



FCC LISTED, REGISTRATION  
NUMBER: 2764.01

ISED LISTED REGISTRATION  
NUMBER: 23595-1

Test report No:  
2711ERM.002A2

## Test report

USA FCC 15.519/FCC 15.521  
CANADA RSS-220

RF Measurement of Ultra-Wideband (UWB) devices operating within  
the band 3100 MHz and 10600 MHz.

Identification of item tested	Ultra Wide Band (UWB) Radar Sensor module
Trademark	Novelda
Model and /or type reference	X4C007
Other identification of the product	FCC ID: 2AD9Q-X4C007 IC: 22782-X4C007
Features	---
Manufacturer	Novelda AS Garverivegen 2 NO-3850 Kviteseid, Norway
Test method requested, standard	FCC CFR Title 47 Part 15 Subpart F: 2015 CANADA RSS-220 Issue 1 (July 2018). RSS-GEN Issue 5 (March 2019) ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Domingo Galvez EMC&RF Lab Manager
Date of issue	06-10-2020
Report template No	FDT08_21

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## Competences and guarantees

DEKRA Certification Inc. is a testing laboratory accredited by A2LA (The American Association for Laboratory Accreditation), to perform the tests indicated in the Certificate 2764.01

DEKRA Certification Inc. is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Certification Inc. has a calibration and maintenance program for its measurement equipment.

DEKRA Certification Inc. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Certification at the time of performance of the test.

DEKRA Certification Inc. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

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## General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Certification Inc.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Certification Inc. and the Accreditation Bodies.

## Uncertainty

Uncertainty (factor k=2) was calculated according to the DEKRA Certification internal document PODT000.

Frequency (MHz)	U (k=2)	Units
30-180	3.82	dB
180-1000	2.61	dB
1000-18000	2.92	dB
18000-40000	2.15	dB

## Data provided by the client

Ultra-Wide Band (UWB) Radar sensor module.

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

## Usage of samples

Samples undergoing test have been selected by: The client.

Sample S/01 is composed of the following elements:

Control Nº	Description	Model	Serial Nº	Date of reception
2711.15	X4C007 DUT (UWB_Device)	XTCBLP008	D-10	2/24/2020

Following Accessory Items were used with Sample S/01

Control Nº	Description	Model	Serial Nº	Date of reception
2711.14	DUT Controller	X4t16	C-10	2/24/2020
2711.10	USB cable	-	-	2/24/2020
2711.11	Sphere(silver)	-	S-4-	2/24/2020
2711.12	Drive	-	EB-1(29N9)-	2/24/2020
2711.16	Stand for DUT	-	-	2/24/2020
2711.13	Motor	-	EB-1(45N9)-	2/24/2020
2711.09	AC/DC Adapter	96897	S-4	2/24/2020

Sample S/01 was used in following testing: Power line Conducted Emission testing in Appendix A

Samples undergoing test have been selected by: The client.

Sample S/02 is composed of the following elements:

<b>Control Nº</b>	<b>Description</b>	<b>Model</b>	<b>Serial Nº</b>	<b>Date of reception</b>
2711/05	DUT (UWB Device)	XTCBLP008	D-1	02-17-2020
2711/06	DUT (UWB Device)	XTCBLP008	D-3	02-17-2020

Following Accessory Items were used with Sample S/02

<b>Control Nº</b>	<b>Description</b>	<b>Model</b>	<b>Serial Nº</b>	<b>Date of reception</b>
2711/03	DUT Controller	X4t16	C-1	02-17-2020
2711/04	DUT Controller	X4t16	C-3	02-17-2020
2711/07	USB Cable	-	7-6	02-17-2020
2711/08	AC/DC Adapter (EU)	S6W21M18	1948073484	02-17-2020
2711/02	Stand for DUT	-	-	02-17-2020

1. Sample S/02 has undergone following test(s): 10 dB Bandwidth and Transmitter On/Off requirement in appendix A.

Samples undergoing test have been selected by: The client.

Sample S/03 is composed of the following elements:

<b>Control Nº</b>	<b>Description</b>	<b>Model</b>	<b>Serial Nº</b>	<b>Date of reception</b>
2711/06	DUT (UWB Device)	XTCBLP008	D-3	02-17-2020

Following Accessory Items were used with Sample S/03

<b>Control Nº</b>	<b>Description</b>	<b>Model</b>	<b>Serial Nº</b>	<b>Date of reception</b>
2711/04	DUT Controller	X4t16	C-3	02-17-2020
2711/07	USB Cable	-	7-6	02-17-2020
2711/08	AC/DC Adapter (EU)	S6W21M18	1948073484	02-17-2020
2711/02	Stand for DUT	-	-	02-17-2020

1. Sample S/03 has undergone following test(s): Radiated Emission, Radiated Emission in GPS band and Peak level of Emission in appendix A.

## Test sample description

Ports.....	Port name and description	Cable				
		Specified length [m]	Attached during test	Shielded		
	GND		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
	SCL		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
	SDA		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
	VCC		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
	Enable		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
Supplementary information to the ports.....	All ports are connected to the host through flat cable supplied with the host.					
Rated power supply .....	Voltage and Frequency	Reference poles				
		L1	L2	L3	N	
	<input type="checkbox"/> AC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input type="checkbox"/> AC:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	<input checked="" type="checkbox"/> DC:1.8 V – 3.3 V, Nominal 2.5 V					
	<input type="checkbox"/> DC:					
Rated Power .....	72 mA					
Clock frequencies .....	27 MHz, 243 MHz					
Other parameters.....						
Software version .....	12c04720					
Hardware version.....	4.0					
Dimensions in cm (L x W x D) ....	32 mm 3.8 mm x 2.2 mm					
Mounting position.....	<input checked="" type="checkbox"/>	Table top equipment				
	<input type="checkbox"/>	Wall/Ceiling mounted equipment				
	<input type="checkbox"/>	Floor standing equipment				
	<input checked="" type="checkbox"/>	Hand-held equipment				
	<input type="checkbox"/>	Other: Vehicle / Automotive use				

Modules/parts .....	Module/parts of test item	Type	Manufacturer
	X4C007 (PCBA + Shield)		Novelda AS
Accessories (not part of the test item) .....	Description	Type	Manufacturer
	X4T16 controller board		Novelda AS
	USB Cable		
	AC/DC Adapter		
	Stand for EUT		Novelda AS
Documents as provided by the applicant .....	Description	File name	Issue date
	EUT Product Information		
<b>Copy of marking plate:</b>			
No Marking Plate found on EUT			

## Identification of the client

Novelda AS  
Garverivegen 2  
NO-3850 Kviteseid, Norway

## Testing period and place

<b>Test Location</b>	DEKRA Certification Inc.
<b>Date (start)</b>	02-21-2020
<b>Date (finish)</b>	02-27-2020

## Document history

Report number	Date	Description
2711ERM.002	05-26-2020	First release
2711ERM.002A1	06-05-2020	Second release
2711ERM.002A2	06-10-2020	Third release

## Modifications to the reference test report

It was introduced the following modification in respect to the test report number 2711ERM.002A1 related with the same samples:

Clauses/ Sub-Clauses	Modification	Justification
Page 28 / 10 dB Bandwidth	Changed the FL and FH value and mentioned 10 dB below the maximum power	FL and FH value changed from OBW value.

This modification test report cancels and replaces the test report 2711ERM.002A1.

## Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the semi-anechoic chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 °C Max. = 35 °C
Relative humidity	Min. = 30 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

## Remarks and comments

The tests have been performed by the technical personnel: Divya Adusumilli, Bhagyashree Chaudhary, Poojita Bhattu and Koji Nishimoto.

## Testing verdicts

Not applicable :	N/A
Pass :	P
Fail :	F
Not measured :	N/M

## Summary

FCC PART 15.519 /15.521					
Section	FCC Spec Clause	RSS Spec Clause	Test Description	Verdict	Remark
A.1	§ Section 15.207	RSS-GEN Clause 8.8	Conducted Emission	P	N/A
A.2	§ Section 15.209 § Section 15.519(c)	RSS GEN Clause 8.9 RSS -220 Clause 5.3.1(d)	Radiated Emission	P	N/A
A.3	§ Section 15.519(d)	RSS -220 Clause 5.3.1(e)	Radiated Emission in GPS band	P	N/A
A.4	§ Section 15.519(a)	RSS -220 Clause 5.3.1(b)	Transmitter On/Off Requirement	P	N/A
A.5	§Section 15.503(a) § Section 15.519(b)	RSS -220 Clause 5.1(a)	10 dB Bandwidth	P	N/A
A.6	§ Section 15.521(g) § Section 15.519(e)	RSS -220 Clause 5.3.1(g)	Peak level of Emission	P	N/A
<u>Supplementary information and remarks:</u> N/A					

## List of equipment used during the test

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CONTROL NUMBER	DESCRIPTION	MANUFACTURE	MODEL	LAST CALIBRATION	NEXT CALIBRATION
1179	Semi anechoic Absorber Lined Chamber	FRANKONIA	SAC 3 plus "L"	2017/08	2020/08
1064	Biconical Log antenna	ETS LINDGREN	3142E	2018/01	2021/01
1056	Double-ridge Waveguide Horn antenna	ETS LINDGREN	3116C	2020/01	2023/01
1057	Double-ridge Waveguide Horn antenna	ETS LINDGREN	3115	2017/03	2020/03
1058	Double-ridge Waveguide Horn antenna	ETSI LINDGREN	3115	2017/03	2020/03
1012	EMI Test Receiver	Rohde & Schwarz	ESR26	2019/12	2021/12
1014	Signal analyzer	Rohde & Schwarz	FSV40	2019/04	2021/04
0981	Low Noise Preamplifier	BONN ELECKTRONIK	BLMA0118-2A	2018/10	2020/10
0982	Low Noise Preamplifier	BONN ELECKTRONIK	BLMA01840-1M	2018/10	2020/10
1062	Active loop antenna	ETS LINDGREN	6502	2017/02	2020/02
1039	Signal analyzer	Rohde & Schwarz	FSV40	2018/10	2020/10

## **Appendix A: Test results**

## Appendix A Content

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## PRODUCT INFORMATION

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The following information is provided by the client

Information	Description
Modulation	Pulsed TX with pseudo random bi-phase
Lowest Operating Frequency	7.49 GHz
Highest Operating Frequency	8.45 GHz
RF output Power	< -15 dBm
Operating Voltage range	1.8 V – 3.3 V
- Nominal Voltage	2.5 V
Channel bandwidth	Nominal -10 dB bandwidth 960 MHz
Antenna gain	-10 dBi
Type of Antenna	PCB antenna

## DESCRIPTION OF TEST CONDITIONS

---

TEST CONDITIONS	DESCRIPTION
TC#01	<p><u>Power supply (V):</u> <math>V_{nominal} = 2.5 \text{ V}</math></p> <p><u>Modulation:</u> Pulsed TX with pseudo random bi-phase</p> <p><u>Test Frequency band / range:</u> 7.49 – 8.45 GHz</p>

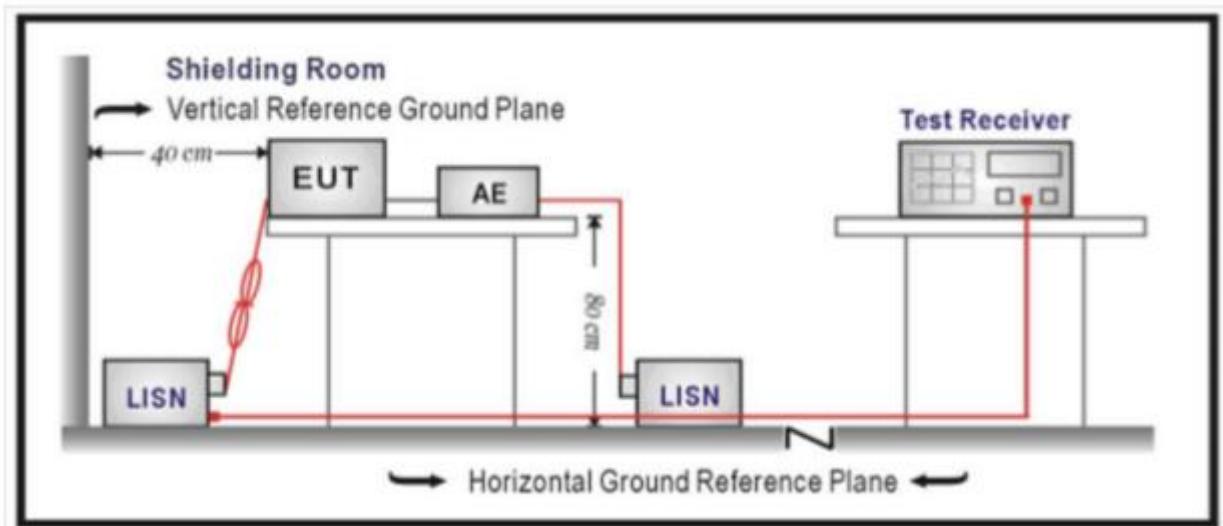
## TEST A.1: CONDUCTED EMISSION

<b>LIMITS:</b>	Product standard:	Part 15 Subpart C §15.207(a) and RSS-GEN Clause 8.8
	Test standard:	ANSI C63.10-2013 Section 6.2

### LIMITS

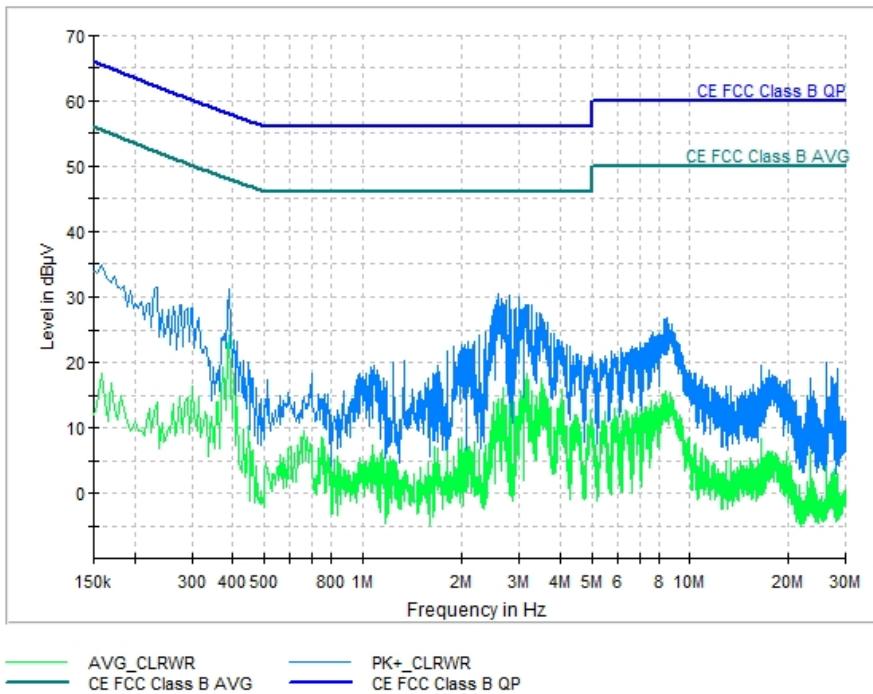
Frequency (MHz)	QP (dB $\mu$ V)	AV (dB $\mu$ V)
0.15-0.50	66-56	56-46
0.50-5.0	56	46
5.0-30	60	50

### TEST SETUP:

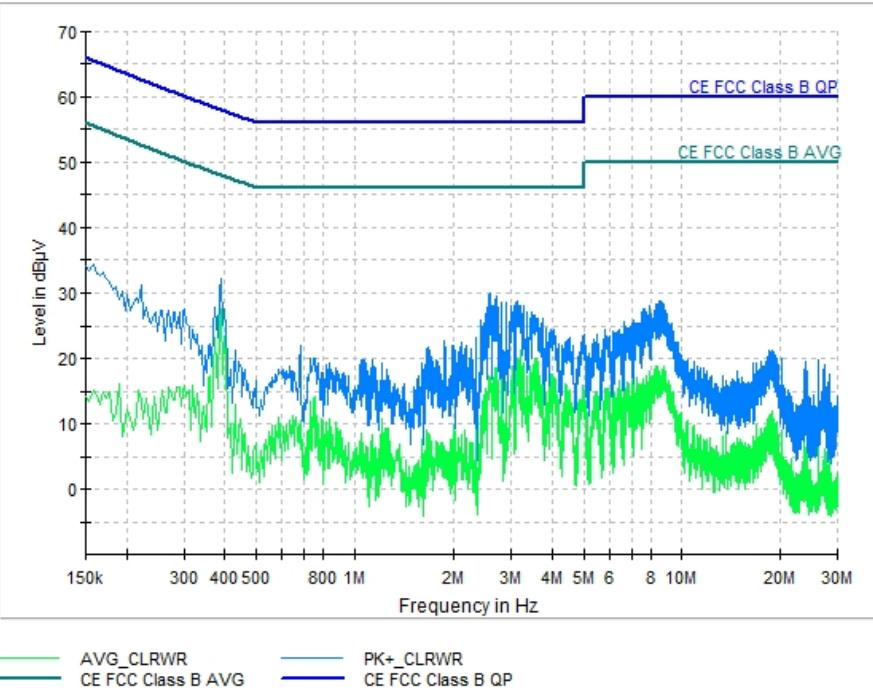


TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS:	PASS

Description: EUT powered by AC/DC adapter 2.5V, N wire



Frequency (MHz)	PK+_CLRWR (dB $\mu$ V)	AVG_CLRWR (dB $\mu$ V)
0.158000	34.7	18.3
3.138000	28.7	17.4
8.526000	26.6	14.6
9.166000	23.0	11.3
13.310000	16.5	5.4
16.546000	19.5	8.3
18.118000	18.0	4.4
23.382000	17.5	6.3
26.222000	20.0	4.2
28.414000	19.0	2.9

TEST RESULTS (Cont.):	PASS																																	
Description: EUT powered by AC/DC adapter 2.5V, L1 wire																																		
 <p>Legend:</p> <ul style="list-style-type: none"><li>AVG_CLRWR (Green line)</li><li>CE FCC Class B AVG (Green line)</li><li>PK+_CLRWR (Blue line)</li><li>CE FCC Class B QP (Blue line)</li></ul>																																		
<table border="1"><thead><tr><th>Frequency (MHz)</th><th>PK+_CLRWR (dB<math>\mu</math>V)</th><th>AVG_CLRWR (dB<math>\mu</math>V)</th></tr></thead><tbody><tr><td>0.158000</td><td>34.2</td><td>15.3</td></tr><tr><td>3.178000</td><td>28.0</td><td>19.1</td></tr><tr><td>8.522000</td><td>28.7</td><td>18.3</td></tr><tr><td>9.342000</td><td>25.5</td><td>14.4</td></tr><tr><td>14.698000</td><td>18.1</td><td>7.9</td></tr><tr><td>17.474000</td><td>19.7</td><td>9.3</td></tr><tr><td>18.578000</td><td>21.4</td><td>11.2</td></tr><tr><td>24.026000</td><td>19.5</td><td>4.7</td></tr><tr><td>26.194000</td><td>19.9</td><td>5.5</td></tr><tr><td>27.338000</td><td>19.2</td><td>6.1</td></tr></tbody></table>		Frequency (MHz)	PK+_CLRWR (dB $\mu$ V)	AVG_CLRWR (dB $\mu$ V)	0.158000	34.2	15.3	3.178000	28.0	19.1	8.522000	28.7	18.3	9.342000	25.5	14.4	14.698000	18.1	7.9	17.474000	19.7	9.3	18.578000	21.4	11.2	24.026000	19.5	4.7	26.194000	19.9	5.5	27.338000	19.2	6.1
Frequency (MHz)	PK+_CLRWR (dB $\mu$ V)	AVG_CLRWR (dB $\mu$ V)																																
0.158000	34.2	15.3																																
3.178000	28.0	19.1																																
8.522000	28.7	18.3																																
9.342000	25.5	14.4																																
14.698000	18.1	7.9																																
17.474000	19.7	9.3																																
18.578000	21.4	11.2																																
24.026000	19.5	4.7																																
26.194000	19.9	5.5																																
27.338000	19.2	6.1																																

## TEST A.2: RADIATED EMISSION

<b>LIMITS:</b>	Product standard:	Part 15 Subpart C §15.209(a) and Subpart F § 15.519 (c) and RSS-GEN Clause 8.9 and RSS 220 Clause 5.3(d)
	Test standard:	ANSI C63.10-2013 Section 6.3, 6.4, 6.5, 6.6, 10.2 and 10.3

### LIMITS

Frequency (MHz)	Distance(m)	Level (dB $\mu$ V/m)
0.009-0.490	300	20 log (2400/F(kHz))
0.490-1.705	30	20 log (24000/F(kHz))
1.705-30.0	30	29.5
30-88	3	40
88-216	3	43.5
216-960	3	46

Note 1: The lower limit shall apply at the transition frequency.

Note 2: Distance refers to the distance in meters between the measuring instrument antenna and the close point of any part of the device or system.

Note 3: E field strength (dB $\mu$ V/m) = 20 log E field strength ( $\mu$ V/m)

Note 4: E field strength (dB $\mu$ V/m) = EIRP (dBm) + 95.2

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

Fundamental frequency (MHz)	EIRP in dBm
960-1610	-75.3
1610-1990	-63.3
1990-3100	-61.3
3100-10600	-41.3
Above 10600	-61.3

### TEST SETUP:

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at 3 m for the frequency range 9kHz – 30 MHz (Active loop antenna), 30-960 MHz (Bilog antenna), at 1m for the frequency range 960 MHz -18 GHz (Double ridge horn antennas) and at 0.5 m for the frequency range 18 GHz- 40 GHz (Double ridge horn antennas).

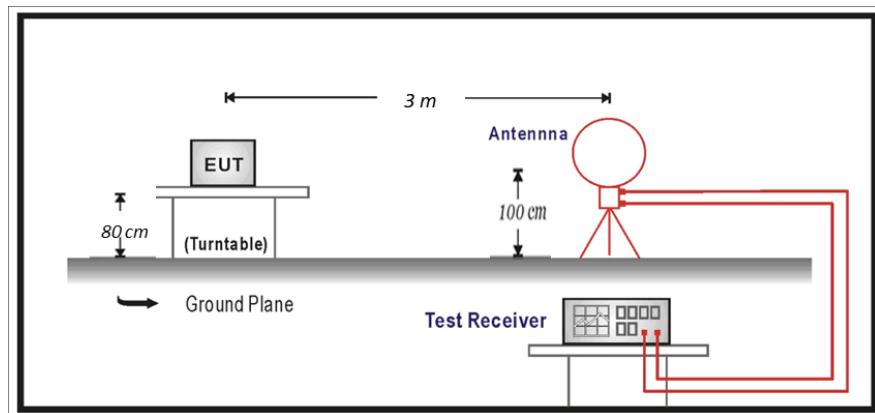
For radiated emissions in the range 960 MHz - 40 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

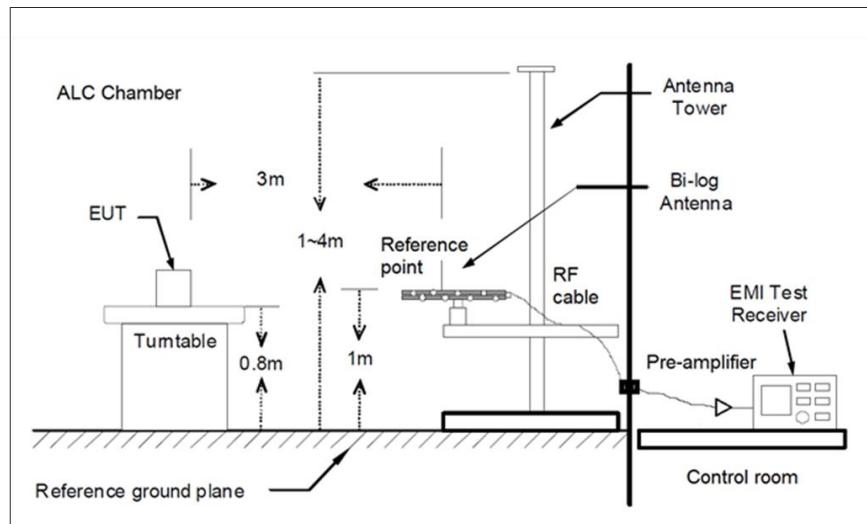
Measurements were made in both horizontal and vertical planes of polarization.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain

#### Radiated measurements Setup 9 kHz to 30 MHz

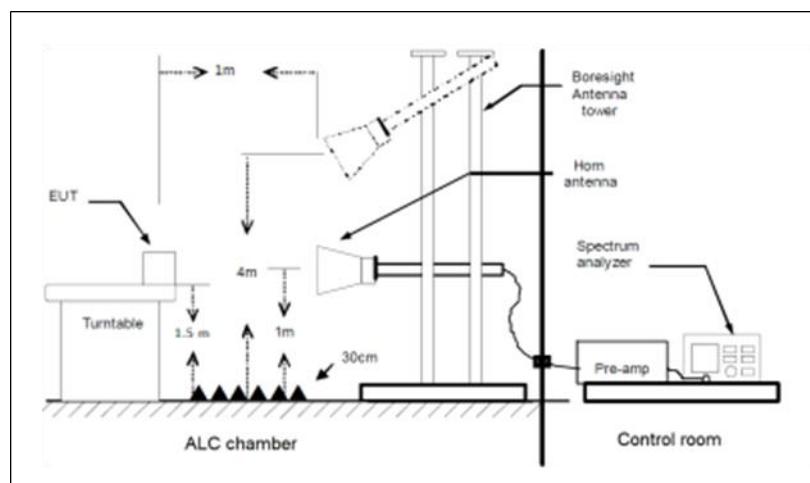


#### Radiated measurements Setup 30 MHz to 960 MHz



**TEST SETUP (Cont.):**

**Radiated measurements setup  $f > 960$  MHz**



**TESTED RESULTS:**

S/03

**TESTED CONDITIONS MODES:**

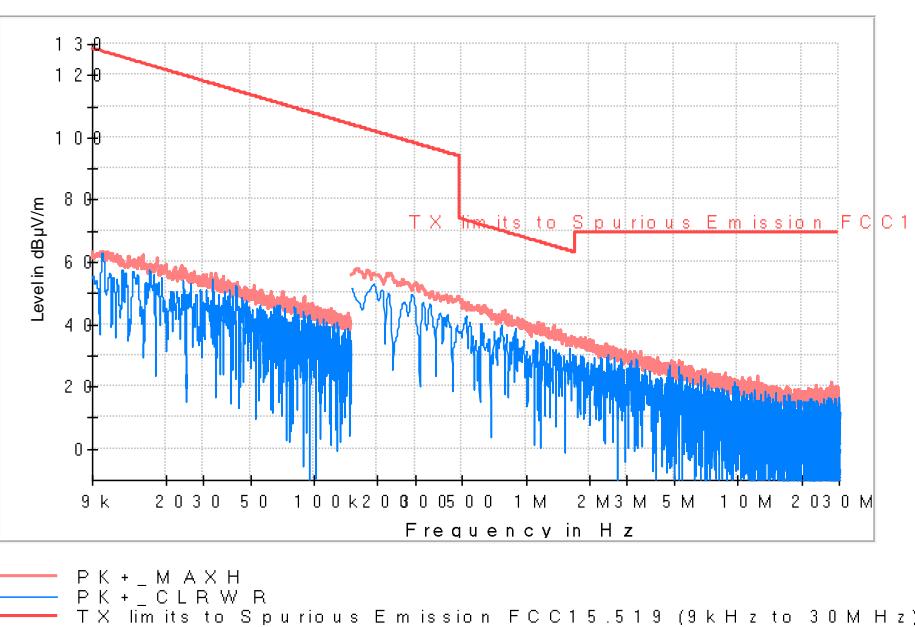
TC#01

**TEST RESULTS**

PASS

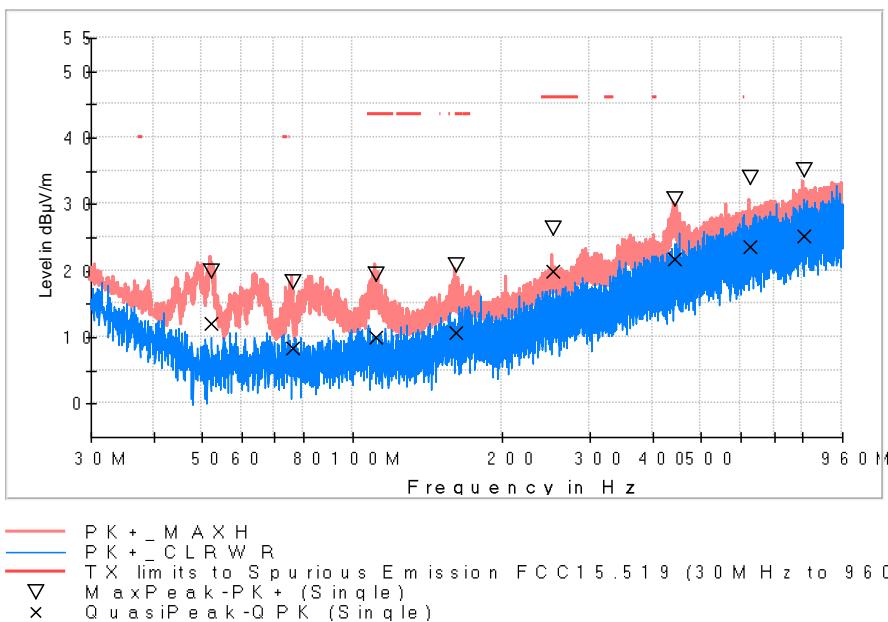
**FREQUENCY RANGE**

9 kHz – 30 MHz



FREQUENCY RANGE

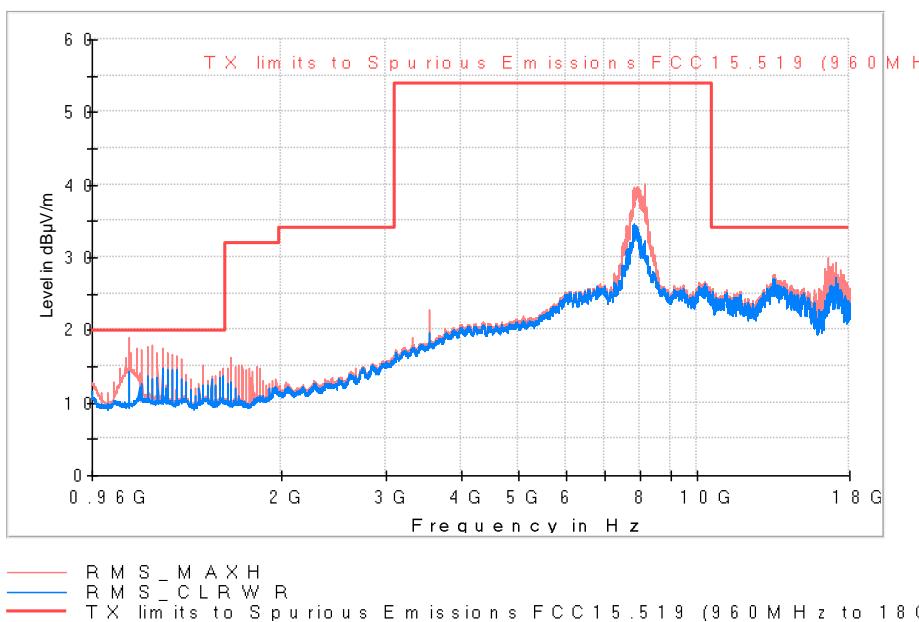
30 - 960 MHz



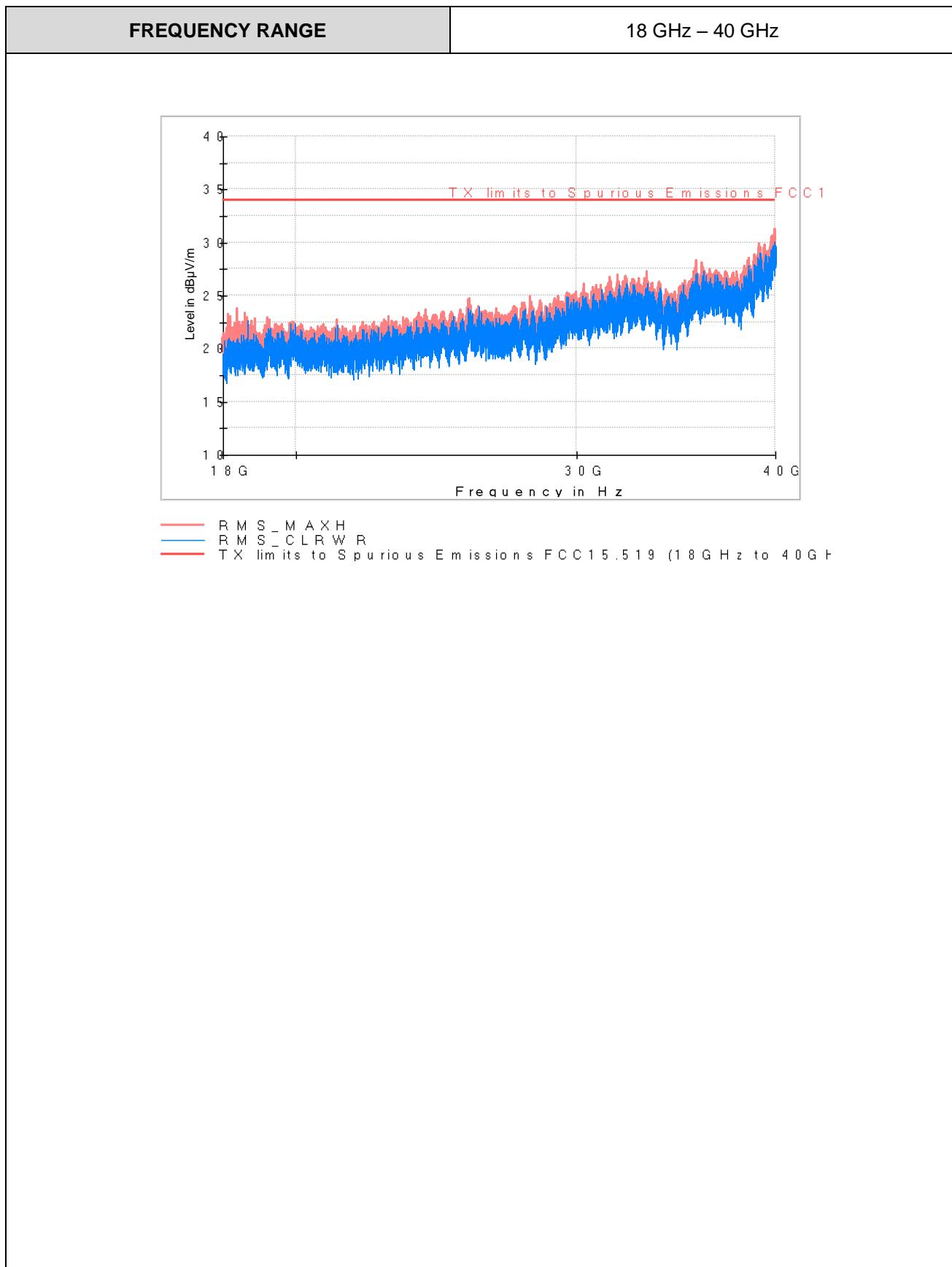
Frequency (MHz)	MaxPeak (dBµV/m)	QuasiPeak (dBµV/m)	Pol
52.320000	19.9	12.1	V
76.081500	18.2	8.5	V
111.282000	19.5	9.9	V
161.827500	20.9	10.7	V
251.991000	26.3	19.9	V
442.222500	30.7	21.8	V
628.455000	34.1	23.5	H
806.457000	35.2	25.3	H

**FREQUENCY RANGE**

960 MHz – 18 GHz



Frequency (MHz)	RMS_CLRWR (dBμV/m)	RMS_MAXH (dBμV/m)	Pol	Comment
1106.881818	14.4	19.0	H	
1643.827273	12.8	16.3	V	
3542.500000	19.7	22.9	V	
8145.156250	32.4	40.1	H	Fundamental
13411.537500	27.0	27.7	V	
16606.950000	25.2	30.0	V	



## TEST A.3: RADIATED EMISSION IN GPS BAND

<b>LIMITS:</b>	Product standard:	Part 15 Subpart F § 15.519 (d) and RSS 220 Clause 5.3(e)
	Test standard:	ANSI C63.10-2013 Section 6.6, 10.3.7 and 10.3.10

### LIMITS

In addition to the radiated emission limits specified in the table in paragraph (c) 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:

Fundamental Frequency (MHz)	EIRP in dBm
1164-1240	-85.3
1559-1610	-85.3

### **TEST SETUP:**

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at 1 m for the frequency range 960 MHz -18 GHz (1-18 GHz Double ridge horn antenna).

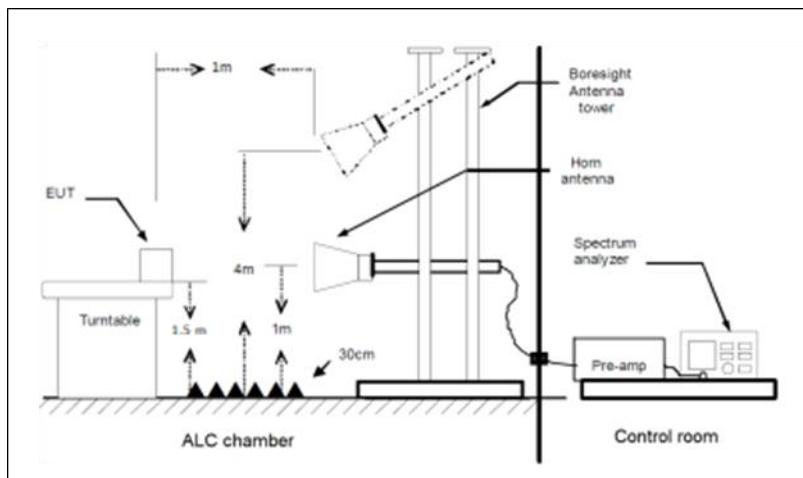
For radiated emissions in the range 960 MHz - 18 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360° and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

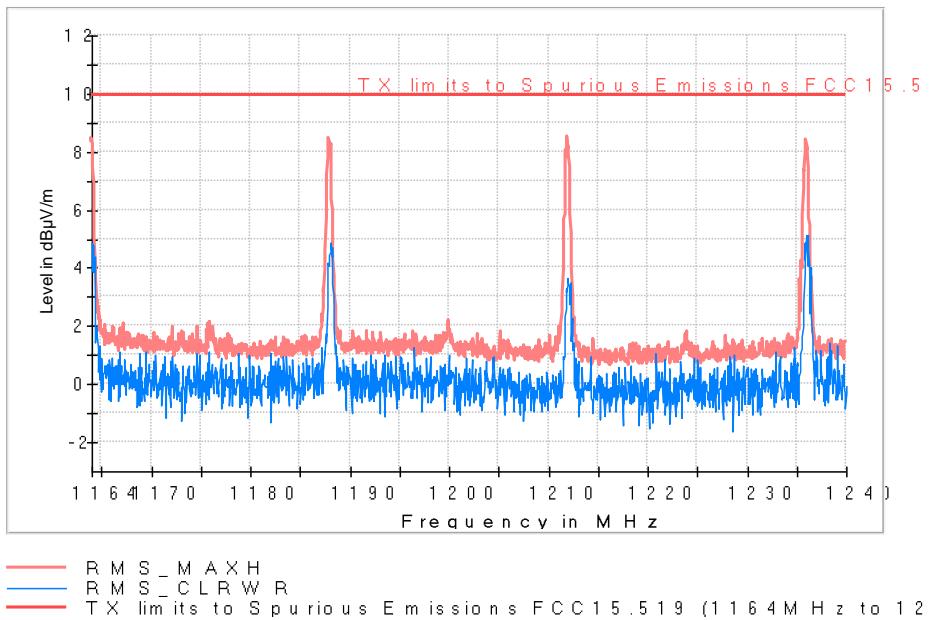
Measurements were made in both horizontal and vertical planes of polarization.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor, cable loss and pre-amplifiers gain

### Radiated measurements setup f > 960 MHz



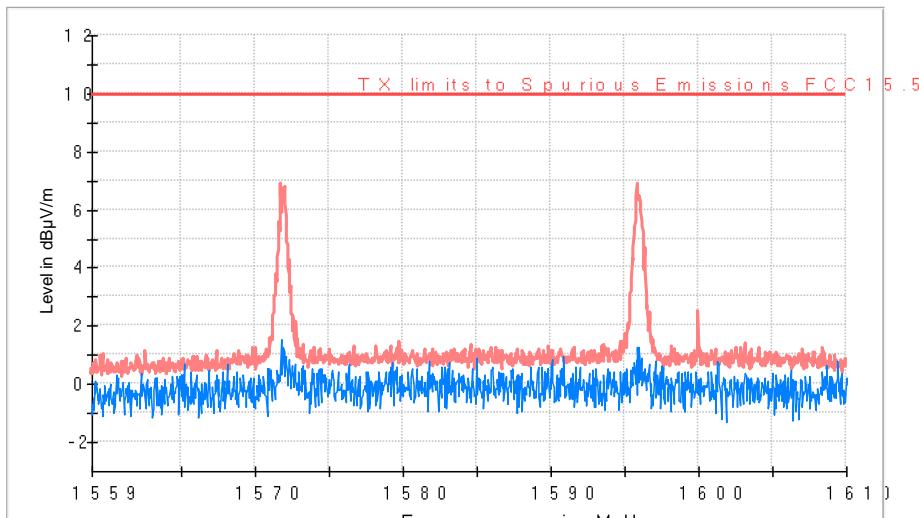
TESTED RESULTS:	S/03
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS (Cont.)	PASS
FREQUENCY RANGE	1164 MHz – 1240 MHz



Frequency (MHz)	RMS_CLRWR (dB $\mu$ V/m)	RMS_MAXH (dB $\mu$ V/m)	Pol
1164.047500	4.9	8.5	V
1187.940000	4.4	8.5	H
1211.975000	3.5	8.5	H
1236.010000	5.1	8.4	V

**FREQUENCY RANGE**

1159 MHz –1610 MHz



— RMS\_MAXH  
— RMS\_CLRWR  
— TX limits to Spurious Emissions FCC 15.519 (1559 MHz to 1610 MHz)

Frequency (MHz)	RMS_CLRWR (dB $\mu$ V/m)	RMS_MAXH (dB $\mu$ V/m)	Pol
1571.792500	1.0	6.9	V
1595.932500	0.0	6.9	V
1600.055000	0.2	2.5	V

## TEST A.4: TRANSMITTER ON/OFF REQUIREMENT

<b>LIMITS:</b>	Product standard:	Part 15 Subpart F § 15.519 (a) and RSS 220 Clause 5.3(b)
	Test standard:	ANSI C63.10-2013

### LIMITS

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

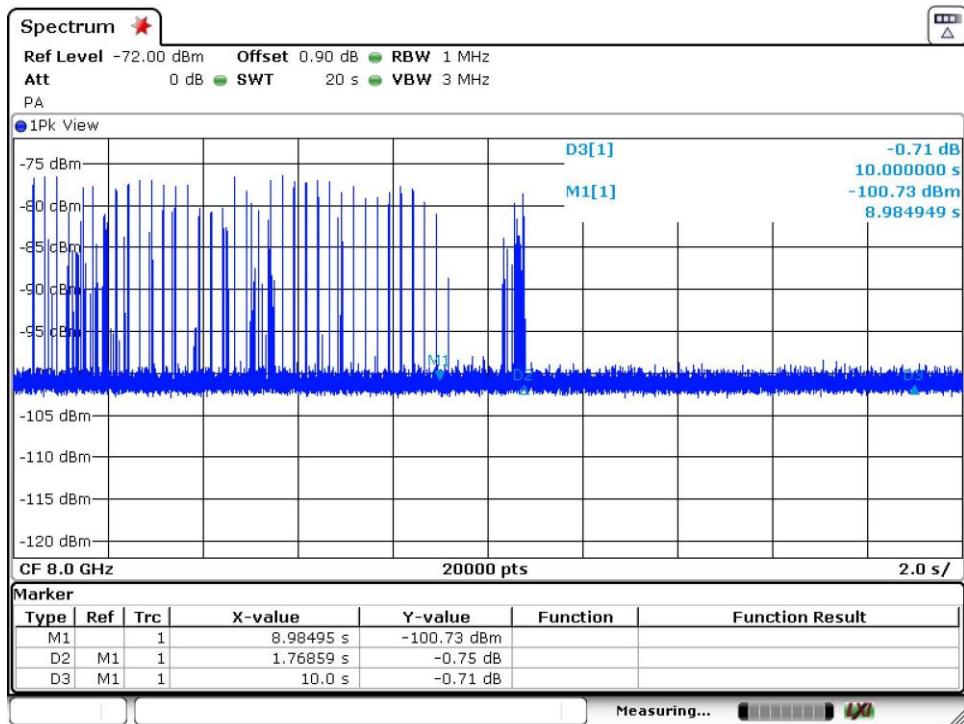
<b>TESTED SAMPLES:</b>	S/02
<b>TESTED CONDITIONS MODES:</b>	TC#01
<b>TEST RESULTS:</b>	PASS

Frequency (MHz)	Measurement result (sec):	Limit (sec)	Test Result
8000	1.7686	10	P

### TEST RESULTS (Cont.)

Marker M1: Associated receiver stopped transmission to send acknowledgement.

Marker D2: Transmitter device stopped transmission.



## TEST A.5: 10 dB BANDWIDTH

<b>LIMITS:</b>	Product standard:	Part 15 Subpart F § 15.503 (a), § 15.519(b) and RSS 220 Clause 5.1(a)
	Test standard:	ANSI C63.10 Section 10.1

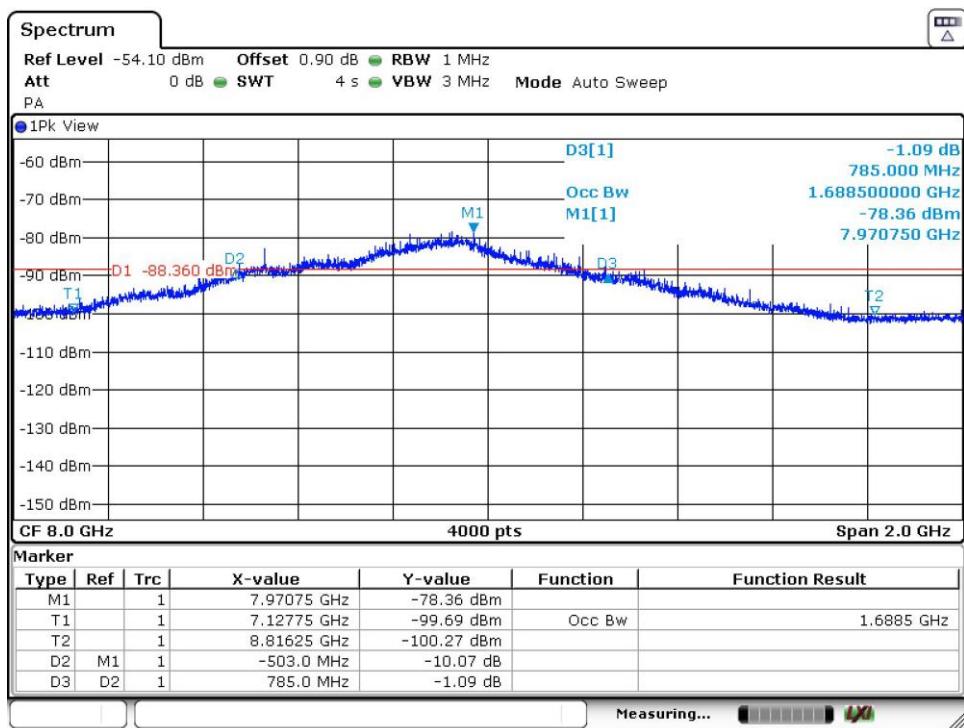
### LIMITS

Ultra-wideband (UWB) transmitter. An intentional radiator that, at any point in time, has a fractional bandwidth equal to or greater than 0.20 or has a UWB bandwidth equal to or greater than 500 MHz, regardless of the fractional bandwidth. The UWB bandwidth of a device operating under the provisions of this section must be contained between 3100 MHz and 10,600 MHz.

<b>TESTED SAMPLES:</b>	S/02
<b>TESTED CONDITIONS MODES:</b>	TC#01
<b>TEST RESULTS:</b>	PASS

<b>Frequency (MHz)</b>	<b>Lower Frequency (MHz)</b>	<b>Upper Frequency (MHz)</b>	<b>10 dB Bandwidth (MHz)</b>	<b>Limit (MHz)</b>		<b>Result</b>
				<b>Lower Frequency</b>	<b>Upper Frequency</b>	
8000	7467.75	8252.75	785.00	3100	10600	Pass

TEST RESULTS (Cont.)



Date: 26.FEB.2020 11:23:26

## TEST A.6: PEAK LEVEL OF THE EMISSION

<b>LIMITS:</b>	Product standard:	Part 15 Subpart F § 15.519(e), § 15.521(g), and RSS 220 Clause 5.3(g)
	Test standard:	ANSI C63.10 Section 6.6

### LIMITS

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. It is acceptable to employ a different resolution bandwidth, and a correspondingly different peak emission limit, following the procedures described in §15.521.

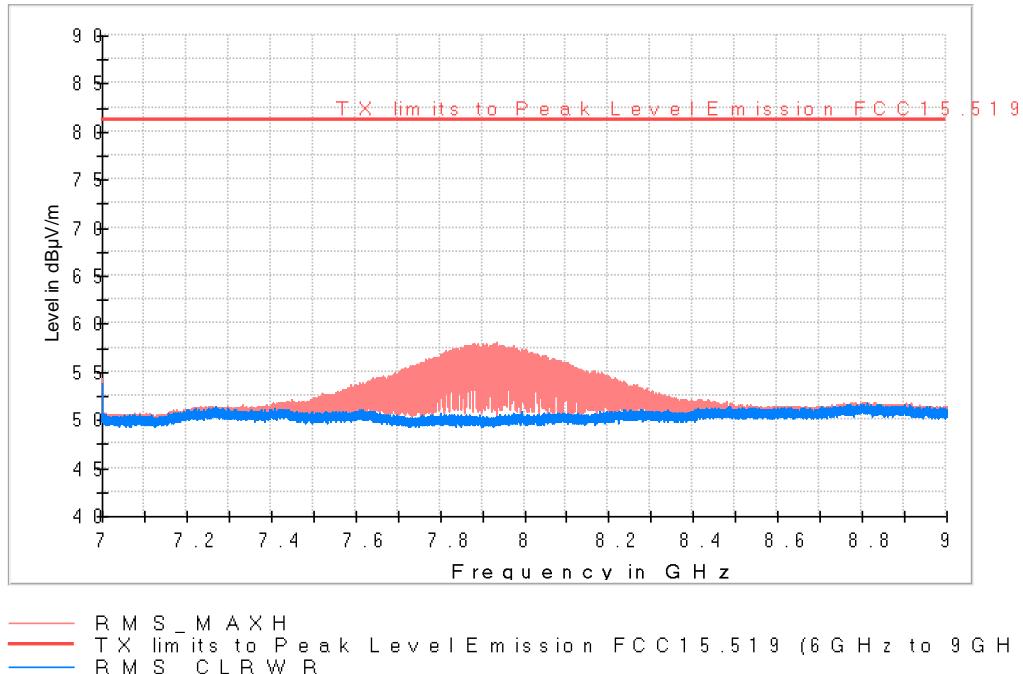
When a peak measurement is required, it is acceptable to use a resolution bandwidth other than the 50 MHz specified in this subpart. This resolution bandwidth shall not be lower than 1 MHz or greater than 50 MHz, and the measurement shall be centered on the frequency at which the highest radiated emission occurs,  $f_M$ . If a resolution bandwidth other than 50 MHz is employed, the peak EIRP limit shall be  $20 \log (RBW/50)$  dBm where RBW is the resolution bandwidth in megahertz that is employed. This may be converted to a peak field strength level at 3 meters using  $E$  (dB $\mu$ V/m) =  $P$  (dBm EIRP) + 95.2.

Note: The RBW = 10 MHz, so the RBW correction is  $20 \log (10/50) = -14.0$  dB.

Limit in dB $\mu$ V/m @RBW 10 MHz = 0 + 95.2 -14.0 = 81.2 dB $\mu$ V/m - This value is shown in the plot below.

TESTED SAMPLES:	S/03
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS:	PASS
FREQUENCY RANGE	7 GHz – 9 GHz z axis

Plot shows below represents worst case of DUT Orientation



Frequency (MHz)	RMS_CLRWR (dB $\mu$ V/m)	RMS_MAXH (dB $\mu$ V/m)	Pol
7934.718750	50.0	58.1	H