



**FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8**

CERTIFICATION TEST REPORT

FOR

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

MODEL NUMBER: SM-N750S, SM-N750K, SM-N750L

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IC: 649E-SMN750KOR

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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**



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--	2/3/14	Initial Issue	P. Kim
A	2/14/14	Updated equipment list; updated conducted and radiated emission statement	P. Kim
B	2/15/14	Updated equipment list	P. Kim

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.

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

MODEL: SM-N750S, SM-N750K, SM-N750L

SERIAL NUMBER: FL-029-C (RADIATED)
FL-029-D (CONDUCTED)

DATE TESTED: JANUARY 27 – FEBRUARY 3, 2014

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 3	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.

CHARLES VERGONIO
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 C63.10-2009, RSS-GEN Issue 3, and RSS-210 Issue 8.

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:

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

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 Phone + Bluetooth & DTS/UNII a/b/g/n/ac + ANT+NFC

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2412 - 2462	802.11b	20.87	122.18
2412 - 2462	802.11g	23.06	202.30
2412 - 2462	802.11n HT20	22.765	189.02
5745-5825	802.11a	21.41	138.36
5745-5825	802.11n HT20	21.44	139.32
5755-5795	802.11n HT40	21.44	139.32
5775	802.11n HT80	19.87	97.05

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an FPCB antenna, with a maximum gain of -1.58 dBi for 2.4GHz and 3.46dBi for 5GHz.

5.4. 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

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	SAMSUNG	EP-TA11KWK	SE1D805AS/B-E	N/A
Earphone	SAMSUNG	N/A	N/A	N/A

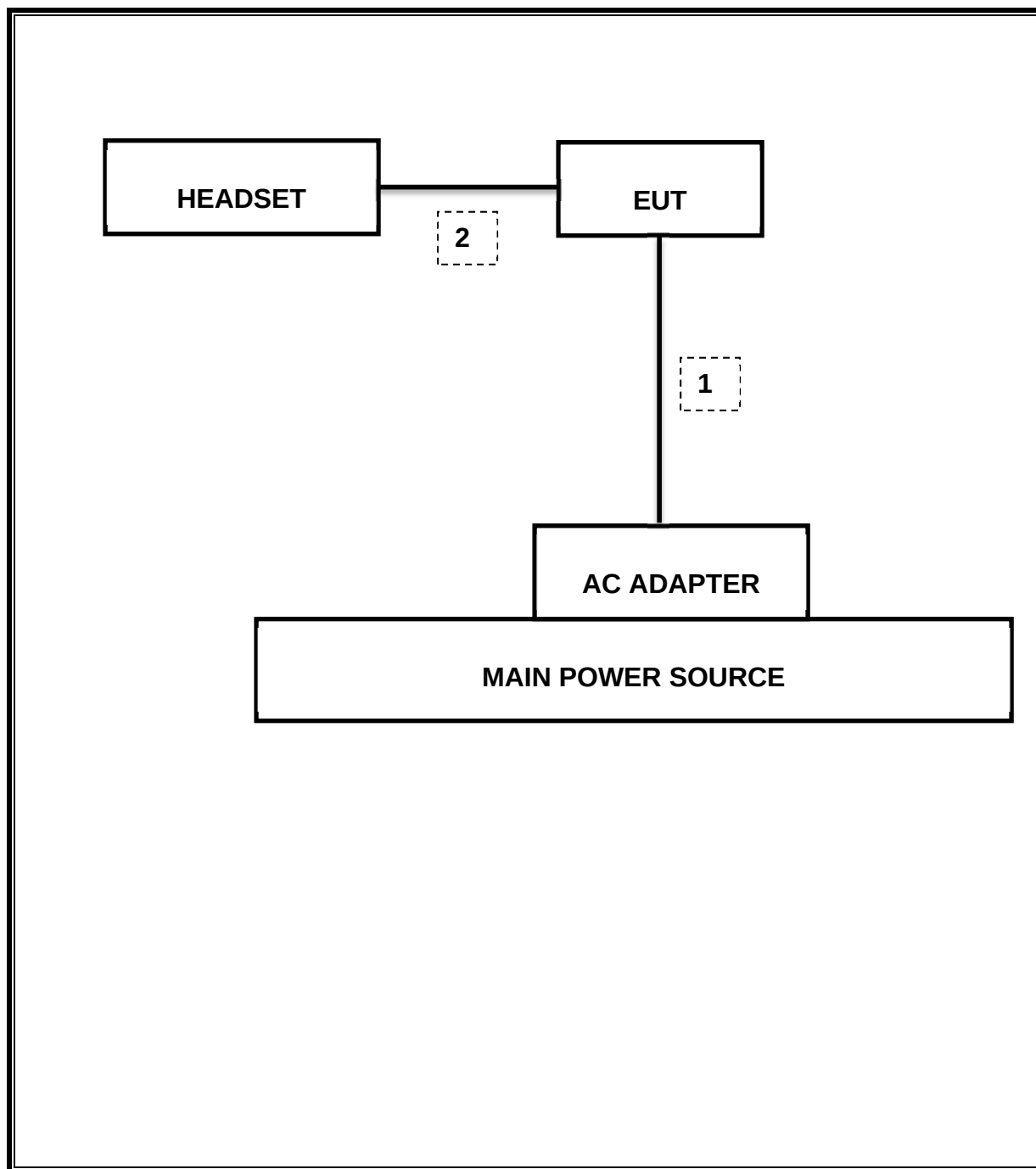
I/O CABLES

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

8. 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	9.60MHz
2.1051, 15.247 (d)	RSS-210 A8.5	Band Edge / Conducted Spurious Emission	-20dBc		Pass	-34.06dBm
15.247	RSS-210 A8.4	TX conducted output power	<30dBm		Pass	23.06dBm
15.247	RSS-210 A8.2	PSD	<8dBm		Pass	-4.76dBm
15.207 (a)	RSS-GEN 7.2.2	AC Power Line conducted emissions	Section 10	Radiated	Pass	53.82dBuV/m
15.205, 15.209	RSS-210 Clause 2.6, RSS-210 Clause 6	Radiated Spurious Emission	< 54dBuV/m		Pass	49.57dBuV/m

9. ANTENNA PORT TEST RESULTS

9.1. 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

9.1.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	9.60	0.5
Mid	2437	9.97	0.5
High	2462	10.23	0.5
Worst		9.60	

9.1.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	16.50	0.5
Mid	2437	16.54	0.5
High	2462	15.21	0.5
Worst		15.21	

9.1.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2412	17.67	0.5
Mid	2437	17.71	0.5
High	2462	17.71	0.5
Worst		17.67	

9.1.4. 802.11a MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	16.500	0.5
Mid	5785	16.500	0.5
High	5825	16.450	0.5
Worst		16.450	

9.1.5. 802.11n HT20 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5745	17.750	0.5
Mid	5785	17.750	0.5
High	5825	17.750	0.5
Worst		17.750	

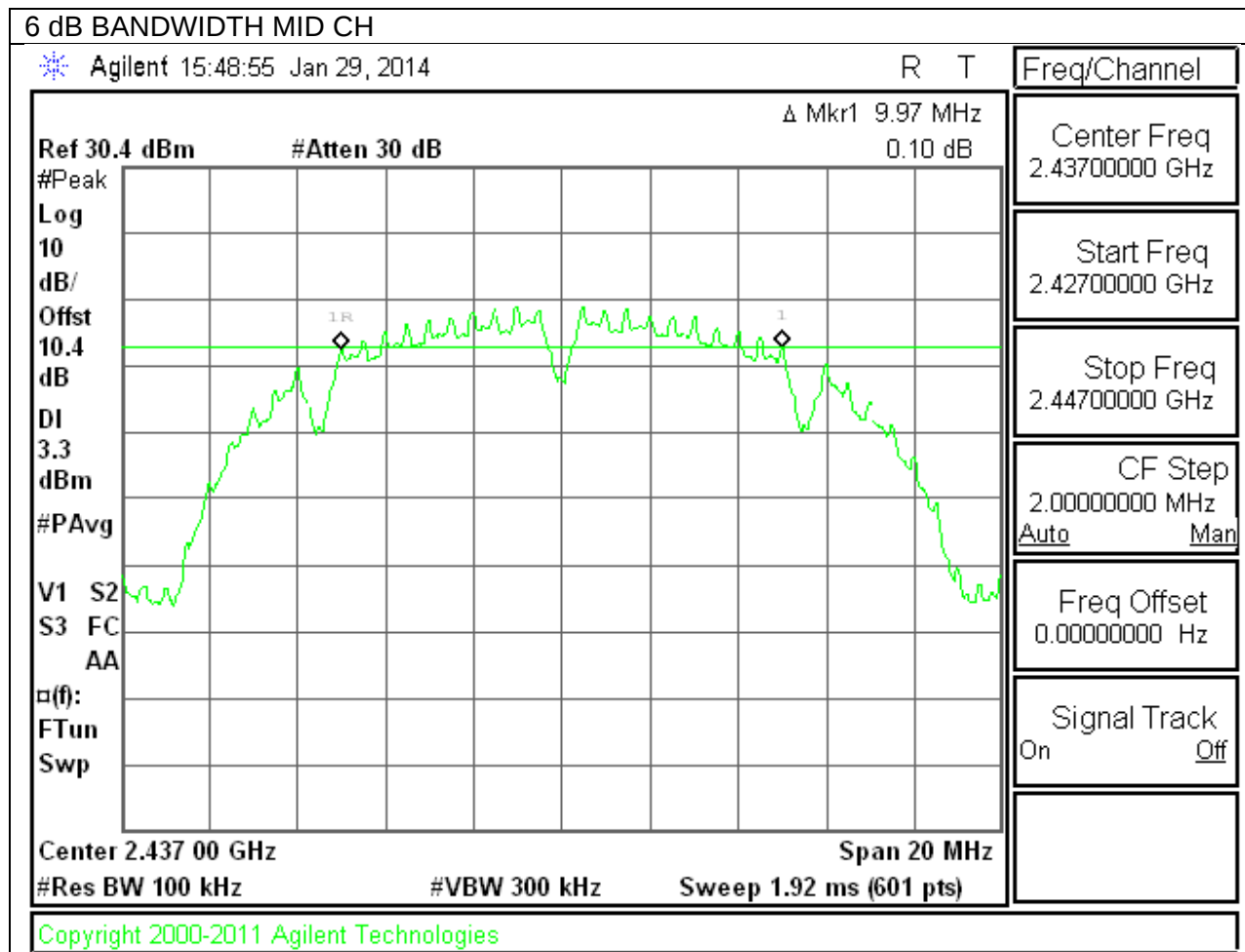
9.1.6. 802.11n HT40 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5755	36.5	0.5
High	5795	36.5	0.5
Worst		36.5	0.5

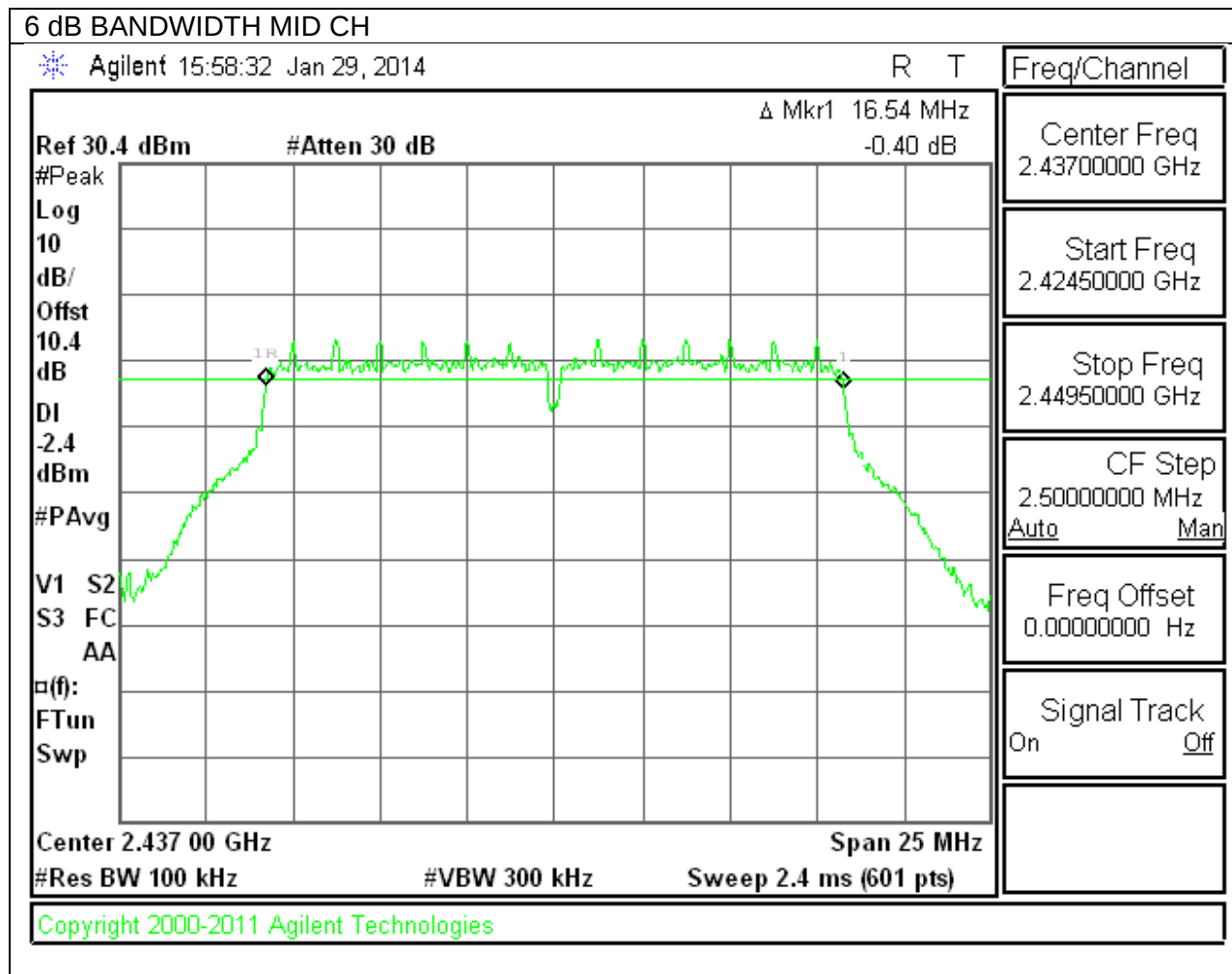
9.1.1. 802.11ac HT80 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	5775	76.45	0.5
Worst		76.45	0.5

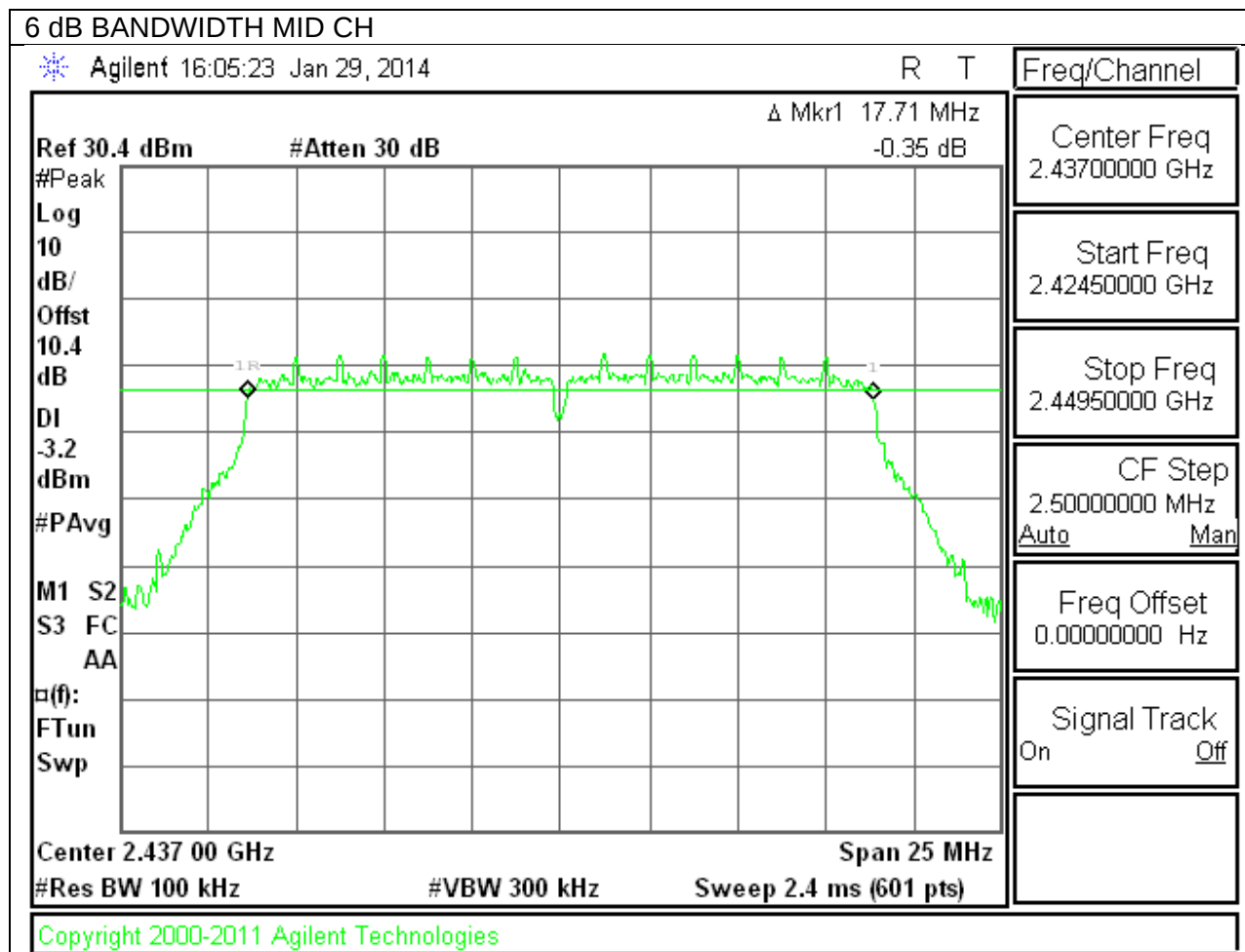
802.11b 6 dB BANDWIDTH



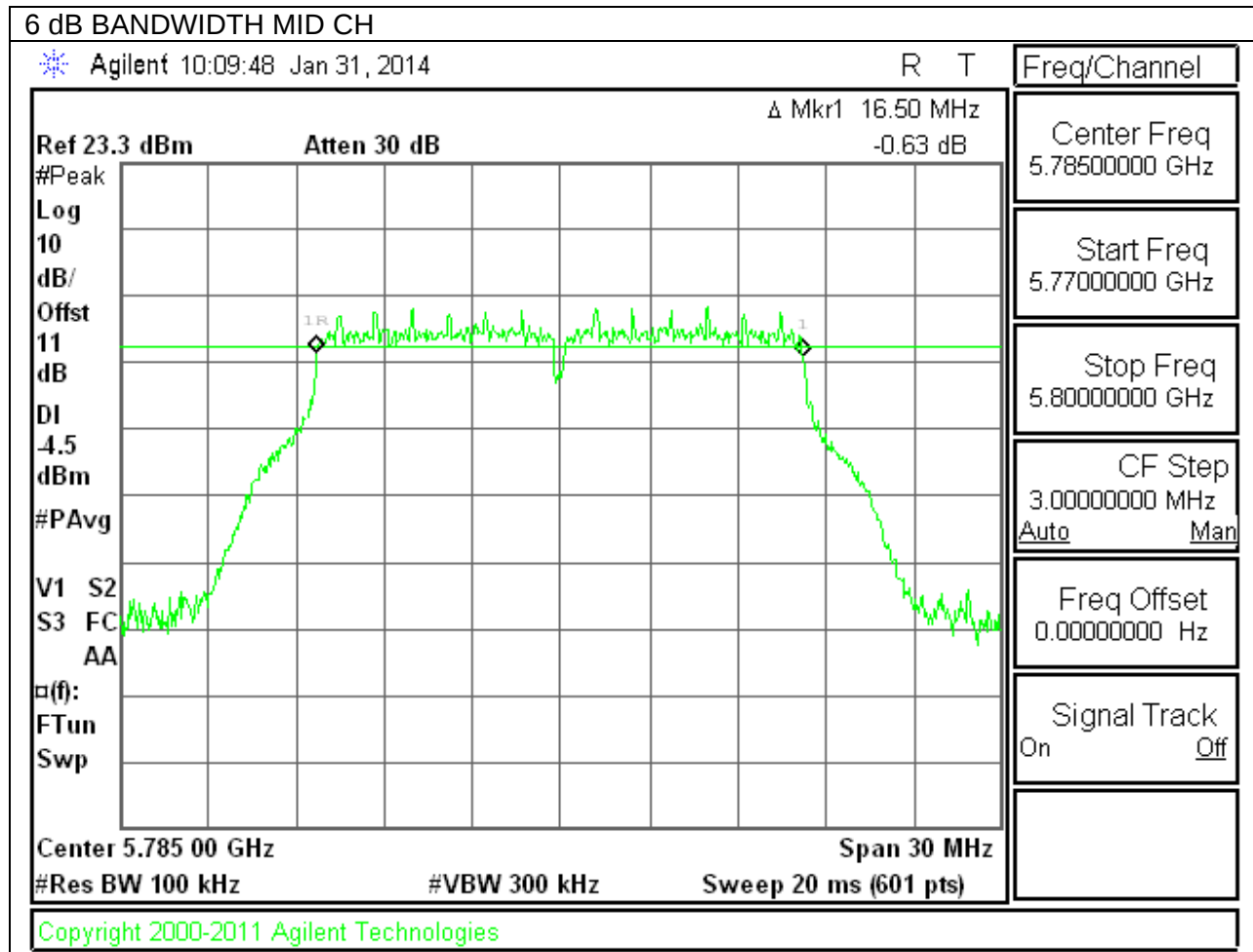
802.11g 6 dB BANDWIDTH



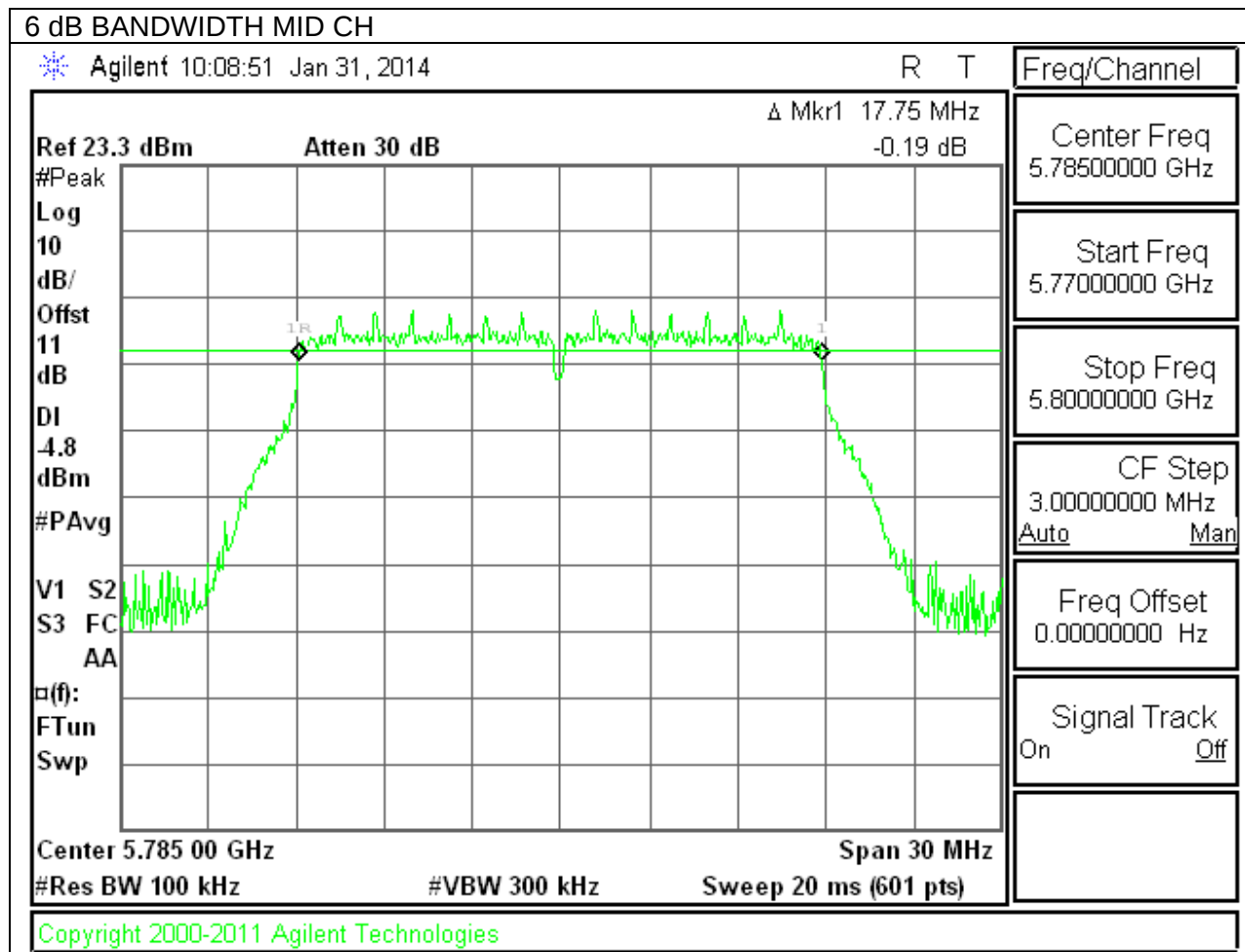
802.11n 6 dB BANDWIDTH



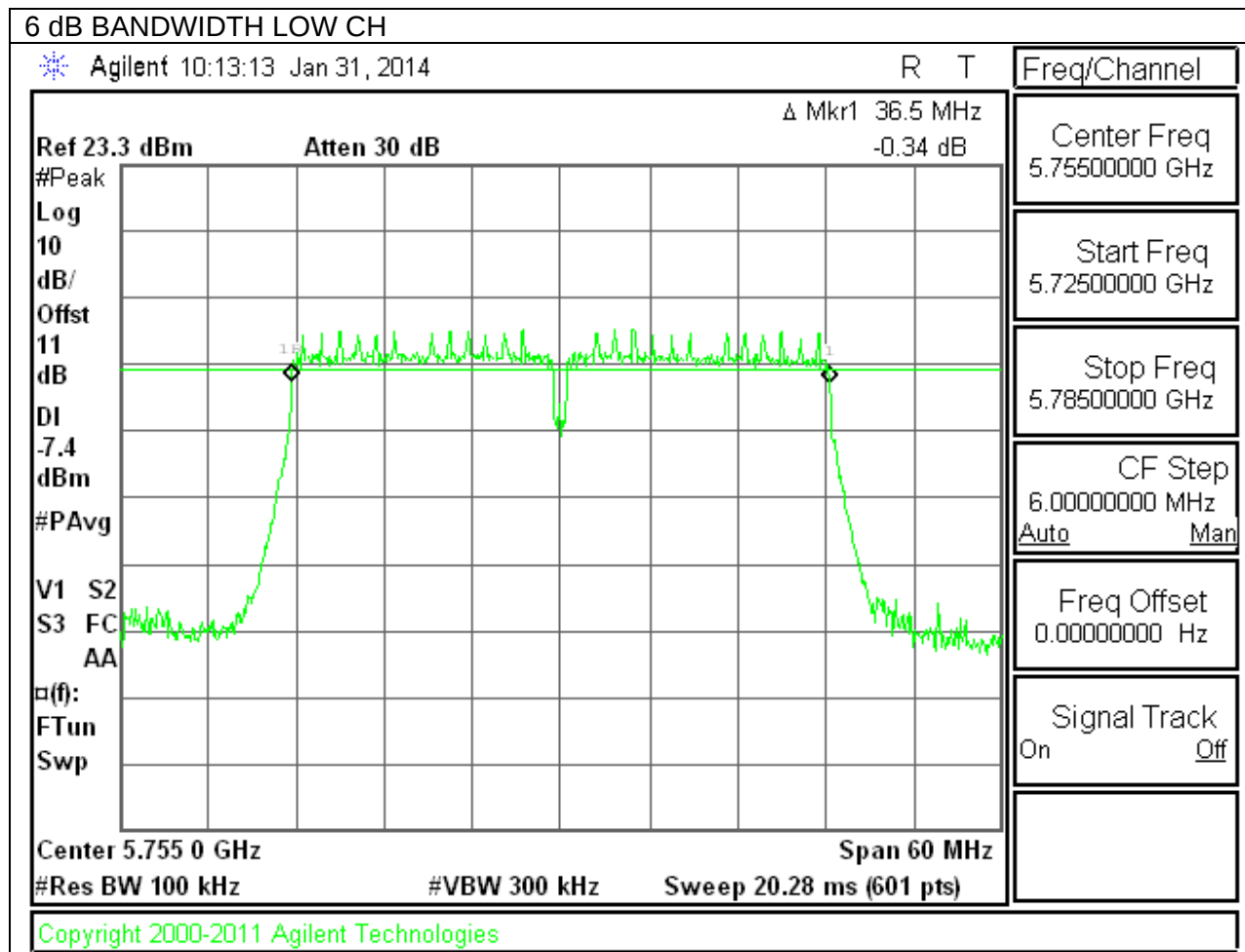
802.11a HT20 5.8GHz mode 6 dB BANDWIDTH



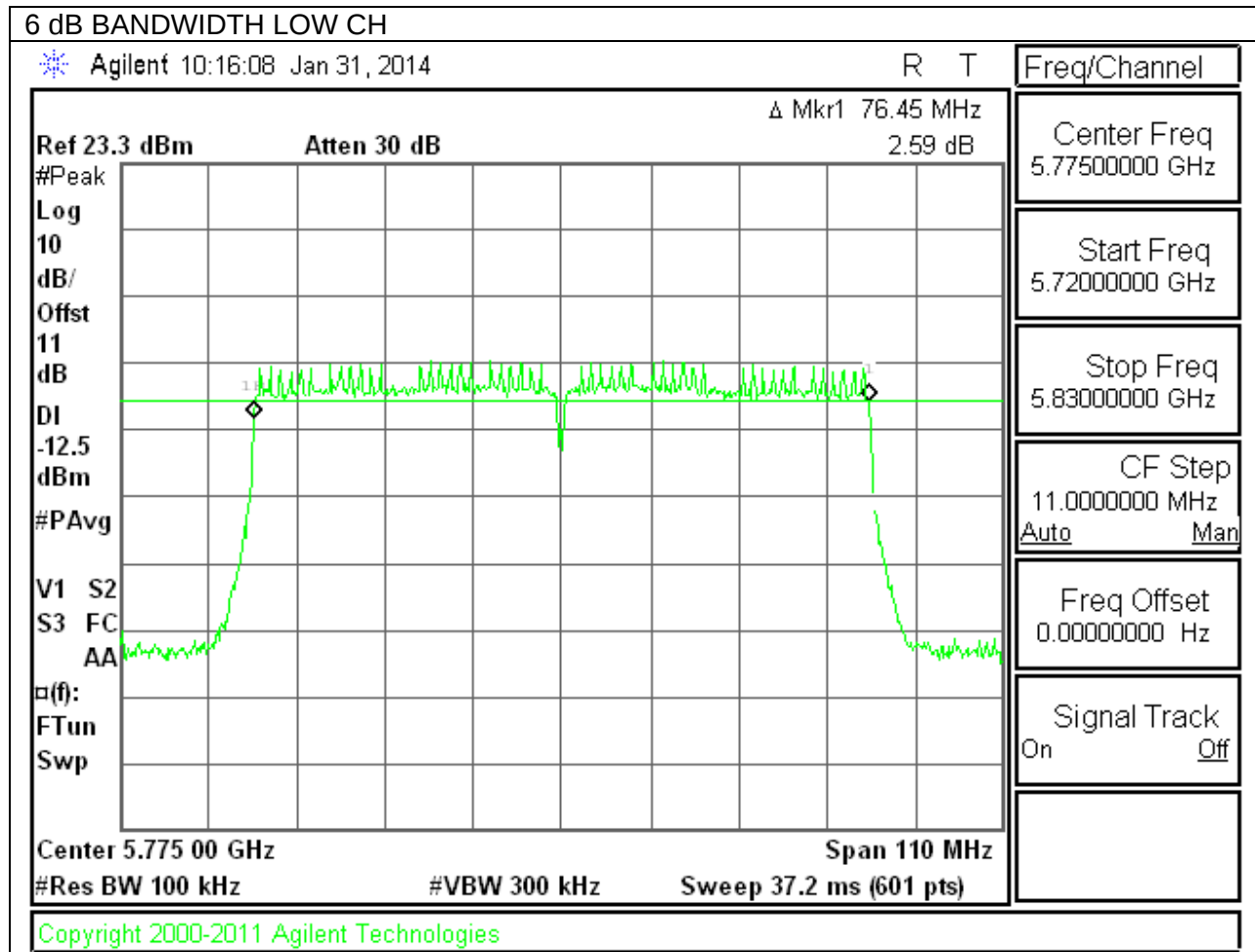
802.11n HT20 5.8GHz mode 6 dB BANDWIDTH



802.11n HT40 5.8GHz mode 6 dB BANDWIDTH



802.11ac HT80 5.8GHz mode 6 dB BANDWIDTH



9.2. 99% BANDWIDTH

LIMITS

None; for reporting purposes only.

RESULTS

9.2.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	13.14
Mid	2437	13.17
High	2462	13.13
Worst		13.17

9.2.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.84
Mid	2437	16.97
High	2462	17.08
Worst		17.84

9.2.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2412	17.96
Mid	2437	18.08
High	2462	18.05
Worst		18.08

9.2.4. 802.11a MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	16.607
Mid	5785	16.624
High	5825	16.609
Worst		16.624

9.2.5. 802.11n HT20 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5745	17.779
Mid	5785	17.772
High	5825	17.792
Worst		17.792

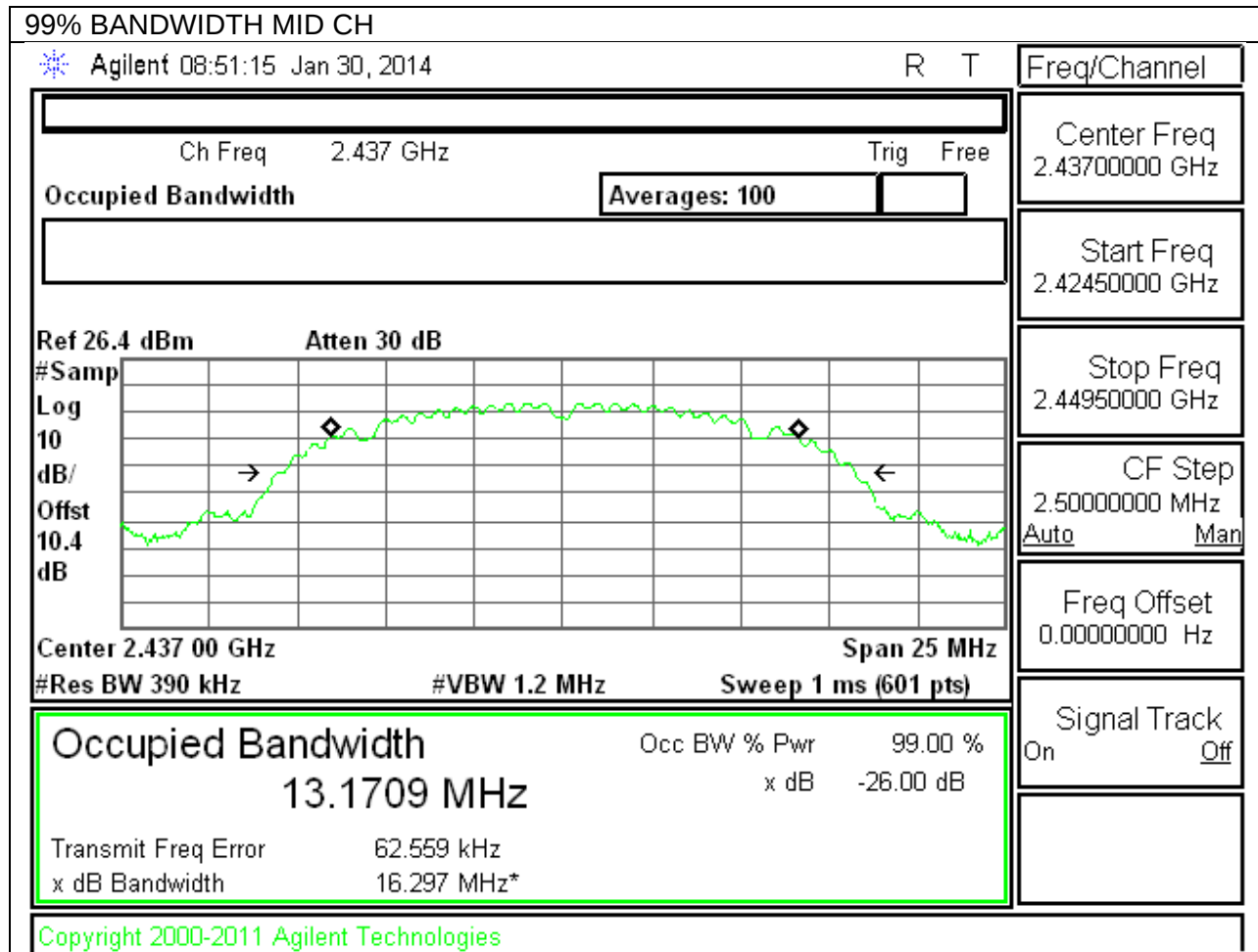
9.2.6. 802.11n HT40 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5755	36.4
High	5795	36.5
Worst		36.5

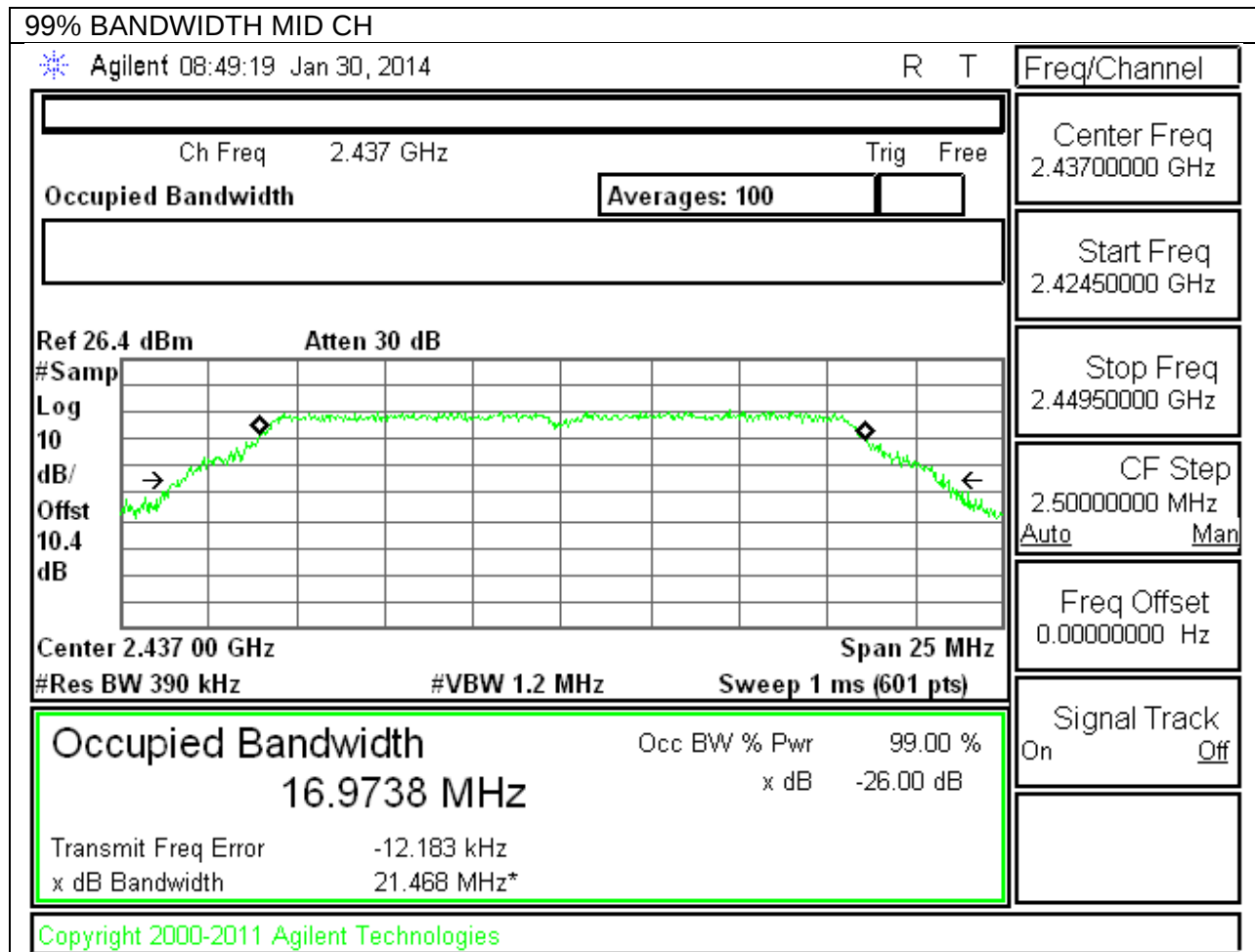
9.2.1. 802.11ac HT80 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	5775	75.7
Worst		75.7

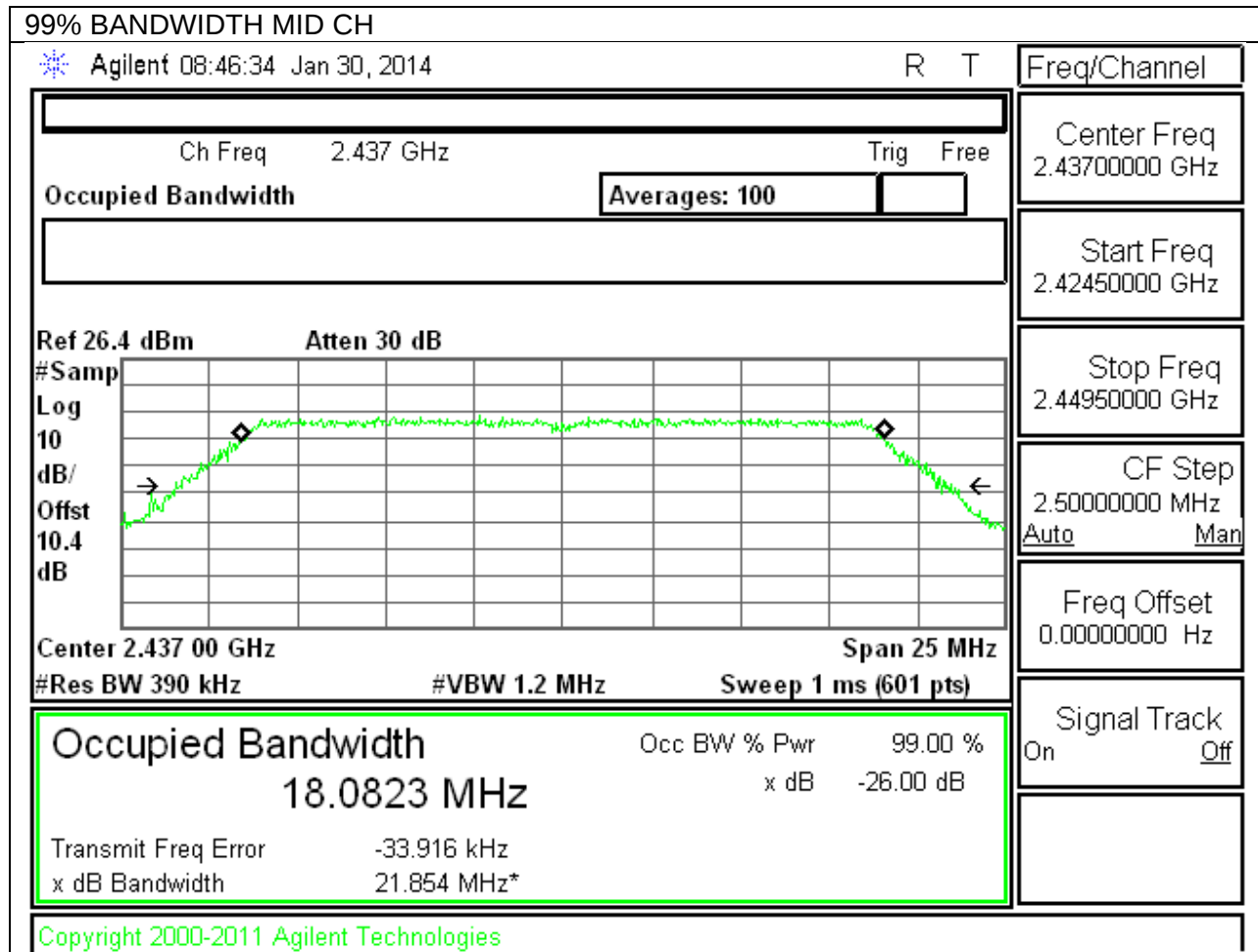
802.11b 99% BANDWIDTH



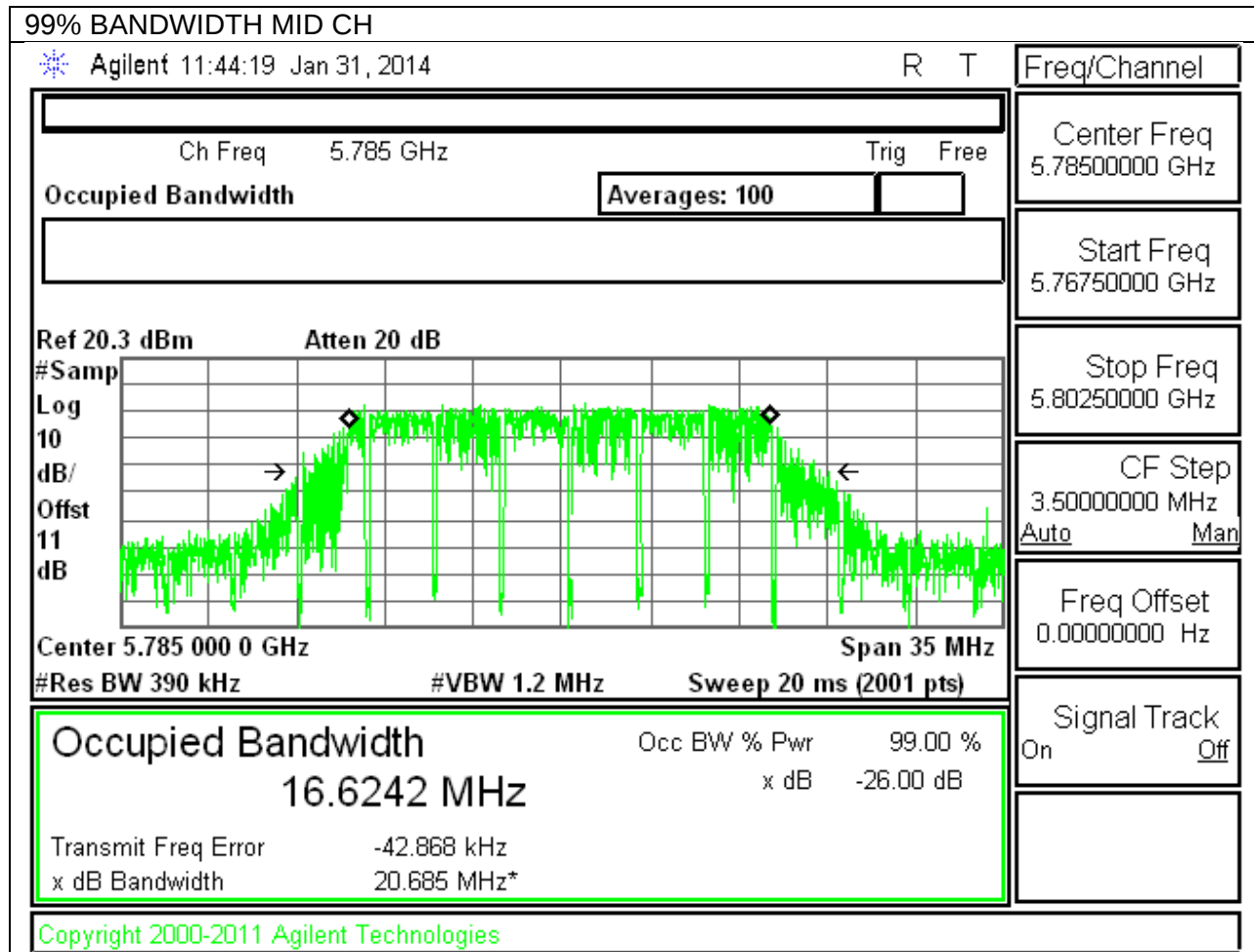
802.11g 99% BANDWIDTH



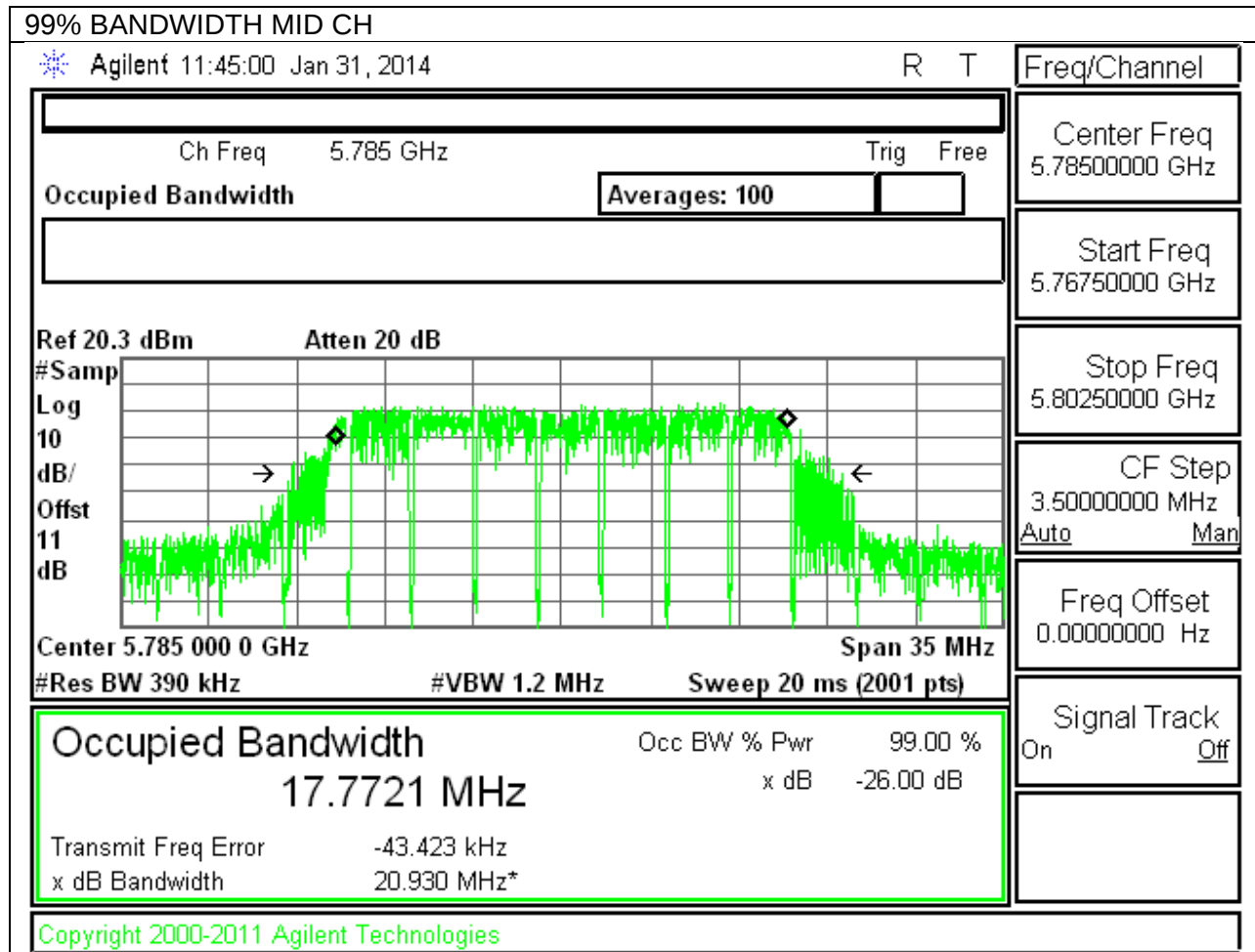
802.11n 99% BANDWIDTH



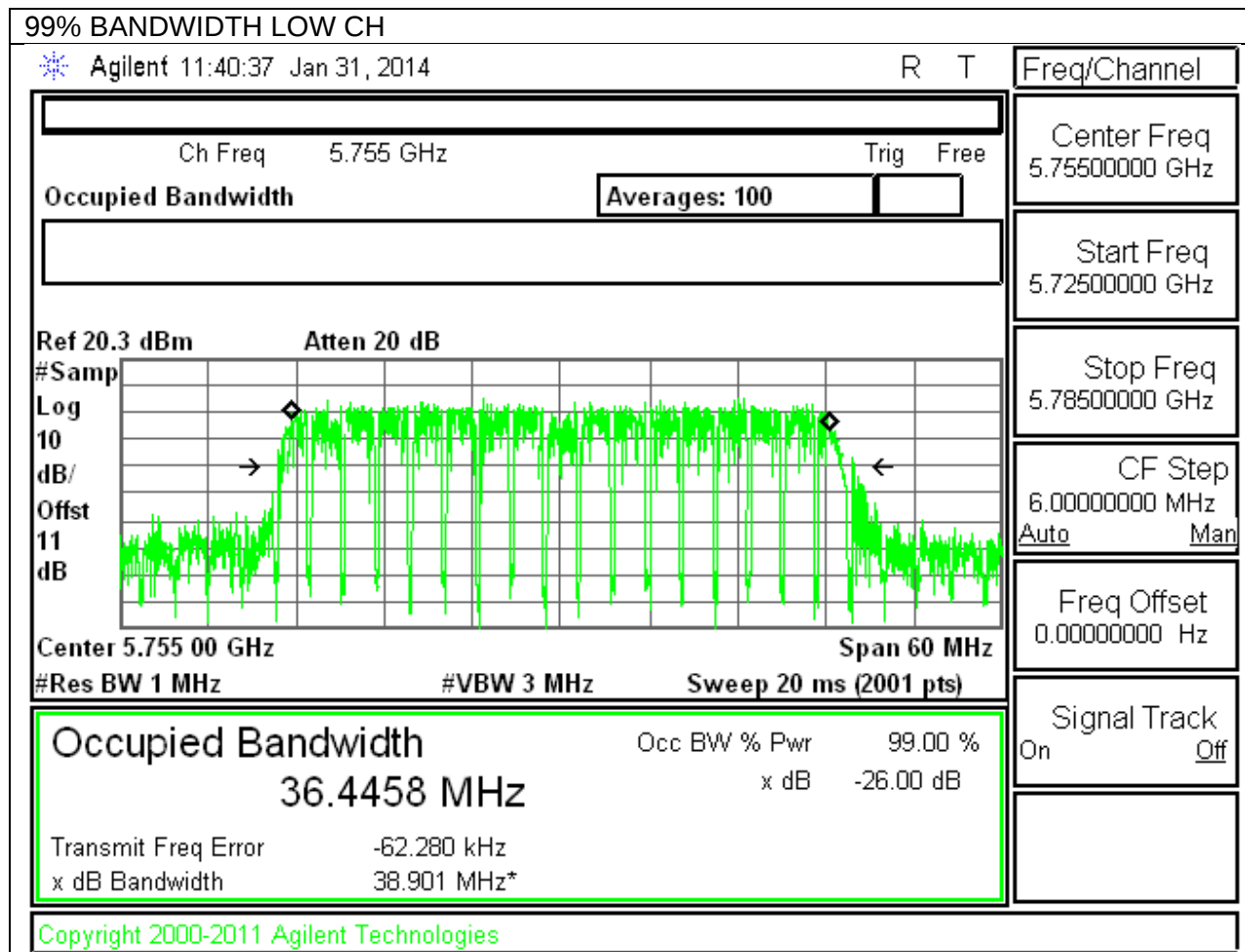
802.11a HT20 5.8GHz mode 99% BANDWIDTH



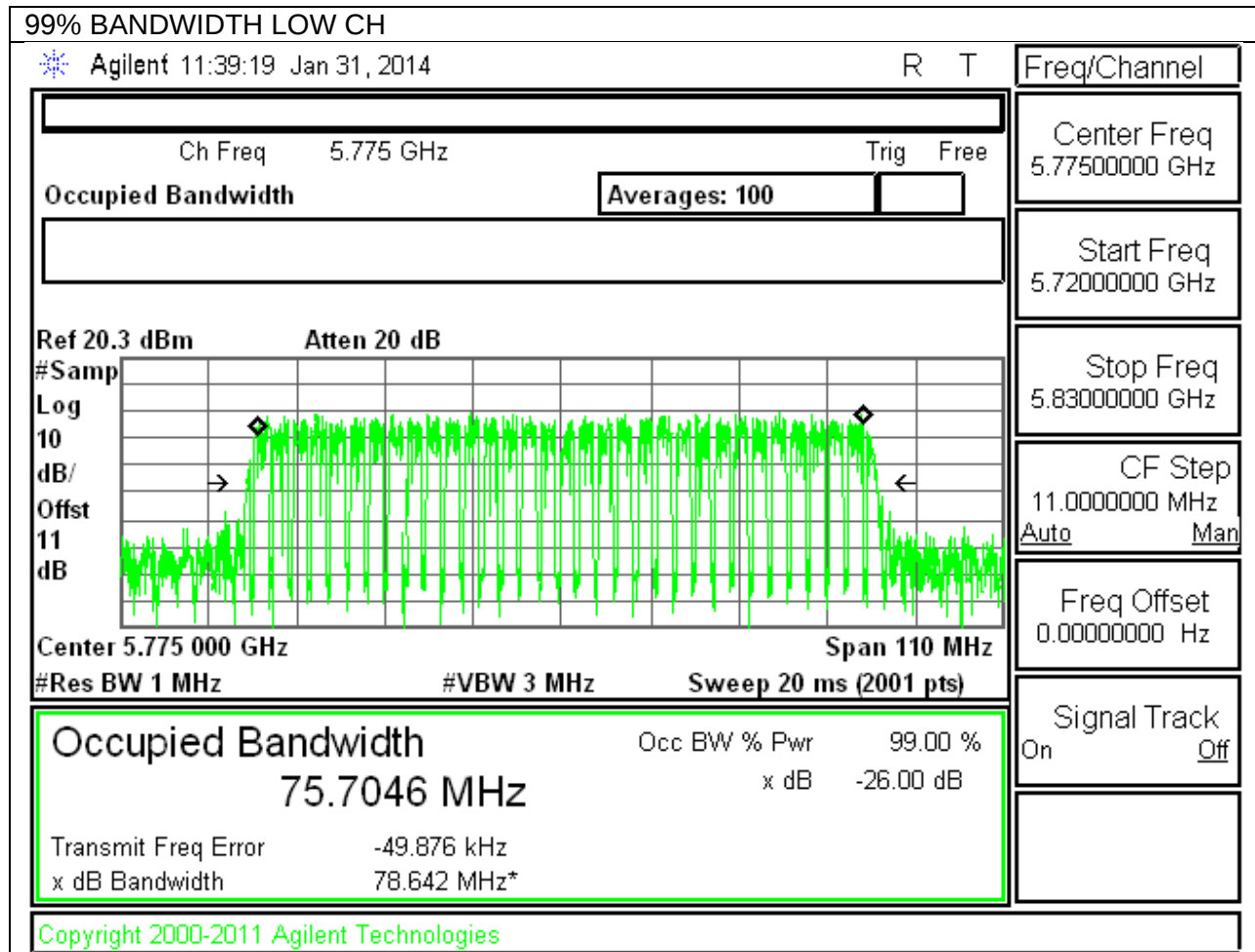
802.11n HT20 5.8GHz mode 99% BANDWIDTH



802.11n HT40 5.8GHz mode 99% BANDWIDTH



802.11ac HT80 5.8GHz mode 99% BANDWIDTH



9.3. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

The cable assembly insertion loss of 10.2 dB (including 10 dB pad and 0.2 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

RESULTS

9.3.1. 802.11b MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	2412	17.40
Mid	2437	17.40
High	2462	17.10
Worst		17.400

9.3.2. 802.11g MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	2412	14.20
Mid	2437	14.10
High	2462	14.00
Worst		14.200

9.3.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	2412	12.10
Mid	2437	12.50
High	2462	12.10
Worst		12.500

9.3.4. 802.11a MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5745	12.000
Mid	5785	12.200
High	5825	12.100
Worst		12.200

9.3.5. 802.11n HT20 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5745	12.000
Mid	5785	12.000
High	5825	12.100
Worst		12.100

9.3.6. 802.11n HT40 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5755	11.9
High	5795	11.8
Worst		11.9

9.3.1. 802.11ac HT80 MODE IN THE 5.8 GHz BAND

Channel	Frequency (MHz)	Avg Power (dBm)
Low	5775	10.2
Worst		10.2

9.4. 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

There is only one transmitter output therefore the directional gain is equal to the antenna gain.

RESULTS

9.4.1. 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	-1.58	30.00	30	36	30.00
Mid	2437	-1.58	30.00	30	36	30.00
High	2462	-1.58	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	20.64	20.64	30.00	-9.36
Mid	2437	20.87	20.87	30.00	-9.13
High	2462	20.53	20.53	30.00	-9.47
Worst			20.87		

9.4.2. 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	-1.58	30.00	30	36	30.00
Mid	2437	-1.58	30.00	30	36	30.00
High	2462	-1.58	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	22.79	22.79	30.00	-7.21
Mid	2437	23.06	23.06	30.00	-6.94
High	2462	22.41	22.41	30.00	-7.59
Worst			23.06		

9.4.3. 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	-1.58	30.00	30	36	30.00
Mid	2437	-1.58	30.00	30	36	30.00
High	2462	-1.58	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	2412	21.12	21.12	30.00	-8.88
Mid	2437	21.03	21.03	30.00	-8.97
High	2462	22.77	22.77	30.00	-7.24
Worst			22.77		

9.4.4. 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	3.46	30.00	30	36	30.00
Mid	5785	3.46	30.00	30	36	30.00
High	5825	3.46	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	5745	21.41	21.41	30.00	-8.59
Mid	5785	21.11	21.11	30.00	-8.89
High	5825	21.15	21.15	30.00	-8.85
Worst			21.41		

9.4.5. 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	3.46	30.00	30	36	30.00
Mid	5785	3.46	30.00	30	36	30.00
High	5825	3.46	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	5745	21.42	21.42	30.00	-8.58
Mid	5785	20.94	20.94	30.00	-9.06
High	5825	21.44	21.44	30.00	-8.56
Worst			21.44		

9.4.6. 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	3.46	30.00	30	36	30.00
High	5795	3.46	30.00	30	36	30.00

Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	5755	21.44	21.44	30.00	-8.56
High	5795	21.35	21.35	30.00	-8.65
Worst			21.44		

9.4.1. 802.11ac HT80 MODE IN THE 5.8 GHz BAND

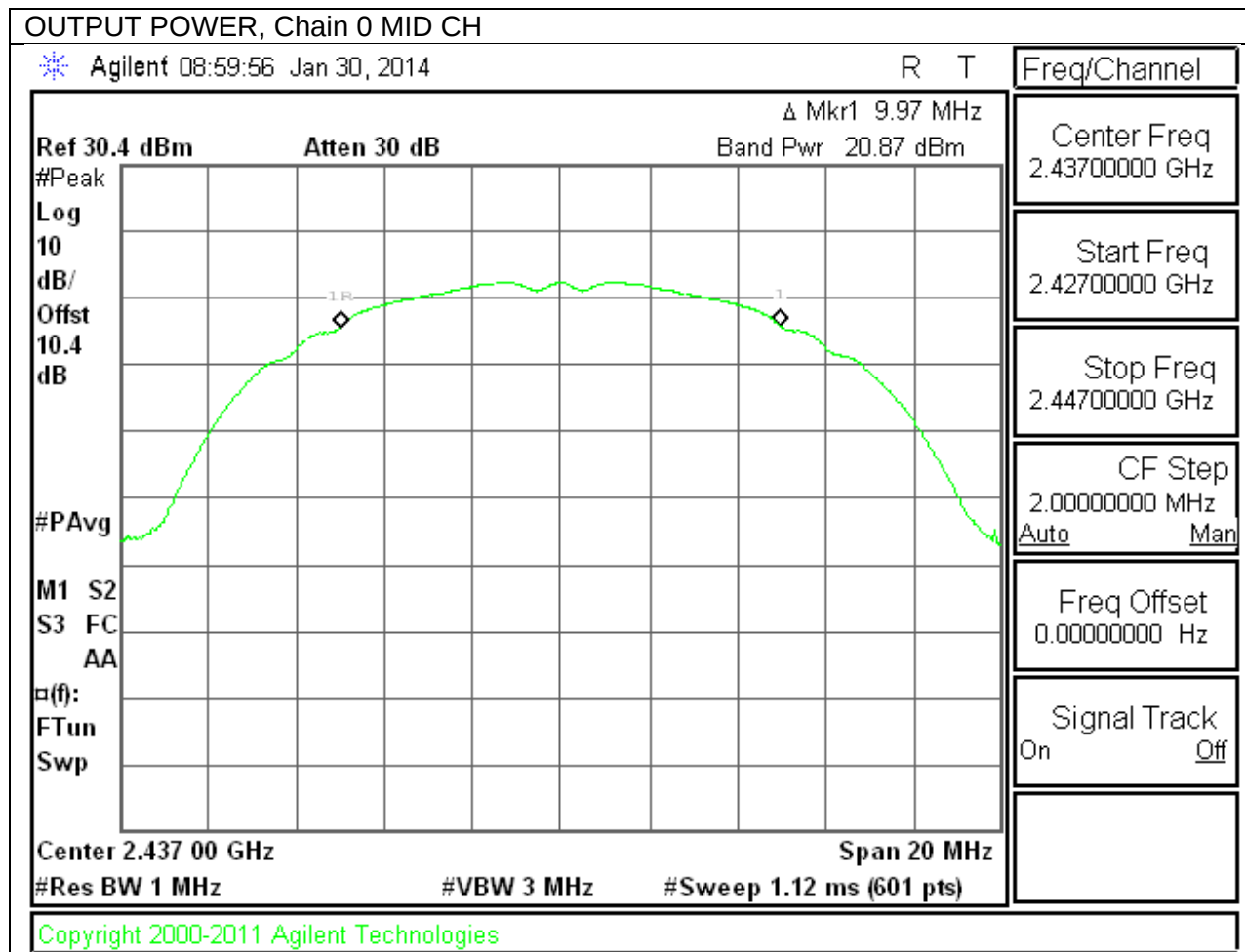
Limits

Channel	Frequency (MHz)	Directional Gain (dBi)	FCC Power Limit (dBm)	IC Power Limit (dBm)	IC EIRP Limit (dBm)	Max Power (dBm)
Low	5775	3.46	30.00	30	36	30.00

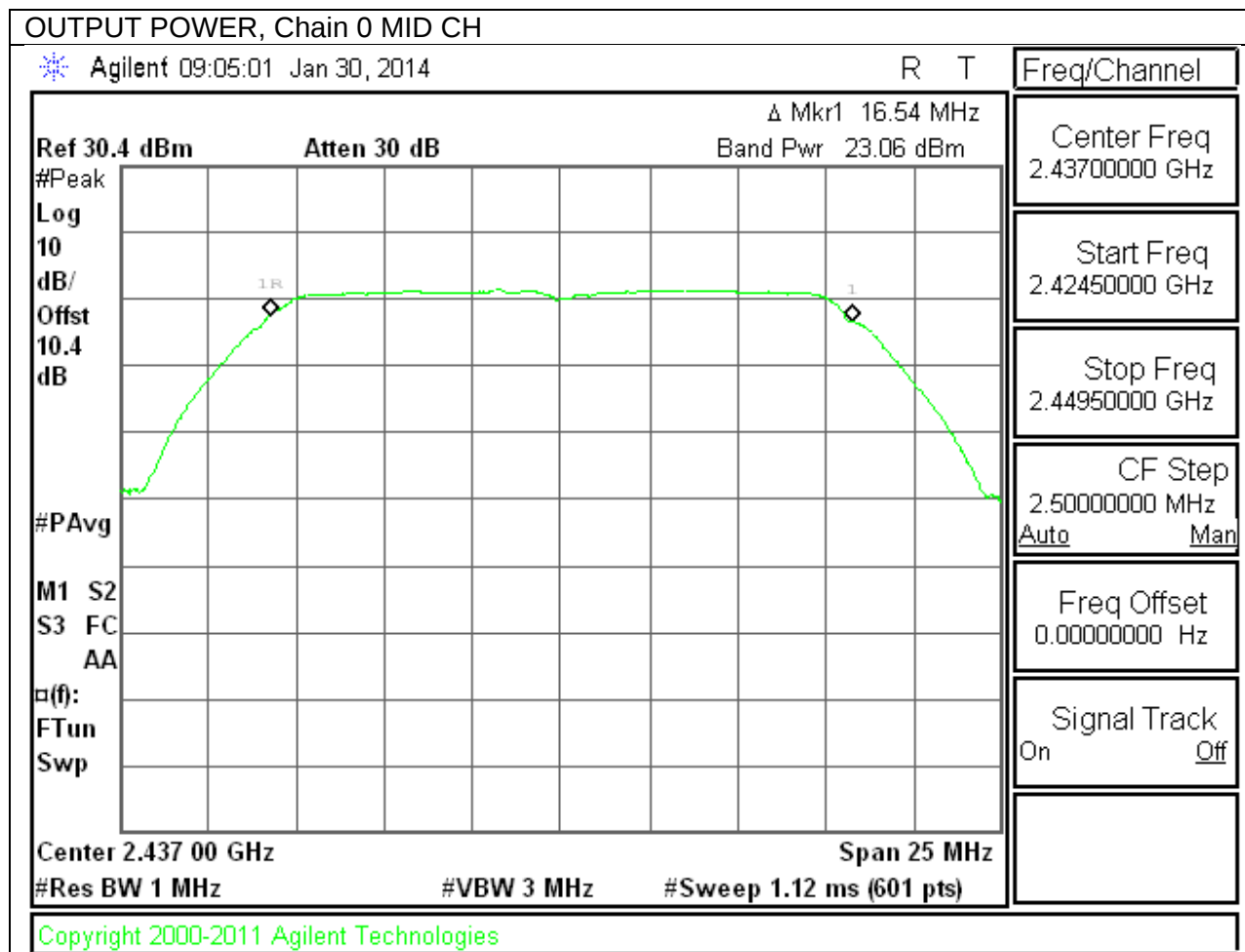
Results

Channel	Frequency (MHz)	Chain 0 Meas Power (dBm)	Total Corr'd Power (dBm)	Power Limit (dBm)	Margin (dB)
Low	5775	19.87	19.87	30.00	-10.13
Worst			19.87		

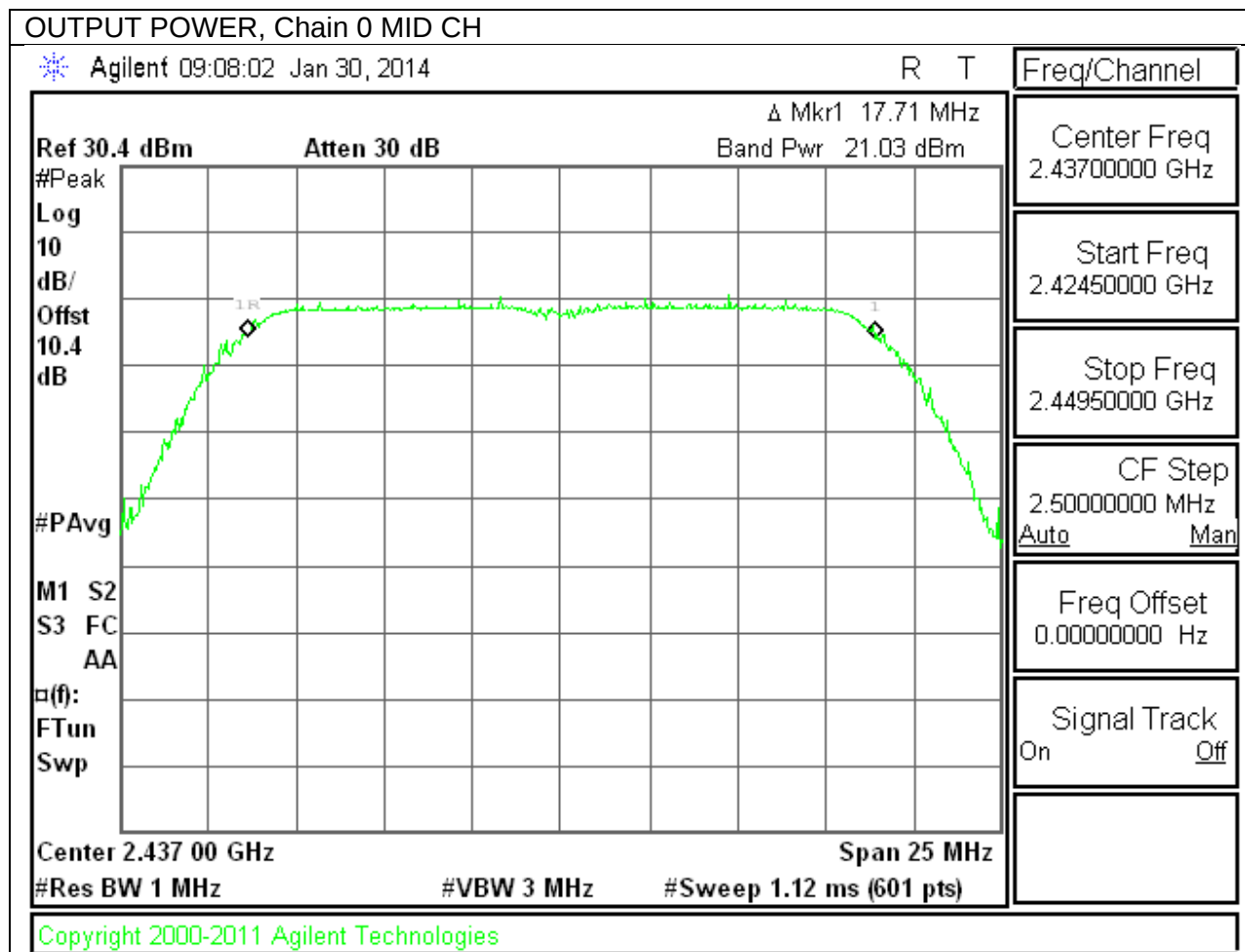
802.11b OUTPUT POWER, Chain 0



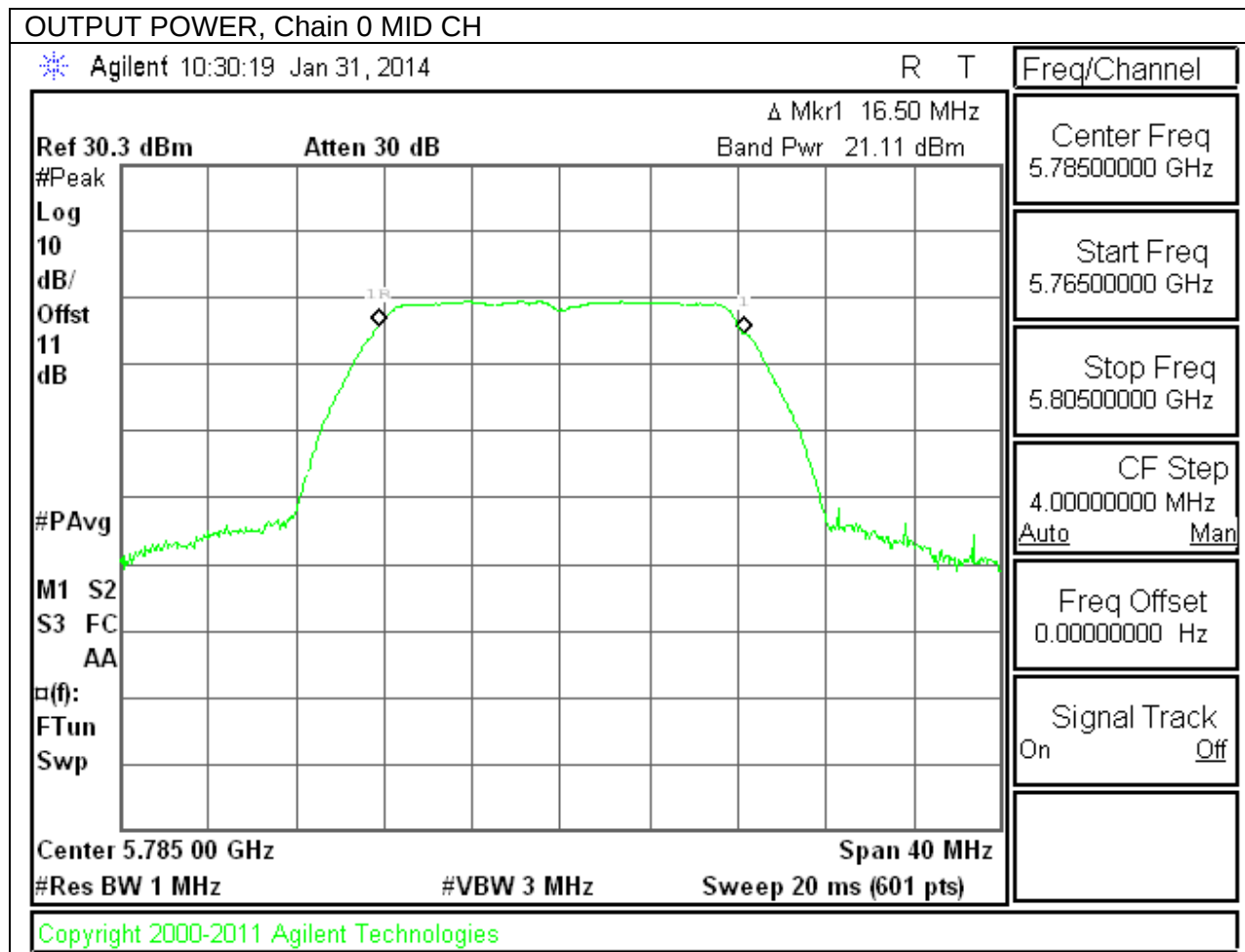
802.11g OUTPUT POWER, Chain 0



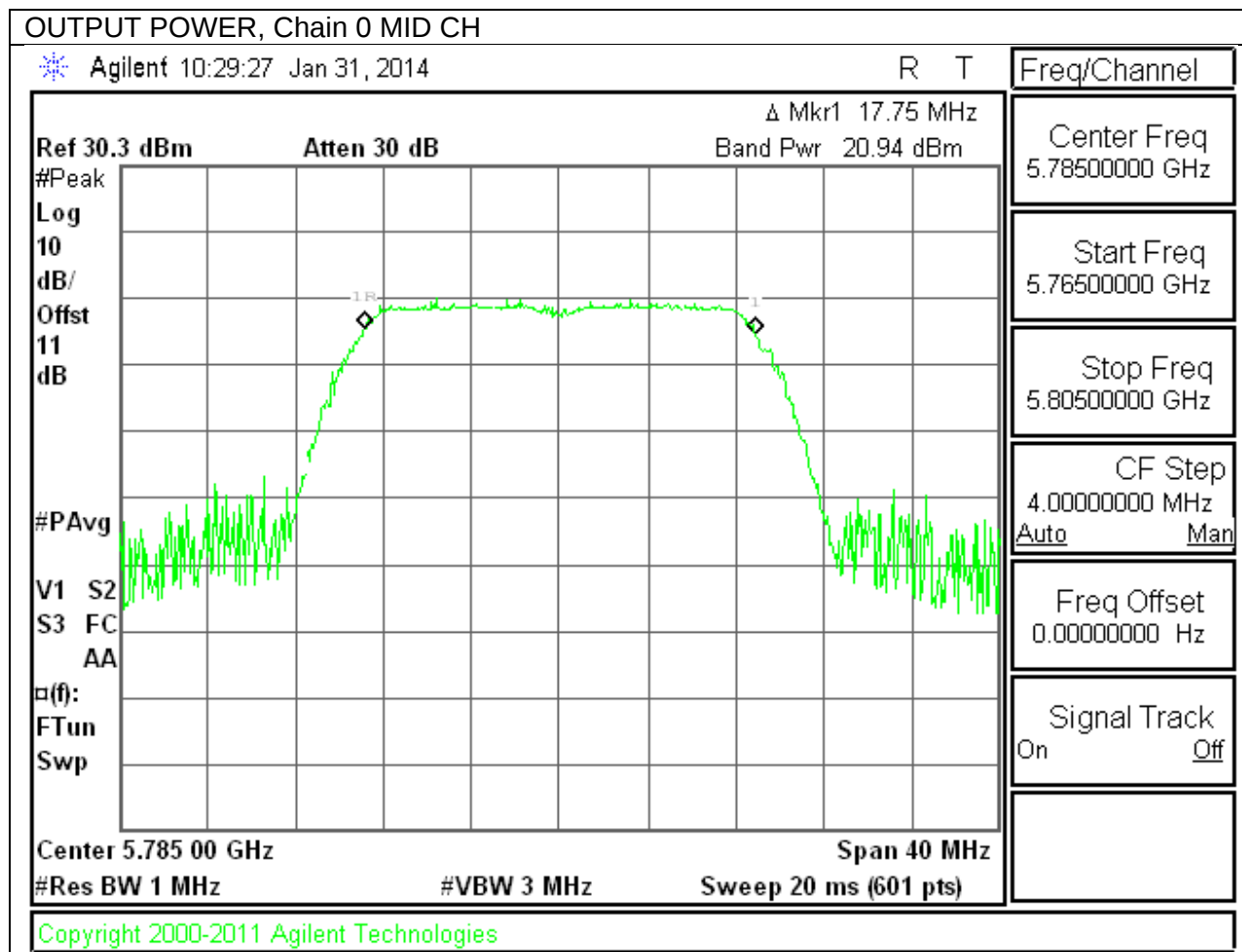
802.11n OUTPUT POWER, Chain 0



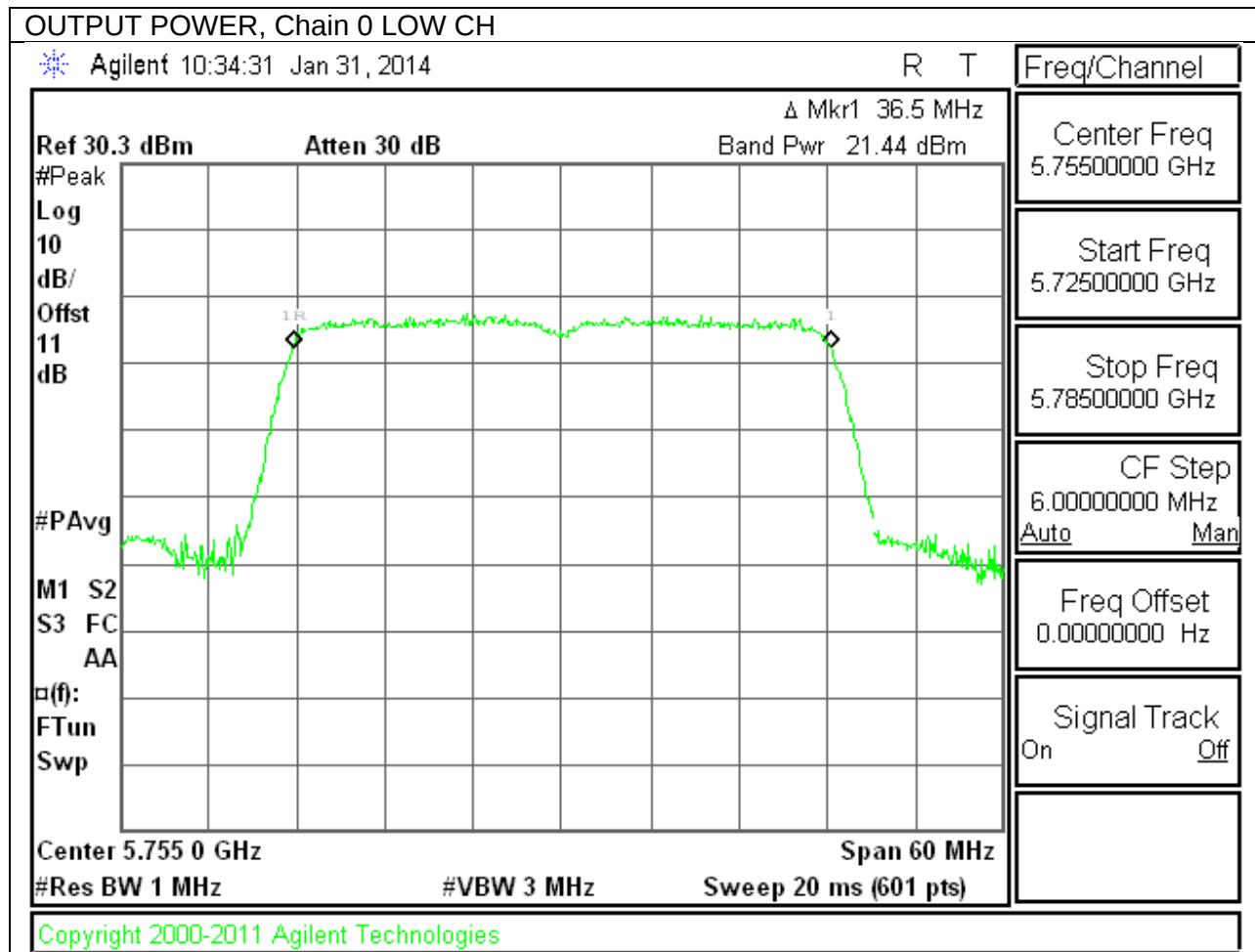
802.11a HT20 5.8GHz mode OUTPUT POWER, Chain 0



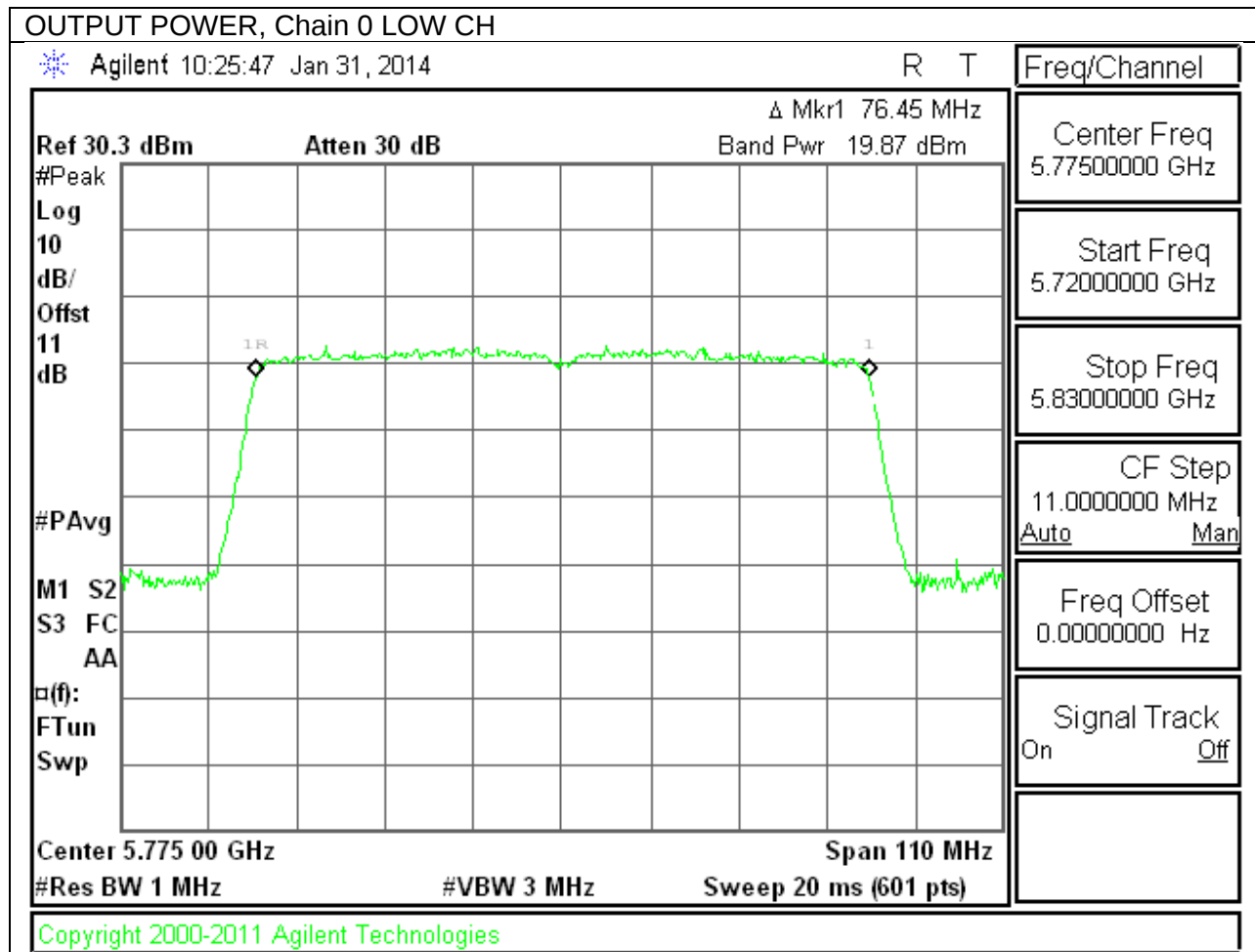
802.11n HT20 5.8GHz mode OUTPUT POWER, Chain 0



802.11n HT40 5.8GHz mode OUTPUT POWER, Chain 0



802.11ac HT80 5.8GHz mode OUTPUT POWER, Chain 0



9.5. 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

9.5.1. 802.11b MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-4.76	8.0	-12.8
Mid	2437	-5.02	8.0	-13.0
High	2462	-5.11	8.0	-13.1

9.5.2. 802.11g MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-10.69	8.0	-18.7
Mid	2437	-10.79	8.0	-18.8
High	2462	-9.74	8.0	-17.7

9.5.3. 802.11n HT20 MODE IN THE 2.4 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	2412	-13.54	8.0	-21.5
Mid	2437	-12.69	8.0	-20.7
High	2462	-12.76	8.0	-20.8

9.5.4. 802.11a MODE IN THE 5.8 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	5745	-11.55	8.0	-19.6
Mid	5785	-11.74	8.0	-19.7
High	5825	-11.98	8.0	-20.0

9.5.5. 802.11n HT20 MODE IN THE 5.8 GHz BAND

PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	5745	-13.12	8.0	-21.1
Mid	5785	-12.26	8.0	-20.3
High	5825	-12.51	8.0	-20.5

9.5.6. 802.11n HT40 MODE IN THE 5.8 GHz BAND

PSD Results

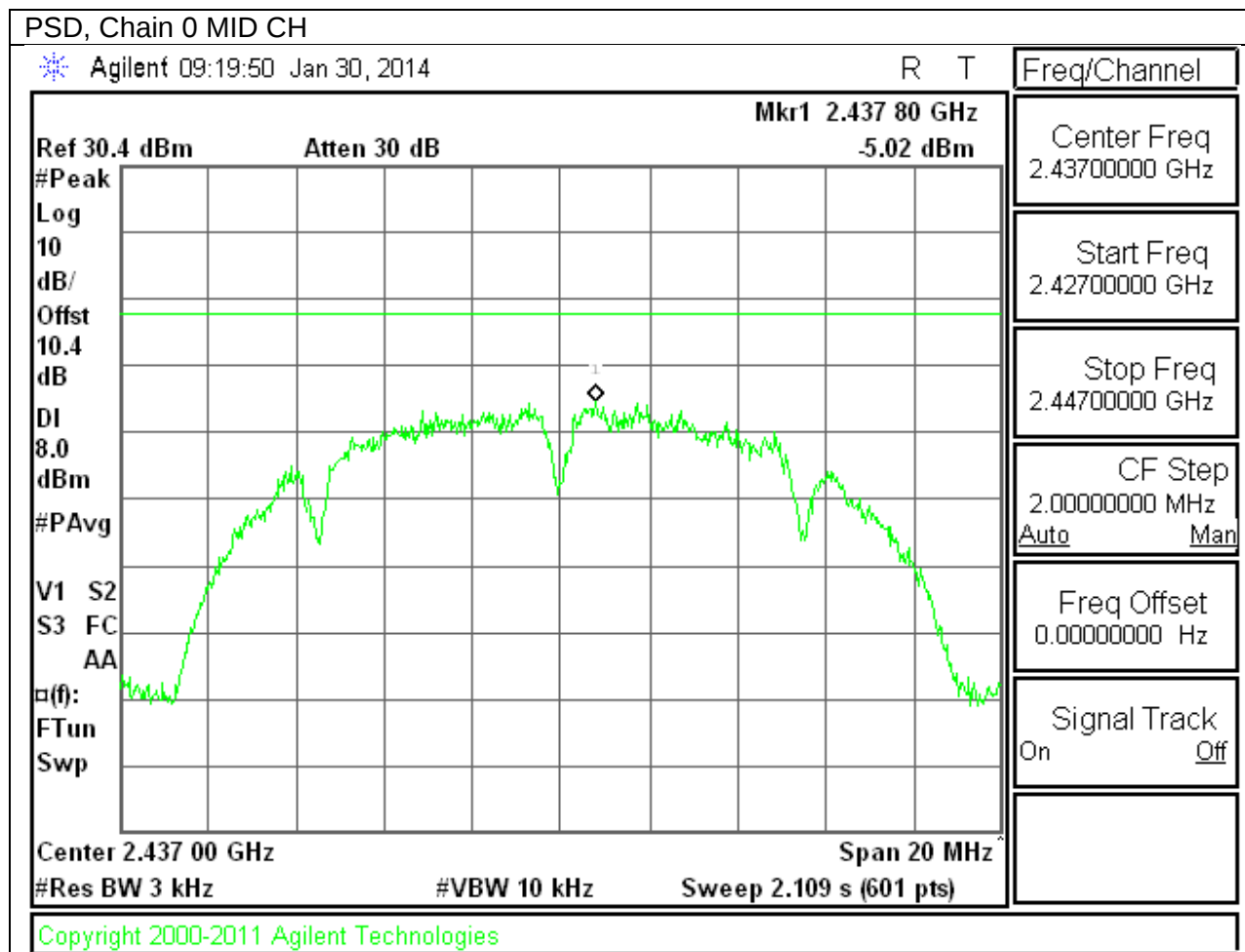
Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	5755	-15.44	8.0	-23.4
High	5795	-15.87	8.0	-23.9

9.5.1. 802.11ac HT80 MODE IN THE 5.8 GHz BAND

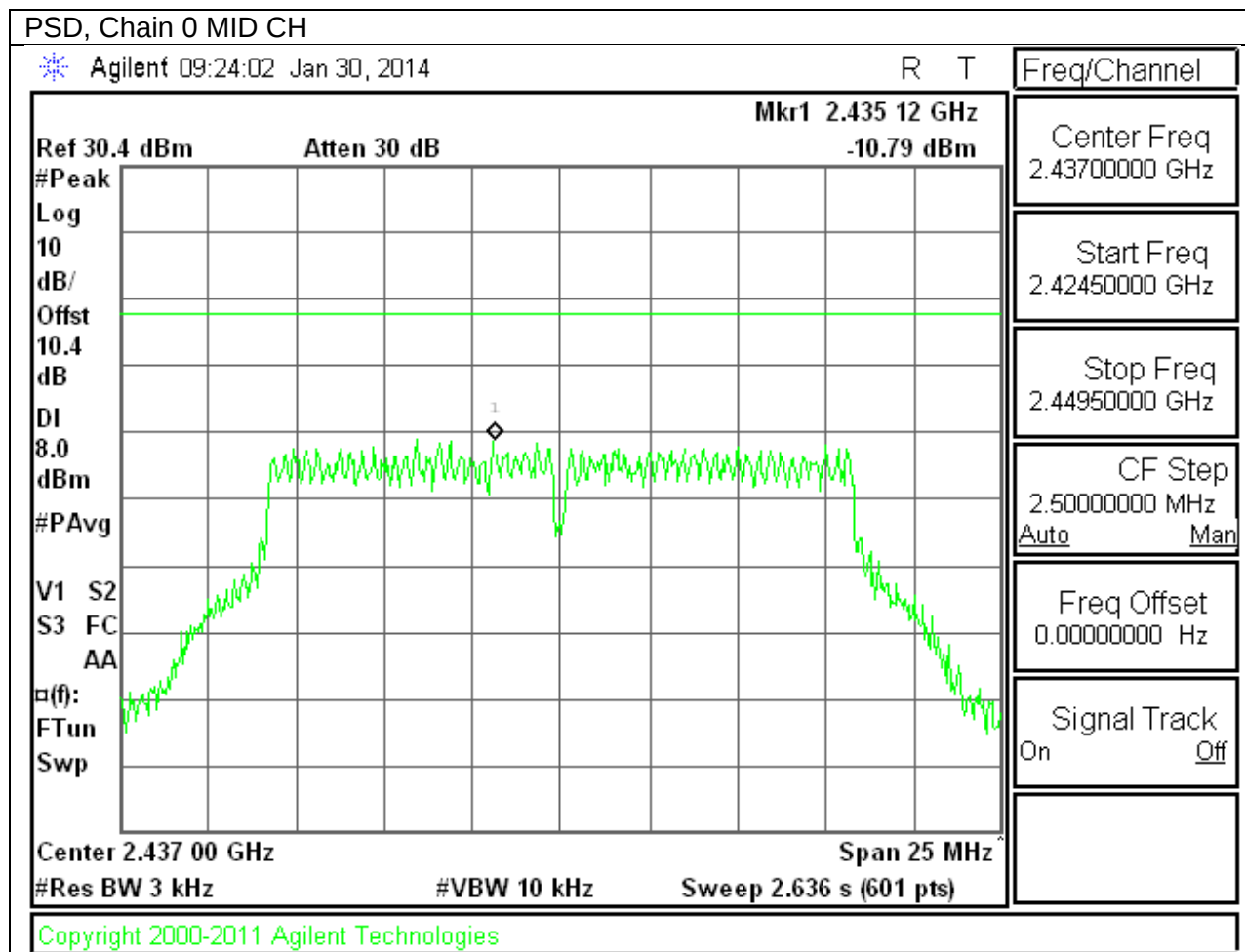
PSD Results

Channel	Frequency (MHz)	Chain 0 Meas (dBm)	Limit (dBm)	Margin (dB)
Low	5775	-20.85	8.0	-28.9

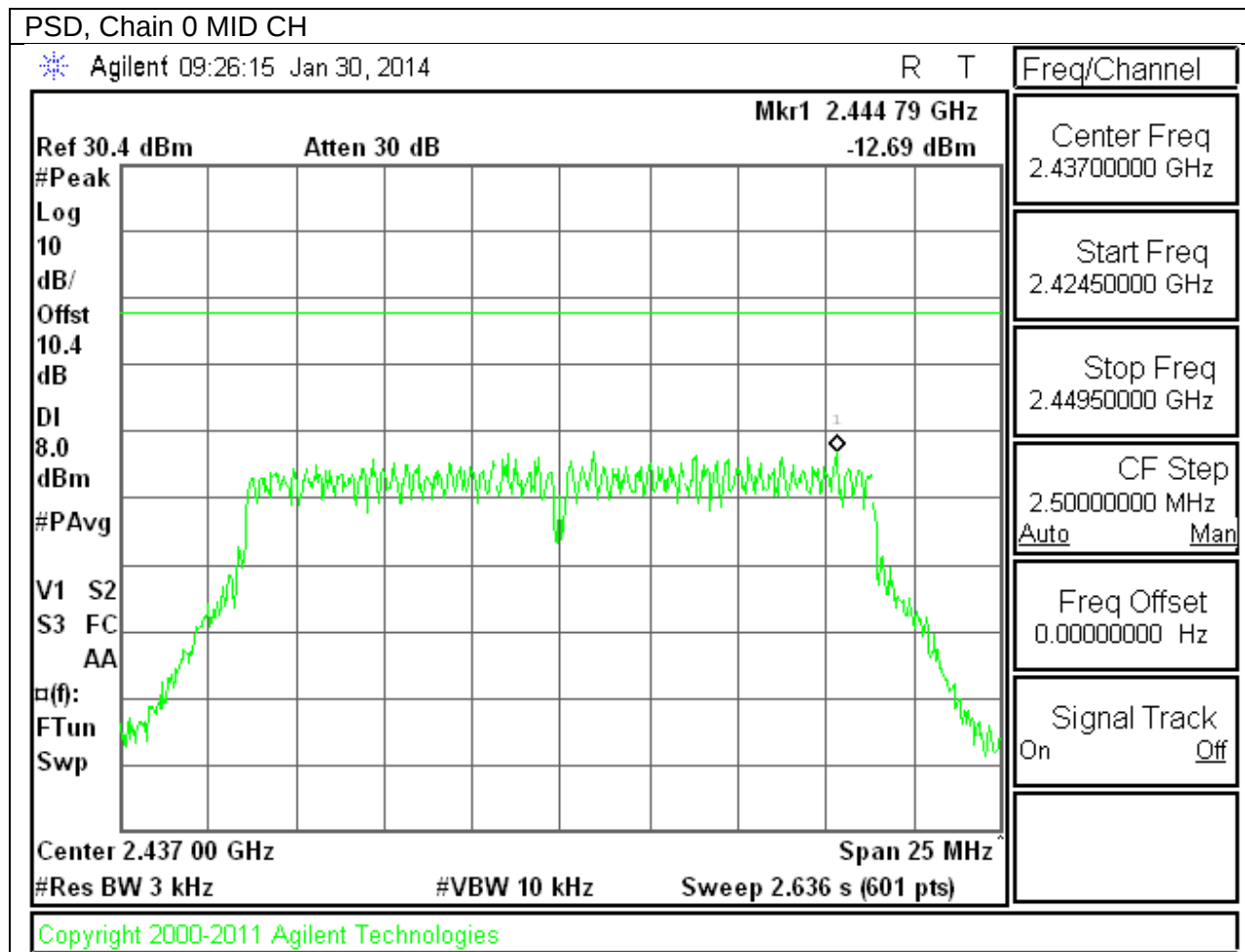
802.11b PSD, Chain 0



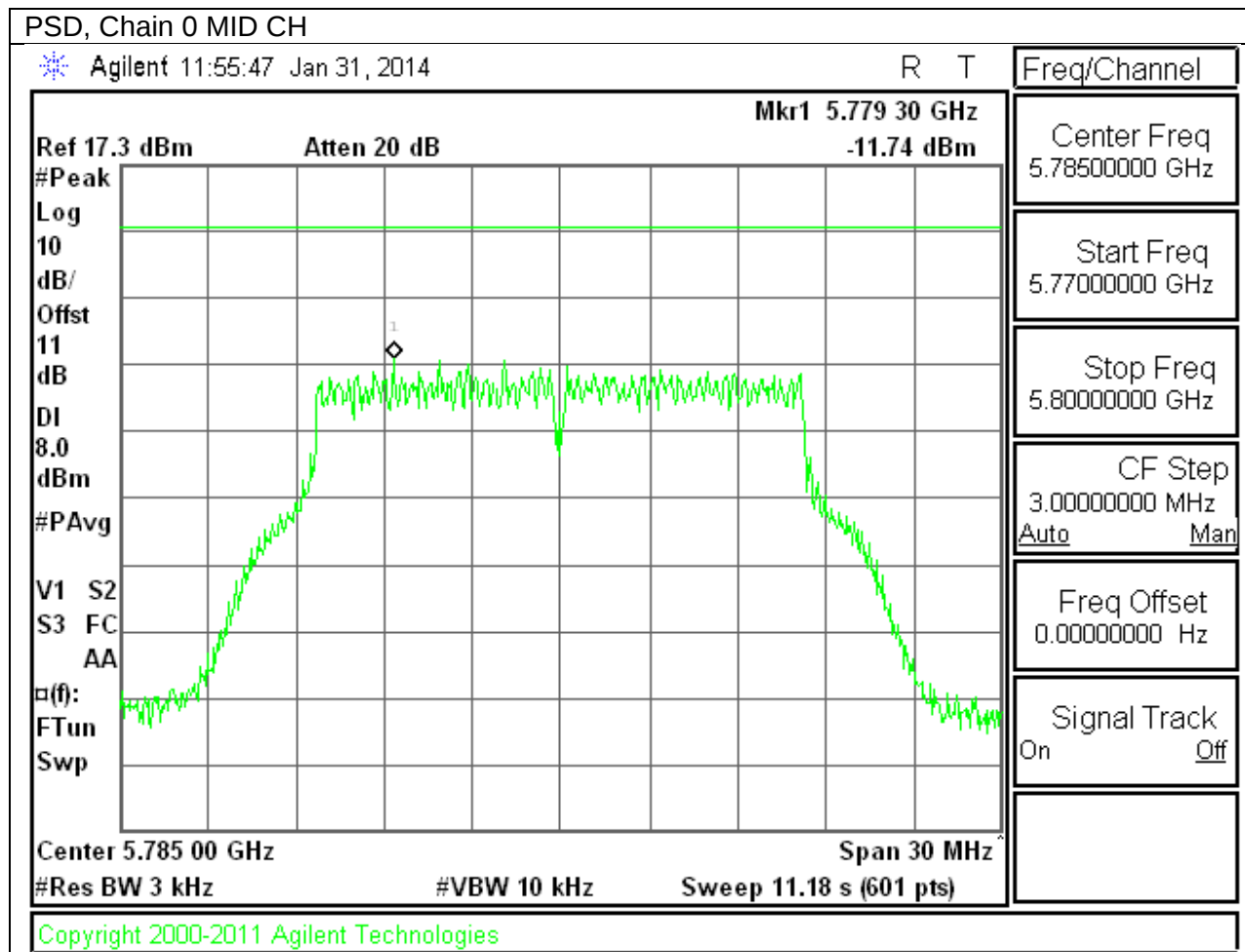
802.11g PSD, Chain 0



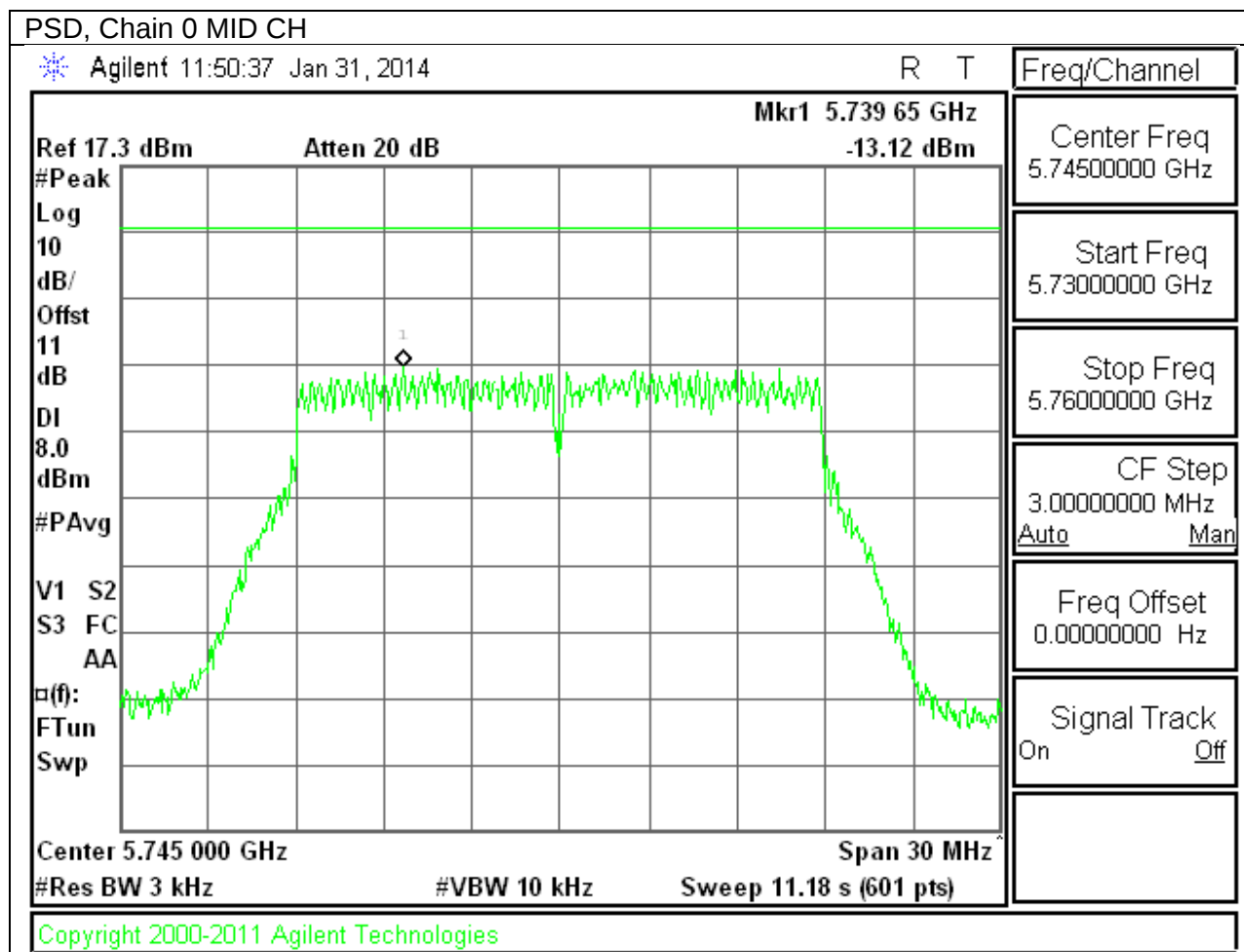
802.11n PSD, Chain 0



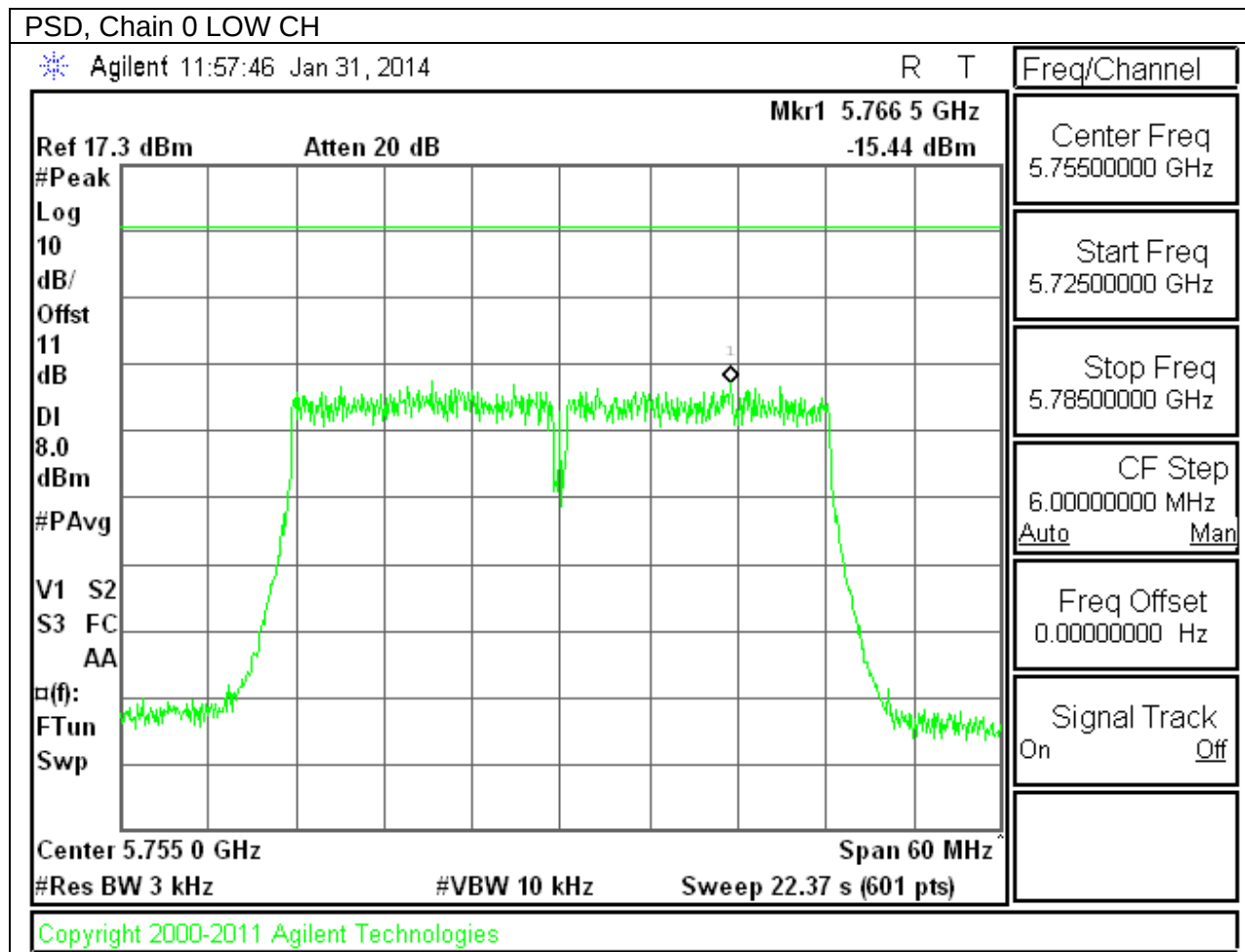
802.11a HT20 5.8GHz mode PSD, Chain 0



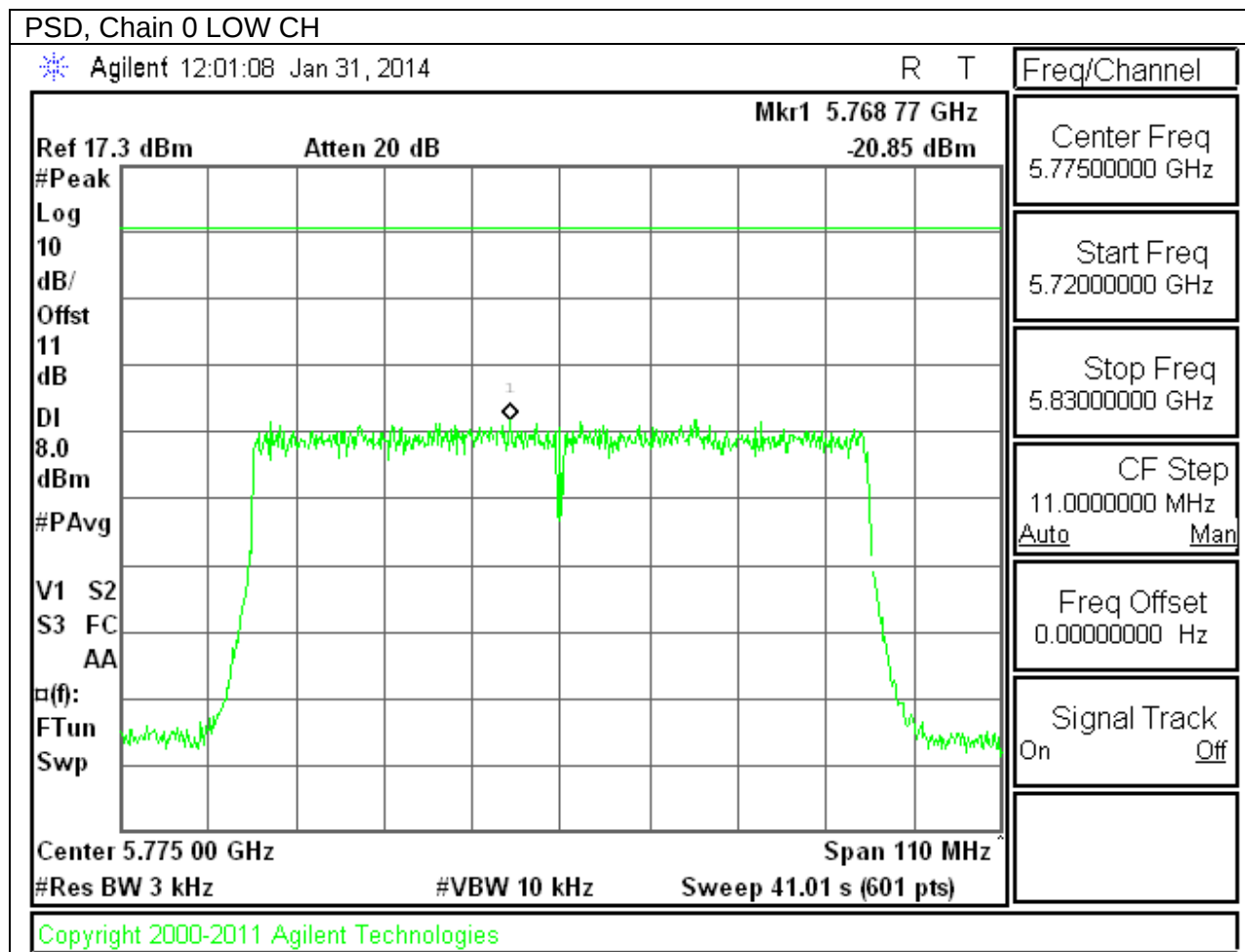
802.11n HT20 5.8GHz mode PSD, Chain 0



802.11n HT40 5.8GHz mode PSD, Chain 0



802.11ac HT80 5.8GHz mode PSD, Chain 0



9.6. 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.

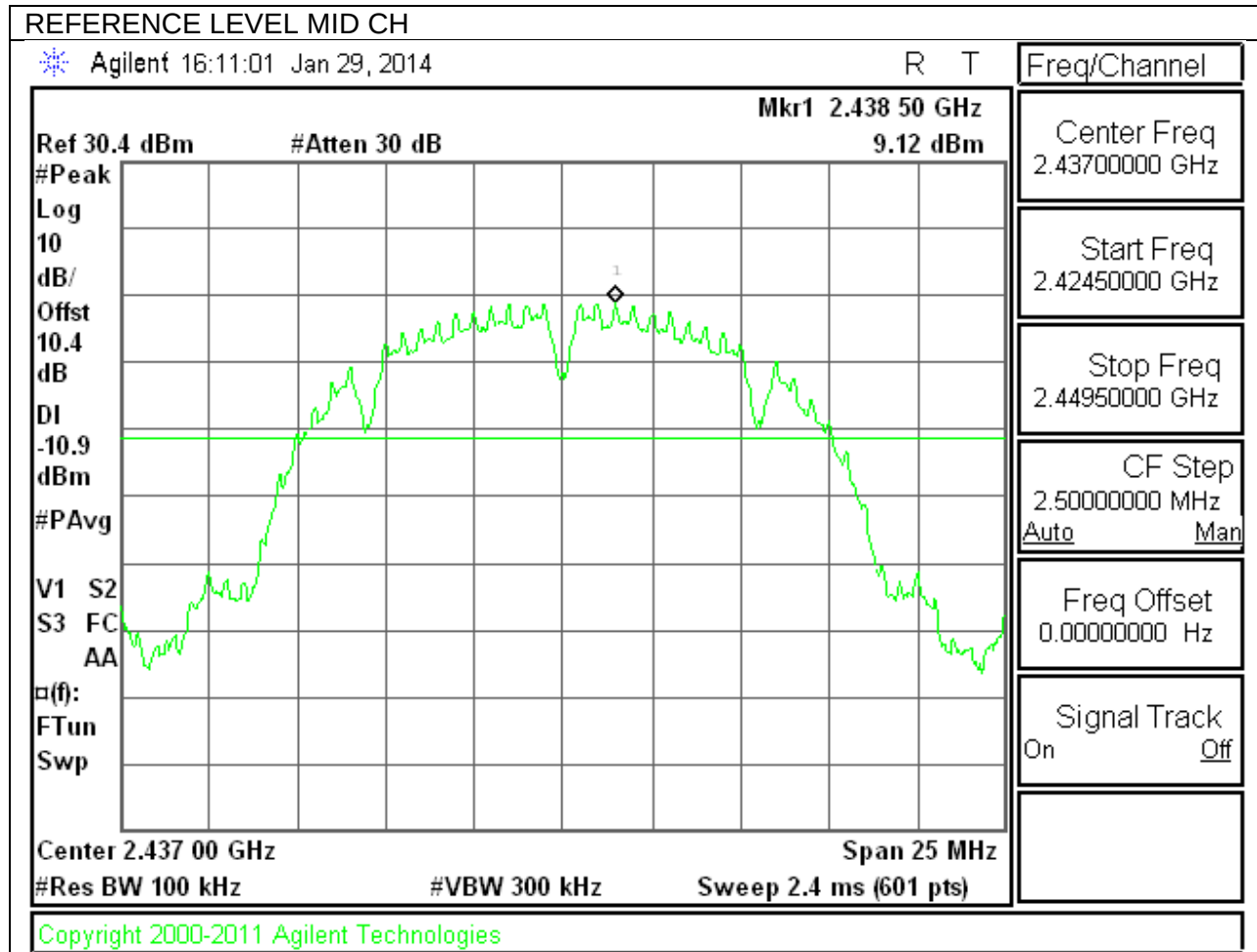
TEST PROCEDURE

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.

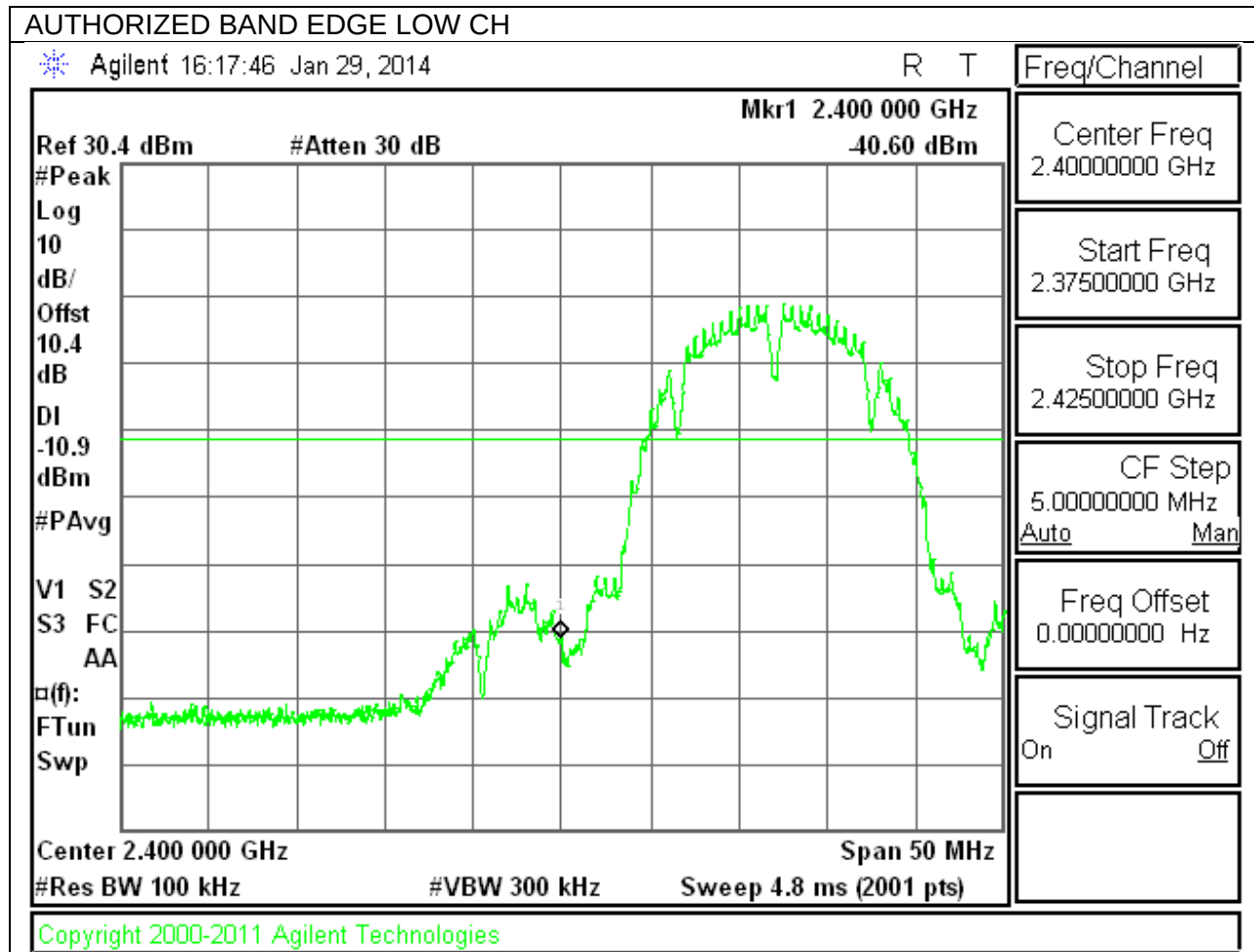
RESULTS

9.6.1. 802.11b MODE IN THE 2.4 GHz BAND

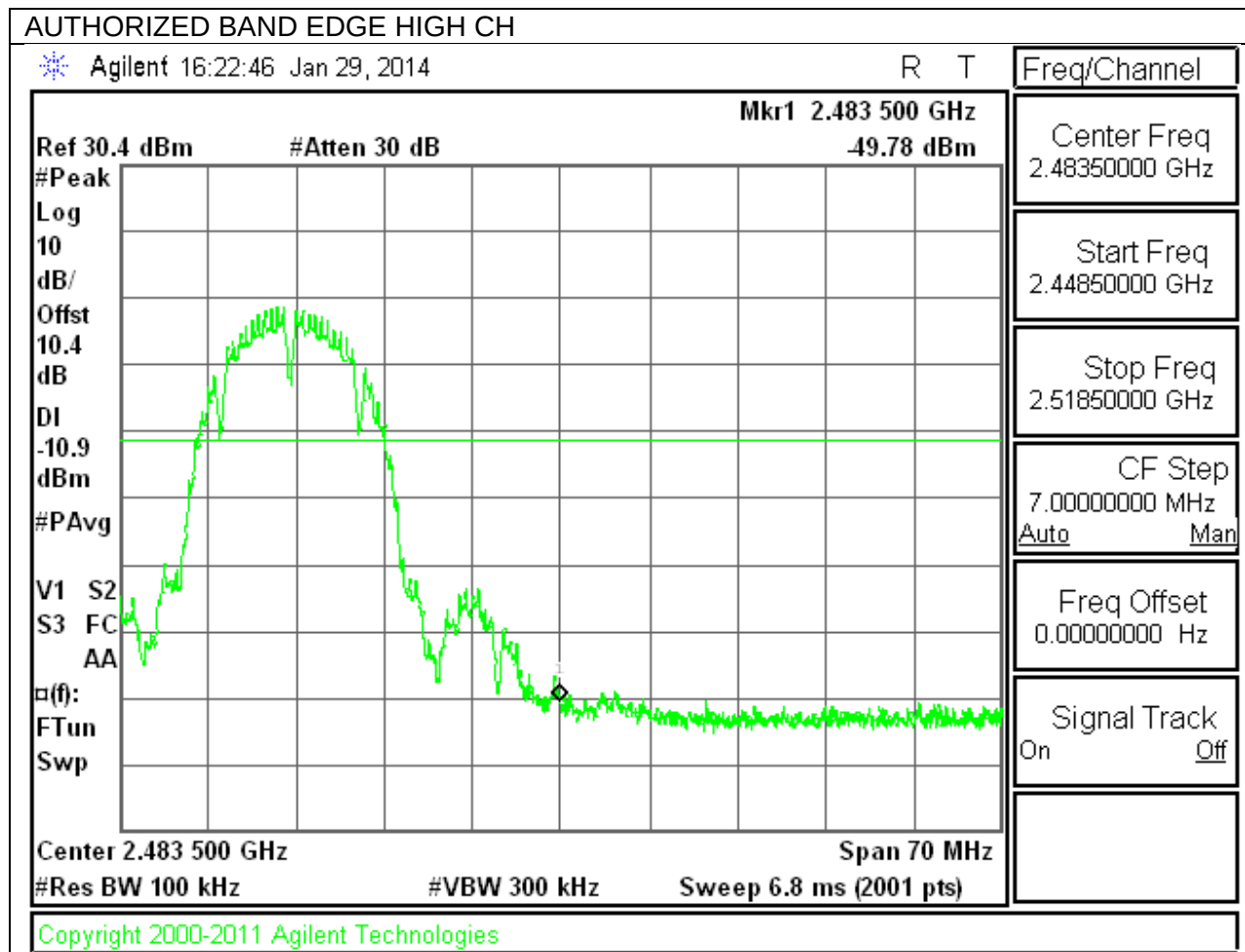
IN-BAND REFERENCE LEVEL



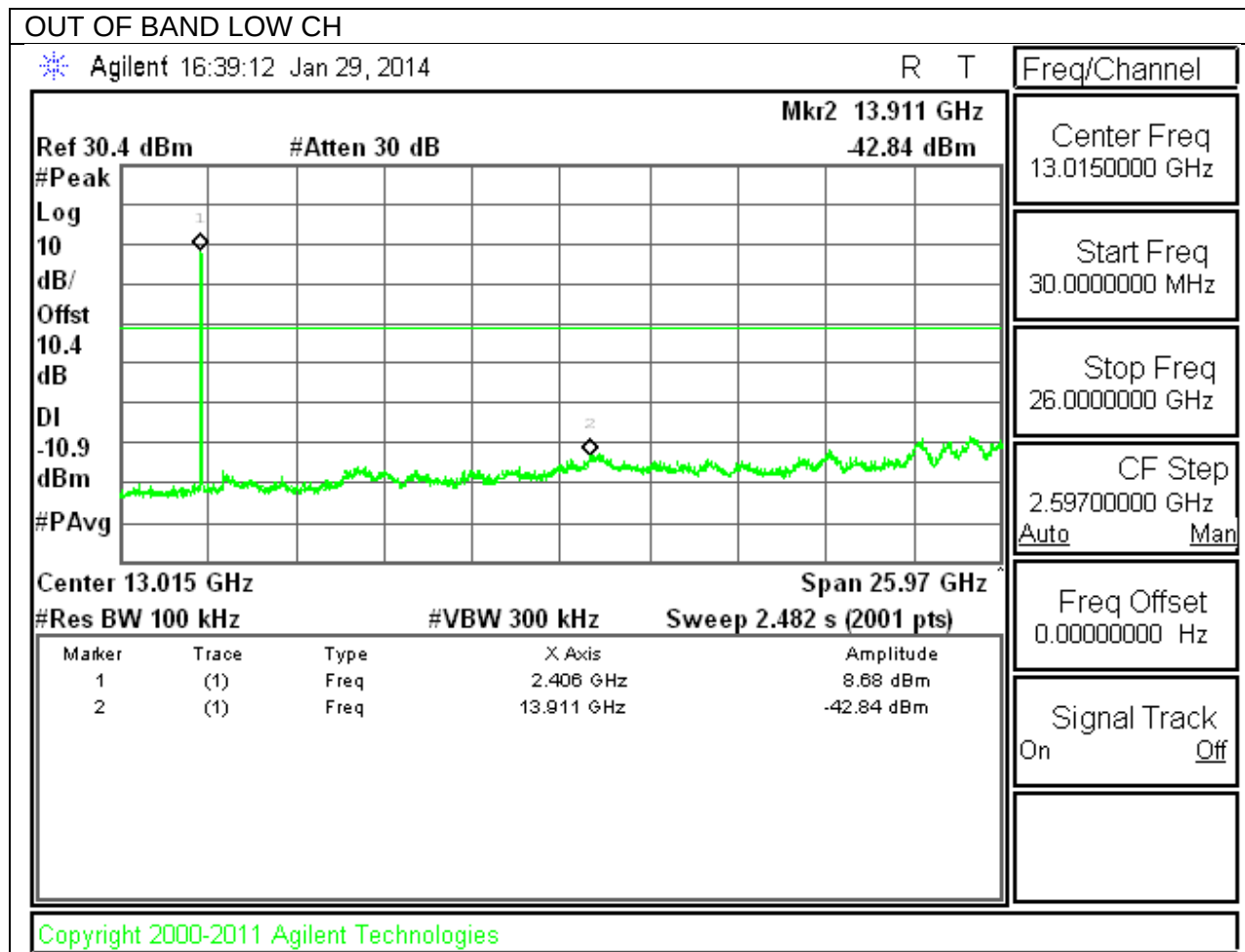
LOW CHANNEL BANDEDGE



HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS

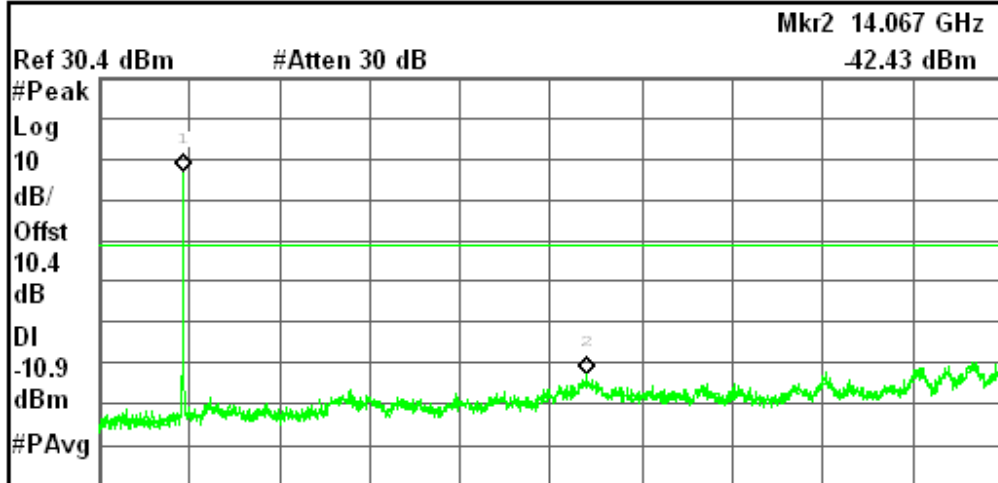


OUT OF BAND MID CH

Agilent 16:40:45 Jan 29, 2014

R T

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

Center 13.015 GHz Span 25.97 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (2001 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.432 GHz	7.34 dBm
2	(1)	Freq	14.067 GHz	-42.43 dBm

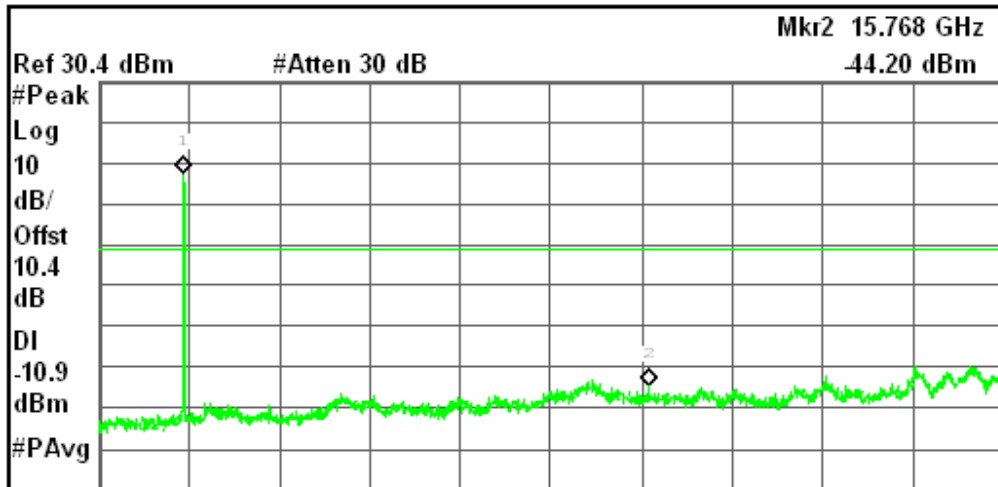
Copyright 2000-2011 Agilent Technologies

OUT OF BAND HIGH CH

Agilent 16:41:34 Jan 29, 2014

R T

Freq/Channel



Center Freq
13.0150000 GHz

Start Freq
30.0000000 MHz

Stop Freq
26.0000000 GHz

CF Step
2.59700000 GHz
Auto Man

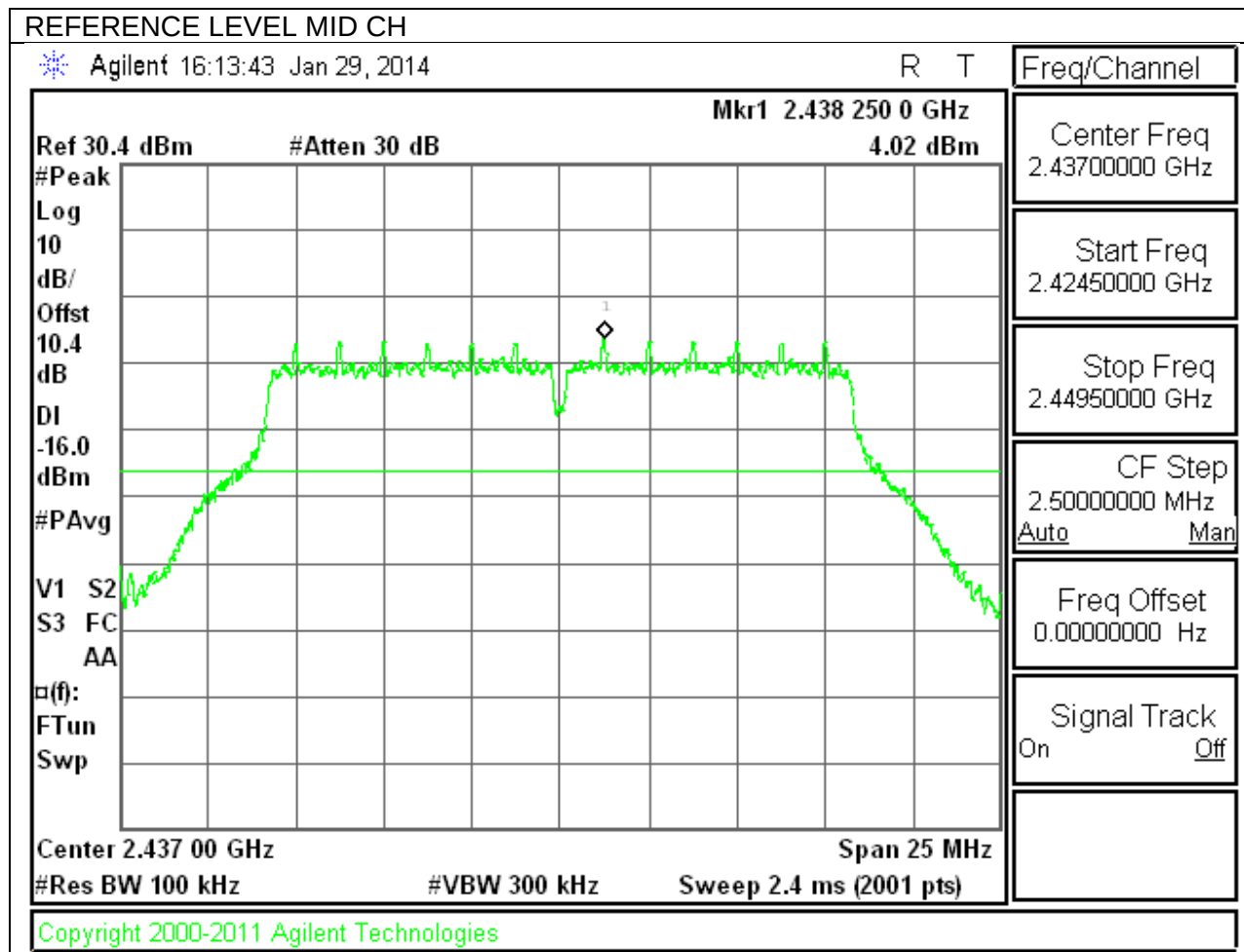
Freq Offset
0.00000000 Hz

Signal Track
On Off

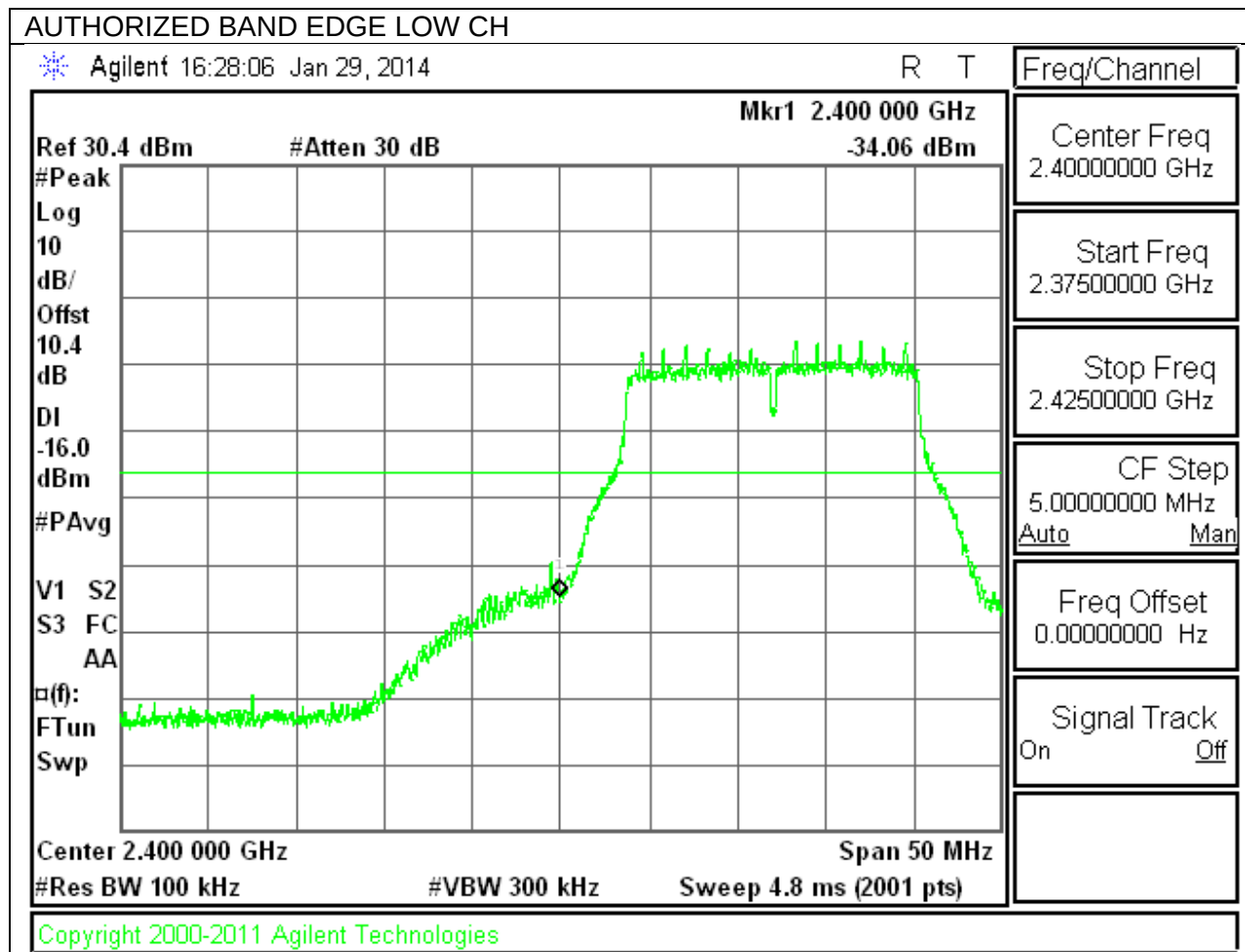
Copyright 2000-2011 Agilent Technologies

9.6.2. 802.11g MODE IN THE 2.4 GHz BAND

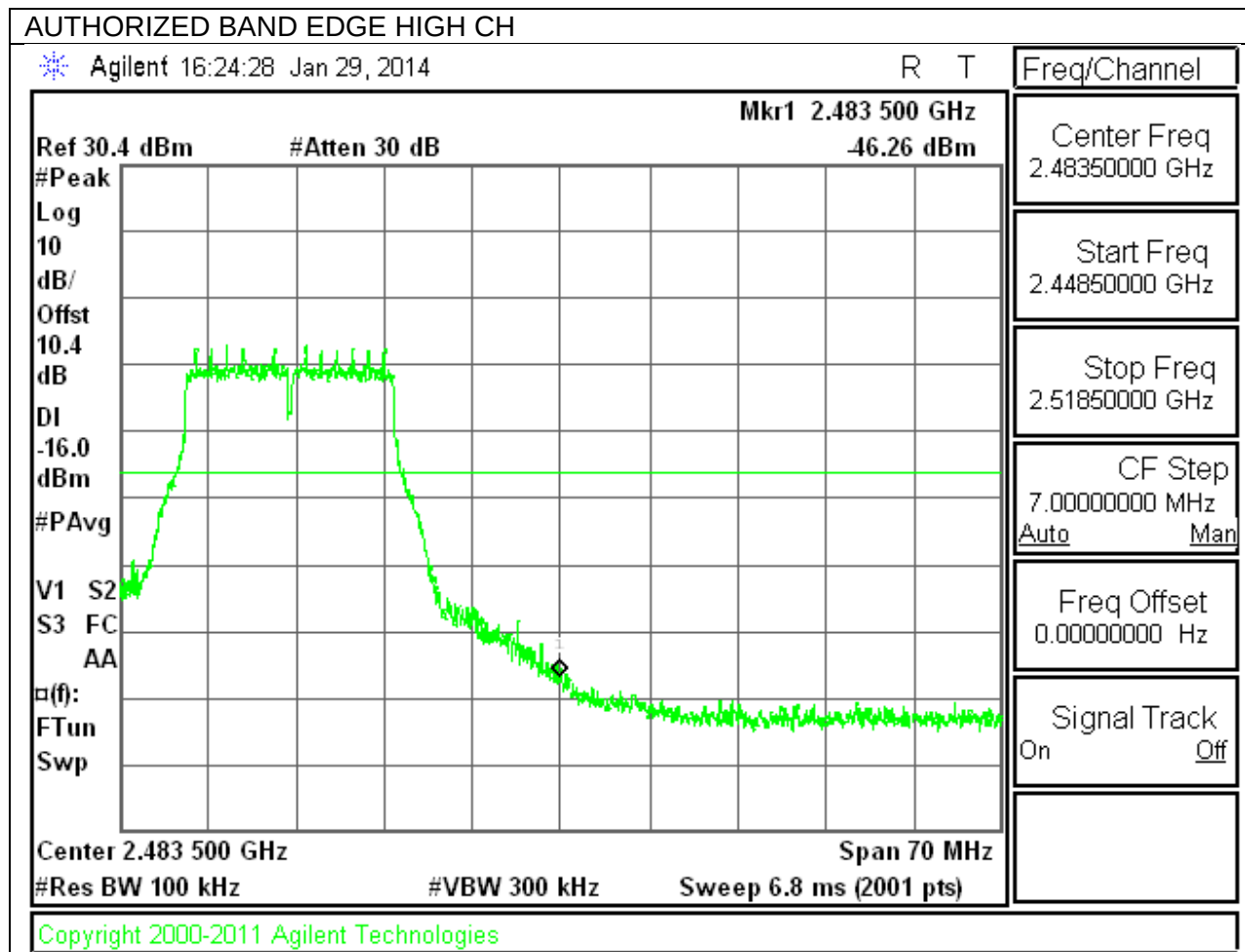
IN-BAND REFERENCE LEVEL



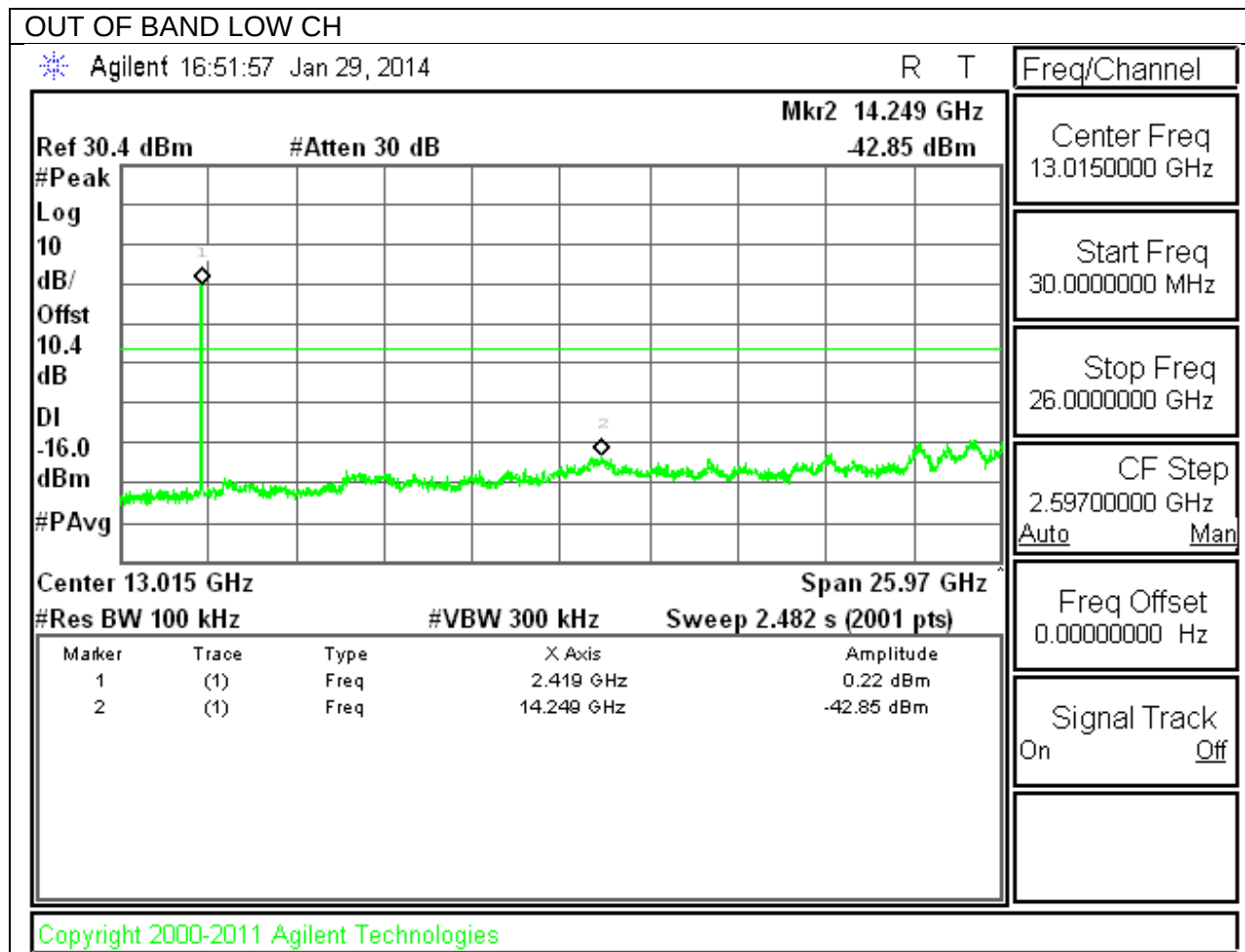
LOW CHANNEL BANDEDGE

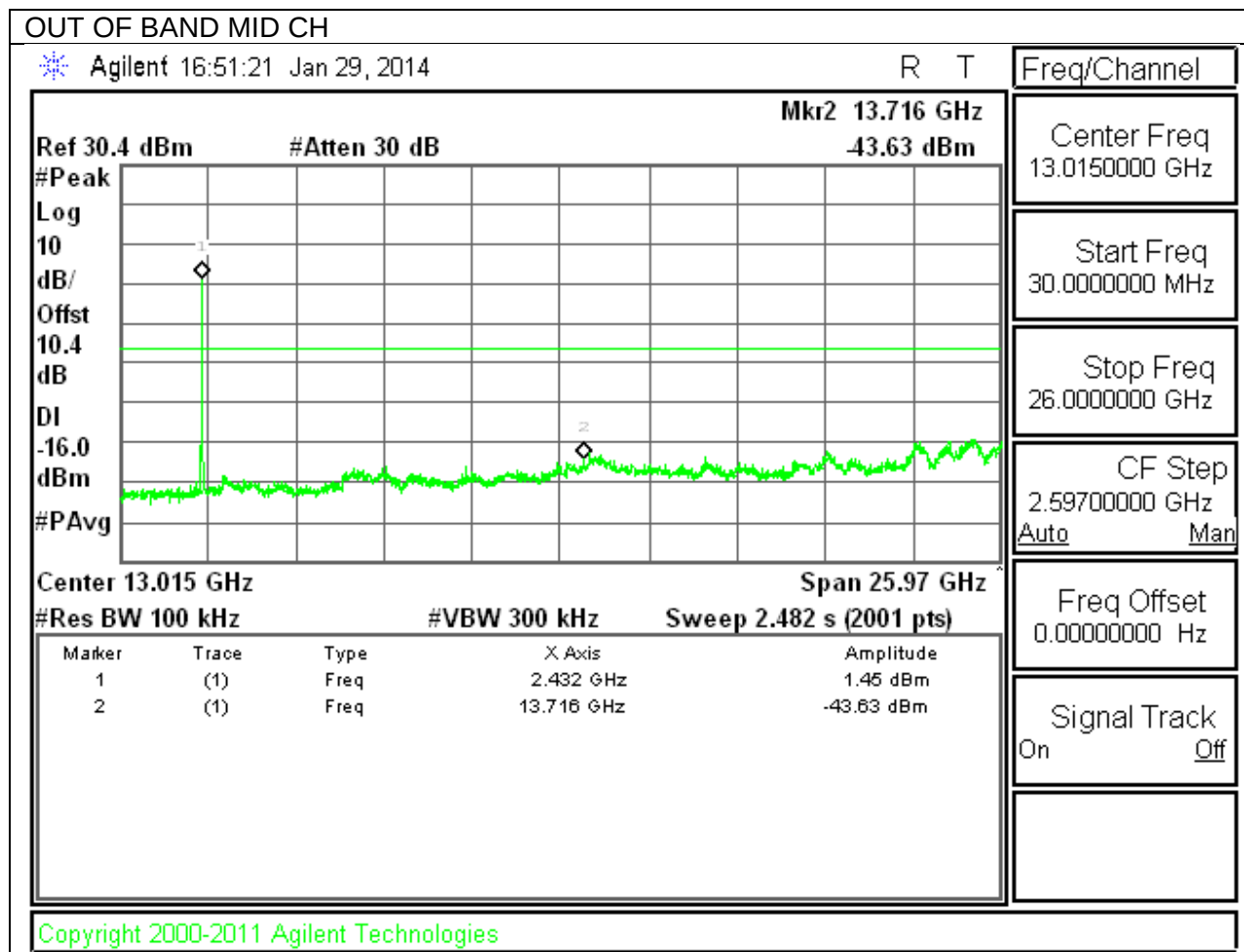


HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS



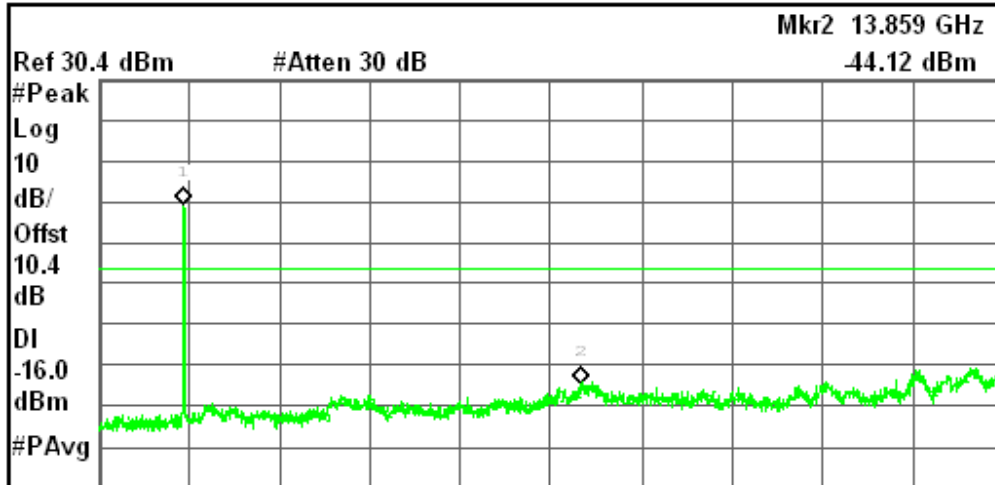


OUT OF BAND HIGH CH

Agilent 16:52:31 Jan 29, 2014

R T

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

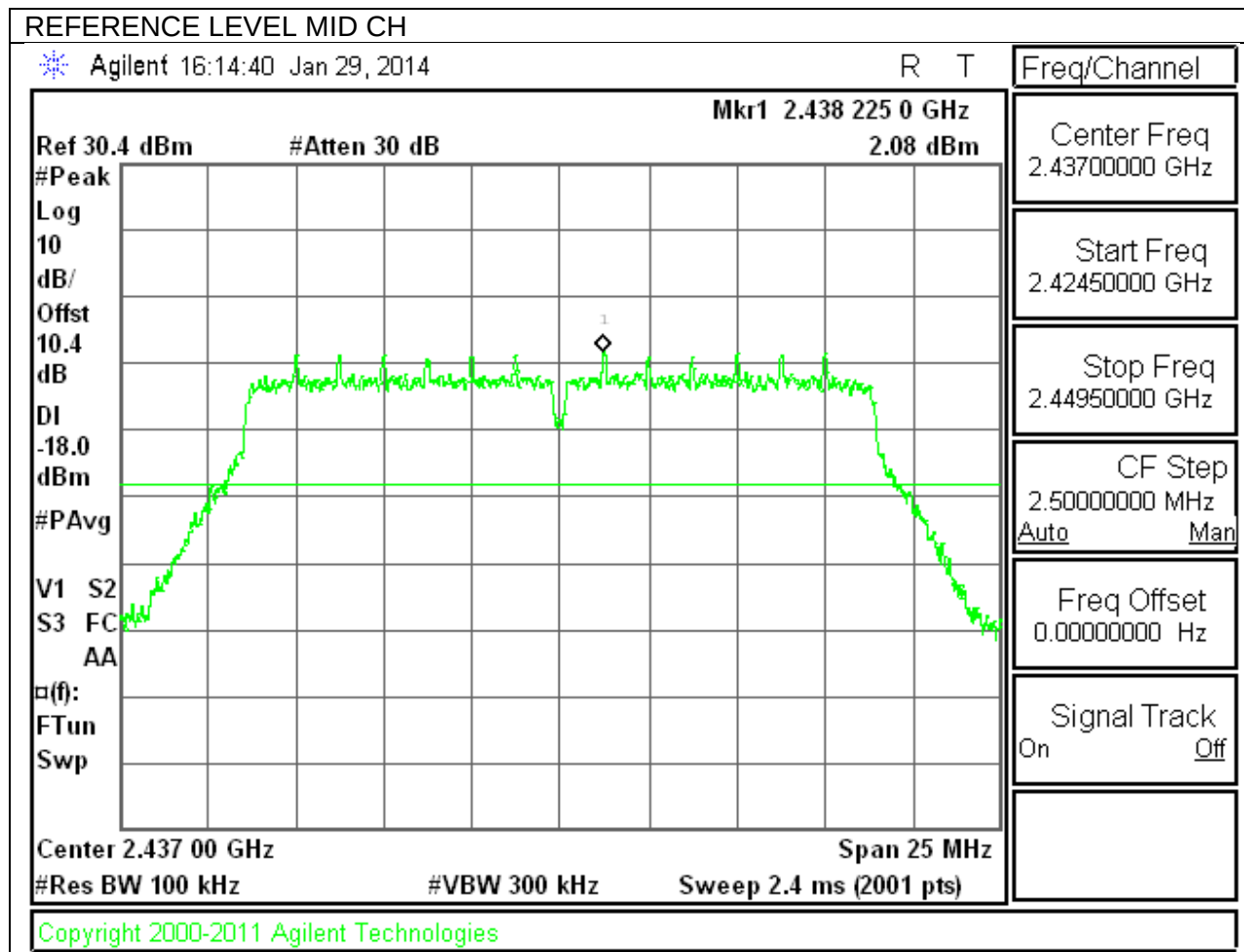
Center 13.015 GHz Span 25.97 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (2001 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.458 GHz	-0.03 dBm
2	(1)	Freq	13.859 GHz	-44.12 dBm

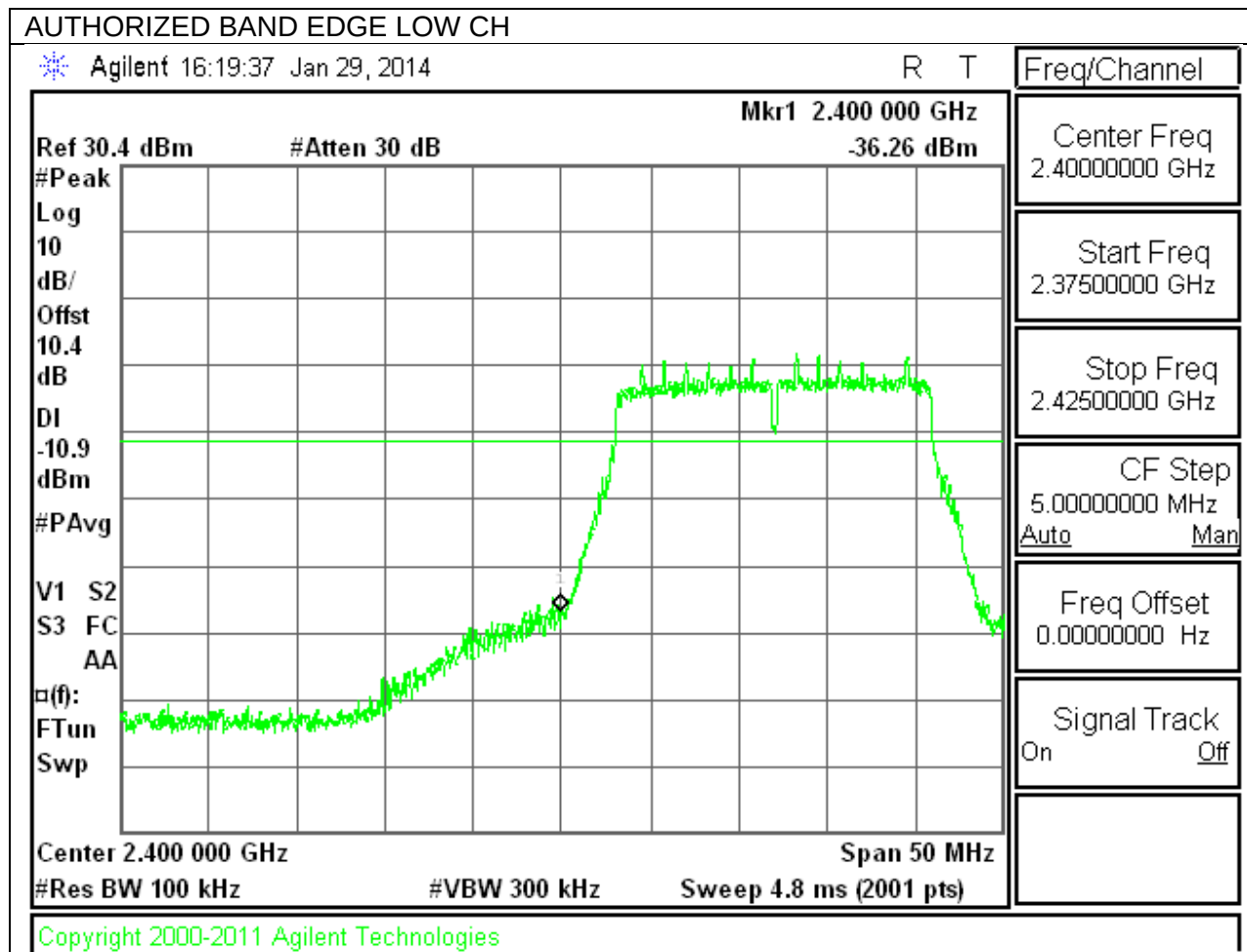
Copyright 2000-2011 Agilent Technologies

9.6.3. 802.11n MODE IN THE 2.4 GHz BAND

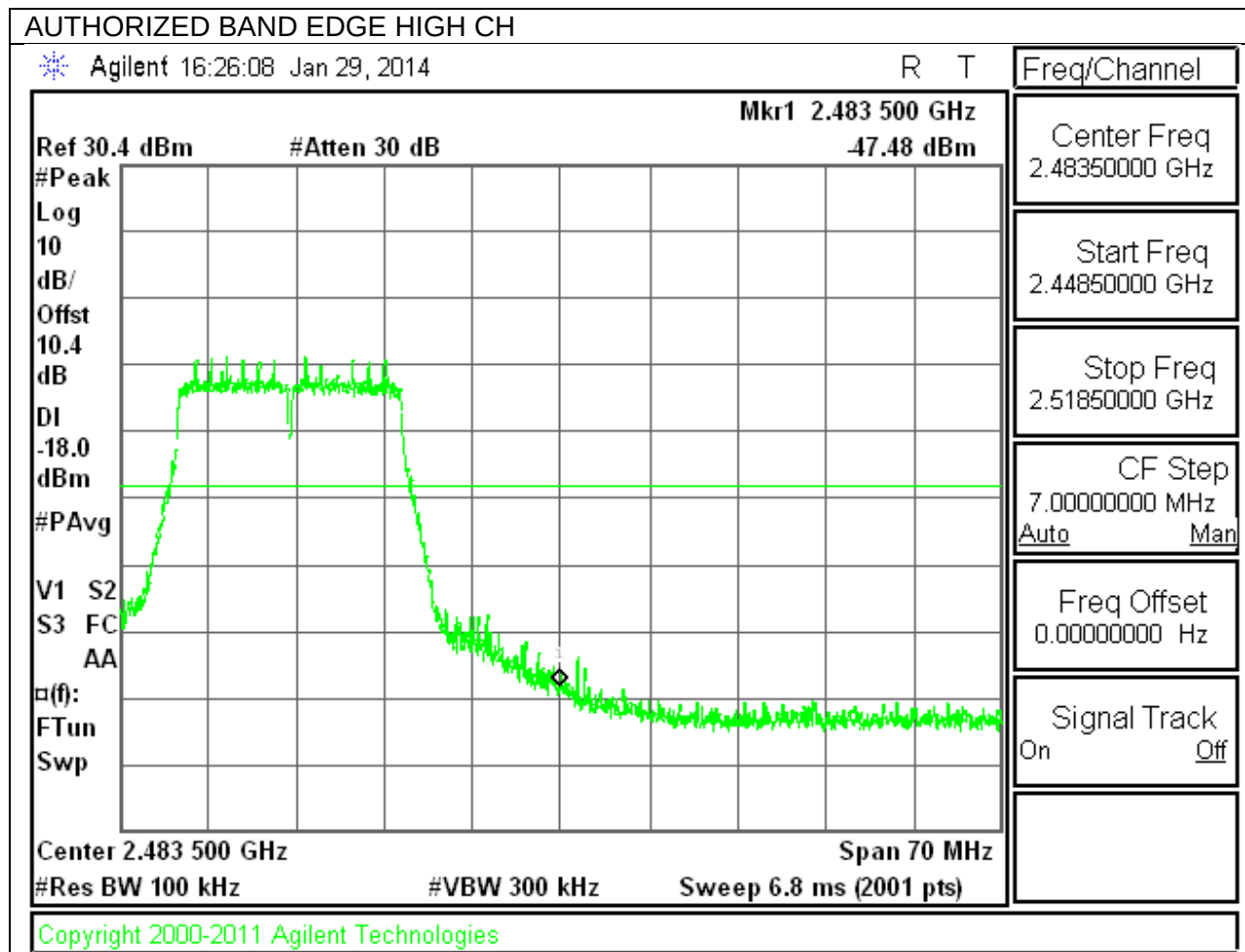
IN-BAND REFERENCE LEVEL



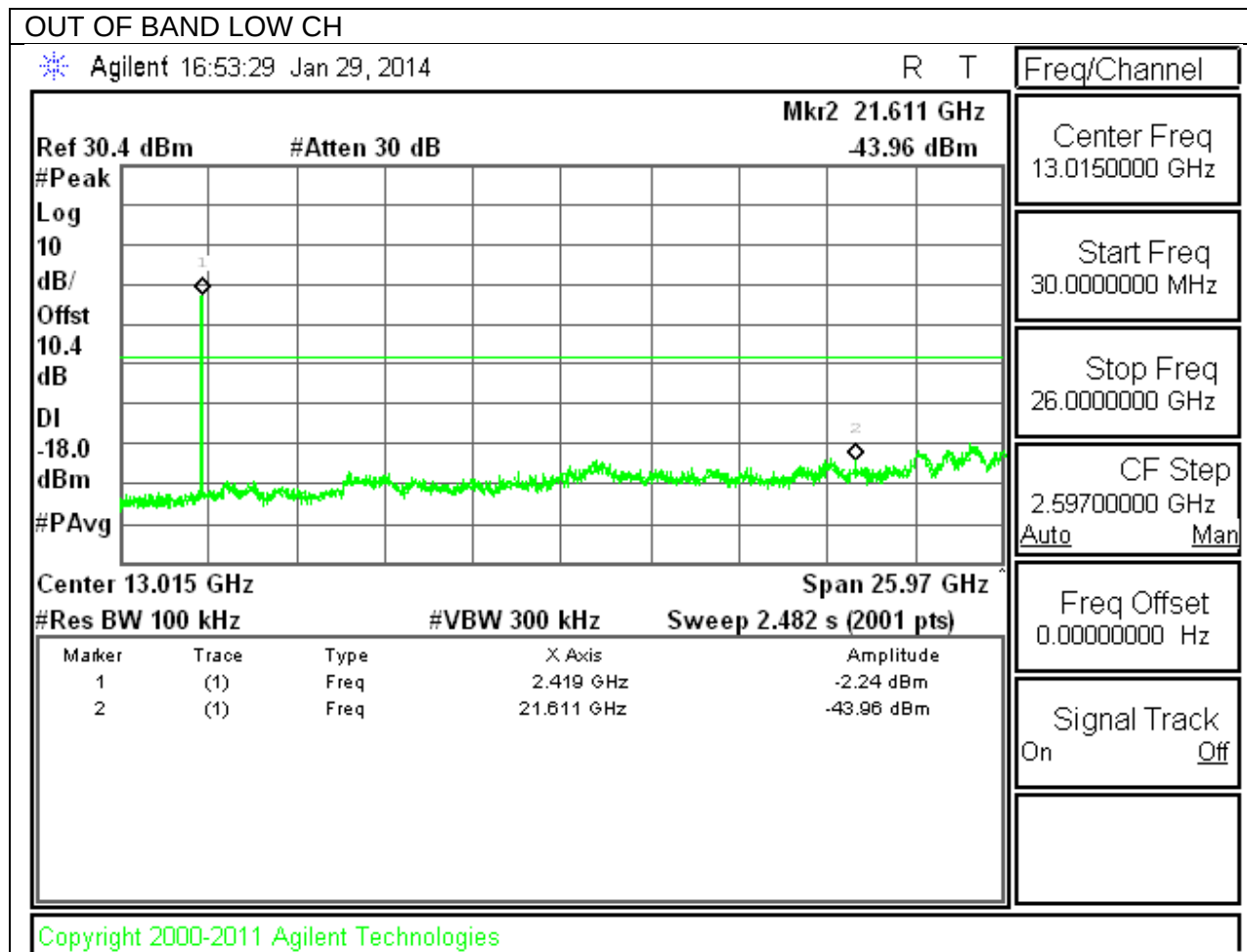
LOW CHANNEL BANDEDGE



HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS

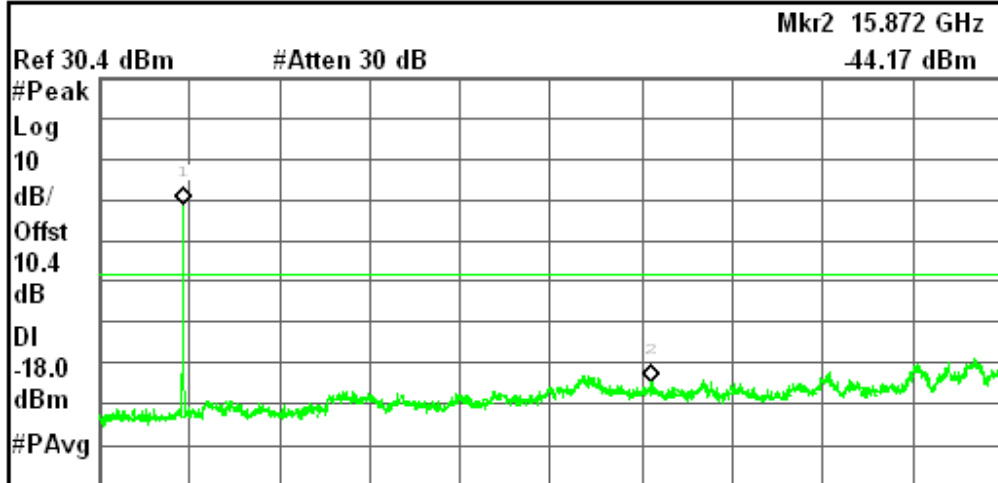


OUT OF BAND MID CH

Agilent 16:54:07 Jan 29, 2014

R T

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

Center 13.015 GHz Span 25.97 GHz
#Res BW 100 kHz #VBW 300 kHz Sweep 2.482 s (2001 pts)

Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.432 GHz	-0.85 dBm
2	(1)	Freq	15.872 GHz	-44.17 dBm

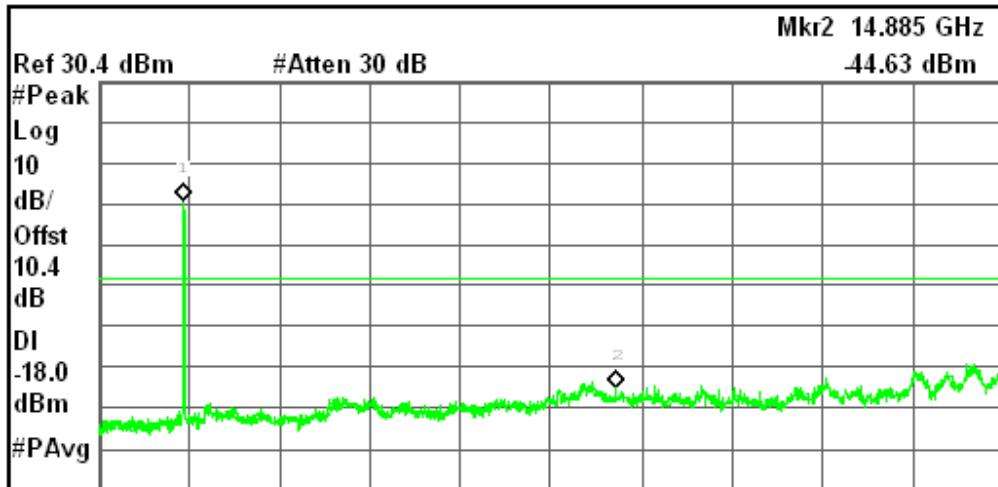
Copyright 2000-2011 Agilent Technologies

OUT OF BAND HIGH CH

Agilent 16:54:38 Jan 29, 2014

R T

Freq/Channel



Center Freq
13.0150000 GHz

Start Freq
30.0000000 MHz

Stop Freq
26.0000000 GHz

CF Step
2.59700000 GHz
Auto Man

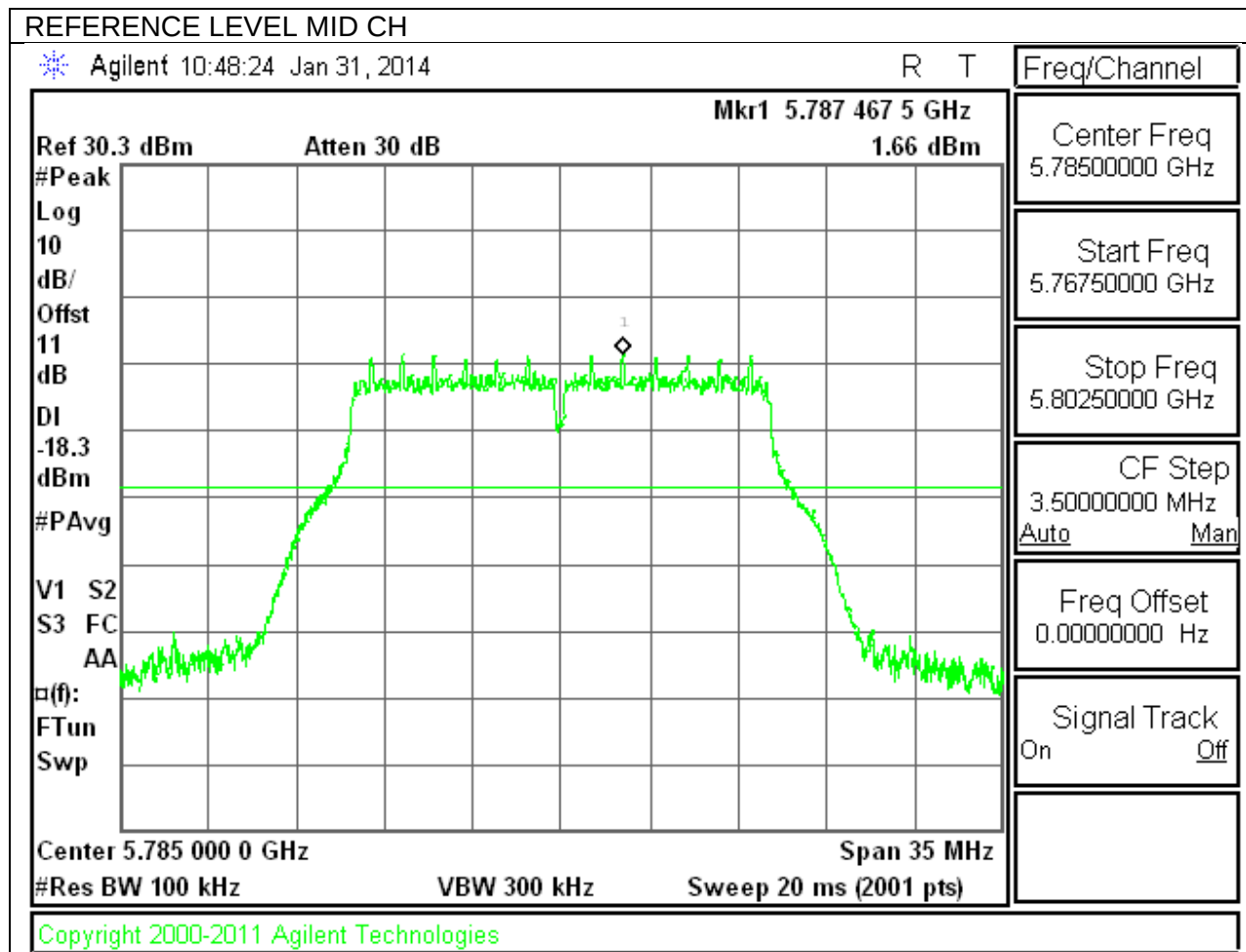
Freq Offset
0.00000000 Hz

Signal Track
On Off

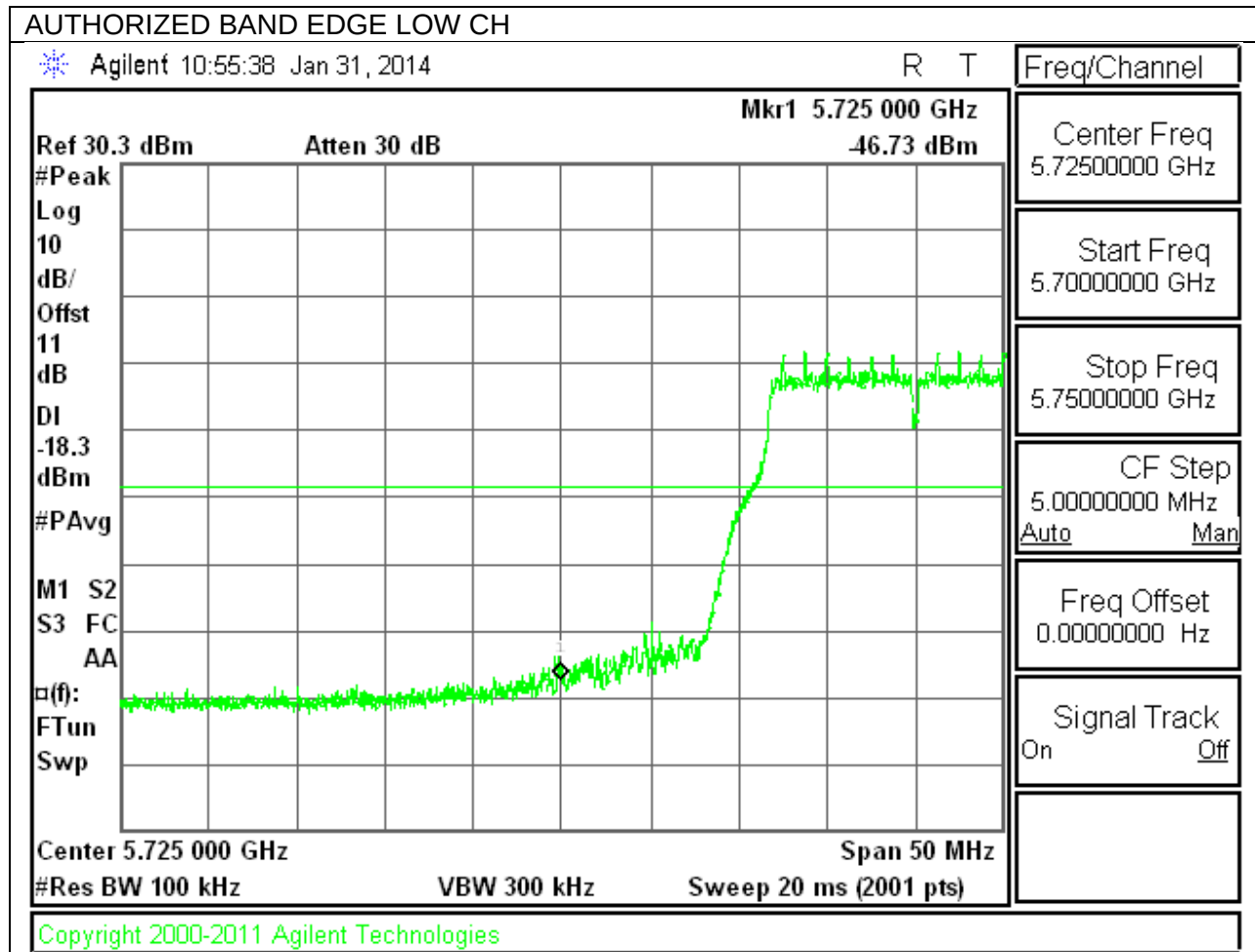
Copyright 2000-2011 Agilent Technologies

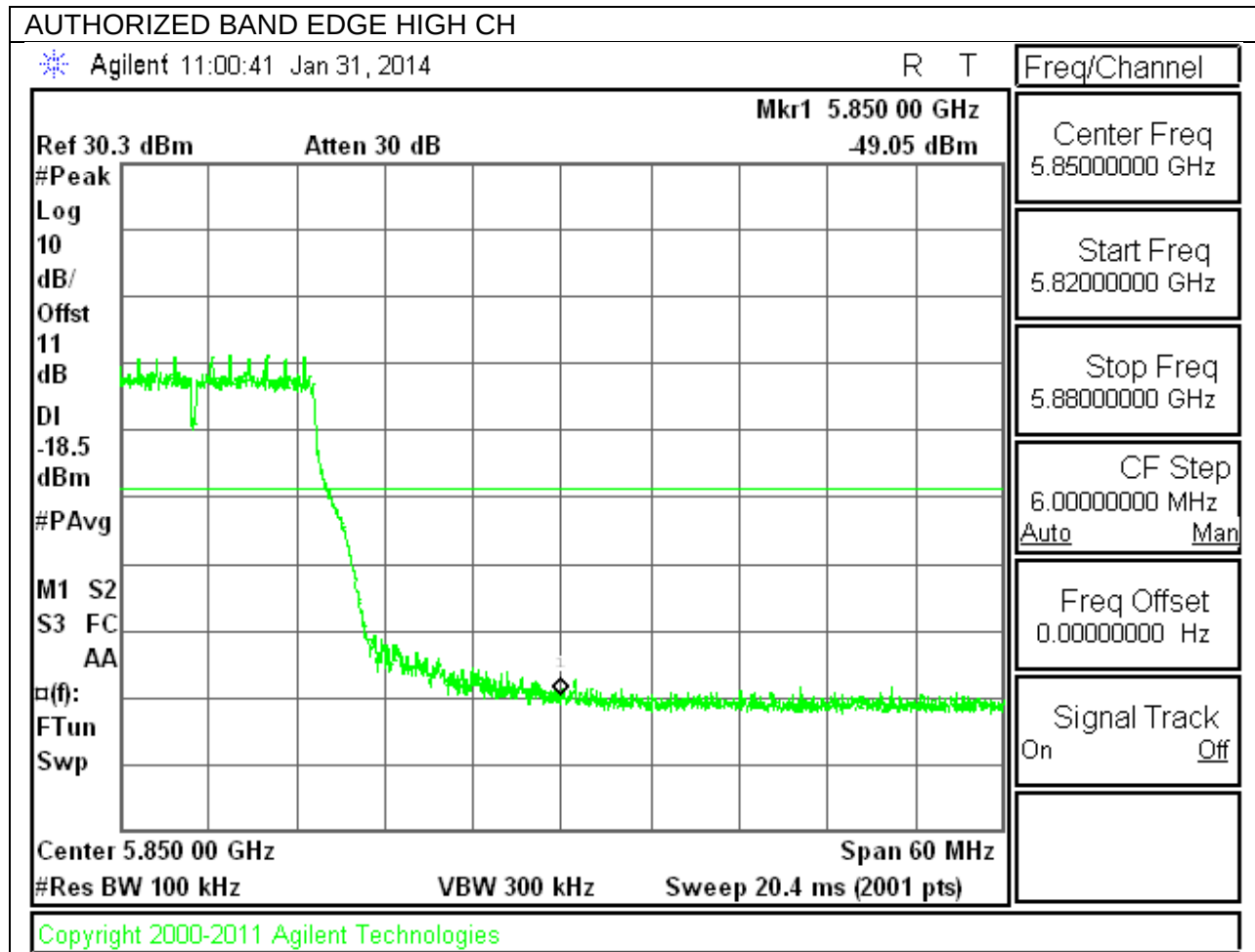
9.6.4. 802.11a MODE IN THE 5.8 GHz BAND

IN-BAND REFERENCE LEVEL

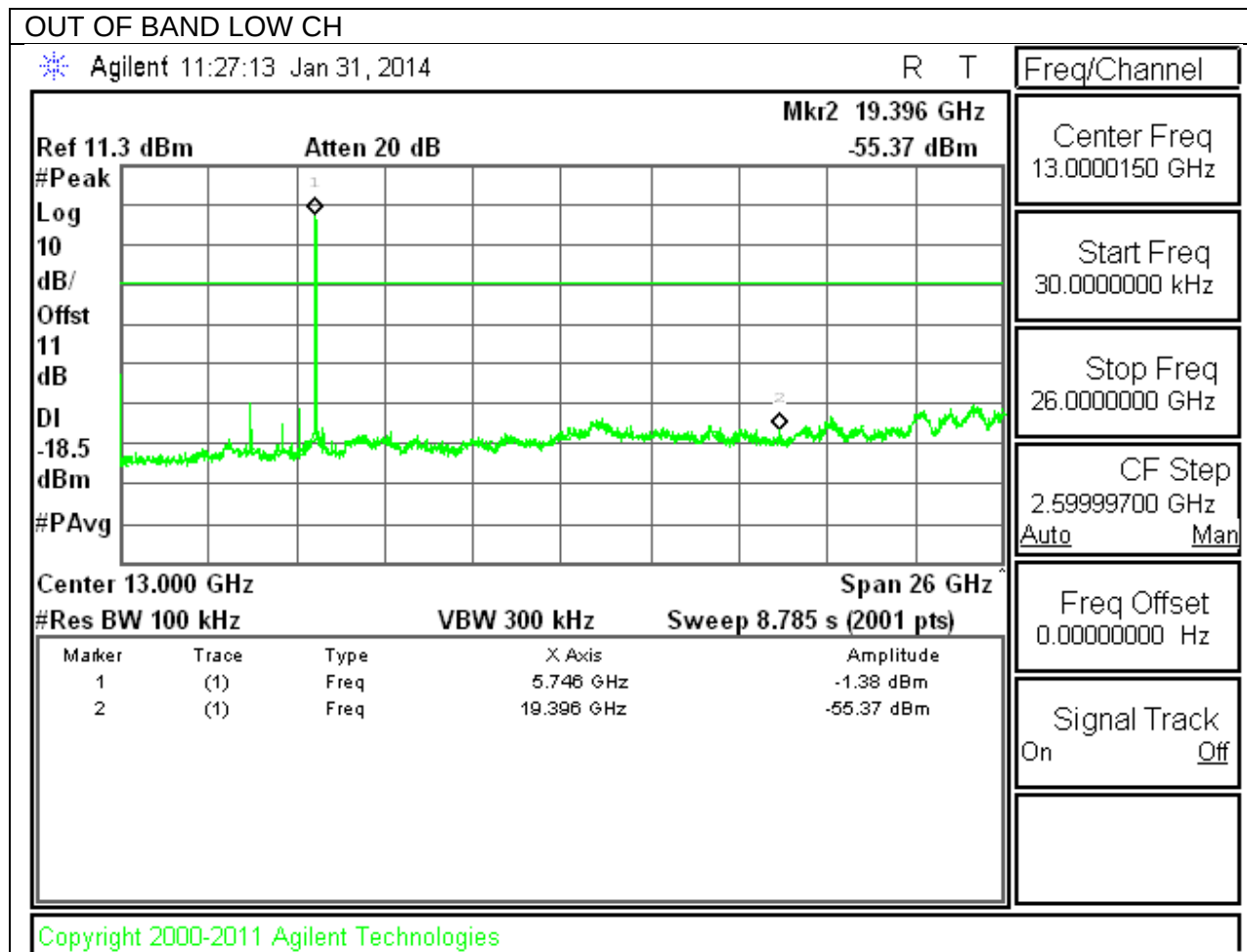


LOW CHANNEL BANDEDGE

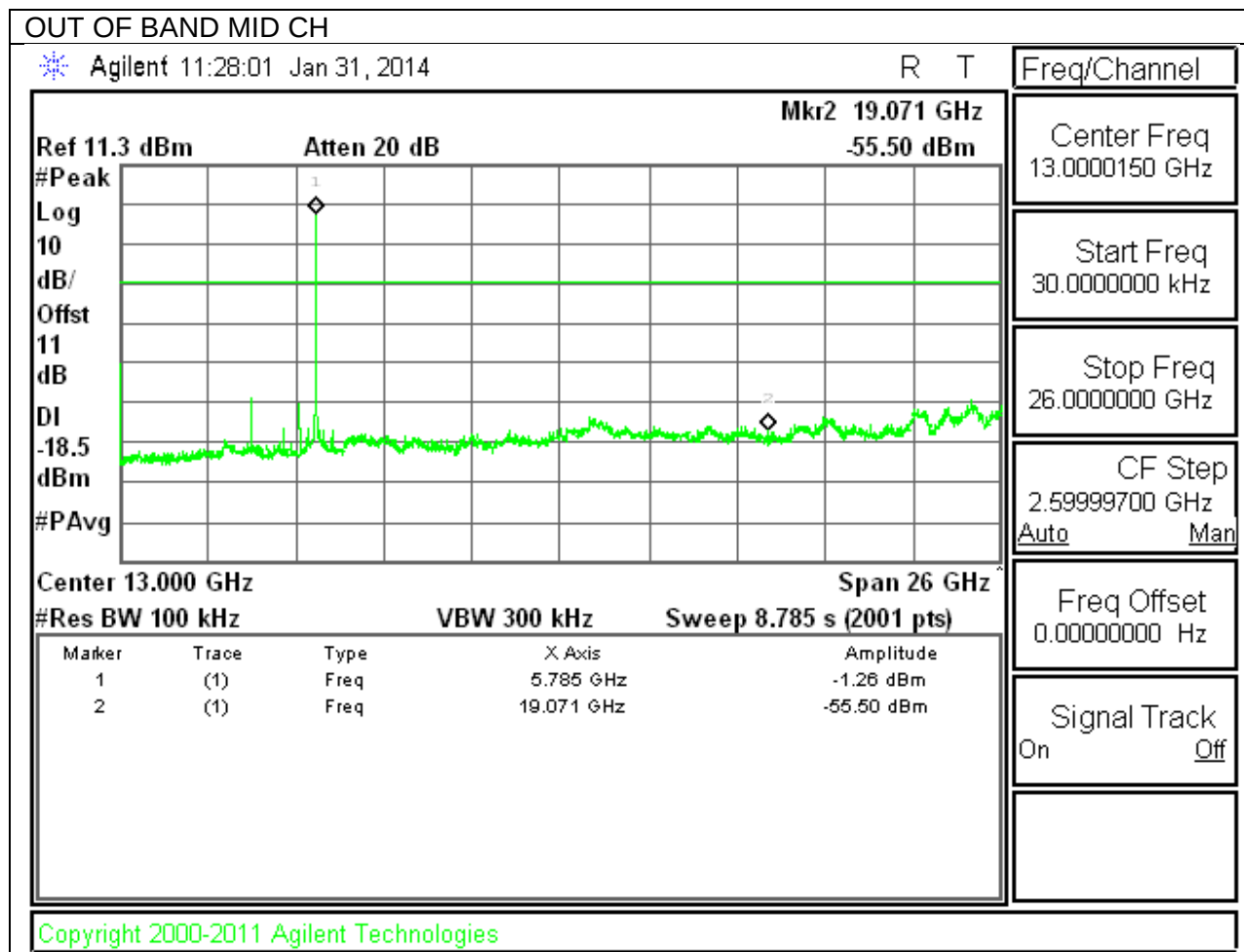




OUT-OF-BAND EMISSIONS

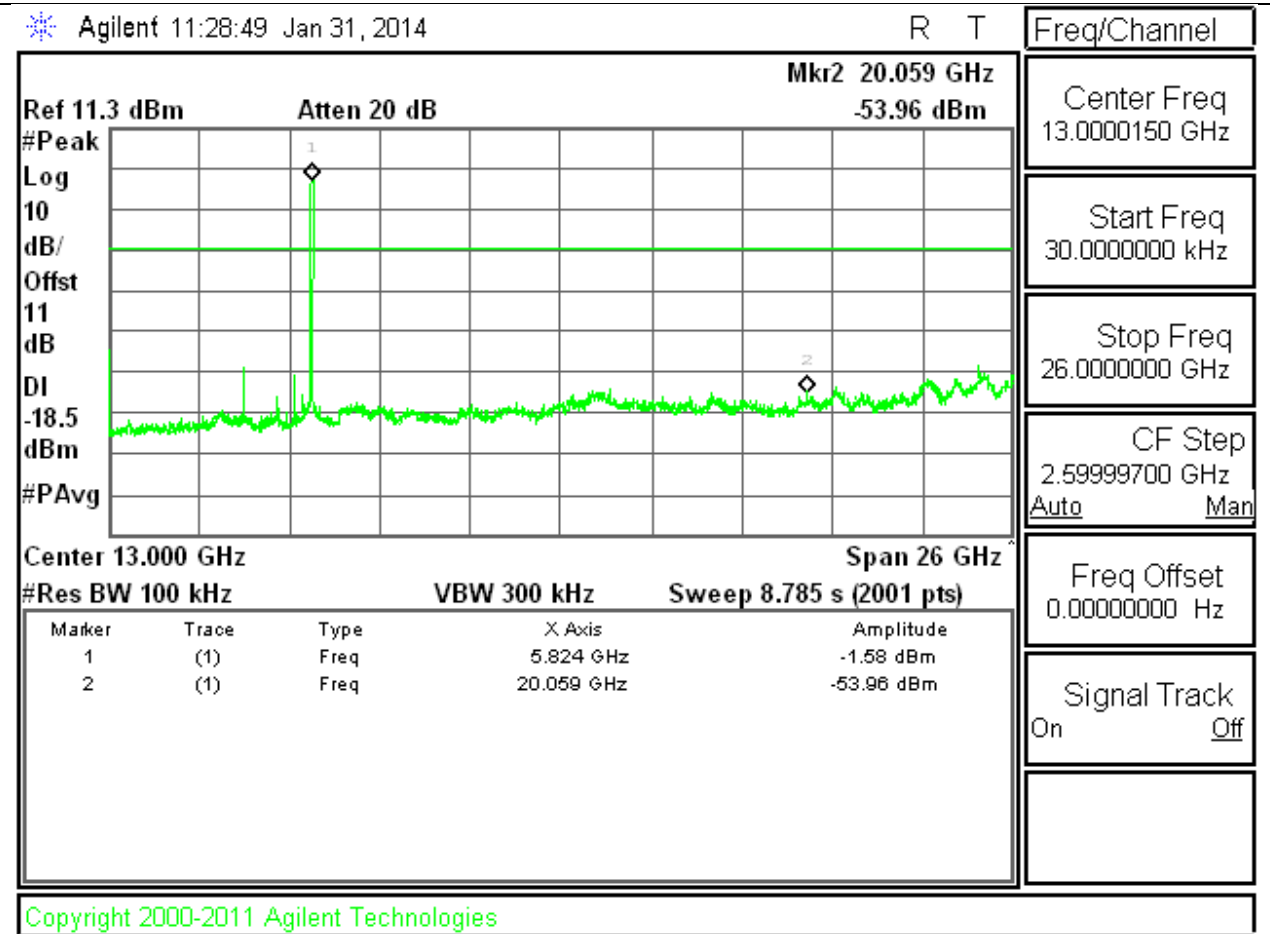


Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



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

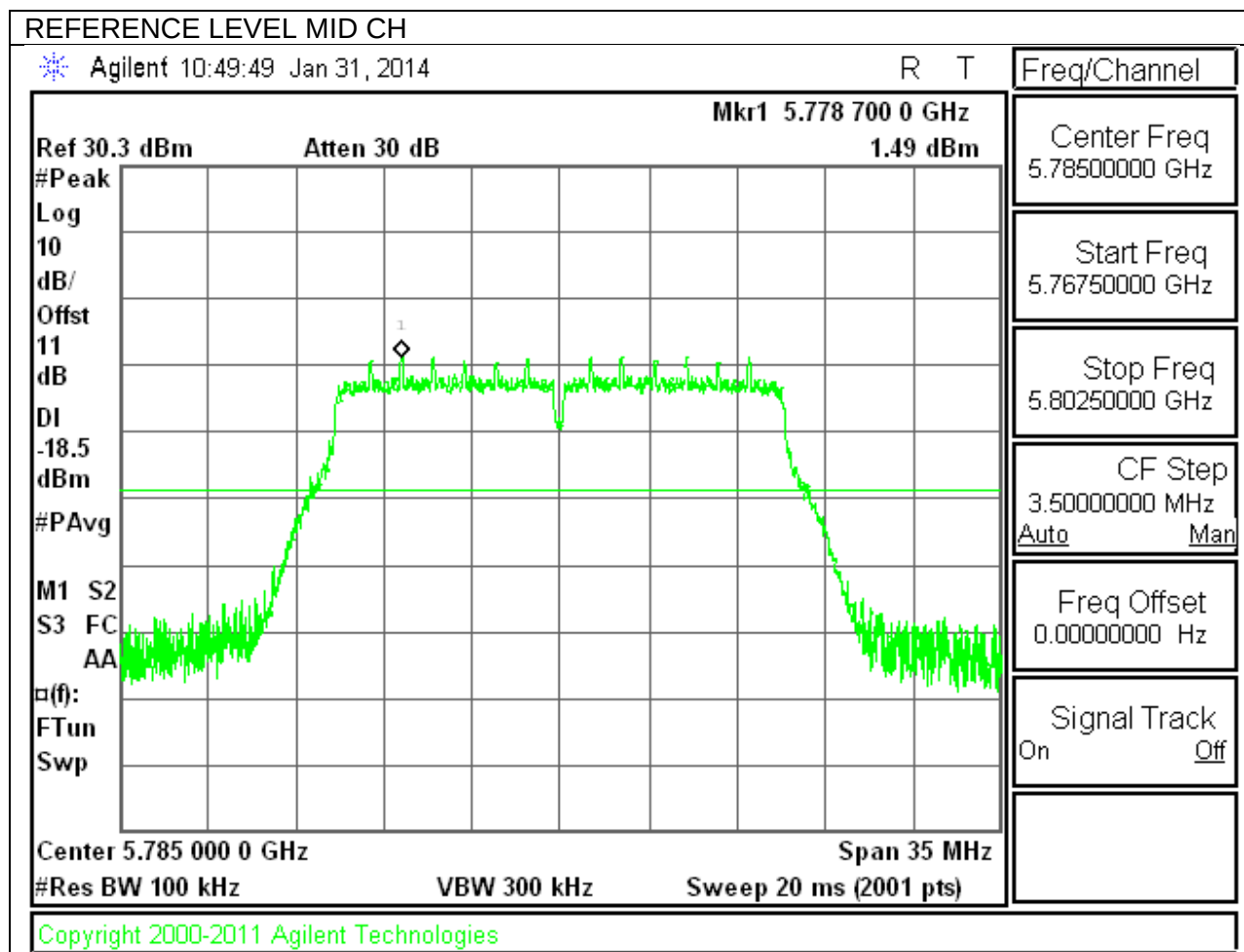
OUT OF BAND HIGH CH



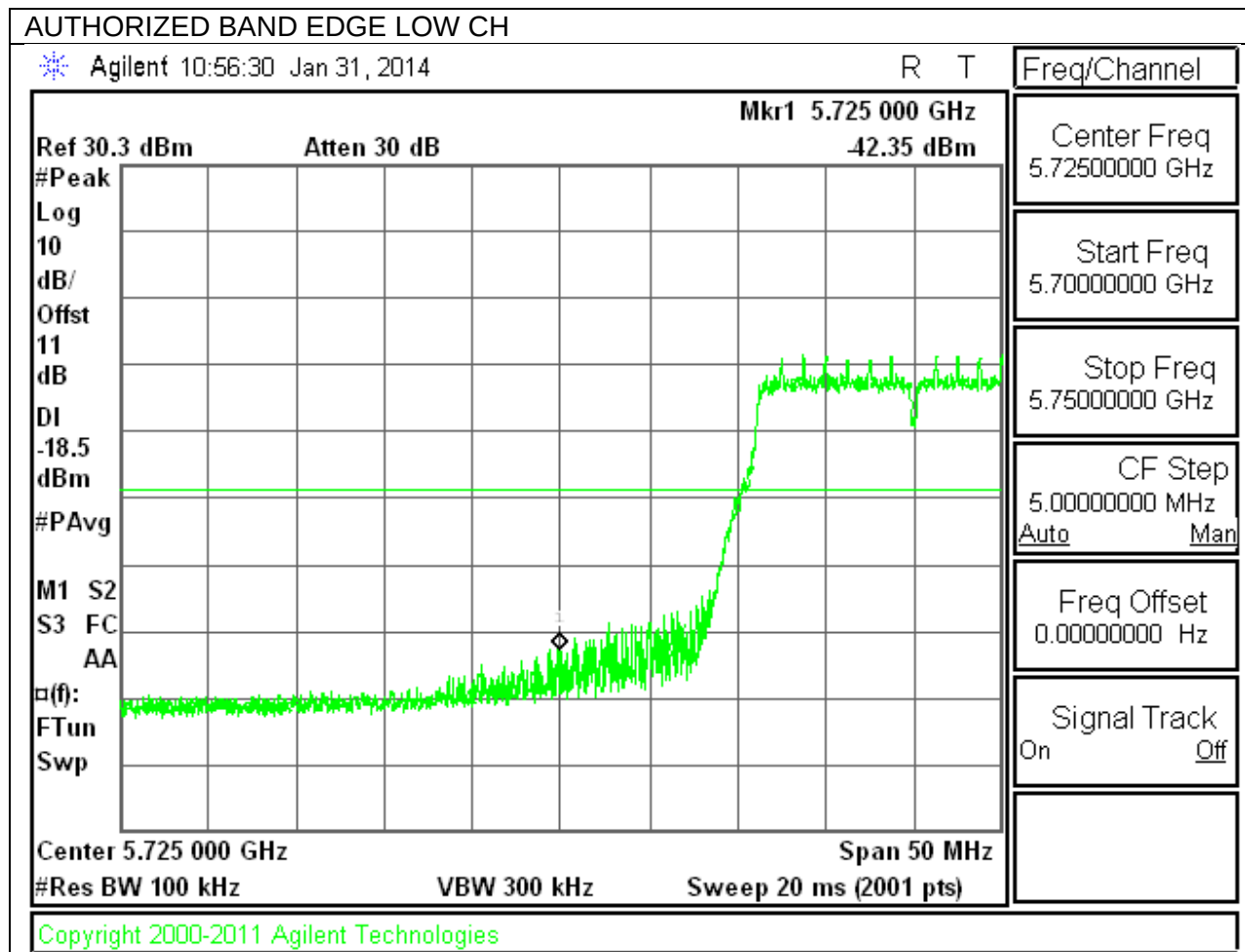
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

9.6.5. 802.11n MODE IN THE 5.8 GHz BAND

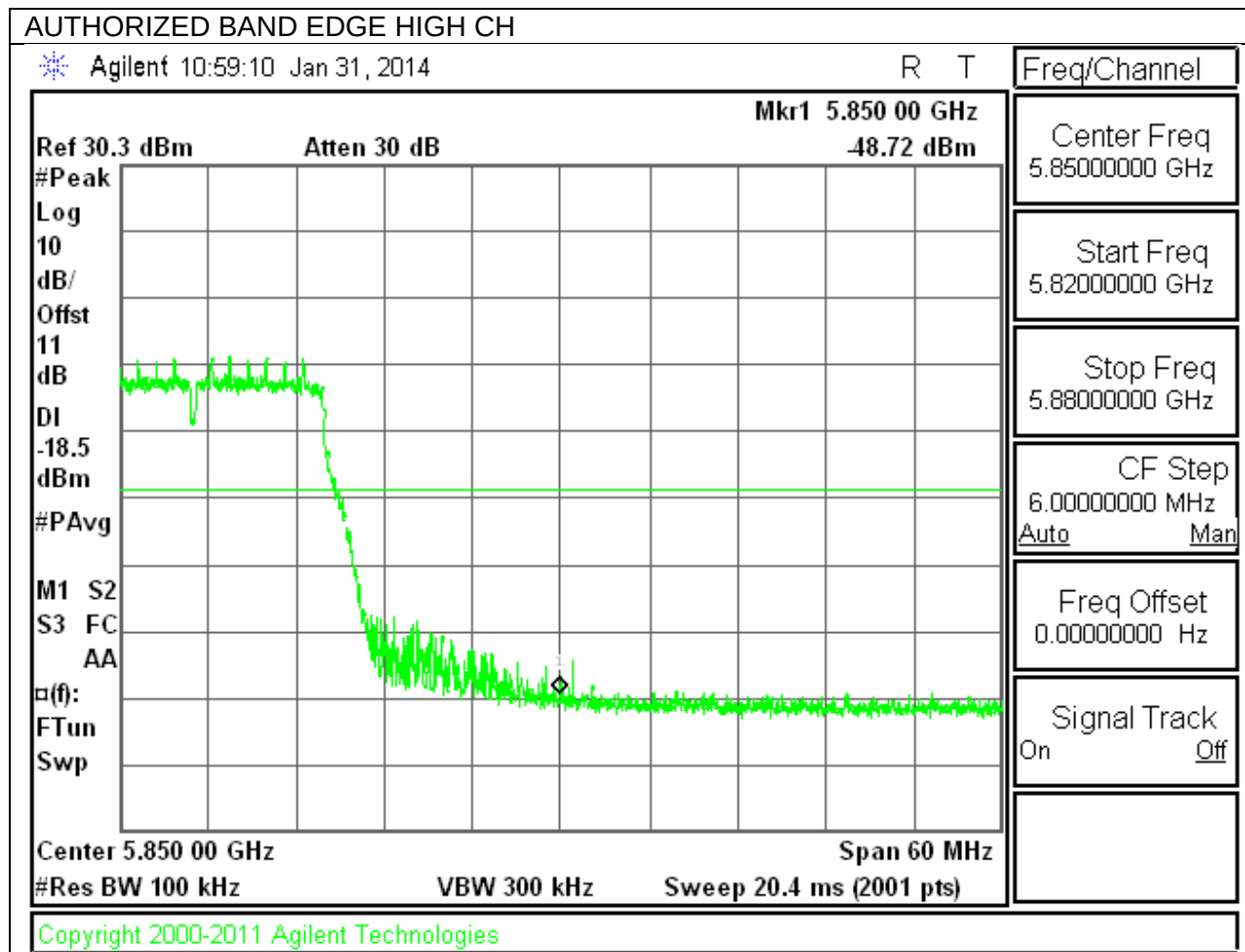
IN-BAND REFERENCE LEVEL



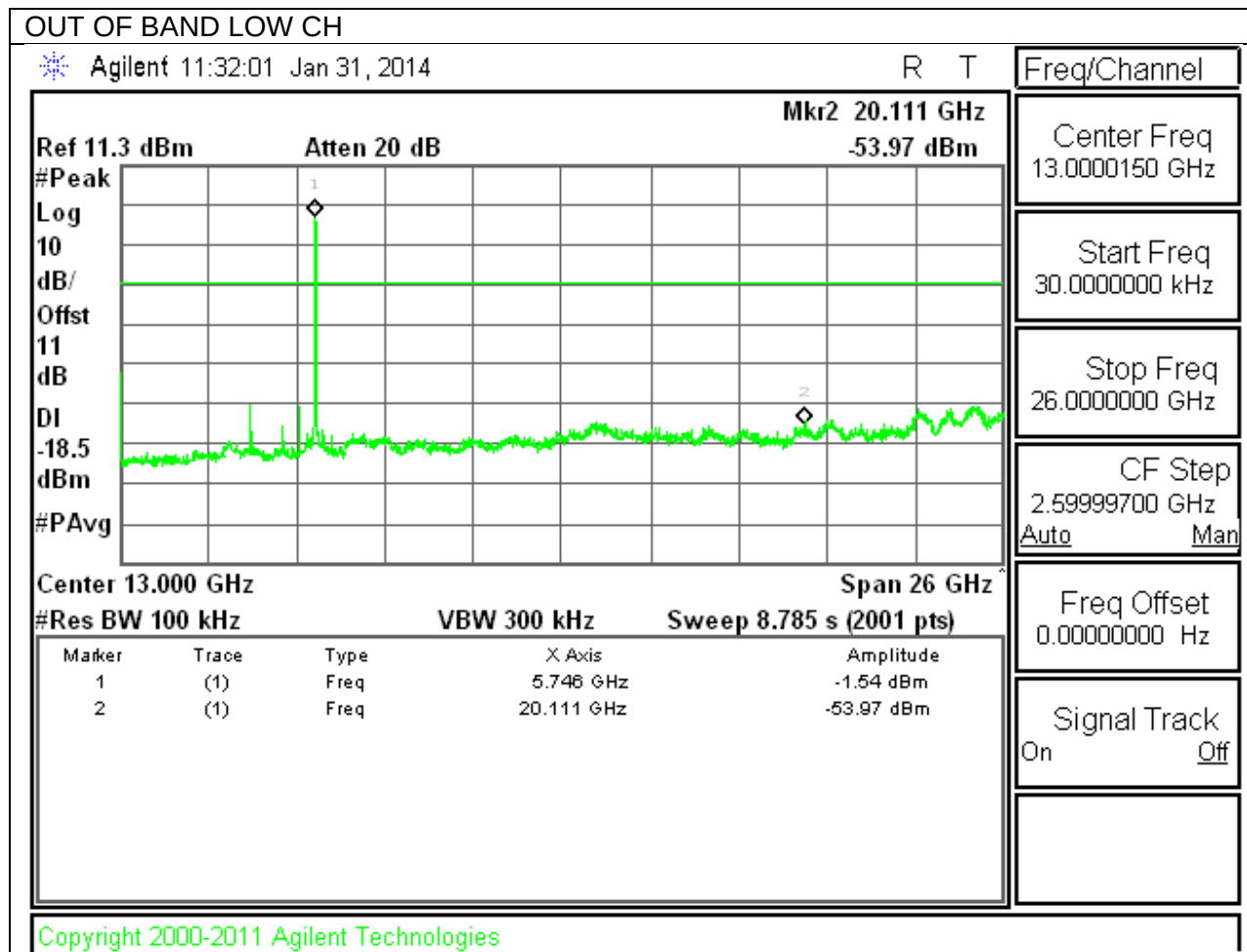
LOW CHANNEL BANDEDGE



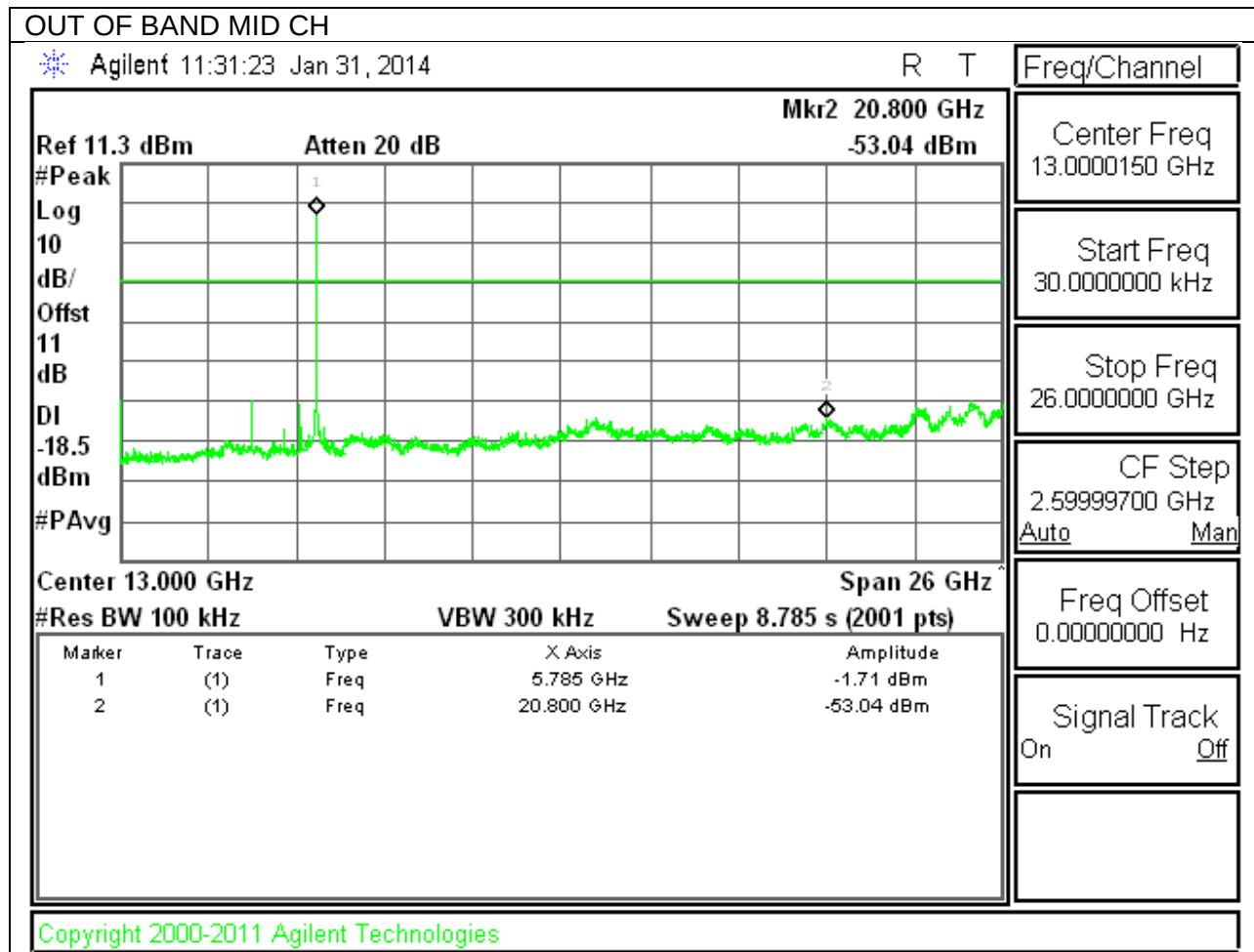
HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS

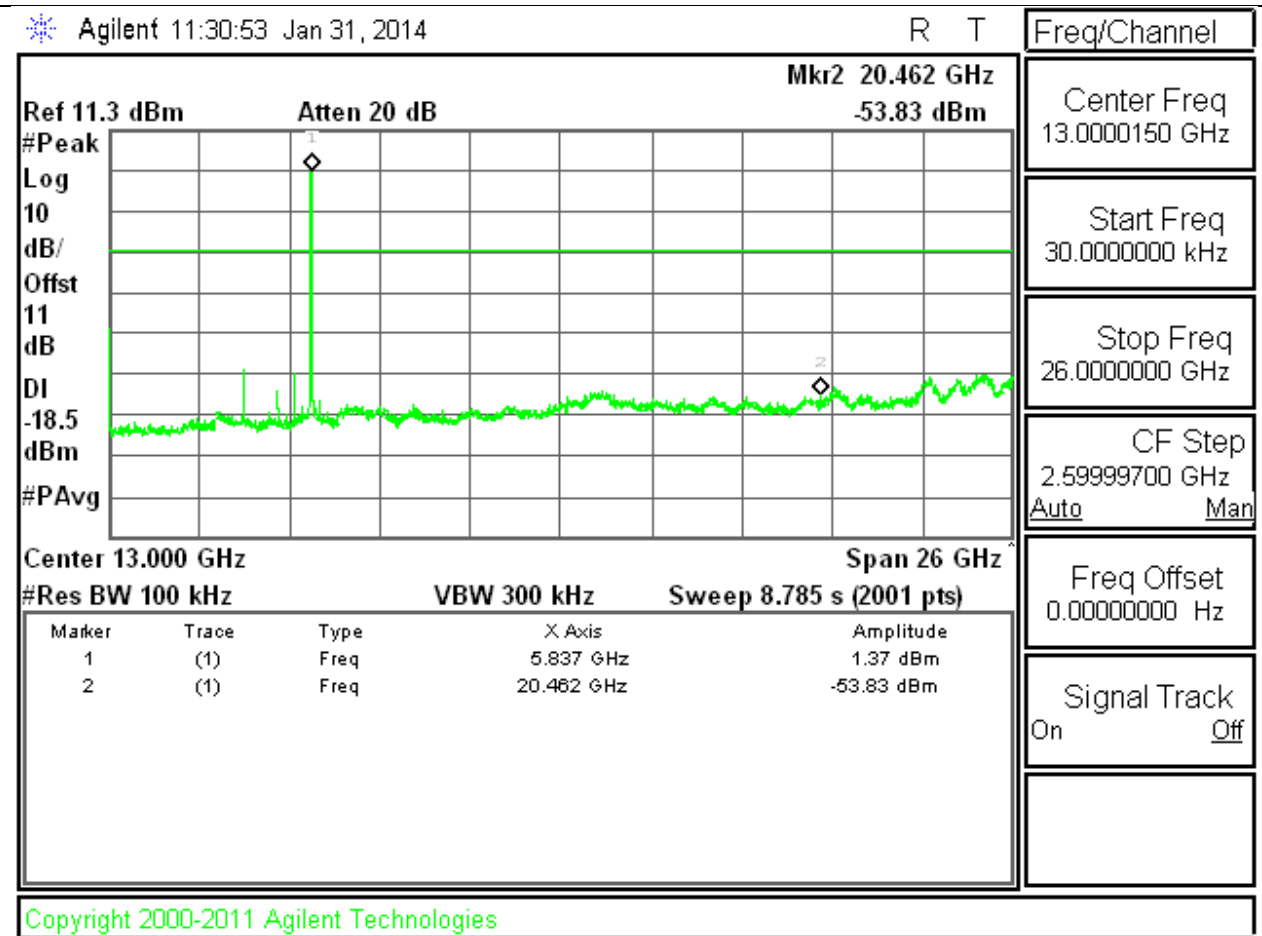


Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



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

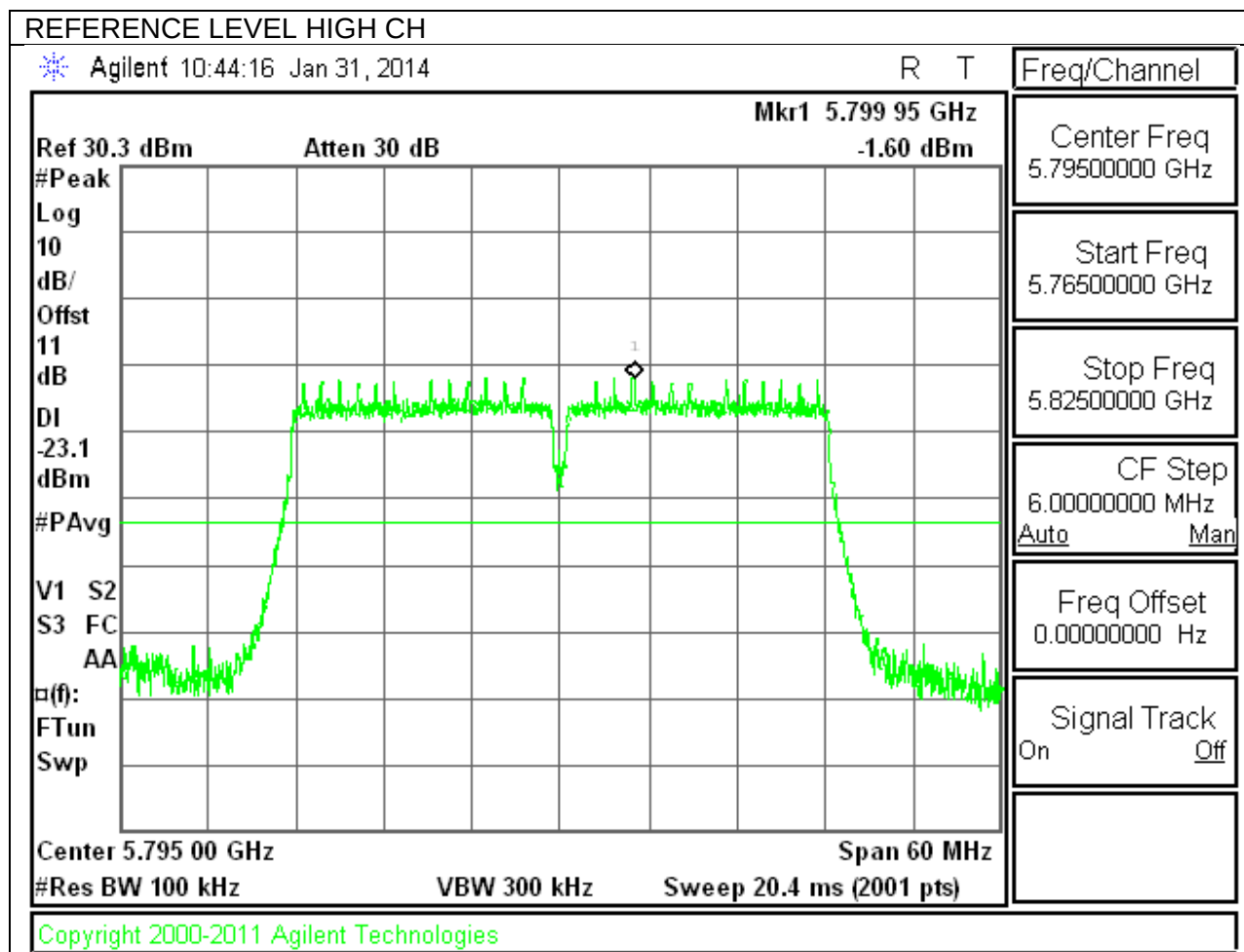
OUT OF BAND HIGH CH



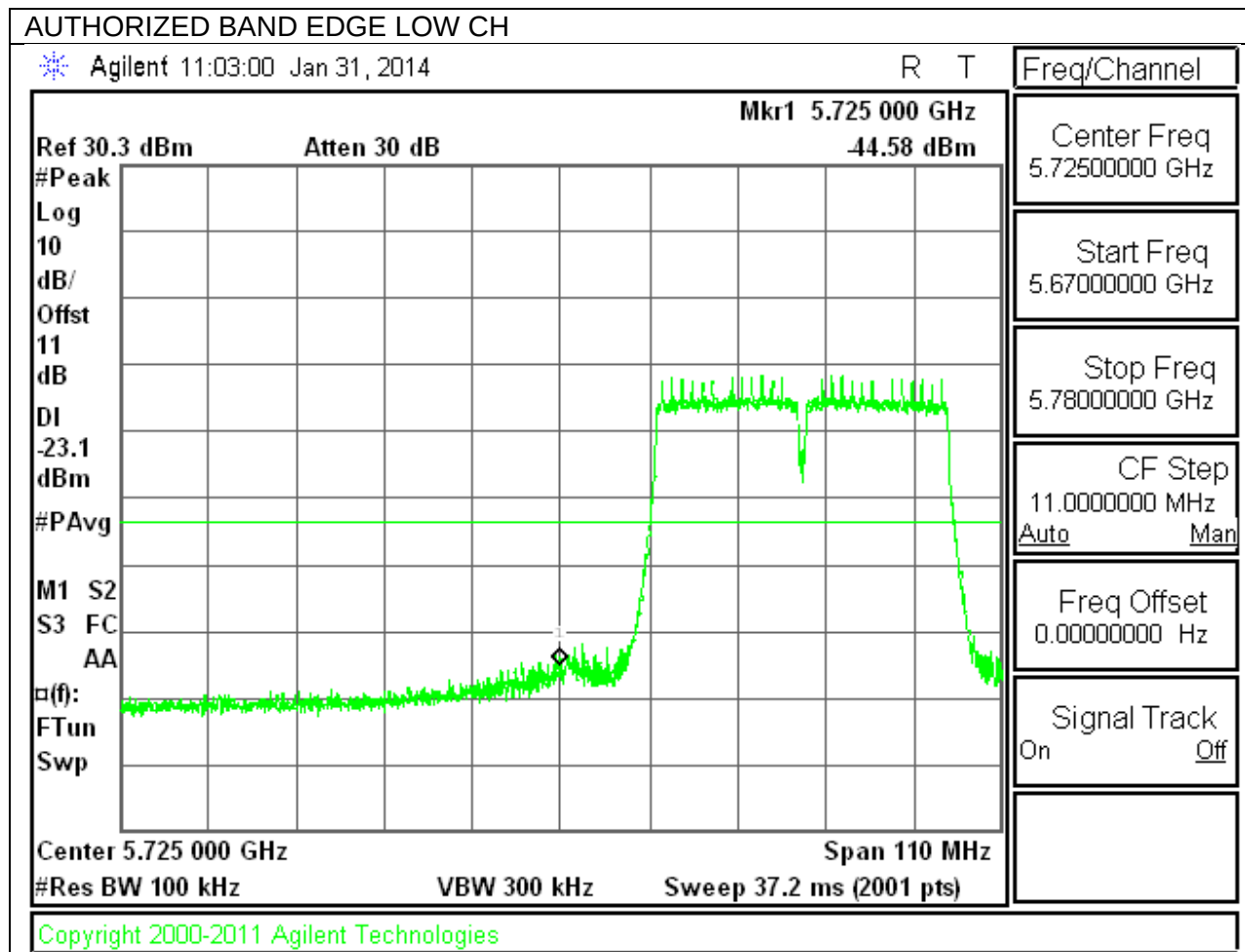
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

9.6.6. 802.11n HT40 MODE IN THE 5.8 GHz BAND

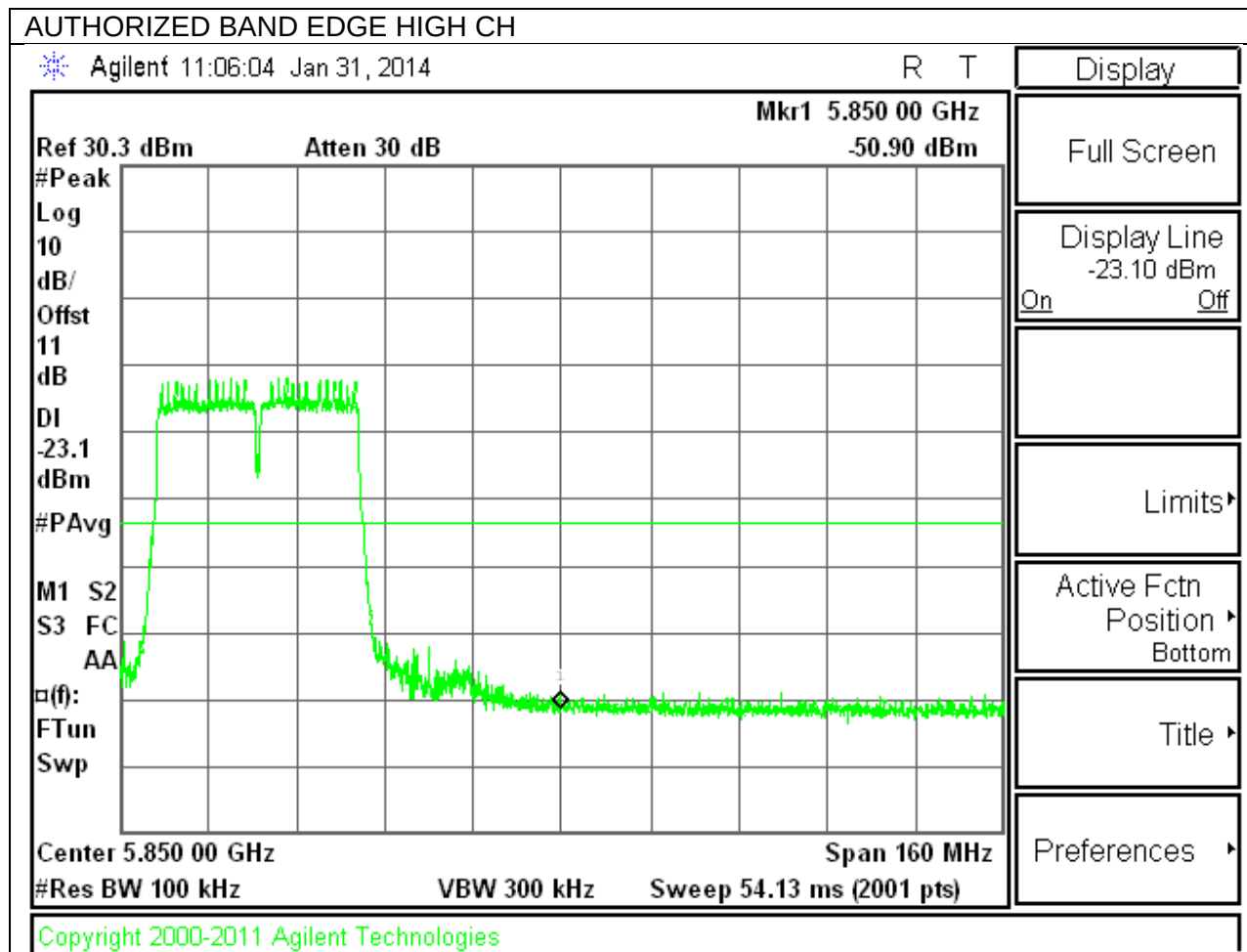
IN-BAND REFERENCE LEVEL



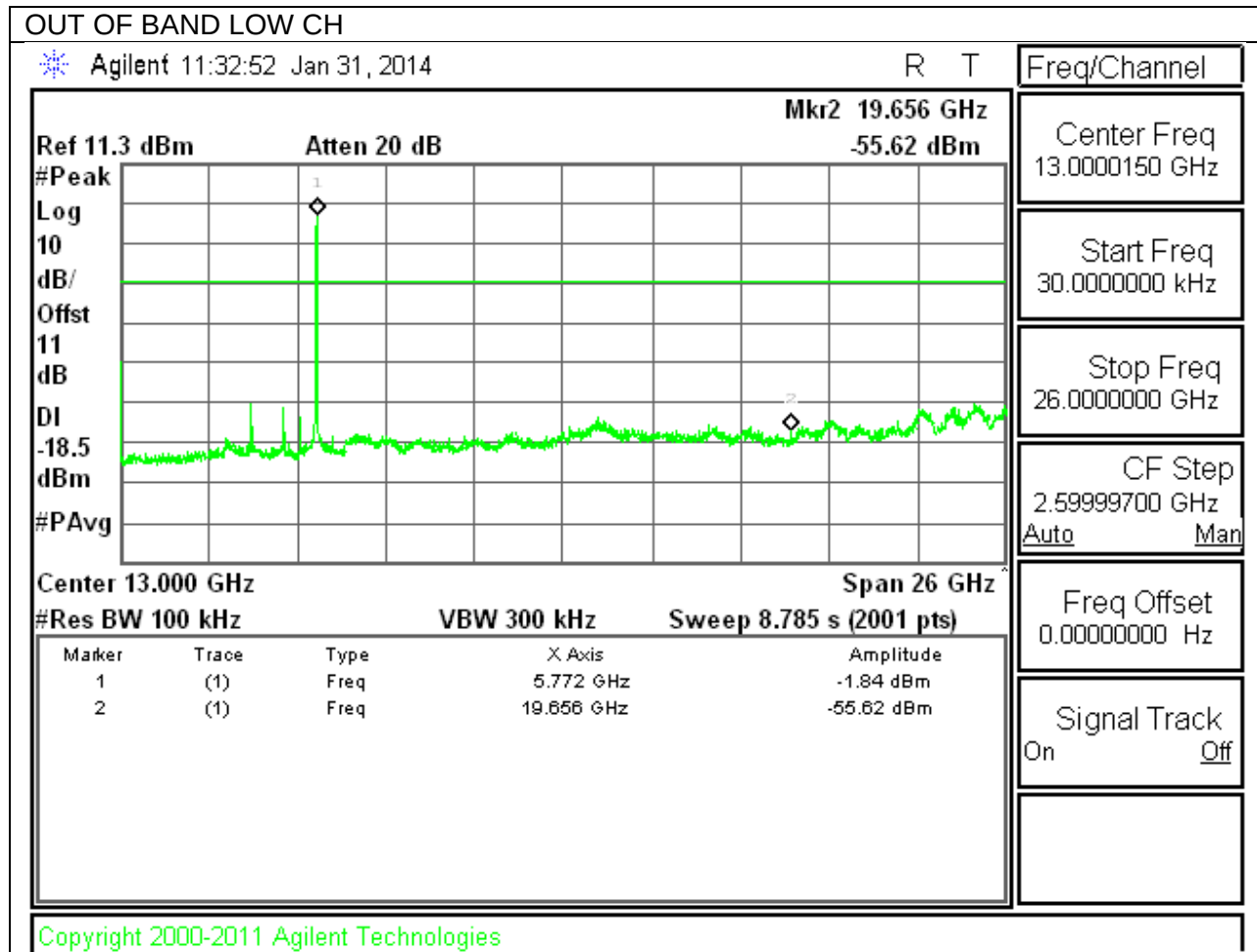
LOW CHANNEL BANDEDGE



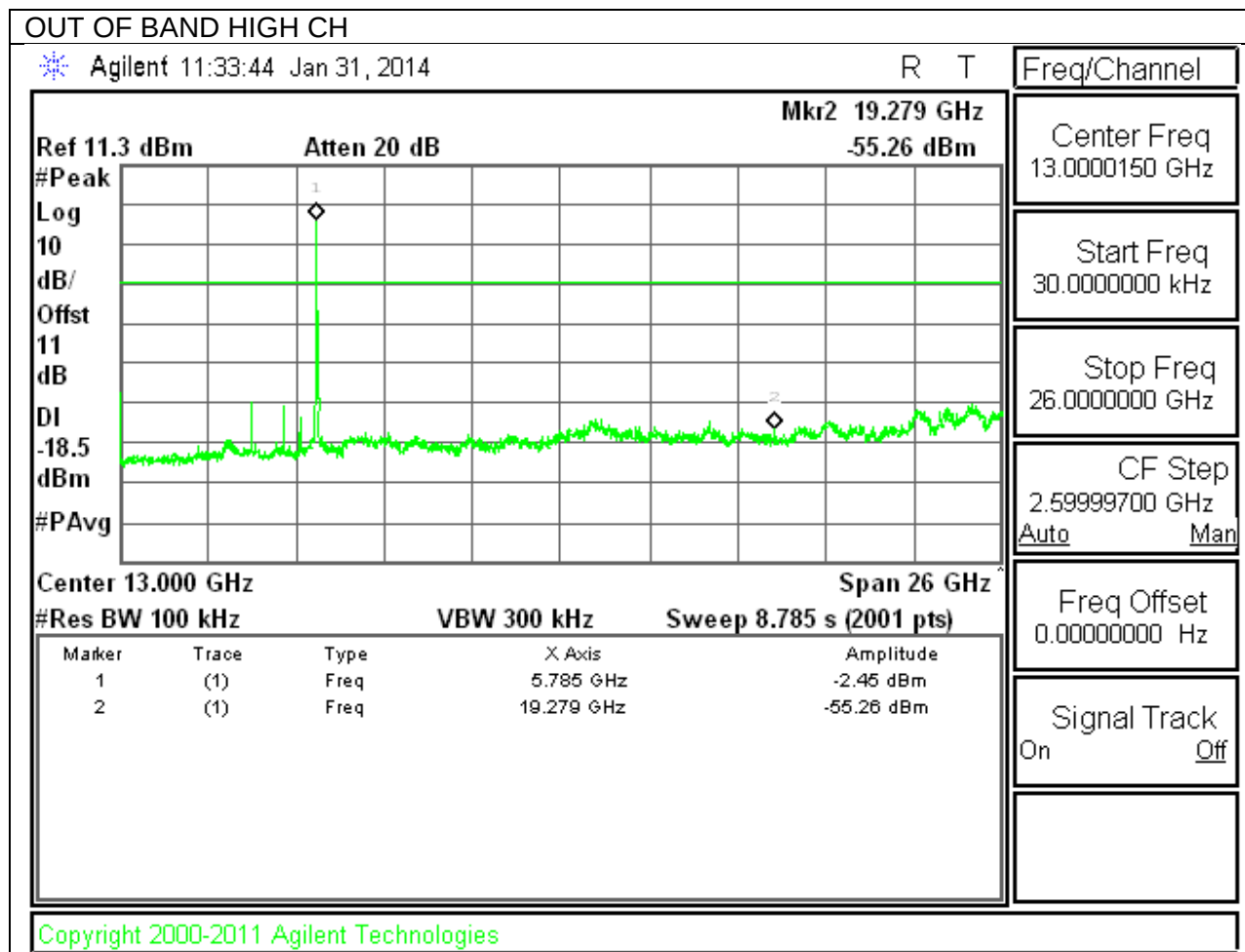
HIGH CHANNEL BANDEDGE



OUT-OF-BAND EMISSIONS



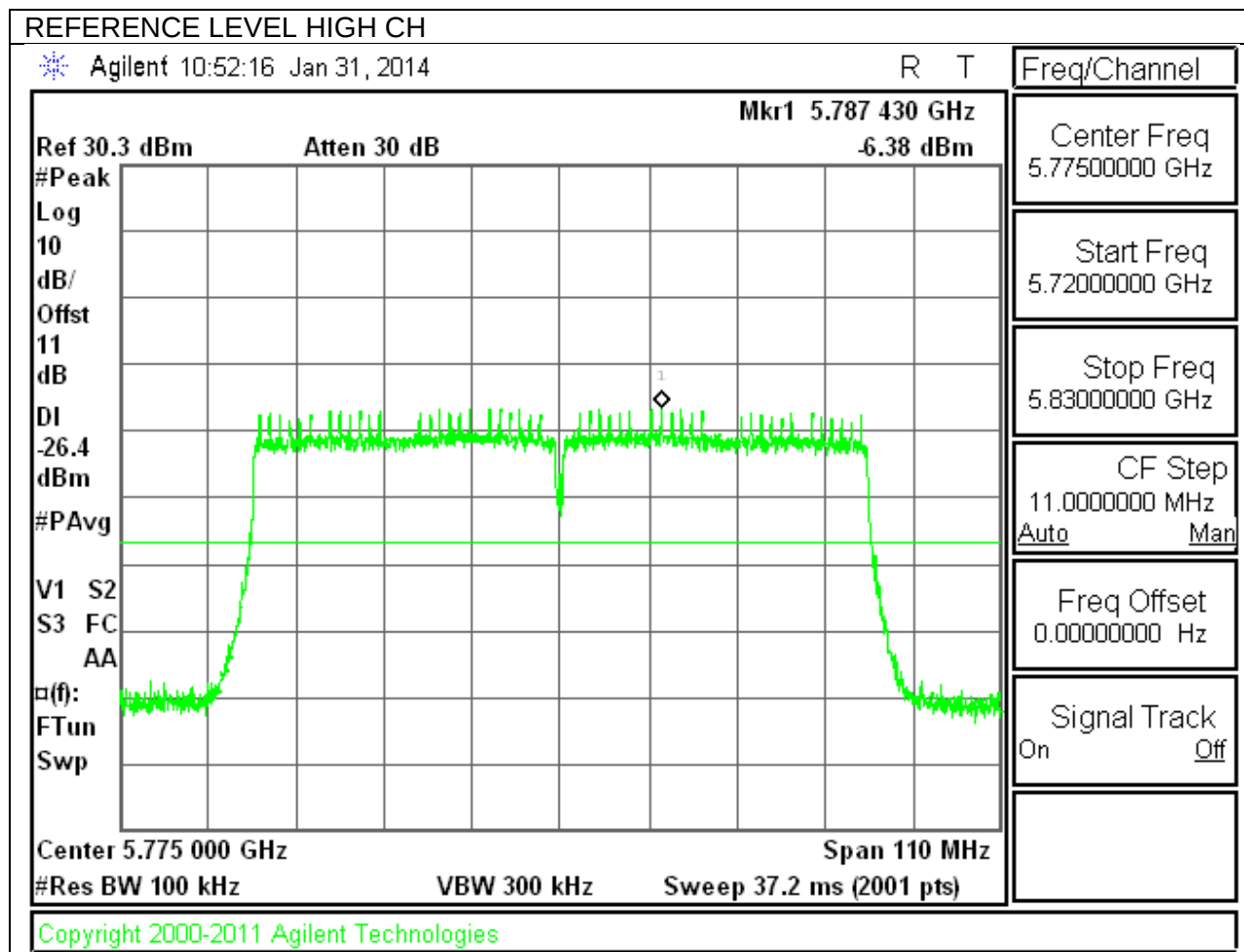
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.



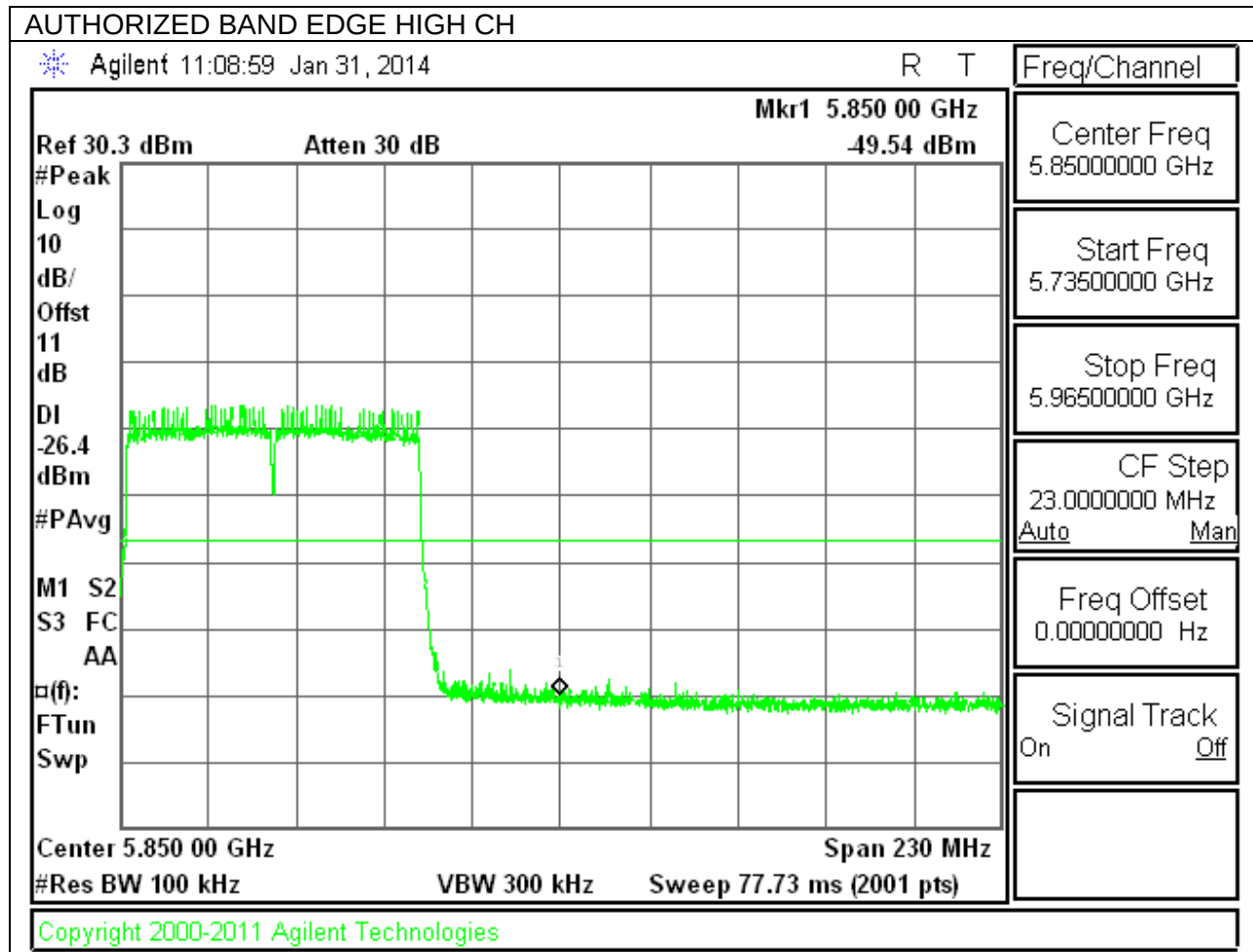
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

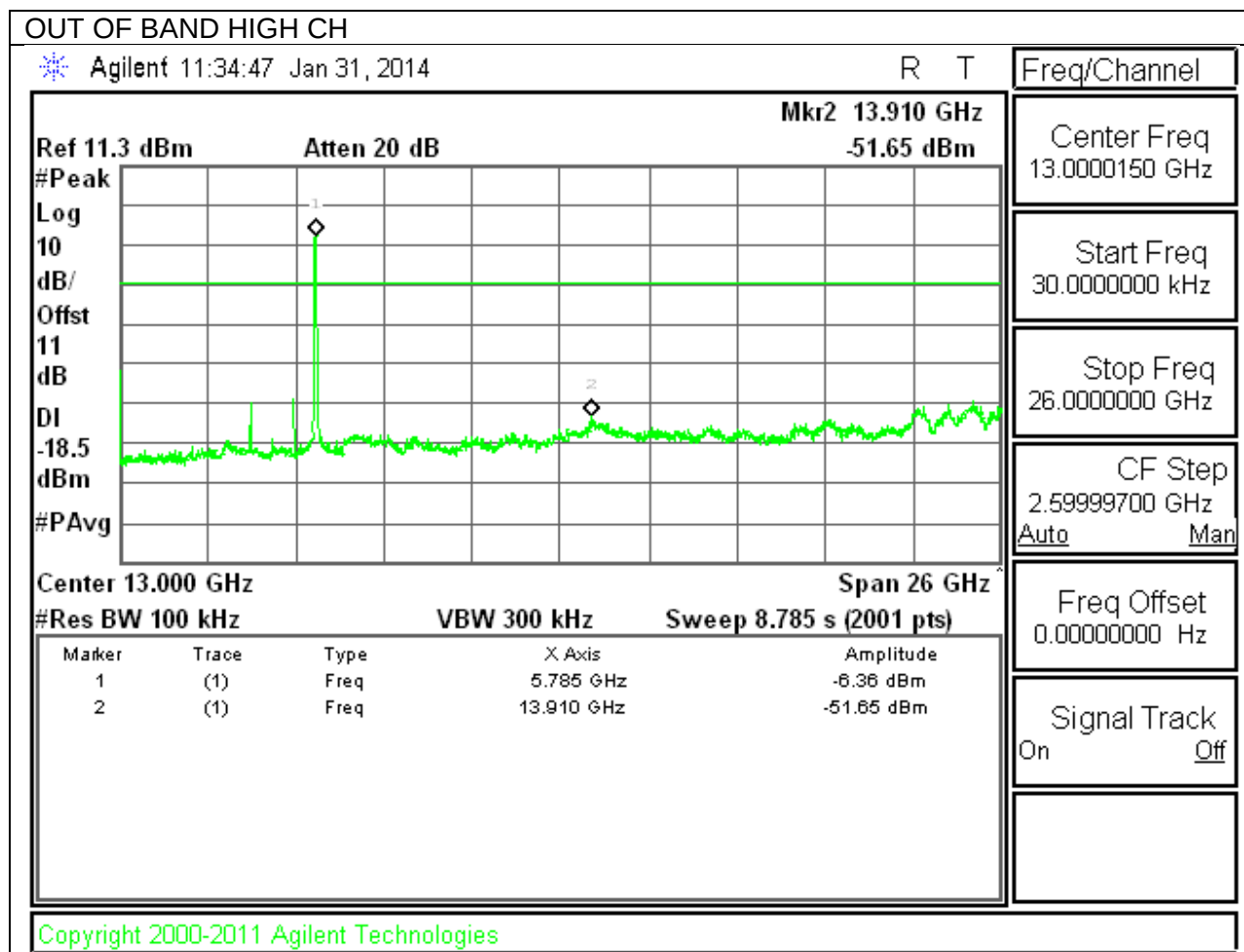
9.6.1. 802.11n HT40 MODE IN THE 5.8 GHz BAND

IN-BAND REFERENCE LEVEL



HIGH BANDEDGE





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

10. RADIATED TEST RESULTS

10.1. 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.

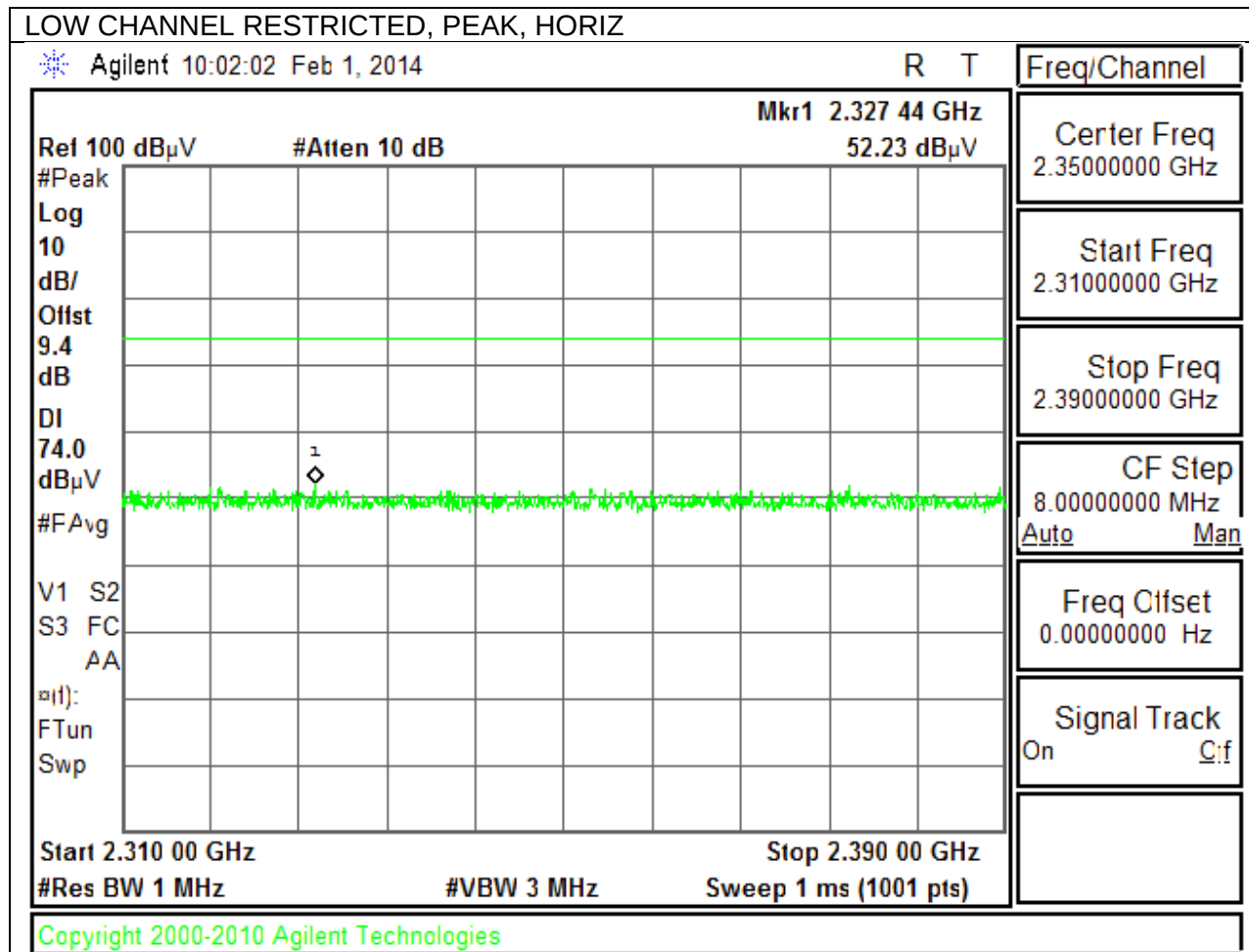
For measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and add duty cycle factor for average measurements. Duty cycle factor= $10\log(1/x)$ For this sample B mode = 0dB (duty cycle >98%); G mode = 0.3dB; N mode = 0.32dB.

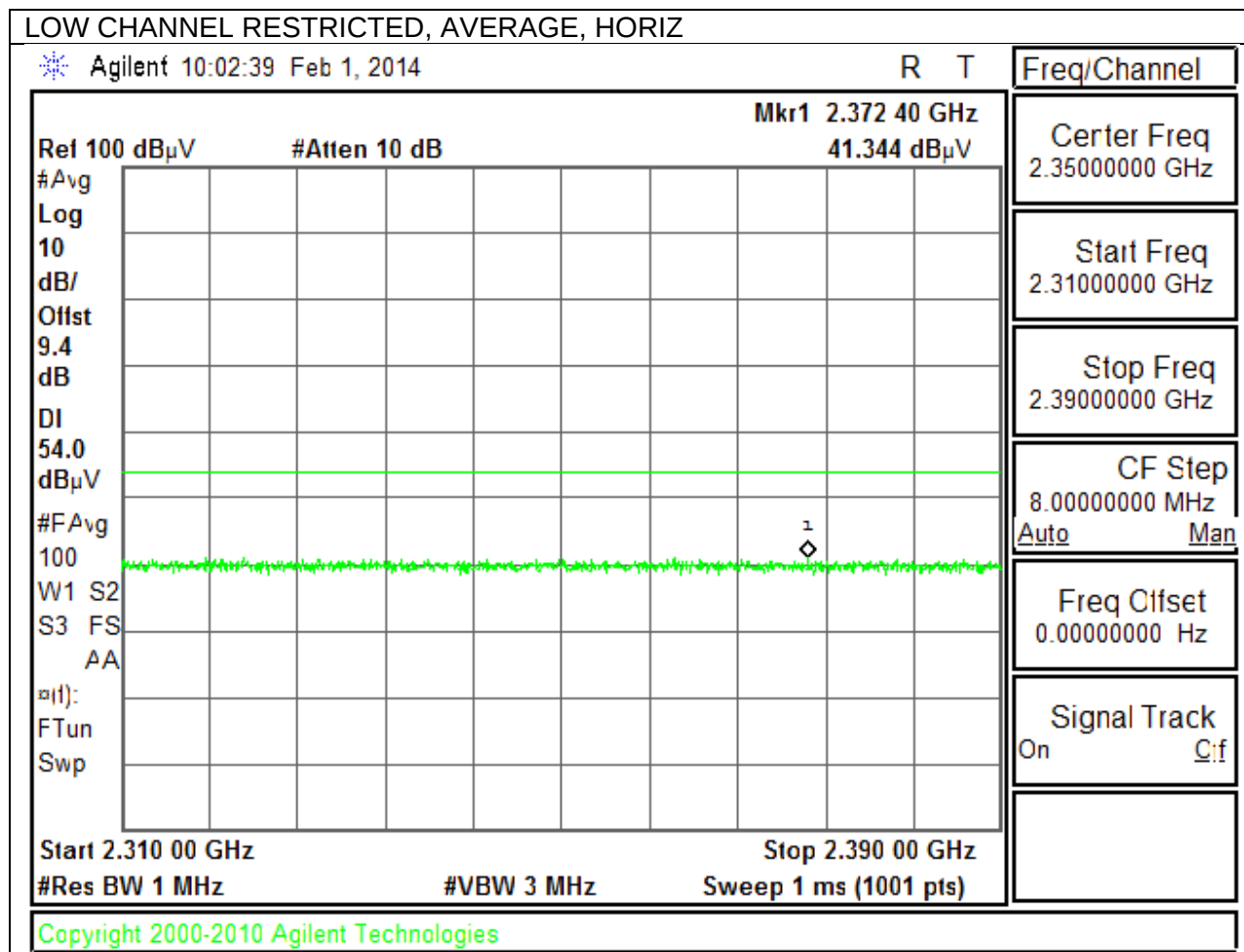
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band.

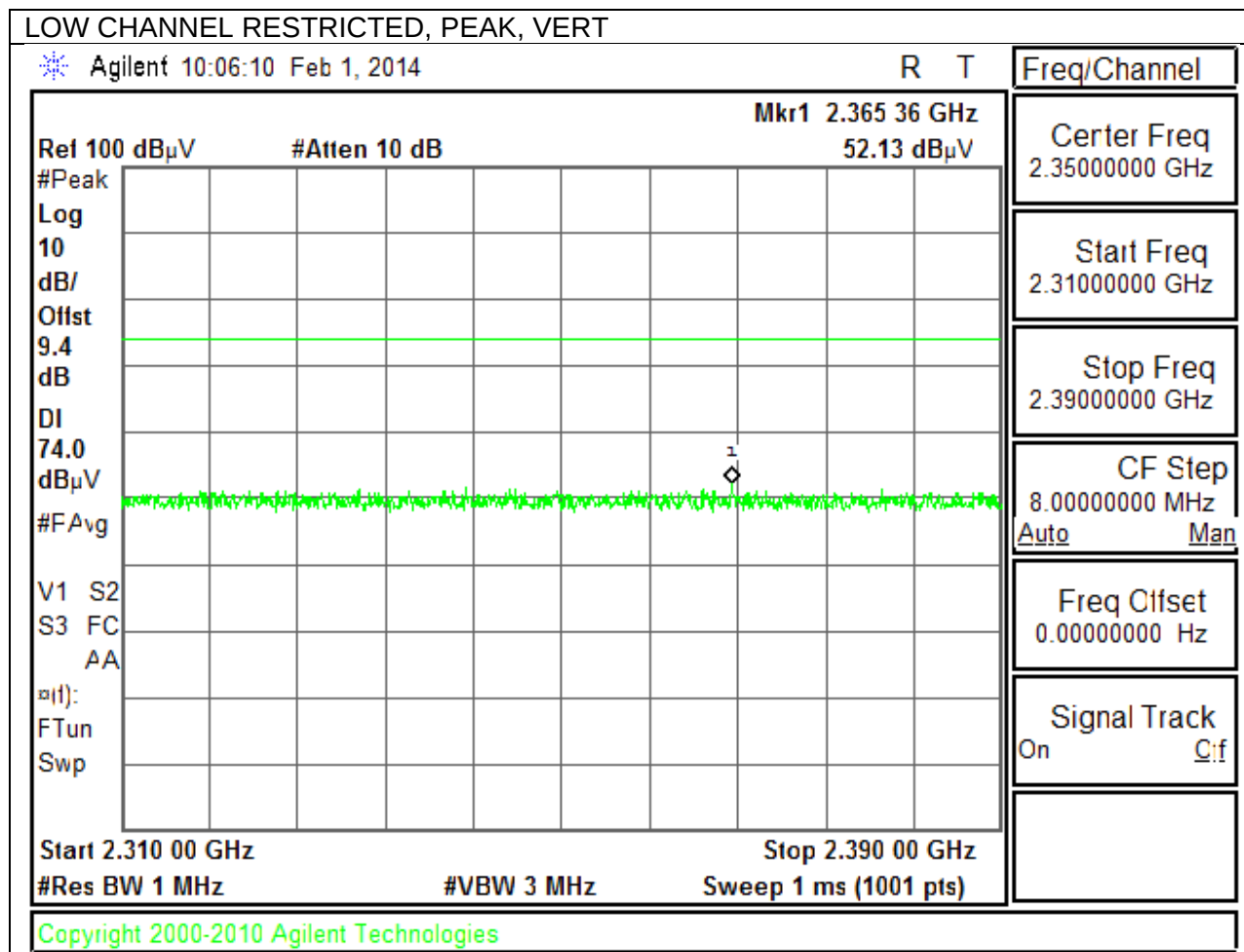
The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized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

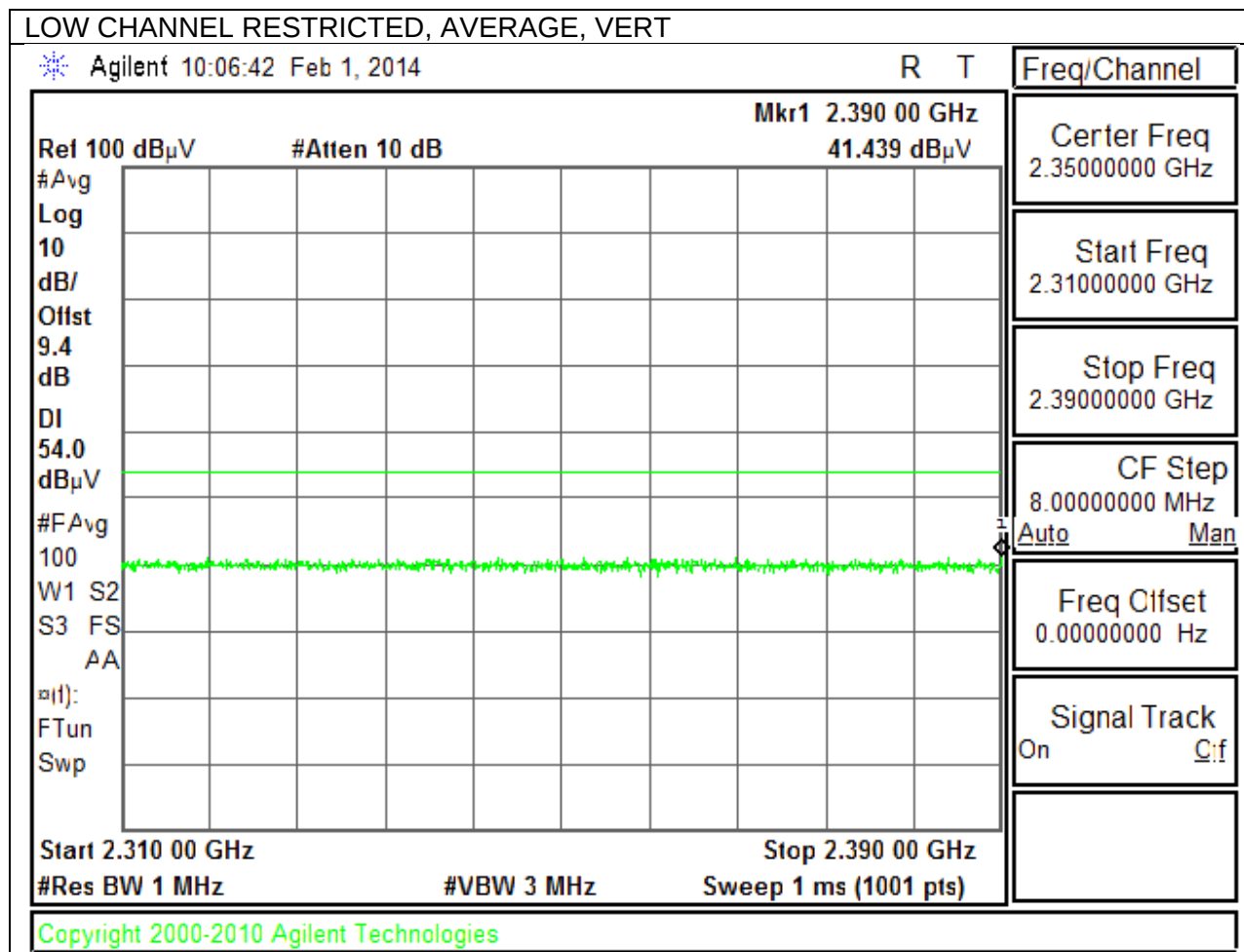
10.2. TRANSMITTER ABOVE 1 GHz

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

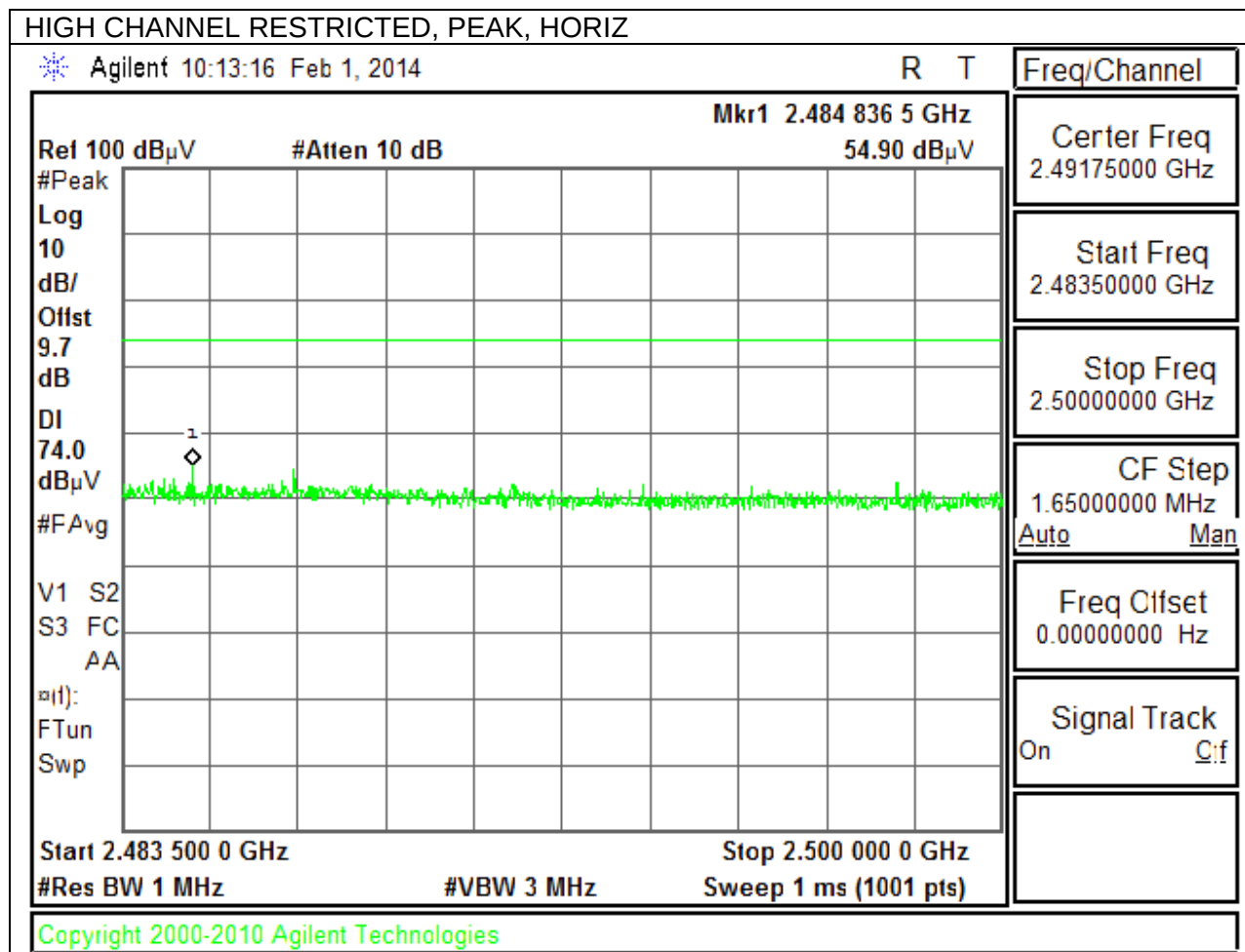


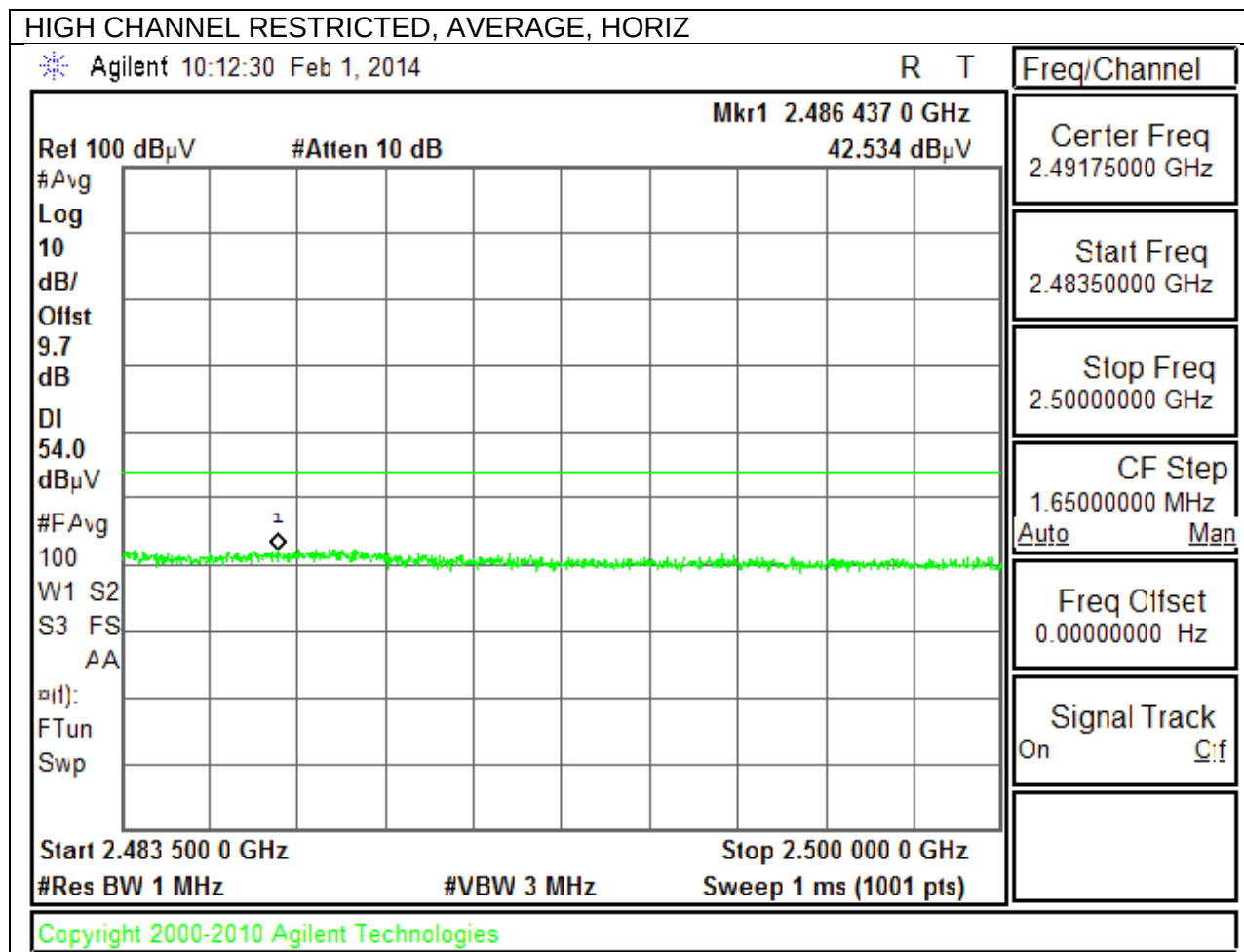


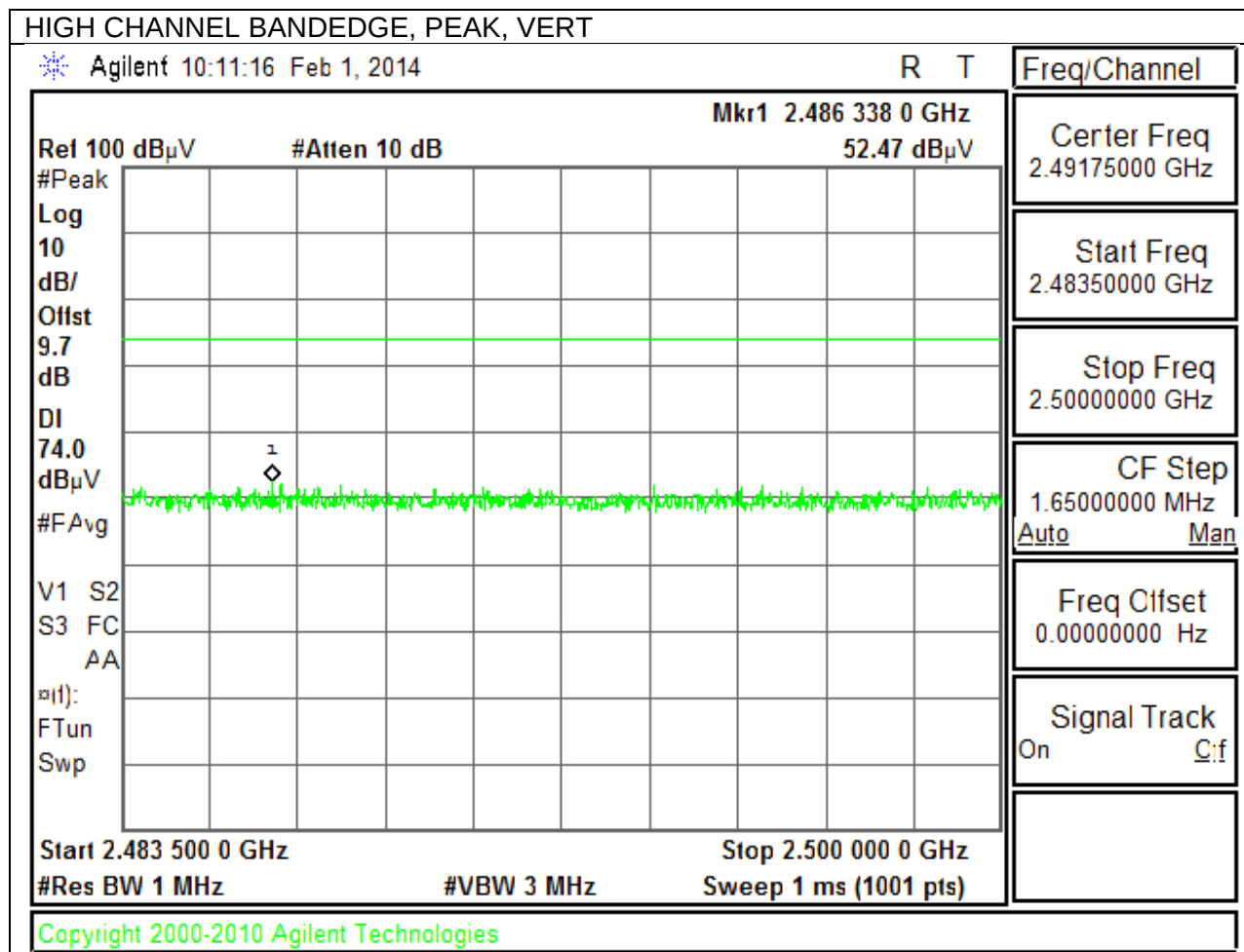


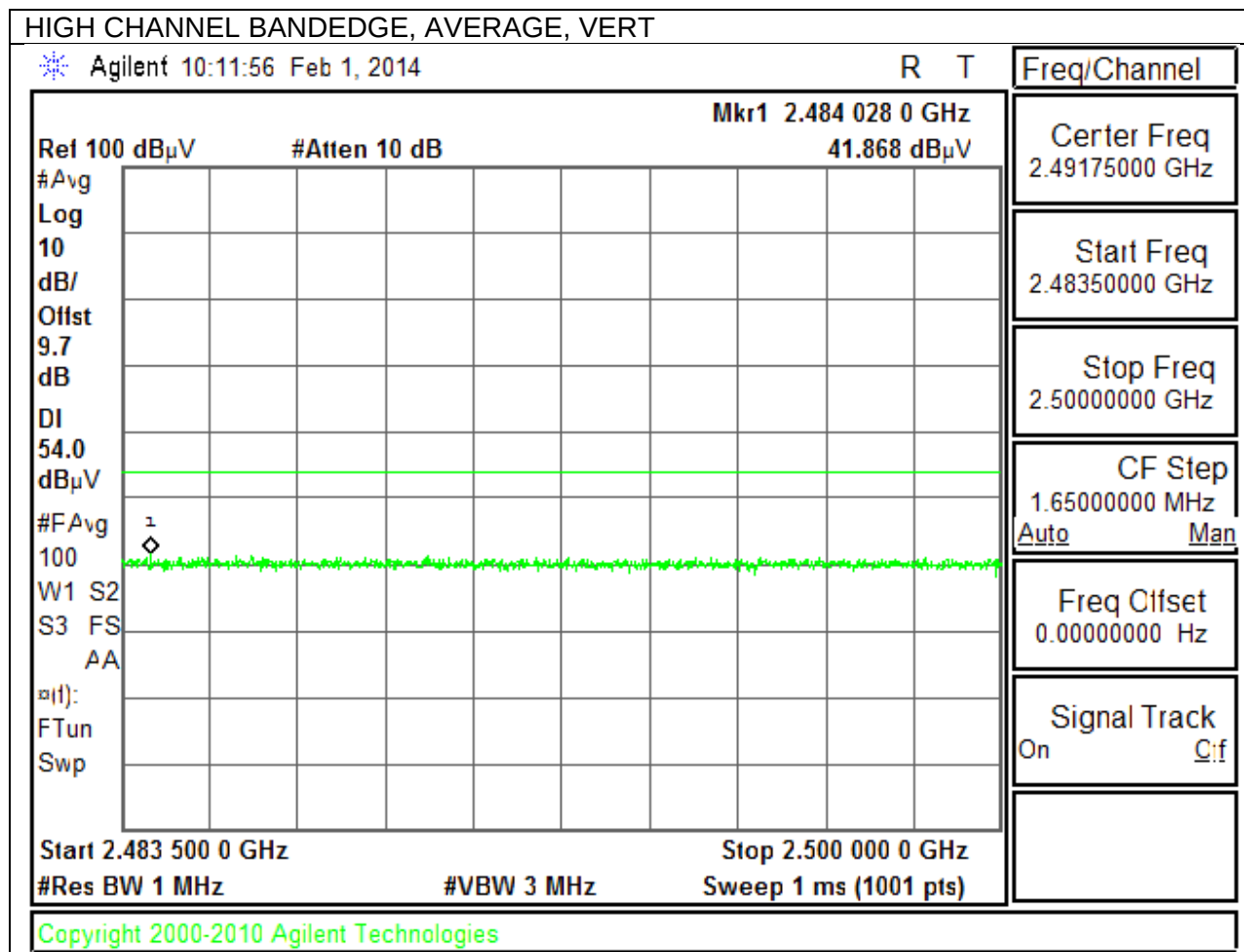


AUTHORIZED BANDEDGE (HIGH CHANNEL)



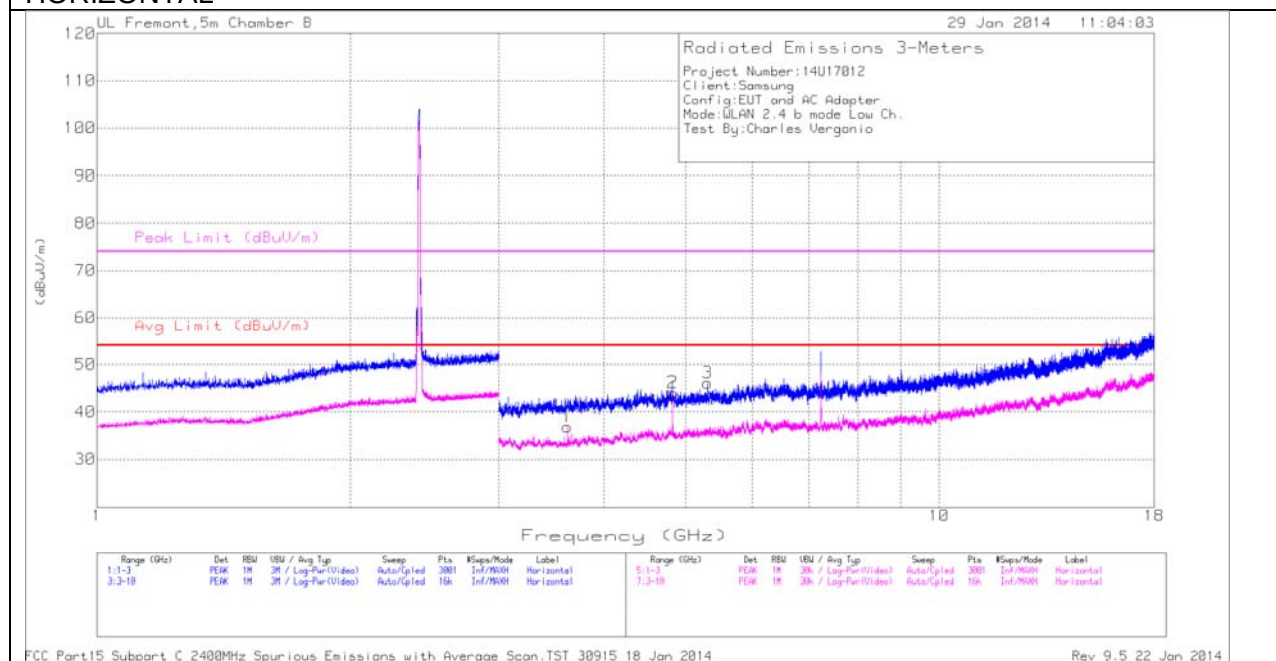






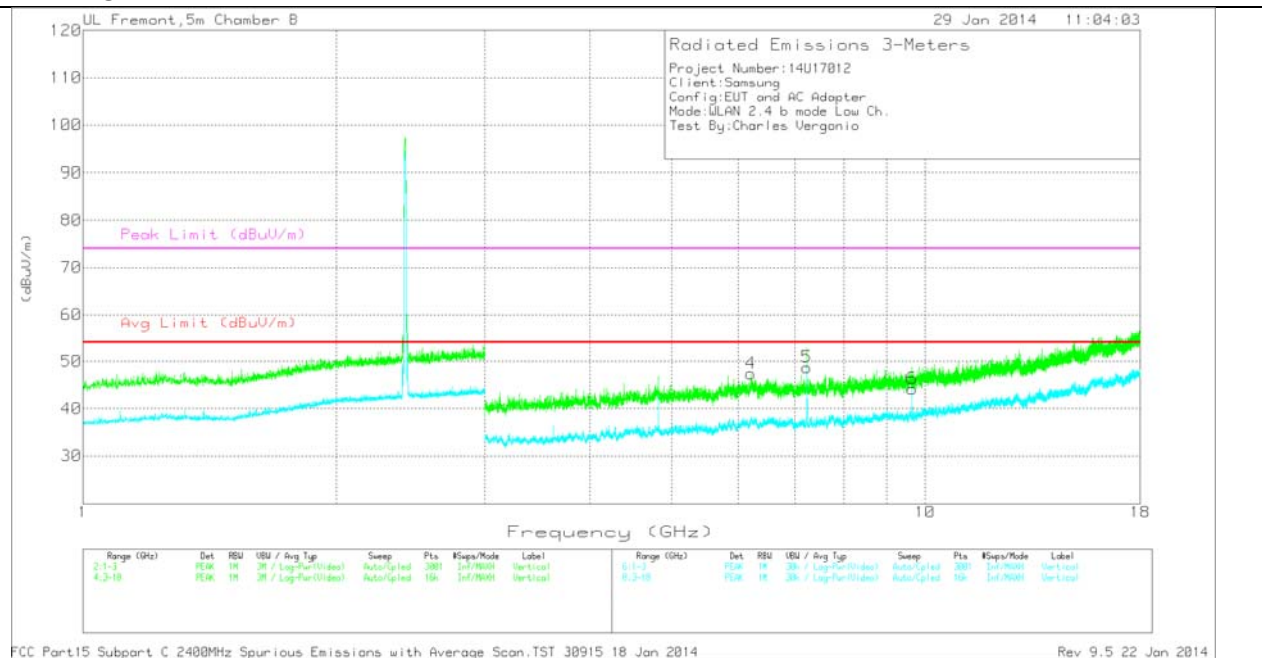
HARMONICS AND SPURIOUS EMISSIONS

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

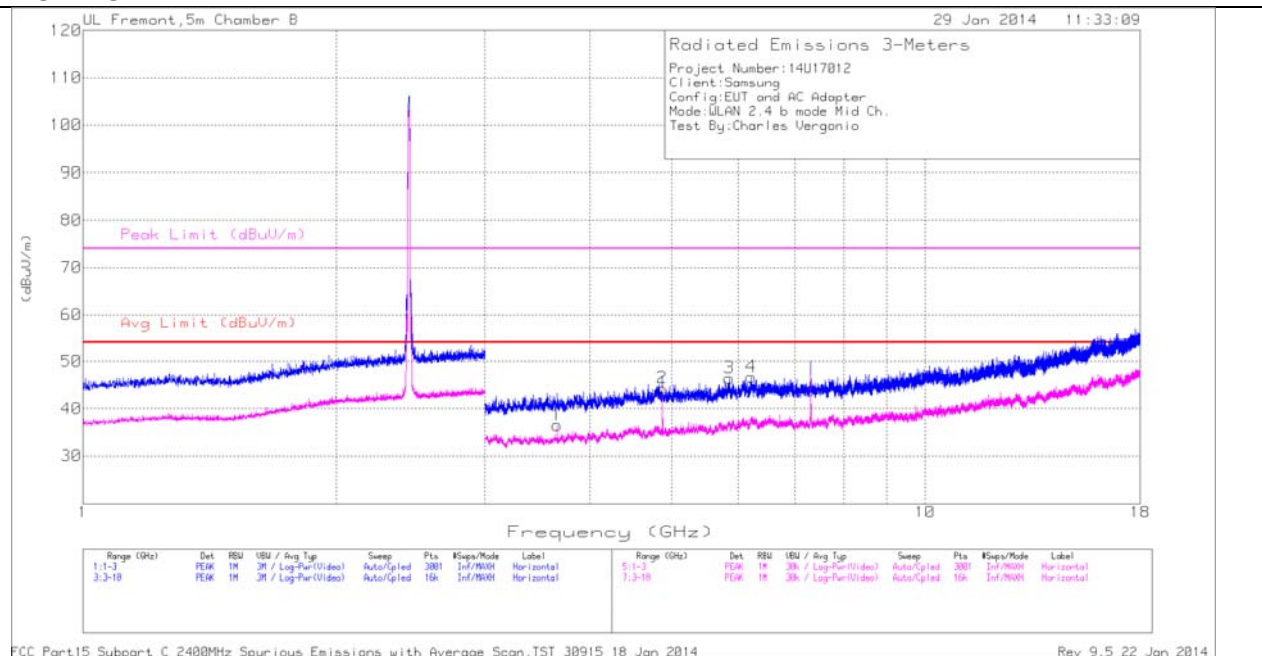
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F lter/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.618	34.53	Avg	33.5	-31.2	36.83	54	-17.17	-	-	0-360	201	H
2	* 4.824	38.59	Avg	34.7	-29.3	43.99	54	-10.01	-	-	0-360	99	H
3	5.307	39.89	PK	34.9	-28.7	46.09	-	-	74	-27.91	0-360	99	H
4	6.208	39.21	PK	36	-27.8	47.41	-	-	74	-26.59	0-360	99	V
5	7.235	40.23	Avg	35.8	-27.3	48.73	54	-5.27	-	-	0-360	99	V
6	9.647	30.9	Avg	37.4	-24.1	44.2	54	-9.8	-	-	0-360	99	V

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

PK - Peak detector

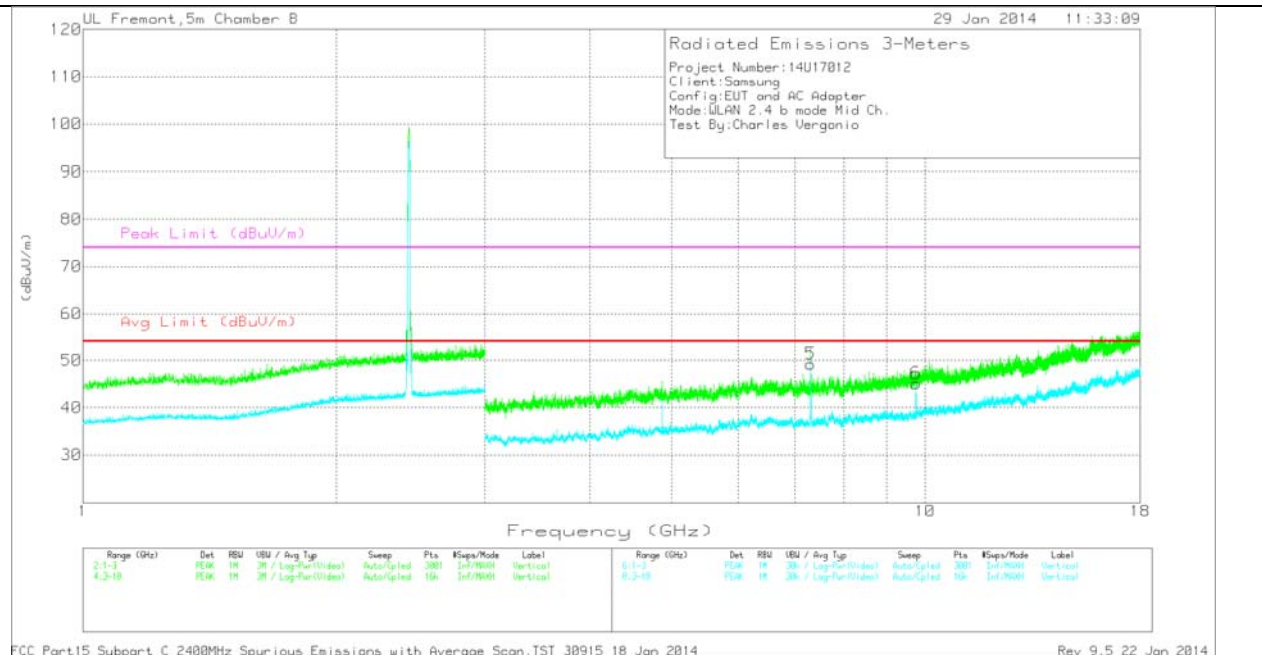
Avg - Video bandwidth < Resolution bandwidth

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

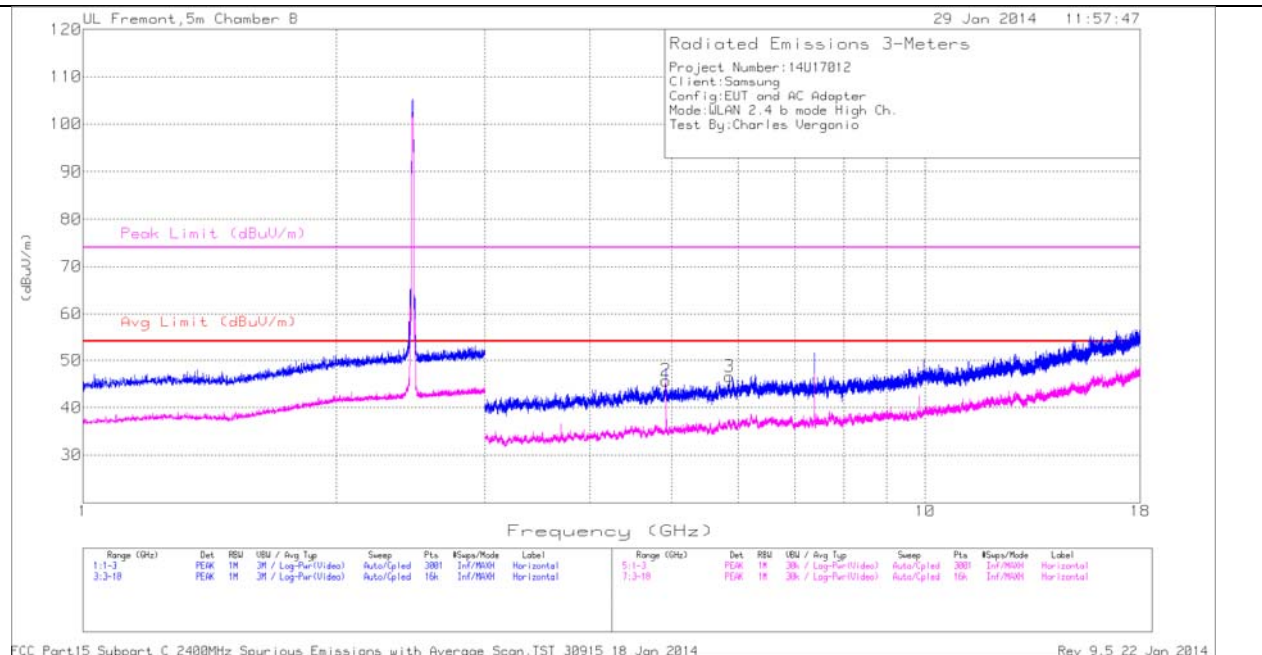
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.655	33.92	Avg	33.6	-31	36.52	54	-17.48	-	-	0-360	202	H
2	* 4.874	40.24	Avg	34.7	-30.6	44.34	54	-9.66	-	-	0-360	99	H
5	* 7.31	41.13	Avg	35.8	-27.7	49.23	54	-4.77	-	-	0-360	99	V
3	5.851	40.17	PK	35.5	-29.2	46.47	-	-	74	-27.53	0-360	202	H
4	6.214	38.51	PK	36	-27.8	46.71	-	-	74	-27.29	0-360	202	H
6	9.748	31.78	Avg	37.5	-24.2	45.08	54	-8.92	-	-	0-360	202	V

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

PK - Peak detector

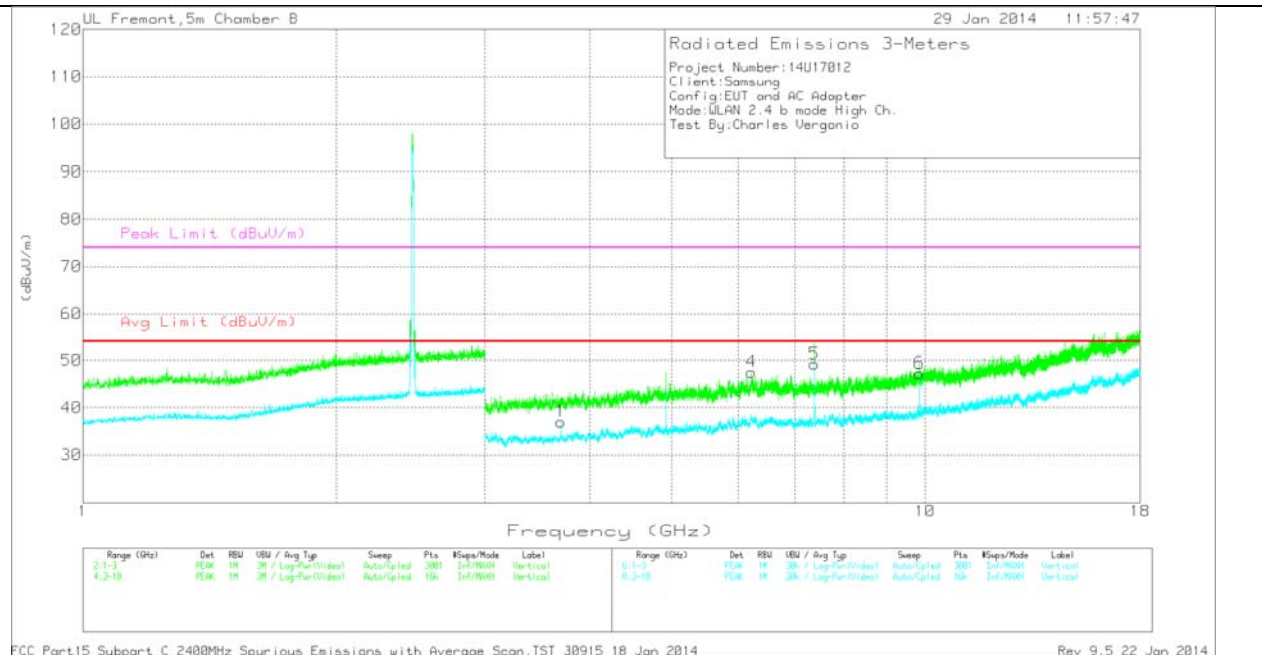
Avg - Video bandwidth < Resolution bandwidth

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

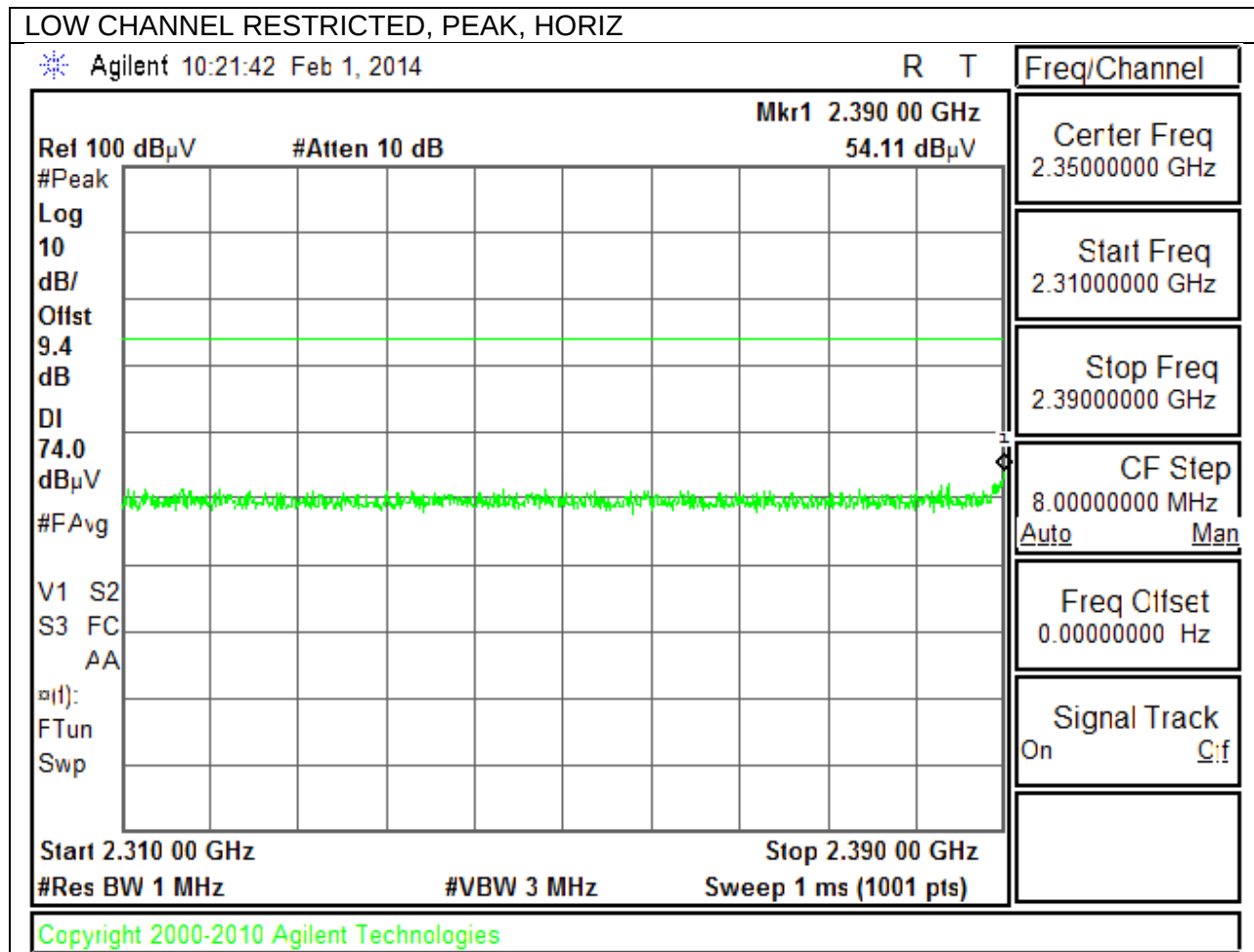
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.924	41.81	Avg	34.6	-30.7	45.71	54	-8.29	-	-	0-360	99	H
1	* 3.693	34.53	Avg	33.7	-31.2	37.03	54	-16.97	-	-	0-360	99	V
5	* 7.384	40.7	Avg	35.9	-27.4	49.2	54	-4.8	-	-	0-360	202	V
3	5.855	40.13	PK	35.5	-29.1	46.53	-	-	74	-27.47	0-360	99	H
4	6.222	39.32	PK	36	-27.8	47.52	-	-	74	-26.48	0-360	202	V
6	9.847	33.72	Avg	37.6	-24.1	47.22	54	-6.78	-	-	0-360	202	V

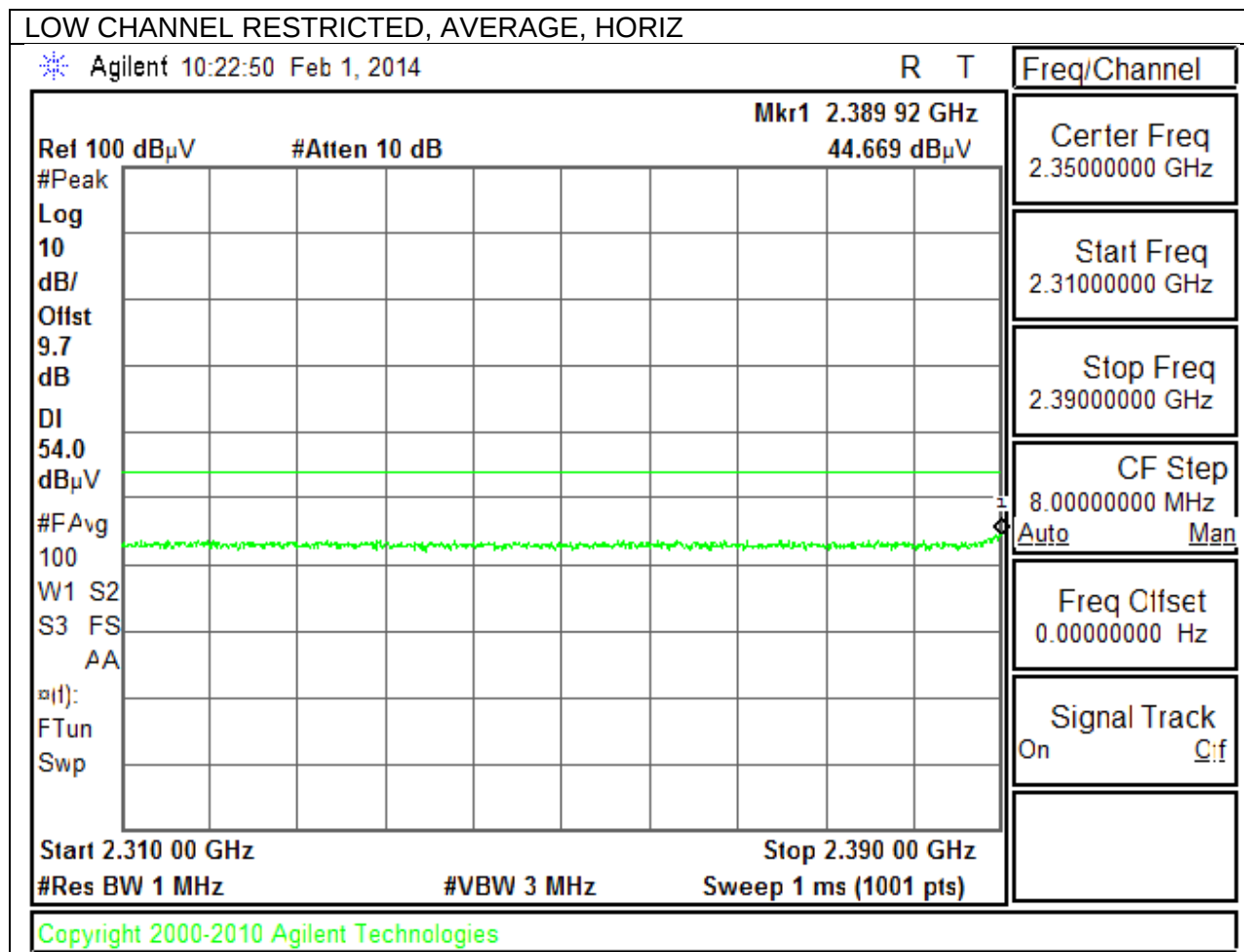
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

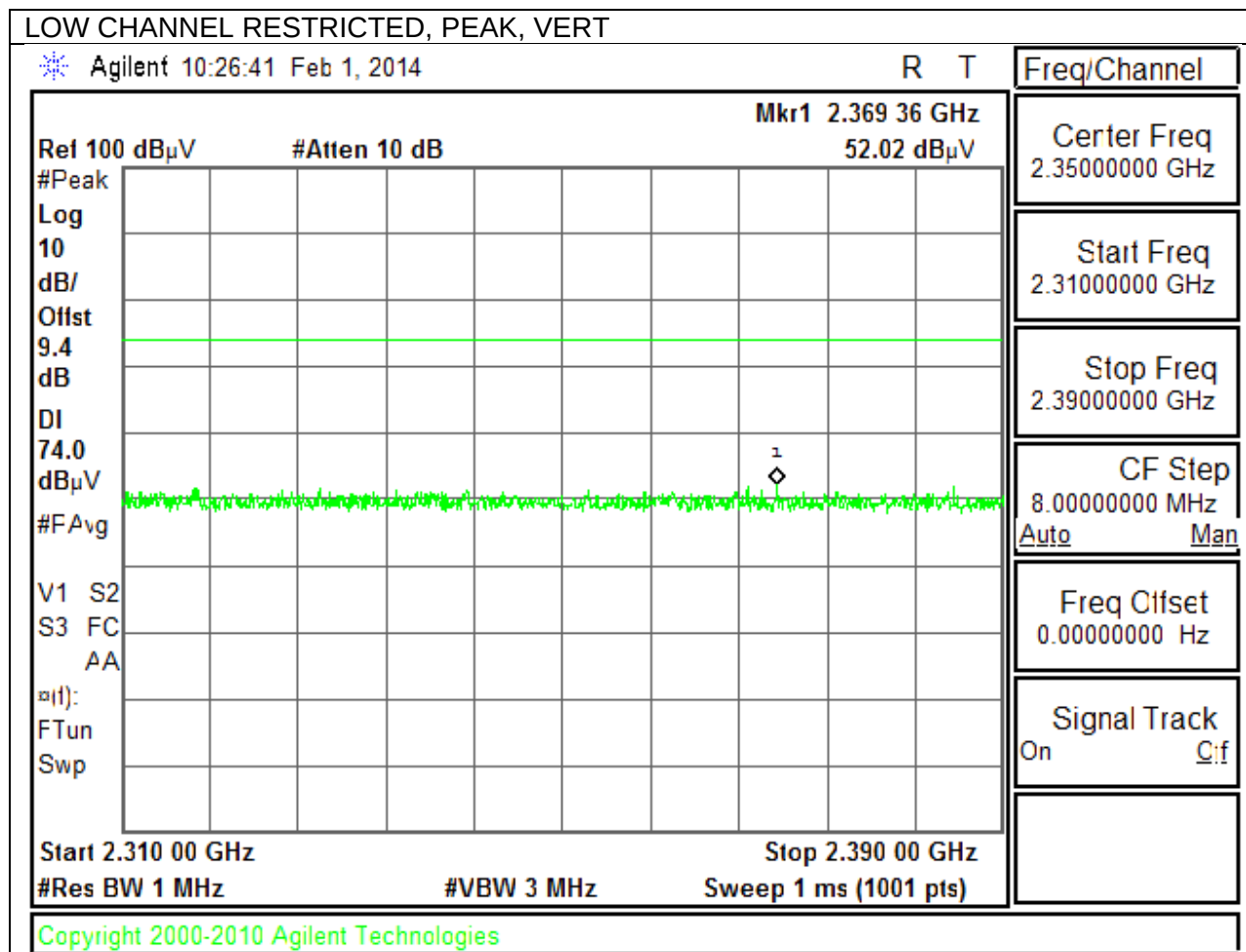
PK - Peak detector

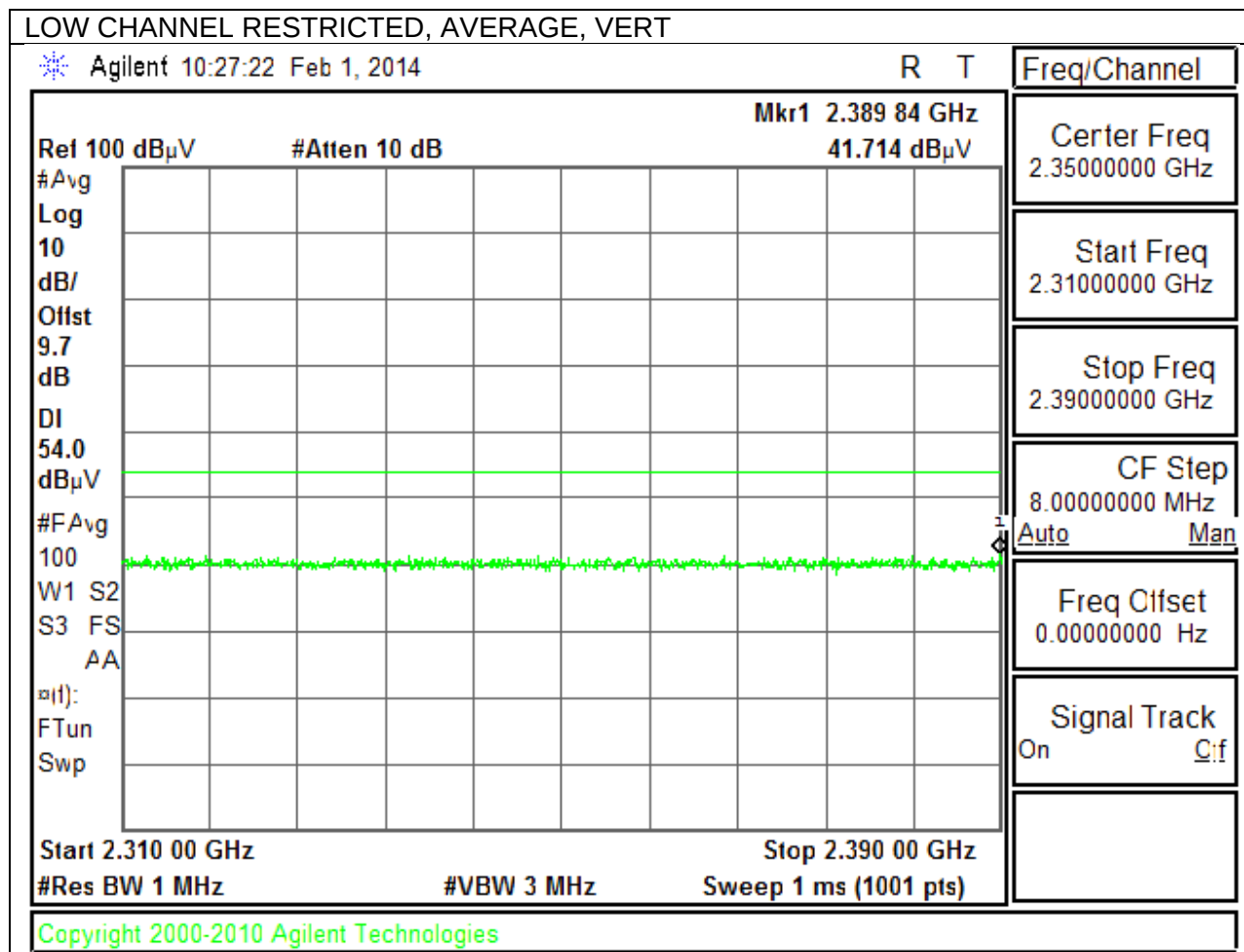
Avg - Video bandwidth < Resolution bandwidth

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

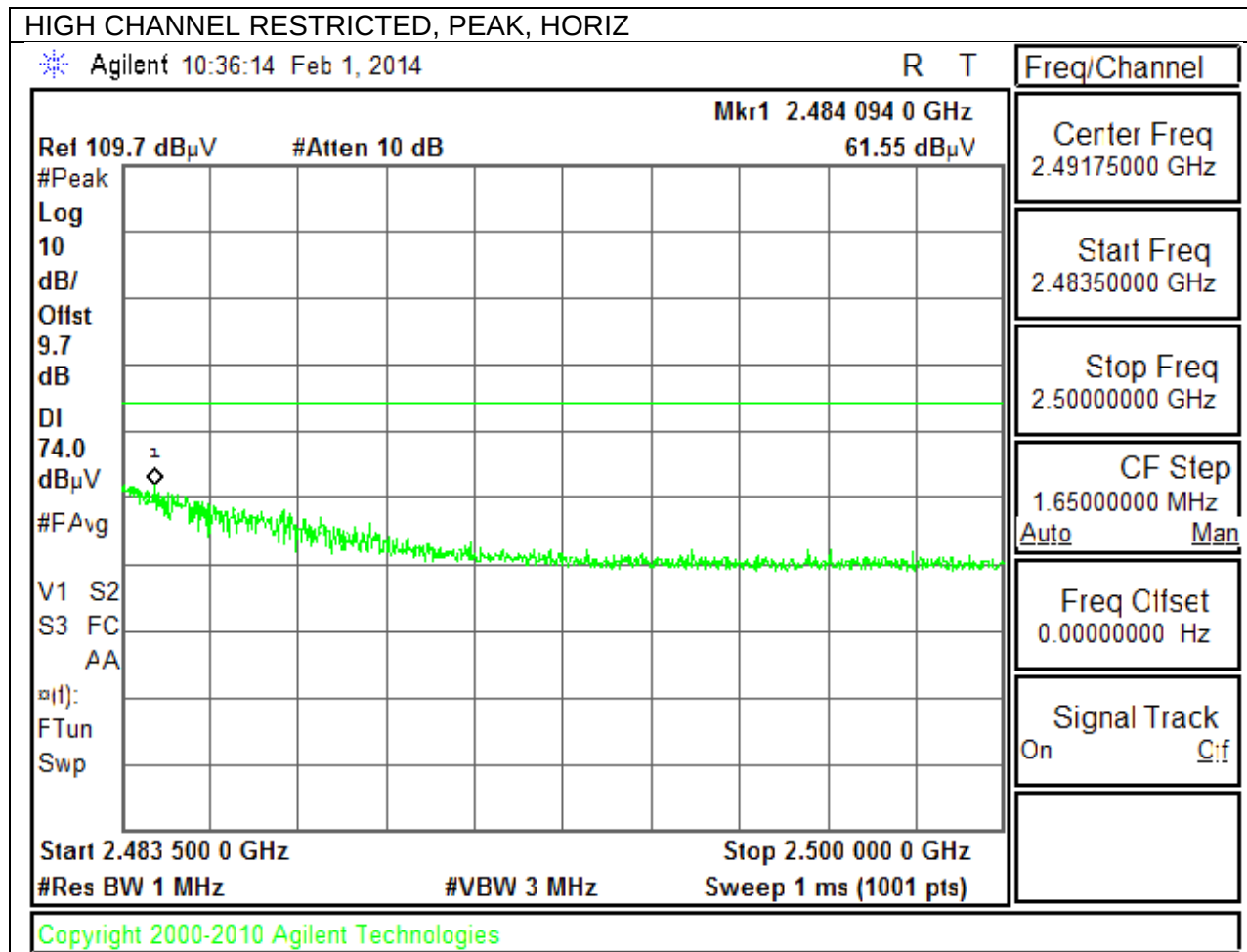


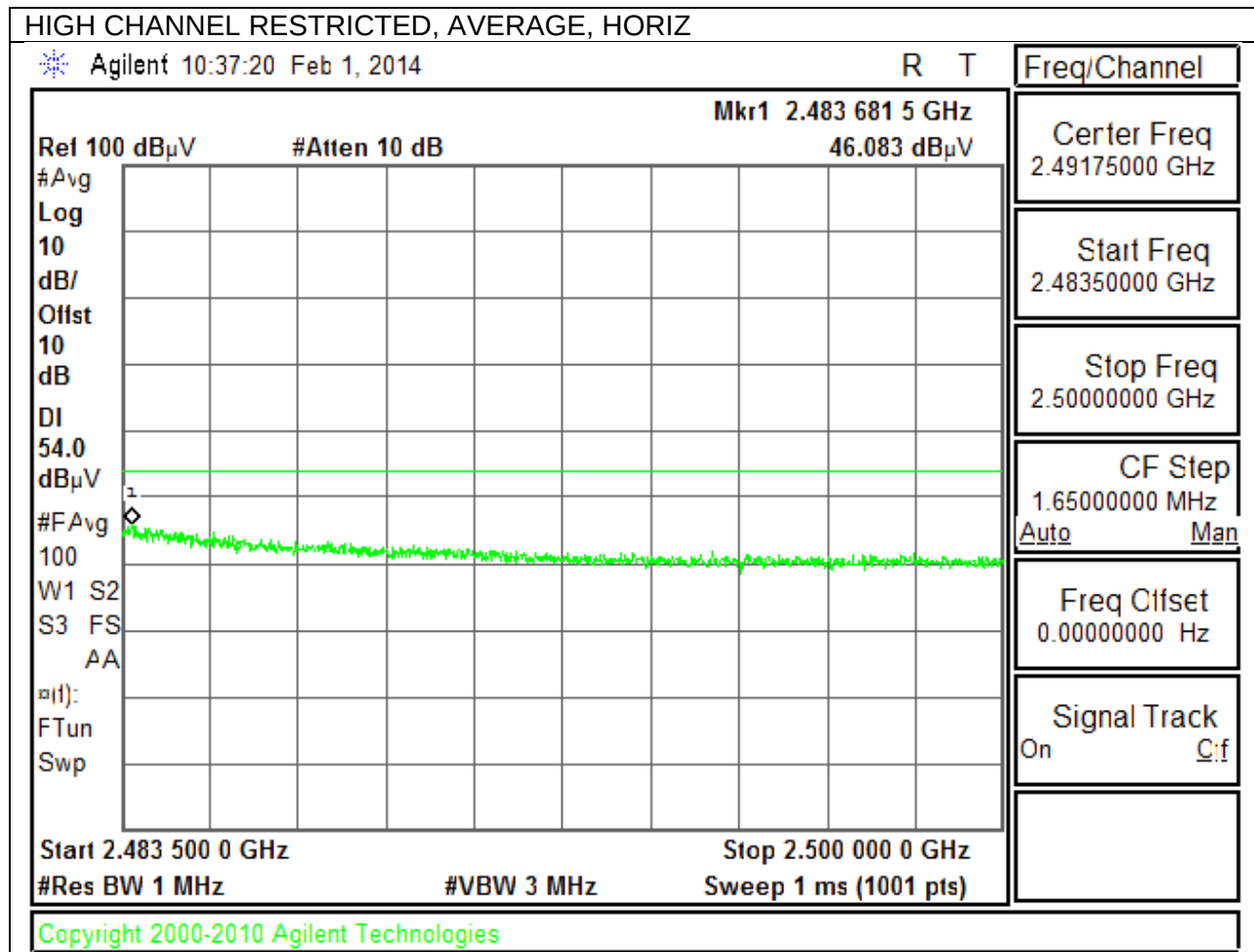


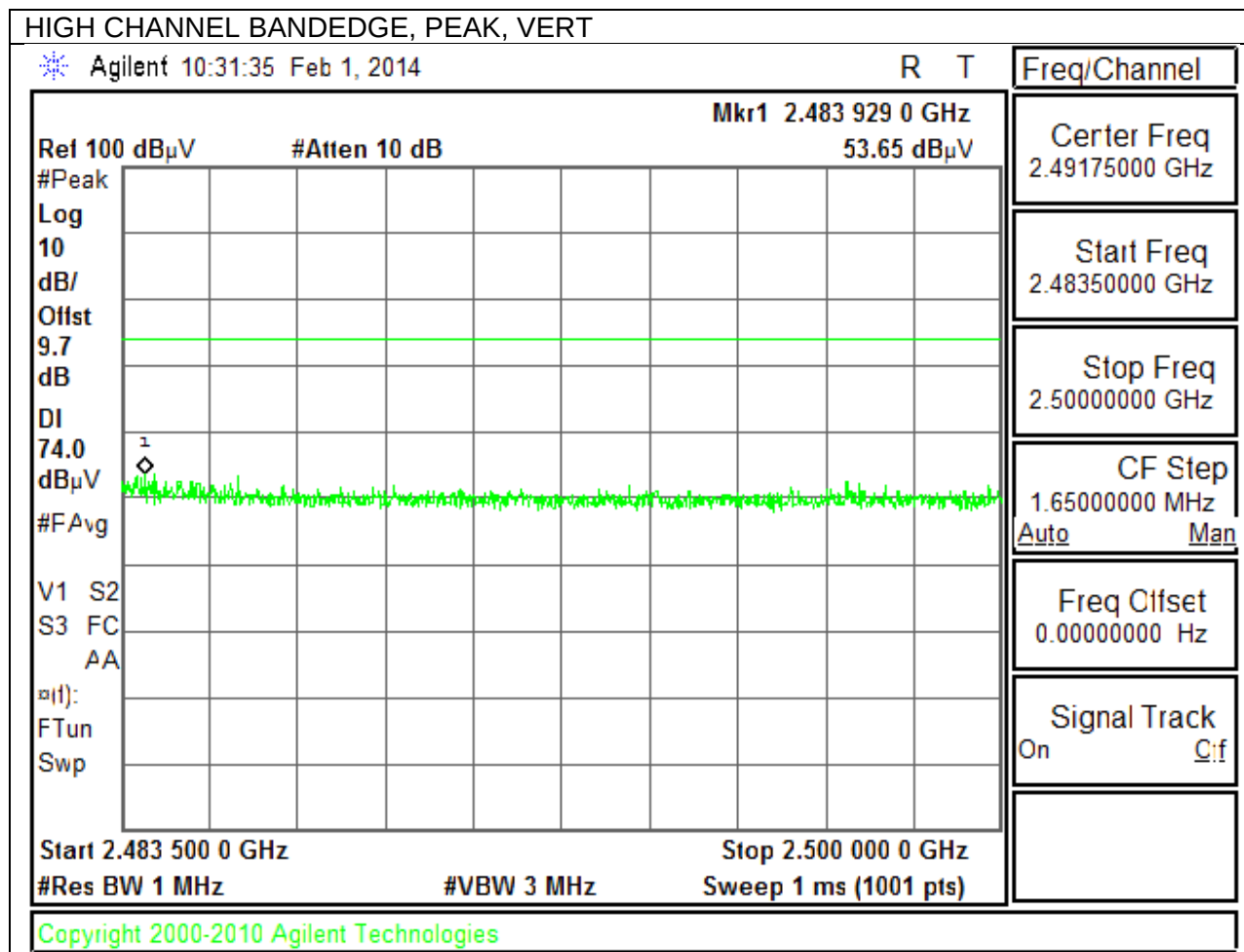


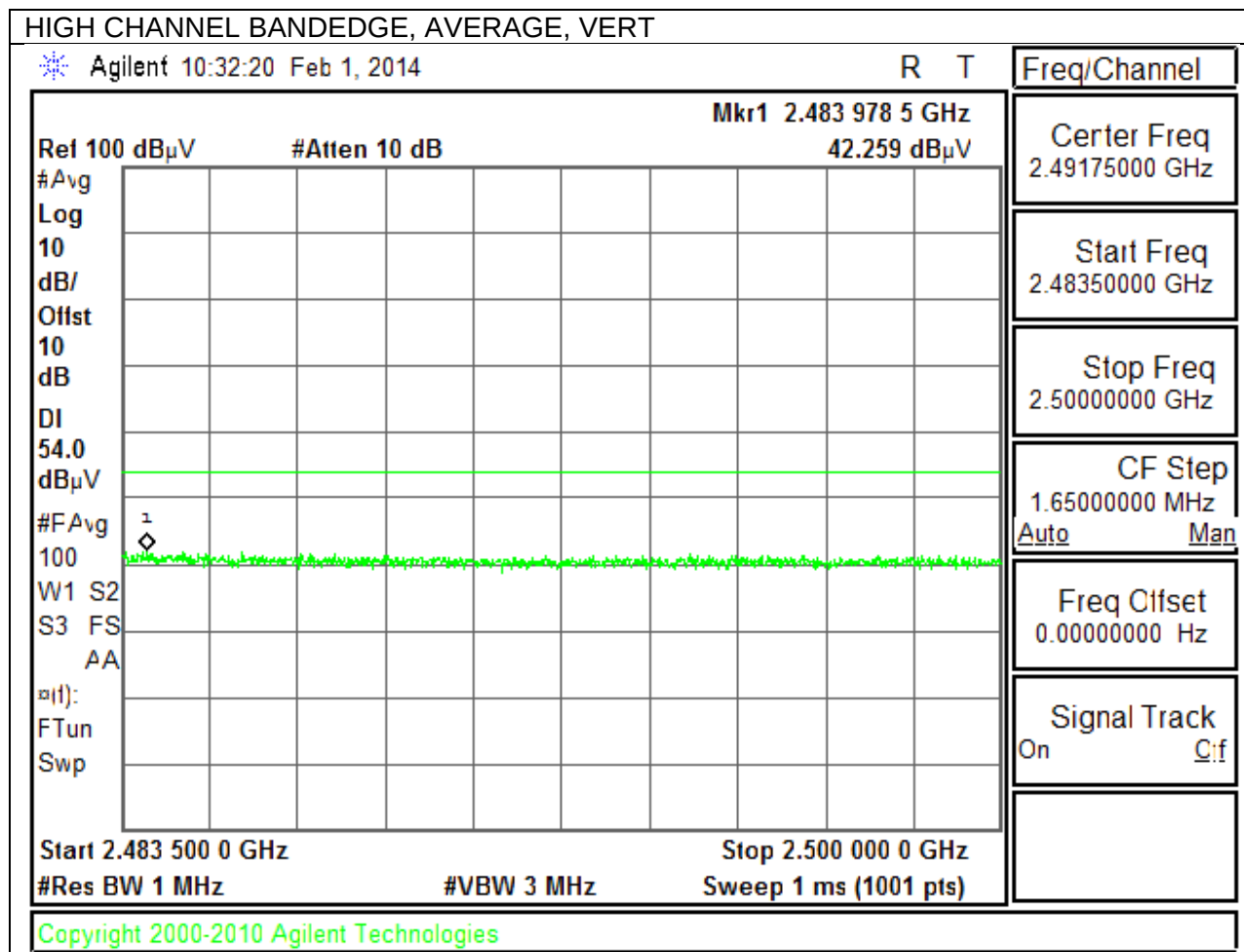


AUTHORIZED BANDEDGE (HIGH CHANNEL)



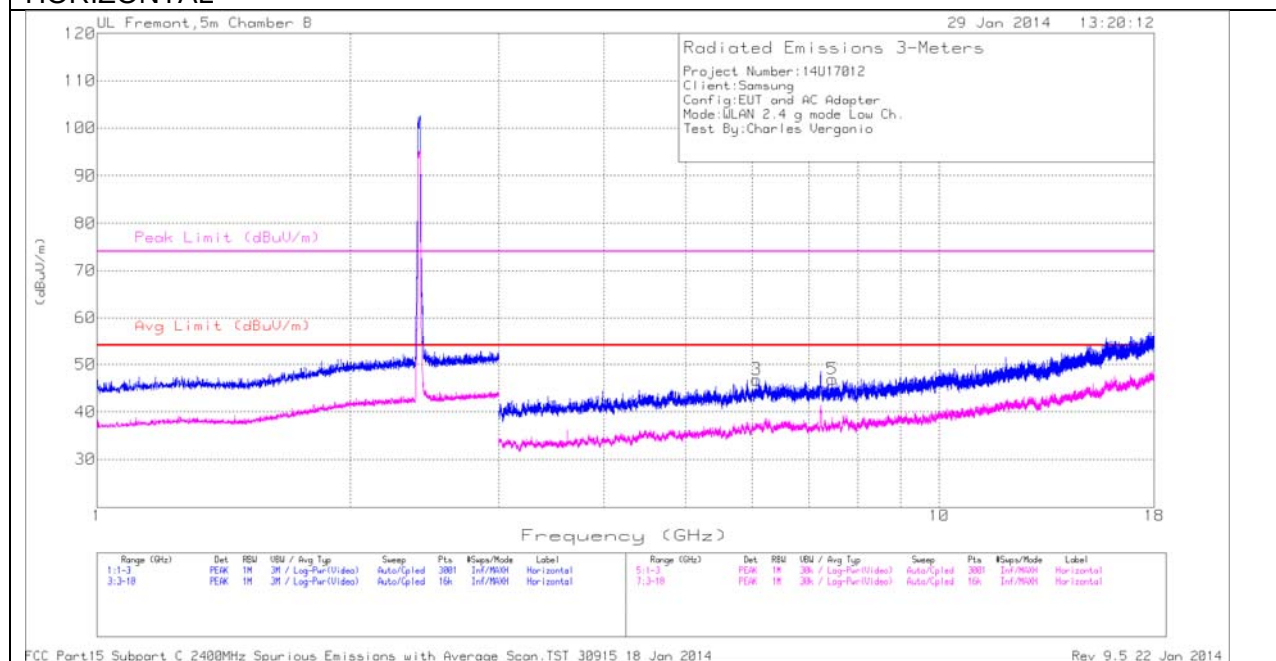






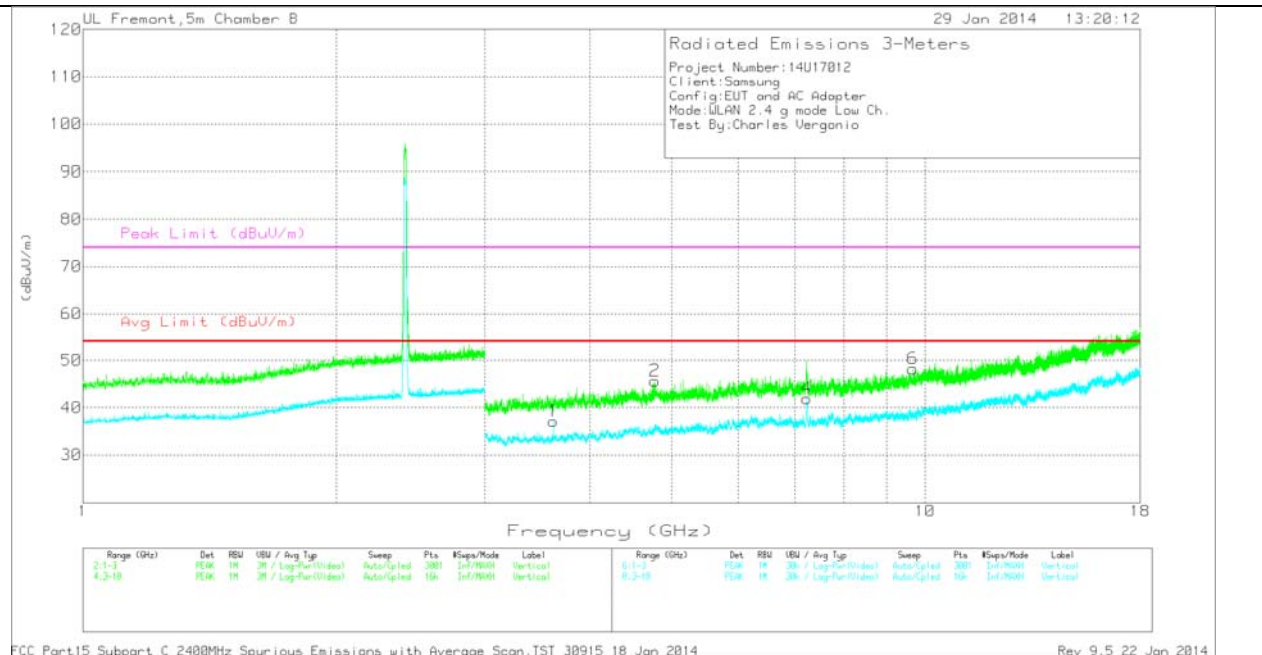
HARMONICS AND SPURIOUS EMISSIONS

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

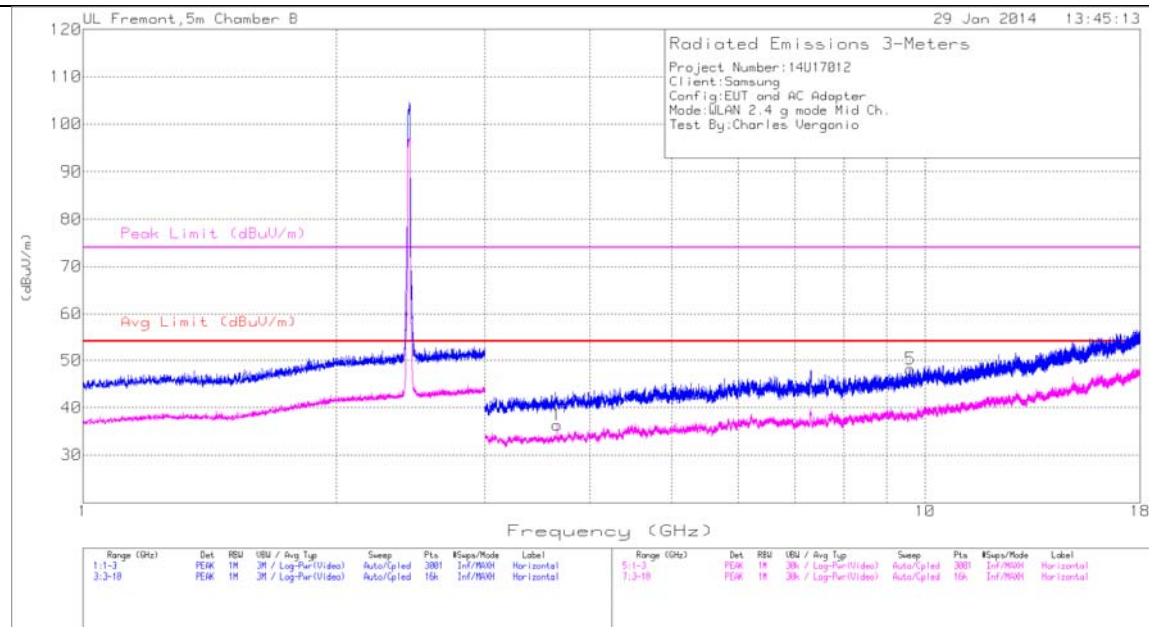
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F lter/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	* 7.468	37.89	PK	36	-27	46.89	-	-	74	-27.11	0-360	202	H
2	* 4.776	40.13	PK	34.7	-29.2	45.63	-	-	74	-28.37	0-360	202	V
1	* 3.618	34.84	Avg	33.5	-31.2	37.14	54	-16.86	-	-	0-360	99	V
3	6.074	39.99	PK	35.9	-29.1	46.79	-	-	74	-27.21	0-360	99	H
4	7.233	33.24	Avg	35.8	-27.1	41.94	54	-12.06	-	-	0-360	99	V
6	9.67	34.81	PK	37.4	-24	48.21	-	-	74	-25.79	0-360	99	V

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

PK - Peak detector

Avg - Video bandwidth < Resolution bandwidth

MID CHANNEL HORIZONTAL

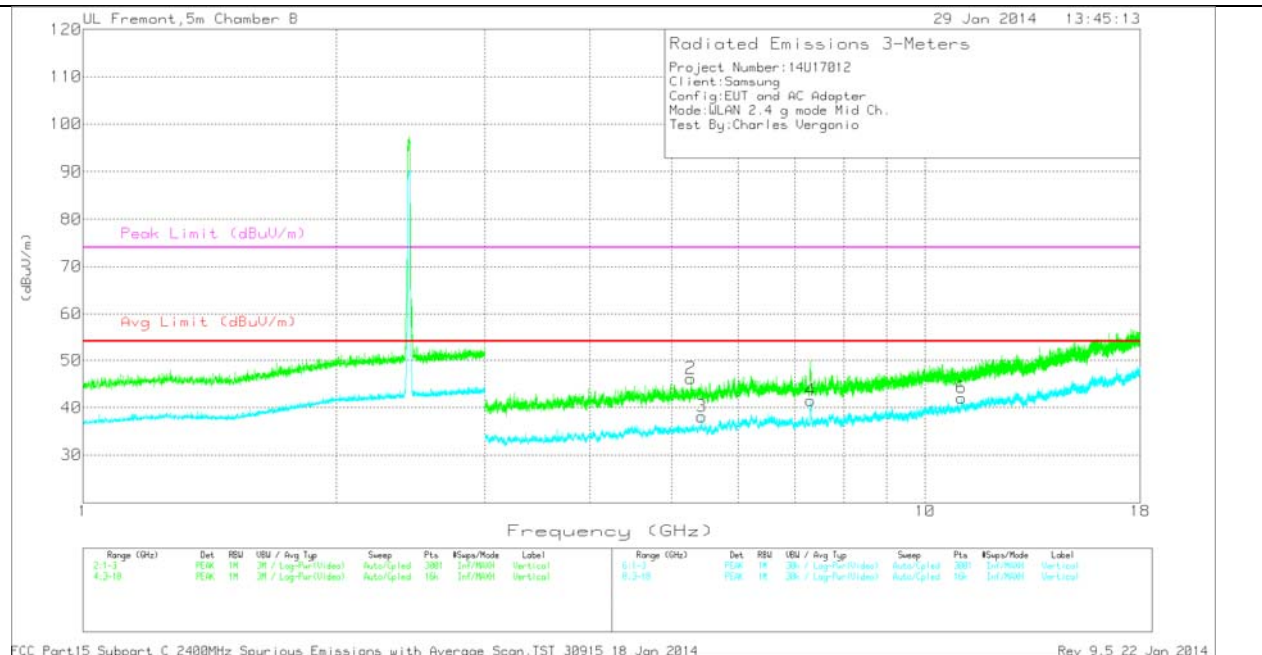


FCC Part15 Subpart C 2400MHz Spurious Emissions with Average Scan.TST 30915 18 Jan 2014

Rev 9.5 22 Jan 2014

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

Trace Markers

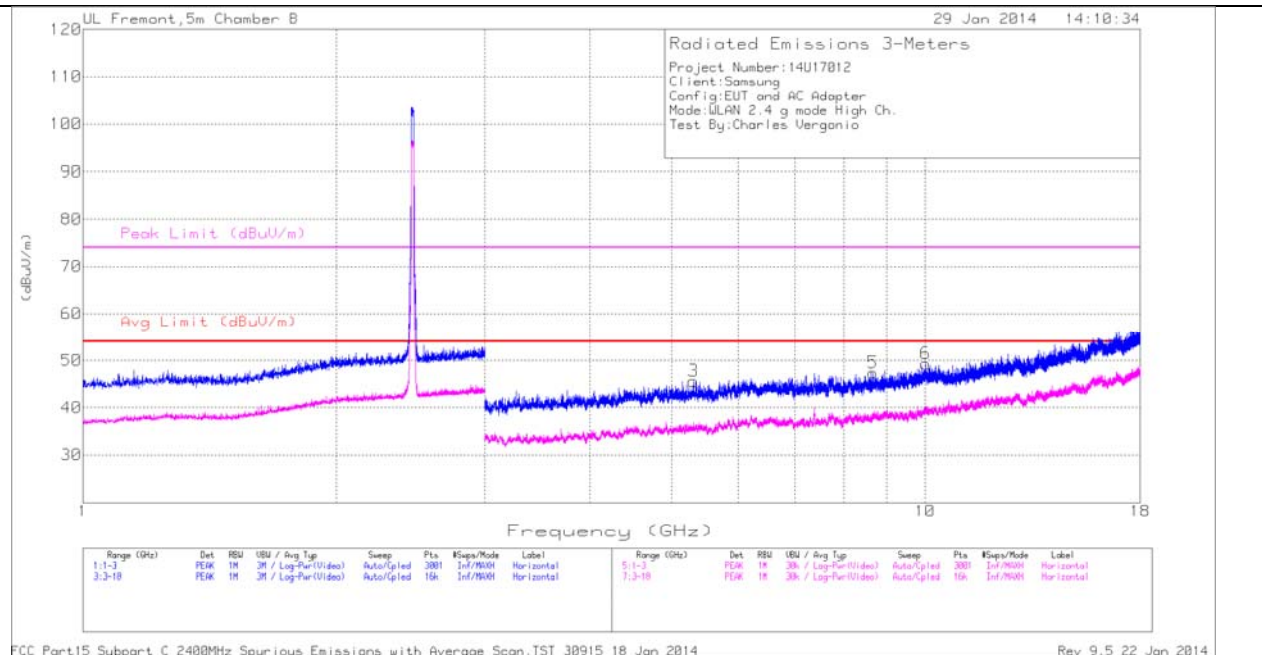
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.655	33.74	Avg	33.6	-31	36.34	54	-17.66	-	-	0-360	201	H
3	* 5.431	32.34	Avg	34.9	-29.1	38.14	54	-15.86	-	-	0-360	99	V
4	* 7.311	33.38	Avg	35.8	-27.7	41.48	54	-12.52	-	-	0-360	202	V
6	* 11.048	26.68	Avg	38.3	-22.9	42.08	54	-11.92	-	-	0-360	99	V
2	5.268	41.08	PK	34.9	-29.8	46.18	-	-	74	-27.82	0-360	99	V
5	9.61	34.91	PK	37.3	-24.1	48.11	-	-	74	-25.89	0-360	99	H

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

PK - Peak detector

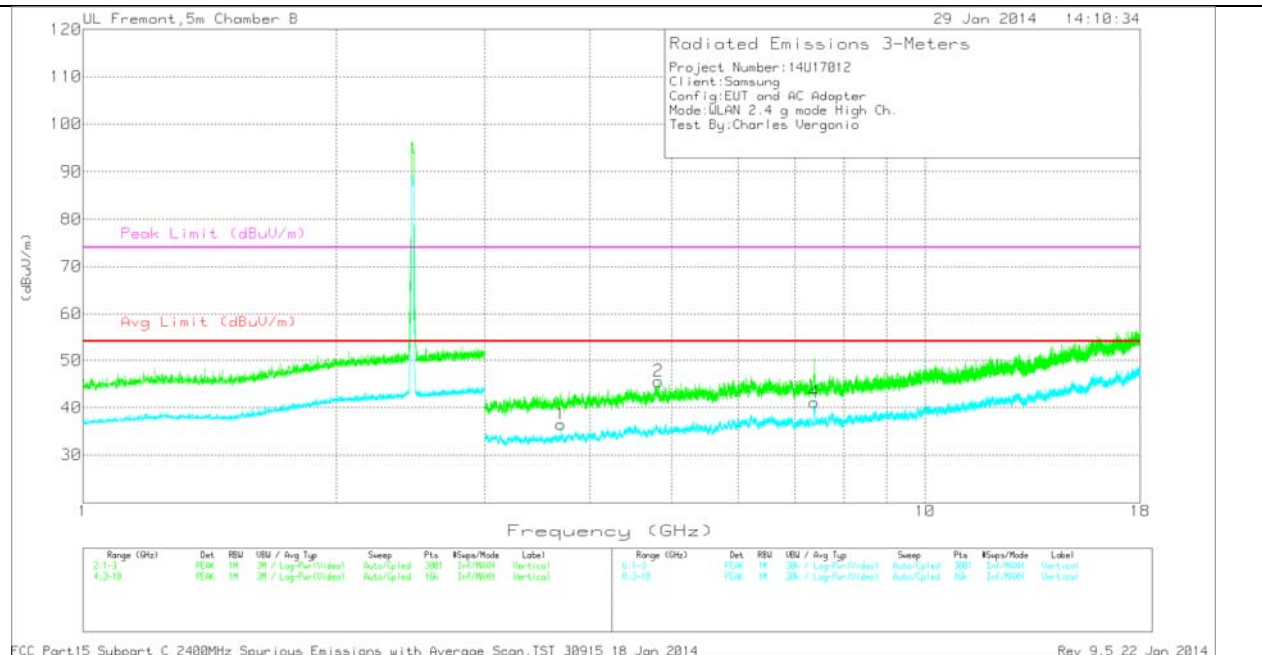
Avg - Video bandwidth < Resolution bandwidth

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

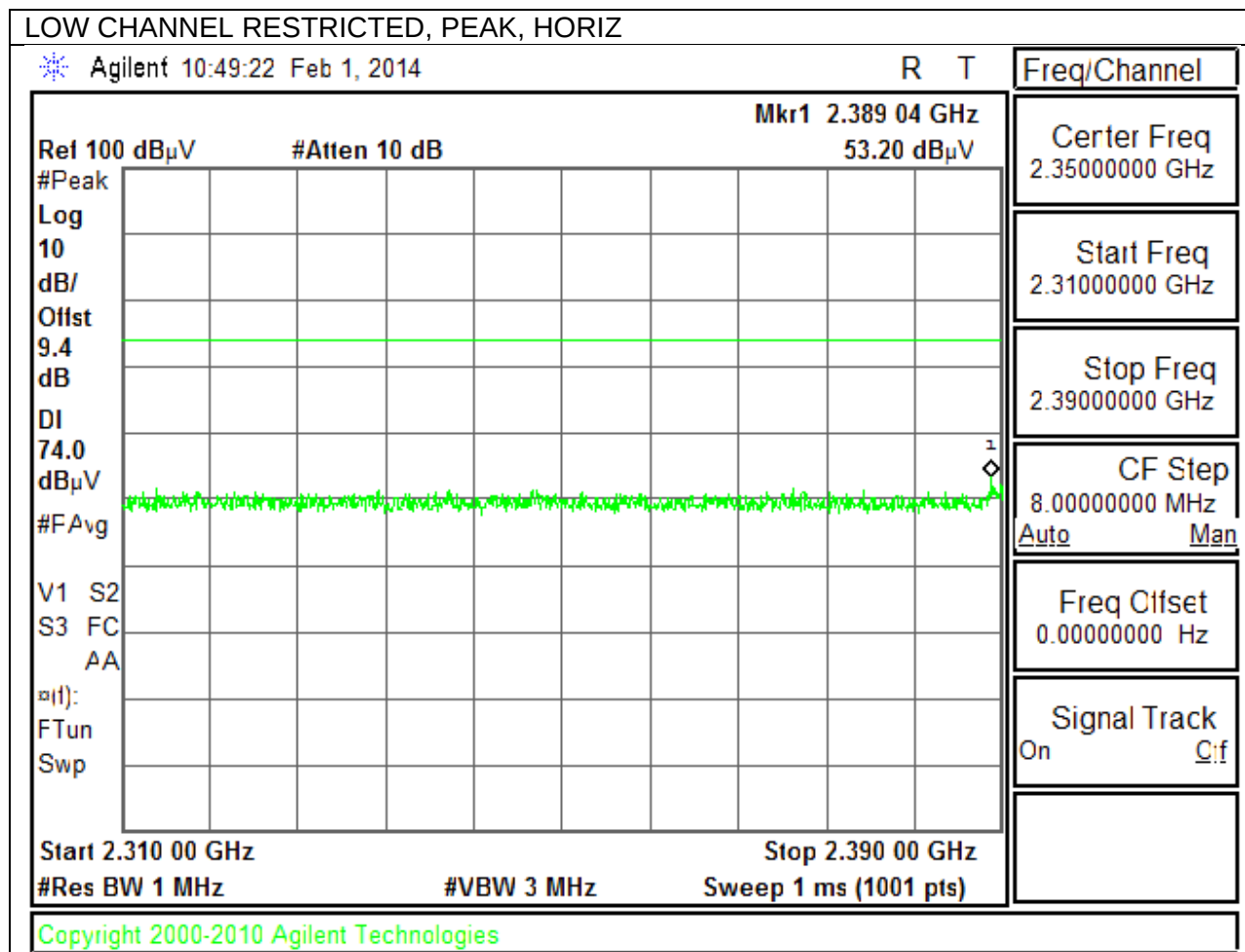
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F lter/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.822	40.17	PK	34.7	-29.3	45.57	-	-	74	-28.43	0-360	99	V
1	* 3.693	33.99	Avg	33.7	-31.2	36.49	54	-17.51	-	-	0-360	99	V
4	* 7.389	32.62	Avg	35.9	-27.4	41.12	54	-12.88	-	-	0-360	202	V
3	5.306	39.38	PK	34.9	-28.7	45.58	-	-	74	-28.42	0-360	201	H
5	8.671	36.83	PK	36.3	-25.8	47.33	-	-	74	-26.67	0-360	201	H
6	10.016	35.6	PK	37.8	-24.1	49.3	-	-	74	-24.7	0-360	99	H

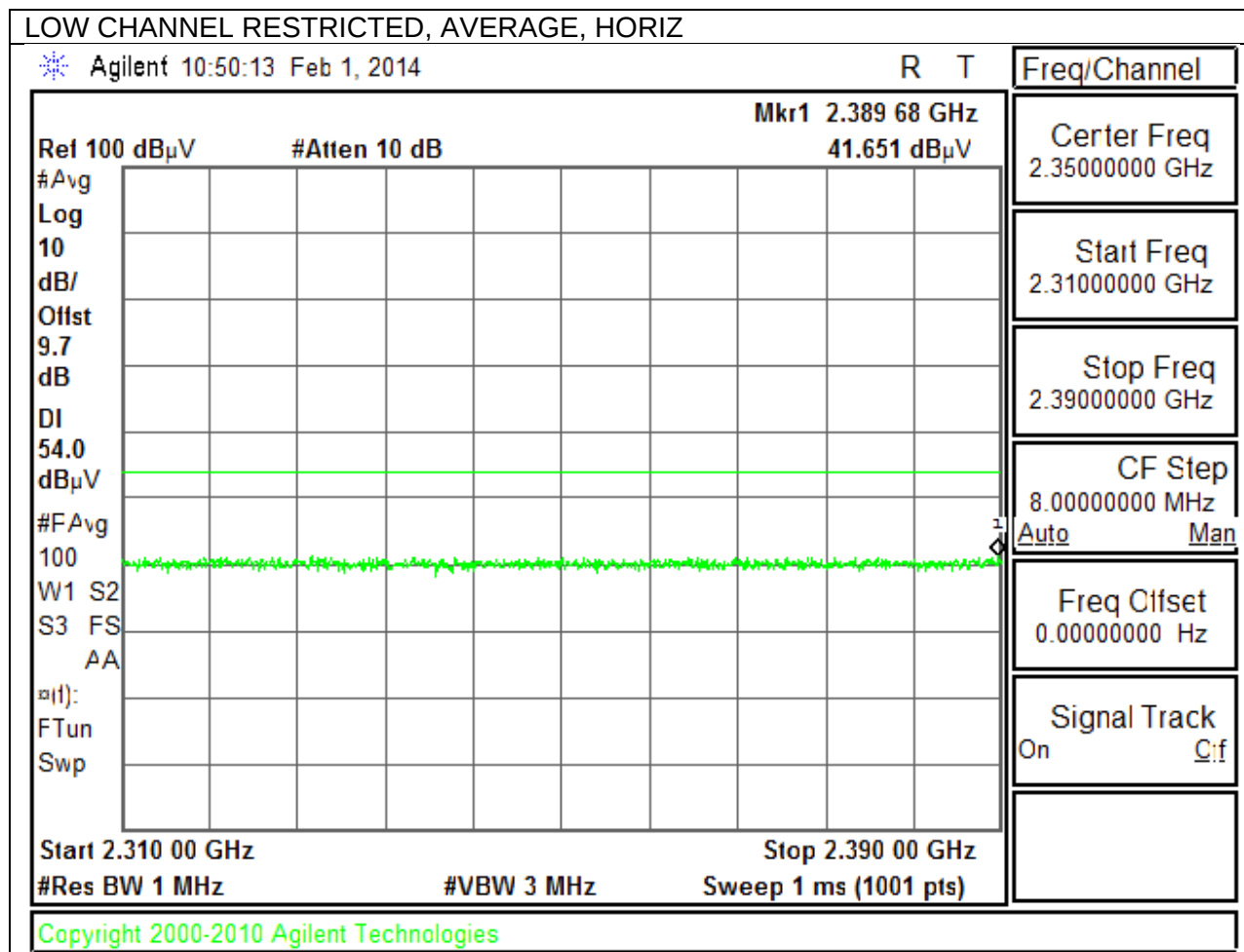
* - indicates frequency in CFR15.205/IC7.2.2 Restricted Band

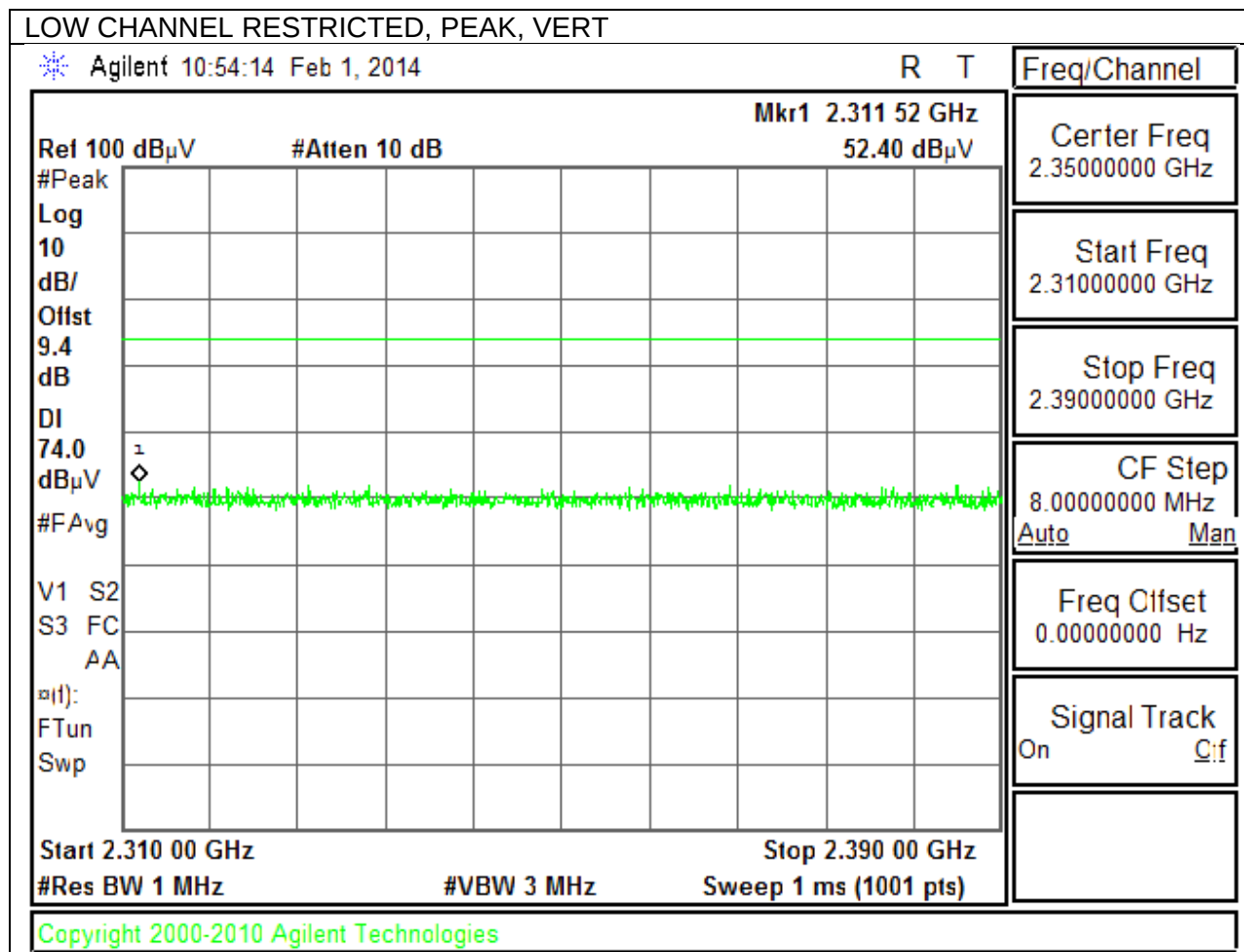
PK - Peak detector

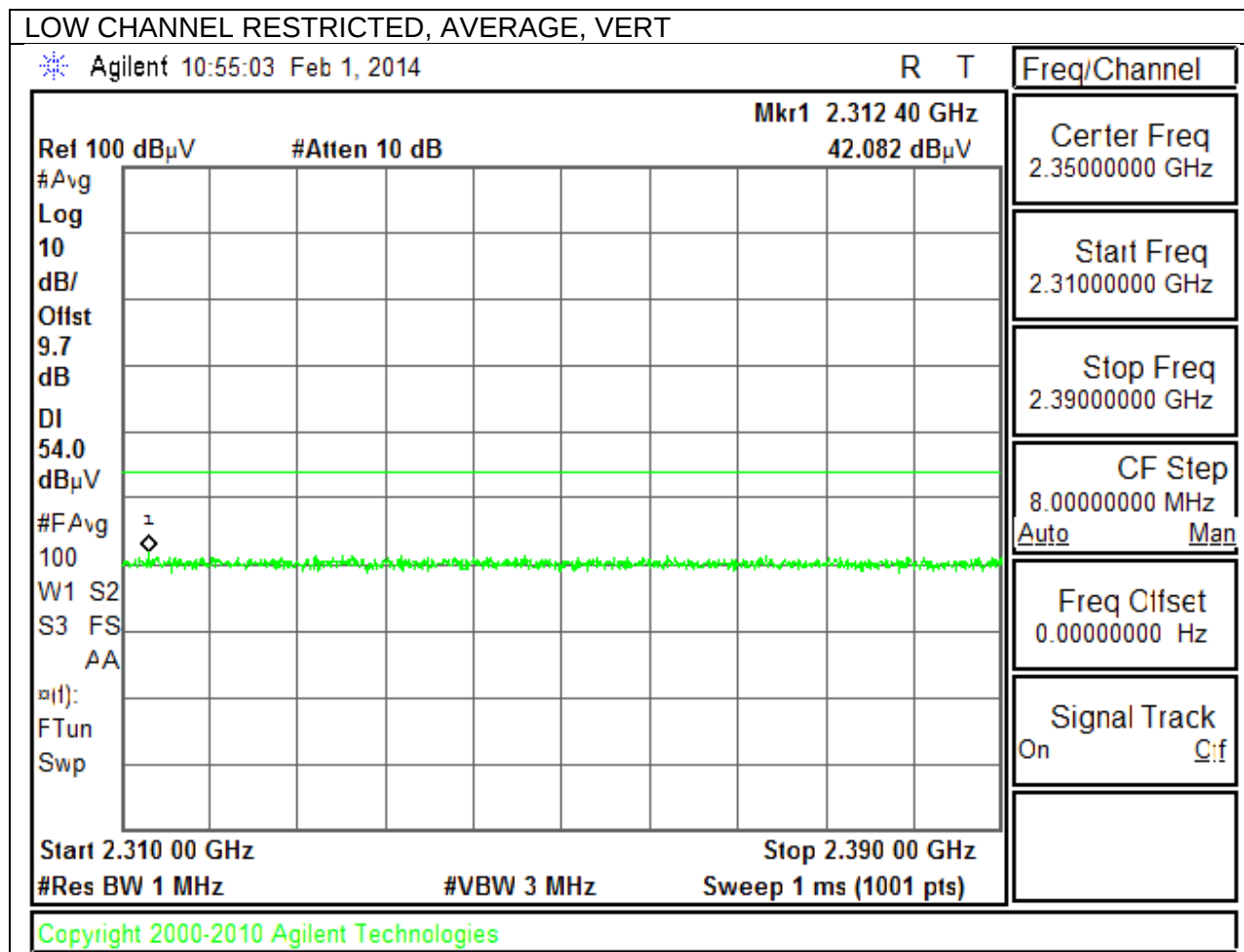
Avg - Video bandwidth < Resolution bandwidth

10.2.3. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 2.4 GHz BAND RESTRICTED BANDEDGE (LOW CHANNEL)

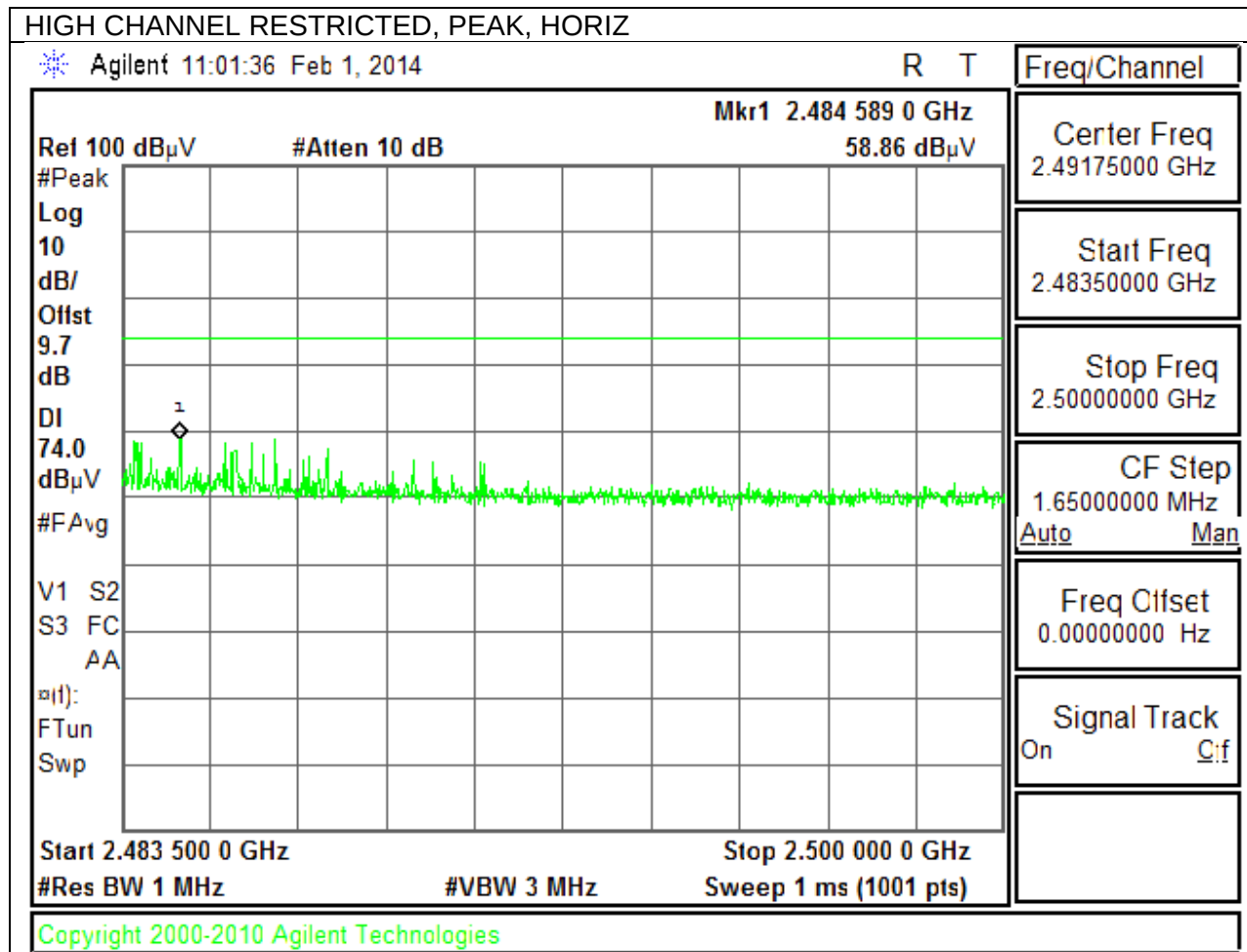


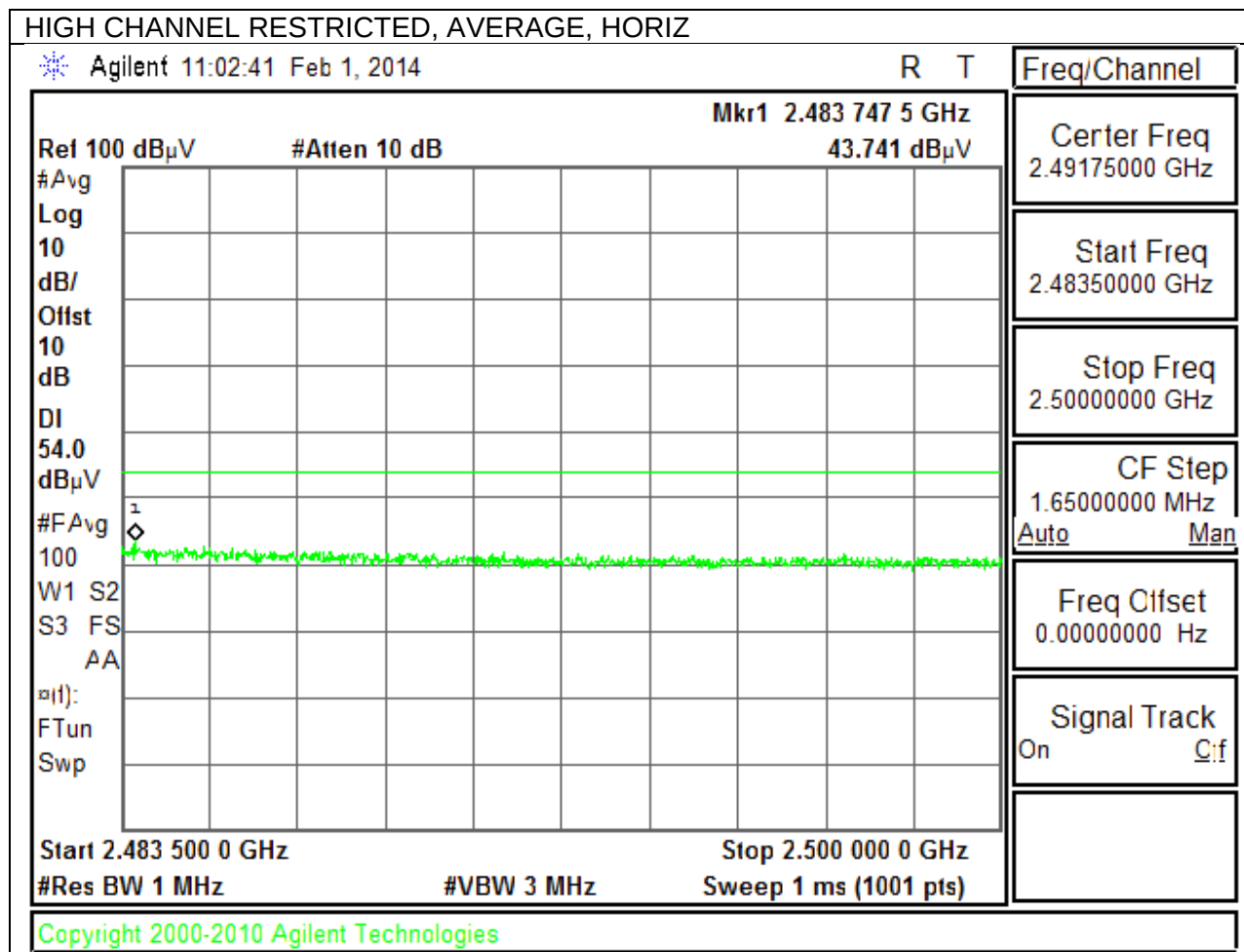


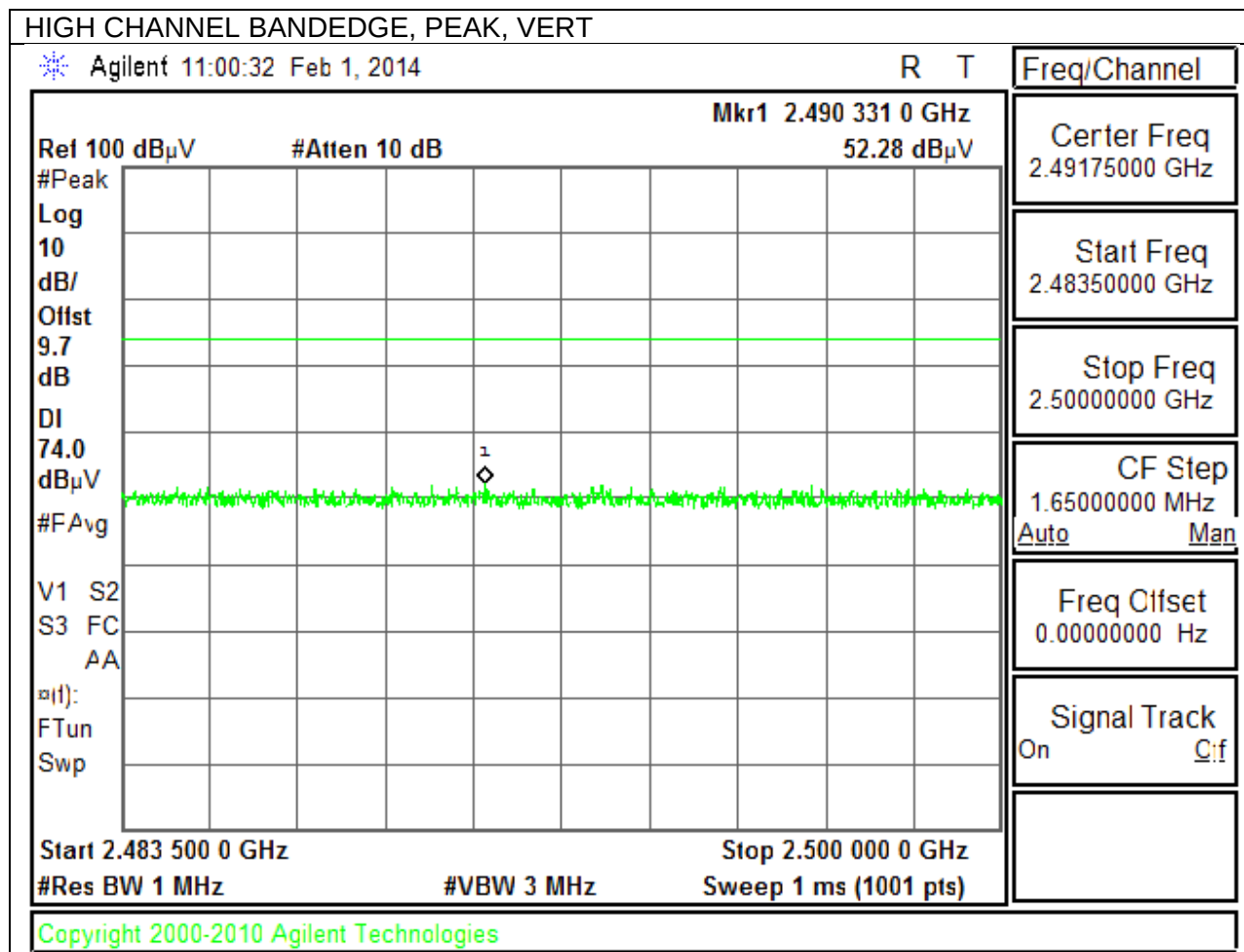


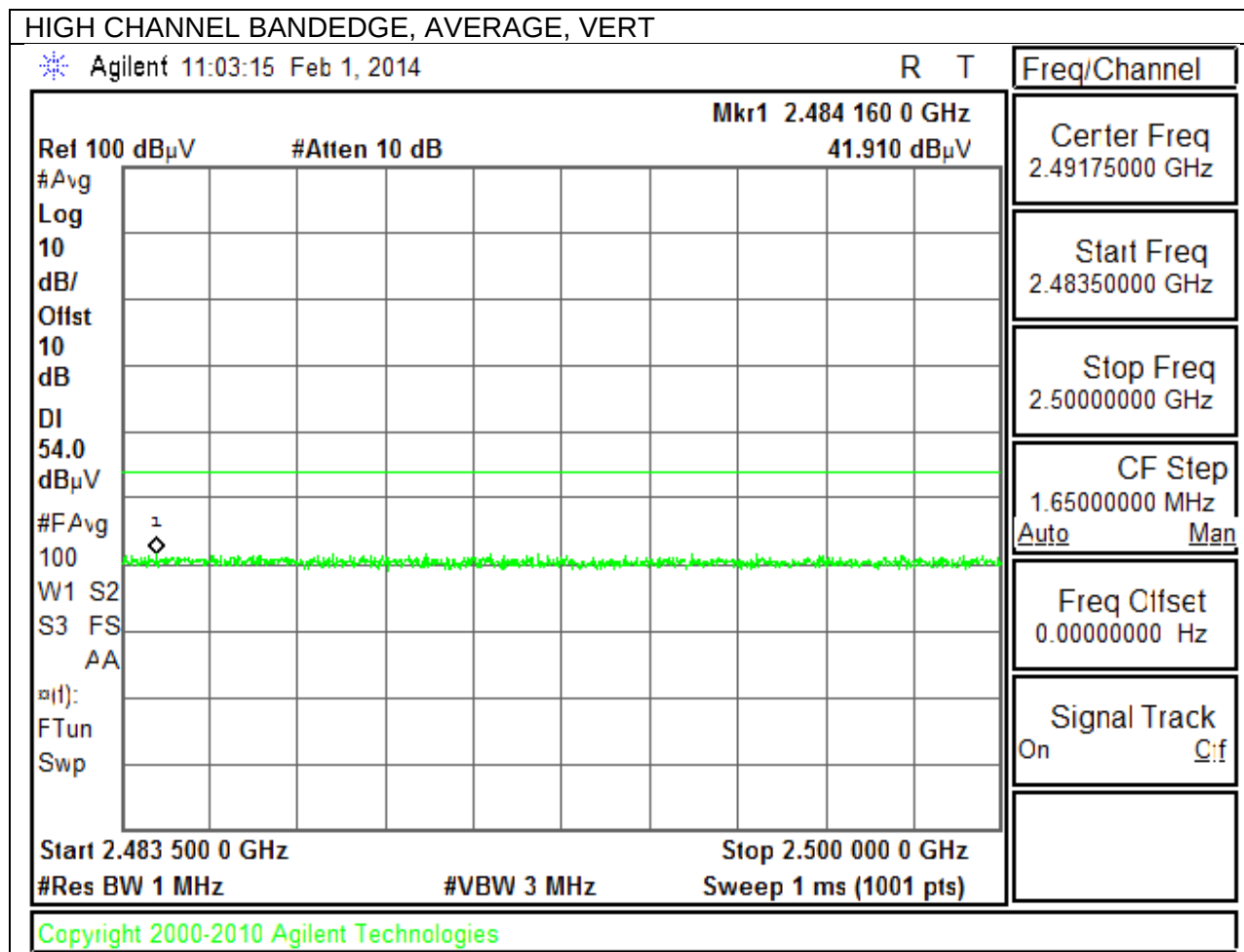


AUTHORIZED BANDEDGE (HIGH CHANNEL)



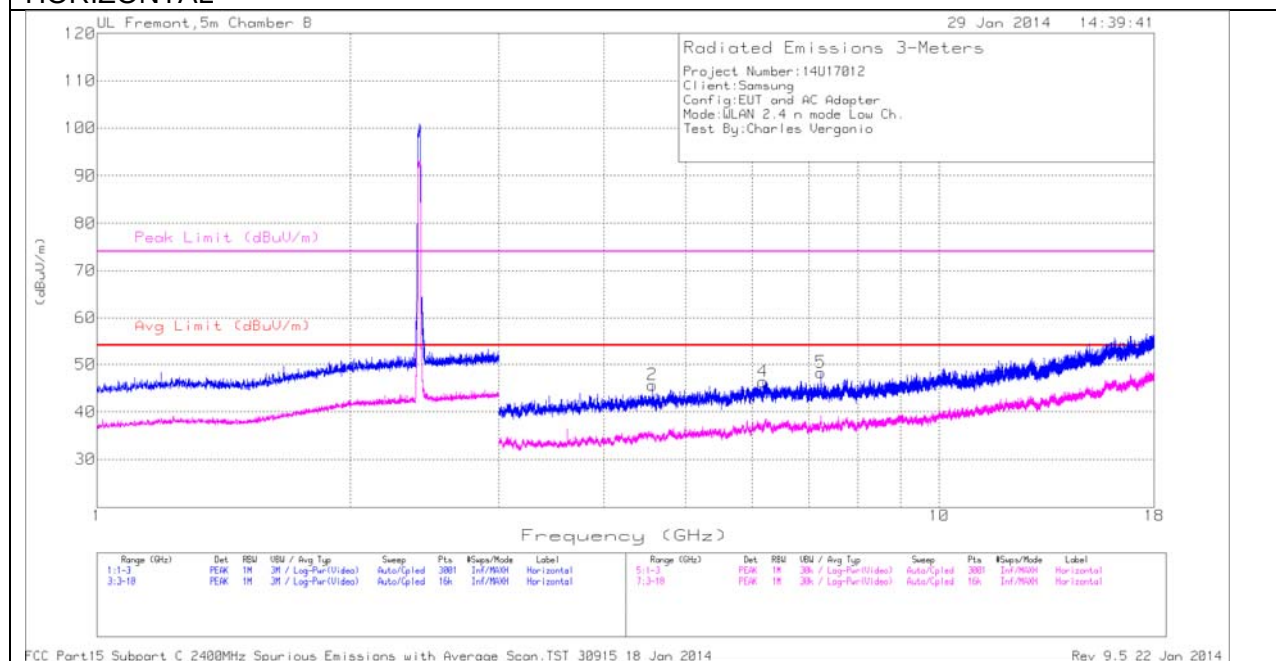






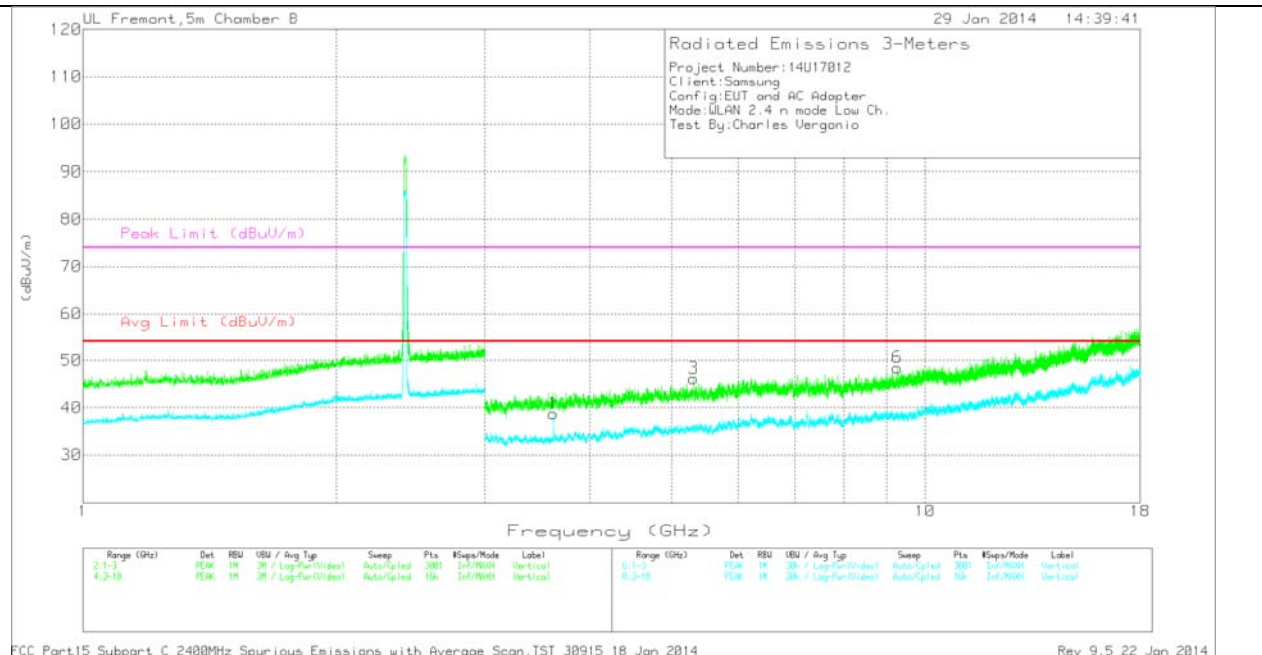
HARMONICS AND SPURIOUS EMISSIONS

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

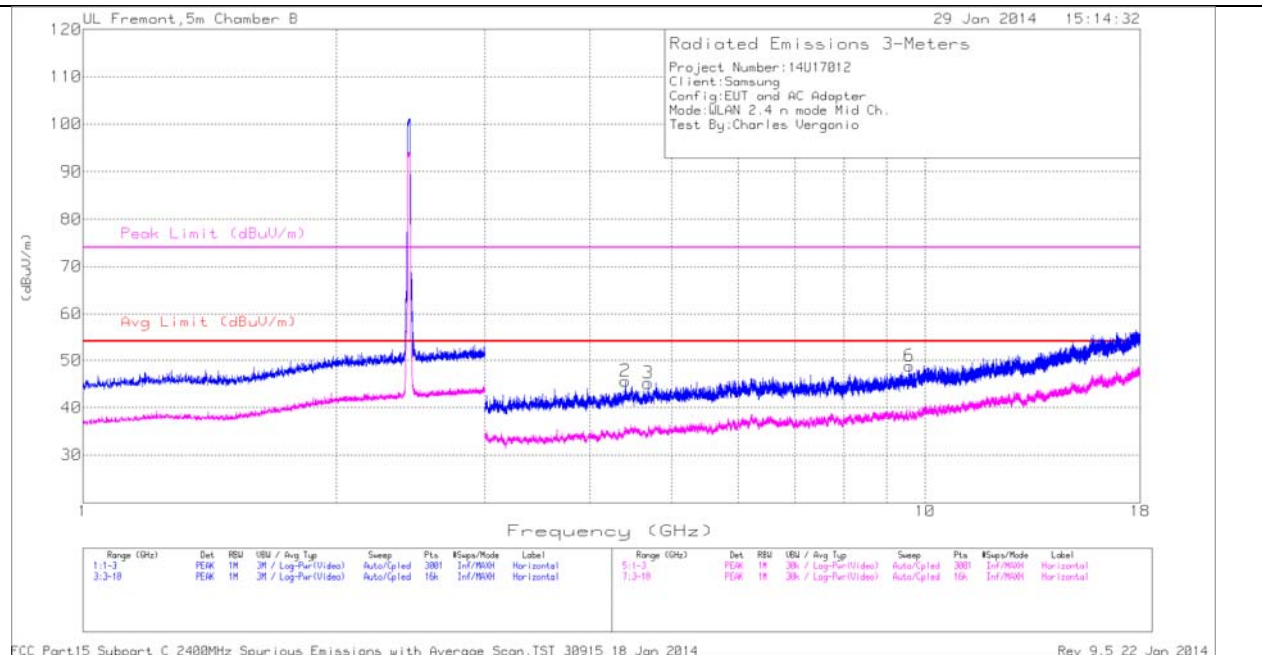
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F lter/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 4.563	41.68	PK	34.6	-30.6	45.68	-	-	74	-28.32	0-360	202	H
1	* 3.618	36.46	Avg	33.5	-31.2	38.76	54	-15.24	-	-	0-360	99	V
3	5.309	39.97	PK	34.9	-28.7	46.17	-	-	74	-27.83	0-360	99	V
4	6.176	38.96	PK	36	-28.6	46.36	-	-	74	-27.64	0-360	99	H
5	7.233	39.56	PK	35.8	-27.1	48.26	-	-	74	-25.74	0-360	99	H
6	9.269	36.15	PK	36.9	-24.6	48.45	-	-	74	-25.55	0-360	99	V

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

PK - Peak detector

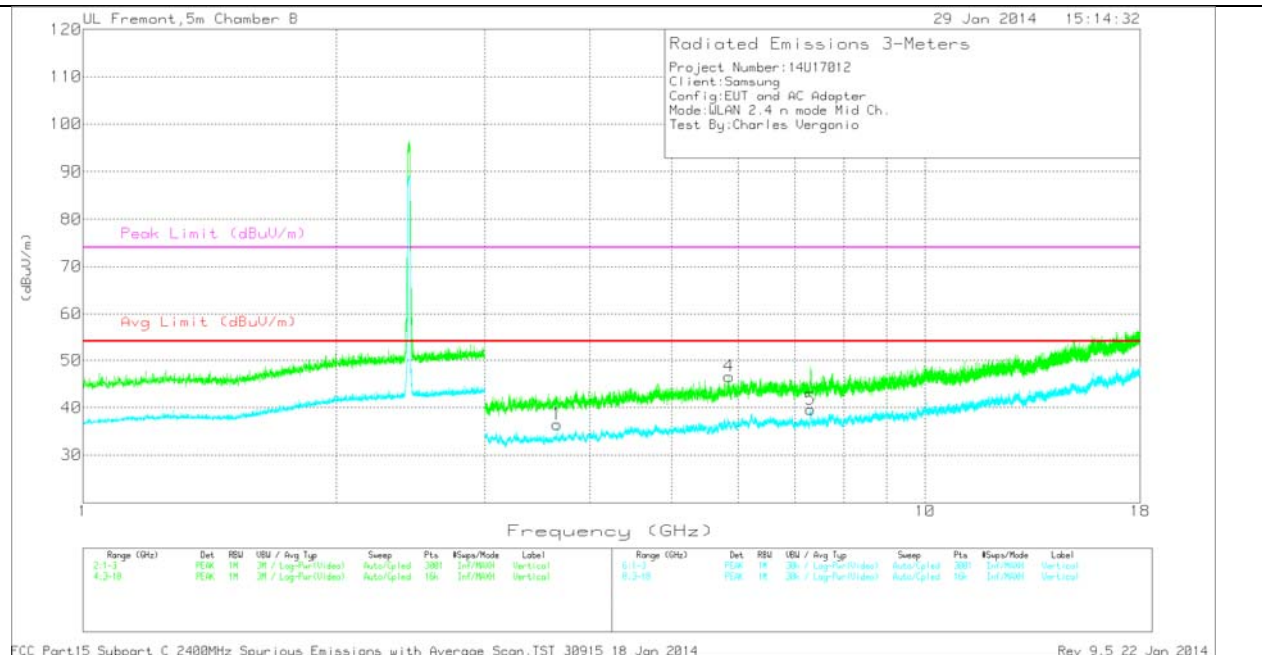
Avg - Video bandwidth < Resolution bandwidth

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

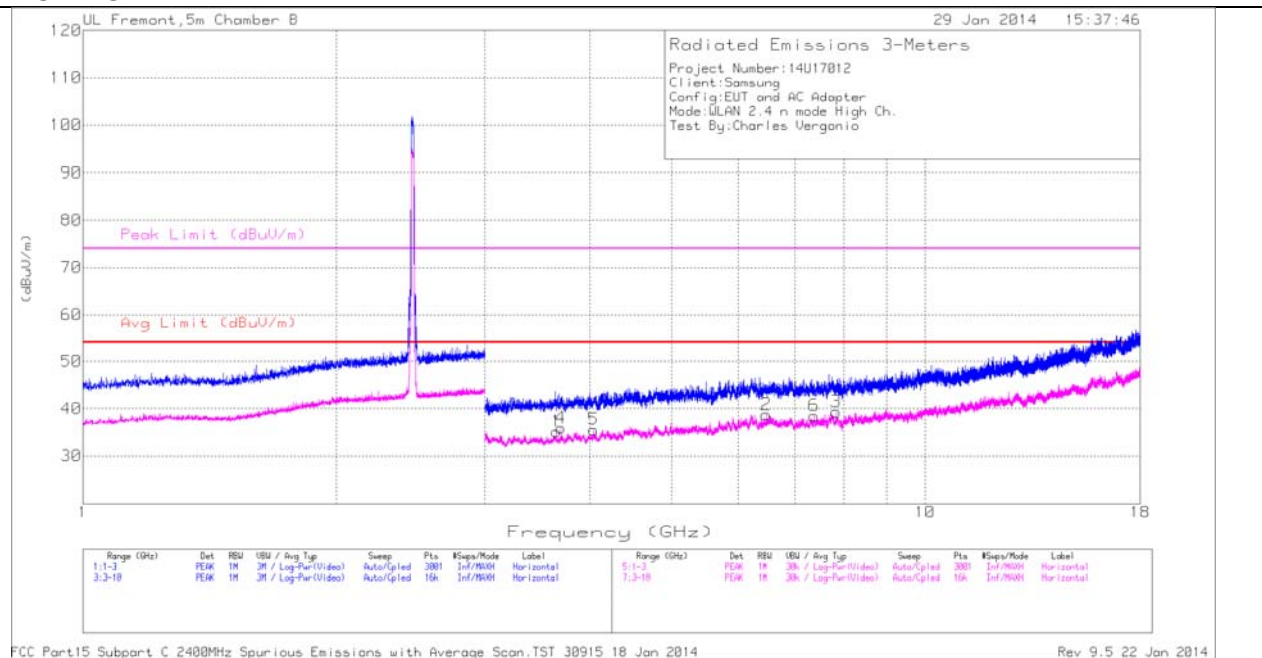
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F lter/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 4.687	40.77	PK	34.6	-30.2	45.17	-	-	74	-28.83	0-360	99	H
1	* 3.655	33.83	Avg	33.6	-31	36.43	54	-17.57	-	-	0-360	99	V
5	* 7.313	31.45	Avg	35.9	-27.7	39.65	54	-14.35	-	-	0-360	202	V
2	4.405	41.03	PK	34.3	-29.7	45.63	-	-	74	-28.37	0-360	99	H
4	5.849	40.29	PK	35.5	-29.2	46.59	-	-	74	-27.41	0-360	202	V
6	9.573	35.7	PK	37.3	-24.2	48.8	-	-	74	-25.2	0-360	99	H

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

PK - Peak detector

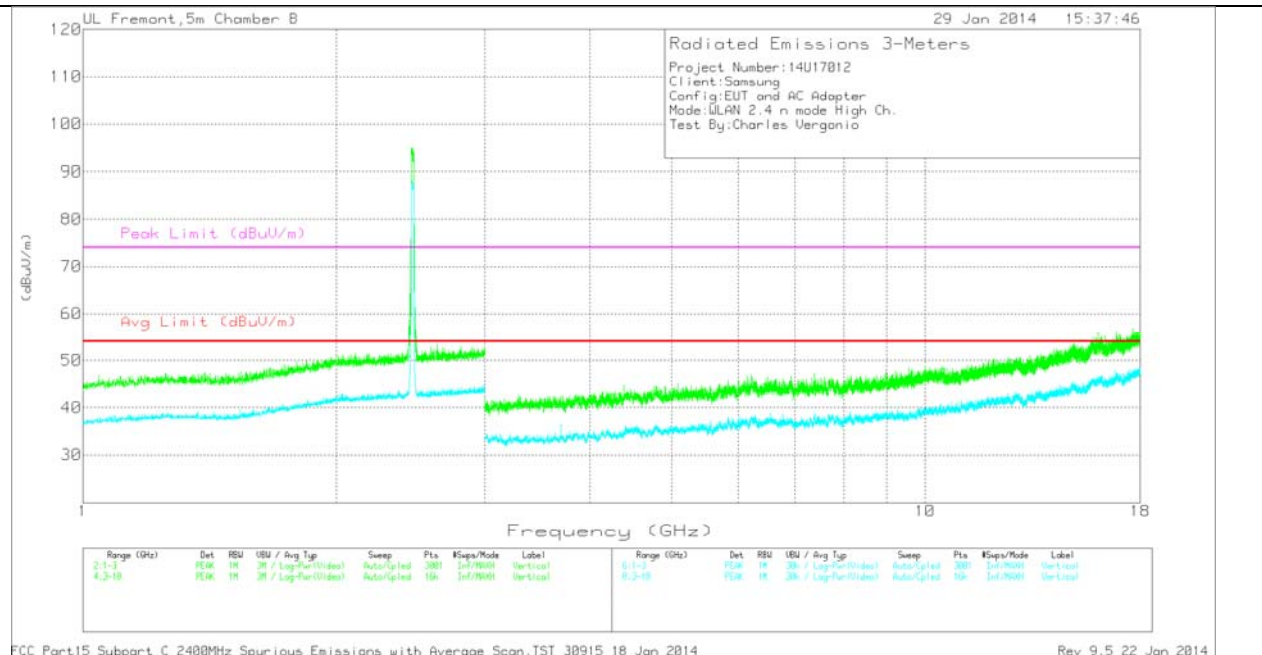
Avg - Video bandwidth < Resolution bandwidth

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

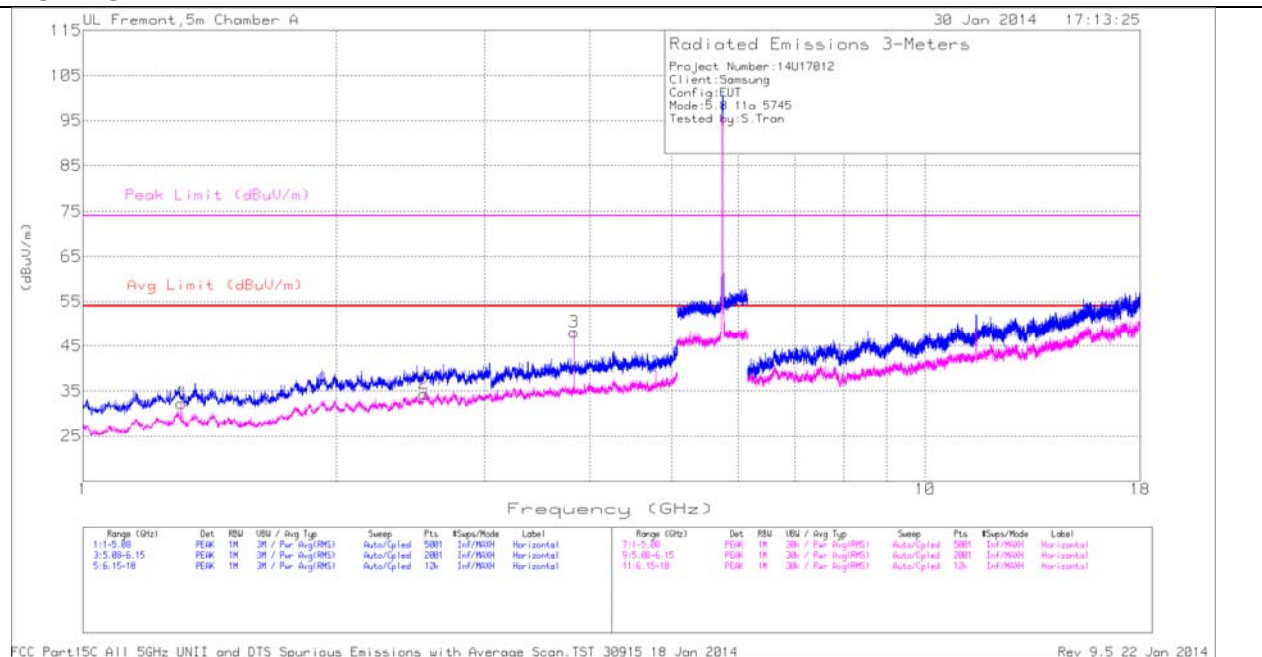
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T345 (dB/m)	Amp/Cbl/F lter/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 3.649	32.56	Avg	33.6	-31	35.16	54	-18.84	-	-	0-360	202	H
4	* 3.693	33.42	Avg	33.7	-31.2	35.92	54	-18.08	-	-	0-360	202	H
5	* 4.039	32.76	Avg	33.9	-31.1	35.56	54	-18.44	-	-	0-360	99	H
6	* 7.38	30.09	Avg	35.9	-27.5	38.49	54	-15.51	-	-	0-360	99	H
2	6.477	31.21	Avg	35.9	-28.4	38.71	54	-15.29	-	-	0-360	202	H
3	7.836	30.21	Avg	36.2	-27.1	39.31	54	-14.69	-	-	0-360	99	H

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

Avg - Video bandwidth < Resolution bandwidth

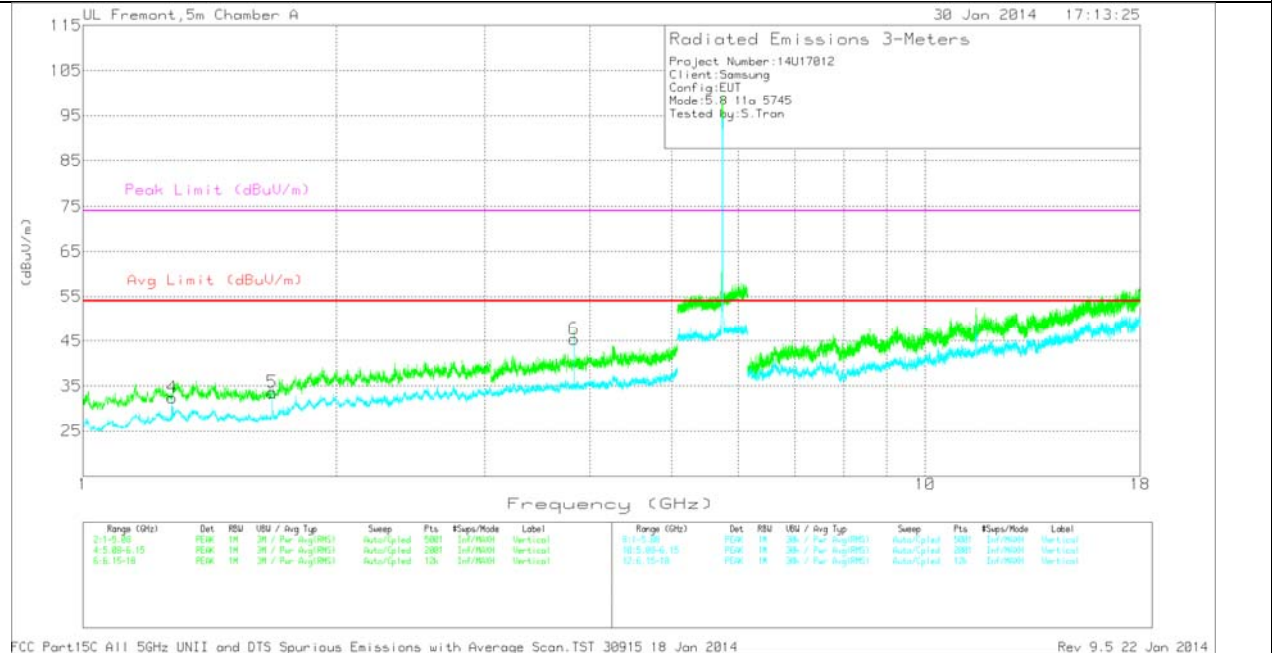
10.2.1. TX ABOVE 1 GHz 802.11a HT20 MODE IN THE 5.8 GHz BAND HARMONICS AND SPURIOUS EMISSIONS (LOW CHANNEL)

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



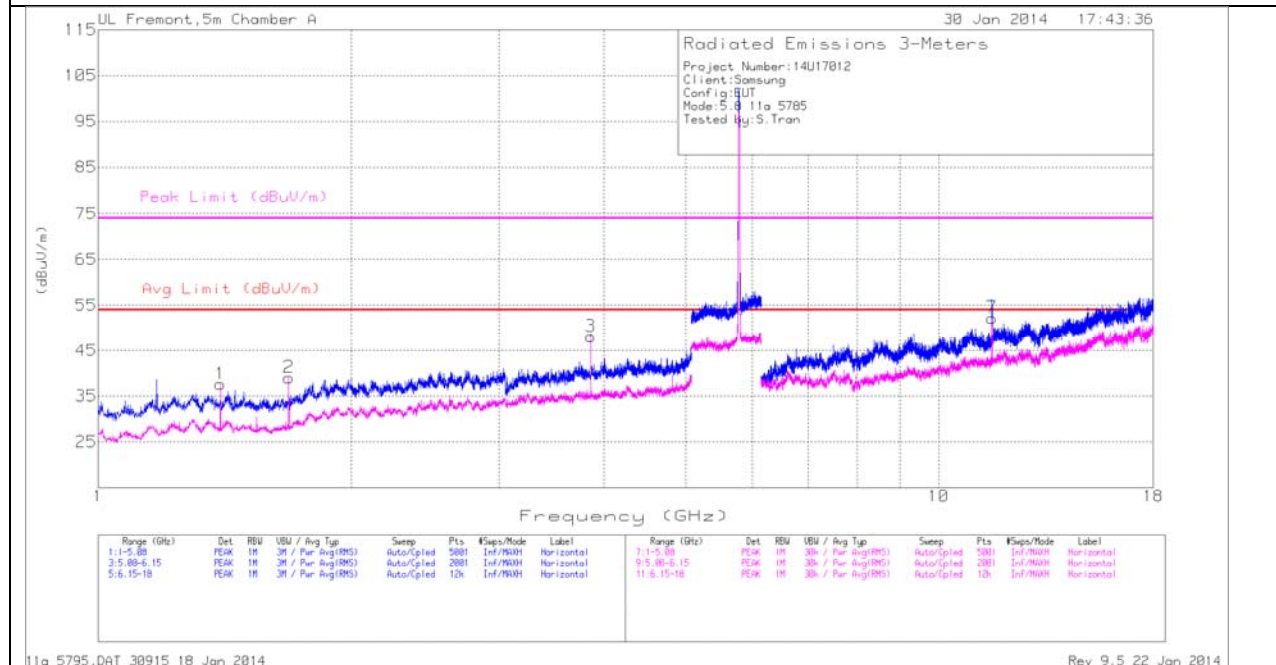
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	1.277	39.52	Avg	30.1	-37.2	32.42	54	-21.58	-	-	0-360	101	V
1	1.308	39.12	Avg	30.3	-37.2	32.22	54	-21.78	-	-	0-360	200	H
5	1.678	40.38	Avg	29.2	-36	33.58	54	-20.42	-	-	0-360	101	V
2	2.542	34.56	Avg	32.6	-32.8	34.36	54	-19.64	-	-	0-360	200	H
3	3.83	45.78	Avg	33.6	-31.2	48.18	54	-5.82	-	-	0-360	200	H
6	3.83	43.03	Avg	33.6	-31.2	45.43	54	-8.57	-	-	0-360	101	V

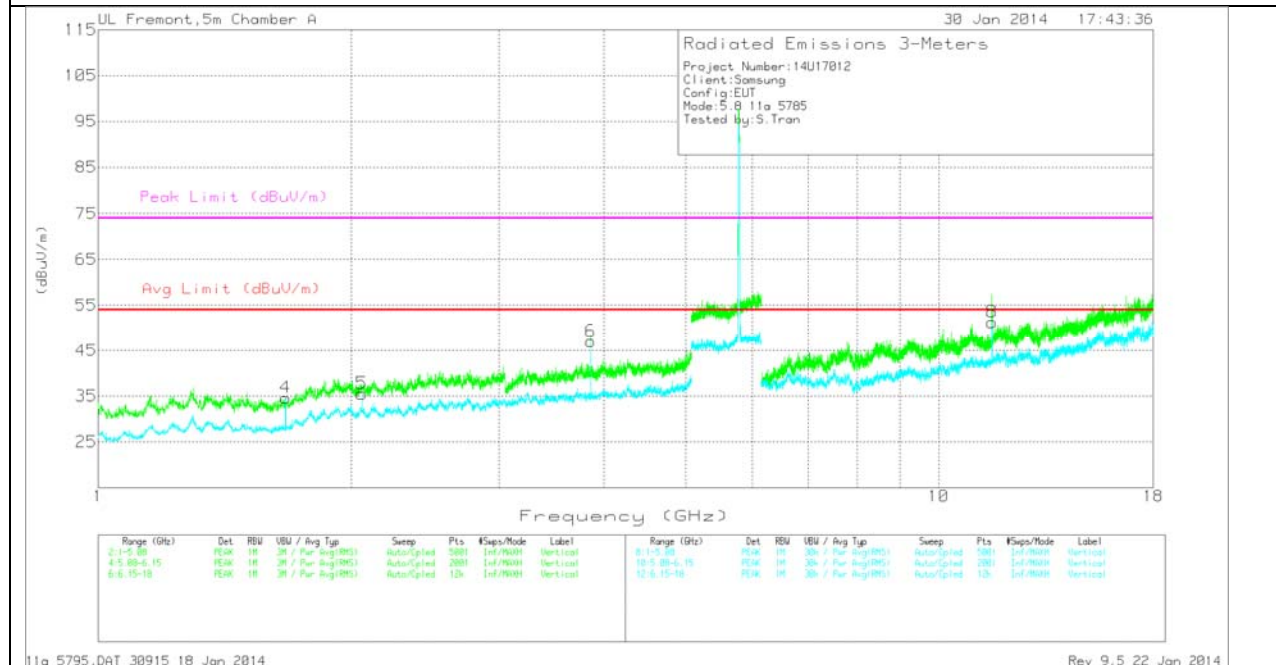
Avg - Video bandwidth < Resolution bandwidth

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

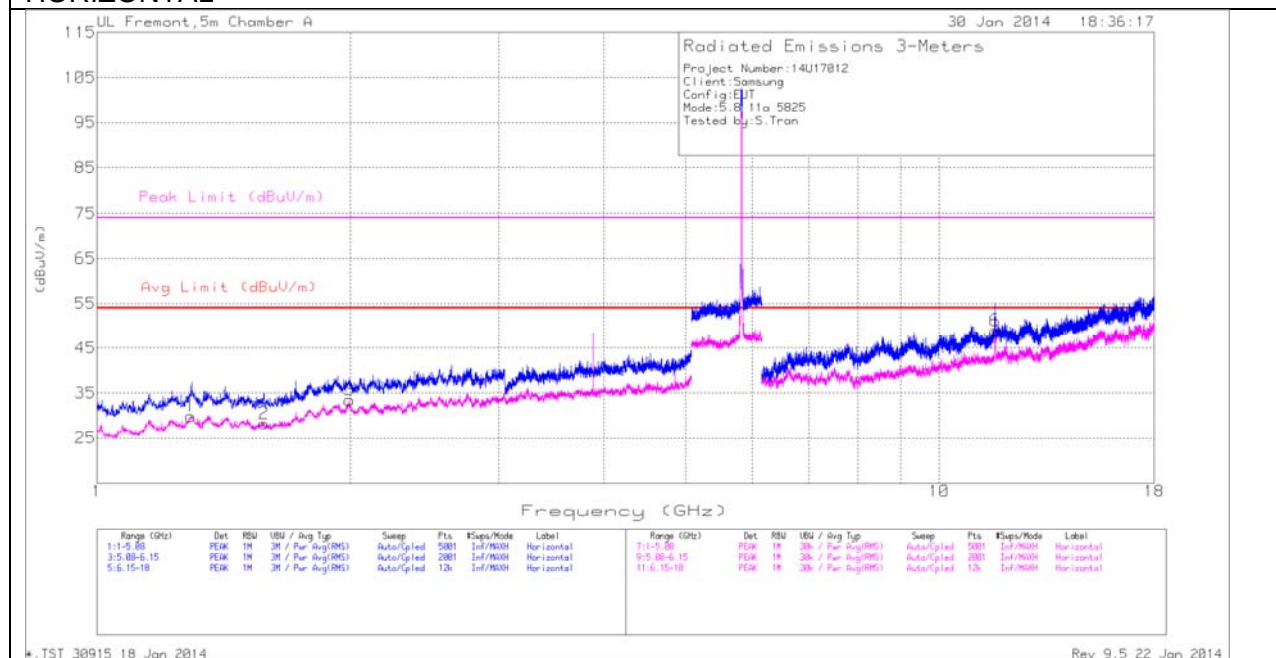
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F lter/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.398	44.33	Avg	29.8	-36.5	37.63	54	-16.37	-	-	0-360	200	H
4	1.672	41.81	Avg	29.1	-36.3	34.61	54	-19.39	-	-	0-360	101	V
2	1.686	46.01	Avg	29.2	-36.2	39.01	54	-14.99	-	-	0-360	100	H
5	2.06	38.71	Avg	31.7	-34.9	35.51	54	-18.49	-	-	0-360	101	V
3	3.857	45.63	Avg	33.6	-31.1	48.13	54	-5.87	-	-	0-360	200	H
6	3.857	44.51	Avg	33.6	-31.1	47.01	54	-6.99	-	-	0-360	200	V
8	11.569	35.29	Avg	38.4	-22.4	51.29	54	-2.71	-	-	0-360	201	V
7	11.57	36.1	Avg	38.4	-22.3	52.2	54	-1.8	-	-	0-360	200	H

Avg - Video bandwidth < Resolution bandwidth

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
3.857	45.35	MAv1	33.6	-31.1	47.85	54	-6.15	74	-26.15	236	231	H

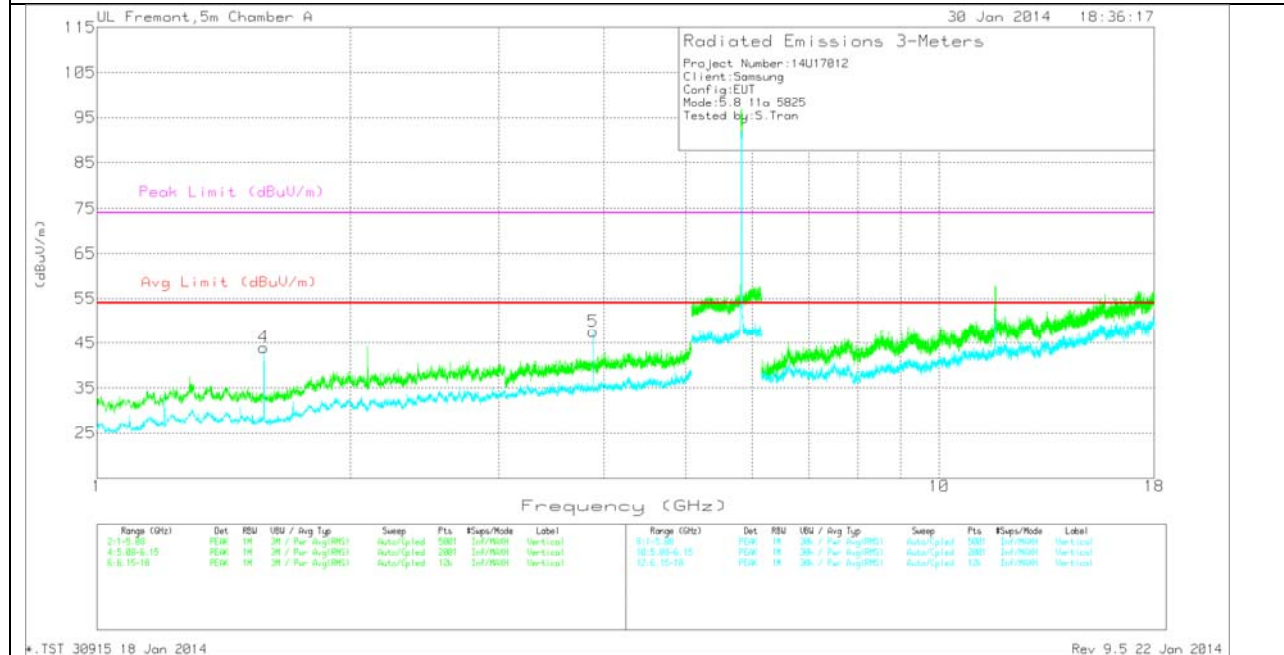
MAv1 - KDB558074 Option 1 Maximum RMS Average

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



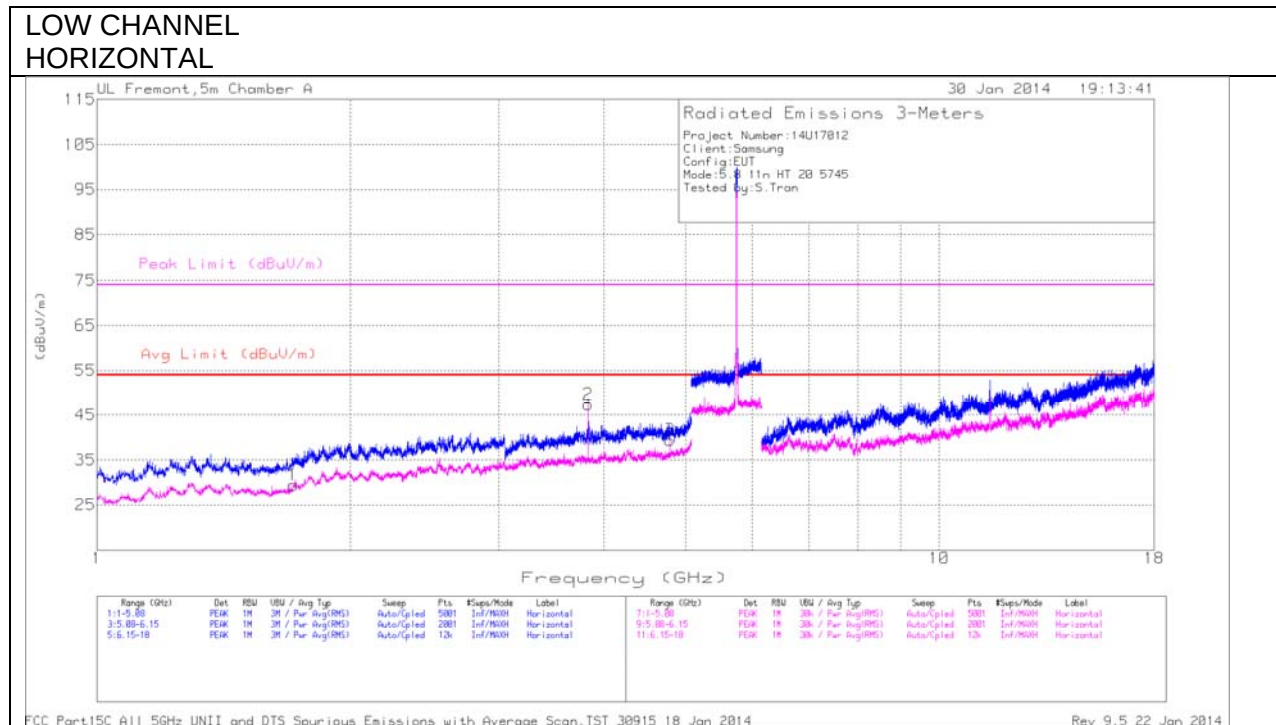
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

HIGH CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.291	36.41	Avg	30.2	-36.8	29.81	54	-24.19	-	-	0-360	101	H
4	1.578	51.27	Avg	28.4	-35.7	43.97	54	-10.03	-	-	0-360	100	V
2	1.579	35.49	Avg	28.4	-35.7	28.19	54	-25.81	-	-	0-360	200	H
3	1.994	36.51	Avg	31.9	-35	33.41	54	-20.59	-	-	0-360	200	H
5	3.884	45.4	Avg	33.7	-31.5	47.6	54	-6.4	-	-	0-360	200	V
6	11.655	32.93	Avg	38.5	-22.5	48.93	54	-5.07	-	-	0-360	200	H

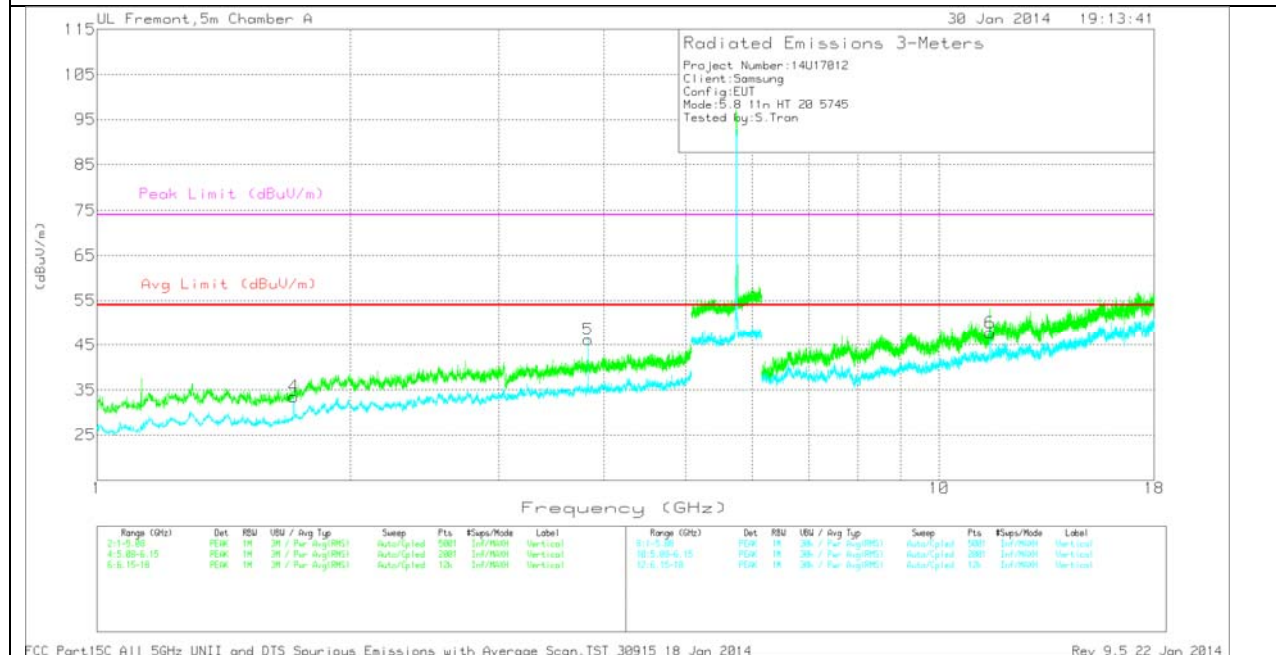
Avg - Video bandwidth < Resolution bandwidth

10.2.1. TX ABOVE 1 GHz 802.11n HT20 MODE IN THE 5.8 GHz BAND HARMONICS AND SPURIOUS EMISSIONS



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



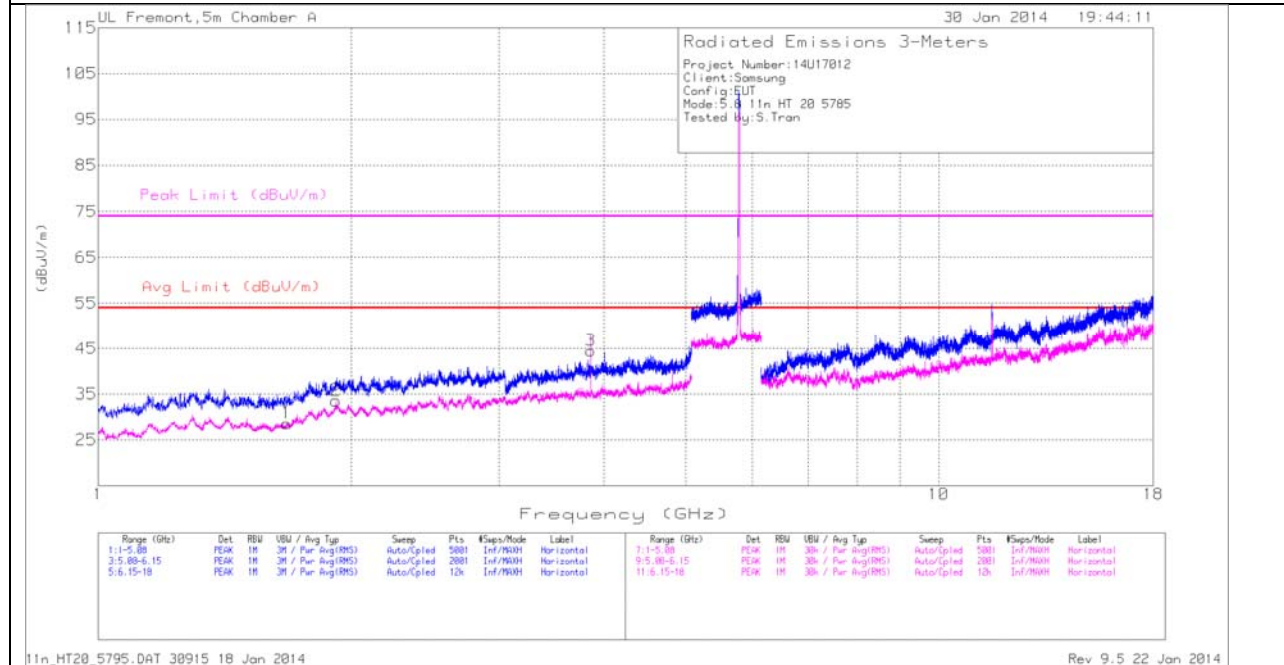
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.71	35.89	Avg	29.5	-36	29.39	54	-24.61	-	-	0-360	200	H
4	1.712	39.76	Avg	29.5	-35.8	33.46	54	-20.54	-	-	0-360	201	V
5	3.83	43.8	Avg	33.6	-31.2	46.2	54	-7.8	-	-	0-360	101	V
2	3.831	44.97	Avg	33.6	-31.2	47.37	54	-6.63	-	-	0-360	200	H
3	4.788	35.07	Avg	33.9	-29.6	39.37	54	-14.63	-	-	0-360	200	H
6	11.496	32.37	Avg	38.3	-22.9	47.77	54	-6.23	-	-	0-360	200	V

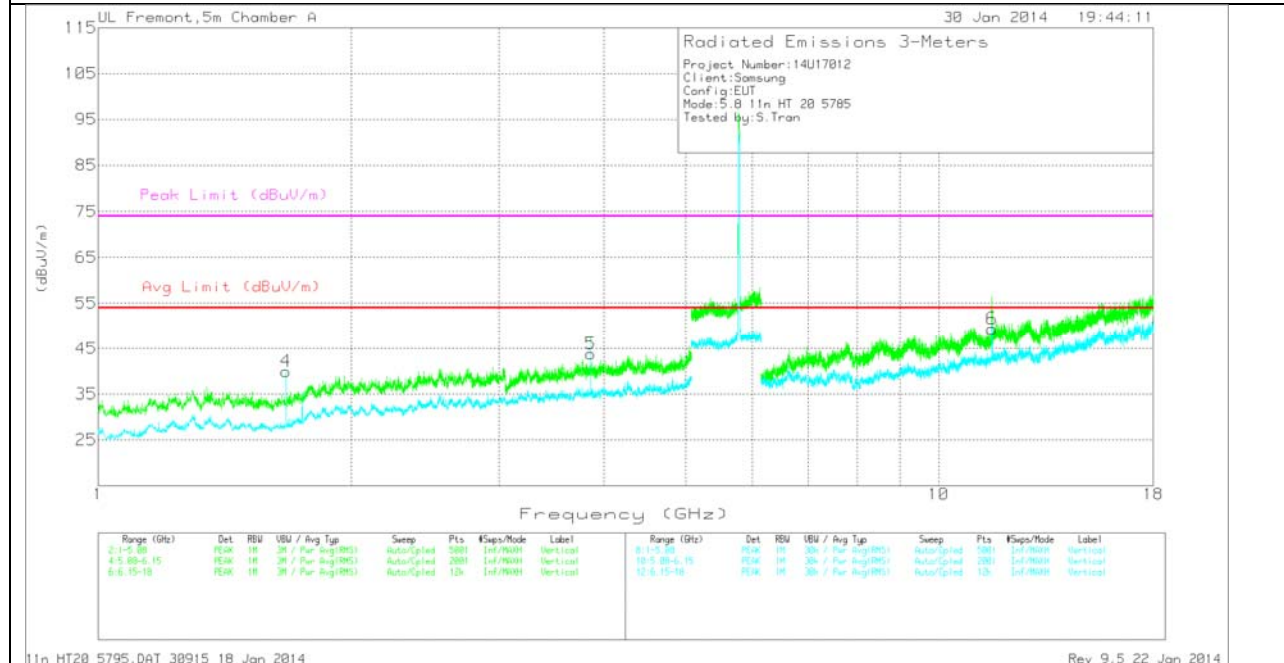
Avg - Video bandwidth < Resolution bandwidth

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

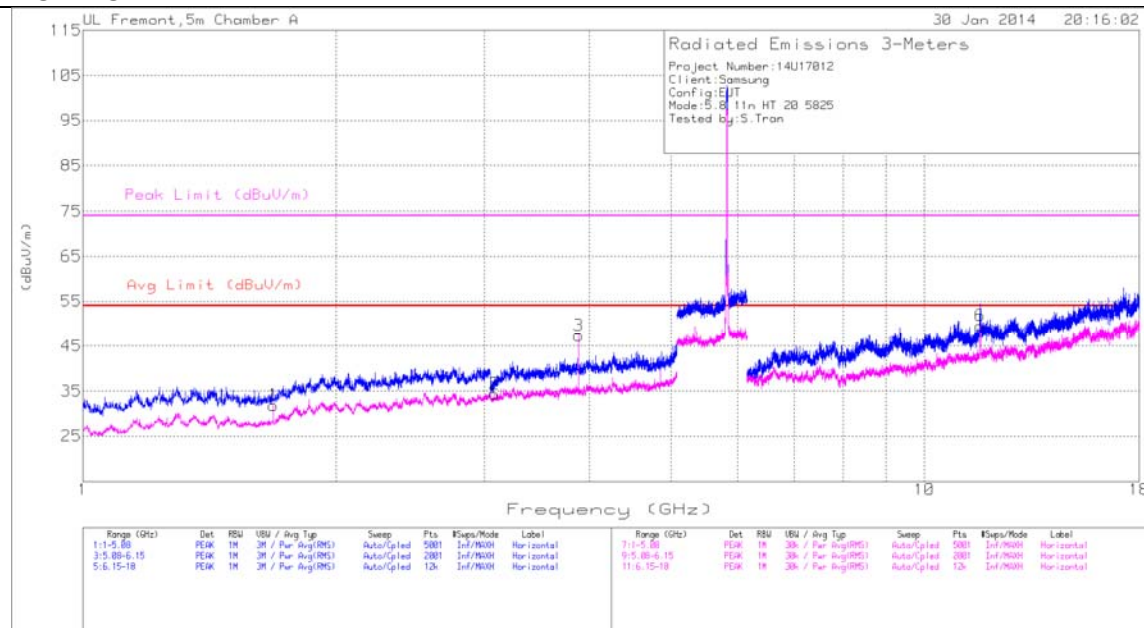
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F lter/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	1.673	47.04	Avg	29.1	-36.2	39.94	54	-14.06	-	-	0-360	101	V
1	1.676	35.61	Avg	29.1	-36.1	28.61	54	-25.39	-	-	0-360	101	H
2	1.92	36.36	Avg	31.7	-34.5	33.56	54	-20.44	-	-	0-360	200	H
3	3.858	41.89	Avg	33.6	-31	44.49	54	-9.51	-	-	0-360	200	H
5	3.858	41.19	Avg	33.6	-31	43.79	54	-10.21	-	-	0-360	201	V
6	11.576	33.33	Avg	38.4	-22.4	49.33	54	-4.67	-	-	0-360	201	V

Avg - Video bandwidth < Resolution bandwidth

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
3.857	45.35	MAv1	33.6	-31.1	47.85	54	-6.15	74	-26.15	236	231	H

MAv1 - KDB558074 Option 1 Maximum RMS Average

HIGH CHANNEL HORIZONTAL

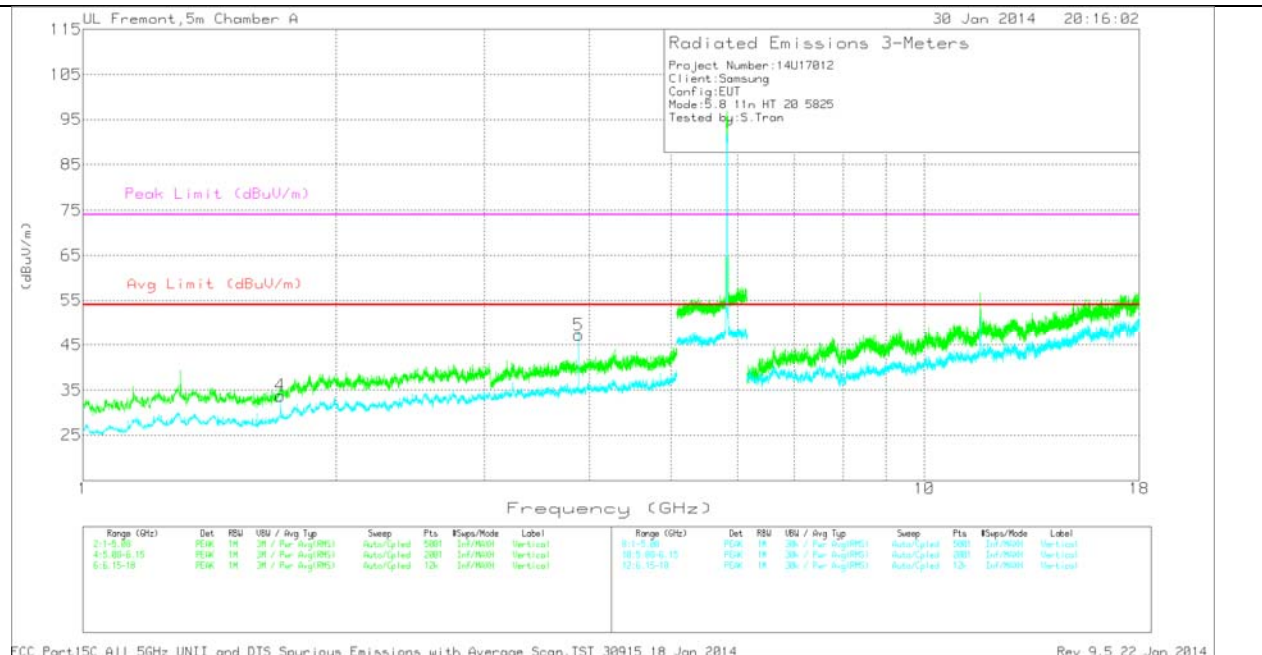


FCC Part15C All 5GHz UNII and DTS Spurious Emissions with Average Scan.TST 30915 18 Jan 2014

Rev. 9.5 22 Jan 2014

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.

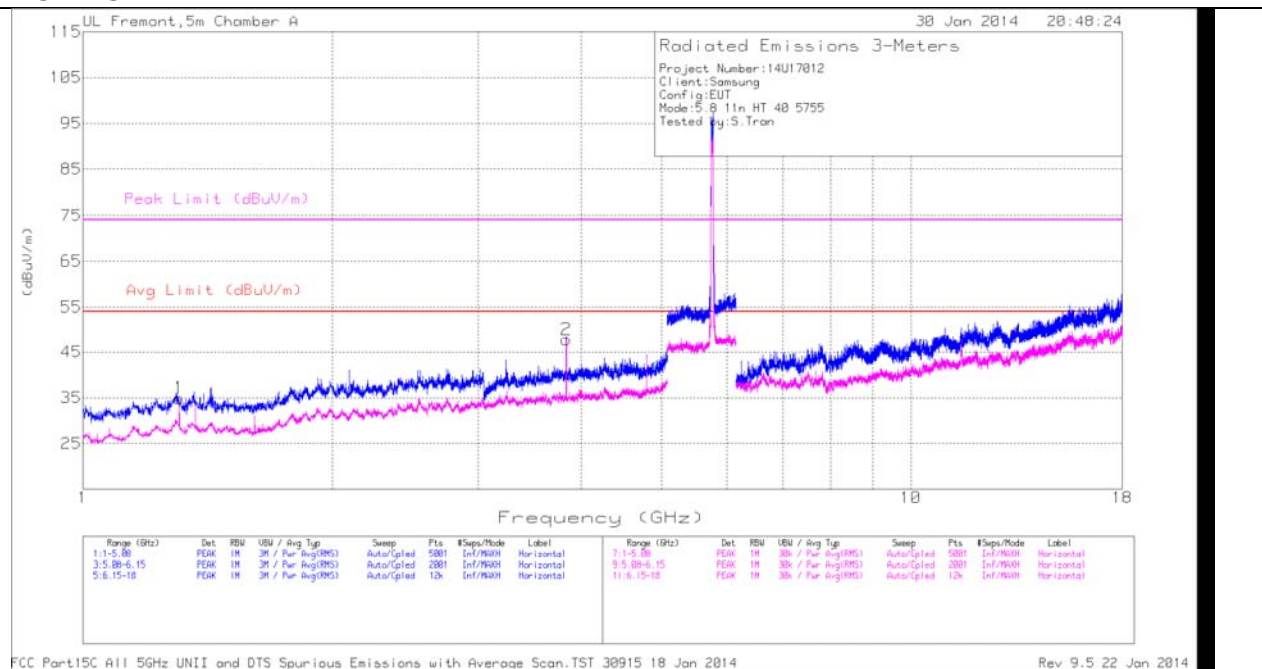
HIGH CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.683	38.73	Avg	29.2	-36.1	31.83	54	-22.17	-	-	0-360	200	H
4	1.716	39.83	Avg	29.6	-35.7	33.73	54	-20.27	-	-	0-360	100	V
2	3.082	33.5	Avg	32.8	-32	34.3	54	-19.7	-	-	0-360	200	H
3	3.884	45.16	Avg	33.7	-31.5	47.36	54	-6.64	-	-	0-360	200	H
5	3.884	45.04	Avg	33.7	-31.5	47.24	54	-6.76	-	-	0-360	201	V
6	11.649	33.97	Avg	38.4	-22.8	49.57	54	-4.43	-	-	0-360	200	H

Avg - Video bandwidth < Resolution bandwidth

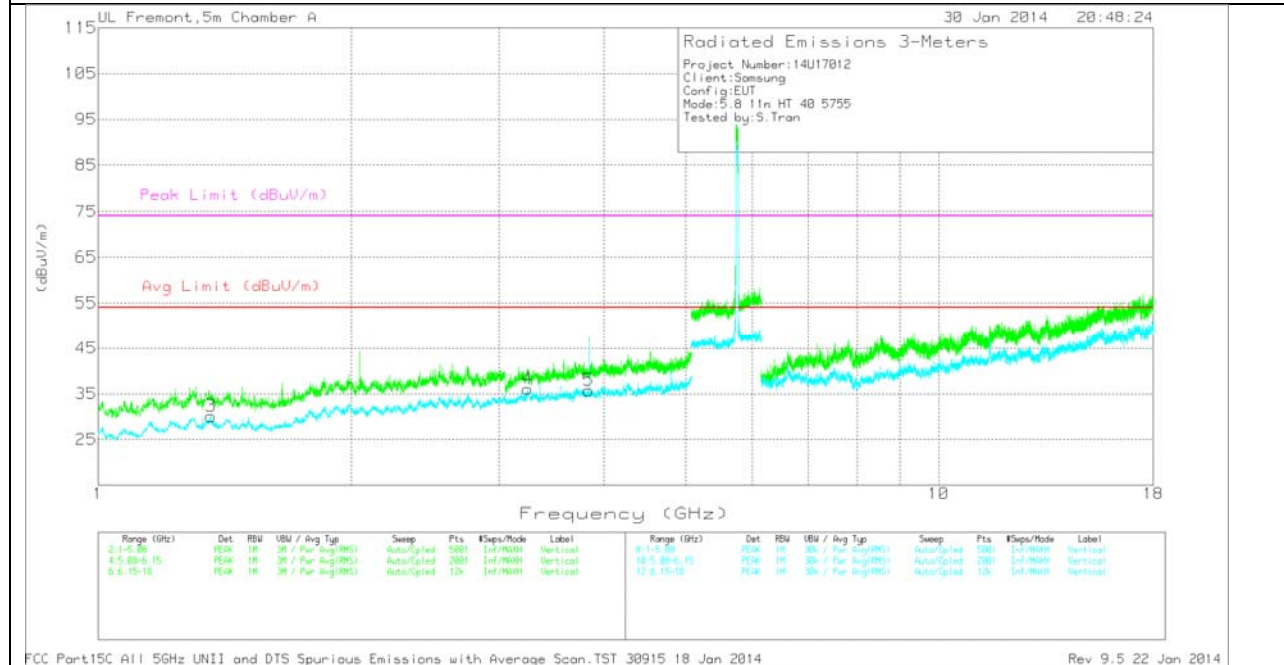
10.2.1. TX ABOVE 1 GHz 802.11n HT40 MODE IN THE 5.8 GHz BAND HARMONICS AND SPURIOUS EMISSIONS

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



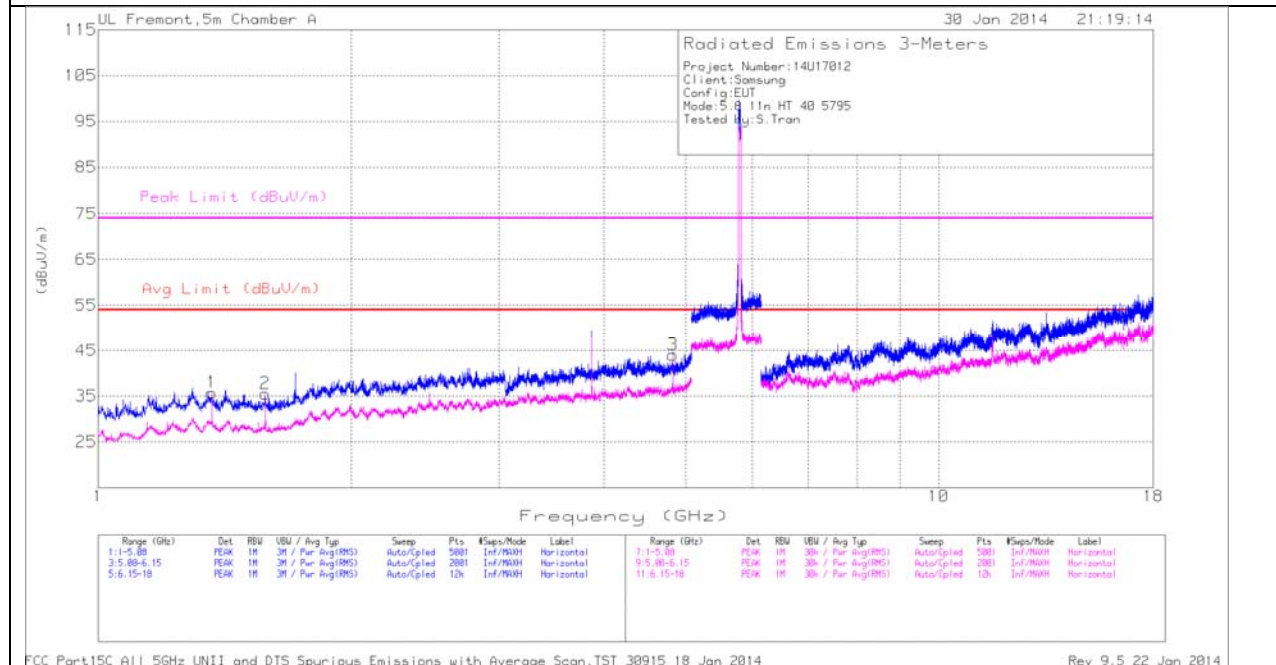
Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.307	41.71	Avg	30.3	-37.1	34.91	54	-19.09	-	-	0-360	200	H
3	1.362	36.92	Avg	30	-36.8	30.12	54	-23.88	-	-	0-360	201	V
4	3.242	34.43	Avg	33.3	-31.7	36.03	54	-17.97	-	-	0-360	101	V
5	3.833	33.19	Avg	33.6	-31.1	35.69	54	-18.31	-	-	0-360	201	V
2	3.836	45.12	Avg	33.6	-30.9	47.82	54	-6.18	-	-	0-360	200	H

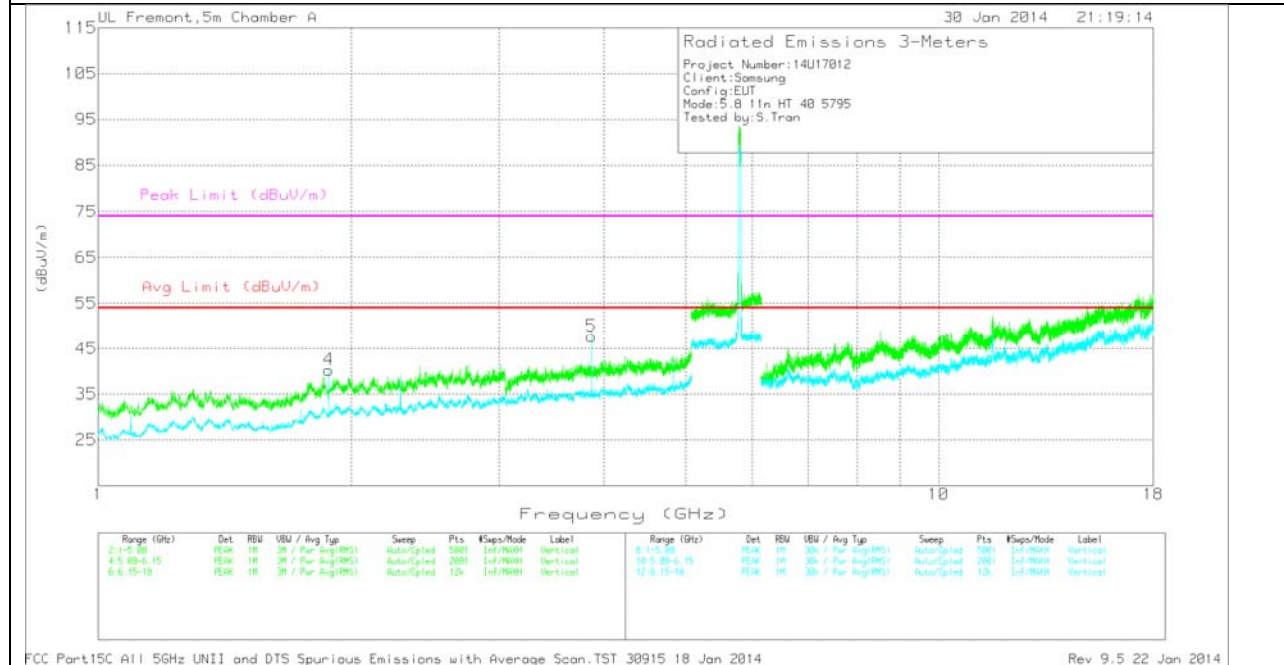
Avg - Video bandwidth < Resolution bandwidth

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.

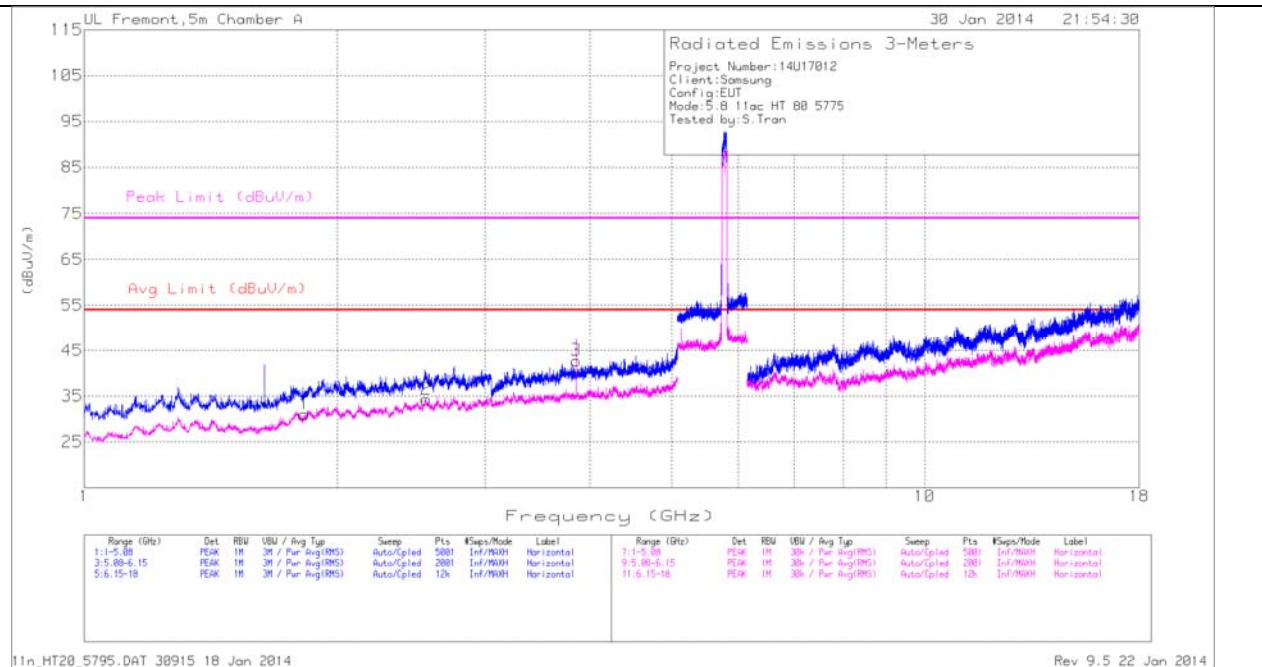
MID CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.366	42.63	Avg	30	-36.9	35.73	54	-18.27	-	-	0-360	200	H
2	1.581	42.83	Avg	28.4	-35.7	35.53	54	-18.47	-	-	0-360	200	H
4	1.881	43.77	Avg	31.5	-35	40.27	54	-13.73	-	-	0-360	201	V
5	3.863	44.85	Avg	33.6	-30.8	47.65	54	-6.35	-	-	0-360	201	V
3	4.829	39.58	Avg	33.9	-29.5	43.98	54	-10.02	-	-	0-360	200	H

Avg - Video bandwidth < Resolution bandwidth

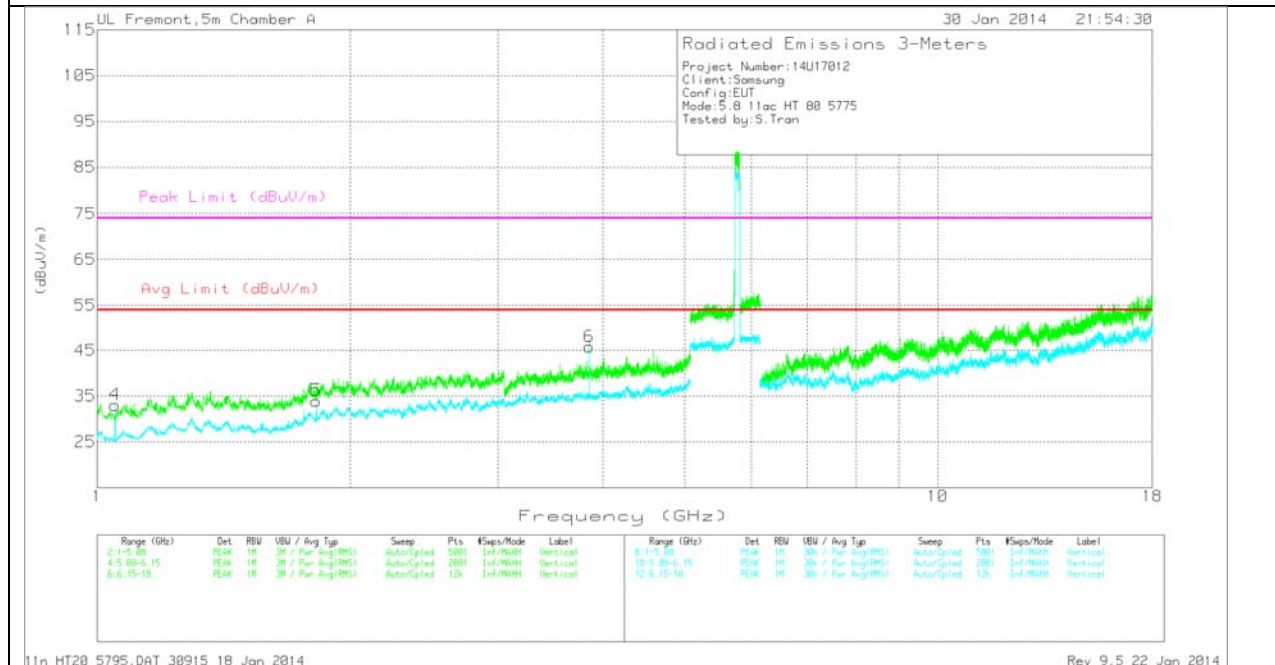
10.2.1. TX ABOVE 1 GHz 802.11ac HT80 MODE IN THE 5.8 GHz BAND HARMONICS AND SPURIOUS EMISSIONS

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.

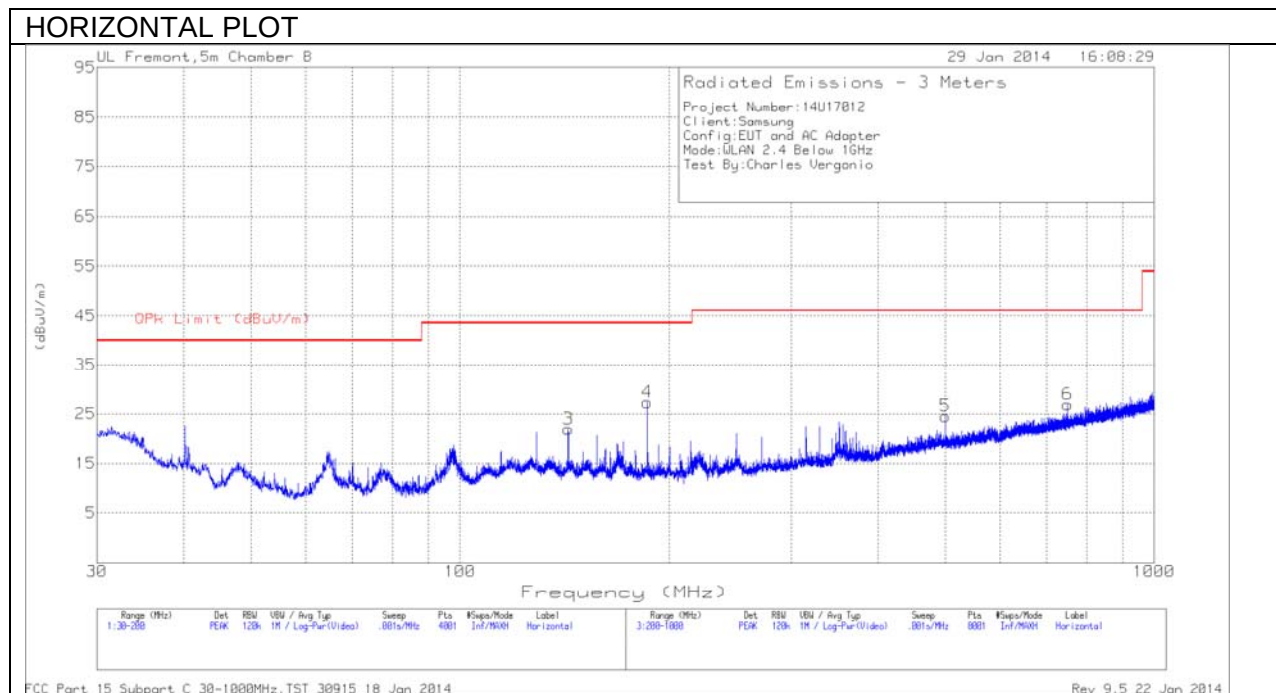
LOW CHANNEL DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T136 (dB/m)	Amp/Cbl/F ltr/Pad (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	1.051	42.66	Avg	28	-37.6	33.06	54	-20.94	-	-	0-360	100	V
5	1.823	37.75	Avg	30.8	-34.6	33.95	54	-20.05	-	-	0-360	201	V
1	1.829	34.55	Avg	30.8	-34.3	31.05	54	-22.95	-	-	0-360	100	H
2	2.553	34.3	Avg	32.7	-32.7	34.3	54	-19.7	-	-	0-360	200	H
6	3.85	43.63	Avg	33.6	-31.4	45.83	54	-8.17	-	-	0-360	201	V
3	3.851	40.53	Avg	33.6	-31.4	42.73	54	-11.27	-	-	0-360	200	H

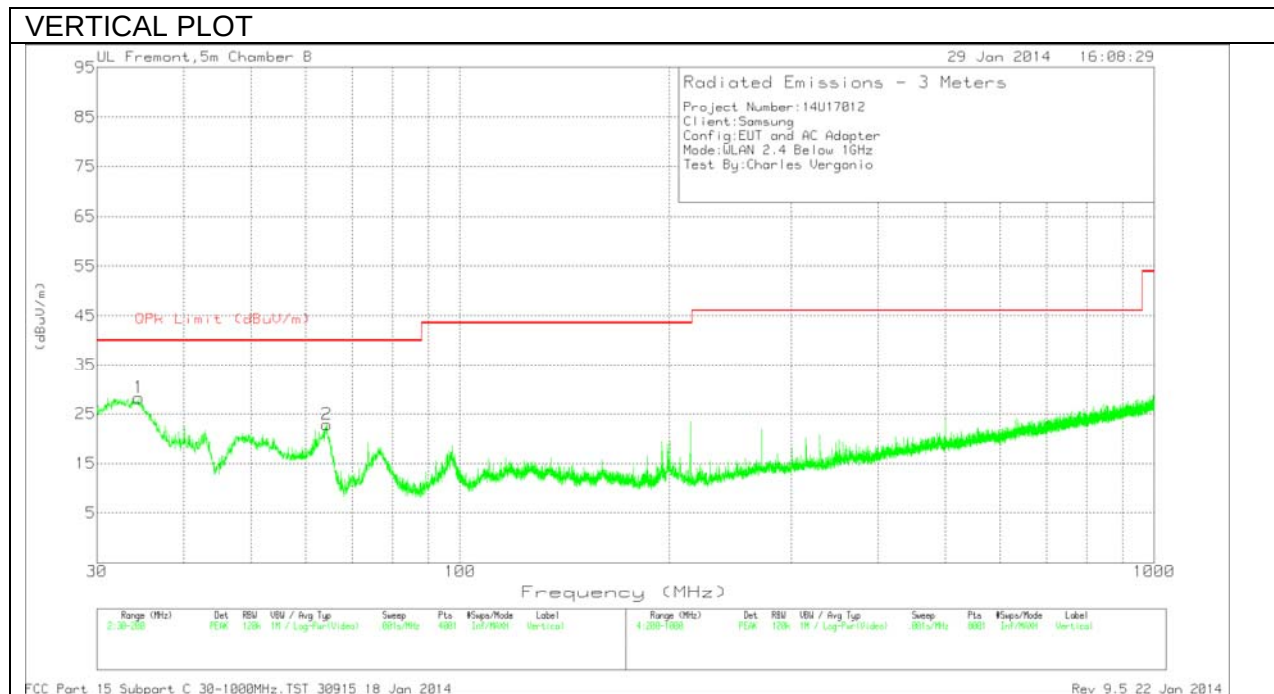
Avg - Video bandwidth < Resolution bandwidth

10.3. 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	34.4625	39.33	PK	17.7	-28.8	28.23	40	-11.77	0-360	101	V
2	64.2975	43.86	PK	7.5	-28.5	22.86	40	-17.14	0-360	101	V
3	143.1775	36.83	PK	12.7	-27.6	21.93	43.52	-21.59	0-360	200	H
4	186.1025	43.43	PK	11	-27.1	27.33	43.52	-16.19	0-360	100	H
5	500.1	32.93	PK	17.5	-25.9	24.53	46.02	-21.49	0-360	200	H
6	750.2	30.62	PK	20.6	-24.3	26.92	46.02	-19.1	0-360	101	H

PK - Peak detector

11. 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

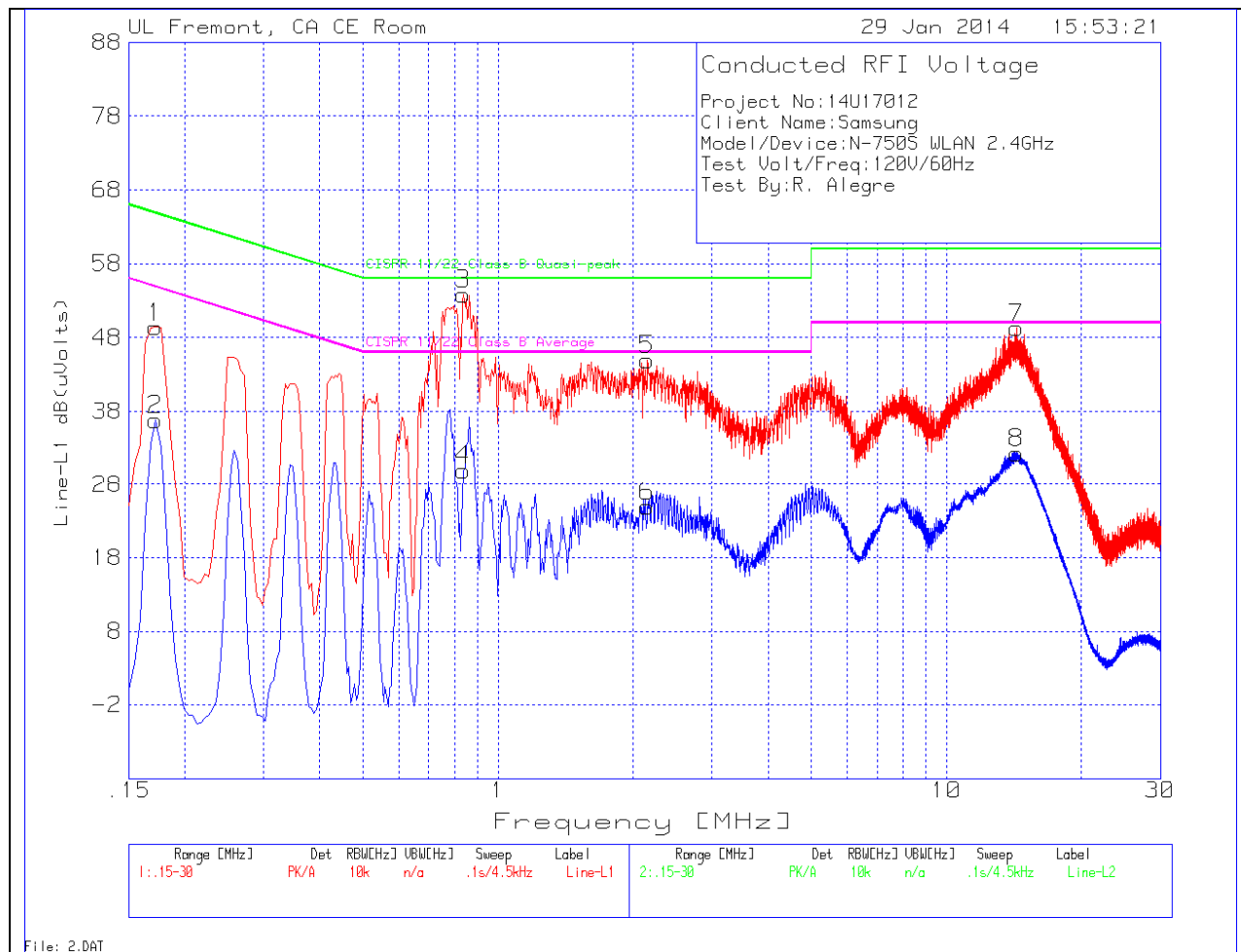
The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4 2009.

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

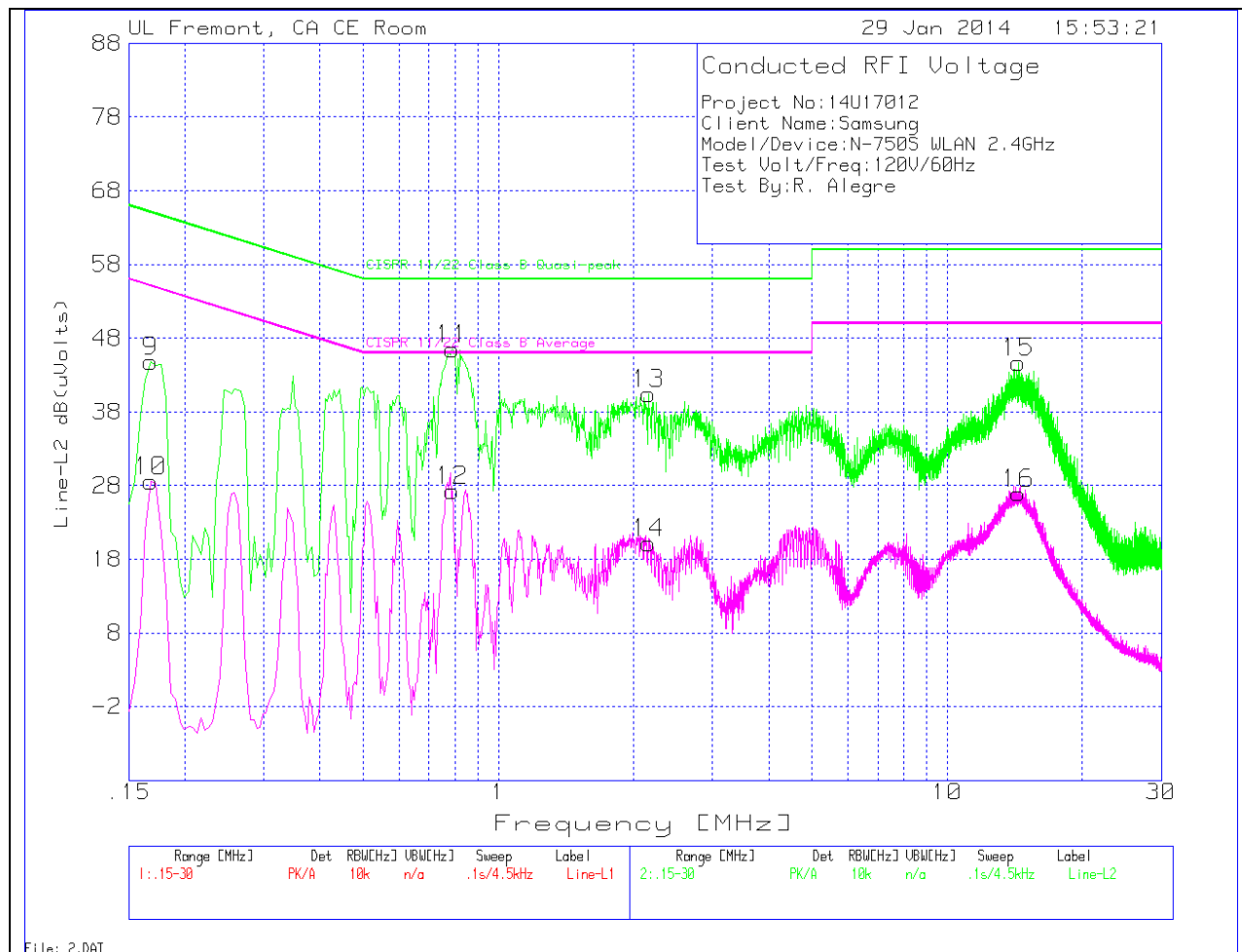
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

LINE 1 RESULTS



LINE 2 RESULTS



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	.1725	48.18	PK	1.2	0	49.38	64.8	-15.42	-	-
2	.1725	35.57	Av	1.2	0	36.77	-	-	54.8	-18.03
3	.8385	53.52	PK	.3	0	53.82	56	-2.18	-	-
4	.8385	29.73	Av	.3	0	30.03	-	-	46	-15.97
5	2.1525	44.63	PK	.2	.1	44.93	56	-11.07	-	-
6	2.1525	24.63	Av	.2	.1	24.93	-	-	46	-21.07
7	14.3295	48.86	PK	.2	.2	49.26	60	-10.74	-	-
8	14.3295	31.94	Av	.2	.2	32.34	-	-	50	-17.66

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)
9	.168	43.51	PK	1.3	0	44.81	65.1	-20.29	-	-
10	.168	27.21	Av	1.3	0	28.51	-	-	55.1	-26.59
11	.789	46.24	PK	.3	0	46.54	56	-9.46	-	-
12	.789	26.92	Av	.3	0	27.22	-	-	46	-18.78
13	2.157	40.17	PK	.2	.1	40.47	56	-15.53	-	-
14	2.157	19.92	Av	.2	.1	20.22	-	-	46	-25.78
15	14.415	44.13	PK	.3	.2	44.63	60	-15.37	-	-
16	14.415	26.45	Av	.3	.2	26.95	-	-	50	-23.05

PK - Peak detector

Av - average detection