6. Measurement Data (continued)

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

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

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

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

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

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

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

Measurements made from 6.4 to 18 GHz and 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.

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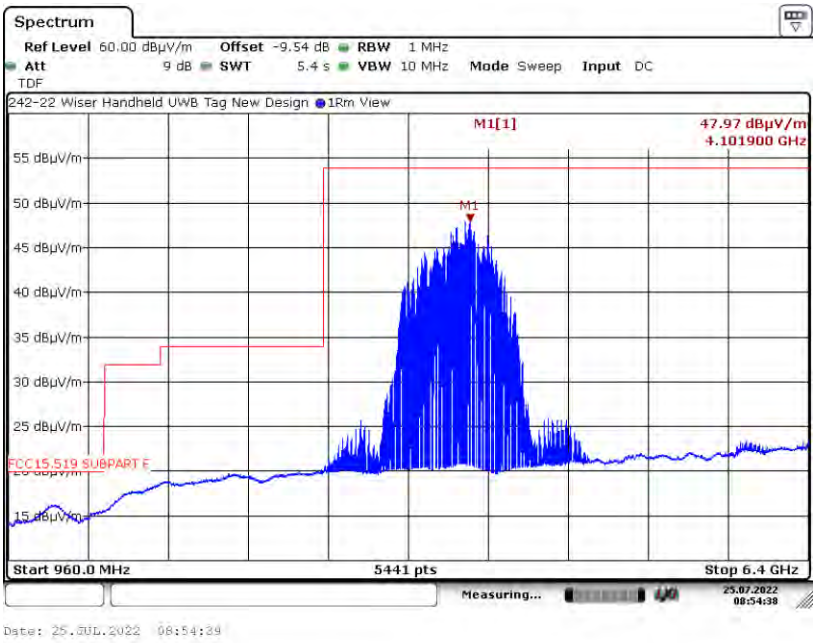
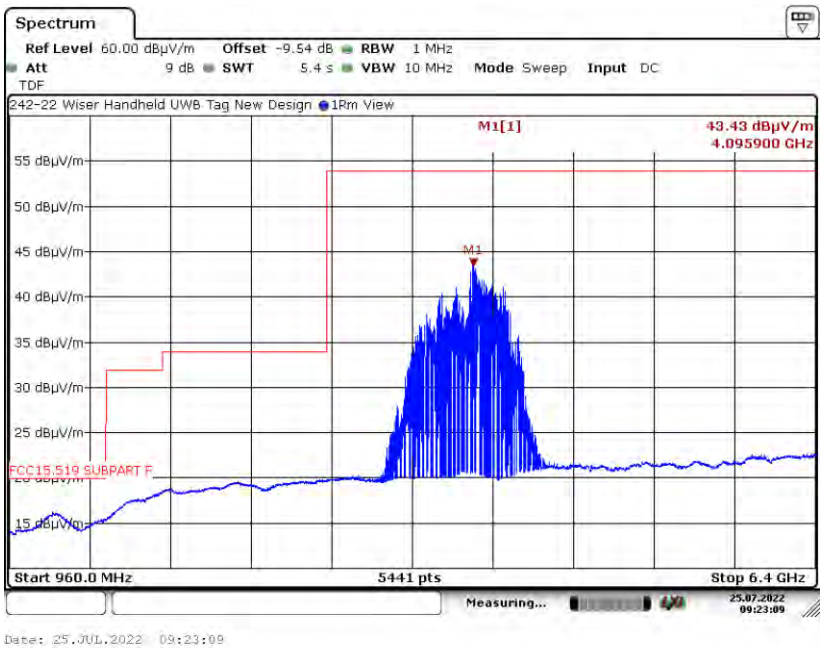
6. Measurement Data (continued)

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

6.5.1. 960 MHz to 6.4 GHz Horizontal at 1 Meter, X Axis CH2 16M



6.5.2. 960 MHz to 6.4 GHz Vertical at 1 Meter, X Axis CH2 16M



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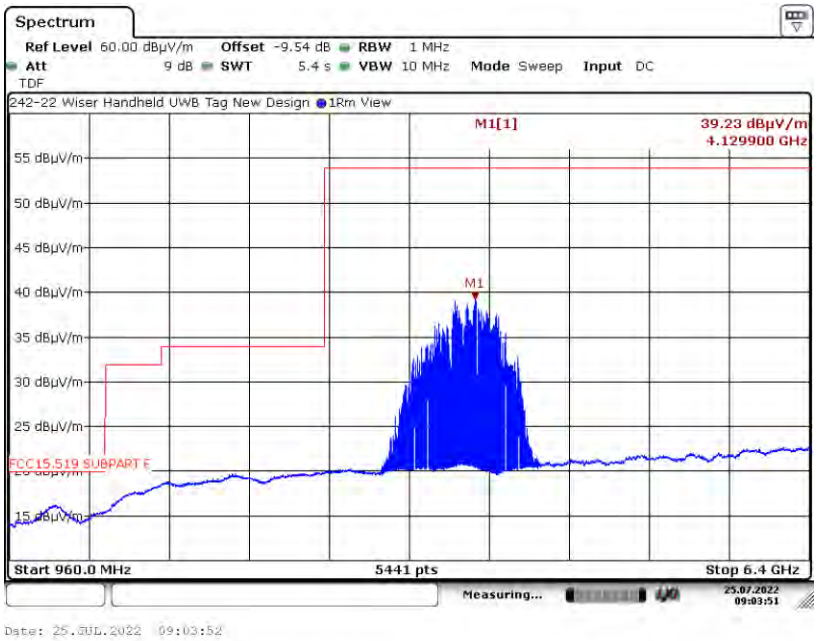
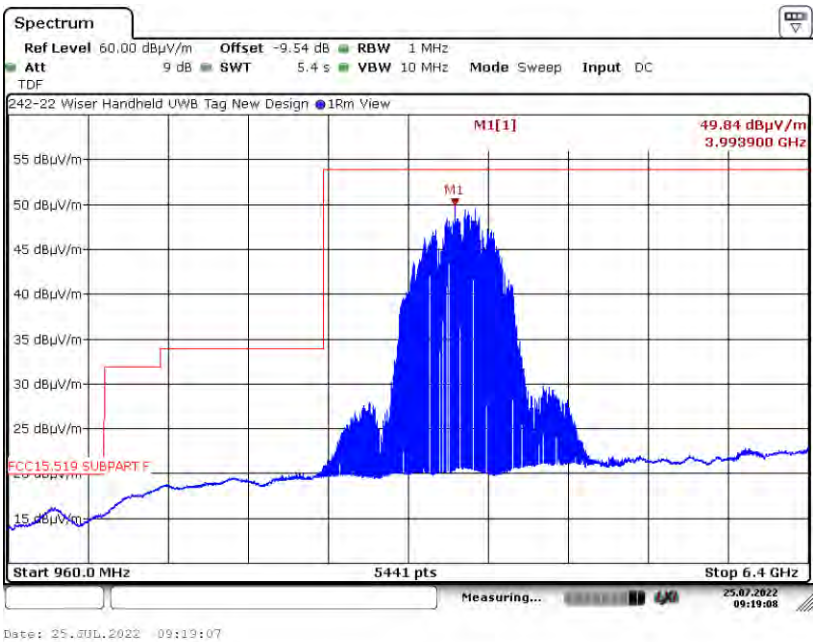
6. Measurement Data (continued)

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

6.5.3. 960 MHz to 6.4 GHz Horizontal at 1 Meter, Y Axis CH2 16M



6.5.4. 960 MHz to 6.4 GHz Vertical at 1 Meter, Y Axis CH2 16M



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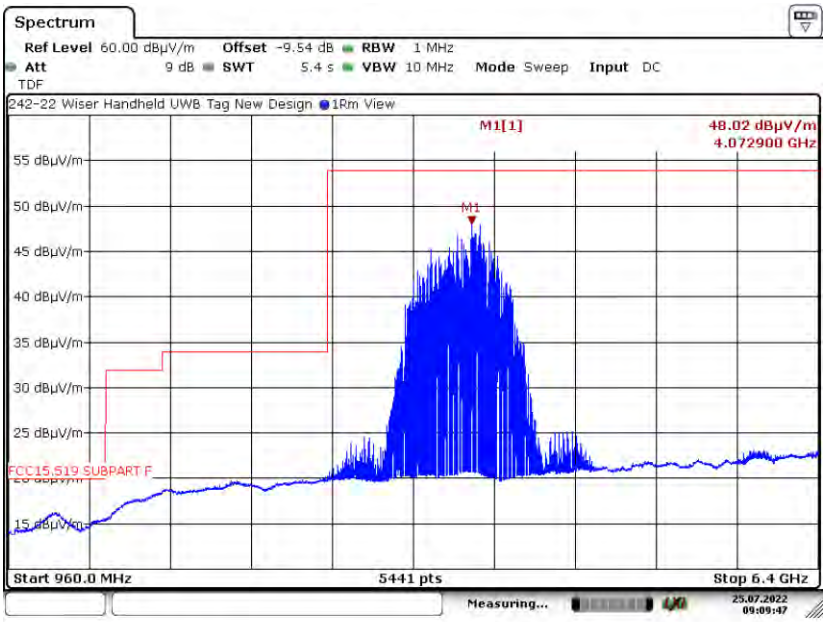
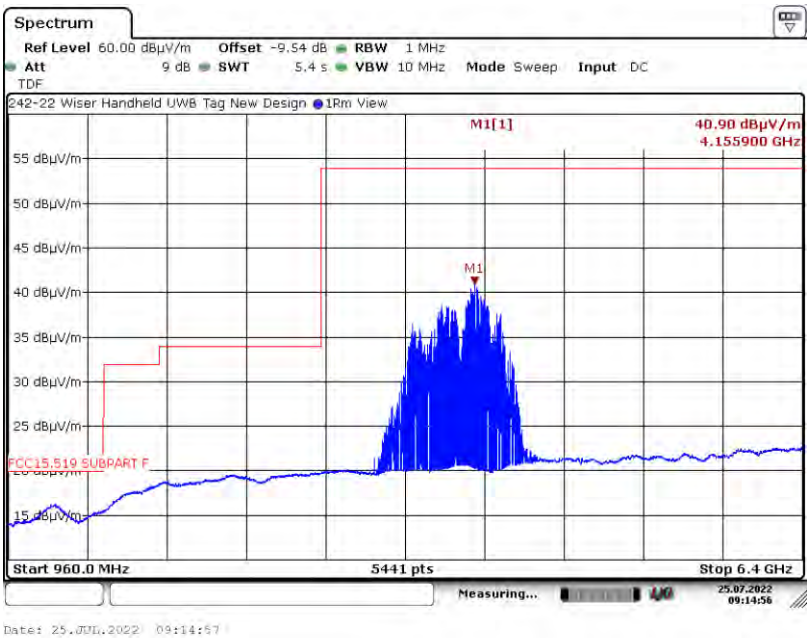
6. Measurement Data (continued)

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

6.5.5. 960 MHz to 6.4 GHz Horizontal at 1 Meter, Z Axis CH2 16M



6.5.6. 960 MHz to 6.4 GHz Vertical at 1 Meter, Z Axis CH2 16M



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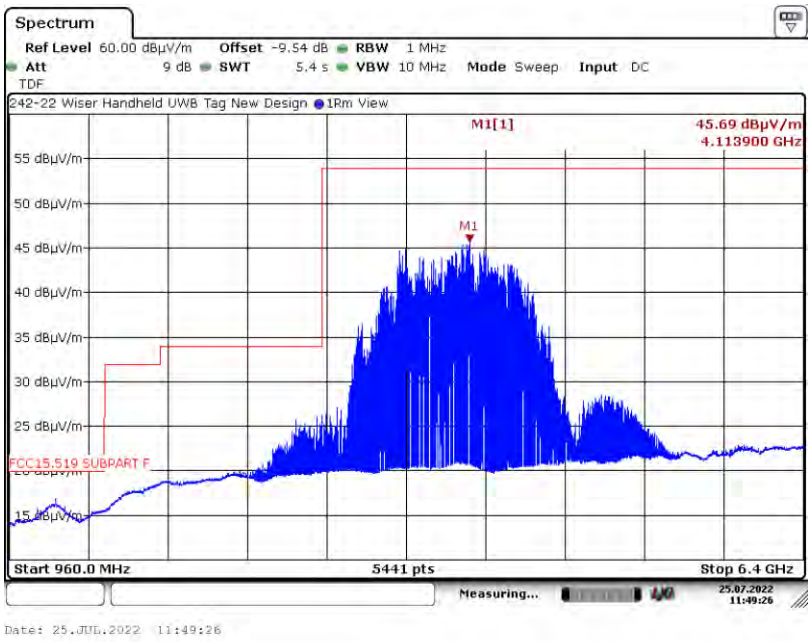
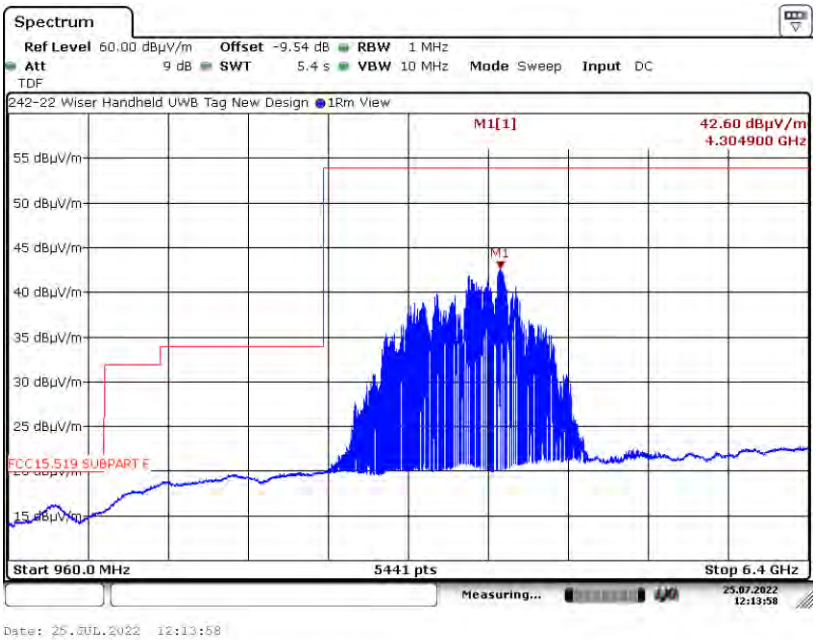
6. Measurement Data (continued)

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

6.5.7. 960 MHz to 6.4 GHz Horizontal at 1 Meter, X Axis CH4 16M



6.5.8. 960 MHz to 6.4 GHz Vertical at 1 Meter, X Axis CH4 16M



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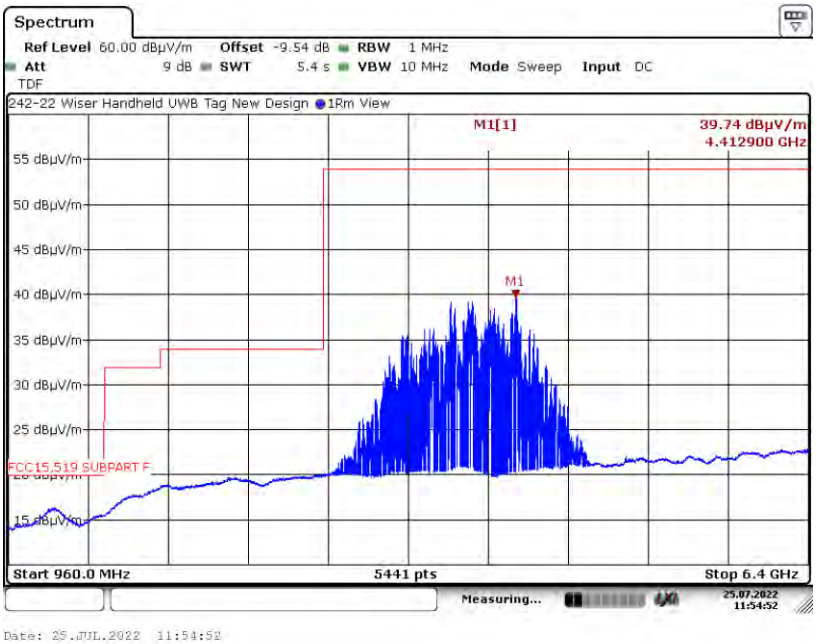
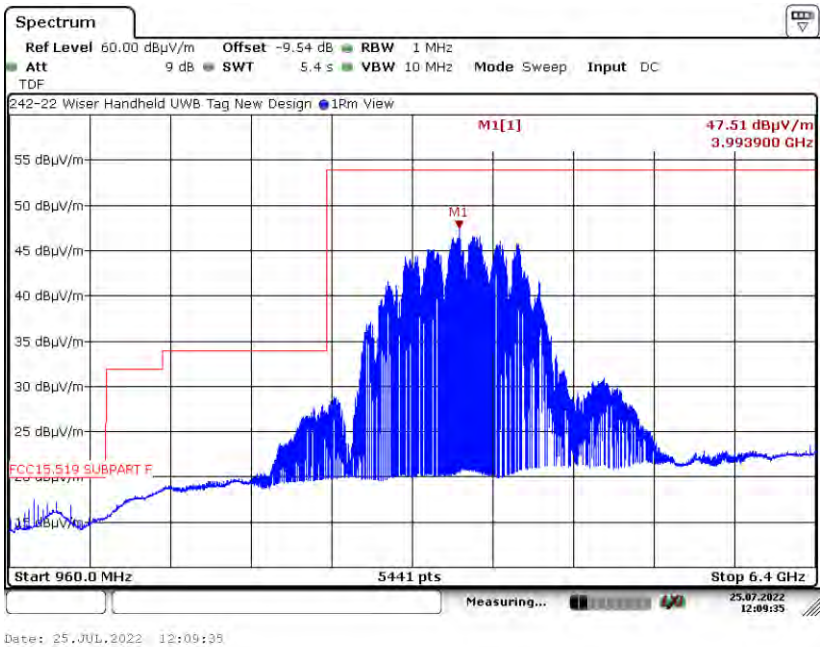
6. Measurement Data (continued)

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

6.5.9. 960 MHz to 6.4 GHz Horizontal at 1 Meter, Y Axis CH4 16M



6.5.10. 960 MHz to 6.4 GHz Vertical at 1 Meter, Y Axis CH4 16M



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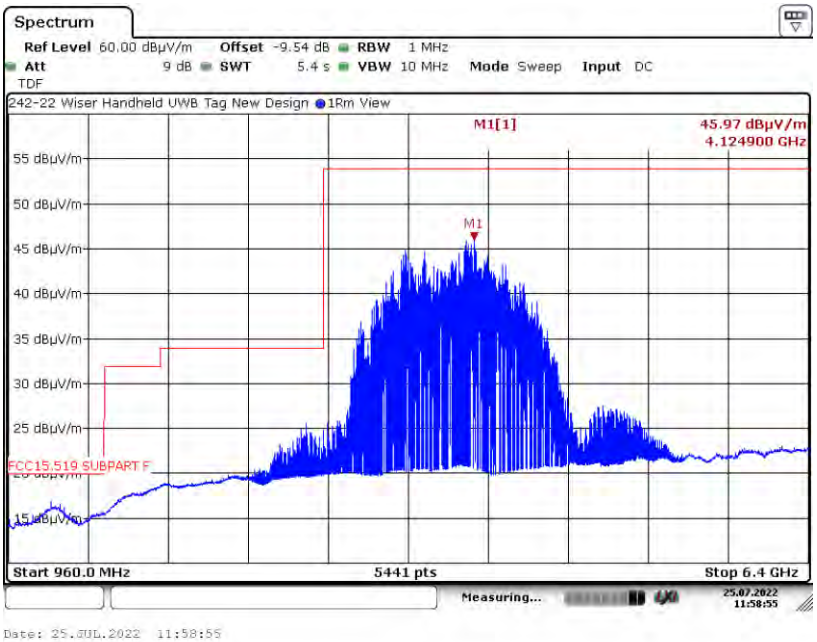
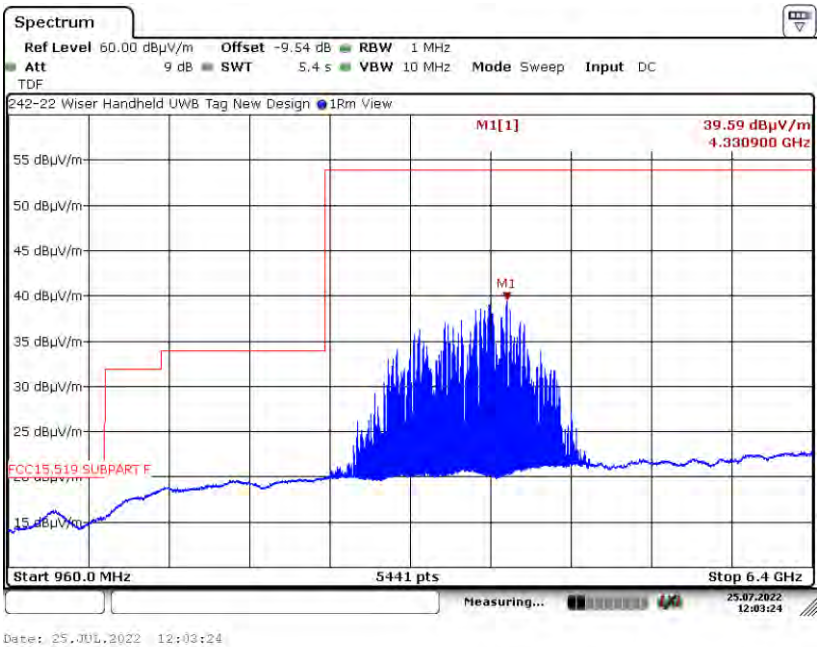
6. Measurement Data (continued)

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

6.5.11. 960 MHz to 6.4 GHz Horizontal at 1 Meter, Z Axis CH4 16M



6.5.12. 960 MHz to 6.4 GHz Vertical at 1 Meter, Z Axis CH4 16M



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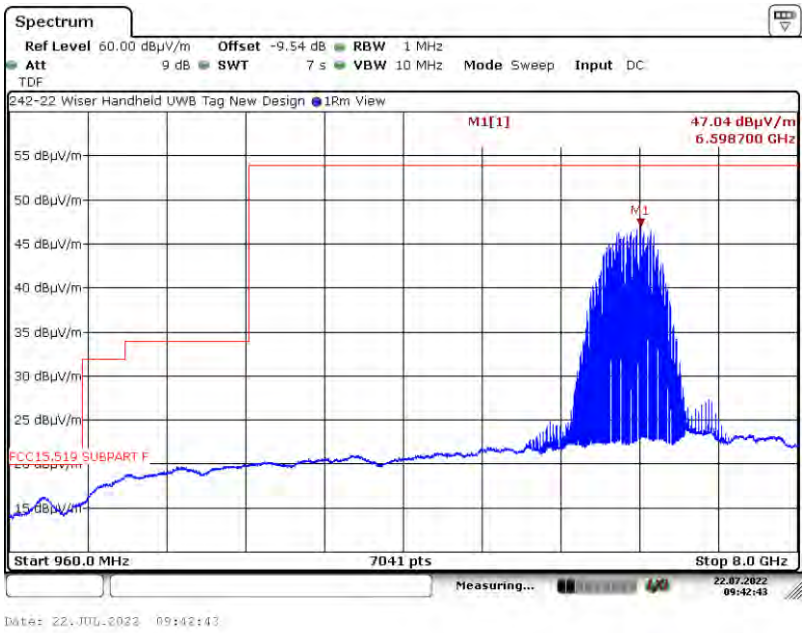
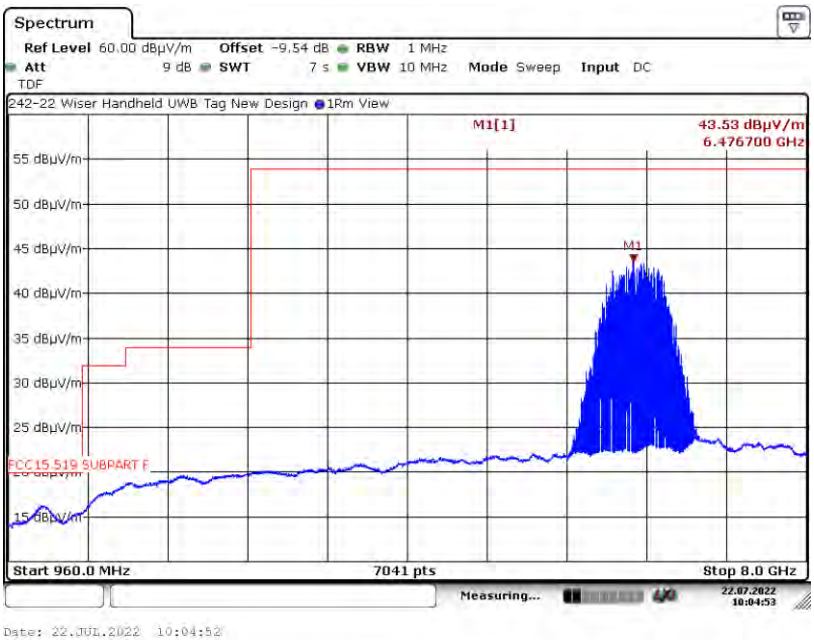
6. Measurement Data (continued)

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

6.5.13. 960 MHz to 8 GHz Horizontal at 1 Meter, X Axis CH5 16M



6.5.14. 960 MHz to 8 GHz Vertical at 1 Meter, X Axis CH5 16M



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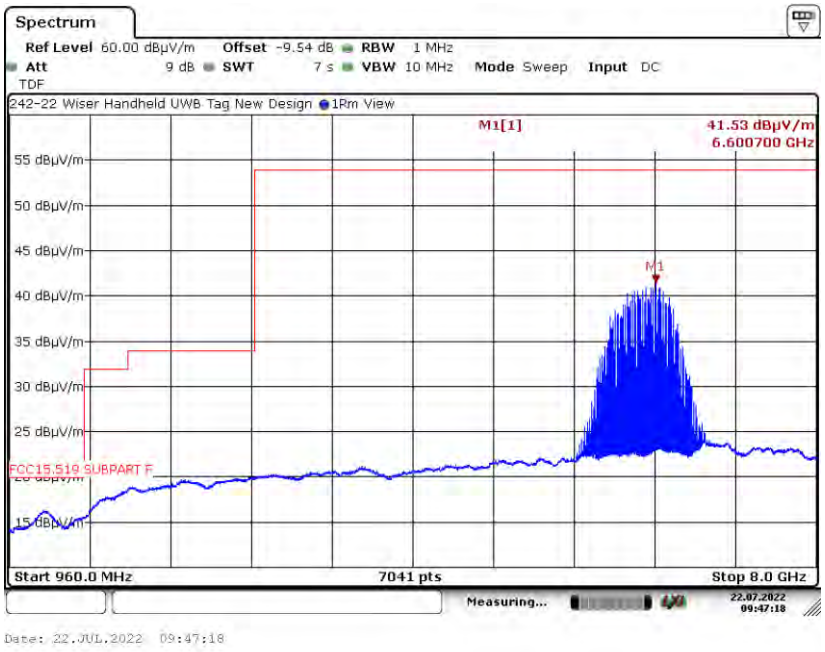
6. Measurement Data (continued)

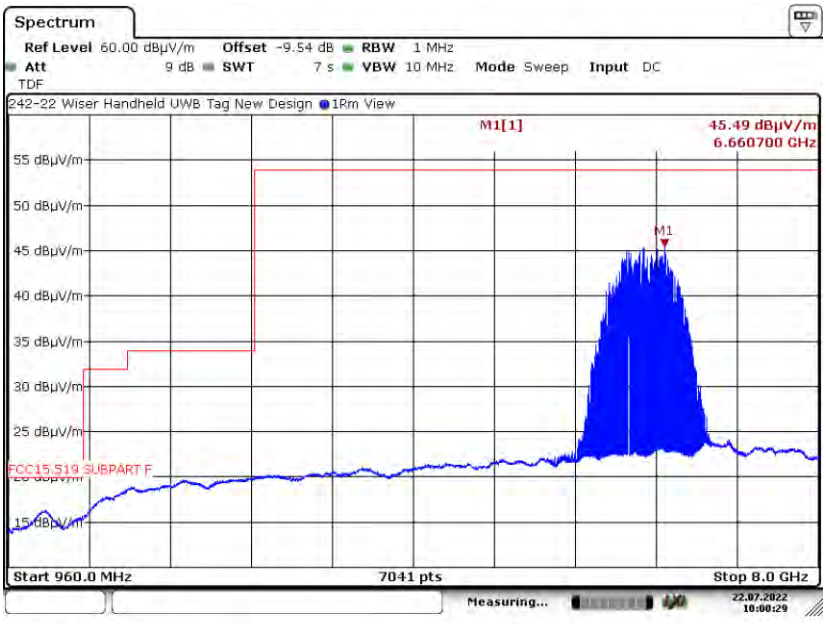
6.5. Spurious Radiated Emissions (15.519 (c) continued)

6.5.15. 960 MHz to 8 GHz Horizontal at 1 Meter, Y Axis CH5 16M



Date: 22.JUL.2022 09:47:18

6.5.16. 960 MHz to 8 GHz Vertical at 1 Meter, Y Axis CH5 16M



Date: 22.JUL.2022 10:00:29

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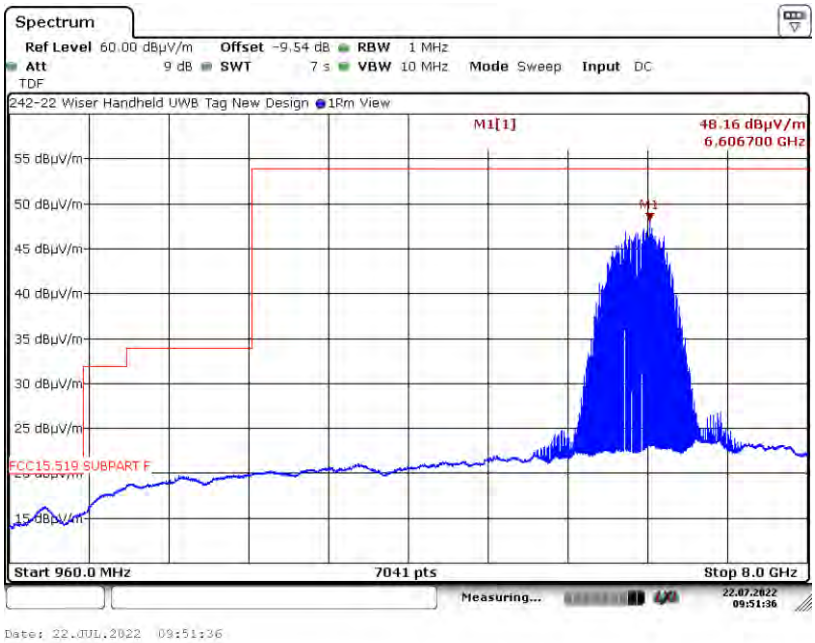
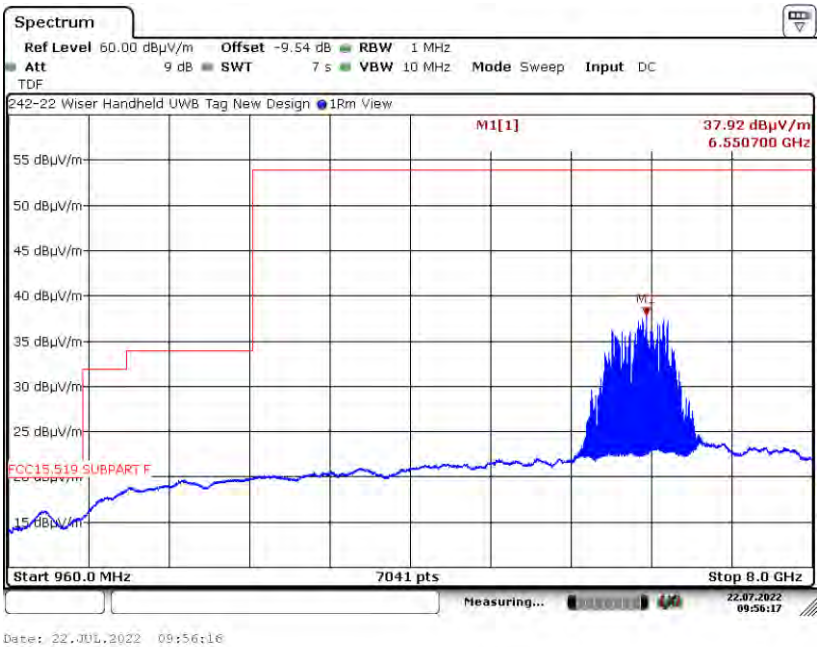
6. Measurement Data (continued)

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

6.5.17. 960 MHz to 8 GHz Horizontal at 1 Meter, Z Axis CH5 16M



6.5.18. 960 MHz to 8 GHz Vertical at 1 Meter, Z Axis CH5 16M



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6. Measurement Data (continued)

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

6.5.19. 6.4 to 18 GHz Horizontal at 1 Meter, X Axis CH2 16M

6.5.20. 6.4 to 18 GHz Vertical at 1 Meter, X Axis CH2 16M

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6. Measurement Data (continued)

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

6.5.21. 6.4 to 18 GHz Horizontal at 1 Meter, Y Axis CH2 16M

6.5.22. 6.4 to 18 GHz Vertical at 1 Meter, Y Axis CH2 16M

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6. Measurement Data (continued)

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

6.5.23. 6.4 to 18 GHz Horizontal at 1 Meter, Z Axis CH2 16M

6.5.24. 6.4 to 18 GHz Vertical at 1 Meter, Z Axis CH2 16M

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6. Measurement Data (continued)

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

6.5.25. 6.4 to 18 GHz Horizontal at 1 Meter, X Axis CH4 16M

6.5.26. 6.4 to 18 GHz Vertical at 1 Meter, X Axis CH4 16M

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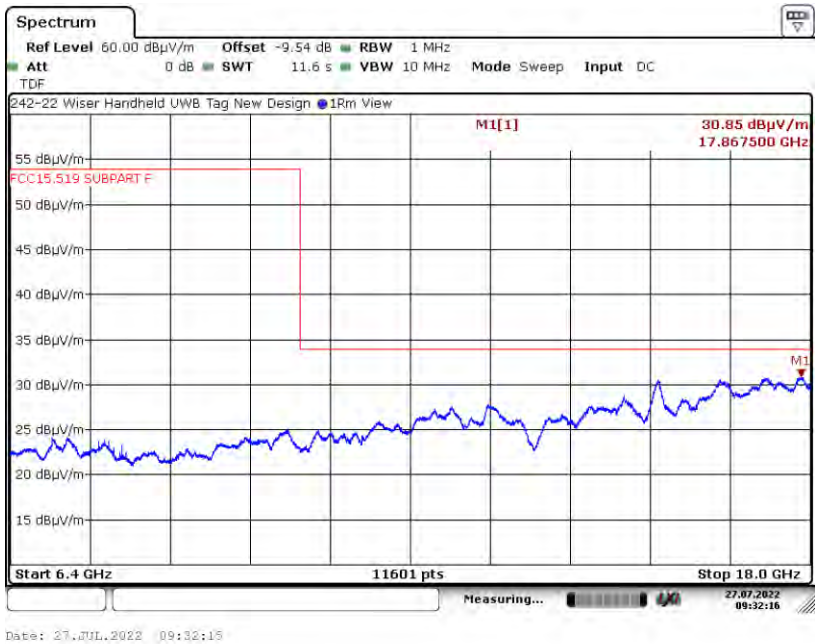
6. Measurement Data (continued)

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

6.5.27. 6.4 to 18 GHz Horizontal at 1 Meter, Y Axis CH4 16M



6.5.28. 6.4 to 18 GHz Vertical at 1 Meter, Y Axis CH4 16M

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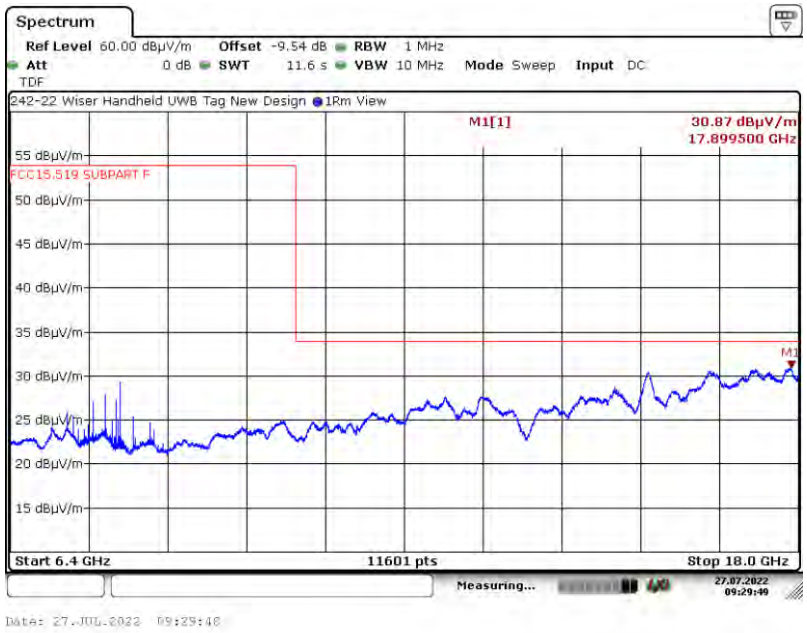
6. Measurement Data (continued)

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

6.5.29. 6.4 to 18 GHz Horizontal at 1 Meter, Z Axis CH4 16M



6.5.30. 6.4 to 18 GHz Vertical at 1 Meter, Z Axis CH4 16M

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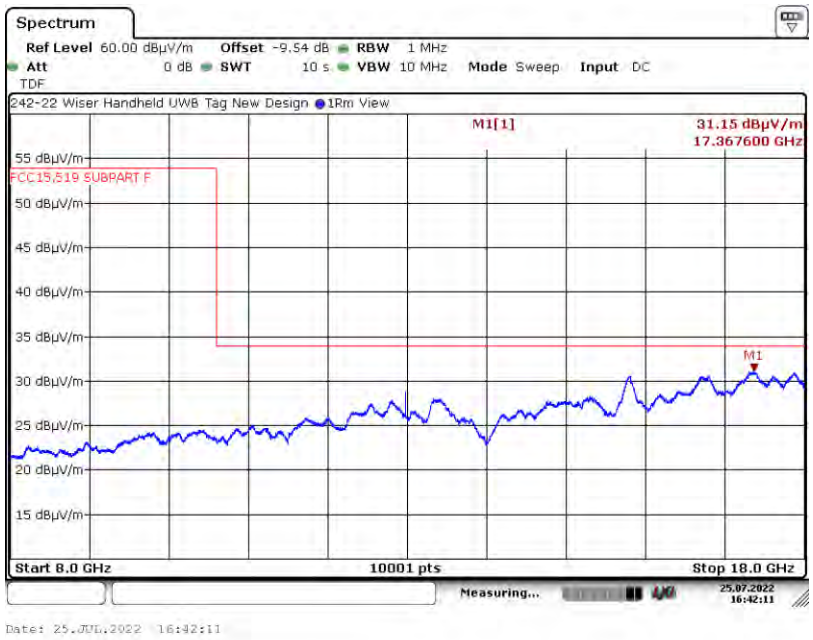
6. Measurement Data (continued)

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

6.5.31. 8 to 18 GHz Horizontal at 1 Meter, X Axis CH5 16M

6.5.32. 8 to 18 GHz Vertical at 1 Meter, X Axis CH5 16M



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6. Measurement Data (continued)

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

6.5.33. 8 to 18 GHz Horizontal at 1 Meter, Y Axis CH5 16M

6.5.34. 8 to 18 GHz Vertical at 1 Meter, Y Axis CH5 16M

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6. Measurement Data (continued)

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

6.5.35. 8 to 18 GHz Horizontal at 1 Meter, Z Axis CH5 16M

6.5.36. 8 to 18 GHz Vertical at 1 Meter, Z Axis CH5 16M

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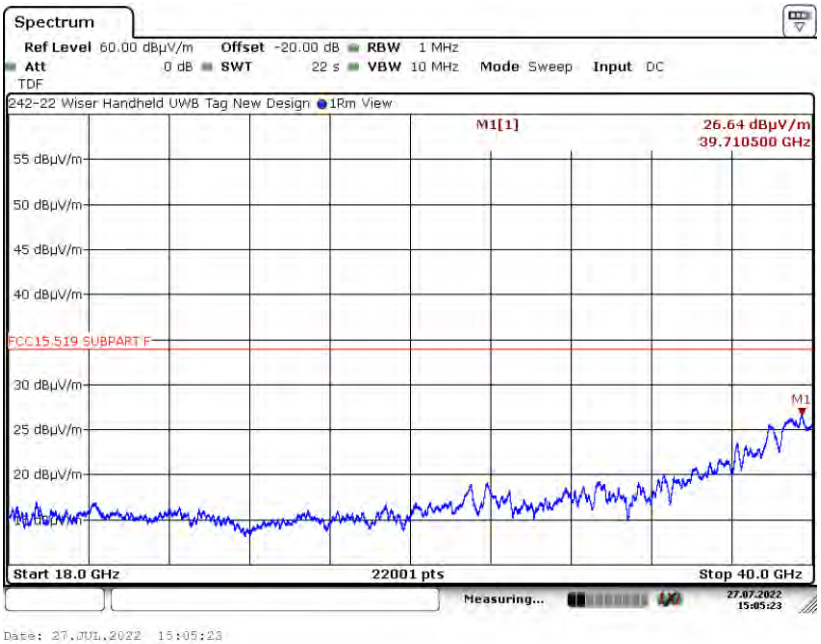
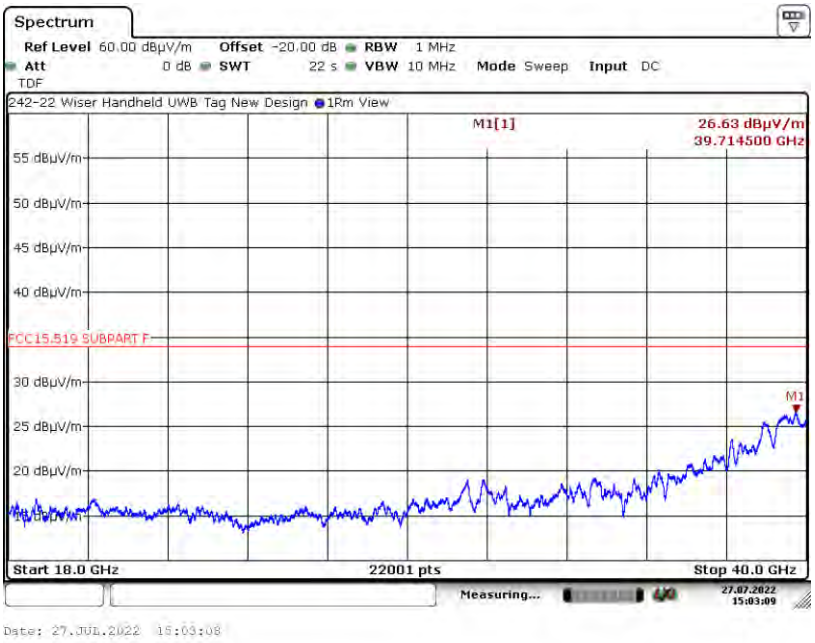
6. Measurement Data (continued)

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

6.5.37. 18 to 40 GHz Horizontal at 0.3 Meter, X Axis CH2 16M



6.5.38. 18 to 40 GHz Vertical at 0.3 Meter, X Axis CH2 16M



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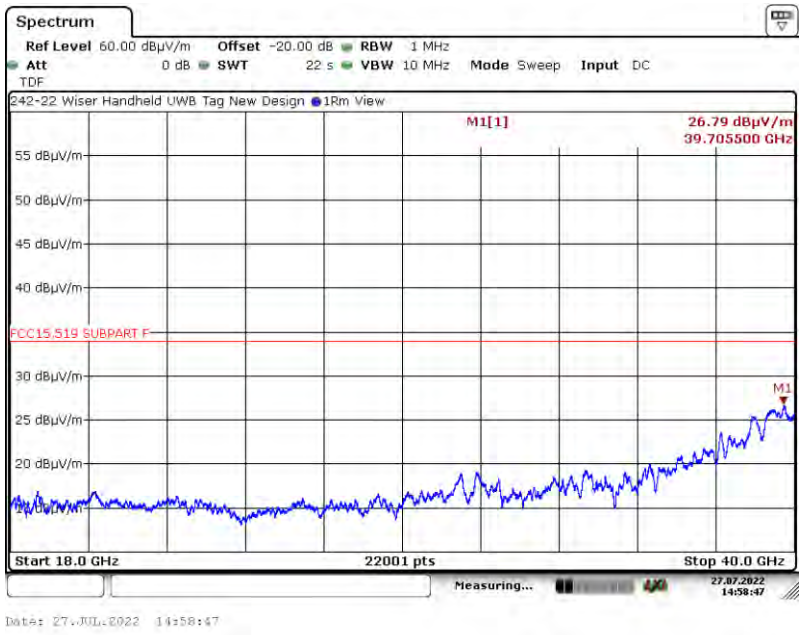
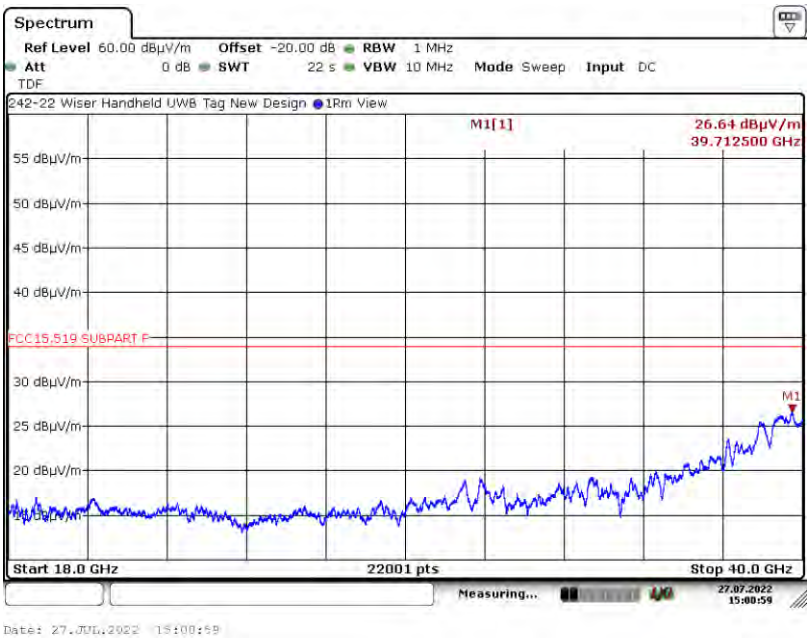
6. Measurement Data (continued)

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

6.5.39. 18 to 40 GHz Horizontal at 0.3 Meter, Y Axis CH2 16M



6.5.40. 18 to 40 GHz Vertical at 0.3 Meter, Y Axis CH2 16M



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6. Measurement Data (continued)

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

6.5.41. 18 to 40 GHz Horizontal at 0.3 Meter, Z Axis CH2 16M

6.5.42. 18 to 40 GHz Vertical at 0.3 Meter, Z Axis CH2 16M

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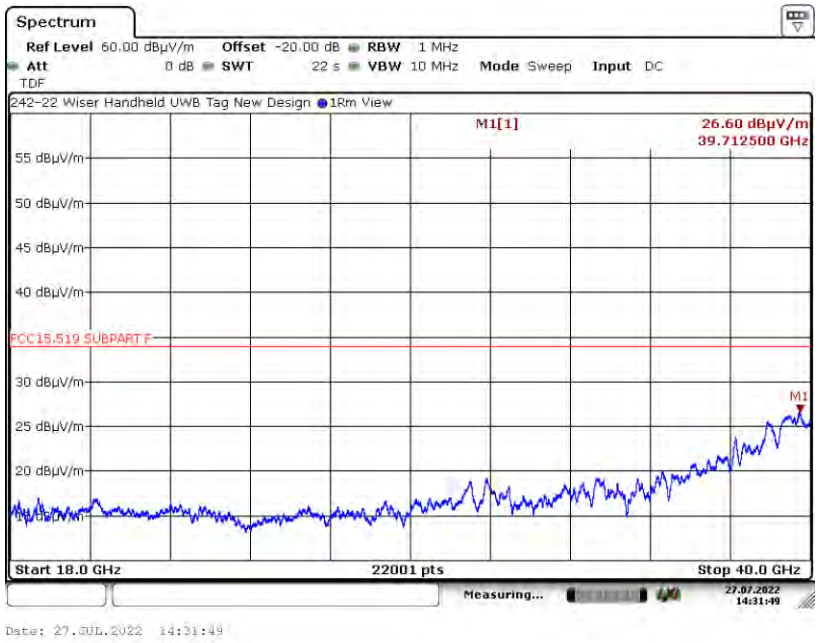
6. Measurement Data (continued)

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

6.5.43. 18 to 40 GHz Horizontal at 0.3 Meter, X Axis CH4 16M



6.5.44. 18 to 40 GHz Vertical at 0.3 Meter, X Axis CH4 16M

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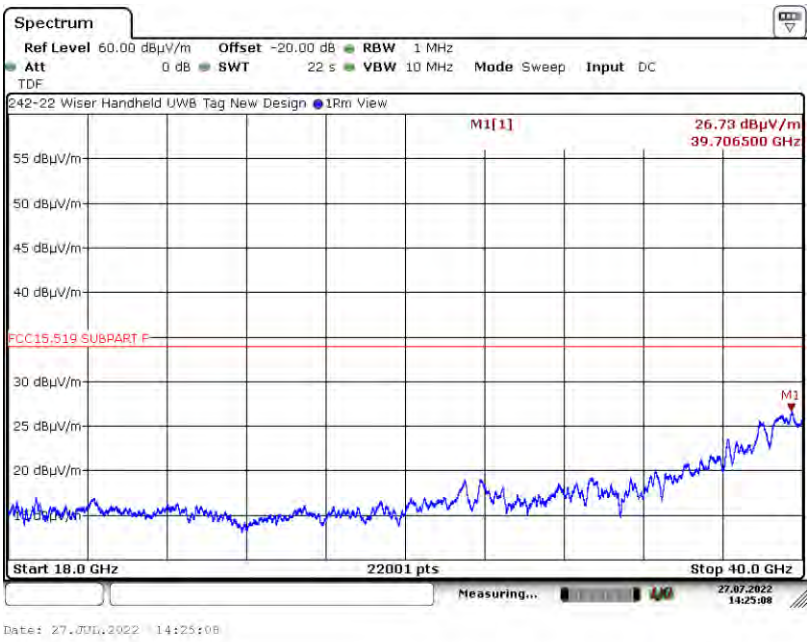
6. Measurement Data (continued)

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

6.5.45. 18 to 40 GHz Horizontal at 0.3 Meter, Y Axis CH4 16M



6.5.46. 18 to 40 GHz Vertical at 0.3 Meter, Y Axis CH4 16M

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6. Measurement Data (continued)

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

6.5.47. 18 to 40 GHz Horizontal at 0.3 Meter, Z Axis CH4 16M

6.5.48. 18 to 40 GHz Vertical at 0.3 Meter, Z Axis CH4 16M

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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 6.5.9 to 6.5.12 on the previous pages.

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.

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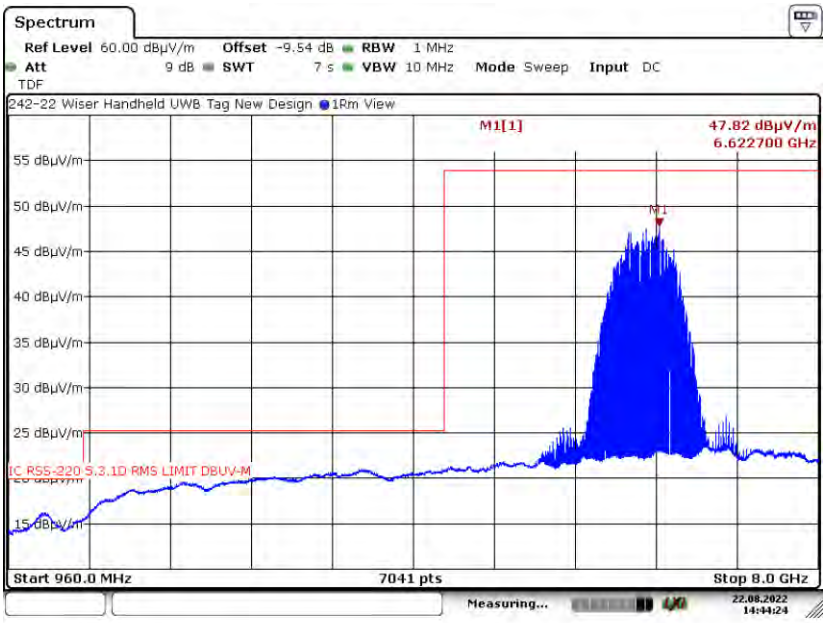
6. Measurement Data (continued)

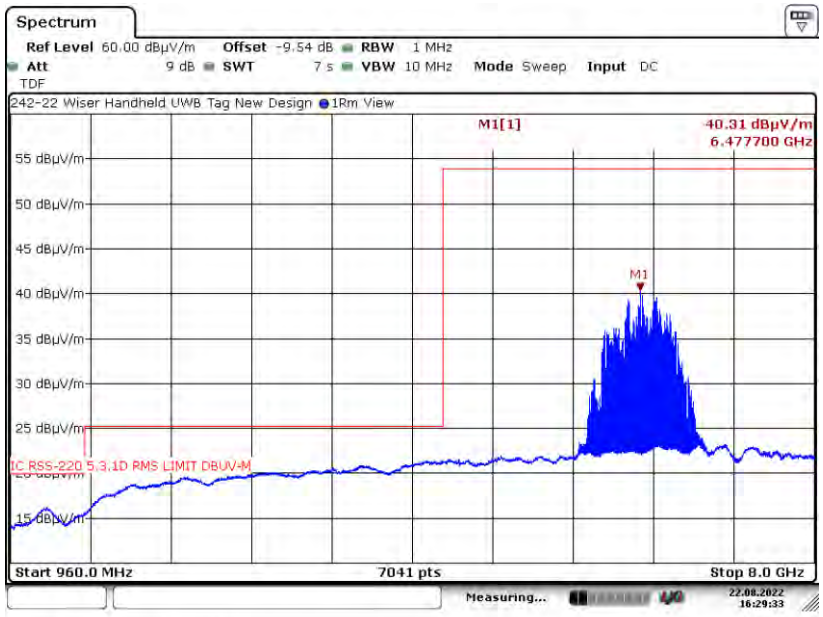
6.5. Spurious Radiated Emissions (RSS-220 5.3.1 (d)) continued)

6.5.49. 960 MHz to 8 GHz Horizontal at 1 Meter, X Axis CH5 16M



Date: 22.AUG.2022 14:44:23

6.5.50. 960 MHz to 8 GHz Vertical at 1 Meter, X Axis CH5 16M



Date: 22.AUG.2022 16:29:32

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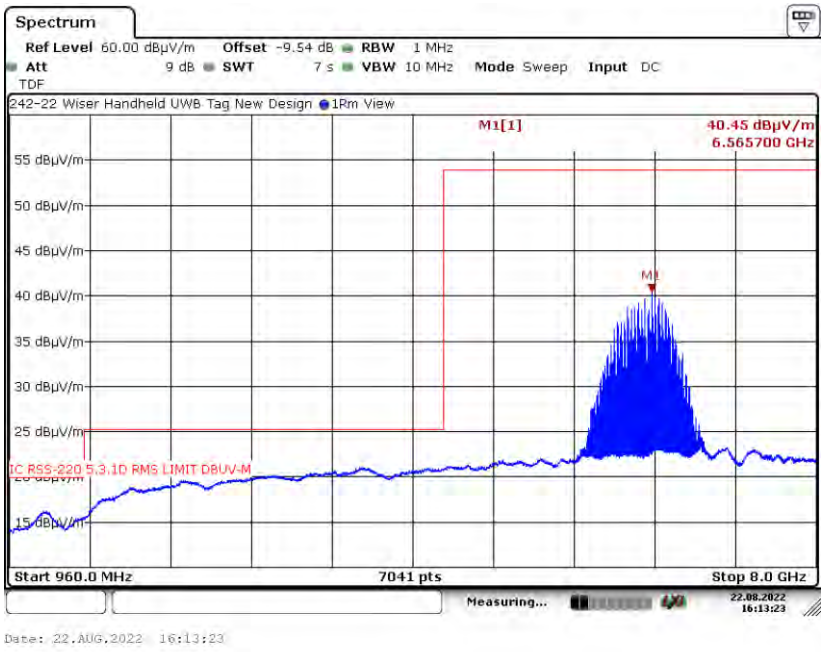
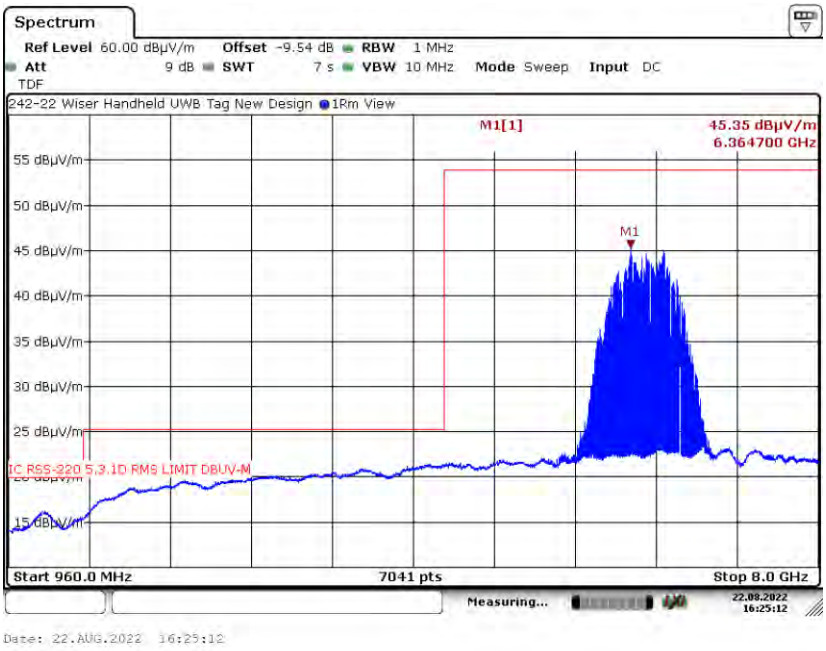
6. Measurement Data (continued)

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

6.5.51. 960 MHz to 8 GHz Horizontal at 1 Meter, Y Axis CH5 16M



6.5.52. 960 MHz to 8 GHz Vertical at 1 Meter, Y Axis CH5 16M



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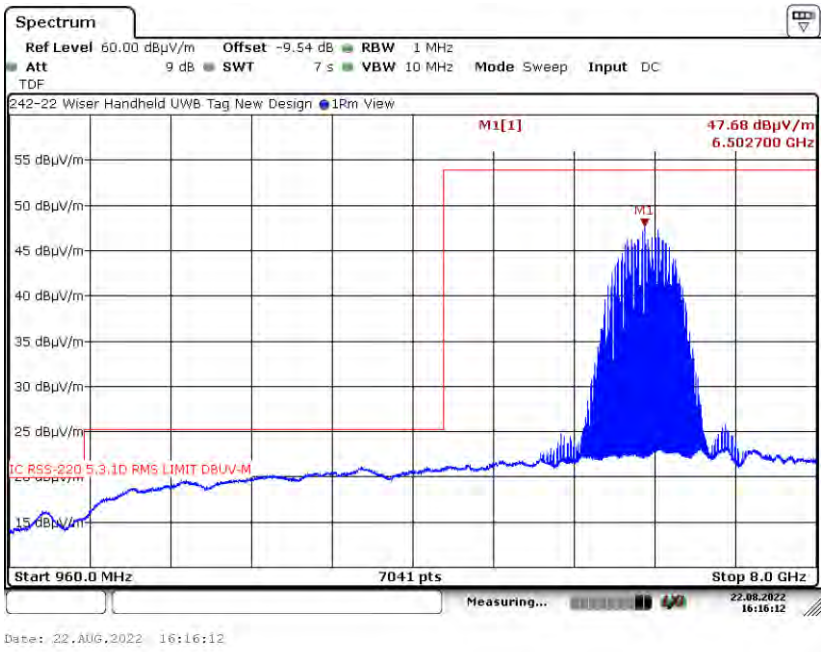
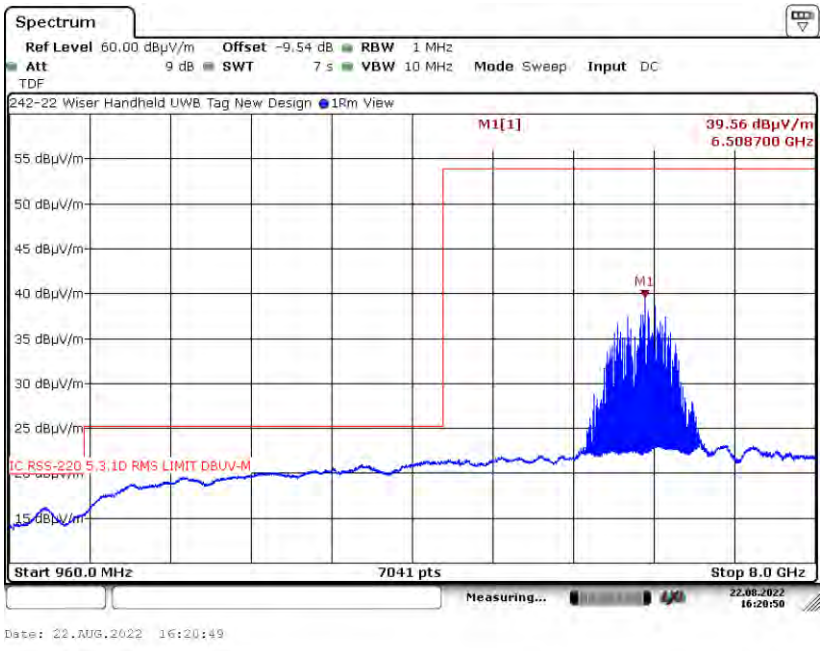
6. Measurement Data (continued)

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

6.5.53. 960 MHz to 8 GHz Horizontal at 1 Meter, Z Axis CH5 16M



6.5.54. 960 MHz to 8 GHz Vertical at 1 Meter, Z Axis CH5 16M



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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

There were no broadband emissions related to the UWB transmitter. Measured signals were narrowband and related to the microprocessor / clocks and do not fall under the requirements of this section. 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.

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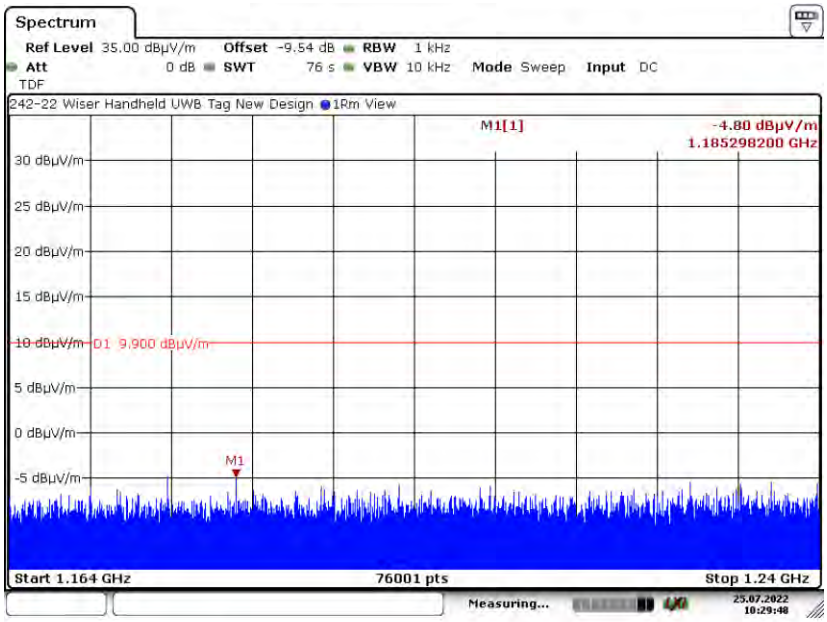
6. Measurement Data (continued)

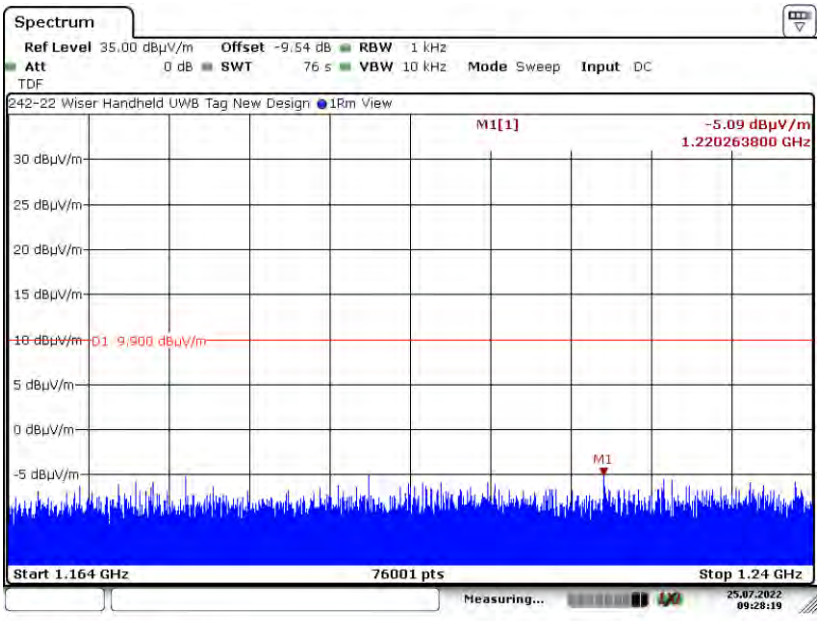
6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

6.6.3.1 Horizontal Measurement Polarity 1164 to 1240 MHz, X Axis CH2 16M



Date: 25.JUL.2022 10:29:48

6.6.3.2 Vertical Measurement Polarity 1164 to 1240 MHz, X Axis CH2 16M



Date: 25.JUL.2022 09:28:19

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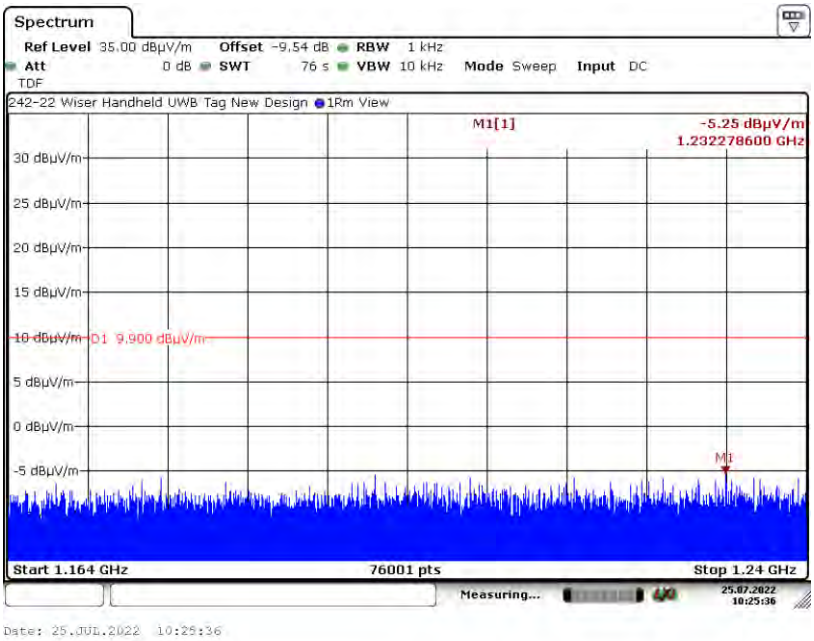
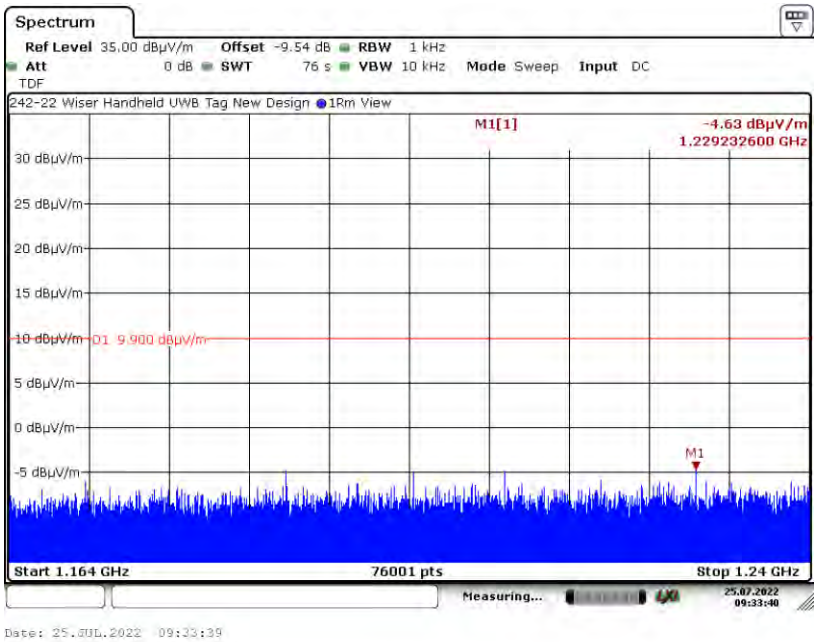
6. Measurement Data (continued)

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

6.6.3.3 Horizontal Measurement Polarity 1164 to 1240 MHz, Y Axis CH2 16M



6.6.3.4 Vertical Measurement Polarity 1164 to 1240 MHz, Y Axis CH2 16M



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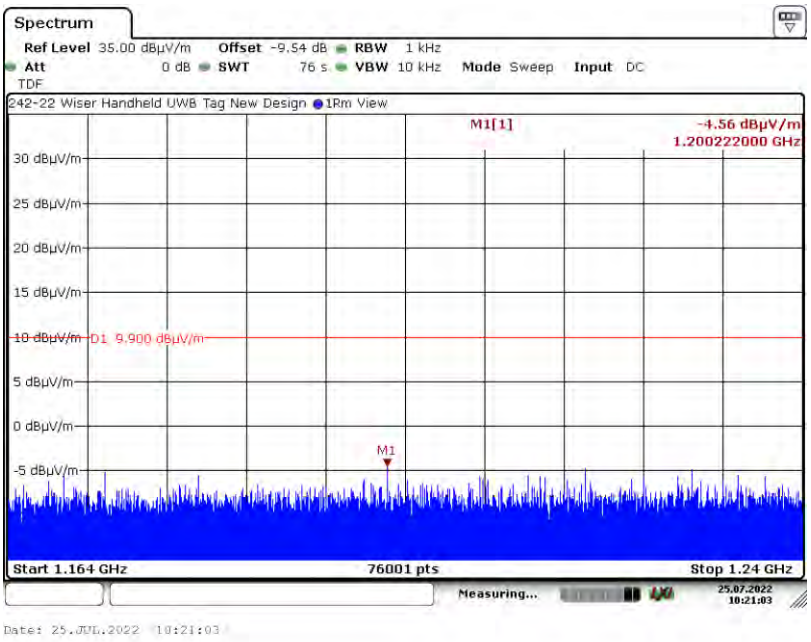
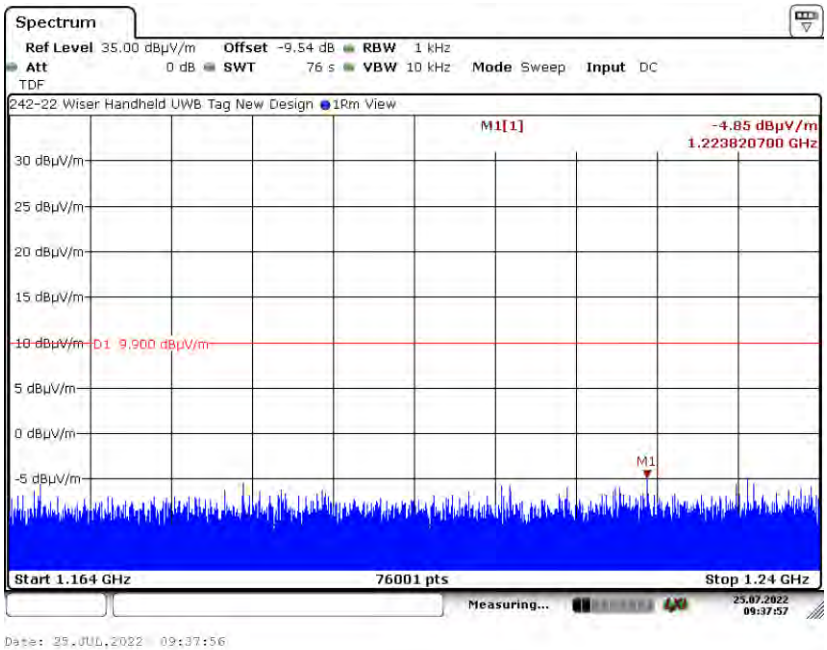
6. Measurement Data (continued)

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

6.6.3.5 Horizontal Measurement Polarity 1164 to 1240 MHz, Z Axis CH2 16M



6.6.3.6 Vertical Measurement Polarity 1164 to 1240 MHz, Z Axis CH2 16M



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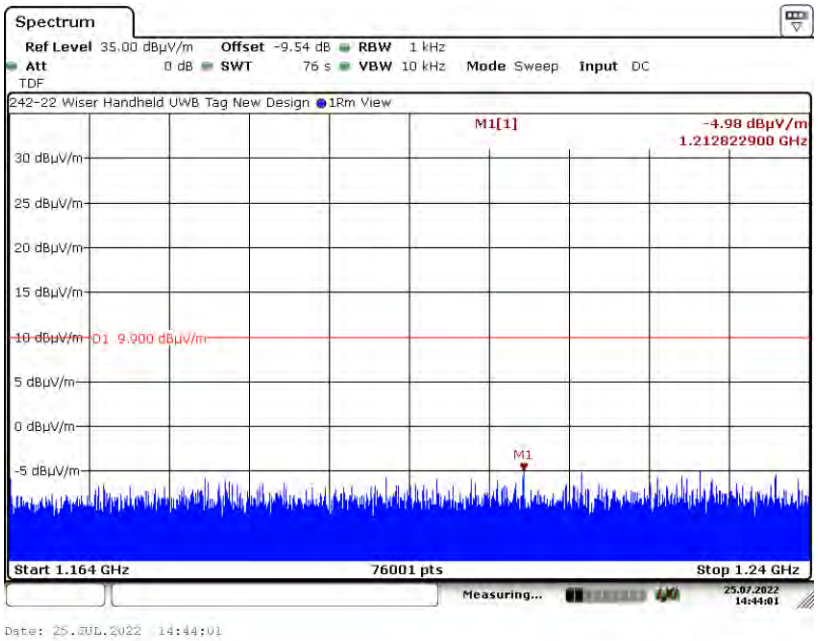
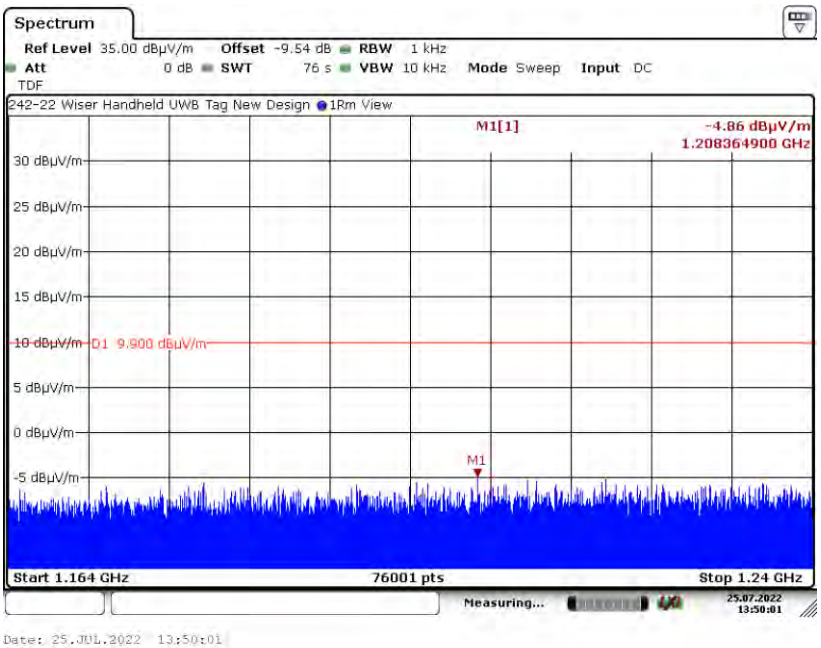
6. Measurement Data (continued)

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

6.6.3.7 Horizontal Measurement Polarity 1164 to 1240 MHz, X Axis CH4 16M



6.6.3.8 Vertical Measurement Polarity 1164 to 1240 MHz, X Axis CH4 16M



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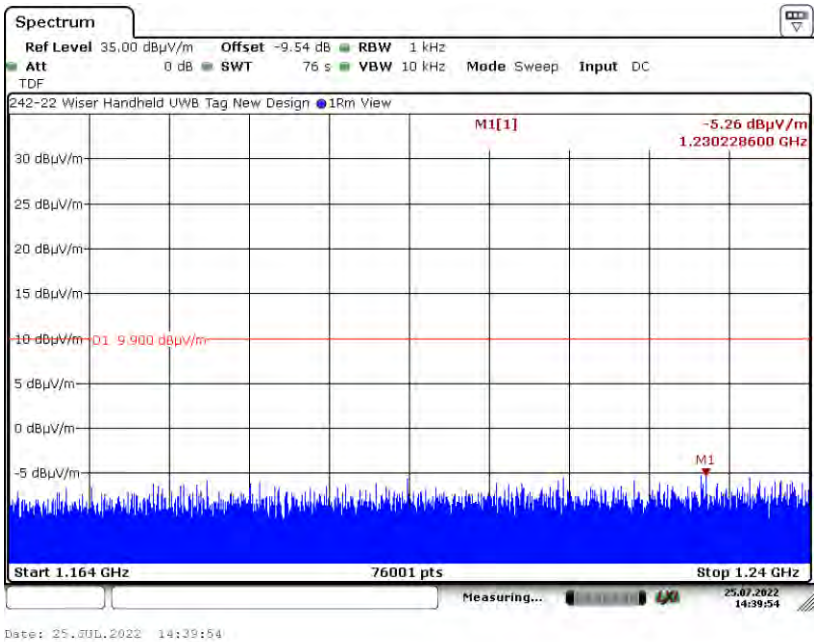
6. Measurement Data (continued)

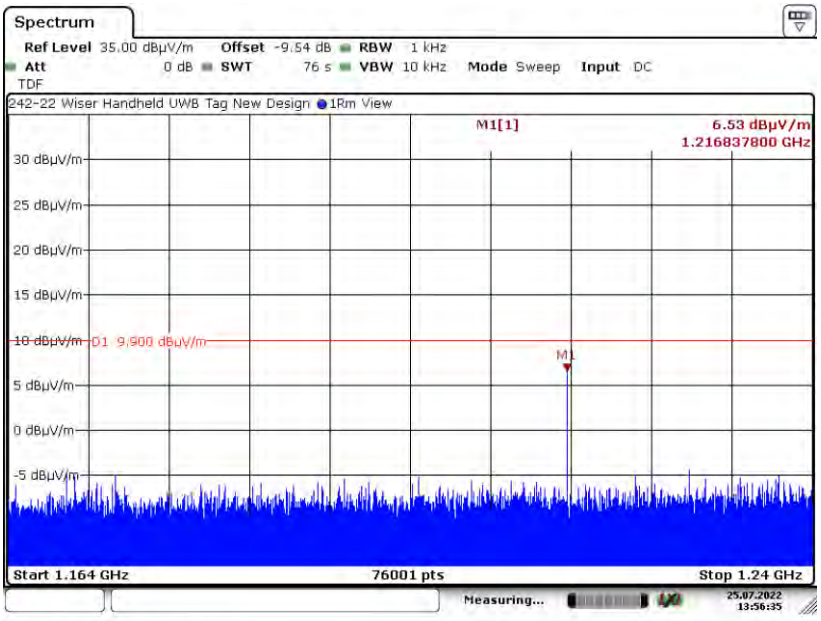
6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

6.6.3.9 Horizontal Measurement Polarity 1164 to 1240 MHz, Y Axis CH4 16M



Date: 25.JUL.2022 14:39:54

6.6.3.10 Vertical Measurement Polarity 1164 to 1240 MHz, Y Axis CH4 16M



Date: 25.JUL.2022 13:56:35

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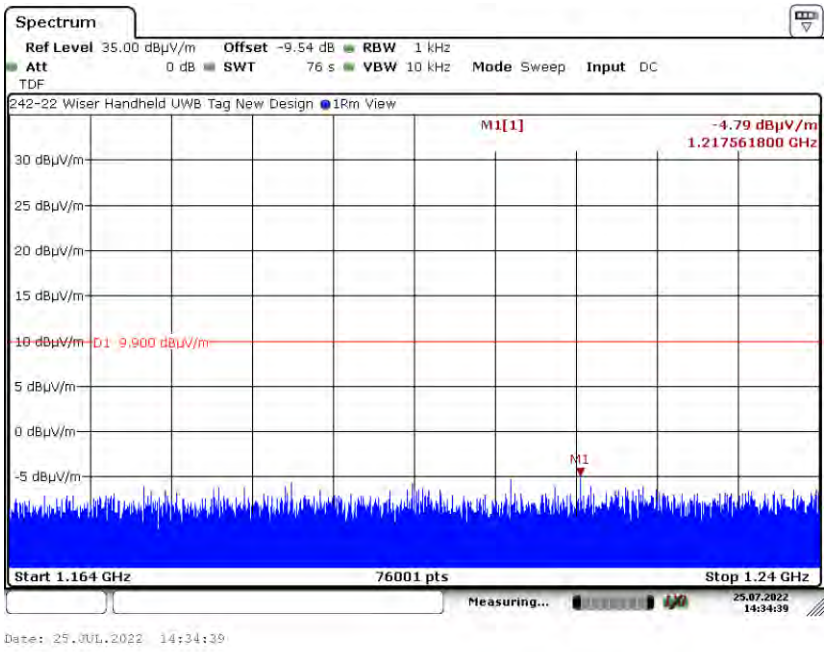
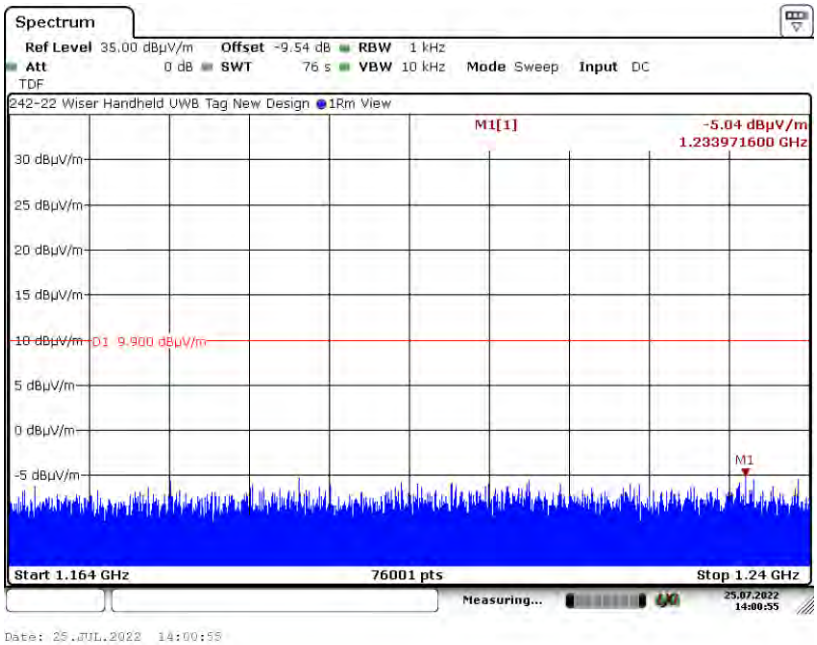
6. Measurement Data (continued)

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

6.6.3.11 Horizontal Measurement Polarity 1164 to 1240 MHz, Z Axis CH4 16M



6.6.3.12 Vertical Measurement Polarity 1164 to 1240 MHz, Z Axis CH4 16M



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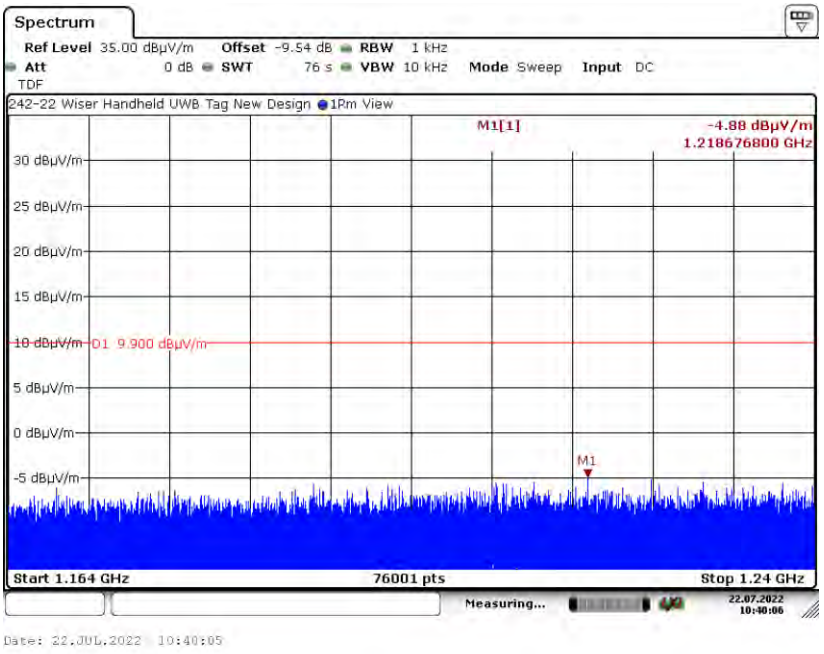
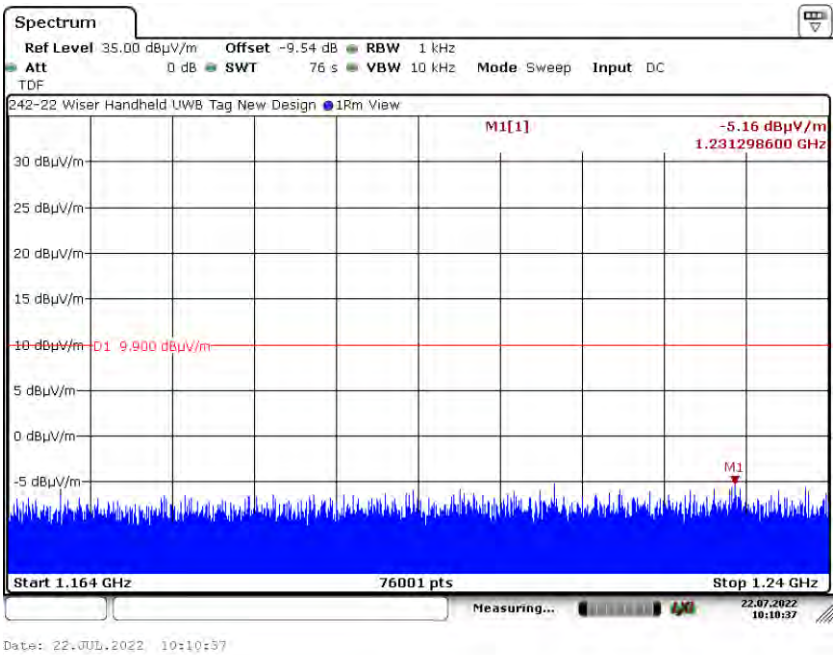
6. Measurement Data (continued)

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

6.6.3.13 Horizontal Measurement Polarity 1164 to 1240 MHz, X Axis CH5 16M



6.6.3.14 Vertical Measurement Polarity 1164 to 1240 MHz, X Axis CH5 16M



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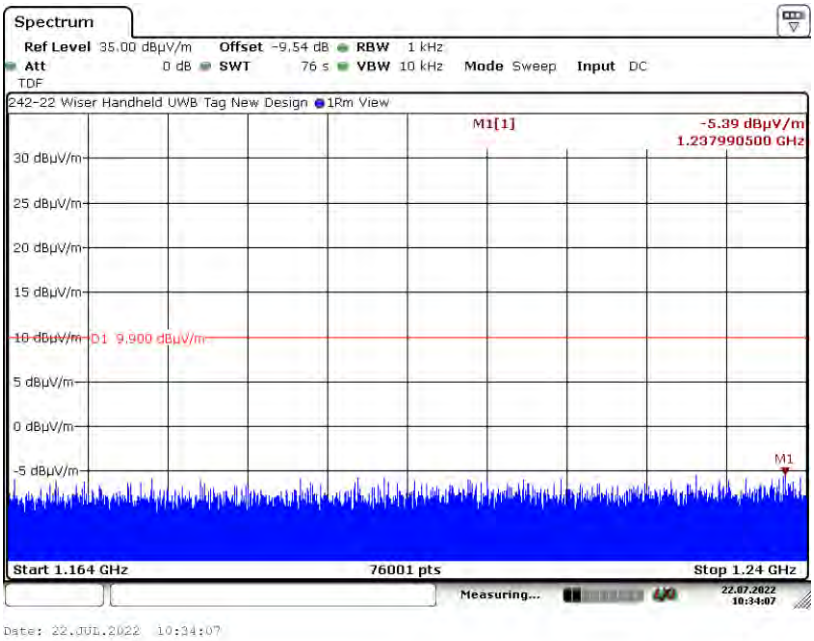
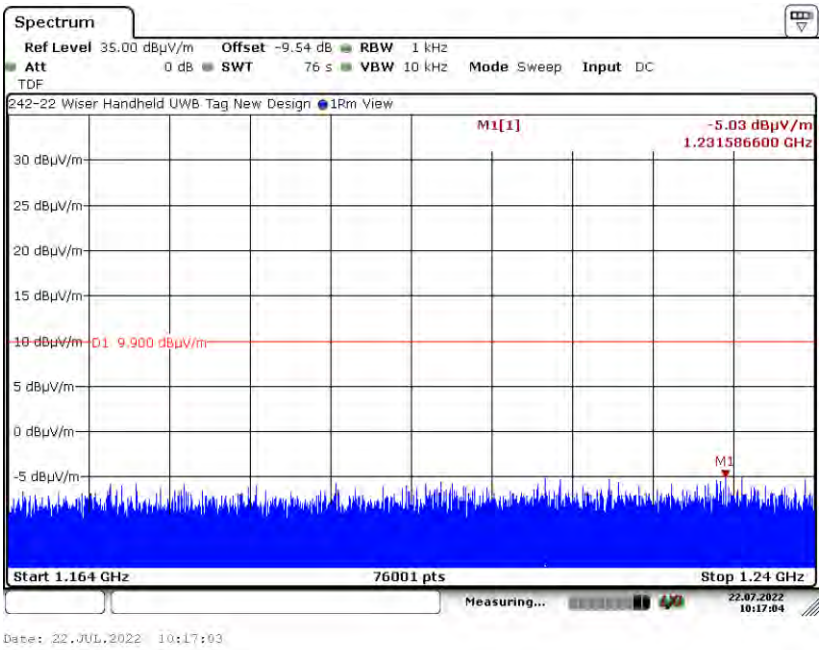
6. Measurement Data (continued)

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

6.6.3.15 Horizontal Measurement Polarity 1164 to 1240 MHz, Y Axis CH5 16M



6.6.3.16 Vertical Measurement Polarity 1164 to 1240 MHz, Y Axis CH5 16M



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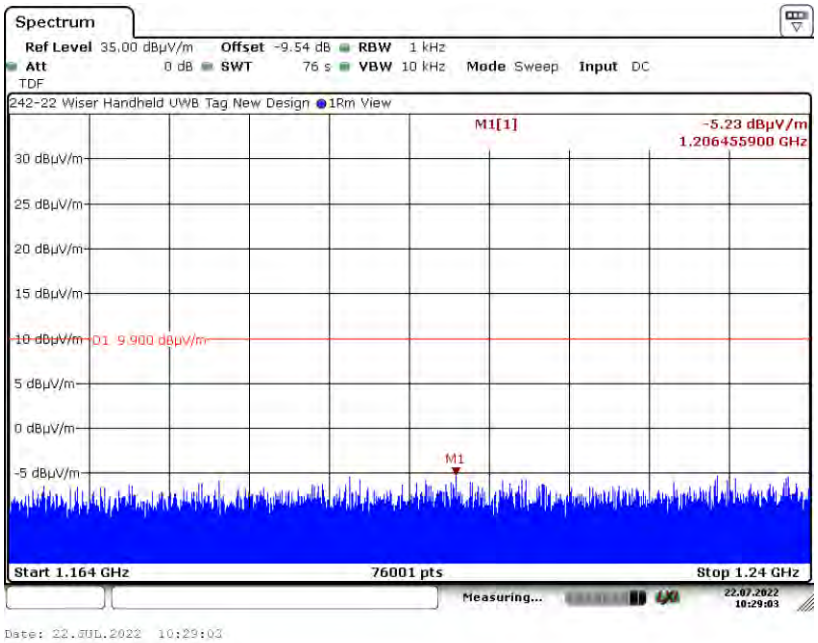
6. Measurement Data (continued)

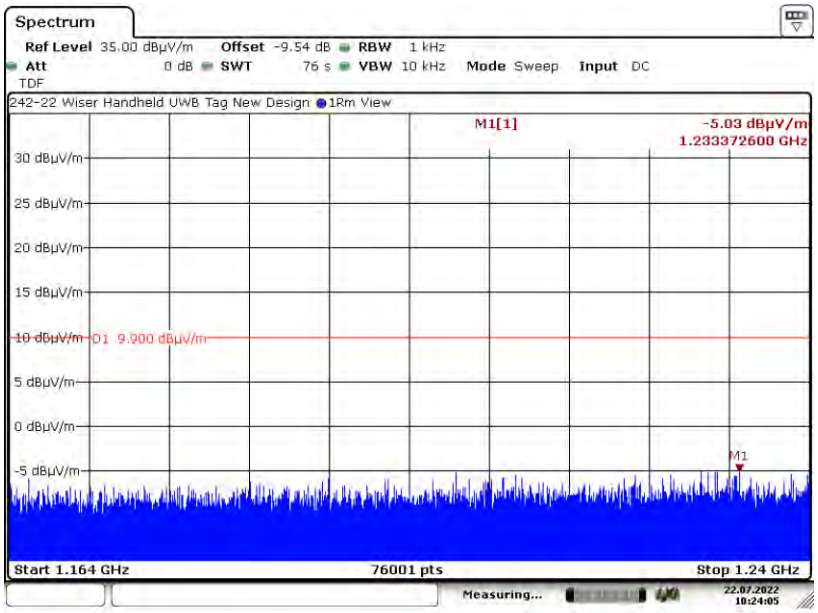
6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

6.6.3.17 Horizontal Measurement Polarity 1164 to 1240 MHz, Z Axis CH5 16M



Date: 22.JUL.2022 10:29:03

6.6.3.18 Vertical Measurement Polarity 1164 to 1240 MHz, Z Axis CH5 16M



Date: 22.JUL.2022 10:24:05

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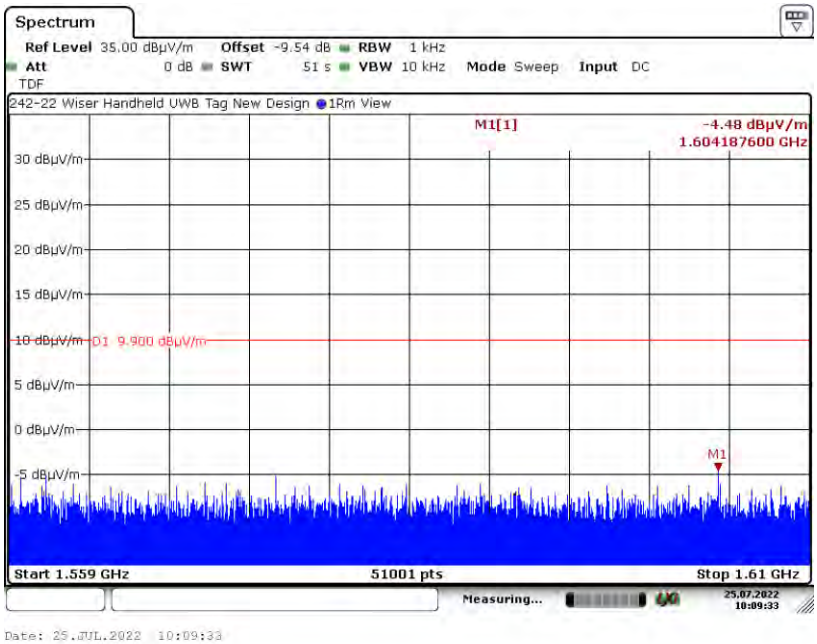
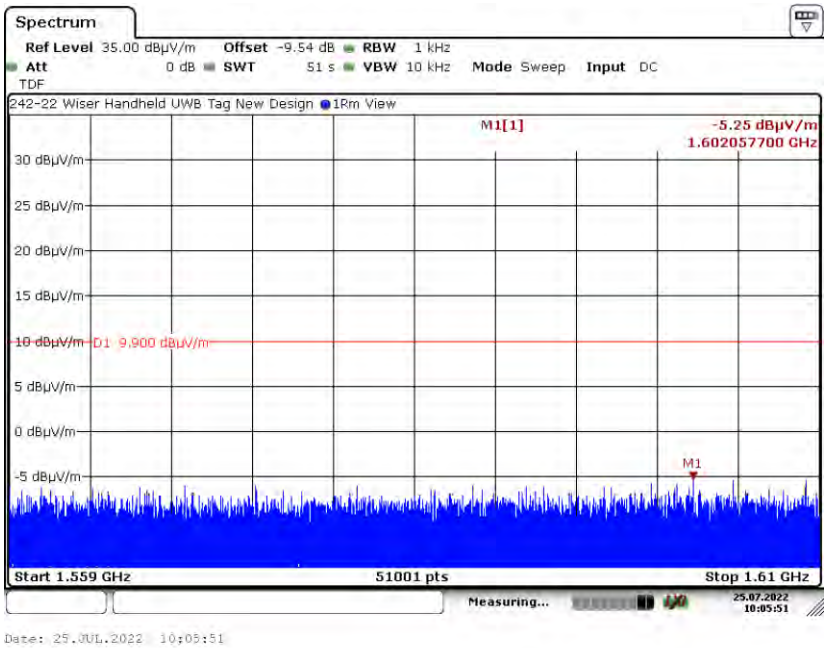
6. Measurement Data (continued)

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

6.6.3.19 Horizontal Measurement Polarity 1559 to 1610 MHz, X Axis CH2 16M



6.6.3.20 Vertical Measurement Polarity 1559 to 1610 MHz, X Axis CH2 16M



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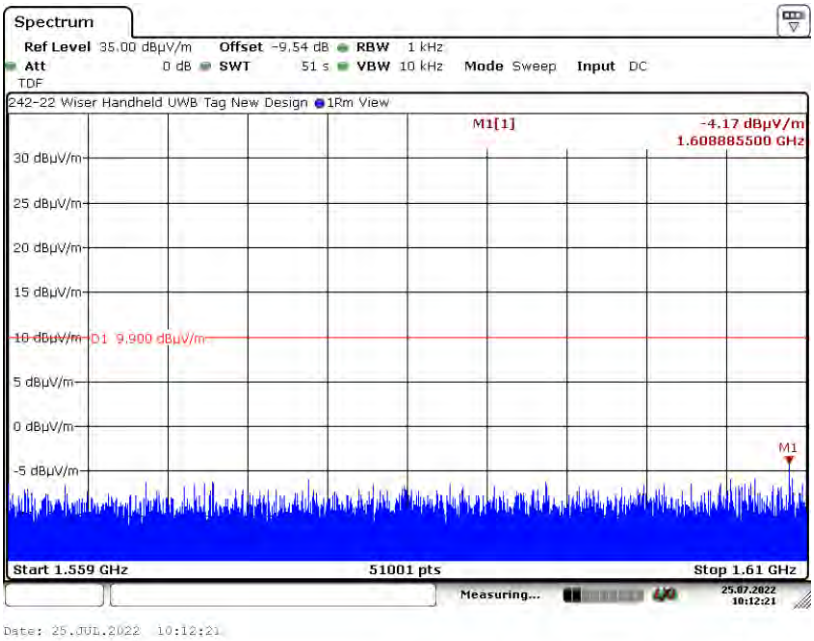
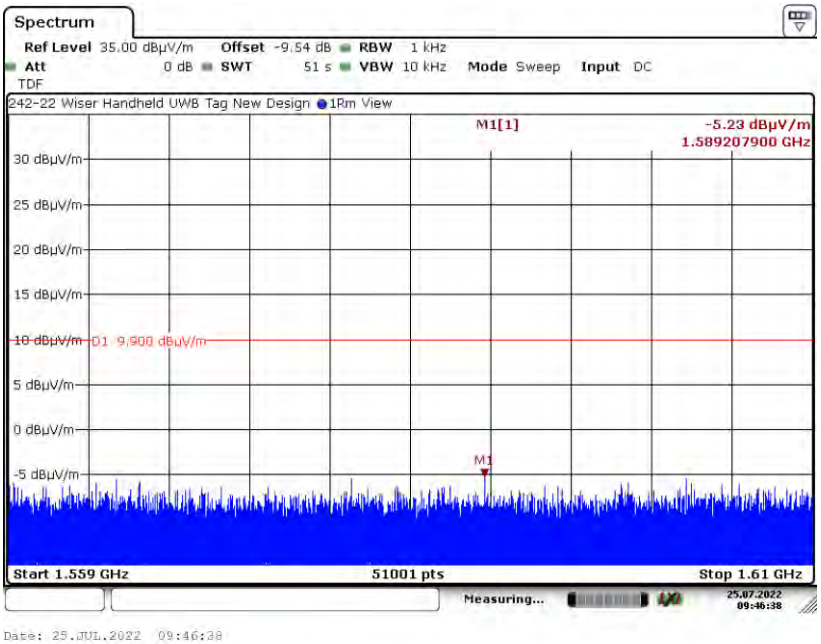
6. Measurement Data (continued)

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

6.6.3.21 Horizontal Measurement Polarity 1559 to 1610 MHz, Y Axis CH2 16M



6.6.3.22 Vertical Measurement Polarity 1559 to 1610 MHz, Y Axis CH2 16M



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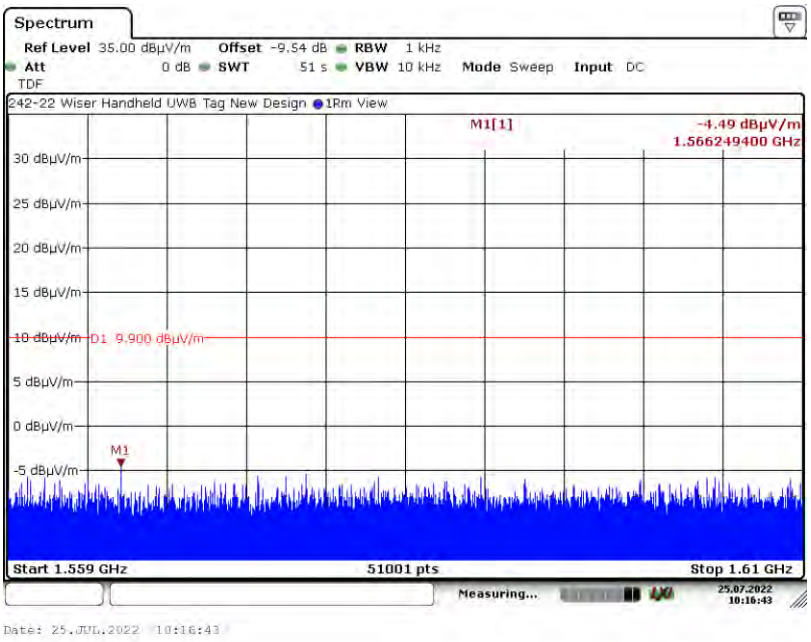
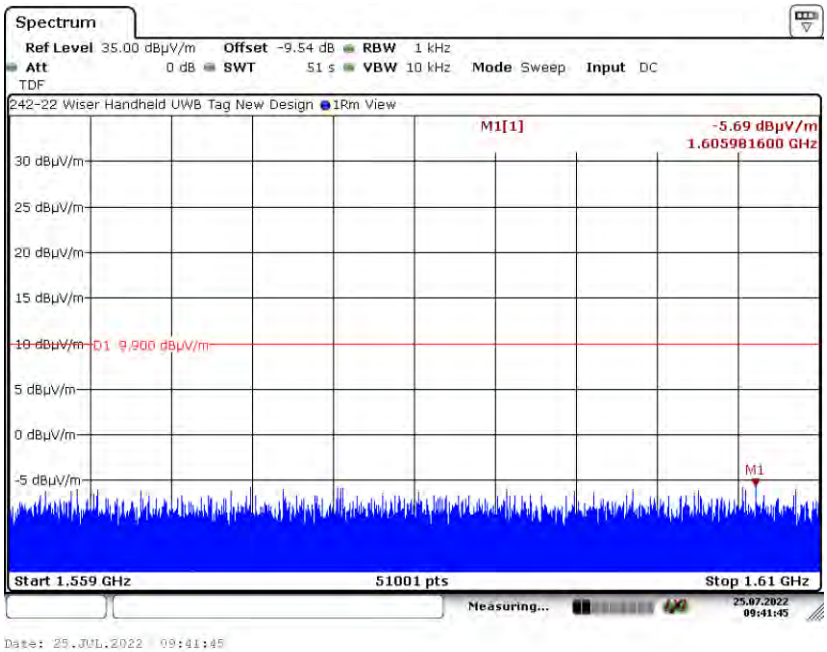
6. Measurement Data (continued)

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

6.6.3.23 Horizontal Measurement Polarity 1559 to 1610 MHz, Z Axis CH2 16M



6.6.3.24 Vertical Measurement Polarity 1559 to 1610 MHz, Z Axis CH2 16M



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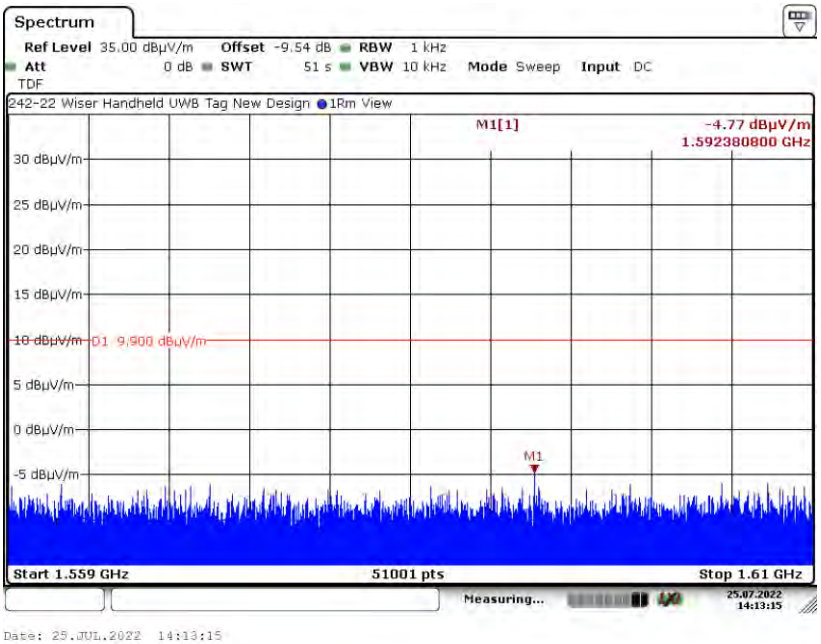
6. Measurement Data (continued)

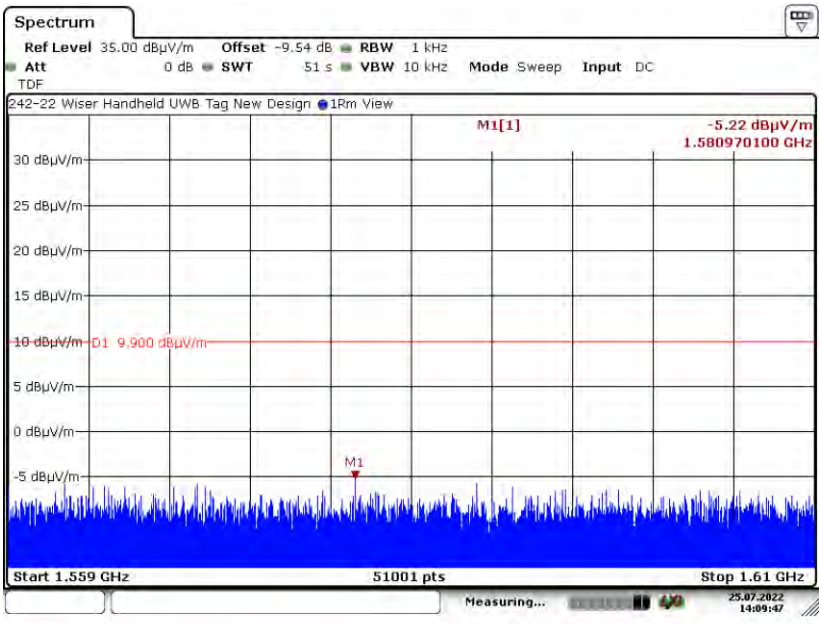
6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

6.6.3.25 Horizontal Measurement Polarity 1559 to 1610 MHz, X Axis CH4 16M



Date: 25.JUL.2022 14:13:15

6.6.3.26 Vertical Measurement Polarity 1559 to 1610 MHz, X Axis CH4 16M



Date: 25.JUL.2022 14:09:47

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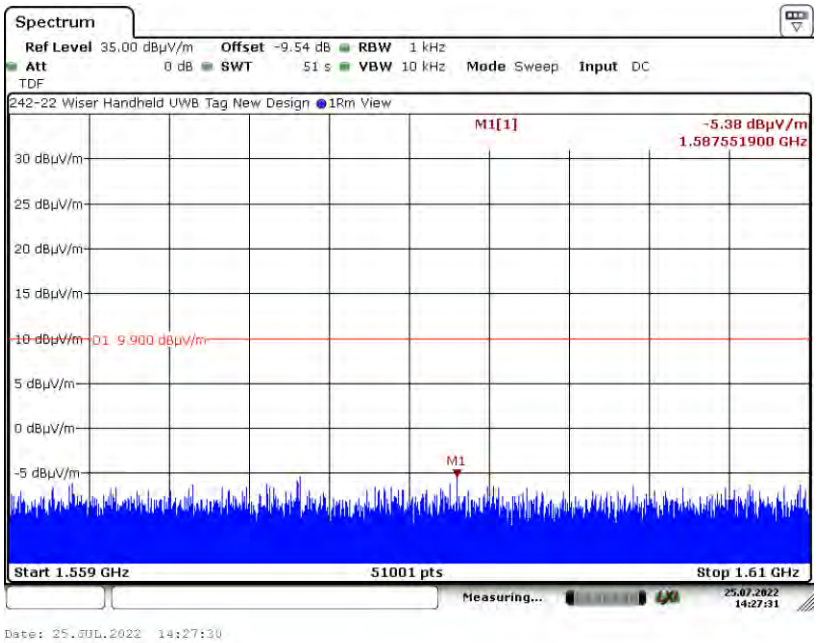
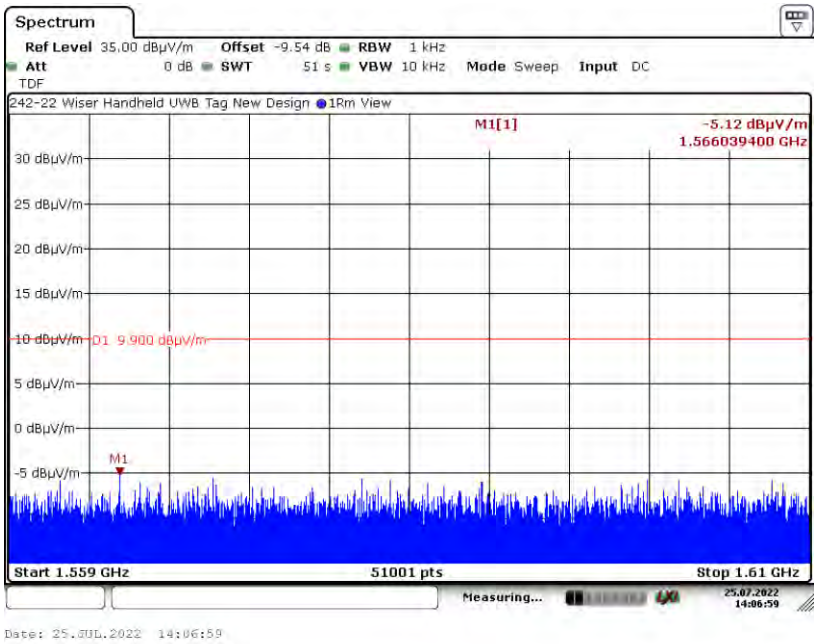
6. Measurement Data (continued)

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

6.6.3.27 Horizontal Measurement Polarity 1559 to 1610 MHz, Y Axis CH4 16M



6.6.3.28 Vertical Measurement Polarity 1559 to 1610 MHz, Y Axis CH4 16M



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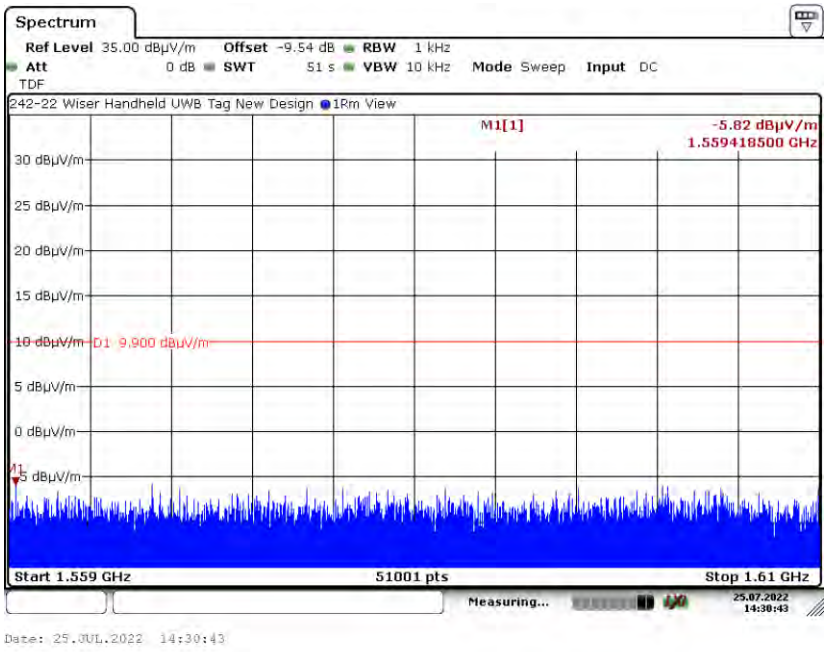
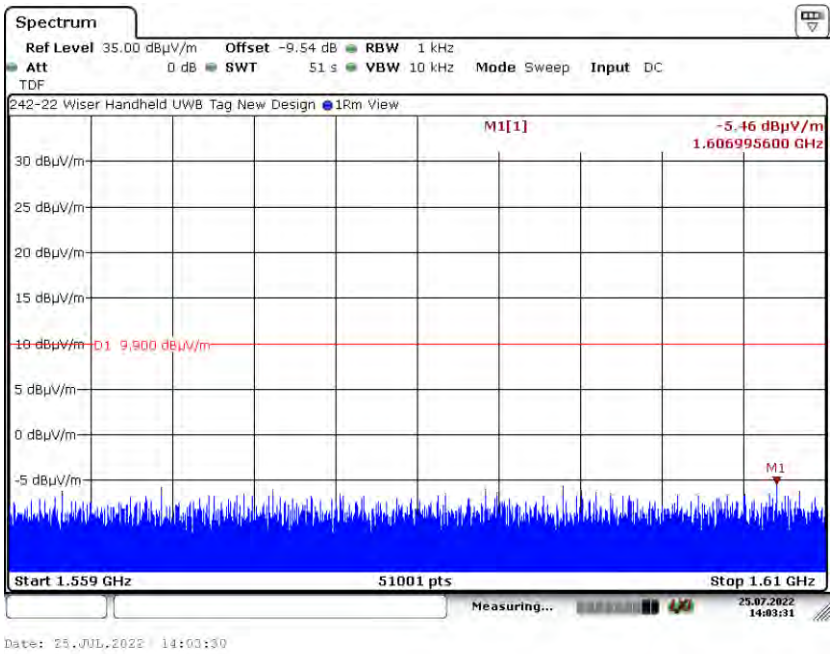
6. Measurement Data (continued)

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

6.6.3.29 Horizontal Measurement Polarity 1559 to 1610 MHz, Z Axis CH4 16M



6.6.3.30 Vertical Measurement Polarity 1559 to 1610 MHz, Z Axis CH4 16M



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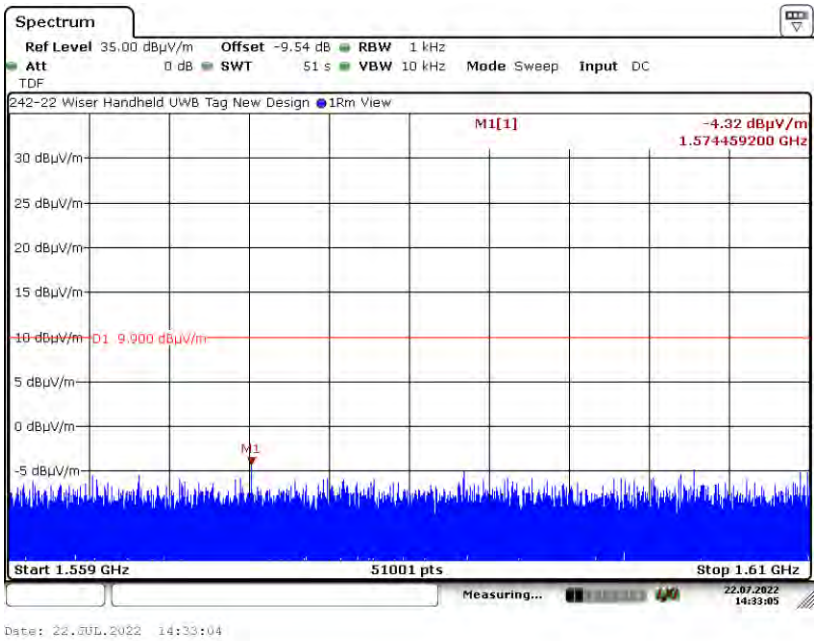
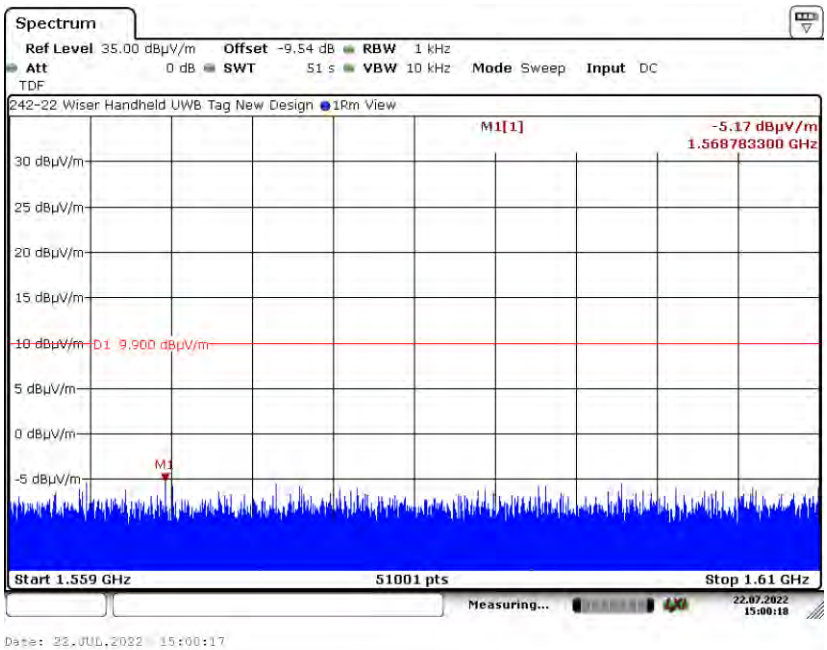
6. Measurement Data (continued)

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

6.6.3.31 Horizontal Measurement Polarity 1559 to 1610 MHz, X Axis CH5 16M



6.6.3.32 Vertical Measurement Polarity 1559 to 1610 MHz, X Axis CH5 16M



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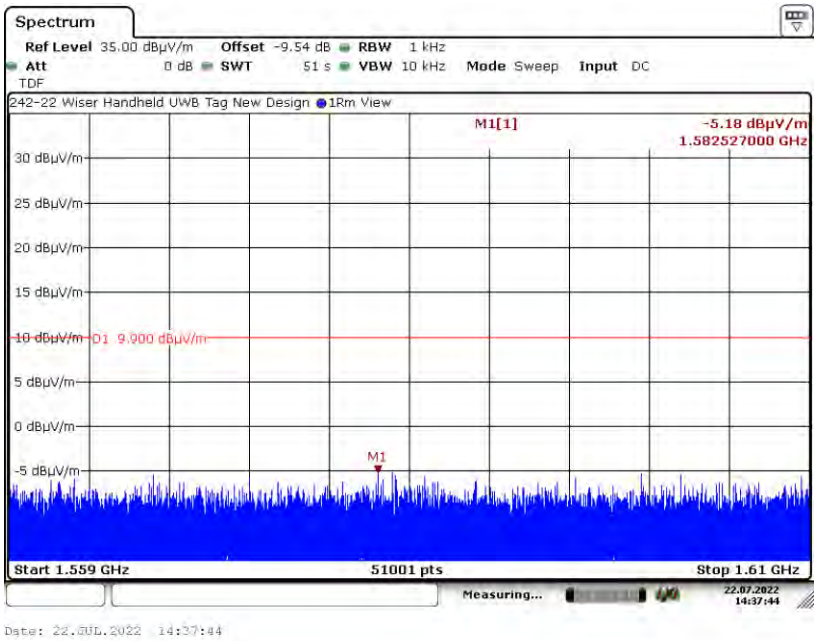
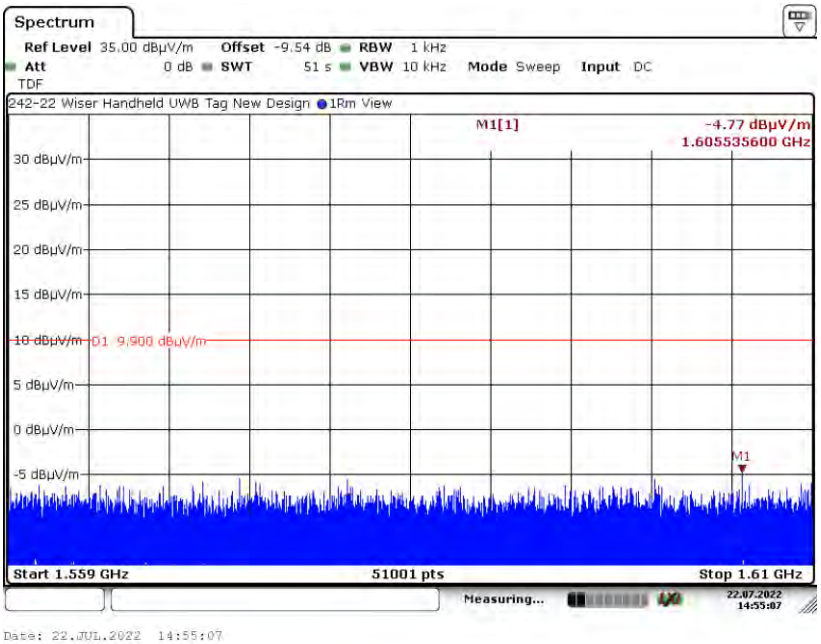
6. Measurement Data (continued)

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

6.6.3.33 Horizontal Measurement Polarity 1559 to 1610 MHz, Y Axis CH5 16M



6.6.3.34 Vertical Measurement Polarity 1559 to 1610 MHz, Y Axis CH5 16M



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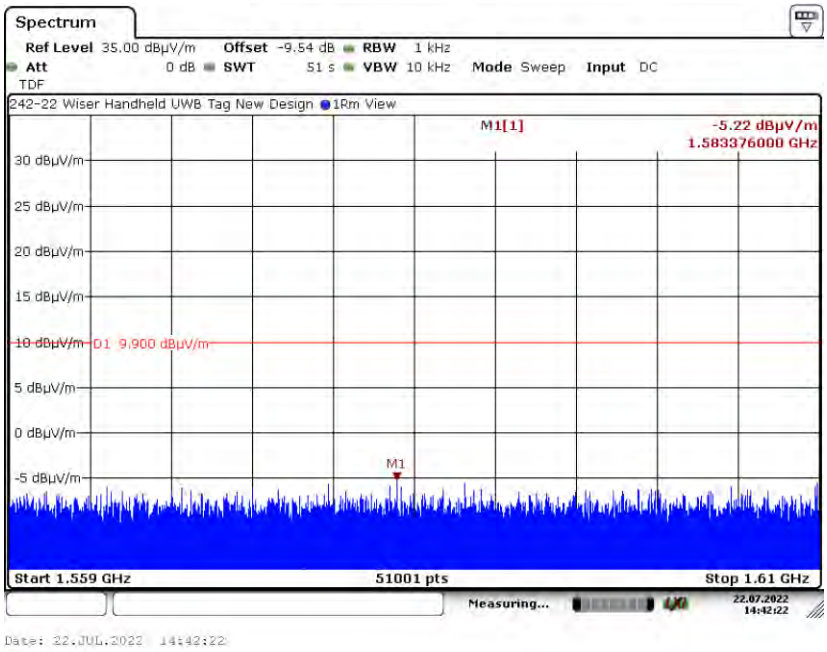
6. Measurement Data (continued)

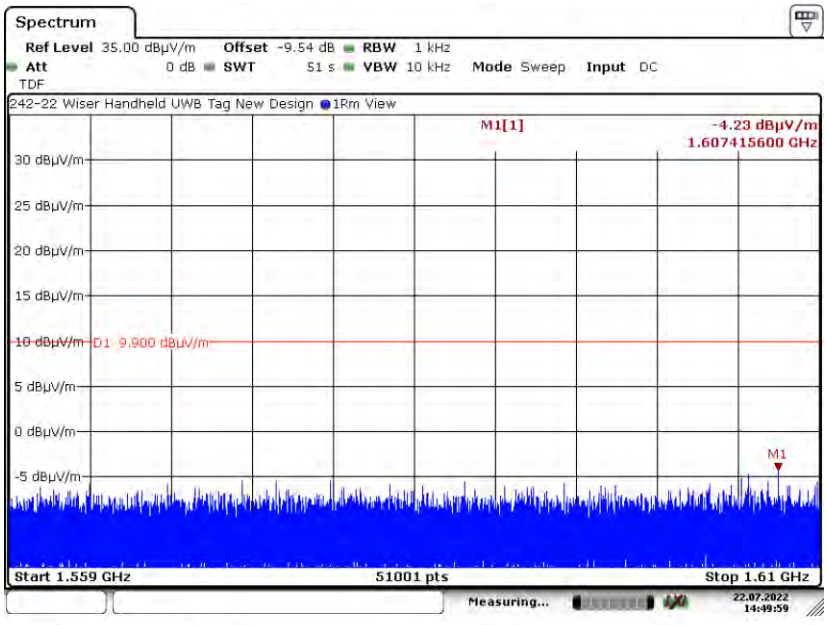
6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

6.6.3.35 Horizontal Measurement Polarity 1559 to 1610 MHz, Z Axis CH5 16M



Date: 22.JUL.2022 14:42:22

6.6.3.36 Vertical Measurement Polarity 1559 to 1610 MHz, Z Axis CH5 16M



Date: 22.JUL.2022 14:49:58

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6. Measurement Data (continued)

6.7. Radiated Emissions of UWB Transmission (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)
3100 - 10600	-41.3	53.9

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

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6. Measurement Data (continued)

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

6.7.1. Plot of RMS Power at 3 Meters (CH2, 6.8 Mbps, 16M PRF)

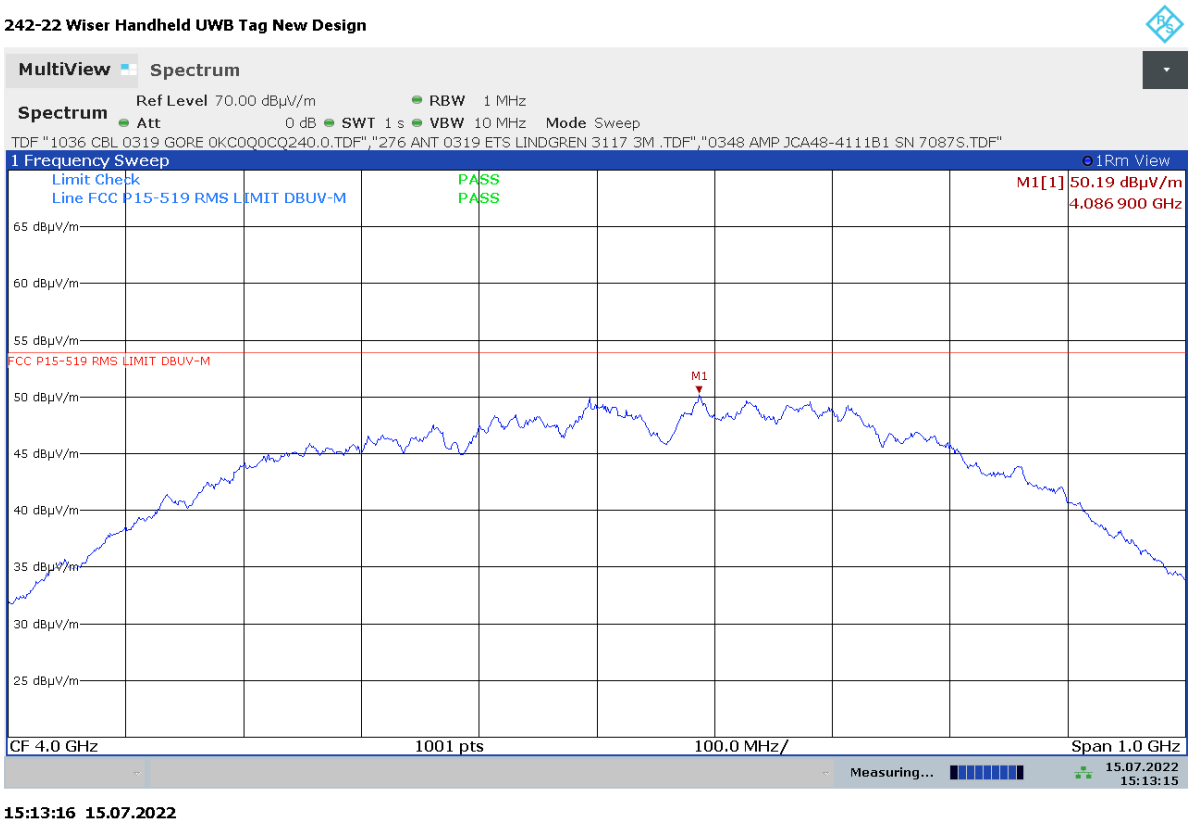
Frequency (GHz)	Amplitude[1]	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
4.0869	50.19	53.90	-3.71	H	133	253	Compliant

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	
4.0869	-45.01	-41.30	-3.71	H	133	253	Compliant



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6. Measurement Data (continued)

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

6.7.2. Plot of RMS Power at 3 Meters (CH2, 6.8 Mbps, 64M PRF)

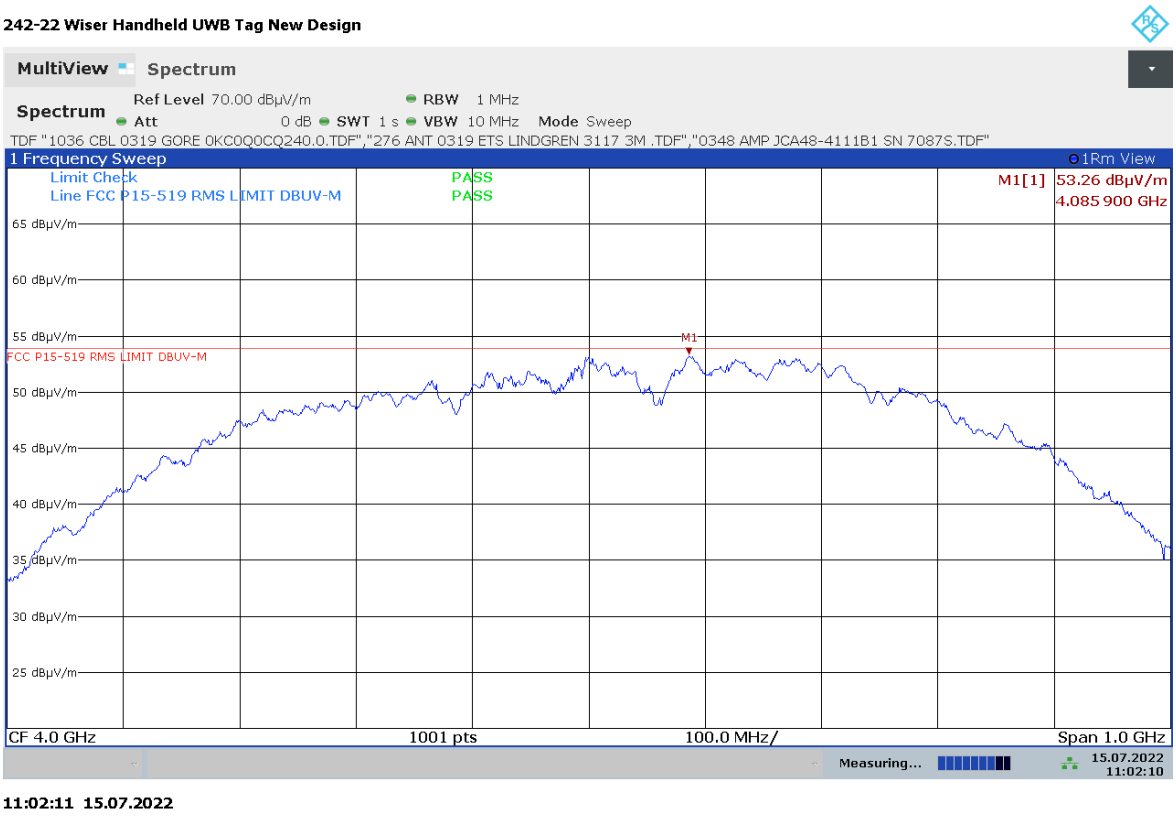
Frequency (GHz)	Amplitude[1]	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
4.0859	53.26	53.90	-0.64	H	133	253	Compliant

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	
4.0859	-41.94	-41.30	-0.64	H	133	253	Compliant



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6. Measurement Data (continued)

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

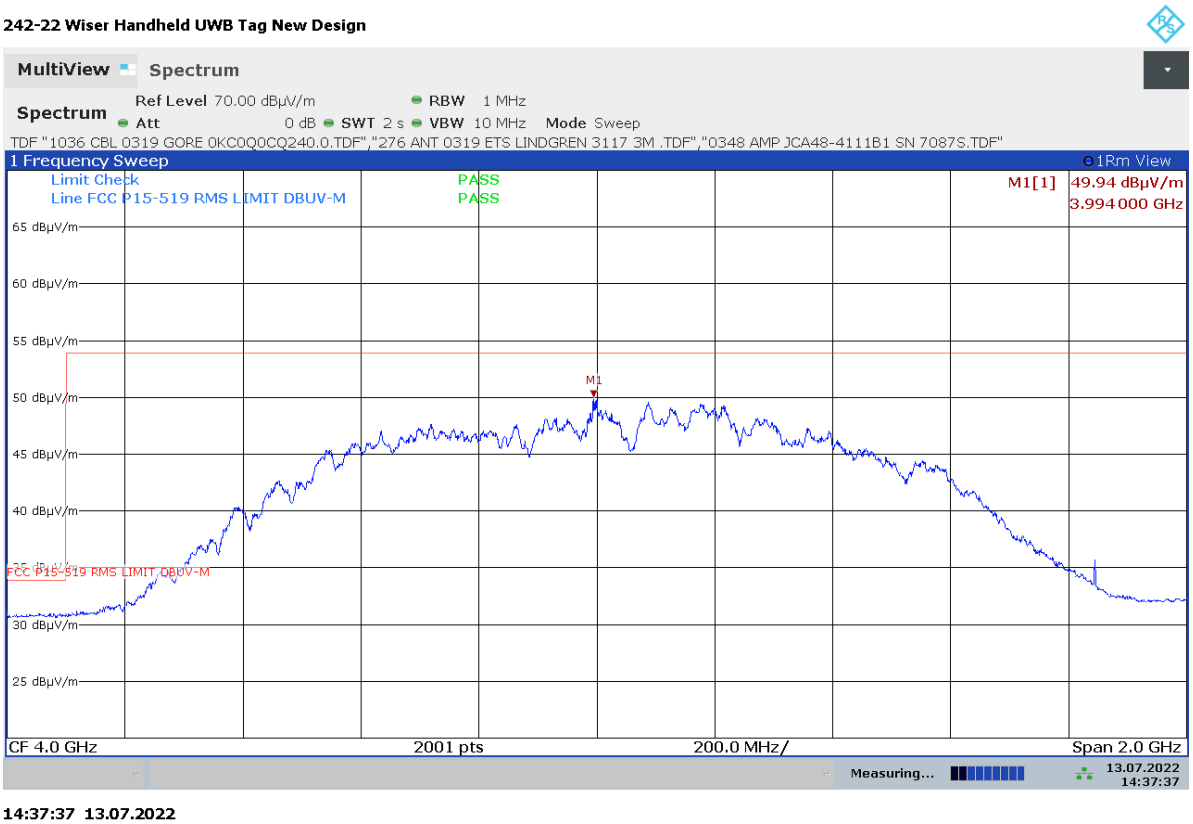
6.7.3. Plot of RMS Power at 3 Meters (CH4, 6.8 Mbps, 16M PRF)

Frequency (GHz)	Amplitude[1]	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
3.994	49.94	53.90	-3.96	H	133	253	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	
3.994	-45.26	-41.30	-3.96	H	133	253	Compliant



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6. Measurement Data (continued)

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

6.7.4. Plot of RMS Power at 3 Meters (CH4, 6.8 Mbps, 64M PRF)

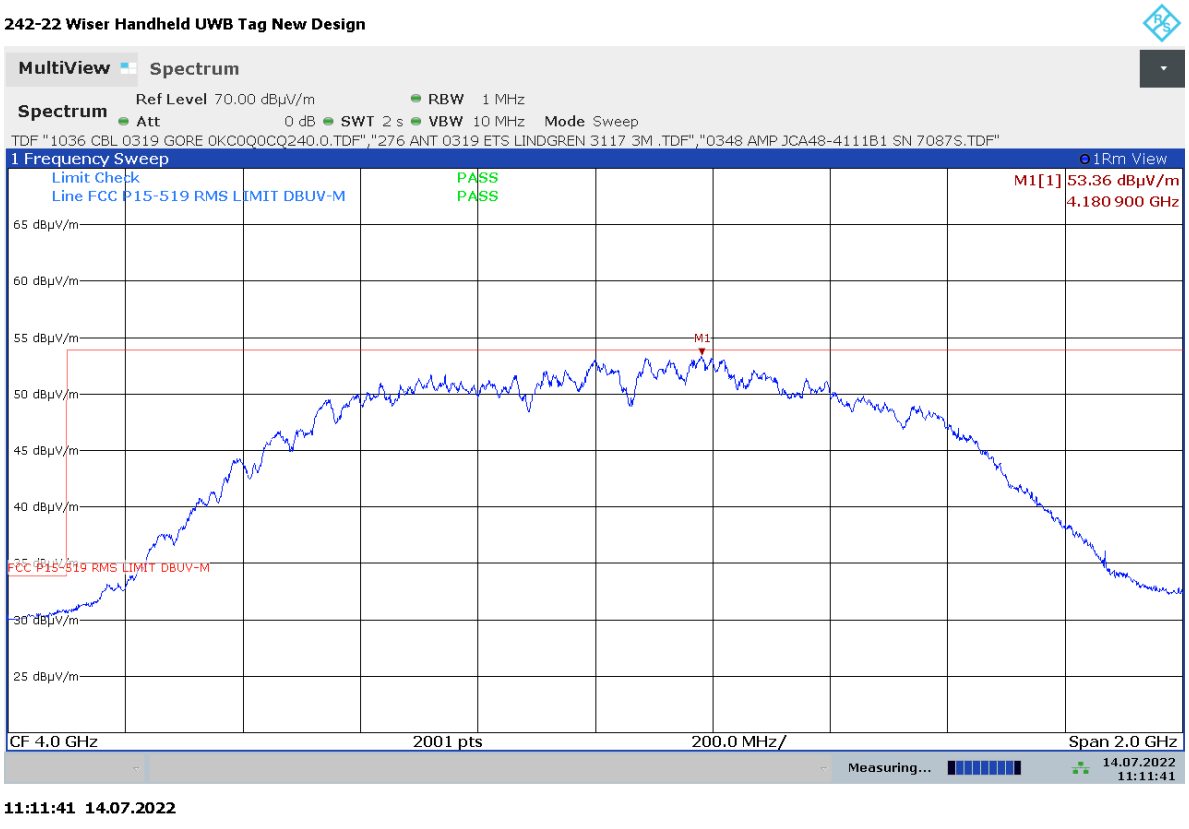
Frequency (GHz)	Amplitude[1]	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
4.1809	53.36	53.90	-0.54	H	133	253	Compliant

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	
4.1809	-41.84	-41.30	-0.54	H	133	253	Compliant



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6. Measurement Data (continued)

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

6.7.5. Plot of RMS Power at 3 Meters (CH5, 6.8 Mbps, 16M PRF)

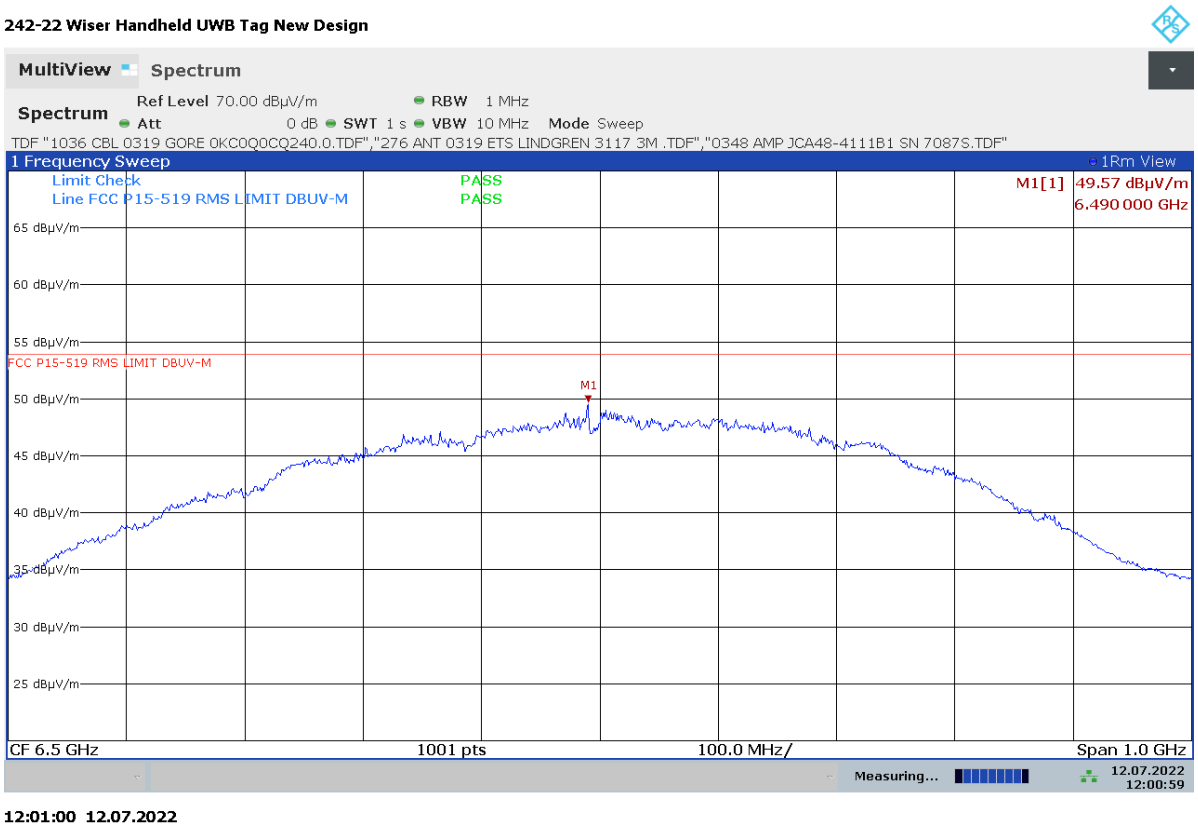
Frequency (GHz)	Amplitude[1]	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
6.490	49.57	53.90	-4.33	H	148	216	Compliant

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	
6.490	-45.66	-41.30	-4.33	H	148	216	Compliant



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6. Measurement Data (continued)

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

6.7.6. Plot of RMS Power at 3 Meters (CH5, 6.8 Mbps, 64M PRF)

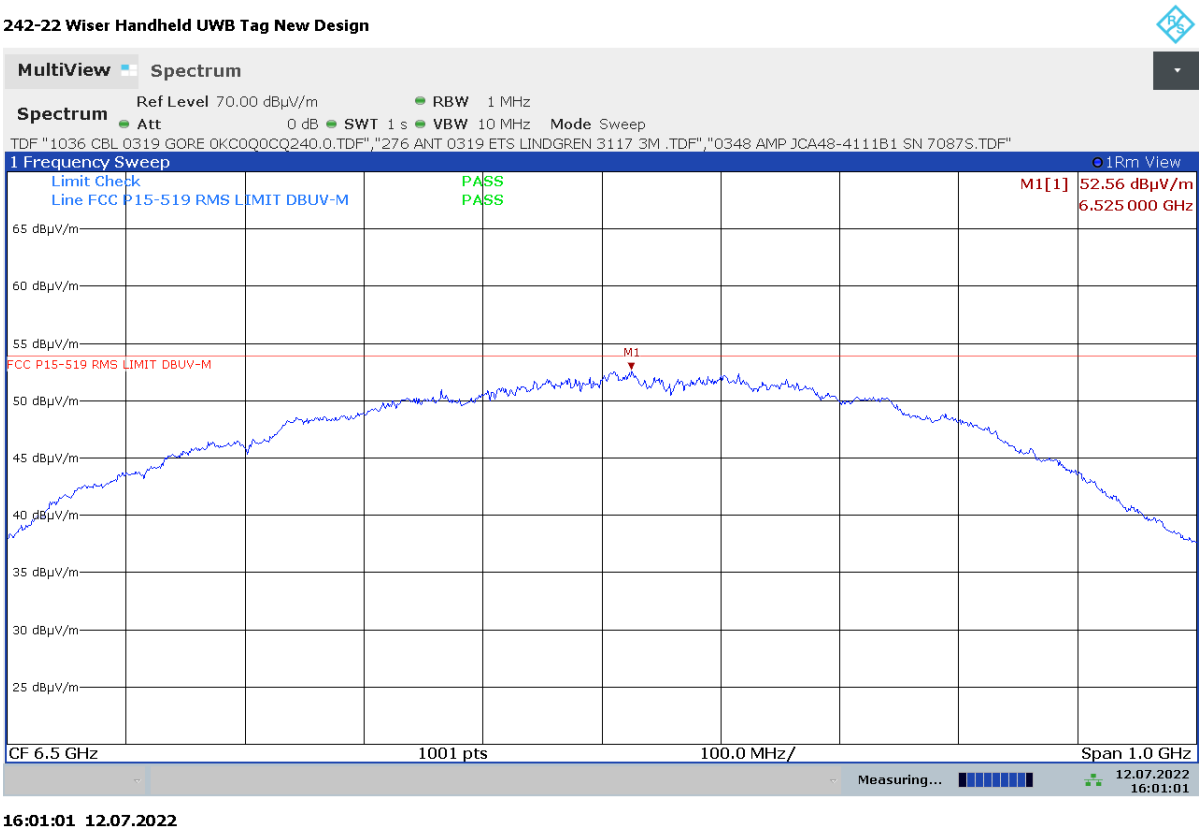
Frequency (GHz)	Amplitude[1]	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
6.525	52.56	53.90	-1.34	H	148	216	Compliant

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	
6.525	-42.64	-41.30	-1.34	H	148	216	Compliant



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6. Measurement Data (continued)

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

Frequency (MHz)	EIRP (dBm)	EIRP at 3 Meters (dBµV/m)
3100 - 10600	0	95.2

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

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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 (CH2, 6.8 Mbps, 16M PRF)

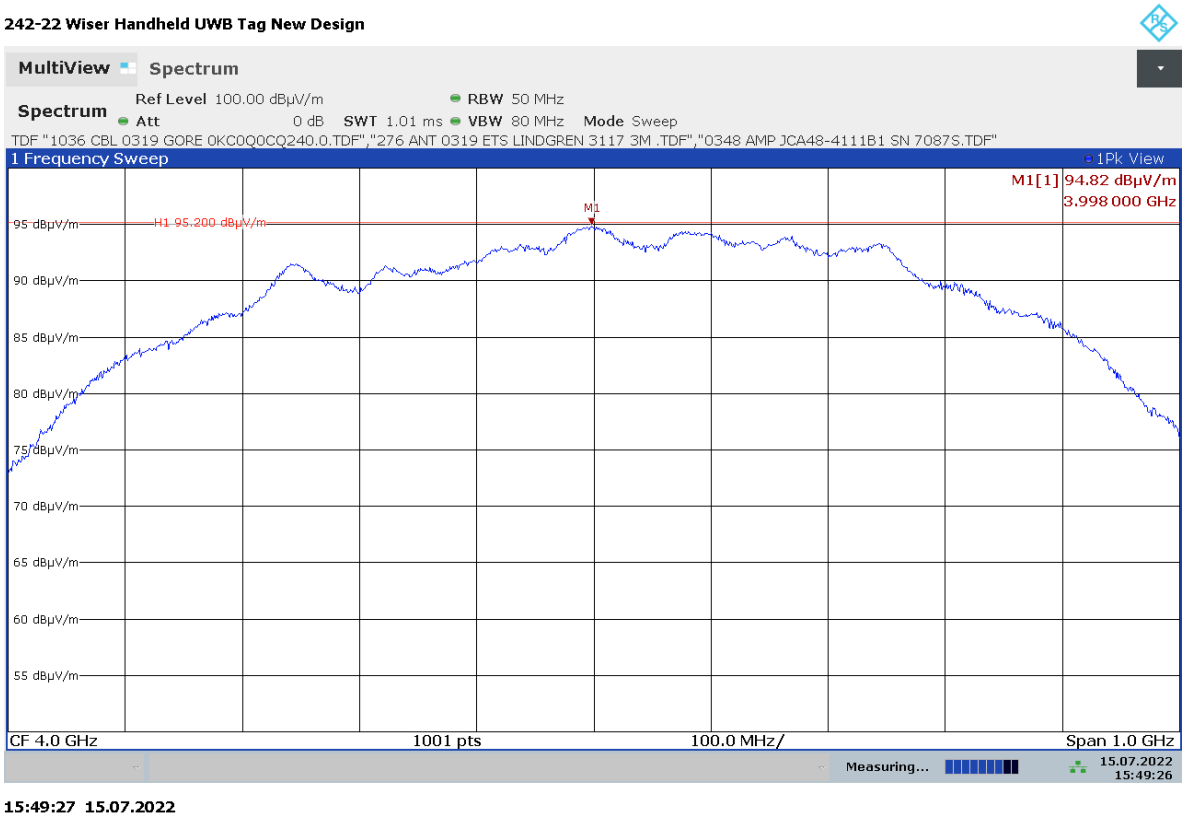
Frequency (GHz)	Amplitude[1]	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
3.998	94.82	95.20	-0.38	H	133	253	Compliant

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	
3.998	-0.38	0.00	-0.38	H	133	253	Compliant



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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 (CH2, 6.8 Mbps, 64M PRF)

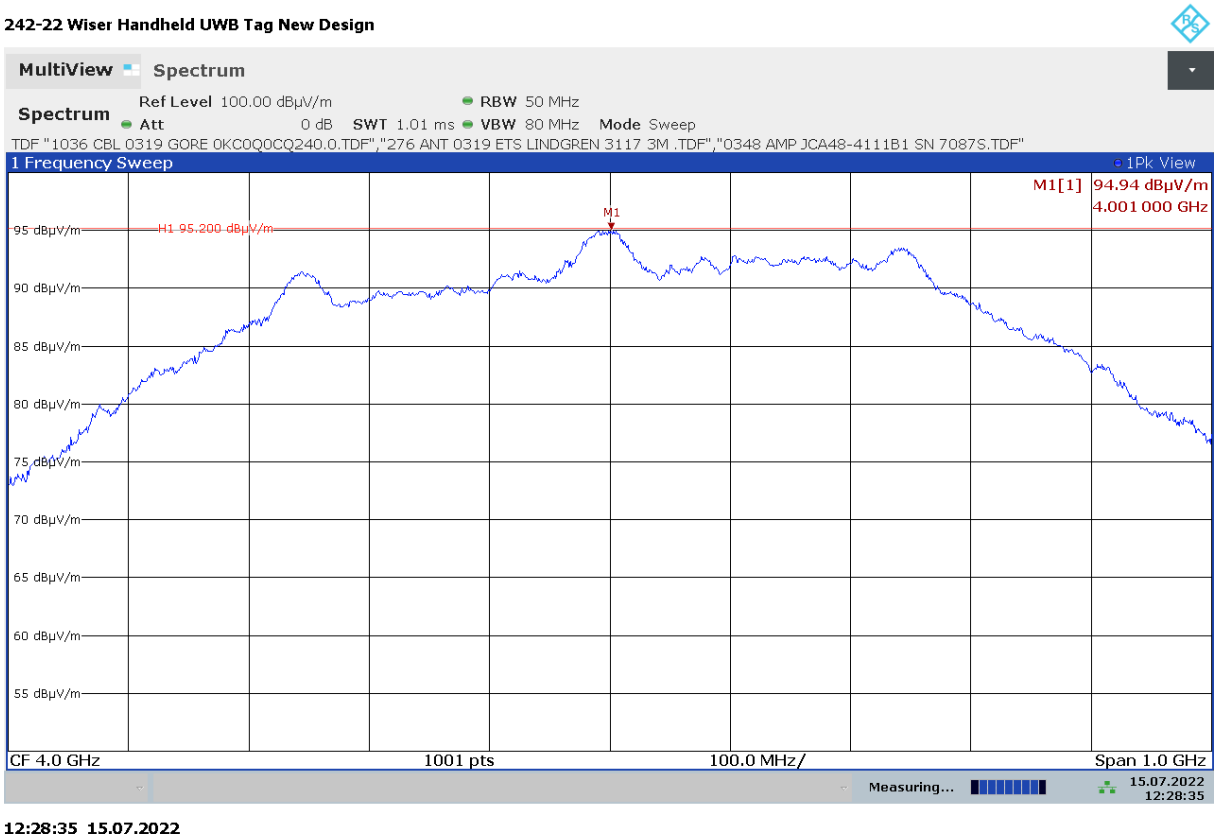
Frequency (GHz)	Amplitude[1]	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
4.001	94.94	95.20	-0.26	H	133	253	Compliant

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	
4.001	-0.26	0.00	-0.26	H	133	253	Compliant



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6. Measurement Data (continued)

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

6.8.3 Plot of Peak Power at 3 Meters (CH4, 6.8 Mbps, 16M PRF)

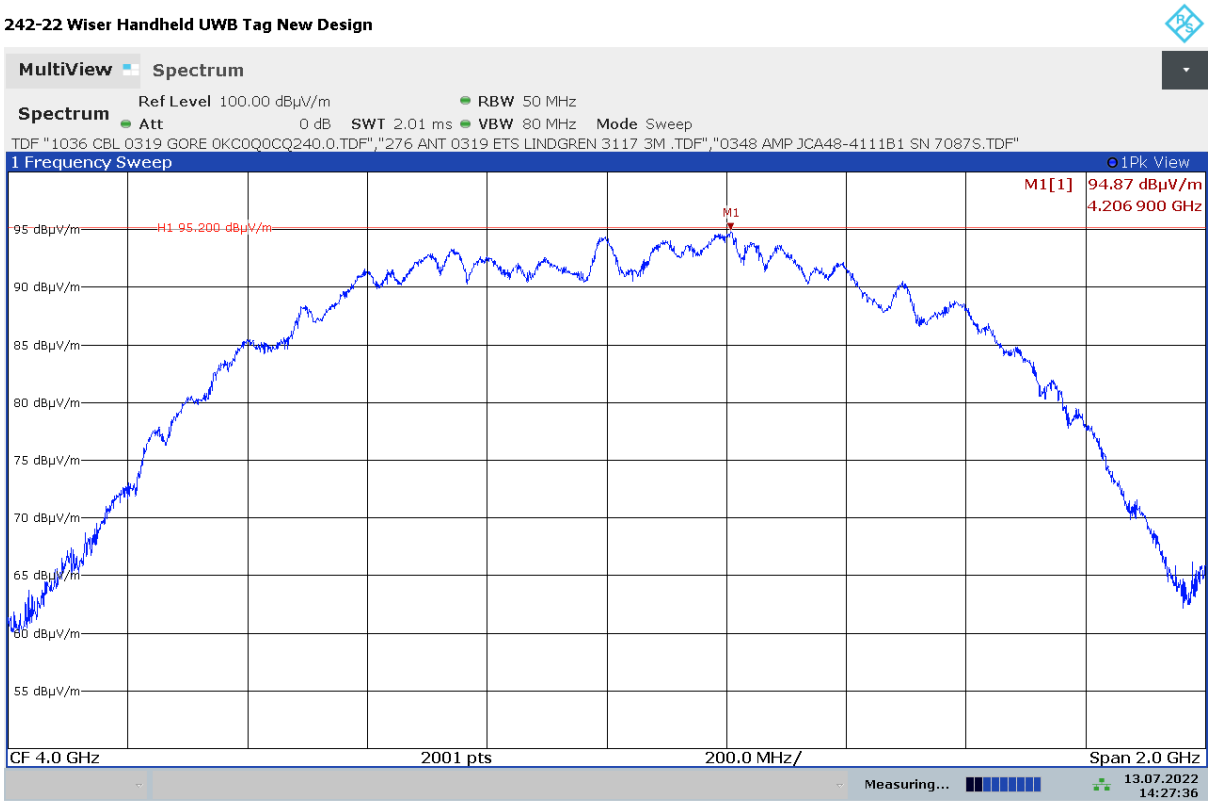
Frequency (GHz)	Amplitude[1]	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
4.2069	94.87	95.20	-0.37	H	133	253	Compliant

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	
4.2069	-0.37	0.00	-0.37	H	133	253	Compliant



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6. Measurement Data (continued)

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

6.8.4 Plot of Peak Power at 3 Meters (CH4, 6.8 Mbps, 64M PRF)

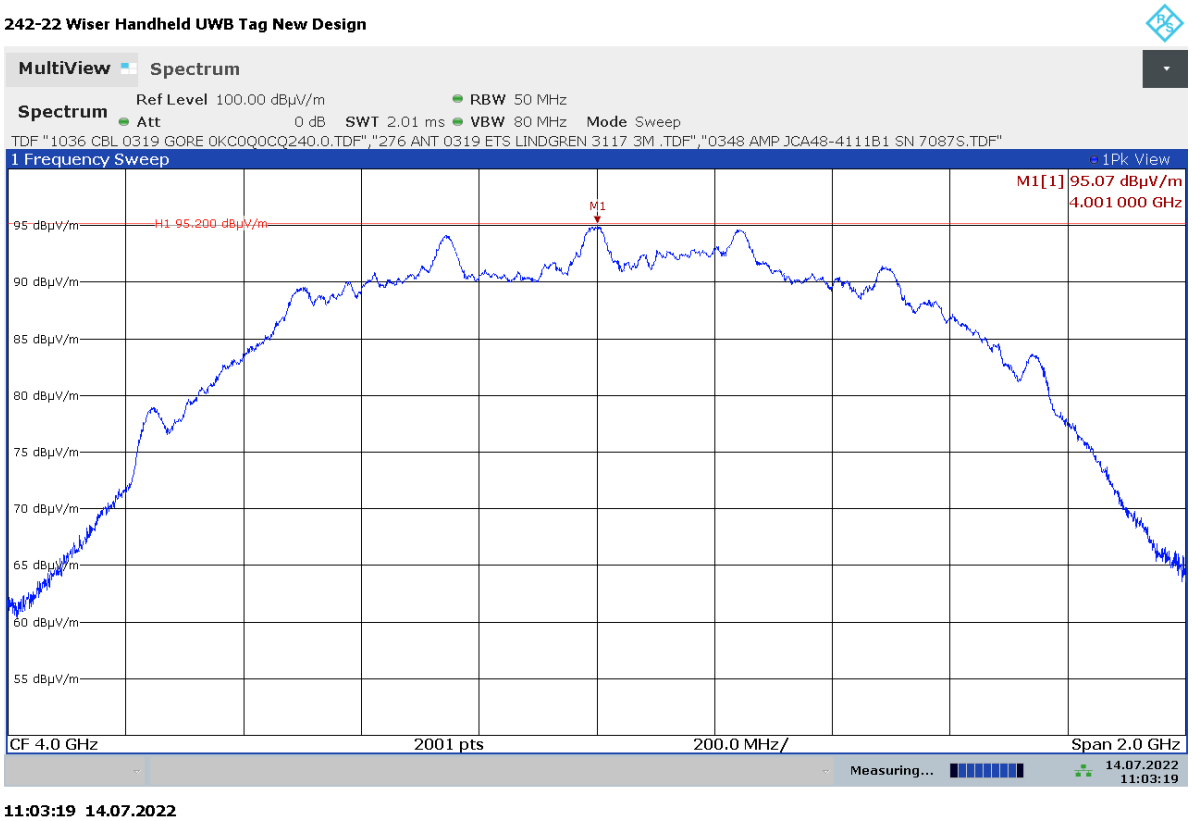
Frequency (GHz)	Amplitude[1]	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
4.001	95.07	95.20	-0.13	H	133	253	Compliant

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	
4.001	-0.13	0.00	-0.13	H	133	253	Compliant



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6. Measurement Data (continued)

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

6.8.5 Plot of Peak Power at 3 Meters (CH5, 6.8 Mbps, 16M PRF)

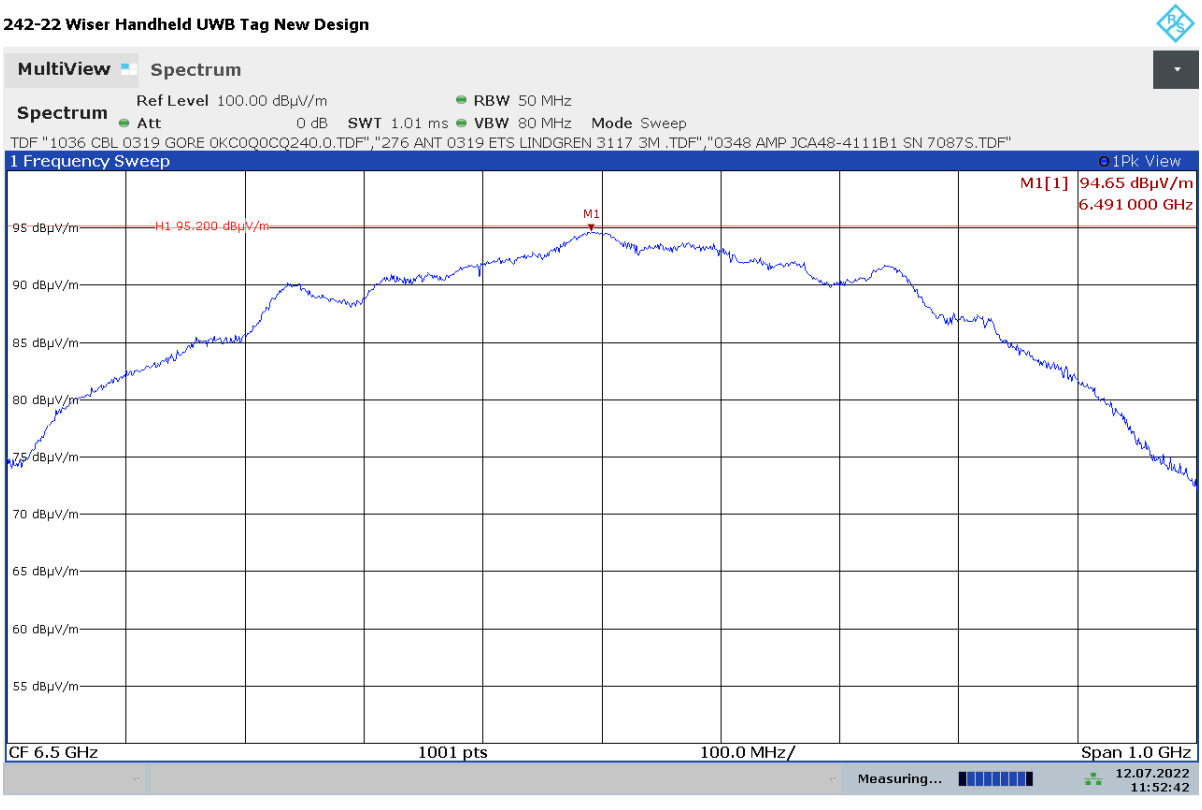
Frequency (GHz)	Amplitude[1]	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
6.491	94.65	95.20	-0.55	H	148	216	Compliant

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	
6.491	-0.55	0.00	-0.55	H	148	216	Compliant



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6. Measurement Data (continued)

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

6.8.6 Plot of Peak Power at 3 Meters (CH5, 6.8 Mbps, 64M PRF)

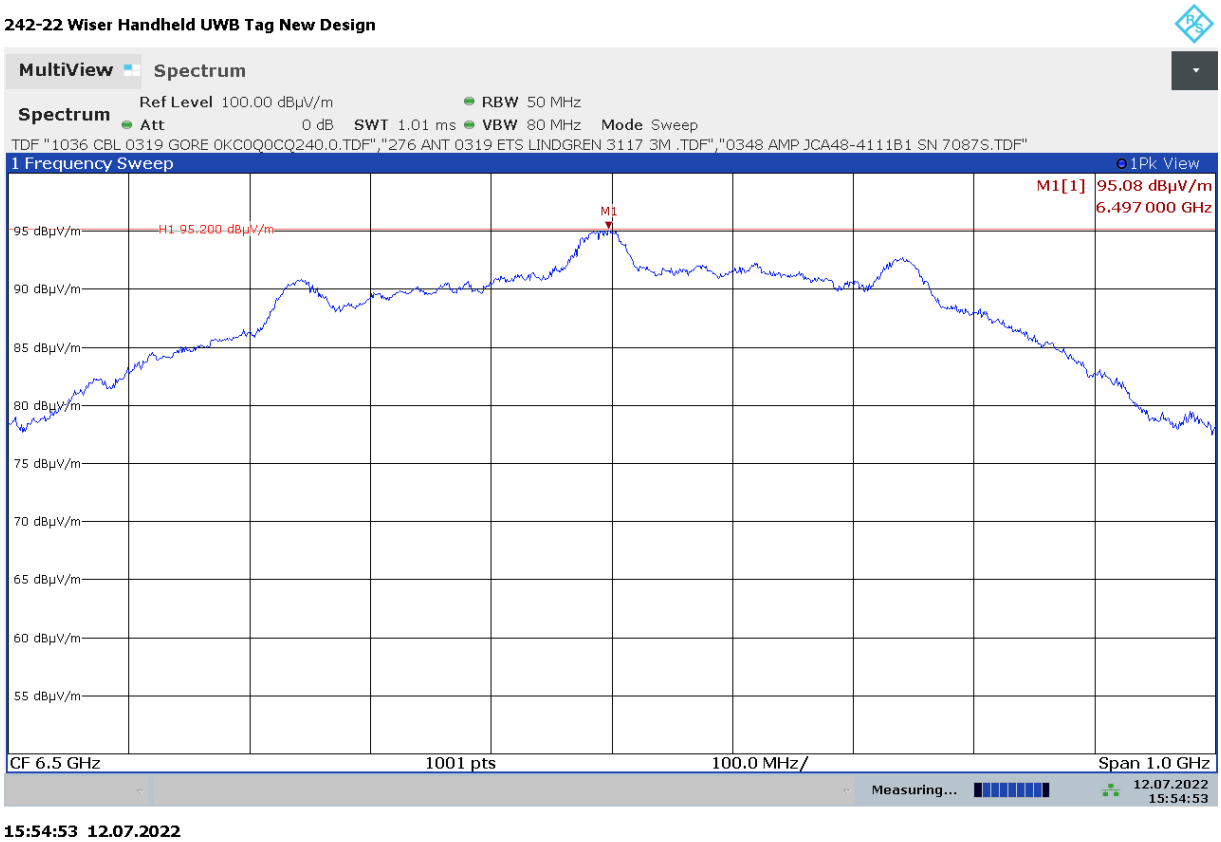
Frequency (GHz)	Amplitude[1]	Limit	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
6.497	95.08	95.20	-0.12	H	148	216	Compliant

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	
6.497	-0.12	0.00	-0.12	H	148	216	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	101156	10/25/2024
LISN	EMCO	3825/2	9109-1860	1/4/2023
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:	N/A
Test Engineer:	N/A
Site Temperature (°C):	N/A
Relative Humidity (%RH):	N/A
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.

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6. Measurement Data (continued)

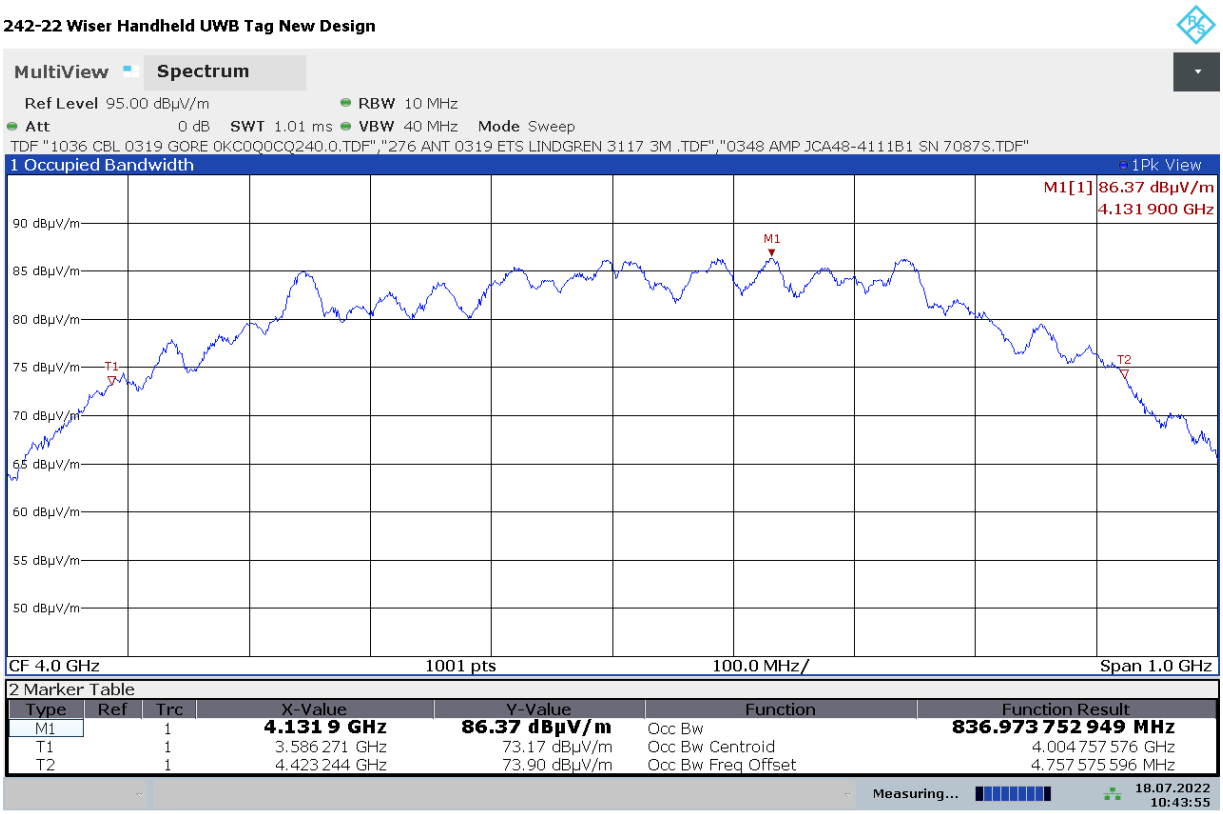
6.10. 99% Emission Bandwidth (RSS-GEN 6.7)

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.

6.10.1 Plot of 99% Emission Bandwidth (CH2, 6.8 Mbps, 16M PRF)



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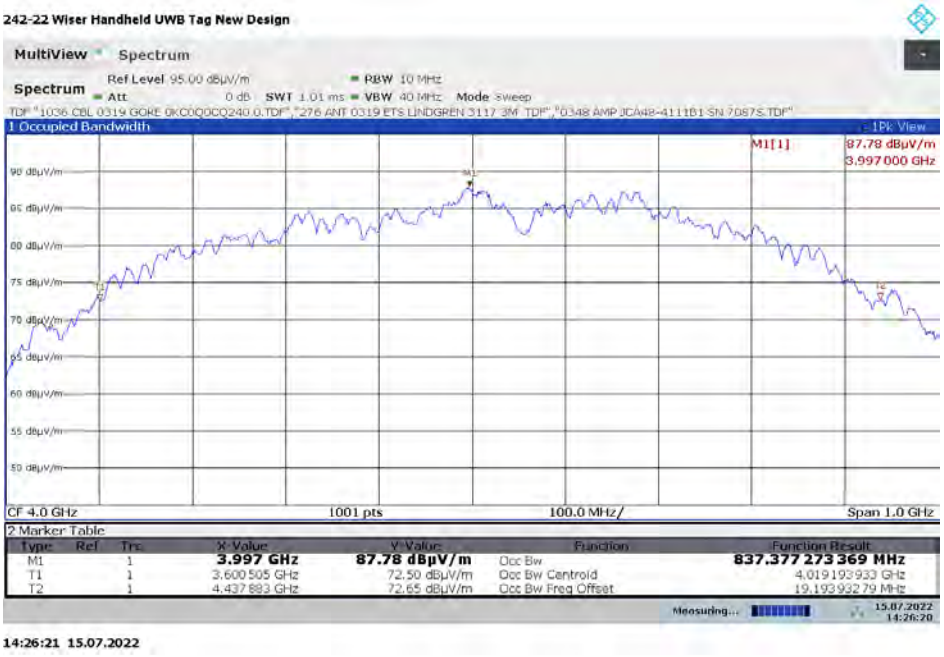
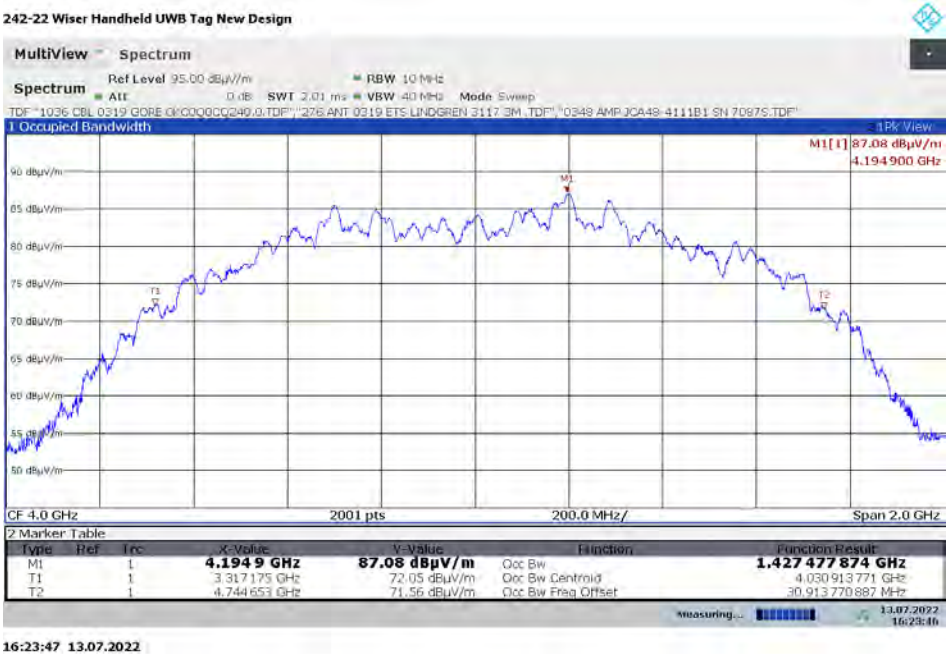
6. Measurement Data (continued)

6.10. 99% Emission Bandwidth (RSS-GEN 6.7)

6.10.2 Plot of 99% Emission Bandwidth (CH2, 6.8 Mbps, 64M PRF)



6.10.3 Plot of 99% Emission Bandwidth (CH4, 6.8 Mbps, 16M PRF)



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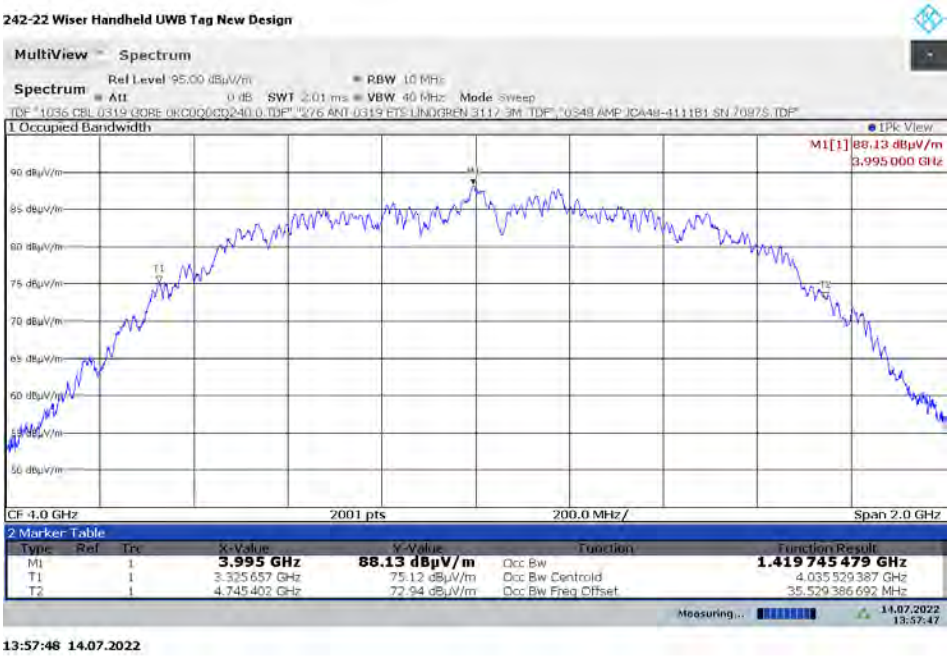
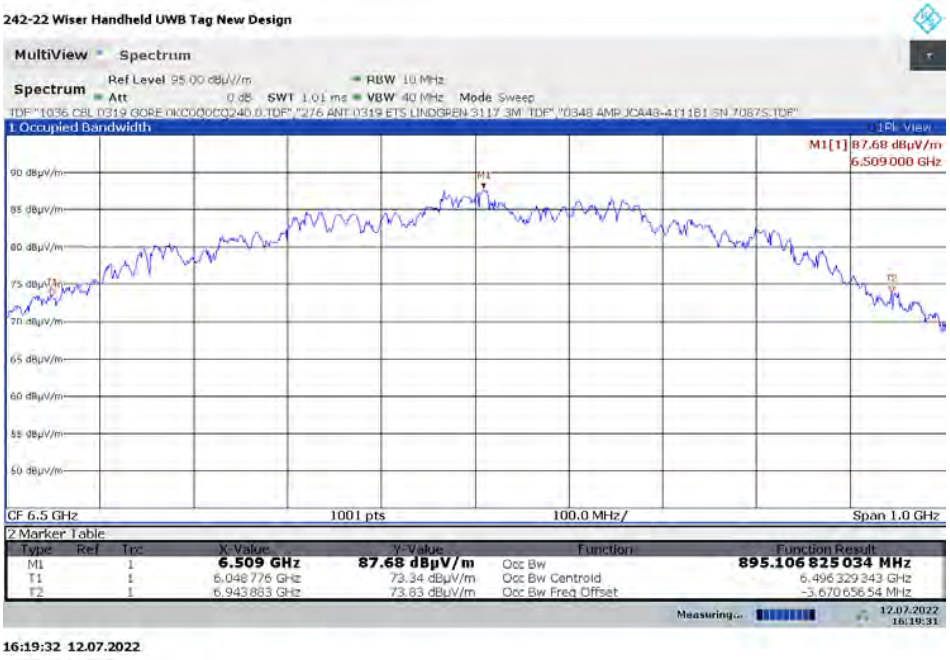
6. Measurement Data (continued)

6.10. 99% Emission Bandwidth (RSS-GEN 6.7)

6.10.4 Plot of 99% Emission Bandwidth (CH4, 6.8 Mbps, 64M PRF)



6.10.5 Plot of 99% Emission Bandwidth (CH5, 6.8 Mbps, 16M PRF)



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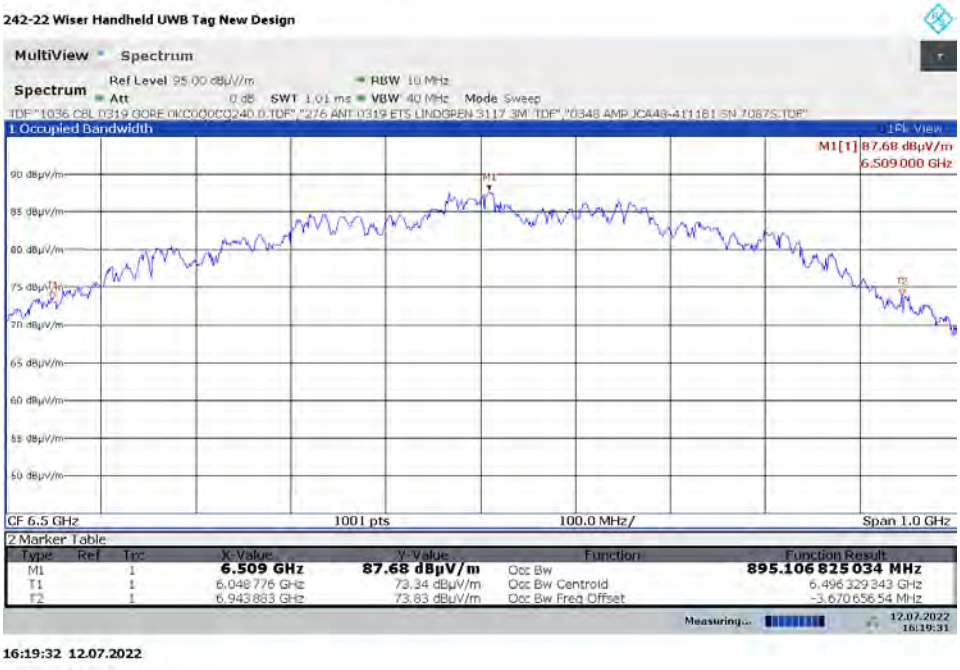
6. Measurement Data (continued)

6.10. 99% Emission Bandwidth (RSS-GEN 6.7)

6.10.6 Plot of 99% Emission Bandwidth (CH5, 6.8 Mbps, 64M PRF)



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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**), Industry Canada (file number **IC 3023A-1)** and VCCI (Member number 3168) under registration number A-0274.

Compliance Worldwide is also designated as a Phase 1 CAB under APEC-MRA (US0132) for Australia/New Zealand AS/NZS CISPR 32, Chinese-Taipei (Taiwan) BSMI CNS 13438 and Korea (RRA) KN 11, KN 13, KN 14-1, KN 22, KN 32, KN 61000-6-3, KN 61000-6-4.

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 table top.

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8. Test Images

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

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8. Test Images

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

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8. Test Images

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

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8. Test Images

8.4. Spurious and Harmonic Emissions – 1 to 18 GHz Front

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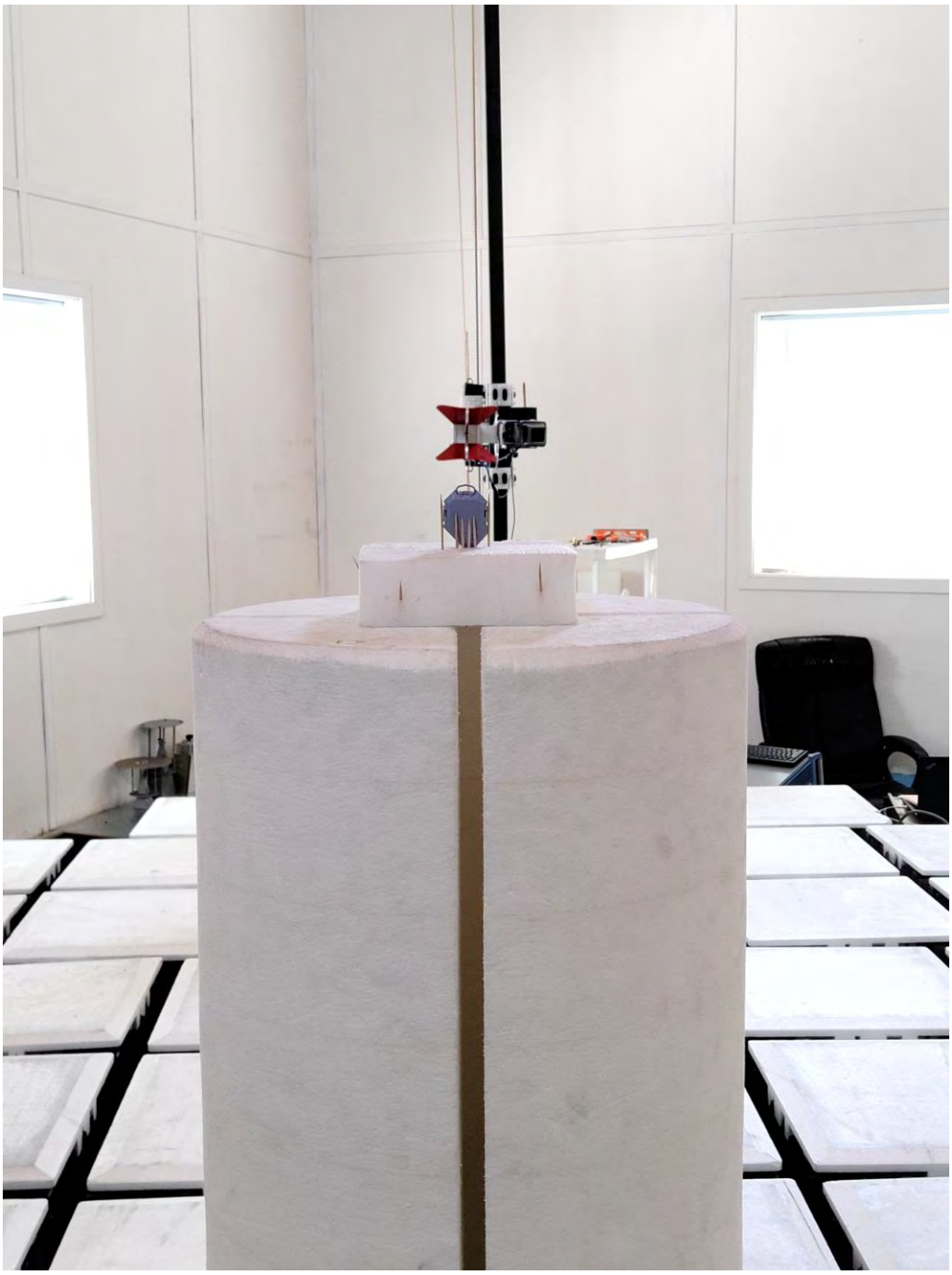
8. Test Images

8.5. Spurious and Harmonic Emissions – 1 to 18 GHz Rear



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8. Test Images

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

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