

## **SPECIFICATION**

Part No. : AP.10F.07.0039B

Product Name : 2 Stage 25dB 10mm Active Ceramic Patch Antenna

39mm 0.81 Micro Coax with IPEX MHFI (U.FL

compatible)

with Front End SAW Filter

Feature : Small form factor GPS active patch

10mm\*10mm\*4mm,

Wide Voltage 1.8V~5.5V

25dB LNA

High performance

Ultra Low Power Consumption

**RoHS Compliant** 



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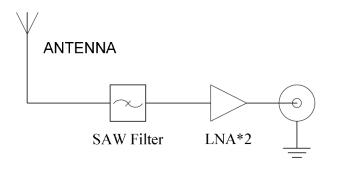
### I. Introduction

The AP.10F active GPS patch antenna is the smallest GPS high performance antenna currently available in the world. It uses an extremely sensitive high dielectric constant powder formulation and tight process control and patented circular polarized side stripe design the 10\*10\*4mm patch antenna. 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.

This product is suited to small form factor mobile devices such as GPS Smartphones, Personal Location, Medical devices, Telematic devices and Automotive navigation and tracking. Custom gain, connector and cable versions are available.

Custom tuning is available for specific customer device environments and is dependent on a minimum order quantity and NRE in some cases. Please contact sales@taoglas.com for details.

The AP.10E consists of 2 functional blocks – the LNA and also the patch antenna.



I-PEX +cable

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# **II. Specification**

#### **Patch Antenna**

| Parameter       | Specification         |  |
|-----------------|-----------------------|--|
| Frequency       | 1575.42 ± 1.023MHz    |  |
| Gain @ Zenith   | -10dBic Typ. @ Zenith |  |
| Polarization    | RHCP                  |  |
| Axial Ratio     | 4.0dB max. @Zenith    |  |
| Patch Dimension | 10*10*4.0mm           |  |

#### LNA

| Parameter                                    | Specification      |               |              |              |
|--|--------------------|---------------|--------------|--------------|
| Frequency                                    | 1575.42 ± 1.023MHz |               |              |              |
|  |                    | F0=1575.      | 42MHz        |              |
|  |                    | F0±30MHz      | 5dB min.     |              |
|  |                    | F0±50MHz      | 20dB min.    |              |
| Outer Band Attenuation                       |                    | F0±100MHz     | 25dB min.    |              |
| Output Impedance                             |                    | 500           | Ω            |              |
| Output VSWR                                  | 2.0 Max            |               |              |              |
| Pout at 1dB Gain                             | Typ. 11 dBm        |               |              |              |
| Compression point                            | Min. 8 dBm         |               |              |              |
| LNA Gain, Power Consumption and Noise Figure |                    |               |              |              |
|  | LNA Gain           |               |              | Noise Figure |
| Voltage                                      | (Typ)              | Power Consump | tion(mA) Typ | Тур          |
| Min. 1.8V                                    | 20dB               | 5mA           | ١            | 2.7dB        |
| Typ. 3.0V                                    | 25dB               | 10m/          | A            | 2.5dB        |
| Max. 5.5V                                    | 25dB               | 23m/          | A            | 2.7dB        |

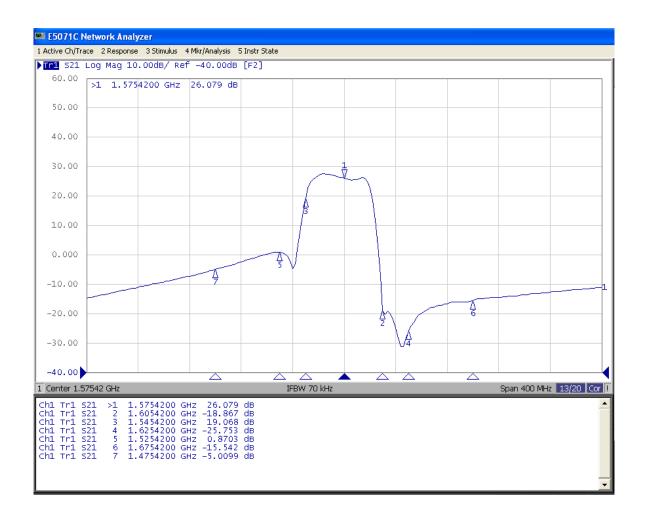
#### Cable\* & Connector

| Parameter | Specification                                  |
|-----------|--|
| RF Cable  | Coaxial Cable Ø0.81 ± 0.1mm, length 39 ± 2.0mm |
| Connector | IPEX MHFI (U.FL)                               |

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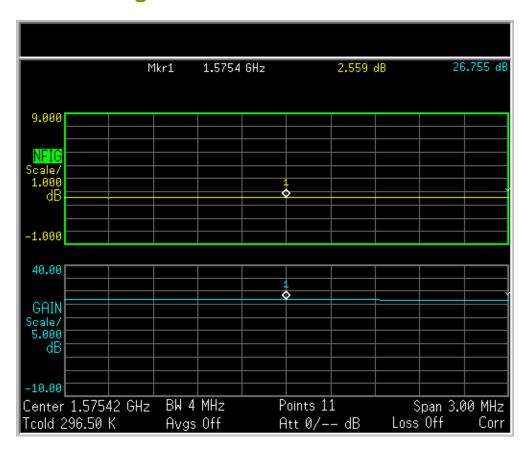
## III. LNA Gain and Out Band Rejection @3.0V



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## IV. LNA Noise Figure @3.0V



## V. Total Specification

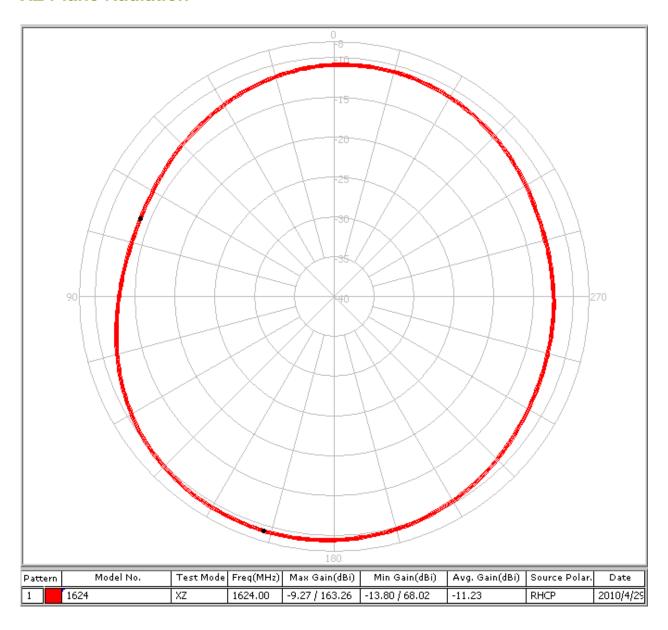
## (through Antenna, LNA, Cable and Connector)

| Parameter             | Specification               |
|-----------------------|-----------------------------|
| Frequency             | 1575.42 ± 1.023MHz          |
| Gain                  | At 3V: 15 ± 4dBic@90°       |
| Output Impedance      | 50Ω                         |
| Polarization          | RHCP                        |
| Output VSWR           | Max 2.0                     |
| Operation Temperature | -40°C to + 85°C             |
| Storage Temperature   | -40°C to + 105°C            |
| Relative Humidity     | 40% to 95%                  |
| Input Voltage         | Min:1.8V Typ. 3.0V Max:5.5V |
| Antenna               | 10*10*4mm                   |

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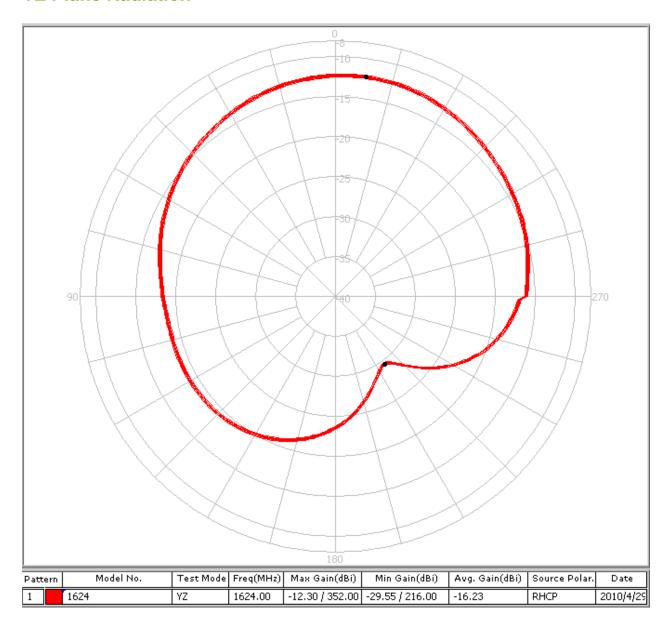
### **XZ Plane Radiation**



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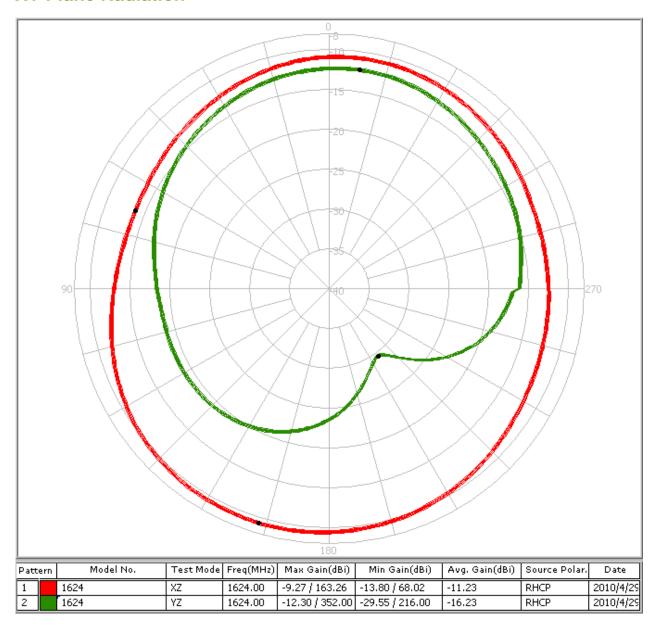
### **YZ Plane Radiation**



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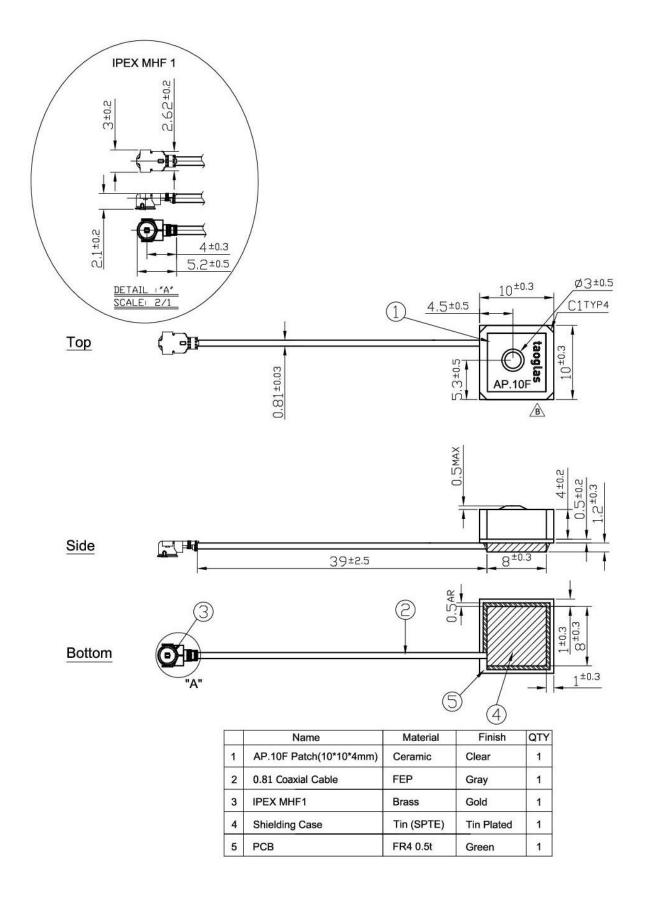
### **XY Plane Radiation**



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### **VI. Antenna Drawing**



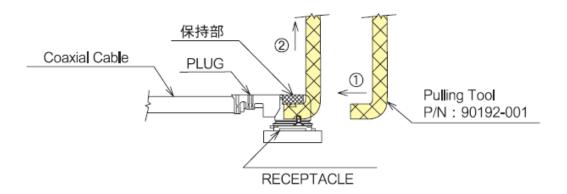
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### **VIII. Plugs Usage Precautions**

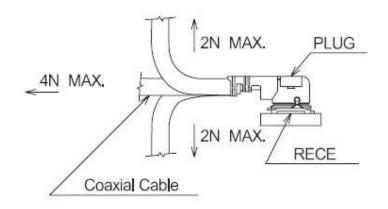
#### VIII.I Mating / unmating

- (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.



#### VIII.II Pull forces on the cable after connectors are mated

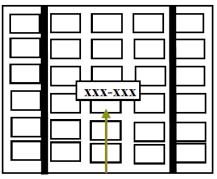
After the connectors are mated, do not apply a load to the cable in excess of the values indicated in the diagram below.



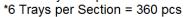
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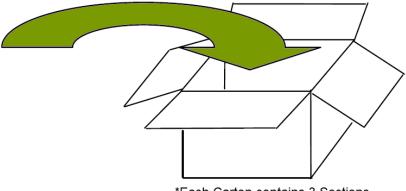


# IX. Packaging



\*Packaged in Tray with Foam \*One Tray = 60 pieces





\*Each Carton contains 3 Sections

\*1080 pieces per Carton

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