

ANTENNA

TEST REPORT

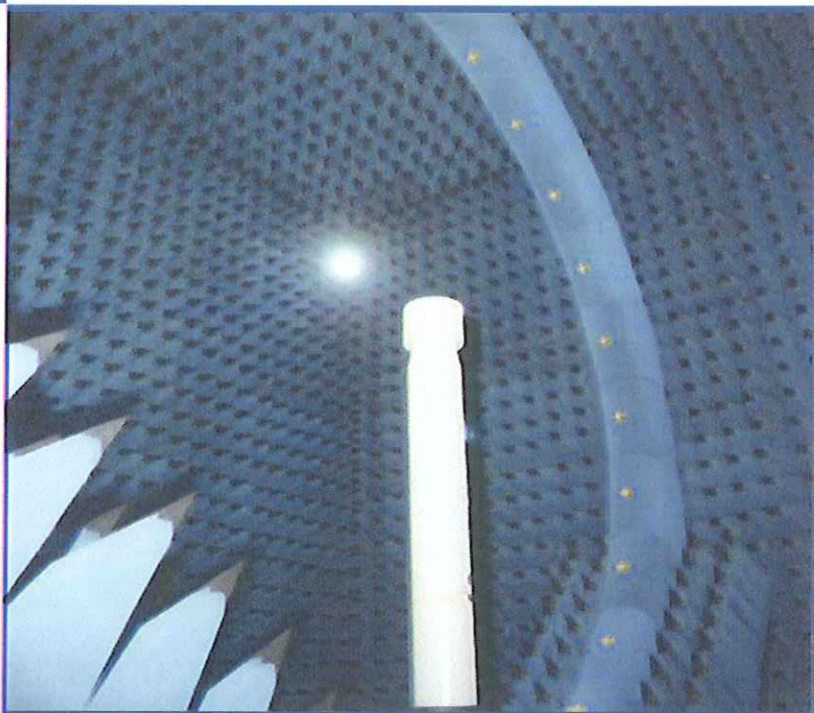
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.



FOR
HORIPAD ULTIMATE

ISSUED TO
HORI Co., Ltd.

640 Saedo-Cho, Tsuzuki-ku, Yokohama-shi, Kanagawa-ken 224-0054, Japan



Tested by: Zou Lin

Zou Liu
(Engineer)

Date Sep. 30, 2015

Approved by: Wei Yanqun

Wei Yanqun
(Chief Engineer)

Date Sep. 30, 2015

Report No: BL-SZ1580204-901

EUT Type: HORIPAD ULTIMATE

Model Name: HIP-047(U/E)

Brand Name: HORI

Test Standard: IEEE149-1979

Maximum: Gain: -3.41dBi

Efficiency: 19%

Test Date: Aug. 24, 2015

Date of Issue: Sep. 30, 2015

NOTE: This test report can be duplicated completely for the legal use with the approval of the applicant; it shall not be reproduced except in full, without the written approval of Shenzhen BALUN Technology Co., Ltd. BALUN Laboratory. Any objections should be raised within thirty days from the date of issue. To validate the report, please visit BALUN website.

Revision History

<u>Version</u>	<u>Issue Date</u>	<u>Revisions</u>
<u>Rev. 01</u>	<u>Sep. 30, 2015</u>	<u>Initial Issue</u>

TABLE OF CONTENTS

1 GENERAL INFORMATION.....	3
1.1 Identification of the Testing Laboratory.....	3
1.2 Identification of the Responsible Testing Location.....	3
1.3 Announce.....	3
2 PRODUCT INFORMATION.....	4
2.1 Applicant.....	4
2.2 Manufacturer.....	4
2.3 General Description for Equipment under Test (EUT).....	4
2.4 Technical Information.....	4
3 SUMMARY OF TEST RESULTS.....	5
3.1 Test Standards.....	5
3.2 Test Verdict.....	5
3.3 Test Uncertainty.....	5
4 GENERAL TEST CONFIGURATIONS.....	6
4.1 Test Condition.....	6
4.2 Test Equipment List.....	6
4.3 Test Setup.....	6
ANNEX A TEST RESULTS.....	7
A.1 Gain and Efficiency.....	7
ANNEX B RADIATION PATTERN.....	8
ANNEX C TEST SETUP PHOT.....	12
ANNEX D EUT PHOTO.....	13

1 GENERAL INFORMATION

1.1 Identification of the Testing Laboratory

Company Name	Hatch International Limited
Address	blanche@hatchmfg.com
Phone Number	0755-83689256
Fax Number	0755-83689256

1.2 Identification of the Responsible Testing Location

Test Location 1	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory has met the requirements of the IAS Accreditation Criteria for Testing Laboratories (AC89), has demonstrated compliance with ISO/IEC Standard 17025:2005. The accreditation certificate number is TL-588. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Announce

- (1) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- (2) The test report is invalid if there is any evidence and/or falsification.
- (3) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- (4) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

2 PRODUCT INFORMATION

2.1 Applicant

Applicant	HORI Co., Ltd.
Address	640 Saedo-Cho, Tsuzuki-ku, Yokohama-shi, Kanagawa-ken 224-0054, Japan

2.2 Manufacturer

Manufacturer	Dongguan City Fuze Electronic CO., LTD.
Address	No.2, Dongyiheng Road, Huanshidong Road, Tangxia Town, Dongguan City, Guangdong Province, China

2.3 General Description for Equipment under Test (EUT)

EUT Type	HORIPAD ULTIMATE
Model Name	HIP-047(U/E)
Antenna Type	PCB Antenna
Hardware Version	N/A
Serial Number	N/A
Dimensions	20mm×3mm

2.4 Technical Information

Frequency Range	2402MHz~ 2480MHz
Test Frequencies	2402MHz,2441MHz,2480MHz

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	IEEE149-1979	IEEE Standard Test Procedures for Antennas

3.2 Test Verdict

Report Section	Description	Remark
ANNEX A.1	Gain And Efficiency	--
ANNEX B	Radiation Pattern	--

3.3 Test Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Item	Uncertainty
VSWR(S11)	$\pm 0.2\text{dB}$
Gain	$\pm 0.5\text{dB}$

4 GENERAL TEST CONFIGURATIONS

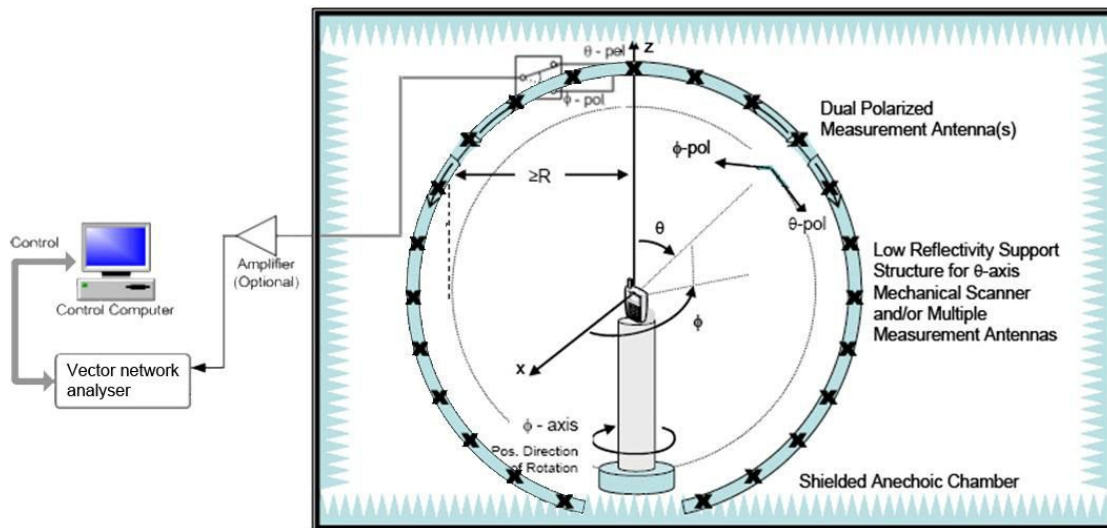
4.1 Test Condition

Environment Parameter	Selected Values During Tests			
	Ambient Pressure(KPa)	Temperature(°C)	Voltage	Relative Humidity(%)
Normal Temperature, Normal Voltage (NTNV)	100 to 102	19 to 25	N/A	45 to 55

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Vector Network Analyzer	Agilent	E5071C	MY46103472	2015.1.28	2016.1.27
5*5*5 Full Anechoic Chamber	SATIMO	5*5*5	CN-1307-555	2014.09.28	2015.09.27
SG24 Multi-probe Antenna Measurement System	SATIMO	SG24-L	1101855-0001	2014.09.14	2015.09.13

4.3 Test Setup



ANNEX A TEST RESULTS

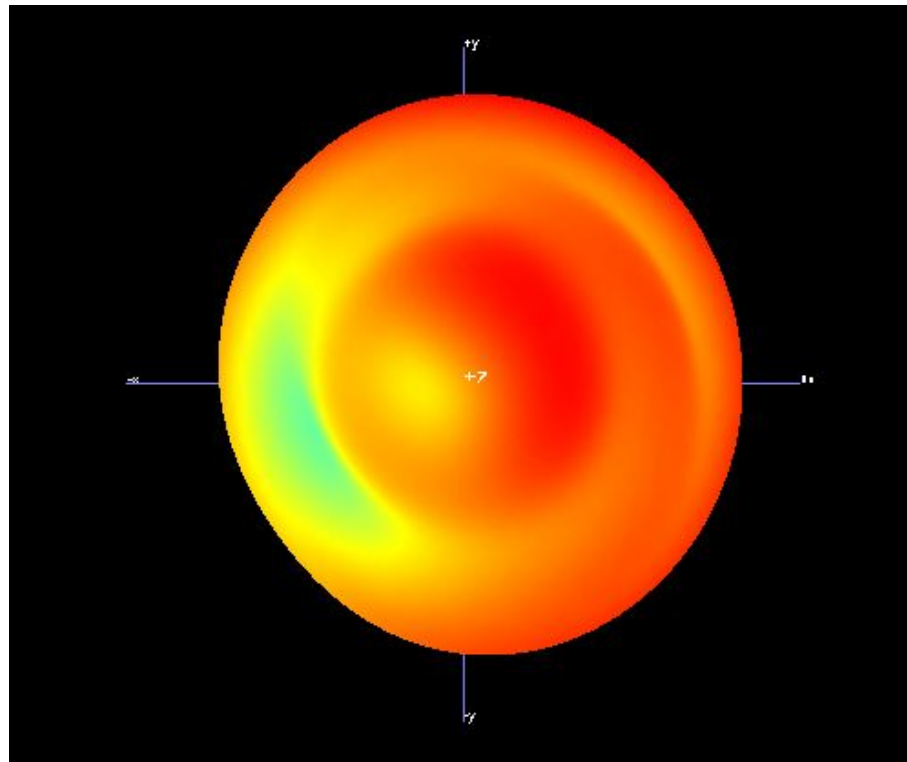
A.1 Gain and Efficiency

Frequency	Gain (dBi)	Efficiency (%)
2402MHz	-3.41	18
2441MHz	-4.80	19
2480MHz	-4.75	19

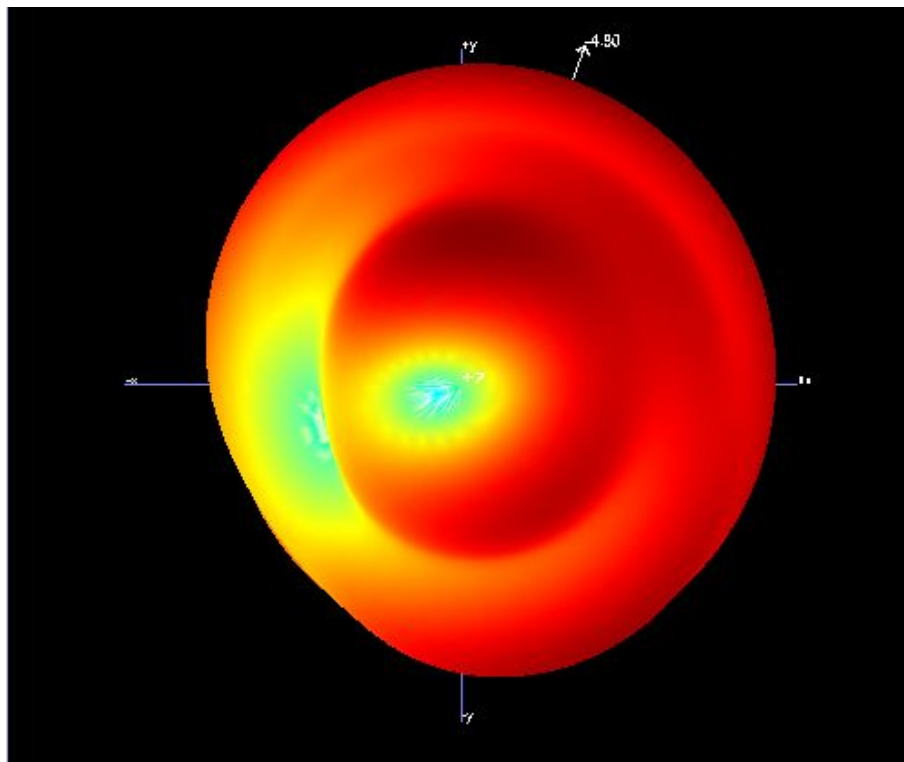
ANNEX B RADIATION PATTERN

B.1 3D Pattern

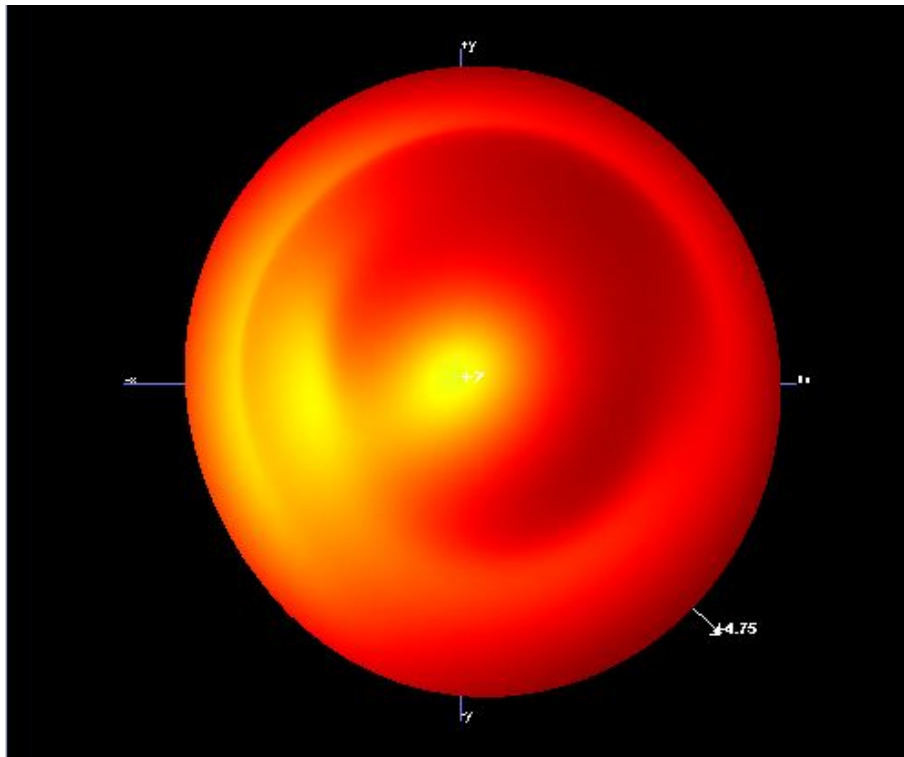
B1.1 3D Pattern for 2402MHz



B1.2 3D Pattern for 2441MHz

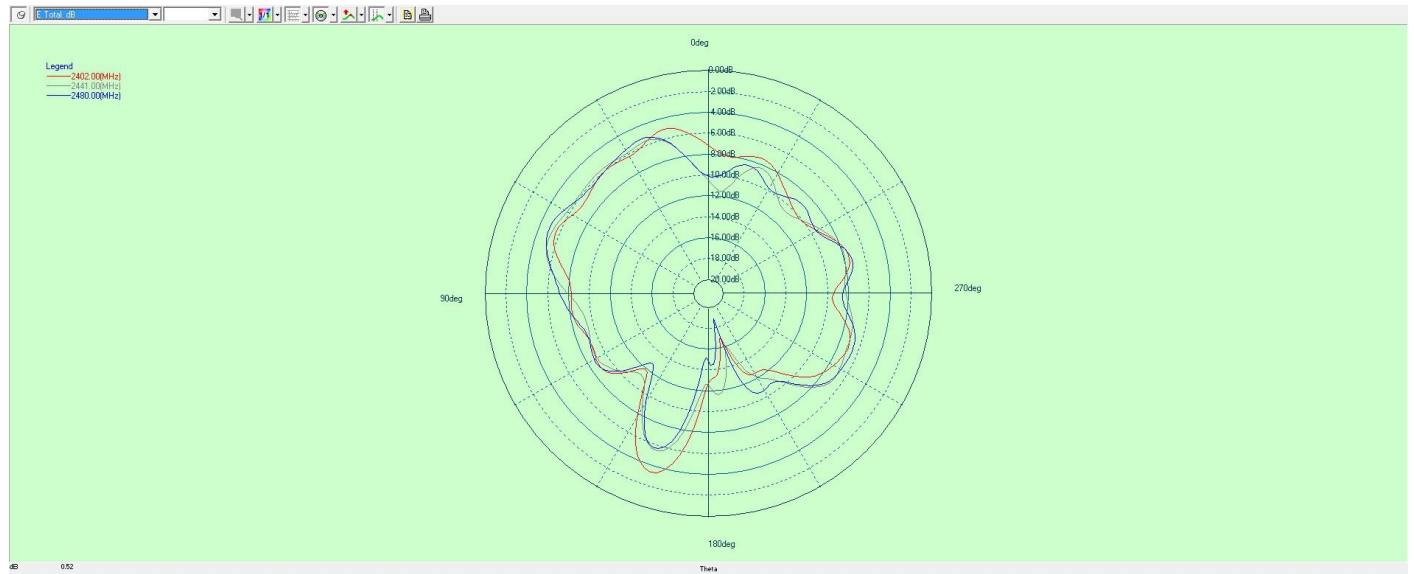


B1.3 3D Pattern for 2480MHz

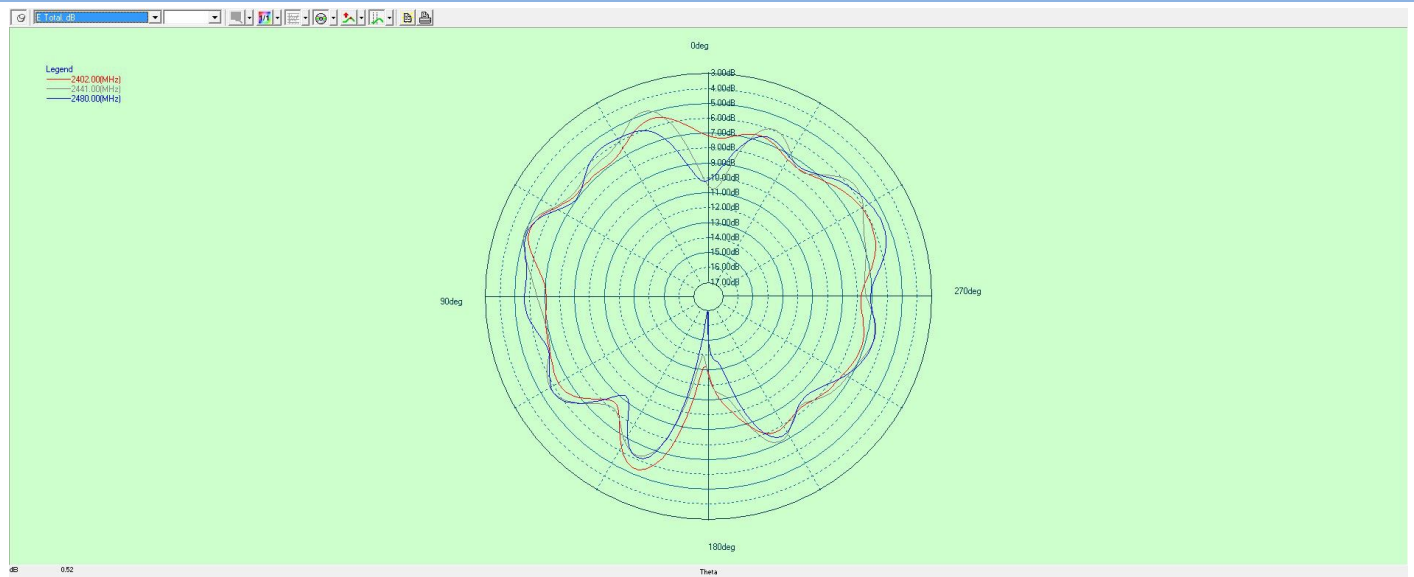


B.2 1D Radiation Pattern

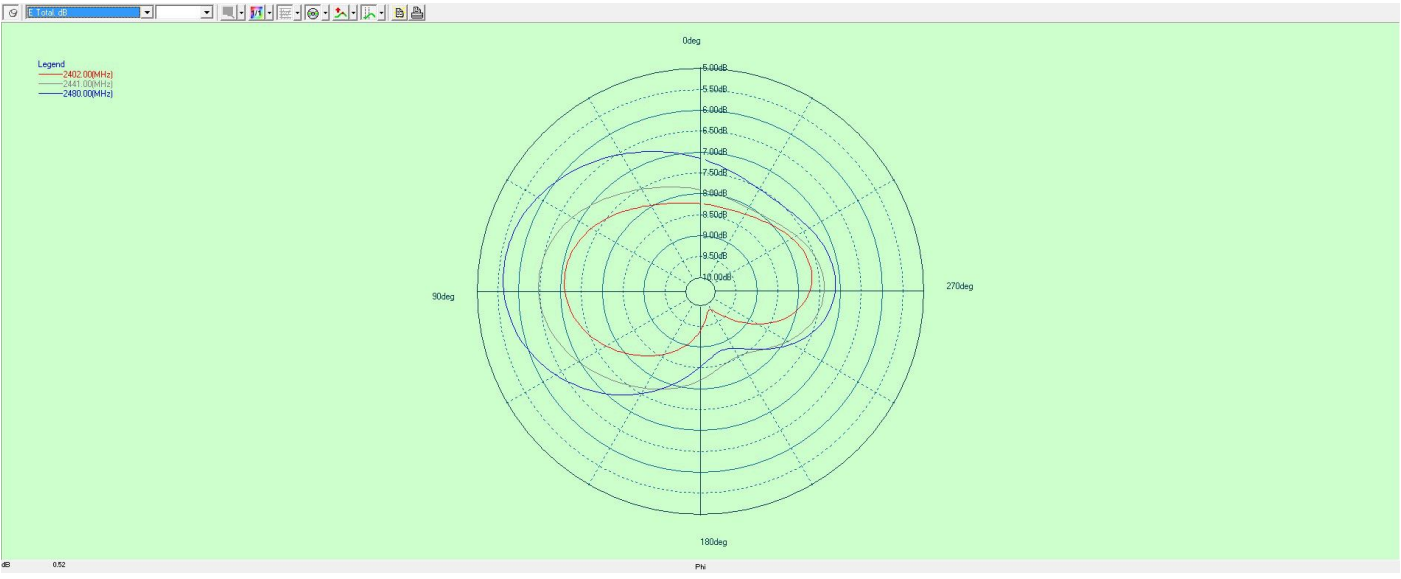
B2.1 PHI=0



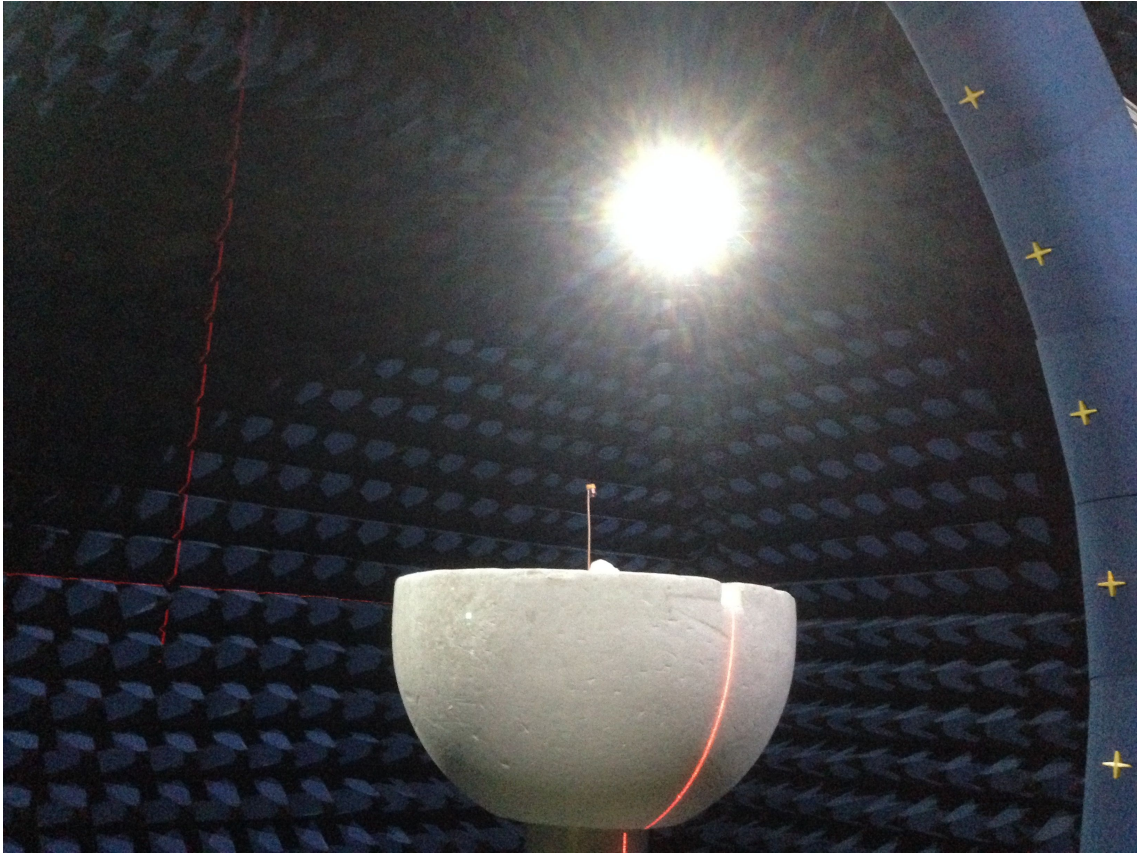
B2.2 PHI=90



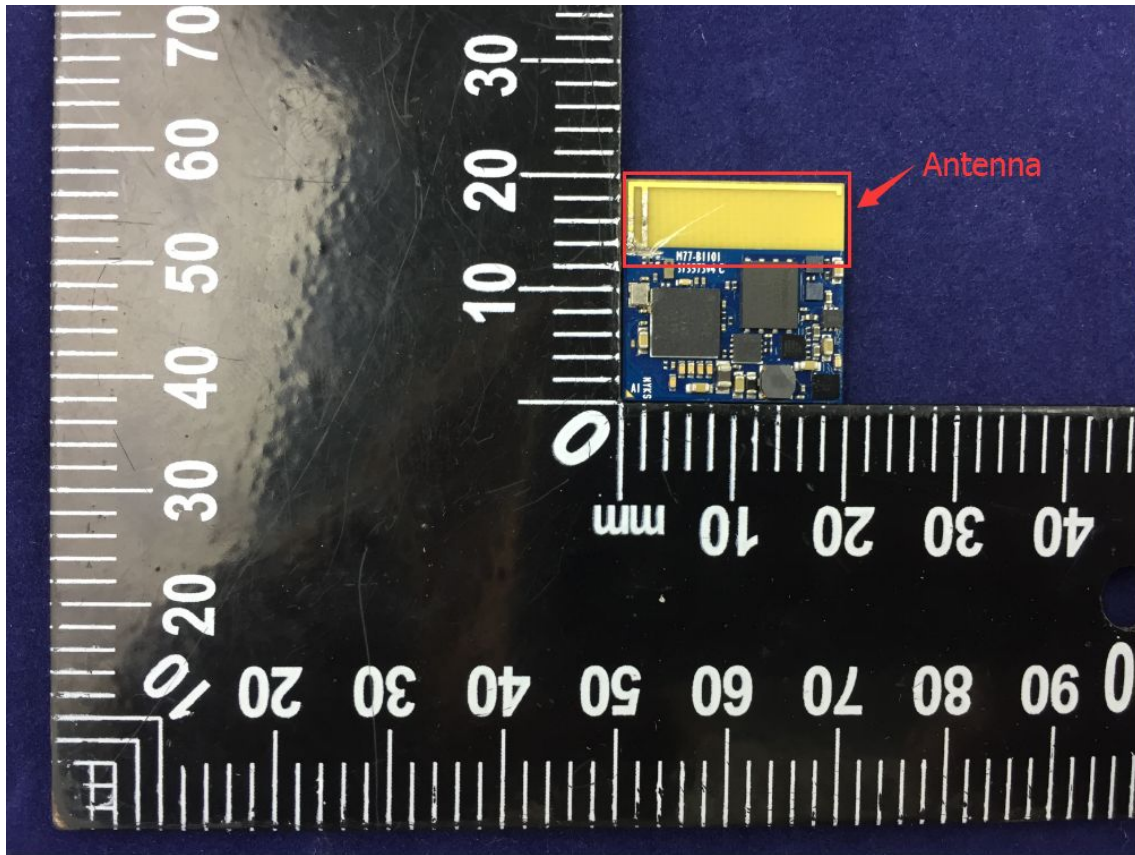
B2.3 THETA=90



ANNEX C TEST SETUP PHOT



ANNEX D EUT PHOTO



--END OF REPORT--