

APPROVAL SHEET

Dipole ANTENNA
5.15 ~5.85 GHz Band Working Frequency
Halogens Free Product
P/N: RFPCA220904IM5B305

Customer : 智易科技股份有限公司

Customer 's Part No. : 120800085100J

Test Personnel : Kerry Wu

Test Date : 2023/04/20

Production : 佳邦科技股份有限公司竹南分公司
INPAQ TECHNOLOGY CO., LTD. CHUNAN BRANCH
350402 苗栗縣竹南鎮公義里 11 鄰科

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Taiwan (R.O.C.)

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

Version	Date	Description	Author
V01	2020 SEP.	New Release	HWCHAN
V02	2021 JUL.	變更線長(由 35 改為 41mm);變更端子方向(由朝外改為朝內)	HWCHAN
V03	2023 APR.	更新測報	HWCHAN
V04	2023 JUN.	取消端子保護套	HWCHAN

ELECTRICAL CHARACTERISTICS

Item	Specification
Frequency Range	5.18 ~ 5.85 GHz
Impedance	50 Ohm Nominal
VSWR	2.0 (Max)
Gain	2.91 dBi
Radiation	Omni-directional
Polarization	Linear Vertical
Admitted Power	1W
Operation Temperature	-20°C ~ +65°C

*note-1: Electrical characteristics will depend on customer's final application.

MATERIAL TABLE

Items	Description
Dipole Antenna	FR4(Single Layer);綠漆;T=0.8mm
Coaxial cable	φ 1.13 Coaxial Cable ; White
Connector	IPEX Compatible(Gold)
Double Tape	3M9888T

ORDERING RULE

RF	PCA	2209	04	I	M	5	B	3	05
Type Code	Product Code	Dipole Dimension (Unit: mm)	Cable Length (unit: cm)	Connector Brand	Type of Connector	Application	Project status	Wire Diameter	Project
Walsin RF Device	Dipole Antenna	Per 2 digits of length, width e.g.:2209 Length 18.0mm, Width9.8mm	2 digits for cable length e.g.: 04 Cable Length: 4.1cm	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 5: 5GHz 6: 6GHz 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:Durin g Test X: Pile Run	0:None 1:∅0.81 3:∅1.13 4:∅1.13 Low Loss 6:RG316 7:∅1.37 8:RG178 Low Loss	01~99 series number

DIMENSIONS

NO	DESCRIPTION	QTY	REMARK	UL No.
△ A	Body (PCA2209-4D)	1		ZPMV2.E359219
B	Coaxial cable	1		AVLV2.E318898 (Type: 11149)
△ C	Connector	1	△ 2130800013	QMFZ2.E213445
△ D	Safe Sheshth	1		YDPU2.E213950 (Instruction)
E	Double Tape	1		RSE: H 2017/913

ELECTRICAL
Frequency : 5.15 ~ 5.85 GHz

Front View

Back View

RF Coaxial Connector direction:
 100mm±90°
 200mm±135°
 200mm above dose
 not control

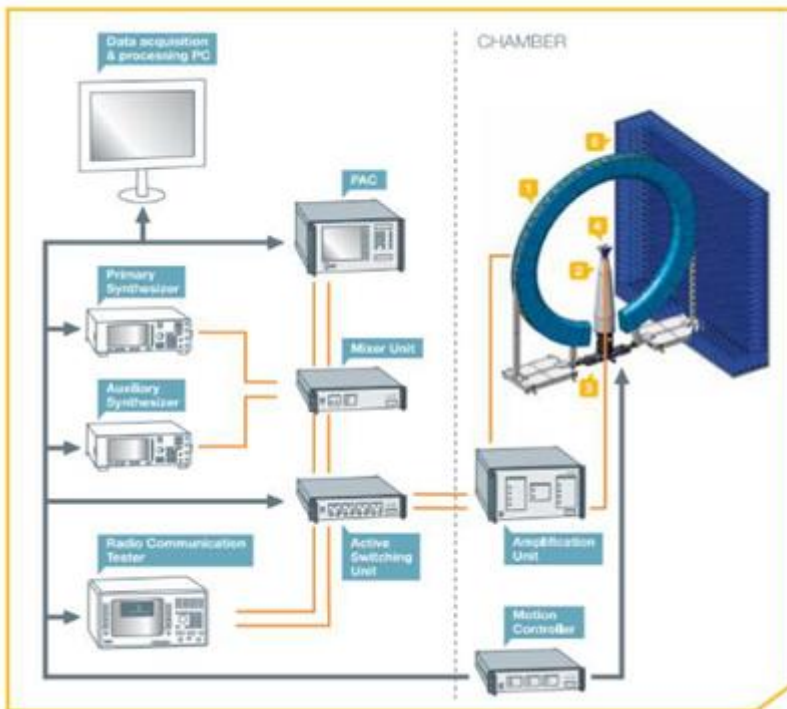
智易料號：120800085100J

※Mark Bymark, Focused inspection dimensions
 ※標記 記號者，為重點檢驗尺寸

△ 取消端子保護套	2023.06.16	HWCHAN	設計 DR.	HWCHAN	2020.08.27	品名	版本 REV.		
△ 客戶變更印刷文字	2021.07.09	HWCHAN	核准 APPR.	Marco				ARTICLE	E
△ 變更線長(由35改為41mm);變更端子方向(由朝外改為朝內)	2021.05.14	HWCHAN	容許公差 TOLERANCE				RFPCA220904IM5B305		
△ 變更端子(由IPEX外殼鍍銀改為直德端子鍍金)	2020.09.14	HWCHAN						6 以下.....±0.2 6 以上~30.....±0.5 30 以上~120.....±0.8 120 以上~315.....±1.2 315 以上~1000.....±2.0 1000 以上~2000.....±3.0	
LTR DESCRIPTION	DATE	REQ. BY					單位 UNIT	比例 SCALE	張數 SHEET
華新科技股份有限公司 WALSIN TECHNOLOGY CORPORATION							mm	****	7

Test Equipment and Calibration

ENA Series Network Analyzer	AGILENT	E5071C	MY46419201	100kHz~8.5GHz	Feb. 21, 2023	Feb. 20, 2024
VNA Calibration Kit	TS RF	TS85033E-F	-	DC~9GHz	N.C.R.	N.C.R.



SG 64 uses analog RF signal generators to emit EM waves from the probe array to the antenna under test (AUT) or vice versa.

It uses the NPAC as an RF receiver for antenna measurements. The NPAC also drives the electronic scanning of the probe array.

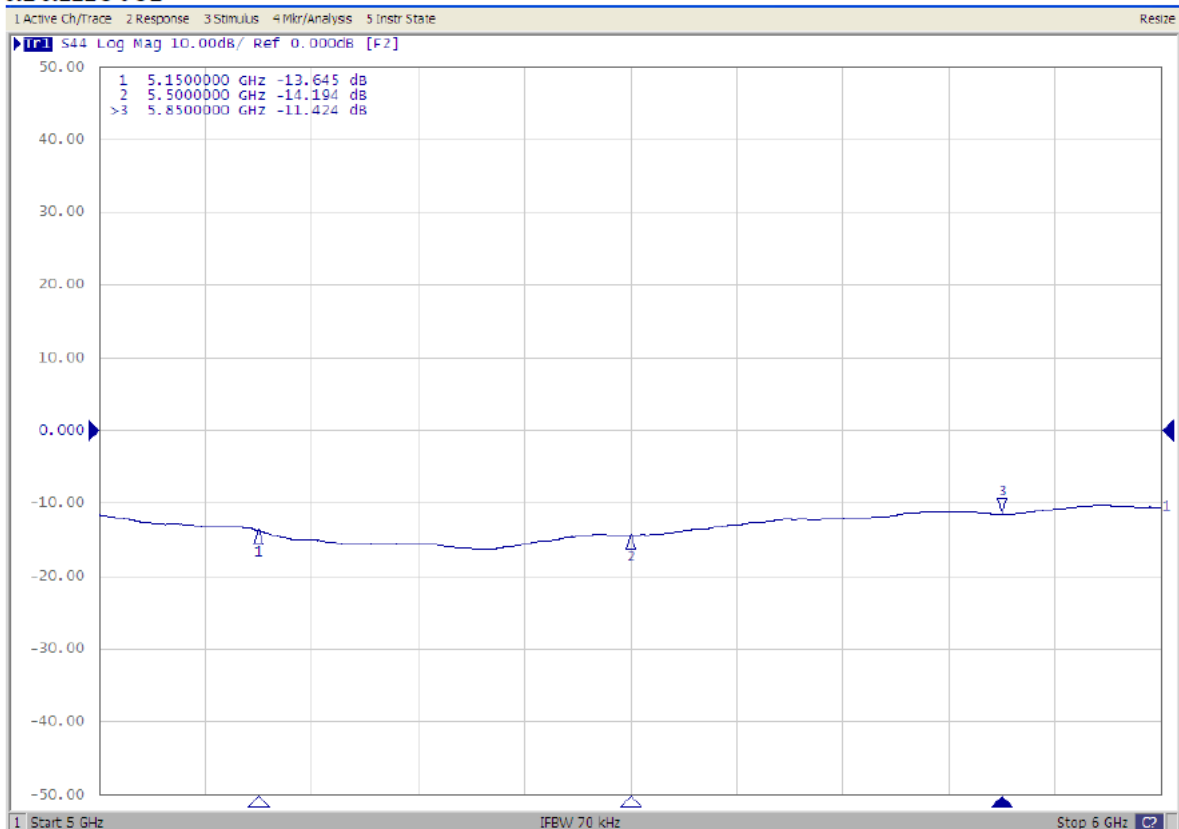
The NPAC includes the fastest and most accurate sources and receivers on the market.

Device	Type/Model	Serial#	Manufacturer	Calibrated Date	Calibrated Unit
SG64 Chamber	Standard	SG64	MVG	2023/03/30	2024/03/30
Turn Table	Customization	-	Machinery Dept.	2023/03/30	2024/03/30
New Probe Array Controller	N/A	1102341-4535	MVG	2023/03/30	2024/03/30
Power Supply Unit	N/A	1103211-13204	MVG	2023/03/30	2024/03/30
Active Switching Unit	N/A	1102347-7214	MVG	2023/03/30	2024/03/30
TX Amplification Unit	N/A	1102527-5909	MVG	2023/03/30	2024/03/30
RX Amplification Unit	N/A	1102536-3823	MVG	2023/03/30	2024/03/30
Transfer Switching Unit	N/A	1102183-3351	MVG	2023/03/30	2024/03/30
Mixer Unit	N/A	1102545-7208	MVG	2023/03/30	2024/03/30
Power And Control Unit	N/A	1102706-7209	MVG	2023/03/30	2024/03/30
Antenna Probe	DP 400-6000	-	MVG	2023/03/30	2024/03/30
Cable 13.7m-400MHz to 18GHz	SS402	00100A1F5A1XXS	Woken	2023/03/30	2024/03/30

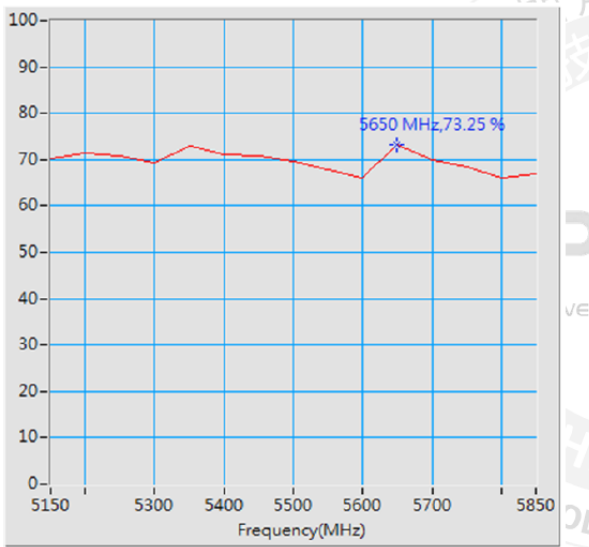
ELECTRICAL CHARACTERISTICS

- Place the device at the center of the chamber.
- Connect the antenna cable to RF cable of the chamber
- Run IETS-Lindgren SW test measurement
- Get 3D data in 2.8125 degree step from phi 0°~360° and theta -90°~ +90°, including efficiency, peak gain, 2D & 3D radiation pattern.

S-Parameter



■ Antenna Efficiency & Peak Gain



Maximum Efficiency at 5650MHz : 73.25%

Frequency (GHz)	Efficiency (%)	Peak gain (dBi)
5.15	70.29	2.91
5.5	69.71	2.37
5.85	66.86	1.97

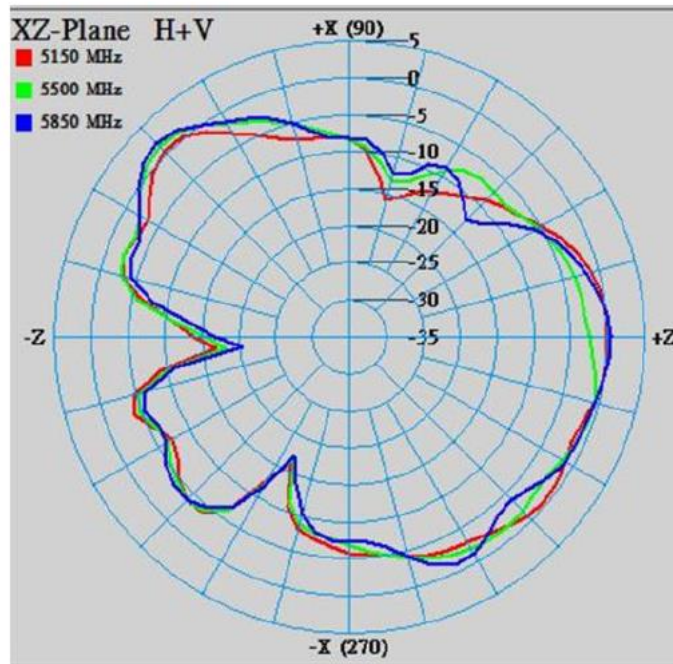
RADIATION PATTERN

5150~5850 MHz

X-Z Plane

Phi=0.00deg

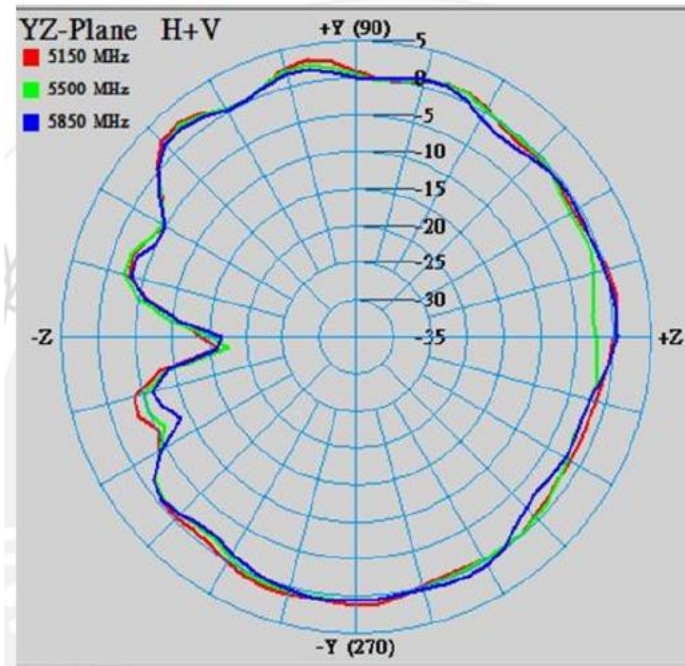
Gain . dB



Y-Z Plane

Phi=90.00deg

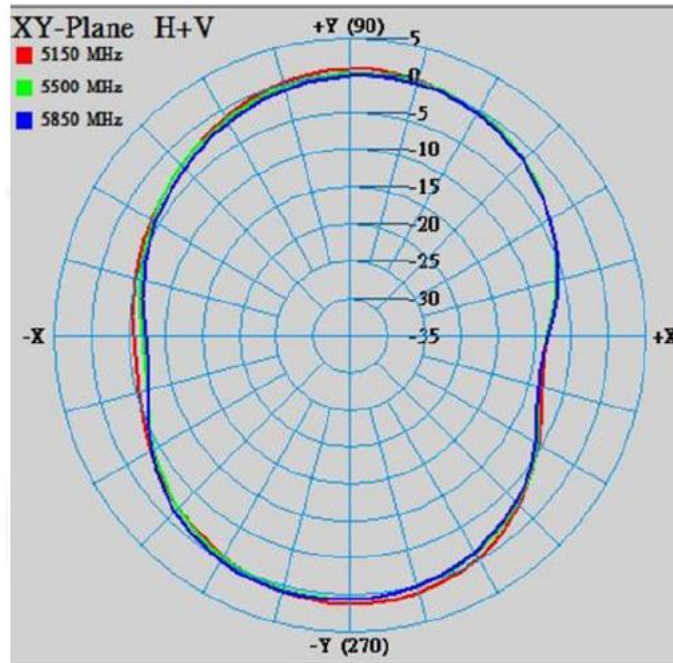
Gain . dB



X-Y Plane

Theta=90.00deg

Gain . dB



Frequency [MHz]	ZX plane		ZY plane		XY plane	
	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]	Max Value [dB]	Average [dB]
5150	0.52	-3.89	2.90	-0.38	1.26	-1.80
5500	1.47	-3.92	2.29	-0.77	0.58	-2.14
5850	1.89	-3.67	1.87	-0.84	0.81	-2.22