



## 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 dB $\mu$ V/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 semianechoic 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  $(dB\mu V/m)$  = Measurement Value  $(dB\mu V)$  + Antenna Factor (dB/m) + Cable Loss (dB) – Pre-amplifier Gain (dB) Internal or External.

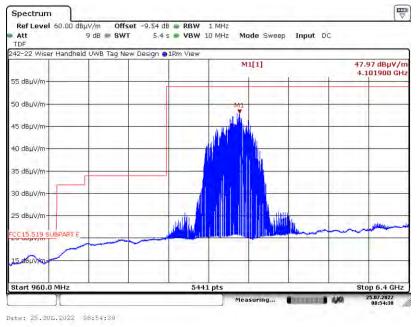
**Note:** All correction factors are loaded into the measurement instrument prior to testing to determine the final result.



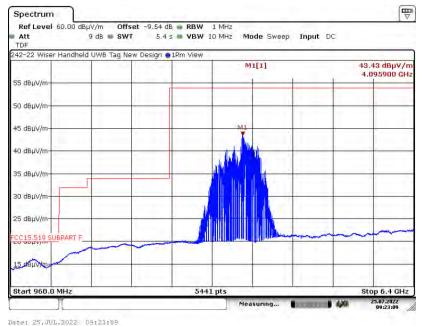


## 6.5. Spurious Radiated Emissions (15.519 (c) continued)

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



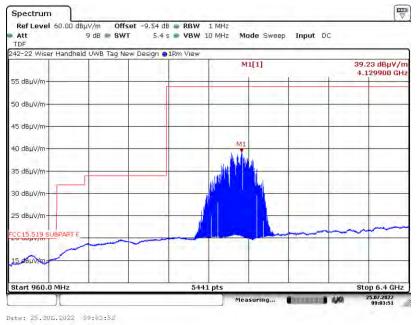
Page 56 of 128



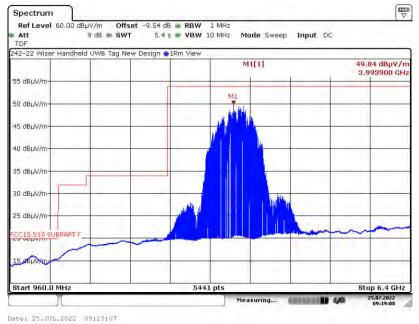


## 6.5. Spurious Radiated Emissions (15.519 (c) continued)

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



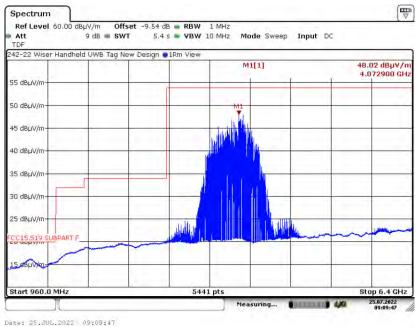
Page 57 of 128



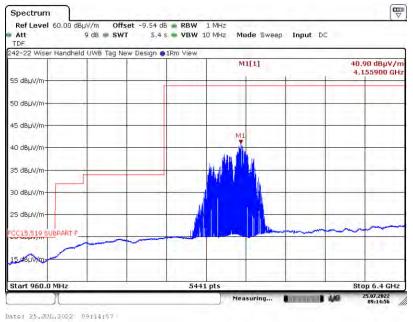


# 6.5. Spurious Radiated Emissions (15.519 (c) continued)

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



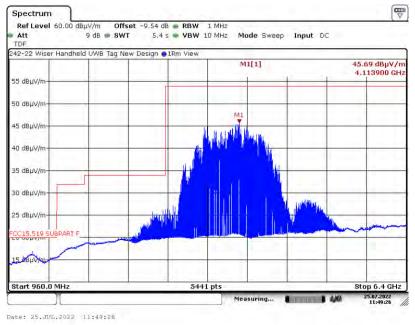
Page 58 of 128



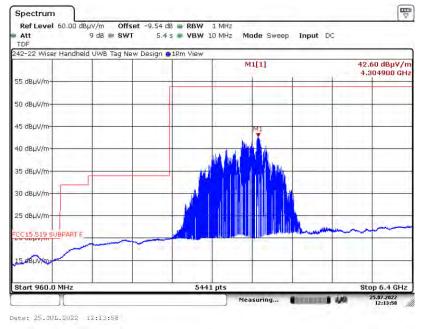


## 6.5. Spurious Radiated Emissions (15.519 (c) continued)

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



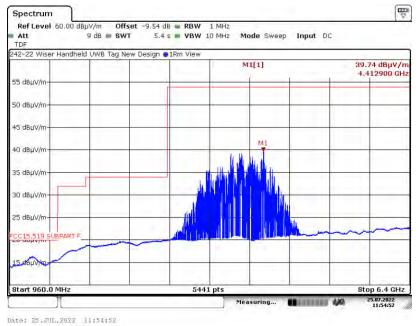
Page 59 of 128



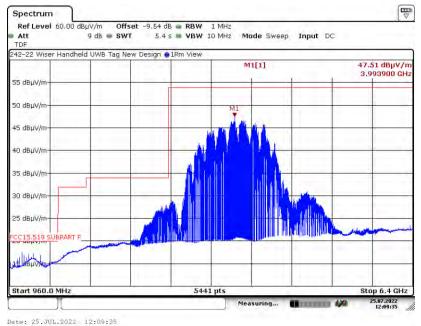


## 6.5. Spurious Radiated Emissions (15.519 (c) continued)

### 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



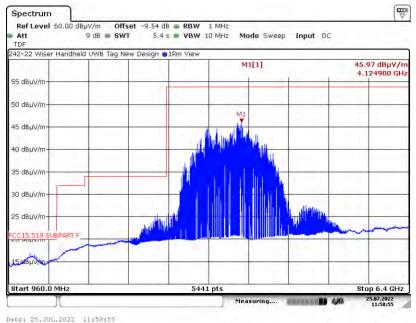
Page 60 of 128



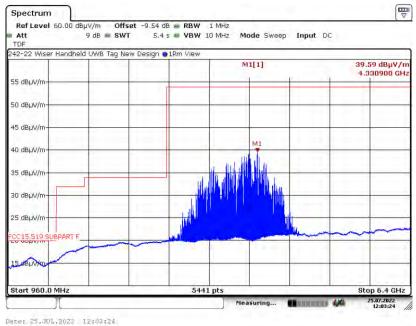


## 6.5. Spurious Radiated Emissions (15.519 (c) continued)

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



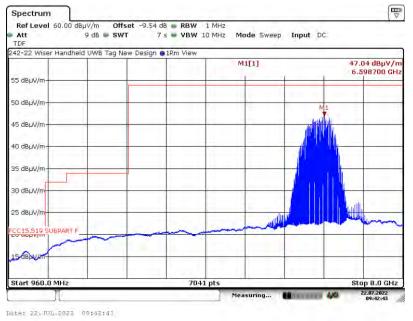
#### Page 61 of 128



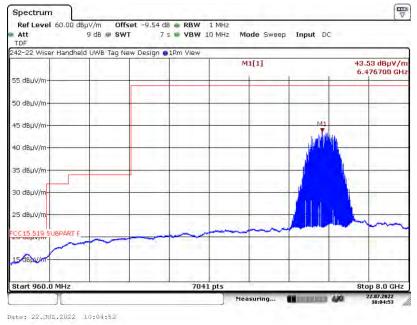


# 6.5. Spurious Radiated Emissions (15.519 (c) continued)

### 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



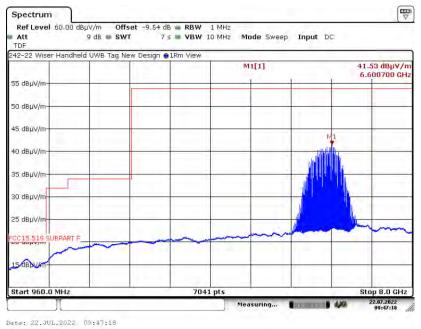
Page 62 of 128



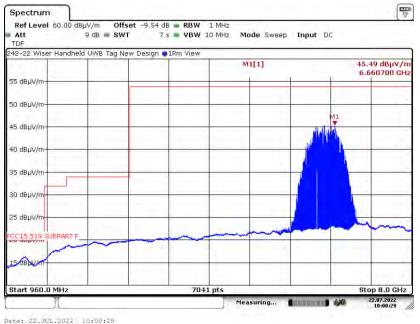


## 6.5. Spurious Radiated Emissions (15.519 (c) continued)

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



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



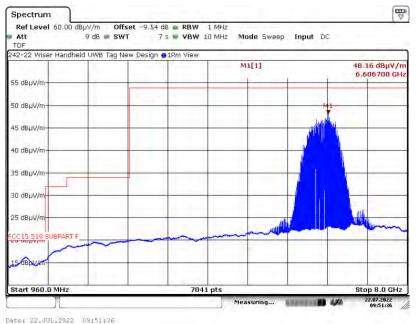
Page 63 of 128



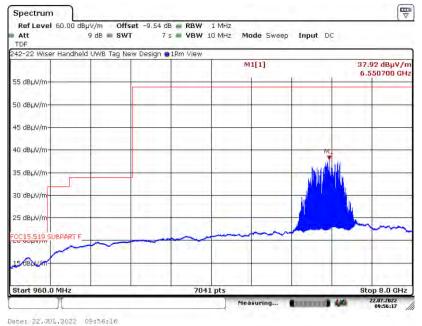


## 6.5. Spurious Radiated Emissions (15.519 (c) continued)

### 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



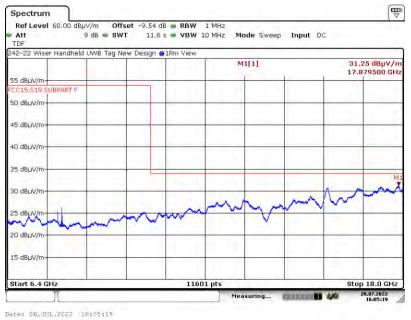
Page 64 of 128





## 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

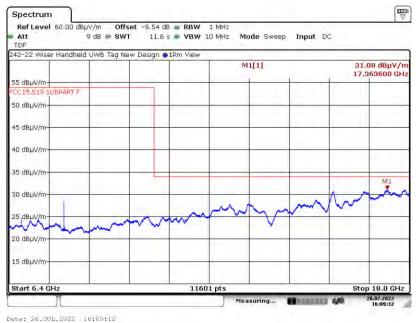




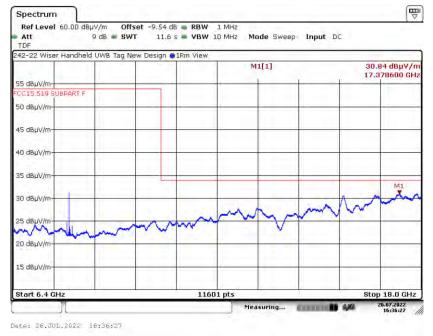


## 6.5. Spurious Radiated Emissions (15.519 (c) continued)

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



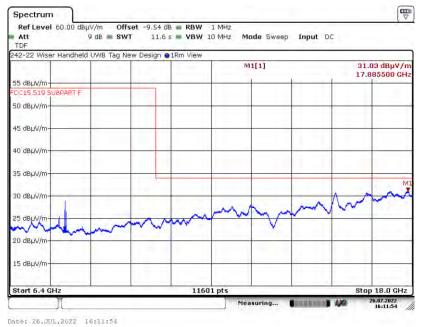
#### Page 66 of 128





## 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



Page 67 of 128



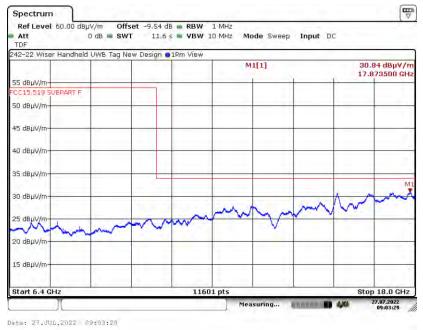


## 6.5. Spurious Radiated Emissions (15.519 (c) continued)

### 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



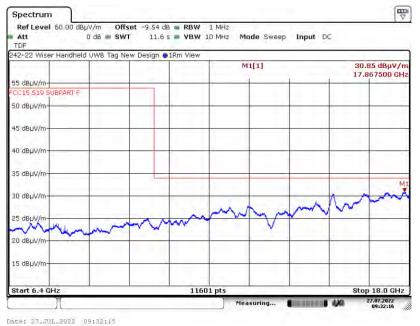
Page 68 of 128





## 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

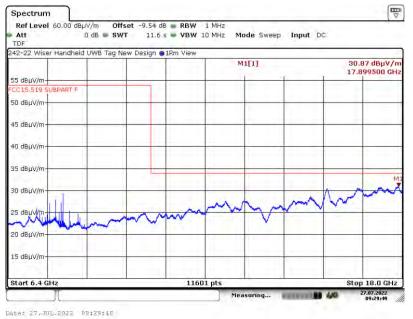




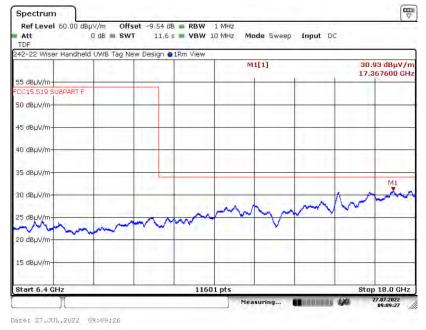


# 6.5. Spurious Radiated Emissions (15.519 (c) continued)

## 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



Page 70 of 128



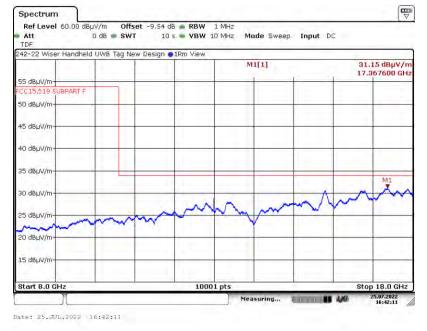


## 6.5. Spurious Radiated Emissions (15.519 (c) continued)

## 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







# 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



### Page 72 of 128





## 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

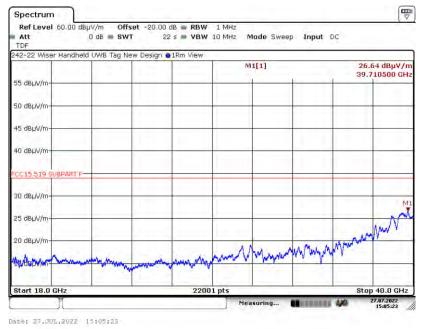




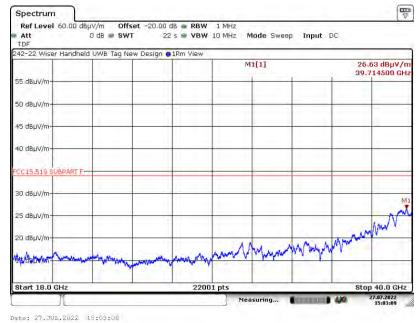


# 6.5. Spurious Radiated Emissions (15.519 (c) continued)

### 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



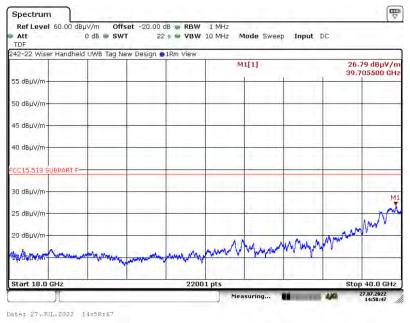
Page 74 of 128



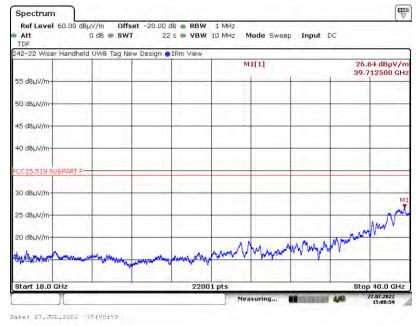


# 6.5. Spurious Radiated Emissions (15.519 (c) continued)

### 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



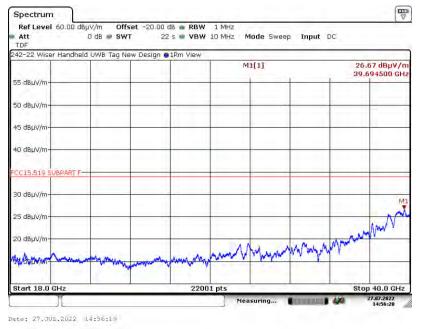
Page 75 of 128





# 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



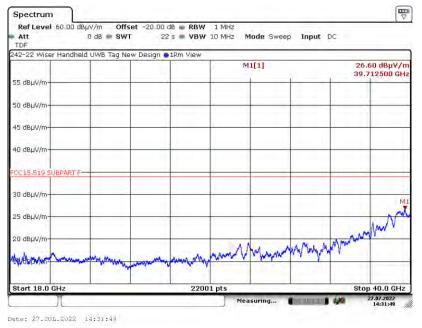
Page 76 of 128





# 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



Page 77 of 128



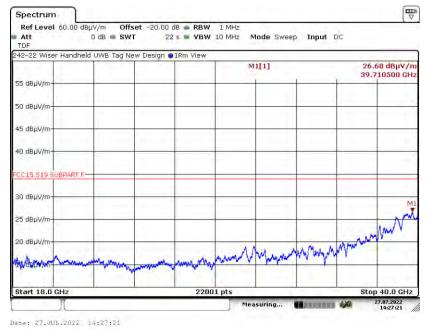


# 6.5. Spurious Radiated Emissions (15.519 (c) continued)

### 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



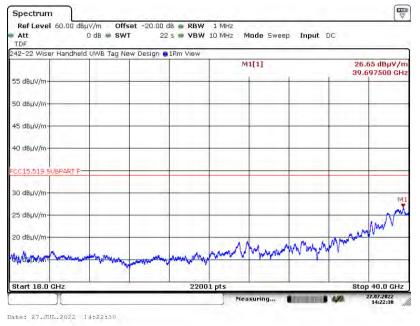
Page 78 of 128





# 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



Page 79 of 128





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

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

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

The EIRP in terms of dBm, can be converted to a field strength, in  $dB\mu V/m$  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 semianechoic 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  $(dB\mu V/m)$  = Measurement Value  $(dB\mu V)$  + Antenna Factor (dB/m)<br/>+ Cable Loss (dB) – Pre-amplifier Gain (dB) Internal or External.

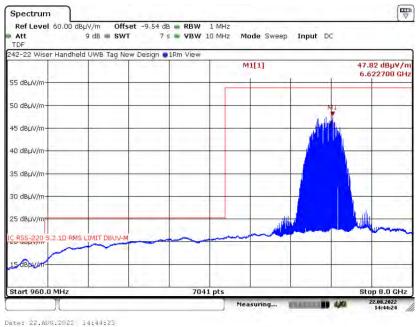
**Note:** All correction factors are loaded into the measurement instrument prior to testing to determine the final result.



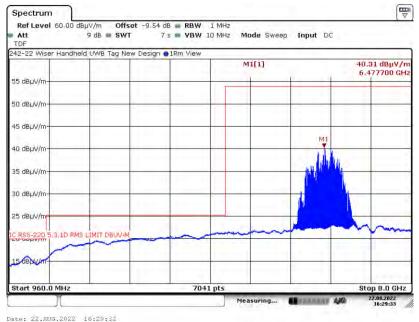


# 6.5. Spurious Radiated Emissions (RSS-220 5.3.1 (d)) continued)

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



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

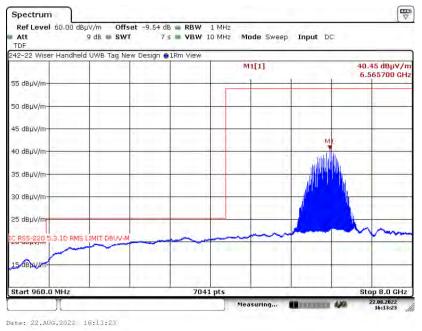




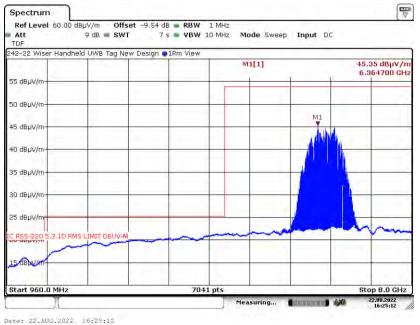


# 6.5. Spurious Radiated Emissions (RSS-220 5.3.1 (d)) continued)

### 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

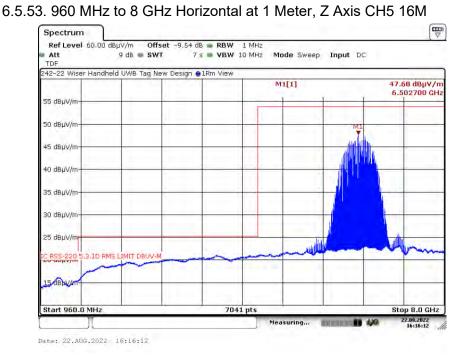


Page 82 of 128

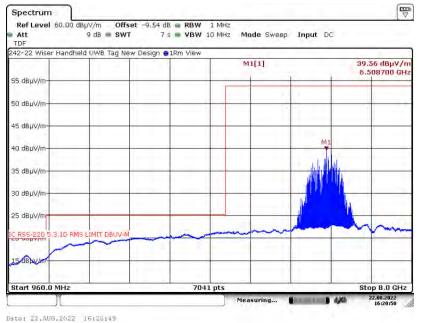




# 6.5. Spurious Radiated Emissions (RSS-220 5.3.1 (d)) continued)



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



Page 83 of 128





## 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  $(dB\mu V/m)$  = Measurement Value  $(dB\mu V)$  + Antenna Factor (dB/m) + Cable Loss (dB) – Pre-amplifier Gain (dB) Internal or External.

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



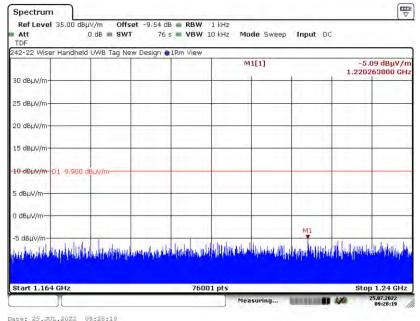


## 6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

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

242-22 Wiser Handhel	d UWB Tag New I	Design 😐 1Rm VI		M1[1]		-4.80 dBµY/n
30 dBµV/m	1		_		r.	1.185298200 GH
SU UBDV/III						
25 dBµV/m			-	-		
20 dBµV/m						
15 dBuV/m						
15 objevin						
10 dBµV/m-01 9,900	dBµV/m		-			
5 dBµV/m						
D dBµV/m						
-5 dBµV/m-	M1				10.01	
and the and the	the marter loop life	a ka da malat	di handala ana	dia dia ma	distriction of the	il ambient tot the former
da viet issociateda. Ha seri	La terretta Maria da sera sera	es ra renes. Adriadada	linge for the nonserver of the	and a second sould	die die weierhaf	a for an other restored to the

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



Page 85 of 128





# 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

242-22 Wiser Handheld UWB	i lag New Design		M1[1]		5.25 dBµV/n 2278600 GH
30 dBµV/m-					
25 dBµV/m-		-			_
20 dBµV/m-					-
15 dBµV/m	-				-
10 dBuV/m-D1 9.900 dBuV/	TTP:		_		_
5 dBµV/m-					
) dBµV/m-					
5 dBuV/m					MI
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of the tweet is a little of	officer collegeory		the set of the set	the design of the second se	<b>1</b> (1
		76001 pts			op 1.24 GH:

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

242-22 Wiser Handh	held UWB Tag New Desi	ign 01Rm View	M1[1]	-4.63 dBµV/
a constant		1.1.1.1.1	MILIJ	1.229232600 G
30 dBµV/m				
25 dBµV/m		-		
20 dBµV/m-				
15 dBµV/m	-			
10 dBµV/m D1 9 90	DO dauv/m			
5 dBµV/m-				
) dBµV/m				
-5 dBµV/m			-	M1
understated an an add	still ding water with the	allanda debiljashelle	hallochighed by a local half of a state of presents.	upple populated by the internet of
Start 1.164 GHz		76001	ats	Stop 1.24 GH

Page 86 of 128





# 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

1. The second		w Design 🌒		M	11[1]			6 dBµV/n 22000 GH
30 dBµV/m					-			
25 dBµV/m				-				
20 dBµV/m-				-			11	
15 dBµV/m	-			_				-
10 dBµV/m D1 9,9	00 dBµV/m							
5 dBµV/m	-							_
) dBµV/m								
5 dBµV/m			M1					1
a apprenti	and in the second	di vicence i	S 64 1	del Halana ha	A and fully	to I will	- Indiana	he bar

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

42-22 Wiser Handheld	CITE Tag New	r besign er		M	1[1]			5 dBµ¥/n 20700 GH
30 dBµV/m							1.2200	20700 GH
25 dBµV/m		_	_	-			_	-
20 dBµV/m								
.5 dBµV/m		_	_				_	_
<del>.0 dBµV/m 1</del> 01 9,900 d	tBpV/m	_	_				_	_
i dBµV/m			_	¢				
) dBµV/m			_					
5 dBµV/m						MI		
	ter Hunder	واللعلي الراب	N <sup>1</sup> APR <sup>1</sup> APR <sup>1</sup>	in billibling	aller which he	ANTH MARTINE	In the second	and hat all all

Page 87 of 128





# 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

2-22 Wiser Handheld UWB Tag Nev	Design Otkin view	M1[1]		-4.98 dBµV/
) dBµV/m		+	1 1	1.212822900 Gr
5 dBµV/m				
) dBµV/m				
5 dBµV/m				
0 4847/m D1 9.000 4847/m				
dBµV/m				
dBµV/m				_
dBµV/m		M1		
a opposed band out of the ball band of the	landra the pollade h	Helpetherlife & Lines	Ally the and had	Alad In Mapalace
a og produkter and out of the filling	lige lastial streage delt	lideiladuridede ina.	(1941), 44 minutes for the	Algely Align V

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

		ew Design 🧧	and them	M1[1] -4.86 dE 1.20836490				
i0 dBµV/m	-	-				1	112000	
5 dBµV/m					_			
0 dBµV/m	-							
.5 dBµV/m		-		-	-			-
0 dBµV/m 01 9.90	3 dBuV/m							
i dBµV/m								
I dBµV/m								
5 dBµV/m	1 3 4 3 4		1	M1		h du o	11 contra	( rale as
developing the provident of the Autom	nd path Man hi	Polation Late	l-yell minelli	Analysi kond allo	and the first of	alditabilited alphip	I tared with	entelni de la

Page 88 of 128





# 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

M1
we have the second stand which which which is

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

1771 I	eld UWB Tag New Design @1Rm View M1[1]						6.53 dBµV/n 1.216837800 GH:		
30 dBµV/m						-			
25 dBµV/m	-			-			-		
20 dBµV/m									
15 dBµV/m	-						-		
<del>10 dBµV/m (</del> D1 9,900	dBu¥/m				M				
5 dBµV/m	-								
D dBµV/m									
-5 dBµV/m	- fully	(Last di	al alo	1 Junio	a falled all the data	monak	. date	dan alah se	
AND DESCRIPTION OF A PARTY	atum Millet	and share a second	त भाषाभा करता	Ma. Altradiation	Alla, and Area	ALL MARKANNA	A hitson back []	alitette dine due o	

Page 89 of 128





# 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

12.11		w Design 💿		-4.79 dBµV/m 1.217561800 GHz				
30 dBµV/m								
25 dBµV/m				_		_		-
20 dBµV/m								_
15 dBµV/m	-			-			-	
10 dBµV/m D1 9,90	io deuV/m							_
5 dBµV/m				-				_
0 dBµV/m-								_
-5 dBµV/m		1			N	1		_
We have been and the state of the	Hoth Long Alberta	Junhauh	al market	Whatel whe will	uddlan Hellalk	1.1.1.	tite the stated	1 Alter

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

	eld UWB Tag Ne	an bosigir e	2101111011	M1[1] -5.04 d 1.2339716				
30 dBµV/m-								
25 dBµV/m-				-				-
20 dBµV/m	_							1
15 dBµV/m	_			-				-
10 dBµV/m 01 9.90	0 dBµV/m							
i dBµV/m	-							-
) dBµV/m	_							
5 dBµV/m				1				MI
La Law Saladian Is a na Idila	PA HAMPINES	. Il Abdel Olah	Lubalins	allette Lette	Manut	which the Nie	ALAN MUSH	A BEALING

Page 90 of 128





# 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

	UWB Tag Nev			M	1[1]			88 dBµY/n 576800 GH
0 dBµV/m								
5 dBµV/m						-	-	
0 dBµV/m							-	
5 dBµV/m								-
0-dBµV/m-01-9.900 (	f8µV/m	_		_	_			
dBµV/m						- <b>F</b>		-
dBµV/m								-
5 dBµV/m					10.00	MI		
dina ana ana did	laber. Ohtors ca	anala tha eff.	والمالية المتعادية	and all Mills	a history	la addition as a	distant belief	الالار والم والأرب

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

	Id UWB Tag New	Design Dirin vie		M1[1]		-5.16 dBµV/n
30 dBµV/m				1 1		C. Marcher and Const. Const.
25 dBµV/m						
20 dBµV/m			_			
15 dBµV/m			-			
10 dBµV/m D1 9,900	dBuV/m			-		
5 dBµV/m			-	-		
D dBµV/m			_	-		
-5 dBuV/m						M1
5 dBµV/m	di dika piyada ba	hin nil en dete mi	a, Ille Jacoble ha	million	halandahad	*

Page 91 of 128



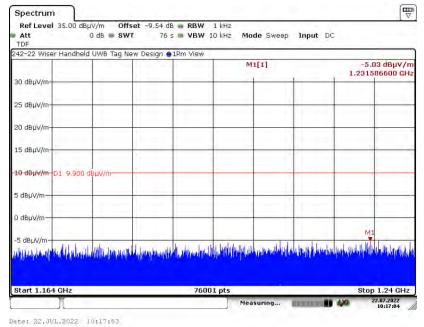


### 6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

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

1.00		11		M1[1]	1.	-5.39 dBµY/n 237990500 GH:
30 dBµV/m				1 1		
25 dBµV/m			-	-		_
20 dBµV/m-				-		
15 dBµV/m	_		_	-		
10 dBuV/m D1 9.9	900 dBuV/m	_	_	-		
5 dBµV/m-	-		_			
) dBµV/m		-		-		
5 dBµV/m		100	to Kelling and	E. C. L. M.		M1
atta dalaha selah baha sija	والالمقطاطي فبالار ولالساد	When the Will Cold P	Ball de Helenan	A sprinkle and the	had not and an and an	PARTY AND A PARTY AND A PARTY AND A

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



Page 92 of 128





### 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

100		w Design 🛛 1F		M	1[1]			23 dBµV/n 155900 GH
30 dBµV/m								
25 dBµV/m		-	-					
20 dBµV/m-					-			
15 dBµV/m					-			
10 d0µV/m 01 9 9	00 deµv/m							
5 dBµV/m	_			_				
0 dBµV/m		_		_	-			
-5 dBµV/m			1.	M1	1		- 1	1 1
antiday. It to be inter	militia Willasha hir	diamin hall d	I that half a la	stimile de	and Alas	bed hat I had	Aund market	had by the lite

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

			M1[1]	10	-5.03 dBµV/i 1.233372600 GH
30 dBµV/m				1	
25 dBµV/m					
20 dBµV/m					
15 dBµV/m					
10 dBuV/m D1 9.900	dBµV/m				_
5 dBµV/m					_
) dBµV/m					
5 dBµV/m			Cold McDillow	Variation Color	M1
phylipped and the state of the	ethil hands of the	, have been a start of the	ortheological patricks () a	and the database	edin educat de détrebrai

Page 93 of 128





# 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

	eld UWB Tag Ne	in posigit et	a an a se a	м	1[1]		-4.48	dBµV/n 7600 GH
10 dBµV/m	_							
5 dBµV/m			-					
0 dBµV/m								
5 dBµV/m			_		-	-		_
0 dBµV/m 01 9.90	i0.dBuV/m							
i dBµV/m								_
l dBµV/m	_			_				
5 dBµV/m	-		::				MI	
all the deal the relations	Carlo La Andra	ton this	dial direct	and indiana	all blanks	and chickato	d and also	that he

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

242-22 Wiser Handheld UWB Tag		-	11[1]	-5.25	dBµV/r
30 dBµV/m					100.00
25 dBµV/m		_			_
20 dBµV/m				_	_
15 dBµV/m	-	-			_
10 dBµV/m D1 9,900 daµV/m		-			_
5 dBµV/m					_
0 dBµV/m	_				
-5 dBµV/m-				M1	_
almatestep down dibbe contributes and it power	hand day by production	utronoutin but plan	dam Hilde hand hand	anticological to produce	phlaplan
anna a bharail na deallan bhandhailte	len Andreich - e cenel	asseries a state	ano-franchorfela bakala	ud da wadha si da ka waka	lese for
Start 1.559 GHz	4	51001 pts		Stop 1	.61 GH

Page 94 of 128





### 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

			m View	M1[1]	1.5	-4.17 dBµV/n 1.608885500 GH
30 dBµV/m						
25 dBµV/m						_
20 dBµV/m-	-					
15 dBµV/m	_	_				
10 dBuV/m-01 9.9	00 dBuV/m			_	_	
5 dBµV/m						
0 dBµV/m	-				-	
-5 dBµV/m						MI
the dead and and a distant	and a shell be added	and the state of the second	n hai da al dan h	halver birding the	المالية الأعادية ومرارا فالمالية وريا	addath bill ballat

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

		w Design 💿1Rm		M1[1]		-5.23 dBµV/r
30 dBµV/m				1 1	1.	589207900 GH
25 dBµV/m						-
20 dBµV/m						
15 dBµV/m	-			-		
18 dBµV/m 01 9/90	10 dBuV/m					
5 dBµV/m			-	-		
) dBµV/m	_			-		_
-5 dBµV/m	and that	(		M1		Cold Linear La
	Napris al va pastarpre		aples alter phattleps	anne An Dall an	impart i pal marti	university frame

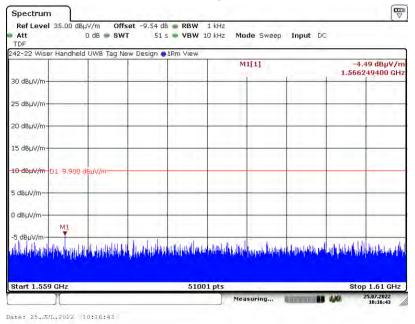
Page 95 of 128



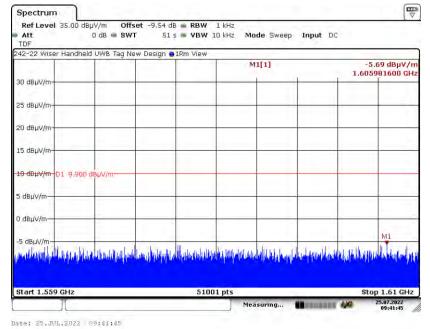


### 6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

#### 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



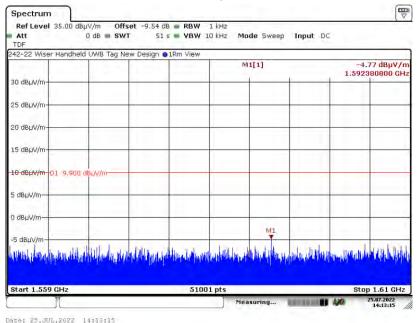
Page 96 of 128





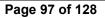
### 6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

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



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

1.			M1[1]	11 - Lei	-5.22 dBµV/i 1.580970100 GH
30 dBµV/m-			1	1 1	
25 dBµV/m		_			_
20 dBµV/m					
15 dBµV/m		-		-	
10 dBµV/m 01 9,900 i	dBuV/m	_		+	
5 dBµV/m		_			
0 dBµV/m-		-			
-5 dBµV/m		MI			_
string to the state of the state of the	a a la da baba a ba	upla dia antidity	Network Scales and Albert	When hills when the state	A Bhall And Andrews

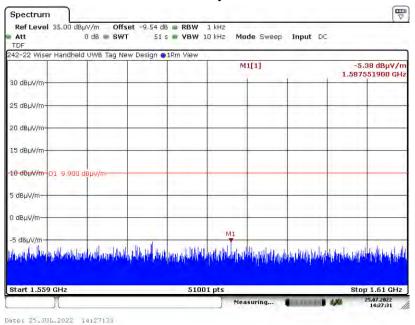






### 6.6. Spurious Radiated Emissions in GPS Bands (15.519 (d) continued)

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

200			View	M1[1]	1000		2 dBµV/r 39400 GH
30 dBµV/m	-			-		1.0000	09100 di
25 dBµV/m			-	_			
20 dBµV/m							-
15 dBµV/m	_				-		
10 dBµV/m D1 9 90	la depv/m		_	_	-		
5 dBµV/m			-	_			
) dBµV/m-			-		-		
5 dBµV/m			Lot La .			1	L.c.
distantial aller datis to Ta	d d. a billi de la stela a	ul II. al match	1 Handbard	du fidialità un 1.	halial and the	a laborated by	القامالة الأ

Page 98 of 128





# 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

142-22 Wiser Handhe	nu ovvo rag ive	on Design	TCIO VIEW	M	1[1]			32 dBµV/n 18500 GH
30 dBµV/m-					-			
25 dBµV/m	-				-			
20 dBµV/m					_			
15 dBµV/m	-				_			-
10 dBµV/m D1 9,900	dauv/m	1					-	_
5 dBµV/m	_			-	_			
0 dBµV/m								
5 dBµV/m			1					
ed op Tod Hill To Bland plan	Waldalugawaadhi	the participation of the	it which have	and block of the	uhowh/hat/hit	handlighdald	Mapping all Aller	mil mile ma
				J 1.4				1. 1

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

		ew Design <del>8</del> 1Rn		M1[1]	1	-5.46 dBµV/n
30 dBµV/m	-					in the second se
25 dBµV/m						
20 dBµV/m						
15 dBµV/m			-			-
10 dBµV/m D1 9,9	oo deuv/m					
i dBμV/m	-		-		-	-
) dBµV/m			-			-
5 dBµV/m			-			M1
at the distant	الأفاقيا ليقتد والدارية	ald the detail is	Later bedrachter	far dinkertade a t.d.	the Mall Martin Black	nables a ghalles a

Page 99 of 128





### 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

2 mil 1			M1	[1]		1.32 dBµ∀/n 1459200 GH
30 dBµV/m						
25 dBµV/m			-			-
20 dBµV/m						
.5 dBµV/m			-			-
0 dBµV/m D1 .9.900	dBuV/m		-		_	-
5 dBµV/m		_				
) dBµV/m					-	-
5 dBµV/m	M1		1	de la dece d	INCE ET	
A habdelet Ut you a	Lighter a house	the state of the s	la ar pas bill bi	WIN PLANNING TO BE		- Hall-Label

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

-22 Wiser Haridheid UWB I	Tag New Design 👴1Rm				
			11[1]		5.17 dBµ¥/m 3783300 GH:
dBµV/m			+ +		1
					-
dBµV/m					
dBµV/m					-
dBµV/m					-
dBµV/m D1 9,900 dBµV/m					-
IBµV/m					-
IBµV/m					-
dBµV/m					
and an I considered the low, and	All days J. John addition	(II.) Hallada a state of the data	Indiates de la companya de la company	a sili but is called	الم السال الله ال
	stread, admanded	ille materia andre verbeide	dumenticity, and	alantan, tu nama	La tilla .

Page 100 of 128





# 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

1. Sec. 1. Sec. 1.	1.1			M	1[1]			18 dBµV/n 527000 GH
30 dBµV/m	-		_		-			
25 dBµV/m-			_					
20 dBµV/m-	_					-	<u>i - 11- 11 -</u>	
15 dBµV/m	_		-					-
10 d6µV/m 01 9.90	0 dBµV/m							
5 dBµV/m					-			
D dBµV/m	_		_					
-5 dBµV/m			M1				1	
ination and with the solution	hill hall and breed it, hite	WHAT WALK	In all with	B. Breath at	the black the	antshaksapah	We have	A De Marendel

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

and the second			Rm View	M	1[1]	_	-4.77 dBµV/
0 dBµV/m	-				1		1.605535600 GH
5 dBµV/m					-		
0 dBµV/m							
5 dBµV/m-	-						
<del>0 dBµV/m  </del> 01  9,900 d	lBu∀/m		_				
dBµV/m-							
dBµV/m-		_					
5 dBµV/m			1	0.5			M1
nte helpitalitate da di band	malinuder	all un Line	h al a h a h a h a h	(deallar little	And the Adams	hable block	we defend the filling factor

Page 101 of 128





# 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

			1Rm View	M1	.[1]			22 dBµV/n
30 dBµV/m	_				-		1.5833	76000 GH
25 dBµV/m								
20 dBµV/m								
15 dBµV/m	-				_			-
10 dBµV/m D1 9,9	00 dBµV/m				_			
5 dBµV/m					-	-		
0 dBµV/m								
-5 dBµV/m-	200	-	M1.	-				
لالبابيل لياه ويتقر المانات	فالبلا وجاليا البلوج البالة	البلول إطولا مقل ال	about the shall be a	افداد الا	and the ball of a st	and whether the	الماليا لمانيا	different aleastic

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

	B Tag New Design		M1[1]		-4.23 dBµV/r 1.607415600 GH
IQ dBµV/m				1	
5 dBµV/m		-			-
O dBµV/m		-		-	
5 dBµV/m		-			_
0 dBµV/m D1 9,900 dBµV	/m	-			_
i dBµV/m		-			
l dBµV/m					280
5 dBµV/m		1	- 15 U.S.M.S.	t n.t	M1
an particulation interaction by the large	Hangphachtenne	in delhar didla	that property and particular	par a history parties	norshendlereder

Page 102 of 128





### 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  $dB\mu V/m$  at 3 Meters by adding 95.2.

Frequency	EIRP	EIRP at 3 Meters
(MHz)	(dBm)	(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)





#### 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 <sup>1</sup>	Limit	Margin	Ant Polarity		Turntable Azimuth	Result
(0112)	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
4.0869	50.19	53.90	-3.71	Н	133	253	Compliant

Notes: <sup>1</sup> 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<sub>meas</sub> + 20 log (d<sub>meas</sub>) - 104.7; d<sub>meas</sub> = 3 EIRP (dBm) =  $E_{meas}$  (dB $\mu$ V/m) – 95.2

Frequency (GHz)	Amplitude <sup>1</sup> (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
(0.1.2)	EIRP	EIRP	(dB)	H/V	cm	Deg	
4.0869	-45.01	-41.30	-3.71	Н	133	253	Compliant

242-22 Wiser H	andheld UWB	Tag New Design	ı						
MultiView	Spectrum	1							•
Spectrum	Att		/Tis 🗢 VBW i	IO MHz Mode					
1 Frequency S		0Q0CQ240.0.TDF	","276 ANT 0319	ETS LINDGREN	3117 3M .TDF","(	J348 AMP JCA48-	-4111B1 SN 708	7S.TDF"	o1Rm View
Limit Che	ck	LIMIT DBUV-M	PA PA					M1[1]	50.19 dBµV/m 4.086 900 GHz
65 dBµV/m									
60 dBµV/m									
55 dBµ∀/m									
FCC P15-519 RMS L	IMIT DBUV-M				M1				
50 dBµV/m				Manna and	min 1	mm	W.		
45 dBµ∀/m	. 1	man	m	V V V V			hm	him	
40 dBµV/m──	~~~~~~							- ment	h
35 dBµ\9/m	2								m
June 200 Million									~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
30 dBµV/m									
25 dBµV/m									
CF 4.0 GHz			1001 pt:	s	10	0.0 MHz/			Span 1.0 GHz
	~					~	Measuring		15.07.2022 15:13:15

15:13:16 15.07.2022





 $\wedge$ 

#### 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 <sup>1</sup>	Limit	Margin	Ant Polarity		Turntable Azimuth	Result
(0112)	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
4.0859	53.26	53.90	-0.64	Н	133	253	Compliant

Notes: <sup>1</sup> 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<sub>meas</sub>) – 104.7; d<sub>meas</sub> = 3 EIRP (dBm) =  $E_{meas}$  (dB $\mu$ V/m) – 95.2

Frequency (GHz)	Amplitude <sup>1</sup> (dBm)	Limit (dBm)	Margin	Ant Polarity		Turntable Azimuth	Result
(0112)	EIRP	EIRP	(dB)	H/V	cm	Deg	
4.0859	-41.94	-41.30	-0.64	Н	133	253	Compliant

MultiView	- Spectrum	1							
raiti i civ									
Spectrum	Ref Level 70.		● RBW VT 1 s ● VBW 1		Succe				
		:0Q0CQ240.0.TDF				348 AMP JCA48	-4111B1 SN 708	7S.TDF"	
Frequency S	Sweep								●1Rm View
Limit Che Line FCC	ck P15-519 RM <mark>S</mark> I	LIMIT DBUV-M	PA PA					M1[1]	53.26 dBµV/r 4.085 900 GH
5 dBµ∨/m									
O dBµV/m									
5 dBµ∨/m					M1-				
:C P15-519 RMS 0 dBµV/m	LIMIT DBUV-M		. A.	mmm	man	m	$\sim$		
	1 and 1	have	r w	*	Ŵ		VV~~~	Mar .	
مر 5 dBµV/m	and the second								man
) dBµV/m									- Art
jdBµV/m									
dBµV/m───									
5 dBµV/m───									
F 4.0 GHz			1001 pt	6	10	0.0 MHz/			Span 1.0 GH
							Measuring		15.07.2022





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

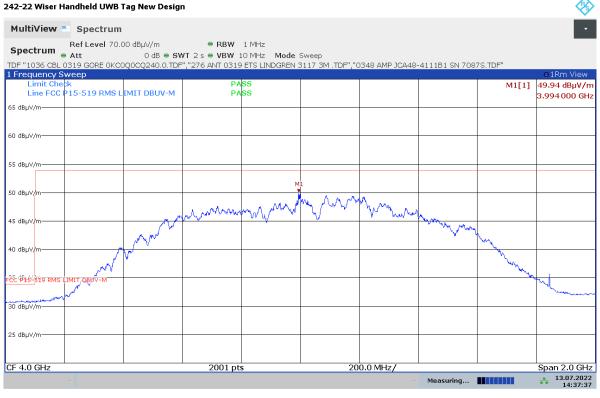
6.7.3. Plot of RMS Power at 3 Meters (CH4, 6.8 Mbps, 16M PRF)

Frequency (GHz)	Amplitude <sup>1</sup>	Limit	Margin	Ant Polarity		Turntable Azimuth	Result
(0112)	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
3.994	49.94	53.90	-3.96	Н	133	253	Compliant

Notes: <sup>1</sup> 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<sub>meas</sub>) – 104.7; d<sub>meas</sub> = 3 EIRP (dBm) =  $E_{meas}$  (dB $\mu$ V/m) – 95.2

Frequency (GHz)	Amplitude <sup>1</sup> (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	Н	133	253	Compliant



14:37:37 13.07.2022





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

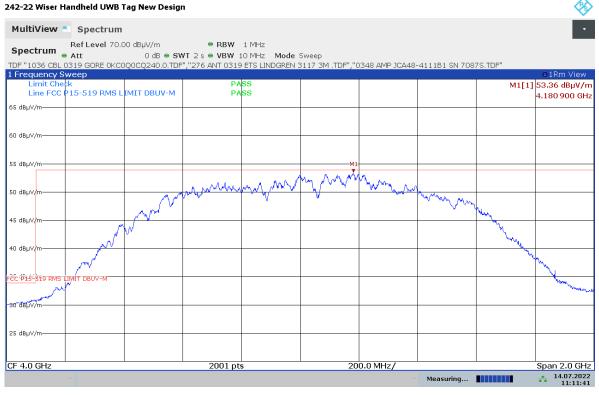
6.7.4. Plot of RMS Power at 3 Meters (CH4, 6.8 Mbps, 64M PRF)

Frequency (GHz)	Amplitude <sup>1</sup>	Limit	Margin	Ant Polarity		Turntable Azimuth	Result
(0112)	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
4.1809	53.36	53.90	-0.54	Н	133	253	Compliant

Notes: <sup>1</sup> 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<sub>meas</sub>) – 104.7; d<sub>meas</sub> = 3 EIRP (dBm) =  $E_{meas}$  (dB $\mu$ V/m) – 95.2

	Frequency (GHz)	Amplitude <sup>1</sup> (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	Н	133	253	Compliant



11:11:41 14.07.2022





### 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 <sup>1</sup>	Limit	Margin	Ant Polarity		Turntable Azimuth	Result
(0112)	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
6.490	49.57	53.90	-4.33	Н	148	216	Compliant

Notes: <sup>1</sup> 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<sub>meas</sub> + 20 log (d<sub>meas</sub>) - 104.7; d<sub>meas</sub> = 3 EIRP (dBm) =  $E_{meas}$  (dB $\mu$ V/m) – 95.2

Frequency (GHz)	Amplitude <sup>1</sup> (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
(0.1.2)	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.490	-45.66	-41.30	-4.33	Н	148	216	Compliant

242-22 Wiser Handheld UWB Tag New Desig	n				<b>I</b>
MultiView 🗉 Spectrum					•
Enoctrum	● RBW 1 MHz WT 1s ● VBW 10 MHz Mode	Sweep			
TDF "1036 CBL 0319 GORE 0KC0Q0CQ240.0.TD			-4111B1 SN 7087	S.TDF"	
1 Frequency Sweep					●1Rm View
Limit Check Line FCC P15-519 RMS LIMIT DBUV-M	PASS PASS				49.57 dBµV/m
	PA55				6.490 000 GHz
65 dBµV/m					
60 dBµV/m					
55 dBµV/m					
FCC P15-519 RMS LIMIT DBUV-M					
50 dBµV/m	M1				
	manne	Man Mar Man Mar	www		
45 dBµV/m			the way way	mh	
40 dBµV/m				- my my	
and the second second					the second s
,3,5-d₿µ∨/m					
30 dBµV/m					
25 dBµV/m					
CF 6.5 GHz	1001 pts	100.0 MHz/	1 1		Span 1.0 GHz
V			Measuring		12.07.2022 12:00:59

12:01:00 12.07.2022





#### 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 <sup>1</sup>	Limit	Margin	Ant Polarity		Turntable Azimuth	Result
(0112)	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
6.525	52.56	53.90	-1.34	Н	148	216	Compliant

Notes: <sup>1</sup> 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<sub>meas</sub> + 20 log (d<sub>meas</sub>) - 104.7; d<sub>meas</sub> = 3 EIRP (dBm) =  $E_{meas}$  (dB $\mu$ V/m) – 95.2

Frequency (GHz)	Amplitude <sup>1</sup> (dBm)	Limit (dBm)	Margin	Ant Polarity		Turntable Azimuth	Result
()	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.525	-42.64	-41.30	-1.34	Н	148	216	Compliant

242-22 Wiser Handheld UWB Tag	New Design						<b>I</b>
MultiView Spectrum							
Spectrum Ref Level 70.00 d	HBμV/m ● RBW OdB ● SWT 1 s ● VBW 1		weep				
TDF "1036 CBL 0319 GORE 0KC0Q0	CQ240.0.TDF","276 ANT 0319	ETS LINDGREN 3	117 3M .TDF","0	348 AMP JCA48-	4111B1 SN 7087	'S.TDF"	
1 Frequency Sweep	24						●1Rm View
Limit Check Line FCC P15-519 RMS LIMI	ET DBUV-M PA						52.56 dBµV/m
		55					6.525 000 GHz
65 dBµV/m							
60 dBµV/m							
00 00000000							
55 dBµV/m			M1				
FCC P15-519 RMS LIMIT DBUV-M			- X				
		murmuh	n tunn	Morninga			
50 dBµV/m	and the second sec	<b>0</b> ·		*	man and a second		
	John and a large a					many	
45 dBµV/m	, 					m	
man							<b>N</b>
							The way
40 dBµV/m							when
er te							no no
35 dBµV/m							
30 dBµV/m							
25 dBµV/m							
CF 6.5 GHz	1001 pts	;	10	0.0 MHz/			Span 1.0 GHz
v				V	Measuring		12.07.2022 16:01:01

16:01:01 12.07.2022





### 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  $dB\mu V/m$  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.

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

Frequency Range:
Measurement Distance:
EMI Receiver IF Bandwidth:
EMI Receiver Avg Bandwidth
Detector Function:

3.5 to 4.5 GHz, 3 to 5 GHz, 6 to 7 GHz3 Meters50 MHz80 MHzPeak, Max Held





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

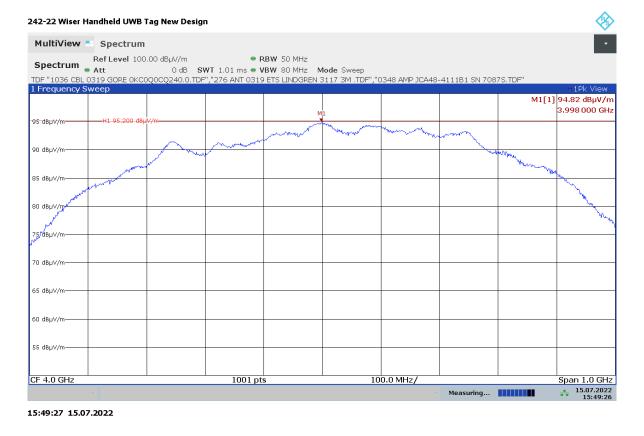
6.8.1 Plot of Peak Power at 3 Meters (CH2, 6.8 Mbps, 16M PRF)

Frequency (GHz)	Amplitude <sup>1</sup>	Limit	Margin	Ant Polarity		Turntable Azimuth	Result
(0112)	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
3.998	94.82	95.20	-0.38	Н	133	253	Compliant

Notes: <sup>1</sup> 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<sub>meas</sub>) – 104.7; d<sub>meas</sub> = 3 EIRP (dBm) =  $E_{meas}$  (dB $\mu$ V/m) – 95.2

Frequency (GHz)	Amplitude <sup>1</sup> (dBm)	Limit (dBm)	Margin	Ant Polarity		Turntable Azimuth	Result
(0.1)	EIRP	EIRP	(dB)	H/V	cm	Deg	
3.998	-0.38	0.00	-0.38	Н	133	253	Compliant







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

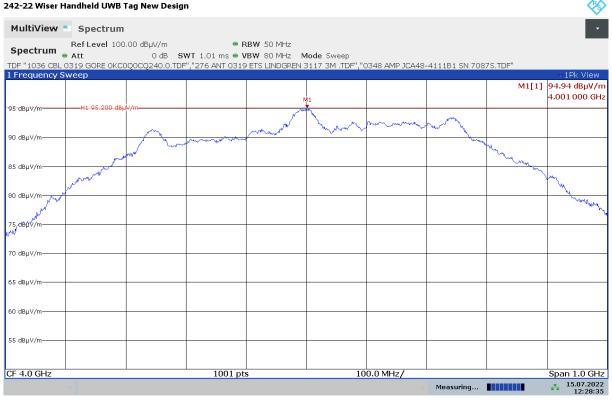
6.8.2 Plot of Peak Power at 3 Meters (CH2, 6.8 Mbps, 64M PRF)

Frequency (GHz)	Amplitude <sup>1</sup>	Limit	Margin	Ant Polarity		Turntable Azimuth	Result
(0112)	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
4.001	94.94	95.20	-0.26	Н	133	253	Compliant

Notes: <sup>1</sup> 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<sub>meas</sub>) – 104.7; d<sub>meas</sub> = 3 EIRP (dBm) =  $E_{meas}$  (dB $\mu$ V/m) – 95.2

Frequency (GHz)	Amplitude <sup>1</sup> (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
(0)	EIRP	EIRP	(dB)	H/V	cm	Deg	
4.001	-0.26	0.00	-0.26	Н	133	253	Compliant



12:28:35 15.07.2022





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

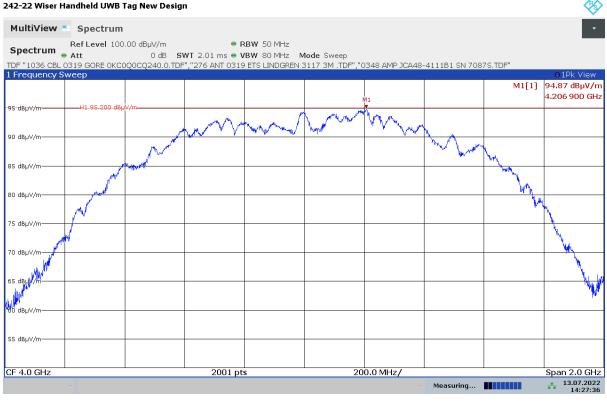
6.8.3 Plot of Peak Power at 3 Meters (CH4, 6.8 Mbps, 16M PRF)

Frequency (GHz)	Amplitude <sup>1</sup>	Limit	Margin	Ant Polarity		Turntable Azimuth	Result
(0112)	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
4.2069	94.87	95.20	-0.37	Н	133	253	Compliant

Notes: <sup>1</sup> 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<sub>meas</sub>) – 104.7; d<sub>meas</sub> = 3 EIRP (dBm) =  $E_{meas}$  (dB $\mu$ V/m) – 95.2

Frequency (GHz)	Amplitude <sup>1</sup> (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
(0.12)	EIRP	EIRP	(dB)	H/V	cm	Deg	
4.2069	-0.37	0.00	-0.37	Н	133	253	Compliant



14:27:36 13.07.2022





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

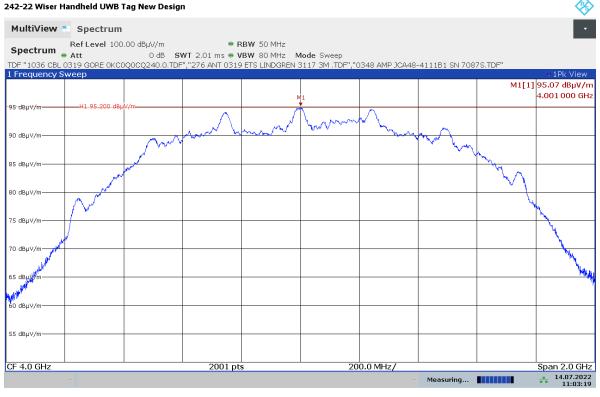
6.8.4 Plot of Peak Power at 3 Meters (CH4, 6.8 Mbps, 64M PRF)

Frequency (GHz)	Amplitude <sup>1</sup>	Limit	Margin	Ant Polarity		Turntable Azimuth	Result
(0112)	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
4.001	95.07	95.20	-0.13	Н	133	253	Compliant

Notes: <sup>1</sup> 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<sub>meas</sub>) – 104.7; d<sub>meas</sub> = 3 EIRP (dBm) =  $E_{meas}$  (dB $\mu$ V/m) – 95.2

Frequency (GHz)	Amplitude <sup>1</sup> (dBm)	Limit (dBm)	Margin	Ant Polarity		Turntable Azimuth	Result
(0)	EIRP	EIRP	(dB)	H/V	cm	Deg	
4.001	-0.13	0.00	-0.13	Н	133	253	Compliant



11:03:19 14.07.2022





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

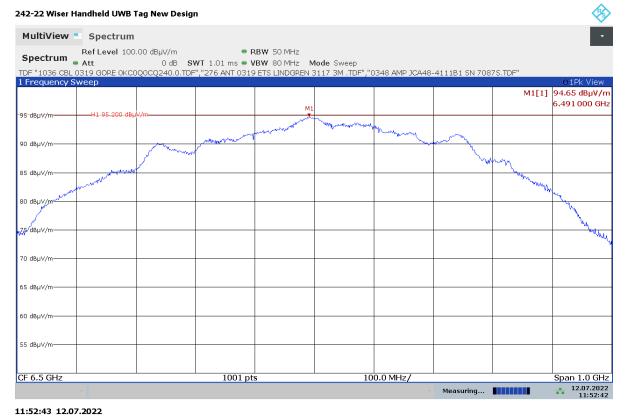
6.8.5 Plot of Peak Power at 3 Meters (CH5, 6.8 Mbps, 16M PRF)

Frequency (GHz)	Amplitude <sup>1</sup>	Limit	Margin	Ant Polarity		Turntable Azimuth	Result
(0112)	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
6.491	94.65	95.20	-0.55	Н	148	216	Compliant

Notes: <sup>1</sup> 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<sub>meas</sub>) – 104.7; d<sub>meas</sub> = 3 EIRP (dBm) =  $E_{meas}$  (dB $\mu$ V/m) – 95.2

Frequency (GHz)	Amplitude <sup>1</sup> (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
(0112)	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.491	-0.55	0.00	-0.55	Н	148	216	Compliant







#### 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 <sup>1</sup>	Limit	Margin	Ant Polarity		Turntable Azimuth	Result
(0112)	(dBµV/m)	(dBµV/m)	(dB)	H/V	cm	Deg	
6.497	95.08	95.20	-0.12	Н	148	216	Compliant

Notes: <sup>1</sup> 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<sub>meas</sub>) – 104.7; d<sub>meas</sub> = 3 EIRP (dBm) =  $E_{meas}$  (dB $\mu$ V/m) – 95.2

Frequency (GHz)	Amplitude <sup>1</sup> (dBm)	Limit (dBm)	Margin	Ant Polarity	Ant Height	Turntable Azimuth	Result
(0.1)	EIRP	EIRP	(dB)	H/V	cm	Deg	
6.497	-0.12	0.00	-0.12	Н	148	216	Compliant

242-22 Wiser H	1andheld UWB 1	ag New Desig	n						<b></b>
MultiView	Spectrum								•
Spectrum	Ref Level 100 Att 0319 GORE 0KC0	0 dB <b>S</b> '	WT 1.01 ms 👄 V			240 8MD 30840	414484 01 700		
1 Frequency S	weep	JQUCQ240.0.1DF	, 276 ANT USIS	ETS LINDGREN 3	5117 SM.TDF, €	J346 AMP JCA46-	-4111D1 SN 70d	75.TDF	●1Pk View
				м	1				95.08 dBµV/m 6.497 000 GHz
-95-dBµ∀/m	H1 95.200 dBµ	V/m		a manufacture	human	mann			
90 dBµV/m						- Contraction of the second se	and the second	Manunan -	
85 dBµV/m	www							- M	mm
80 dByy/m									Mark and Mary
75 dBµV/m									
70 dBµV/m───									
65 dBµV/m									
60 dBµV/m									
55 dBµV/m									
CF 6.5 GHz		1	1001 pt	s	10	0.0 MHz/		1	Span 1.0 GHz
	~					v	Measuring		12.07.2022 15:54:53

15:54:53 12.07.2022





#### 6.9 Conducted Emissions Test Setup

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

Frequency Range (MHz)	Limits (dBµV)				
(11112)	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 De		scription	Title/Model #	Rev.
Compliance Worldwide	Test Report Gener	ation 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  $(dB\mu V)$  = Measurement Value  $(dB\mu V)$  + LISN Factor (dB) + Cable Loss (dB).

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

Page 117 of 128





#### 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)

Page 118 of 128





### 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)

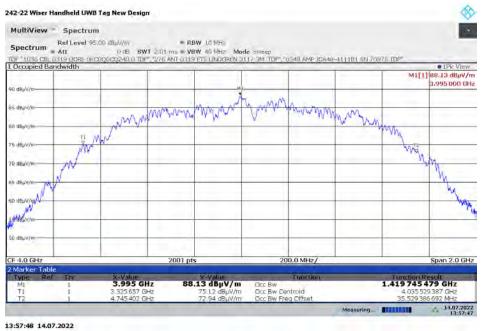




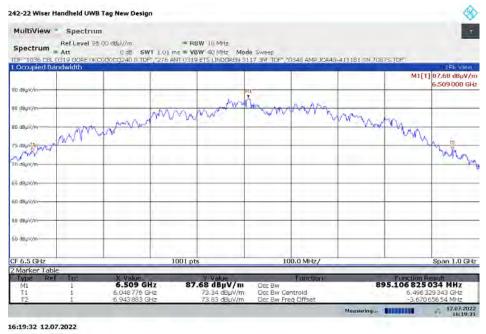


### 6.10. 99% Emission Bandwidth (RSS-GEN 6.7)

#### 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)

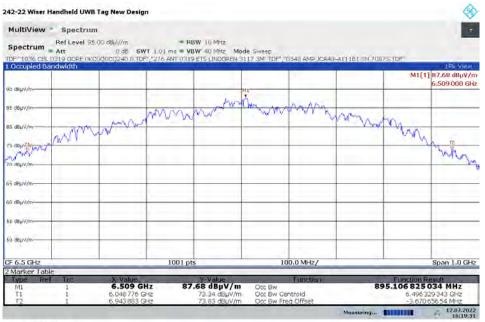






### 6.10. 99% Emission Bandwidth (RSS-GEN 6.7)

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



16:19:32 12.07.2022

Page 121 of 128





### 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  $2.3 \times 2.5$  meter ground plane and a  $2.4 \times 2.4$  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.





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



Page 123 of 128





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



Page 124 of 128





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



Page 125 of 128





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



Page 126 of 128





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







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



Page 128 of 128