REPORT No. : SZ21030355E01

TEST REPORT

Applicant	:	CHANG YOW TECHNOLOGIES INTERNATIONAL CO., LTD.
PRODUCT NAME	:	Bluetooth Antenna
MODEL NAME	:	BLE003
TRADE NAME	:	N/A
BRAND NAME	:	N/A
STANDARD(S)	:	ANSI/IEEE Std 149-2008
RECEIPT DATE	:	2021-04-06
TEST DATE	:	2021-04-07
ISSUE DATE	:	2021-04-09

Edited by: Ke Zhiqing(Rapporteur)

Approved by: Chi Shide(Supervisor)

MORLAB

SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.
FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road,
Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

Tel: 86-755-36698555 Fax: 86-755-36698525
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DIRECTORY

Change History		
Version	Date	Reason for change
1.0	2021-04-09	First edition

1.Technical Information

Note: Provide by manufacturer.

1.1. Manufacturer and Factory Information

Applicant:	CHANG YOW TECHNOLOGIES INTERNATIONAL CO., LTD.
Applicant Address:	No.88, Shuren 6th St., Wufeng Dist., Taichung City 413, Taiwan (R.O.C.)
Manufacturer:	CHANG YOW TECHNOLOGIES INTERNATIONAL CO., LTD.
Manufacturer Address:	No.88, Shuren 6th St., Wufeng Dist., Taichung City 413, Taiwan (R.O.C.)

1.2. Equipment Under Test (EUT) Description

Wireless Type	Bluetooth
Hardware Version	N/A
Software Version	N/A

2. Test Results

2.1. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	ANSI/IEEE Std 149-2008	IEEE Standard Test Procedures for Antennas

2.2. Test Conditions

Test Environment Conditions：

Relative Humidity:	25 ... 75 %
Temperature:	+10 °C to +30 °C

2.3. Test Results lists

2.3.1. Gain and Efficiency

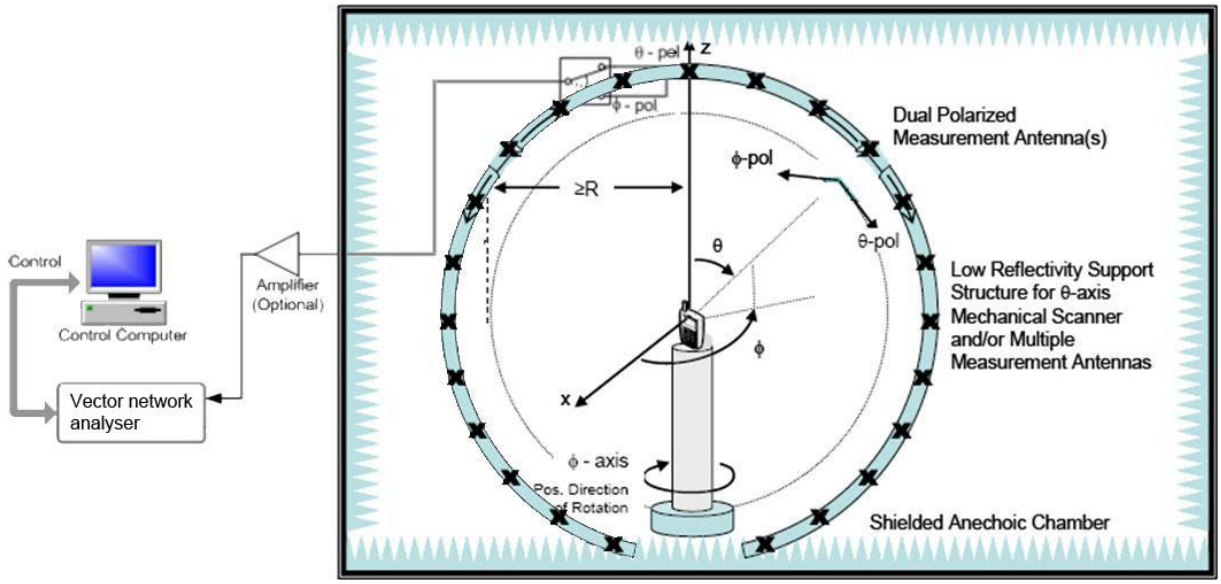
Frequency	Gain(dBi)	Efficiency
2400MHz	-6.13	9.51%
2442MHz	-3.96	16.69%
2484MHz	-3.03	17.18%

2.3.2. Return Loss

Frequency	Return Loss(dB)
2400MHz	-6.78
2442MHz	-4.58
2484MHz	-4.19

Annex A Photographs

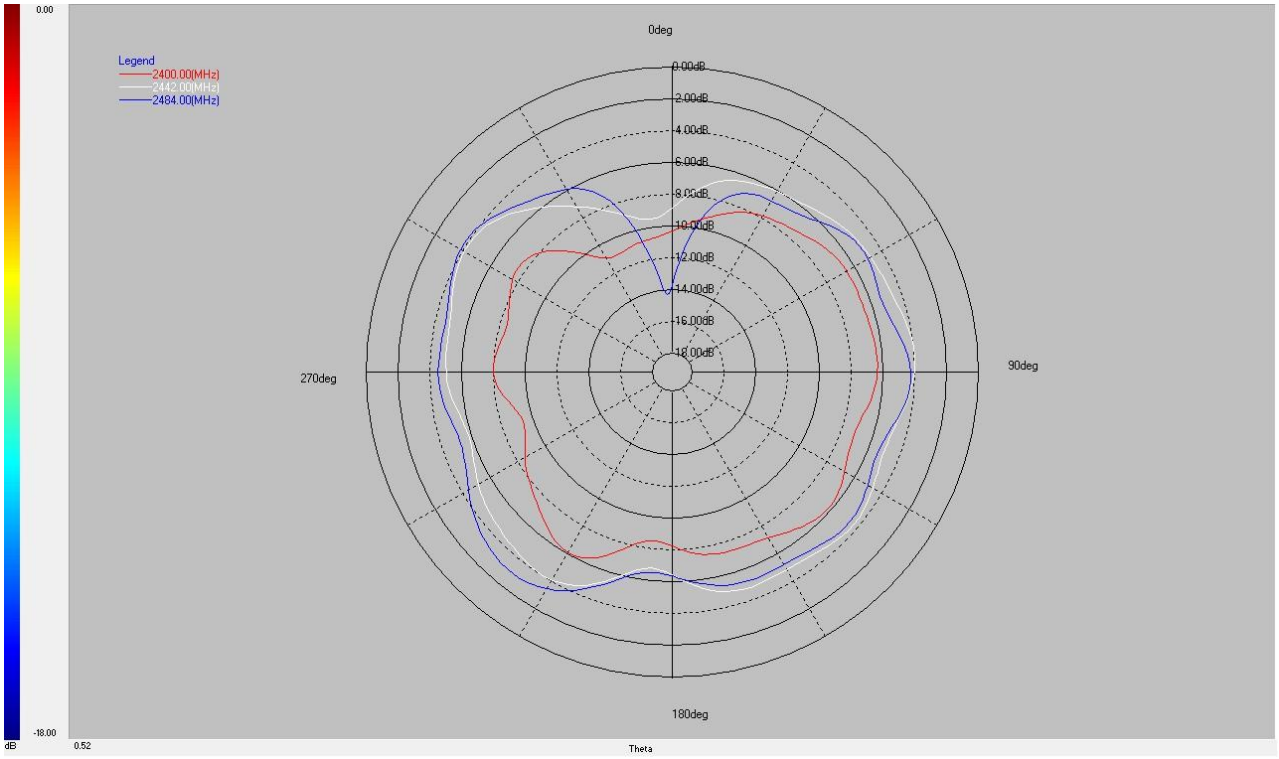
1. Test Setup



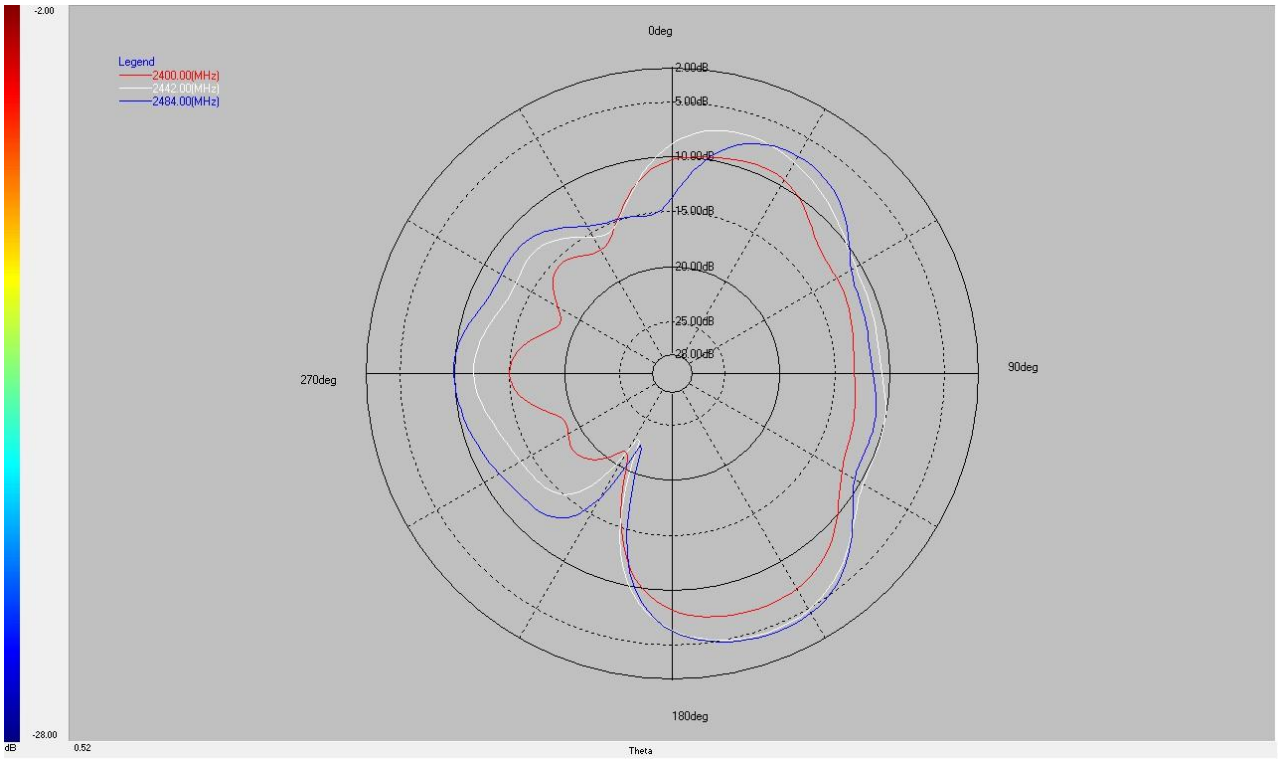
Annex B Figures

1. 2D Radiation Pattern

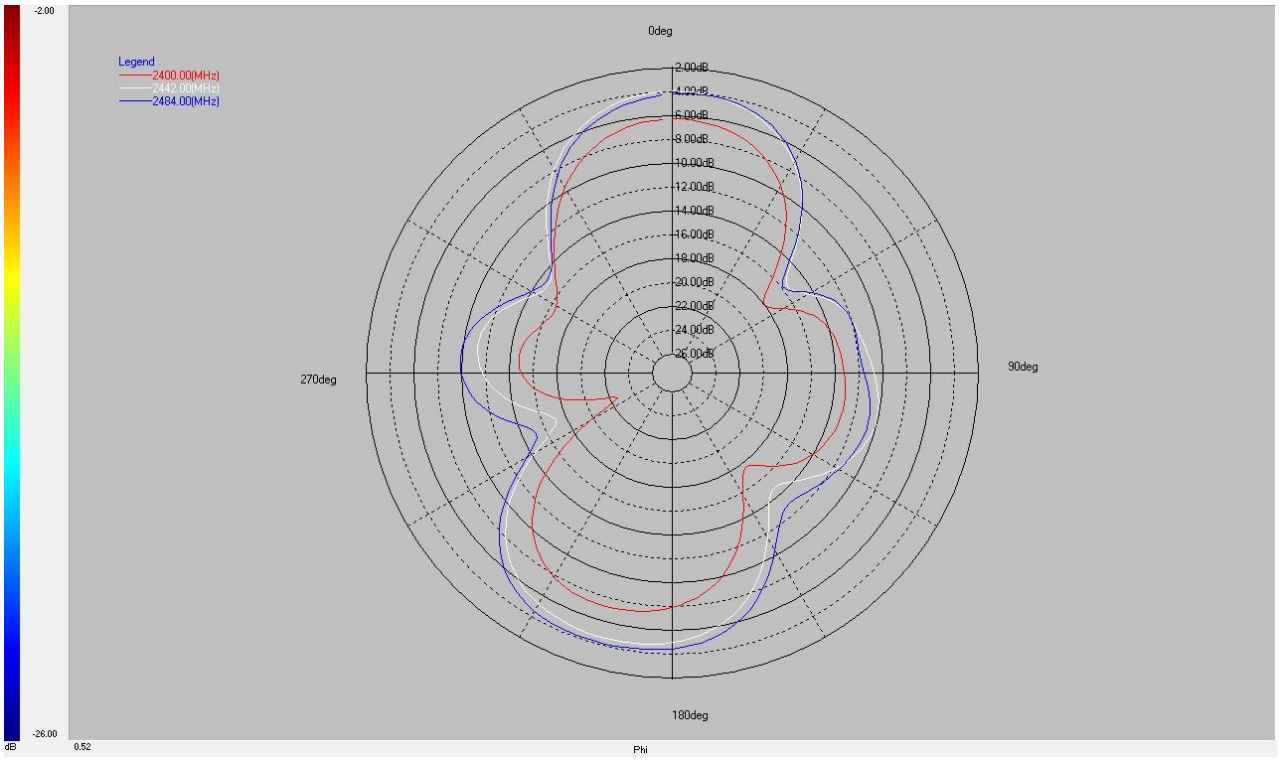
Phi=0°



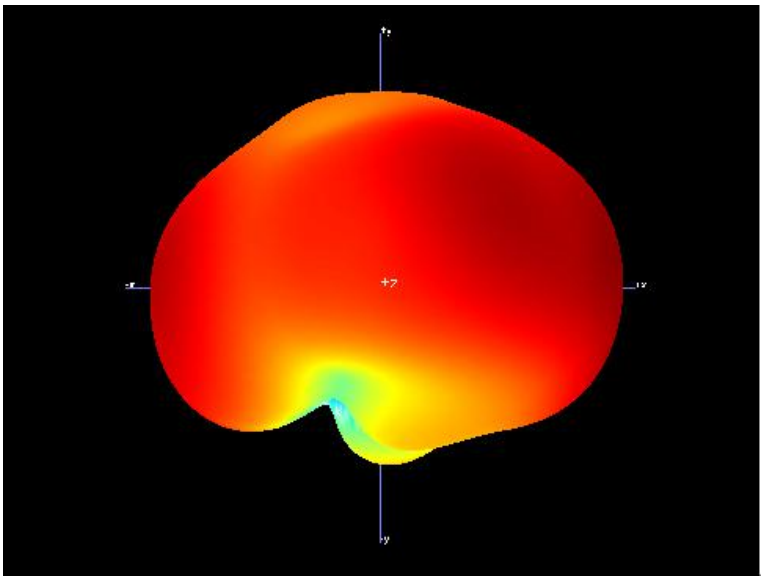
Phi=90°



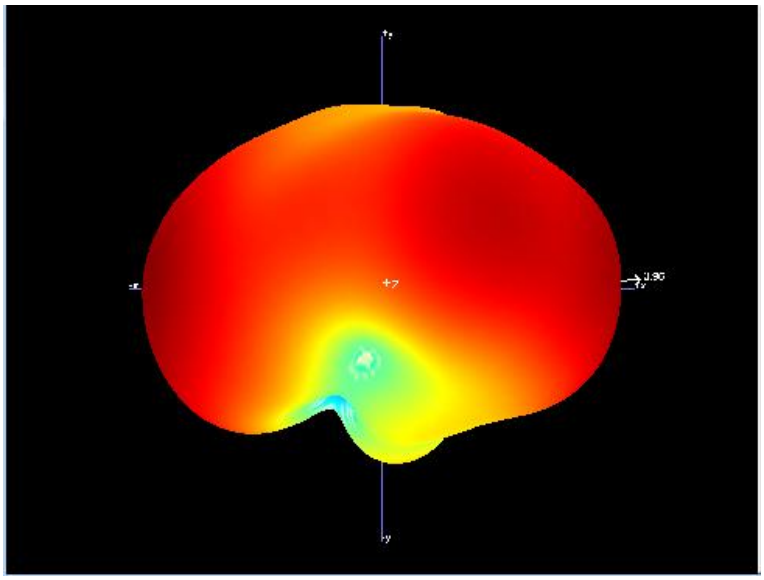
Theta=90°



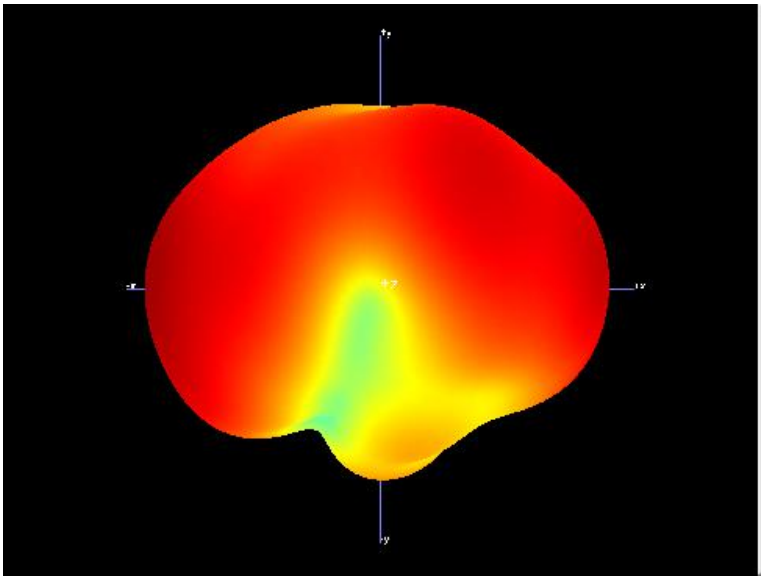
2. 3D Radiation Pattern



2400MHz

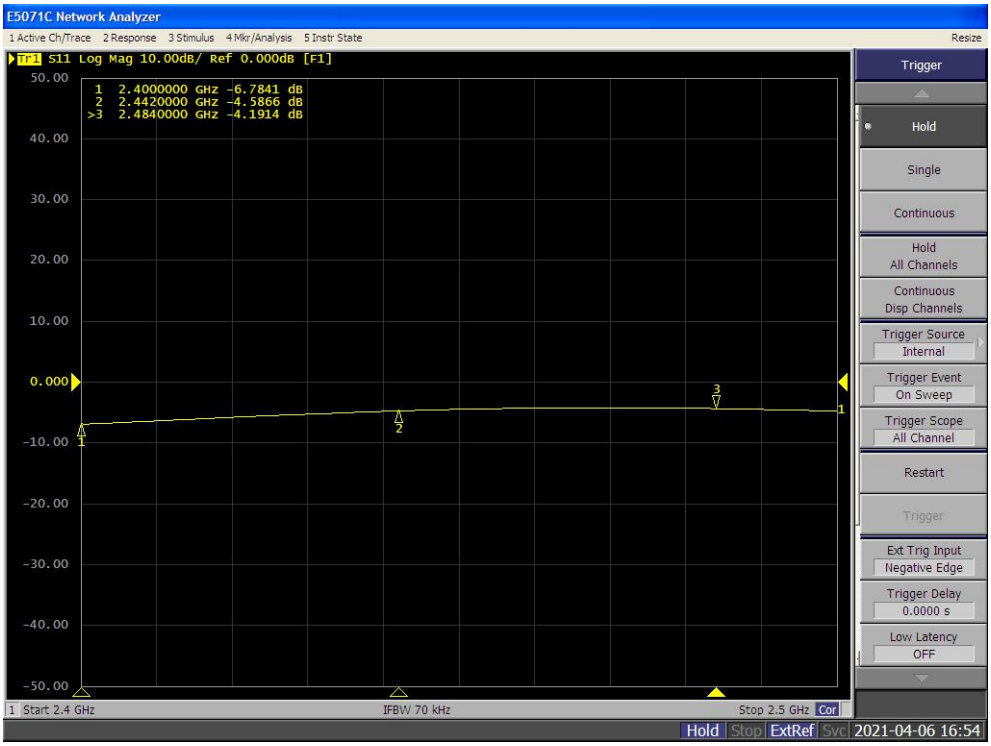


2442MHz



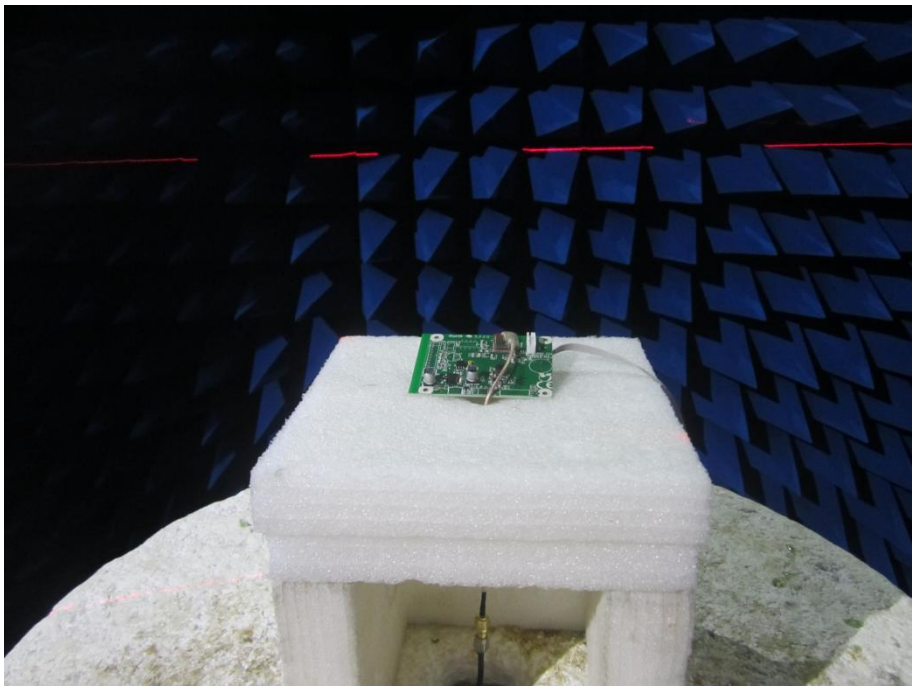
2484MHz

3. Return Loss

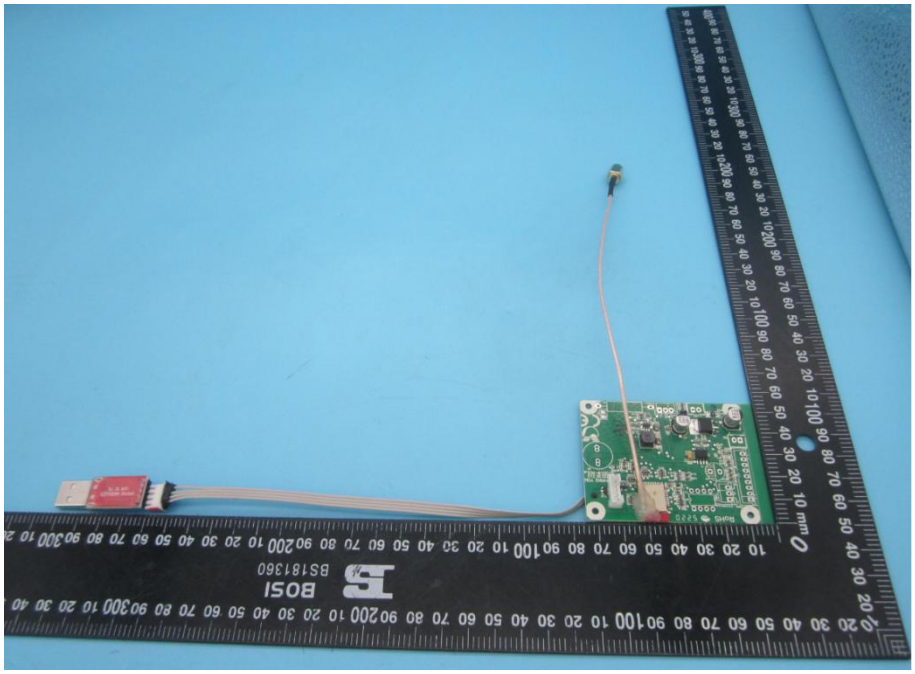


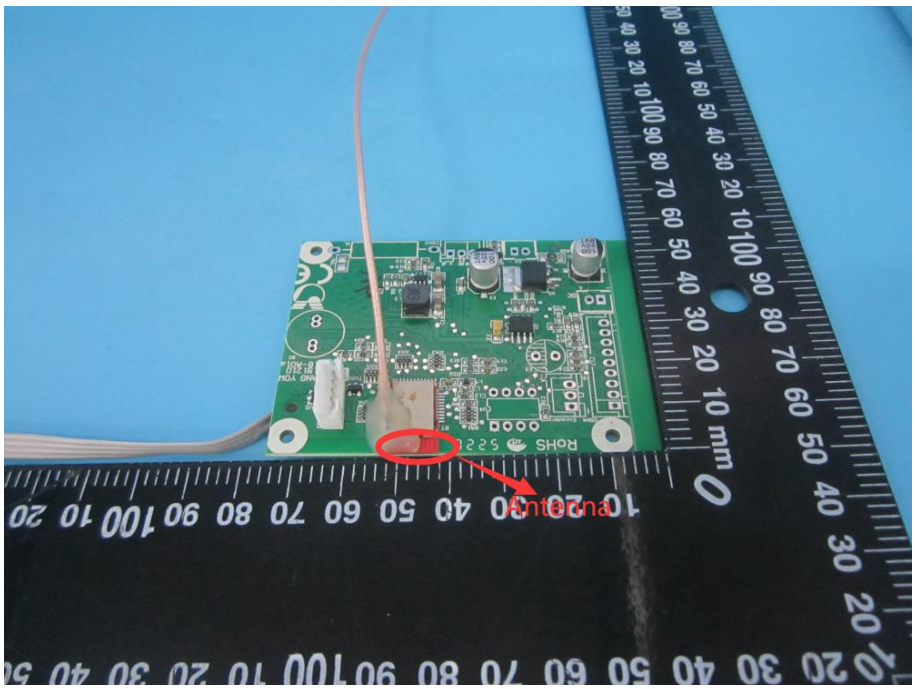
Annex C Photographs

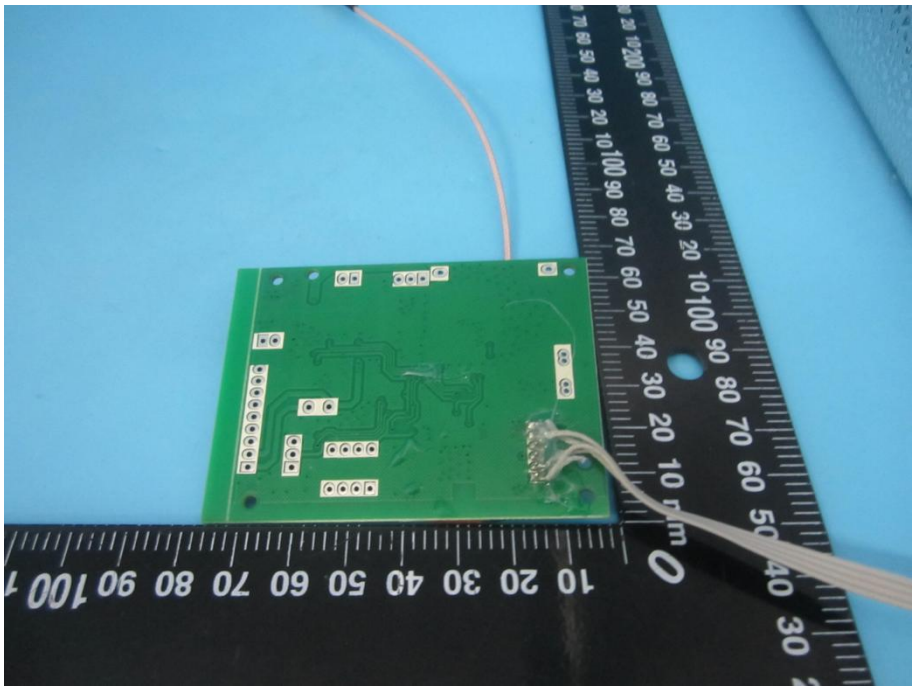
1. Test environment



2. EUT




Antenna



Annex D General Information

1.1 Identification of the Responsible Testing Laboratory

Laboratory Name:	Morlab Laboratory of Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address:	FL1-3, 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:	Morlab Laboratory of Shenzhen Morlab Communications Technology Co., Ltd.
Address:	FL1-3, Building A, FeiYang Science Park, No.8 LongChang Road, Block67, BaoAn District, ShenZhen , GuangDong Province, P. R. China

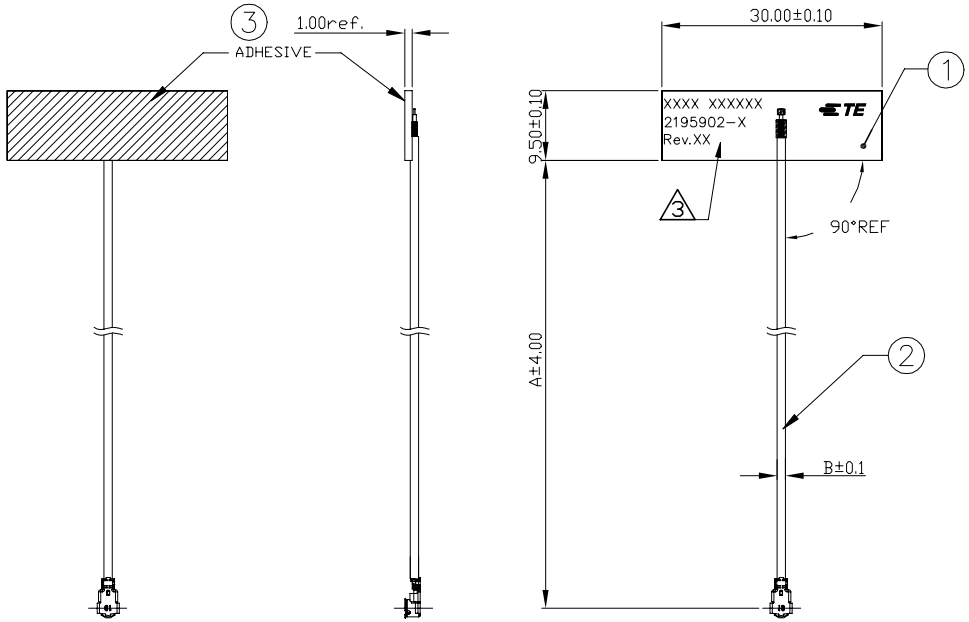
1.3 Test Equipments Utilized

1.3.1 List of Test Equipment

No.	Type	Specification
1	E5071C Vector Network Analyzer	Manufacturer: Agilent
2	4*4*4 Full Anechoic Chamber	Manufacturer: Satimo
3	SG24 Multi-probe Antenna Measurement System	Manufacturer: Satimo

END OF REPORT

REVISIONS					
P	LTR	DESCRIPTION	DATE	DWN	APVD
	1	NEW DRAWING	18MAY2021	DC	AC



1. MATERIALS : REFER TO TABLE.
2. A: ALL MATERIALS, COMPONENTS AND PROCESSES SHALL COMPLY WITH TEC-138-702 (CONTAINS NO BANNED OR RESTRICTED SUBSTANCES)
   B: NO REACH SVHC SHALL BE CONTAINED ABOVE THE THRESHOLD AS DEFINED IN REACH SVHC
   C: LOW HALOGEN: CODE 2(Br<900PPM, Cl<900PPM, Br+Cl<1500PPM PER HOMOGENEOUS MATERIAL) COMPLIANCE DEFINITION IN ANNEX A

3 IDENTIFICATION INCLUDES : FOUR DIGIT DATE CODE(FIRST 2 DIGITS FOR THE WEEK CODE AND THE 2ND TWO DIGITS FOR THE YEAR CODE), MANUFACTURING CONTROL NUMBER, TE PART NUMBER & REVISION NO.

2195902

TE Connectivity plc

Parkmore Business Park West,
Parkmore,
H91VN2T Ballybrit,
Galway, Ireland

Gain: 2dBi

CONNECTOR TYPE	DIMENSION B	DIMENSION A	PART NUMBER
(MHF1 TYPE)	1.13	500	2195902-3
		350	2195902-1
		180	2195902-2

ITEM NO.	NAME	MATERIAL
3	TAPE	ADHESIVE
2	CABLE ASSY	COAXIAL CABLE & CONN
1	PCB ANTENNA	FR-4

THIS DRAWING IS A CONTROLLED DOCUMENT.

DIMENSIONS: mm

TOLERANCES UNLESS OTHERWISE SPECIFIED:
0 PLC ± –
1 PLC ± –
2 PLC ± –
3 PLC ± –
4 PLC ± –
ANGLES ± –

MATERIAL –
FINISH –

DWN DC HSIANG 06MAY2021
CHK AKU HUANG 22OCT2018
APVD AMOS CHEAH 22OCT2018
PRODUCT SPEC –
APPLICATION SPEC –
WEIGHT –

TE Connectivity Ltd.

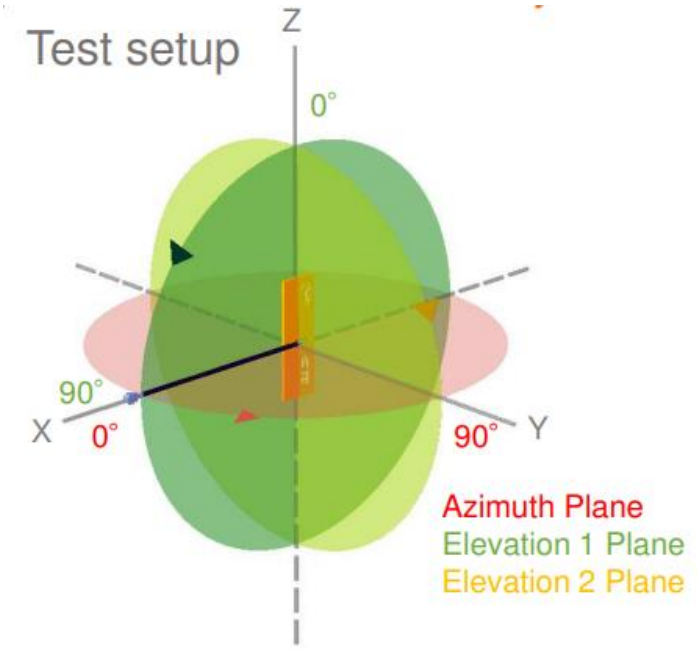
NAME WLAN DUAL BAND ANTENNA PCB V
–
–

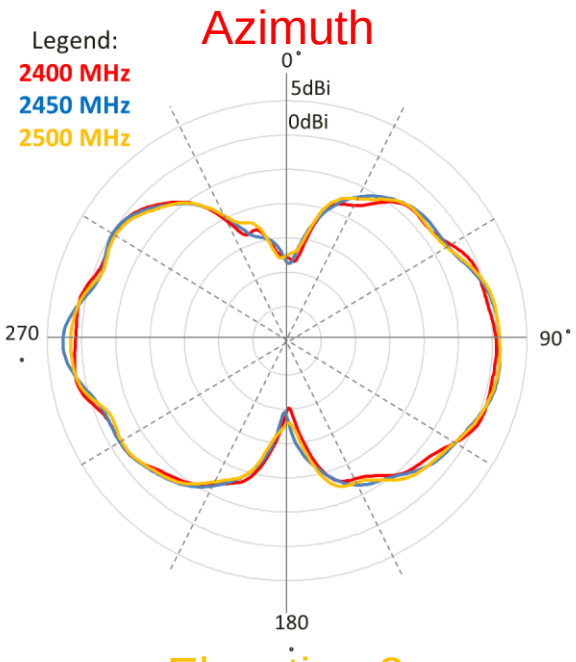
SIZE A2 | CAGE CODE 00779 | DRAWING NO C-2195902 | RESTRICTED TO –

CUSTOMER DRAWING | SCALE 1:1 | SHEET 1 OF 2 | REV 1

1471-9 (1/15)

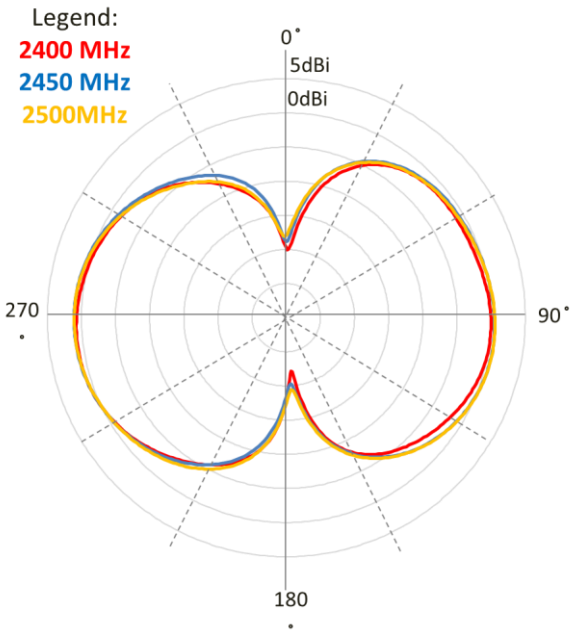
RADIATION PATTERN

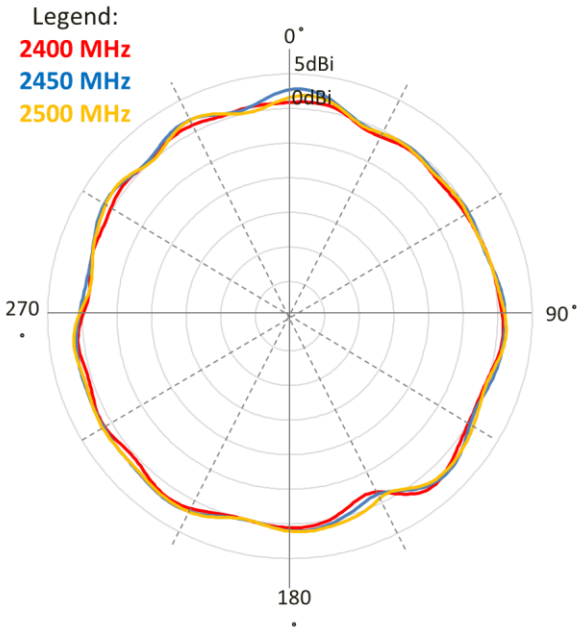




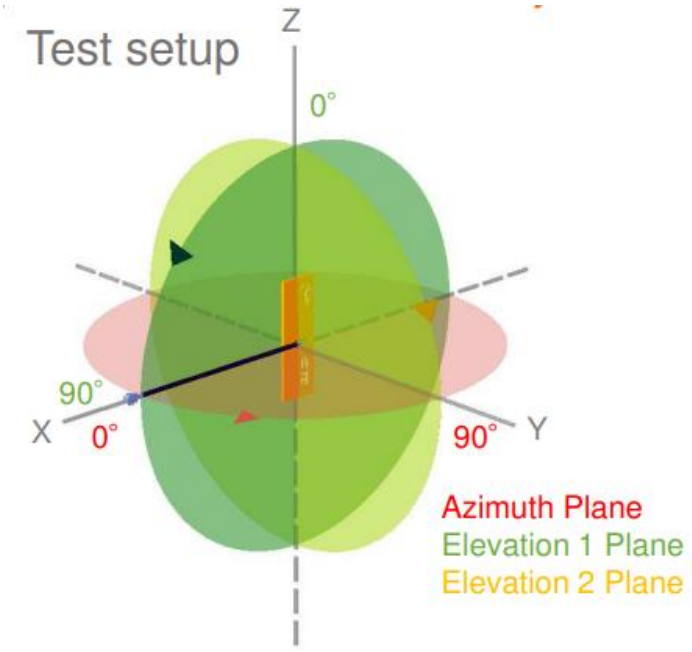
Elevation 1

Elevation 2

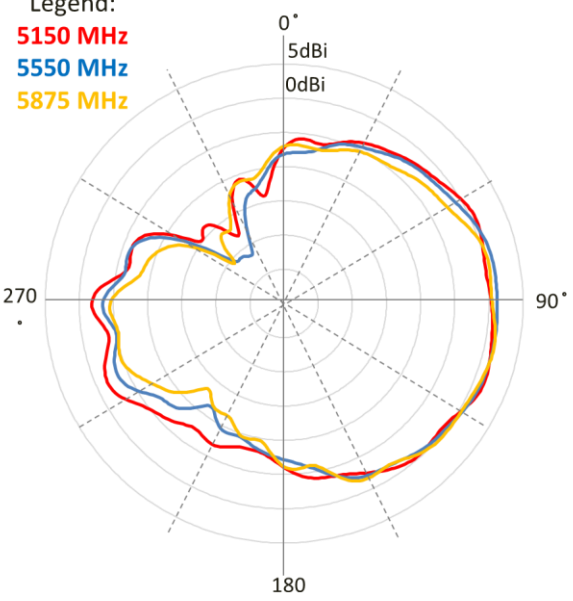




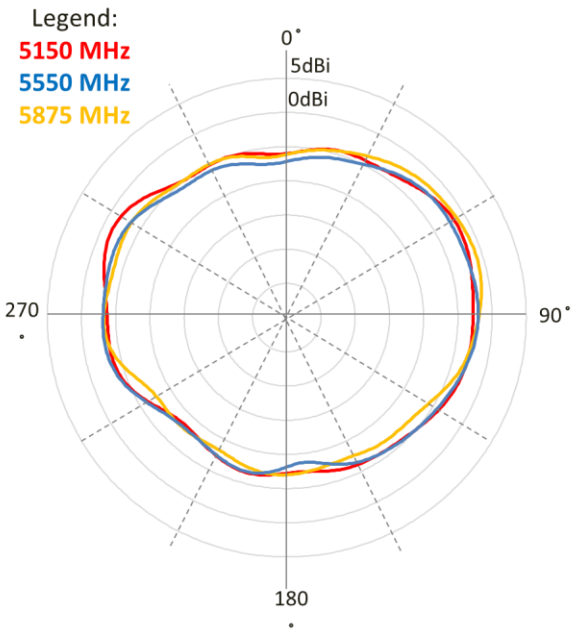
RADIATION PATTERN



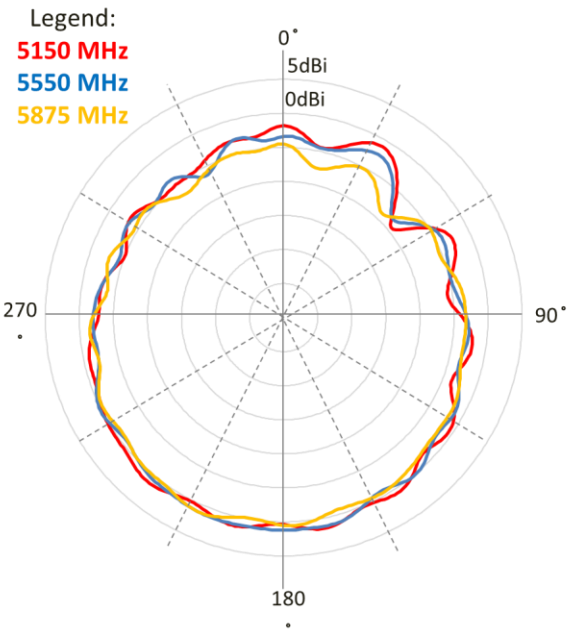
Azimuth



Elevation 1

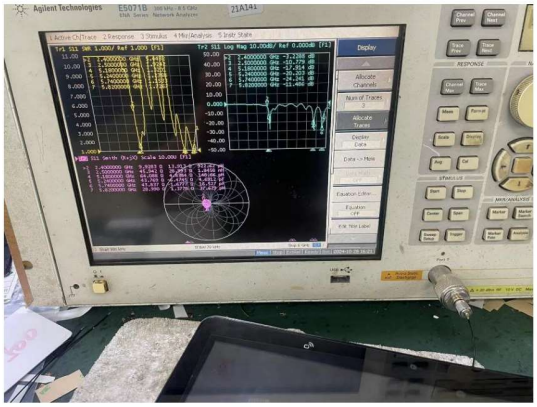


Elevation 2



天线相关数据

WiFi-0天线驻波回损



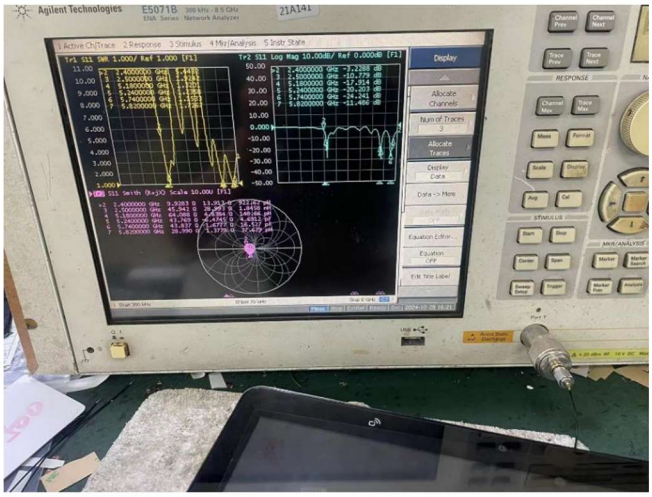
WiFi-0天线效率

Passive Test For WIFI2.4		
Freq (MHz)	Effi (%)	Gain (dBi)
2400	31.75	1.36
2410	29.86	1.22
2420	31.72	1.5
2430	34.63	1.86
2440	39.28	2.33
2450	39.6	2.26
2460	42.24	2.36
2470	42.21	2.22
2480	47.67	2.68
2490	45.47	2.39
2500	41.62	1.95

Passive Test For WIFI5.8		
Freq (MHz)	Effi (%)	Gain (dBi)
5150	32.49	1.35
5200	26.92	0.77
5250	26.62	0.2
5300	27.66	0.02
5350	26.95	0.3
5400	25.52	0.58
5450	27.3	0.82
5500	30.28	0.93
5550	33.28	1.13
5600	28.9	0.41
5650	27.6	0.51
5700	46.32	2.84
5750	34.1	1.41
5800	35.64	1.47
5850	39.83	1.69

天线相关数据

蓝牙天线驻波回损



蓝牙天线效率

Passive Test For WIFI2.4		
Freq (MHz)	Effi (%)	Gain (dBi)
2400	31.75	1.36
2410	29.86	1.22
2420	31.72	1.5
2430	34.63	1.86
2440	39.28	2.33
2450	39.6	2.26
2460	42.24	2.36
2470	42.21	2.22
2480	47.67	2.68
2490	45.47	2.39
2500	41.62	1.95