

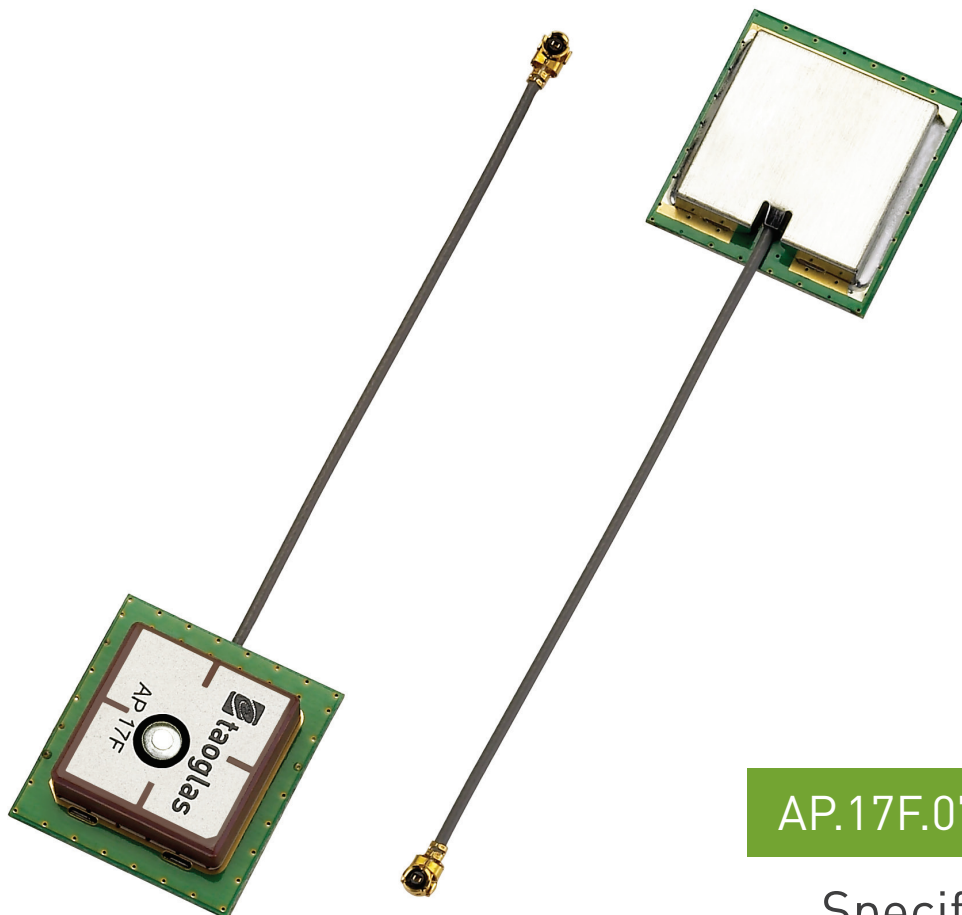
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[AP.17F.07.0064A](#)

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AP.17F.07.0064A

Specification

Part No.	AP.17F.07.0064A
Product Name	17mm Two Stage GPS Active Patch Antenna Module
Feature	22.2mm*23.8mm*7.8mm 64mm 1.13 IPEX MHFI Wide Voltage Input 1.8V to 5.5V 28dB LNA Tested in Free space ROHS Compliant



I. Introduction

The AP.17F is a two stage 17mm active patch antenna that has been designed specifically for embedded (inside device) integration with GPS receiver modules.

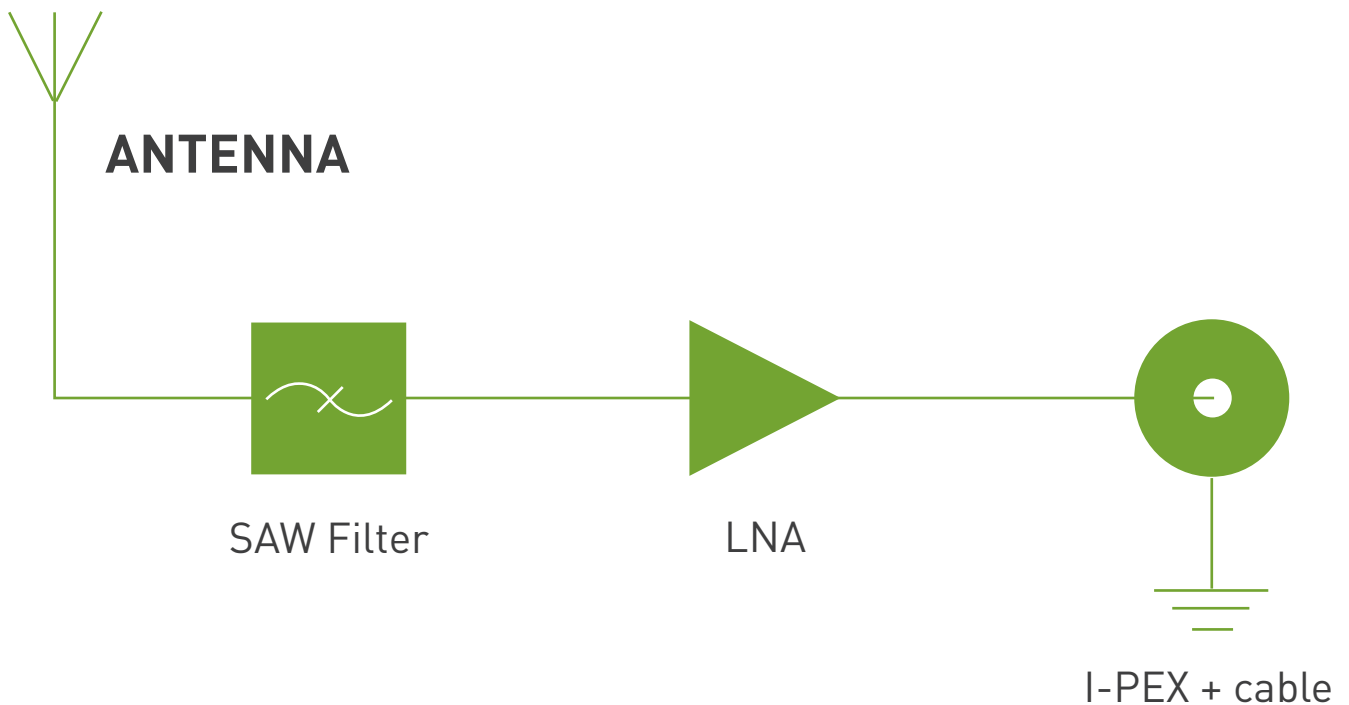
The AP.17F combines a 17*17*4mm advanced low profile ceramic patch antenna with a one stage LNA and a front-end SAW filter with ultra thin coaxial cable. It comes with it's own integrated ground-plane.

The front end SAW filter reduces the risks where there is a cellular transmitter nearby of interference from out of band frequencies which can cause LNA burn-out, saturation, or radiated spurious emissions.

The antenna can work on a wide input voltage from 1.8V to 5.5V with best in class power consumption figures.

If further tuning and optimization specific to a customer device is required Taoglas offers a custom tuned and optimized part service. Contact sales@taoglas.com for more information.

Cables and connectors can be customized according to request.





2. Specification

2.1 Patch Antenna

Parameter	Specification
Frequency	1575.42 ± 1.023MHz
Gain @ Zenith	-1.5dBic Typ. @ Zenith
Polarization	RHCP
Axial Ratio	3.0dB max @ Zenith
Patch Dimension	17*17*4mm

2.2 LNA

Parameter	Specification
Frequency	1575.42 ± 1.023MHz
Outer Band Attenuation	F0=1575.42MHz F0±30MHz 6dB min. F0±50MHz 20dB min. F0±100MHz 25dB min.
Output Impedance	50Ω
Output VSWR	2.0 Max
Pout at 1dB Gain	Typ. -5dBm
Compression point	Min. -9dBm

LNA Gain, Power Consumption and Noise Figure

Voltage	LNA Gain (Typ)	Power Consumption(mA) Typ	Noise Figure Typ
Min. 1.8V	21dB	3.3mA	2.7dB
Typ. 3.0V	28dB	7.5mA	2.5dB
Max. 5.5V	31dB	15.5mA	2.7dB

2.3 Cable* & Connector

Parameter	Specification
RF Cable	Coaxial Cable Ø 1.13 RF length 64mm ± 1.5mm
RF Connector	IPEX (MHF) - U.FL Comp.



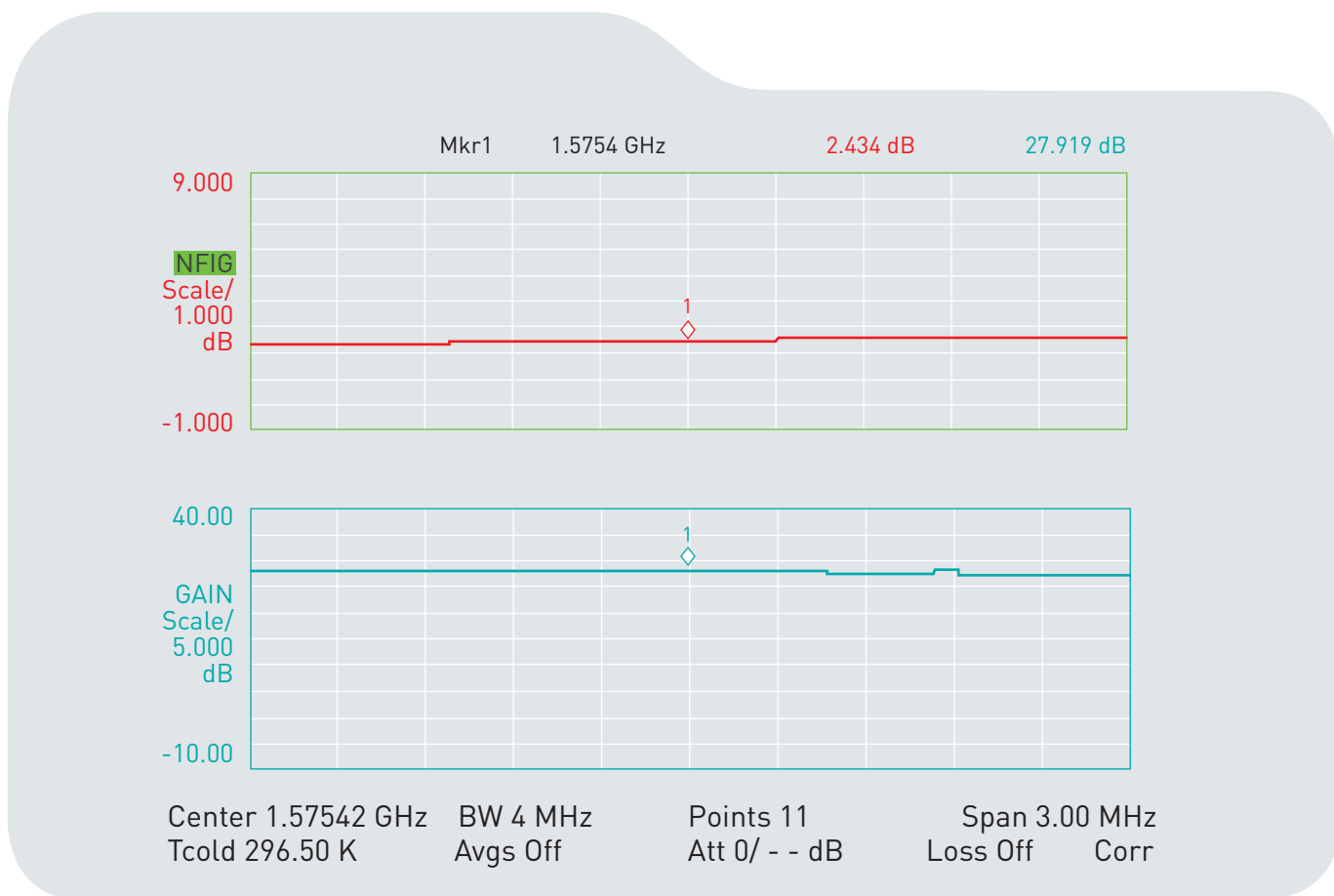
3. LNA Gain and Out Band Rejection @3.0V



Cg1	Tr1	S21	>1	1.5754200 GHz	28.271 dB
Cg1	Tr1	S21	2	1.6054200 GHz	-13.431 dB
Cg1	Tr1	S21	3	1.5454200 GHz	20.190 dB
Cg1	Tr1	S21	4	1.6254200 GHz	-19.542 dB
Cg1	Tr1	S21	5	1.5254200 GH	5.9581 dB
Cg1	Tr1	S21	6	1.6754200 GHz	-14.832 dB
Cg1	Tr1	S21	7	1.4754200 GHz	-0.2277 dB



4. LNA Noise Figure @3.0V



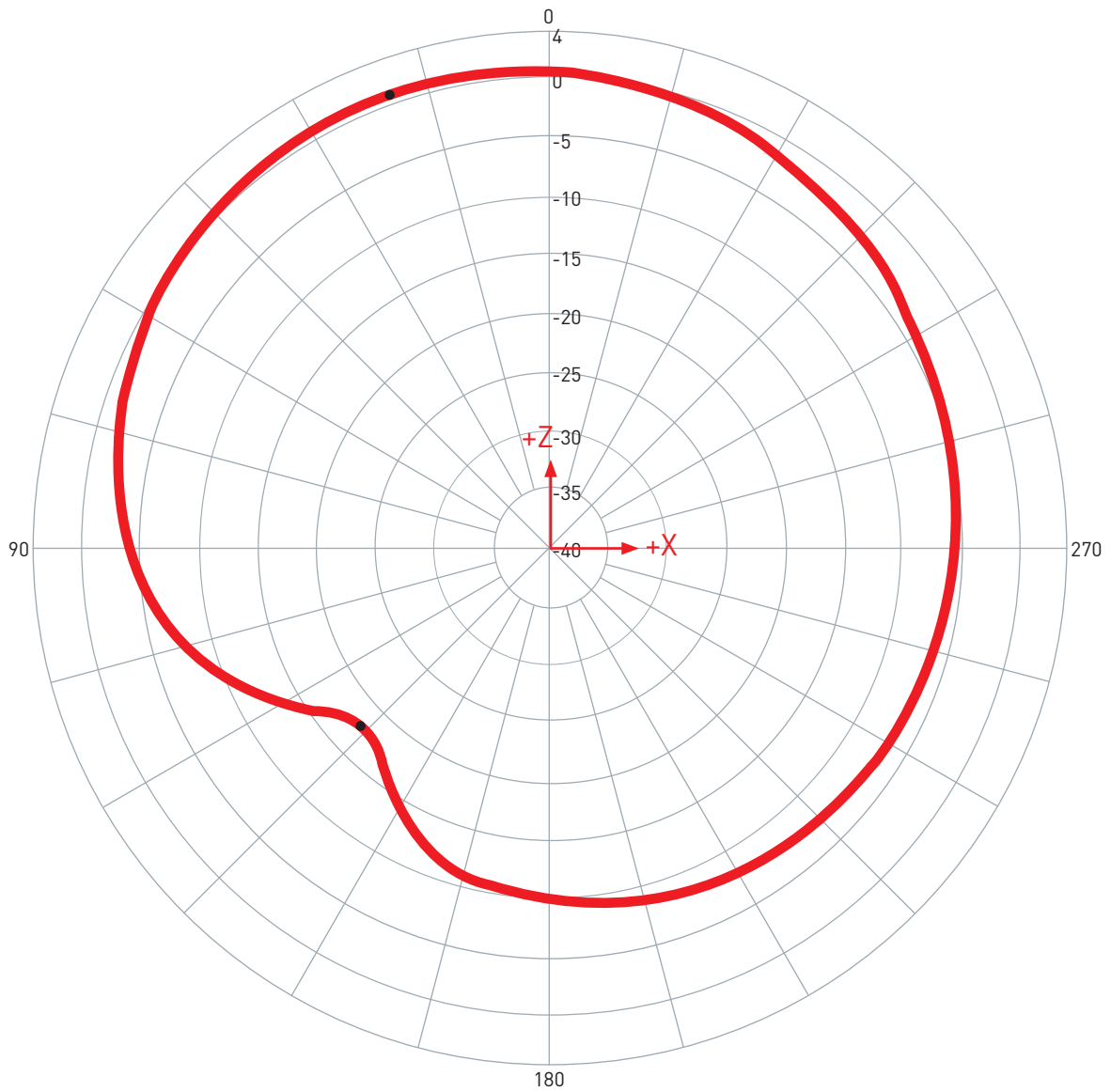
5. Total Specification (through Antenna, LNA, Cable and Connector)

Parameter	Specification
Frequency	1575.42 ± 1.023MHz
Gain	At 3V: 29.5 ± 3dBic @ 90°
Output Impedance	50Ω
Polarization	RHCP
Output VSWR	Max 2.0
Operation Temperature	-40°C to + 85°C
Storage Temperature	-40°C to + 85°C
Relative Humidity	40% to 95%
Input Voltage	Min. 1.8V, Typ. 3.0V, Max. 5.5V
Antenna	23.8*22.2*8mm



6. Radiation Patterns

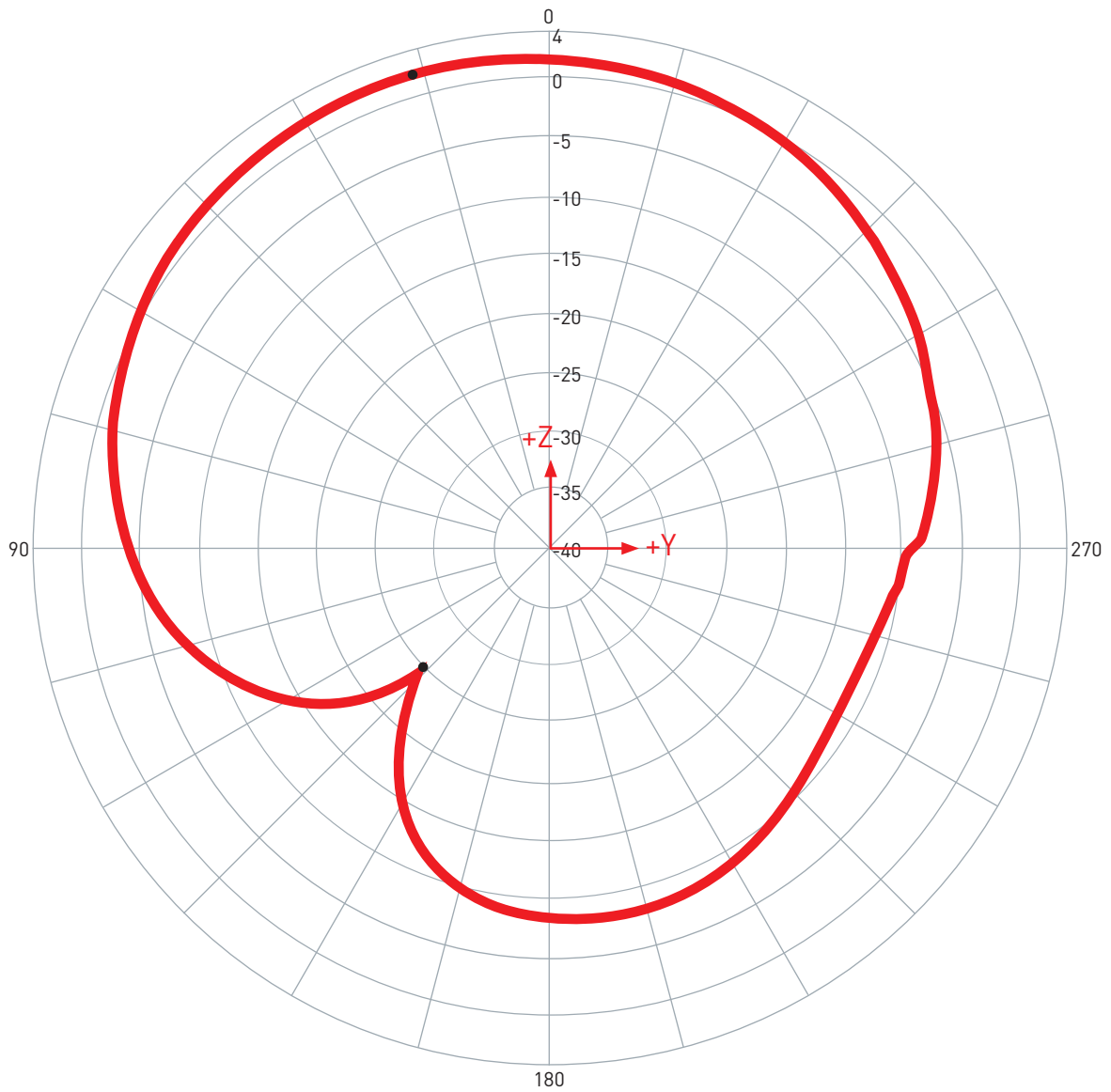
6.1 XZ Plane Radiation



Pattern	Model No.	Test Mode	Freq (MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	AP.17F.07.0064A	XZ	1575.42	1.05 / 19.00	-17.90 / 134.00	-3.25	RHCP	2011/9/21



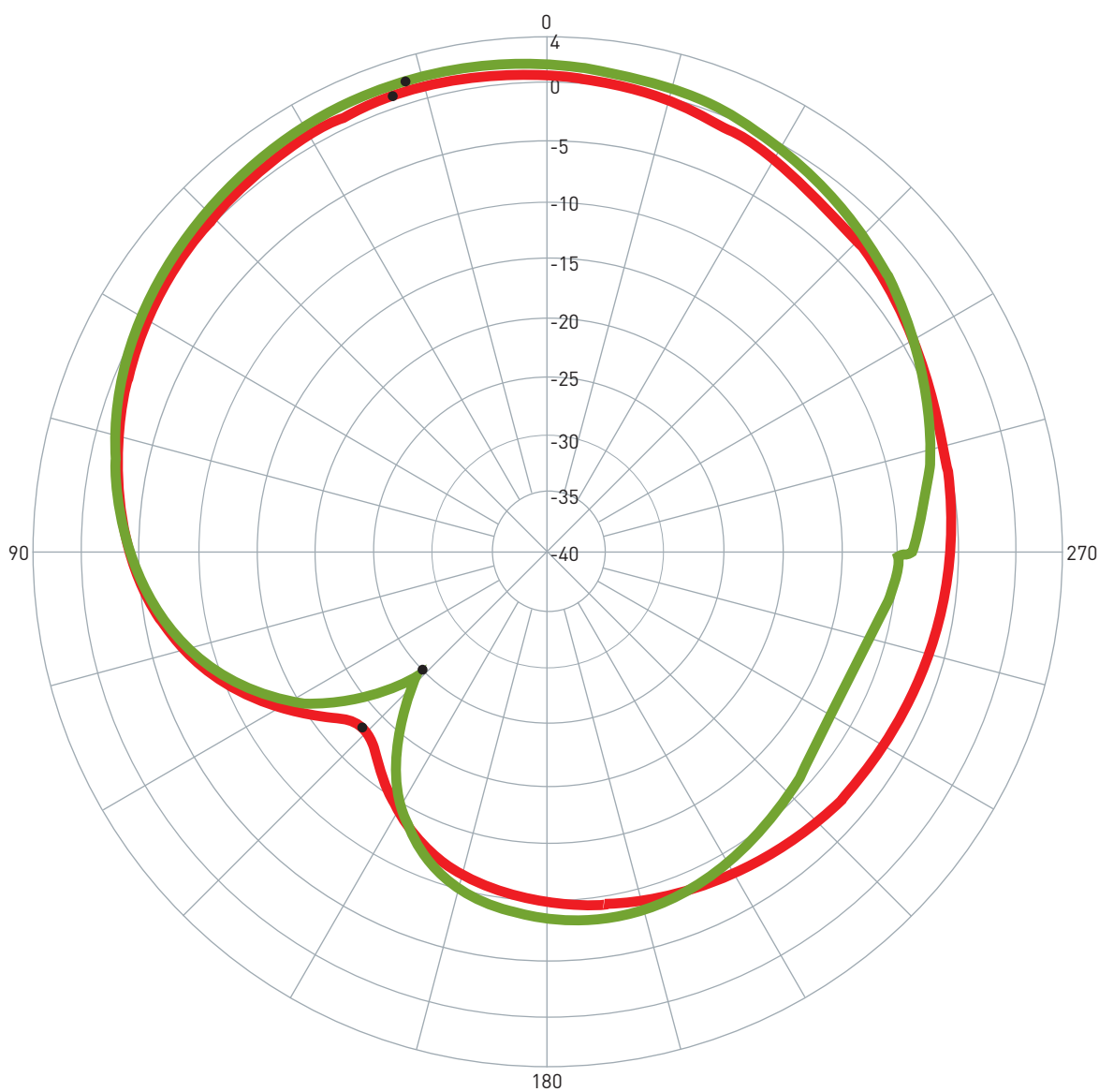
6.2 YZ Plane Radiation



Pattern	Model No.	Test Mode	Freq (MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	AP.17F.07.0064A	YZ	1575.42	1.91 / 16.00	-24.58 / 134.00	-2.85	RHCP	2011/9/21



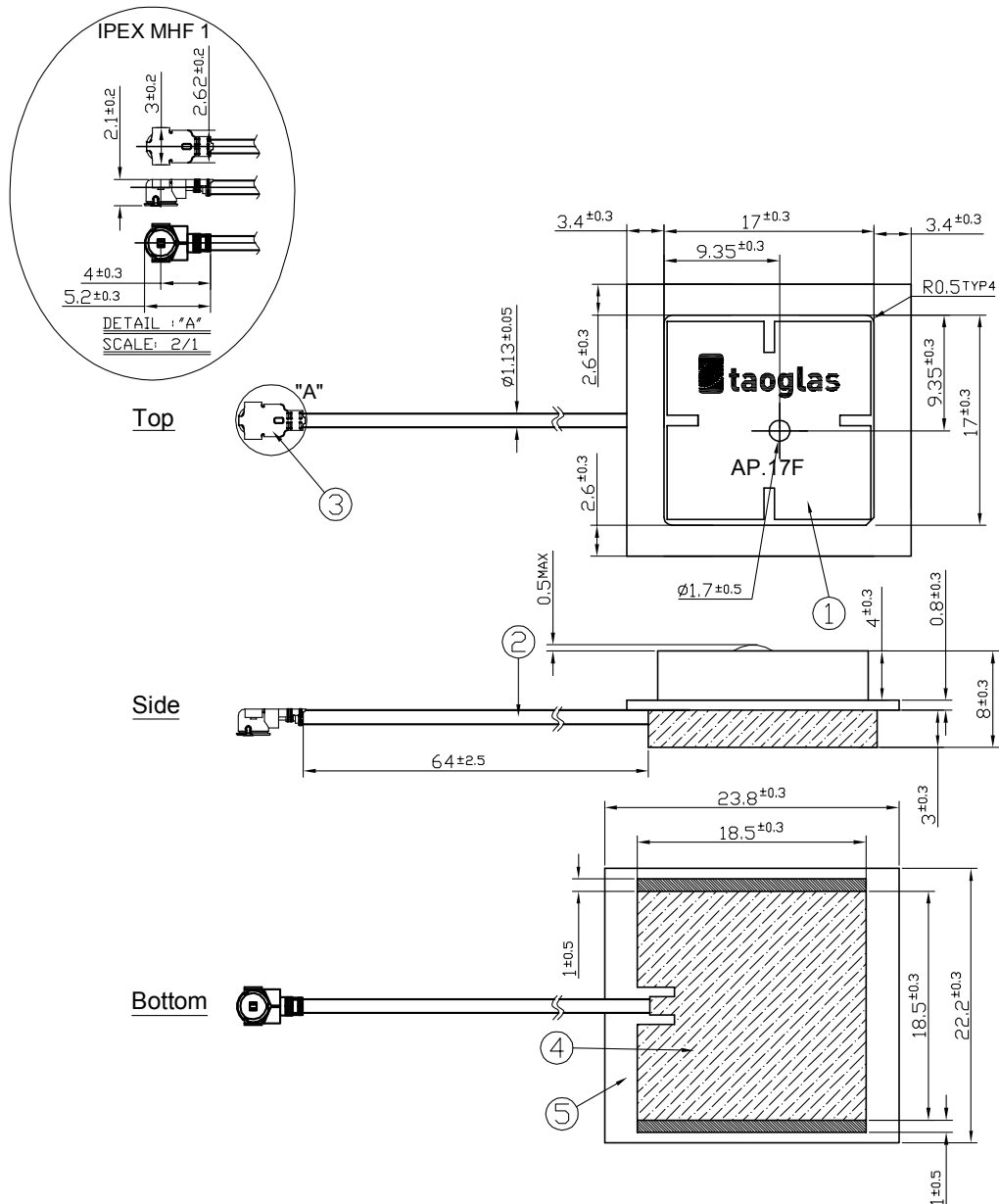
6.3 XY Plane Radiation



Pattern	Model No.	Test Mode	Freq (MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	AP.17F.07.0064A	XZ	1575.42	1.05 / 19.00	-17.90 / 134.00	-3.25	RHCP	2011/9/21
2	AP.17F.07.0064A	YZ	1575.42	1.91 / 16.00	-24.58 / 134.00	-2.85	RHCP	2011/9/21



7. Technical Drawing



Name	P/N	Material	Finish	QTY	NOTE:
1 AP.17F Patch (17*17*4mm)	AP.17F	Ceramic	Clear	1	1. Soldered area 
2 1.13 Coaxial Cable	OD.113.J	FEP	Gray	1	2. Shielding case 
3 IPEX MHF1 Connector	IPEX.MHFI.113	Brass	Gold Plated	1	3. The connector position has special orientation to the PCB as per drawing
4 Shielding Case		Tin (SPTE)	Tin Plated	1	4. All material must be RoHS compliant
5 PCB		FR4 0.8t	Green	1	5. Open/short QC, VSWR required



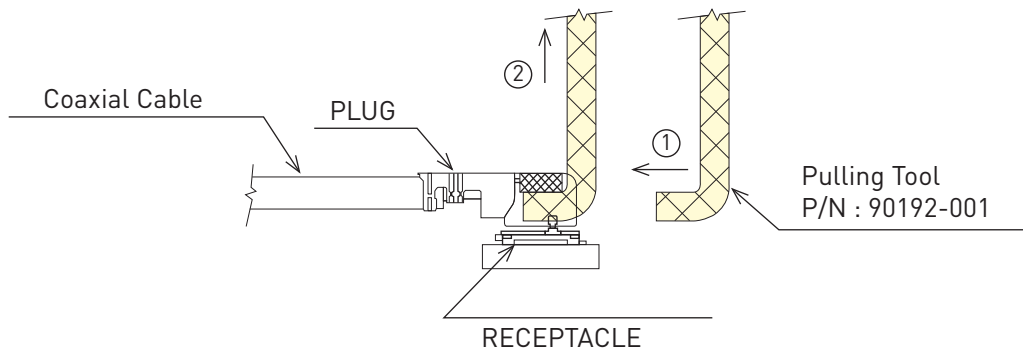
8. Plugs Usage Precautions

8.1 Mating / unmating

(1) To disconnect connectors, insert the end portion of I-PEX under the connector flanges and pull off vertically, in the direction of the connector mating axis.

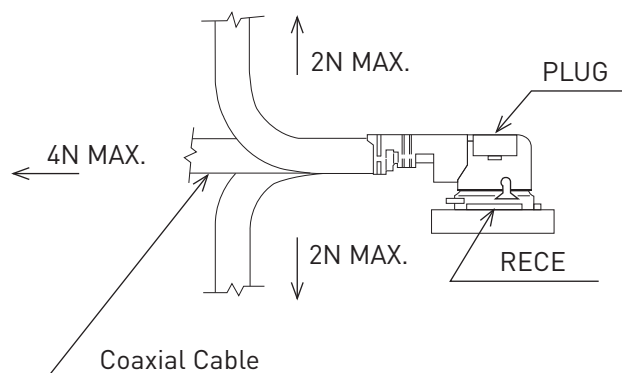
(2) To mate the connectors, the mating axes of both connectors must be aligned and the connectors can be mated. The "click" will confirm fully mated connection.

Do not attempt to insert on an extreme angle.



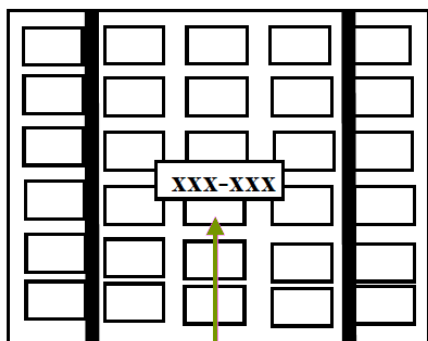
8.2 Pull forces on the cable after connectors are mated

After the connectors are mated, do not apply a load to the cable in excess of the values indicated in the diagram below.

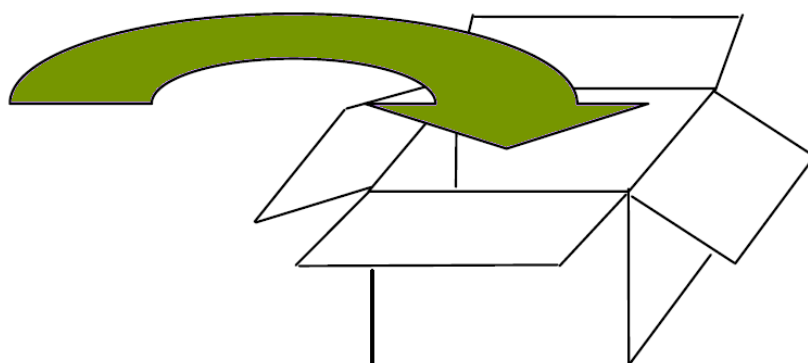




9. Packaging



- *Packaged in Tray with Foam
- *One Tray = 60 pieces
- *6 Trays per Section = 360 pcs



- *Each Carton contains 3 Sections
- *1080 pieces per Carton