RADIO TEST REPORT

FCC ID: 2ABU6MBM01

Product: Ultra-Long Range Beacon

Trade Mark: MINEW

Model No.: MBM01

Family Model: N/A

Report No.: S23051201705002

Issue Date: Aug 22. 2023

Prepared for

Shenzhen Minew Technologies Co., Ltd.

3rd Floor, I Building, Gangzhilong Science Park, Qinglong Road, Longhua District, Shenzhen City, China

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.

1/F, Building E, Fenda Science Park, Sanwei Community,
Xixiang Street Bao'an District, Shenzhen 518126 P.R. China

Tel. 400-800-6106, 0755-2320 0050, 0755-2320 0090
Website: http://www.ntek.org.cn

TABLE OF CONTENTS

1 TEST RESULT CERTIFICATION

Applicant's name .....:	Shenzhen Minew Technologies Co., Ltd.
Address .....:	3rd Floor, I Building, Gangzhilong Science Park, Qinglong Road, Longhua District, Shenzhen City, China
Manufacturer's Name .....:	Shenzhen Minew Technologies Co., Ltd.
Address .....:	Building 3, Instrument World Industrial Park, No. 306, Guanlan Guiyue Road, Longhua District, Shenzhen
Product description	
Product name .....:	Ultra-Long Range Beacon
Model and/or type reference .....:	MBM01
Family Model .....:	N/A
Sample number	S230512017002

Measurement Procedure Used:

APPLICABLE STANDARDS	
APPLICABLE STANDARD/ TEST PROCEDURE	TEST RESULT
FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart F ANSI C63.10-2013	Complied

This device described above has been tested by Shenzhen NTEK Testing Technology Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
This report shall not be reproduced except in full, without the written approval of Shenzhen NTEK Testing Technology Co., Ltd., this document may be altered or revised by Shenzhen NTEK Testing Technology Co., Ltd., personnel only, and shall be noted in the revision of the document.
The test results of this report relate only to the tested sample identified in this report.

Date of Test : Jun 16. 2023 ~ Aug 22. 2023

Testing Engineer : (Mary Hu)

Authorized Signatory : (Alex Li)

2 SUMMARY OF TEST RESULTS

FCC Part15, Subpart F			
Standard Section	**Test Item**	**Verdict**	**Remark**
15.207	Conducted Emission	N/A	
15.209 (a) 15.517(c)	Radiated Spurious Emission	PASS	
15.503(a)(d) 15.517(b)	10dB Bandwidth	PASS	
15.521(g) 15.517(e)	EIRP	PASS	
15.517 (b)	Band Edge	PASS	
15.517(d)	Radiated Emission in GPS Band	PASS	
15.203	Antenna Requirement	PASS	

Remark:
1. “N/A” denotes test is not applicable in this Test Report.
2. All test items were verified and recorded according to the standards and without any deviation during the test.

3 FACILITIES AND ACCREDITATIONS

3.1 FACILITIES

All measurement facilities used to collect the measurement data are located at
1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R. China.
The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

3.2 LABORATORY ACCREDITATIONS AND LISTINGS

Site Description

CNAS-Lab.	:	The Certificate Registration Number is L5516.
IC-Registration		The Certificate Registration Number is 9270A. CAB identifier:CN0074
FCC- Accredited		Test Firm Registration Number: 463705. Designation Number: CN1184
A2LA-Lab.		The Certificate Registration Number is 4298.01 This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).
Name of Firm	:	Shenzhen NTEK Testing Technology Co., Ltd.
Site Location	:	1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R. China.

3.3 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y±U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	±2.80dB
2	RF power, conducted	±0.16dB
3	Spurious emissions, conducted	±0.21dB
4	All emissions, radiated(30MHz~1GHz)	±2.64dB
5	All emissions, radiated(1GHz~6GHz)	±2.40dB
6	All emissions, radiated(＞6GHz)	±2.52dB
7	Temperature	±0.5°C
8	Humidity	±2%
9	All emissions, radiated(9KHz~30MHz)	±6dB
10	Occupied bandwidth	±4.7%

4 GENERAL DESCRIPTION OF EUT

Product Feature and Specification	
Equipment	Ultra-Long Range Beacon
Trade Mark	MINEW
FCC ID	2ABU6MBM01
Model No.	MBM01
Family Model	N/A
Model Difference	N/A
Operating Frequency	6.5GHz,8GHz
Modulation	Pulse
Number of Channels	2 Channels
Frequency	6.5GHz,8GHz
Antenna Type	PCB antenna
Antenna Gain	6.5GHz:2.3dbi 8GHz:5.5dBi
Power supply	DC 3V powered by Battery (Four AA alkaline batteries)
Adapter	N/A
HW Version	N/A
SW Version	N/A

Note 1: Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.

Note 2: The engineering test program was provided and the EUT was programmed to be in continuously transmitting mode.
Note 3: UWB transmitters employed solely for indoor operation.

Revision History

Report No.	Version	Description	Issued Date
S23051201705002	Rev.01	Initial issue of report	Aug 22, 2021

5 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement –X, Y, and Z-plane. The X-plane results were found as the worst case and were shown in this report.

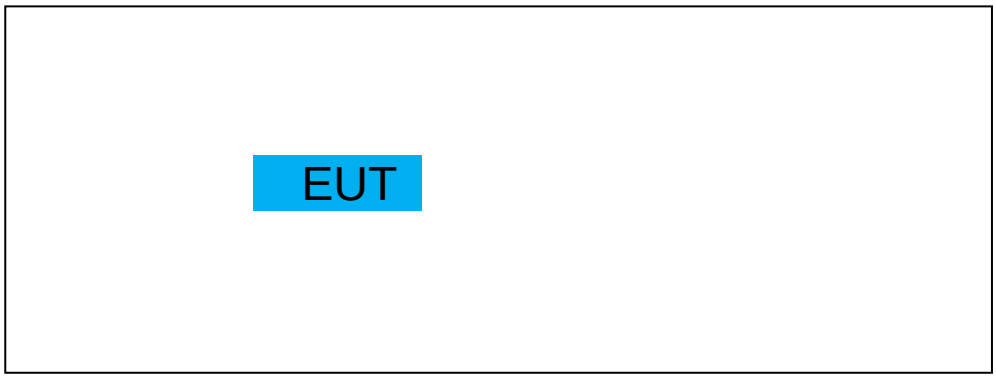
The following summary table is showing all test modes to demonstrate in compliance with the standard.
Note:

1. For radiated test cases, this data rate has the highest RF output power at preliminary tests, and no other significantly frequencies found in conducted spurious emission.

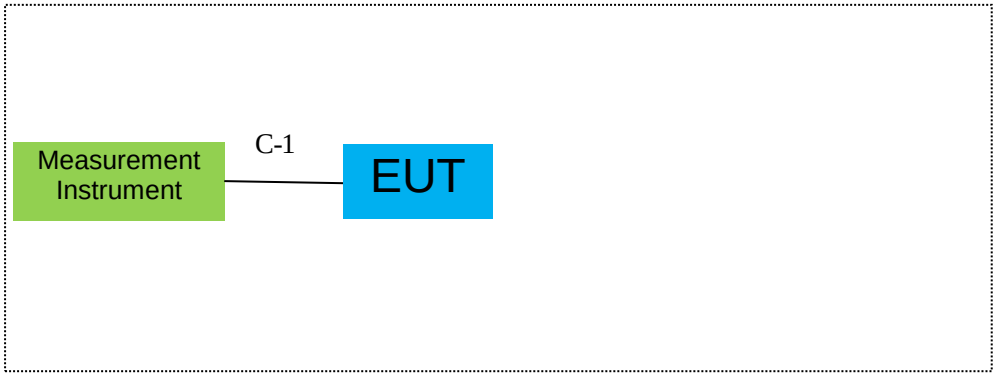
6 SETUP OF EQUIPMENT UNDER TEST

6.1 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM

For Radiated Test Cases



For Conducted Test Cases



Note:

1 The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

2. For radiated test cases, the worst mode data rate was reported only, because this data rate has the highest RF output power at preliminary tests, and no other significantly frequencies found in conducted spurious emission.

6.2 SUPPORT EQUIPMENT

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Model/Type No.	Series No.	Note

Item	Cable Type	Shielded Type	Ferrite Core	Length
C-1	RF Cable	YES	NO	0.1m

Notes:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.
(3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

6.3 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation& Conducted Test equipment

	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Aglient	E4440A	MY41000130	2023.03.27	2024.03.26	1 year
2	Spectrum Analyzer	Agilent	N9020A	MY49100060	2022.06.16 2023.05.29	2023.06.15 2024.05.28	1 year
3	Spectrum Analyzer	R&S	FSV40	101417	2023.03.27	2024.03.26	1 year
4	Test Receiver	R&S	ESPI7	101318	2023.03.27	2024.04.26	1 year
5	Bilog Antenna	TESEQ	CBL6111D	31216	2023.03.16	2024.03.16	1 year
6	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2023.05.06	2026.05.05	3 year
7	Horn Antenna	SCHWARZBECK	BBHA 9120 D	2816	2023.01.12	2024.01.11	1 year
8	Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	803	2022.11.07	2023.11.06	1 year
9	Amplifier	EMC	EMC051835 SE	980246	2023.05.29	2024.05.28	1 year
10	Active Loop Antenna	SCHWARZBECK	FMZB 1519 B	055	2022.11.04	2023.11.03	1 year
11	Power Meter	DARE	RPR3006W	15I00041SNO84	2022.11.08	2023.11.07	1 year
12	Test Cable (9KHz-30MHz)	N/A	R-01	N/A	2022.06.17	2025.06.16	3 year
13	Test Cable (30MHz-1GHz)	N/A	R-02	N/A	2022.06.17	2025.06.16	3 year
14	High Test Cable(1G-40GHz)	N/A	R-03	N/A	2022.06.17	2025.06.16	3 year
15	Filter	TRILTHIC	2400MHz	29	2023.03.26	2026.03.25	3 year
16	temporary antenna connector (Note)	NTS	R001	N/A	N/A	N/A	N/A

Note:
We will use the temporary antenna connector (soldered on the PCB board) When conducted test
And this temporary antenna connector is listed within the instrument list

AC Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2023.03.27	2024.03.26	1 year
2	LISN	R&S	ENV216	101313	2023.03.27	2024.03.26	1 year
3	LISN	SCHWARZBECK	NNLK 8129	8129245	2023.03.27	2024.03.26	1 year
4	50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200983704	2023.05.06	2026.05.05	3 year
5	Test Cable (9KHz-30MHz)	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
6	Test Cable (9KHz-30MHz)	N/A	C02	N/A	2023.05.06	2026.05.05	3 year
7	Test Cable (9KHz-30MHz)	N/A	C03	N/A	2023.05.06	2026.05.05	3 year

Note: Each piece of equipment is scheduled for calibration once a year except the Aux Equipment & Test Cable which is scheduled for calibration every 2 or 3 years.

7 TEST REQUIREMENTS

7.1 CONDUCTED EMISSIONS TEST

7.1.1 Applicable Standard

According to FCC Part 15.207(a)

7.1.2 Conformance Limit

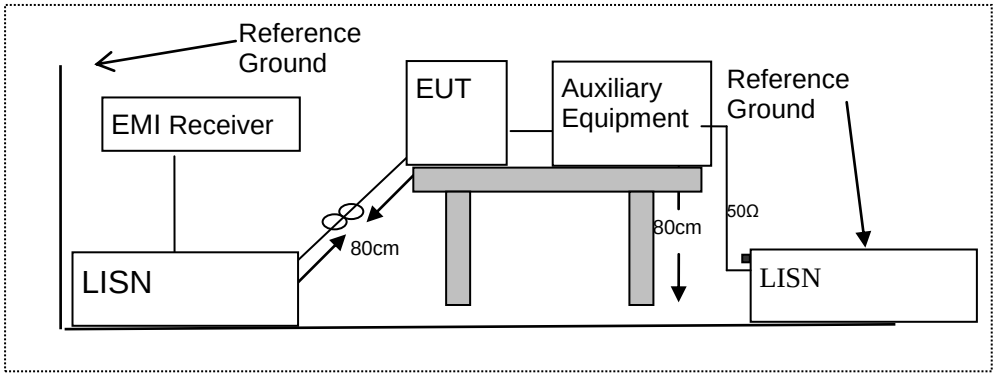
Frequency(MHz)	Conducted Emission Limit	
	Quasi-peak	Average
0.15-0.5	66-56*	56-46*
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. *Decreases with the logarithm of the frequency
2. The lower limit shall apply at the transition frequencies
3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

7.1.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.1.4 Test Configuration



7.1.5 Test Procedure

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room.
2. The EUT was placed on a table which is 0.8m above ground plane.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40cm long.
5. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
6. LISN at least 80 cm from nearest part of EUT chassis.
7. The frequency range from 150KHz to 30MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth(IF bandwidth=9KHz) with Maximum Hold Mode
9. For the actual test configuration, please refer to the related Item –EUT Test Photos.

7.1.6 Test Results

EUT：	Ultra-Long Range Beacon	Model Name ：	MBM01
Temperature：	22.2 ℃	Relative Humidity：	52%
Pressure：	1010hPa	Phase :	N/A
Test Voltage ：	N/A	Test Mode：	N/A

Note: Not Applicable

7.2 RADIATED SPURIOUS EMISSION

7.2.1 Applicable Standard

According to FCC Part 15.209 and ANSI C63.10-2013 and FCC Part 15.517(c)

7.2.2 Conformance Limit

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009~0.490	2400/F(KHz)	20 log (uV/m)	300
0.490~1.705	24000/F(KHz)	20 log (uV/m)	30
1.705~30.0	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3

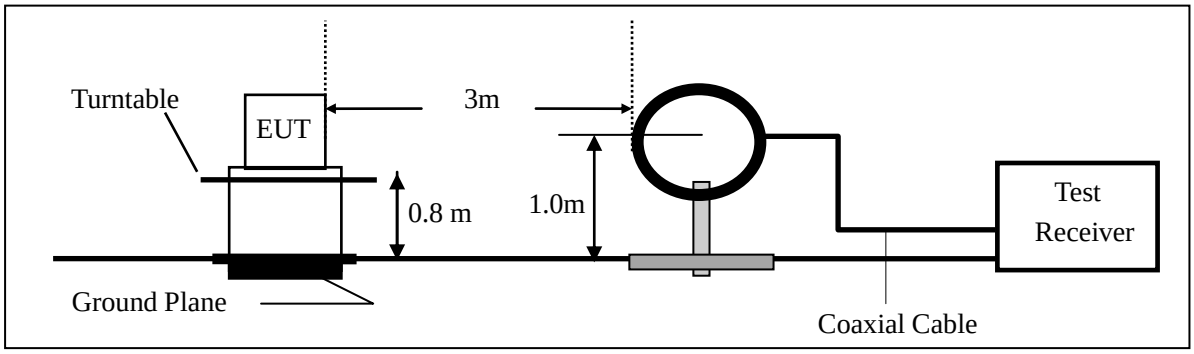
Remark :1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. For Frequency 9kHz~30MHz: Distance extrapolation factor =40log(Specific distance/ test distance)(dB); Limit line=Specific limits(dBuV) + distance extrapolation factor.
For Frequency above 30MHz: Distance extrapolation factor =20log(Specific distance/ test distance)(dB); Limit line=Specific limits(dBuV) + distance extrapolation factor.

7.2.3 Measuring Instruments

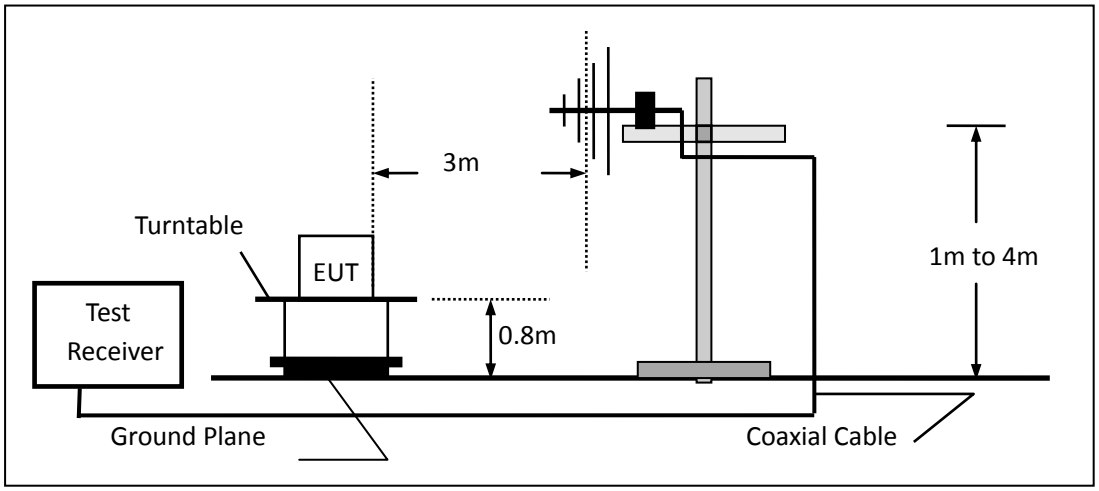
The Measuring equipment is listed in the section 6.3 of this test report.

7.2.4 Test Configuration

(a) For radiated emissions below 30MHz



(b) For radiated emissions from 30MHz to 960MHz



7.2.5 Test Procedure

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2013. The test distance is 3m.The setup is according to the requirements in Section 10.3.2of ANSI C63.10-2013.
Use the following spectrum analyzer settings:

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~960MHz / RB 120kHz for QP

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz.
b. The EUT was placed on the top of a rotating table 0.8 m for below 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz

Note: for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where RBWCF [dB] =10*lg(100 [kHz]/narrower RBW [kHz]). , the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

7.2.6 Test Results

Spurious Emission below 30MHz (9KHz to 30MHz)

EUT:	Ultra-Long Range Beacon	Model No.:	MBM01
Temperature:	20 ℃	Relative Humidity:	48%

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
--	--	--	--	--	--	--	--

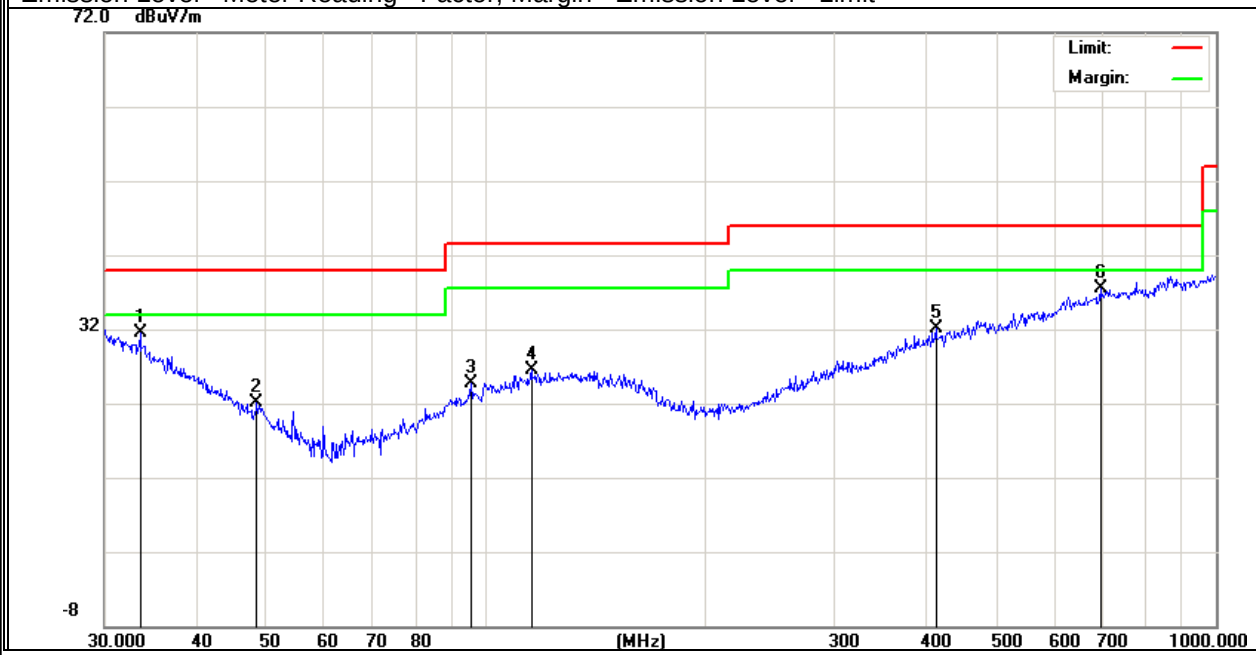
Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Spurious Emission below 1GHz (30MHz to 960MHz)
All the modulation modes have been tested, and the worst result was report as below:

EUT:	Ultra-Long Range Beacon	Model Name :	MBM01
Temperature:	24.9 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Voltage :	DC 3V

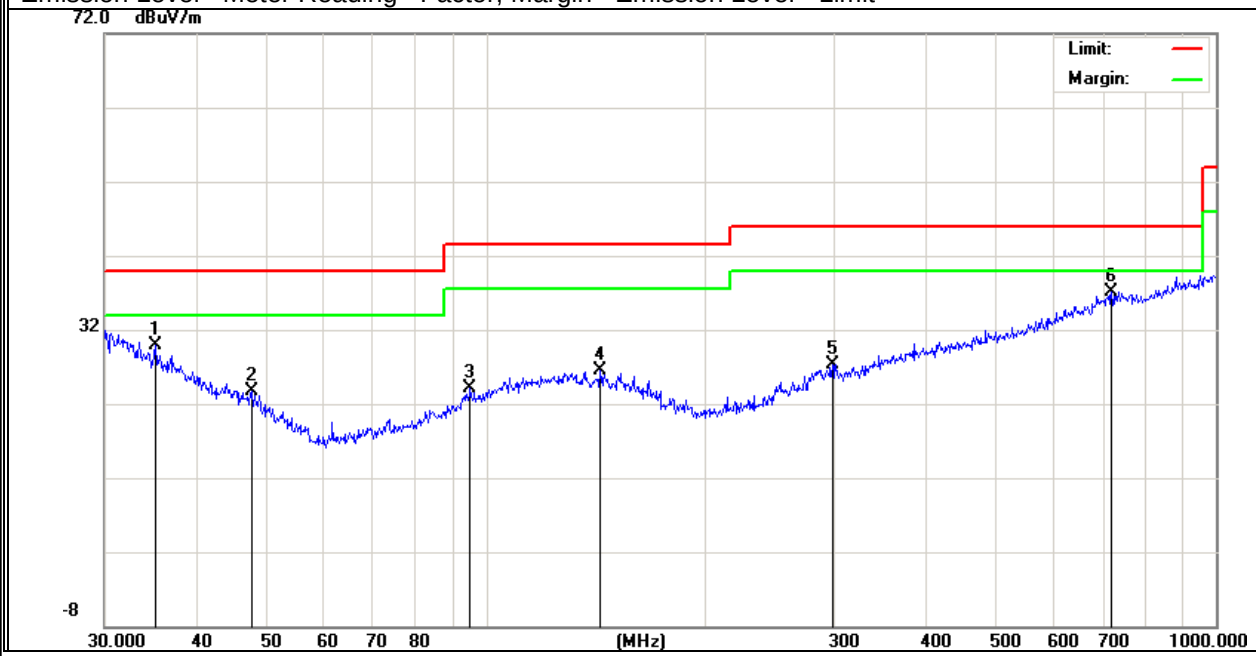
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
V	33.5623	6.92	24.50	31.42	40.00	-8.58	QP
V	48.5016	5.95	16.13	22.08	40.00	-17.92	QP
V	95.4270	7.41	17.29	24.70	43.50	-18.80	QP
V	115.3204	7.79	18.64	26.43	43.50	-17.07	QP
V	413.2706	8.68	23.49	32.17	46.00	-13.83	QP
V	694.4174	9.58	27.86	37.44	46.00	-8.56	QP

Remark:
Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit



Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
H	35.2511	6.27	23.56	29.83	40.00	-10.17	QP
H	47.8260	7.26	16.52	23.78	40.00	-16.22	QP
H	95.0930	6.83	17.27	24.10	43.50	-19.40	QP
H	143.3257	7.79	18.64	26.43	43.50	-17.07	QP
H	298.2681	7.21	20.18	27.39	46.00	-18.61	QP
H	719.1992	8.90	28.24	37.14	46.00	-8.86	QP

Remark:
Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit



Note:

(1) Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor
(2)All other emissions more than 20dB below the limit.

7.3 10DB BANDWIDTH

7.3.1 Applicable Standard

According to FCC Part 15.503(a)(d)

7.3.2 Conformance Limit

Center frequency. The center frequency, fC, equals (fH + fL)/2.
Fractional bandwidth. The fractional bandwidth equals 2(fH−fL)/ (fH + fL).
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.
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.

7.3.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.3.4 Test Setup

Please refer to Section 6.1 of this test report.

7.3.5 Test Procedure

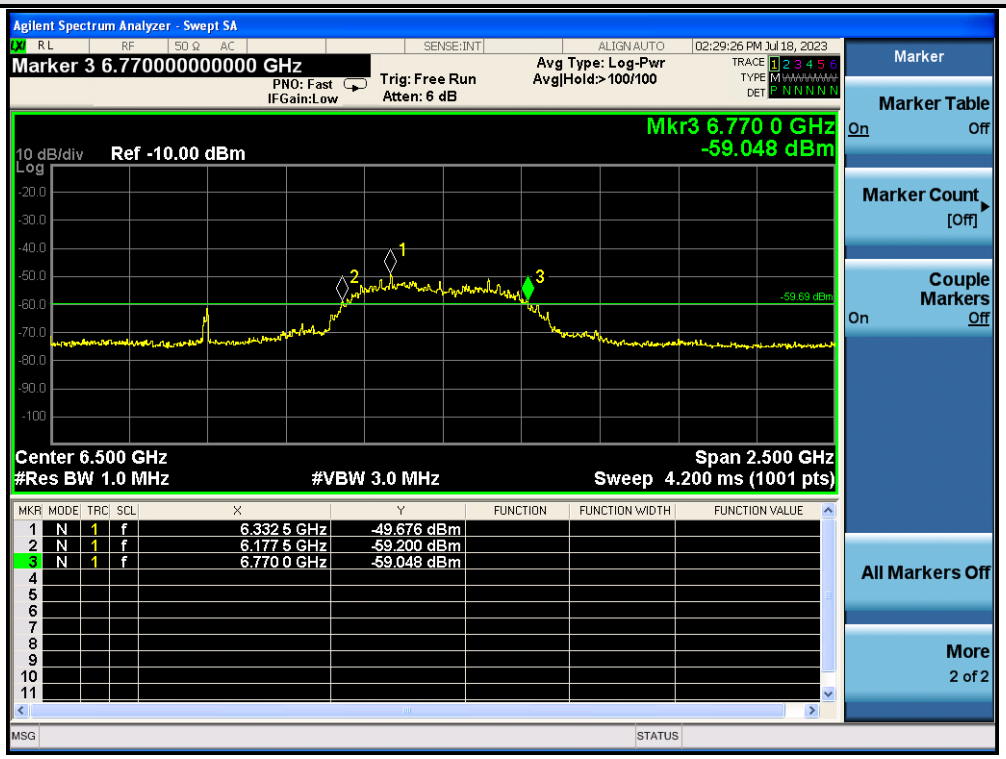
The EUT was tested according to ANSI C63.10: 2013 for compliance to FCC 47CFR 15.503(a) requirements.
Set RBW = 1 MHz, VBW = 3MHz, Span = 2.5 GHz, use 10dB bandwidth function to test the result.

7.3.6 Test Results

EUT：	Ultra-Long Range Beacon	Model Name ：	MBM01
Temperature：	24.9 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Test Voltage ：	DC 3V

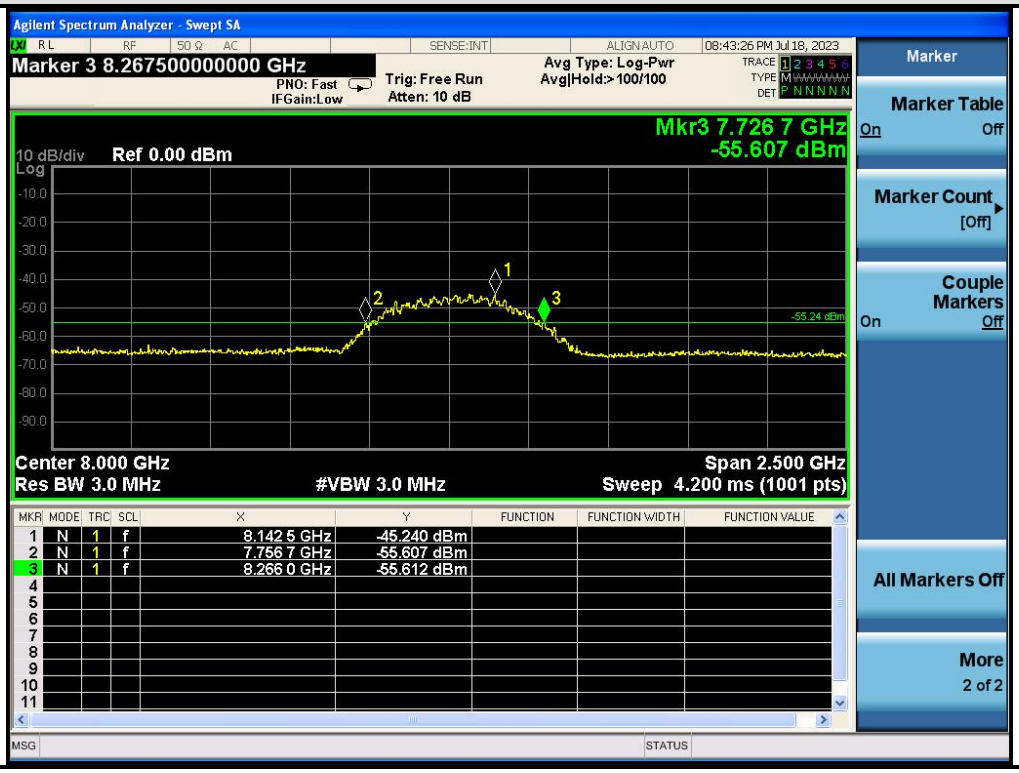
Mode	Measured Frequencies			10dB Bandwidth (MHz)	Limit (MHz)	Pass/Fail
	FL (MHz)	FM (MHz)	FH (MHz)			
1	6177.5	6473.75	6770	592.5	500	Pass

SPECTRUM PLOT



Mode	Measured Frequencies			10dB Bandwidth (MHz)	Limit (MHz)	Pass/Fail
	FL (MHz)	FM (MHz)	FH (MHz)			
1	7756.7	8011.35	8266	509.3	500	Pass

SPECTRUM PLOT



7.4 EIRP

7.4.1 Applicable Standard

as tested in accordance with the procedures specified in §15.521(g) and 15.517(e) of this chapter.

7.4.2 Conformance Limit

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.

7.4.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.4.4 Test Setup

Please refer to Section 6.1 of this test report.

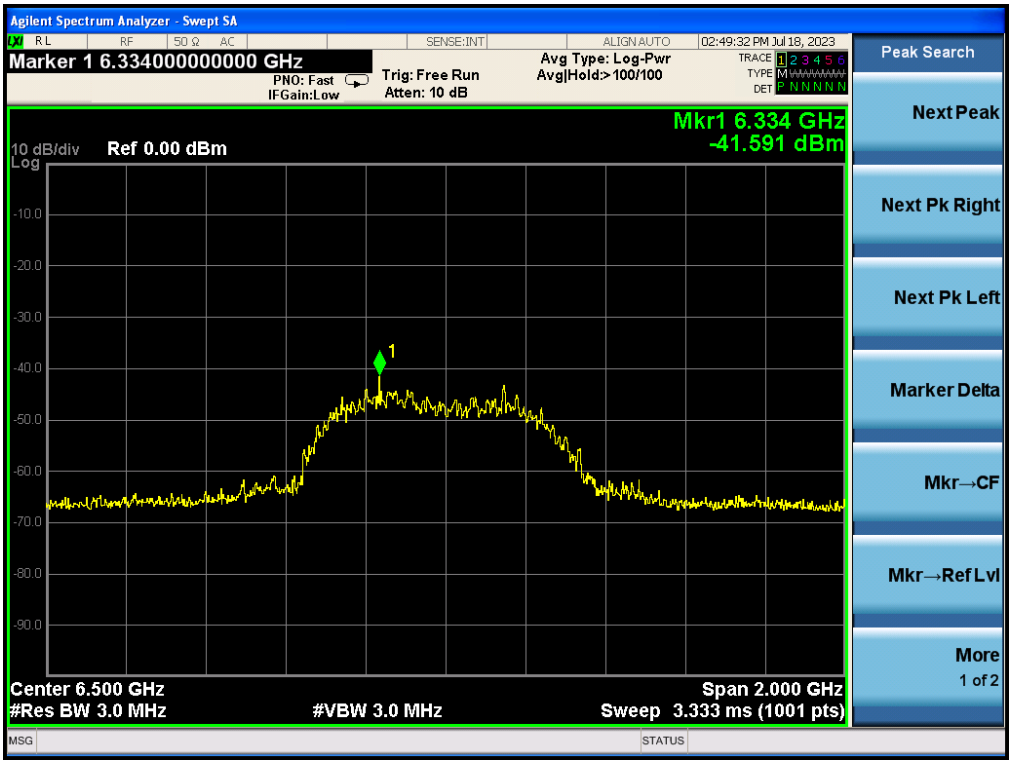
7.4.5 Test Procedure

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(dBuV/m) = P(dBm EIRP) + 95.2.Set The RBW = 3MHz, VBW = 3MHz , 20log(RBW/50)+Limit= 20log(3/50)+0=-24.437dBm.

7.4.6 Test Results

EUT：	Ultra-Long Range Beacon	Model Name ：	MBM01
Temperature：	24.9 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Test Voltage ：	DC 3V

Frequency(MHz)	Measure Level(dBm)	Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)
6500	-41.591	2.3	-39.291	-24.437



Frequency(MHz)	Measure Level(dBm)	Antenna Gain(dBi)	EIRP(dBm)	Limit(dBm)
8000	-40.271	5.5	-34.771	-24.437

7.5 RADIATED EMISSIONS

7.5.1 Applicable Standard

According to FCC Part 15.517(c)(d)

7.5.2 Conformance Limit

when an isotropic transmitting antenna is assumed, the following relationships in E (dBμV/m) = EIRP(dBm) + 95.3 may be employed to relate EIRP to field strength at a specified measurement distance of 3 m:

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	dBuV/m
960-1610	−75.3	20
1610-1990	−53.3	42
1990-3100	−51.3	44
3100-10600	−41.3	54
About 10600	−51.3	44

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:

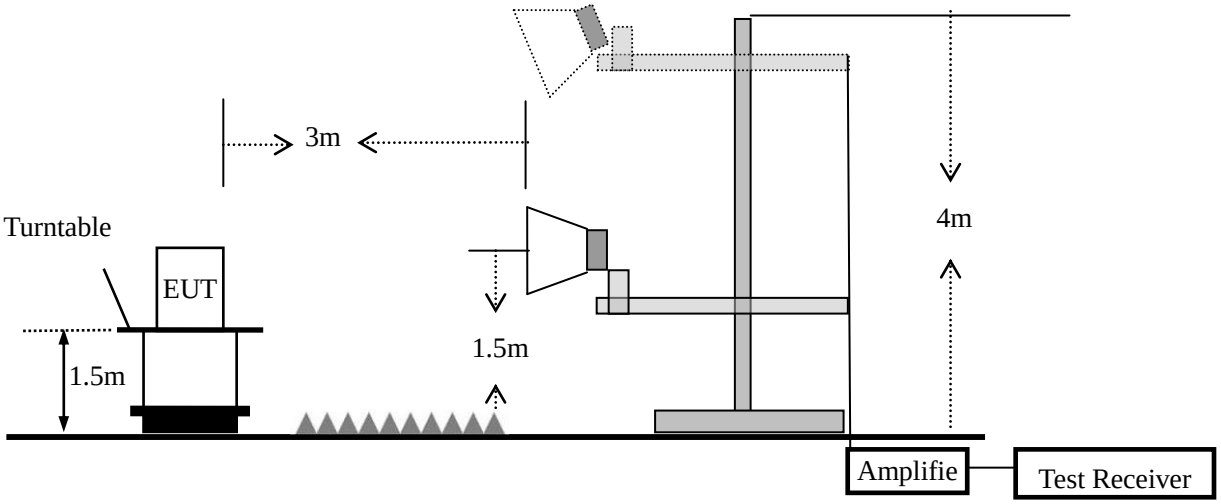
Frequency in MHz	EIRP in dBm	dBuV/m
1164-1240	−85.3	10
1559-1610	−85.3	10

7.5.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.5.4 Test Configuration

For radiated emissions above 1000MHz



7.5.5 Test Procedure

The Spurious RF radiated emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2013 Section 10.3 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW=1MHz and VBW= 3MHz to measure the average field strength. Set the sweep time so that there is no more than a 1 ms integration period over each measurement bin.

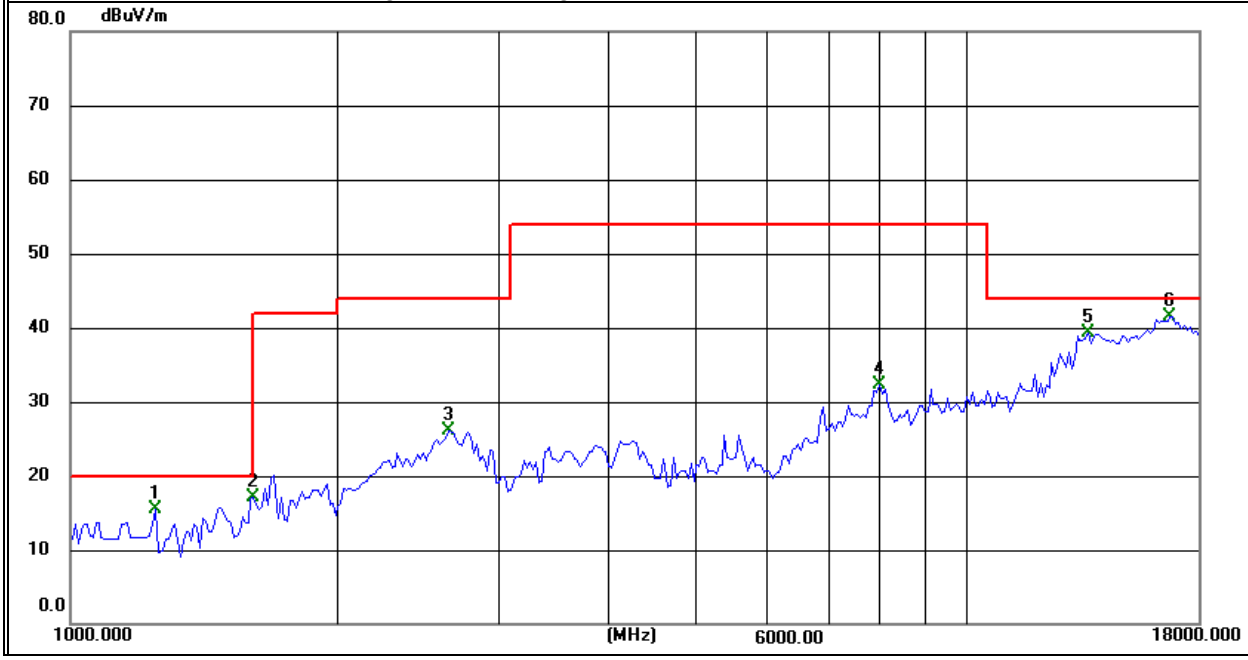
7.5.6 Test Results

Radiated Emissions above 960 MHz:

EUT:	Ultra-Long Range Beacon	Model Name :	MBM01
Temperature:	24.9 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Test Mode	6.5GHz

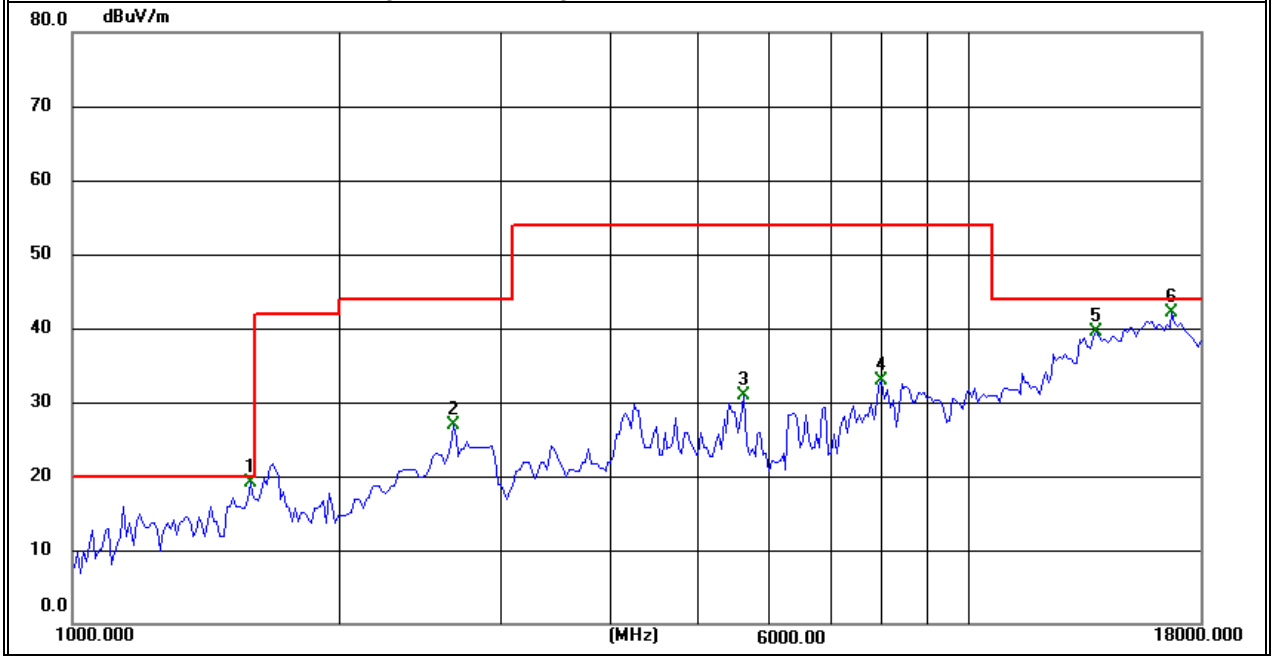
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
V	1242.068	14.88	0.67	15.55	20.00	-13.93	AVG
V	1599.491	14.07	2.96	17.03	20.00	-13.39	AVG
V	2633.397	19.19	6.88	26.07	44.00	-10.99	AVG
V	7970.000	15.80	16.51	32.31	54.00	-3.33	AVG
V	13622.500	17.33	21.99	39.32	44.00	-2.57	AVG
V	16767.500	16.08	25.35	41.43	44.00	-13.93	AVG

Remark:
Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit



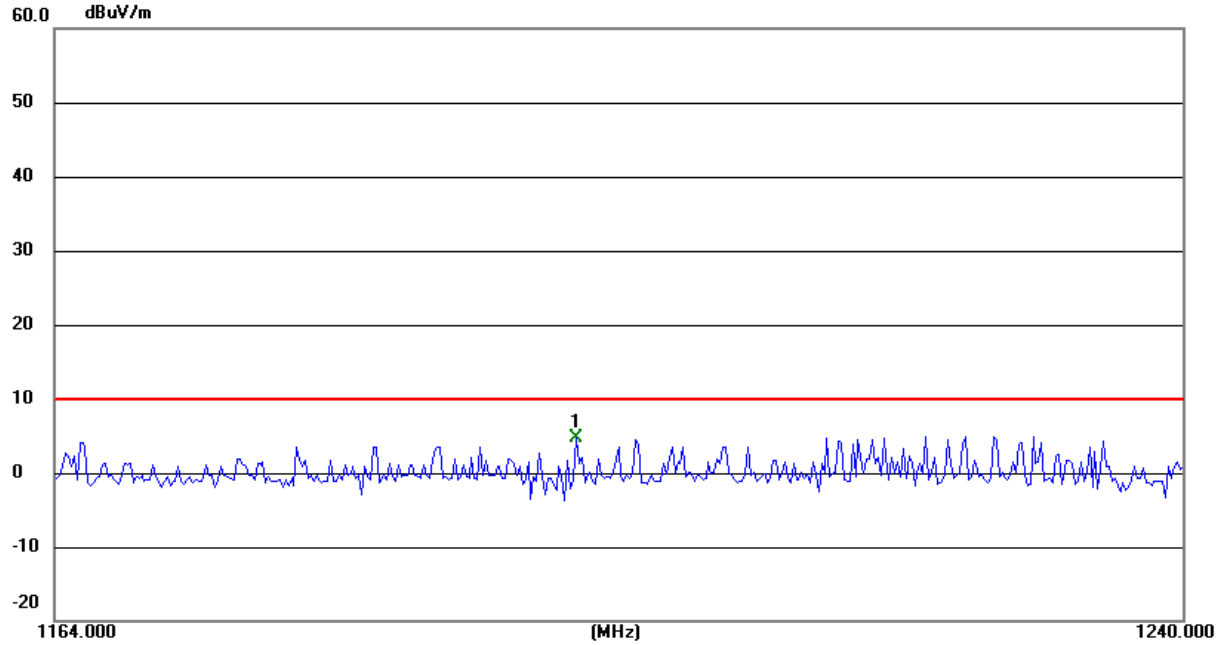
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
H	1576.542	16.16	2.85	19.01	20.00	-0.99	AVG
H	2657.500	19.95	6.97	26.92	44.00	-17.08	AVG
H	5590.000	17.30	13.51	30.81	54.00	-23.19	AVG
H	7970.000	16.31	16.51	32.82	54.00	-21.18	AVG
H	13792.500	17.16	22.33	39.49	44.00	-4.51	AVG
H	16852.500	16.73	25.41	42.14	44.00	-1.86	AVG

Remark:
Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit



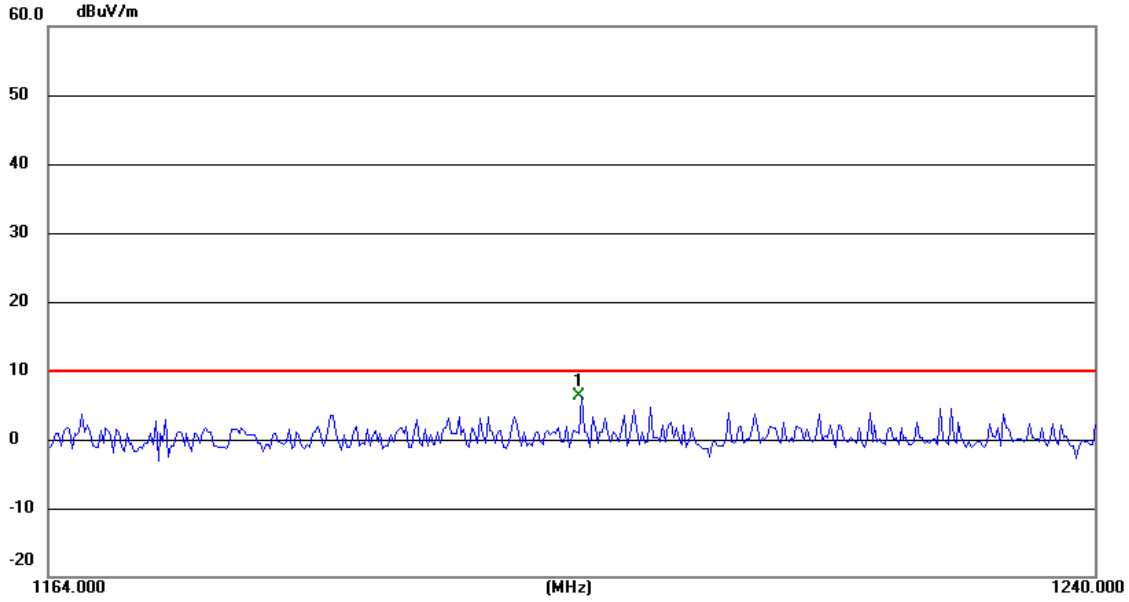
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
H	1198.580	4.34	0.33	4.67	10.00	-5.33	AVG

Remark:
Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit



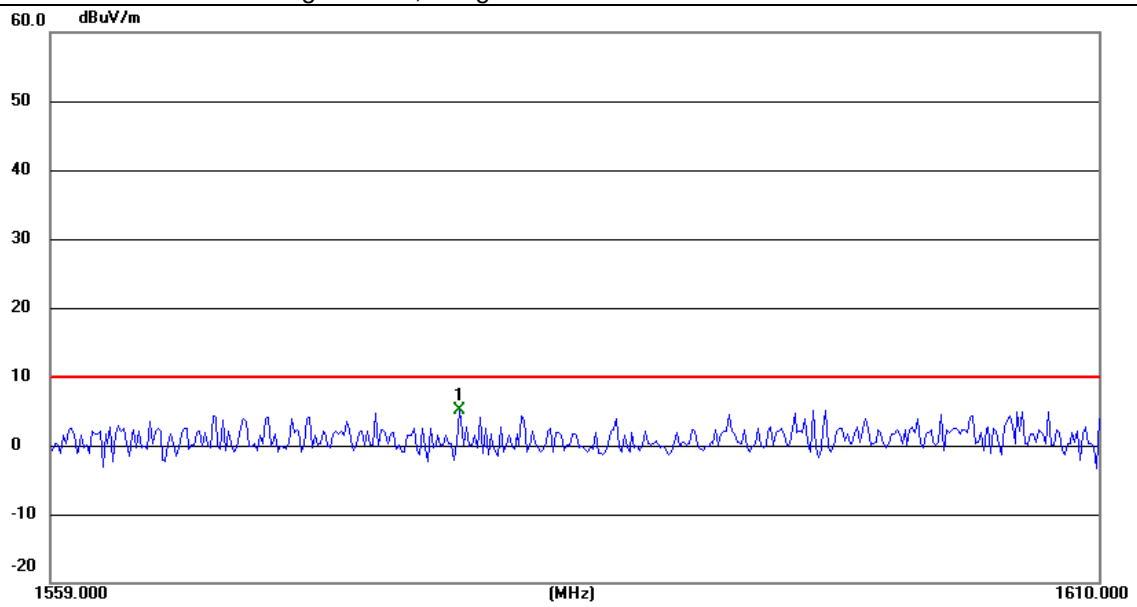
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
V	1202.190	5.92	0.36	6.28	10.00	-3.72	AVG

Remark:
Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit



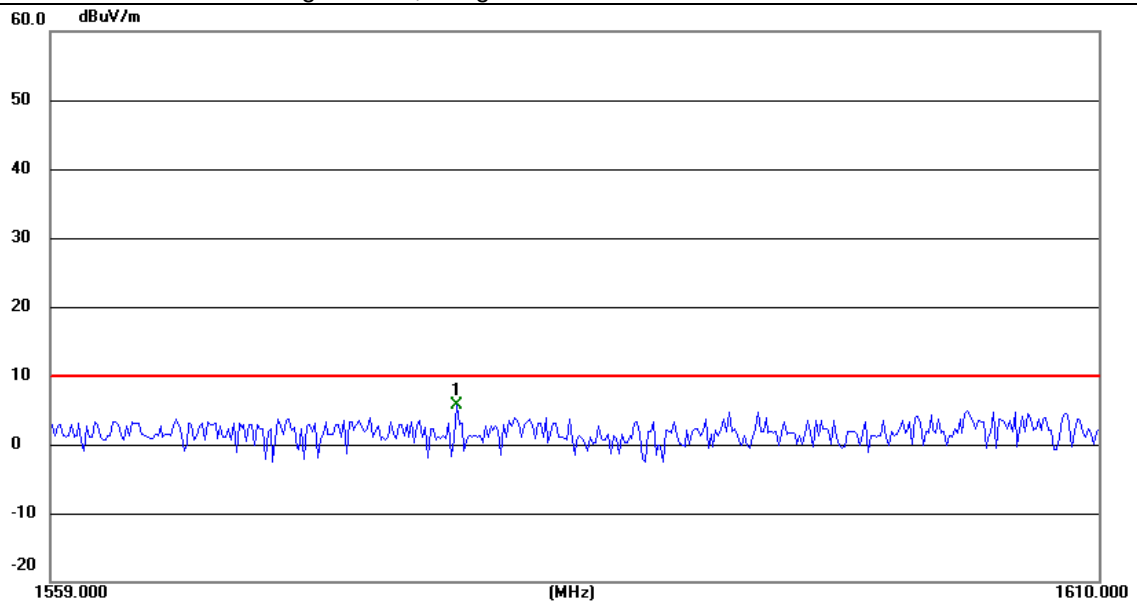
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
V	1578.763	2.22	2.86	5.08	10.00	-4.92	AVG

Remark:
Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit



Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
H	1578.635	2.78	2.85	5.63	10.00	-4.37	AVG

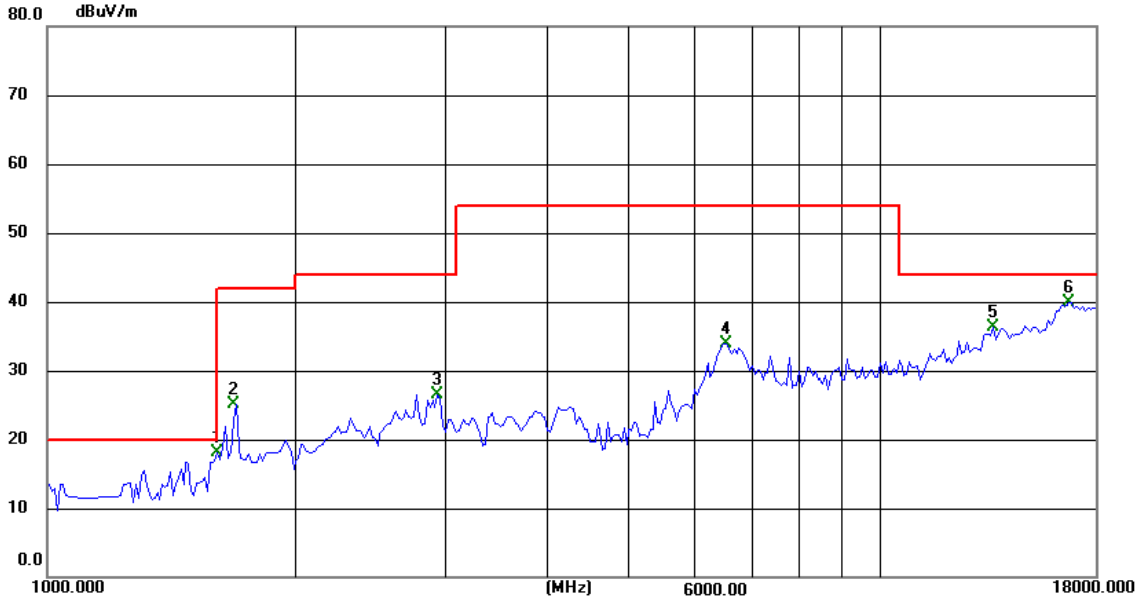
Remark:
Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit



EUT：	Ultra-Long Range Beacon	Model Name ：	MBM01
Temperature：	24.9 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Test Mode	8GHz

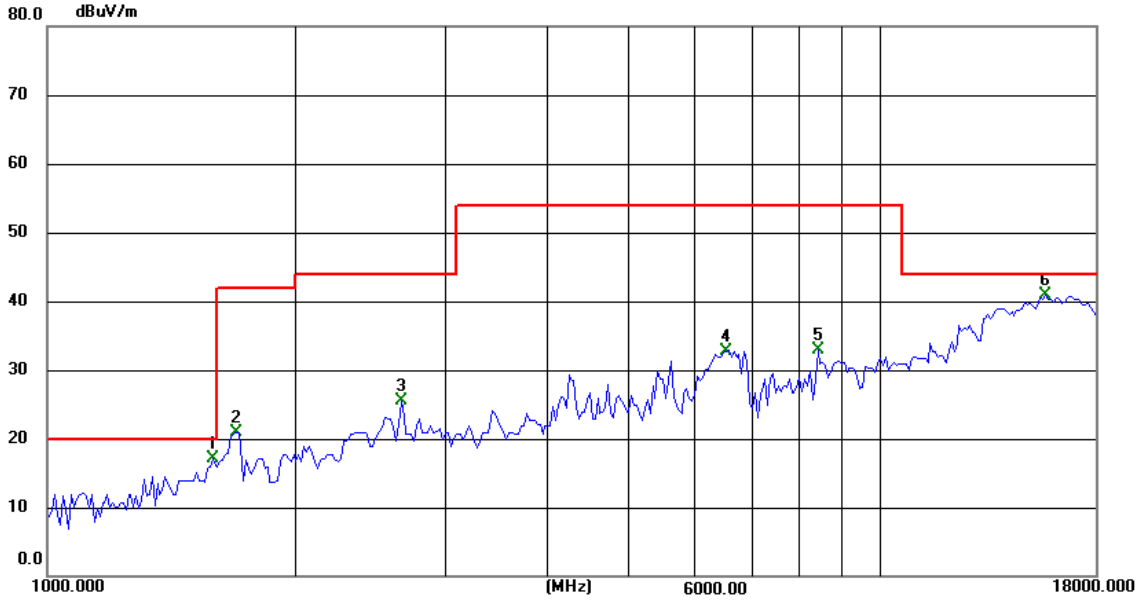
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
V	1599.491	15.07	2.96	18.03	20.00	-1.97	AVG
V	1682.476	21.75	3.34	25.09	42.00	-16.91	AVG
V	2955.000	17.97	8.56	26.53	44.00	-17.47	AVG
V	6525.000	19.92	13.99	33.91	54.00	-20.09	AVG
V	13622.500	14.33	21.99	36.32	44.00	-7.68	AVG
V	16767.500	14.58	25.35	39.93	44.00	-4.07	AVG

Remark:
Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit



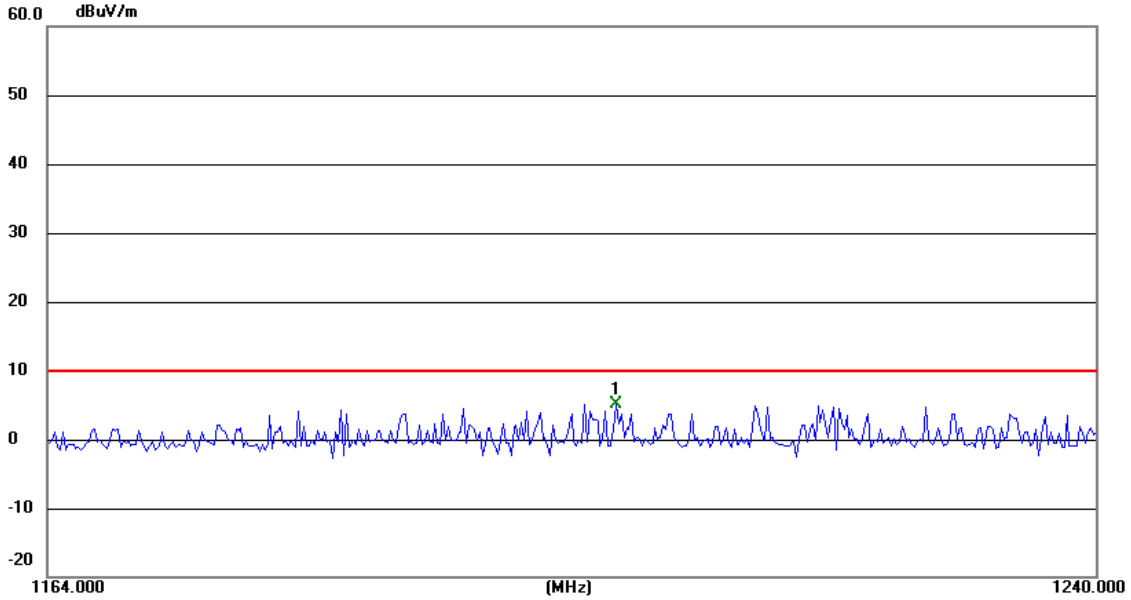
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
H	1576.542	14.16	2.85	17.01	20.00	-2.99	AVG
H	1694.678	17.54	3.40	20.94	42.00	-21.06	AVG
H	2657.500	18.45	6.97	25.42	44.00	-18.58	AVG
H	6525.000	18.73	13.99	32.72	54.00	-21.28	AVG
H	8395.000	15.61	17.36	32.97	54.00	-21.03	AVG
H	15747.500	16.62	24.20	40.82	44.00	-3.18	AVG

Remark:
Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit



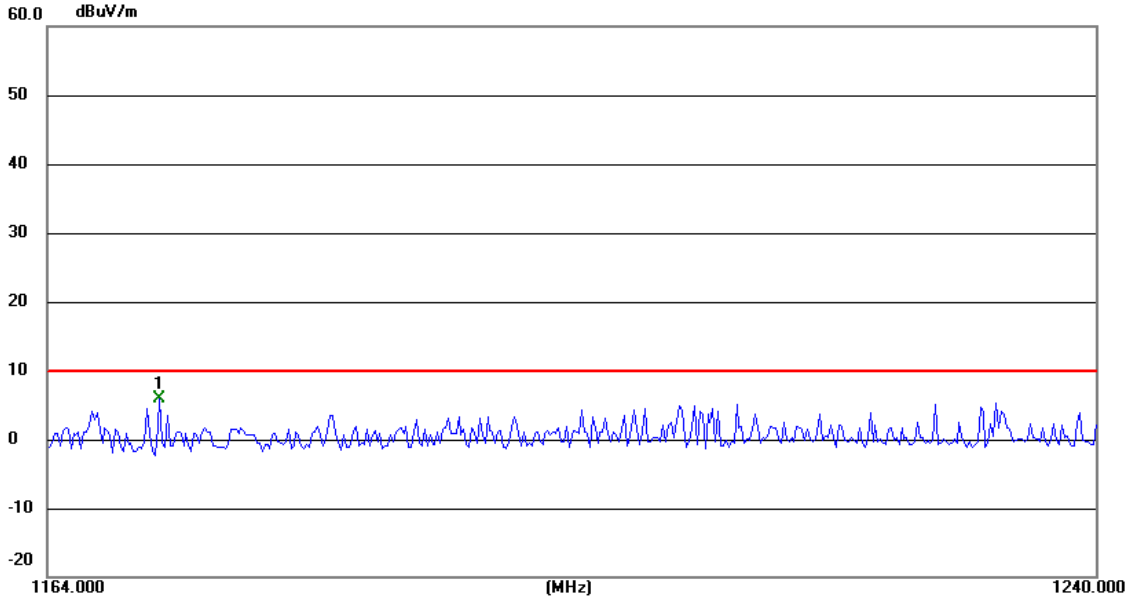
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
H	1204.660	4.69	0.38	5.07	10.00	-4.93	AVG

Remark:
Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit



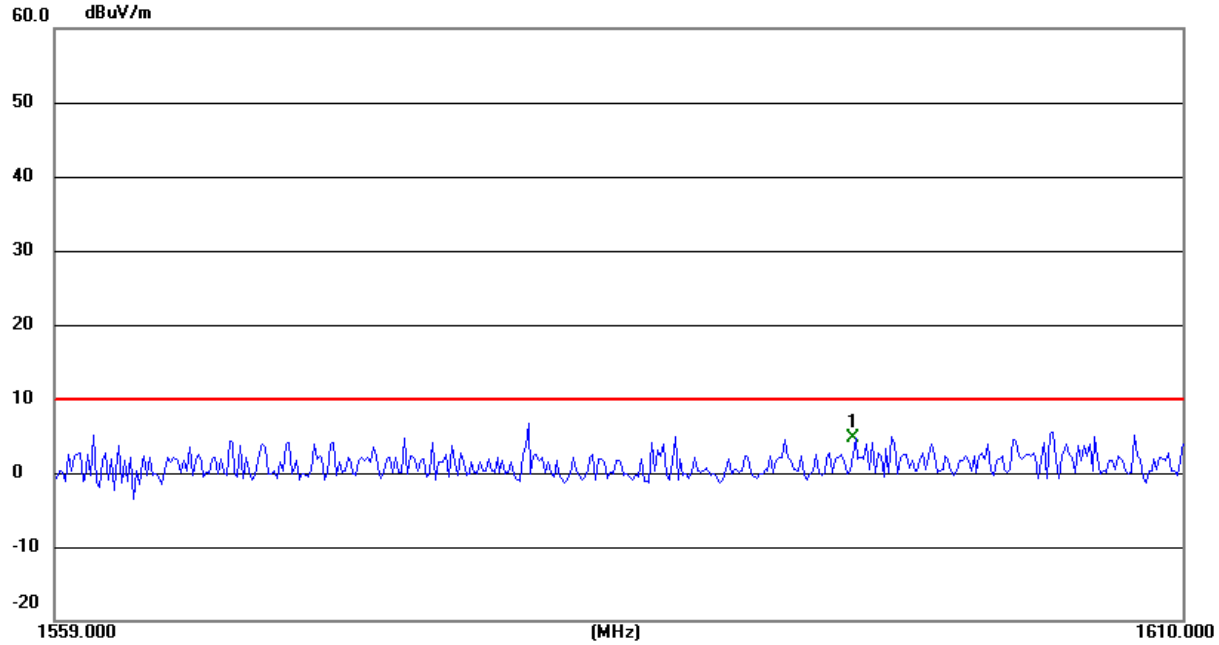
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
V	1171.980	5.85	0.12	5.97	10.00	-4.03	AVG

Remark:
Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit



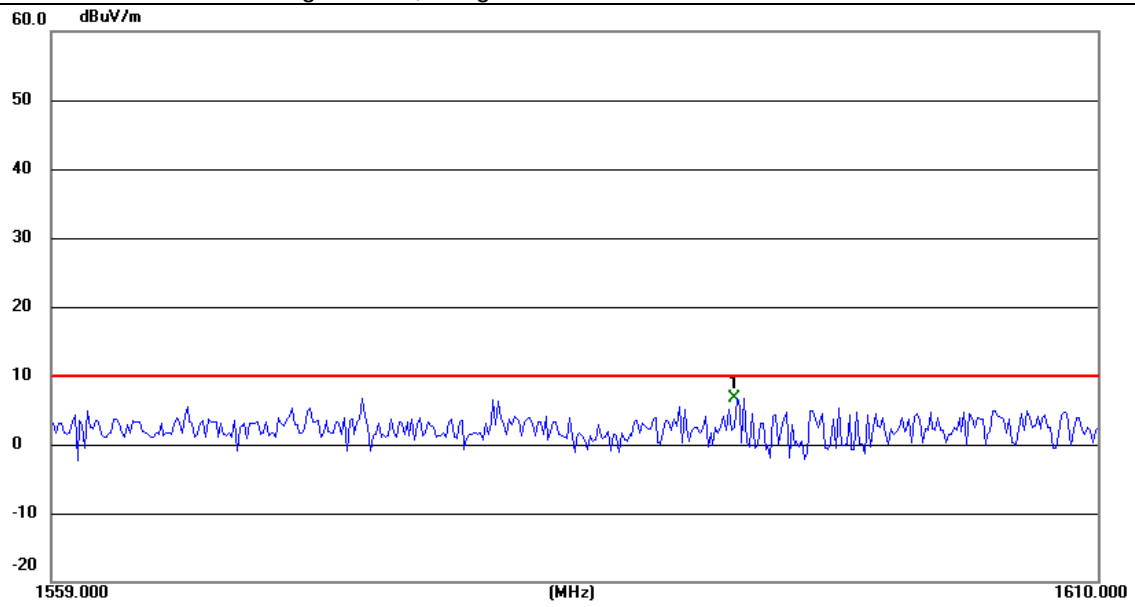
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
V	1595.082	1.86	2.93	4.79	10.00	-5.21	AVG

Remark:
Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit



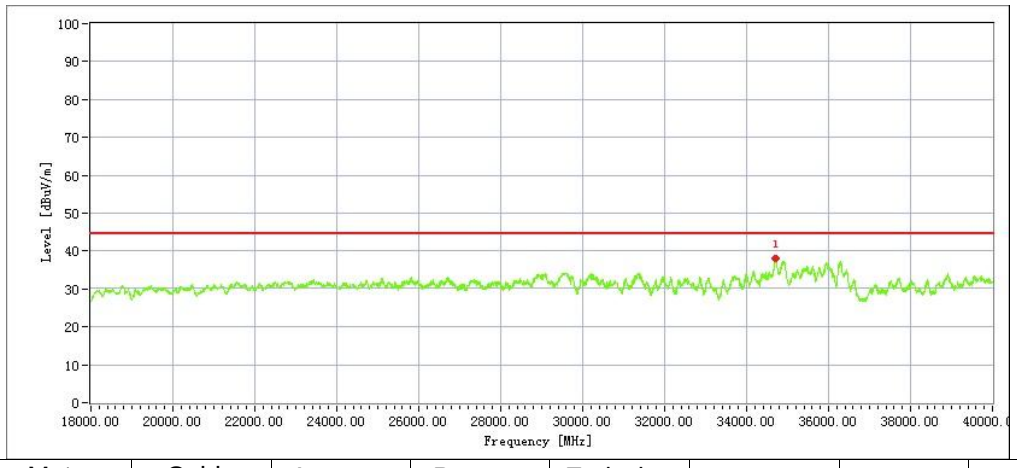
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
H	1592.277	3.74	2.93	6.67	10.00	-3.33	AVG

Remark:
Emission Level= Meter Reading+ Factor, Margin= Emission Level - Limit



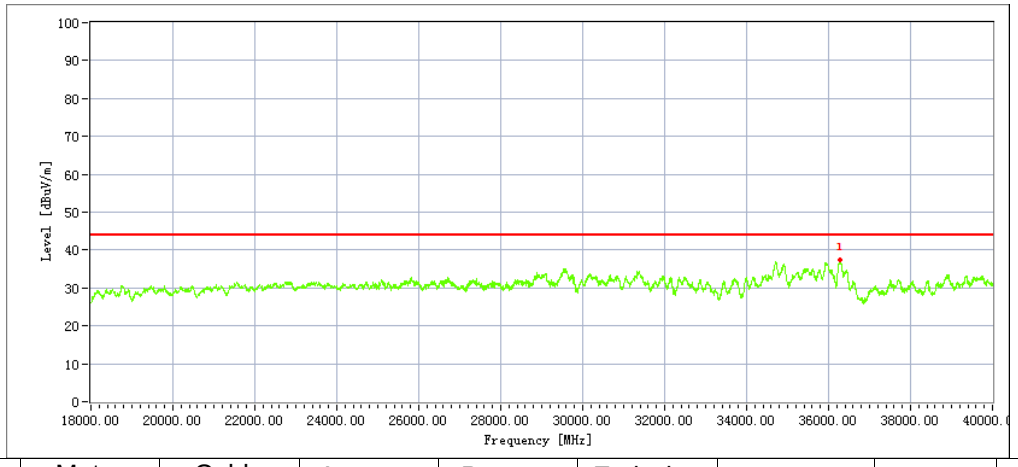
EUT：	Ultra-Long Range Beacon	Model Name ：	MBM01
Temperature：	24.9 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Test Mode	8GHz

Vertical



Frequency	Meter Reading(dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBμV/m)	Limits (dBuV/m)	Margin (dB)	Remark
34803.865	19.83	20.09	42.61	43.48	39.03	44	4.95	AVG

Horizontal



Frequency	Meter Reading(dBuV)	Cable loss (dB)	Antenna Factor dB/m	Preamp Factor (dB)	Emission Level (dBμV/m)	Limits (dBuV/m)	Margin (dB)	Remark
36369.844	29.61	20.09	44.16	43.48	38.08	44	5.92	AVG

Only the worst data is recorded in the report, the data rates test result is the worst

7.6 ANTENNA APPLICATION

7.6.1 Antenna Requirement

15.203 requirement: For intentional device, according to 15.203: 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.

7.6.2 Result

The EUT antenna is permanent attached PCB Antenna (6.5GHz:2.3dbi; 8GHz:5.5dBi). It comply with the standard requirement.

END OF REPORT