

FCC CERTIFICATION TEST REPORT

Applicant	:	Tsingoal (Beijing) Technology Co., Ltd.
Address	:	10th Floor, Building A, Innovation Plaza , No.1 Zhongguancun East Road, Haidian District, Beijing
Manufacturer	:	Tsingoal (Beijing) Technology Co., Ltd.
Address	:	10th Floor, Building A, Innovation Plaza , No.1 Zhongguancun East Road, Haidian District, Beijing
Equipment under Test	:	Positioning Device
Model No.	:	TB5000-BD
FCC ID	:	2BK5RTB5000-BD
Report No.	:	LS-R25103127-1F01
Issue Date	:	Jan. 29, 2026

LabSure Testing Services (Tianjin) Co., Ltd.



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Test Report Declare

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Address	:	10th Floor, Building A, Innovation Plaza , No.1 Zhongguancun East Road, Haidian District, Beijing

Test Standard Used:

47 CFR FCC Part 15F (15.519),
ANSI C63.10-2020

We Declare:

The equipment described above is tested and assessed by LabSure Testing Services (Tianjin) Co., Ltd. and in the configuration assessed the equipment complied with the standards specified above. The tested and assessed results are contained in this test report and LabSure Testing Services (Tianjin) Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these assessments.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.

Report No.:	LS-R25103127-1F01		
Date of Receipt:	Jan. 13, 2026	Date of Test:	Jan. 14, 2026 ~ Jan. 27, 2026

Prepared By:

Reviewed by:

Novak Wei

Ethan Bao

Aaron Zhang

Novak Wei/Engineer

Ethan Bao/Engineer

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Manager

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of LabSure Testing Services (Tianjin) Co., Ltd.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Jan. 29, 2026	

1. Summary of Test Results

Description of Test Item	Standard	Verdict
Transmission cease time	15.519(a)(1)	Pass
10 dB Bandwidth	15.503(d) 15.519(b)	Pass
Radiated emissions	15.519(c)&(d)	Pass
Effective isotropic radiated power	15.519(e)	Pass
Power Line Conducted Emission	15.207	Pass

2. General Test Information

2.1. Description of EUT

EUT Name	: Positioning Device
Test Model Number	: TB5000-BD
EUT Function Description	: Please reference user manual of this device
Power Supply	: DC 3.7V by Battery
Radio Specification	: UWB (8 GHz)
Operation Frequency	: 7500 MHz - 8500 MHz
Data Rate	: 6.8 Mbps
Antenna Type	: PCB antenna, maximum PK gain: 3.24 dBi
UWB devices type	: hand held UWB systems
Sample Number	: Y25103127-01

Note: EUT is the ab. of equipment under test.

2.2. Accessories of EUT

Description of Accessories	Manufacturer	Model number	Description	Remark
N/A	N/A	N/A	N/A	N/A

2.3. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	Description	SN
Notebook	Lenovo Beijing Co. Ltd.	ThinkPad E450c	N/A	TP00067A

2.4. Block diagram of EUT configuration for test



The test software was used to control EUT work in Continuous Tx mode, and select test channel, wireless mode as below table.

Tested mode, channel, and data rate information			
Mode	Channel	Frequency (MHz)	Power Level
UWB	-	8000	Default

2.5. Deviations of test standard

No deviation.

2.6. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	21-25 °C
Humidity range:	25-75%
Pressure range:	86-106 kPa

2.7. Test laboratory

LabSure Testing Services (Tianjin) Co., Ltd.

Address: Building D-1, No. 19, Weisi Road, Microelectronics Industrial Park Development Area, Tianjin, China.

Tel: +86-22-58038033, www.lab-sure.com, E-mail: labsure@lab-sure.com

NVLAP (National Voluntary Laboratory Accreditation Program) CODE: 500036-0

CNAS (China National Accreditation Service for Conformity Assessment) CODE: L13402

FCC Designation Number: CN5004; FCC Test Firm Registration Number: 368676

ISED (Innovation, Science and Economic Development Canada) Company Number: 27768

Conformity Assessment Body Identifier: CN0125

VCCI Facility Registration Number: C-20089, T-20093, R-20125, G-20122

2.8. Measurement uncertainty

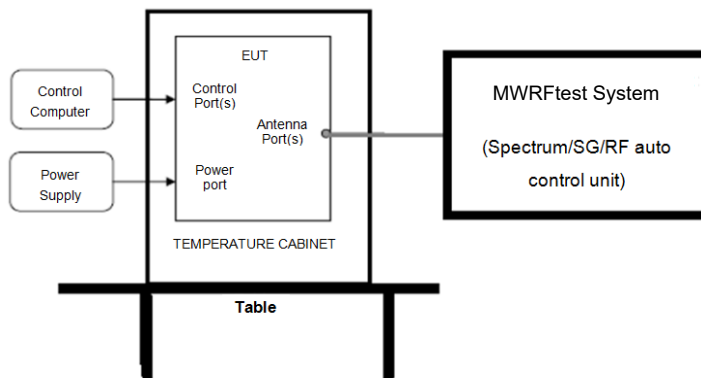
Test Item	Uncertainty
Bandwidth	0.14%
Peak Output Power (Conducted) (Spectrum Analyzer)	0.12 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$); 0.32 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
Peak Output Power (Conducted) (Power Sensor)	0.51 dB
Power Spectral Density	0.12 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$); 0.32 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
Frequencies Stability	6.7×10^{-8} (Antenna couple method) 3.4×10^{-8} (Conducted method)
Conducted Spurious Emissions	0.12 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$); 0.32 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$) 0.52 dB ($8 \text{ GHz} \leq f < 22 \text{ GHz}$)
Uncertainty for Radio Frequency (RBW < 20 kHz)	3×10^{-7}
Temperature	$\pm 2^{\circ}\text{C}$
Humidity	$\pm 1\%$
Uncertainty for Radiation Emission Test (30 MHz - 1 GHz)	2.72 dB (Antenna Polarize: V) 2.72 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission Test (1 GHz - 40 GHz)	2.74 dB (1 - 6 GHz) 2.72 dB (6 GHz - 18 GHz) 3.54 dB (18 GHz - 26 GHz) 4.30 dB (26 GHz - 40 GHz)
Uncertainty for Power Line Conduction Emission Test	3.40 dB (150 kHz - 30 MHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3. Equipment Used During Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
RF Connected Test (MWRFTest system)					
EXG Analog Signal Generator	Keysight	N5173B	MY53270968	2025/02/20	1 Year
MXG Vector Signal Generator	Keysight	N5182A	MY50143288	2025/02/20	1 Year
PXA Signal Analyzer	Keysight	N9030B	MY56320639	2025/02/20	1 Year
PXA Signal Analyzer	Keysight	N9010A	MY53281492	2025/02/20	1 Year
Wideband Radio Communication Tester	R&S	CMW500	158800	2025/02/20	1 Year
Power Sensor	KEYSIGHT	U2021XA	MY59150007	2025/02/20	1 Year
DC Power Supply	inSTEK	PSP-2010	EN122317	2025/02/03	1 Year
Test Software	MWRFTest	MTS8310	V03	N/A	N/A
Radiated Emission -10m EMI Chamber					
Broadband Horn Antenna	TESEQ	BHA 9118	31754	2025/2/17	1 Year
Broad Band Horn Antenna	Com-Power	AHA-840	10100024	2025/10/10	2 Year
Active Loop Antenna	R&S	HFH2-Z2	100269	2024/08/25	2 Year
Amplifier	CMO-MW	DPA8 1000 1800	09211739	2025/02/17	1 Year
EMI Test Receiver	R&S	ESCI	101024	2025/02/17	1 Year
EMI Test Receiver	R&S	ESCI	101030	2025/02/17	1 Year
EMI Test Receiver	R&S	ESU26	100244	2025/02/17	1 Year
EXA Signal Analyzer	Keysight	N9010A	MY53281492	2025/02/20	1 Year
Bilog Antenna	TESEQ	CBL6112D	29068	2024/10/10	2 Year
Bilog Antenna	TESEQ	CBL6112D	29069	2024/10/10	2 Year
Amplifier	Sonoma	310N	300913	2025/02/17	1 Year
Amplifier	Sonoma	310N	334532	2025/02/17	1 Year
Ant Mast	Innco	MA4000	N/A	N/A	N/A
Ant Mast	Innco	MA4000	N/A	N/A	N/A
Mast Controller	Innco	CO2000	N/A	N/A	N/A
Mast Controller	Innco	CO2000	N/A	N/A	N/A
RF Selector 4CH	TOYO	NS4904N	Selector1	N/A	N/A
RF Selector 4CH	TOYO	NS4904N	Selector2	N/A	N/A
Test software	TOYO	EP5/RSE	Ver 1.9.1	N/A	N/A
Test software	Audix	E3	V 6.11111b	N/A	N/A

4. 10 dB Bandwidth

4.1. Block diagram of test setup



4.2. Limits

1.FCC §15.503 (d): 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.

2.FCC §15.519 (b): The UWB bandwidth of a device operating under the provisions of this section must be contained between 3100 MHz and 10,600 MHz.

4.3. Test procedure

The frequency at which the maximum power level is measured with the peak detector is designated f_M . The peak power measurements shall be made using a spectrum analyzer or EMI receiver with a 1 MHz resolution bandwidth and a video bandwidth of 1 MHz or greater. The instrument shall be set to peak detection using the maximum-hold trace mode. The outermost 1 MHz segments above and below f_M , where the peak power falls by 10 dB relative to the level at f_M , are designated as f_H and f_L , respectively:

a) For the lowest frequency bound f_L , the emission is searched from a frequency lower than f_M that has, by inspection, a peak power much lower than 10 dB less than the power at f_M and increased toward f_M until the peak power indicates 10 dB less than the power at f_M . The frequency of that segment is recorded.

b) This process is repeated for the highest frequency bound f_H , beginning at a frequency higher than f_M that has, by inspection, a peak power much lower than 10 dB below the power at f_M . The frequency of that segment is recorded.

c) The two recorded frequencies represent the highest f_H and lowest f_L bounds of the UWB transmission, and the -10 dB bandwidth (B_{-10}) is defined as $(f_H - f_L)$.⁷⁵ The center frequency (f_c) is mathematically determined from $(f_H - f_L) / 2$.

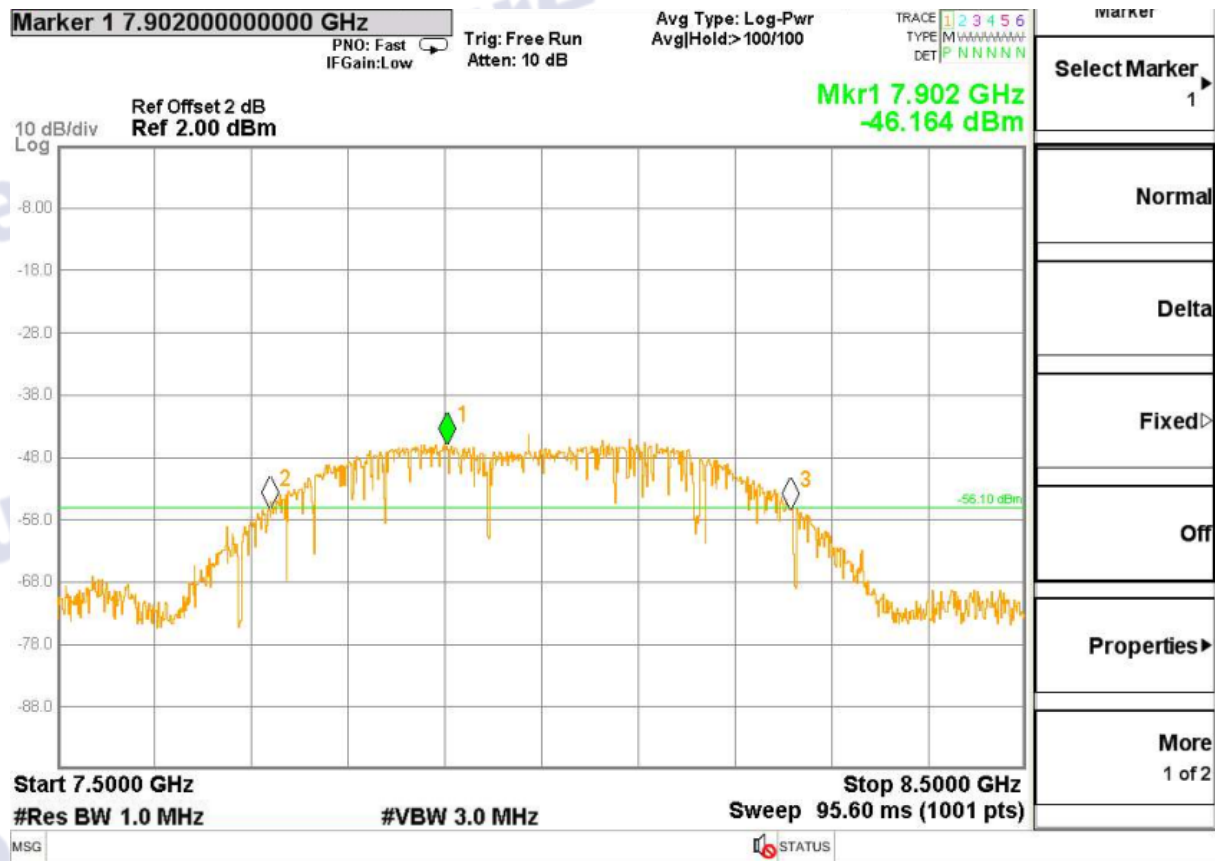
d) The fractional bandwidth is defined as $2(f_H - f_L) / (f_H + f_L)$.

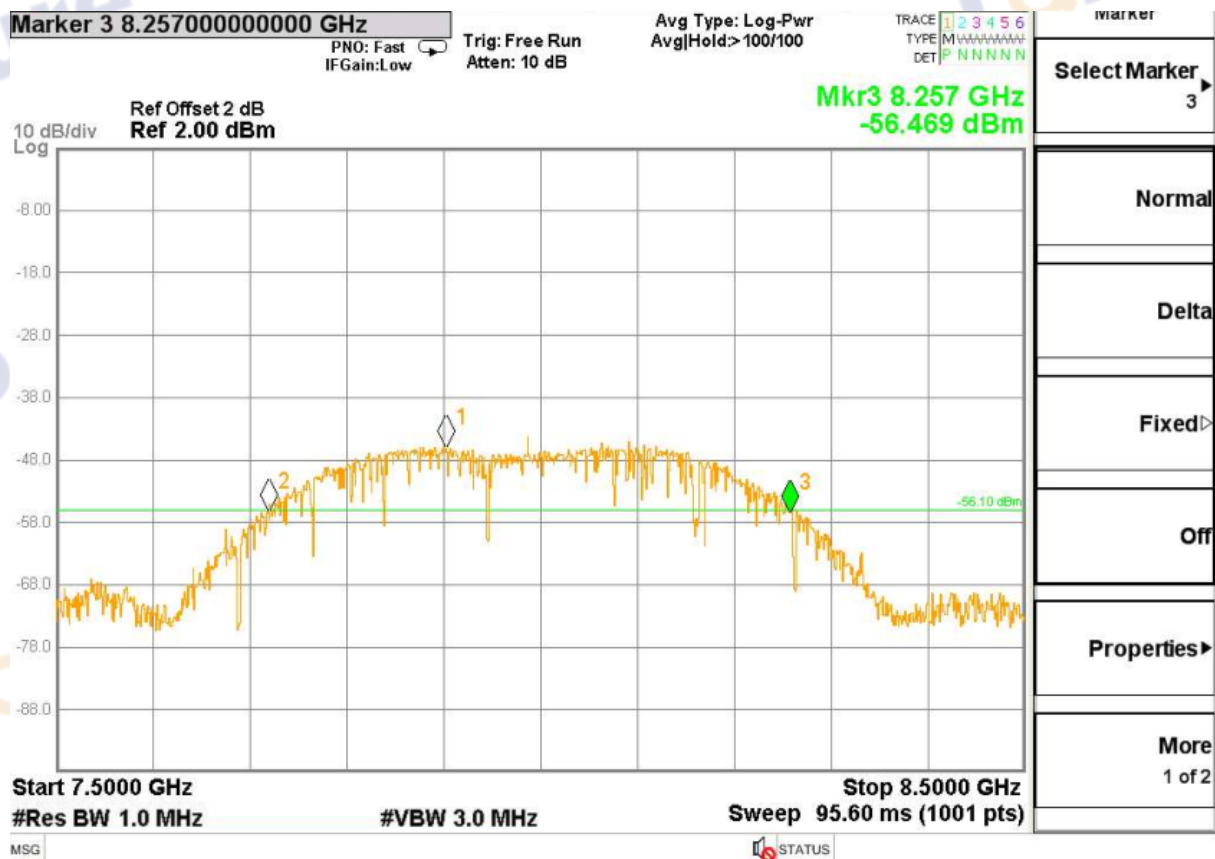
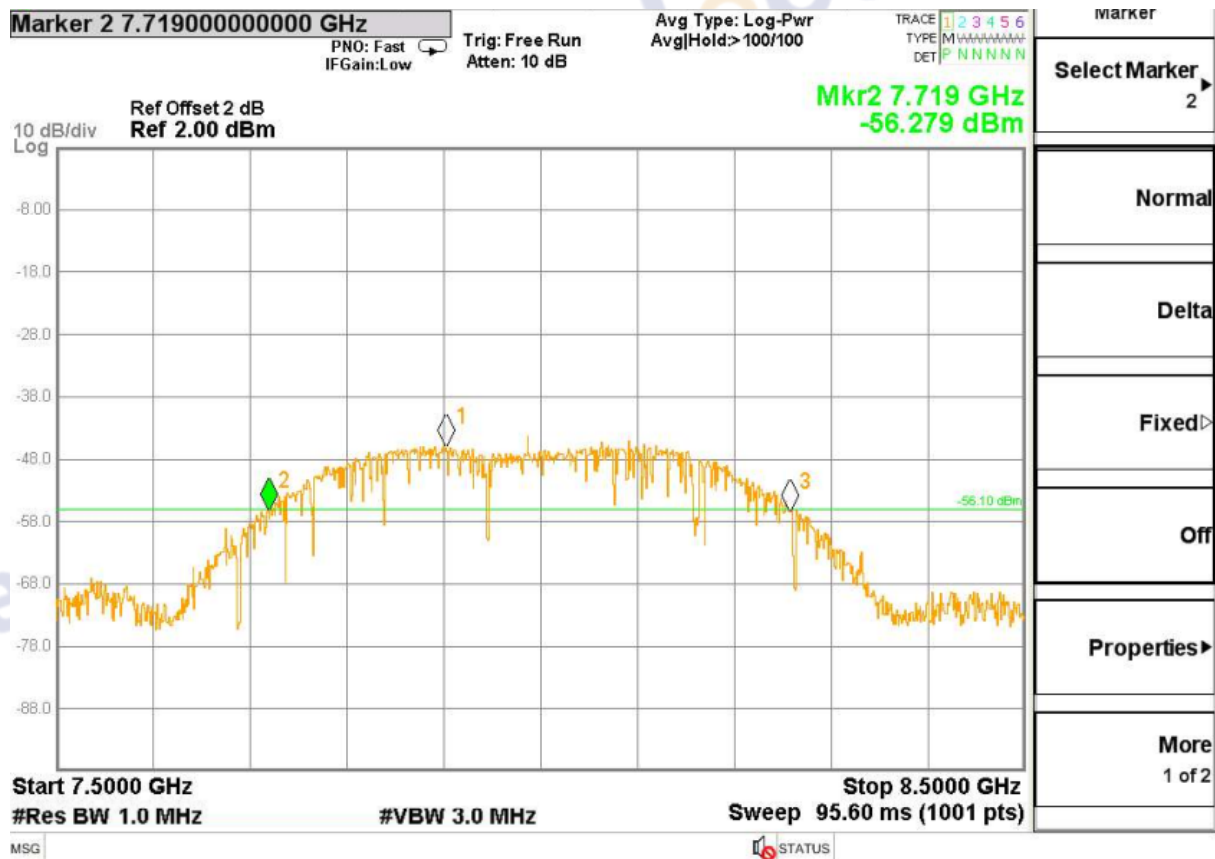
e) Determine whether the -10 dB bandwidth ($f_H - f_L$) is ≥ 500 MHz, or whether the fractional bandwidth $2(f_H - f_L) / (f_H + f_L)$ is ≥ 0.2 .

4.4. Test result

Pass

No	F_{low} (MHz)	F_{high} (MHz)	Bandwidth (MHz)	Limit (MHz)	Result
1	7719	8257	538	≥ 500	Pass

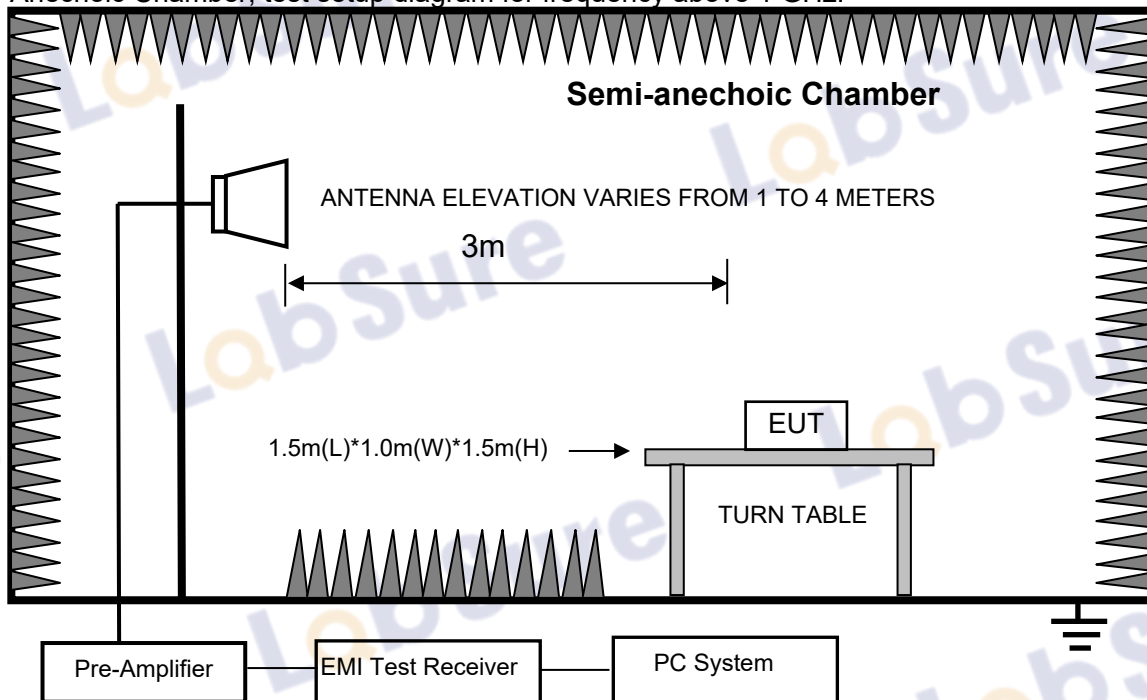




5. Effective isotropic radiated power

5.1. Block diagram of test setup

Anechoic Chamber, test setup diagram for frequency above 1 GHz:



Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

5.2. Limits

According to FCC Part 15.519(e):

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, fM. That limit is 0 dBm EIRP.

5.3. Test procedure

(1) EUT height should be 0.8 m for below 1 GHz at a semi-anechoic chamber while EUT height should be 1.5 m for above 1 GHz at full chamber or semi-anechoic chamber ground with absorbers.

Peak detector,

(2) Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

(3) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions from 9 kHz to 40 GHz:

(a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1 m to 4 m (Except loop antenna,

it's fixed 1m above ground.)

(b) Change work frequency or channel of device if practicable.

(c) Change modulation type of device if practicable.

(d) Change power supply range from 85% to 115% of the rated supply voltage

(e) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions.

(4) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission.

Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10 2013 on Radiated Emission test.

5.4. Test result

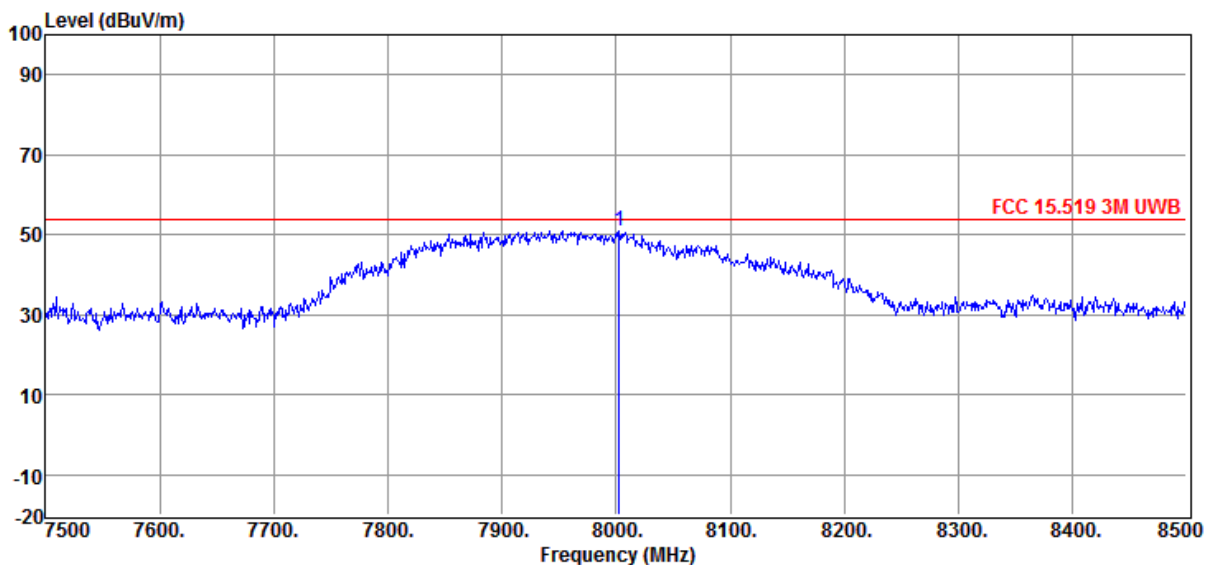
Pass

No	Reading Level (dB μ V/m)	EIRP (dBm/ MHz)	EIRP (dBm/ 50 MHz)	Limit (dBm/ 50 MHz)	Result
1	50.2	-45.0	-11	0	Pass

Note:

(1) The correct factor of RBW 1 MHz to 50 MHz is $20\log(1\text{MHz}/ 50 \text{ MHz})=-34$

(2) $E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP} [\text{dBm}] + 95.2$, for $d=3$ meters.



Item (Mark)	Freq. (MHz)	Read Level (dB μ V)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dB μ V/m)	Limit Line (dB μ V/m)	Over Limit (dB)	Detector	Polarization
1	8003.00	61.88	37.40	56.26	7.18	50.2	53.90	-3.7	PK	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss – PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

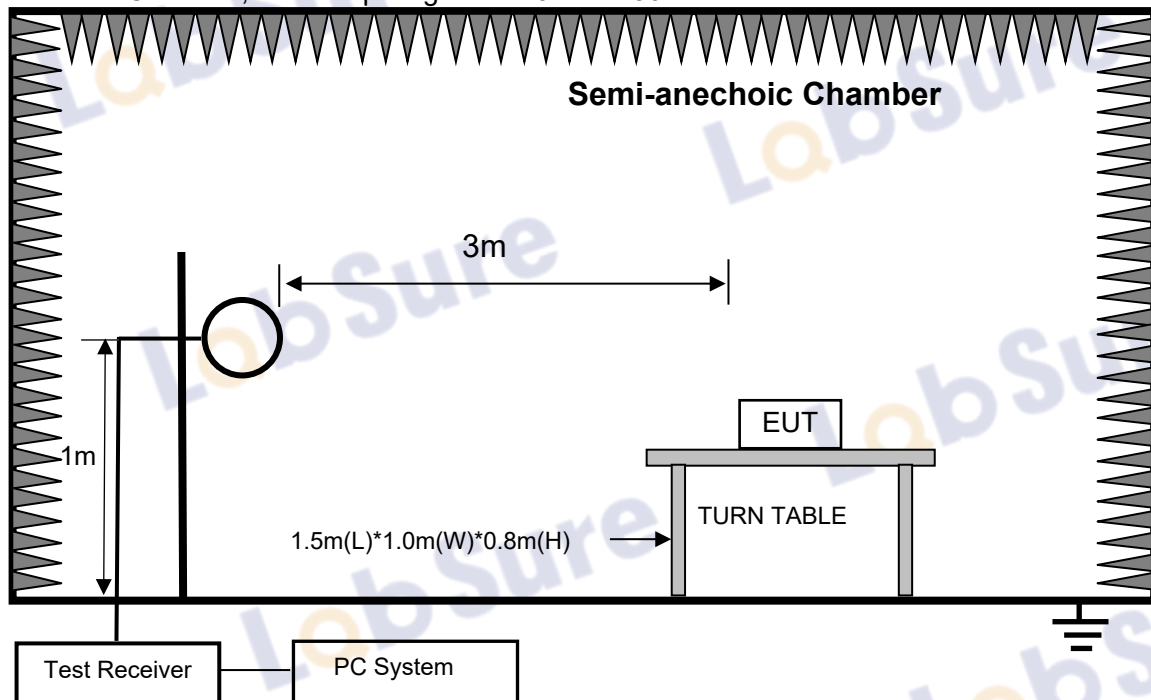
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

4. Margin = Result Level - Limit.

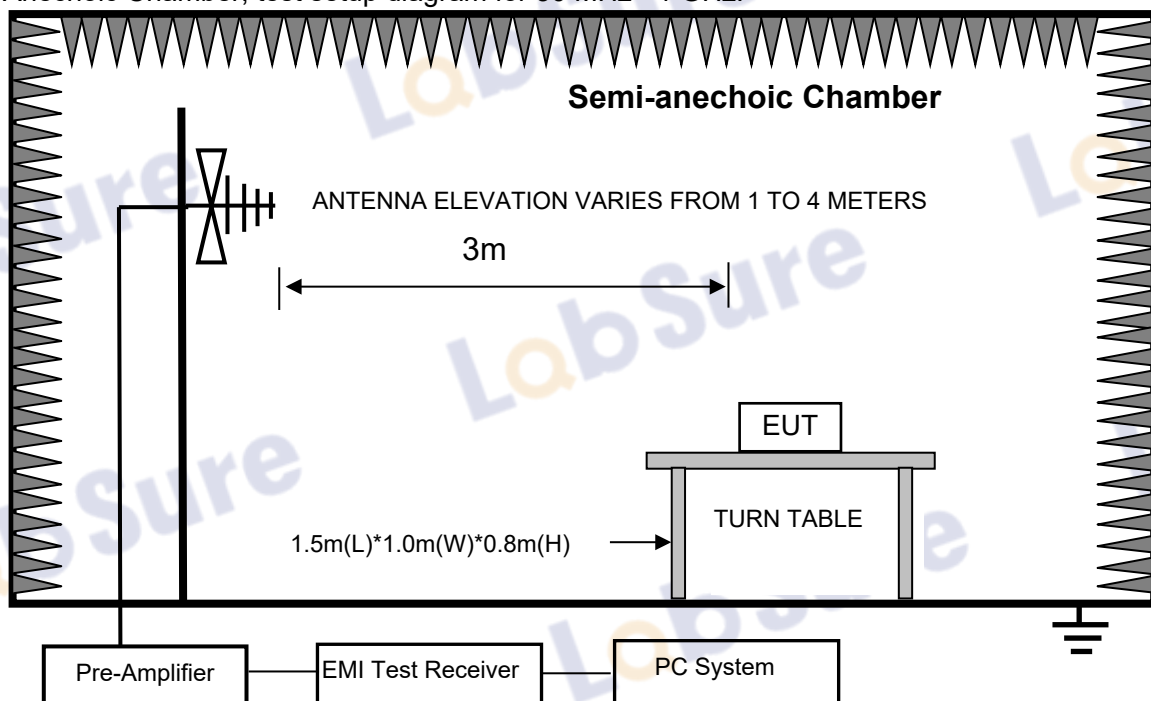
6. Radiated Emission

6.1. Block diagram of test setup

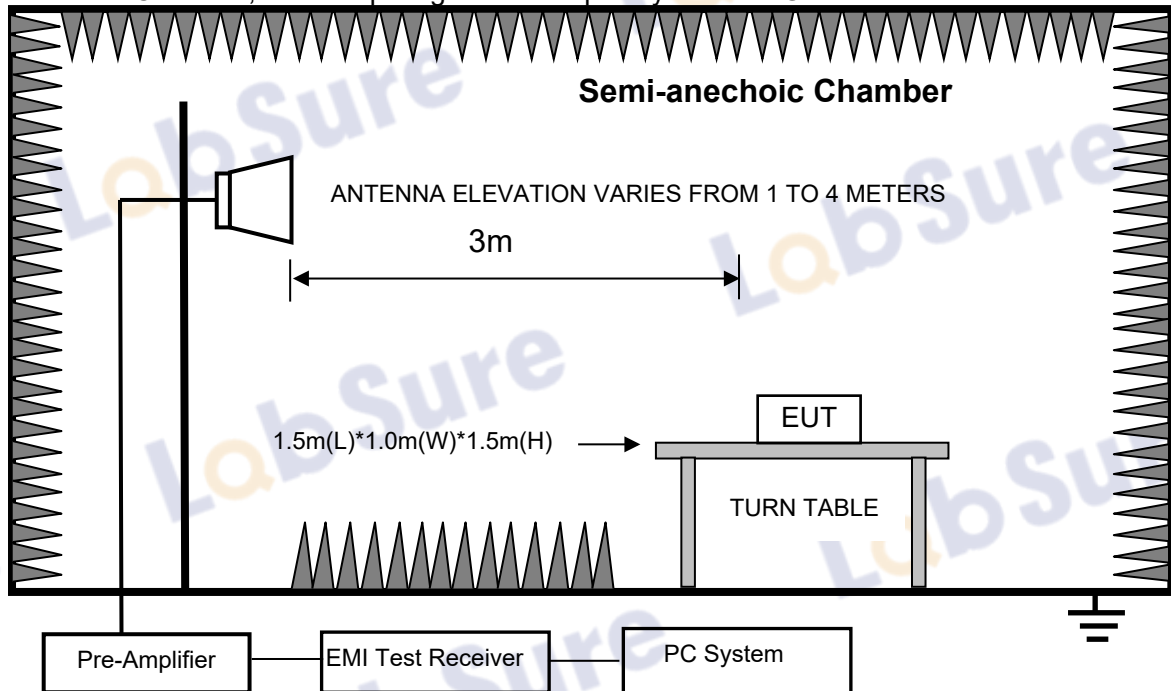
Anechoic Chamber, test setup diagram for 9 kHz - 30 MHz:



Anechoic Chamber, test setup diagram for 30 MHz - 1 GHz:



Anechoic Chamber, test setup diagram for frequency above 1 GHz:



Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

6.2. Limit

(1) FCC 15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.1772&4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.2072&4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(²)
13.36-13.41			

¹Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

²Above 38.6

(2) FCC §15.519 (c): 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.

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
0.009 ~ 0.490	300	2400/F(kHz)	67.6-20log(F)
0.490 ~ 1.705	30	24000/F(kHz)	87.6-20log(F)
1.705 ~ 30.0	30	30	29.54
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

(3) 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:

Frequency in MHz	EIRP in dBm	Distance Meters (m)	Field strength Limit dB $\mu\text{V}/\text{m}$
960-1610	-75.3	3	19.9
1610-1990	-63.3	3	31.9
1990-3100	-61.3	3	33.9
3100-10600	-41.3	3	53.9
Above 10600	-61.3	3	33.9

(3) FCC §15.519 (d): 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:

Frequency in MHz	EIRP in dBm	Distance Meters (m)	Field strength Limit dB $\mu\text{V}/\text{m}$
1164-1240	-85.3	3	9.9
1559-1610	-85.3	3	9.9

Note: Limit conversion applying formula (38) from ANSI C63.10

6.3. Test Procedure

(1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber for below 1G and 150 cm above the ground plane inside a fully-anechoic chamber for above 1G.

(2) Test antenna was located on an adjustable mast, the distance from test antenna to EUT and the antenna used as below table.

Test frequency range	Test antenna used	Test antenna distance
9 kHz - 30 MHz	Active Loop antenna	3 m
30 MHz - 1 GHz	Trilog Broadband Antenna	10 m
1 GHz - 18 GHz	Double Ridged Horn Antenna (1 GHz - 18 GHz)	3 m
18 GHz - 40 GHz	Horn Antenna (18 GHz - 40 GHz)	3 m

According ANSI C63.10:2013 clause 6.4.4.2 and 6.5.3, for measurements below 30 MHz, the loop antenna was positioned with its plane vertical from the EUT and rotated about its vertical axis for maximum response at each azimuth position around the EUT. And the loop antenna also is positioned with its plane horizontal at the specified distance from the EUT. The center of the loop is 1 m above the ground. Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

(3) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions from 9 kHz to 25 GHz:

(a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1 m to 4 m (Except loop antenna, it's fixed 1 m above ground.)

(b) Change work frequency or channel of device if practicable.

(c) Change modulation type of device if practicable.

(d) Change power supply range from 85% to 115% of the rated supply voltage

(e) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions.

Spectrum frequency from 9 kHz to 25 GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 18 GHz to 25 GHz, so below final test was performed with frequency range from 9 kHz to 18 GHz.

(4) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed according to ANSI C63.10:2020 on Radiated Emission test.

(5) The emissions from 9 kHz to 1 GHz were measured based on CISPR QP detector except for the frequency bands 9 - 90 kHz, 110 - 490 kHz, for emissions from 9 kHz - 90 kHz, 110 kHz - 490 kHz and above 1 GHz were measured based on average detector, for emissions above 1 GHz, peak emissions also be measured and need comply with Peak limit.

(6) The emissions from 9 kHz to 1 GHz, QP or average values were measured with EMI receiver with below RBW.

Frequency band	RBW
9 kHz - 150 kHz	200 Hz
150 kHz - 30 MHz	9 kHz
30 MHz - 1 GHz	120 kHz

(7) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1 MHz, VBW is set at 3 MHz for Peak measure; According ANSI C63.10:2020 clause 4.1.4.2.2 procedure for average measure.

(8) X axis, Y axis, Z axis are tested, and worse setup X axis is reported.

6.4. Test result

Pass. (See below detailed test result)

Note1: For emissions below 1 GHz, according exploratory explorer test, when change Tx mode and channel, have no distinct influence on emissions level, so for emissions below 1 GHz, the final test was only performed with EUT TX mode.

Note2: For emissions above 1 GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit.

Radiated Emission test (9KHz-30M)

Radiated Emission Test Result

Test Site : 10m Chamber

Test Date : 01-28-2026

Tested By : Tom

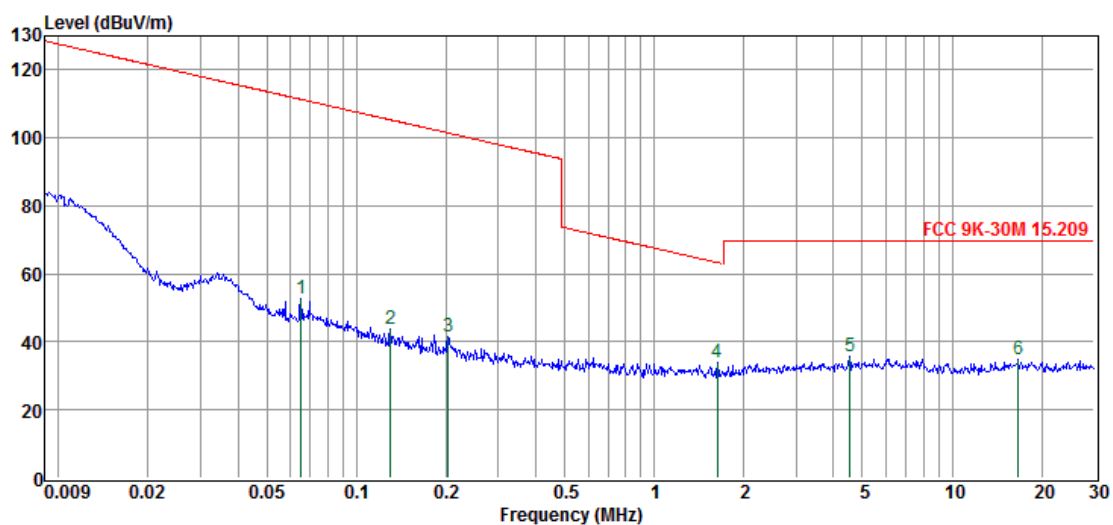
EUT : Positioning Device

Model Number : TB5000-BD

Power Supply : Battery

Test Mode : TX

Memo : UWB

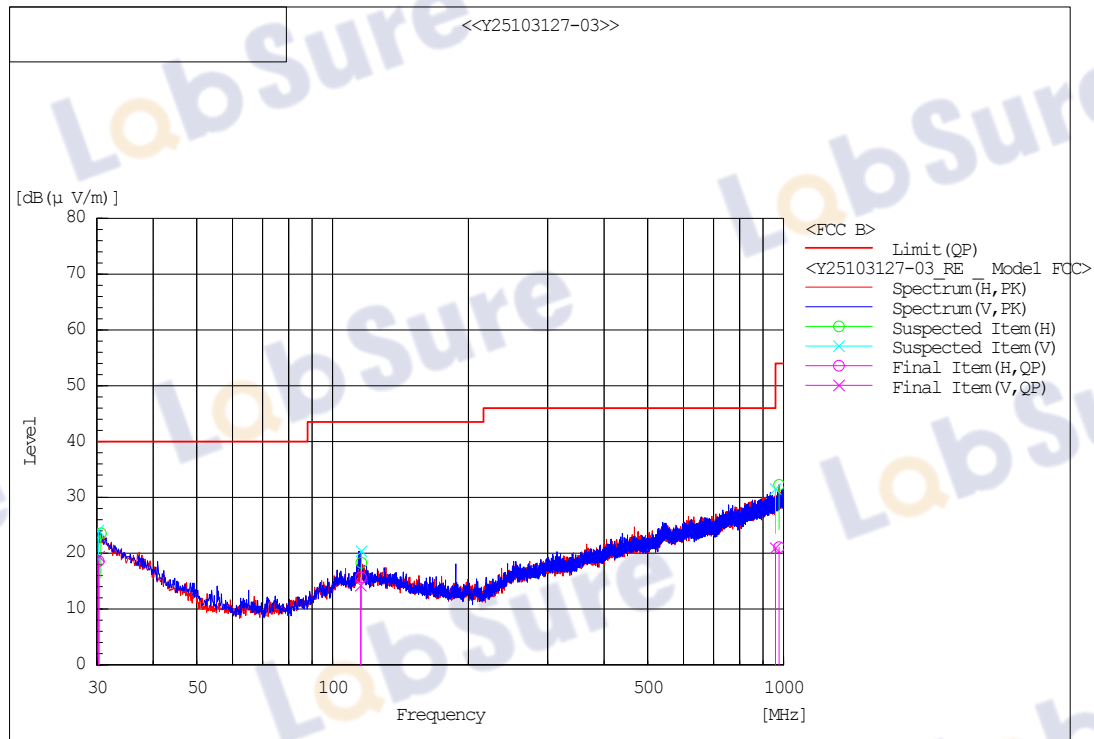


Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detect or	Polarization
1	0.065	32.93	19.70	0.03	52.66	111.32	-58.66	Peak	HORIZONTAL
2	0.130	23.99	19.66	0.03	43.68	105.33	-61.65	Peak	HORIZONTAL
3	0.203	21.77	19.60	0.04	41.41	101.46	-60.05	Peak	HORIZONTAL
4	1.631	14.05	19.93	0.10	34.08	63.36	-29.28	Peak	HORIZONTAL
5	4.532	15.78	19.99	0.16	35.93	69.54	-33.61	Peak	HORIZONTAL
6	16.729	14.32	20.05	0.26	34.63	69.54	-34.91	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.

3. Test setup: 9k-150kHz, RBW: 300Hz; 150k-30Mhz, RBW: 10kHz, Sweep time: auto.

Radiated Emission test (below 1 GHz)**Final Result**

No.	Frequency [MHz]	(P)	Reading QP [dB (μV)]	c.f [dB (1/m)]	Result QP [dB (μV/m)]	Limit QP [dB (μV/m)]	Margin QP [dB]	Height [cm]	Angle [°]	Remark
1	30.341	V	23.7	-4.3	19.4	40.0	20.6	126.0	188.0	
2	30.284	H	22.9	-4.3	18.6	40.0	21.4	387.0	202.2	
3	959.401	V	17.2	3.7	20.9	46.0	25.1	134.0	126.4	
4	115.496	H	27.3	-11.6	15.7	43.5	27.8	264.0	300.3	
5	115.473	V	25.8	-11.6	14.2	43.5	29.3	155.0	38.8	
6	977.015	H	16.9	4.2	21.1	54.0	32.9	287.0	257.6	

Note) Receiving antenna polarization: Horizontal and/or Vertical

Test Distance: 10 m, Antenna Height: 1 m to 4 m

Level QP (Quasi-Peak) = Reading QP + Factor (Antenna Factor + Cable Loss - Amp. Gain)

Margin QP (Quasi-Peak) = Limit - Level QP

Radiated Emission test (above 1 GHz)

Radiated Emission Test Result

Test Site : 10m Chamber

Test Date : 01-28-2026

Tested By : Tom

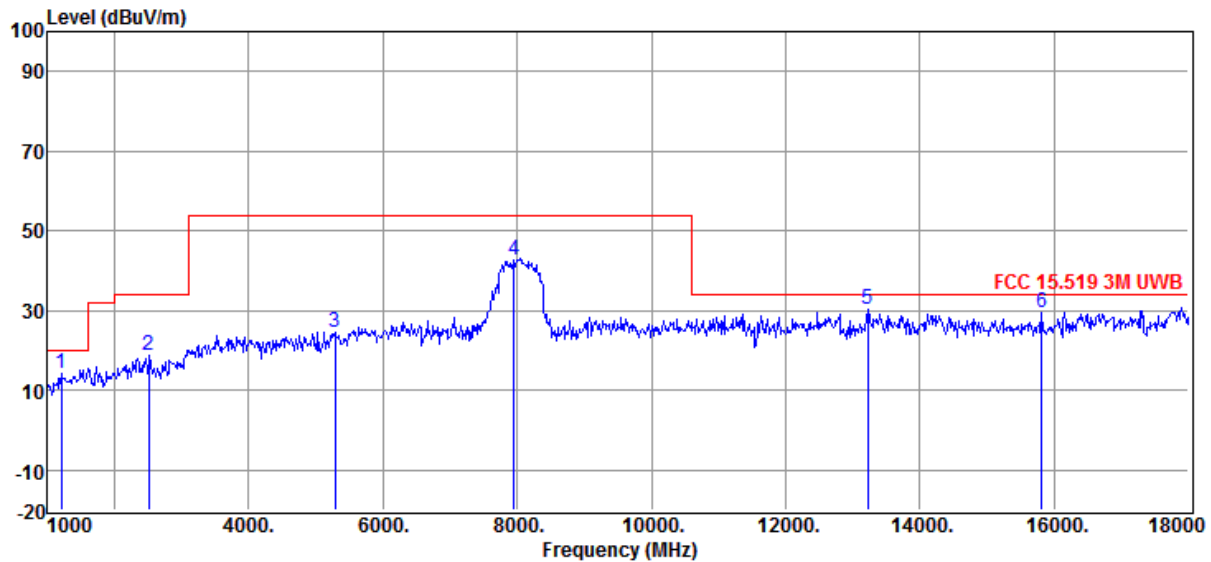
EUT : Positioning Device

Model Number : TB5000-BD

Power Supply : BATTERY

Test Mode : Tx mode

Memo : UWB



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	1204.00	41.88	25.43	52.17	3.15	18.29	19.9	-1.61	Average	HORIZONTAL
2	2513.00	42.96	28.46	52.56	4.40	23.26	33.9	-10.64	Average	HORIZONTAL
3	5284.00	57.42	36.18	53.13	7.15	47.62	53.9	-6.28	Average	HORIZONTAL
4	7953.00	35.83	38.48	54.35	8.61	28.57	33.9	-5.33	Average	HORIZONTAL
5	13223.00	34.91	40.91	56.15	9.69	29.36	33.9	-4.54	Average	HORIZONTAL
6	15807.00	33.56	42.86	55.07	11.06	32.41	33.9	-1.49	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss – PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

4. Margin = Result Level - Limit.

Radiated Emission Test Result

Test Site : 10m Chamber

Test Date : 01-28-2026

Tested By : Tom

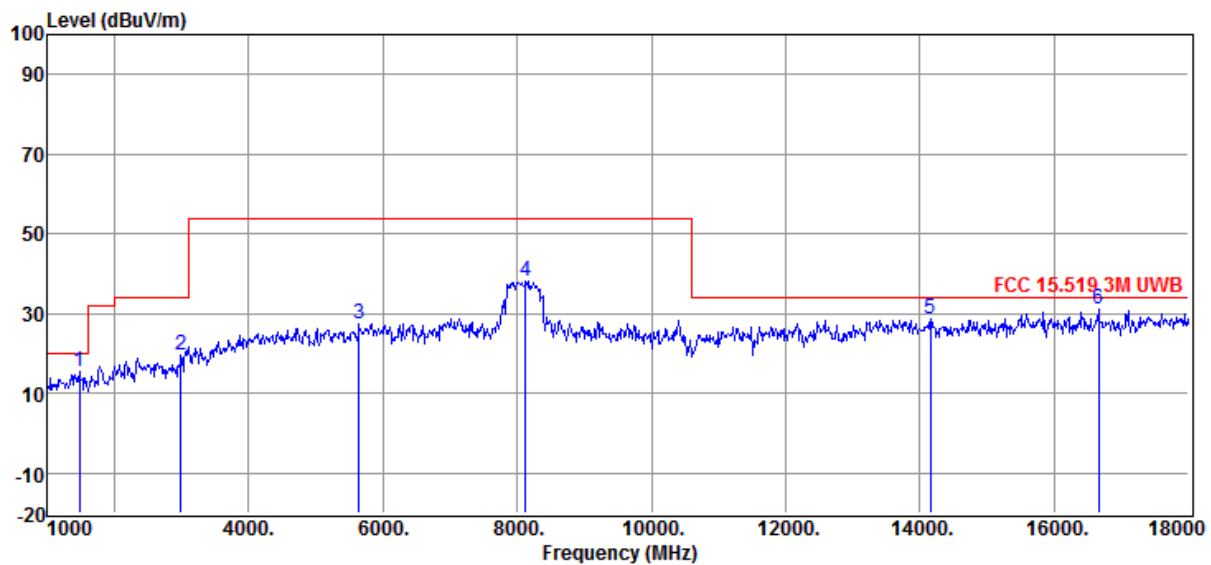
EUT : Positioning Device

Model Number : TB5000-BD

Power Supply : BATTERY

Test Mode : Tx mode

Memo : UWB



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	1476.00	42.27	25.62	52.42	3.15	18.62	19.9	-1.28	Average	VERTICAL
2	2989.00	42.05	29.95	52.66	4.48	23.82	33.9	-10.08	Average	VERTICAL
3	5641.00	53.49	37.49	53.18	7.47	45.27	53.9	-8.63	Average	VERTICAL
4	8123.00	35.12	38.98	54.86	8.76	28	33.9	-5.9	Average	VERTICAL
5	14158.00	35.03	41.12	56.42	9.80	29.53	33.9	-4.37	Average	VERTICAL
6	16657.00	33.49	42.93	55.23	11.41	32.6	33.9	-1.3	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss – PRM Factor.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

4. Margin = Result Level - Limit.

Radiated Emission Test Result

Test Site : 10m Chamber

Test Date : 01-28-2026

Tested By : Tom

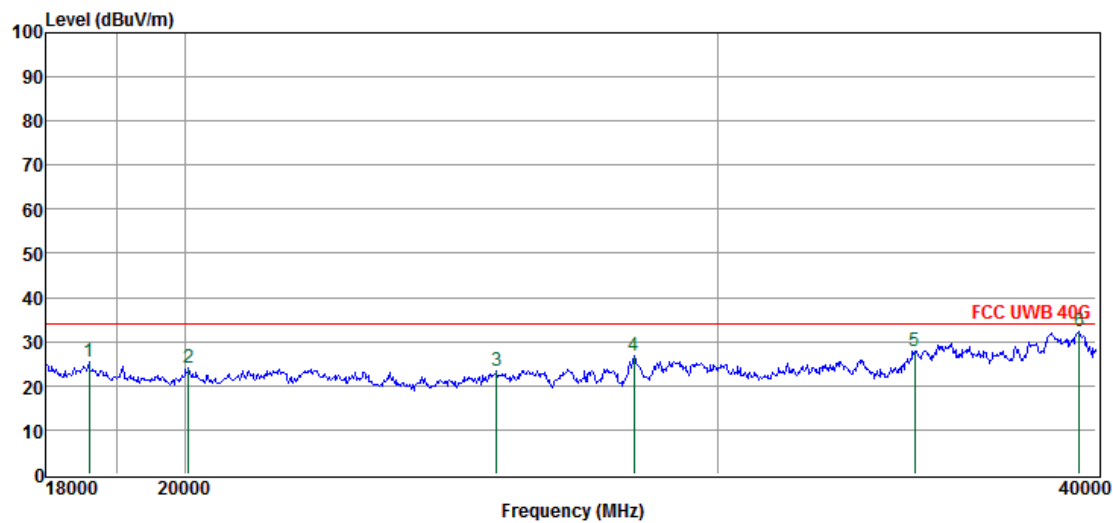
EUT : Positioning Device

Model Number : TB5000-BD

Power Supply : BATTERY

Test Mode : Tx mode

Memo : UWB



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	18599.05	19.46	-2.49	8.42	25.39	33.90	-8.51	Average	HORIZONTAL
2	20064.84	19.72	-4.42	8.84	24.14	33.90	-9.76	Average	HORIZONTAL
3	25353.88	18.78	-4.79	9.43	23.42	33.90	-10.48	Average	HORIZONTAL
4	28149.68	21.34	-4.69	10.16	26.81	33.90	-7.09	Average	HORIZONTAL
5	34839.01	19.27	-3.28	11.92	27.91	33.90	-5.99	Average	HORIZONTAL
6	39492.21	21.05	-0.40	11.80	32.45	33.90	-1.45	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

Radiated Emission Test Result

Test Site : 10m Chamber

Test Date : 01-28-2026

Tested By : Tom

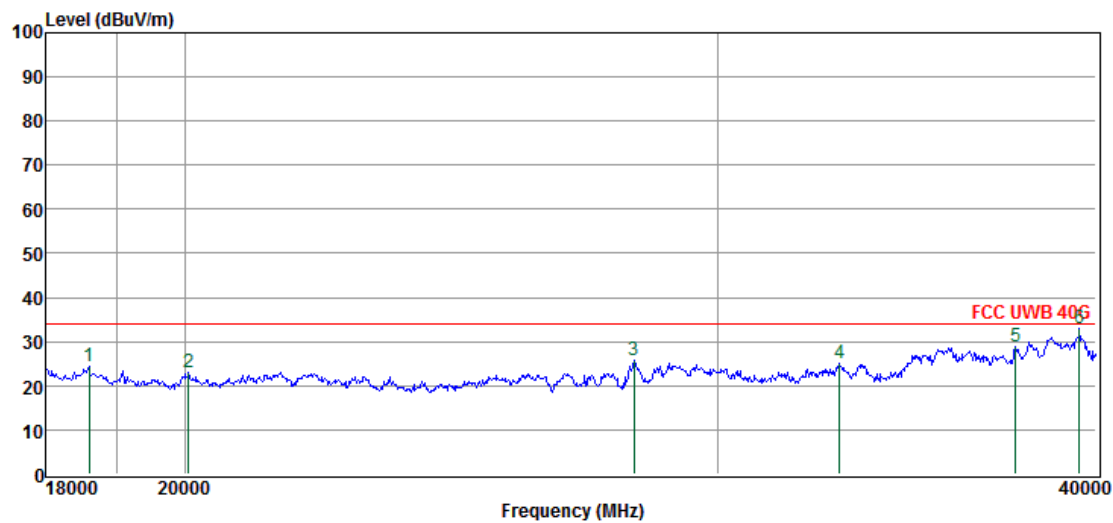
EUT : Positioning Device

Model Number : TB5000-BD

Power Supply : BATTERY

Test Mode : Tx mode

Memo : UWB



Item (Mark)	Freq. (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	18599.05	18.46	-2.49	8.42	24.39	33.90	-9.51	Average	VERTICAL
2	20064.84	18.72	-4.42	8.84	23.14	33.90	-10.76	Average	VERTICAL
3	28149.68	20.34	-4.69	10.16	25.81	33.90	-8.09	Average	VERTICAL
4	32918.79	16.94	-3.03	11.05	24.96	33.90	-8.94	Average	VERTICAL
5	37614.68	18.55	-1.30	11.46	28.71	33.90	-5.19	Average	VERTICAL
6	39492.21	21.57	-0.40	11.80	32.97	33.90	-0.93	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

Radiated Emission Test Result

Test Site : 10m Chamber

Test Date : 01-28-2026

Tested By : Tom

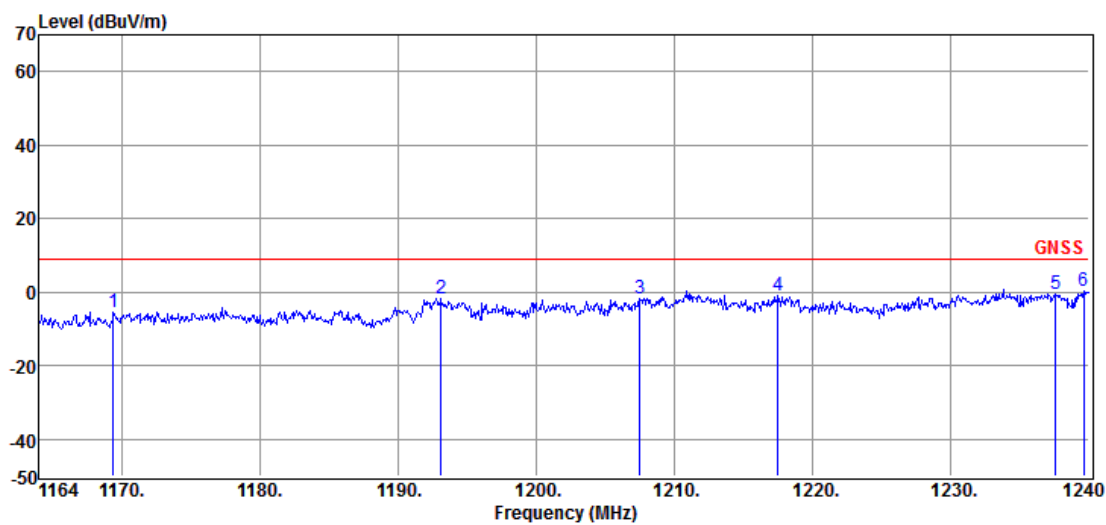
EUT : Positioning Device

Model Number : TB5000-BD

Power Supply : BATTERY

Test Mode : Tx mode

Memo : UWB



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	1169.40	-32.79	24.58	2.90	-5.31	9.00	-14.31	Average	VERTICAL
2	1193.11	-29.26	24.66	2.84	-1.76	9.00	-10.76	Average	VERTICAL
3	1207.47	-29.26	24.71	2.77	-1.78	9.00	-10.78	Average	VERTICAL
4	1217.50	-28.45	24.74	2.72	-0.99	9.00	-9.99	Average	VERTICAL
5	1237.57	-27.89	24.81	2.69	-0.39	9.00	-9.39	Average	VERTICAL
6	1239.62	-27.03	24.81	2.70	0.48	9.00	-8.52	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 KHz, VBW: 3 KHz, Sweep time: auto.

4. Margin = Result Level - Limit.

Radiated Emission Test Result

Test Site : 10m Chamber

Test Date : 01-28-2026

Tested By : Tom

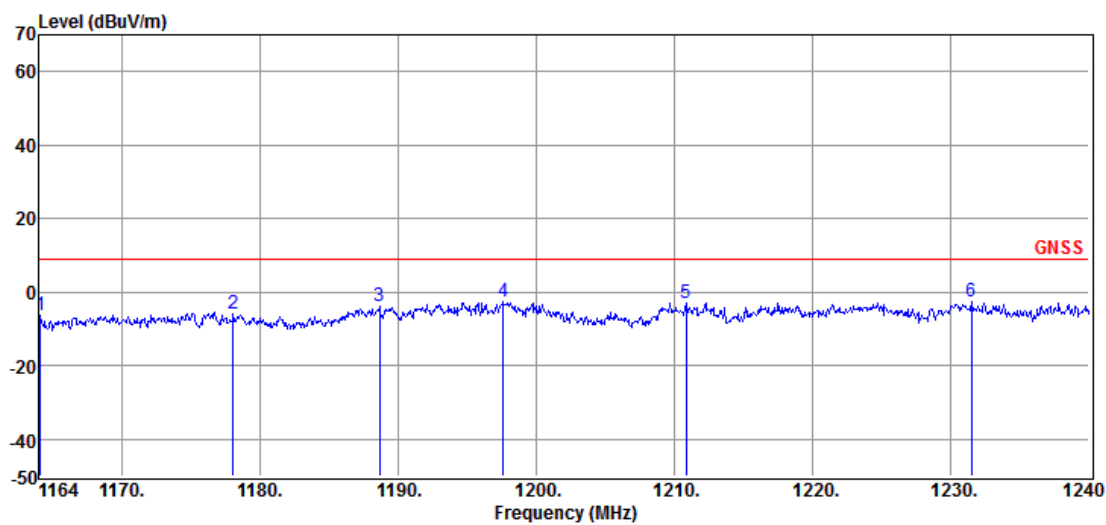
EUT : Positioning Device

Model Number : TB5000-BD

Power Supply : BATTERY

Test Mode : Tx mode

Memo : UWB



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	1164.08	-33.84	24.56	2.89	-6.39	9.00	-15.39	Average	HORIZONTAL
2	1178.06	-33.32	24.61	2.91	-5.80	9.00	-14.80	Average	HORIZONTAL
3	1188.62	-31.47	24.64	2.87	-3.96	9.00	-12.96	Average	HORIZONTAL
4	1197.59	-30.16	24.67	2.82	-2.67	9.00	-11.67	Average	HORIZONTAL
5	1210.82	-30.31	24.72	2.76	-2.83	9.00	-11.83	Average	HORIZONTAL
6	1231.49	-30.23	24.79	2.67	-2.77	9.00	-11.77	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 KHz, VBW: 3 KHz, Sweep time: auto.

4. Margin = Result Level - Limit.

Radiated Emission Test Result

Test Site : 10m Chamber

Test Date : 01-28-2026

Tested By : Tom

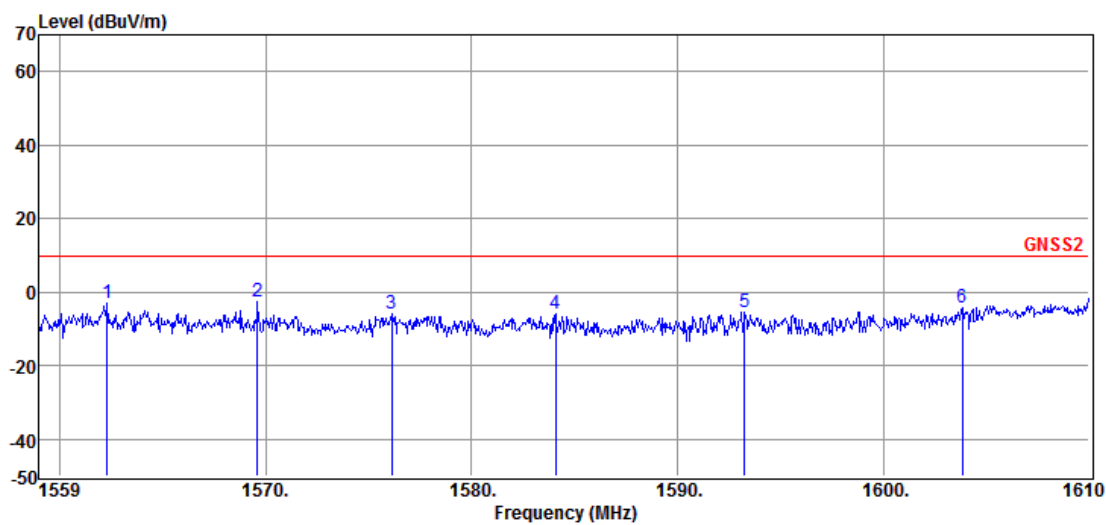
EUT : Positioning Device

Model Number : TB5000-BD

Power Supply : BATTERY

Test Mode : Tx mode

Memo : UWB



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	1562.32	-31.84	26.02	3.03	-2.79	9.90	-12.69	Average	HORIZONTAL
2	1569.61	-31.83	26.06	3.00	-2.77	9.90	-12.67	Average	HORIZONTAL
3	1576.14	-35.08	26.10	2.98	-6.00	9.90	-15.90	Average	HORIZONTAL
4	1584.09	-34.88	26.14	2.99	-5.75	9.90	-15.65	Average	HORIZONTAL
5	1593.27	-34.49	26.19	3.04	-5.26	9.90	-15.16	Average	HORIZONTAL
6	1603.83	-33.48	26.24	3.11	-4.13	9.90	-14.03	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 KHz, VBW: 3 KHz, Sweep time: auto.

4. Margin = Result Level - Limit.

Radiated Emission Test Result

Test Site : 10m Chamber

Test Date : 01-28-2026

Tested By : Tom

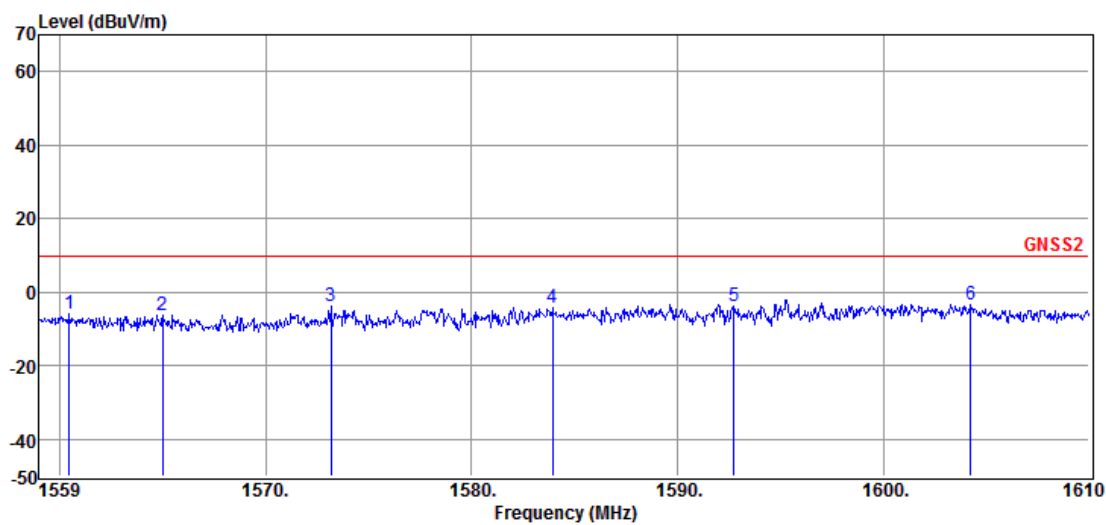
EUT : Positioning Device

Model Number : TB5000-BD

Power Supply : BATTERY

Test Mode : Tx mode

Memo : UWB



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	1560.48	-34.81	26.01	3.04	-5.76	9.90	-15.66	Average	VERTICAL
2	1565.02	-35.26	26.04	3.02	-6.20	9.90	-16.10	Average	VERTICAL
3	1573.18	-32.99	26.08	2.99	-3.92	9.90	-13.82	Average	VERTICAL
4	1583.94	-33.27	26.14	2.99	-4.14	9.90	-14.04	Average	VERTICAL
5	1592.76	-32.85	26.18	3.04	-3.63	9.90	-13.53	Average	VERTICAL
6	1604.24	-32.73	26.24	3.12	-3.37	9.90	-13.27	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.

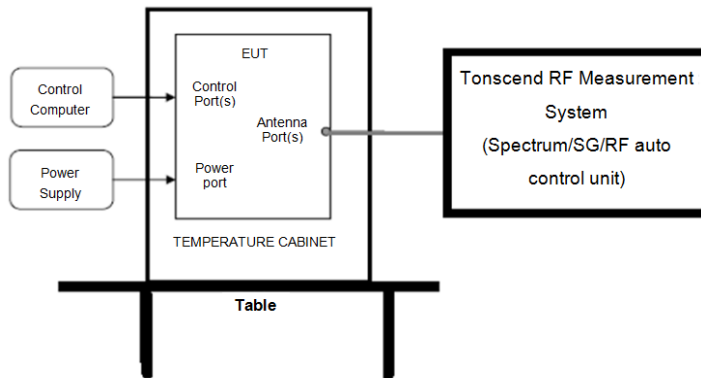
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

3. Test setup: RBW: 1 KHz, VBW: 3 KHz, Sweep time: auto.

4. Margin = Result Level - Limit.

7. Transmission cease time

7.1. Block diagram of test setup



7.2. Limits

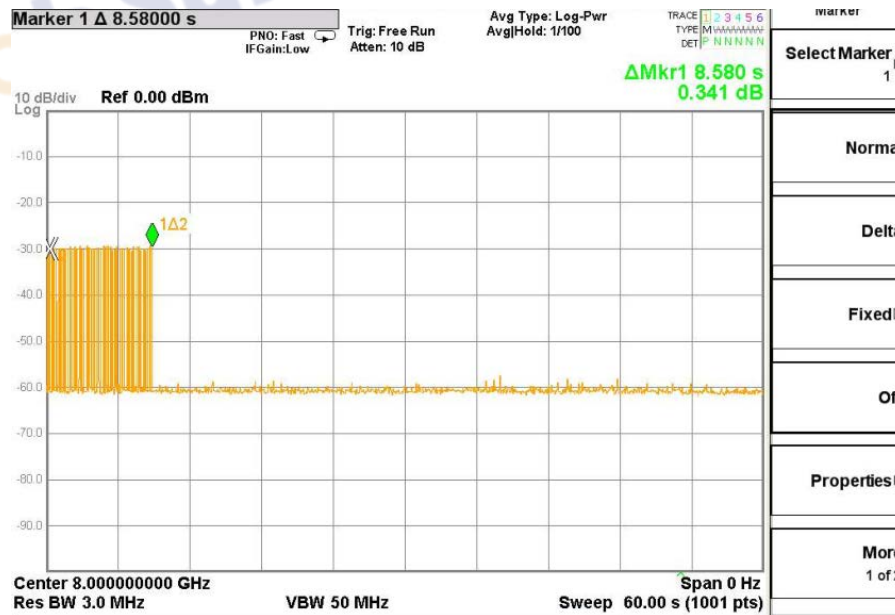
FCC §15.519 (a)(1): The UWB intentional radiator shall cease transmission within 10 seconds unless it receives an acknowledgement from the associated receiver that its transmission is being received.

7.3. Test procedure

- (1) Trigger the spectrum analyzer sweep on the wanted signal frequency
- (2) Set the spectrum analyzer sweep time much greater than 10 s
- (3) Deactivation Manually activate the UWB device and confirm that it ceases transmission within the specified time of

7.4. Test result

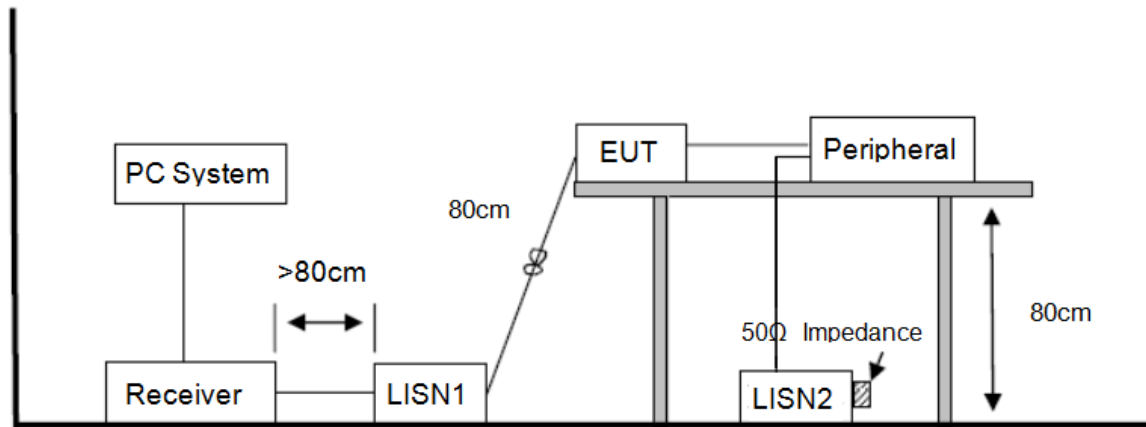
Pass



Note: The EUT ceases transmission within 10 s and does not transmit again without receiving an acknowledgement from the associated receiver.

8. Power Line Conducted Emission

8.1. Block diagram of test setup



8.2. Power line conducted emission limits

Frequency	Quasi-Peak Level dB(μ V)	Average Level dB(μ V)
150 kHz ~ 500 kHz	66 ~ 56*	56 ~ 46*
500 kHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

8.3. Test procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80 cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 3.0 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30 MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest

emissions.

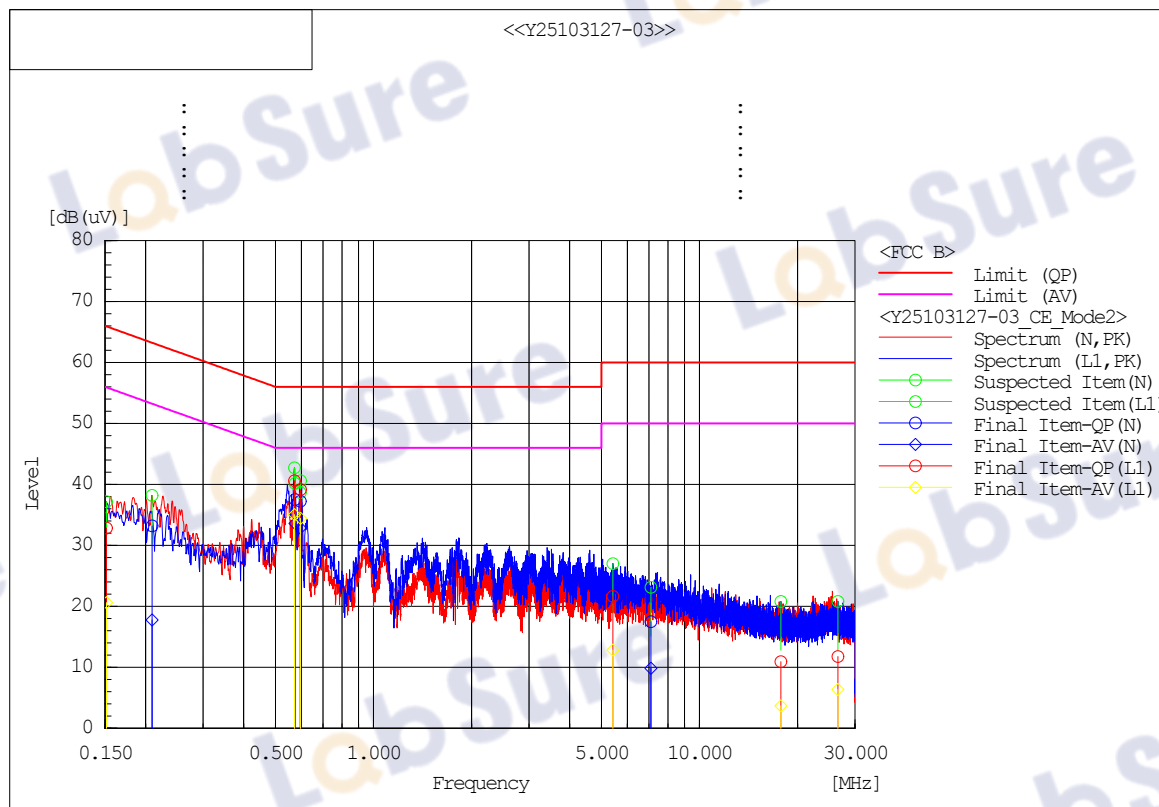
Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

8.4. Test result

PASS



Final Result

--- N Phase ---

No.	Frequency	Reading QP	Reading CAV	c.f	Result QP	Result CAV	Limit QP	Limit AV	Margin QP	Margin CAV
	[MHz]	[dB(uV)]	[dB(uV)]	[dB]	[dB(uV)]	[dB(uV)]	[dB(uV)]	[dB(uV)]	[dB]	[dB]
1	0.20916	23.4	8.0	9.8	33.2	17.8	63.2	53.2	30.0	35.4
2	0.57369	27.7	23.8	9.8	37.5	33.6	56.0	46.0	18.5	12.4
3	0.59623	27.4	23.0	9.8	37.2	32.8	56.0	46.0	18.8	13.2
4	7.0968	7.5	-0.2	10.0	17.5	9.8	60.0	50.0	42.5	40.2

--- L1 Phase ---

No.	Frequency	Reading QP	Reading CAV	c.f	Result QP	Result CAV	Limit QP	Limit AV	Margin QP	Margin CAV
	[MHz]	[dB(uV)]	[dB(uV)]	[dB]	[dB(uV)]	[dB(uV)]	[dB(uV)]	[dB(uV)]	[dB]	[dB]
1	0.15145	23.1	10.8	9.8	32.9	20.6	65.9	55.9	33.0	35.3
2	0.57191	30.8	25.2	9.8	40.6	35.0	56.0	46.0	15.4	11.0
3	0.59674	29.4	24.6	9.8	39.2	34.4	56.0	46.0	16.8	11.6
4	5.42353	11.6	2.8	10.0	21.6	12.8	60.0	50.0	38.4	37.2
5	17.78041	0.7	-6.5	10.2	10.9	3.7	60.0	50.0	49.1	46.3
6	26.60701	1.7	-3.7	10.1	11.8	6.4	60.0	50.0	48.2	43.6

9. Test Setup Photograph

Please find the photos of EUT in Test Setup Photograph.

10. Photos of the EUT

Please find the photos of EUT in APPENDIXES-Photos.

END OF REPORT