



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.: *C660-510495-A*

REV.: *X1*

	MANUFACTURER SIGNATURE	CUSTOMER SIGNATURE
APPROVED BY :	<i>Dick</i>	
DATE :	<i>2020 / 7 / 16</i>	

WHA YU GROUP

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

譚裕實業股份有限公司

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DONGGUAN AEON TECH CO.,LTD.(CHINA)

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

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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)

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Dong Guan City, Guangdong, China

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2.	成品圖 2
3.	測試報告 3~13

RF Antenna Assembly

Specification(with cable loss)

1. Electrical Properties :

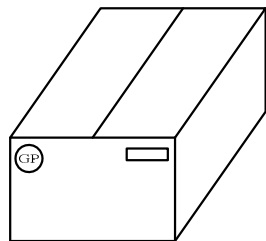
- 1.1 Frequency Range..... 2.412GHz ~ 2.472GHz / 5.18GHz ~ 5.825GHz
- 1.2 Impedance 50Ω Nominal
- 1.3 VSWR (1.92:1Max)
- 1.4 Return Loss..... (10dB Max)
- 1.5 Radiation Omni-directional
- 1.6 Gain(Peak).....
 - 2.412~2.472GHz(1.59 dBi)
 - 5.18~5.25GHz(1.72 dBi)
 - 5.25~5.32GHz(1.82dBi)
 - 5.50~5.7GHz(1.84 dBi)
 - 5.745~5.825GHz(1.66dBi)
- 1.7 Efficiency..... 2.4G(>80%) / 5G(>70%)
- 1.8 Polarization..... Linear ; Vertical
- 1.9 Admitted Power..... 1W
- 1.10 Cable..... 1.37 Cable Black
- 1.11 Connector..... (I-PEX)

2. Physical Properties :

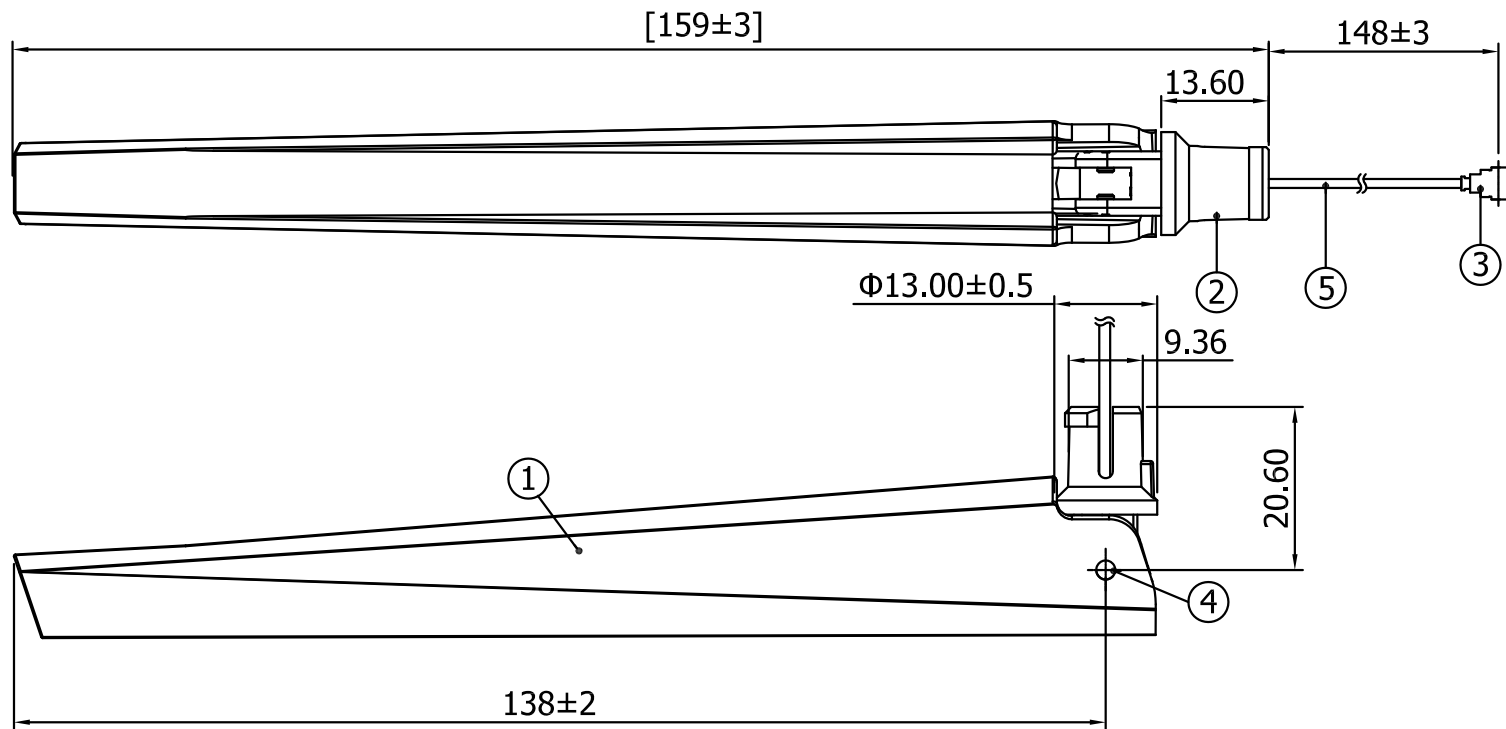
- 2.1 Operating Temp.-10°C ~ +60°C
- 2.2 Storage Temp.-10°C ~ +70°C

CG-XXXX

REV	DATE	DESCRIPTION
X1	2020/02/19	New Issue

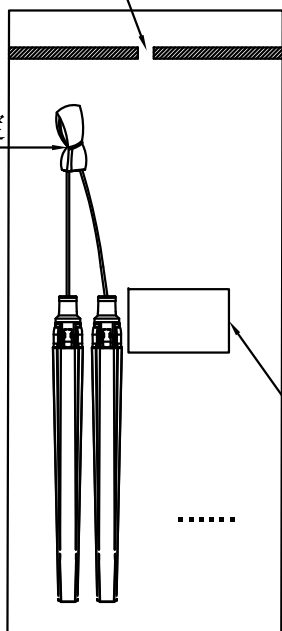


GP標籤貼於紙箱側麥左上角(共2PCS)
外箱標籤貼於紙箱側麥右上角(共1PCS)



熱封留氣孔

用透明膠帶固定



Label

Packing: 10PCS/bag

5	Cable	Φ1.37mm Cable; 黑色(Black)	1	
4	Rivet	POM ; 黑色(Black)	2	
3	Connector	MHF Plug	1	
2	Antenna Base	(CD-1636)PC/PBT ; Color: 黑色(Black)	1	
1	Antenna Cap	(CD-1504)ABS ; Color: 黑色(Black)	1	
NO	DESCRIPTION		Q'TY	REMARK

CUSTOMER'S SINGATURE

XX.	± 3.0	APPROVED
X.	± 2.0	
.X	± 1.0	CHECKED
.XX	± 0.5	
.XXX	± 0.1	DRAWING

CUSTOMER: ASUS

PART NO :

PARTNAME: RF Antenna Assembly

W.Y P/NO : C660-510495-A

REV UNIT FILE :SRF2020067

X1 m/m SHEET : 1/1

M.gear Wha Yu Group

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***C660-510495-A
NE3-19151
Antenna
Test Report***

Version: V 1.00

Released Date: 2019/11/26

Prepared By: Cathy

Reviewed By: Damon



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Website : www.whayu.com
E-mail : 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
2019/11/26	1.00	Antenna Testing Report NEW Design



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Specification

Requirements of Antenna Design

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

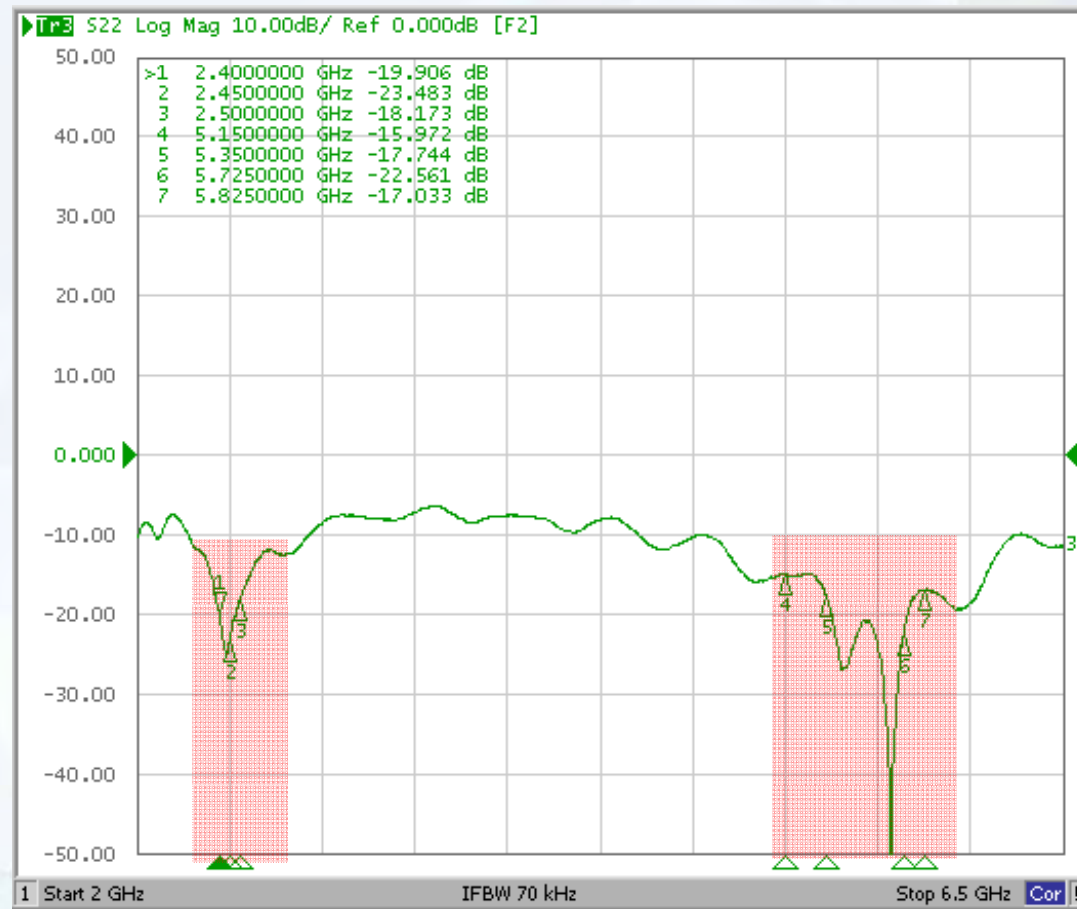


ANT-1

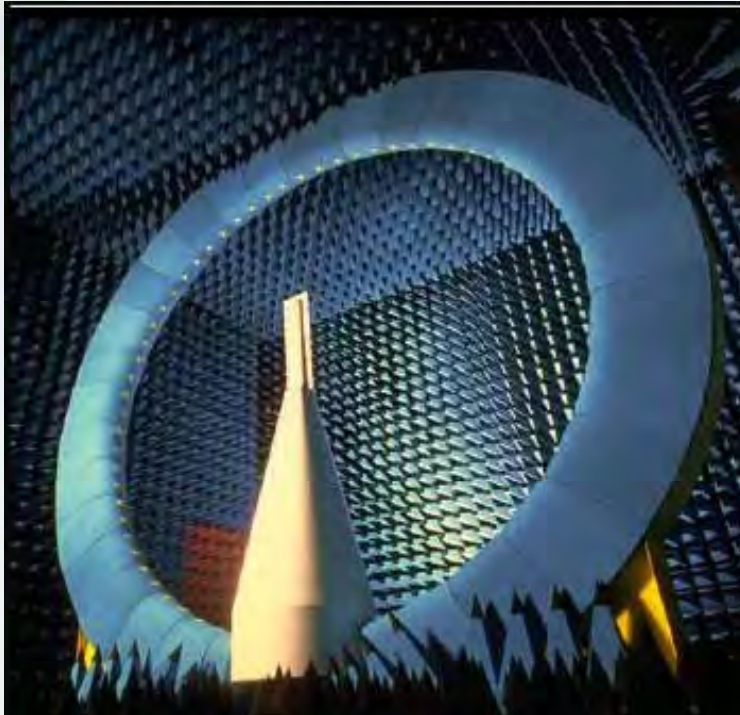
Antenna	ANT Type	Size (L * W * H)	Cable Length (mm)	Cable Type
ANT1(Dual Band)	Metal Dipole	159*15*21	Exp148(Black)	Ø1.37

Return Loss Results

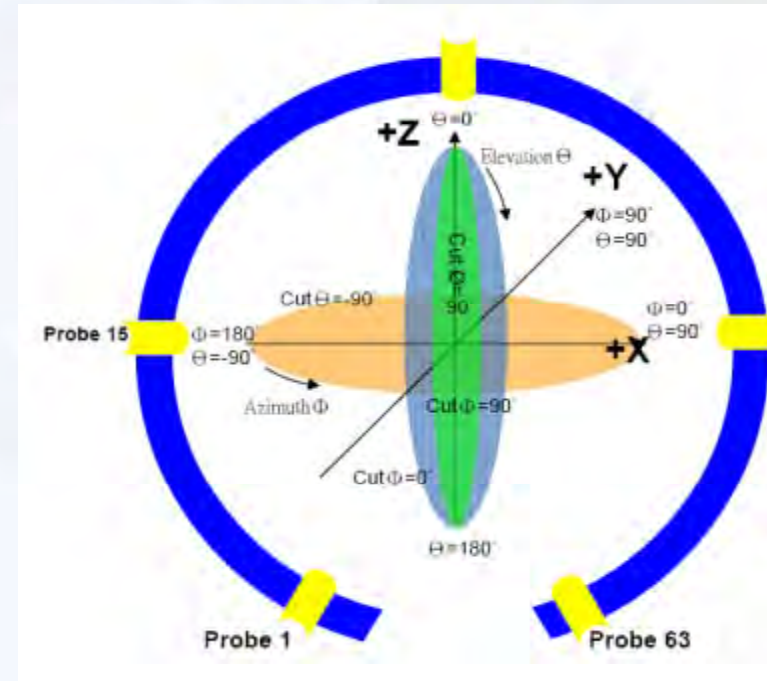
ANT1 (2400MHz~2500MHz/5150MHz~5825MHz) (Criterion:>10 dB)



Chamber Information

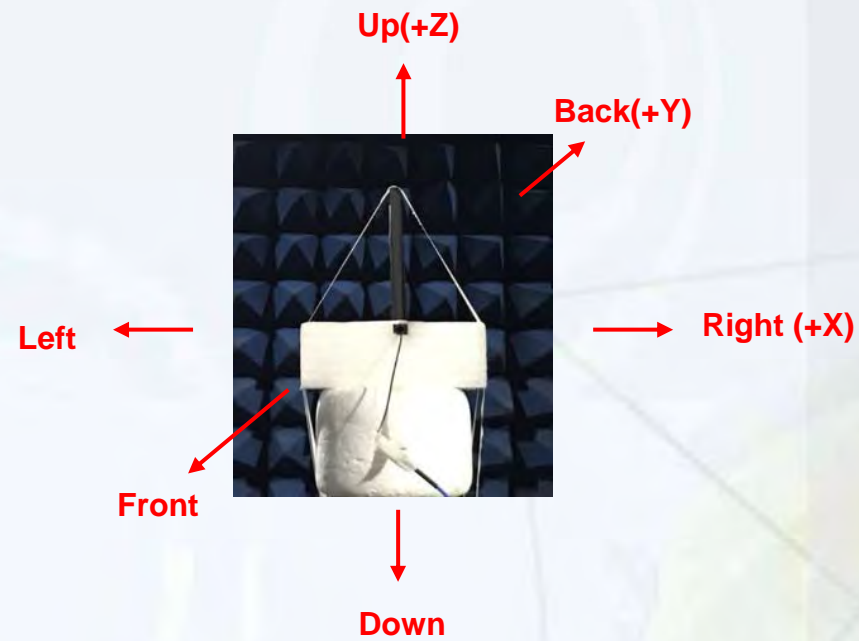


Chamber	Brand	Model	Location
SATIMO	SATIMO	SG-64	Taiwan Hsin Chu



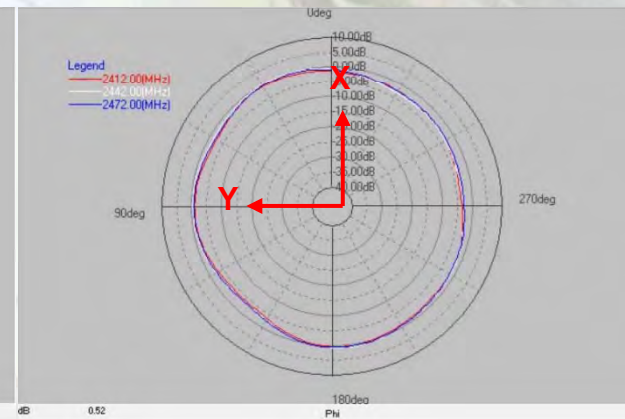
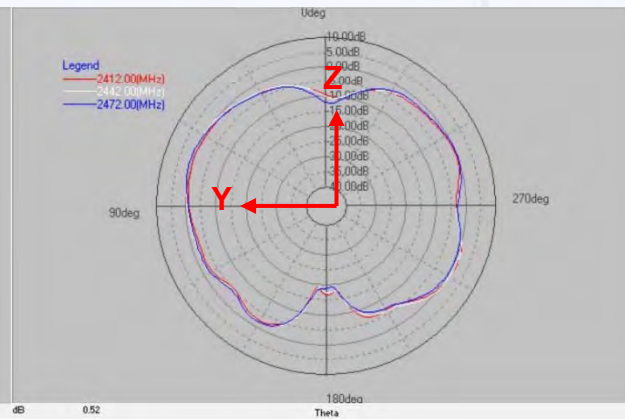
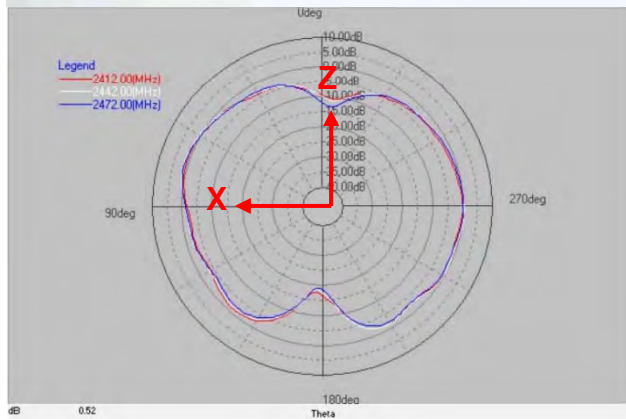
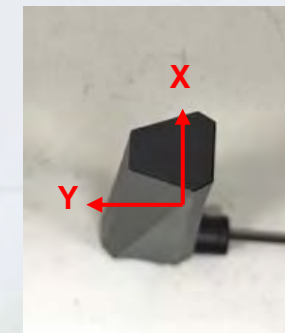
	θ	ϕ
Total angle	175°	360°
How many angle scan one point	5°	5°
Total scan point	36	73

Test Setup for Radiation Pattern Measurement



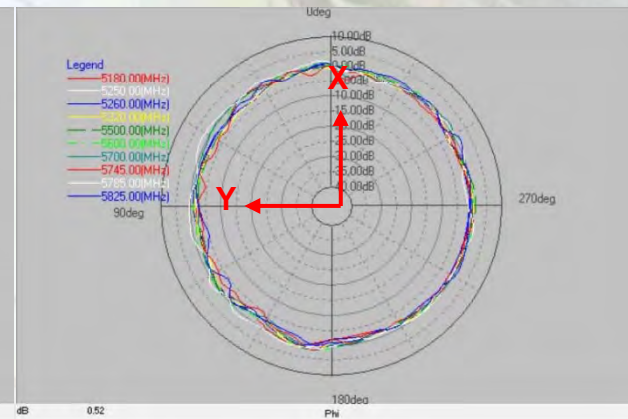
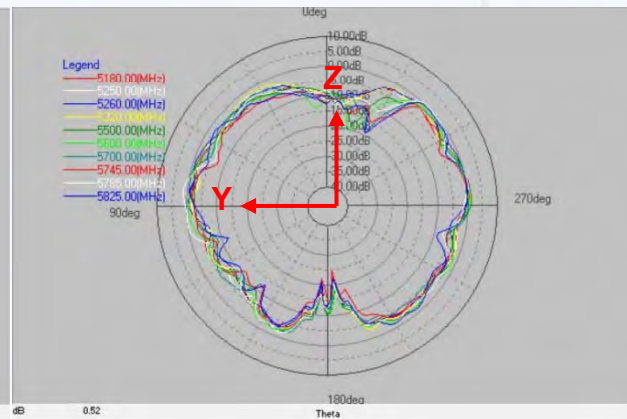
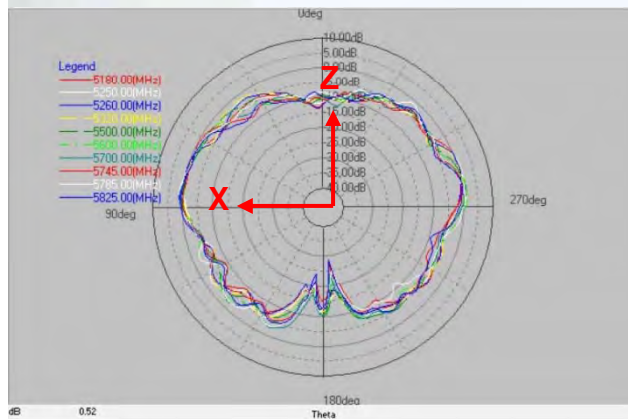
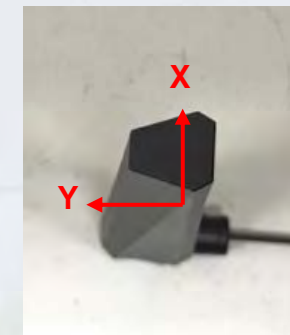
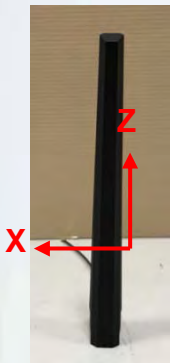
2D Radiation Pattern Results

Dipole(Dual Band)_ANT1 (2.4G)



2D Radiation Pattern Results

Dipole(Dual Band)_ANT1 (5G)



Results Summary

Return Loss (Criterion: >10dB)

Frequency (MHz)	ANT1
2400	19
2450	23
2500	18
5150	15
5350	17
5725	22
5825	17

Results Summary

Gain & Efficiency

Frequency (MHz)	Ant1	
	Gain(dB)	Efficiency (%)
2412	1.48	84
2442	1.59	85
2472	1.55	85
5180	1.72	73
5250	1.69	73
5260	1.82	74
5320	1.81	72
5500	1.84	73
5600	1.82	75
5700	1.84	74
5745	1.65	73
5785	1.66	72
5825	1.64	73





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 DONGGUAN PARNER TECH CO.,LTD.(CHINA)



SPECIFICATION FOR APPROVAL

CUSTOMER: ASUS


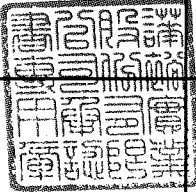
PART NAME: RF Antenna Assembly

PART NO.:

REVISION:

W. Y. P/NO.: C660-510496-A

REV.: X1

	MANUFACTURER SIGNATURE	CUSTOMER SIGNATURE
APPROVED BY :		
DATE :	2020/2/16 	

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3.	測試報告 3~13

Antenna Assembly

Specification(with cable loss)

1. Electrical Properties :

- 1.1 Frequency Range..... 5.18GHz ~ 5.825GH
- 1.2 Impedance 50Ω Nominal
- 1.3 VSWR (1.92:1Max)
- 1.4 Return Loss..... (10dB Max)
- 1.5 Radiation Omni-directional

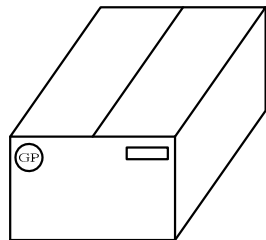
- 1.6 Gain(Peak).....
 - 5.18~5.25GHz(1.74 dBi)
 - 5.25~5.32GHz(1.79 dBi)
 - 5.50~5.7GHz(1.86 dBi)
 - 5.745~5.825GHz(1.86 dBi)
- 1.7 Efficiency..... 5G(>70%)
- 1.8 Polarization..... Linear ; Vertical
- 1.9 Admitted Power..... 1W
- 1.10 Cable..... 1.37 Cable White
- 1.11 Connector..... (I-PEX)

2. Physical Properties :

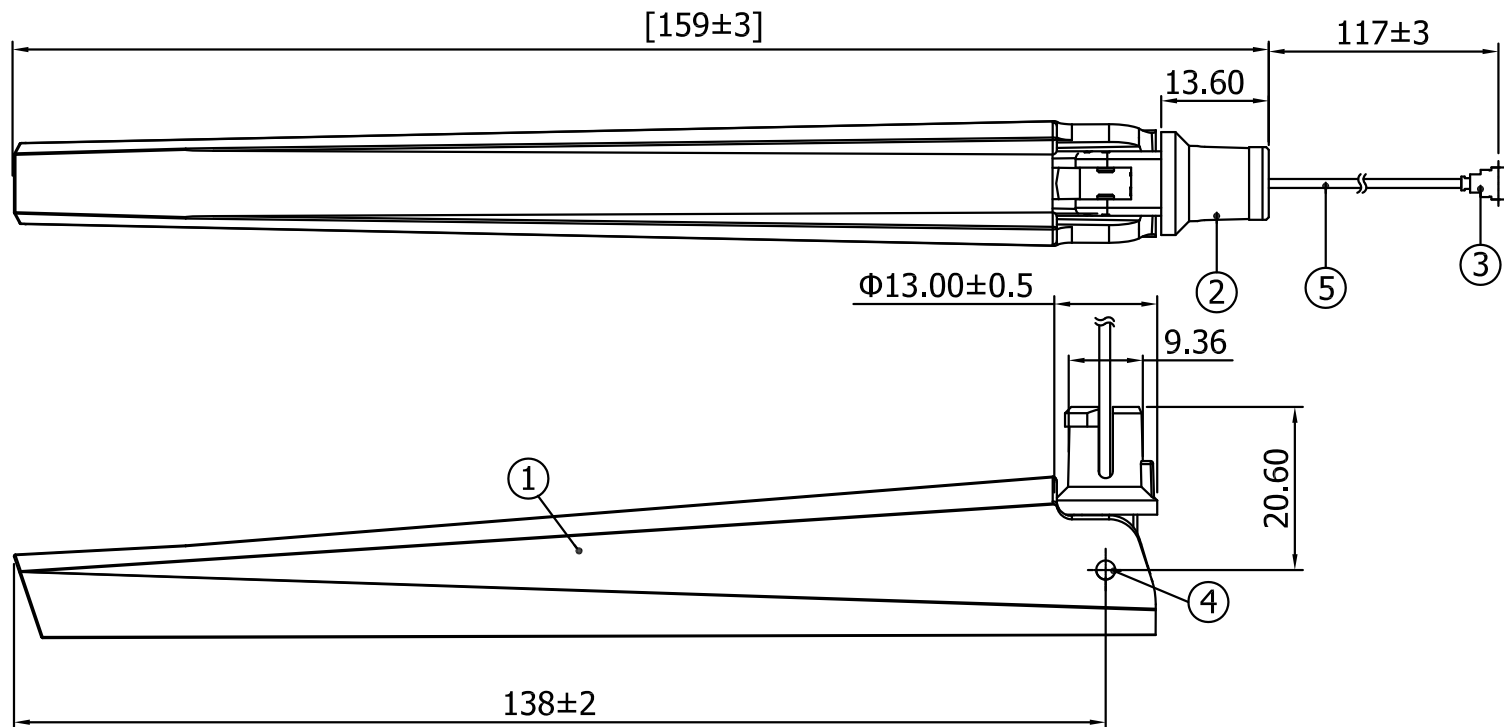
- 2.1 Operating Temp.-10°C ~ +60°C
- 2.2 Storage Temp.-10°C ~ +70°C

CG-XXXX

REV	DATE	DESCRIPTION
X1	2020/02/19	New Issue

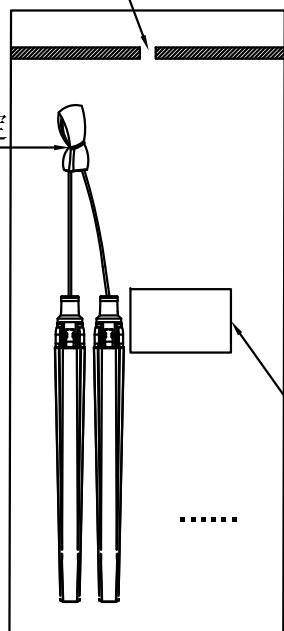


GP標籤貼於紙箱側麥左上角(共2PCS)
外箱標籤貼於紙箱側麥右上角(共1PCS)



熱封留氣孔

用透明膠帶固定



Label

Packing: 10PCS/bag

5	Cable	Φ1.37mm Cable; 白色(White)	1	
4	Rivet	POM ; 黑色(Black)	2	
3	Connector	MHF Plug	1	
2	Antenna Base	(CD-1636)PC/PBT ; Color: 黑色(Black)	1	
1	Antenna Cap	(CD-1504)ABS ; Color: 黑色(Black)	1	
NO	DESCRIPTION		Q'TY	REMARK

XX.	± 3.0	APPROVED
X.	± 2.0	
.X	± 1.0	CHECKED
.XX	± 0.5	
.XXX	± 0.1	DRAWING
⊕		

CUSTOMER:		ASUS	
PART NO :			
PARTNAME:		RF Antenna Assembly	
W.Y P/NO :		C660-510496-A	
REV	UNIT	FILE	:SRF2020068
X1	m/m	SHEET :	1/1

CUSTOMER'S SINGATURE

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C660-510496-A
NE3-19151
Antenna
Test Report

Version: V 1.00

Released Date: 2019/11/26

Prepared By: Cathy

Reviewed By: Damon



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Contents

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- Results Summary (return loss, isolation, peak gain, efficiency)

Revision History

Released Date	Version	Record
2019/11/26	1.00	Antenna Testing Report NEW Design



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Specification

Requirements of Antenna Design

RF Function	Number of ANT	Frequency Band	Remark
WiFi	2	5.180GHz~5.825GHz	

Requirements of Measurement

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

Antenna Placement & Solution

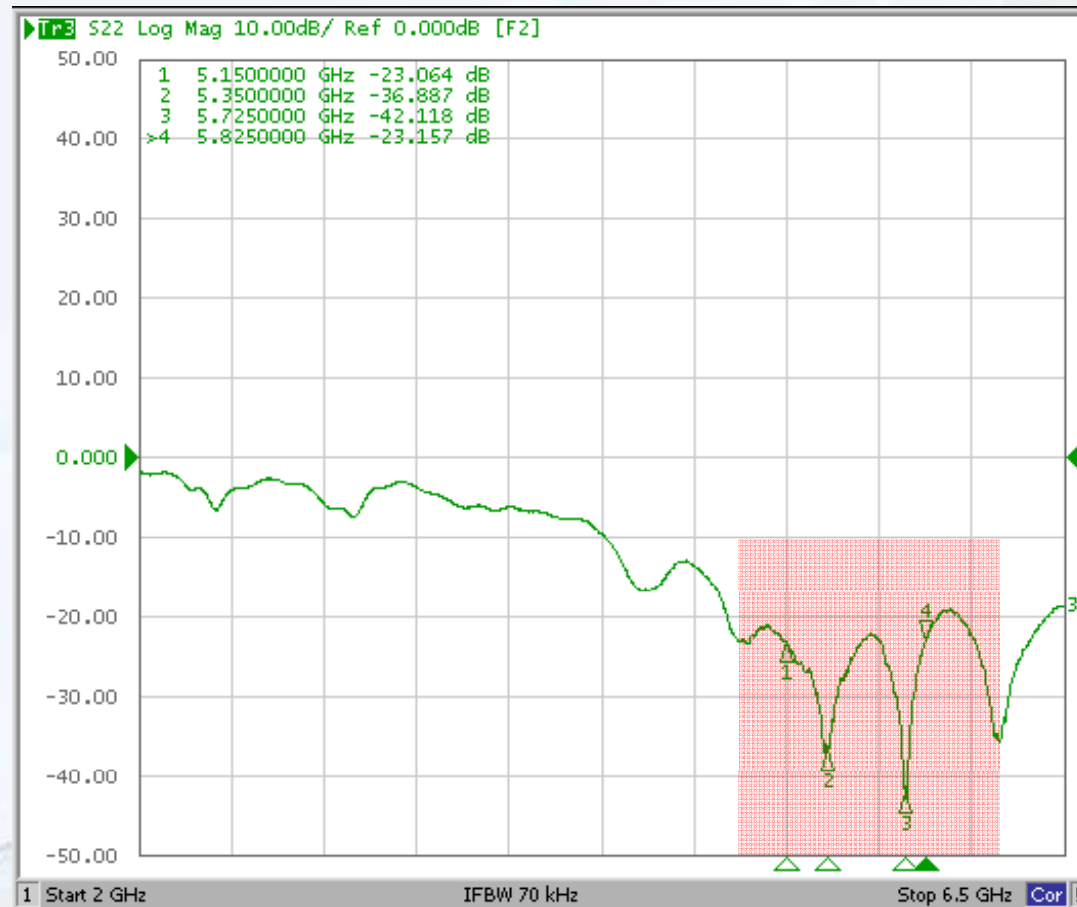


ANT-2

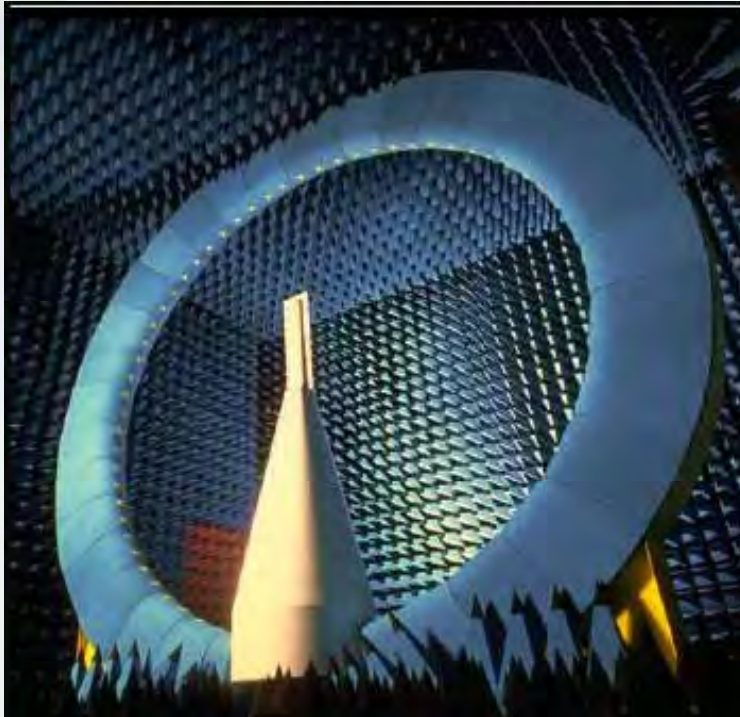
Antenna	ANT Type	Size (L * W * H)	Cable Length (mm)	Cable Type
ANT2(5G)	Metal Dipole	159*15*21	Exp117(White)	Ø1.37

Return Loss Results

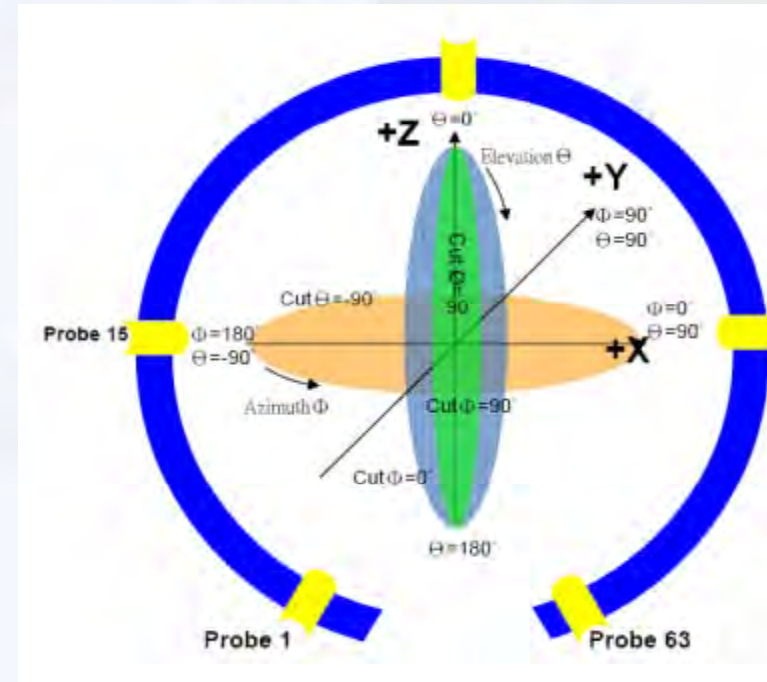
ANT2 (5150MH~5825MHz) (Criterion:>10 dB)



Chamber Information

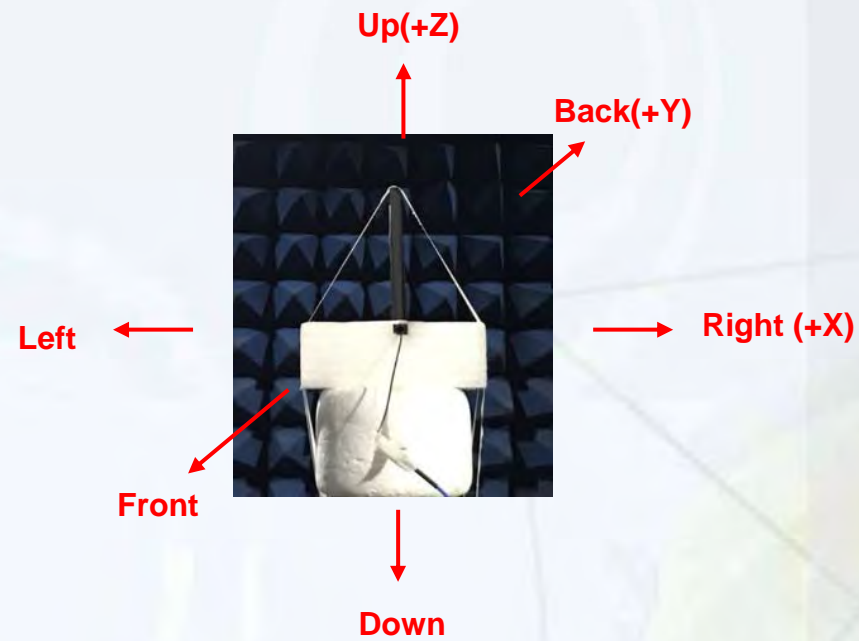


Chamber	Brand	Model	Location
SATIMO	SATIMO	SG-64	Taiwan HsinChu



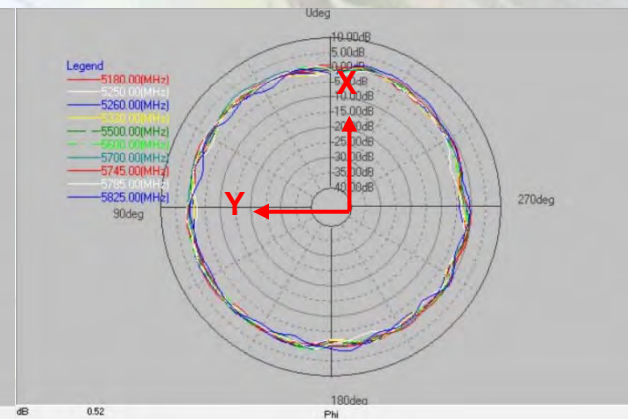
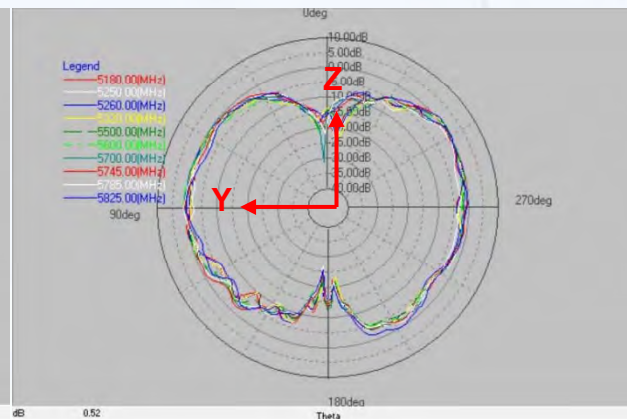
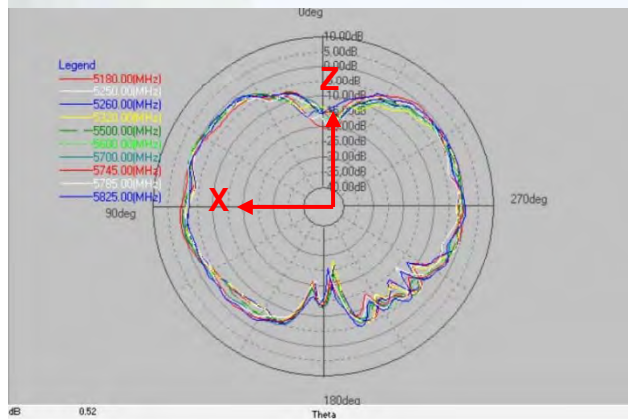
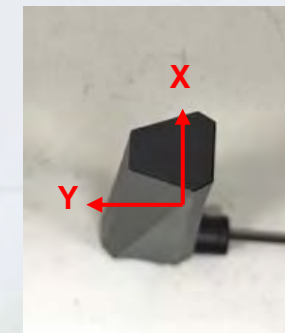
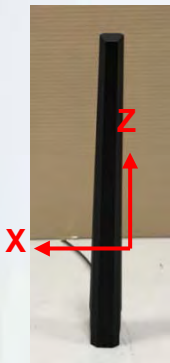
	θ	ϕ
Total angle	175°	360°
How many angle scan one point	5°	5°
Total scan point	36	73

Test Setup for Radiation Pattern Measurement



2D Radiation Pattern Results

Dipole(5G)_ANT2



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 Website : www.whayu.com
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Results Summary

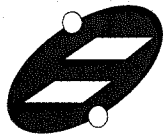
Return Loss (Criterion: >10dB)

Frequency (MHz)	ANT2
5150	23
5350	36
5725	42
5825	23

Results Summary

Gain & Efficiency

Frequency (MHz)	Ant2	
	Gain(dB)	Efficiency (%)
5180	1.7	73
5250	1.74	74
5260	1.79	75
5320	1.77	74
5500	1.83	73
5600	1.85	74
5700	1.86	72
5745	1.76	75
5785	1.79	73
5825	1.86	75



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 DONGGUAN PARNER TECH CO.,LTD.(CHINA)



SPECIFICATION FOR APPROVAL

CUSTOMER: ASUS


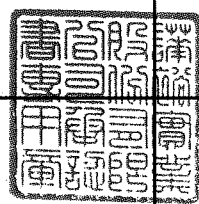
PART NAME: RF Antenna Assembly

PART NO.:

REVISION:

W. Y. P/NO.: C660-510497-A

REV.: X1

	MANUFACTURER SIGNATURE	CUSTOMER SIGNATURE
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DATE :	2020/2/16	

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Contents

<i>Item</i>	<i>Description</i>	<i>Page</i>
1.	天線規格表 1
2.	成品圖 2
3.	測試報告 3~13

RF Antenna Assembly

Specification(with cable loss)

1. Electrical Properties :

- 1.1 Frequency Range..... 5.18GHz ~ 5.825GH
- 1.2 Impedance50Ω Nominal
- 1.3 VSWR (1.92:1Max)
- 1.4 Return Loss..... (10dB Max)
- 1.5 Radiation Omni-directional

- 1.6 Gain(Peak).....
 - 5.18~5.25GHz(1.61 dBi)
 - 5.25~5.32GHz(1.69 dBi)
 - 5.50~5.7GHz(1.68 dBi)
 - 5.745~5.825GHz(1.82 dBi)

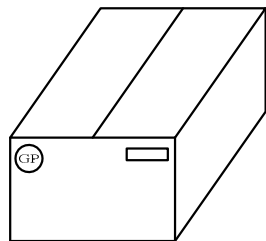
- 1.7 Efficiency..... 5G(>70%)
- 1.8 Polarization..... Linear ; Vertical
- 1.9 Admitted Power..... 1W
- 1.10 Cable.....1.37 Cable Blue
- 1.11 Connector..... (I-PEX)

2. Physical Properties :

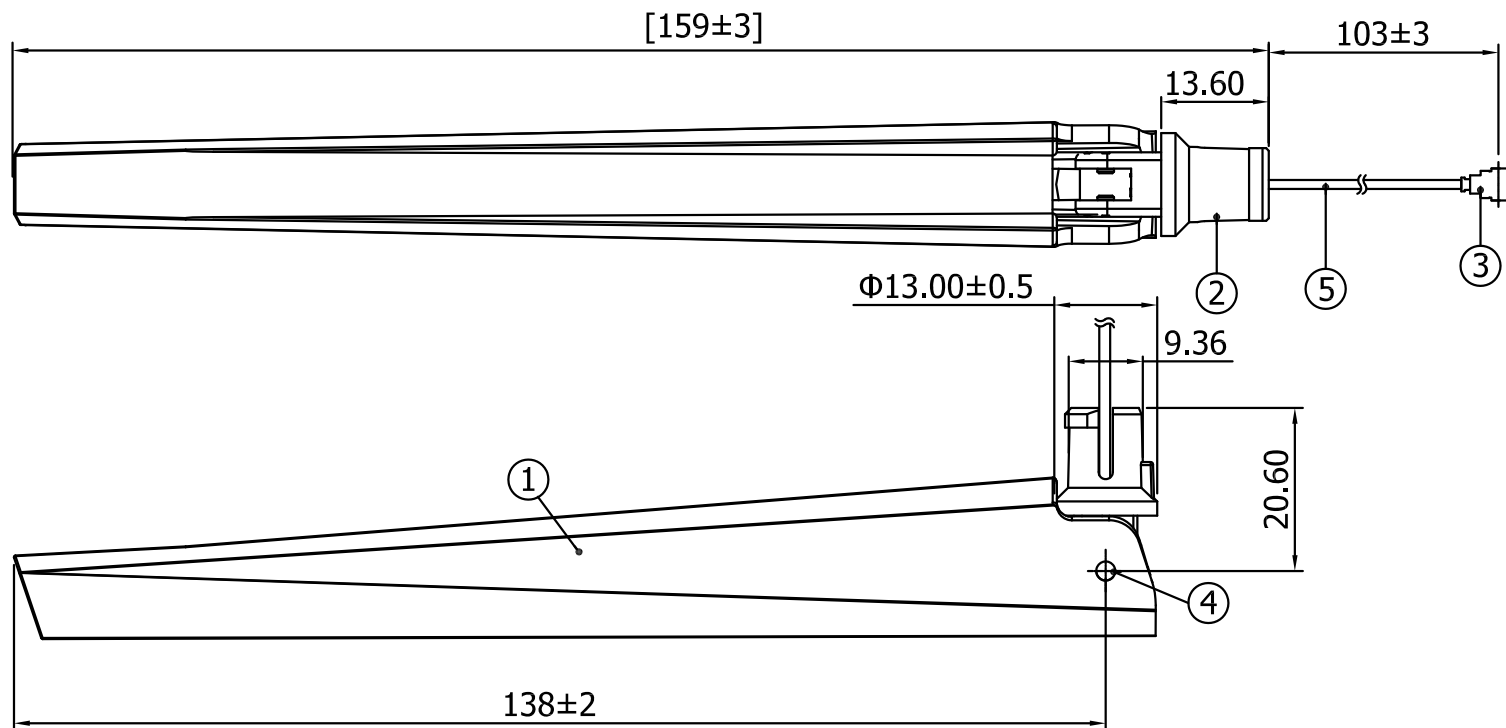
- 2.1 Operating Temp. -10°C ~ +60°C
- 2.2 Storage Temp. -10°C ~ +70°C

CG-XXXX

REV	DATE	DESCRIPTION
X1	2020/02/19	New Issue

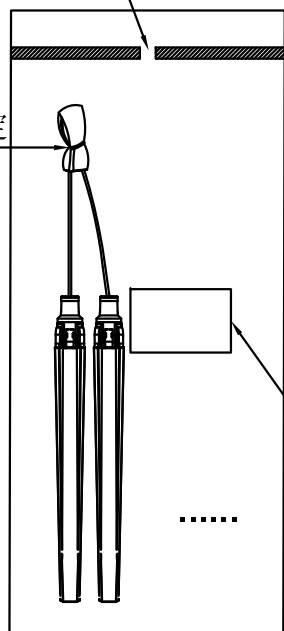


GP標籤貼於紙箱側麥左上角(共2PCS)
外箱標籤貼於紙箱側麥右上角(共1PCS)



熱封留氣孔

用透明膠帶固定



Packing: 10PCS/bag

Label

5	Cable	Φ1.37mm Cable;藍色(Blue)	1	
4	Rivet	POM ;黑色(Black)	2	
3	Connector	MHF Plug	1	
2	Antenna Base	(CD-1636)PC/PBT ;Color:黑色(Black)	1	
1	Antenna Cap	(CD-1504)ABS ;Color:黑色(Black)	1	
NO	DESCRIPTION		Q'TY	REMARK

CUSTOMER'S SINGATURE

XX.	± 3.0	APPROVED
X.	± 2.0	
.X	± 1.0	CHECKED
.XX	± 0.5	
.XXX	± 0.1	DRAWING

CUSTOMER: ASUS

PART NO :

PARTNAME: RF Antenna Assembly

W.Y P/NO : C660-510497-A

REV UNIT FILE :SRF2020069

X1 m/m SHEET : 1/1

M.gear Wha Yu Group

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C660-510497-A
NE3-19151
Antenna
Test Report

Version: V 1.00

Released Date: 2019/11/26

Prepared By: Cathy

Reviewed By: Damon



WHA YU INDUSTRIAL CO., LTD.
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Website : www.whayu.com
E-mail : 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
2019/11/26	1.00	Antenna Testing Report NEW Design



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Specification

Requirements of Antenna Design

RF Function	Number of ANT	Frequency Band	Remark
WiFi	3	5.180GHz~5.825GHz	

Requirements of Measurement

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

Antenna Placement & Solution

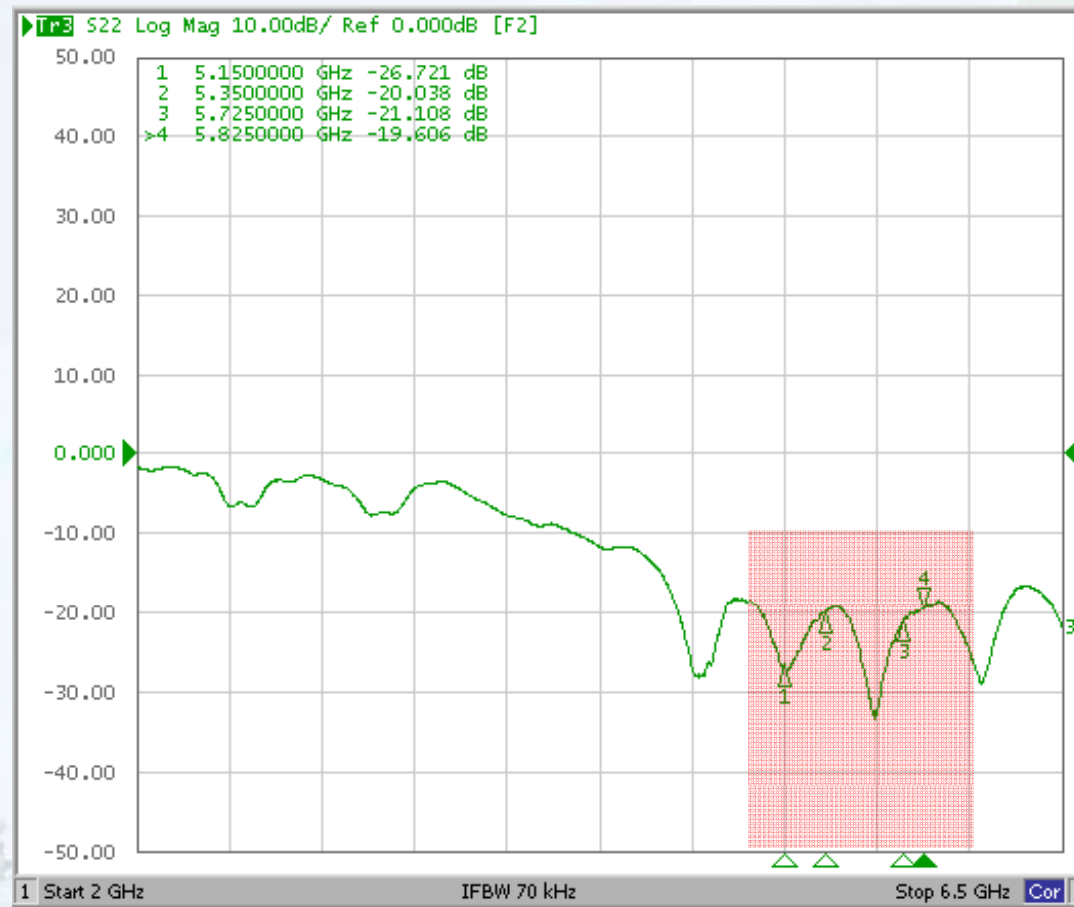


ANT-3

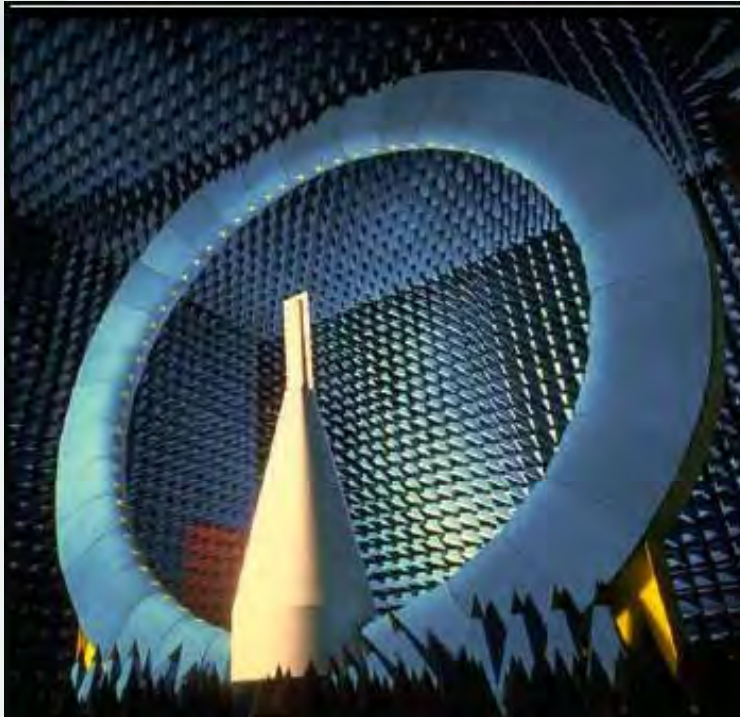
Antenna	ANT Type	Size (L * W * H)	Cable Length (mm)	Cable Type
ANT3(5G)	Metal Dipole	159*15*21	Exp103(Blue)	Ø1.37

Return Loss Results

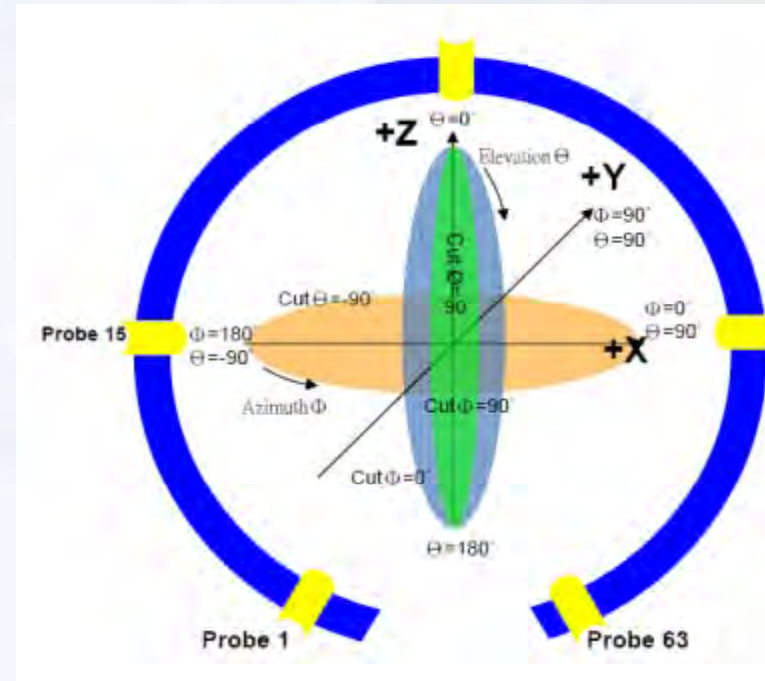
ANT3 (5150MHz~5825MHz) (Criterion:>10 dB)



Chamber Information

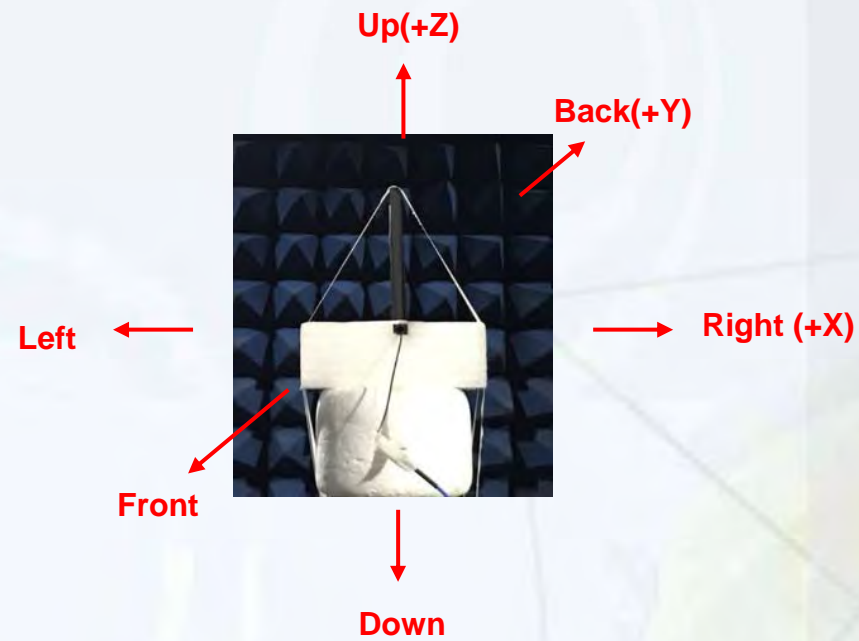


Chamber	Brand	Model	Location
SATIMO	SATIMO	SG-64	Taiwan HsinChu



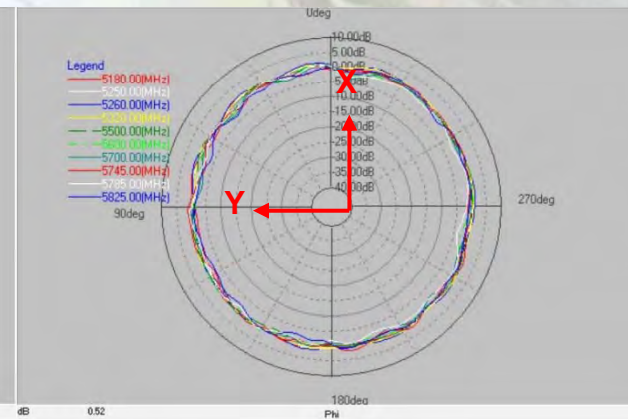
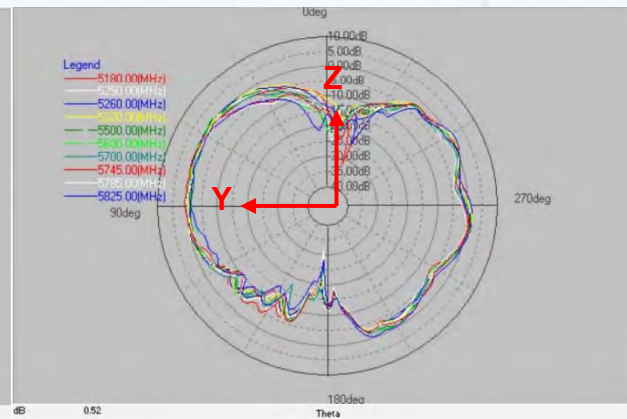
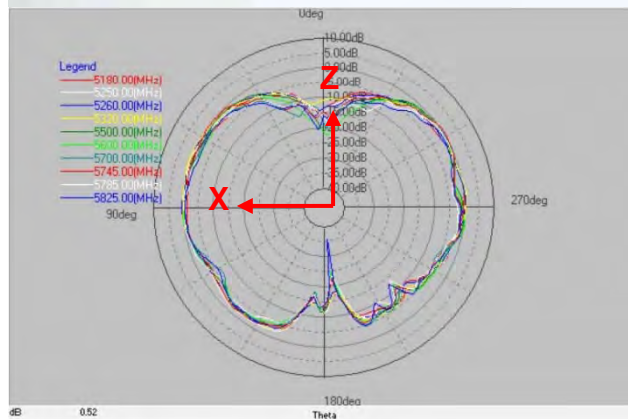
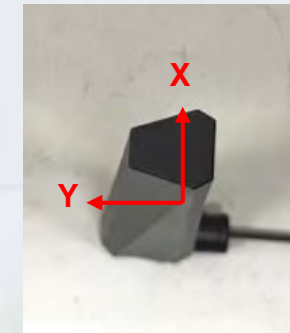
	θ	ϕ
Total angle	175°	360°
How many angle scan one point	5°	5°
Total scan point	36	73

Test Setup for Radiation Pattern Measurement



2D Radiation Pattern Results

Dipole(5G)_ANT3



Results Summary

Return Loss (Criterion: >10dB)

Frequency (MHz)	ANT3
5150	26
5350	20
5725	21
5825	19

Results Summary

Gain & Efficiency

Frequency (MHz)	Ant3	
	Gain(dB)	Efficiency (%)
5180	1.55	74
5250	1.61	75
5260	1.69	75
5320	1.65	74
5500	1.65	73
5600	1.68	75
5700	1.68	76
5745	1.82	74
5785	1.82	75
5825	1.77	74



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.: C660-510498-A

REV.: X1

	MANUFACTURER SIGNATURE	CUSTOMER SIGNATURE
APPROVED BY :		
DATE :	2020/2/26	

WHA YU GROUP

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1.	天線規格表 1
2.	成品圖 2
3.	測試報告 3~14

RF Antenna Assembly

Specification(with cable loss)

1. Electrical Properties :

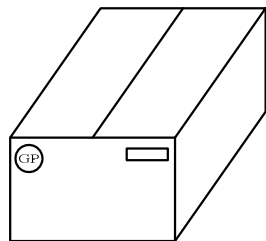
- 1.1 Frequency Range..... 2.412GHz ~ 2.472GHz / 5.18GHz ~ 5.825GH
- 1.2 Impedance 50Ω Nominal
- 1.3 VSWR (1.92:1Max)
- 1.4 Return Loss..... (10dB Max)
- 1.5 Radiation Omni-directional
- 1.6 Gain(Peak).....
 - 2.412~2.472GHz(1.58 dBi)
 - 5.18~5.25GHz(1.77 dBi)
 - 5.25~5.32GHz(1.81dBi)
 - 5.50~5.7GHz(1.82 dBi)
 - 5.745~5.825GHz(1.85dBi)
- 1.7 Efficiency..... 2.4G(>80%) / 5G(>70%)
- 1.8 Polarization..... Linear ; Vertical
- 1.9 Admitted Power..... 1W
- 1.10 Cable..... 1.37 Cable Gray
- 1.11 Connector..... (I-PEX)

2. Physical Properties :

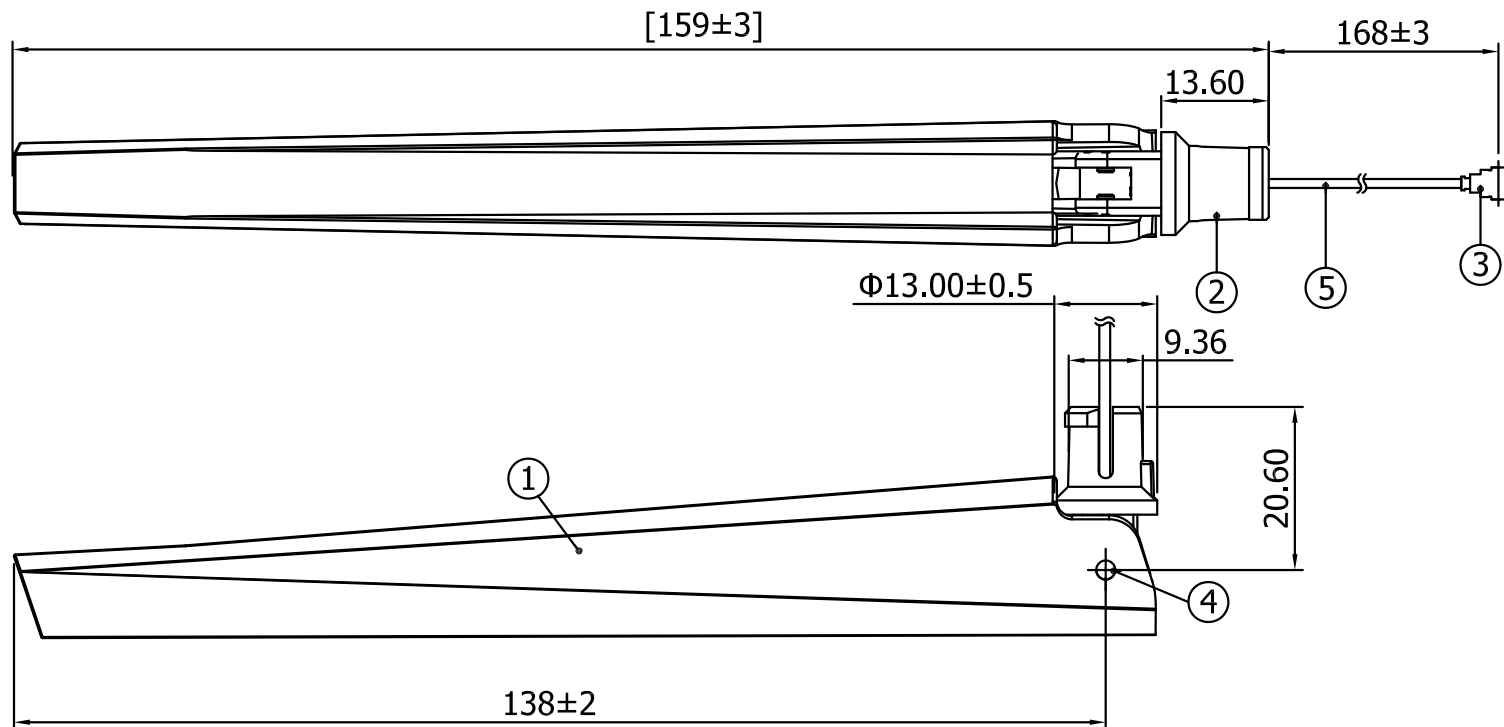
- 2.1 Operating Temp. -10°C ~ +60°C
- 2.2 Storage Temp. -10°C ~ +70°C

CG-XXXX

REV	DATE	DESCRIPTION
X1	2020/02/19	New Issue

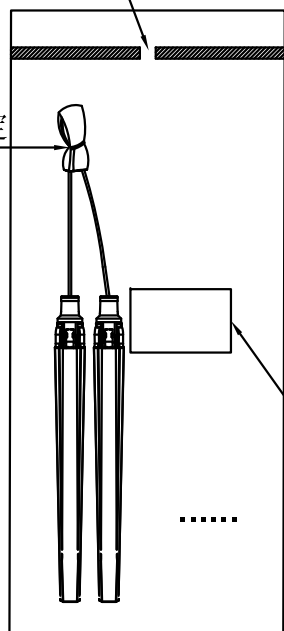


GP標籤貼於紙箱側麥左上角(共2PCS)
外箱標籤貼於紙箱側麥右上角(共1PCS)



熱封留氣孔

用透明膠帶固定



Packing: 10PCS/bag

Label

5	Cable	Φ1.37mm Cable; 灰色(Gray)	1	
4	Rivet	POM ; 黑色(Black)	2	
3	Connector	MHF Plug	1	
2	Antenna Base	(CD-1636)PC/PBT ; Color: 黑色(Black)	1	
1	Antenna Cap	(CD-1504)ABS ; Color: 黑色(Black)	1	
NO	DESCRIPTION		Q'TY	REMARK

XX.	± 3.0	APPROVED
X.	± 2.0	
.X	± 1.0	CHECKED
.XX	± 0.5	
.XXX	± 0.1	DRAWING
⊕		

CUSTOMER:		ASUS
PART NO :		
PARTNAME:		RF Antenna Assembly
W.Y P/NO :		C660-510498-A
REV	UNIT	FILE :SRF2020070
X1	m/m	SHEET : 1/1

CUSTOMER'S SINGATURE

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C660-510498-A
NE3-19151
Antenna
Test Report

Version: V 1.00

Released Date: 2019/11/26

Prepared By: Cathy

Reviewed By: Damon



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Contents

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- Isolation Results
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- 2D Radiation Pattern Results
- Results Summary (return loss, isolation, peak gain, efficiency)

Revision History

Released Date	Version	Record
2019/11/26	1.00	Antenna Testing Report NEW Design



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E-mail : market@whayu.com

Specification

Requirements of Antenna Design

RF Function	Number of ANT	Frequency Band	Remark
WiFi	4	2.412G Hz~2.472GHz/5.180GHz~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

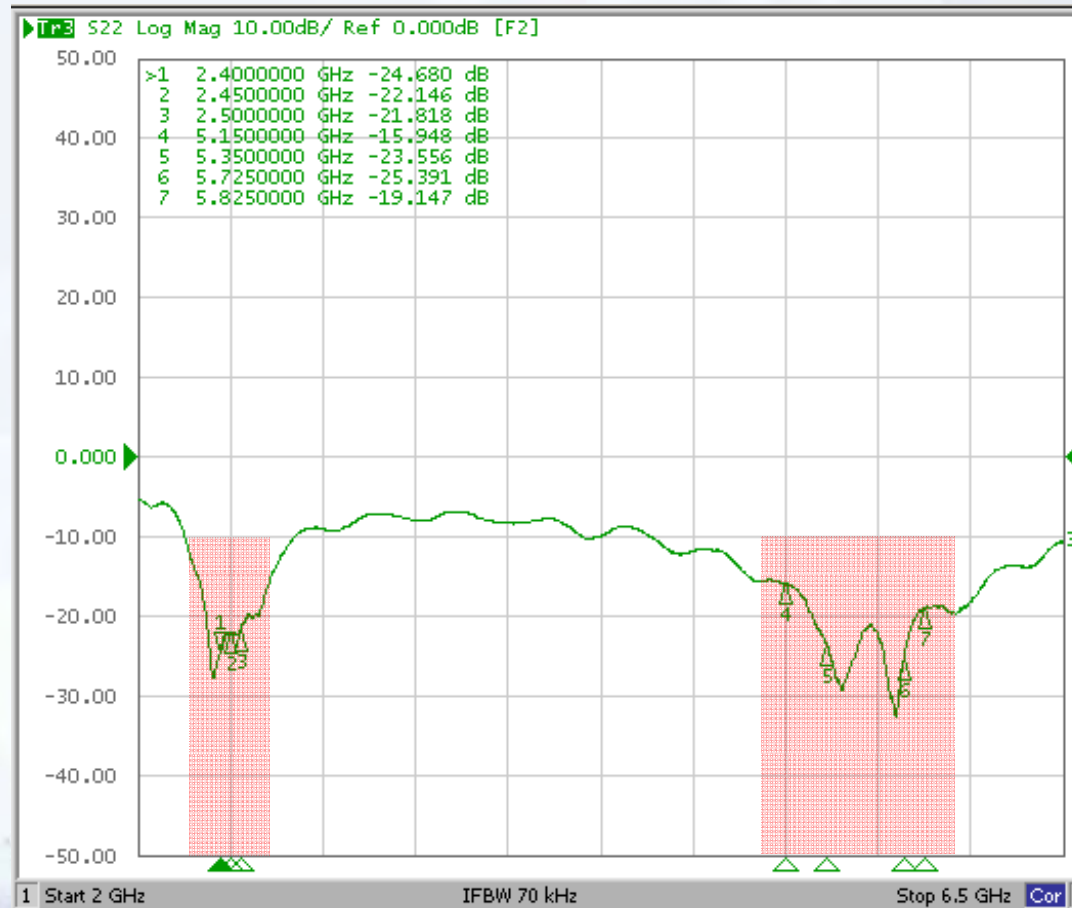


ANT-4

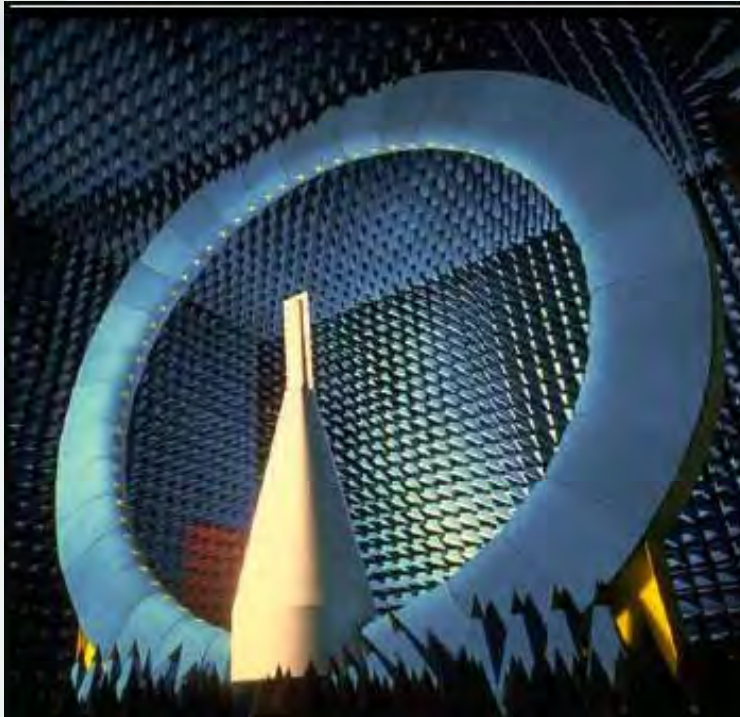
Antenna	ANT Type	Size (L * W * H)	Cable Length (mm)	Cable Type
ANT4(DualBand)	Metal Dipole	159*15*21	Exp168(Gray)	Ø1.37

Return Loss Results

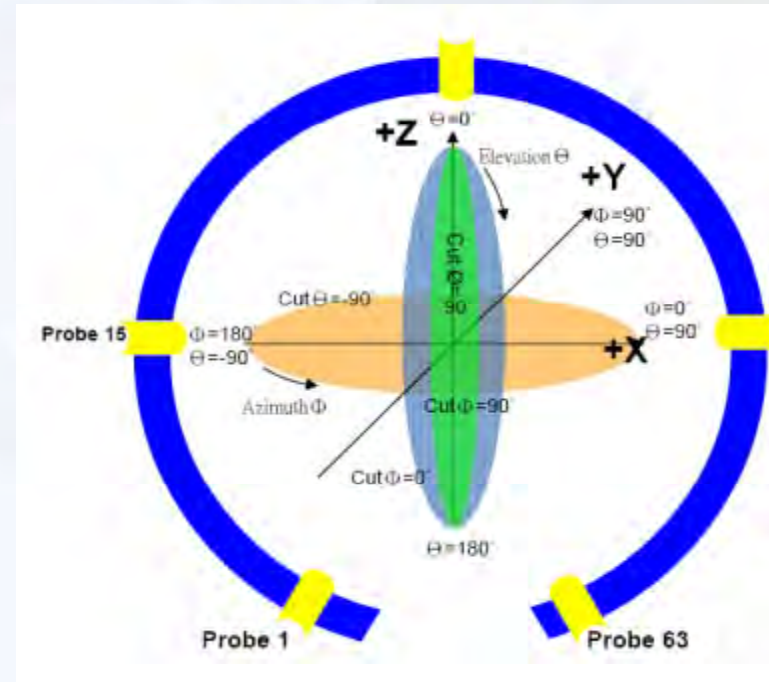
ANT4 (2400MHz~2500MHz/5150MHz~5825MHz) (Criterion:>10 dB)



Chamber Information

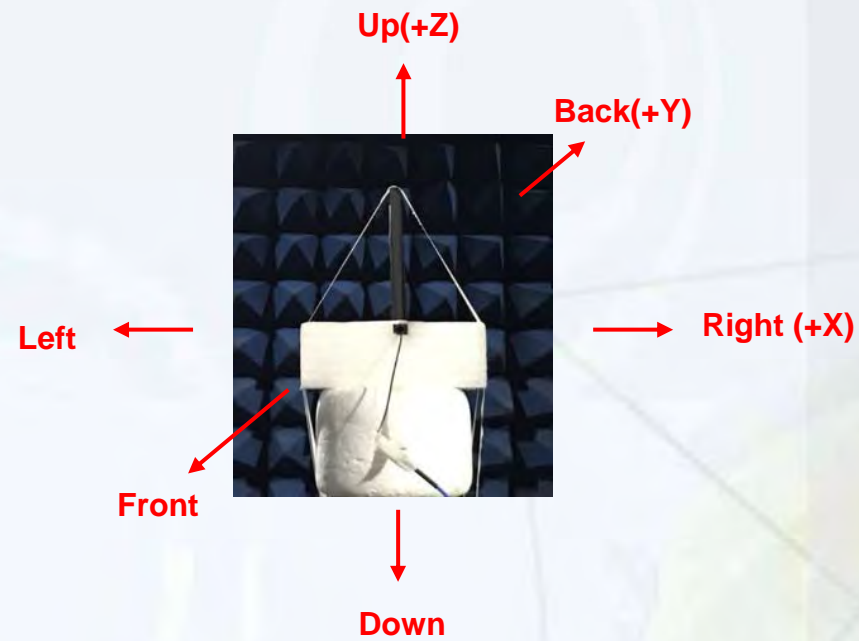


Chamber	Brand	Model	Location
SATIMO	SATIMO	SG-64	Taiwan HsinChu



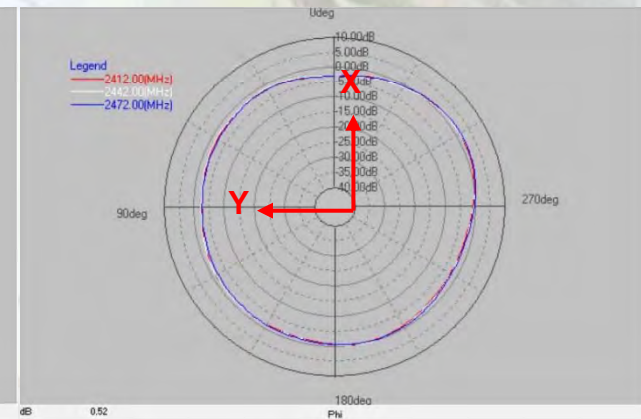
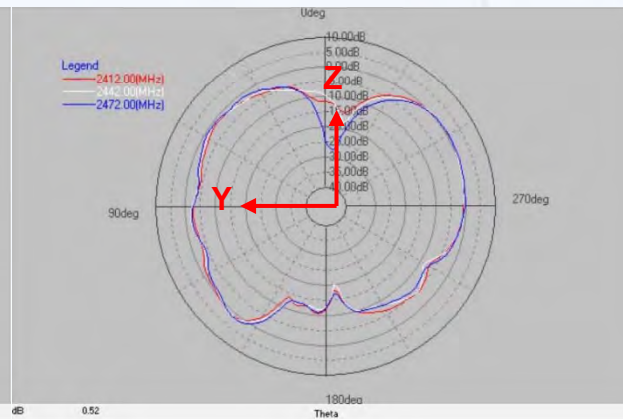
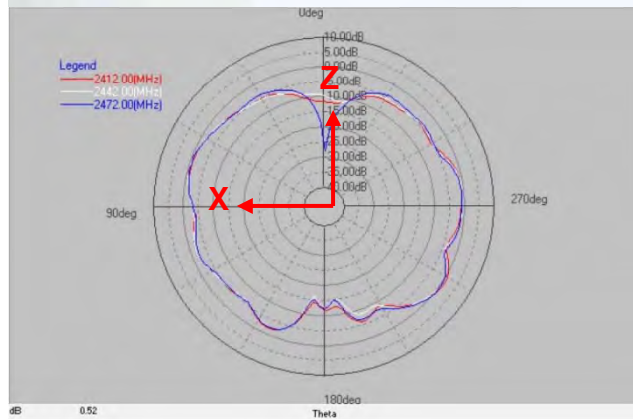
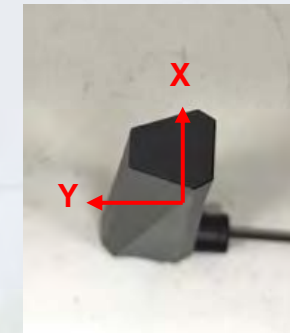
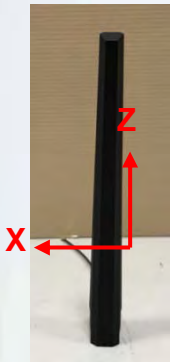
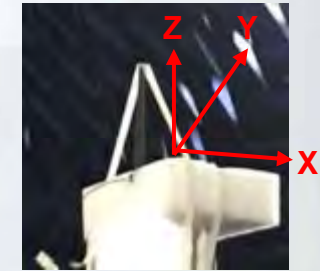
	θ	ϕ
Total angle	175°	360°
How many angle scan one point	5°	5°
Total scan point	36	73

Test Setup for Radiation Pattern Measurement



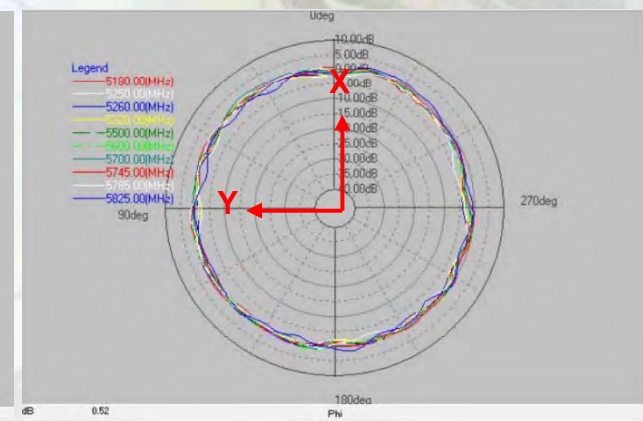
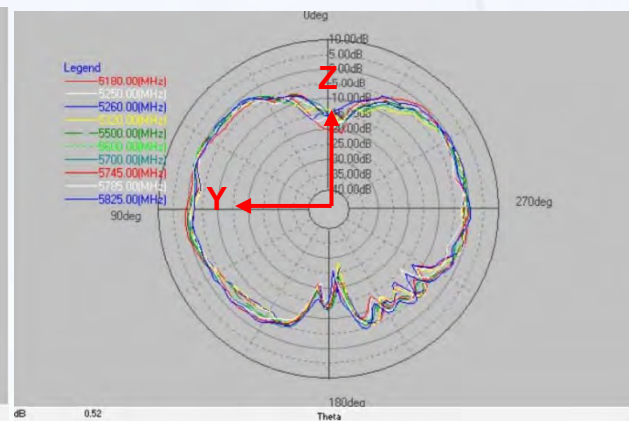
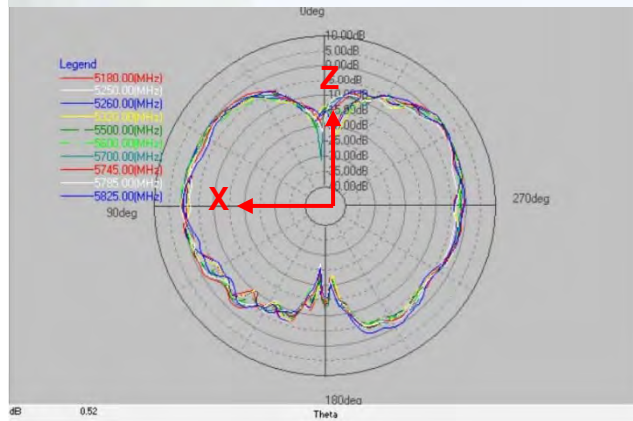
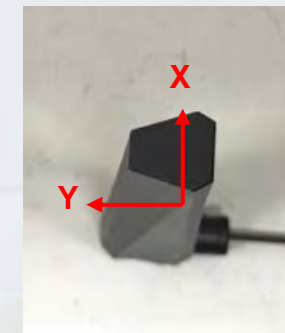
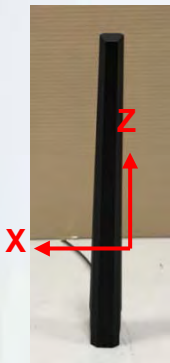
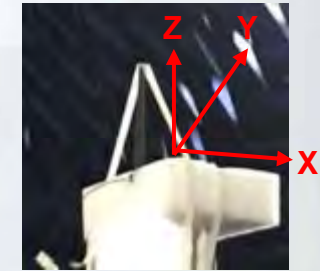
2D Radiation Pattern Results

Dipole(Dual Band)_ANT4 (2.4G)



2D Radiation Pattern Results

Dipole(Dual Band)_ANT4 (5G)



Results Summary

Return Loss (Criterion: >10dB)

Frequency (MHz)	ANT4
2400	24
2450	22
2500	21
5150	15
5350	23
5725	25
5825	19

Results Summary

Gain & Efficiency

Frequency (MHz)	Ant4	
	Gain(dB)	Efficiency (%)
2412	1.54	82
2442	1.56	83
2472	1.58	83
5180	1.68	74
5250	1.77	73
5260	1.79	72
5320	1.81	74
5500	1.82	73
5600	1.78	75
5700	1.8	75
5745	1.84	74
5785	1.85	72
5825	1.82	73



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