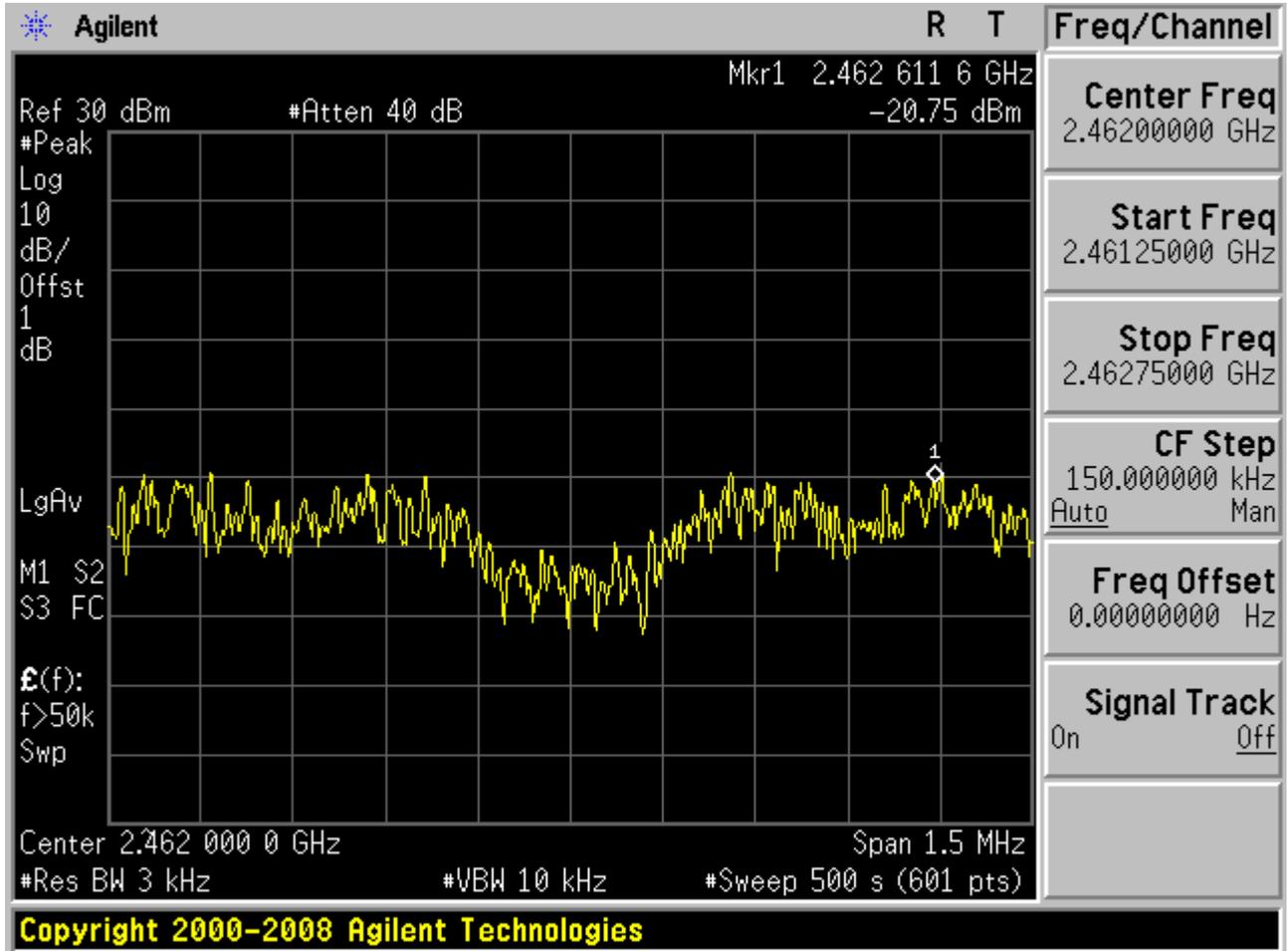


Channel 06



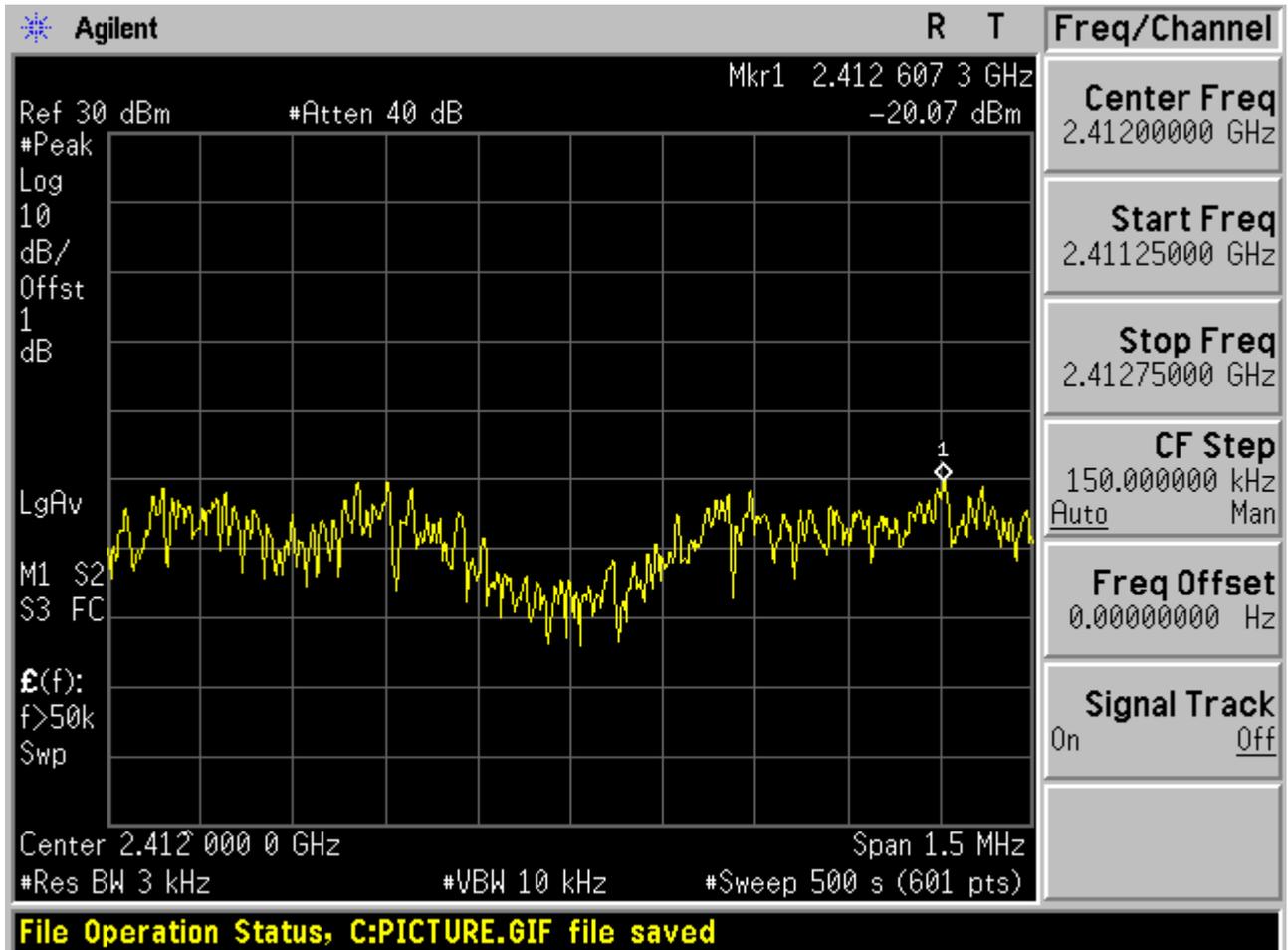


Channel 11



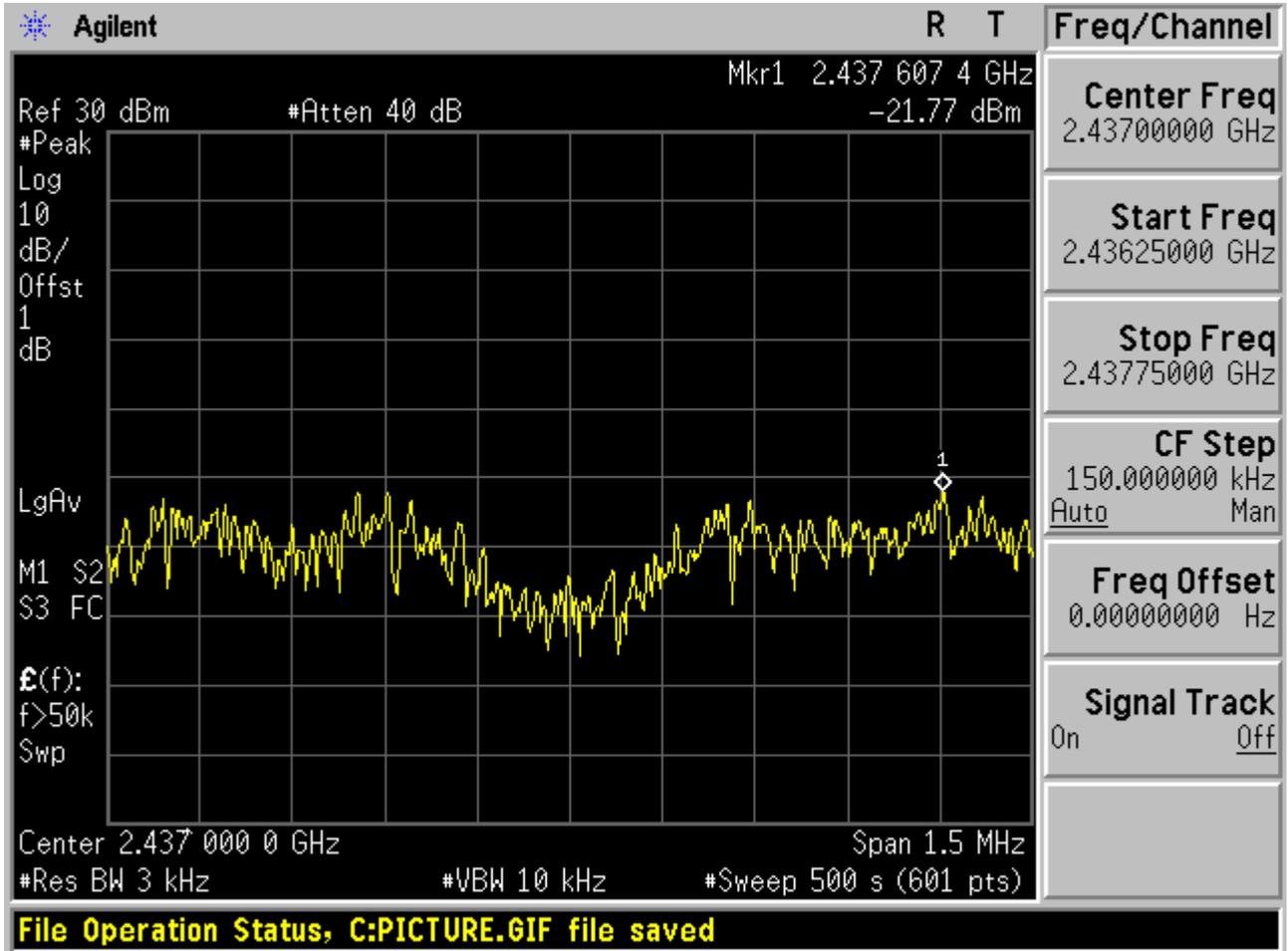


TM3 Chain 1 Channel 01



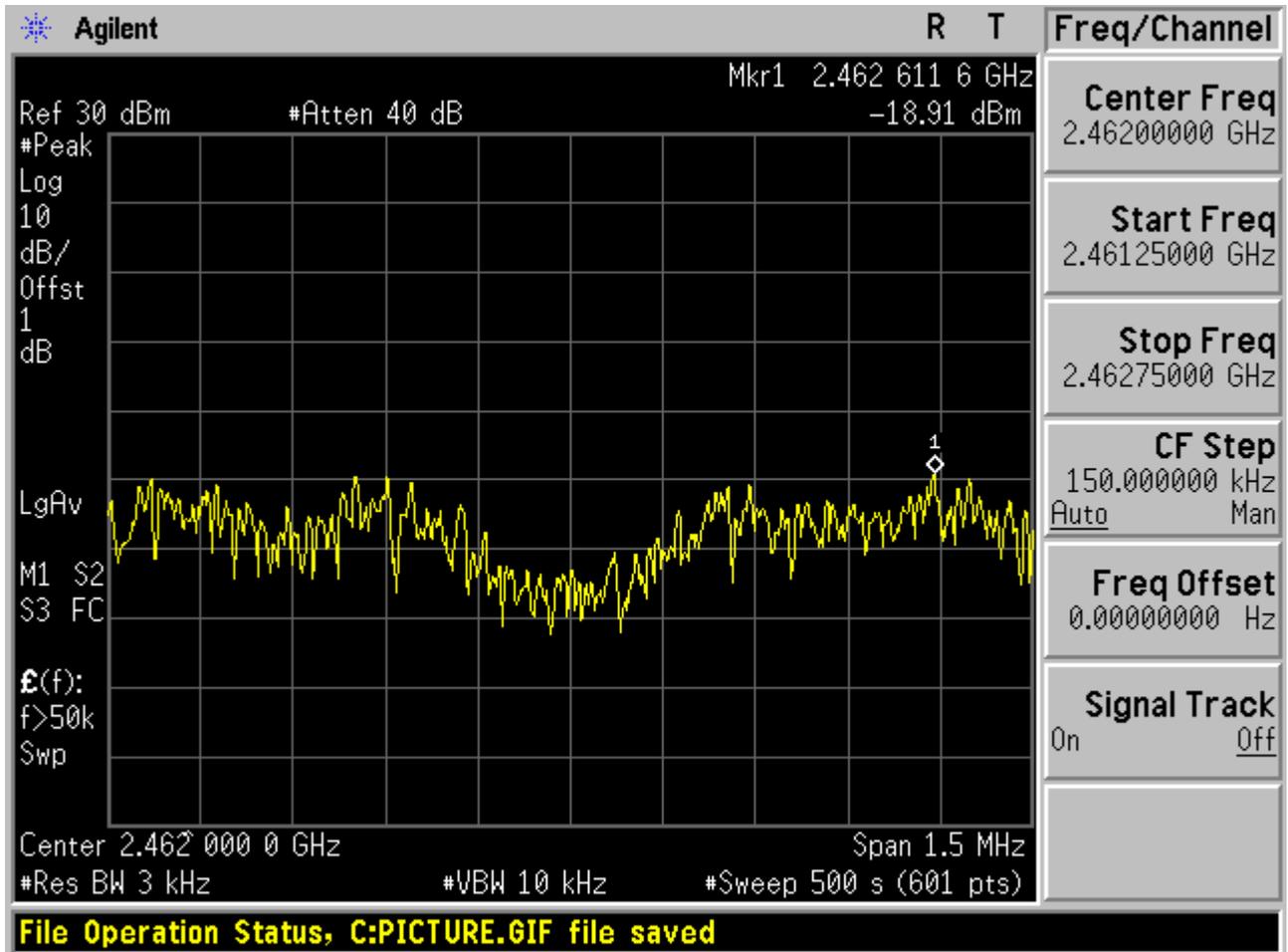


Channel 06





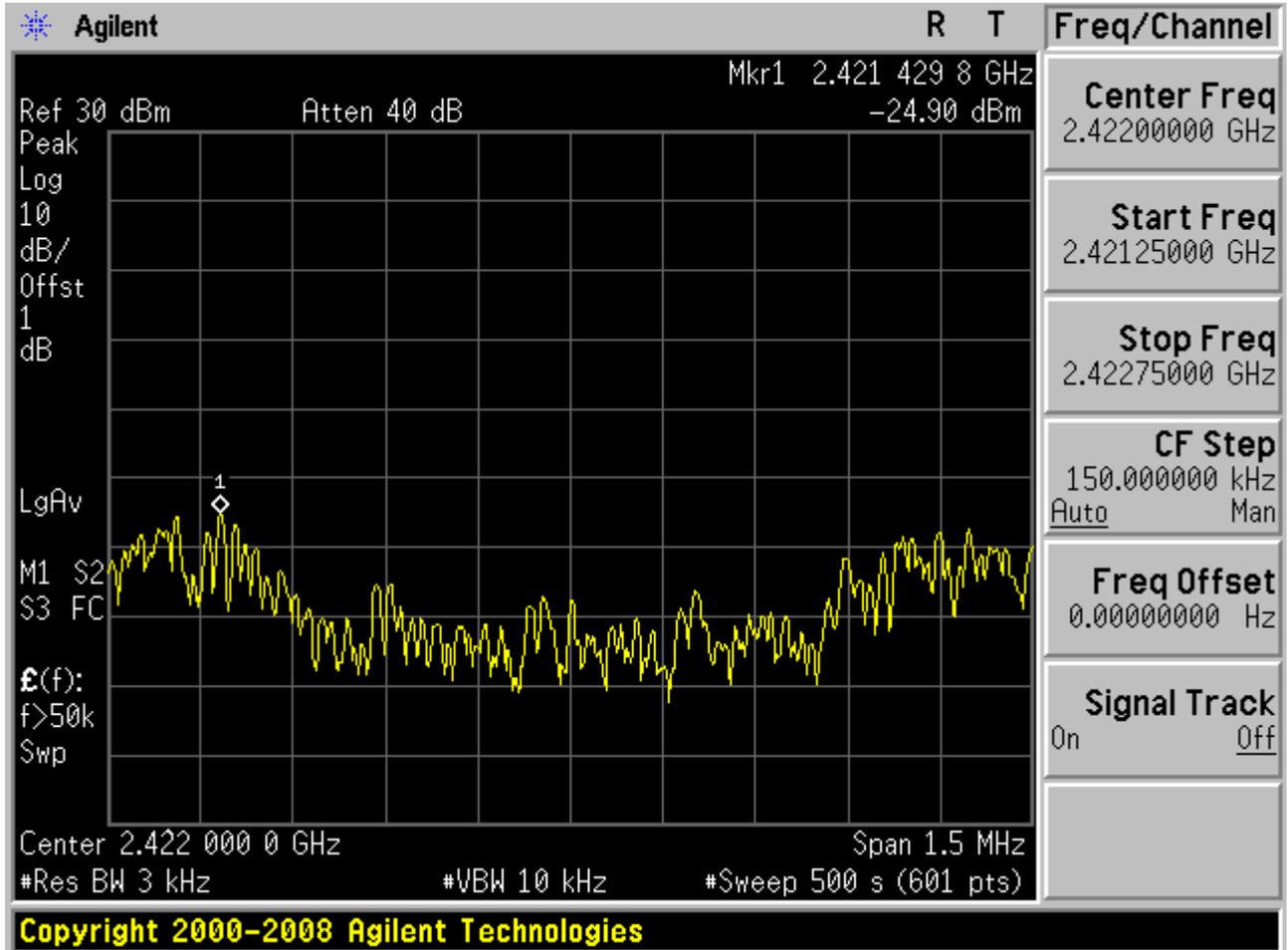
Channel 11





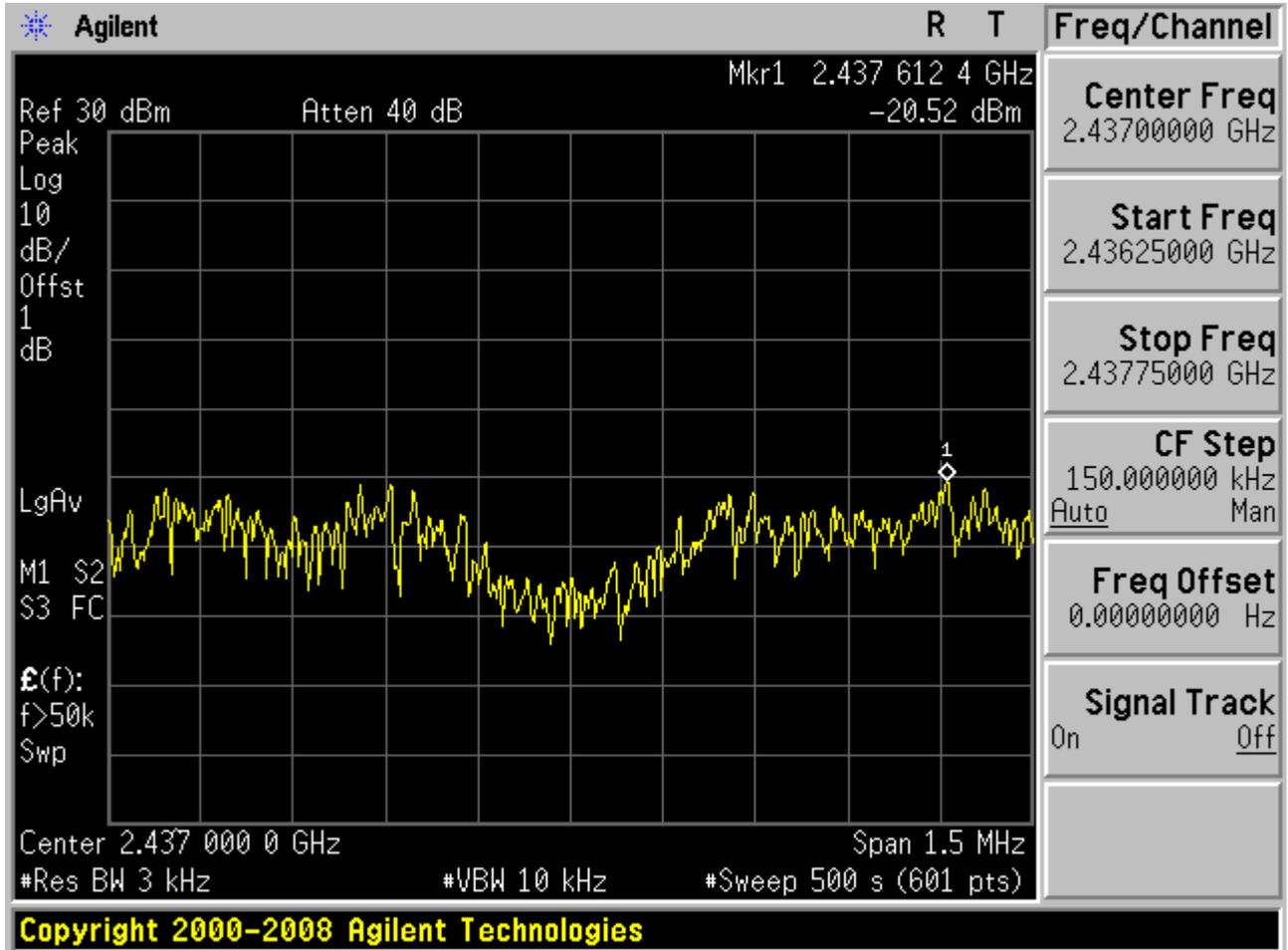
TM4 Chain 1

Channel 03



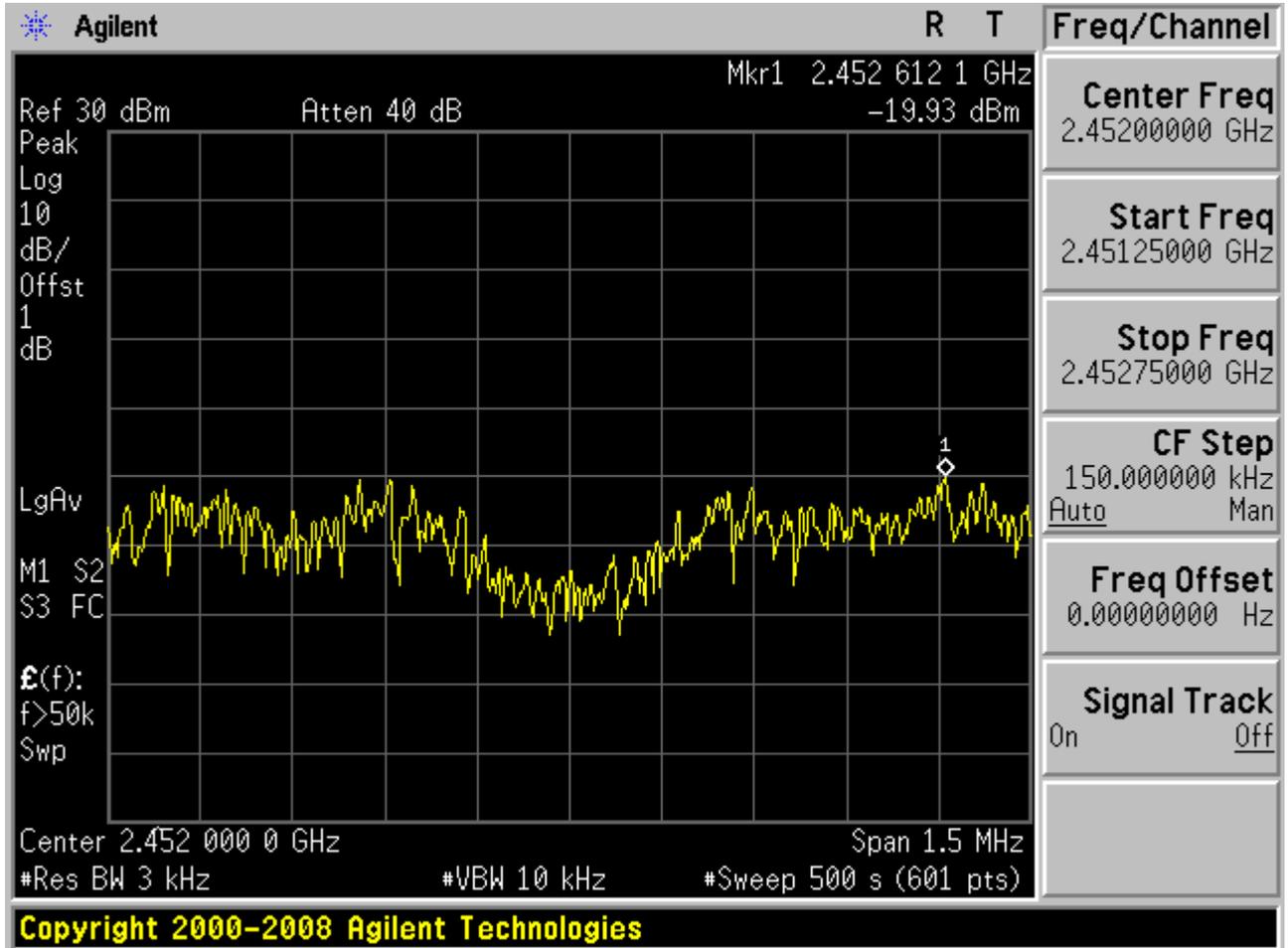


Channel 06





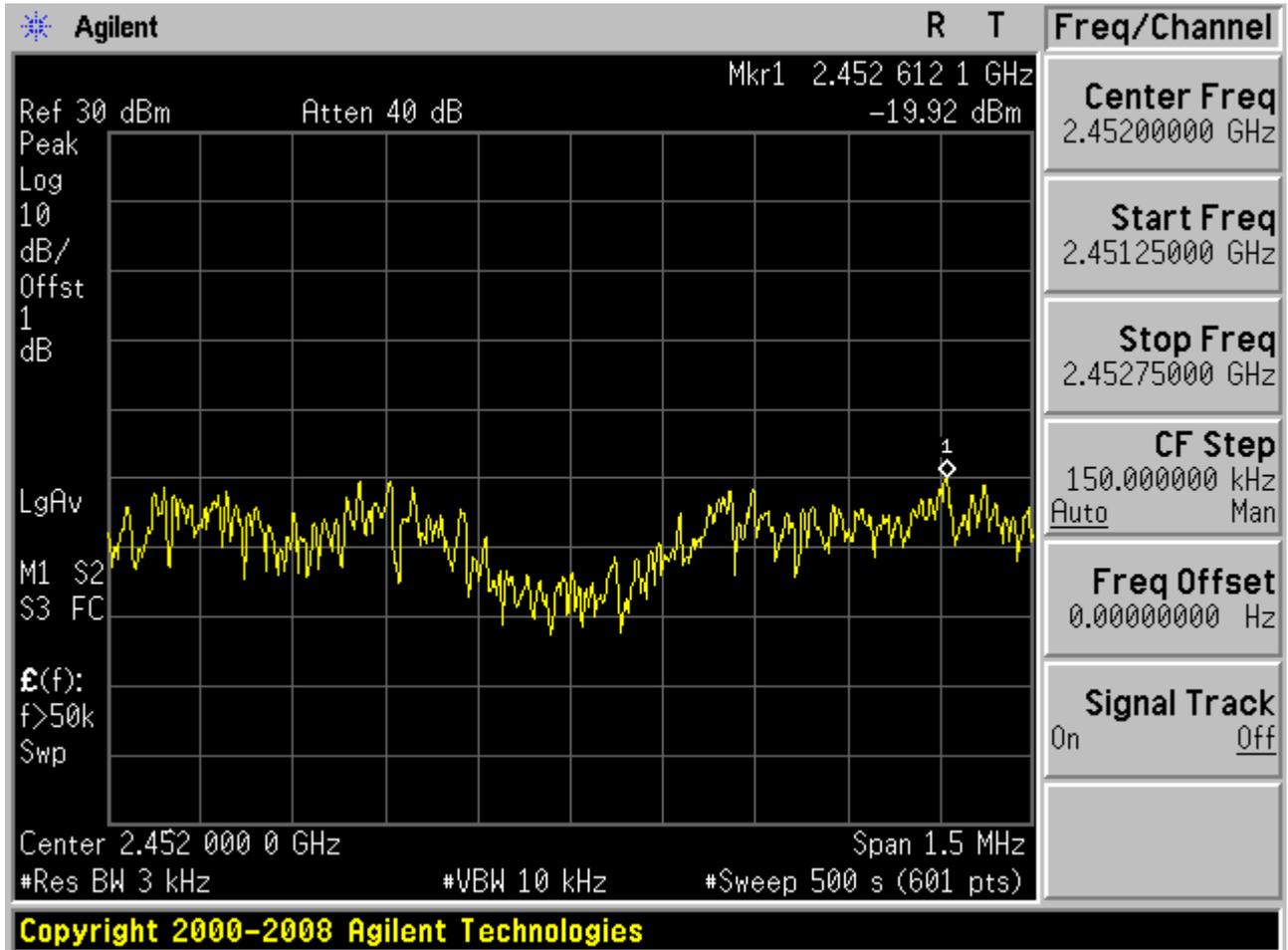
Channel 09





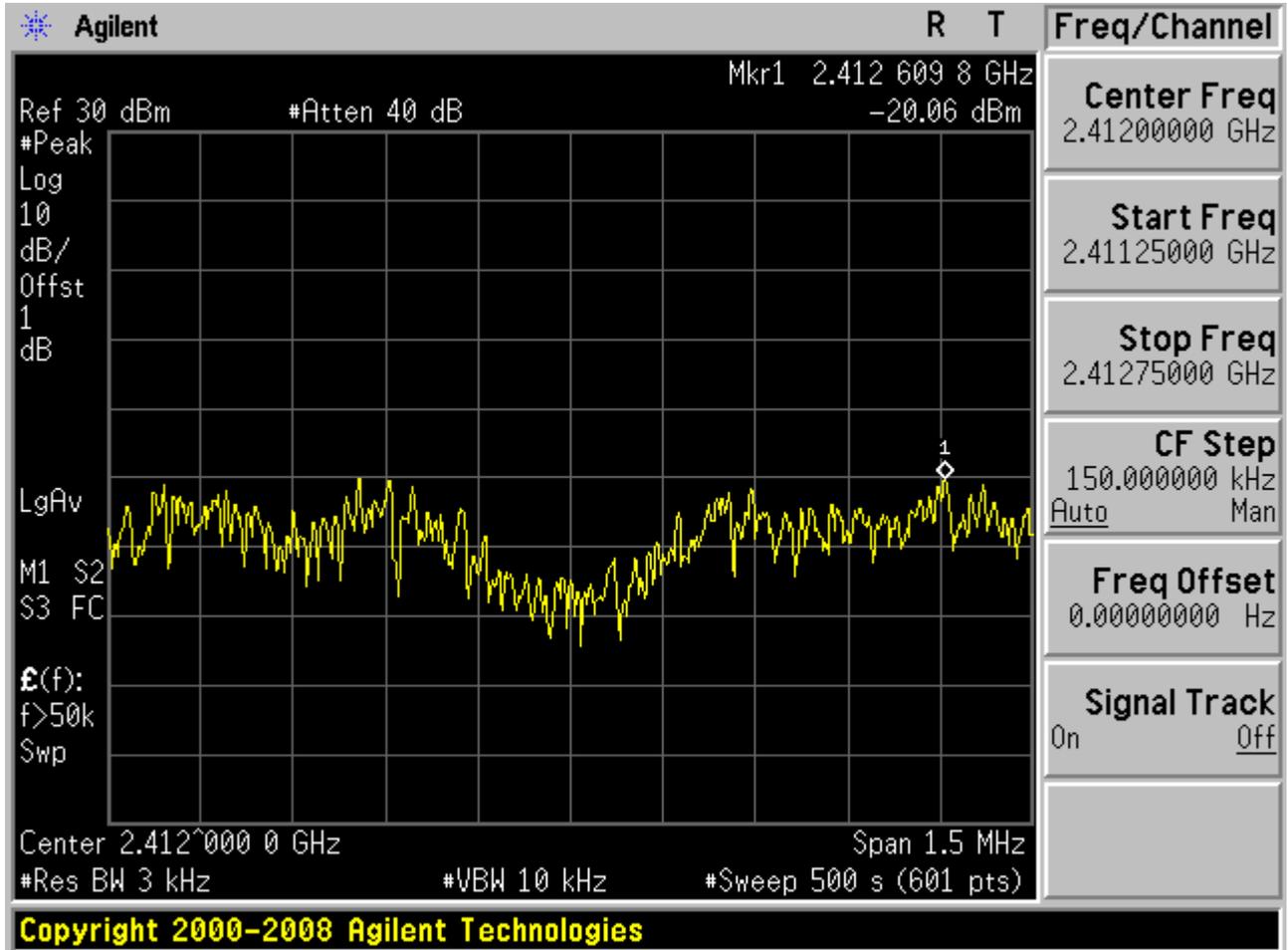
TM5 Chain 1&2 Channel 01

Chain 1





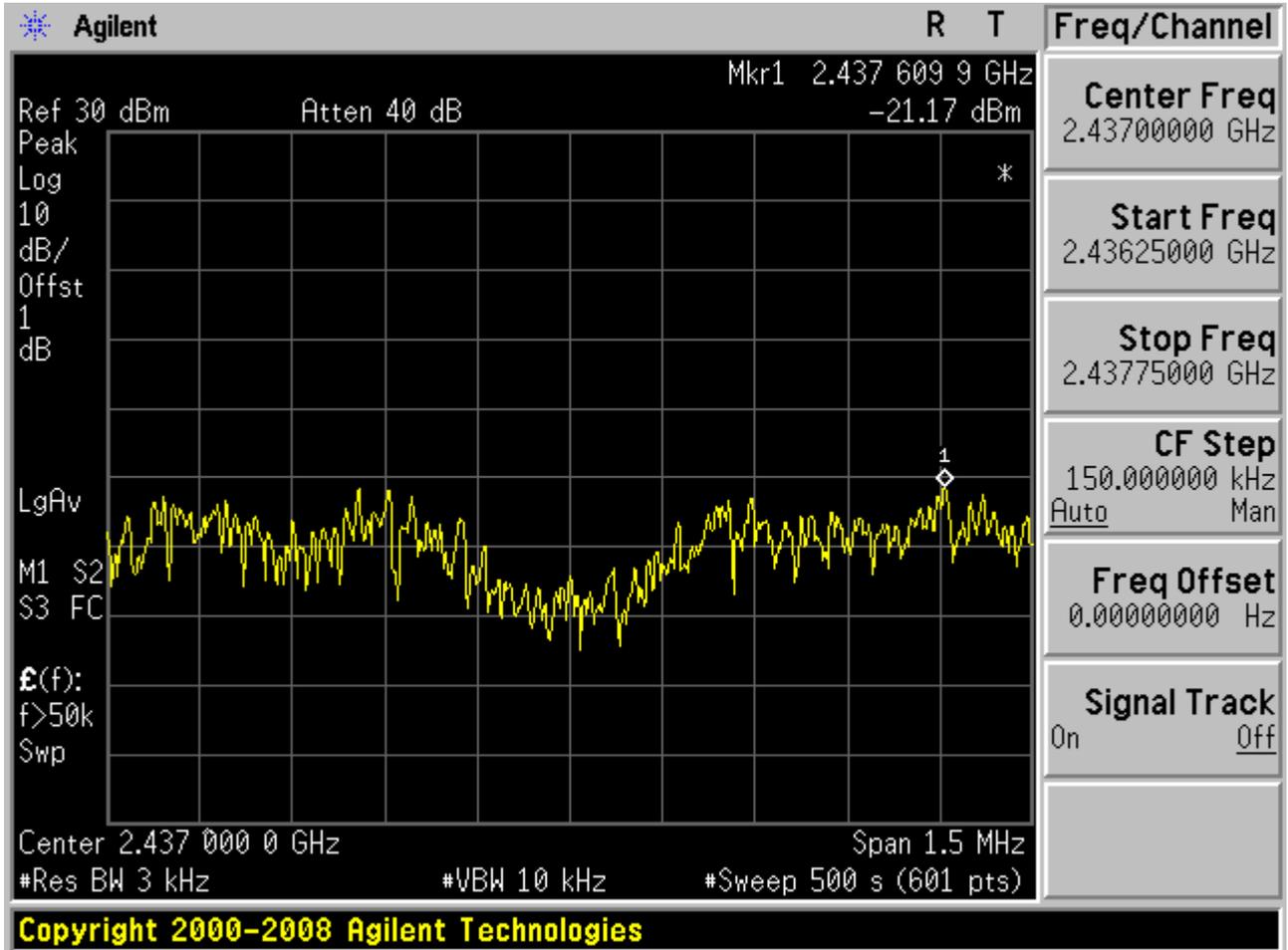
Chain 2





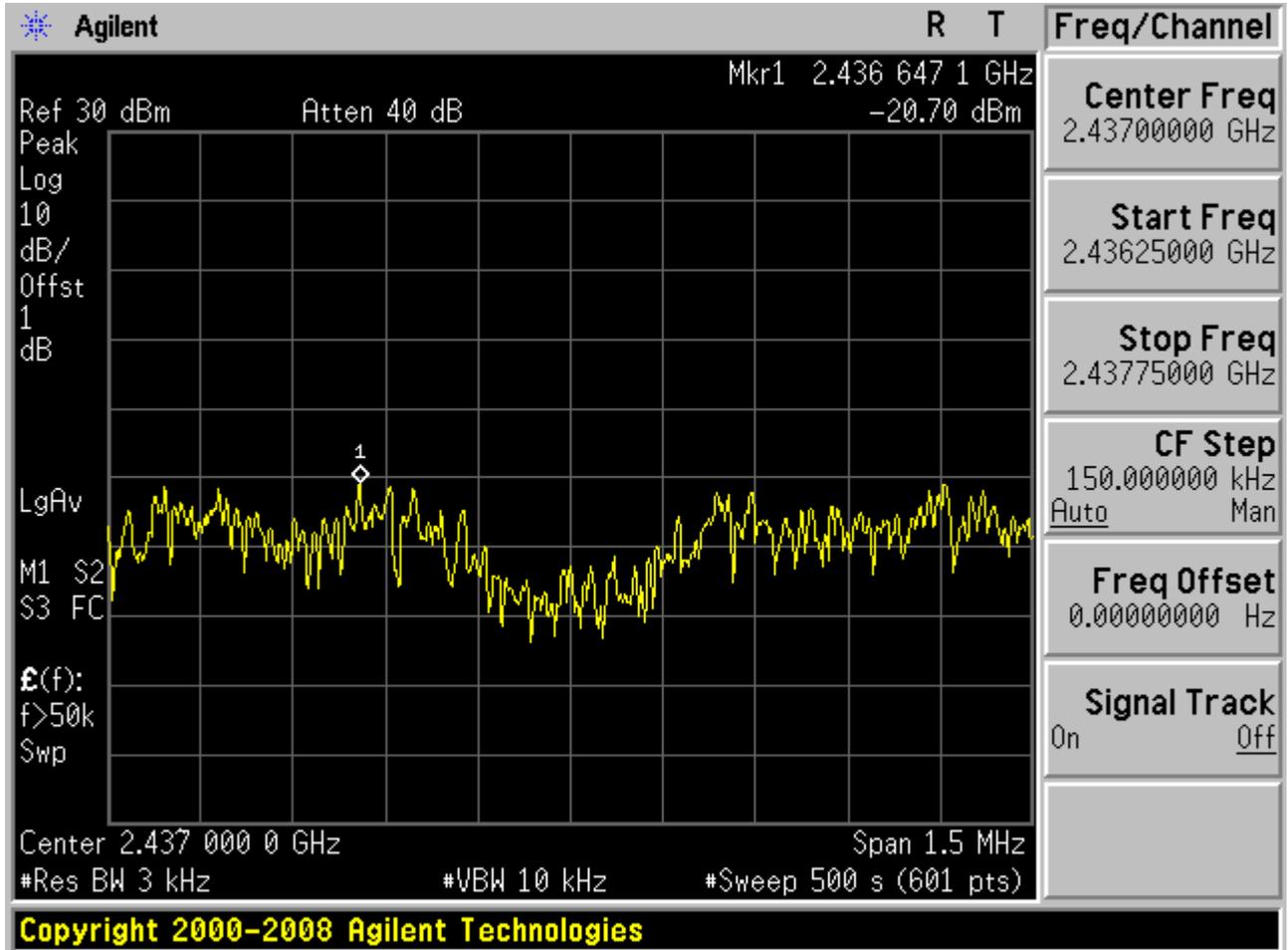
Channel 06

Chain 1





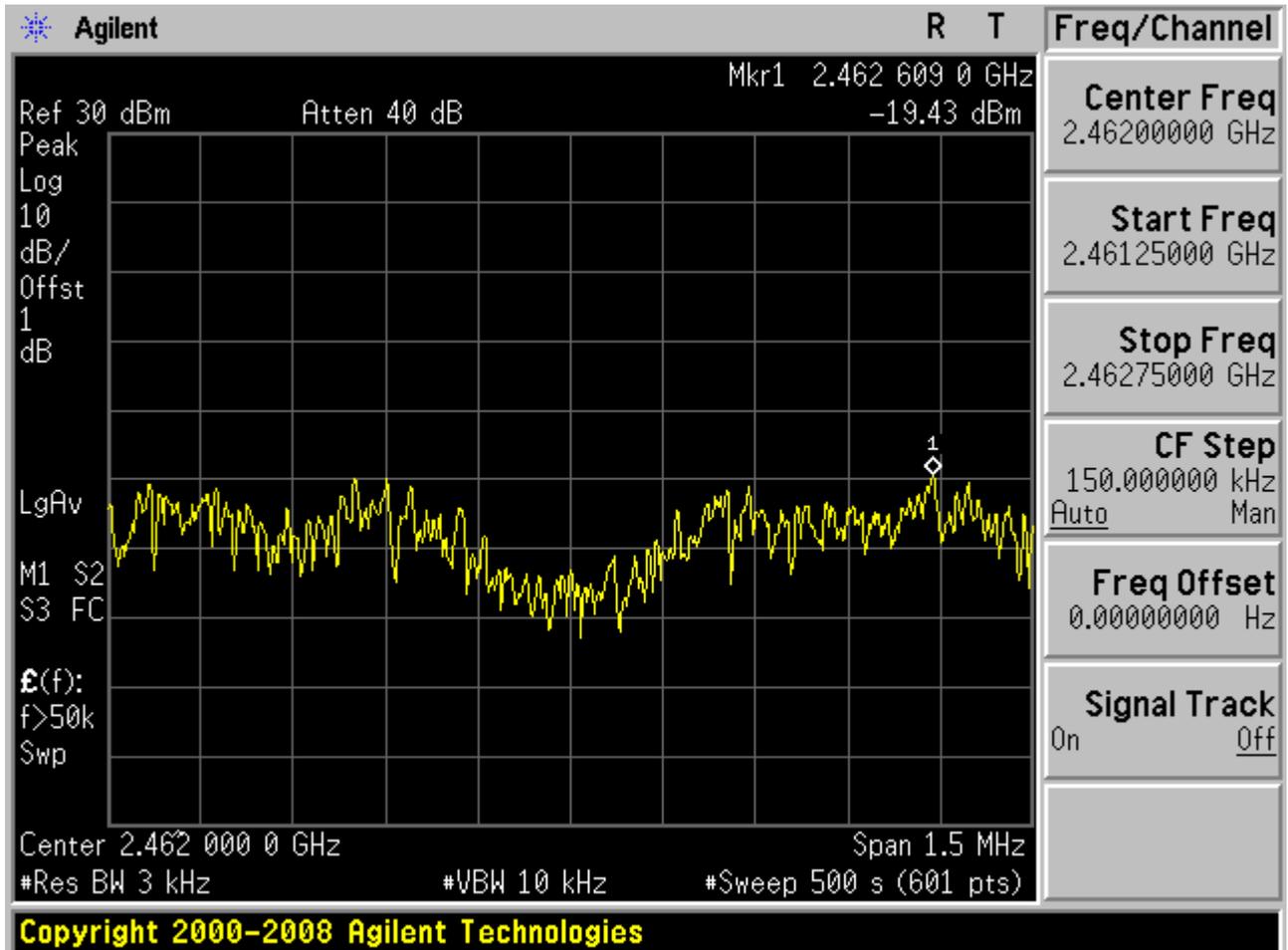
Chain 2





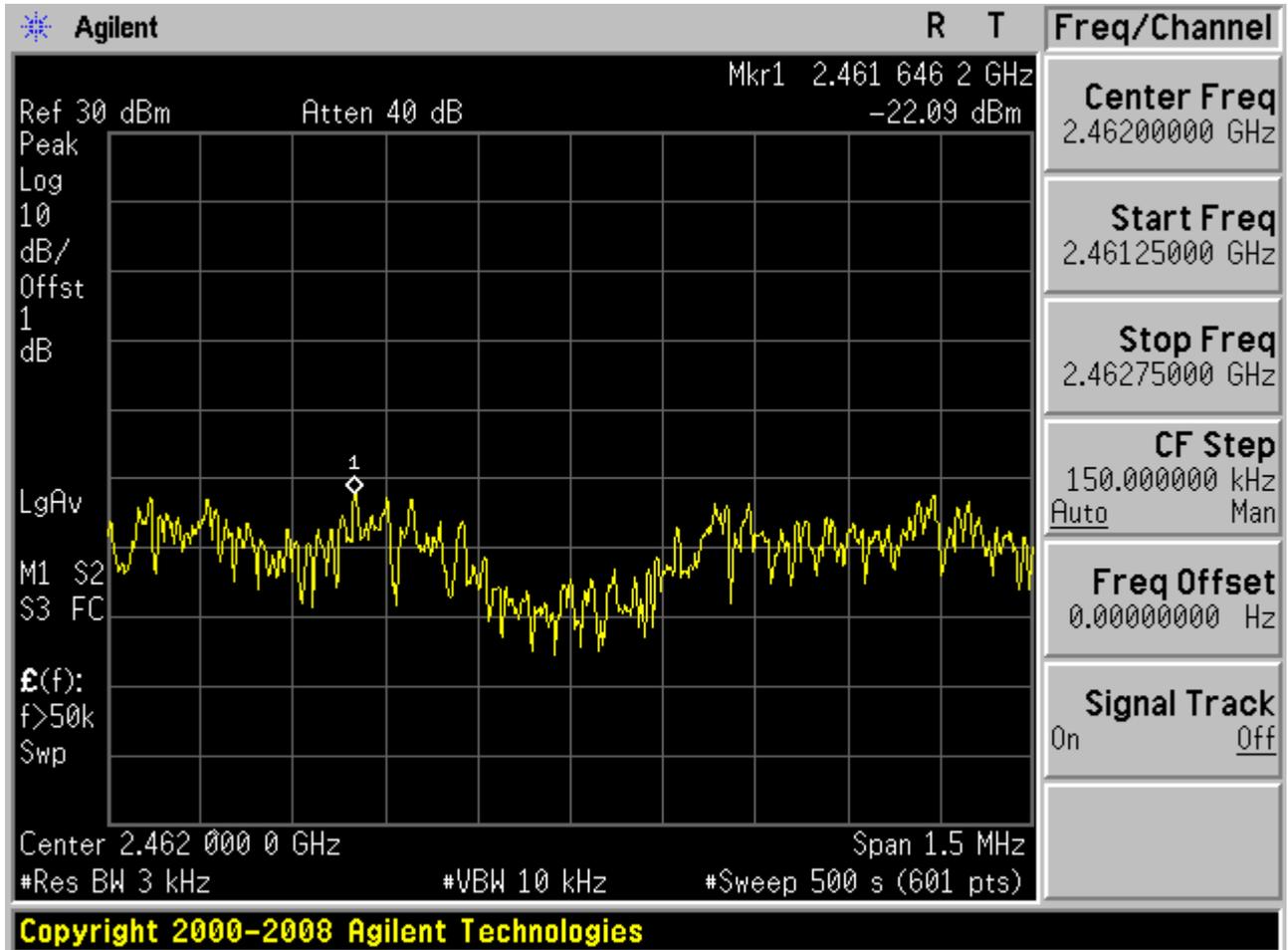
Channel 11

Chain 1





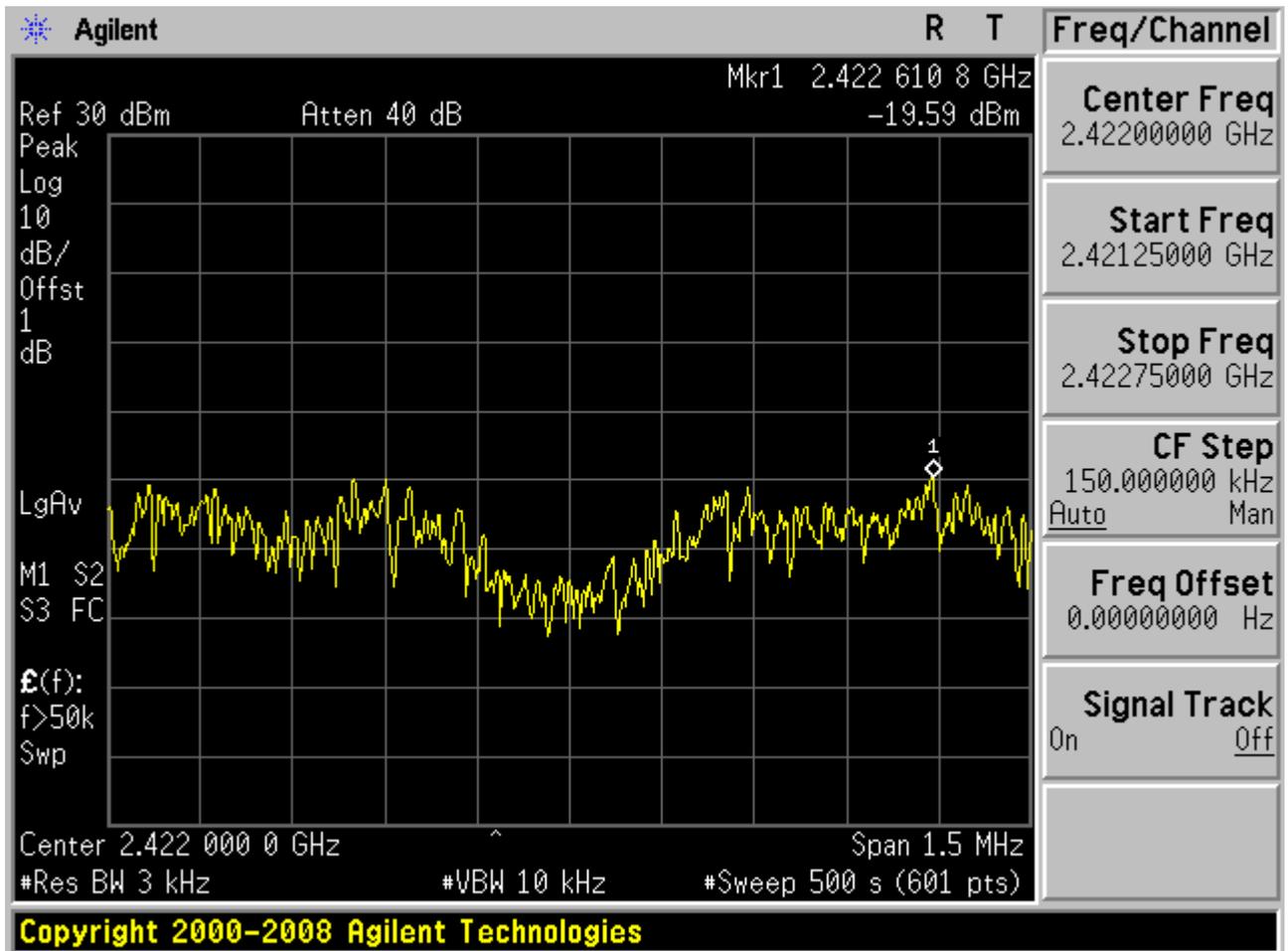
Chain 2





TM6 Chain 1&2 Channel 03

Chain 1





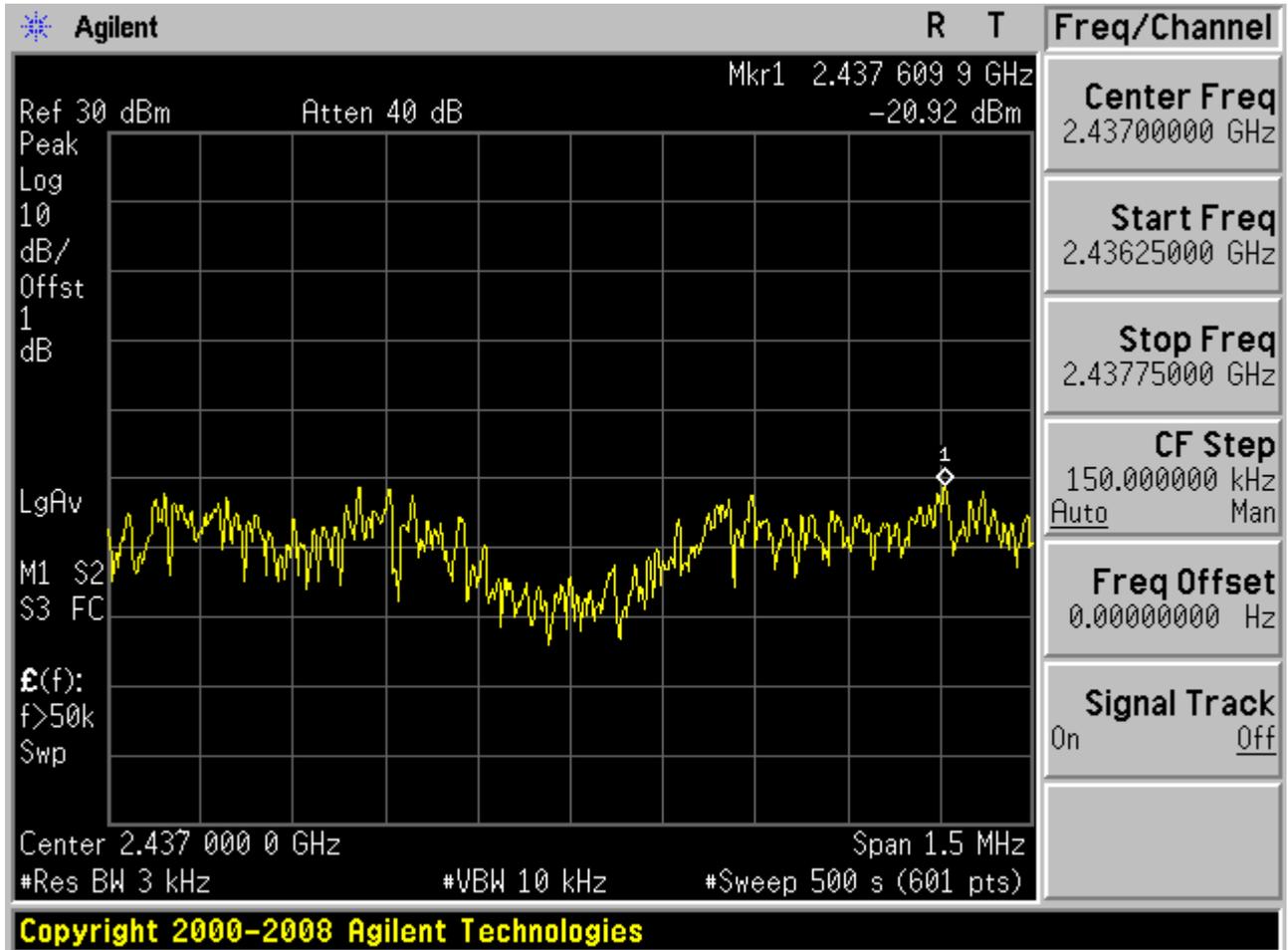
Chain 2





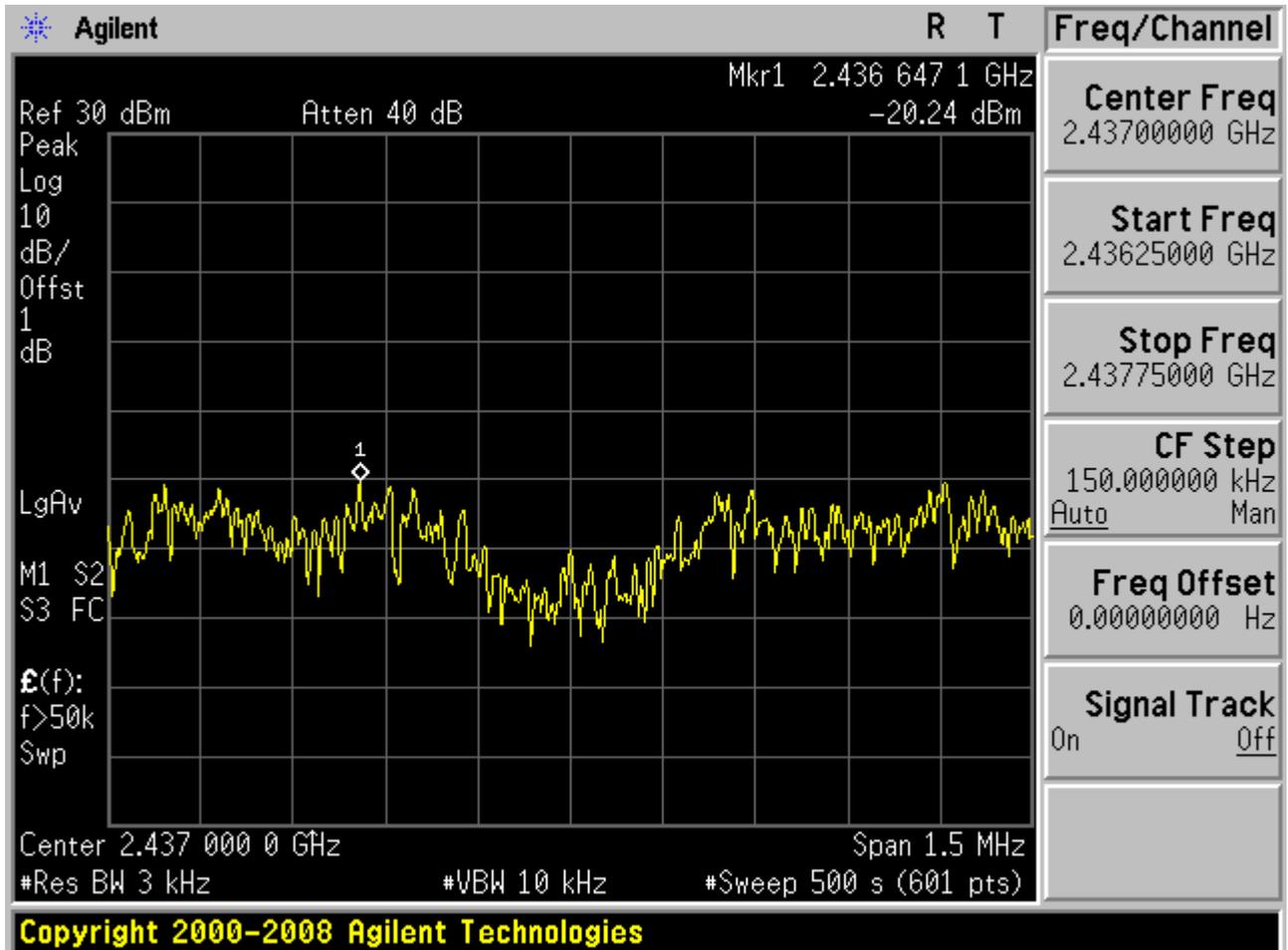
Channel 06

Chain 1





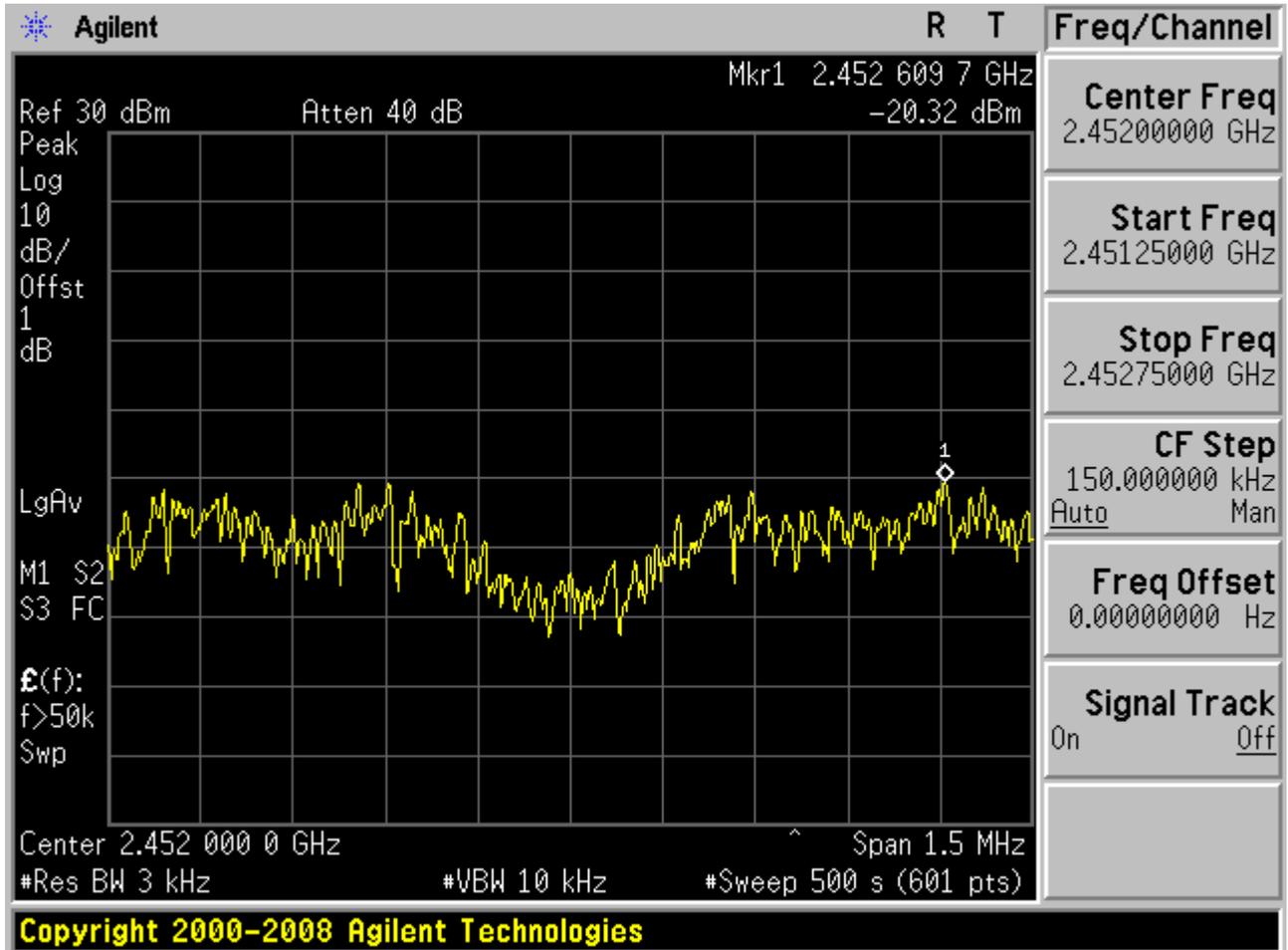
Chain 2





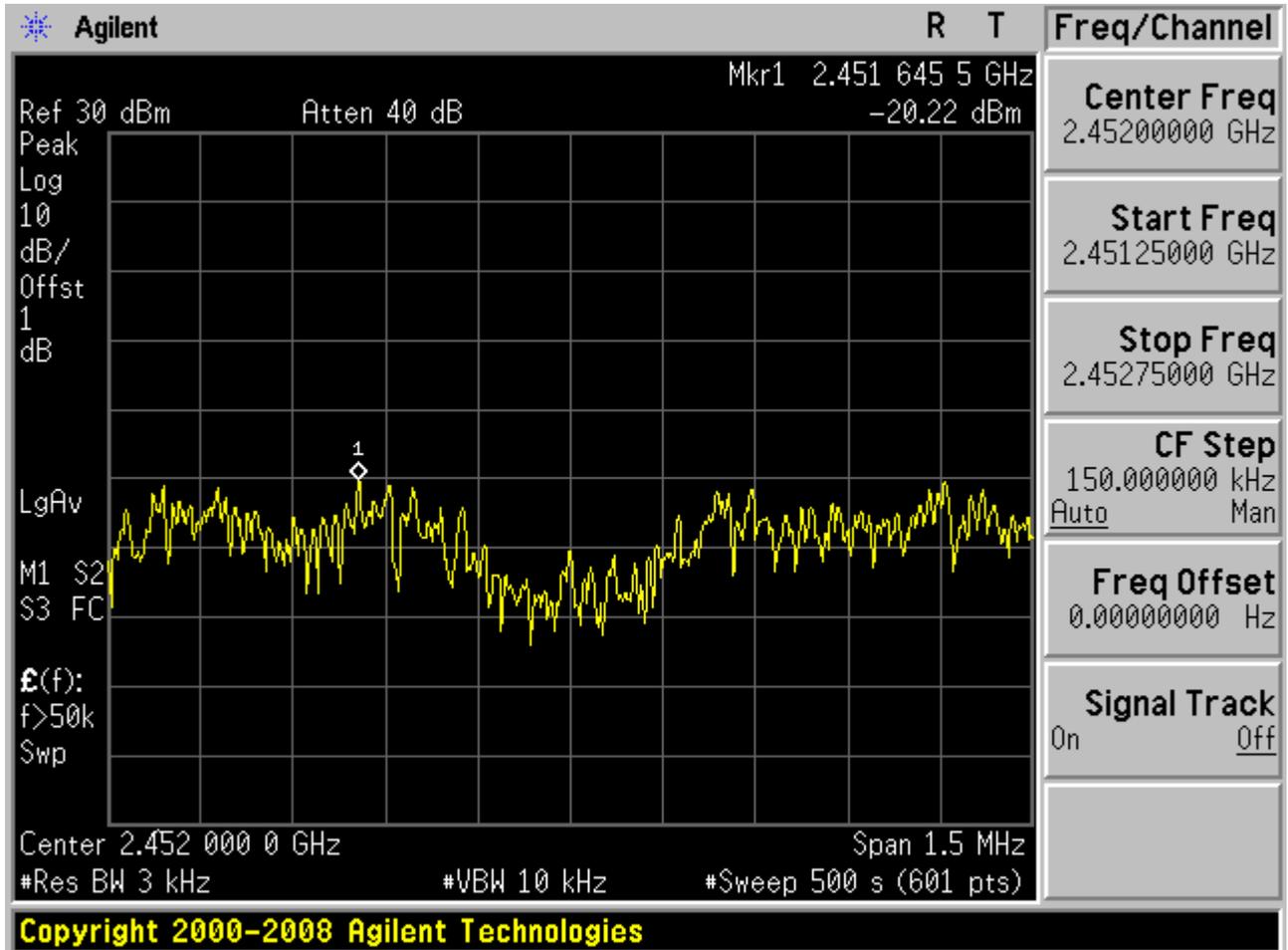
Channel 09

Chain 1





Chain 2





FCC&IC Test Report of B683
FCC ID: QISB683-74V
IC ID: 6369A-B68374V

Security Level:
Public

Appendix F

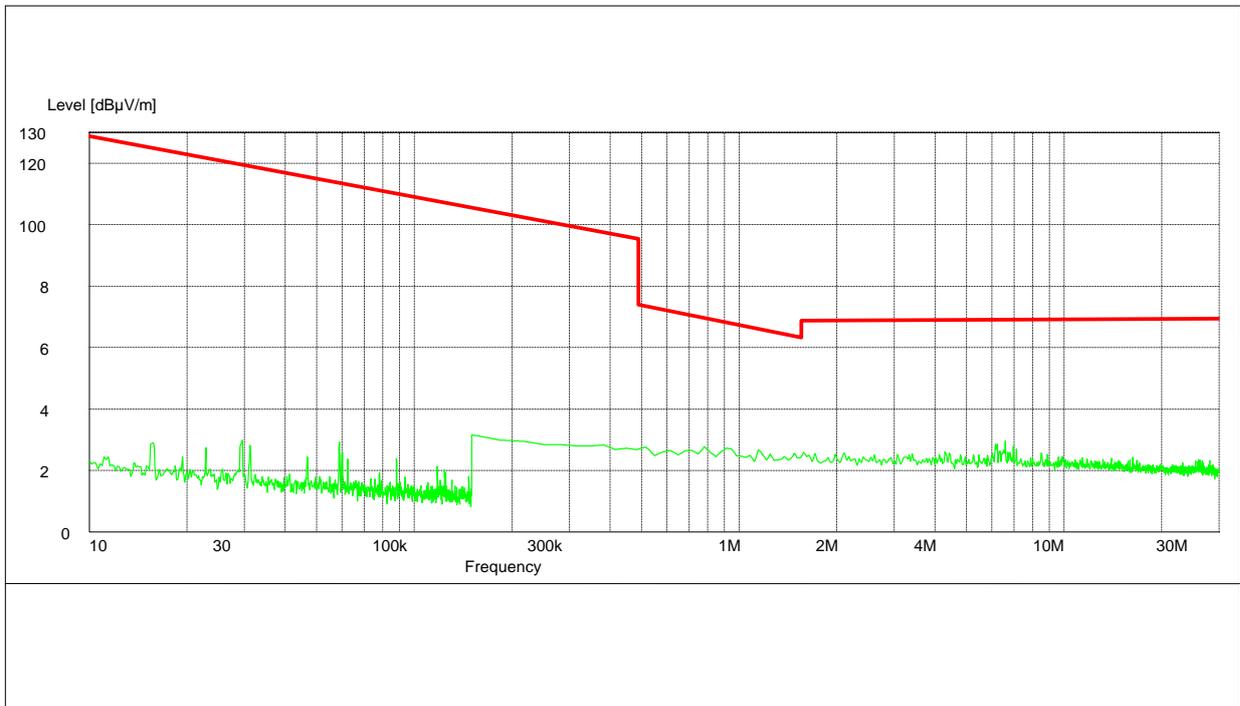
Radiated spurious emission & spurious in restricted band

According to FCC Part 15.247 (d) & 15.205 & 15.209
&RSS-210



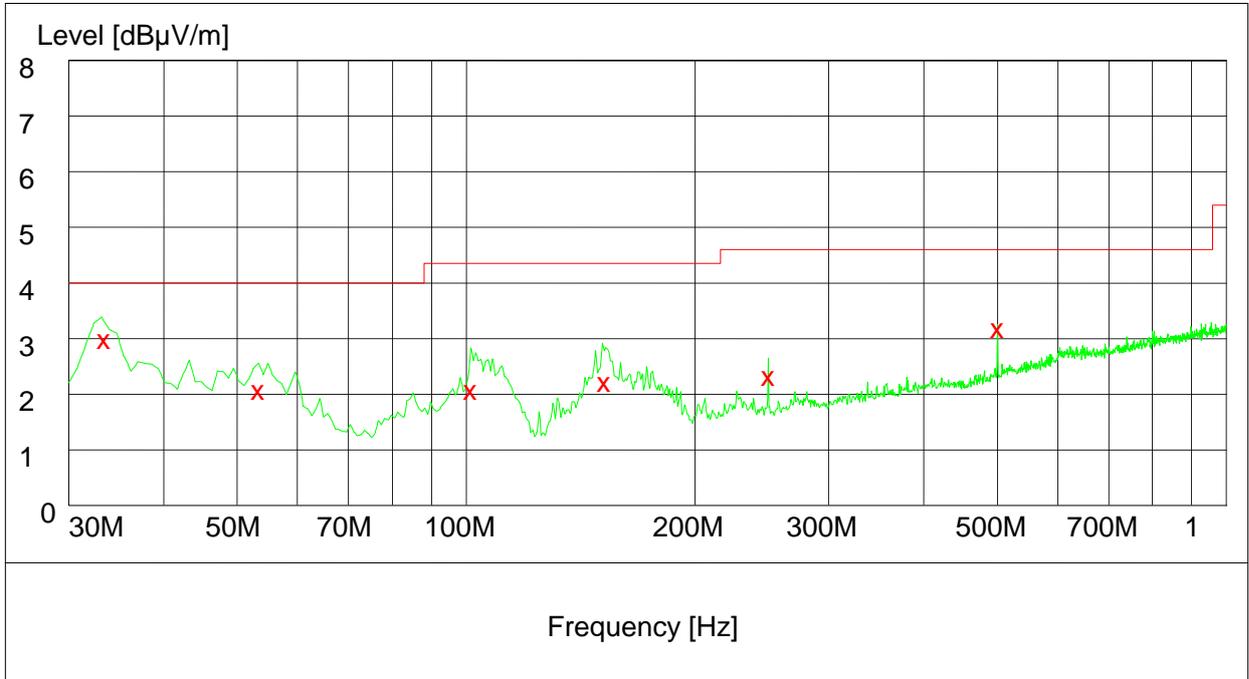
Note: This test was carried out in all the test modes, here only the worst test result was shown.

Channel 1 10kHz to 30MHz





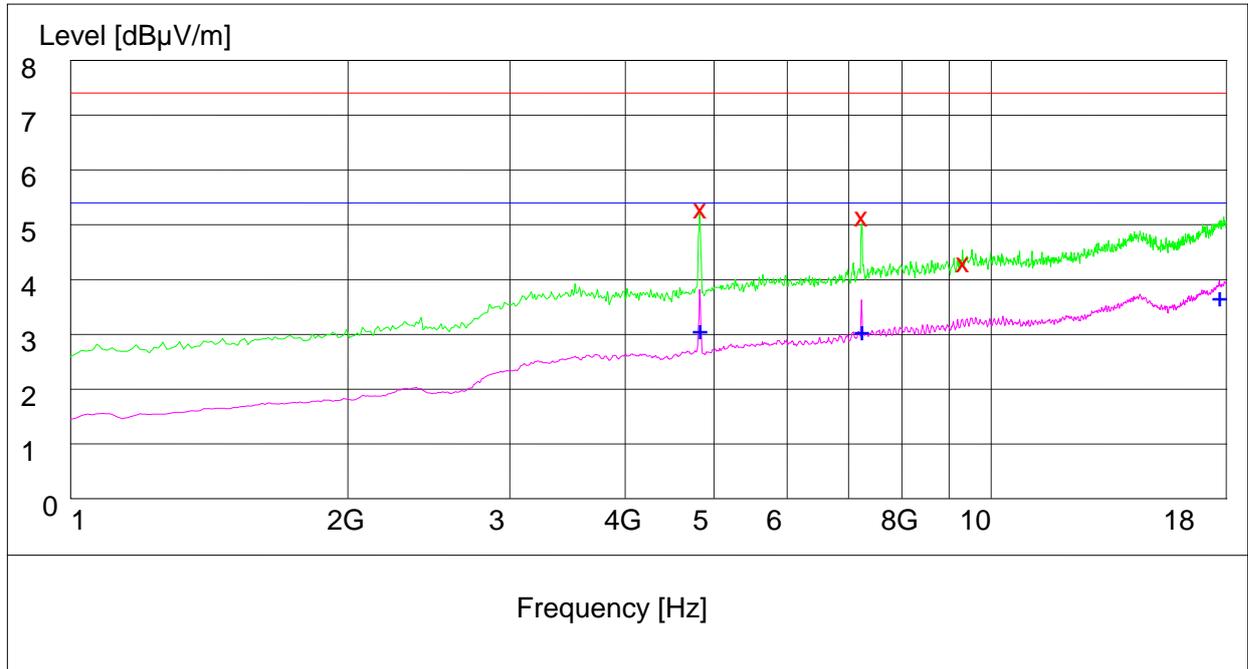
30MHz to 1GHz



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Plarization
33.420000	31.20	11.7	40.0	8.8	100.0	30.00	VERTICAL
53.280000	21.90	12.7	40.0	18.1	100.0	21.00	VERTICAL
101.390000	22.10	13.0	43.5	21.4	100.0	54.00	VERTICAL
151.900000	23.40	9.1	43.5	20.1	100.0	127.00	VERTICAL
249.600000	24.60	14.1	46.0	21.4	121.0	133.00	HORIZONTAL
500.000000	33.20	20.2	46.0	12.8	105.0	274.00	VERTICAL



1GHz to 18GHz



Note: Signal suppressed with a 2.4 GHz band rejection filter

MEASUREMENT RESULT: PK Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarization
4827.000000	54.20	-3.6	74.0	19.8	100.0	348.00	VERTICAL
7229.000000	52.90	1.3	74.0	21.1	101.0	345.00	HORIZONTAL
9317.000000	44.40	5.2	74.0	29.6	186.0	202.00	HORIZONTAL

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarization
4825.500000	32.00	-3.6	54.0	22.0	100.0	354.00	VERTICAL
7232.000000	31.20	1.3	54.0	22.8	119.0	0.00	HORIZONTAL
17694.000000	38.10	18.9	54.0	15.9	154.0	102.00	VERTICAL



FCC&IC Test Report of B683
FCC ID: QISB683-74V
IC ID: 6369A-B68374V

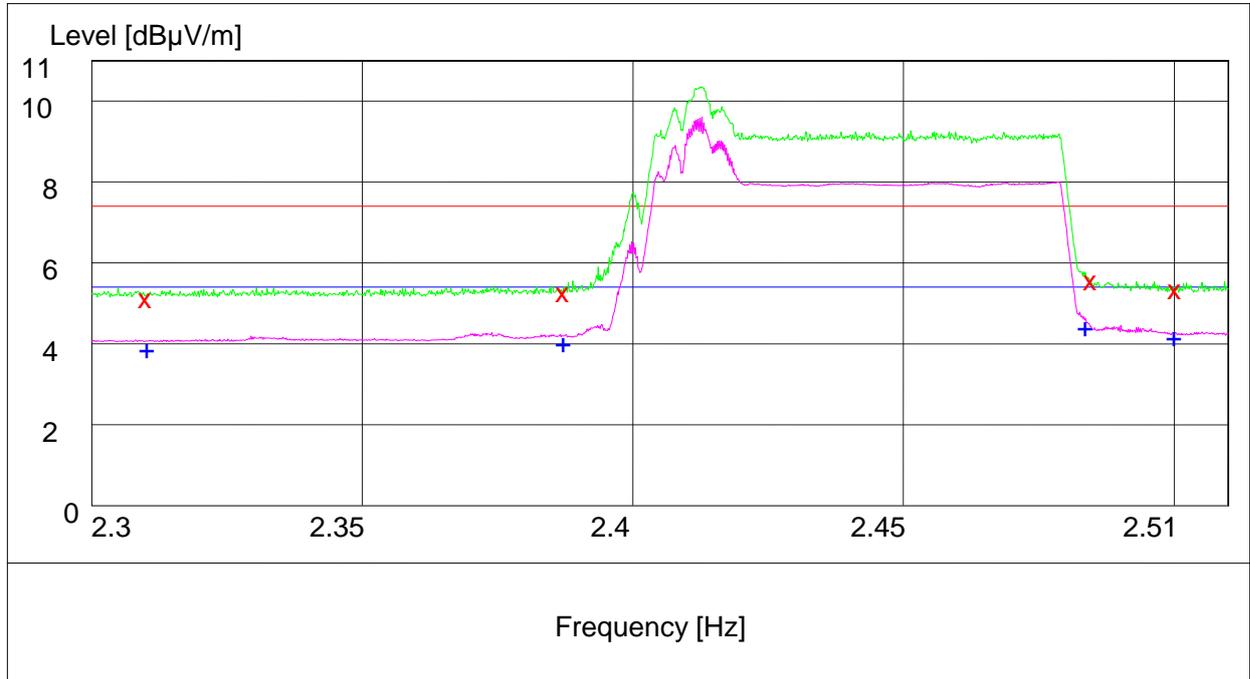
Security Level:
Public

18GHz to 26GHz

Note: No peak found in pre- test.



2.30GHz to 2.51GHz



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
2310.000000	53.10	35.5	74.0	20.9	200.0	240.00	VERTICAL
2390.000000	54.40	36.1	74.0	19.6	197.0	292.00	HORIZONTAL
2483.500000	57.40	39.9	74.0	16.6	181.0	344.00	VERTICAL
2500.000000	54.20	36.3	74.0	19.8	110.0	311.00	VERTICAL

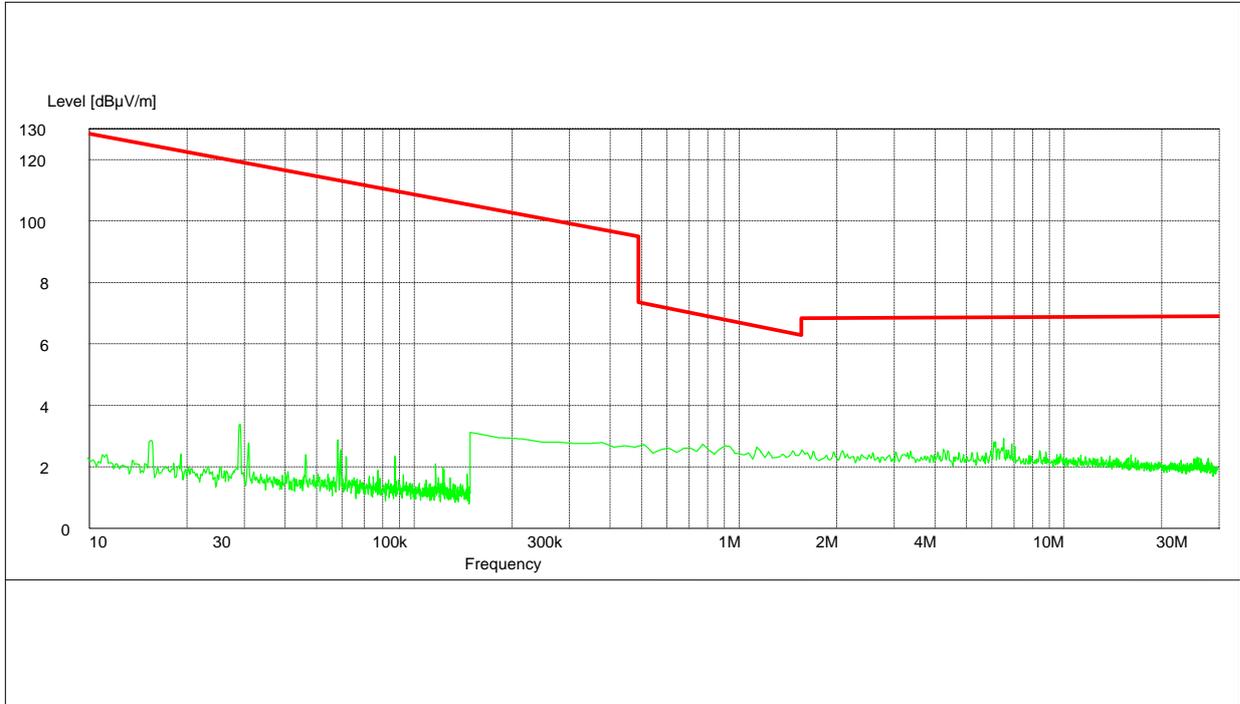
MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarization
2310.000000	40.60	35.5	54.0	13.4	136.0	32.00	VERTICAL
2390.000000	41.90	36.1	54.0	12.1	100.0	344.00	VERTICAL
2483.500000	45.70	39.9	54.0	8.3	100.0	21.00	VERTICAL
2500.000000	42.30	36.3	54.0	11.7	128.0	19.00	VERTICAL



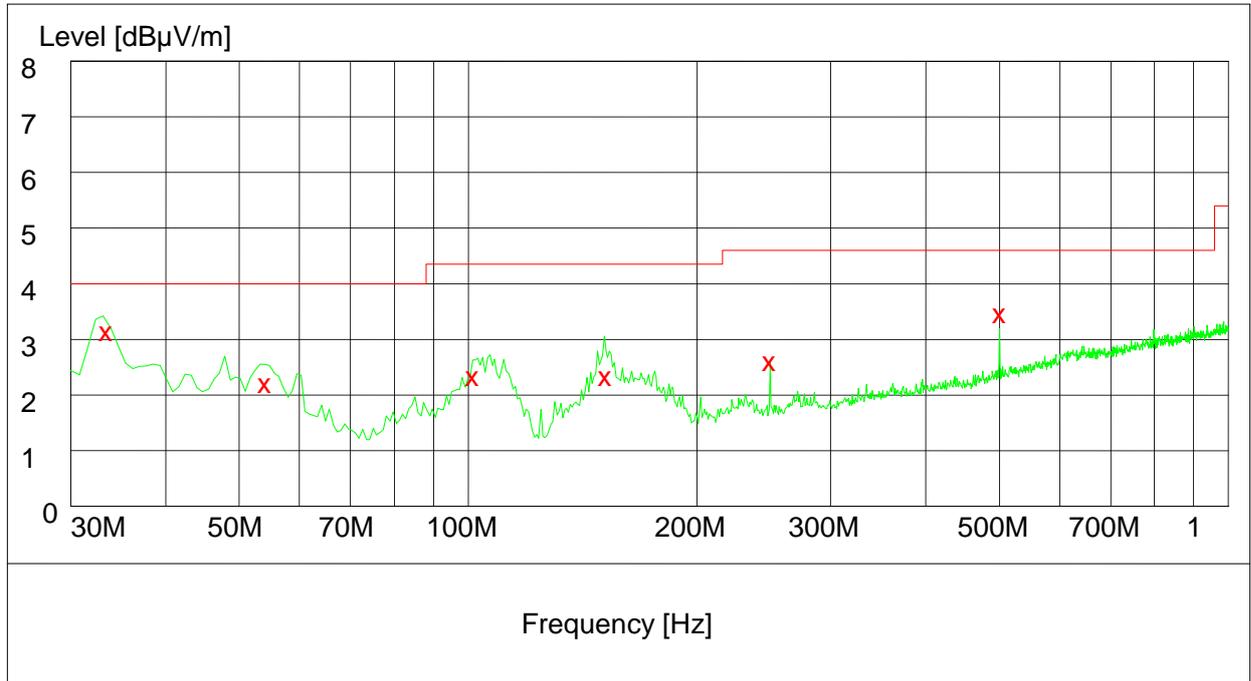
Channel 6

10 kHz to 30MHz





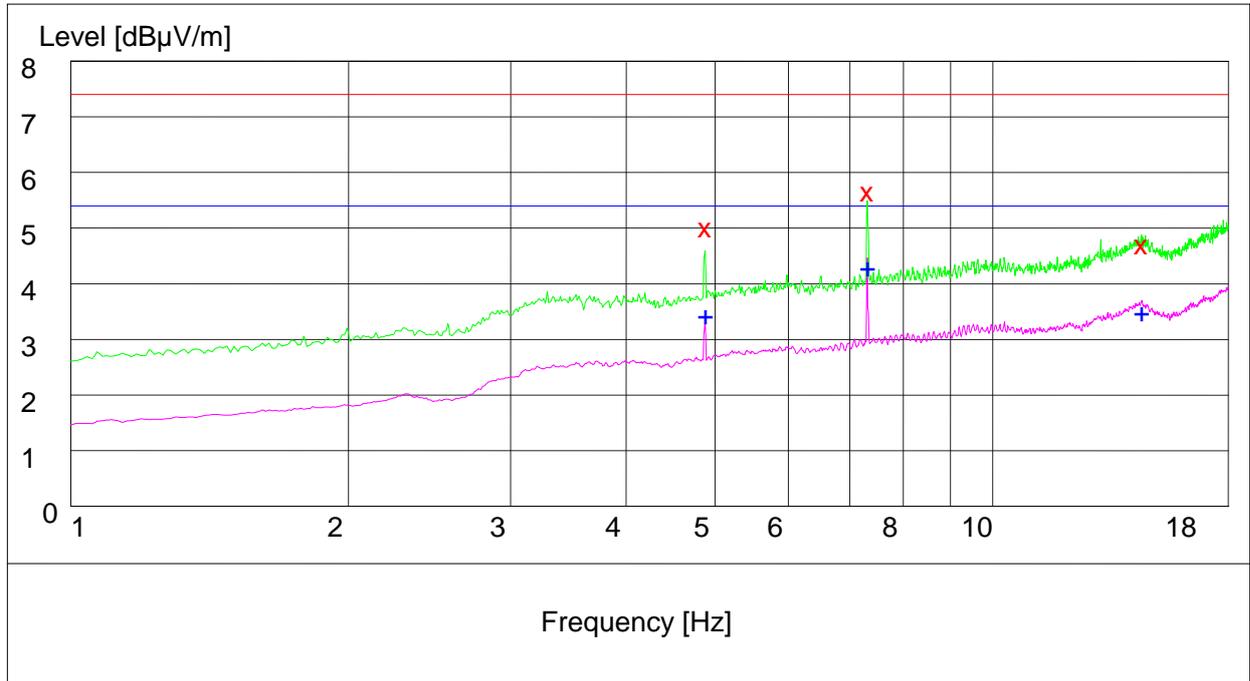
30MHz to 1GHz



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarization
33.420000	31.30	11.7	40.0	8.7	100.0	30.00	VERTICAL
54.070000	22.70	12.7	40.0	17.3	100.0	21.00	VERTICAL
101.390000	23.20	13.0	43.5	20.3	100.0	54.00	VERTICAL
151.700000	23.20	9.1	43.5	20.3	100.0	127.00	VERTICAL
249.500000	24.80	14.1	46.0	21.2	121.0	133.00	HORIZONTAL
500.200000	34.10	20.2	46.0	11.9	105.0	274.00	VERTICAL



1GHz to 18GHz



Note: Signal suppressed with a 2.4 GHz band rejection filter

MEASUREMENT RESULT: PK Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarization
4874.000000	50.60	-3.4	74.0	23.4	100.0	34.00	HORIZONTAL
7311.000000	57.80	2.2	74.0	16.2	109.0	9.00	VERTICAL
14477.500000	48.30	14.5	74.0	25.7	140.0	315.00	VERTICAL

MEASUREMENT RESULT: AVDetector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarization
4874.000000	35.50	-3.4	54.0	18.5	100.0	0.00	HORIZONTAL
7313.500000	44.10	2.1	54.0	9.9	171.0	16.00	VERTICAL
14482.000000	36.10	14.5	54.0	17.9	100.0	316.00	HORIZONTAL



FCC&IC Test Report of B683
FCC ID: QISB683-74V
IC ID: 6369A-B68374V

Security Level:
Public

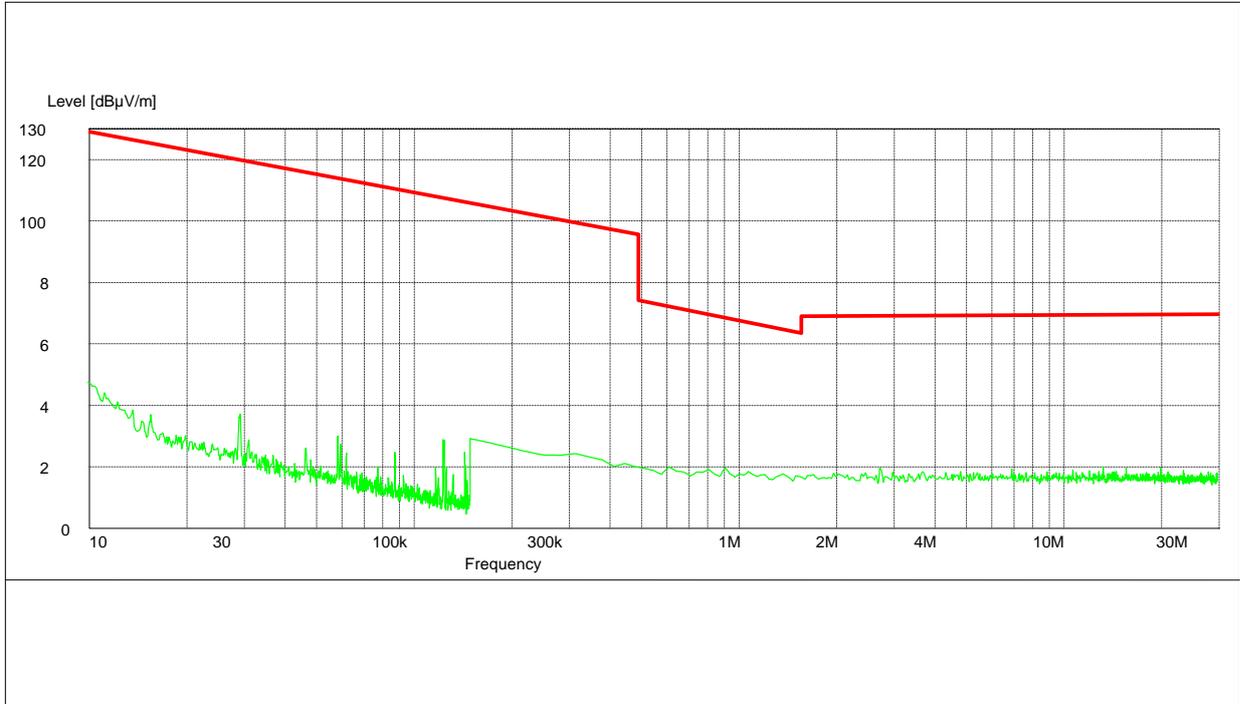
18GHz to 26GHz

Note: No peak found in pre- test.



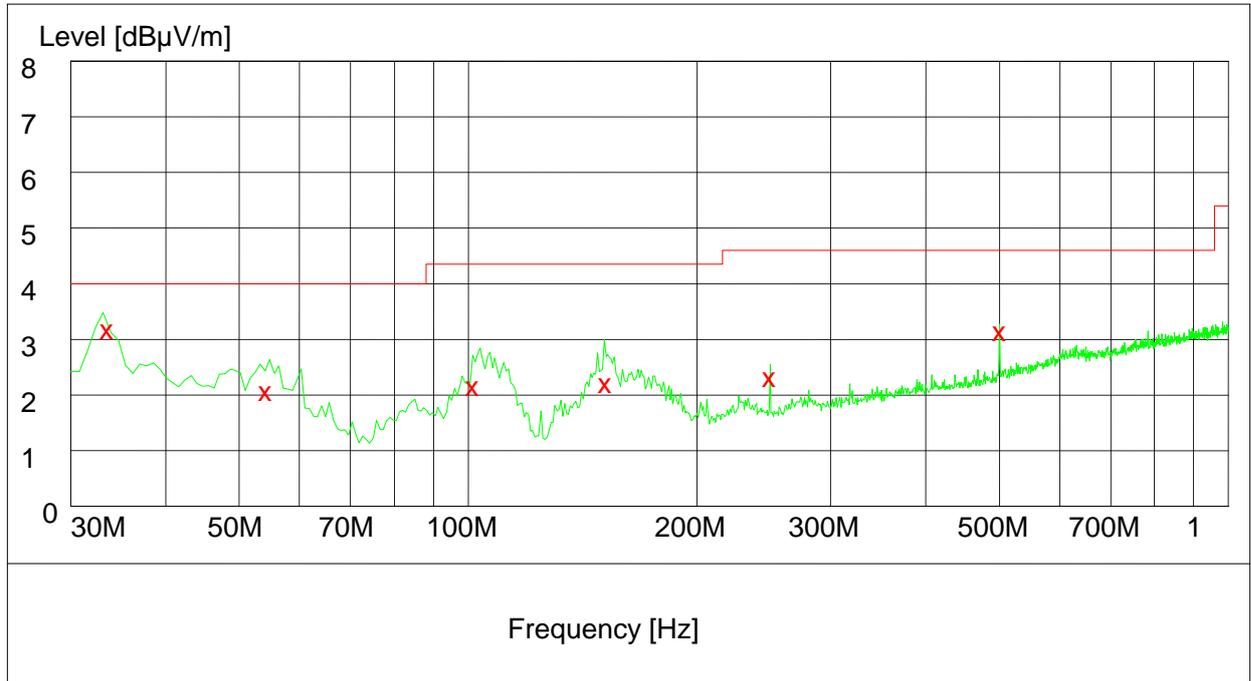
Channel 11

10 kHz to 30 MHz





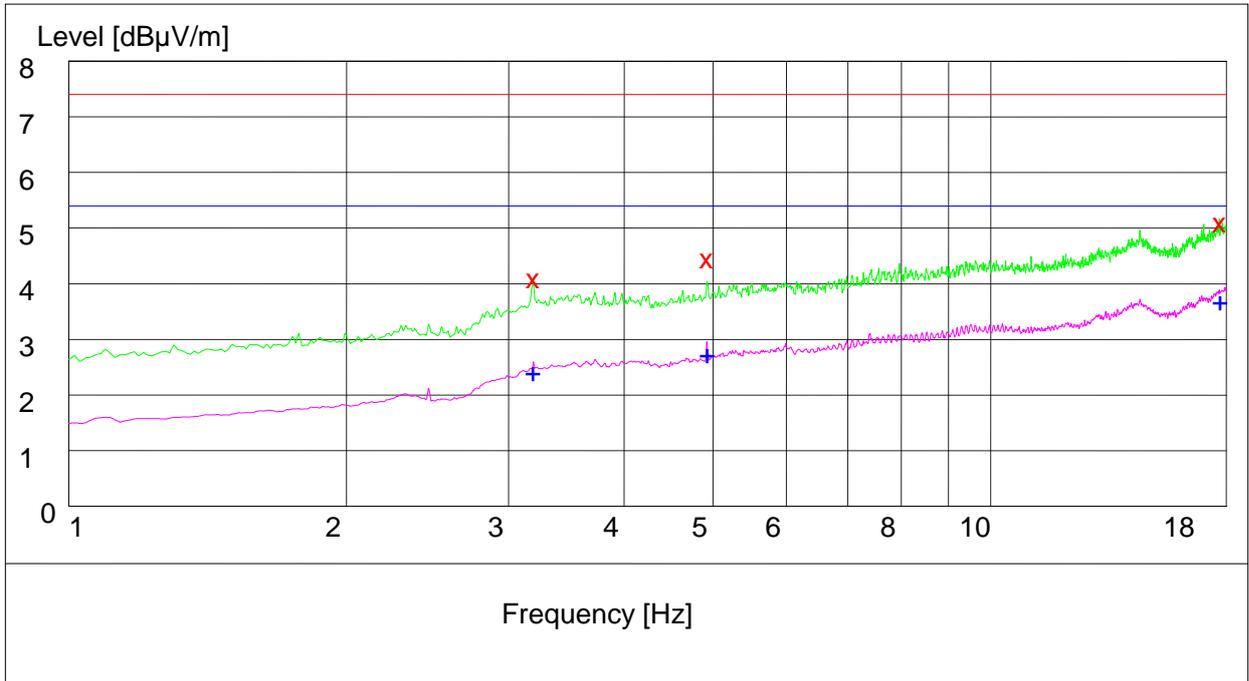
30MHz to 1GHz



Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarization
33.520000	32.00	11.7	40.0	8.0	100.0	32.00	VERTICAL
54.170000	20.60	12.7	40.0	19.4	100.0	24.00	VERTICAL
101.420000	22.20	13.0	43.5	21.3	100.0	138.00	VERTICAL
151.640000	22.30	9.1	43.5	21.2	100.0	110.00	VERTICAL
249.500000	24.40	14.1	46.0	21.6	111.0	243.00	HORIZONTAL
500.000000	32.00	20.2	46.0	14.0	100.0	317.00	VERTICAL



1GHz to 18GHz



Note: Signal suppressed with a 2.4 GHz band rejection filter

MEASUREMENT RESULT: PK Detector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarization
3190.000000	41.60	-6.5	74.0	32.4	101.0	39.00	VERTICAL
4924.000000	45.90	-3.3	74.0	28.1	101.0	55.00	HORIZONTAL
17684.000000	51.20	18.8	74.0	22.8	101.0	351.00	VERTICAL

MEASUREMENT RESULT: AVDetector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarization
3188.000000	25.50	-6.6	54.0	28.5	101.0	44.00	VERTICAL
4924.000000	28.60	-3.3	54.0	25.4	177.0	30.00	HORIZONTAL
17692.500000	38.10	18.9	54.0	15.9	200.0	113.00	VERTICAL



FCC&IC Test Report of B683
FCC ID: QISB683-74V
IC ID: 6369A-B68374V

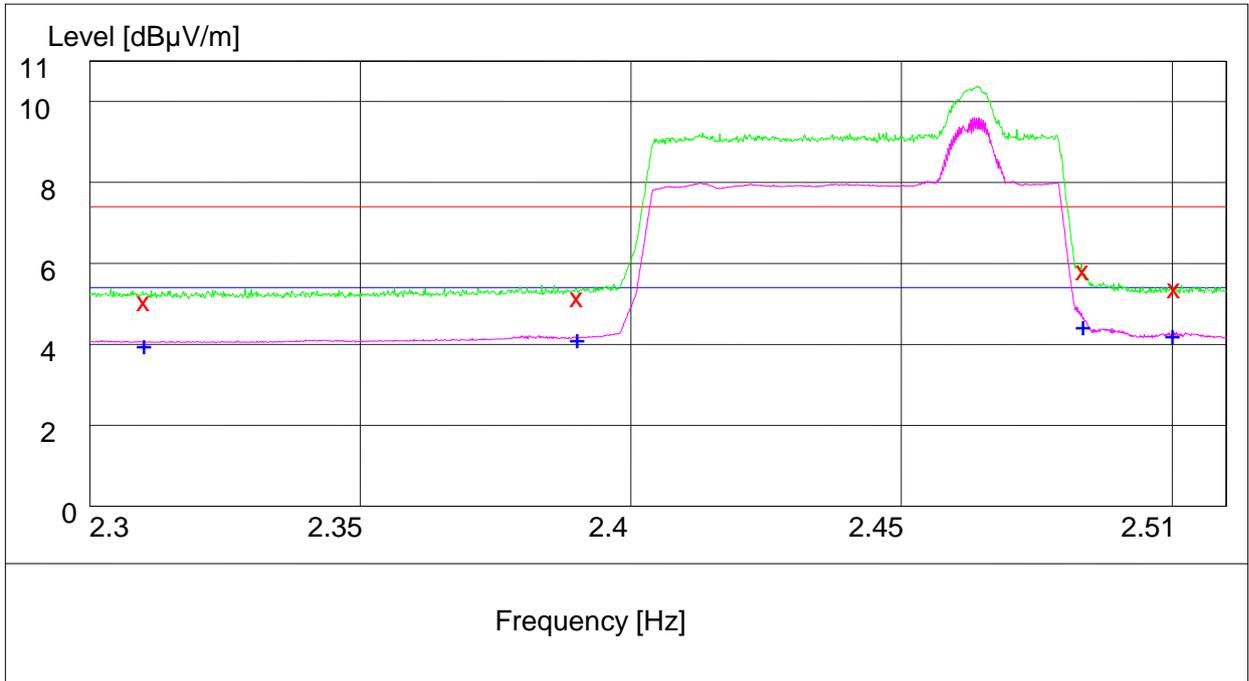
Security Level:
Public

18GHz to 26GHz

Note: No peak found in pre- test.



2.30GHz to 2.51GHz



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
2310.000000	52.30	35.5	74.0	21.7	102.0	78.00	VERTICAL
2390.000000	53.40	36.1	74.0	20.6	100.0	108.00	VERTICAL
2483.500000	60.10	39.9	74.0	13.9	152.0	28.00	VERTICAL
2500.000000	54.10	36.3	74.0	19.9	106.0	201.00	VERTICAL

MEASUREMENT RESULT: AVDetector

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarization
2310.000000	40.60	35.5	54.0	13.4	100.0	83.00	VERTICAL
2390.000000	41.60	36.1	54.0	12.4	100.0	109.00	VERTICAL
2483.500000	46.30	39.9	54.0	7.7	100.0	21.00	VERTICAL
2500.000000	43.10	36.3	54.0	10.9	100.0	214.00	VERTICAL



FCC&IC Test Report of B683
FCC ID: QISB683-74V
IC ID: 6369A-B68374V

Security Level:
Public

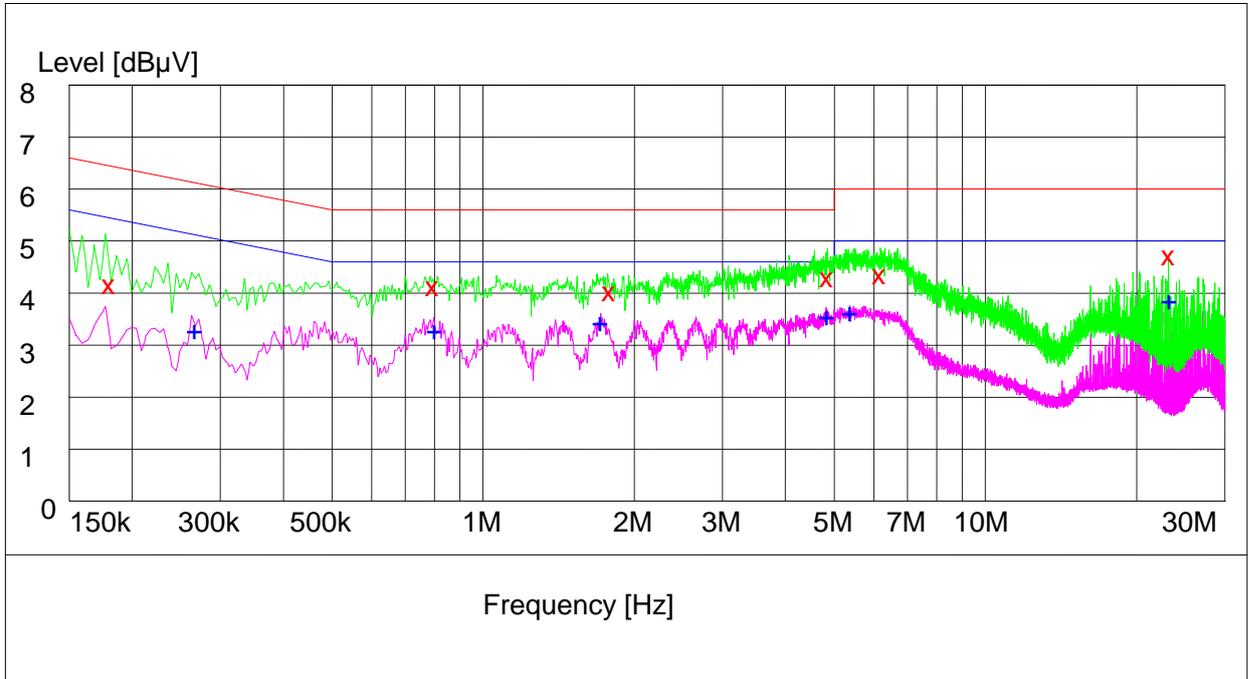
Appendix G

Conducted Emission at Power Port

According to FCC Part 15.207&RSS-210



Channel 6



MEASUREMENT RESULT: QP Detector

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.180000	41.70	10.1	65	23.3	N	FLO
0.794000	40.80	10.1	56	15.2	N	FLO
1.782000	40.00	10.1	56	16.0	N	FLO
4.836000	43.00	10.2	56	13.0	N	FLO
6.156000	44.00	10.2	60	16.0	N	FLO
23.128000	47.50	10.4	60	12.5	L1	FLO

MEASUREMENT RESULT: AV Detector

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.266000	33.10	10.0	51	17.9	N	FLO
0.798000	33.60	10.1	46	12.4	N	FLO
1.704000	34.00	10.1	46	12.0	N	FLO
4.826000	35.80	10.2	46	10.2	N	FLO
5.354000	36.20	10.2	50	13.8	N	FLO
23.128000	40.00	10.4	50	10.0	L1	FLO