

### MAX Wideband Antenna Family

Models: RA150-CX1, RA150-IPX

Patent-pending omnidirectional antenna, based on a hybrid-design for market leading performance.

Excellent efficiency over a very wide frequency range, covering 700 to 3000 MHz.

Suitable for Bluetooth, Wi-Fi, 2G, 3G, 4G/LTE, LPWAN, ZigBee, GPS, IoT applications and more.



### Overview

#### **Full IoT Frequency Range**

The MAX antennas from RangeAnt are the first omnidirectional true wideband antennas on the market, specially designed for the entire range from 700 to 3000 MHz.

This makes it easier to launch a product for the global market because the same antenna supports all frequency bands in this range.

No matter which communication protocols you intend to use in your product, such as Bluetooth, ZigBee, LPWAN (LoRa, Sigfox, Weightless etc.), Wi-Fi, 2G, 3G, 4G/LTE, NB-IoT and more, the MAX antenna will work very well.



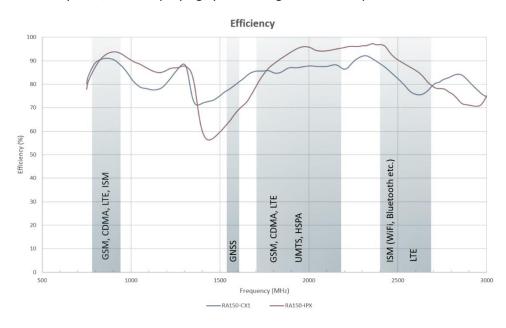
#### High Efficiency

The high efficiency of the RangeAnt MAX wideband antenna family is based on a unique and patentpending technology, providing market leading performance. This in terms of longer range, or lower power consumption, depending on what is most important in the current application.

Furthermore, the enhanced signal strength offered by these antennas also enables higher data rates and unrivaled coverage in harsh environments. These antennas are therefore ideal for most applications, especially within IoT.

#### **Ground Plane Independent**

The unique design of the patent-pending antenna enables it to operate independent of a separate ground-plane to achieve full performance. This can reduce both the size and number of other components in the system, thus simplifying system design of the final product.





# Specification MAX antennas

#### **Antenna Characteristics**

	/ witching characteristics						
Model	RA150-CX1	RA150-IPX					
	(150 mm RG178 coax cable with	(IPX contact on PCB)					
	male SMA contact)						
Frequency Range*	700 MHz to 3000 MHz	700 MHz to 3000 MHz					
Peak Gain at 2.4GHz	+3 dBi	+3 dBi					
Impedance	50 ohms	50 ohms					
Design	Omnidirectional	Omnidirectional					
Туре	Patent Pending Monopole /	Patent Pending Monopole /					
	Dipole Hybrid	Dipole Hybrid					
Size	150x37 mm (± 0,2 mm)	150x37 mm (± 0,2 mm)					
Thickness PCB	0,8 mm	0,8 mm					
Antenna Colour **	White	White					
Connector	150mm RG178 coax cable with male	IPX connector on PCB					
	SMA contact						
Operating Temperature	-40 to +85°C	-40 to +85°C					
Certifications	CE, RoHS	CE, RoHS					

<sup>\*</sup> Detailed frequency response specified later in this document

\*\* Custom colours available on request

### Free Space Frequency Response RA150-IPX (IPX contact on PCB)

Band (MHz)	800-	1500-	1700-	2100	2400	2600-
	900	1600	1900			2700
Standard	GSM,	GNSS	GSM,	UMTS,	ISM	LTE
	CDMA,		CDMA,	HSPA		
	LTE		LTE			
Frequency (MHz)	791-	1559-	1710-	1755-	2400-	2500-
	960	1610	1990	2170	2500	2690
Avg Efficiency (%)	92.3	92.2	92.0	91.7	91.3	90.8
Avg VSWR	1.3	1.3	1.4	1.4	1.5	1.5
Avg Return Loss (dB)	21.2	11.6	26.1	25.6	10.6	9.7

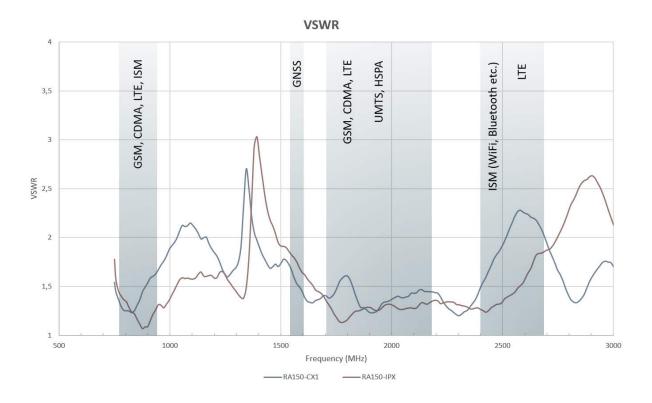
### Free Space Frequency Response RA150-CX1 (150mm Coax & SMA)

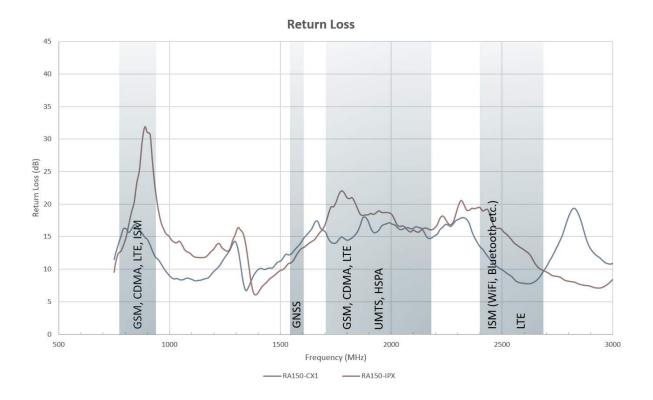
•	•	•			
800-	1500-	1700-	2100	2400	2600-
900	1600	1900			2700
GSM,	GNSS	GSM,	UMTS,	ISM	LTE
CDMA,		CDMA,	HSPA		
LTE		LTE			
791-	1559-	1710-	1755-	2400-	2500-
960	1610	1990	2170	2500	2690
85.9	86.8	87.4	87.6	87.6	87.4
1.5	1.5	1.5	1.6	1.6	1.7
15.6	17.0	14.7	28.9	11.2	10.1
	900 GSM, CDMA, LTE 791- 960 85.9 1.5	900 1600 GSM, GNSS CDMA, LTE 791- 1559- 960 1610 85.9 86.8 1.5 1.5	900 1600 1900 GSM, GNSS GSM, CDMA, CDMA, LTE LTE 791- 1559- 1710- 960 1610 1990 85.9 86.8 87.4 1.5 1.5 1.5	900 1600 1900 GSM, GNSS GSM, UMTS, CDMA, CDMA, HSPA LTE LTE 791- 1559- 1710- 1755- 960 1610 1990 2170 85.9 86.8 87.4 87.6 1.5 1.5 1.6	900 1600 1900 GSM, GNSS GSM, UMTS, ISM CDMA, CDMA, HSPA LTE 791- 1559- 1710- 1755- 2400- 960 1610 1990 2170 2500 85.9 86.8 87.4 87.6 87.6 1.5 1.5 1.5 1.6 1.6



## **MAX Antenna Characteristics**

The antenna characteristics below are based on a standard matching network in free space. For optimum performance in a specific user case, it is possible to customize the antennas matching network. Please contact ShortLink for more information.

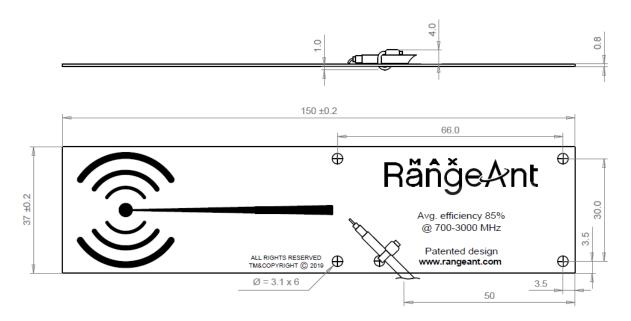




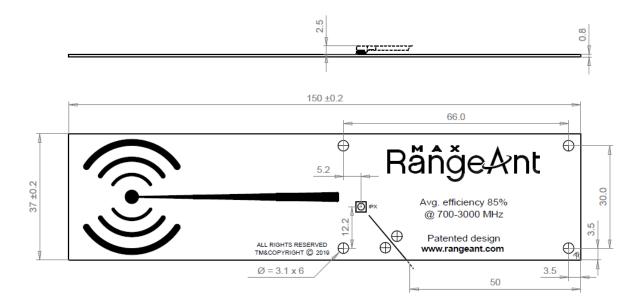


# Mechanical Drawings

 $Mechanical\ Drawing,\ MAX\ RA150-CX1\ \hbox{\scriptsize (150\ mm\ coax\ cable\ with\ male\ SMA\ contact)}$ 



Mechanical Drawing, MAX RA150-IPX (UFL/IPX connector on PCB)





## **Model and Ordering Codes**

**RA150 - XXX** 

(1) (2)

(1) Family

RA150 = RangeAnt MAX 150 mm Omnidirectional IoT Antenna family

(2) Connection

IPX = IPX Connector on PCB

CX1 = 150 mm coax cable with male SMA contact

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