

## 2J7186BGFa

2× 5GNR MIMO, 2.4/5.0/6.0 GHz ISM MIMO and GNSS Screw Mount

### Key Features

#### Cable 1-2: 5GNR

- 617-960 MHz
- 1427-2690 MHz
- 3300-5000 MHz
- 5150-5925 Mhz

#### Cable 3-4: 2.4/5.0/6.0 GHz ISM

- 2410-2490 MHz
- 4920-5925 MHz
- 5915-7125 MHz

#### Cable 5: GPS/GLONASS/QZSS/Galileo

- 1561-1606 MHz

Screw Mount

Heavy Duty antenna

High Performance

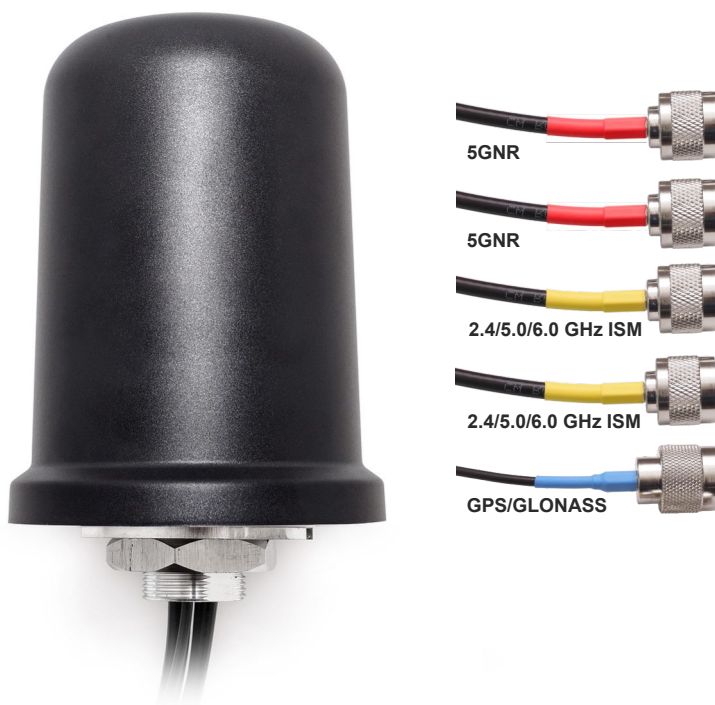
Ground Plane Independent

Anti-Rotation Mounting

Customizable Cable and Connector

Dimensions: Ø 96 x H 130 mm

Certificates: IP67, IP69, IK09



## 1. Antenna and electrical specifications

Cable 1

| Parameters           | 5G NR Antenna                                                                                       |                                                                                                                                                                                 |                                 |                      |
|----------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------|
| Technologies         | 5G, 4G, 3G and 2G                                                                                   |                                                                                                                                                                                 |                                 |                      |
| Standards            | 5G NR/4G LTE/FirstNet/CBRS/LPWA/CAT-X/CAT-Mx/CAT-NBx/NB-IoT/3G/2G                                   |                                                                                                                                                                                 |                                 |                      |
| Frequency (MHz)      | 617-960                                                                                             | 1427-2690                                                                                                                                                                       | 3300-5000                       | 5150-5925            |
| Band (MHz)           | 600, 700, 850, 900                                                                                  | 1500, 1600, 1700, 1800,<br>1900, 2000, 2100, 2300,<br>2500, 2600                                                                                                                | 3300, 3500, 3600,<br>3700, 4500 | 5200, 5500, 5800     |
| 5G NR Bands          | n5, n8, 12, n20, n28, n71,<br>n81, n82, n83,                                                        | n1, n2, n3, n7, n25, n34,<br>n38, n39, n40, n41, n50,<br>n51, n66, n70, n74, n75,<br>n76, n80, n84, n86                                                                         | n77, n78, n79                   |                      |
| 4G LTE Bands         | B5, B6, B8, B12, B13, B14,<br>B17, B18, B19, B20, B26,<br>B27, B28, B29, B44, B67,<br>B68, B71, B85 | B1, B2, B3, B4, B7, B9,<br>B10, B11, B21, B23, B24,<br>B25, B30, B32, B33, B34,<br>B35, B36, B37, B38, B39,<br>B40, B41, B45, B50, B51,<br>B65, B66, B69, B70, B74,<br>B75, B76 | B22, B42, B43, B48,<br>B49, B52 | B46, B47, B252, B255 |
| 3G CELL Bands        | B5, B6, B8, B12, B13, B14,<br>B19, B20, B26                                                         | B1, B2, B3, B4, B7, B9,<br>B10, B11, B21, B25, B32,<br>B33, B34, B35, B36, B37,<br>B38, B39, B40                                                                                | B22                             |                      |
| 2G CELL Bands        | 710, 750, 810T, 850, 900P,<br>900E, 900R                                                            | 1800DCS, 1900PCS                                                                                                                                                                |                                 |                      |
| CDMA CELL Bands      | BC0, BC2, BC3, BC7, BC9,<br>BC10, BC12, BC18, BC19                                                  | BC1, BC4, BC6, BC8,<br>BC13, BC14, BC15, BC16,<br>BC20, BC21                                                                                                                    |                                 |                      |
| Return Loss (dB)     | ~-5.5                                                                                               | ~-12.2                                                                                                                                                                          | ~-15.2                          | ~-14.2               |
| VSWR                 | ~3.7:1                                                                                              | ~2.0:1                                                                                                                                                                          | ~1.5:1                          | ~1.6:1               |
| Efficiency (%)       | ~31.0                                                                                               | ~41.6                                                                                                                                                                           | ~41.6                           | ~36.9                |
| Peak Gain (dBi)      | ~1.3                                                                                                | ~3.4                                                                                                                                                                            | ~4.7                            | ~4.0                 |
| Average Gain (dB)    | ~-5.1                                                                                               | ~-3.9                                                                                                                                                                           | ~-3.8                           | ~-4.4                |
| Impedance (Ohm)      | 50                                                                                                  |                                                                                                                                                                                 |                                 |                      |
| Polarisation         | Linear                                                                                              |                                                                                                                                                                                 |                                 |                      |
| Radiation Pattern    | Omni-Directional                                                                                    |                                                                                                                                                                                 |                                 |                      |
| Max. Input Power (W) | 35                                                                                                  |                                                                                                                                                                                 |                                 |                      |
| Connector Type       | SMA-Male Standard (Other Connectors Available)                                                      |                                                                                                                                                                                 |                                 |                      |
| Cable Length         | 300 cm Standard (Any Cable Length Available)                                                        |                                                                                                                                                                                 |                                 |                      |
| Cable Type           | LL195 Standard (Other Cables Available)                                                             |                                                                                                                                                                                 |                                 |                      |

**Cable 2**

| Parameters           | 5GNR Antenna                                                                                        |                                                                                                                                                                                 |                                 |                      |
|----------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------|
| Technologies         | 5G, 4G, 3G and 2G                                                                                   |                                                                                                                                                                                 |                                 |                      |
| Standards            | 5GNR/4GLTE/FirstNet/CBRS/LPWA/CAT-X/CAT-Mx/CAT-NBx/NB-IoT/3G/2G                                     |                                                                                                                                                                                 |                                 |                      |
| Frequency (MHz)      | 617-960                                                                                             | 1427-2690                                                                                                                                                                       | 3300-5000                       | 5150-5925            |
| Band (MHz)           | 600, 700, 850, 900                                                                                  | 1500, 1600, 1700, 1800,<br>1900, 2000, 2100, 2300,<br>2500, 2600                                                                                                                | 3300, 3500, 3600,<br>3700, 4500 | 5200, 5500, 5800     |
| 5GNR Bands           | n5, n8 ,12, n20, n28, n71,<br>n81, n82, n83,                                                        | n1, n2, n3, n7, n25, n34,<br>n38, n39, n40, n41, n50,<br>n51, n66, n70, n74, n75,<br>n76, n80, n84, n86                                                                         | n77, n78, n79                   |                      |
| 4GLTE Bands          | B5, B6, B8, B12, B13, B14,<br>B17, B18, B19, B20, B26,<br>B27, B28, B29, B44, B67,<br>B68, B71, B85 | B1, B2, B3, B4, B7, B9,<br>B10, B11, B21, B23, B24,<br>B25, B30, B32, B33, B34,<br>B35, B36, B37, B38, B39,<br>B40, B41, B45, B50, B51,<br>B65, B66, B69, B70, B74,<br>B75, B76 | B22, B42, B43, B48,<br>B49, B52 | B46, B47, B252, B255 |
| 3GCELL Bands         | B5, B6, B8, B12, B13, B14,<br>B19, B20, B26                                                         | B1, B2, B3, B4, B7, B9,<br>B10, B11, B21, B25, B32,<br>B33, B34, B35, B36, B37,<br>B38, B39, B40                                                                                | B22                             |                      |
| 2GCELL Bands         | 710, 750, 810T, 850, 900P,<br>900E, 900R                                                            | 1800DCS, 1900PCS                                                                                                                                                                |                                 |                      |
| CDMACELL Bands       | BC0, BC2, BC3, BC7, BC9,<br>BC10, BC12, BC18, BC19                                                  | BC1, BC4, BC6, BC8,<br>BC13, BC14, BC15, BC16,<br>BC20, BC21                                                                                                                    |                                 |                      |
| Return Loss (dB)     | ~-5.6                                                                                               | ~-12.7                                                                                                                                                                          | ~-15.3                          | ~-16.0               |
| VSWR                 | ~3.7:1                                                                                              | ~1.9:1                                                                                                                                                                          | ~1.5:1                          | ~1.5:1               |
| Efficiency (%)       | ~31.2                                                                                               | ~41.4                                                                                                                                                                           | ~42.4                           | ~33.1                |
| Peak Gain (dBi)      | ~1.2                                                                                                | ~3.6                                                                                                                                                                            | ~4.6                            | ~3.2                 |
| Average Gain (dB)    | ~-5.1                                                                                               | ~-3.9                                                                                                                                                                           | ~-3.8                           | ~-4.8                |
| Impedance (Ohm)      | 50                                                                                                  |                                                                                                                                                                                 |                                 |                      |
| Polarisation         | Linear                                                                                              |                                                                                                                                                                                 |                                 |                      |
| Radiation Pattern    | Omni-Directional                                                                                    |                                                                                                                                                                                 |                                 |                      |
| Max. Input Power (W) | 35                                                                                                  |                                                                                                                                                                                 |                                 |                      |
| Connector Type       | SMA-Male Standard (Other Connectors Available)                                                      |                                                                                                                                                                                 |                                 |                      |
| Cable Length         | 300 cm Standard (Any Cable Length Available)                                                        |                                                                                                                                                                                 |                                 |                      |
| Cable Type           | LL195 Standard (Other Cables Available)                                                             |                                                                                                                                                                                 |                                 |                      |

**Cable 3**

| Parameters           | 2.4/5.0/6.0 GHz ISM Antenna                       |           |           |
|----------------------|---------------------------------------------------|-----------|-----------|
| Standards            | WiFi, BT, ZigBee, ISM                             |           |           |
| Band (MHz)           | 2.4 GHz                                           | 5.0 GHz   | 6.0 GHz   |
| Frequency (MHz)      | 2410-2490                                         | 4920-5925 | 5925-7125 |
| Return Loss (dB)     | ~-10.4                                            | ~-13.6    | ~-11.6    |
| VSWR                 | ~1.9:1                                            | ~1.6:1    | ~1.9:1    |
| Efficiency (%)       | ~58                                               | ~64       | ~65       |
| Peak Gain (dBi)      | ~5.6                                              | ~5.5      | ~3.8      |
| Average Gain (dB)    | ~-2.3                                             | ~-1.9     | ~-1.8     |
| Impedance (Ohm)      | 50                                                |           |           |
| Polarisation         | Linear                                            |           |           |
| Radiation Pattern    | Omni-Directional                                  |           |           |
| Max. Input Power (W) | 25                                                |           |           |
| Connector Type       | SMA-Male-RP Standard (Other Connectors Available) |           |           |
| Cable Length         | 300 cm Standard (Any Cable Length Available)      |           |           |
| Cable Type           | LL195 Standard (Other Cables Available)           |           |           |

**Cable 4**

| Parameters           | 2.4/5.0/6.0 GHz ISM Antenna                       |           |           |
|----------------------|---------------------------------------------------|-----------|-----------|
| Standards            | WiFi, BT, ZigBee, ISM                             |           |           |
| Band (MHz)           | 2.4 GHz                                           | 5.0 GHz   | 6.0 GHz   |
| Frequency (MHz)      | 2410-2490                                         | 4920-5925 | 5925-7125 |
| Return Loss (dB)     | ~-10.4                                            | ~-13.6    | ~-13.5    |
| VSWR                 | ~1.9:1                                            | ~1.6:1    | ~1.6:1    |
| Efficiency (%)       | ~58                                               | ~64       | ~63.1     |
| Peak Gain (dBi)      | ~5.6                                              | ~5.5      | ~3.6      |
| Average Gain (dB)    | ~-2.3                                             | ~-1.9     | ~-2.0     |
| Impedance (Ohm)      | 50                                                |           |           |
| Polarisation         | Linear                                            |           |           |
| Radiation Pattern    | Omni-Directional                                  |           |           |
| Max. Input Power (W) | 25                                                |           |           |
| Connector Type       | SMA-Male-RP Standard (Other Connectors Available) |           |           |
| Cable Length         | 300 cm Standard (Any Cable Length Available)      |           |           |
| Cable Type           | LL195 Standard (Other Cables Available)           |           |           |

**Antenna Measurement Conditions:**

Mounted on Metal Plate of 30 x 30 cm  
 100 cm of LMR195 Cable  
 Measured in Certified CTIA 3D Anechoic Chamber

Cable 5

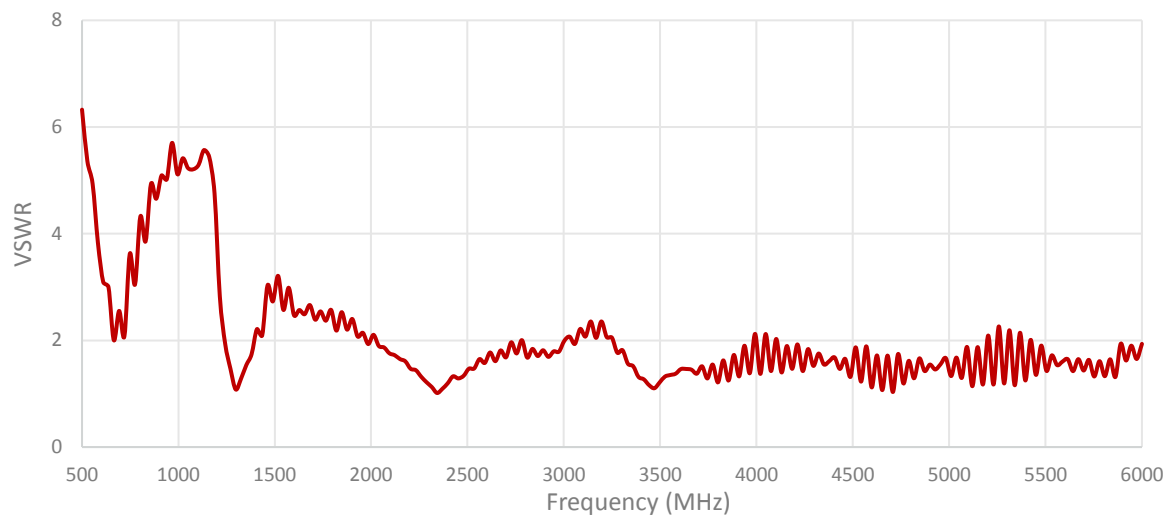
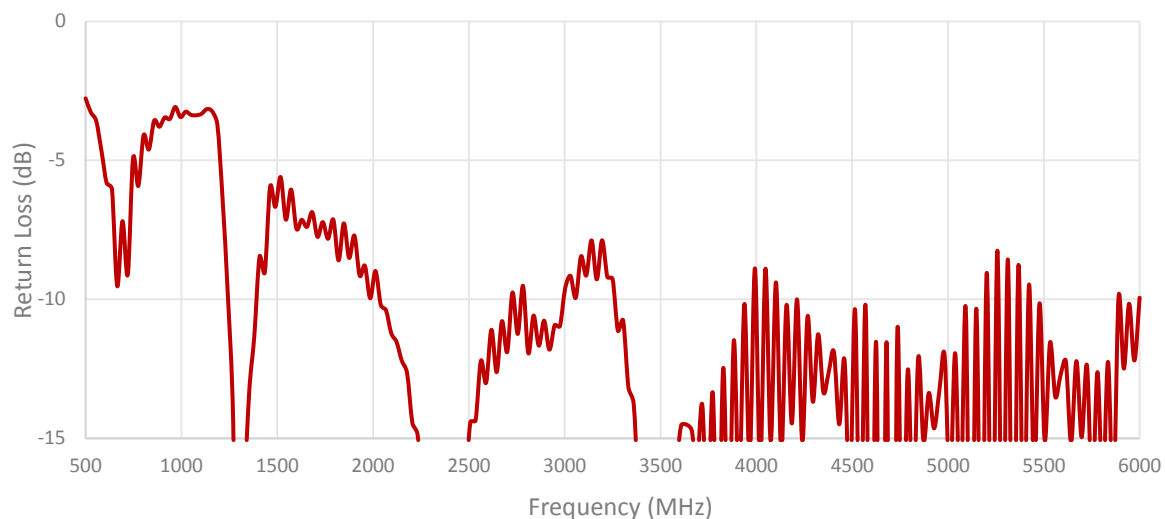
| Parameters                         | GPS/GLONASS Antenna                            |           |
|------------------------------------|------------------------------------------------|-----------|
| <b>Standard</b>                    | GPS/QZSS/Galileo                               | GLONASS   |
| <b>Band (MHz)</b>                  | 1575                                           | 1602      |
| <b>Frequency(MHz)</b>              | 1575.42                                        | 1598-1610 |
| <b>Return Loss (dB)</b>            | <=-14                                          |           |
| <b>VSWR</b>                        | <=1.5:1                                        |           |
| <b>Impedance</b>                   | 50                                             |           |
| <b>Radiation Pattern</b>           | Hemispherical                                  |           |
| <b>Polarization</b>                | RHCP                                           |           |
| <b>Saw Filter</b>                  | Post-Filter                                    |           |
| <b>Active Gain (dB)</b>            | 23 @ 3 V, 24 @ 5 V                             |           |
| <b>Noise Figure (dB)</b>           | 1.2                                            |           |
| <b>Voltage (V)</b>                 | 2.7 - 5.5                                      |           |
| <b>Current Consumption (mA)</b>    | 15 - 25                                        |           |
| <b>Power Consumption (mW)</b>      | 40.5 - 137.5                                   |           |
| <b>Out of Band Rejection (dBc)</b> | ~32                                            |           |
| <b>Connector Type</b>              | SMA-Male Standard (Other Connectors Available) |           |
| <b>Cable Length</b>                | 300 cm Standard (Any Cable Length Available)   |           |
| <b>Cable Type</b>                  | LL100 Standard (Other Cables Available)        |           |

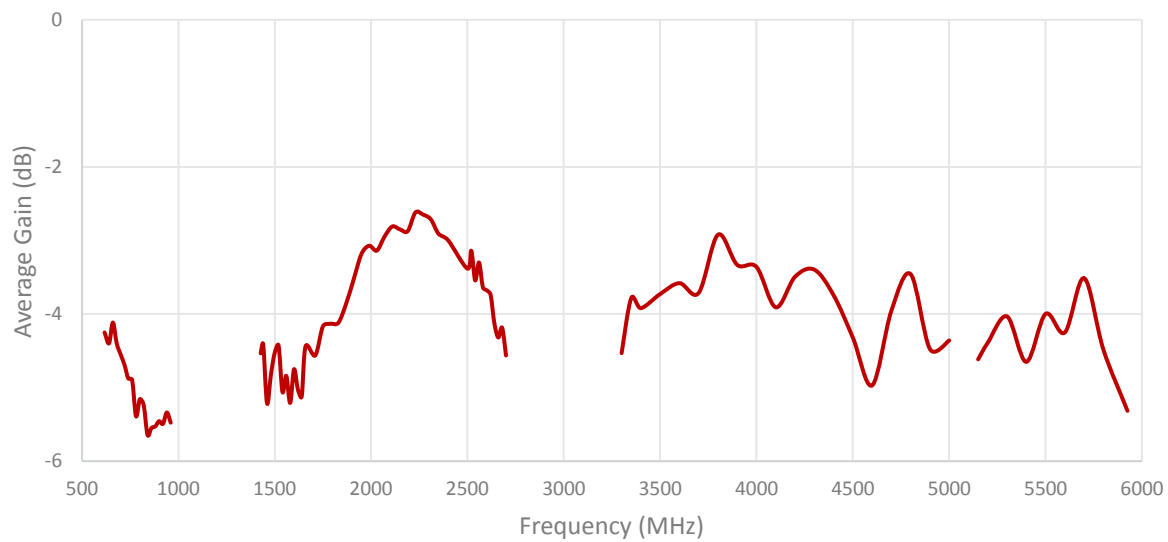
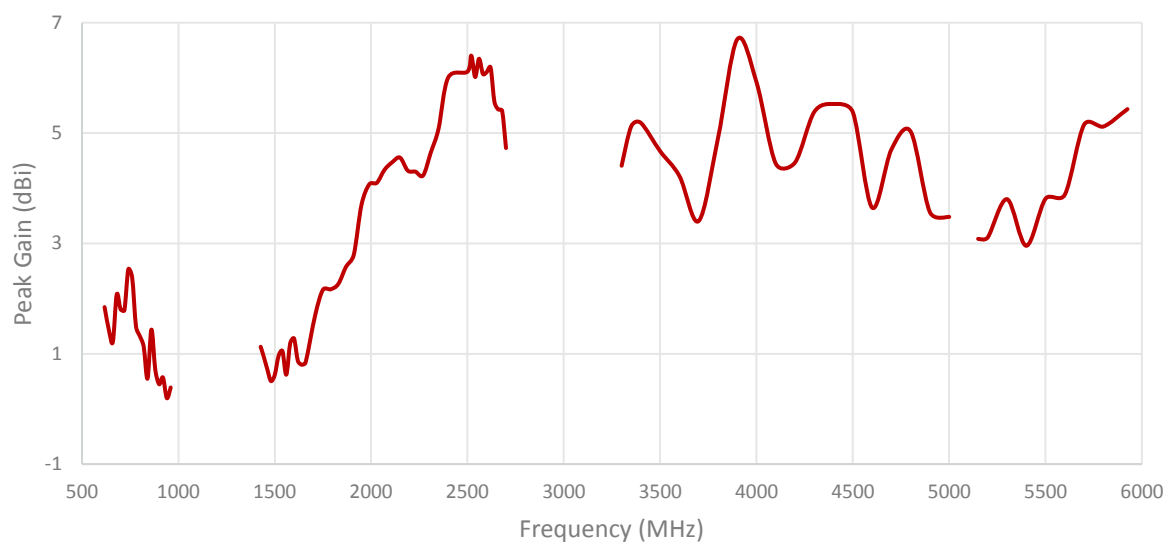
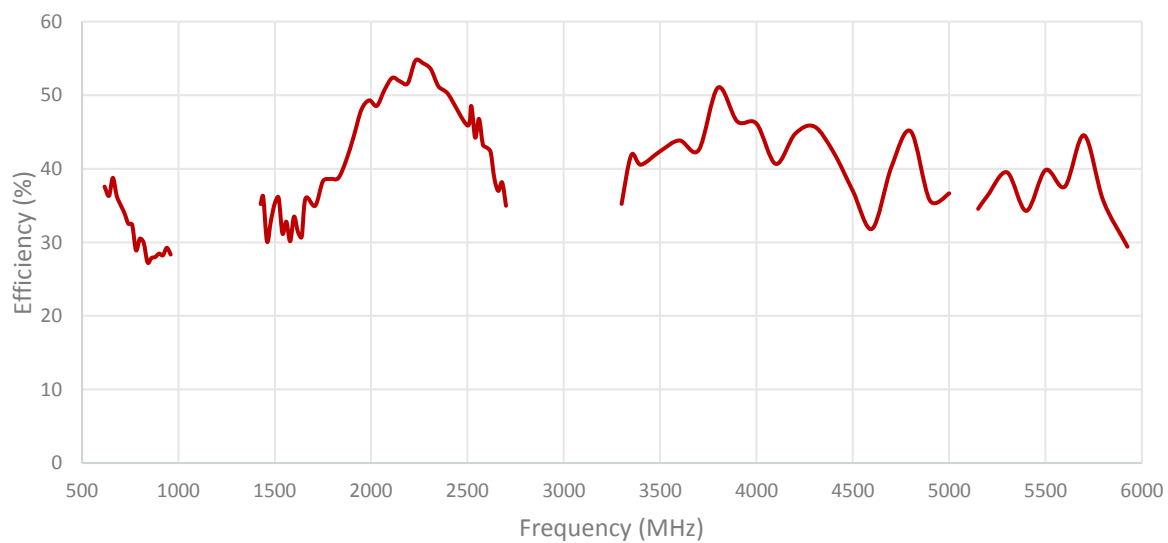
## 2. Mechanical and environmental specifications

| Specifications                   | 2J7186BGFa       |
|----------------------------------|------------------|
| <b>Mounting Type</b>             | Screw Mount      |
| <b>Dimensions (mm)</b>           | Ø 96 x H 130     |
| <b>Max. Tighten Torque (Nm)</b>  | 15 Nm            |
| <b>Radome</b>                    | ASA              |
| <b>Radome color</b>              | White, Black     |
| <b>Antenna Base</b>              | Aluminium alloy  |
| <b>Operating Temperature (C)</b> | -40 to +85       |
| <b>Storage Temperature (C)</b>   | -40 to +85       |
| <b>Substance Compliance</b>      | RoHS             |
| <b>Certificates</b>              | IP67, IP69, IK09 |

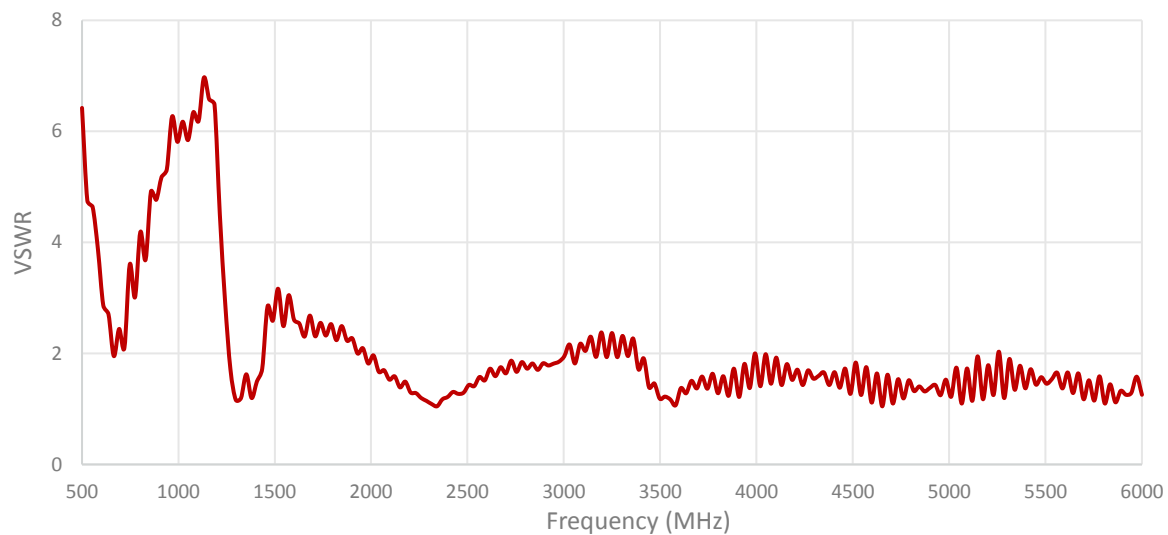
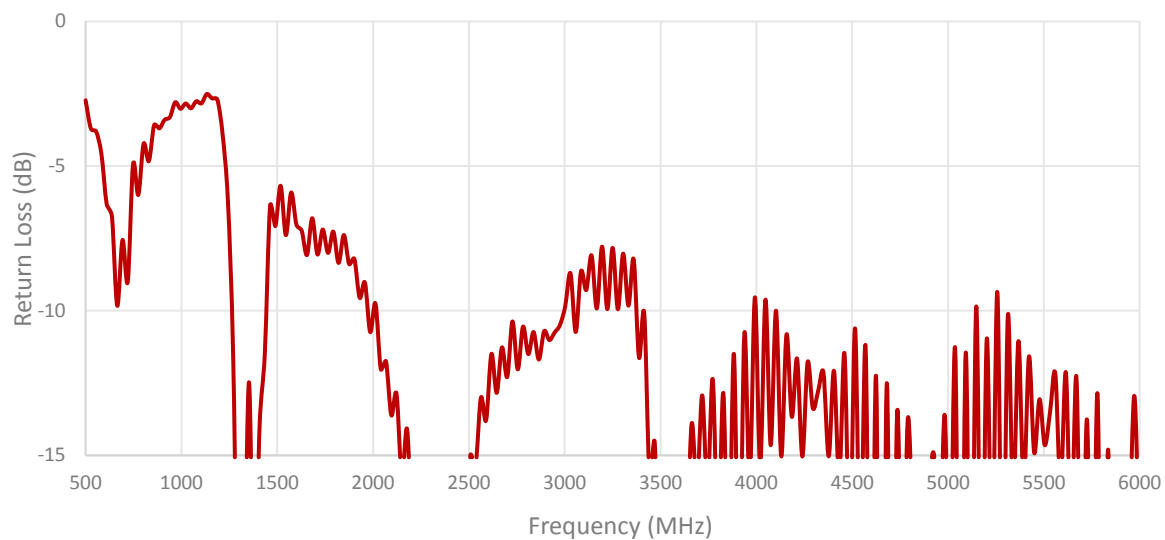
### 3. Antenna parameters

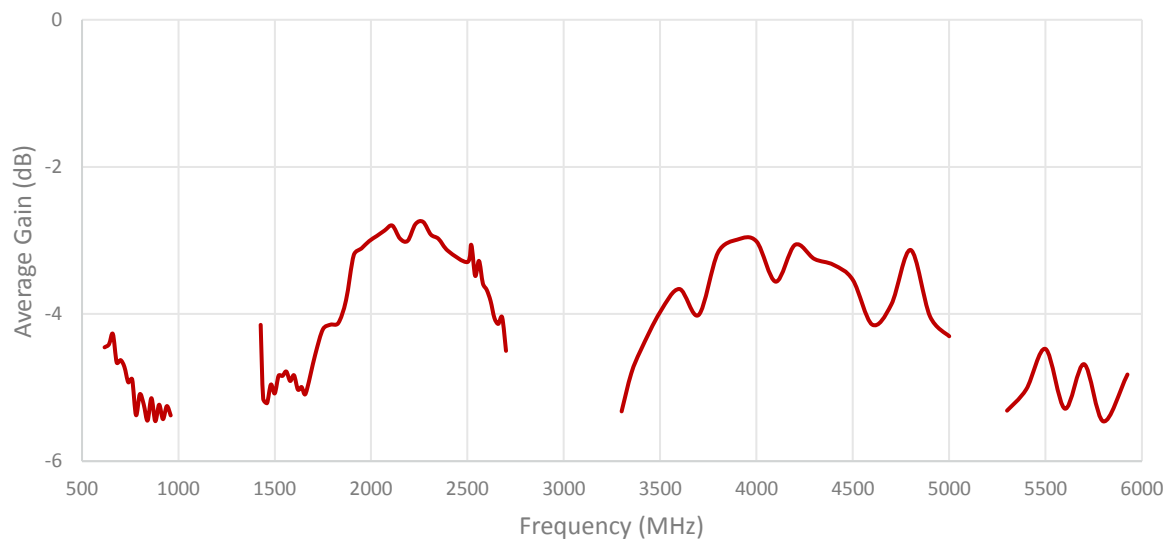
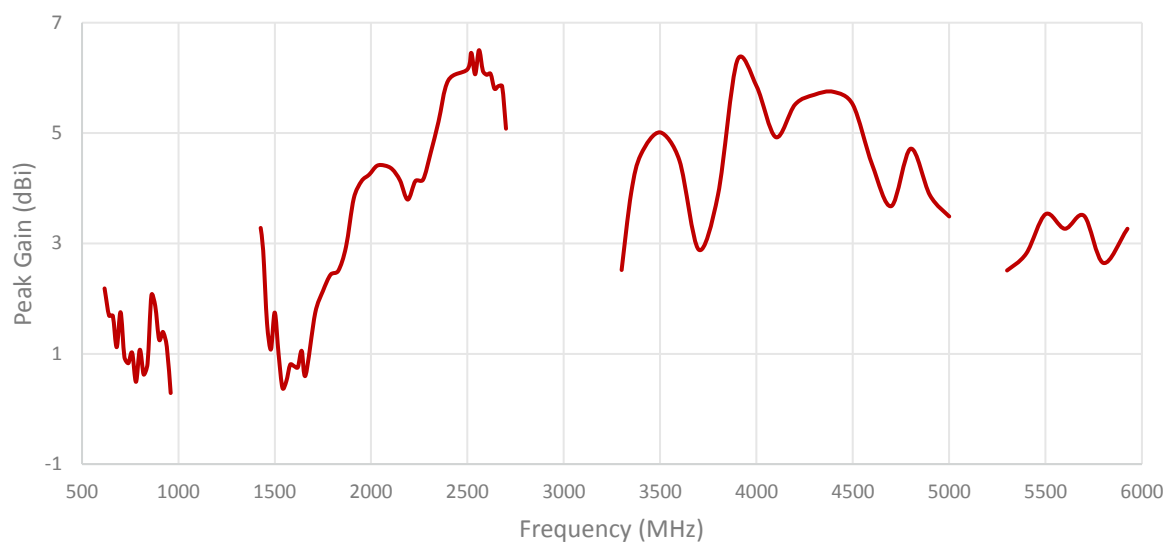
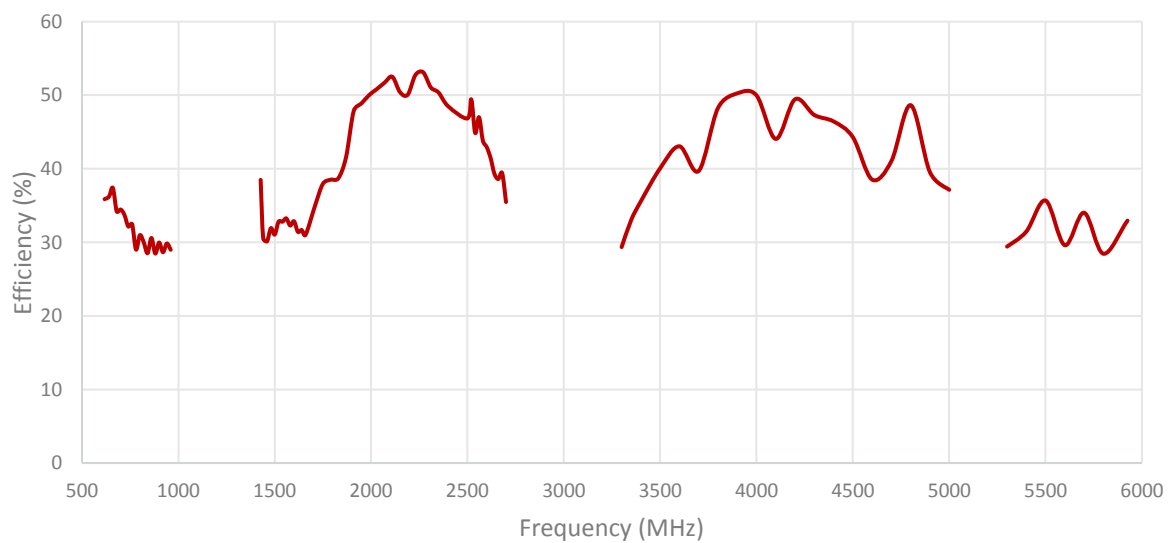
**Cable 1: 5GNR**



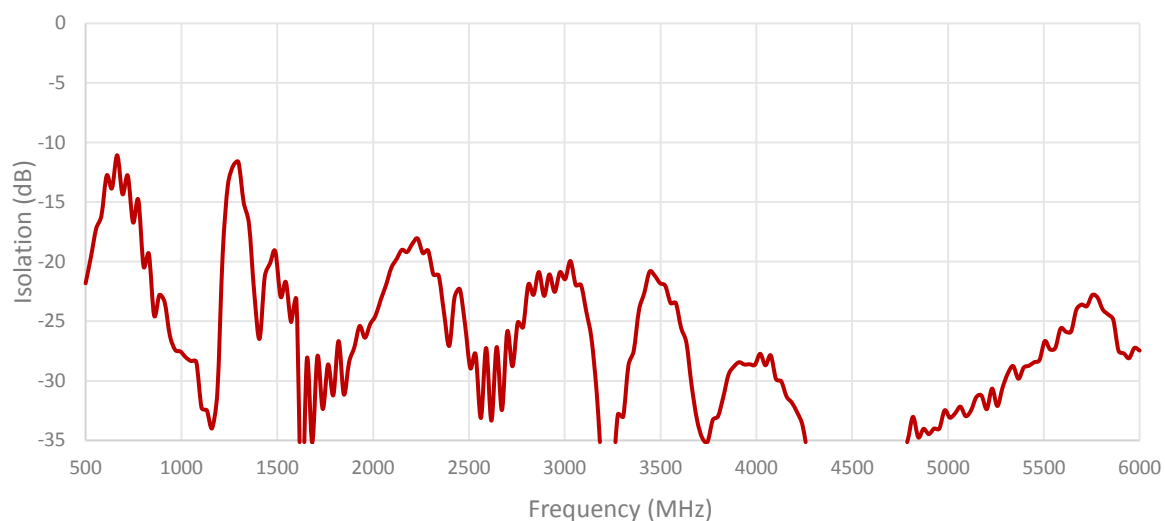


**Cable 2: 5GNR**

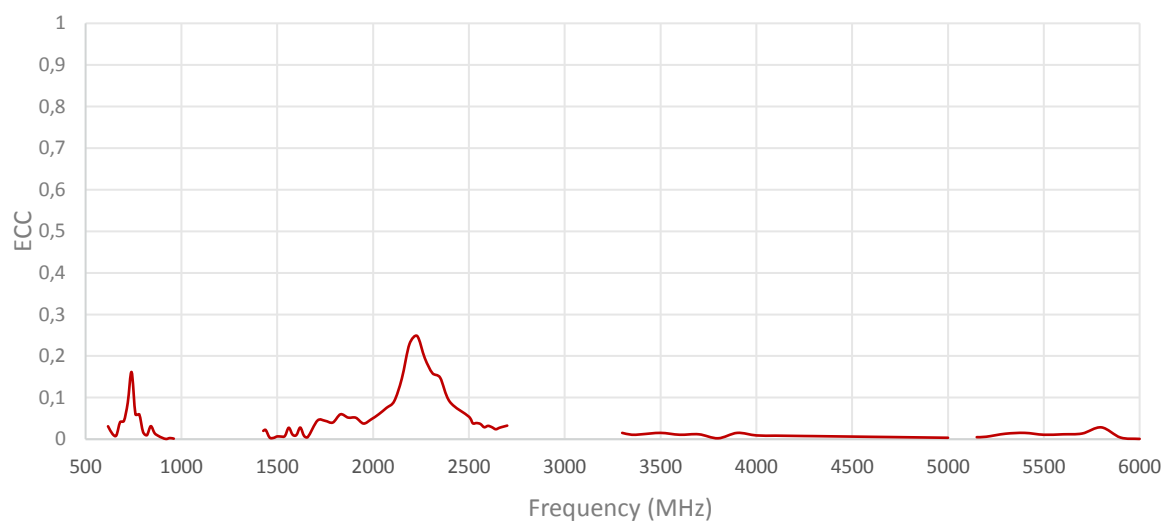




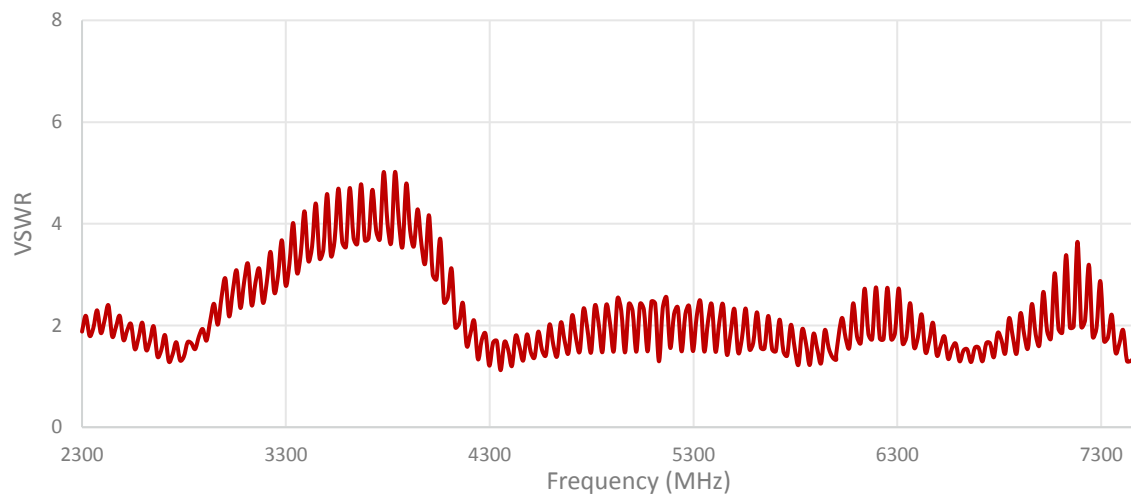
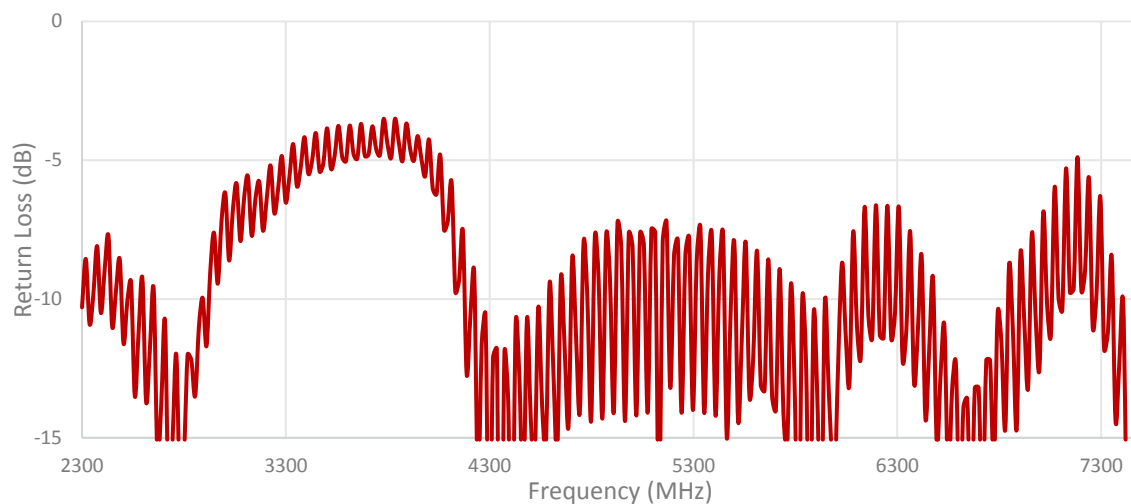
## ISOLATION FOR CABLES 1 AND 2

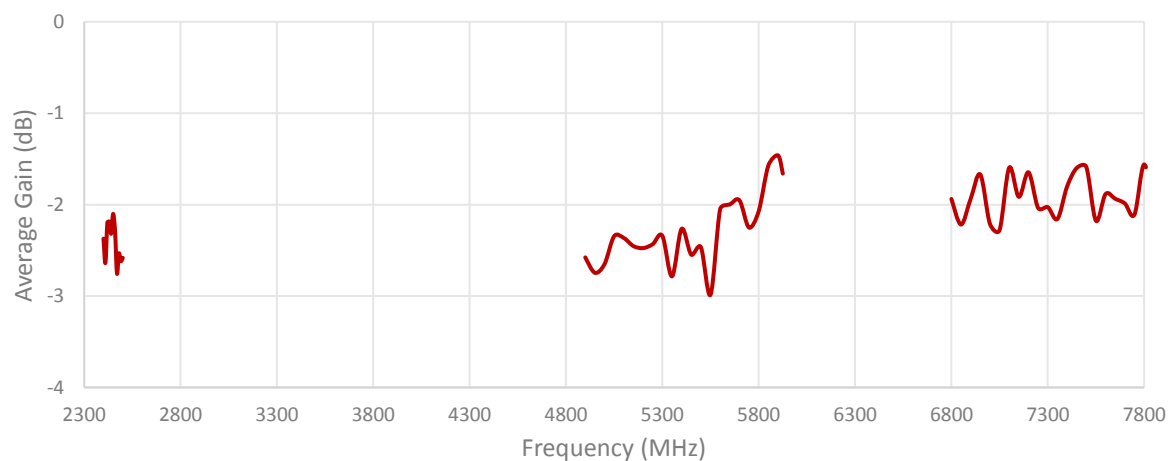
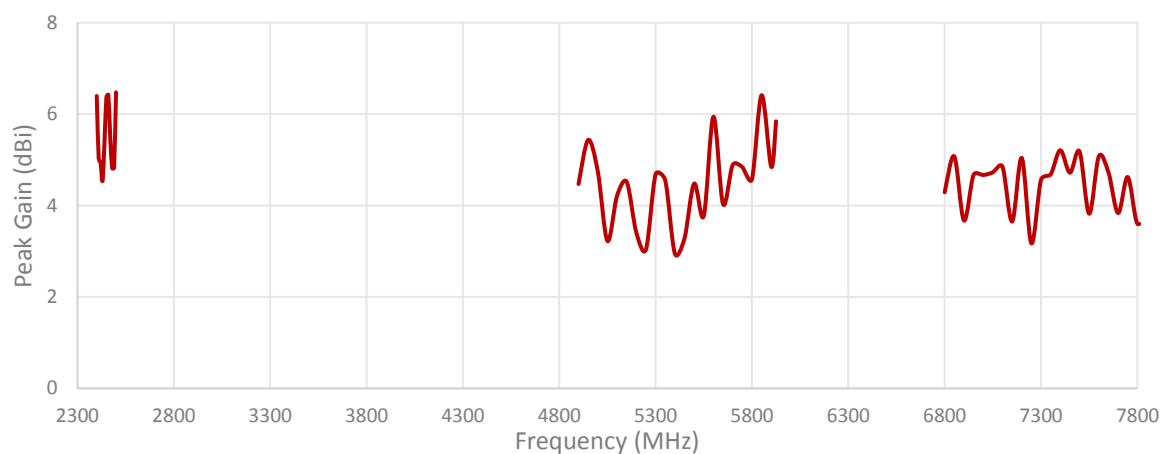
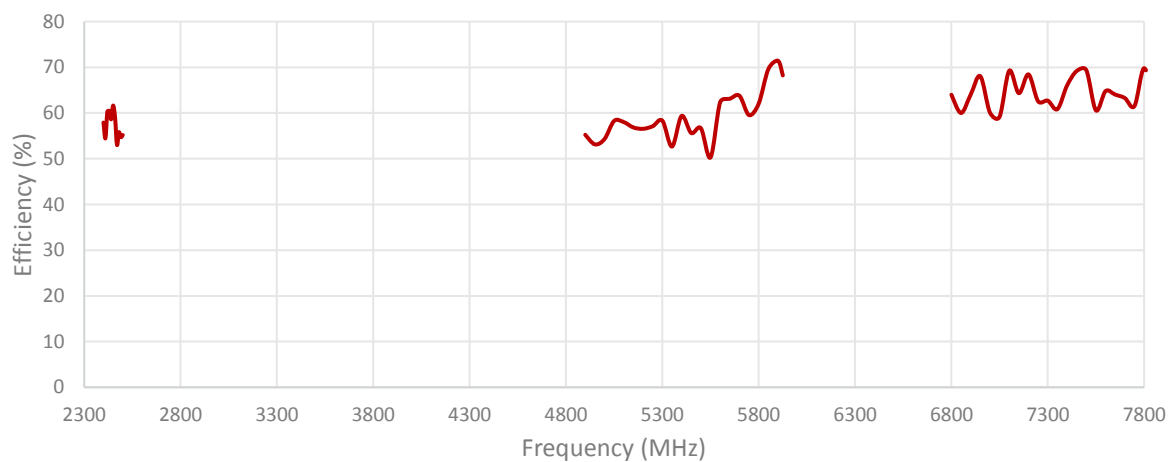


## ENVELOPE CORRELATION COEFFICIENT FOR CABLES 1 AND 2

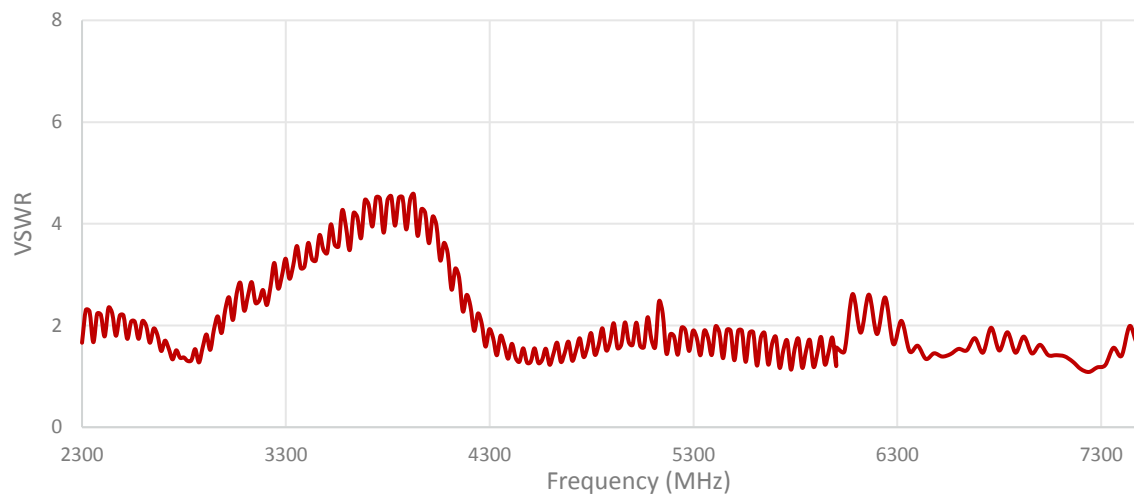
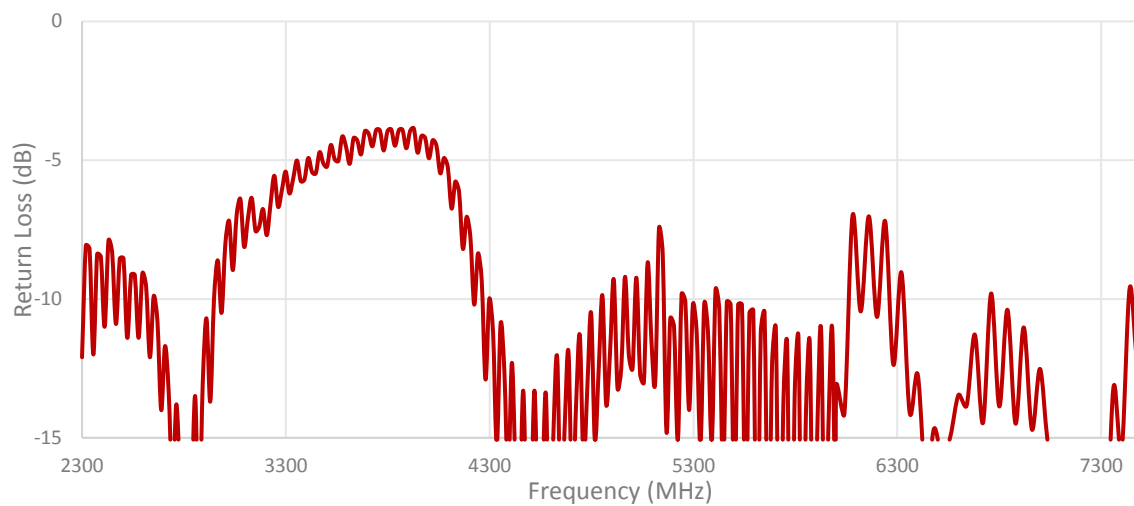


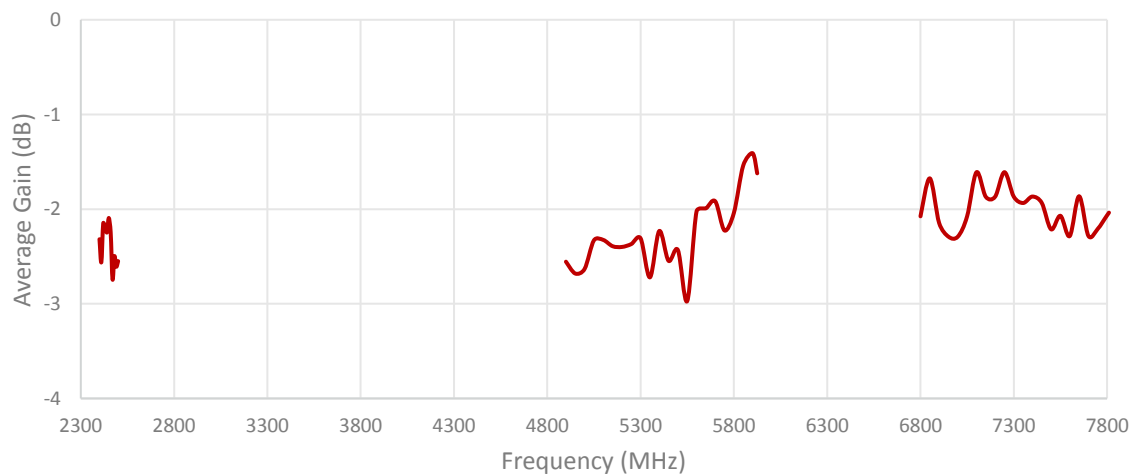
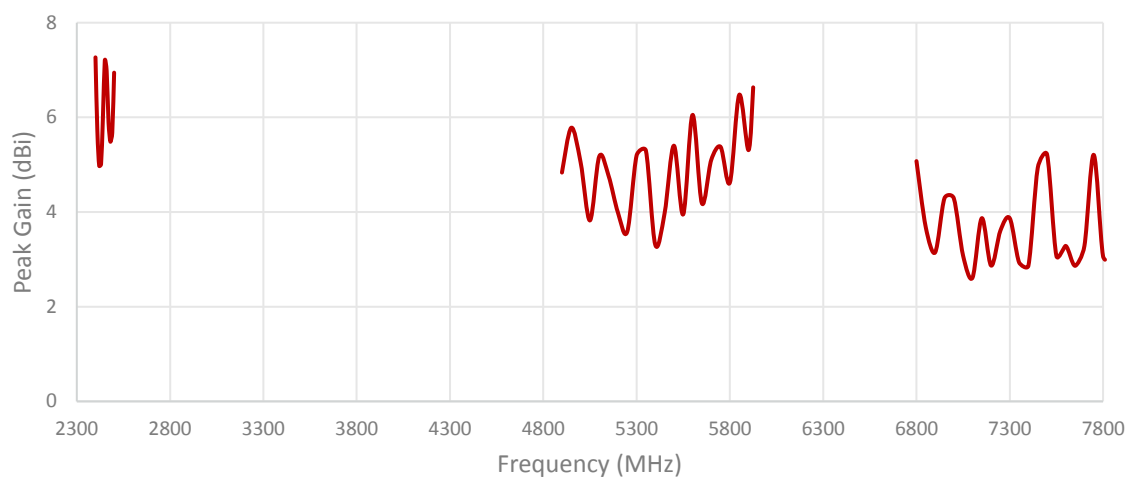
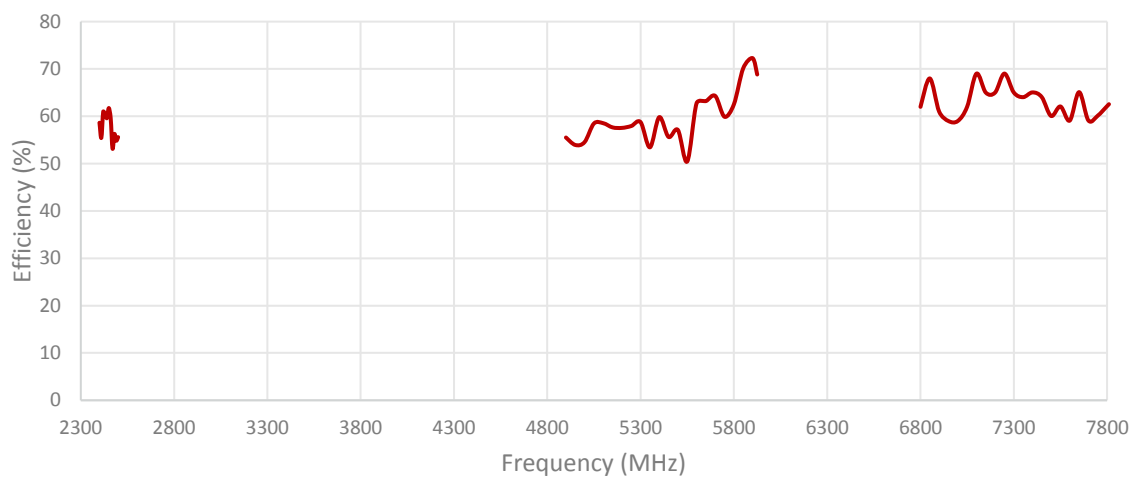
**Cable 3: 2.4/5.0/6.0 GHz ISM**



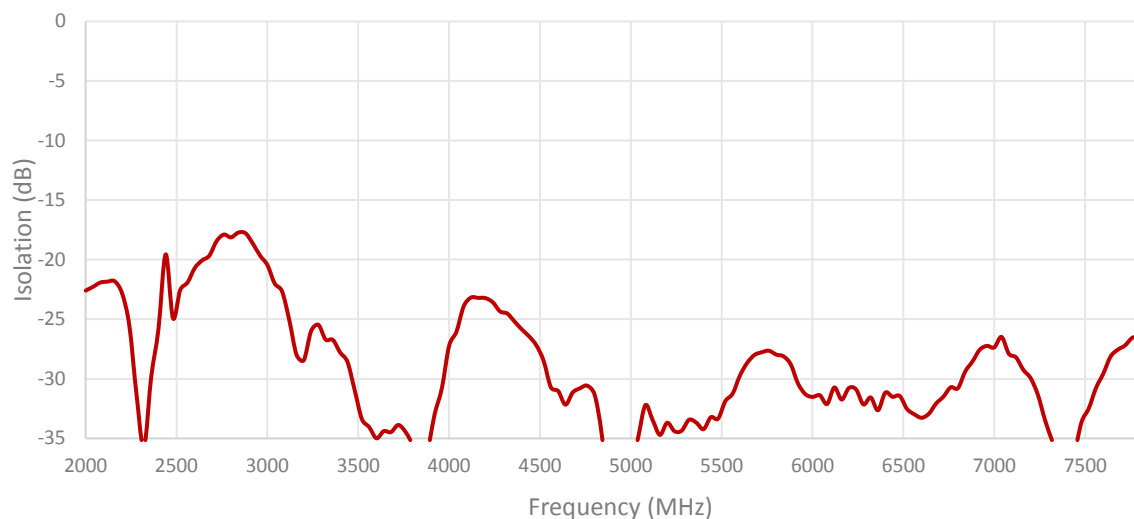


**Cable 4: 2.4/5.0/6.0 GHz ISM**

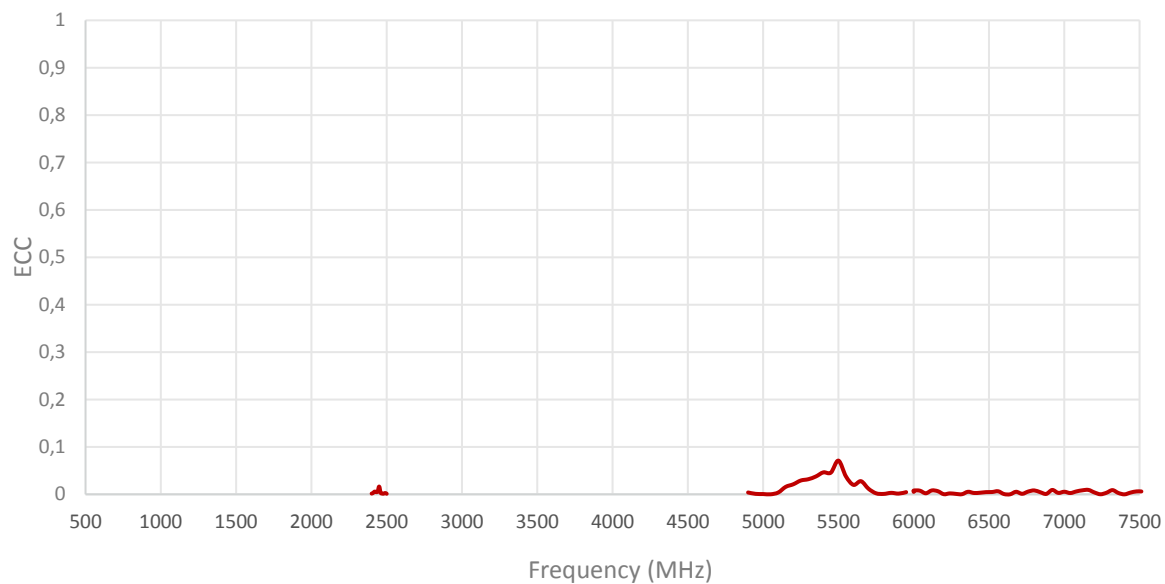


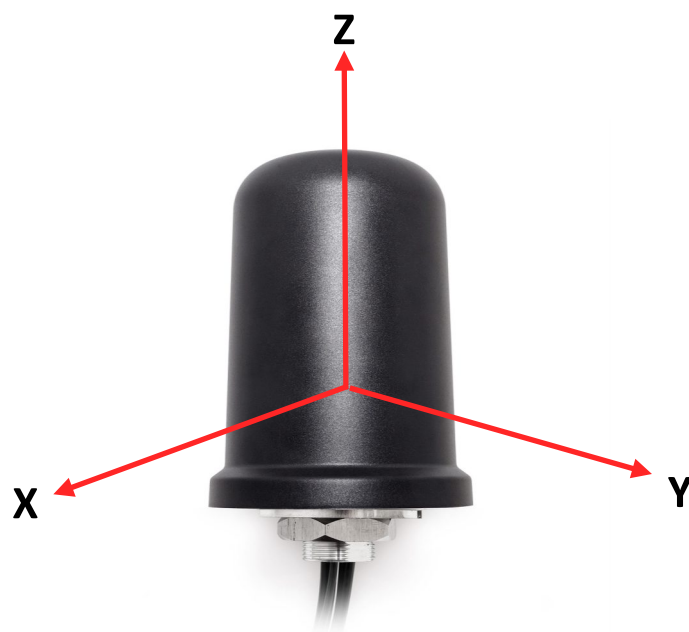


#### ISOLATION FOR CABLES 3 AND 4



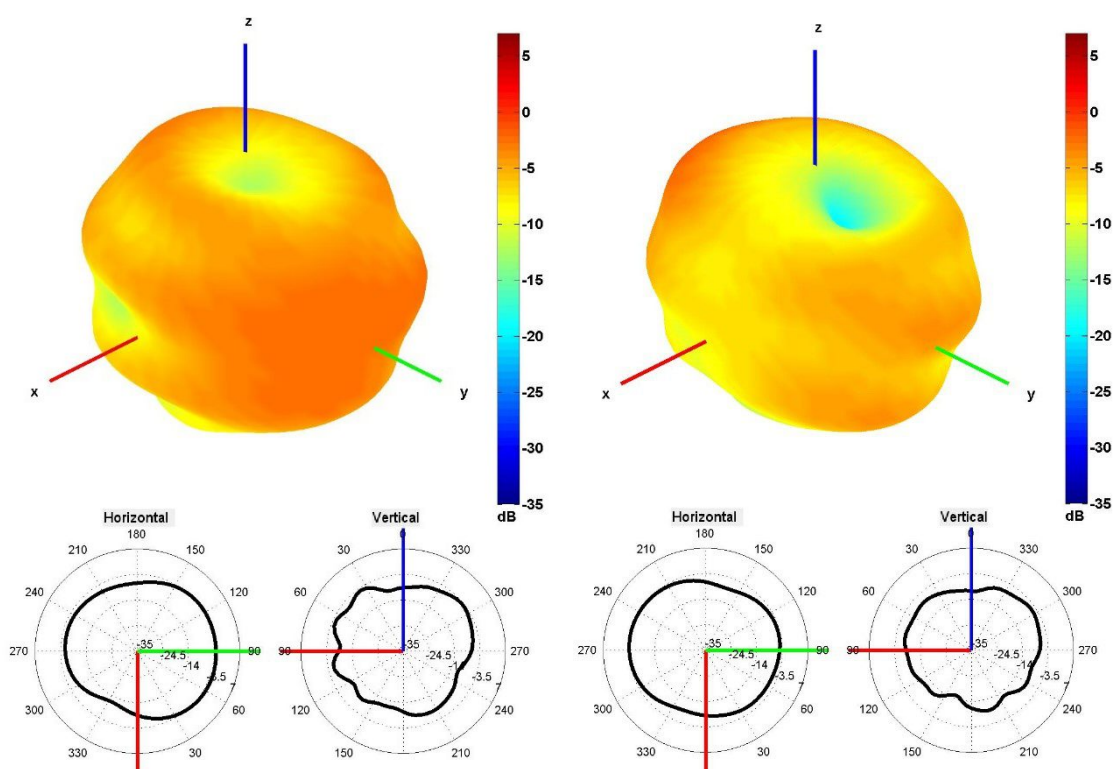
#### ENVELOPE CORRELATION COEFFICIENT FOR CABLES 3 AND 4



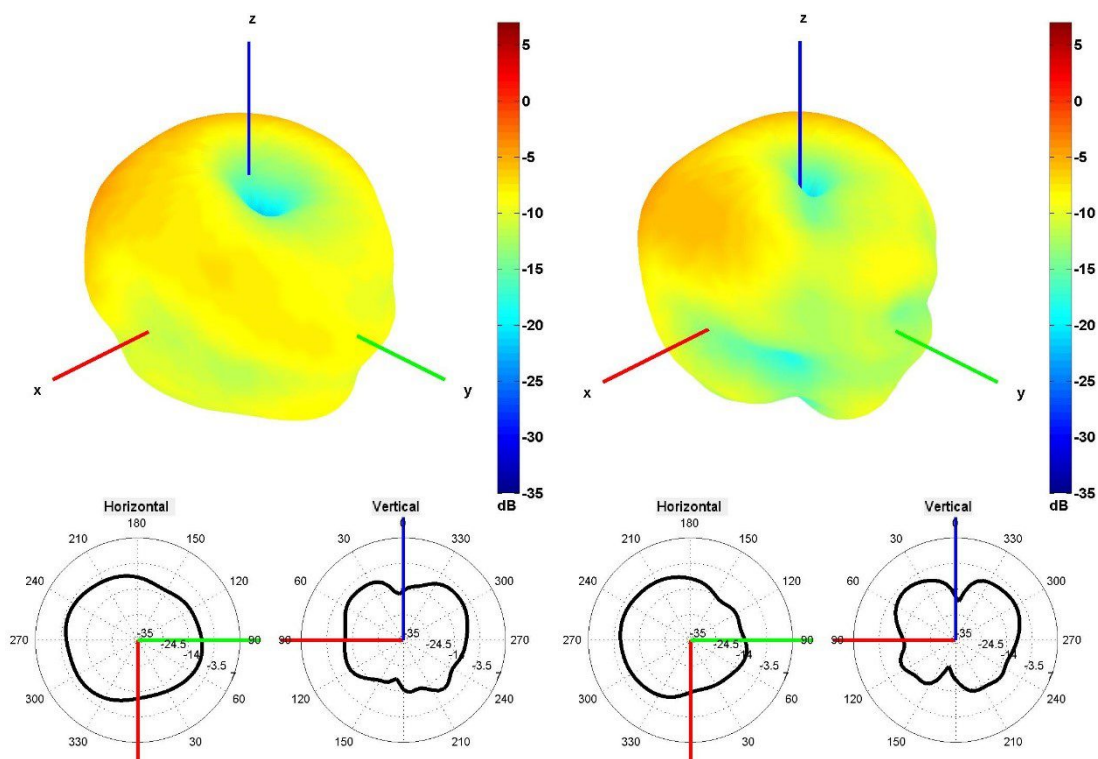


Radiation pattern reference

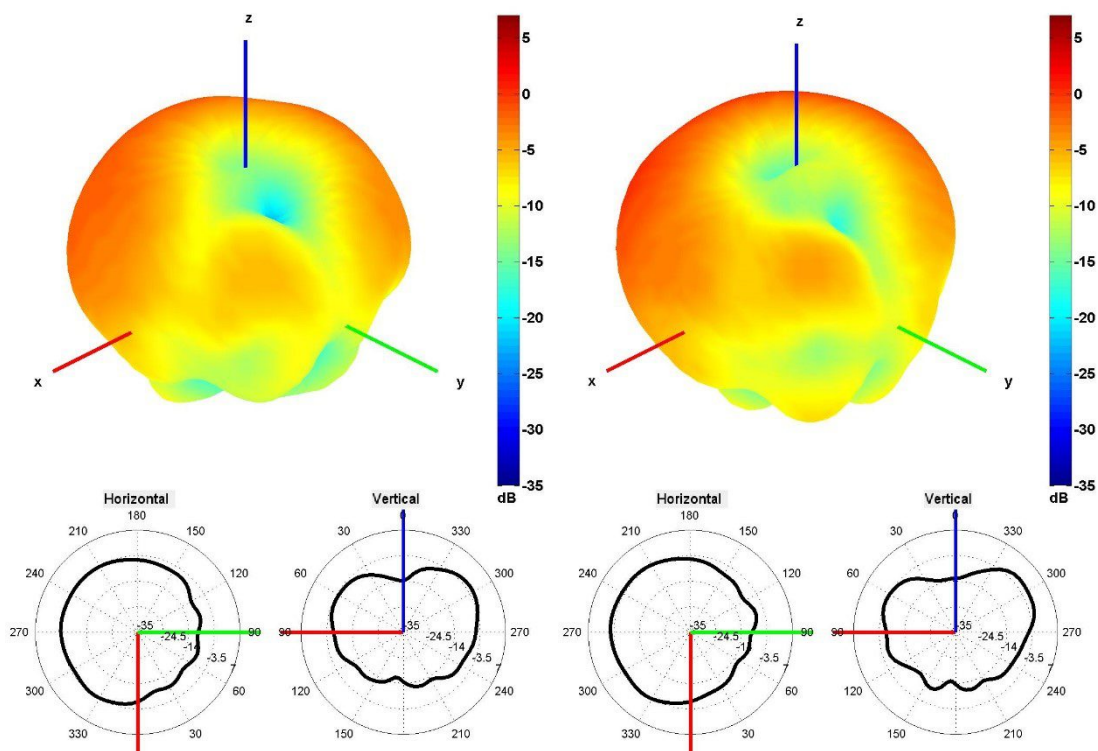
Cable 1: 5GNR



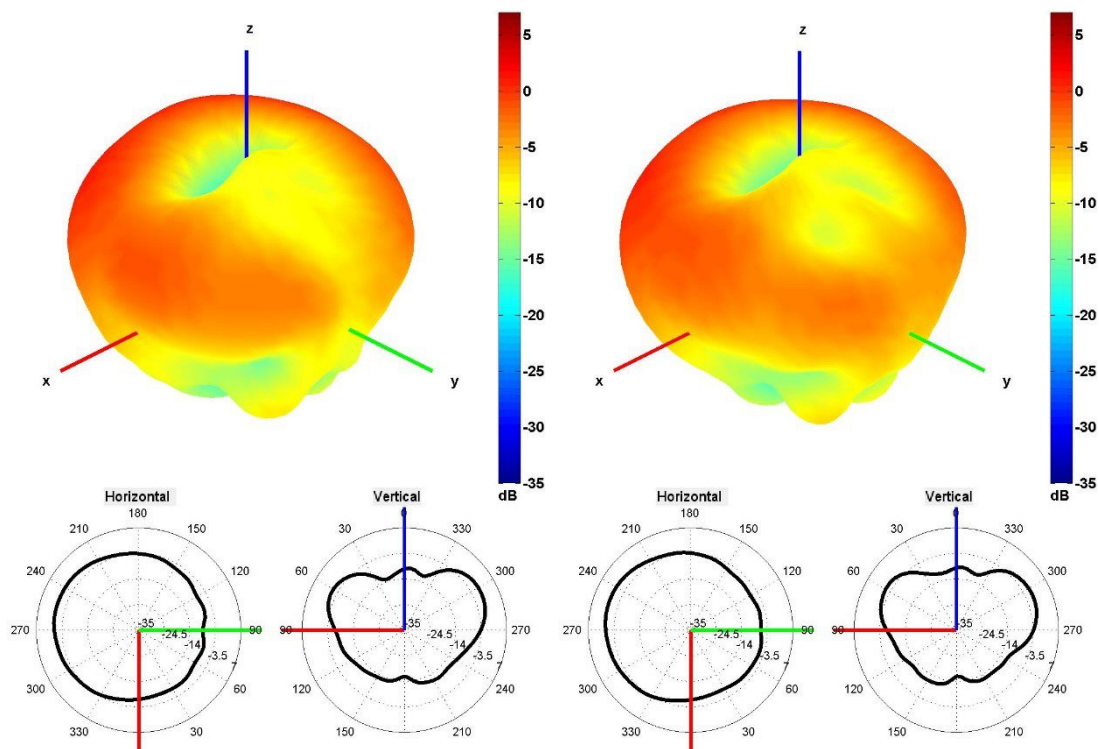
650 and 750 MHz Radiation pattern



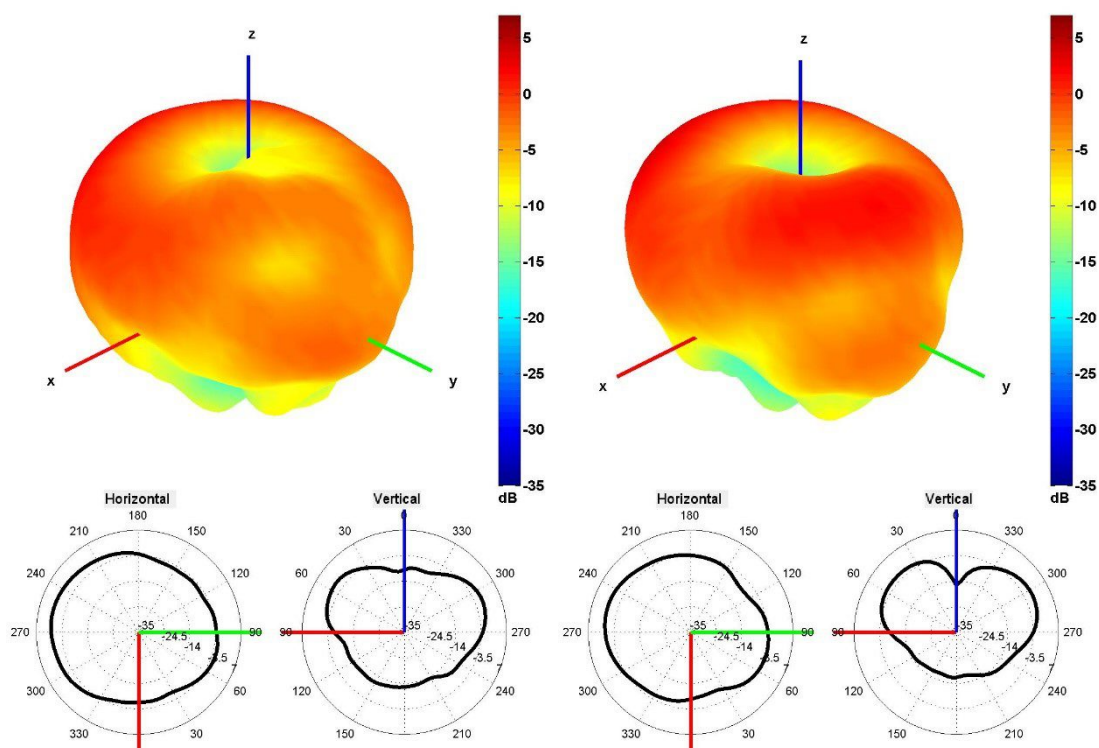
850 and 940 MHz Radiation pattern



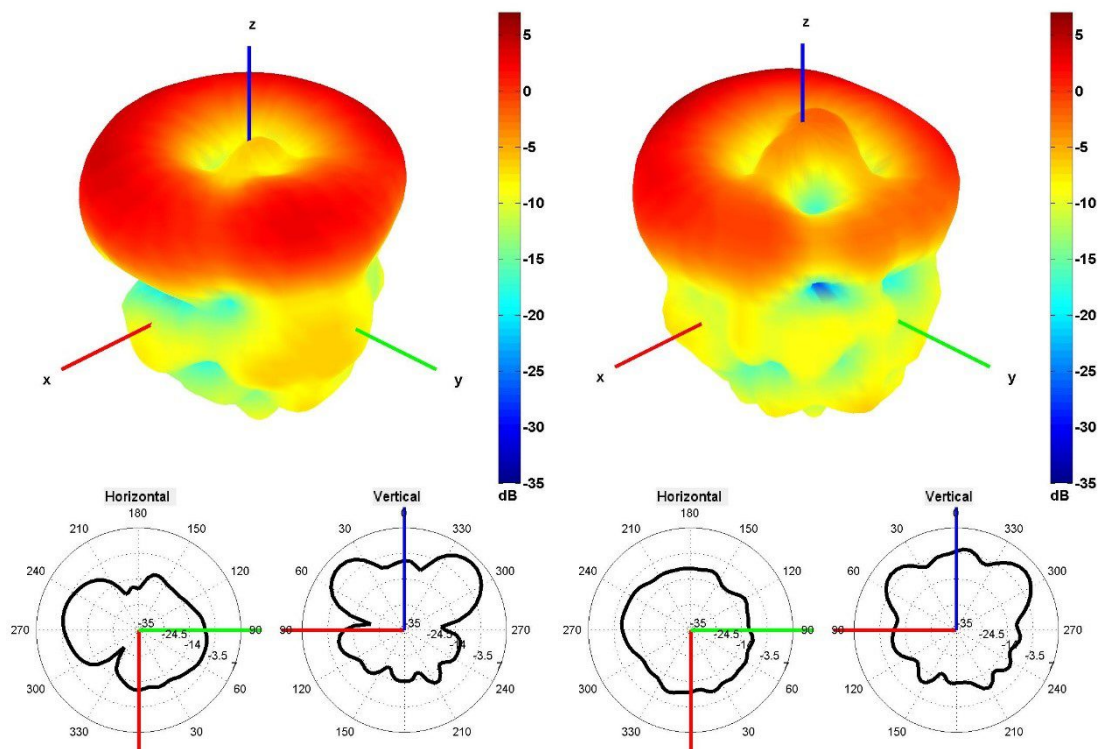
1500 and 1600 MHz Radiation pattern



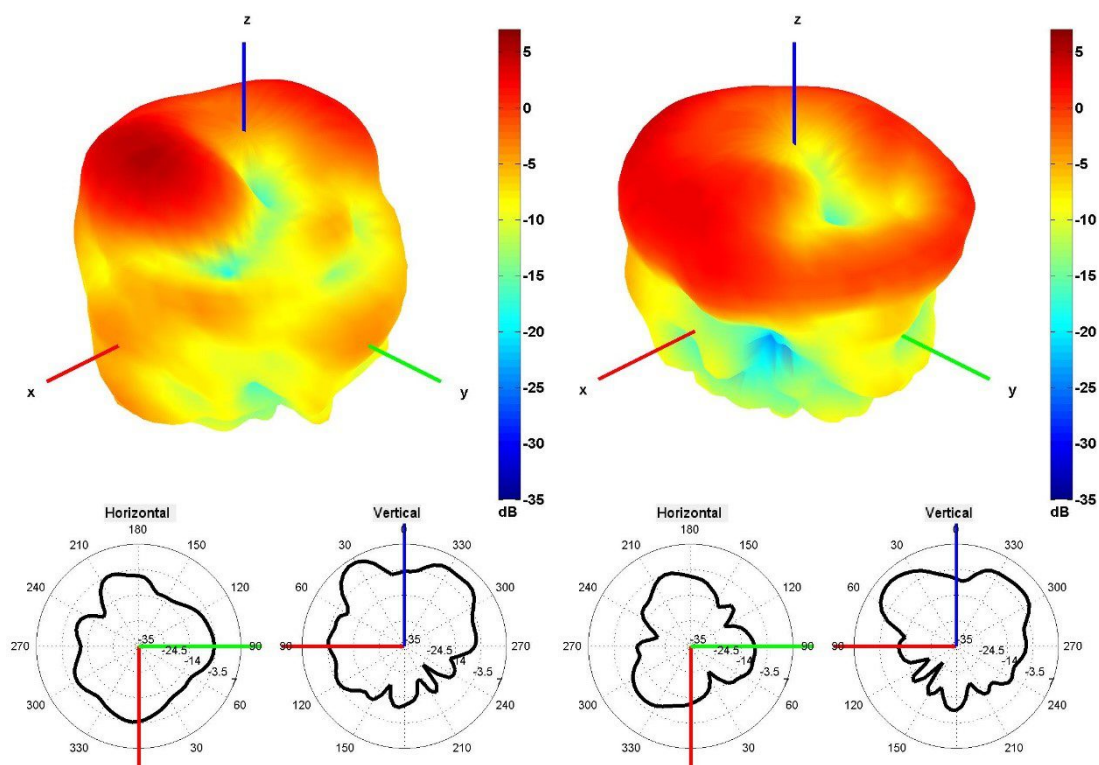
1750 and 1850 MHz Radiation pattern



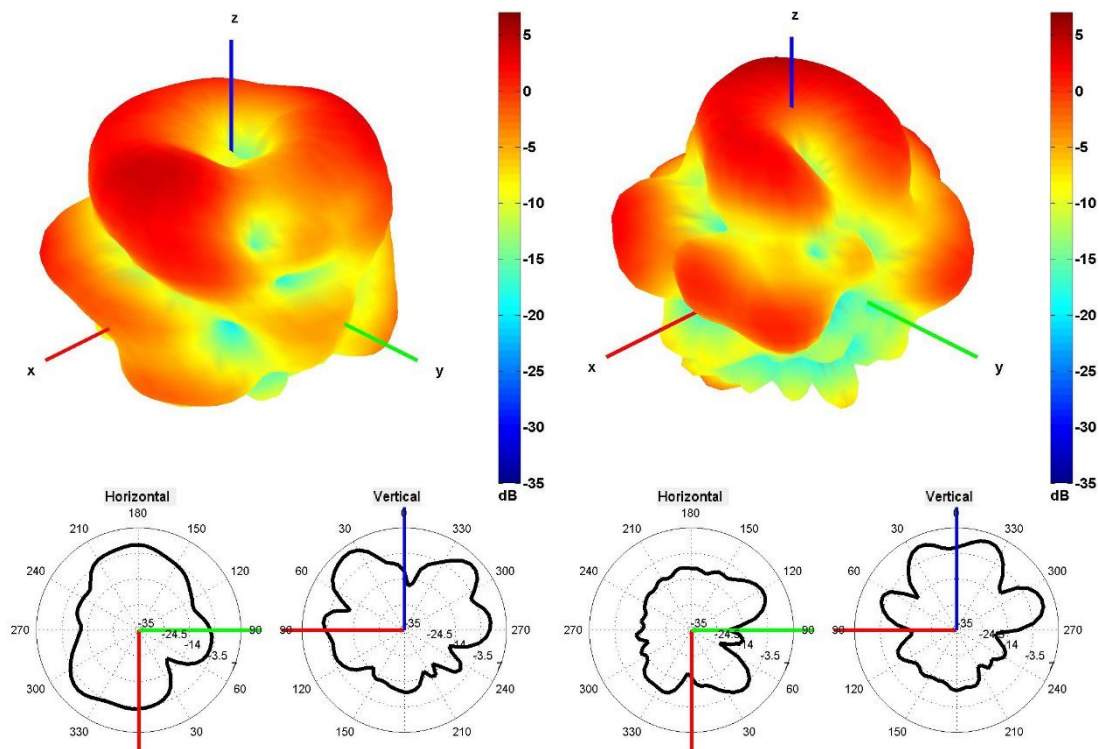
1950 and 2100 MHz Radiation pattern



2350 and 2600 MHz Radiation pattern

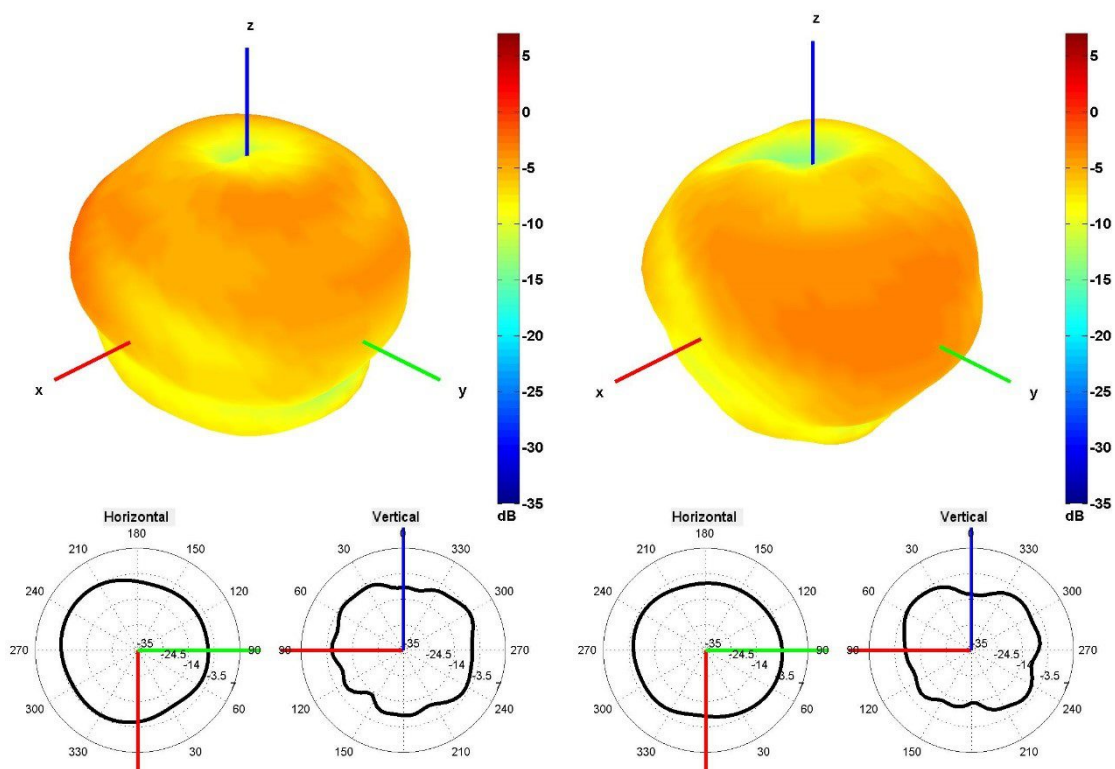


3350 and 3600 MHz Radiation pattern

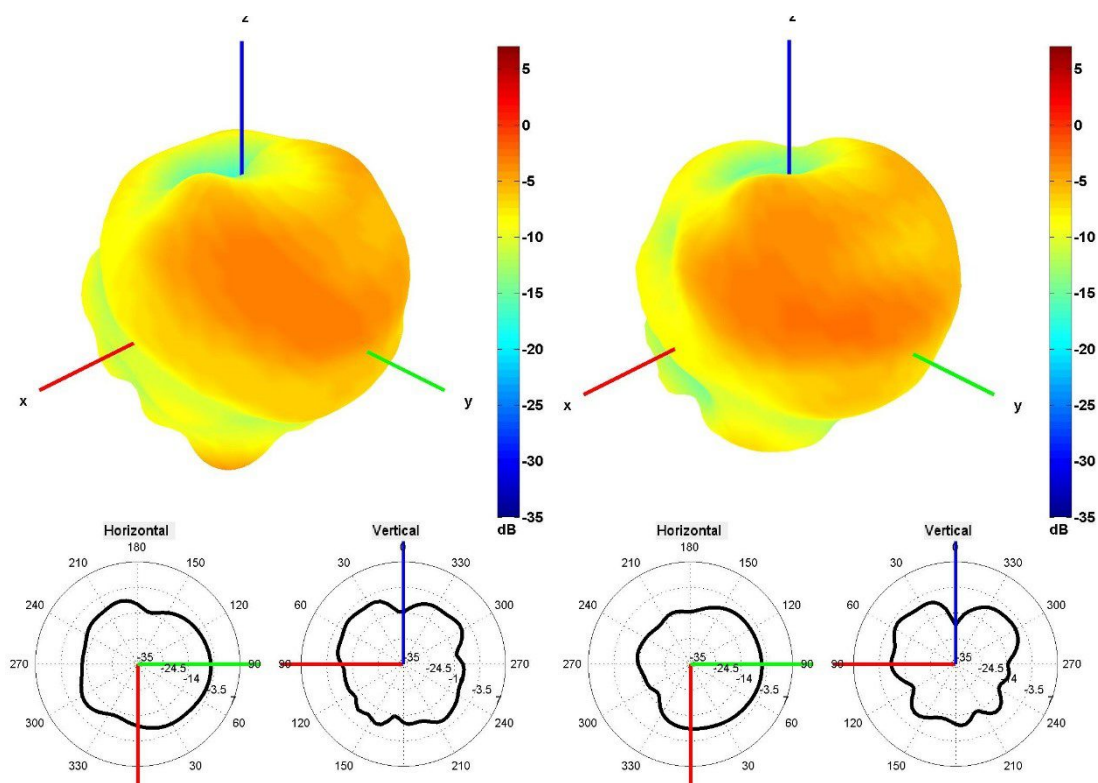


4500 and 5500 MHz Radiation pattern

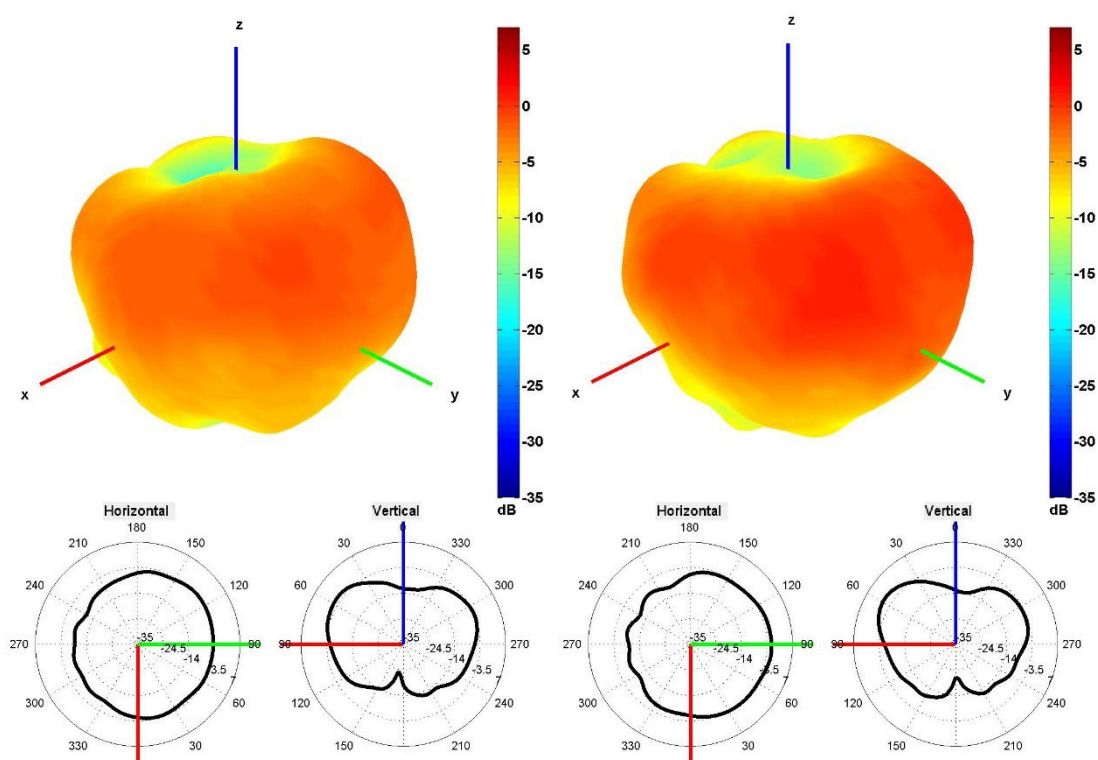
Cable 2: 5GNR



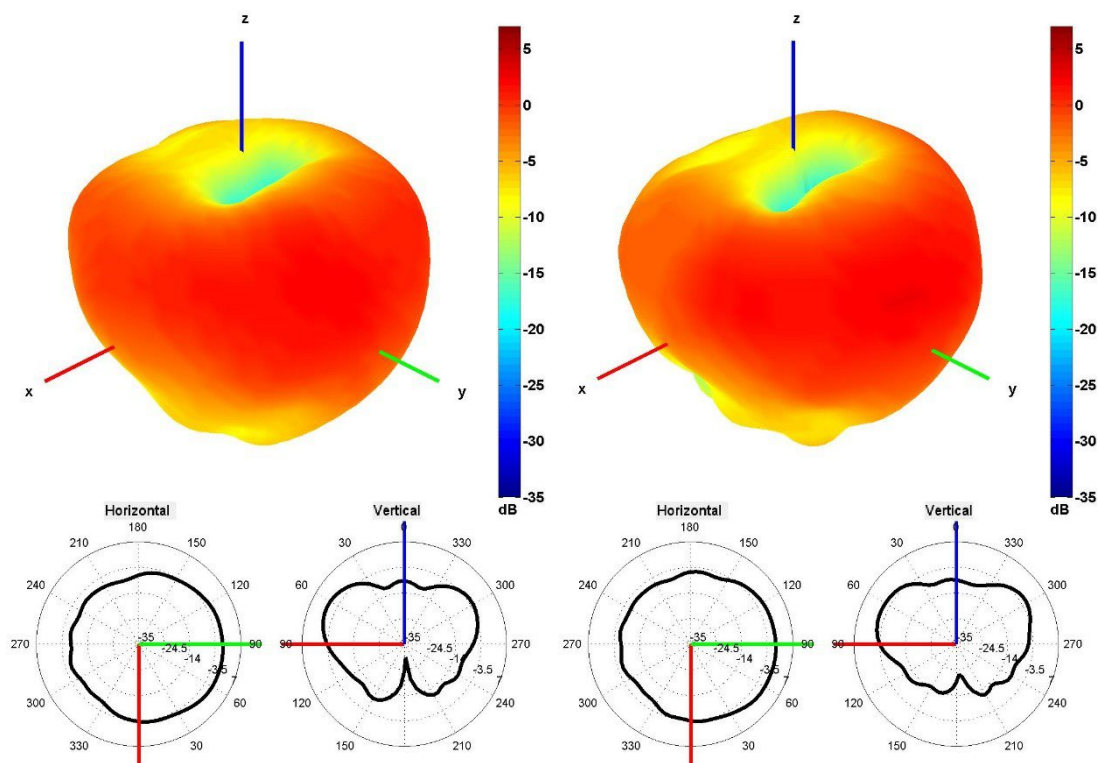
650 and 750 MHz Radiation pattern



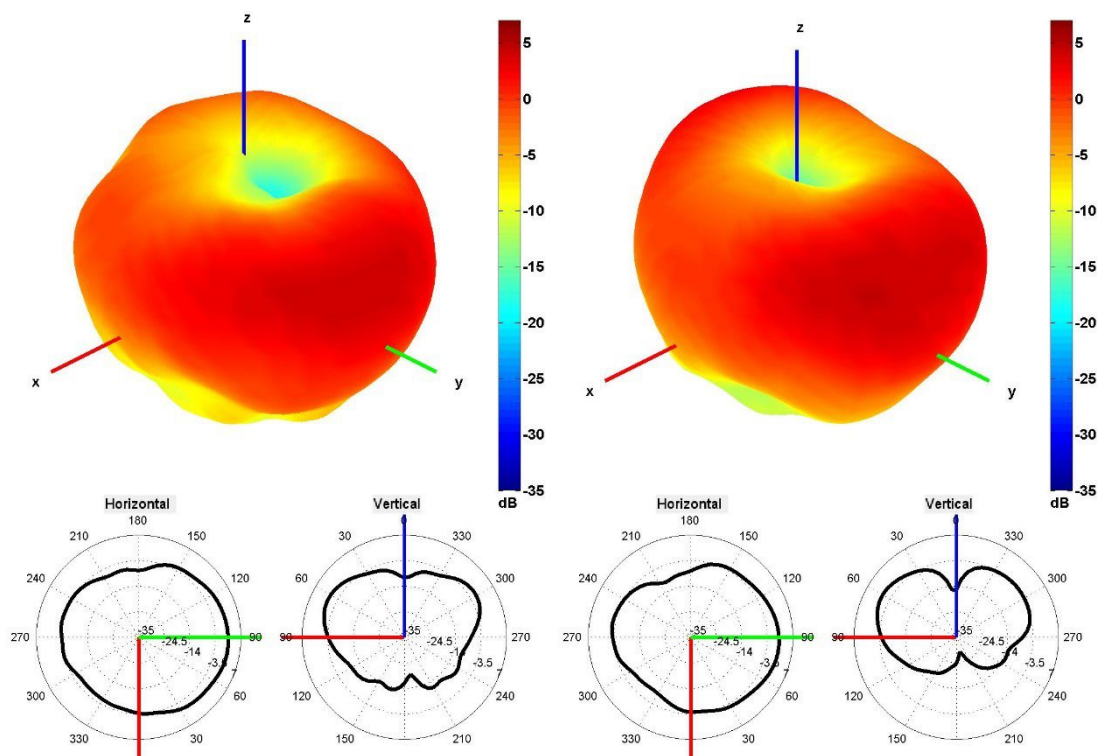
850 and 940 MHz Radiation pattern



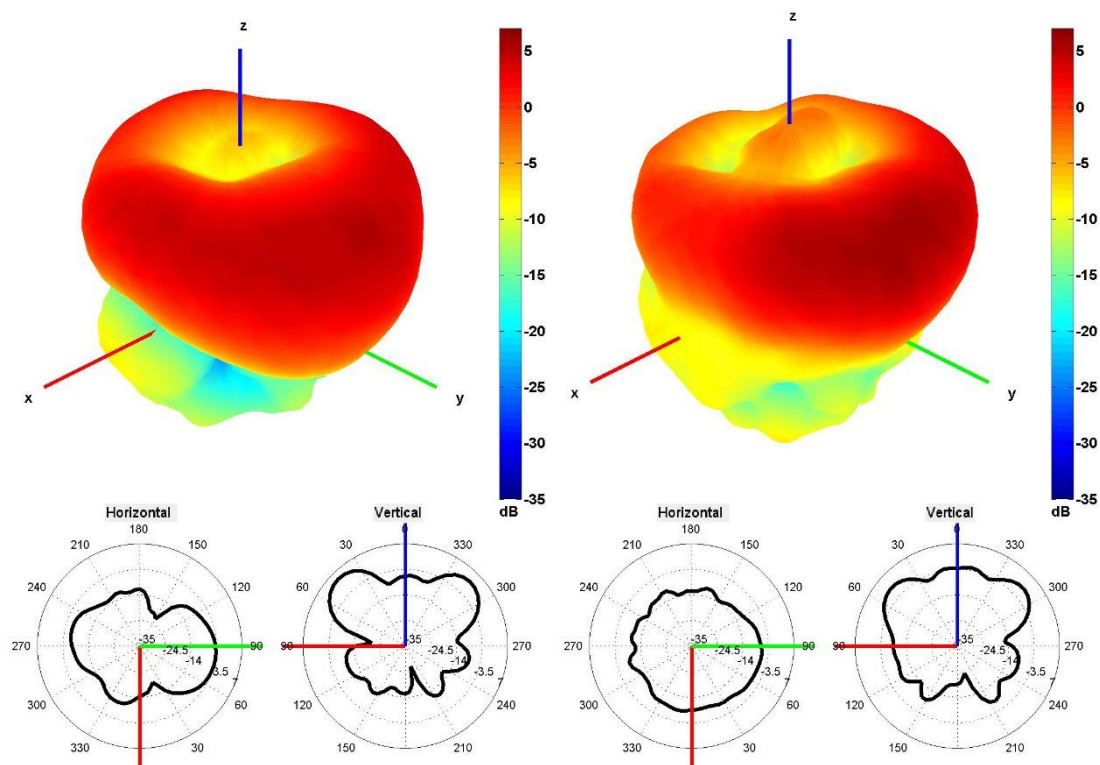
1500 and 1600 MHz Radiation pattern



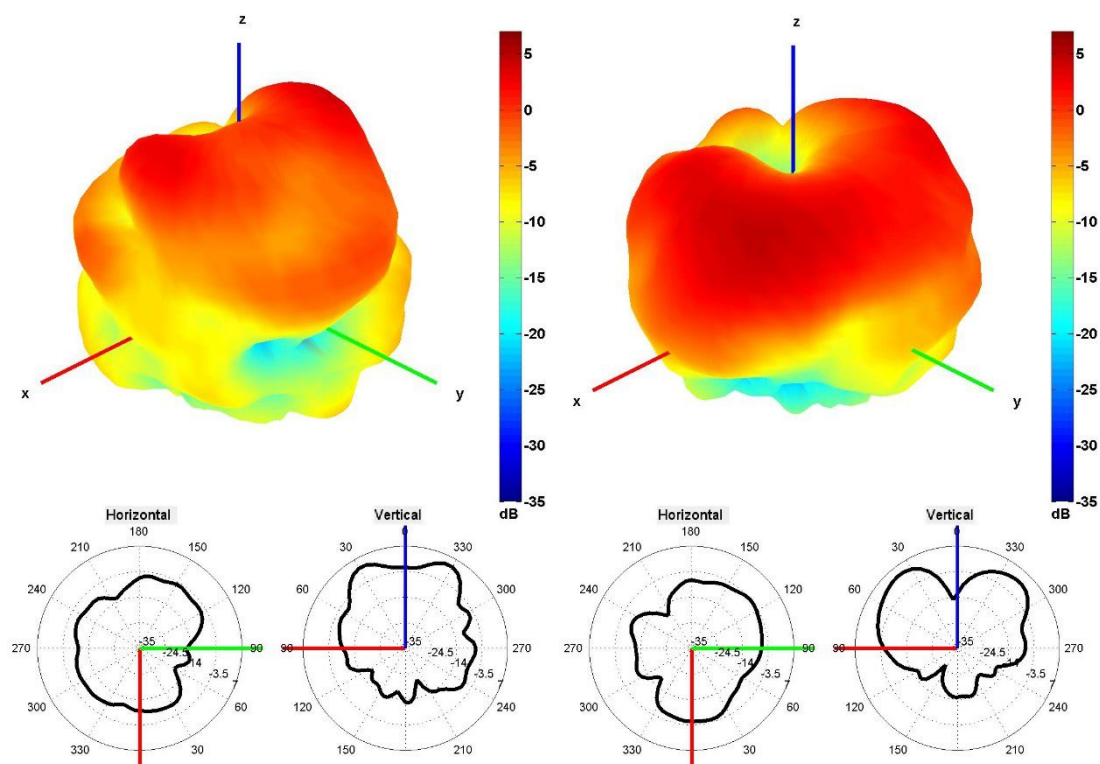
1750 and 1850 MHz Radiation pattern



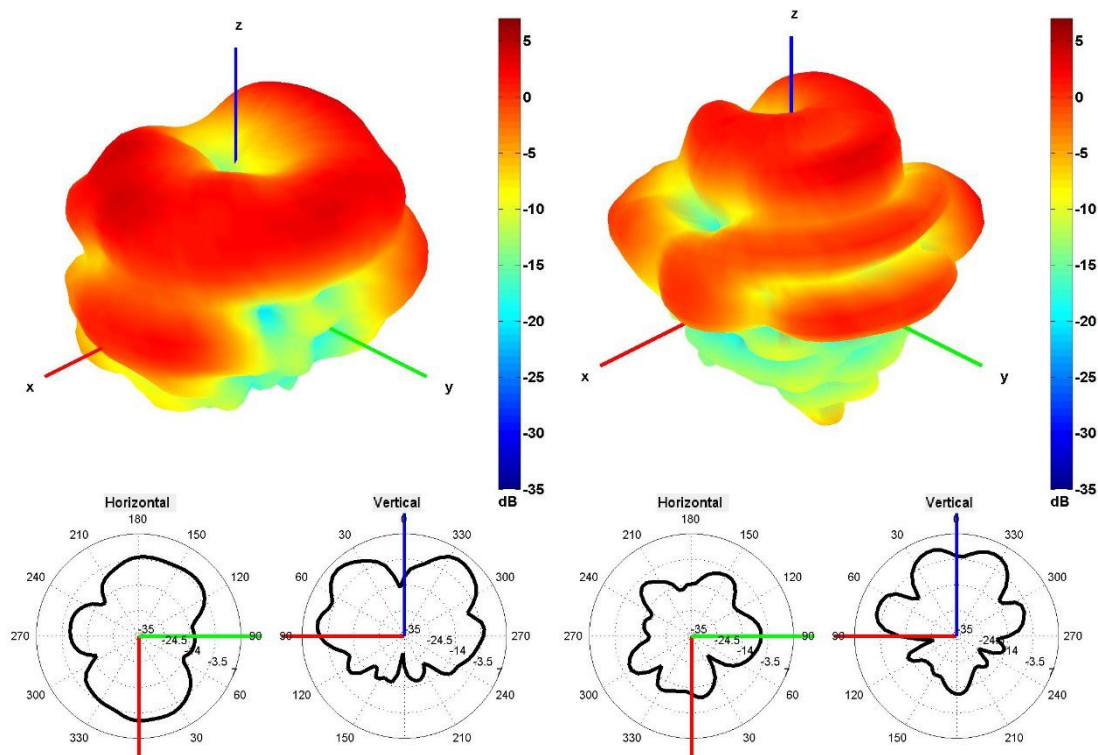
1950 and 2100 MHz Radiation pattern



2350 and 2600 MHz Radiation pattern

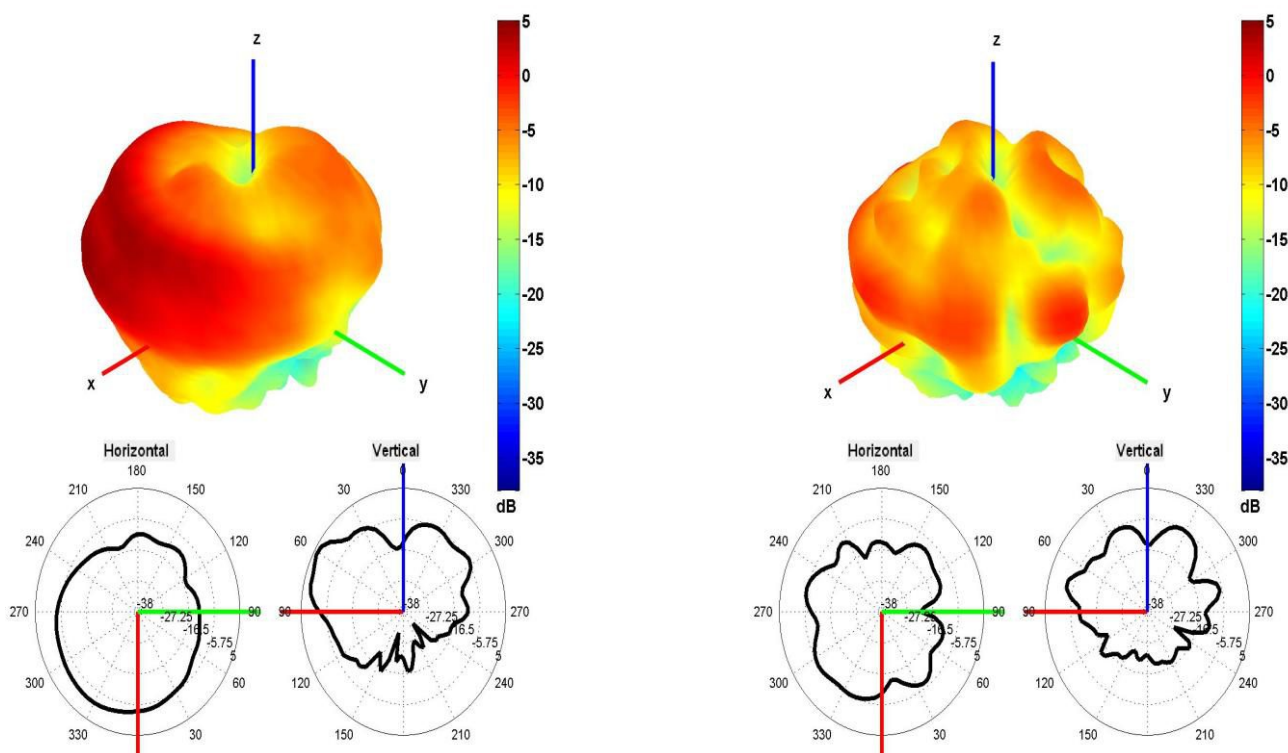


3350 and 3600 MHz Radiation pattern

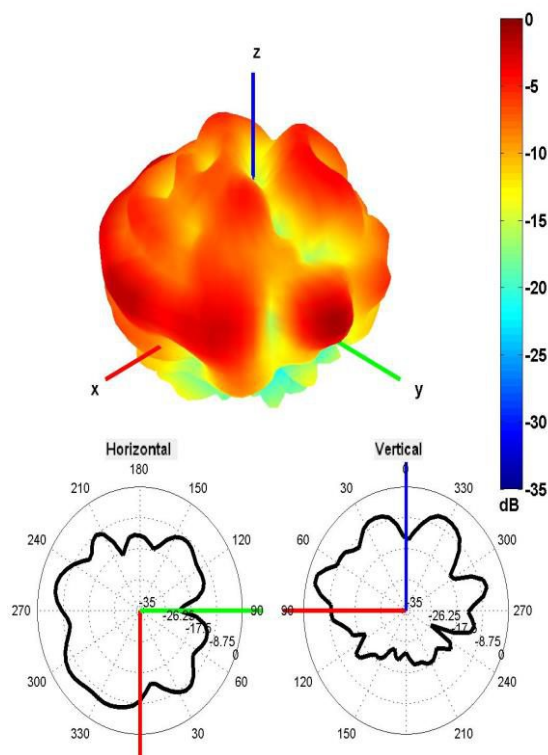


4500 and 5500 MHz Radiation pattern

Cable 3: 2.4/5.0/6.0 GHz ISM

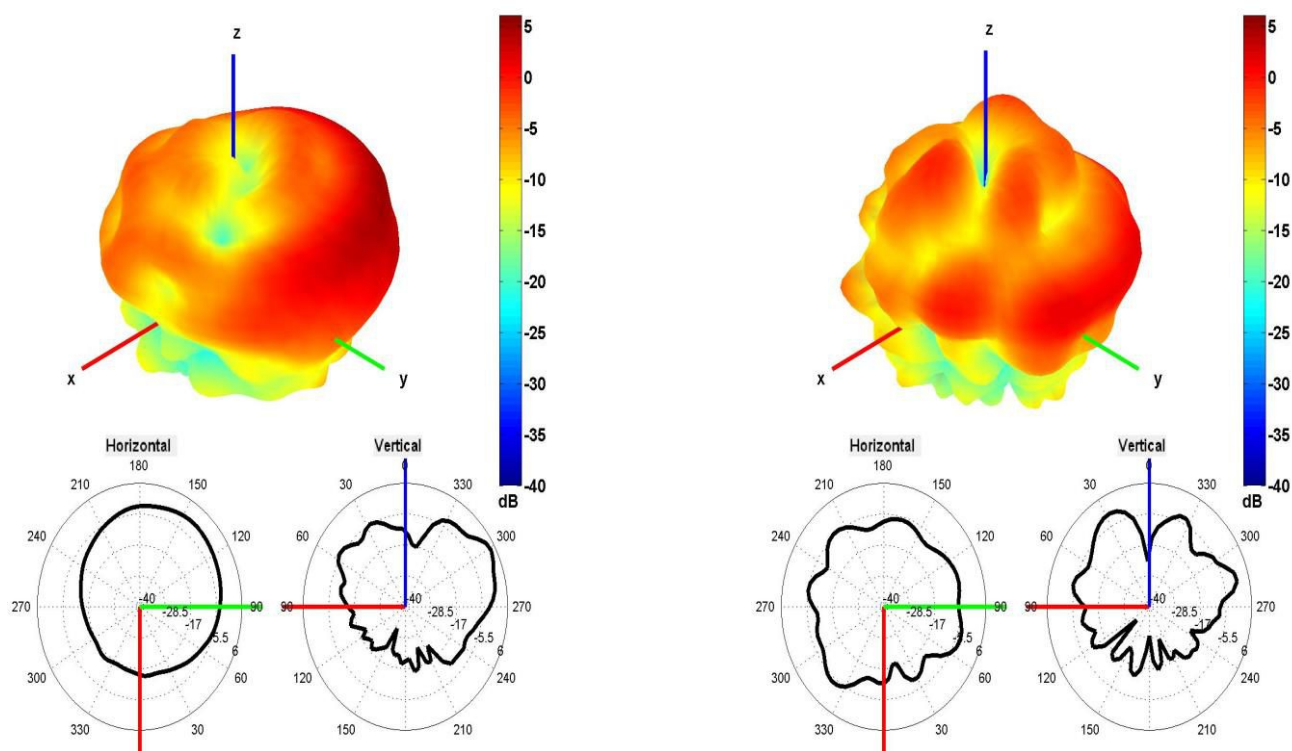


2450 and 5500 MHz Radiation pattern

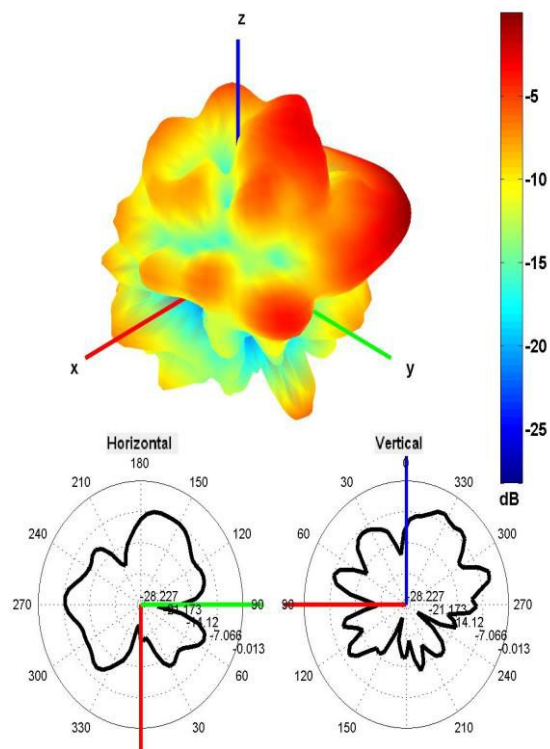


6500 MHz Radiation pattern

Cable 4: 2.4/5.0/6.0 GHz ISM

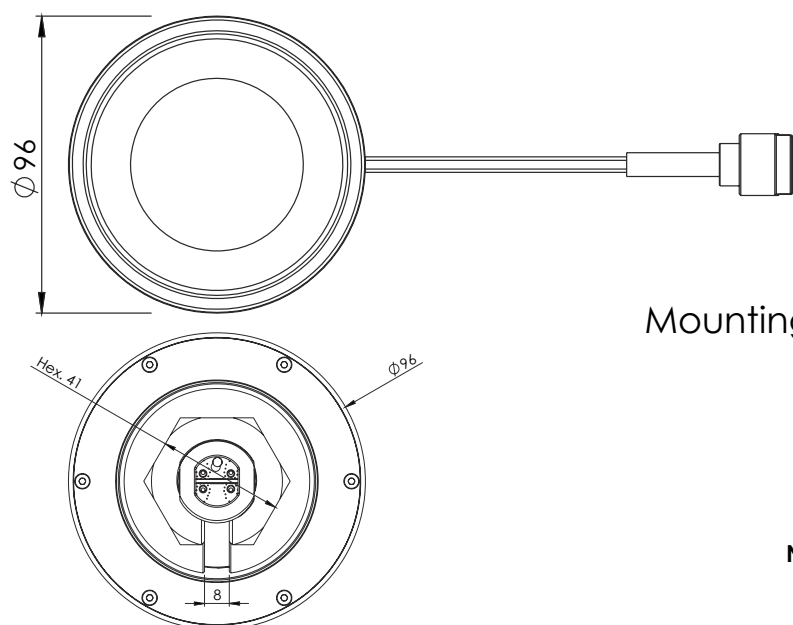
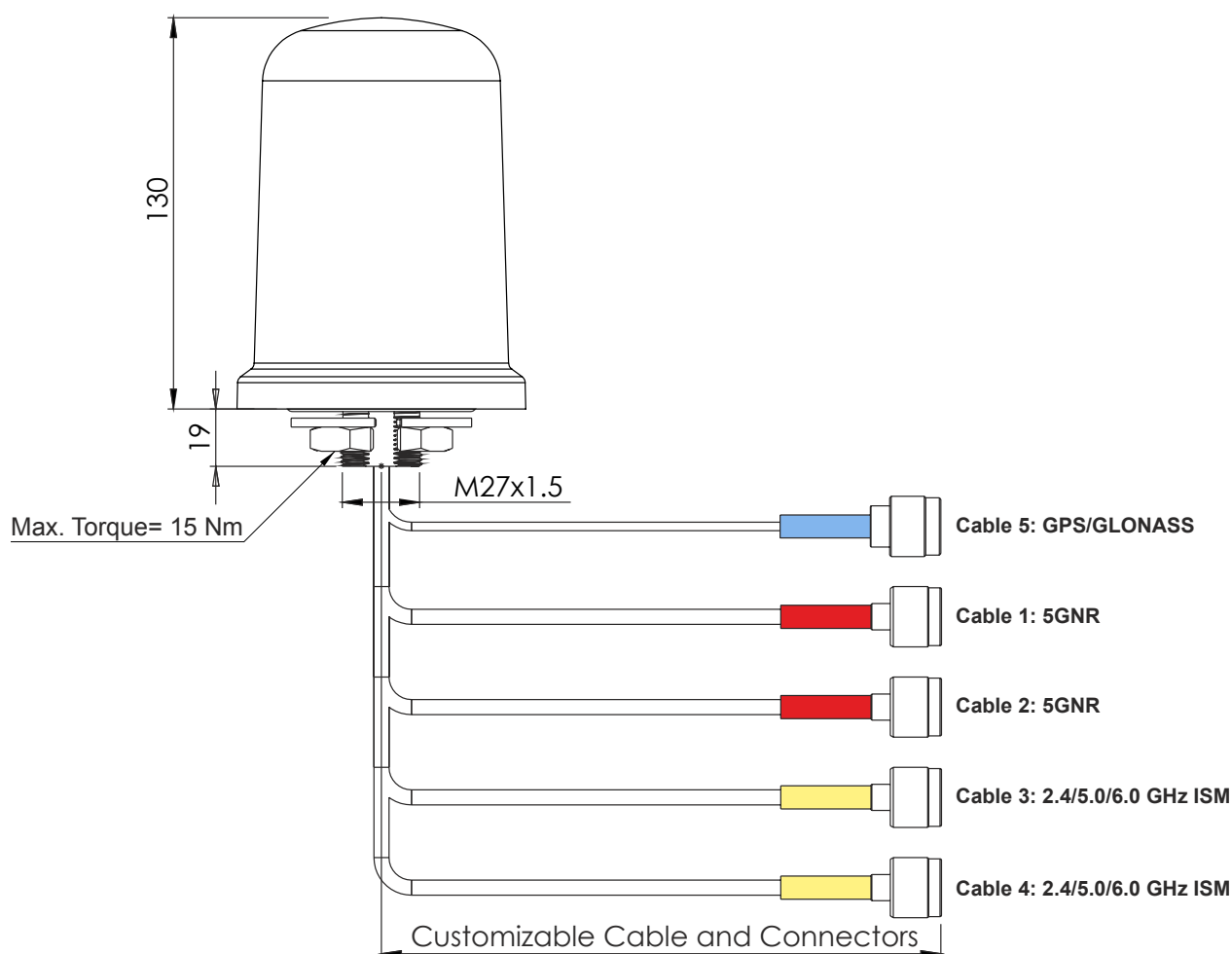


2450 and 5500 MHz Radiation pattern

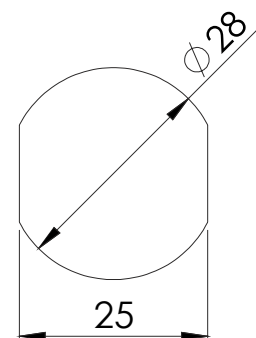


6500 MHz Radiation pattern

## 4. Antenna drawings



Mounting hole



**Note:** Dimensions are in millimeters  
**\*Dimensions are after mounting**  
**\*\*Max. Torque= 15 Nm**

## 5. Antenna Images

