

## SPECIFICATION

Part No. : **AP.10E.07.0039B**

Product Name : AP.10E - 1 Stage 15dB 39mm 0.81 with IPEX  
MHFI (U.FL compatible)

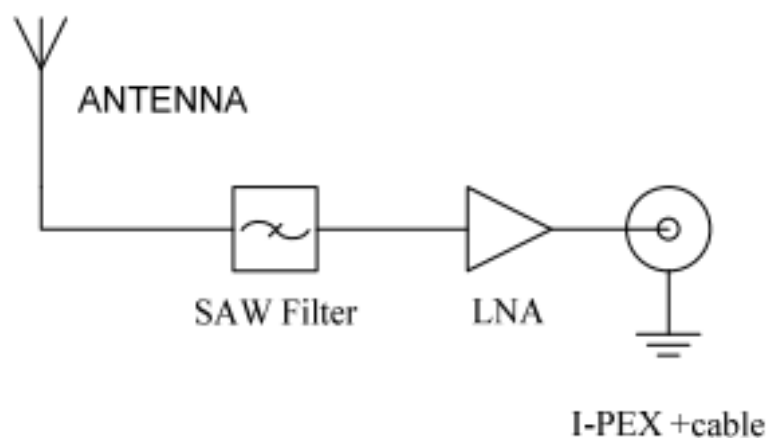
Feature : World smallest GPS/GALILEO active patch  
High performance  
Ultra low power consumption  
RoHS Compliant



## 1. Introduction

AP.10E active GPS/GALILEO patch antenna is the smallest GPS high performance antenna currently available in the world. Using extremely sensitive high dielectric constant powder formulation and tight process control the 10\*10\*4mm patch antenna is accurately tuned to have its frequency band right at 1575.42MHz for GPS systems. With an ultra low power consumption one stage LNA, this small active patch has the performance of an ordinary active patch, but at only a quarter of the size.

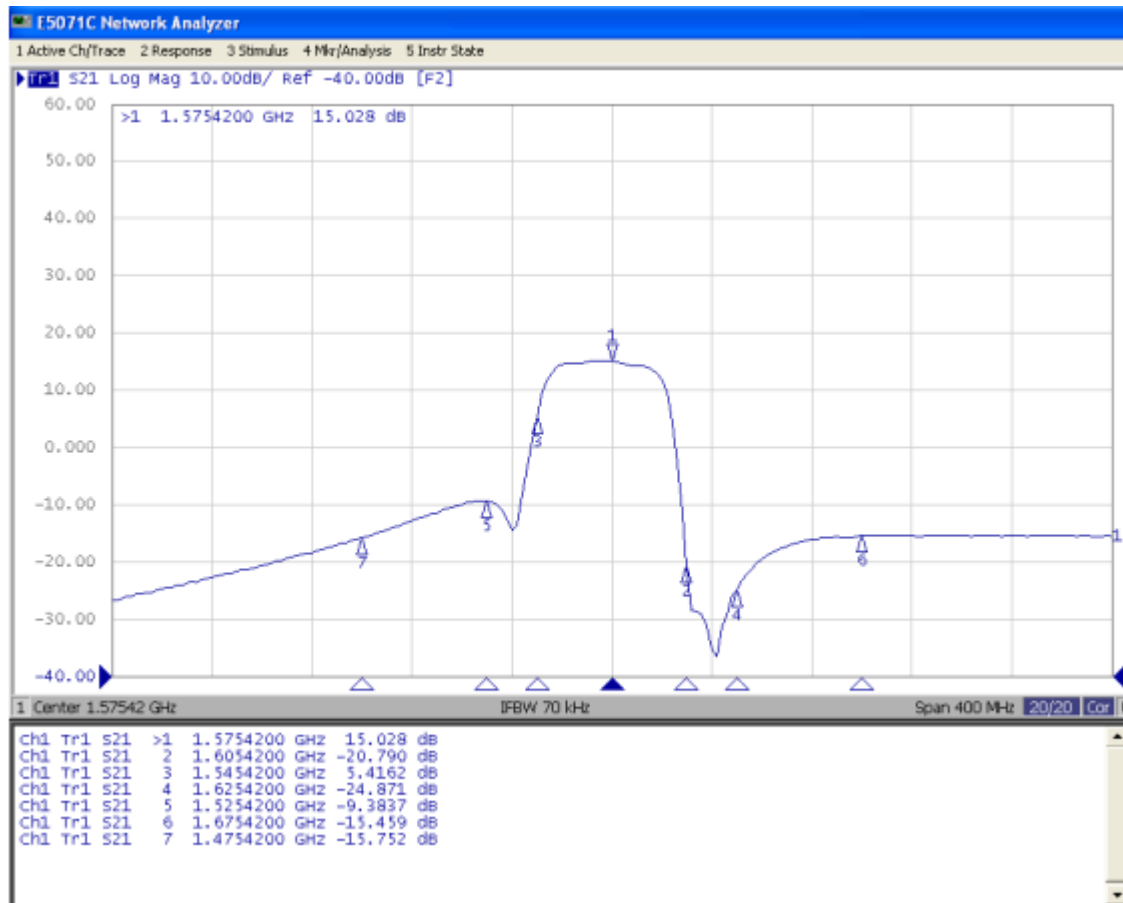
This product is suited to small form factor mobile devices such as GPS Smartphones, Personal Location, Medical devices, Telematic devices and Automotive navigation and tracking. Custom gain, connector and cable versions are available. The AP.10E consists of 2 functional blocks – the LNA and also the patch antenna.



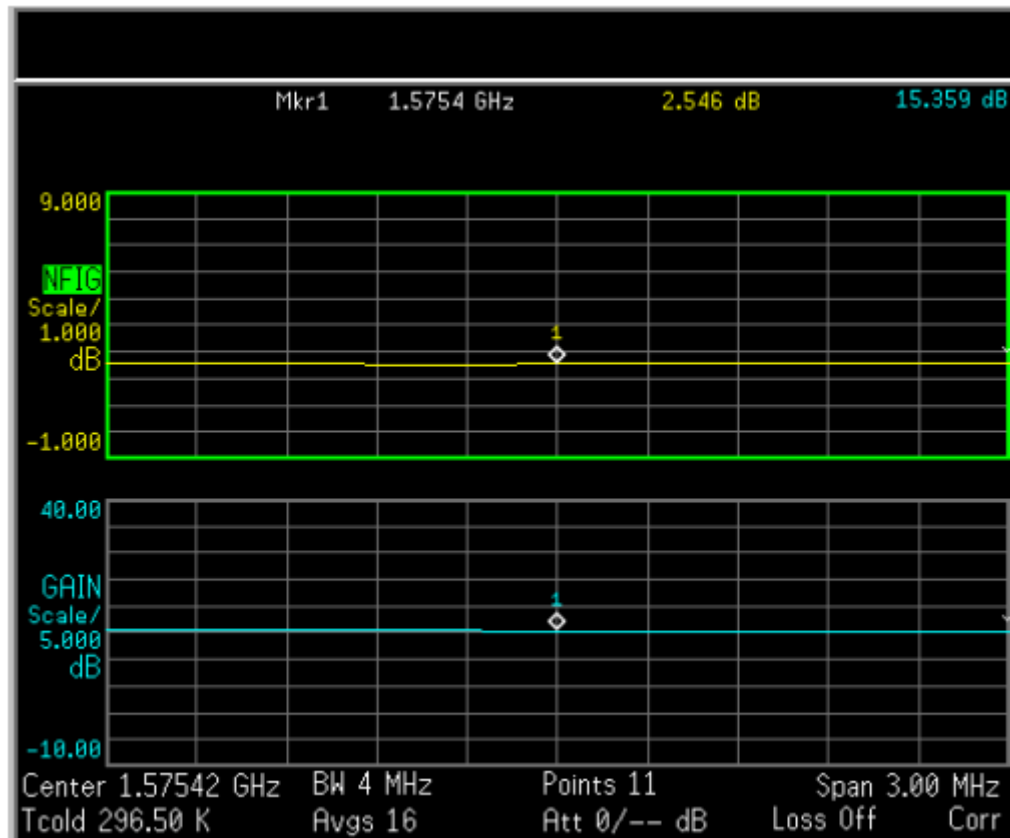
## 2. Specification

| ELECTRICAL                                   |                                                |                           |                  |
|----------------------------------------------|------------------------------------------------|---------------------------|------------------|
| 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                                          |                                                |                           |                  |
| Frequency                                    | 1575.42 ± 1.023MHz                             |                           |                  |
| Outer Band Attenuation                       | F0=1575.42MHz                                  |                           |                  |
|                                              | F0±30MHz                                       | 9dB min.                  |                  |
|                                              | F0±50MHz                                       | 20dB min.                 |                  |
|                                              | F0±100MHz                                      | 25dB 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                                    | 14dB                                           | 3mA                       | 2.5dB            |
| Typ. 3.0V                                    | 15dB                                           | 3mA                       | 2.5dB            |
| Max. 5.5V                                    | 15dB                                           | 3mA                       | 2.6dB            |
| MECHANICAL                                   |                                                |                           |                  |
| Dimensions                                   | 10*10*4.0mm                                    |                           |                  |
| RF Cable                                     | Coaxial Cable Ø0.81 ± 0.1mm, length 39 ± 2.0mm |                           |                  |
| Connector                                    | IPEX MHFI (U.FL)                               |                           |                  |
| ANTENNA WITH LNA                             |                                                |                           |                  |
| Frequency                                    | 1575.42 ± 1.023MHz                             |                           |                  |
| Gain                                         | At 3V: 5 ± 4dBi@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                                      | 10*10*5.9mm                                    |                           |                  |

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

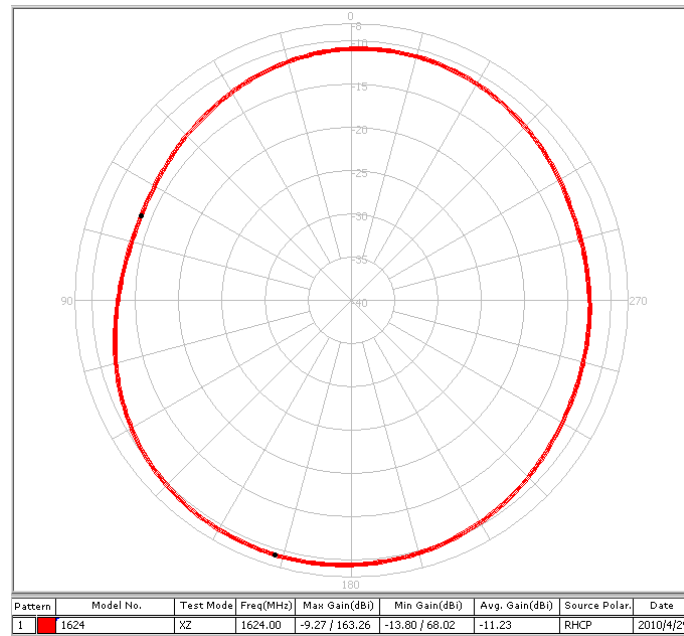


## 4. LNA Noise Figure @3.0V

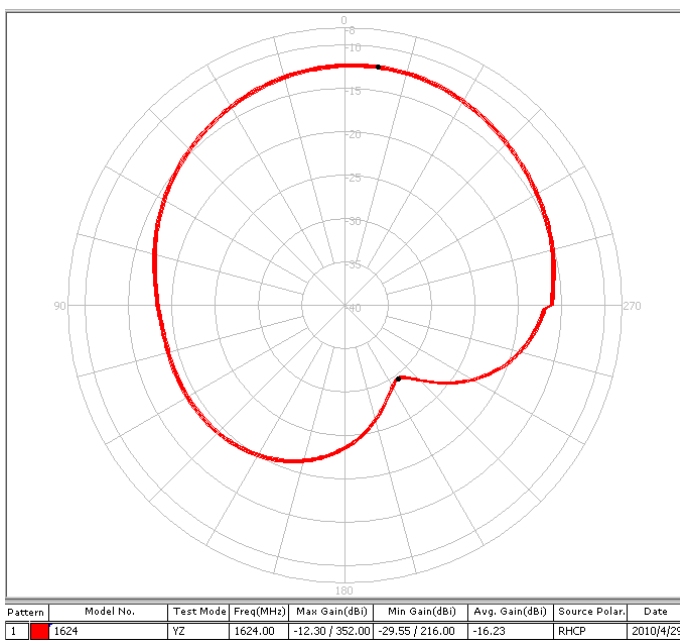


## 5. Radiation Pattern

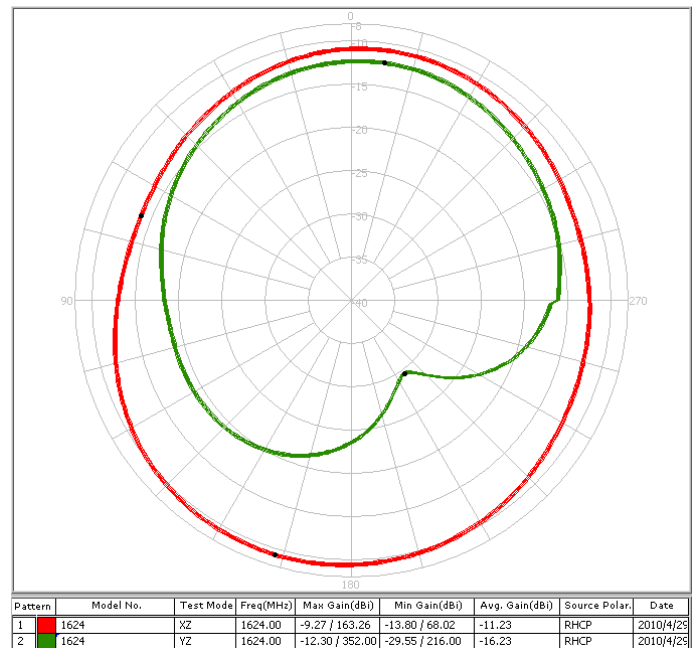
### XZ Plane Radiation



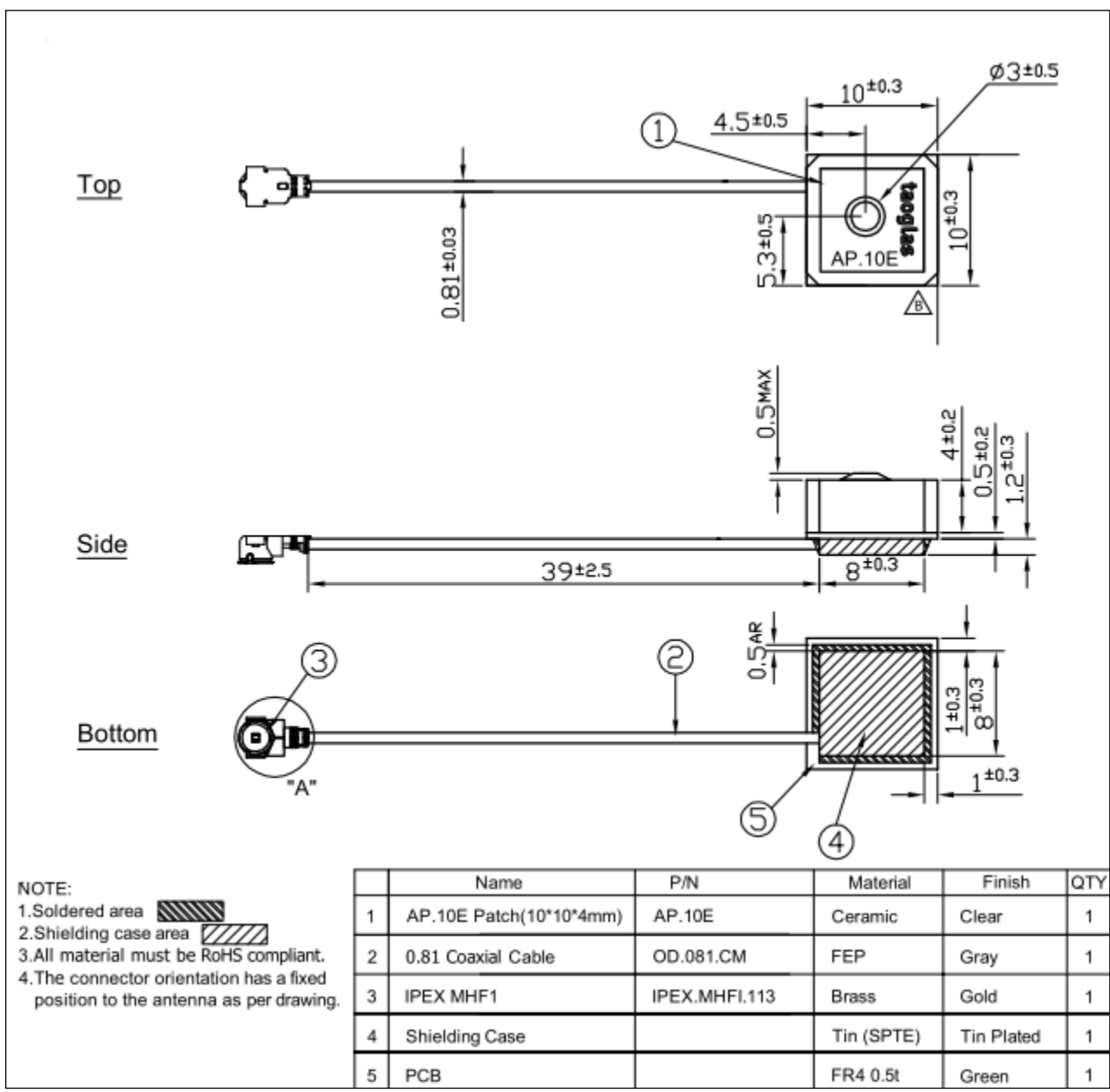
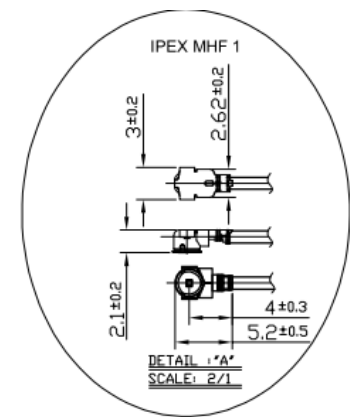
### YZ Plane Radiation



### XY Plane Radiation



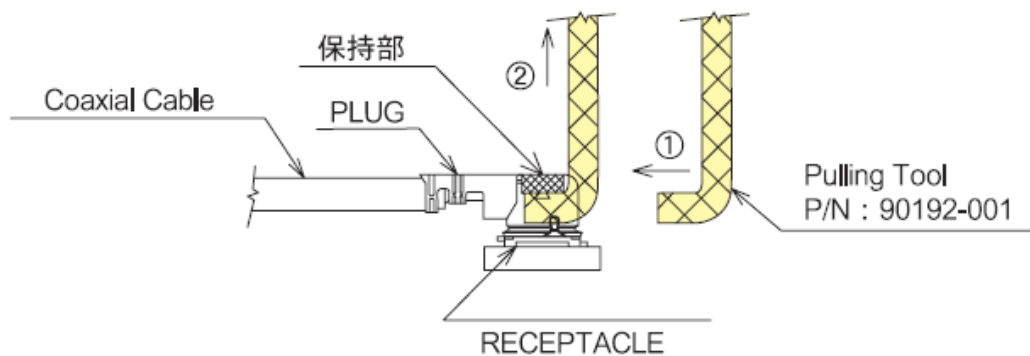
## 6. Antenna Drawing



## 7. Plugs Usage Precautions

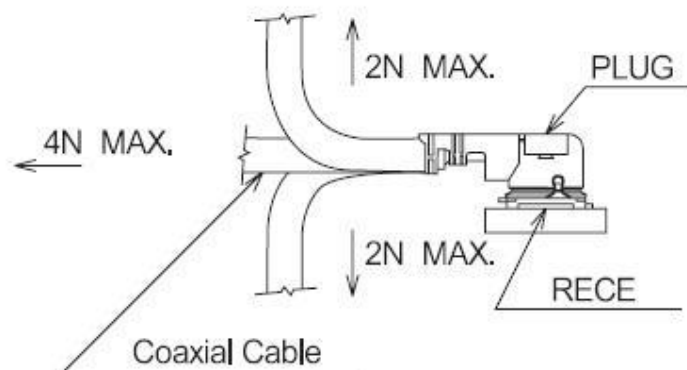
### 7.1. Mating / Unmating

- (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.

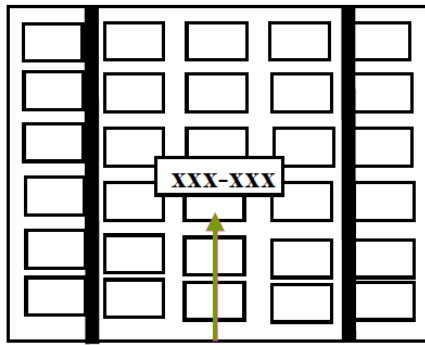


### 7.2. Pull forces on the cable after connectors are mated

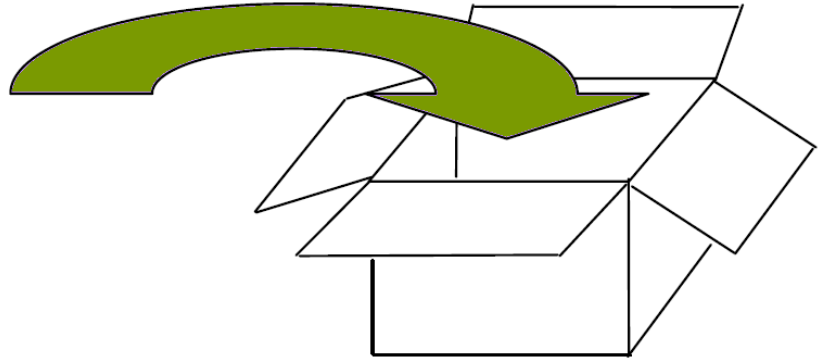
After the connectors are mated, do not apply a load to the cable in excess of the values indicated in the diagram below.



## 8. 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

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