

TEST REPORT

Application No.: SHCR2303000490ME
FCC ID: 2A9VN3XUWB
Applicant: Shanghai United Imaging Healthcare Co., Ltd.
Address of Applicant: 2258 Chengbei Rd., Jiading District, Shanghai
Manufacturer: Changzhou Synergy Technology Co., Ltd.
Address of Manufacturer: No 5, Longfan Road, Wujin High-tech Development Zone, Jiangsu
Factory: Changzhou Synergy Technology Co., Ltd.
Address of Factory: No 5, Longfan Road, Wujin High-tech Development Zone, Jiangsu
Equipment Under Test (EUT):
EUT Name: UWB Gateway
Model No.: UG-230
Standard(s) : 47 CFR Part 15, Subpart F
Date of Receipt: 2023-03-14
Date of Test: 2023-03-14 to 2023-03-20
Date of Issue: 2023-03-20

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Parlan Zhan

Parlan Zhan
Laboratory Manager



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Revision Record			
Version	Description	Date	Remark
00	Original	2023-03-20	/

Authorized for issue by:			
		<i>Bill Wu</i>	
		Bill Wu/Project Engineer	
		<i>Parlam Zhan</i>	
		Parlam Zhan/Reviewer	



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2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203 & Subpart F Section 15.517 (a)(3)	N/A	PASS
UWB Bandwidth	47 CFR Part 15, Subpart F Section 15.503 (d) 15.517 (b) 15.521 (e)	ANSI C63.10 (2013)	PASS
Dwell Time	47 CFR Part 15, Subpart F Section 15.517 (a)(5)	ANSI C63.10 (2013)	PASS
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart F Section 15.521 (c) /15.209	ANSI C63.10 (2013)	PASS
Radiated Emissions (Above 1GHz)	47 CFR Part 15, Subpart F Section 15.521 (c) /15.209	ANSI C63.10 (2013)	PASS
Spurious Emissions	47 CFR Part 15, Subpart F Section 15.517 (c)(d)/15.209 15.521 (h)	ANSI C63.10 (2013)	PASS
EIRP	47 CFR Part 15, Subpart F Section 15.517 (e)	ANSI C63.10 (2013)	PASS

N/A: Not applicable



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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 12~48V
Test voltage:	DC 12V
Product category:	Indoor UWB system
Antenna Type:	Dipole antenna
Modulation Type:	BPM-BPSK
Number of Channels:	1
Operation Frequency:	3.9936GHz

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Laptop	LENOVO	L460	-

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	8.4 x 10 ⁻⁸
2	Timeout	2s
3	Duty cycle	0.4%
4	Occupied Bandwidth	3%
5	RF power density	2.9dB
6	RF Radiated power	5.2dB (Below 1GHz)
		5.9dB (Above 1GHz)
7	Radiated Spurious emission test	4.2dB (Below 30MHz)
		4.5dB (30MHz-1GHz)
		5.1dB (1GHz-6GHz)
		5.4dB (6GHz-18GHz)
8	Temperature test	1°C
9	Humidity test	3%
10	Supply voltages	1.5%
11	Time	3%

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



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4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab
588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Tel: +86 21 6191 5666 Fax: +86 21 6191 5678

No tests were sub-contracted.

Note:

1. SGS is not responsible for wrong test results due to incorrect information (e.g. max. clock frequency, highest internal frequency, antenna gain, cable loss, etc) is provided by the applicant. (if applicable).
2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (if applicable).

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **A2LA (Certificate No. 6332.01)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the American Association for Laboratory Accreditation(A2LA).

• **FCC (Designation Number: CN1301)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

• **ISED (CAB Identifier: CN0020)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 8617A

• **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
RF Radiated Test					
EMI test Receiver	R&S	ESU40	SHEM051-1	2022-12-20	2023-12-19
Spectrum Analyzer	R&S	FSP-30	SHEM002-1	2022-12-20	2023-12-19
Communication Tester	R&S	CMW500	SHEM268-1	2022-07-25	2023-07-24
Loop Antenna (9kHz-30MHz)	Schwarzbeck	FMZB1519	SHEM135-1	2022-12-20	2023-12-19
Antenna (25MHz-2GHz)	Schwarzbeck	VULB9168	SHEM048-1	2021-09-11	2023-09-10
Antenna (25MHz-2GHz)	Schwarzbeck	VULB9168	SHEM202-1	2021-05-07	2023-05-06
Horn Antenna (1-18GHz)	Schwarzbeck	HF906	SHEM009-1	2022/8/11	2024-08-10
Horn Antenna (1-18GHz)	Schwarzbeck	BBHA9120D	SHEM050-1	2021-09-18	2023-09-17
Horn Antenna (14-40GHz)	Schwarzbeck	BBHA 9170	SHEM049-1	2021-09-18	2023-09-17
Pre-Amplifier	HP	8447D	SHEM236-1	2022-08-02	2023-08-01
High-amplifier (14-40GHz)	Schwarzbeck	10001	SHEM049-2	2022-12-20	2023-12-19
Band Filter	LORCH	9BRX-875/X150	SHEM156-1	/	/
Band Filter	LORCH	13BRX-1950/X500	SHEM083-2	/	/
Band Filter	LORCH	5BRX-2400/X200	SHEM155-1	/	/
Band Filter	LORCH	5BRX-5500/X1000	SHEM157-2	/	/
High pass Filter	Wainwright	WHK3.0/18G	SHEM157-1	/	/
High pass Filter	Wainwright	WHKS1700	SHEM157-3	/	/
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2020-05-25	2023-05-24
RE test Cable	/	RE01, RE02, RE06	/	2023-01-07	2024-01-06
Test software	ESE	E3	Version: 6.111221a	/	/



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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.517(a)(3)

6.1.2 Conclusion

Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.517(a) (3) requirement:

The use of outdoor mounted antennas, e.g., antennas mounted on the outside of a building or on a telephone pole, or any other outdoors infrastructure is prohibited.

EUT Antenna:

The antenna is RP-SMA antenna and no consideration of replacement.

Antenna location: Refer to Appendix(Internal Photos)



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7 Radio Spectrum Matter Test Results

7.1 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15, Subpart F Section 15.517 (c)(d)/15.209 47 CFR Part 15, Subpart F Section 15.521 (h)				
Test Method:	ANSI C63.10: 2013				
Test Site:	Measurement Distance: 3m				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-960MHz	Quasi-peak	100 kHz	300kHz	Quasi-peak
	Above 960MHz	RMS	1MHz	3MHz	RMS
Limit: (Spurious Emissions)	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1610MHz	-75.3 dBm (EIRP, RBW=1MHz)		RMS	3
	1610MHz-1990MHz	-53.3 dBm (EIRP, RBW=1MHz)		RMS	3
	1990MHz-3100MHz	-51.3 dBm (EIRP, RBW=1MHz)		RMS	3
	3100MHz-10600MHz	-41.3 dBm (EIRP, RBW=1MHz)		RMS	3
	3100MHz-10600MHz	0 dBm (EIRP, RBW=50MHz)		Peak	3
	Above 10600MHz	-51.3 dBm (EIRP, RBW=1MHz)		RMS	3
	1164MHz-1240MHz	-85.3 dBm (EIRP, RBW=1kHz)		RMS	3
	1559MHz-1610MHz	-85.3 dBm (EIRP, RBW=1kHz)		RMS	3



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Test Setup:

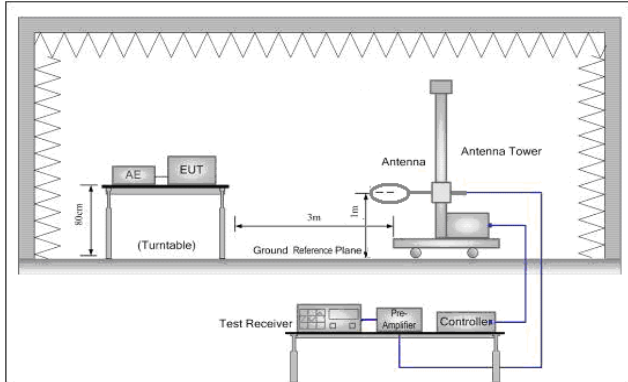


Figure 1. Below 30MHz

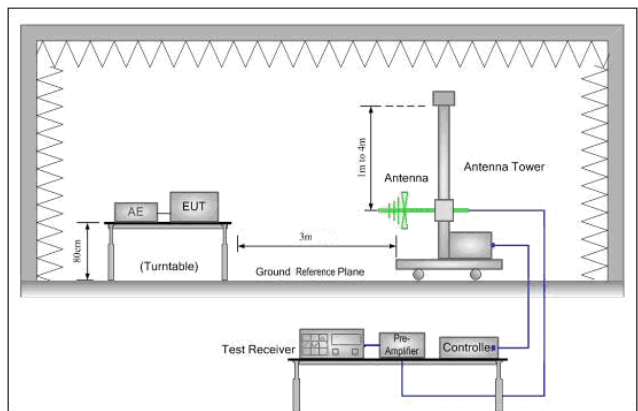


Figure 2. 30MHz to 1GHz

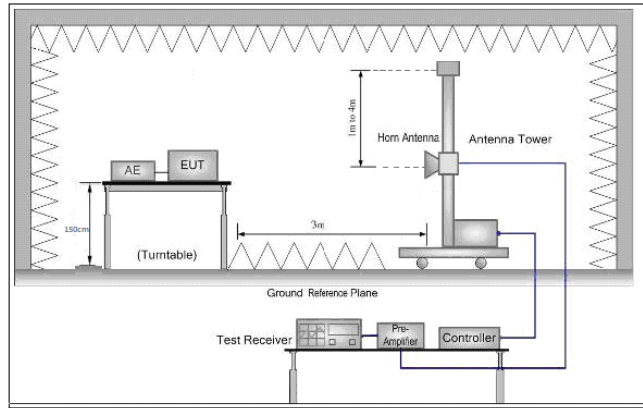


Figure 3. Above 1 GHz

Test Procedure:

- 1) For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2) For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- 3) The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 4) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- 5) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to



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	<p>heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>6) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>7) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.</p> <p>8) Test the EUT in the lowest channel,the middle channel,the Highest channel</p> <p>9) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode,And found the X axis positioning which it is worse case.</p> <p>10) Repeat above procedures until all frequencies measured was complete.</p>
Exploratory Test Mode:	Transmitting mode
Final Test Mode:	Transmitting mode
Instruments Used:	Refer to section 4 for details
Test Results:	Pass

According to ANSI 63.10 Clause 10.3.9, the EIRP to field strength at a specified measurement distance of 3 m is below:

$$E \text{ (dBuV/m)} = \text{EIRP(dBm)} + 95.3$$

Thus, the field strength limit for the test above 1GHz is below:

Frequency	Limit		Detector	Measurement Distance
	EIRP (dBm)	Field Strength (dBuV/m)		
960MHz-1610MHz	-75.3 (RBW=1MHz)	20.00	RMS	3
1610MHz-1990MHz	-53.3 (RBW=1MHz)	42.00	RMS	3
1990MHz-3100MHz	-51.3 (RBW=1MHz)	44.00	RMS	3
3100MHz-10600MHz	-41.3 (RBW=1MHz)	54.00	RMS	3
3100MHz-10600MHz	0 (RBW=50MHz)	95.3	Peak	3
Above 10600MHz	-51.3 (RBW=1MHz)	44.00	RMS	3
1164MHz-1240MHz	-85.3 (RBW=1kHz)	10.00	RMS	3
1559MHz-1610MHz	-85.3 (RBW=1kHz)	10.00	RMS	3



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Measurement Data

7.1.1.1 Peak Power

Field Strength for fundamental @ RBW=10MHz						
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Polarization
3993.6	30.59	12.64	42.40	56.09	56.92	Horizontal
3993.6	30.59	12.64	42.40	64.13	65.14	Vertical

Calculated Field Strength of fundamental @ RBW=50MHz						
Frequency (MHz)	Measured Field Strength of fundamental (FS _M) (dBuV/m)	Calculated factor for RBW=10MHz to RBW=50MHz	Calculated Field Strength of fundamental (FS _C) (dBuV/m)	Limit (dBuV/m)	Over Limit(dB)	Polarization
3993.6	56.92	13.98	70.90	95.20	-24.30	Horizontal
3993.6	65.14	13.98	79.12	95.20	-16.08	Vertical
Note: FS _C = FS _M + 20log(50MHz/10MHz) = FS _M + 13.98						

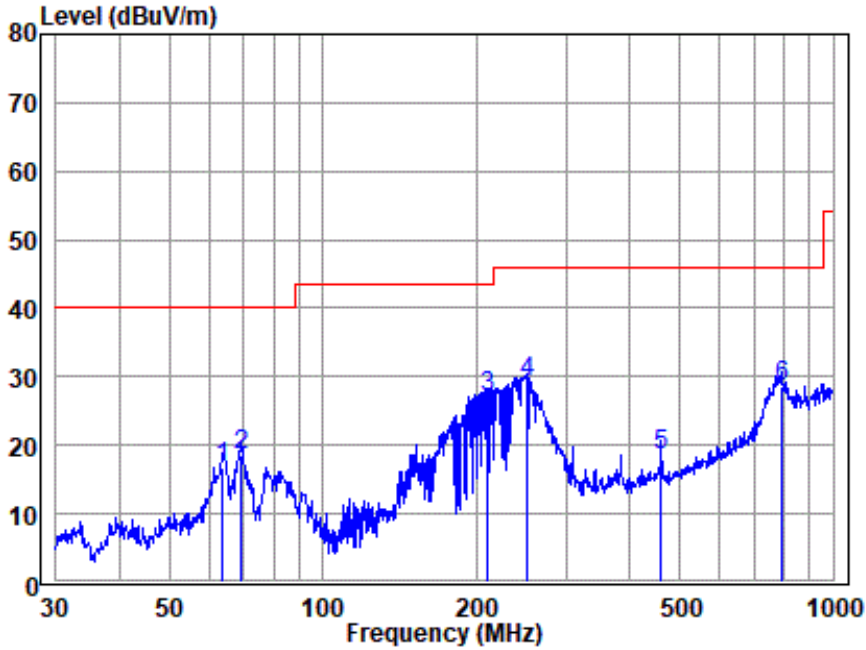


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7.1.1.2 Spurious Emissions

30MHz-960MHz



Antenna Polarity :Horizontal

EUT/Project :0490ME

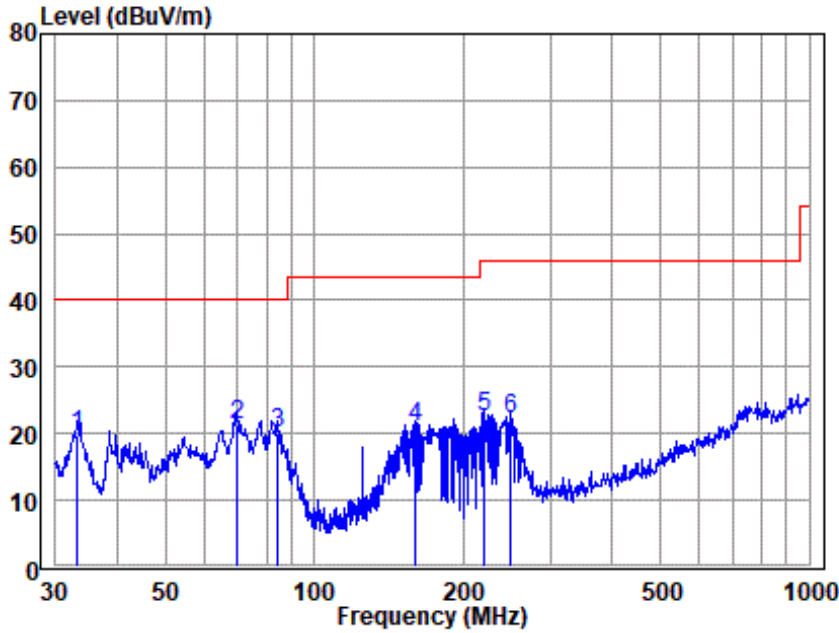
Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1 63.76	36.42	12.70	1.27	33.60	16.79	40.00	-23.21	QP
2 69.11	39.03	11.65	1.42	33.60	18.50	40.00	-21.50	QP
3 210.05	47.52	9.72	3.21	33.26	27.19	43.50	-16.31	QP
4 251.18	47.36	11.87	3.22	33.10	29.35	46.00	-16.65	QP
5 460.73	30.30	17.17	4.21	33.00	18.68	46.00	-27.32	QP
6 793.40	32.46	22.39	6.32	32.53	28.64	46.00	-17.36	QP

Note: Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



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Antenna Polarity :Vertical
EUT/Project :0490ME

	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	33.21	40.25	12.28	0.94	33.70	19.77	40.00	-20.23 QP
2	69.84	42.04	11.49	1.45	33.60	21.38	40.00	-18.62 QP
3	84.41	43.72	8.02	1.85	33.54	20.05	40.00	-19.95 QP
4	159.23	38.42	13.39	2.49	33.46	20.84	43.50	-22.66 QP
5	219.84	42.51	10.02	3.23	33.22	22.54	46.00	-23.46 QP
6	249.43	40.31	11.82	3.20	33.10	22.23	46.00	-23.77 QP

Note: Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



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Test Data:

Transmitting with modulation Mode								
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1164MHz ≤ f ≤ 1240MHz & 1559MHz ≤ f ≤ 1610MHz								
1228.15	24.5	5.76	41.09	16.12	5.29	9.9	-4.61	Vertical
1591.57	25.31	7.12	41.2	15.54	6.77	9.9	-3.13	Vertical
960MHz ≤ f ≤ 3100MHz (except for above frequency range)								
1041.78	24.3	5.3	41.01	23.14	11.73	19.9	-8.17	Vertical
2458.15	27.13	8.95	42.33	26.43	20.18	43.9	-23.72	Vertical
f > 3100MHz								
3324.78	29.17	11.03	42.3	27.15	25.05	53.9	-28.85	Vertical
4738.32	32.22	14.59	42.4	21.54	25.95	53.9	-27.95	Vertical
6443.74	34.11	19.43	42.5	38.65	49.69	53.9	-4.21	Vertical
12138.87	38.39	24.22	43.4	20.64	39.85	43.9	-4.05	Vertical
13885.58	39.57	24.13	43.32	18.84	39.22	43.9	-4.68	Vertical
14023.85	39.59	24.3	43.26	19.02	39.65	43.9	-4.25	Vertical
1164MHz ≤ f ≤ 1240MHz & 1559MHz ≤ f ≤ 1610MHz								
1195.24	24.46	5.66	41.07	14.43	3.48	9.9	-6.42	Horizontal
1572.54	25.27	7.06	41.2	13.11	4.24	9.9	-5.66	Horizontal
960MHz ≤ f ≤ 3100MHz (except for above frequency range)								
1021.71	24.28	5.23	41	25.85	14.36	19.9	-5.54	Horizontal
2179.68	26.19	8.11	41.72	26.87	19.45	43.9	-24.45	Horizontal
f > 3100MHz								
3476.86	29.52	11.58	42.3	27.68	26.48	53.9	-27.42	Horizontal
4878.14	32.46	14.86	42.4	42.35	47.27	53.9	-6.63	Horizontal
6573.58	34.52	20.22	42.49	36.54	48.79	53.9	-5.11	Horizontal
11286.08	38.07	24.26	42.4	16.12	36.05	43.9	-7.85	Horizontal
13792.69	39.55	24.13	43.34	18.38	38.72	43.9	-5.18	Horizontal
14628.25	39.14	24.3	41.58	16.76	38.62	43.9	-5.28	Horizontal

Remark:

- 1) Scan from 9kHz to 40GHz, The disturbance above 18GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported .



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7.2 Radiated Emissions (30MHz-1GHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.10: 2013

Limit:

Class B

Test Distance: 3m

30MHz -88MHz 40.0(dBμV/m) quasi-peak

88MHz-216MHz 43.5(dBμV/m) quasi-peak

216MHz-960MHz 46.0(dBμV/m) quasi-peak

960MHz-1000MHz 54.0(dBμV/m) quasi-peak

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30MHz to1000MHz

7.2.1 E.U.T. Operation

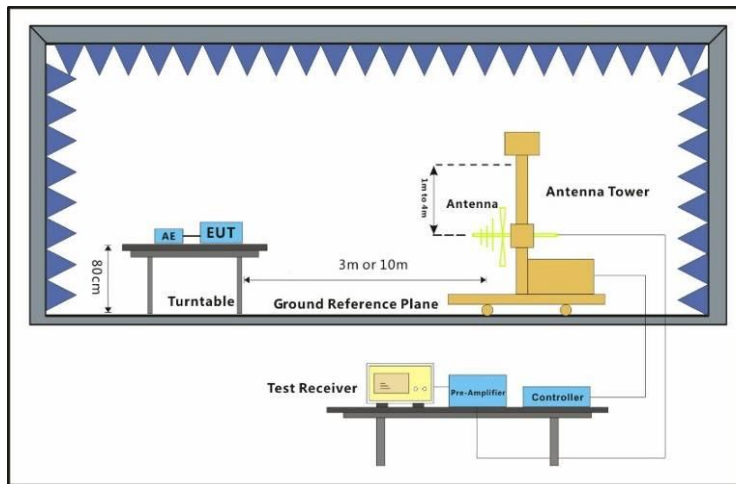
Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Working mode_Keep the EUT working continuously and disable the UWB function.

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

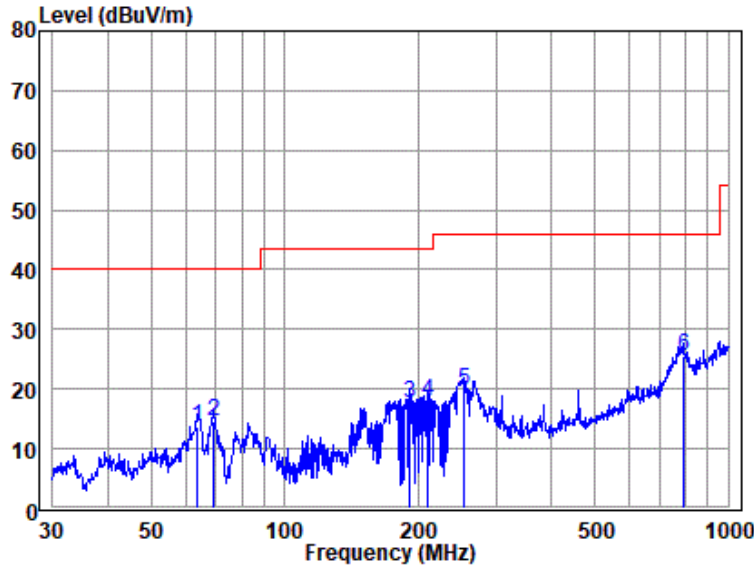


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Test Mode: 00; Polarity: Horizontal



Antenna Polarity :Horizontal
EUT/Project :0490ME

Freq MHz	Read Level dBuv	Antenna Factor dB/m	Cable Loss dB	Preamp Factor dB	Emission Level dBuv/m	Limit Line dBuv/m	Over Limit dB	Remark
1 63.76	33.42	12.70	1.27	33.60	13.79	40.00	-26.21	QP
2 69.11	35.03	11.65	1.42	33.60	14.50	40.00	-25.50	QP
3 191.75	38.11	10.30	2.67	33.33	17.75	43.50	-25.75	QP
4 210.79	38.12	9.74	3.21	33.26	17.81	43.50	-25.69	QP
5 252.95	37.67	11.91	3.26	33.09	19.75	46.00	-26.25	QP
6 793.40	29.46	22.39	6.32	32.53	25.64	46.00	-20.36	QP

Note: Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



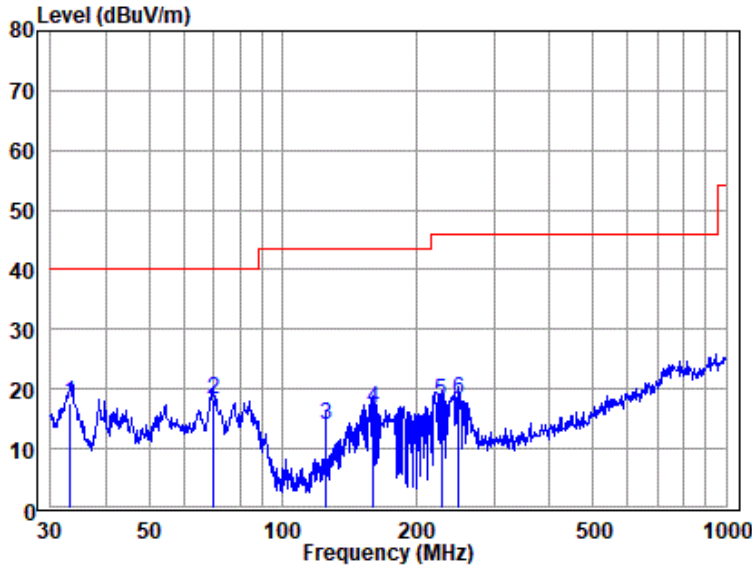
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Test Mode: 00; Polarity: Vertical



Antenna Polarity :Vertical
EUT/Project :0490ME

Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 33.21	38.25	12.28	0.94	33.70	17.77	40.00	-22.23	QP
2 69.84	39.04	11.49	1.45	33.60	18.38	40.00	-21.62	QP
3 125.01	33.89	11.50	2.15	33.55	13.99	43.50	-29.51	QP
4 159.23	34.42	13.39	2.49	33.46	16.84	43.50	-26.66	QP
5 227.69	37.45	10.40	3.21	33.19	17.87	46.00	-28.13	QP
6 249.43	36.31	11.82	3.20	33.10	18.23	46.00	-27.77	QP

Note: Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



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7.3 Radiated Emissions (Above 1GHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.10: 2013

Limit:

Class B

Above 1GHz 74(dBμV/m) peak, 54(dBμV/m) average

Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000M to 18000MHz

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C

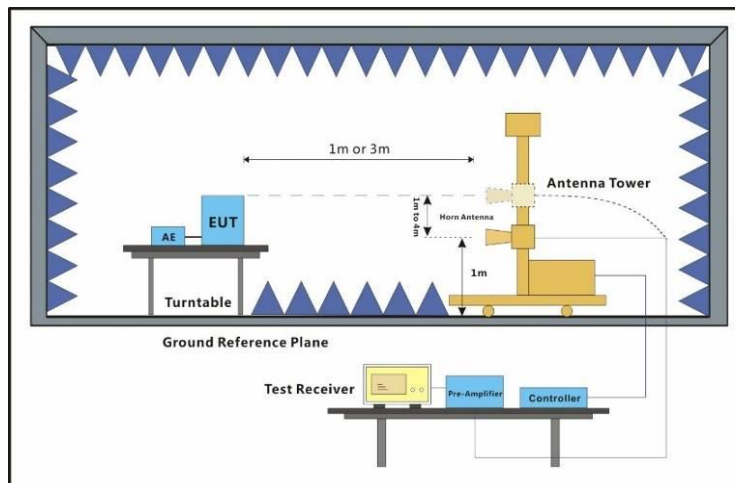
Humidity: 50 % RH

Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Working mode_Keep the EUT working continuously and disable the UWB function.

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.

The red line show in graphic is the limit in standard used in this section.

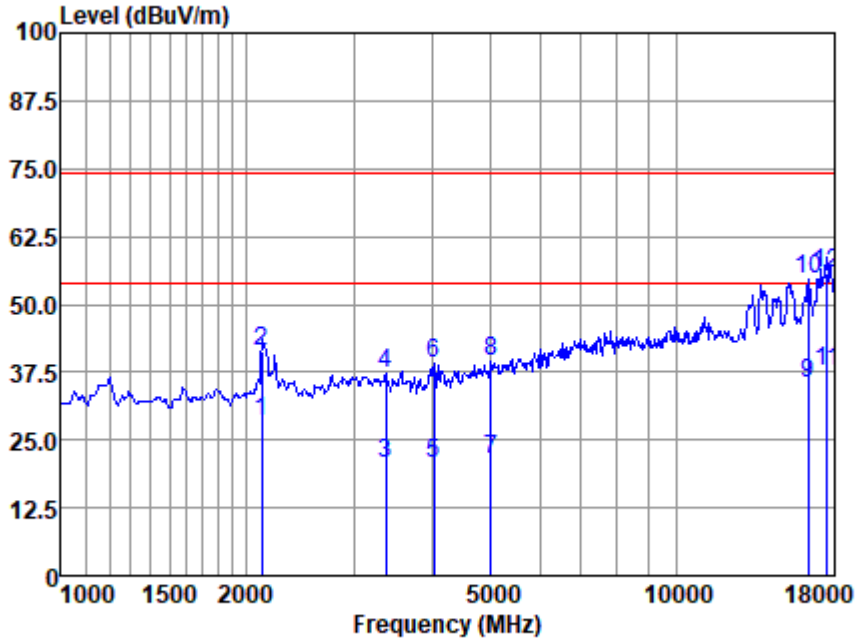
Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor



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Test Mode: 00; Polarity: Horizontal



Antenna Polarity :HORIZONTAL
EUT/Project :0490ME
Test mode :00

	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2120.171	35.39	26.09	8.68	41.65	28.51	54.00	-25.49 Average
2	2120.171	48.39	26.09	8.68	41.65	41.51	74.00	-32.49 Peak
3	3366.778	22.30	29.23	11.57	42.40	20.70	54.00	-33.30 Average
4	3366.778	38.80	29.23	11.57	42.40	37.20	74.00	-36.80 Peak
5	4027.554	19.80	30.42	12.73	42.40	20.55	54.00	-33.45 Average
6	4027.554	38.49	30.42	12.73	42.40	39.24	74.00	-34.76 Peak
7	4988.058	17.20	32.62	13.83	42.40	21.25	54.00	-32.75 Average
8	4988.058	35.26	32.62	13.83	42.40	39.31	74.00	-34.69 Peak
9	16362.460	19.34	38.16	19.16	41.08	35.58	54.00	-18.42 Average
10	16362.460	38.34	38.16	19.16	41.08	54.58	74.00	-19.42 Peak
11	17537.800	17.42	41.03	19.81	40.70	37.56	54.00	-16.44 Average
12	17537.800	35.42	41.03	19.81	40.70	55.56	74.00	-18.44 Peak

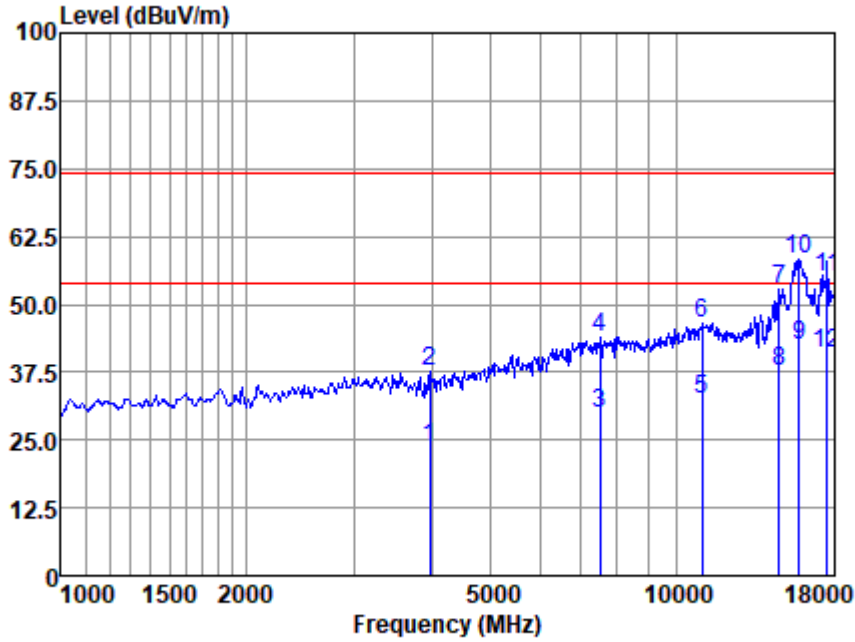
Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



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Test Mode: 00; Polarity: Vertical



Antenna Polarity :VERTICAL
EUT/Project :0490ME
Test mode :00

	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
-----	-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 3969.767	22.46	30.36	13.17	42.40	23.59	54.00	-30.41	Average
2 3969.767	36.46	30.36	13.17	42.40	37.59	74.00	-36.41	Peak
3 7519.349	21.01	35.75	15.87	42.80	29.83	54.00	-24.17	Average
4 7519.349	35.01	35.75	15.87	42.80	43.83	74.00	-30.17	Peak
5 10980.470	19.98	38.01	16.75	42.21	32.53	54.00	-21.47	Average
6 10980.470	33.98	38.01	16.75	42.21	46.53	74.00	-27.47	Peak
7 14660.480	36.69	39.12	18.74	41.80	52.75	74.00	-21.25	Peak
8 14660.480	21.69	39.12	18.74	41.80	37.75	54.00	-16.25	Average
9 15804.660	26.61	38.17	19.07	41.45	42.40	54.00	-11.60	Average
10 15804.660	42.61	38.17	19.07	41.45	58.40	74.00	-15.60	Peak
11 17537.800	34.76	41.03	19.81	40.70	54.90	74.00	-19.10	Peak
12 17537.800	20.76	41.03	19.81	40.70	40.90	54.00	-13.10	Average

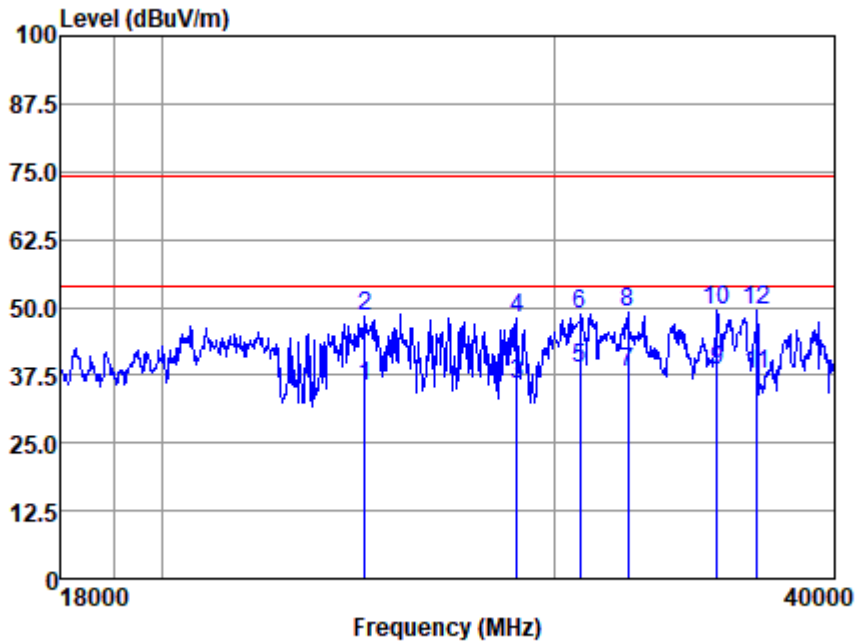
Note: Emission Level = Read Level + Antenna Factor + Cable loss - Preamp Factor



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Test Mode: 00; Polarity: Horizontal



Antenna Polarity : HORIZONTAL
EUT/Project : 0490ME
Test mode : 00

	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 24635.420	27.06	38.49	8.14	38.30	35.39	54.00	-18.61	Average
2 24635.420	40.06	38.49	8.14	38.30	48.39	74.00	-25.61	Peak
3 28832.160	21.89	39.60	9.72	35.38	35.83	54.00	-18.17	Average
4 28832.160	33.89	39.60	9.72	35.38	47.83	74.00	-26.17	Peak
5 30783.200	21.68	40.27	10.38	33.70	38.63	54.00	-15.37	Average
6 30783.200	31.68	40.27	10.38	33.70	48.63	74.00	-25.37	Peak
7 32345.550	19.19	40.59	10.87	32.52	38.13	54.00	-15.87	Average
8 32345.550	30.19	40.59	10.87	32.52	49.13	74.00	-24.87	Peak
9 35456.440	17.65	41.31	11.79	32.49	38.26	54.00	-15.74	Average
10 35456.440	28.65	41.31	11.79	32.49	49.26	74.00	-24.74	Peak
11 36959.660	13.95	41.18	12.21	29.80	37.54	54.00	-16.46	Average
12 36959.660	25.95	41.18	12.21	29.80	49.54	74.00	-24.46	Peak

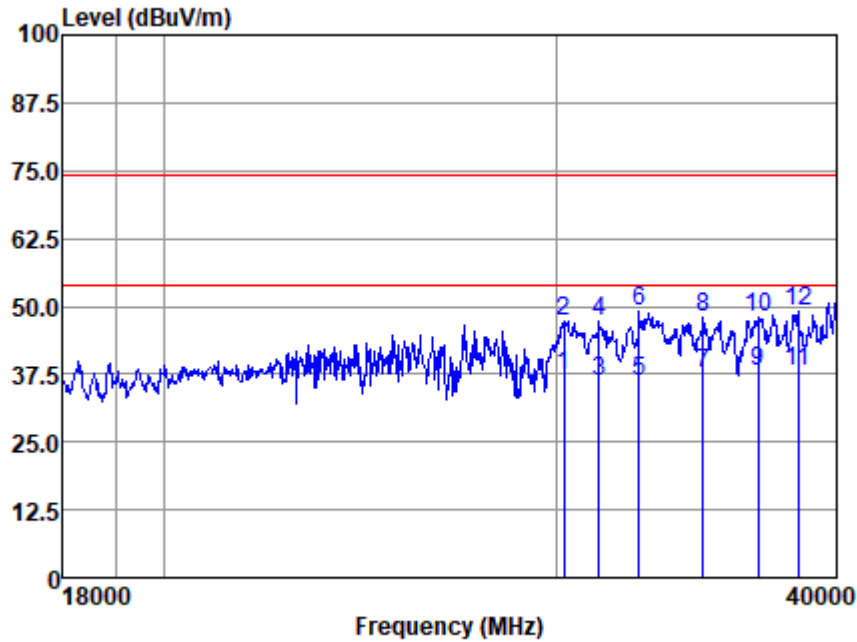
Note: Emission Level = Read Level + Antenna Factor + Cable loss - Preamp Factor



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Test Mode: 00; Polarity: Vertical



Antenna Polarity :VERTICAL
EUT/Project :0490ME
Test mode :00

Read Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark	
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	30198.880	20.61	40.44	10.18	34.01	37.22	54.00	-16.78	Average
2	30198.880	30.61	40.44	10.18	34.01	47.22	74.00	-26.78	Peak
3	31303.740	19.00	40.08	10.54	33.57	36.05	54.00	-17.95	Average
4	31303.740	30.00	40.08	10.54	33.57	47.05	74.00	-26.95	Peak
5	32630.910	16.20	41.25	10.96	32.23	36.18	54.00	-17.82	Average
6	32630.910	29.20	41.25	10.96	32.23	49.18	74.00	-24.82	Peak
7	34866.840	16.54	41.58	11.62	31.95	37.79	54.00	-16.21	Average
8	34866.840	26.54	41.58	11.62	31.95	47.79	74.00	-26.21	Peak
9	36900.690	14.55	41.15	12.19	29.91	37.98	54.00	-16.02	Average
10	36900.690	24.55	41.15	12.19	29.91	47.98	74.00	-26.02	Peak
11	38465.150	11.83	43.17	12.61	29.61	38.00	54.00	-16.00	Average
12	38465.150	22.83	43.17	12.61	29.61	49.00	74.00	-25.00	Peak

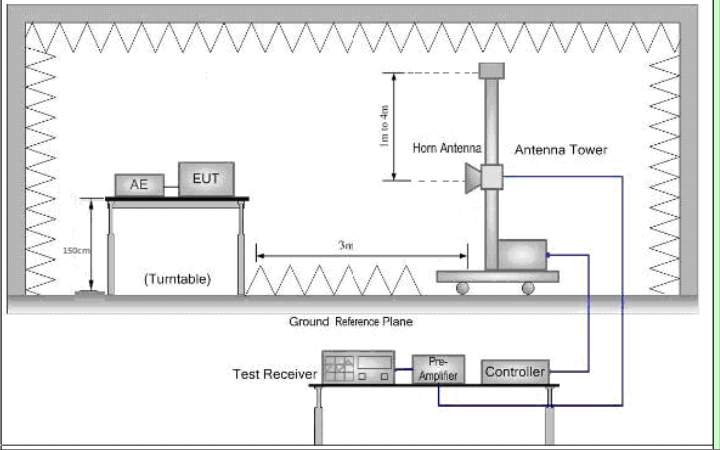
Note: Emission Level = Read Level + Antenna Factor + Cable loss - Preamp Factor



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7.4 UWB Bandwidth (10dB Bandwidth)

Test Requirement:	47 CFR Part 15F Section 15.503(d) 47 CFR Part 15F Section 15.517(b) 47 CFR Part 15F Section 15.521(e)
Test Method:	ANSI C63.10:2013
Test Setup:	
Limit:	≥500MHz The UWB bandwidth must be between 3100 MHz and 10,600 MHz. fm must be contained within the UWB bandwidth.
Exploratory Test Mode:	Transmitter mode
Instruments Used:	Refer to section 4 for details
Test Results:	Pass

Measurement Data

Test Frequency (MHz)	F _L (MHz)	F _H (MHz)	10dB bandwidth (MHz)	Limit (MHz)	Results
3993.6	3605.3	4341.6	736.3	≥500MHz	Pass

Remark 1: F_L=3605.3MHz, F_H=4341.6MHz which contained between 3100 MHz and 10,600 MHz, so the EUT meet 47 CFR Part 15F Section 15.517(b) requirement.

Remark 2: F_m=3.995.6MHz which contained within F_L to F_H, so the EUT meet 47 CFR Part 15F Section 15.521(e) requirement.

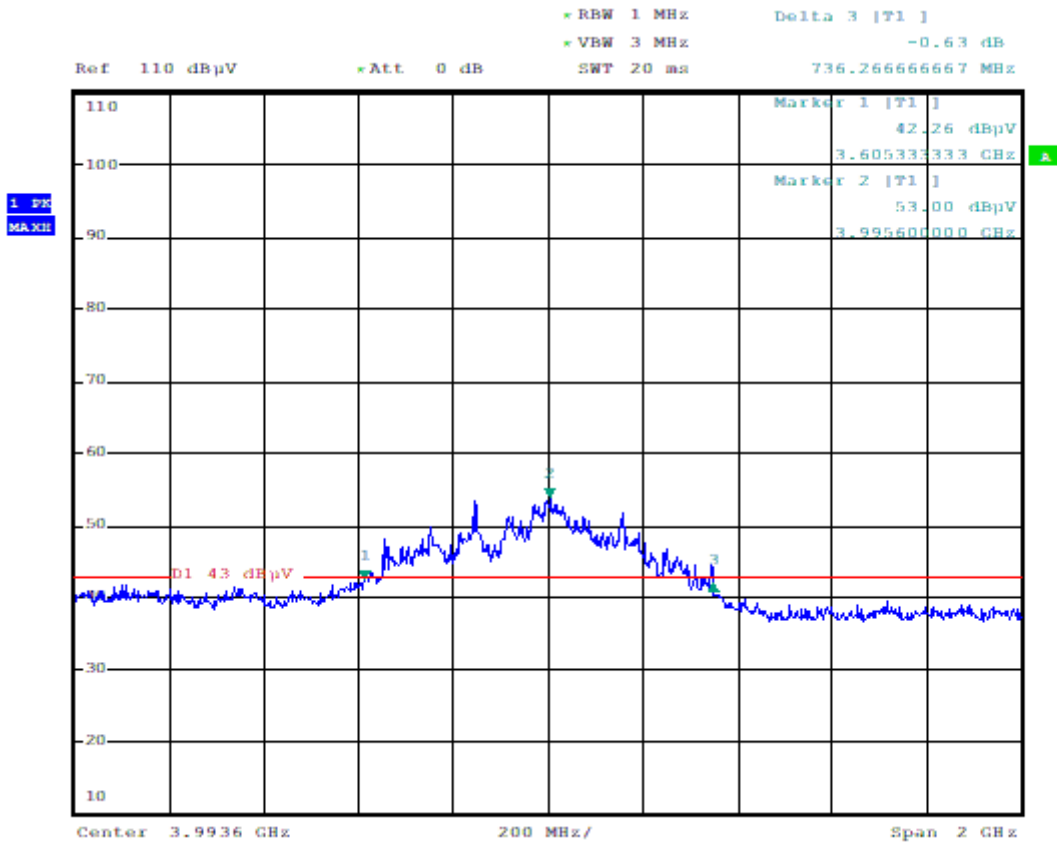


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Test plot as follows:



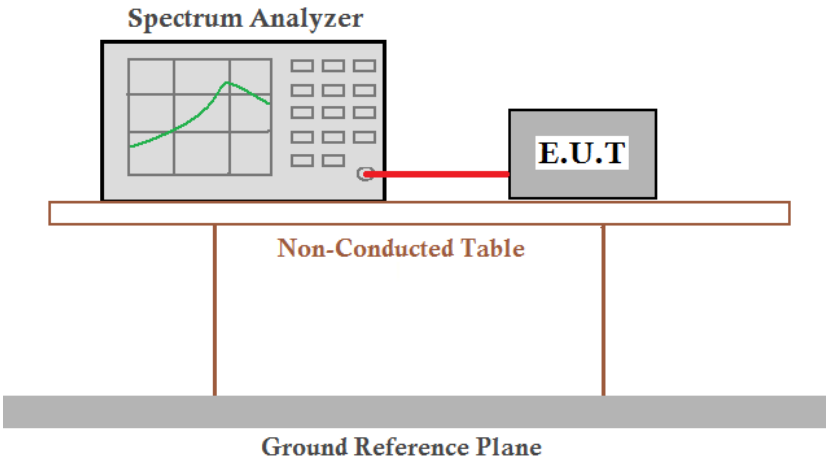
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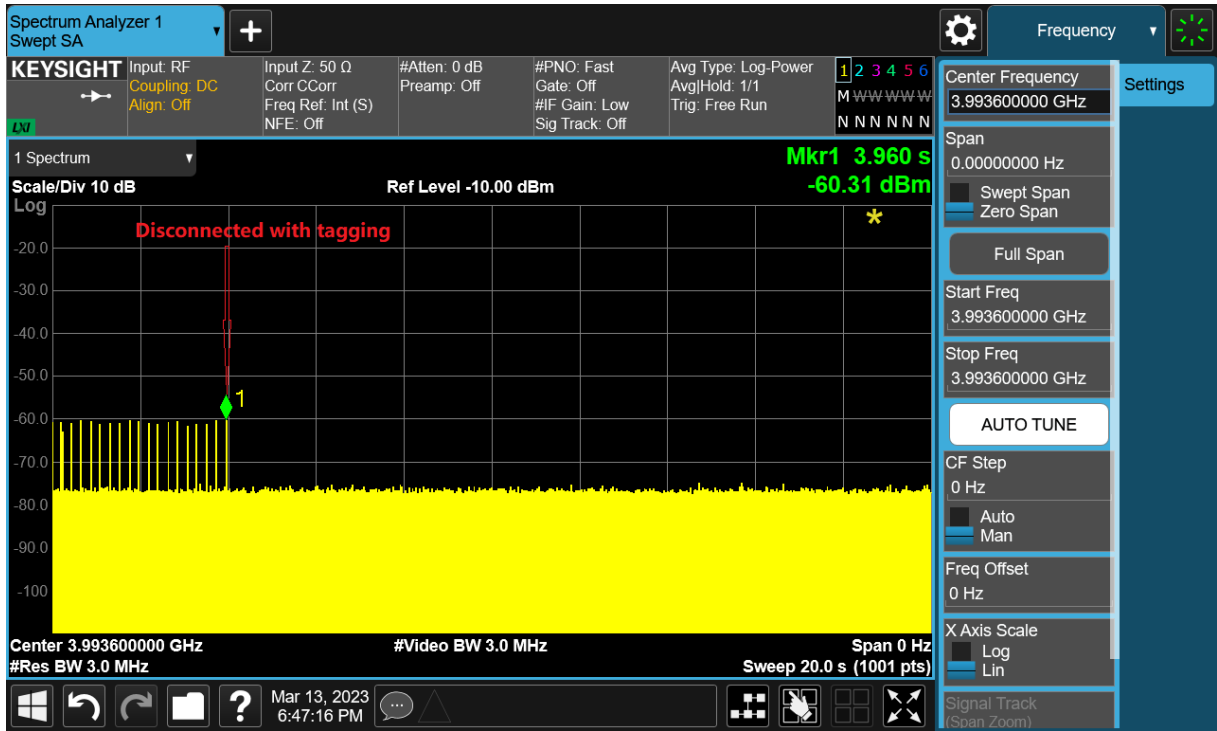
7.5 Dwell Time

Test Requirement:	47 CFR Part 15F Section 15.517(a)(5)
Test Method:	ANSI C63.10:2013
Test Setup:	
Limit:	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
Exploratory Test Mode:	Operation mode
Instruments Used:	Refer to section 4 for details
Test Results:	Pass*

Measurement Data

The UWB Gateway only transmit signal when receiver signal form UWB Tag,the UWB Gateway cease transmission when disconnected with UWB Tag,so UWB Gateway is satisfied the requirement for 47 CFR Part 15F Section 15.517(a)(5).





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8 Test Setup Photo

Refer to Appendix - Test Setup Photo for SHCR2303000490ME

9 EUT Constructional Details (EUT Photos)

Refer to Appendix - Photographs of EUT Constructional Details for SHCR2303000490ME

-- End of the Report --



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