

APPROVAL SHEET

Metal ANTENNA

2.4 ~ 2.5 GHz Band Working Frequency

Halogens Free Product

P/N: RFMTA161425IMAB401

Customer : 光寶科技股份有限公司

Customer 's Part No. :

Approval No. :

Issue Date :

*Contents in this sheet are subject to change without prior notice.

Contents

Item	Description	Page
1.	Antenna Specification 4
2.	Mechanical Specification 5
3.	Test Report 6~37

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DESIGNED BY : 黃瑞郎	APPROVED BY : 陳振榮		
TITLE : RFMTA161425IMAB401		DOCUMENT NO.	SPEC REV. A0

1.Explanation of part number :

RF	MTA	1614	25	I	M	A	B	4	01
Type Code	Product Code	Metal Dimension (Unit: mm)	Cable Length (unit: cm)	Connector Brand	Type of Connector	Application	Project status	Wire Diameter	Project
Walsin RF Device	Metal Antenna	Per 2 digits of length, width e.g.: 1614 Length 166.0mm, Width 140.0mm	2 digits for cable length e.g.:25 Cable Length 2G1:22.0cm 2G2:25.0cm 5G1:23.0cm 5G2:15.0cm BT:21.0cm	A: N C:MCX D:IPEX III E: IPEX IV F: IPEX A13 H: Hirose I: IPEX M: MMCX S: SMA T: TNC U:MURATA N: None	A: Reverse Female B: Reverse Male F: Female M: Male N: None	0: 0GHz 3: 3GHz 6: 6GHz 5: 5GHz A: 2.4GHz ISM band B: GSM 900/1800 dual band G: GPS band L: 2.4/5.2/5.8 GHz tri-band N: NFC T: LTE band W: WCDMA band	B: MP T:During Test X: Pile Run	0:None 1:∅ 0.81 2:∅ 1.32 3:∅ 1.13 4:Low Loss ∅ 1.13 5:∅ 0.5 6:RG316 7: ∅ 1.37 8:RG178 9:Low Loss ∅ 1.37	01~99 series number

2.Electrical Specification :

Item	Specification
Working Frequency Range	2.4 ~2.5 GHz
Return Loss	-10 dB
Peak Gain	2G1:7.51 dBi 2G2::7.41 dBi 52G1:6.76 dBi 5G2::7.58 dBi BT:7.38
VSWR	2 max.
Polarization	Linear Vertical
Radiation Pattern	Directional
Impedance	50Ω
Operation Temperature	-20℃ ~ +65℃

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 ANGLES = N/A HOLEDIA = N/A



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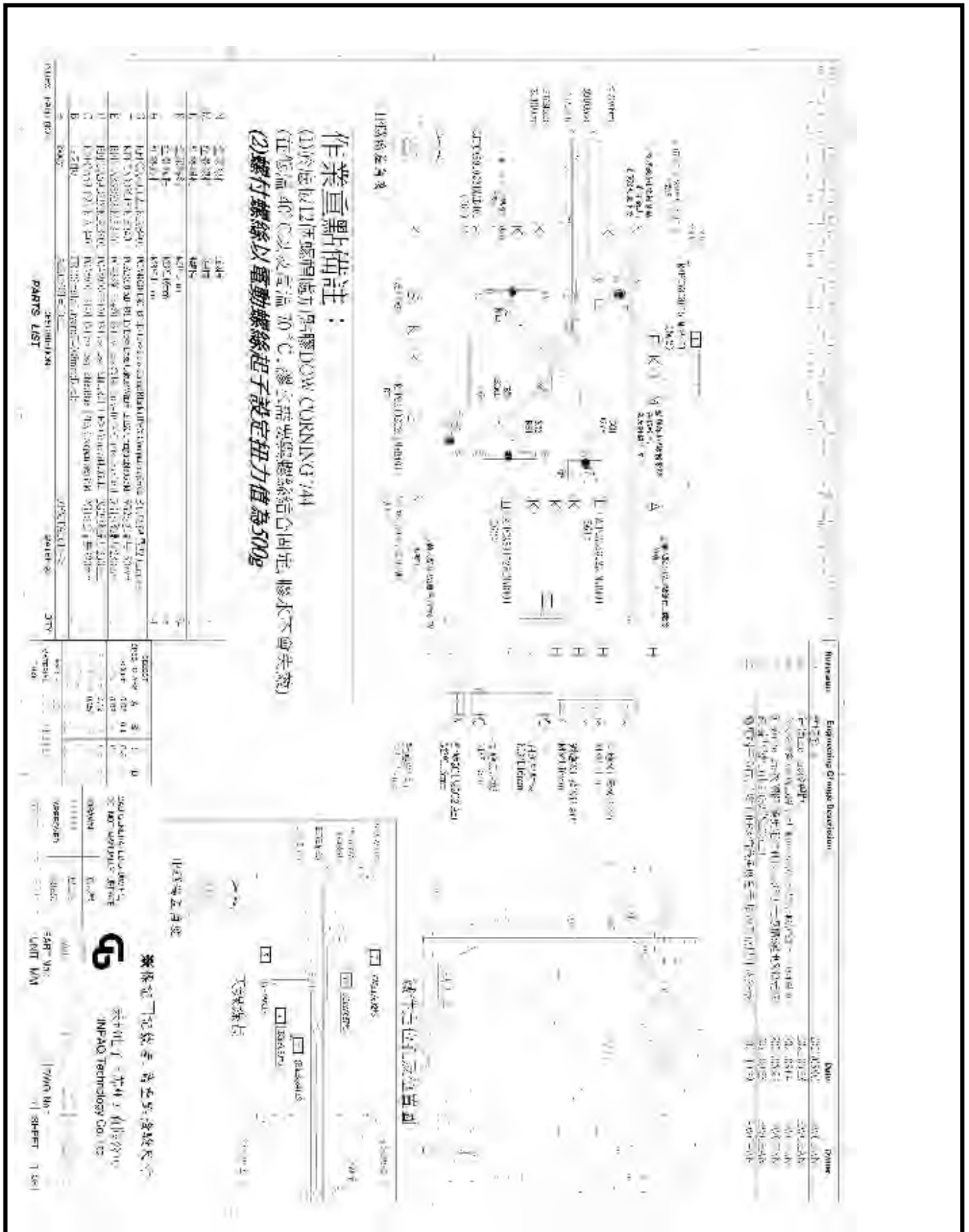
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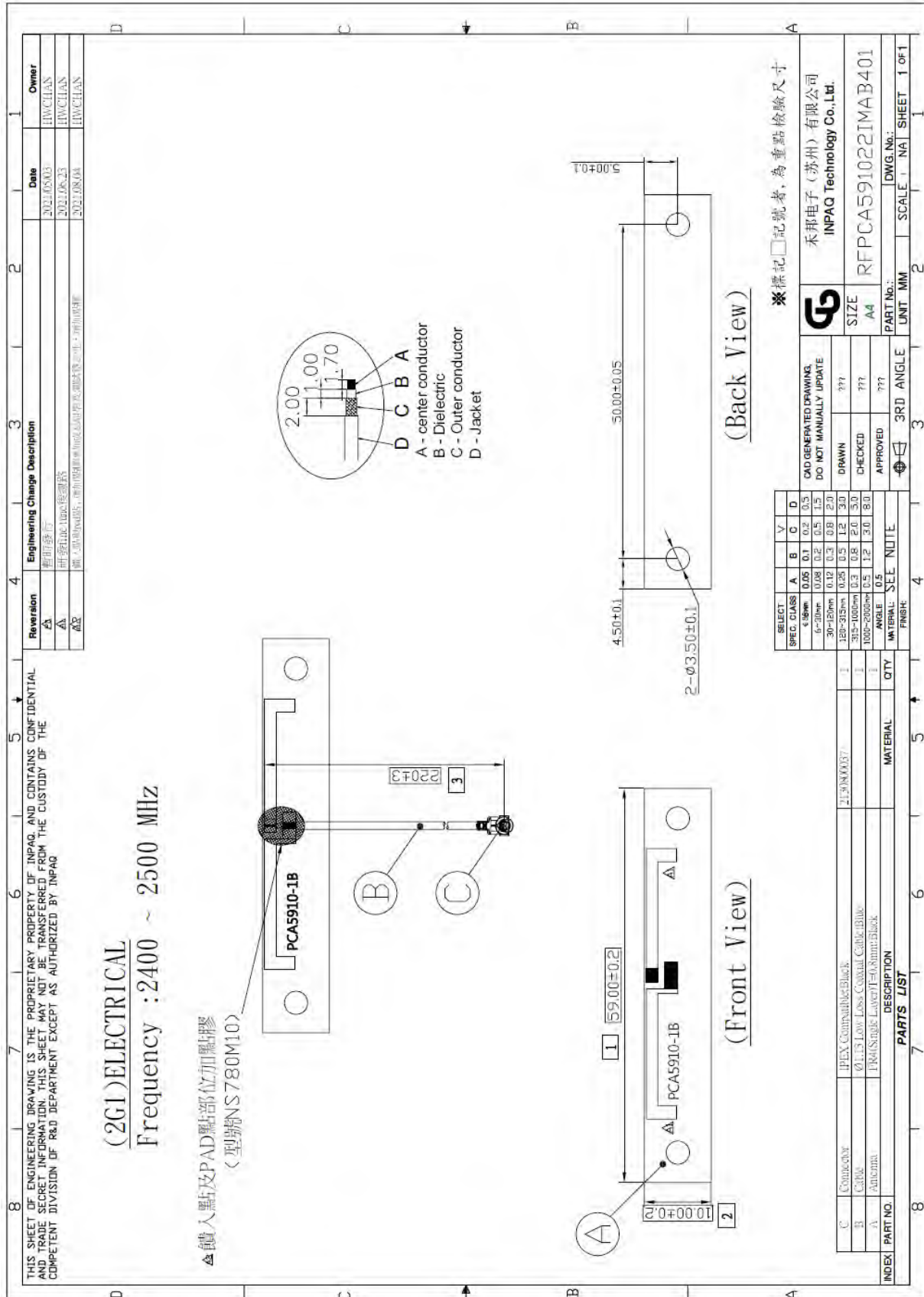
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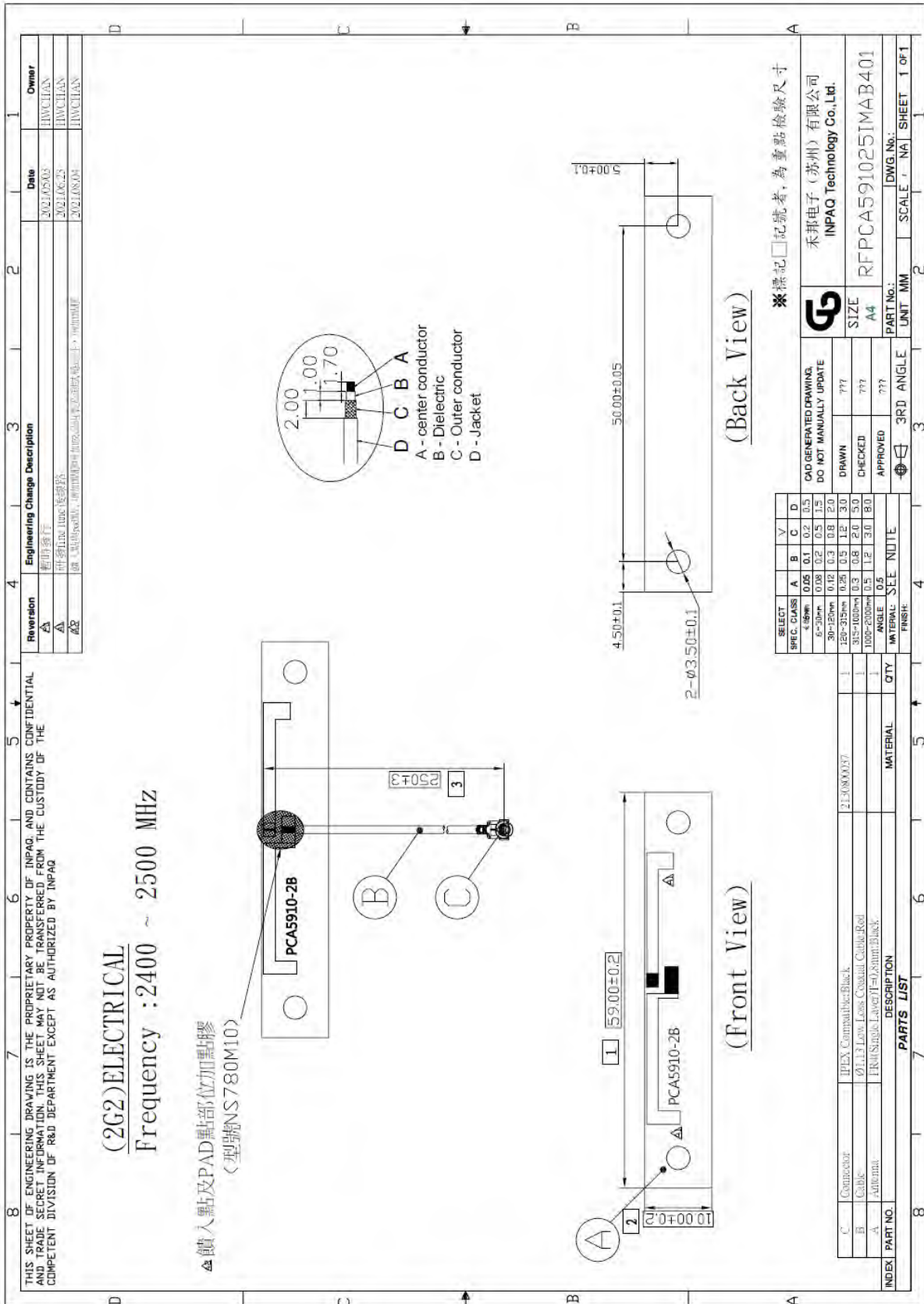
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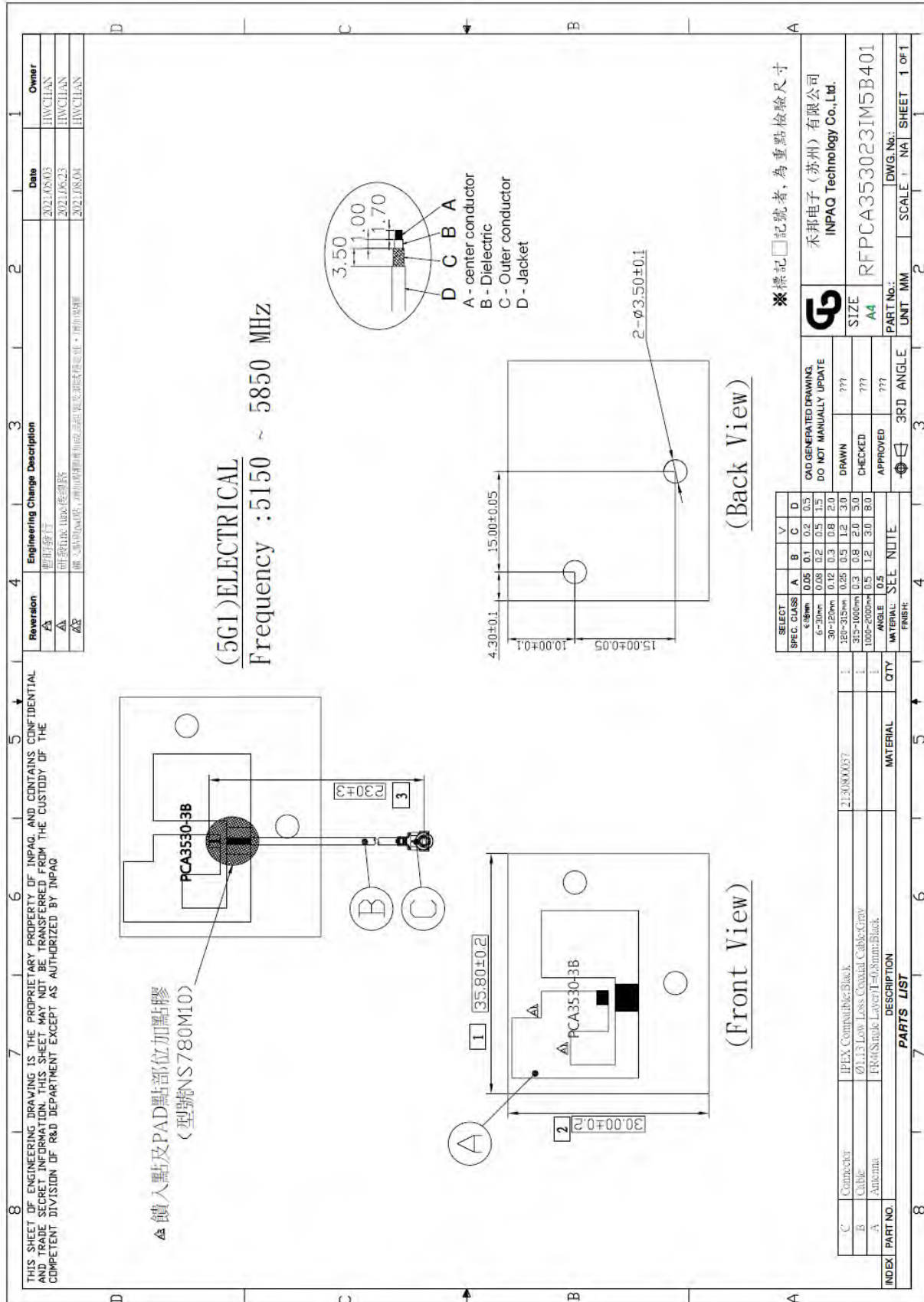
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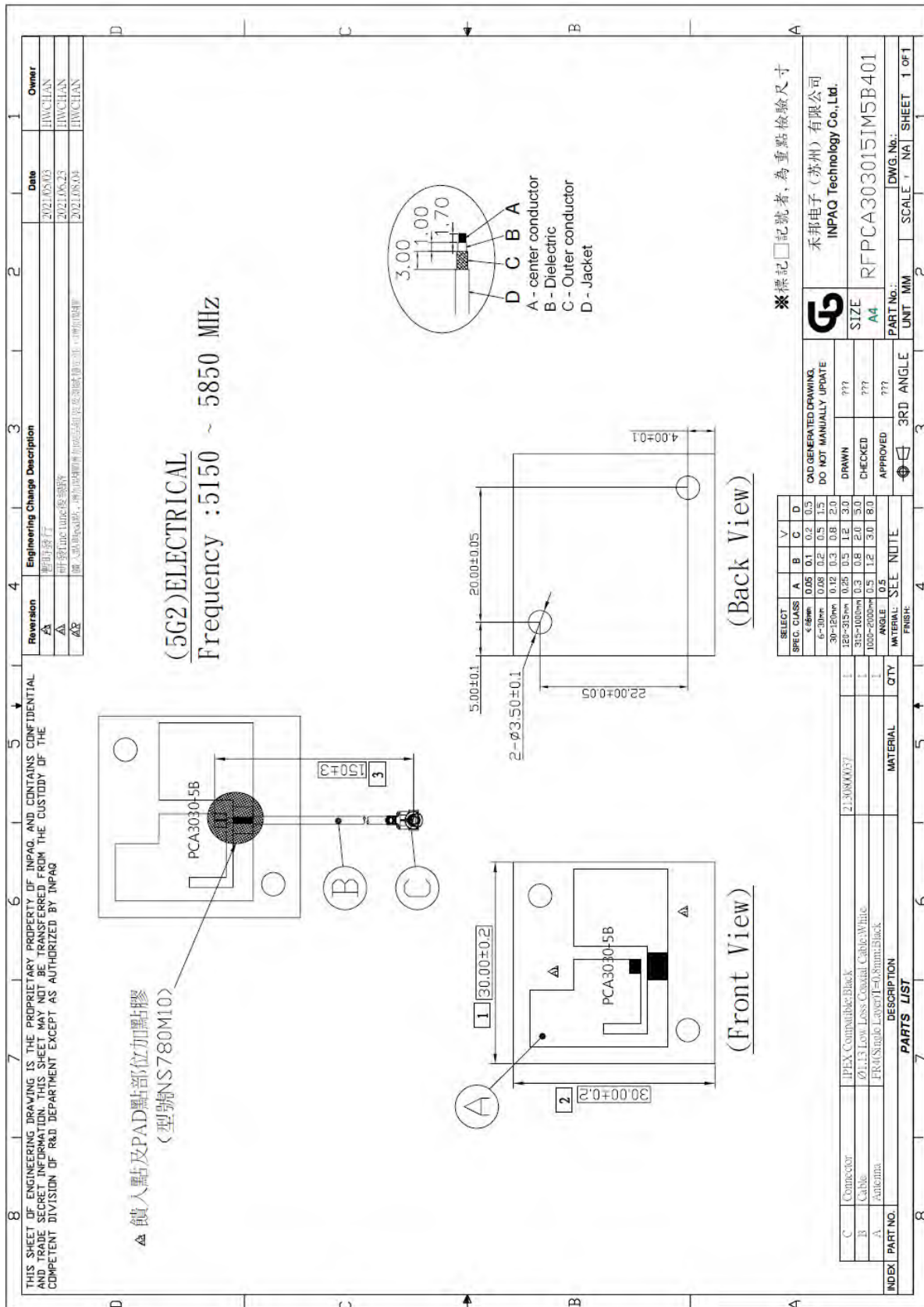
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Reversion	Engineering Change Description	Date	Owner
A	圖面修訂	2021/03/03	HWCHAN
A	研發Line圖檢核修	2021/08/23	HWCHAN
A/R	圖面圖檢核, 增加點膠膠厚, 增加點膠膠厚, 增加點膠膠厚	2021/08/04	HWCHAN

INPAQ TECHNOLOGY CO., LTD.	永邦電子(蘇州)有限公司
SIZE A4	RFPCA303015IM5B401
PART No.:	DWG No.:
UNIT: MM	SCALE: 1:1
SHEET 1 OF 1	

SELECT	SPEC. CLASS	A	B	C	D	V
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	5-20mm	0.08	0.2	0.5	1.5	
	30-250mm	0.12	0.3	0.8	2.0	
	225-250mm	0.25	0.5	1.2	3.0	
	315-1000mm	0.3	0.8	2.0	5.0	
	1000-2000mm	0.5	1.2	3.0	8.0	
	ANGLE	0.5				
	MATERIAL	SEE NOTE				

INDEX	PART NO.	DESCRIPTION	QTY	MATERIAL
		CONNECTOR	1	PPLEX Compatible-Black
		Cable	1	Ø1.13 Low Loss Coaxial Cable-White
		Antenna	1	FR4(Single Layer)0.8mm-Black

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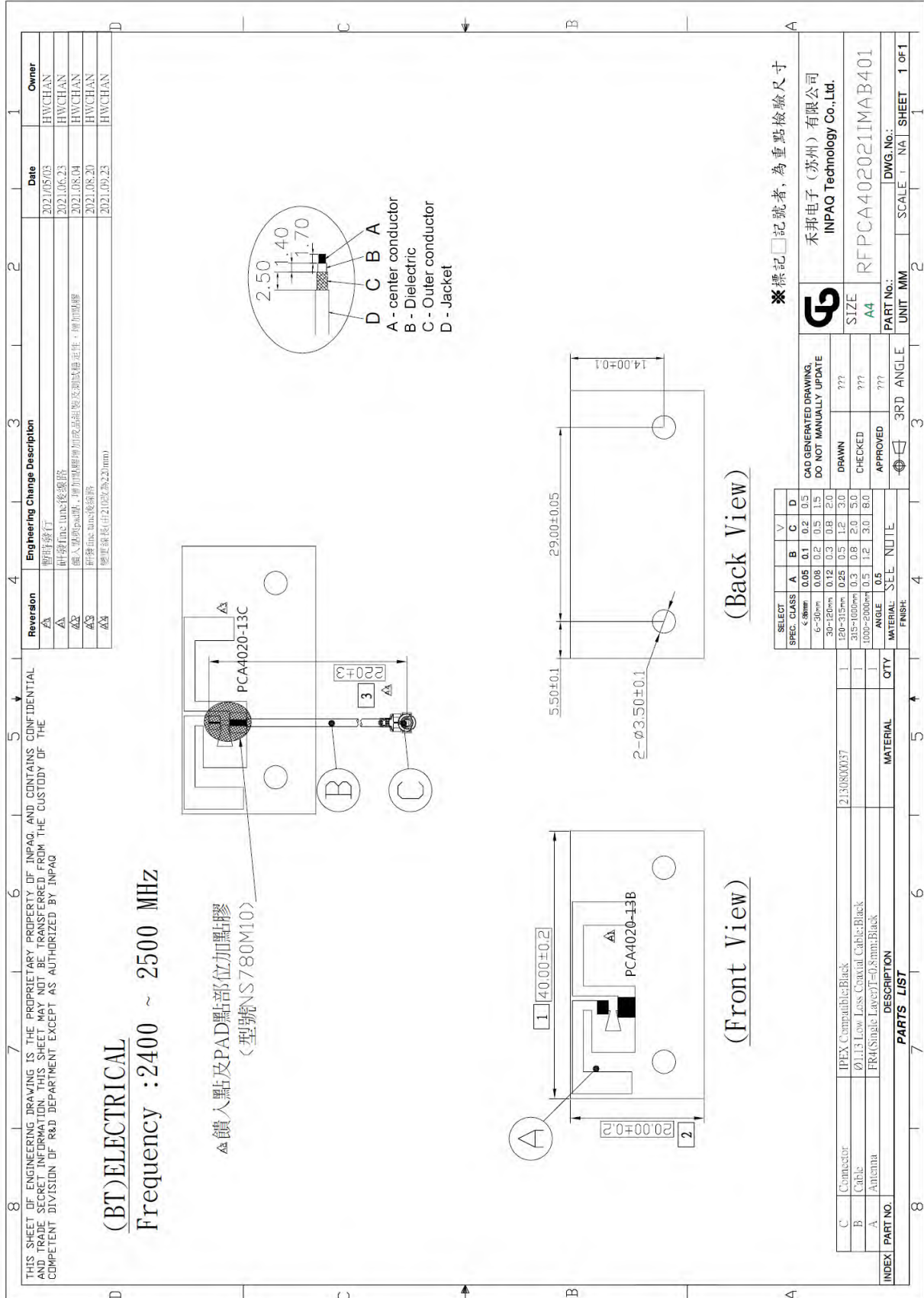
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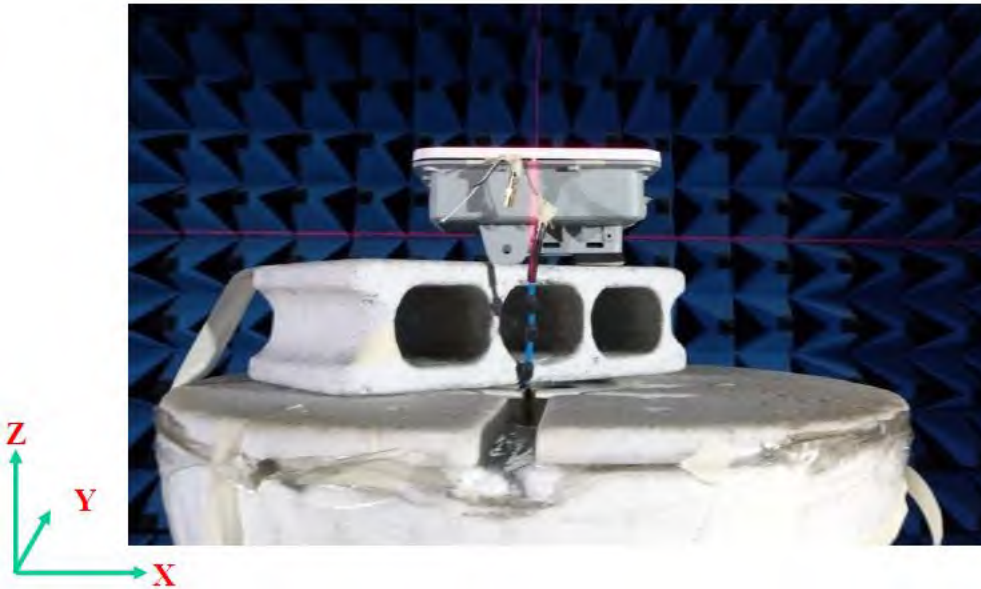
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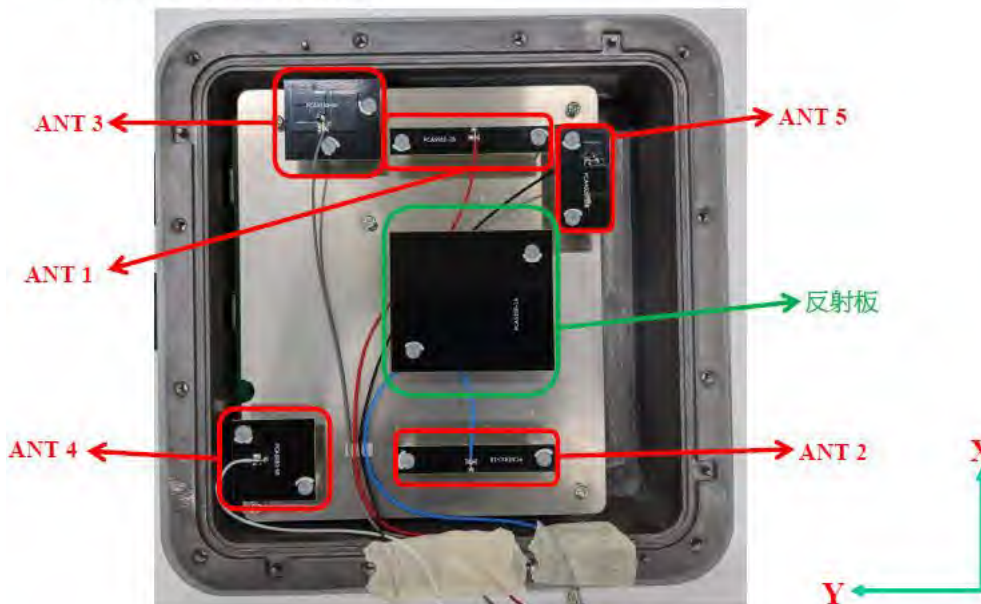
Test Report


ELECTRICAL CHARACTERISTICS

Experimental Setup

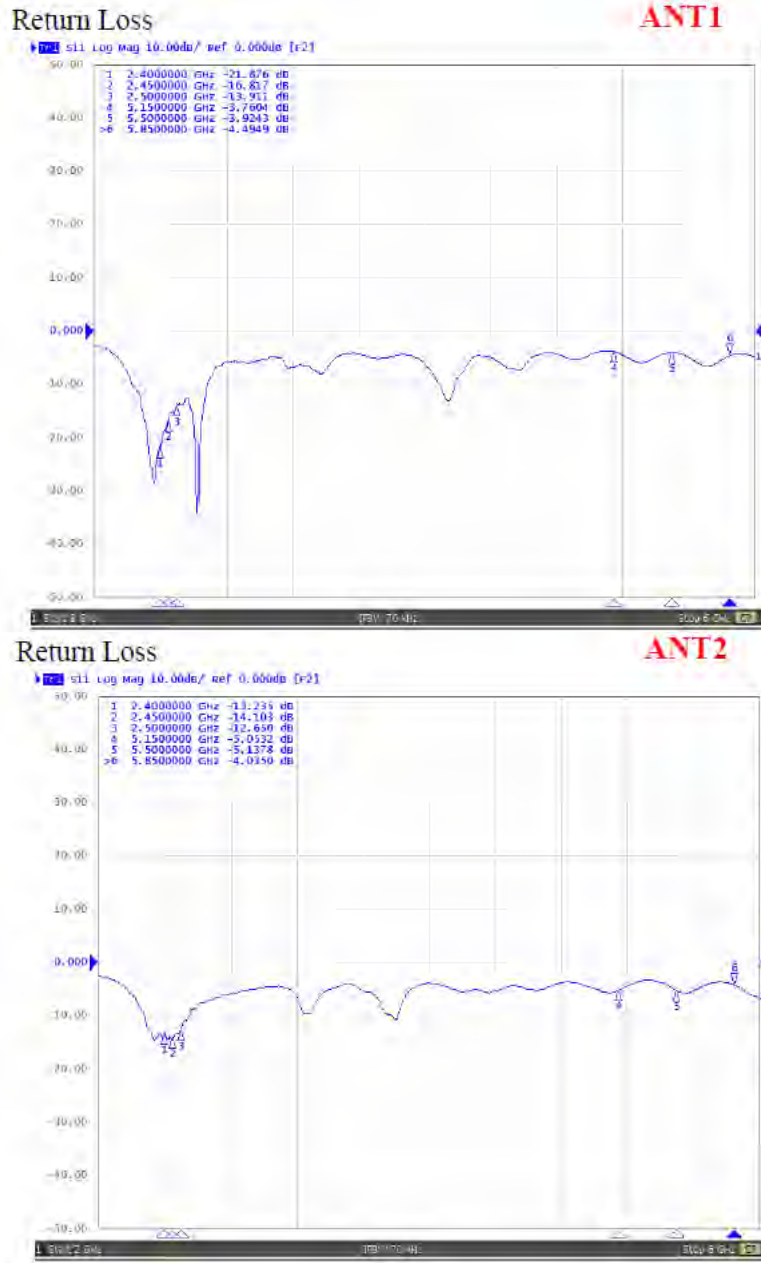



Antenna Solution Detail

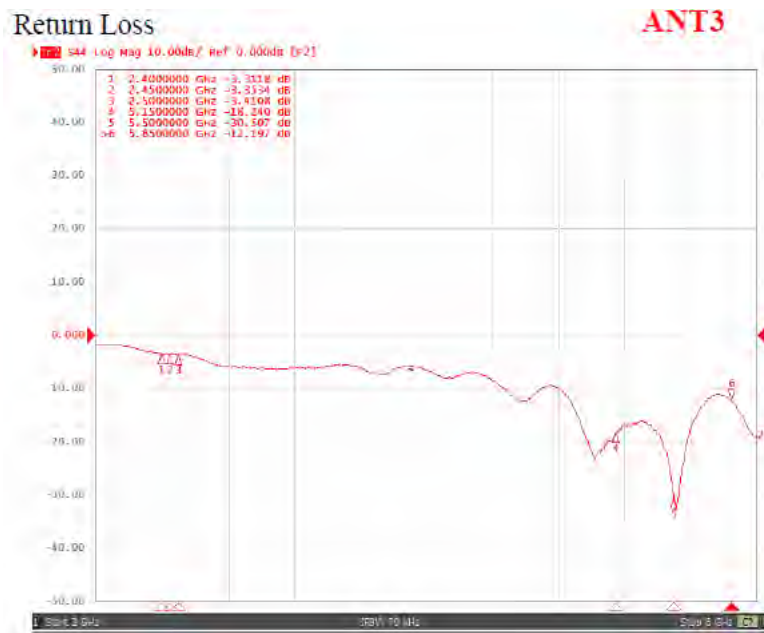


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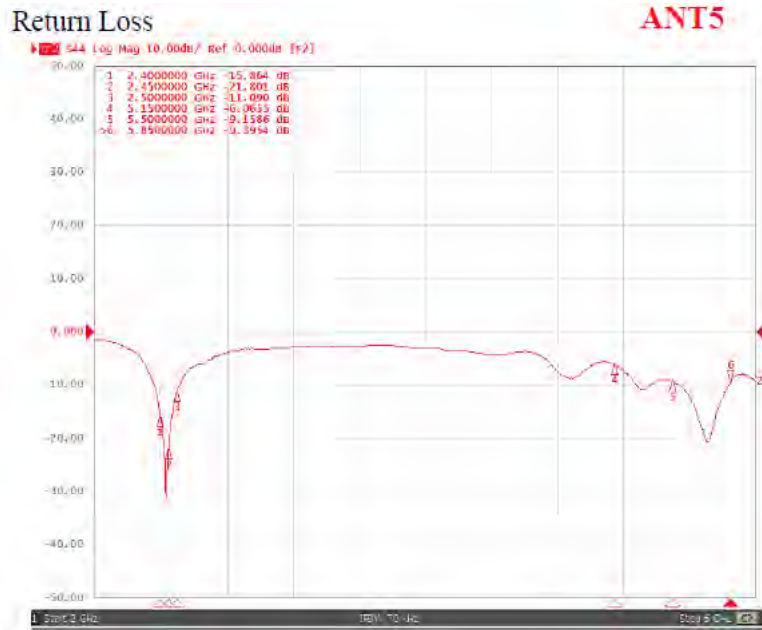
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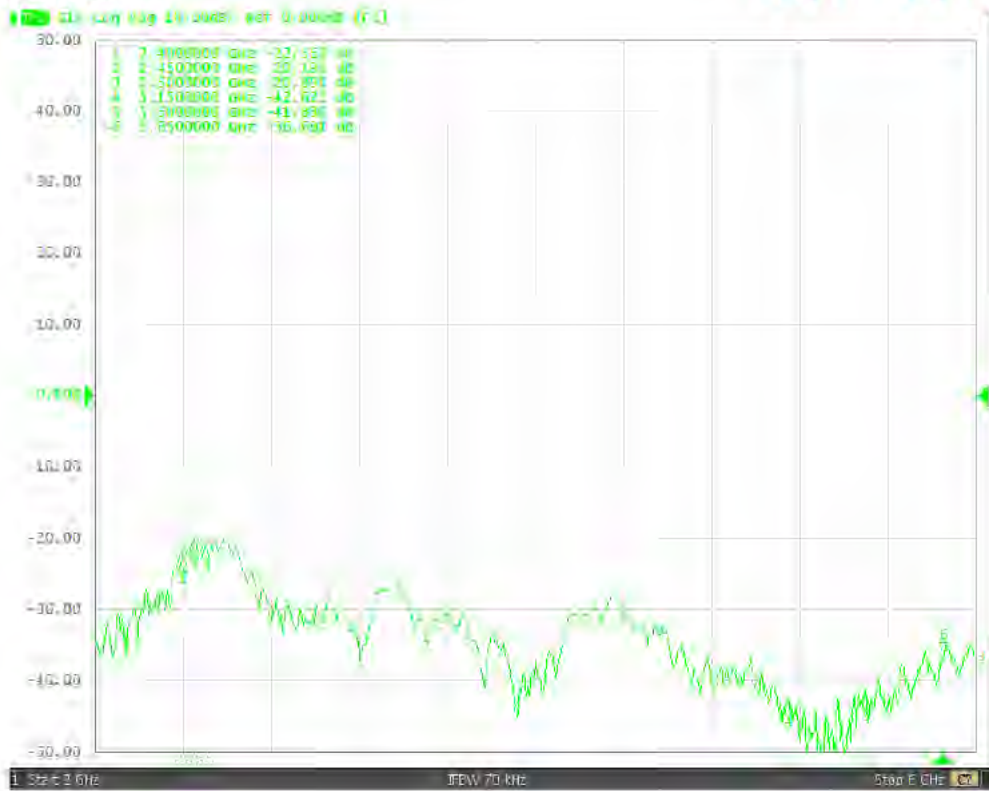
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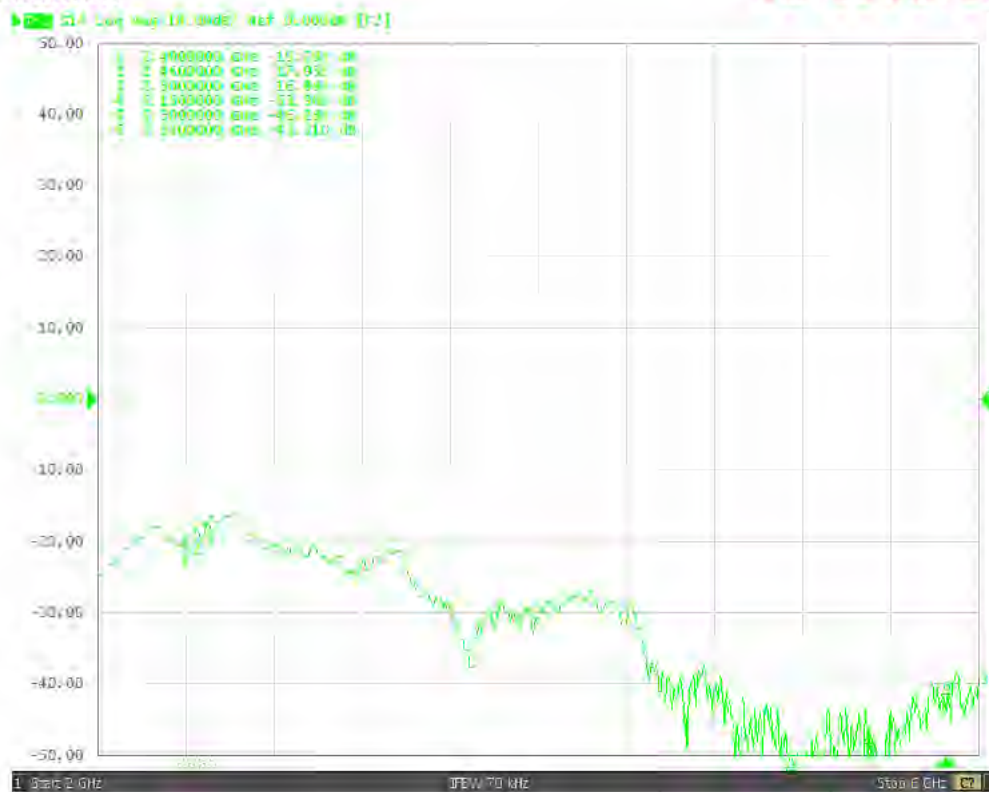
Isolation


ANT1-ANT2



Isolation

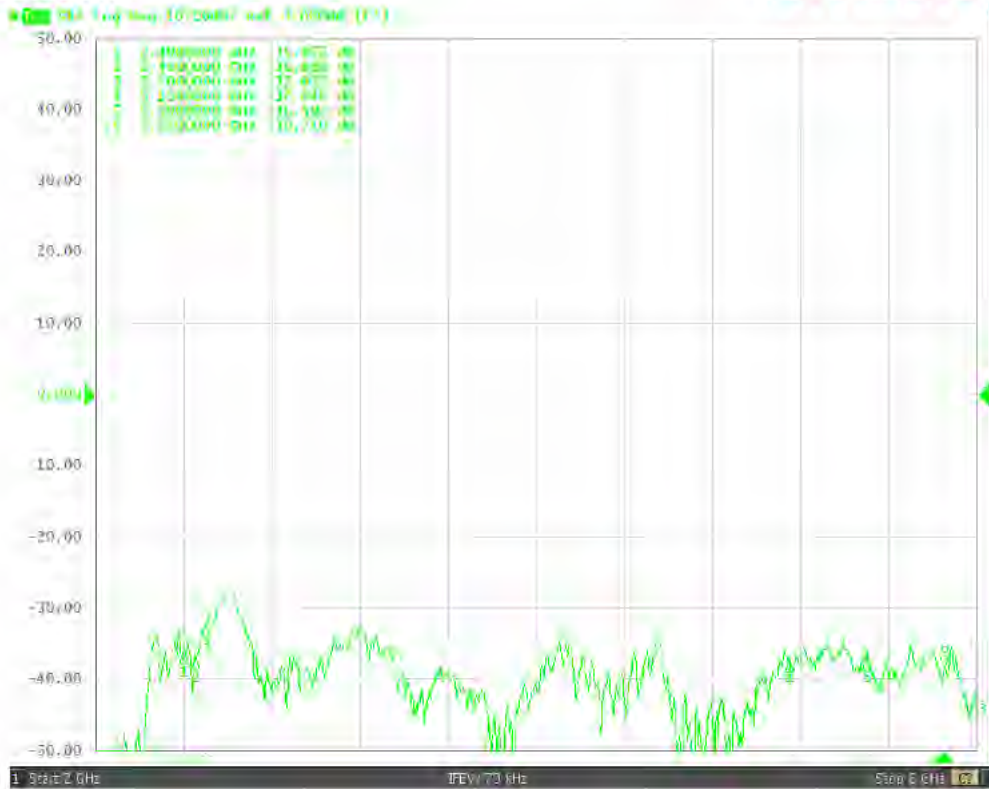
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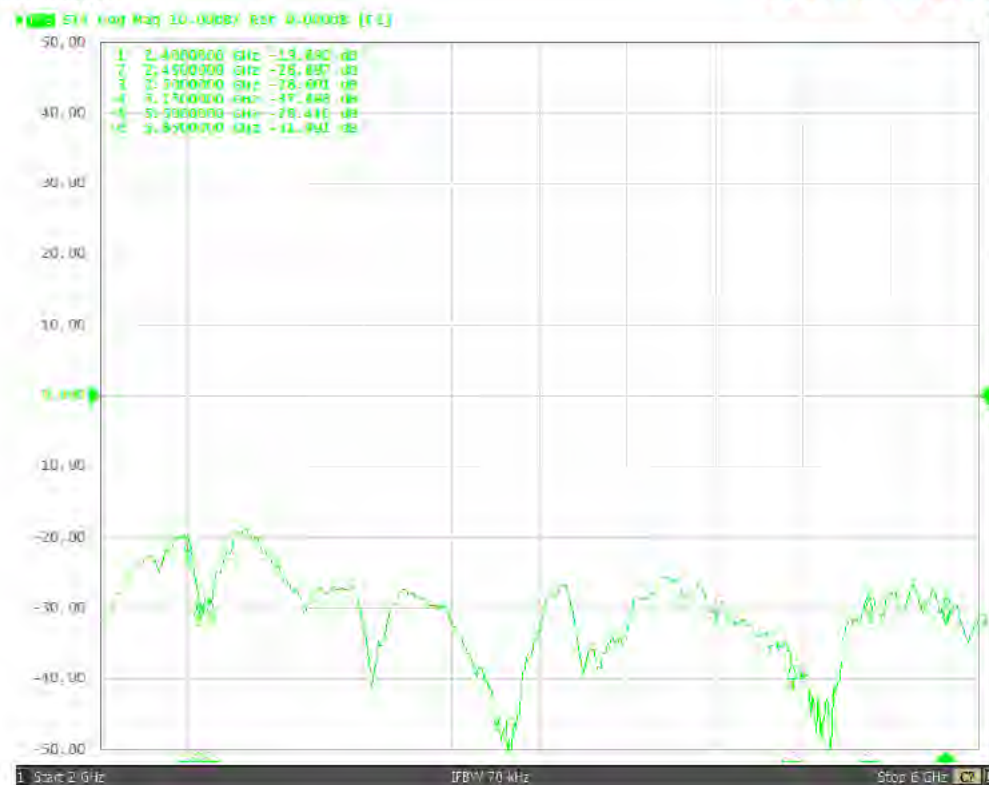
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ANTI-ANT4



Isolation

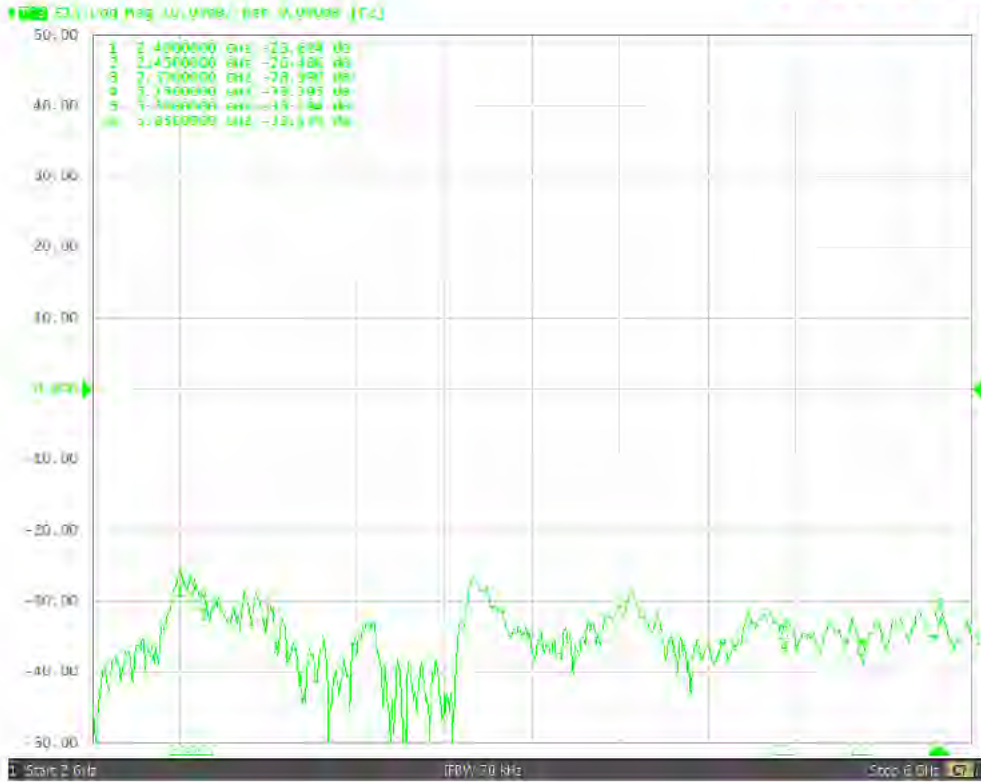
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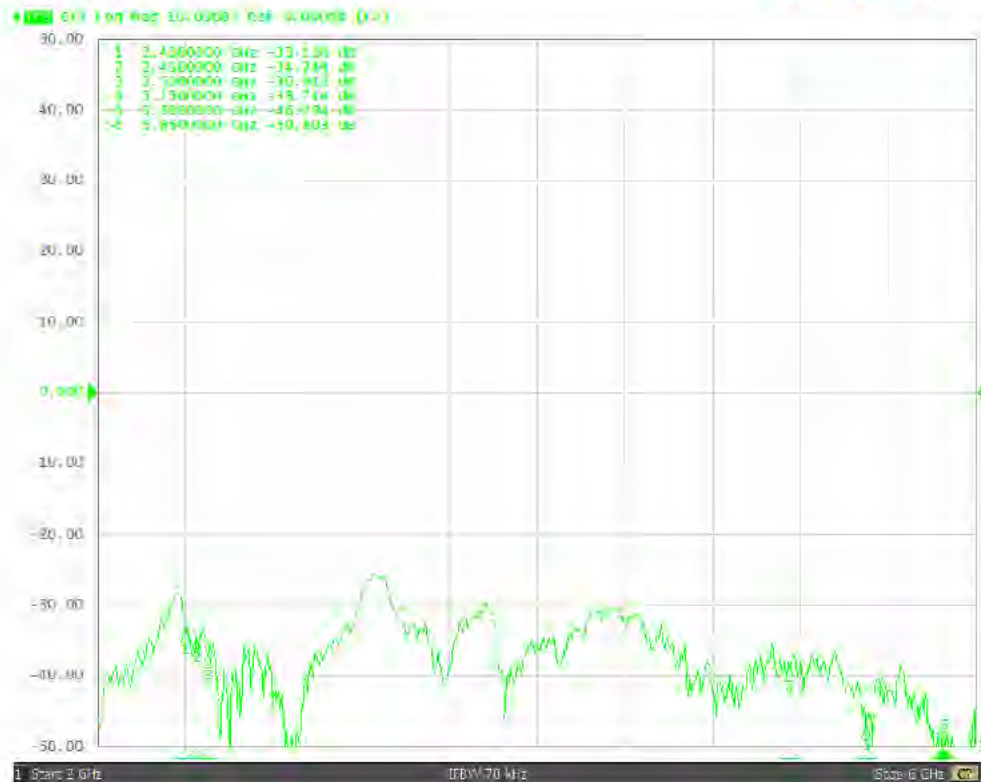
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ANT2-ANT3



Isolation

ANT2-ANT4



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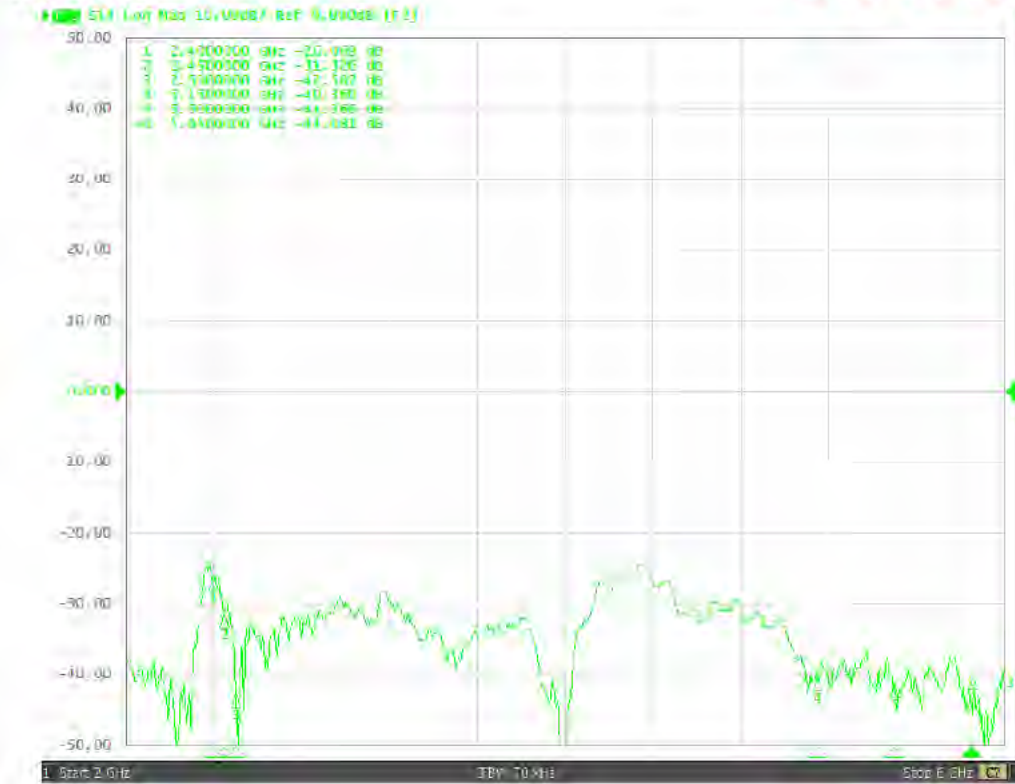
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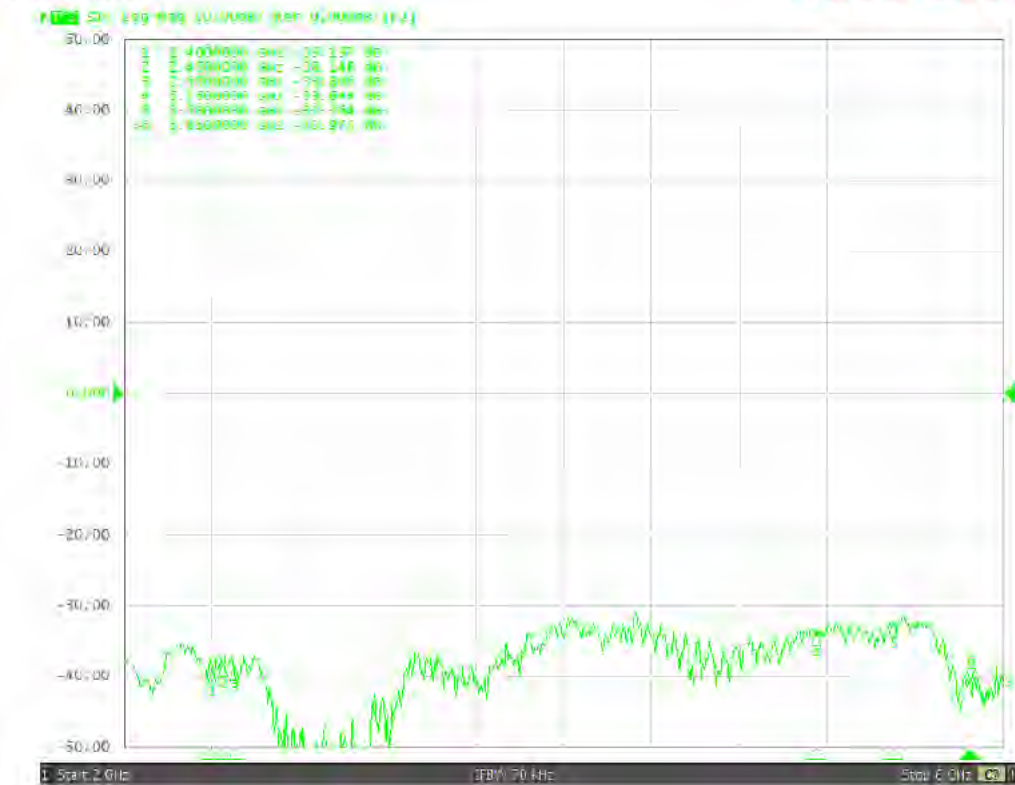
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ANT2-ANT5



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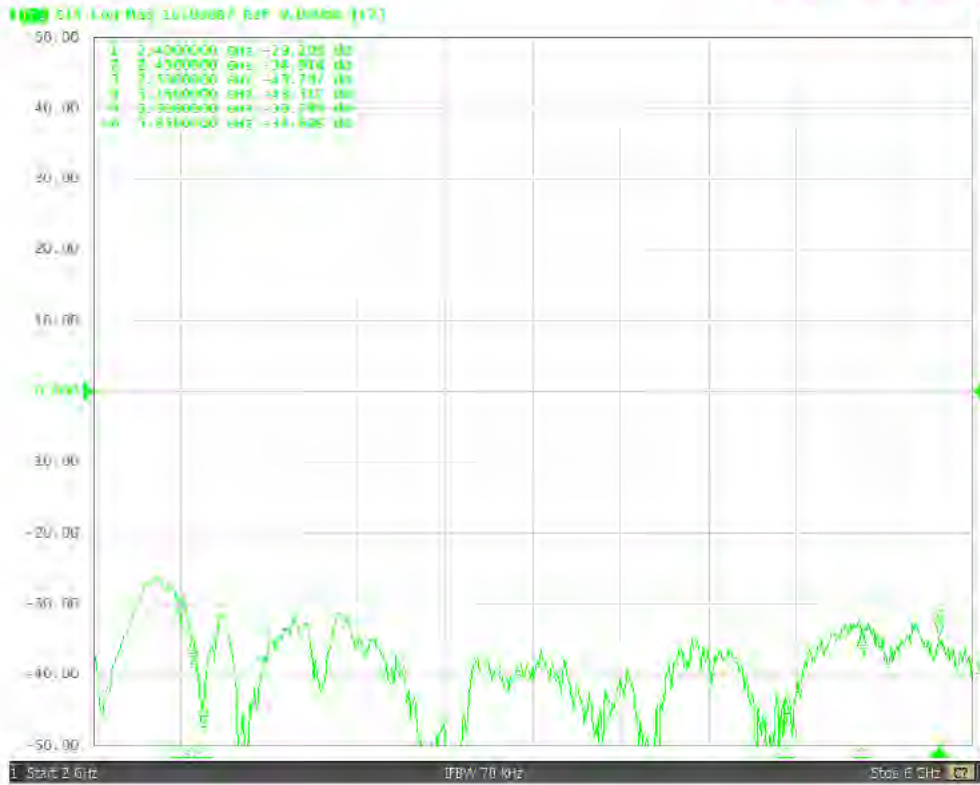
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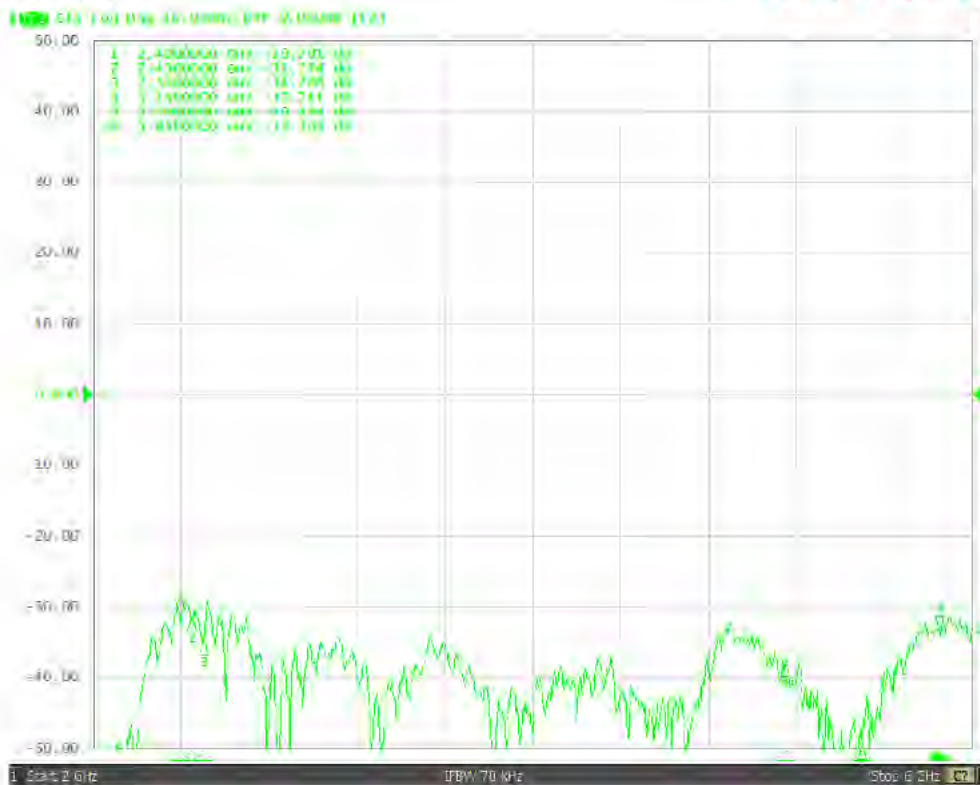
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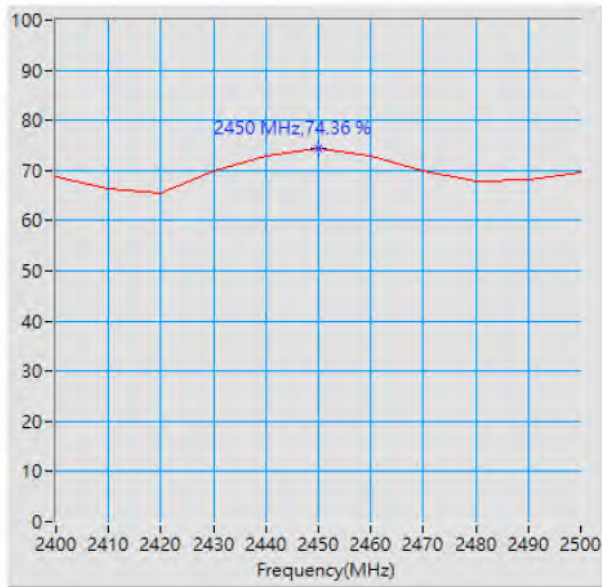
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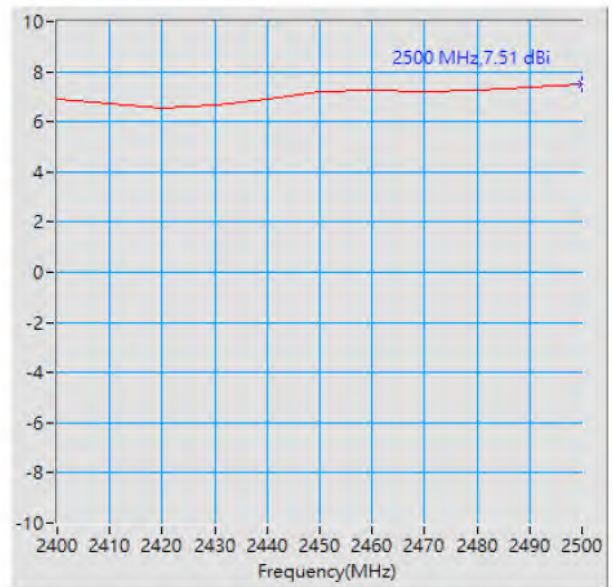
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Antenna Efficiency & Peak Gain

ANT1

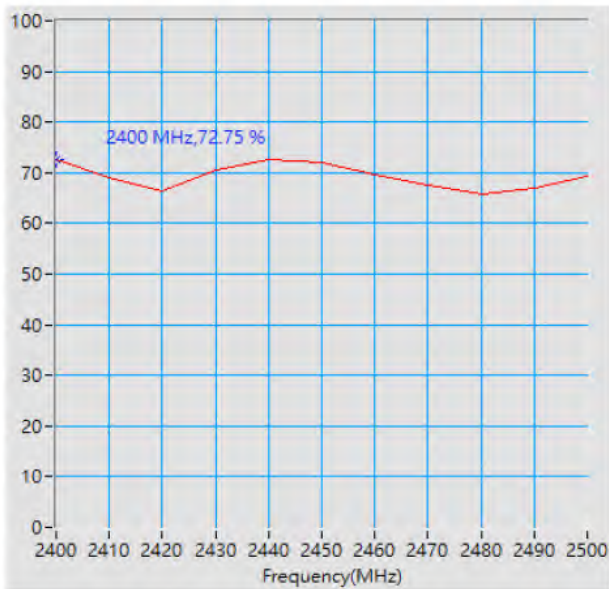


Maximum Efficiency at 2450 MHz : 74.36 %

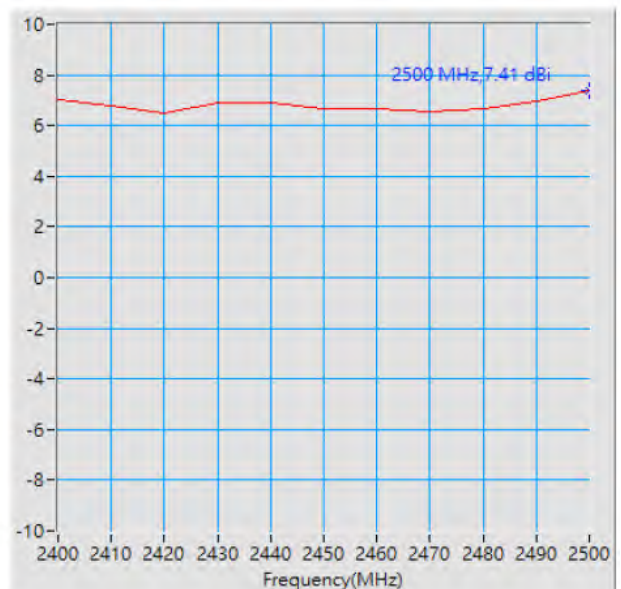


Maximum Peak Gain at 2500 MHz : 7.51 dBi

ANT2



Maximum Efficiency at 2400 MHz : 72.75 %



Maximum Peak Gain at 2500 MHz : 7.41 dBi

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 ANGLES=N/A HOLEDIA=N/A



INPAQ TECHNOLOGY CO., LTD.

SCALE : N/A

UNIT : mm

DRAWN BY : 詹惠雯

CHECKED BY : 詹惠雯

DESIGNED BY : 黃瑞郎

APPROVED BY : 陳振榮

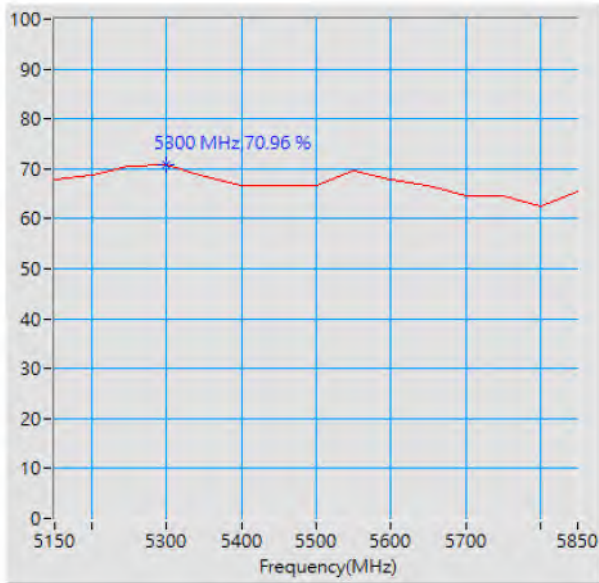
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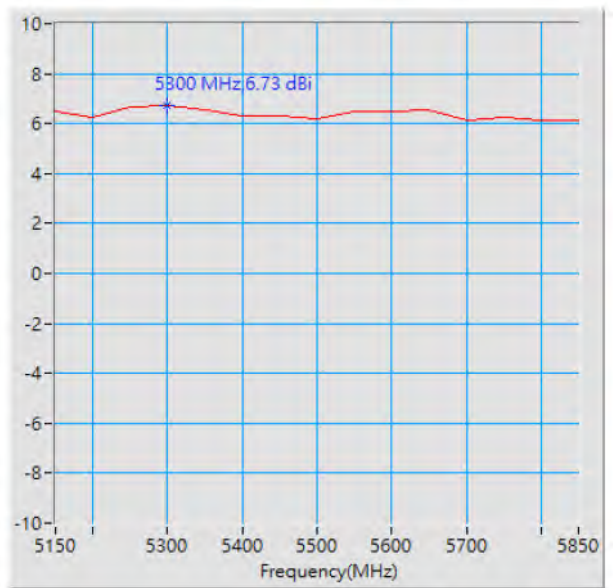
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ANT3

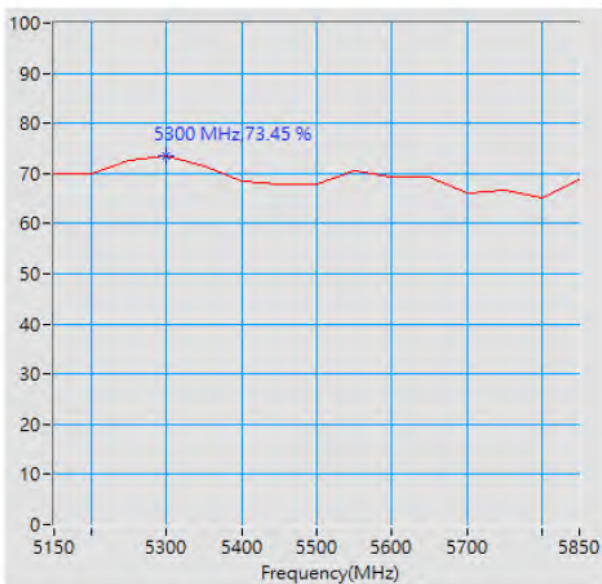


Maximum Efficiency at 5300 MHz : 70.96 %

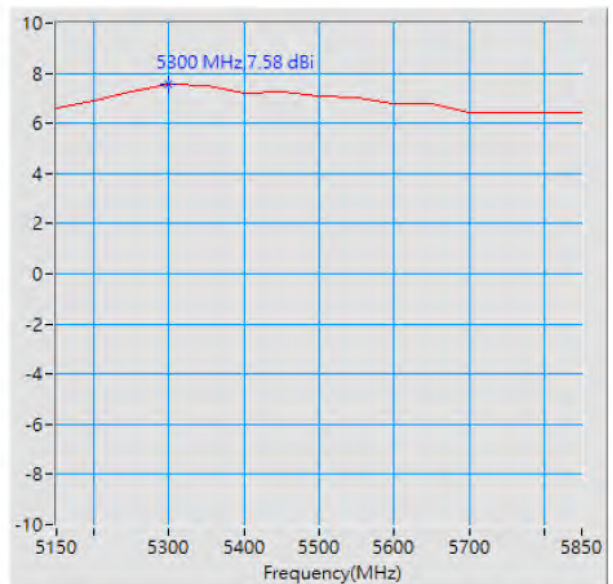


Maximum Peak Gain at 5300 MHz : 6.76 dBi

ANT4



Maximum Efficiency at 5300 MHz : 73.45 %



Maximum Peak Gain at 5300 MHz : 7.58 dBi

UNLESS OTHER SPECIFIED TOLERANCES ON :
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SCALE : N/A UNIT : mm
 DRAWN BY : 詹惠雯 CHECKED BY : 詹惠雯
 DESIGNED BY : 黃瑞郎 APPROVED BY : 陳振榮

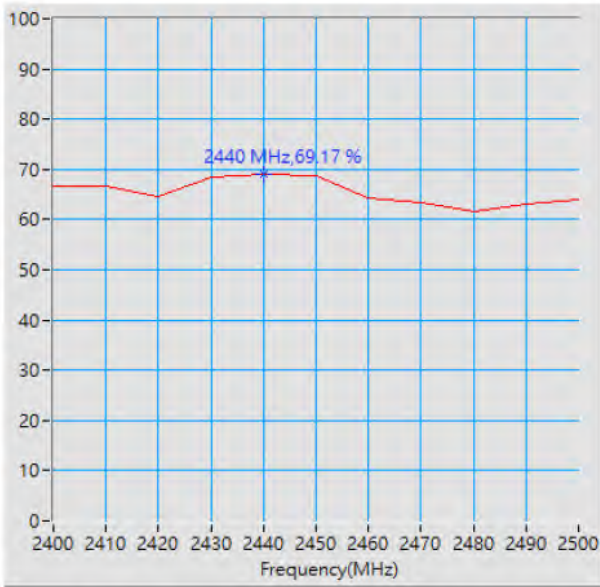
THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION

TITLE : RFMTA161425IMAB401

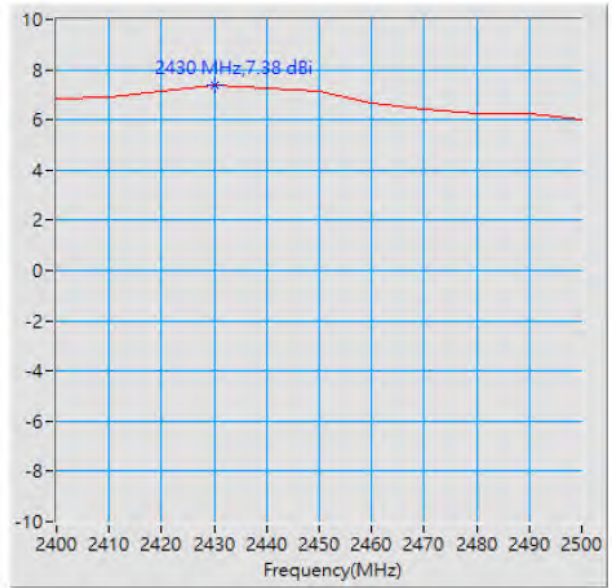
DOCUMENT NO.

SPEC REV.
A0


ANT5



Maximum Efficiency at 2440 MHz : 69.17 %



Maximum Peak Gain at 2430 MHz : 7.38 dBi

UNLESS OTHER SPECIFIED TOLERANCES ON : X=N/A X.X=N/A X.XX=N/A ANGLES=N/A HOLEDIA=N/A		 INPAQ TECHNOLOGY CO., LTD.
SCALE : N/A	UNIT : mm	
DRAWN BY : 詹惠雯	CHECKED BY : 詹惠雯	THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION
DESIGNED BY : 黃瑞郎	APPROVED BY : 陳振榮	
TITLE : RFMTA161425IMAB401		DOCUMENT NO.
		SPEC REV. A0

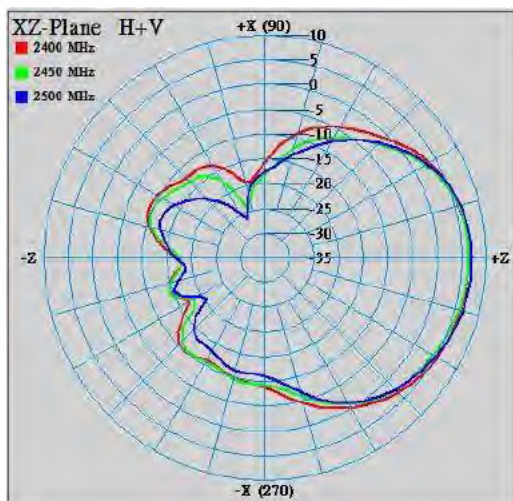
RADIATION PATTERN


ANT1

X-Z Plane

Phi=0.00deg

Gain . dB

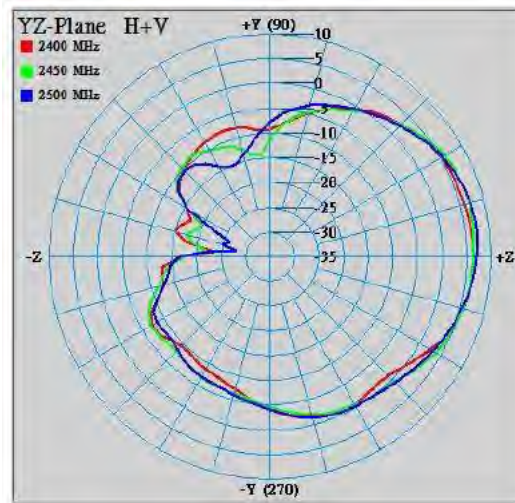



UNLESS OTHER SPECIFIED TOLERANCES ON :			INPAQ TECHNOLOGY CO., LTD.
X=N/A	X.X=N/A		
ANGLES=N/A		HOLEDIA=N/A	
SCALE : N/A	UNIT : mm	THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION	
DRAWN BY : 詹惠雯	CHECKED BY : 詹惠雯		
DESIGNED BY : 黃瑞郎	APPROVED BY : 陳振榮		
TITLE : RFMTA161425IMAB401		DOCUMENT NO.	SPEC REV.
			A0

Y-Z Plane

Phi=90.00deg

Gain . dB

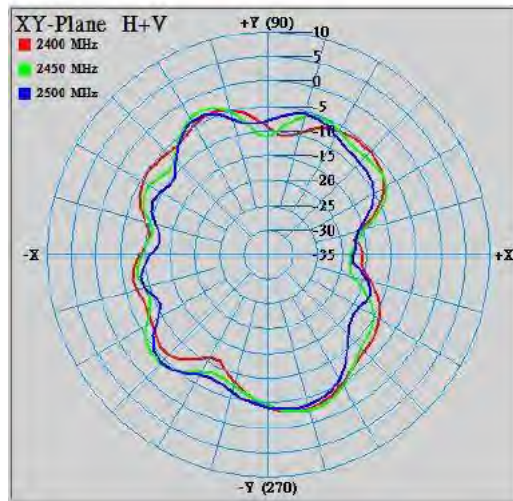


UNLESS OTHER SPECIFIED TOLERANCES ON :			INPAQ TECHNOLOGY CO., LTD.
X=N/A	X.X=N/A		
ANGLES=N/A		HOLEDIA=N/A	
SCALE : N/A	UNIT : mm	THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION	
DRAWN BY : 詹惠雯	CHECKED BY : 詹惠雯		
DESIGNED BY : 黃瑞郎	APPROVED BY : 陳振榮		
TITLE : RFMTA161425IMAB401		DOCUMENT NO.	SPEC REV. A0


X-Y Plane

Theta=90.00deg

Gain . dB



Frequency [MHz]	ZX plane		ZY plane		XY plane	
	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]
2400	6.48	0.00	6.48	0.10	-2.75	-6.96
2450	6.52	-0.50	7.04	0.50	-2.47	-6.80
2500	7.15	-0.13	7.41	0.56	-3.44	-7.54

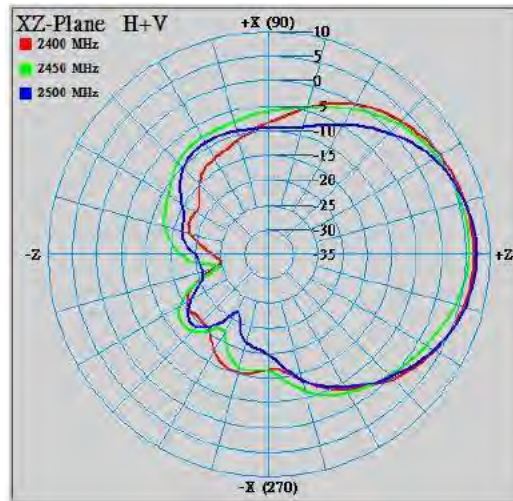
UNLESS OTHER SPECIFIED TOLERANCES ON : X=N/A X.X=N/A X.XX=N/A ANGLES=N/A HOLEDIA=N/A			INPAQ TECHNOLOGY CO., LTD.
SCALE : N/A	UNIT : mm		
DRAWN BY : 詹惠雯	CHECKED BY : 詹惠雯		
DESIGNED BY : 黃瑞郎	APPROVED BY : 陳振榮		
TITLE : RFMTA161425IMAB401		DOCUMENT NO.	SPEC REV. A0


ANT2

X-Z Plane

Phi=0.00deg

Gain . dB

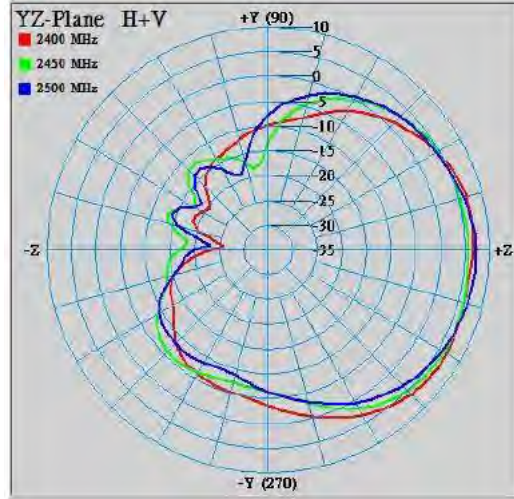



UNLESS OTHER SPECIFIED TOLERANCES ON :			INPAQ TECHNOLOGY CO., LTD.
X=N/A X.X=N/A X.XX=N/A ANGLES=N/A HOLEDIA=N/A			
SCALE : N/A	UNIT : mm	THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION	
DRAWN BY : 詹惠雯	CHECKED BY : 詹惠雯		
DESIGNED BY : 黃瑞郎	APPROVED BY : 陳振榮		
TITLE : RFMTA161425IMAB401		DOCUMENT NO.	SPEC REV. A0

Y-Z Plane

Phi=90.00deg

Gain . dB

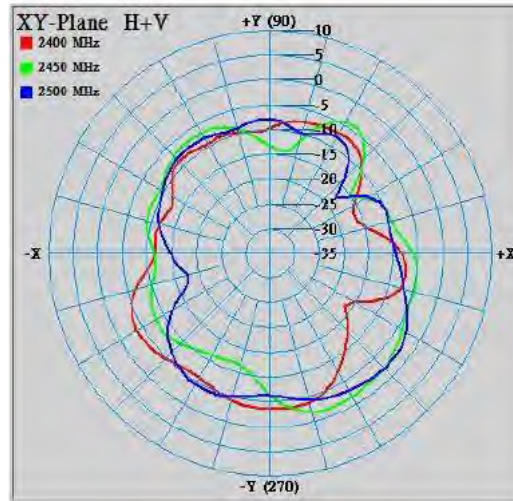


UNLESS OTHER SPECIFIED TOLERANCES ON :			INPAQ TECHNOLOGY CO., LTD.
X=N/A	X.X=N/A X.XX=N/A		
ANGLES=N/A		THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION	
SCALE : N/A	UNIT : mm		
DRAWN BY : 詹惠雯	CHECKED BY : 詹惠雯		
DESIGNED BY : 黃瑞郎	APPROVED BY : 陳振榮	DOCUMENT NO.	
TITLE : RFMTA161425IMAB401			

X-Y Plane

Theta=90.00deg

Gain . dB



Frequency [MHz]	ZX plane		ZY plane		XY plane	
	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]
2400	6.67	0.07	6.93	1.29	-3.56	-7.53
2450	5.80	-0.78	6.46	0.79	-1.36	-6.55
2500	7.56	-0.27	7.39	0.97	-2.10	-7.02

UNLESS OTHER SPECIFIED TOLERANCES ON :
 X=N/A X.X=N/A X.XX=N/A
 ANGLES=N/A HOLEDIA=N/A



INPAQ TECHNOLOGY CO., LTD.

SCALE : N/A UNIT : mm
 DRAWN BY : 詹惠雯 CHECKED BY : 詹惠雯
 DESIGNED BY : 黃瑞郎 APPROVED BY : 陳振榮

THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION

TITLE : RFMTA161425IMAB401

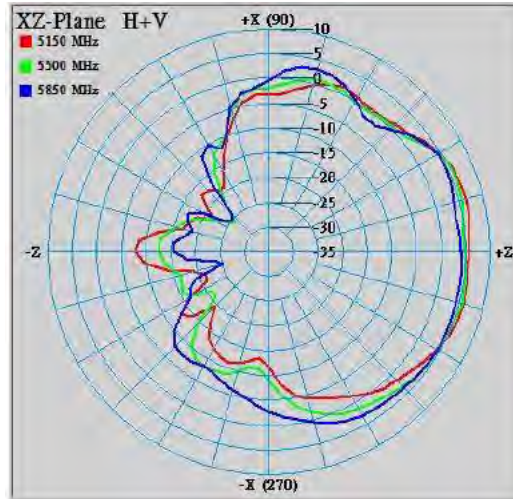
DOCUMENT NO. SPEC REV. A0


ANT3

X-Z Plane

Phi=0.00deg

Gain . dB

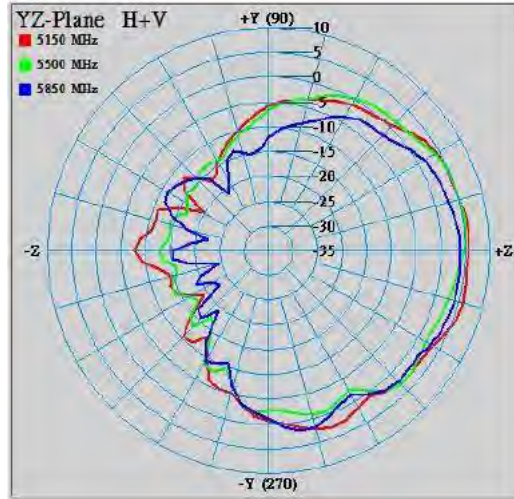



UNLESS OTHER SPECIFIED TOLERANCES ON :			INPAQ TECHNOLOGY CO., LTD.
X=N/A	X.X=N/A X.XX=N/A		
ANGLES=N/A		HOLEDIA=N/A	
SCALE : N/A	UNIT : mm	THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION	
DRAWN BY : 詹惠雯	CHECKED BY : 詹惠雯		
DESIGNED BY : 黃瑞郎	APPROVED BY : 陳振榮		
TITLE : RFMTA161425IMAB401		DOCUMENT NO.	SPEC REV. A0

Y-Z Plane

Phi=90.00deg

Gain . dB

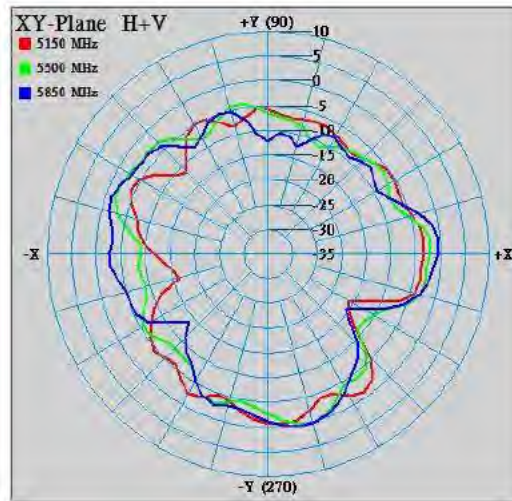


UNLESS OTHER SPECIFIED TOLERANCES ON :			INPAQ TECHNOLOGY CO., LTD.
X=N/A	X.X=N/A X.XX=N/A		
ANGLES=N/A		THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION	
HOLEDIA=N/A			
SCALE : N/A	UNIT : mm		
DRAWN BY : 詹惠雯	CHECKED BY : 詹惠雯		
DESIGNED BY : 黃瑞郎	APPROVED BY : 陳振榮		
TITLE : RFMTA161425IMAB401		DOCUMENT NO.	SPEC REV. A0


X-Y Plane

Theta=90.00deg

Gain . dB



Frequency [MHz]	ZX plane		ZY plane		XY plane	
	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]
5150	6.49	0.25	6.02	0.29	-0.42	-5.20
5500	5.92	0.30	5.32	-0.70	0.30	-4.79
5850	4.85	0.33	4.24	-1.46	0.49	-4.32

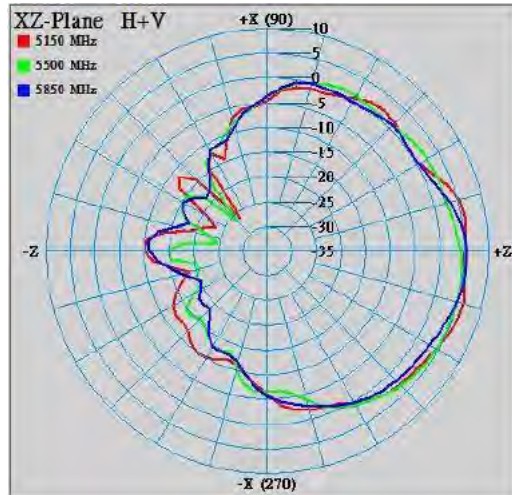
UNLESS OTHER SPECIFIED TOLERANCES ON :			INPAQ TECHNOLOGY CO., LTD.
X=N/A X.X=N/A X.XX=N/A ANGLES=N/A HOLEDIA=N/A			
SCALE : N/A	UNIT : mm	THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION	
DRAWN BY : 詹惠雯	CHECKED BY : 詹惠雯		
DESIGNED BY : 黃瑞郎	APPROVED BY : 陳振榮		
TITLE : RFMTA161425IMAB401		DOCUMENT NO.	SPEC REV. A0


ANT4

X-Z Plane

Phi=0.00deg

Gain . dB

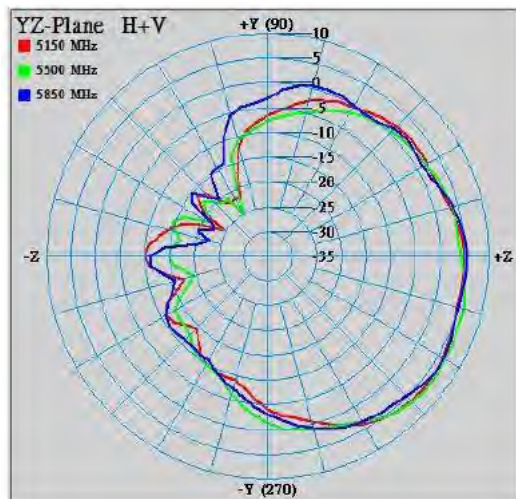



UNLESS OTHER SPECIFIED TOLERANCES ON :			INPAQ TECHNOLOGY CO., LTD.
X=N/A	X.X=N/A X.XX=N/A		
ANGLES=N/A		THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION	
SCALE : N/A	UNIT : mm		
DRAWN BY : 詹惠雯	CHECKED BY : 詹惠雯		
DESIGNED BY : 黃瑞郎	APPROVED BY : 陳振榮	DOCUMENT NO.	
TITLE : RFMTA161425IMAB401			

Y-Z Plane

Phi=90.00deg

Gain . dB

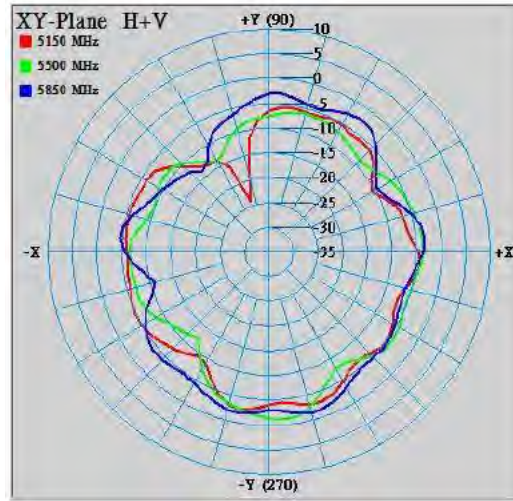


UNLESS OTHER SPECIFIED TOLERANCES ON :			INPAQ TECHNOLOGY CO., LTD.
X=N/A	X.X=N/A X.XX=N/A		
ANGLES=N/A		THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION	
SCALE : N/A	UNIT : mm		
DRAWN BY : 詹惠雯	CHECKED BY : 詹惠雯		
DESIGNED BY : 黃瑞郎	APPROVED BY : 陳振榮	DOCUMENT NO.	
TITLE : RFMTA161425IMAB401			


X-Y Plane

Theta=90.00deg

Gain . dB



Frequency [MHz]	ZX plane		ZY plane		XY plane	
	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]
5150	6.28	-0.11	6.42	0.38	-2.68	-6.09
5500	5.00	-0.59	6.99	0.60	-1.08	-6.06
5850	5.59	-0.88	6.34	0.52	-1.25	-4.82

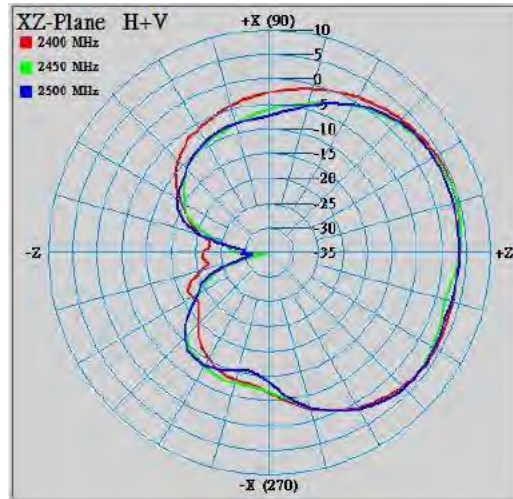
UNLESS OTHER SPECIFIED TOLERANCES ON :			INPAQ TECHNOLOGY CO., LTD.
X=N/A X.X=N/A X.XX=N/A			
ANGLES=N/A HOLEDIA=N/A		THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION	
SCALE : N/A	UNIT : mm		
DRAWN BY : 詹惠雯	CHECKED BY : 詹惠雯		
DESIGNED BY : 黃瑞郎	APPROVED BY : 陳振榮		
TITLE : RFMTA161425IMAB401		DOCUMENT NO.	SPEC REV.
			A0


ANT5

X-Z Plane

Phi=0.00deg

Gain . dB

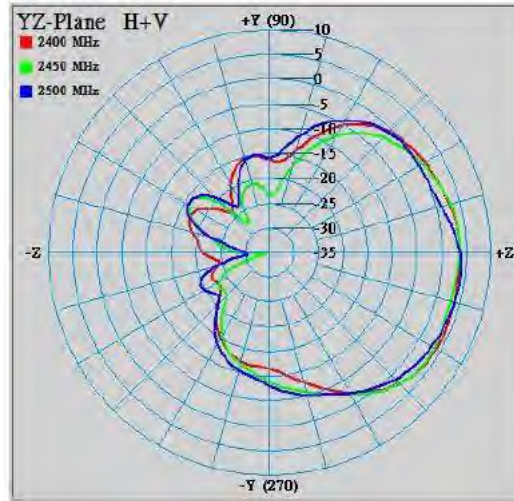



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ANGLES = N/A		HOLEDIA = N/A	
SCALE : N/A	UNIT : mm	THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION	
DRAWN BY : 詹惠雯	CHECKED BY : 詹惠雯		
DESIGNED BY : 黃瑞郎	APPROVED BY : 陳振榮		
TITLE : RFMTA161425IMAB401		DOCUMENT NO.	SPEC REV. A0

Y-Z Plane

Phi=90.00deg

Gain . dB

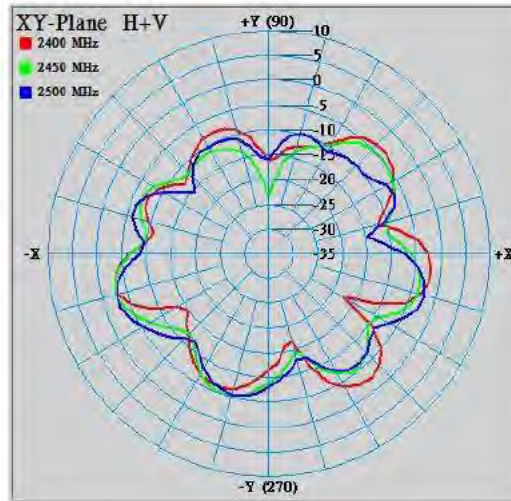


UNLESS OTHER SPECIFIED TOLERANCES ON :			INPAQ TECHNOLOGY CO., LTD.
X=N/A	X.X=N/A X.XX=N/A		
ANGLES=N/A		THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION	
SCALE : N/A	UNIT : mm		
DRAWN BY : 詹惠雯	CHECKED BY : 詹惠雯		
DESIGNED BY : 黃瑞郎	APPROVED BY : 陳振榮	DOCUMENT NO.	
TITLE : RFMTA161425IMAB401			

X-Y Plane

Theta=90.00deg

Gain . dB



Frequency [MHz]	ZX plane		ZY plane		XY plane	
	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]
2400	4.58	-0.21	4.24	-2.10	-1.65	-6.98
2450	4.57	-0.81	3.83	-2.39	-2.80	-7.59
2500	4.00	-0.80	4.20	-2.58	-2.25	-7.64

UNLESS OTHER SPECIFIED TOLERANCES ON :
 X=N/A X.X=N/A X.XX=N/A
 ANGLES=N/A HOLEDIA=N/A



INPAQ TECHNOLOGY CO., LTD.

SCALE : N/A UNIT : mm
 DRAWN BY : 詹惠雯 CHECKED BY : 詹惠雯
 DESIGNED BY : 黃瑞郎 APPROVED BY : 陳振榮

THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF INPAQ TECHNOLOGY CO.,LTD.AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION

TITLE : RFMTA161425IMAB401

DOCUMENT NO.

SPEC REV.
A0

2. Antenna Characteristics

2.3 3D Peak gain & above 30 elevation degree

Frequency [MHz]	2G1		2G2		5G1		5G2		BT
	Peak gain	Peak gain above 30 elevation degree	Peak gain	Peak gain above 30 elevation degree	Peak gain	Peak gain above 30 elevation degree	Peak gain	Peak gain above 30 elevation degree	Peak gain
2400	6.88	5.36	6.93	6.19					6.78
2450	7.04	6.77	6.46	6.36					7.17
2500	7.41	6.27	7.39	6.01					6.00
5150					6.49	5.16	6.42	5.00	
5500					6.20	5.46	6.99	4.61	
5850					6.18	6.12	6.34	4.47	