

PROFESSOR TECHNOLOGY CO.,LTD.

INTRODUCTION

MIMO(2in1)GNSS L1+L2 4G/LTE Antenna

CPGN16-L1+L2-4G/LTE-RG174-5M-SMA/Mx2

Magnetic & Adhesive (3M) Mount

2-Cables :1 xGNSS L1+L2 & 1x 4G/LTE

Cable 1:GNSS L1+L2 RG174 Low loss 5M SMA/M S/T

L1:1560-1610Mhz + L2:1217-1250 MHz 23-28 dBic

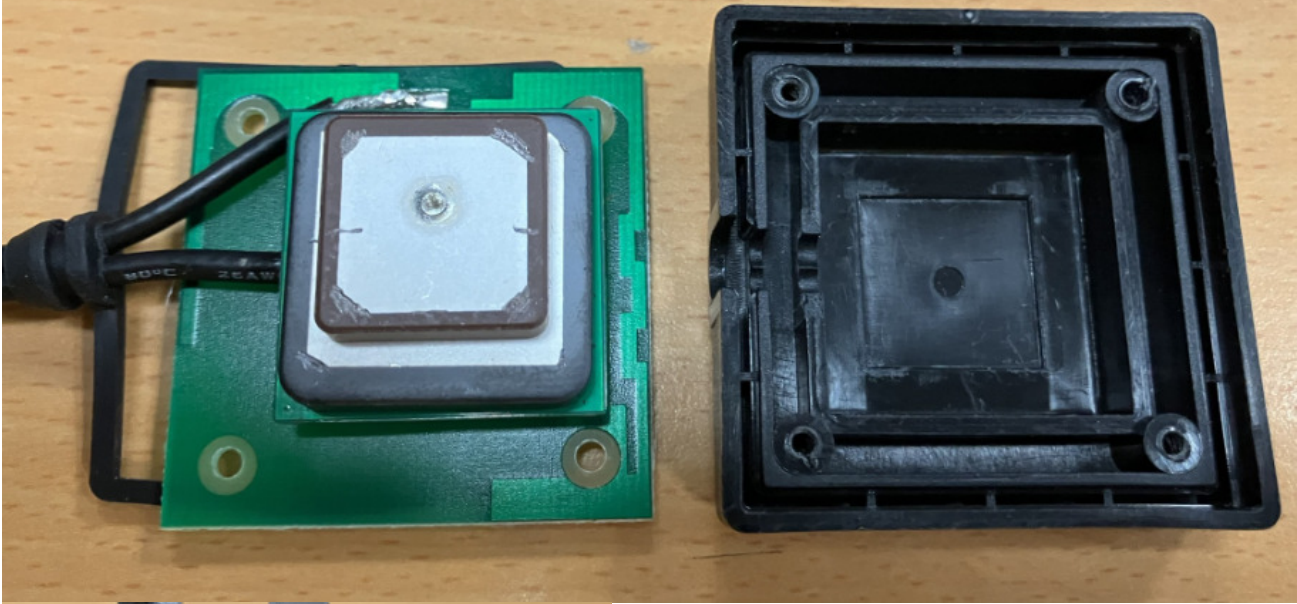
Cable 2 : 4G/LTE RG174 Low Loss 5M SMA/M S/T

696-960/1710-2170/2500-2700 MHz 2-5dBi



PROFESSOR TECHNOLOGY CO.,LTD.

L1+L2 & 4G/LTE



PROFESSOR TECHNOLOGY CO.,LTD.

1. GENERAL DESCRIPTION

Model No	Products P/N
CPGN16-L1+L2-4G/LTE-RG174-5M-SMA/Mx2	CPGN16-5M

Below is a table summarizing the GNSS L1+L2 / 4G/LTE (2-in-1) antenna design specification

Cable 1:

2.1 GNSS Active L1+L2 Antenna Electrical Properties

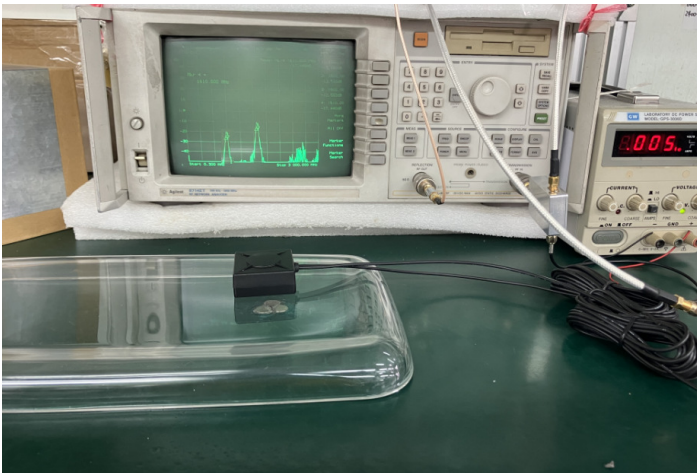
Antenna module type	Ceramic modules stacked in to layers L1 Ceramic +L2 Ceramic
Antenna module size	L1:25x25mm & L2:18x18mm
Antenna Frequency Range	L1:1560~1610MHz L2: 1217~1250MHz
Antenna Maximum Gain	90° : 2.0 dBi Min. 20° : -5.0 dBi Min. Mounted on the 60mm*60mm ground plane.
LNA Gain	L1:+26~+28dB L2:+23~+26dB
LNA NF	L1:2.3dB L2:1.5dB typical
Axial Ratio	L1:3.0dB L2: 2.9 typical
Noise Figure	L1:1.5dB L2:1.6dB typical
Total Peak System Gain	+23~+28dB
V.S.W.R	<2.0 : 1 Both L1& L2 bands
Polarization	RHCP
Axial Ratio	90° : Max 3.0dB Mounted on the 60mm*60mm ground plane.
Input Voltage	2.4V-5.0V
Power Consumption	At 2.4 V Type: 13mA. Max: 16mA. At 5.0 V Type: 18mA. Max: 22mA.
Horizontal (AZ) Beamwidth	360 degrees Both L1& L2 bands
Output Impedance	50Ω
Note: Gain includes the cable loss	

PROFESSOR TECHNOLOGY CO.,LTD.

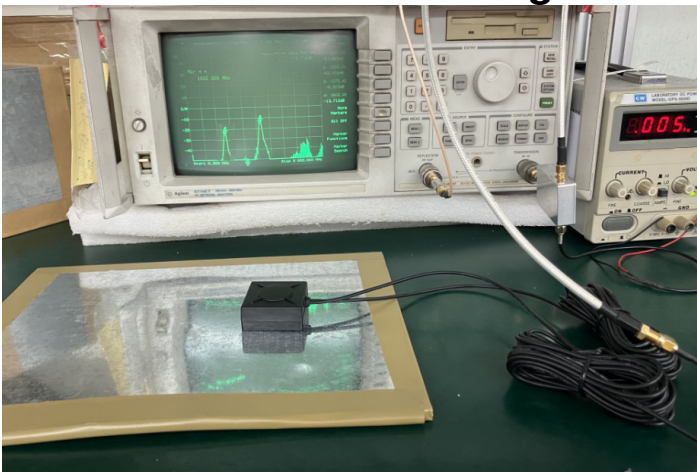
2.2 CPGN16-L1+L2 Antenna Mechanical Properties

Parameter	Description
Antenna Mounting	Magnetic Mount and Adhesive Mount (3M)
Waterproof	100 % waterproof.(IP66~IP67)
Shock 10msec. Half sine wave.	Shock 10msec. Half sine wave.
Antenna cable	RG174U Low loss
Antenna Cable Total Length	5000 mm(16.5ft)
Antenna Color	ABS (Black)
Connector	SMA 180°(Male)
Operating Temperature Range	-30 °C~+75 °C
Storage Temperature Range	-40 °C~+80 °C

2.3 CPGN16-L1+L2 test Adhesive mount on the glass (23-Aug-22)



2.4 CPGN16-L1+L2 test Magnetic Mount on iron plate(23-Aug-22)



PROFESSOR TECHNOLOGY CO.,LTD.

Cable 2:

3.1 4G/LTE Multi-band Antenna Electrical Properties

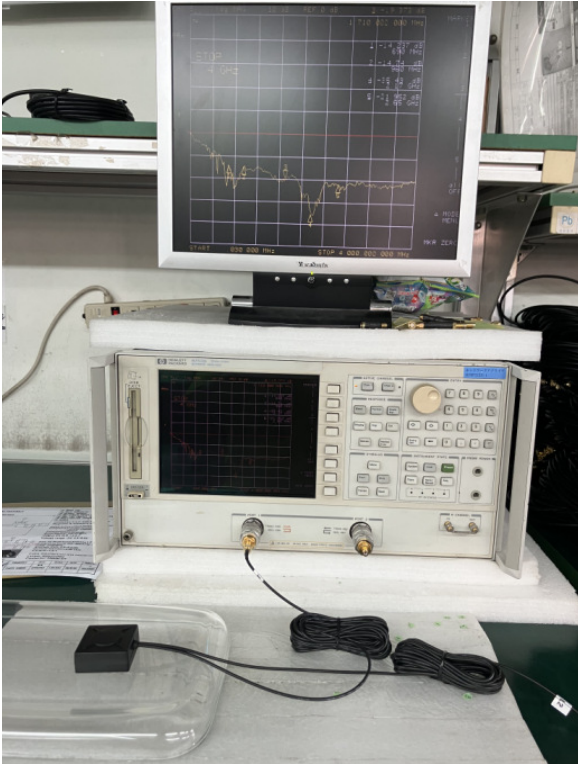
Parameter	Description
Communication System	5G/4G/3G/AMPS/GSM/DCS/UMTS/LTE
Frequency Band (MHz)	696~960/1710~2170/2500~2700MHz
Average Efficiency	65%/67%/59%
Average Gain	2.0~5.0dBi
Nominal Impedance	50 ohm
Polarization	Vertical
Return Loss (Check test data)	863.609MHz(-25.880dB),2033.00MHz (-32.088dB),2650.00MHz(-24.417dB)
V.S.W.R <1.5:1	863.609MHz(1.107:1),2033.00MHz(1.051:1), 2650.00MHz(1.128:1)
Reflection coefficient	863.609MHz(0.051),2033.00MHz(0.025), 2650.00MHz(0.060)

3.2 LTE/5G/4G/3G/2G Multi-band Antenna Mechanical Properties

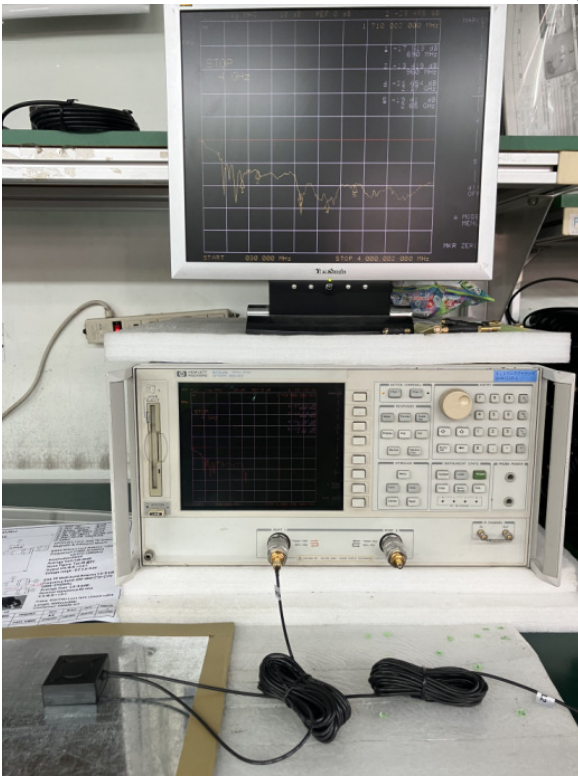
Parameter	Description
Antenna Type	External Antenna
Touch Type	Magnetic Mount and Adhesive Mount
Antenna size	L:45mm xW:45mm X20.5mm
Antenna cable	RG174 Low loss cable
Connector Type	SMA 180°(Male)
Antenna Cable Total Length	5000mm(16.5ft) ±50mm
Antenna Color	Black
Waterproof	100% waterproof.(IP66~IP67)
Shock (Drop Test)	25CM drop on concret

PROFESSOR TECHNOLOGY CO.,LTD.

3.3 CPGN16- 4G/LTE test Adhesive mount on the glass(23-Aug)



4.4 CPGN16- 4G/LTE test Magnetic Mount on iron plate



PROFESSOR TECHNOLOGY CO.,LTD.

5. Antenna Appearance Size:

L: 45.0mm (1.77")

W: 45.0mm(1.77")

H: 20.5mm (0.80")



6. Appearance

CPGN16-L1+L2-4G/LTE-RG174-5M-SMA/Mx2		01 Head top	Black	01
		02 Twin adhesive	White	01
		03 Rubber washer	Black	01
		04 RG-174A/U Cable	Black	02
		05 SMA 180°(Male)	Colden plating	02
		06 Heat-shrink tube	Black	02
		07 Label		02

**CPGN16-L1+L2- 4G/LTE Antenna
Magnetic & Adhesive Mount**

GNSS Active L1+L2 Antenna <+28dB Gain
Frequency:L1(1560-1610MHz)
L2(1217-1250Mhz)
Polarization:RHCP
Average Gain:+23-28dB
Noise Figure: Typ.28 @5V
Output V/S.W.R :<2.0:1
Voltage range : DC 2.4~5.0V

4G/LTE Multi-band Antenna 2.0~5.0dBi
Frequency band: 690~960/1710~2170
/2500~2700MHz
Average Gain: 2.0~5.0dBi
Nominal Impedance:50 ohm
V.S.W.R:<1.5:1

Cable :RG174U Loss less coaxial cable
Length: 5000mm(5M)
Connector: SMA/M S/T

RoHS Compliant
IP66~IP67

CUSTOMER' S	MODEL	PARTS NUMBER	FREQUENCY	UNIT	SCALE	DATE	VERSION
				M/M			I
TOLERANCE	X, XX+0. 15	NAME	PARTS NUMBER	APPROVED	CHECKED	DRAWING	DESIGNED
SURFACE ROUGHNESS	S VV	APPEARANCE					

Third angle projection
PROFESSOR
普傑國際股份有限公司

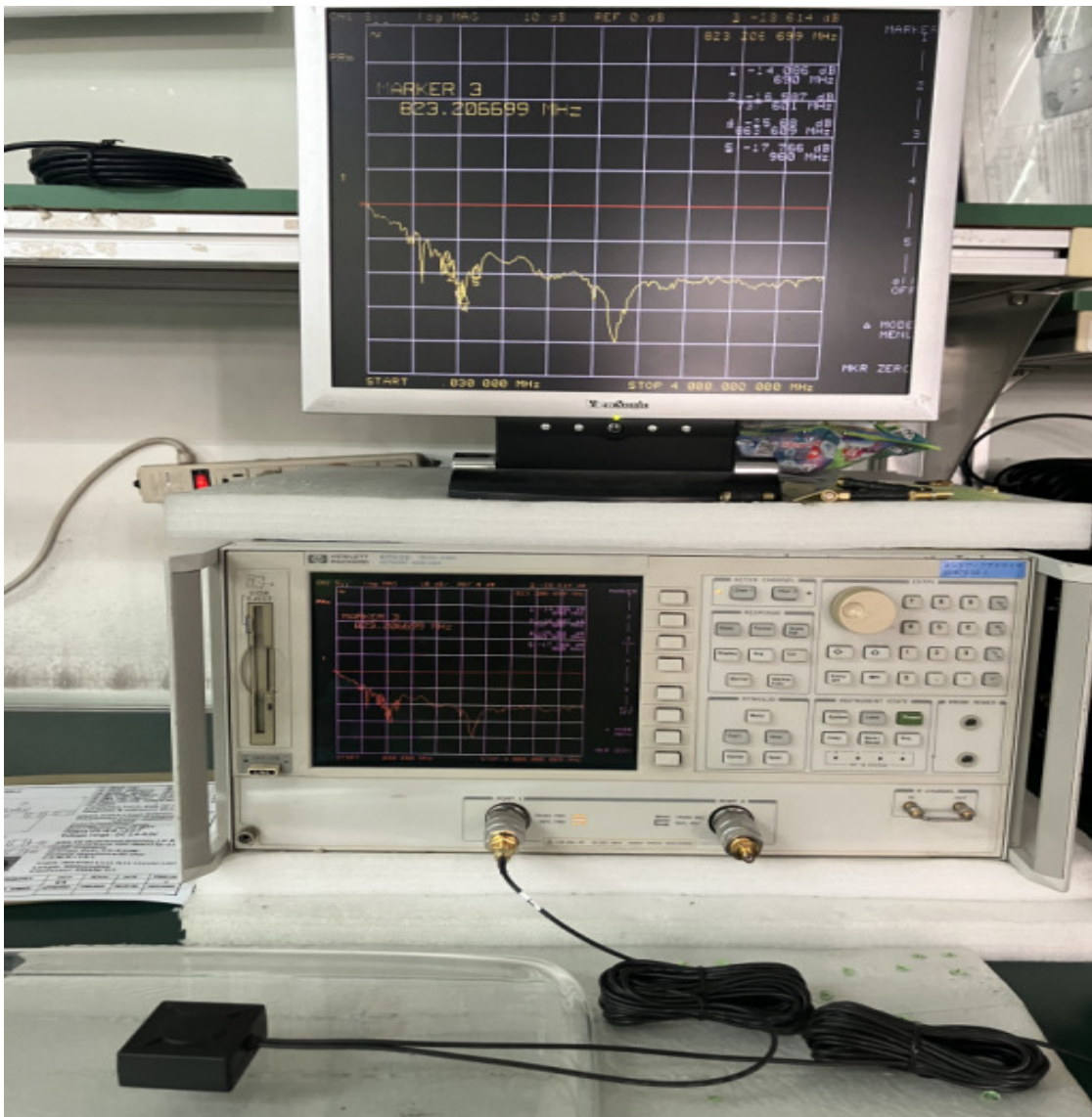
PROFESSOR TECHNOLOGY CO.,LTD.

7. 4G/LTE Multi -band Network analyzer test (23-AUG-22)

Frequency : 696~960/1710~2170/2500~2700/MHz

7-1 Detail band test - Frequency : 690~960MHz

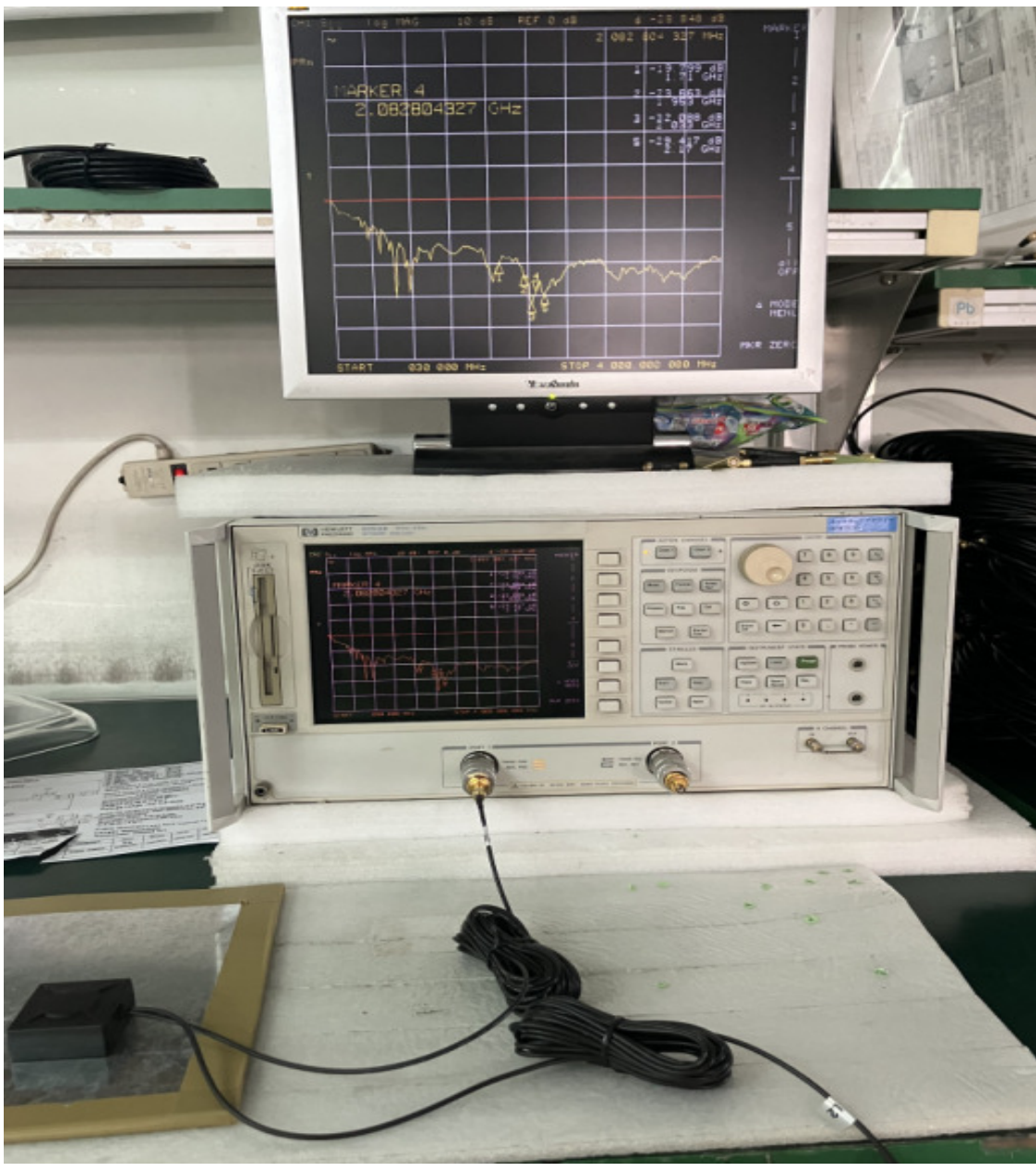
Frequency	Return loss	V.S.W.R	Reflection coefficient
690.000MHz	-14.086dB	1.492:1	0.198
737.601MHz	-16.587dB	1.348:1	0.148
833.206MHz	-23.614dB	1.141:1	0.066
863.609MHz	-25.880dB	1.107:1	0.051
960.000MHz	-17.766dB	1.297:1	0.129



PROFESSOR TECHNOLOGY CO.,LTD.

7-2 Detail band test - Frequency : 1710~2170MHz

Frequency	Return loss	V.S.W.R	Reflection coefficient
1710.00MHz	-19.799dB	1.228:1	0.102
1953.00MHz	-23.663dB	1.140:1	0.066
2033.00MHz	-32.088dB	1.051:1	0.025
2082.80MHz	-23.848dB	1.137:1	0.064
2170.00MHz	-29.417dB	1.070:1	0.034



PROFESSOR TECHNOLOGY CO.,LTD.

7-3 Detail band test - Frequency : 2500-2700Mhz

Frequency	Return loss	V.S.W.R	Reflection coefficient
2500.00MHz	-21.718dB	1.179:1	0.082
2550.00MHz	-22.072dB	1.171:1	0.079
2600.00MHz	-24.335dB	1.129:1	0.061
2650.00MHz	-24.417dB	1.128:1	0.060
2700.00MHz	-24.737dB	1.123:1	0.058

