

**COMPLIANCE WORLDWIDE INC.
TEST REPORT 101-23R1**

**In Accordance with the Requirements of
FCC Title 47 CFR Part 15.519, Subpart F
Technical Requirements for Handheld UWB Systems**

**ISED RSS-220, Issue 1 (March 2009) + Amendment 1 (July 2018)
Devices Using Ultra-Wideband (UWB) Technology**

Issued to

**ShotTracker, Inc.
7220 W Frontage Road
Merriam, KS 66203**

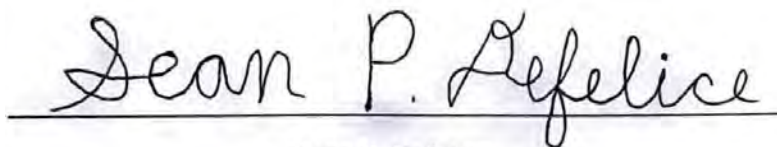
For the

**2.0 Tag, Model S2P2
with UWB Radio**

**FCC ID: 2AC4B-S2P2
IC: 12327A-S2P2**

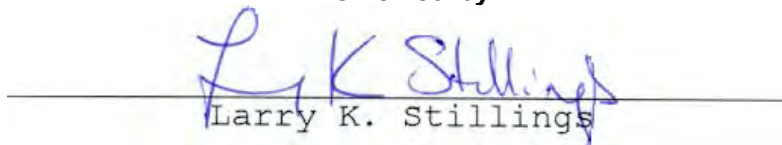
**Report Issued on August 5, 2026
Revision R1 Issued on September 3, 2026**

Tested by



Sean P. Defelice

Reviewed by



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1. Scope

This test report certifies that the ShotTracker 2.0 Tag model S2P2 as tested, was evaluated against the FCC Part 15, Subpart F and ISSED RSS-220 requirements. The scope of this test report is limited to the test sample provided by the client, only in as much as that sample represents other production units. If any significant changes are made to the unit, the changes shall be evaluated and a retest may be required. Measurement Uncertainty will not be applied to any of the measurement / testing results in this test report to determine pass/fail criteria per the Decision Rule as defined in ISO/IEC Guide 17025-2017 Clause 3.7. Revision R1 adds additional test data in Sections 6.4, 6.5 and 6.6 for operating on Channel 5 from 30 kHz to 960 MHz, 8 to 40 GHz and the GPS Bands.

2. Product Details

2.1. Manufacturer:	ShotTracker
2.2. Model Number:	S2P2
2.3. Serial Numbers:	34781, 34386
2.4. Description:	The S2P2 sends and receives ultra wideband (UWB) transmissions so that player wearing the tag can be accurately located and tracked by other nearby UWB sensors. The S2P2 also has a Bluetooth Low Energy (BLE) transceiver that operates in the 2.402 to 2.48 GHz frequency band for provisioning, configuration and maintenance purposes.
2.5. Power Source:	3.7 VDC via Battery
2.6. Hardware Revision:	Rev A
2.7. Software Revision:	N/A
2.8. Modulation Type:	Pulse Modulation, Frequency Hopping
2.9. Operating Frequencies:	3.5 GHz Center Frequency Nominal (Channel 1 – 500 MHz BW), 4 GHz Center Frequency Nominal (Channel 2 – 500 MHz BW), 4.5 GHz Center Frequency Nominal (Channel 3 – 500 MHz BW), 6.5 GHz Center Frequency Nominal (Channel 5 – 500 MHz BW)
2.10. EMC Modifications:	None

Note: Only Channel 5 operation is allowed in Canada.

3. Product Configuration

3.1 Operational Characteristics & Software

Hardware Setup:

Using the software tool configure the S2P2 to transmit on UWB Channels 1, 2, 3 or 5.

3. Product Configuration (cont.)

3.2. EUT Hardware

Manufacturer	Model/Part # / Options	Serial Numbers	Input Volts	Freq (Hz)	Description/Function
ShotTracker	S2P2	33781, 34386	3.7	DC	Tracking Tag

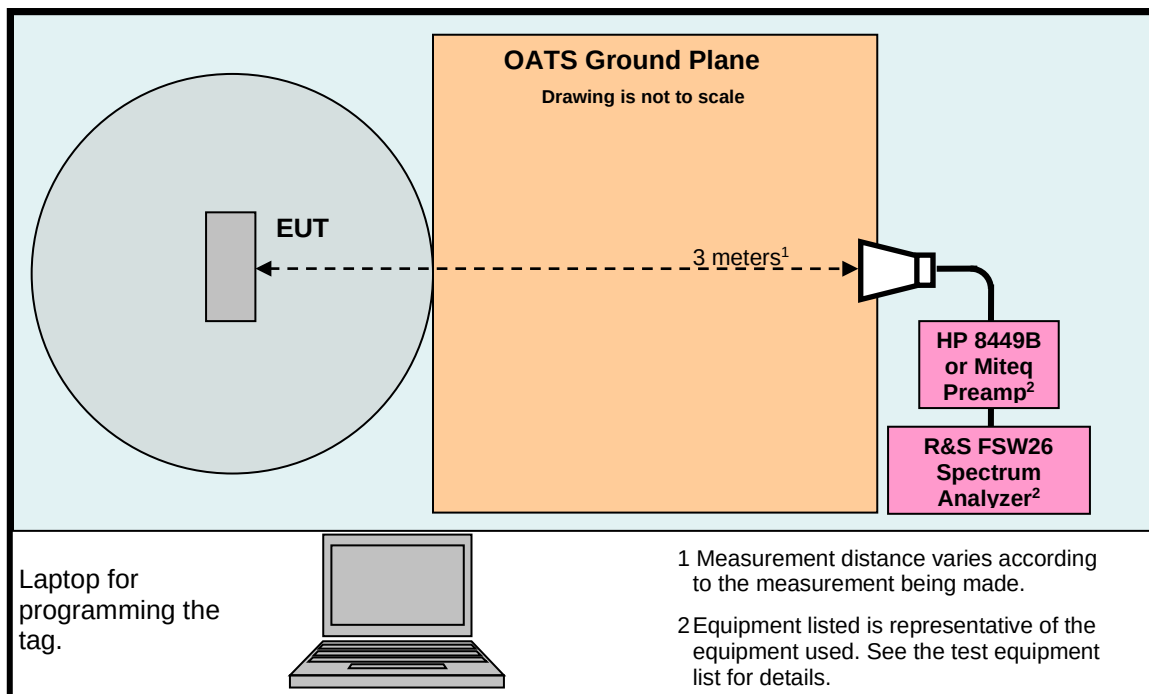
3.3. EUT Cables/Transducers

Cable Type	Length	Shield	From	To / Function
None				

3.4. Support Equipment

Manufacturer	Model/Part # / Options	Serial Number	Input Voltage	Freq (Hz)	Description/Function
Lenovo	ThinkPad T440P	PB-031DX9	120	60	For controlling the board

3.5. Test Setup Diagram



4. Measurements Parameters

4.1. Measurement Equipment Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due	Interval
EMI Test Receiver, 9 kHz – 7 GHz ¹	Rohde & Schwarz	ESR7	101156	10/25/2026	5 Years
EMI Test Receiver, 10 Hz – 7 GHz ¹	Rohde & Schwarz	ESR7	101770	7/23/2027	3 Years
EMI Test Receiver, 9 kHz – 26.5 GHz ¹	Rohde & Schwarz	ESR26	101693	6/26/2027	4 Years
Spectrum Analyzer, 2 Hz to 26.5 GHz ²	Rohde & Schwarz	FSW26	102057	7/19/2027	3 Years
Spectrum Analyzer, 9 kHz to 40 GHz ³	Rohde & Schwarz	FSV40	100899	6/27/2027	3 Years
Spectrum Analyzer 10 Hz – 40 GHz ⁴	Rohde & Schwarz	FSVR40	100909	9/18/2026	6 Years
Loop Antenna 9 kHz - 30 MHz	EMCO	6512	9309-1139	4/14/2027	5 Years
Biconilog Antenna, 30 MHz - 2 GHz	Sunol Sciences	JB1	A050913	7/1/2027	5 Years
Dbl Ridged Guide Antenna 1 - 18 GHz	ETS-Lindgren	3117	00143292	5/11/2027	5 Years
Dbl Ridged Guide Antenna 1 - 18 GHz	ETS-Lindgren	3117	00227631	4/21/2027	5 Years
Preamplifier 100 MHz to 7 GHz	Miteq	AFS3-00100200-10-15P-4	988773	9/28/2026	3 Years
Preamplifier 100 MHz to 18 GHz	Miteq	AMF-7D-00101800-30-10P	1953081	9/27/2026	3 Years
Preamplifier 2 to 12 GHz	JCA	JCA48-4111B1	7087S	9/28/2026	3 Years
Preamplifier 18 to 40 GHz	Miteq	JSD42-21004200-40-5P	649199/649219	9/27/2026	3 Years
Horn Antenna 18 to 40 GHz	Com Power	AH-840	03075	4/4/2027	5 Years
Horn Antenna 18 to 40 GHz	Com Power	AH-840	101032	1/25/2027	5 Years
High Pass Filter 6.4 to 18 GHz	Micro-Tronics	HPM50112	014	2/27/2027	3 Years
High Pass Filter 7.2 to 18 GHz	Micro-Tronics	HPM50107	G036	2/27/2027	3 Years
Passband Filter 12 to 18.5 GHz	Wavecom	F2620A	16	2/27/2027	3 Years
Digital Barometer	Control Company	4195	ID236	3/15/2027	3 Years
Barometric Pressure/Humidity & Temp Datalogger	Extech Instruments	SD700	Q590483	4/4/2027	3 Years

¹ ESR7/26 Firmware revision: V3.48 SP3, Date installed: 09/30/2020

² FSW26 Firmware revision: V4.71 SP1, Date installed: 11/16/2020

³ FSV40 Firmware revision: V2.30 SP4, Date installed: 05/04/2016

⁴ FSVR40 Firmware revision: V2.23 SP1, Date installed: 08/19/2016

Previous V3.48 SP2, installed 07/23/2020.

Previous V4.61, installed 08/11/2020.

Previous V2.30 SP1, installed 10/22/2014.

Previous V2.23, installed 10/22/2014.

4. Measurements Parameters (continued)

4.2. Measurement & Equipment Setup

Test Dates:	3/20/2023, 3/21/2023, 3/22/2023, 3/23/2026, 3/24/2023, 3/29/2023, 3/31/2023, 4/7/2023, 4/10/2023, 8/5/2026
Test Engineers:	Sean Defelice
Normal Site Temperature (15 – 35 °C):	24
Relative Humidity (20 – 75 % RH):	40
Frequency Range:	30 MHz to 40 GHz
Measurement Distance:	3 Meters
EMI Receiver IF Bandwidth:	120 kHz - 30 MHz to 1 GHz 1 MHz - Above 1 GHz
EMI Receiver Avg Bandwidth:	$\geq 3 * RBW$
Detector Function:	Peak, Quasi-Peak & Average
Antenna Height:	1 to 4 meters
Measurement Uncertainty 30 to 200 MHz:	± 4.76 dB (H), ± 4.88 dB (V)
Measurement Uncertainty 200 to 1 GHz:	± 5.01 dB (H), ± 5.00 dB (V)
Measurement Uncertainty 1 to 6 GHz:	± 5.17 dB
Measurement Uncertainty 6 to 18 GHz:	± 5.48 dB
Measurement Uncertainty 18 to 40 GHz:	± 5.49 dB

4.3. Measurement Procedure

Test measurements were made in accordance with FCC Parts 15.209 Subpart C, 15.519 Subpart F, ISSED RSS-220 and RSS-GEN requirements.

The test methods used to generate the data in this test report is in accordance with ANSI C63.10:2020, American National Standard for Testing Unlicensed Wireless Devices.

4.4. Measurement Uncertainty

The following uncertainties are expressed for an expansion/coverage factor of K=2.

RF Frequency (out of band)	$\pm 1 \times 10^{-8}$
Radiated Emission of Transmitter to 100 GHz	± 4.55 dB
Radiated Emission of Receiver	± 4.55 dB
Temperature	$\pm 0.91^{\circ}$ C
Humidity	$\pm 5\%$

5. Measurements Summary

Test Requirement	FCC Rule Requirement	ISED Rule Requirement	Test Report Section	Result	Comment
Antenna Requirement	15.203	RSS-220 5.1 (b)	6.1	Compliant	
Operational Requirements	15.519 (a) (1)	RSS-220	6.2	Compliant	
UWB Bandwidth	15.503 (a) (d) 15.519 (b)	RSS-220 2 RSS-220 5.1	6.3	Compliant	
Radiated Emissions below 960 MHz	15.209	RSS-220 3.4	6.4	Compliant	
Radiated Emissions above 960 MHz	15.519 (c) 15.521 (d)	RSS-220 5.3.1 (d)	6.5	Compliant	
Radiated Emissions in GPS Bands	15.519 (d)	RSS-220 5.3.1 (e)	6.6	Compliant	
RMS Emissions of UWB Transmission in a 1 MHz Bandwidth	15.519 (c) 15.521 (d)	RSS-220 5.3.1 (d)	6.7	Compliant	
Peak Emissions in a 50 MHz Bandwidth	15.519 (e) 15.521 (g)	RSS-220 5.3.1 (g)	6.8	Compliant	
Conducted Emissions	15.207	RSS-GEN	6.9 6.10	Compliant	
99% Emission Bandwidth	N/A	RSS-GEN	6.11	Compliant	

6. Measurement Data

6.1. Antenna Requirement (Part 15.203, RSS-220 5.1(b))

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

Result: The antenna utilized by the device under test is a pcb etch type.

6. Measurement Data (continued)

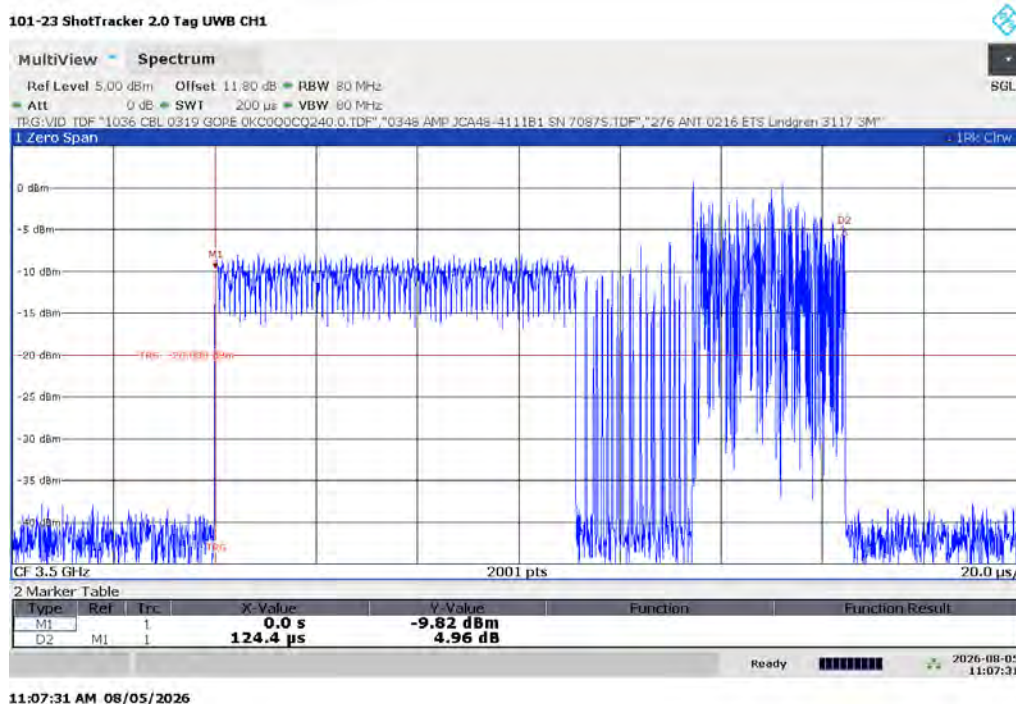
6.2. Operational Requirements of the Device under Test (15.519 (a) (1))

Requirement: UWB device operating under the provisions of this section must be hand held, i.e., they are relatively small device that are primarily hand held while being operated and do not employ a fixed infrastructure. UWB devices operating under the provisions of this section may operate indoors or outdoors.

A UWB device operating under the provisions of this section shall transmit only when it is sending information to an associated receiver. The UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmission is being received. An acknowledgment of reception must continue to be received by the UWB intentional radiator at least every 10 seconds or the UWB device must cease transmitting.

Result: To facilitate testing, the EUT transmits a ~124 μ S burst every 1 mS. When the device loses connection with an associated receiver, it tries to reconnect every ~12 seconds.

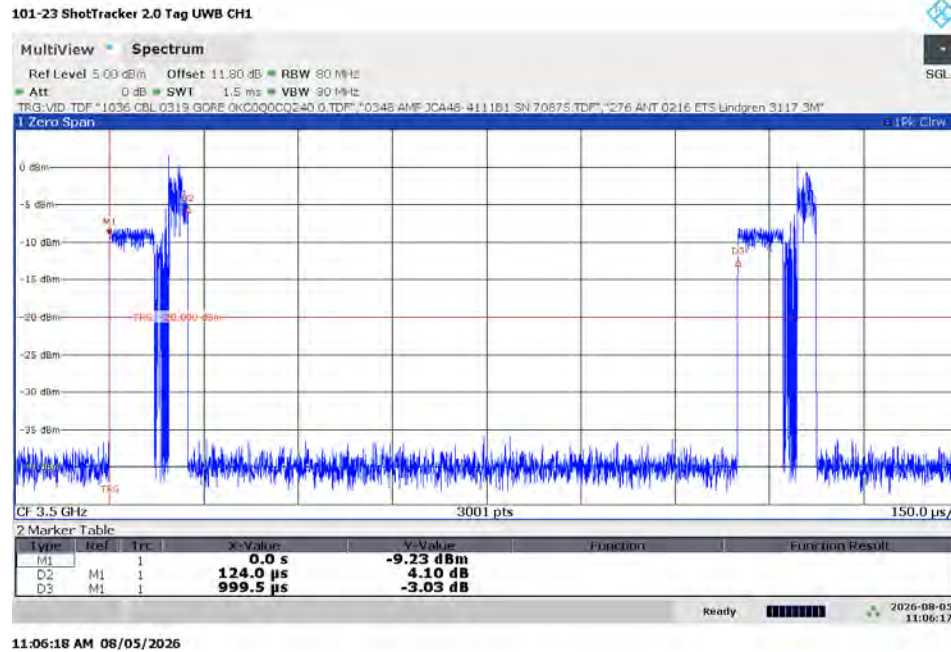
6.2.1 Plot of Transmission On-Time Channel 1



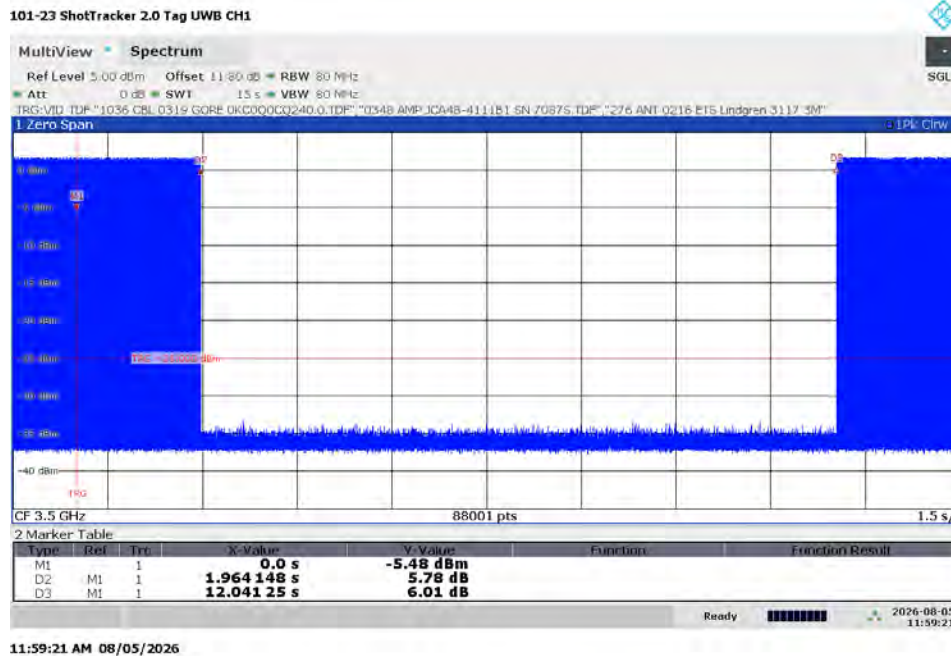
6. Measurement Data (continued)

6.2. Operational Requirements of the Device under Test (15.519 (a) (1))

6.2.2 Plot of Transmission Period – Channel 1



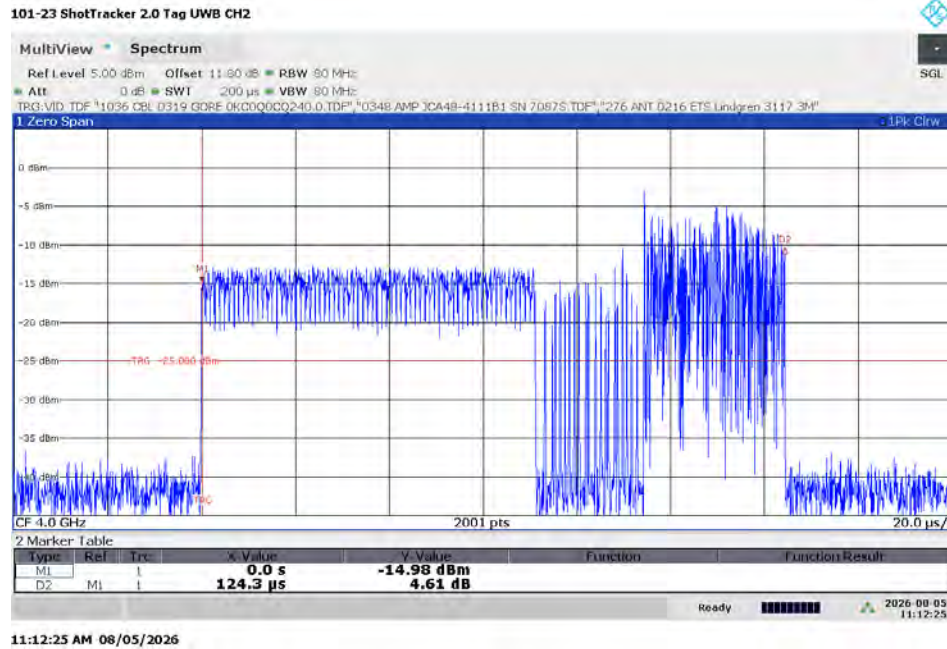
6.2.3 Plot of Reconnection signal – Channel 1



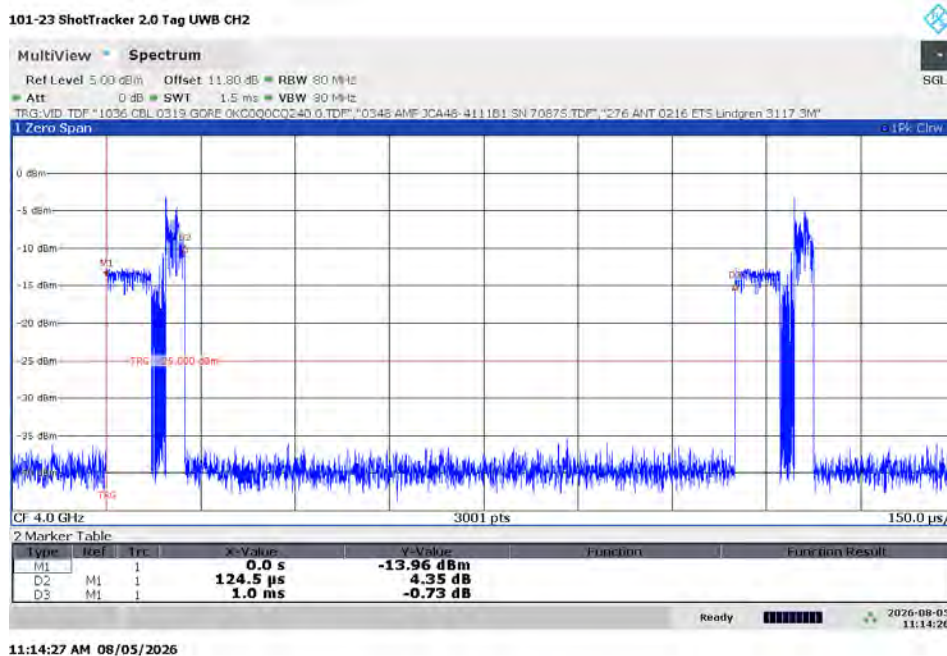
6. Measurement Data (continued)

6.2. Operational Requirements of the Device under Test (15.519 (a) (1))

6.2.4 Plot of Transmission On-Time Channel 2



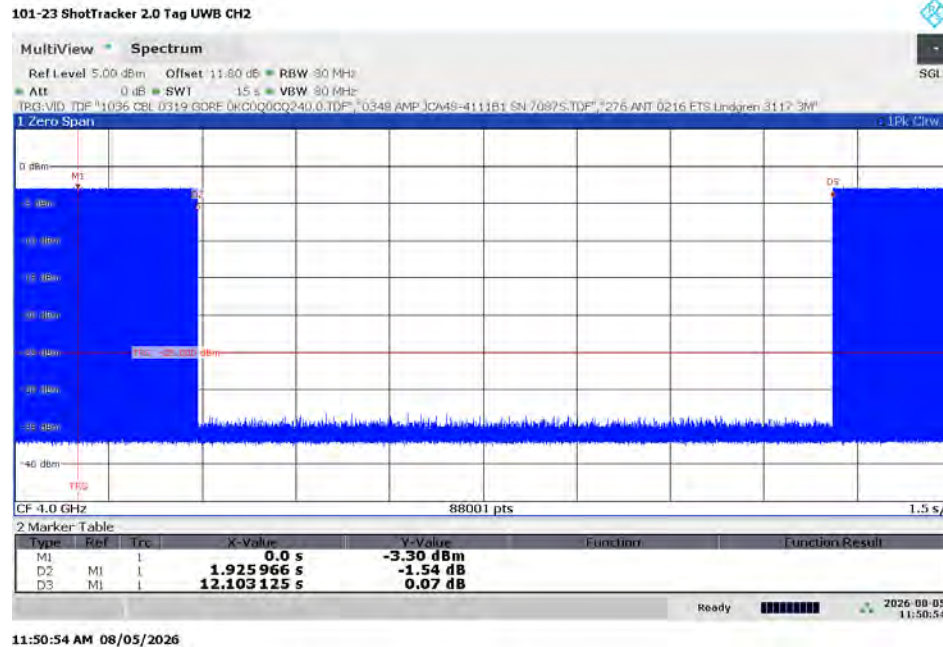
6.2.5 Plot of Transmission Period – Channel 2



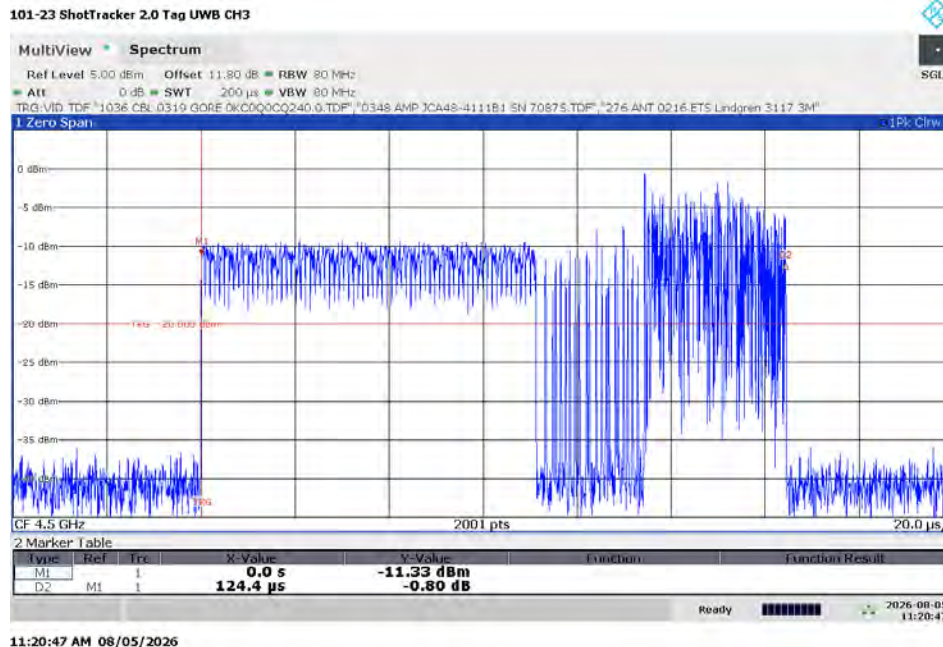
6. Measurement Data (continued)

6.2. Operational Requirements of the Device under Test (15.519 (a) (1))

6.2.6 Plot of Reconnection signal – Channel 2



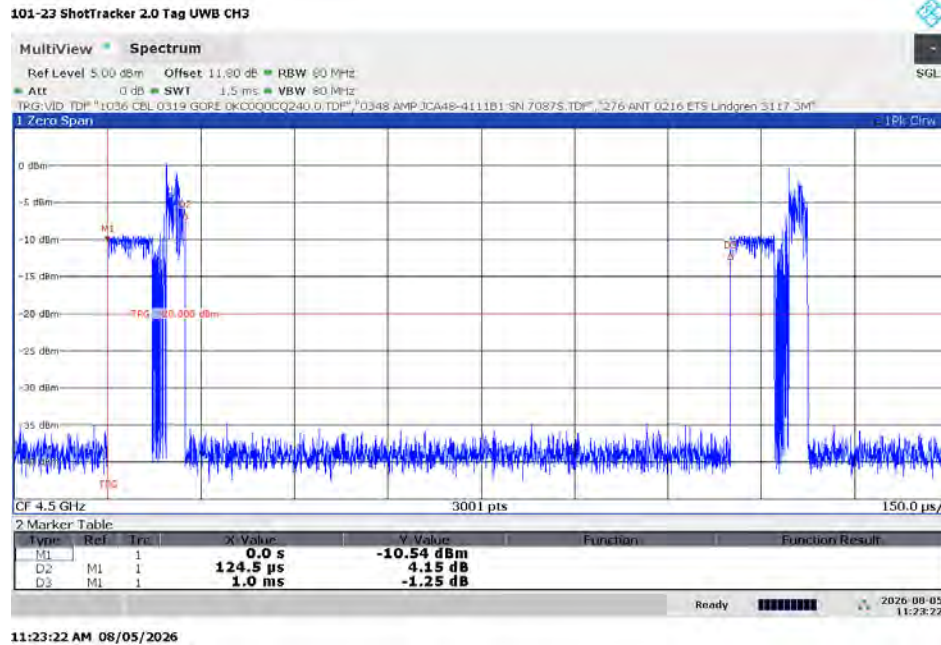
6.2.7 Plot of Transmission On-Time Channel 3



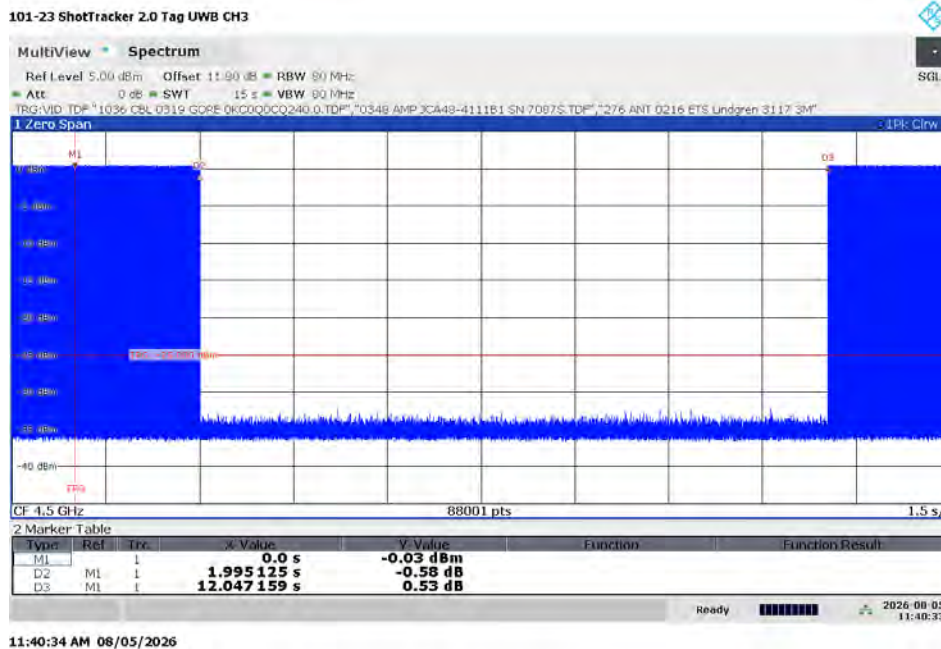
6. Measurement Data (continued)

6.2. Operational Requirements of the Device under Test (15.519 (a) (1))

6.2.8 Plot of Transmission Period – Channel 3



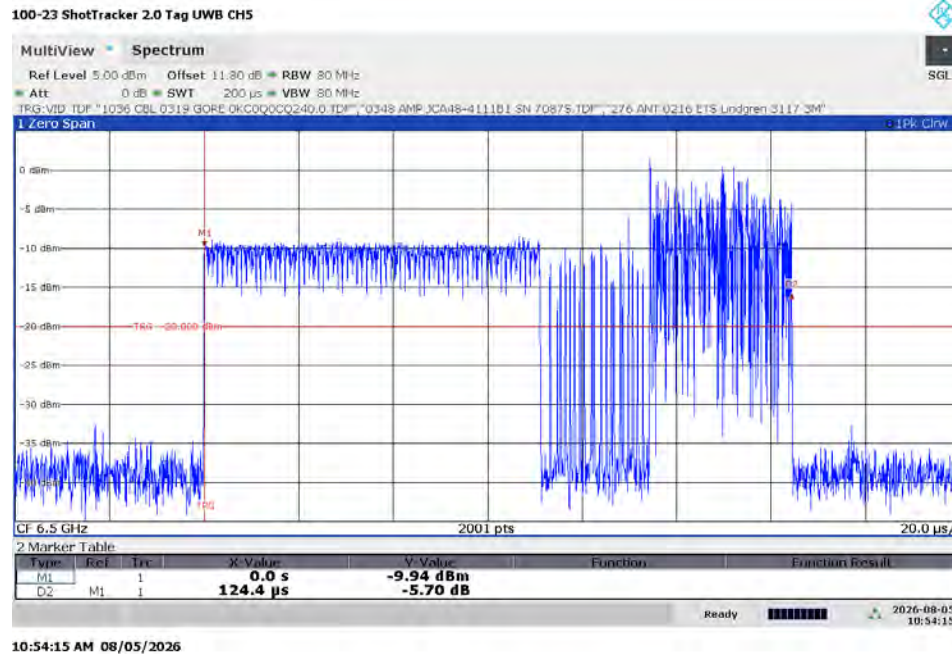
6.2.9 Plot of Reconnection signal – Channel 3



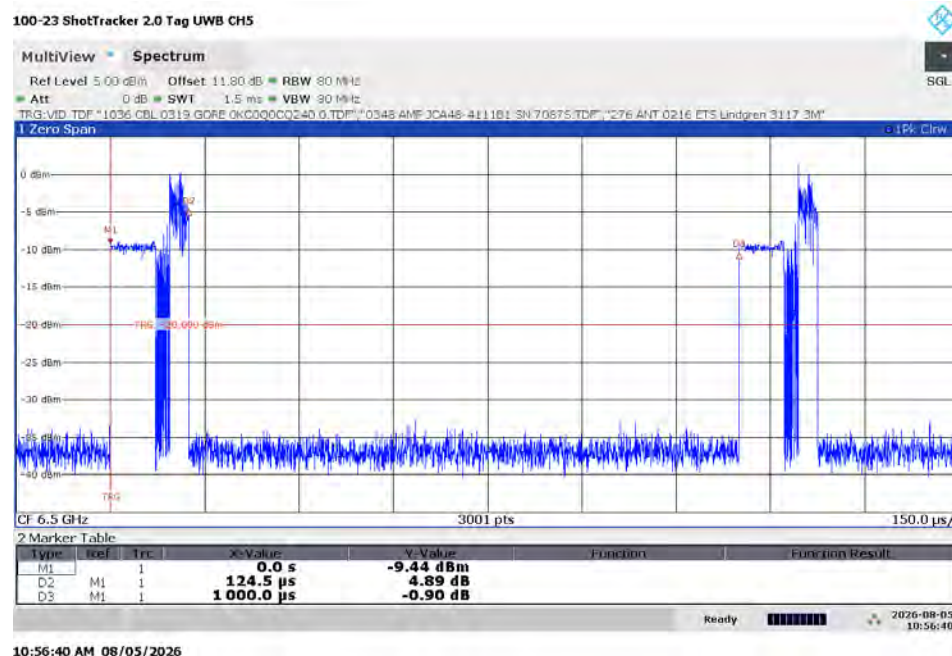
6. Measurement Data (continued)

6.2. Operational Requirements of the Device under Test (15.519 (a) (1))

6.2.10 Plot of Transmission On-Time Channel 5



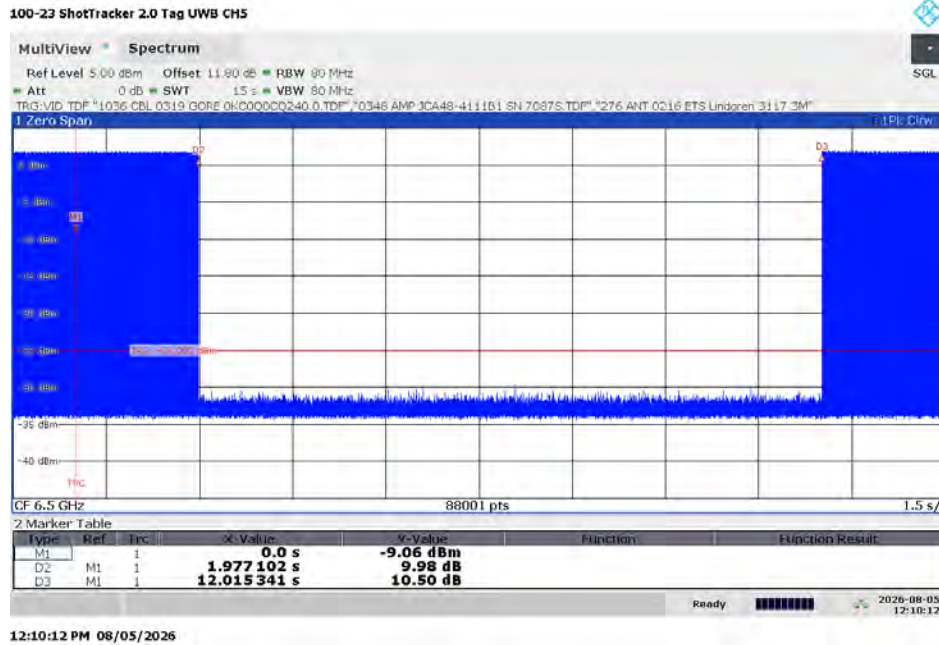
6.2.11 Plot of Transmission Period – Channel 5



6. Measurement Data (continued)

6.2. Operational Requirements of the Device under Test (15.519 (a) (1))

6.2.12 Plot of Reconnection signal – Channel 5



6. Measurement Data (continued)

6.3. UWB Bandwidth (15.503 (a) (d), 15.519 (b))

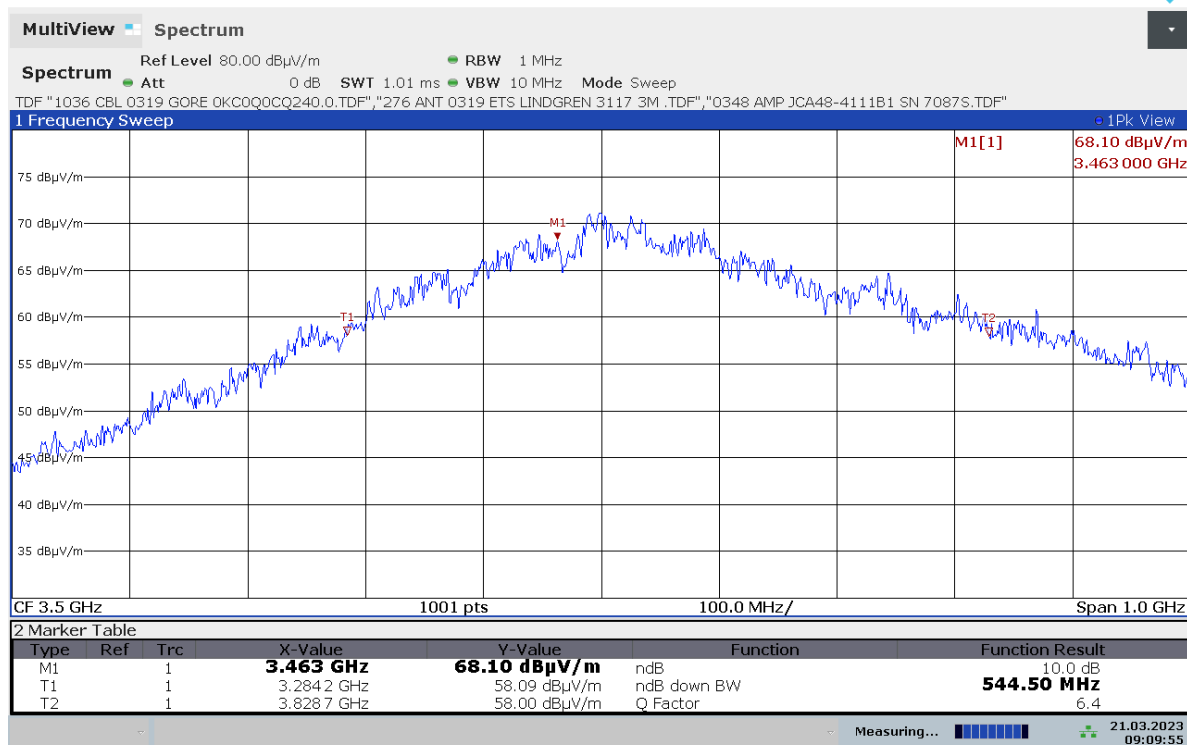
Requirement: The UWB bandwidth of a device operating under the provisions of this section shall be contained between 3,100 MHz and 10,600 MHz and at any point in time and has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the fractional bandwidth.

6.3.1. Measurement Data – Values in GHz – Channel 1

f_M	The highest emission peak	3.4630
f_L	10 dB below the highest peak	3.2842
f_H	10 dB above the highest peak	3.8287
f_C	Calculated: $(f_H + f_L) / 2$	3.5565
Bandwidth	Calculated: $(f_H - f_L)$	0.5445
Fractional BW	Calculated: $2*(f_H - f_L) / (f_H + f_L)$	0.1531

6.3.2. Measurement Plot of 10 dB frequencies – Channel 1

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6. Measurement Data (continued)

6.3. UWB Bandwidth (15.503 (a) (d), 15.519 (b))

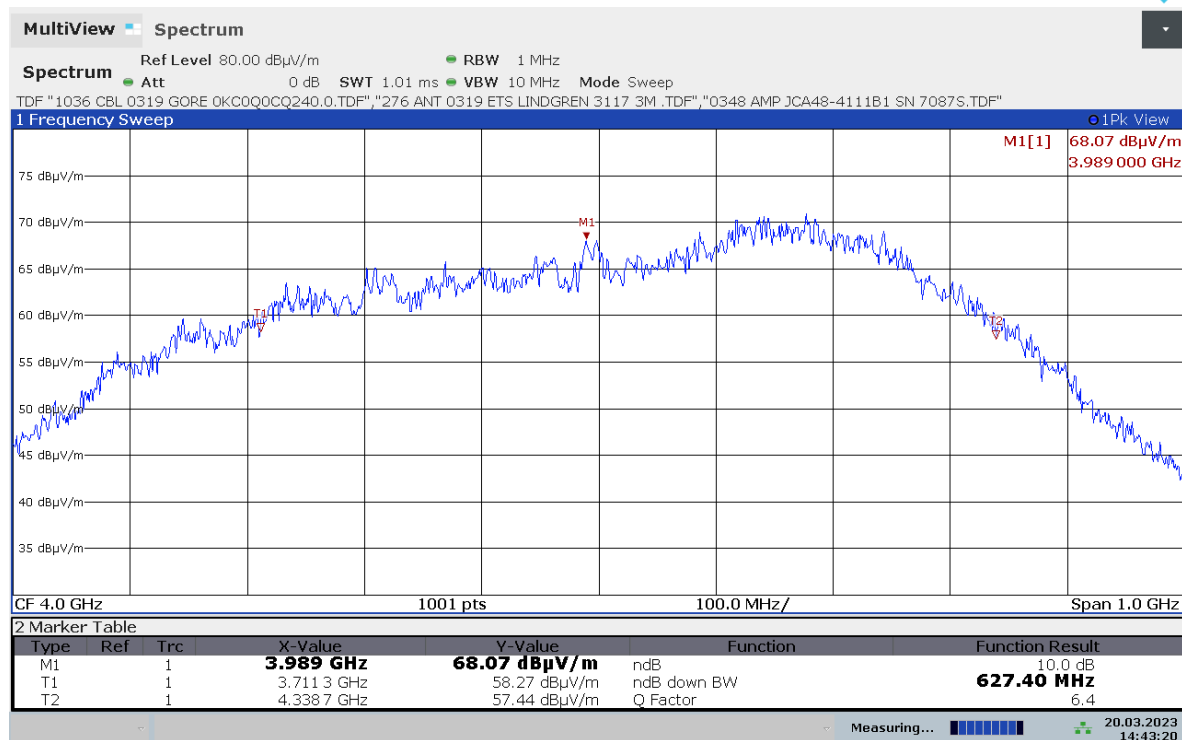
Requirement: The UWB bandwidth of a device operating under the provisions of this section shall be contained between 3,100 MHz and 10,600 MHz and at any point in time and has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the fractional bandwidth.

6.3.3. Measurement Data – Values in GHz – Channel 2

f_M	The highest emission peak	3.9890
f_L	10 dB below the highest peak	3.7113
f_H	10 dB above the highest peak	4.3387
f_C	Calculated: $(f_H + f_L) / 2$	4.0250
Bandwidth	Calculated: $(f_H - f_L)$	0.6274
Fractional BW	Calculated: $2 * (f_H - f_L) / (f_H + f_L)$	0.1559

6.3.4. Measurement Plot of 10 dB frequencies – Channel 2

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6. Measurement Data (continued)

6.3. UWB Bandwidth (15.503 (a) (d), 15.519 (b))

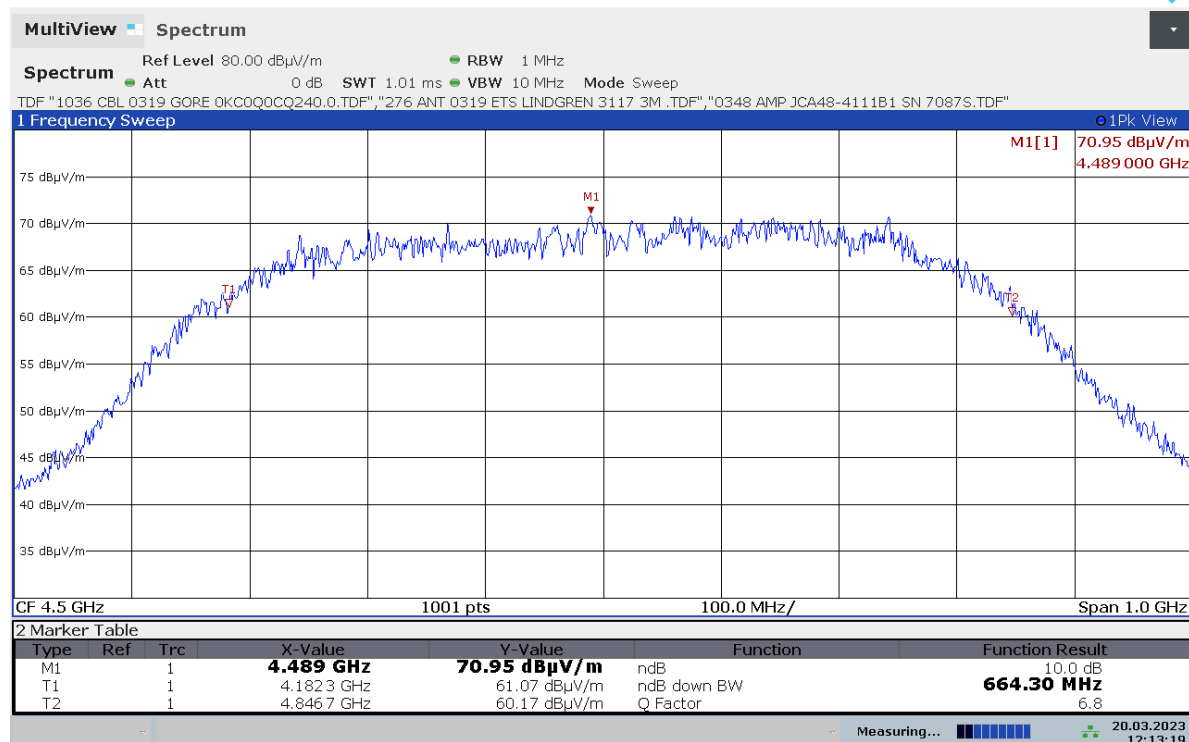
Requirement: The UWB bandwidth of a device operating under the provisions of this section shall be contained between 3,100 MHz and 10,600 MHz and at any point in time and has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the fractional bandwidth.

6.3.5. Measurement Data – Values in GHz – Channel 3

f_M	The highest emission peak	4.4890
f_L	10 dB below the highest peak	4.1823
f_H	10 dB above the highest peak	4.8467
f_C	Calculated: $(f_H + f_L) / 2$	4.5145
Bandwidth	Calculated: $(f_H - f_L)$	0.6644
Fractional BW	Calculated: $2 * (f_H - f_L) / (f_H + f_L)$	0.1472

6.3.6. Measurement Plot of 10 dB frequencies – Channel 3

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6. Measurement Data (continued)

6.3. UWB Bandwidth (15.503 (a) (d), 15.519 (b))

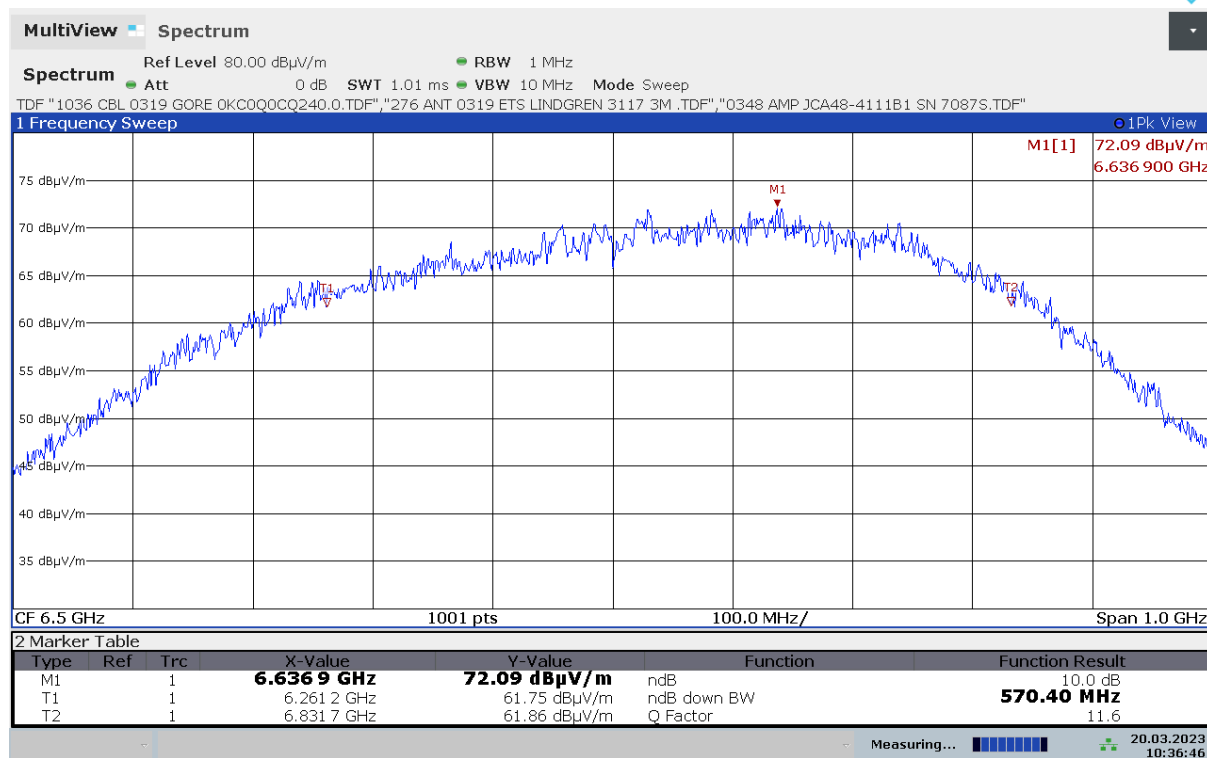
Requirement: The UWB bandwidth of a device operating under the provisions of this section shall be contained between 3,100 MHz and 10,600 MHz and at any point in time and has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the fractional bandwidth.

6.3.7. Measurement Data – Values in GHz – Channel 5

f_M	The highest emission peak	6.6369
f_L	10 dB below the highest peak	6.2612
f_H	10 dB above the highest peak	6.8317
f_C	Calculated: $(f_H + f_L) / 2$	6.5465
Bandwidth	Calculated: $(f_H - f_L)$	0.5705
Fractional BW	Calculated: $2 * (f_H - f_L) / (f_H + f_L)$	0.0871

6.3.8. Measurement Plot of 10 dB frequencies – Channel 5

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6. Measurement Data (continued)

6.4. Spurious Radiated Emissions below 960 MHz (15.519 (c), 15.209, RSS-GEN)

Requirement: The radiated emissions at or below 960 MHz from a device operating under the provisions of this section shall not exceed the emission levels in Section 15.209.

Radiated Emissions Field Strength Limits at 3 Meters (Section 15.209, RSS-220)

Frequency (MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)
0.009 to 0.490	2,400/F (F in kHz)	128.5 to 93.8
0.490 to 1.705	24,000/F (F in kHz)	73.8 to 63
1.705 - 30	30	69.5
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46

Test Notes: Refer to Section 4.1 for the test equipment used. Channel 1 Data is representative of what the other channels measured for all three axis.

Frequency Range:	30 kHz to 960 MHz
Measurement Distance:	3 Meters
EMI Receiver IF Bandwidth:	200 Hz – 30 kHz to 150 kHz 9 kHz – 150 kHz to 30 MHz 120 kHz - 30 MHz to 960 MHz
EMI Receiver Avg Bandwidth:	≥ 3 * RBW or IF(BW)
Detector Function:	Peak, Quasi-Peak & CISPR Average

Sample Calculation: Final Result (dBμV/m) = Measurement Value (dBμV) + Antenna Factor (dB/m) + Cable Loss (dB) – Pre-amplifier Gain (dB) Internal or External.

Note: All correction factors are loaded into the measurement instrument prior to testing to determine the final result.

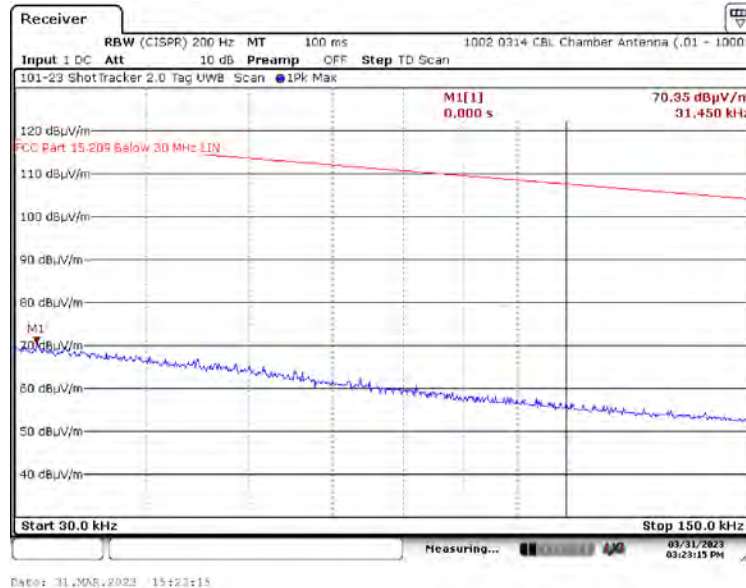
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

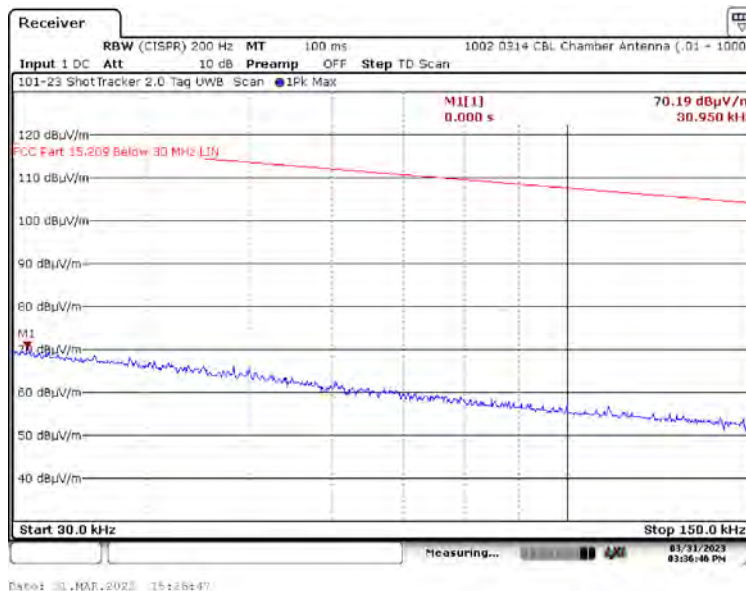
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.1 Parallel Measurement Antenna – 30 to 150 kHz, CH1, X-Axis



6.4.1.2 Perpendicular Measurement Antenna – 30 to 150 kHz, CH1, X-Axis



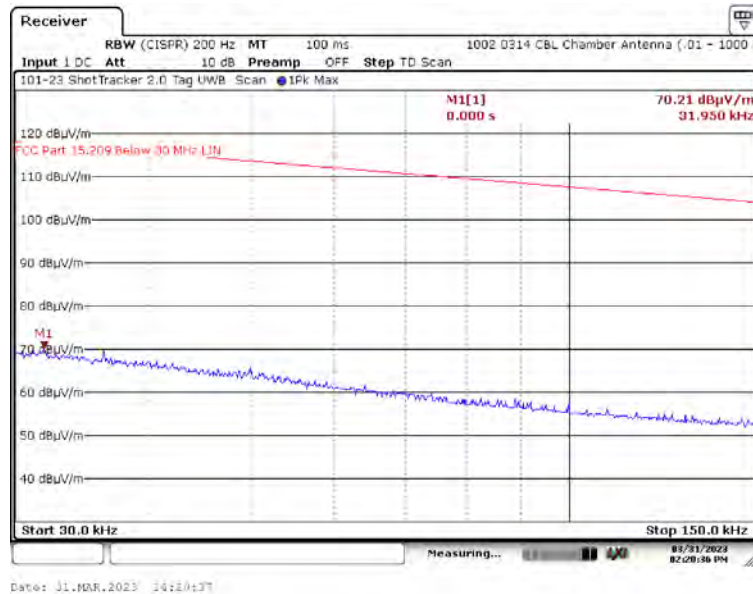
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

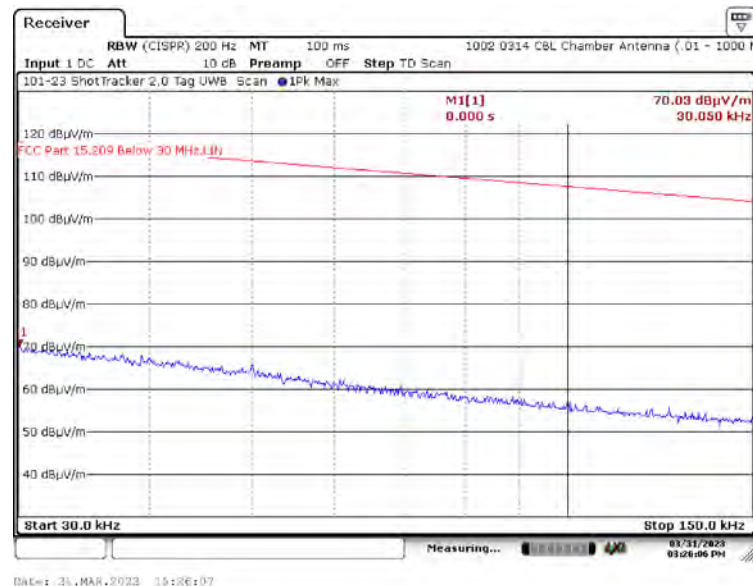
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.3 Ground Parallel Measurement Antenna – 30 to 150 kHz, CH1, X-Axis



6.4.1.4 Parallel Measurement Antenna – 30 to 150 kHz, CH1, Y-Axis



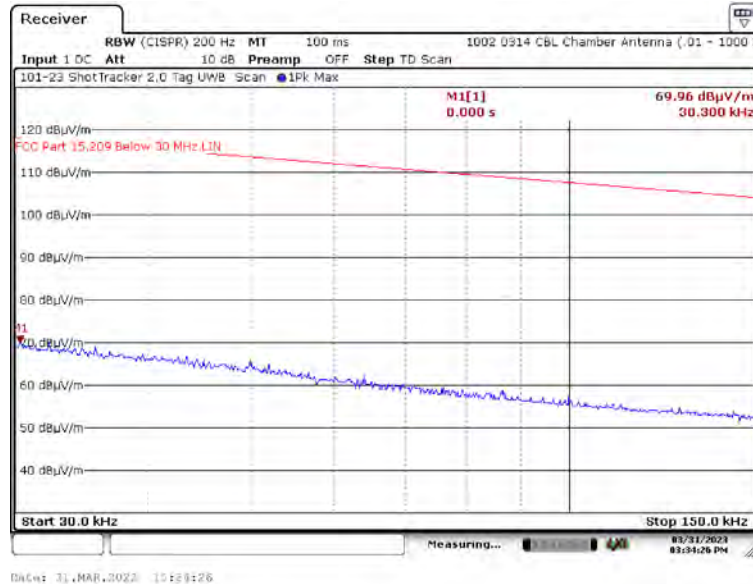
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

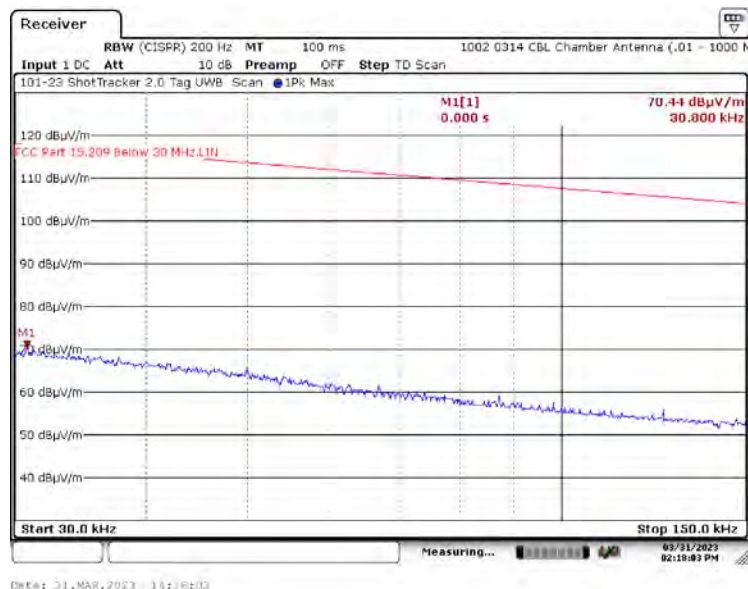
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.5 Perpendicular Measurement Antenna – 30 to 150 kHz, CH1, Y-Axis



6.4.1.6 Ground Parallel Measurement Antenna – 30 to 150 kHz, CH1, Y-Axis



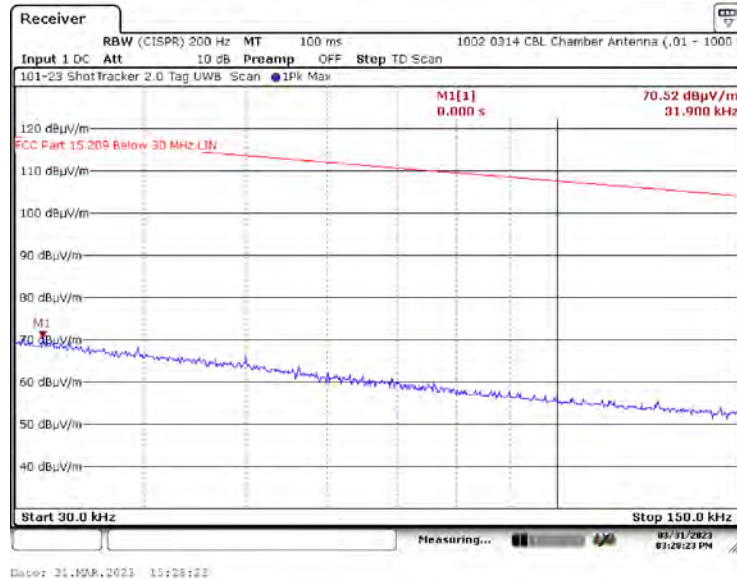
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

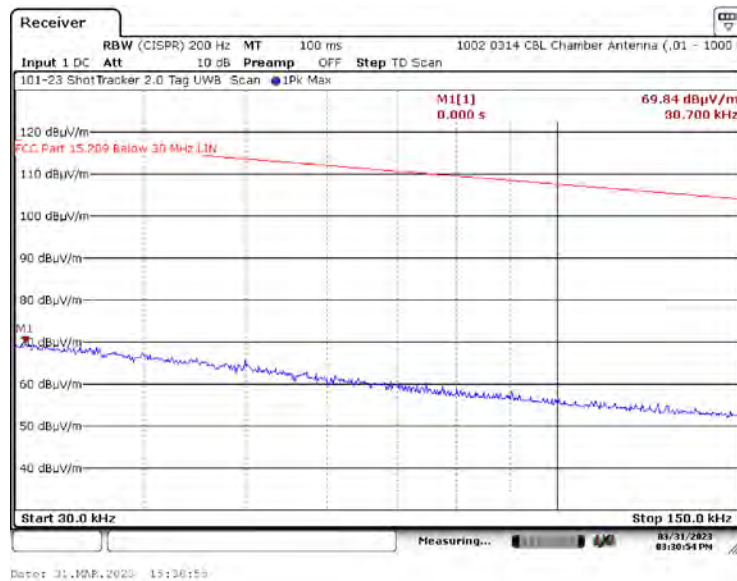
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.7 Parallel Measurement Antenna – 30 to 150 kHz, CH1, Z-Axis



6.4.1.8 Perpendicular Measurement Antenna – 30 to 150 kHz, CH1, Z-Axis



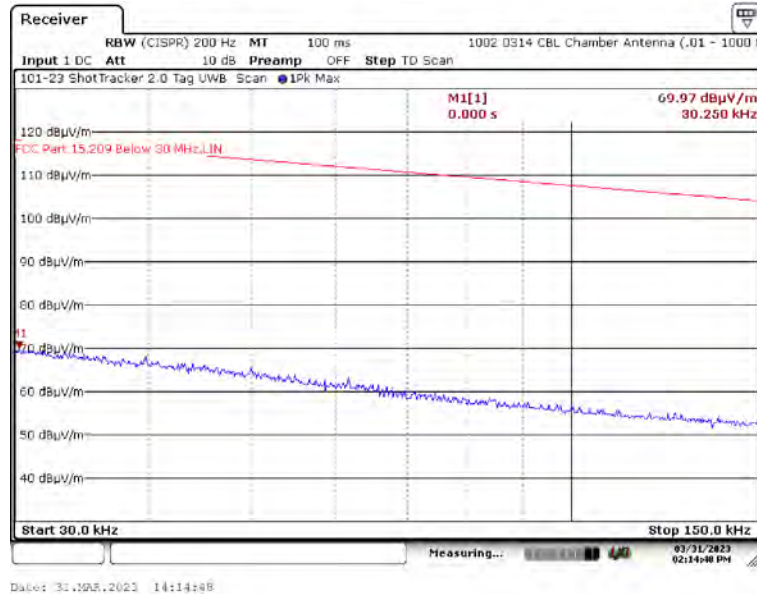
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.9 Ground Parallel Measurement Antenna – 30 to 150 kHz, CH1, Z-Axis



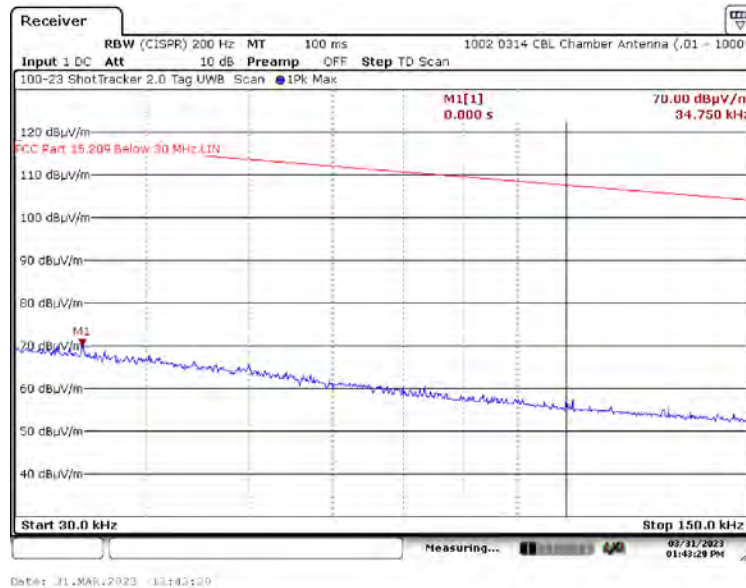
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, RSS-GEN, continued)

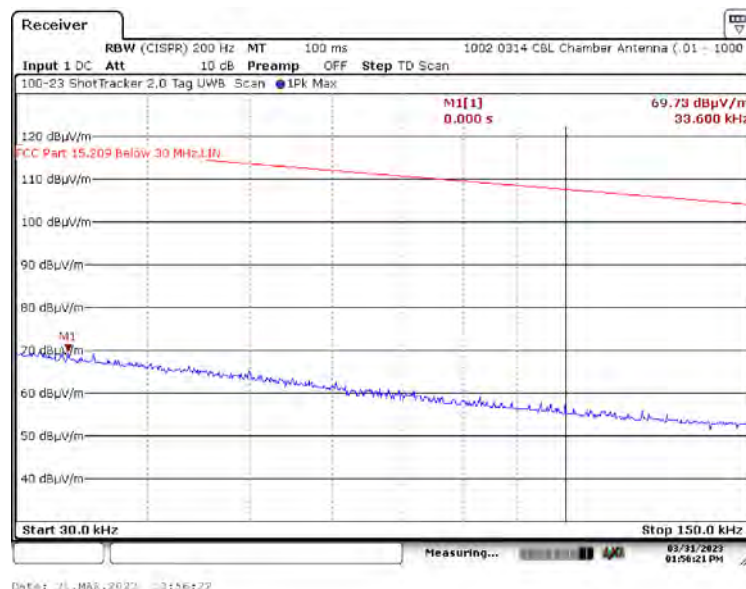
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.10 Parallel Measurement Antenna – 30 to 150 kHz, CH5, X-Axis



6.4.1.11 Perpendicular Measurement Antenna – 30 to 150 kHz, CH5, X-Axis



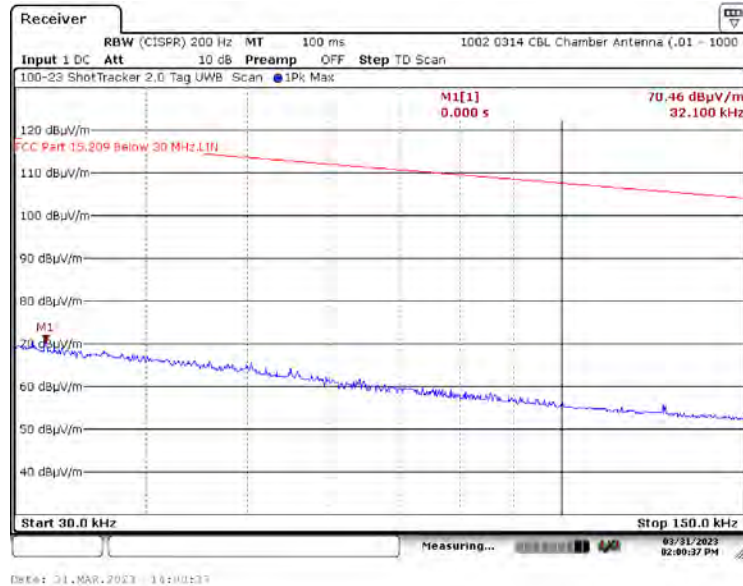
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, RSS-GEN continued)

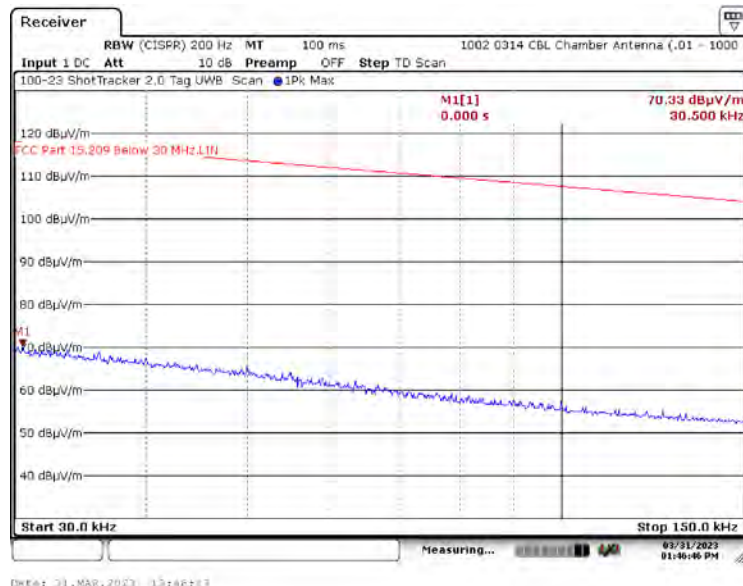
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.12 Ground Parallel Measurement Antenna – 30 to 150 kHz, CH5, X-Axis



6.4.1.13 Parallel Measurement Antenna – 30 to 150 kHz, CH5, Y-Axis



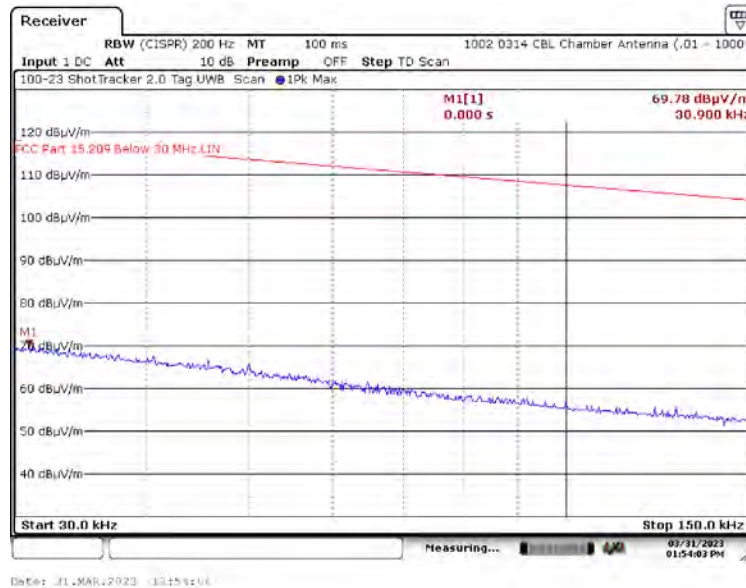
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

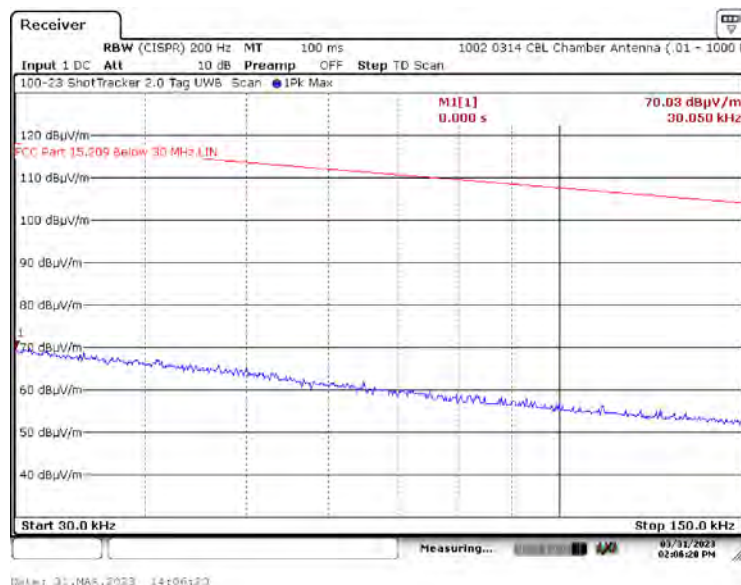
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.14 Perpendicular Measurement Antenna – 30 to 150 kHz, CH5, Y-Axis



6.4.1.15 Ground Parallel Measurement Antenna – 30 to 150 kHz, CH5, Y-Axis



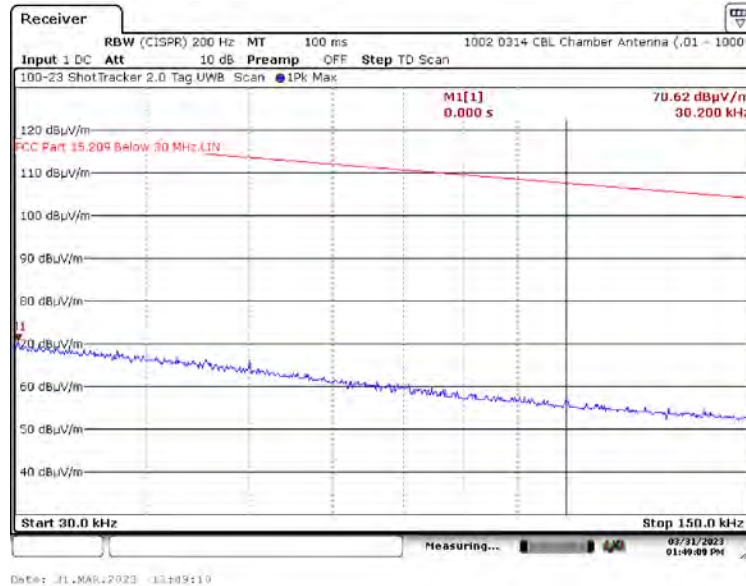
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, RSS-GEN continued)

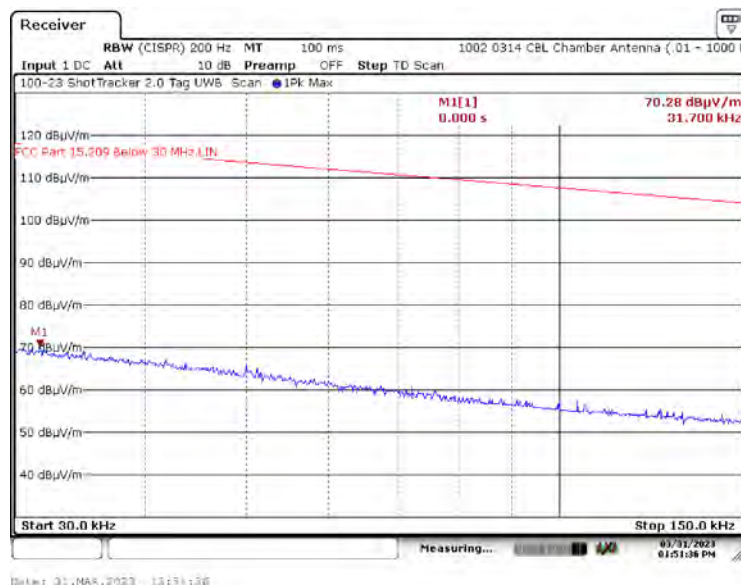
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.16 Parallel Measurement Antenna – 30 to 150 kHz, CH5, Z-Axis



6.4.1.17 Perpendicular Measurement Antenna – 30 to 150 kHz, CH5, Z-Axis



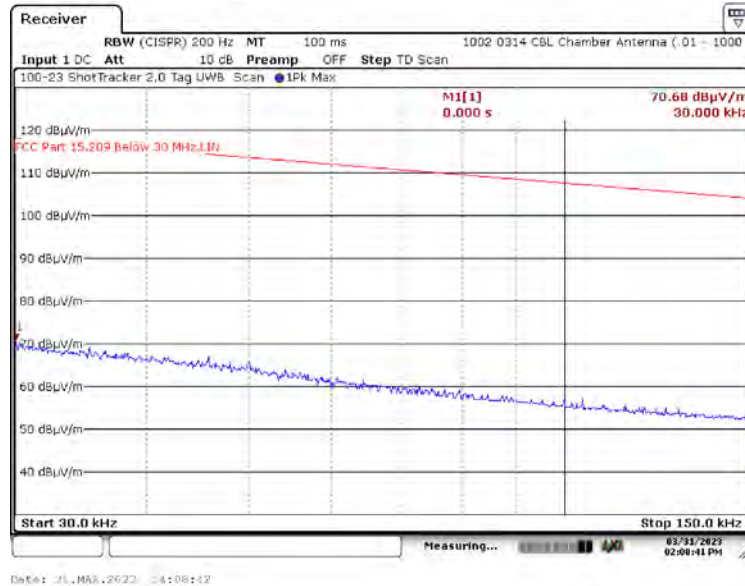
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, RSS-GEN continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.18 Ground Parallel Measurement Antenna – 30 to 150 kHz, CH5, Z-Axis



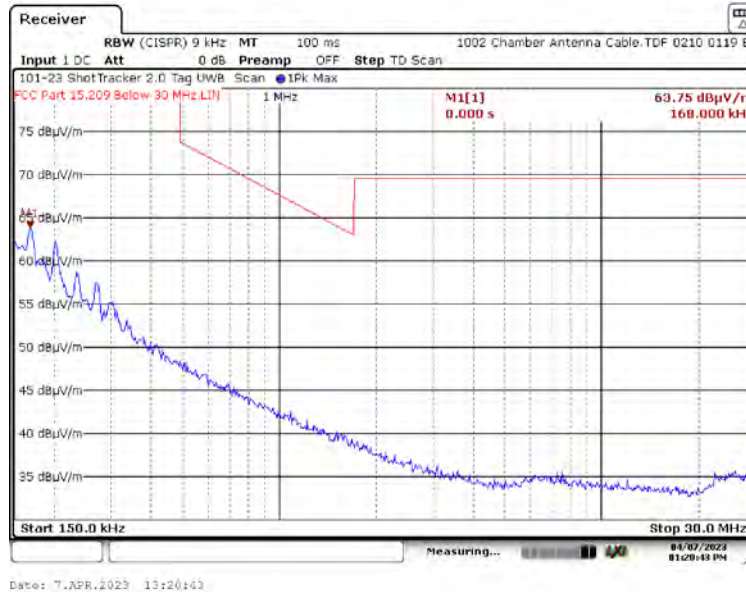
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.19 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH1, X-Axis



6.4.1.20 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH1, X-Axis



6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

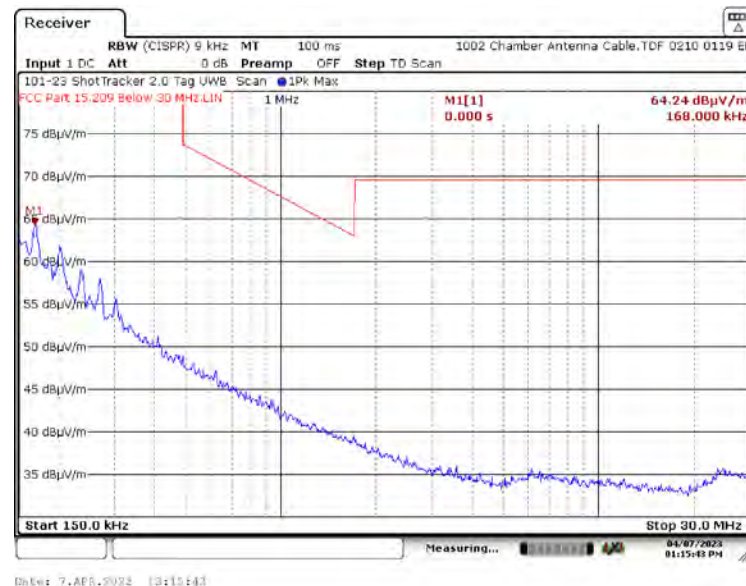
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.21 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH1, X-Axis



6.4.1.22 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH1, Y-Axis



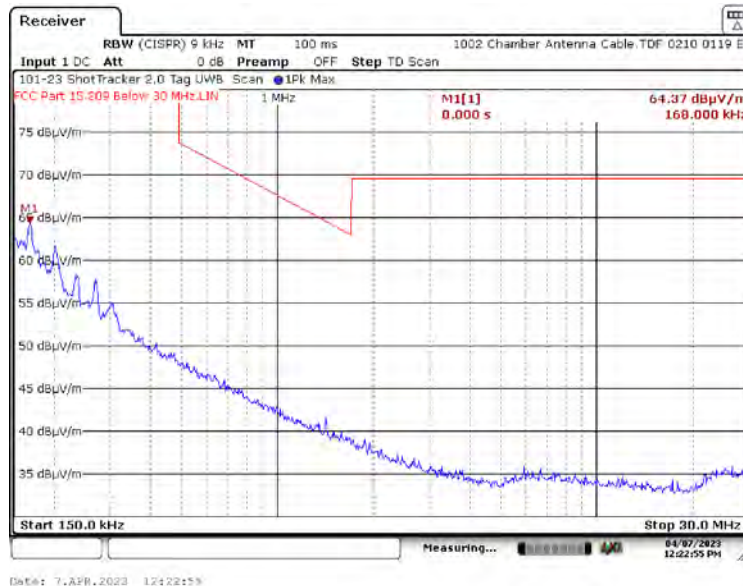
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

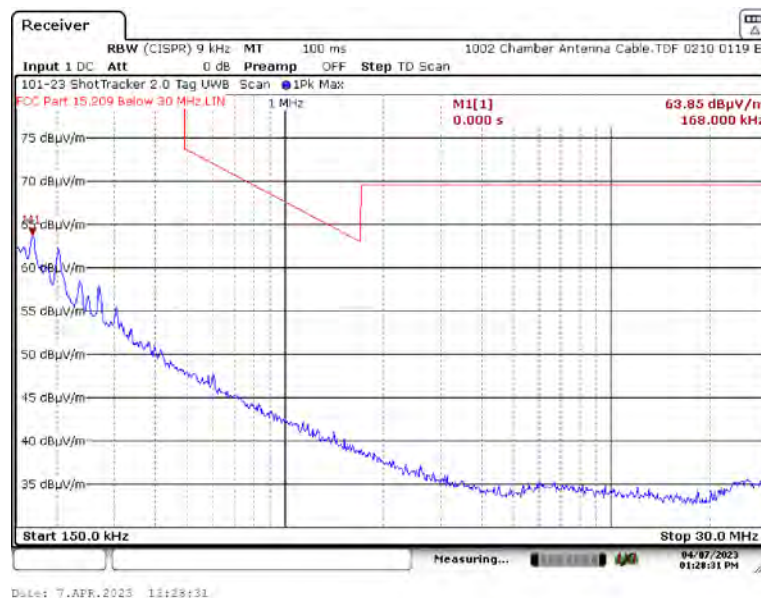
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.23 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH1, Y-Axis



6.4.1.24 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH1, Y-Axis



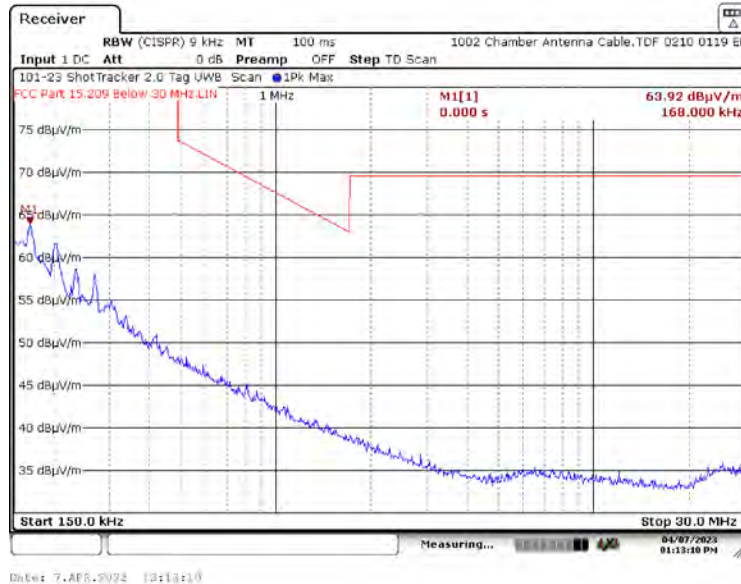
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

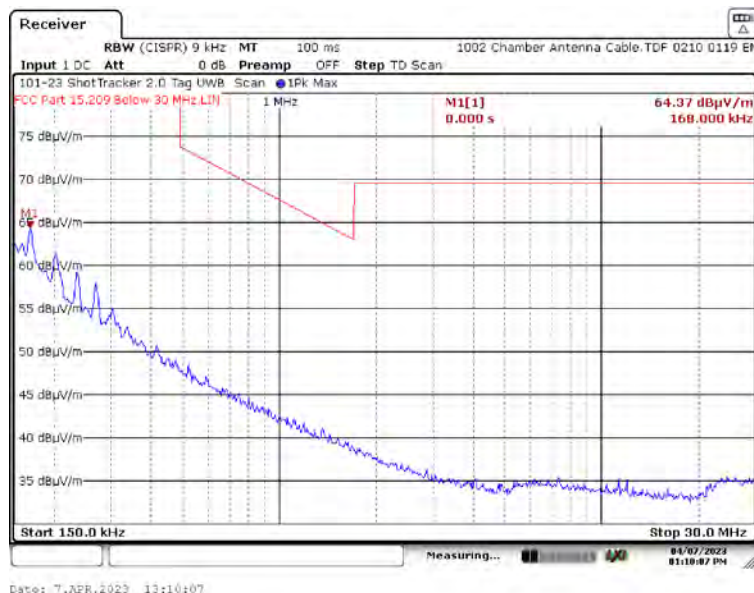
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.25 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH1, Z-Axis



6.4.1.26 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH1, Z-Axis



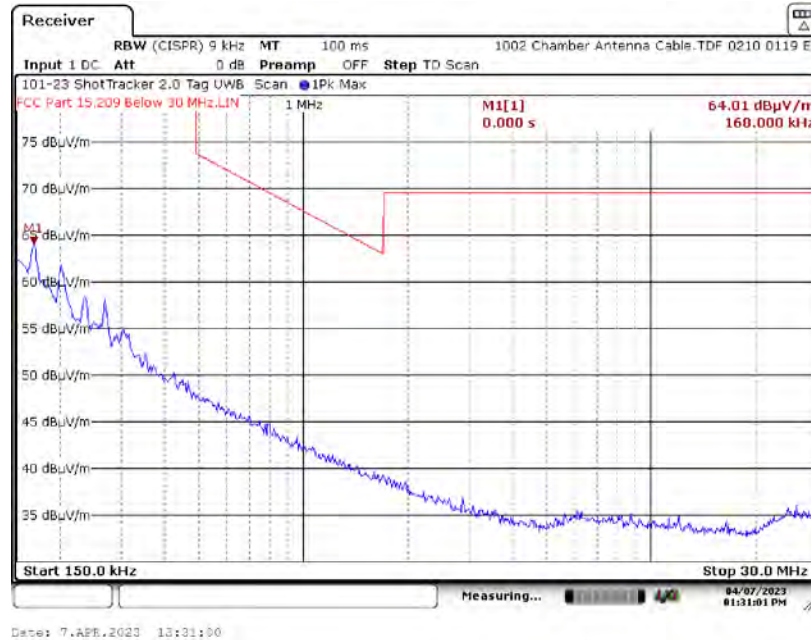
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.27 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH1, Z-Axis



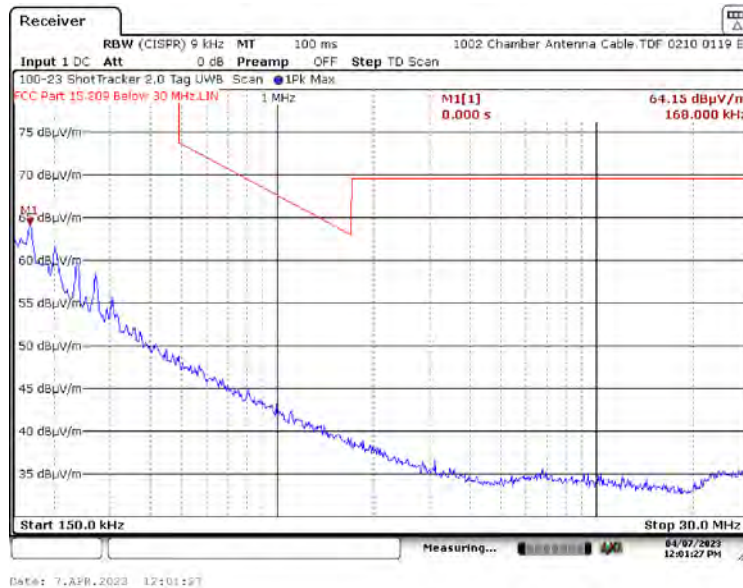
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, RSS-GEN continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.28 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, X-Axis



6.4.1.29 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH5, X-Axis



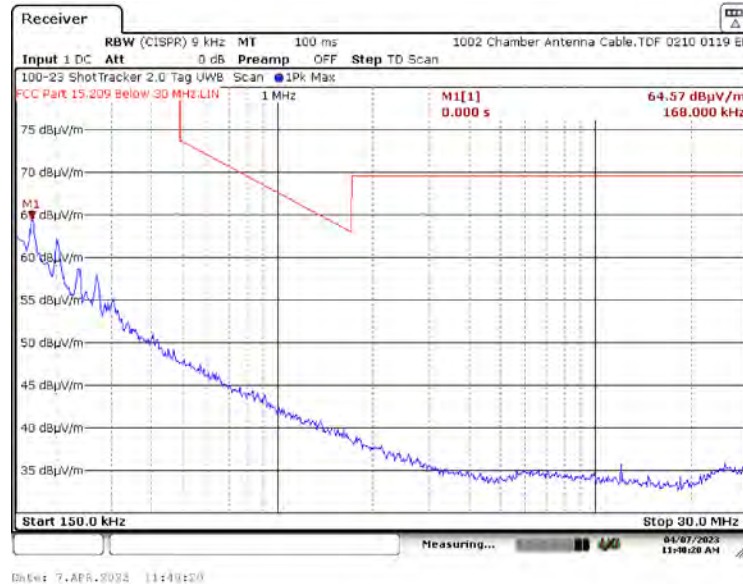
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, RSS-GEN continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.30 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, X-Axis



6.4.1.31 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, Y-Axis



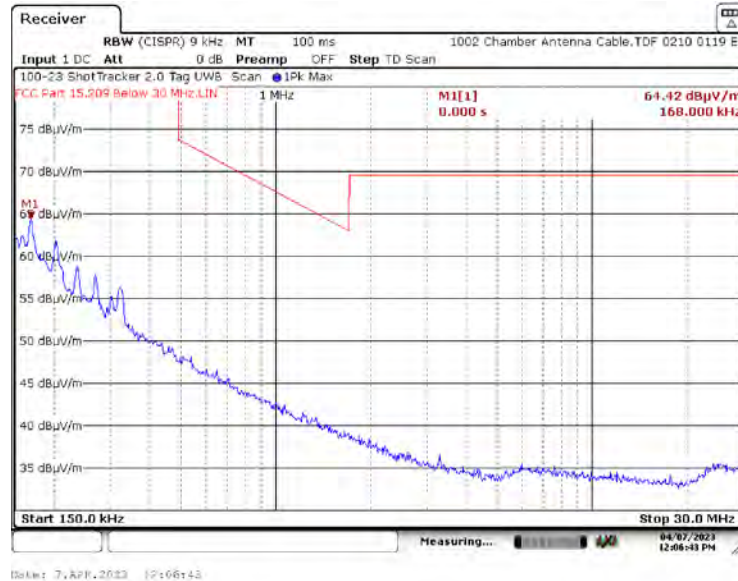
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, RSS-GEN continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.32 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH5, Y-Axis



6.4.1.33 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, Y-Axis



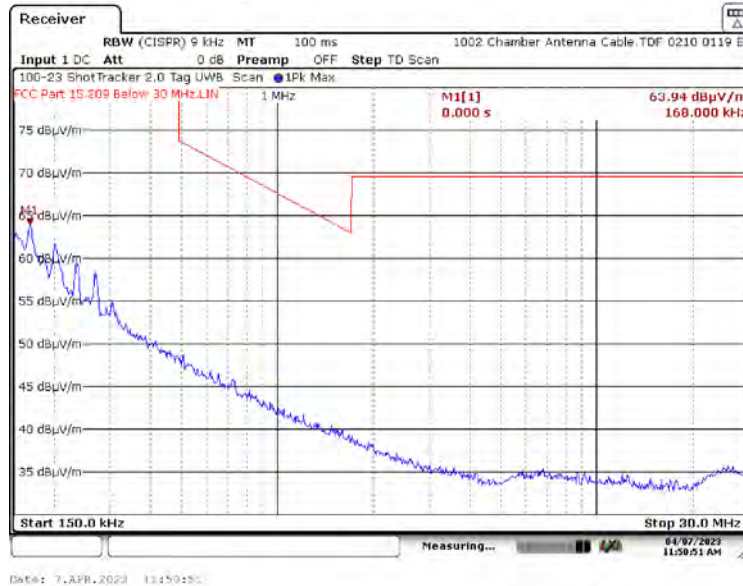
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, RSS-GEN continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.34 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, Z-Axis



6.4.1.35 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH5, Z-Axis



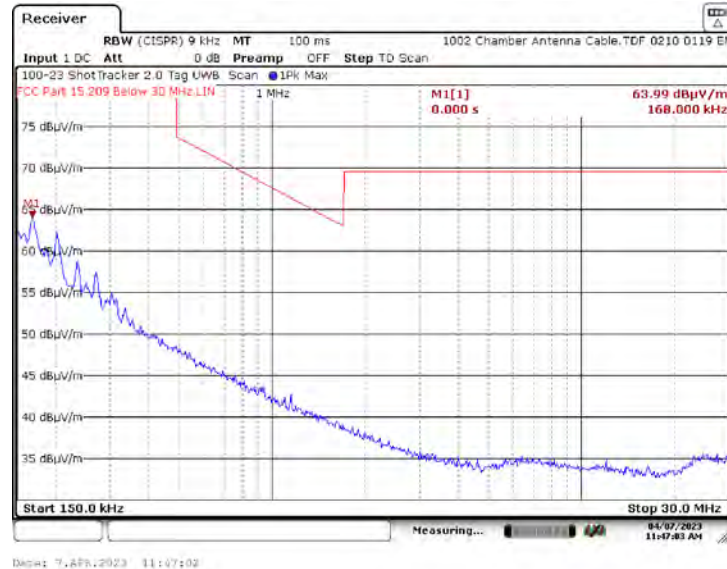
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, RSS-GEN continued)

6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.36 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, Z-Axis



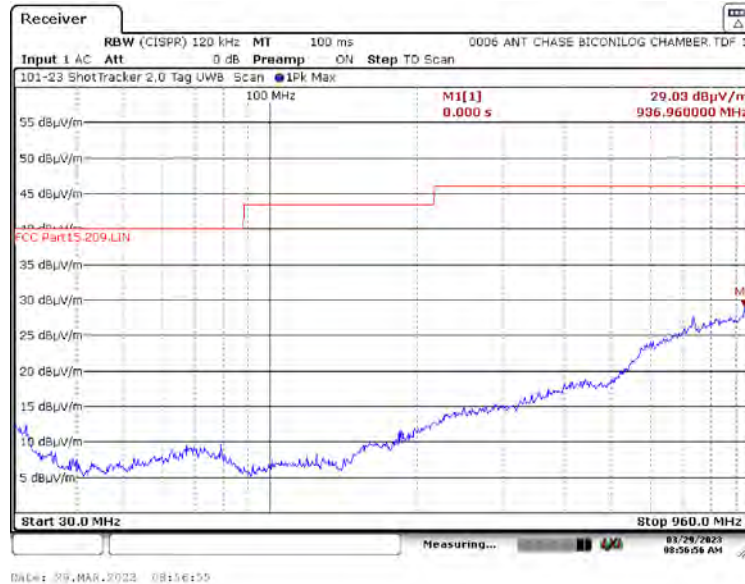
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

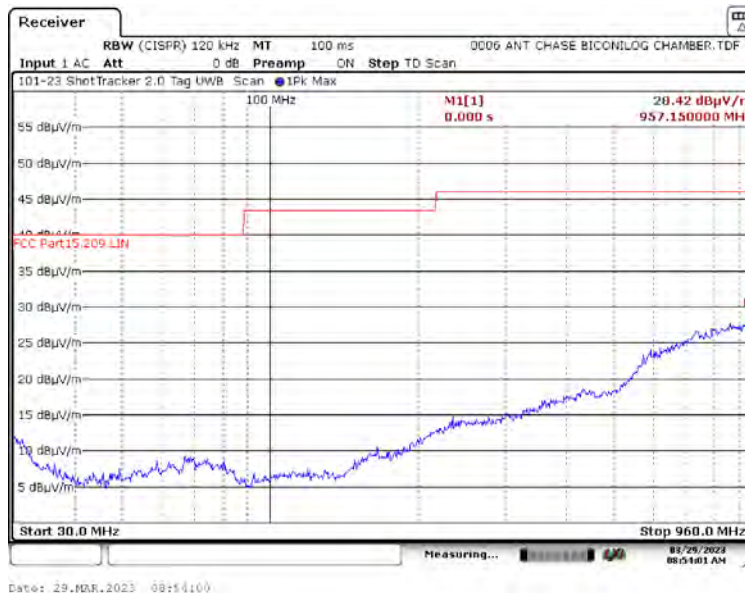
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.37 Horizontal Polarity – 30 to 960 MHz – Channel 1, X-Axis



6.4.1.38 Vertical Polarity – 30 to 960 MHz – Channel 1, X-Axis



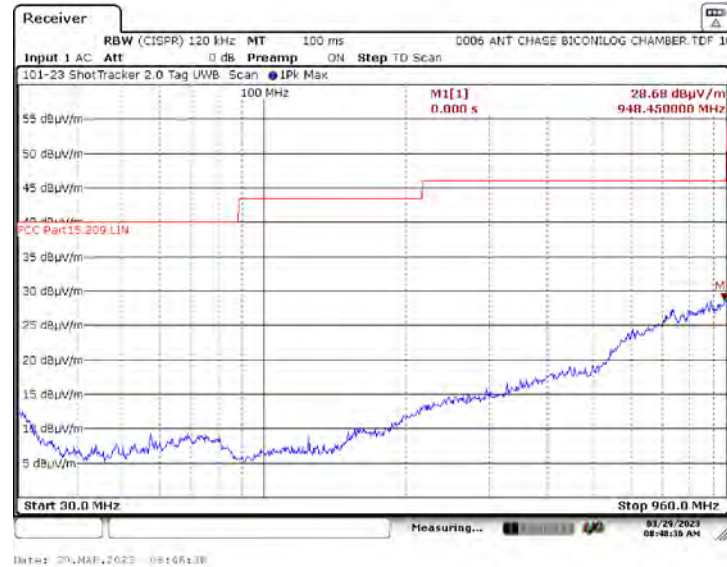
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

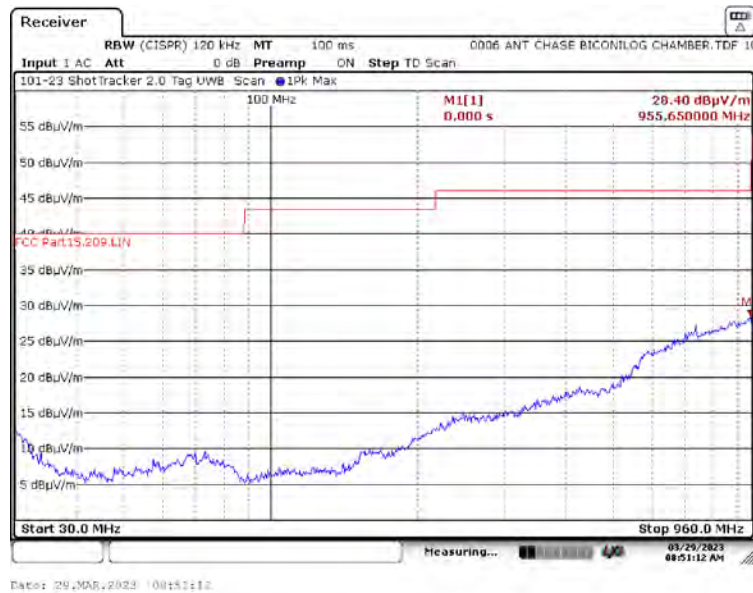
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.39 Horizontal Polarity – 30 to 960 MHz – Channel 1, Y-Axis



6.4.1.40 Vertical Polarity – 30 to 960 MHz – Channel 1, Y-Axis



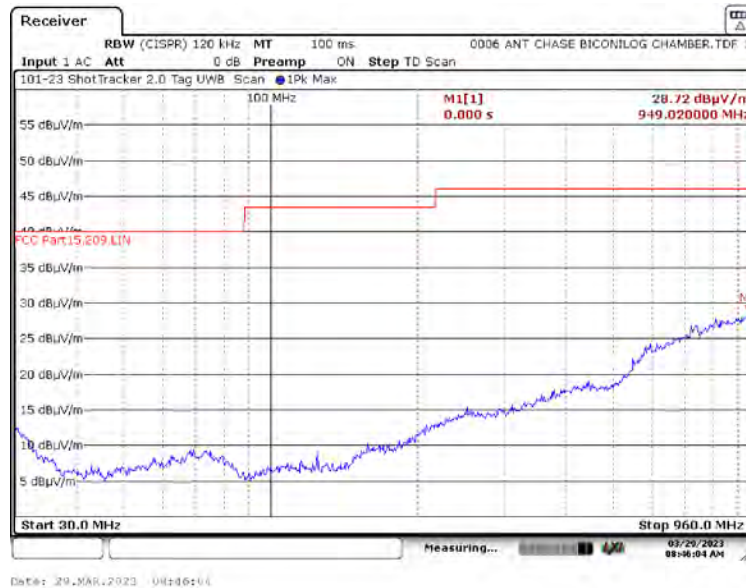
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

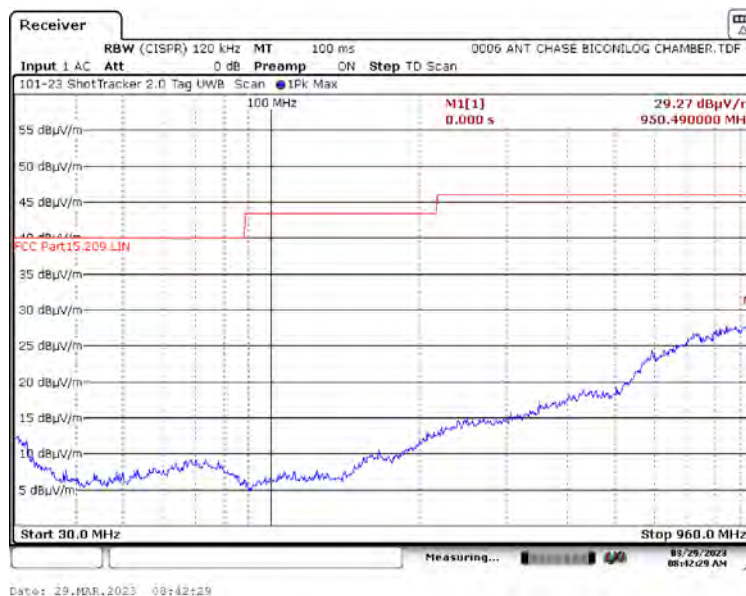
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.41 Horizontal Polarity – 30 to 960 MHz – Channel 1, Z-Axis



6.4.1.42 Vertical Polarity – 30 to 960 MHz – Channel 1, Z-Axis



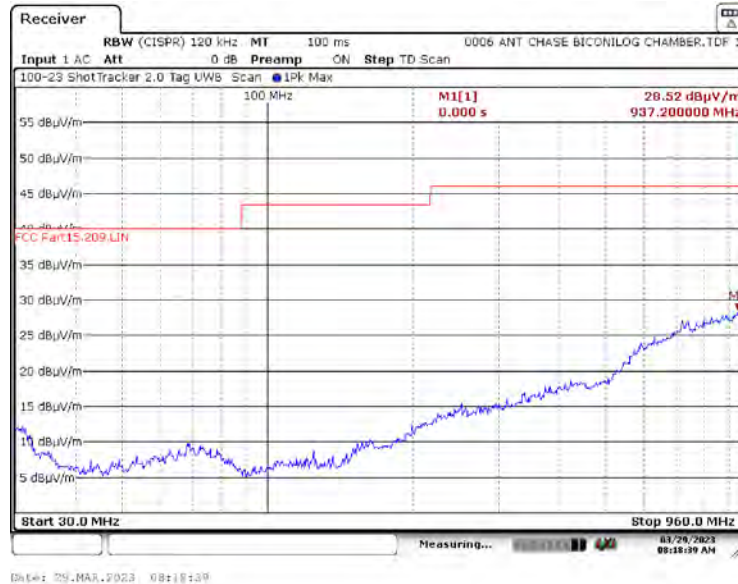
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, RSS-GEN continued)

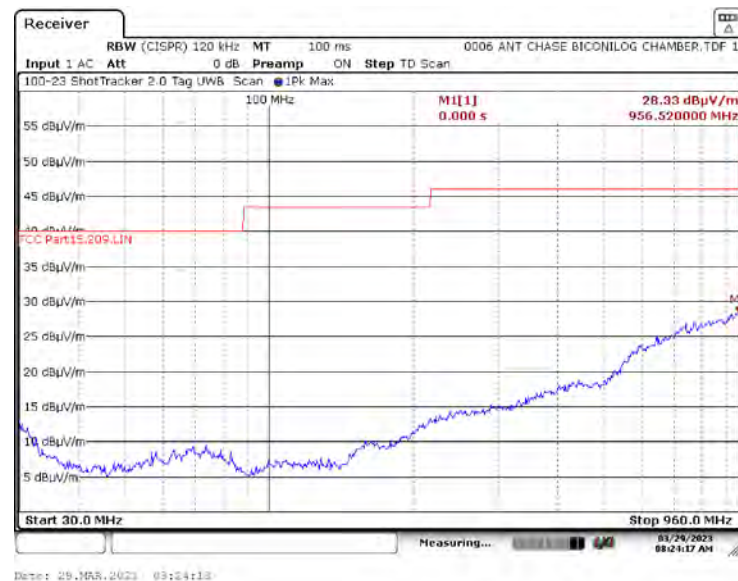
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.43 Horizontal Polarity – 30 to 960 MHz – Channel 5, X-Axis



6.4.1.44 Vertical Polarity – 30 to 960 MHz – Channel 5, X-Axis



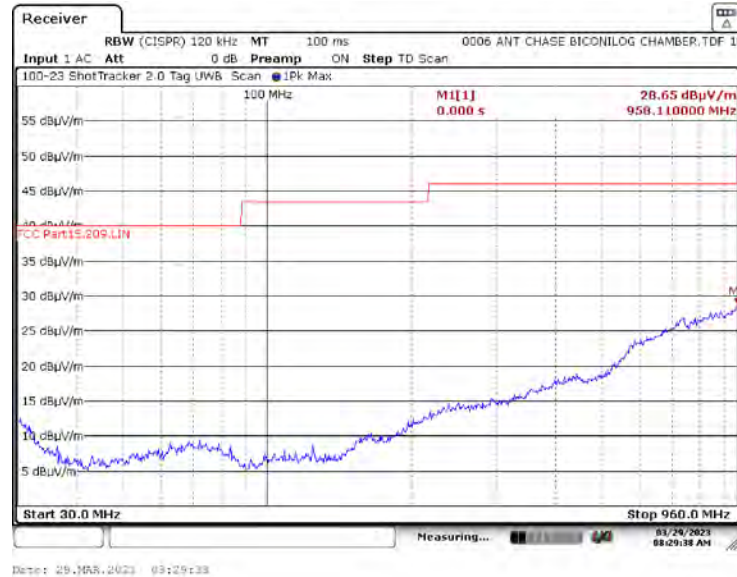
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, RSS-GEN continued)

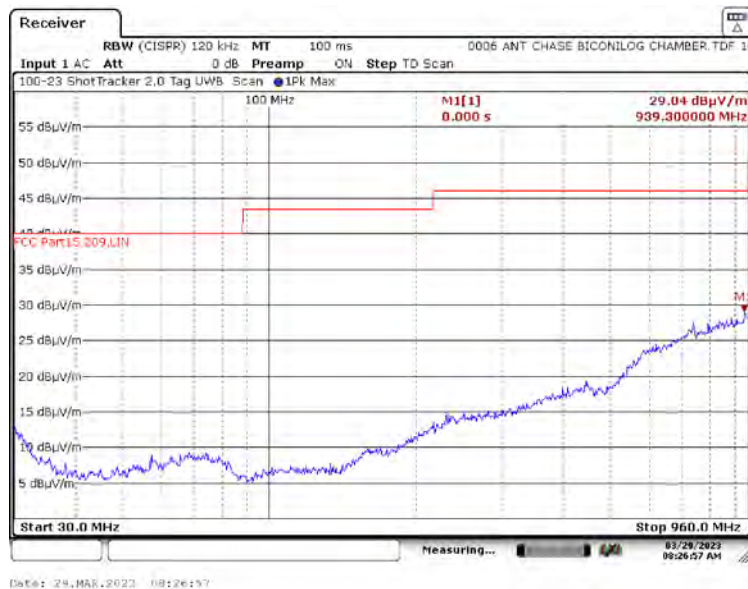
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.45 Horizontal Polarity – 30 to 960 MHz – Channel 5, Y-Axis



6.4.1.46 Vertical Polarity – 30 to 960 MHz – Channel 5, Y-Axis



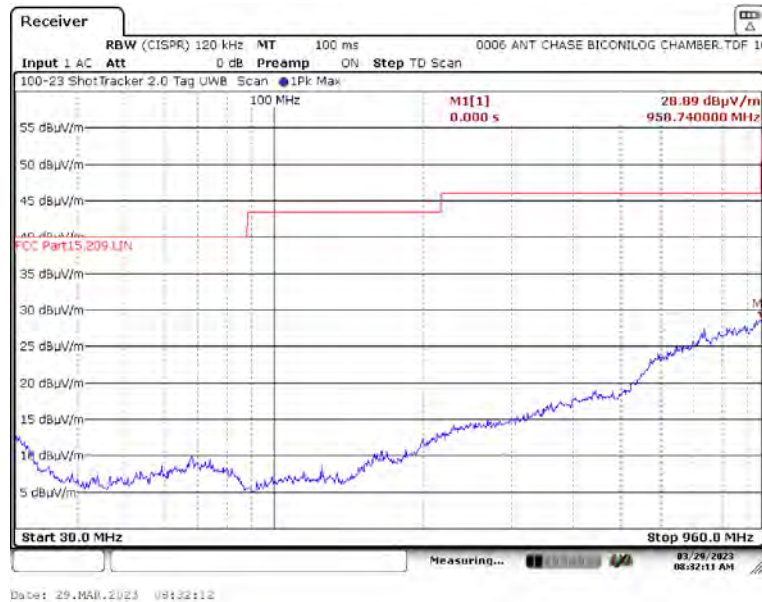
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, RSS-GEN continued)

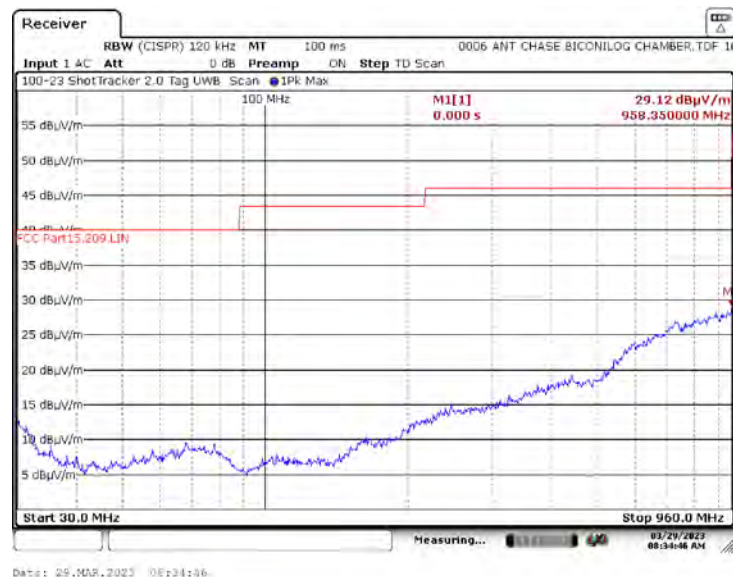
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

The device was prescreened in our 3 Meter Semi-Anechoic Chamber. There were no measurable emissions below 960 MHz on our 3 Meter OATS.

6.4.1.47 Horizontal Polarity – 30 to 960 MHz – Channel 5, Z-Axis



6.4.1.48 Vertical Polarity – 30 to 960 MHz – Channel 5, Z-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions above 960 MHz (15.519 (c), 15.521 (d))

Requirement: The radiated emissions above 960 MHz from a device operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of 1 MHz:

The RMS average measurement is based on the use of a spectrum analyzer with a resolution bandwidth of 1 MHz, an RMS detector, and a 1 millisecond or less averaging time.

The EIRP in terms of dBm, can be converted to a field strength, in dBμV/m at 3 Meters by adding 95.2.

Frequency (MHz)	EIRP (dBm)	EIRP at 3 Meters (dBμV/m)
960 - 1610	-75.3	19.9
1610 - 1990	-63.3	31.9
1990 - 3100	-61.3	33.9
3100 - 10600	-41.3	53.9
Above 10600	-61.3	33.9

Frequency Range: 960 MHz to 40 GHz
 Measurement Distance: 1 Meter and 0.3 Meter
 EMI Receiver IF Bandwidth: 1 MHz
 EMI Receiver Avg Bandwidth: 10 MHz
 Detector Function: RMS 1 mS Average as defined in 15.521(d)

Notes: Measurements made from 960 MHz to 18 GHz were made in a semi-anechoic chamber at 1 Meter using a -9.54 dB distance offset was programmed into the spectrum analyzer.

There were no broadband emissions related to the UWB transmitter above the limits. Narrowband spikes are related to digital circuitry and not subject to the 15.519 (d) limits and are only required to be below the limits of 15.209 see 15.521(c).

Measurements made from (6.4 or 8) to 18 GHz were done with the aid of a High Pass Filter before the low noise amplifier.

Measurements made from 18 to 40 GHz were done at 0.3 meters and a -20.00 dB distance offset was programmed into the spectrum analyzer.

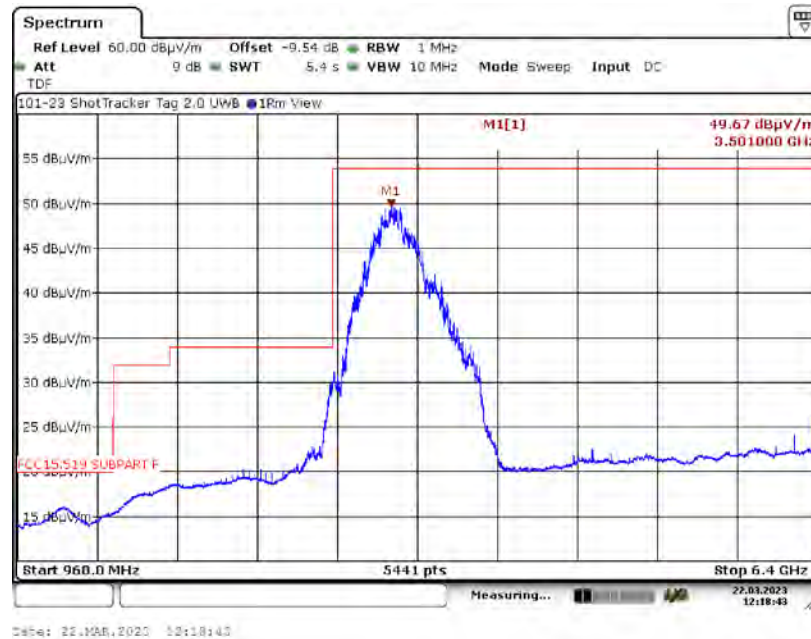
Sample Calculation: Final Result (dBμV/m) = Measurement Value (dBμV) + Antenna Factor (dB/m) + Cable Loss (dB) – Pre-amplifier Gain (dB) Internal or External.

Note: All correction factors are loaded into the measurement instrument prior to testing to determine the final result.

6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.1. 960 MHz to 6.4 GHz Horizontal at 1 Meter – Channel 1, X-Axis



6.5.2. 960 MHz to 8 GHz Vertical at 1 Meter – Channel 1, X-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.3. 960 MHz to 6.4 GHz Horizontal at 1 Meter – Channel 1, Y-Axis



6.5.4. 960 MHz to 6.4 GHz Vertical at 1 Meter – Channel 1, Y-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.5. 960 MHz to 6.4 GHz Horizontal at 1 Meter – Channel 1, Z-Axis



6.5.6. 960 MHz to 6.4 GHz Vertical at 1 Meter – Channel 1, Z-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.7. 960 MHz to 6.4 GHz Horizontal at 1 Meter – Channel 2, X-Axis



6.5.8. 960 MHz to 8 GHz Vertical at 1 Meter – Channel 2, X-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.9. 960 MHz to 6.4 GHz Horizontal at 1 Meter – Channel 2, Y-Axis



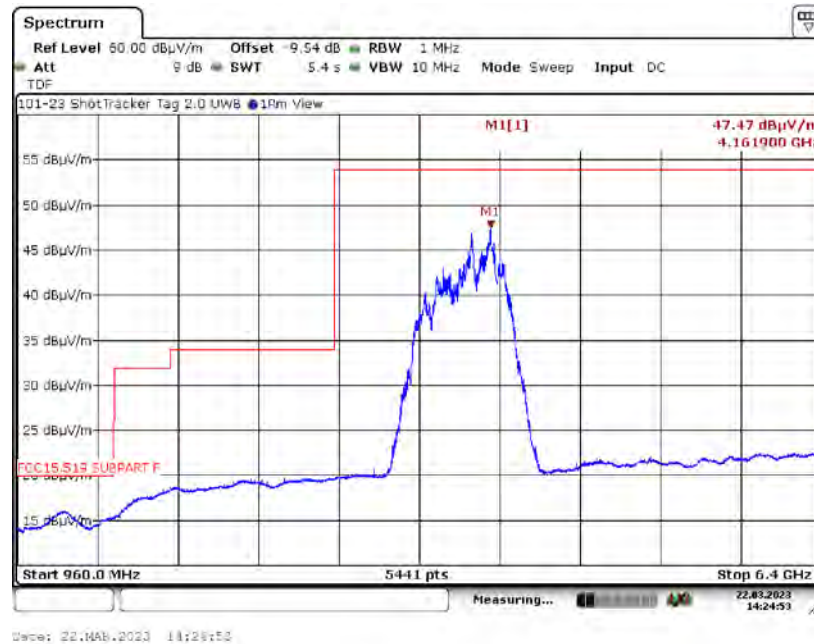
6.5.10. 960 MHz to 6.4 GHz Vertical at 1 Meter – Channel 2, Y-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.11. 960 MHz to 6.4 GHz Horizontal at 1 Meter – Channel 2, Z-Axis



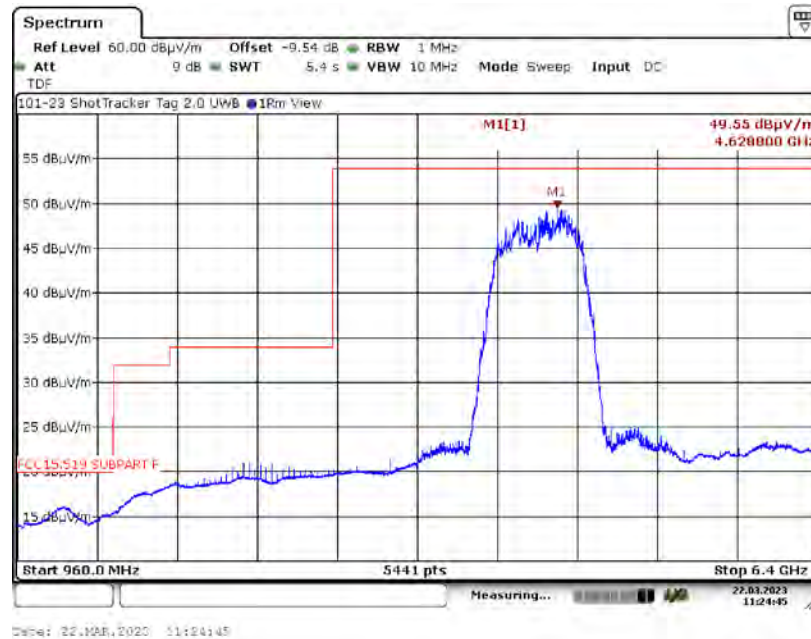
6.5.12. 960 MHz to 6.4 GHz Vertical at 1 Meter – Channel 2, Z-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.13. 960 MHz to 6.4 GHz Horizontal at 1 Meter – Channel 3, X-Axis



6.5.14. 960 MHz to 8 GHz Vertical at 1 Meter – Channel 3, X-Axis



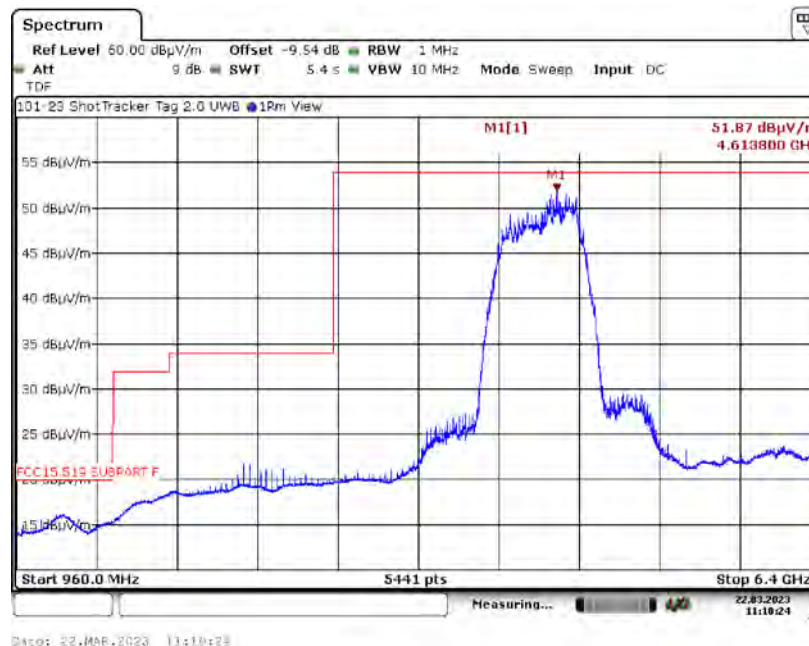
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.15. 960 MHz to 6.4 GHz Horizontal at 1 Meter – Channel 3, Y-Axis



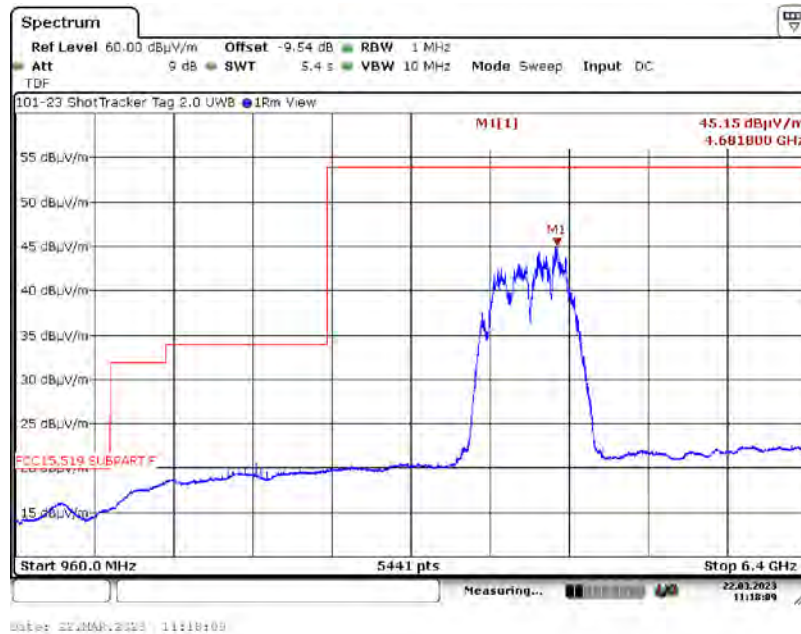
6.5.16. 960 MHz to 6.4 GHz Vertical at 1 Meter – Channel 3, Y-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.17. 960 MHz to 6.4 GHz Horizontal at 1 Meter – Channel 3, Z-Axis



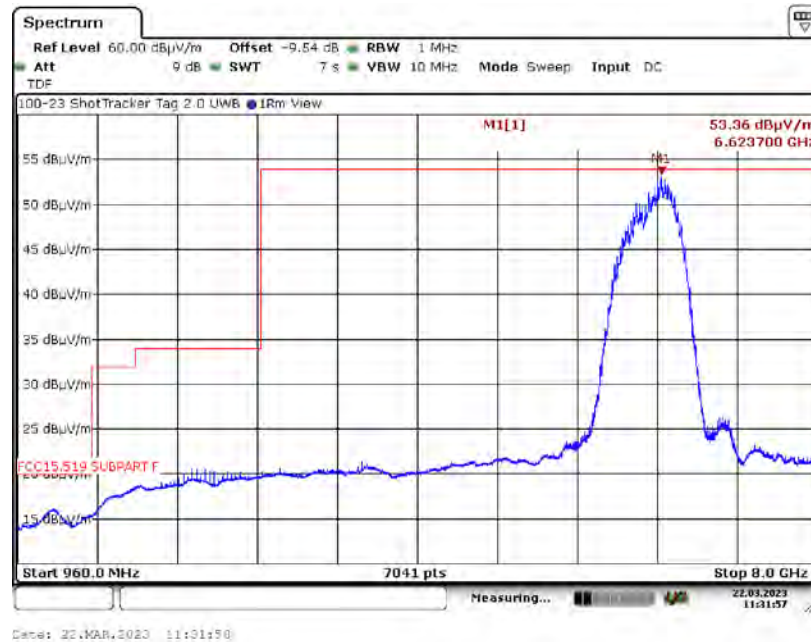
6.5.18. 960 MHz to 6.4 GHz Vertical at 1 Meter – Channel 3, Z-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.19. 960 MHz to 8 GHz Horizontal at 1 Meter – Channel 5, X-Axis



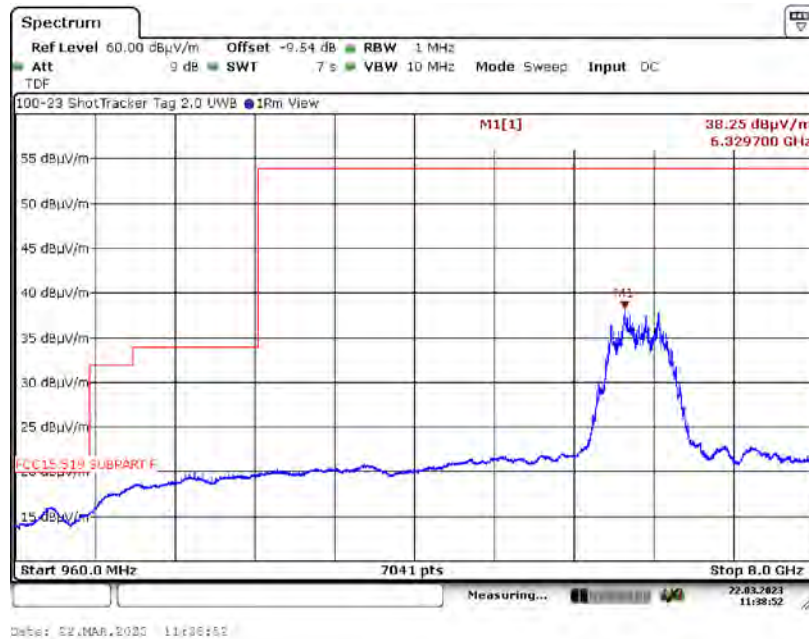
6.5.20. 960 MHz to 8 GHz Vertical at 1 Meter – Channel 5, X-Axis



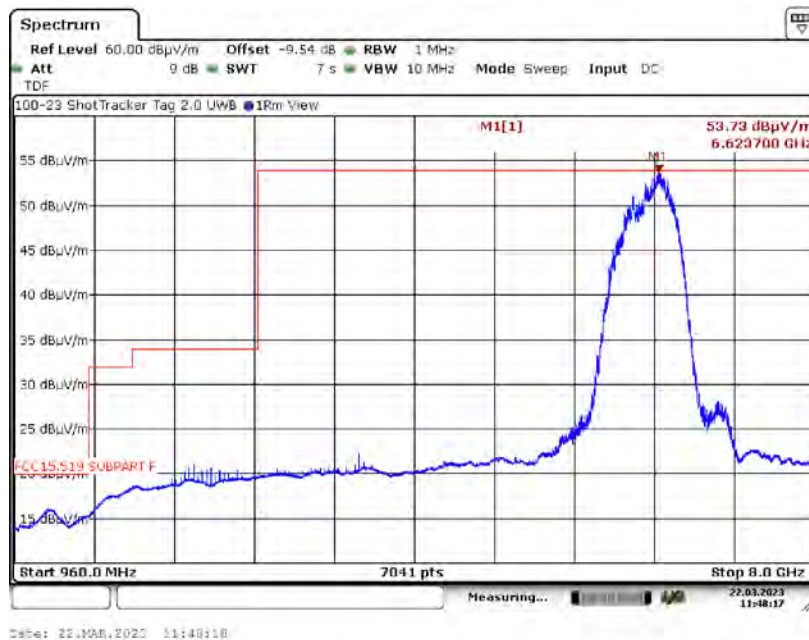
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.21. 960 MHz to 8 GHz Horizontal at 1 Meter – Channel 5, Y-Axis



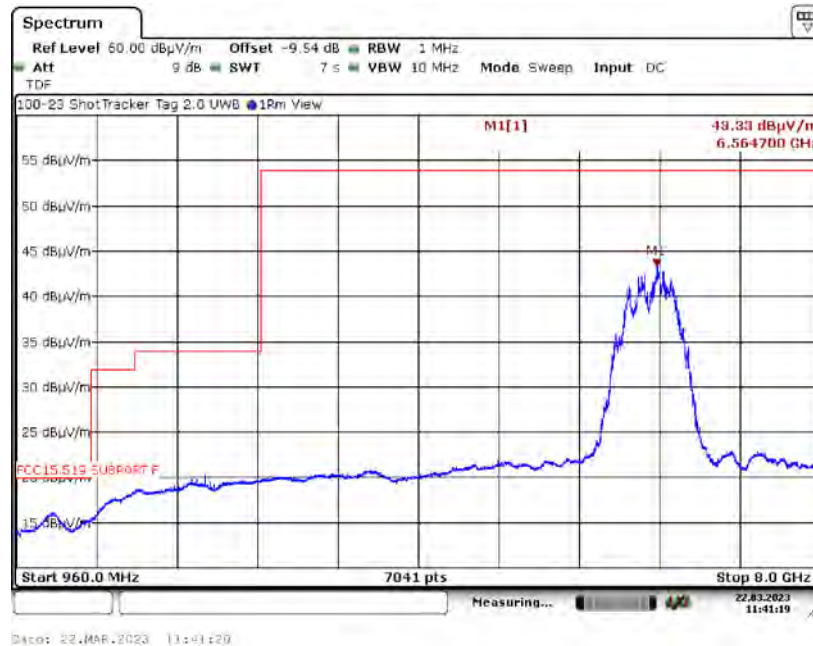
6.5.22. 960 MHz to 8 GHz Vertical at 1 Meter – Channel 5, Y-Axis



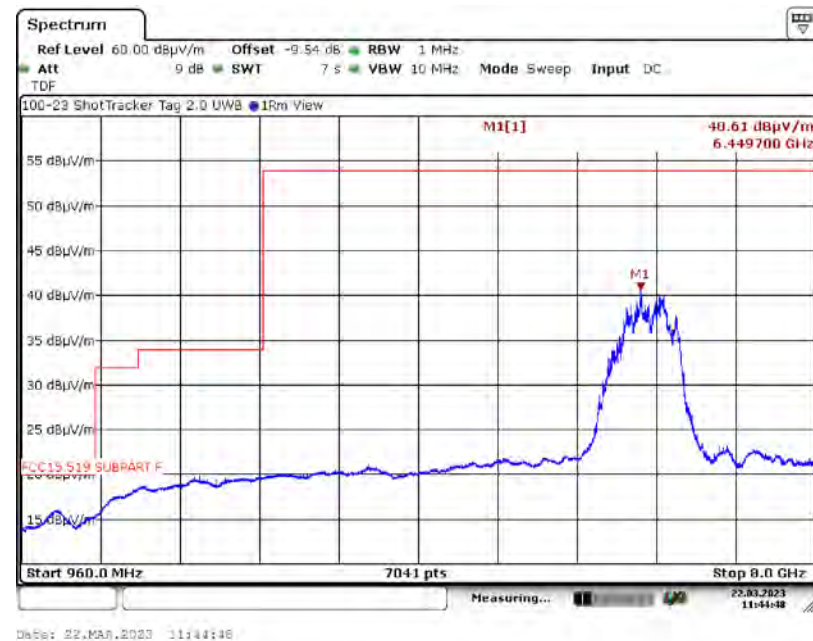
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.23. 960 MHz to 8 GHz Horizontal at 1 Meter – Channel 5, Z-Axis



6.5.24. 960 MHz to 8 GHz Vertical at 1 Meter – Channel 5, Z-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.25. 6.4 to 18 GHz Horizontal at 1 Meter – Channel 1, X-Axis



6.5.26. 6.4 to 18 GHz Vertical at 1 Meter – Channel 1, X-Axis



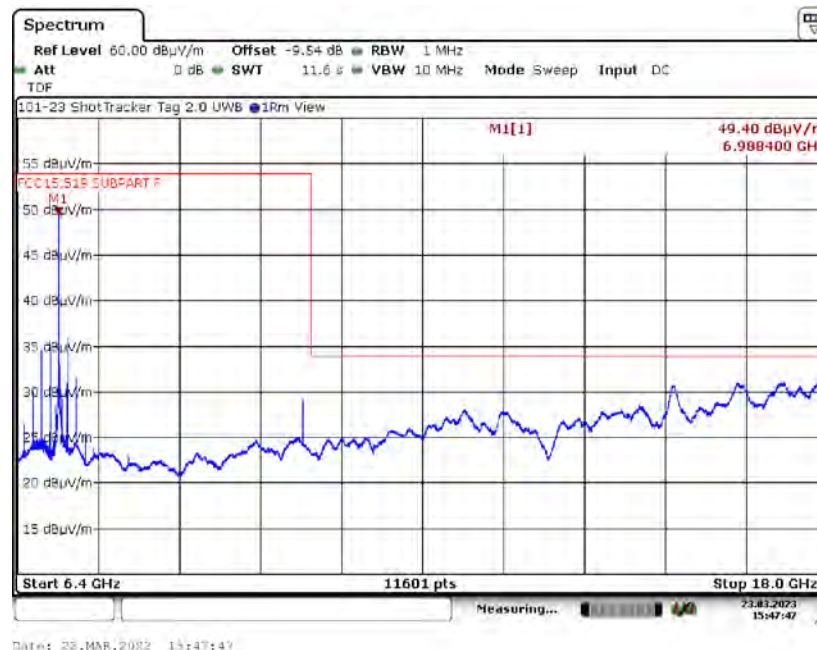
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.27. 6.4 to 18 GHz Horizontal at 1 Meter – Channel 1, Y-Axis



6.5.28. 6.4 to 18 GHz Vertical at 1 Meter – Channel 1, Y-Axis



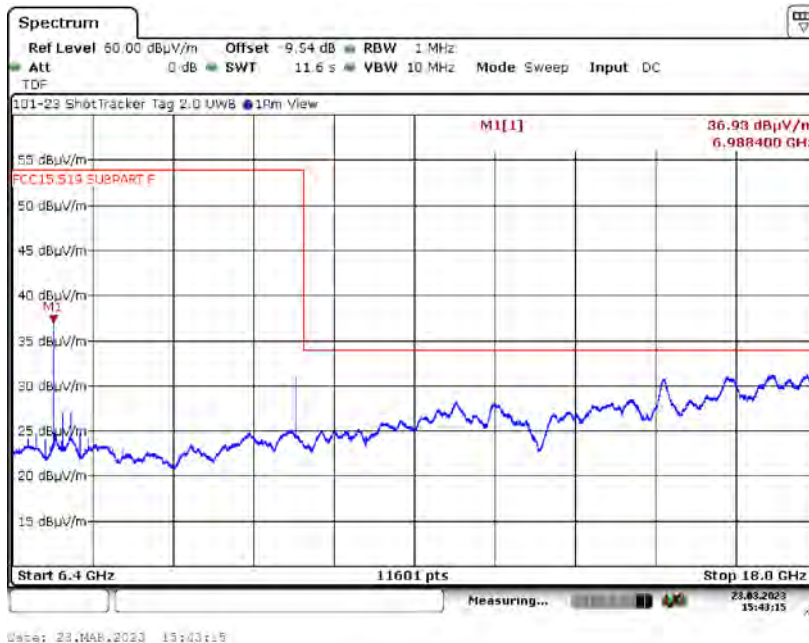
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.29. 6.4 to 18 GHz Horizontal at 1 Meter – Channel 1, Z-Axis



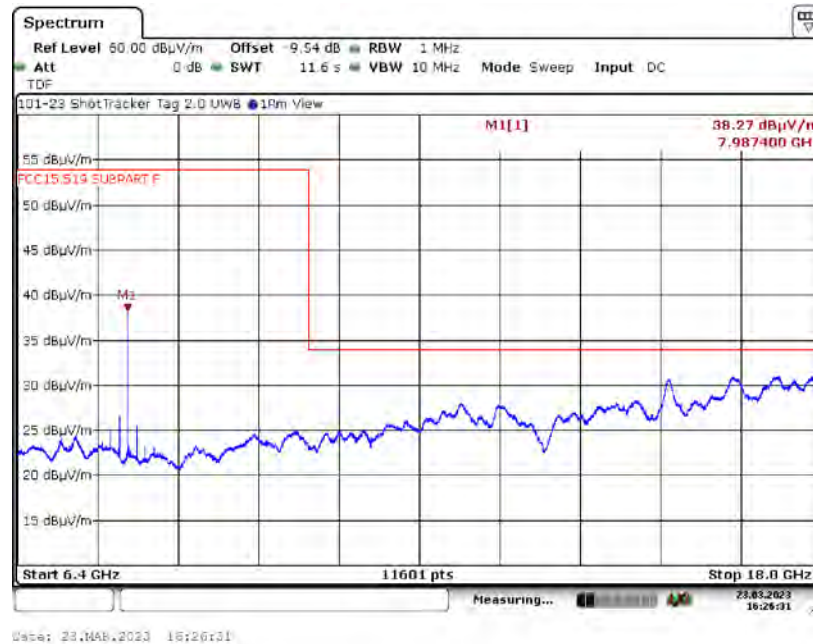
6.5.30. 6.4 to 18 GHz Vertical at 1 Meter – Channel 1, Z-Axis



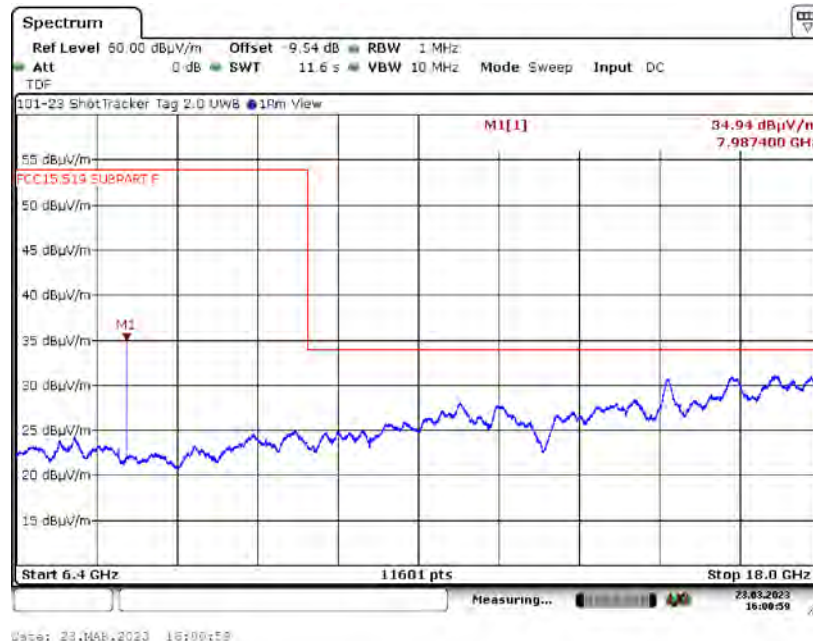
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.31. 6.4 to 18 GHz Horizontal at 1 Meter – Channel 2, X-Axis



6.5.32. 6.4 to 18 GHz Vertical at 1 Meter – Channel 2, X-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.33. 6.4 to 18 GHz Horizontal at 1 Meter – Channel 2, Y-Axis



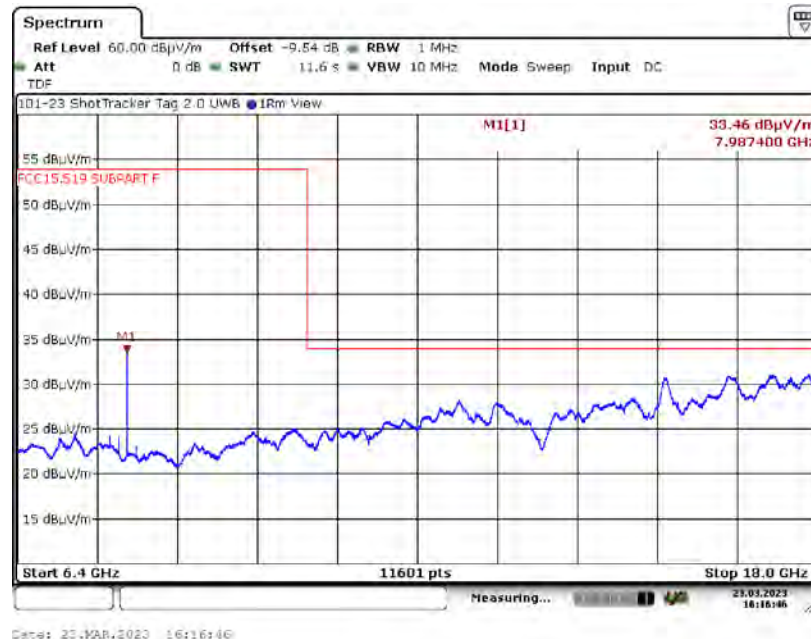
6.5.34. 6.4 to 18 GHz Vertical at 1 Meter – Channel 2, Y-Axis



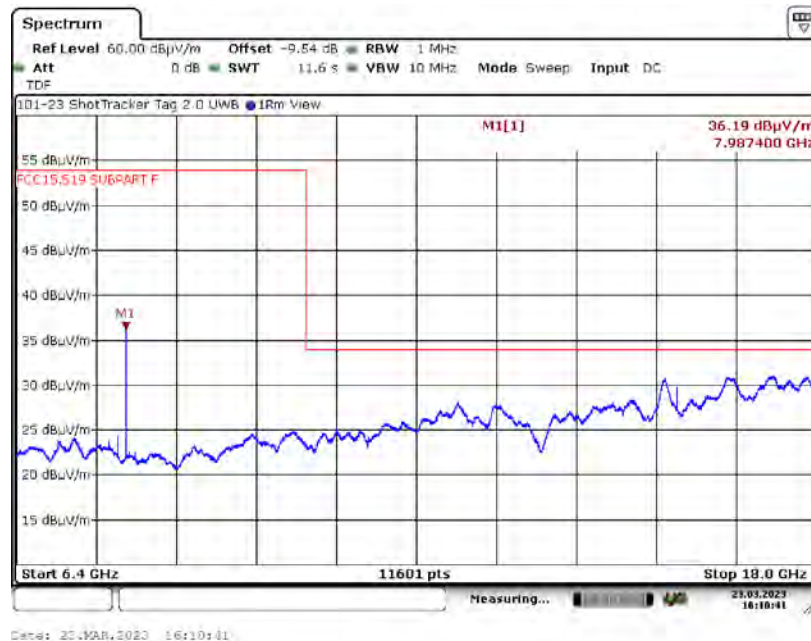
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.35. 6.4 to 18 GHz Horizontal at 1 Meter – Channel 2, Z-Axis



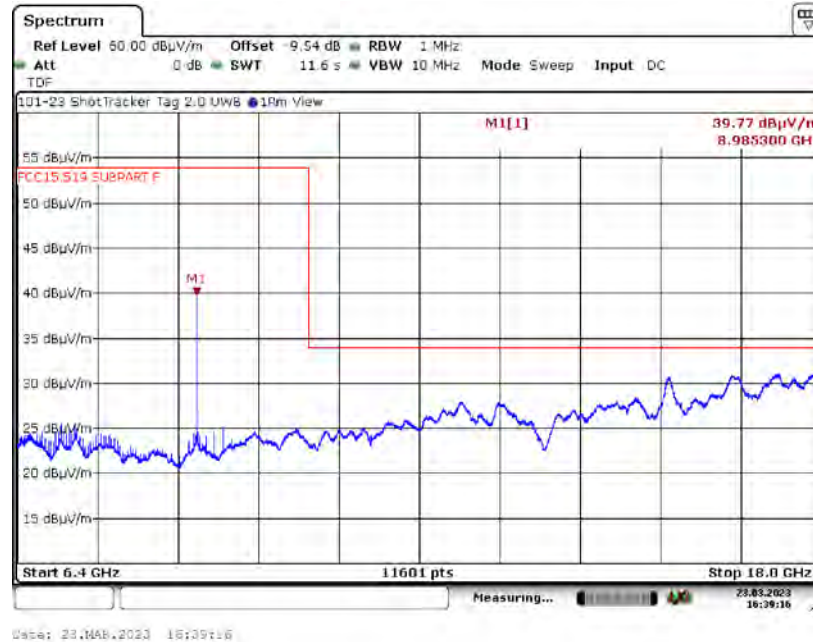
6.5.36. 6.4 to 18 GHz Vertical at 1 Meter – Channel 2, Z-Axis



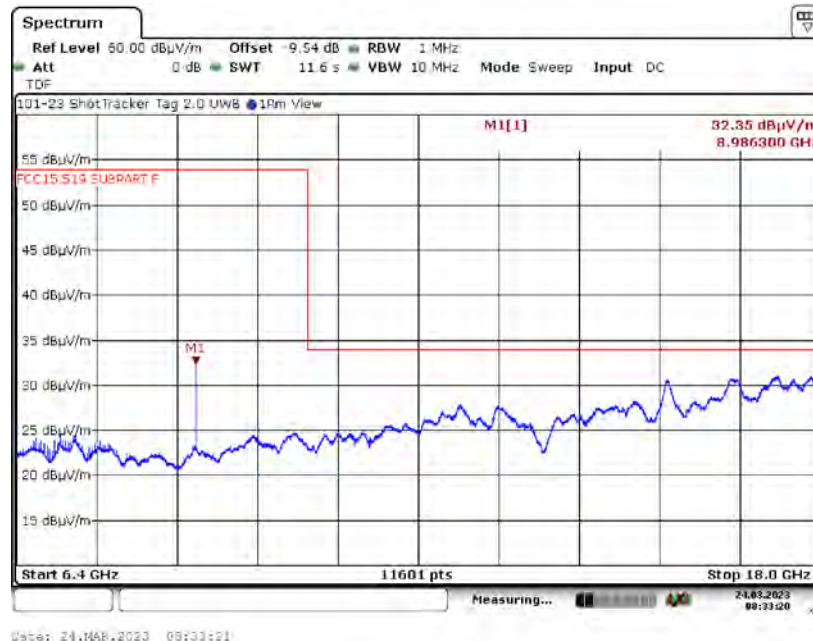
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.37. 6.4 to 18 GHz Horizontal at 1 Meter – Channel 3, X-Axis



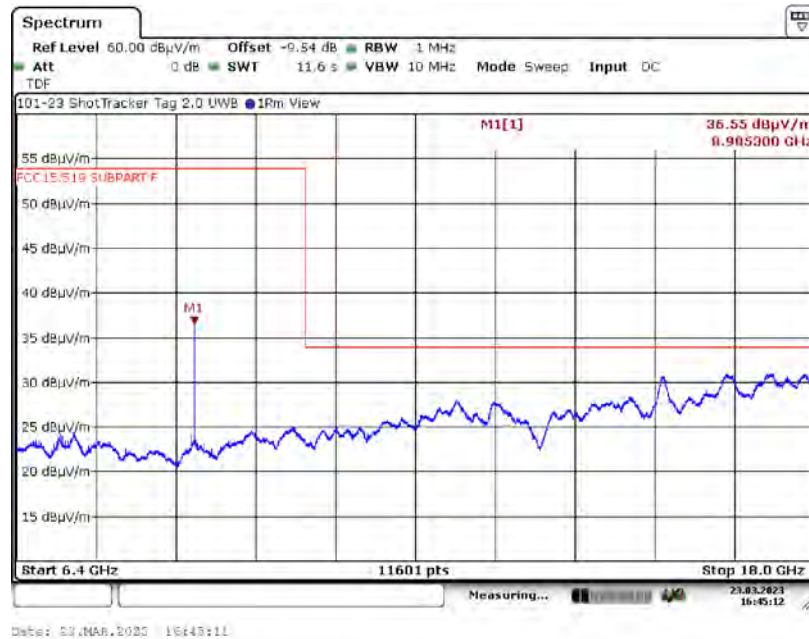
6.5.38. 6.4 to 18 GHz Vertical at 1 Meter – Channel 3, X-Axis



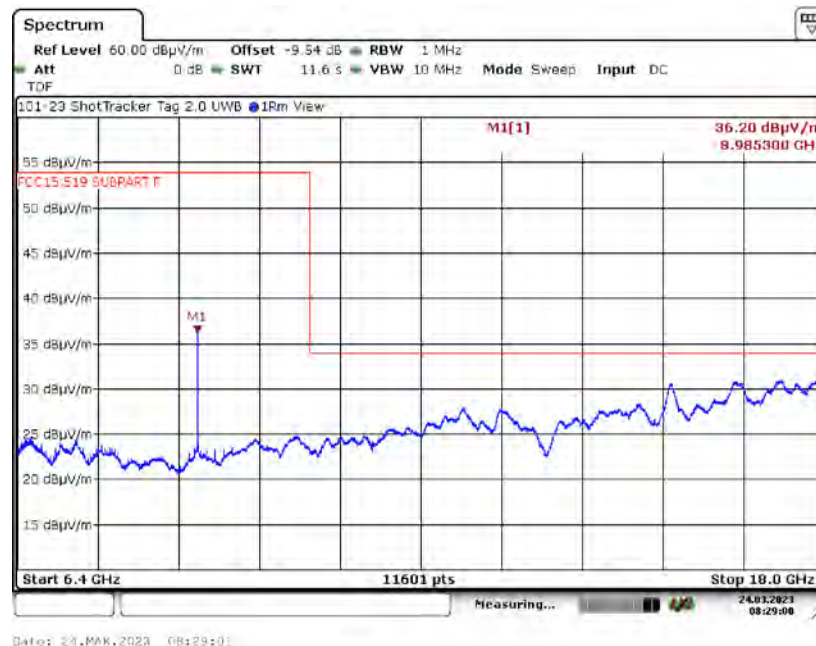
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.39. 6.4 to 18 GHz Horizontal at 1 Meter – Channel 3, Y-Axis



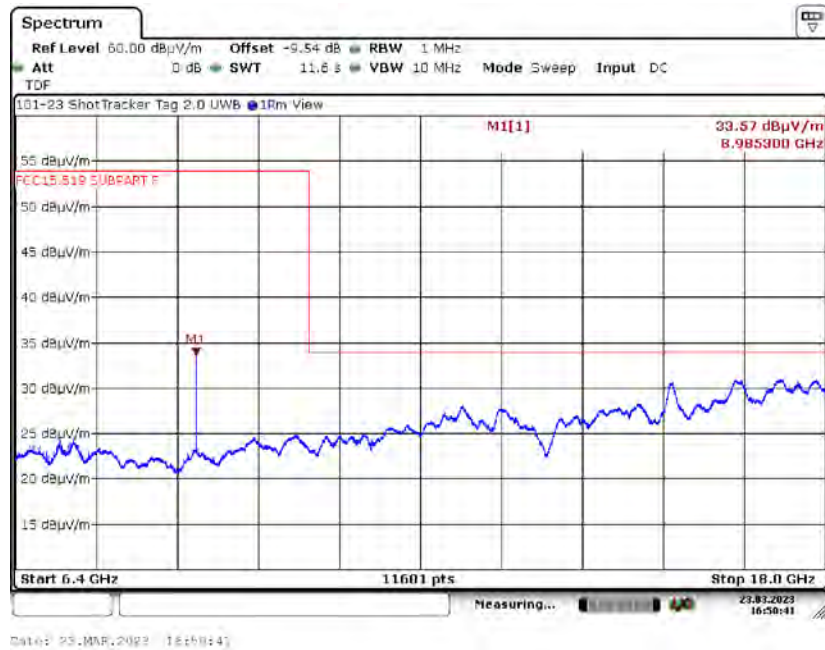
6.5.40. 6.4 to 18 GHz Vertical at 1 Meter – Channel 3, Y-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.41. 6.4 to 18 GHz Horizontal at 1 Meter – Channel 3, Z-Axis



6.5.42. 6.4 to 18 GHz Vertical at 1 Meter – Channel 3, Z-Axis



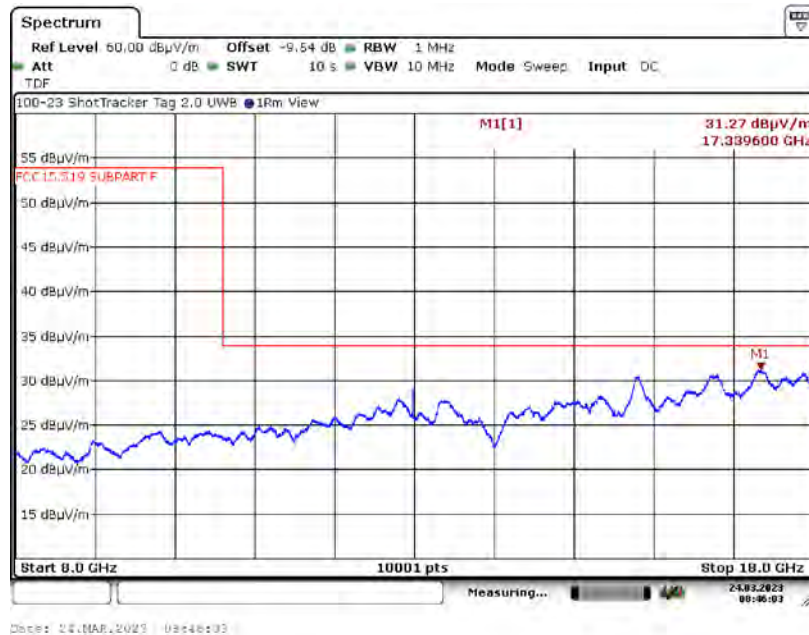
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.43. 8 to 18 GHz Horizontal at 1 Meter – Channel 5, X-Axis



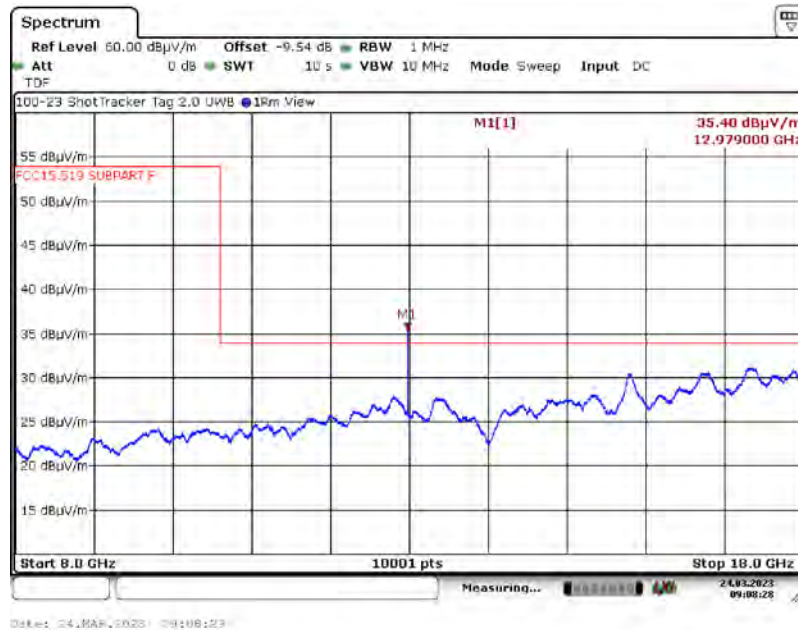
6.5.44. 8 to 18 GHz Vertical at 1 Meter – Channel 5, X-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.45. 8 to 18 GHz Horizontal at 1 Meter – Channel 5, Y-Axis



Note: Narrowband signal falls under the Part 15.209 / RSS-GEN limits

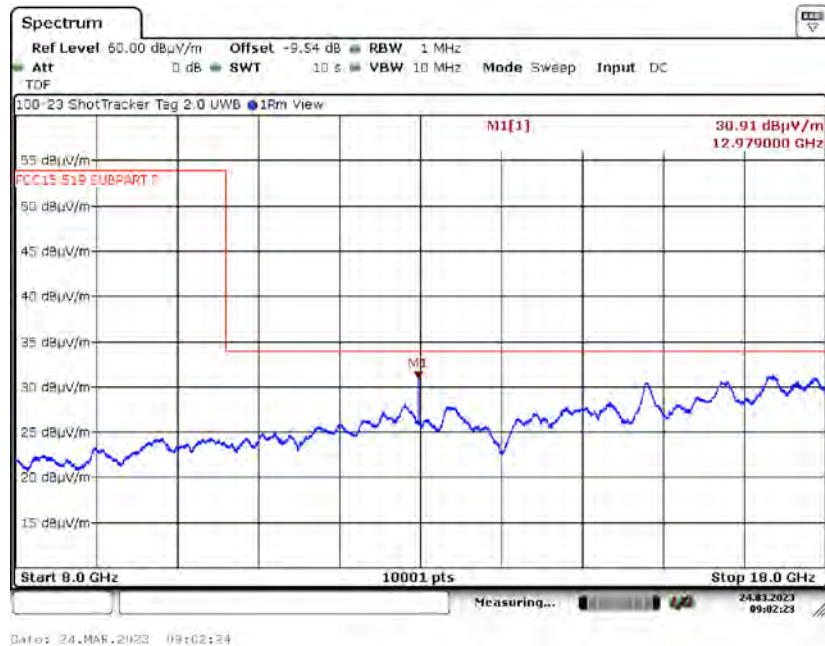
6.5.46. 8 to 18 GHz Vertical at 1 Meter – Channel 5, Y-Axis



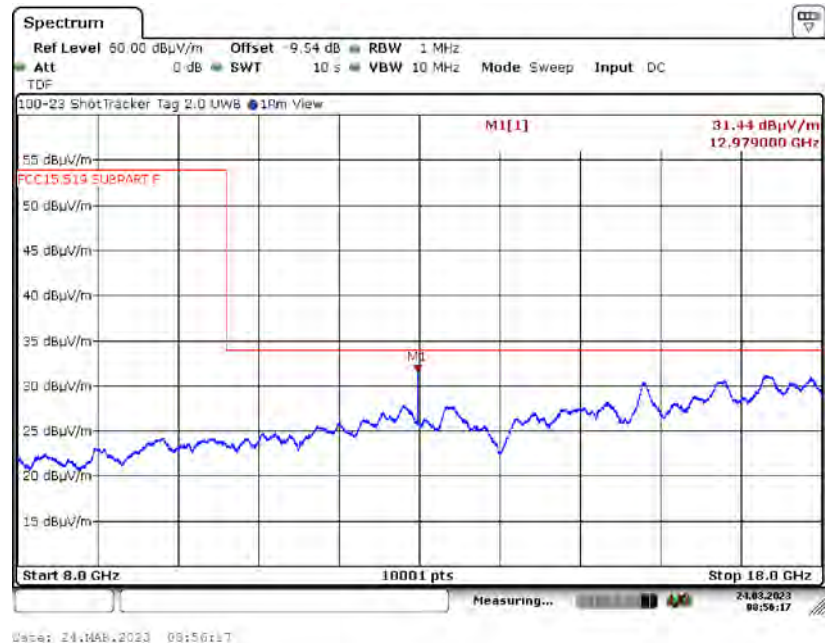
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.47. 8 to 18 GHz Horizontal at 1 Meter – Channel 5, Z-Axis



6.5.48. 8 to 18 GHz Vertical at 1 Meter – Channel 5, Z-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.49. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 1, X-Axis



6.5.50. 18 to 40 GHz Vertical at 0.3 Meter – Channel 1, X-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.51. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 1, Y-Axis



6.5.52. 18 to 40 GHz Vertical at 0.3 Meter – Channel 1, Y-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.53. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 1, Z-Axis



6.5.54. 18 to 40 GHz Vertical at 0.3 Meter – Channel 1, Z-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.55. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 2, X-Axis



6.5.56. 18 to 40 GHz Vertical at 0.3 Meter – Channel 2, X-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.57. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 2, Y-Axis



6.5.58. 18 to 40 GHz Vertical at 0.3 Meter – Channel 2, Y-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.59. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 2, Z-Axis



6.5.60. 18 to 40 GHz Vertical at 0.3 Meter – Channel 2, Z-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.61. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 3, X-Axis



6.5.62. 18 to 40 GHz Vertical at 0.3 Meter – Channel 3, X-Axis



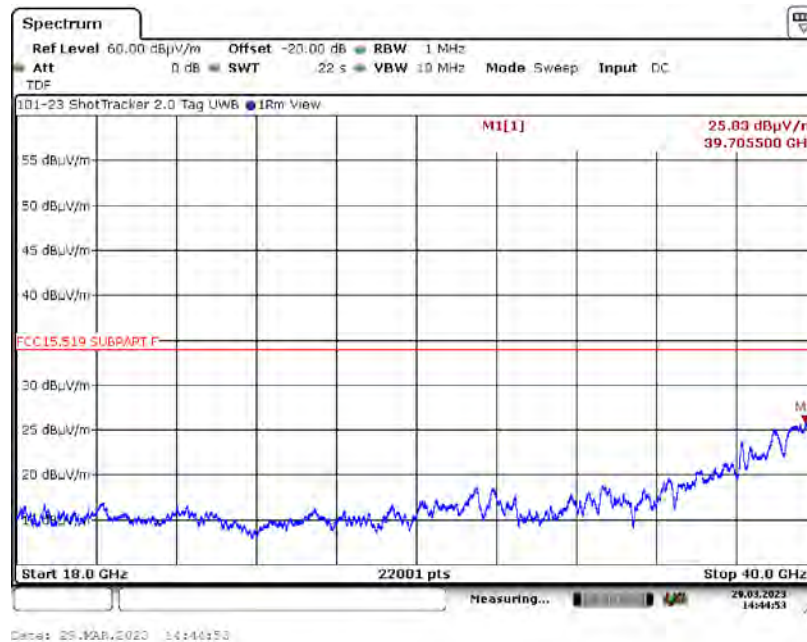
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.63. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 3, Y-Axis



6.5.64. 18 to 40 GHz Vertical at 0.3 Meter – Channel 3, Y-Axis



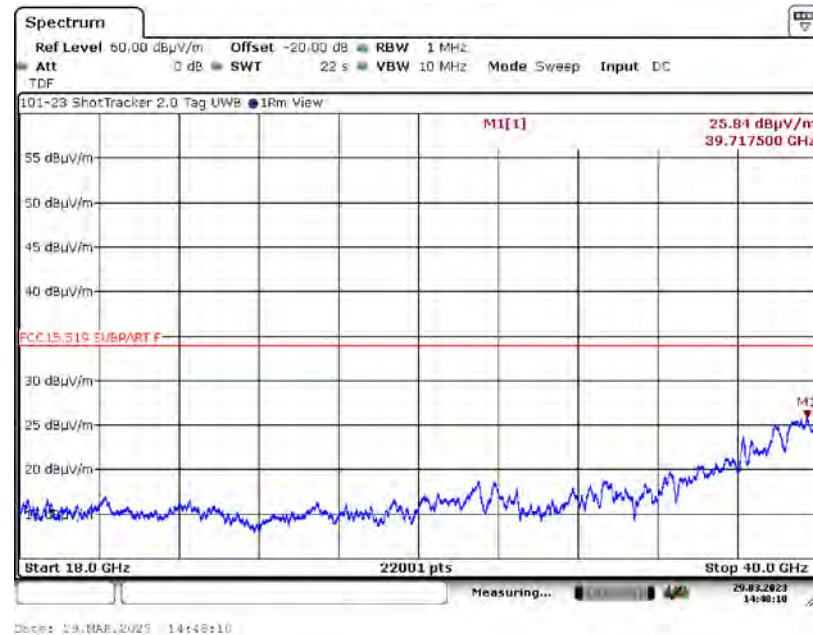
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.65. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 3, Z-Axis



6.5.66. 18 to 40 GHz Vertical at 0.3 Meter – Channel 3, Z-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.67. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 5, X-Axis



6.5.68. 18 to 40 GHz Vertical at 0.3 Meter – Channel 5, X-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.69. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 5, Y-Axis



6.5.70. 18 to 40 GHz Vertical at 0.3 Meter – Channel 5, Y-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.71. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 5, Z-Axis



6.5.72. 18 to 40 GHz Vertical at 0.3 Meter – Channel 5, Z-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (RSS-220 5.3.1 (d) continued)

Requirement: The radiated emissions at or below 960 MHz from a device shall not exceed the limits in Section 3.4. The radiated emissions above 960 MHz from a device shall not exceed the following average limits when measured using a resolution bandwidth of 1 MHz:

The RMS average measurement is based on the use of a spectrum analyzer with a resolution bandwidth of 1 MHz, an RMS detector, and a 1 millisecond or less averaging time.

The EIRP in terms of dBm, can be converted to a field strength, in dB μ V/m at 3 Meters by adding 95.2.

Frequency (MHz)	EIRP (dBm)	EIRP at 3 Meters (dB μ V/m)
960 - 1610	-75.3	19.9
1610 – 4750	-70.0	25.2
4750 – 10,600	-41.3	53.9
Above 10,600	-61.3	33.9

Frequency Range: 960 MHz to 8 GHz
 Measurement Distance: 1 Meter
 EMI Receiver IF Bandwidth: 1 MHz
 EMI Receiver Avg Bandwidth: 10 MHz
 Detector Function: RMS 1 mS Average as defined in Annex Section 4(b)

Notes: Measurements made from 960 MHz to 8 GHz were made in a semi-anechoic chamber at 1 Meter using a -9.54 dB distance offset was programmed into the spectrum analyzer.

Measurement data above 8 GHz for Channel 5 has identical limits to FCC.

RSS-220 Section 4(m) Emissions from digital circuitry (used only to enable the operation of the UWB transmitter and that does not control additional functions or capabilities) shall comply with the average and peak power limits applicable to the UWB transmitter. ...The limits for emissions from digital circuitry prescribed in RSS-Gen apply to that emission rather than the UWB limits.

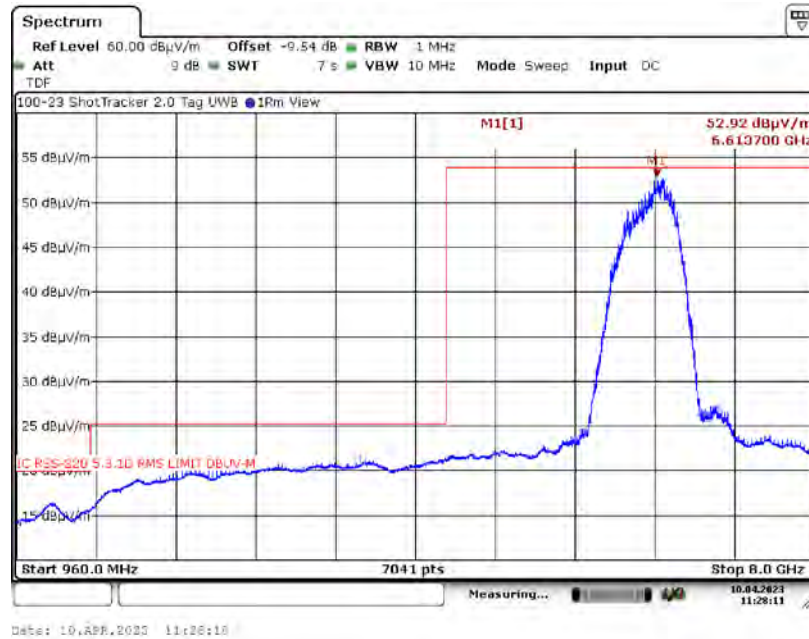
Sample Calculation: Final Result (dB μ V/m) = Measurement Value (dB μ V) + Antenna Factor (dB/m) + Cable Loss (dB) – Pre-amplifier Gain (dB) Internal or External.

Note: All correction factors are loaded into the measurement instrument prior to testing to determine the final result.

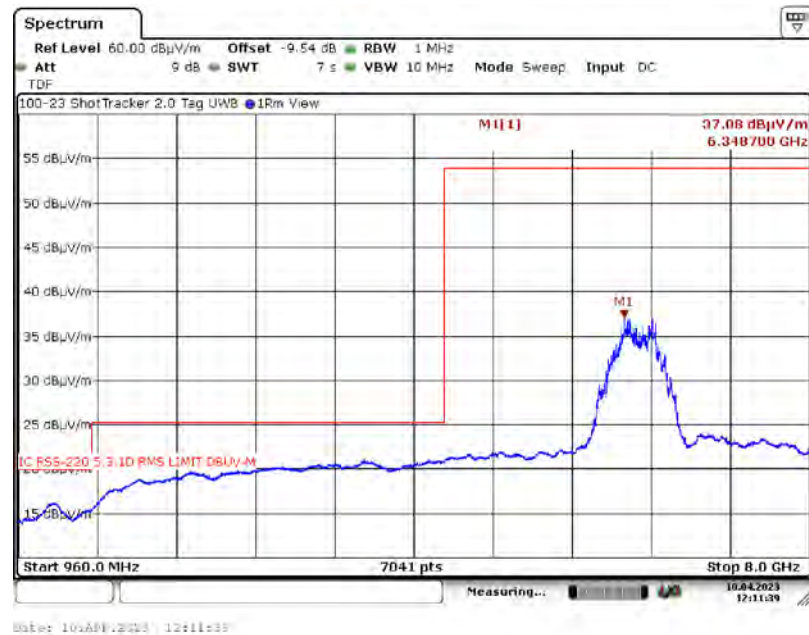
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (RSS-220 5.3.1 (d)) continued)

6.5.73. 960 MHz to 8 GHz Horizontal at 1 Meter, CH5, X-Axis



6.5.74. 960 MHz to 8 GHz Vertical at 1 Meter, CH5, X-Axis



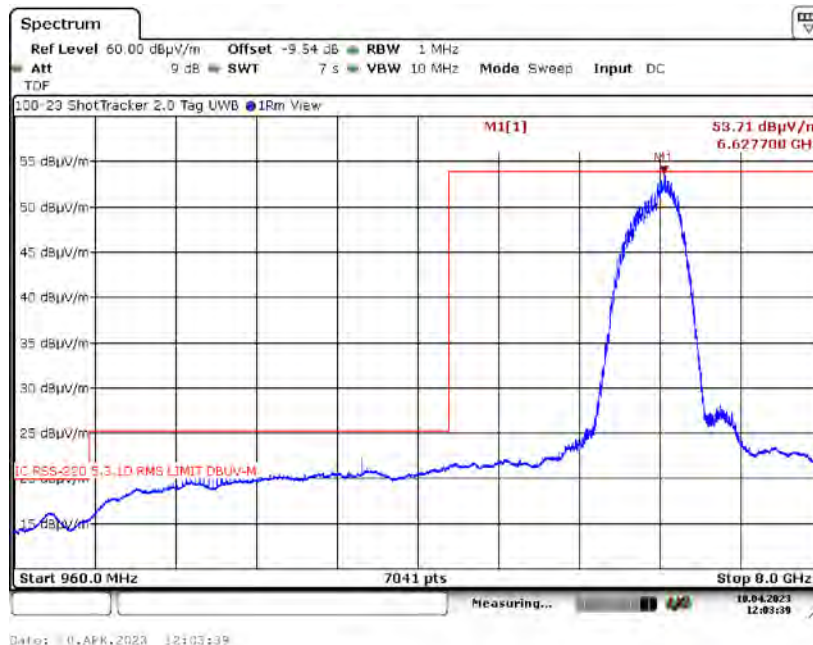
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (RSS-220 5.3.1 (d)) continued)

6.5.75. 960 MHz to 8 GHz Horizontal at 1 Meter, CH5, Y-Axis



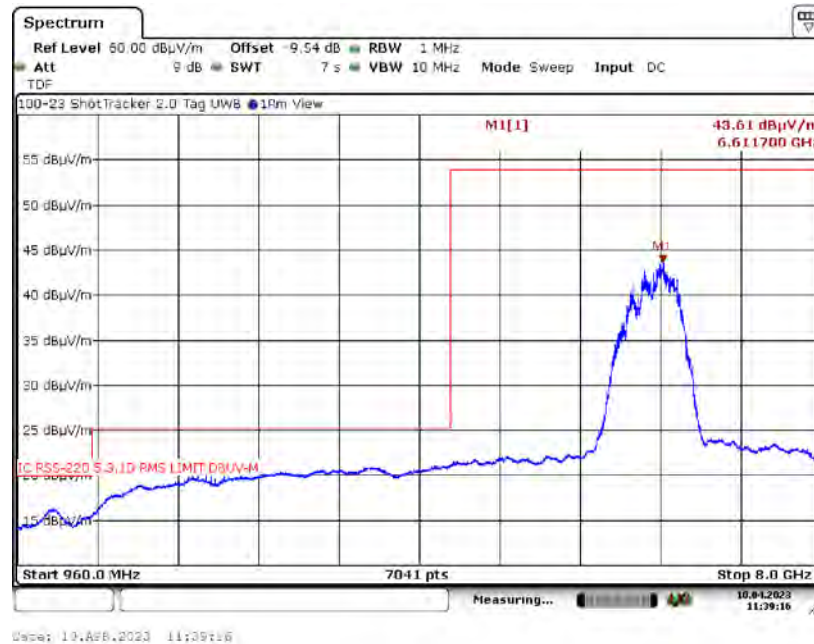
6.5.76. 960 MHz to 12 GHz Vertical at 1 Meter, CH5, Y-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (RSS-220 5.3.1 (d)) continued)

6.5.77. 960 MHz to 8 GHz Horizontal at 1 Meter, CH5, Z-Axis



6.5.78. 960 MHz to 8 GHz Vertical at 1 Meter, CH5, Z-Axis



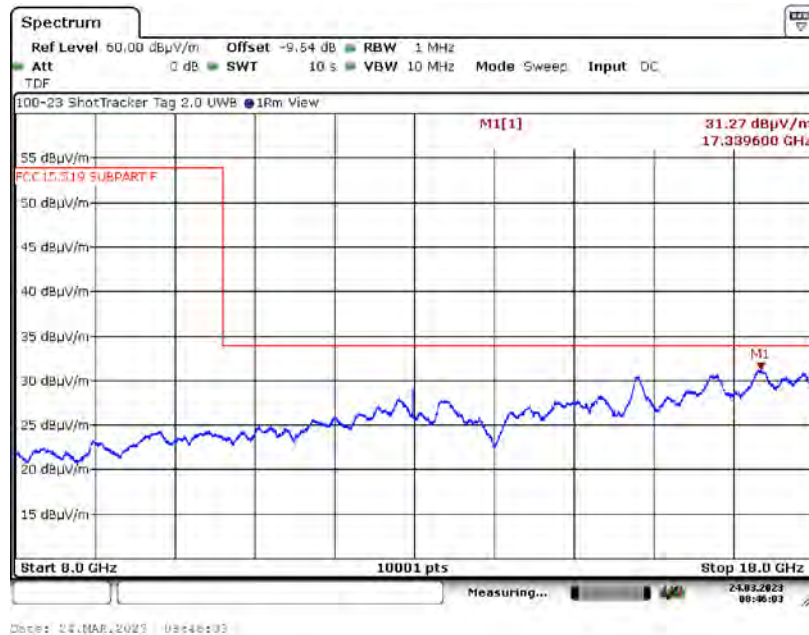
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.79. 8 to 18 GHz Horizontal at 1 Meter – Channel 5, X-Axis



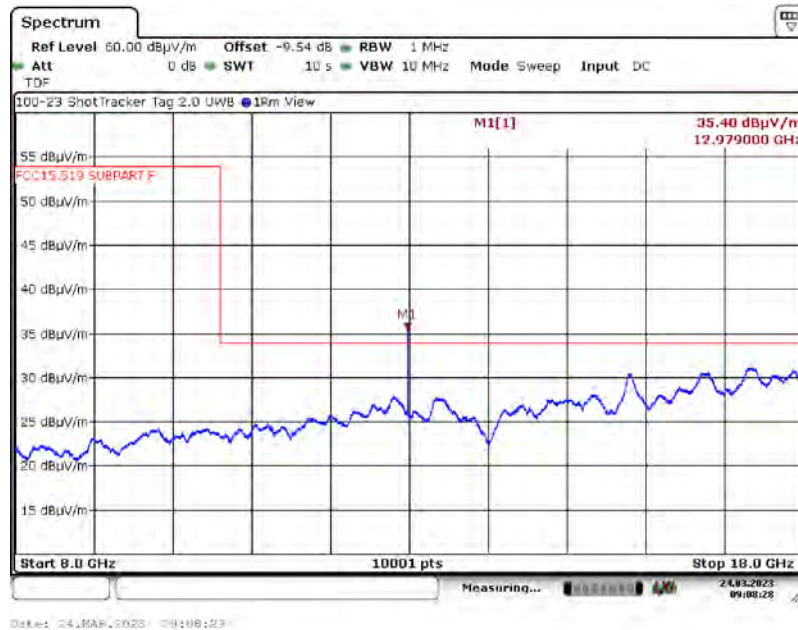
6.5.80. 8 to 18 GHz Vertical at 1 Meter – Channel 5, X-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.81. 8 to 18 GHz Horizontal at 1 Meter – Channel 5, Y-Axis



Note: Narrowband signal falls under the RSS-GEN limits

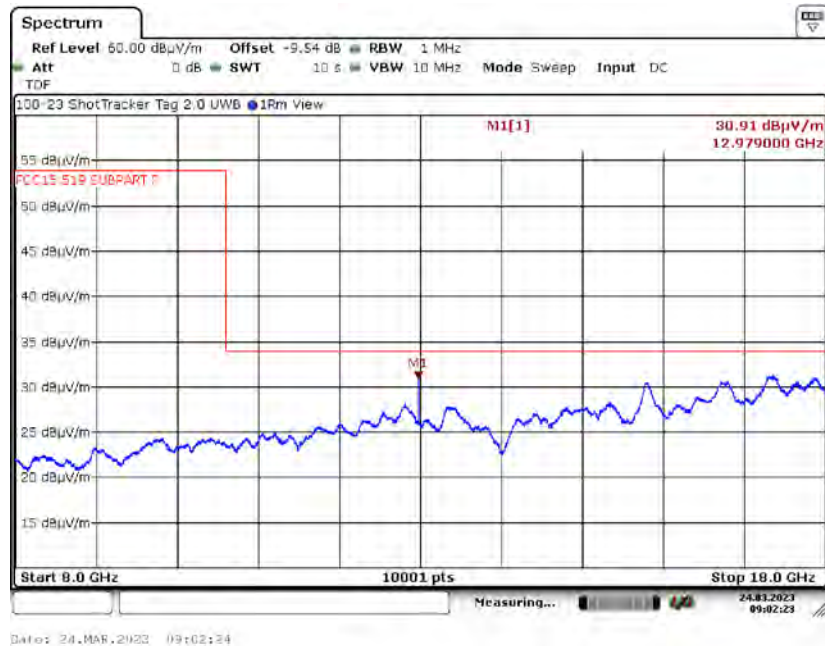
6.5.82. 8 to 18 GHz Vertical at 1 Meter – Channel 5, Y-Axis



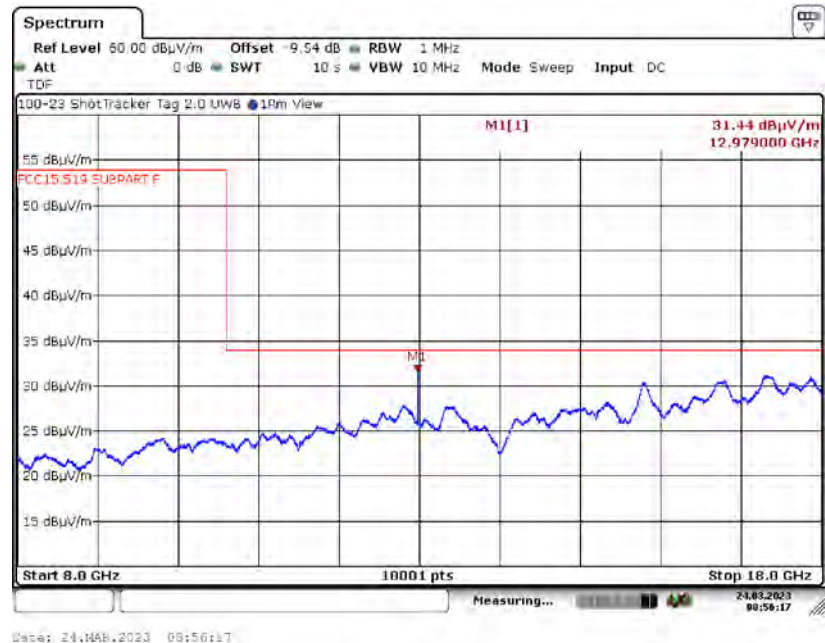
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.83. 8 to 18 GHz Horizontal at 1 Meter – Channel 5, Z-Axis



6.5.84. 8 to 18 GHz Vertical at 1 Meter – Channel 5, Z-Axis



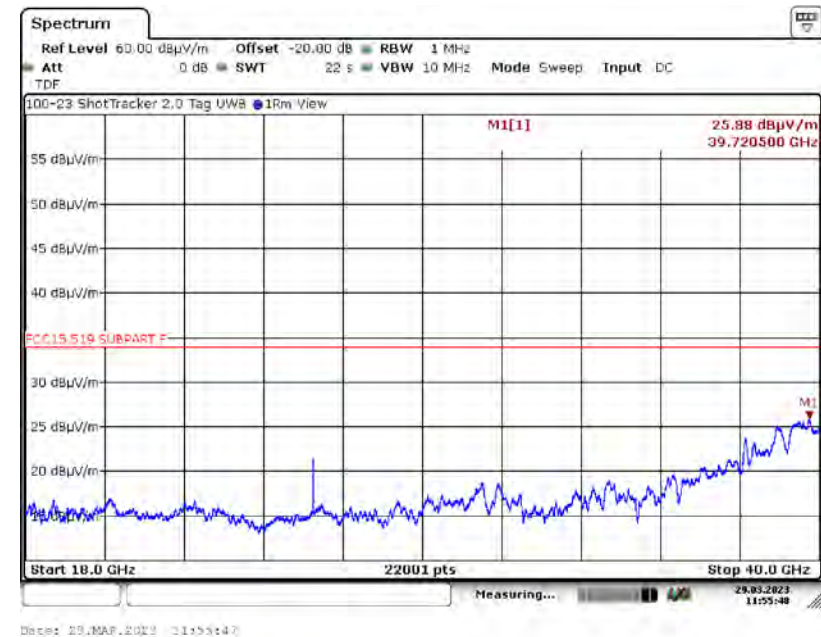
6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.85. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 5, X-Axis



6.5.86. 18 to 40 GHz Vertical at 0.3 Meter – Channel 5, X-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.87. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 5, Y-Axis



6.5.88. 18 to 40 GHz Vertical at 0.3 Meter – Channel 5, Y-Axis



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.89. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 5, Z-Axis



6.5.90. 18 to 40 GHz Vertical at 0.3 Meter – Channel 5, Z-Axis



6. Measurement Data (continued)

6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d), RSS-220 5.3.1 (e))

Requirement: In addition to the radiated emission limits specified in the table in paragraph (d) of this section, UWB transmitters operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of no less than 1 kHz:

Frequency (MHz)	EIRP (dBm)	EIRP at 3 Meters (dBμV/m)
1164 - 1240	-85.3	9.9
1559 - 1610	-85.3	9.9

6.6.1. Measurement & Equipment Setup

EMI Receiver IF Bandwidth: 1 kHz
EMI Receiver Avg Bandwidth: 10 kHz
Detector Functions: RMS Average, 1mS / point

6.6.2. 1164 to 1240 MHz & 1559 to 1610 MHz

Measurements were made at 1.0 Meter with a -9.54 dB distance correction factor. The -85.3 dBm limit was converted to a field strength limit of 9.9 dBuV/m using a factor of 95.2.

Sample Calculation: Final Result (dBμV/m) = Measurement Value (dBμV) + Antenna Factor (dB/m) + Cable Loss (dB) – Pre-amplifier Gain (dB) Internal or External.

Note: All correction factors are loaded into the measurement instrument prior to testing to determine the final result.

Note: There were no broadband emissions related to the UWB transmitter. Narrowband spikes are related to digital circuitry and not subject to the 15.519 (d) limits and are only required to be below the limits of 15.209 see 15.521(c).

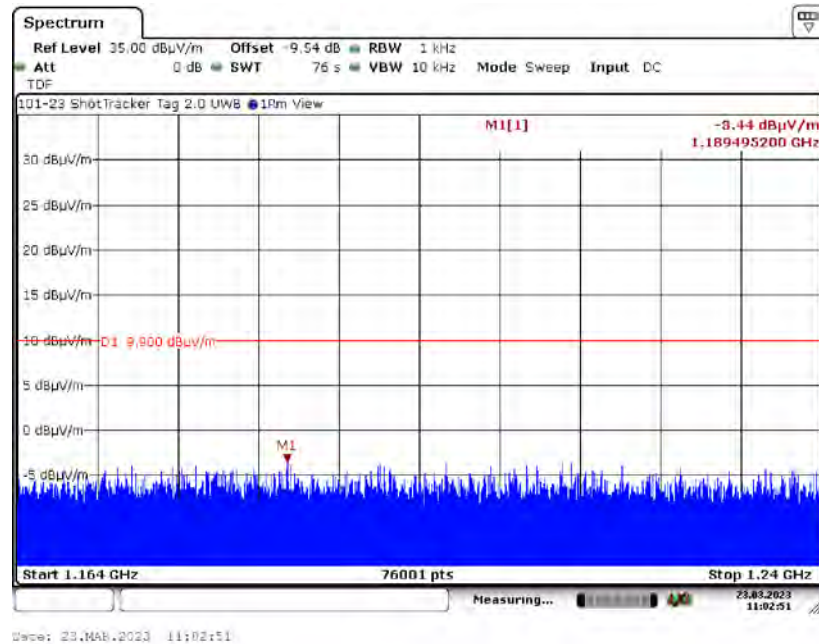
RSS-220 Section 4(m) Emissions from digital circuitry (used only to enable the operation of the UWB transmitter and that does not control additional functions or capabilities) shall comply with the average and peak power limits applicable to the UWB transmitter. ...The limits for emissions from digital circuitry prescribed in RSS-Gen apply to that emission rather than the UWB limits.

Channel 1 measured data is representative of what was measured when the device operates on the other channels.

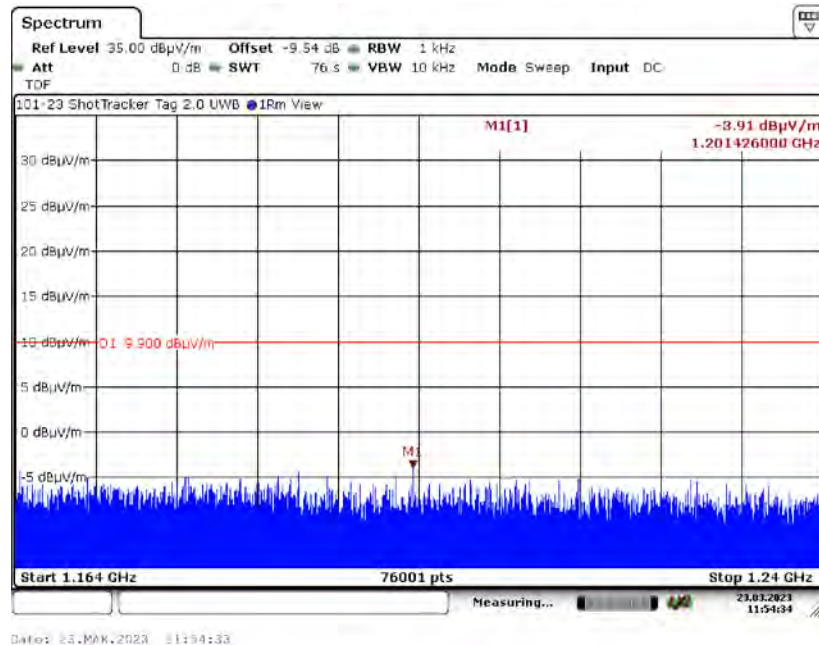
6. Measurement Data (continued)

6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

6.6.3.1 Horizontal Measurement Polarity 1164 to 1240 MHz – CH 1, X-Axis



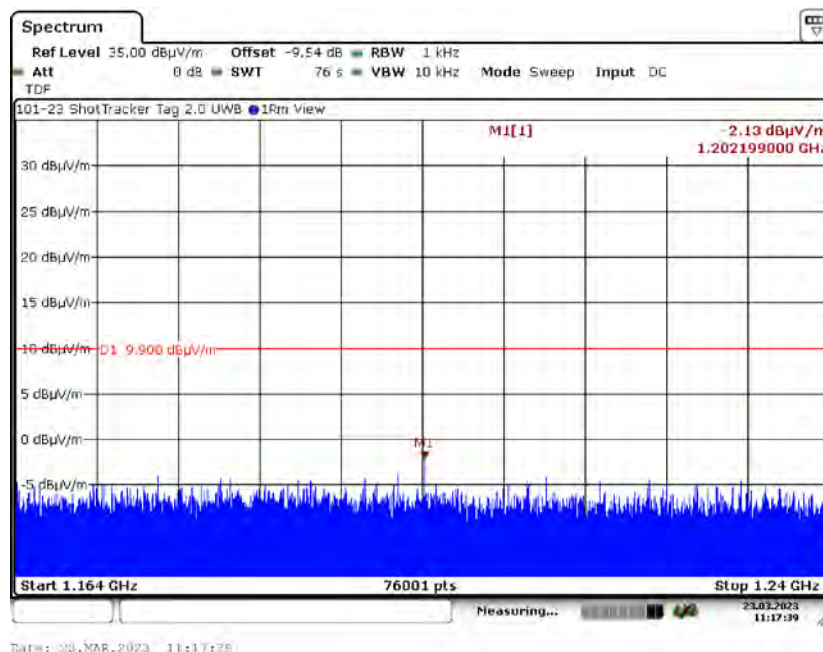
6.6.3.2 Vertical Measurement Polarity 1164 to 1240 MHz – CH 1, X-Axis



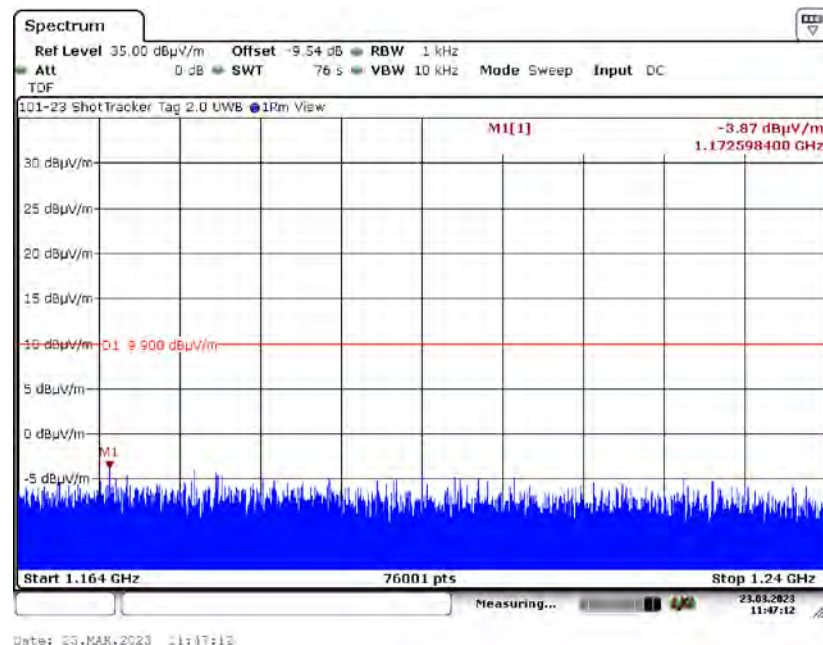
6. Measurement Data (continued)

6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

6.6.3.3 Horizontal Measurement Polarity 1164 to 1240 MHz – CH 1, Y-Axis



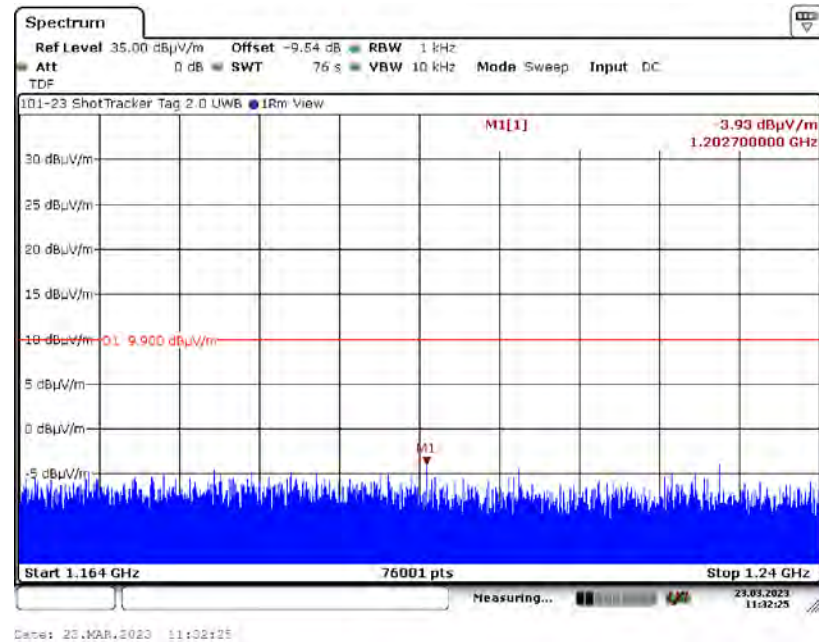
6.6.3.4 Vertical Measurement Polarity 1164 to 1240 MHz – CH 1, Y-Axis



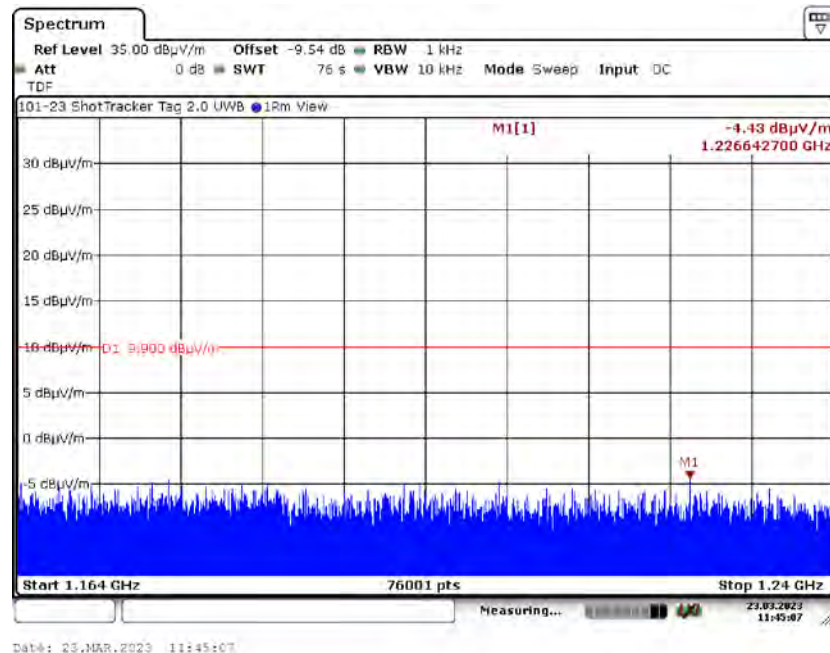
6. Measurement Data (continued)

6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

6.6.3.5 Horizontal Measurement Polarity 1164 to 1240 MHz – CH 1, Z-Axis



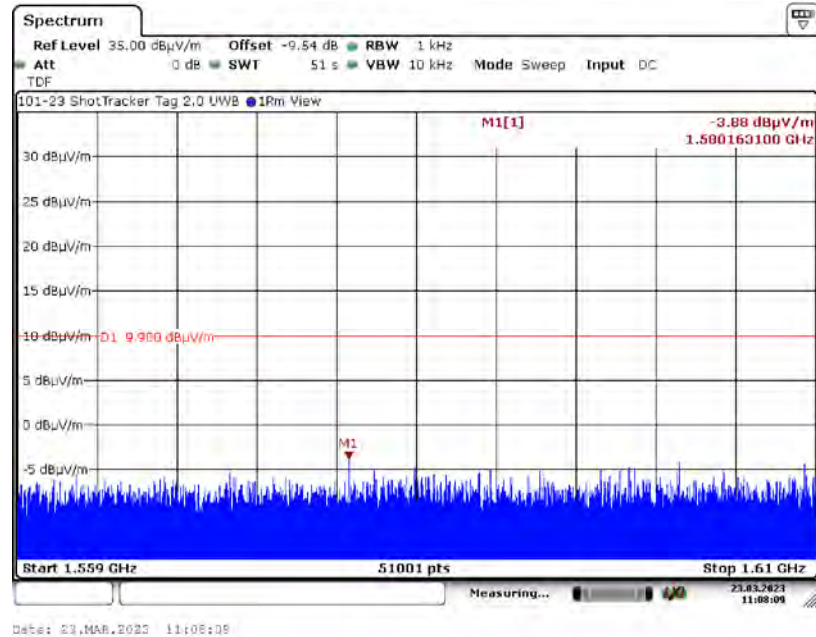
6.6.3.6 Vertical Measurement Polarity 1164 to 1240 MHz – CH 1, Z-Axis



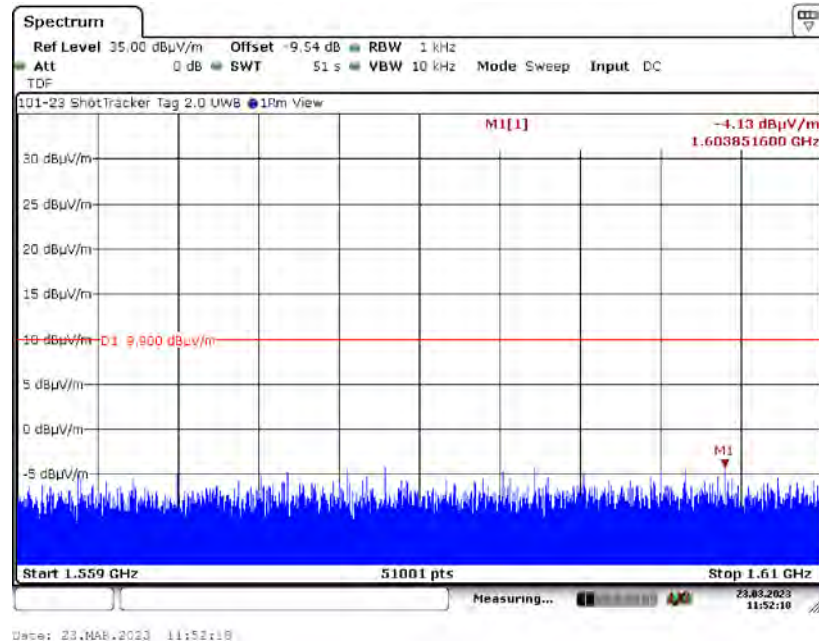
6. Measurement Data (continued)

6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

6.6.3.7 Horizontal Measurement Polarity 1559 to 1610 MHz – CH 1, X-Axis



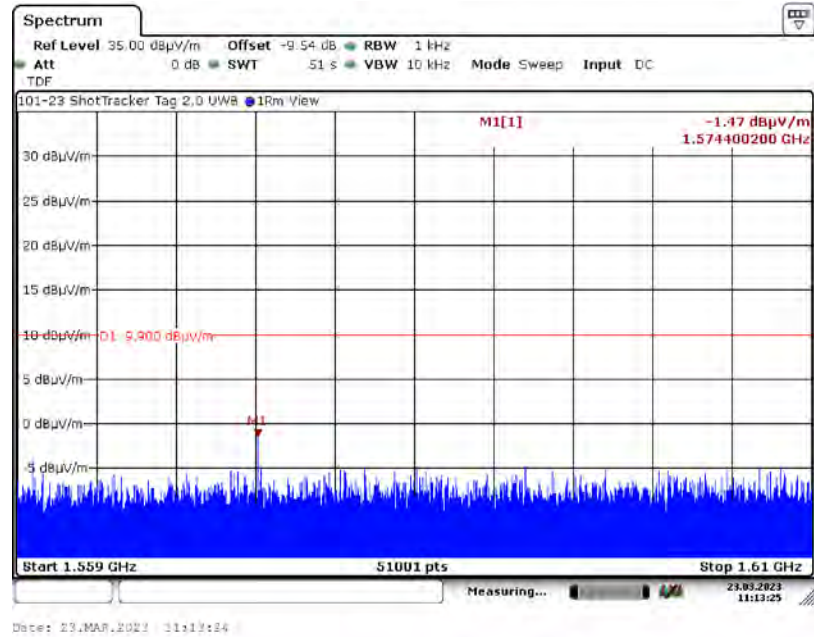
6.6.3.8 Vertical Measurement Polarity 1559 to 1610 MHz – CH 1, X-Axis



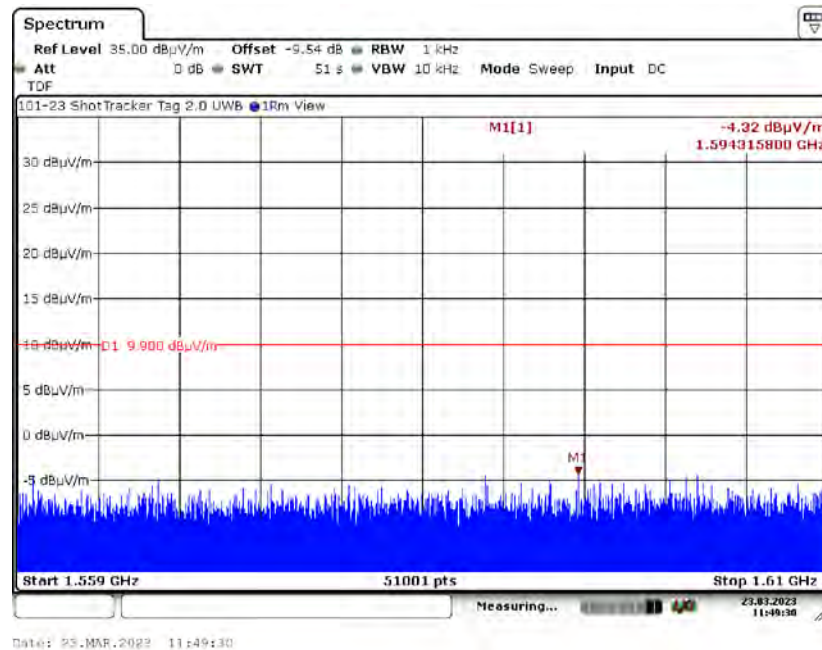
6. Measurement Data (continued)

6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

6.6.3.9 Horizontal Measurement Polarity 1559 to 1610 MHz – CH 1, Y-Axis



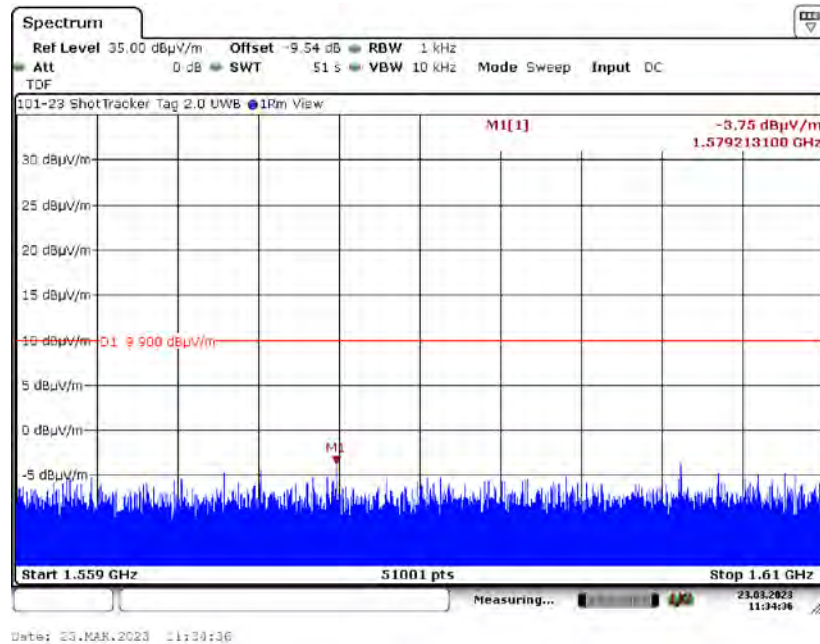
6.6.3.10 Vertical Measurement Polarity 1559 to 1610 MHz – CH 1, Y-Axis



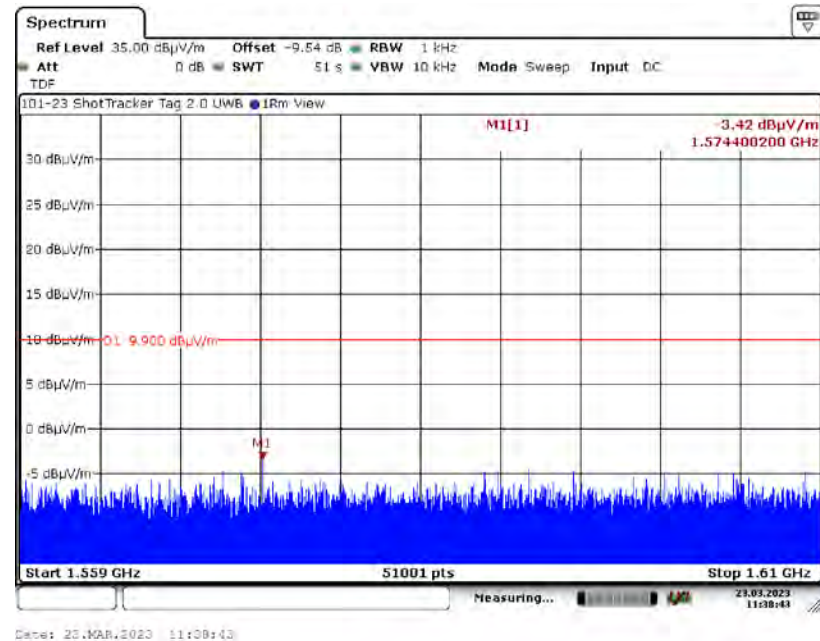
6. Measurement Data (continued)

6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

6.6.3.11 Horizontal Measurement Polarity 1559 to 1610 MHz – CH 1, Z-Axis



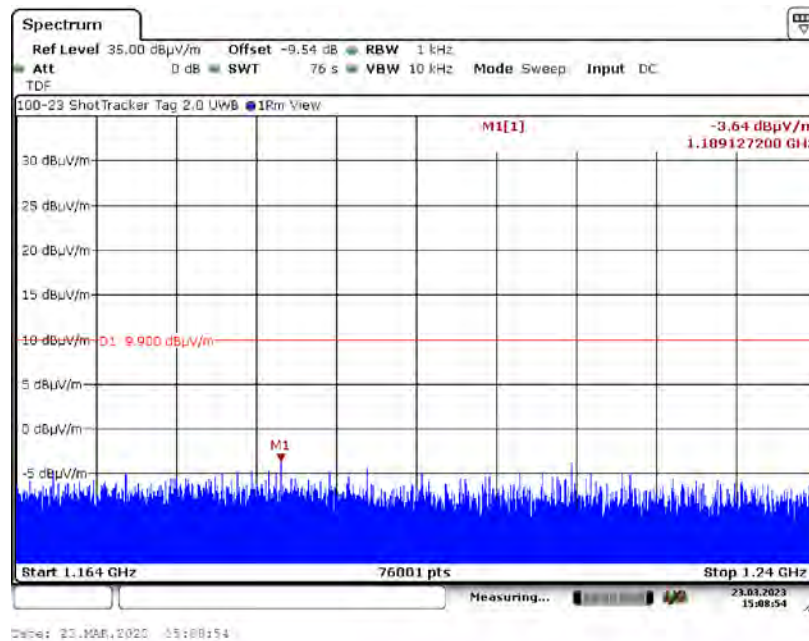
6.6.3.12 Vertical Measurement Polarity 1559 to 1610 MHz – CH 1, Z-Axis



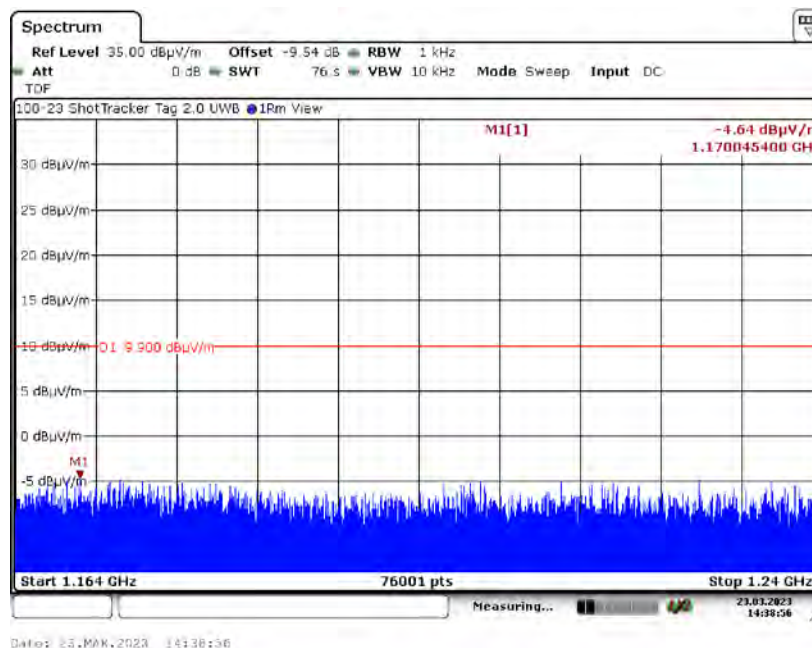
6. Measurement Data (continued)

6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d), RSS-220 5.3.1 (e) cont.)

6.6.3.13 Horizontal Measurement Polarity 1164 to 1240 MHz – CH 5, X-Axis



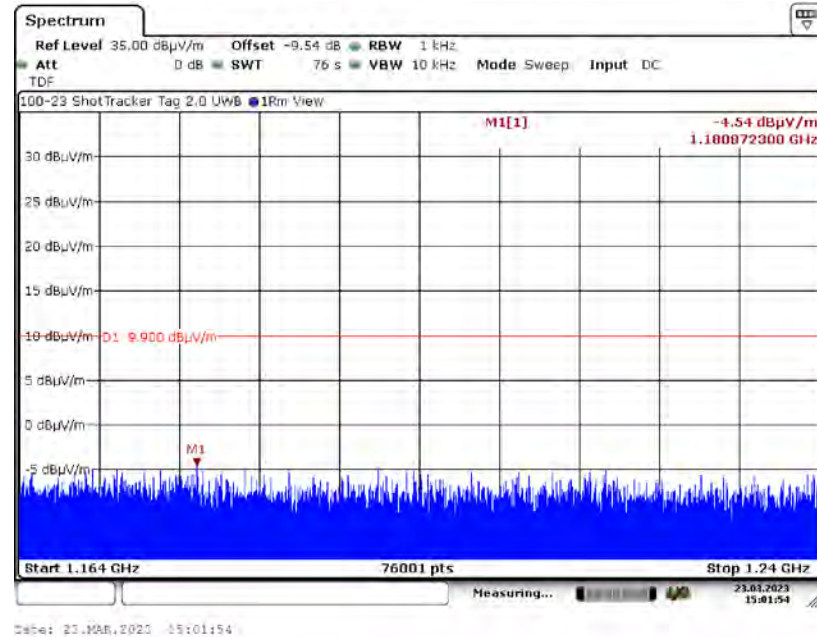
6.6.3.14 Vertical Measurement Polarity 1164 to 1240 MHz – CH 5, X-Axis



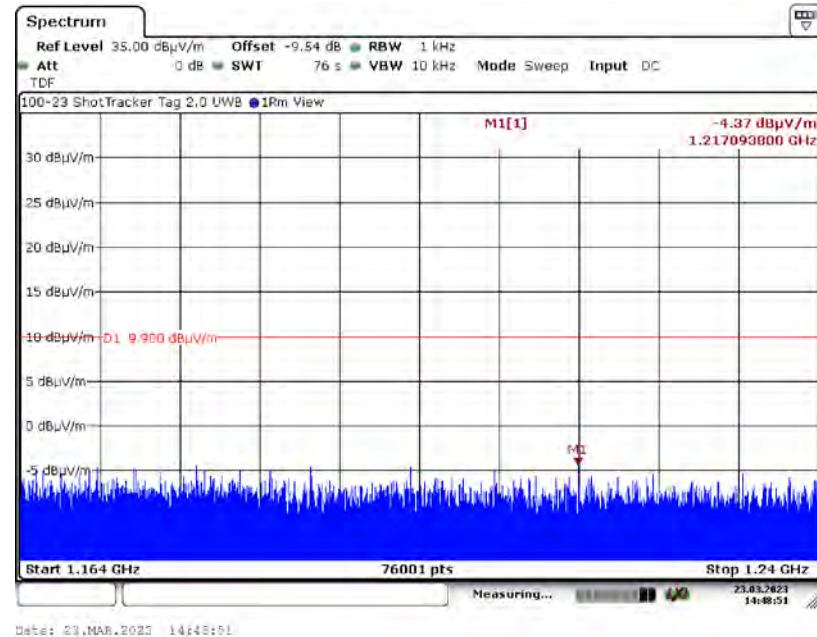
6. Measurement Data (continued)

6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d), RSS-220 5.3.1 (e) cont.)

6.6.3.15 Horizontal Measurement Polarity 1164 to 1240 MHz – CH 5, Y-Axis



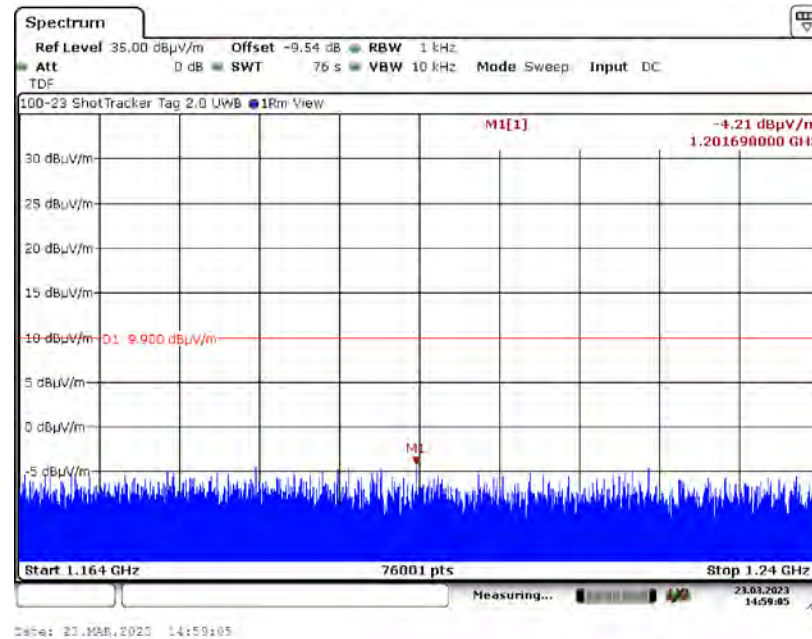
6.6.3.16 Vertical Measurement Polarity 1164 to 1240 MHz – CH 5, Y-Axis



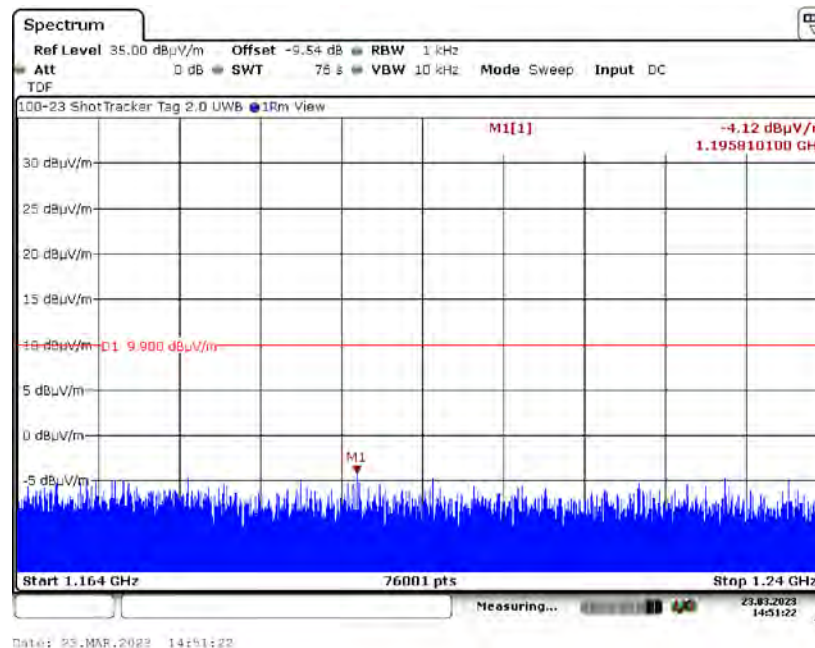
6. Measurement Data (continued)

6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d), RSS-220 5.3.1 (e) cont.)

6.6.3.17 Horizontal Measurement Polarity 1164 to 1240 MHz – CH 5, Z-Axis



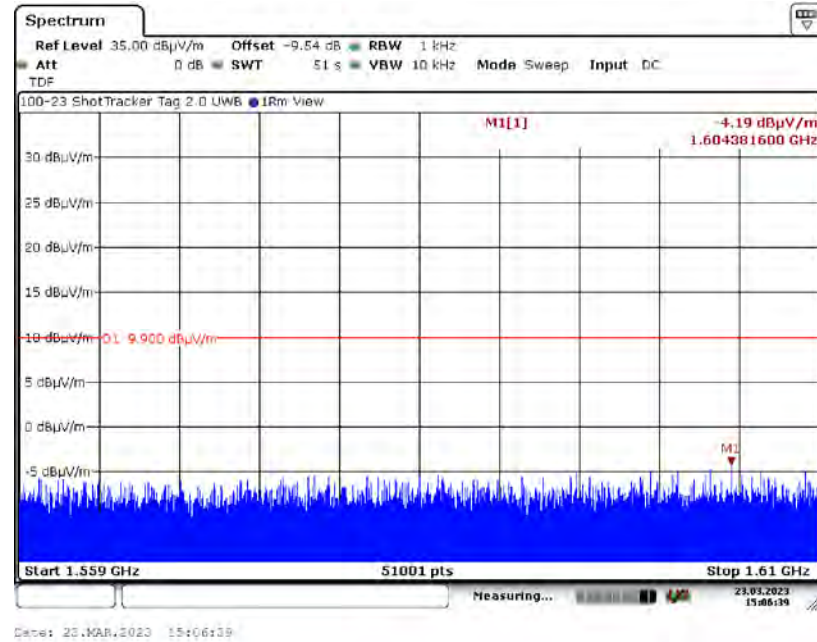
6.6.3.18 Vertical Measurement Polarity 1164 to 1240 MHz – CH 5, Z-Axis



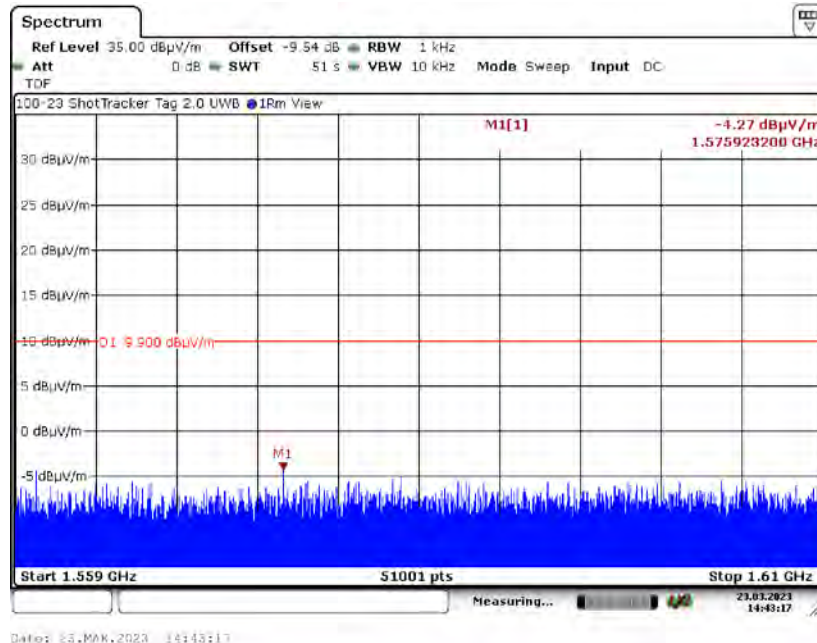
6. Measurement Data (continued)

6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d), RSS-220 5.3.1 (e) cont.)

6.6.3.19 Horizontal Measurement Polarity 1559 to 1610 MHz – CH 5, X-Axis



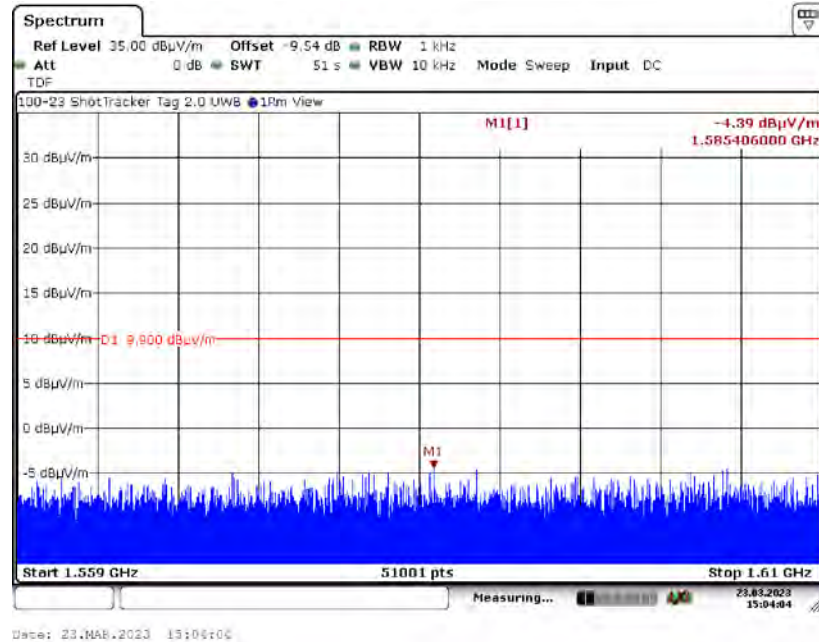
6.6.3.20 Vertical Measurement Polarity 1559 to 1610 MHz – CH 5, X-Axis



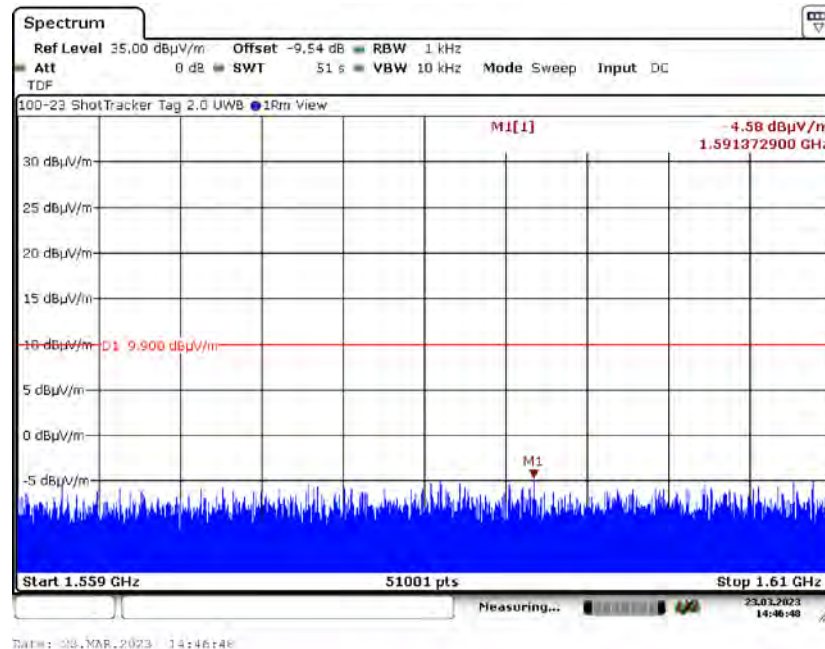
6. Measurement Data (continued)

6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d), RSS-220 5.3.1 (e) cont.)

6.6.3.21 Horizontal Measurement Polarity 1559 to 1610 MHz – CH 5, Y-Axis



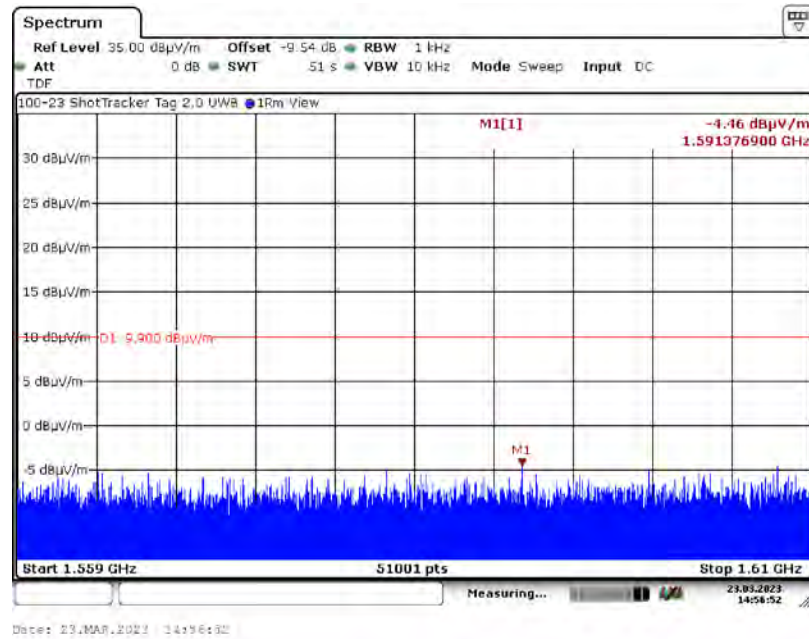
6.6.3.22 Vertical Measurement Polarity 1559 to 1610 MHz – CH 5, Y-Axis



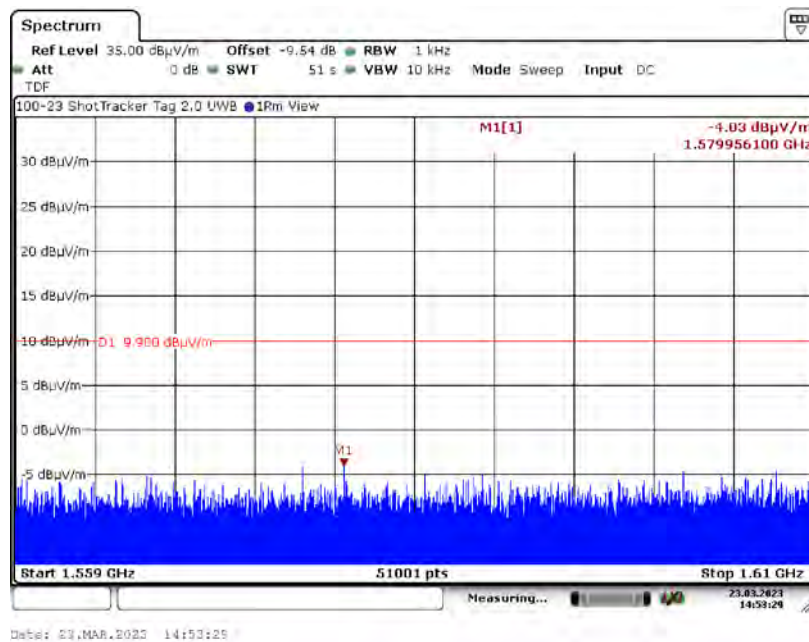
6. Measurement Data (continued)

6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d), RSS-220 5.3.1 (e) cont.)

6.6.3.23 Horizontal Measurement Polarity 1559 to 1610 MHz – CH 5, Z-Axis



6.6.3.24 Vertical Measurement Polarity 1559 to 1610 MHz – CH 5, Z-Axis



6. Measurement Data (continued)

6.7. Radiated Emissions of UWB Transmission (15.519 (c), 15.521 (d) RSS 5.3.1(d))

Requirement: The radiated emissions above 960 MHz from a device operating under the provisions of this section shall not exceed the following average limits when measured using a resolution bandwidth of 1 MHz: The RMS average measurement is based on the use of a spectrum analyzer with a resolution bandwidth of 1 MHz, an RMS detector, and a 1 millisecond or less averaging time.

The EIRP in terms of dBm, can be converted to a field strength, in dBμV/m at 3 Meters by adding 95.3.

FCC

Frequency (MHz)	EIRP (dBm)	EIRP at 3 Meters (dBμV/m)
3100 – 10,600	-41.3	53.9

ISED

Frequency (MHz)	EIRP (dBm)	EIRP at 3 Meters (dBμV/m)
4750 – 10,600	-41.3	53.9

Frequency Range: 3 to 4 GHz, 3.5 to 4.5 GHz, 4 to 5 GHz, 6 to 7 GHz
 Measurement Distance: 3 Meters
 EMI Receiver IF Bandwidth: 1 MHz
 EMI Receiver Avg Bandwidth: 10 MHz
 Detector Function: RMS 1 mS Average as defined in 15.521(d)

6. Measurement Data (continued)

6.7. Spurious Radiated Emissions (15.519 (c), 15.521(d))

6.7.1. Plot of RMS Power at 3 Meters – Channel 1

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
3.503	52.22	54.00	-1.78	V	163	356	Compliant

Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

EIRP (dBm) = E_{meas} (dBμV/m) – 95.3, Equation 33 from ANSI C63.10:2020

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
3.503	-43.08	-41.30	-1.78	V	163	356	Compliant

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6. Measurement Data (continued)

6.7. Spurious Radiated Emissions (15.519 (c), 15.521(d))

6.7.2. Plot of RMS Power at 3 Meters – Channel 2

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
4.1758	53.48	54.00	-0.52	V	182	2	Compliant

Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

EIRP (dBm) = E_{meas} (dBμV/m) – 95.3, Equation 33 from ANSI C63.10:2020

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
4.1758	-41.82	-41.30	-0.52	V	182	2	Compliant

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14:35:59 20.03.2023

6. Measurement Data (continued)

6.7. Spurious Radiated Emissions (15.519 (c), 15.521(d))

6.7.3. Plot of RMS Power at 3 Meters – Channel 3

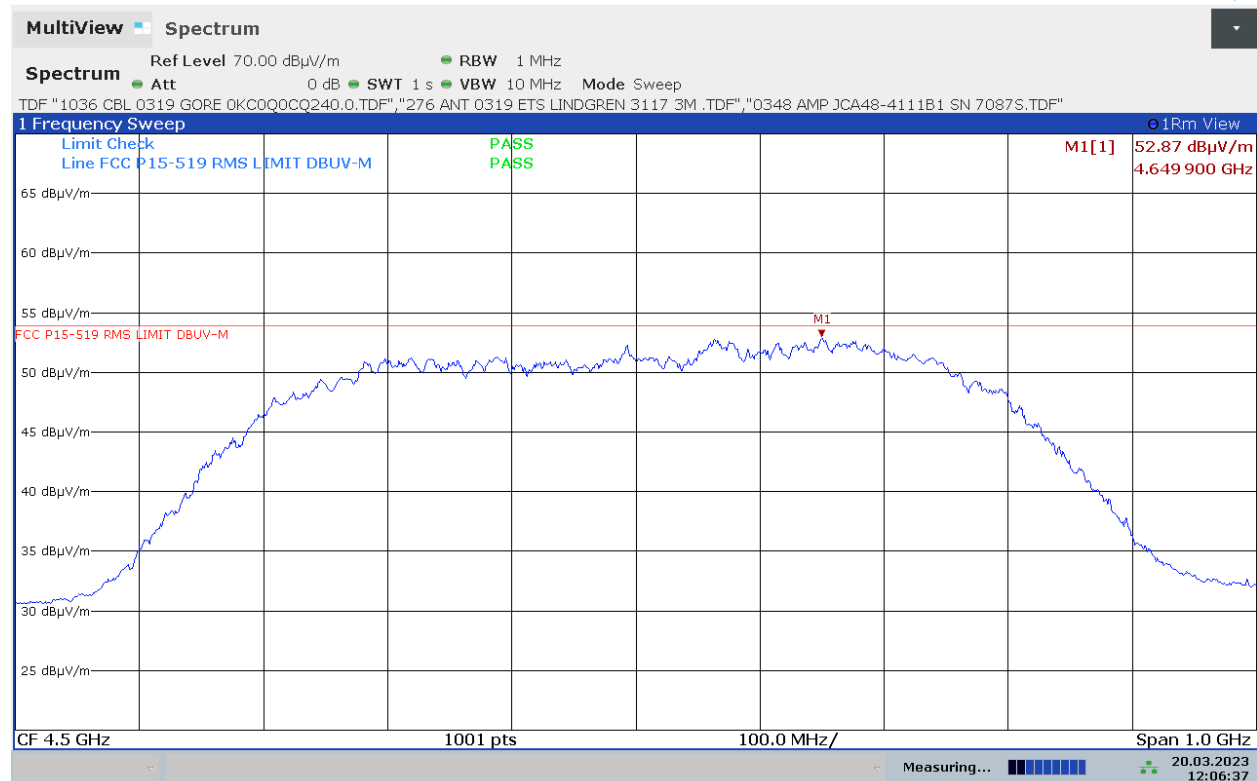
Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
4.6499	52.87	54.00	-1.13	V	154	3	Compliant

Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

EIRP (dBm) = E_{meas} (dBμV/m) – 95.3, Equation 33 from ANSI C63.10:2020

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBm)	(dBm)	(dB)	H/V	cm	Deg	
4.6499	-42.43	-41.30	-1.13	V	154	3	Compliant

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12:06:38 20.03.2023

6. Measurement Data (continued)

6.7. Spurious Radiated Emissions (15.519 (c), 15.521(d), RSS 5.3.1(d))

6.7.4. Plot of RMS Power at 3 Meters – Channel 5

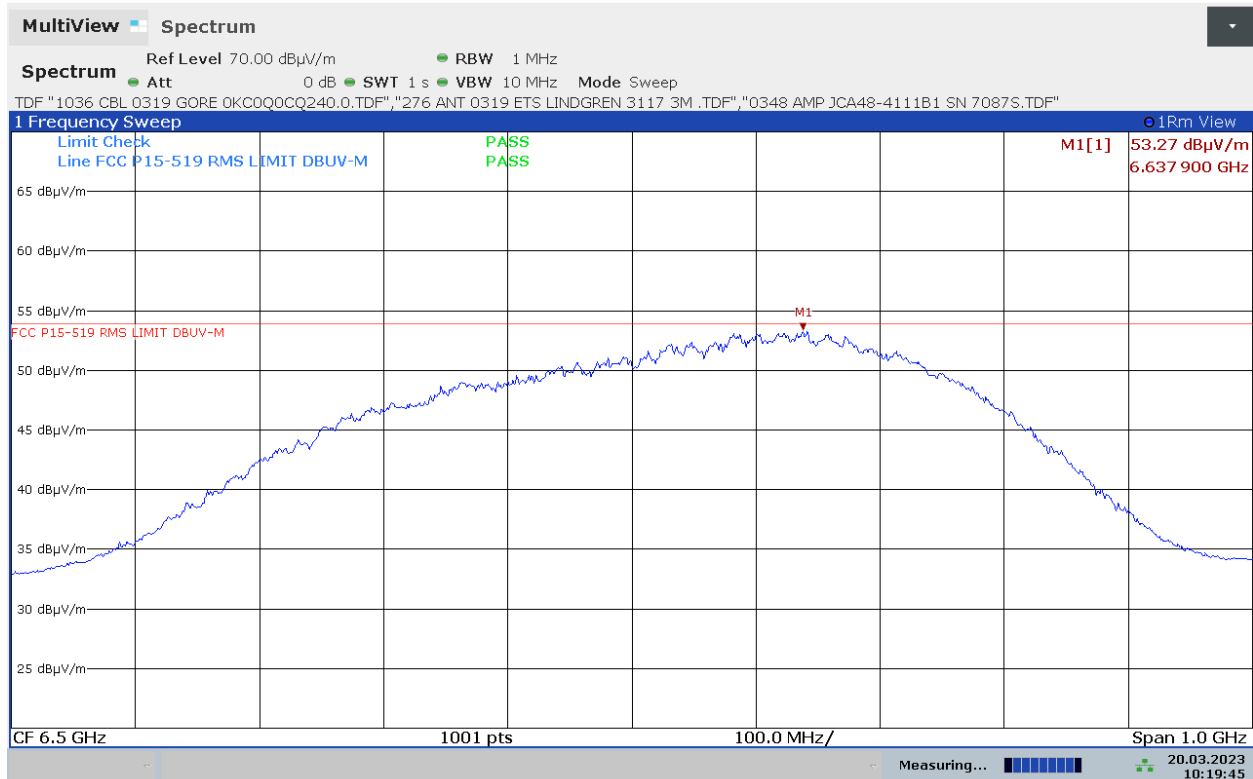
Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.6379	53.27	54.00	-0.73	V	161	9	Compliant

Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

EIRP (dBm) = E_{meas} (dBμV/m) – 95.3, Equation 33 from ANSI C63.10:2020

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.6379	-42.03	-41.30	-0.73	V	161	9	Compliant

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10:19:46 20.03.2023

6. Measurement Data (continued)

6.8. Peak Emissions in a 50 MHz Bandwidth (15.519 (e), 15.521 (g), RSS-220 5.3.1 (g))

Requirement: There is a limit on the peak level of the emissions contained within a 50 MHz bandwidth centered on the frequency at which the highest radiated emission occurs, f_m . That limit is 0 dBm EIRP.

The EIRP in terms of dBm, can be converted to a field strength, in dB μ V/m at 3 Meters by adding 95.3. As used in this subpart, EIRP refers to the highest signal strength measured in any direction and at any frequency from the UWB device.

FCC

Frequency (MHz)	EIRP (dBm)	EIRP at 3 Meters (dB μ V/m)
3100 – 10,600	0	95.3

ISED

Frequency (MHz)	EIRP (dBm)	EIRP at 3 Meters (dB μ V/m)
4750 – 10,600	0	95.3

Frequency Range:	3 to 4 GHz, 3.5 to 4.5 GHz, 4 to 5 GHz, 6 to 7 GHz
Measurement Distance:	3 Meters
EMI Receiver IF Bandwidth:	50 MHz
EMI Receiver Avg Bandwidth	80 MHz
Detector Function:	Peak, Max Held

6. Measurement Data (continued)

6.8. Peak Emissions in a 50 MHz Bandwidth (15.519 (e), 15.521 (g))

6.8.1 Plot of Peak Power at 3 Meters – Channel 1

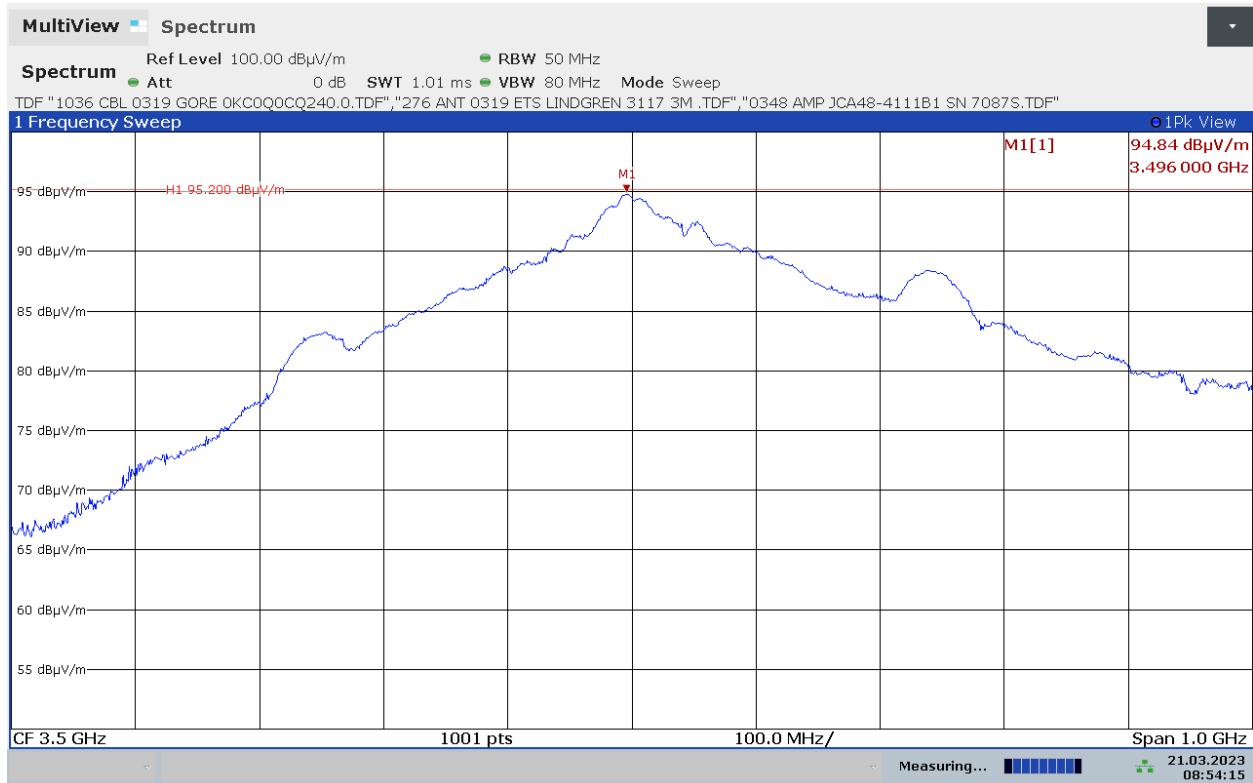
Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
3.496	94.84	95.30	-0.46	V	163	356	Compliant

Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

$$\text{EIRP (dBm)} = E_{\text{meas}} (\text{dB}\mu\text{V/m}) - 95.3, \text{ Equation 33 from ANSI C63.10:2020}$$

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
3.496	-0.46	0.00	-0.46	V	163	356	Compliant

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6. Measurement Data (continued)

6.8. Peak Emissions in a 50 MHz Bandwidth (15.519 (e), 15.521 (g))

6.8.2 Plot of Peak Power at 3 Meters – Channel 2

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
4.2368	93.45	95.30	-1.85	V	182	2	Compliant

Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

EIRP (dBm) = E_{meas} (dBμV/m) – 95.3, Equation 33 from ANSI C63.10:2020

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
4.2368	-1.85	0.00	-1.85	V	182	2	Compliant

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6. Measurement Data (continued)

6.8. Peak Emissions in a 50 MHz Bandwidth (15.519 (e), 15.521 (g))

6.8.3 Plot of Peak Power at 3 Meters – Channel 3

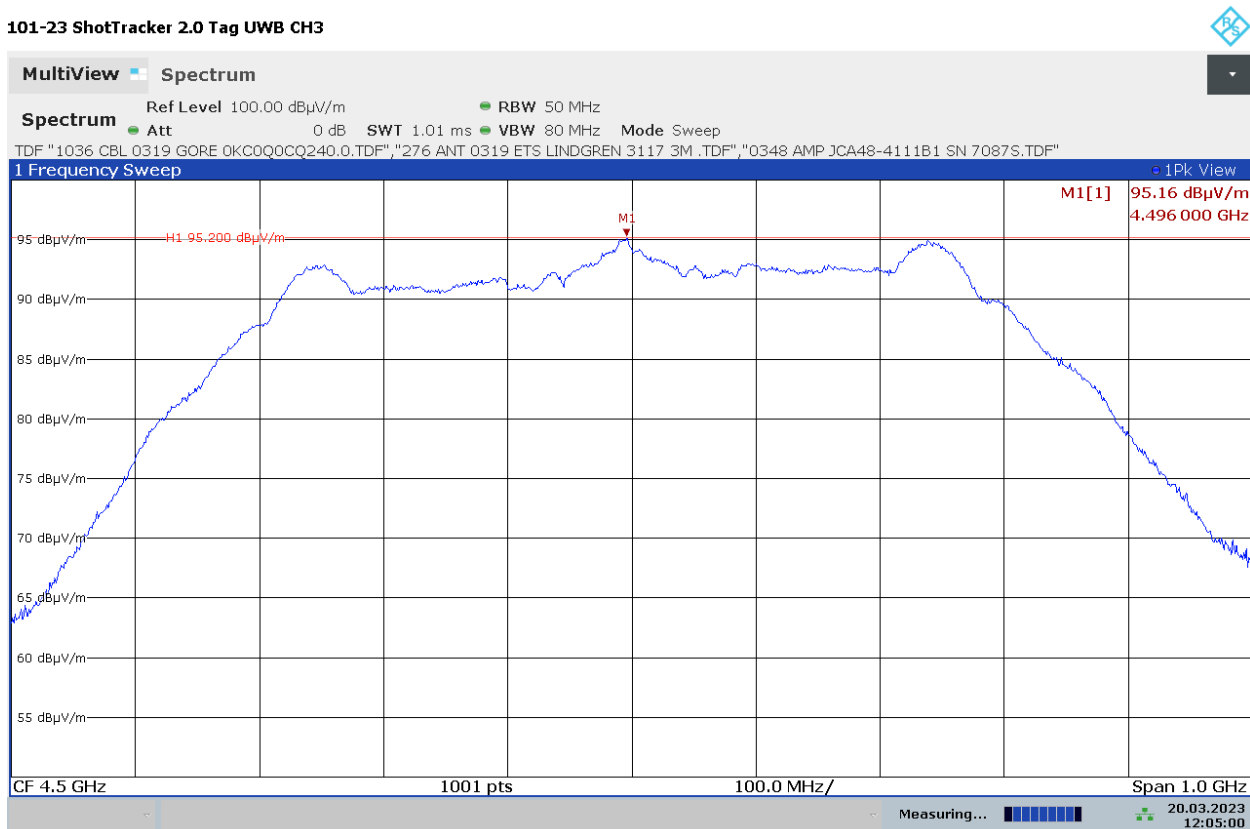
Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
4.496	95.16	95.30	-0.14	V	154	3	Compliant

Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

$$\text{EIRP (dBm)} = E_{\text{meas}} (\text{dB}\mu\text{V/m}) - 95.3, \text{ Equation 33 from ANSI C63.10:2020}$$

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
4.496	-0.14	0.00	-0.14	V	154	3	Compliant

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6. Measurement Data (continued)

6.8. Peak Emissions in a 50 MHz Bandwidth (15.519 (e), 15.521 (g), RSS-220 5.3.1 (g))

6.8.4 Plot of Peak Power at 3 Meters – Channel 5

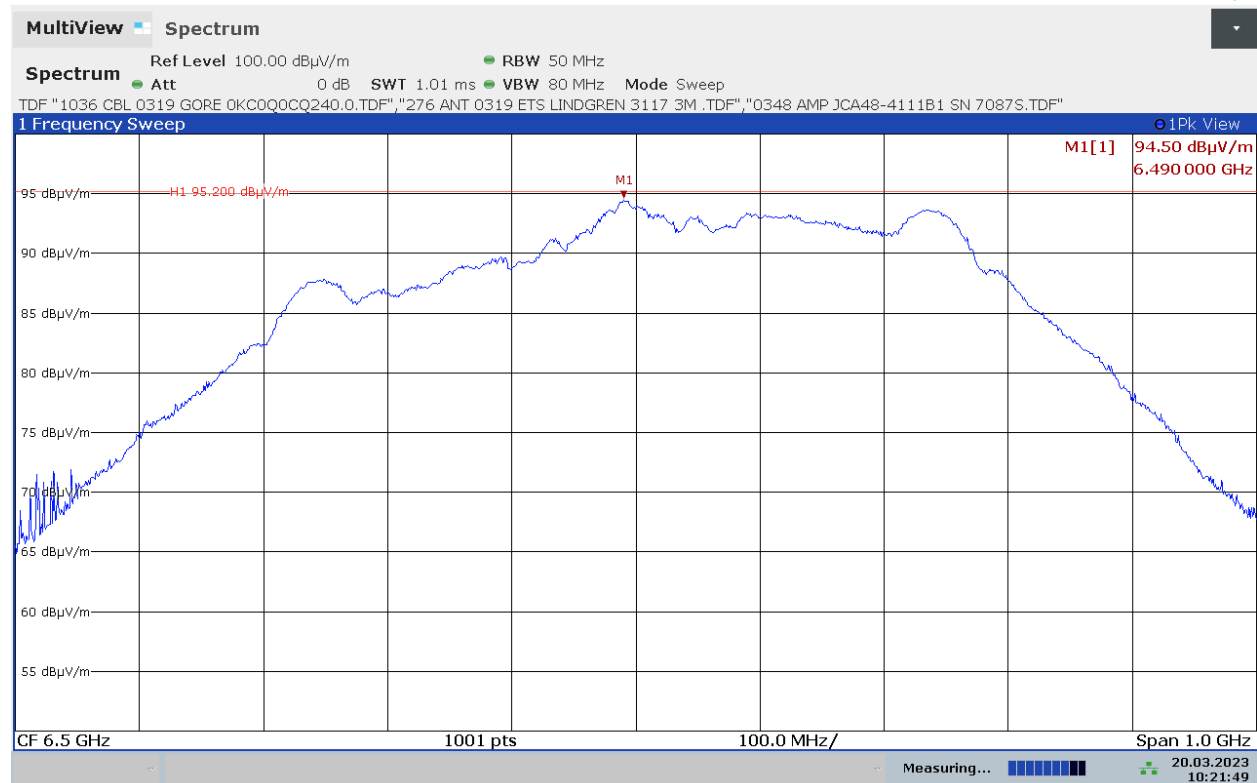
Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.490	94.50	95.30	-0.80	V	161	9	Compliant

Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

$$\text{EIRP (dBm)} = E_{\text{meas}} (\text{dB}\mu\text{V/m}) - 95.3, \text{ Equation 33 from ANSI C63.10:2020}$$

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.490	-0.80	0.00	-0.80	V	161	9	Compliant

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6. Measurement Data (continued)

6.9. Conducted Emissions (FCC Part 15.207, ISSED RSS-GEN 7.2)

Requirement: With certain exceptions, an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-Peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5.0	56	46
5.0 to 30.0	60	50
* Decreases with the logarithm of the frequency.		

Procedure: This test was performed in accordance with the procedure detailed in ANSI C63.10-2020, Section 6.2: Standard test method for ac power-line conducted emissions from unlicensed wireless devices.

Results: The device under test meets the FCC Part 15.207 & RSS-GEN 7.2 test requirements.

Measurement & Equipment Setup

Test Date:	3/20/2023
Test Engineer:	Jeffrey Paquette
Site Temperature (°C):	22.5
Relative Humidity (%RH):	35
Frequency Range:	0.15 MHz to 30 MHz
EMI Receiver IF Bandwidth:	9 kHz
EMI Receiver Avg Bandwidth:	$\geq 3 * \text{RBW or IF(BW)}$
Detector Functions:	Peak, Quasi-Peak. & Average
Measurement Uncertainty	$\pm 3.40 \text{ dB}$

Sample Calculation: Final Result (dB μ V) = Measurement Value (dB μ V) + LISN Insertion Loss (dB) + Cable Loss (dB).

Note: All correction factors are loaded into the measurement instrument prior to testing to determine the final result.

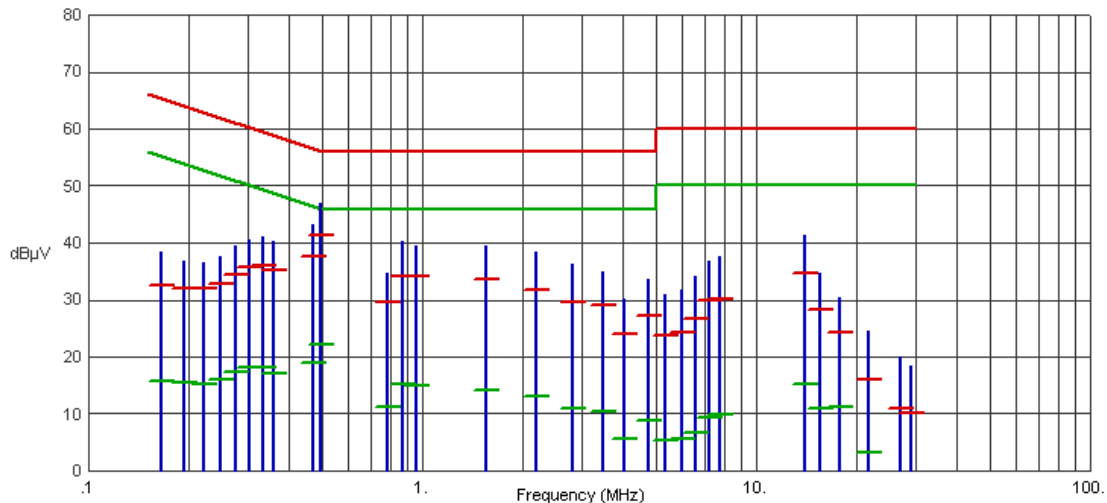
6. Conducted Emissions Test Results

6.10. Conducted Emissions (FCC Part 15.207)

6.10.1. 120 Volts, 60 Hz Phase

Test No.: 155-23, 120 Volts, 60 Hz Phase

FCC, Class B



Frequency (MHz)	Pk Amp (dBμV)	QP Amp (dBμV)	QP Limit (dBμV)	QP Margin (dB)	Avg Amp (dBμV)	Avg Limit (dBμV)	Avg Margin (dB)	Comments
.1658	38.53	32.63	65.17	-32.54	15.77	55.17	-39.40	
.1928	36.92	32.05	63.92	-31.87	15.38	53.92	-38.54	
.2220	36.61	32.04	62.74	-30.70	15.20	52.74	-37.54	
.2490	37.58	32.77	61.79	-29.02	15.94	51.79	-35.85	
.2760	39.36	34.46	60.94	-26.48	17.27	50.94	-33.67	
.3030	40.62	35.61	60.16	-24.55	18.12	50.16	-32.04	
.3323	41.12	35.94	59.39	-23.45	18.21	49.39	-31.18	
.3593	40.35	35.13	58.74	-23.61	17.17	48.74	-31.57	
.4695	43.15	37.53	56.52	-18.99	18.81	46.52	-27.71	
.4965	46.89	41.45	56.06	-14.61	22.20	46.06	-23.86	
.7890	34.79	29.53	56.00	-26.47	11.15	46.00	-34.85	
.8723	40.15	34.10	56.00	-21.90	15.18	46.00	-30.82	
.9555	39.53	34.01	56.00	-21.99	14.91	46.00	-31.09	
1.5518	39.47	33.48	56.00	-22.52	14.24	46.00	-31.76	
2.1998	38.27	31.81	56.00	-24.19	13.03	46.00	-32.97	
2.8253	36.30	29.73	56.00	-26.27	10.84	46.00	-35.16	
3.4733	34.94	29.14	56.00	-26.86	10.27	46.00	-35.73	
4.0403	30.05	23.96	56.00	-32.04	5.67	46.00	-40.33	
4.7760	33.52	27.16	56.00	-28.84	8.70	46.00	-37.30	
5.3453	30.81	23.84	60.00	-36.16	5.41	50.00	-44.59	
5.9753	31.77	24.27	60.00	-35.73	5.50	50.00	-44.50	
6.5580	34.03	26.73	60.00	-33.27	6.60	50.00	-43.40	
7.2060	36.80	29.97	60.00	-30.03	9.33	50.00	-40.67	
7.8158	37.54	30.22	60.00	-29.78	9.98	50.00	-40.02	
13.9515	41.34	34.66	60.00	-25.34	15.08	50.00	-34.92	
15.5850	34.79	28.14	60.00	-31.86	10.85	50.00	-39.15	
17.6955	30.44	24.26	60.00	-35.74	11.12	50.00	-38.88	
21.6578	24.50	15.90	60.00	-44.10	3.32	50.00	-46.68	
27.1388	19.87	11.06	60.00	-48.94	-2.73	50.00	-52.73	
29.1120	18.52	10.03	60.00	-49.97	-2.26	50.00	-50.26	

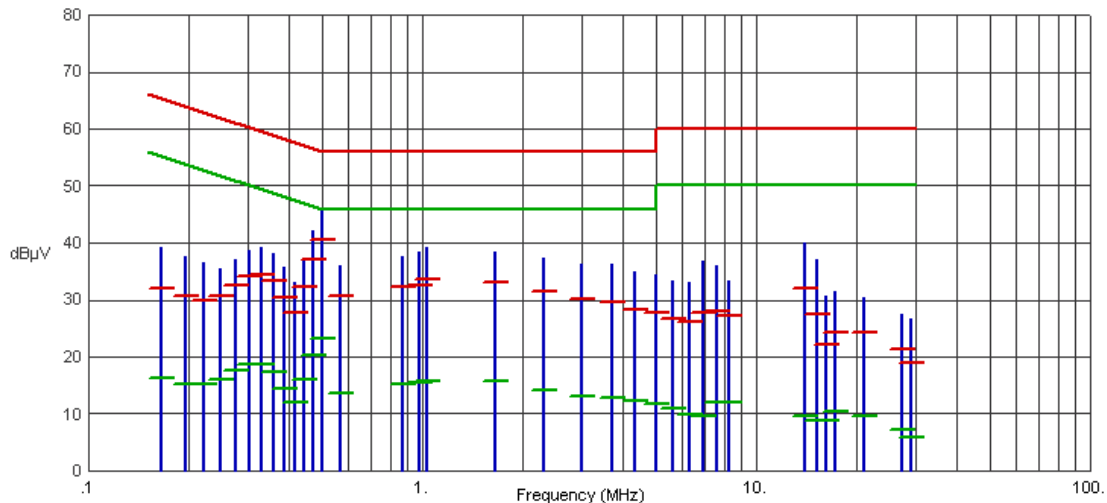
6. Conducted Emissions Test Results

6.10. Conducted Emissions (FCC Part 15.207 continued)

6.10.2. 120 Volts, 60 Hz Neutral

Test No.: 155-23, 120 Volts, 60 Hz Neutral

FCC, Class B



Frequency (MHz)	Pk Amp (dBμV)	QP Amp (dBμV)	QP Limit (dBμV)	QP Margin (dB)	Avg Amp (dBμV)	Avg Limit (dBμV)	Avg Margin (dB)	Comments
.1658	39.31	31.92	65.17	-33.25	16.31	55.17	-38.86	
.1950	37.66	30.56	63.82	-33.26	15.15	53.82	-38.67	
.2220	36.48	30.00	62.74	-32.74	15.08	52.74	-37.66	
.2490	35.47	30.78	61.79	-31.01	16.09	51.79	-35.70	
.2760	37.18	32.60	60.94	-28.34	17.69	50.94	-33.25	
.3030	38.68	34.00	60.16	-26.16	18.66	50.16	-31.50	
.3300	39.18	34.33	59.45	-25.12	18.68	49.45	-30.77	
.3570	38.25	33.28	58.80	-25.52	17.34	48.80	-31.46	
.3840	35.69	30.51	58.19	-27.68	14.41	48.19	-33.78	
.4133	33.17	27.74	57.58	-29.84	11.94	47.58	-35.64	
.4425	37.34	32.22	57.01	-24.79	16.11	47.01	-30.90	
.4695	42.01	36.96	56.52	-19.56	20.30	46.52	-26.22	
.4988	45.52	40.43	56.02	-15.59	23.15	46.02	-22.87	
.5708	36.11	30.54	56.00	-25.46	13.53	46.00	-32.47	
.8700	37.70	32.14	56.00	-23.86	15.25	46.00	-30.75	
.9803	38.31	32.60	56.00	-23.40	15.48	46.00	-30.52	
1.0298	39.16	33.53	56.00	-22.47	15.77	46.00	-30.23	
1.6553	38.44	32.96	56.00	-23.04	15.62	46.00	-30.38	
2.3010	37.26	31.51	56.00	-24.49	14.14	46.00	-31.86	
3.0143	36.33	30.16	56.00	-25.84	12.97	46.00	-33.03	
3.6848	36.17	29.67	56.00	-26.33	12.85	46.00	-33.15	
4.3418	35.01	28.38	56.00	-27.62	12.19	46.00	-33.81	
5.0190	34.31	27.86	60.00	-32.14	11.71	50.00	-38.29	
5.6378	33.21	26.64	60.00	-33.36	10.96	50.00	-39.04	
6.3015	32.99	26.16	60.00	-33.84	9.84	50.00	-40.16	
6.9608	36.74	27.67	60.00	-32.33	9.52	50.00	-40.48	
7.6065	36.09	27.98	60.00	-32.02	12.09	50.00	-37.91	
8.2883	33.45	27.21	60.00	-32.79	12.02	50.00	-37.98	
13.9448	40.03	31.97	60.00	-28.03	9.62	50.00	-40.38	
15.2498	36.95	27.48	60.00	-32.52	8.81	50.00	-41.19	
16.2263	30.75	22.03	60.00	-37.97	8.82	50.00	-41.18	
17.1443	31.57	24.28	60.00	-35.72	10.46	50.00	-39.54	

6. Conducted Emissions Test Results

6.10. Conducted Emissions (FCC Part 15.207 continued)

6.10.2. 120 Volts, 60 Hz Neutral (continued)

Frequency (MHz)	Pk Amp (dBμV)	QP Amp (dBμV)	QP Limit (dBμV)	QP Margin (dB)	Avg Amp (dBμV)	Avg Limit (dBμV)	Avg Margin (dB)	Comments
21.0930	30.46	24.38	60.00	-35.62	9.63	50.00	-40.37	
27.3413	27.42	21.28	60.00	-38.72	7.25	50.00	-42.75	
29.2290	26.66	19.05	60.00	-40.95	5.92	50.00	-44.08	

6. Measurement Data (continued)

6.11. 99% Emission Bandwidth (RSS-GEN 6.7)

Requirement: The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs RSS-Gen, Section 6.7.

Test Note: The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

The detector of the spectrum analyzer shall be set to "Sample". However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or "Max Hold") may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.

6.11.1 Plot of 99% Emission Bandwidth, Channel 1



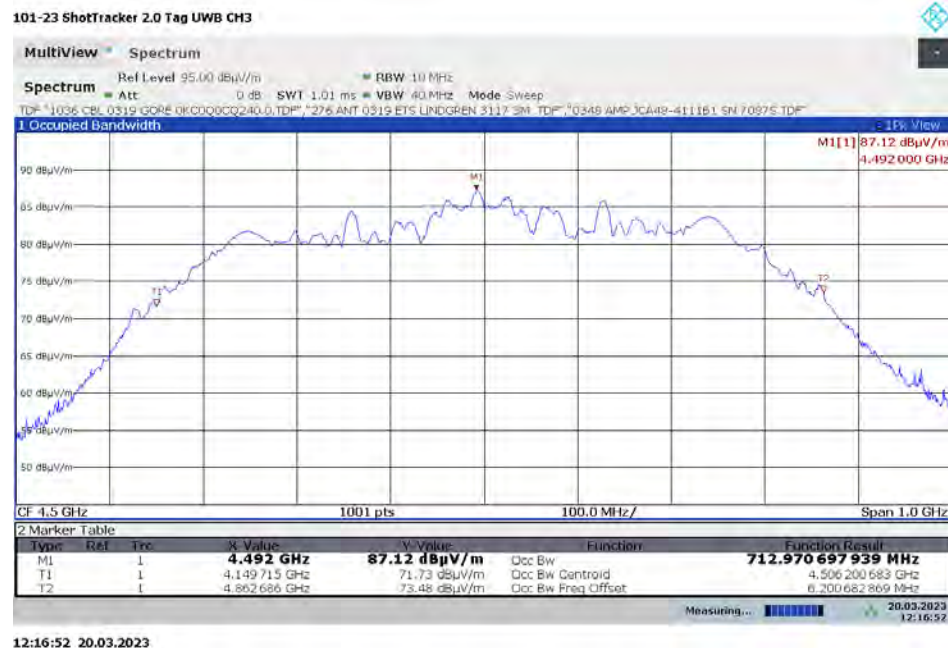
6. Measurement Data (continued)

6.11. 99% Emission Bandwidth (RSS-GEN 6.7 Continued)

6.11.2 Plot of 99% Emission Bandwidth, Channel 2



6.11.3 Plot of 99% Emission Bandwidth, Channel 3



6. Measurement Data (continued)

6.11. 99% Emission Bandwidth (RSS-GEN 6.7 Continued)

6.11.2 Plot of 99% Emission Bandwidth, Channel 5



7. Test Site Description

Compliance Worldwide is located at 357 Main Street in Sandown, New Hampshire. The test sites at Compliance Worldwide are used for conducted and radiated emissions testing in accordance with the Federal Communications Commission (FCC) and Industry Canada standards. Through our American Association for Laboratory Accreditation (A2LA) ISO Guide 17025 Accreditation our test sites are designated with the FCC (designation number **US1091**) and Industry Canada (file number **IC 3023A-1**).

Compliance Worldwide is also designated as a Phase 1 CAB under APEC-MRA (US0132) for Australia/New Zealand AS/NZS CISPR 11, AS/NZS CISPR 14-1, AS/NZS CISPR 15, AS/NZS CISPR 32, Chinese-Taipei (Taiwan) BSMI CNS 15936 and Korea (RRA) KS C 9811, KS C 9814-1, KS C 9815, KS C 9832, KS C 9610-6-3 & KS C 9610-6-4.

The radiated emissions test site is a 3- and 10-meter enclosed open area test site (OATS). Personnel, support equipment and test equipment are located in the basement beneath the OATS ground plane.

The conducted emissions site is part of a 16' x 20' x 12' ferrite tile chamber and uses one of the walls for the vertical ground plane. A second conducted emissions site is also located in the basement of the OATS site with a 2.3 x 2.5-meter ground plane and a 2.4 x 2.4-meter vertical wall.

The radiated emissions test site for measurements above 1GHz is a 3 Meter open area test site (OATS) with a 3.6 by 3.6-meter anechoic absorber floor patch to achieve a quasi-free space measurement environment per ANSI C63.4/C63.10 and CISPR 16-1-4 standards.

The sites are designed to test products or systems 1.5 meters W x 1.5 meters L x 2.0 meters H, floor standing or tabletop.

8. Test Images

8.1. Spurious and Harmonic Emissions – 30 kHz to 30 MHz Front



8. Test Images

8.2. Spurious and Harmonic Emissions – 30 kHz to 30 MHz Rear



8. Test Images

8.3. Spurious and Harmonic Emissions – 30 MHz to 960 MHz Rear



8. Test Images

8.4. Spurious and Harmonic Emissions – 960 MHz to 18 GHz Front



8. Test Images

8.5. Spurious and Harmonic Emissions – 960 MHz to 18 GHz Rear



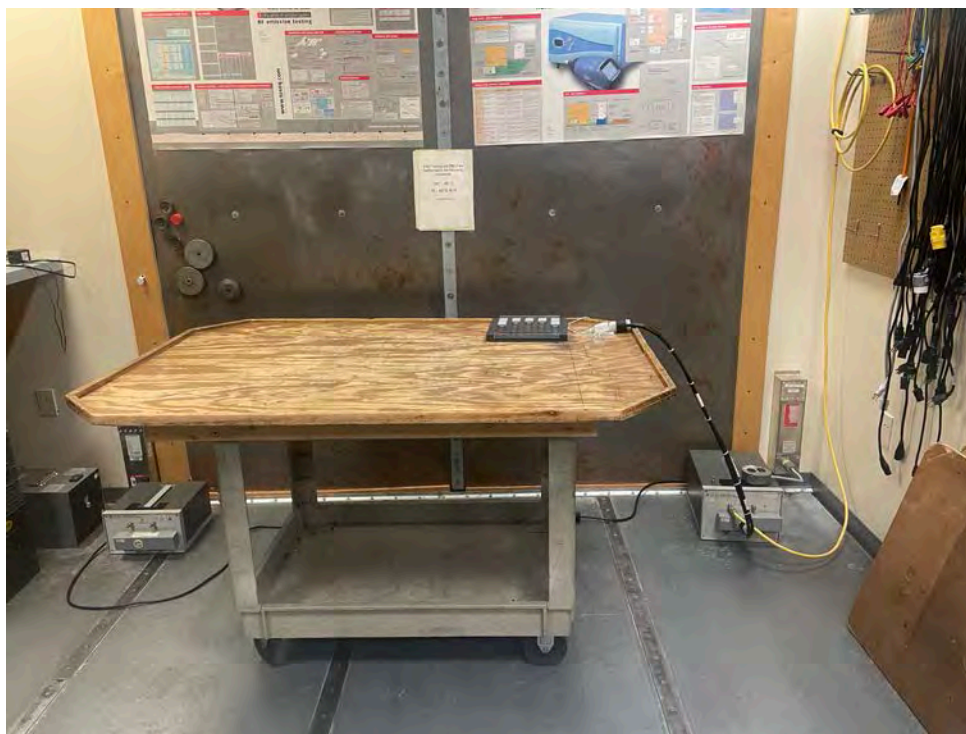
8. Test Images

8.6. Spurious and Harmonic Emissions – 18 to 40 GHz Side View



8. Test Setup Photographs

8.7. Conducted Emissions, Front View



8. Test Setup Photographs

8.8. Conducted Emissions, Rear View

