



FCC CFR47 PART 15 SUBPART C

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE Tablet + Bluetooth, DTS/UNII a/b/g/n/ac & ANT +

MODEL NUMBER: SM-T805

FCC ID: A3LSMT805

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Prepared for

SAMSUNG ELECTRONICS CO., LTD.

416, MAETAN 3-DONG, YEONGTONG-GU

SUWON-CITY, GYEONGGI-DO 443-742, SOUTH KOREA

Prepared by

UL VERIFICATION SERVICES INC.

47173 BENICIA STREET

FREMONT, CA 94538, U.S.A.

TEL: (510) 771-1000

FAX: (510) 661-0888



NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	3/10/14	Initial Issue	P. Kim
A	3/11/14	Updated conducted spurious emission plots for 5.8GHz band	P. Kim

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
416, MAETAN 3-DONG, YEONGTONG-GU
SUWON-CITY, GYEONGGI-DO 443-742, SOUTH KOREA

EUT DESCRIPTION: GSM/WCDMA/LTE Tablet + Bluetooth, DTS/UNII a/b/g/n/ac & ANT+

MODEL: SM-T805

SERIAL NUMBER: R32F108JLEK (CONDUCTED); R32F108JLDM (RADIATED)

DATE TESTED: February 6- March 10, 2014

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released
For UL Verification Services Inc. By:

Tested By:



PHILIP KIM
WISE PROGRAM MANAGER
UL Verification Services Inc.



STEVEN TRAN
WISE LAB TECHNICIAN
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.4-2009.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 18000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA/LTE Tablet + Bluetooth, DTS/UNII a/b/g/n/ac & ANT+.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum total conducted output power as follows:

Frequency Range (MHz)	Mode	Total Output Power (dBm)	Total Output Power (mW)
2412 - 2462	802.11b	19.31	85.31
2412 - 2462	802.11g	24.07	255.27
2412 - 2462	802.11n HT20	23.63	230.67
5745-5825	802.11a	20.38	109.14
5745-5825	802.11n HT20	20.68	116.95
5755-5795	802.11n HT40	21.03	126.77
5755-5795	802.11ac HT80	21.85	153.11

The transmitter has a average conducted output power as follows:

Band (GHz)	No. of Transmitters	Mode	Mode	Ch #	Freq. (MHz)	Avg Pwr (dBm)		
						Wi-Fi 1	Wi-Fi 2	
2.4	1 Tx	802.11b	1 Mbps	1	2412	13.7		
				6	2437	14.3		
				11	2462	13.6		
				1	2412		12.7	
				6	2437		13.4	
				11	2462		12.8	
	2 Tx			1	2412	13.7	12.7	
				6	2437	14.3	13.4	
				11	2462	13.7	12.8	
	1 Tx	802.11g	6 Mbps	1	2412	11.9		
				6	2437	12.5		
				11	2462	12.0		
				1	2412		10.9	
				6	2437		11.6	
				11	2462		11.2	
				2 Tx	1	2412	11.9	11.0
					6	2437	12.5	11.6
					11	2462	12.0	11.3
	1 Tx	802.11n (HT20)	MCS0	1	2412	10.7		
				6	2437	11.3		

				11	2462	11.0			
				1	2412		9.5		
				6	2437		10.2		
				11	2462		9.7		
	2 Tx			1	2412	11.0	9.8		
				6	2437	11.3	10.2		
				11	2462	11.0	9.8		

Band (GHz)	Mode	Mode	Mode	Ch #	Freq. (MHz)	Avg Pwr (dBm)	
						Wi-Fi 1	Wi-Fi 2
5.8 (DTS)	1 Tx	802.11a	6 Mbps	149	5745	9.6	
				157	5785	9.5	
				165	5825	9.4	
				149	5745		9.9
				157	5785		9.7
				165	5825		9.6
				149	5745	10.5	10.5
				157	5785	10.4	10.5
				165	5825	10.4	10.4
	2 Tx	802.11n (HT20)	MCS0	149	5745	10.3	
				157	5785	10.2	
				165	5825	10.2	
				149	5745		9.6
				157	5785		9.6
				165	5825		9.5
				149	5745	10.3	10.4
				157	5785	10.2	10.3
				165	5825	10.2	10.3
	1 Tx	802.11n (HT40)	MCS0	151	5755	10.4	
				159	5795	10.3	
				151	5755		9.8
				159	5795		9.7
				151	5755	10.4	10.0
				159	5795	10.3	10.2
	2 Tx	802.11ac (20 MHz)	MCS0	149	5745	10.3	
				157	5785	10.3	
				165	5825	10.2	
				149	5745		9.6
				157	5785		9.6
				165	5825		9.6
	1 Tx	802.11ac (40 MHz)	MCS0	151	5755	10.4	
				159	5795	10.3	
				151	5755		9.8

		802.11ac (80 MHz)	MCS0	159	5795		9.8
	2 Tx			151	5755	10.4	10.0
				159	5795	10.3	10.2
	1 Tx			155	5775	10.3	
				155	5775		10.5
	2 Tx			155	5775	10.3	10.5

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes two FPCB antennas, with a maximum gain of -4.6 dBi for 2.4GHz and -3.18 dBi for 5.8GHz; 1.14dBi for 2.4GHz and -0.4dBi for 5.8GHz

5.4. List of test reduction and modes covering other modes:

2400 - 2483.5 MHz Authorized Frequency Band (Antenna Port & Radiated Testing)		
Frequency Range (MHz)	Mode	Covered by
2412 - 2462	802.11b Legacy 1TX	802.11b CDD 2TX
2412 - 2462	802.11g Legacy 1TX	802.11g CDD 2TX
2412 - 2462	802.11n 1TX	802.11n HT20 CDD 2TX
2412 - 2462	802.11n STBC 2TX	802.11n HT20 CDD 2TX
2412 - 2462	802.11n HT40 1TX	802.11n HT40 CDD 2TX
2412 - 2462	802.11n HT40 STBC 2TX	802.11n HT40 CDD 2TX

5725 - 5850 MHz Authorized Frequency Band (Antenna Port & Radiated Testing)		
Frequency Range (MHz)	Mode	Covered by
5745 - 5825	802.11a Legacy 1TX	802.11a CDD 2TX
5745 - 5825	802.11n HT20 1TX	802.11n HT20 CDD 2TX
5745 - 5825	802.11n HT20 STBC 2TX	802.11n HT20 CDD 2TX
5755 - 5795	802.11n HT40 1TX	802.11n HT40 CDD 2TX
5755 - 5795	802.11n HT40 STBC 2TX	802.11n HT40 CDD 2TX
5775	802.11ac VHT80 1TX	802.11ac VHT80 CDD 2TX
5775	802.11ac VHT80 STBC 2TX	802.11ac VHT80 CDD 2TX

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

Based on the baseline scan, the worst-case data rates were:

802.11b mode: 1 Mbps
802.11g mode: 6 Mbps
802.11a mode: 6 Mbps
802.11n HT20mode: MCS0
802.11n HT40mode: MCS0
802.11ac VHT80mode: MCS0

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

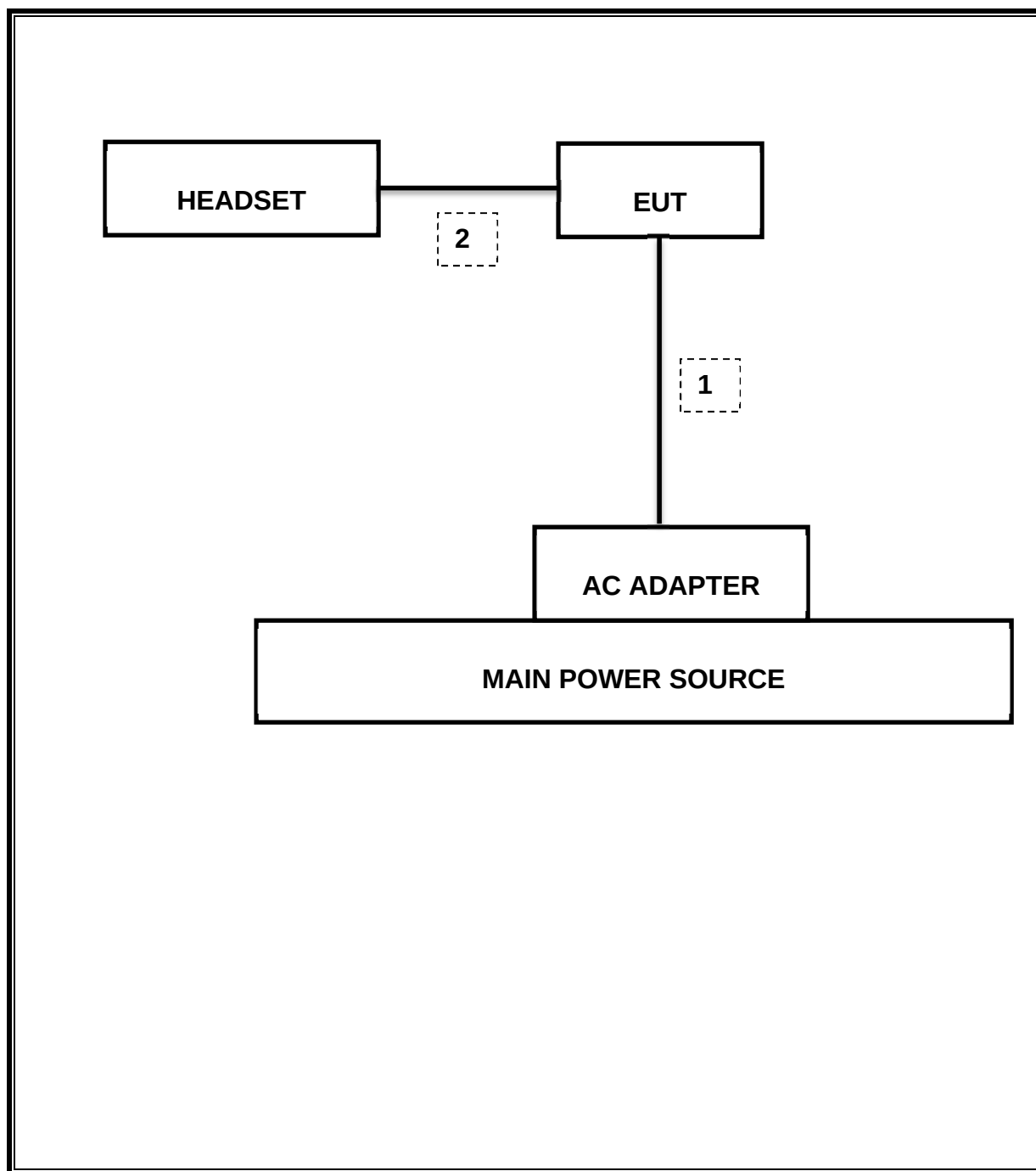
Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Samsung	Samsung	N/A	N/A
Earphone	Samsung	Samsung	N/A	N/A

I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Mini-USB	Shielded	1.2m	N/A
2	Audio	1	Mini-Jack	Unshielded	1m	N/A

TEST SETUP

The EUT is a stand-alone unit during the tests. Test software exercised the radio card.

SETUP DIAGRAM FOR TESTS

6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/14
Spectrum Analyzer, 9KHz-40GHz	HP	8564E	C00986	04/01/14
EMI Test Receiver, 9 kHz-7 GHz	R & S	ESCI 7	1000741	08/13/14
EMI Test Receiver, 30 MHz	R & S	ESHS 20	N02396	08/18/14
Peak Power Meter	Agilent / HP	E4416A	C00963	12/13/14
Peak / Average Power Sensor	Agilent / HP	E9327A	C00964	12/13/14
Antenna, Horn, 1-18 GHz	ETS	3117	C01022	02/21/15
Antenna, Horn, 18- 26 GHz	ARA	MWH-1826/B	C00946	11/12/14
Antenna, Horn, 26-40 GHz	ARA	MWH-2640	C00891	06/28/14
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	T243	03/06/15
RF Preamplifier, 100KHz -> 1300MHz	HP	TBD	C00825	06/01/14
RF Preamplifier, 1GHz - 18GHz	Miteq	NSP4000-SP2	924343	03/23/14
RF Preamplifier, 1GHz - 26.5GHz	HP	8449B	F00351	06/27/14
AC Power Supply, 2,500VA 45-500Hz	Elgar-Ametek	CW2501M	F00013	CNR
RF Preamplifier, 1GHz - 40GHz	Miteq	NSP4000-SP2	C00990	08/20/14
Attenuator / Switch driver	HP	11713A	F00204	CNR
Low Pass Filter 3GHz	Micro-Tronics	LPS17541	F00219	05/23/14
High Pass Filter 5GHz	Micro-Tronics	HPS17542	F00222	05/22/14
High Pass Filter 6GHz	Micro-Tronics	HPM17543	F00224	05/22/14

7. MEASUREMENT METHODS

KDB 558074 D01 DTS Meas Guidance v03r01:Measurement Procedure PK2 is used for power and PKPSD is used for power spectral density.

Unwanted emissions within Restricted Bands are measured using traditional radiated procedures.

Band edge emissions within Restricted Bands are measured using RMS with duty cycle factor offset method.

8. ON TIME, DUTY CYCLE AND MEASUREMENT METHODS

LIMITS

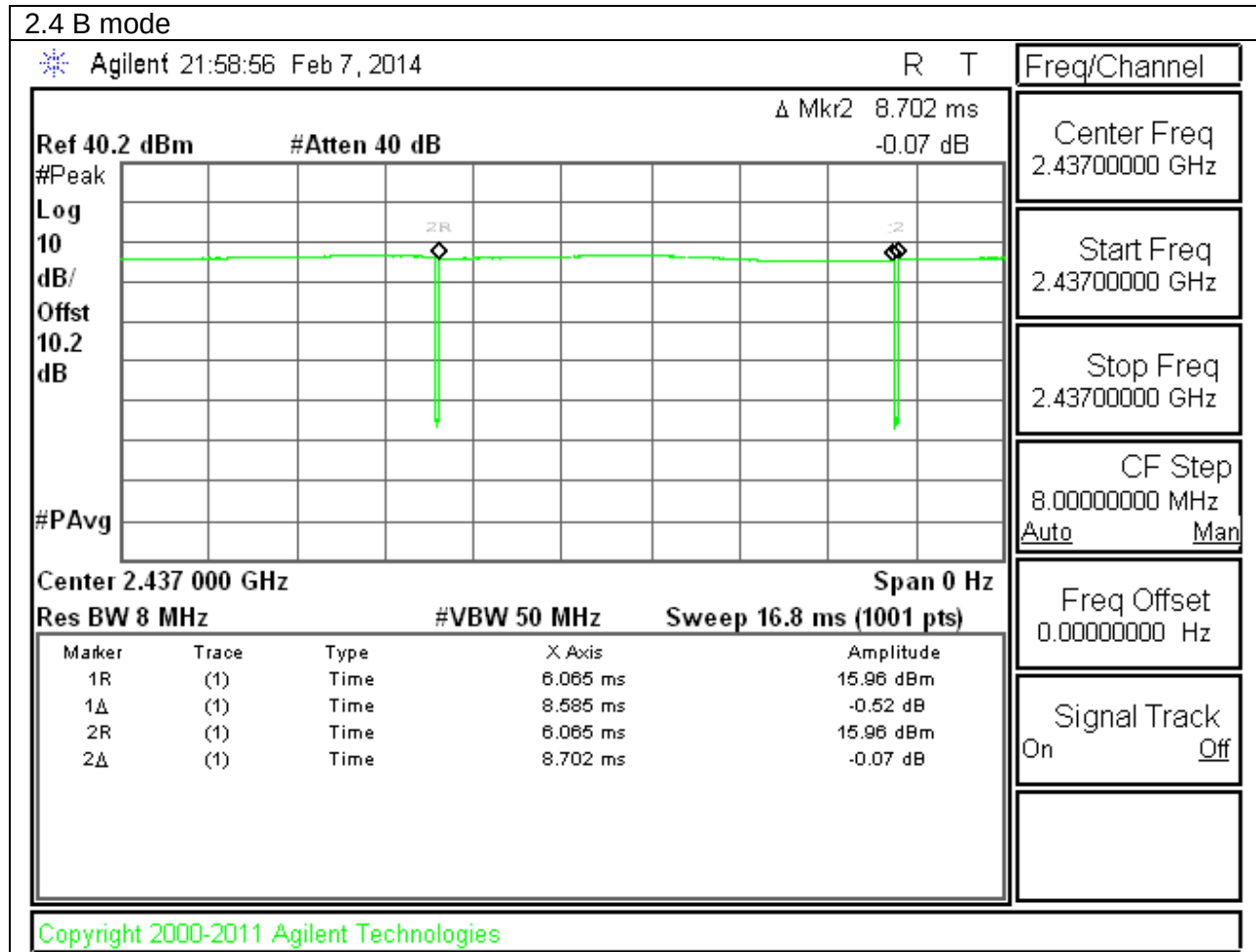
None; for reporting purposes only.

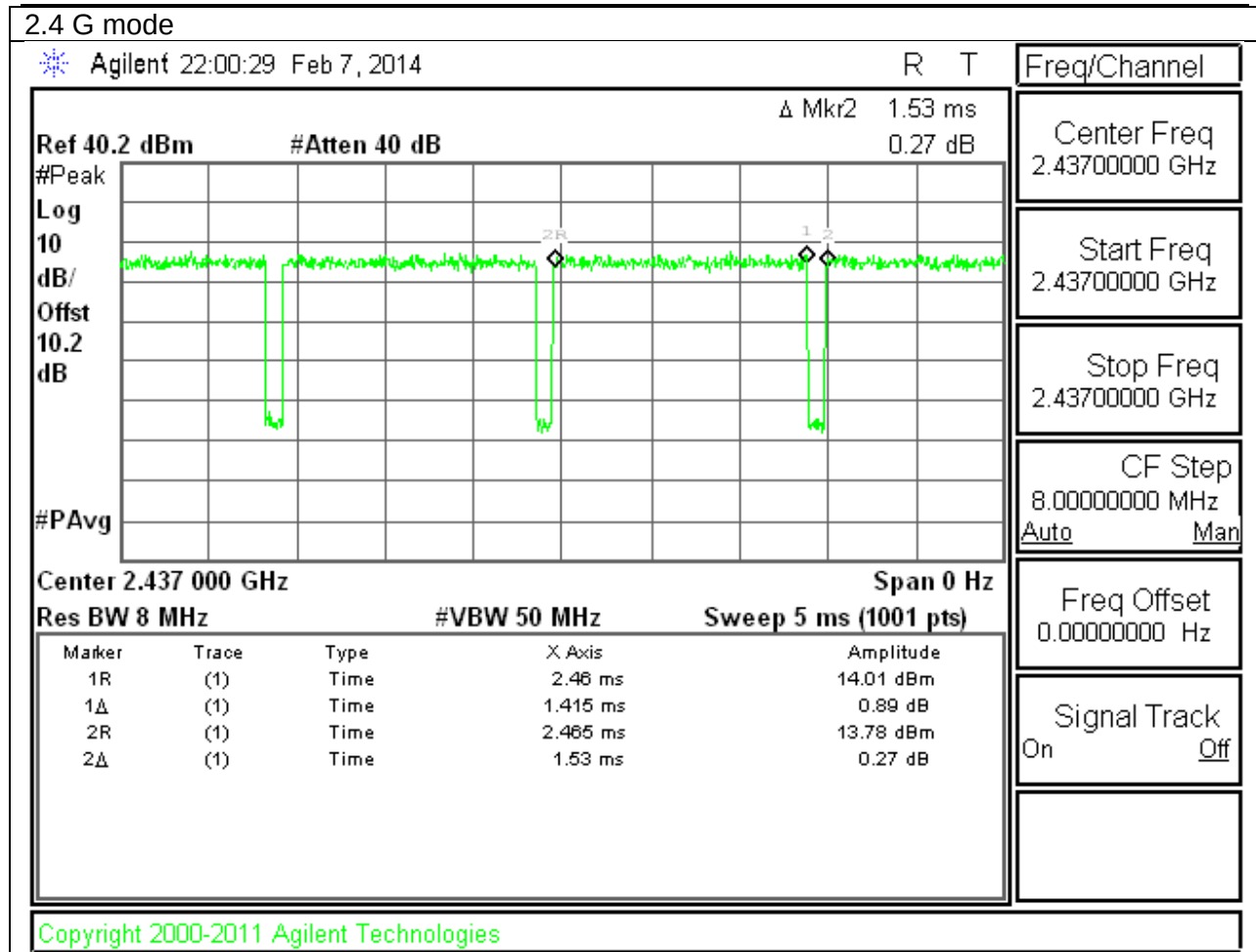
PROCEDURE

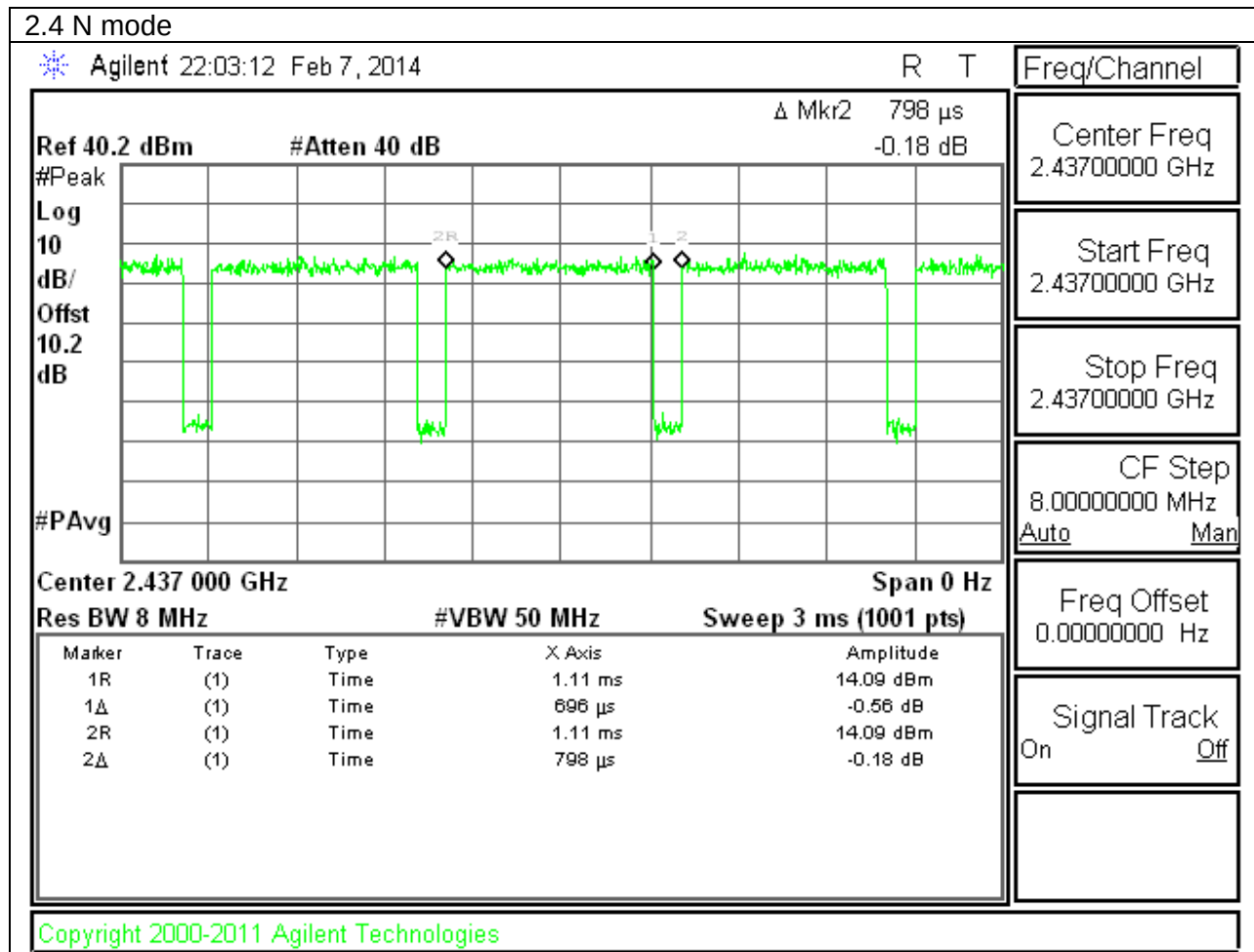
KDB 789033 Zero-Span Spectrum Analyzer Method.

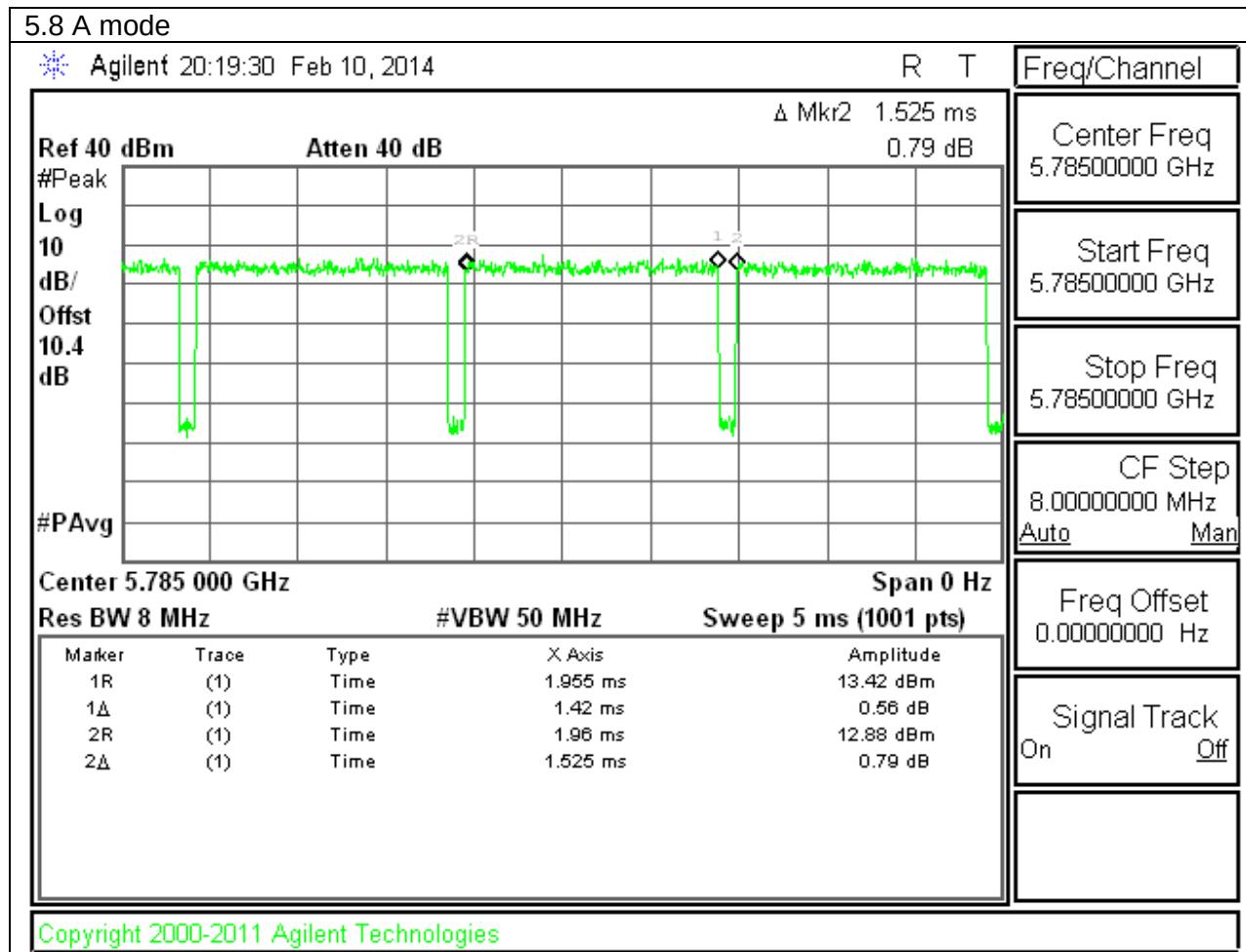
8.1. ON TIME AND DUTY CYCLE RESULTS

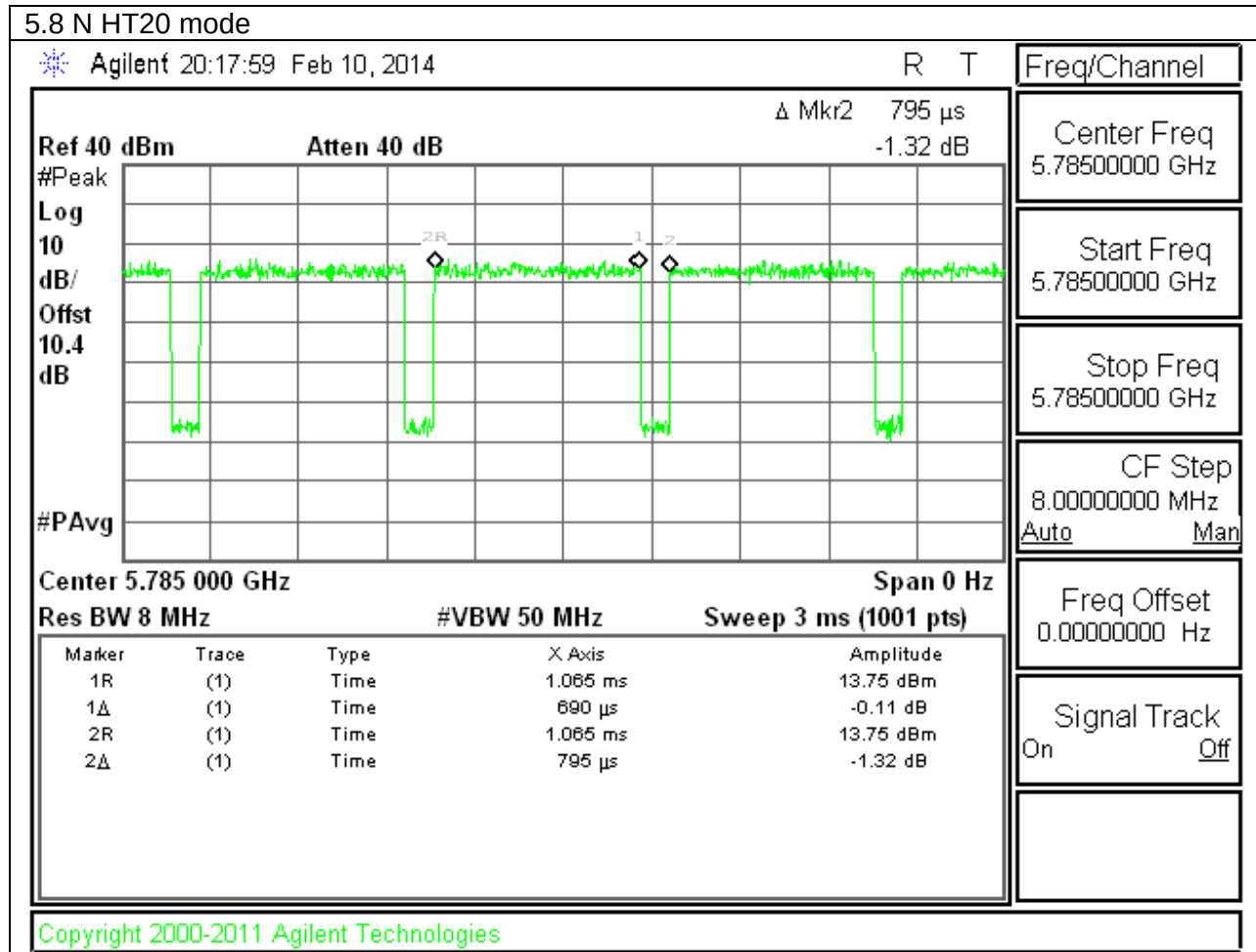
Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
802.11b CDD	8.585	8.702	0.987	98.66%	0.06	0.010
802.11g CDD	1.415	1.530	0.925	92.48%	0.34	0.010
802.11n HT20 CDD	0.696	0.798	0.872	87.22%	0.59	0.010
5GHz Band						
802.11a CDD	1.420	1.525	0.931	93.11%	0.31	0.010
802.11n HT20 CDD	0.690	0.795	0.868	86.79%	0.62	0.010
802.11n HT40 CDD	0.3600	0.4640	0.776	77.59%	1.10	2.155
802.11ac VHT80 CDD	0.1920	0.2920	0.658	65.75%	1.82	3.425

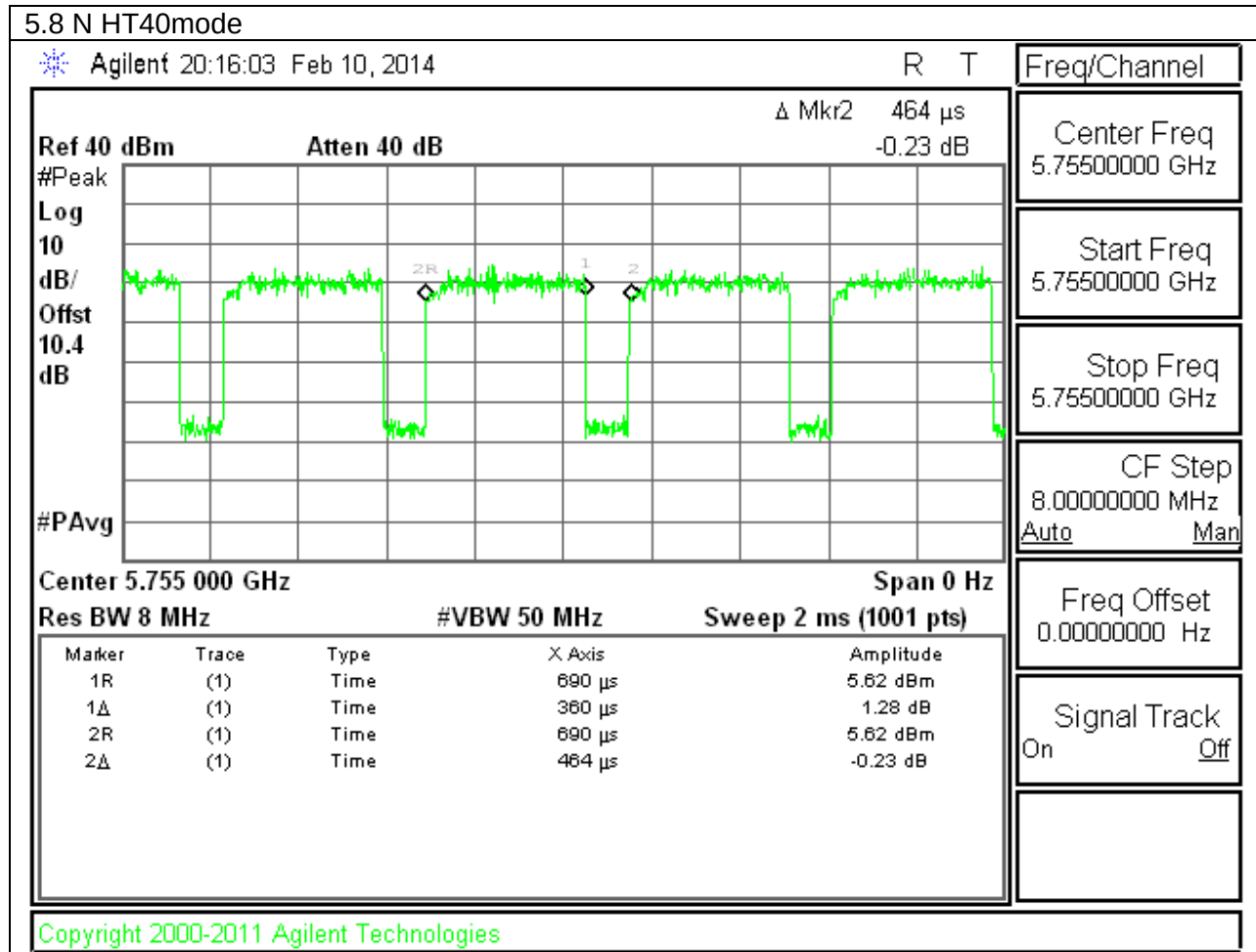










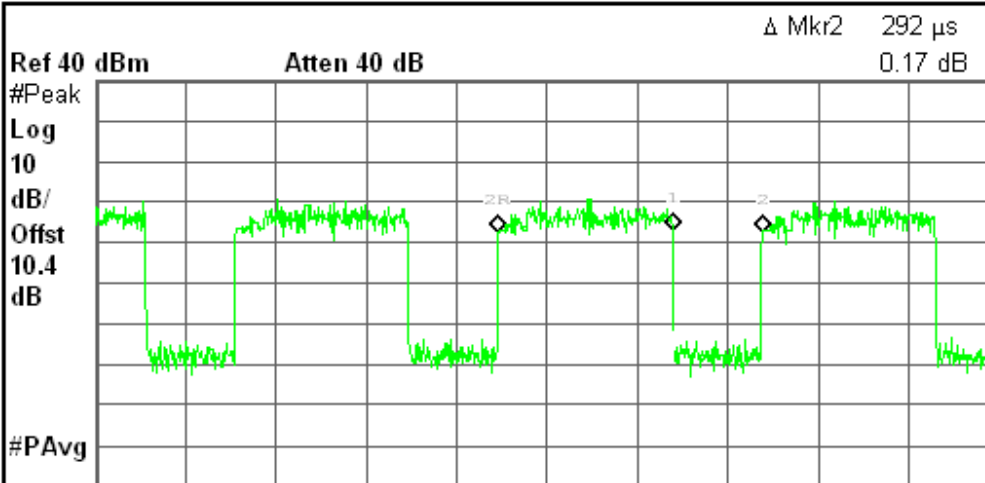


5.8 AC VHT80 mode

Agilent 20:13:51 Feb 10, 2014

R T

Freq/Channel



Center Freq
5.77500000 GHz

Start Freq
5.77500000 GHz

Stop Freq
5.77500000 GHz

CF Step
8.00000000 MHz
Auto Man

Center 5.775 000 GHz Span 0 Hz
Res BW 8 MHz #VBW 50 MHz Sweep 1 ms (1001 pts)

Freq Offset
0.00000000 Hz

Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	446 μ s	2.48 dBm
1Δ	(1)	Time	192 μ s	0.54 dB
2R	(1)	Time	446 μ s	2.48 dBm
2Δ	(1)	Time	292 μ s	0.17 dB

Signal Track
On Off

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9. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result	Worst Case
15.247 (a)(2)	RSS-210 A8.2(a)	Occupied Band width (6dB)	>500KHz	Conducted	Pass	8.57MHz
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-33.49dBm
15.247	RSS-210 A8.4	TX conducted output power	<30dBm		Pass	24.07dBm
15.247	RSS-210 A8.2	PSD	<8dBm		Pass	-6.61dBm
15.207 (a)	RSS-GEN 7.2.2	AC Power Line conducted emissions	Section 10	Radiated	Pass	56dBuV
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m		Pass	52dBuV/m

10. ANTENNA PORT TEST RESULTS

10.1. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

IC RSS-210 A8.2 (a)

The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

Reference to KDB 558074 D01 DTS Meas Guidance v03r01: The transmitter output is connected to a spectrum analyzer with the RBW set to 100KHz, the VBW $\geq 3 \times$ RBW, peak detector and max hold.

RESULTS

10.1.1. 802.11b CDD MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	2412	9.000	9.070	0.5
Mid	2437	9.030	9.030	0.5
High	2462	8.570	9.100	0.5

10.1.2. 802.11g CDD MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	2412	16.290	16.290	0.5
Mid	2437	16.330	16.380	0.5
High	2462	16.080	16.290	0.5

10.1.3. 802.11n CDD HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	2412	17.420	17.670	0.5
Mid	2437	17.460	17.670	0.5
High	2462	17.580	17.540	0.5

10.1.4. 802.11a CDD MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	5745	16.500	16.400	0.5
Mid	5785	16.450	16.450	0.5
High	5825	16.450	16.450	0.5

10.1.5. 802.11n CDD HT20 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	5745	17.750	17.650	0.5
Mid	5785	17.700	17.650	0.5
High	5825	17.700	17.650	0.5

10.1.6. 802.11n CDD HT40 MODE IN THE 5.8 GHz BAND

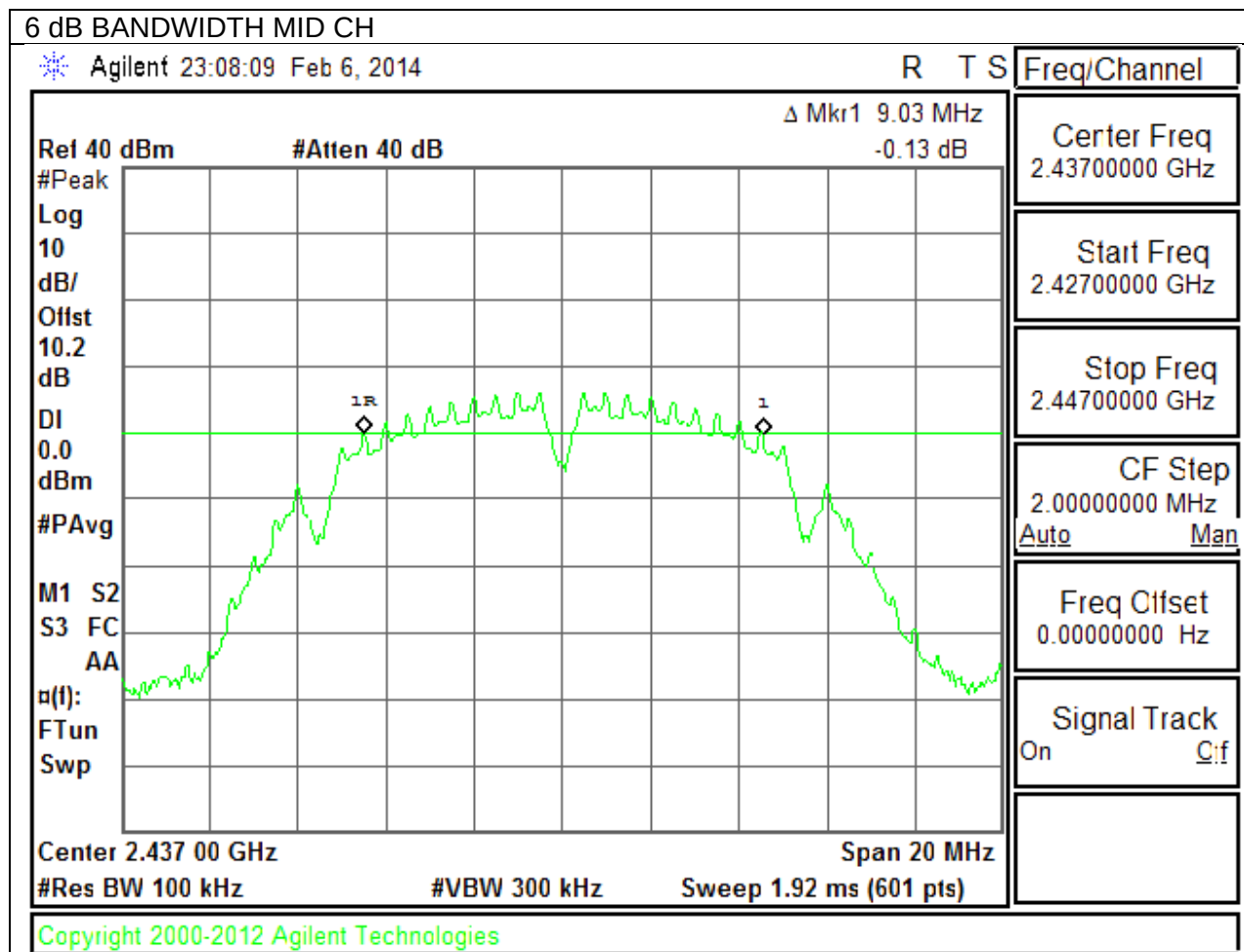
Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Low	5755	36.400	36.300	0.5
High	5795	36.400	36.200	0.5

10.1.7. 802.11AC CDD HT80 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	6 dB BW Chain 0 (MHz)	6 dB BW Chain 1 (MHz)	Minimum Limit (MHz)
Mid	5775	76.200	76.400	0.5

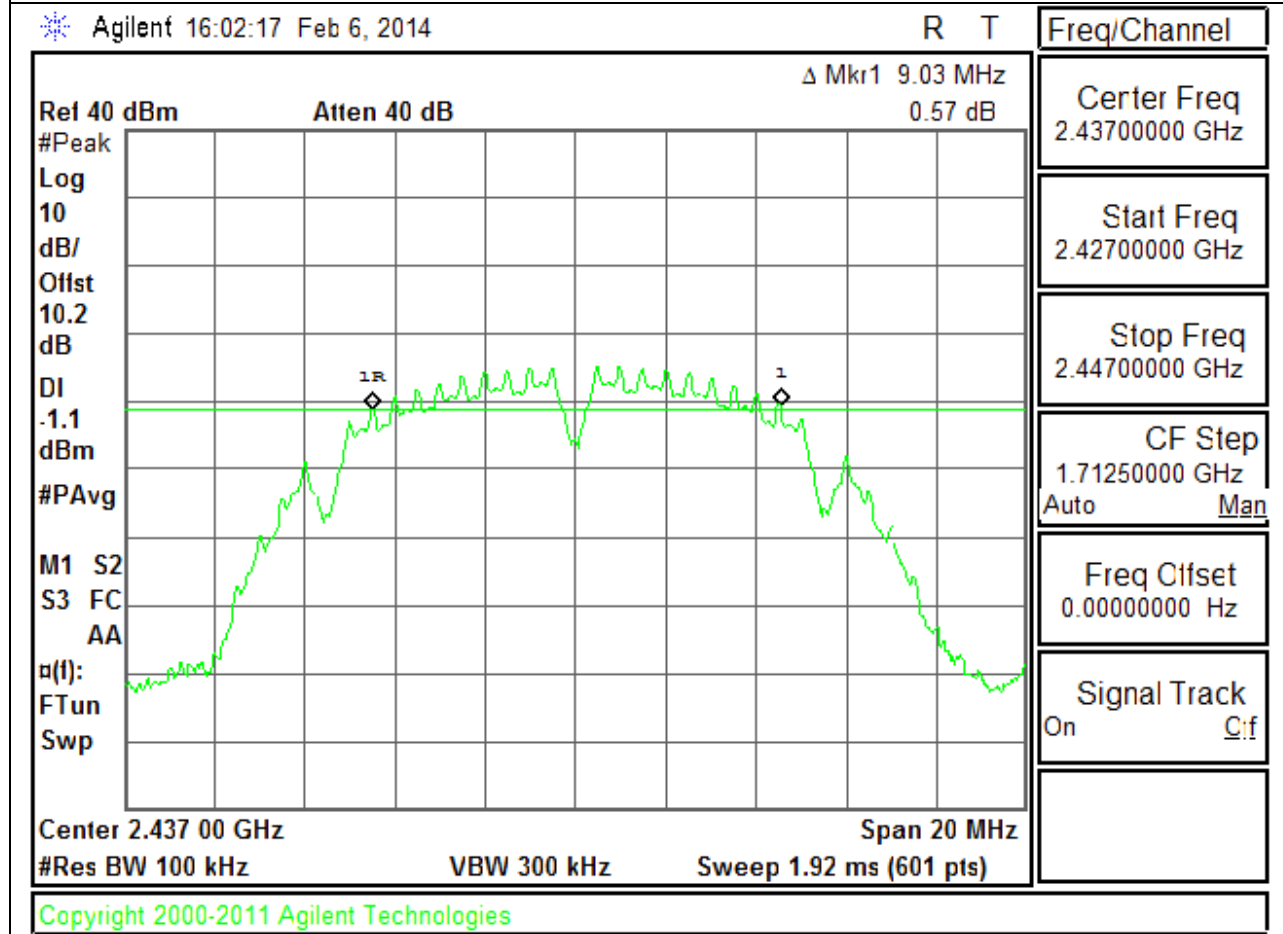
10.1.8. 2.4GHz Plots

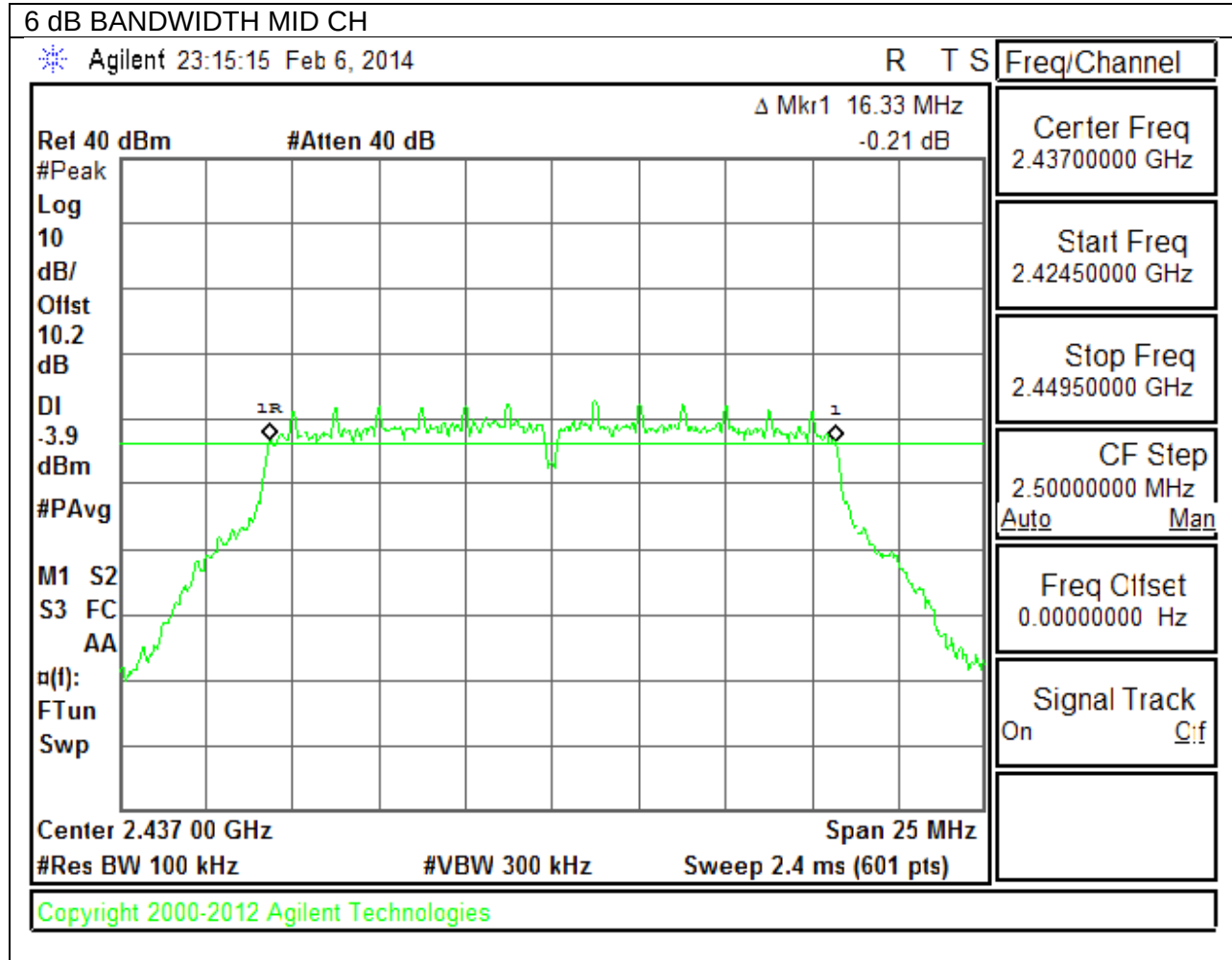
802.11b 6 dB BANDWIDTH CHAIN 0



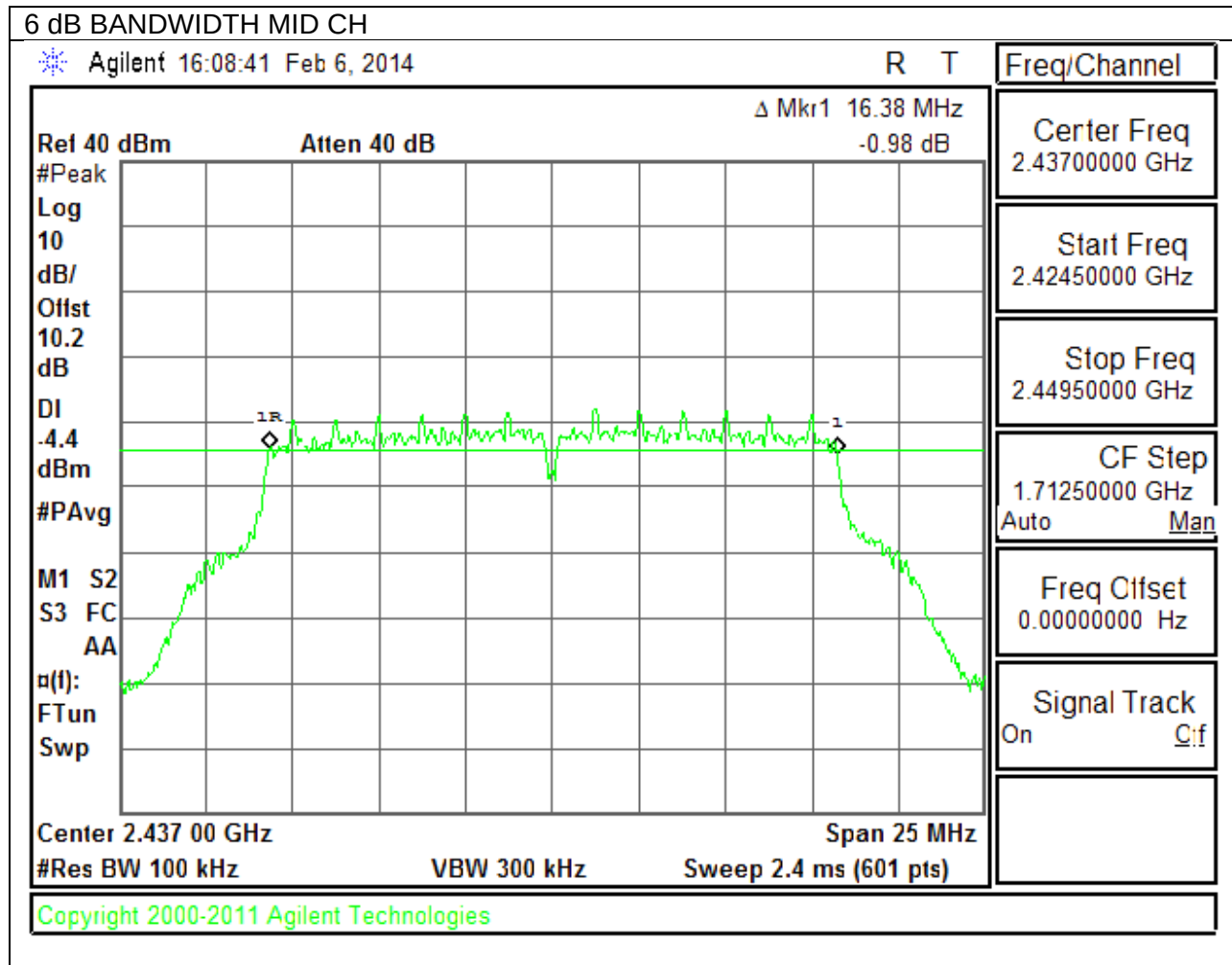
802.11b 6 dB BANDWIDTH CHAIN 1

6 dB BANDWIDTH MID CH

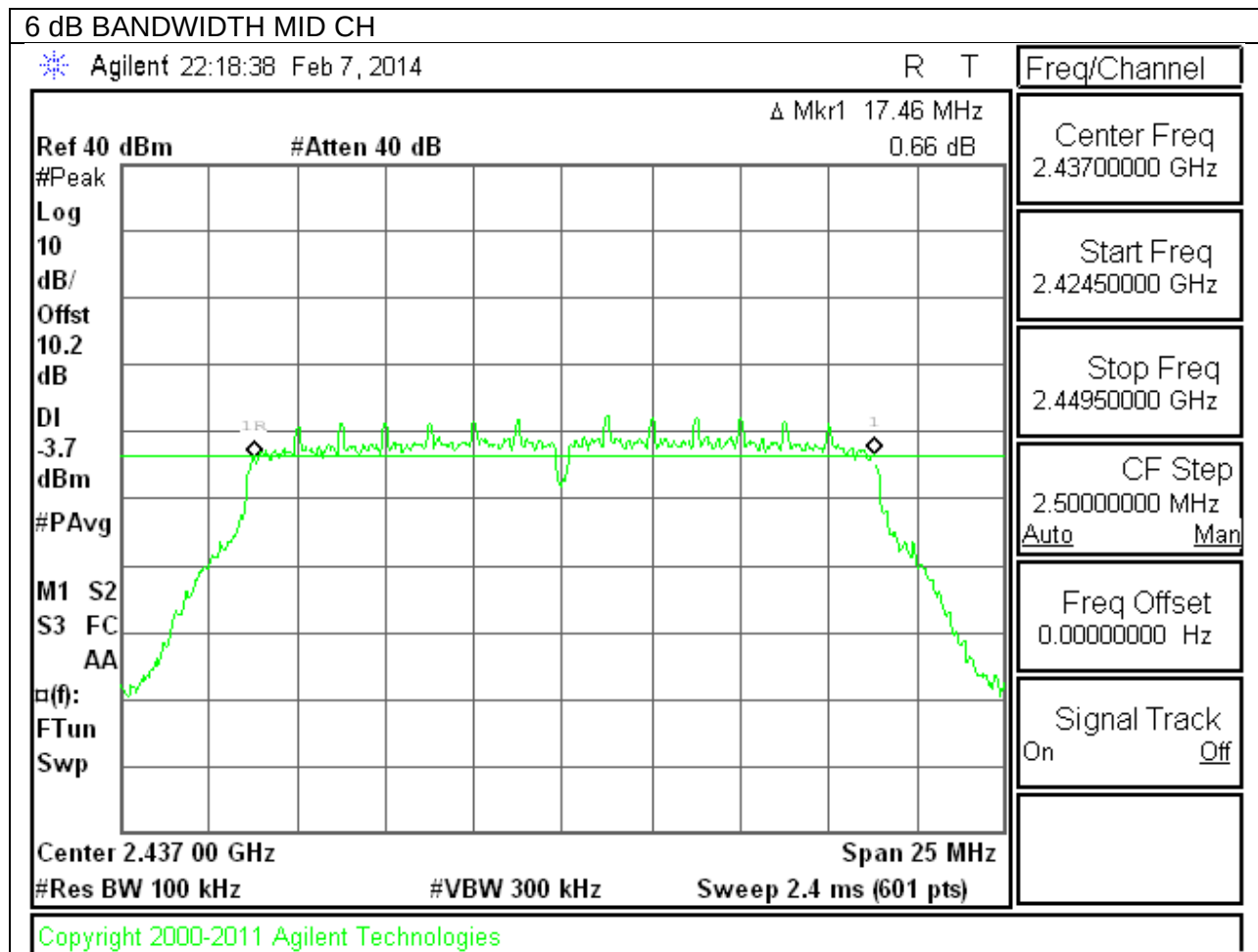


802.11g 6 dB BANDWIDTH CHAIN 0

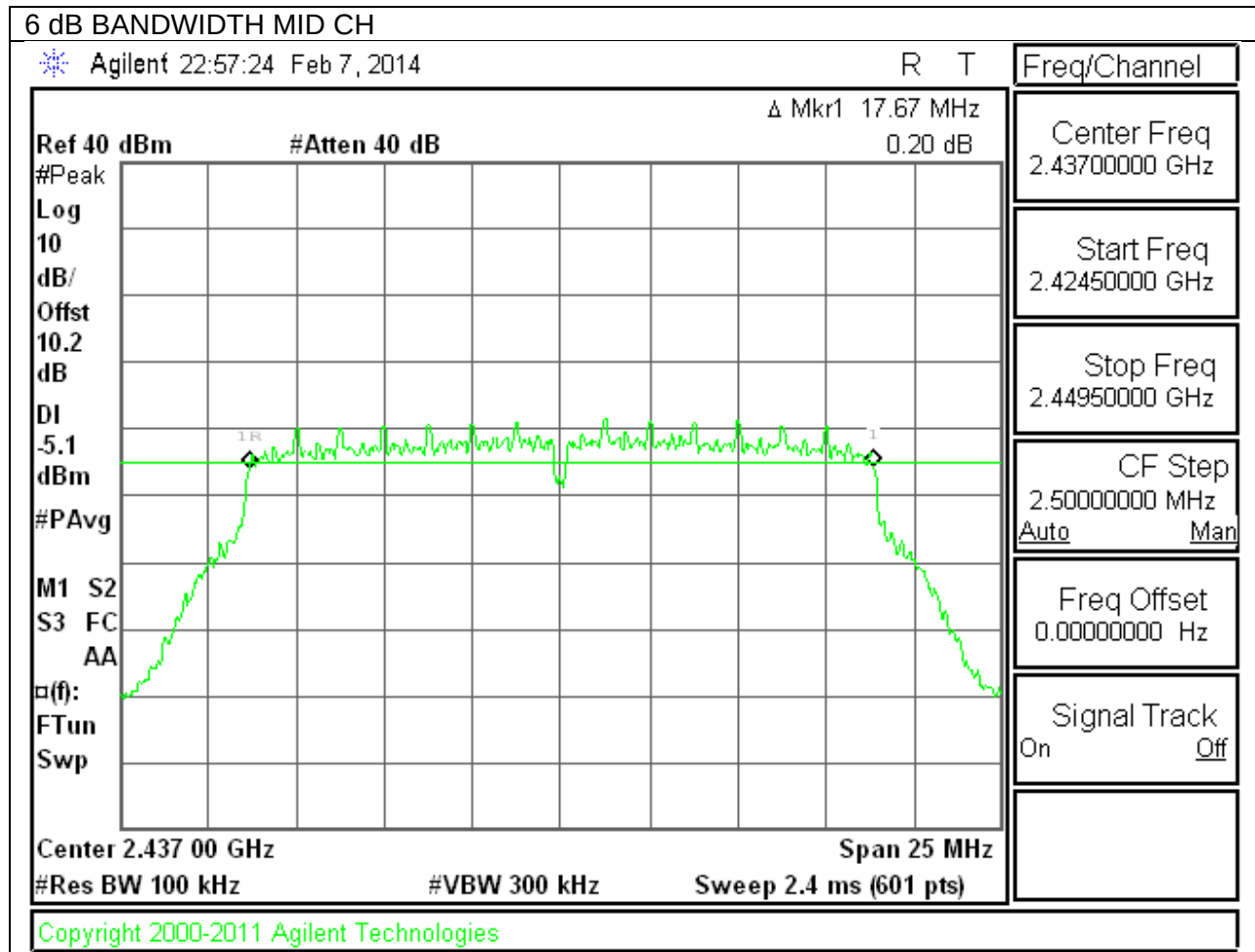
802.11g 6 dB BANDWIDTH CHAIN 1



802.11n 6 dB BANDWIDTH CHAIN 0

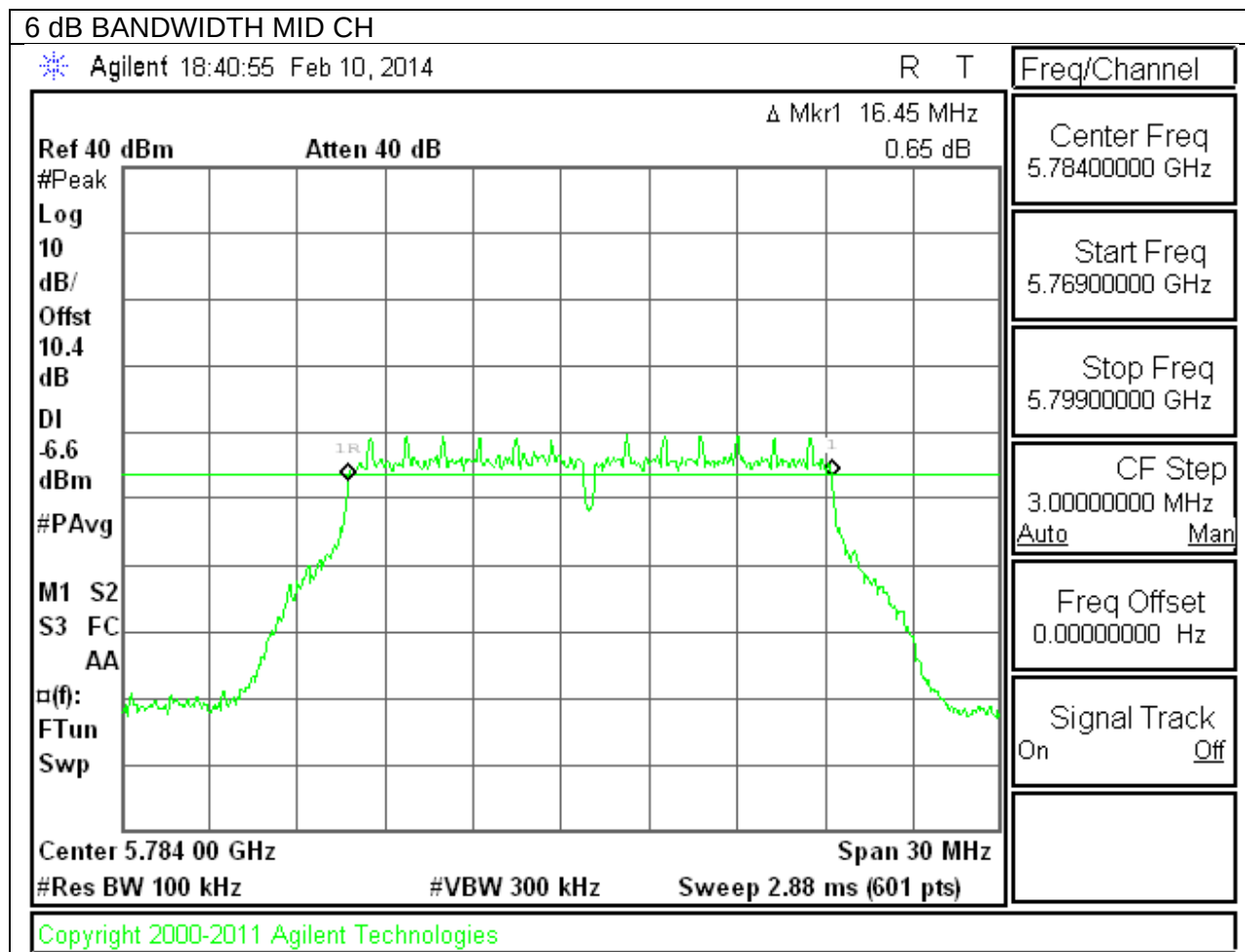


802.11n 6 dB BANDWIDTH CHAIN 1

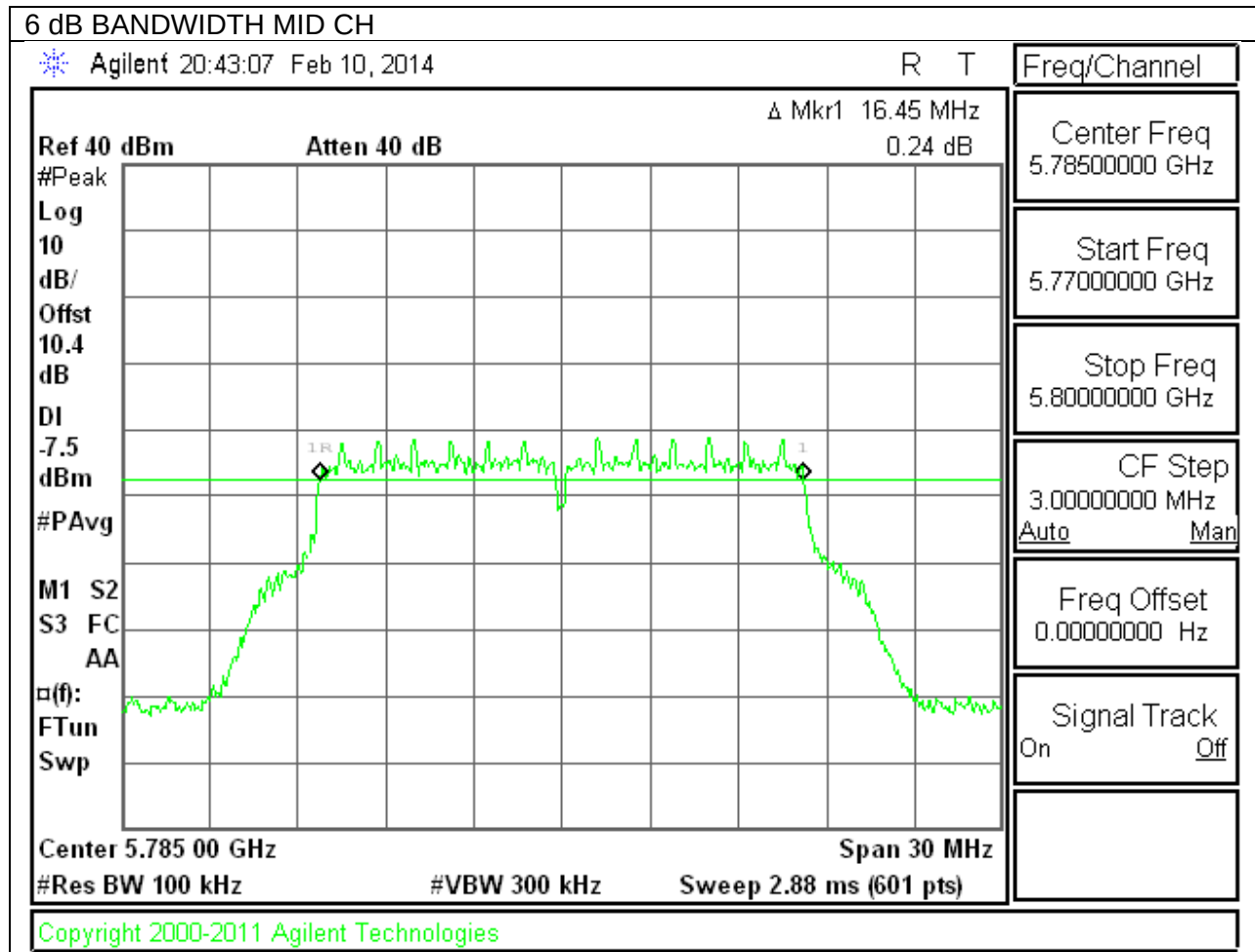


10.1.9. 5.8GHz Plots

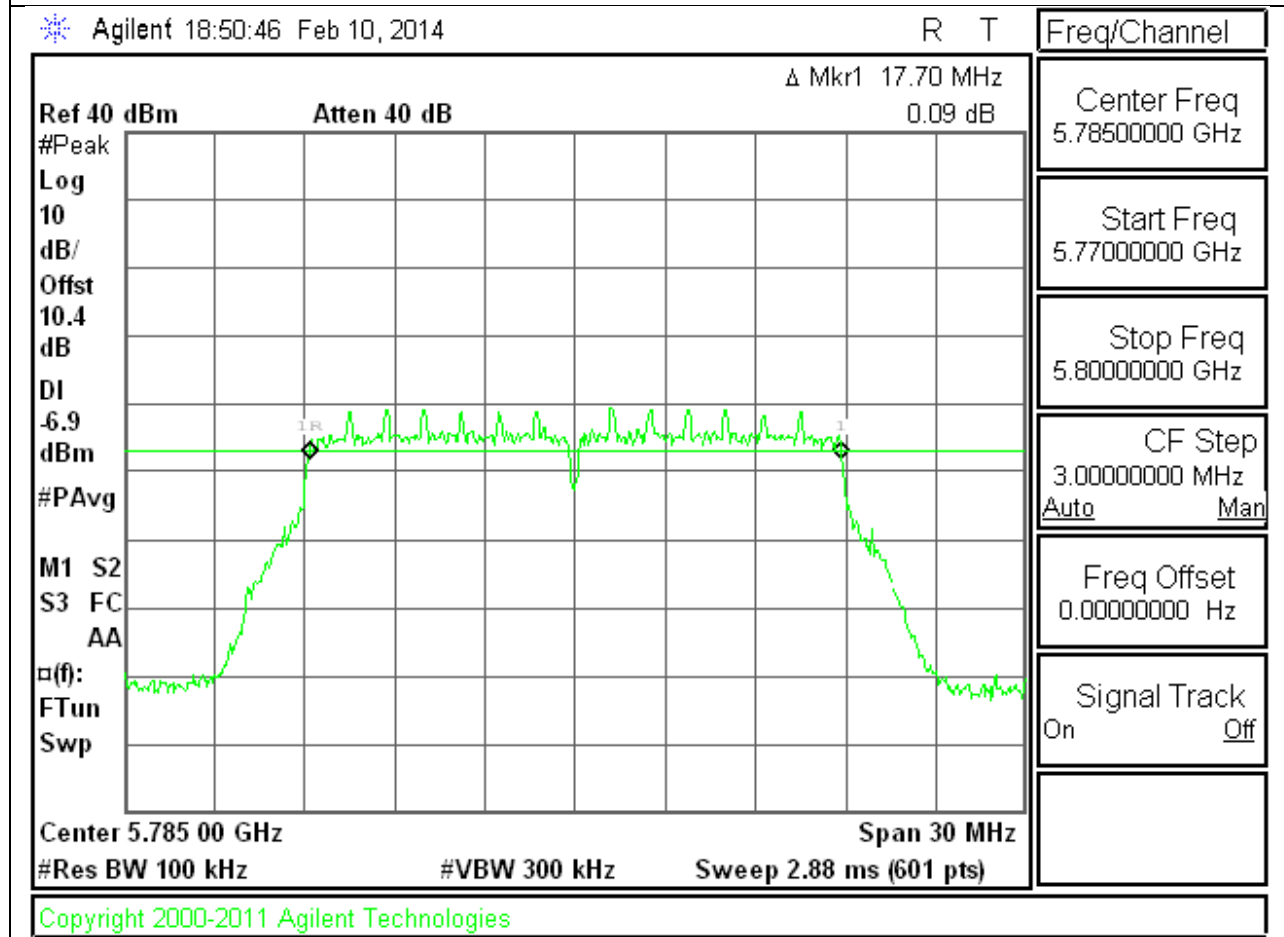
802.11a 6 dB BANDWIDTH CHAIN 0



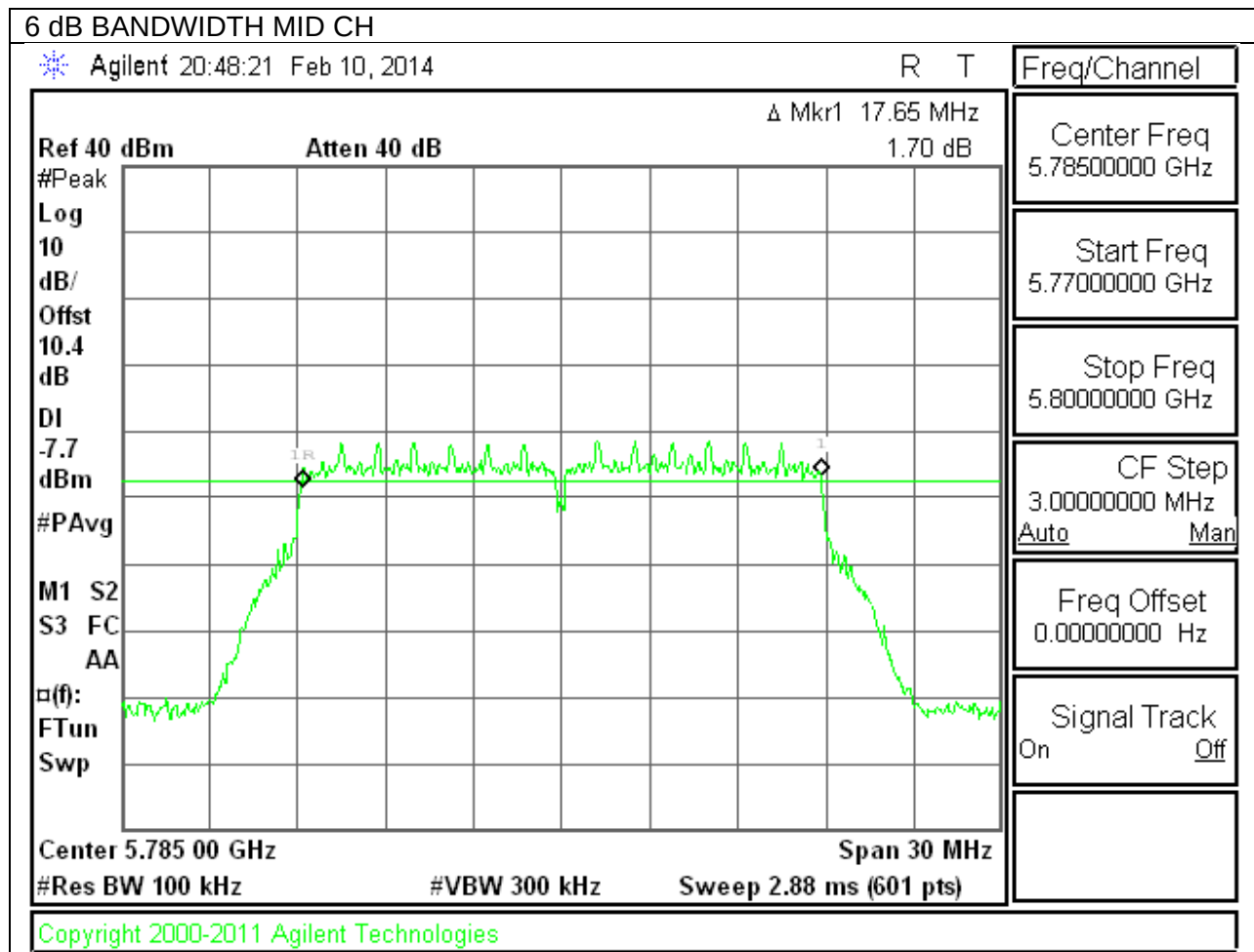
802.11a 6 dB BANDWIDTH CHAIN 1



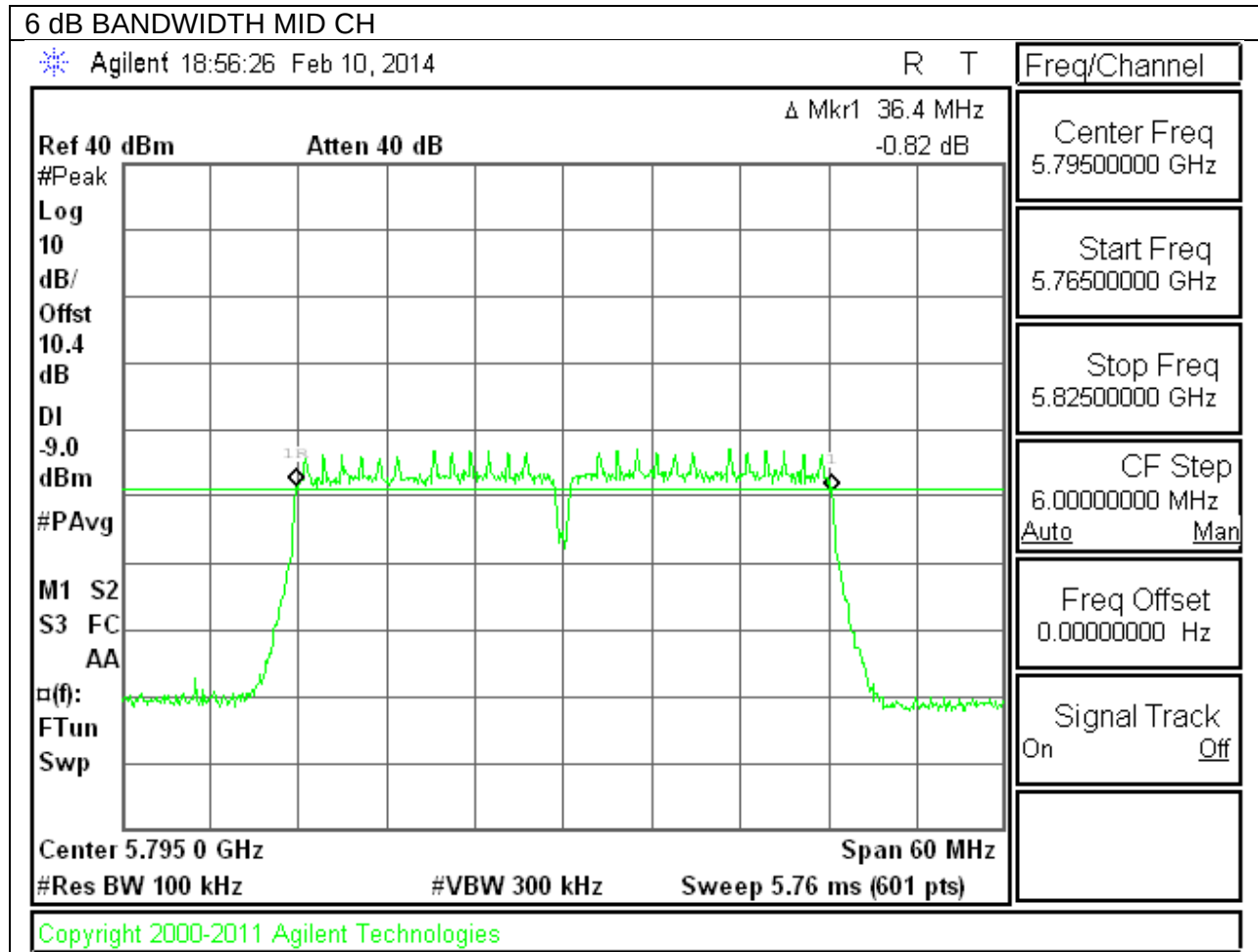
6 dB BANDWIDTH MID CH



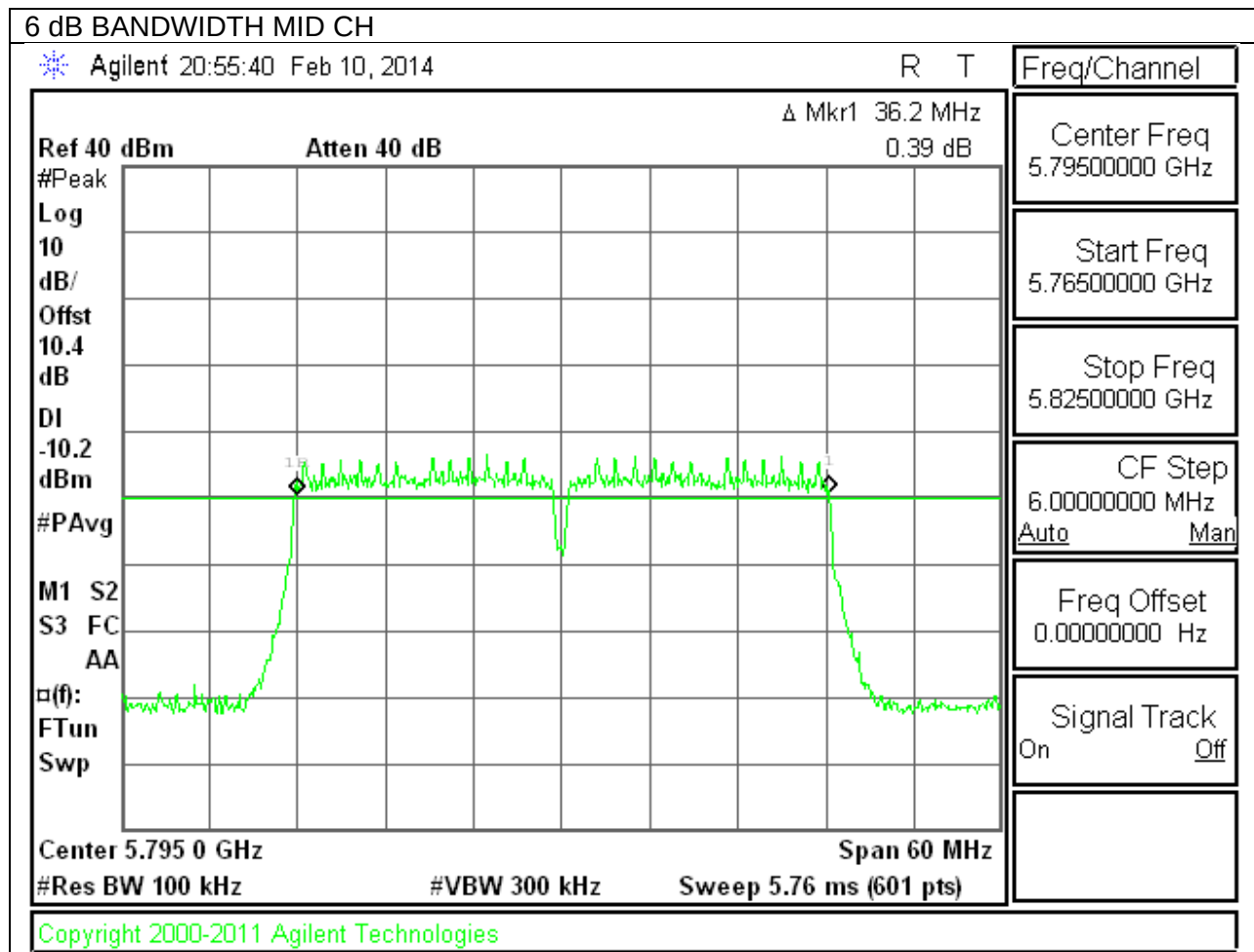
802.11n HT20 6 dB BANDWIDTH CHAIN 1



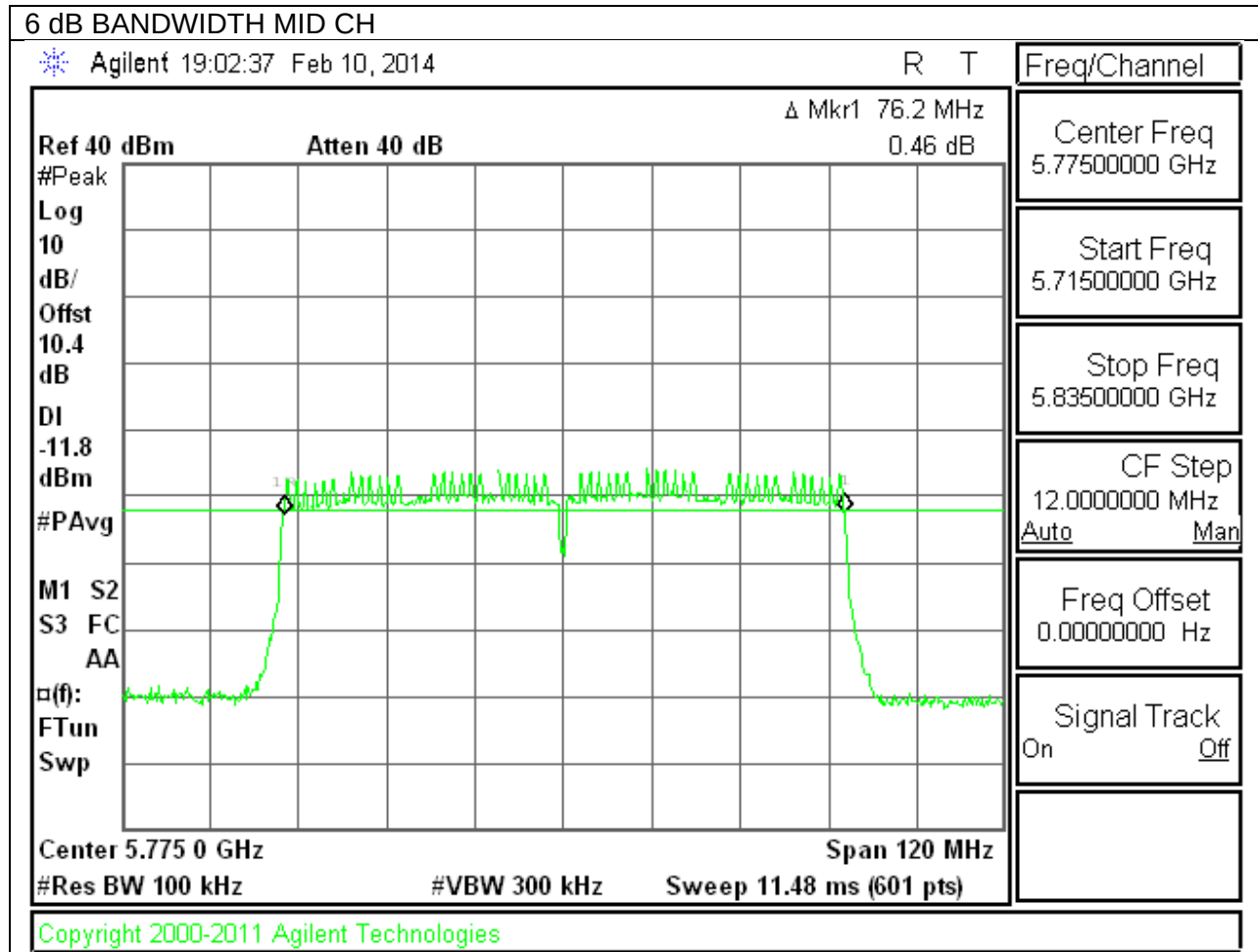
802.11n HT40 6 dB BANDWIDTH CHAIN 0



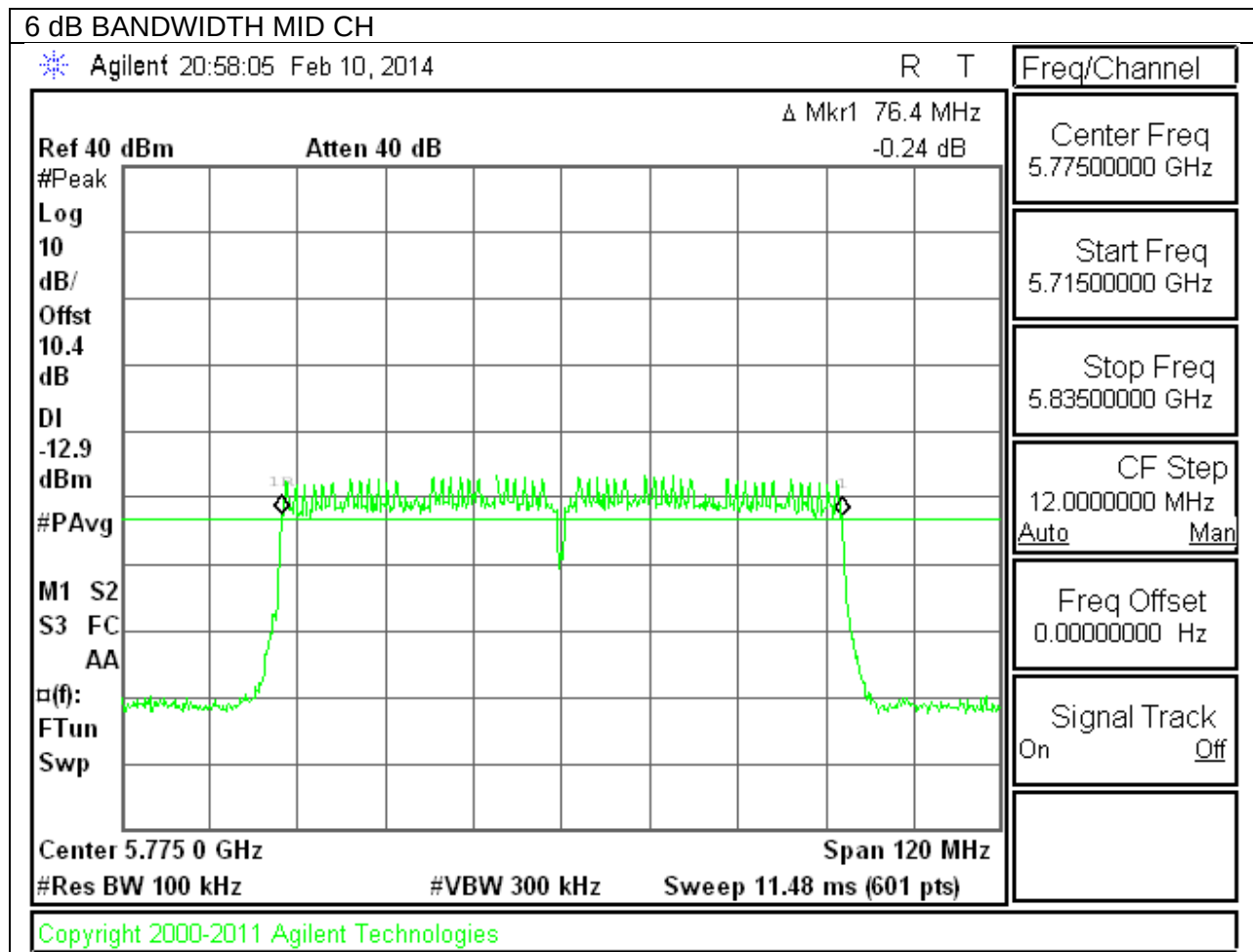
802.11n HT40 6 dB BANDWIDTH CHAIN 1



802.11ac HT80 6 dB BANDWIDTH CHAIN 0



802.11ac HT80 6 dB BANDWIDTH CHAIN 1



10.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

10.2.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	2412	10.9494	11.2056
Mid	2437	11.0146	11.0727
High	2462	11.0513	11.0870

10.2.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	2412	16.3247	16.4233
Mid	2437	16.6263	16.4583
High	2462	16.3389	16.3284

10.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	2412	17.3655	17.3273
Mid	2437	17.2751	17.4736
High	2462	17.3331	17.4608

10.2.4. 802.11a MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5745	16.6561	16.6669
Mid	5785	16.6765	16.6718
High	5825	16.6778	16.6785

10.2.5. 802.11n HT20 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5745	17.8537	17.8471
Mid	5785	17.8617	17.8567
High	5825	17.8625	17.8605

10.2.6. 802.11n HT40 MODE IN THE 5.8 GHz BAND

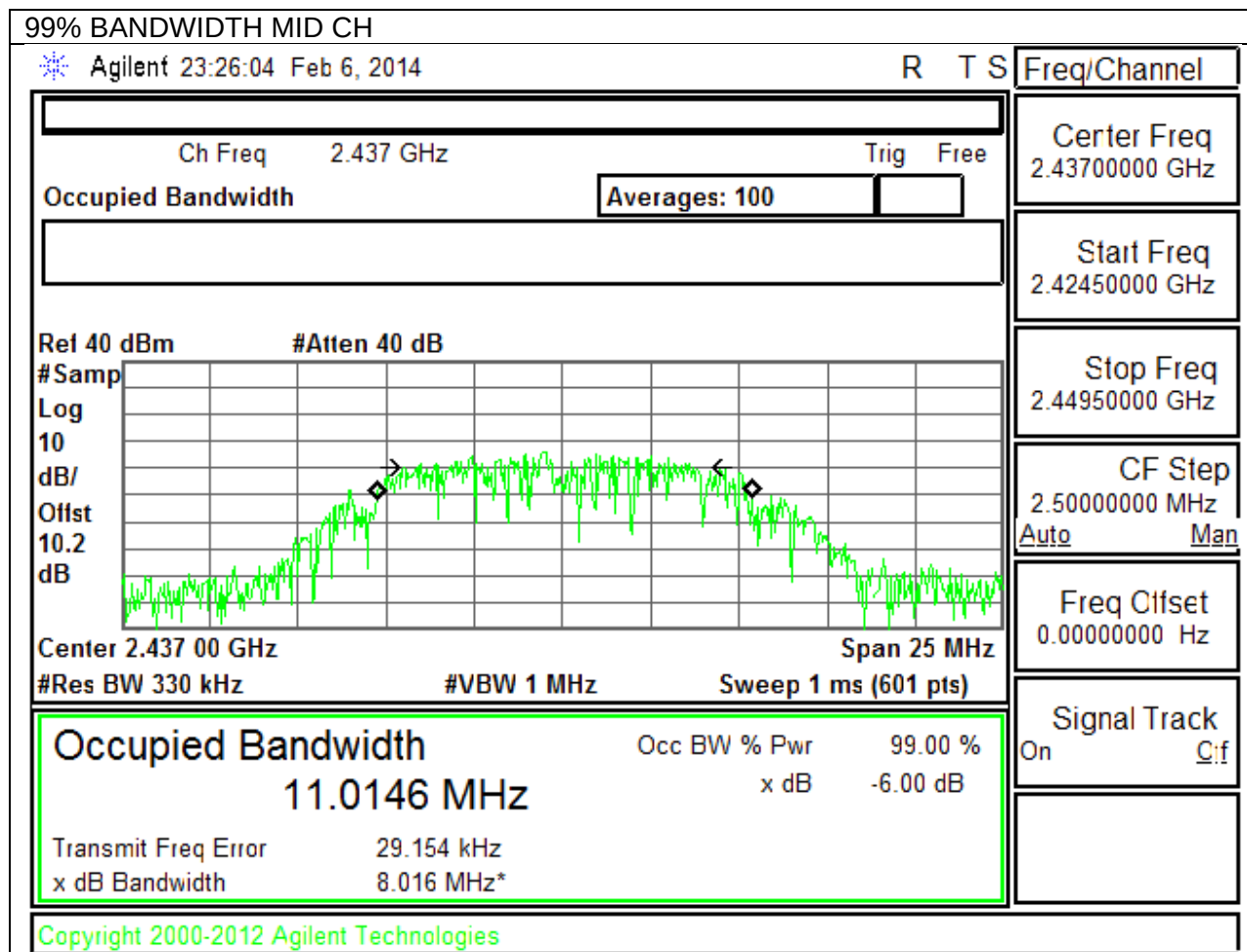
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5755	36.3735	36.3520
High	5795	36.4012	36.4250

10.2.7. 802.11A HT80 MODE IN THE 5.8 GHz BAND

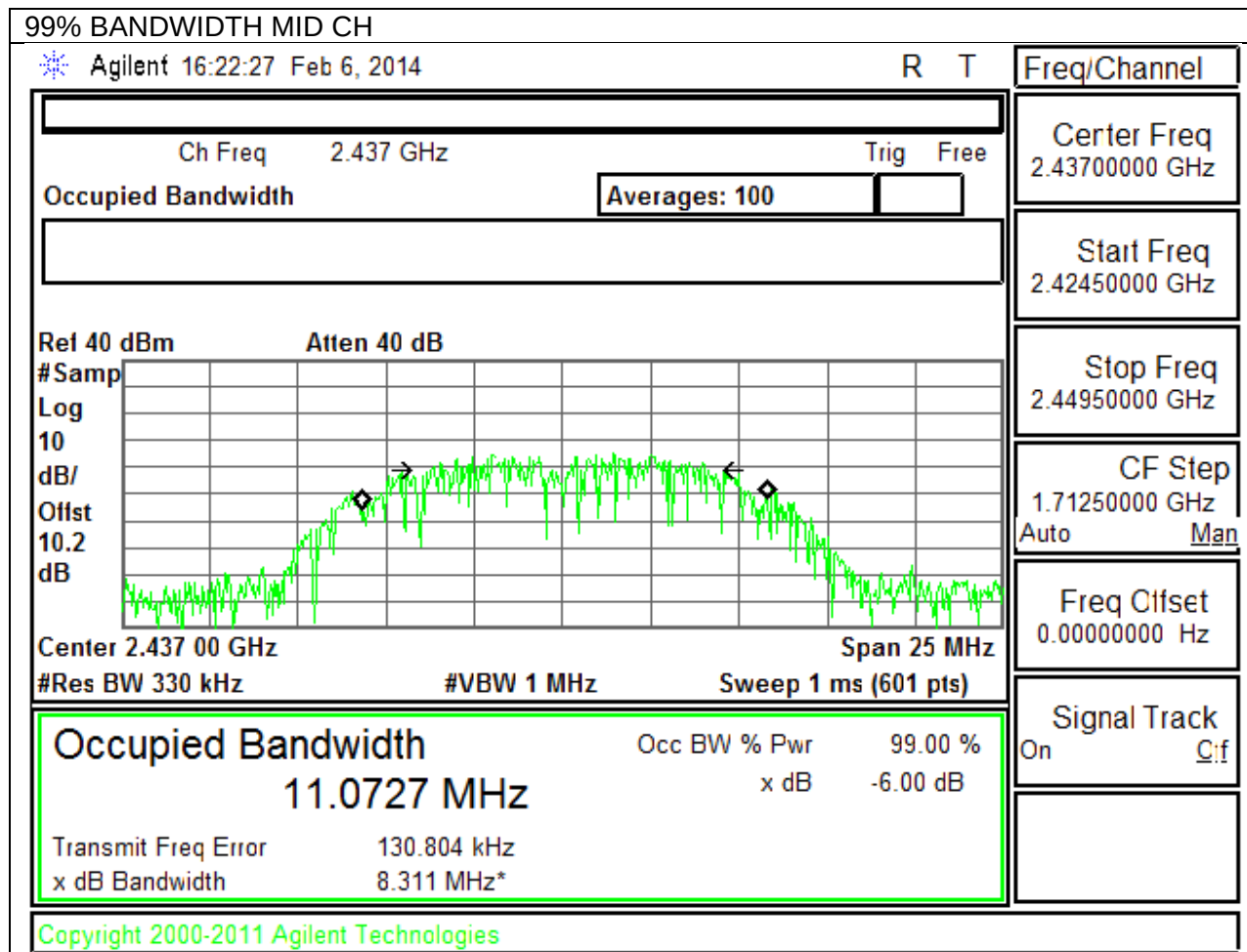
Channel	Frequency (MHz)	99% BW Chain 0 (MHz)	99% BW Chain 1 (MHz)
Low	5775	76.0032	76.0056

10.2.8. 2.4GHz Plots

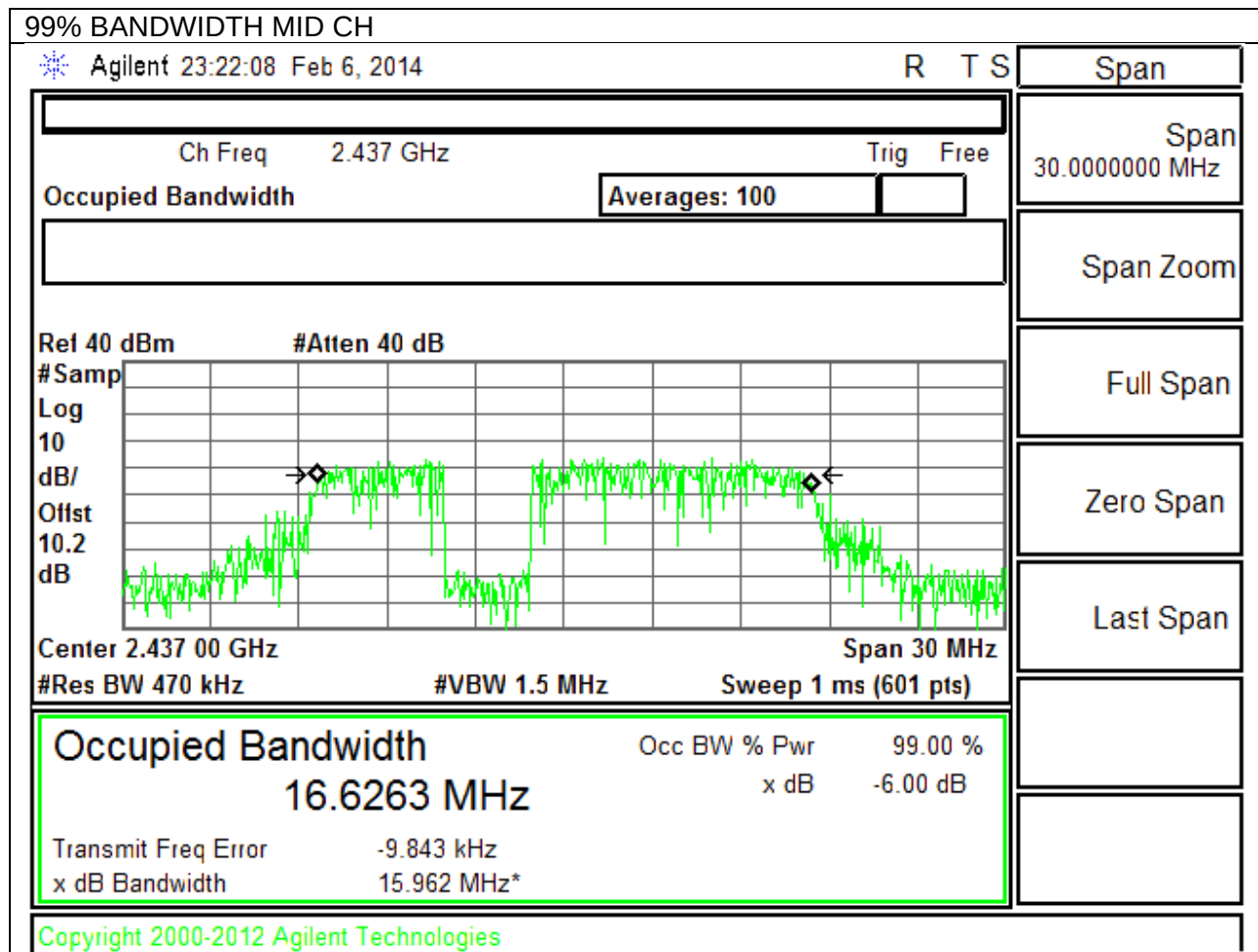
802.11b 99% BANDWIDTH CHAIN 0



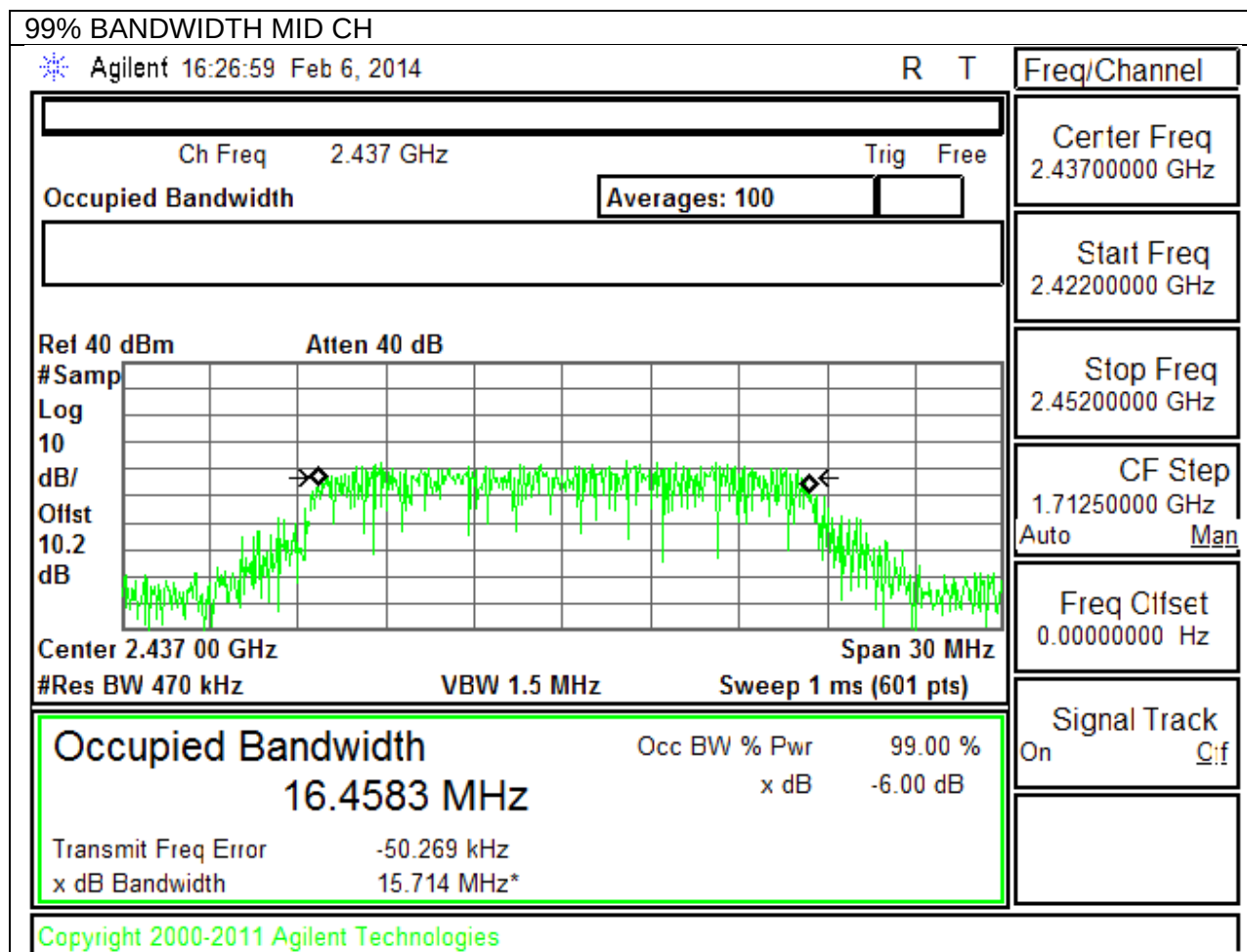
802.11b 99% BANDWIDTH CHAIN 1



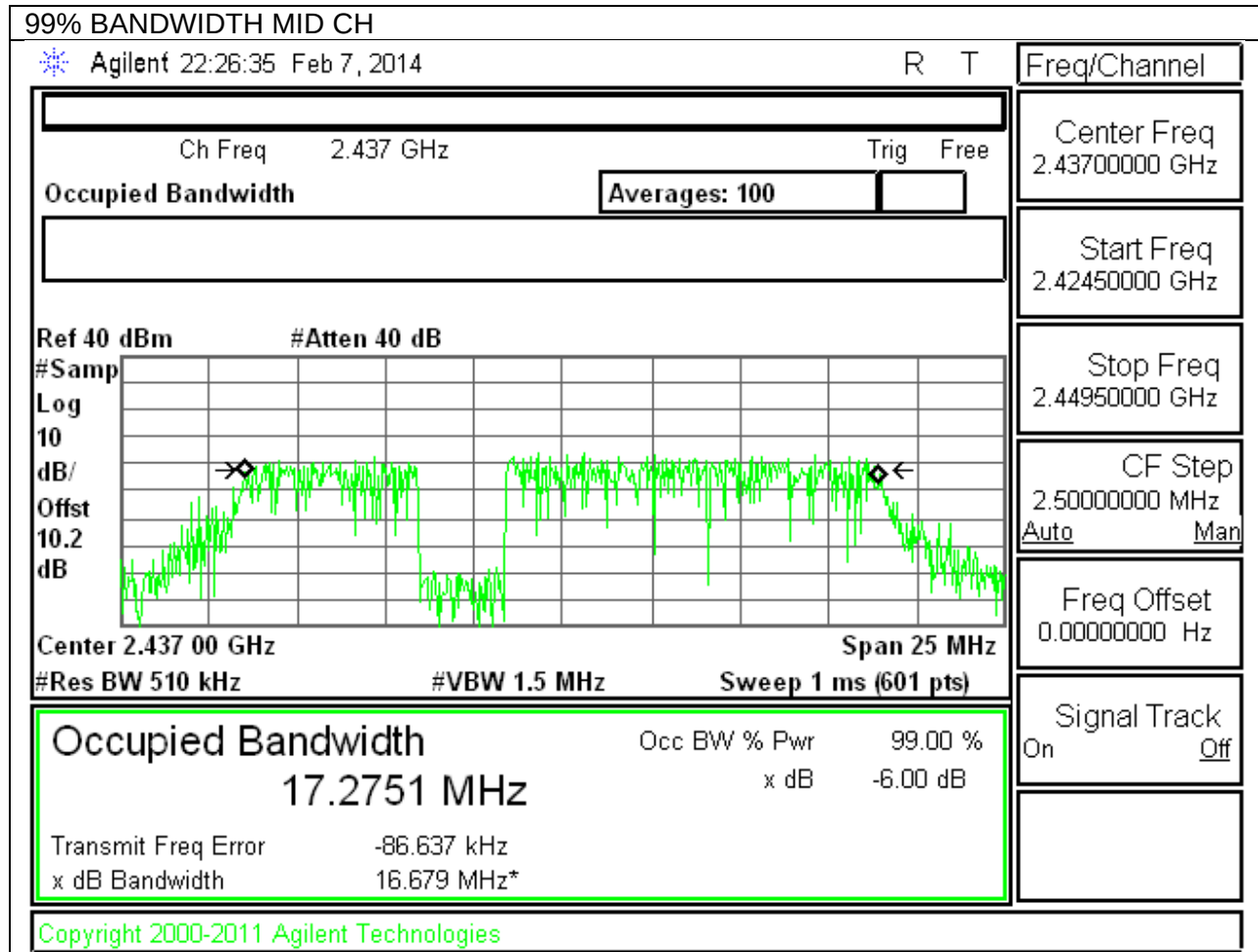
802.11g 99% BANDWIDTH CHAIN 0

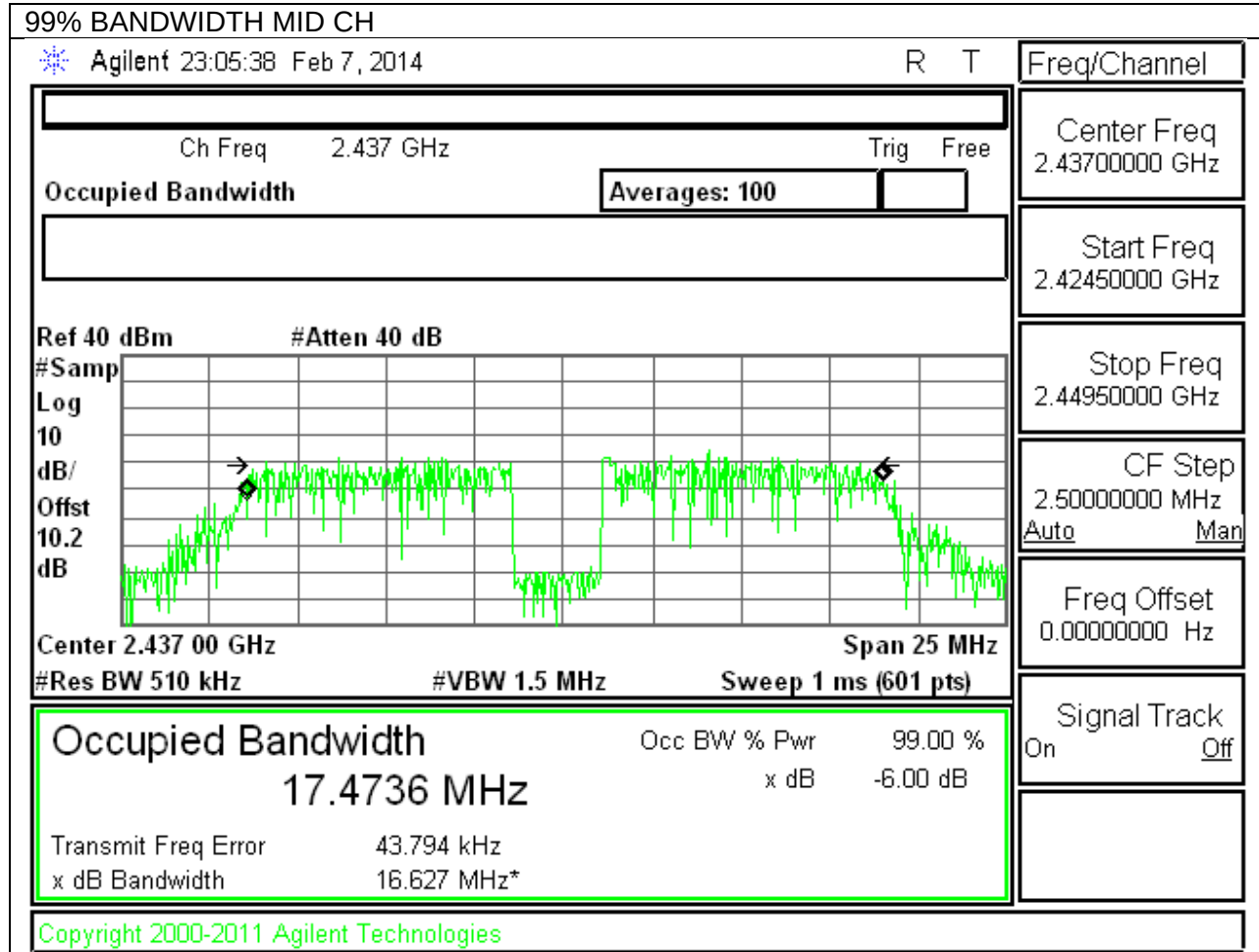


802.11g 99% BANDWIDTH CHAIN 1



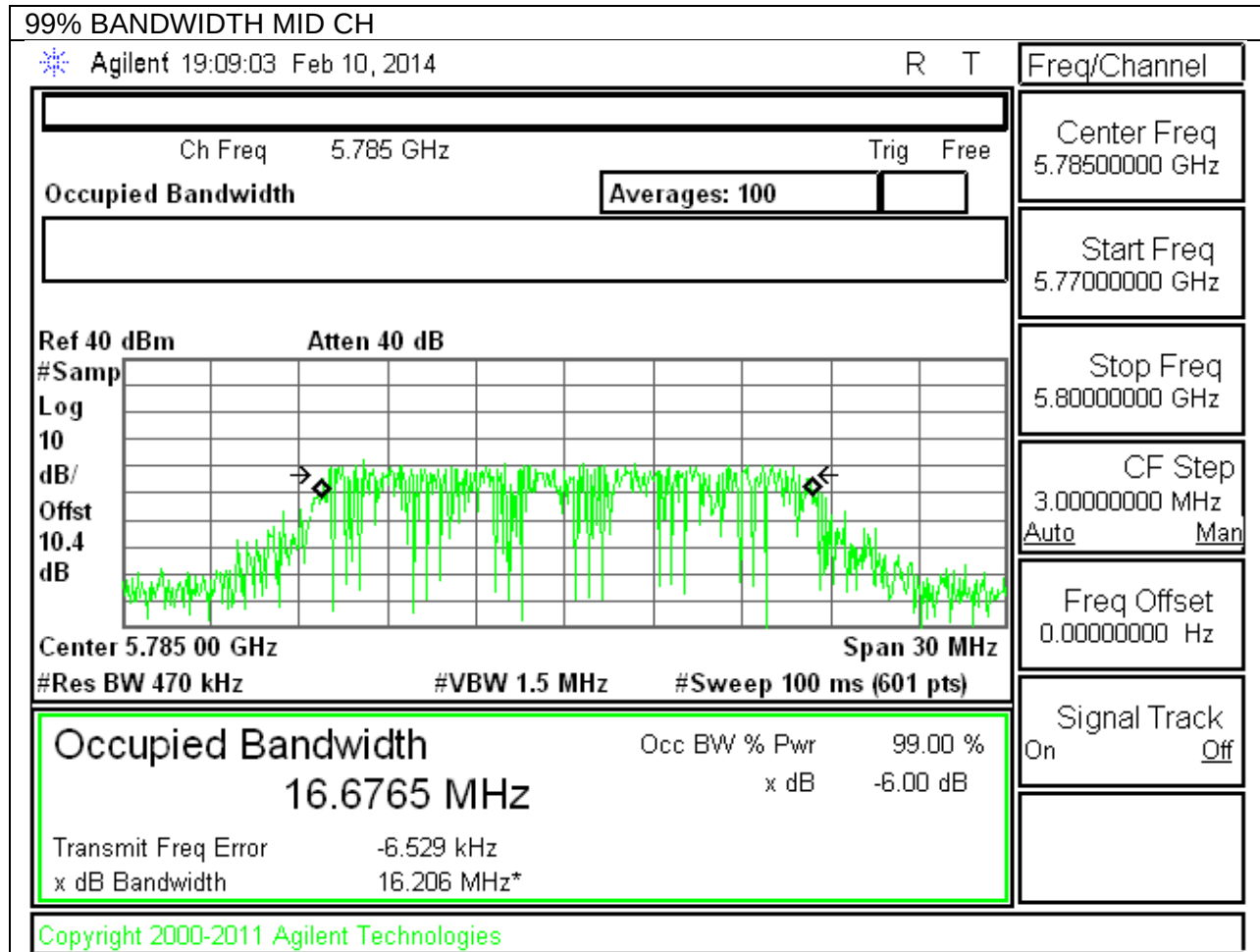
802.11n 99% BANDWIDTH CHAIN 0



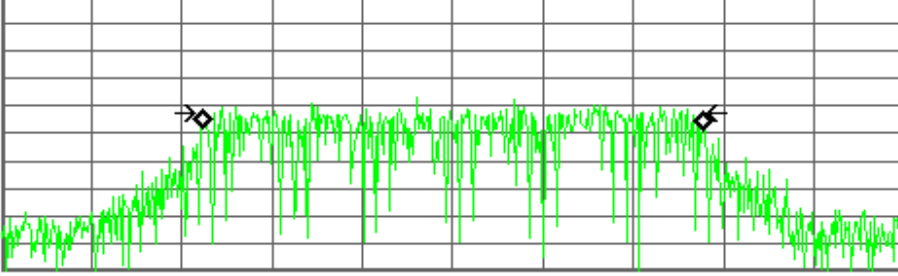
802.11n 99% BANDWIDTH CHAIN 0

10.2.9. 5.8GHz Plots

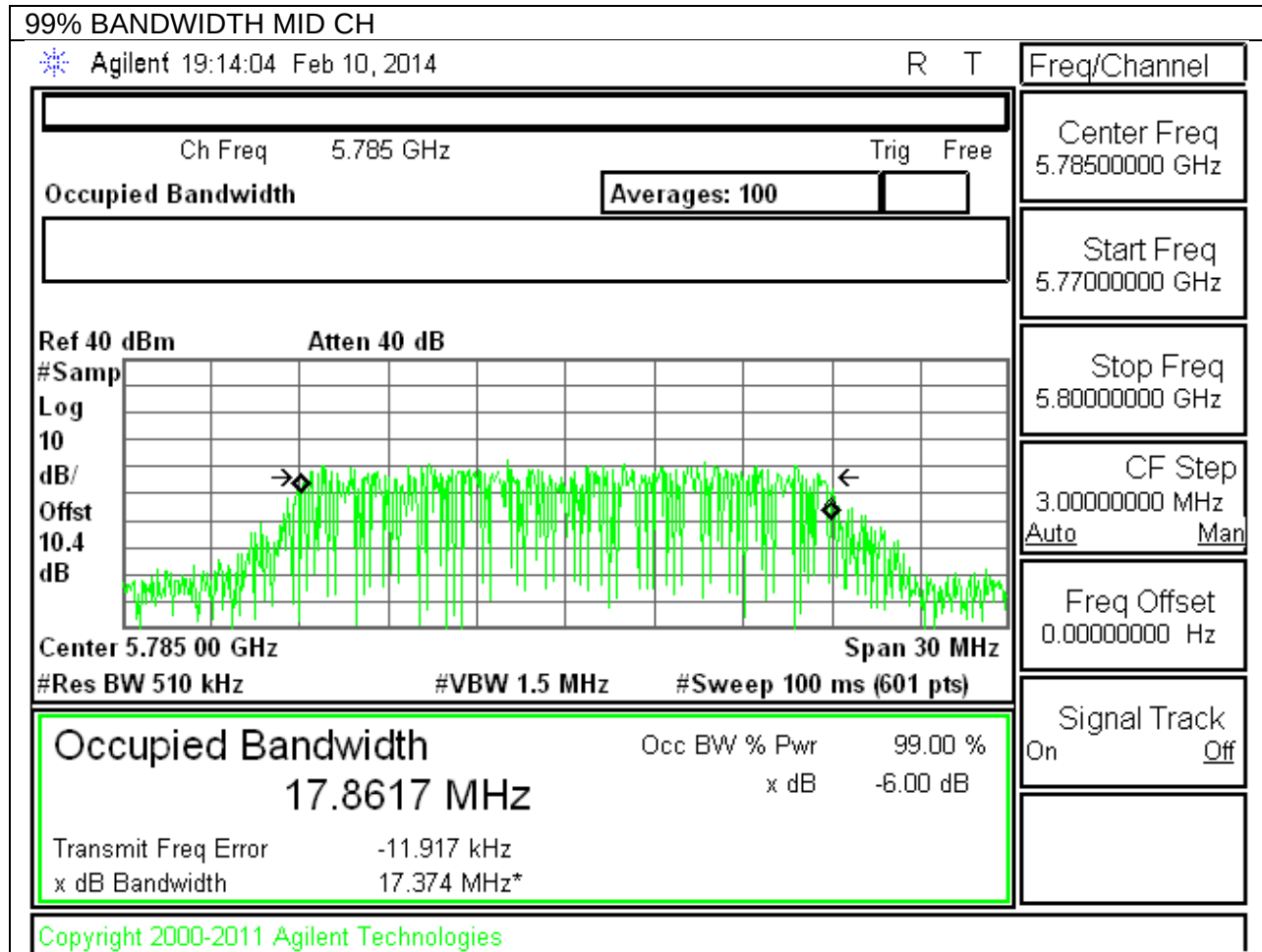
802.11a 99% BANDWIDTH CHAIN 0



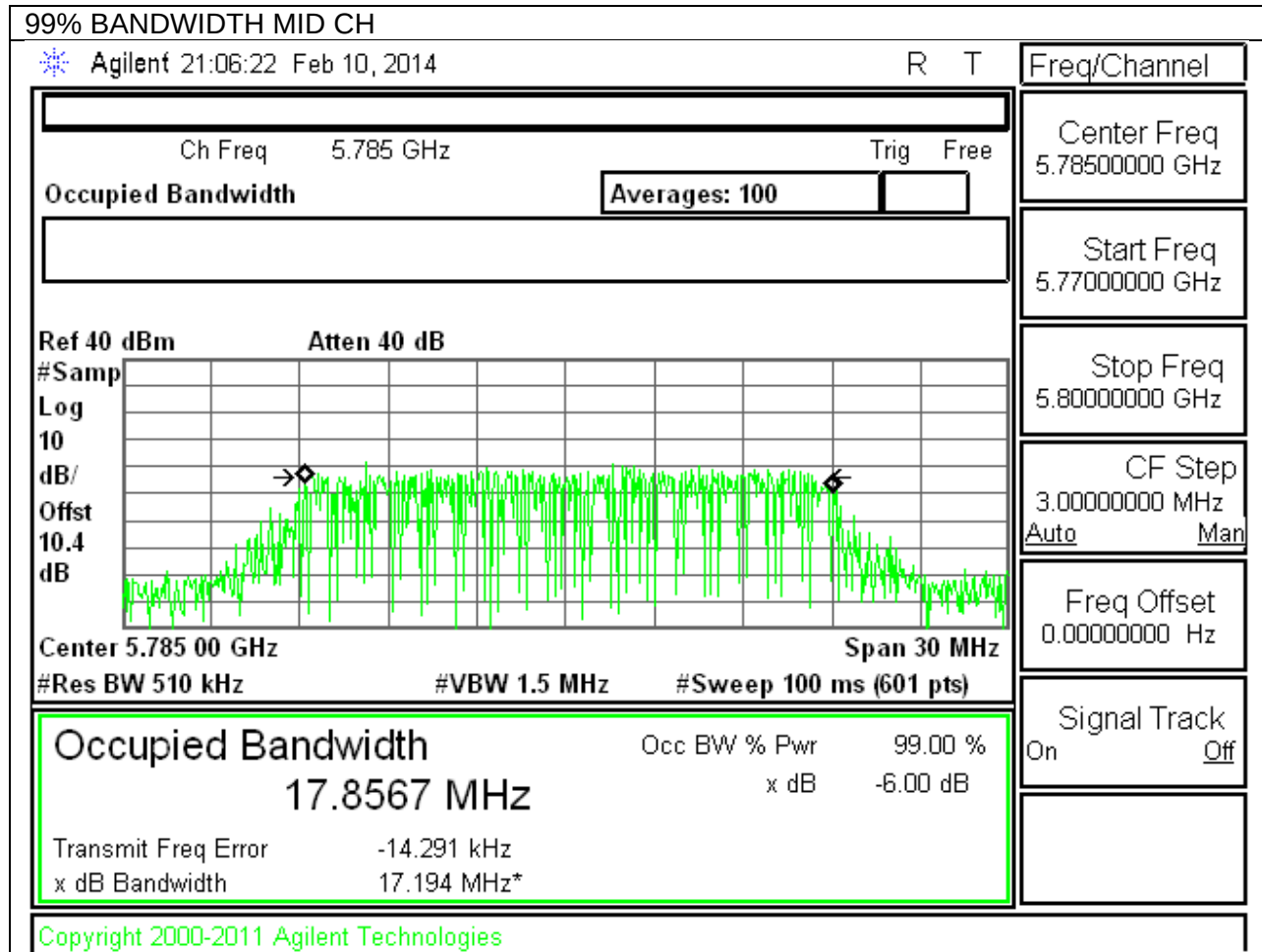
802.11a 99% BANDWIDTH CHAIN 1

99% BANDWIDTH MID CH		R T		Freq/Channel	
* Agilent 21:11:18 Feb 10, 2014					
Ch Freq 5.785 GHz		Trig Free		Center Freq 5.78500000 GHz	
Occupied Bandwidth		Averages: 100		Start Freq 5.77000000 GHz	
				Stop Freq 5.80000000 GHz	
Ref 40 dBm Atten 40 dB				CF Step 3.00000000 MHz Auto Man	
#Samp Log 10 dB/ Offst 10.4 dB				Freq Offset 0.00000000 Hz	
Center 5.785 00 GHz		Span 30 MHz			
#Res BW 470 kHz		#VBW 1.5 MHz		#Sweep 100 ms (601 pts)	
Occupied Bandwidth 16.6718 MHz		Occ BW % Pwr 99.00 % x dB -6.00 dB		Signal Track On Off	
Transmit Freq Error -13.016 kHz					
x dB Bandwidth 16.107 MHz*					
Copyright 2000-2011 Agilent Technologies					

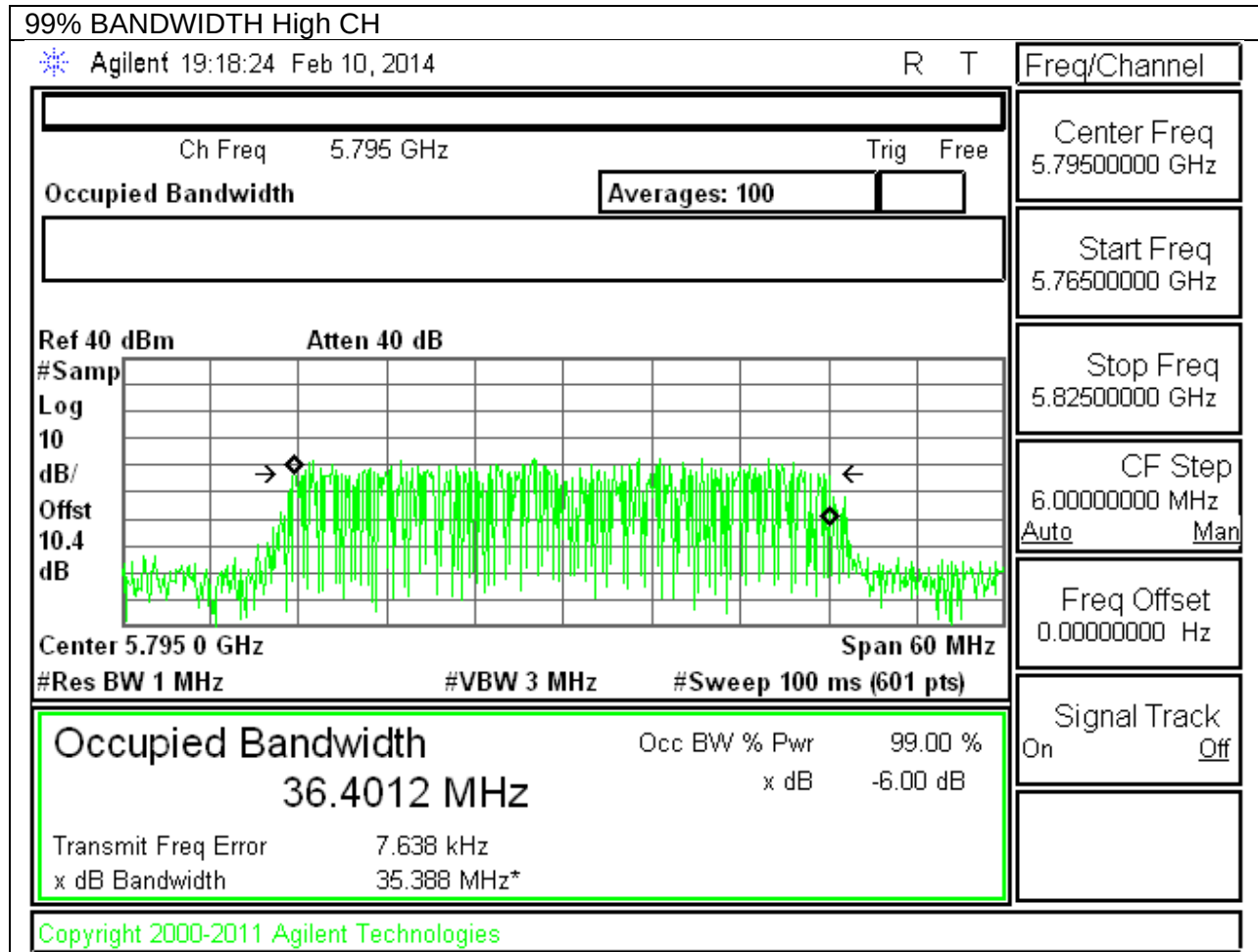
802.11n HT20 99% BANDWIDTH CHAIN 0



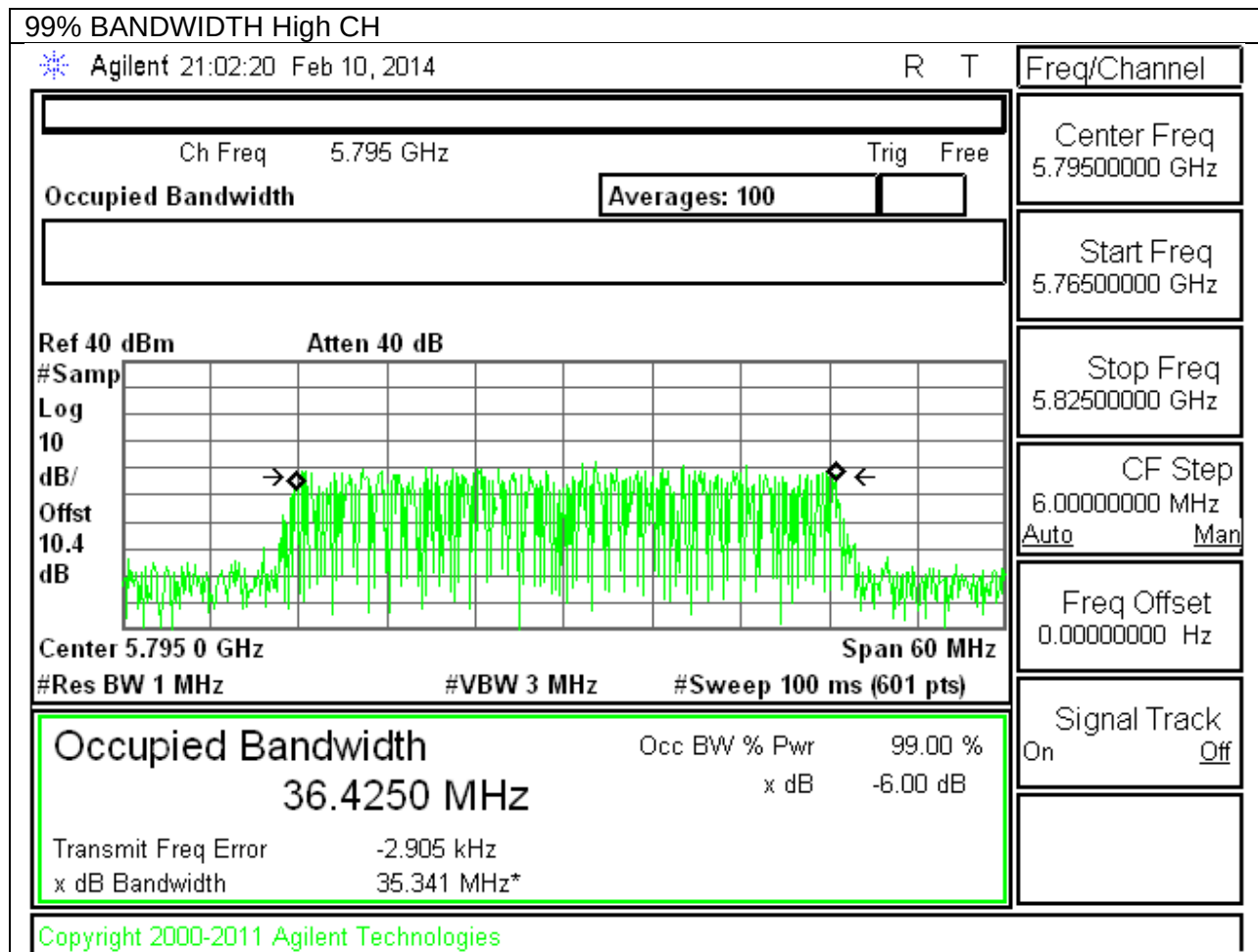
802.11n HT20 99% BANDWIDTH CHAIN 1



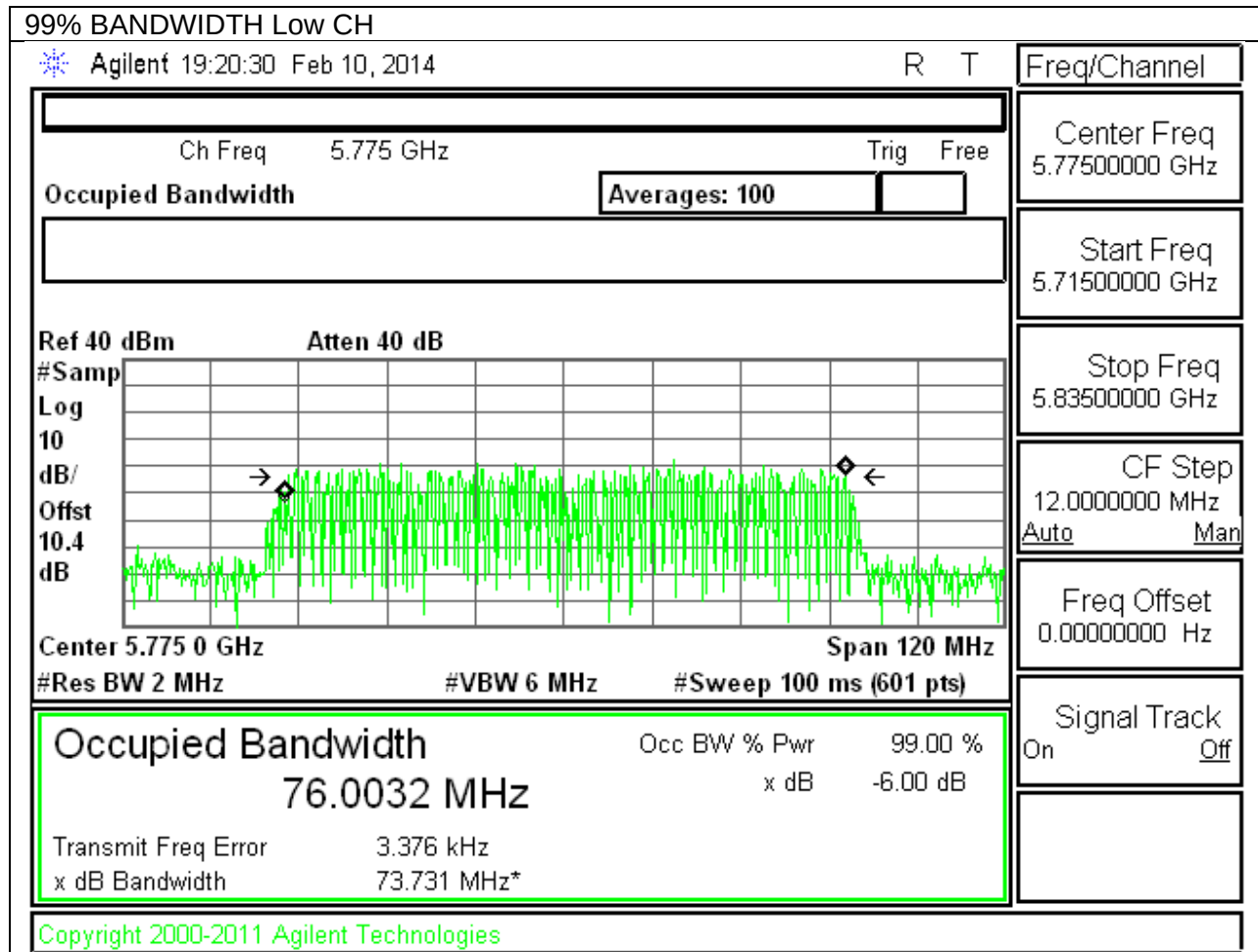
802.11n HT40 99% BANDWIDTH CHAIN 0



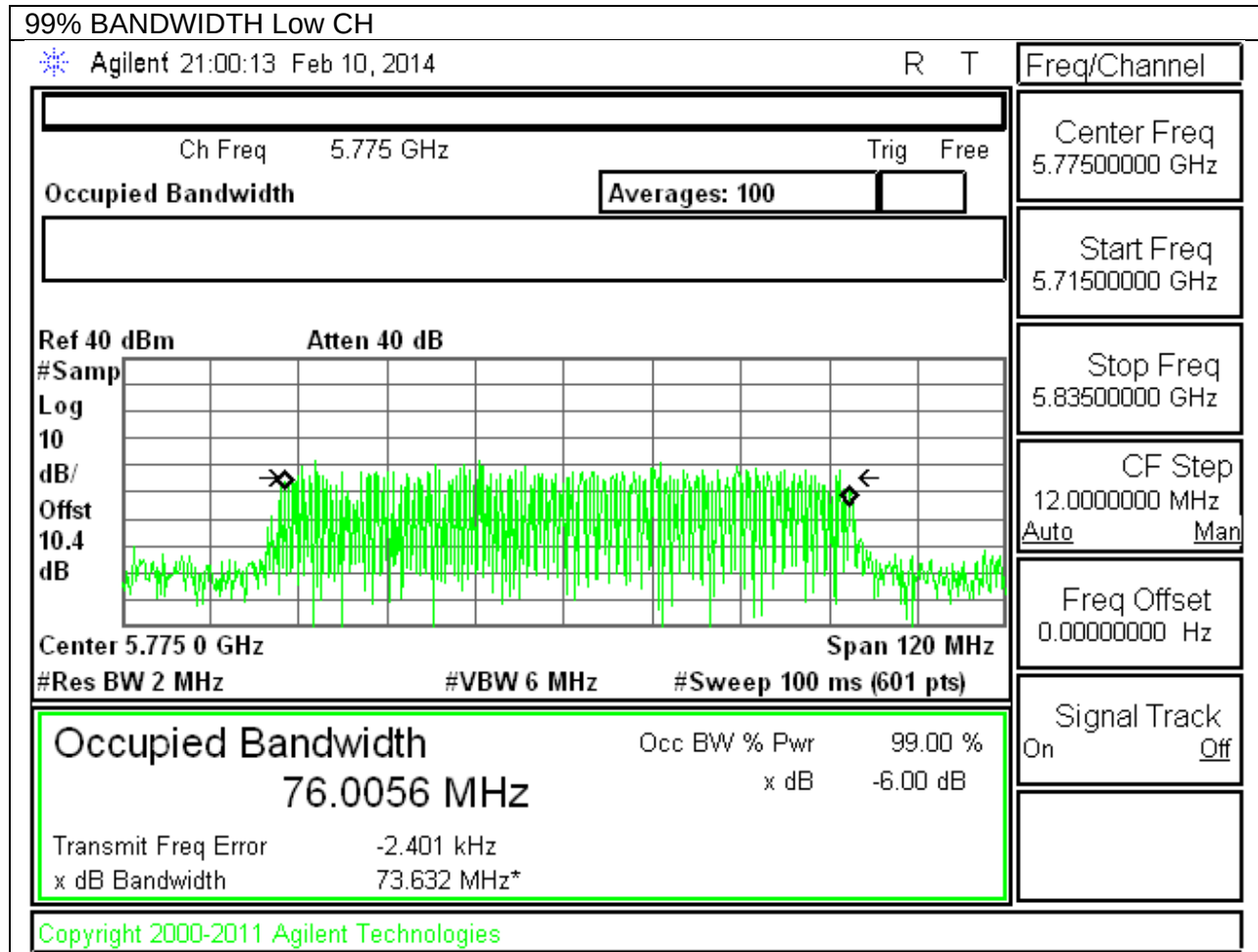
802.11n HT40 99% BANDWIDTH CHAIN 1



802.11ac HT80 99% BANDWIDTH CHAIN 0



802.11ac HT80 99% BANDWIDTH CHAIN 1



10.3. OUTPUT POWER

LIMITS

FCC §15.247

IC RSS-210 A8.4

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

DIRECTIONAL ANTENNA GAIN

The TX chains are uncorrelated and the antenna gain is the same for each chain. The directional gain is equal to the antenna gain.

2.4GHz

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-4.60	1.14	-0.84

5.8GHz

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Uncorrelated Chains Directional Gain (dBi)
-3.18	-0.40	-1.57

The TX chains are correlated and the antenna gain is unequal among the chains. The directional gain is:

2.4GHz

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
-4.60	1.14	1.75

5.8GHz

Chain 0 Antenna Gain (dBi)	Chain 1 Antenna Gain (dBi)	Correlated Chains Directional Gain (dBi)
-3.18	-0.40	1.33

RESULTS

10.3.1. 802.11b MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-0.22	30.00	30	36	30.00
Mid	2437	-0.22	30.00	30	36	30.00
High	2462	-0.22	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low	2412	15.95	15.35	18.67	30.00	-11.33
Mid	2437	16.61	15.97	19.31	30.00	-10.69
High	2462	16.04	15.39	18.74	30.00	-11.26

10.3.2. 802.11g MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-0.22	30.00	30	36	30.00
Mid	2437	-0.22	30.00	30	36	30.00
High	2462	-0.22	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low	2412	20.59	20.26	23.44	30.00	-6.56
Mid	2437	21.23	20.89	24.07	30.00	-5.93
High	2462	20.78	20.41	23.61	30.00	-6.39

10.3.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	2412	-0.22	30.00	30	36	30.00
Mid	2437	-0.22	30.00	30	36	30.00
High	2462	-0.22	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low	2412	20.15	19.90	23.04	30.00	-6.96
Mid	2437	20.82	20.42	23.63	30.00	-6.37
High	2462	20.44	19.89	23.18	30.00	-6.82

10.3.4. 802.11a MODE IN THE 5.8 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	5745	-0.13	30.00	30	36	30.00
Mid	5785	-0.13	30.00	30	36	30.00
High	5825	-0.13	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low	5745	18.31	16.17	20.38	30.00	-9.62
Mid	5785	18.35	15.08	20.03	30.00	-9.97
High	5825	18.40	15.76	20.29	30.00	-9.71

10.3.5. 802.11n HT20 MODE IN THE 5.8 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	5745	-0.13	30.00	30	36	30.00
Mid	5785	-0.13	30.00	30	36	30.00
High	5825	-0.13	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margi (dB)
Low	5745	18.66	16.28	20.64	30.00	-9.36
Mid	5785	18.35	16.17	20.41	30.00	-9.59
High	5825	18.20	17.07	20.68	30.00	-9.32

10.3.6. 802.11n HT40 MODE IN THE 5.8 GHz BAND

Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	5755	-0.13	30.00	30	36	30.00
High	5795	-0.13	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	5755	19.02	16.72	21.03	30.00	-8.97
High	5795	19.05	16.56	20.99	30.00	-9.01

10.3.1. 802.11AC HT80 MODE IN THE 5.8 GHz BAND

Limits

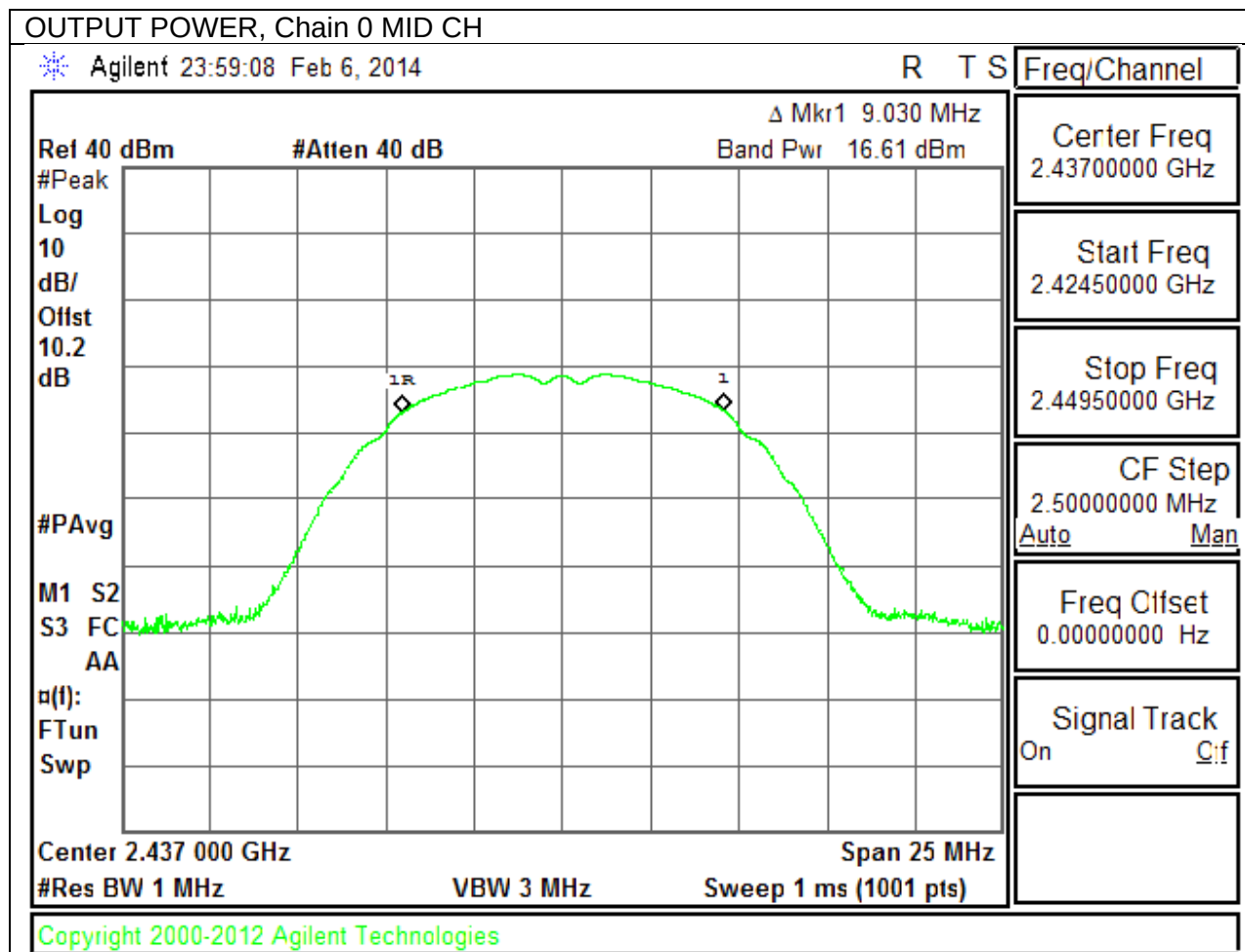
Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	5775	-0.13	30.00	30	36	30.00

Results

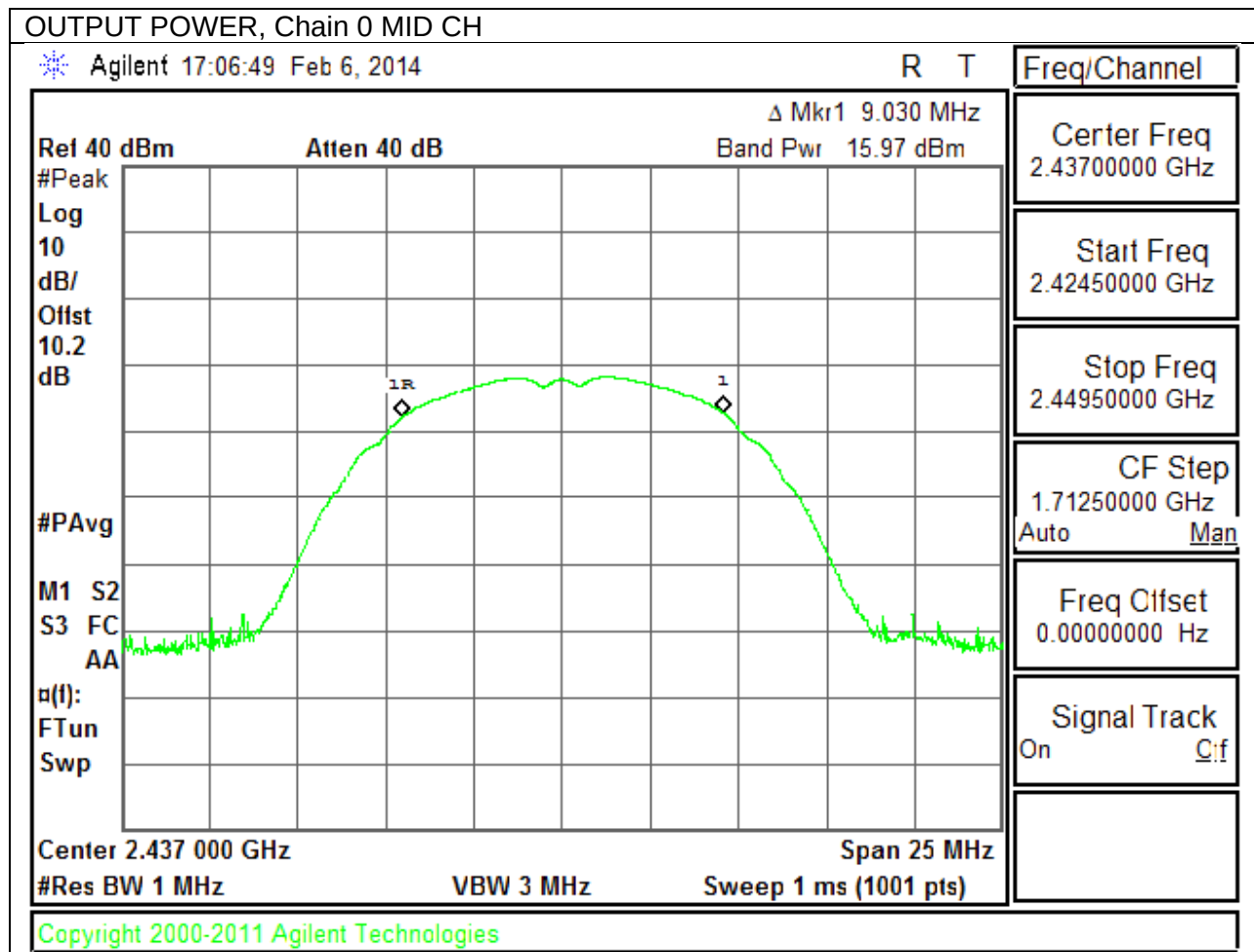
Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Chain 1 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	5775	19.48	18.08	21.85	30.00	-8.15

10.3.2. 2.4GHz Plots

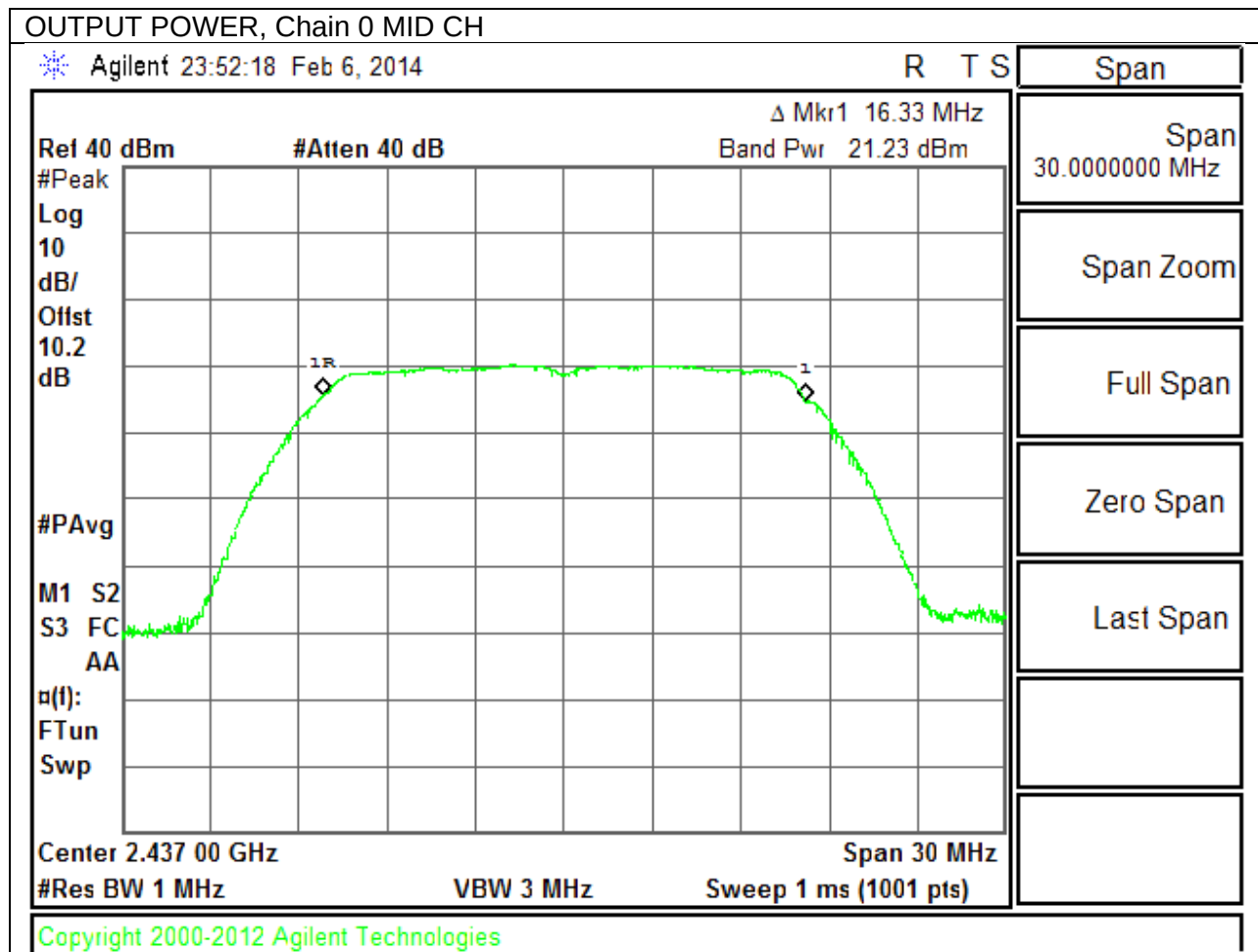
802.11b OUTPUT POWER, Chain 0



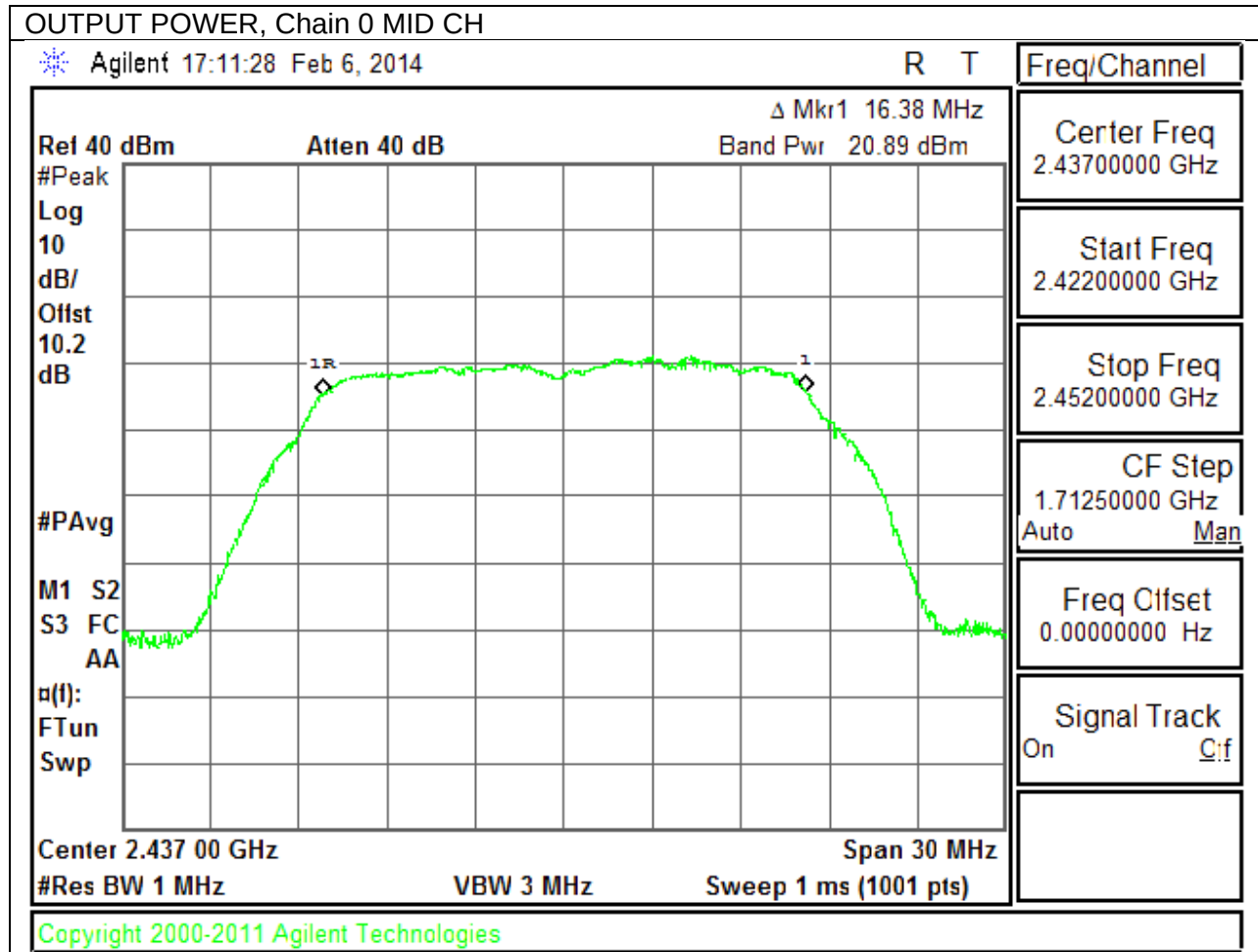
802.11b OUTPUT POWER, Chain 1



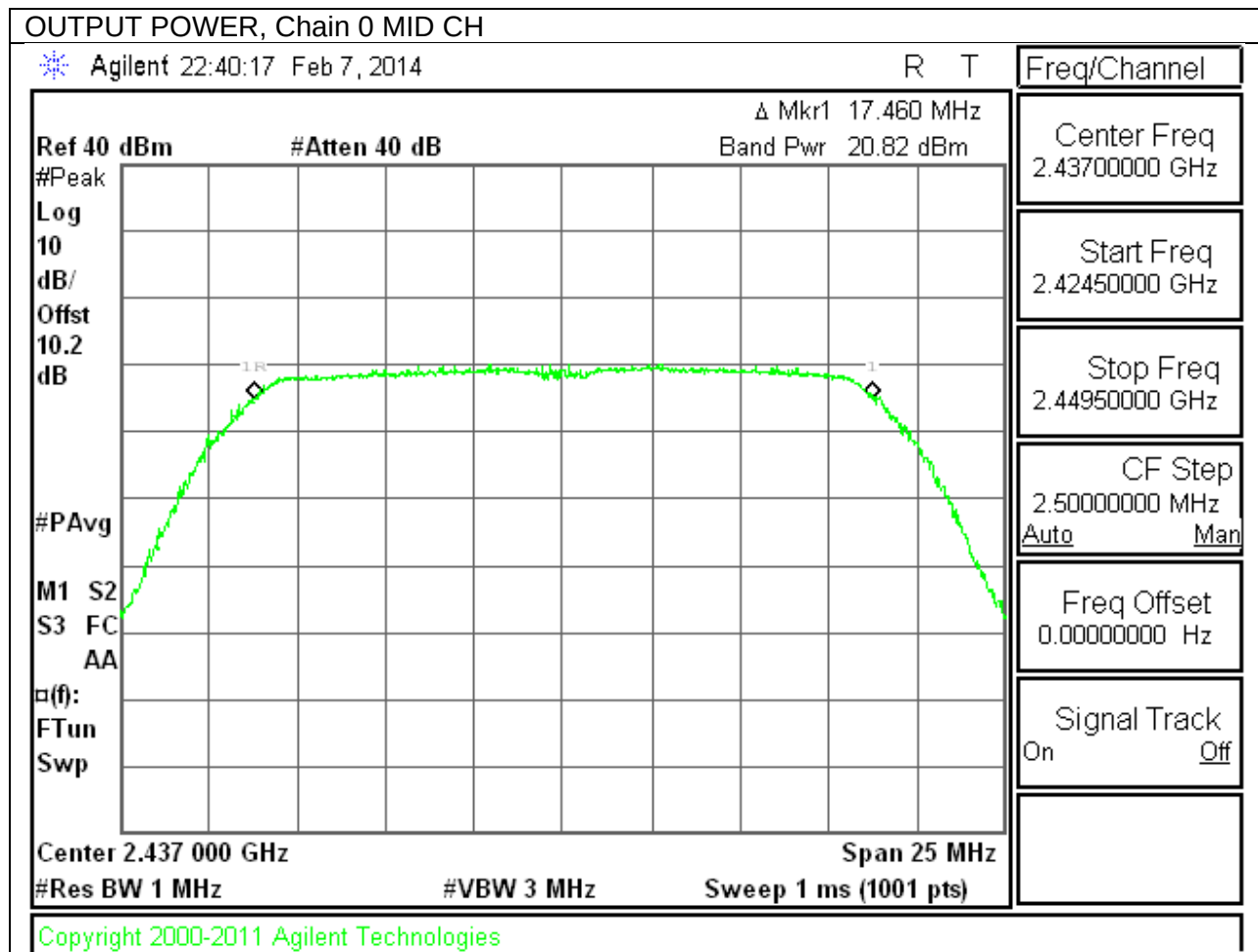
802.11g OUTPUT POWER, Chain 0



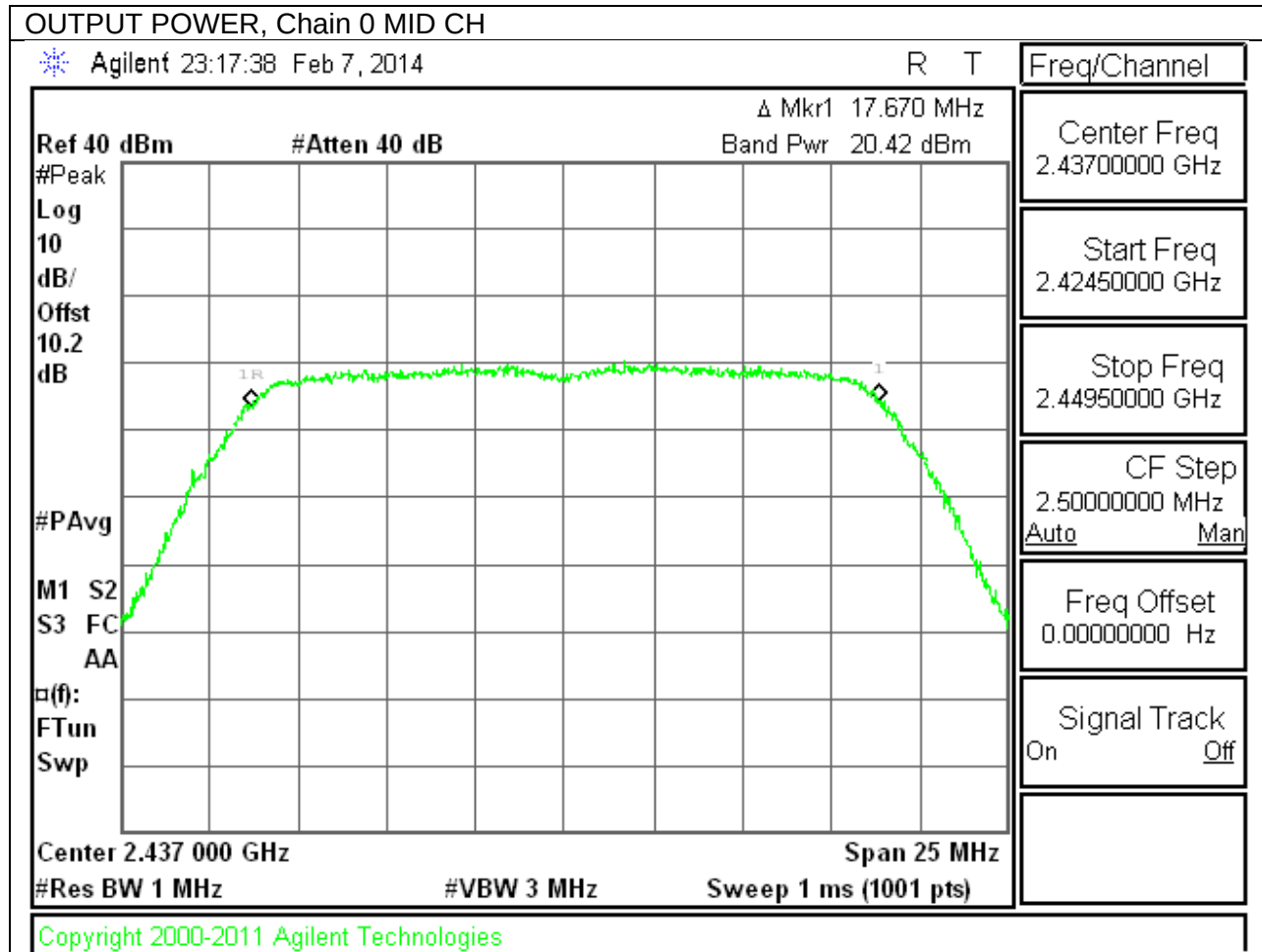
802.11g OUTPUT POWER, Chain 1



802.11n OUTPUT POWER, Chain 0

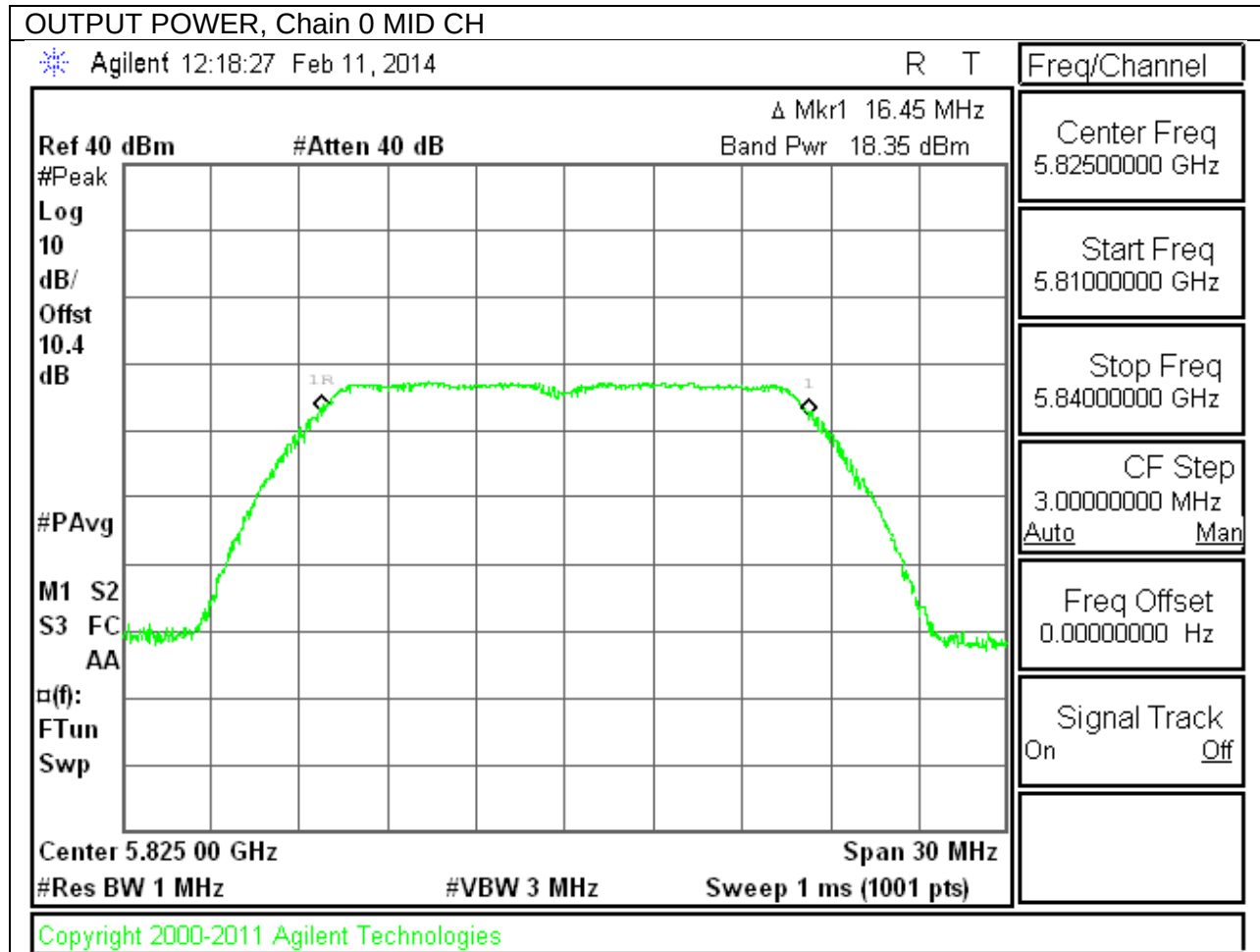


802.11n OUTPUT POWER, Chain 1

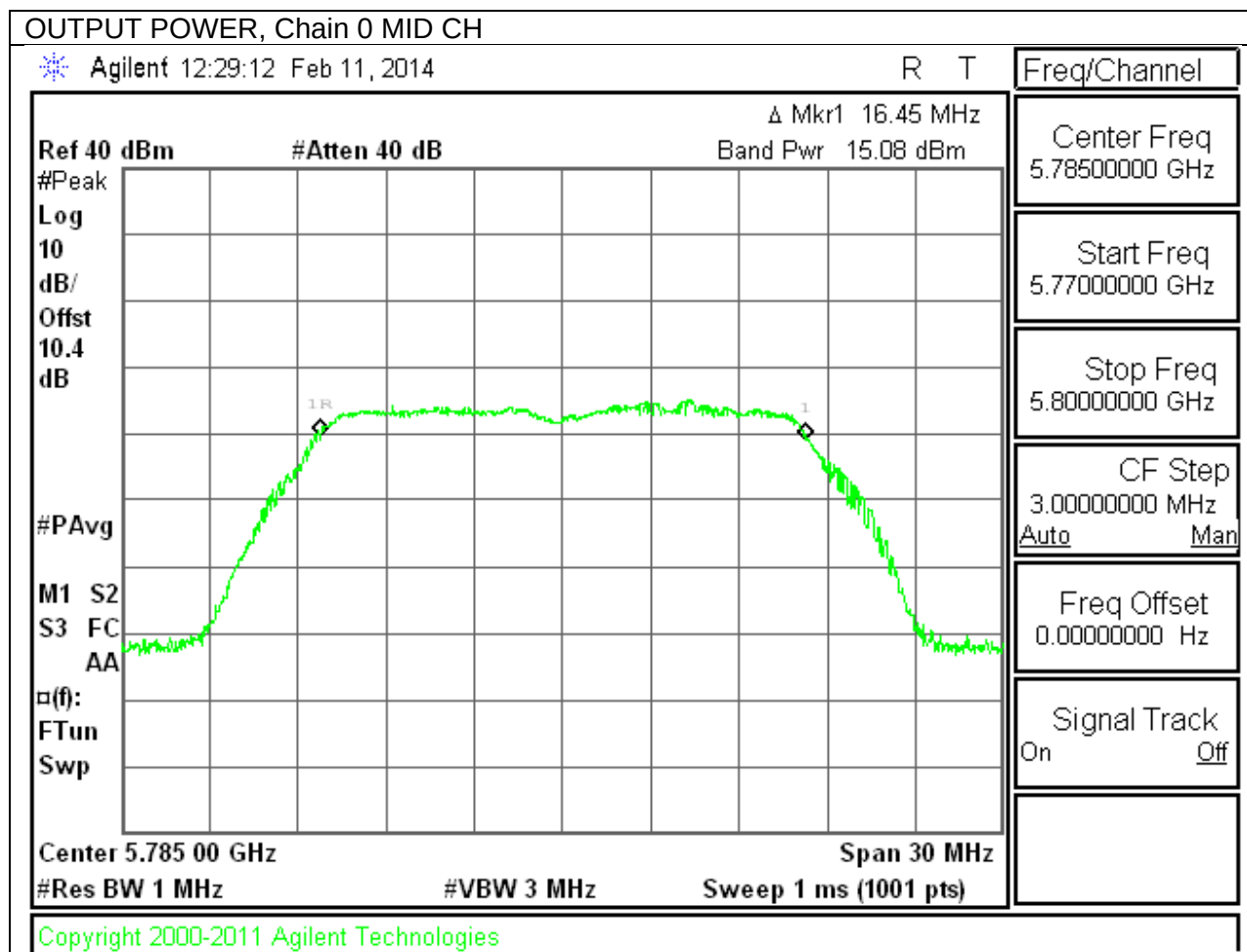


10.3.3. 5.8GHz Plots

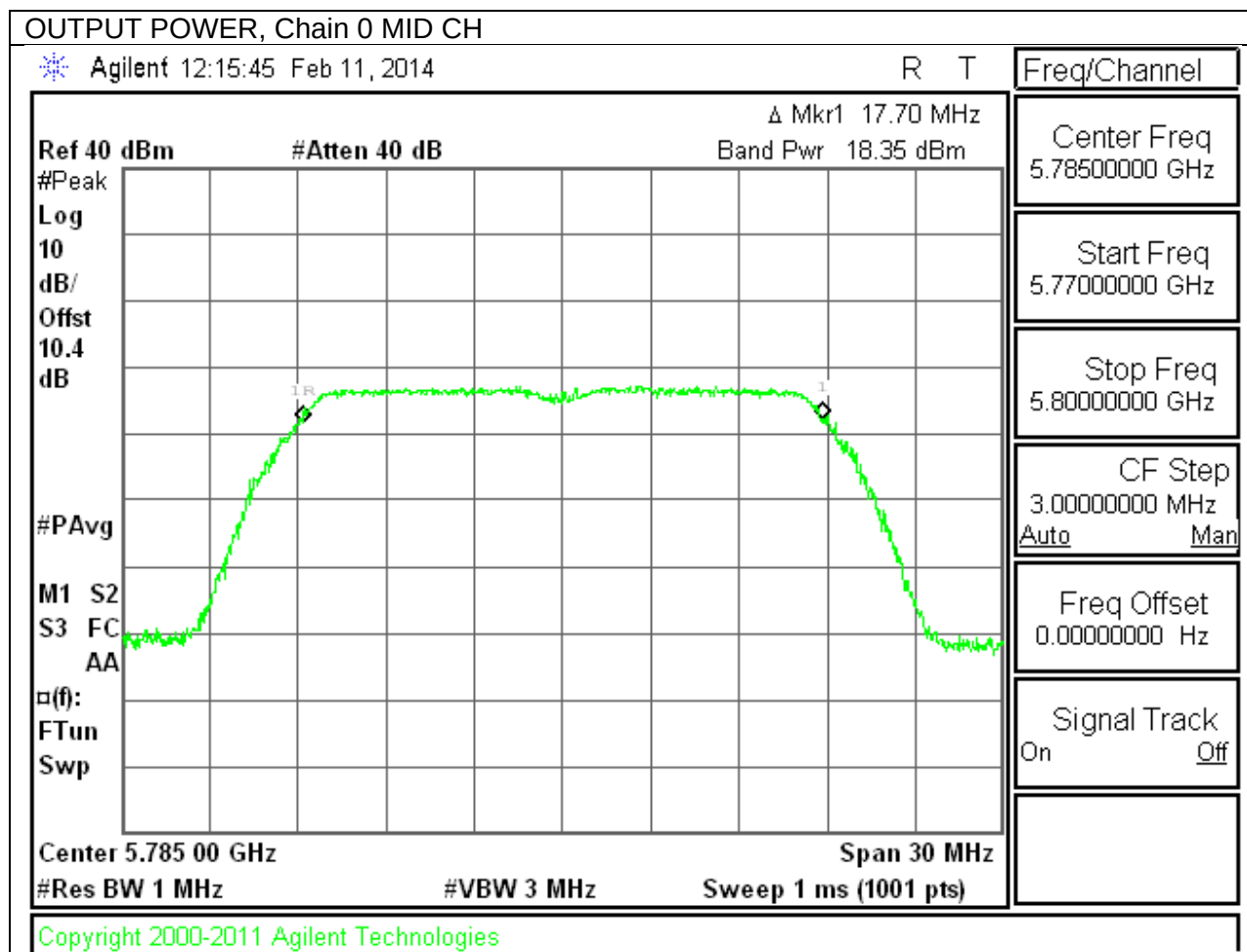
802.11a OUTPUT POWER, Chain 0



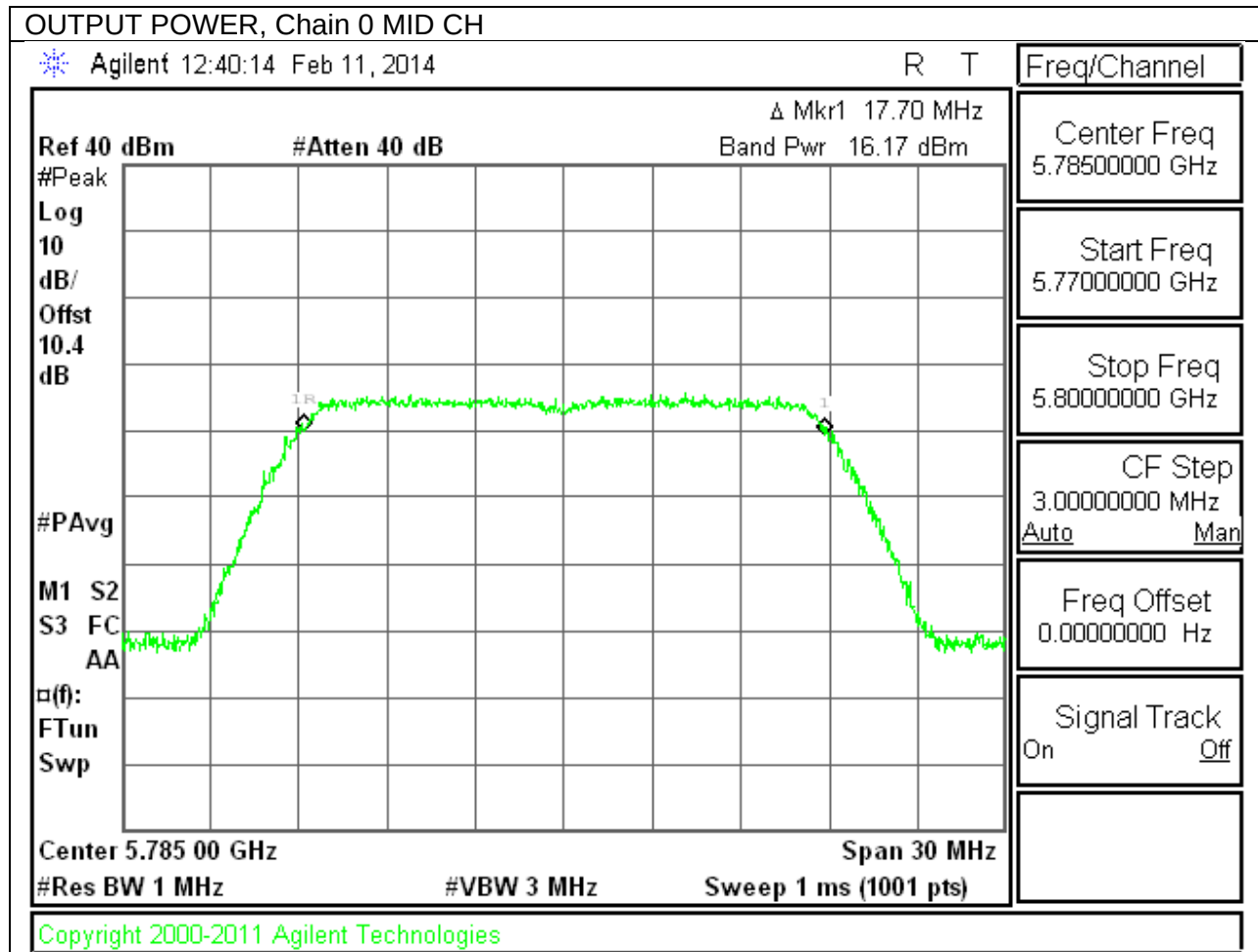
802.11a OUTPUT POWER, Chain 1



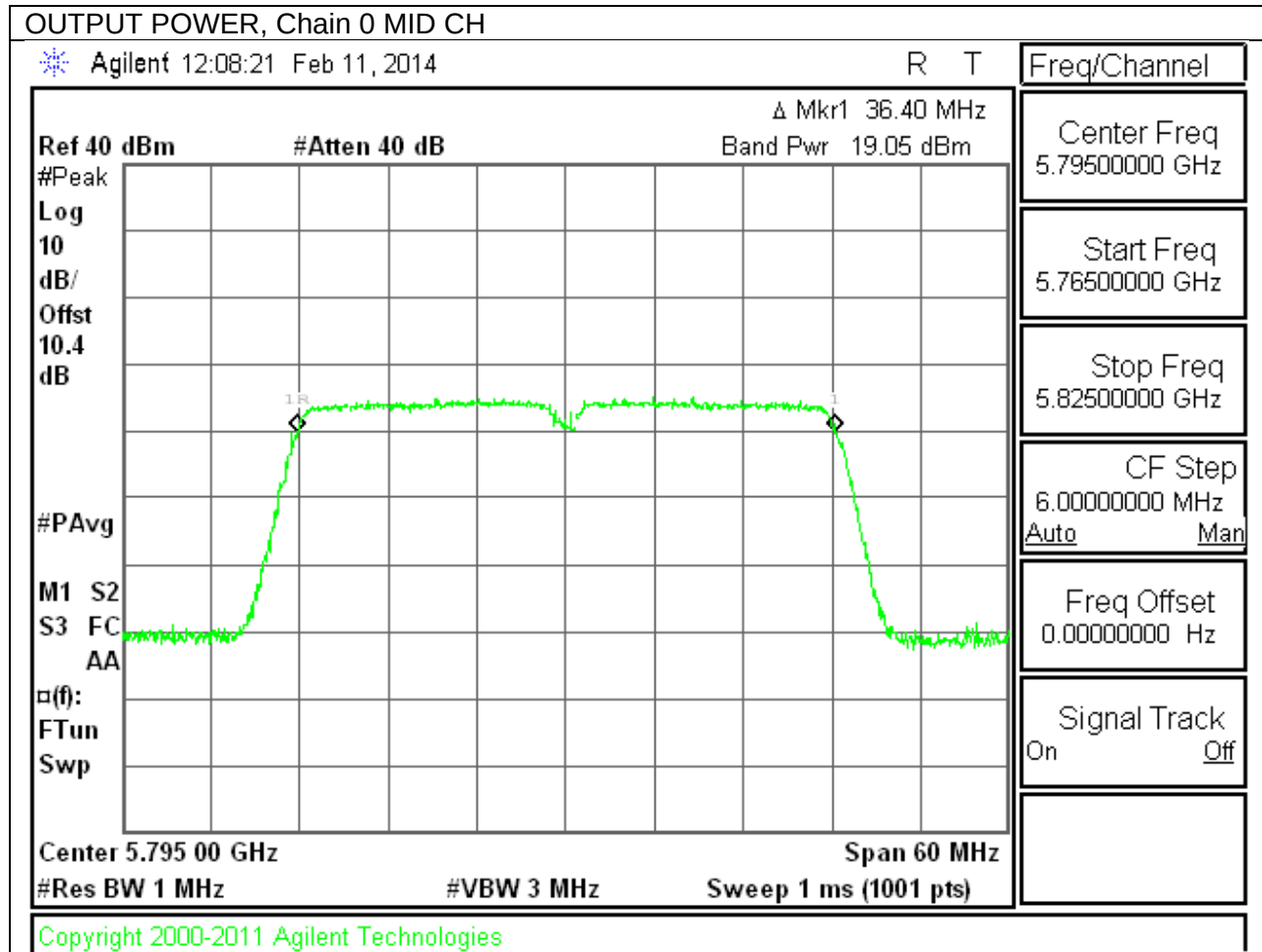
802.11n HT20 OUTPUT POWER, Chain 0



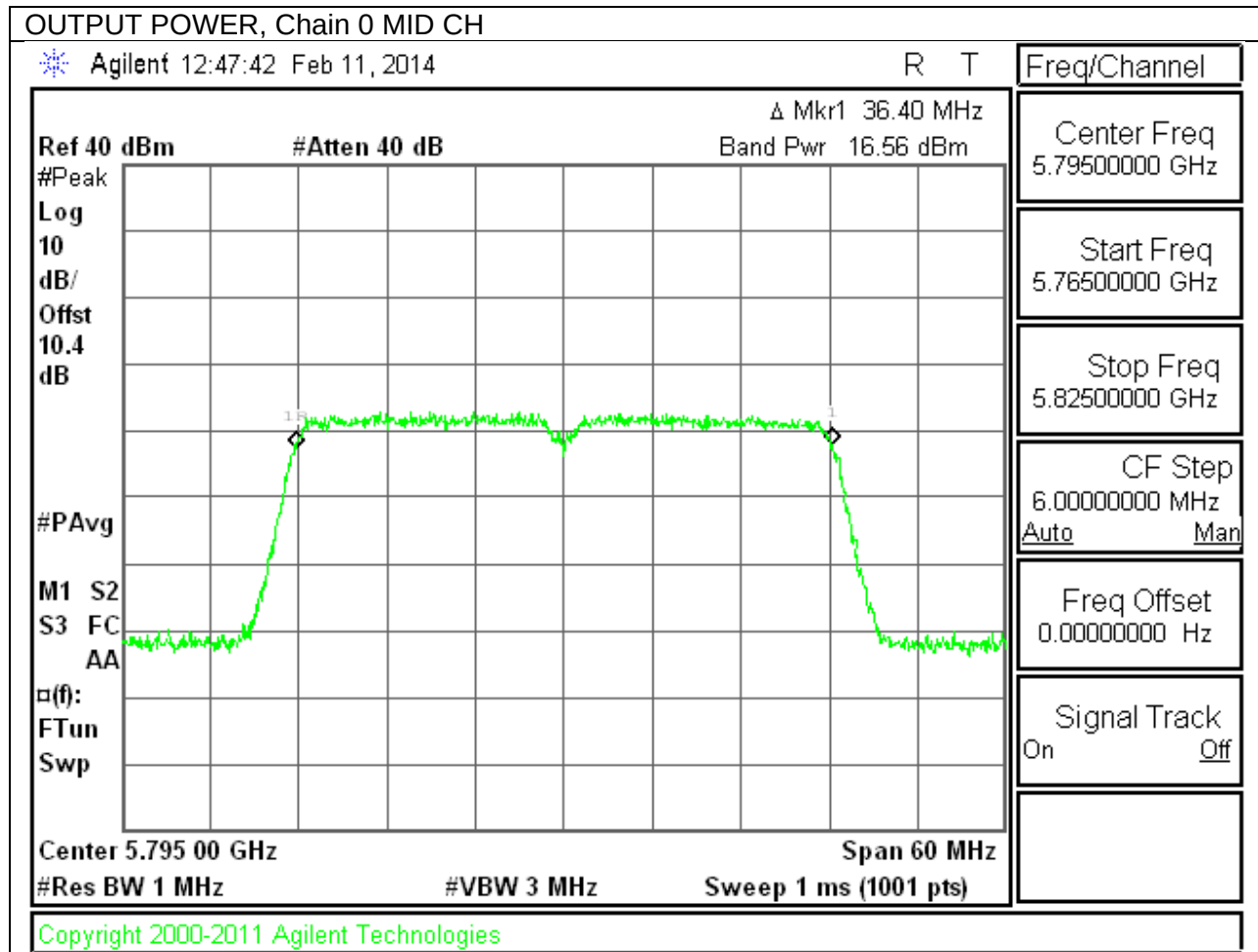
802.11n HT20 OUTPUT POWER, Chain 1



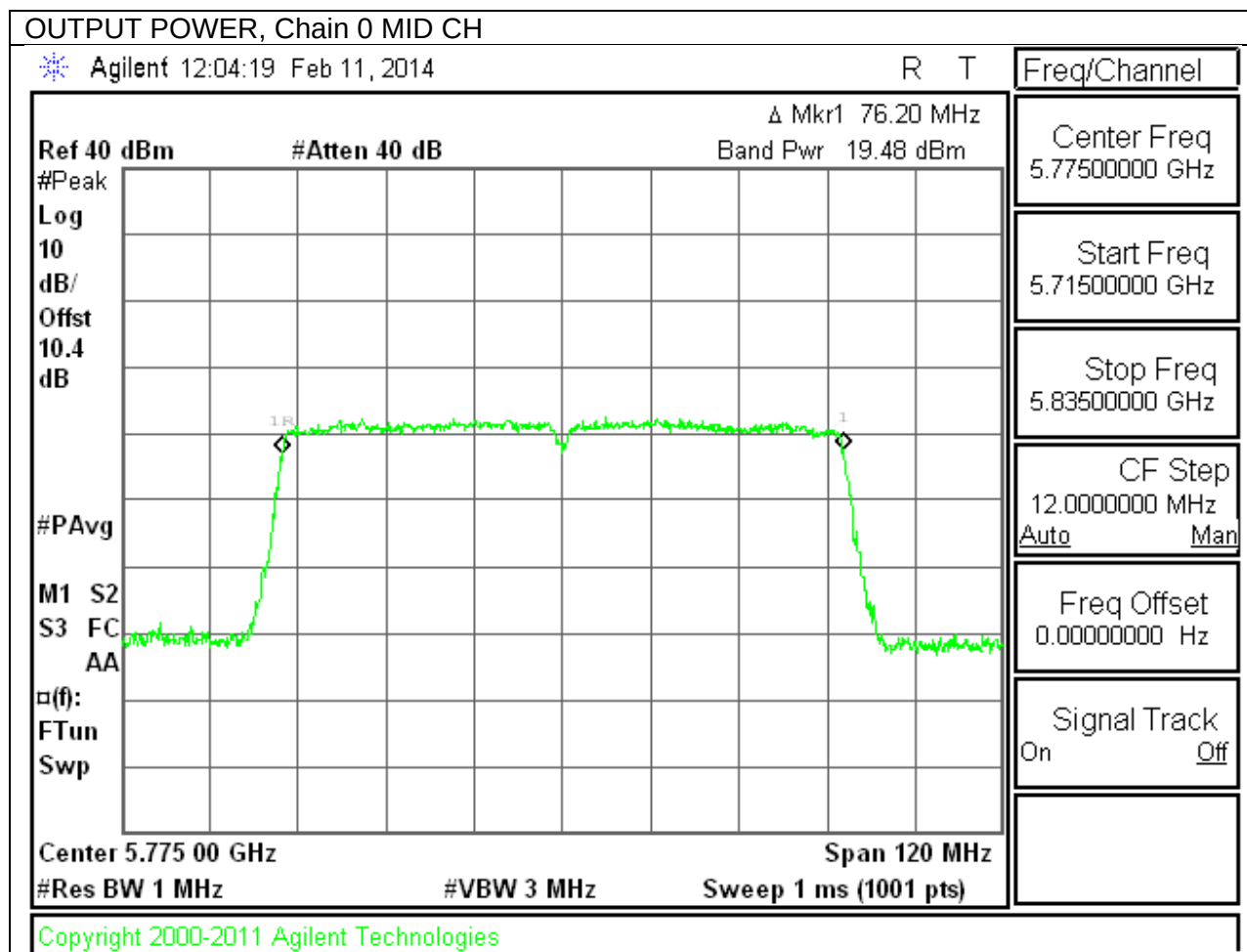
802.11n HT40 OUTPUT POWER, Chain 0



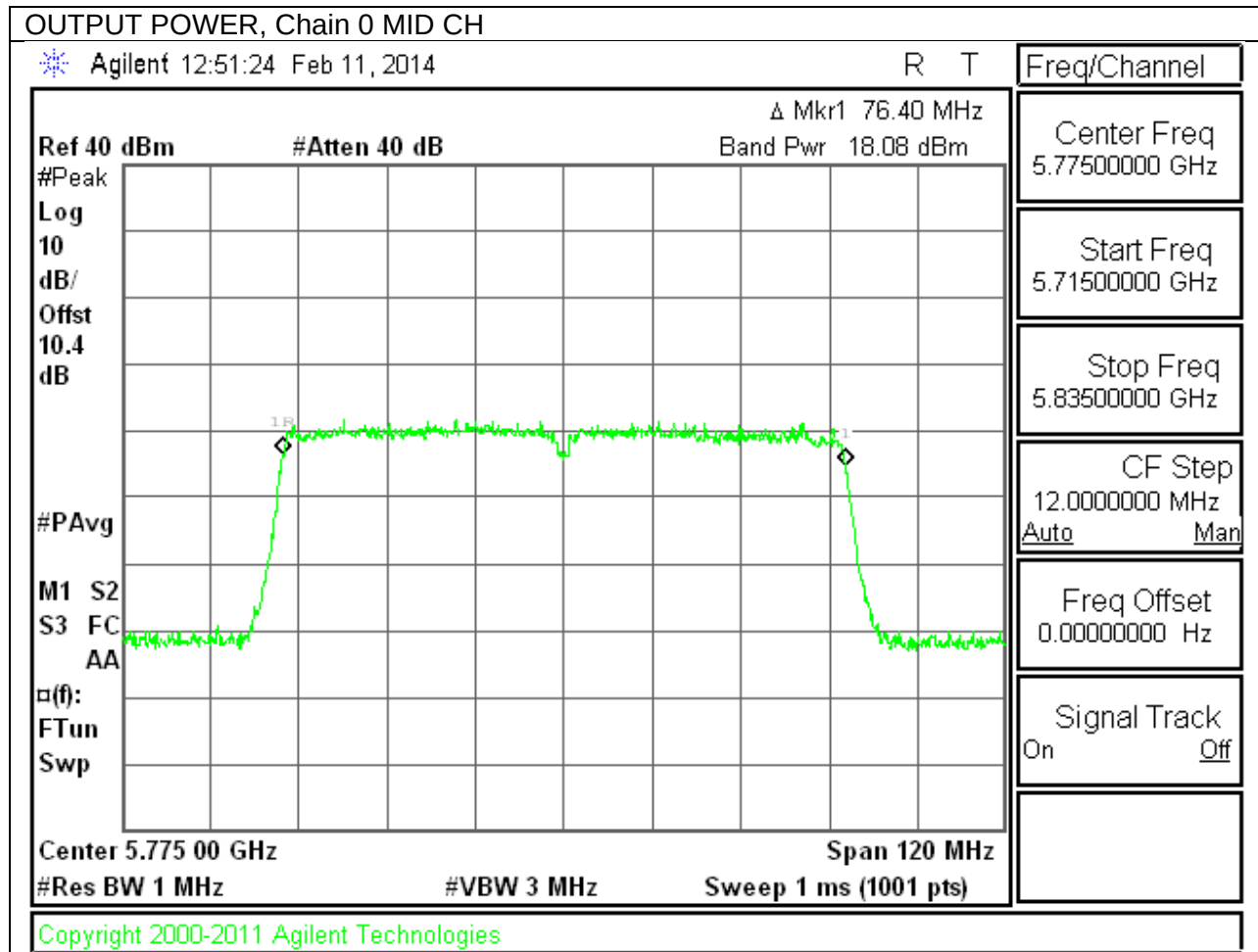
802.11n HT40 OUTPUT POWER, Chain 1



802.11ac HT80 OUTPUT POWER, Chain 0



802.11ac HT80 OUTPUT POWER, Chain 1



10.4. PSD

LIMITS

FCC §15.247

IC RSS-210 A8.2

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

10.4.1. 802.11b MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.03	-10.10	-7.05	8.0	-15.1
Mid	2437	-9.43	-9.81	-6.61	8.0	-14.6
High	2462	-9.88	-9.46	-6.65	8.0	-14.7

10.4.2. 802.11g MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-12.67	-13.53	-10.07	8.0	-18.1
Mid	2437	-11.30	-13.85	-9.38	8.0	-17.4
High	2462	-12.45	-13.95	-10.13	8.0	-18.1

10.4.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-13.76	-13.37	-10.55	8.0	-18.6
Mid	2437	-13.91	-14.91	-11.37	8.0	-19.4
High	2462	-16.62	-14.88	-12.65	8.0	-20.7

10.4.4. 802.11a MODE IN THE 5.8 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	5745	-14.42	-14.34	-11.37	8.0	-19.4
Mid	5785	-15.32	-16.94	-13.04	8.0	-21.0
High	5825	-20.14	-16.63	-15.03	8.0	-23.0

10.4.5. 802.11n HT20 MODE IN THE 5.8 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	5745	-15.90	-16.29	-13.08	8.0	-21.1
Mid	5785	-15.79	-16.59	-13.16	8.0	-21.2
High	5825	-16.31	-17.18	-13.71	8.0	-21.7

10.4.6. 802.11n HT40 MODE IN THE 5.8 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	5755	-17.76	-19.00	-15.33	8.0	-23.3
High	5795	-18.44	-18.55	-15.48	8.0	-23.5

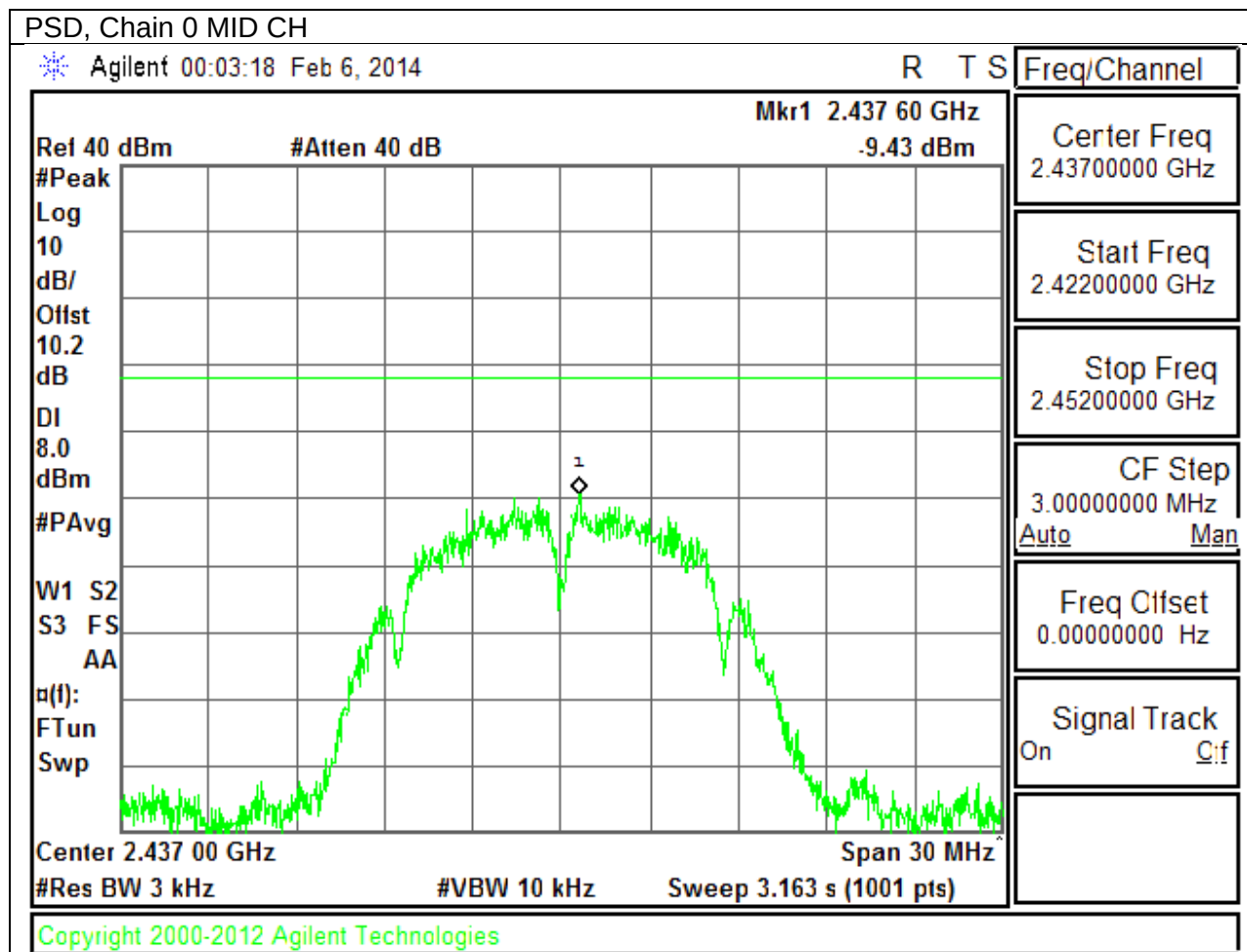
10.4.7. 802.11AC HT80 MODE IN THE 5.8 GHz BAND

PSD Results

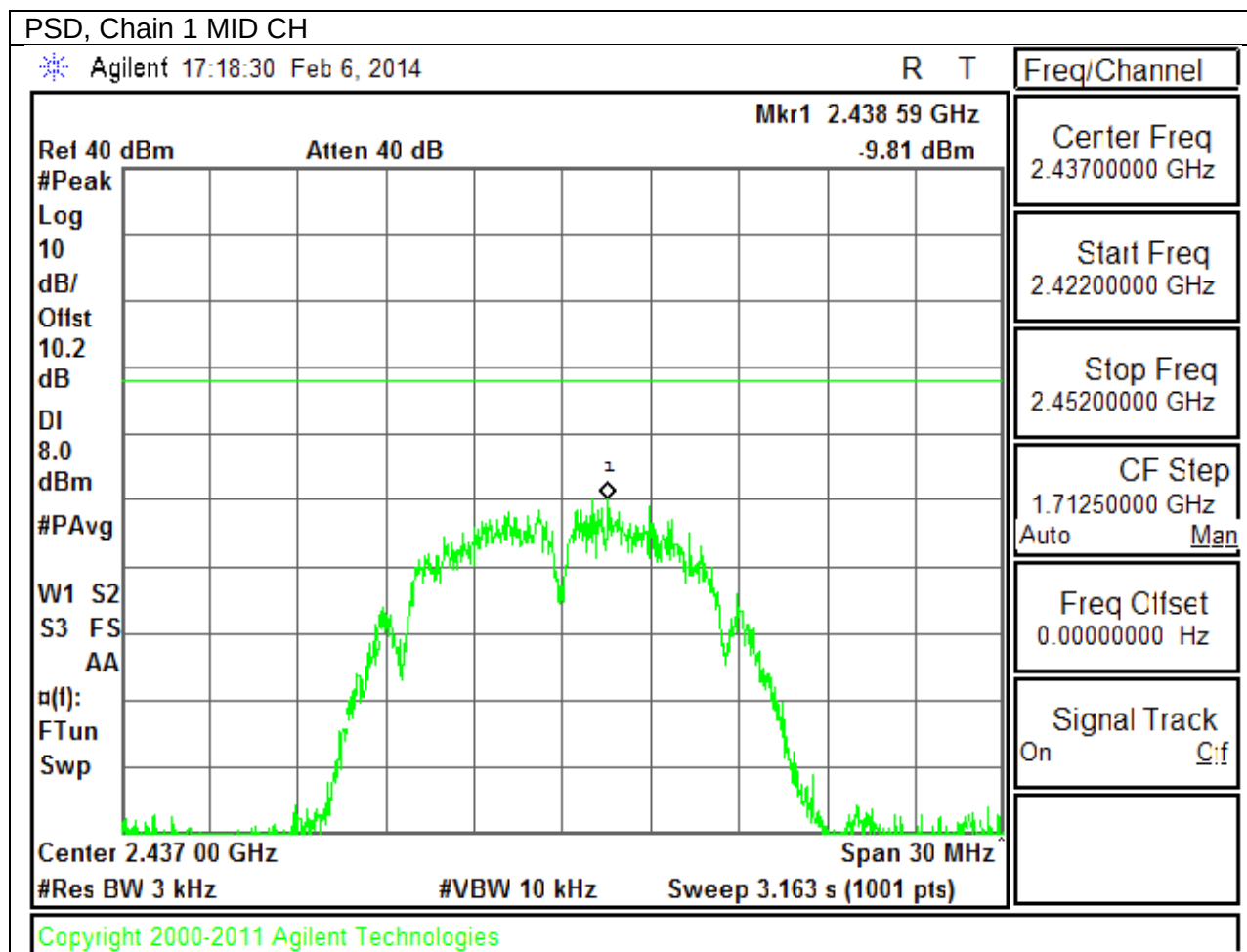
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Chain 1 Meas (dBm)	Total PSD (dBm)	Limit (dBm)	Margin (dB)
Low	5775	-21.05	-20.69	-17.86	8.0	-25.9

10.4.8. 2.4 GHz Plots

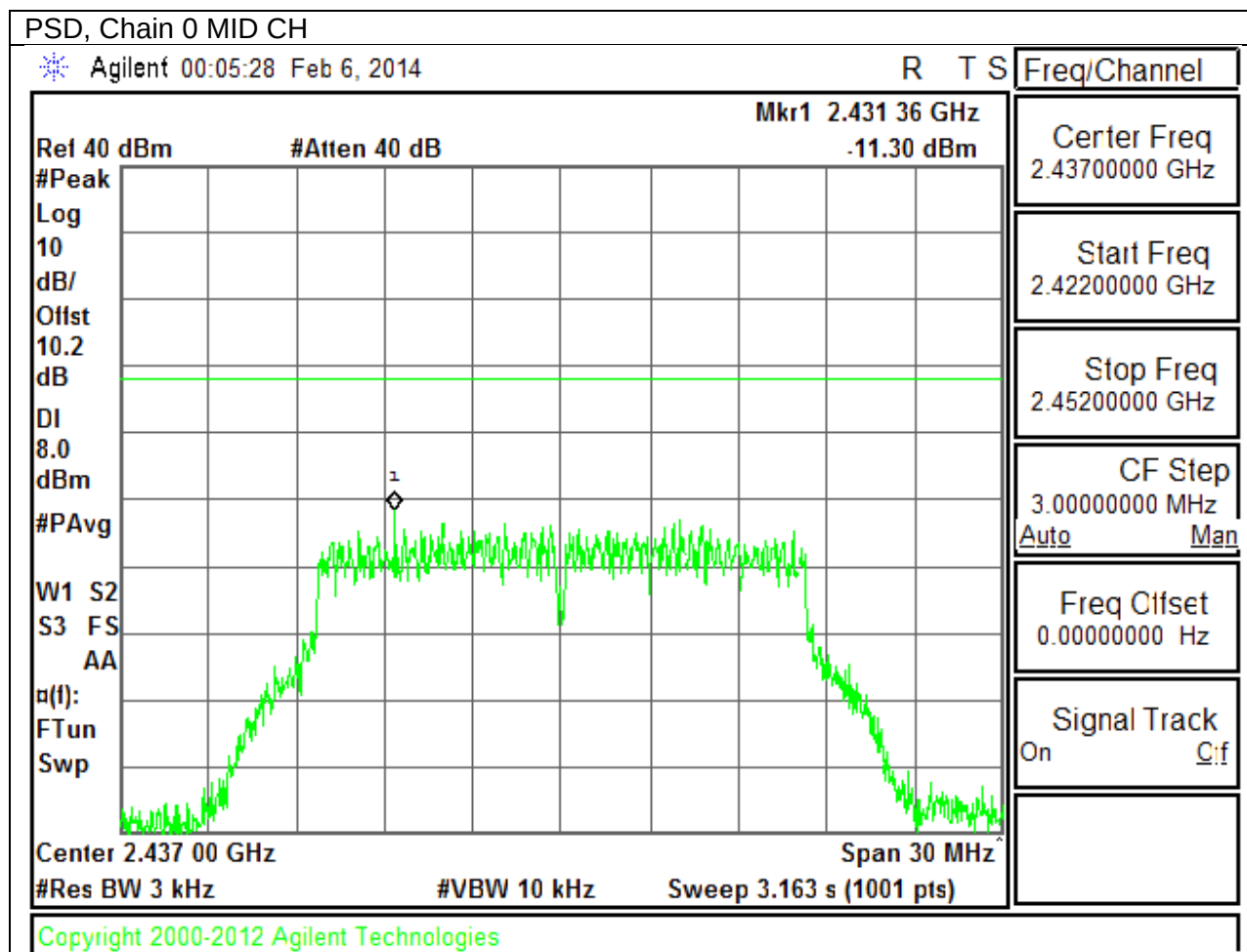
802.11b PSD, Chain 0



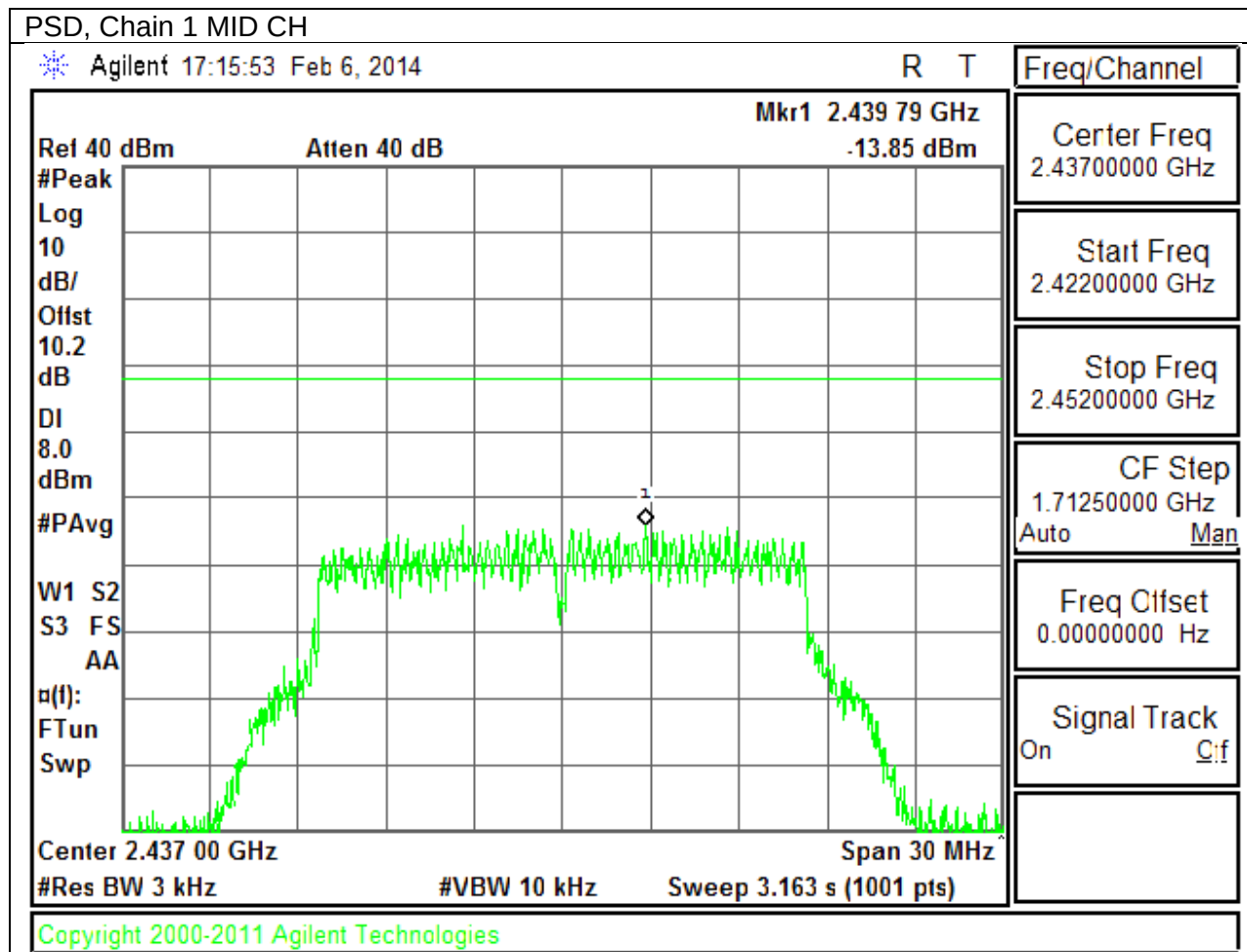
802.11b PSD, Chain 1



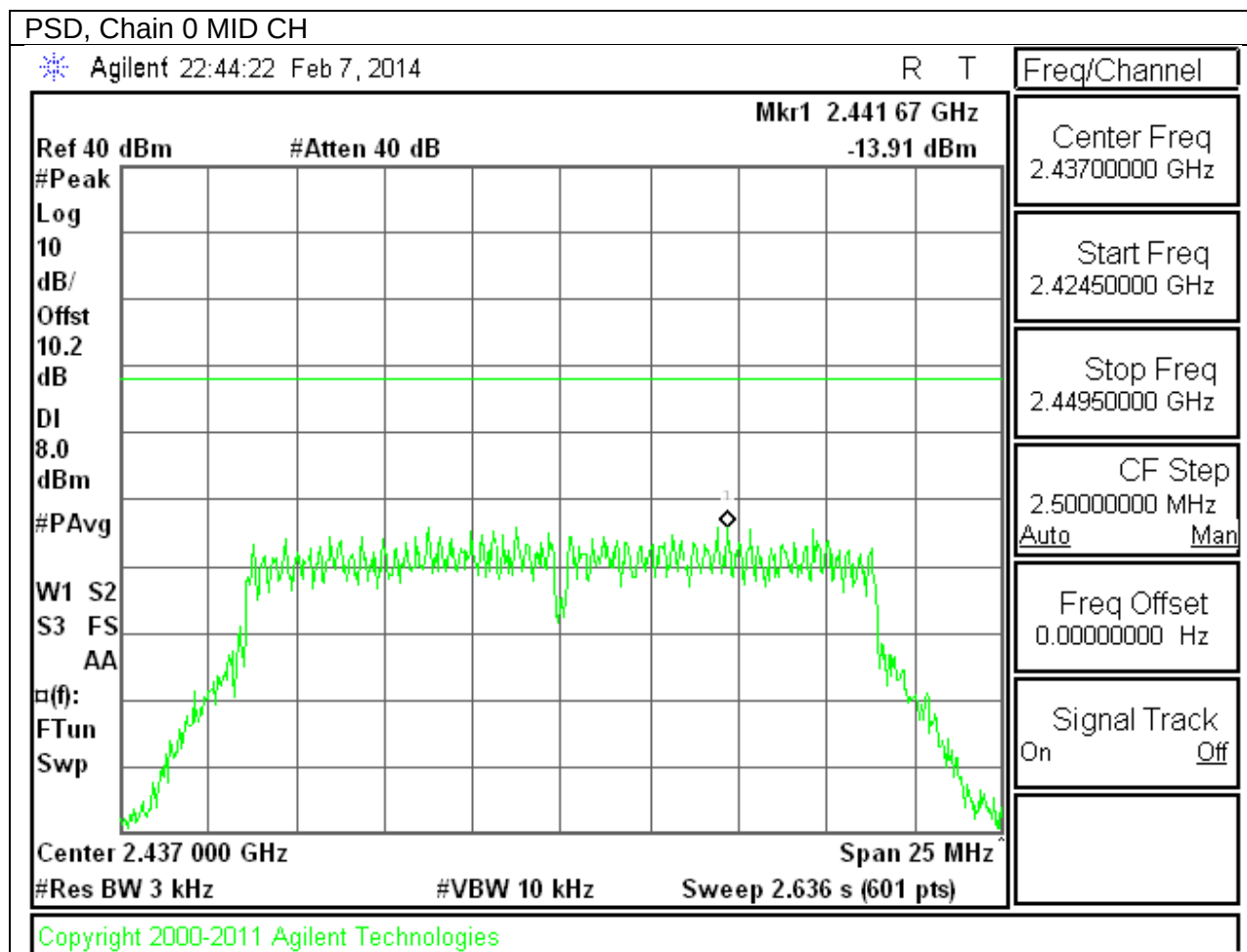
802.11g PSD, Chain 0



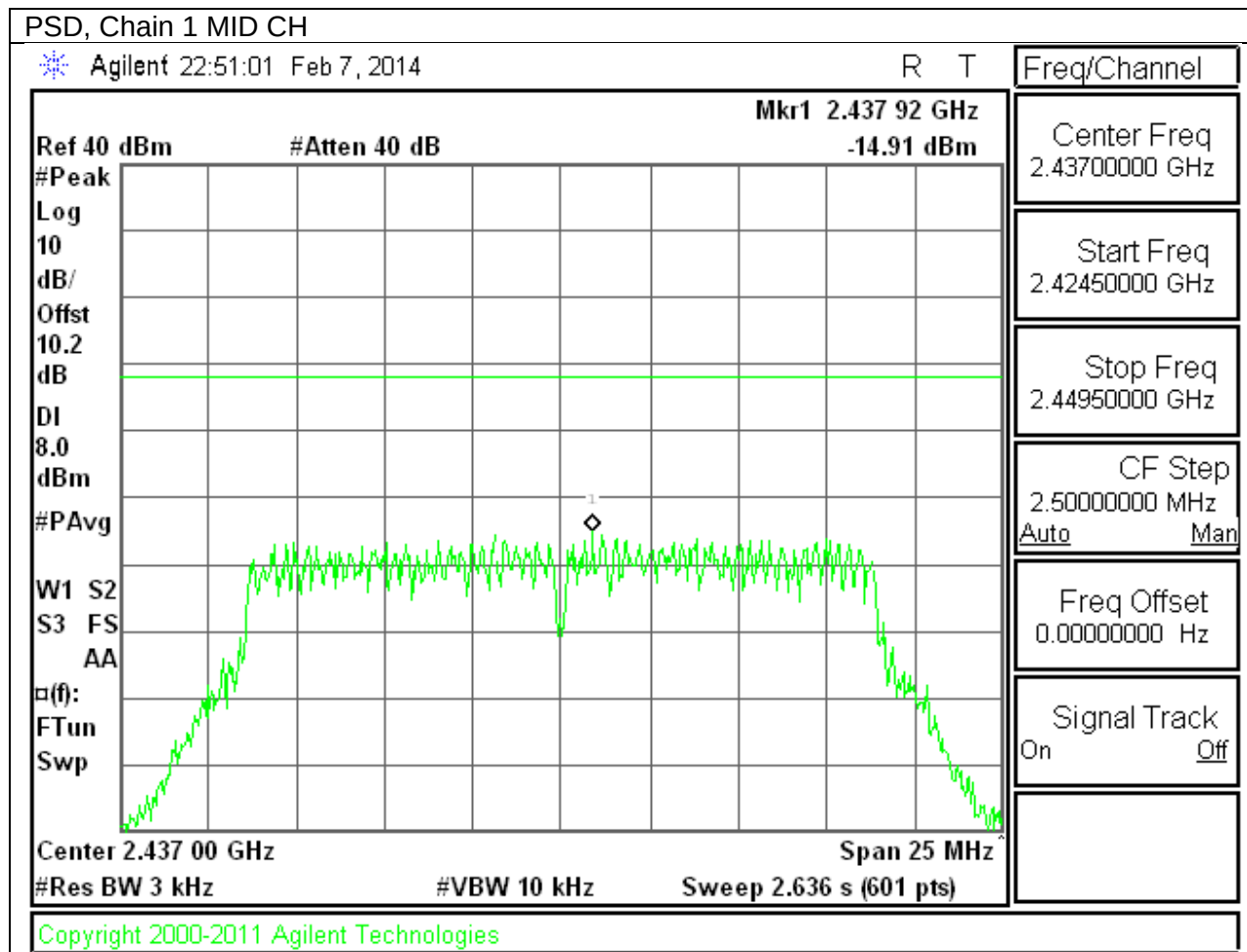
802.11g PSD, Chain 1



802.11n PSD, Chain 0

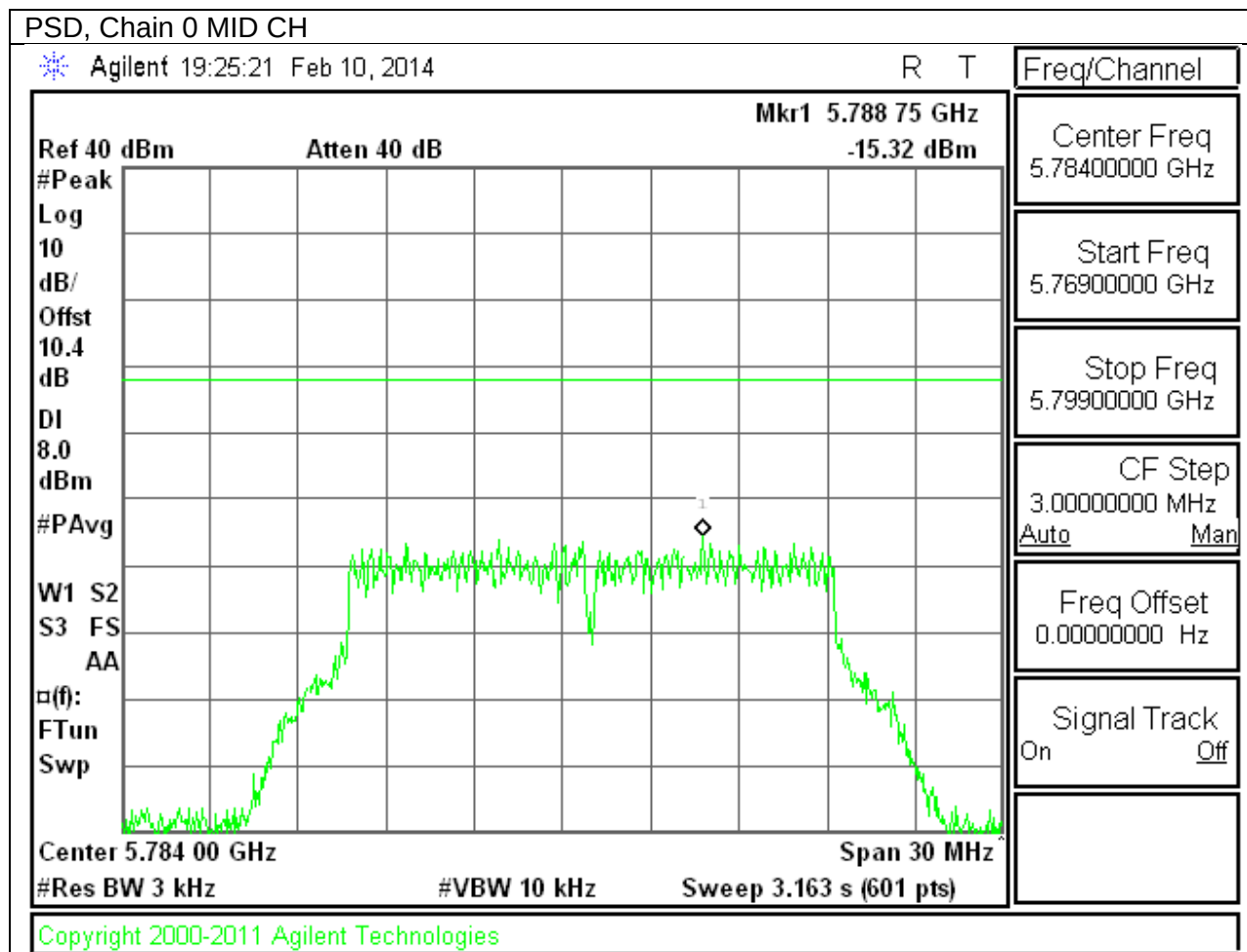


802.11n PSD, Chain 1

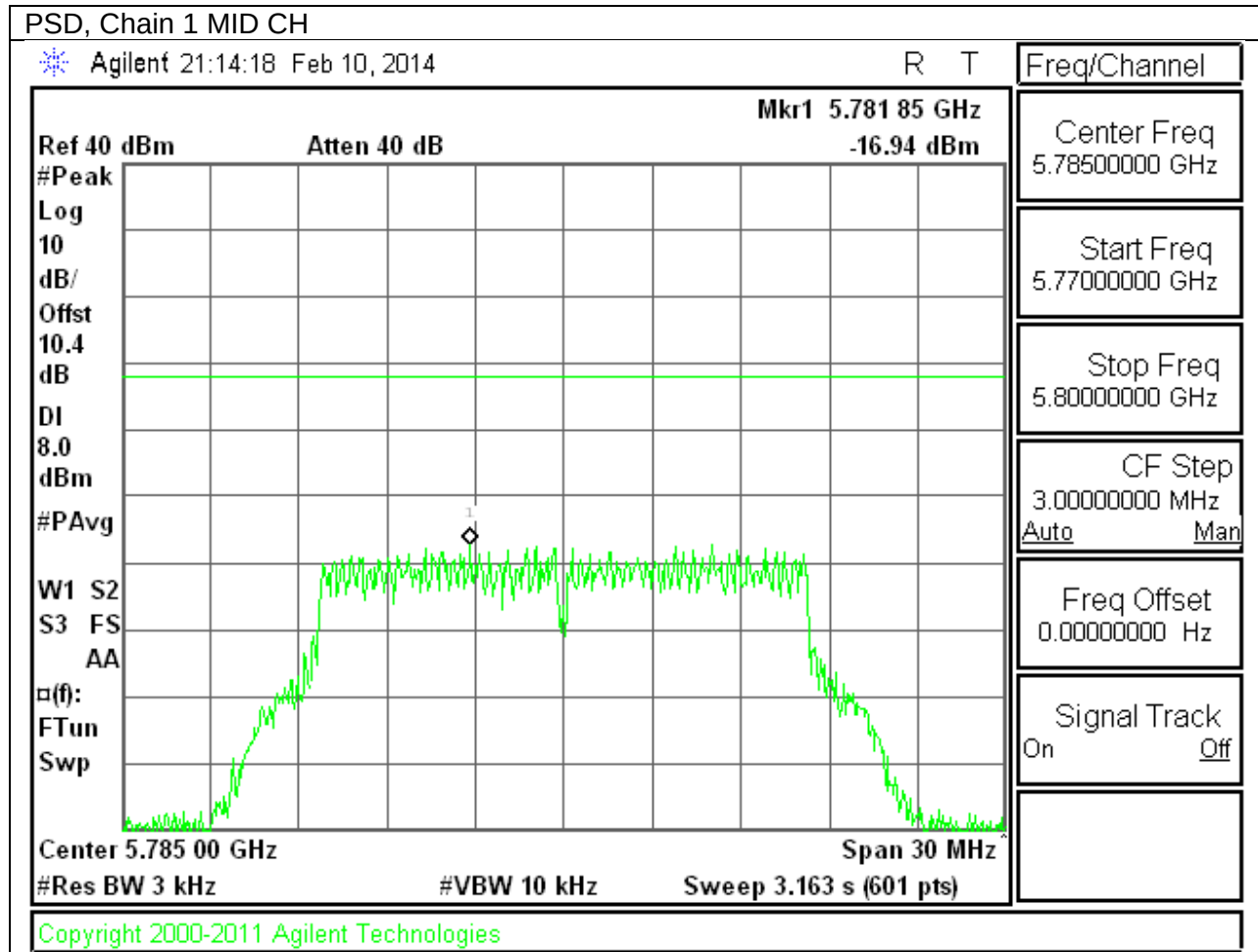


10.4.9. 5.8 GHz Plots

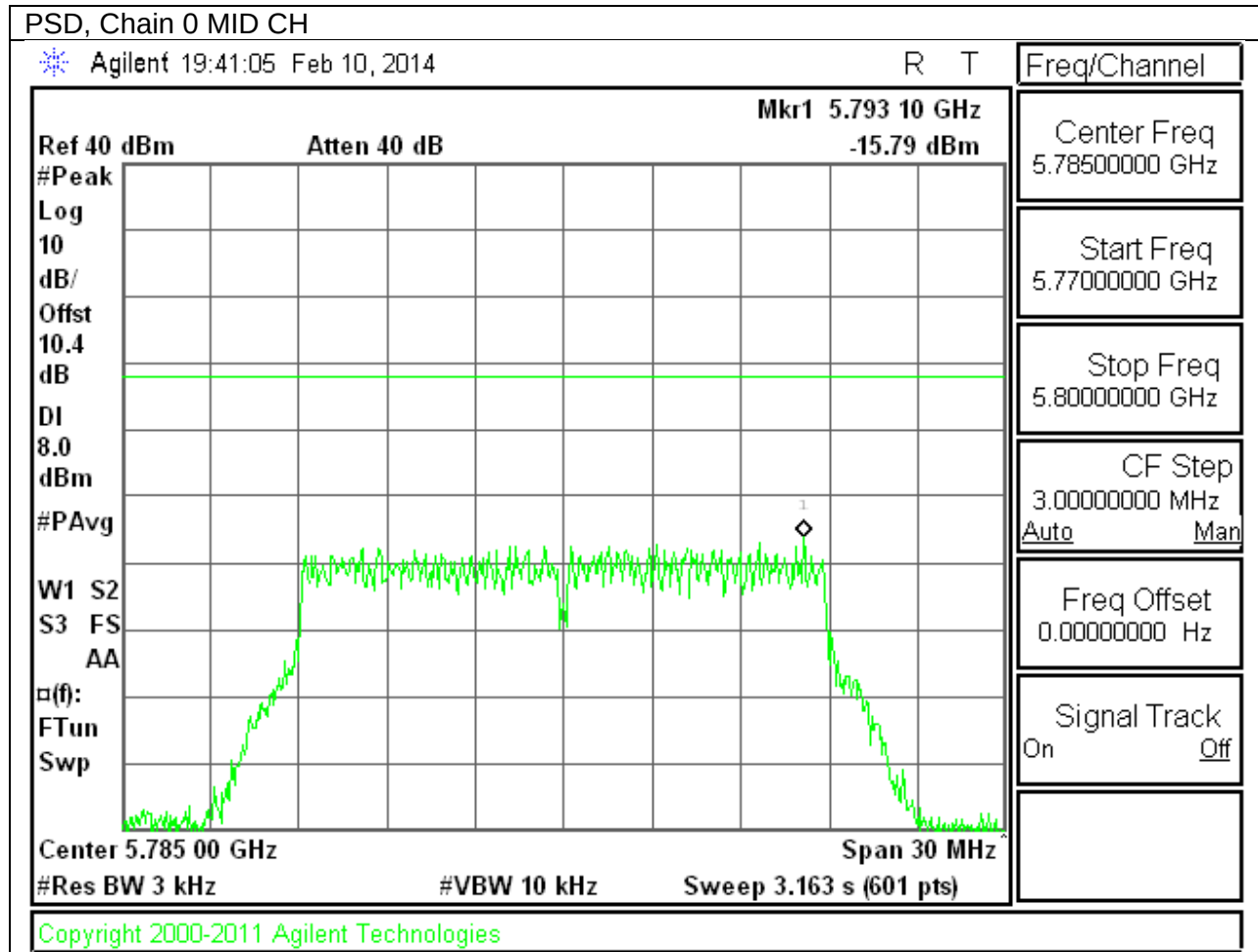
802.11a PSD, Chain 0



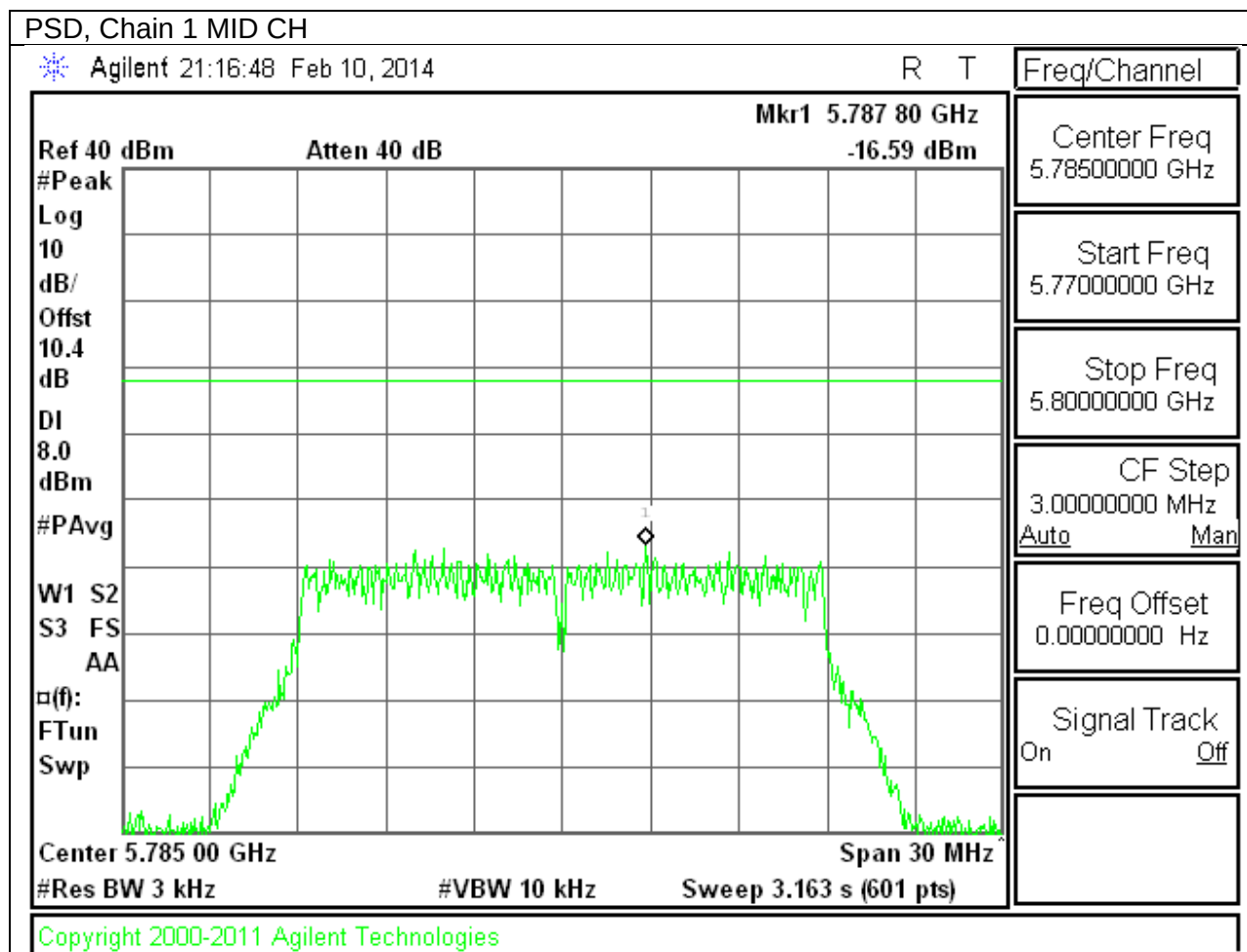
802.11a PSD, Chain 1



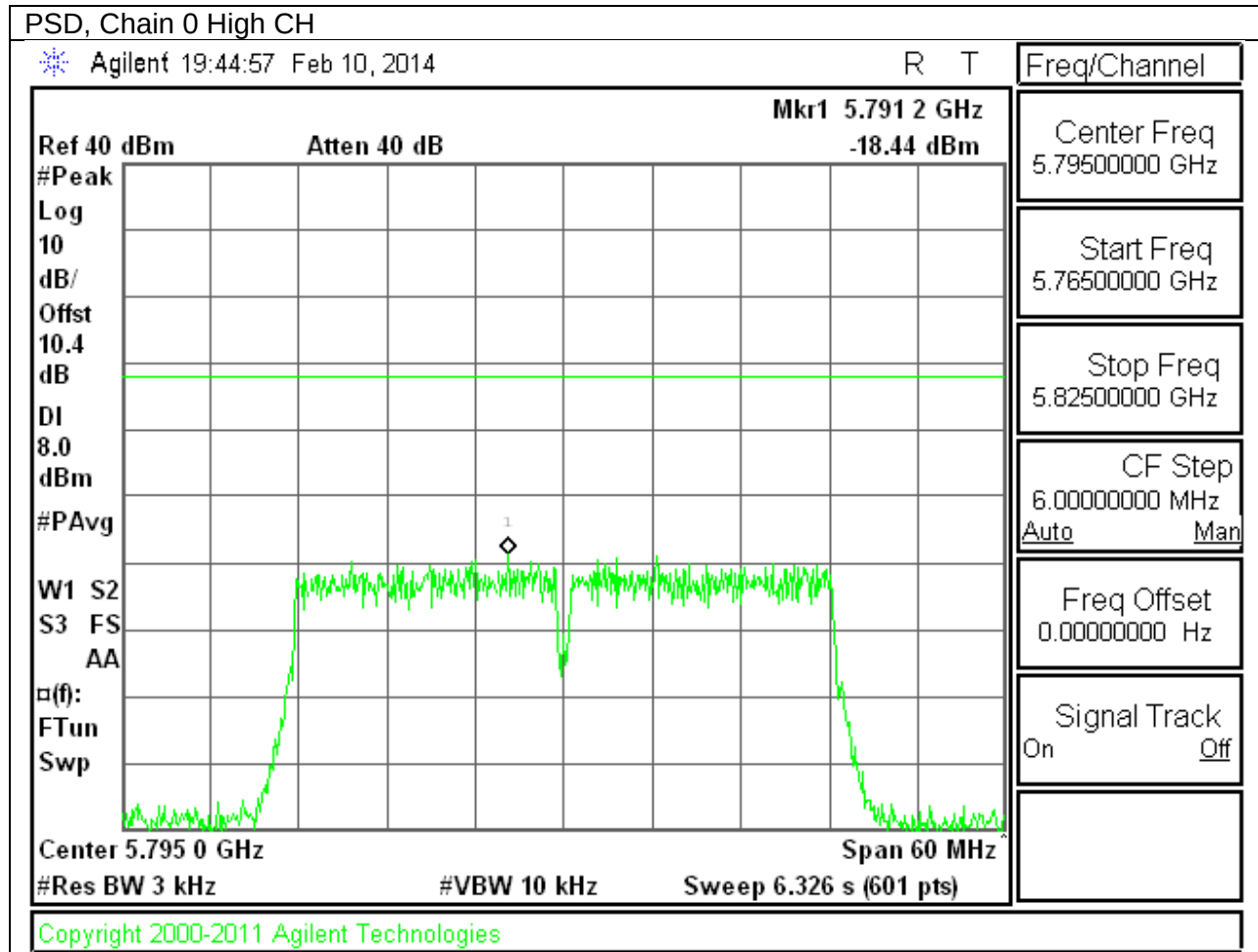
802.11n HT20 PSD, Chain 0



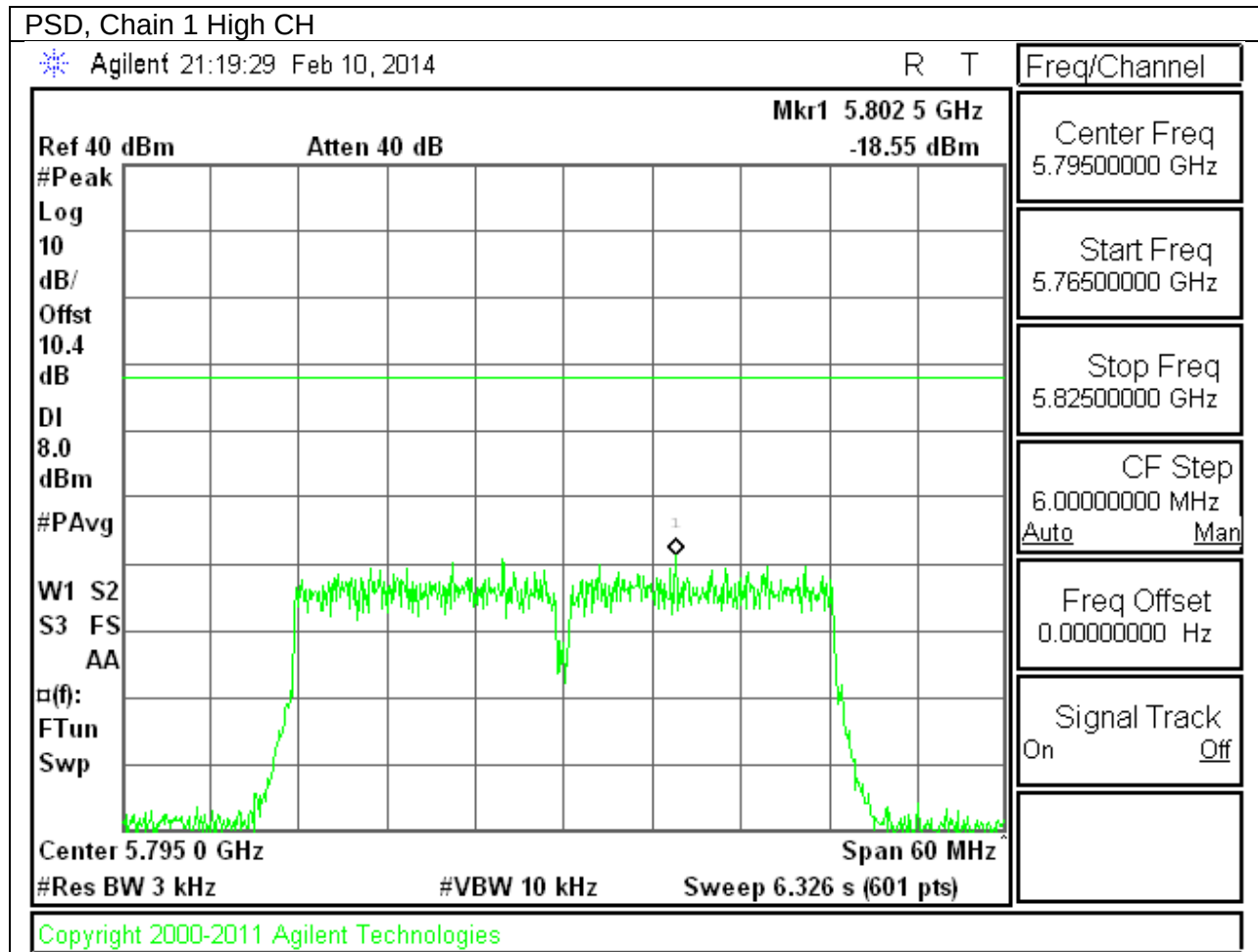
802.11n HT20 PSD, Chain 1



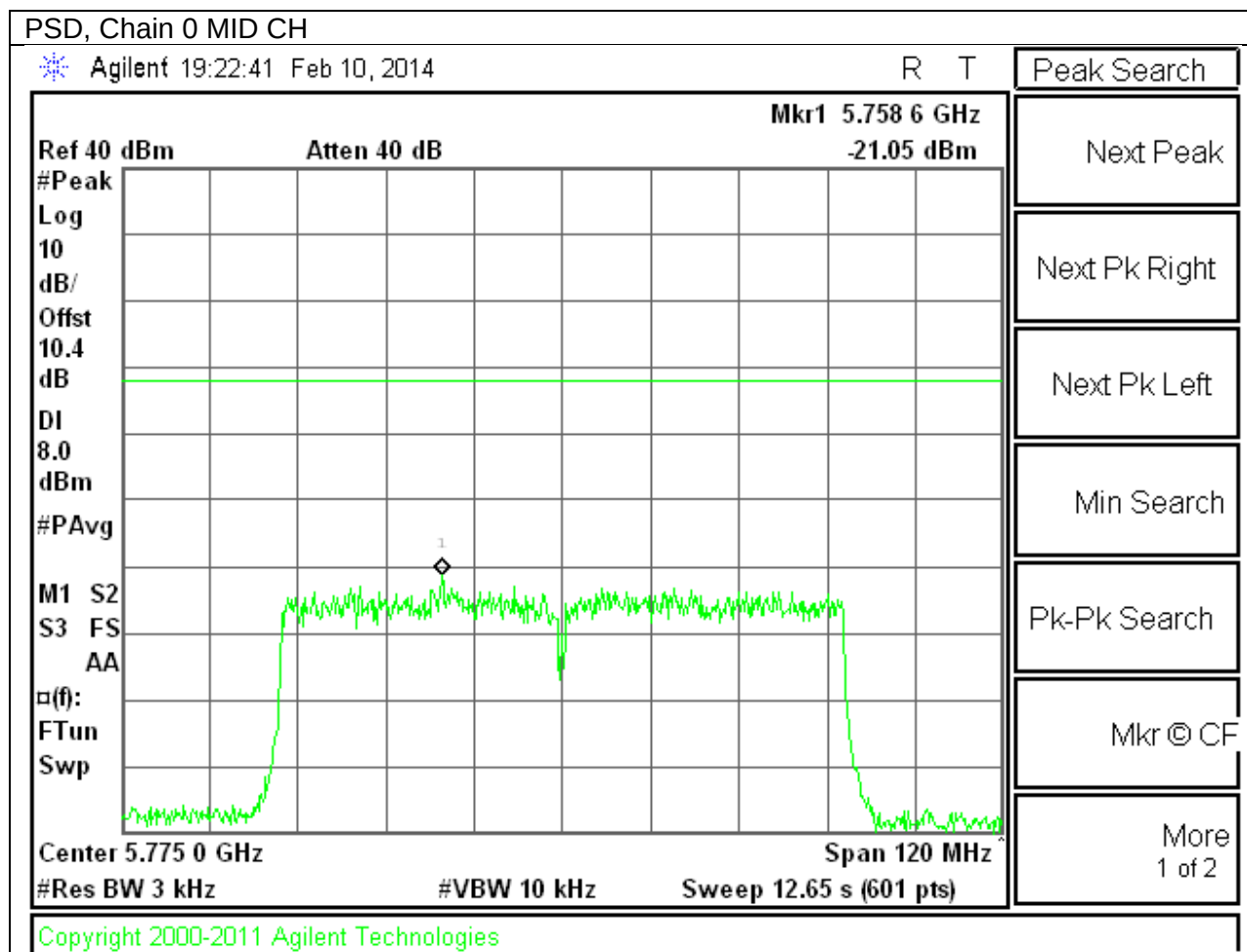
802.11n HT40 PSD, Chain 0



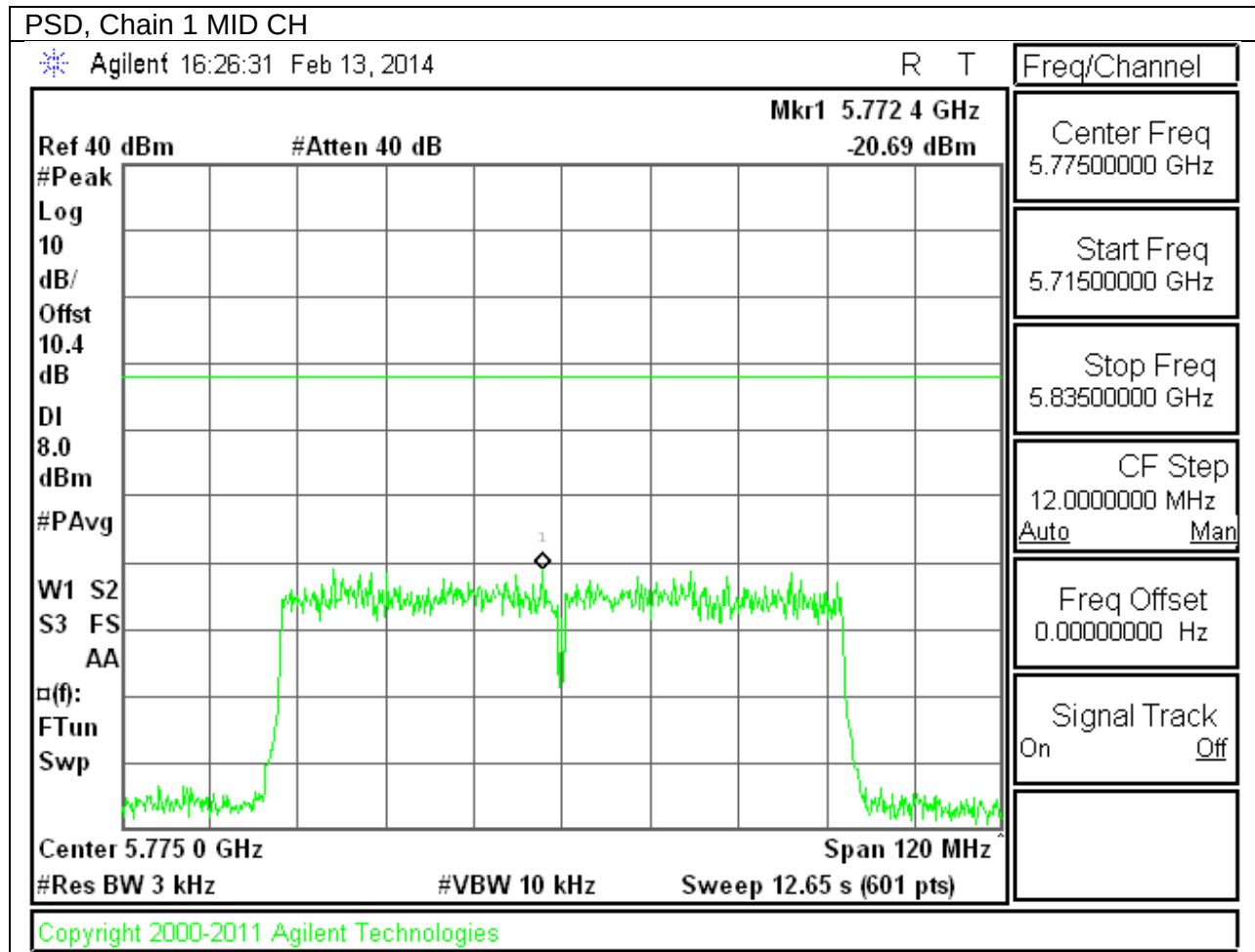
802.11n HT40 PSD, Chain 1



802.11ac HT80 PSD, Chain 0



802.11ac HT80 PSD, Chain 1



10.5. OUT-OF-BAND EMISSIONS

LIMITS

FCC §15.247 (d)

IC RSS-210 A8.5

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 §15.209(a) is not required.

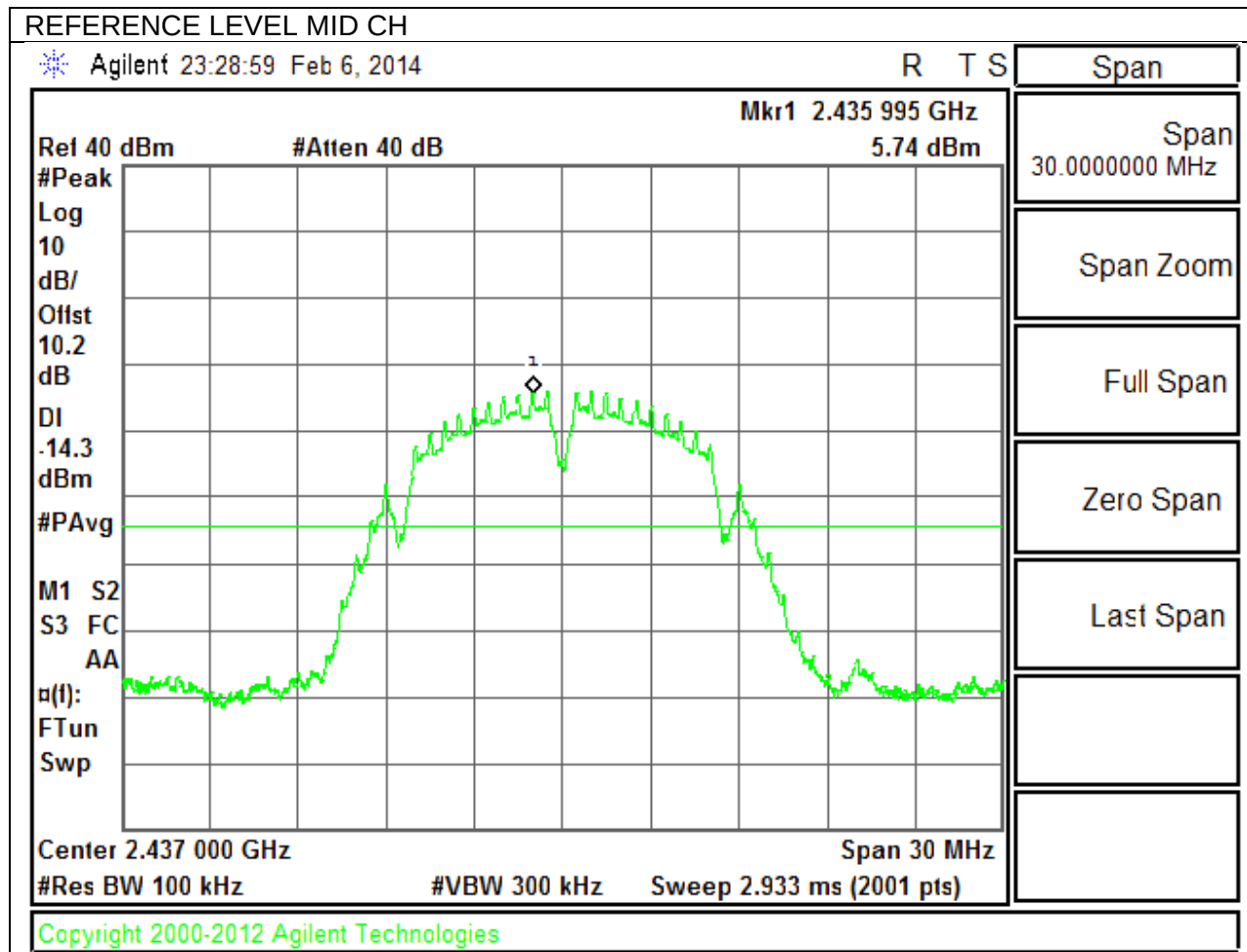
TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer with RBW = 100 kHz, VBW = 300 kHz, peak detector, and max hold. Measurements utilizing these settings are made of the in-band reference level, bandedge (where measurements to the general radiated limits will not be made) and out-of-band emissions.

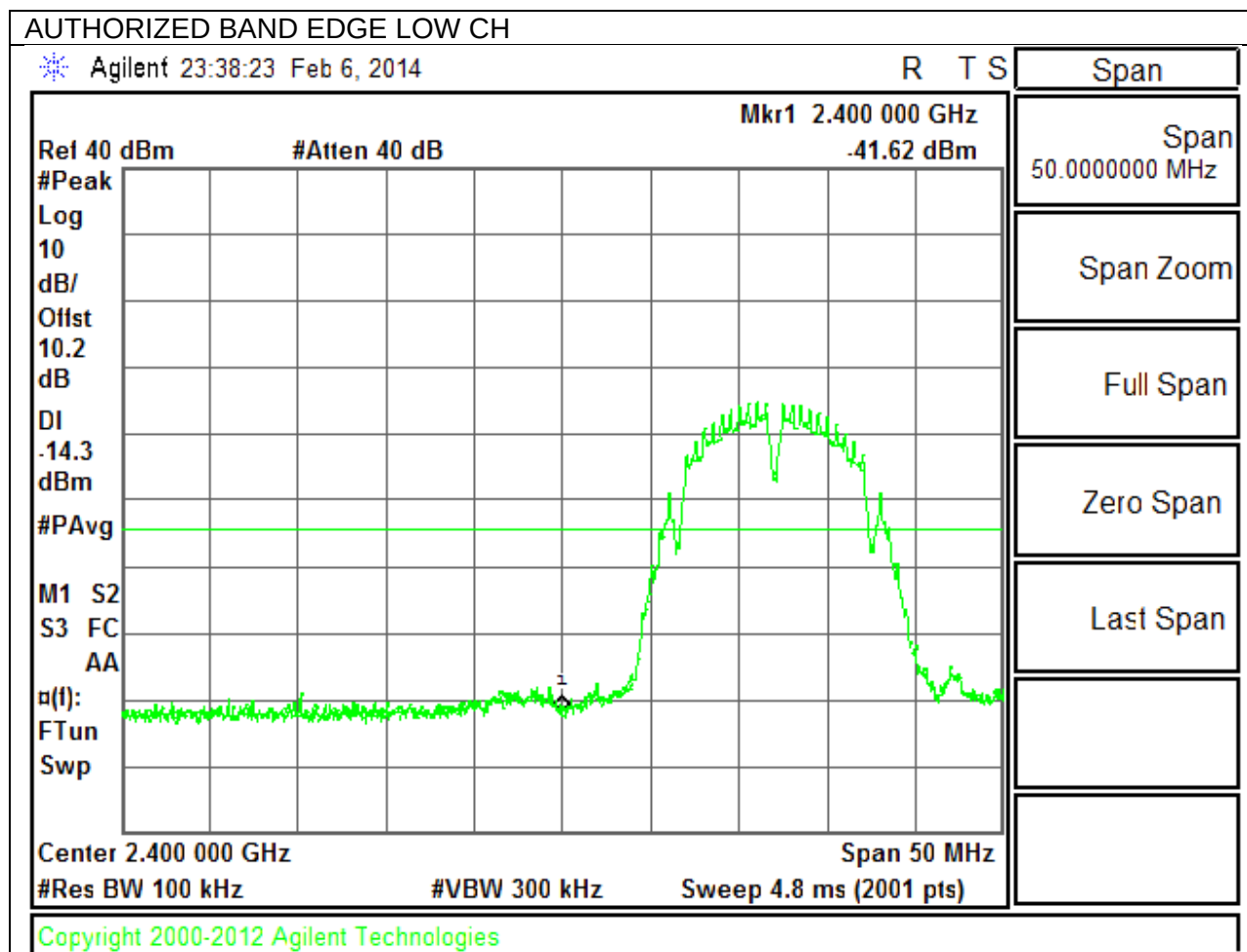
RESULTS

10.5.1. 802.11b MODE IN THE 2.4 GHZ BAND CHAIN 0

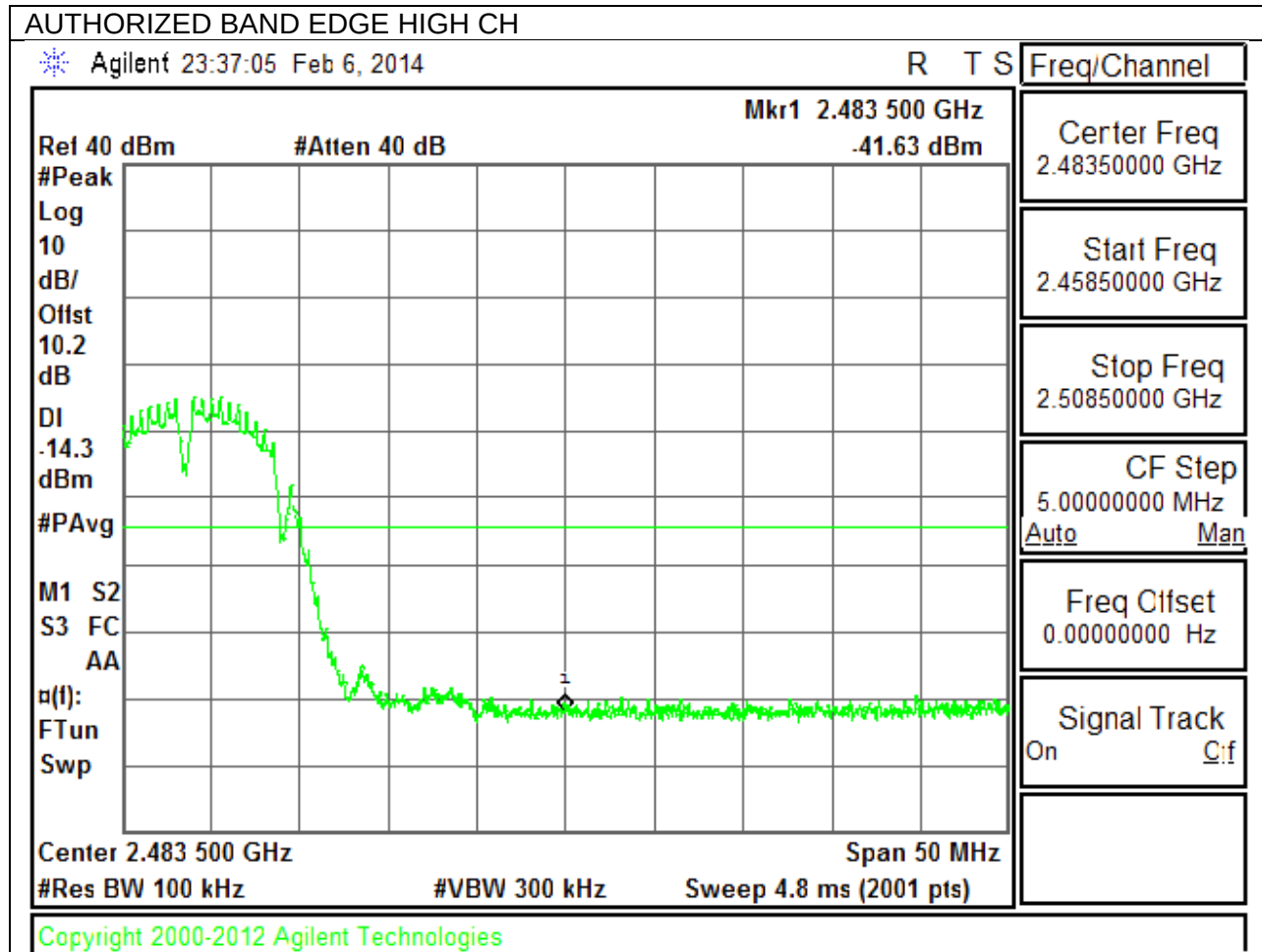
IN-BAND REFERENCE LEVEL



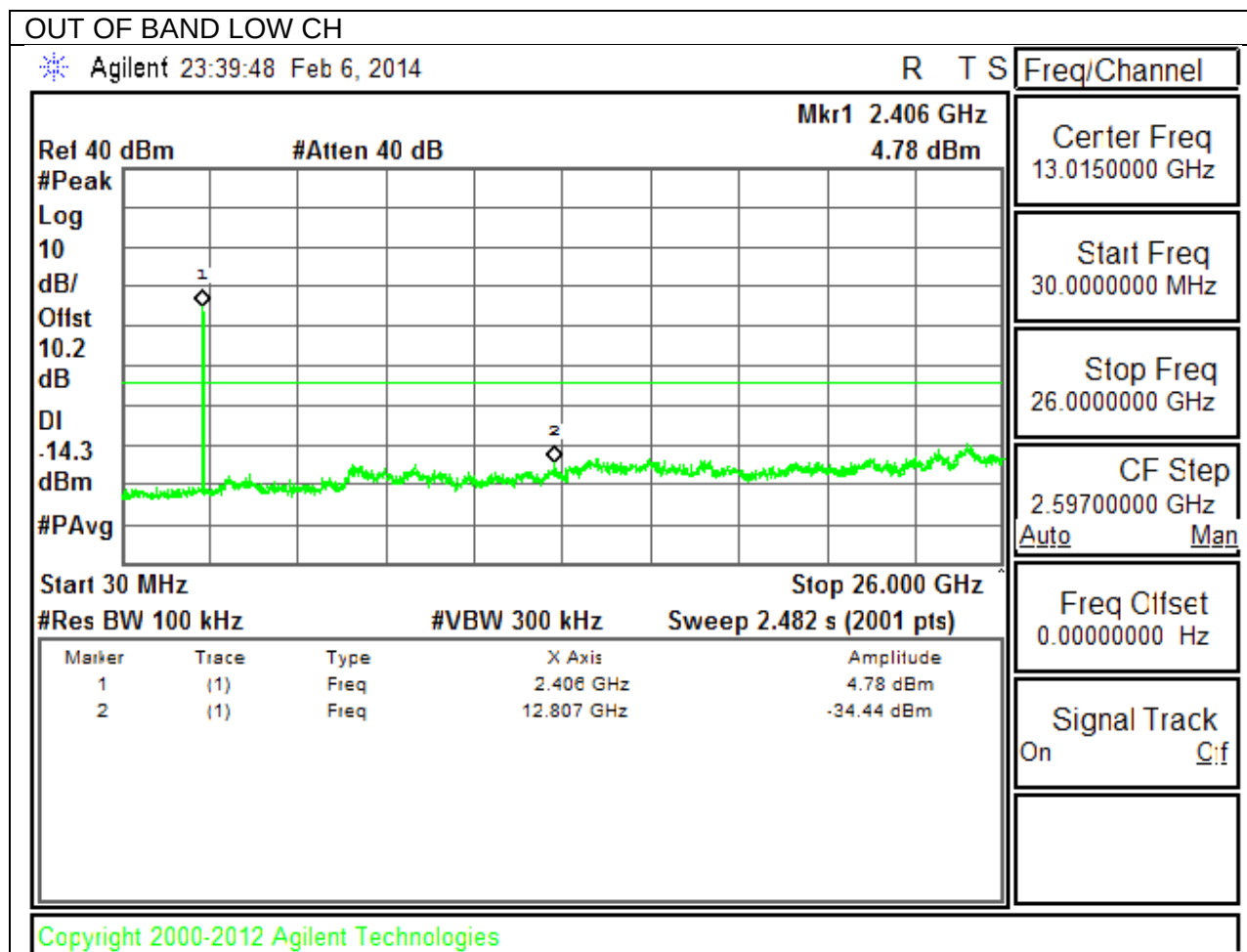
LOW CHANNEL BANDEDGE

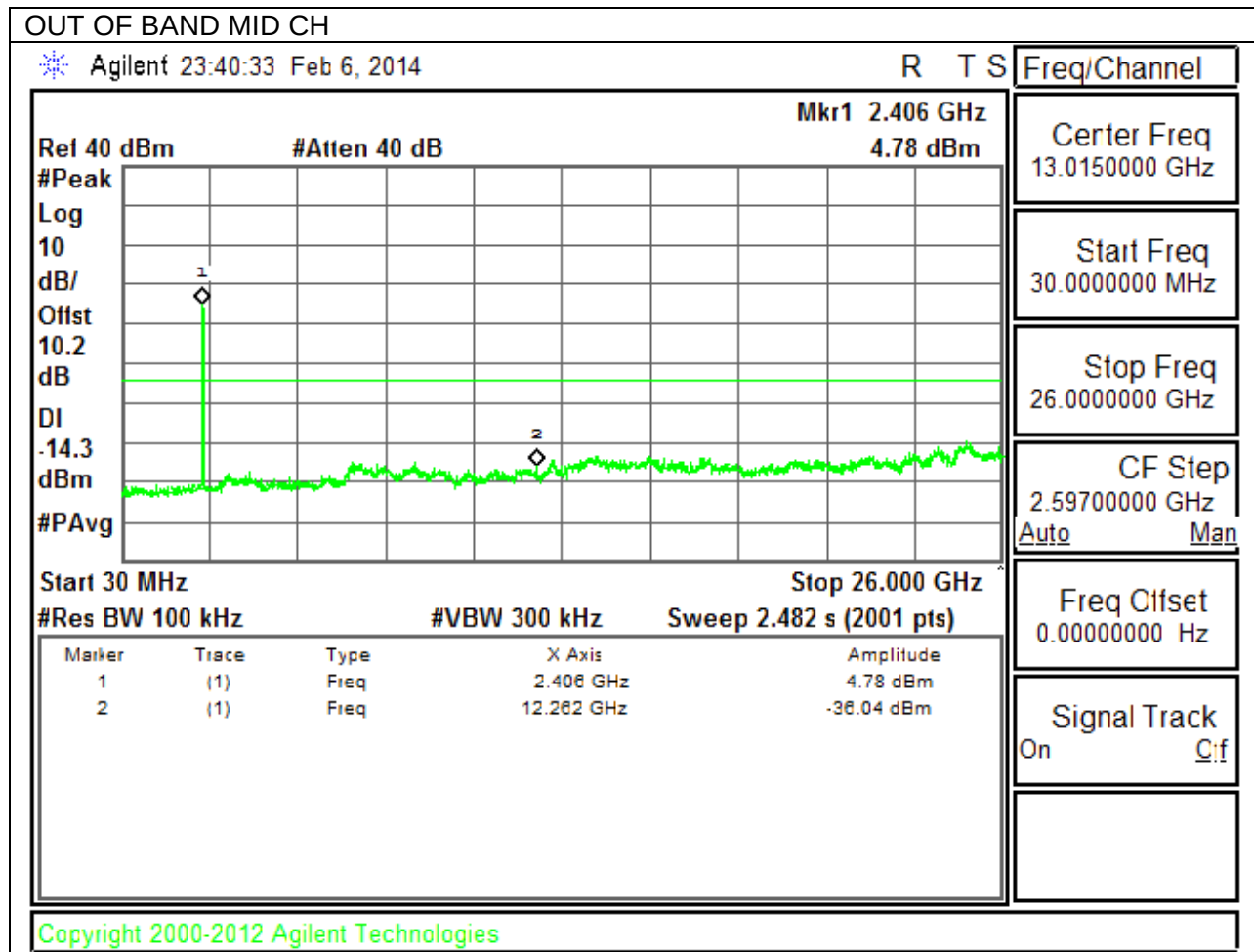


HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS



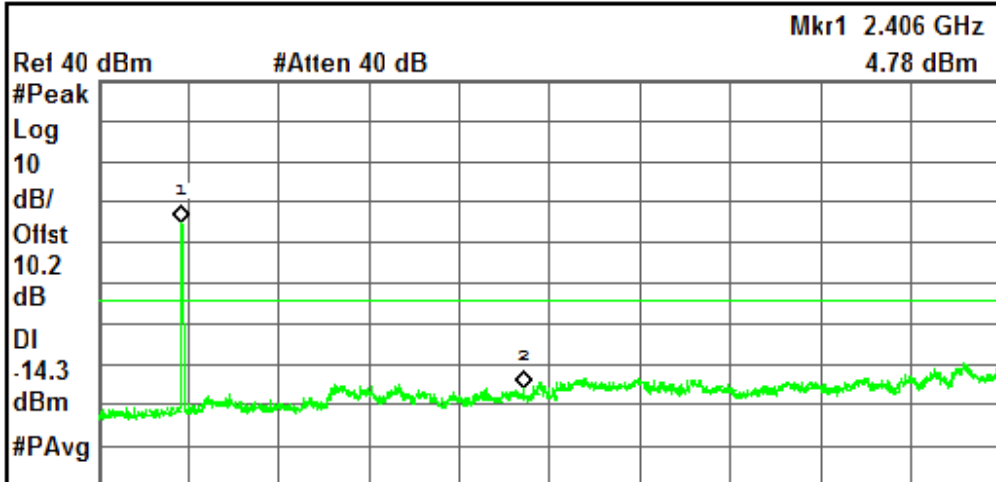


OUT OF BAND HIGH CH

Agilent 23:41:32 Feb 6, 2014

R T S

Freq/Channel



Center Freq
13.0150000 GHz

Start Freq
30.0000000 MHz

Stop Freq
26.0000000 GHz

CF Step
2.59700000 GHz
Auto Man

Start 30 MHz Stop 26.000 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (2001 pts)

Freq Offset
0.00000000 Hz

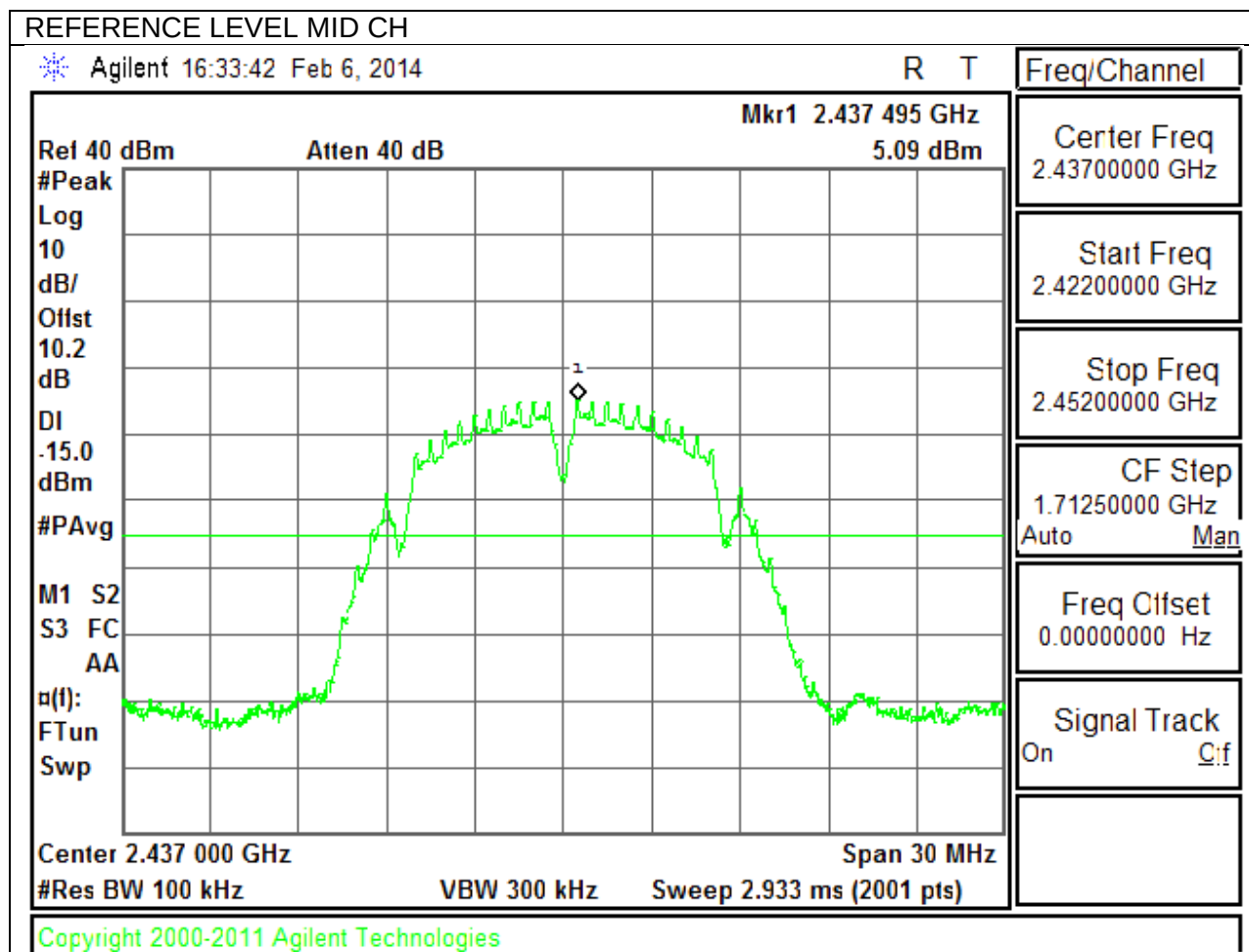
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.406 GHz	4.78 dBm
2	(1)	Freq	12.262 GHz	-36.04 dBm

Signal Track
On Off

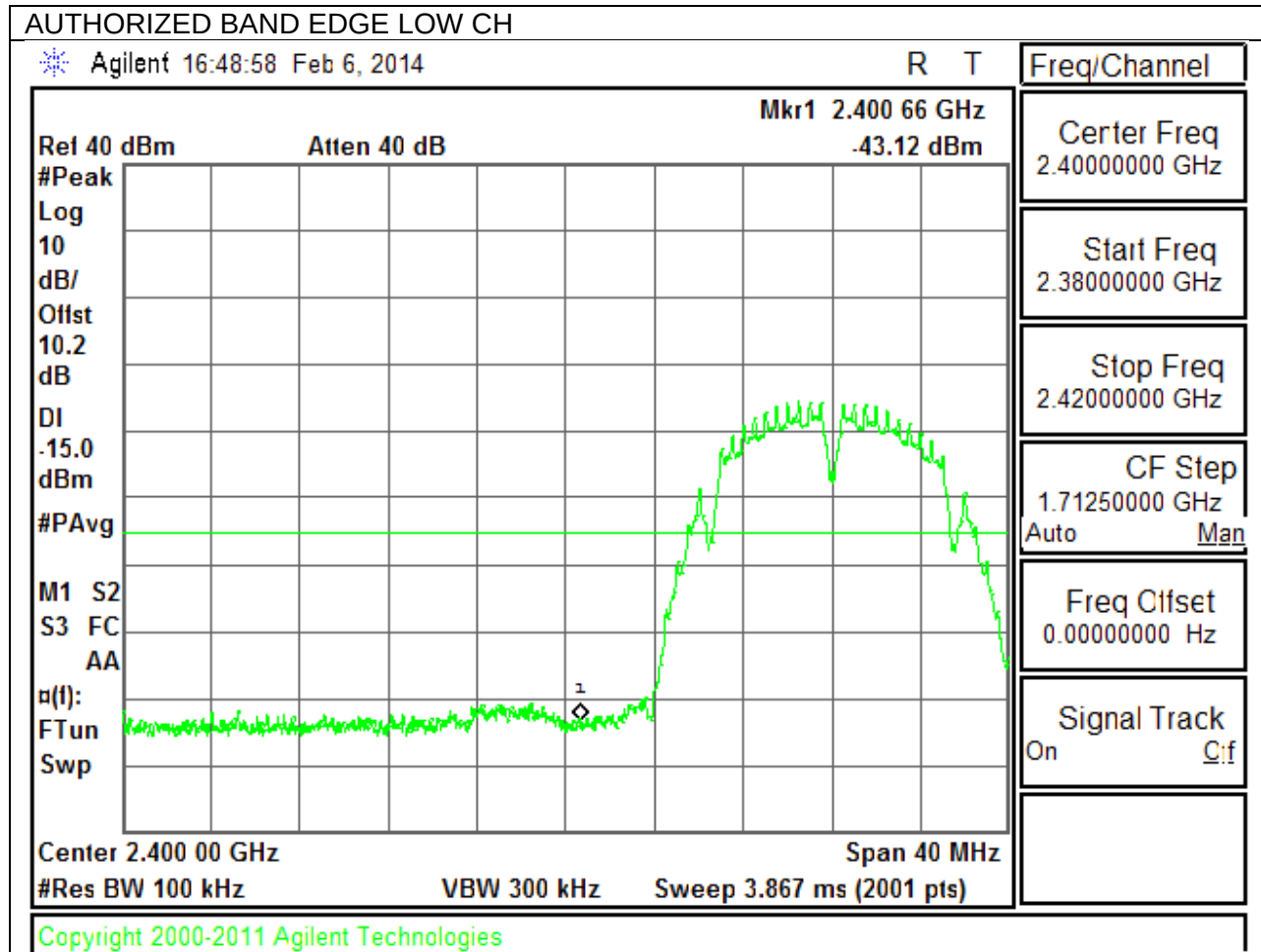
Copyright 2000-2012 Agilent Technologies

10.5.2. 802.11b MODE IN THE 2.4 GHZ BAND CHAIN 1

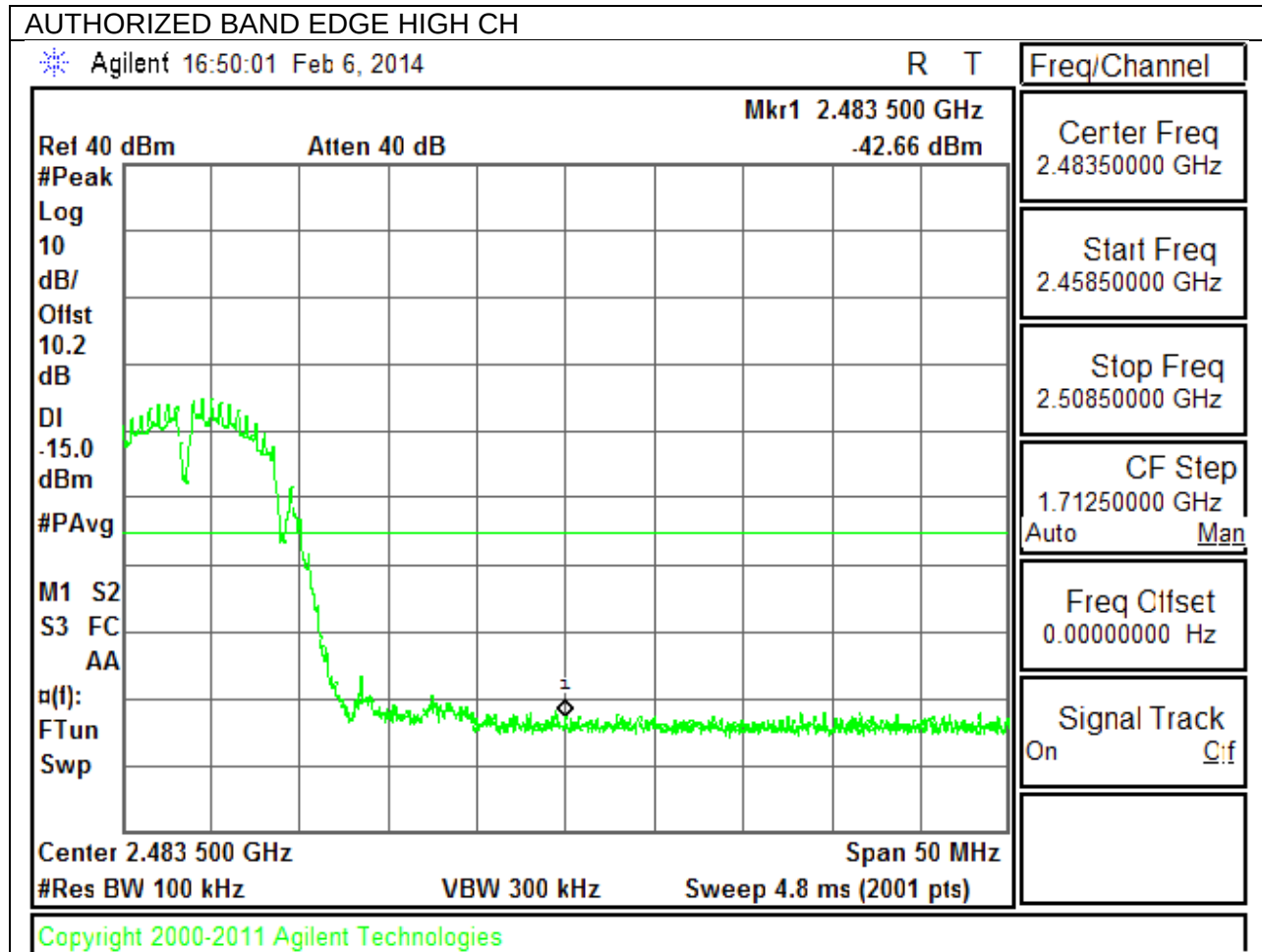
IN-BAND REFERENCE LEVEL



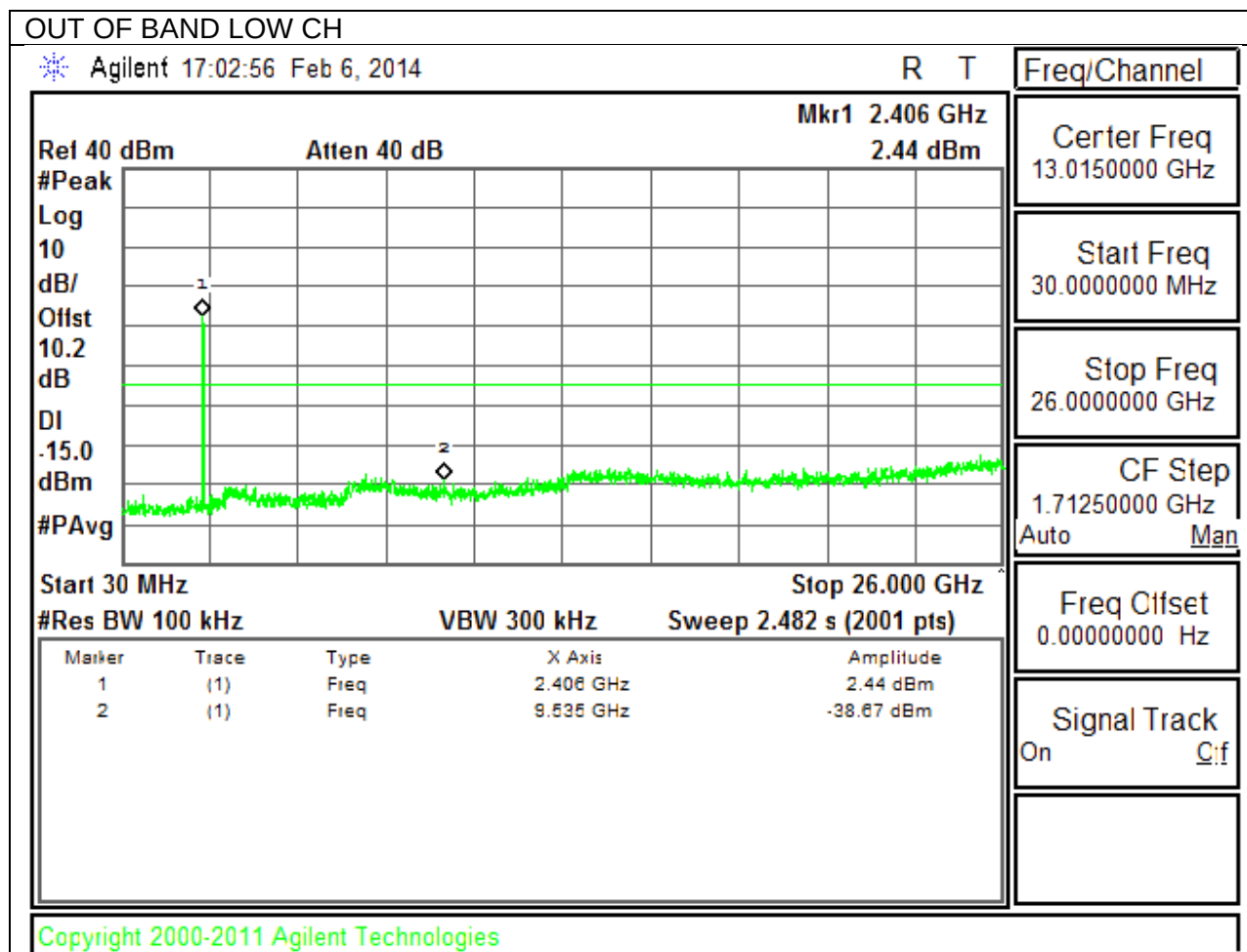
AUTHORIZED BAND EDGE LOW CH

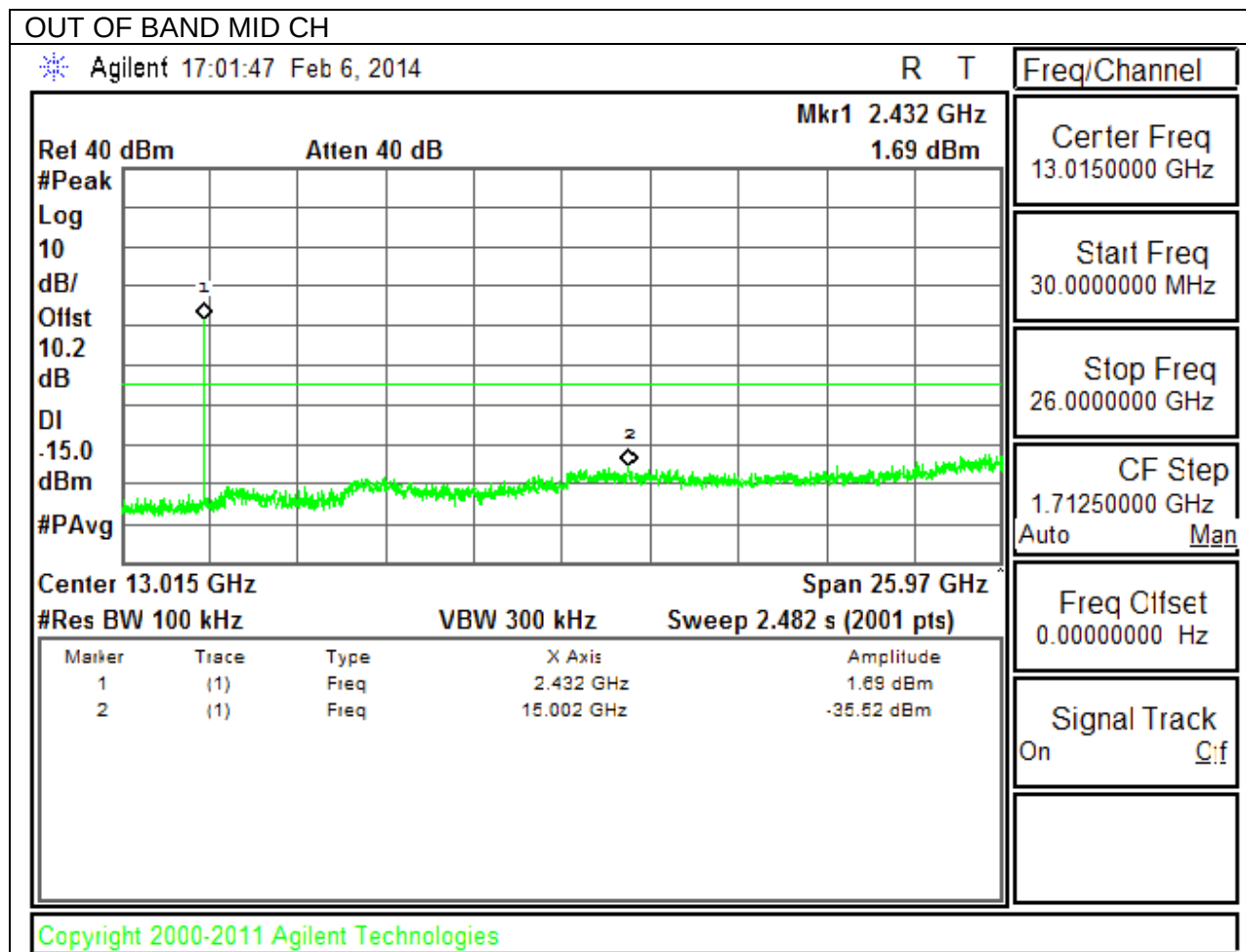


HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS





OUT OF BAND HIGH CH

Agilent 17:00:45 Feb 6, 2014

R T

Freq/Channel

Ref 40 dBm

Atten 40 dB

Mkr1 2.458 GHz

1.24 dBm

#Peak

Log

10

dB/

Offst

10.2

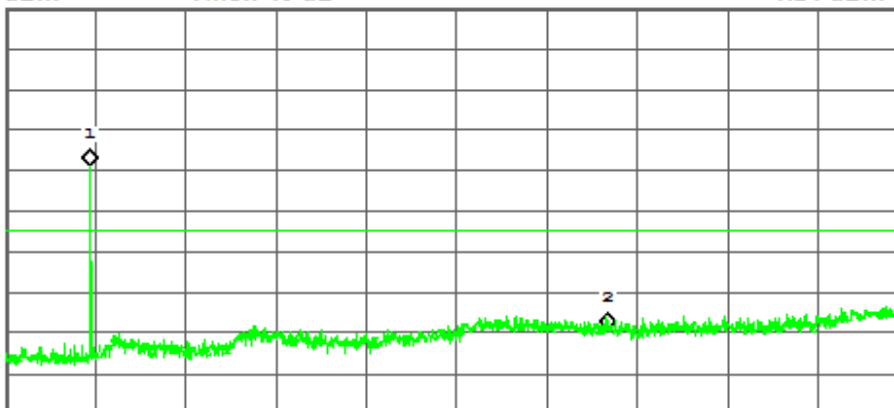
dB

DI

-15.0

dBm

#PAvg



Start 30 MHz

Stop 26.000 GHz

#Res BW 100 kHz

VBW 300 kHz

Sweep 2.482 s (2001 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.458 GHz	1.24 dBm
2	(1)	Freq	17.326 GHz	-39.43 dBm

Center Freq
13.0150000 GHz

Start Freq
30.0000000 MHz

Stop Freq
26.0000000 GHz

CF Step
1.71250000 GHz
Auto Man

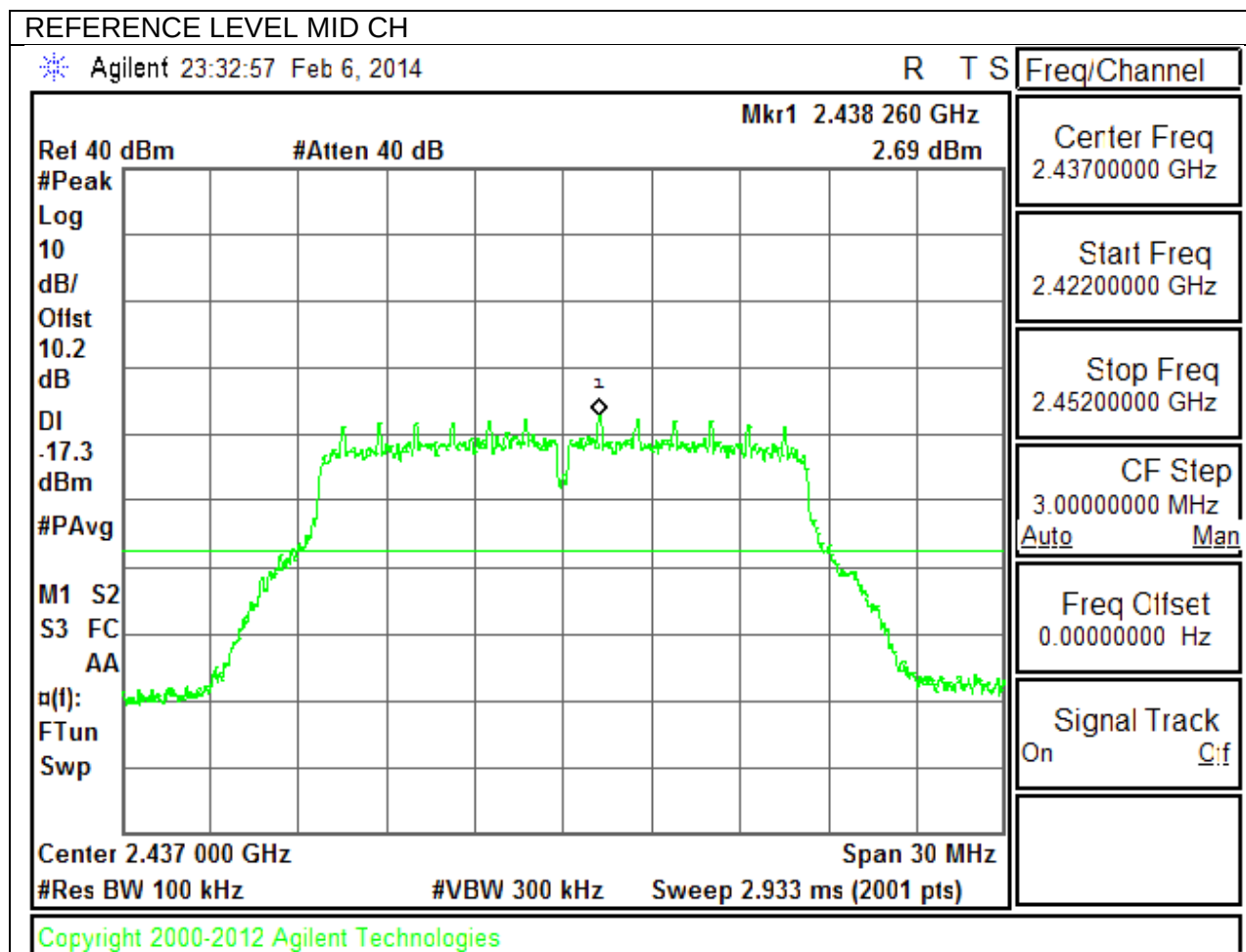
Freq Offset
0.00000000 Hz

Signal Track
On Off

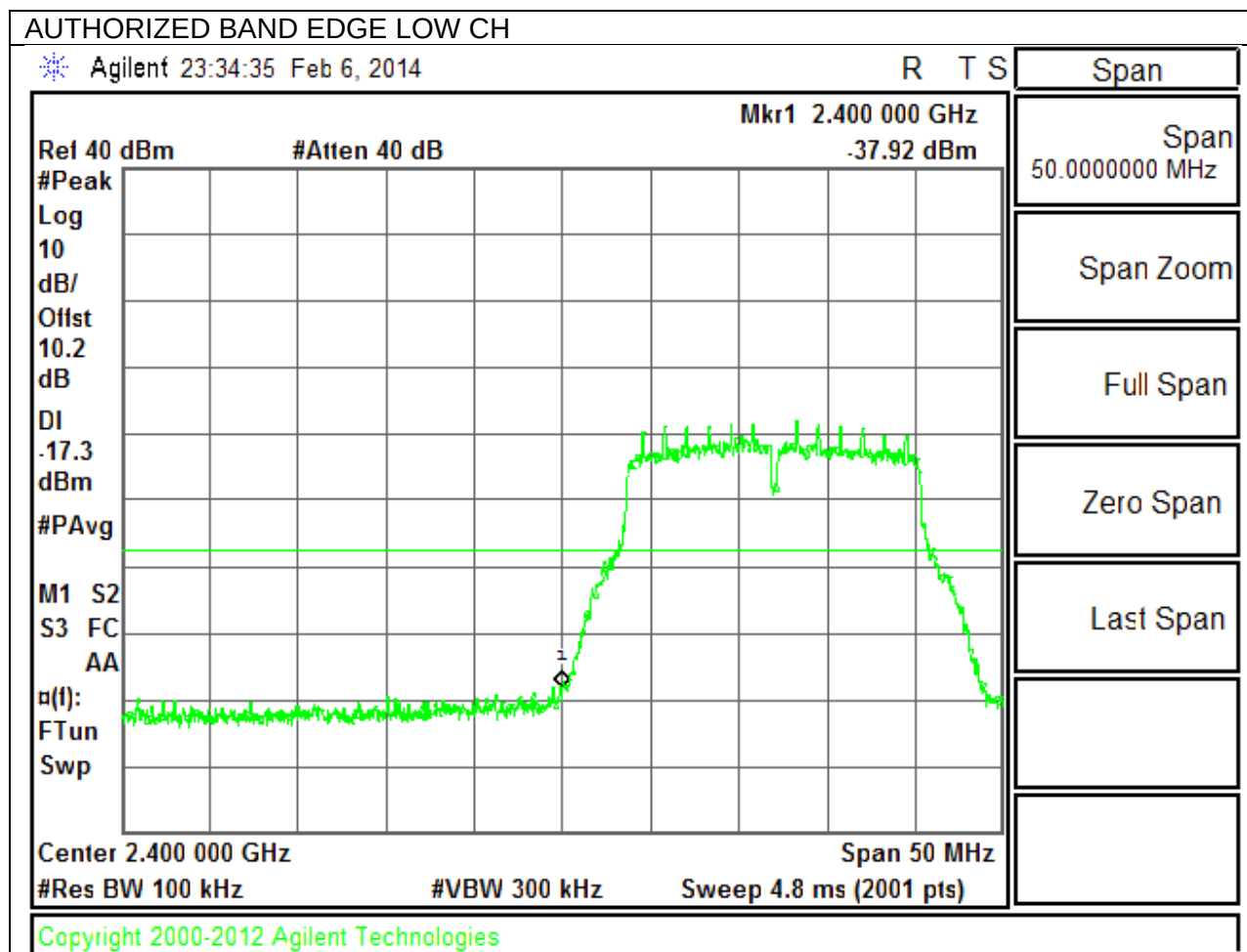
Copyright 2000-2011 Agilent Technologies

10.5.3. 802.11g MODE IN THE 2.4 GHZ BAND CHAIN 0

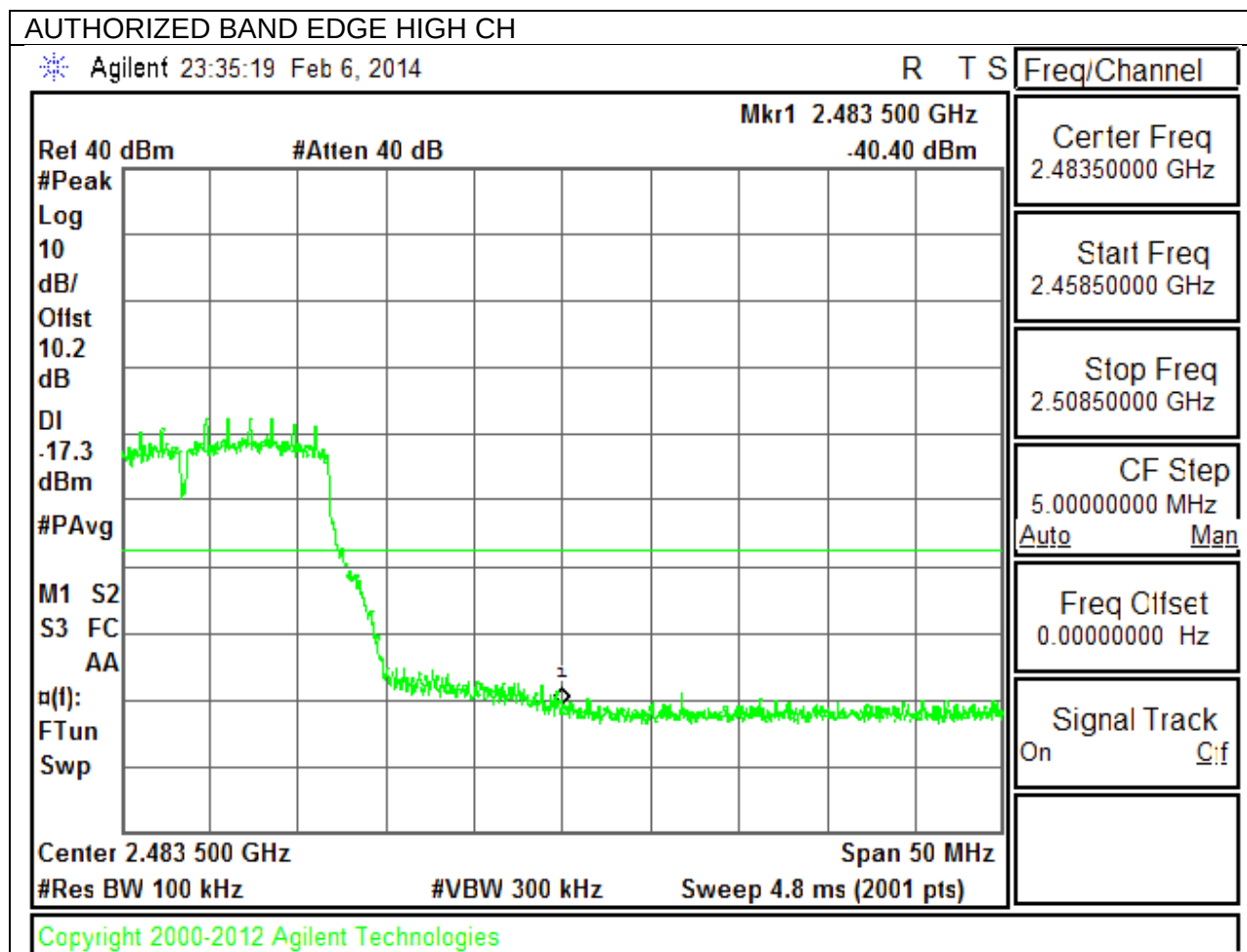
IN-BAND REFERENCE LEVEL



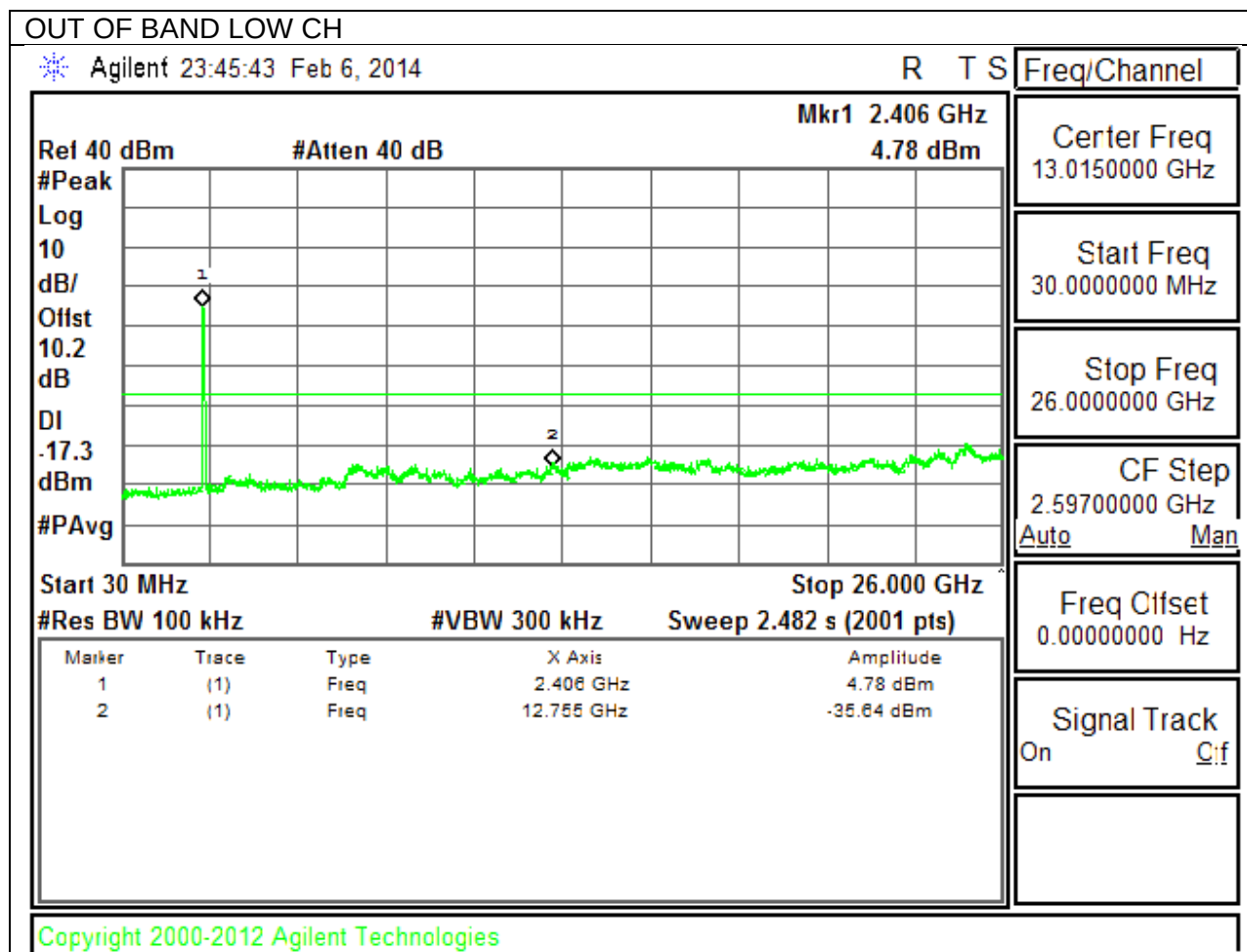
LOW CHANNEL BANDEDGE

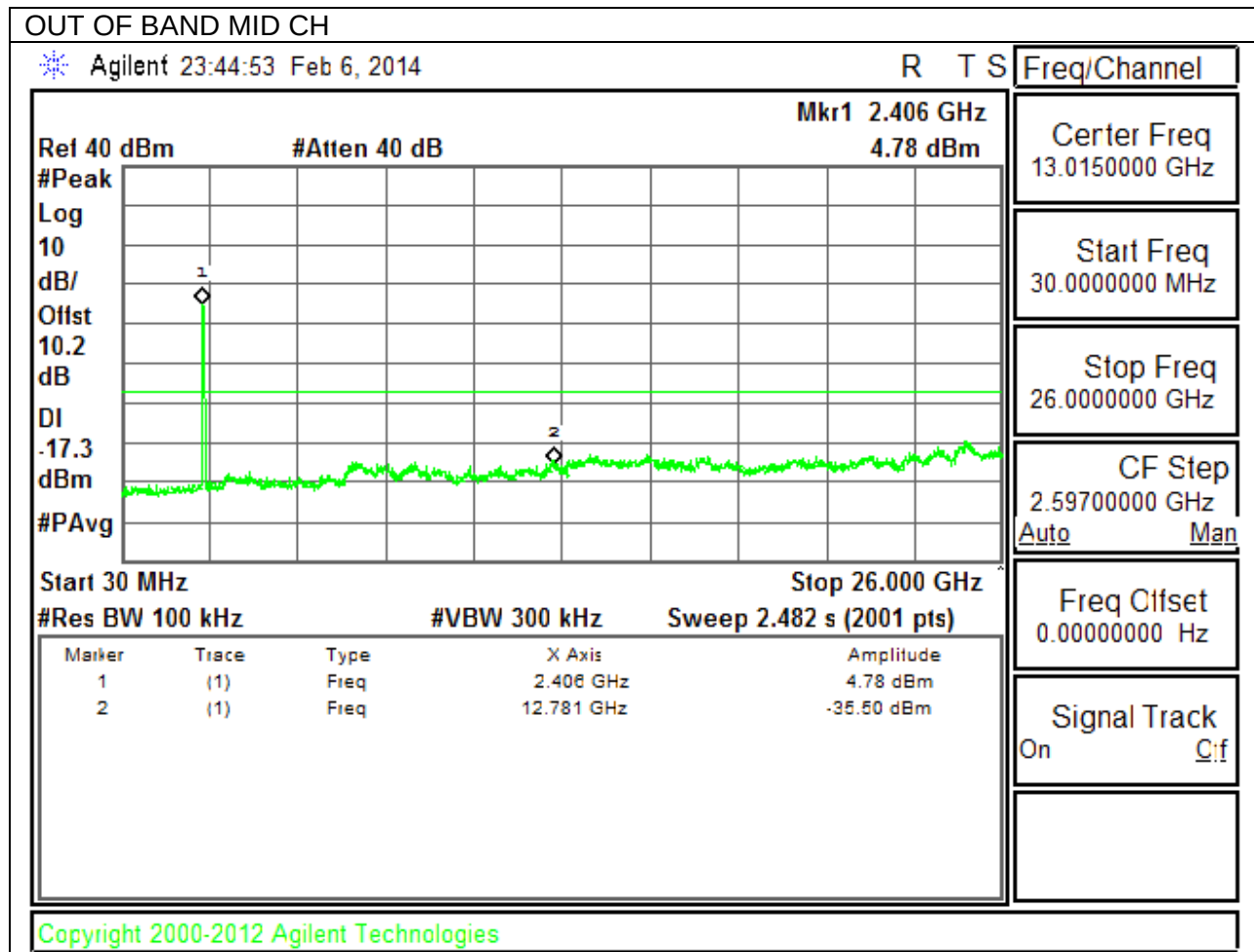


HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS



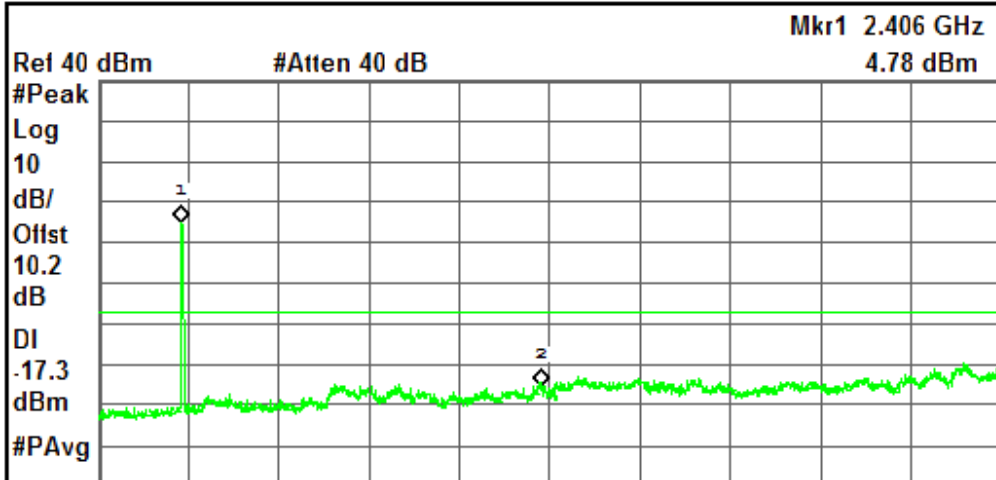


OUT OF BAND HIGH CH

Agilent 23:44:03 Feb 6, 2014

R T S

Freq/Channel



Center Freq
13.0150000 GHz

Start Freq
30.0000000 MHz

Stop Freq
26.0000000 GHz

CF Step
2.59700000 GHz
Auto Man

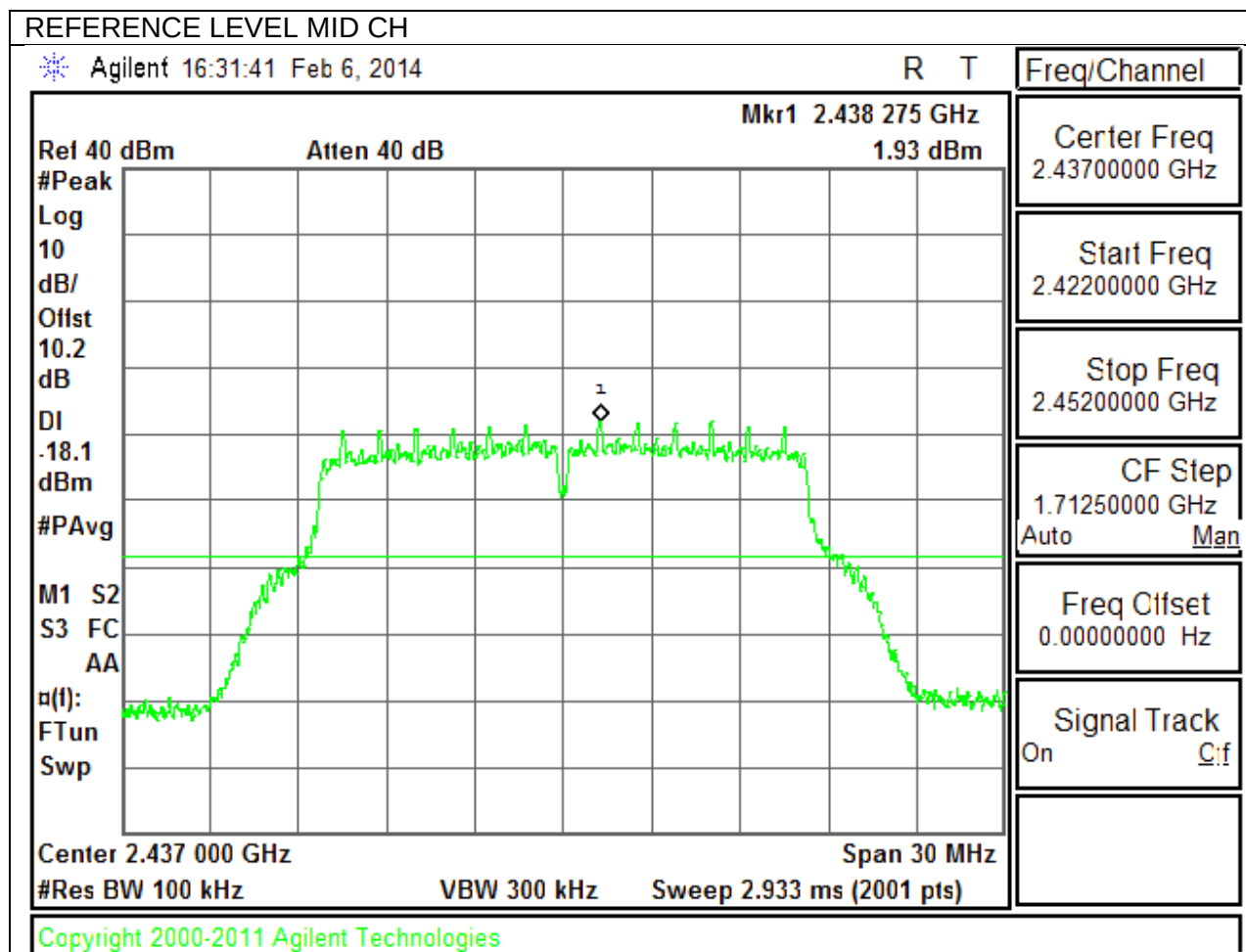
Freq Offset
0.00000000 Hz

Signal Track
On Off

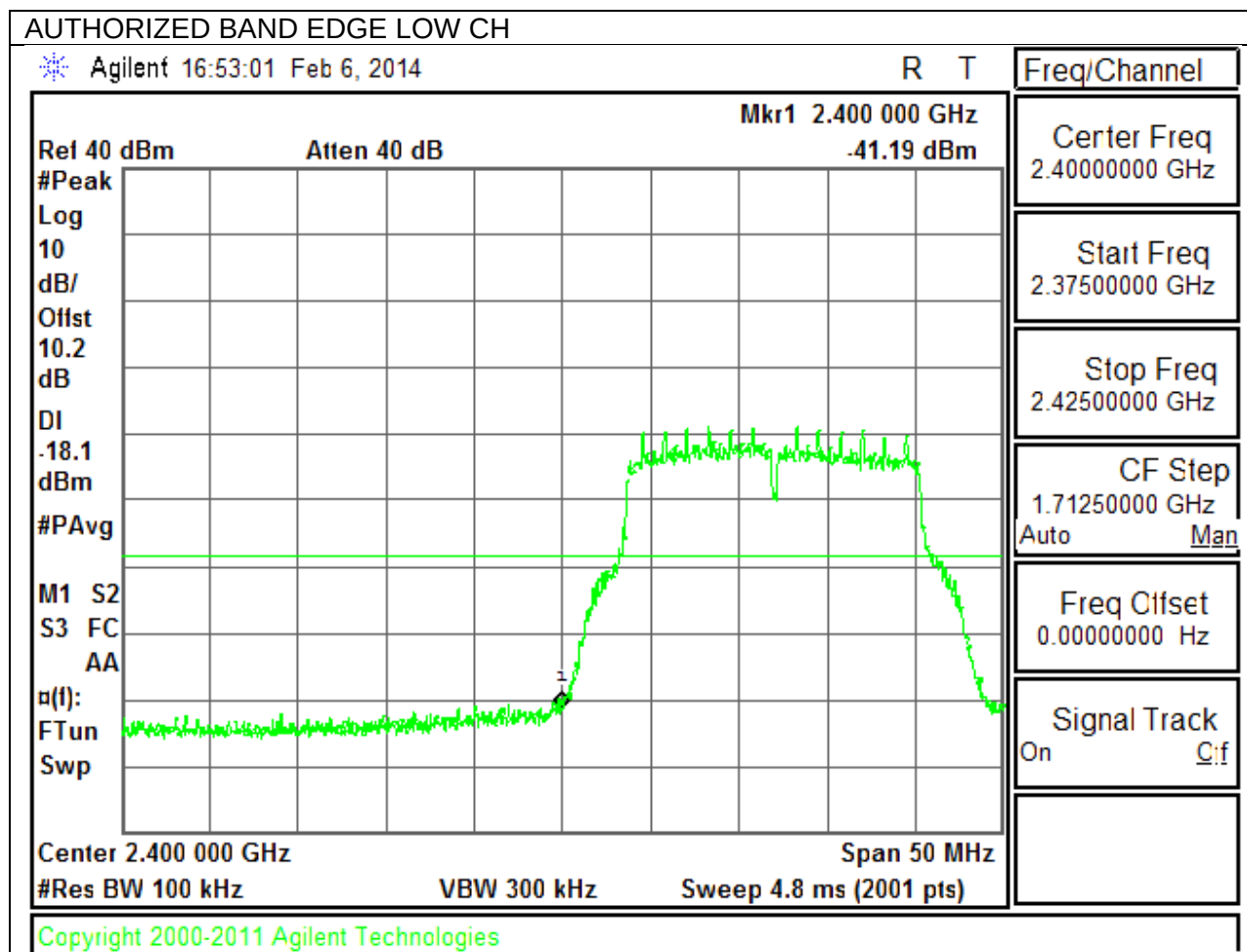
Copyright 2000-2012 Agilent Technologies

10.5.4. 802.11g MODE IN THE 2.4 GHz BAND CHAIN 1

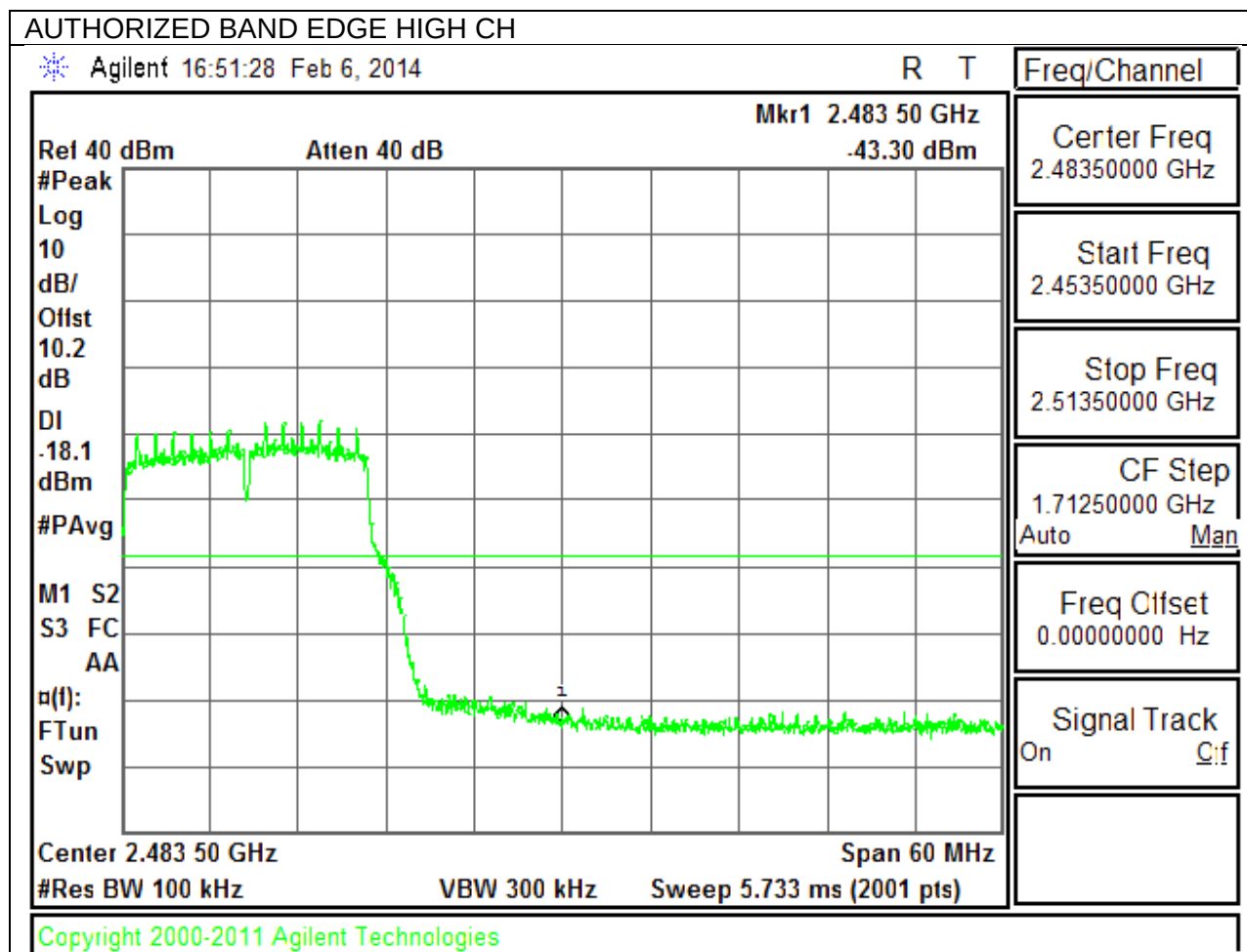
IN-BAND REFERENCE LEVEL



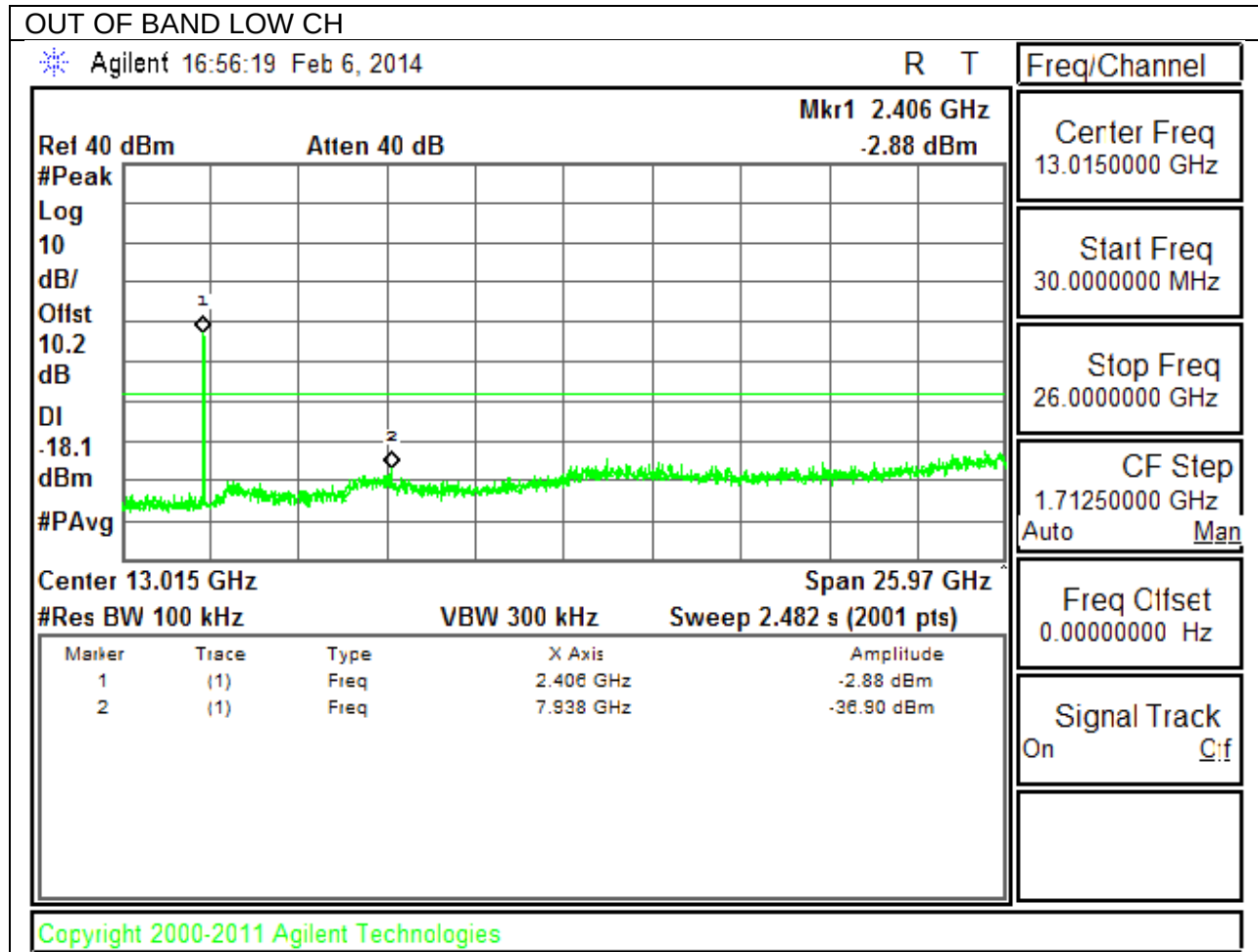
LOW CHANNEL BANDEDGE

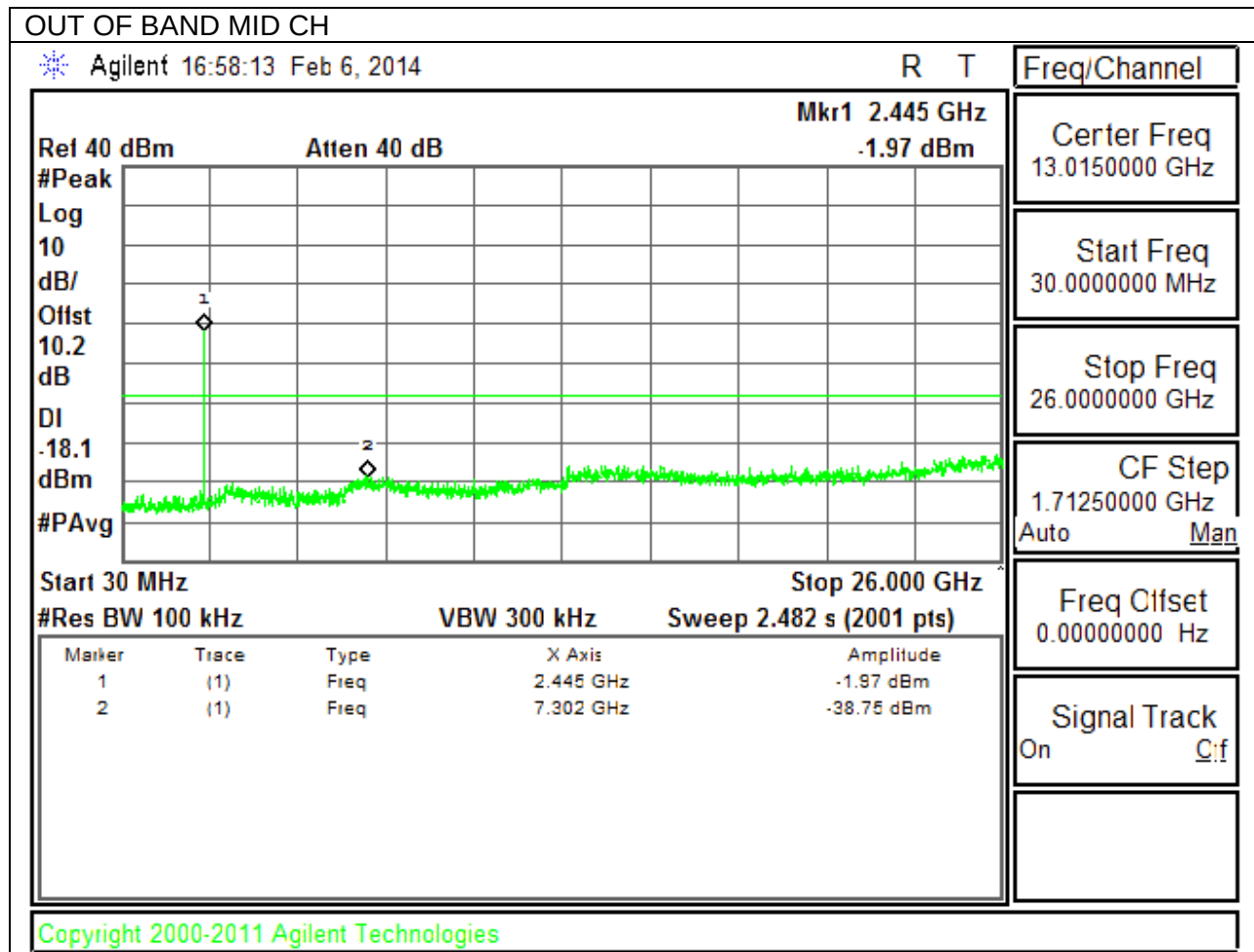


HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS



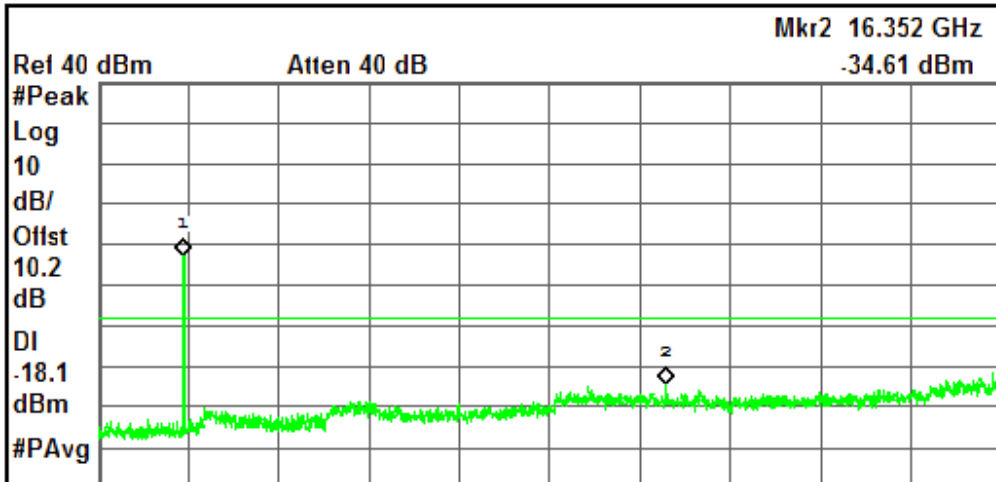


OUT OF BAND HIGH CH

Agilent 16:59:23 Feb 6, 2014

R T

Freq/Channel



Center Freq
13.0150000 GHz

Start Freq
30.0000000 MHz

Stop Freq
26.0000000 GHz

CF Step
1.71250000 GHz
Auto Man

Start 30 MHz Stop 26.000 GHz
#Res BW 100 kHz VBW 300 kHz Sweep 2.482 s (2001 pts)

Freq Offset
0.00000000 Hz

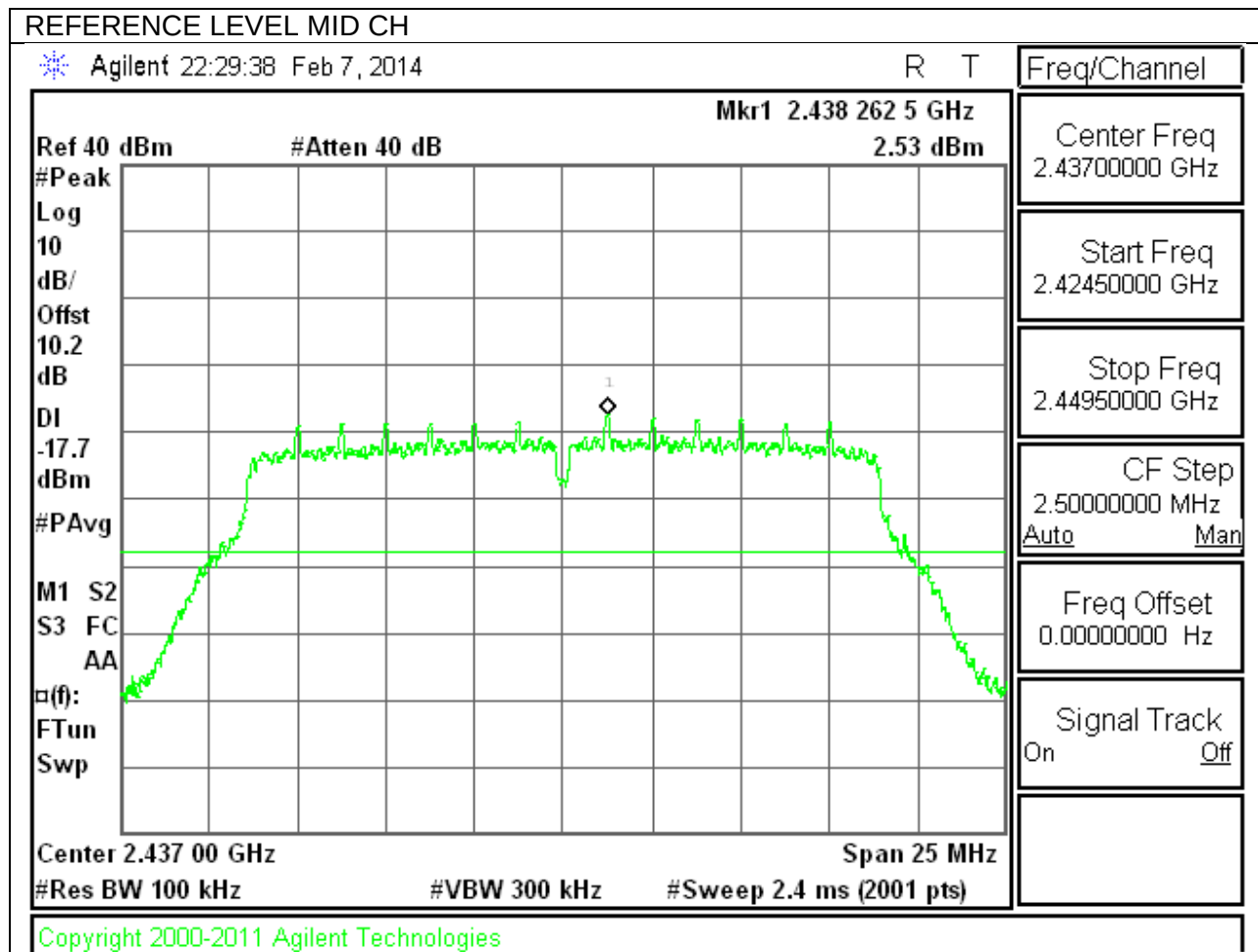
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.458 GHz	-2.57 dBm
2	(1)	Freq	16.352 GHz	-34.61 dBm

Signal Track
On Off

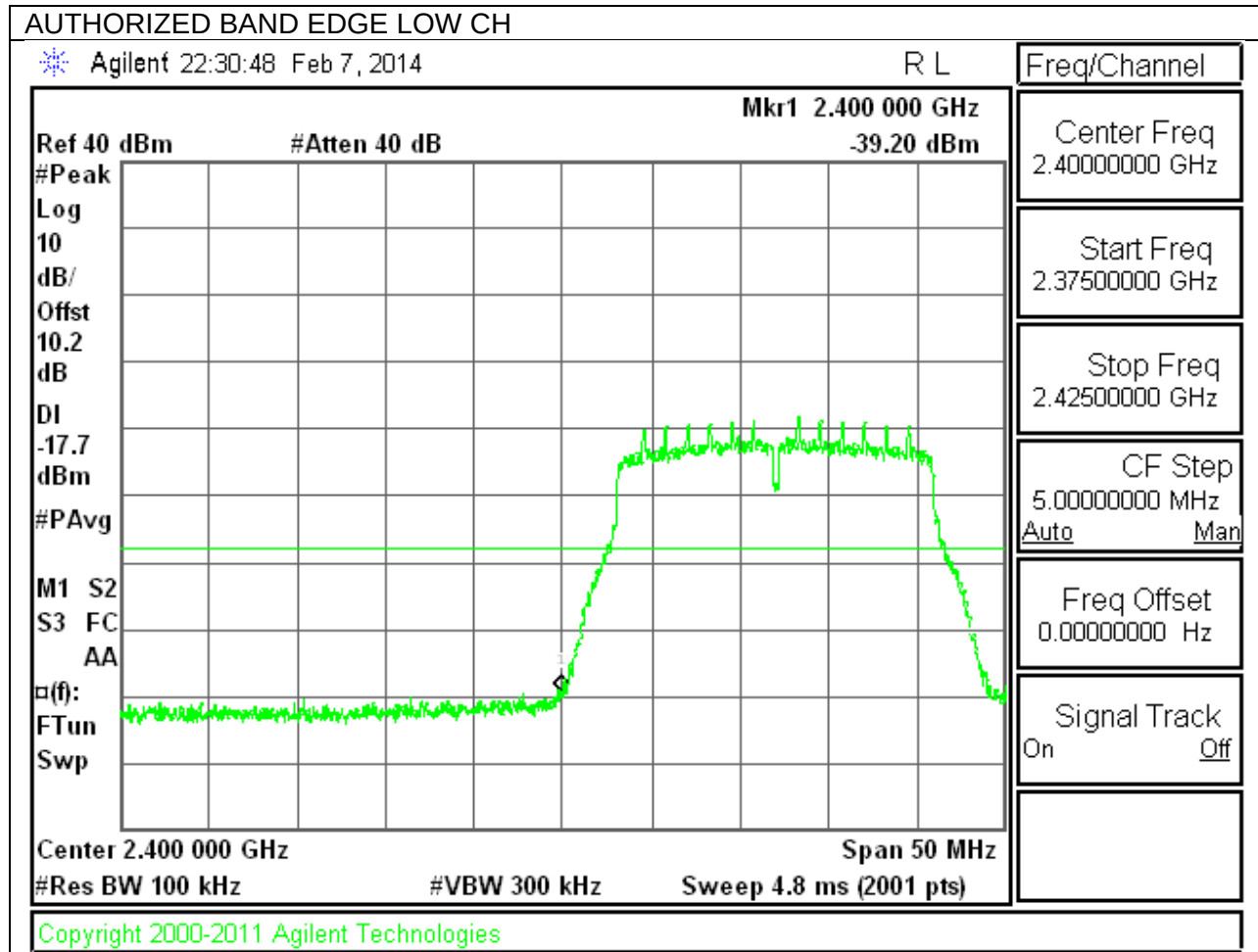
Copyright 2000-2011 Agilent Technologies

10.5.5. 802.11n MODE IN THE 2.4 GHz BAND CHAIN 0

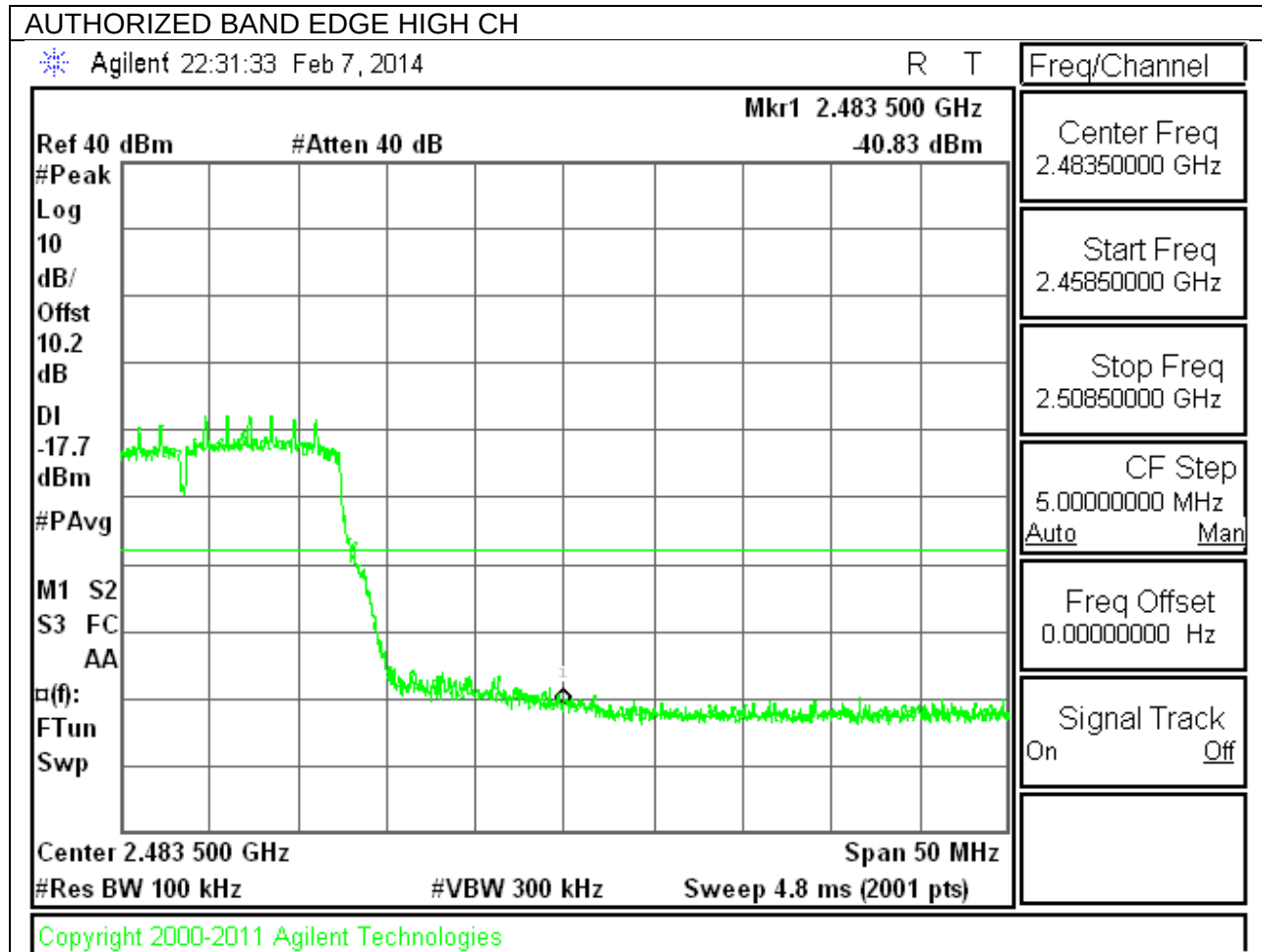
IN-BAND REFERENCE LEVEL



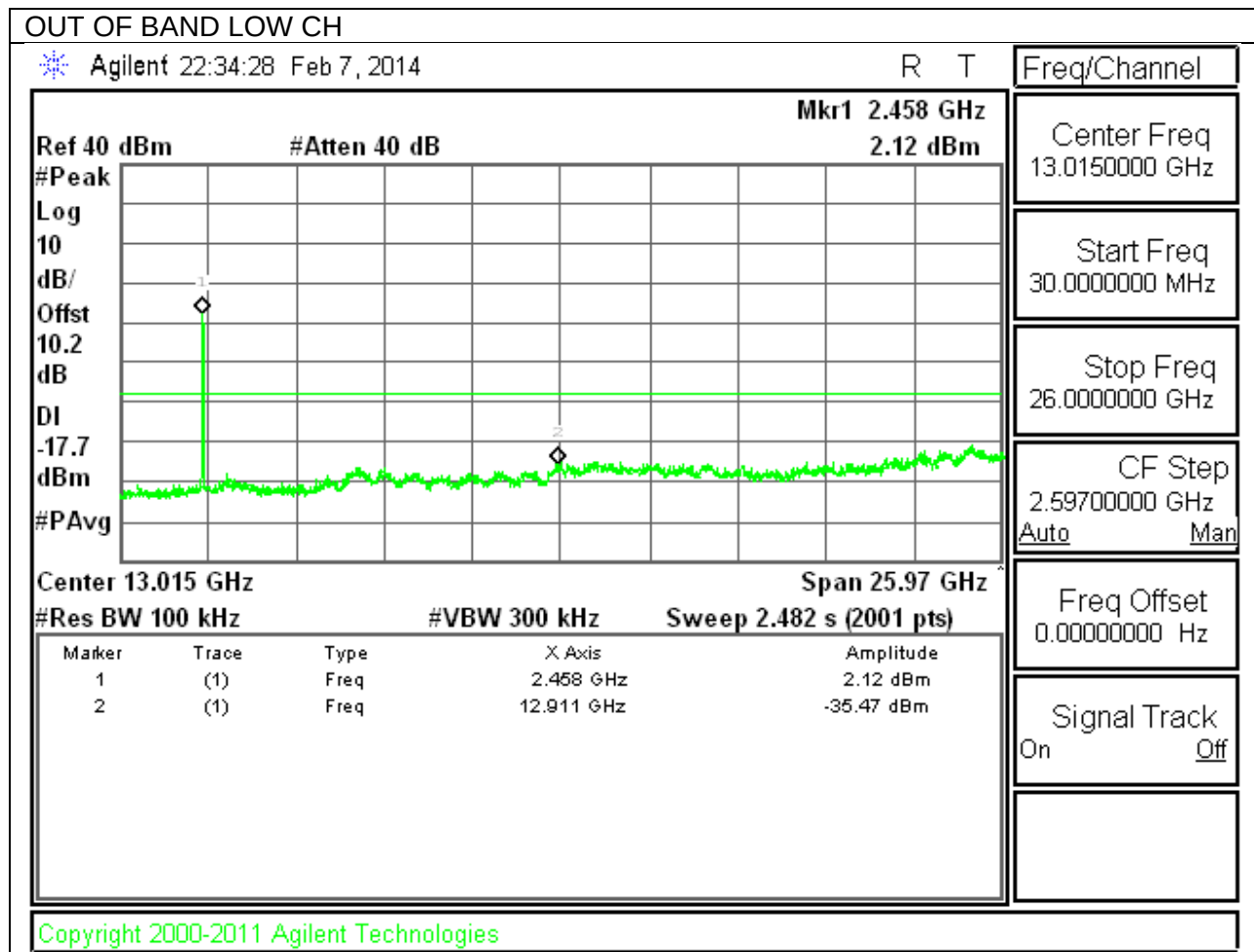
LOW CHANNEL BANDEDGE

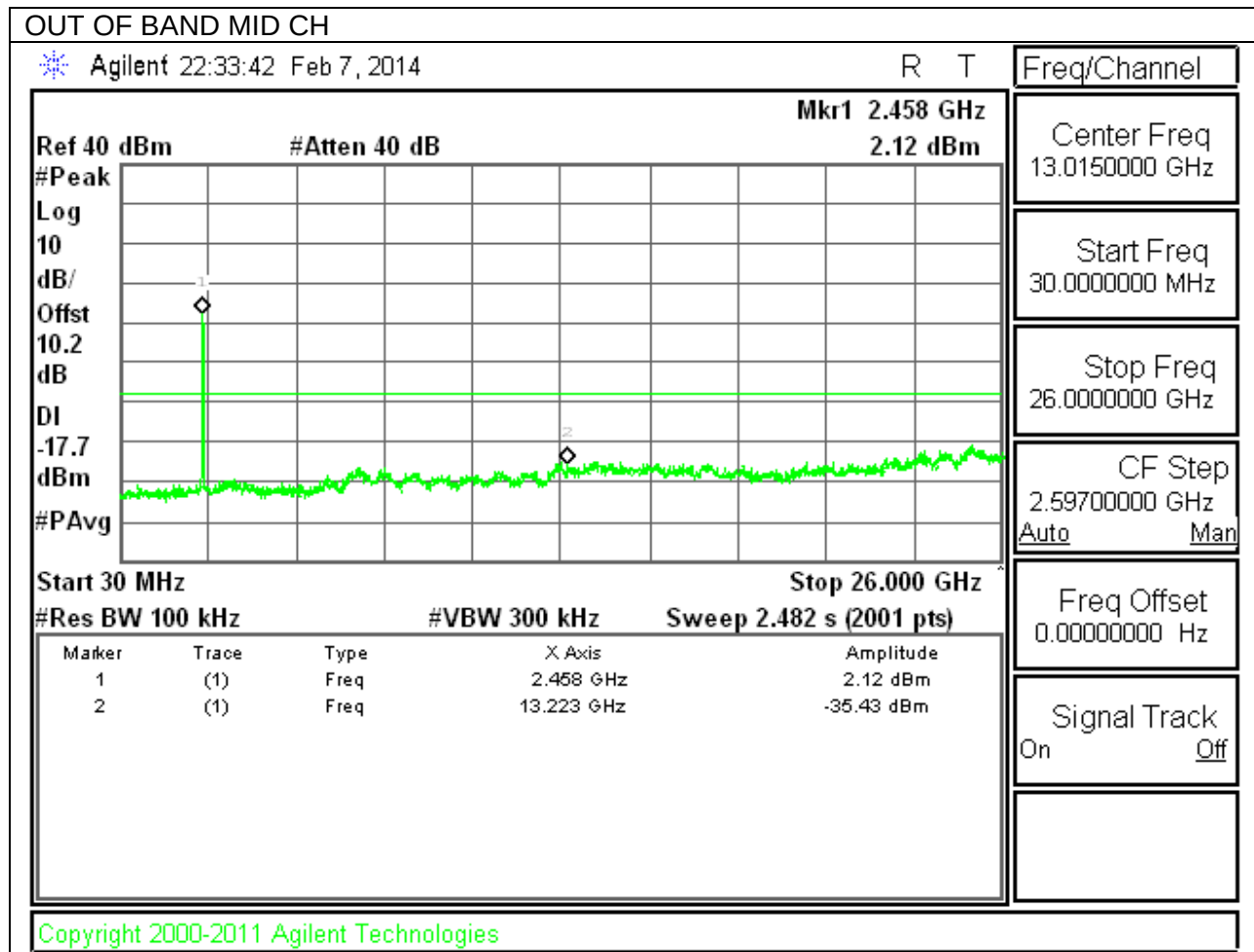


HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS





OUT OF BAND HIGH CH

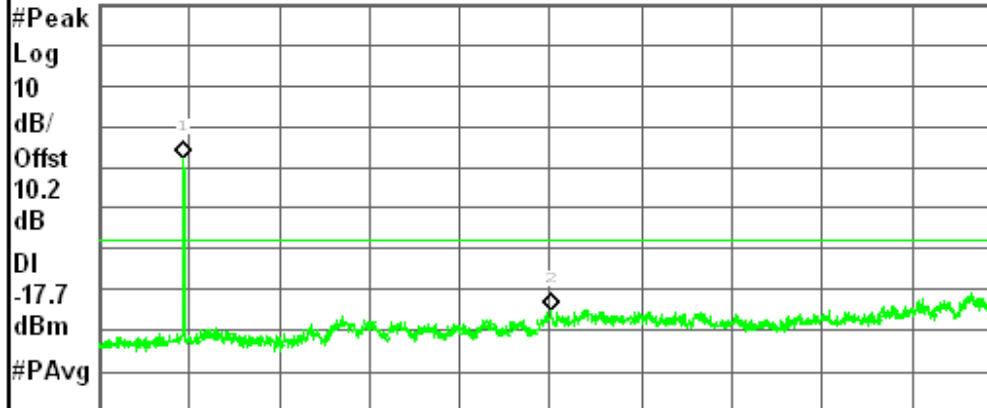
Agilent 22:33:03 Feb 7, 2014

R T

Freq/Channel

Ref 40 dBm #Atten 40 dB Mkr1 2.458 GHz 2.12 dBm

Center Freq
13.0150000 GHz



Start Freq
30.0000000 MHz

Stop Freq
26.0000000 GHz

CF Step
2.59700000 GHz
Auto Man

Start 30 MHz #Res BW 100 kHz #VBW 300 kHz Stop 26.000 GHz Sweep 2.482 s (2001 pts)

Freq Offset
0.00000000 Hz

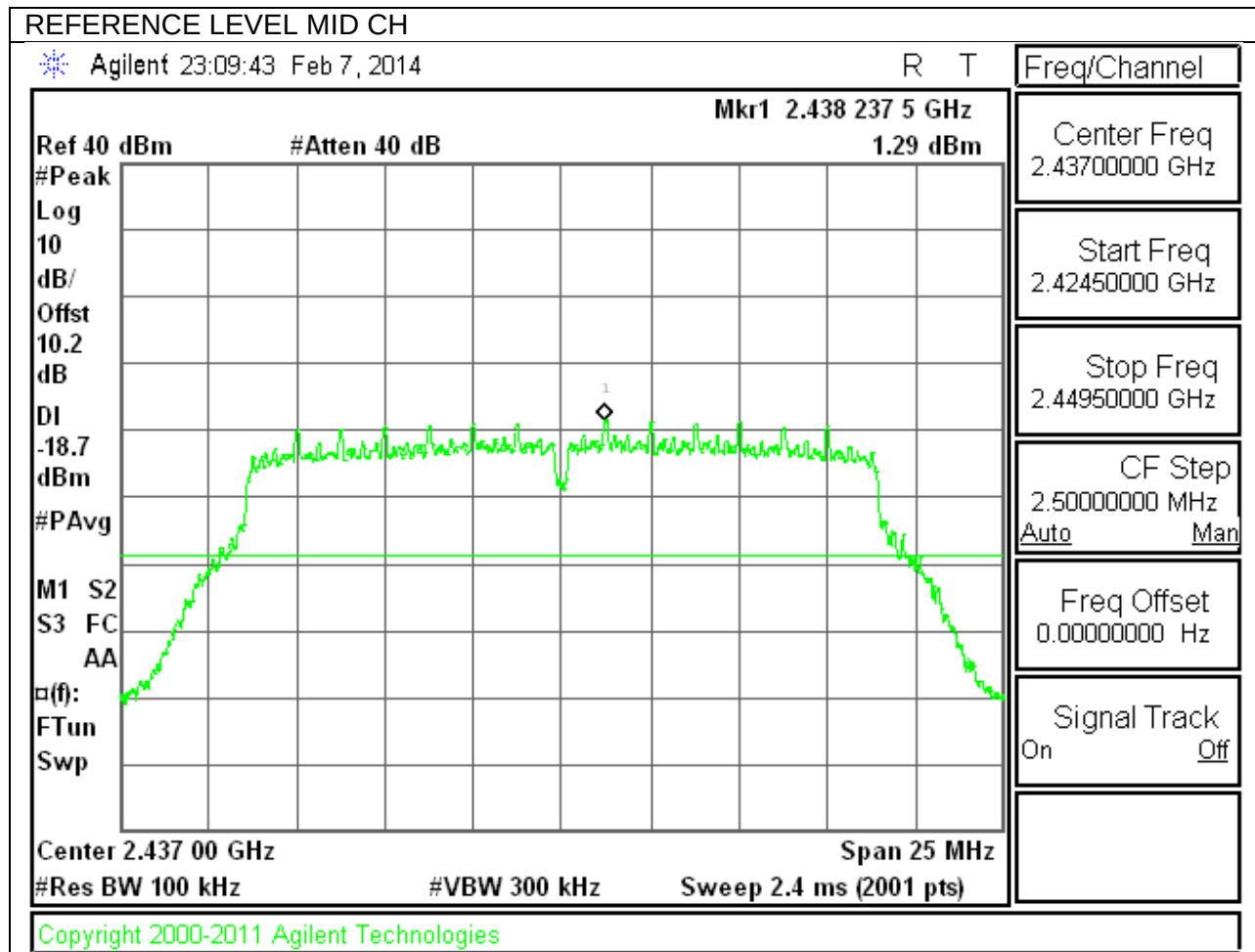
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.458 GHz	2.12 dBm
2	(1)	Freq	13.067 GHz	-34.96 dBm

Signal Track
On Off

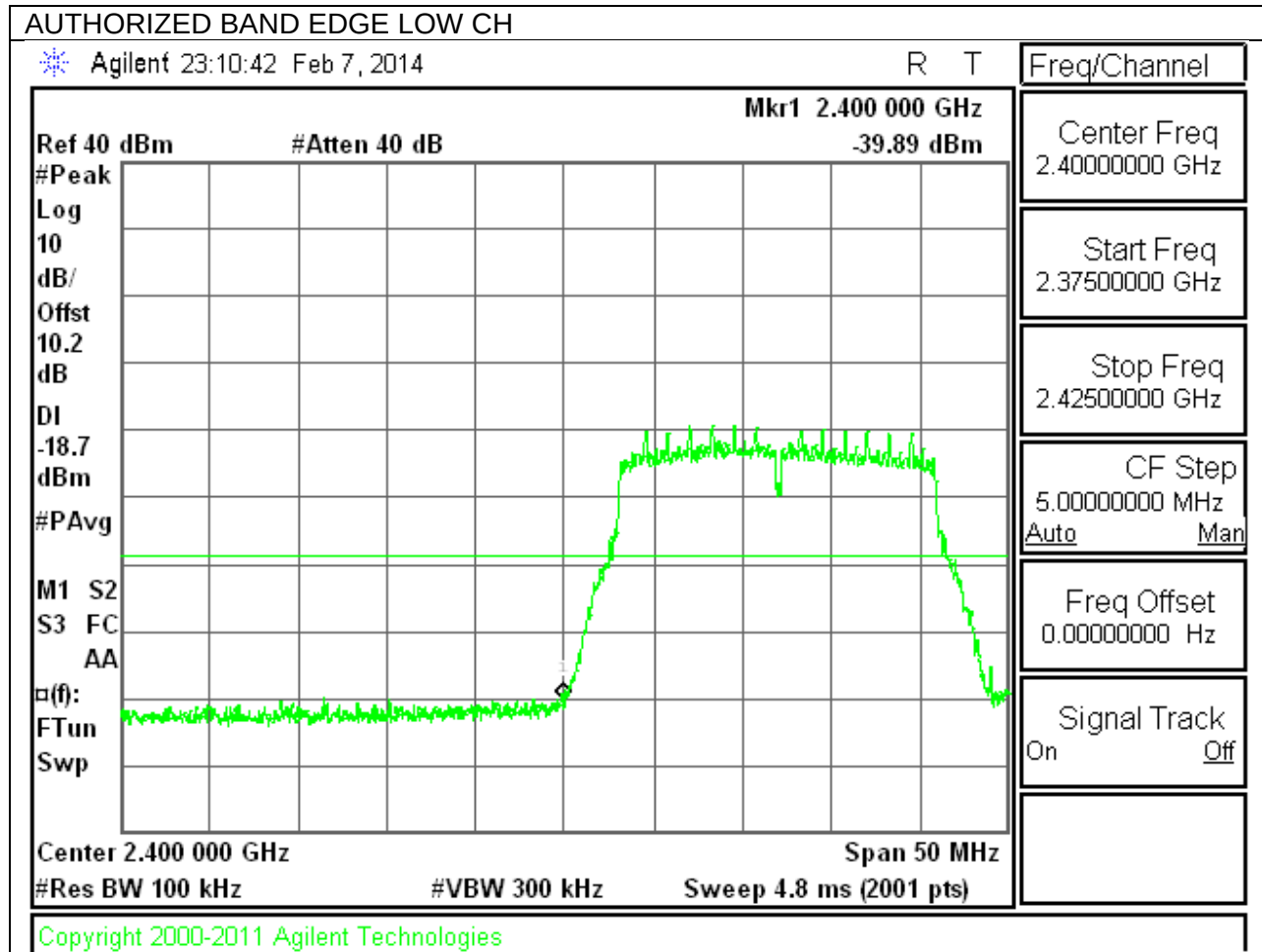
Copyright 2000-2011 Agilent Technologies

10.5.6. 802.11n MODE IN THE 2.4 GHz BAND CHAIN 1

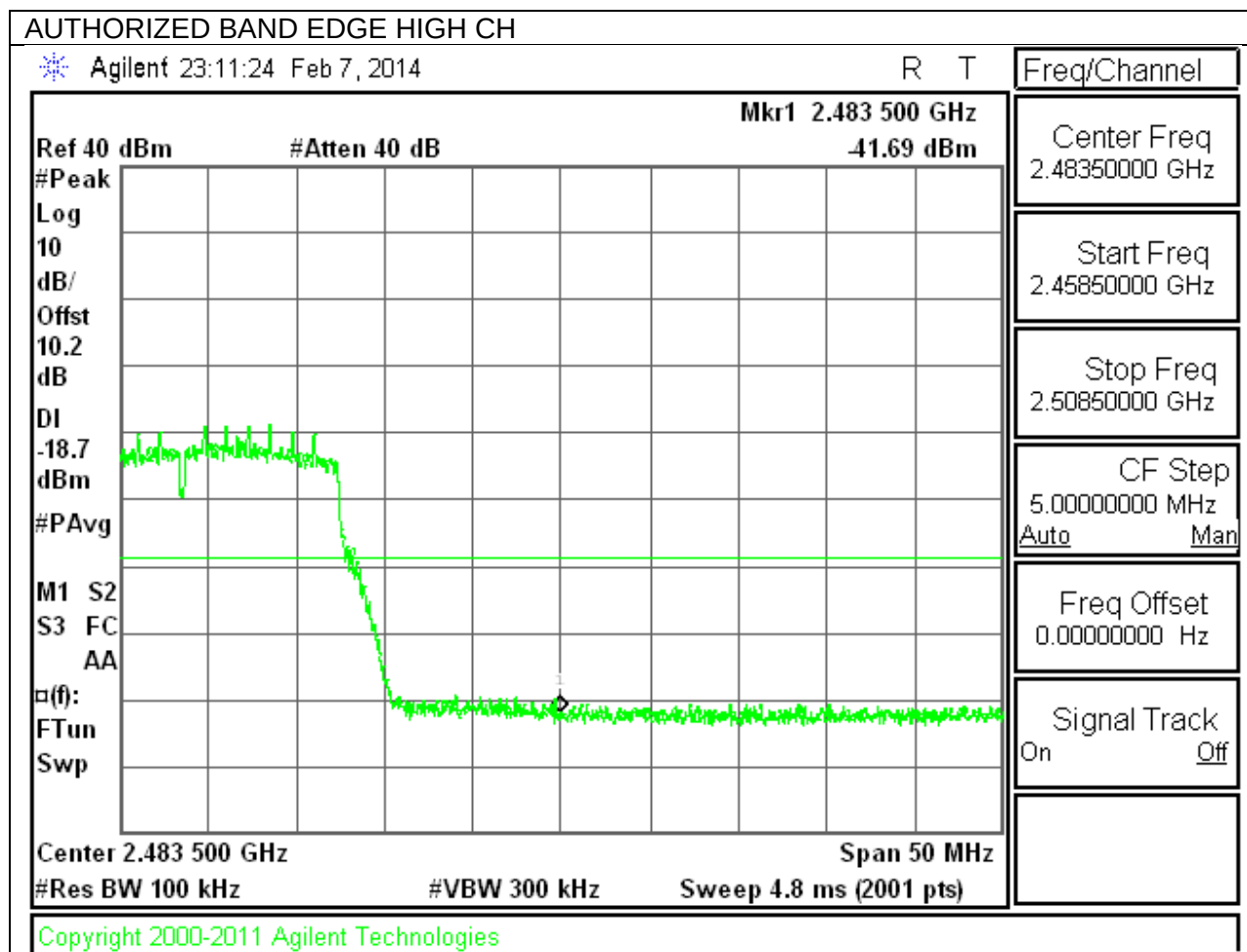
IN-BAND REFERENCE LEVEL



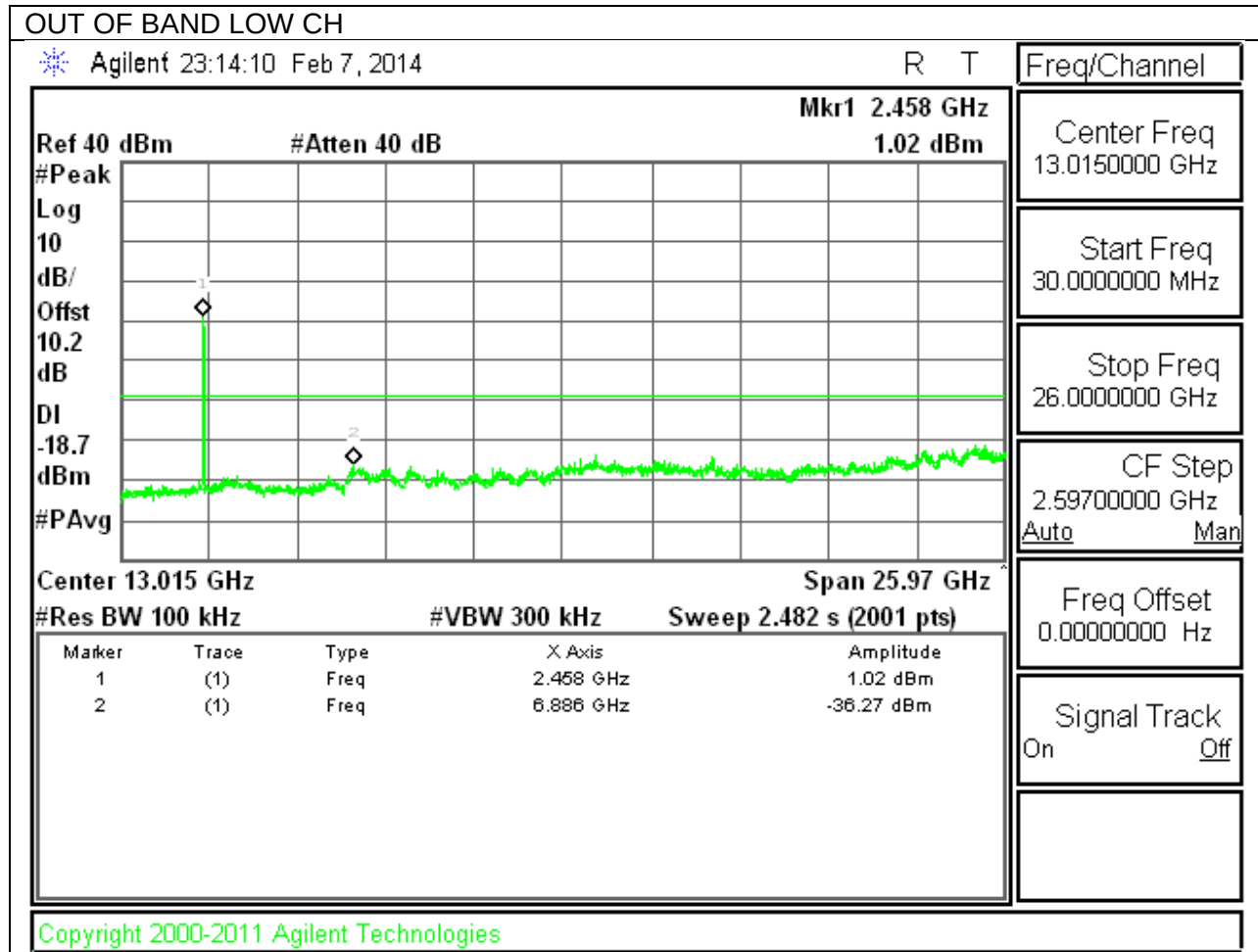
LOW CHANNEL BANDEDGE

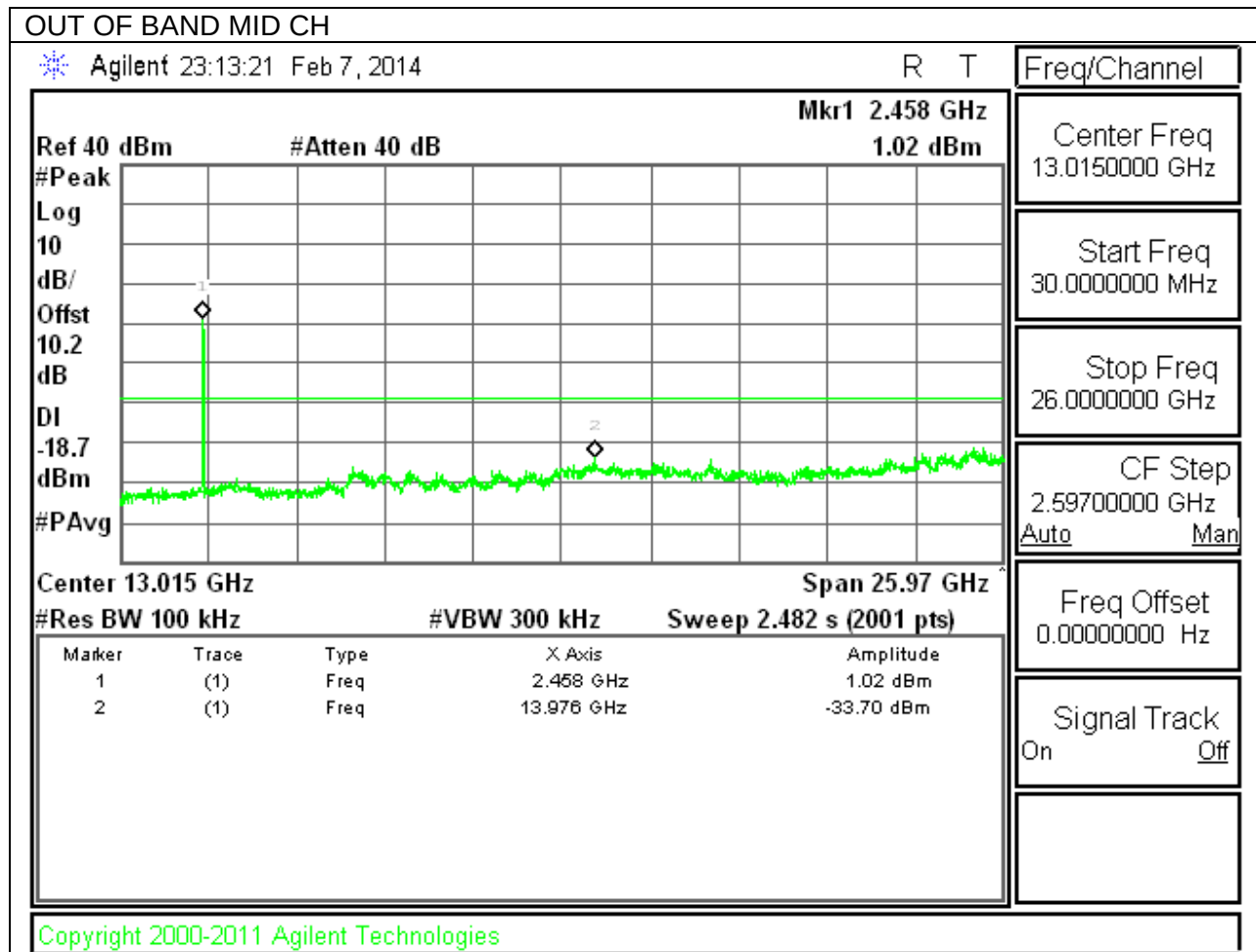


HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS





OUT OF BAND HIGH CH

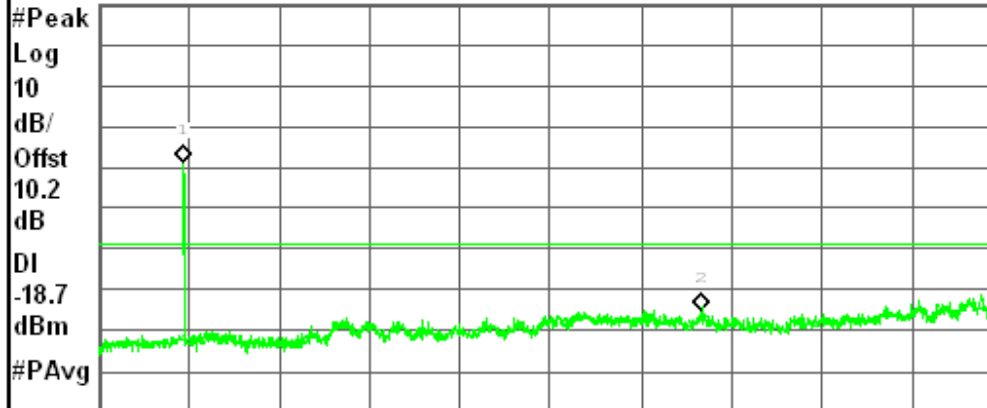
Agilent 23:12:45 Feb 7, 2014

R T

Freq/Channel

Ref 40 dBm #Atten 40 dB Mkr1 2.458 GHz 1.02 dBm

Center Freq
13.0150000 GHz



Start Freq
30.0000000 MHz

Stop Freq
26.0000000 GHz

CF Step
2.59700000 GHz
Auto Man

Start 30 MHz Stop 26.000 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (2001 pts)

Freq Offset
0.00000000 Hz

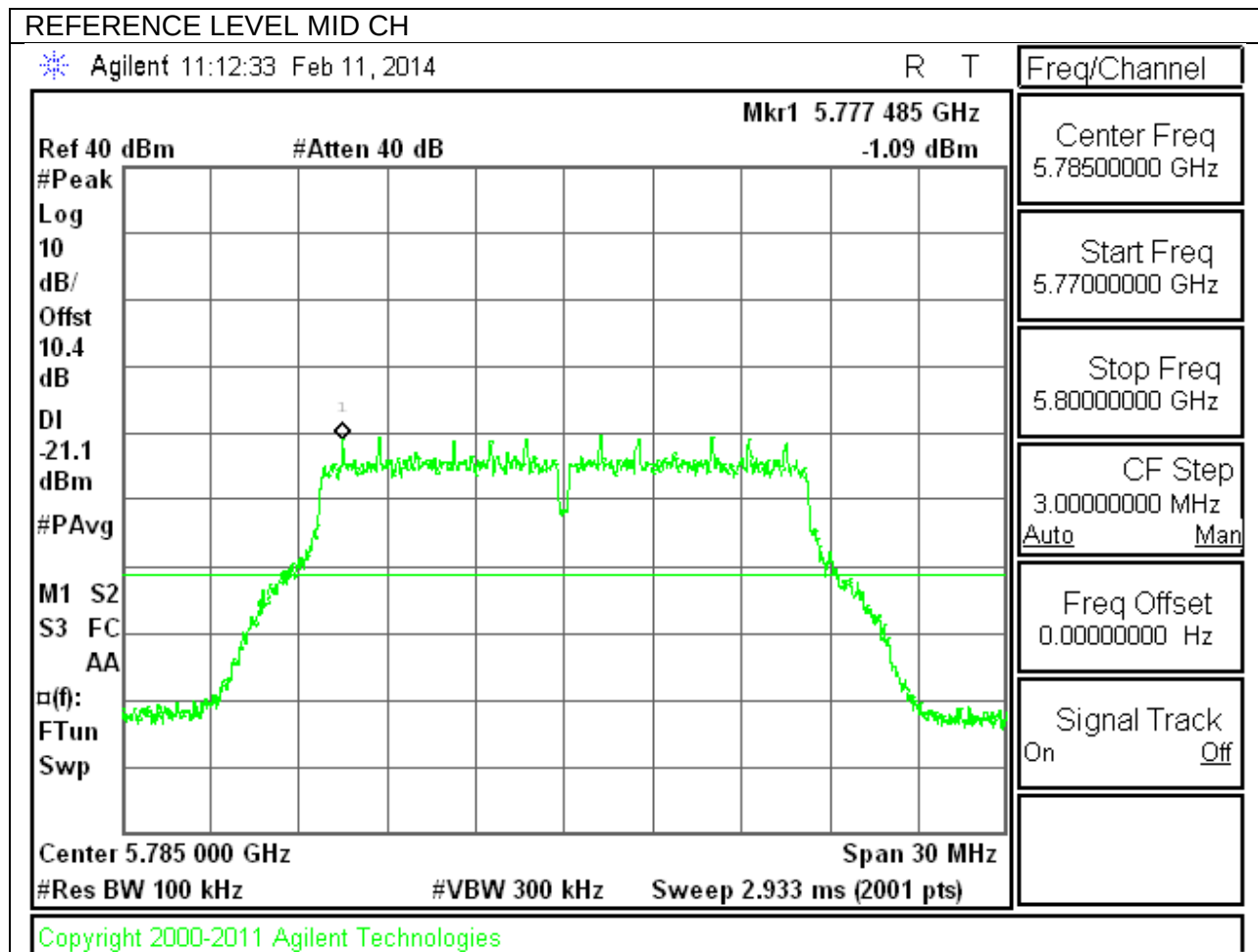
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.458 GHz	1.02 dBm
2	(1)	Freq	17.287 GHz	-35.36 dBm

Signal Track
On Off

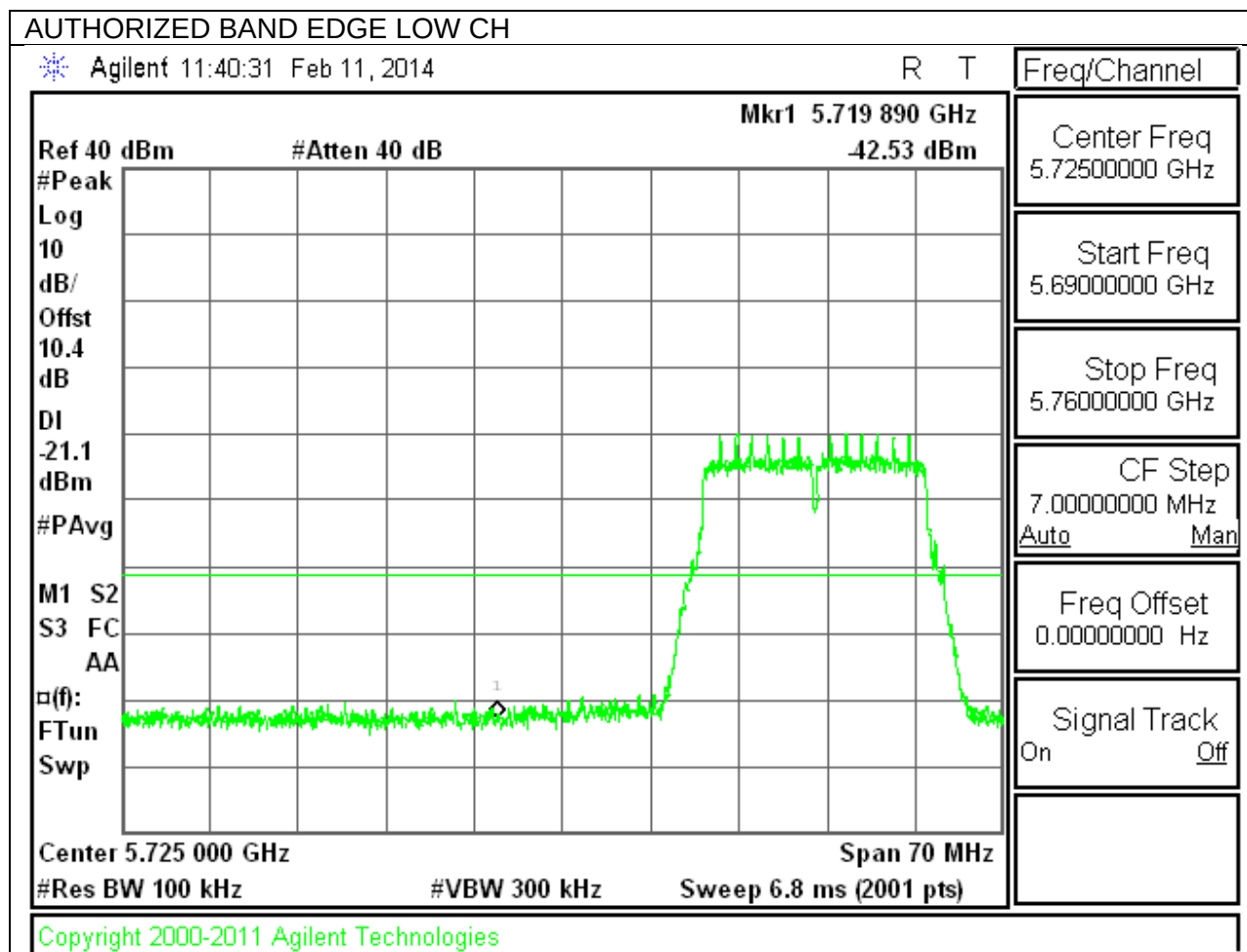
Copyright 2000-2011 Agilent Technologies

10.5.7. 802.11a MODE IN THE 5.8 GHz BAND CHAIN 0

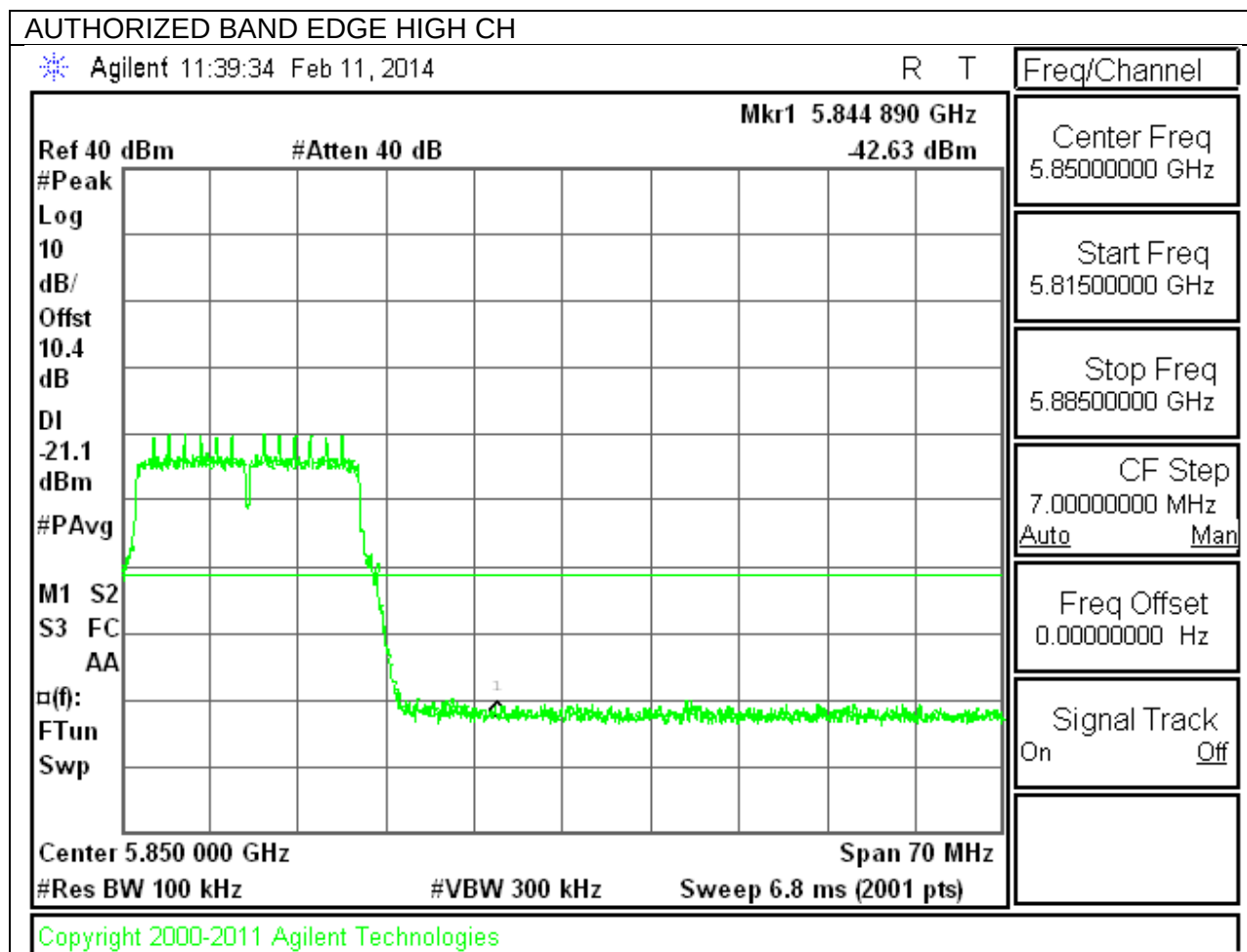
IN-BAND REFERENCE LEVEL



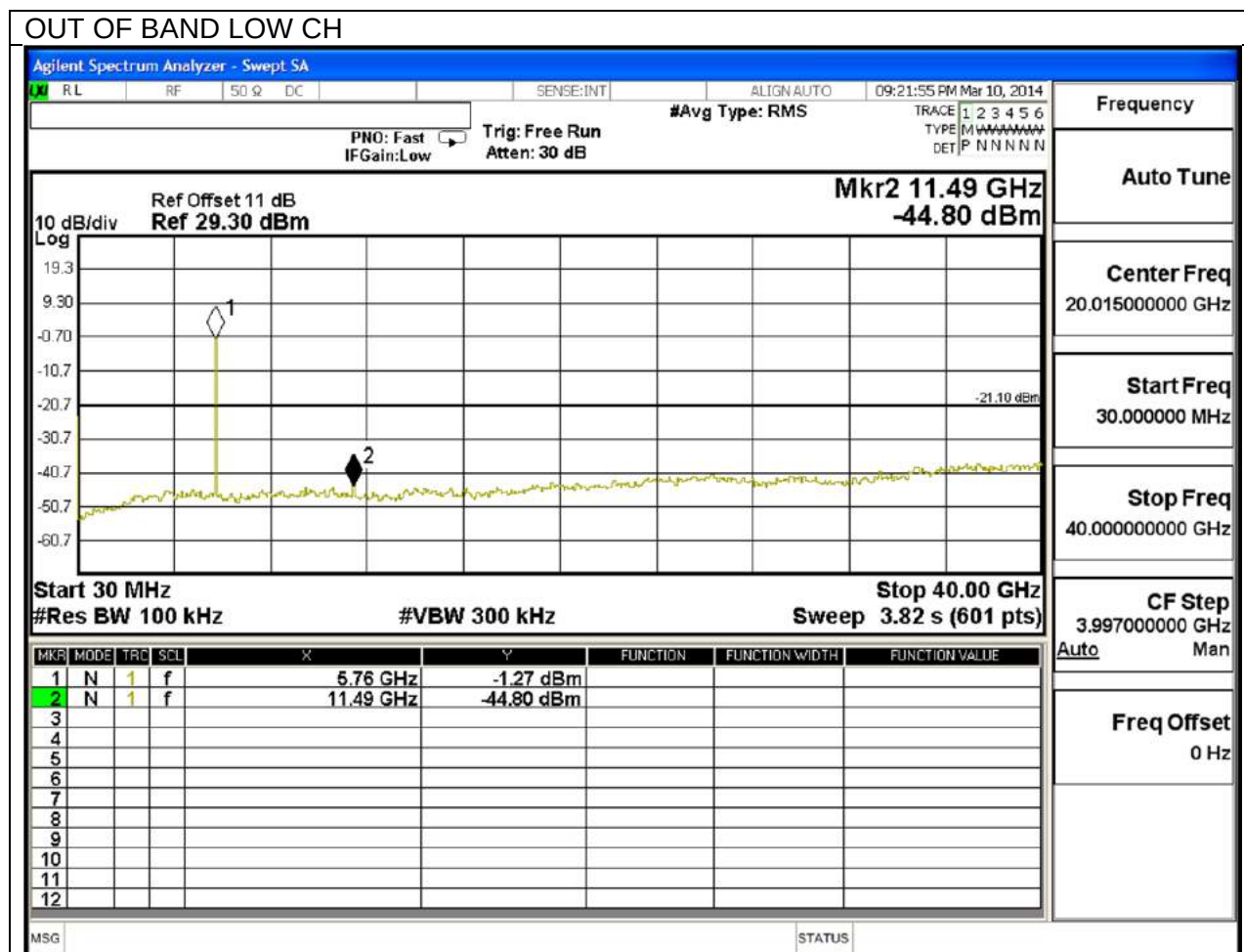
LOW CHANNEL BANDEDGE



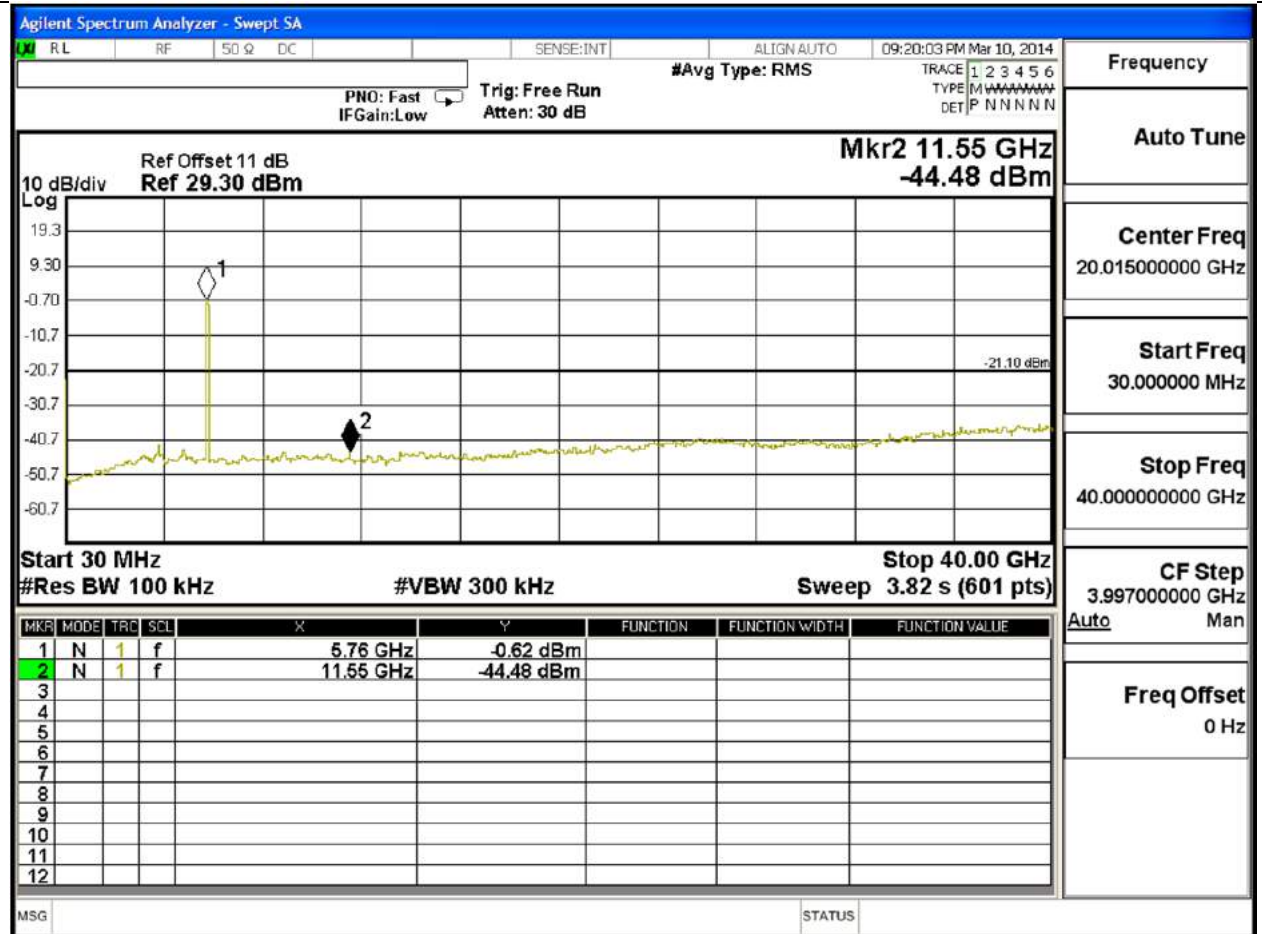
HIGH CHANNEL BANDEDGE



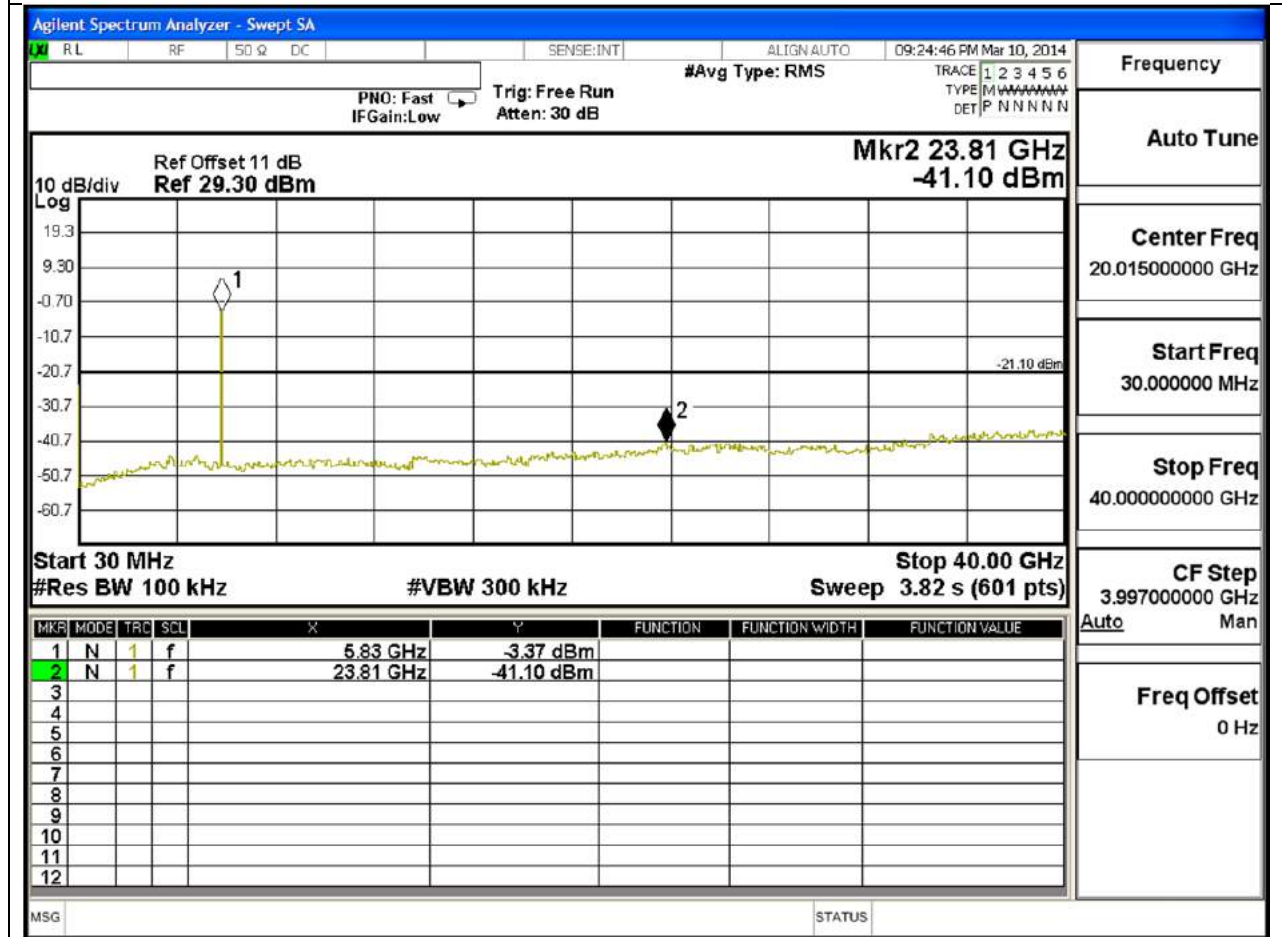
OUT-OF-BAND EMISSIONS



OUT OF BAND MID CH

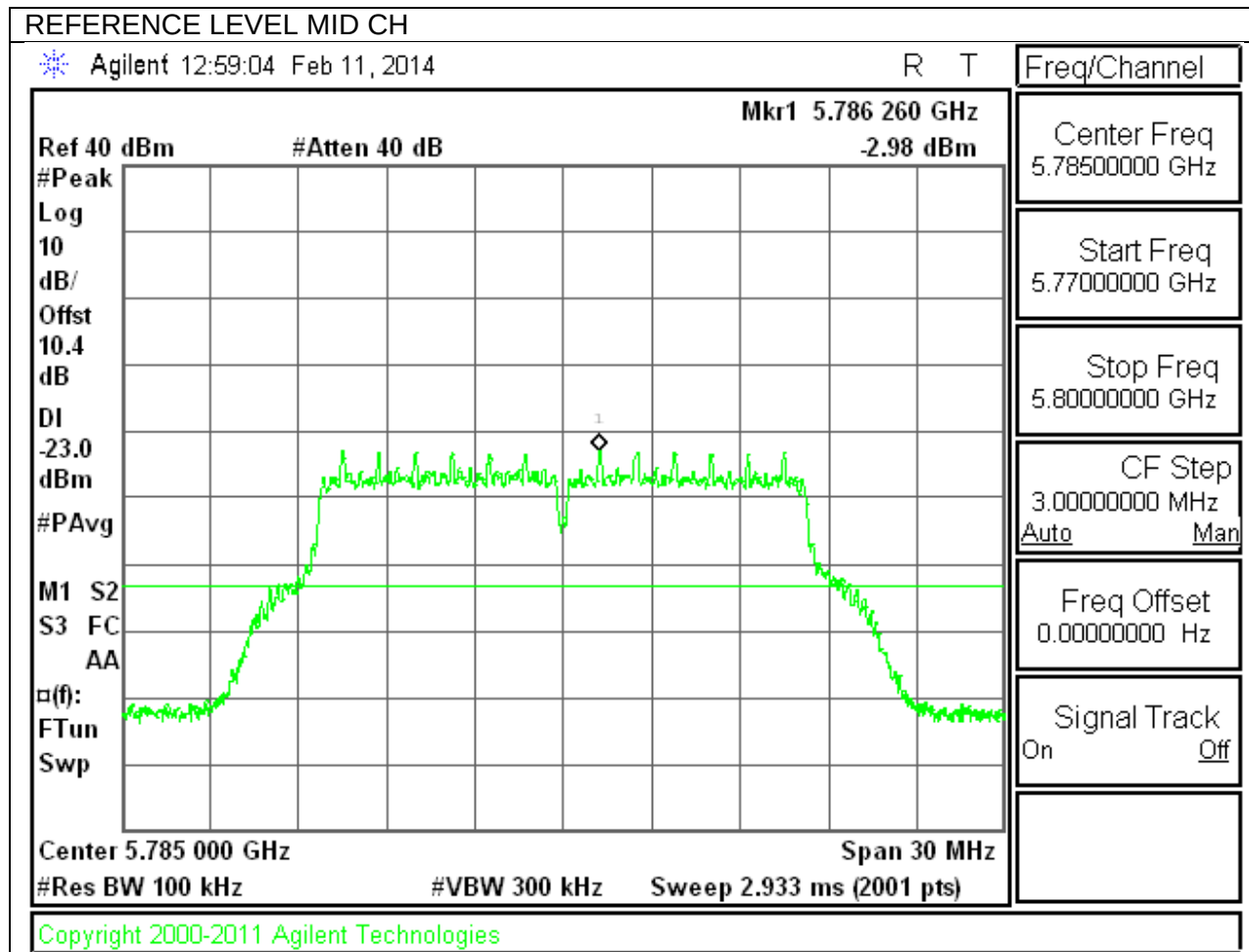


OUT OF BAND HIGH CH

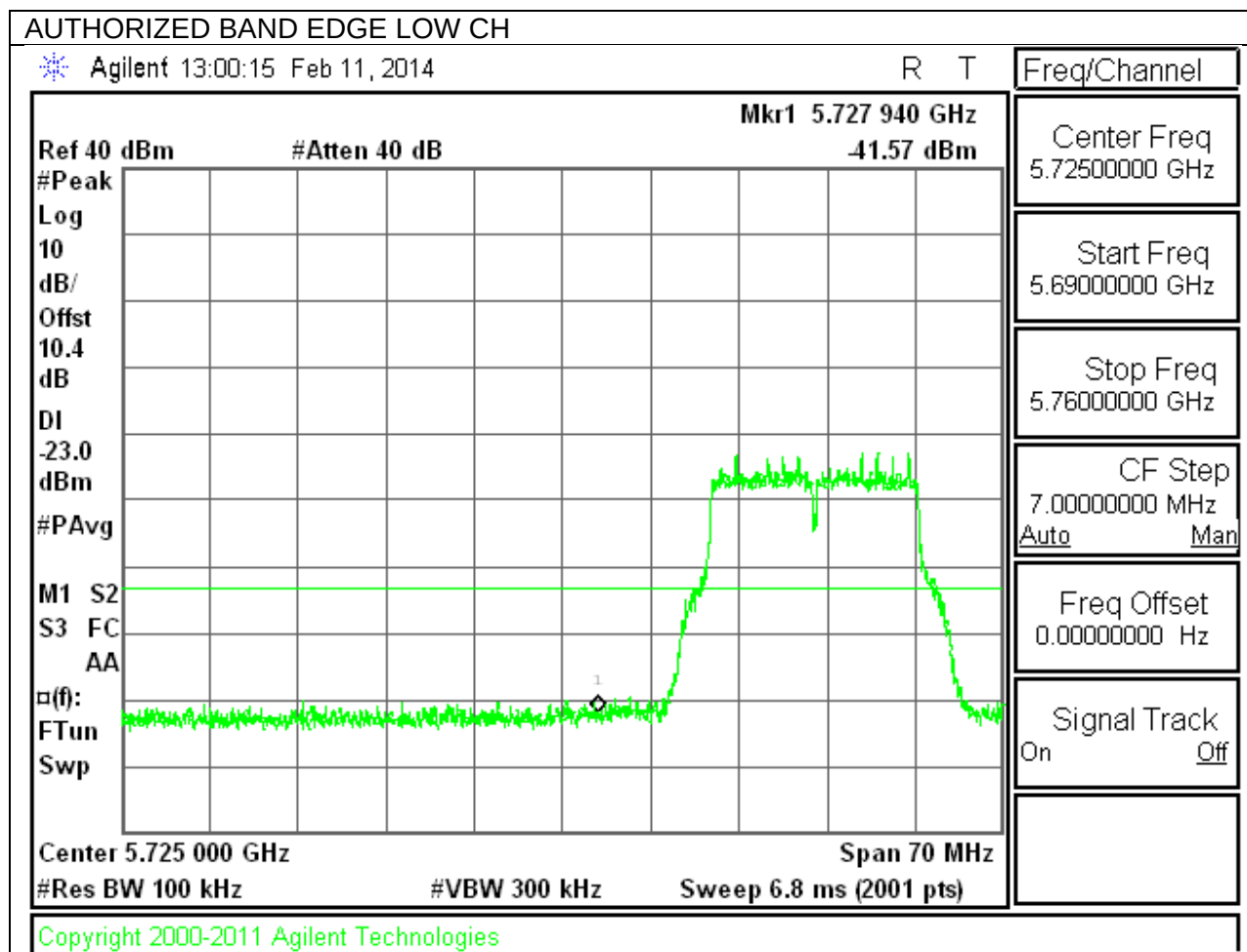


10.5.8. 802.11a MODE IN THE 5.8 GHz BAND CHAIN 1

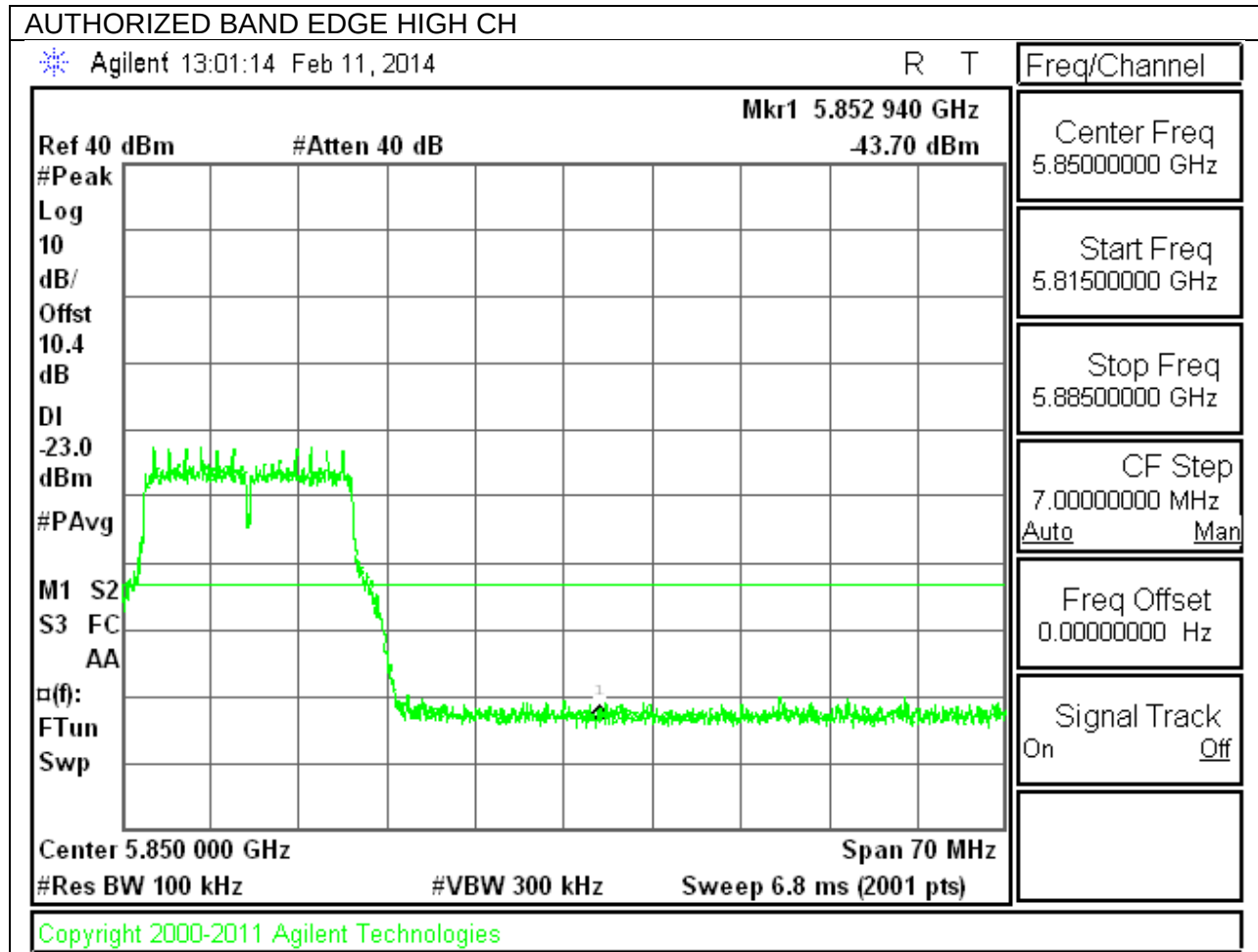
IN-BAND REFERENCE LEVEL



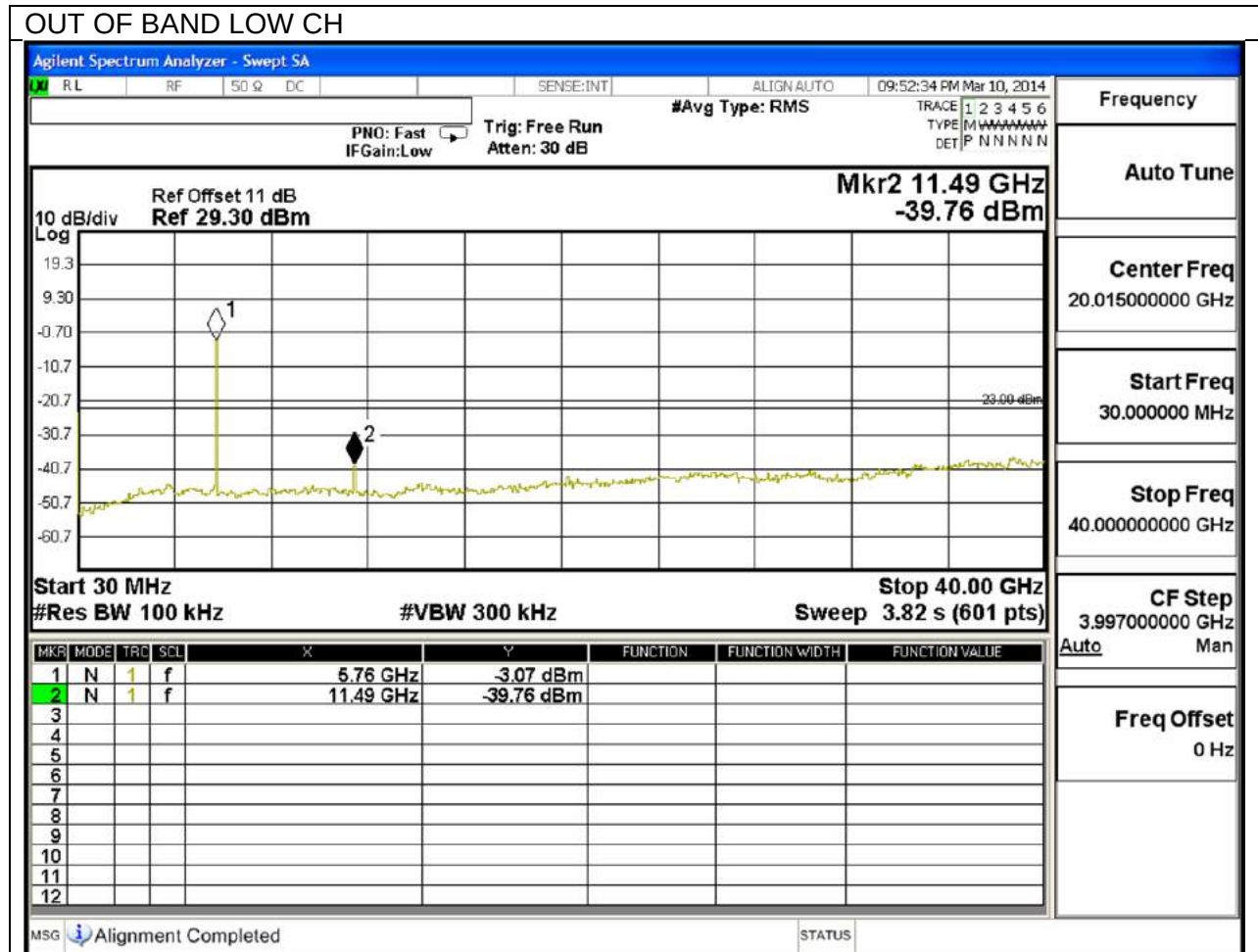
LOW CHANNEL BANDEDGE



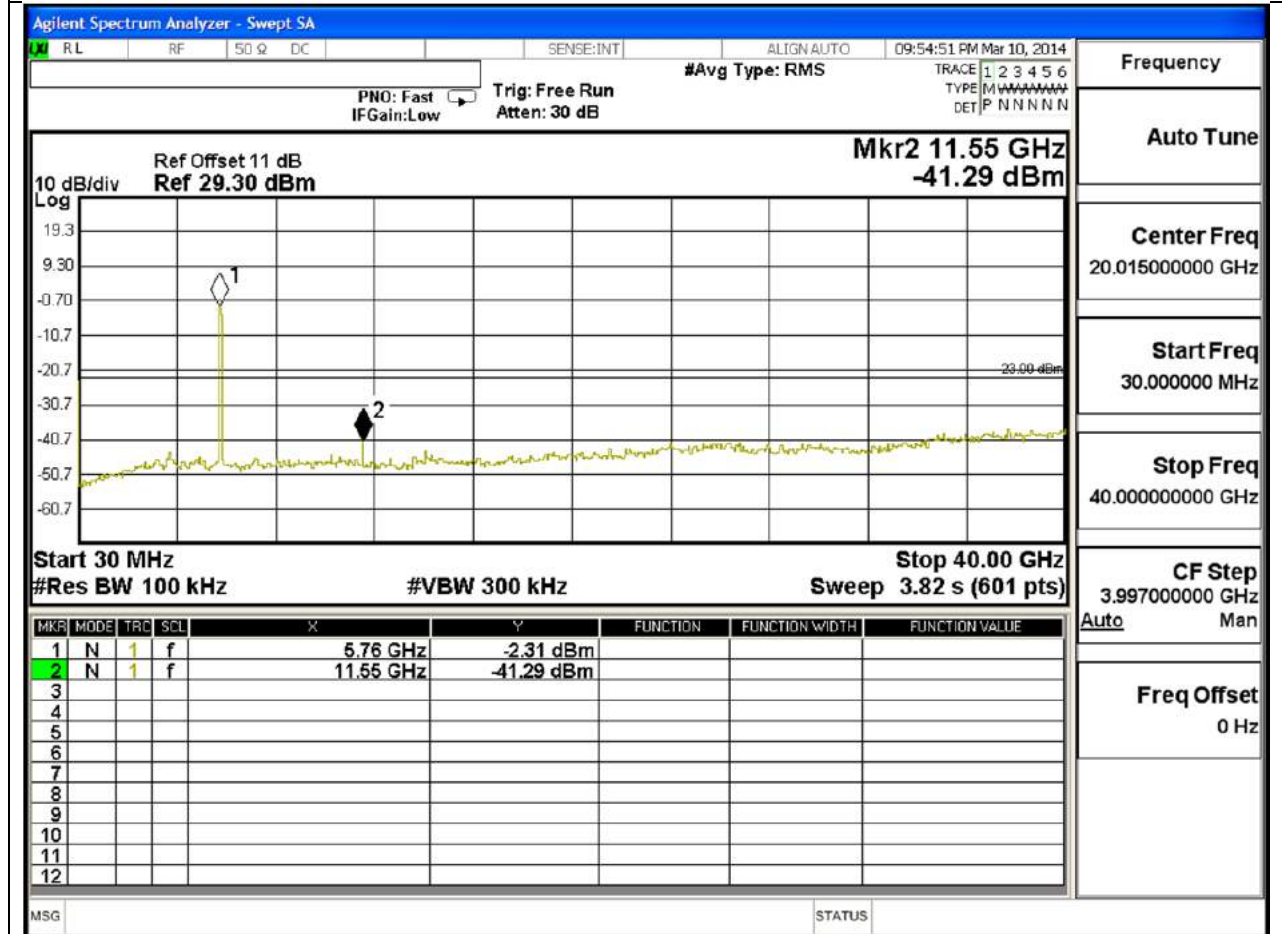
HIGH CHANNEL BANDEDGE



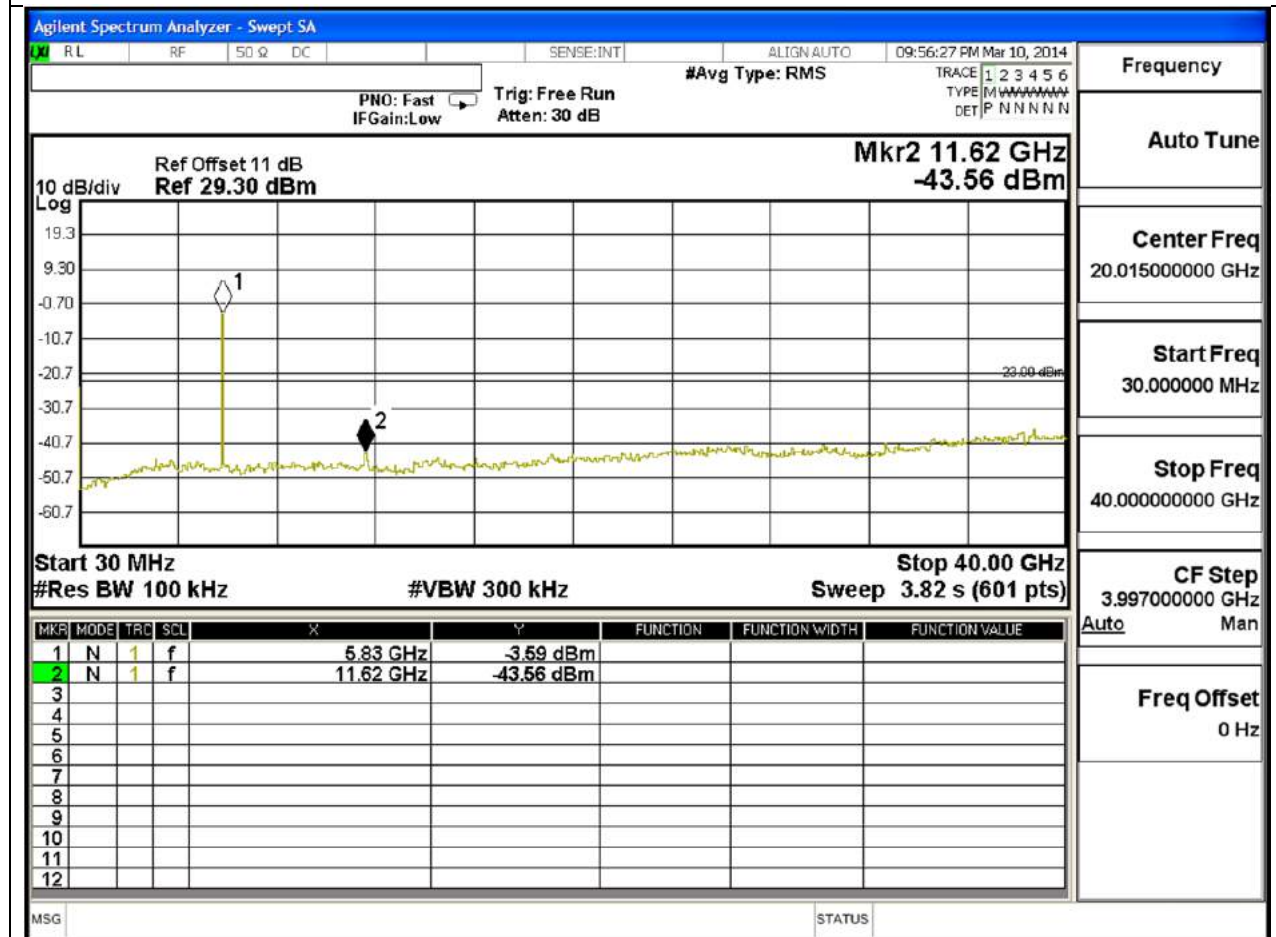
OUT-OF-BAND EMISSIONS



OUT OF BAND MID CH

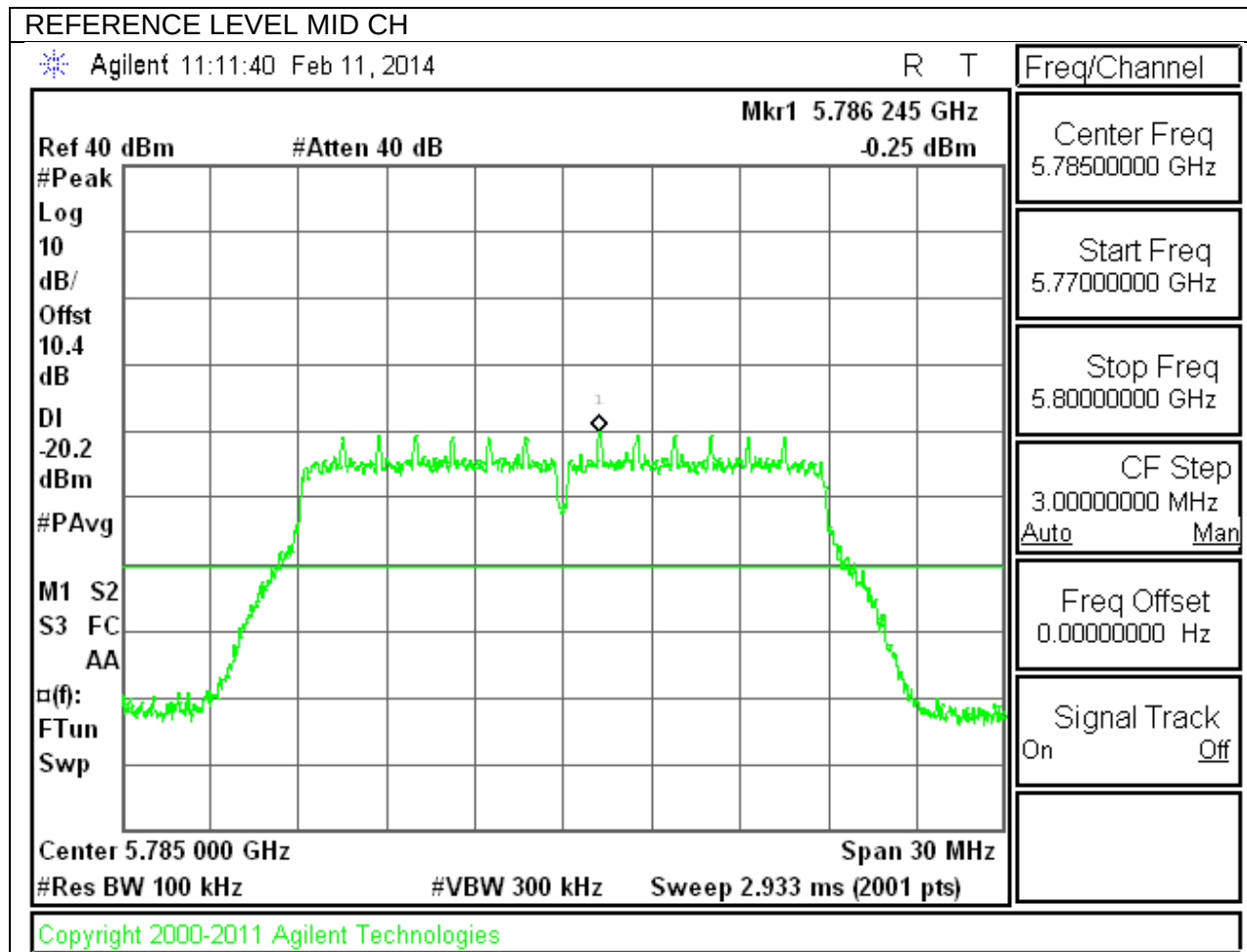


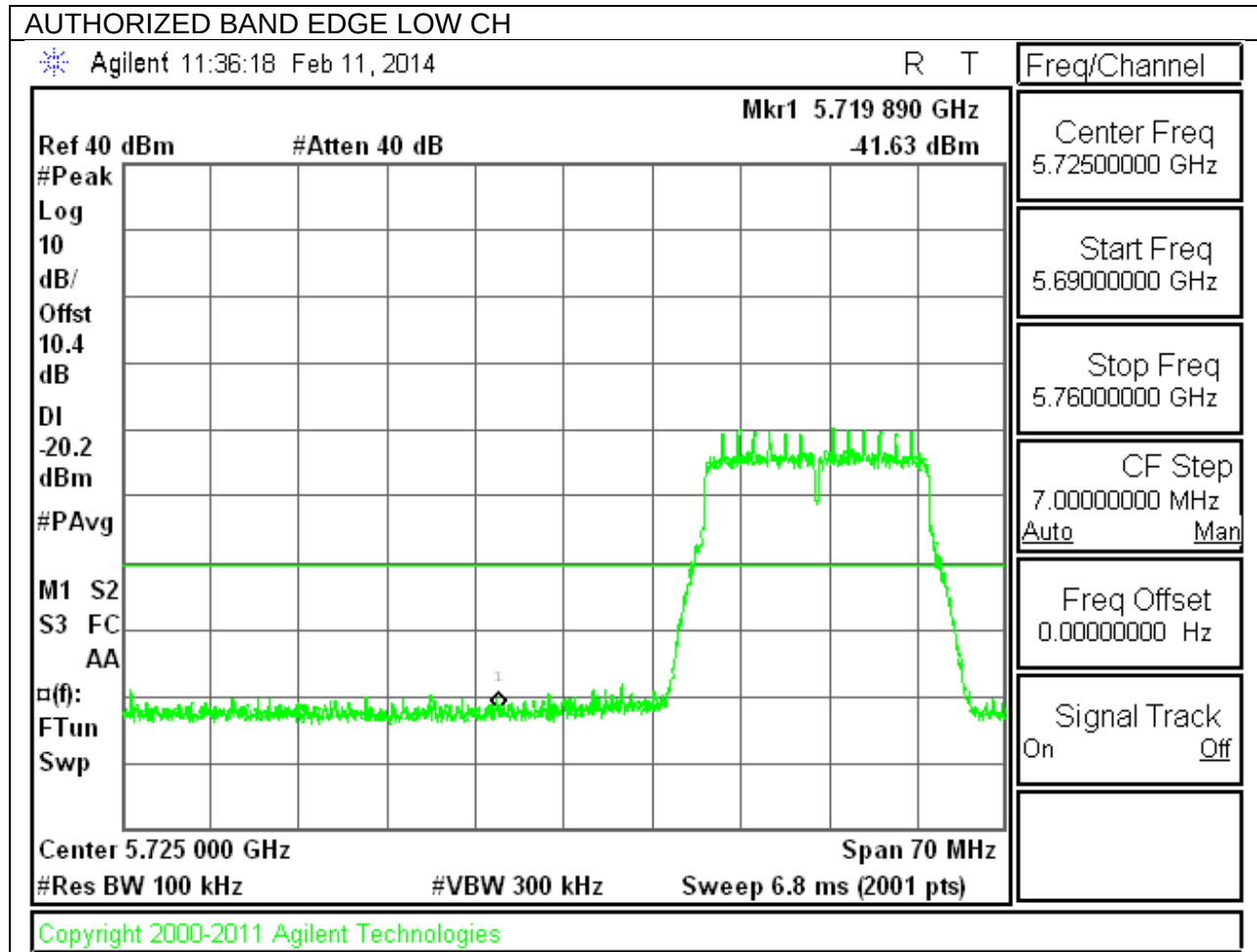
OUT OF BAND HIGH CH



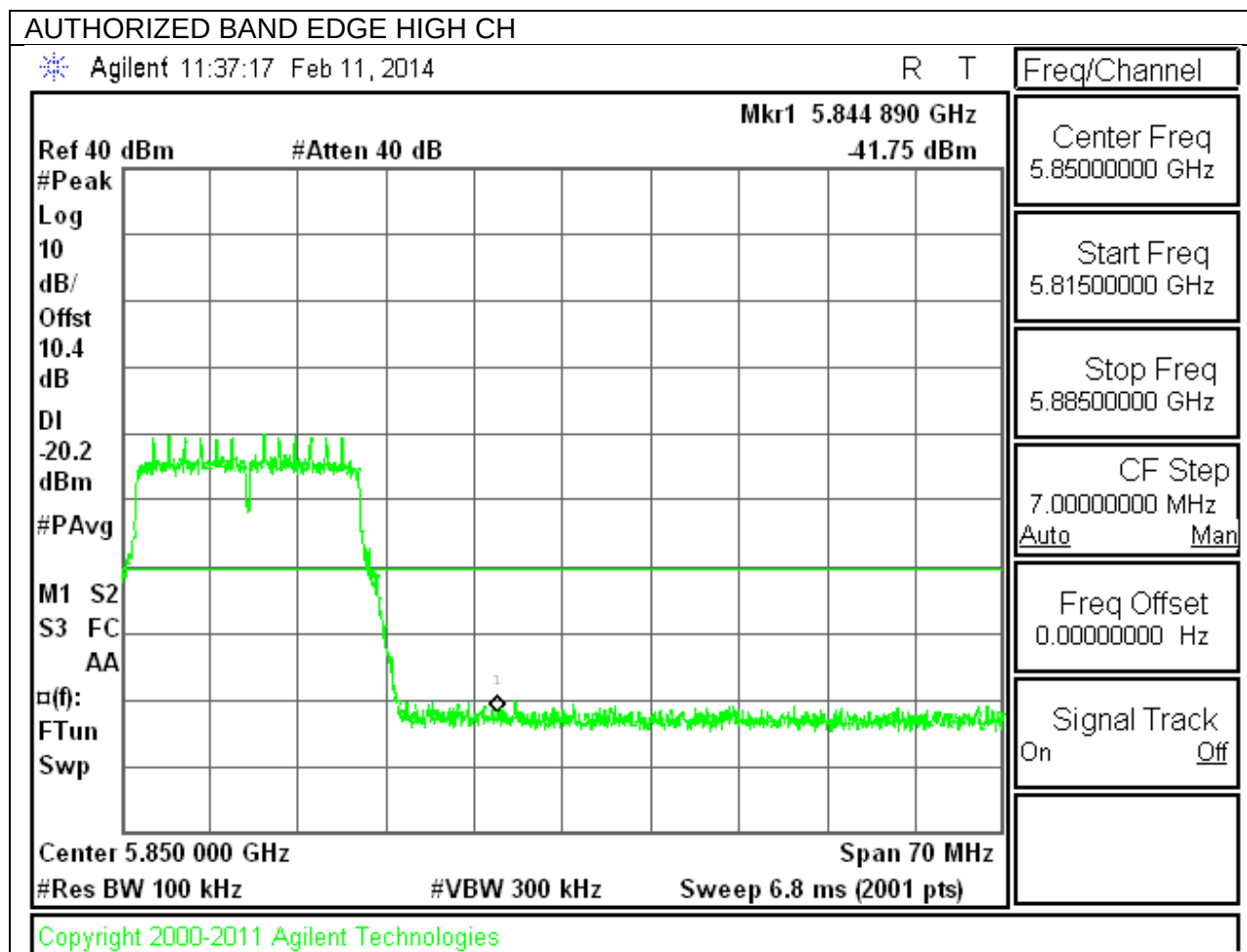
10.5.9. 802.11n MODE IN THE 5.8 GHz BAND CHAIN 0

IN-BAND REFERENCE LEVEL

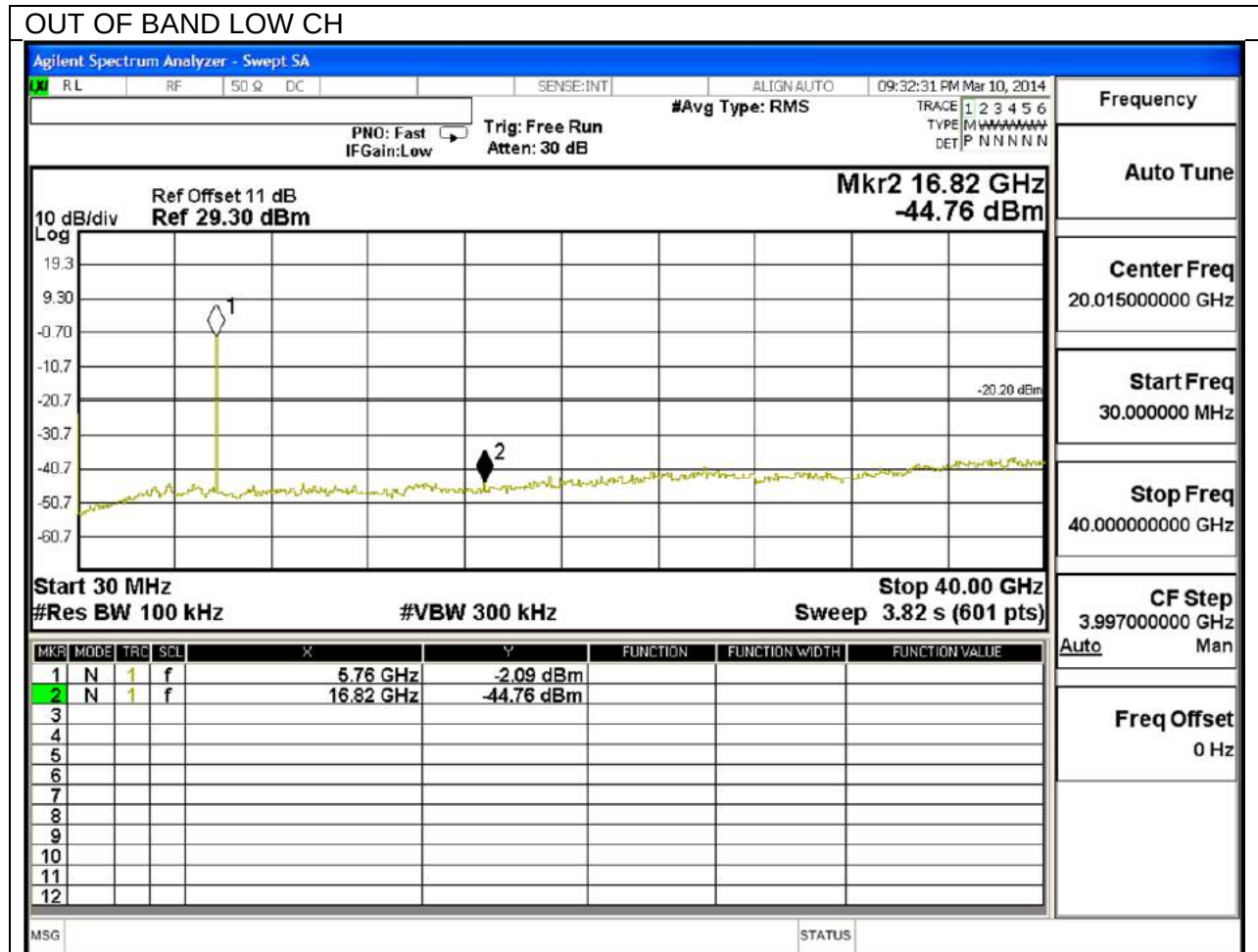


LOW CHANNEL BANDEDGE

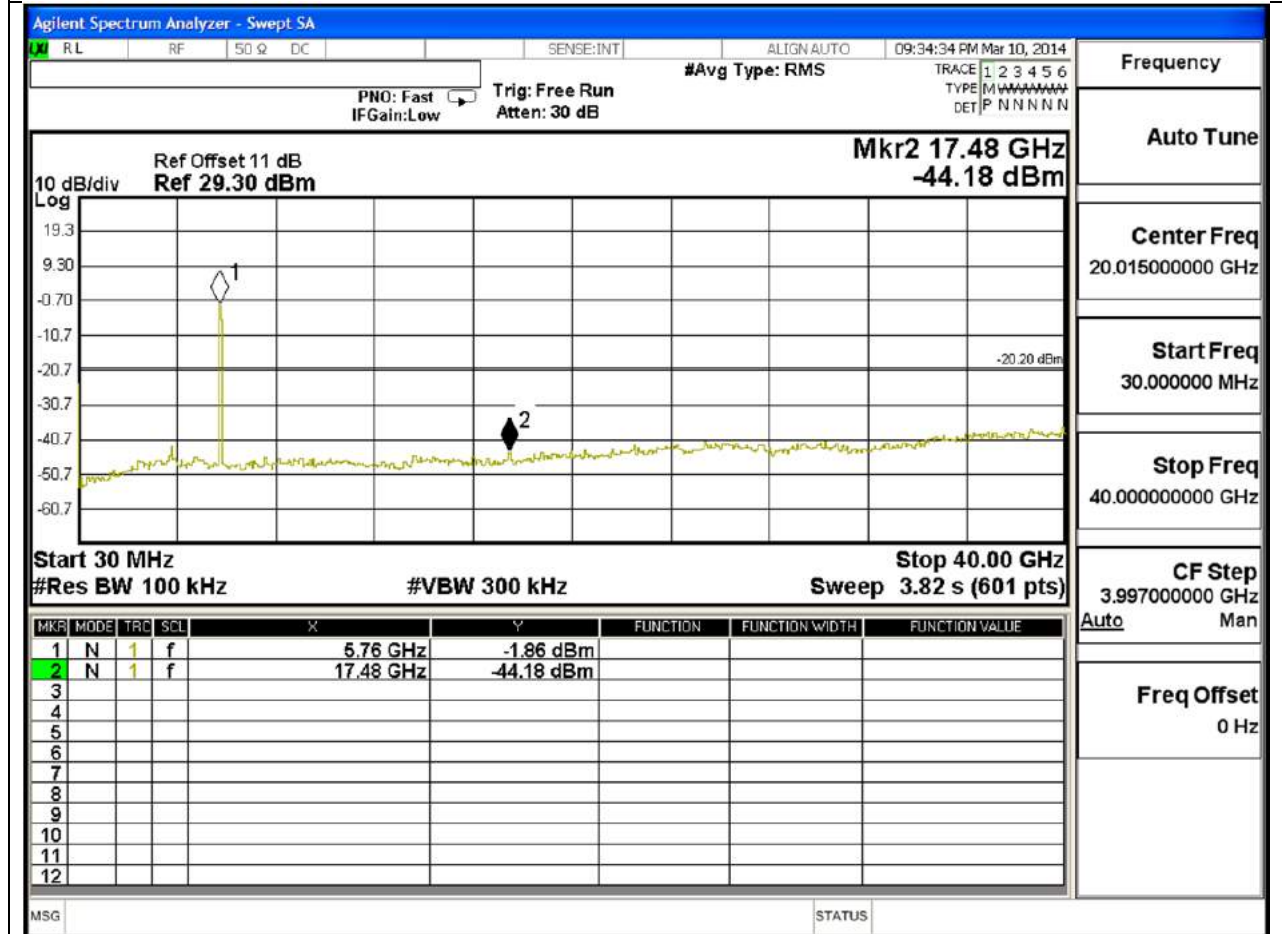
HIGH CHANNEL BANDEDGE



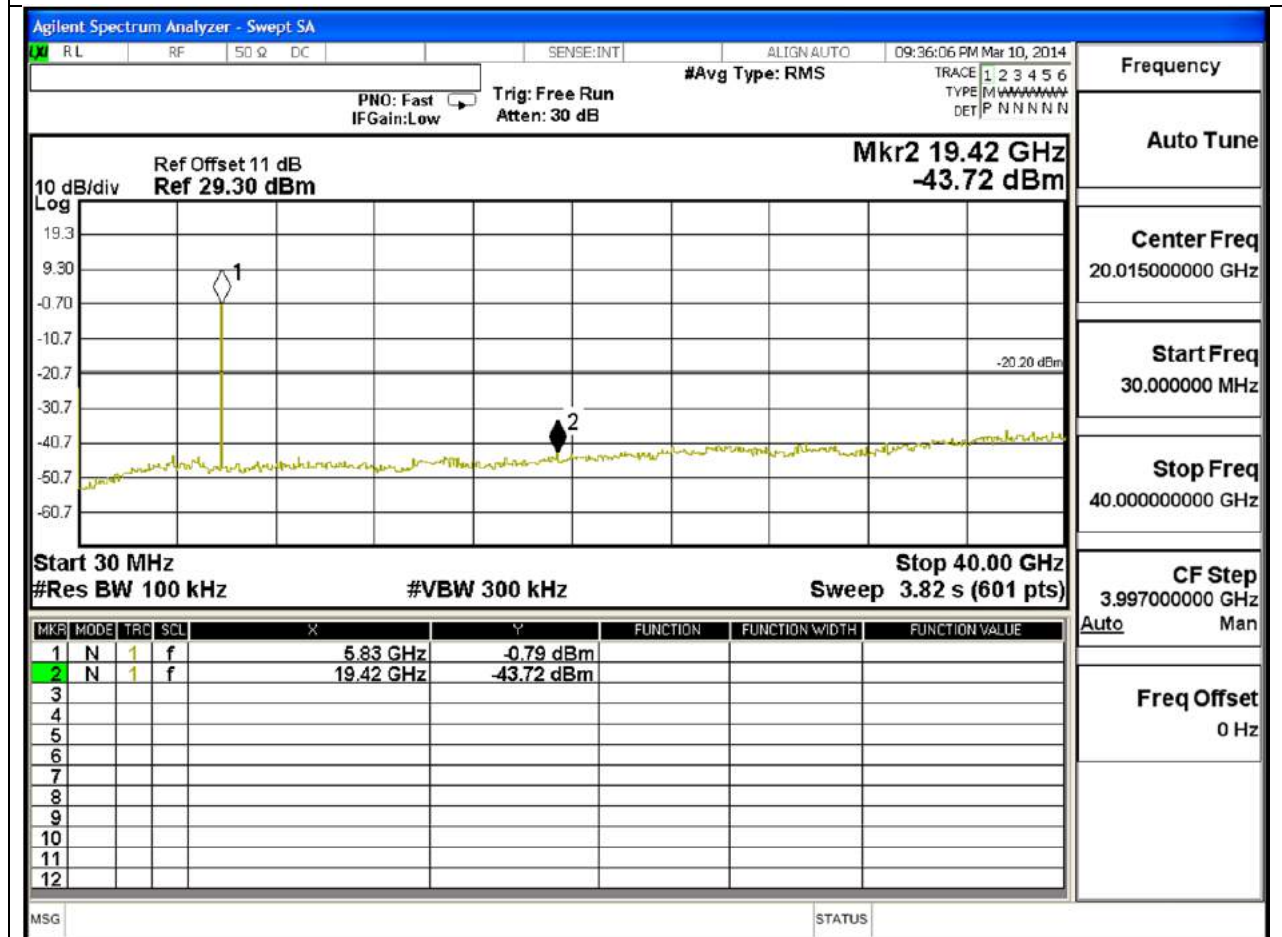
OUT-OF-BAND EMISSIONS



OUT OF BAND MID CH

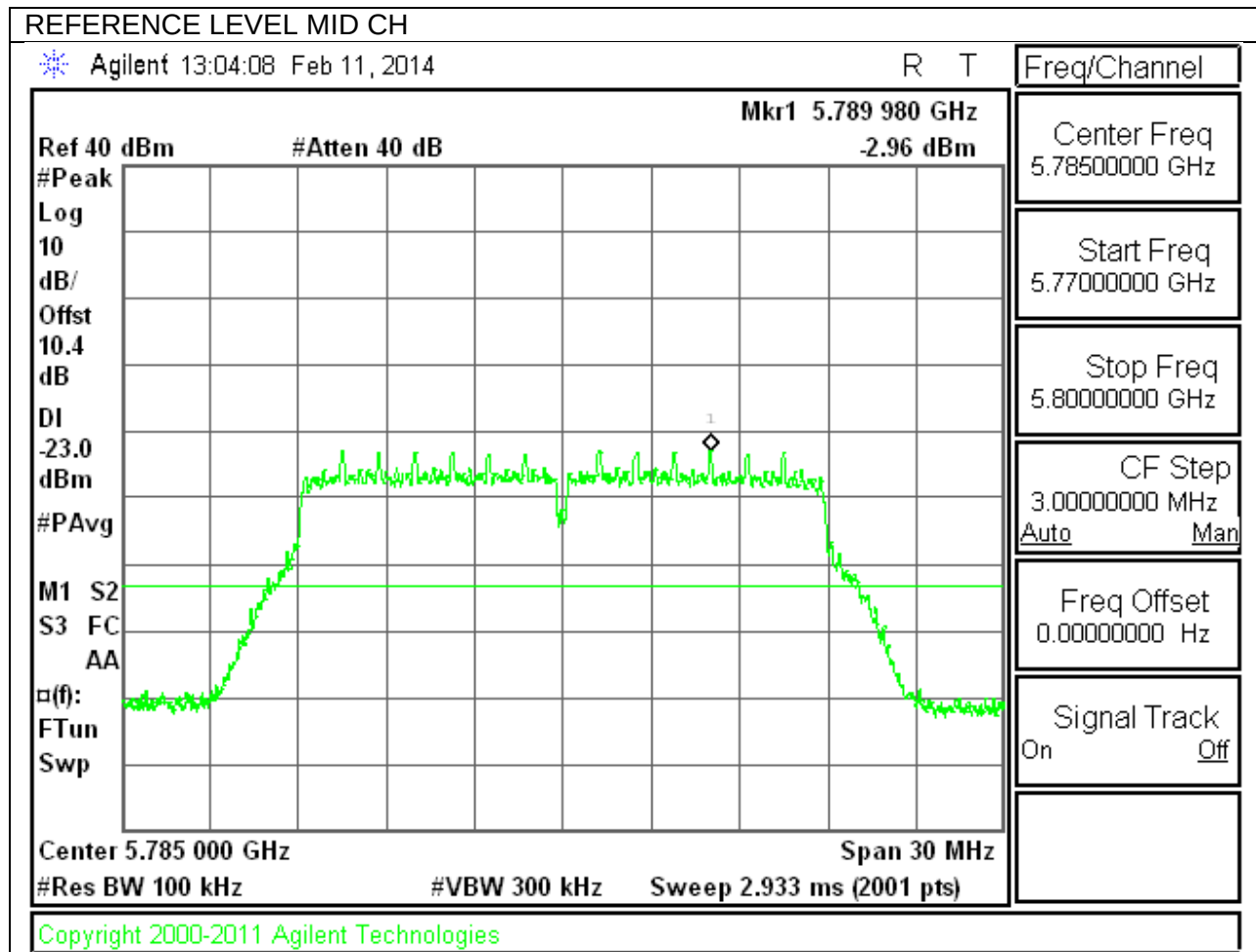


OUT OF BAND HIGH CH

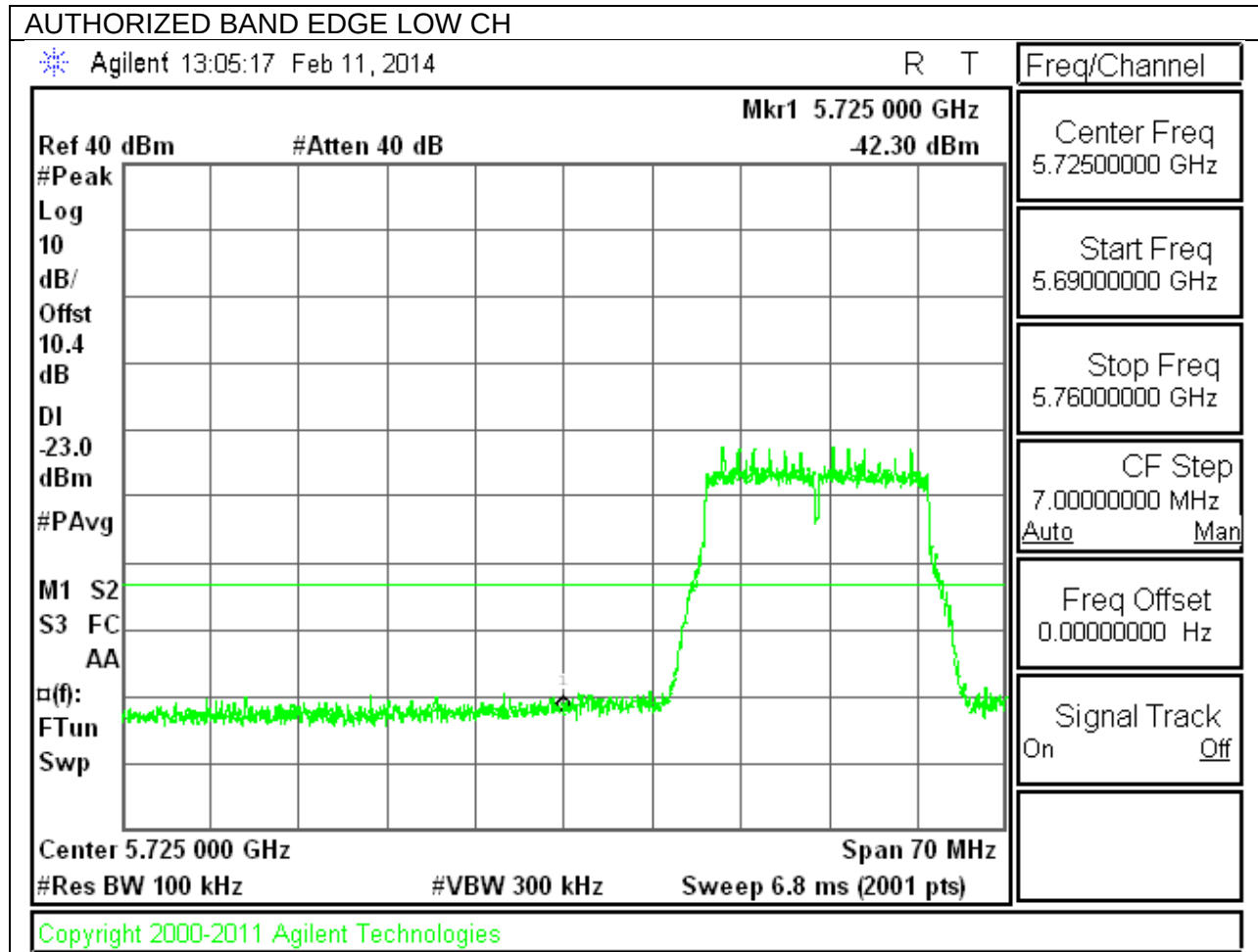


10.5.10. 802.11n MODE IN THE 5.8 GHz BAND CHAIN 1

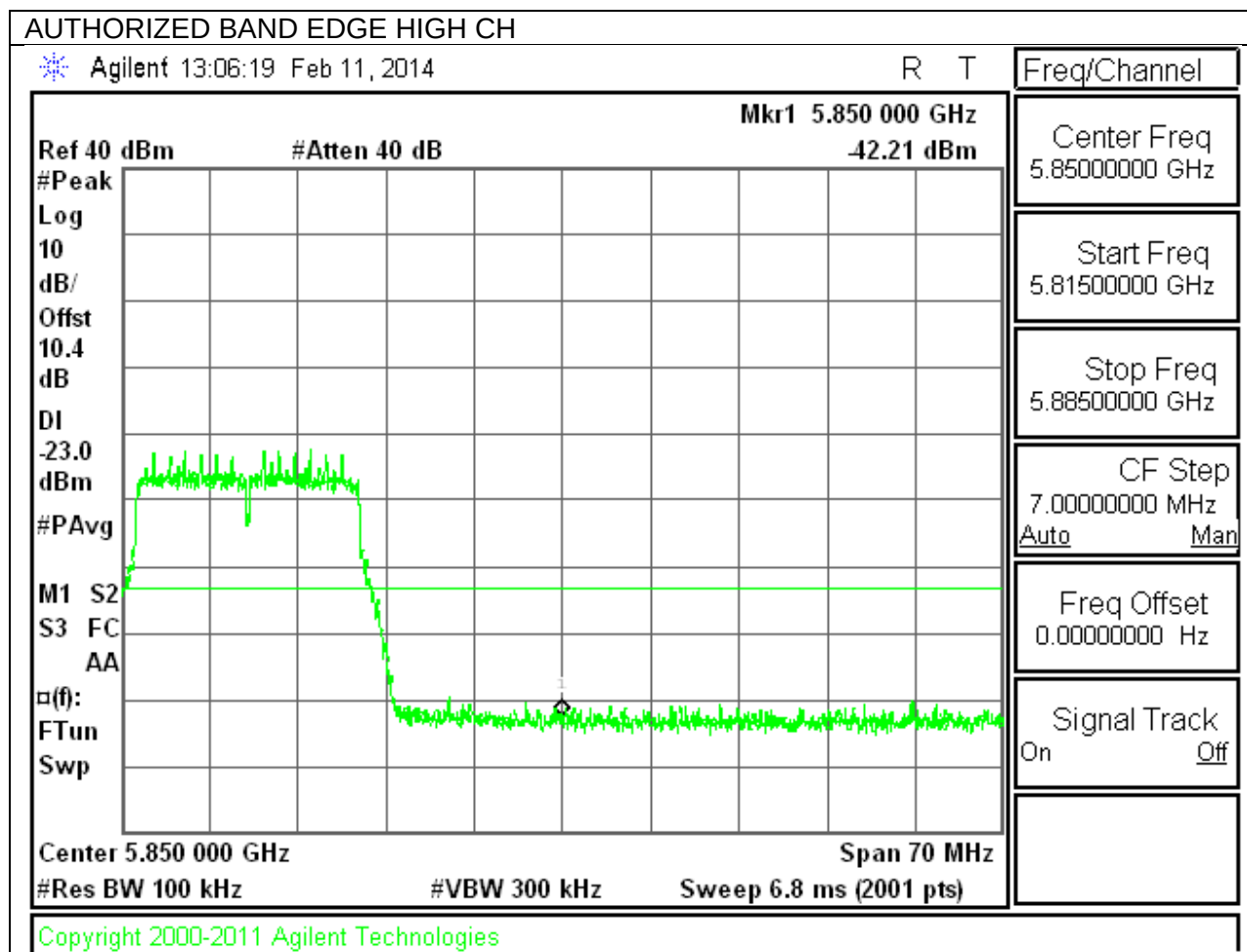
IN-BAND REFERENCE LEVEL



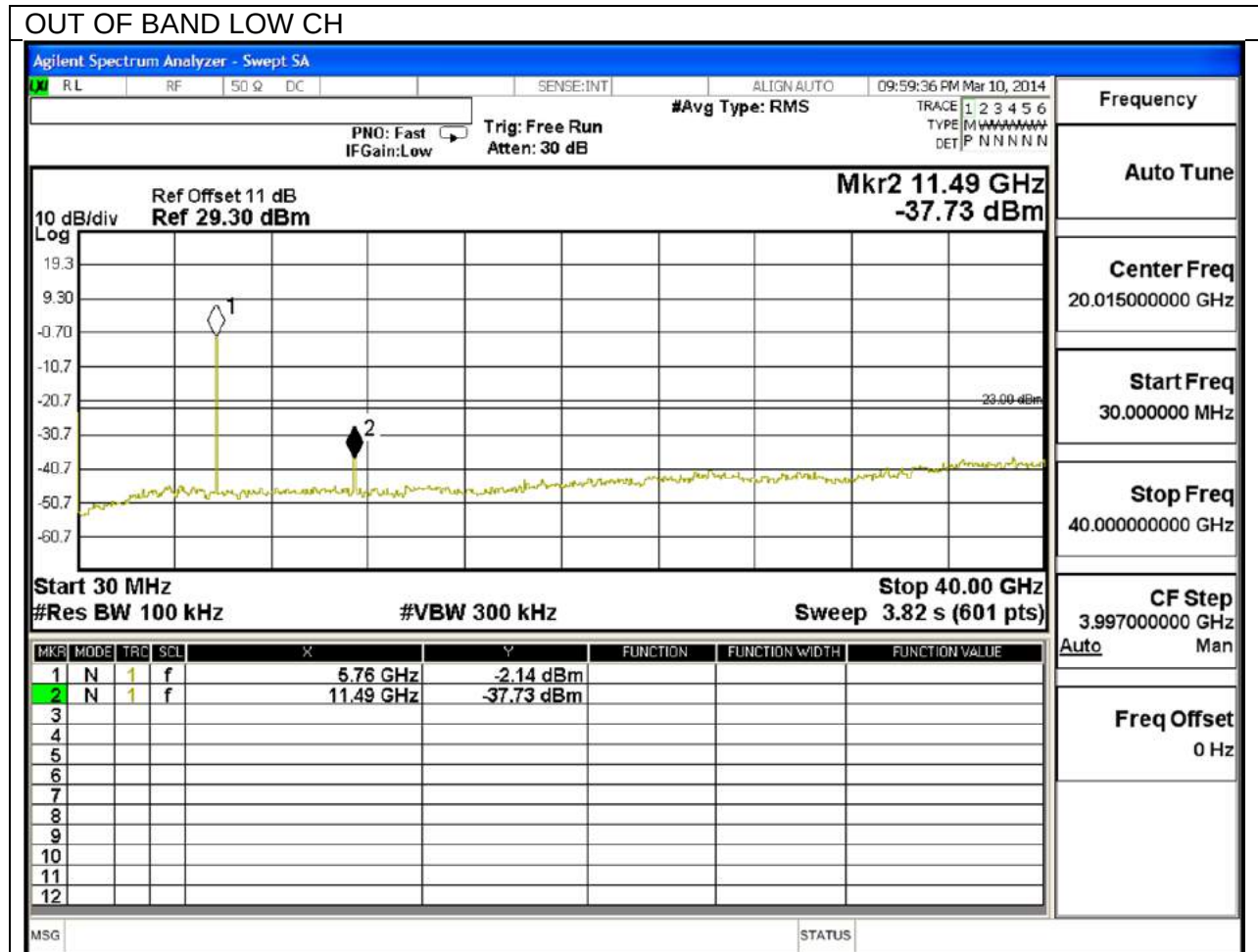
LOW CHANNEL BANDEDGE



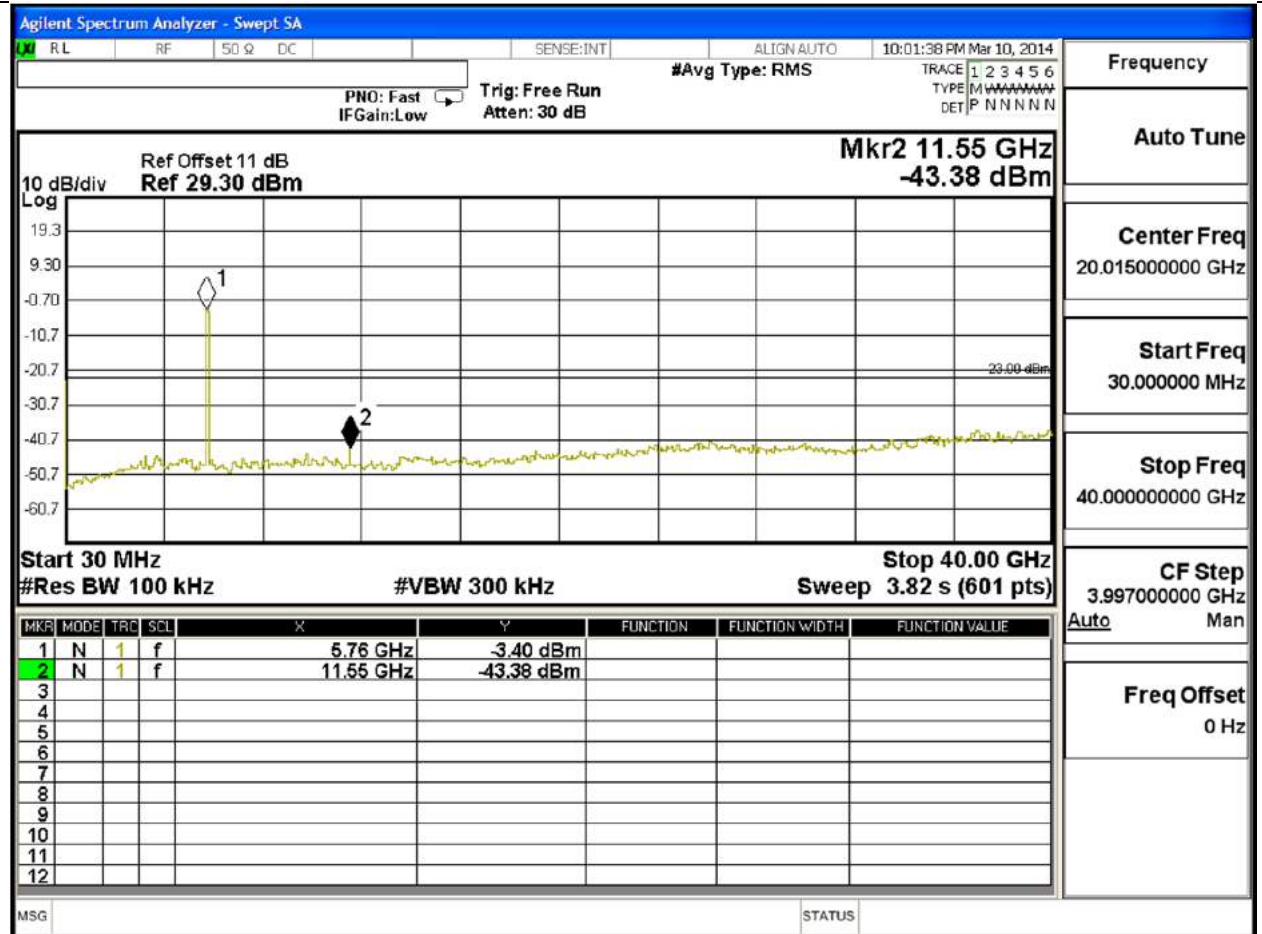
HIGH CHANNEL BANDEDGE



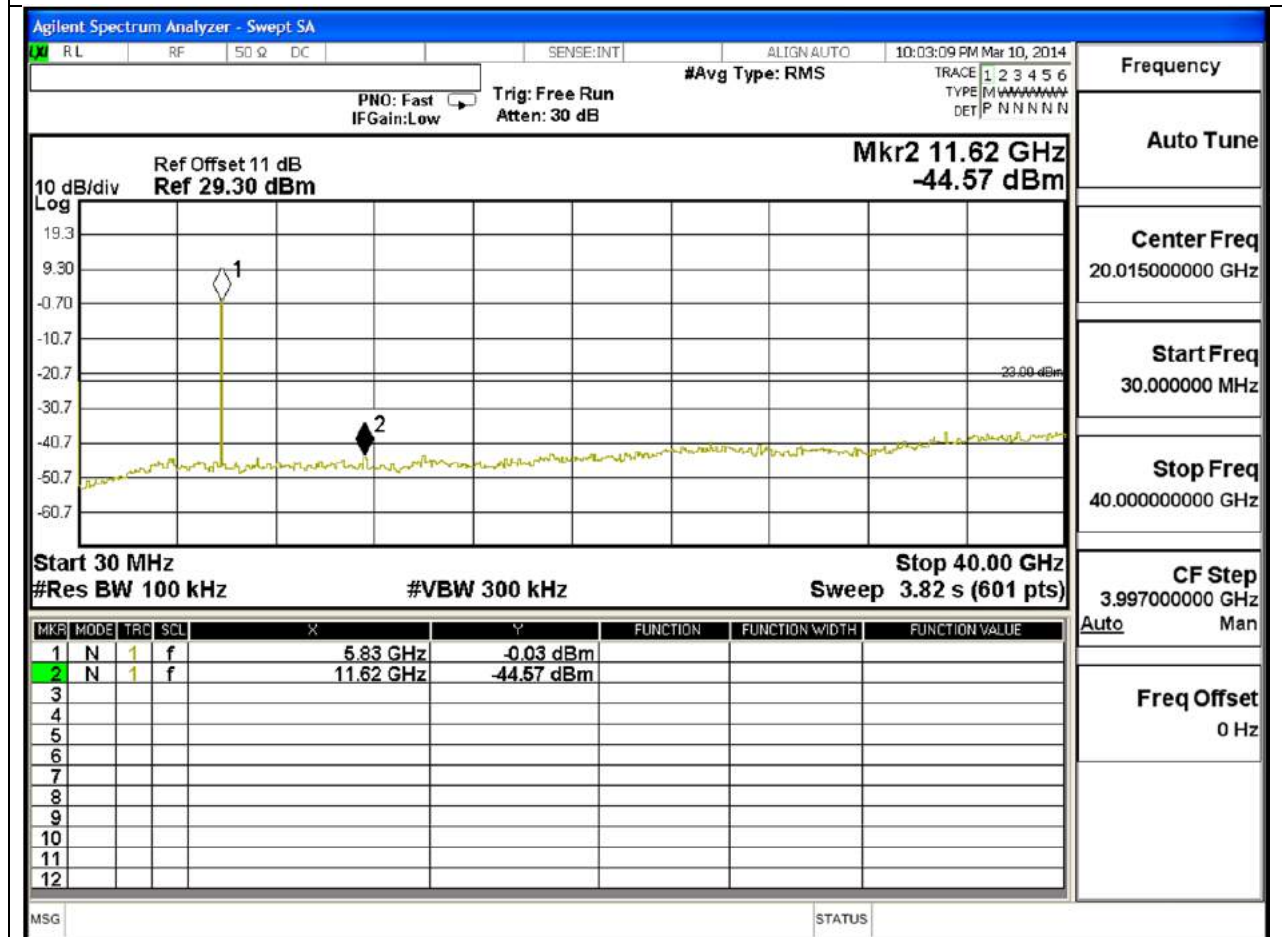
OUT-OF-BAND EMISSIONS



OUT OF BAND MID CH

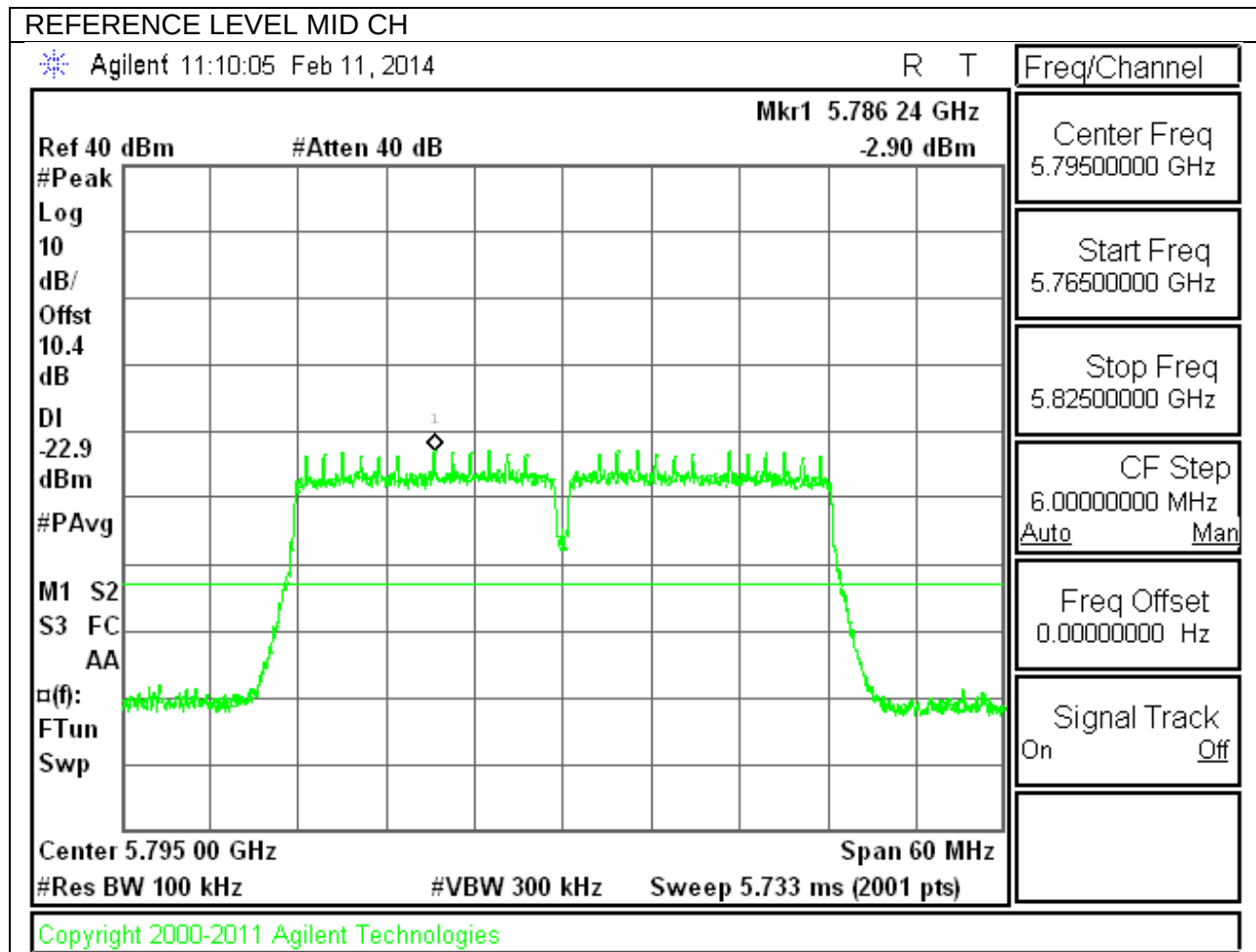


OUT OF BAND HIGH CH

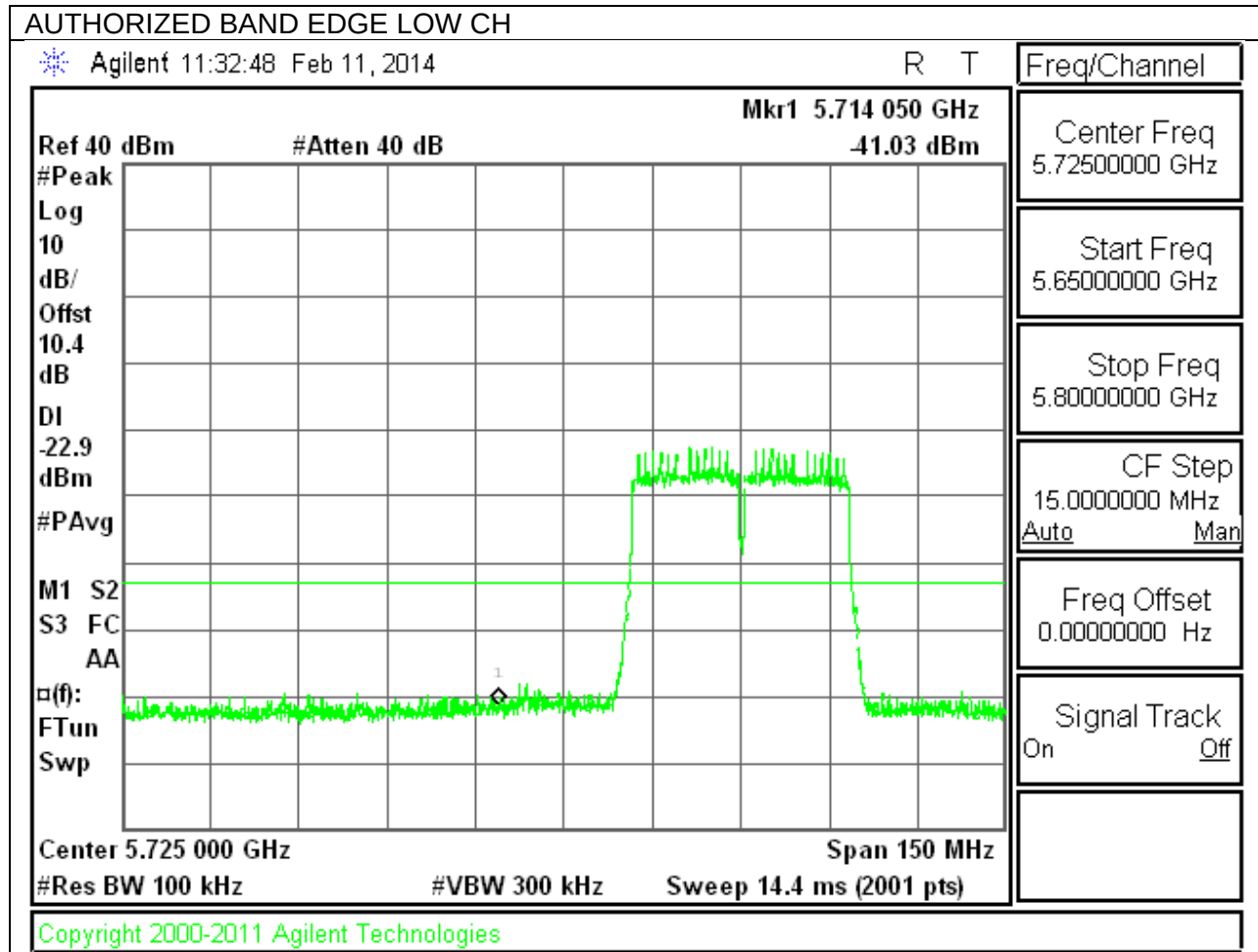


10.5.11. 802.11n HT40 MODE IN THE 5.8 GHz BAND CHAIN 0

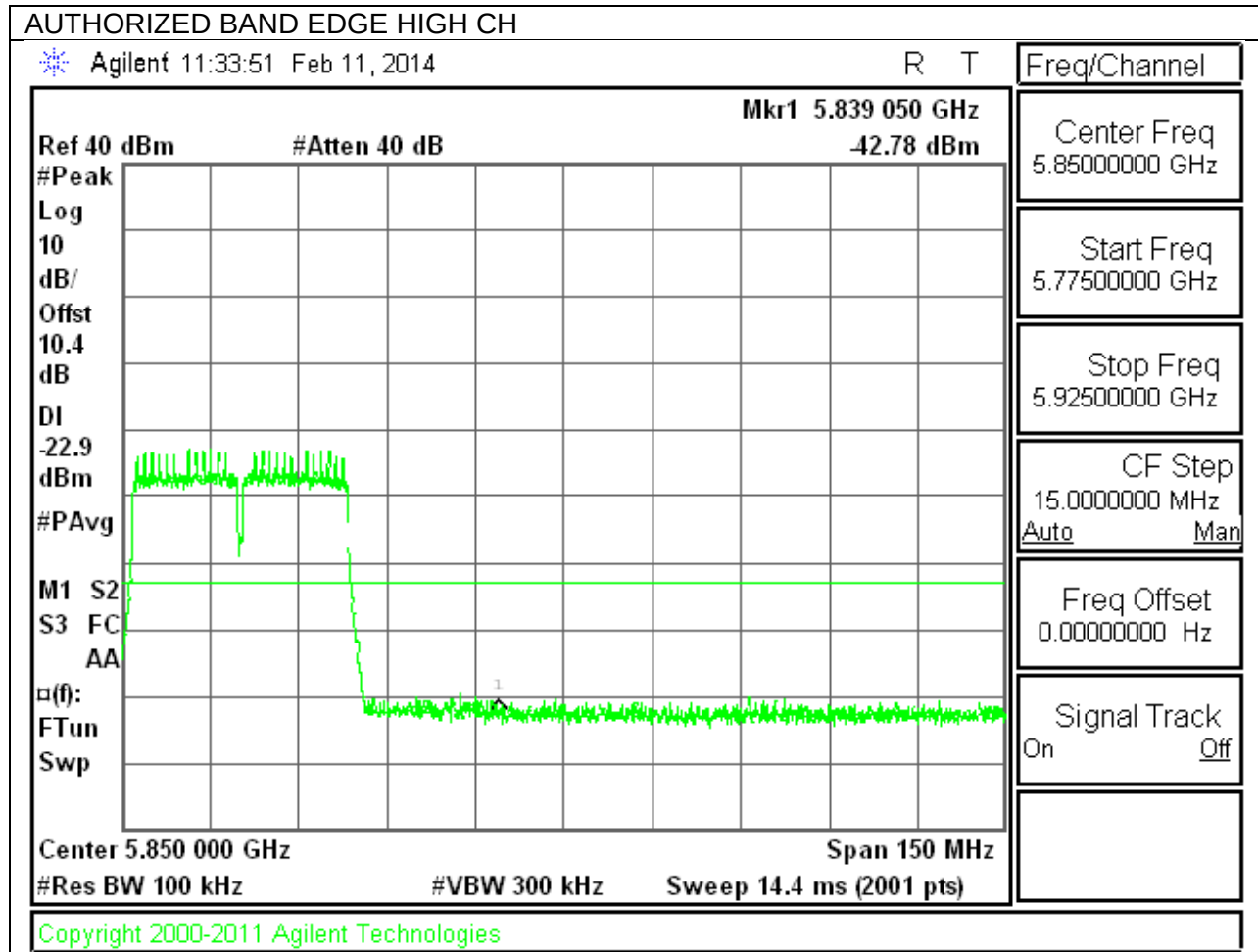
IN-BAND REFERENCE LEVEL



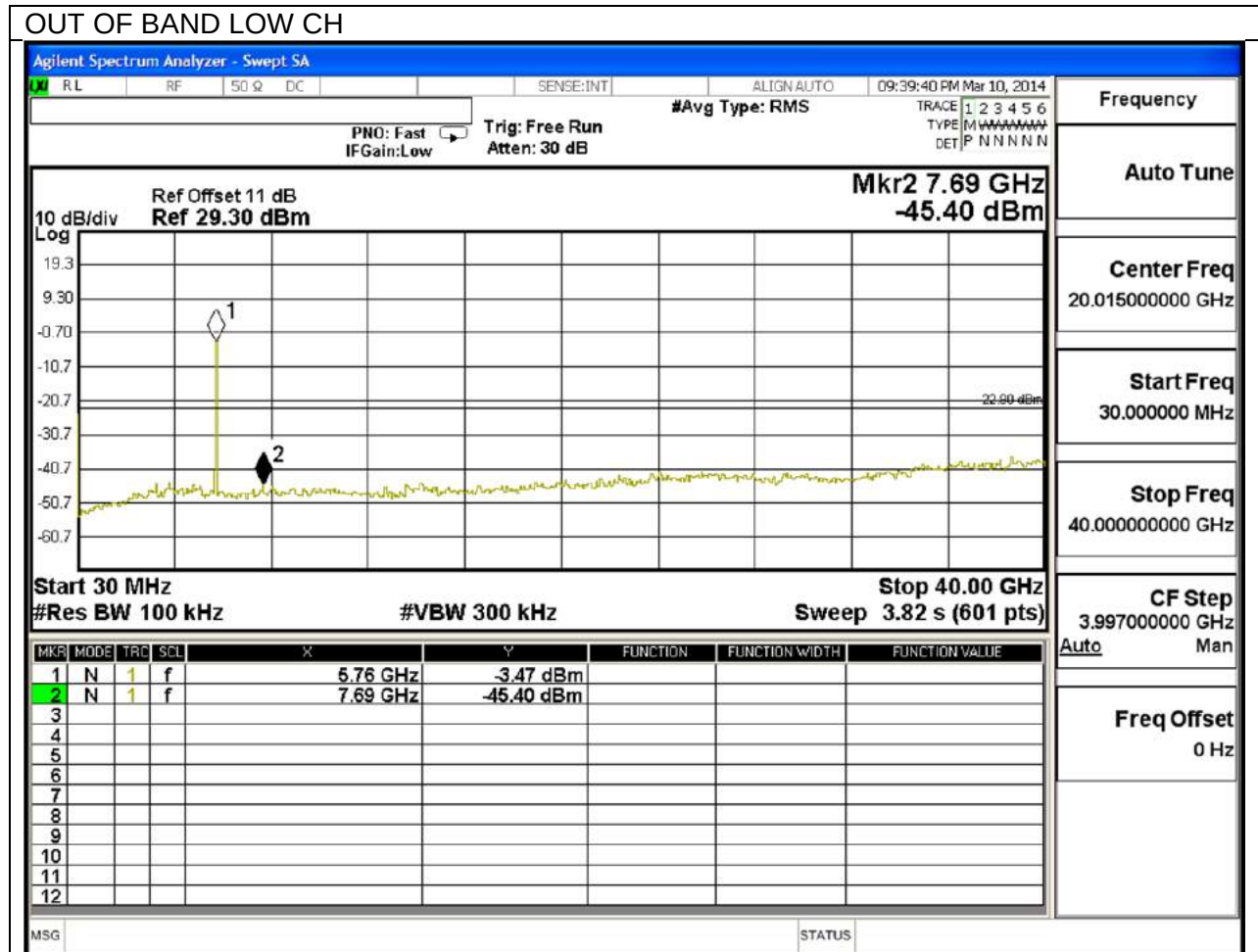
LOW CHANNEL BANDEDGE



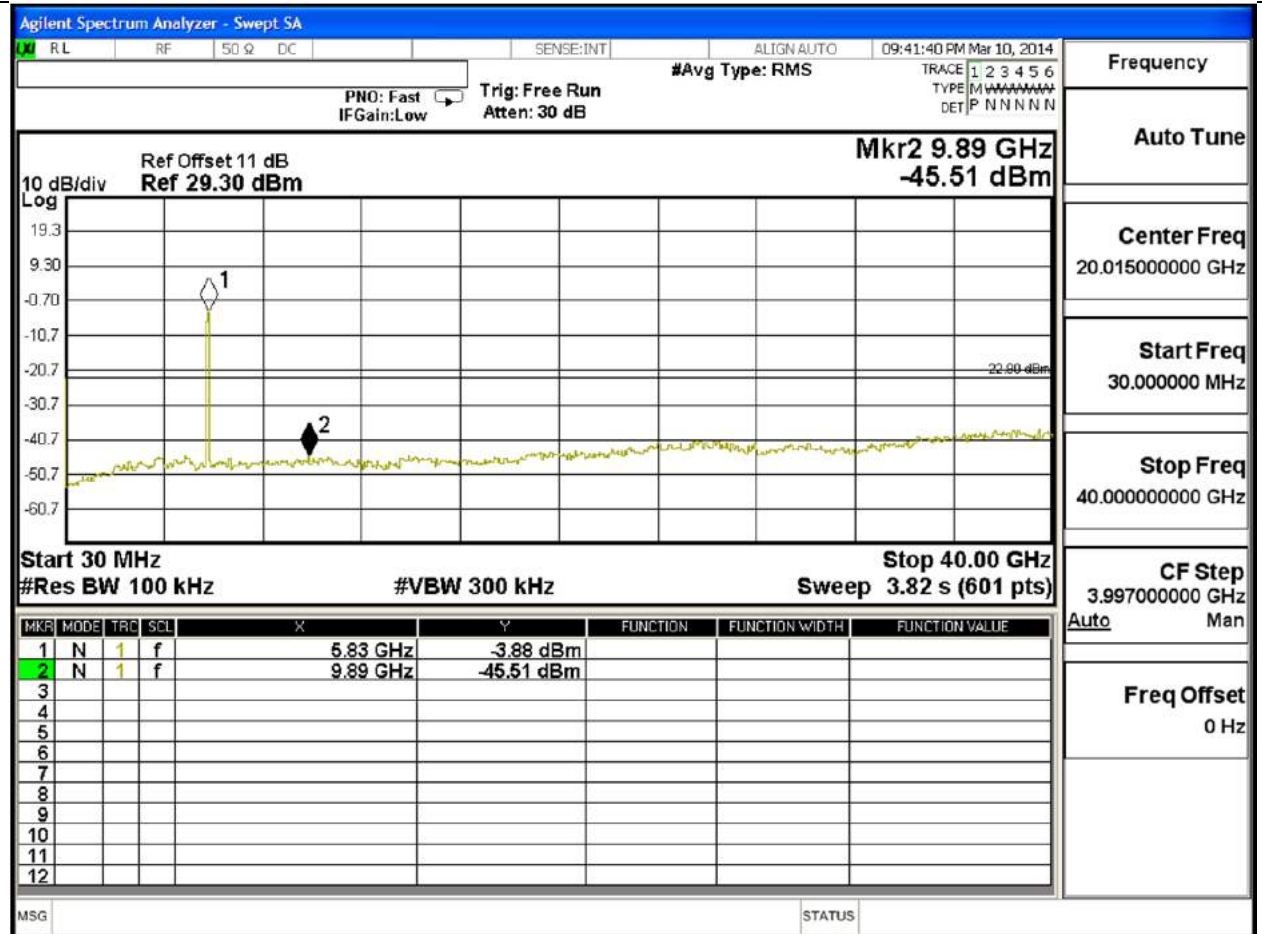
HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS

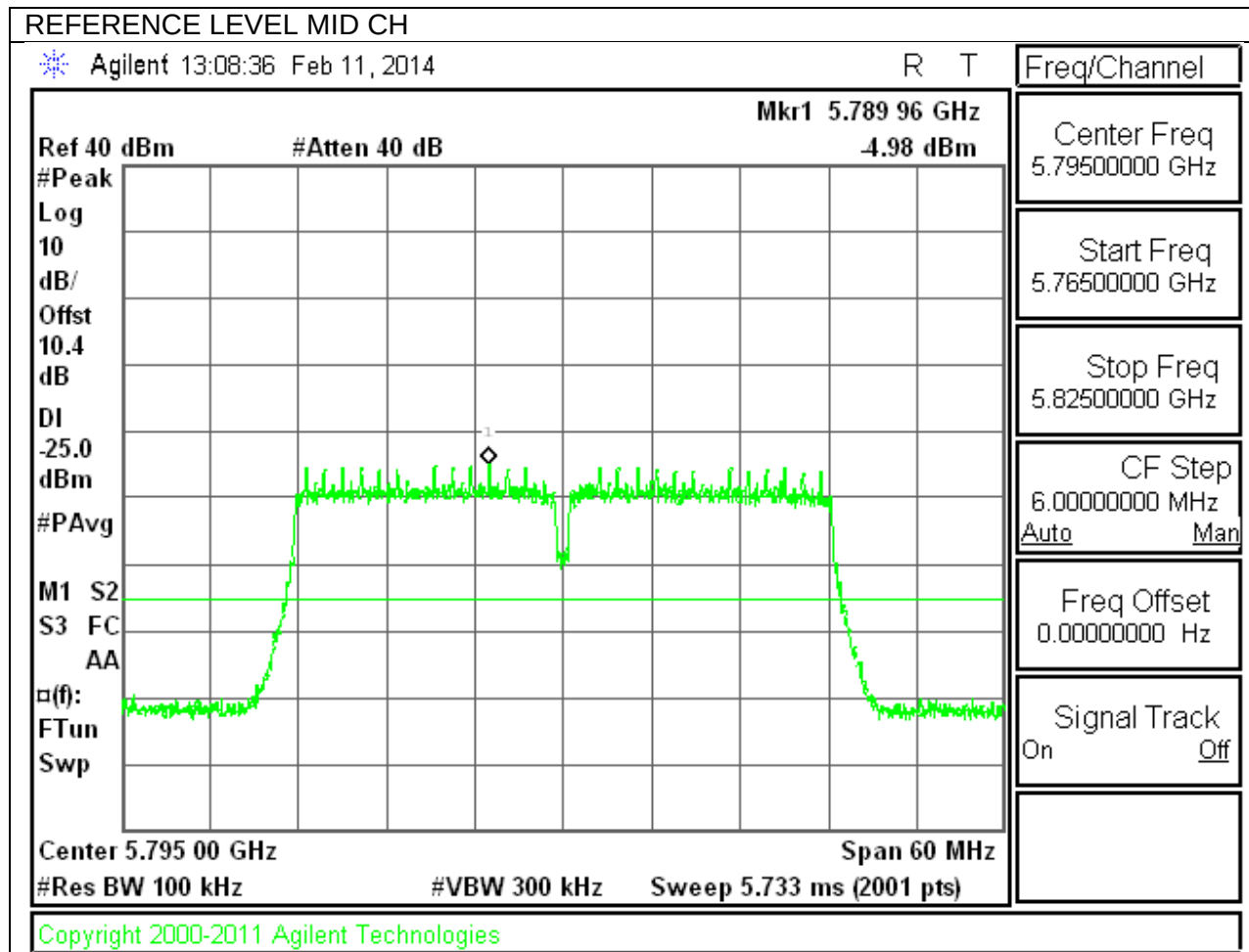


OUT OF BAND HIGH CH

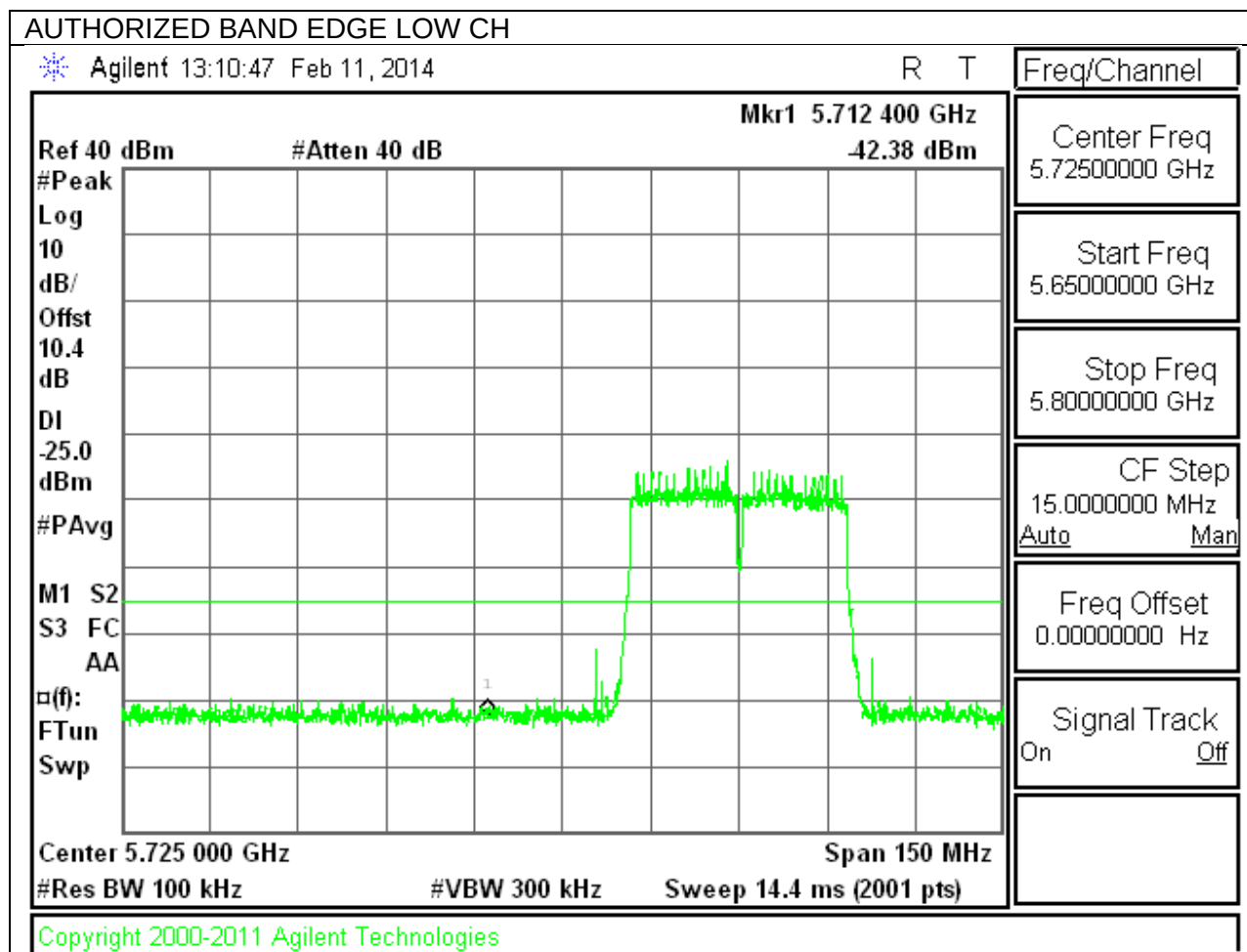


10.5.12. 802.11n HT40 MODE IN THE 5.8 GHz BAND CHAIN 1

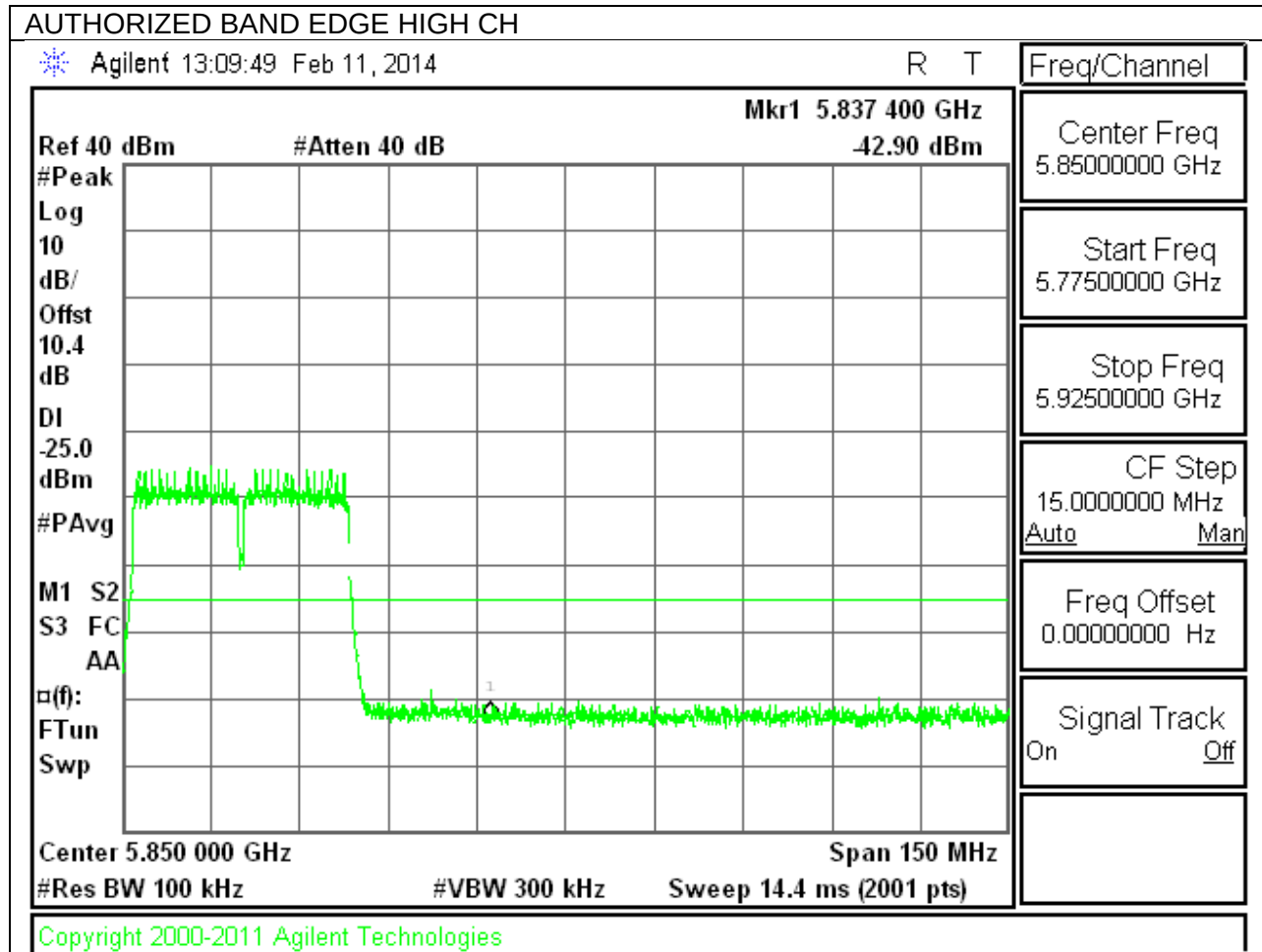
IN-BAND REFERENCE LEVEL



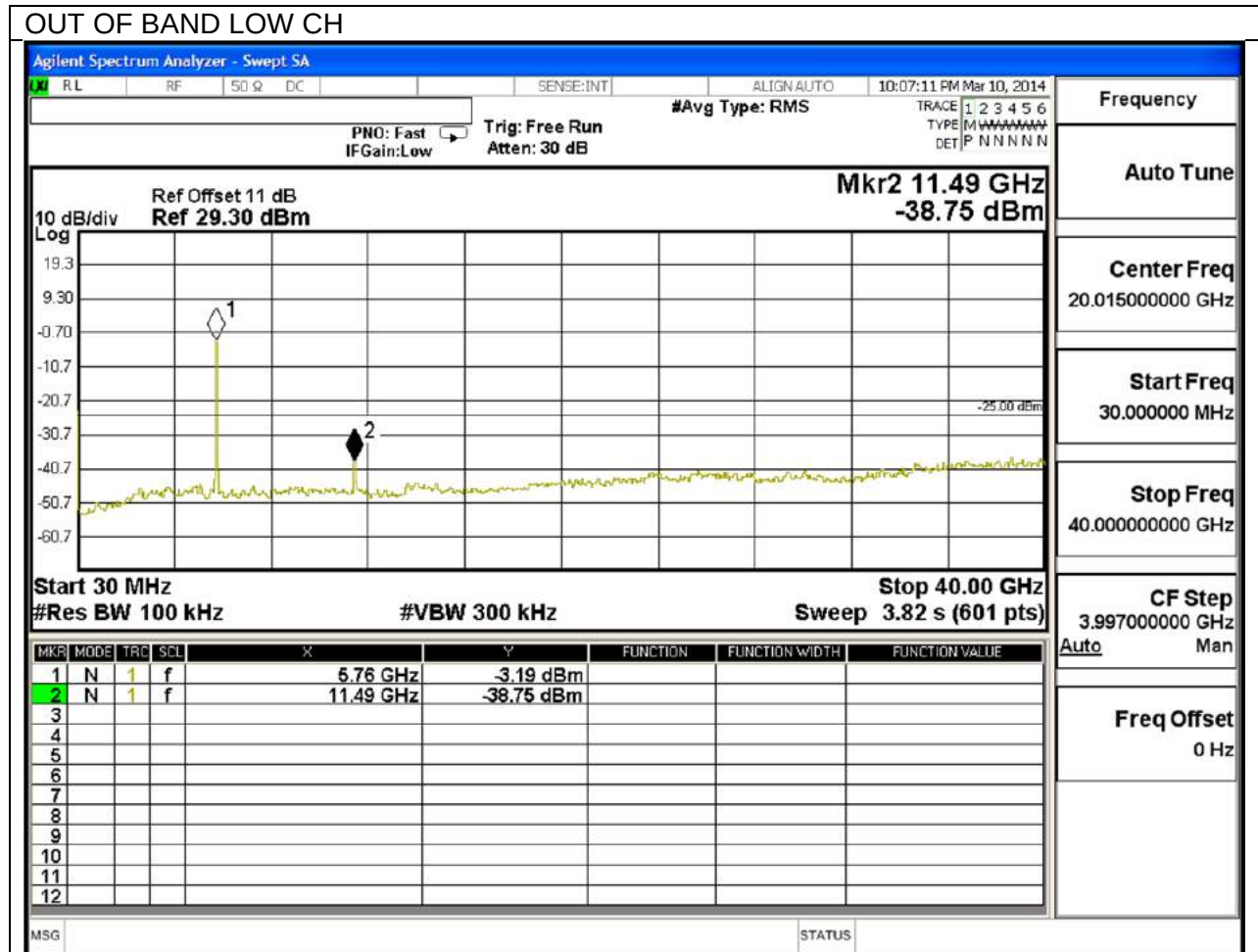
LOW CHANNEL BANDEDGE



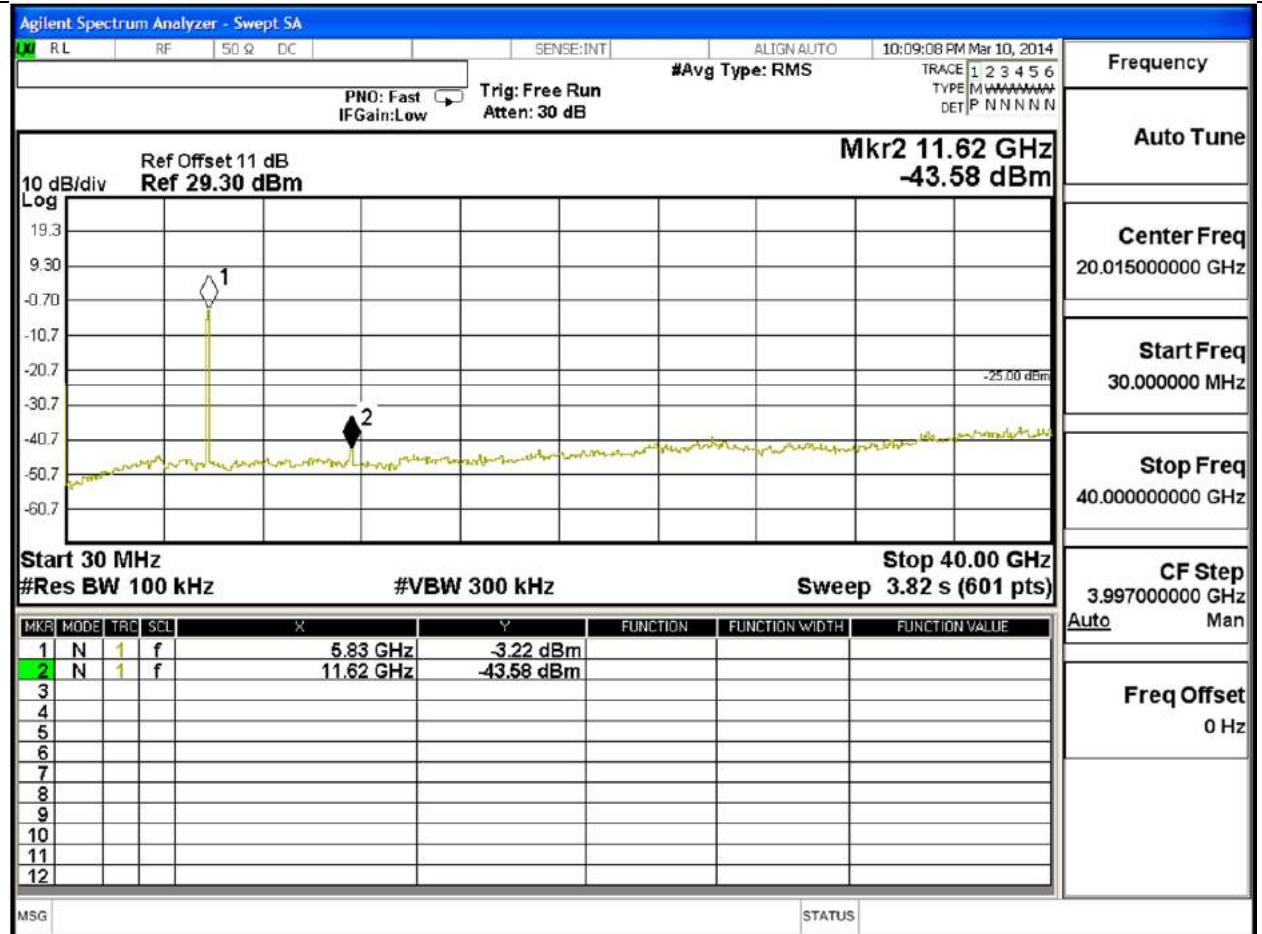
HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS

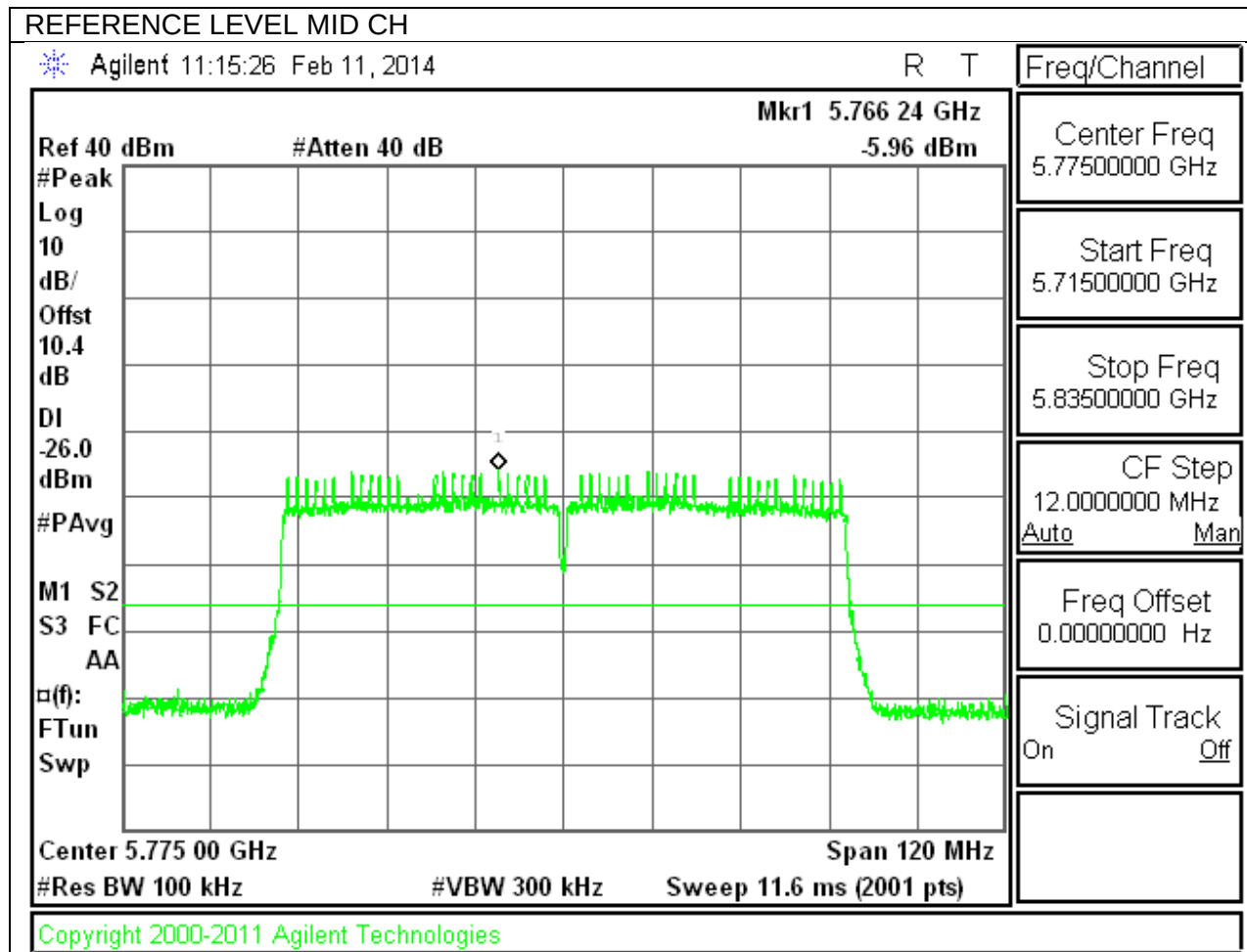


OUT OF BAND HIGH CH

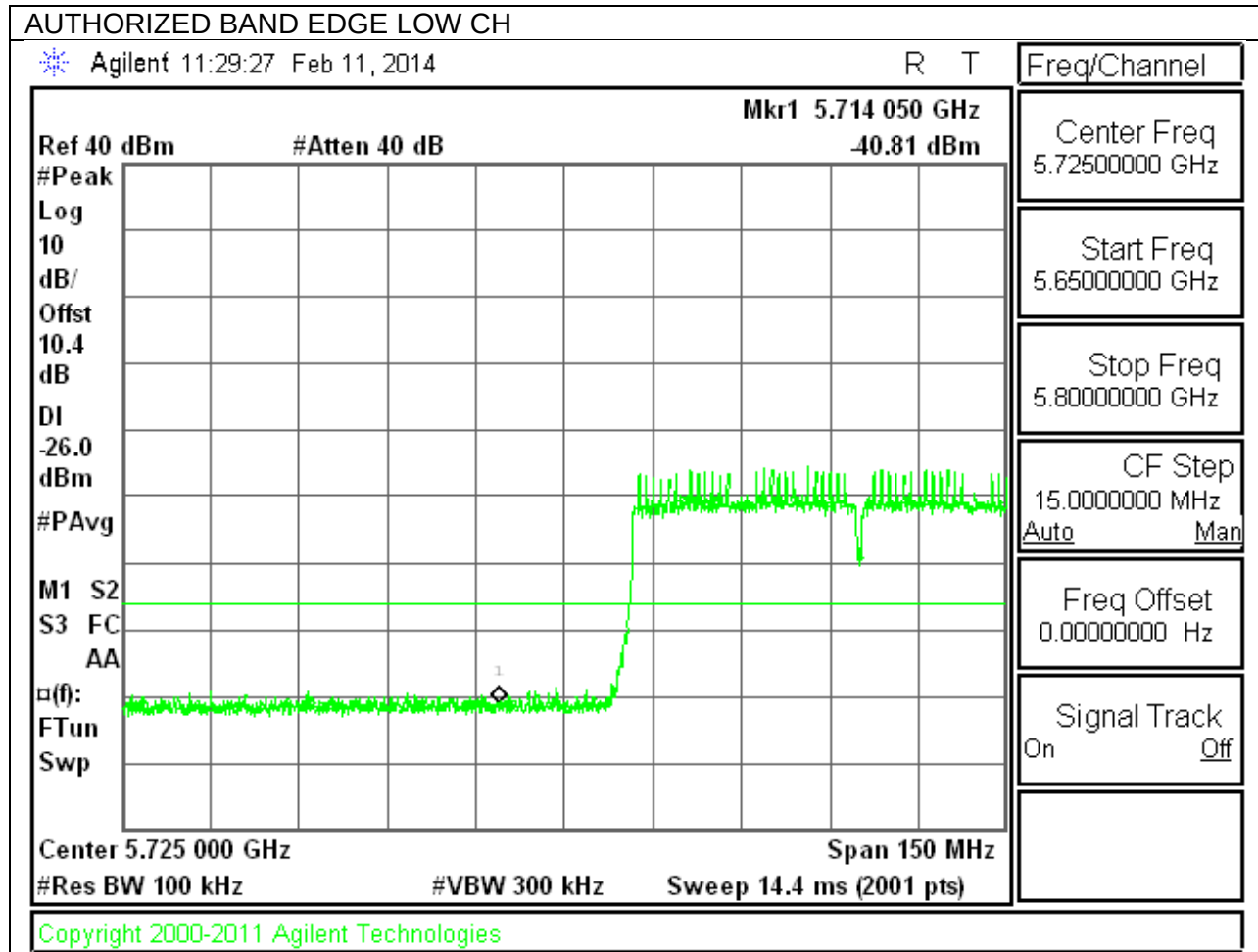


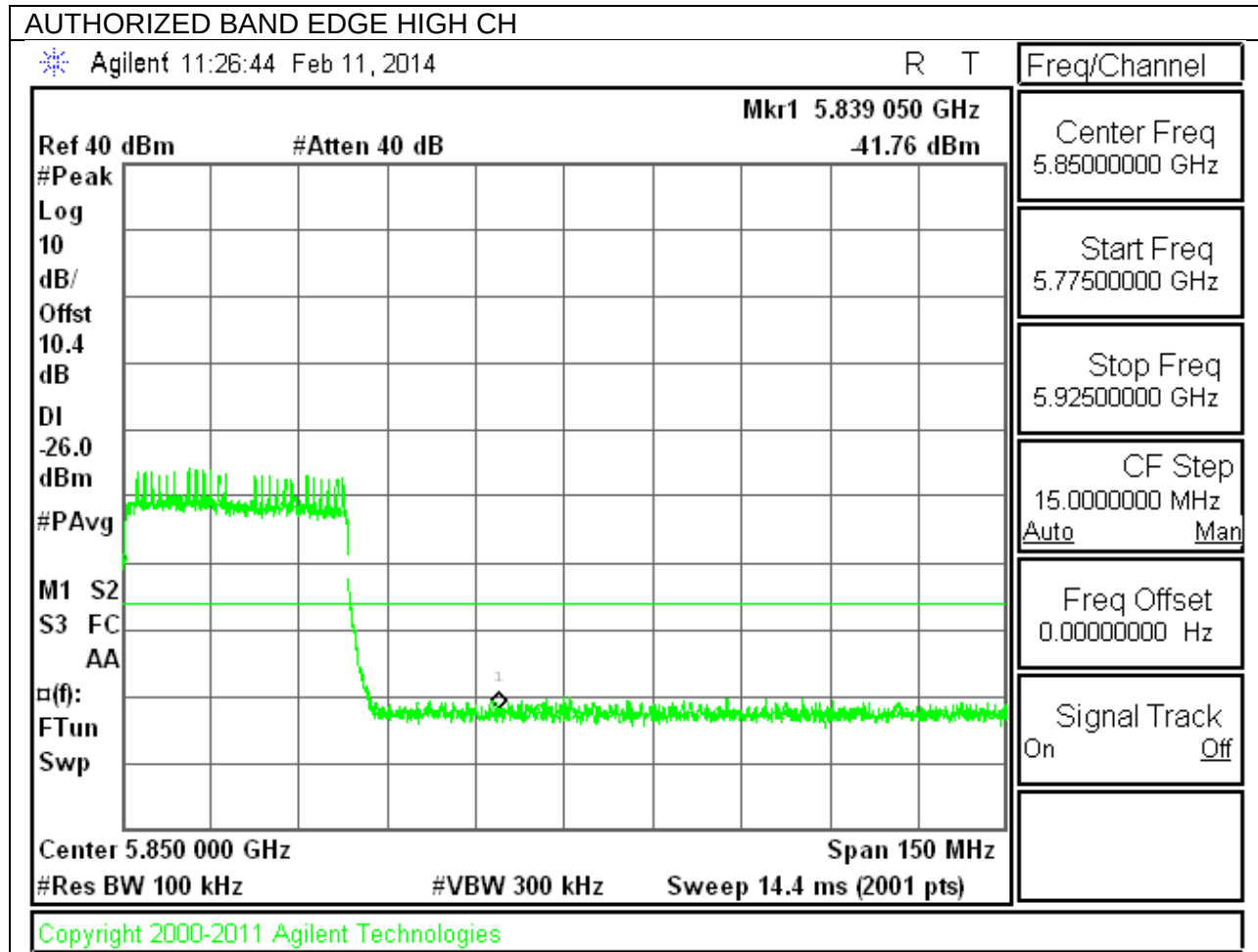
10.5.13. 802.11ac HT80 MODE IN THE 5.8 GHz BAND CHAIN 0

IN-BAND REFERENCE LEVEL

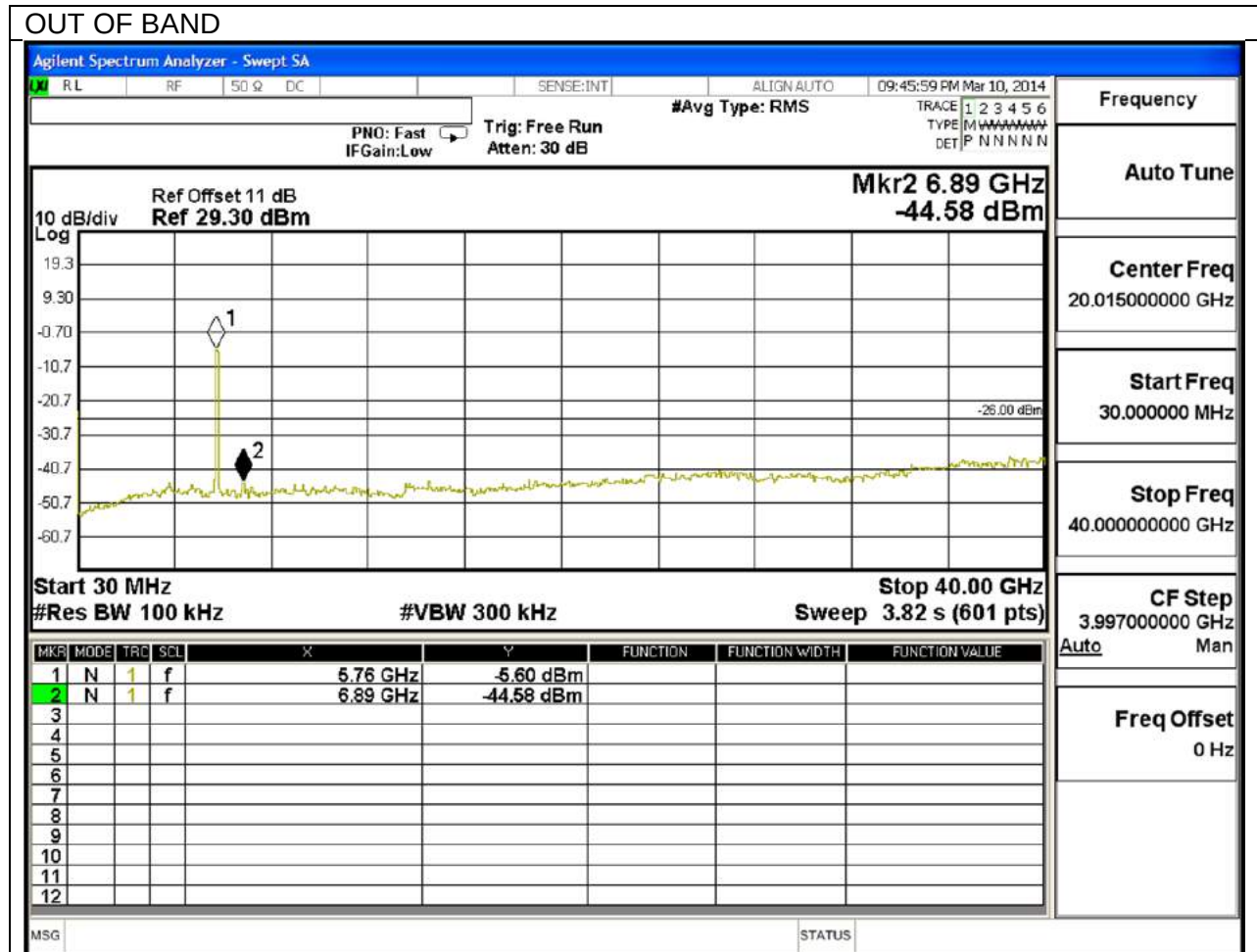


LOW CHANNEL BANDEDGE



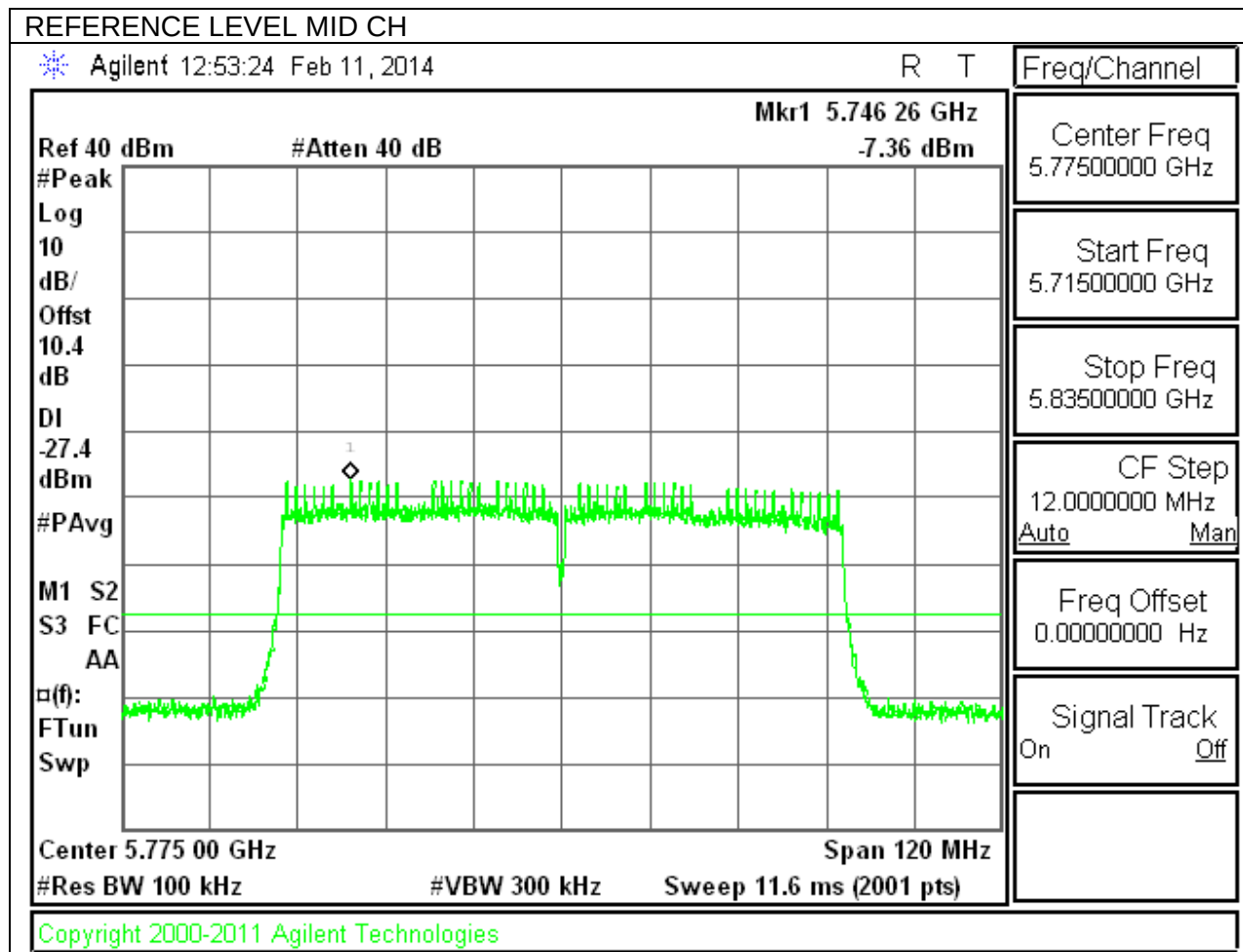


OUT OF BAND

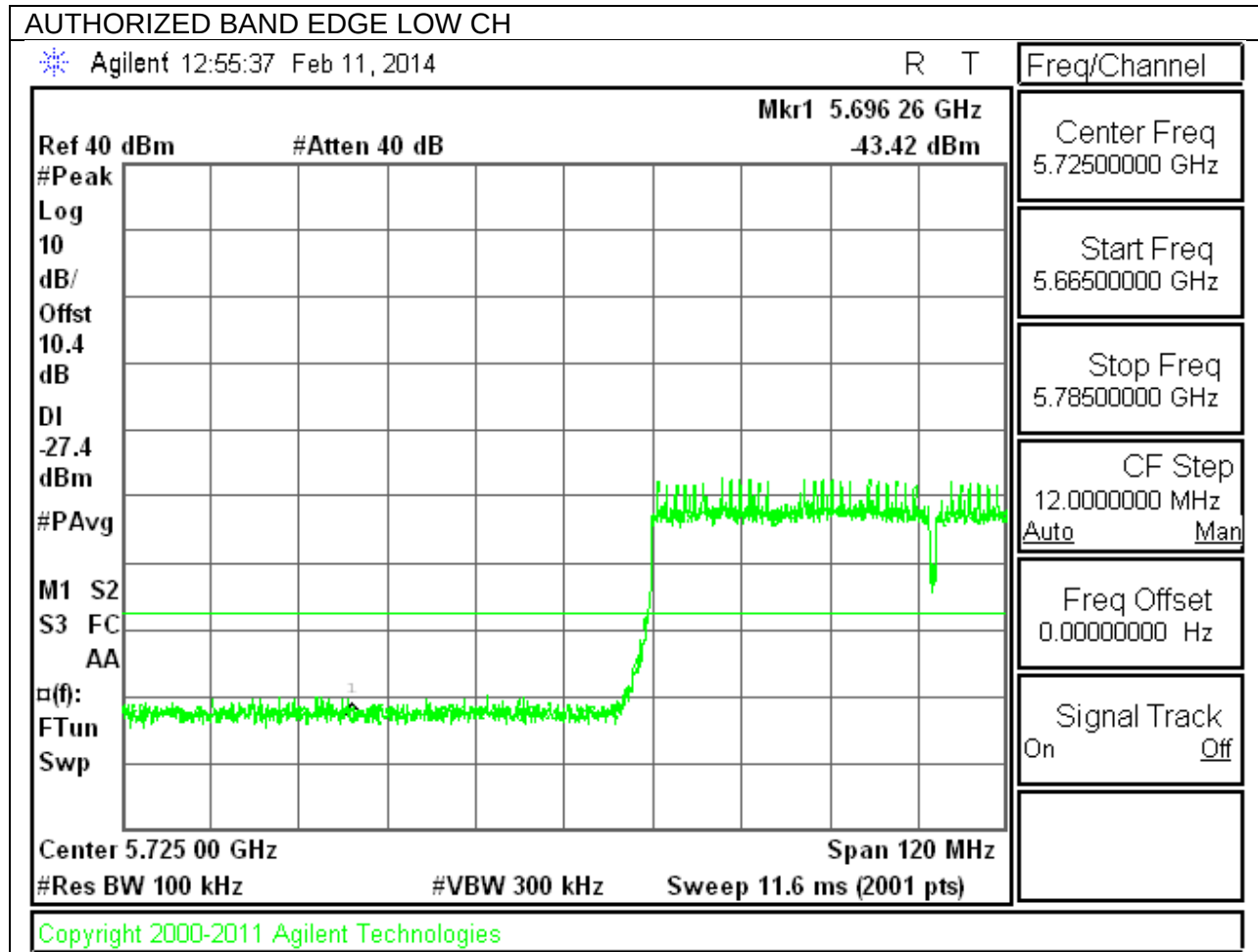


10.5.14. 802.11ac HT80 MODE IN THE 5.8 GHz BAND CHAIN 1

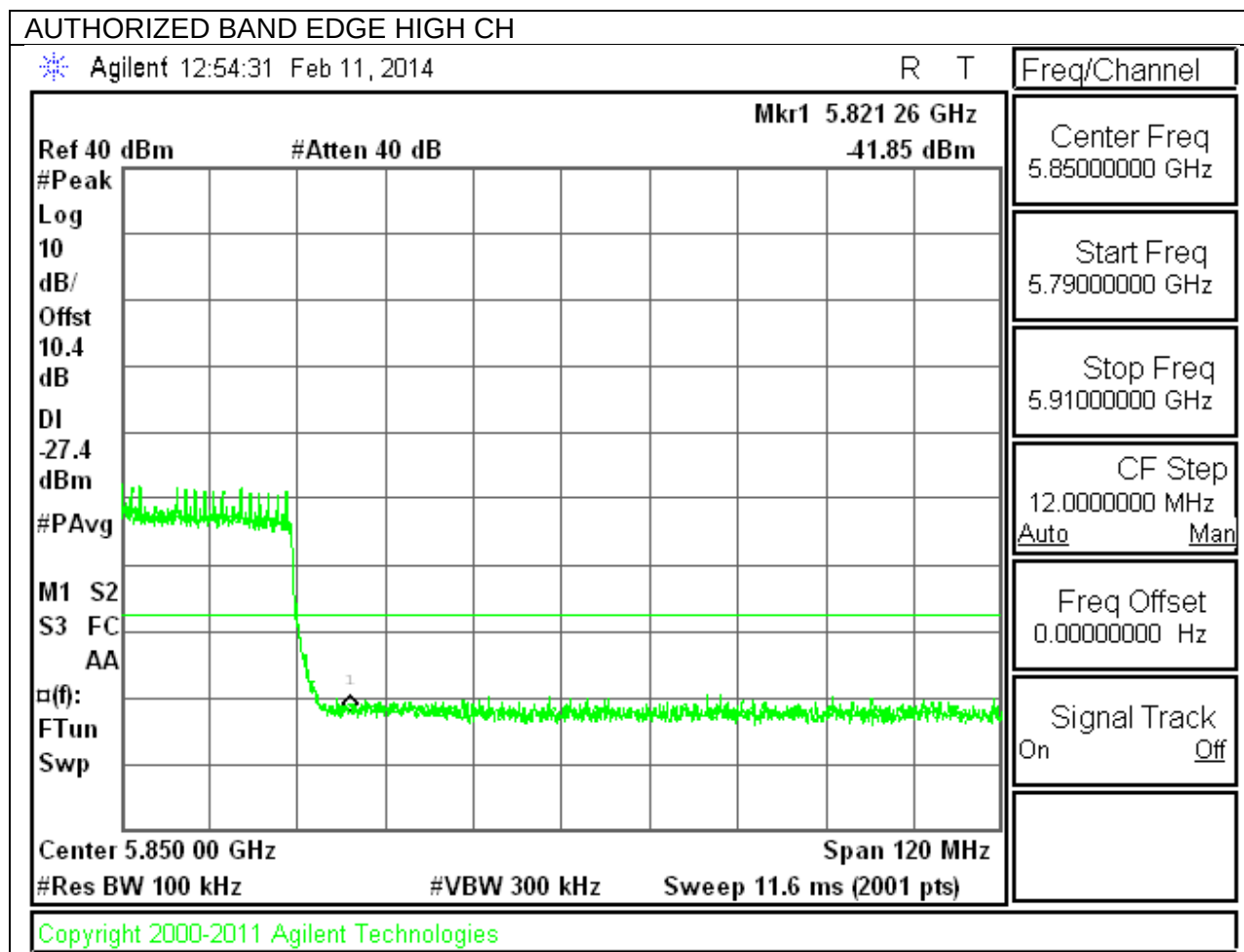
IN-BAND REFERENCE LEVEL



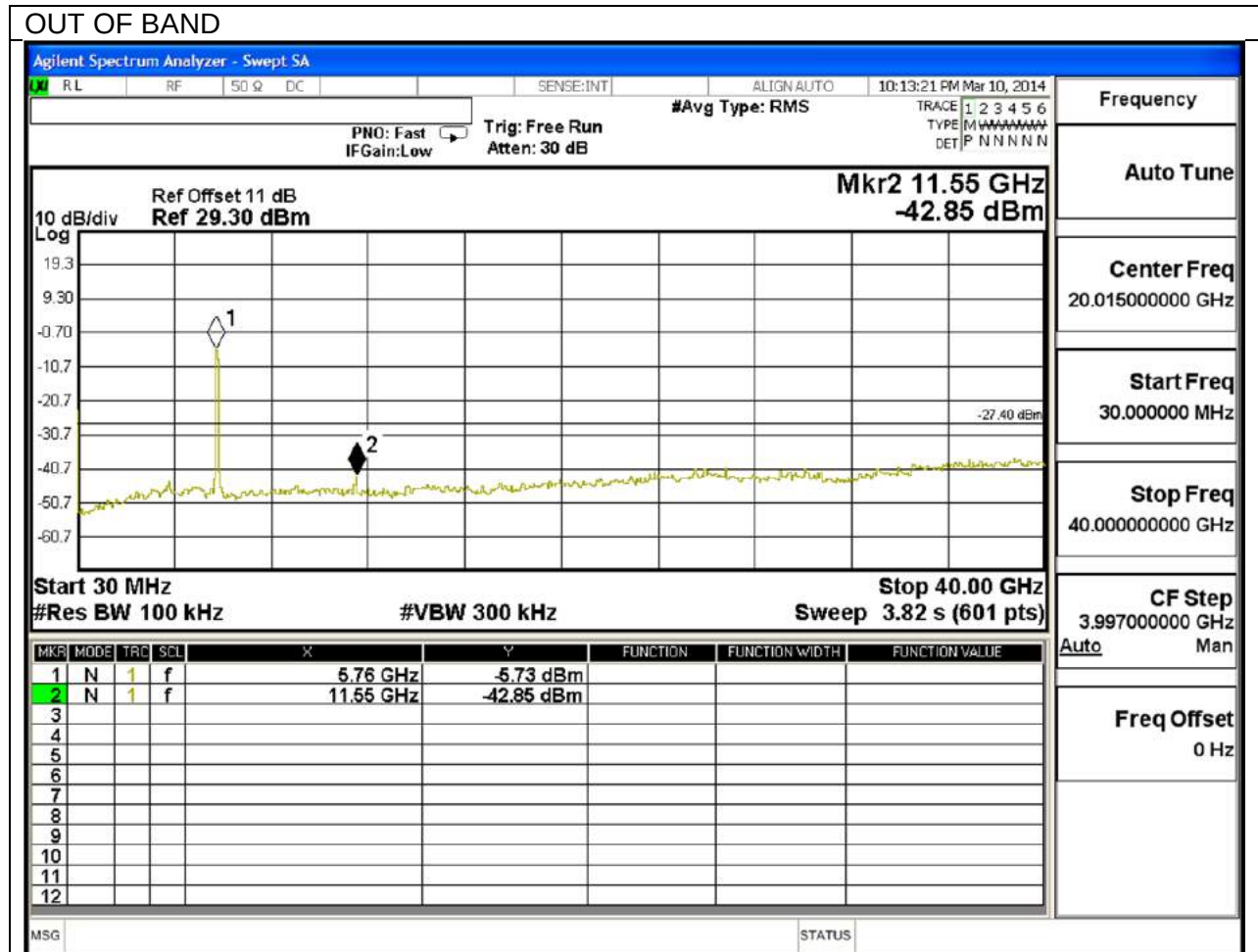
LOW CHANNEL BANDEDGE



HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS



11. RADIATED TEST RESULTS

11.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 Clause 2.6 (Transmitter)

IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

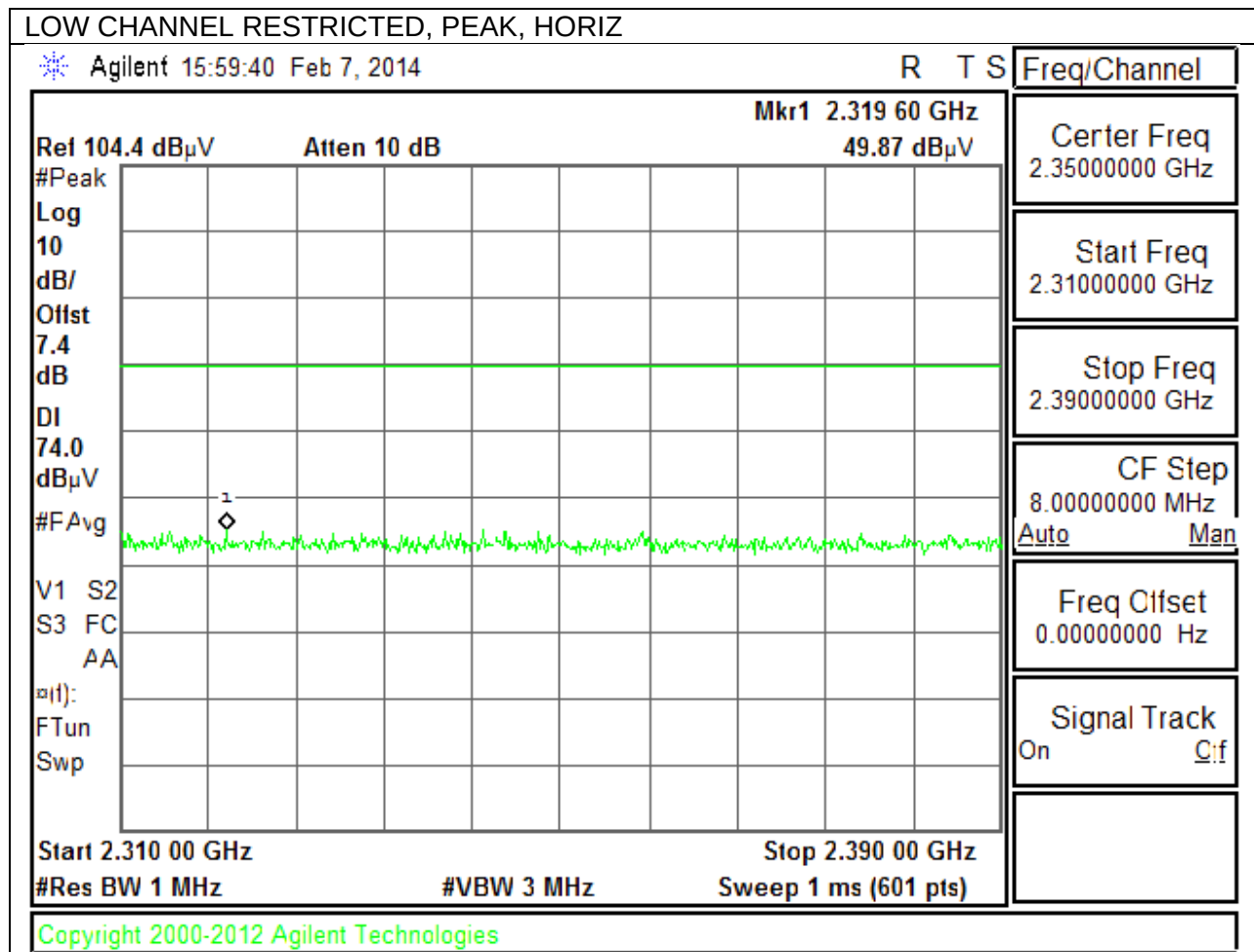
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor= $10\log(1/x)$

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

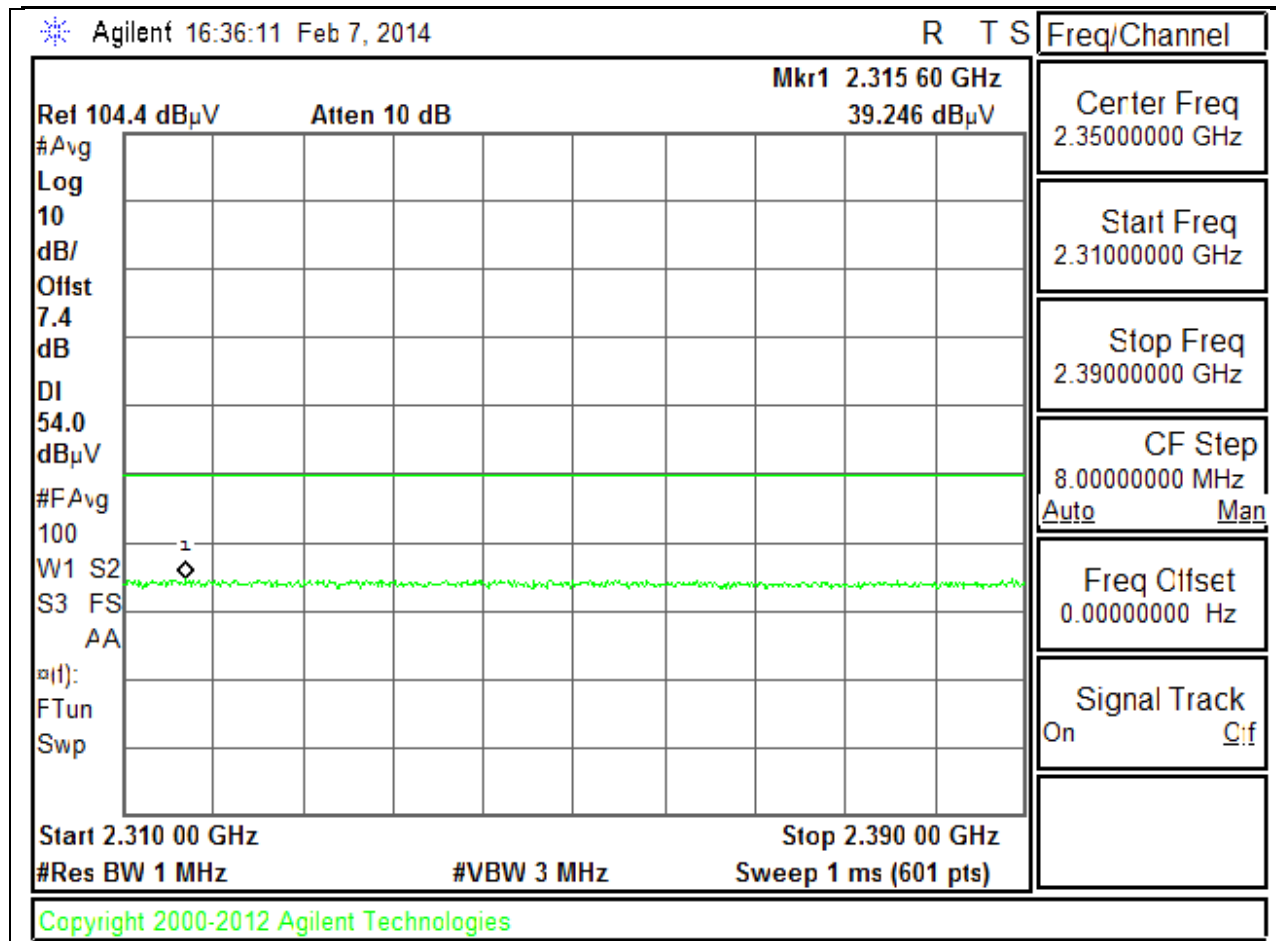
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

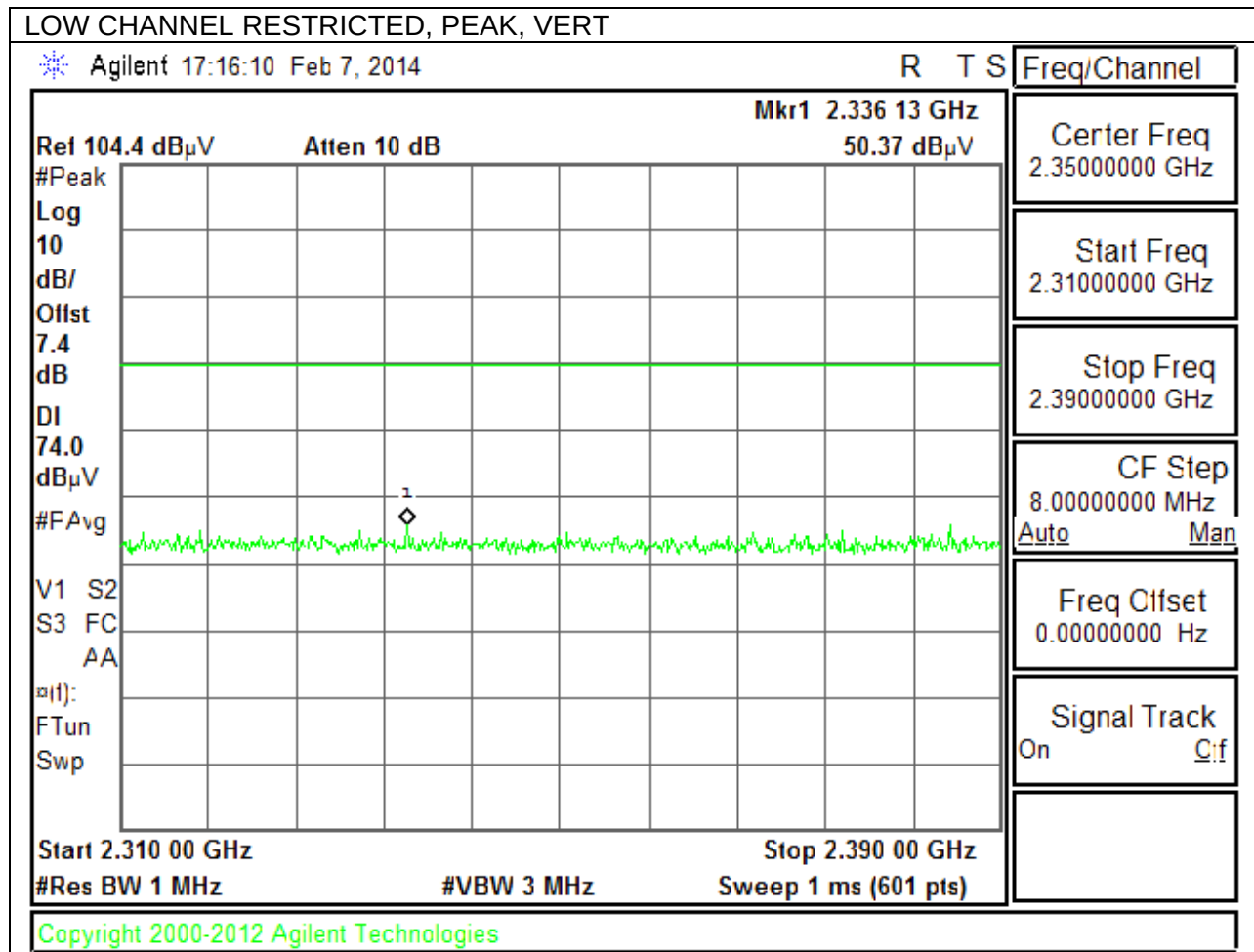
11.2. TRANSMITTER ABOVE 1 GHz

11.2.1. TX ABOVE 1 GHz 802.11b CDD MODE IN THE 2.4 GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

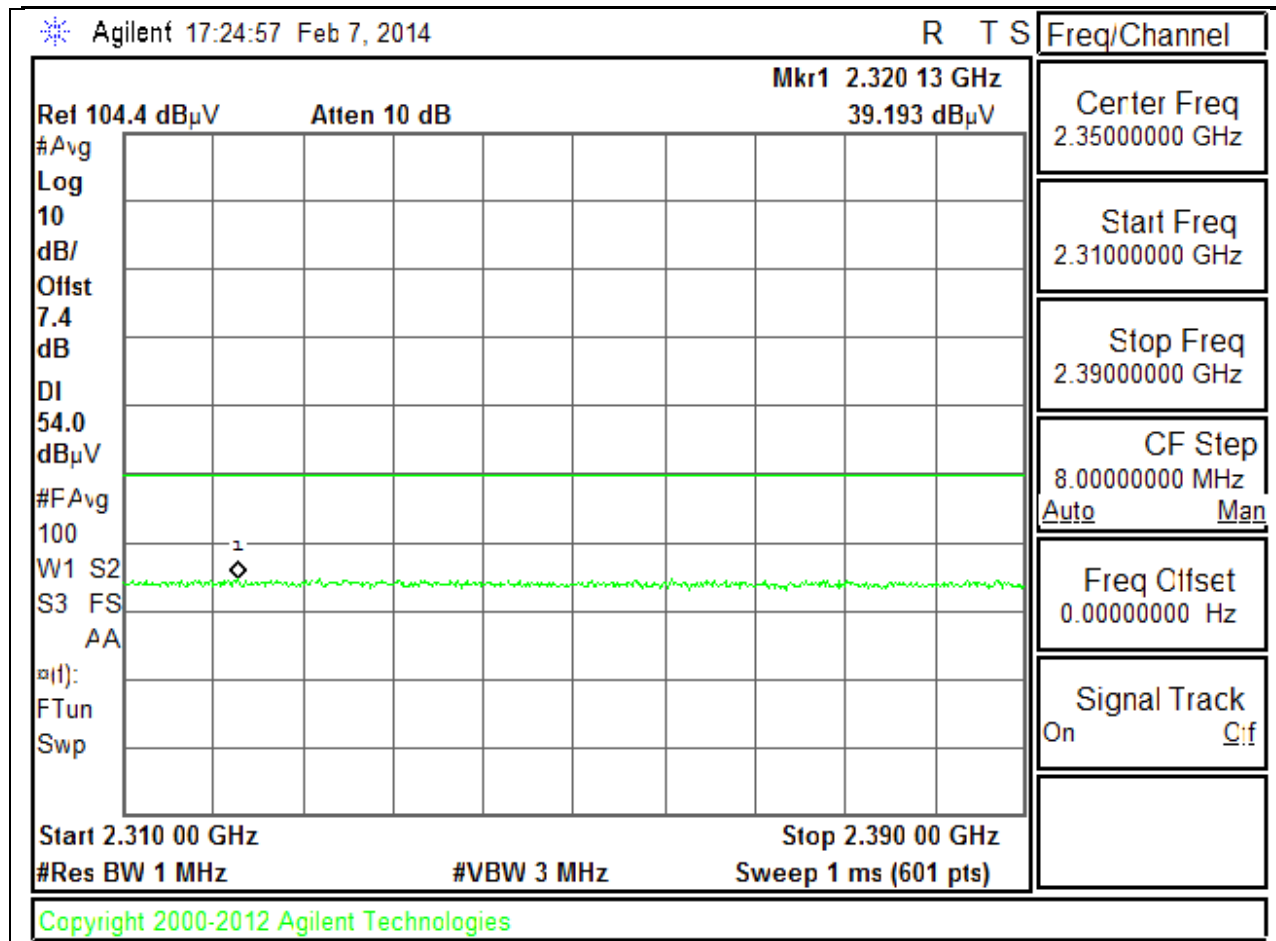


LOW CHANNEL RESTRICTED, AVERAGE, HORIZ

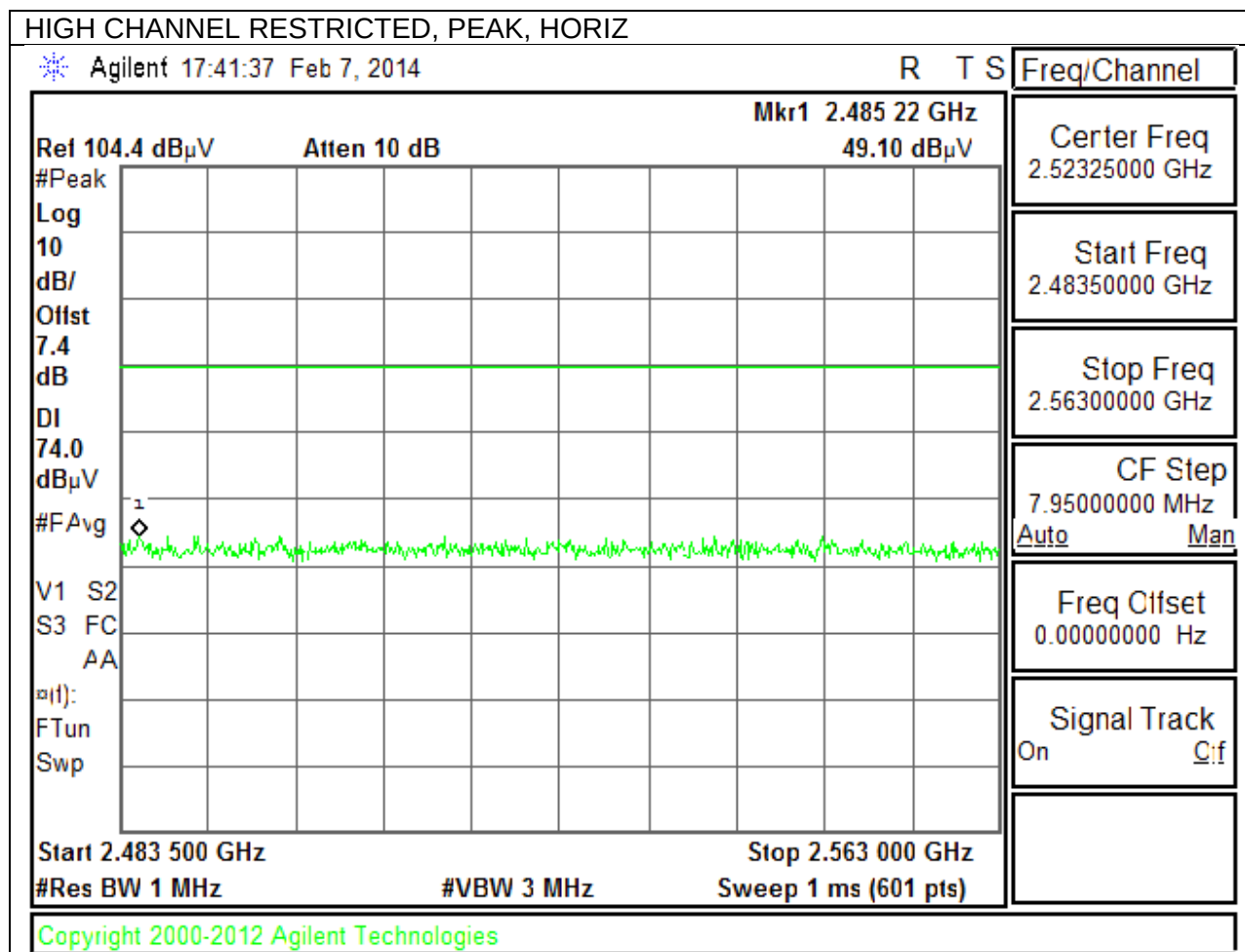




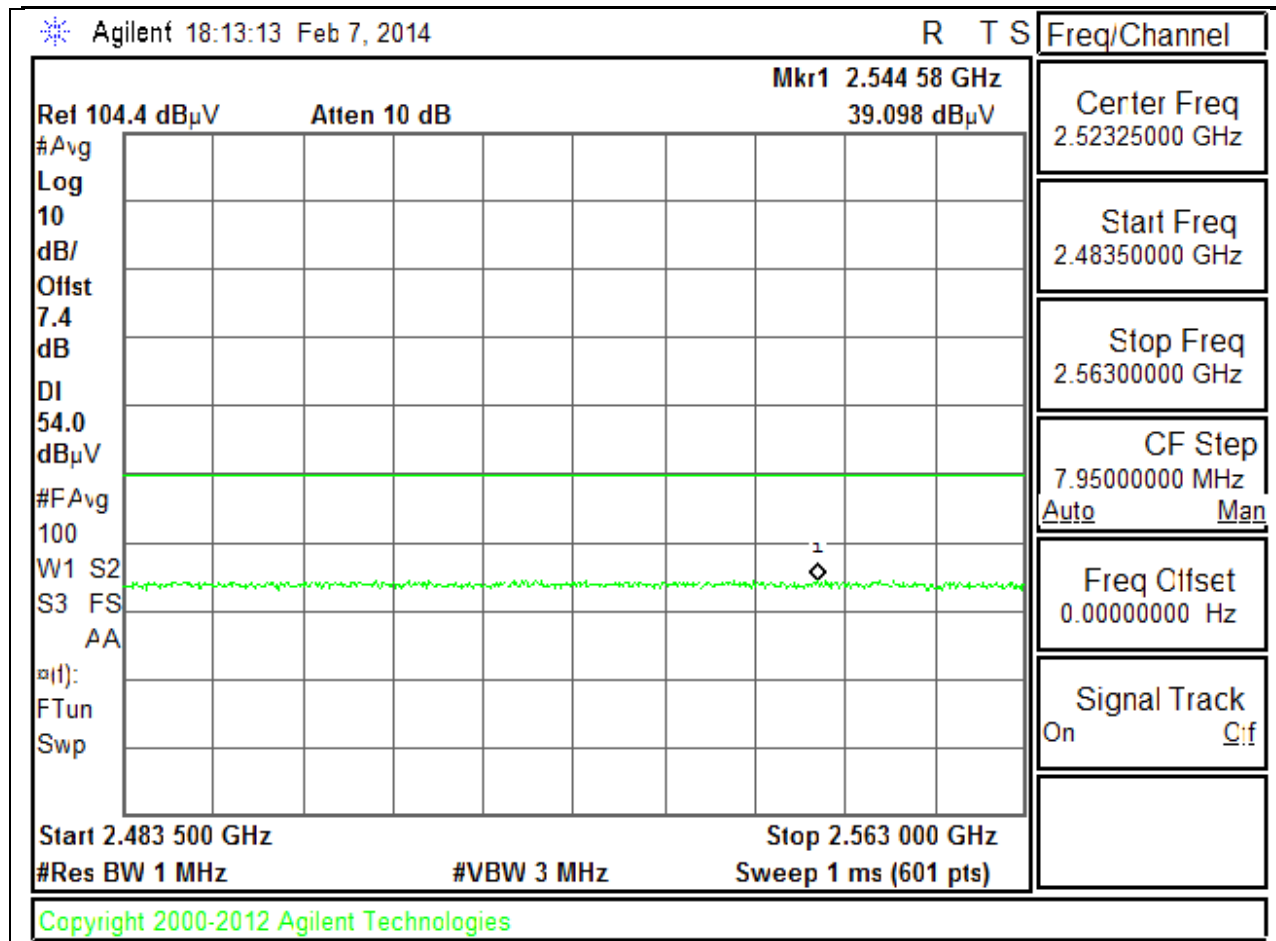
LOW CHANNEL RESTRICTED, AVERAGE, VERT

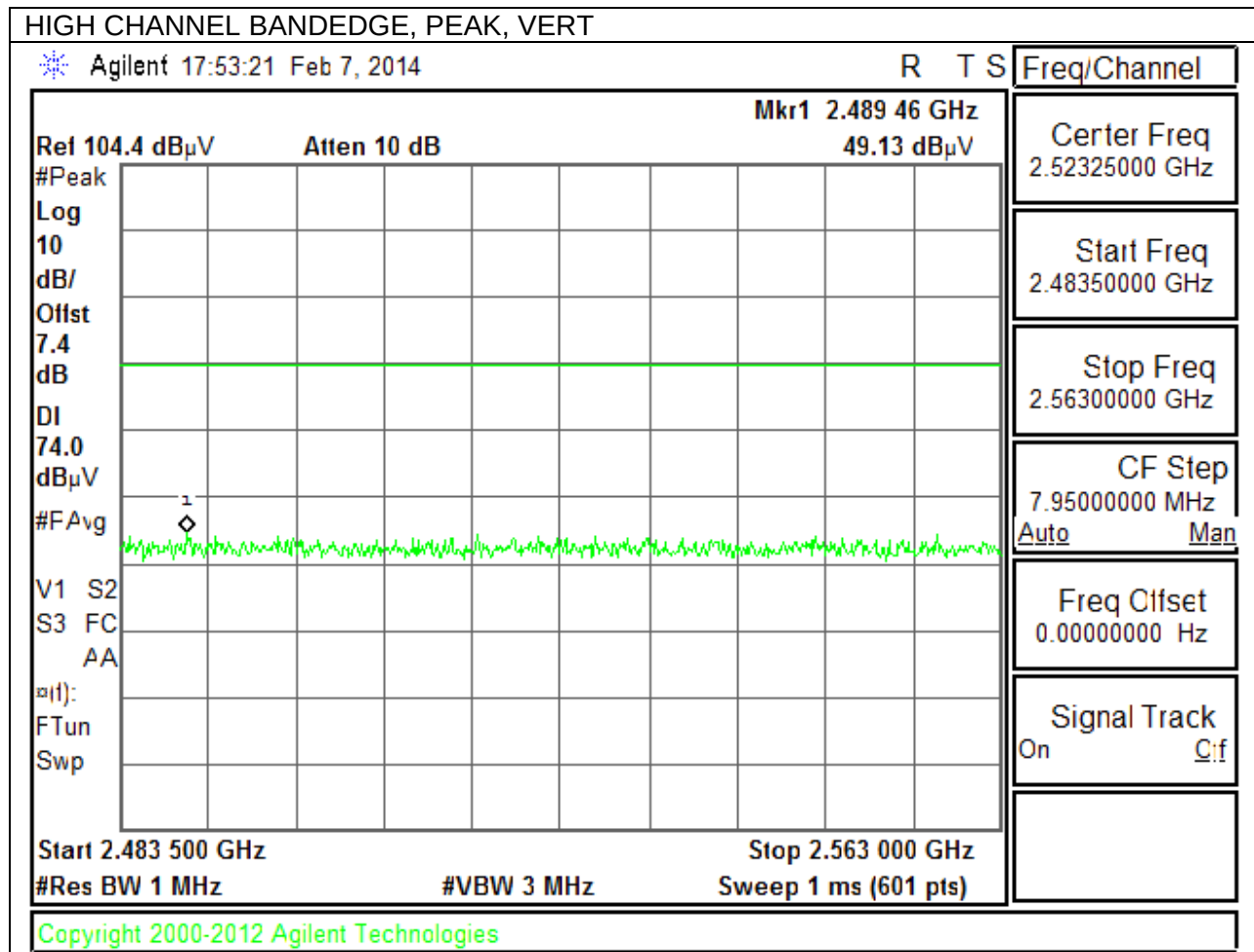


AUTHORIZED BANDEDGE (HIGH CHANNEL)

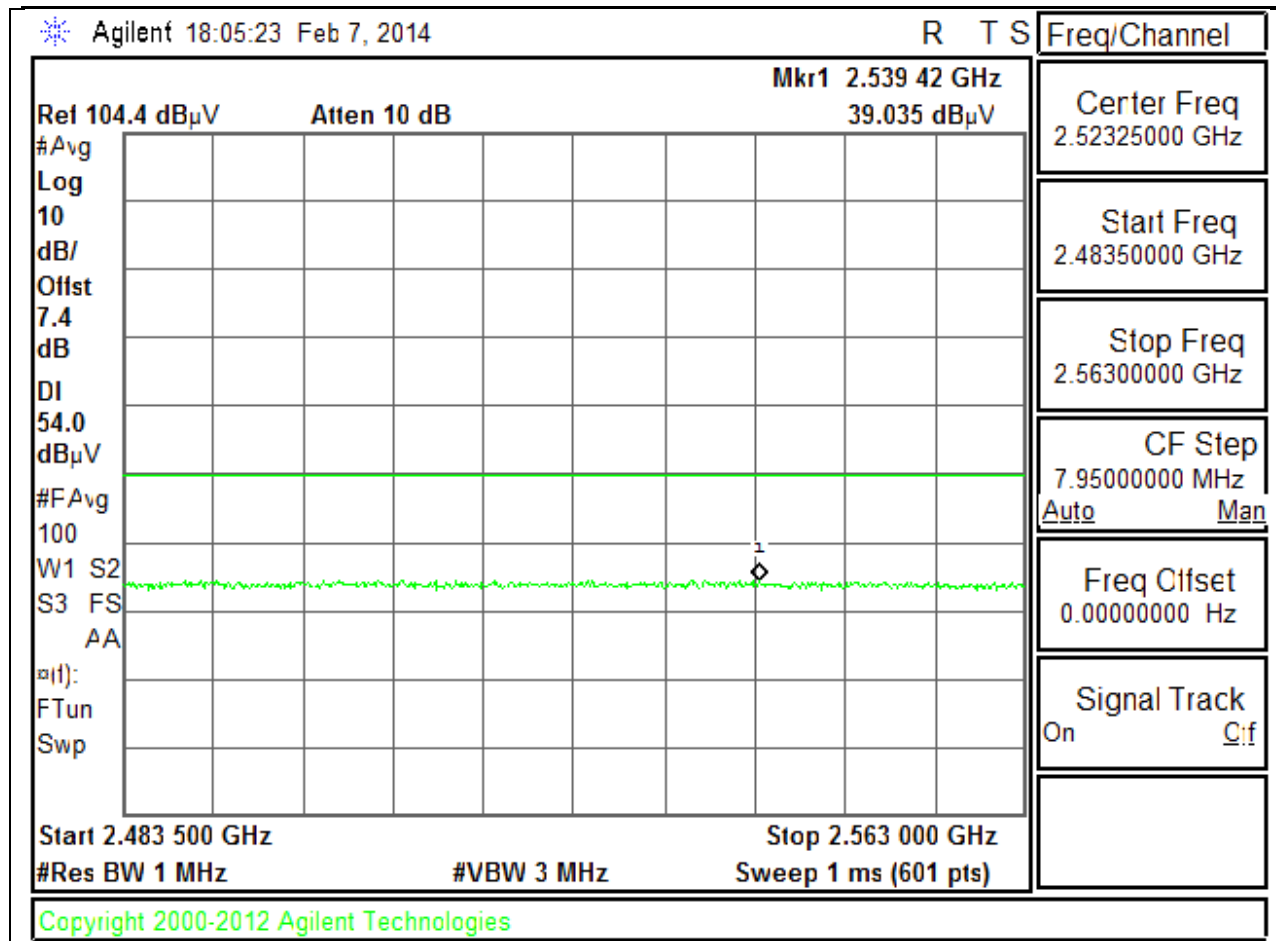


HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



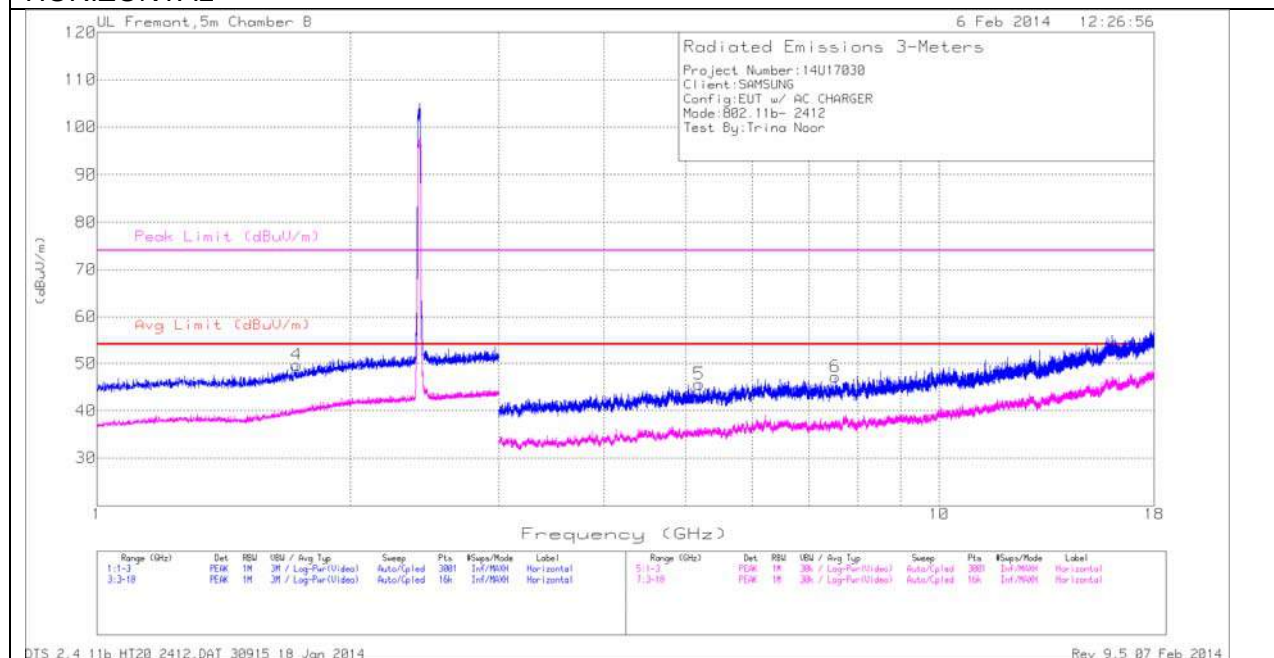


HIGH CHANNEL BANDEDGE, AVERAGE, VERT



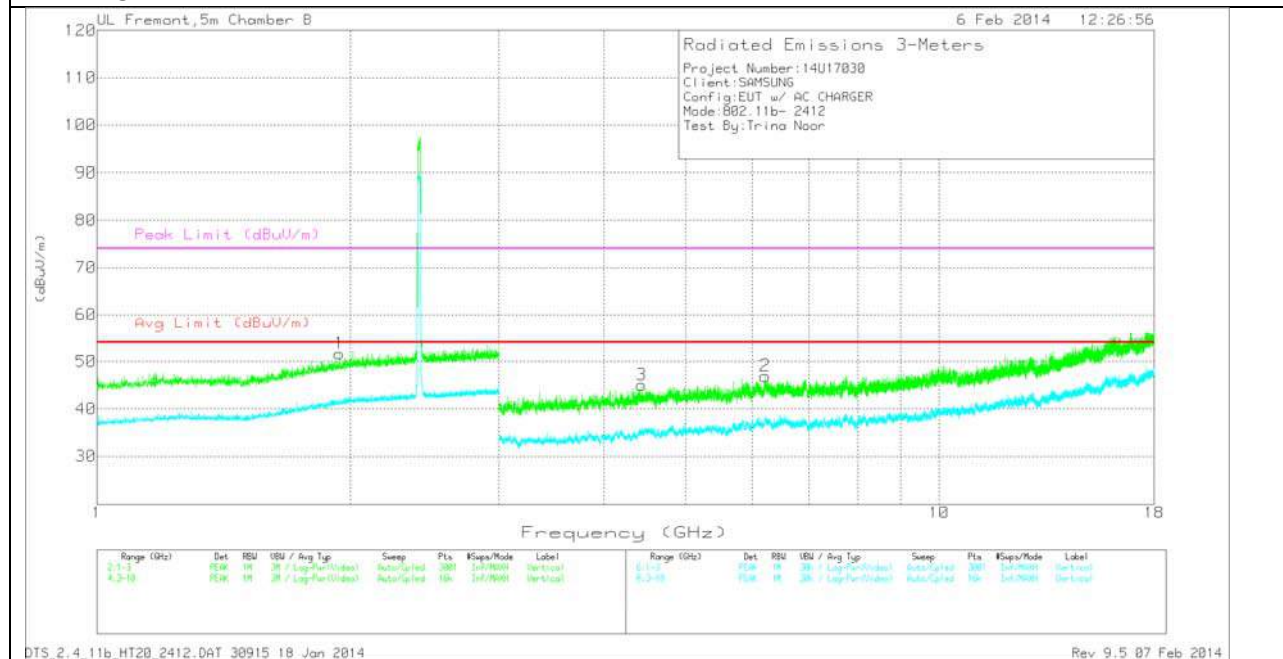
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL
VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

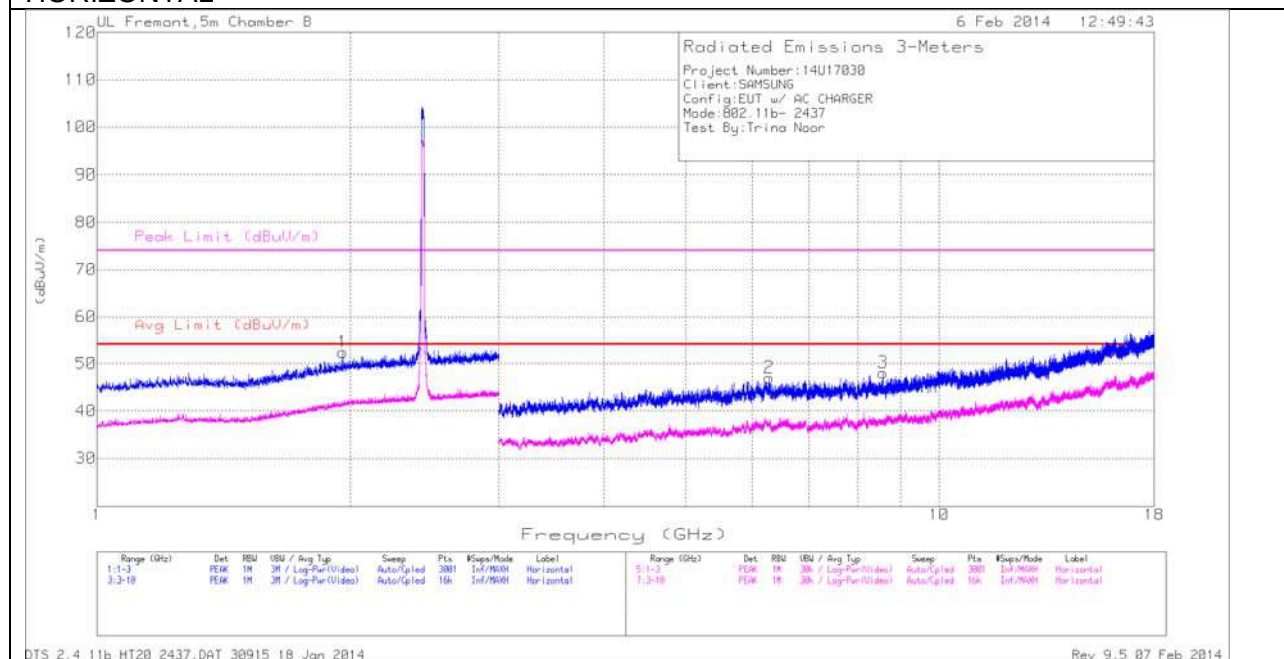
LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 7.525	38.25	PK	36	-27.1	47.15	-	-	74	-26.85	0-360	99	H
4	1.727	43.48	PK	29.9	-23.7	49.68	-	-	74	-24.32	0-360	202	H
1	1.941	43.84	PK	31.4	-23.6	51.64	-	-	74	-22.36	0-360	99	V
3	4.434	39.72	PK	34.4	-29.1	45.02	-	-	74	-28.98	0-360	99	V
5	5.189	41.09	PK	34.8	-30.3	45.59	-	-	74	-28.41	0-360	202	H
2	6.215	38.7	PK	36	-27.8	46.9	-	-	74	-27.1	0-360	202	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

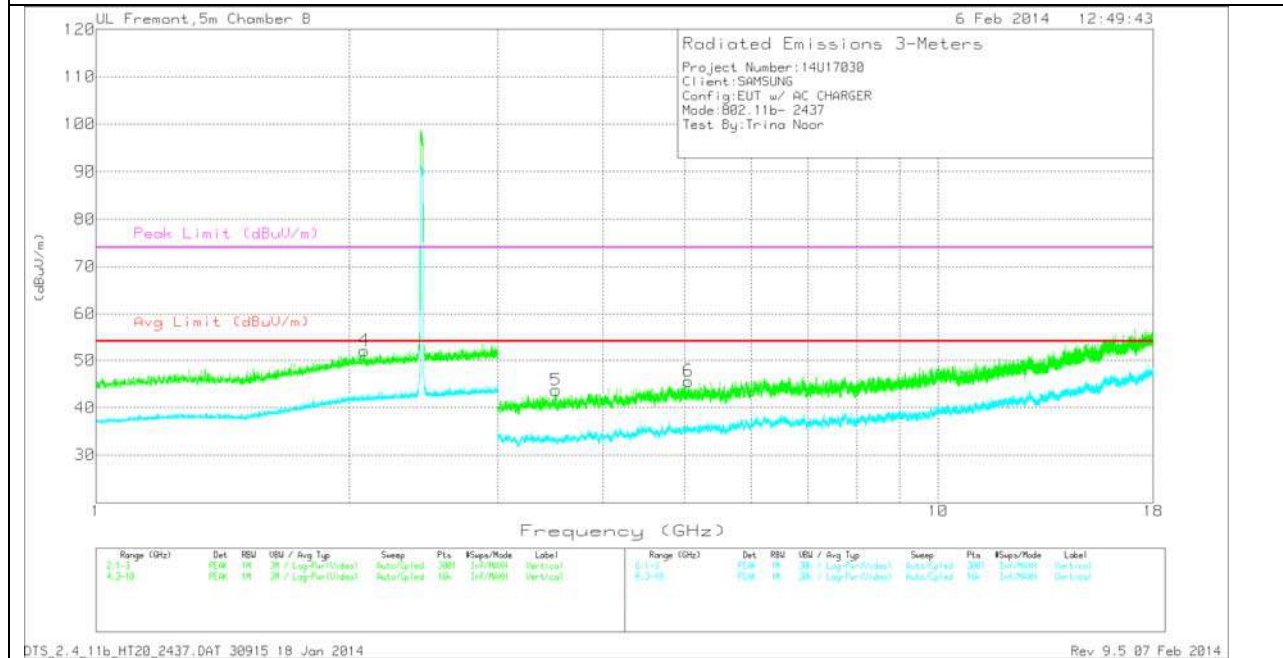
PK - Peak detector

MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL
VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

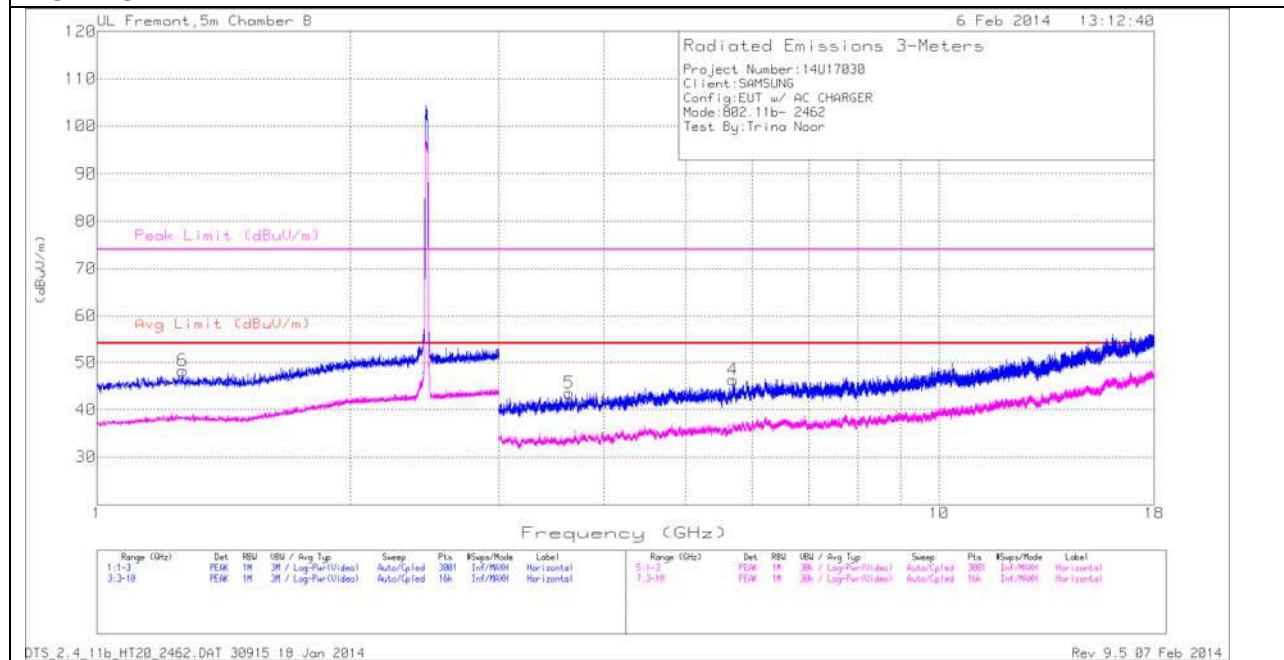
MID CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 3.517	41.8	PK	33.2	-31.3	43.7	-	-	74	-30.3	0-360	99	V
6	* 5.051	39.67	PK	34.7	-28.8	45.57	-	-	74	-28.43	0-360	202	V
1	1.958	44.46	PK	31.5	-23.6	52.36	-	-	74	-21.64	0-360	201	H
4	2.082	43.53	PK	31.9	-23.4	52.03	-	-	74	-21.97	0-360	99	V
2	6.281	39.08	PK	36	-28.1	46.98	-	-	74	-27.02	0-360	202	H
3	8.575	38.04	PK	36.3	-26.3	48.04	-	-	74	-25.96	0-360	99	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

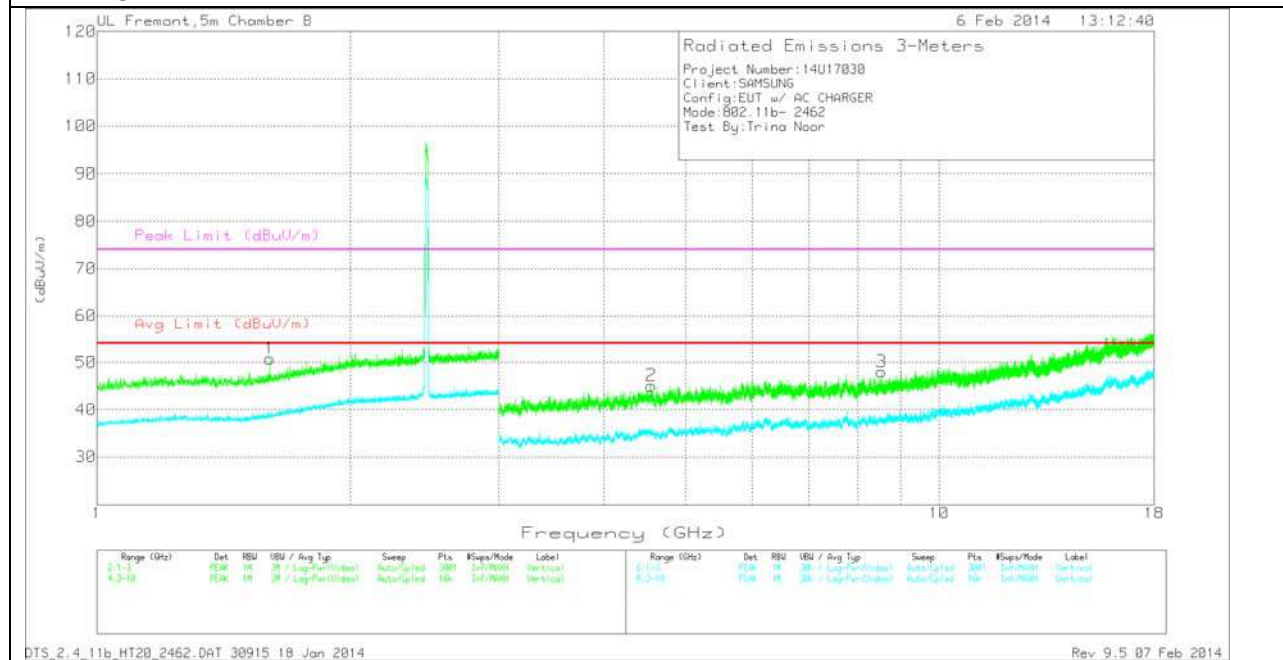
PK - Peak detector

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL
VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

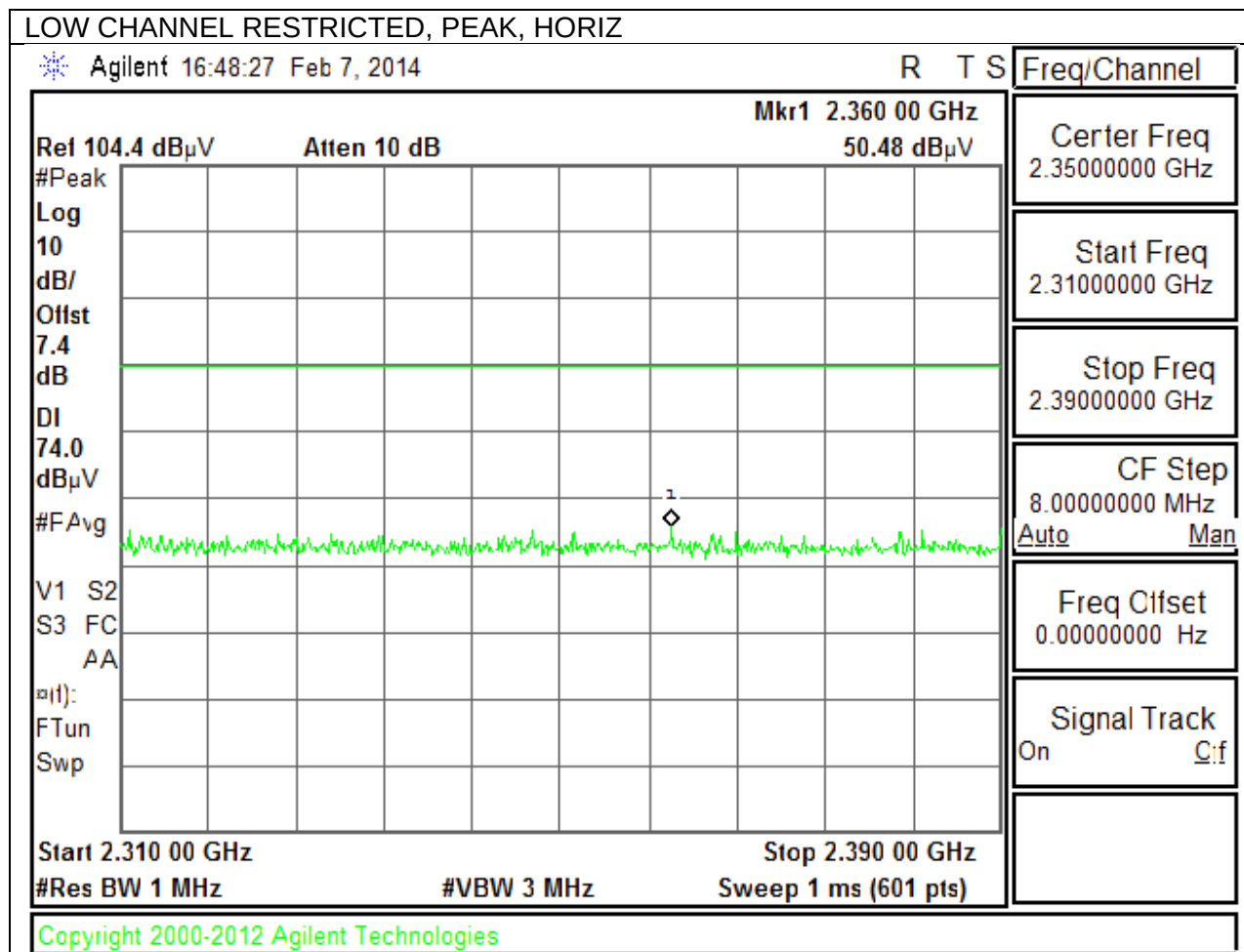
HIGH CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 1.264	44.24	PK	28.6	-24.6	48.24	-	-	74	-25.76	0-360	202	H
1	* 1.605	45.66	PK	29	-23.9	50.76	-	-	74	-23.24	0-360	99	V
5	* 3.638	41.1	PK	33.5	-31.1	43.5	-	-	74	-30.5	0-360	99	H
2	* 4.551	41.06	PK	34.5	-30.5	45.06	-	-	74	-28.94	0-360	99	V
4	5.69	40.07	PK	35.1	-28.9	46.27	-	-	74	-27.73	0-360	99	H
3	8.542	38.39	PK	36.2	-26.6	47.99	-	-	74	-26.01	0-360	202	V

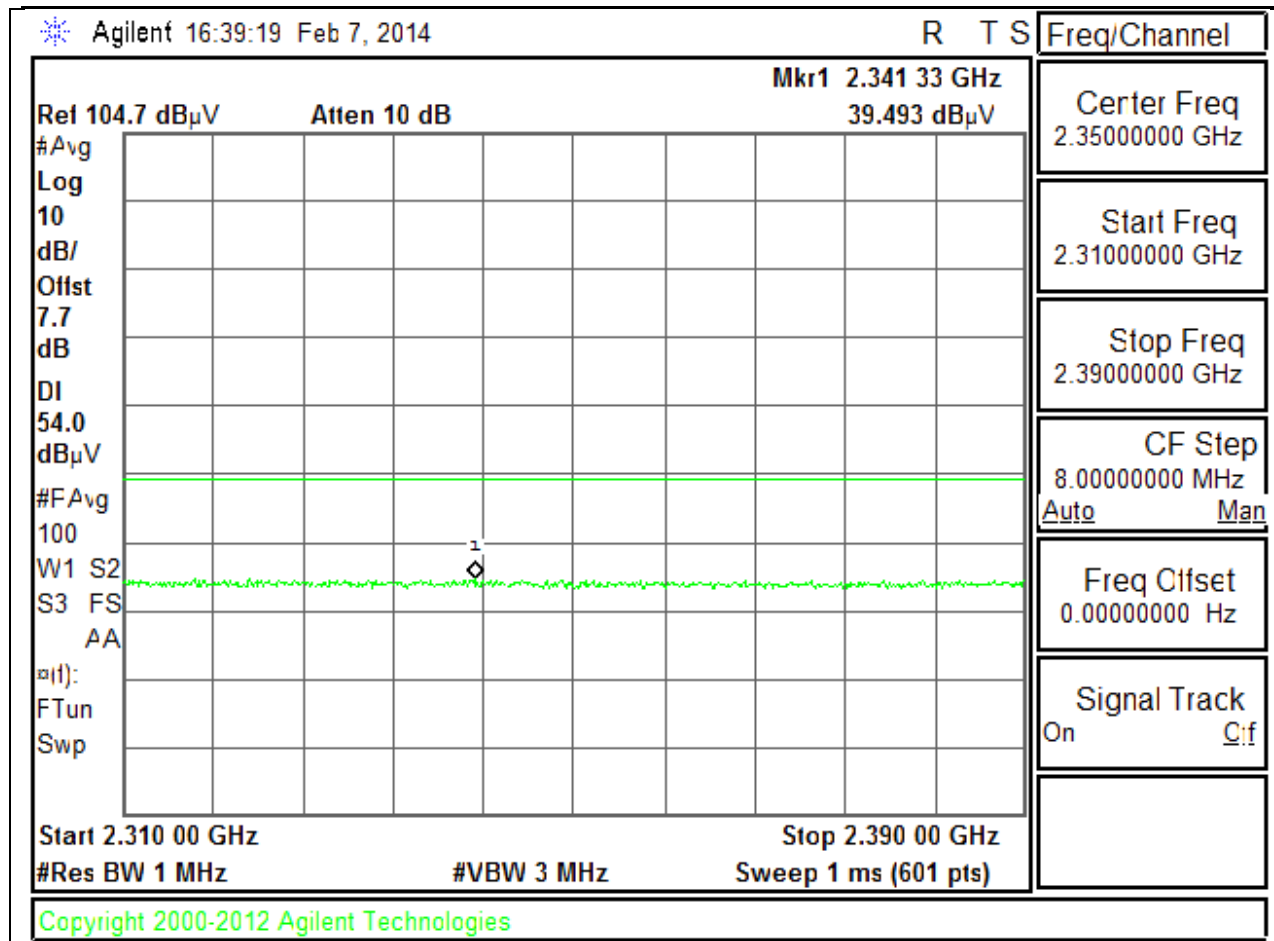
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

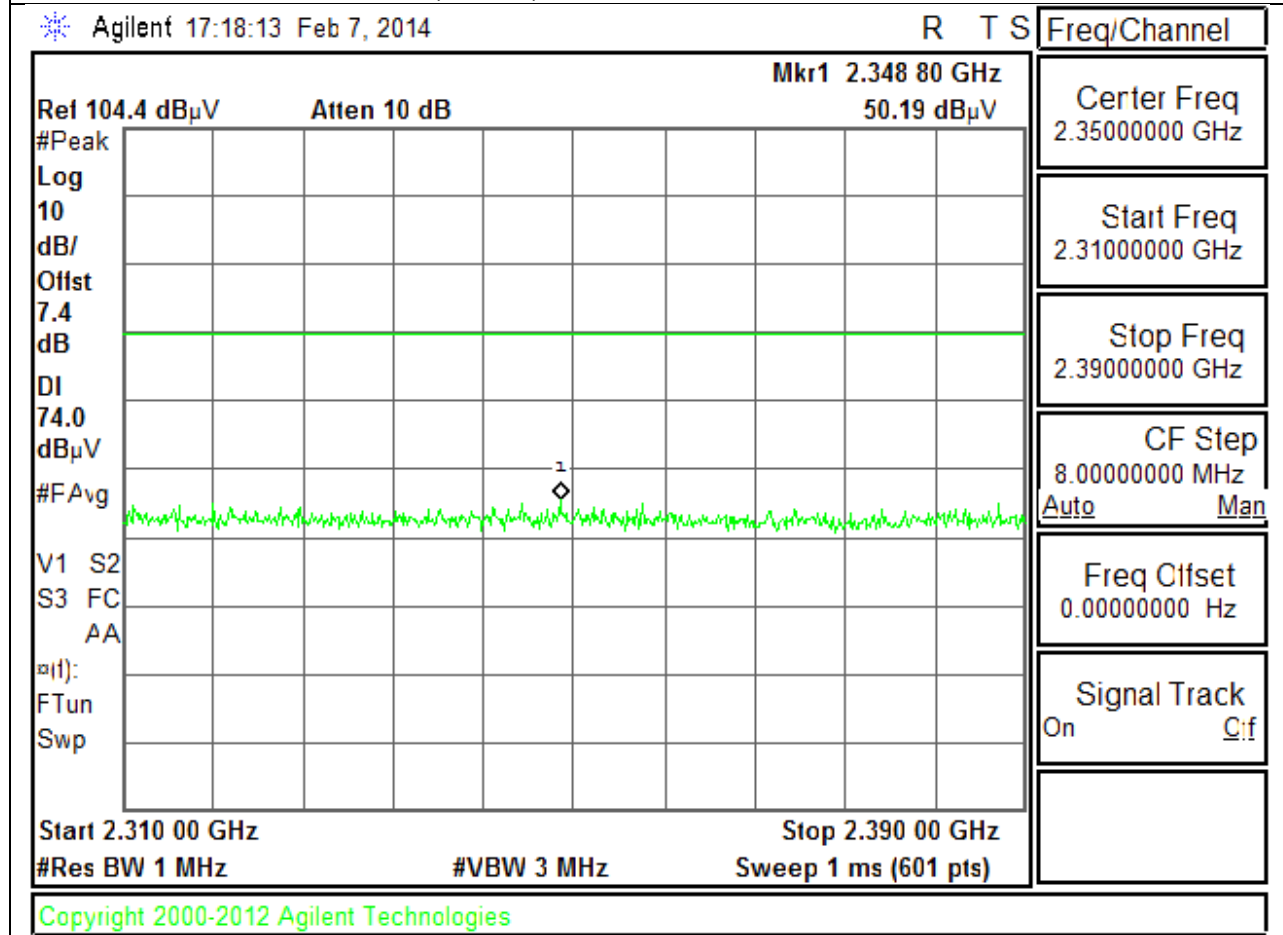
**11.2.2. TX ABOVE 1 GHz 802.11g CDD MODE IN THE 2.4 GHz BAND
RESTRICTED BANDEDGE (LOW CHANNEL)**



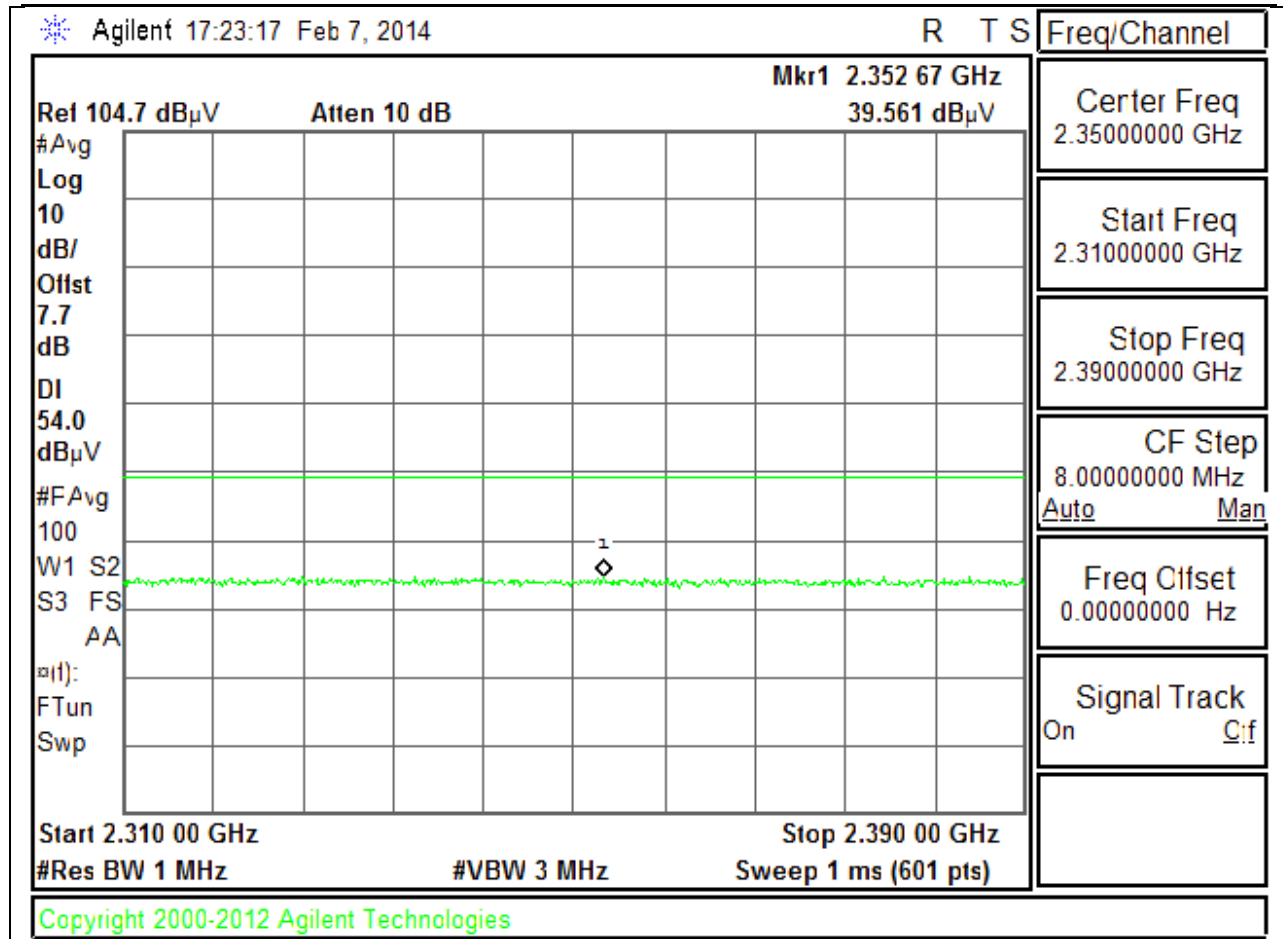
LOW CHANNEL RESTRICTED, AVERAGE, HORIZ



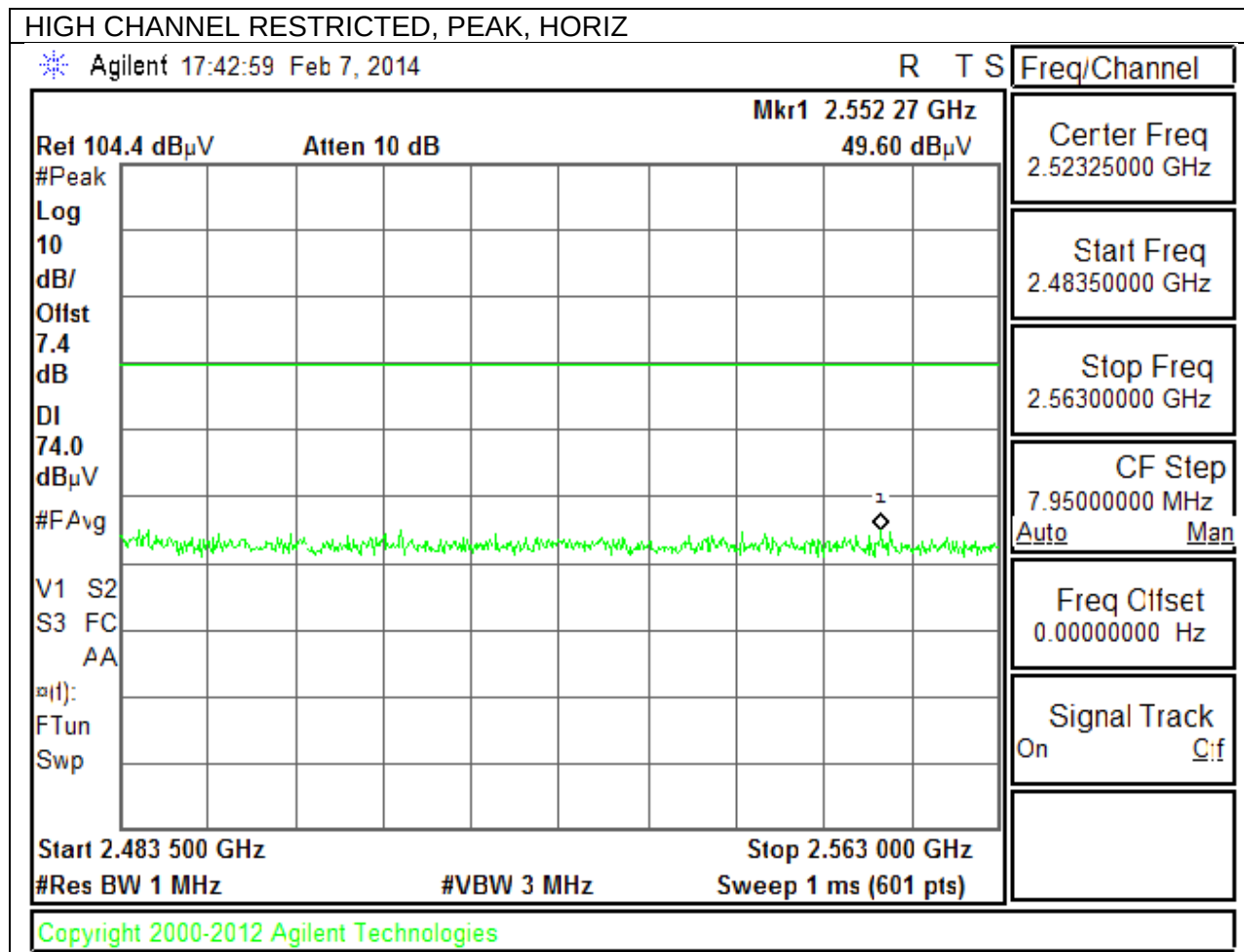
LOW CHANNEL RESTRICTED, PEAK, VERT



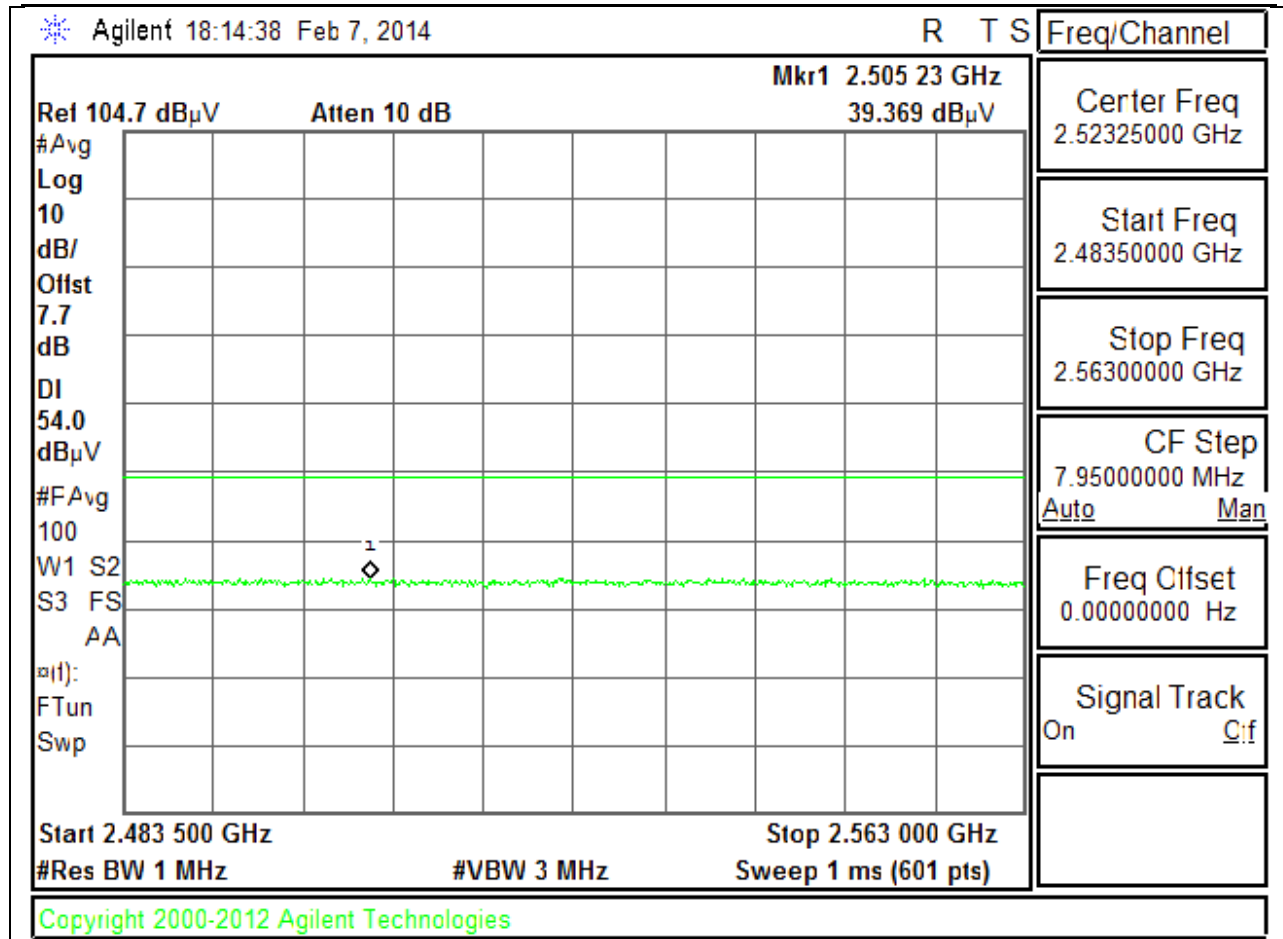
LOW CHANNEL RESTRICTED, AVERAGE, VERT

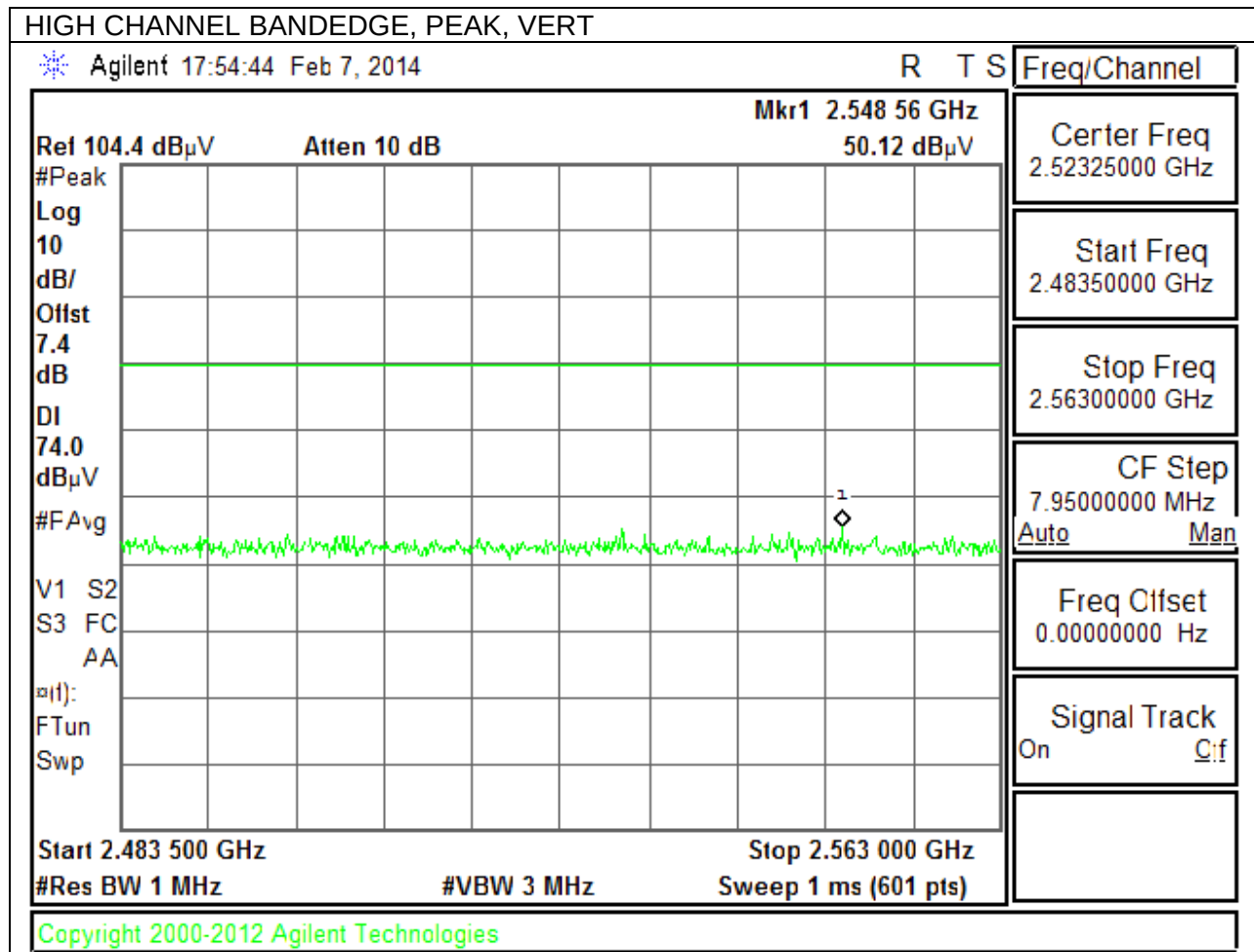


AUTHORIZED BANDEDGE (HIGH CHANNEL)

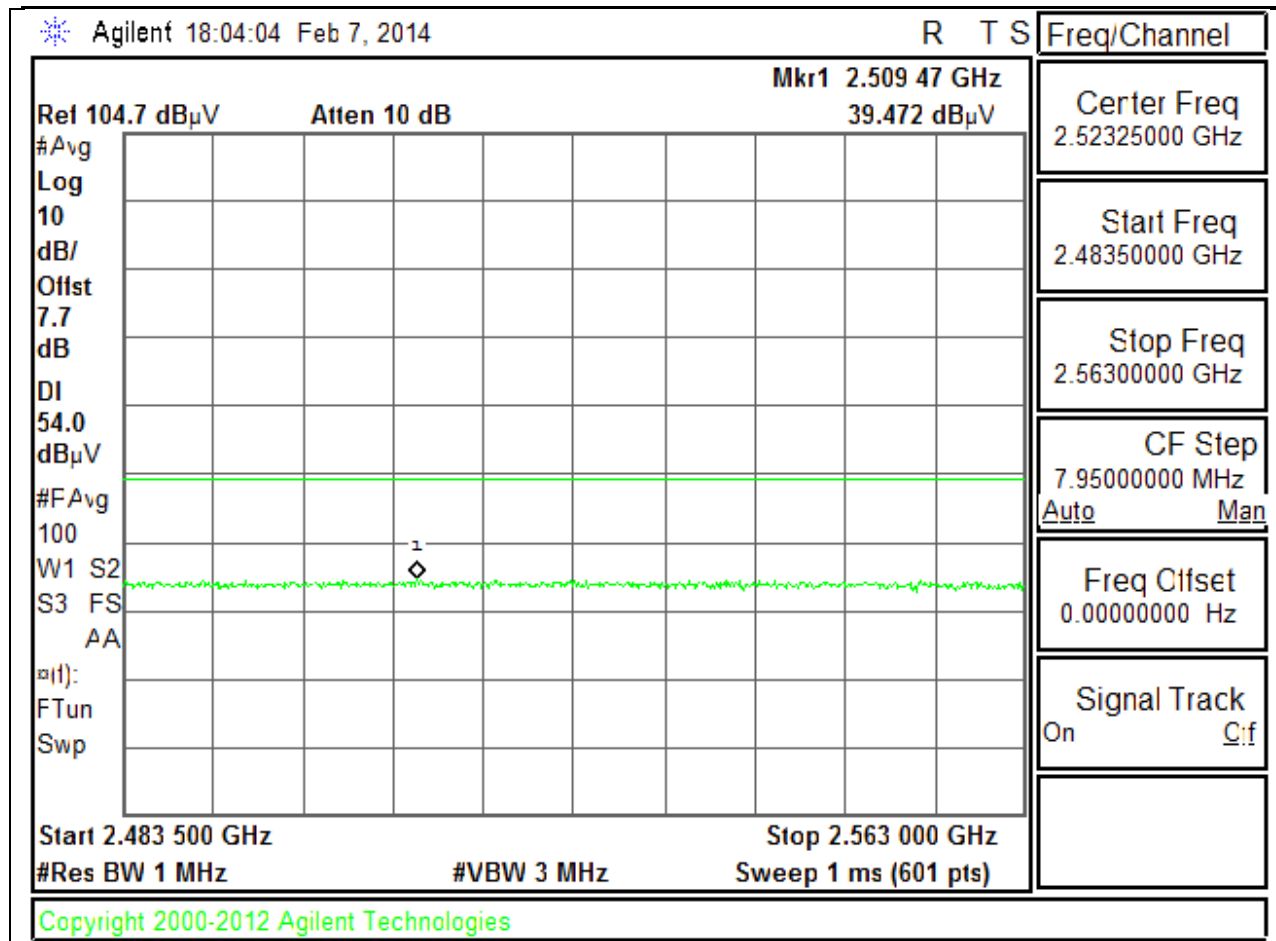


HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



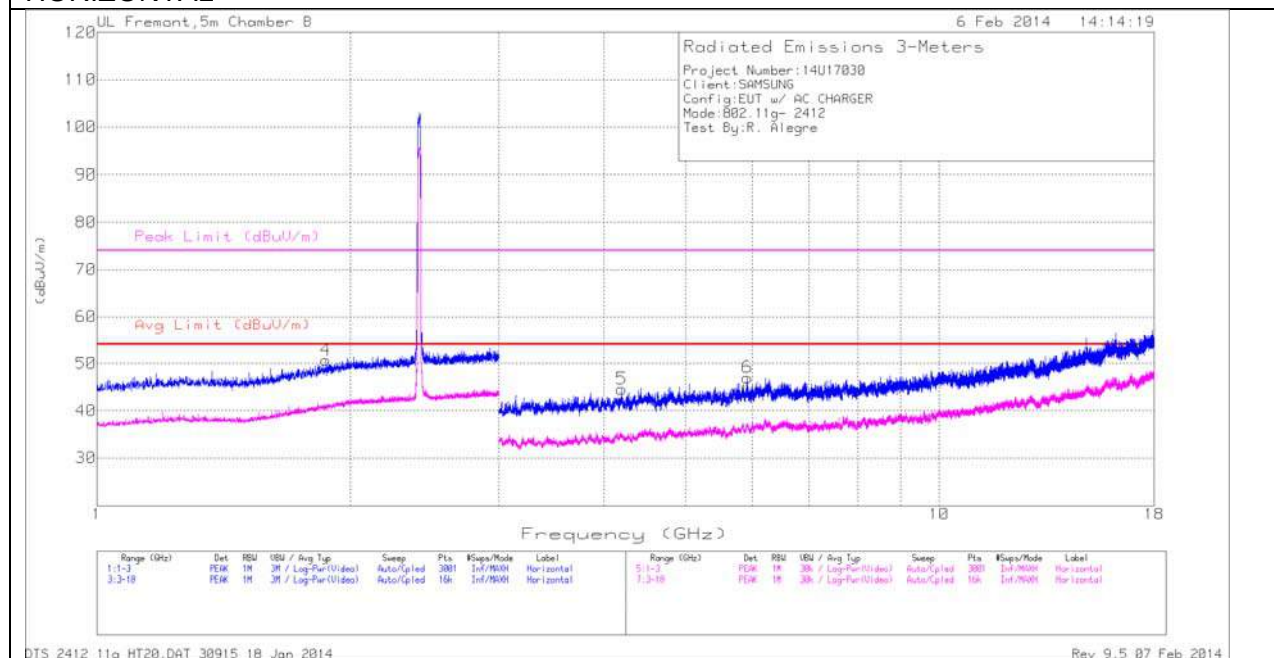


HIGH CHANNEL BANDEDGE, AVERAGE, VERT



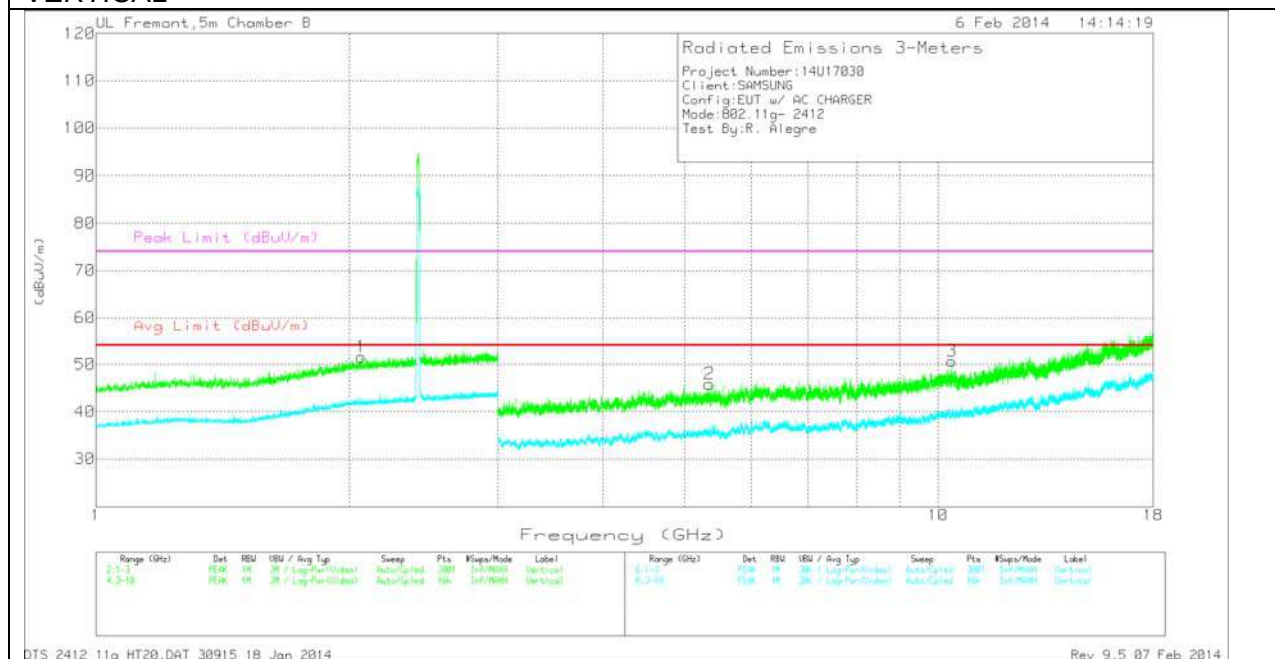
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL
VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

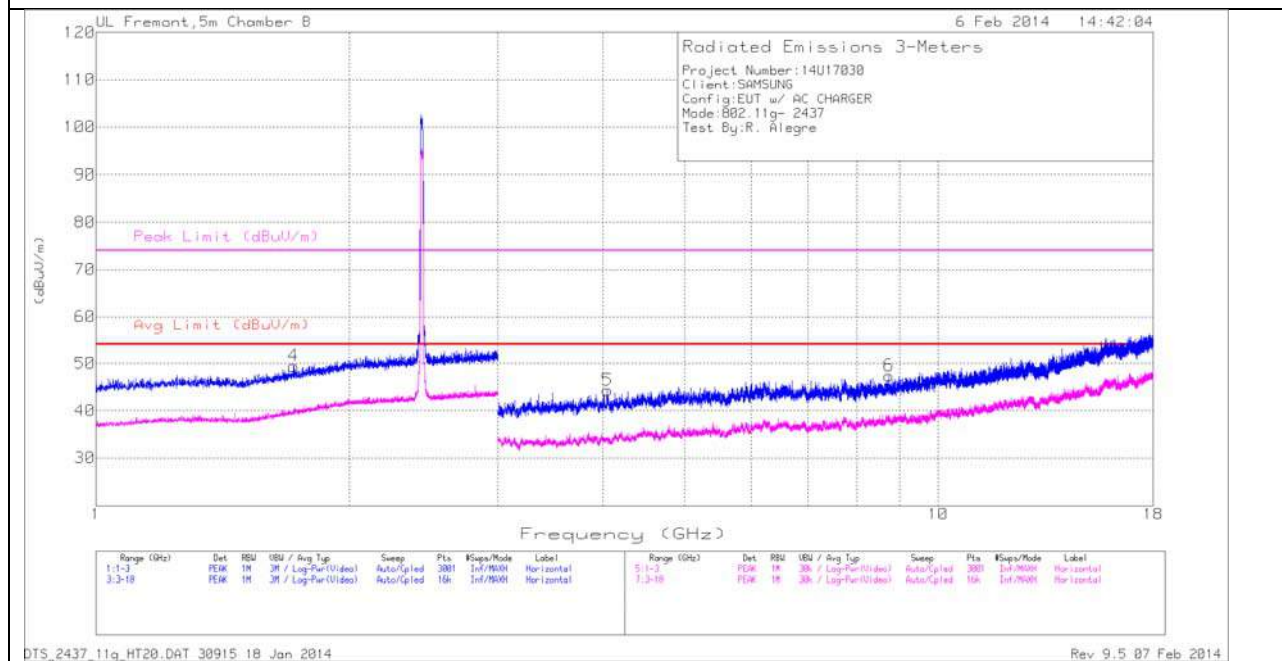
LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 4.198	40.36	PK	34.1	-29.9	44.56	-	-	74	-29.44	0-360	99	H
2	* 5.352	39.73	PK	34.9	-28.8	45.83	-	-	74	-28.17	0-360	99	V
4	1.869	43.48	PK	30.9	-23.7	50.68	-	-	74	-23.32	0-360	202	H
1	2.067	43.13	PK	31.9	-23.5	51.53	-	-	74	-22.47	0-360	99	V
6	5.92	39.7	PK	35.7	-28.4	47	-	-	74	-27	0-360	202	H
3	10.383	35.86	PK	38.1	-23.3	50.66	-	-	74	-23.34	0-360	202	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

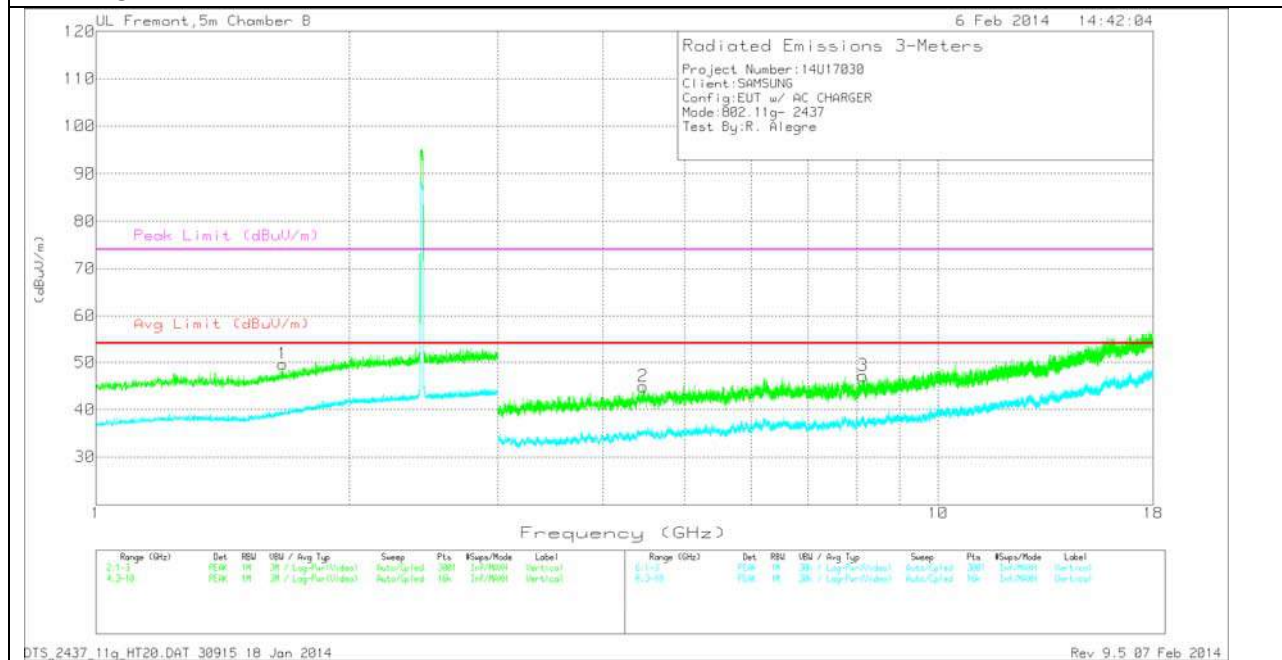
PK - Peak detector

MID CHANNEL
HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL
VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

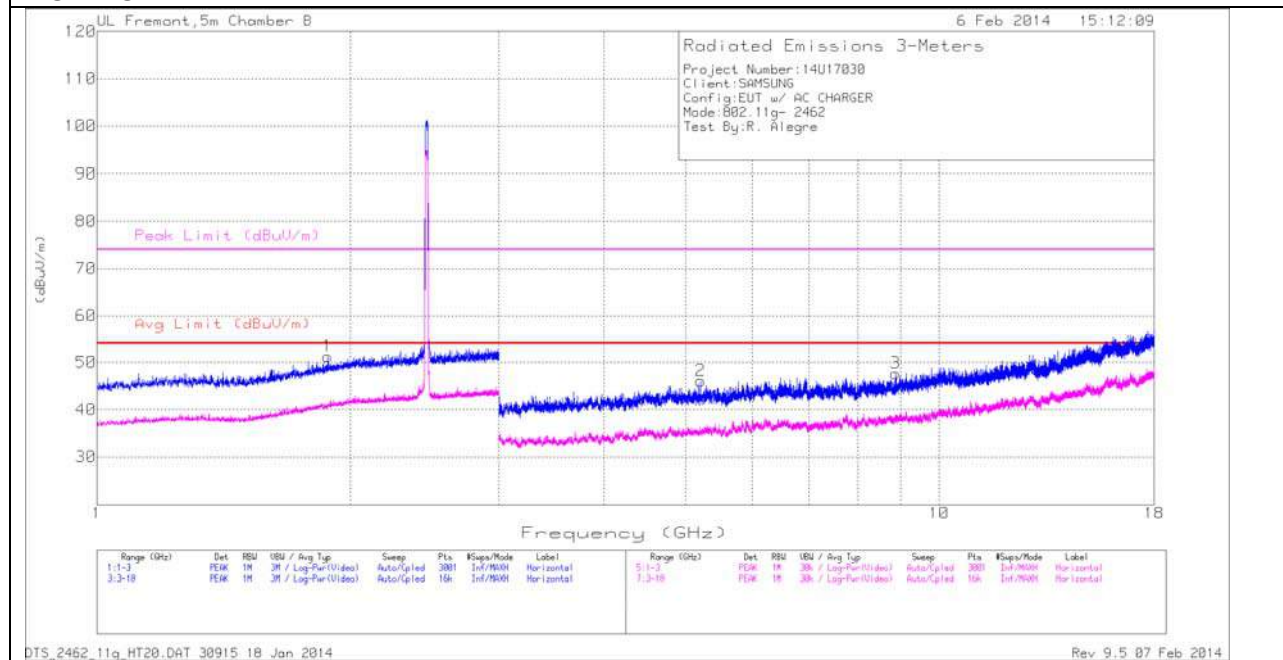
MID CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.667	43.96	PK	29.5	-23.8	49.66	-	-	74	-24.34	0-360	99	V
5	* 4.049	41.21	PK	33.9	-30.8	44.31	-	-	74	-29.69	0-360	99	H
3	* 8.142	37.56	PK	36.1	-26.5	47.16	-	-	74	-26.84	0-360	202	V
4	1.717	43.34	PK	29.8	-23.7	49.44	-	-	74	-24.56	0-360	99	H
2	4.461	39.5	PK	34.4	-29	44.9	-	-	74	-29.1	0-360	202	V
6	8.743	35.97	PK	36.4	-25	47.37	-	-	74	-26.63	0-360	99	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

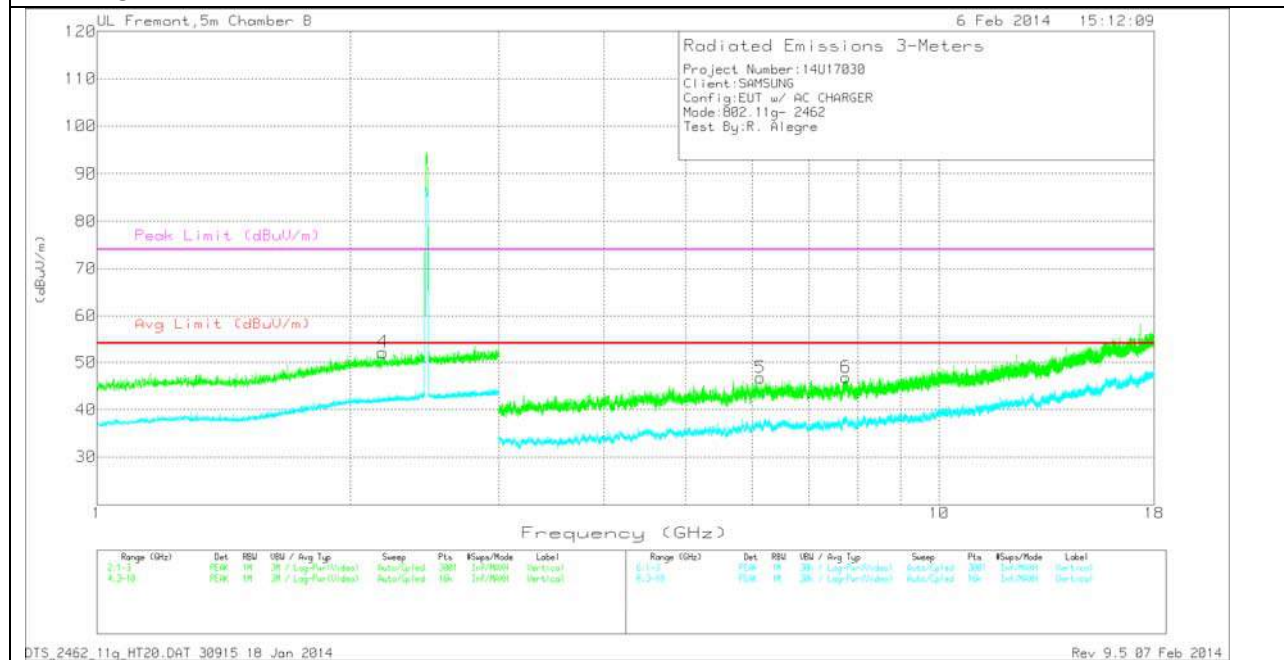
PK - Peak detector

HIGH CHANNEL
HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

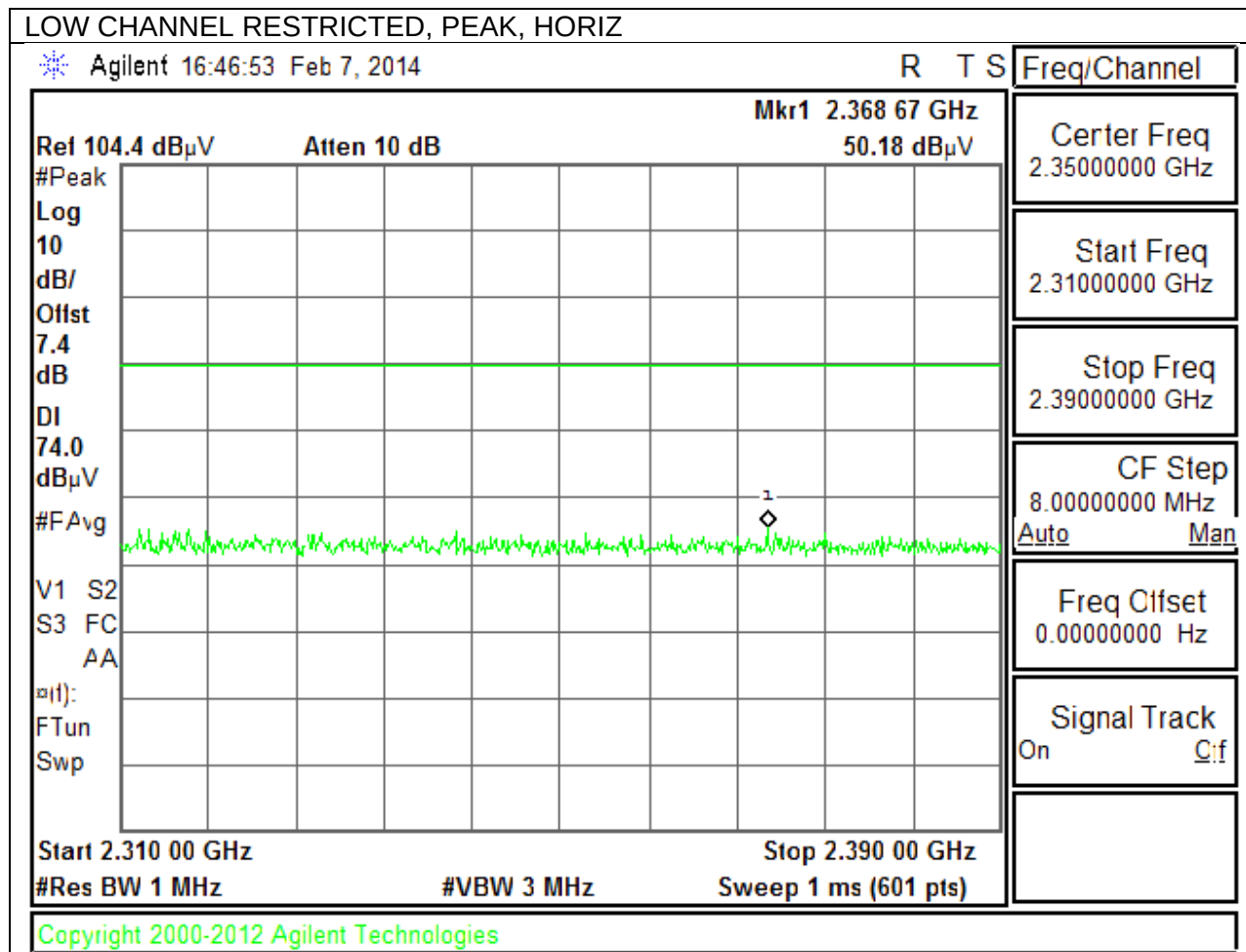
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 7.747	36.64	PK	36.2	-26	46.84	-	-	74	-27.16	0-360	202	V
1	1.88	43.86	PK	31	-23.6	51.26	-	-	74	-22.74	0-360	99	H
4	2.185	43.3	PK	32	-23.2	52.1	-	-	74	-21.9	0-360	202	V
2	5.209	41.39	PK	34.9	-30.2	46.09	-	-	74	-27.91	0-360	201	H
5	6.137	39.85	PK	36	-29.1	46.75	-	-	74	-27.25	0-360	202	V
3	8.877	36.95	PK	36.6	-25.9	47.65	-	-	74	-26.35	0-360	201	H

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

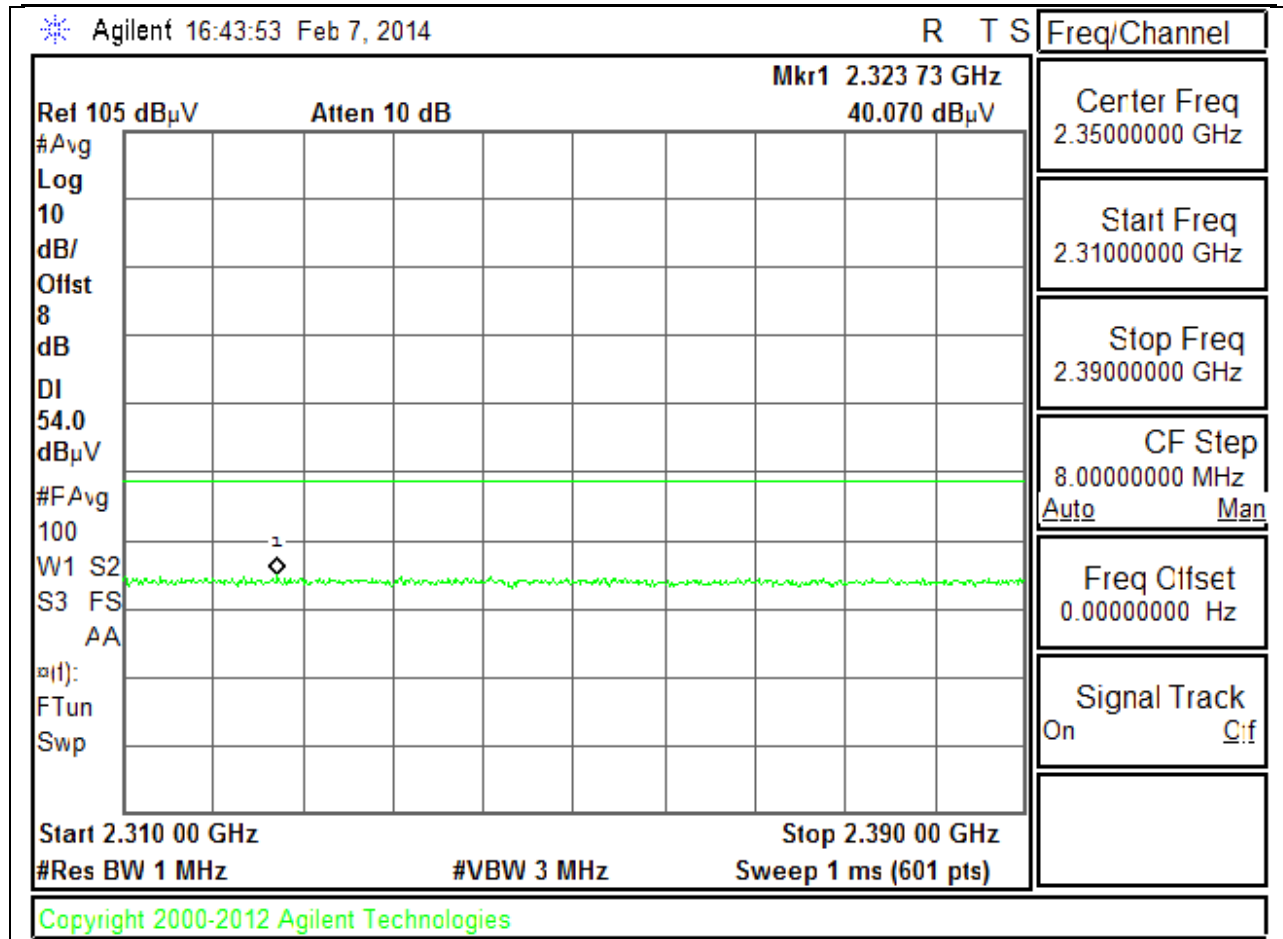
PK - Peak detector

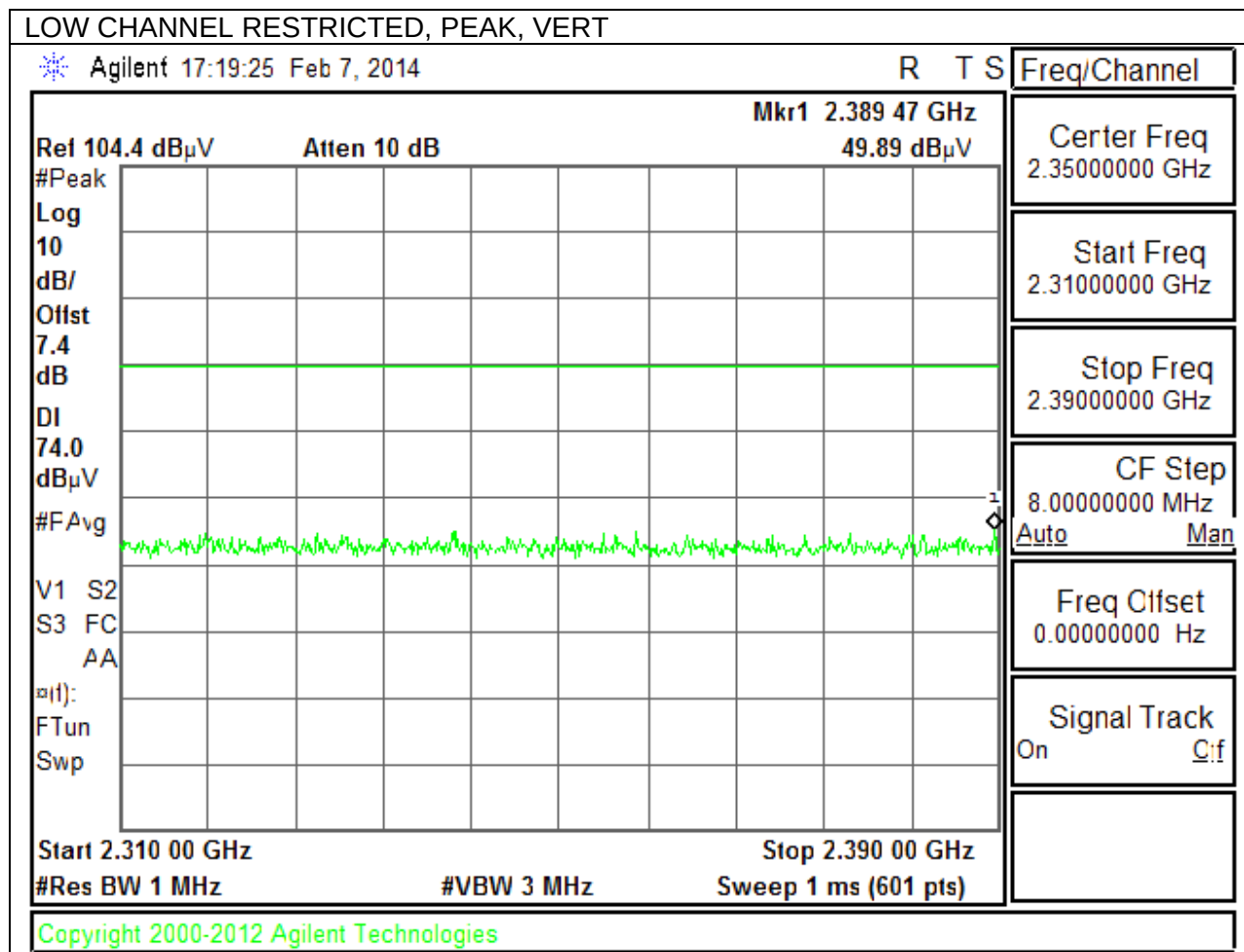
11.2.3. TX ABOVE 1 GHz 802.11n HT20 CDD MODE IN THE 2.4 GHz BAND

RESTRICTED BANDEDGE (LOW CHANNEL)

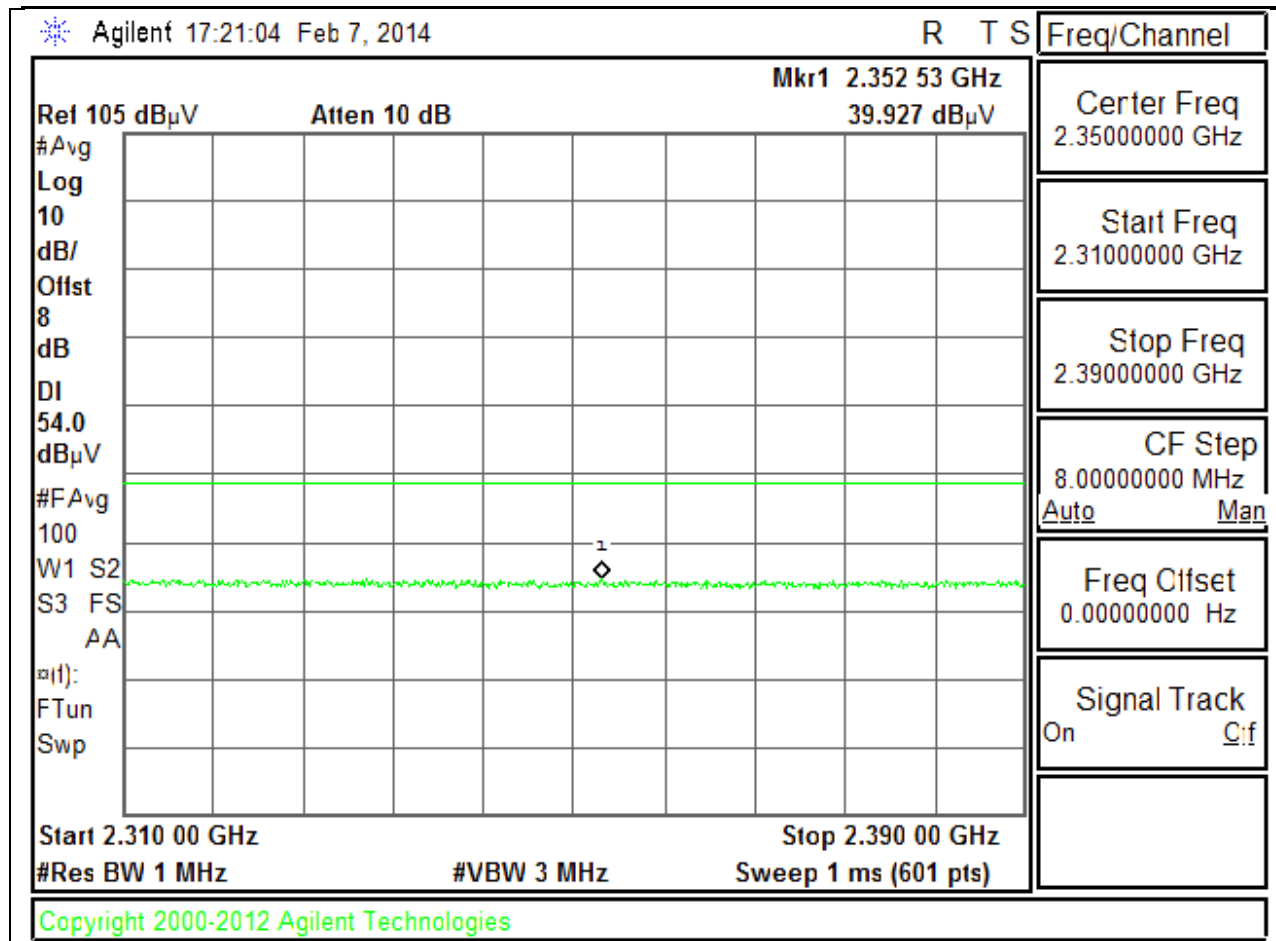


LOW CHANNEL RESTRICTED, AVERAGE, HORIZ

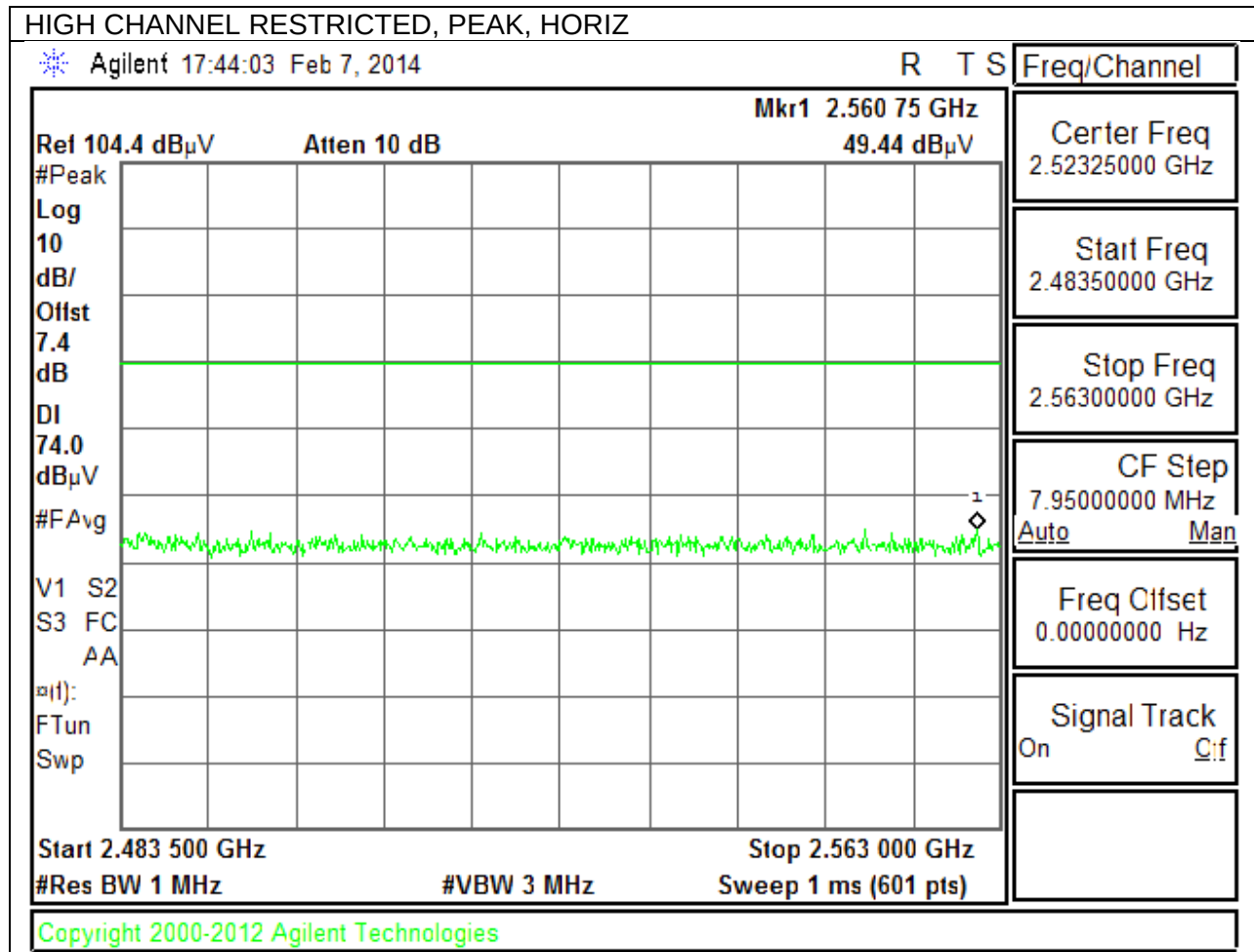




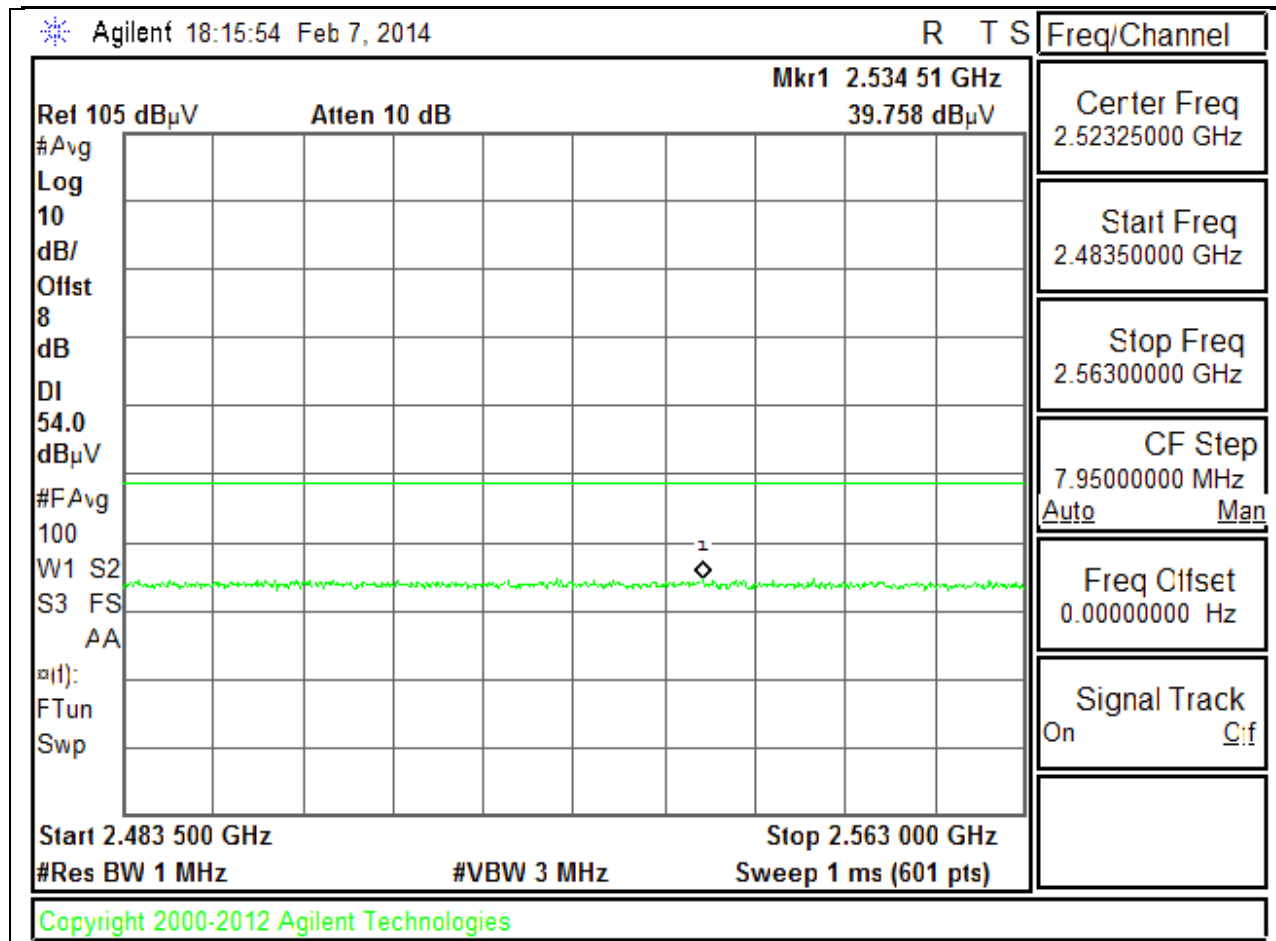
LOW CHANNEL RESTRICTED, AVERAGE, VERT

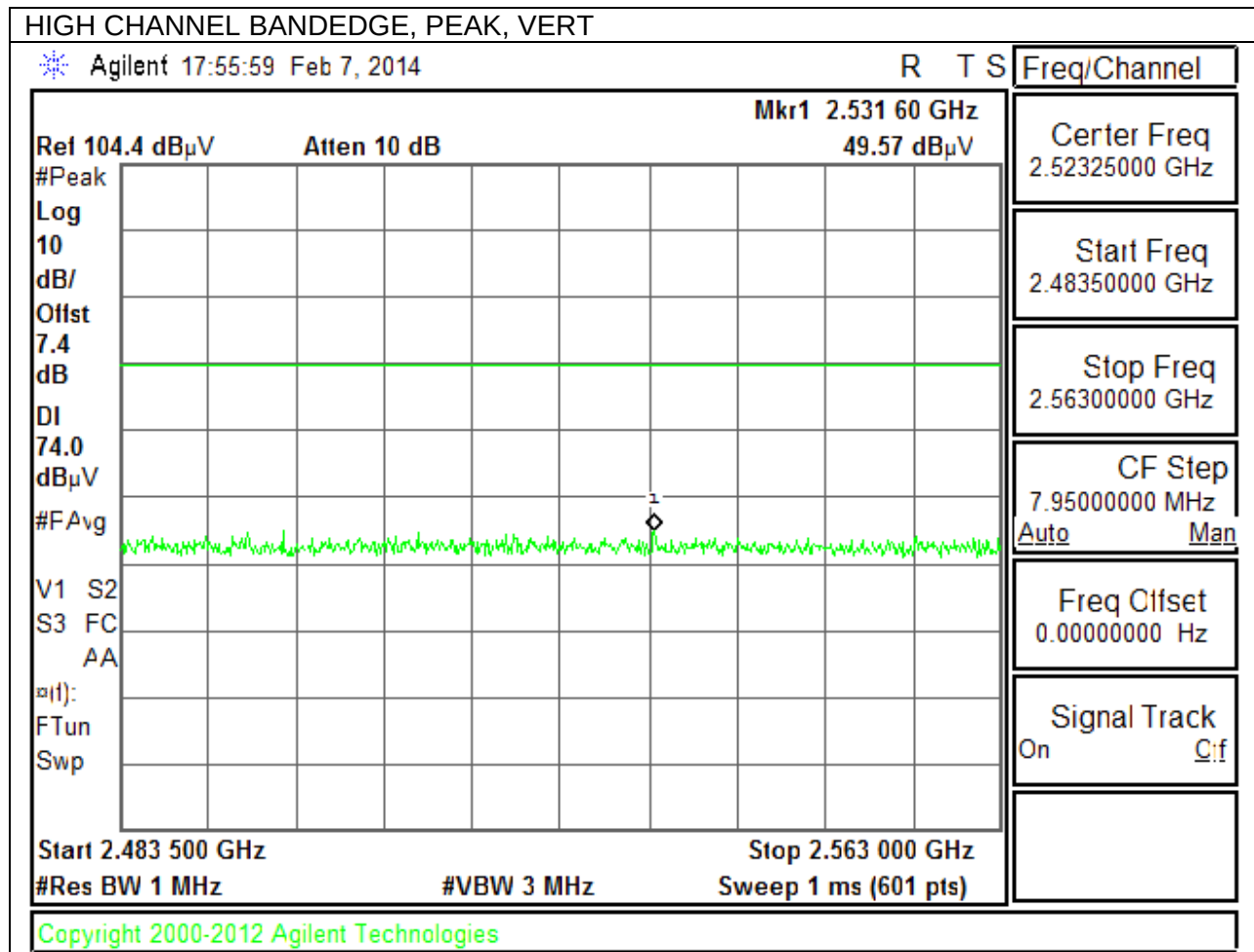


AUTHORIZED BANDEDGE (HIGH CHANNEL)

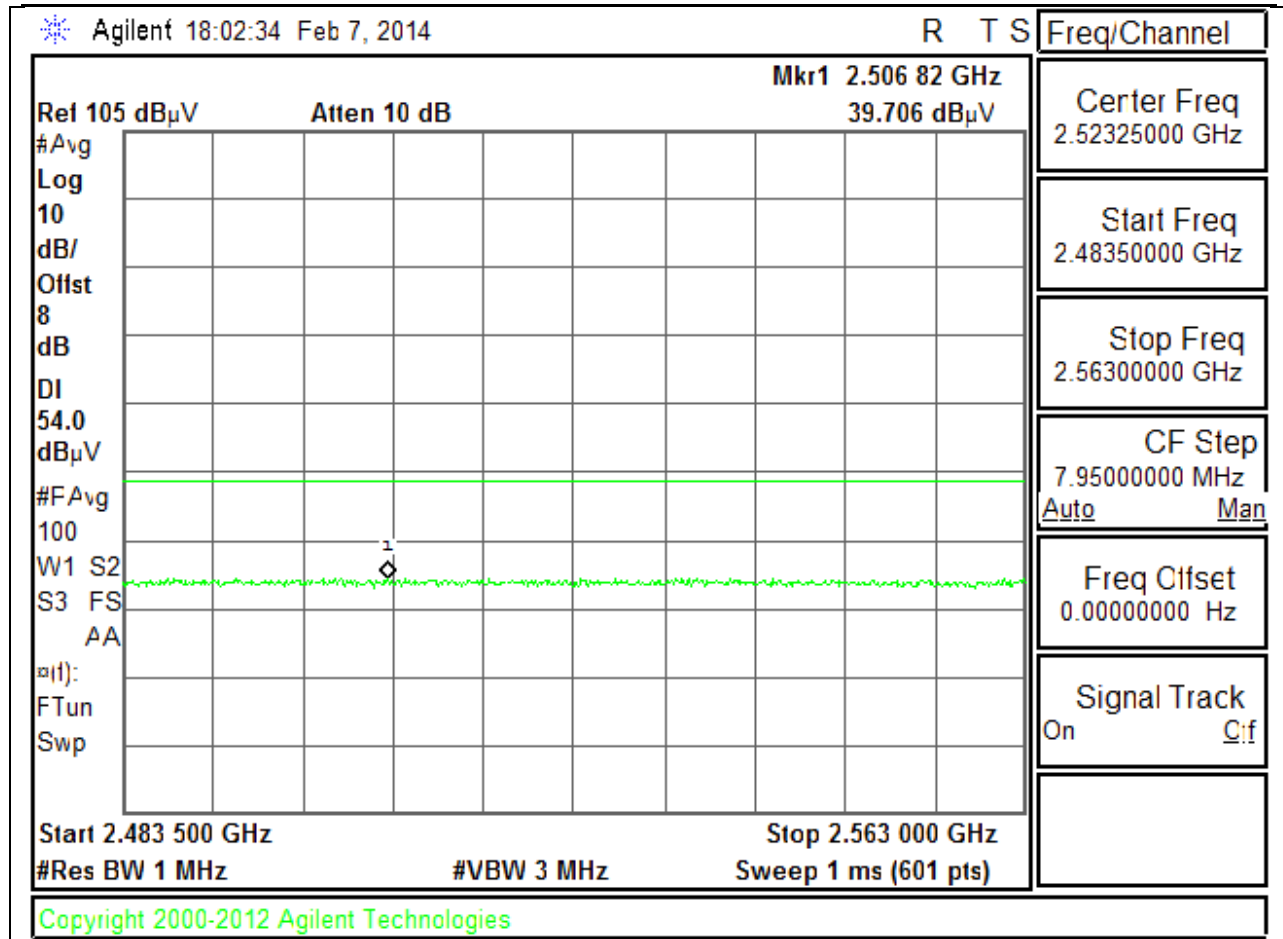


HIGH CHANNEL RESTRICTED, AVERAGE, HORIZ



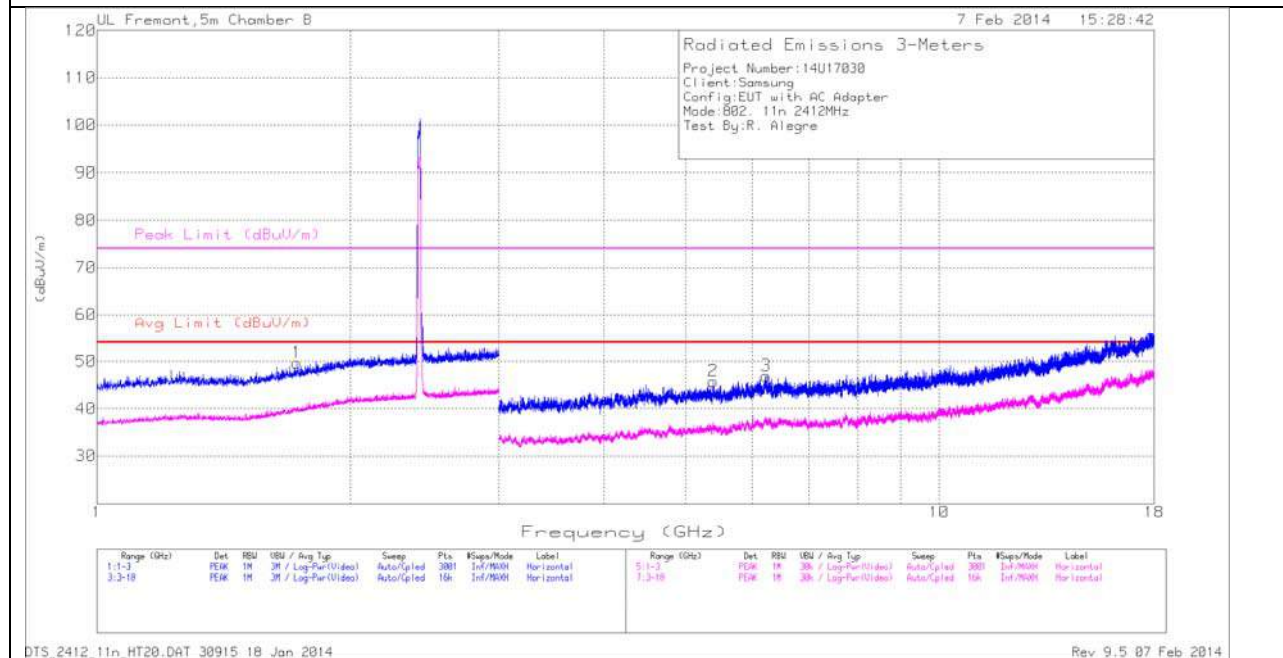


HIGH CHANNEL BANDEDGE, AVERAGE, VERT



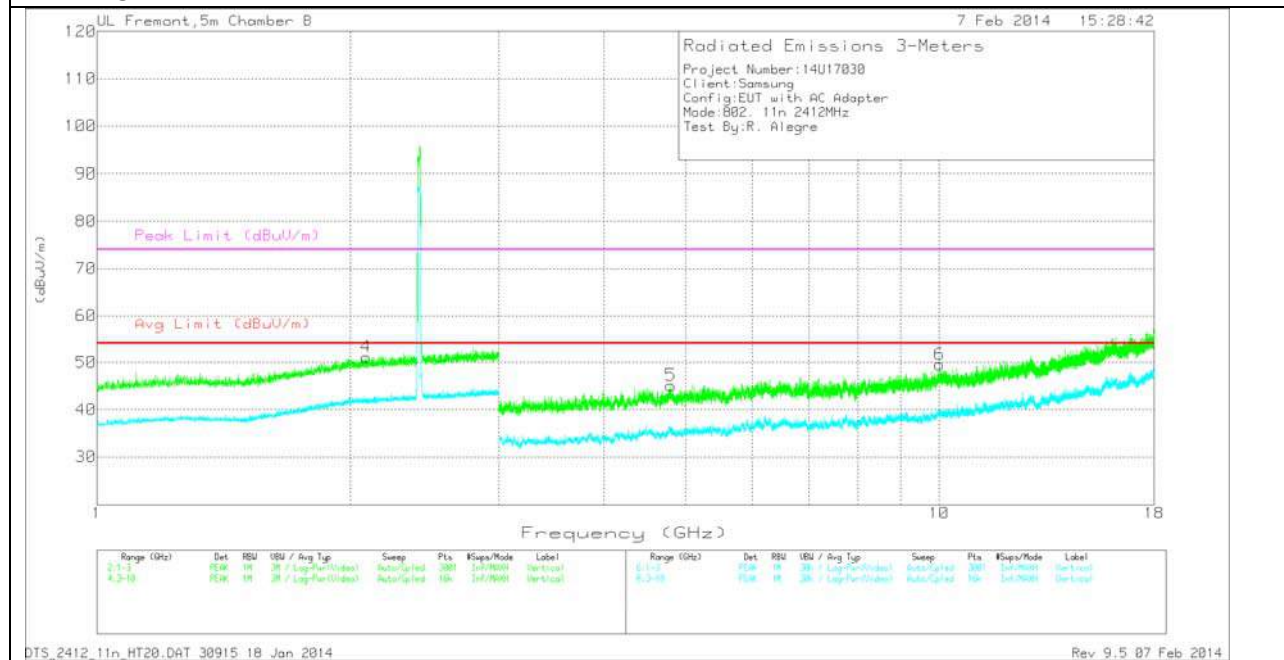
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL
VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

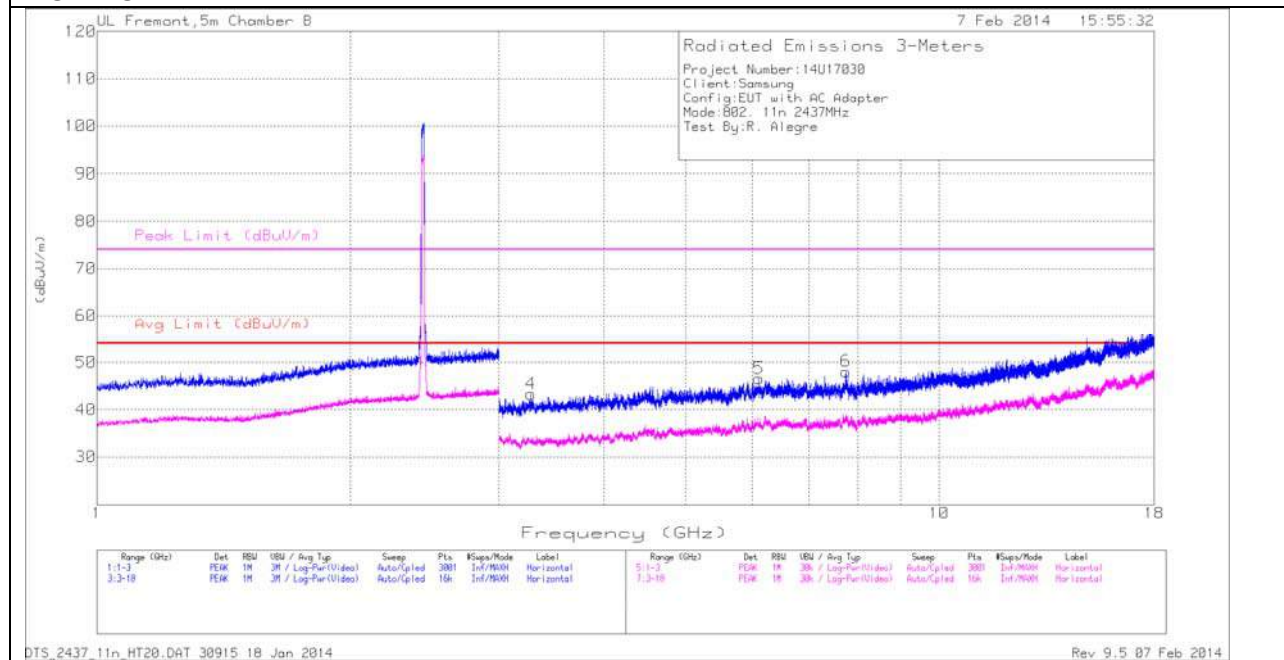
LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 5.392	39.51	PK	34.9	-28.6	45.81	-	-	74	-28.19	0-360	99	H
5	* 4.802	39.2	PK	34.7	-28.8	45.1	-	-	74	-28.9	0-360	202	V
1	1.727	43.5	PK	29.9	-23.7	49.7	-	-	74	-24.3	0-360	202	H
4	2.087	42.62	PK	31.9	-23.4	51.12	-	-	74	-22.88	0-360	99	V
3	6.231	38.91	PK	36	-28	46.91	-	-	74	-27.09	0-360	201	H
6	10.013	35.84	PK	37.8	-24.1	49.54	-	-	74	-24.46	0-360	202	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

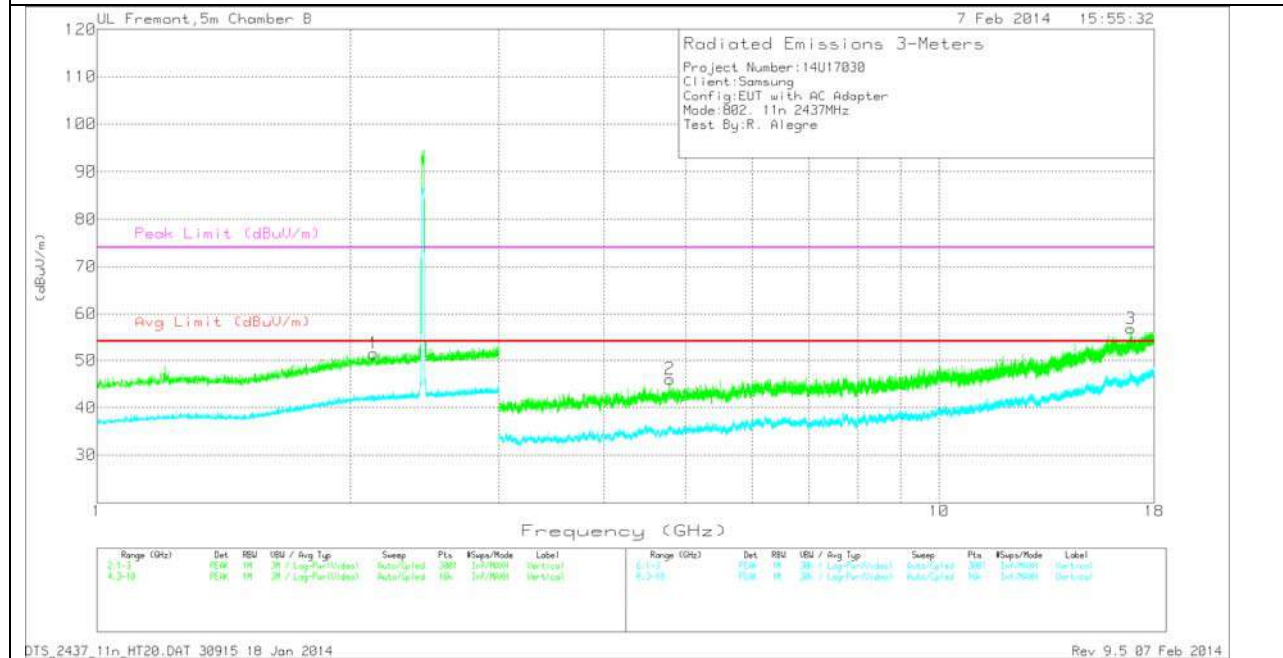
PK - Peak detector

MID CHANNEL
HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL
VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

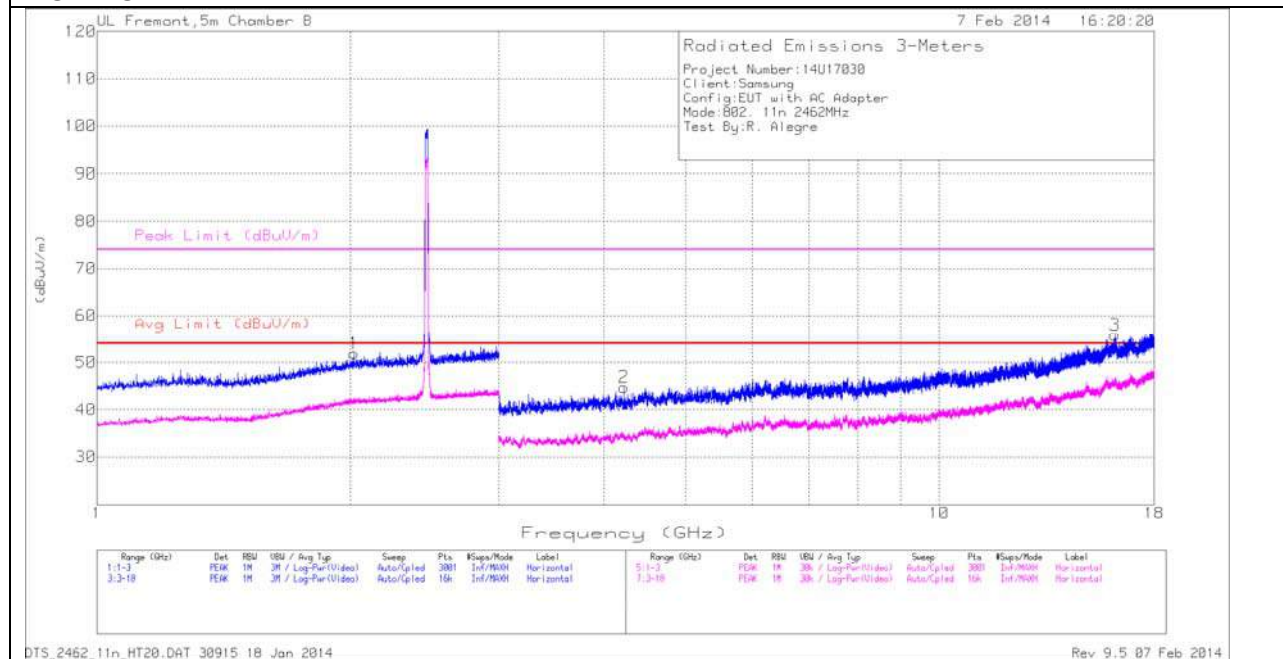
MID CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	* 7.749	37.87	PK	36.2	-26	48.07	-	-	74	-25.93	0-360	99	H
2	* 4.789	40.23	PK	34.7	-28.9	46.03	-	-	74	-27.97	0-360	99	V
1	2.13	42.72	PK	32	-23.3	51.42	-	-	74	-22.58	0-360	202	V
4	3.275	41.4	PK	33.3	-31.4	43.3	-	-	74	-30.7	0-360	99	H
5	6.106	39.83	PK	35.9	-29.2	46.53	-	-	74	-27.47	0-360	202	H
3	16.885	34.52	PK	41.5	-19.2	56.82	-	-	74	-17.18	0-360	202	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

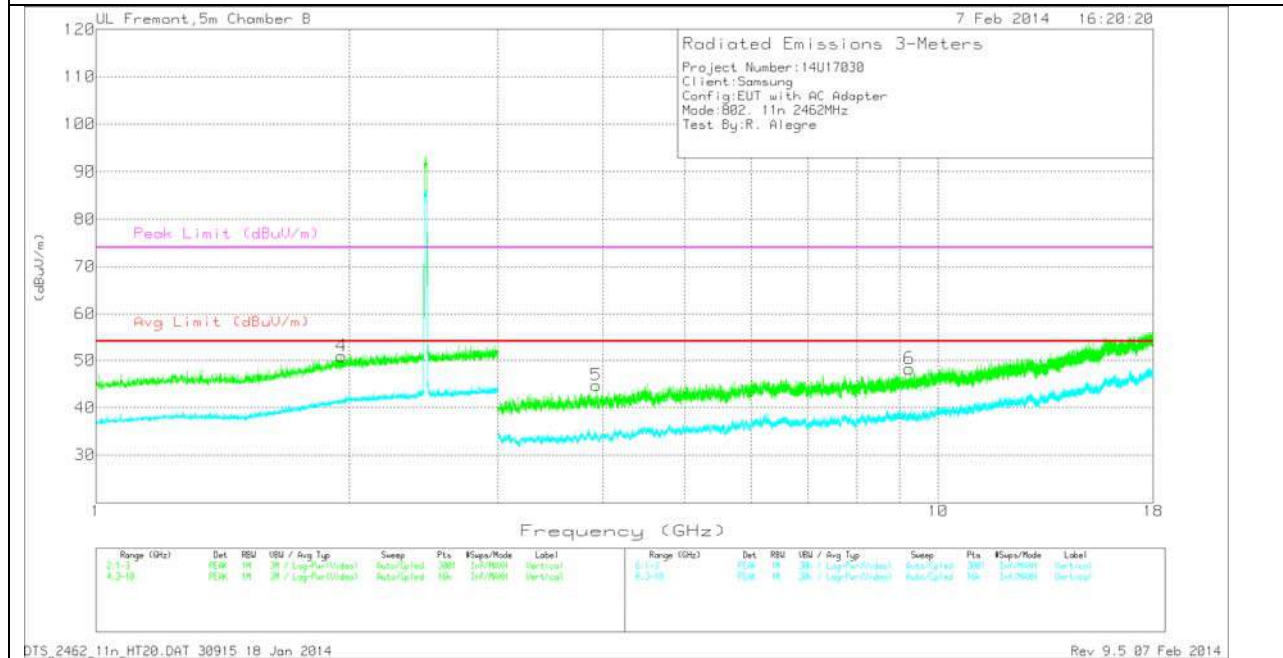
PK - Peak detector

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 26GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

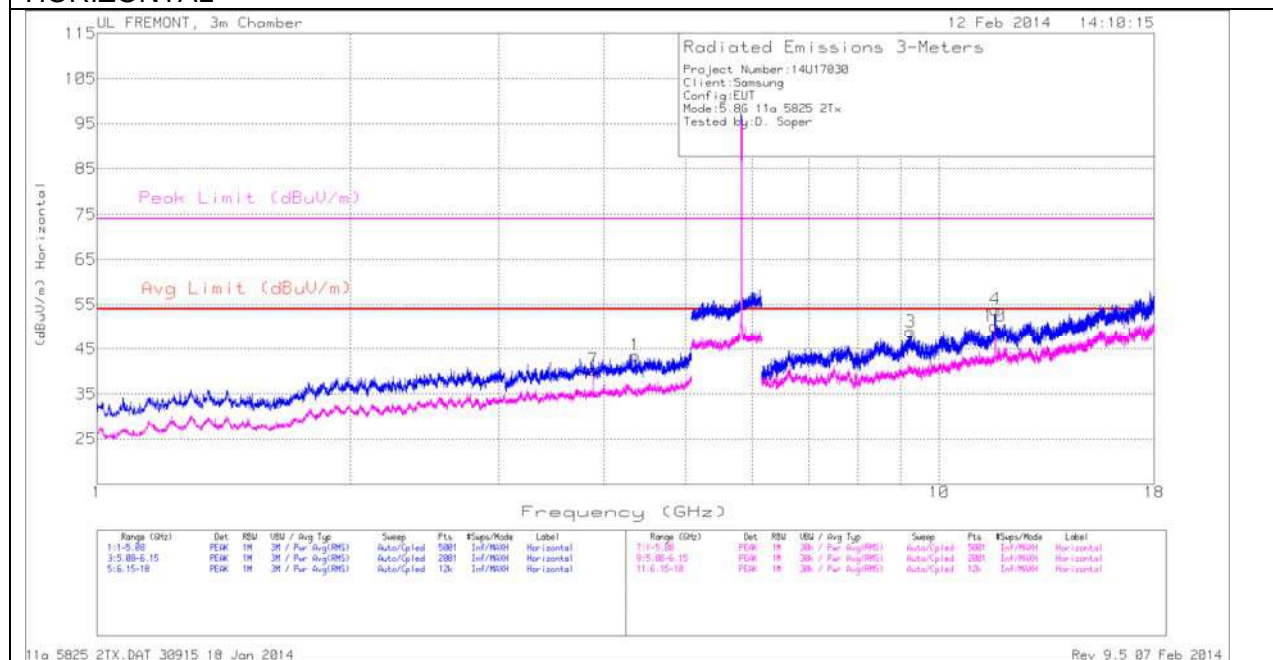
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/ Ftr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.223	40.87	PK	34.1	-30.3	44.67	-	-	74	-29.33	0-360	99	H
3	* 16.164	34.28	PK	41.5	-19.9	55.88	-	-	74	-18.12	0-360	202	H
5	* 3.927	41.35	PK	33.9	-30.5	44.75	-	-	74	-29.25	0-360	99	V
4	1.957	43.01	PK	31.5	-23.6	50.91	-	-	74	-23.09	0-360	99	V
1	2.02	43.58	PK	31.8	-23.5	51.88	-	-	74	-22.12	0-360	202	H
6	9.244	36.24	PK	36.9	-24.9	48.24	-	-	74	-25.76	0-360	99	V

* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

PK - Peak detector

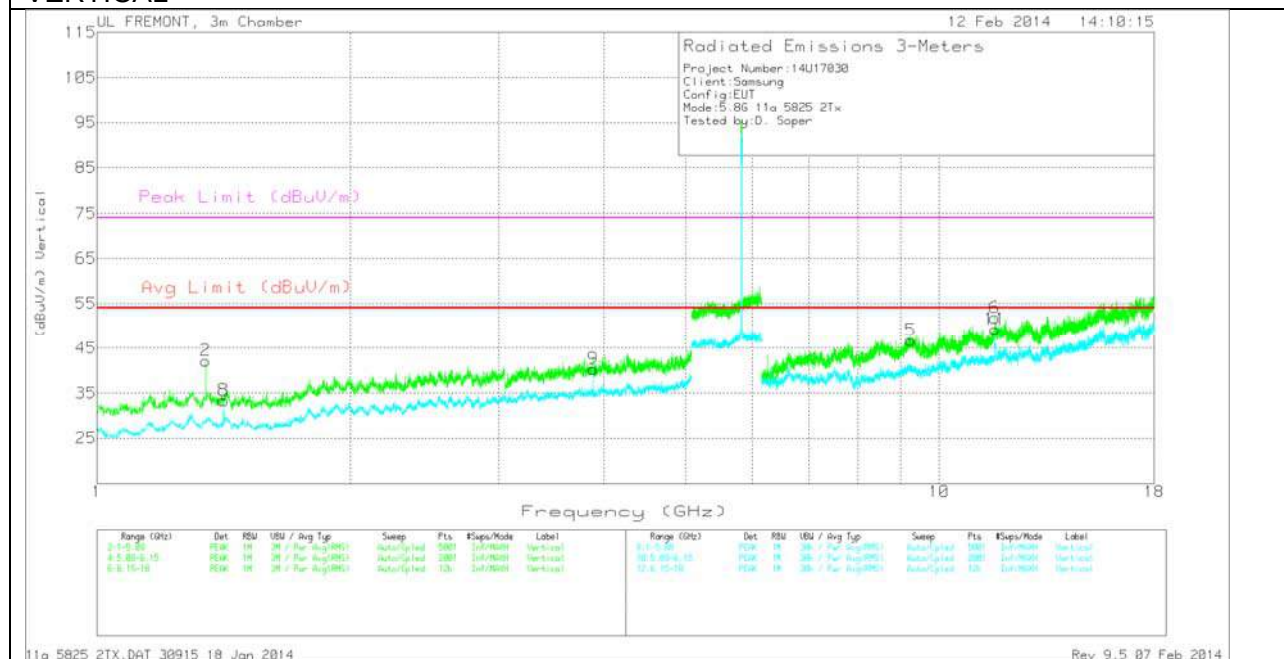
11.2.4. TX ABOVE 1 GHz 802.11a HT20 CDD MODE IN THE 5.8 GHz BAND
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL
VERTICAL

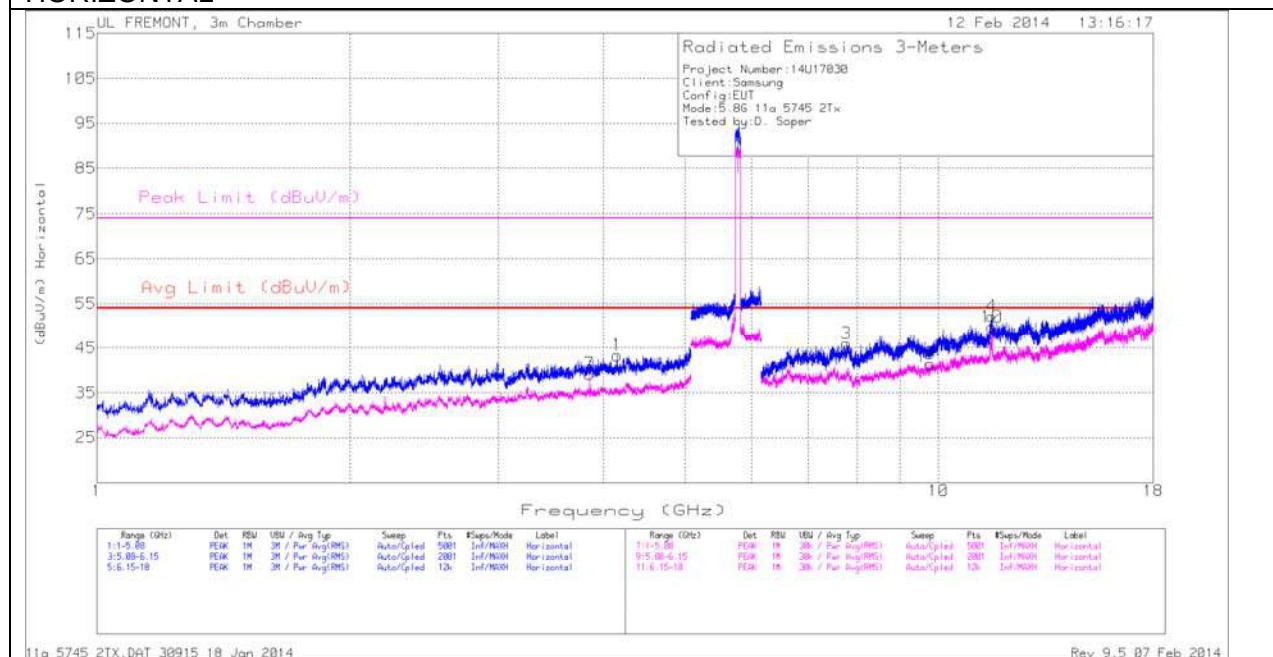


Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

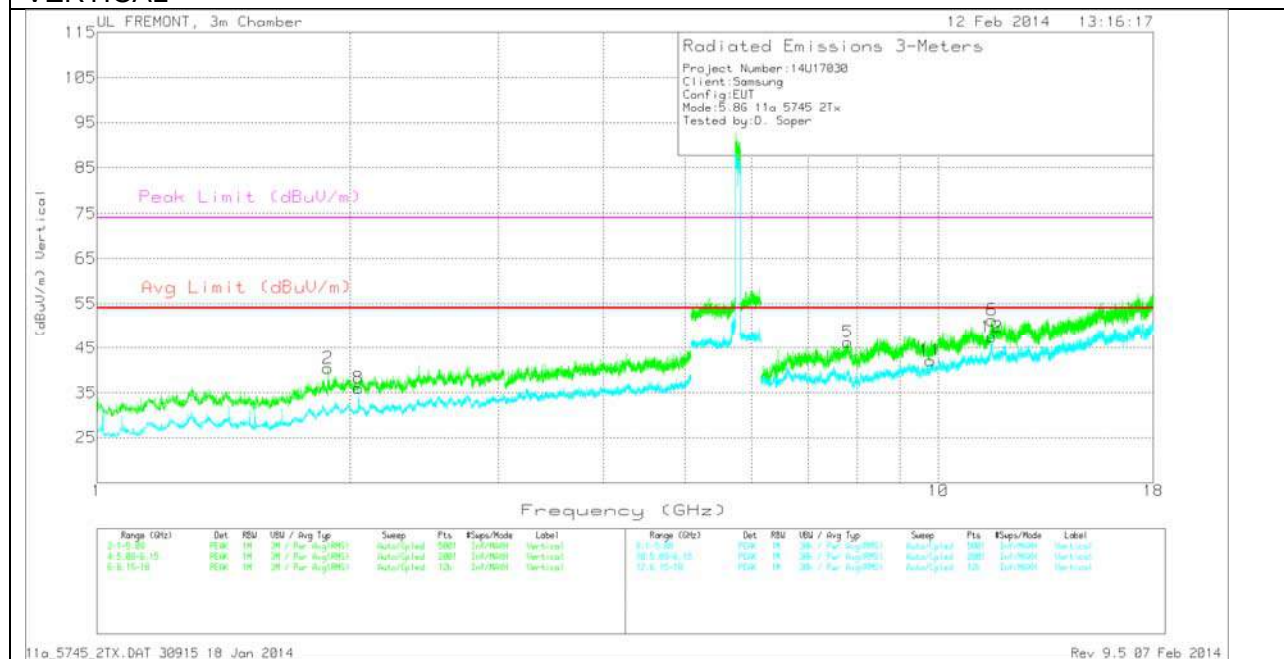
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	1.346	48.66	PK	30.1	-36.6	42.16	54	-11.84	74	-31.84	0-360	101	V
8	1.414	40.26	Avg	29.7	-36.6	33.36	54	-20.64	-	-	0-360	201	V
7	3.884	38.15	Avg	33.7	-31.5	40.35	54	-13.65	-	-	0-360	101	H
9	3.884	38.17	Avg	33.7	-31.5	40.37	54	-13.63	-	-	0-360	201	V
1	4.354	40.88	PK	33.6	-30.9	43.58	54	-10.42	74	-30.42	0-360	200	H
3	9.247	37.61	PK	36.2	-24.9	48.91	54	-5.09	74	-25.09	0-360	101	H
5	9.255	35.42	PK	36.2	-24.9	46.72	54	-7.28	74	-27.28	0-360	200	V
10	11.641	34.47	Avg	38.4	-22.7	50.17	54	-3.83	-	-	0-360	100	H
6	11.642	36.12	PK	38.4	-22.7	51.82			74	-22.18	0-360	200	V
11	11.651	33.46	Avg	38.5	-22.7	49.26	54	-4.74	-	-	0-360	201	V
4	11.658	37.94	PK	38.5	-22.5	53.94			74	-20.06	0-360	200	H

MID CHANNEL
HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL

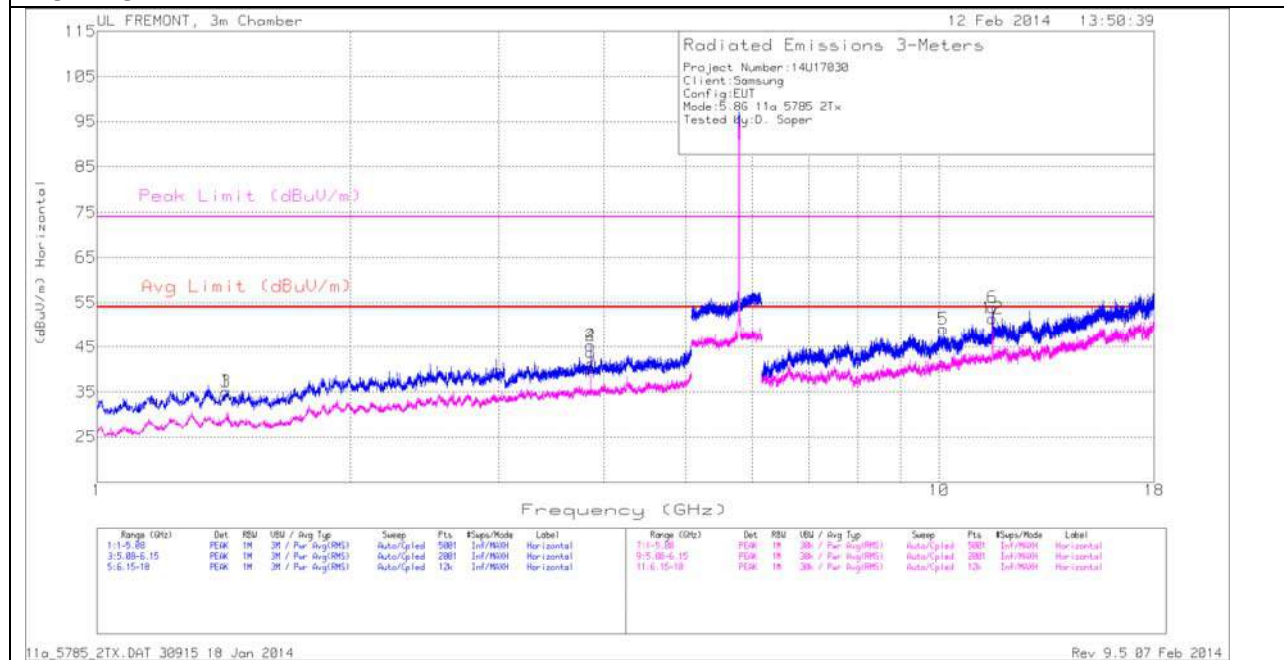


Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

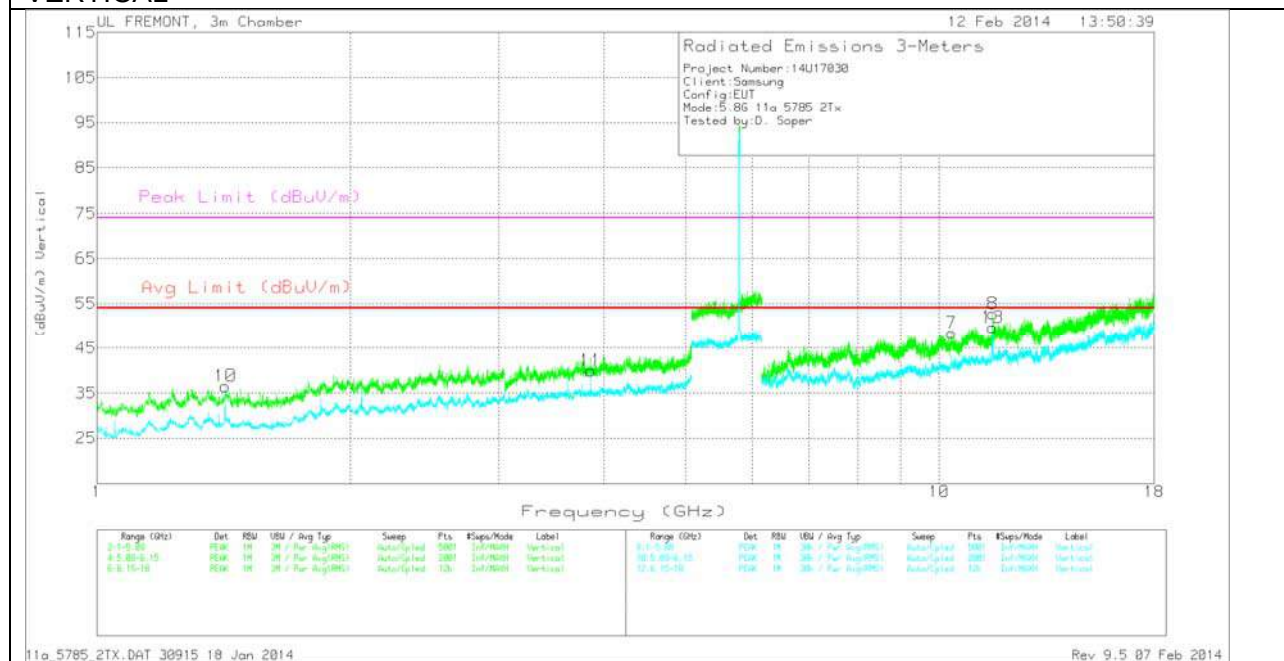
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	1.881	43.93	PK	31.5	-35	40.43	54	-13.57	74	-33.57	0-360	200	V
8	2.045	39.52	Avg	31.8	-35.3	36.02	54	-17.98	-	-	0-360	200	V
7	3.85	36.95	Avg	33.6	-31.4	39.15	54	-14.85	-	-	0-360	101	H
1	4.152	40.14	PK	33.6	-30.4	43.34	54	-10.66	74	-30.66	0-360	200	H
3	7.774	36.5	PK	35.5	-26	46	54	-8	74	-28	0-360	100	H
5	7.805	35.66	PK	35.5	-24.8	46.36	54	-7.64	74	-27.64	0-360	101	V
11	9.786	28.12	Avg	36.9	-22.9	42.12	54	-11.88	-	-	0-360	201	V
9	9.791	27.58	Avg	36.9	-23.1	41.38	54	-12.62	-	-	0-360	200	H
4	11.564	36.44	PK	38.4	-22.7	52.14			74	-21.86	0-360	200	H
12	11.57	31.39	Avg	38.4	-22.3	47.49	54	-6.51	-	-	0-360	101	V
10	11.571	33.68	Avg	38.4	-22.3	49.78	54	-4.22	-	-	0-360	200	H
6	11.577	35.27	PK	38.4	-22.4	51.27			74	-22.73	0-360	200	V

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

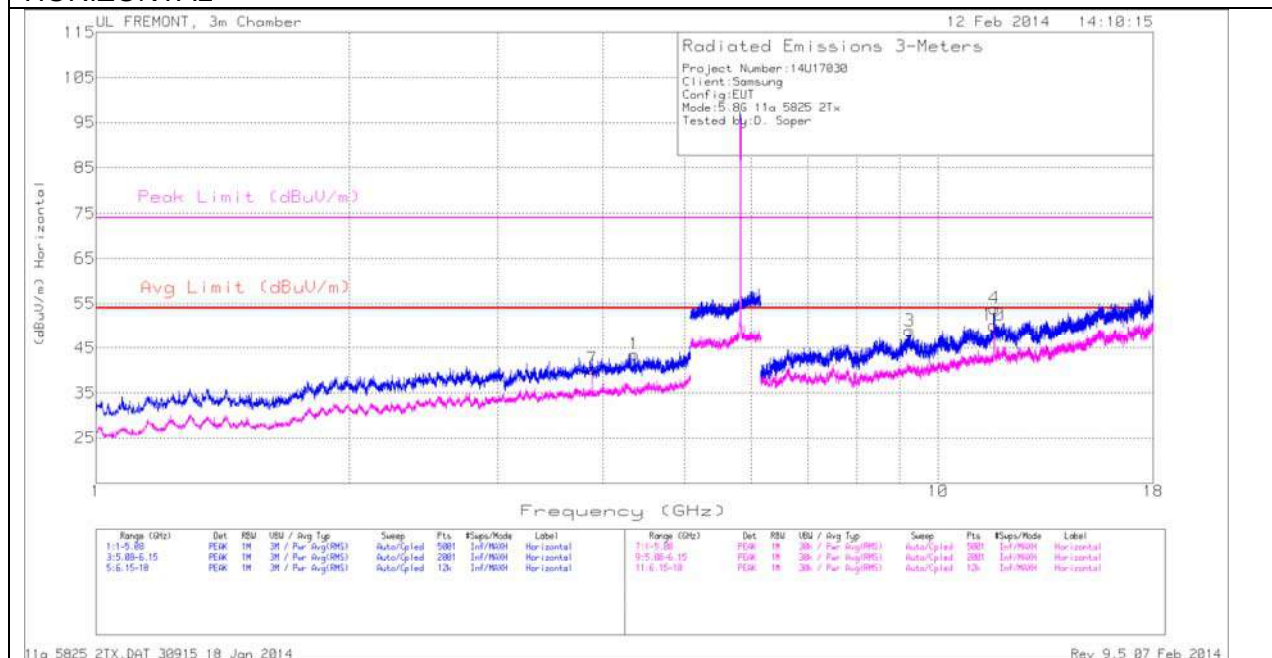
HIGH CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.422	41.84	PK	29.6	-36.4	35.04	54	-18.96	74	-38.96	0-360	101	H
2	3.857	42.77	PK	33.6	-31.1	45.27	54	-8.73	74	-28.73	0-360	101	H
3	1.422	41.84	PK	29.6	-36.4	35.04	54	-18.96	74	-38.96	0-360	101	H
4	3.857	42.77	PK	33.6	-31.1	45.27	54	-8.73	74	-28.73	0-360	101	H
5	10.118	35.26	PK	37.2	-23.4	49.06	54	-4.94	74	-24.94	0-360	200	H
6	11.572	37.68	PK	38.4	-22.2	53.88			74	-20.12	0-360	200	H
7	10.349	33.29	PK	37.3	-22.2	48.39	54	-5.61	74	-25.61	0-360	200	V
8	11.577	36.71	PK	38.4	-22.4	52.71			74	-21.29	0-360	200	V
9	3.857	37.87	Avg	33.6	-31.1	40.37	54	-13.63	-	-	0-360	101	H
10	1.42	43.39	Avg	29.6	-36.5	36.49	54	-17.51	-	-	0-360	200	V
11	3.857	37.49	Avg	33.6	-31.1	39.99	54	-14.01	-	-	0-360	200	V
13	11.568	33.68	Avg	38.4	-22.4	49.68	54	-4.32	-	-	0-360	101	V

11.2.5. TX ABOVE 1 GHz 802.11n HT20 CDD MODE IN THE 5.8 GHz BAND

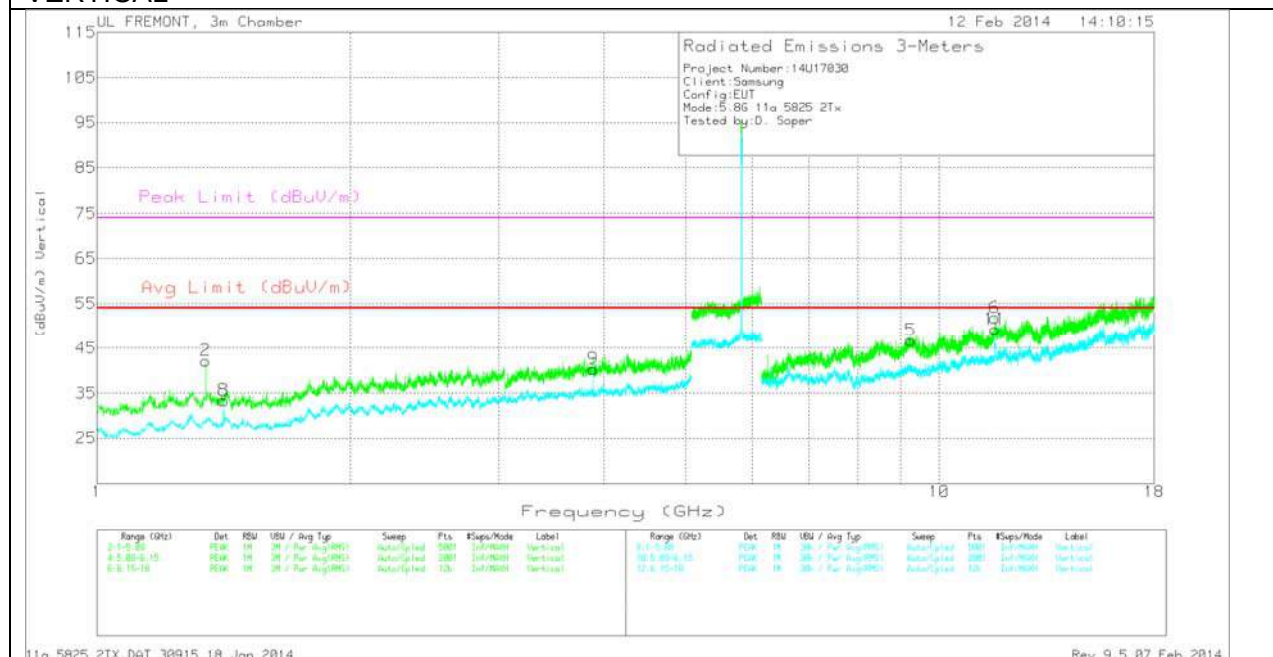
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL VERTICAL

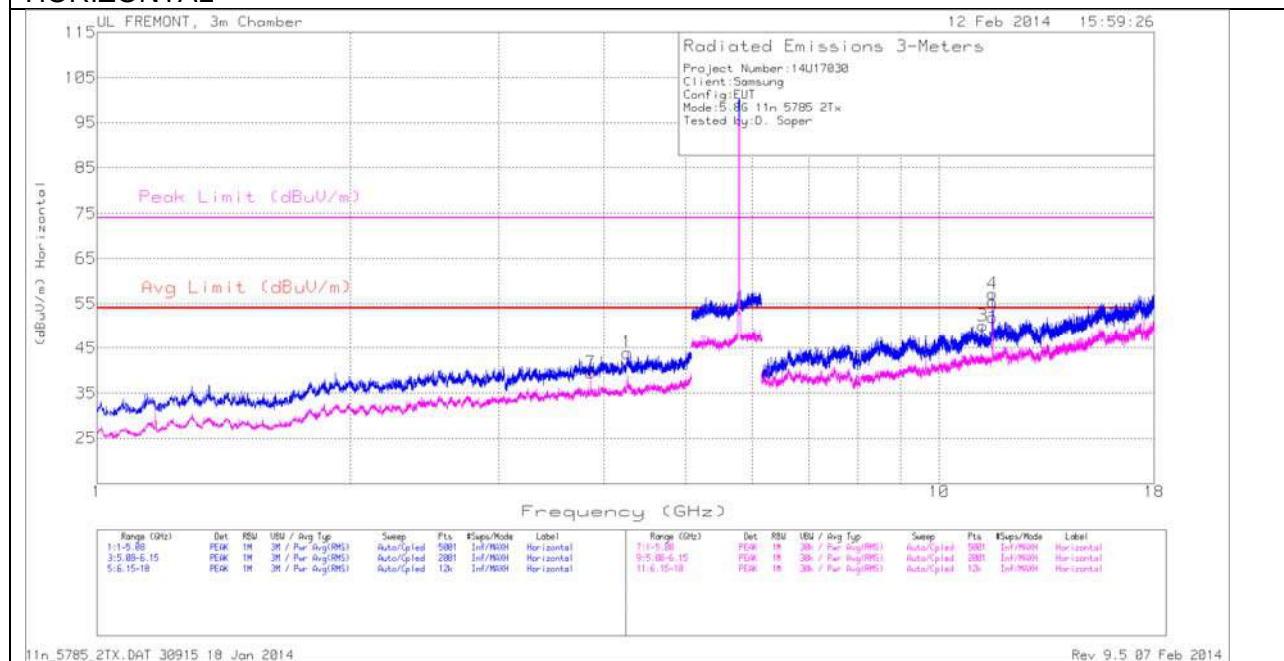


Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

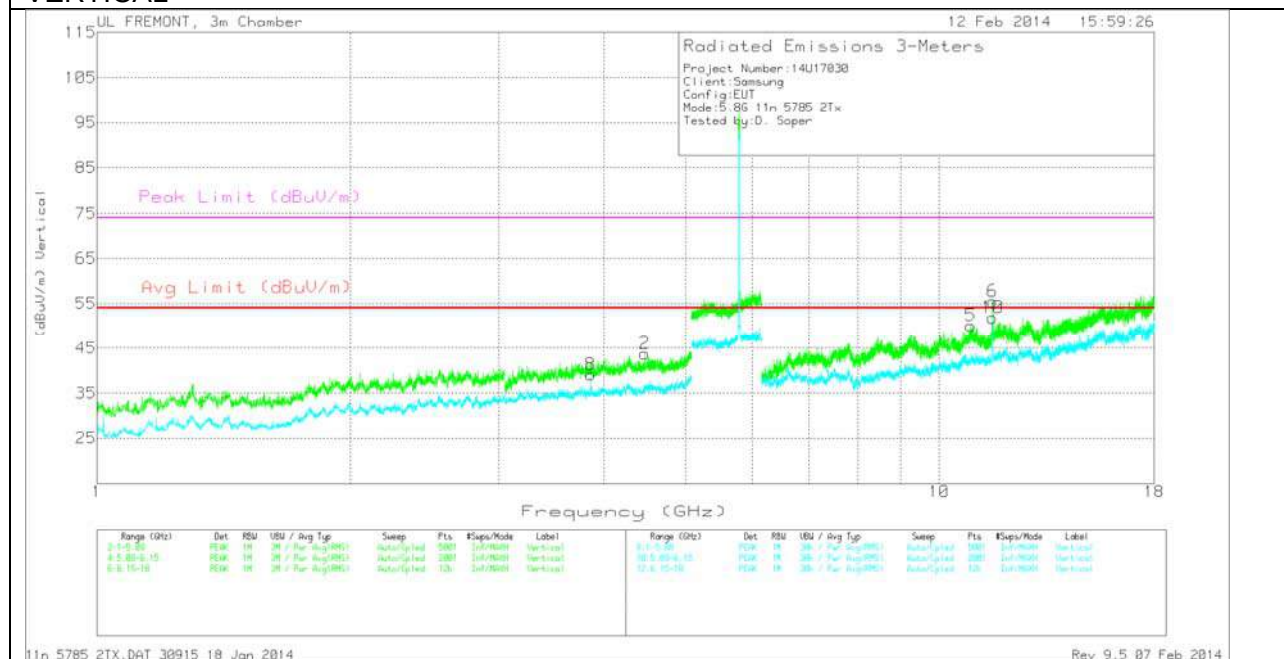
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	1.346	48.66	PK	30.1	-36.6	42.16	54	-11.84	74	-31.84	0-360	101	V
8	1.414	40.26	Avg	29.7	-36.6	33.36	54	-20.64	-	-	0-360	201	V
7	3.884	38.15	Avg	33.7	-31.5	40.35	54	-13.65	-	-	0-360	101	H
9	3.884	38.17	Avg	33.7	-31.5	40.37	54	-13.63	-	-	0-360	201	V
1	4.354	40.88	PK	33.6	-30.9	43.58	54	-10.42	74	-30.42	0-360	200	H
3	9.247	37.61	PK	36.2	-24.9	48.91	54	-5.09	74	-25.09	0-360	101	H
5	9.255	35.42	PK	36.2	-24.9	46.72	54	-7.28	74	-27.28	0-360	200	V
10	11.641	34.47	Avg	38.4	-22.7	50.17	54	-3.83	-	-	0-360	100	H
6	11.642	36.12	PK	38.4	-22.7	51.82	54	-2.18	74	-22.18	0-360	200	V
11	11.651	33.46	Avg	38.5	-22.7	49.26	54	-4.74	-	-	0-360	201	V
4	11.658	37.94	PK	38.5	-22.5	53.94	54	-.06	74	-20.06	0-360	200	H

MID CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
7	3.857	37.05	Avg	33.6	-31.1	39.55	54	-14.45	-	-	0-360	100	H
8	3.857	36.56	Avg	33.6	-31.1	39.06	54	-14.94	-	-	0-360	200	V
1	4.264	38.5	PK	33.6	-28.2	43.9	54	-10.1	74	-30.1	0-360	100	H
2	4.469	39.55	PK	33.7	-29.5	43.75	54	-10.25	74	-30.25	0-360	101	V
5	10.9	34.89	PK	37.9	-22.7	50.09	54	-3.91	74	-23.91	0-360	201	V
3	11.261	33.89	PK	38	-21.8	50.09	54	-3.91	74	-23.91	0-360	101	H
6	11.566	39.65	PK	38.4	-22.6	55.45			74	-18.55	0-360	201	V
4	11.571	41.06	PK	38.4	-22.3	57.16			74	-16.84	0-360	200	H

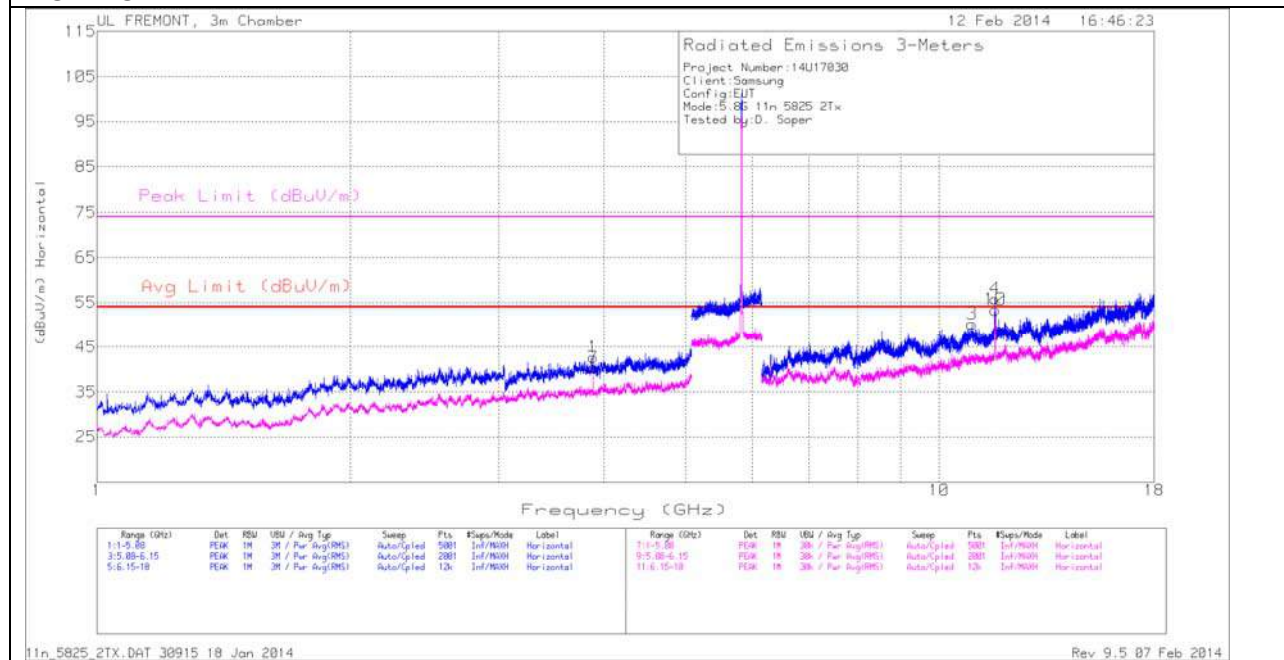
PK - Peak detector

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
11.569	32.68	MAV1	38.4	-22.4	48.68	54	-5.32	74	-25.32	25	156	H

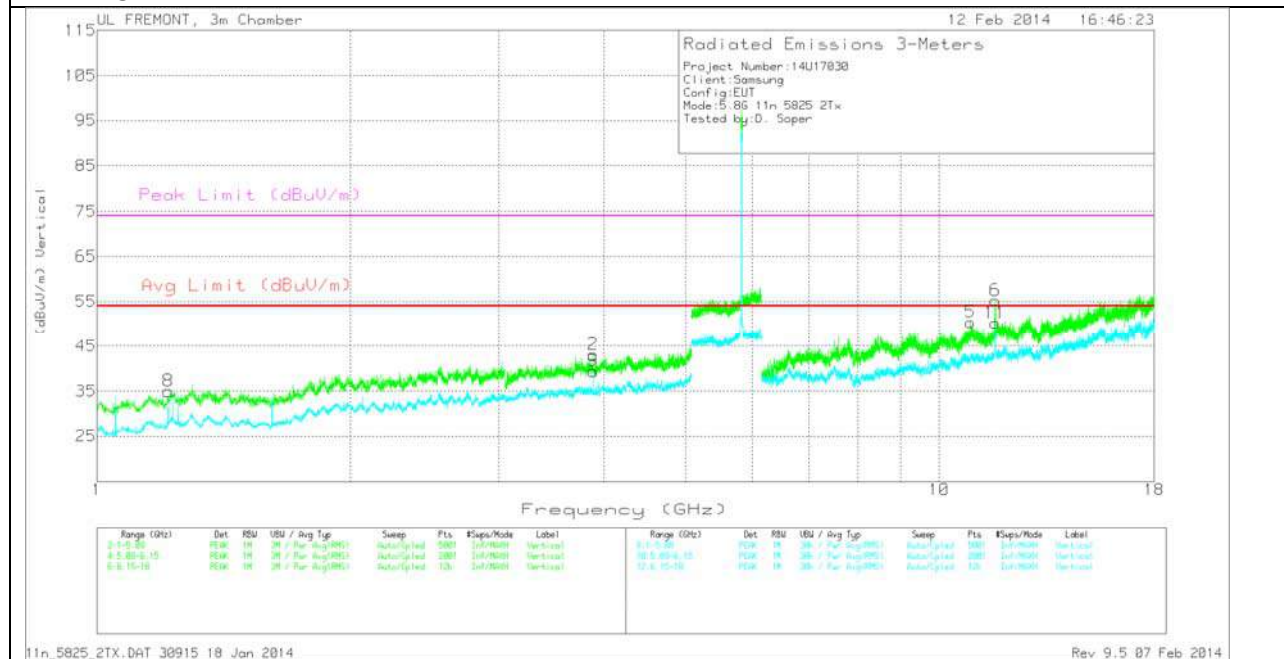
MAV1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

Marker	Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Filtr/Pad (dB)	Correcte d Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
8	1.215	42.37	Avg	29.6	-37	34.97	54	-19.03	-	-	0-360	101	V
9	3.883	37.2	Avg	33.7	-31.5	39.4	54	-14.6	-	-	0-360	201	V
1	3.884	40.47	PK	33.7	-31.5	42.67	54	-11.33	74	-31.33	0-360	101	H
2	3.884	40.9	PK	33.7	-31.5	43.1	54	-10.9	74	-30.9	0-360	201	V
7	3.884	38.18	Avg	33.7	-31.5	40.38	54	-13.62	-	-	0-360	101	H
5	10.891	35.6	PK	37.9	-23.1	50.4	54	-3.6	74	-23.6	0-360	201	V
3	10.941	34.63	PK	37.9	-22.3	50.23	54	-3.77	74	-23.77	0-360	100	H
11	11.648	34.69	Avg	38.4	-22.9	50.19	54	-3.81	-	-	0-360	101	V
4	11.65	40.21	PK	38.4	-22.8	55.81			74	-18.19	0-360	100	H
6	11.655	39.24	PK	38.5	-22.5	55.24			74	-18.76	0-360	201	V

PK - Peak detector

Avg - Video bandwidth < Resolution bandwidth

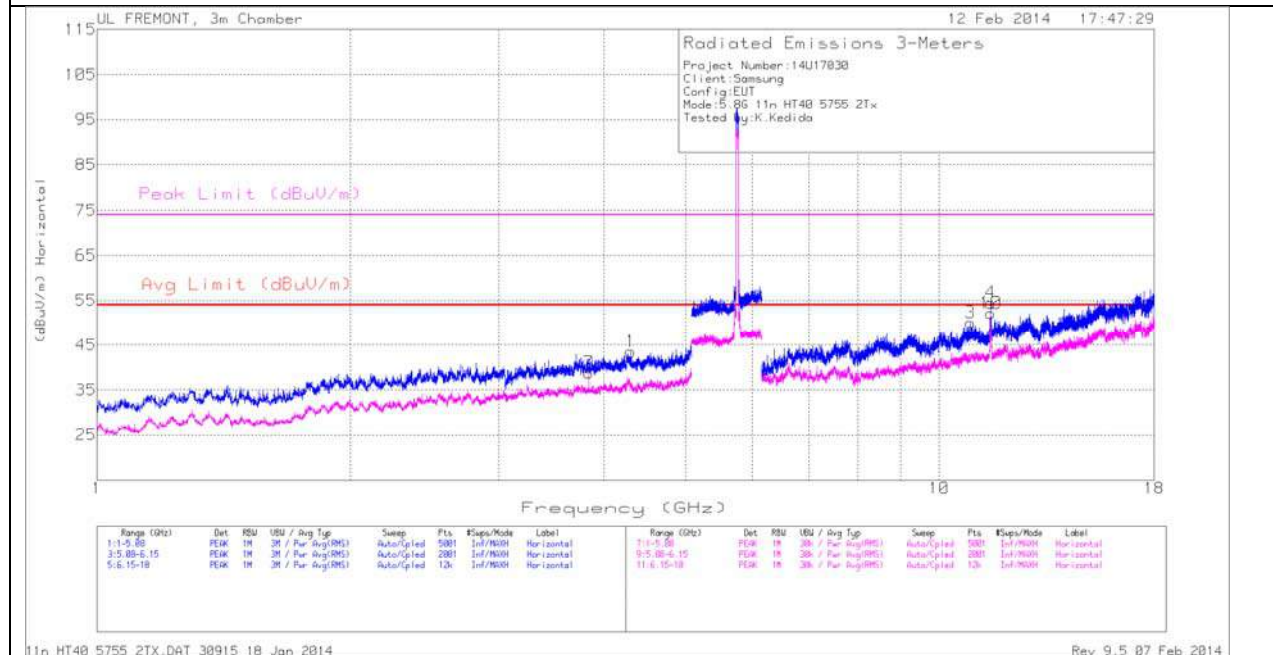
Radiated Emissions

Frequenc y (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Filtr/Pad (dB)	Correcte d Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
11.569	32.68	MAV1	38.4	-22.4	48.68	54	-5.32	74	-25.32	25	156	H

MAV1 - KDB558074 Option 1 Maximum RMS Average

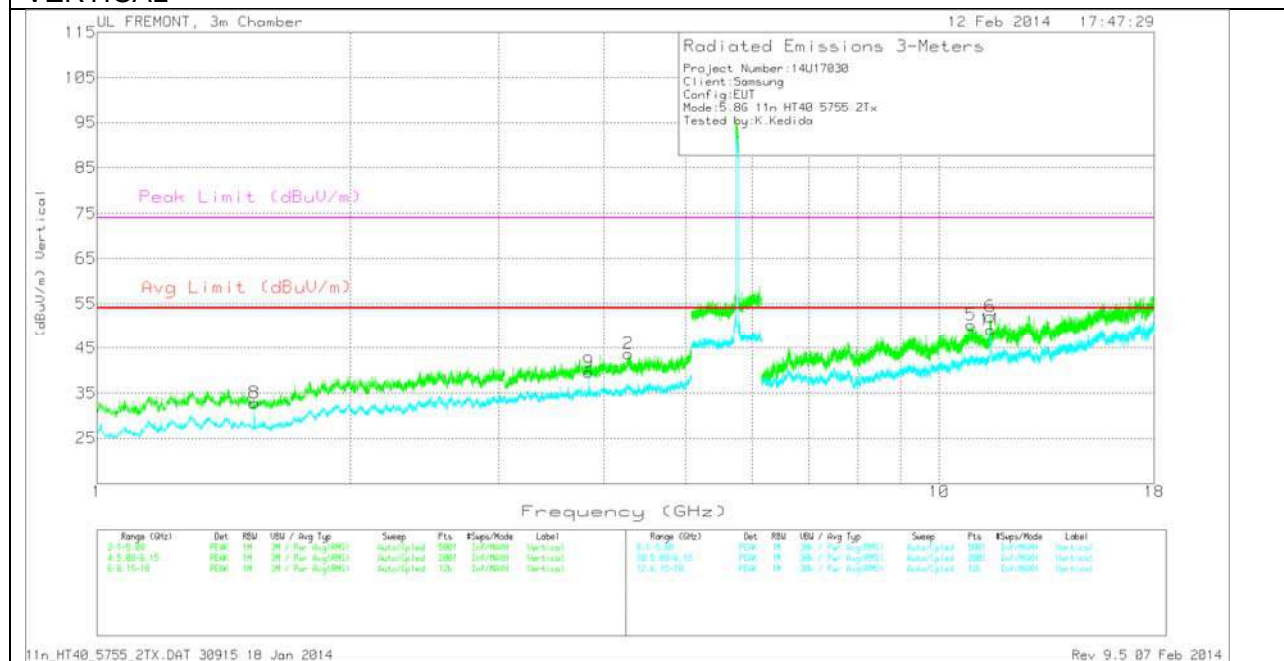
11.2.6. TX ABOVE 1 GHz 802.11n HT40 CDD MODE IN THE 5.8 GHz BAND
HARMONICS AND SPURIOUS EMISSIONS

**MID CHANNEL
HORIZONTAL**



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

MID CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
8	1.538	40.08	Avg	28.7	-36	32.78	54	-21.22	-	-	0-360	101	V
7	3.836	36.09	Avg	33.6	-30.9	38.79	54	-15.21	-	-	0-360	101	H
9	3.836	36.9	Avg	33.6	-30.9	39.6	54	-14.4	-	-	0-360	201	V
2	4.275	38.79	PK	33.6	-28.7	43.69	54	-10.31	74	-30.31	0-360	201	V
1	4.302	39.68	PK	33.6	-29.8	43.48	54	-10.52	74	-30.52	0-360	200	H
3	10.896	35.05	PK	37.9	-22.9	50.05	54	-3.95	74	-23.95	0-360	100	H
5	10.908	34.93	PK	37.9	-22.6	50.23			74	-23.77	0-360	101	V
6	11.497	36.7	PK	38.3	-22.9	52.1			74	-21.9	0-360	201	V
4	11.51	39.38	PK	38.3	-23.2	54.48			74	-19.52	0-360	200	H
11	11.511	34.04	Avg	38.3	-23.2	49.14	54	-4.86	-	-	0-360	200	V

PK - Peak detector

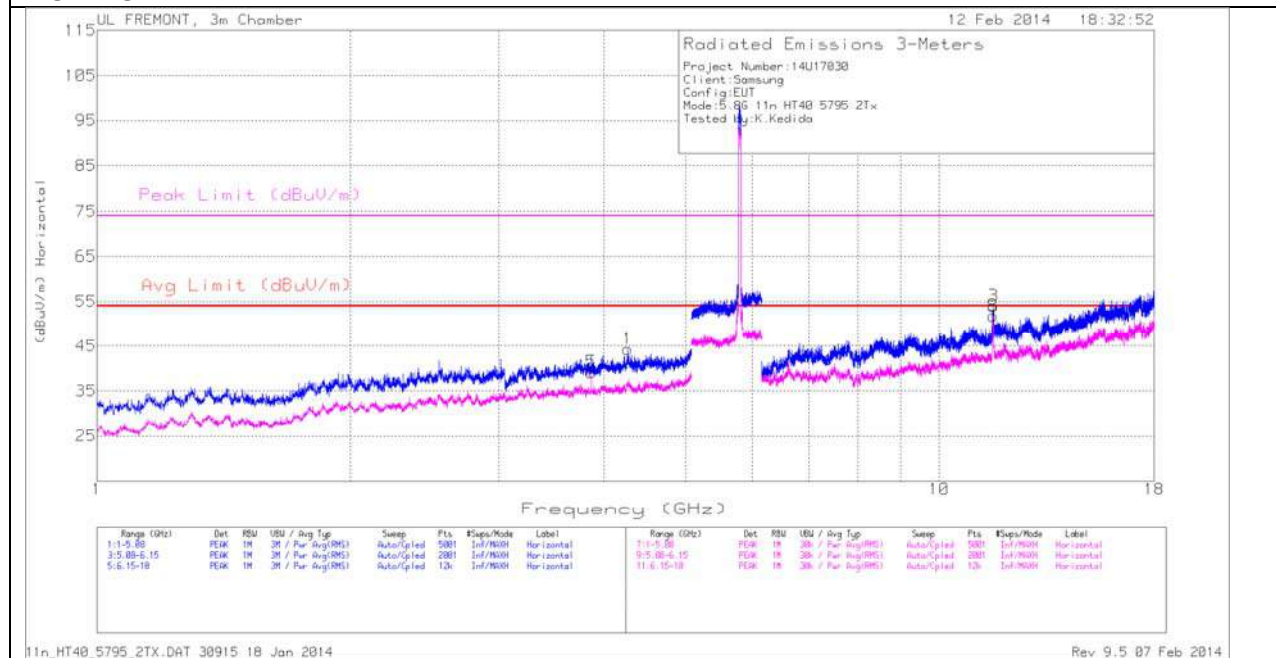
Avg - Video bandwidth < Resolution bandwidth

Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
11.569	32.68	MAV1	38.4	-22.4	48.68	54	-5.32	74	-25.32	25	156	H

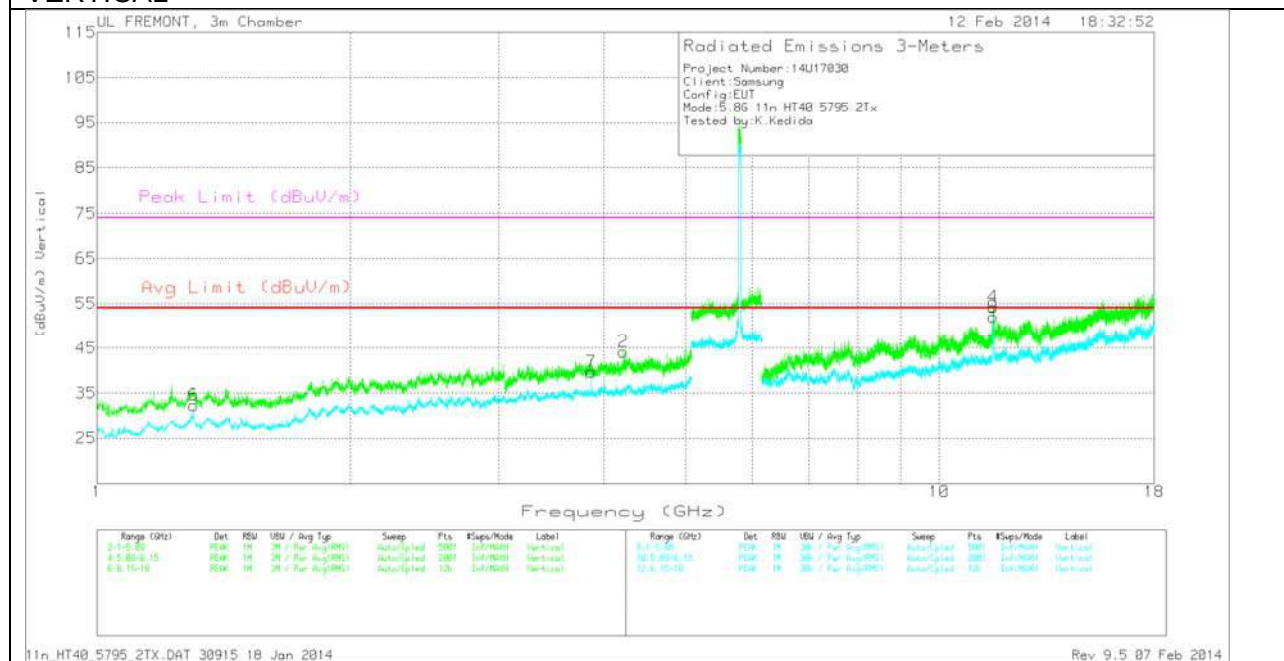
MAV1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL
VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	1.303	38.89	Avg	30.3	-36.9	32.29	54	-21.71	-	-	0-360	100	V
5	3.863	36.37	Avg	33.6	-30.8	39.17	54	-14.83	-	-	0-360	101	H
7	3.863	36.89	Avg	33.6	-30.8	39.69	54	-14.31	-	-	0-360	200	V
2	4.217	40.26	PK	33.5	-29.6	44.16	54	-9.84	74	-29.84	0-360	201	V
1	4.267	39.1	PK	33.6	-28.4	44.3	54	-9.7	74	-29.7	0-360	101	H
4	11.586	38.51	PK	38.4	-22.7	54.21			74	-19.79	0-360	201	V
8	11.591	36.23	Avg	38.4	-22.8	51.83	54	-2.17	-	-	0-360	101	H
9	11.591	36.4	Avg	38.4	-22.8	52	54	-2	-	-	0-360	201	V
3	11.595	38.41	PK	38.4	-22.8	54.01			74	-19.99	0-360	200	H

PK - Peak detector

Avg - Video bandwidth < Resolution bandwidth

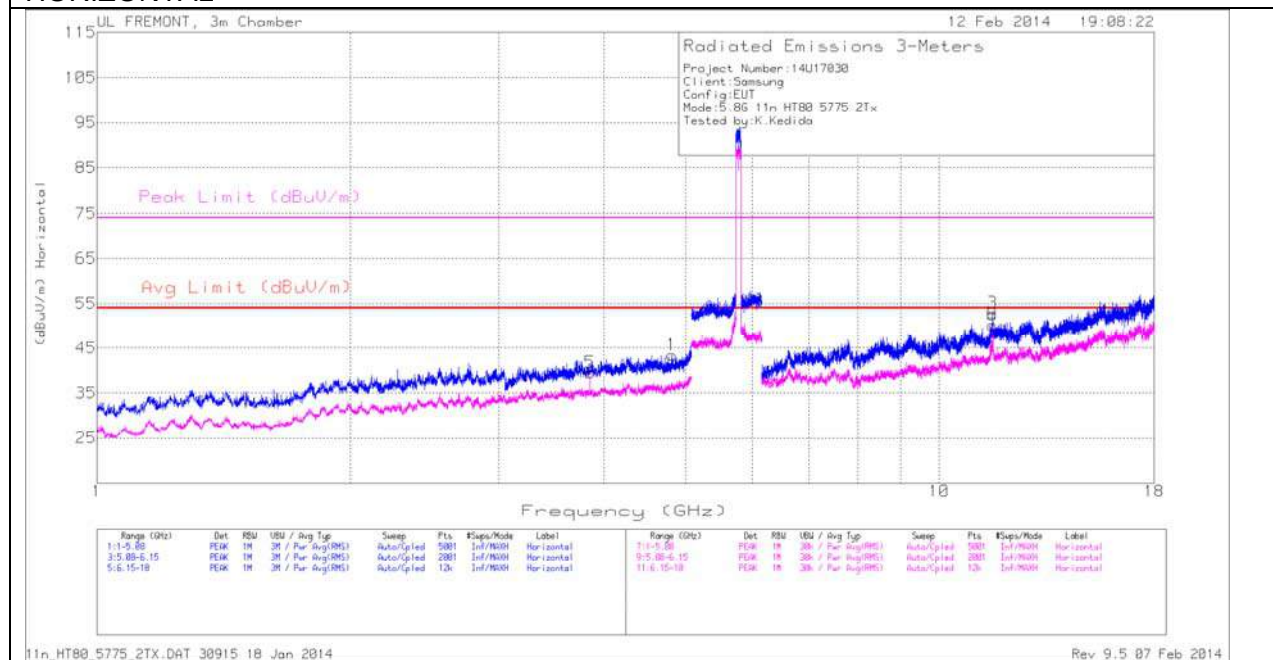
Radiated Emissions

Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/Filtr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
11.591	27.89	MAV1	38.4	-22.8	43.49	54	-10.51	74	-30.51	46	372	V

MAV1 - KDB558074 Option 1 Maximum RMS Average

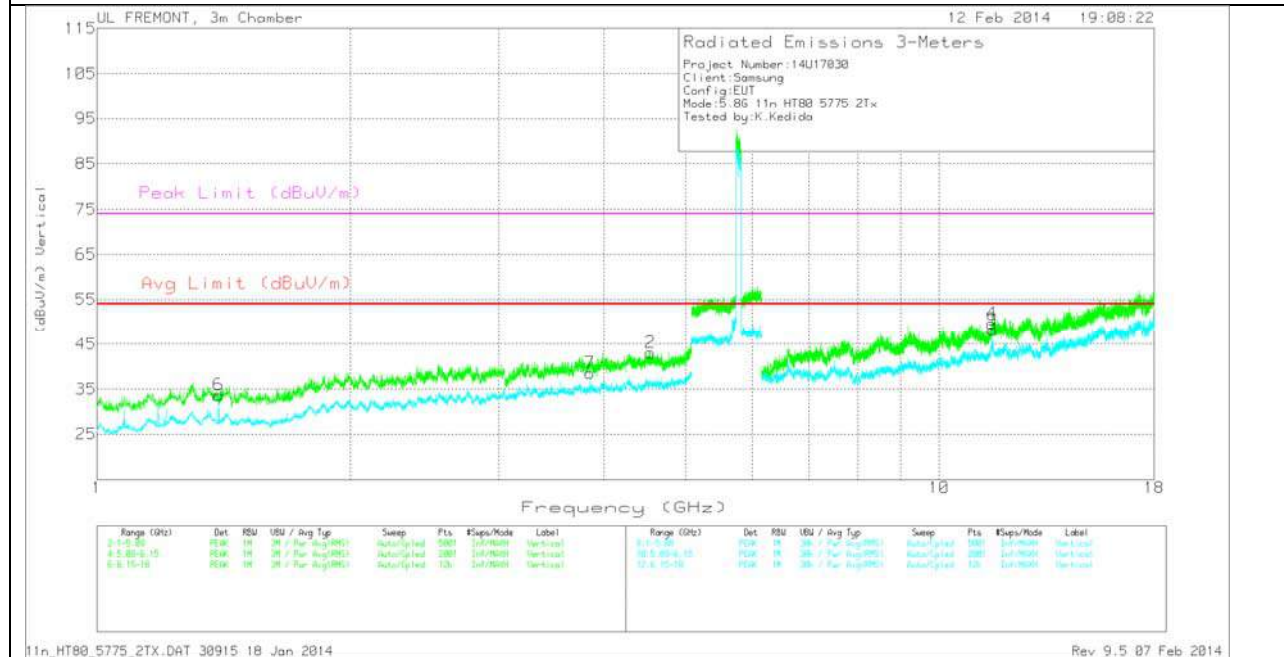
11.2.7. TX ABOVE 1 GHz 802.11ac HT80 CDD MODE IN THE 5.8 GHz BAND
HARMONICS AND SPURIOUS EMISSIONS

HORIZONTAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

VERTICAL



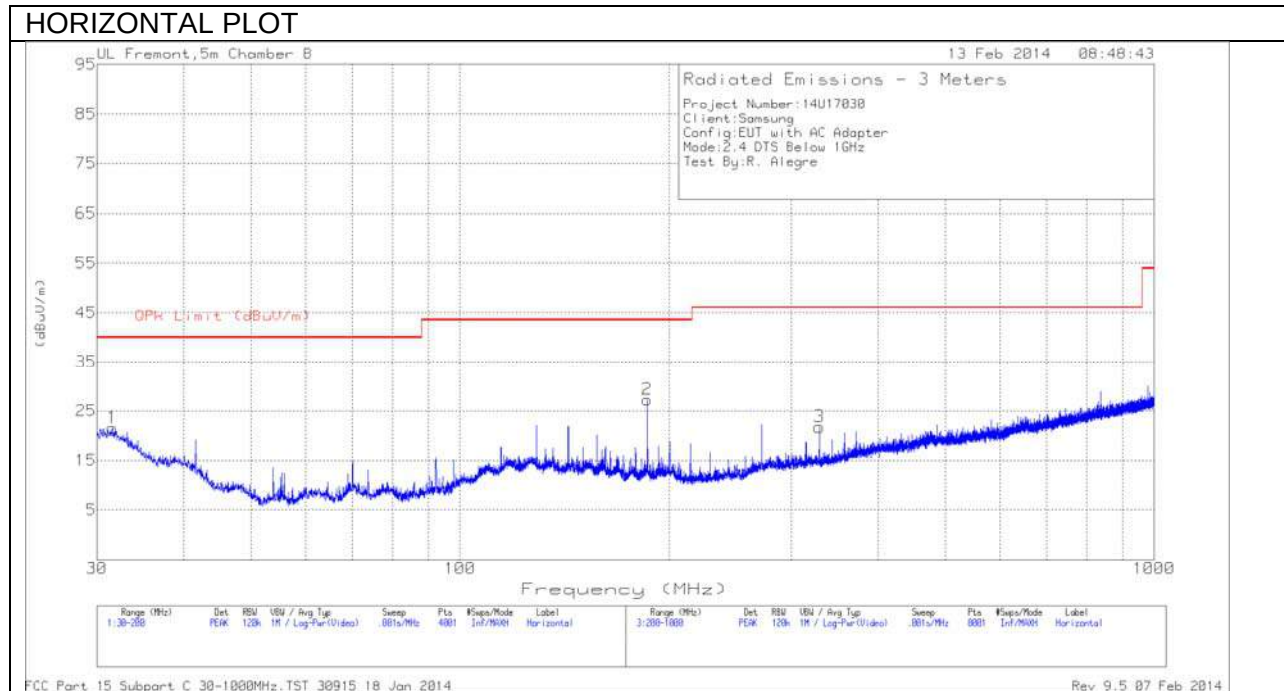
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

CHANNEL DATA

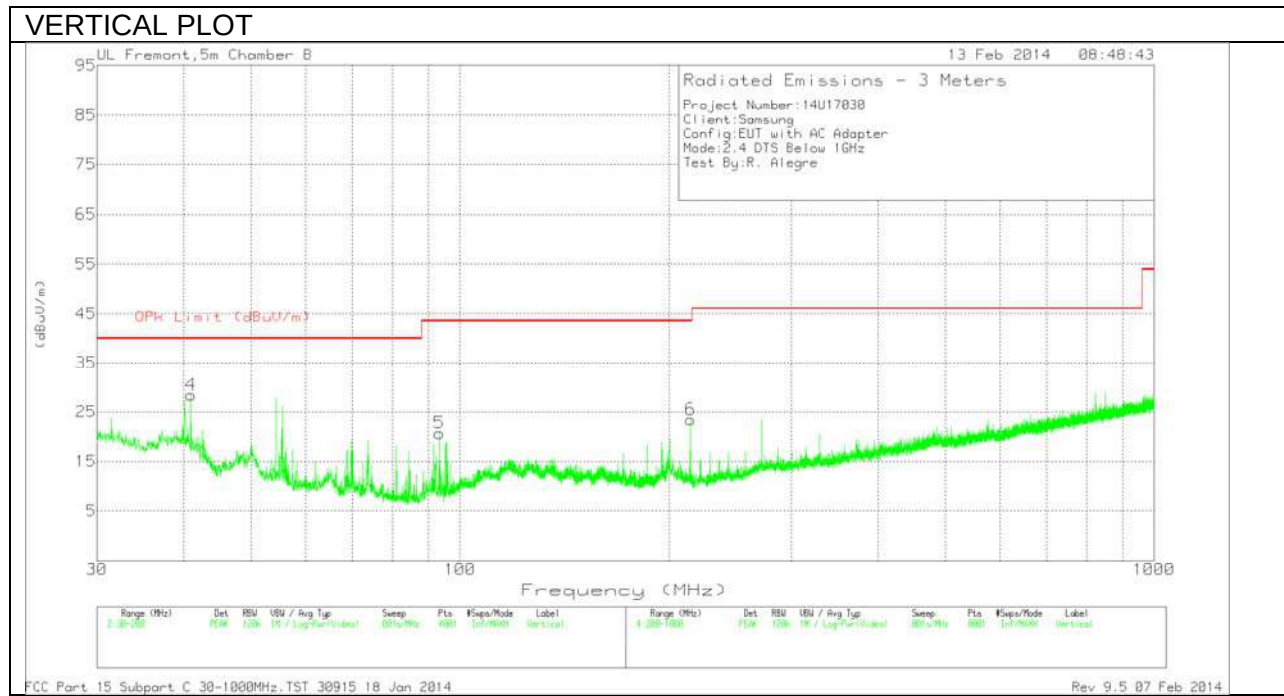
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/ Filt/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
6	1.394	40.37	Avg	29.8	-36.5	33.67	54	-20.33	-	-	0-360	101	V
7	3.849	36.41	Avg	33.6	-31.5	38.51	54	-15.49	-	-	0-360	201	V
5	3.85	37.27	Avg	33.6	-31.4	39.47	54	-14.53	-	-	0-360	101	H
2	4.542	39.04	PK	33.8	-29.8	43.04	54	-10.96	74	-30.96	0-360	201	V
1	4.816	38.57	PK	33.9	-29.1	43.37	54	-10.63	74	-30.63	0-360	201	H
4	11.545	34.21	PK	38.3	-22.9	49.61	54	-4.39	74	-24.39	0-360	201	V
3	11.564	37.19	PK	38.4	-22.7	52.89			74	-21.11	0-360	200	H
8	11.571	34.07	Avg	38.4	-22.3	50.17	54	-3.83	-	-	0-360	200	H
9	11.571	32.11	Avg	38.4	-22.3	48.21	54	-5.79	-	-	0-360	200	V

11.3. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)



Below 1G Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	31.5725	30.42	PK	20	-28.9	21.52	40	-18.48	0-360	400	H
4	40.965	44.41	PK	12.7	-28.7	28.41	40	-11.59	0-360	101	V
5	93.41	40.58	PK	8.2	-28.1	20.68	43.52	-22.84	0-360	101	V
2	186.145	43.39	PK	11	-27.1	27.29	43.52	-16.23	0-360	101	H
6	214.8	39.73	PK	10.5	-26.8	23.43	46.02	-22.59	0-360	200	V
3	329.3	33.74	PK	13.9	-25.9	21.74	46.02	-24.28	0-360	200	H

PK - Peak detector

FCC Part 15 Subpart C 30-1000MHz.TST 30915 18 Jan 2014

Rev 9.5 07 Feb 2014

12. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

RSS-Gen 7.2.2

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

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4 2009.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

6 WORST EMISSIONS

Line-L1 .15 - 30MHz

Trace Markers

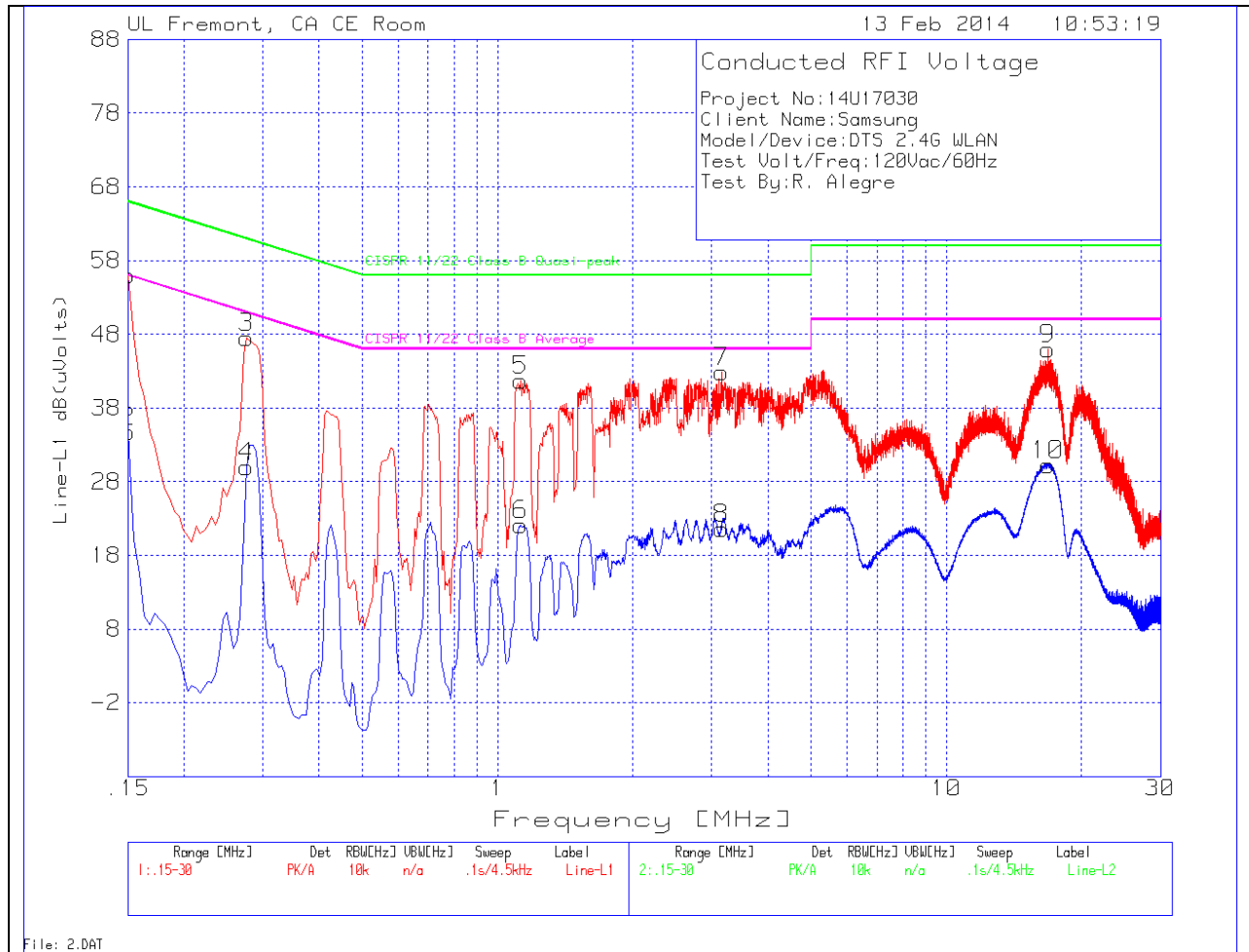
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin to Limit (dB)	CISPR 11/22 Class B Average	Margin to Limit (dB)
1	.15	54.6	PK	1.4	0	56	66	-10	-	-
2	.15	33.31	Av	1.4	0	34.71	-	-	56	-21.29
3	.276	46.89	PK	.6	0	47.49	60.9	-13.41	-	-
4	.276	29.4	Av	.6	0	30	-	-	50.9	-20.9
5	1.1265	41.5	PK	.2	0	41.7	56	-14.3	-	-
6	1.1265	21.88	Av	.2	0	22.08	-	-	46	-23.92
7	3.1515	42.55	PK	.2	.1	42.85	56	-13.15	-	-
8	3.1515	21.34	Av	.2	.1	21.64	-	-	46	-24.36
9	16.827	45.52	PK	.3	.2	46.02	60	-13.98	-	-
10	16.827	29.76	Av	.3	.2	30.26	-	-	50	-19.74

Line-L2 .15 - 30MHz

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin to Limit (dB)	CISPR 11/22 Class B Average	Margin to Limit (dB)
11	.15	39.93	PK	1.5	0	41.43	66	-24.57	-	-
12	.15	13.87	Av	1.5	0	15.37	-	-	56	-40.63
13	.2715	34.98	PK	.7	0	35.68	61.1	-25.42	-	-
14	.2715	14.15	Av	.7	0	14.85	-	-	51.1	-36.25
15	.708	34.23	PK	.3	0	34.53	56	-21.47	-	-
16	.708	15.56	Av	.3	0	15.86	-	-	46	-30.14
17	4.9515	41.23	PK	.2	.1	41.53	56	-14.47	-	-
18	4.9515	21.72	Av	.2	.1	22.02	-	-	46	-23.98
19	17.1105	51.25	PK	.3	.2	51.75	60	-8.25	-	-
20	17.1105	35.59	Av	.3	.2	36.09	-	-	50	-13.91
21	19.473	48.15	PK	.3	.2	48.65	60	-11.35	-	-
22	19.473	31.31	Av	.3	.2	31.81	-	-	50	-18.19

LINE 1 RESULTS



LINE 2 RESULTS

