

**COMPLIANCE WORLDWIDE INC.
TEST REPORT 194-24R1**

**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

**STATSports Group Ltd
Drumalane Mill, The Quays
Newry, Co Down BT35 8QS, United Kingdom**

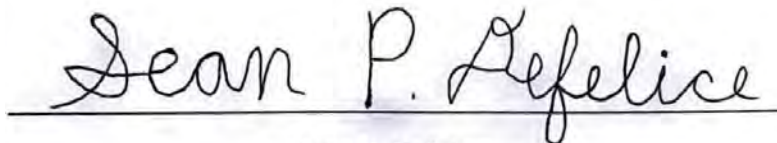
For the

**ApexNXT
Model: V1.x**

**FCC ID: 2APHS-APX400
IC: 25854-APX400**

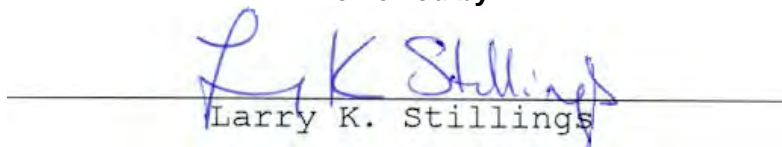
**Report Issued on January 15, 2025
Revision R1 Issued on August 22, 2025**

Tested by



Sean P. Defelice

Reviewed by



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1. Scope

This test report certifies that the STATSports Group ApexNXT 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 plots in Section 6.5 for continuous wave mode to more closely match the data in Section 6.7.

2. Product Details

2.1. Manufacturer:	Statsports Group Ltd
2.2. Model Numbers:	ApexNXT V1.x
2.3. Serial Numbers:	8DD81BB2FC1F, C4D65120E808, AC0B791900F5, 78, 84
2.4. Description:	Wearable tracking sensor device
2.5. Power Source:	Lithium Battery
2.6. Hardware Revision:	N/A
2.7. Software Revision:	N/A
2.8. Modulation Type:	Pulse Modulation, Frequency Hopping 6.5 GHz Center Frequency Nominal (Channel 5 – 500 MHz BW),
2.9. Operating Frequencies:	4.5 GHz Center Frequency Nominal (Channel 3 – 500 MHz BW) Note: Channel 3 can only be operated in the USA.
2.10. EMC Modifications:	None

3. Product Configuration

3.1 Operational Characteristics & Software

Hardware Setup:

Connect the ApexNXT to the laptop to configure operation for either Channel 3 or Channel 5 and either 16M or 64M PRF. The device supports several of modes of operation.

0x10000000 - UWB "continuous wave" (less than 1 microseconds between packets, constant packets), note the device will never be used in this mode of operation.

0x01000000 - UWB 10Hz constant packets identical to how the device operates normally on UWB

0x00800000 - UWB 80Hz with a 32-bit counter inside the packet, same len as normal operation

The UWB 10 Hz mode was chosen for testing. The UWB CW mode was additionally used in the semi-anechoic chamber to more closely match was collected on 3M OATS

Remove the laptop connection and perform the test.

3. Product Configuration (cont.)

3.2. EUT Hardware

Device	Manufacturer	Manufacturer p/n	Serial No.
Pod	STATSports	ApexNXT V1.x	See above
Microcontroller	NXP	MIMXRT1064DVL6B	TBD
BLE Coprocessor	Nordic Semiconductors	nRF52840	TBD
UWB Transceiver	Qorvo / Decawave	DW1000	TBD
GNSS Module	u-Blox	NEO-M9N	TBD
Lithium Polymer Battery	YOK Energy	YE652143E-600mAh	N/A

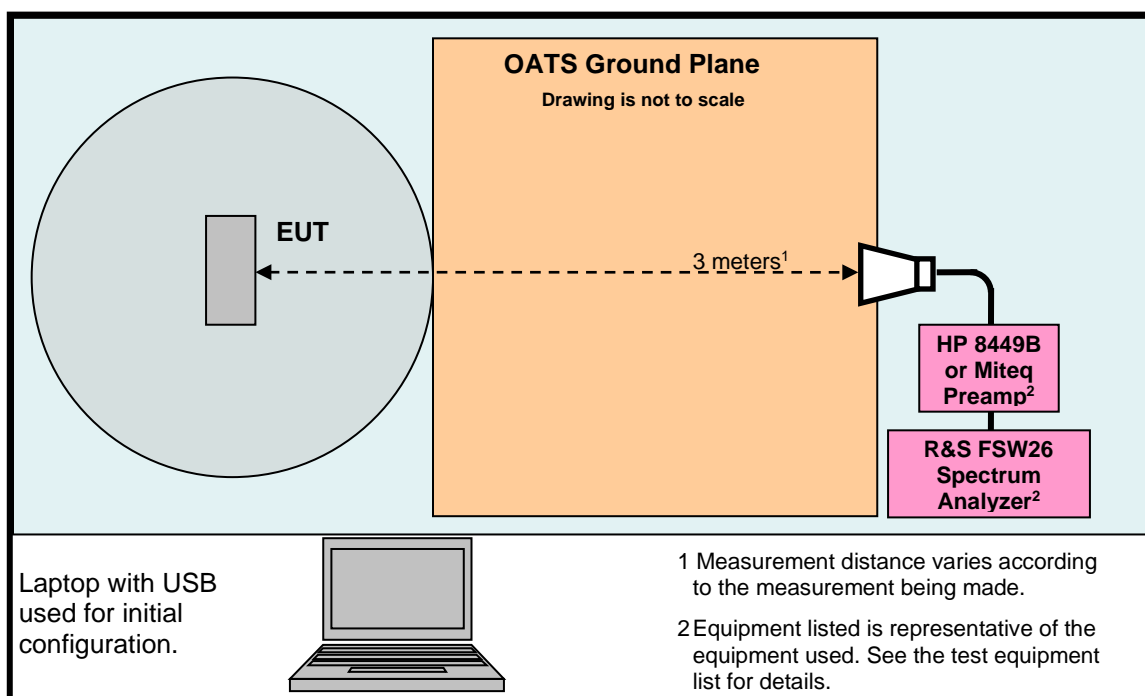
3.3. EUT Cables/Transducers

Cable Type	Length	Shield	From	To / Function
USB	1M	Yes	EUT	Laptop - Only used to program the device

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	10/25/2025	4 Years
EMI Test Receiver, 10 Hz – 7 GHz ¹	Rohde & Schwarz	ESR7	101770	7/23/2026	2 Years
EMI Test Receiver, 9 kHz – 26.5 GHz ¹	Rohde & Schwarz	ESR26	101693	6/26/2026	3 Years
Spectrum Analyzer, 2 Hz to 26.5 GHz ²	Rohde & Schwarz	FSW26	102057	7/19/2026	2 Years
Spectrum Analyzer, 9 kHz to 40 GHz ³	Rohde & Schwarz	FSV40	100899	6/27/2026	2 Years
Spectrum Analyzer 10 Hz – 40 GHz ⁴	Rohde & Schwarz	FSVR40	100909	9/18/2025	5 Years
Loop Antenna 9 kHz - 30 MHz	EMCO	6512	9309-1139	4/14/2026	4 Years
Biconilog Antenna, 30 MHz - 2 GHz	Sunol Sciences	JB1	A050913	7/1/2026	4 Years
Dbl Ridged Guide Antenna 1 - 18 GHz	ETS-Lindgren	3117	00143292	5/11/2026	4 Years
Dbl Ridged Guide Antenna 1 - 18 GHz	ETS-Lindgren	3117	00227631	4/21/2026	4 Years
Preamplifier 100 MHz to 7 GHz	Miteq	AFS3-00100200-10-15P-4	988773	9/28/2025	2 Years
Preamplifier 100 MHz to 18 GHz	Miteq	AMF-7D-00101800-30-10P	1953081	9/27/2025	2 Years
Preamplifier 2 to 12 GHz	JCA	JCA48-4111B1	7087S	9/28/2025	2 Years
Preamplifier 18 to 40 GHz	Miteq	JSD42-21004200-40-5P	649199/649219	9/27/2025	2 Years
Horn Antenna 18 to 40 GHz	Com Power	AH-840	101032	1/25/2026	4 Years
High Pass Filter 6.4 to 18 GHz	Micro-Tronics	HPM50112	014	2/27/2026	2 Years
High Pass Filter 7.2 to 18 GHz	Micro-Tronics	HPM50107	G036	2/27/2026	2 Years
Passband Filter 12 to 18.5 GHz	Wavecom	F2620A	16	2/27/2026	2 Years
Digital Barometer	Control Company	4195	ID236	3/15/2026	2 Years
Barometric Pressure/Humidity & Temp Datalogger	Extech Instruments	SD700	Q590483	4/4/2026	2 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:	06/12/2024, 06/13/2024, 08/13/2024, 08/14/2024, 12/18/2024, 12/19/2024, 12/20/2024, 1/3/2025, 1/6/2025, 1/14/2025, 1/15/2025, 8/20/2025, 8/21/2025, 8/22/2025
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 C63.10:2013, 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 (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 surface mount type.

6. Measurement Data (continued)

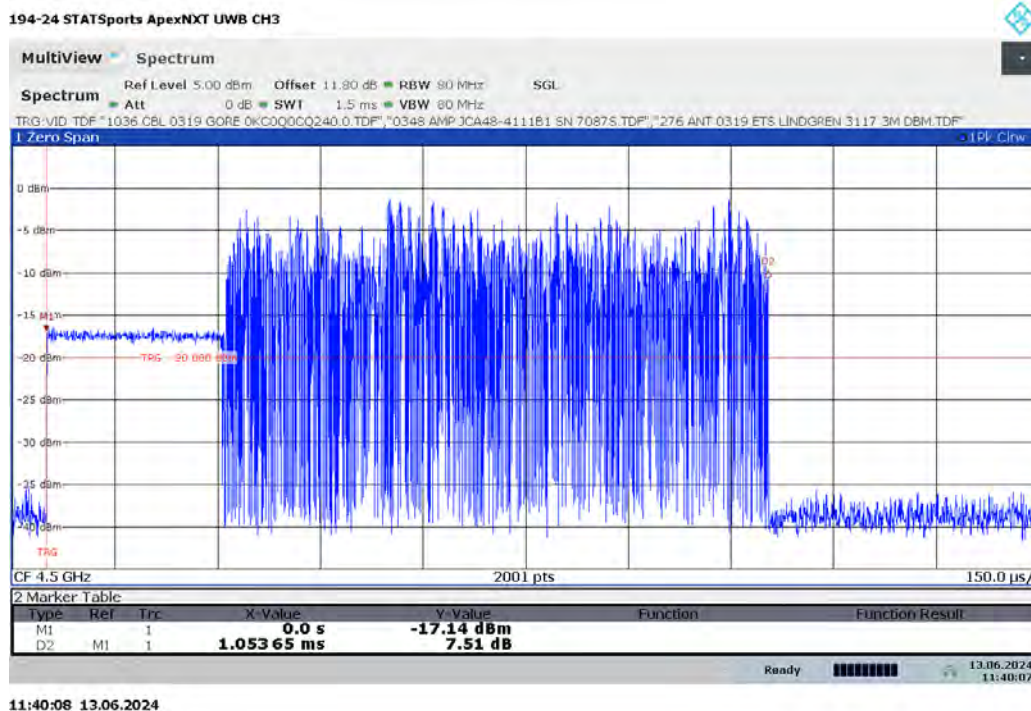
6.2. Operational Requirements of the Device under Test (15.519 (a) (1))

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 1.06 mS burst every 100 mS. When the device loses connection with an associated receiver, it tries to reconnect every 10.005 seconds.

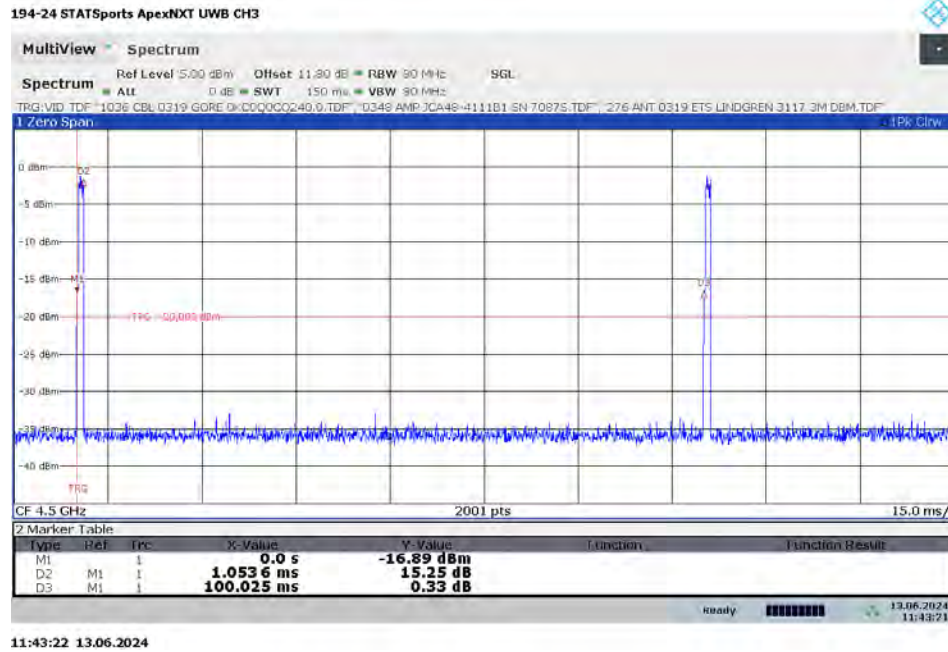
6.2.1 Plot of Transmission On-Time Channel 3, 16M PRF



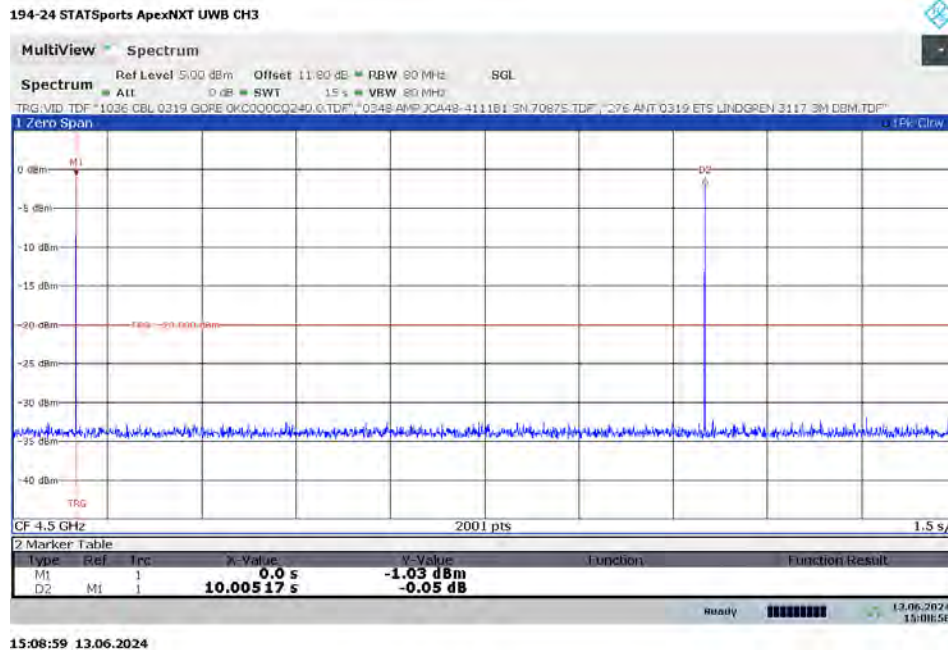
6. Measurement Data (continued)

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

6.2.2 Plot of Transmission Period – Channel 3, 16M PRF



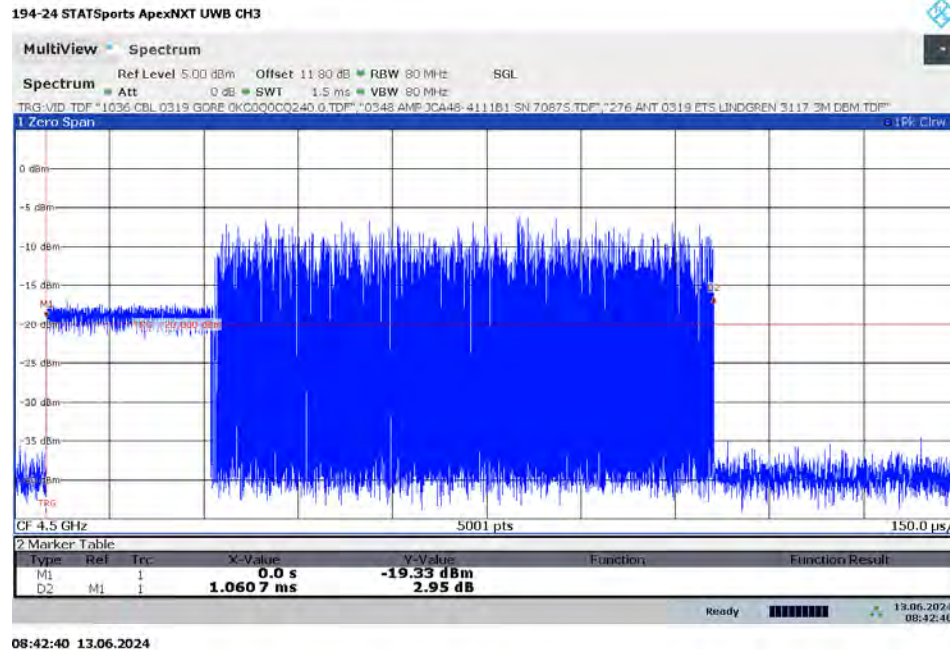
6.2.3 Plot of Reconnection signal – Channel 3, 16M PRF



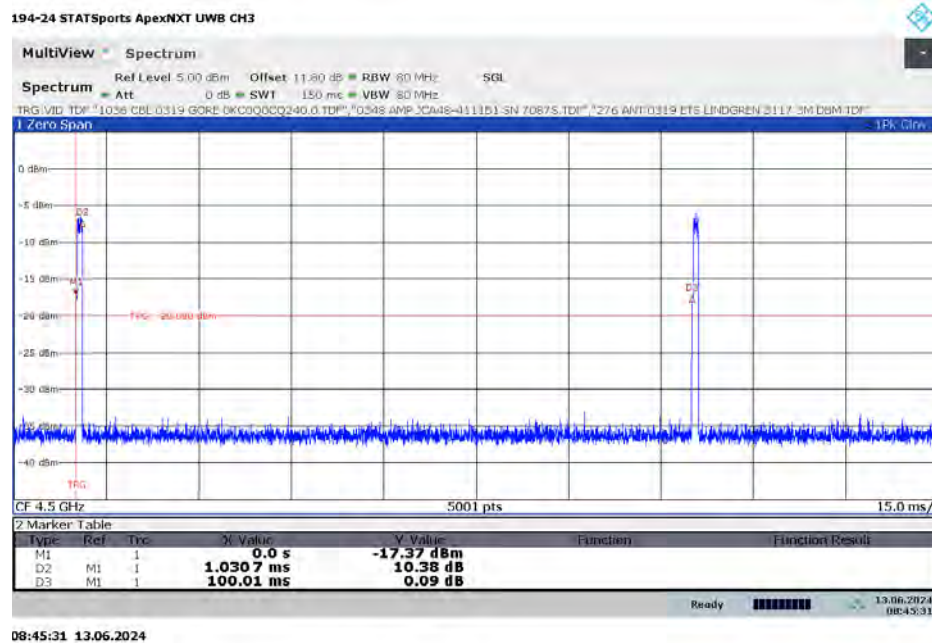
6. Measurement Data (continued)

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

6.2.4 Plot of Transmission On-Time Channel 3, 64M PRF



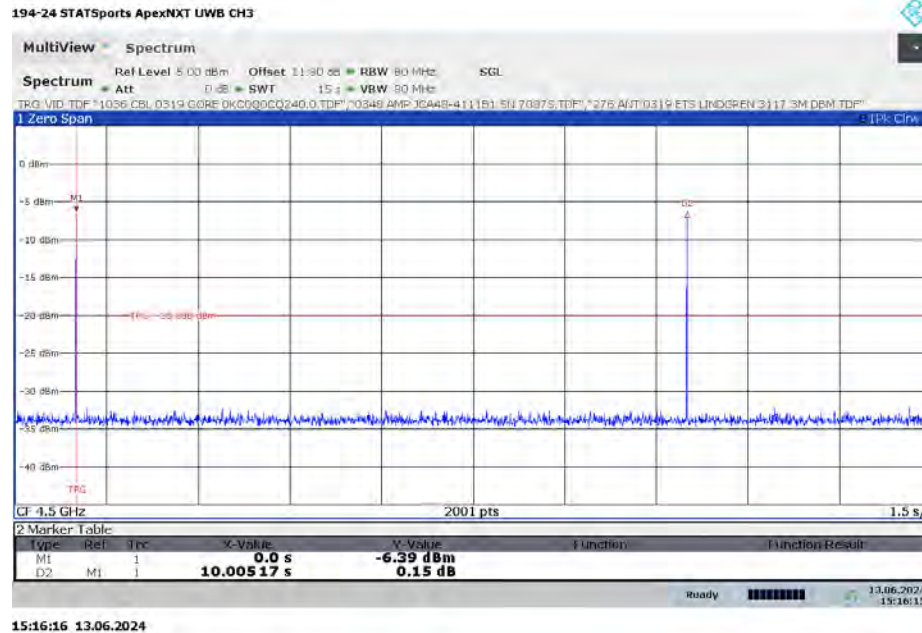
6.2.5 Plot of Transmission Period – Channel 3, 64M PRF



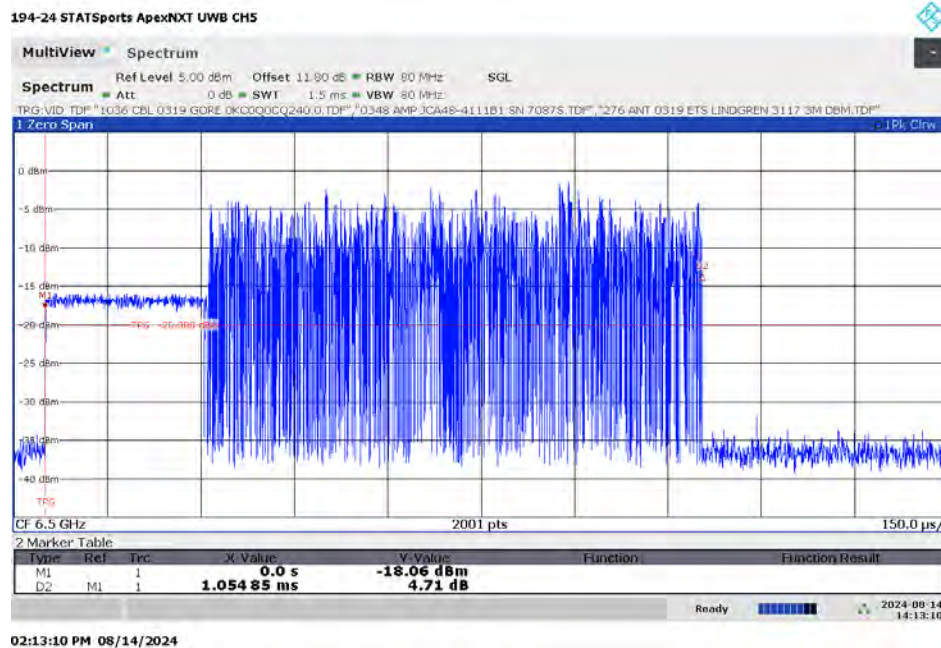
6. Measurement Data (continued)

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

6.2.6 Plot of Reconnection signal – Channel 3, 64M PRF



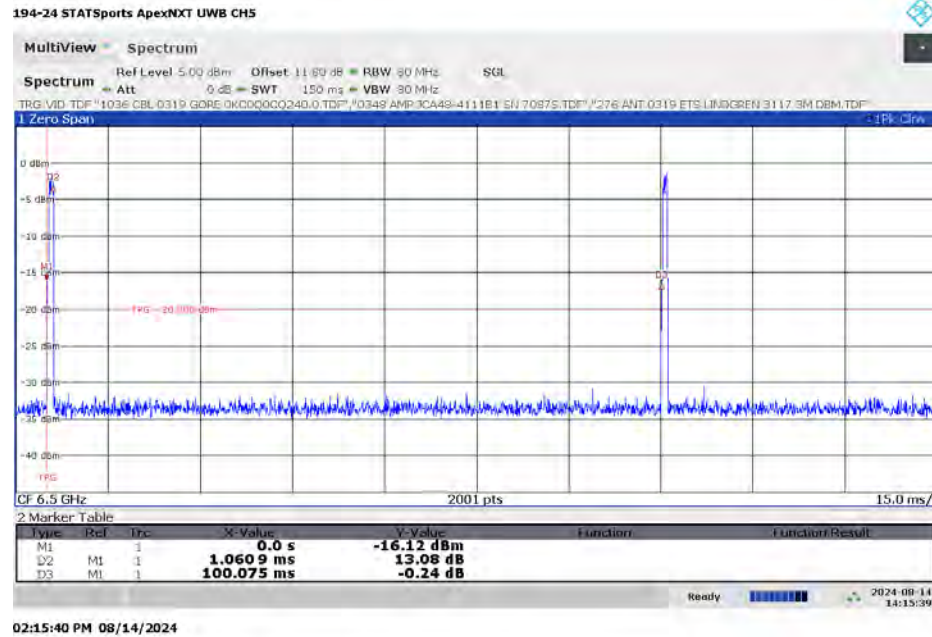
6.2.7 Plot of Transmission Period – Channel 5, 16M PRF



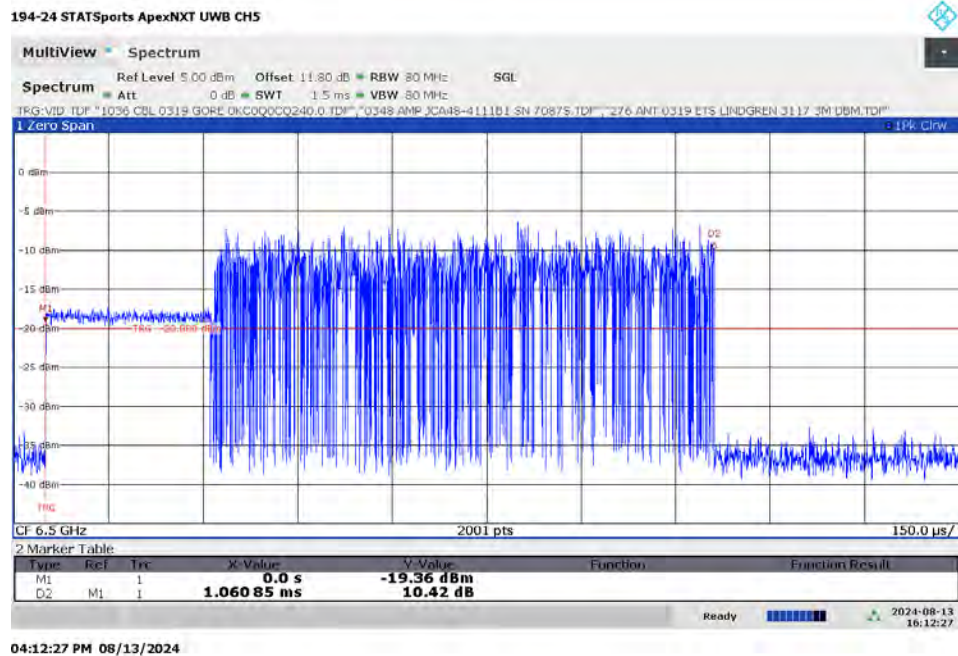
6. Measurement Data (continued)

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

6.2.8 Plot of Transmission Period – Channel 5, 16M PRF



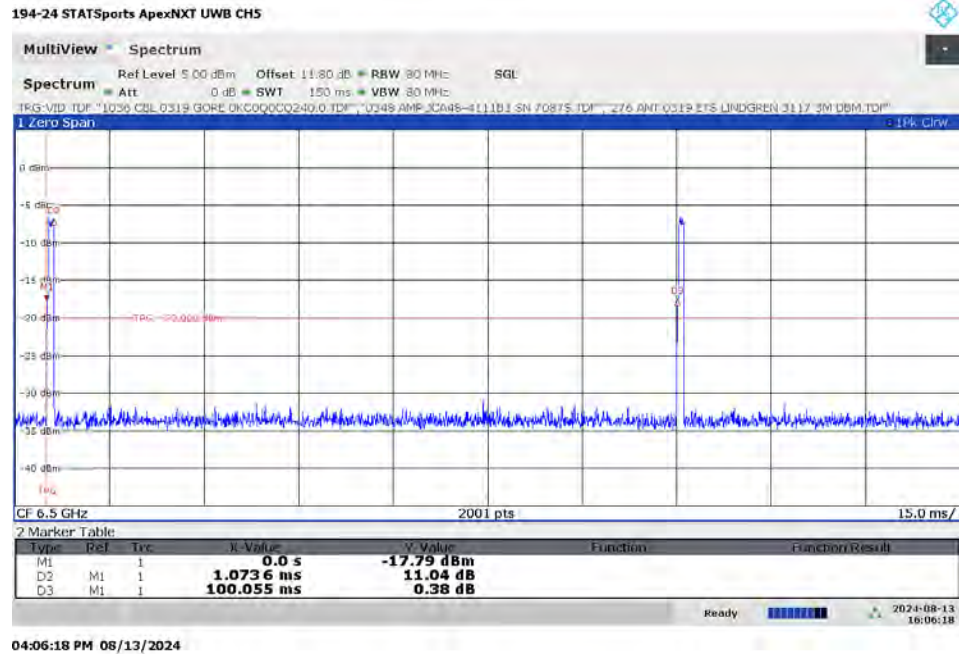
6.2.9 Plot of Transmission Period – Channel 5, 64M PRF



6. Measurement Data (continued)

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

6.2.10 Plot of Transmission Period – Channel 5, 64M PRF



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 3, 16M PRF

f_M	The highest emission peak	4.5020
f_L	10 dB below the highest peak	4.2323
f_H	10 dB above the highest peak	4.7877
f_C	Calculated: $(f_H + f_L) / 2$	4.5100
Bandwidth	Calculated: $(f_H - f_L)$	0.5554
Fractional BW	Calculated: $2 * (f_H - f_L) / (f_H + f_L)$	0.1231

6.3.2. Measurement Plot of 10 dB frequencies – Channel 3, 16M PRF

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6. Measurement Data (continued)

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

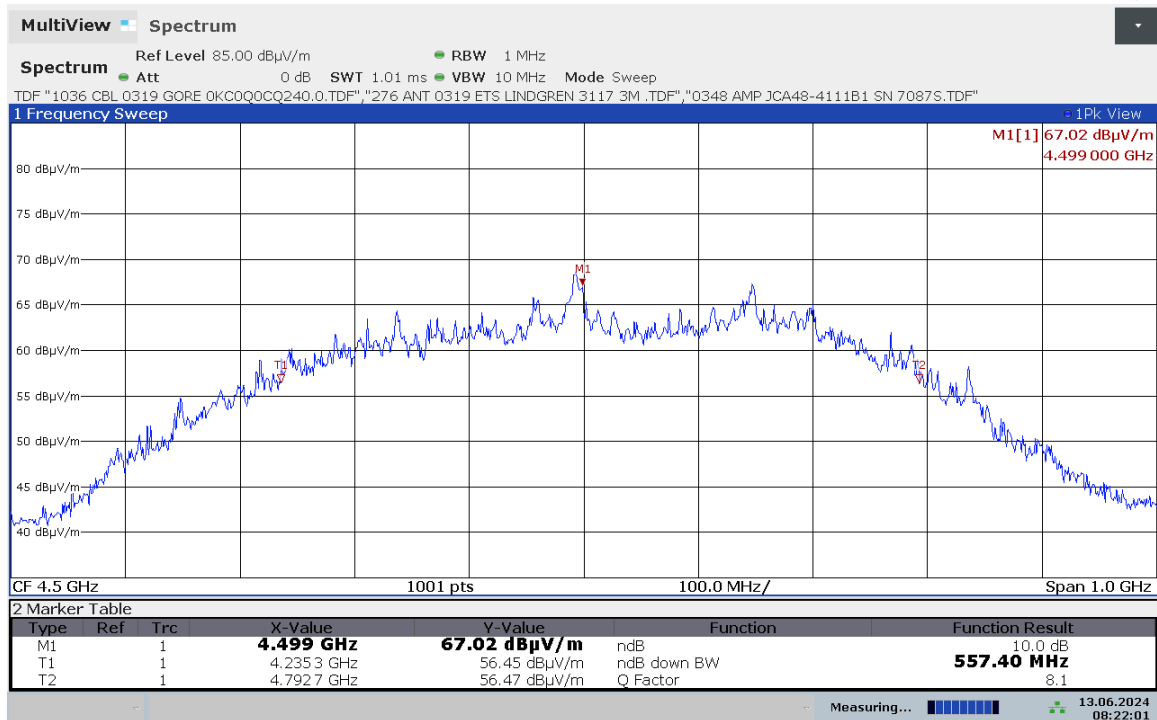
Requirement: The UWB bandwidth of a device operating under the provisions of this section shall be contained between 3,100 MHz and 10,600 MHz and at any point in time and has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the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

6.3.3. Measurement Data – Values in GHz – Channel 3, 64M PRF

f_M	The highest emission peak	4.4990
f_L	10 dB below the highest peak	4.2353
f_H	10 dB above the highest peak	4.7927
f_C	Calculated: $(f_H + f_L) / 2$	4.5140
Bandwidth	Calculated: $(f_H - f_L)$	0.5574
Fractional BW	Calculated: $2 * (f_H - f_L) / (f_H + f_L)$	0.1235

6.3.4. Measurement Plot of 10 dB frequencies – Channel 3, 64M PRF

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6. Measurement Data (continued)

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

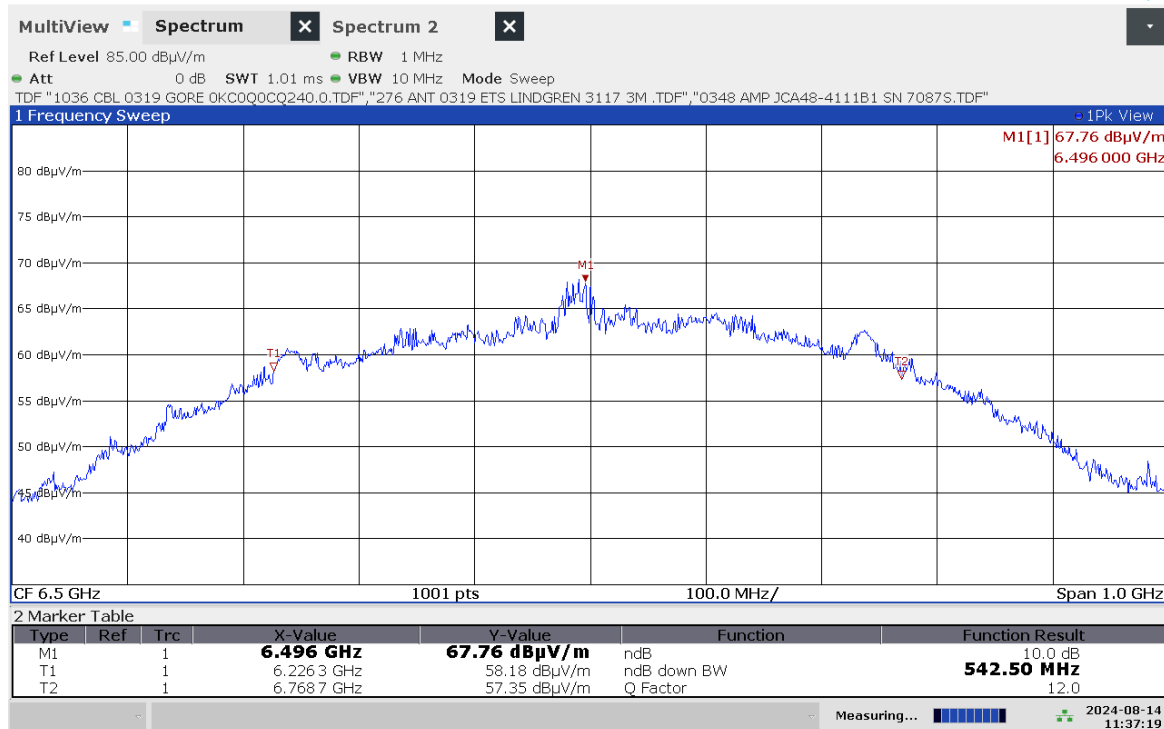
Requirement: The UWB bandwidth of a device operating under the provisions of this section shall be contained between 3,100 MHz and 10,600 MHz and at any point in time and has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the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

6.3.5. Measurement Data – Values in GHz – Channel 5, 16M PRF

f_M	The highest emission peak	6.4960
f_L	10 dB below the highest peak	6.2263
f_H	10 dB above the highest peak	6.7687
f_C	Calculated: $(f_H + f_L) / 2$	6.4975
Bandwidth	Calculated: $(f_H - f_L)$	0.5424
Fractional BW	Calculated: $2 * (f_H - f_L) / (f_H + f_L)$	0.0835

6.3.6. Measurement Plot of 10 dB frequencies – Channel 5, 16M PRF

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6. Measurement Data (continued)

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

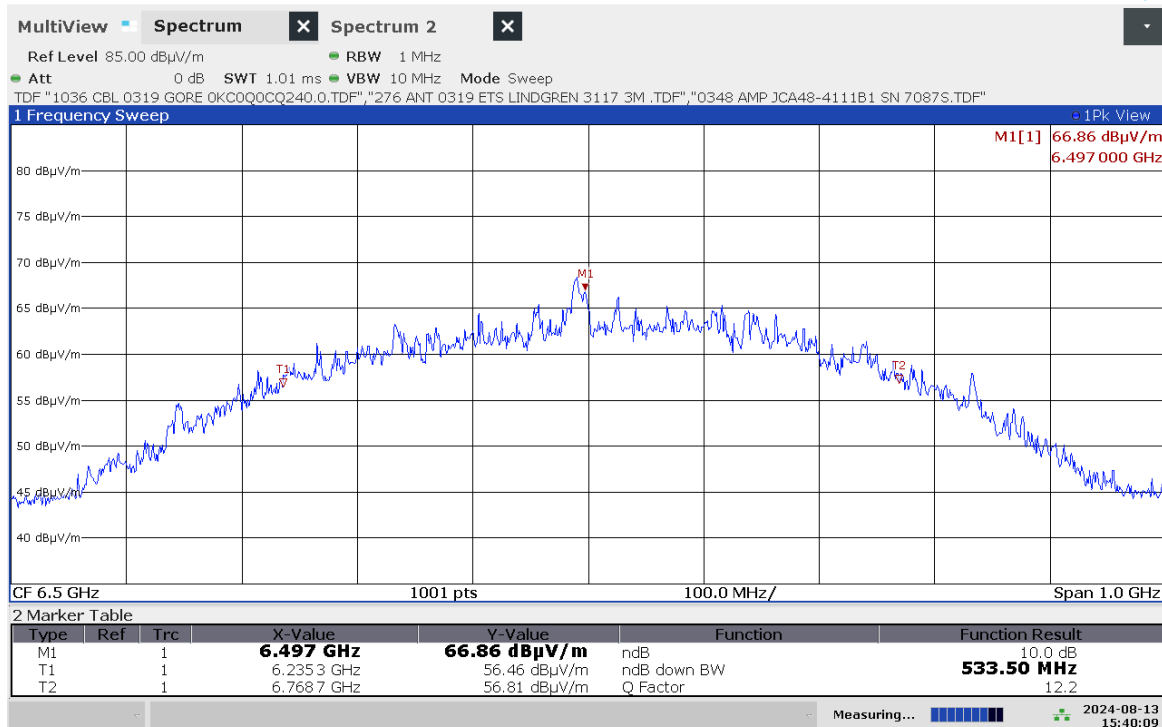
Requirement: The UWB bandwidth of a device operating under the provisions of this section shall be contained between 3,100 MHz and 10,600 MHz and at any point in time and has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the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

6.3.7. Measurement Data – Values in GHz – Channel 5, 64M PRF

f_M	The highest emission peak	6.4970
f_L	10 dB below the highest peak	6.2353
f_H	10 dB above the highest peak	6.7687
f_C	Calculated: $(f_H + f_L) / 2$	6.5020
Bandwidth	Calculated: $(f_H - f_L)$	0.5334
Fractional BW	Calculated: $2 * (f_H - f_L) / (f_H + f_L)$	0.0820

6.3.8. Measurement Plot of 10 dB frequencies – Channel 5, 64M PRF

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6. Measurement Data (continued)

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

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.

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.

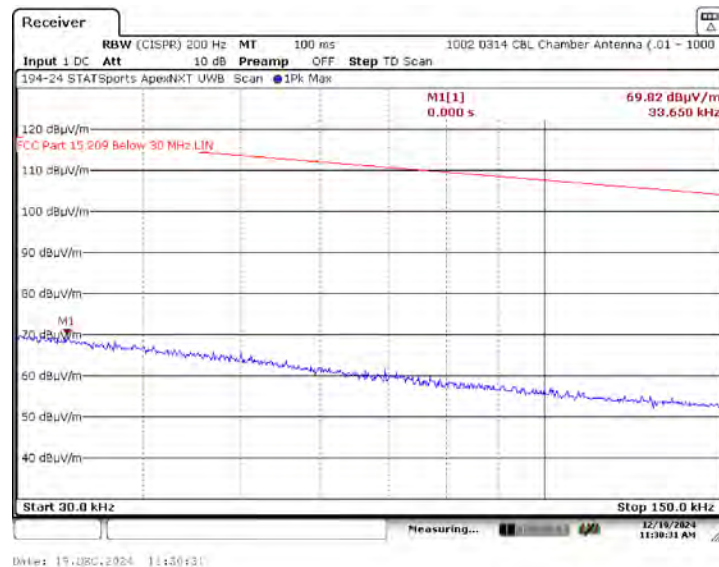
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

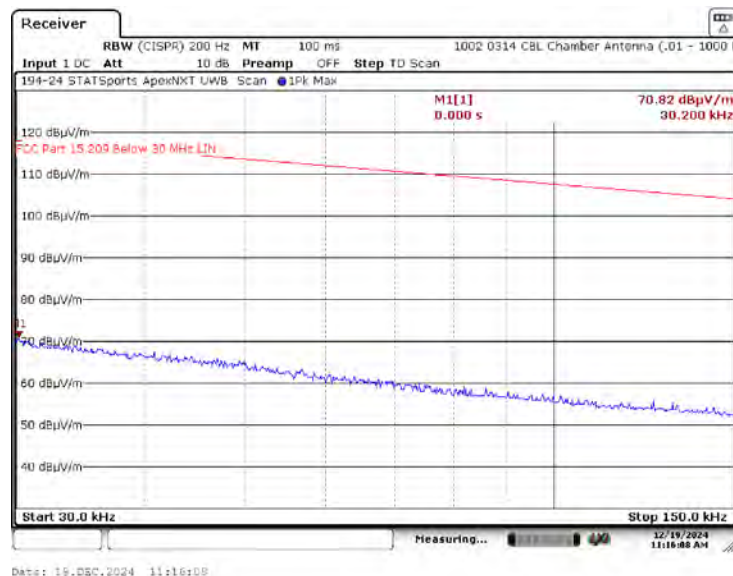
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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, CH3, 16M X-Axis



6.4.1.2 Perpendicular Measurement Antenna – 30 to 150 kHz, CH3, 16M X-Axis



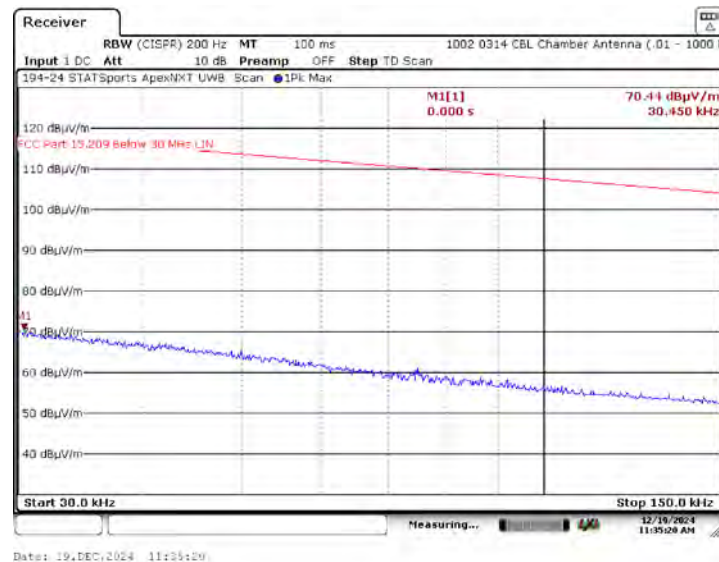
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

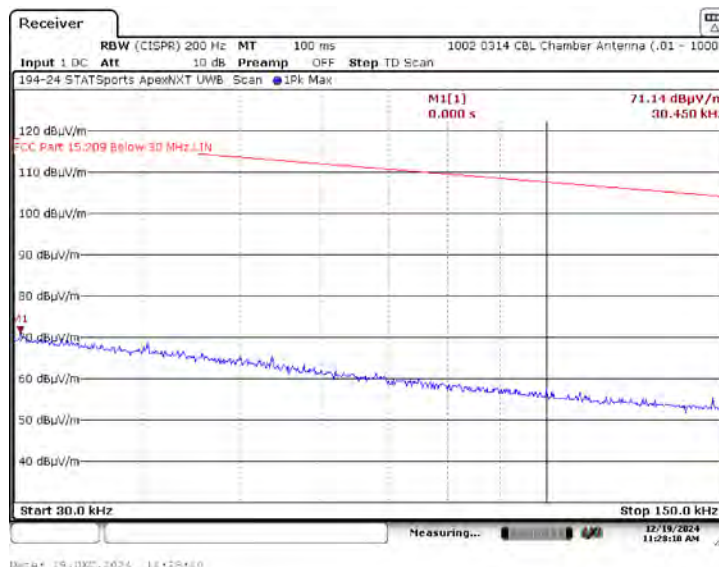
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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, CH3, 16M, X-Axis



6.4.1.4 Parallel Measurement Antenna – 30 to 150 kHz, CH3, 16M Y-Axis



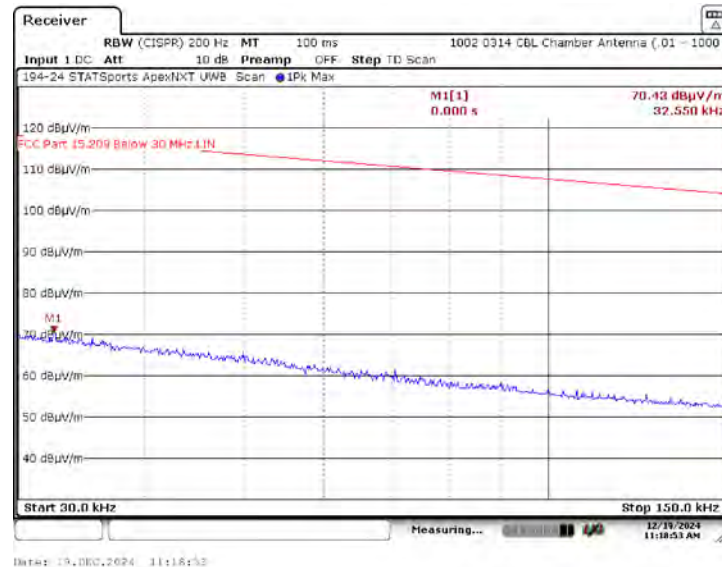
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

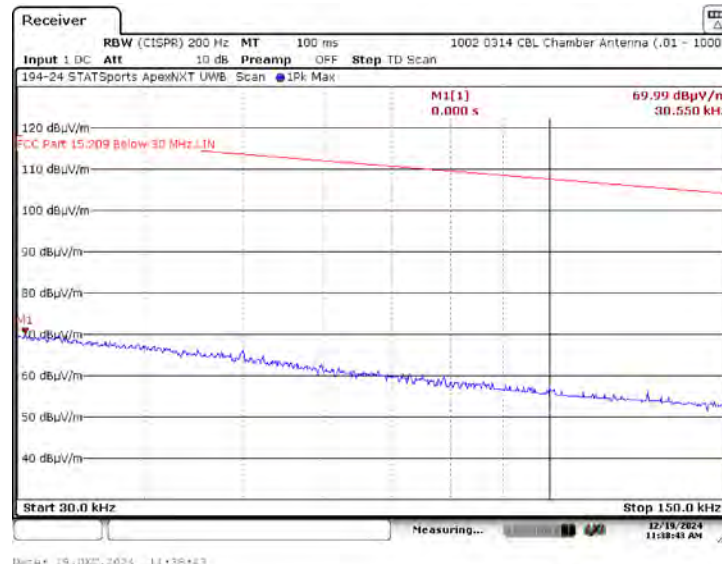
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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, CH3, 16M Y-Axis



6.4.1.6 Ground Parallel Measurement Antenna – 30 to 150 kHz, CH3, 16M, Y-Axis



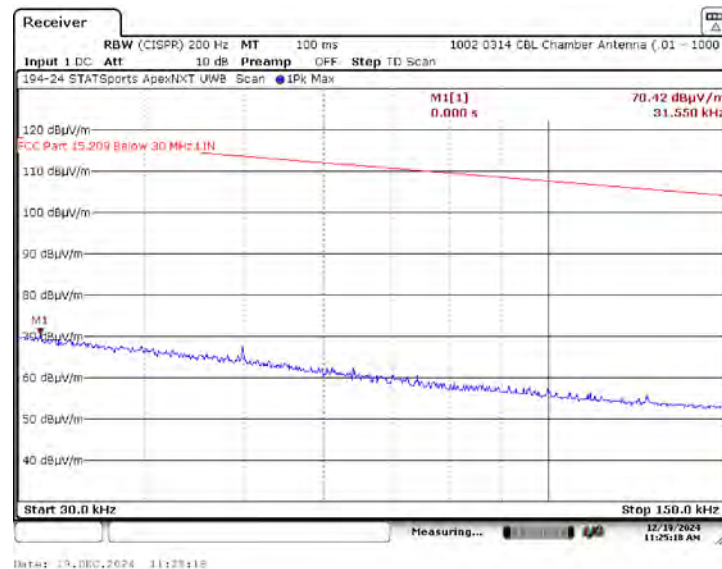
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

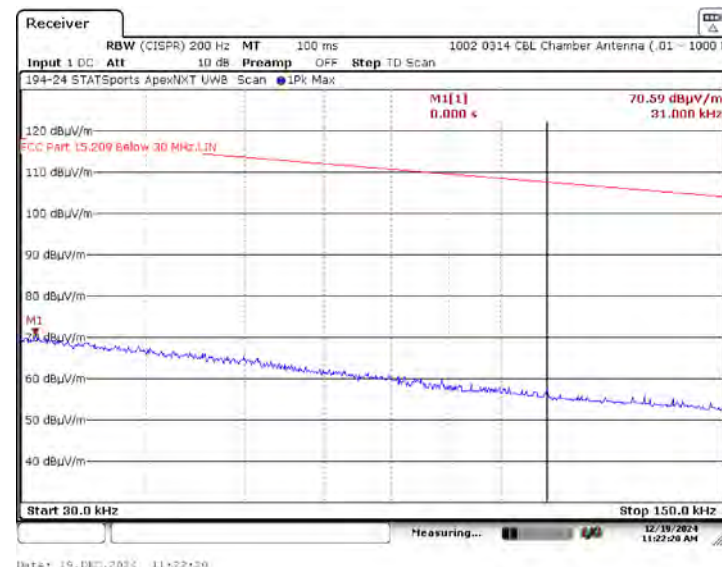
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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, CH3, 16M Z-Axis



6.4.1.8 Perpendicular Measurement Antenna – 30 to 150 kHz, CH3, 16M Z-Axis



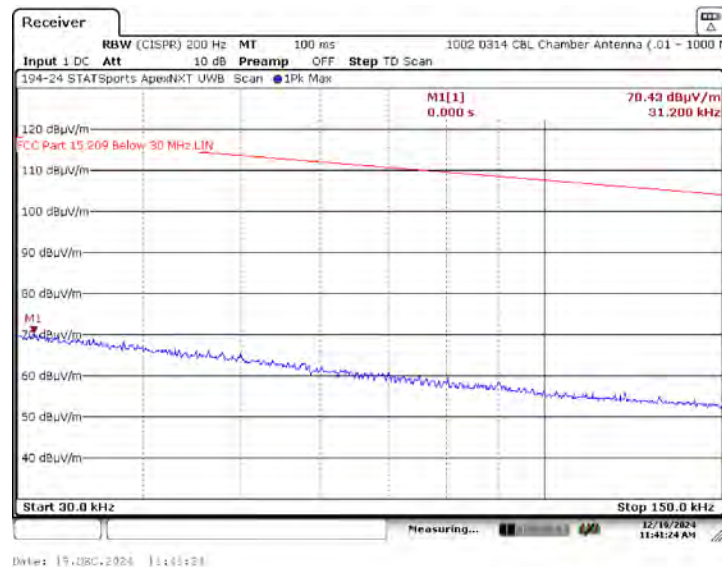
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

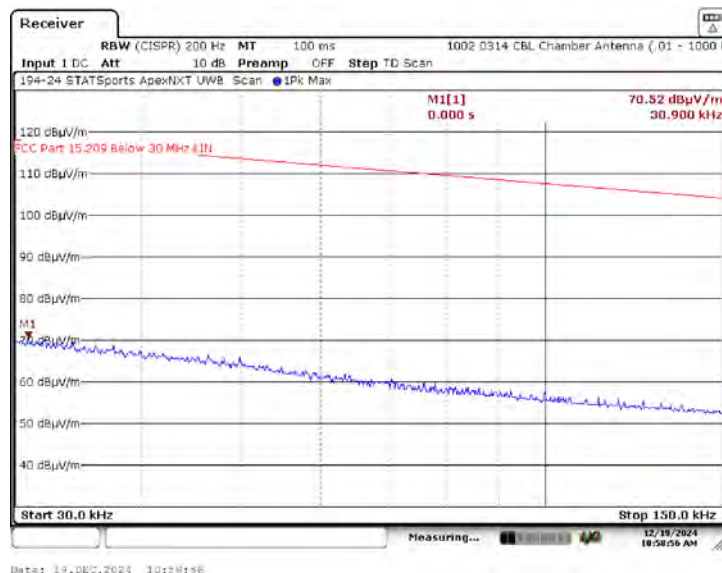
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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, CH3, 16M, Z-Axis



6.4.1.10 Parallel Measurement Antenna – 30 to 150 kHz, CH3, 64M X-Axis



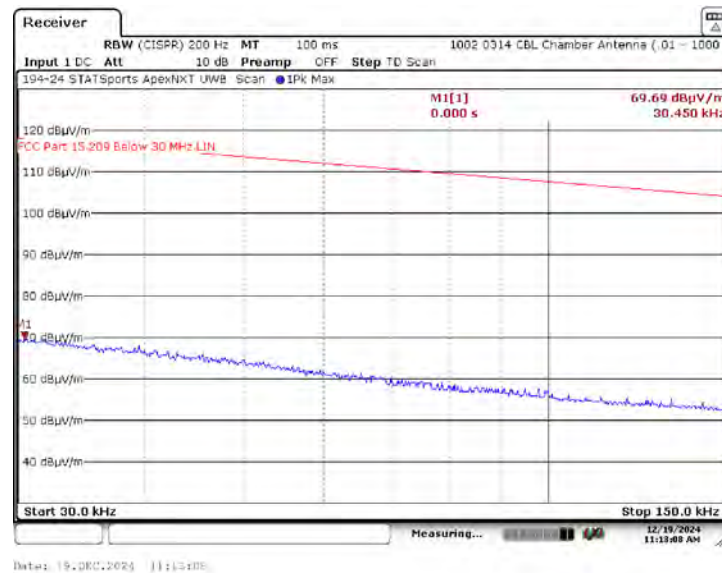
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

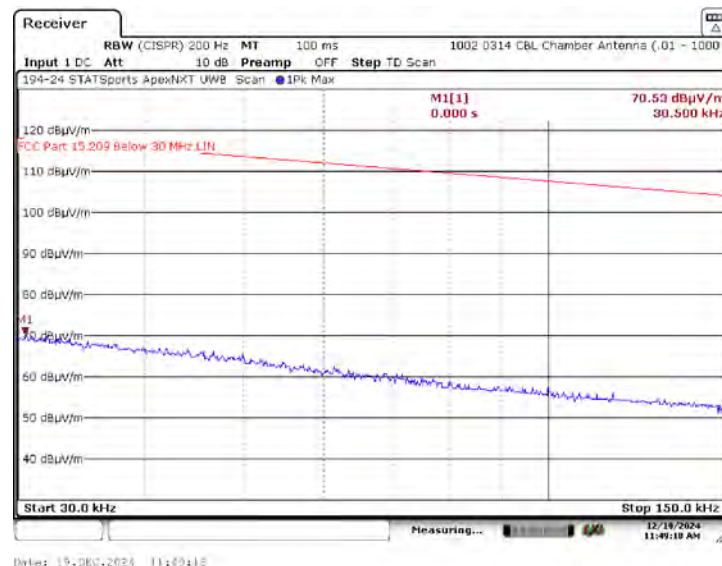
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.11 Perpendicular Measurement Antenna – 30 to 150 kHz, CH3, 64M X-Axis



6.4.1.12 Ground Parallel Measurement Antenna – 30 to 150 kHz, CH3, 64M, X-Axis



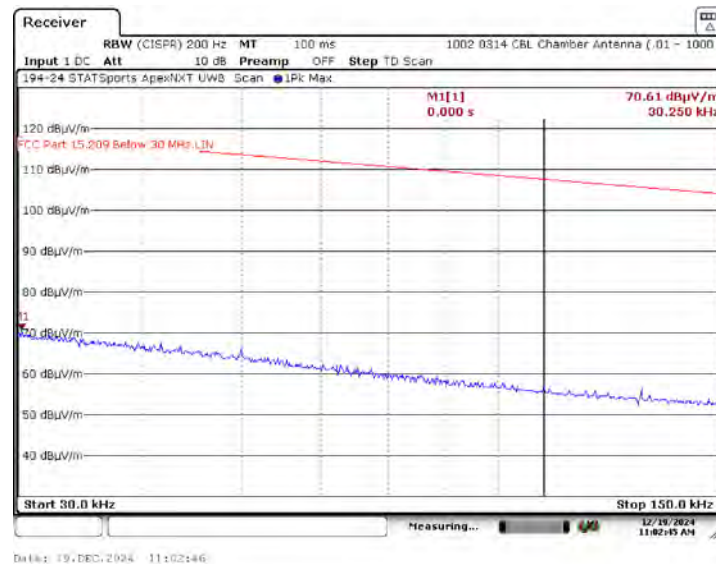
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

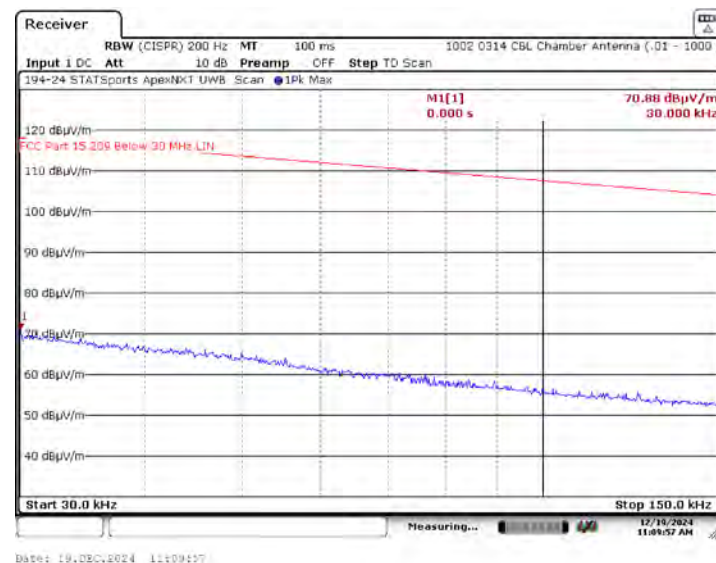
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.13 Parallel Measurement Antenna – 30 to 150 kHz, CH3, 64M Y-Axis



6.4.1.14 Perpendicular Measurement Antenna – 30 to 150 kHz, CH3, 64M Y-Axis



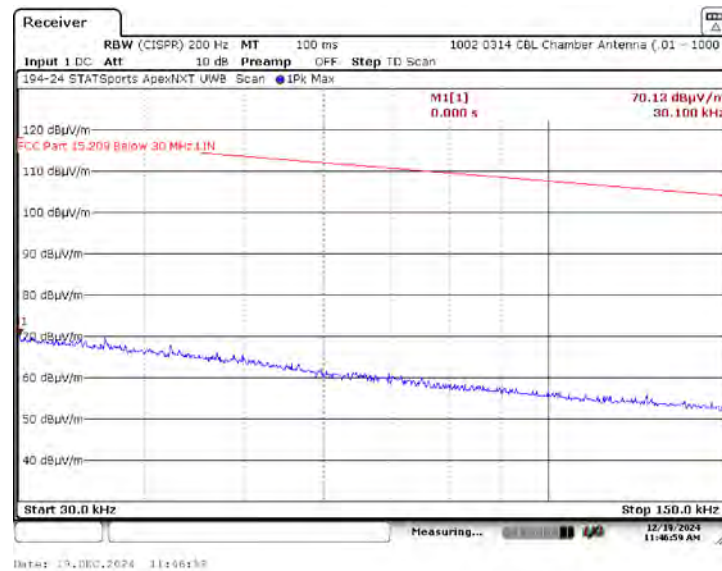
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

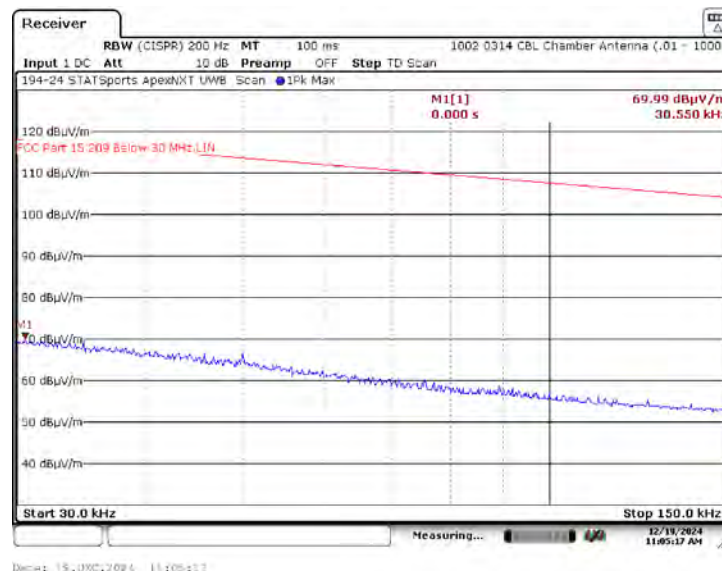
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.15 Ground Parallel Measurement Antenna – 30 to 150 kHz, CH3, 64M, Y-Axis



6.4.1.16 Parallel Measurement Antenna – 30 to 150 kHz, CH3, 64M Z-Axis



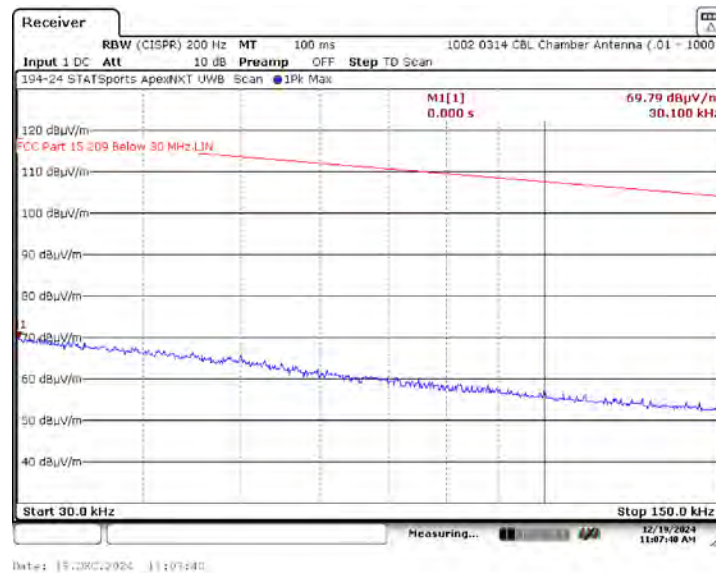
6. Measurement Data (continued)

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.

6.4.1.17 Perpendicular Measurement Antenna – 30 to 150 kHz, CH3, 64M Z-Axis



6.4.1.18 Ground Parallel Measurement Antenna – 30 to 150 kHz, CH3, 64M, Z-Axis



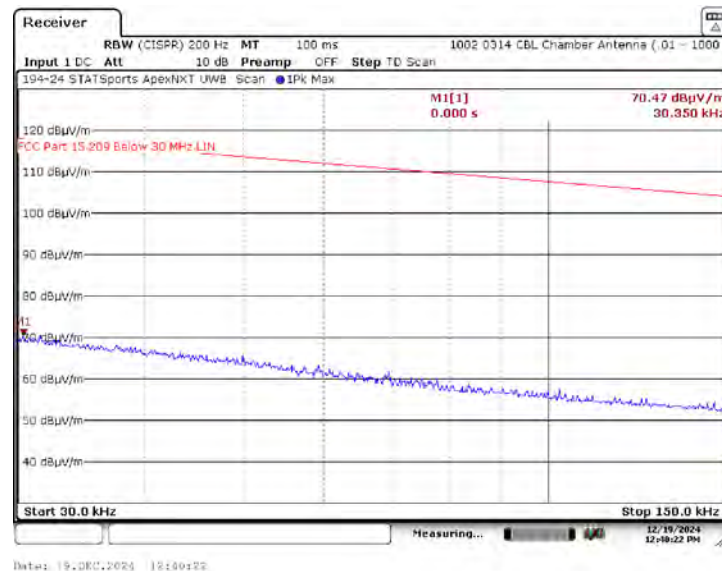
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

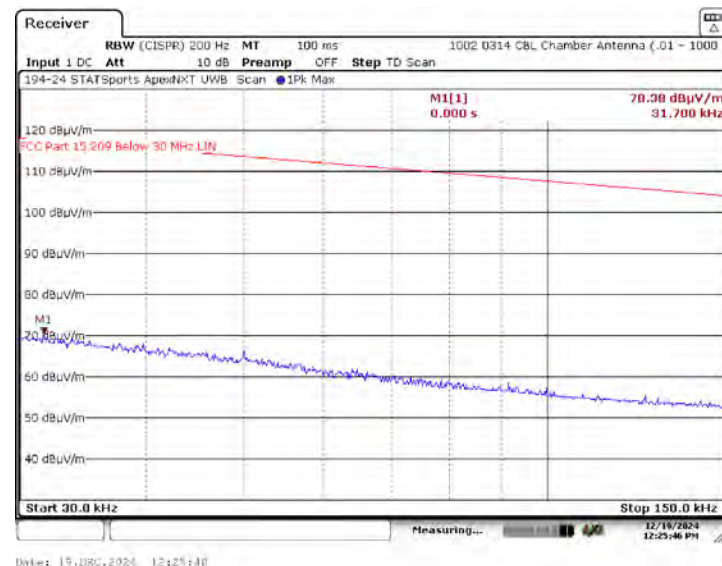
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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 – 30 to 150 kHz, CH5, 16M X-Axis



6.4.1.20 Perpendicular Measurement Antenna – 30 to 150 kHz, CH5, 16M X-Axis



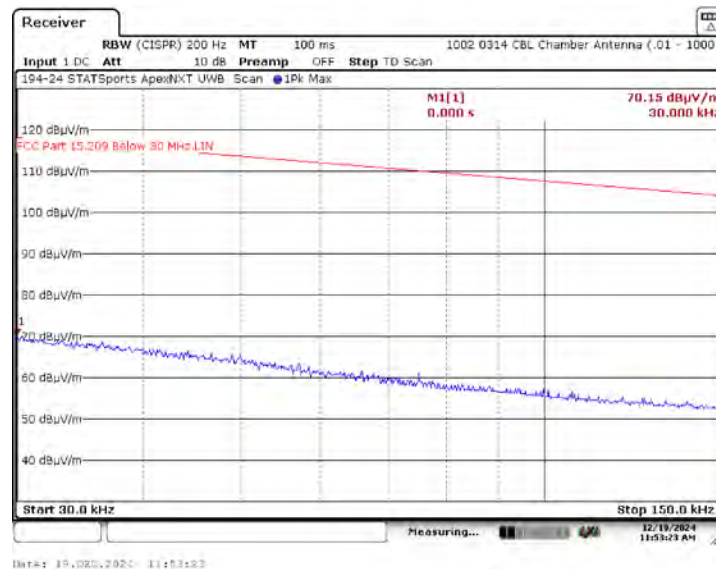
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

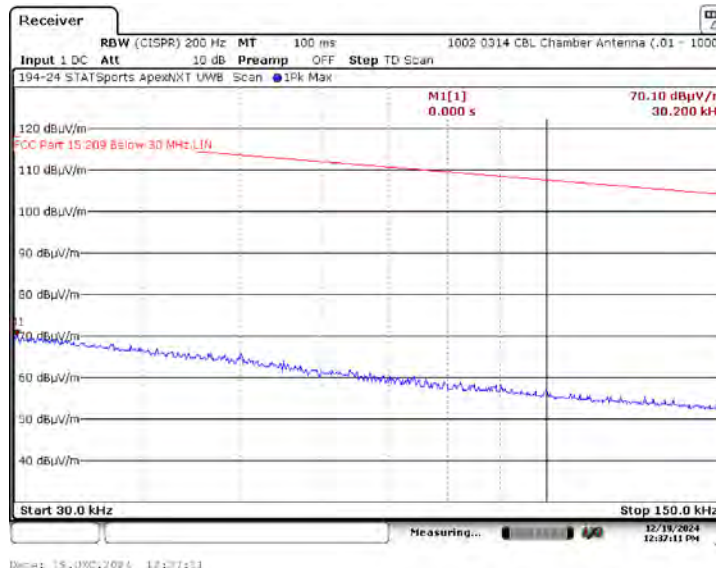
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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 – 30 to 150 kHz, CH5, 16M, X-Axis



6.4.1.22 Parallel Measurement Antenna – 30 to 150 kHz, CH5, 16M Y-Axis



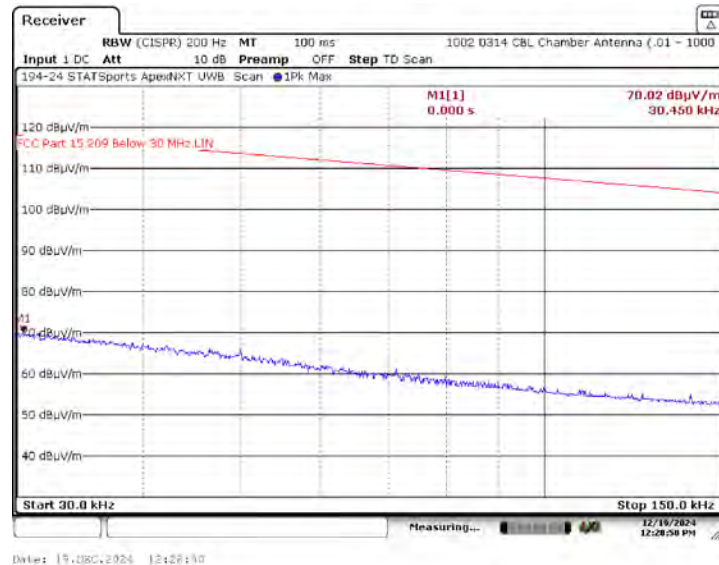
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

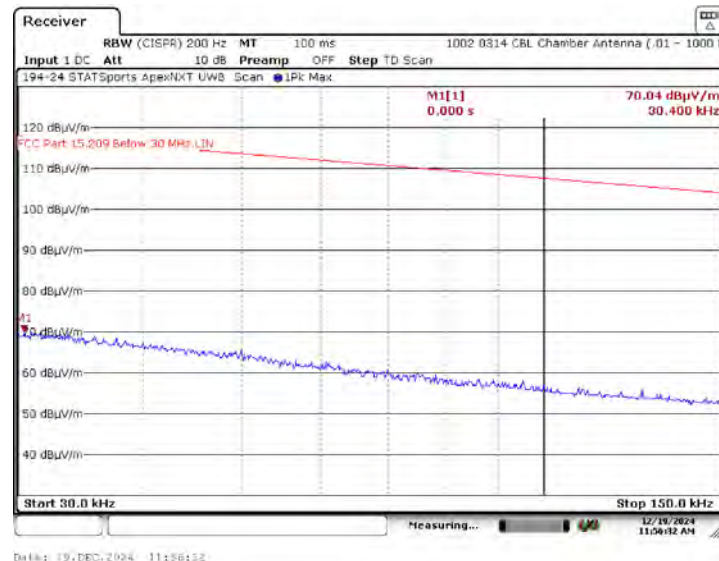
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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 – 30 to 150 kHz, CH5, 16M Y-Axis



6.4.1.24 Ground Parallel Measurement Antenna – 30 to 150 kHz, CH5, 16M, Y-Axis



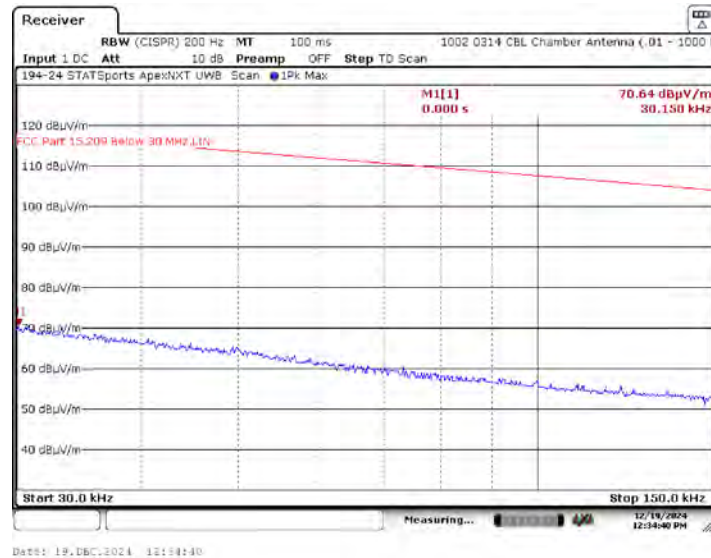
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

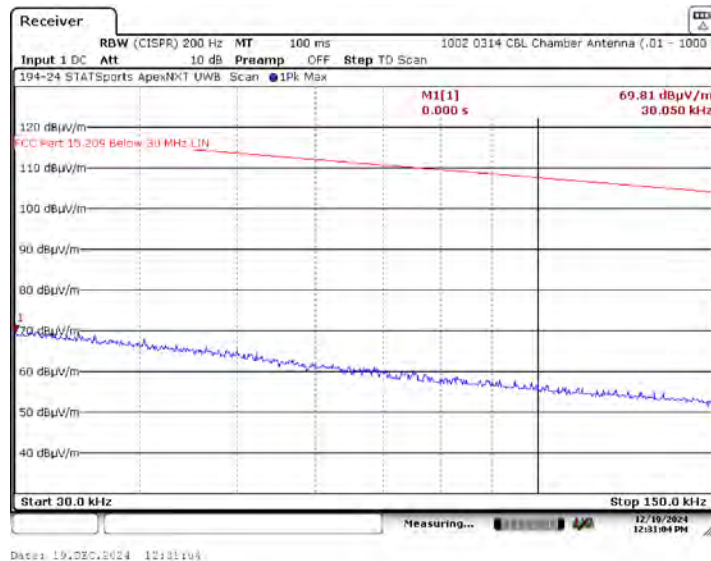
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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 – 30 to 150 kHz, CH5, 16M Z-Axis



6.4.1.26 Perpendicular Measurement Antenna – 30 to 150 kHz, CH5, 16M Z-Axis



6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

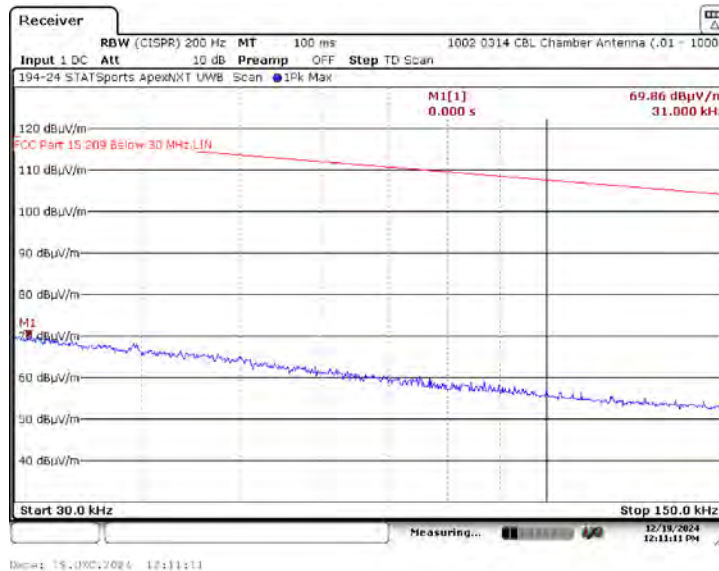
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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 – 30 to 150 kHz, CH5, 16M, Z-Axis



6.4.1.28 Parallel Measurement Antenna – 30 to 150 kHz, CH5, 64M X-Axis



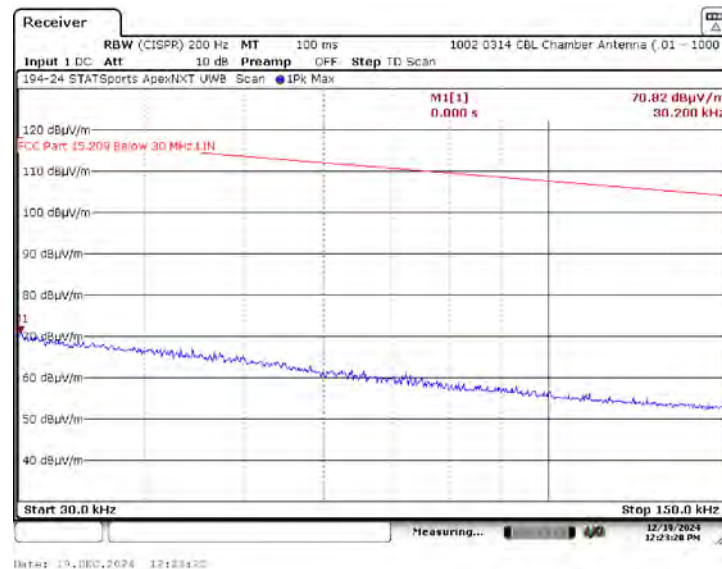
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

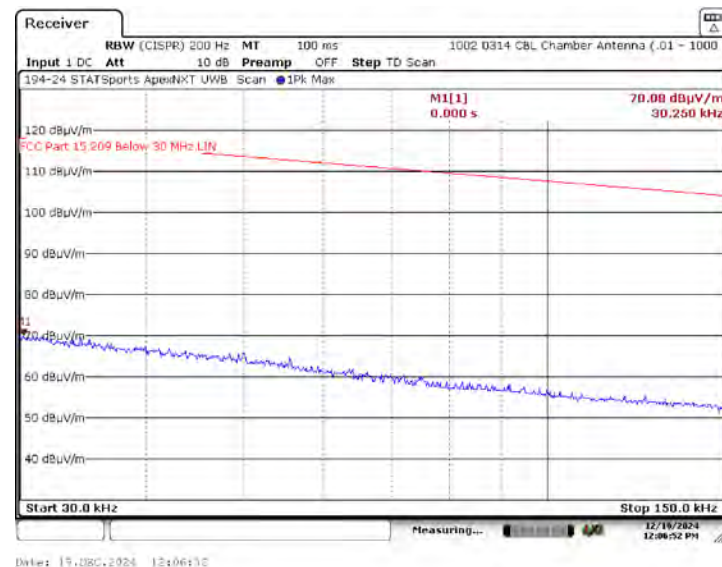
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.29 Perpendicular Measurement Antenna – 30 to 150 kHz, CH5, 64M X-Axis



6.4.1.30 Ground Parallel Measurement Antenna – 30 to 150 kHz, CH5, 64M, X-Axis



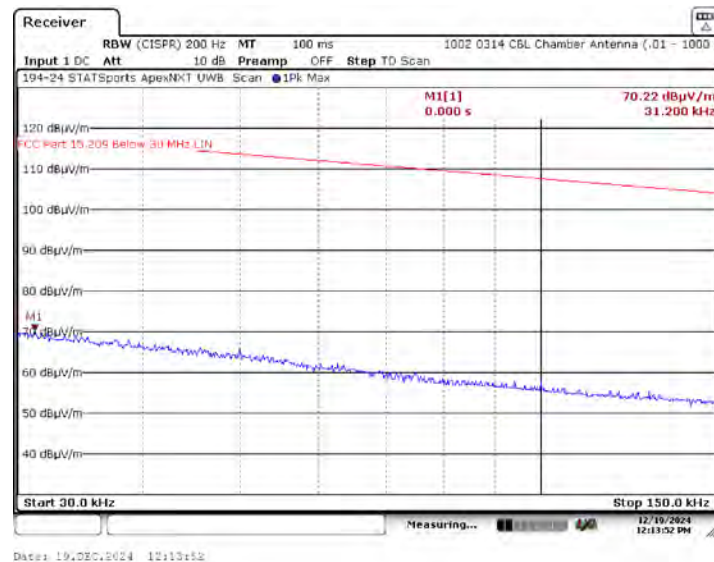
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

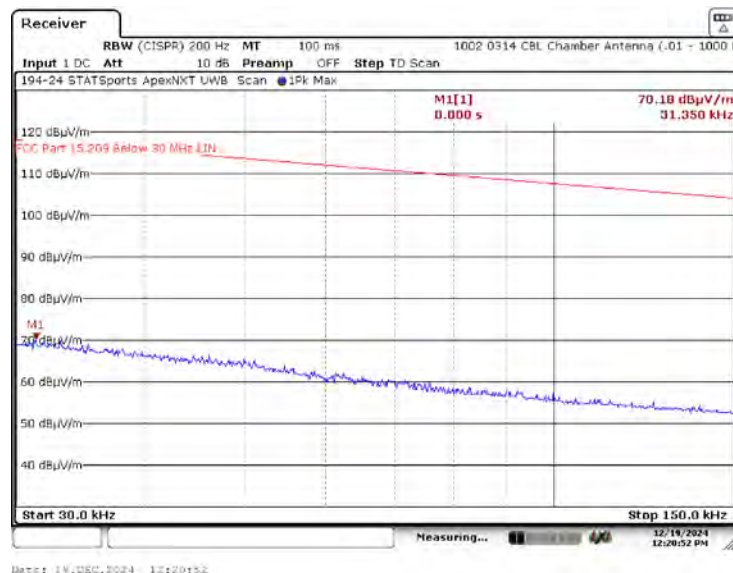
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.31 Parallel Measurement Antenna – 30 to 150 kHz, CH5, 64M Y-Axis



6.4.1.32 Perpendicular Measurement Antenna – 30 to 150 kHz, CH5, 64M Y-Axis



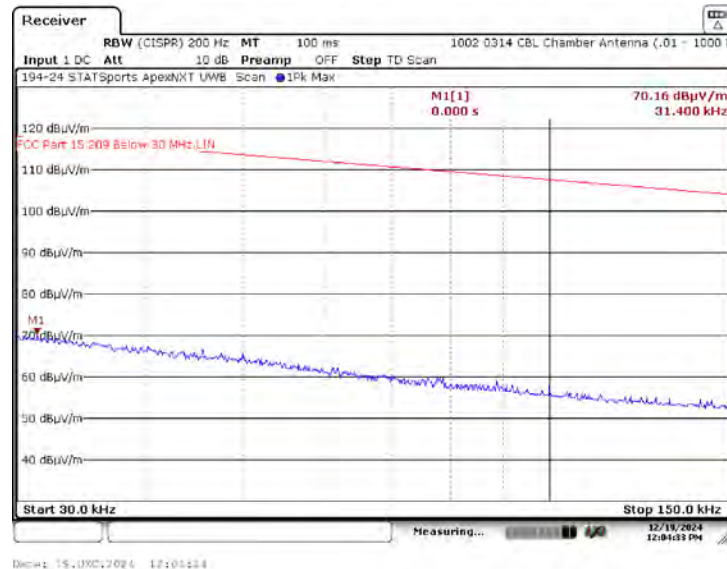
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

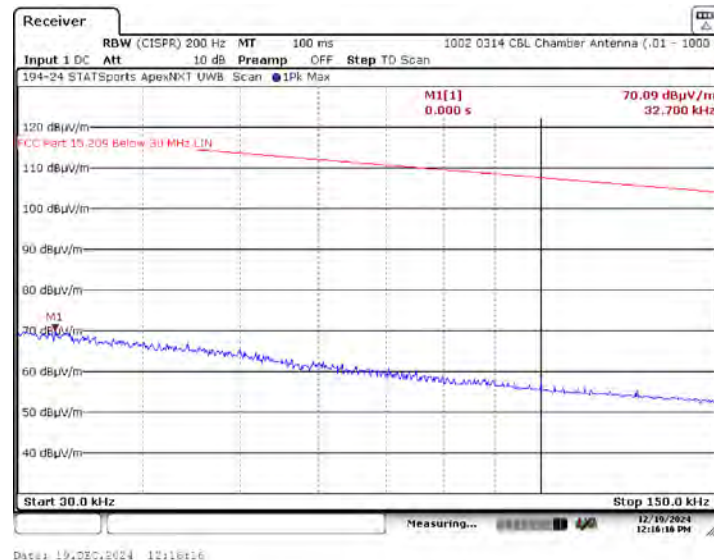
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.33 Ground Parallel Measurement Antenna – 30 to 150 kHz, CH5, 64M, Y-Axis



6.4.1.34 Parallel Measurement Antenna – 30 to 150 kHz, CH5, 64M Z-Axis



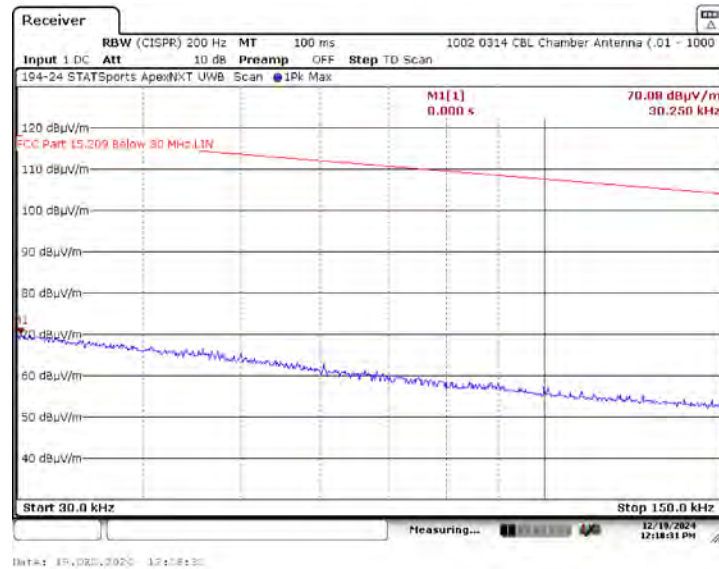
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

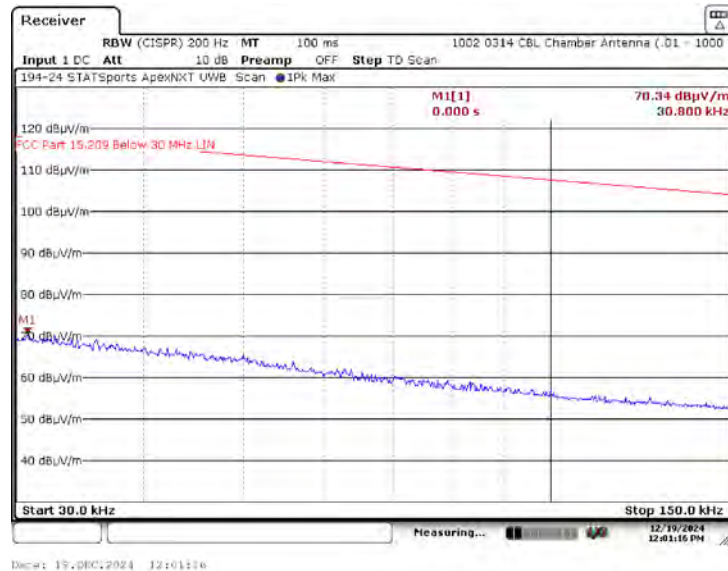
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.35 Perpendicular Measurement Antenna – 30 to 150 kHz, CH5, 64M Z-Axis



6.4.1.36 Ground Parallel Measurement Antenna – 30 to 150 kHz, CH5, 64M, Z-Axis



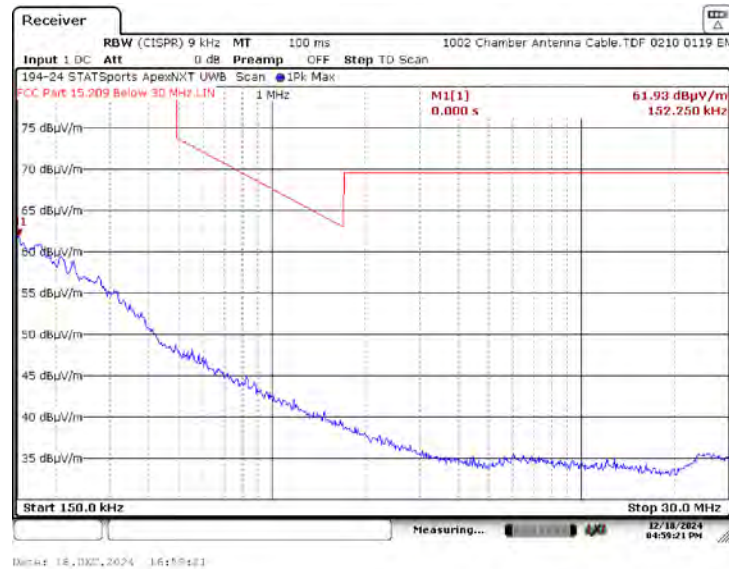
6. Measurement Data (continued)

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.

6.4.1.37 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH3, 16M, X-Axis



6.4.1.38 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH3, 16M, X-Axis



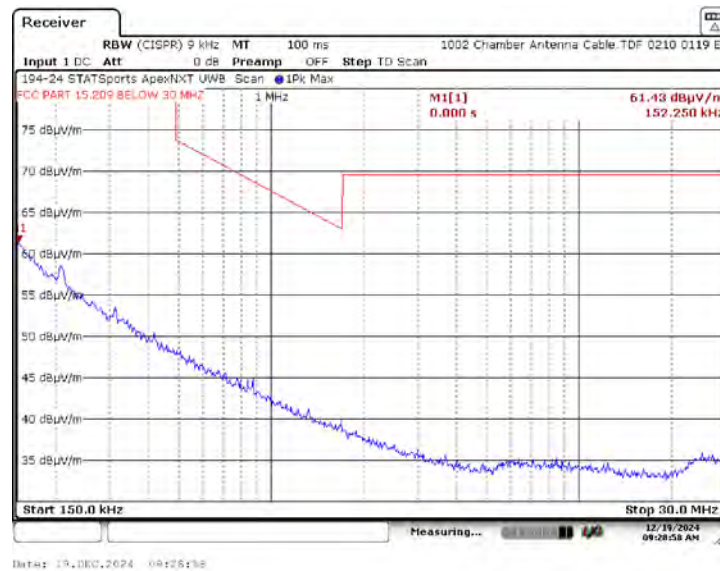
6. Measurement Data (continued)

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.

6.4.1.39 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH3, 16M, X-Axis



6.4.1.40 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH3, 16M, Y-Axis



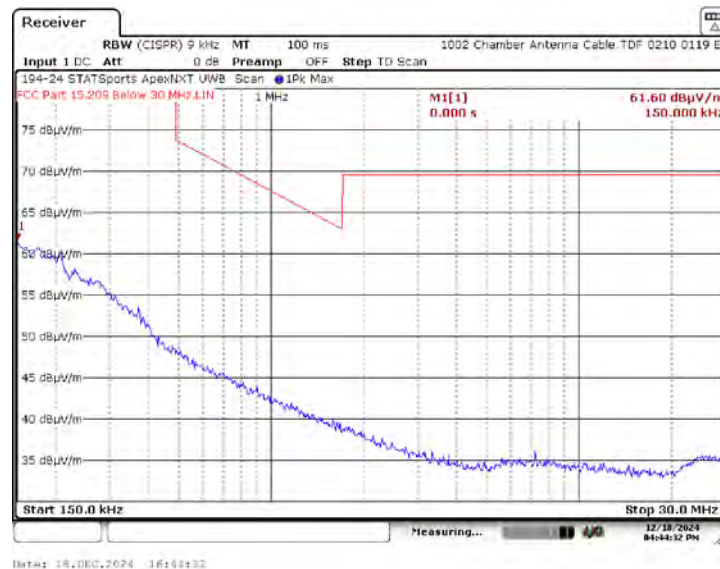
6. Measurement Data (continued)

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.

6.4.1.41 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH3, 16M, Y-Axis



6.4.1.42 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH3, 16M, Y-Axis



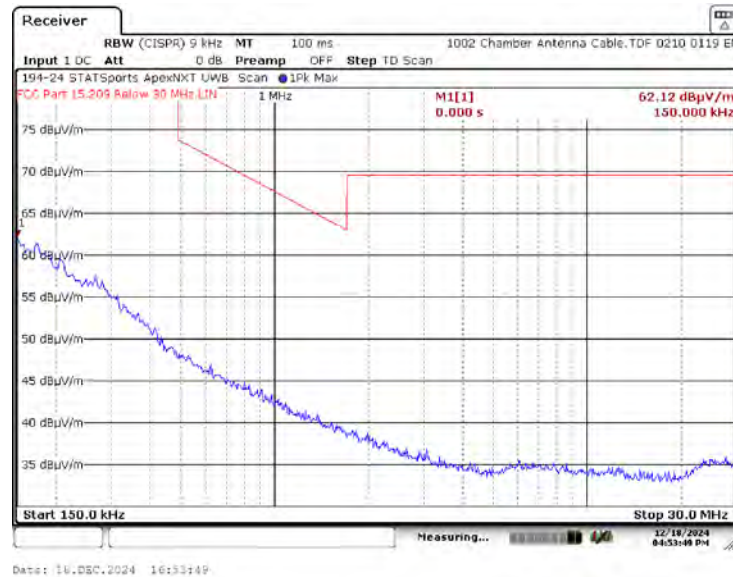
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

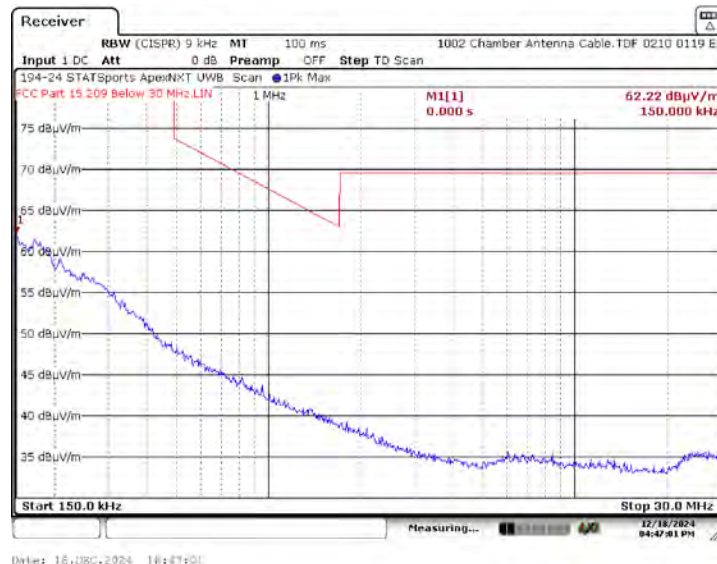
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.43 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH3, 16M, Z-Axis



6.4.1.44 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH3, 16M, Z-Axis



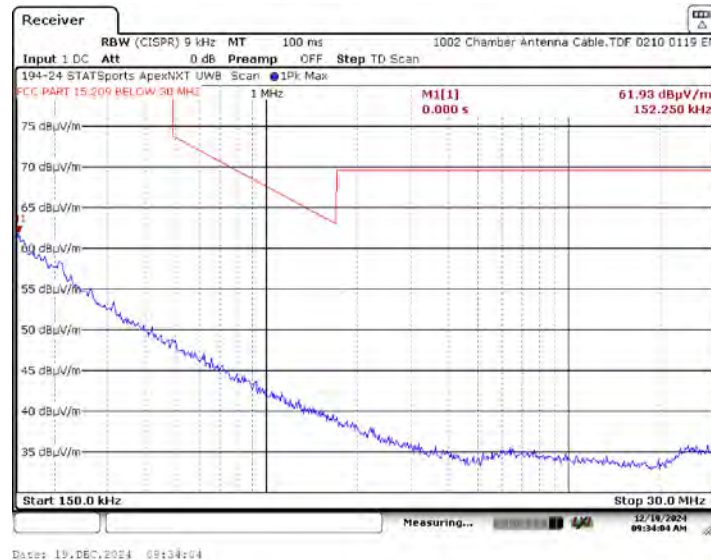
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

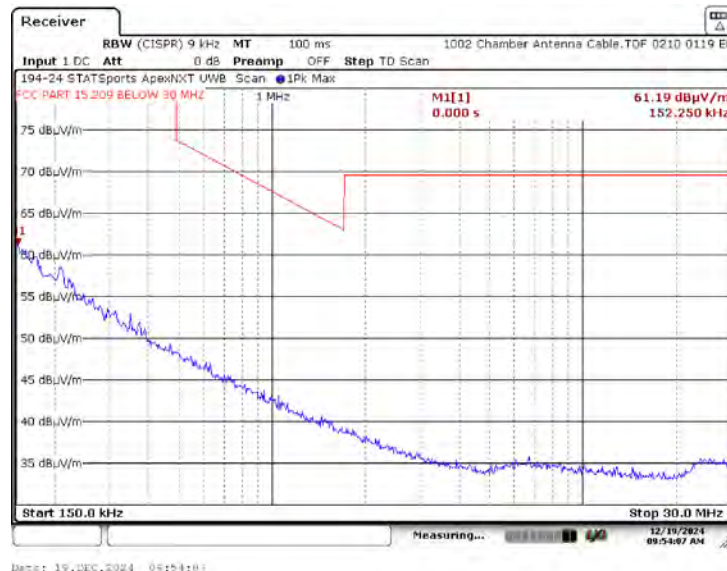
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.45 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH3, 16M, X-Axis



6.4.1.46 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH3, 64M, X-Axis



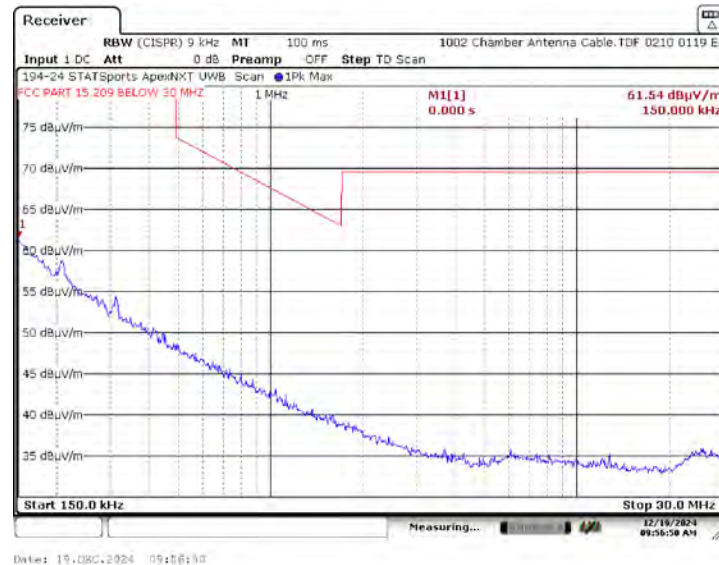
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

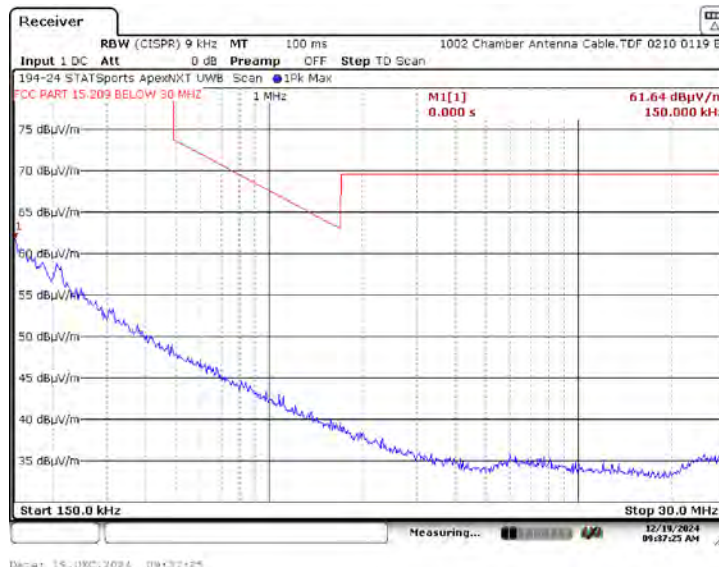
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.47 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH3, 64M, X-Axis



6.4.1.48 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH3, 64M, X-Axis



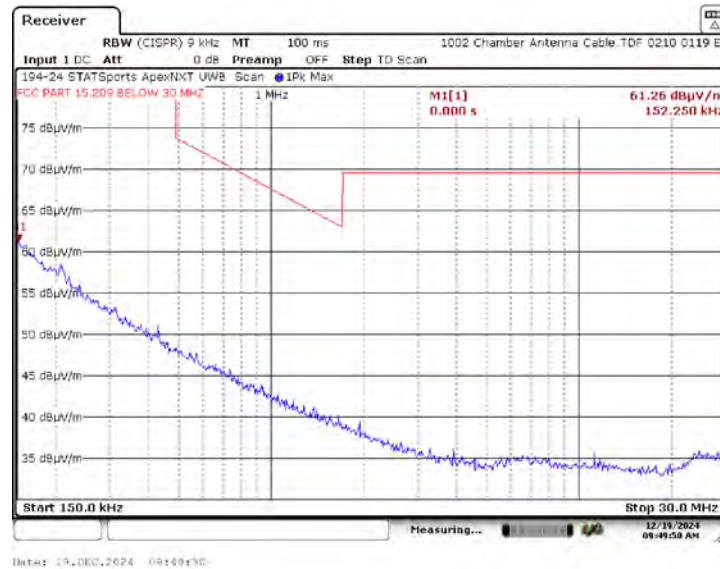
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

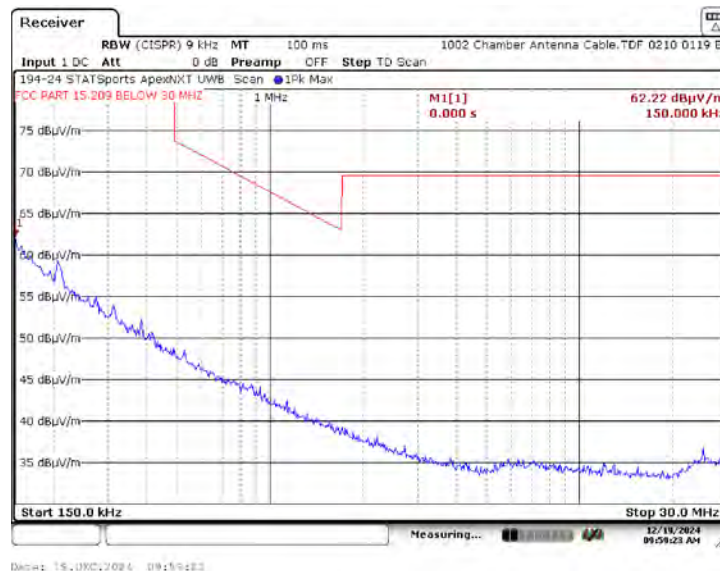
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.49 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH3, 64M, Y-Axis



6.4.1.50 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH3, 64M, Y-Axis



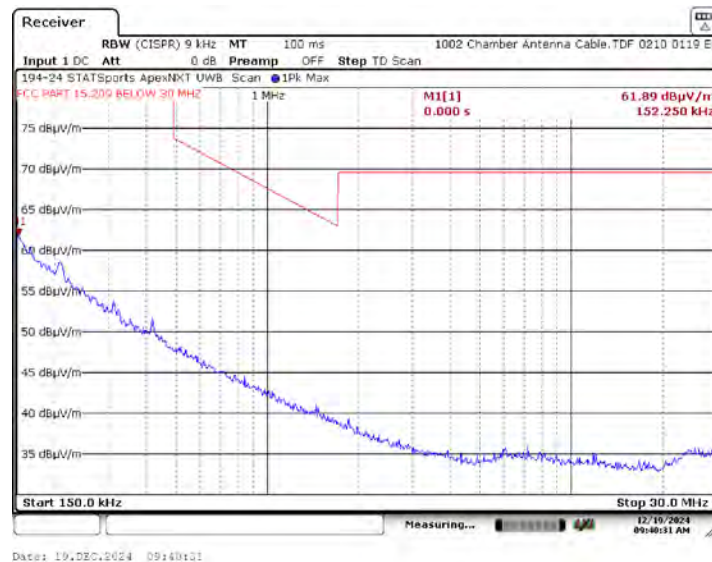
6. Measurement Data (continued)

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.

6.4.1.51 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH3, 64M, Y-Axis



6.4.1.52 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH3, 64M, Z-Axis



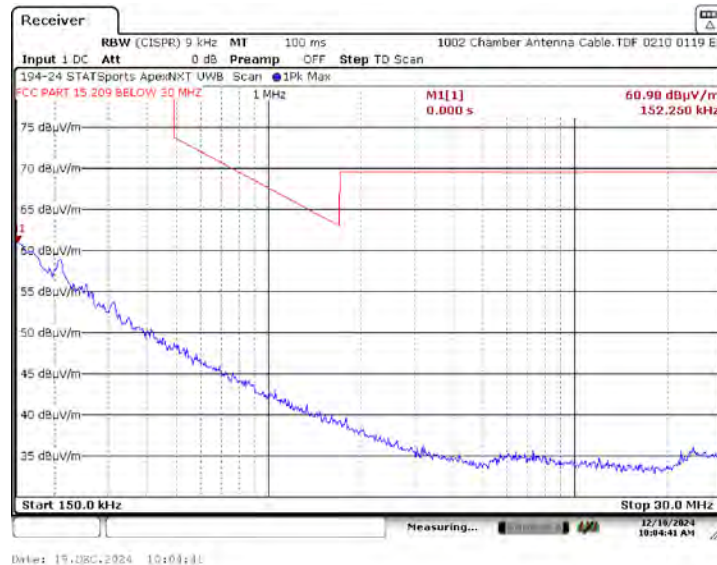
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

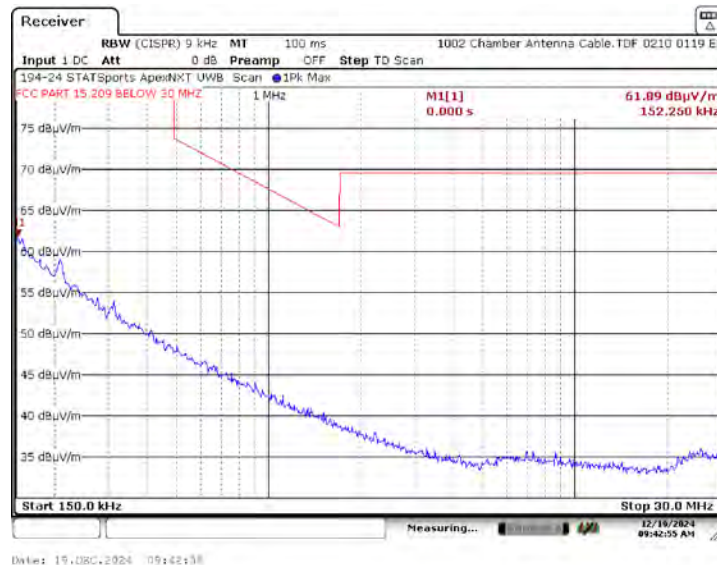
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.53 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH3, 64M, Z-Axis



6.4.1.54 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH3, 64M, Z-Axis



6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

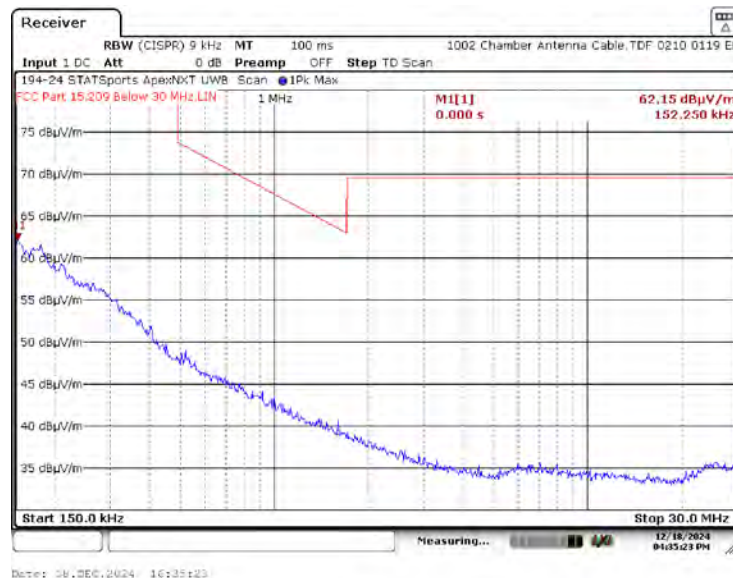
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.55 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, 16M, X-Axis



6.4.1.56 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH5, 16M, X-Axis



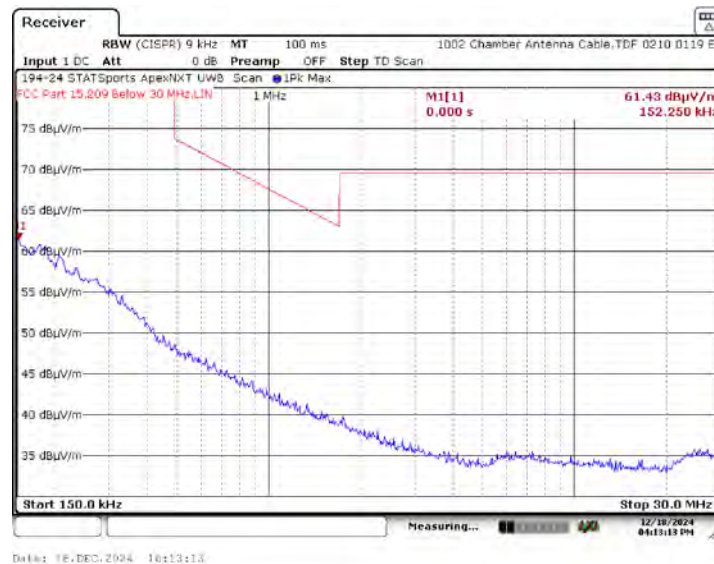
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

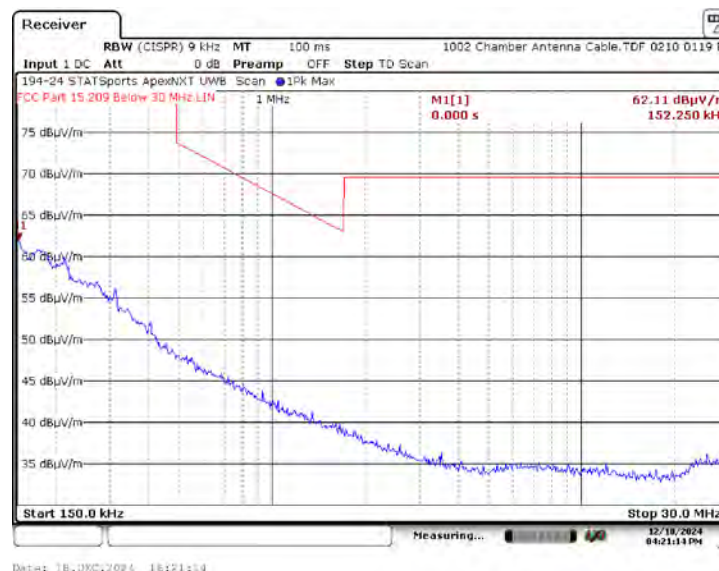
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.57 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, 16M, X-Axis



6.4.1.58 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, 16M, Y-Axis



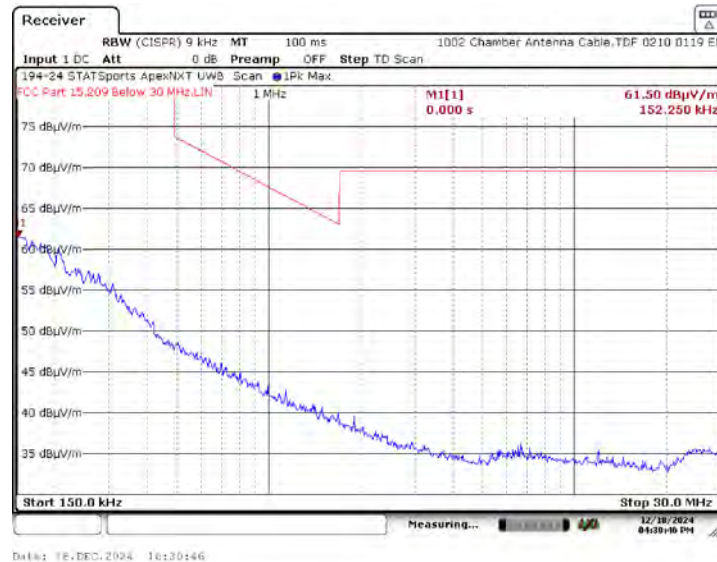
6. Measurement Data (continued)

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.

6.4.1.59 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH5, 16M, Y-Axis



6.4.1.60 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, 16M, Y-Axis



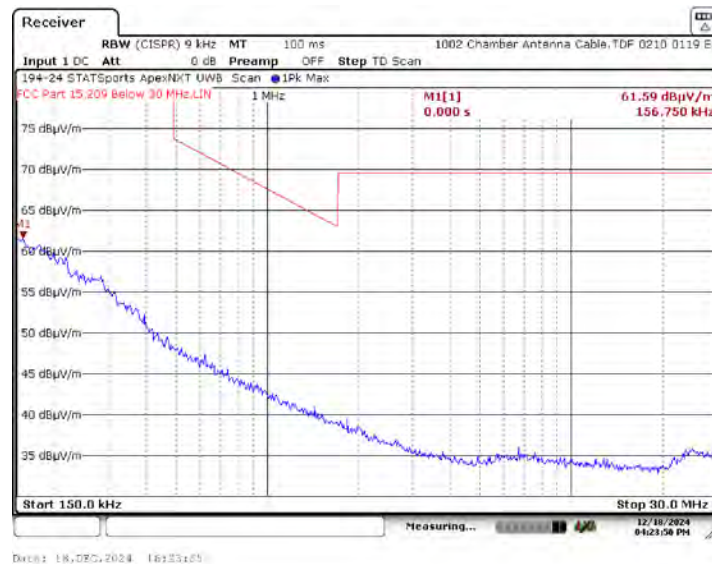
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

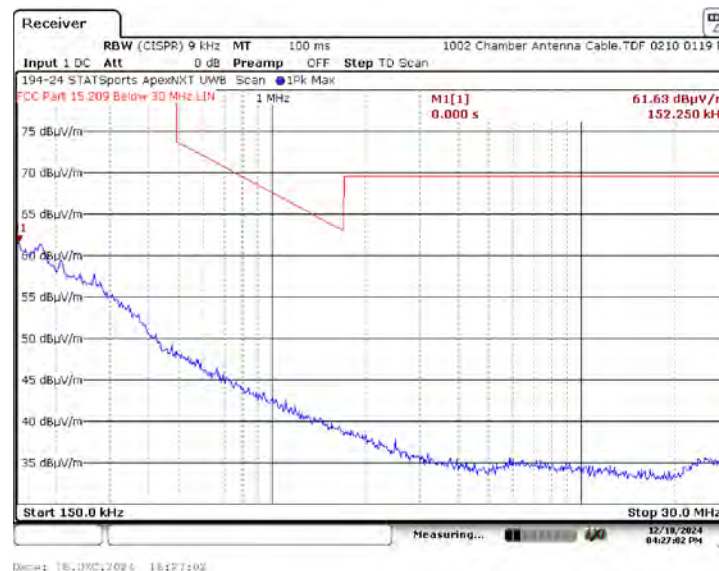
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.61 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, 16M, Z-Axis



6.4.1.62 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH5, 16M, Z-Axis



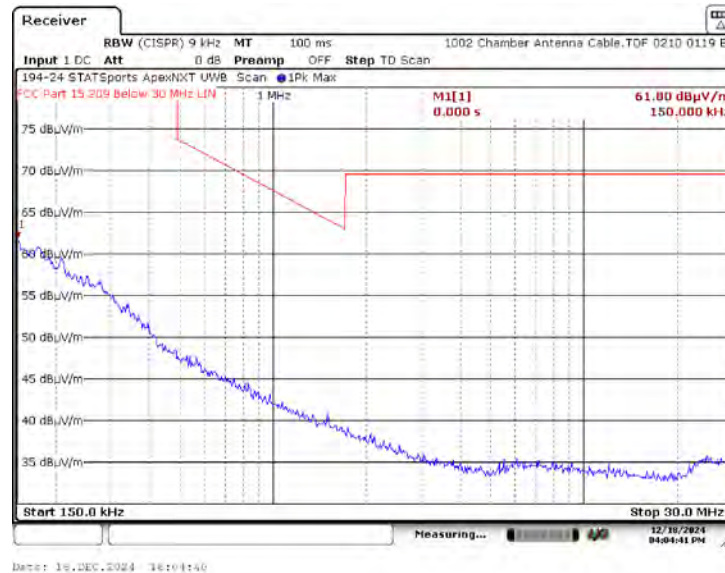
6. Measurement Data (continued)

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.

6.4.1.63 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, 16M, Z-Axis



6.4.1.64 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, 64M, X-Axis



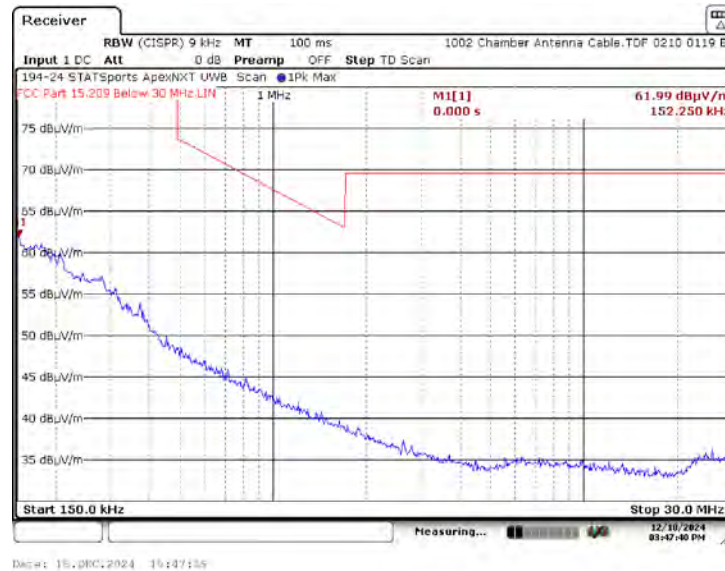
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

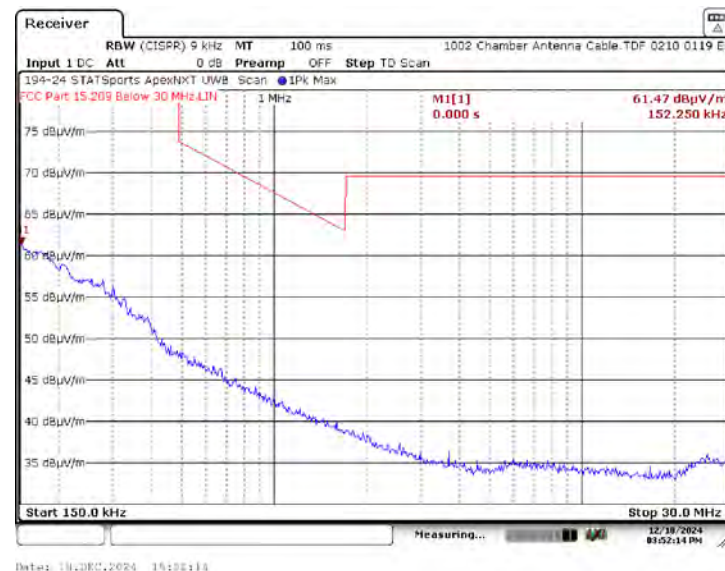
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.65 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH5, 64M, X-Axis



6.4.1.66 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, 64M, X-Axis



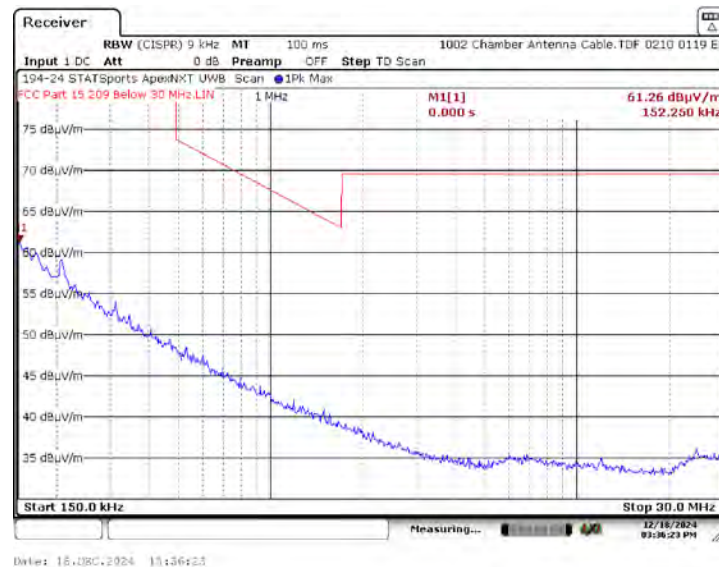
6. Measurement Data (continued)

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.

6.4.1.67 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, 64M, Y-Axis



6.4.1.68 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH5, 64M, Y-Axis



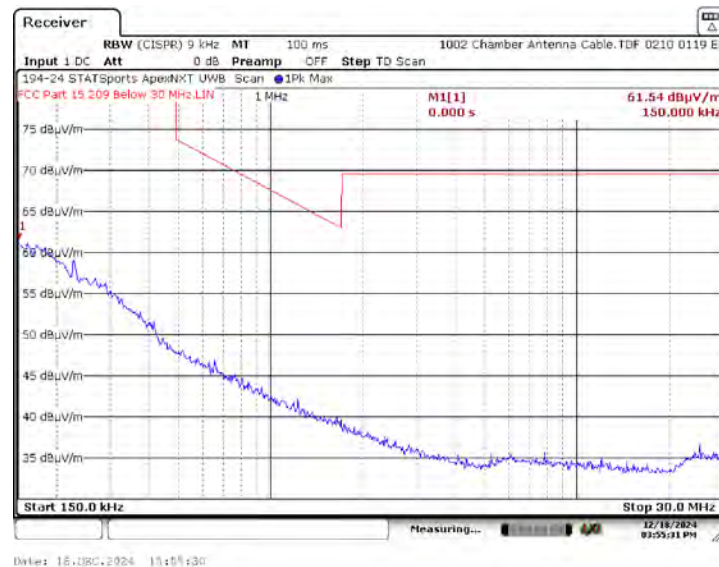
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

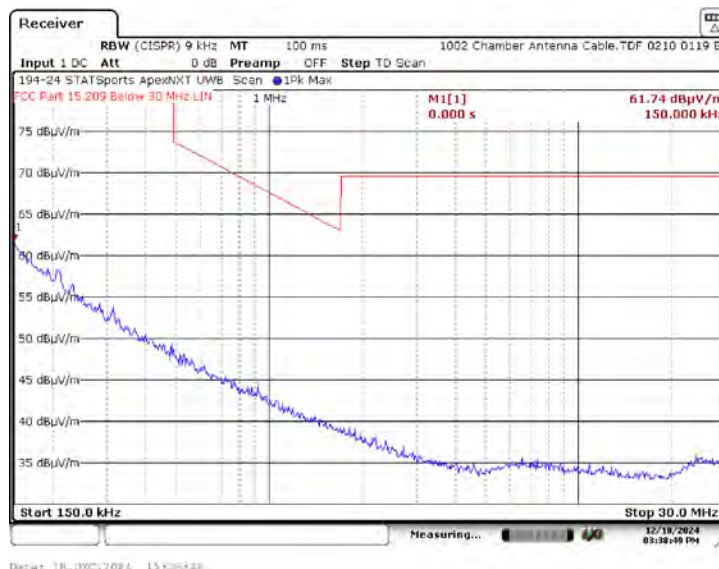
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.69 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, 64M, Y-Axis



6.4.1.70 Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, 64M, Z-Axis



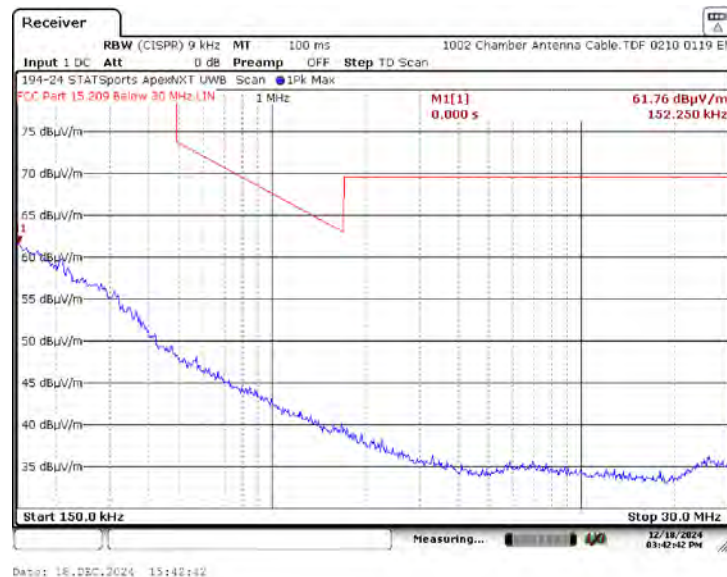
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209 continued)

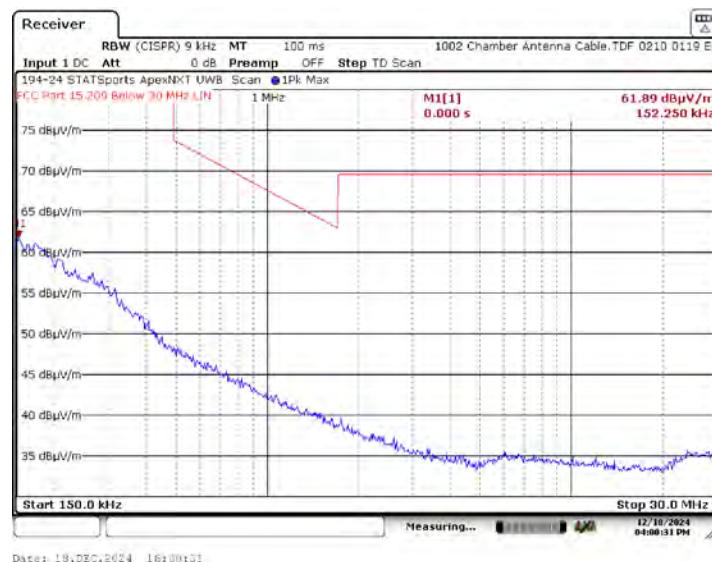
6.4.1. 30 kHz to 960 MHz, measured at 3 Meters

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

6.4.1.71 Perpendicular Measurement Antenna – 150 kHz to 30 MHz, CH5, 64M, Z-Axis



6.4.1.72 Ground Parallel Measurement Antenna – 150 kHz to 30 MHz, CH5, 64M, Z-Axis



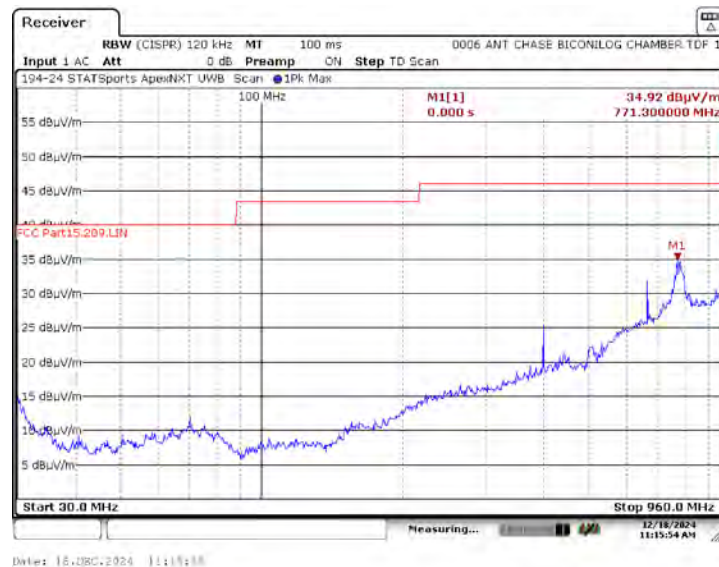
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

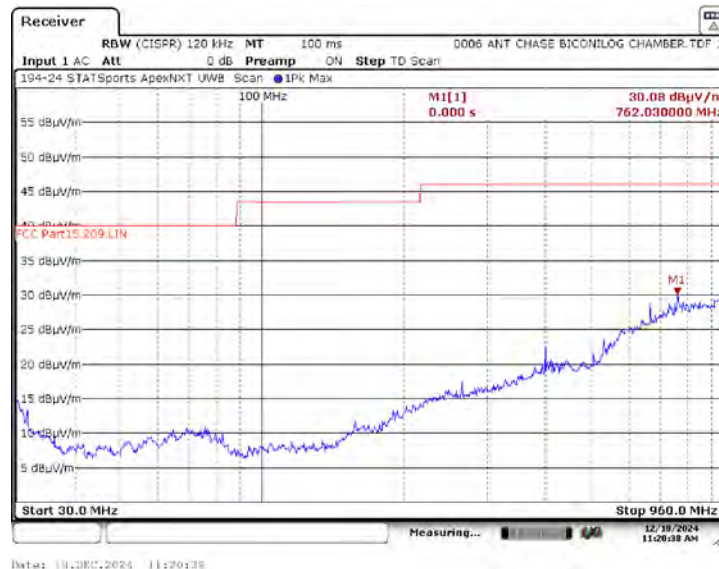
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

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

6.4.1.73 Horizontal Polarity – 30 to 960 MHz – Channel 3, 16M, X-Axis



6.4.1.74 Vertical Polarity – 30 to 960 MHz – Channel 3, 16M, X-Axis



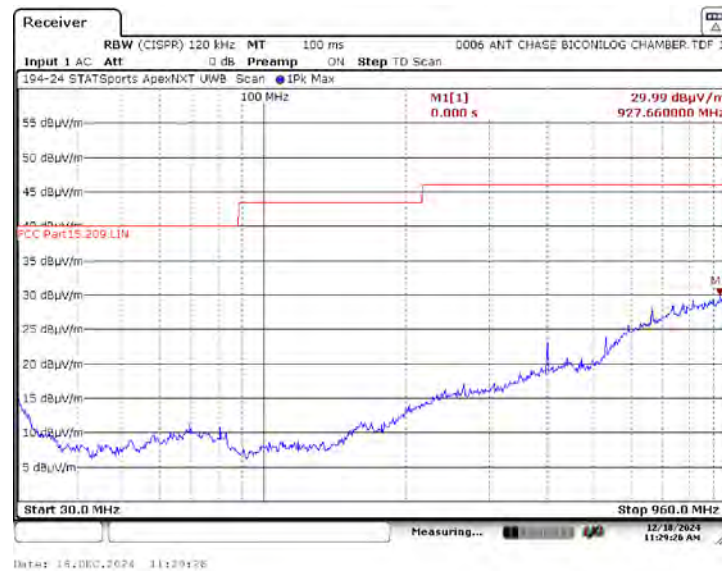
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

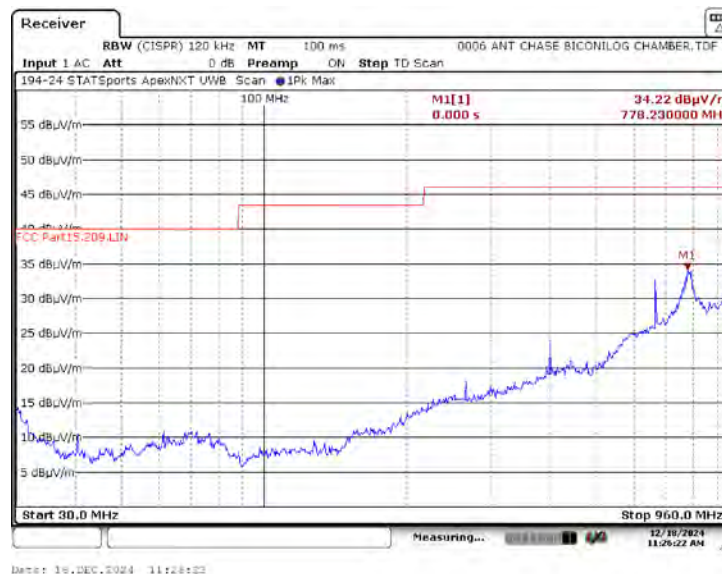
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

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

6.4.1.75 Horizontal Polarity – 30 to 960 MHz – Channel 3, 16M, Y-Axis



6.4.1.76 Vertical Polarity – 30 to 960 MHz – Channel 3, 16M, Y-Axis



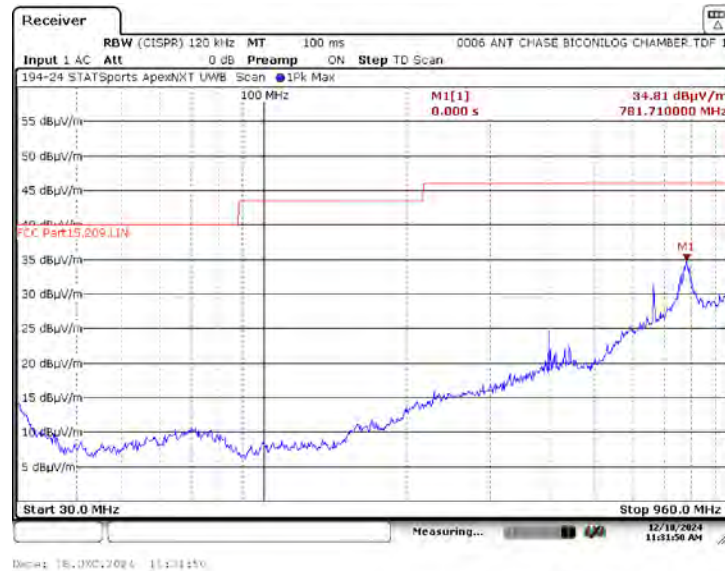
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

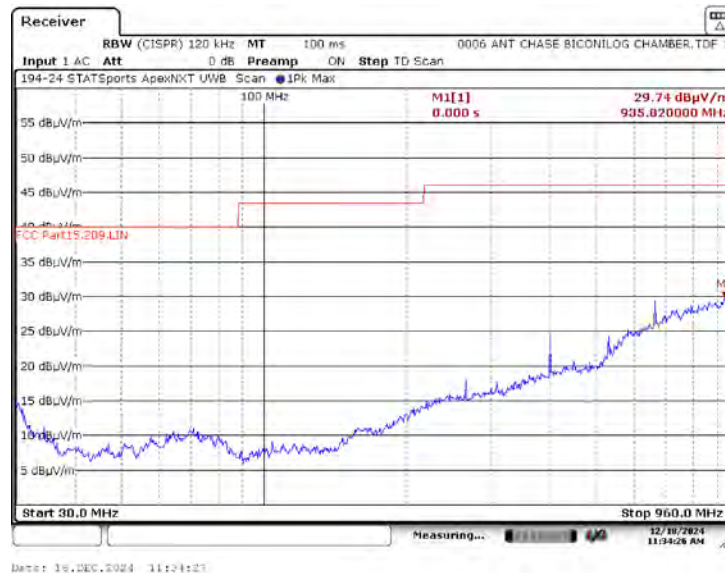
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

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

6.4.1.77 Horizontal Polarity – 30 to 960 MHz – Channel 3, 16M, Z-Axis



6.4.1.78 Vertical Polarity – 30 to 960 MHz – Channel 3, 16M, Z-Axis



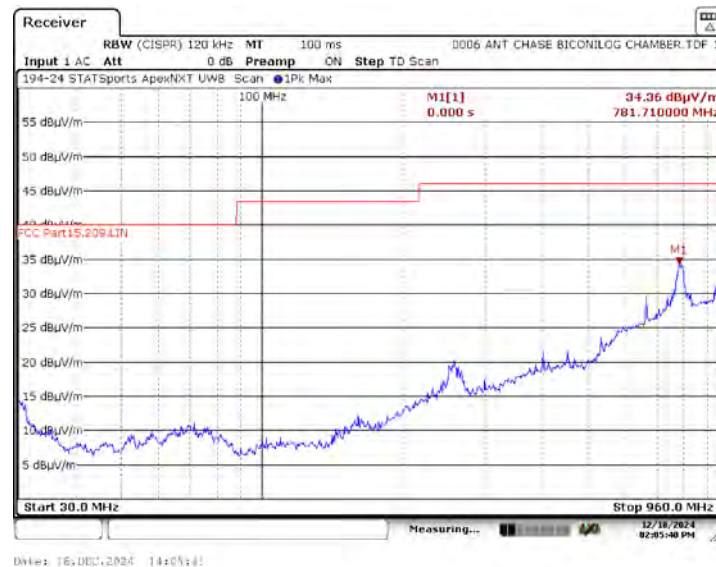
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

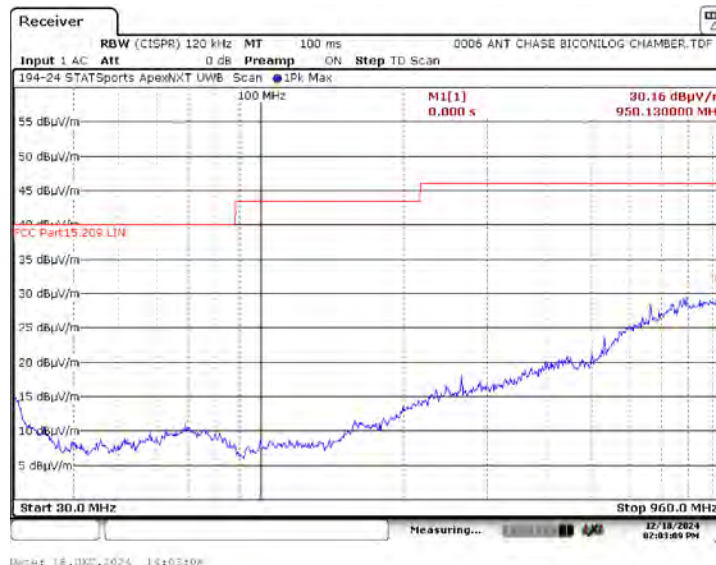
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

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

6.4.1.79 Horizontal Polarity – 30 to 960 MHz – Channel 3, 64M, X-Axis



6.4.1.80 Vertical Polarity – 30 to 960 MHz – Channel 3, 64M, X-Axis



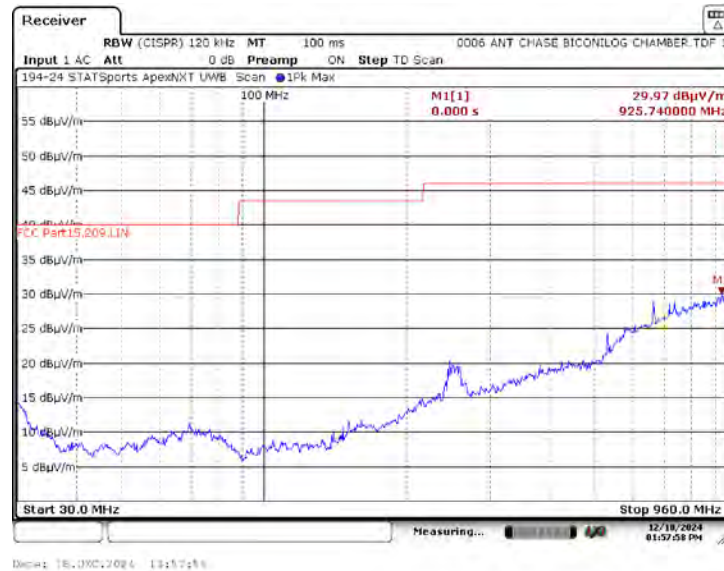
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

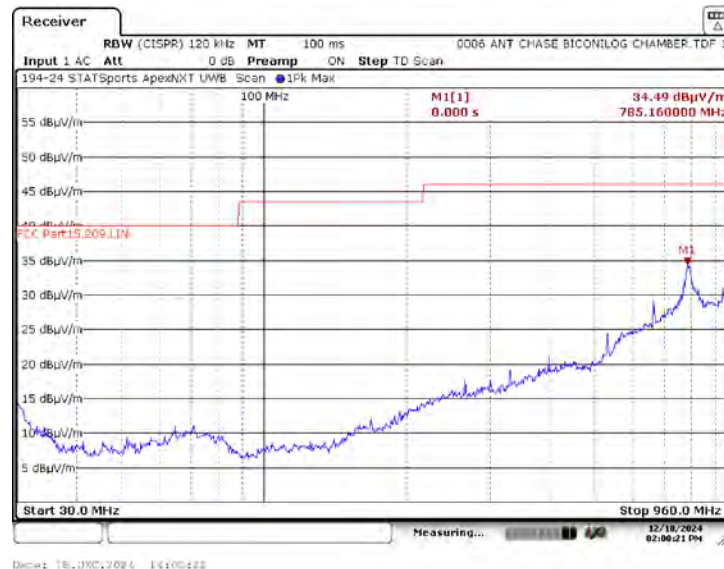
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

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

6.4.1.81 Horizontal Polarity – 30 to 960 MHz – Channel 3, 64M, Y-Axis



6.4.1.82 Vertical Polarity – 30 to 960 MHz – Channel 3, 64M, Y-Axis



6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

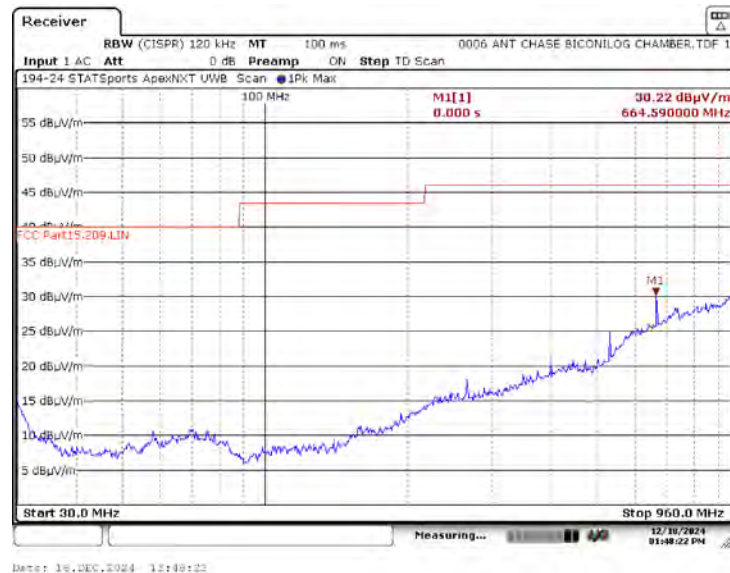
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

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

6.4.1.83 Horizontal Polarity – 30 to 960 MHz – Channel 3, 64M, Z-Axis



6.4.1.84 Vertical Polarity – 30 to 960 MHz – Channel 3, 64M, Z-Axis



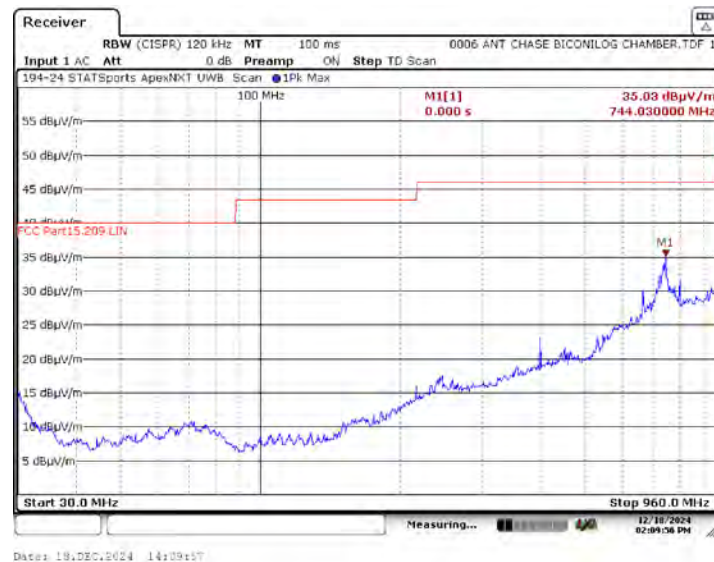
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

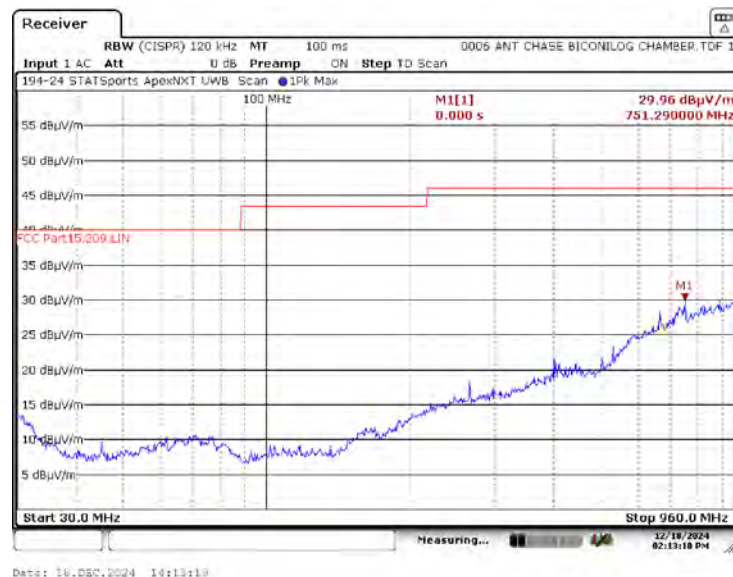
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

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

6.4.1.85 Horizontal Polarity – 30 to 960 MHz – Channel 5, 16M, X-Axis



6.4.1.86 Vertical Polarity – 30 to 960 MHz – Channel 5, 16M, X-Axis



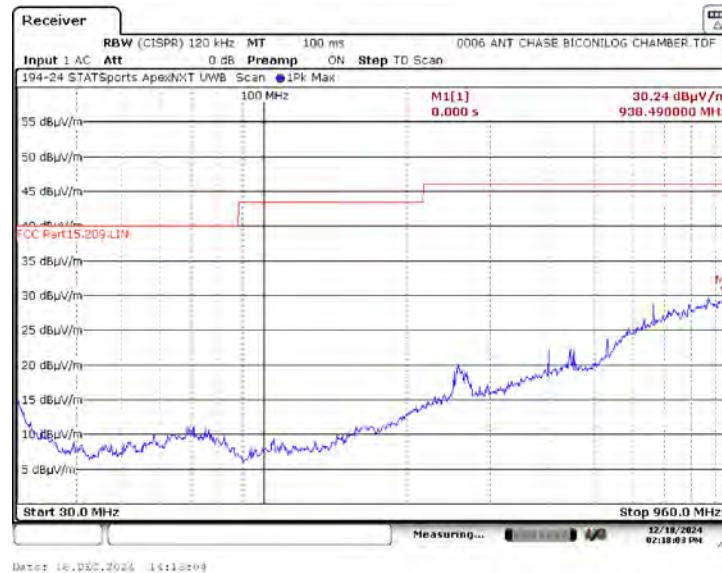
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

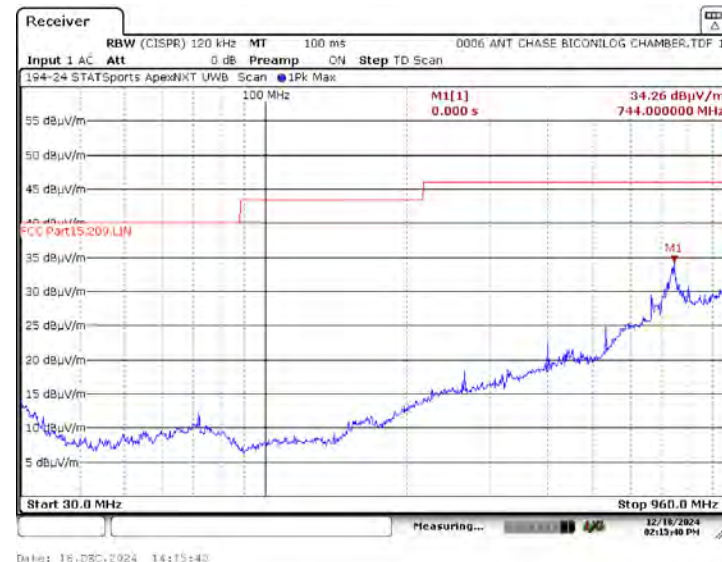
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

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

6.4.1.87 Horizontal Polarity – 30 to 960 MHz – Channel 5, 16M, Y-Axis



6.4.1.88 Vertical Polarity – 30 to 960 MHz – Channel 5, 16M, Y-Axis



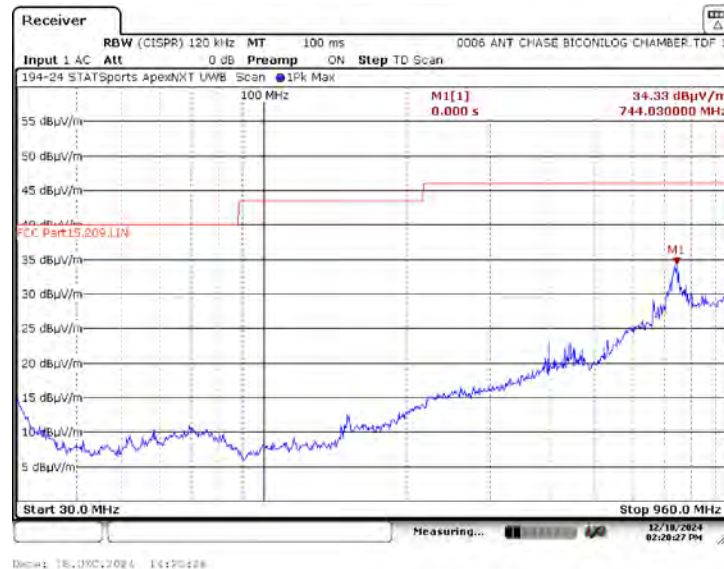
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

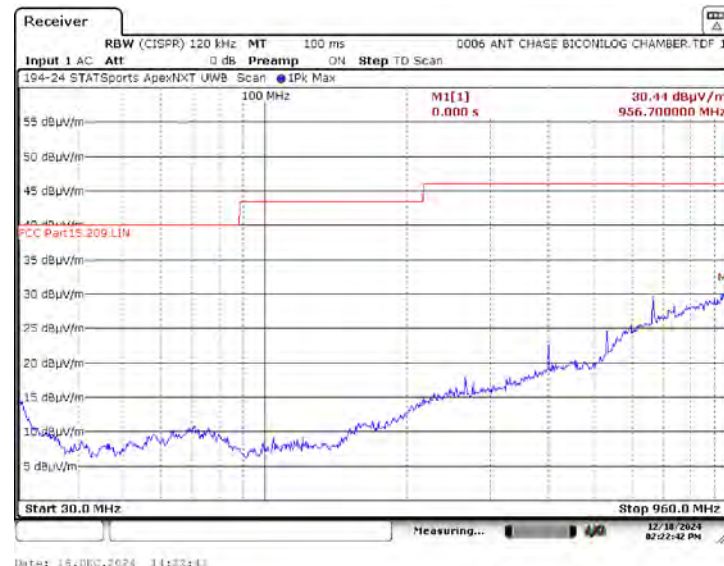
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

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

6.4.1.89 Horizontal Polarity – 30 to 960 MHz – Channel 5, 16M, Z-Axis



6.4.1.90 Vertical Polarity – 30 to 960 MHz – Channel 5, 16M, Z-Axis



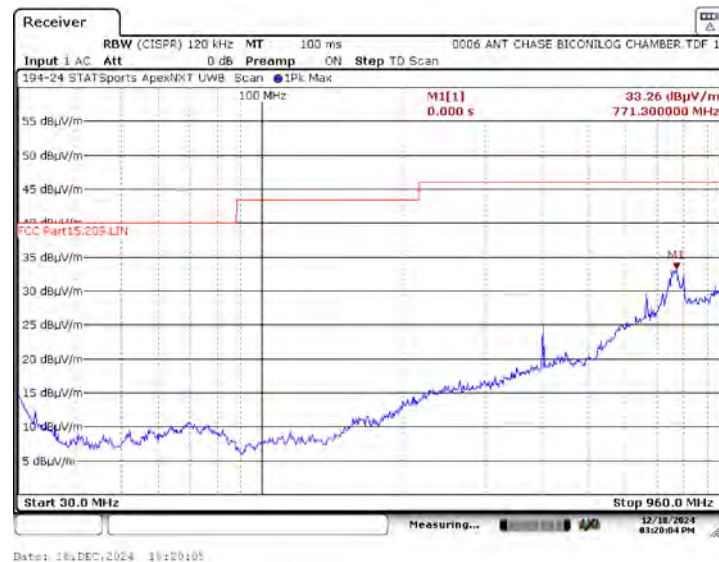
6. Measurement Data (continued)

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.

6.4.1.91 Horizontal Polarity – 30 to 960 MHz – Channel 5, 64M, X-Axis



6.4.1.92 Vertical Polarity – 30 to 960 MHz – Channel 5, 64M, X-Axis



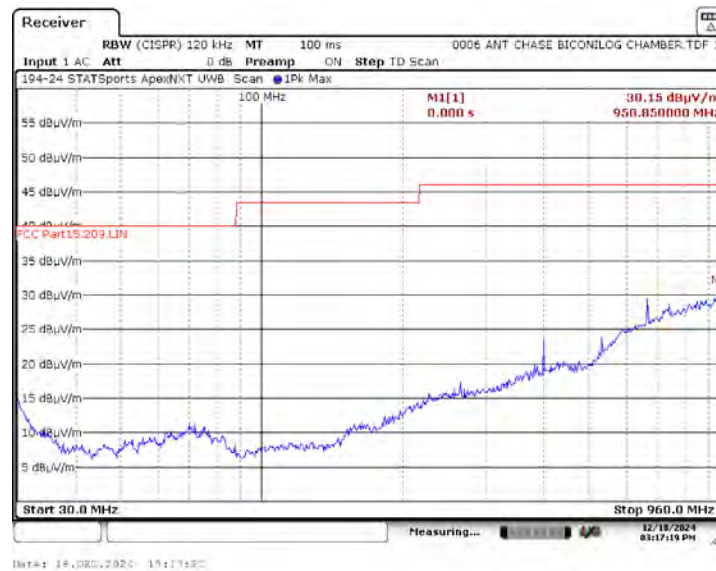
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

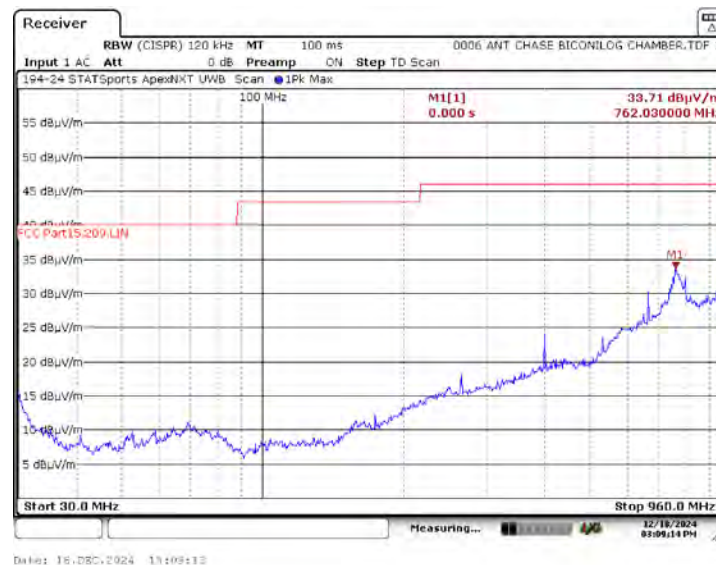
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

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

6.4.1.93 Horizontal Polarity – 30 to 960 MHz – Channel 5, 64M, Y-Axis



6.4.1.94 Vertical Polarity – 30 to 960 MHz – Channel 5, 64M, Y-Axis



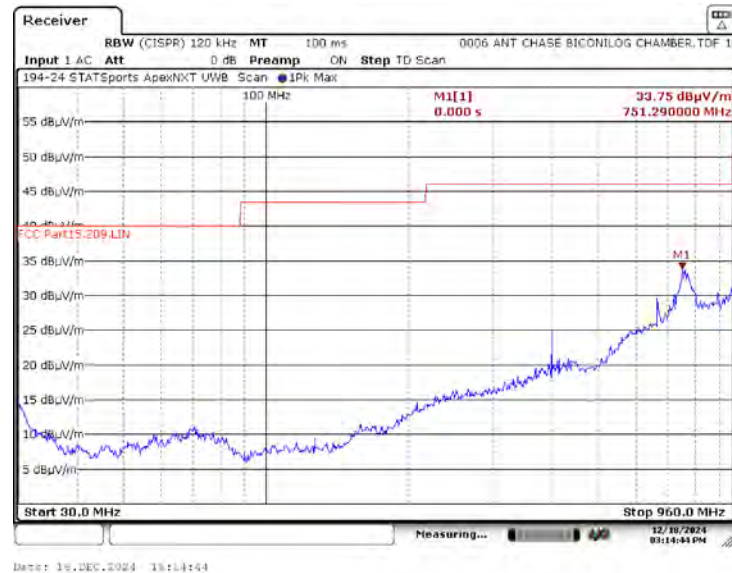
6. Measurement Data (continued)

6.4. Spurious Radiated Emissions (15.209, continued)

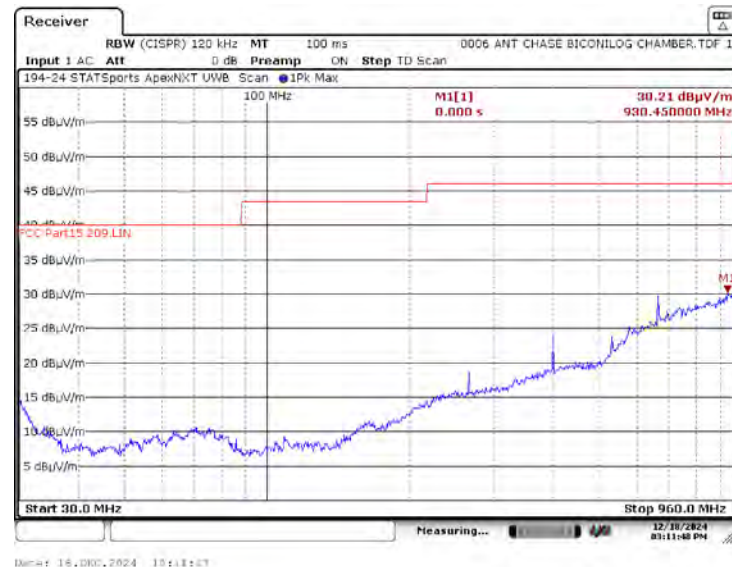
6.4.1. 30 MHz to 960 MHz, measured at 3 Meters

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

6.4.1.95 Horizontal Polarity – 30 to 960 MHz – Channel 5, 64M, Z-Axis



6.4.1.96 Vertical Polarity – 30 to 960 MHz – Channel 5, 64M, 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 were made using 16M PRF. 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 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.

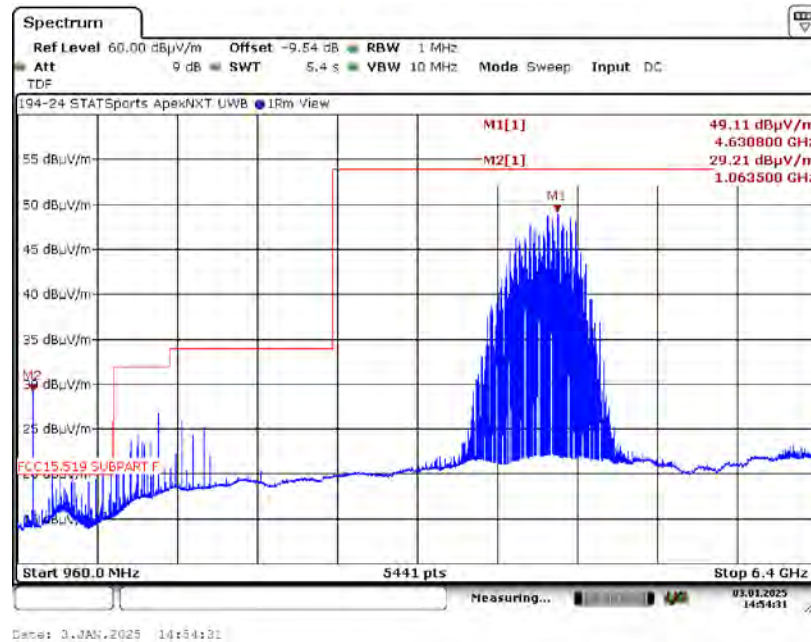
Sample Calculation: Final Result (dBμV/m) = Measurement Value (dBμV) + Antenna Factor (dB/m) + Cable Loss (dB) – Pre-amplifier Gain (dB) Internal or External.

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

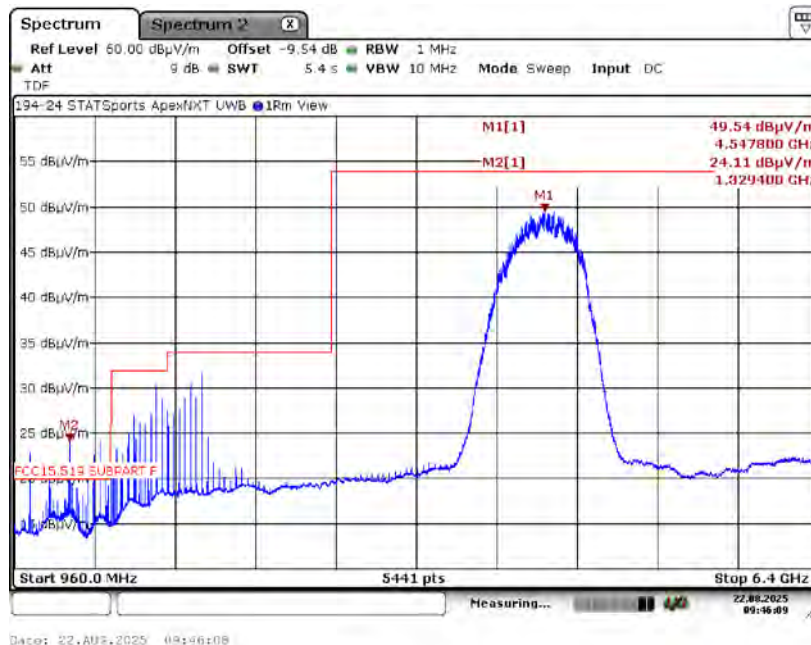
6. Measurement Data (continued)

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

6.5.1. 960 MHz to 6.4 GHz Horizontal at 1 Meter – Channel 3, 16M, X-Axis



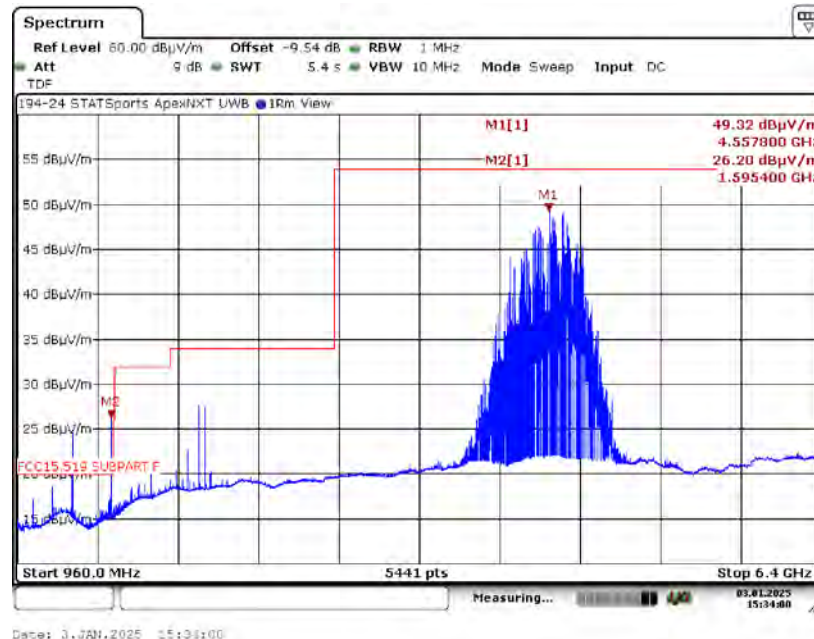
6.5.2. 960 MHz to 6.4 GHz Horizontal at 1 Meter – Channel 3, 16M, CW, X-Axis



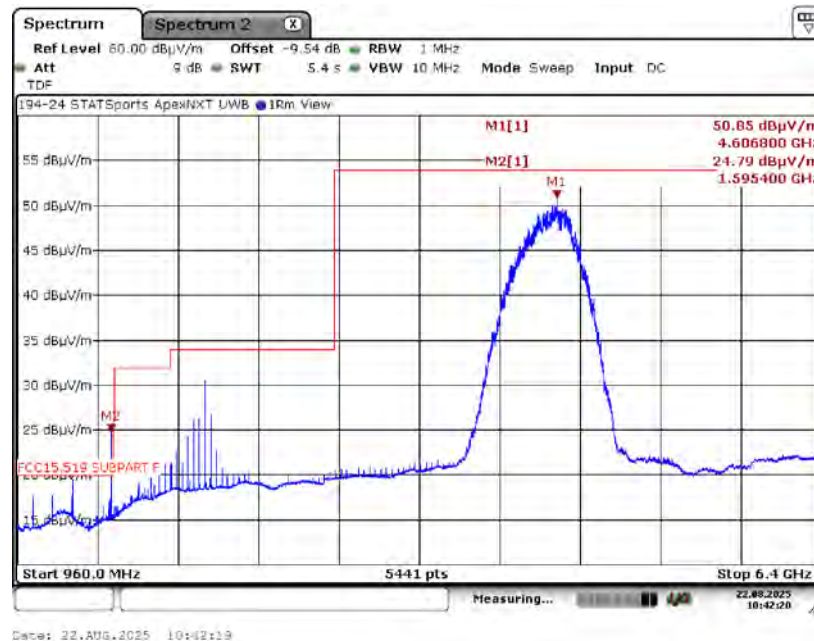
6. Measurement Data (continued)

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

6.5.3. 960 MHz to 6.4 GHz Vertical at 1 Meter – Channel 3, 16M, X-Axis



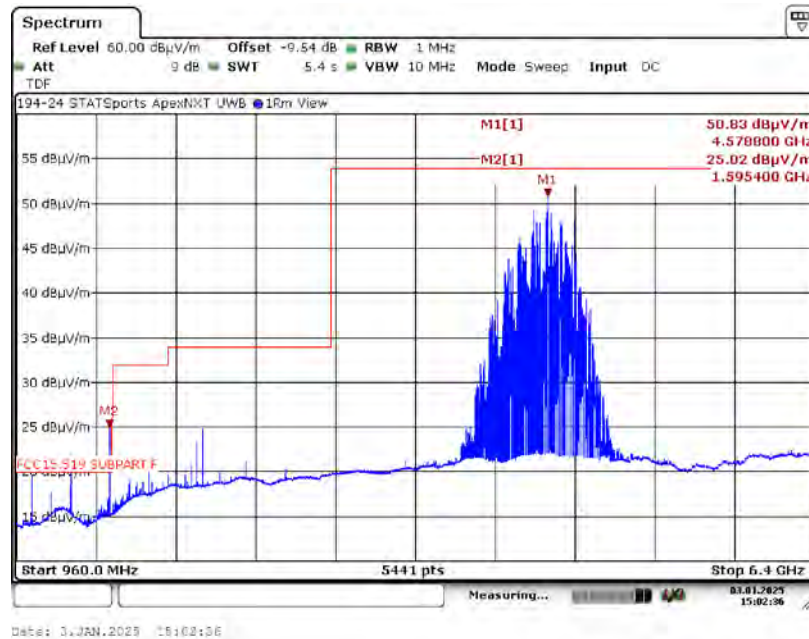
6.5.4. 960 MHz to 6.4 GHz Vertical at 1 Meter – Channel 3, 16M, CW, X-Axis



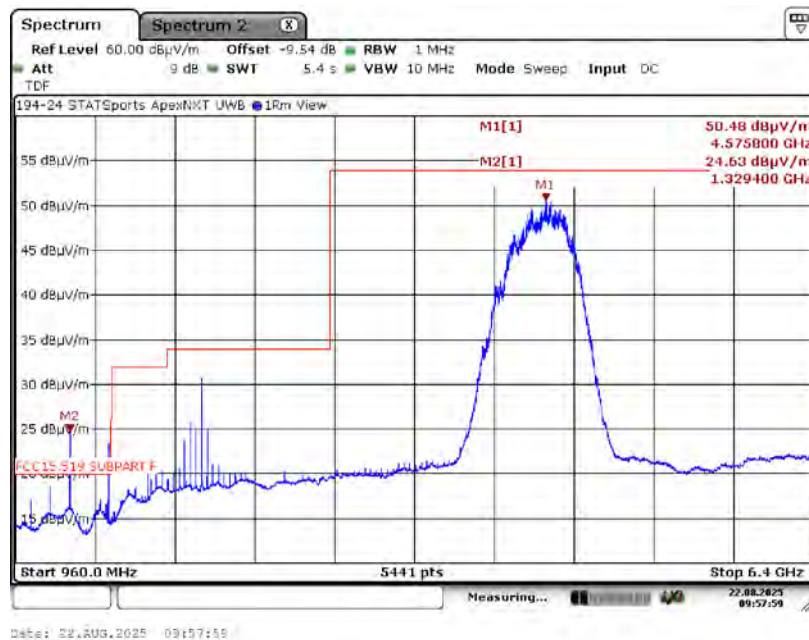
6. Measurement Data (continued)

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

6.5.5. 960 MHz to 6.4 GHz Horizontal at 1 Meter – Channel 3, 16M, Y-Axis



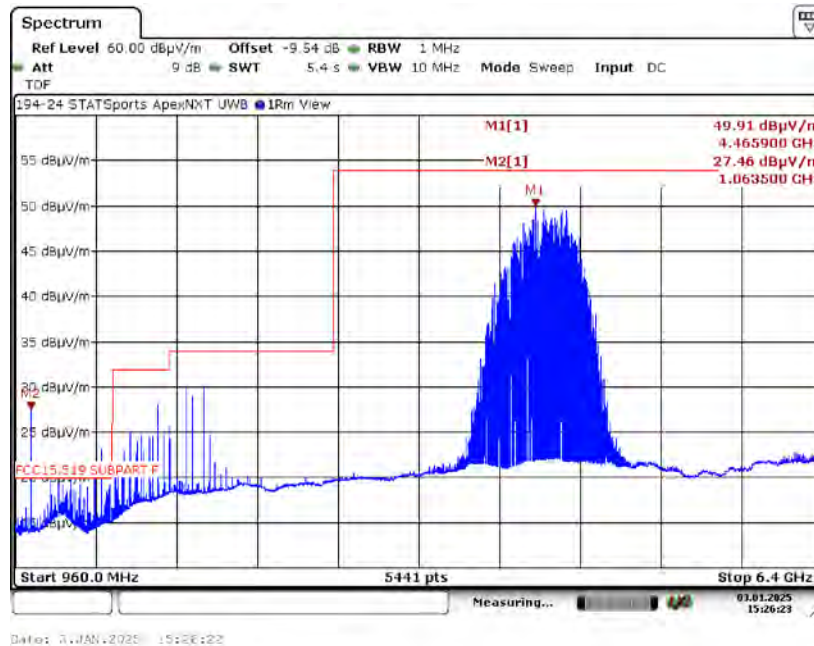
6.5.6. 960 MHz to 6.4 GHz Horizontal at 1 Meter – Channel 3, 16M, CW, Y-Axis



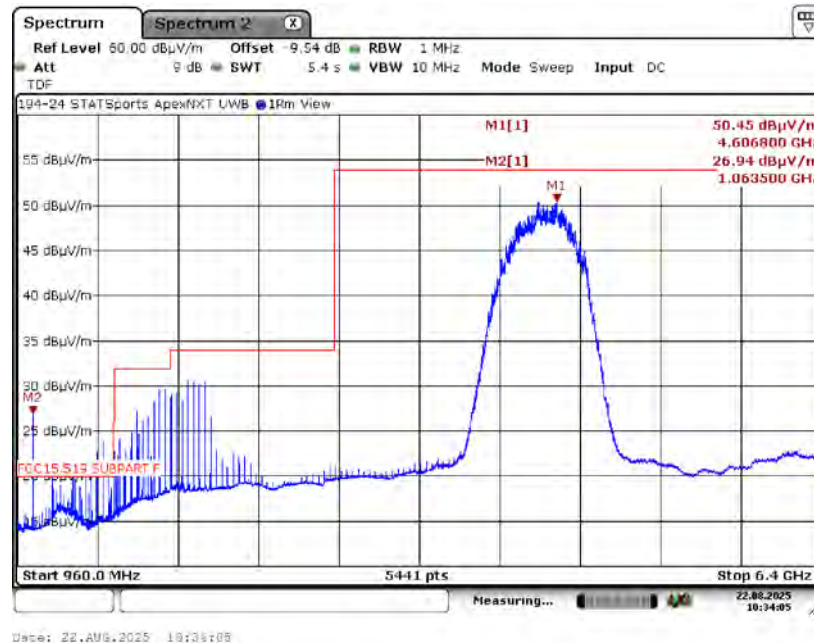
6. Measurement Data (continued)

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

6.5.7. 960 MHz to 6.4 GHz Vertical at 1 Meter – Channel 3, 16M, Y-Axis



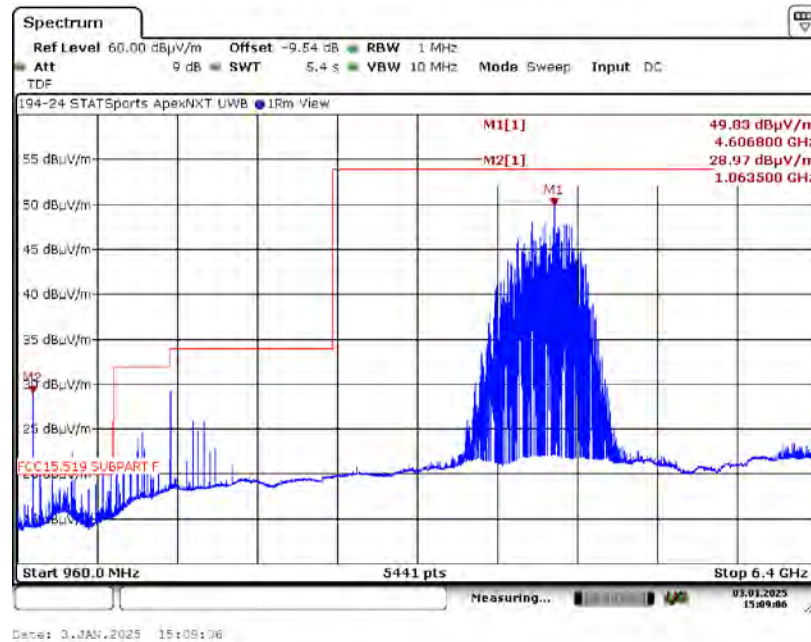
6.5.8. 960 MHz to 6.4 GHz Vertical at 1 Meter – Channel 3, 16M, CW, Y-Axis



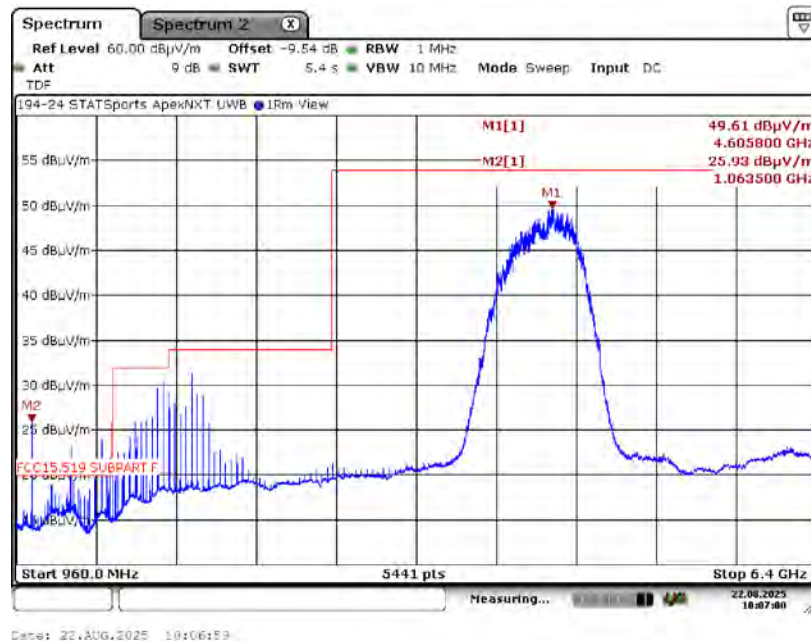
6. Measurement Data (continued)

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

6.5.9. 960 MHz to 6.4 GHz Horizontal at 1 Meter – Channel 3, 16M, Z-Axis



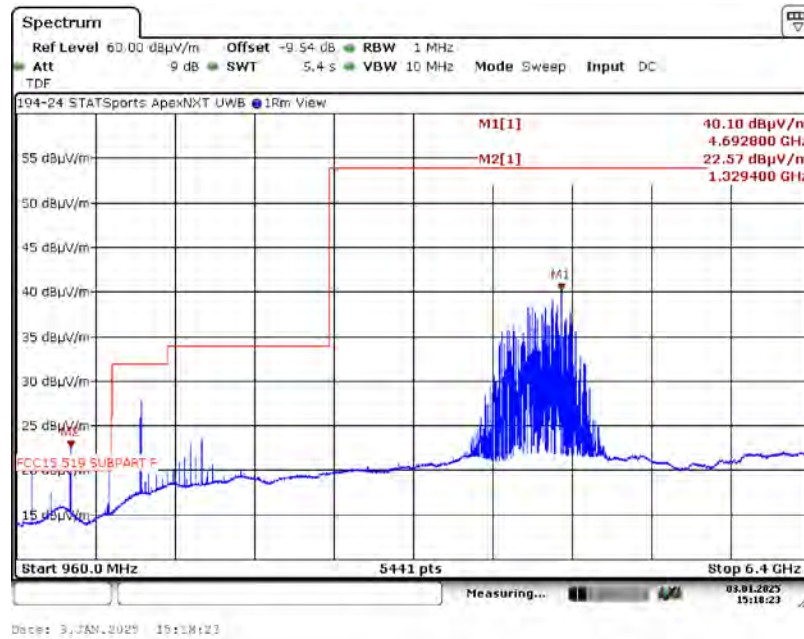
6.5.10. 960 MHz to 6.4 GHz Horizontal at 1 Meter – Channel 3, 16M, CW, Z-Axis



6. Measurement Data (continued)

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

6.5.11. 960 MHz to 6.4 GHz Vertical at 1 Meter – Channel 3, 16M, Z-Axis



6.5.12. 960 MHz to 6.4 GHz Vertical at 1 Meter – Channel 3, 16M, CW, Z-Axis



6. Measurement Data (continued)

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

6.5.13. 6.4 to 18 GHz Horizontal at 1 Meter – Channel 3, 16M, X-Axis



6.5.14. 6.4 to 18 GHz Vertical at 1 Meter – Channel 3, 16M, X-Axis



6. Measurement Data (continued)

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

6.5.15. 6.4 to 18 GHz Horizontal at 1 Meter – Channel 3, 16M, Y-Axis



6.5.16. 6.4 to 18 GHz Vertical at 1 Meter – Channel 3, 16M, Y-Axis



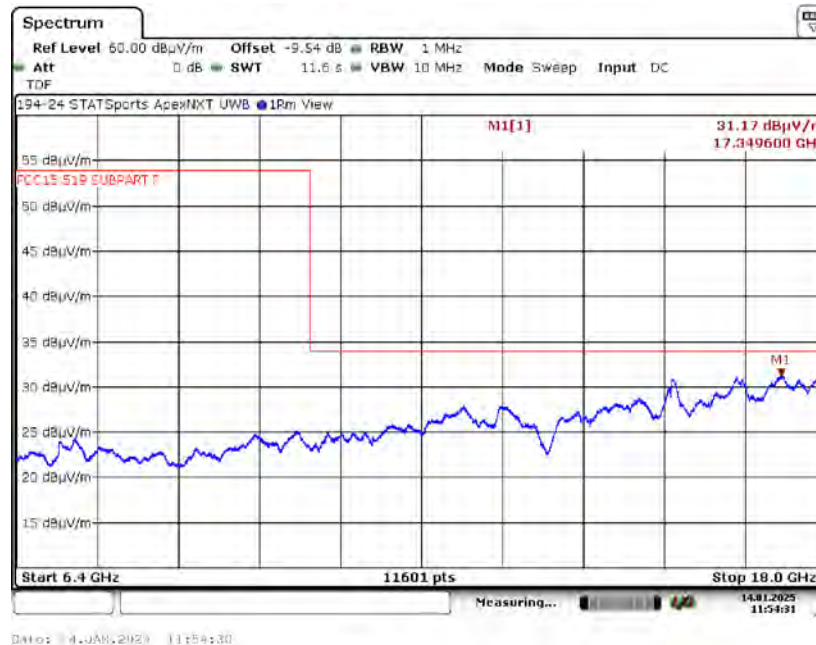
6. Measurement Data (continued)

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

6.5.17. 6.4 to 18 GHz Horizontal at 1 Meter – Channel 3, 16M, Z-Axis



6.5.18. 6.4 to 18 GHz Vertical at 1 Meter – Channel 3, 16M, Z-Axis



6. Measurement Data (continued)

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

6.5.19. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 3, 16M, X-Axis



6.5.20. 18 to 40 GHz Vertical at 0.3 Meter – Channel 3, 16M, X-Axis



6. Measurement Data (continued)

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

6.5.21. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 3, 16M, Y-Axis



6.5.22. 18 to 40 GHz Vertical at 0.3 Meter – Channel 3, 16M, Y-Axis



6. Measurement Data (continued)

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

6.5.23. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 3, 16M, Z-Axis



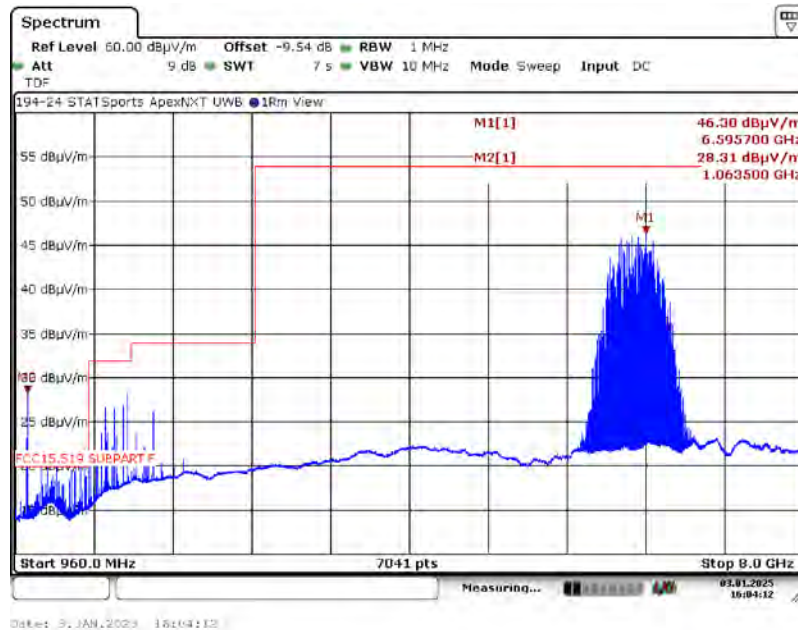
6.5.24. 18 to 40 GHz Vertical at 0.3 Meter – Channel 3, 16M, Z-Axis



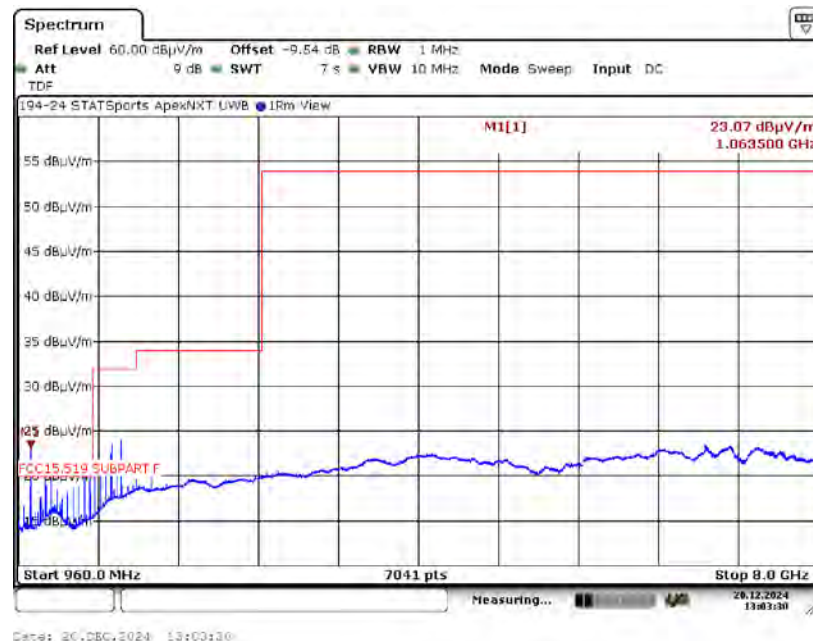
6. Measurement Data (continued)

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

6.5.25. 960 MHz to 8 GHz Horizontal at 1 Meter – Channel 5, 16M, X-Axis



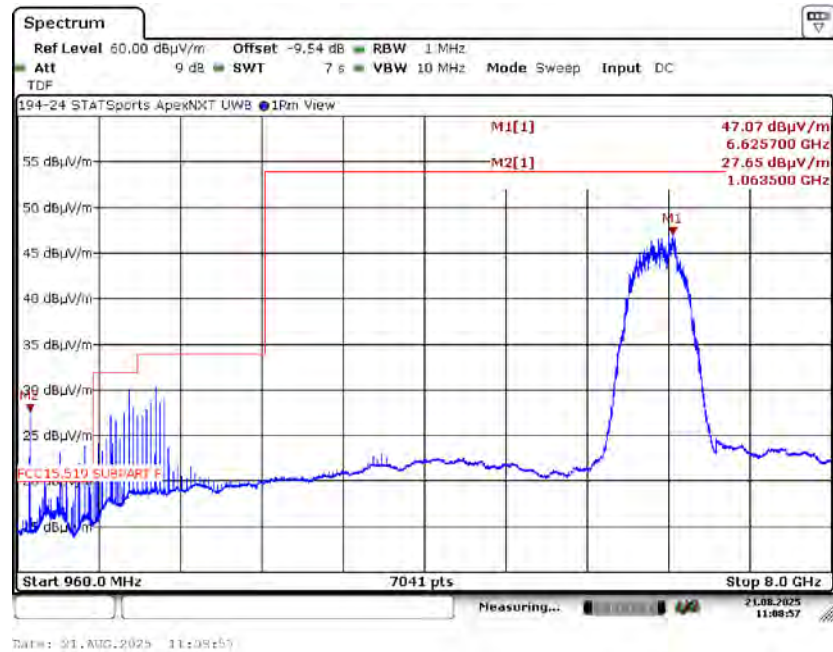
6.5.26. 960 MHz to 8 GHz Horizontal at 1 Meter – Channel 5, 16M, X-Axis, Tx-Off



6. Measurement Data (continued)

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

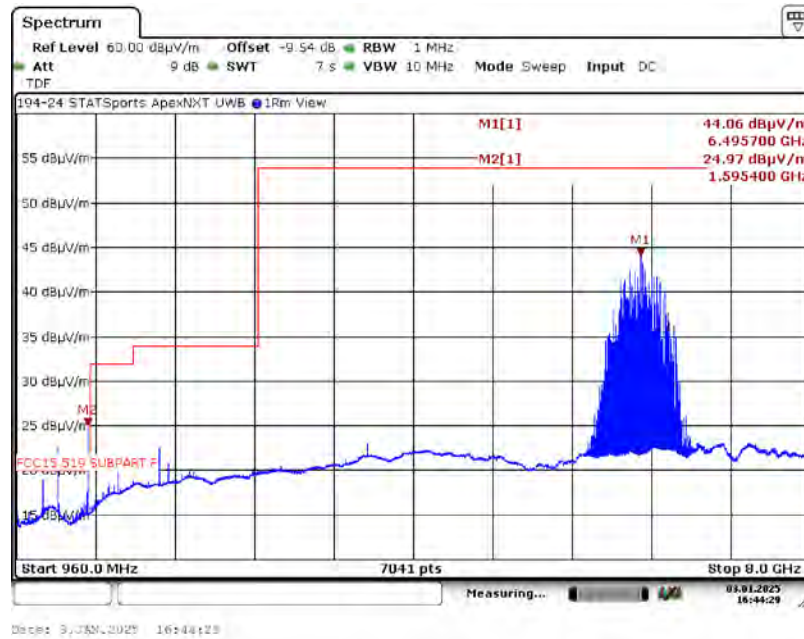
6.5.27. 960 MHz to 8 GHz Horizontal at 1 Meter – Channel 5, 16M, CW, X-Axis



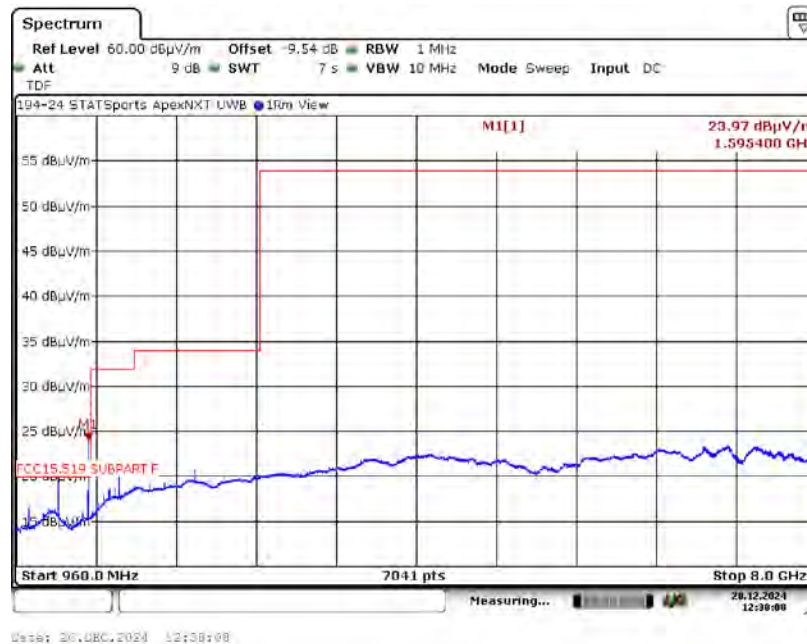
6. Measurement Data (continued)

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

6.5.28. 960 MHz to 8 GHz Vertical at 1 Meter – Channel 5, 16M, X-Axis



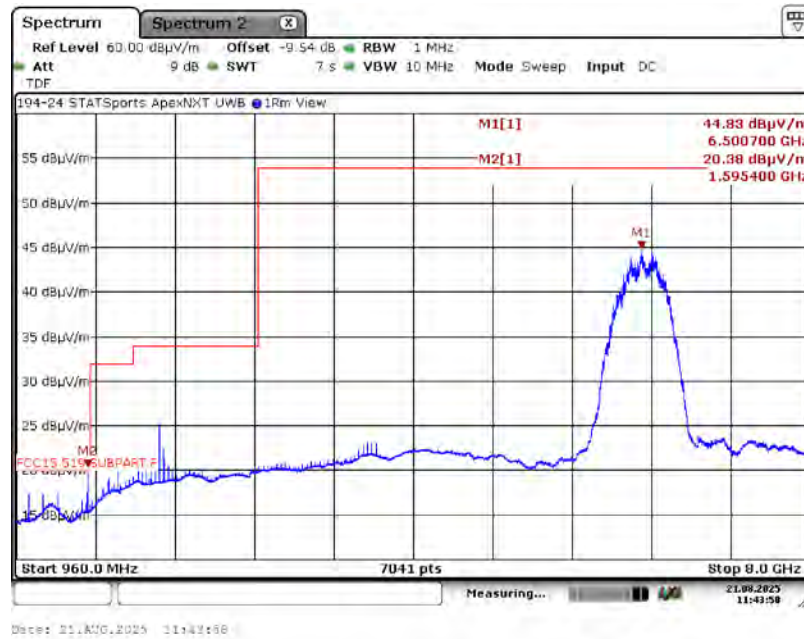
6.5.29. 960 MHz to 8 GHz Vertical at 1 Meter – Channel 5, 16M, X-Axis, Tx-Off



6. Measurement Data (continued)

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

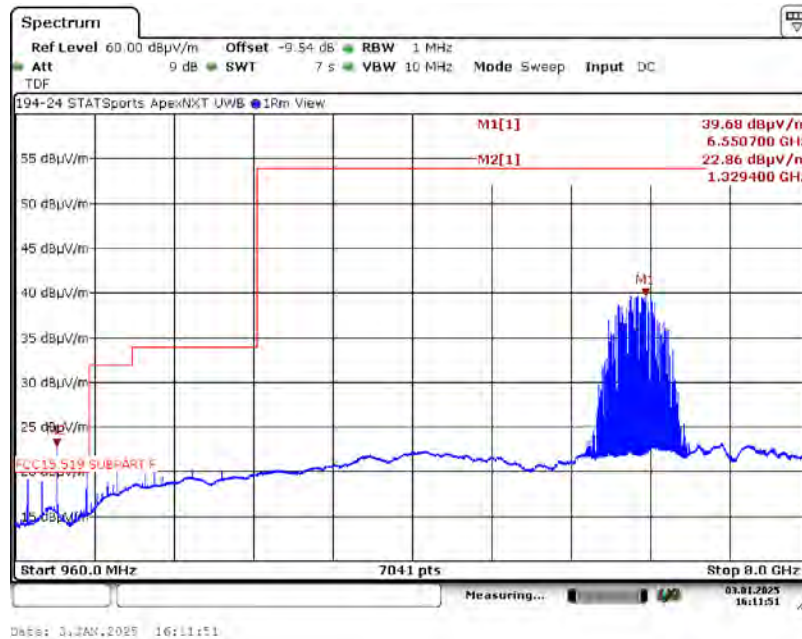
6.5.30. 960 MHz to 8 GHz Vertical at 1 Meter – Channel 5, 16M, CW, X-Axis



6. Measurement Data (continued)

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

6.5.31. 960 MHz to 8 GHz Horizontal at 1 Meter – Channel 5, 16M, Y-Axis



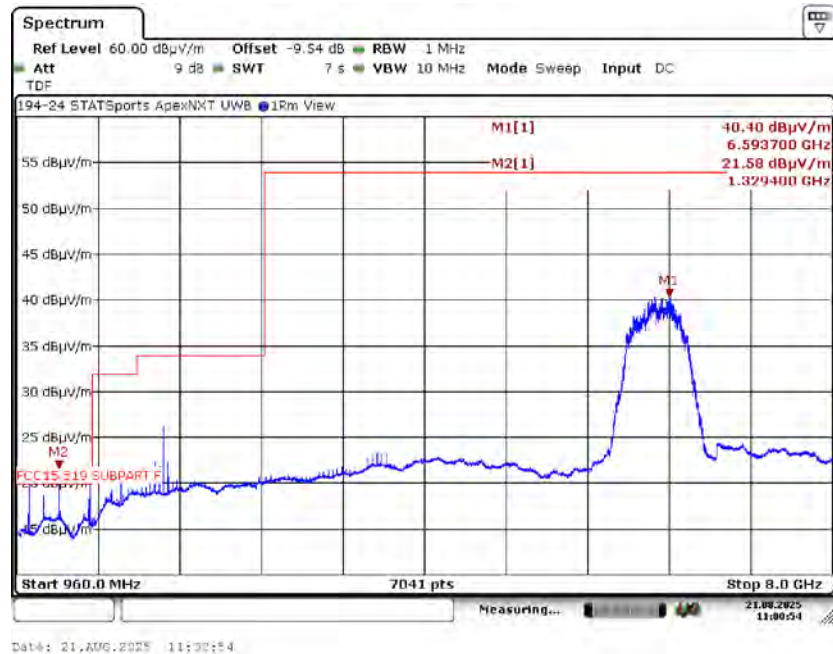
6.5.32. 960 MHz to 8 GHz Horizontal at 1 Meter – Channel 5, 16M, Y-Axis, Tx-Off



6. Measurement Data (continued)

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

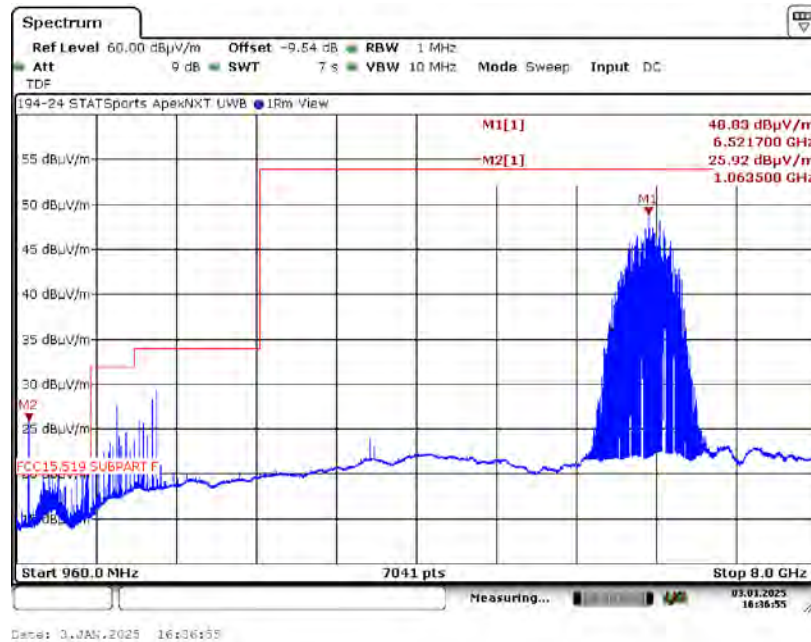
6.5.33. 960 MHz to 8 GHz Horizontal at 1 Meter – Channel 5, 16M, CW, Y-Axis



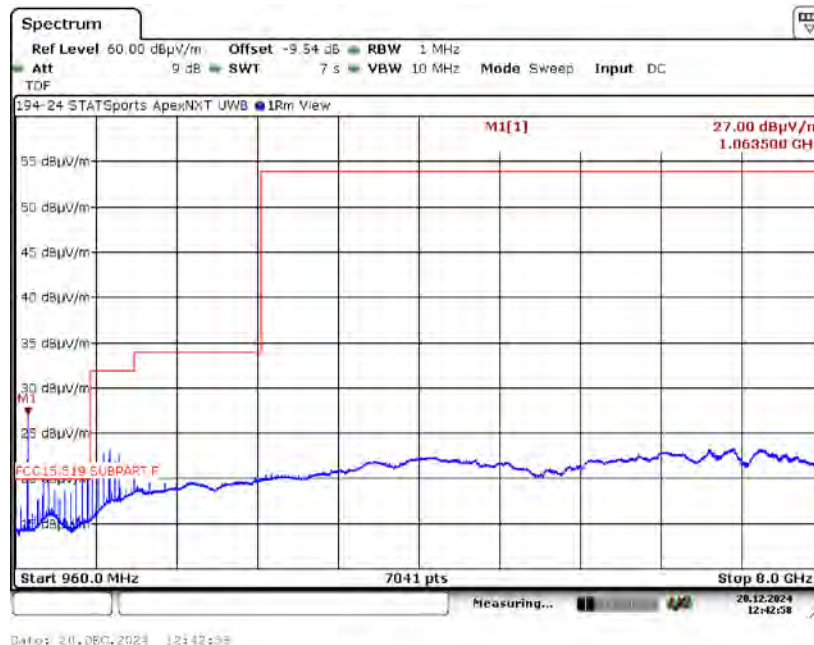
6. Measurement Data (continued)

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

6.5.34. 960 MHz to 8 GHz Vertical at 1 Meter – Channel 5, 16M, Y-Axis



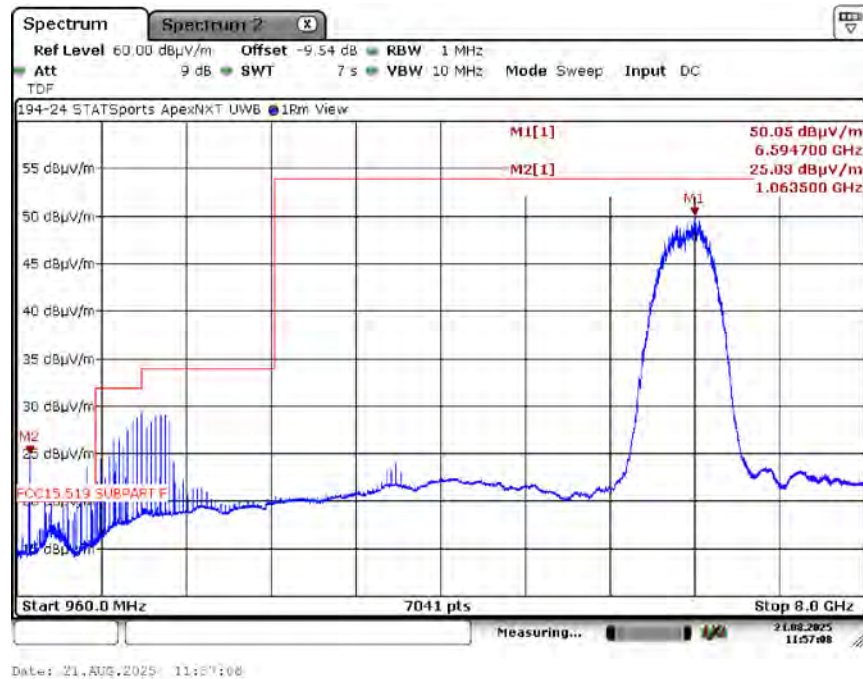
6.5.35. 960 MHz to 8 GHz Vertical at 1 Meter – Channel 5, 16M, Y-Axis, Tx-Off



6. Measurement Data (continued)

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

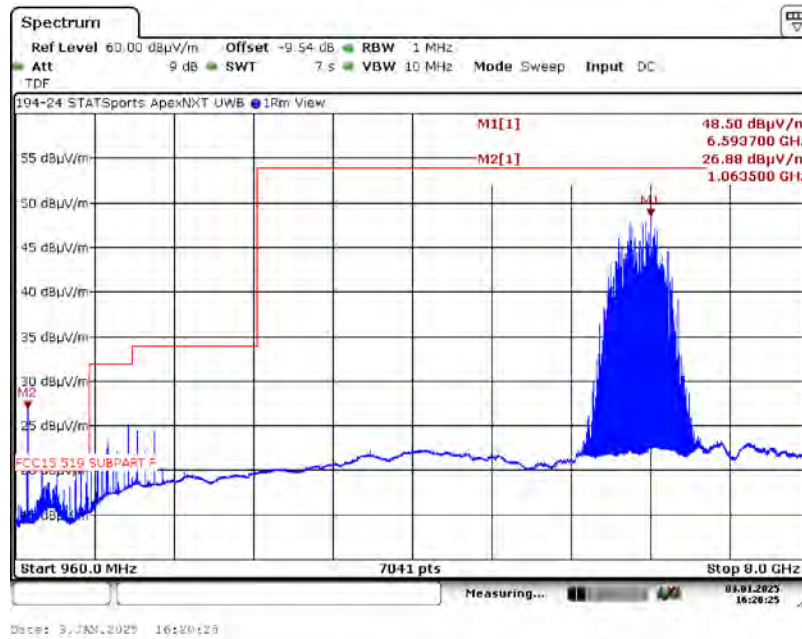
6.5.36. 960 MHz to 8 GHz Vertical at 1 Meter – Channel 5, 16M, CW, Y-Axis



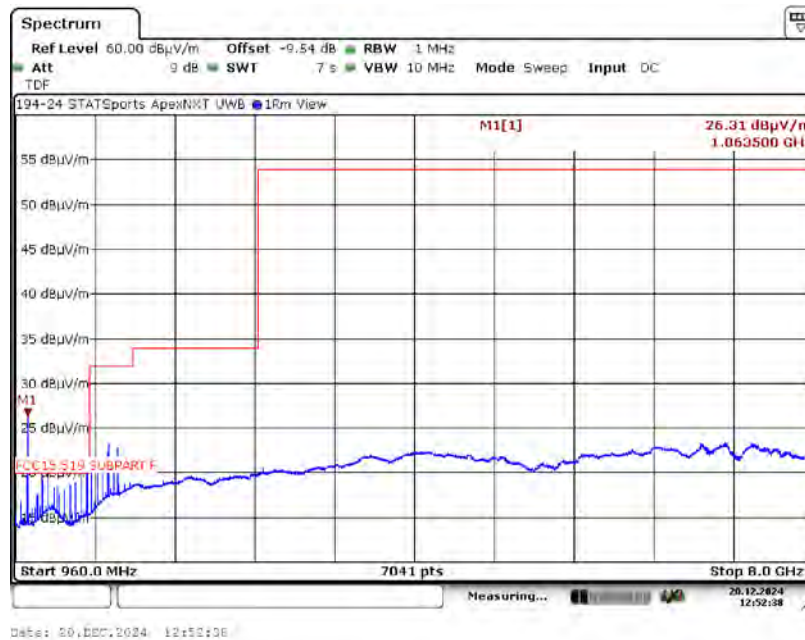
6. Measurement Data (continued)

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

6.5.37. 960 MHz to 8 GHz Horizontal at 1 Meter – Channel 5, 16M, Z-Axis



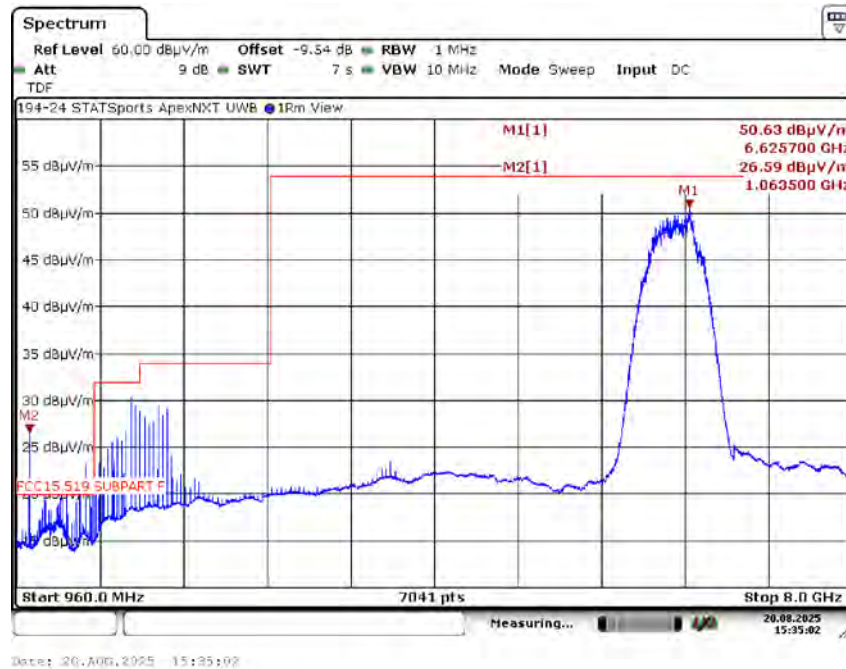
6.5.38. 960 MHz to 8 GHz Horizontal at 1 Meter – Channel 5, 16M, Z-Axis, Tx-Off



6. Measurement Data (continued)

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

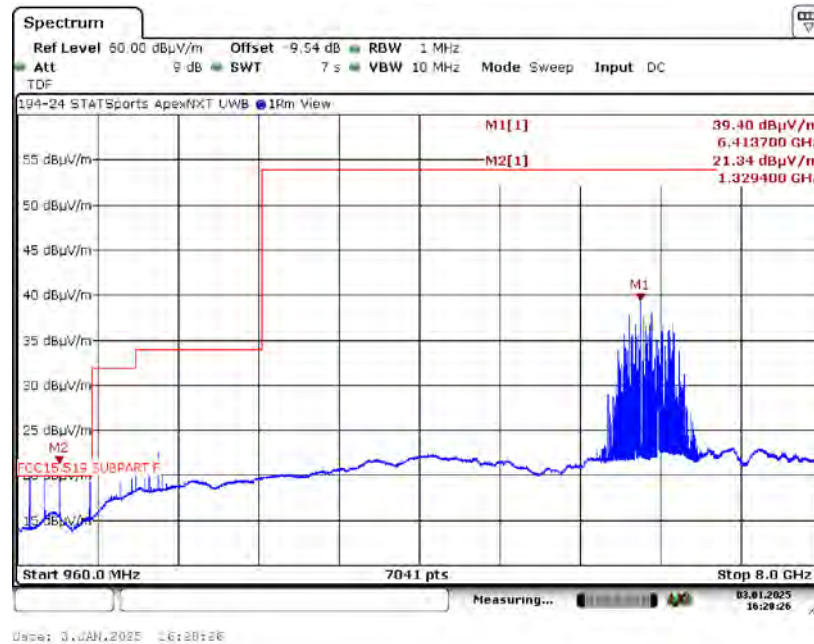
6.5.39. 960 MHz to 8 GHz Horizontal at 1 Meter – Channel 5, 16M, CW, Z-Axis



6. Measurement Data (continued)

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

6.5.40. 960 MHz to 8 GHz Vertical at 1 Meter – Channel 5, 16M, Z-Axis



6.5.41. 960 MHz to 8 GHz Vertical at 1 Meter – Channel 5, 16M, Z-Axis, Tx-Off



6. Measurement Data (continued)

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

6.5.42. 960 MHz to 8 GHz Vertical at 1 Meter – Channel 5, 16M, CW, 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, 16M, X-Axis



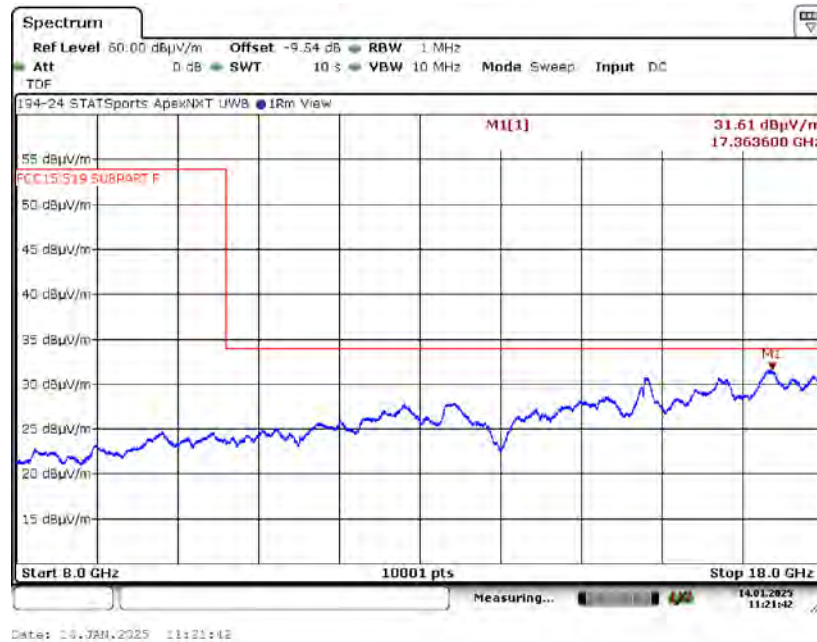
6.5.44. 8 to 18 GHz Vertical at 1 Meter – Channel 5, 16M, X-Axis



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, 16M, Y-Axis



6.5.46. 8 to 18 GHz Vertical at 1 Meter – Channel 5, 16M, 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, 16M, Z-Axis



6.5.48. 8 to 18 GHz Vertical at 1 Meter – Channel 5, 16M, Z-Axis



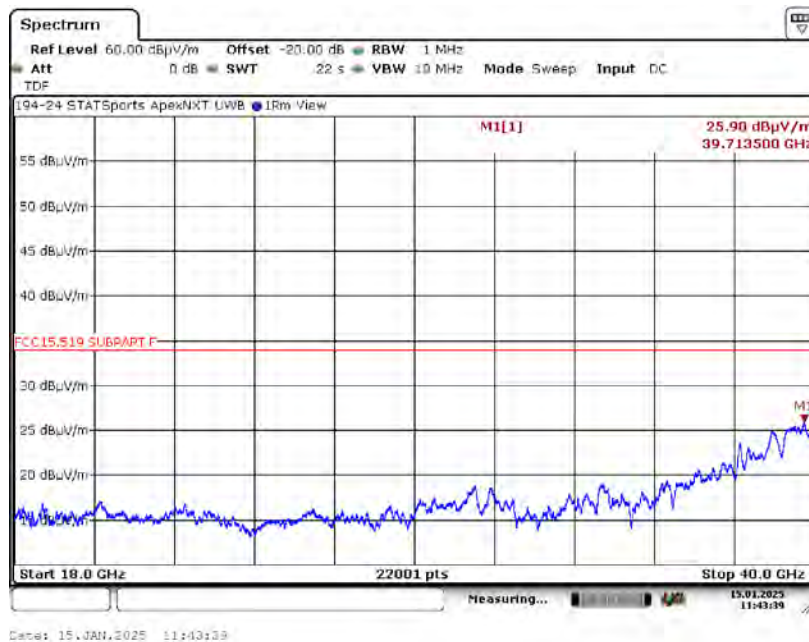
6. Measurement Data (continued)

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

6.5.49. 18 to 40 GHz Horizontal at 0.3 Meter – Channel 5, 16M, X-Axis



6.5.50. 18 to 40 GHz Vertical at 0.3 Meter – Channel 5, 16M, 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 5, 16M, Y-Axis



6.5.52. 18 to 40 GHz Vertical at 0.3 Meter – Channel 5, 16M, 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 5, 16M, Z-Axis



6.5.54. 18 to 40 GHz Vertical at 0.3 Meter – Channel 5, 16M, 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 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 – 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 is provided in plots 6.5.31 to 6.5.42 on the previous pages.

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.

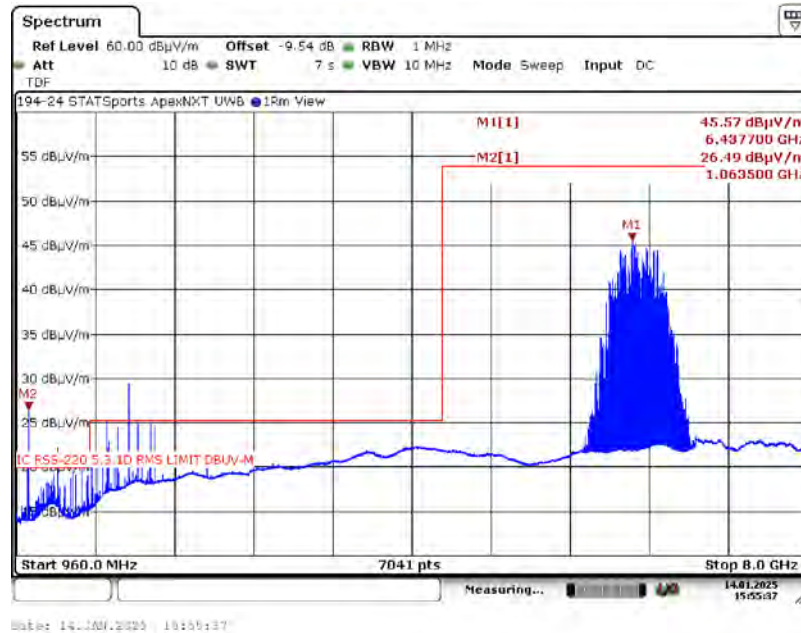
Sample Calculation: Final Result (dBμV/m) = Measurement Value (dBμV) + Antenna Factor (dB/m) + Cable Loss (dB) – Pre-amplifier Gain (dB) Internal or External.

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

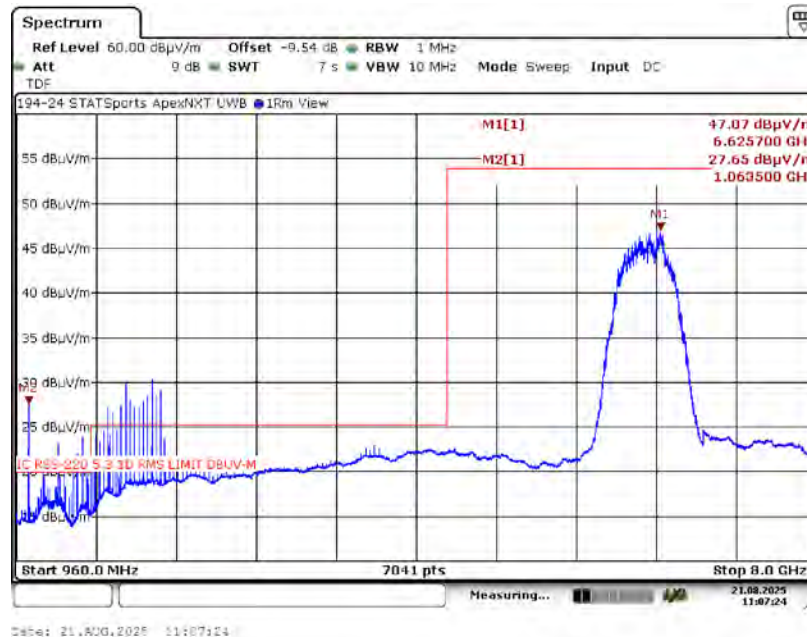
6. Measurement Data (continued)

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

6.5.55. 960 MHz to 8 GHz Horizontal at 1 Meter, X-Axis



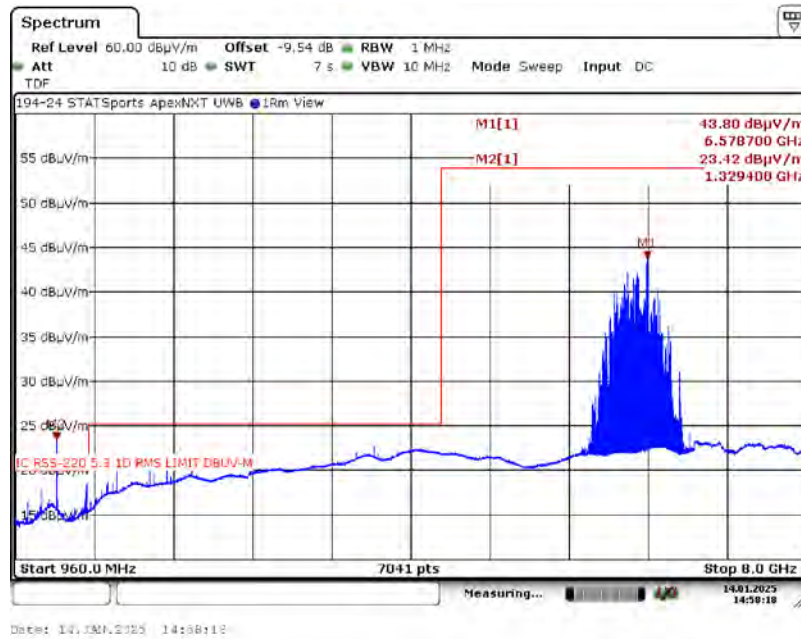
6.5.56. 960 MHz to 8 GHz Horizontal at 1 Meter, CW, X-Axis



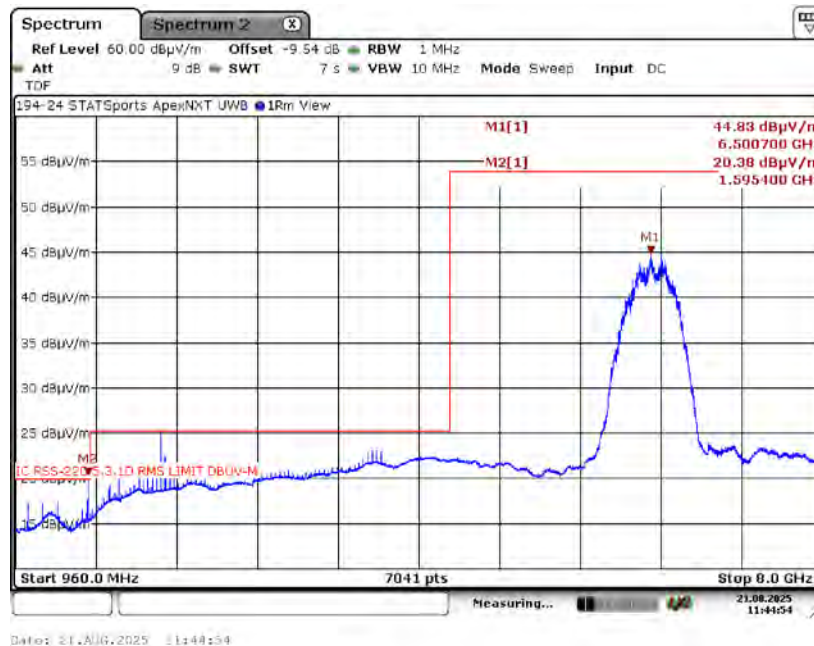
6. Measurement Data (continued)

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

6.5.57. 960 MHz to 8 GHz Vertical at 1 Meter, X-Axis



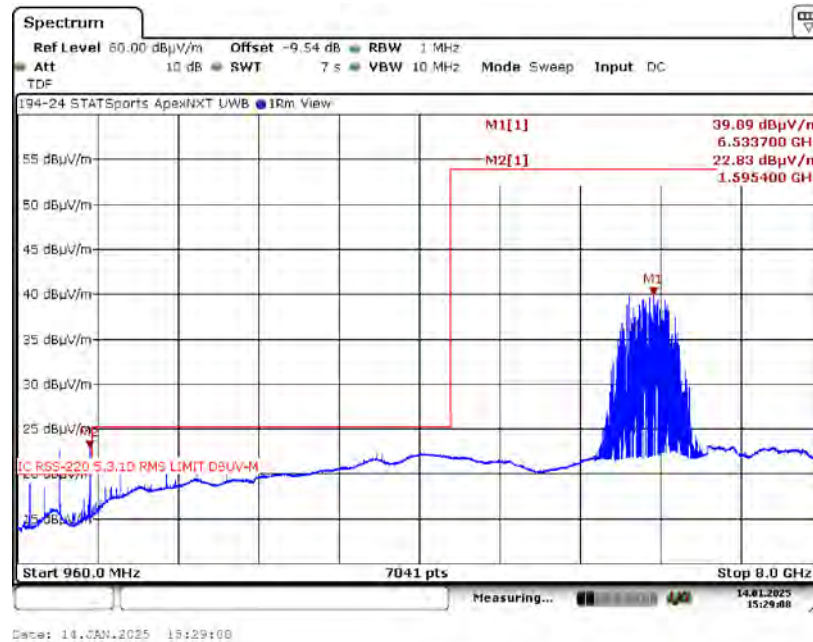
6.5.58. 960 MHz to 8 GHz Vertical at 1 Meter, CW, X-Axis



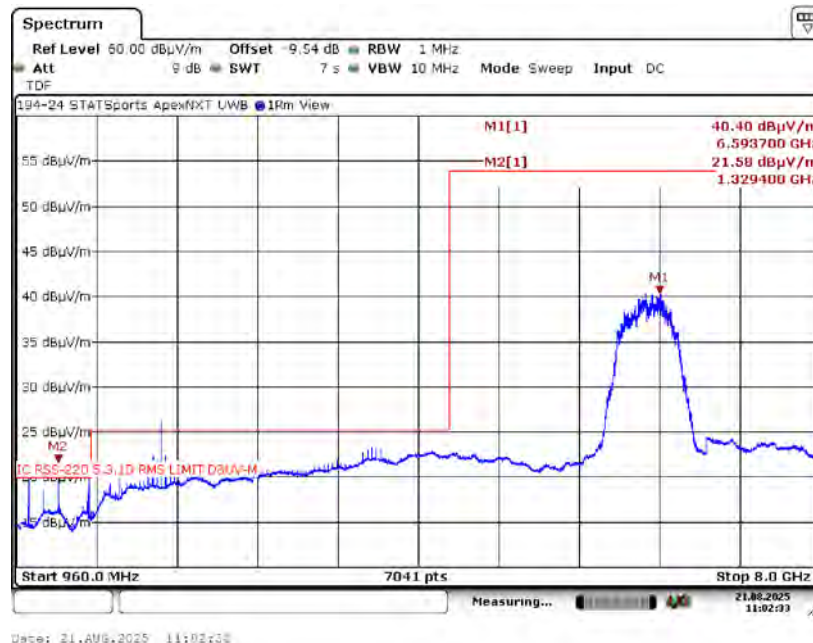
6. Measurement Data (continued)

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

6.5.59. 960 MHz to 8 GHz Horizontal at 1 Meter, Y-Axis



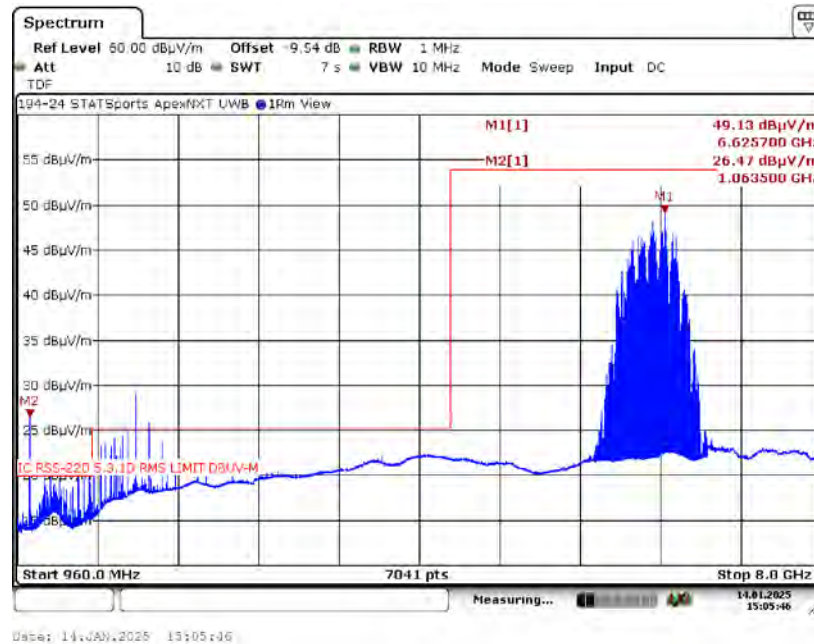
6.5.60. 960 MHz to 8 GHz Horizontal at 1 Meter, CW, Y-Axis



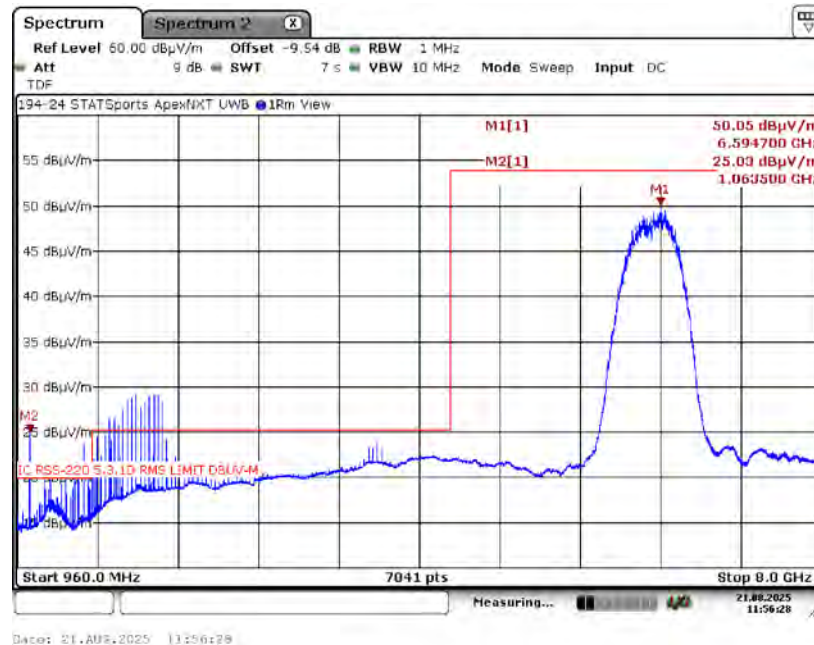
6. Measurement Data (continued)

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

6.5.61. 960 MHz to 8 GHz Vertical at 1 Meter, Y-Axis



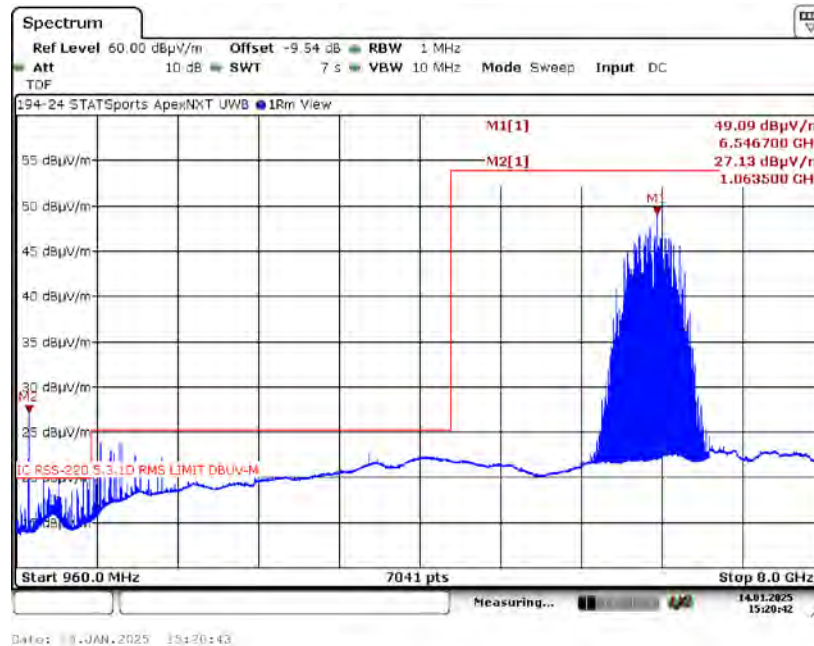
6.5.62. 960 MHz to 8 GHz Vertical at 1 Meter, CW, Y-Axis



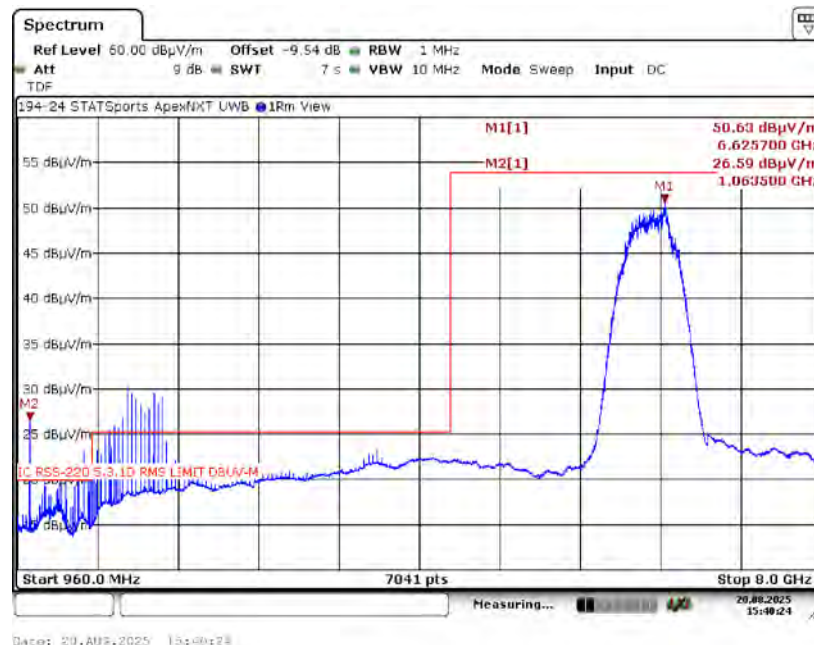
6. Measurement Data (continued)

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

6.5.63. 960 MHz to 8 GHz Horizontal at 1 Meter, Z-Axis



6.5.64. 960 MHz to 8 GHz Horizontal at 1 Meter, CW, Z-Axis



6. Measurement Data (continued)

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

6.5.65. 960 MHz to 8 GHz Vertical at 1 Meter, Z-Axis



6.5.66. 960 MHz to 8 GHz Vertical at 1 Meter, CW, Z-Axis



6. Measurement Data (continued)

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

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.

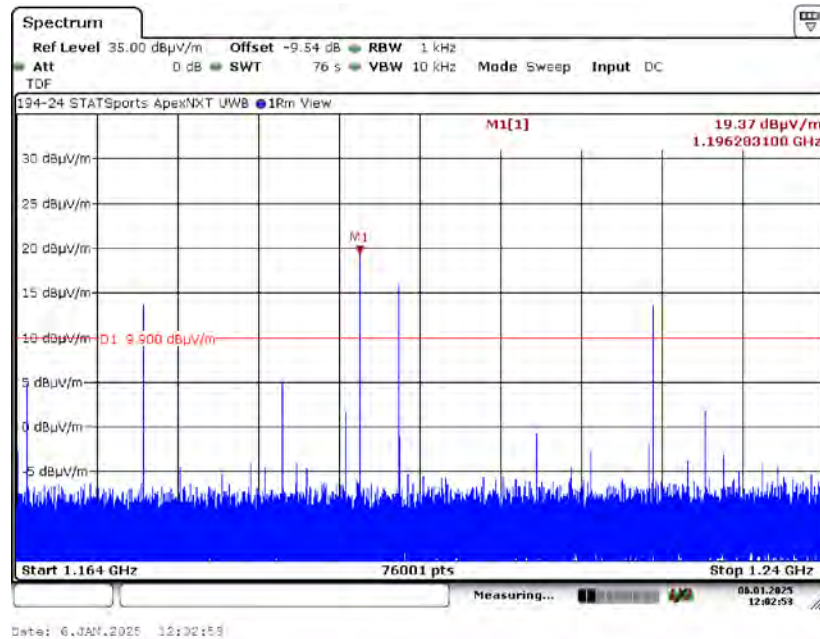
Note: There were no broadband emissions related to the UWB transmitter. Narrowband spikes are related to digital circuitry and not subject to the 15.519 (d) limits and are only required to be below the limits of 15.209 see 15.521(c).

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.

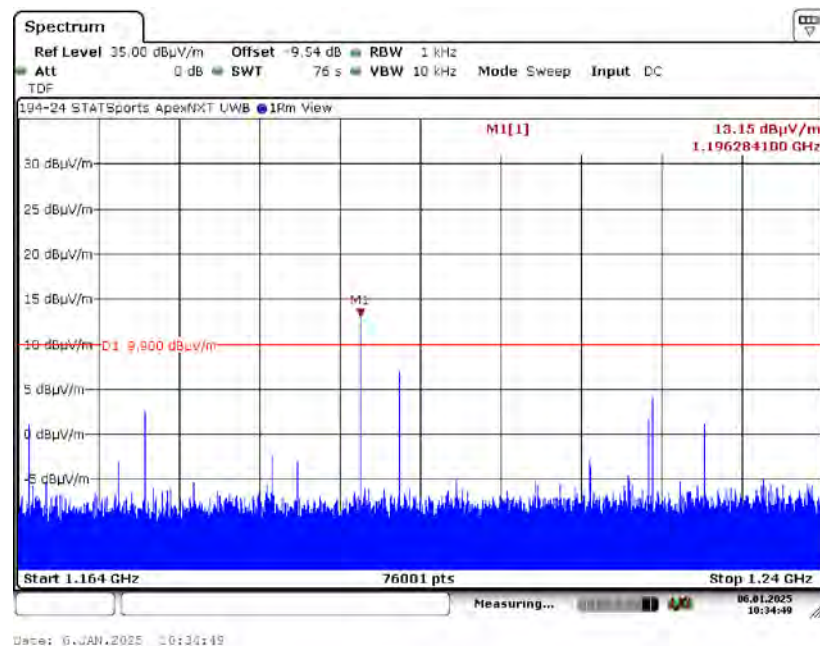
6. Measurement Data (continued)

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

6.6.3.1 Horizontal Measurement Polarity 1164 to 1240 MHz – Channel 3, X-Axis



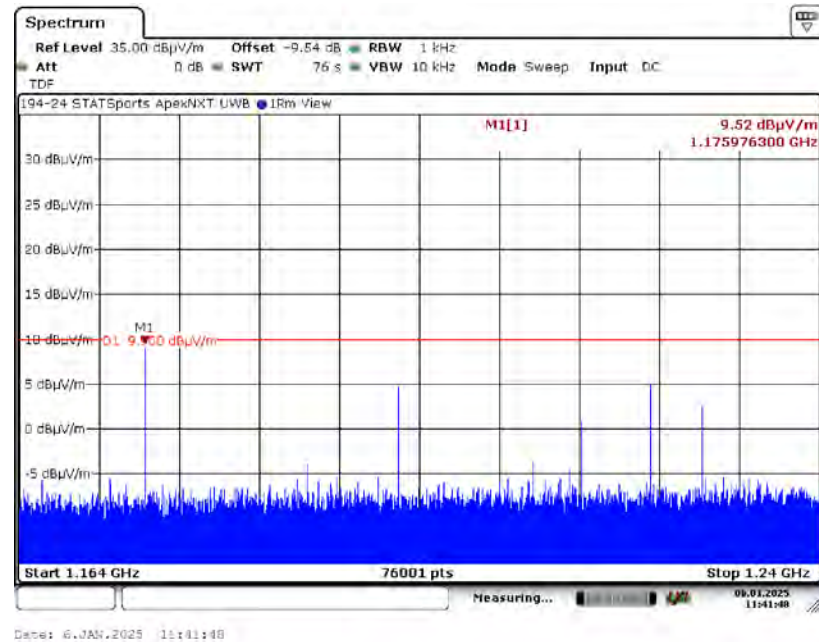
6.6.3.2 Vertical Measurement Polarity 1164 to 1240 MHz – Channel 3, X-Axis



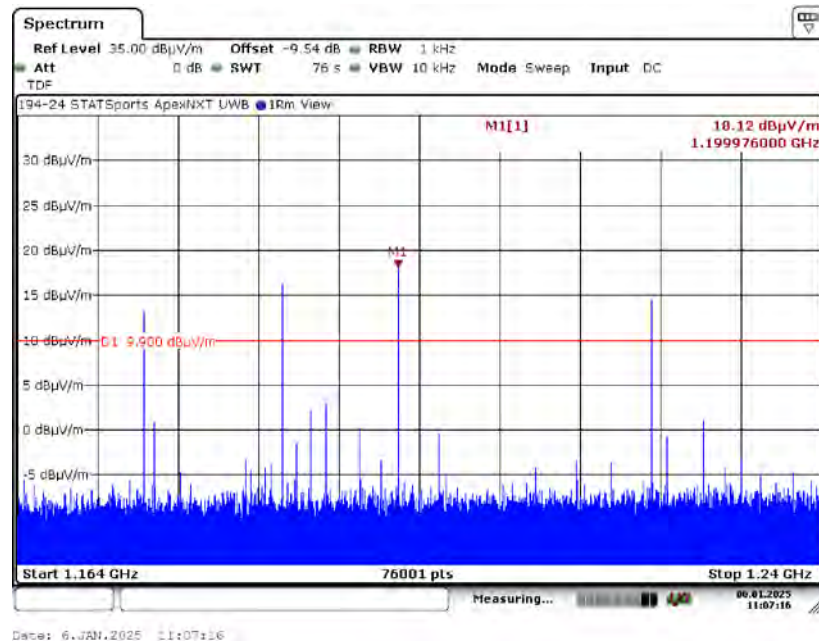
6. Measurement Data (continued)

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

6.6.3.3 Horizontal Measurement Polarity 1164 to 1240 MHz – Channel 3, Y-Axis



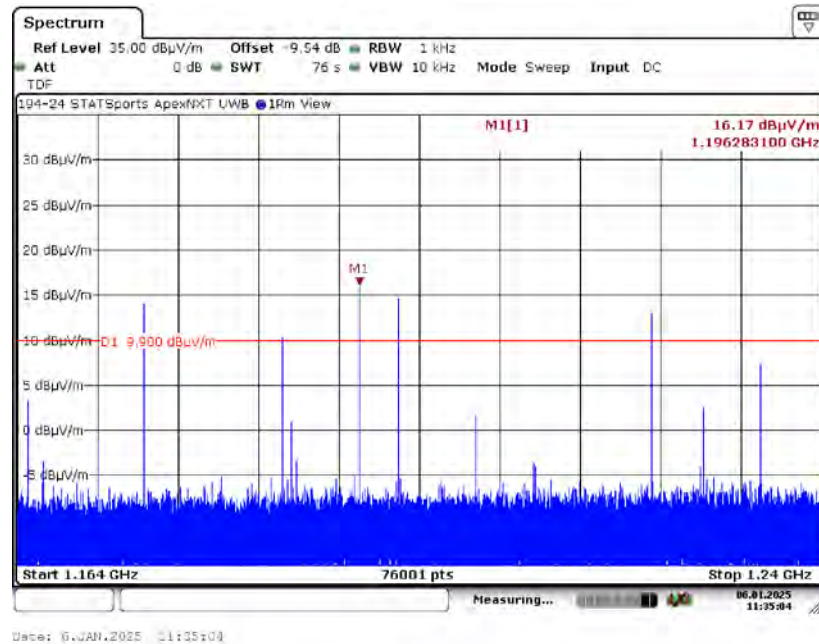
6.6.3.4 Vertical Measurement Polarity 1164 to 1240 MHz – Channel 3, Y-Axis



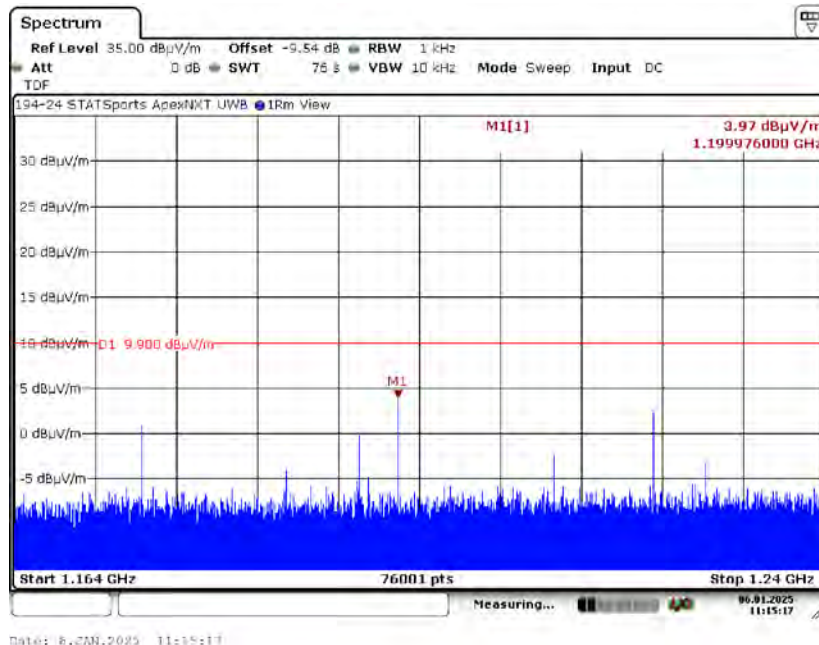
6. Measurement Data (continued)

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

6.6.3.5 Horizontal Measurement Polarity 1164 to 1240 MHz – Channel 3, Z-Axis



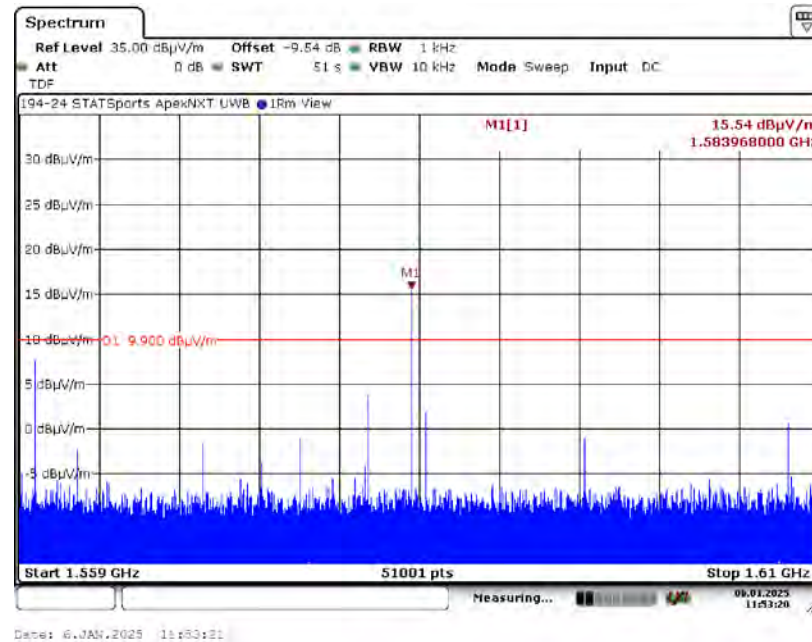
6.6.3.6 Vertical Measurement Polarity 1164 to 1240 MHz – Channel 3, Z-Axis



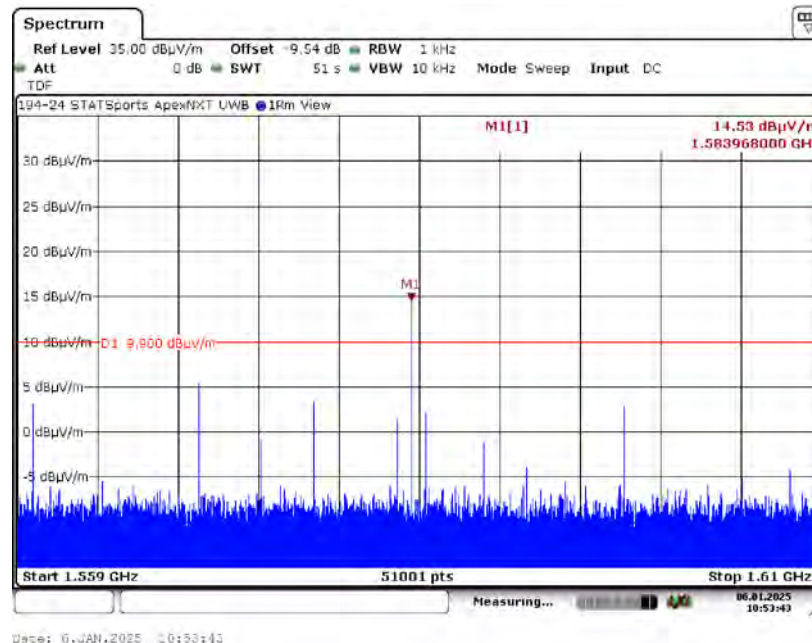
6. Measurement Data (continued)

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

6.6.3.7 Horizontal Measurement Polarity 1559 to 1610 MHz – Channel 3, X-Axis



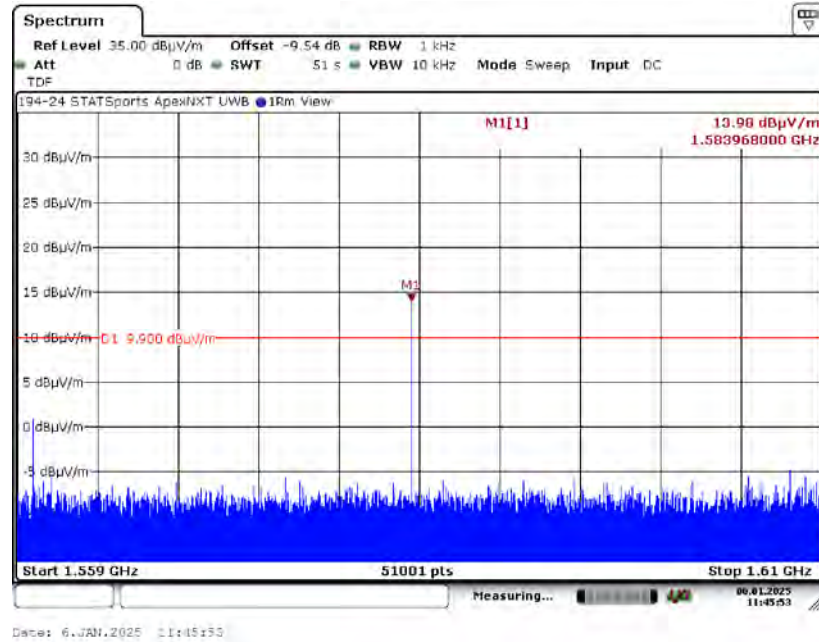
6.6.3.8 Vertical Measurement Polarity 1559 to 1610 MHz – Channel 3, X-Axis



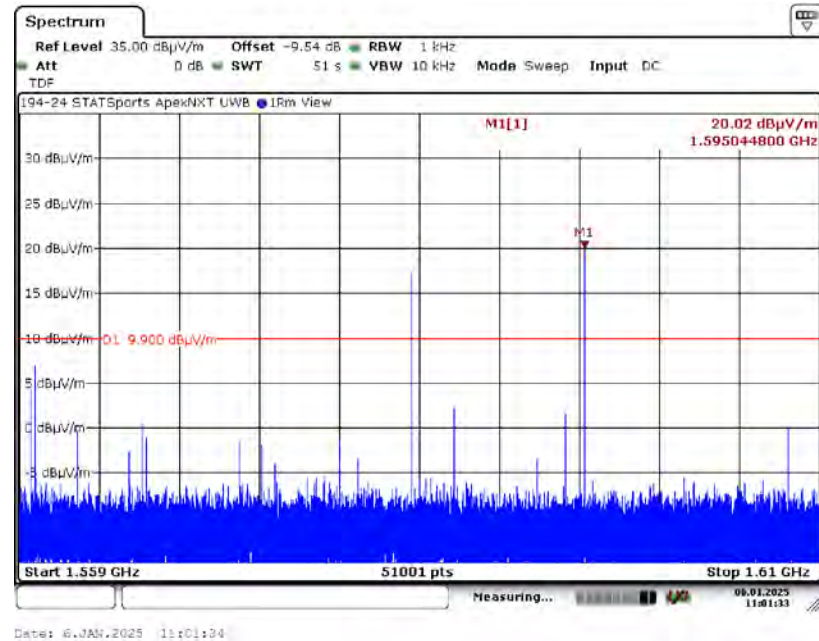
6. Measurement Data (continued)

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

6.6.3.9 Horizontal Measurement Polarity 1559 to 1610 MHz – Channel 3, Y-Axis



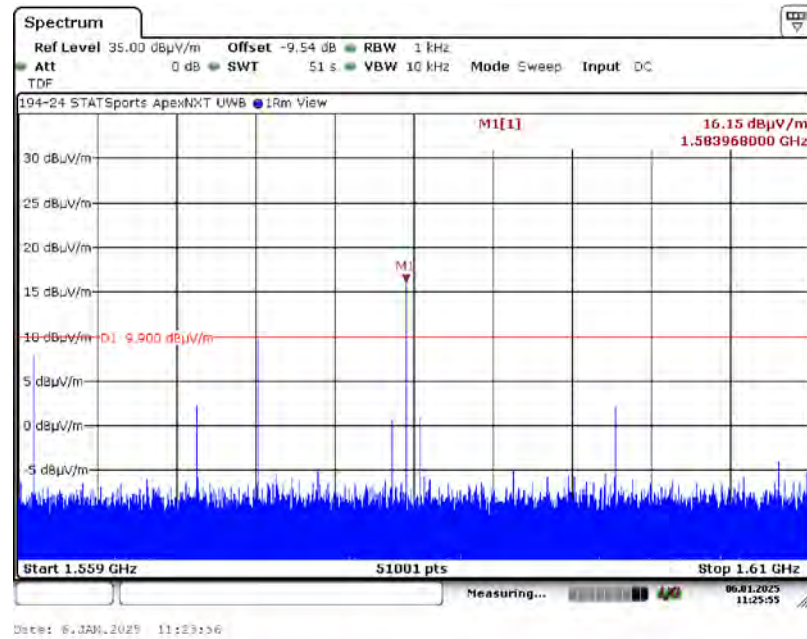
6.6.3.10 Vertical Measurement Polarity 1559 to 1610 MHz – Channel 3, Y-Axis



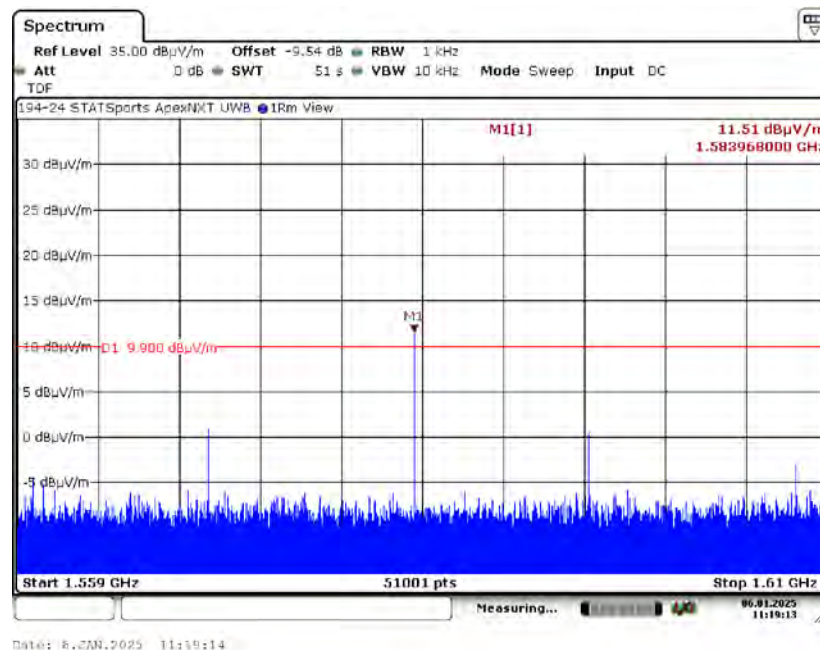
6. Measurement Data (continued)

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

6.6.3.11 Horizontal Measurement Polarity 1559 to 1610 MHz – Channel 3, Z-Axis



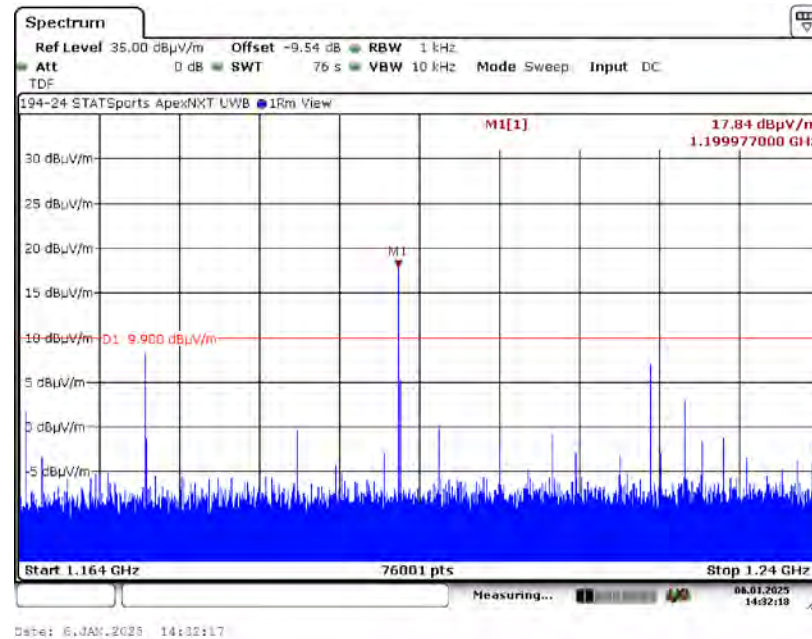
6.6.3.12 Vertical Measurement Polarity 1559 to 1610 MHz – Channel 3, Z-Axis



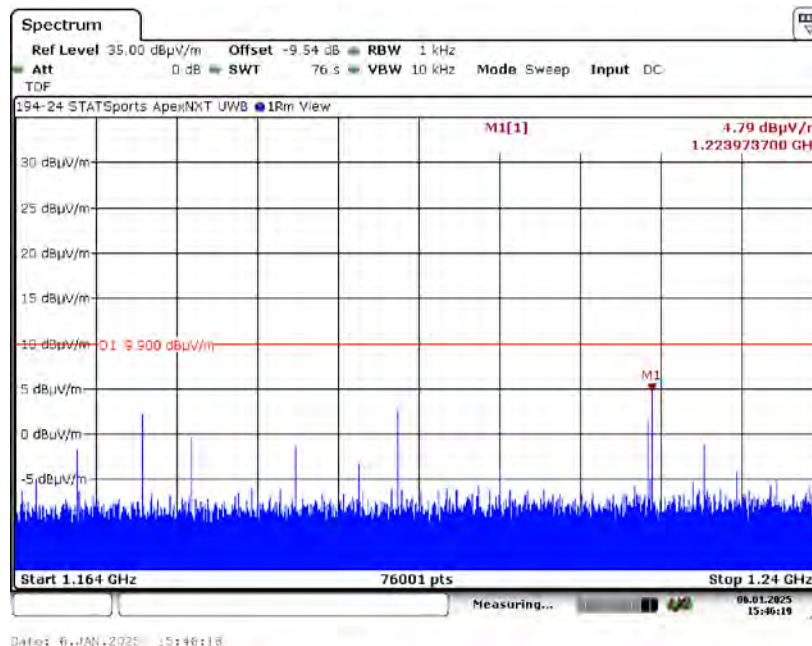
6. Measurement Data (continued)

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

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



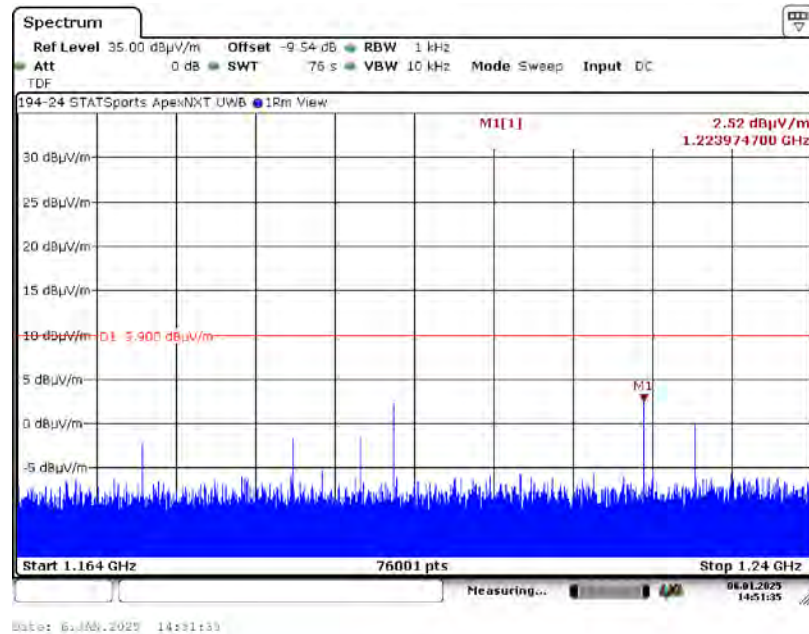
6.6.3.14 Vertical Measurement Polarity 1164 to 1240 MHz – Channel 5, X-Axis



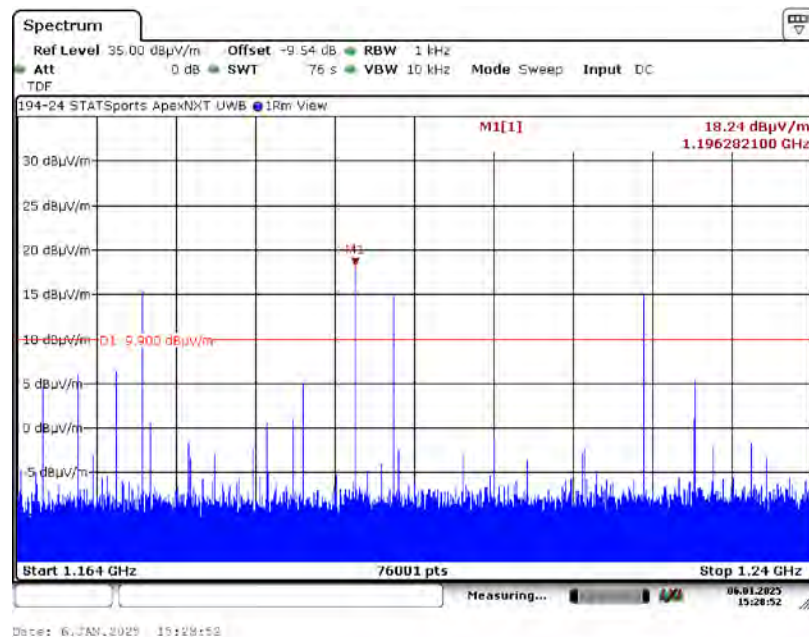
6. Measurement Data (continued)

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

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



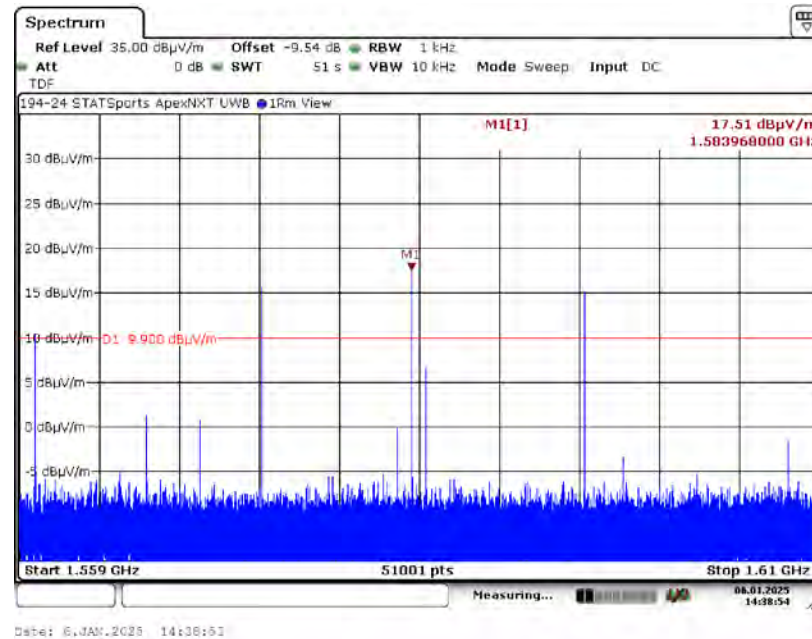
6.6.3.16 Vertical Measurement Polarity 1164 to 1240 MHz – Channel 5, X-Axis



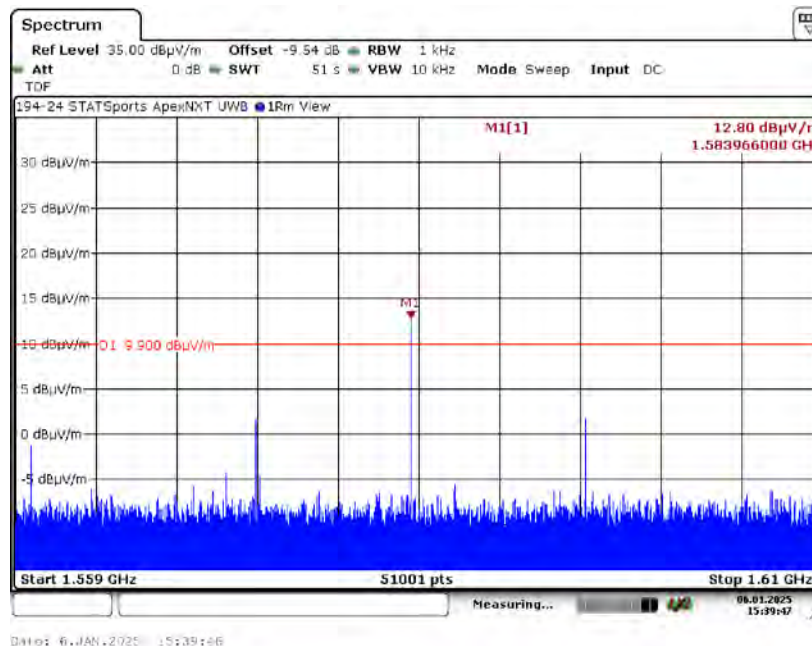
6. Measurement Data (continued)

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

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



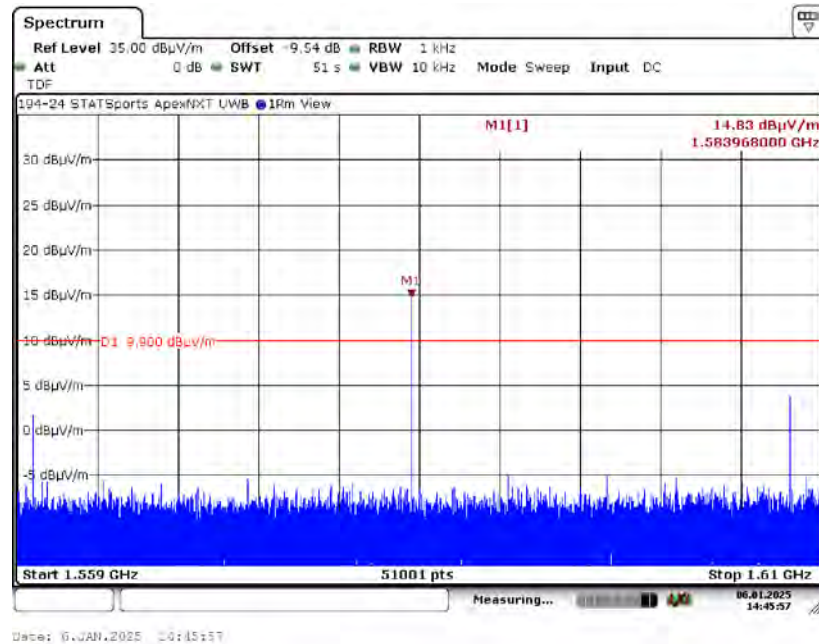
6.6.3.20 Vertical Measurement Polarity 1559 to 1610 MHz – Channel 5, X-Axis



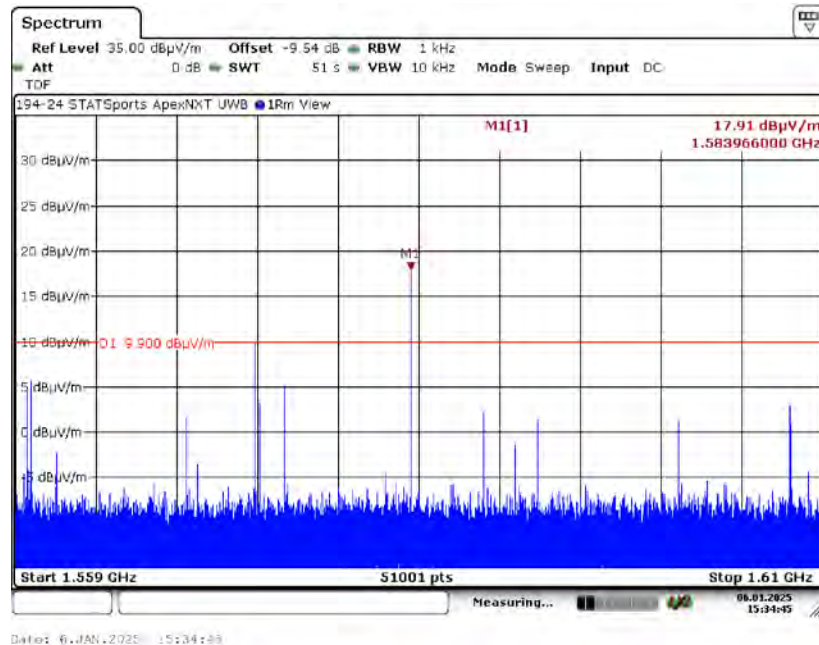
6. Measurement Data (continued)

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

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



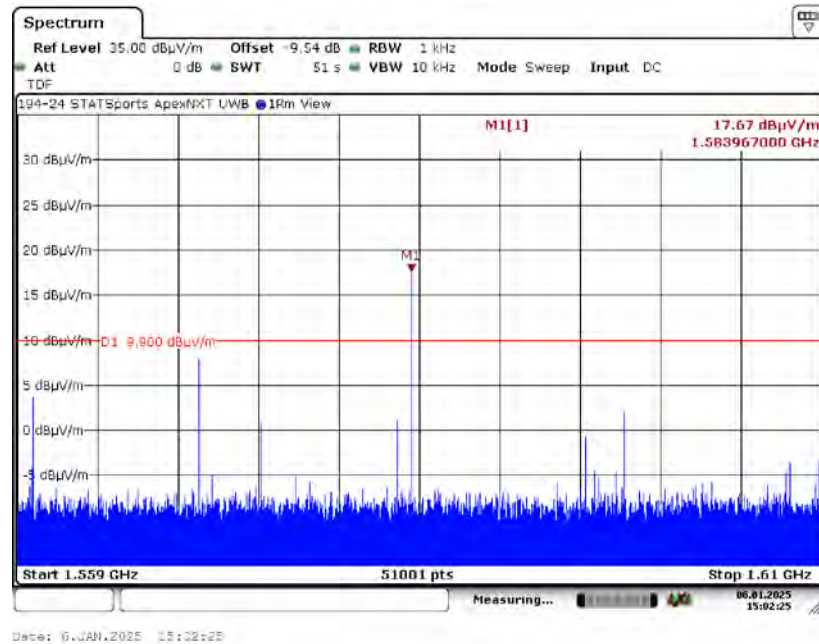
6.6.3.22 Vertical Measurement Polarity 1559 to 1610 MHz – Channel 5, Y-Axis



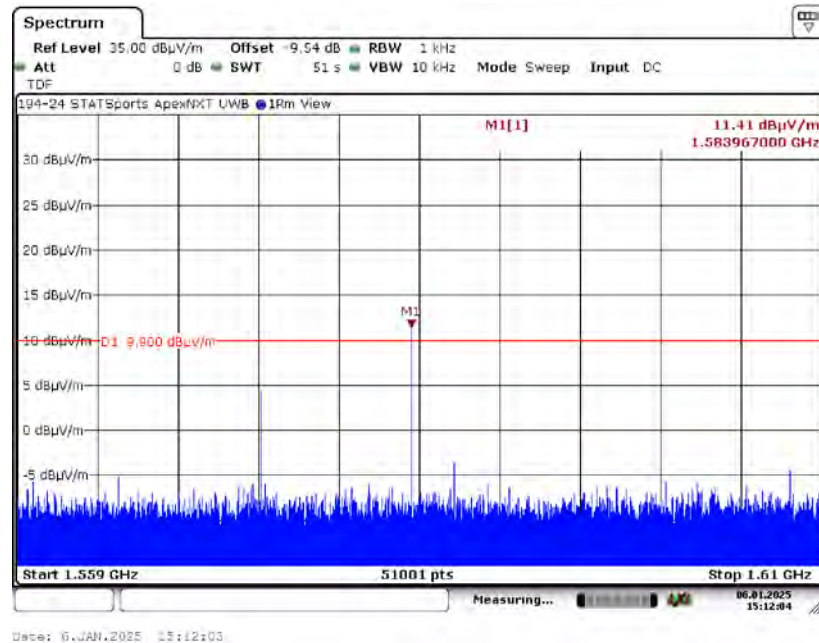
6. Measurement Data (continued)

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

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



6.6.3.24 Vertical Measurement Polarity 1559 to 1610 MHz – Channel 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 dB μ V/m at 3 Meters by adding 95.2.

FCC

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

ISED

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

Frequency Range:	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), RSS-220 5.3.1 (d))

6.7.1. Plot of RMS Power at 3 Meters – Channel 3, 16M PRF, Z-Axis

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
4.6379	53.82	53.90	-0.08	H	223	97	Compliant

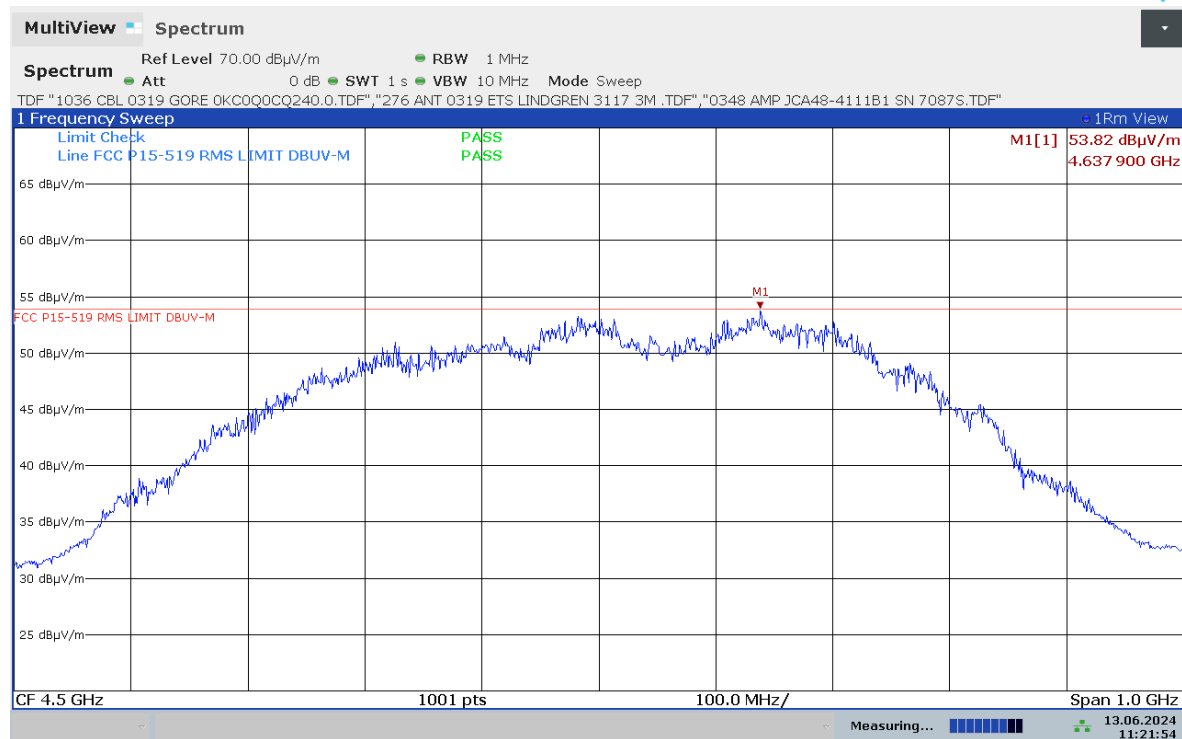
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBm)	(dBm)	(dB)	H/V	cm	Deg	
4.6379	-41.38	-41.30	-0.08	H	223	97	Compliant

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6. Measurement Data (continued)

6.7. Spurious Radiated Emissions (15.519 (c), 15.521(d), RSS-220 5.3.1 (d))

6.7.2. Plot of RMS Power at 3 Meters – Channel 3, 64M PRF, Z-Axis

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
4.6349	53.83	53.90	-0.07	H	223	97	Compliant

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

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBm)	(dBm)	(dB)	H/V	cm	Deg	
4.6349	-41.37	-41.30	-0.07	H	223	97	Compliant

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17:00:57 12.06.2024

6. Measurement Data (continued)

6.7. Spurious Radiated Emissions (15.519 (c), 15.521(d), RSS-220 5.3.1 (d))

6.7.3. Plot of RMS Power at 3 Meters – Channel 5, 16M PRF, Z-Axis

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.490	53.32	53.90	-0.58	H	175	75	Compliant

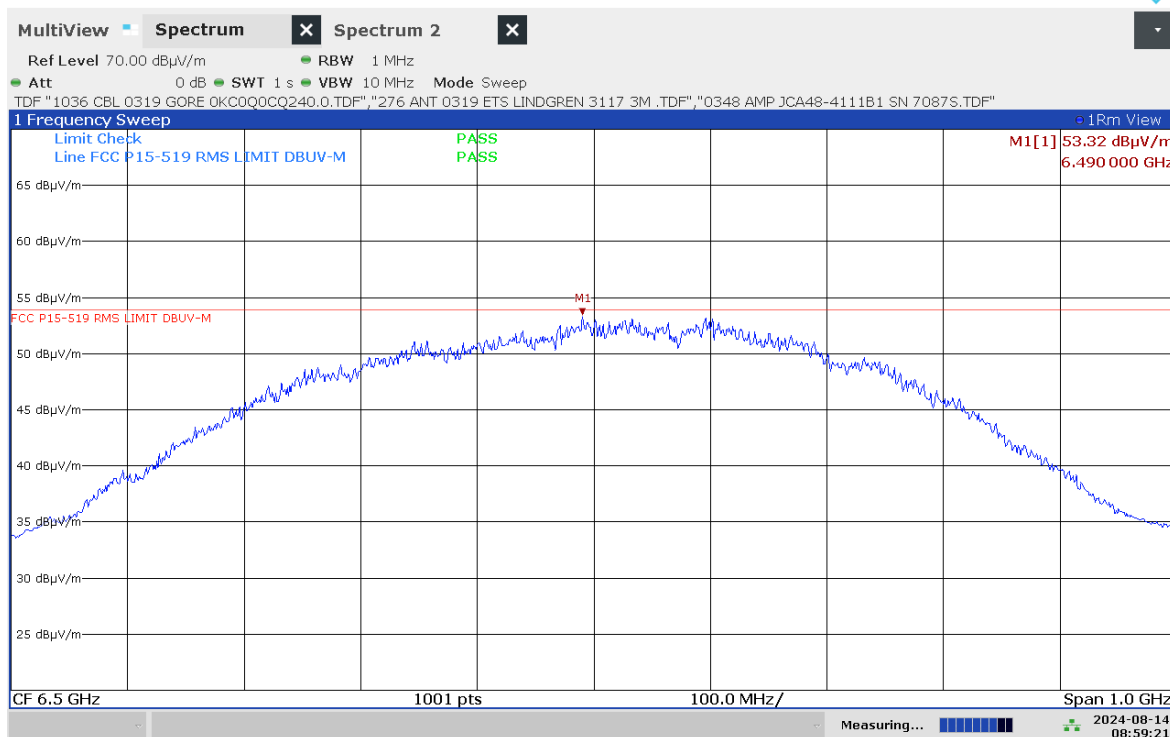
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBm)	(dBm)	(dB)	H/V	cm	Deg	
6.490	-41.88	-41.30	-0.58	H	175	75	Compliant

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08:59:21 AM 08/14/2024

6. Measurement Data (continued)

6.7. Spurious Radiated Emissions (15.519 (c), 15.521(d), RSS-220 5.3.1 (d))

6.7.4. Plot of RMS Power at 3 Meters – Channel 5, 64M PRF, Z-Axis

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.490	53.59	53.90	-0.31	H	175	75	Compliant

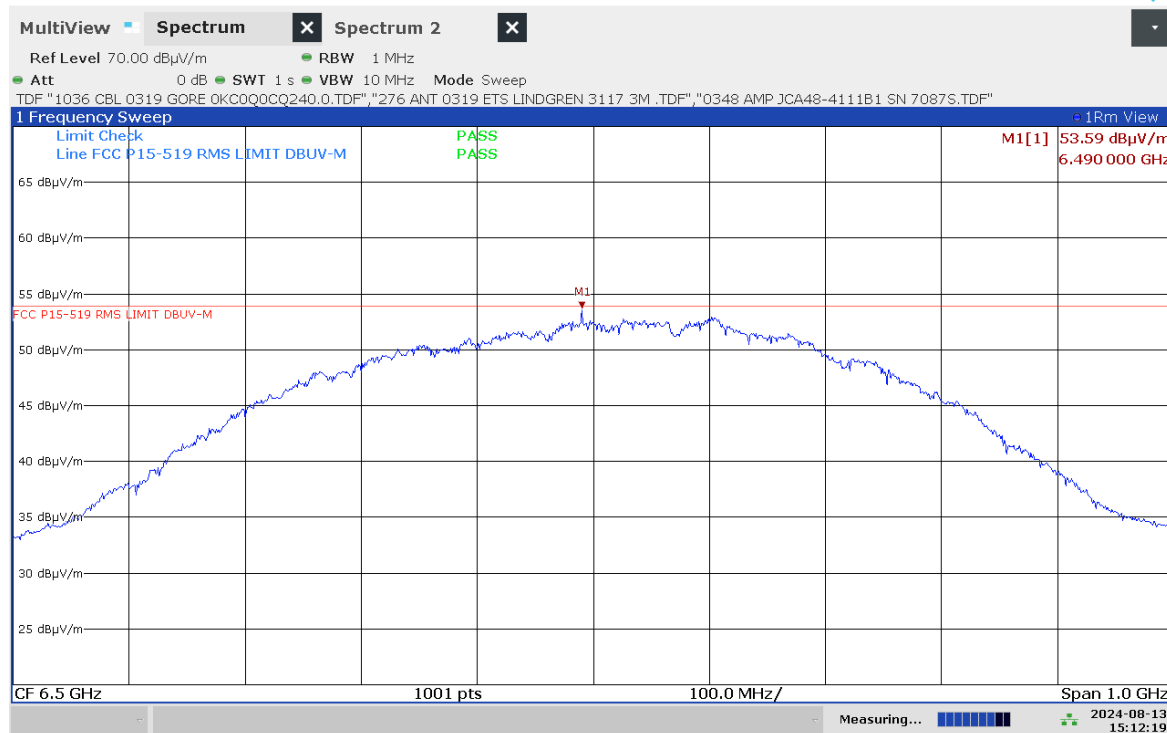
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBm)	(dBm)	(dB)	H/V	cm	Deg	
6.490	-41.61	-41.30	-0.31	H	175	75	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))

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 95.2. 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	95.2

ISED

Frequency (MHz)	EIRP (dBm)	EIRP at 3 Meters (dB μ V/m)
4750 – 10,600	0	95.2

Frequency Range:	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) continued)

6.8.1 Plot of Peak Power at 3 Meters – Channel 3, 16M PRF, Z-Axis

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
4.495	93.35	95.20	-1.85	H	223	97	Compliant

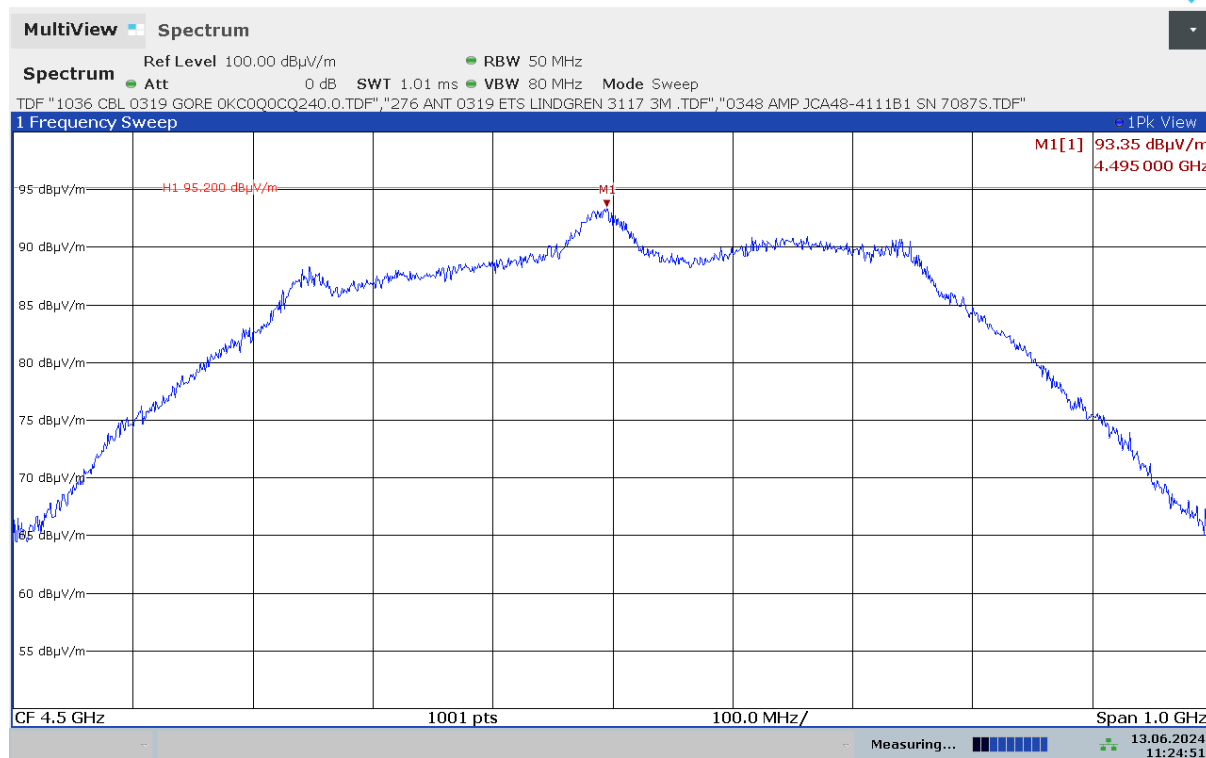
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
4.495	-1.85	0.00	-1.85	H	223	97	Compliant

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11:24:52 13.06.2024

6. Measurement Data (continued)

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

6.8.2 Plot of Peak Power at 3 Meters – Channel 3, 64M PRF, Z-Axis

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
4.496	88.63	95.20	-6.57	H	223	97	Compliant

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

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
4.496	-6.57	0.00	-6.57	H	223	97	Compliant

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17:05:43 12.06.2024

6. Measurement Data (continued)

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

6.8.3 Plot of Peak Power at 3 Meters – Channel 5, 16M PRF, Z-Axis

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.486	93.81	95.20	-1.39	H	175	75	Compliant

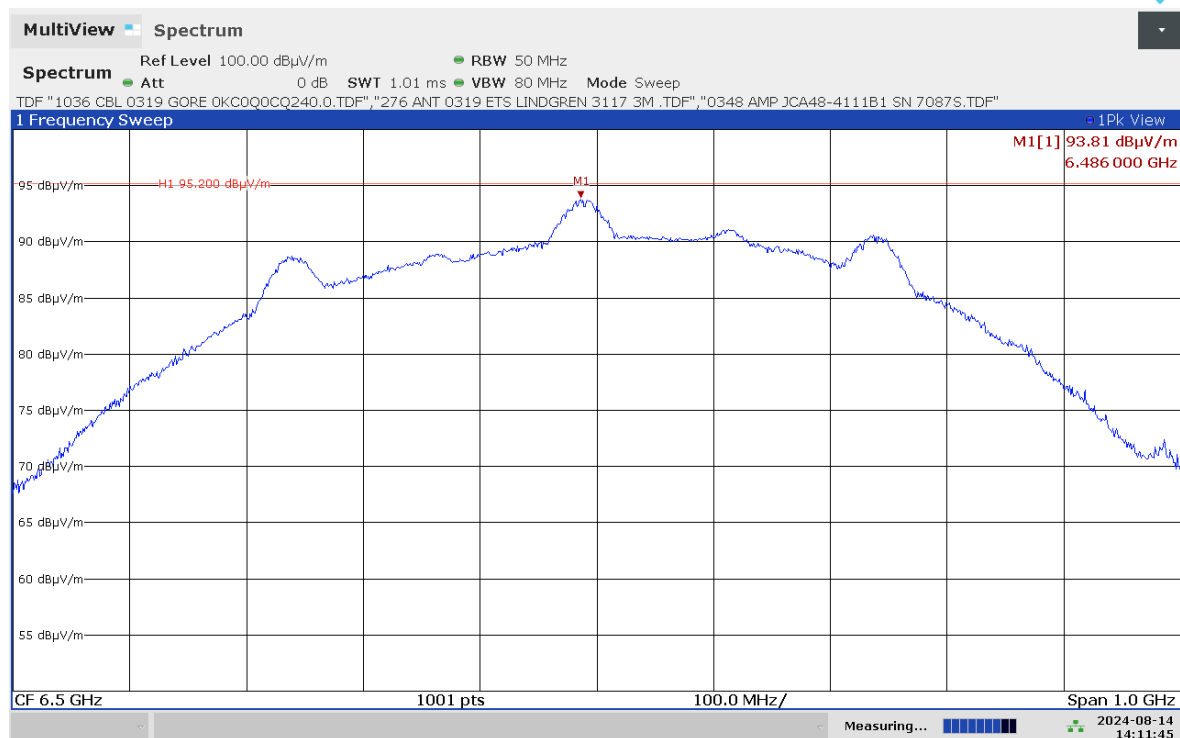
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP (dBm) = E_{meas} (dBμV/m) - 95.2$

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.486	-1.39	0.00	-1.39	H	175	75	Compliant

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6. Measurement Data (continued)

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

6.8.4 Plot of Peak Power at 3 Meters – Channel 5, 64M PRF, Z-Axis

Frequency (GHz)	Amplitude ¹	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBμV/m)	(dBμV/m)	(dB)	H/V	cm	Deg	
6.492	88.27	95.20	-6.93	H	175	75	Compliant

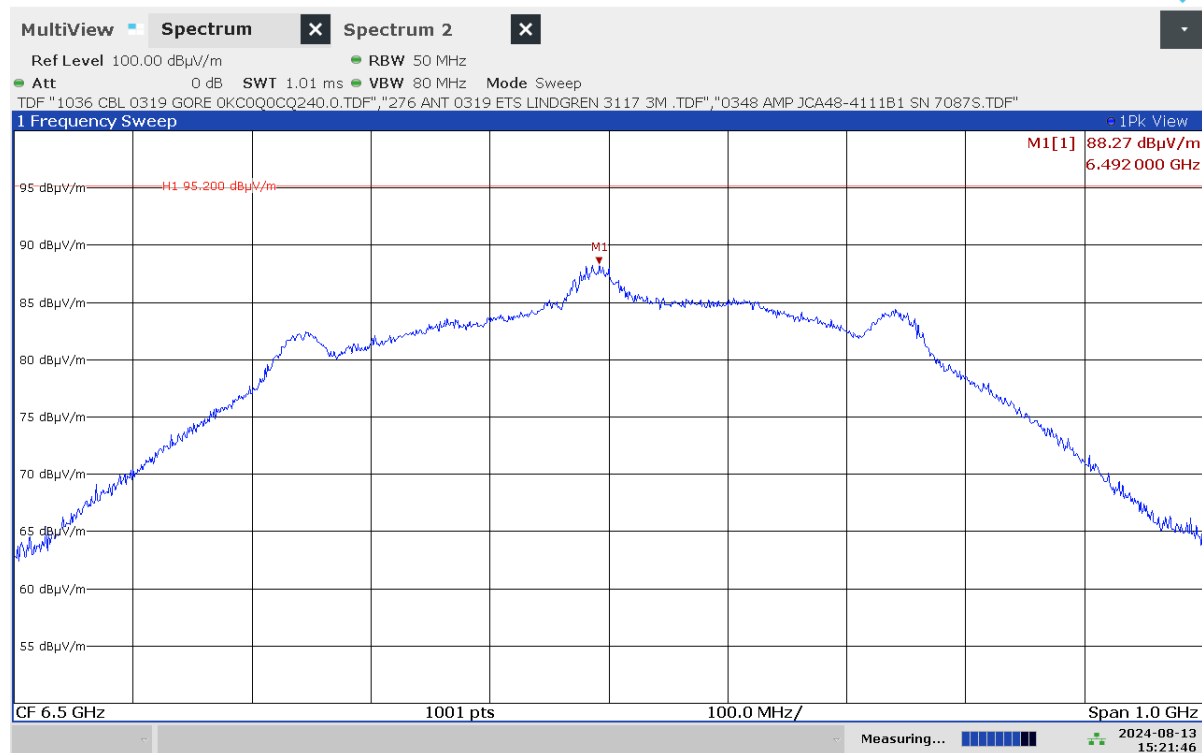
Notes: ¹ Antenna Factor (AF), Cable Factor (CF) and External Preamplifier Gain (PAG) have been entered into the analyzer as transducer factors.

Equation (22) from ANSI C63.10-2013, $EIRP = E_{meas} + 20 \log(d_{meas}) - 104.7$; $d_{meas} = 3$

$EIRP \text{ (dBm)} = E_{meas} \text{ (dBμV/m)} - 95.2$

Frequency (GHz)	Amplitude ¹ (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.492	-6.93	0.00	-6.93	H	175	75	Compliant

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6. Measurement Data (continued)

6.9 Conducted Emissions Test Setup

6.9.1. Regulatory Limit: FCC Part 15, Class B, IC RSS-GEN

Frequency Range (MHz)	Limits (dBμV)	
	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.

6.9.2 Measurement Equipment and Software Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due
EMI Receiver	Rohde & Schwarz	ESR7	101770	7/23/2026
LISN	EMCO	3825/2	11967C	3/28/2026
Manufacturer	Software Description		Title/Model #	Rev.
Compliance Worldwide	Test Report Generation Software		Test Report Generator	1.0

6.9.3. Measurement & Equipment Setup

Test Date:	1/2/2025
Test Engineer:	Sean Defelice
Site Temperature (°C):	21
Relative Humidity (%RH):	35
Frequency Range:	0.15 MHz to 30 MHz
EMI Receiver IF Bandwidth:	9 kHz
EMI Receiver Avg Bandwidth:	≥ 3 * RBW or IF(BW)
Detector Functions:	Peak, Quasi-Peak & CISPR Average

6.9.4. Test Procedure

Test measurements were made in accordance with ANSI C63.4-2014, Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz.

Sample Calculation: Final Result (dBμV) = Measurement Value (dBμV) + LISN Factor (dB) + Cable Loss (dB).

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

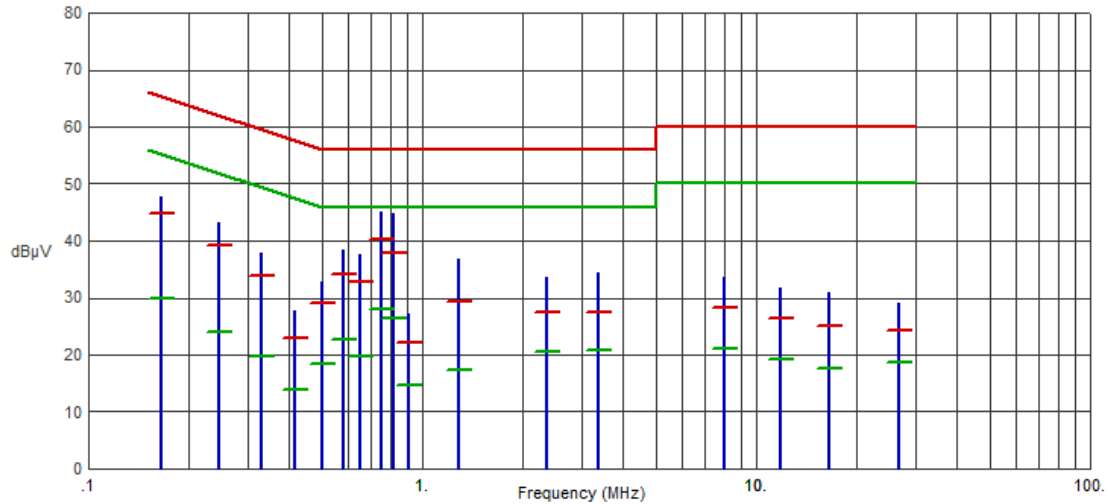
6. Measurement Data (continued)

6.10 Conducted Emissions Test Results

6.10.1. 120 Volts, 60 Hz Phase

Test No.: 194-24, 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	47.73	44.93	65.17	-20.24	29.93	55.17	-25.24	
.2468	43.13	39.07	61.86	-22.79	24.04	51.86	-27.82	
.3300	37.81	33.74	59.45	-25.71	19.65	49.45	-29.80	
.4133	27.81	23.06	57.58	-34.52	13.78	47.58	-33.80	
.4988	32.73	29.07	56.02	-26.95	18.31	46.02	-27.71	
.5820	38.28	34.25	56.00	-21.75	22.54	46.00	-23.46	
.6540	37.72	32.68	56.00	-23.32	19.60	46.00	-26.40	
.7530	45.17	40.38	56.00	-15.62	27.99	46.00	-18.01	
.8205	44.77	37.90	56.00	-18.10	26.53	46.00	-19.47	
.9128	27.22	22.17	56.00	-33.83	14.73	46.00	-31.27	
1.2818	36.73	29.23	56.00	-26.77	17.43	46.00	-28.57	
2.3573	33.59	27.44	56.00	-28.56	20.61	46.00	-25.39	
3.3653	34.35	27.40	56.00	-28.60	20.72	46.00	-25.28	
8.0520	33.63	28.33	60.00	-31.67	21.16	50.00	-28.84	
11.7713	31.81	26.40	60.00	-33.60	19.23	50.00	-30.77	
16.5278	31.02	24.98	60.00	-35.02	17.69	50.00	-32.31	
26.6415	29.06	24.26	60.00	-35.74	18.56	50.00	-31.44	

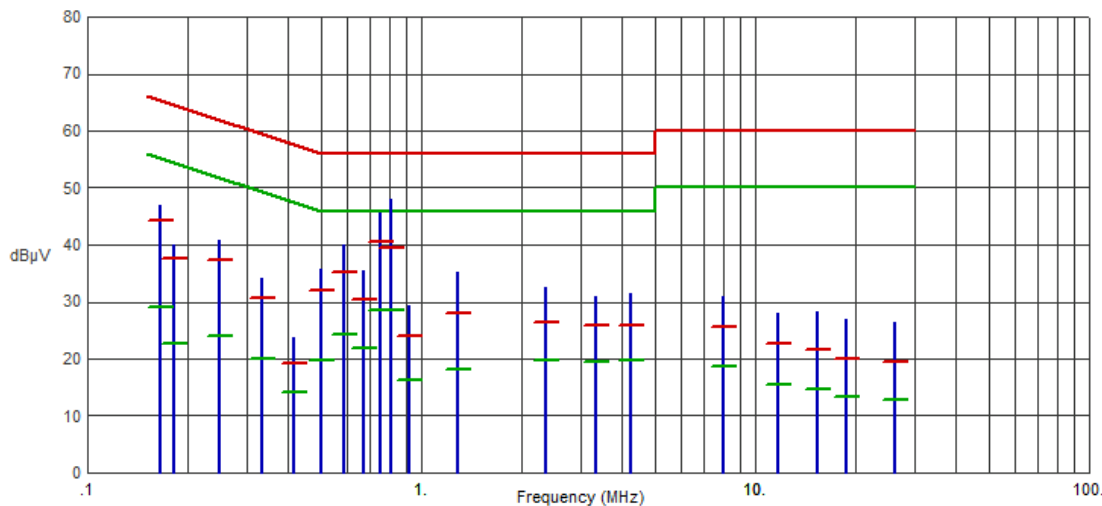
6. Measurement Data (continued)

6.10 Conducted Emissions Test Results (continued)

6.10.2. 120 Volts, 60 Hz Neutral

Test No.: 194-24, 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	47.03	44.22	65.17	-20.95	29.04	55.17	-26.13	
.1815	40.01	37.57	64.42	-26.85	22.72	54.42	-31.70	
.2490	40.72	37.41	61.79	-24.38	24.11	51.79	-27.68	
.3323	34.06	30.68	59.39	-28.71	20.09	49.39	-29.30	
.4133	23.79	19.27	57.58	-38.31	14.24	47.58	-33.34	
.5010	35.83	32.10	56.00	-23.90	19.73	46.00	-26.27	
.5843	40.03	35.29	56.00	-20.71	24.17	46.00	-21.83	
.6698	35.52	30.32	56.00	-25.68	21.90	46.00	-24.10	
.7575	45.55	40.63	56.00	-15.37	28.60	46.00	-17.40	
.8070	47.95	39.48	56.00	-16.52	28.46	46.00	-17.54	
.9195	29.21	24.00	56.00	-32.00	16.36	46.00	-29.64	
1.2908	35.27	27.97	56.00	-28.03	18.04	46.00	-27.96	
2.3685	32.49	26.48	56.00	-29.52	19.61	46.00	-26.39	
3.3450	30.82	25.85	56.00	-30.15	19.42	46.00	-26.58	
4.2180	31.51	25.94	56.00	-30.06	19.83	46.00	-26.17	
7.9868	30.90	25.73	60.00	-34.27	18.60	50.00	-31.40	
11.6858	28.06	22.68	60.00	-37.32	15.55	50.00	-34.45	
15.3713	28.22	21.49	60.00	-38.51	14.56	50.00	-35.44	
18.7553	26.87	20.03	60.00	-39.97	13.23	50.00	-36.77	
26.0745	26.35	19.50	60.00	-40.50	12.84	50.00	-37.16	

6. Measurement Data (continued)

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

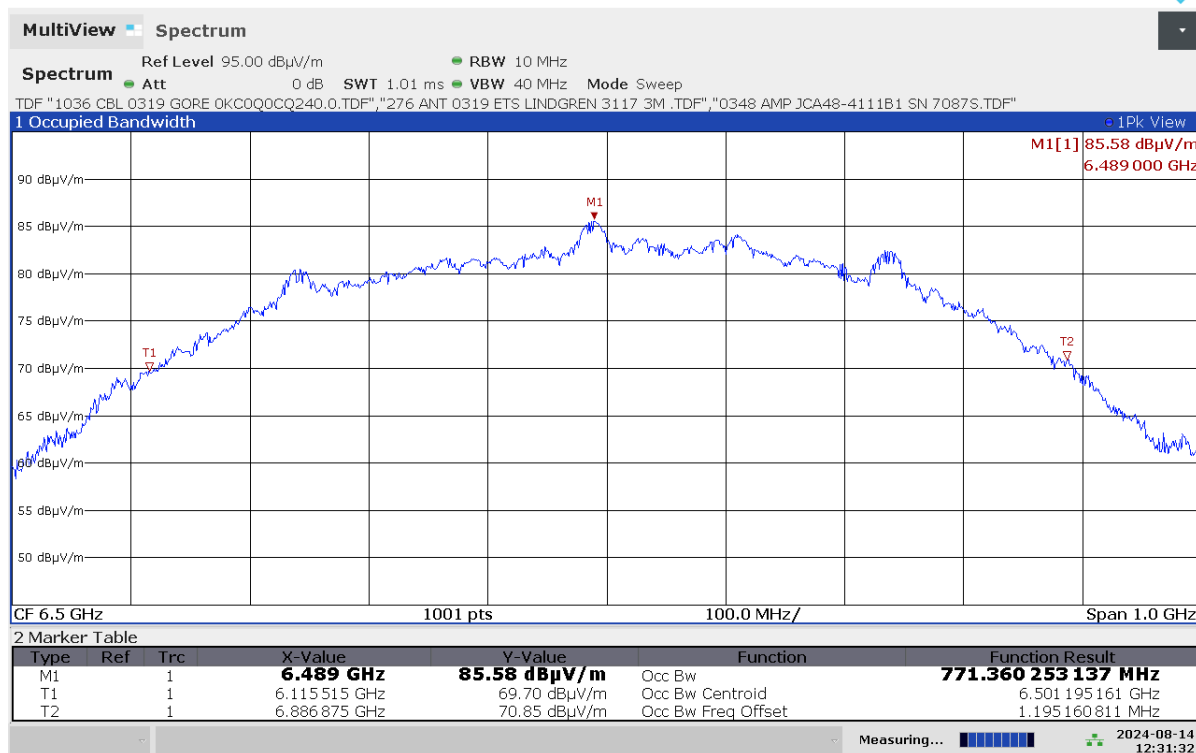
Requirement: The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs RSS-Gen, Section 6.7.

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 5, 16M PRF

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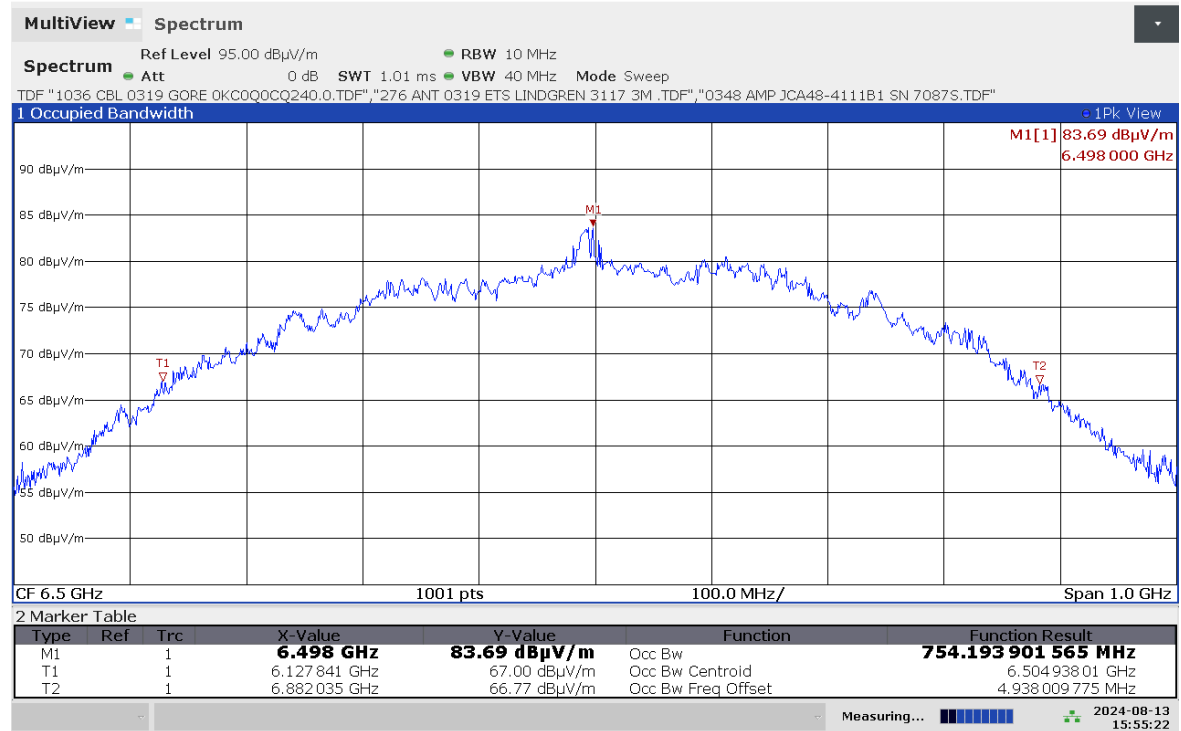
12:31:32 PM 08/14/2024

6. Measurement Data (continued)

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

6.11.2 Plot of 99% Emission Bandwidth, Channel 5, 64M PRF

194-24 STATSports ApexNXT UWB CH5



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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 MHz to 1 GHz Front



8. Test Images

8.2. Spurious and Harmonic Emissions – 30 MHz to 1 GHz Rear



8. Test Images

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



8. Test Images

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



8. Test Images

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



8. Test Images (continued)

8.7. Conducted Emissions, Front View



8. Test Images (continued)

8.8. Conducted Emissions, Rear View

