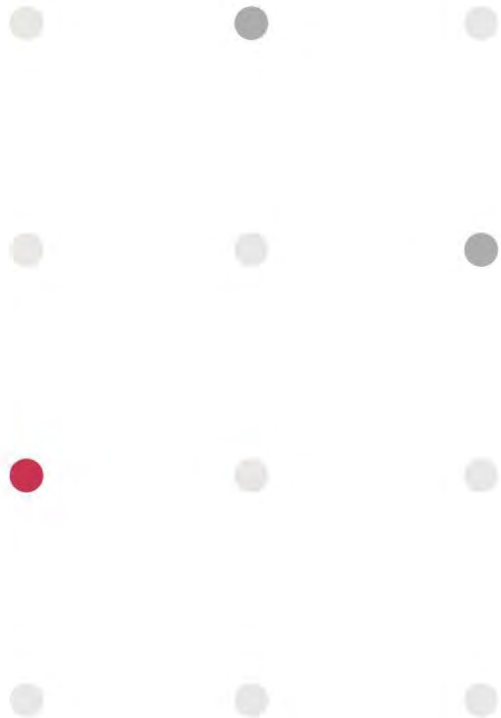


PSA

佳邦科技股份有限公司

INPAQ TECHNOLOGY CO., LTD.

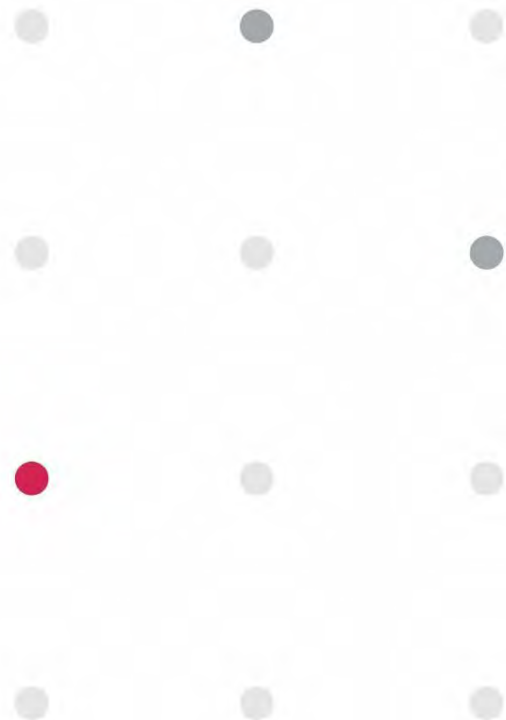
WE CONNECT & WE PROTECT WE ARE ONE



PSA

PASSIVE SYSTEM ALLIANCE
INPAQ TECHNOLOGY CO., LTD.

WE CONNECT & WE PROTECT WE ARE ONE



開元Nautilus

Presented by :Leo Sun, RF R&D Dept.

Checked by : Andy Chen

Approved by : Leeting Hsieh

INPAQ Technology Co., Ltd.

Last updated in 02.04, 2026

Version:V09



Version	Date	Description	Author
V01	2025/02/05	New Release	Bill
V02	2025/04/17	EVT Antenna fine tune and measurement	Peter
V03	2025/04/22	1.EVT Antenna fine tune and measurement (base customer Frequency point) 2.Update GPS Active test	Peter
V04	2025/04/24	1.EVT Antenna fine tune and measurement (base customer Frequency point) 2.Update GPS Passive test	Peter
V05	2025/04/28	1.Update title 2.Removed GPS Active test	Peter
V06	2025/04/30	1.Removed P24/P25	Peter
V07	2025/05/16	DVT sample measurement	Peter
V08	2025/07/31	DVT sample measurement (新增PCBA下方金屬板)	Ken Cheng
V09	2026/02/04	DVT sample measurement (更改Panel)	Leo

OUTLINE

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2.Antenna Characteristics

1. Return Loss & Isolation
2. Antenna Efficiency and Peak Gain
3. 3 views of antenna & 2D Radiation Patterns

3. Summary

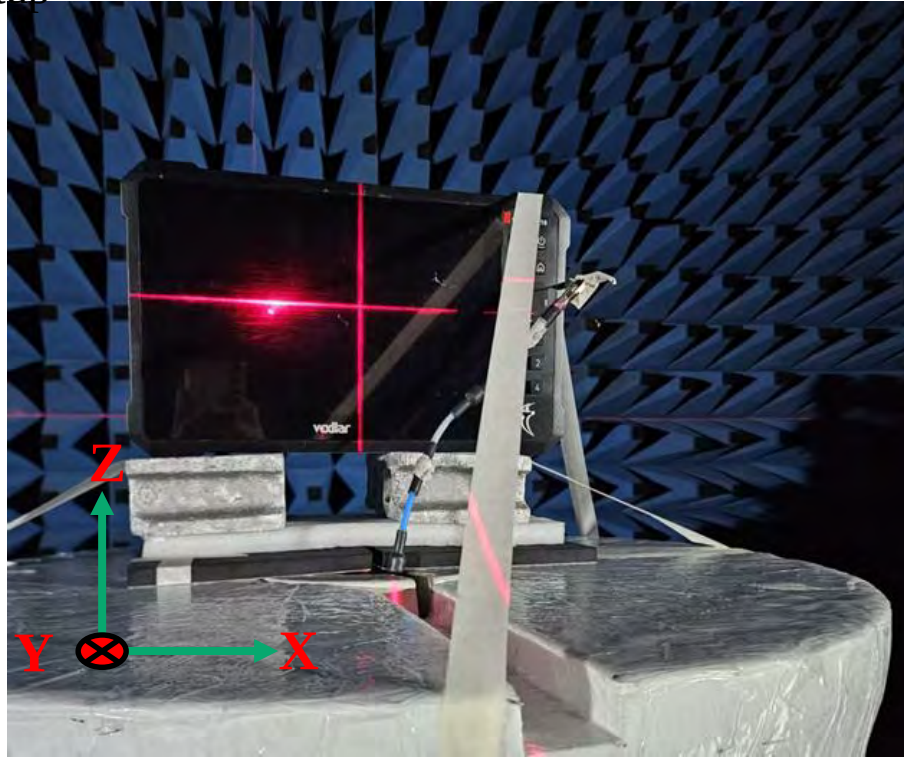
1. Measurement Information

1.1 Antenna solution

Product Name	Vendor	Model No	Specifications	Type
Nautilus	INPAQ	RFCMA252504IMGB302	GPS Module	Patch
Nautilus	INPAQ	RFPCA252011IMAB401	BT_ PCB+Cable 1.13LLS	Dipole
Nautilus	INPAQ	RFPCA401517IMLB401	WiFi2_ PCB+Cable 1.13LLS	Dipole
Nautilus	INPAQ	RFPCA401531IMLB401	WiFi1_ PCB+Cable 1.13LLS	Dipole

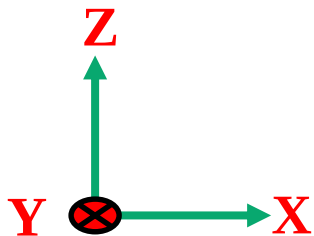
1.Measurement Information

1.2 Experimental Setup



1.Measurement Information

1.3 Antenna Solution Detail

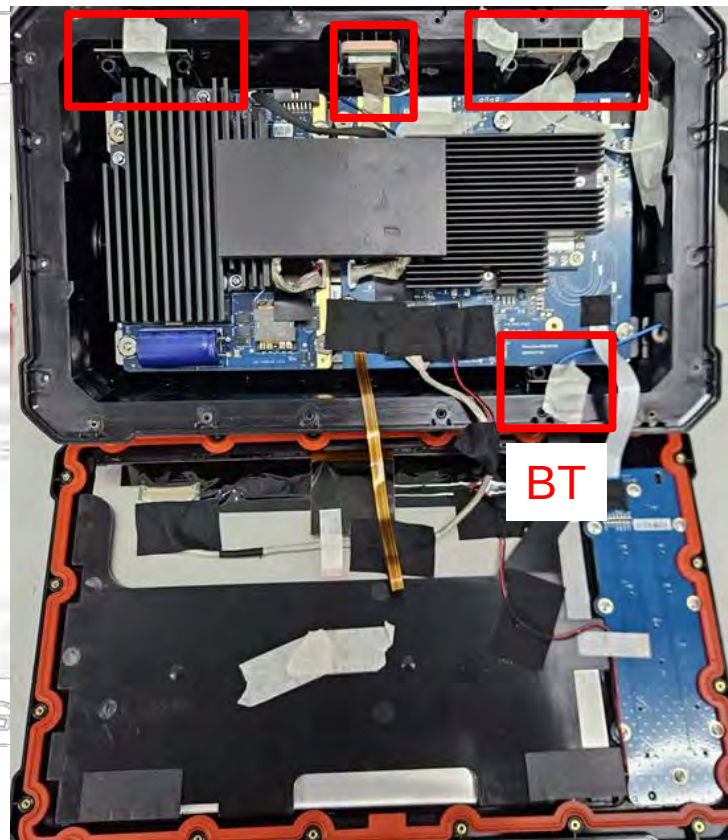


PASSIVE SYSTEM ALLIANCE
INPAQ TECHNOLOGY CO., LTD.

Wi-Fi-1

GPS

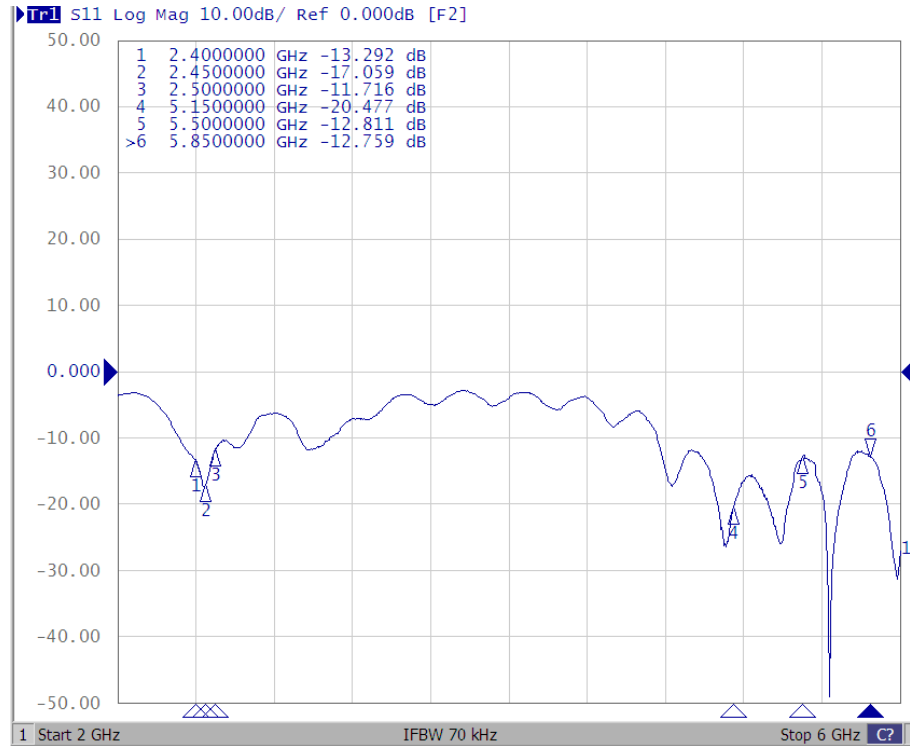
Wi-Fi-2



2. Antenna Characteristics

Wi-Fi_1

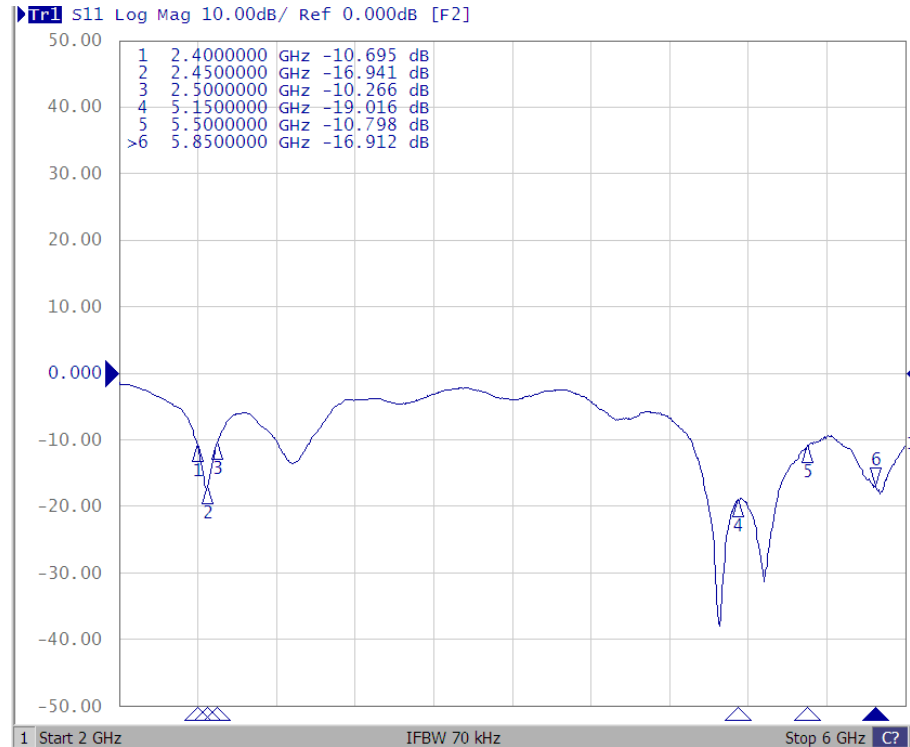
2.1 Return Loss



2. Antenna Characteristics

Wi-Fi_2

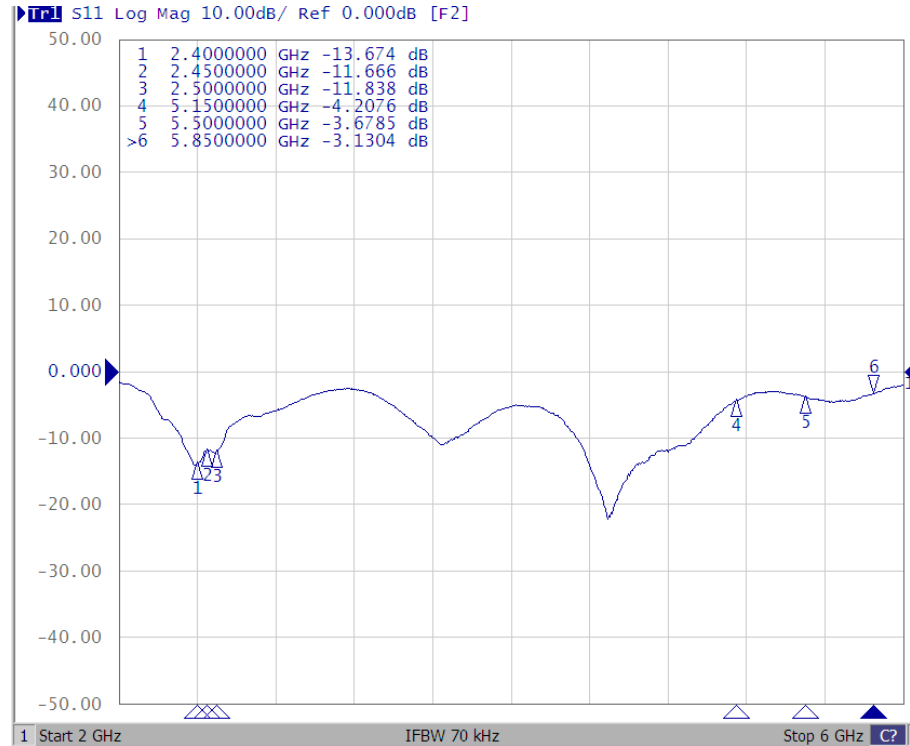
2.1 Return Loss



2. Antenna Characteristics

BT

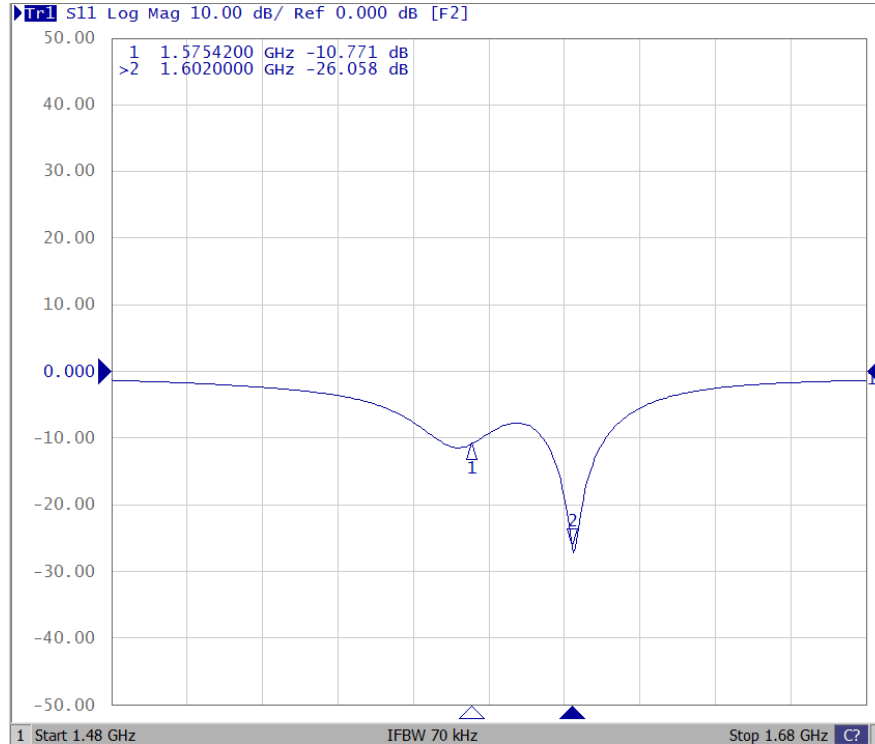
2.1 Return Loss



2. Antenna Characteristics

GPS

2.1 Return Loss



2. Antenna Characteristics

Wi-Fi-1 to Wi-Fi-2

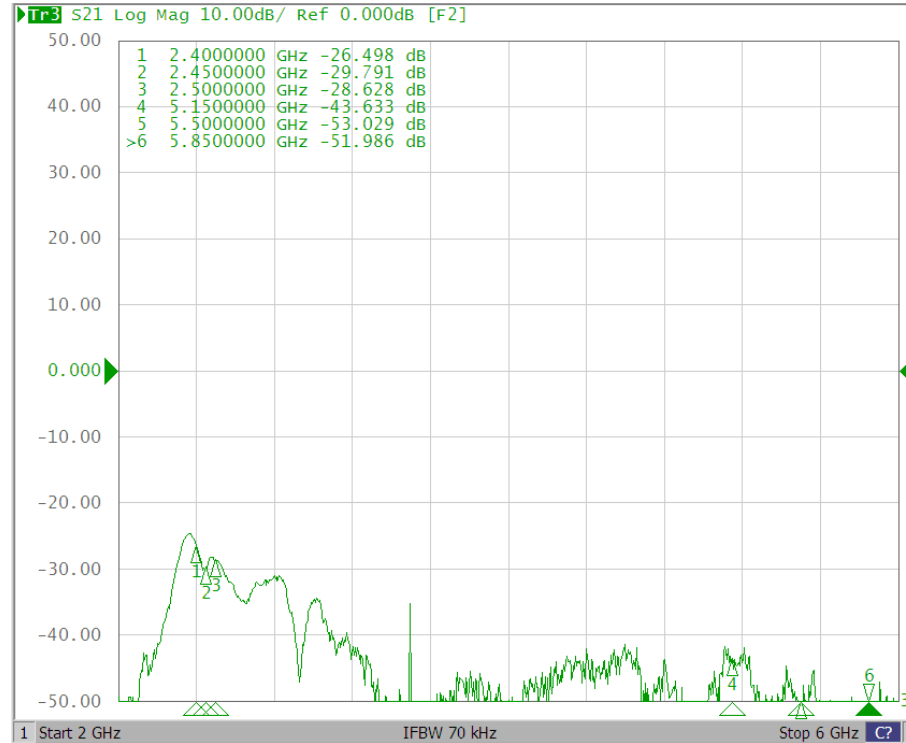
2.1 Isolation



2. Antenna Characteristics

Wi-Fi-1 to BT

2.1 Isolation



2. Antenna Characteristics

Wi-Fi-2 to BT

2.1 Isolation



2. Antenna Characteristics

2.2 Antenna Efficiency and Peak Gain

	Wi-Fi-1			Wi-Fi-2			BT		
Frequency (MHz)	AVG Efficiency (%)	AVG.Gain (dBi)	Peak Gain (dBi)	AVG Efficiency (%)	AVG.Gain (dBi)	Peak Gain (dBi)	AVG Efficiency (%)	AVG.Gain (dBi)	Peak Gain (dBi)
2402	51.49	-2.88	1.96	51.42	-2.89	2.54	55.73	-2.54	4.02
2412	51.81	-2.86	2.12	52.66	-2.78	2.52	55.49	-2.56	3.72
2442	52.98	-2.76	1.82	52.55	-2.79	1.71	57.41	-2.41	4.17
2472	52.49	-2.80	2.23	54.30	-2.65	1.72	58.02	-2.36	3.11
2480	51.10	-2.92	1.90	52.89	-2.77	1.70	58.52	-2.33	3.22
5150	53.54	-2.71	4.96	51.78	-2.86	4.24			
5180	55.06	-2.59	5.05	52.31	-2.81	4.47			
5320	53.00	-2.76	4.47	52.87	-2.77	4.76			
5620	51.55	-2.88	3.68	54.68	-2.62	5.66			
5835	54.21	-2.66	3.94	53.54	-2.71	5.45			

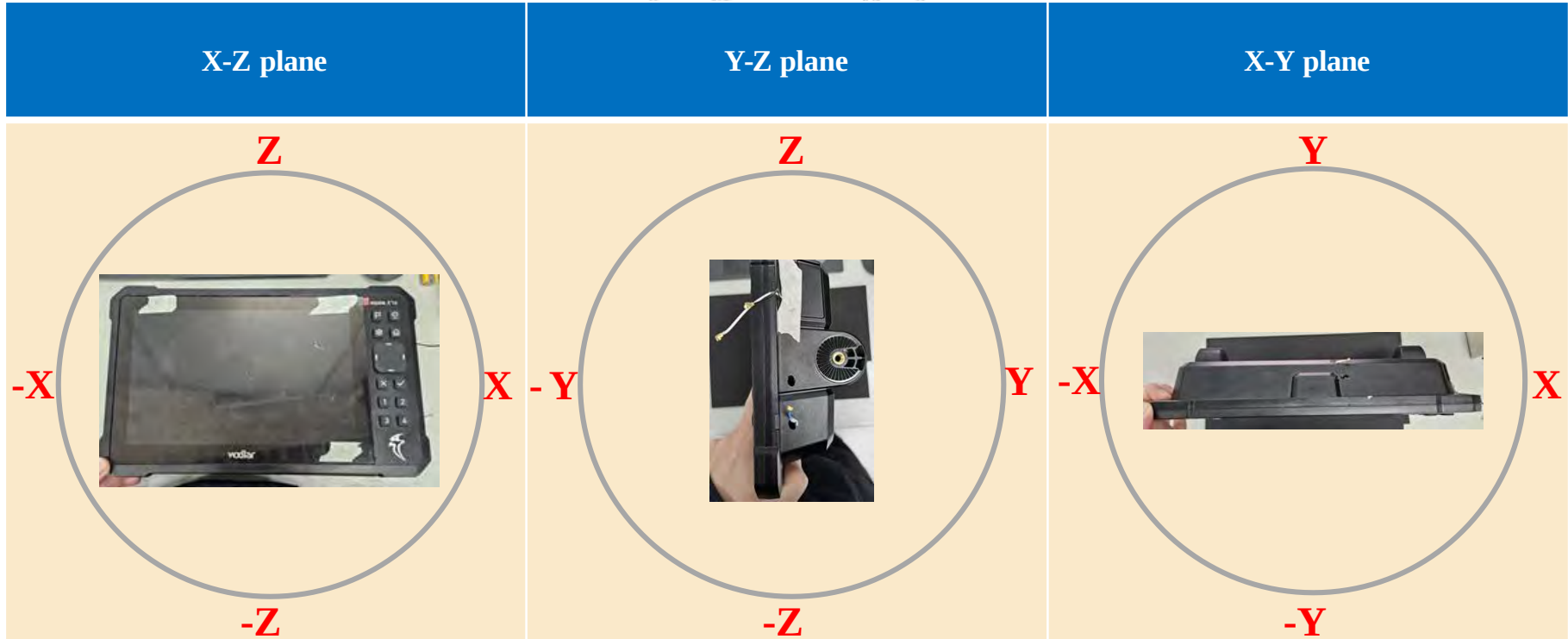
2. Antenna Characteristics

2.2 Antenna Efficiency and Peak Gain

	GPS		
Frequency (MHz)	AVG Efficiency (%)	AVG.Gain (dBi)	Peak Gain (dBi)
1560	53.85	-2.69	3.23
1575	61.74	-2.09	3.58
1602	55.99	-2.52	4.20

2. Antenna Characteristics

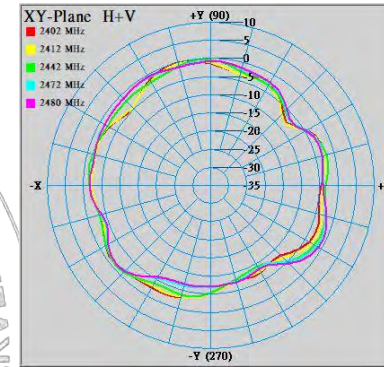
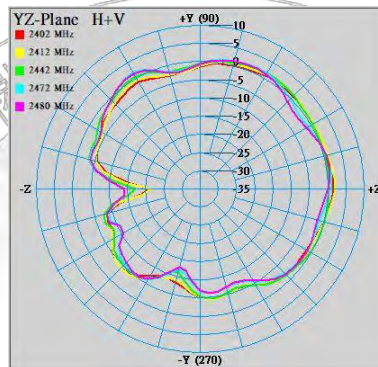
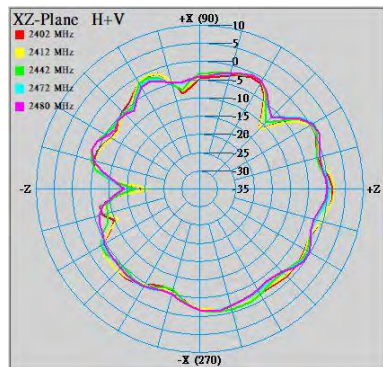
2.3 3 views of antenna



2. Antenna Characteristics

Wi-Fi-1@2G

2.3 2D Radiation Patterns

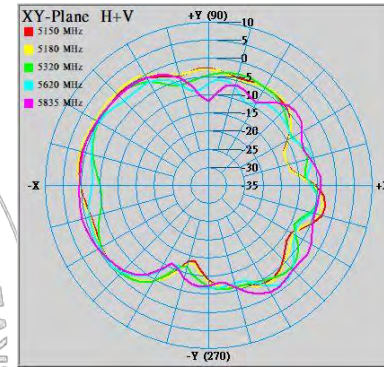
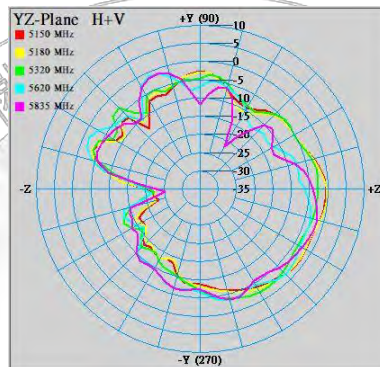
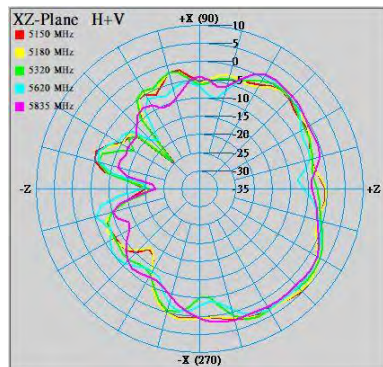


	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]
2402	1.55	-2.75	1.55	-2.04	-0.01	-3.13
2412	2.03	-2.67	2.06	-1.75	-0.3	-3.17
2442	0.77	-2.82	1.82	-1.57	-0.1	-2.82
2472	1.33	-2.74	1.85	-1.84	-0.54	-2.83
2480	1.16	-2.9	1.64	-2.11	-0.5	-2.8

2. Antenna Characteristics

Wi-Fi-1@5G

2.3 2D Radiation Patterns

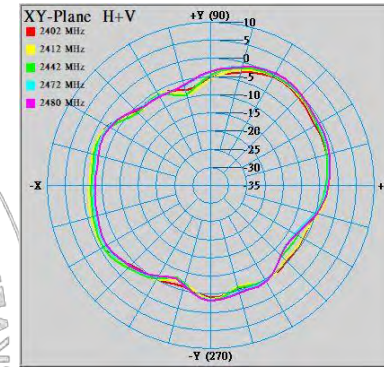
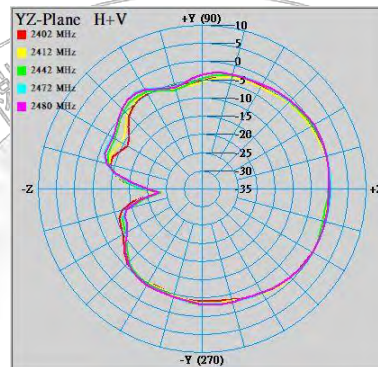
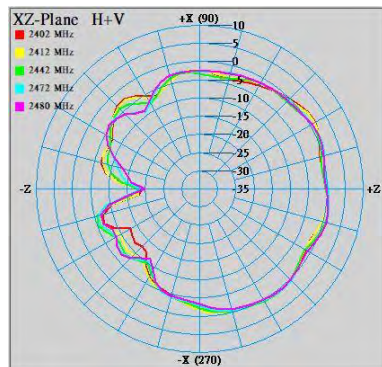


	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]
5150	4.8	-1.36	-0.38	-5.29	1.13	-2.93
5180	4.62	-1.32	-0.06	-5.24	1.67	-2.55
5320	3.8	-1.76	-2.12	-5.55	0.15	-3.74
5620	3.22	-2.23	-0.97	-5.83	-0.06	-3.89
5835	2.8	-1.89	-1.38	-6.29	0.98	-2.55

2. Antenna Characteristics

Wi-Fi-2@2G

2.3 2D Radiation Patterns

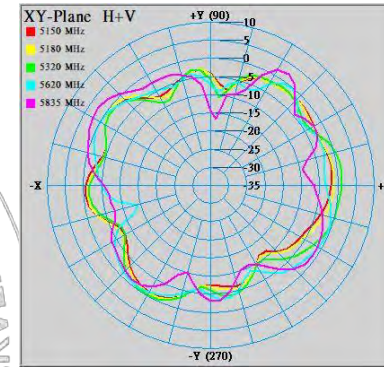
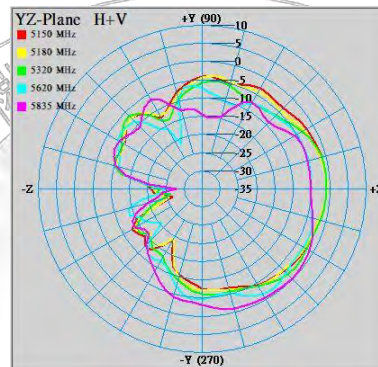
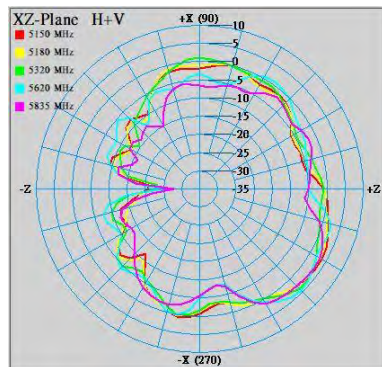


	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]
2402	1.77	-2.38	0.39	-3.18	-0.25	-3.14
2412	1.65	-2.32	0.22	-3.28	0.05	-3.02
2442	0.97	-2.44	0.44	-3.01	0.15	-3.19
2472	1.18	-2.25	0.62	-2.72	0.79	-3.05
2480	1.08	-2.4	0.55	-2.79	0.84	-3.09

2. Antenna Characteristics

Wi-Fi-2@5G

2.3 2D Radiation Patterns

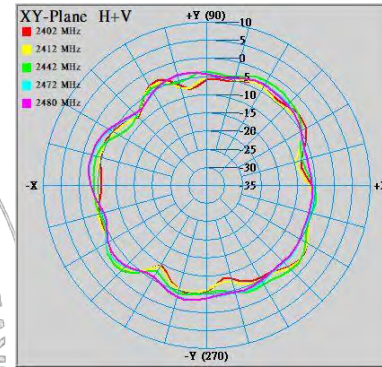
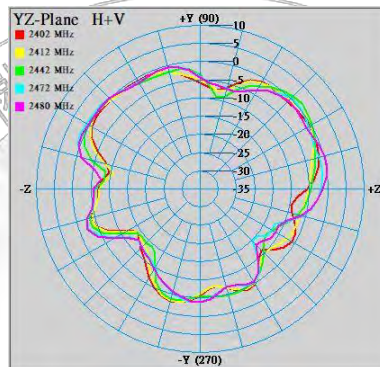
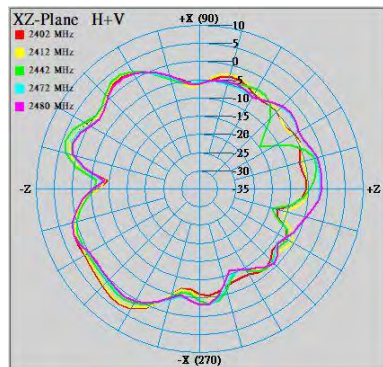


	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]
5150	3.79	-1.95	-0.74	-5.26	-0.48	-3.49
5180	3.43	-2.02	-0.71	-5.47	-0.4	-3.32
5320	3.98	-2.03	-0.75	-5.51	1.27	-2.69
5620	4.62	-2.16	-1.22	-6.56	0.17	-3.1
5835	3.38	-3.38	-0.15	-5.51	2.58	-2.69

2. Antenna Characteristics

BT

2.3 2D Radiation Patterns

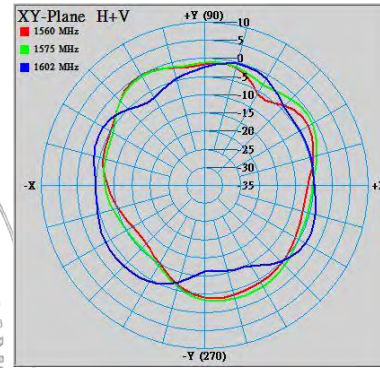
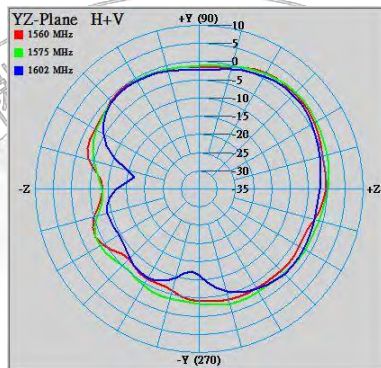
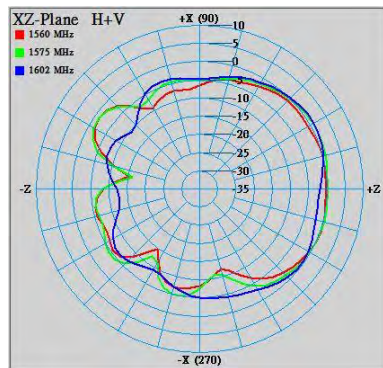


	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]
2402	3.65	-1.63	-0.21	-3.78	-2.04	-4.9
2412	3.41	-1.68	0.26	-3.79	-1.95	-4.96
2442	4.17	-1.78	1.36	-3.37	-1.37	-4.15
2472	2.5	-1.93	1.15	-3.12	-2.23	-4.3
2480	2.24	-1.93	0.79	-3.17	-2.11	-4.39

2. Antenna Characteristics

GPS

2.3 2D Radiation Patterns



	ZX plane		ZY plane		XY plane	
Frequency [MHz]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]	Max Value [dBi]	Average [dBi]
1560	0.41	-3.57	2.11	-1.75	0.11	-4.30
1575	1.15	-2.77	2.53	-1.24	-0.29	-3.58
1602	1.24	-3.30	1.53	-2.71	-0.19	-4.21

Thank you

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