



Wireless Communications

Product Catalog

➤ Sensing and Connecting

Chip Antennas

Unictron's proprietary TELA technology enable fast frequency tuning feature on all TELA chip antennas. Adjusting the antenna frequency is as easy as changing a RLC component. Designers can now fully optimize the frequency and impedance tuning without a compromise.

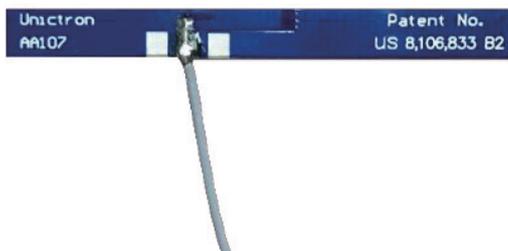
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PCB/FPC Antennas

PCB and FPC antennas are assembled with cable and connector according to customers' specification. It is a great internal solution when layout space is limited.

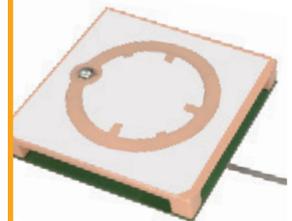
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Antenna Module

Generally speaking, the trend of electronic products has become compact and multifunctional. Thus, Unictron has announced the release of our GNSS active antenna module that integrates a patch antenna and a low-noise-amplifier (LNA). Don't miss out our newly released High Precision GNSS antenna module.

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External / Customized Antennas

Unictron's proprietary TELA technology enable fast Unictron is manufacturing also other antenna types (like NFC, metal stamping, LDS) and customizing antennas to fit the specific environment of customers' devices. Check out our most advanced 5in1 (MIMO LTE + MIMO WiFi + GNSS) and high precision GPS L1/L2/L5 solution!

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About Us

Unictron's story

Unictron was founded in 1988. Since then we had expanded our office areas and production sites, currently employing over 500 staff.

With the engineering team and own manufacturing, we control whole production process, starting from preparing the ceramic material till the final quality control.

Unictron is truly the leader in high performance miniature chip antennas. Many portable devices like wireless earphones, trackers, smart home controllers using only $3.2 \times 1.6 \times 0.5$ mm chip antennas for Wi-Fi, Bluetooth (BLE), ZigBee, GPS and Glonass, and $5.0 \times 3.0 \times 0.5$ mm chip antenna for 868MHz and 915MHz frequencies.

Our services include tuning of the antennas (chip, patch) inside the customer's devices using our 2D and 3D anechoic chambers for the optimal performance. We also help our customers with non-standard products to implement customized PCB / FPC / LDS antennas.

Dry press for patch antenna manufacturing



Every antenna piece leaving our factory is tested so that 100% quality of our products is guaranteed. Our high quality is confirmed also by everyday usage in automotive industry.

Network analyzer



About Us

Over the years, Unictron perfected its manufacturing capabilities which resulted in customers in automotive industry and certificates proving the automotive standards.



ISO 9001:2015
(Taoyuan Factory)



ISO 9001:2015
(Hsinchu Factory)



ISO 14001:2015



IATF 16949:2016
(Taoyuan Factory)



IATF 16949:2016
(Hsinchu Factory)

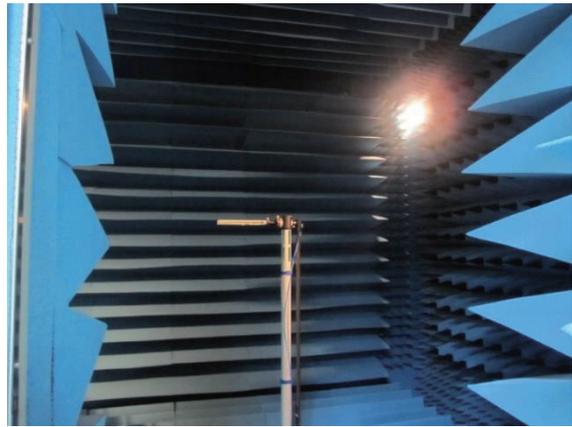


ISO 45001:2018

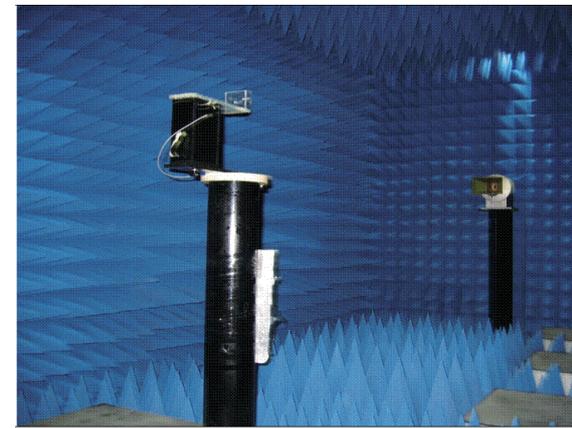
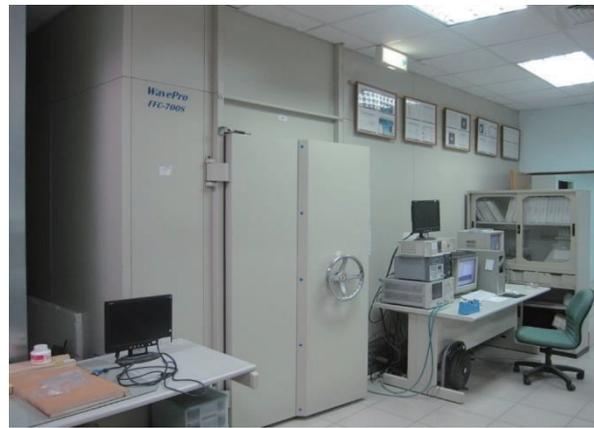
About Us

Together with production capabilities, Unictron has strong engineering team and various state-of-art equipment.

3D anechoic chamber



2D anechoic chamber



Artificial Head & Artificial Hand for testing wearables and IoT devices



Chip Antennas

Chip Antennas

Chip antennas: miniature in size, friendly to use

Traditional chip antennas are so called monopole, where one end of chip antenna is connected to the feed line and the other end is free. Unictron's chip antenna are designed as loop antennas, meaning that one end of chip antenna is connected to the feed line and the other end is grounded. Besides the loop design, our chip antennas consider frequency tuning element in the layout. This unique feature resulted in trademark of TELA antenna. TELA stands for Tuning Element Loop Antenna.

All chip antennas from Unictron are fairly omni-directional and developed to be outed with SMD technology.

Please visit our website to get the latest datasheet and the layout overview.

On www.unictron.com search for the Model name shown in the tables below.

Wi-Fi/ZigBee/Bluetooth

Model name	AA055U	AA080	CW201
			
			
Size [mm]	3.2 × 1.6 × 0.5	1.6 × 0.8 × 0.3	2.0 × 1.2 × 0.6
Frequency [MHz]	2400 – 2500	2400 – 2500	2400 – 2500
Peak Gain [dBi]	1.8 (typical)	-0.3 (typical)	2.0 (typical)
VSWR	2 max. (typical)	2.5 max. (typical)	2 max. (typical)
Type	TELA	TELA	TELA
Polarization	Linear	Linear	Linear
Part Number	H2U34W1H1Z0700	H2UB4K1H1B0100	H2U34C1H1B0100

Did you know?

The bigger the mother board, the better the gain of chip antenna.

Chip Antennas

Model name	CW325	CW324	CW324S
			
Size [mm]	3.2 × 1.6 × 1.6	3.2 × 1.6 × 1.3	3.2 × 1.6 × 1.3
Frequency [MHz]	2400 – 2500	2400 – 2500	2400 – 2500
Peak Gain [dBi]	1.9 (typical)	1.2 (typical)	1.5 (typical)
VSWR	2 max. (typical)	2 max. (typical)	2 max. (typical)
Type	Monopole	Monopole	Monopole
Polarization	Linear	Linear	Linear
Part Number	H2U36D1K1B0300	H2U36D1K1B0100	H2U38D1E1B0100

Model name	CW321	CW503	AA029 
			
Size [mm]	3.2 × 1.6 × 0.5	5.0 × 2.2 × 1.0	5.0 × 2.2 × 1.6
Frequency [MHz]	2400 – 2500	2400 – 2500	2400 – 2500
Peak Gain [dBi]	0.6 (typical)	1.9 (typical)	2.2 (typical)
VSWR	2 max. (typical)	2 max. (typical)	2 max. (typical)
Type	Monopole	Monopole	Monopole
Polarization	Linear	Linear	Linear
Part Number	H2U34D1L1B0200	H2U36F1K1B0300	H2U262GKBA0100

Chip Antennas

Model name	AA070	CW804	CW706
			
Size [mm]	3.2 × 1.6 × 0.5	8.0 × 1.0 × 1.3	7.0 × 2.0 × 2.0
Frequency [MHz]	2400 – 2500	2400 – 2500	2400 – 2500
Peak Gain [dBi]	2.6 (typical)	0.9 (typical)	2.0 (typical)
VSWR	2 max. (typical)	2 max. (typical)	2 max. (typical)
Type	Monopole	Monopole	Monopole
Polarization	Linear	Linear	Linear
Part Number	H2U34W1H1B1200	H2U36G2K1B0100	H2U36G4K1B0100

Doesn't need GND clearance

Model name	CW504	CW337	CW10D7
			
Size [mm]	5.0 × 1.0 × 1.3	3.0 × 3.0 × 3.3	3.0 × 3.0 × 10.0
Frequency [MHz]	2400 – 2500	2400 – 2500	2400 – 2500
Peak Gain [dBi]	1.9 (typical)	-0.4 (typical)	3.4 (typical)
VSWR	2 max. (typical)	2 max. (typical)	2 max. (typical)
Type	Monopole	Pillar	Pillar
Polarization	Linear	Vertical	Vertical
Part Number	H2U36F1K1B0100	H2UB6D1K1B0100	H2U36D2K1B0100

Distinctive features of pillar antennas

CW337 was specially developed for True Wireless Earphones (TWS). It doesn't require clearance area to provide a Bluetooth connectivity. CW10D7 has a better throughput of Wi-Fi signal than 3dBi rubber duck antennas on home routers.

Chip Antennas

Model name	CW501S	CW801S	CW323S
			
Size [mm]	5.0 × 1.0 × 0.5	8.0 × 1.0 × 0.5	3.2 × 1.6 × 1.0
Frequency [MHz]	2400 – 2500	2400 – 2500	2400 – 2500
Peak Gain [dBi]	0.7 (typical)	0.5 (typical)	0.6 (typical)
VSWR	2 max. (typical)	2 max. (typical)	2 max. (typical)
Type	Monopole	Monopole	TELA
Polarization	Linear	Linear	Linear
Part Number	H2U36F1L1B0100	H2U36G1L1B0100	H2U34D1L1B0500



Wi-Fi 5GHz (HDMI)

Model name	AA106	AA076	CH10D7
			
Size [mm]	3.2 × 1.6 × 0.5	3.2 × 1.6 × 0.5	3.0 × 3.0 × 10.0
Frequency [MHz]	5150 – 5850	5150 – 5850	5150 – 5850
Peak Gain [dBi]	3.4 (typical)	1.7 (typical)	3.4 (typical)
VSWR	2 max. (typical)	2 max. (typical)	2 max. (typical)
Type	Monopole	TELA	Pillar
Polarization	Linear	Linear	Vertical
Part Number	H2U34W1H1Q0500	H2U34W1H1Q0600	H2UH6D2K1Q0100

Chip Antennas

Wi-Fi Dual Band

Upgrade your 2.4GHz Wi-Fi device by adding 5GHz band. The dual band Wi-Fi chip antenna AA077 is of the same size as AA055A, only 3.2 × 1.6 × 0.5 mm.

Model name	AA077U		CU325		CU323	
						
						
Size [mm]	3.2 × 1.6 × 0.5		3.2 × 1.6 × 1.6		3.2 × 1.6 × 1.0	
Frequency [MHz]	①	2400 – 2500	①	2400 – 2500	①	2400 – 2500
	②	5150 – 5850	②	5150 – 5850	②	5150 – 5850
Peak Gain [dBi]	①	1.4 (typical)	①	2.4 (typical)	①	2.4 (typical)
	②	2.3 (typical)	②	1.8 (typical)	②	1.6 (typical)
VSWR	①	2 max. (typical)	①	2 max. (typical)	①	2 max. (typical)
	②	2 max. (typical)	②	2.5 max. (typical)	②	2.5 max. (typical)
Type	TELA		Monopole		Monopole	
Polarization	Linear		Linear		Linear	
Part Number	H2U84W1H1S0800		H2U86D1K1P0100		H2U86D1K1P0200	

Model name	CU10D7		CU10D7S		CU10D7W	
						
Size [mm]	3.0 × 6.0 × 10.0		3.0 × 6.0 × 10.0		3.0 × 6.0 × 10.0	
Frequency [MHz]	①	2400 – 2500	①	2400 – 2500	①	2400 – 2500
	②	5150 – 5850	②	5150 – 5850	②	5150 – 5850
Peak Gain [dBi]	①	1.2 (typical)	①	1.2 (typical)	①	1.2 (typical)
	②	2.6 (typical)	②	2.6 (typical)	②	3.1 (typical)
VSWR	①	2 max. (typical)	①	2 max. (typical)	①	2.5 max. (typical)
	②	2 max. (typical)	②	2 max. (typical)	②	2.5 max. (typical)
Type	Pillar		Pillar		Pillar	
Polarization	Vertical		Vertical		Vertical	
Part Number	H2U86D2K1S0100		H2U86D2K1S0300		H2U86D2K1S0400	

Chip Antennas

Wi-Fi 6E

To speed up the traditional Wi-Fi and allow more devices to be connected at the same time, new frequency band has been added (6GHz). We can support you either on adding new antenna to your current Wi-Fi device, or change for a combo antenna enabling all 3 frequency bands (2.5GHz, 5GHz, 6GHz).

Model name	CE807	CK10D7	CT321S
			
Size [mm]	3.0 × 3.0 × 8.0	3.0 × 6.0 × 10.0	3.2 × 1.6 × 0.5
Frequency [MHz]	5925 – 7125	① 5150 – 5850 ② 5925 – 7125	① 2400 – 2500 ② 5150 – 5850 ③ 5925 – 7125
Peak Gain [dBi]	3.5 (typical)	① 3.3 (typical) ② 3.8 (typical)	① 2.3 (typical) ② 1.5 (typical) ③ 2.5 (typical)
VSWR	2 max. (typical)	① 2 max. (typical) ② 2 max. (typical)	① 2 max. (typical) ② 3 max. (typical) ③ 3 max. (typical)
Type	Pillar	Pillar	Monopole
Polarization	Vertical	Vertical	Linear
Part Number	H2UM6D1K2T0100	H2U86D2K2X0100	H2UM4W1L1B0100

Not familiar with Unictron's chip antenna?

Request the evaluation board and try it yourself.



Chip Antennas

Navigation antennas

Chip antennas break the traditional approach of implementing navigation functionality of the wireless device. Even though the size is very small compared to patch antennas, the navigation is still precise enough and fast for many tracking applications like wildlife animals tracking, car tracking and other outdoor navigation. Furthermore, omnidirectional radiation pattern helps to ensure that GPS signal is received no matter the orientation of the device in regards to the sky.

GNSS (GPS, GLONASS, BEIDOU, GALILEO)

Model name	AA088U	AA064B
		
		
Size [mm]	3.2 × 1.6 × 0.5	10.0 × 3.2 × 3.9
Frequency [MHz]	1560 – 1606	1560 – 1606
Peak Gain [dBi]	3.3 (typical)	3.0 (typical)
VSWR	2 max. (typical)	2 max. (typical)
Type	TELA	TELA
Polarization	Linear	Linear
Part Number	H2UJ4W1H1A0200	H2U1631S1A0200

Model name	AA065A	CG508
		
Size [mm]	10.0 x 3.2 x 2.0	5.0 x 3.0 x 4.0
Frequency [MHz]	1560 – 1606	1560 – 1606
Peak Gain [dBi]	2.7 (typical)	1.5 (typical)
VSWR	2 max. (typical)	2 max. (typical)
Type	TELA	Pillar
Polarization	Linear	Linear
Part Number	H2UJ6V1A2A0100	H2UJ6F1K2A0100

Chip Antennas

GNSS (GPS / GLONASS / BDS) & Wi-Fi (2.4GHz) / Bluetooth

Model name	AA089U
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Size [mm]	3.2 × 1.6 × 0.5	
Frequency [MHz]	①	1560 – 1606
	②	2400 – 2500
Peak Gain [dBi]	①	1.3 (typical)
	②	1.8 (typical)
VSWR	①	2 max. (typical)
	②	2 max. (typical)
Type	TELA	
Polarization	Linear	
Part Number	H2U94W1H1G0600	

LOGO

Unictron's antennas are marked with logo. The small chip antennas show at least letter "U" as the marking.

GNSS & Wi-Fi Dual Band (2.4GHz & 5GHz)

Model name	AA099U
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Most Advanced

Size [mm]	3.2 × 1.6 × 0.5	
Frequency [MHz]	①	1560 – 1606
	②	2400 – 2500
	③	5150 – 5850
Peak Gain [dBi]	①	1.5 (typical)
	②	0.4 (typical)
	③	2.3 (typical)
VSWR	①	2 max. (typical)
	②	2 max. (typical)
	③	3 max. (typical)
Type	TELA	
Polarization	Linear	
Part Number	H2UC4W1H2D0600	

The most advanced chip antenna on the market

AA099U offers navigation and WiFi/Bluetooth functionality in one chip antenna. The implementation includes one feed line for all frequencies, or one feed line for navigation and second feed for WiFi/Bluetooth.

Chip Antennas

Multi-bands GNSS (L1 & L2 & L5 & L6)

Model name	CB501F	
		
Size [mm]	5.0 × 3.0 × 0.5	
Frequency [MHz]	①	1560 – 1606
	②	1176.45
	③	1227.6
	④	1278.75
Peak Gain [dBi]	①	2.3 (typical)
	②	1.7 (typical)
	③	2.0 (typical)
	④	1.7 (typical)
VSWR	①	2 max. (typical)
	②	2.5 max. (typical)
	③	3.0 max. (typical)
	④	4.0 max. (typical)
Type	TELA	
Polarization	Linear	
Part Number	H2UJ4U1H2Q0100	

Precise navigation

CB501F uses dual frequencies: GPS L1+L2 or GPS L1+L5/L6, which provides better position accuracy for asset tracking or navigation.

Model name	CB321F	
		
Size [mm]	3.2 × 1.6 × 0.5	
Frequency [MHz]	①	1560 – 1606
	②	1176.45
Peak Gain [dBi]	①	1.7 (typical)
	②	0.3 (typical)
VSWR	①	2 max. (typical)
	②	2 max. (typical)
Type	TELA	
Polarization	Linear	
Part Number	H2UJ4W1H2Q0100	

Chip Antennas

Chip antennas for ISM frequencies

ISM stands for Industrial, Scientific and Medical radio bands. Usually these frequencies doesn't require license and are great for sending small packets of data through long distance. These frequencies are also a popular choice when one would like to avoid having GSM subscription when sending data over several kilometers distance.

ISM 433MHz

Model name	C4501	AA187
		
Size [mm]	5.0 × 3.0 × 0.5	16.0 × 5.1 × 0.8
Frequency [MHz]	433.05 – 434.79	433.05 – 434.79
Peak Gain [dBi]	-7.3 (typical)	-4.7 (typical)
VSWR	2 max. (typical)	2 max. (typical)
Type	TELA	Monopole
Polarization	Linear	Linear
Part Number	H2U64U1H2J0100	H2U66K1K1V0100

Same antenna for various frequencies

Antennas from this page can be tuned to any from the supported frequencies. If your product is promoted in areas preferring 868MHz or in areas with preferred 915MHz, device need to have only one design, one chip antenna. Difference will be the tuning element (capacitor) to achieve the desired frequency.

Model name	C420D5	C412D5
		
Size [mm]	20.0 × 5.0 × 1.6	12.0 × 5.0 × 1.6
Frequency [MHz]	① 433.05 – 434.79 ② 450.00 – 510.00	① 433.05 – 434.79 ② 450.00 – 510.00
Peak Gain [dBi]	① -0.2 (typical) ② -0.2 (typical)	① -4.9 (typical) ② -2.2 (typical)
VSWR	① 2 max. (typical) ② 2.5 max. (typical)	① 2 max. (typical) ② 2.5 max. (typical)
Type	Monopole	Monopole
Polarization	Linear	Linear
Part Number	H2U66K1K2J0100	H2U66J1K2J0100

Chip Antennas

ISM 868MHz

Model name	AA701	C812D5	AA067
	 		
Size [mm]	5.0 × 3.0 × 0.5	12.0 × 4.0 × 1.6	10 × 3.2 × 0.5
Frequency [MHz]	863 – 870	863 – 870	863 – 870
Gain [dBi]	-0.9 (typical)	-0.6 (typical)	0.5 (typical)
VSWR	2 max. (typical)	2 max. (typical)	2 max. (typical)
Type	TELA	Monopole	TELA
Polarization	Linear	Linear	Linear
Part Number	H2U64U1H2B0200	H26U66J1K2B0100	H2U646MTNW0100

ISM 915MHz

Model name	AA702	C912D5	AA066
			
Size [mm]	5.0 × 3.0 × 0.5	12.0 × 4.0 × 1.6	10 × 3.2 × 0.5
Frequency [MHz]	902 – 928	902 – 928	902 – 928
Gain [dBi]	0.8 (typical)	-1.0 (typical)	0.9 (typical)
VSWR	2 max. (typical)	2 max. (typical)	2 max. (typical)
Type	TELA	Monopole	TELA
Polarization	Linear	Linear	Linear
Part Number	H2U64U1H2C0200	H2U66J1K2C0100	H2U646MHLQ0200

Chip Antennas

ISM 868/915MHz

Model name	C8B706	
		
Size [mm]	7.0 × 2.0 × 2.0	
Frequency [MHz]	①	863 – 870
	②	902 – 928
Gain [dBi]	①	-5.6 (typical)
	②	-4.9 (typical)
VSWR	①	2 max. (typical)
	②	2 max. (typical)
Type	Monopole	
Polarization	Linear	
Part Number	H2U66G1K2L0100	

NB-IoT

Model name	CB501	
		
Size [mm]	5.0 × 3.0 × 0.5	
Frequency [MHz]	1920-1980/2110-2170	
	1710-1785/1805-1880	
Gain [dBi]	2.0 / 1.0 (typical)	
	1.4 / 1.6 (typical)	
VSWR	3.5 max. (typical)	
Type	TELA	
Polarization	Linear	
Part Number	H2UK4U1H2P0100	

ISM 433/868/915MHz

Model name	C4T906		C4T11D5	
				
Size [mm]	9.0 × 4.0 × 2.0		10.5 × 3.0 × 1.6	
Frequency [MHz]	①	433.05 – 434.79	①	433.05 – 434.79
	②	863 – 870	②	863 – 870
	③	902 – 928	③	902 – 928
Gain [dBi]	①	N/A	①	N/A
	②	-5.6 (typical)	②	-2.1 (typical)
	③	-2.9 (typical)	③	-1.9 (typical)
VSWR	2 max. (typical)		2 max. (typical)	
Type	Monopole		Monopole	
Polarization	Linear		Linear	
Part Number	H2U66H1K2L0100		H2U66H1K2M0100	

Chip Antennas

3G/GSM

Model name	CC26DV	CC26DH	CC26DH2
			
Size [mm]	26.2 × 7.85 × 3.2	26.0 × 7.65 × 3.2	26.0 × 7.65 × 0.9
Frequency [MHz]	① 824 – 960 ② 1710 – 2170	① 824 – 960 ② 1710 – 2170	① 824 – 960 ② 1710 – 2170
Gain [dBi]	① 1.0 (typical) ② 2.2 (typical)	① 1.1 (typical) ② 2.4 (typical)	① 1.4 (typical) ② 2.9 (typical)
VSWR	3 max. (typical)	3 max. (typical)	3 max. (typical)
Type	Monopole	Monopole	Monopole
Polarization	Linear	Linear	Linear
Orientation	Vertical	Horizontal	Horizontal
Part Number	H2UA6K2K1N0100	H2UA6K2K1N0200	H2UA6K2K1N0500

Model name	CC40D7	CC40D2
		
Size [mm]	40.4 × 10.8 × 3.2	40.8 × 10.8 × 0.8
Frequency [MHz]	① 824 – 960 ② 1710 – 2170	① 824 – 960 ② 1710 – 2170
Gain [dBi]	① 1.7 (typical) ② 2.9 (typical)	① 1.5 (typical) ② 2.5 (typical)
VSWR	3 max. (typical)	3 max. (typical)
Type	Monopole	Monopole
Polarization	Linear	Linear
Orientation	Horizontal	Horizontal
Part Number	H2UE6P1K2G0100	H2UE6P1K1N0100

Chip Antennas

LTE Full-Band

Model name	CC40D9	CC35D8
		
	Best Seller	Smallest LTE chip antenna
Size [mm]	40.0 × 5.0 × 6.0	35.0 × 5.0 × 4.0
Frequency [MHz]	① 698 – 798 ② 824 – 960 ③ 1710 – 2170 ④ 2300 – 2400 ⑤ 2490 – 2690	① 698 – 798 ② 824 – 960 ③ 1710 – 2170 ④ 2300 – 2400 ⑤ 2490 – 2690
Gain [dBi]	① 1.4 (typical) ② 0.7 (typical) ③ 3.2 (typical) ④ 3.8 (typical) ⑤ 4.2 (typical)	① 1.3 (typical) ② 1.0 (typical) ③ 2.6 (typical) ④ 4.4 (typical) ⑤ 4.2 (typical)
VSWR	① 3.5 max. (typical) ② 3.5 max. (typical) ③ 3.5 max. (typical) ④ 3.5 max. (typical) ⑤ 3.5 max. (typical)	① 3.5 max. (typical) ② 3.5 max. (typical) ③ 3.5 max. (typical) ④ 3.5 max. (typical) ⑤ 3.5 max. (typical)
Type	Monopole	Monopole
Polarization	Linear	Linear
Orientation	Horizontal	Horizontal
Part Number	H2UE3P1D2G0100	H2UE3P2D2G0100

Smallest LTE chip antenna on the market

The CC35D8 is currently the smallest Full-LTE chip antenna available on the market. It is suitable for devices with PCB size around 120 x 40 mm.

To achieve optimal performance, please contact Unictron's team for simulation reports and further design assistance.

Chip Antennas

LTE Full-Band

Model name	CC40D7F	CC40D7J
		
Size [mm]	40.4 × 10.8 × 3.2	40.0 × 7.0 × 3.0
Frequency [MHz]	① 698 – 798 ② 824 – 960 ③ 1710 – 2170 ④ 2300 – 2400 ⑤ 2490 – 2690	① 698 – 798 ② 824 – 960 ③ 1710 – 2170 ④ 2300 – 2400 ⑤ 2490 – 2690
Gain [dBi]	① 1.0 (typical) ② 0.4 (typical) ③ 4.0 (typical) ④ 4.4 (typical) ⑤ 4.5 (typical)	① 2.3 (typical) ② 2.1 (typical) ③ 6.4 (typical) ④ 6.8 (typical) ⑤ 5.8 (typical)
VSWR	① 3.5 max. (typical) ② 3.5 max. (typical) ③ 3.5 max. (typical) ④ 3.5 max. (typical) ⑤ 3.5 max. (typical)	① 5 max. (typical) ② 5 max. (typical) ③ 3.5 max. (typical) ④ 3.5 max. (typical) ⑤ 3.5 max. (typical)
Type	Monopole	Monopole
Polarization	Linear	Linear
Orientation	Horizontal	Horizontal
Part Number	H2UE6P1K2G0300	H2UE6Q1K2G0100

Chip Antennas

5G FR1/4G/LTE Full-Band

Model name	CX40D9
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Size [mm]		40.0 × 5.0 × 6.0
Frequency [MHz]	①	617 – 960
	②	1710 – 2170
	③	2300 – 2690
	④	3300 – 4200
	⑤	4400 – 5000
	⑥	5150 – 5925
Gain [dBi]	①	0.5 (typical)
	②	2.9 (typical)
	③	3.0 (typical)
	④	2.5 (typical)
	⑤	0.7 (typical)
	⑥	-1.3 (typical)
VSWR	①	4 max. (typical)
	②	2.5 max. (typical)
	③	3 max. (typical)
	④	3.5 max. (typical)
	⑤	3 max. (typical)
	⑥	5 max. (typical)
Type		Monopole
Polarization		Linear
Orientation		Horizontal
Part Number		H2UN3P1D2V0100

Chip Antennas

UWB

Model name	CR601	CR702	CR801
			
Size [mm]	6.0 × 5.0 × 0.5	7.0 × 3.0 × 1.0	8.0 × 6.0 × 0.5
Frequency [MHz]	6000 – 8000	3300 – 5000	3500 – 8500
Gain [dBi]	6.3 (typical)	4.5 (typical)	3.1 (typical)
VSWR	3 max. (typical)	3 max. (typical)	4 max. (typical)
Type	Monopole	Monopole	Monopole
Polarization	Linear	Linear	Linear
Orientation	Horizontal	Horizontal	Horizontal
Part Number	H2UL4F1T2W0100	H2UL6G1K2U0100	H2UL6G1T2W0100

Each chip antenna can be provided on a demo board for convenience of initial testing. Demo boards are of standardized sizes with SMA connector, however, upon request we can modify the size of the board or connector type. Our team will gladly help you with the implementation of antenna design in your particular device.



Demo board with GSM chip antenna



Demo board with GPS chip antenna

Chip Antennas

V2X/DSRC

Model name	CH16G	
		
Size [mm]	1.6 × 0.8 × 0.3	
Frequency [MHz]	①	5150 – 5850
	②	5850 – 5925
Gain [dBi]	①	0.6 (typical)
	②	1.8 (typical)
VSWR	①	2.5 max. (typical)
	②	2 max. (typical)
Type	TELA	
Polarization	Linear	
Part Number	H2UH4B1H2N0100	

FM

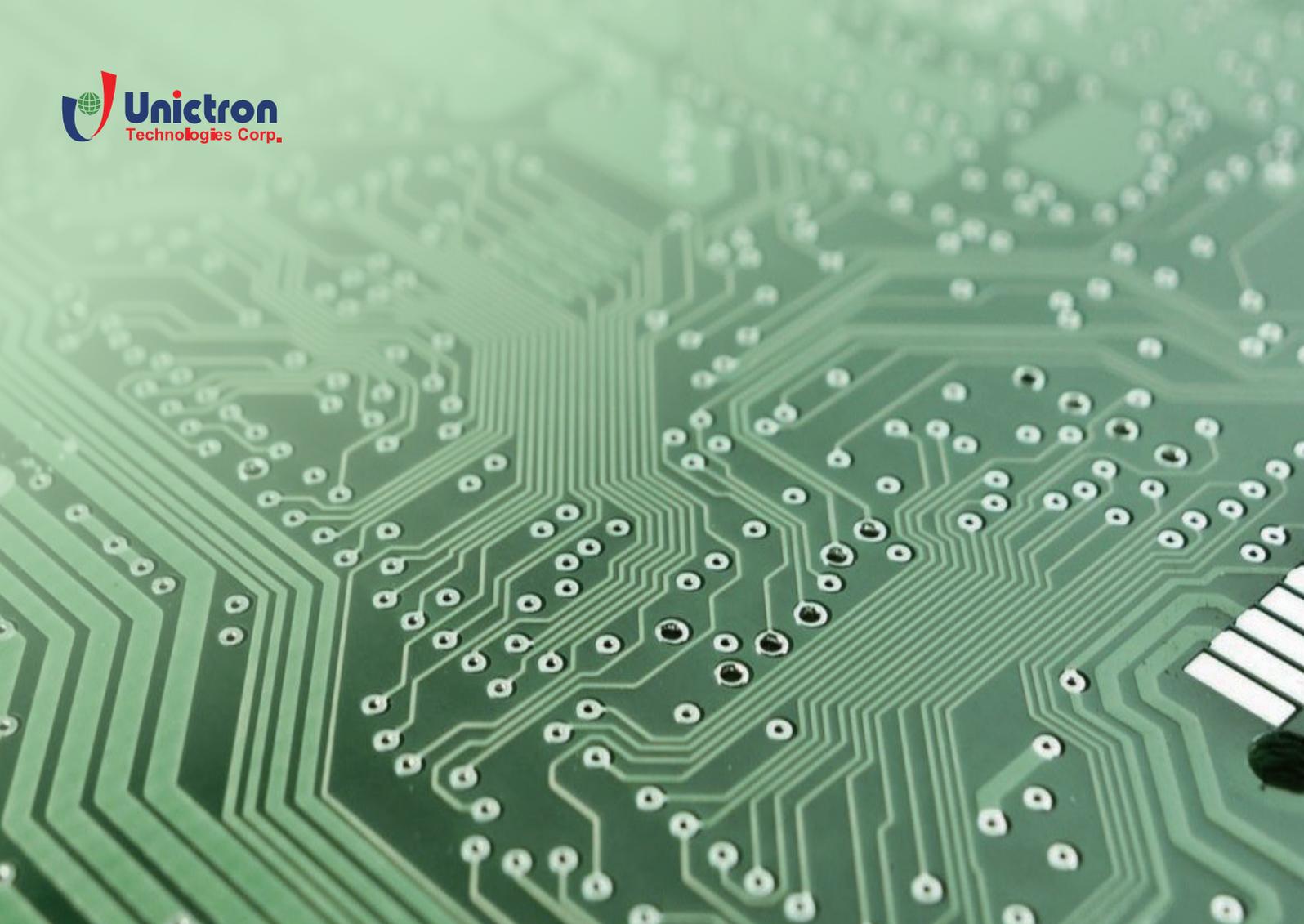
Model name	AA047	
		
Size [mm]	25.2 × 5.1 × 0.8	
Frequency [MHz]	87.5 – 108	
Gain [dBi]	N/A	
VSWR	2 max. (typical)	
Type	Monopole	
Polarization	Linear	
Part Number	H2U566KKJA0100	

DECT

Model name	AA081	
		
Size [mm]	3.2 × 1.6 × 0.5	
Frequency [MHz]	1880 – 1930	
Gain [dBi]	1.5 (typical)	
VSWR	2 max. (typical)	
Type	TELA	
Polarization	Linear	
Part Number	H2U74W1H1M0100	

TELA (Tuning Element Loop Antenna)

TELA antennas are unique chip antenna series developed by Unictron Technologies. These high performance patented design of TELA antennas are widely used in various applications by internationally renowned companies. With proprietary design of tuning element, the resonant frequencies of antennas can be fine-tuned easily to accommodate the changes of circuit board or housing. The same standard ground plane layout can be used in various devices. With this user-friendly design methodology, the antenna design-in process can be easily done by users themselves. Quick-turn-around product design can be easily achieved.



PCB/FPC Antennas

PCB/FPC Antennas

PCB and FPC antennas are a great choice when there is not enough space on the mother PCB for chip antenna. PCB and FPC are assembled with cable and connector according to customers' specification. The body includes double-sided tape, so the antenna can be easily stuck on the surface inside or outside the housing.

Wi-Fi / ZigBee / Bluetooth

Model name	AA107	AA273	FP-W07
			
Size [mm]	50.0 × 5.0 × 0.5	30.0 × 5.0 × 0.5	5.6 × 3.9 × 0.25
Frequency [MHz]	2400 – 2500	2400 – 2500	2400 – 2500
Peak Gain [dBi]	3.3 dBi	3.2 dBi	5.16 dBi
VSWR	2 max. (typical)	2 max. (typical)	< 3
Polarization	Linear	Linear	Linear
Cable [mm]	100	100	70
Connector	IPEX MHFI	IPEX MHFI	IPEX MHFI
Material	PCB	PCB	FPC

Model name	WW20D1	WW20D0
		
Size [mm]	20.0 × 7.0 × 0.5	20.0 × 7.0 × 0.15
Frequency [MHz]	2400 – 2500	2400 – 2500
Peak Gain [dBi]	4.0 dBi	4.3 dBi
VSWR	2 max. (typical)	2 max. (typical)
Polarization	Linear	Linear
Cable [mm]	100	100
Connector	IPEX MHFI	IPEX MHFI PCB
Material	PCB	FPC

Did you know?

IPEX MHFI connector is fully compatible with U.FL connector. Thickness of the double-sided tape can be chosen from 0.2 mm to several mm.

PCB/FPC Antennas

Wi-Fi 6.5 GHz

Model name	PC-U601
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Size [mm]	16.0 × 18.6 × 1.0
Frequency [MHz]	6250 – 6750
Peak Gain [dBi]	4.2 dBi
VSWR	< 3
Polarization	Linear
Impedance (Ω)	50
Material	PCB

Wi-Fi 5 GHz

Model name	AA272
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Size [mm]	17.0 × 4.5 × 0.9
Frequency [MHz]	5150 – 5900
Peak Gain [dBi]	2.8 dBi
VSWR	2 max. (typical)
Polarization	Linear
Cable [mm]	100
Connector	IPEX MHFI
Material	PCB

Wi-Fi Dual Band

Model name	AA258	AA222	WU34D1
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Size [mm]		25.0 × 7.0 × 0.5	40.0 × 6.0 × 0.5	34.0 × 13.0 × 0.5
Frequency [MHz]	①	2400 – 2500	①	2400 – 2500
	②	4900 – 5900	②	4900 – 5900
Gain [dBi]	①	0.9 dBi	①	2.8 dBi
	②	3.8 dBi	②	2.5 dBi
VSWR		2 max. (typical)	2 max. (typical)	2 max. (typical)
Polarization		Linear	Linear	Linear
Cable [mm]		100	100	100
Connector		IPEX MHFI	IPEX MHFI	IPEX MHFI
Material		PCB	PCB	PCB

PCB/FPC Antennas

Wi-Fi Dual Band

Model name	PC-GEPH-013	GEPH-021	GEPH-023
			
Size [mm]	26.5 × 11.0 × 1.8	30.0 × 15.6 × 2.0	44.5 × 7.8 × 1.9
Frequency [MHz]	2400 – 2500 5150 – 5850	2400 – 2500 5150 – 5850	2400 – 2500 5150 – 5850
Gain [dBi]	8 dBi	5.5 dBi	7.5 dBi
VSWR	3 max. (typical)	3 max. (typical)	3 max. (typical)
Polarization	Linear	Linear	Linear
Cable [mm]	50	253	320
Connector	IPEX MHFI	IPEX MHFI	IPEX MHFI
Material	PCB	PCB	PCB

Model name	FP-WE04	FP-W18	WT32D1
			
Size [mm]	45.0 × 7.0 × 0.25	30.2 × 15.3 × 0.25	32.0 × 13.0 × 0.5
Frequency [MHz]	① 2400 – 2500 ② 5150 – 5850	① 2400 – 2500 ② 5150 – 5850	① 2400 – 2500 ② 5150 – 5900 ③ 5925 – 7125
Peak Gain [dBi]	① 5.0 dBi ② 6.5 dBi	① 3.5 dBi ② 2.5 dBi	① 2.7 dBi ② 3.6 dBi ③ 4.9 dBi
VSWR	< 3	2 max. (typical)	2 max. (typical)
Polarization	Linear	Linear	Linear
Cable [mm]	150	60	100
Connector	IPEX MHF4L	IPEX MHF4L	IPEX MHFI
Material	FPC	FPC	PCB

PCB/FPC Antennas

ISM 433MHz

Model name	W462D1	W462D0
		
Size [mm]	62.0 × 7.0 × 0.5	62.0 × 7.0 × 0.15
Frequency [MHz]	433	433
Peak Gain [dBi]	-0.9 dBi	-0.8 dBi
VSWR	2 max. (typical)	2 max. (typical)
Polarization	Linear	Linear
Standard cable [mm]	100	100
Standard connector	IPEX MHFI	IPEX MHFI
Material	PCB	FPC
Part Number	H2B1SF1A2H0100	H2B4SF1F2H0100

ISM 868MHz

Model name	W835D1	W835D0
		
Size [mm]	35.0 × 7.0 × 0.5	35.0 × 7.0 × 0.15
Frequency [MHz]	863 – 870	863 – 870
Peak Gain [dBi]	1.7 dBi	1.9 dBi
VSWR	2 max. (typical)	2 max. (typical)
Polarization	Linear	Linear
Standard cable [mm]	100	100
Standard connector	IPEX MHFI	IPEX MHFI
Material	PCB	FPC
Part Number	H2B1SD1A1S0100	H2B4SD1F1S0100

PCB/FPC Antennas

ISM 915MHz

Model name	W935D1	W935D0
		
Size [mm]	35.0 × 7.0 × 0.5	35.0 × 7.0 × 0.15
Frequency [MHz]	902 – 928	902 – 928
Peak Gain [dBi]	2.0 dBi	2.3 dBi
VSWR	2 max. (typical)	2 max. (typical)
Polarization	Linear	Linear
Standard cable [mm]	100	100
Standard connector	IPEX MHFI	IPEX MHFI
Material	PCB	FPC

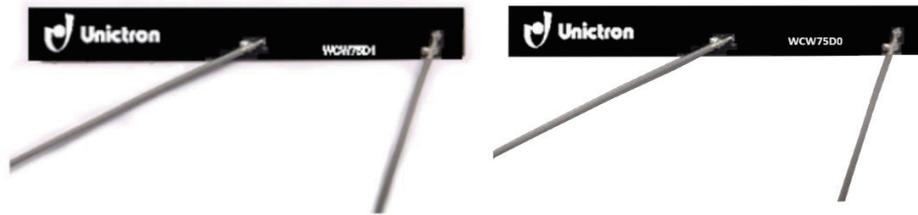
ISM 868 / 915MHz

Model name	GEPH-030	FP-C08
		
Size [mm]	34.3 × 7.3 × 1.9	60.0 × 20.0 × 0.25
Frequency [MHz]	868 / 915	868 / 915
Peak Gain [dBi]	2 dBi	1.56 / 1.26 dBi
VSWR	< 2.5	< 3
Polarization	Linear	Linear
Standard cable [mm]	60	100
Standard connector	IPEX MHFI	IPEX MHFI
Material	PCB	FPC

PCB/FPC Antennas

3G / GSM & Wi-Fi (2.4GHz)

Model name	WCW75D1	WCW75D0
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Size [mm]	75.0 × 8.5 × 0.5	75.0 × 8.5 × 0.15
Frequency [MHz]	① 824 – 960 ② 1710 – 2170 ③ 2400 – 2500	① 824 – 960 ② 1710 – 2170 ③ 2400 – 2500
Peak Gain [dBi]	① 2.2 dBi ② 2.0 dBi ③ 1.5 dBi	① 2.2 dBi ② 2.0 dBi ③ 1.5 dBi
VSWR	3 max. (typical)	3 max. (typical)
Polarization	Linear	Linear
cable [mm]	100	100
connector	IPEX MHFI	IPEX MHFI
Material	PCB	FPC

PCB/FPC Antennas

3G / GSM / LTE Band 7

Model name

WC10H0

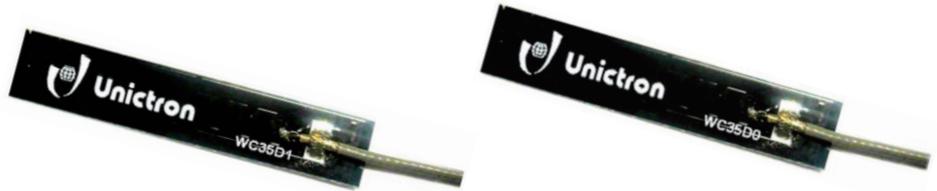


Size [mm]	106.0 × 13.0 × 0.15
Frequency [MHz]	① 824 – 960 ② 1710 – 2170 ③ 2490 – 2690
Peak Gain [dBi]	① 2.1 dBi ② 3.0 dBi ③ 2.7 dBi
VSWR	3 max. (typical)
Polarization	Linear
cable [mm]	100
connector	IPEX MHFI
Material	FPC

PCB/FPC Antennas

3G / GSM

Model name	WC35D1	WC35D0
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Size [mm]		35.0 × 7.0 × 0.5		35.0 × 7.0 × 0.15
Frequency [MHz]	①	824 – 960	①	824 – 960
	②	1710 – 2170	②	1710 – 2170
Peak Gain [dBi]	①	0.4 dBi	①	0.3 dBi
	②	1.5 dBi	②	0.6 dBi
VSWR	①	6 max. (typical)	①	6 max. (typical)
	②	3 max. (typical)	②	3 max. (typical)
Polarization		Linear		Linear
Standard cable [mm]		100		100
Standard connector		IPEX MHFI		IPEX MHFI
Material		PCB		FPC

PCB/FPC Antennas

3G / GSM

Model name	WC75D1	WC75D0
		
Size [mm]	75.0 × 8.5 × 0.5	75.0 × 8.5 × 0.15
Frequency [MHz]	① 824 – 960 ② 1710 – 2170	① 824 – 960 ② 1710 – 2170
Peak Gain [dBi]	① 0.6 dBi ② 3.9 dBi	① 0.8 dBi ② 2.7 dBi
VSWR	① 3 max. (typical) ② 3 max. (typical)	① 3 max. (typical) ② 3 max. (typical)
Polarization	Linear	Linear
Standard cable [mm]	100	100
Standard connector	IPEX MHFI	IPEX MHFI
Material	PCB	FPC

Note

Unictron supplies standard PCB antenna with cable length of 100mm and IPEX I connector.
Custom made PCB antennas are available upon request.
Specifications are subject to change without notice .

PCB/FPC Antennas

3G / GSM / LTE Full-Band

Model name	WC75D1L	WC75D0L
		
Size [mm]	75.0 × 8.5 × 0.5	35.0 × 7.0 × 0.15
Frequency [MHz]	① 698 – 960 ② 1710 – 2170 ③ 2300 – 2400 ④ 2490 – 2690	① 698 – 960 ② 1710 – 2170 ③ 2300 – 2400 ④ 2490 – 2690
Peak Gain [dBi]	① 0.2 dBi ② 3.6 dBi ③ 2.2 dBi ④ 3.1 dBi	① 0.2 dBi ② 3.7 dBi ③ 2.1 dBi ④ 3.0 dBi
VSWR	① 6.5 max. (typical) ② 3.5 max. (typical) ③ 3.5 max. (typical) ④ 3.5 max. (typical)	① 9 max. (typical) ② 4 max. (typical) ③ 4 max. (typical) ④ 3.5 max. (typical)
Polarization	Linear	Linear
Standard cable [mm]	100	100
Standard connector	IPEX MHFI	IPEX MHFI
Material	PCB	FPC

PCB/FPC Antennas

3G / GSM / LTE Full-Band

Model name	WC12H1	WC12H0
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Size [mm]	120.0 × 13.0 × 0.5	120.0 × 13.0 × 0.15
Frequency [MHz]	① 698 – 960	① 698 – 960
	② 1710 – 2170	② 1710 – 2170
	③ 2300 – 2400	③ 2300 – 2400
	④ 2490 – 2690	④ 2490 – 2690
Peak Gain [dBi]	① 2.8 dBi	① 2.8 dBi
	② 2.7 dBi	② 3.0 dBi
	③ 3.2 dBi	③ 2.6 dBi
	④ 1.1 dBi	④ 1.2 dBi
VSWR	① 2.5 max. (typical)	① 2.5 max. (typical)
	② 2.5 max. (typical)	② 2.5 max. (typical)
	③ 2.5 max. (typical)	③ 2.5 max. (typical)
	④ 2.5 max. (typical)	④ 2.5 max. (typical)
Polarization	Linear	Linear
Standard cable [mm]	100	100
Standard connector	IPEX MHFI	IPEX MHFI
Material	PCB	FPC

Looking for more?

As the antenna manufacturer we can help you to design PCB/FPC antenna according to your needs. Let us know the frequency and the size available for antenna in your device.

PCB/FPC Antennas

BeiDou/GPS/GLONASS

Model name	FP-B02
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Size [mm]	30 × 30 × 0.25
Frequency [MHz]	1561/1575.42/1602
Impedance (Ω)	50
VSWR	2 max. (typical)
Polarization	Linear
Cable [mm]	100
Connector	IPEX MHFI
Material	FPC

GPS/4G LTE/5G NR

Model name	FP-GL01
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Size [mm]	66.5 × 20 × 0.25
Frequency [MHz]	698 – 3800
Impedance (Ω)	50
VSWR	< 3.5
Polarization	Linear
Cable [mm]	100
Connector	IPEX MHFI
Material	FPC

GPS

Model name	WG25D1
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Size [mm]	25 × 7 × 0.5
Frequency [MHz]	1560– 1606
Impedance (Ω)	50
VSWR	2 max. (typical)
Polarization	Linear
Cable [mm]	100
Connector	IPEX MHFI
Material	PCB

4G LTE

Model name	FP-L08
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Size [mm]	60 × 20 × 0.25
Frequency [MHz]	698 – 960 1710 – 2690
Impedance (Ω)	50
VSWR	< 3
Polarization	Linear
Cable [mm]	200
Connector	IPEX MHFI
Material	FPC

PCB/FPC Antennas

5G FR1 / LTE Full-Band

Model name	WX12H1
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Size [mm]	12.0 × 18.0 × 0.5
Frequency [MHz]	① 617 – 960 ② 1710 – 2170 ③ 2300 – 2400 ④ 2500 – 2700 ⑤ 3400 – 5000 ⑥ 5150 – 5925
Peak Gain [dBi]	① 2.0 dBi ② 2.9 dBi ③ 3.0 dBi ④ 2.6 dBi ⑤ 2.7 dBi ⑥ 2.9 dBi
VSWR	① 4.0 max. (typical) ② 2.0 max. (typical) ③ 2.5 max. (typical) ④ 2.5 max. (typical) ⑤ 4.0 max. (typical) ⑥ 3.5 max. (typical)
Polarization	Linear
Standard cable [mm]	150
Standard connector	IPEX MHFI
Material	PCB

4G LTE/5G NR

Model name	FP-L26-01
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Size [mm]	50.0 × 20.0 × 0.25
Frequency [MHz]	① 617 – 698 ② 698 – 824 ③ 824 – 960 ④ 1710 – 1880 ⑤ 1850 – 1990 ⑥ 1920 – 2170 ⑦ 2300 – 2690 ⑧ 3300 – 3800 ⑨ 5150 – 5850
Peak Gain [dBi]	① 3.86 dBi ② 4.10 dBi ③ 4.39 dBi ④ 4.59 dBi ⑤ 6.04 dBi ⑥ 6.95 dBi ⑦ 7.07 dBi ⑧ 5.70 dBi ⑨ 5.87 dBi
Impedance (Ω)	50
VSWR	< 2
Polarization	Linear
Cable [mm]	100
Connector	IPEX MHFI
Material	FPC



NFC Antennas

NFC Antennas

NFC is an abbreviation of Near Field Communication. The communication distance is usually only few millimeters. For example, NFC antenna with size 50 × 40 mm on a smartphone works to about 40mm distance. NFC is usually on a flexible substrate (FPC) with double sided tape, so the installation inside the device is very easy.

NFC without IC

Model name	BN50D
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Size [mm]	50 × 40 × 0.28
Frequency [MHz]	13.56
Impedance [Ω]	50
Q factor	60 (typical)
IC	No
Absorber	Yes
Part Number	H2B4QE1F1D01HF

Absorber

Absorber (or ferrite sheet) is needed if NFC is placed on the metal surface or battery.

Please let us know in advance if you need it.

NFC with AMS IC

AMS IC is includes SPI interface.

Model name	Size [mm]	Frequency [MHz]	Impedance [Ω]	Q factor	Part Number
AA500	25.0 × 20.0 × 1.45	14.2	50	60 (typical)	H2B4QC1A1D01HF
AA501	35.0 × 25.0 × 1.45	14.2	50	60 (typical)	H2B4QD1A1D01HF
AA504	45.0 × 40.0 × 1.45	14.17	50	60 (typical)	H2B4QE1A1D01HF

NFC Antennas

NFC with Infineon IC

Model name	Size [mm]	Frequency [MHz]	Impedance [Ω]	Q factor	Part Number
AA508	9.5 × 9.5 × 0.7	14.23	50	60 (typical)	H2B4QA1J1D01HF
AA510	25.0 × 20.0 × 0.75	14.11	50	60 (typical)	H2B4QC1A1D04HF
AA511	35.0 × 25.0 × 0.75	14.11	50	60 (typical)	H2B4QD1A1D03HF
AA512	45.0 × 40.0 × 0.75	14.15	50	60 (typical)	H2B4QE1A1D03HF



NFC with AMS IC



NFC with Infineon IC



NFC with NXP IC

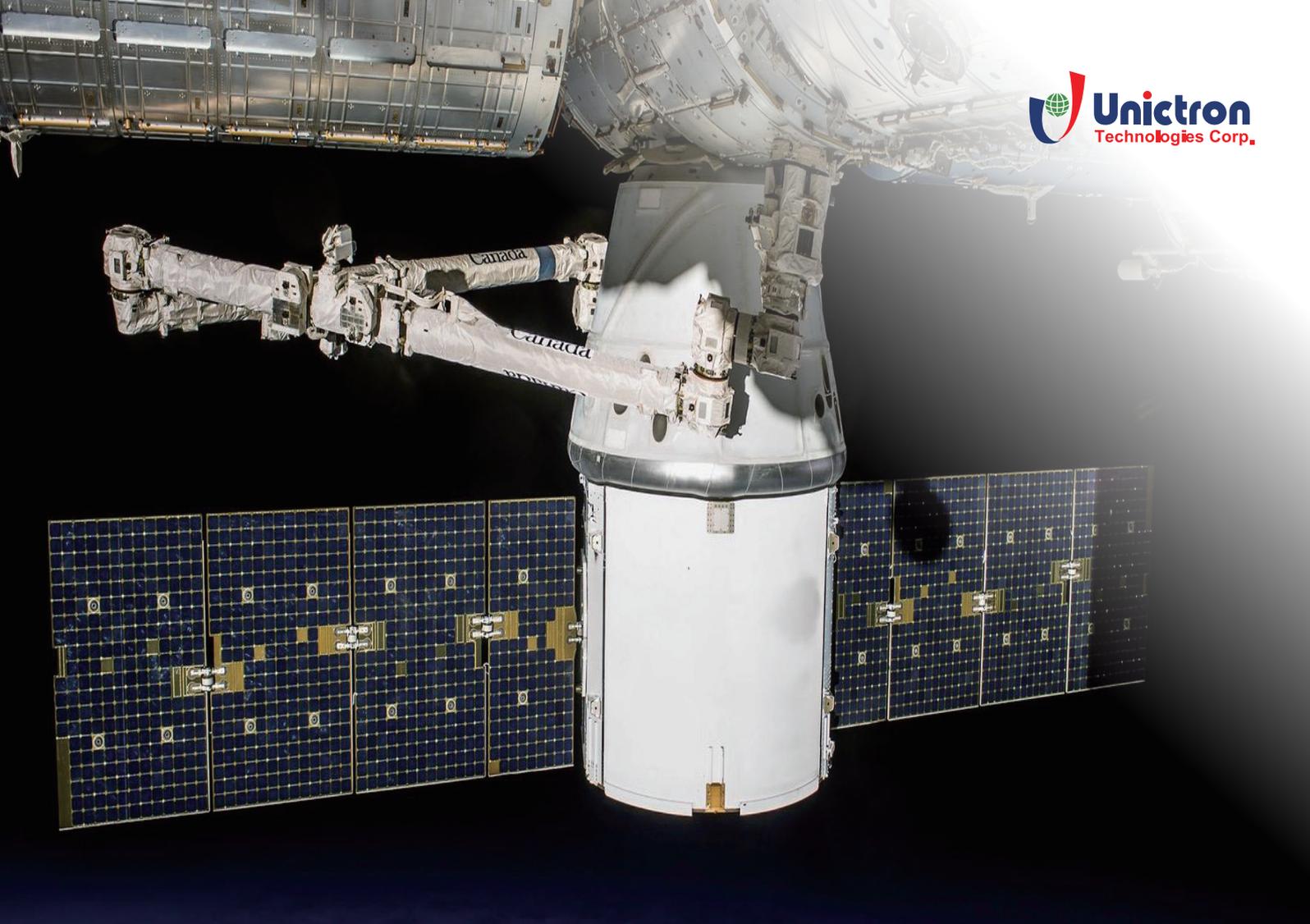
NFC with NXP IC (311N)

NXP 311N IC includes I2C interface

Model name	Size [mm]	Frequency [MHz]	Impedance [Ω]	Q factor	Part Number
NN35NA	35.0 × 25.0 × 1.3	13.56	50	30 (typical)	H2B4QD1J1D0100
NN25N	25.0 × 16.0 × 1.3	13.56	50	30 (typical)	H2B4QD2J1D0100

NFC with NXP IC (213F)

Model name	Size [mm]	Frequency [MHz]	Impedance [Ω]	Q factor	Part Number
NN35NB	35.0 × 25.0 × 0.6	13.56	50	30 (typical)	H2B4QD1J1D0200
NN18N	18.0 × 11.0 × 0.65	13.56	50	20 (typical)	H2B4QB1J1D0500



Patch Antennas

Patch Antennas

Specialty of patch antennas is that they can be circularly polarized. Typical application is the navigation system, where the signal coming from the satellites is of circular polarization. Using patch antenna is very easy. Patch antenna has a pin going through the ceramic body and through the mother PCB. This pin is soldered on the opposite side of the PCB to the feed line. Patch antenna can be placed right over the metal elements and doesn't require any ground clear area.

Performance of the patch antenna will vary depends on the size of the PCB (ground). When placed on different size of the PCB, or different position on the PCB (center vs. corner), a shift of the central frequency may occur. The adjusting of the central frequency is called tuning. Tuning requires modification of the top silver surface of the patch antenna. This is usually done manually.

At Unictron we will gladly help you to tune the patch antenna on your device. Contact us for more details.

GPS/GLONASS Ceramic Patch Antenna



Model	Size [mm]	Frequency [MHz]	Peak Gain [dBic]	Return Loss[dB]	VSWR
CP-122A-H-N	12.0 × 12.0 × 2.0	1575.42 / 1602	-1.35/-1.23	< -10	< 2
CP-124A-H-N	12.0 × 12.0 × 4.0	1575.42 / 1602	3.27/3.63	< -10	< 2
CP-154A-H-N	15.0 × 15.0 × 4.0	1575.42 / 1602	3.95/4.25	< -10	< 2
CP-182A-H-N	18.0 × 18.0 × 2.0	1575.42 / 1602	2.11/2.50	< -10	< 2
CP-254A-H-B	25.0 × 25.0 × 4.0	1575.42 / 1602	5.06/5.37	< -10	< 2

Patch Antennas

Square Patch Antennas (through-hole type)

Model	Size [mm]	Frequency [MHz]	Peak Gain [dBic]	Return Loss[dB]	VSWR
40.0 × 40.0 × 4.0	915	Circular	1.0 (typical)	26 (min.)	2.5 (max.)
36.0 × 36.0 × 6.0	1227.6 – 1575.42	Circular	4.0 (typical)	9.0 (min.)	2.0 (max.)
36.0 × 36.0 × 6.0	1227.6	Circular	5.0 (typical)	9.0 (min.)	2.0 (max.)
25.0 × 25.0 × 6.0	1575.42	Circular	3.7 (typical)	14.0 (min.)	2.0 (max.)
25.0 × 25.0 × 6.0	1598 ~ 1606	Circular	4.0 (typical)	16.0 (min.)	2.0 (max.)
25.0 × 25.0 × 4.0	1227.6	Circular	2.0 (typical)	6.0 (min.)	2.0 (max.)
25.0 × 25.0 × 4.0	1575.42	Circular	5.0 (typical)	21.0 (min.)	1.5 (max.)
25.0 × 25.0 × 4.0	1575.42	Circular	4.0 (typical)	13.0 (min.)	2.0 (max.)
	1598 ~ 1606	Circular	4.2 (typical)	15.0 (min.)	2.0 (max.)
25.0 × 25.0 × 4.0	1616 ~ 1626.5	Circular	4.6 (typical)	15.0 (min.)	2.0 (max.)
25.0 × 25.0 × 2.0	1575.42	Circular	4.5 (typical)	10.0 (min.)	1.5 (max.)
25.0 × 25.0 × 3.0	2400 – 2484	Circular (R.H.C.P)	6.4 (typical)	87.0 (min.)	2.0 (max.)
20.0 × 20.0 × 4.0	1575.42	Circular	1.4 (typical)	4.0 (min.)	2.0 (max.)
	1598 – 1606	Circular	1.5 (typical)	4.0 (min.)	2.0 (max.)
20.0 × 20.0 × 4.0	1575.42	Circular	3.0 (typical)	4.0 (min.)	2.0 (max.)
20.0 × 20.0 × 4.0	2320 – 2345	Circular (L.H.C.P)	4.0 (typical)	60.0 (min.)	2.0 (max.)
18.5 × 18.5 × 4.0	1575.42	Circular	2.5 (typical)	9.0 (min.)	2.0 (max.)
18.5 × 18.5 × 4.0	1575.42	Circular	0.9 (typical)	4.0 (min.)	2.0 (max.)
	& 1598 – 1606	Circular	0.6 (typical)	4.0 (min.)	2.0 (max.)
18.5 × 18.5 × 4.0	1575.42	Circular (L.H.C.P)	2.6 (typical)	7.0 (min.)	2.0 (max.)
	& 1598 – 1606	Circular	2.2 (typical)	8.0 (min.)	2.0 (max.)
18.5 × 18.5 × 4.0	1575.42	Circular	2.5 (typical)	9.0 (min.)	1.5 (max.)
18.5 × 18.5 × 4.0	1616 ~ 1626.5	Circular	2.8 (typical)	10.0 (min.)	2.0 (max.)
18.5 × 18.5 × 2.0	1575.42	Circular	1.0 (typical)	7.0 (min.)	1.5 (max.)
18.0 × 18.0 × 4.0	2320~2345	Circular (L.H.C.P)	3.5 (typical)	56 (min.)	2.0 (max.)

Patch Antennas

Size [mm]	Frequency [MHz]	Polarization	Peak gain [dBic]	Bandwidth [MHz]	VSWR
15.0 × 15.0 × 4.0	1575.42	Circular	-2.3 (typical)	2.0 (min.)	2.0 (max.)
	1598 – 1606	Circular	-1.7 (typical)	2.0 (min.)	2.0 (max.)
15.0 × 15.0 × 2.0	1575.42	Circular	0.8 (typical)	5.0 (min.)	2.0 (max.)
13.0 × 13.0 × 4.0	1575.42	Circular	-1.2 (typical)	4.0 (min.)	1.5 (max.)
12.0 × 12.0 × 6.0	1575.42	Circular	-2.1 (typical)	6.5 (min.)	2.0 (max.)
12.0 × 12.0 × 4.0	1575.42	Circular	-2.9 (typical)	5.0 (min.)	2.0 (max.)
12.0 × 12.0 × 3.0	1575.42	Circular	-3.5 (typical)	4.8 (min.)	2.0 (max.)
12.0 × 12.0 × 3.5	1575.42	Circular	-3.5 (typical)	5.0 (min.)	2.0 (max.)
10.0 × 10.0 × 4.0	1575.42	Circular	-4.45 (typical)	7.9 (min.)	1.5 (max.)



Patch 25.0 × 25.0 × 4.0 mm with pin



Patch 40.0 × 40.0 × 4.0 mm with pin

Polarization

Patch antenna can be tuned to have linear polarization or circular. Circular polarization can be Right Hand Circular Polarization (R.H.C.P) or Left Hand Circular Polarization (L.H.C.P).

Patch Antennas

The best way of testing patch antennas is to test them tuned to the certain ground plane. Feel free to request samples of SMD patch antennas on the ground plane (PCB). Keep in mind that when the size of the PCB or position on the PCB will be changed, patch antenna needs to be tuned again.



SMD patch antenna 20 × 20 mm on the demo board.



SMD patch antenna 18 × 18 mm on the demo board.

Low profile (flat) SMD patch antenna

Size [mm]	Frequency [MHz]	Polarization	Peak gain [dBic]	Bandwidth [MHz]	VSWR
27.0 × 32.5 × 0.8	1575.42	Circular (R.H.C.P)	-5.2 (typical)	16.0 (min.)	2.0 (max.)

Flat patch antenna

This patch antenna can be placed right over the metal parts. It also receives the signal if the metal part is over surface of the patch of the same size. Suitable for wearable devices.



Patch Antennas

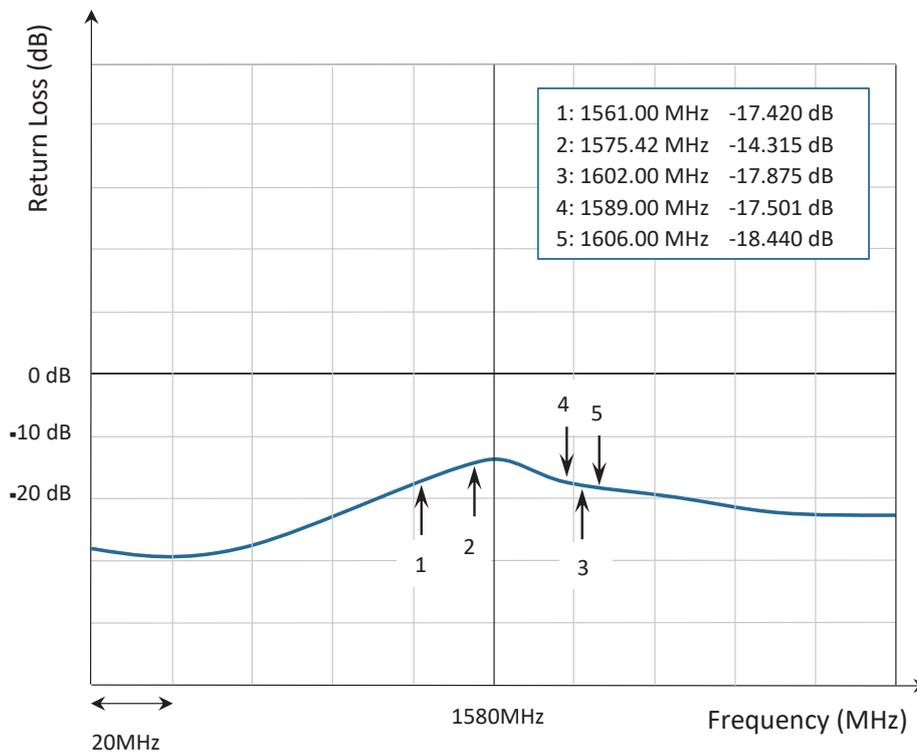
Dual Pin Patch Antenna

Size [mm]	Frequency [MHz]	Polarization	Peak gain [dBic]	VSWR
25.0 × 25.0 × 4.0	1575.42	Circular (R.H.C.P)	4.2 (typical)	2.0 (max.)
	& 1598 – 1606	Circular (R.H.C.P)	1.6 (typical)	2.0 (max.)
	& 1561	Circular (R.H.C.P)	1.9 (typical)	2.0 (max.)



Dual pin patch antenna – Model : **AA650**

Dual pin patch antenna shows a wide bandwidth of usable frequencies (frequencies where return loss is below -10dB).

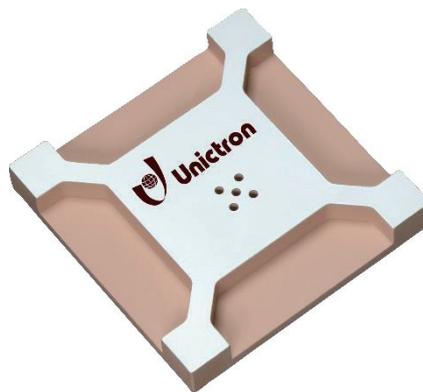


Patch Antennas

Castle patch antenna

Patented castle patch antennas handle two navigation frequencies like GPS L1+L2 or GPS L1+L5. With two simultaneous frequencies, the position localization is with higher accuracy in centimeter range, rather than a few meters toleration given by the standard consumer's GPS.

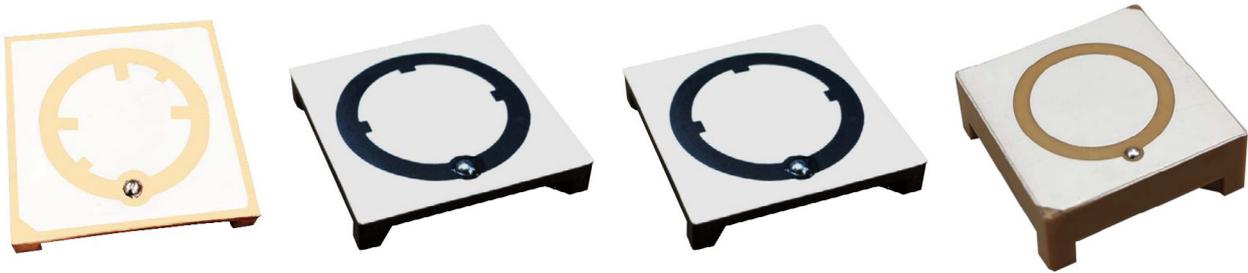
Traditionally for dual band frequencies two patch antennas have been used, a.k.a. stacked patch antennas. Castle patch provides two frequencies with the body size as a single patch antenna but with less body mass. Such solution resulted in a lighter weight, suitable for drones as well as autonomous cars.



Dual Pin Castle Antenna

Model name	Size [mm]	Frequency [MHz]	Peak gain [dBic]	Polarization	VSWR
PB50DMS	50 x 50 x 8	1164~1189	6.1 (typical)	Circular (R.H.C.P)	2.0(max.)
		1561~1606	4.5 (typical)		
PB50DMX	50 x 50 x 8	1215~1239	6.2 (typical)	Circular (R.H.C.P)	2.0(max.)
		1561~1606	4.5 (typical)		
PB50DMJ	50 x 50 x 8	1164~1189	2.7 (typical)	Circular (R.H.C.P)	2.0(max.)
		1215~1239	2.3 (typical)		
		1561~1606	4.5 (typical)		
PB30DMS	30 x 30 x 10	1164~1189	3.3 (typical)	Circular (R.H.C.P)	2.0(max.)
		1561~1606	4.3 (typical)		

Patch Antennas



Single Pin Castle Antenna

Model name	Size [mm]	Frequency [MHz]	Peak gain [dBic]	Bandwidth [MHz]	Polarization	VSWR
PB40D9NS	40 x 40 x 6	1164~1189	5.4 (typical)	11 (L5)	Circular (R.H.C.P)	2.0(max.)
		1561~1606	5.4 (typical)	24 (L1)		
PB40D9NX	40 x 40 x 6	1215~1239	5.1 (typical)	13 (L2)	Circular (R.H.C.P)	2.0(max.)
		1561~1606	5.8 (typical)	37 (L1)		
PB25D8	25 x 25 x 4.5	1164~1189	3.0 (typical)	7 (L5)	Circular (R.H.C.P)	2.0(max.)
		1561~1606	5.0 (typical)	11 (L1)		
PB25D8X	25 x 25 x 4.5	1215~1239	3.2 (typical)	8 (L2)	Circular (R.H.C.P)	2.0(max.)
		1561~1606	5.0 (typical)	15 (L1)		
PB18DRS	18 x 18 x 5	1164~1189	-0.8 (typical)	7 (L5)	Circular (R.H.C.P)	2.0(max.)
		1561~1606	3.1(typical)	11 (L1)		

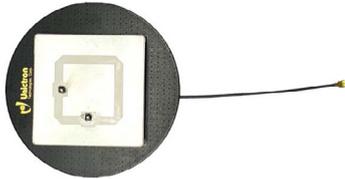
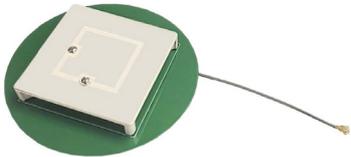


Antenna Module

Antenna Module

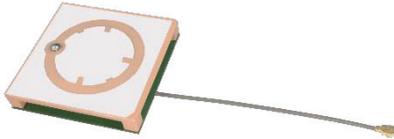
Wireless communication products are ubiquitous nowadays with many different radio waves around us. And the increase in the number of skyscrapers has also had a significant but negative impact on the transmission and reception of radio waves. Therefore, we have developed a lineup of active antenna modules for miniaturization and integration (transistors, ICs, bandpass filters and LCR passive elements, etc.). These amazing low-noise amplifiers are equipped with low-interference, energy-saving, high-gain and high-efficiency noise filter to ensure that frequencies pass through the required range and attenuate other frequencies. Such a small size and integrated module can reduce the development time of RF engineers by effectively maintaining good radio waves. Last but not least, we highly recommend our High Precision GNSS antenna module, which is ideal for autonomous vehicle.

Castle Module

Model name	NB80DG	NB80DJ
		
Size [mm]	80 × 80 × 12.1	80 × 80 × 12.1
Frequency [MHz]	① L5 : 1176.45 ② L1 : 1575.42	① L5 : 1176.45 ② L2 : 1227.6 ③ L1 : 1561 ④ L1 : 1575.42 ⑤ L1 : 1602
Peak Gain [dBi]	① 2.6 dBi ② 4.6 dBi	① -0.81 dBi ② -1.4 dBi ③ 2.2 dBi ④ 3.7 dBi ⑤ 3.4 dBi
Polarization	R.H.C.P	R.H.C.P
Input Voltage [V]	3.3 V	3 V
LNA Gain [dB]	23 (typical)	28 (typical)
Noise Figure [dB]	2.8 (typical)	① 3.0 (typical) ② 3.0 (typical) ③ 3.0 (typical) ④ 2.7 (typical) ⑤ 3.0 (typical)

Antenna Module

Castle Module

Model name	NB40DG	NB26DG
		
Size [mm]	40 × 40 × 10.25	26 × 26 × 8.75
Frequency [MHz]	① L5 : 1176.45 ② L1 : 1575.42 ③ L1 : 1602	① L5 : 1176.45 ② L1 : 1575.42 ③ L1 : 1602
Peak Gain [dBi]	① 2.7 dBi ② 4.8 dBi ③ 3.9 dBi	① -0.8 dBi ② 0.6 dBi ③ 1.3 dBi
Polarization	R.H.C.P	R.H.C.P
Input Voltage [V]	3 V	3 V
LNA Gain [dB]	28 (typical)	28 (typical)
Noise Figure [dB]	3.0 (typical)	3.0 (typical)

Model name	NB26DF
	
Size [mm]	26 × 26 × 8.75
Frequency [MHz]	① L2 : 1227.6 ② L1 : 1575.42 ③ L1 : 1602
Peak Gain [dBi]	① -0.7 dBi ② 0.7 dBi ③ 0.8 dBi
Polarization	R.H.C.P
Input Voltage [V]	3 V
LNA Gain [dB]	28 (typical)
Noise Figure [dB]	3.0 (typical)

Antenna Module

Active GNSS Antenna Module



Model name	Size [mm]	Frequency [MHz]	Peak gain [dBic]	Gain [dB]	VSWR
AM-1-A-B	25.0 × 25.0 × 7.8	1561 / 1575.42 / 1602	1.21/1.21/1.44	27	< 3
AM-1-E-N	25.0 × 25.0 × 4.0	1575.42 / 1602	2	16/15	< 1.5
AM-3-A-G	12.0 × 12.0 × 6.4	1575.42	-0.92	21	< 2
AM-4-A-B	18.0 × 18.0 × 7.9	1575.42 / 1602	0.29/1.95	29	< 2
AM-8-A-G	18.0 × 18.0 × 2.0	1575.42	0.17	27	< 3
AM-9-A-N	15.0 × 15.0 × 4.0	1575.42 / 1602	0.09/0.08	27/26	< 2
AM-11-C-A	100 × 100 × 16.5	1176 / 1227 / 1561 1575.42 / 1602	-6.14/ -11.69/ 3.24 2.48 / 0.69	44/44/41 42/40	< 2
AM-25	25.0 × 25.0 × 8.0	1575.42	2	28	< 2

Antenna Module

Active GNSS Antenna Module

Size [mm]	Navigation	Frequency [MHz]	Peak gain [dBi]	Polarization	Input Voltage [V]	LNA Gain [dB]	Noise Figure [dB]
15.0 × 15.0 × 4.0	L1	1575.42	2.5 dBi	R.H.C.P	3 V	27 (typical)	3.0 (max.)
		1602	1.9 dBi				
18.5 × 18.5 × 7.25	L1	1575.42	0.2 dBi	R.H.C.P	3 V	15 (typical)	2.0 (max.)
		1602	0.4 dBi				
15 × 15 × 7.25	L1	1575.42	-2.3 dBi	R.H.C.P	3 V	16 (typical)	2.0 (max.)
		1602	-2.5 dBi				
13 × 13 × 7.25	L1	1575.42	-3 dBi	R.H.C.P	3 V	16 (typical)	2.0 (max.)
		1602					
12 × 12 × 7.25	L1	1575.42	2 dBi	R.H.C.P	3 V	16 (typical)	2.0 (max.)
		1602	2.2 dBi				
10 × 10 × 7.25	L1	1575.42	-2 dBi	R.H.C.P	3 V	16 (typical)	2.0 (max.)
		1602	-3 dBi				
16 × 6 × 7.25	L1	1575.42	-4 dBi	Linear	3 V	16 (typical)	2.0 (max.)
20 × 6 × 7.25	L1	1575.42	-4 dBi	Linear	3 V	16 (typical)	2.0 (max.)
45 × 10.1 × 2.2	L1	1575.42	2.6 dBi	Linear	3 V	16 (typical)	2.0 (max.)

Size [mm] 10 x 10 x 4



Size [mm] 15 x 15 x 4





External Antennas

External Antennas

External antennas are very convenient plug & play solutions. The cable length varies from 1 to 40 meters and variety of connectors are available upon request. The mounting of the housing to the surface can be done through screws, double sided tape, or a magnet.

Please let us know the combination of parameters you are looking for.

Customized GNSS External Antenna:

Frequency: GNSS (GPS / GLONASS / BEIDOU / GALILEO)

Input Voltage: 2.5 V – 5.5 V

Cable type: RG174 / CFD200 (LMR200) / others

Cable length: 0.1m to 40m

Radome/housing: Optional

Mounting Option: Screws / Double sided Tape / Magnet / others

Connector: SMA / SMB / MCX / MMCX / SMC / Fakra / others

Connector type: Male / Female

LNA: Two stage / Three stage



External Antennas

5 in 1 (GNSS+LTE MIMO+Wi-Fi MIMO)



SPECIFICATION

Model Name	MT-25B-AC-B2L2W
Antenna Dimensions	135.95 * 135.95 * 29.89 mm
Waterproof	IP67 / X9K
Cable type	GPS : H-100 Cable ; LTE/Wi-Fi : SNC-200 Cable
Cable Length	3.1M
Connector	FAKRA II (C)

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GNSS BAND

Application	BeiDou	GPS L1/GPS L2/GPS L5	GLONASS
Center Frequency(MHz)	1561	1575.42/1227.60/1176.45	1602
V.S.W.R.		-3	
Impedance(Ω)		2.7	
Polarization		R.H.C.P	

LNA ELECTRICAL PROPERTIES

Gain(dB)	35 Typ.
Noise Figure(dB)	2.0 Typ.
Output VSWR	< 2.0
DC Input Voltage(V)	3~5.5V
Current consumption	27 mA Typ. @ 5V

External Antennas

CELLULAR/4G LTE BAND

Impedance(Ω)	50
Polarization	Linear
V.S.W.R.	< 4.5
Cable	3.1m SNC-200 Cable
Connector	LTE Main: FAKRA II (D) / LTE Aux : FAKRA II (L)

MIMO 1 (Main)

Frequency(MHz)	617~698	698~960	1710~2170	2300~2690	3300~3800
Efficiency(%)	36.46	45.10	39.31	39.34	41.54
Average Gain(dB)	-4.38	-3.46	-4.05	-4.05	-3.82
Peak Gain(dBi)	2.14	5.79	3.71	4.36	5.42

MIMO 2 (Aux)

Frequency(MHz)	617~698	698~960	1710~2170	2300~2690	3300~3800
Efficiency(%)	33.75	56.18	38.55	35.19	37.66
Average Gain(dB)	-4.72	-2.50	-4.14	-4.54	-4.24
Peak Gain(dBi)	2.00	5.87	3.23	2.94	4.25

2.4 / 5 GHz Wi-Fi BAND

Impedance(Ω)	50
Polarization	Linear
V.S.W.R.	< 2
Cable	3.1m SNC-200 Cable
Connector	Wi-Fi Main: FAKRA II (I) / Wi-Fi Aux : FAKRA II (E)

Wi-Fi 1(Main)

Wi-Fi 2(Aux)

Frequency(MHz)	2400~2500	5150~5850	2400~2500	5150~5850
Efficiency(%)	49.66	33.11	48.42	31.62
Average Gain(dB)	-3.04	-4.80	-3.15	-5.00
Peak Gain(dBi)	5.31	2.93	4.20	2.82

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

5 in 1 (GNSS+LTE MIMO)



SPECIFICATION

Model Name	MT-25B-AS-B4L
Antenna Dimensions	136.47 * 135.95 * 29.89 mm
Waterproof	IP67
Cable type	GPS : H-100 Cable
Cable Length	1M
Connector	SMA(M)

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GNSS BAND

Application	BeiDou	GPS L1	GLONASS
Center Frequency(MHz)	1561	1575.42	1602
V.S.W.R.		< 3.0	
Impedance(Ω)		50	
Polarization		R.H.C.P	

LNA ELECTRICAL PROPERTIES

Gain(dB)	30 Typ.
Noise Figure(dB)	2.5 Typ.
Output VSWR	< 3.0
DC Input Voltage(V)	3.3~5V
Current consumption	9 mA Typ. @ 5V

External Antennas

CELLULAR/4G LTE BAND

Impedance(Ω)	50
Polarization	Linear
V.S.W.R.	6 Typ.
Cable	1m SNC-200 Cable
Connector	SMA(M)

LTE 1

	617~698	698~960	1710~2170	2300~2690	3300~3800
Frequency(MHz)	617~698	698~960	1710~2170	2300~2690	3300~3800
Efficiency(%)	45.50	43.79	66.26	50.13	48.53
Average Gain(dB)	-3.42	-3.59	-1.79	-3.00	-3.14
Peak Gain(dBi)	2.42	2.32	5.87	4.61	3.44

LTE 2

Efficiency(%)	45.9	43.62	58.73	57.38	38.49
Average Gain(dB)	-3.38	-3.60	-2.31	-2.41	-4.15
Peak Gain(dBi)	3.70	3.10	4.89	3.29	1.97

LTE 3

Efficiency(%)	46.47	44.83	58.51	58.01	42.48
Average Gain(dB)	-3.33	-3.48	-1.75	-2.37	-3.72
Peak Gain(dBi)	3.43	3.21	4.19	3.35	2.27

LTE 4

Efficiency(%)	36.81	43.34	55.41	41.73	50.74
Average Gain(dB)	-4.34	3.64	-2.56	-3.80	-2.95
Peak Gain(dBi)	1.48	2.54	6.12	3.24	3.60

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

3 in 1 (GNSS+Wi-Fi MIMO)



SPECIFICATION

Model Name	MT-25B-AS-B2W01
Antenna Dimensions	136.47(L) x 135.95(W) x 27.44(H)
Waterproof	IP67
Cable type	GPS : H-100 Cable
Cable Length	5M
Connector	FAKRA II (C Type)

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

External Antennas

GNSS BAND

Application	BeiDou	GPS L1	GLONASS	GPS L2	GPS L5
Center Frequency(MHz)	1561	1575.42	1602	1227	1176
V.S.W.R.	< 2				
Impedance(Ω)	50				
Polarization	R.H.C.P				

LNA ELECTRICAL PROPERTIES

Gain(dB)	37 Typ.	39 Typ.	36 Typ.	38 Typ.	37 Typ.
Noise Figure(dB)	1.5 Typ.	1.5 Typ.	1.6 Typ.	1.3 Typ.	1.4 Typ.
Output VSWR	< 3.0				
DC Input Voltage(V)	3.3 ~ 5.0				
Current consumption	20 \pm 3 mA				

2.4 / 5 GHz Wi-Fi BAND

Impedance(Ω)	50
Polarization	Linear
V.S.W.R.	< 2
Cable	5m SNC-200 Cable
Connector	FAKRA II (E Type)

Wi-Fi 1

Frequency(MHz)	2400	2450	2500	5150	5350	5750	5850
Efficiency(%)	42.95	43.55	44.98	26.85	24.83	19.91	26.92
Average Gain(dB)	-3.67	-3.61	-3.47	-5.71	-6.05	-7.01	-5.70
Peak Gain(dBi)	1.00	1.14	1.15	-0.77	-0.77	-0.57	-1.42

Wi-Fi 2

Efficiency(%)	48.19	45.92	46.99	27.29	27.16	26.06	20.70
Average Gain(dB)	-3.17	-3.38	-3.28	-5.64	-5.66	-5.84	-6.84
Peak Gain(dBi)	2.66	1.32	1.64	-0.83	-0.09	0.22	0.49

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

4 in 1 (DSDS MIMO + C-V2X MIMO)



SPECIFICATION

Model Name	MT-25B-BS-4L01
Antenna Dimensions	136.47(L) x 135.95(W) x 27.44(H)
Waterproof	IP67
Cable type	DSDA : SNC-200 Cable
Cable Length	5M
Connector	FAKRA II (E Type)

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

External Antennas

DSDA BAND							
Application	5G NR 71	LTE 700	GSM	DCS	PCS	UMTS1	LTE 2600
Center Frequency(MHz)	617 ~698	698 ~824	824 ~960	1710 ~1880	1850 ~1990	1920 ~2170	2300 ~2690
V.S.W.R.	< 5.85			< 3		< 3.57	
Impedance(Ω)	50						
Polarization	Linear						

DSDA 1							
Efficiency(%)	34.74	30.78	29.34	38.60	40.79	40.47	42.62
Average Gain(dB)	-4.59	-5.12	-5.33	-4.13	-3.89	-3.93	-3.70
Peak Gain(dBi)	3.33	1.02	3.22	2.64	2.64	3.41	3.46

DSDA 2							
Efficiency(%)	42.67	35.99	25.50	38.94	42.26	41.10	39.38
Average Gain(dB)	-3.70	-4.44	-5.94	-4.10	-3.74	-3.86	-4.05
Peak Gain(dBi)	4.21	1.79	1.05	2.16	2.98	3.07	1.84

C-V2X BAND	
Impedance(Ω)	50
Polarization	Linear
V.S.W.R.	< 2
Cable	5m SNC-200 Cable
Connector	FAKRA II (E Type)

	C-V2X 1	C-V2X 2
Frequency(MHz)	5905 ~ 5925	5905 ~ 5925
Efficiency(%)	20.46 Typ.	18.79 Typ.
Average Gain(dB)	-6.89 Typ.	-7.26 Typ.
Peak Gain(dBi)	-0.36 Typ.	0.01 Typ.

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

4 in 1 (LTE MIMO)



SPECIFICATION

Model Name	MT-25B-BS-4L02
Antenna Dimensions	136.47(L) x 135.95(W) x 27.44(H)
Waterproof	IP67
Cable type	SNC-200 Cable
Cable Length	5M
Connector	FAKRA II (E Type)

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

External Antennas

5G NR/ 4G LTE Full BAND								
Application	5G NR 71	LTE 700	GSM	DCS	PCS	UMTS1	LTE 2600	5G NR
Center Frequency(MHz)	617 ~ 698	698 ~ 824	824 ~ 960	1710 ~ 1880	1850 ~ 1990	1920 ~ 2170	2300 ~ 2690	3300 ~ 4200
V.S.W.R.	< 4.4					< 2.2		
Impedance(Ω)	50							
Polarization	Linear							

LTE 1								
Efficiency(%)	41.18	31.98	25.60	43.57	44.46	43.35	38.59	29.81
Average Gain(dB)	-3.85	-4.95	-5.92	-3.61	-3.52	-3.63	-4.14	-5.26
Peak Gain(dBi)	4.99	2.25	0.69	4.34	4.28	3.45	3.06	2.62

LTE 2								
Efficiency(%)	42.01	34.36	36.18	34.55	45.00	43.48	39.91	28.33
Average Gain(dB)	-3.77	-4.64	-4.42	-4.62	-3.47	-3.62	-3.99	-5.48
Peak Gain(dBi)	3.46	1.11	1.31.	1.39.	2.25	2.61	2.95	1.57

LTE 3								
Efficiency(%)	41.85	36.21	34.00	36.05	42.87	40.16	37.79	27.80
Average Gain(dB)	-3.78	-4.41	-4.69	-4.43	-3.68	-3.96	-4.23	-5.56
Peak Gain(dBi)	3.57	2.60	4.26	1.90	3.44	2.94	1.72	1.45

LTE 4								
Efficiency(%)	47.32	33.56	26.47	43.74	43.30	42.39	40.21	29.24
Average Gain(dB)	-3.25	-4.74	-5.77	-3.59	-3.64	-3.73	-3.96	-5.34
Peak Gain(dBi)	5.97	2.78	0.85	2.57	2.47	2.92	3.41	3.72

External Antennas

2 in 1 (GNSS + 4G LTE)



SPECIFICATION

Model Name	HB70D
Antenna Dimensions	70 * 70 * 17 mm
Cable type	GNSS: RG-174 LTE : LMR-200
Cable Length	2M (default)
Connector	SMA(M) ST

ENVIRONMENTAL

Operation Temperature	-40 ~ 105 °C
Storage Temperature	-40 ~ 105 °C

External Antennas

GNSS BAND

Application	BeiDou	GPS/QZSS/GALILEO	GLONASS
Center Frequency(MHz)	1561	1575.42	1602
V.S.W.R.		< 2.0	
Impedance(Ω)		50	
Polarization		R.H.C.P	

LNA ELECTRICAL PROPERTIES

Gain(dB)	19 Typ.	19 Typ.	16 Typ.
Noise Figure(dB)		2.5 Typ.	
Output VSWR		< 2.5	
DC Input Voltage(V)		3.3	
Current consumption		10 mA Typ. @3V	

CELLULAR/4G LTE BAND

Frequency(MHz)	698~960	1710~2170	2300~2400	2500~2700
Efficiency(%)	53	59	65	56
Average Gain(dB)	-2.8	-2.2	-1.8	-2.5
Peak Gain(dBi)	2.7	2.7	2.6	2.5
V.S.W.R.			< 3.5	
Impedance(Ω)			50	
Polarization			Linear	
Cable			2M LMR-200 low loss cable	
Connector			SMA(M) ST	

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1 + L2 + L5



SPECIFICATION

Model Name	EG-17BW-AS-A
Antenna Dimensions	140 * 140 * 49 mm
Waterproof	IP67
Cable type	RG-58
Cable Length	3M
Connector	TNC Straight Bulkhead-Mounted Jack

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

Application	Beidou	Glonass	GPS(L1)	GPS(L2)	GPS(L5)
Center Frequency(MHz)	1561	1602	1575.42	1227	1176.45
Peak Gain (dBi)	5.41	3.77	5.14	4.49	-3.39
V.S.W.R.	< 2				
Impedance(Ω)	50				
Polarization	R.H.C.P				

LNA ELECTRICAL PROPERTIES

Gain(dB)	43 Typ.
Noise Figure(dB)	4.5 Typ.
Output VSWR	2.0 max.
DC Input Voltage(V)	3.3~15.0 DC
Current consumption	30 mA Typ. @ 5V

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1 + L2 + L5



SPECIFICATION

Model Name	EG-88W-AC-A
Antenna Dimensions	80 * 80 * 71.2 mm
Waterproof	IP67
Cable type	RG-58
Cable Length	2M
Connector	TNC(M) or N(M)

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

Application	Beidou	Glonass	GPS(L1)	GPS(L2)	GPS(L5)
Center Frequency(MHz)	1561	1602	1575.42	1227	1176.45
Peak Gain (dBic)	3.24	0.69	2.48	-11.69	-6.14
V.S.W.R.	< 2				
Impedance(Ω)	50				
Polarization	R.H.C.P				

LNA ELECTRICAL PROPERTIES

Gain(dB)	35 Typ.
Noise Figure(dB)	2.0 Typ.
Output VSWR	< 2.0
DC Input Voltage(V)	3.3~5
Current consumption	27 mA Typ. @ 5V

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1 + L2



SPECIFICATION

Model Name	EG-56
Antenna Dimensions	79.63 * 79.63 * 94 mm
Waterproof	IP67
Connector	TNC (SBJ)

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

Application	Beidou	Glonass	GPS(L1)	GPS(L2)
Center Frequency(MHz)	1561	1602	1575.42	1227.6
Peak Gain (dBic)	5.4	3.5	5.5	4.8
Efficiency (%)	61.5	45.2	65.0	48.8
V.S.W.R.	< 2			
Impedance(Ω)	50			
Polarization	R.H.C.P			

LNA ELECTRICAL PROPERTIES

Gain(dB)	37 Typ.
Noise Figure(dB)	1.5 Typ.
Output VSWR	< 2.0
DC Input Voltage(V)	3.3 ~ 5.0
Current consumption	20 @ 3.3V Typ.

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GNSS L1 + L2 + L5 / L6



Light Weight Design



SPECIFICATION

	EG-45B-AC-A	EG-45B-BC-A
Model Name	EG-45B-AC-A	EG-45B-BC-A
Application Band Bands	GNSS L1 / L2 / L5	GNSS L1 / L2 / L6
Peak Gain (dBi)	0.16 @ 1176MHz (GPS L5) -2.90 @ 1227MHz (GPS L2) 1.24 @ 1561MHz (Beidou) 1.14 @ 1575.42MHz (GPS L1) -0.57 @ 1602MHz (Glonass)	-1.81 @ 1227MHz (GPS L2) -1.33 @ 1278.75MHz (GPS L6) 1.63 @ 1561MHz (Beidou) 1.34 @ 1575.42MHz (GPS L1) -0.07 @ 1602MHz (Glonass)
Antenna Dimensions	29.77 * 29.77 * 57.68 mm	
Waterproof	IP67	
Connector	SMA(M)	

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C
Relative Humidity	95% non non-condensing

PERFORMANCE SPECIFICATION

V.S.W.R.	< 2
Impedance(Ω)	50
Polarization	Linear

LNA ELECTRICAL PROPERTIES

Output VSWR	< 2.0
DC Input Voltage(V)	3.3~5

*Note: the connector, cable length, and cable type can be tailor made upon request

External Antennas

PROFESSIONAL GPS/GLONASS/BEIDOU/GALILEO AND QZSS RE-RADIATING SYSTEM



SPECIFICATION

Model Name	RK-20W Series
Application	GPS L1 / GLONASS / BEIDOU / GPS L2 / GPS L5
Center Frequency(MHz)	1575.42/1602/1561/1227/1176
Re-radiating Range	40m
Antenna Dimensions	140 * 140 * 49.0 mm
Re-radiator	115 * 115 * 68.5 mm
Waterproof	IP67
Cable type	RG-58 A/U
Cable Length	Standard: 40m / Option:100m
Connector	Antenna: TNC (SBJ), re-radiator: SMA90 (RAJ)

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

PERFORMANCE SPECIFICATION

Peak Gain (dBi)	2.48/0.69/3.24/-11.69/-11.26
V.S.W.R.	< 2
Impedance(Ω)	50

LNA ELECTRICAL PROPERTIES

Gain(dB)	39/36/37/38/37
Noise Figure	1.5/1.6/1.5/1.3/1.4
Power Supply	100 ~ 240V AC to 3.3V ~ 15V DC Regulator
Current consumption	23 \pm 5 mA

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

PROFESSIONAL GPS / GLONASS RE-RADIATING SYSTEM



SPECIFICATION

	RK-104	RK-106	RK-306
Model Name	RK-104	RK-106	RK-306
Application	GPS	GPS / GLONASS	GPS /GLONASS
Center Frequency(MHz)	1575.42	1575/1602 MHz	1575/1602 MHz
Re-radiating Range	10m	10m	30m
Antenna Dimensions		80* 80 * 71.24 mm	
Re-radiator		79 * 85 * 113 mm	
Waterproof		IP67	
Cable type		RG-58 A/U	
Cable Length		Standard: 40m / Option:100m	
Connector		Antenna: TNC Jack, re-radiator: SMA Jack	

ENVIRONMENTAL

Operation Temperature	-30 ~ 80 °C
Storage Temperature	-40 ~ 85 °C

PERFORMANCE SPECIFICATION

Peak Gain (dBic)	+5 Typ.	+4 Typ.	+4 Typ.
V.S.W.R.		2.0 max.	
Impedance(Ω)		50	
Polarization		R.H.C.P	

LNA ELECTRICAL PROPERTIES

Gain(dB)	27 dB typically
Noise Figure	1.5 max.
Power Supply	100 ~ 240V AC to 7.5V ~ 12V DC Regulator
Current consumption	48mA (+/- 5%) @ 7.5V DC

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1 + L5



SPECIFICATION

Model Name	YM45
Antenna Dimensions	67 * 49 * 24.5 mm
Cable type	RG-174
Cable Length	1M (default)
Connector	SMA plug

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

	GPS L5	GPS L1	GLONASS G1
Application	GPS L5	GPS L1	GLONASS G1
Center Frequency(MHz)	1176.45	1575.42	1602
Peak Gain (dBi)	4.2	3.3	3.6
Efficiency (%)	56	55	53
V.S.W.R.			
Impedance(Ω)		50	
Polarization		R.H.C.P	

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1 + L5



SPECIFICATION

Model Name	HB8ODF
Antenna Dimensions	90 * 80 * 25.4 mm
Cable type	RG-174
Cable Length	3M (default)
Connector	SMA(M) ST

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

Application	GPS L5	BDS B1	GPS L1	GLONASS G1
Center Frequency(MHz)	1176.45	1561	1575.42	1602
Peak Gain (dBi)	3.1	5.0	5.1	4.2
Efficiency (%)	53	72	73	54
V.S.W.R.	< 2			
Impedance(Ω)	50			
Polarization	R.H.C.P			

LNA ELECTRICAL PROPERTIES

Gain(dB)	28 ±3 Typ.	28 ±3 Typ.	28 ±3 Typ.	28 ±3 Typ.
Noise Figure(dB)	3.0 Typ.	3.0 Typ.	2.7 Typ.	3.0 Typ.
Output VSWR	< 2.0			
DC Input Voltage(V)	3.0 ± 0.3			
Current consumption	12.5 mA Typ. (at DC 3V)			

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1 + L5



SPECIFICATION

Model Name	HB70DF
Antenna Dimensions	70 * 70 * 17 mm
Cable type	RG-174
Cable Length	2M (default)
Connector	SMA(M) ST

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

	GPS L5	GPS L1
Application	GPS L5	GPS L1
Center Frequency(MHz)	1176.45	1575.42
Peak Gain (dBi)	3.0	4.7
Efficiency (%)	51.7	75.2
V.S.W.R.	< 2	
Impedance(Ω)	50	
Polarization	R.H.C.P	

LNA ELECTRICAL PROPERTIES

Gain(dB)	28 ±3 Typ.
Noise Figure(dB)	3.0 Typ.
Output VSWR	< 2.0
DC Input Voltage(V)	3.0 ± 0.3
Current consumption	12.5 mA Typ. (at DC 3V)

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1 + L5



SPECIFICATION

Model Name	HB60DG
Antenna Dimensions	86.8 * 65 * 23 mm
Cable type	RG-174
Cable Length	1M (default)
Connector	FAKRA SMB CRIMP JACK(Code C)

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

	GPS L5	GPS L1	GLONASS G1
Application	GPS L5	GPS L1	GLONASS G1
Center Frequency(MHz)	1176.45	1575.42	1602
Peak Gain (dBi)	2.7	4.8	3.9
Efficiency (%)	39	55	43
V.S.W.R.		< 2	
Impedance(Ω)		50	
Polarization		R.H.C.P	

LNA ELECTRICAL PROPERTIES

Gain(dB)	28 ±3 Typ.
Noise Figure(dB)	3.0 Typ.
Output VSWR	< 2.0
DC Input Voltage(V)	DC = 3.0 ± 0.3
Current consumption	12.5 mA Typ. (at DC 3V)

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1 + L5



SPECIFICATION

Model Name	HB50DF
Antenna Dimensions	65 * 49 * 24.5 mm
Cable type	RG-174
Cable Length	3M (default)
Connector	SMA(M) ST

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

Application	GPS L5	GPS L1	GLONASS G1
Center Frequency(MHz)	1176.45	1575.42	1602
Peak Gain (dBi)	4.2	3.3	3.6
Efficiency (%)	56	55	53
V.S.W.R.		< 2	
Impedance(Ω)		50	
Polarization		R.H.C.P	

LNA ELECTRICAL PROPERTIES

Gain(dB)	36 Typ.	35 Typ.	34 Typ.
Noise Figure(dB)	2.4 Typ.	2.4 Typ.	2.7 Typ.
Output VSWR		< 2.0	
DC Input Voltage(V)		DC = 3.3~5.0	
Current consumption		17~23 mA	

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1 + L5



SPECIFICATION

Model Name	HB45DF
Antenna Dimensions	47.0 * 45.3 * 15.6 mm
Cable type	RG-174
Cable Length	3M (default)
Connector	SMA(M) ST

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

	GPS L5	GPS L1	GLONASS G1
Application	GPS L5	GPS L1	GLONASS G1
Center Frequency(MHz)	1176.45	1575.42	1602
Peak Gain (dBi)	0.2	2.2	2.0
Efficiency (%)	31	45	46
V.S.W.R.		< 2	
Impedance(Ω)		50	
Polarization		R.H.C.P	

LNA ELECTRICAL PROPERTIES

Gain(dB)	28 ±3 Typ.
Noise Figure(dB)	3.0 Typ.
Output VSWR	< 2.0
DC Input Voltage(V)	DC = 3.0 ± 0.3
Current consumption	12.5 mA Typ. (at DC 3V)

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1 + L2



SPECIFICATION

Model Name	HB80DG
Antenna Dimensions	90 * 80 * 25.4 mm
Cable type	RG-174
Cable Length	5M (default)
Connector	SMA(M) ST

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

Application	GPS L2	BDS B1	GPS L1	GLONASS G1
Center Frequency(MHz)	1227.6	1561	1575.42	1602
Peak Gain (dBi)	3.2	4.5	5.0	3.9
Efficiency (%)	52	64	70	52
V.S.W.R.	< 2.0			
Impedance(Ω)	50			
Polarization	R.H.C.P			

LNA ELECTRICAL PROPERTIES

	GPS L2	BDS B1	GPS L1	GLONASS G1
Gain(dB)	28 ±3 Typ.	28 ±3 Typ.	28 ±3 Typ.	28 ±3 Typ.
Noise Figure(dB)	3.0 Typ.	3.0 Typ.	2.7 Typ.	3.0 Typ.
Output VSWR	< 2.0			
DC Input Voltage(V)	DC = 3.0 ± 0.3			
Current consumption	12.5 mA Typ. (at DC 3V)			

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1 + L2



SPECIFICATION

Model Name	HB50DG
Antenna Dimensions	65 * 49 * 24.5 mm
Cable type	RG-174
Cable Length	3M (default)
Connector	SMA(M) ST

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

	GPS L2	GPS L1	GLONASS G1
Application	GPS L2	GPS L1	GLONASS G1
Center Frequency(MHz)	1227.6	1575.42	1602
Peak Gain (dBi)	4.2	2.0	1.9
Efficiency (%)	56	40	38
V.S.W.R.		< 2	
Impedance(Ω)		50	
Polarization		R.H.C.P	

LNA ELECTRICAL PROPERTIES

Gain(dB)	28 ±3 Typ.
Noise Figure(dB)	3.0 Typ.
Output VSWR	< 2.0
DC Input Voltage(V)	DC = 3.0~5.0
Current consumption	12.0 mA Typ.

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1 + L2 + L5



SPECIFICATION

Model Name	HB8ODJ
Antenna Dimensions	90 * 80 * 25.4 mm
Cable type	RG-174
Cable Length	3M (default)
Connector	SMA(M) ST

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

Application	GPS L5	GPS L2	BDS B1	GPS L1	GLONASS G1
Center Frequency(MHz)	1176.45	1227.6	1561	1575.42	1602
Peak Gain (dBi)	-0.81	-1.4	2.2	3.7	3.4
Efficiency (%)					
V.S.W.R.	< 2.0				
Impedance(Ω)	50				
Polarization	R.H.C.P				

LNA ELECTRICAL PROPERTIES

Gain(dB)	28 ±3 Typ.	28 ±3 Typ.	28 ±3 Typ.	28 ±3 Typ.	28 ±3 Typ.
Noise Figure(dB)	3.0 Typ.	3.0 Typ.	3.0 Typ.	2.7 Typ.	3.0 Typ.
Output VSWR	< 2.0				
DC Input Voltage(V)	DC = 3.0 ± 0.3				
Current consumption	12.5 mA Typ. (at DC 3V)				

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1 + L2



SPECIFICATION

Model Name	HB70DJ
Antenna Dimensions	70 * 70 * 17 mm
Cable type	RG-174
Cable Length	3M (default)
Connector	SMA(M) ST

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

	GPS L2	GPS L1
Application	GPS L2	GPS L1
Center Frequency(MHz)	1227.6	1575.42
Peak Gain (dBic)	4.1	3.0
Efficiency (%)	61.1	45.2
V.S.W.R.	< 2	
Impedance(Ω)	50	
Polarization	R.H.C.P	

LNA ELECTRICAL PROPERTIES

Gain(dB)	30 Typ.
Noise Figure(dB)	1.8 Typ.
Output VSWR	< 2.0
DC Input Voltage(V)	3~24
Current consumption	9 mA Typ. @ 3V

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1 + L2



SPECIFICATION

Model Name	HB45DG
Antenna Dimensions	47.0 * 45.3 * 15.6 mm
Cable type	RG-174
Cable Length	3M (default)
Connector	SMA(M) ST

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

	GPS L2	GPS L1	GLONASS G1
Application	GPS L2	GPS L1	GLONASS G1
Center Frequency(MHz)	1227.6	1575.42	1602
Peak Gain (dBi)	2.3	2.2	2.0
Efficiency (%)			
V.S.W.R.		< 2	
Impedance(Ω)		50	
Polarization		R.H.C.P	

LNA ELECTRICAL PROPERTIES

Gain(dB)	28 ±3 Typ.
Noise Figure(dB)	3.0 Typ.
Output VSWR	< 2.0
DC Input Voltage(V)	DC = 3.0 ± 0.3
Current consumption	12.5 mA Typ. (at DC 3V)

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1 + L2



SPECIFICATION

Model Name	G011
Antenna Dimensions	49.5 * 38.5 * 17 mm
Cable type	RG-174
Cable Length	3M (default)
Connector	SMA plug

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

	GPS L2	GPS L1
Application	GPS L2	GPS L1
Center Frequency(MHz)	1227.6	1575.42
Peak Gain (dBic)	2.0	3.0
Efficiency (%)		
V.S.W.R.	< 3	< 2
Impedance(Ω)	50	
Polarization	R.H.C.P	

LNA ELECTRICAL PROPERTIES

Gain(dB)	28 Typ.
Noise Figure(dB)	2.5 Typ.
Output VSWR	2.5 max
DC Input Voltage(V)	2.5~5
Current consumption	16 mA Typ. @ 3.3V

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1+L5



SPECIFICATION

Model Name	G009
Antenna Dimensions	49.5 * 38.5 * 17 mm
Cable type	RG-174
Cable Length	3M (default)
Connector	SMA plug

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

	GPS L5	GPS L1
Application	GPS L5	GPS L1
Center Frequency(MHz)	1550~1620	1160~1290
Peak Gain (dBic)	2.0	3.0
Efficiency (%)		
V.S.W.R.	< 3	< 2
Impedance(Ω)	50	
Polarization	R.H.C.P	

LNA ELECTRICAL PROPERTIES

Gain(dB)	25 Typ.
Noise Figure(dB)	2.5 Typ.
Output VSWR	2.5 max
DC Input Voltage(V)	2.5~5
Current consumption	16 mA Typ. @ 3.3V

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1/ Glonass L1/ Beidou B1/ GALILEO E1/ QZSS L1



SPECIFICATION

Model Name	EG-16W-AC-B
Antenna Dimensions	60.5 * 60.5 * 78 mm
Cable type	RG-174/U
Cable Length	5M
Connector	BNC, TNC, GT5, MCX(OSX), SMA, SMB or SMC.

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

Application	Beidou	GPS	Glonass
Center Frequency(MHz)	1561	1575.42	1598-1606
Peak Gain (dBiC)	-0.5	2.0	0.6
V.S.W.R.		2.0 max.	
Impedance(Ω)		50	
Polarization		R.H.C.P	

LNA ELECTRICAL PROPERTIES

Gain(dB)	35dB
Noise Figure(typical)	< 1.5 dB
Output VSWR	2.0 max.
DC Input Voltage(V)	3~5.5V DC
Current consumption	12 mA Typ. @ 3V

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS L1/ Glonass L1/ Beidou L1/ GPS L2/ GPS L5



SPECIFICATION

Model Name	EG-42W-AC-A
Antenna Dimensions	138.4(D) * 50(H) mm
Waterproof	IP67
Connector	TNC (SBJ)
Weight (g)	331

ENVIRONMENTAL

Operation Temperature	-40 ~ 85 °C
Storage Temperature	-40 ~ 85 °C

GPS ANTENNA

Application	GPS L5	GPS L2	BeiDou L1	GPS L1	GLONASS
Center Frequency(MHz)	1176	1227	1561	1575.42	1602
Peak Gain (dBi)	-6.14	-11.69	3.24	2.48	0.69
V.S.W.R.	< 2.0				
Impedance(Ω)	50				
Polarization	R.H.C.P				

LNA ELECTRICAL PROPERTIES

	GPS L5	GPS L2	BeiDou L1	GPS L1	GLONASS
Gain(dB)	42dB	43dB	40dB	39dB	39dB
Noise Figure(typical)	2.7 dB	2.9 dB	3.2 dB	3.0 dB	3.2 dB
Output VSWR	2.0 max.				
DC Input Voltage(V)	3.3 ~ 5.0 V DC				
Current consumption	26 ± 3 mA				

**Note: the connector, cable length, and cable type can be tailor made upon request*

External Antennas

GPS

Model name	G023
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Application	GPS
Size [mm]	47 × 45 × 14.5
GPS	1575.42 MHz
Gain at Zenith [dBic]	5 (typical)
Gain at 10° [dBic]	-1.0 (typical)
LNA	
Gain [dB]	19~36 (typical) (30dB at 3V)

GPS+BDS

Model name	H01
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Application	GPS & BDS
Size [mm]	47 × 45 × 14.5
GPS	
Gain at Zenith [dBic]	0.9 (typical)
Gain at 10° [dBic]	-6.3 (typical)
BDS	
Gain at Zenith [dBic]	1.5 (typical)
Gain at 10° [dBic]	-4.8 (typical)
LNA	
Gain (dB)	28~36 (typical) (30dB at 3V) (35dB at 5V)

GPS+GLONASS

Model name	EG-6AB-ES-A	EG-24W-AC-N	EG-2B-CS-B
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Application	GPS L2/L1+ Glonass	GPS+Glonass	GPS+Glonass
Size [mm]	80(D)x 90(L)x 25.4(H)	60.5(D) x 49(H)	80(D) x 71.2(H)
GPS	L2:1227 / L1:1575.42	1575.42 MHz	1575.42 MHz
Peak Gain (dBi)	-11.69/2.48 (L2/ L1)	0.94	1.63
Axial Ratio	1.29/ 2.16 (L2/ L1)		
Glonass	1602.00 MHz	1602.00 MHz	1602.00 MHz
Peak Gain (dBi)	0.69	0.33	1.96
Axial Ratio	2.38		
LNA for GNSS			
Gain (dB)	32~35 (typical)	27(typical)	30~31 (typical)
Noise Figure (dB)	3.0	0.98~0.92	1.23~1.26

External Antennas

GPS/GLONASS/BDS

Model name	A01	EG-20W-AS-A
		
Application	GPS & GLONASS	GPS L1/L5+GLONASS+BDS
Size [mm]	45(L)x45(W)x14.5(H)	115(L) x115(W) x 75.2(H)
GPS	1575.42 MHz	L5:1176.46 / L1:1575.42
Peak Gain (dBi)	-0.1(dBic)	1.76 / 3.5 (GPS L5 / L1))
Axial Ratio (dB)	-6.1(dBic)	2.70 (GPS L5) 1.51 (GPS L1)
GLONASS	1602.00 MHz	1602.00 MHz
Peak Gain (dBi)	-1.1(dBic)	3.76
Axial Ratio (dB)	-19.4(dBic)	
BDS	1561.00 MHz	1561.00 MHz
Peak Gain (dBi)	-0.5 (typical)	3.69
Axial Ratio (dB)		
LNA for GNSS		
Gain (dB)	28 (typical)	43 (typical)
Noise Figure (dB)		2.41
Output V.S.W.R		< 2
Current Consumption		26.8 ± 2 mA
Operation Voltage (V)	3	3.3~ 5
Output Impedance (Ω)	50	50

External Antennas

GPS/GLONASS/BDS

Model name	EG-37B-AS-B	EG-23G-AS-B
		
Application	GPS+GLONASS+BDS	GPS+GLONASS+BDS
Size [mm]	50(L) x 38(W) x 17(H)	33.95(L) x 25.2(W) x 10.6(H)
GPS	1575.42 MHz	1575.42 MHz
Peak Gain (dBi)	≥ 3	0.79
Axial Ratio (dB)	≤ -10	< -5
GLONASS	1602.00 MHz	1602.00 MHz
Peak Gain (dBi)	≥ 3	0.94
Axial Ratio (dB)	≤ -10	< -6
BDS	1561.00 MHz	1561.00 MHz
Peak Gain (dBi)	≥ 3	0.71
Axial Ratio (dB)	≤ -10	< -5
LNA for GNSS		
Gain (dB)	28 ± 2 (Typical)	28 ± 2 (Typical)
Noise Figure (dB)	< 1.5	< 1.5
Output V.S.W.R	< 2	< 2
Current Consumption	≤ 20 mA	10.56 ± 2 mA
Operation Voltage (V)	3 ~ 5	3.3 ~ 5.0
Output Impedance (Ω)	50	50

External Antennas

GNSS/5G NR/4G LTE/Wi-Fi

Model name	MT-15B-AS-B2L3W	MT-10B-AC-B2L2W	MT-10W-AC-B2L2W
			
Application	(6-in-1) GNSS 5G NR/LTE/Wi-Fi	(5-in-1) GNSS 5G NR/LTE/Wi-Fi	(5-in-1) GNSS 5G NR/4G LTE/Wi-Fi
Size [mm]	170.3 x 70.3 x 15.4	108.9(D) x 48.5(H)	102.9(D) x 43.5(H)
GNSS			
Peak Gain (BDS/GPS/GLONASS)	1.21/1.21/1.44	1.21/1.21/1.44	1.21/1.21/1.44
Efficiency (%)	49%/42%/58%	49%/42%/58%	49%/42%/58%
LNA for (BDS/GPS/GLONASS)			
BDS/GPS/GLONASS Gain [dB]	27/27/27	27/27/27	27/27/27
5G NR			
Peak Gain(dBi)	4.78	1.83	1.83
Average Gain(dBi)	-2.04	-3.91	-3.91
Efficiency	62.52% Typ.	40.69% Typ.	40.69% Typ.
LTE 1			
Peak Gain(dBi)	4.53	3.24	3.24
Average Gain(dBi)	-1.33	-2.81	-2.81
Efficiency	73.55% Typ.	52.37% Typ.	52.37% Typ.
LTE 2			
Peak Gain(dBi)	6.81	4.98	4.98
Average Gain(dBi)	-1.42	-2.56	-2.56
Efficiency	72.06% Typ.	55.46% Typ.	55.46% Typ.
Wi-Fi 1			
Peak Gain(dBi)	5.31	4.59	4.59
Average Gain(dBi)	-1.76	-2.09	-2.09
Efficiency	66.68% Typ.	61.80% Typ.	61.80% Typ.
Wi-Fi 2 & Wi-Fi 3			
Peak Gain(dBi)	6.65 & 5.76	3.40	3.40
Average Gain(dBi)	-1.93 & -1.94	-2.52	-2.52
Efficiency	64.12% & 63.97% Typ.	55.98% Typ.	55.98% Typ.

External Antennas

GNSS/5G NR/4G LTE/Wi-Fi

Model name	MT-9B-AC-BLW	MT-6B-AC-BLW	MT-6W-AC-BLW
			
Application	(3-in-1) GNSS 5G NR/4G LTE/Wi-Fi	(3-in-1) GNSS 4G LTE / Wi-Fi	(3-in-1) GNSS 4G LTE / Wi-Fi
Size [mm]	80(D) x 37.9(H)	80(D) x 25.4(H)	80(D) x 25.4(H)
GNSS			
Peak Gain (BDS/GPS/GLONASS)	1.21/1.21/1.44	1.63/1.96	1.63/1.96
Efficiency (%)	49%/42%/58%	50% /63%	50% /63%
LNA for (BDS/GPS/GLONASS)			
BDS/GPS/GLONASS Gain [dB]	27/27/27	30/29	30/29
5G NR			
Peak Gain(dBi)	3.88		
Average Gain(dBi)	-4.23		
Efficiency	37.80% Typ.		
LTE 1			
Peak Gain(dBi)	5.96	8.15	8.15
Average Gain(dBi)	-2.16	-2.13	-2.13
Efficiency	60.76% Typ.	61.18% Typ.	61.18% Typ.
Wi-Fi 1			
Peak Gain(dBi)	4.28	6.04	6.04
Average Gain(dBi)	-2.11	-1.51	-1.51
Efficiency	61.52% Typ.	70.63% Typ.	70.63% Typ.

External Antennas

GNSS/5G NR/4G LTE/Wi-Fi

Model name	MT-38AB-AC-BL01	MT-38B-AC-BLW01
		
Application	(2-in-1) GNSS 5G NR/4G LTE	(3-in-1) GNSS 5G NR/4G LTE/Wi-Fi
Size [mm]	71.95(D) x 19.2(H)	71.9(D) x 19.2(H)
GNSS		
Peak Gain (BDS/GPS/GLONASS)	1.21/1.21/1.44	1.21/1.21/1.44
Efficiency (%)	49.89/42.76/58.61	49.89/42.76/58.61
LNA for (BDS/GPS/GLONASS)		
BDS/GPS/GLONASS Gain [dB]	27/27/27	27/27/27
5G NR		
Peak Gain(dBi)	1.84	2.81
Average Gain(dBi)	-4.12	-4.27
Efficiency	38.74% Typ.	37.39% Typ.
LTE 1		
Peak Gain(dBi)	4.84	3.59
Average Gain(dBi)	-2.82	-2.84
Efficiency	52.25% Typ.	52.00% Typ.
Wi-Fi 1		
Peak Gain(dBi)		2.31
Average Gain(dBi)		-4.31
Efficiency		37.07% Typ.

External Antennas

GNSS/5G NR/4G LTE/Wi-Fi

Model name	MT-38B-AS-B2LW01	MT-9W-AC-BL	E01
			
Application	(4-in-1) GNSS 4G LTE/Wi-Fi	(2-in-1) GNSS 5G NR/4G LTE/Wi-Fi	(2-in-1) GNSS 5G NR/4G LTE/Wi-Fi
Size [mm]	71.9(D) x 15.9(H)	80(D) x 37.90(H)	71.2 (outer diameter)
GNSS			
Peak Gain (BDS/GPS/GLONASS)	1.21/1.29/1.44	1.21/1.21/1.44	1.21/1.21/1.44
Efficiency (%)	49%/42%/58%	49%/42%/58%	49%/42%/58%
LNA for (BDS/GPS/GLONASS)			
BDS/GPS/GLONASS Gain [dB]	31/30/28	27/27/27	27/27/27
5G NR			
Peak Gain(dBi)		2.98	
Average Gain(dBi)		-3.00	
Efficiency		50.16% Typ.	
LTE 1			
Peak Gain(dBi)	4.34	5.84	
Average Gain(dBi)	-3.19	-2.32	
Efficiency	48.01% Typ.	58.55% Typ.	
LTE 2			
Peak Gain(dBi)	5.69		
Average Gain(dBi)	-2.54		
Efficiency	55.69% Typ.		
Wi-Fi 1			
Peak Gain(dBi)	2.03		
Average Gain(dBi)	-3.51		
Efficiency	44.57% Typ.		

External Antennas

5G NR/4G LTE/Wi-Fi

Model name	MT-6B-AS-LLW	MT-14B-AS-LKWE
		
Application	(3-in-1) 5G/4G LTE/Wi-Fi	(3-in-1) 5G/4G LTE/Wi-F
Size [mm]	80(D) x 25.4(H)	226.8x 26.5x 7.55
5G NR		
Peak Gain(dBi)		3.44
Average Gain(dBi)		-3.80
Efficiency		41.66%
LTE 1		
Peak Gain(dBi)	3.86	4.15
Average Gain(dBi)	-2.71	-2.64
Efficiency	53.59% Typ.	54.51% Typ.
LTE 2		
Peak Gain(dBi)	5.64	4.40
Average Gain(dBi)	-2.58	54.60% Typ.
Efficiency	55.22% Typ.	-2.63
Wi-Fi 1		
Peak Gain(dBi)	4.05	3.91
Average Gain(dBi)	-2.79	-3.36
Efficiency	52.60% Typ.	46.13% Typ.

External Antennas

GSM: 4G LTE

Model name	EPH-405AL
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Application	GSM/4G/LTE	
Size [mm]	173(L)x26.5(W)x2.9(T)	
Peak Gain [dBi]		
698-824 MHz	2.98	
824-960 MHz	2.63	
1710-1880 MHz	2.14	
1850-2170 MHz	2.62	
2300-2690 MHz	6.0	

Model name	EHN-602
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Application	4G LTE outdoor	
Size [mm]	250(L) x 30(D)	
Peak Gain [dBi]		
698-824 MHz	2.09	
824-960 MHz	0.87	
1710-1880 MHz	2.54	
1850-1990 MHz	2.62	
1920-2170 MHz	3.58	
2300-2690 MHz	3.26	

External Antennas

GSM: 3G, 4G LTE

Model name	TA-24B-A-L	TA-5B-A-L	MW-1B-A-C	MW-2B-A-C
				
Application	4G / LTE	4G / LTE	4G / LTE	4G / LTE
Size [mm]	48(L) x 17(W) x 7(T)	65.7(L) x 7.8(D)	116(L) x 29.5(D)	288(L) x 29.5(D)
Peak Gain [dBi]				
698-824 MHz	3.85	2.95	1.81	0.04
824-960 MHz	2.59	2.78	3.93	1.54
1710-1880 MHz	4.17	3.11	2.06	-0.16
1850-1990 MHz	4.31	4.84	2.79	2.90
1920-2170 MHz	4.31	4.84	2.79	2.90
2300-2690 MHz	3.28	4.32	2.02	0.24
3300-3800 MHz			5.40	1.69

Model name	TA-S7B-A-L	TA-S8B-A-L	TA-S10B-A-L02	TA-C12B-A-L02
				
Application	4G / LTE	4G / LTE	4G / LTE	4G / LTE
Size [mm]	157.5(L) x 17.6(D)	193(L) x 13(D)	108(L) x 10(D)	170(L) x 10(D)
Peak Gain [dBi]				
617-698 MHz	3.02			
698-824 MHz	0.70	2.87	1.98	2.76
824-960 MHz	0.63	2.39	1.05	2.87
1420-1561 MHz	2.50			
1710-1880 MHz	2.83	3.79	3.26	3.16
1850-1990 MHz	2.91	5.90	2.99	5.46
1920-2170 MHz	3.65	5.90	3.12	5.46
2300-2690 MHz	3.67	4.35	1.31	5.38
3300-3500 MHz				5.59

External Antennas

Cellular: 3G, 4G LTE, 5G

Model name	EC-18B-AC-L	EC-29B-AS-L	EPH-401(F)
			
			
Application	5G / 4G / LTE	5G NR / 4G / LTE	5G NR / 4G / LTE
Size [mm]	80.8(L) x 42.0(D)	116(L) x 21.8(W) x 4.7(T)	104(L) x 10.8(W) x 6.7(T)
Peak Gain [dBi]			
698-824 MHz	3.96	4.57	0.43
824-960 MHz	4.82	4.30	2.95
1710-1880 MHz	4.29	2.18	4.98
1850-1990 MHz	4.89	3.25	4.54
1920-2170 MHz	4.89	3.00	3.11
2300-2690 MHz	4.89	1.66	3.95
3300-3800 MHz	4.97	3.60	3.71

External Antennas

Cellular: 3G, 4G LTE, 5G

Model name	TA-C12B-A-Z	TA-1B-A-L
		
		
Application	5G / 4G / LTE	5G NR / 4G / LTE
Size [mm]	196(L) x 26.9(W) x 14.4(T)	169(L) x 18(W) x 13.7(T)
Peak Gain [dBi]		
617-698 MHz	1.29	3.85
698-824 MHz	2.00	3.98
824-960 MHz	1.29	3.61
1710-1880 MHz	3.77	-0.16
1850-1990 MHz	4.55	0.67
1920-2170 MHz	5.49	0.85
2300-2690 MHz	5.21	2.41
3300-3800 MHz	5.14	5.67
3600-4600 MHz	6.57	1.91
5150-5850 MHz	7.72	2.70

External Antennas

Cellular: 4G LTE, 5G

Model name	TA-18W-A-L	TA-38B-A-L
		
		
Application	5G / 4G / LTE / 5G outdoor	5G NR / 4G / LTE Indoor
Size [mm]	208.1(L) x 23.5(D)	133.5(L)x 19(W) x 10(T)
Peak Gain [dBi]		
617-698 MHz	2.06	1.95
698-824 MHz	2.94	1.70
824-960 MHz	5.02	1.70
1710-1880 MHz	4.60	--
1850-1990 MHz	3.07	1.99
1920-2170 MHz	1.67	2.17
2300-2690 MHz	1.53	2.02
3300-3800 MHz	2.88	2.54
3600-4600 MHz	3.06	2.75
5150-5850 MHz	2.43	2.46

External Antennas

UHF

Model name	TA-T22B-A-X	TA-T23B-A-X
		
Application	340-355MHz	340-355MHz
Size [mm]	83(L) x10(D)	49.5(L) x8(D)
Return Loss (dB)	< -6	< -6
V.S.W.R	< 3	< 3
Impedance (5)	50	50
Polarization	Linear	Linear
Connector	SMA (Male)	SMA (Male)

External Antennas

Wi-Fi Dual Band (2.4GHz + 5GHz)

Model name	TA-4B-A-WE	TA-6B-A-WE	TA-S7B-A-WE	TA-S8B-A-WE
				
Application	Wi-Fi Dual Band	Wi-Fi Dual Band	Wi-Fi Dual Band	Wi-Fi Dual Band
Size [mm]	394(L) x 13(D)	89.5(L) x 7.5(D)	157.5(L) x 17.6(D)	193(L) x 13(D)
Peak Gain [dBi]	9.0 @ 2450Mhz 5.0 @ 5500Mhz	2.17 @ 2450Mhz 2.90 @ 5850Mhz	5.35 @ 2450Mhz 5.45 @ 5850Mhz	6.42 @ 2450Mhz 3.65 @ 5850Mhz

Model name	TA-S9B-A-WE	TA-S10B-A-WE	TA-S10W-A-WE	TA-S13B-B-WE
				
Application	Wi-Fi Dual Band	Wi-Fi Dual Band	Wi-Fi Dual Band	Wi-Fi Dual Band
Size [mm]	157(L) x 12.5(D)	108(L) x 10(D)	108(L) x 10(D)	170(L) x 10(D)
Peak Gain [dBi]	5.01 @ 2450Mhz 3.74 @ 5850Mhz	2.52 @ 2450Mhz 4.05 @ 5850Mhz	2.52 @ 2450Mhz 4.05 @ 5850Mhz	4.74 @ 2450Mhz 3.91 @ 5850Mhz

External Antennas

Wi-Fi Dual Band (2.4GHz + 5GHz)

Model name	EW-00B-BS-W	EW-29B-AS-W	EW-18B-AC-W
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Application	Wi-Fi Dual Band	Wi-Fi Dual Band	Wi-Fi Dual Band
Size [mm]	50(L)x8.8(W)x2.8(T)	116(L)x21.8(W)x4.7(T)	80.8(L) x 42(D)
Peak Gain [dBi]	1.22 @ 2450Mhz 6.81 @ 5850Mhz	3.40 @ 2450Mhz 5.33 @ 5850Mhz	2.39 @ 2450Mhz -0.87 @ 5850Mhz

Wi-Fi 6E

Model name	TA-38B-A-W
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Application	2.4 / 5.8 / 6.0 GHz
Size [mm]	133.5(L) x 10(D) x 19(W)
Peak Gain [dBi]	2.02 @ 2450MHz 2.92 @ 5850MHz 3.58 @ 7125MHz

External Antennas

Wi-Fi (2.4GHz)

Model name	2.4G Dipole Antenna	
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Application	Wi-Fi (2.4GHz)	Wi-Fi (2.4GHz)
Size [mm]	27 (L) x 17.95 (W) x 8 (T)	27 (L) x 17.95 (W) x 8 (T)
Peak Gain [dBi]	2.0 @ 2.4-2.5GHz	2.0 @ 2.4-2.5GHz

Wi-Fi (2.4GHz)

Model name	TA-2B-A-W	TA-28B-A-W
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Application	Wi-Fi (2.4GHz)	Wi-Fi (2.4GHz)
Size [mm]	30(L) x 8(D)	105(L) x 9.35(D)
Peak Gain [dBi]	4.35 @ 2450MHz	3.33 @ 2450Mhz

External Antennas

ISM

Model name	TA-26B-A-S	TA-R17B-A-S9	TA-S10B-A-S9	TA-4B-B-S
				
Application	ISM 915MHz	ISM 915MHz	ISM 915MHz	ISM 915MHz
Size [mm]	160(L) x 10(D)	196(L) x 12.5(D)	108(L) x 10(D)	389(L) x 13(D)
Peak Gain [dBi]				
902 MHz	3.24	2.3	3.13	3.74
915 MHz	3.75	3.34	4.02	4.49
928 MHz	3.44	3.7	4.36	3.92

Model name	TA-30G-A-S	TA-S10B-A-S8
		
Application	ISM 868&915MHz	ISM 868MHz
Size [mm]	188.25(L) x 21.8(D)	108(L) x 10(D)
Peak Gain [dBi]		
863 MHz	2.19	3.10
868 MHz	2.52	2.55
873 MHz	2.80	2.35
902 MHz	2.87	
915 MHz	3.15	
928 MHz	3.12	

External Antennas

SDAR

Model name

D014



Application	SDAR
Size [mm]	47 × 45 × 14.5
Gain at Zenith [dBic]	5 (typical)
Gain at 10° [dBic]	-1.0 (typical)
LNA gain [dB]	38 (typical)



Trackers & Receivers

Trackers & Receivers

Model name	GM48GBR	GM48GDR	GM-5G
			
Application	GPS/Glonass/QZSS/SBAS		GPS/Glonass/QZSS/SBAS
Size [mm]	56.0(D) x 21.5(H)		58.3(L) x 48(W) x 14.5(H)
Receiver type	GPS L1 C/A, QZSS L1 C/A L1S, GLONASS L1OF SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN		GPS L1 C/A, QZSS L1 C/A L1S, GLONASS L1OF BeiDou B1I/B1C, Galileo E1B/C SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN
Sensitivity	Tracking and nav. -167 dBm		Tracking and nav.-167 dBm
Nav update rate	1 Hz	4 Hz	1Hz (default) Up to 10Hz
Acquisition Time	Cold start 28 sec. Typical Hot start 1 sec. Typical Aided start 1 sec. Typical		Cold start 28 sec. Typical Hot start 1 sec. Typical Aided start 1 sec. Typical
Position accuracy	1.5 m CEP		1.5 m CEP
Velocity accuracy	0.05 m/s		0.05 m/s
Position error during GNSS loss*	<small>* Typical error incurred without GNSS as a percentage of distance travelled, applicable to four-wheel road vehicle</small>		
Protocol	NMEA 0183		NMEA 0183
Interface	RS232		RS232
Operating Voltage	5 V	8~35 V	5 V
Output Sentences	RMC	GGA/VTG/ GSV/ZDA	GGA/GLL/GSA GSV/RMC/VTG
Baud Rate	4800 bps	57600 bps	38400 bps

Trackers & Receivers

Model name	GM58GBR	GB06GBT
		
Application	GPS/Glonass/QZSS/ BeiDou/Galileo/SBAS	GPS/Glonass/QZSS/SBAS
Size [mm]	46.4(L) x 38.4(W) x 16.1(H)	30(L) x 30(W) x 8.42(H)
Receiver type	GPS L1 C/A, QZSS L1 C/A L1S, GLONASS L1OF BeiDou B1I/B1C, Galileo E1B/C SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN	GPS L1 C/A, QZSS L1 C/A L1S, GLONASS L1OF SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN
Sensitivity	Tracking and nav. -167 dBm	Tracking and nav. -167 dBm
Nav update rate	1Hz (default) Up to 10Hz	1 Hz
Acquisition Time	Cold start 28 sec. Typical Hot start 1 sec. Typical Aided start 1 sec. Typical	Cold start 28 sec. Typical Hot start 1 sec. Typical Aided start 1 sec. Typical
Position accuracy	1.5 m CEP	1.5 m CEP
Velocity accuracy	0.05 m/s	0.05 m/s
Position error during GNSS loss*		
* Typical error incurred without GNSS as a percentage of distance travelled, applicable to four-wheel road vehicle		
Protocol	NMEA 0183	NMEA 0183
Interface	RS232	TTL
Operating Voltage	5 V	5 V
Output Sentences	GGA/GLL/GSA GSV/RMC/VTG	RMC/GGA/GSV/ VTG/GSA
Baud Rate	9600 bps	4800 bps

Trackers & Receivers

Model name	GR19GD4	GR33GDR
		
Application	GPS/QZSS/SBAS	GPS/SBAS
Size [mm]	115(L) x 115(W) x 75.2(H)	115(L) x 115(W) x 103.1(H)
Receiver type	GPS L1 C/A, QZSS L1 C/A L1S, SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN	GPS L1 C/A, QZSS L1 C/A L1S, GLONASS L1OF SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN
Sensitivity	Tracking and nav. -167 dBm	Tracking and nav. -167 dBm
Nav update rate	1 Hz	1Hz
Acquisition Time	"Cold start 28 sec. Typical Hot start 1 sec. Typical Aided start 1 sec. Typical"	"Cold start 28 sec. Typical Hot start 1 sec. Typical Aided start 1 sec. Typical"
Position accuracy	1.5 m CEP	1.5 m CEP
Velocity accuracy	0.05 m/s	0.05 m/s
Position error during GNSS loss*		
* Typical error incurred without GNSS as a percentage of distance travelled, applicable to four-wheel road vehicle		
Protocol	NMEA 0183	NMEA 0183
Interface	RS422	RS232
Operating Voltage	8~35 V	8~35 V
Output Sentences	RMC	GGA/GSA/GSV/RMC
Baud Rate	4800 bps	4800 bps

Trackers & Receivers

Model name	GR33GEE	GR43GDR
		
Application	GPS/SBAS	GPS
Size [mm]	115(L) x 115(W) x 103.1(H)	60.5(D) x 23.8(H)
Receiver type	GPS L1 C/A SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN	GPS L1C/A SBAS L1 C/A: WAAS, EGNOS, MSAS ADR/UDR
Sensitivity	Tracking and nav.-167 dBm	Tracking and nav.-164 dBm
Nav update rate	1Hz	1Hz
Acquisition Time	Cold start 28 sec. Typical Hot start 1 sec. Typical Aided start 1 sec. Typical	Cold start 26 sec. Typical Hot start 1 sec. Typical
Position accuracy	1.5 m CEP	2.5 m CEP
Velocity accuracy	0.05 m/s	0.05 m/s
Position error during GNSS loss*		Gyro + speed pulse + accelerometer 2%
<small>* Typical error incurred without GNSS as a percentage of distance travelled, applicable to four-wheel road vehicle</small>		
Protocol	NMEA 0183	NMEA 0183
Interface	10/100M Ethernet	RS232
Operating Voltage	8 ~ 45 V	8~35 V
Output Sentences	GGA/GSA/RMC/ZDA	GGA/GSV/RMC
Baud Rate	4800 bps	115200 bps

Trackers & Receivers

Criminal Offender Tracker

MECHANICS DATA

Model Name	CT-31B-F-N01
Size(mm)	81.44 (L) x 68.88 (W) x 33.5 (H)
Strap Size(mm)	373 (L) x 30 (W) x 4.5 (T)
Weight	200g (Including strap and batteries)
Waterproof	IP68



SYSTEM

Control system	Alarm/ RF/ LTE
Antenna type	Embedded GPS/ LTE/ RF antenna

ENVIRONMENT CONDITION

Charging temperature	0°C ~ 40°C
Storage Temperature	-10°C ~ 55°C

POWER

External Power Output	DC 9V/ 2A/ 18W (Standard)
Battery Power	3.7V DC Li-Ion Battery, 2300mAh
Battery life	Charge 3 hours battery to support the device to operate more than 30 hours

LTE (EMEA)

LTE Module	u-blox LARA R6001
LTE Frequency	850/ 900/ 1700/ 1800/ 1900/2100/ 2600 MHz
Power class	LTE Power class 3 (23 dBm)

GNSS

GNSS Module	u-blox M10050 support NMEA0183
Sensitivity	-167 dBm
Channels/Frequency	GPS/QZSS/GLONASS
TTFT(Hot/Warm/Cold)	Cold/Warm <28 seconds ; Hot <1 second
Position Accuracy	1.5 meter (CEP, 50%, 24 hours static, -130dBm, SEP: <3.5m)

RF

RF Module	RIFO TI CC1101/Modulation: FSK
Frequency	433.92MHz
Sensitivity	-116dBm/0.6kbaud

Trackers & Receivers

GNSS/4G Bracelet Tracker



MECHANICS DATA

Model Name	CT-39B-A-N02
Size(mm)	58 (L) x 50 (W) x 20 (H)
Band Size(mm)	Band fits 140–210mm wrists.
Weight	< 100 g
Waterproof	IP68

SYSTEM

Control system	Alarm/ RF/ LTE
Antenna type	Embedded GPS/ LTE/ RF antenna

ENVIRONMENT CONDITION

Charging temperature	0°C ~ 40°C
Storage Temperature	0°C ~ 60°C

POWER

External Power Output	DC 5V (Standard)
Battery Power	3.7V DC Li-Ion Battery, 800mAh
Battery life	24 hours

CELLULAR

Module	u-blox LARA R281
Frequency	4G LTE: 700 / 800 / 900/ 1800 / 2100MHz 3G UMTS/HSDPA/HSUPA: 2100MHz
Transmission	Power class 3 (23 dBm) for LTE mode Power class 3 (24 dBm) for UMTS/HSDPA/HSUPA mode

GPS

GPS Module	u-blox M8030 support NMEA0183
Sensitivity	-164 dBm
Channels/Frequency	72 Channels/ GPS/QZSS/GLONASS
TTFT(Hot/Warm/Cold)	Cold/Warm <26 seconds ; Hot <1 second
Position Accuracy	2.5 meter (CEP, 50%, 24 hours static, -130dBm, SEP: <3.5m)

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No. 83, Kewang Rd., Longtan Dist.,
Taoyuan City 325, Taiwan
Phone: +886-3-4072728
E-mail: a-sales@unictron.com