



TEST REPORT

Application No.: SZEM2006005236CR (SHEM2005003838CR)
FCC ID: 2AWDCU3000-T
Applicant: Tsingoa (Beijing) Technology Co., Ltd.
Address of Applicant: Room 32021, Zhongtai Building, Shuangqing Road No.3, Haidian District, Beijing, China
Manufacturer: Tsingoa (Beijing) Technology Co., Ltd.
Address of Manufacturer: Room 32021, Zhongtai Building, Shuangqing Road No.3, Haidian District, Beijing, China
Factory: Beijing Yongshixinyu Electronic Technology Co., Ltd.
Address of Factory: Maohua factory, hofengbozuodi Road, Shunyi District, Beijing, China
Equipment Under Test (EUT):
EUT Name: UWB Gateway
Model No.: U3000-t
Standard(s) : 47 CFR Part 15, Subpart F
Date of Receipt: 2020-05-19
Date of Test: 2020-05-29 to 2020-06-20
Date of Issue: 2020-06-22

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



Kenx. Xu

Kenx Xu
EMC Laboratory Manager





Revision Record			
Version	Description	Date	Remark
00	Original	2020-06-22	/

Authorized for issue by:			
			
		Foray Chen /Project Engineer	
			
		Eric Fu /Reviewer	





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)	NA	PASS
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.207	ANSI C63.10 (2013) Section 6.2	PASS
UWB Bandwidth	47 CFR Part 15, Subpart F Section 15.503 (a)	ANSI C63.10 (2013)	PASS
Dwell Time	47 CFR Part 15, Subpart F Section 15.517 (a)(5)	ANSI C63.10 (2013)	PASS*
Spurious Emissions	47 CFR Part 15, Subpart F Section 15.517 (c)(d)/15.209	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

*The details please refer to section 7.4



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4 General Information

4.1 Details of E.U.T.

Power supply: DC 24V 1A by adapter or 48V 0.5A by POE
Adapter:
Model:KA2401A-2401000US
Input:100-240V~50/60Hz
Output:24V 1A
Test voltage: AC 120V/60Hz
Product category: Indoor UWB system
Antenna Gain: 2dBi
Antenna Type: PCB antenna
Modulation Type: BPM-BPSK
Number of Channels: 1
Frequency range: 6.1GHz to 6.9GHz

4.2 Description of Support Units

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 7.25 \times 10^{-8}$
2	Duty cycle	$\pm 0.37\%$
3	Occupied Bandwidth	$\pm 3\%$
4	Conduction emission	$\pm 3.0\text{dB}$ (150kHz to 30MHz)
5	RF conducted power	$\pm 0.75\text{dB}$
6	RF power density	$\pm 2.84\text{dB}$
7	Conducted Spurious emissions	$\pm 0.75\text{dB}$
8	RF Radiated power	$\pm 4.5\text{dB}$ (Below 1GHz)
		$\pm 4.8\text{dB}$ (Above 1GHz)
9	Radiated Spurious emission test	$\pm 4.5\text{dB}$ (Below 1GHz)
		$\pm 4.8\text{dB}$ (Above 1GHz)
10	Temperature test	$\pm 1^\circ\text{C}$
11	Humidity test	$\pm 3\%$
12	Supply voltages	$\pm 1.5\%$
13	Time	$\pm 3\%$

Remark:

The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.



4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.5 Test Facility

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

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISCED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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Shenzhen Branch EMC Laboratory. | 中国·深圳·科技园中区M-10栋一号厂房 | 邮编: 518057 | t (86-755) 26012053 | f (86-755) 26710594 | sgs.china@sgs.com



5 Equipment List

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2019-09-26	2020-09-25
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2019-09-26	2020-09-25
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2019-09-26	2020-09-25
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2020-04-07	2021-04-06

RE in Chamber <1GHz						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date	Cal. Due date
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017-08-05	2020-08-04
2	MXE EMI receiver(3Hz-3.6GHz)	KEYSIGHT	N9038A	SEM004-15	2019-12-16	2020-12-15
3	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2017-06-27	2020-06-26
4	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2020-04-01	2021-03-31
5	Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
6	Coaxial Cable	SGS	N/A	SEM025-01	2019-07-11	2020-07-10

RE in Chamber 2# >1GHz						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)
1	3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018-03-13	2021-03-12
2	EXA Signal Analyzer (10Hz-44GHz)	Agilent Technologies Inc	N9010A	SEM004-12	2020-04-09	2021-04-08
3	BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-01	2017-06-27	2020-06-26
4	Horn Antenna (800MHz-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018-04-13	2021-04-12
5	Amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2019-09-24	2020-09-23



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Shenzhen Branch

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6	Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2019-09-24	2020-09-23
7	Measurement Software	AUDIX	e3 V8.2014-6- 27	N/A	N/A	N/A
8	Coaxial Cable	SGS	N/A	SEM026-01	2019-07-11	2020-07-10



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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 PCB antenna and no consideration of replacement. The best case gain of the antenna is 2dBi.

Antenna location: Refer to Appendix(Internal Photos)



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7 Radio Spectrum Matter Test Results

7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207
Test Method: ANSI C63.10 (2013) Section 6.2
Limit:

Frequency of emission(MHz)	Conducted limit(dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

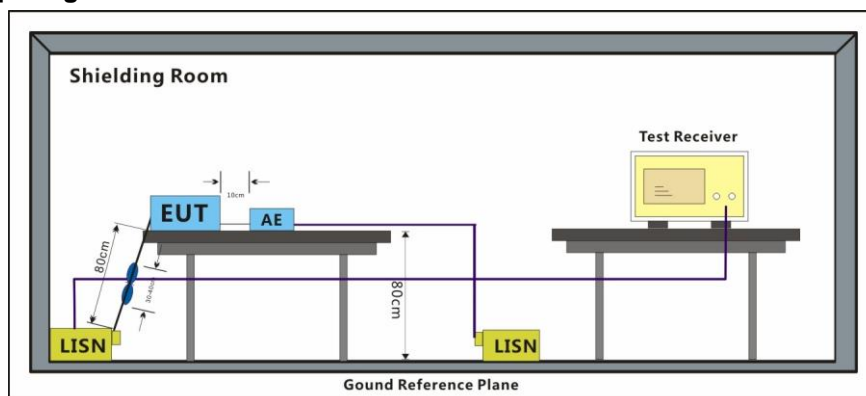
7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar

Test mode b:TX_mode_Keep the EUT in continuously transmitting.

7.1.2 Test Setup Diagram





7.1.3 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark:

1, LISN=Read Level+ Cable Loss+ LISN Factor

2, This test item be test using two power supply (AC 120V for adapter & AC 120V for POE) , and only record the worst data of DC 24V by adapter in the report.

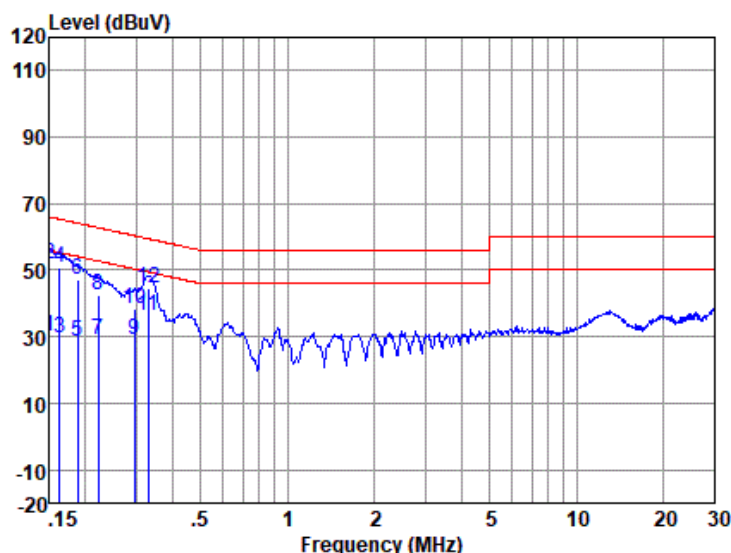


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Mode:b; Line:Live Line



LISN : LINE
EUT/Project No : 3839CR

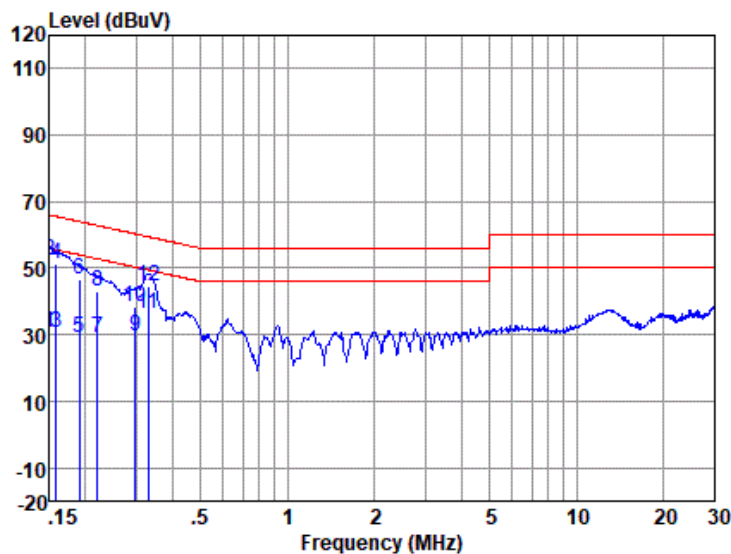
	Freq (MHz)	Read level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark
1	0.15	19.93	0.09	9.97	29.99	56.00	-26.01	Average
2	0.15	41.85	0.09	9.97	51.91	66.00	-14.09	QP
3	0.16	19.51	0.08	9.97	29.56	55.34	-25.78	Average
4	0.16	40.86	0.08	9.97	50.91	65.34	-14.43	QP
5	0.19	18.58	0.07	9.99	28.64	54.11	-25.47	Average
6	0.19	36.97	0.07	9.99	47.03	64.11	-17.08	QP
7	0.22	18.84	0.07	10.00	28.91	52.74	-23.83	Average
8	0.22	32.45	0.07	10.00	42.52	62.74	-20.22	QP
9	0.30	19.19	0.07	10.02	29.28	50.37	-21.09	Average
10	0.30	28.28	0.07	10.02	38.37	60.37	-22.00	QP
11	0.33	26.33	0.08	10.03	36.44	49.49	-13.05	Average
12	0.33	34.55	0.08	10.03	44.66	59.49	-14.83	QP

Notes: Emission Level = Read Level + LISN Factor + Cable loss





Mode:b; Line:Neutral Line



LISN : NEUTRAL

	Freq (MHz)	Read level (dBuV)	LISN Factor (dB)	Cable Loss (dB)	Emission Level (dBuV)	Limit (dBuV)	Over Limit (dB)	Remark
1	0.15	20.66	0.07	9.97	30.70	56.00	-25.30	Average
2	0.15	42.36	0.07	9.97	52.40	66.00	-13.60	QP
3	0.16	20.55	0.07	9.97	30.59	55.56	-24.97	Average
4	0.16	41.24	0.07	9.97	51.28	65.56	-14.28	QP
5	0.19	18.79	0.06	9.99	28.84	54.02	-25.18	Average
6	0.19	36.76	0.06	9.99	46.81	64.02	-17.21	QP
7	0.22	18.84	0.06	10.00	28.90	52.83	-23.93	Average
8	0.22	32.92	0.06	10.00	42.98	62.83	-19.85	QP
9	0.30	19.31	0.06	10.02	29.39	50.32	-20.93	Average
10	0.30	28.20	0.06	10.02	38.28	60.32	-22.04	QP
11	0.33	26.22	0.06	10.03	36.31	49.49	-13.18	Average
12	0.33	34.49	0.06	10.03	44.58	59.49	-14.91	QP

Notes: Emission Level = Read Level + LISN Factor + Cable loss





7.2 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15, Subpart F Section 15.517 (c)(d)/15.209				
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



Test Setup:

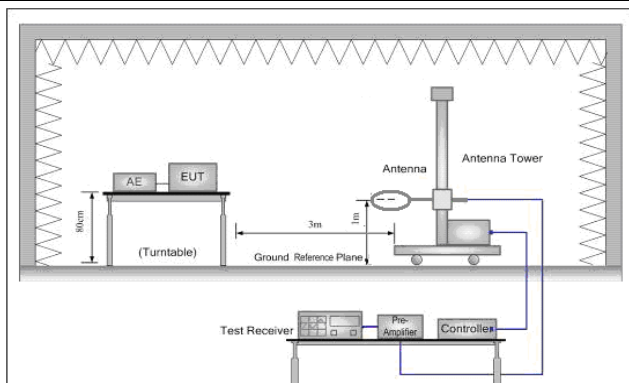


Figure 1. Below 30MHz

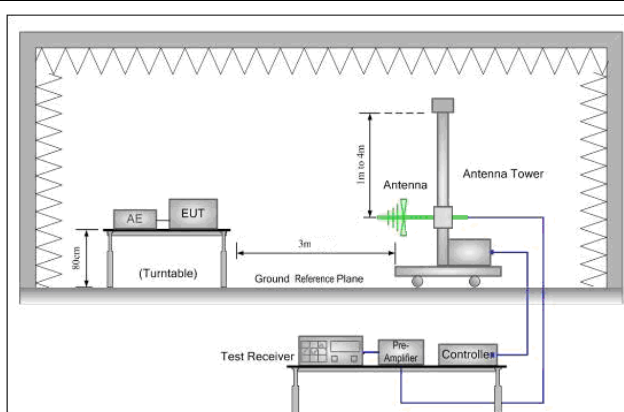


Figure 2. 30MHz to 1GHz

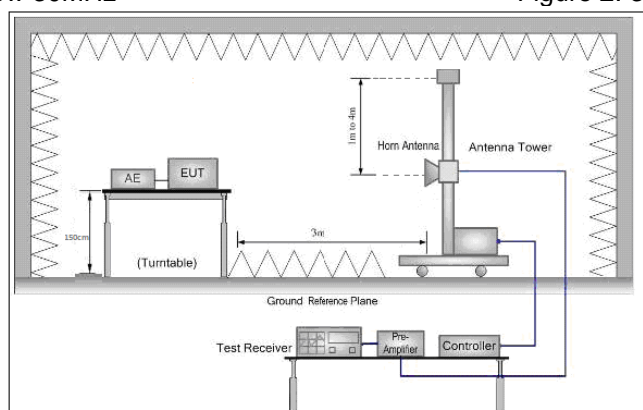


Figure 3. Above 1 GHz

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 heights 1 meter) and the rotatable table was turned from 0 degrees to



	360 degrees to find the maximum reading. 6) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 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. 8) Test the EUT in the lowest channel,the middle channel,the Highest channel 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. 10) Repeat above procedures until all frequencies measured was complete.
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

Remark: This test item be test using two power supply (AC 120V for adapter & AC 120V for POE), and only record the worst data of DC 24V by adapter in the report.





Measurement Data

7.2.1.1 Peak Power

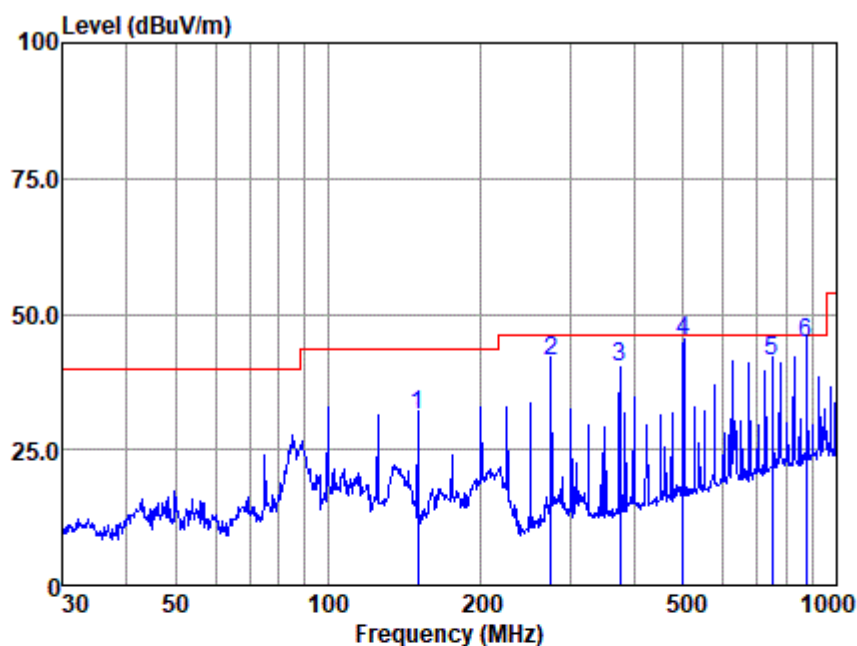
Field Strength for fundamental @ RBW=10MHz						
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Polarization
6506	32.11	9.75	38.13	70.22	73.95	Horizontal
6506	32.11	9.75	38.13	68.78	72.51	Vertical

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
6506	73.95	13.98	87.93	95.30	-7.37	Horizontal
6506	72.51	13.98	86.49	95.30	-8.81	Vertical
Note: FS _C = FS _M + 20log(50MHz/10MHz) = FS _M + 13.98						



7.2.1.2 Spurious Emissions

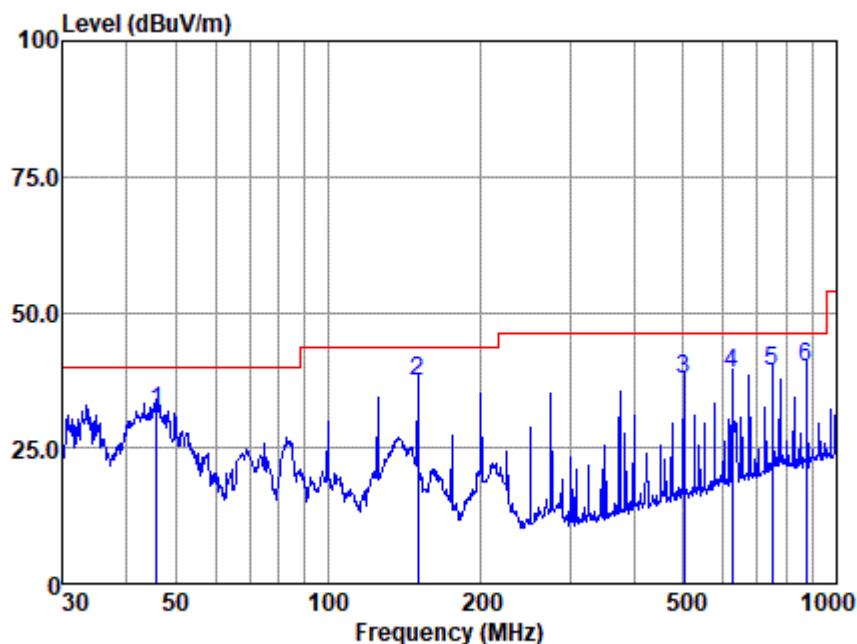
30MHz-960MHz



Antenna Polarity :HORIZONTAL

	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	150.011	58.86	12.90	1.71	42.23	31.24	43.50	-12.26	QP
2	275.157	68.33	12.70	2.31	42.11	41.23	46.00	-4.77	QP
3	375.939	64.66	15.03	2.61	41.93	40.37	46.00	-5.63	QP
4	500.000	66.00	17.70	2.90	41.69	44.91	46.00	-1.09	QP
5	750.108	57.45	22.10	3.59	41.99	41.15	46.00	-4.85	QP
6	875.247	59.48	23.00	3.88	41.72	44.64	46.00	-1.36	QP

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



Antenna Polarity :VERTICAL

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	45.855	59.71	13.53	1.01	42.33	31.92	40.00	-8.08	QP
2	150.011	64.98	12.90	1.71	42.23	37.36	43.50	-6.14	QP
3	501.179	58.84	17.72	2.90	41.69	37.77	46.00	-8.23	QP
4	625.078	57.07	19.97	3.27	41.69	38.62	46.00	-7.38	QP
5	750.108	55.52	22.10	3.59	41.99	39.22	46.00	-6.78	QP
6	875.247	54.69	23.00	3.88	41.72	39.85	46.00	-6.15	QP

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



Test Data:

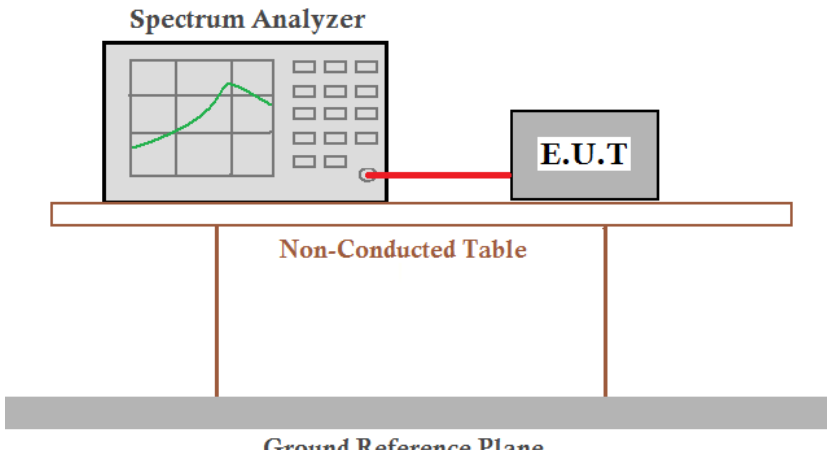
Transmitting with modulation Mode								
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
1164MHz ≤ f ≤ 1240MHz & 1559MHz ≤ f ≤ 1610MHz								
1218.24	22.17	2.16	37.01	17.79	5.11	10.00	-4.89	Vertical
1578.64	23.60	2.42	36.96	16.11	5.17	10.00	-4.83	Vertical
960MHz ≤ f ≤ 3100MHz (except for above frequency range)								
1026.42	21.33	2.12	37.09	24.86	11.22	20.00	-8.78	Vertical
2423.59	26.09	3.12	37.47	27.28	19.02	44.00	-24.98	Vertical
f > 3100MHz								
3237.43	28.14	3.67	38.14	28.04	21.71	54.00	-32.29	Vertical
4782.68	30.79	5.24	38.69	22.78	20.12	54.00	-33.88	Vertical
6494.24	32.10	5.44	38.11	47.94	47.37	54.00	-6.63	Vertical
12096.25	35.71	7.62	36.90	22.22	28.65	44.00	-15.35	Vertical
13854.94	37.92	8.91	37.81	19.36	28.38	44.00	-15.62	Vertical
14046.86	38.26	8.66	37.95	20.27	29.24	44.00	-14.76	Vertical
1164MHz ≤ f ≤ 1240MHz & 1559MHz ≤ f ≤ 1610MHz								
1187.54	22.04	2.15	37.02	18.05	5.22	10.00	-4.78	Horizontal
1584.94	23.62	2.42	36.96	15.81	4.89	10.00	-5.11	Horizontal
960MHz ≤ f ≤ 3100MHz (except for above frequency range)								
1005.56	21.23	2.15	37.10	27.50	13.78	20.00	-6.22	Horizontal
2152.94	25.66	2.94	37.28	28.37	19.69	44.00	-24.31	Horizontal
f > 3100MHz								
3494.56	28.70	3.62	38.40	27.09	21.01	54.00	-32.99	Horizontal
4878.62	31.06	4.48	38.78	43.46	40.22	54.00	-13.78	Horizontal
6592.84	32.30	5.15	37.96	46.77	46.26	54.00	-7.74	Horizontal
11286.46	35.72	7.12	35.52	33.99	41.31	44.00	-2.69	Horizontal
13797.22	37.85	8.66	37.78	20.51	29.24	44.00	-14.76	Horizontal
14634.56	38.73	9.28	38.28	18.79	28.52	44.00	-15.48	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 .



7.3 UWB Bandwidth (10dB Bandwidth)

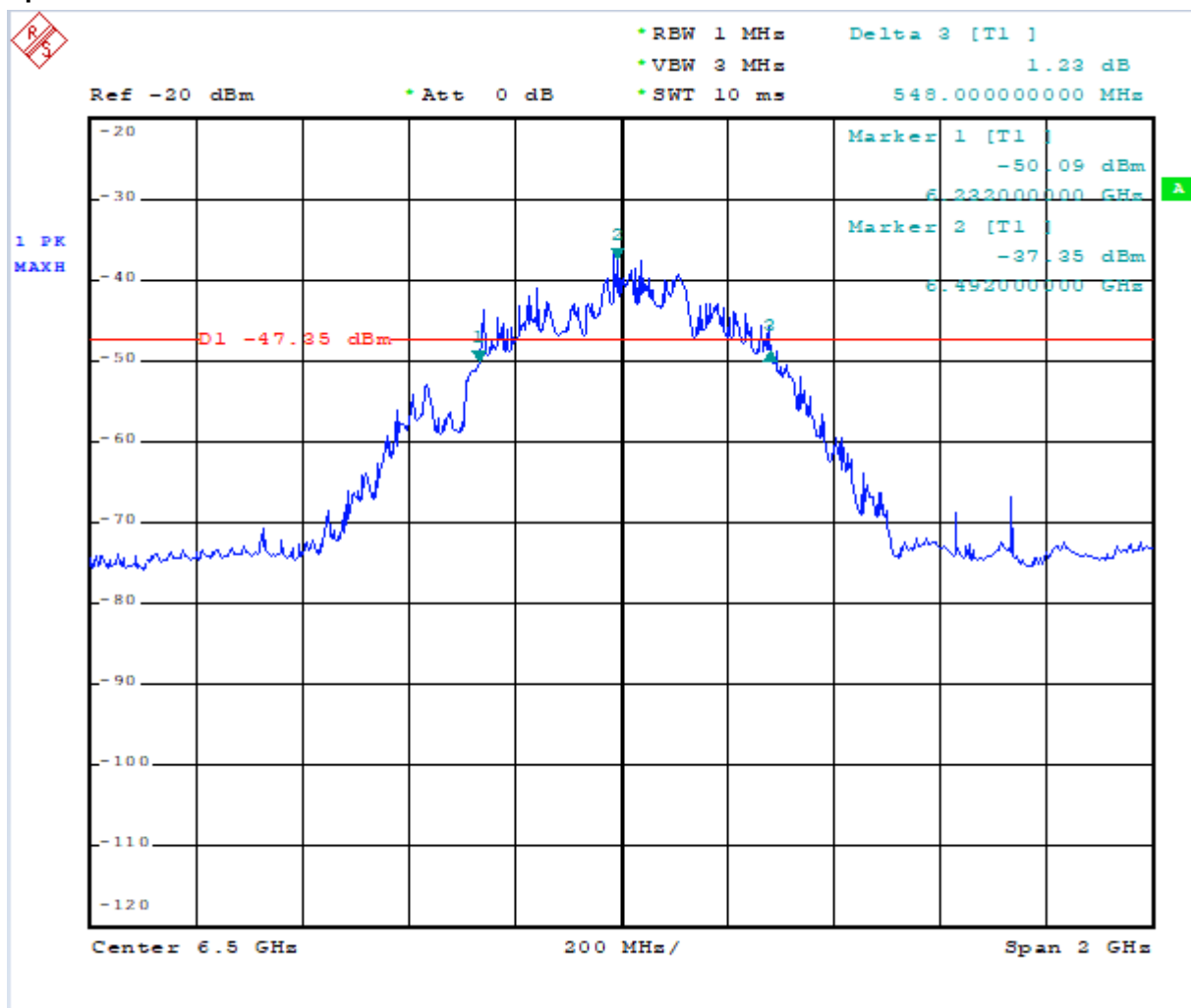
Test Requirement:	47 CFR Part 15F Section 15.503(a)
Test Method:	ANSI C63.10:2013
Test Setup:	
Limit:	≥500MHz
Exploratory Test Mode:	Transmitter mode
Instruments Used:	Refer to section 4 for details
Test Results:	Pass

Measurement Data

Test Frequency (MHz)	F _L (MHz)	F _H (MHz)	10dB bandwidth (MHz)	Limit (MHz)	Results
6506	6232	6780	548	≥500MHz	Pass



Test plot as follows:



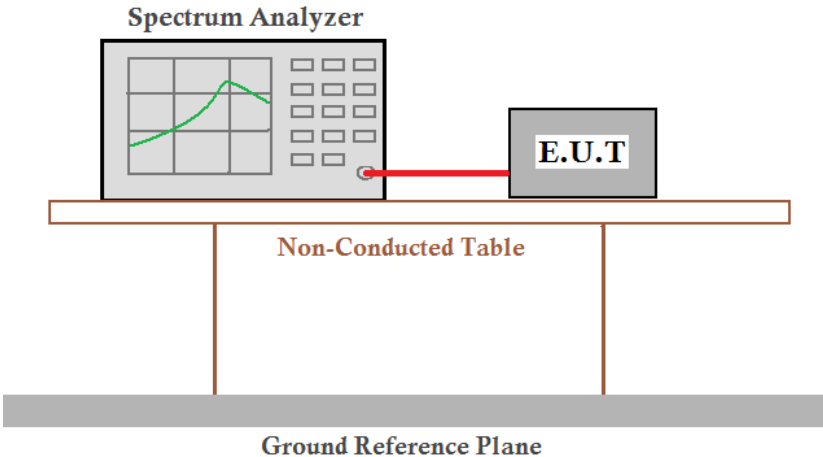
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7.4 Dwell Time

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

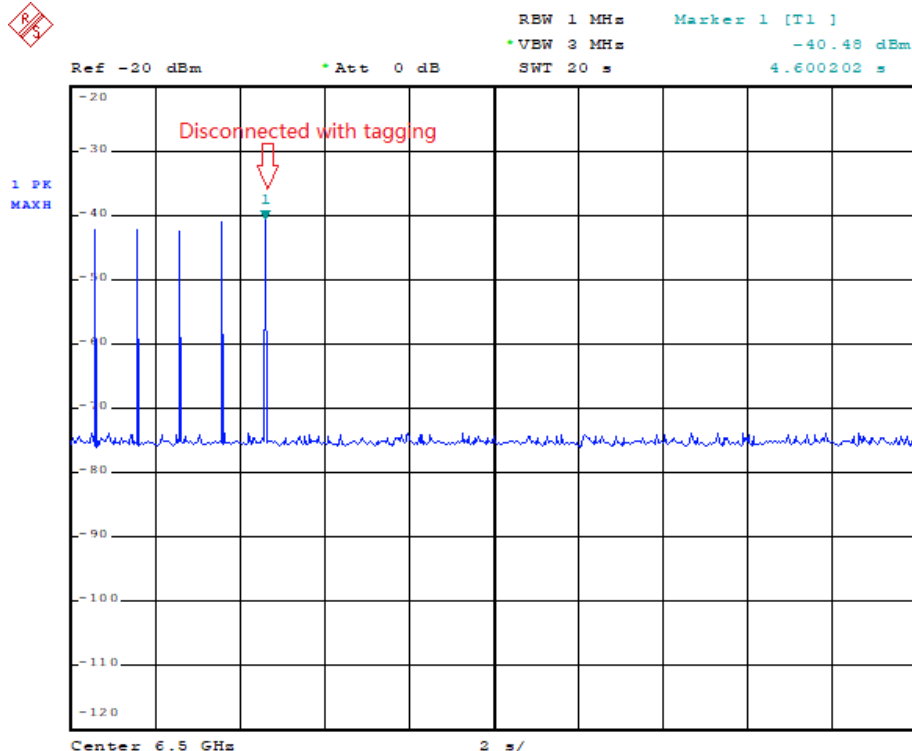
The UWB Gateway only transmit signal when receiver signal form UWB Tag,the UWB Gateway cease transmission when disconnected with UWB Tag,so UWB Gateway is satisfied the requirement for 47 CFR Part 15F Section 15.517(a)(5).



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8 Test Setup Photographs

Refer to the < Test Setup photos-FCC>.

9 EUT Constructional Details

Refer to the < External Photos > & < Internal Photos >.

- End of the Report -



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