Washington Laboratories, Ltd.

FCC & ISED CANADA CERTIFICATION TEST REPORT

for the

INSULET CORPORATION

Omnipod Dash

FCC ID: RBV-SAW

IC ID: 8446A-SAW

REPORT# 16333-01 REV 2

Prepared for:

Insulet Corporation

100 Nagog Park

Acton, MA 01720

Prepared By:

Washington Laboratories, Ltd.

7560 Lindbergh Drive

Gaithersburg, Maryland 20879

FCC & ISED Canada Certification Test Report

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DECEMBER 18, 2019

WLL REPORT# 16333-01 REV 2

Prepared by:

John P. Repella
Manager, EMC & Wireless Services

Reviewed by:

Michael F. Violette, P.E.
CEO

ABSTRACT

This report has been prepared on behalf of Insulet Corporation to support the attached Application for Equipment Authorization. The test report and application are submitted for a Digital Transmission System (DTS) Transmitter under Part 15.247 of the FCC Rules and Regulations and Spectrum Management and Telecommunications Policy and under RSS-247 of Innovation, Science and Economic Development Canada (ISED). This Certification Test Report documents the test configuration and test results for the Insulet Corporation Omnipod Dash.

Testing was performed on an Open Area Test Site (OATS) of Washington Laboratories, Ltd, 4840 Winchester Blvd. Frederick, MD 21703. Site description and site attenuation data have been placed on file with the FCC's Sampling and Measurements Branch at the FCC laboratory in Columbia, MD. The ISED Canada OATS numbers are 3035A for Washington Laboratories, Ltd. Washington Laboratories, Ltd. has been accepted by the FCC and approved by ANAB under Certificate AT-1448 as an independent FCC test laboratory.

The Insulet Corporation Omnipod Dash complies with the limits for a Digital Transmission System (DTS) Transmitter device under FCC Part 15.247 and Innovation, Science and Economic Development Canada (ISED) RSS-247.

Revision History	Description of Change	Date
Rev 0	Initial Release	December 18, 2019
Rev 1	Respond to ACB Comments	January 21, 2020
Rev 2	Edited per comments from ACB	April 14, 2020

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1 INTRODUCTION

1.1 COMPLIANCE STATEMENT

The Insulet Corporation Omnipod Dash complies with the limits for a Digital Transmission System (DTS) Transmitter device under FCC Part 15.247 and ISED Canada RSS-247.

1.2 TEST SCOPE

Tests for radiated and conducted (at antenna terminal) emissions were performed. All measurements were performed in accordance with C63.10 "ANSI Procedures for Compliance Testing of Unlicensed Wireless Devices". The measurement equipment conforms to ANSI C63.2 Specifications for Electromagnetic Noise and Field Strength Instrumentation.

1.3 CONTRACT INFORMATION

Customer:	Chromerics
Address	100 Nagog Park
	Acton, MA 01720
Purchase Order Number:	65709
Quotation Number:	71516

1.4 TEST DATES

Testing was performed on the following date(s): 12/04/2019 – 12/06/2019, 12/13/2019

1.5 TEST AND SUPPORT PERSONNEL

Washington Laboratories, LTD	John P. Repella
Customer Representative	Patty Terilli for Insulet Corporation

2 EQUIPMENT UNDER TEST

2.1 EUT IDENTIFICATION & DESCRIPTION

Table 1: Device Summary

Item	SAW-ASIC-POD
Manufacturer:	Insulet Corporation
FCC ID:	RBV-SAW
ISED ID:	8446A-SAW
Model:	Omnipod Dash
PMN:	Omnipod Dash
HVN:	POD
Serial Number of Unit Tested	(0000037, 0000262, 0000176) for TX conducted, 0000125 for RX conducted, (0000170, 0000274, 0000174) for Radiated Spurious
FCC Rule Parts:	§15.247 Subpart C
ISED Rule Parts:	RSS-247 Issue 2
Frequency Range:	2402-2480
Maximum Output Power:	0.0019W (2.90dBm)
Modulation:	GFSK
Occupied Bandwidth (99%):	1.0555MHz
Occupied Bandwidth (6dB):	665.9 kHz
FCC Emission Designator:	666KG1D
ISED Emissions Designators:	666KG1D
Keying:	Automatic, Manual
Type of Information:	Proprietary
Number of Channels:	40
Power Output Level	Fixed
Highest TX Spurious Emission:	212.4 uV/m@ 120001.00MHz
Highest RX Spurious Emission:	None
Antenna Connector	None

Antenna Type	PCB Loop Trace
Power Source & Voltage:	4.5V Internal Battery

The Insulet Corporation Omnipod Dash is an insulin management system which delivers an insulin dose at a programed time and dose rate.

2.2 TEST CONFIGURATION

The Omnipod Dash was configured for test in two setups:

For antenna port conducted emissions, the output of the EUT was connected to a spectrum analyzer via a short length of cable and corrected for any cable/attenuator losses.

For radiated emissions, the EUT was placed on an 80cm/150cm high table on an OATS. The output from the measurement antenna was connected, via a preamplifier, to the input of the spectrum analyzer. The appropriate corrections were accounted for in the measurement system.

2.3 TESTING ALGORITHM

The SAW-ASIC Omnipod was tested was programmed for operation by the manufacturer for each test case (21 samples total). Worst cast emission levels are provided in the test results data both in a bench conducted and radiated manner.

2.4 TEST LOCATION

All measurements herein were performed at Washington Laboratories, Ltd. test center in Frederick, MD. Site description and site attenuation data have been placed on file with the FCC's Sampling and Measurements Branch at the FCC laboratory in Columbia, MD. The ISED Canada number is 3035A for Washington Laboratories, Ltd. Washington Laboratories, Ltd. has been accepted by the FCC and approved by ANAB under Testing Certificate AT-1448 as an independent FCC test laboratory.

2.5 MEASUREMENTS

2.5.1 References

ANSI C63.2 (Jan-2016) Specifications for Electromagnetic Noise and Field Strength Instrumentation

ANSI C63.4 (Jan 2014) American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

ANSI C63.10 (Jun 2013) American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

2.6 MEASUREMENT UNCERTAINTY

All results reported herein relate only to the equipment tested. The basis for uncertainty calculation uses ANSI/NCSL Z540-2-1997 (R2002) with a type B evaluation of the standard uncertainty. Elements contributing to the standard uncertainty are combined using the method described in Equation 1 to arrive at the total standard uncertainty. The standard uncertainty is multiplied by the coverage factor to determine the expanded uncertainty which is generally accepted for use in commercial, industrial, and regulatory applications and when health and safety are concerned (see Equation 2). A coverage factor was selected to yield a 95% confidence in the uncertainty estimation.

Equation 1: Standard Uncertainty

$$u_c = \pm\sqrt{\frac{a^2}{div_a{}^2} + \frac{b^2}{div_b{}^2} + \frac{c^2}{div_c{}^2} + ...}$$

Where u_c = standard uncertainty

a, b, c,.. = individual uncertainty elements

$Div_{a, b, c}$ = the individual uncertainty element divisor based on the probability distribution

Divisor = 1.732 for rectangular distribution

Divisor = 2 for normal distribution

Divisor = 1.414 for trapezoid distribution

Equation 2: Expanded Uncertainty

$$U = ku_c$$

Where U = expanded uncertainty

k = coverage factor

$k \leq 2$ for 95% coverage (ANSI/NCSL Z540-2 Annex G)

u_c = standard uncertainty

The measurement uncertainty complies with the maximum allowed uncertainty from CISPR 16-4-2. Measurement uncertainty is not used to adjust the measurements to determine compliance. The expanded uncertainty values for the various scopes in the WLL accreditation are provided in Table 2 below.

Table 2: Expanded Uncertainty List

Scope	Standard(s)	Expanded Uncertainty
Conducted Emissions	CISPR11, CISPR22, CISPR32, CISPR14, FCC Part 15	±2.63 dB
Radiated Emissions	CISPR11, CISPR22, CISPR32, CISPR14, FCC Part 15	±4.55 dB

3 TEST EQUIPMENT

Table 3 shows a list of the test equipment used for measurements along with the calibration information.

Table 3: Test Equipment List

Test Name:	**Bench Conducted Emissions**	**Test Date:**	**12/06/2019**
Asset #	Manufacturer/Model	Description	Cal. Due
00582	Agilent/PSA E4446A	Spectrum Analyzer	12/21/2019
00823	Agilent/EXA 9010A	Spectrum Analyzer	02/07/2020
Test Name:	**Radiated Emissions**	**Test Date:**	**12/13/2019**
Asset #	Manufacturer/Model	Description	Cal. Due
00582	Agilent/PSA E4446A	Spectrum Analyzer	12/21/2019
00382	Sunol/JB1	Broadband Hybrid Antenna	03/21/2020
00004	ARA/DRG-118/A	Double Ridge Horn Antenna	12/14/2019
00558	HP/8447D	Pre-Amplifier	04/03/2020
00522	HP/8449b	Pre-Amplifier	04/04/2020
00849	AH Systems/ SAC-18G-16	Low Loss HF Coaxial Cable	01/20/2020

4 TEST RESULTS

The Table Below shows the results of testing for compliance with a Digital Transmission System in accordance with FCC Part 15.247 10/2014 and RSS-247 Issue 2. Full test results are shown in subsequent sub-sections.

Table 4: Test Summary Table

Digital Transmission System (DTS) TX Test Summary			
FCC Rule Part	**IC Rule Part**	**Description**	**Result**
15.247(a) (2)	RSS-247 [5.2 (1)]	6dB Bandwidth	Pass
15.247 (b)(3)	RSS-247 [5.4 (4)]	Transmit Output Power	Pass
15.247 (e)	RSS-247 [5.2 (2)]	Power Spectral Density	Pass
15.247 (d)	RSS-247 [5.5]	Out-of-Band Emissions (Band Edge @ 20dB below)	Pass
15.205 15.209	RSS-Gen [8.9/8.10]	General Field Strength Limits (Restricted Bands & RE Limits)	Pass
15.207	RSS-Gen [8.8]	AC Conducted Emissions	Not Applicable/ Battery Powered Device

4.1 OCCUPIED (DTS) BANDWIDTH

Occupied bandwidth was performed by monitoring the output of the EUT antenna port with a spectrum analyzer corrected for any cable/attenuator losses.

For Direct Sequence Spread Spectrum Systems, FCC Part 15.247 requires the minimum 6 dB bandwidth be at least 500 kHz.

4.1.1 Measurement Method:

Tests were performed as specified in ANSI C63.10 section 11.8 "DTS bandwidth" Option 1 (11.8.1).

Table 5: Occupied Bandwidth Spectrum Analyzer Settings

Resolution Bandwidth	Video Bandwidth
100kHz	300kHz

At full modulation, the occupied bandwidth was measured as shown in Figures 1-3.

Table 6 provides a summary of the Occupied Bandwidth Results.

Table 6: Occupied Bandwidth Results

Frequency	Bandwidth	Limit	Pass/Fail
Low Channel 2402MHz	676.583kHz	≥500kHz	Pass
Center Channel 2440MHz	675.985kHz	≥500kHz	Pass
High Channel 2480MHz	665.930kHz	≥500kHz	Pass

Figure 1: Occupied Bandwidth, Low Channel

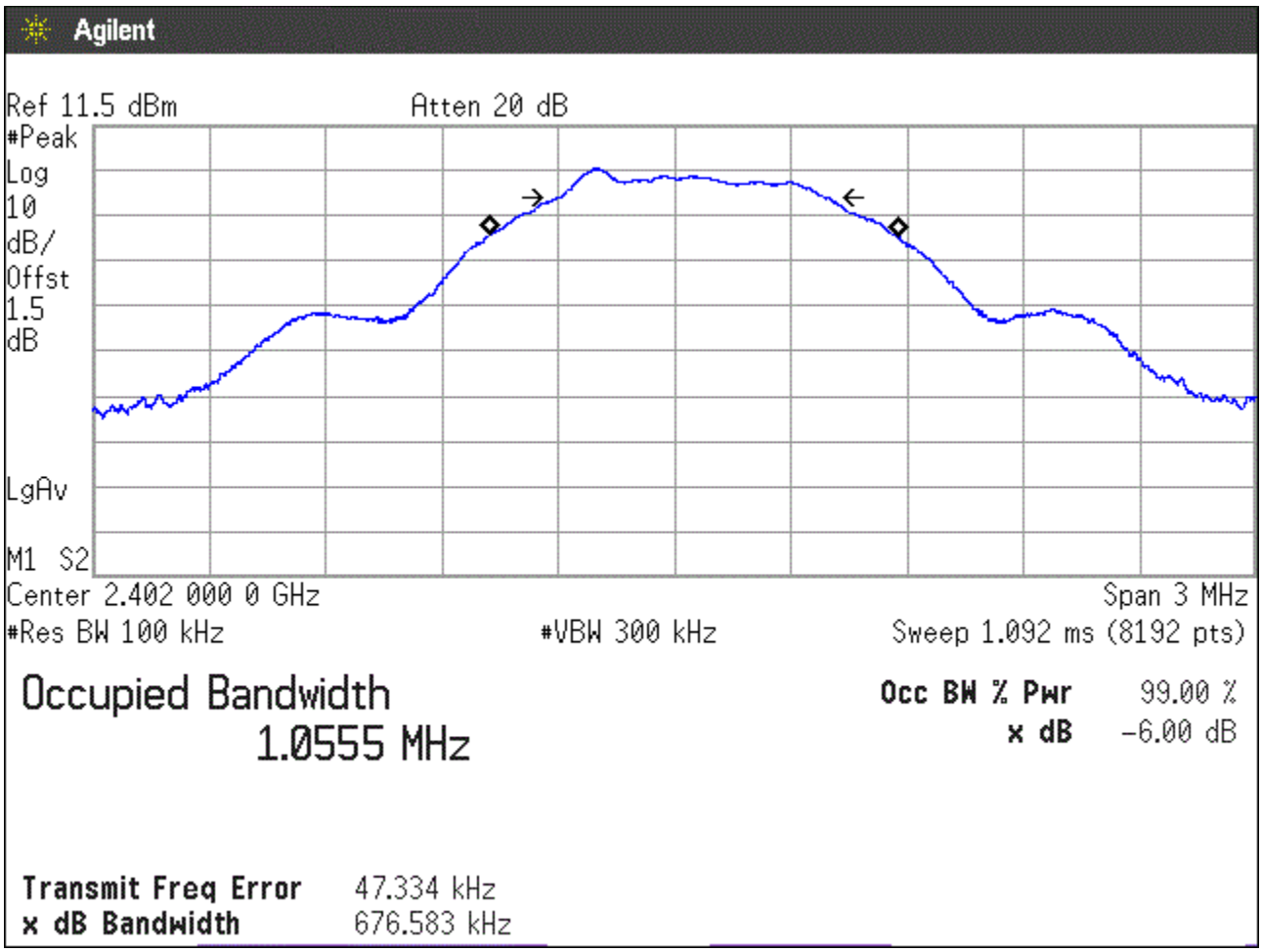


Figure 2: Occupied Bandwidth, Center Channel

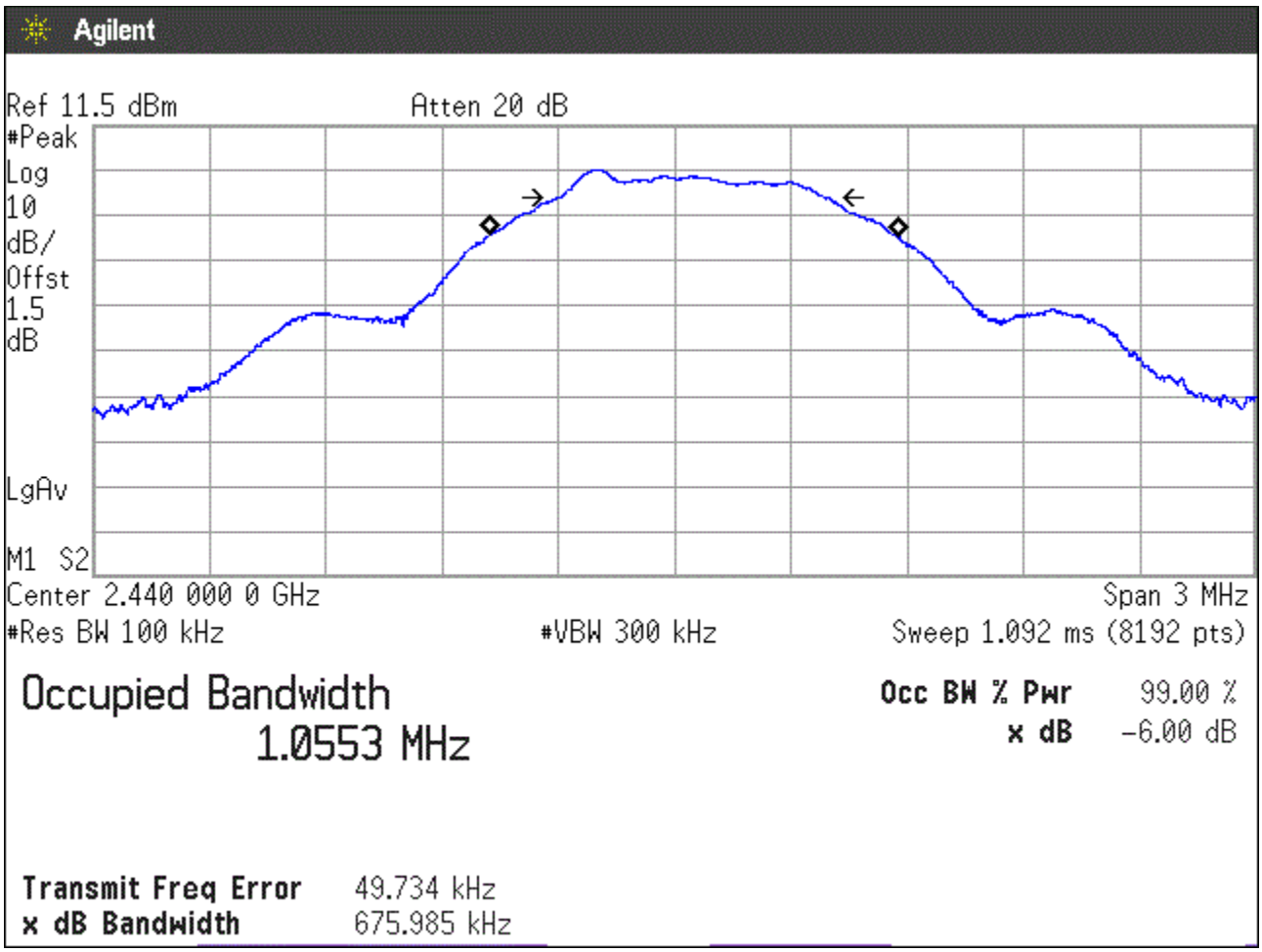
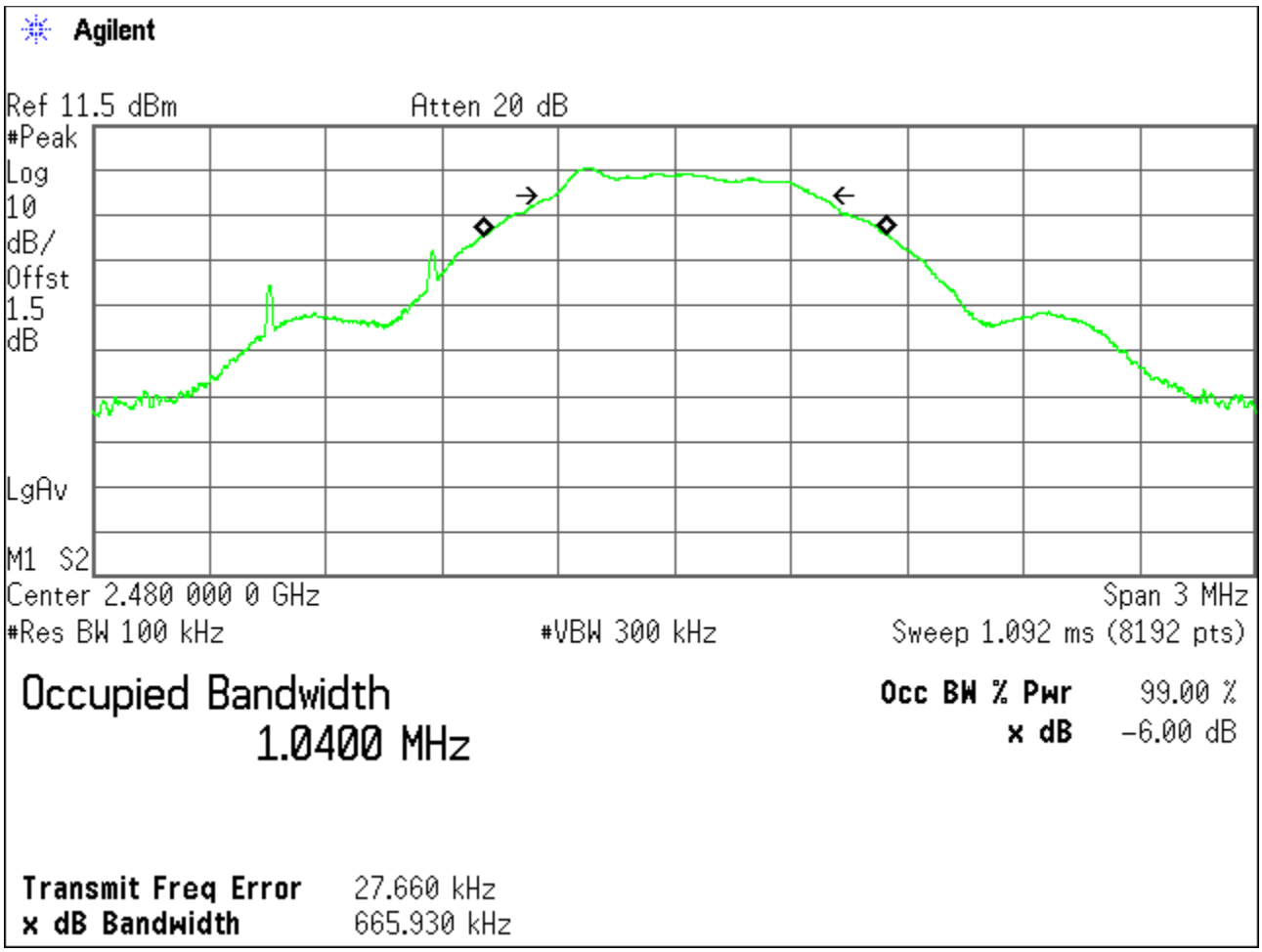


Figure 3: Occupied Bandwidth, High Channel



4.2 RF POWER OUTPUT:

To measure the output power the unit was set to dwell on the low, high and middle channel with a continuous 100% duty cycle. Testing was performed using the method from C63.10 section 11.9.1.1 "RBW ⩾ DTS bandwidth" at the antenna port as follows:

a) Set the RBW ⩾ DTS bandwidth.
b) Set VBW ⩾ [3 × RBW].
c) Set span ⩾ [3 × RBW].
d) Sweep time = auto couple.
e) Detector = peak.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use peak marker function to determine the peak amplitude level.

4.2.1 Measurement Method:

ANSI C63.10 section "11.9.1 Maximum peak conducted output power" subsection "11.9.1.1 RBW > DTS bandwidth"

Table 7: Spectrum Analyzer Settings

Resolution Bandwidth	Video Bandwidth
1MHz	3MHz

Table 8: RF Power Output Summary

Frequency	Level (dBm)	Limit (dBm)	Pass/Fail
Low Channel: 2402MHz	2.90dBm	30 dBm	Pass
Center Channel: 2440MHz	1.59dBm	30 dBm	Pass
High Channel: 2480MHz	1.98dBm	30 dBm	Pass

Figure 4: RF Peak Power, Low Channel

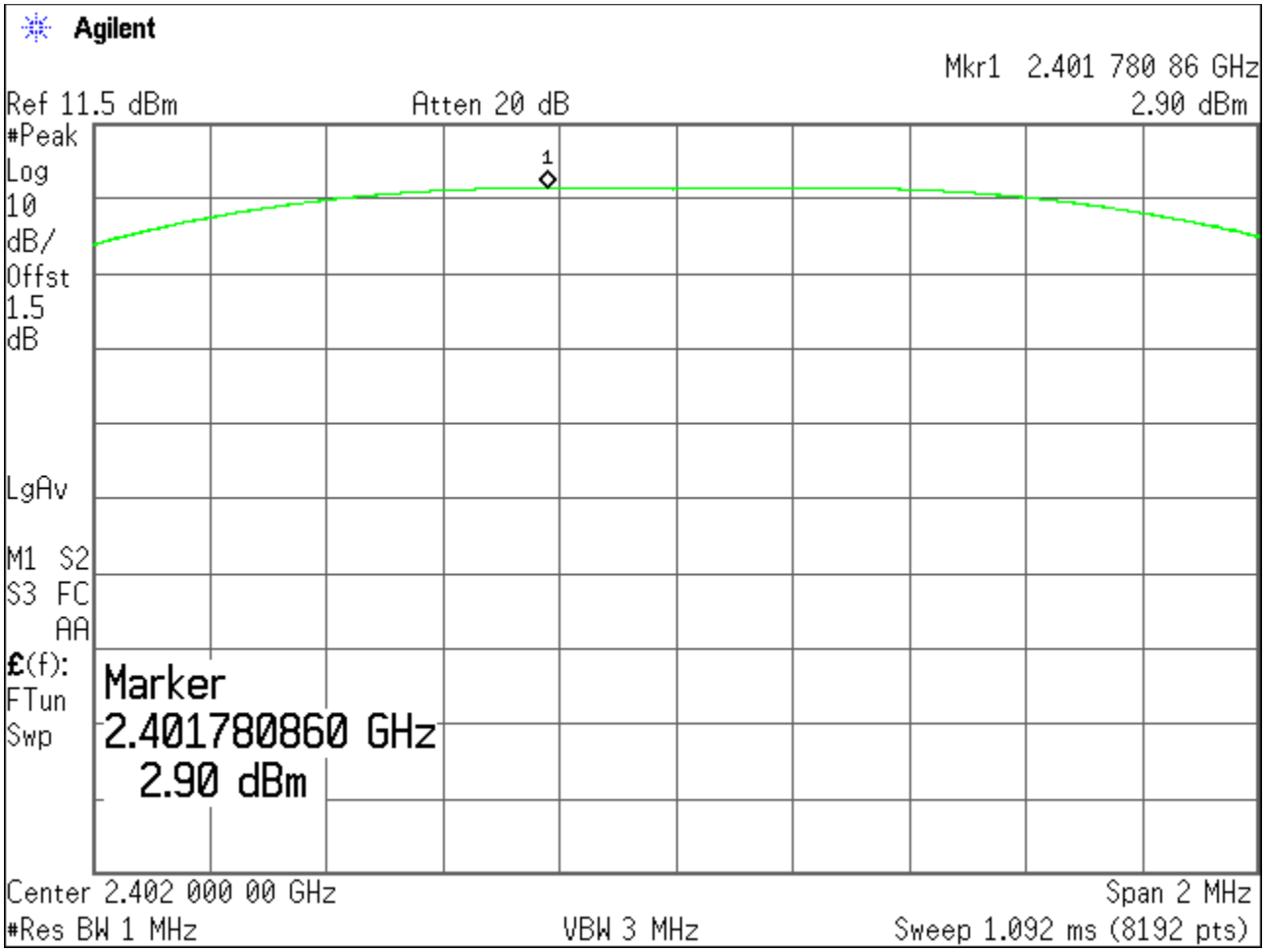


Figure 5: RF Peak Power, Mid Channel

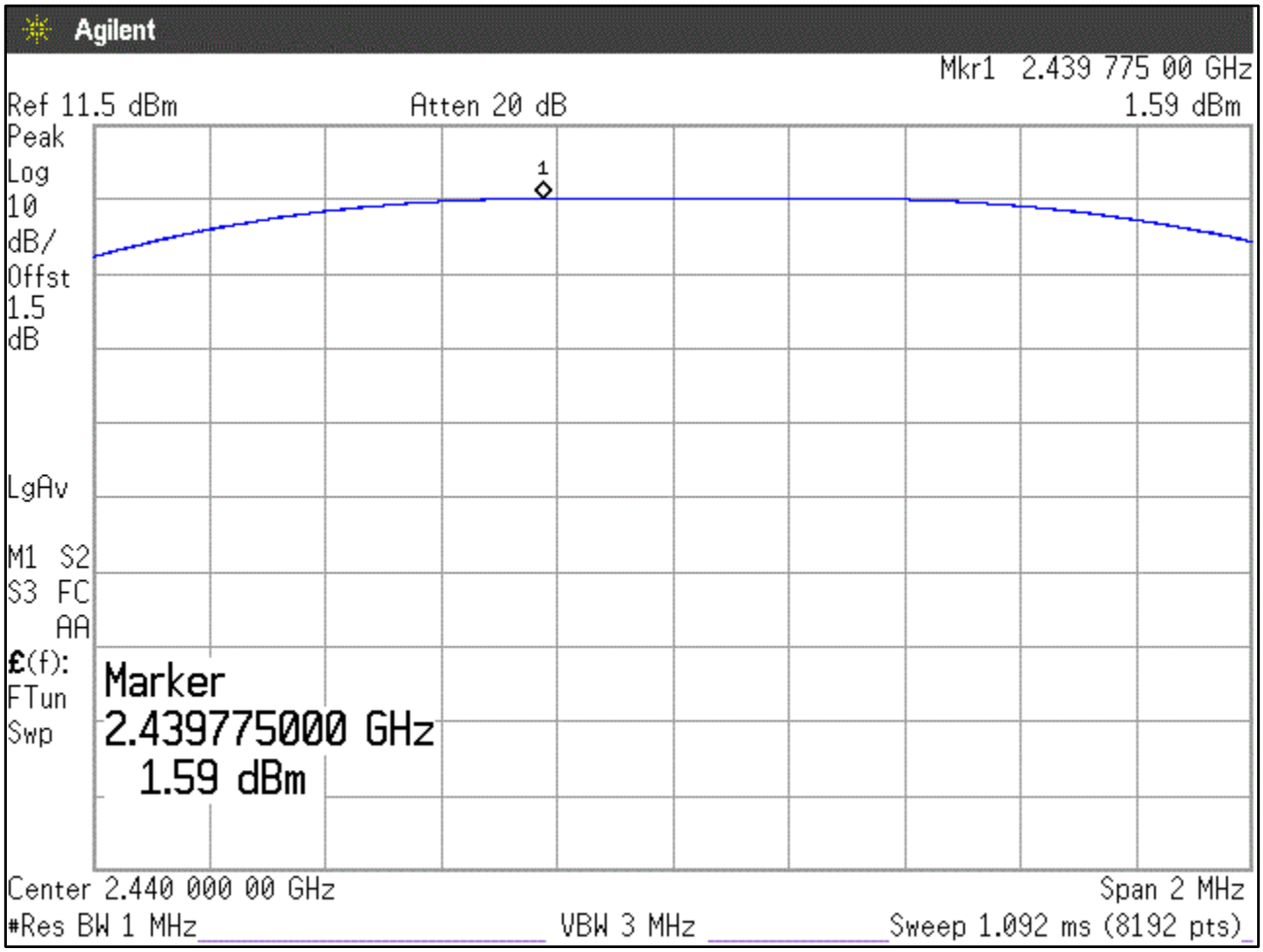
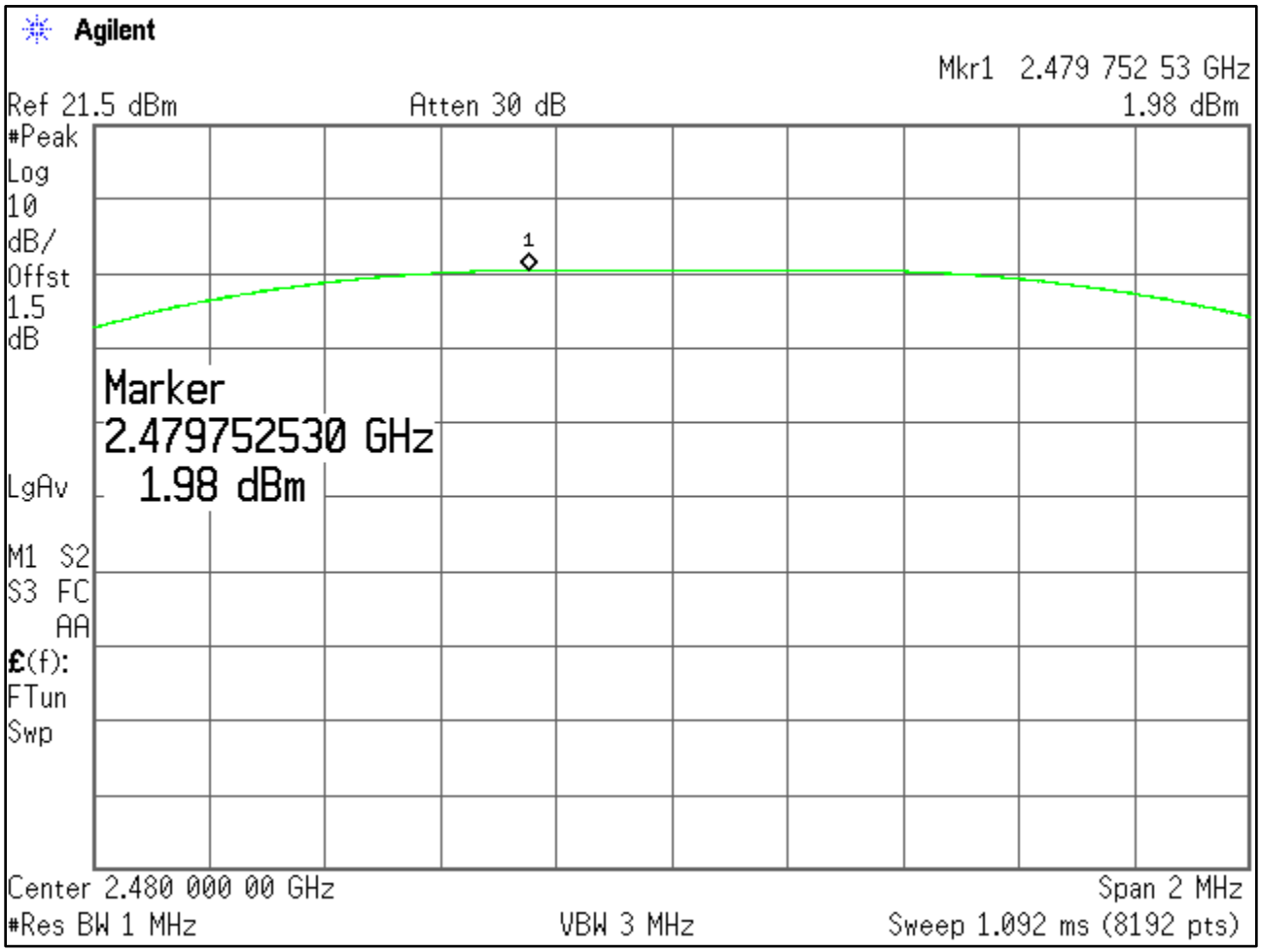


Figure 6: RF Peak Power, High Channel



4.3 POWER SPECTRAL DENSITY

Measurements for power spectral density were taken at the antenna port in accordance with ANSI C63.10. The spectrum analyzer was set to peak detect mode with a RBW of 3kHz ,VBW of 300kHz across a span 1.5X the DTS bandwidth using an auto sweep time.

4.3.1 Measurement Method:

ANSI C63.10 SECTION 11.10 "Maximum power spectral density level in the fundamental emission subsection 11.10.2 "Method PKPSD (peak PSD)"

The highest level detected across any 3 kHz band for continuous transmission was then recorded and compared to the limit 8dBm. The following table and plots give the results for power spectral density testing.

Table 9: Power Spectral Density

Frequency	Peak Level (dBm)	Limit (dBm)	Pass/Fail
Low Channel: 2402MHz	-12.31	8	Pass
Center Channel: 2440MHz	-13.72	8	Pass
High Channel: 2480MHz	-12.97	8	Pass

Figure 7: Power Spectral Density, Low Channel

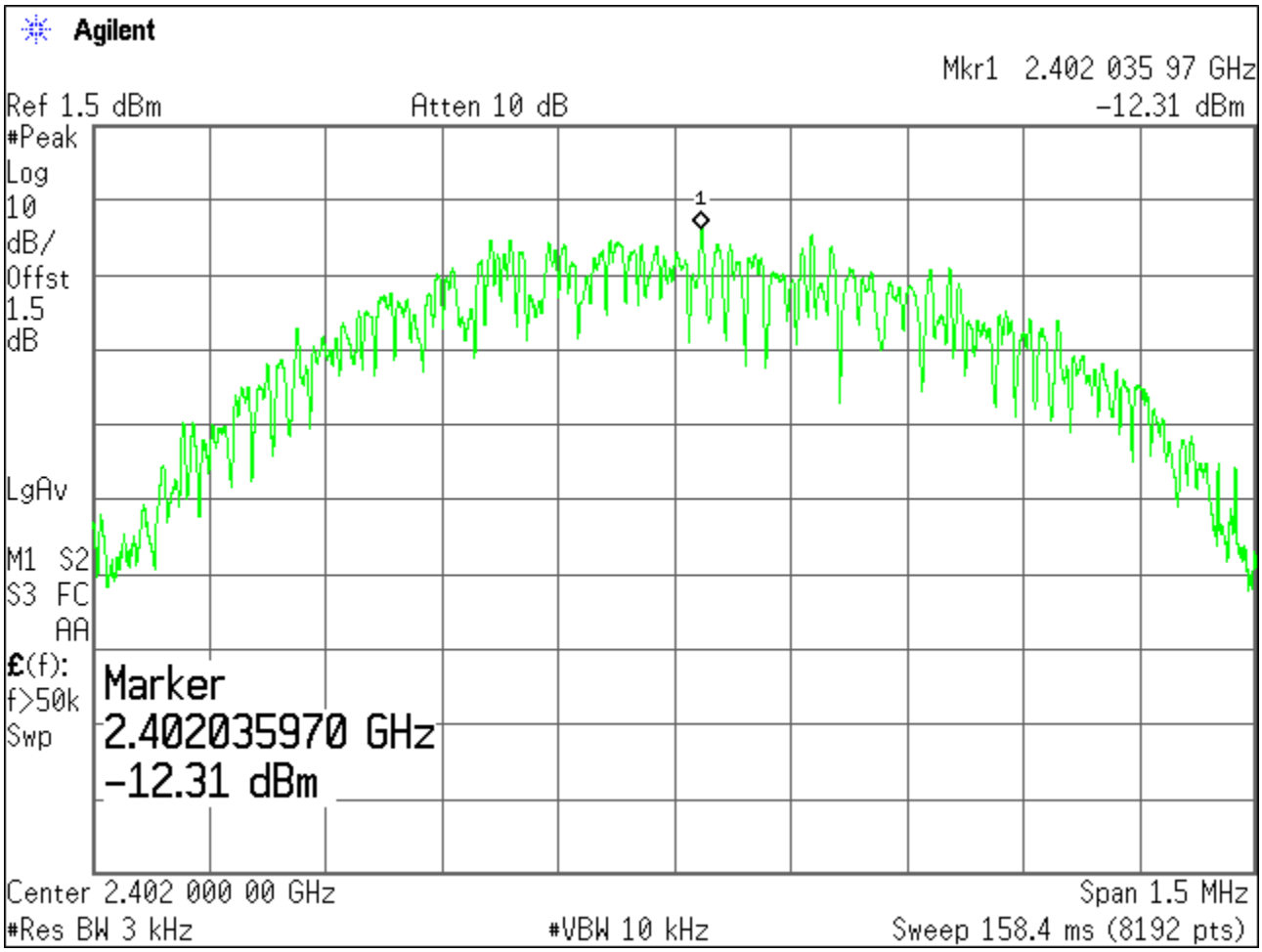


Figure 8: Power Spectral Density, Mid Channel

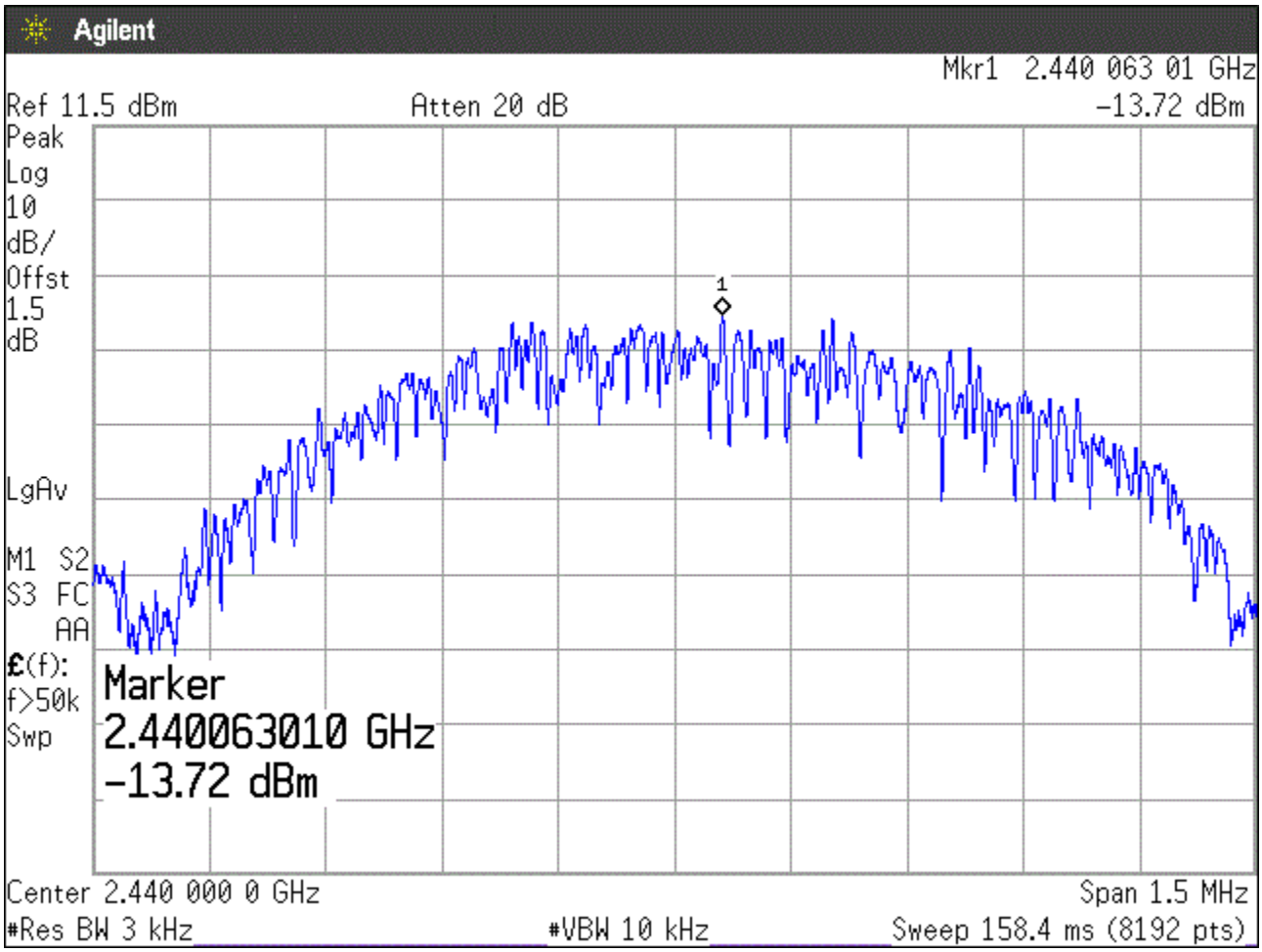
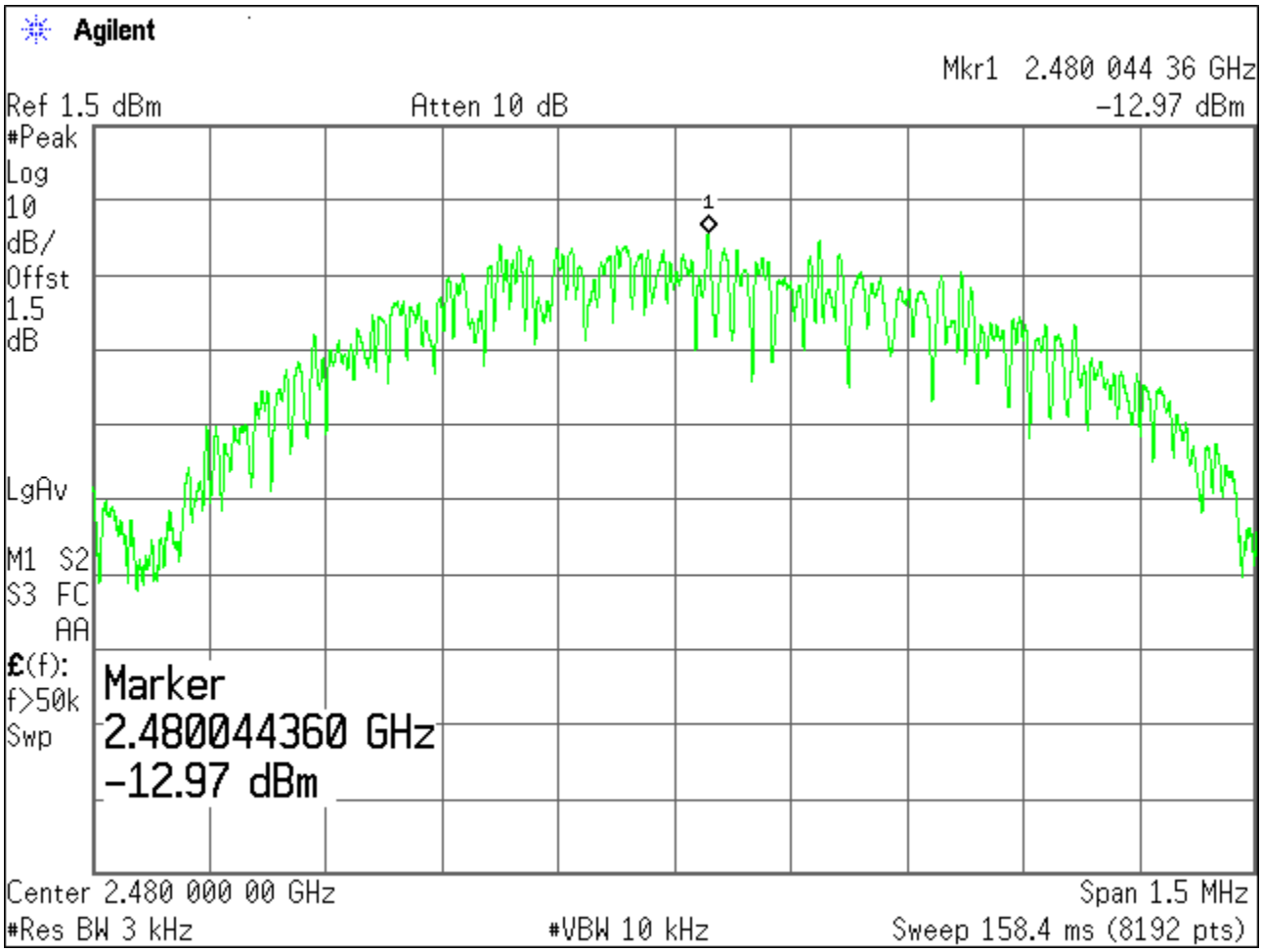


Figure 9: Power Spectral Density, High Channel



4.4 CONDUCTED SPURIOUS EMISSIONS COMPLIANCE

The EUT must comply with requirements for spurious emissions. Per §15.247(d) all spurious emissions in any 100 kHz bandwidth outside the frequency band in which the spread spectrum device is operating shall be attenuated 20 dB below the highest power level in a 100 kHz bandwidth within the band containing the highest level of the desired power.

Per ANSI C63.10 section 11.11 "Emissions in non-restricted frequency bands" this test may be performed in an antenna port conducted manner. The spectrum analyzer resolution bandwidth was set to 100 kHz and the video bandwidth was set to 300 kHz. The amplitude of the EUT carrier frequency was measured to determine the emissions limit (20 dB below the carrier frequency amplitude). The emissions outside of the allocated frequency band were then scanned from 30 MHz up to the tenth harmonic of the carrier.

As per ANSI C63.10 section 11.11.2 the lowest channel has the highest peak in a 100 kHz bandwidth and the limit for all channels was based on this level.

The following table shows the spurious emissions data.

4.4.1 Test Summary

The EUT complied with the requirements for spurious emissions at the antenna port.

Figure 10: Low Channel Conducted Spurious Plot 1

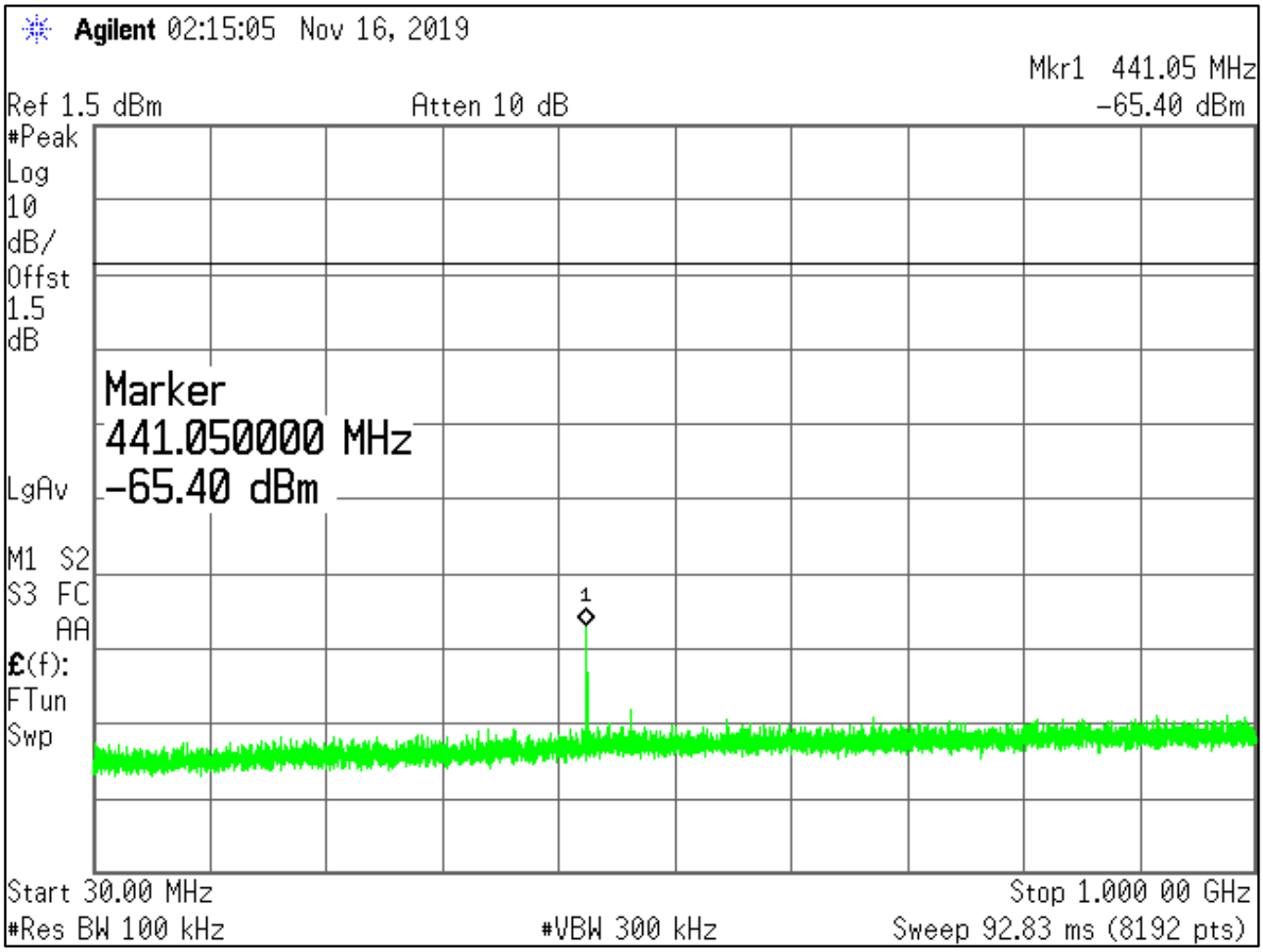


Figure 11: Low Channel Conducted Spurious Plot 2

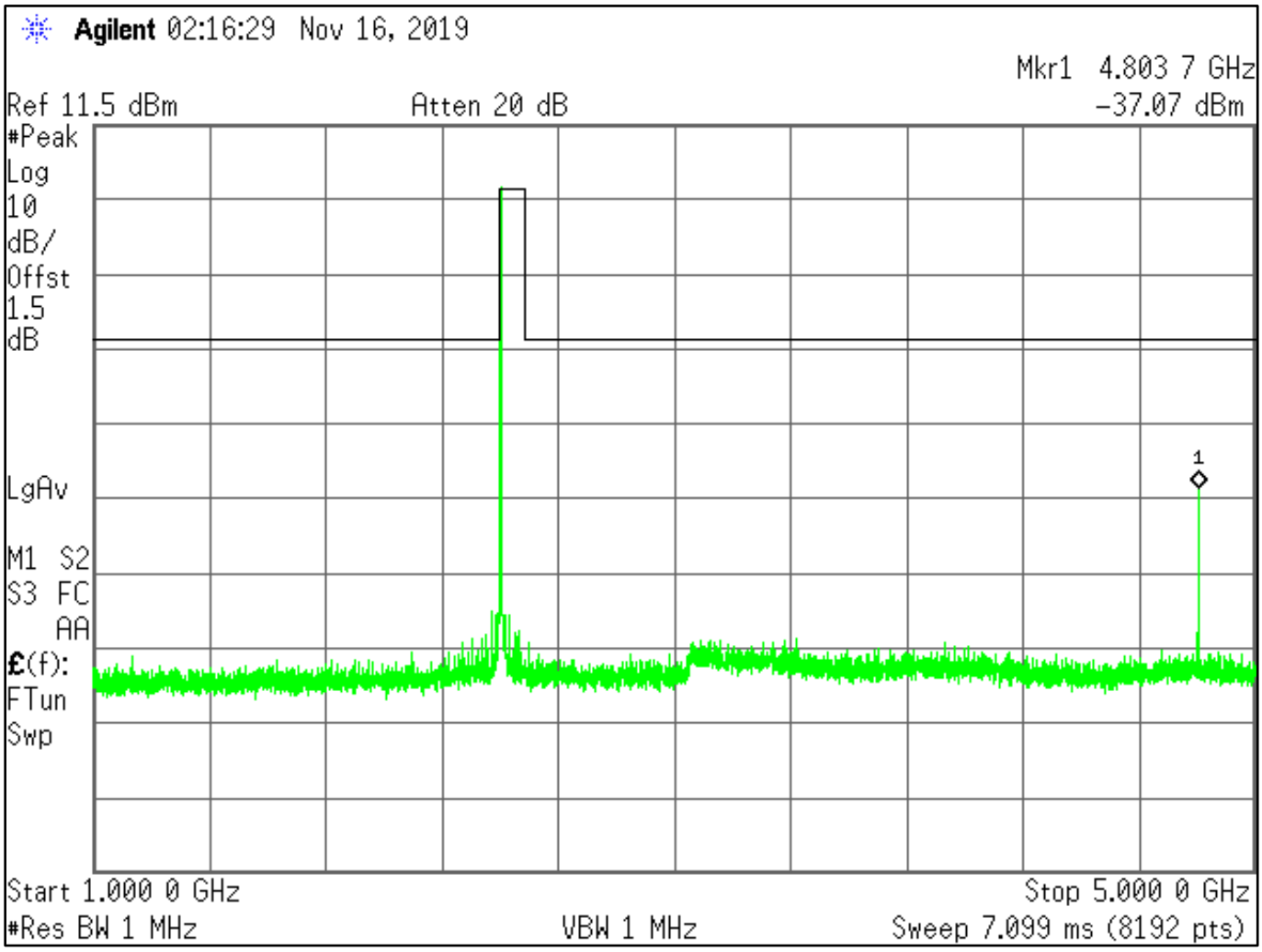


Figure 12: Low Channel Conducted Spurious Plot 3

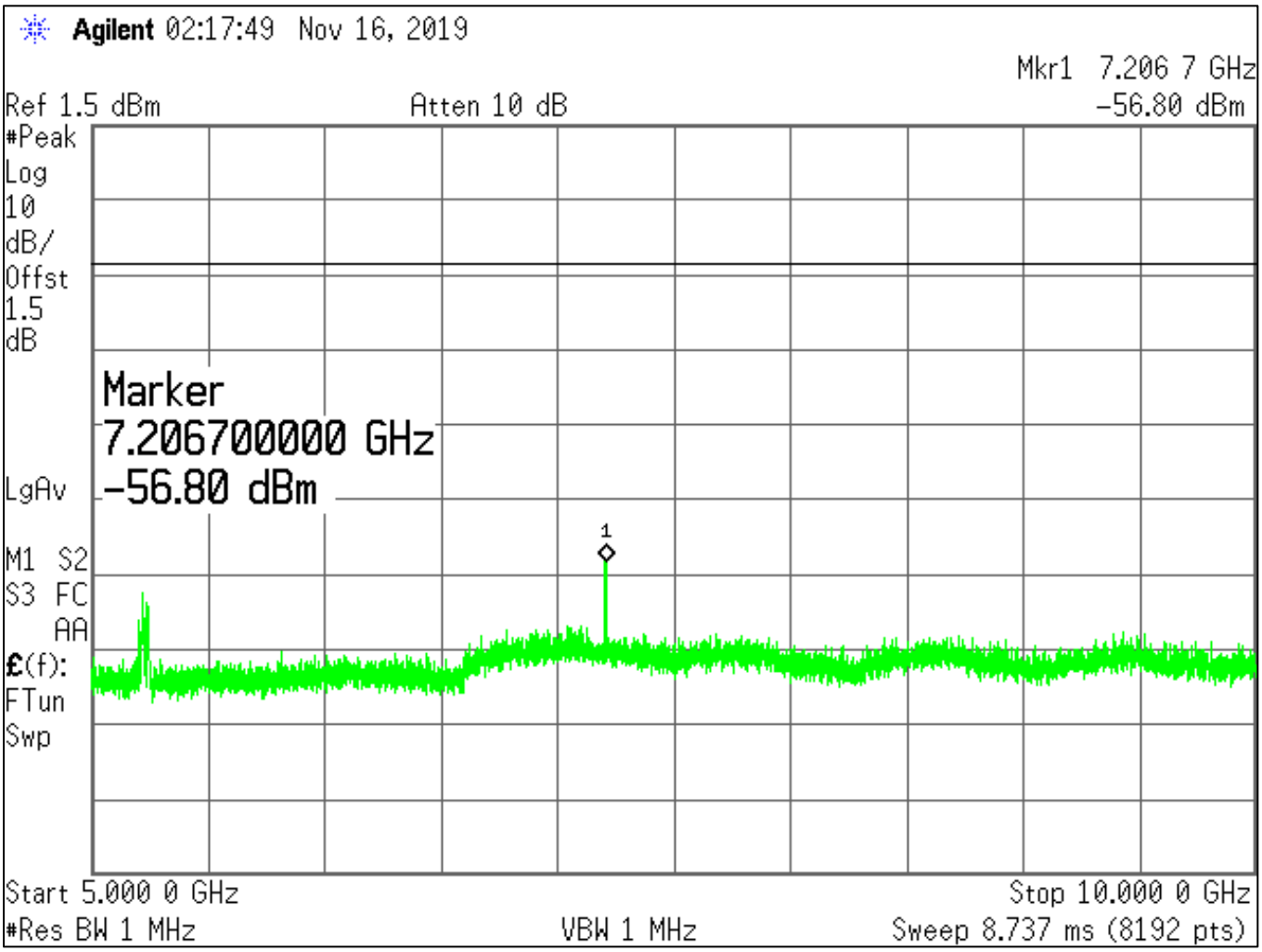


Figure 13: Low Channel Conducted Spurious Plot 4

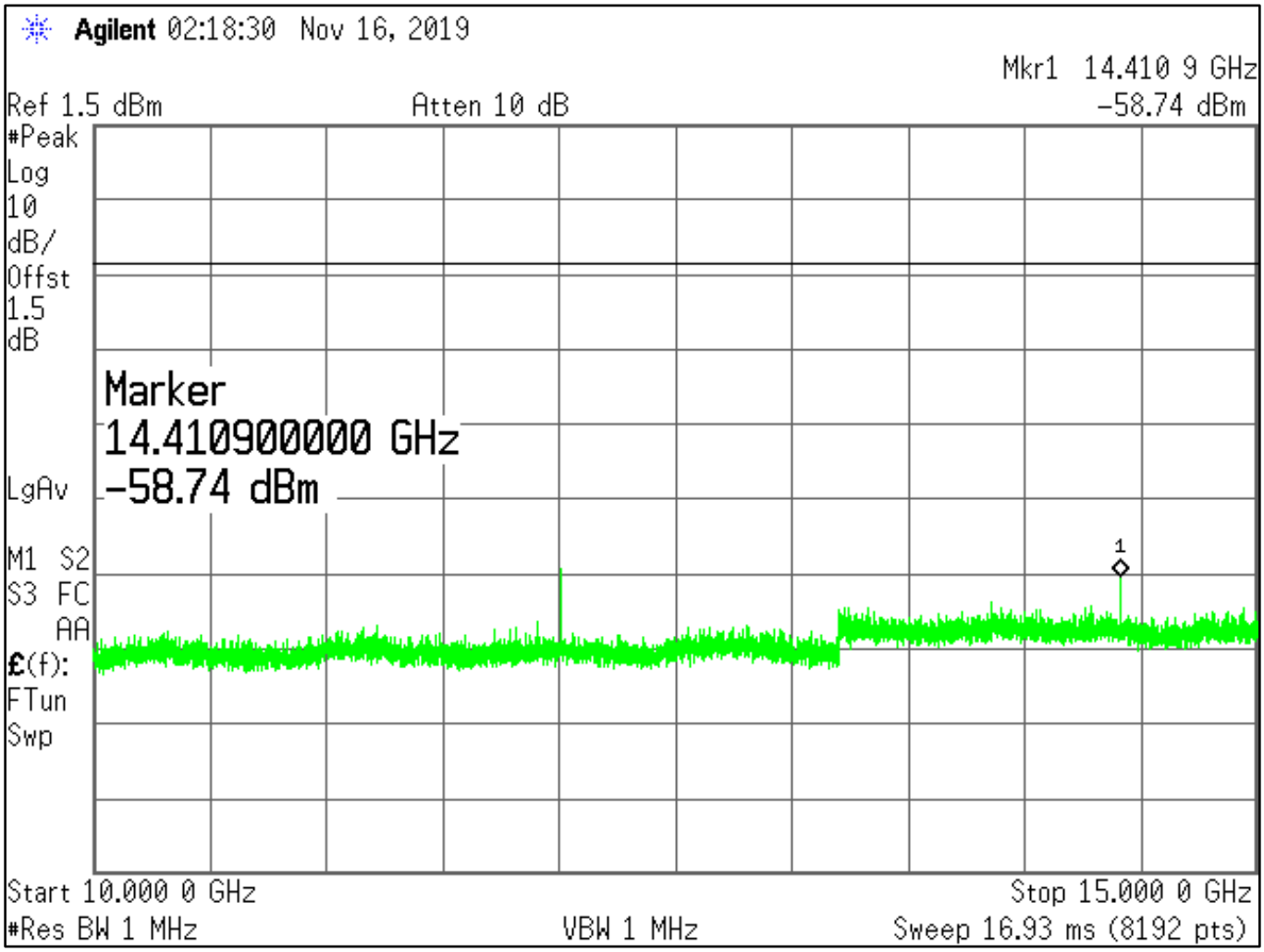


Figure 14: Low Channel Conducted Spurious Plot 5

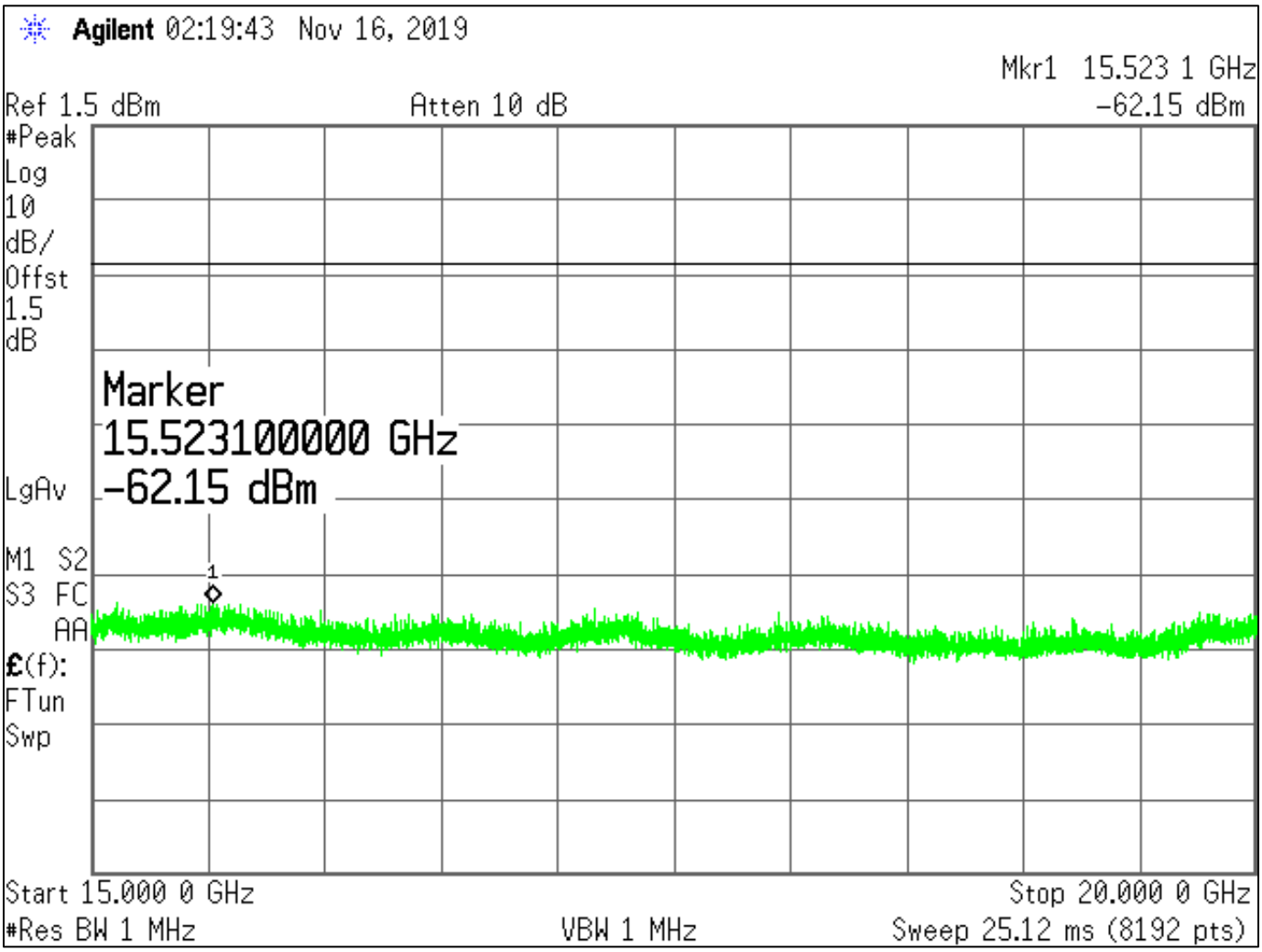


Figure 15: Low Channel Conducted Spurious Plot 6

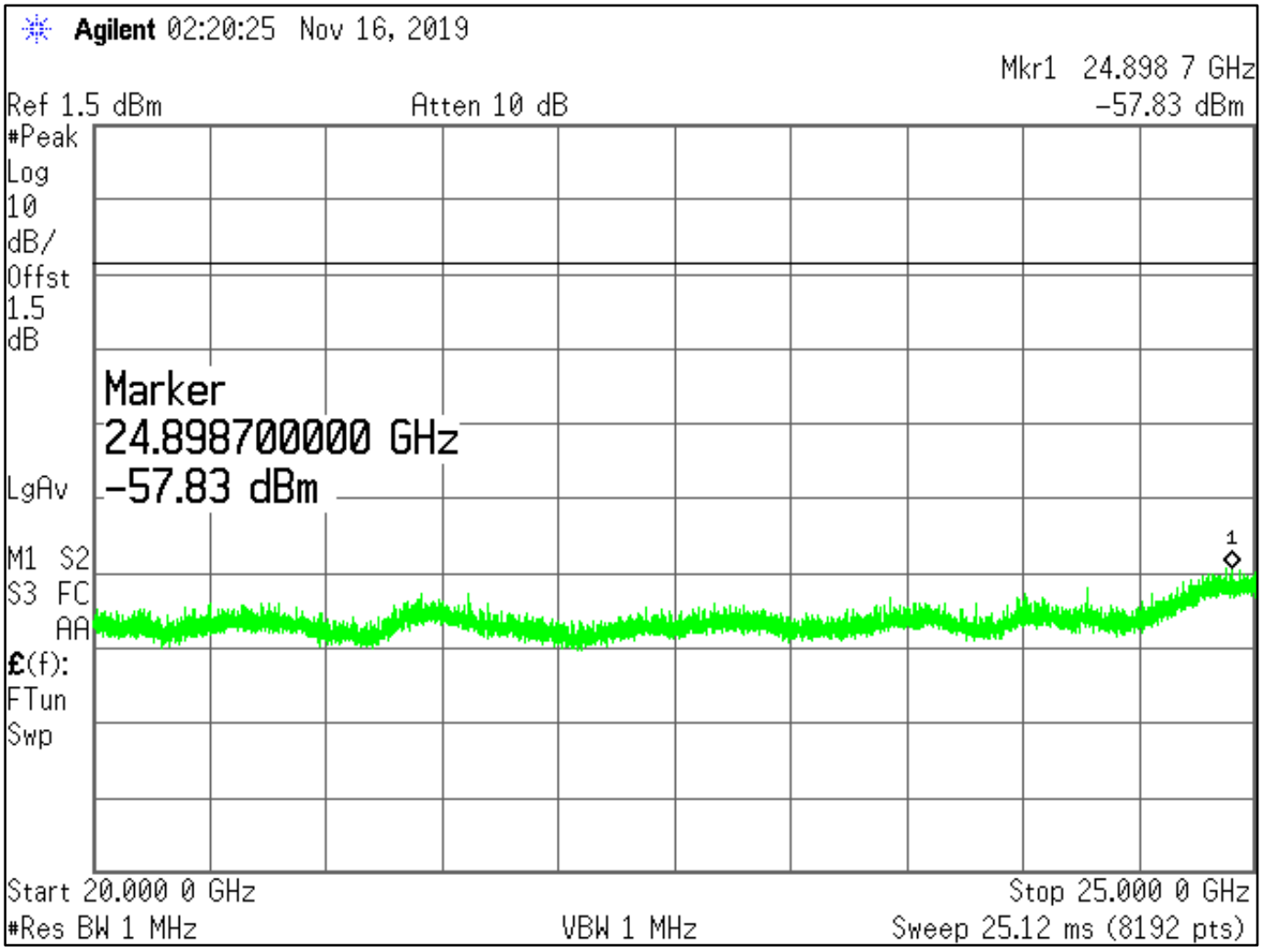


Figure 16: Low Channel, Band Edge Compliance

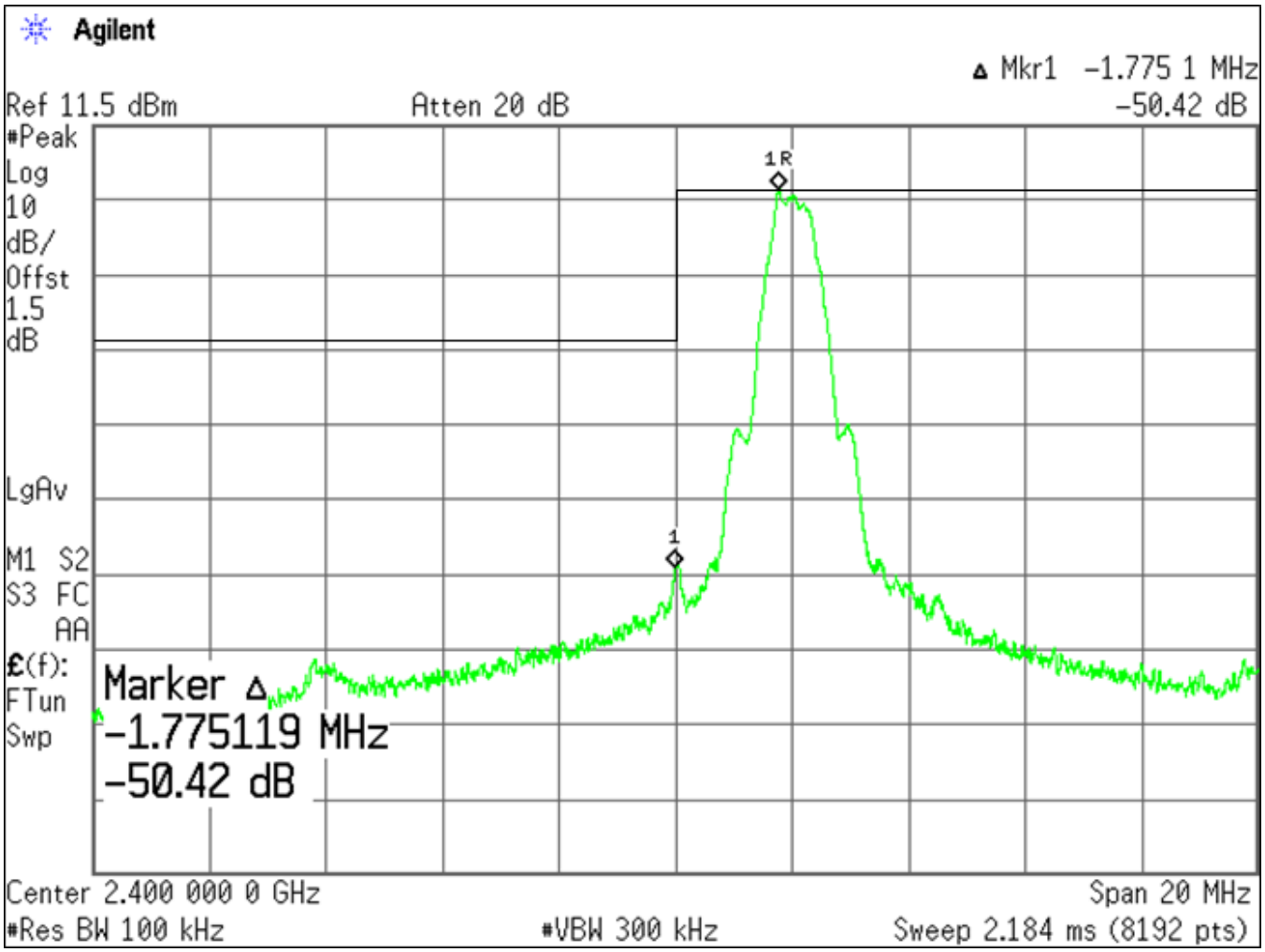


Figure 17: Center Channel Conducted Spurious Plot 1

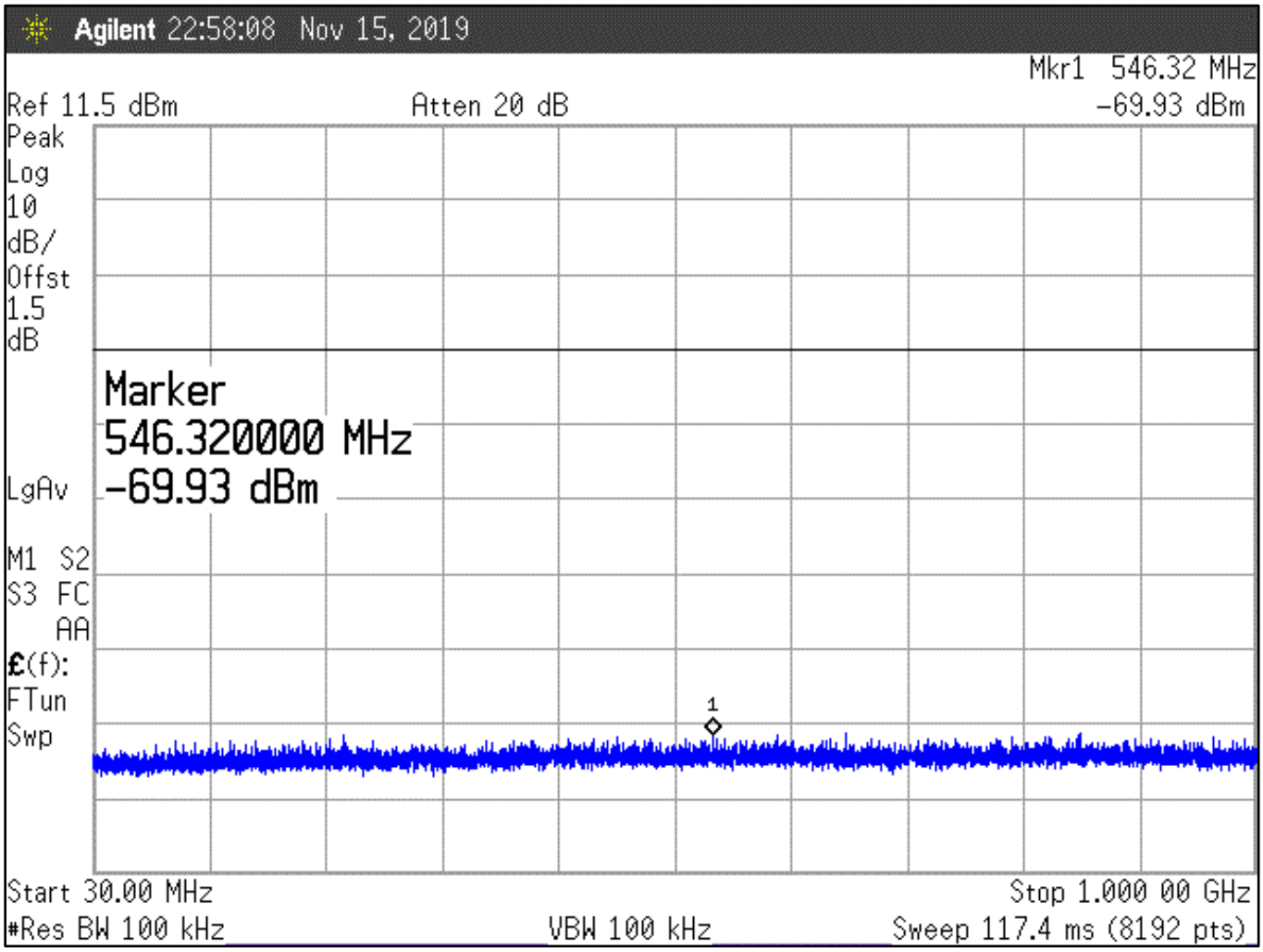

Agilent 22:58:08 Nov 15, 2019
Mkr1 546.32 MHz
Ref 11.5 dBm
Atten 20 dB
-69.93 dBm
Peak
Log
10
dB/
Offst
1.5
dB
Marker
546.320000 MHz
-69.93 dBm
LgAv
M1 S2
S3 FC
AA
£(f):
FTun
Swp
1
Start 30.00 MHz
Stop 1.000 00 GHz
#Res BW 100 kHz
VBW 100 kHz
Sweep 117.4 ms (8192 pts)

Figure 18: Center Channel Conducted Spurious Plot 2

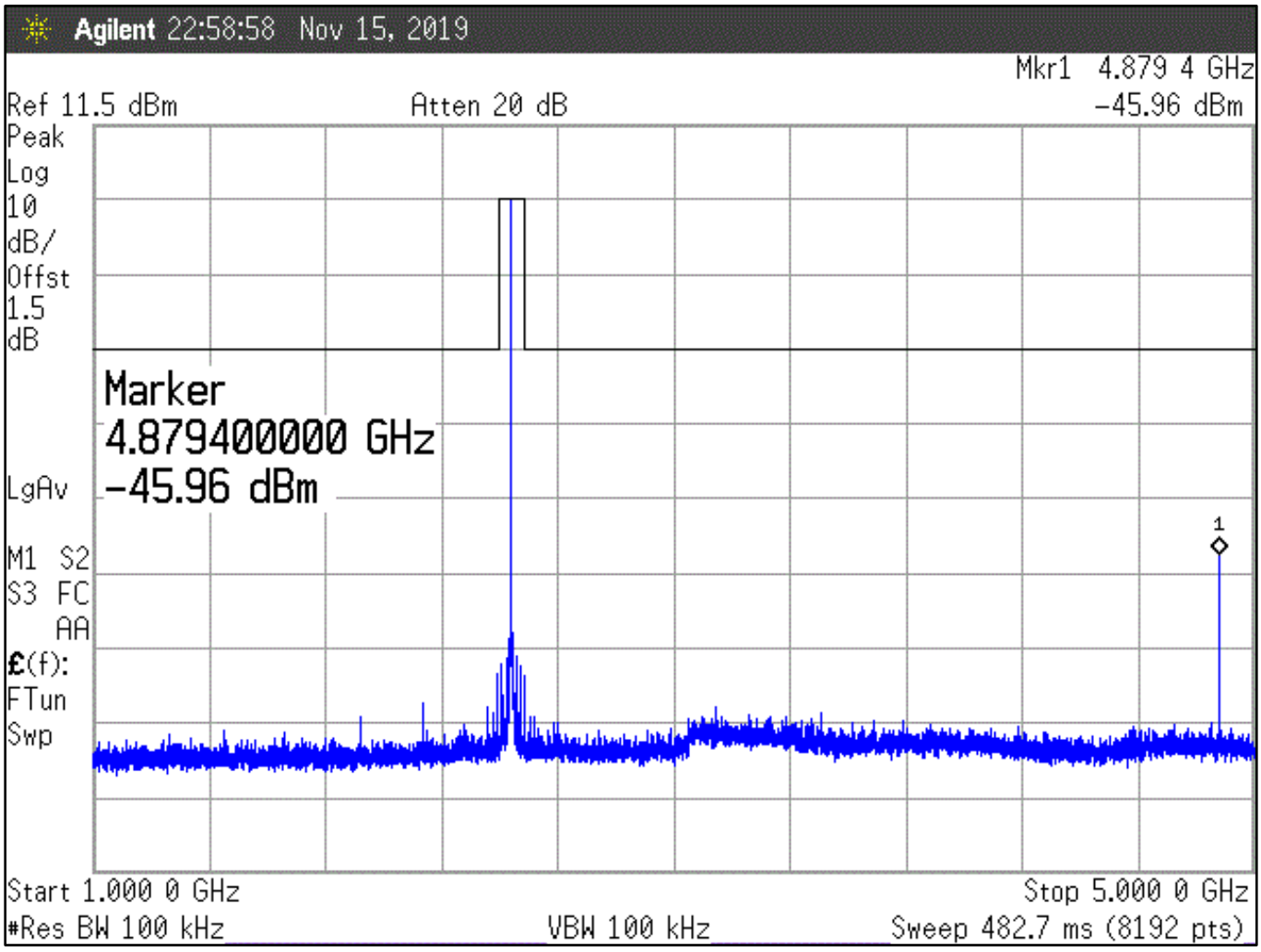


Figure 19: Center Channel Conducted Spurious Plot 3

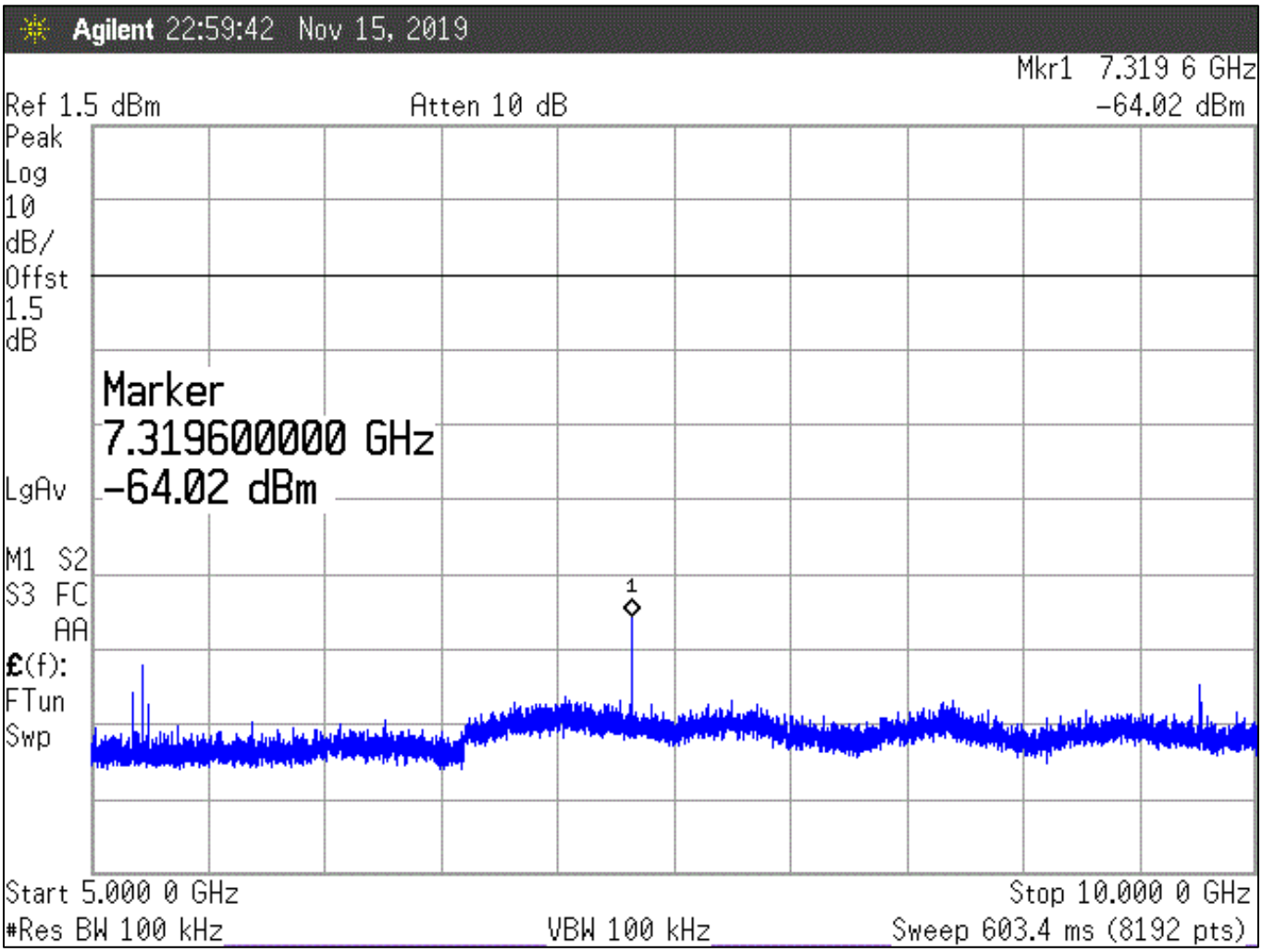


Figure 20: Center Channel Conducted Spurious Plot 4

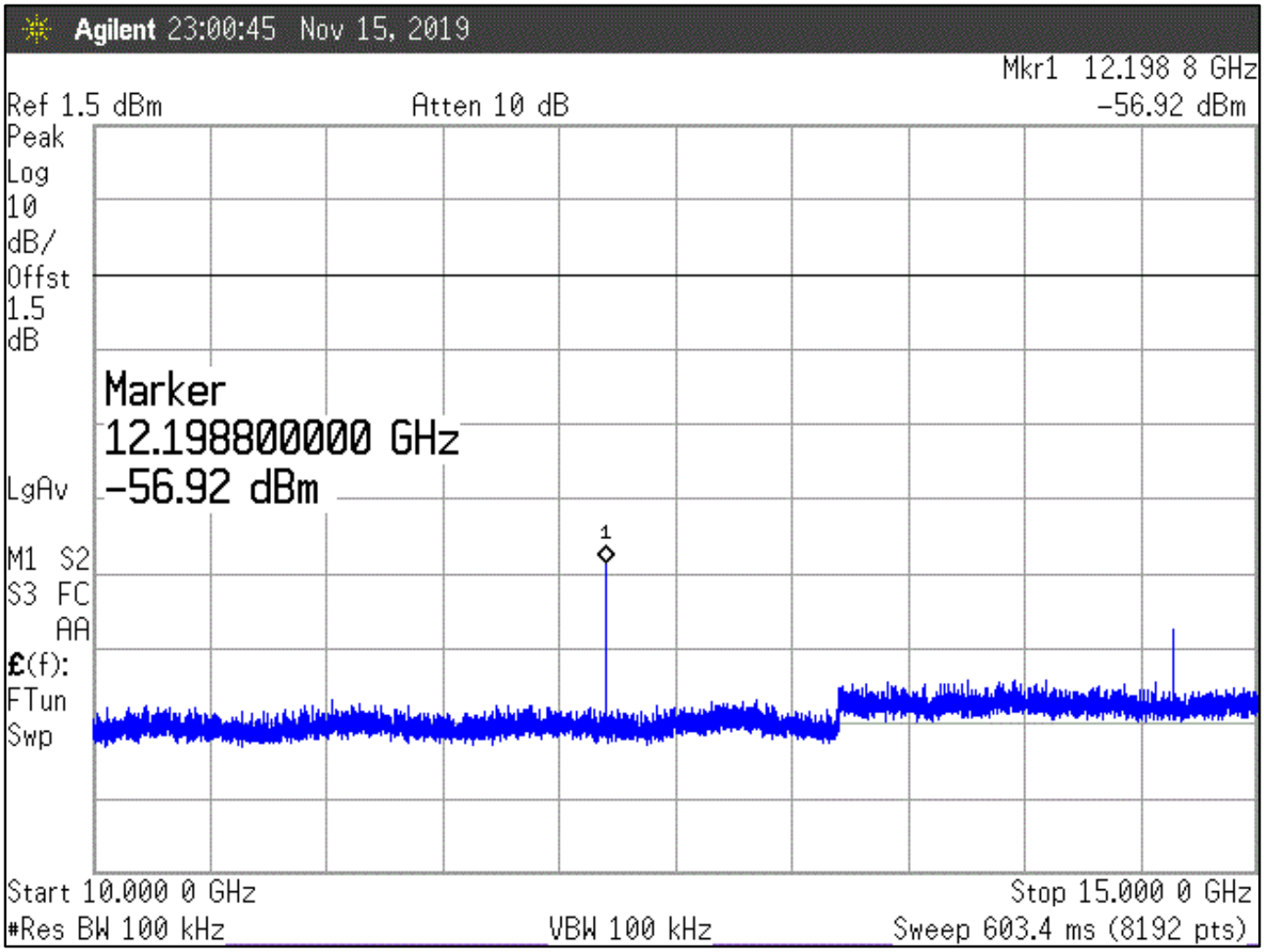


Figure 21: Center Channel Conducted Spurious Plot 5

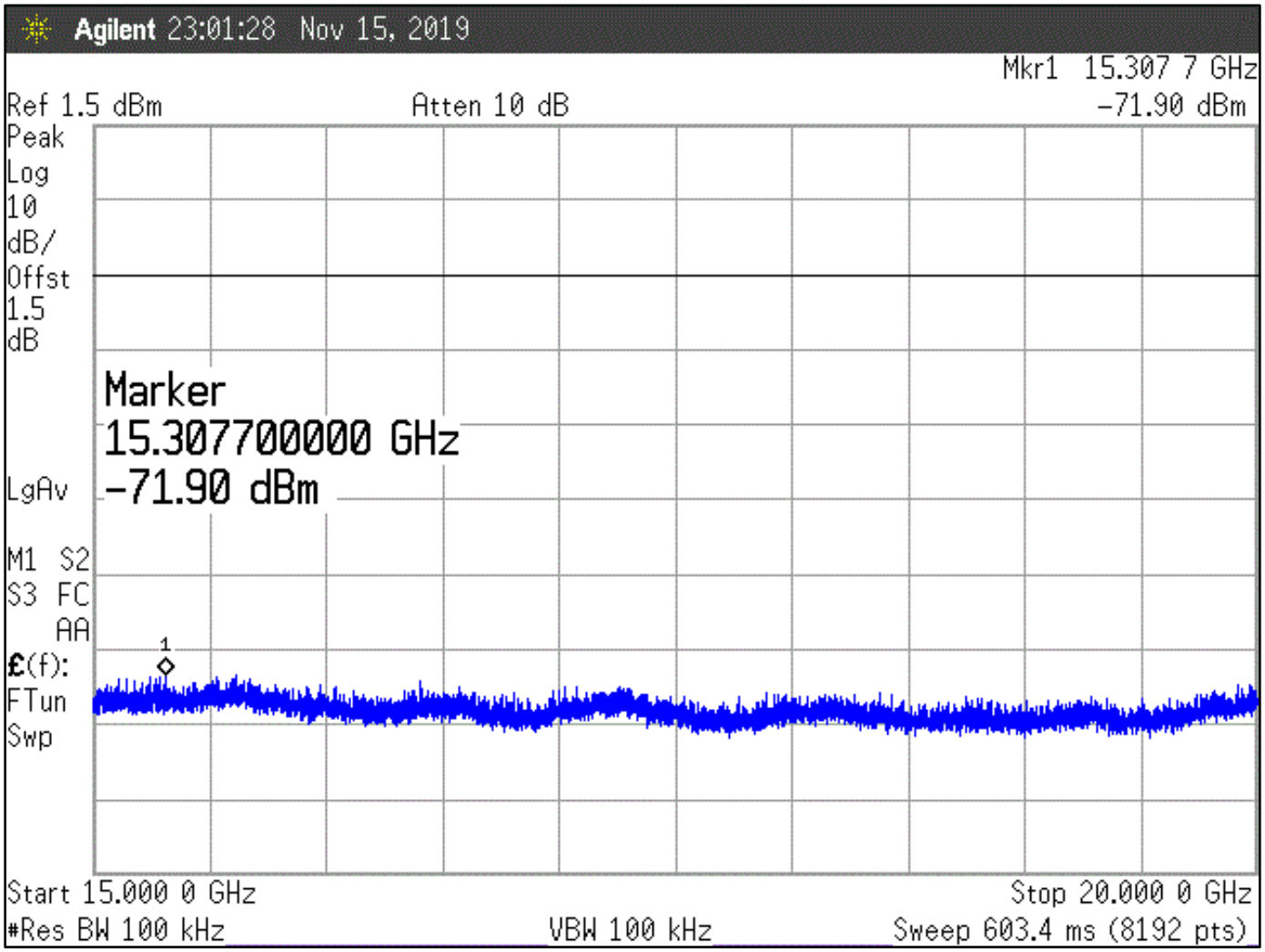


Figure 22: Center Channel Conducted Spurious Plot 6

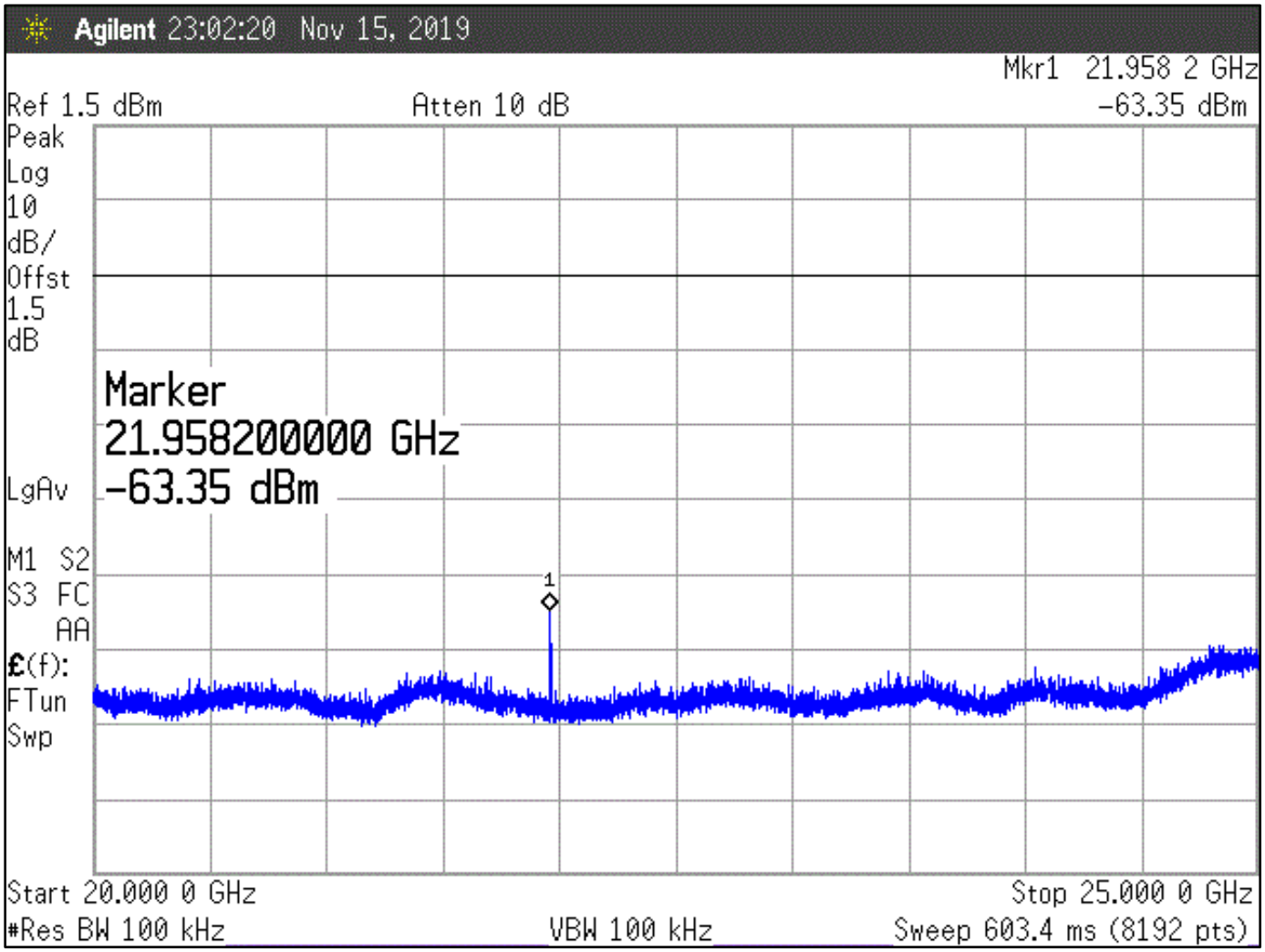


Figure 23: High Channel Conducted Spurious Plot 1

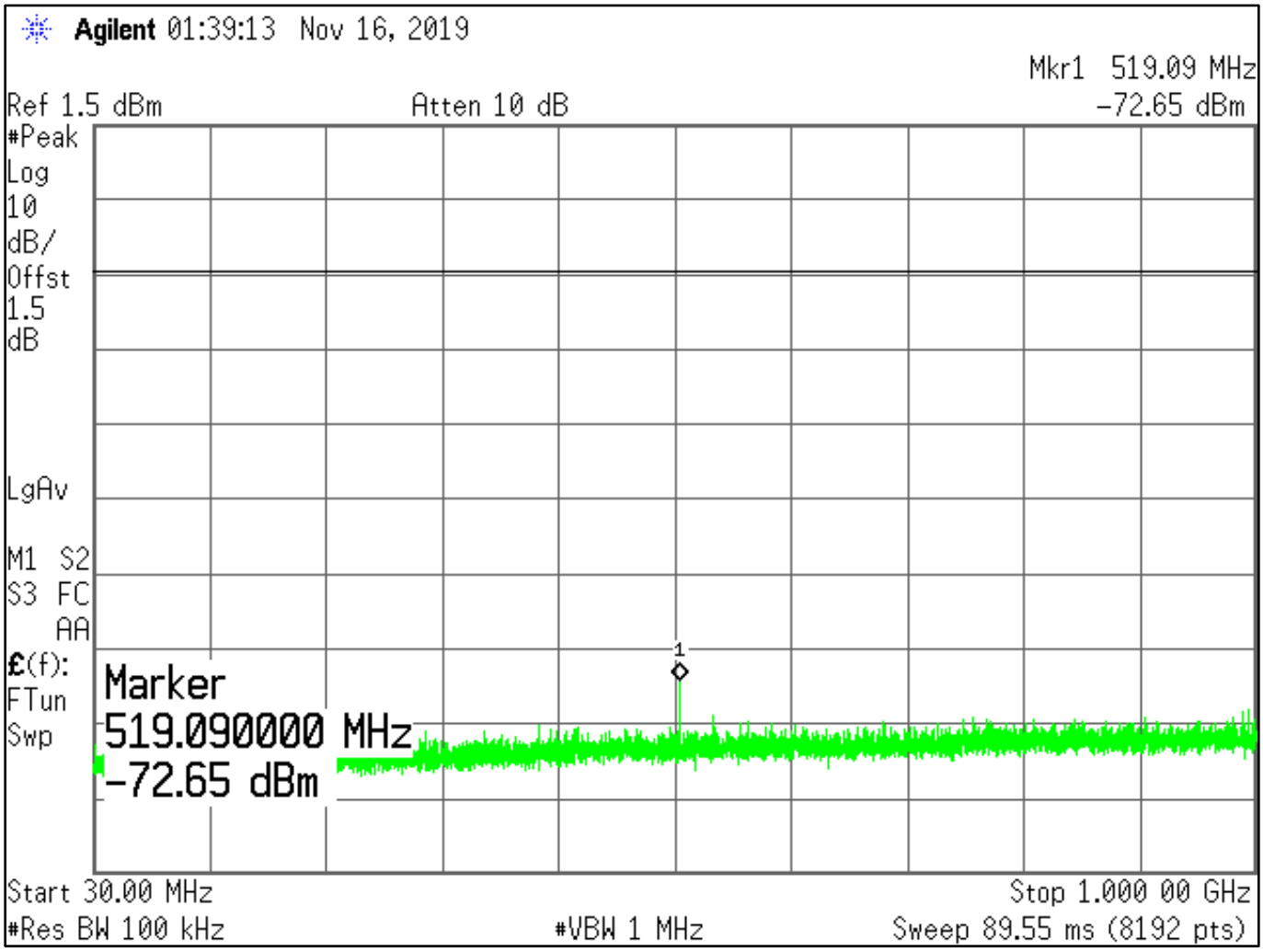


Figure 24: High Channel Conducted Spurious Plot 2

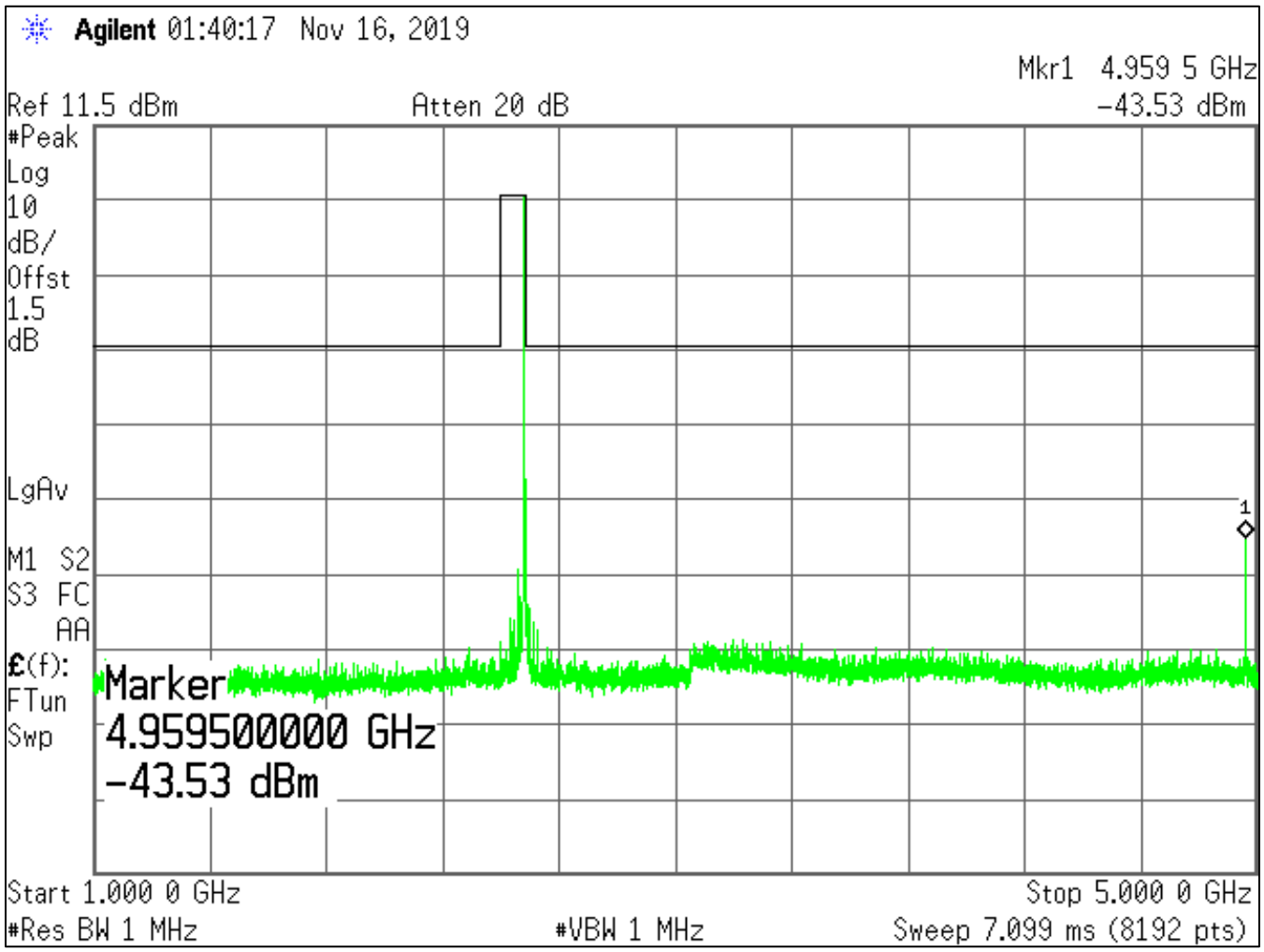


Figure 25: High Channel Conducted Spurious Plot 3

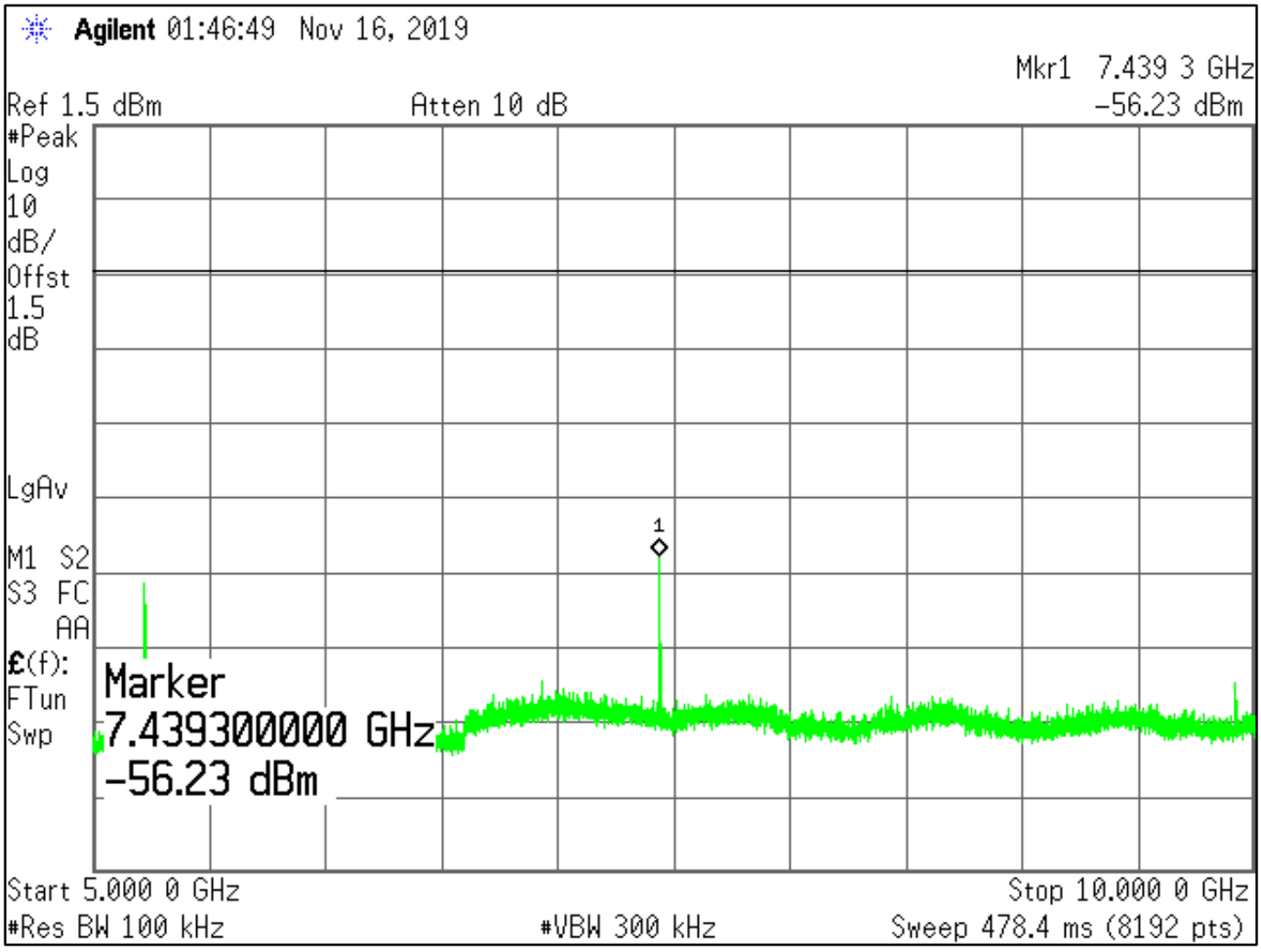


Figure 26: High Channel Conducted Spurious Plot 4

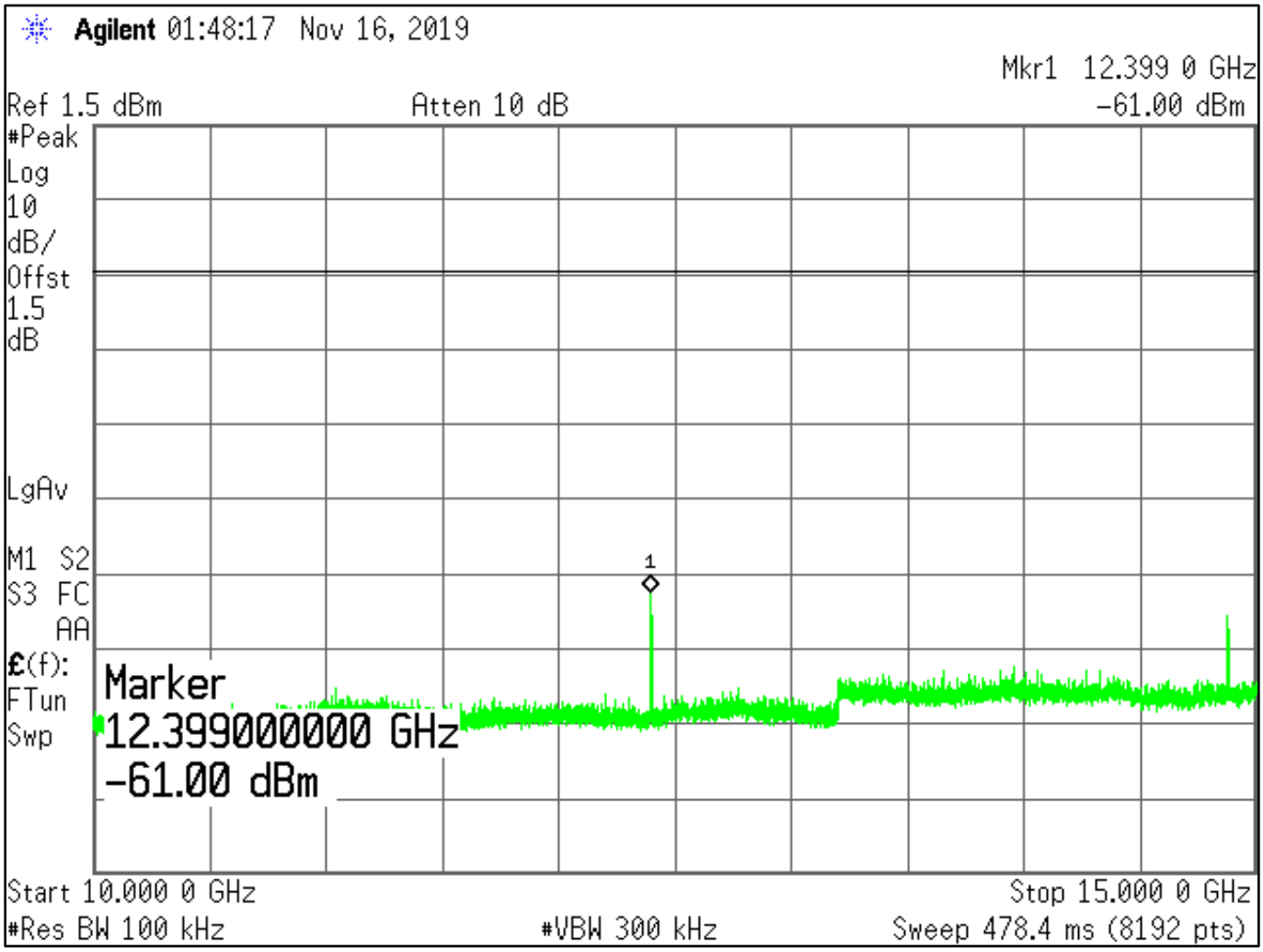


Figure 27: High Channel Conducted Spurious Plot 5

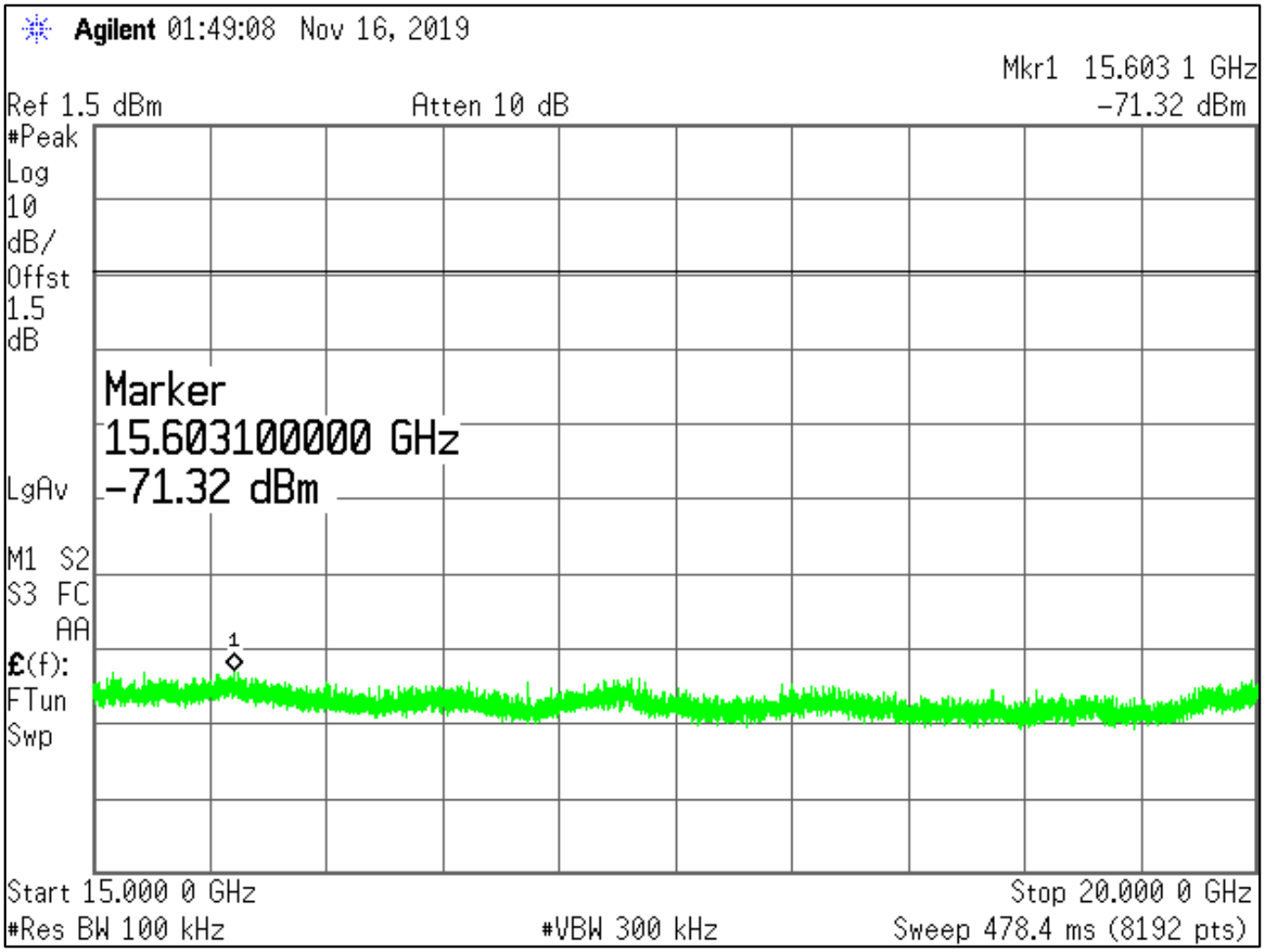


Figure 28: High Channel Conducted Spurious Plot 6

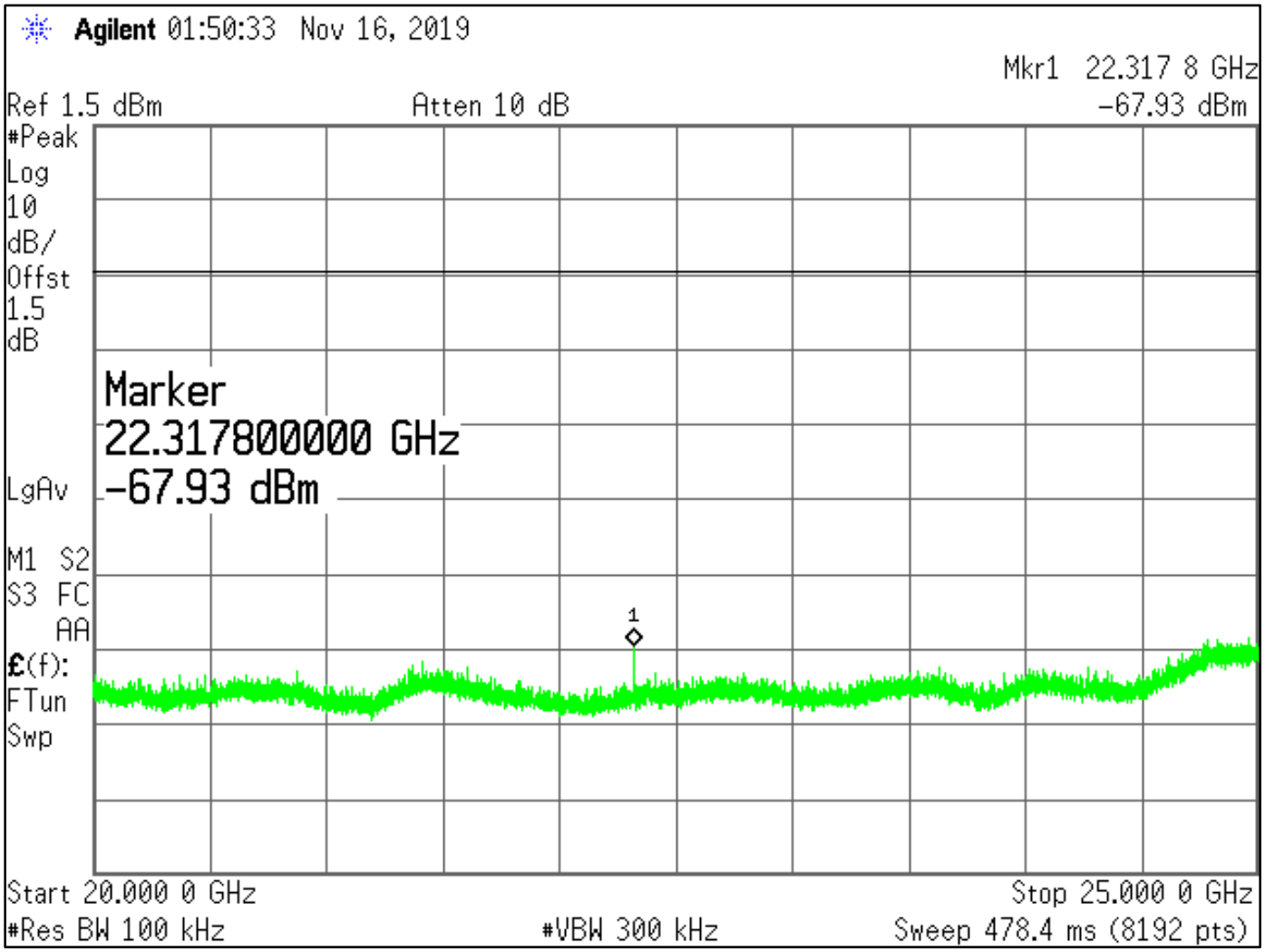
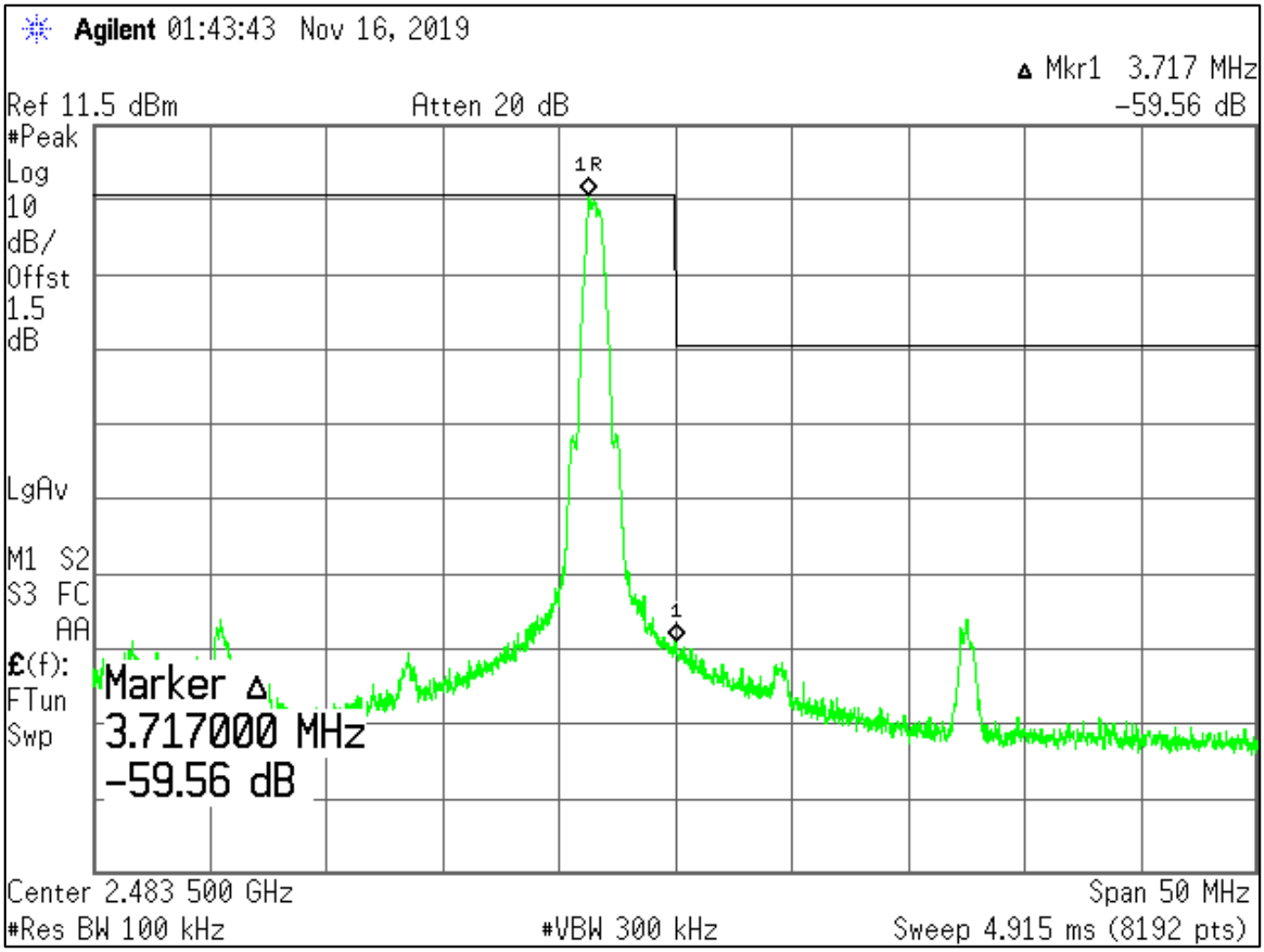


Figure 29: High Channel, Band Edge Compliance



4.5 RADIATED EMISSIONS

4.5.1 Requirements

Compliance Standard: FCC Part 15, Class B

FCC Compliance Limits		
Frequency Range	**Limit (distance)**	
	Class A (10 meter)	**Class B (3 meter)**
30-88 MHz	90 µV/m	100 µV/m
88-216 MHz	150 µV/m	150 µV/m
216-960 MHz	210 µV/m	200 µV/m
>960MHz	300 µV/m	500 µV/m

4.5.2 Test Procedure

The requirements of FCC Part 15 and ICES-003 call for the EUT to be placed on an 80 cm high 1 X 1.5 meters non-conductive motorized turntable for radiated testing on a 3-meter open field test site.

The emissions from the EUT were measured continuously at every azimuth by rotating the turntable. Bi-conical and log periodic broadband antennas were mounted on an antenna mast to determine the height of maximum emissions. The height of the antenna was varied between 1 and 4 meters. The output of the antenna was connected to the input of the spectrum analyzer and the emissions in the frequency range of 30 MHz to 25 GHz were measured. The peripherals were placed on the table in accordance with ANSI C63.4. Cables were varied in position to produce maximum emissions. Both the horizontal and vertical field components were measured.

The output from the antenna was connected, via a preamplifier, to the input of the spectrum analyzer. The detector function was set to quasi-peak or peak, as appropriate. Above 1GHz average measurement are recorded. The measurement bandwidth of the spectrum analyzer system was set to at least 120 kHz, with all post-detector filtering no less than 10 times the measurement bandwidth. Frequencies above 1GHz were performed using a measurement bandwidth of 1MHz with a video bandwidth setting of 10 Hz for the average measurement.

The device was scanned in three orthogonals and is noted in the data table comments column for the three channels measured.

4.5.3 Radiated Data Reduction and Reporting

To convert the raw spectrum analyzer radiated data into a form that can be compared with the FCC limits, it is necessary to account for various calibration factors that are supplied with the antennas and other measurement accessories. These factors are included into the antenna factor (AF) column of the table and in the cable factor (CF) column of the table. The AF (in dB/m) and the CF (in dB) is algebraically added to the raw Spectrum Analyzer Voltage in dBµV to obtain the Radiated Electric Field in dBµV/m. This logarithm amplitude is converted to a linear amplitude, then compared to the FCC limit.

Example:

Spectrum Analyzer Voltage: VdBµV
Antenna Correction Factor: AFdB/m
Cable Correction Factor: CFdB
Pre-Amplifier Gain (if applicable): GdB
Electric Field: EdBµV/m = V dBµV + AFdB/m + CFdB - GdB
To convert to linear units of measure: EdBµV/m/20 Inv log

4.5.4 Test Data

The EUT complied with the Class B Radiated Emissions requirements. Table 10 provides the test results for radiated emissions.

Table 10: Radiated Emission Test Data

Low Channel

Frequency MHz	Polarity H/V	Azimuth Degree	Ant. Height m	SA Level dBuV	Corr Factors dB	Corr. Level uV/m	Limit uV/m	Margin dB	Comment
2400.00	V	245.0	1.5	34.2	-2.3	39.4	500.0	-22.1	LOW-X BE
4804.00	V	215.0	1.5	33.1	4.0	71.7	500.0	-16.9	LOW-X
12001.00	V	145.0	1.5	31.8	14.6	210.0	500.0	-7.5	LOW-X
2400.00	V	180.0	1.5	39.0	-2.3	68.5	500.0	-17.3	LOW-Y BE
4804.00	V	145.0	1.5	32.1	4.0	63.9	500.0	-17.9	LOW-Y
12001.00	V	0.0	1.5	31.7	14.6	207.6	500.0	-7.6	LOW-Y
2400.00	V	100.0	1.5	37.2	-2.3	55.7	500.0	-19.1	LOW-Z BE
4804.00	V	125.0	1.4	32.2	4.0	64.6	500.0	-17.8	LOW-Z
12001.00	V	180.0	1.4	31.8	14.6	210.0	500.0	-7.5	LOW-Z
2400.00	H	245.0	1.5	41.4	-2.3	90.3	500.0	-14.9	LOW-X BE
4804.00	H	215.0	1.5	33.7	4.0	76.8	500.0	-16.3	LOW-X
12001.00	H	180.0	1.5	31.8	14.6	210.0	500.0	-7.5	LOW-X
2400.00	H	100.0	1.5	36.0	-2.3	48.5	500.0	-20.3	LOW-Y BE
4804.00	H	90.0	1.4	33.4	4.0	74.2	500.0	-16.6	LOW-Y
12001.00	H	120.0	1.4	31.9	14.6	212.4	500.0	-7.4	LOW-Y
2400.00	H	240.0	1.5	36.7	-2.3	52.6	500.0	-19.6	LOW-Z BE
4804.00	H	0.0	1.5	31.7	4.0	61.0	500.0	-18.3	LOW-Z
12001.00	H	180.0	1.5	31.8	14.6	210.0	500.0	-7.5	LOW-Z

Center Channel

Frequency (MHz)	Polarity H/V	Azimuth Degree	Ant. Height m	SA Level dBuV	Corr Factors dB	Corr. Level uV/m	Limit uV/m	Margin dB	Comment
4880.00	V	300.0	1.5	32.8	7.0	97.4	500.0	-14.2	MID-X
7320.00	V	180.0	1.5	31.0	13.0	158.2	500.0	-10.0	MID-X
4880.00	V	0.0	1.4	33.0	7.0	99.7	500.0	-14.0	MID-Y
7320.00	V	90.0	1.5	31.0	13.0	158.2	500.0	-10.0	MID-Y
4880.00	V	120.0	1.5	33.2	7.0	102.0	500.0	-13.8	MID-Z
7320.00	V	180.0	1.4	31.7	13.0	171.5	500.0	-9.3	MID-Z
4880.00	H	80.0	1.5	31.8	7.0	86.8	500.0	-15.2	MID-X
7320.00	H	120.0	1.5	32.0	13.0	177.5	500.0	-9.0	MID-X
4880.00	H	300.0	1.5	30.8	7.0	77.4	500.0	-16.2	MID-Y
7320.00	H	0.0	1.5	31.7	13.0	171.5	500.0	-9.3	MID-Y
4880.00	H	0.0	1.5	33.0	7.0	99.7	500.0	-14.0	MID-Z
7320.00	H	90.0	1.5	32.1	13.0	179.6	500.0	-8.9	MID-Z

Note: BE denotes band edge

High Channel

Frequency MHz	Polarity H/V	Azimuth Degree	Ant. Height m	SA Level dBuV	Corr Factors dB	Corr. Level uV/m	Limit uV/m	Margin dB	Comment
2483.50	V	180.0	1.5	33.6	-7.5	20.2	500.0	-27.9	HI-X BE
4960.00	V	90.0	1.5	31.5	-2.5	28.3	500.0	-24.9	HI-X
7440.00	V	0.0	1.5	31.2	0.0	36.4	500.0	-22.8	HI-X
2483.50	V	180.0	1.5	32.9	-7.5	18.6	500.0	-28.6	HI-Y BE
4960.00	V	90.0	1.5	32.8	-2.5	32.9	500.0	-23.6	HI-Y
7440.00	V	120.0	1.5	31.2	0.0	36.4	500.0	-22.8	HI-Y
2483.50	V	180.0	1.5	31.3	-7.5	15.5	500.0	-30.2	HI-Z BE
4960.00	V	180.0	1.5	31.2	-2.5	27.4	500.0	-25.2	HI-Z
7440.00	V	0.0	1.5	31.8	0.0	39.0	500.0	-22.2	HI-Z
2483.50	H	260.0	1.5	33.0	-7.5	18.8	500.0	-28.5	HI-X BE
4960.00	H	180.0	1.5	31.8	-2.5	29.3	500.0	-24.6	HI-X
7440.00	H	90.0	1.5	32.0	0.0	39.9	500.0	-22.0	HI-X
2483.50	H	180.0	1.5	31.9	-7.5	16.6	500.0	-29.6	HI-Y BE
4960.00	H	90.0	1.5	31.7	-2.5	29.0	500.0	-24.7	HI-Y
7440.00	H	0.0	1.5	32.0	0.0	39.9	500.0	-22.0	HI-Y BE
2483.50	H	90.0	1.6	33.8	-7.5	20.7	500.0	-27.7	HI-Z
4960.00	H	120.0	1.6	31.8	-2.5	29.3	500.0	-24.6	HI-Z
7440.00	H	120.0	1.6	32.5	0.0	42.3	500.0	-21.5	HI-Z