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Taoglas Limited
AP.25M.07.0080A

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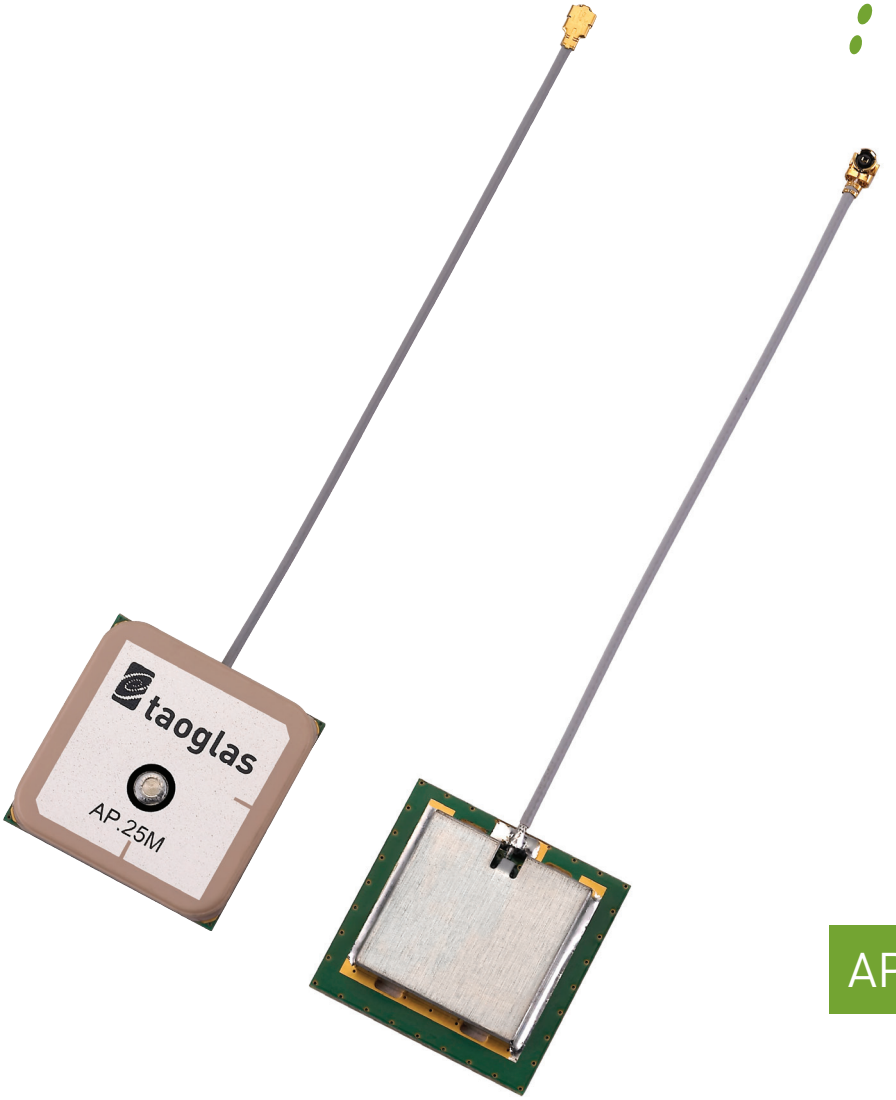


AP.25M.07.0080A

Specification

Part No.	**AP.25M.07.0080A**
Product Name	25mm One Stage GPS Active Patch Antenna Module with front-end Saw Filter
Feature	Industry leading GPS antenna performance 25mm*25mm*6mm 80mm Ø1.13 I-PEX MHFI (U.FL) 15dB LNA Wide Input Voltage 1.8V to 5.5V Low Power Consumption ROHS Compliant

1. Introduction

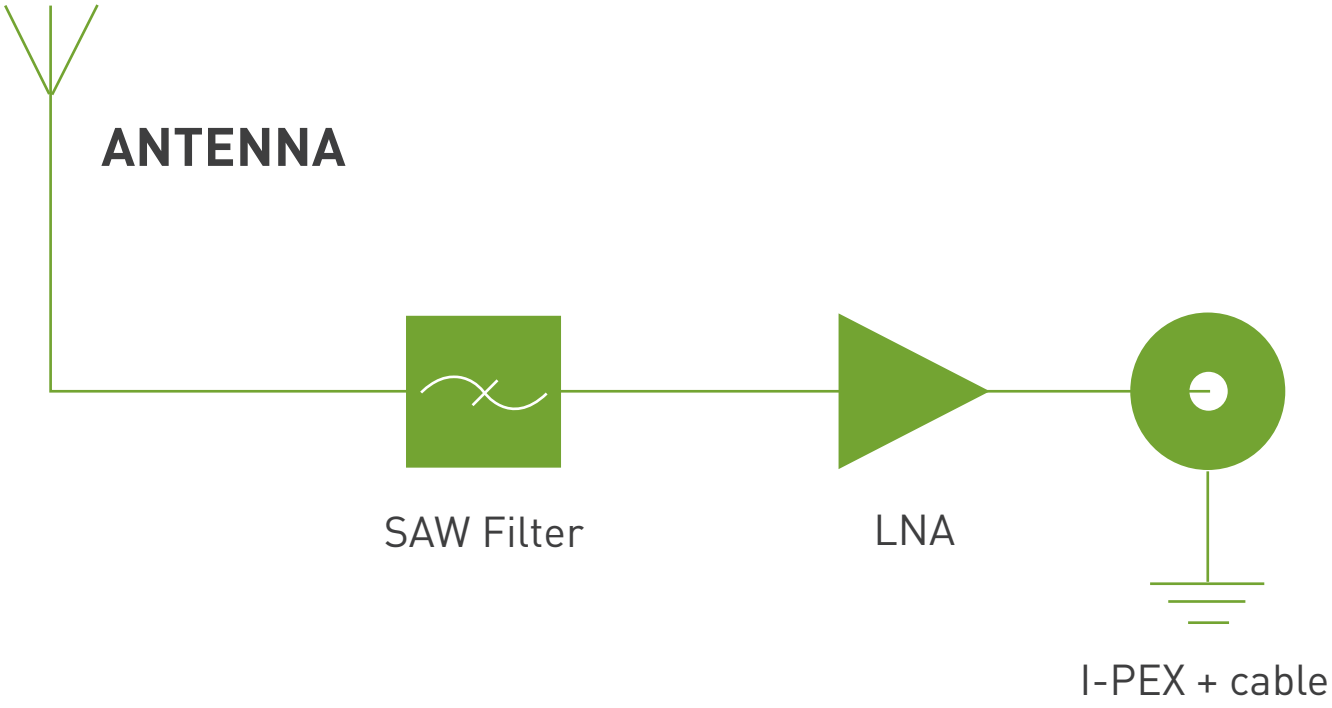
The AP.25M is a one stage 25mm active patch antenna that has been designed specifically for embedded (inside device) integration with GPS receiver modules.

The AP.25M combines a 25*25*2mm 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.

This antenna system consists of two functional blocks, the LNA portion and the patch antenna.



2. Specification

2.1 Patch Antenna

Parameter	Specification
Frequency	1575.42 ± 1.023MHz
Gain @ Zenith	+2.0 dBic Typ. @ Zenith
Polarization	RHCP
Axial Ratio	3.0dB max. @Zenith
Patch Dimension	25*25*2mm

2.2 LNA

Parameter	Specification
Frequency	1575.42 ± 1.023MHz
Outer Band Attenuation	F0=1575.42MHz
	F0±30MHz 3dB min.
	F0±50MHz 15dB min.
	F0±100MHz 23dB min.
Output Impedance	50Ω
Output VSWR	2.0 Max
Pout at 1dB Gain Compression point	Typ. -2dBm Min. -6dBm

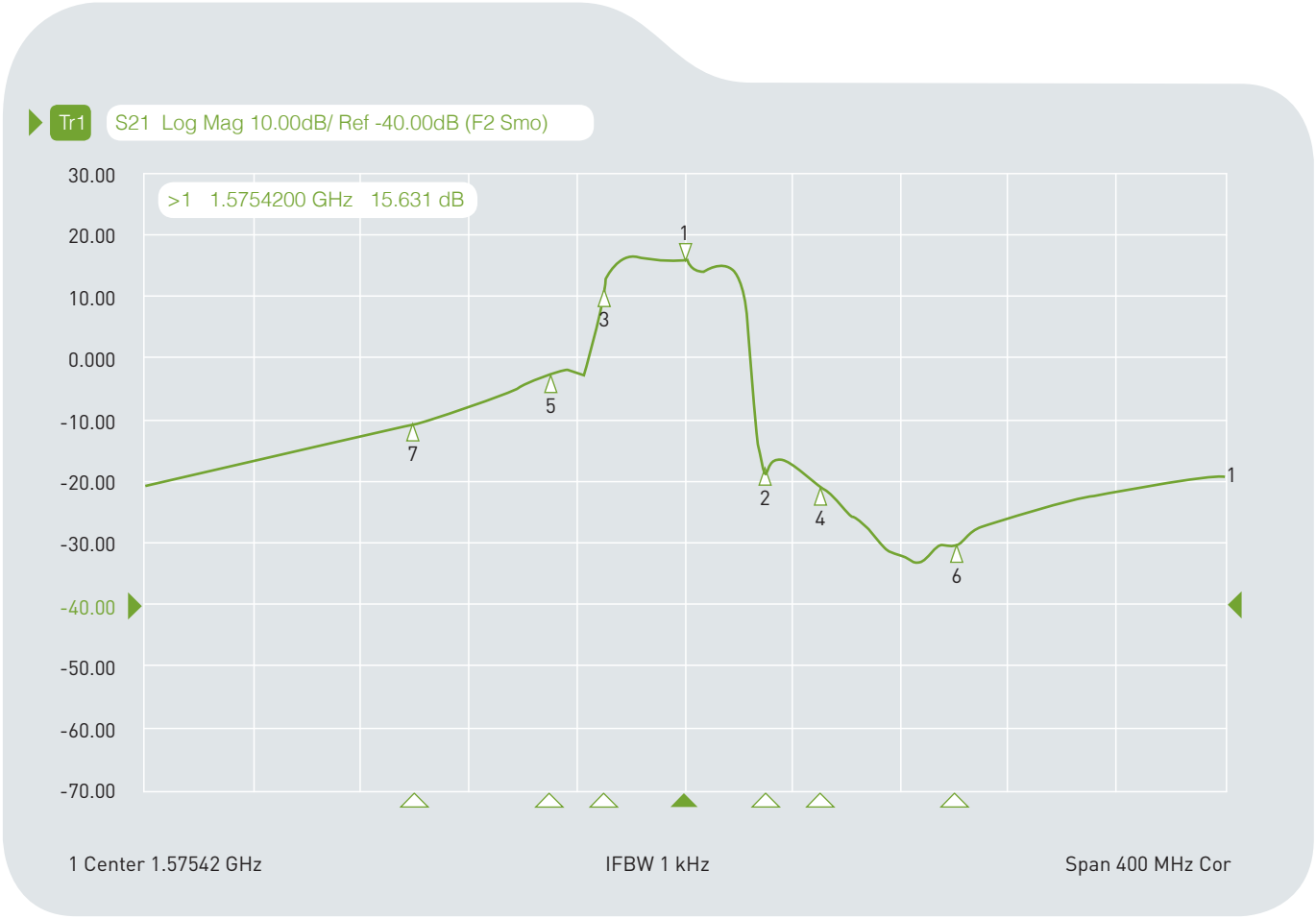
LNA Gain, Power Consumption and Noise Figure

Voltage	LNA Gain (Typ)	Power Consumption(mA) Typ	Noise Figure Typ
Min. 1.8V	13dB	2mA	2.5dB
Typ. 3.0V	15dB	4mA	2.5dB
Max. 5.5V	16dB	9mA	2.6dB

2.3 Cable* & Connector

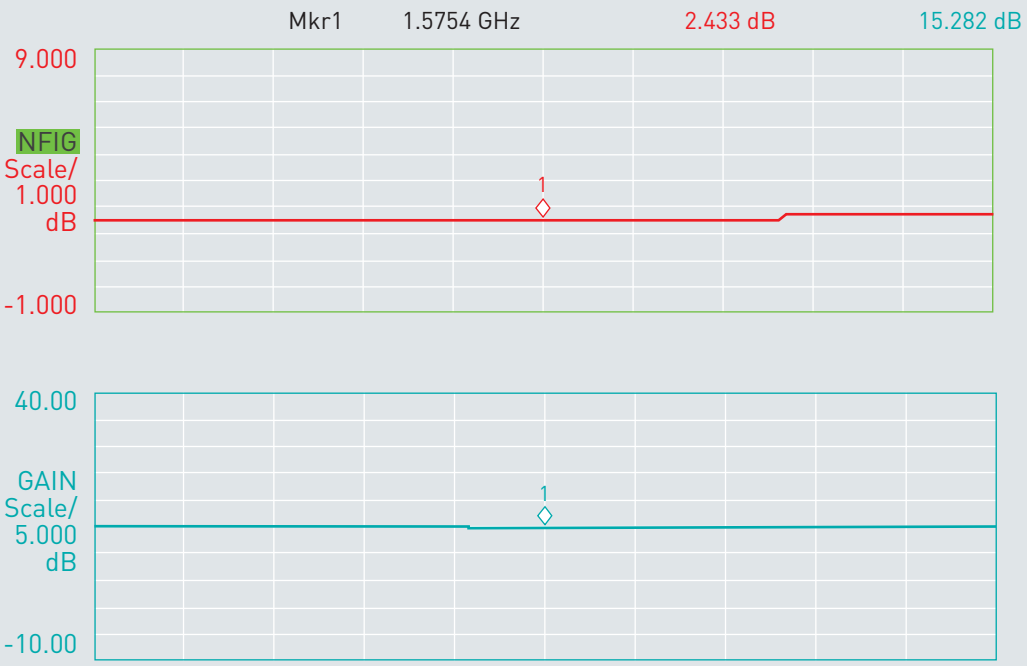
Parameter	Specification
RF Cable	Coaxial Cable Ø 0.13 ± 0.1mm, length 80 ± 2.5mm
Connector	IPEX MHFI (U.FL)

3. LNA Gain and Out Band Rejection @3.0V



Cg1	Tr1	S21	>1	1.5754200 GHz	15.631 dB
Cg1	Tr1	S21	2	1.6054200 GHz	-17.657 dB
Cg1	Tr1	S21	3	1.5454200 GHz	11.265 dB
Cg1	Tr1	S21	4	1.6254200 GHz	-20.538 dB
Cg1	Tr1	S21	5	1.5254200 GHz	-2.7107 dB
Cg1	Tr1	S21	6	1.6754200 GHz	-30.353 dB
Cg1	Tr1	S21	7	1.4754200 GHz	-10.799 dB

4. LNA Noise Figure @3.0V

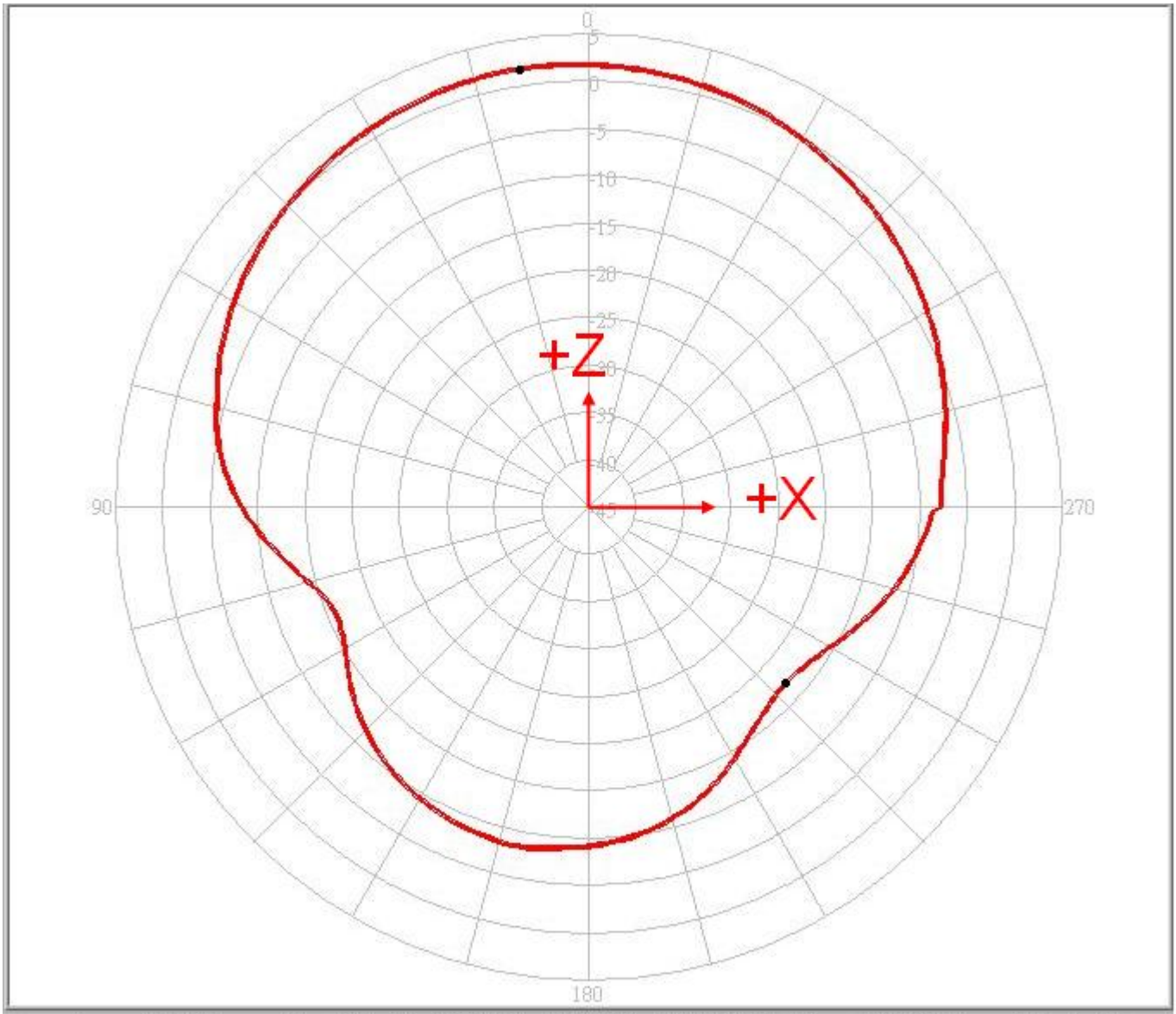


5. Total Specification (through Antenna, LNA, Cable and Connector)

Parameter	Specification
Frequency	1575.42 ± 1.023MHz
Gain	At 3V: 17 ± 3dBic (At 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. 5V
Antenna	25*25*6mm

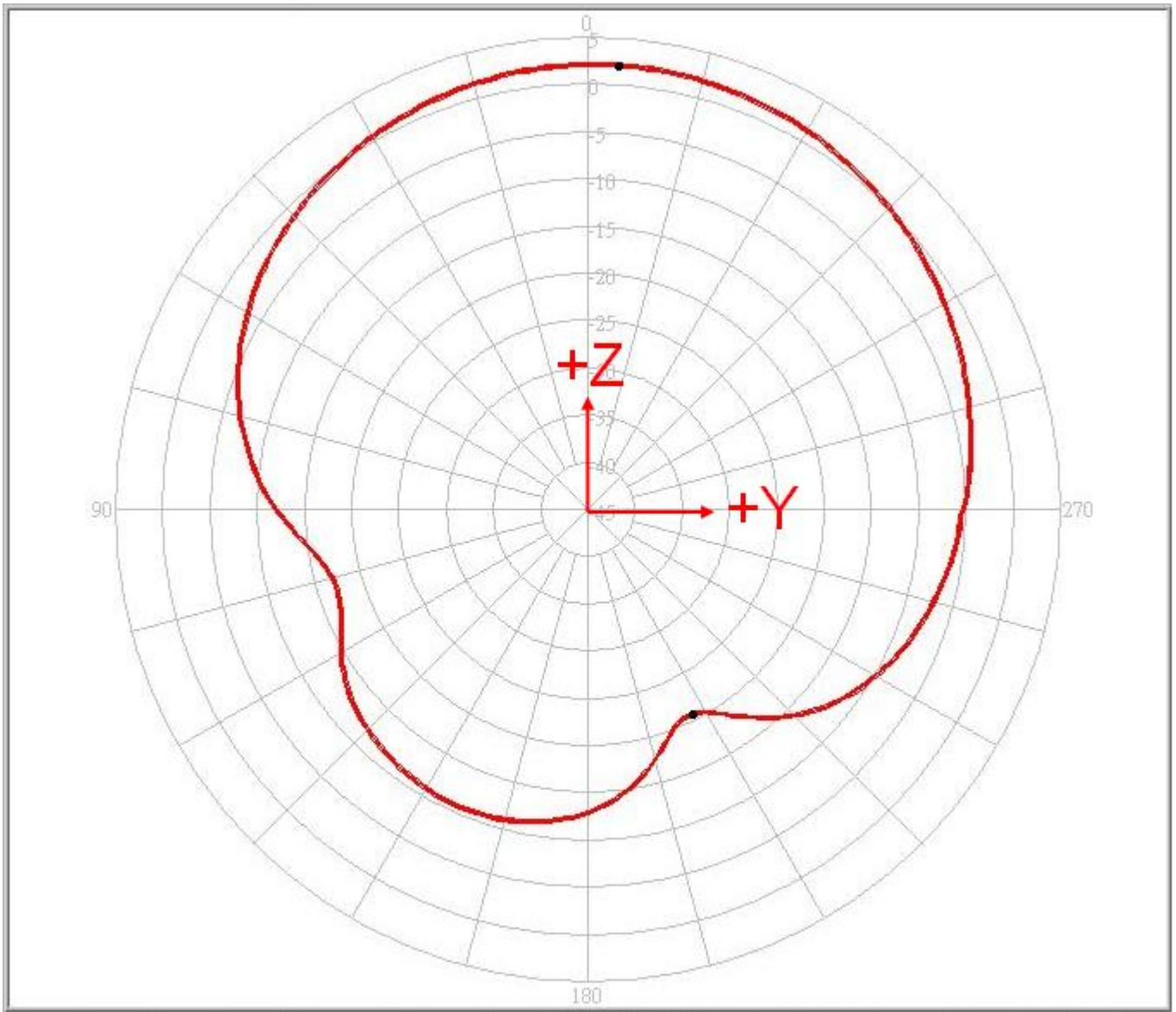
6. Radiation Patterns

6.1 XZ Plane Radiation



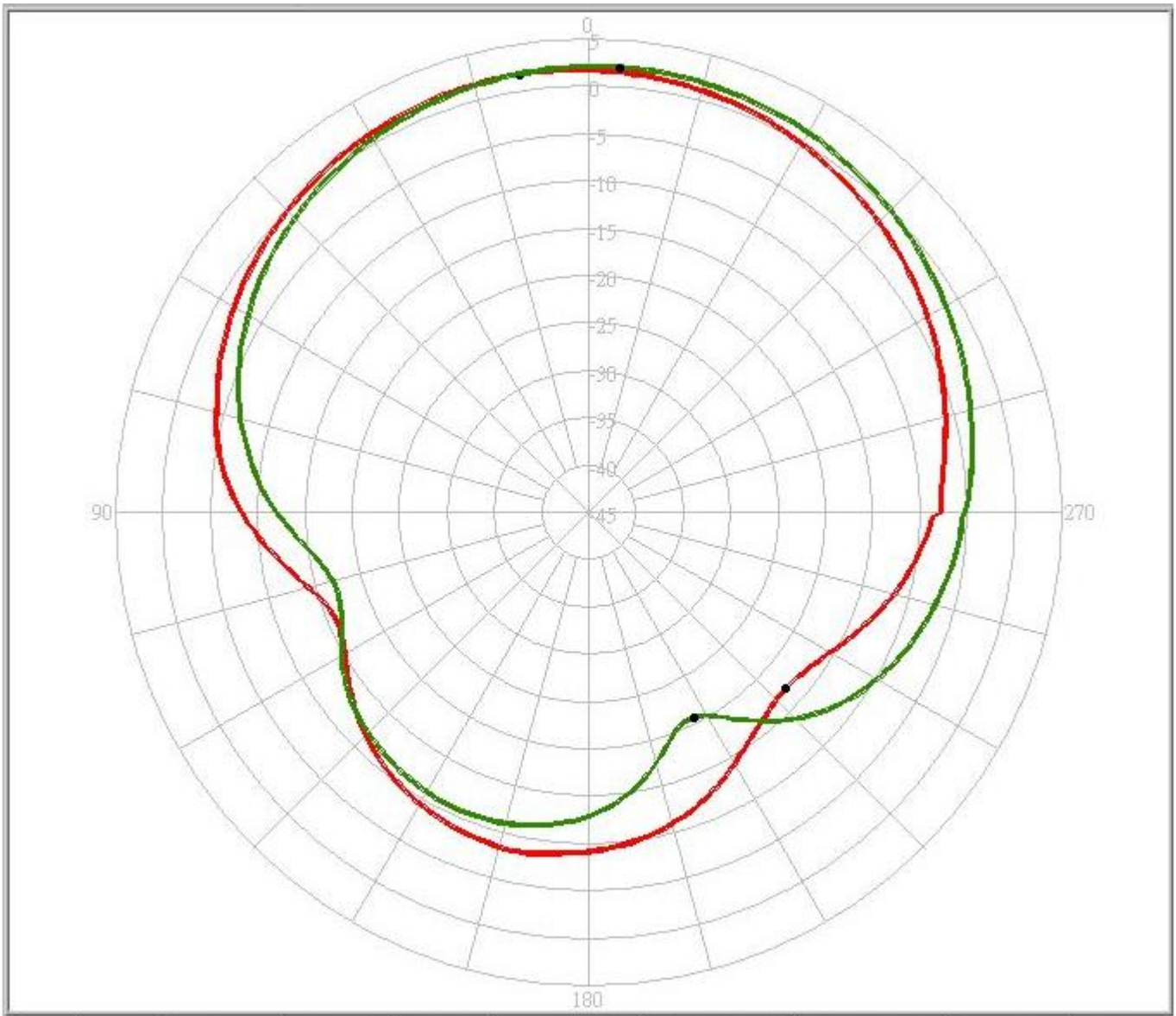
Pattern	Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1	AP.25M	XZ	1575.42	1.82 / 9.00	-17.06 / 228.00	-3.39	RHCP	2011/12/2

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.25M	YZ	1575.42	2.09 / 356.00	-20.67 / 207.00	-3.08	RHCP	2011/12/2

6.3 XY Plane Radiation



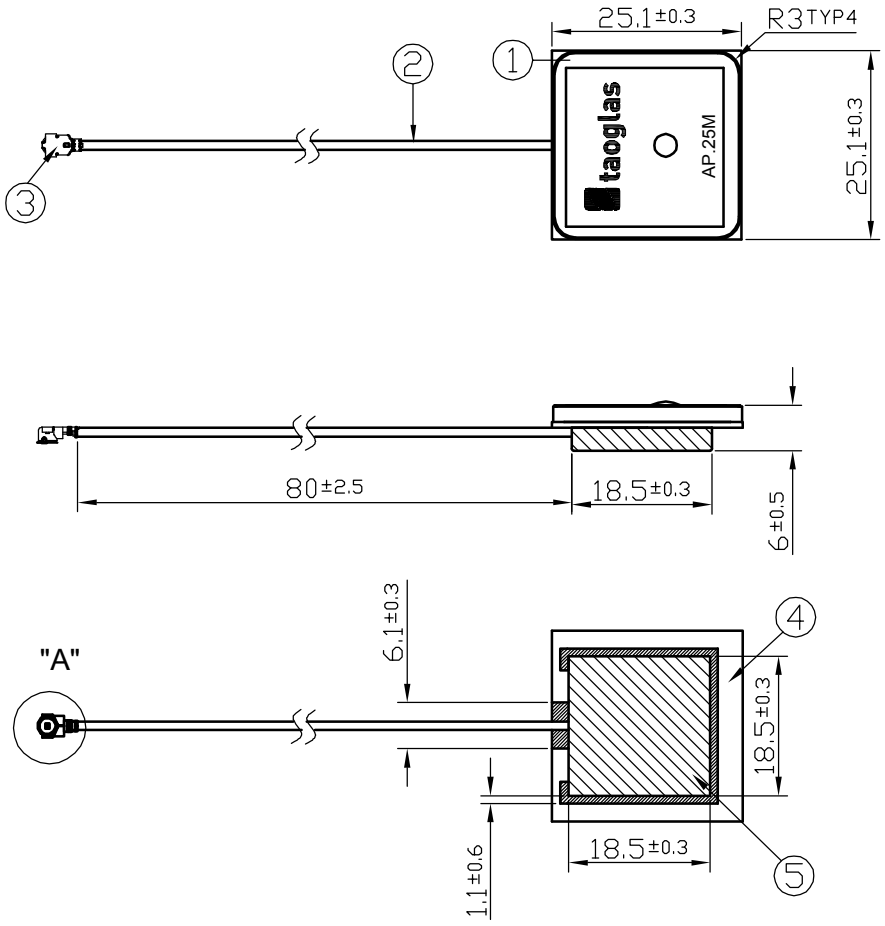
Pattern		Model No.	Test Mode	Freq(MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.	Date
1		AP.25M	XZ	1575.42	1.82 / 9.00	-17.06 / 228.00	-3.39	RHCP	2011/12/2
2		AP.25M	YZ	1575.42	2.09 / 356.00	-20.67 / 207.00	-3.08	RHCP	2011/12/2

7. Technical Drawing

Top

Side

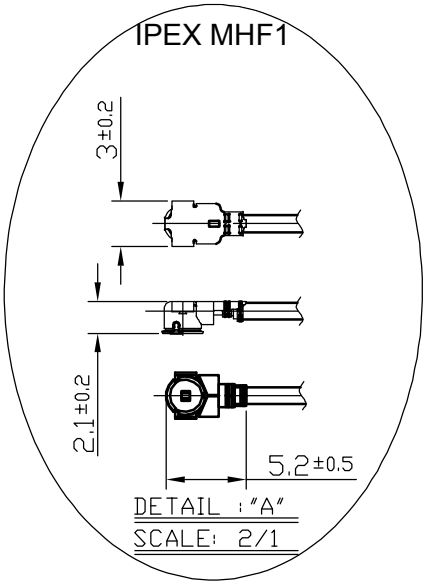
Bottom



NOTE:
1. Soldered area
2. Shielding case area
3. All material must be RoHS compliant.
4. The connector orientation has a fixed position to the antenna as per drawing.

	Name	P/N	Material	Finish	QTY
1	AP.25M Patch (25*25*2mm)	AP.25M	Ceramic	Clear	1
2	1.13 Cable	OD.113.CM	PVC	Gray	1
3	IPEX MHF1	IPEX.MHFI.113	Brass	Gold	1
4	PCB		FR4 0.8t	Green	1
5	Shielding Case		(Tin) SPTE	Tin Plated	1

7.1 Connector Drawing



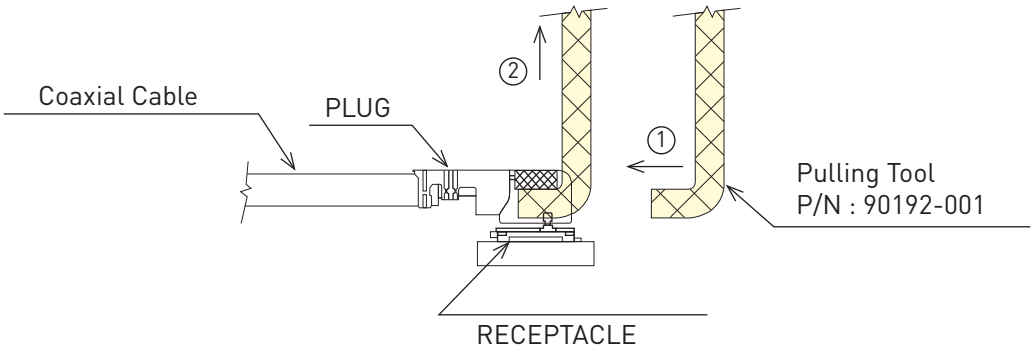
8. Plugs Usage Precautions

8.I 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.

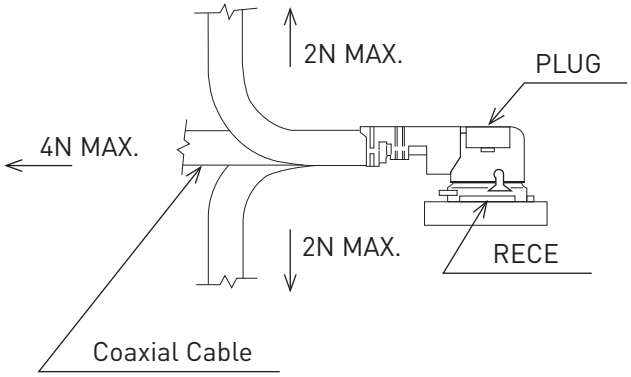
(2) To mate the connectors, the mating axes of both connectors must be aligned and the connectors can be mated. The “click” will confirm fully mated connection.

Do not attempt to insert on an extreme angle.

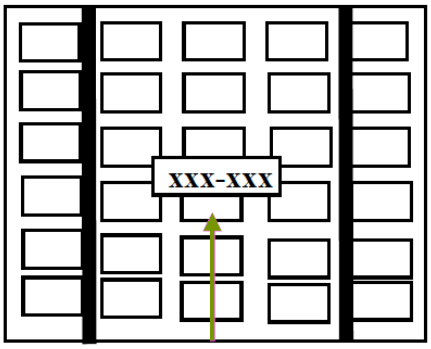


8.2 Pull forces on the cable after connectors are mated

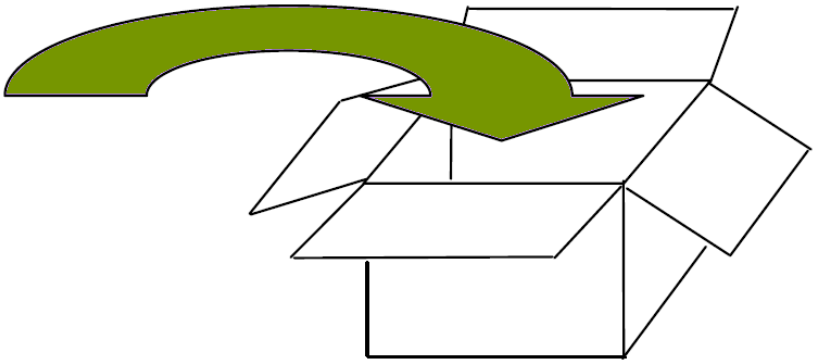
After the connectors are mated, do not apply a load to the cable in excess of the values indicated in the diagram below.



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