REPORT No.: SZ23110039E02

TEST REPORT

APPLICANT	:	NormaTec Industries, LP
PRODUCT NAME	:	Normatec Elite Antennas
MODEL NAME	:	RB2107 BL module, 433MHz
TRADE NAME	:	N/A
BRAND NAME	:	N/A
STANDARD(S)	:	IEEE Std 149-2021
RECEIPT DATE	:	2023-11-07
TEST DATE	:	2023-11-07
ISSUE DATE	:	2023-11-17

Edited by: Fang Jinshan(Rapporteur)

Approved by: Chi Shide(Supervisor)

MORLAB
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DIRECTORY

Change History		
Version	Date	Reason for change
1.0	2023-11-17	First edition

1.Technical Information

Note: Provide by applicant.

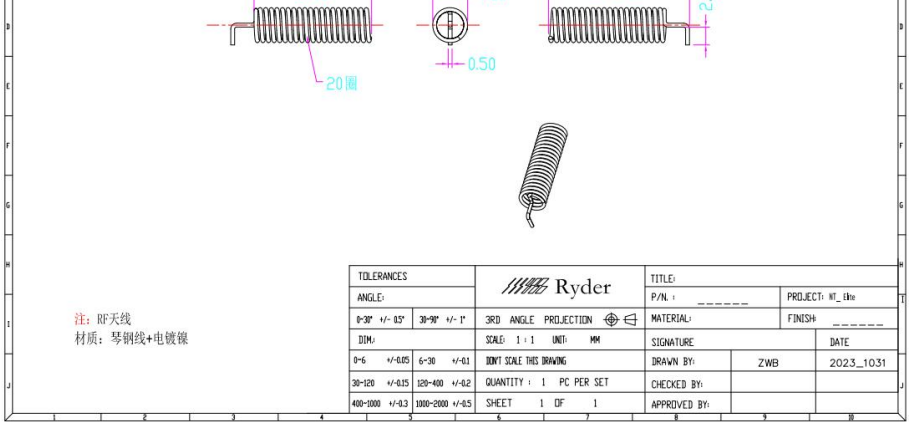
1.1. Applicant and Manufacturer Information

Applicant:	NormaTec Industries, LP
Applicant Address:	480 Pleasant St. Suite A200 Watertown, MA 02472, USA
Manufacturer:	Ryder Electronics (Xinfeng) Ltd.
Manufacturer Address:	Shuidong Ave(E), Xinfeng Industrial Park, Xinfeng County, Ganzhou City, Jiangxi Province, China

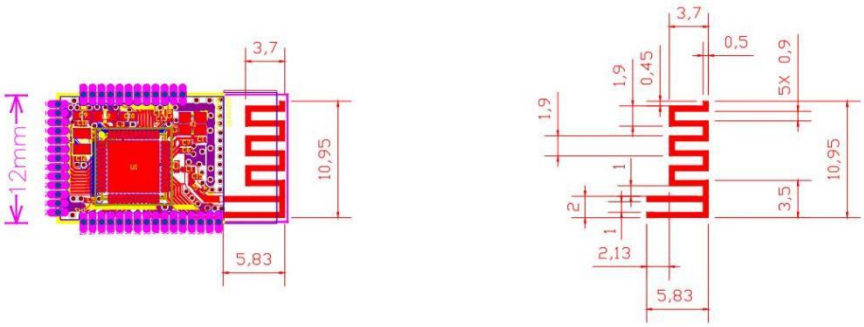
1.2. Equipment Under Test (EUT) Description

Wireless Type	N/A
Frequency	2402MHz-2480MHz,433MHz
IMEI	N/A
Bluetooth Antenna Type	PCB Antenna
433MHz Antenna Type	Helical Antenna
Sample No.	2#

Dimension:



433MHz Antenna



Bluetooth Antenna

2. Test Results

2.1. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	IEEE Std 149-2021	IEEE Recommended Practice for Antenna Measurements

2.2. Test Conditions

Test Environment Conditions：

Relative Humidity(%):	25 - 75
Temperature(°C):	10 - 30

2.3. Measurement Uncertainty

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in Measurement” (GUM) published by ISO. When the test result is a critical value,we will use the measurement uncertainty give the judgment result based on the 95% Confidence intervals.

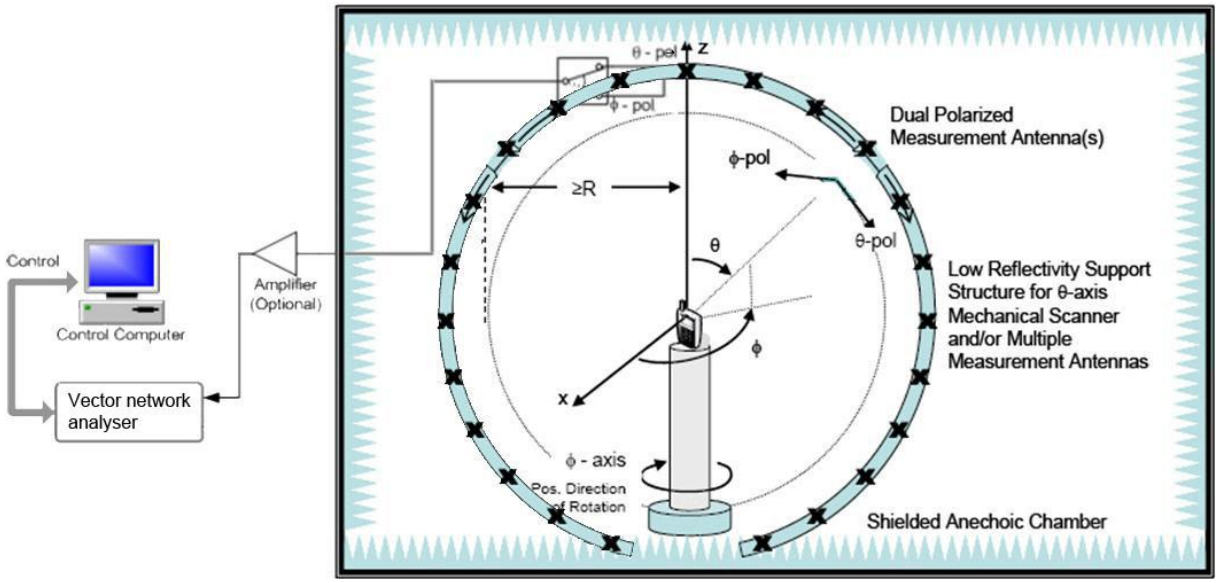
2.4. Test Results lists

2.4.1.Gain

Bluetooth Antenna	
Frequency (MHz)	Gain(dBi)
2402	-2.99
2410	-3.41
2420	-4.14
2430	-4.75
2440	-4.99
2450	-5.36
2460	-5.53
2470	-5.67
2480	-5.81

433MHz Antenna	
Frequency (MHz)	Gain(dBi)
433.92	-8.94

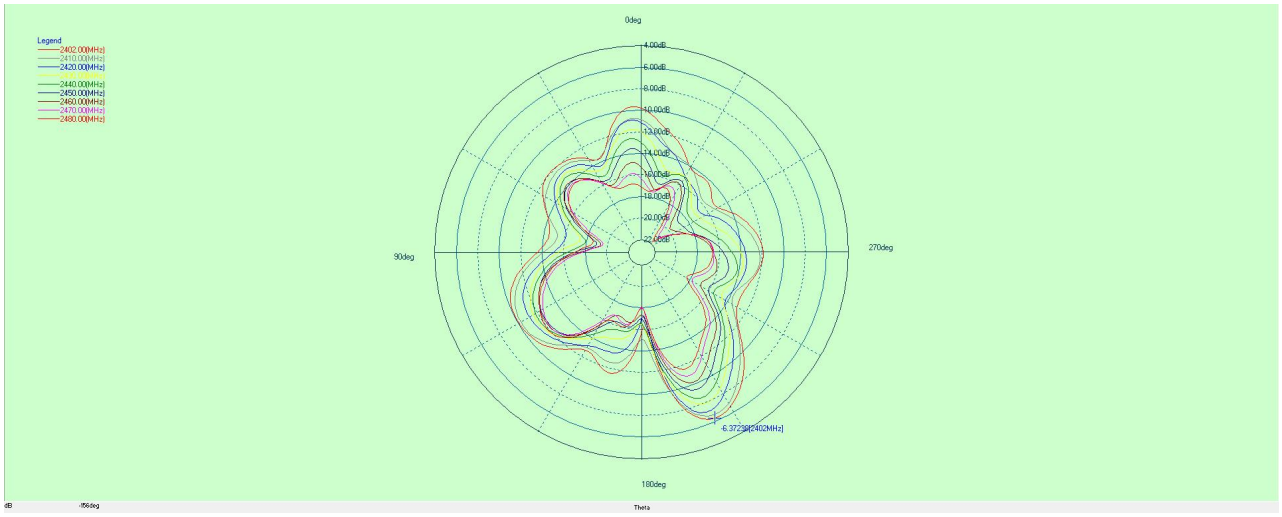
Annex A Test Setup Photos



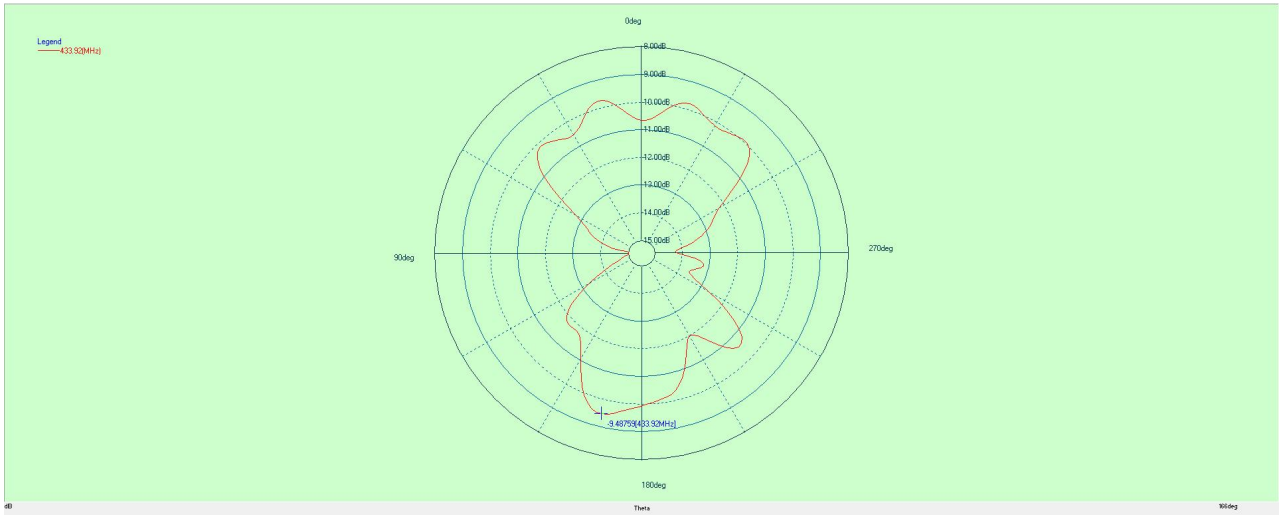
Annex B Figures

1. 2D Radiation Pattern

Phi=0°

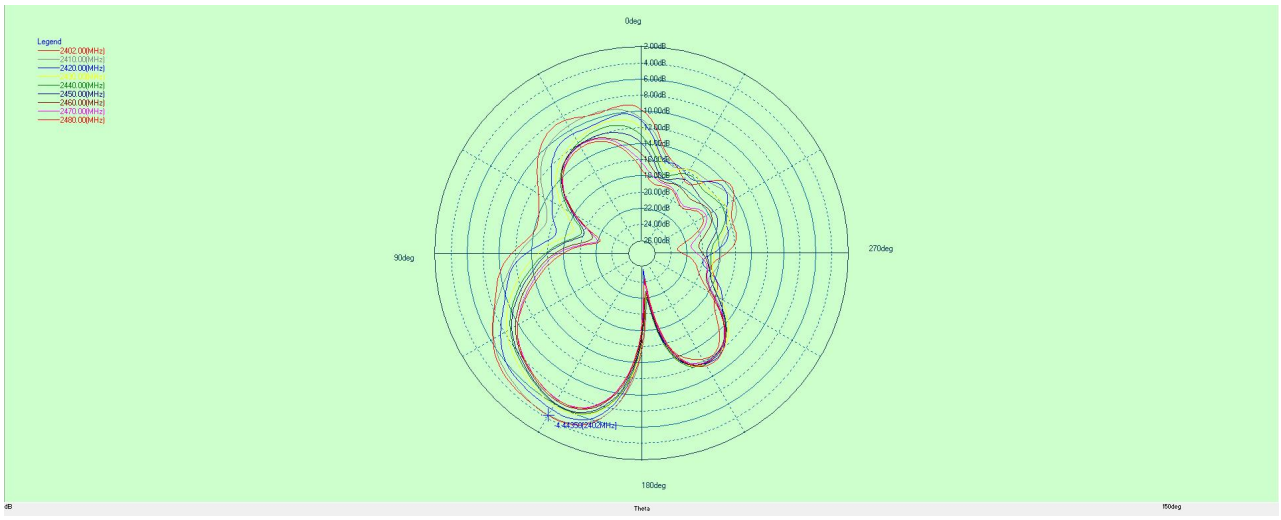


Bluetooth Antenna

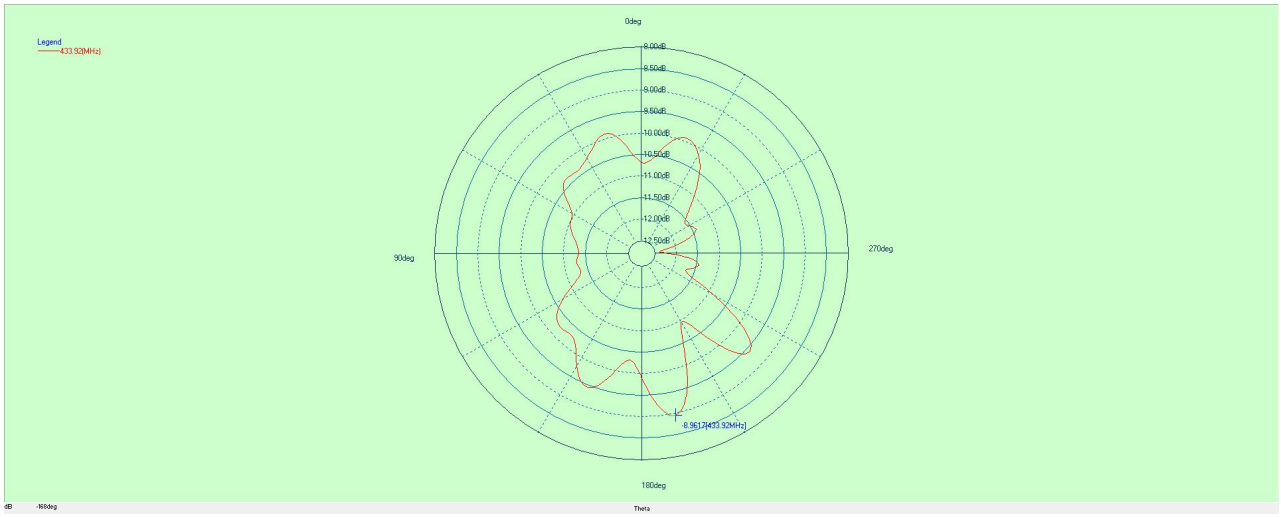


433MHz Antenna

Phi=90°

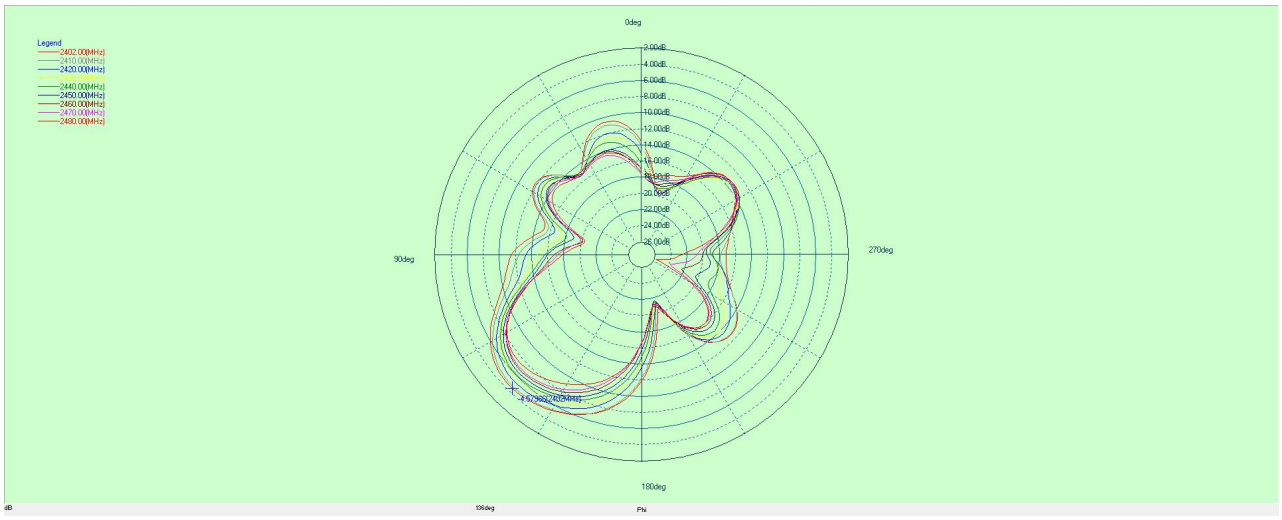


Bluetooth Antenna

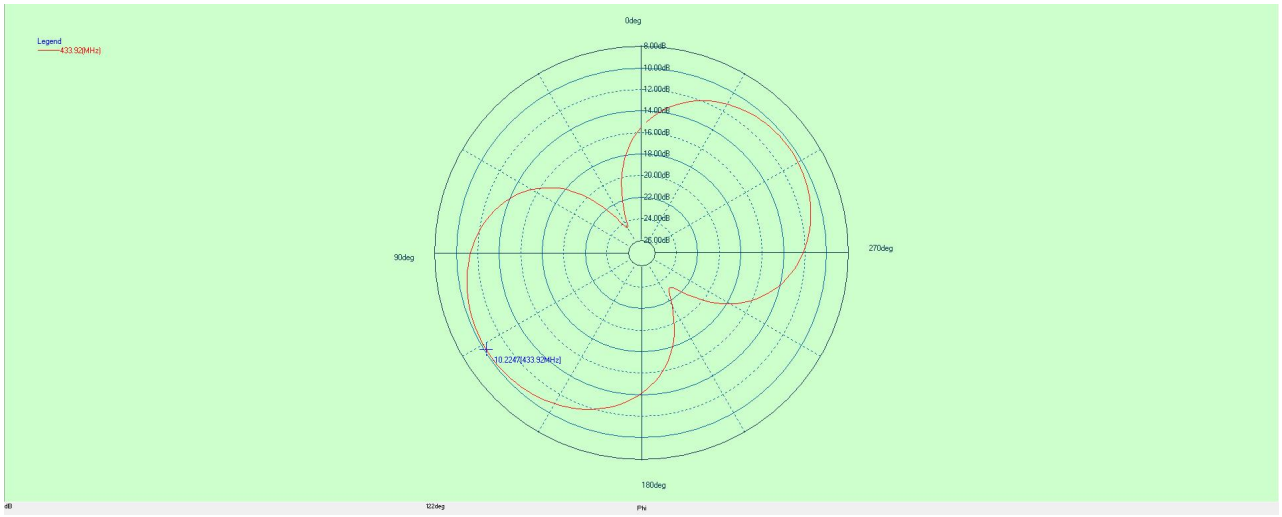


433MHz Antenna

Theta=90°

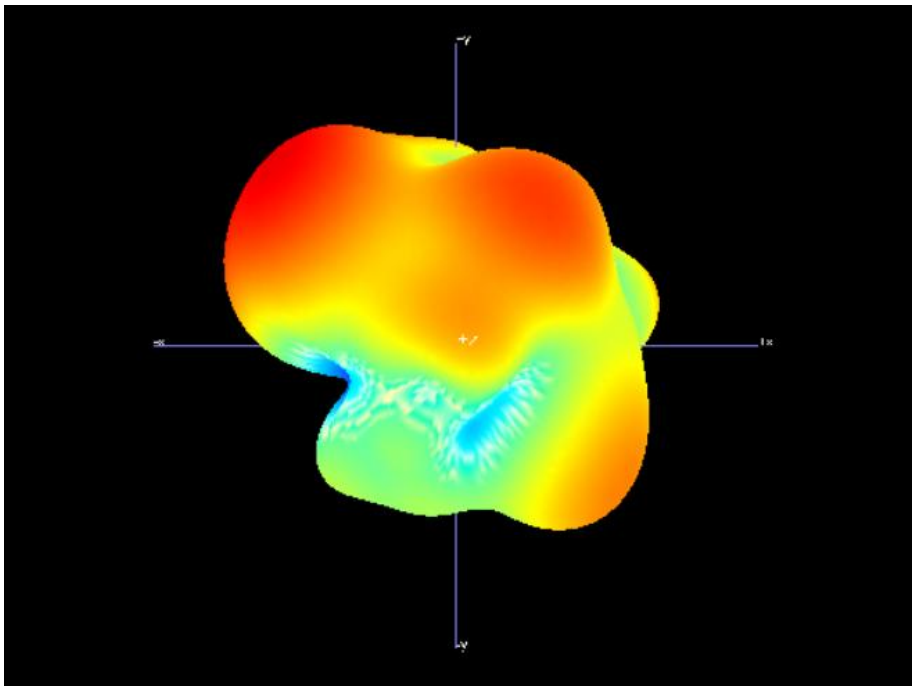


Bluetooth Antenna

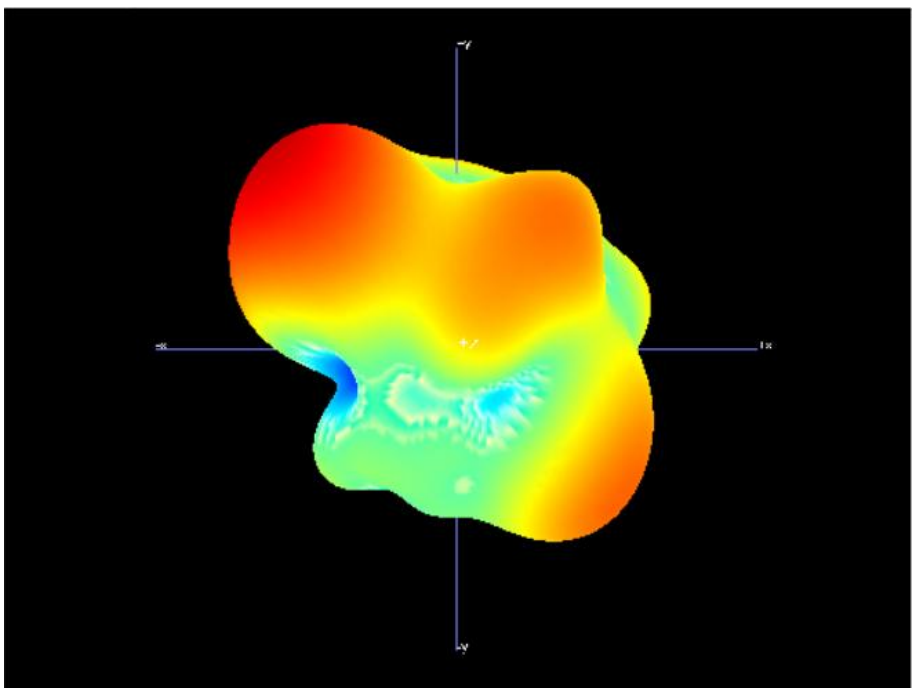


433MHz Antenna

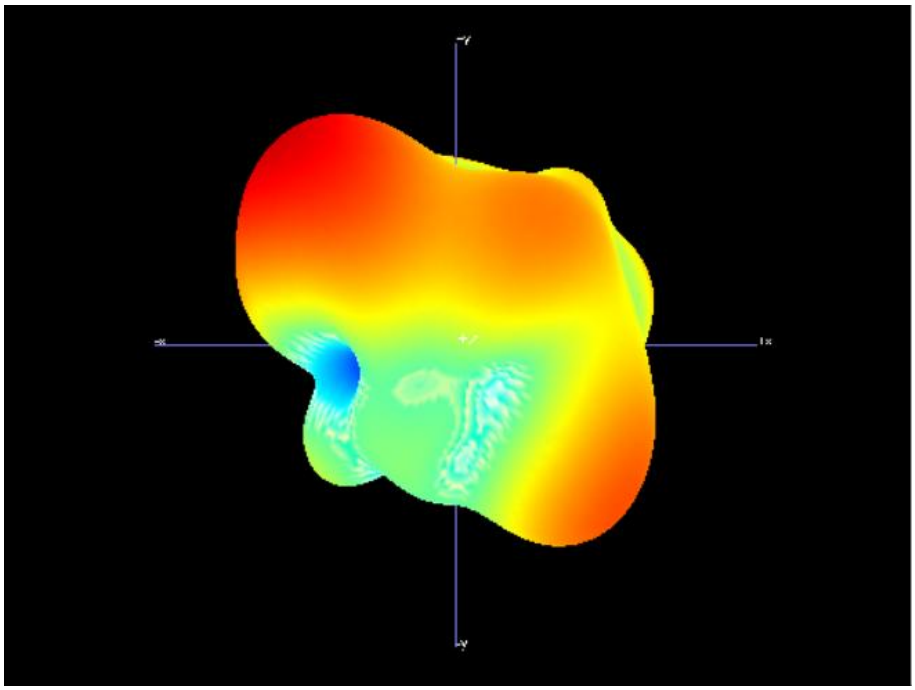
2. 3D Radiation Pattern



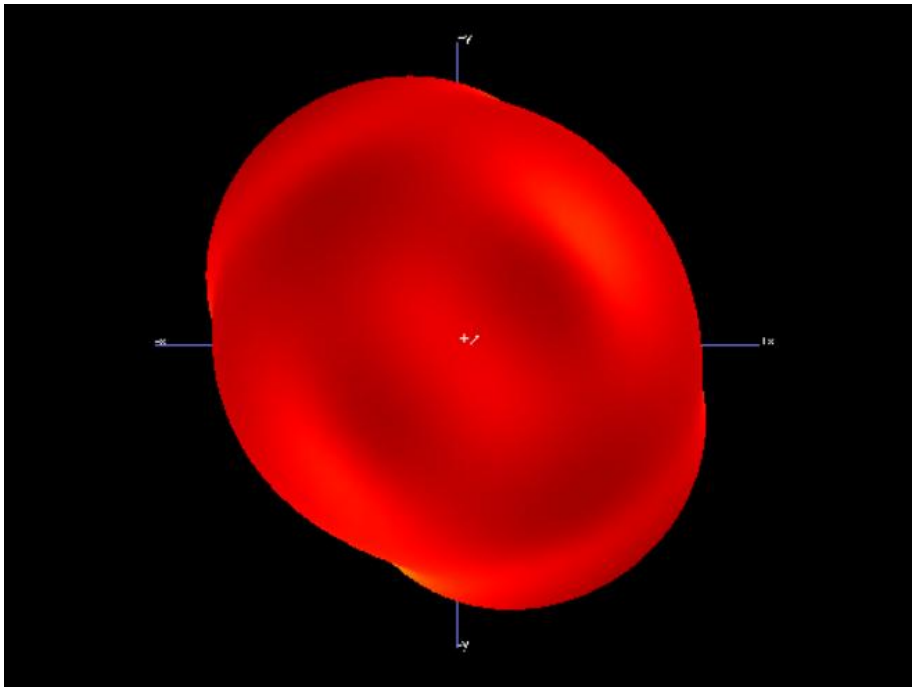
2402MHz



2440MHz



2480MHz



433MHz

Annex C General Information

1.1 Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

1.2 Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL.1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

1.3 Test Equipments Utilized

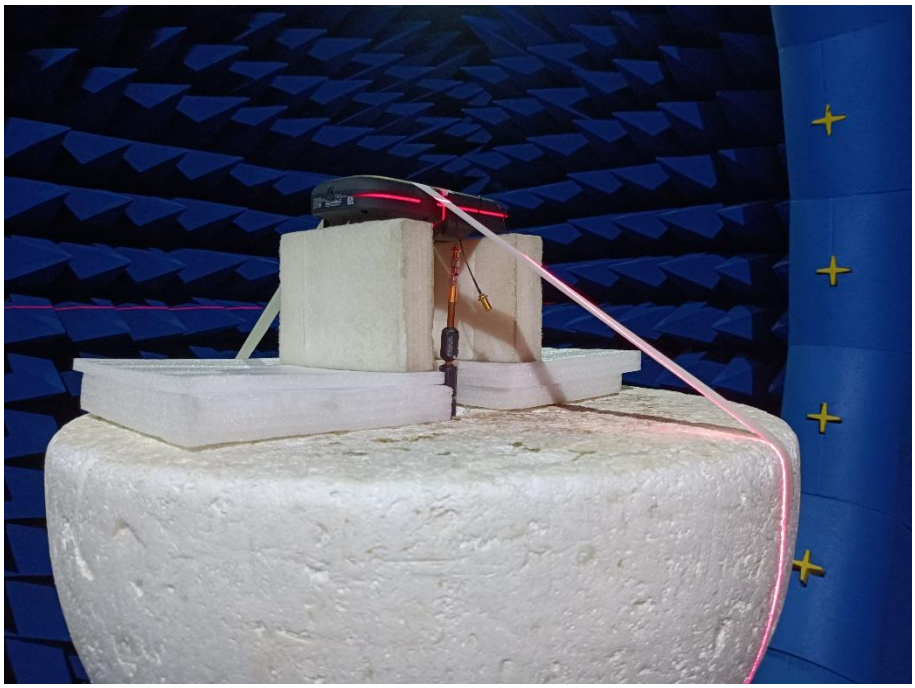
No.	Equipement Name	Serial No.	Type	Manufacturer	Cal.Date	Cal.Due Date
1	Vector Network Analyzer	MY46214666	E5071C	Agilent	2023.02.09	2024.02.08
2	OTA Chamber	N/A	SG24	Satimo	2021.01.12	2024.01.11
3	SatEnv	N/A	2.0.1.5 build 12	Satimo	N/A	N/A
4	SPM	N/A	1.11	Satimo	N/A	N/A

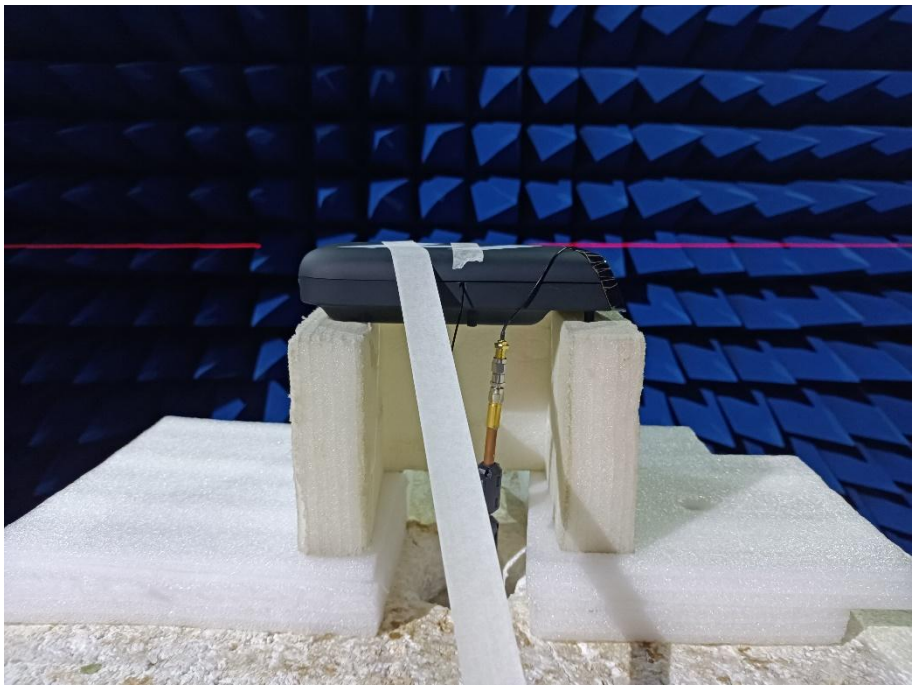
Note: The Main report is end here and the other Annex D will be submitted separately.

——— END OF REPORT ———

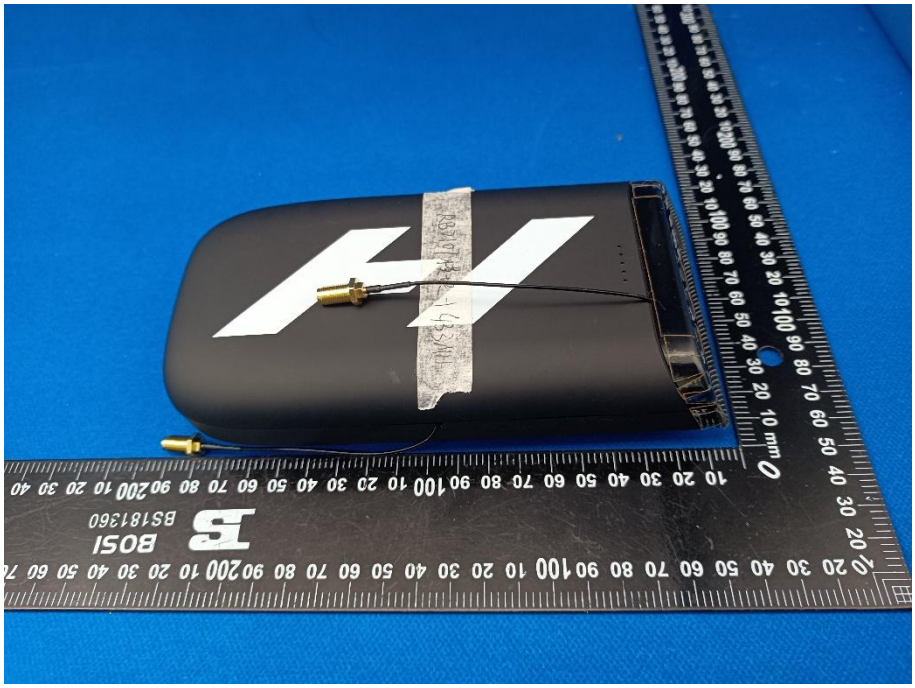
Annex D EUT Photos

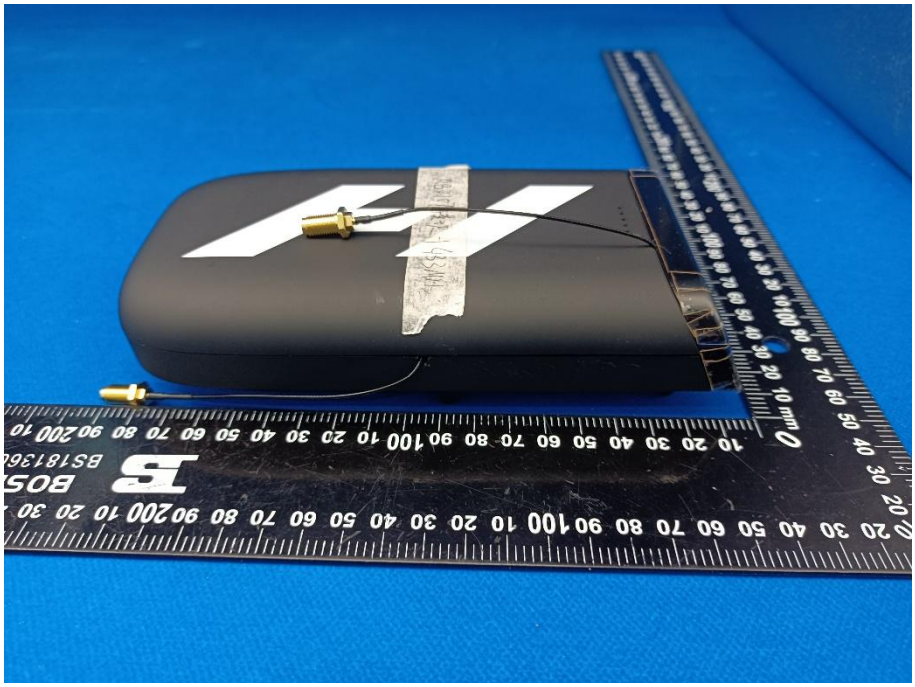
1. Test environment

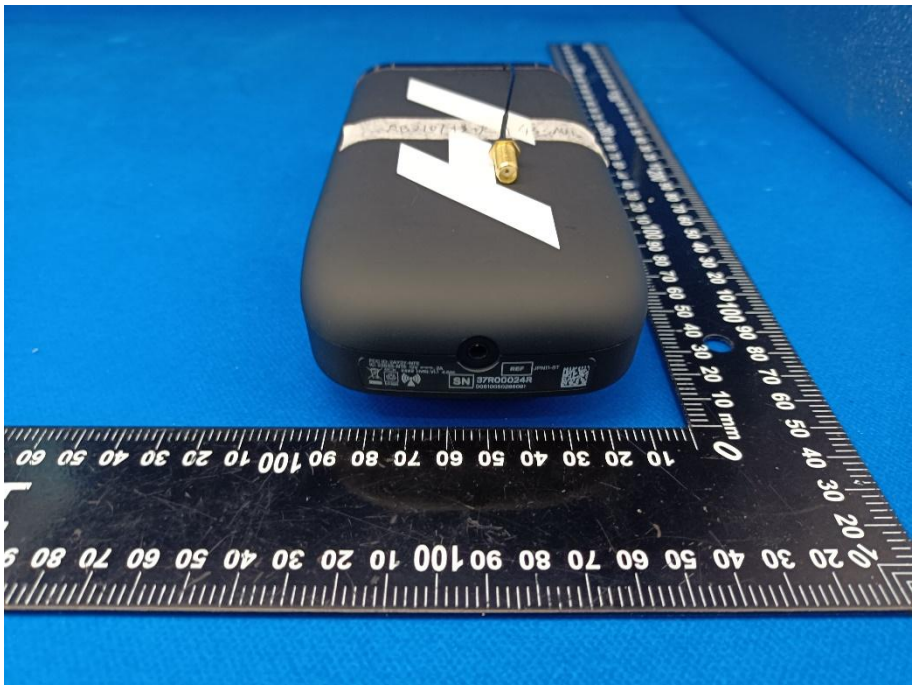


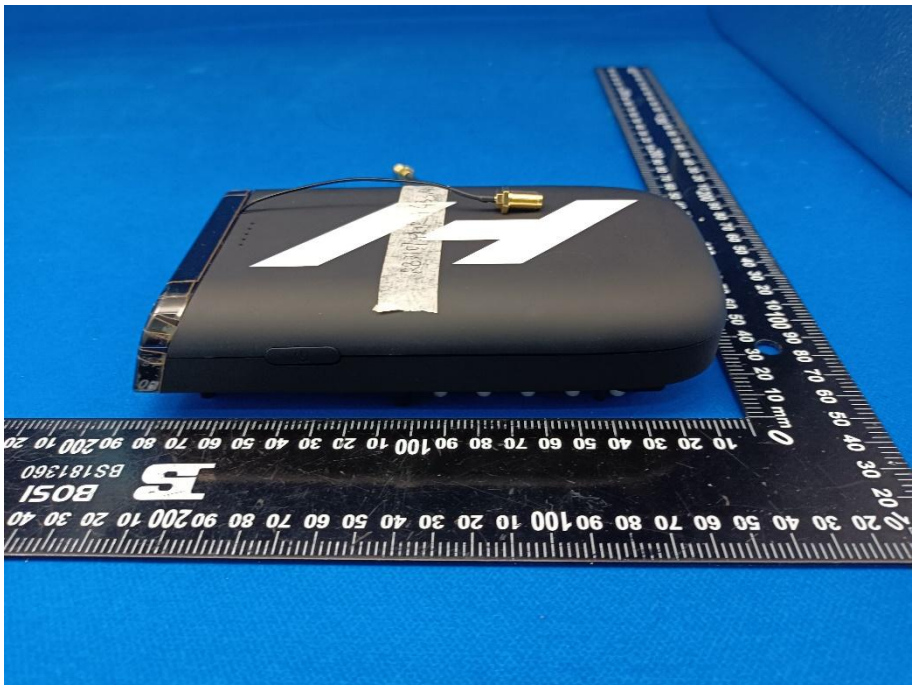


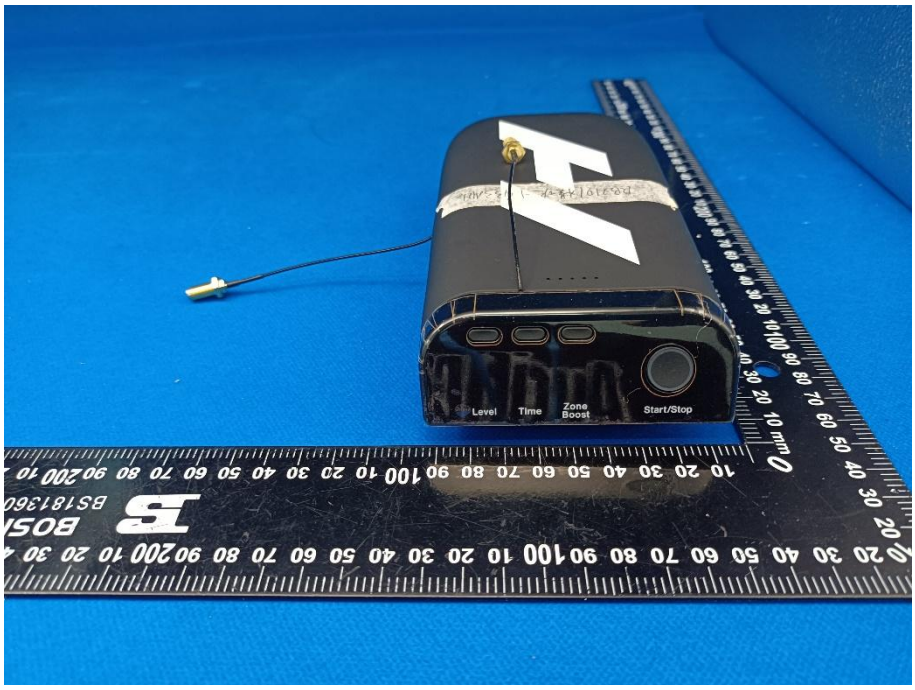
2. EUT

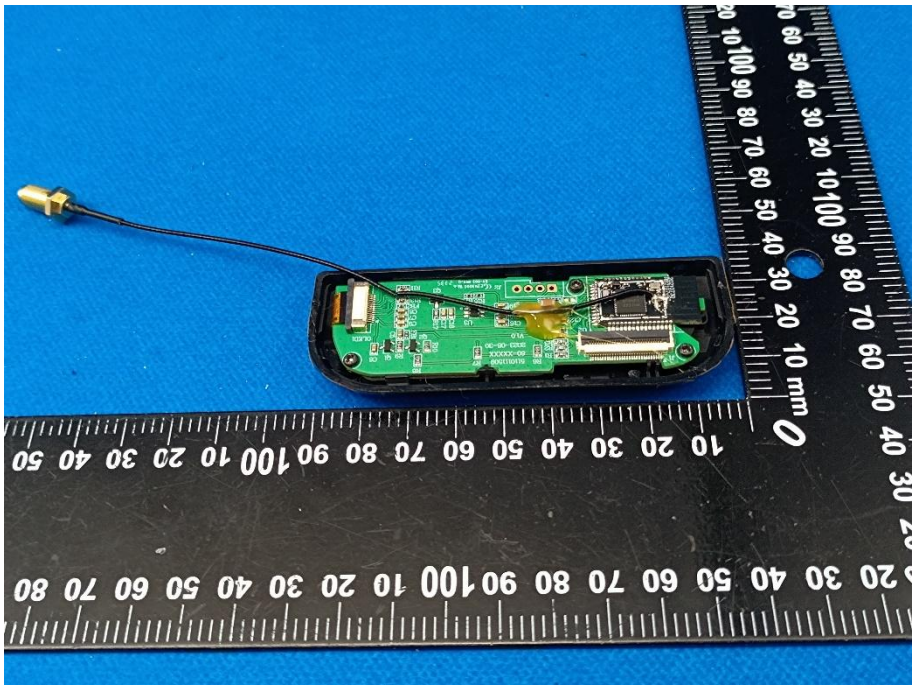


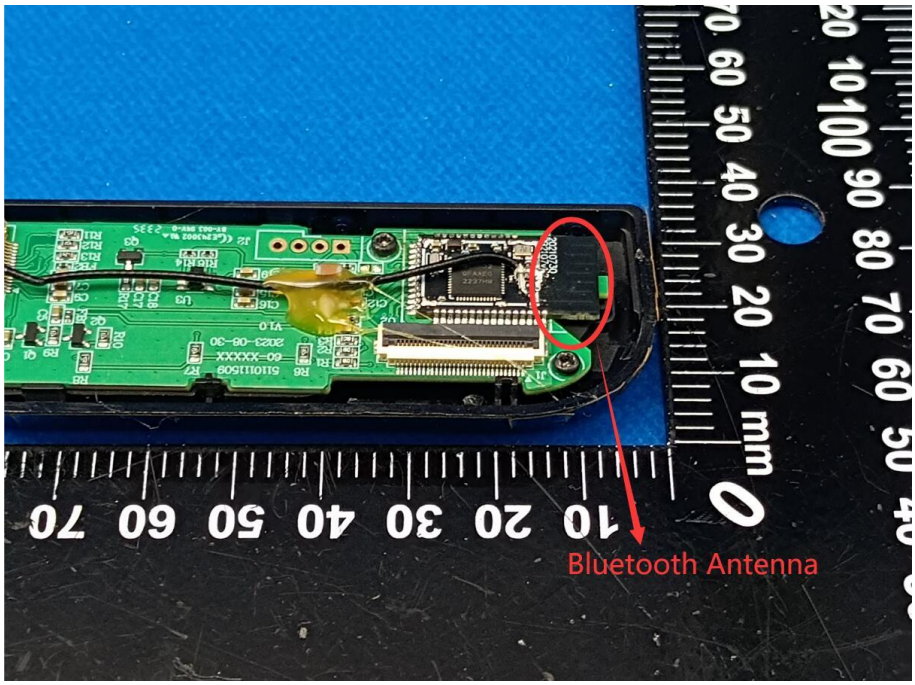


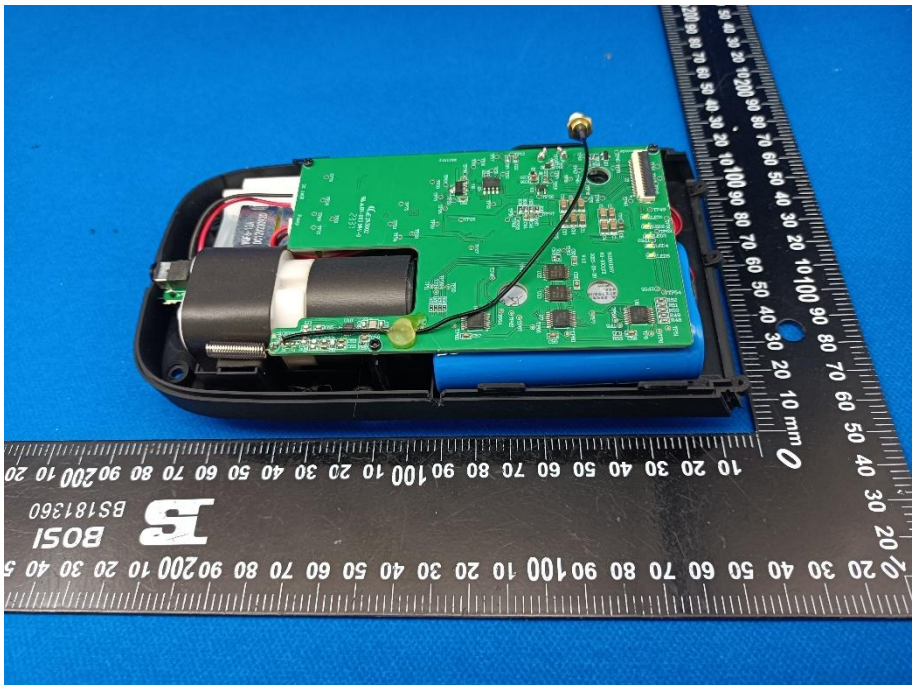


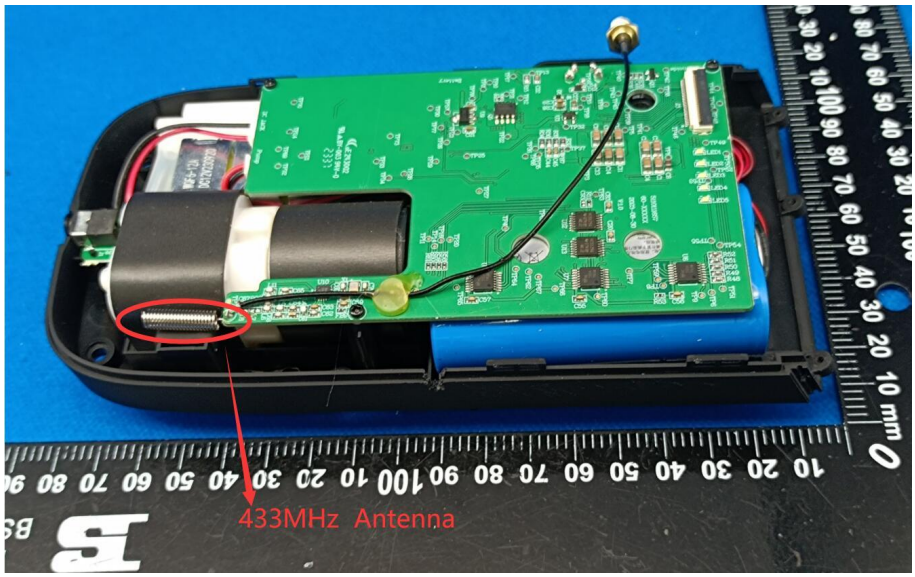



Level
Time
Zone Boost
Start/Stop




Bluetooth Antenna




433MHz Antenna