



WHA YU INDUSTRIAL CO., LTD.(HEAD OFFICE)  
DONGGUAN AEON TECH CO.,LTD.(CHINA)  
SUZHOU AEON TECH CO.,LTD.(CHINA)  
AEON TECH (SHANGHAI) CO.,LTD(CHINA)  
DONGGUAN PARNER TECH CO.,LTD.(CHINA)

## SPECIFICATION FOR APPROVAL

**CUSTOMER:** *ASUS*

**PART NAME:** *RF Antenna Assembly*

**PART NO:**

**REVISION:**

**W. Y. P/NO:** *C660-510456-A*

**REV:** *X1*

	MANUFACTURER SIGNATURE	CUSTOMER SIGNATURE
APPROVED BY :	<i>Dicky</i>	
DATE :	<i>2018.12.18</i>	

### WHA YU GROUP

WHA YU INDUSTRIAL CO., LTD.(HEAD OFFICE)

譚裕實業股份有限公司

Address: No. 326, Sec. 2, Kung Tao 5 Road, Hsin Chu City, Taiwan, R.O.C.

Tel:+886-3-5714225(REP.)

Fax:+ 886-3-5713853 · + 886-3-5723600

DONGGUAN AEON TECH CO.,LTD.(CHINA)

東莞台霖電子通訊有限公司

Address:Hupan Industrial District,Tai Ling Shan Town,Dong Guan City,Guangdong,China

Tel:+86-769-85655858

Fax:+86-769-85655258

SUZHOU AEON TECH CO.,LTD(CHINA)

蘇州華廣電通有限公司

Address:Limin North Road, LiLi Town,LiLi Industrial Park,LinHu Economic Zone

Wujiang City,Jiangsu Province,China

Tel:+86-512-63627980

Fax:+86-512-63627981

AEON TECH (SHANGHAI) CO.,LTD(CHINA)

普翔電子貿易(上海)有限公司

Address:Flat 501,5F,Build 27, NO.68,Guiqing Road, Huhui District, Shanghai,China

Tel:+86-21-64959151

Fax:+86-21-64959059

DONGGUAN PARNER TECH CO.,LTD.(CHINA)

東莞倍能電子有限公司

Address:Hupan Industrial District, Shida Road, Tai Ling Shan Town,

Dong Guan City, Guangdong, China

Tel:+86-769-81662366

Fax:+86-769-81602681

# *Contents*

<i>Item</i>	<i>Description</i>	<i>Page</i>
1. ....	規格表	..... 1
2. ....	成品圖	..... 2
3. ....	測試報告	..... 3~17

# RF Antenna Assembly

## Specification (Free Space)

### 1. Electrical Properties :

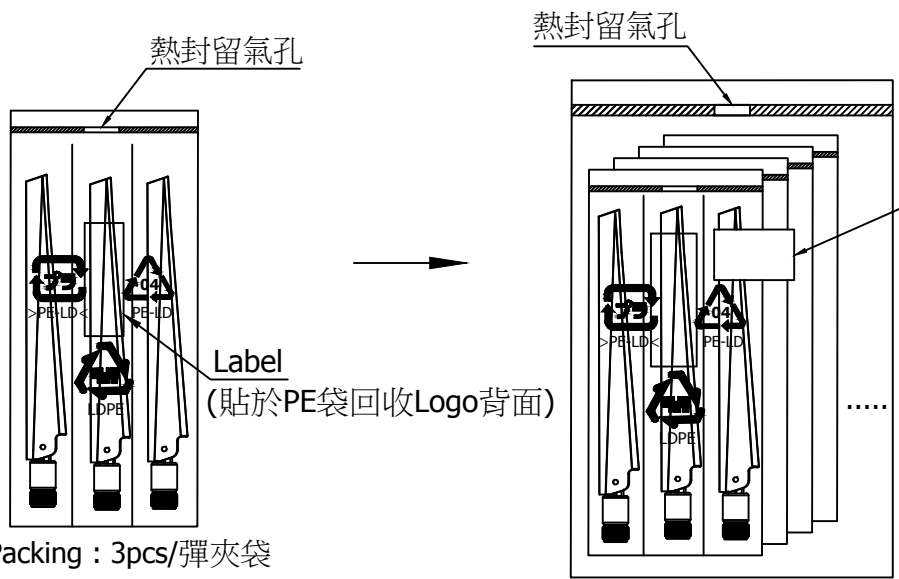
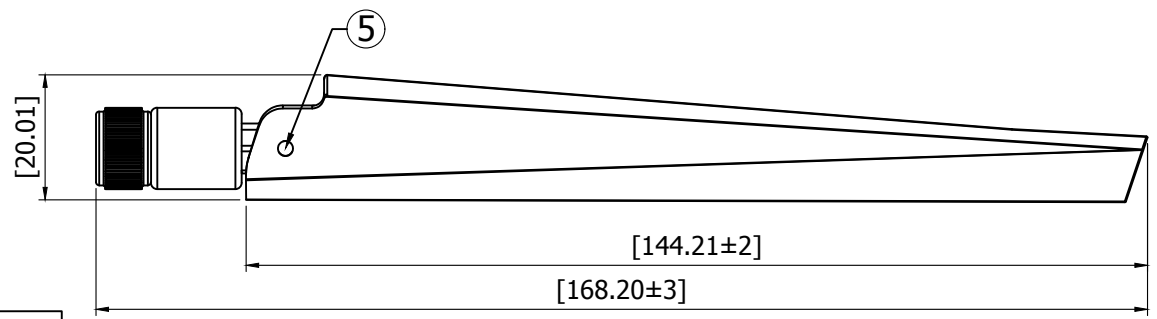
- 1.1 Frequency Range..... 2.412GHz ~ 2.472GHz / 5.180GHz~5.825GHz
- 1.2 Impedance ..... 50Ω Nominal
- 1.3 VSWR ..... (1.92:1Max)
- 1.4 Return Loss..... (-10 dB Max)
- 1.5 Radiation ..... Omni-directional
- 1.6 Gain(2D)..... 2.4GHz (1.25dBi) / 5GHz(1.58dBi)
- 1.7 Polarization..... Linear ; Vertical
- 1.8 Admitted Power..... 1W
- 1.9 Cable..... RG-178
- 1.10 Connector..... SMA

### 2. Physical Properties :

- 2.1 Operating Temp. .... -10°C ~ +60°C
- 2.2 Storage Temp. .... -10°C ~ +70°C

CG-

REV	DATE	DESCRIPTION
X1	12/17-2018	New Issue



Packing : 3pcs/彈夾袋

Packing : 30pcs/bag

5	Rivet	POM ; Black	2	
4	Cable	RG-178 Cable ; Black	1	
3	Connector	SMA Plug Reverse	1	
2	Antenna Base	(CD-13)PC+PBT ; Color : Black	1	
1	Antenna Cap	(CD-1504)ABS ; Color:Black	1	
NO	DESCRIPTION		Q'TY	REMARK

CUSTOMER'S SINGATURE	xx.	± 3.0	APPROVED	CUSTOMER: ASUS	
	X.	± 2.0			
	.X	± 1.0	CHECKED		PART NO :
	.XX	± 0.5	DRAWING		PARTNAME: RF Antenna Cable Assembly
	.XXX	± 0.1			W.Y P/NO : C660-510456-A
			REV	UNIT	FILE : SRF20181489
			X1	m/m	SHEET : 1/1

**M.gear** Wha Yu Group

THIS DRAWING, AND ITS INHERANT DESIGN CONCEPTS, ARE THE PROPERTY OF WHA YU AND AS SUCH MAY NOT BE COPIED, REPRODUCED, OR GIVEN TO THIRD PARTIES WITHOUT THE WRITTEN CONSENT OF WHA YU.

# ***NE3-18086***

## ***Antenna***

### ***Test Report***

*Version: V 1.01*

*Released Date: 2018/12/06*

*Prepared By: Cathy*

*Reviewed By: Sky Lo*



WHA YU INDUSTRIAL CO., LTD.  
TEL : 886-3-5714225 FAX : 886-3-5713853 / 5723600<sup>1</sup>  
Website : [www.whayu.com](http://www.whayu.com)  
E-mail : [market@whayu.com](mailto:market@whayu.com)

# Contents

- Revised History
- Conclusion & Comments
- Specification
- Antenna Placement & Solution
- Test Setup for S-parameter Measurement
- Return Loss Results
- Isolation Results
- Test Setup for Radiation Pattern Measurement
- 2D Radiation Pattern Results
- Results Summary (return loss, isolation, peak gain, efficiency )

# Revision History

Released Date	Version	Record
2018/11/19	1.0	Antenna Testing Report NEW Design
2018/12/03	1.01	Antenna NEW Design
2018/12/06	1.02	Antenna NEW Design

# Revision History

Released Date	Version	Record



# Specification

## Requirements of Antenna Design

RF Function	Number of ANT	Frequency Band	Remark
WiFi	1	2.412G ~2.472GHz / 5.180~5.825GHz	

## Requirements of Measurement

Test Item	Specification	Remark
Return Loss	> 10dB	
Isolation	NA	
Efficiency	2.4G> 80% / 5G>70%	
Radiation pattern	Scale: +10 ~ -40dBi, Angle step size: 5 degree	

# Antenna Placement & Solution



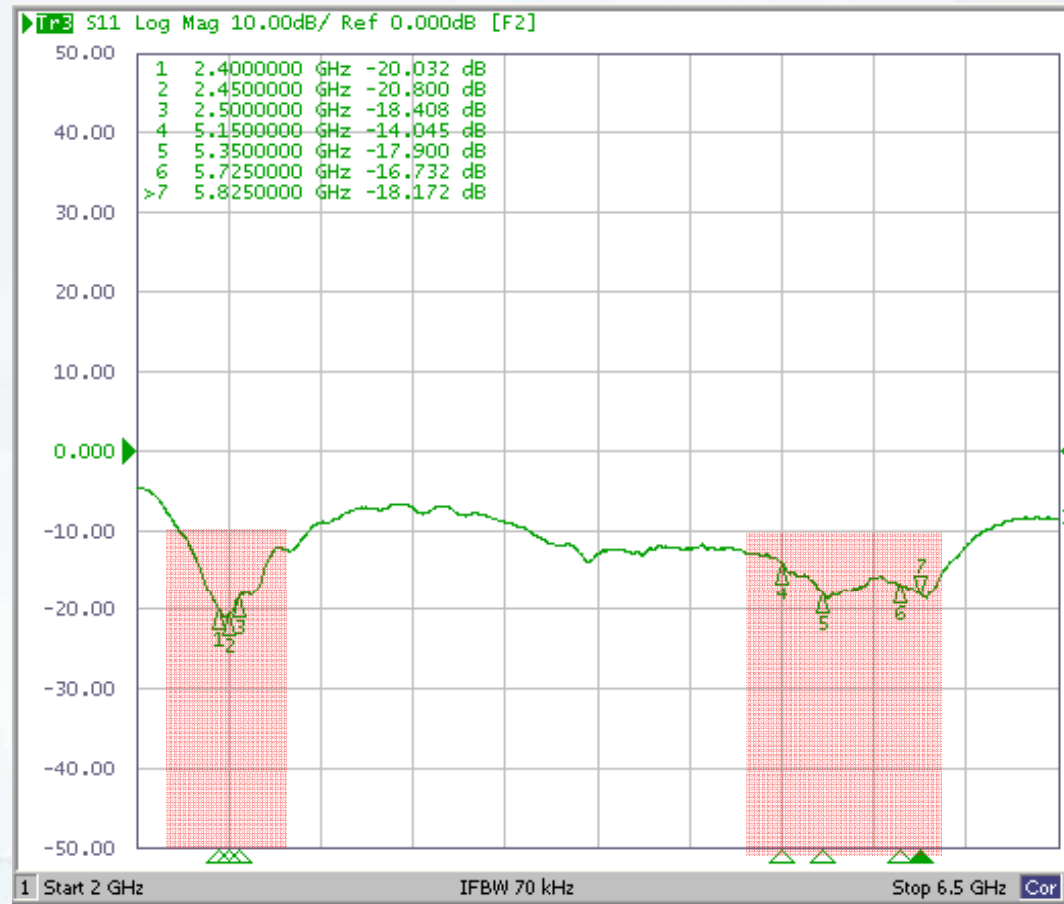
Antenna	ANT Type	Size (L * W * H)	Cable Length (mm)	Cable Type
ANT1	Metal Dipole			RG-178

# Antenna Placement & Solution

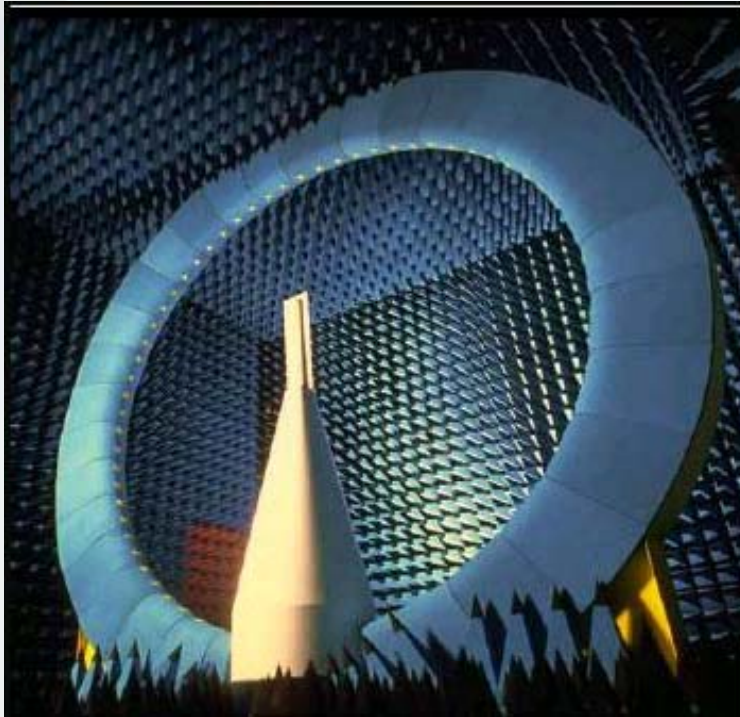
Antenna	Previous Version	Current Version
ANT1	ANT1_v1.00 	

# Return Loss Results

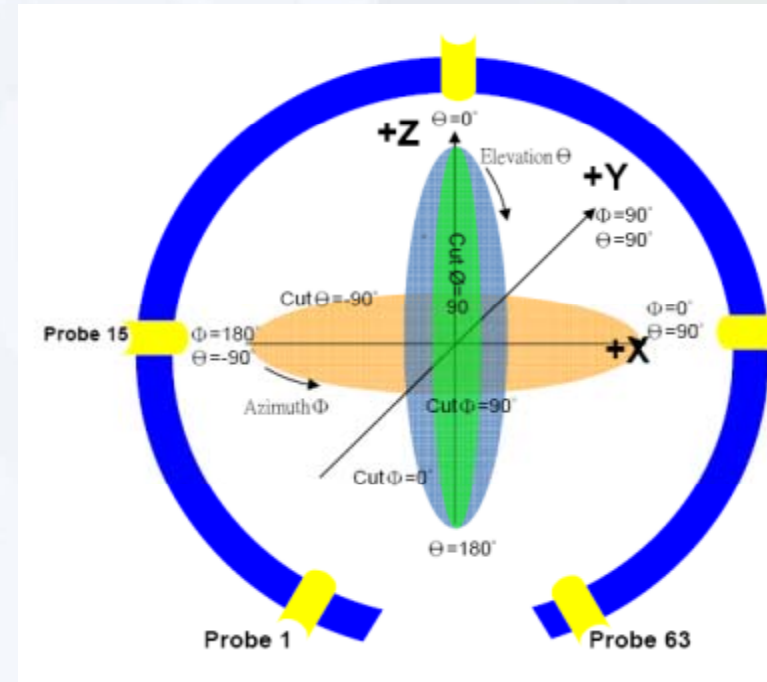
ANT1 (2400MHz~2500MHz / 5150MHz~5825MHz) (Criterion:>10 dB)



# Chamber Information

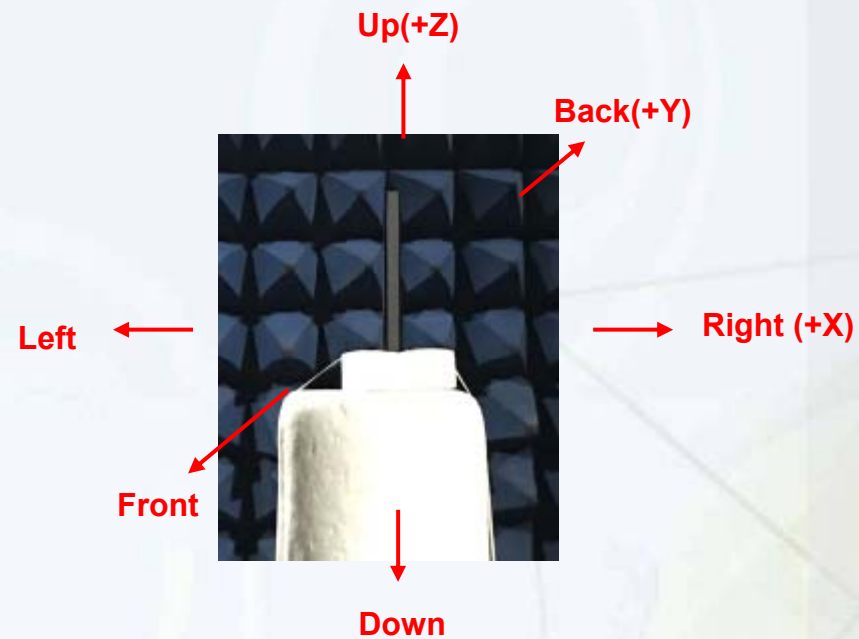


Chamber	Brand	Model	Location
SATIMO	SATIMO	SG-64	Taiwan HsinChu



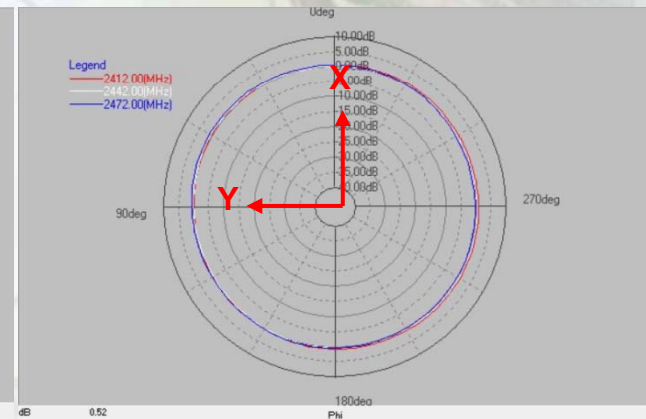
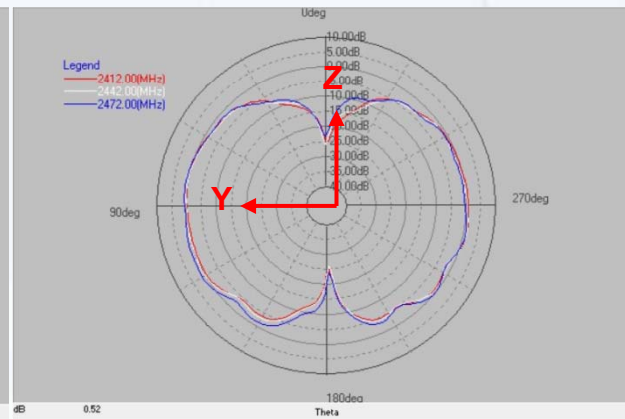
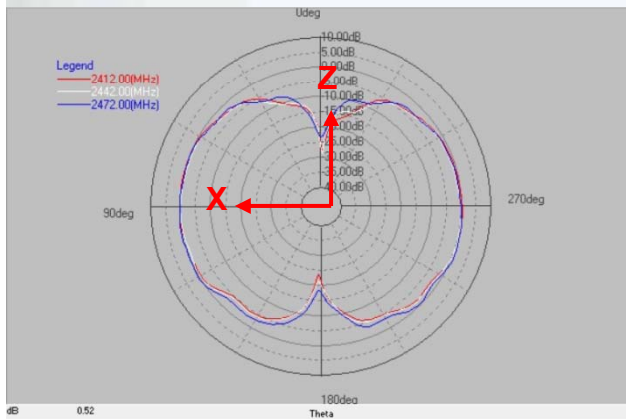
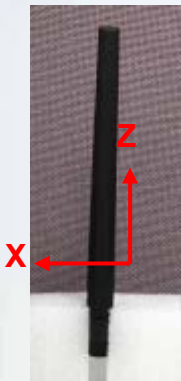
	$\theta$	$\phi$
Total angle	175°	360°
How many angle scan one point	5°	5°
Total scan point	36	73

# Test Setup for Radiation Pattern Measurement



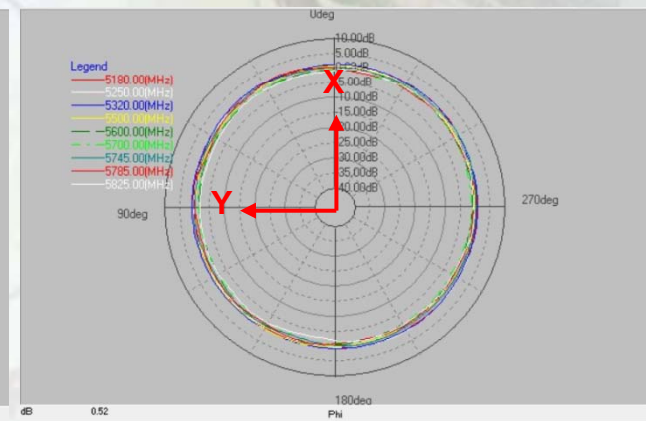
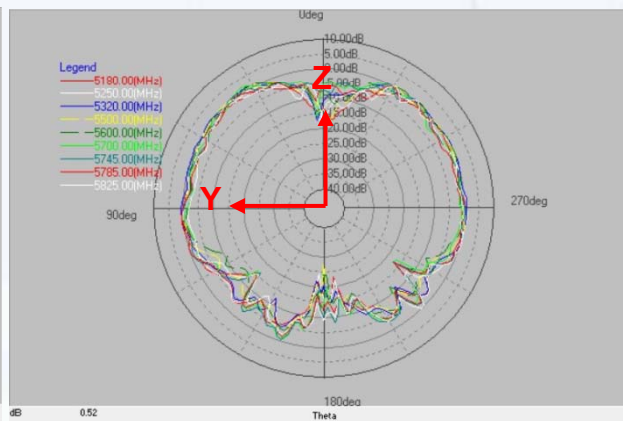
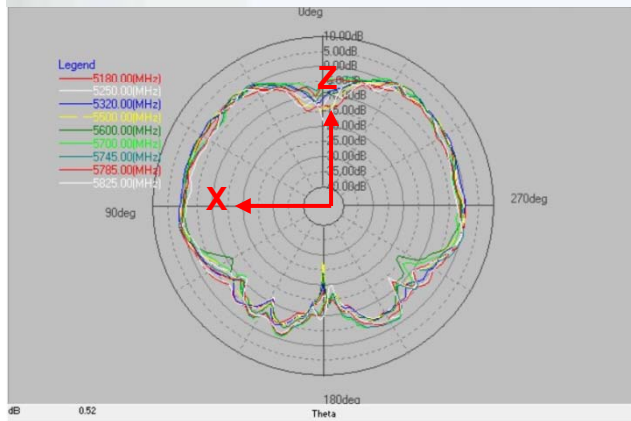
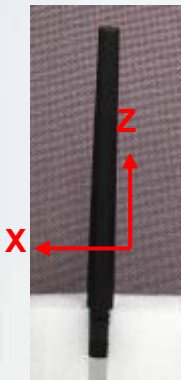
# 2D Radiation Pattern Results

Dipole(2G)\_ANT1



# 2D Radiation Pattern Results

Dipole(5G)\_ANT1





# Results Summary

## Return Loss (Criterion: >10dB)

Frequency (MHz)	ANT1
2400MHz	20
2450MHz	20
2500MHz	18
5150MHz	14
5350MHz	17
5725MHz	16
5825MHz	18

# Results Summary

## 2D gain

Frequency (MHz)	2D Gain Ant1 dB		
	X-Z	Y-Z	X-Y
2412MHz	0.51	1.25	1.07
2442MHz	0.22	1.18	0.72
2472MHz	0.78	1.07	1.04
5180MHz	1.48	0.87	1.10
5250MHz	1.49	1.20	0.92
5320MHz	1.37	1.03	0.99
5500MHz	0.91	0.96	0.53
5600MHz	1.40	1.14	-0.42
5700MHz	0.94	1.58	-0.55
5745MHz	1.51	0.97	0.96
5785MHz	1.02	0.71	0.91
5825MHz	0.37	0.65	-0.11

# Results Summary

## Efficiency

Frequency (MHz)	Ant1
	Efficiency (%)
2412MHz	84
2442MHz	85
2472MHz	84
5180MHz	74
5250MHz	74
5320MHz	75
5500MHz	74
5600MHz	76
5700MHz	76
5745MHz	77
5785MHz	76
5825MHz	75