antenna conceptor

Product Datasheet

# 2J4A86PCFa

## 2× 5GNR MIMO, 2× 2.4/5.0 GHz ISM MIMO and GNSS Adhesive Mount

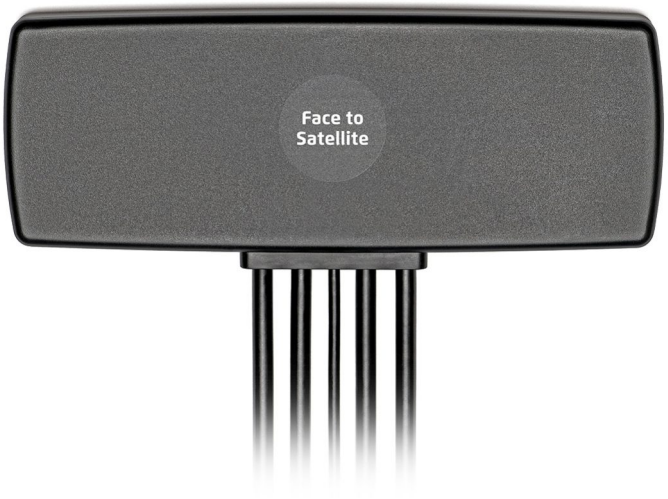
## Key Features

**Cable 1 - 2: 5GNR**
- 617-960 MHz
- 1427-2690 MHz
- 3300-5000 MHz
- 5150-5925 MHz

**Cable 3 - 4: 2.4/5.0 GHz ISM**
- 2410-2490 MHz
- 4920-5925 MHz

**Cable 5: GPS/GLONASS/BeiDou/QZSS/Galileo**
- 1561-1606 MHz

Adhesive Mount
High Performance
Ground Plane Independent
Customizable Cable and Connector
Dimensions:  61.8 x 155.6 x 17.0 mm
Certificates: IP67, IP69



# 1. Antenna and electrical specifications

**Cable 1**

| 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, 1900, 2000, 2100, 2300, 2500, 2600 | 3300, 3500, 3600, 3700, 4500 | 5200, 5500, 5800 |
| 5GNR Bands | n5, n8 ,12, n20, n28, n71, n81, n82, n83, | n1, n2, n3, n7, n25, n34, n38, n39, n40, n41, n50, n51, n66, n70, n74, n75, n76, n80, n84, n86 | n77, n78, n79 | |
| 4GLTE Bands | B5, B6, B8, B12, B13, B14, B17, B18, B19, B20, B26, B27, B28, B29, B44, B67, B68, B71, B85 | B1, B2, B3, B4, B7, B9, B10, B11, B21, B23, B24, B25, B30, B32, B33, B34, B35, B36, B37, B38, B39, B40, B41, B45, B50, B51, B65, B66, B69, B70, B74, B75, B76 | B22, B42, B43, B48, B49, B52 | B46, B47, B252, B255 |
| 3GCELL Bands | B5, B6, B8, B12, B13, B14, B19, B20, B26 | B1, B2, B3, B4, B7, B9, B10, B11, B21, B25, B32, B33, B34, B35, B36, B37, B38, B39, B40 | B22 | |
| 2GCELL Bands | 710, 750, 810T, 850, 900P, 900E, 900R | 1800DCS, 1900PCS | | |
| CDMACELL Bands | BC0, BC2, BC3, BC7, BC9, BC10, BC12, BC18, BC19 | BC1, BC4, BC6, BC8, BC13, BC14, BC15, BC16, BC20, BC21 | | |
| Return Loss (dB) | ~-9.1 | ~-7.0 | ~-6.9 | ~-6.7 |
| VSWR | ~2.7:1 | ~2.9:1 | ~2.9:1 | ~3.4:1 |
| Efficiency (%) | ~45.8 | ~39.6 | ~32.2 | ~14.4 |
| Peak Gain (dBi) | ~1.2 | ~1.3 | ~0.6 | ~-2.7 |
| Average Gain (dB) | ~-3.4 | ~-4.2 | ~-5.0 | ~-8.6 |
| Impendance (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, 1900, 2000, 2100, 2300, 2500, 2600 | 3300, 3500, 3600, 3700, 4500 | 5200, 5500, 5800 |
| 5GNR Bands | n5, n8 ,12, n20, n28, n71, n81, n82, n83, | n1, n2, n3, n7, n25, n34, n38, n39, n40, n41, n50, n51, n66, n70, n74, n75, n76, n80, n84, n86 | n77, n78, n79 | |
| 4GLTE Bands | B5, B6, B8, B12, B13, B14, B17, B18, B19, B20, B26, B27, B28, B29, B44, B67, B68, B71, B85 | B1, B2, B3, B4, B7, B9, B10, B11, B21, B23, B24, B25, B30, B32, B33, B34, B35, B36, B37, B38, B39, B40, B41, B45, B50, B51, B65, B66, B69, B70, B74, B75, B76 | B22, B42, B43, B48, B49, B52 | B46, B47, B252, B255 |
| 3GCELL Bands | B5, B6, B8, B12, B13, B14, B19, B20, B26 | B1, B2, B3, B4, B7, B9, B10, B11, B21, B25, B32, B33, B34, B35, B36, B37, B38, B39, B40 | B22 | |
| 2GCELL Bands | 710, 750, 810T, 850, 900P, 900E, 900R | 1800DCS, 1900PCS | | |
| CDMACELL Bands | BC0, BC2, BC3, BC7, BC9, BC10, BC12, BC18, BC19 | BC1, BC4, BC6, BC8, BC13, BC14, BC15, BC16, BC20, BC21 | | |
| Return Loss (dB) | ~-7.8 | ~-8.8 | ~-5.1 | ~-4.3 |
| VSWR | ~2.7:1 | ~2.7:1 | ~3.8:1 | ~4.2:1 |
| Efficiency (%) | ~43.0 | ~40.0 | ~25.1 | ~22.7 |
| Peak Gain (dBi) | ~0.4 | ~1.7 | ~-0.1 | ~-1.4 |
| Average Gain (dB) | ~-3.7 | ~-4.2 | ~-6.3 | ~-6.7 |
| Impendance (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 GHz ISM Antenna | |
|---|---|---|
| Standards | WiFi, BT, ZigBee, ISM | |
| Band (MHz) | 2.4 GHz | 5.0 GHz |
| Frequency (MHz) | 2410-2490 | 4920-5925 |
| Return Loss (dB) | ~-7.8 | ~-9.8 |
| VSWR | ~2.4:1 | ~2.0:1 |
| Efficiency (%) | ~24.3 | ~47.2 |
| Peak Gain (dBi) | ~-1.5 | ~3.8 |
| Average Gain (dB) | ~-6.3 | ~-3.3 |
| Impendance (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 GHz ISM Antenna | |
|---|---|---|
| Standards | WiFi, BT, ZigBee, ISM | |
| Band (MHz) | 2.4 GHz | 5.0 GHz |
| Frequency (MHz) | 2410-2490 | 4920-5925 |
| Return Loss (dB) | ~-11.6 | ~-18.3 |
| VSWR | ~1.7:1 | ~1.4:1 |
| Efficiency (%) | ~39.0 | ~55.9 |
| Peak Gain (dBi) | ~0.8 | ~4.9 |
| Average Gain (dB) | ~-4.3 | ~-2.6 |
| Impendance (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 Plastic Plate of 30 x 30 cm

100 cm of Cable LL195

Measured in Certified CTIA 3D Anechoic Chamber

Cable 5

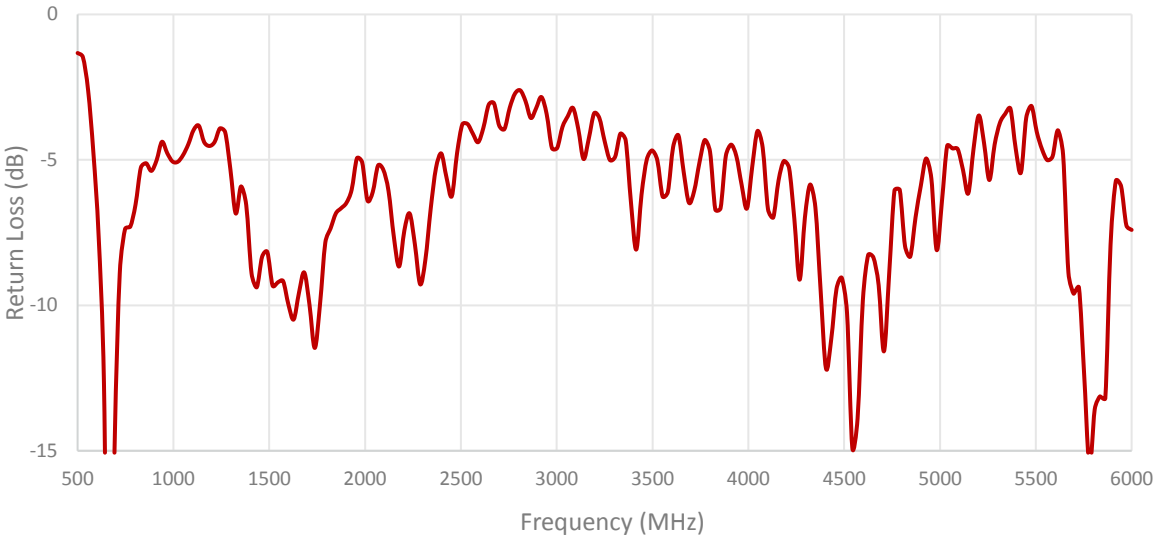
| Parameters | GPS/GLONASS/BeiDou Antenna | | |
|---|---|---|---|
| Standards | BeiDou | GPS/QZSS/Galileo | GLONASS |
| Band (MHz) | 1561 | 1575 | 1602 |
| Frequency(MHz) | 1561.098 | 1575.42 | 1598-1610 |
| Patch Size (mm) | 25 x 25 x 4 | | |
| Return Loss (dB) | <=-15.0 dB | | |
| VSWR | <=1.4:1 dB | | |
| Impedance | 50 | | |
| Radiation Pattern | Hemispherical | | |
| Polarization | RHCP | | |
| Saw Filter | Pre-filter | | |
| Active Gain (dB) | 28 @ 2.7 V | | |
| Noise Figure (dB) | 1.5 Typ | | |
| Voltage (V) | 1.5 – 3.6 | | |
| Current Consumption (mA) | 9 Typ | | |
| Power Consumption (mW) | 24.3 Typ | | |
| ESD Protection (kV) | 2kV | | |
| Connector Type | SMA-Male Standard (Other Connectors Available) | | |
| Cable Length | 300 cm Standard (Any Cable Length Available) | | |
| Cable Type | LMR100 Standard (Other Cables Available) | | |

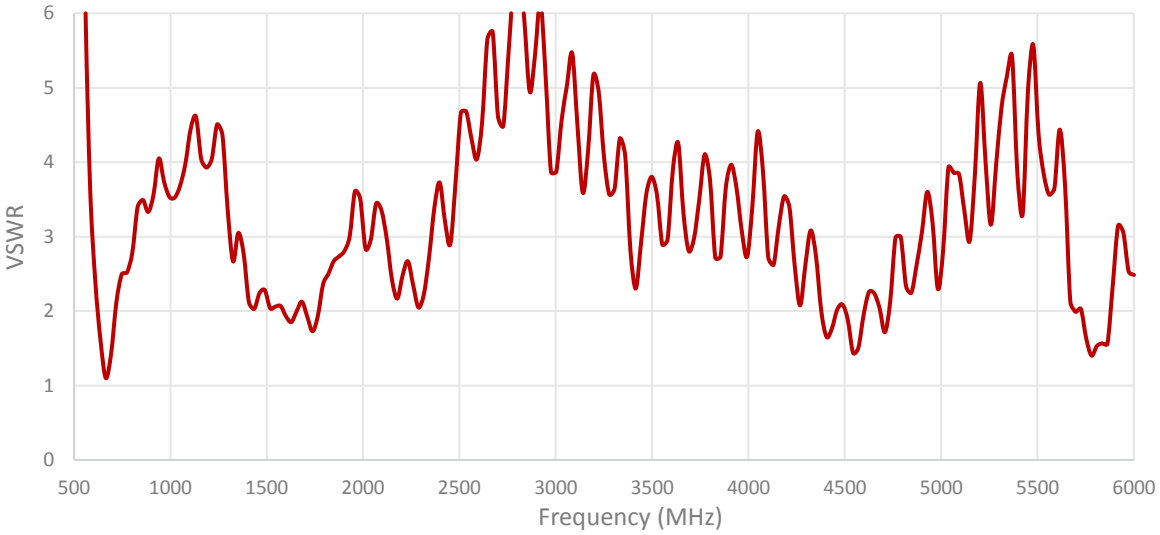
## 2. Mechanical and environmental specifications

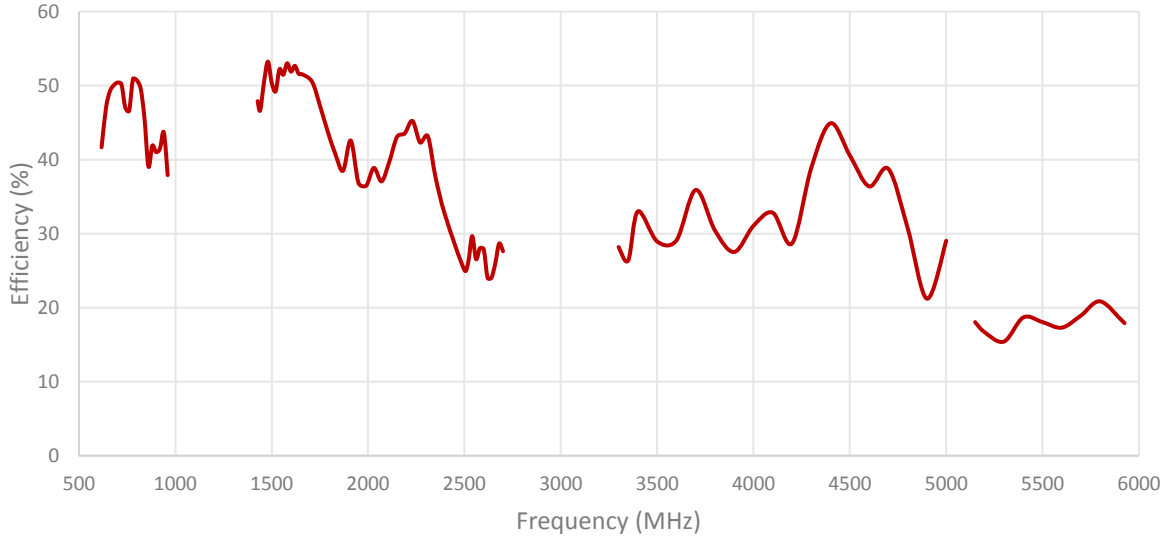
| Specifications | 2J4A86PCFa |
|---|---|
| Mounting Type | Adhesive Mount |
| Dimensions (mm) | 61.8 x 155.6 x 17.0 |
| Radome Type | ABS UV Stable |
| Radome color | Black |
| Operating Temperature (C) | -40 to +85 |
| Storage Temperature (C) | -40 to +85 |
| Substance Compliance | RoHS |
| Certificates | IP67, IP69, CE, Vibration |

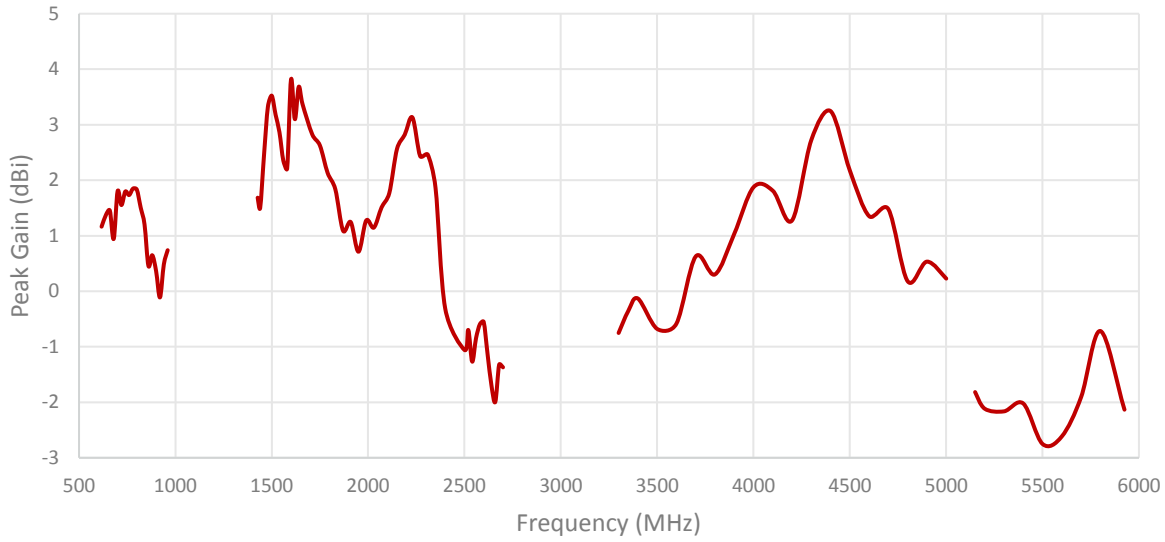
## 3. Antenna parameters

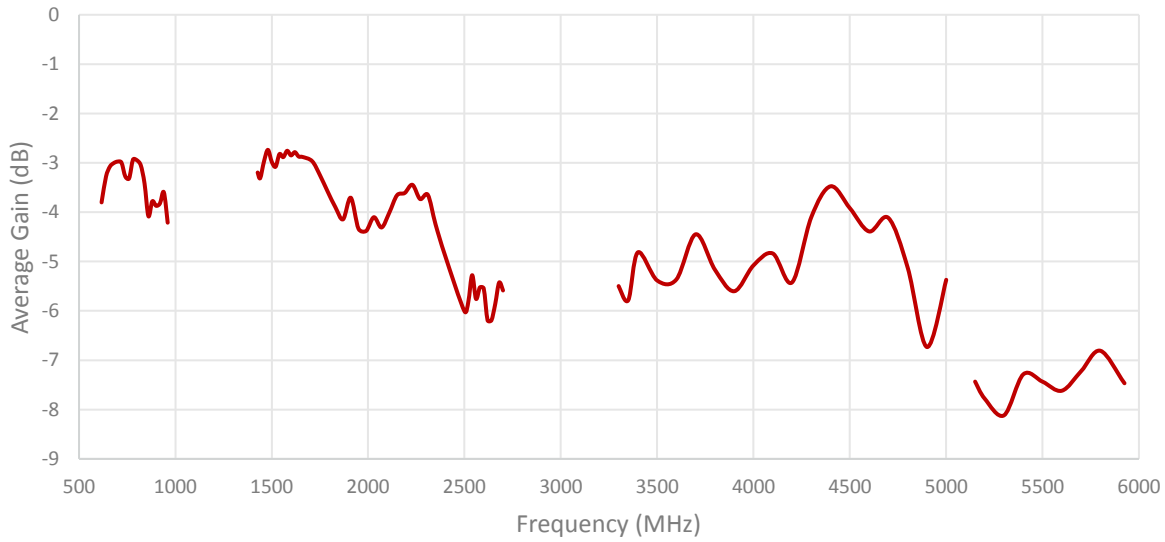
**Cable 1: 5GNR**



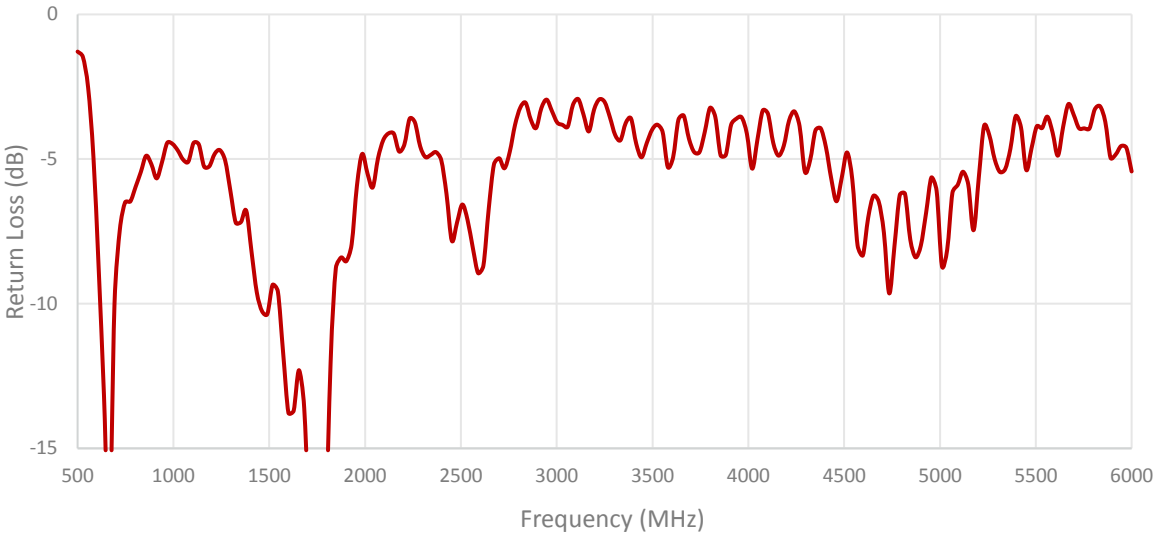



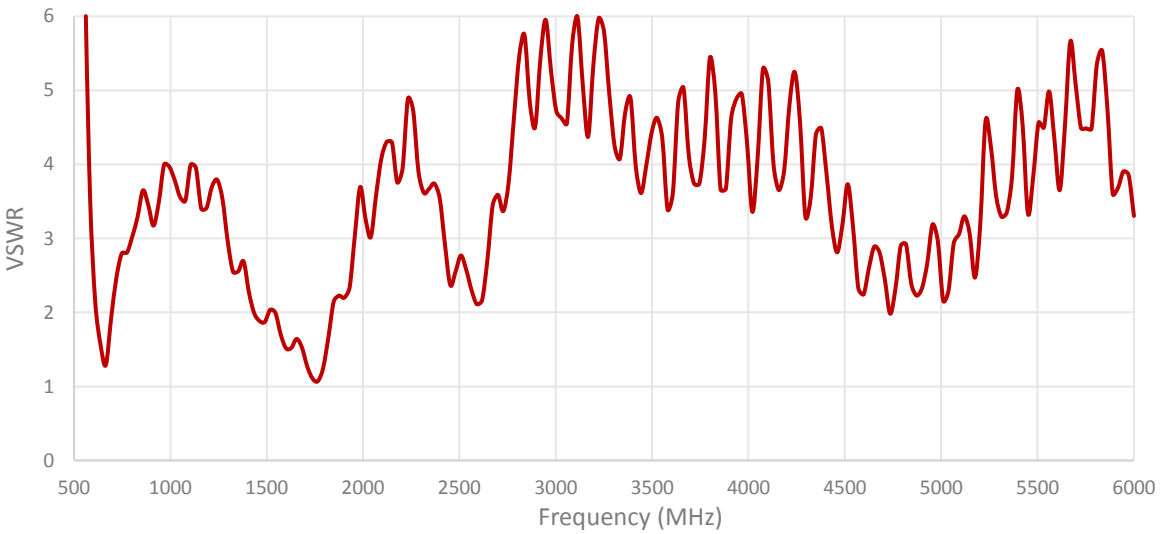

Efficiency (%)
60
50
40
30
20
10
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

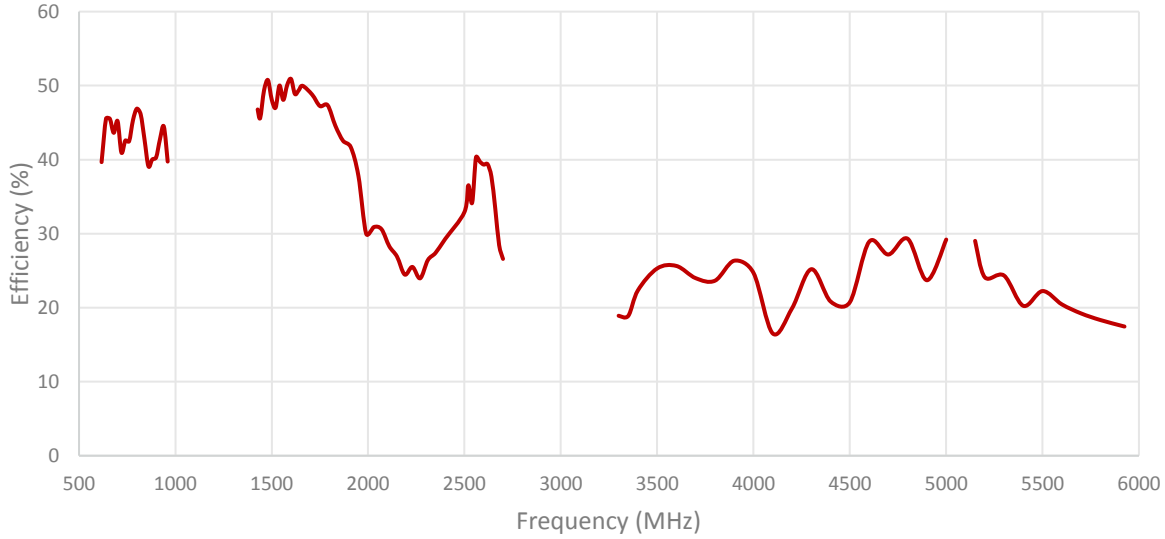

Peak Gain (dBi)
5
4
3
2
1
0
-1
-2
-3
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

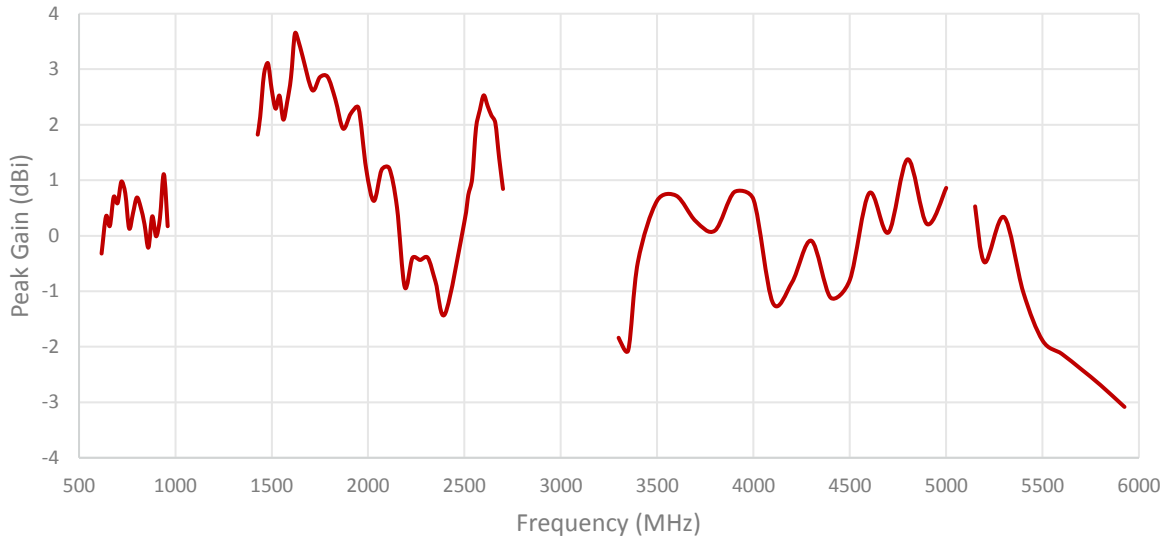

Average Gain (dB)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

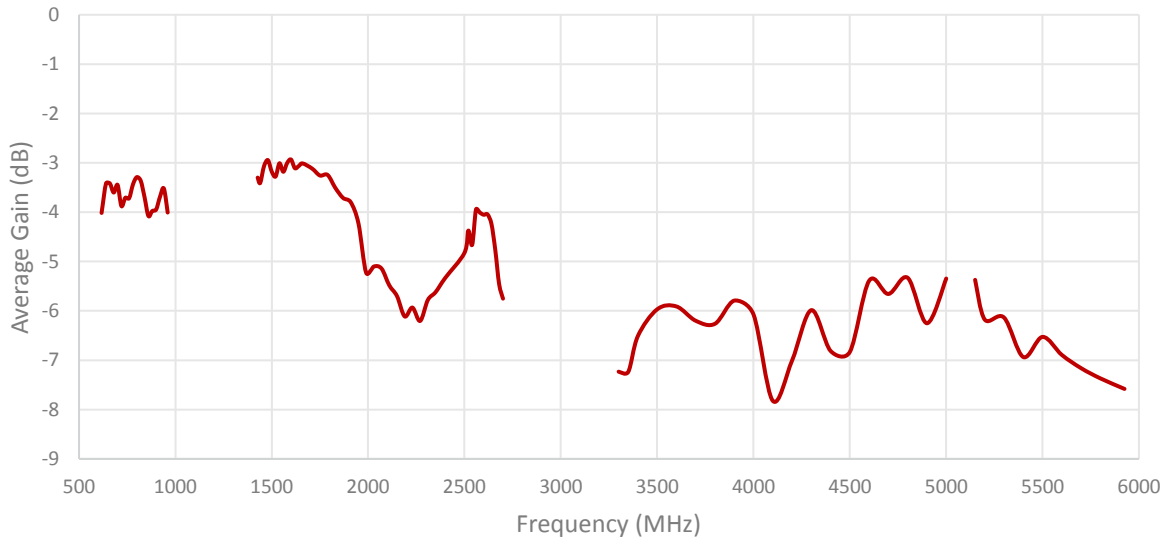
**Cable 2: 5GNR**


0
-5
-10
-15
Return Loss (dB)
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

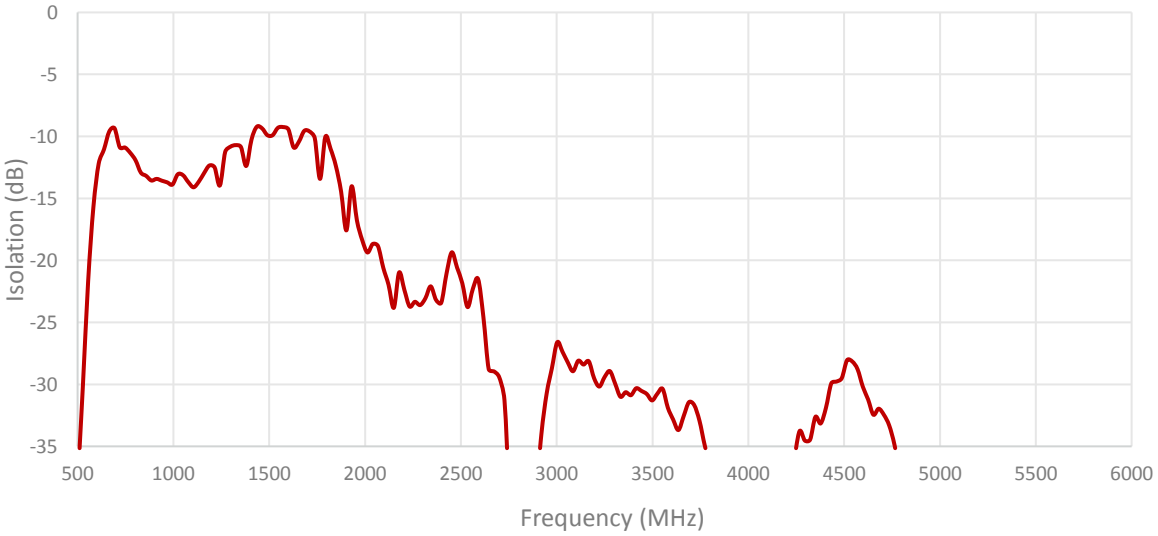

6
5
4
3
2
1
0
VSWR
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)


Efficiency (%)
60
50
40
30
20
10
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

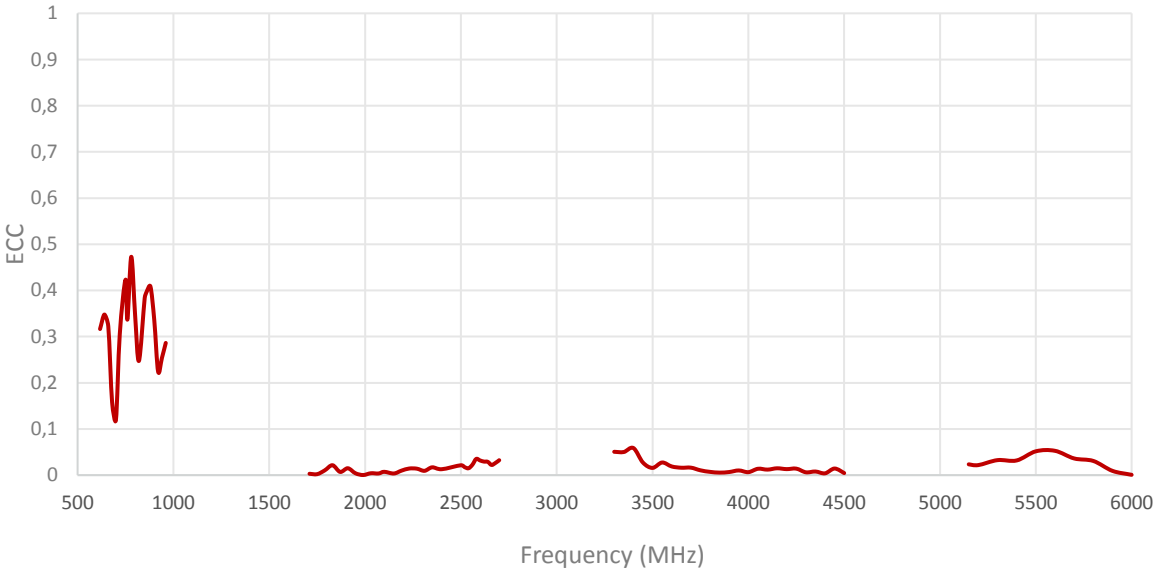

Peak Gain (dBi)
4
3
2
1
0
-1
-2
-3
-4
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)


Average Gain (dB)
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

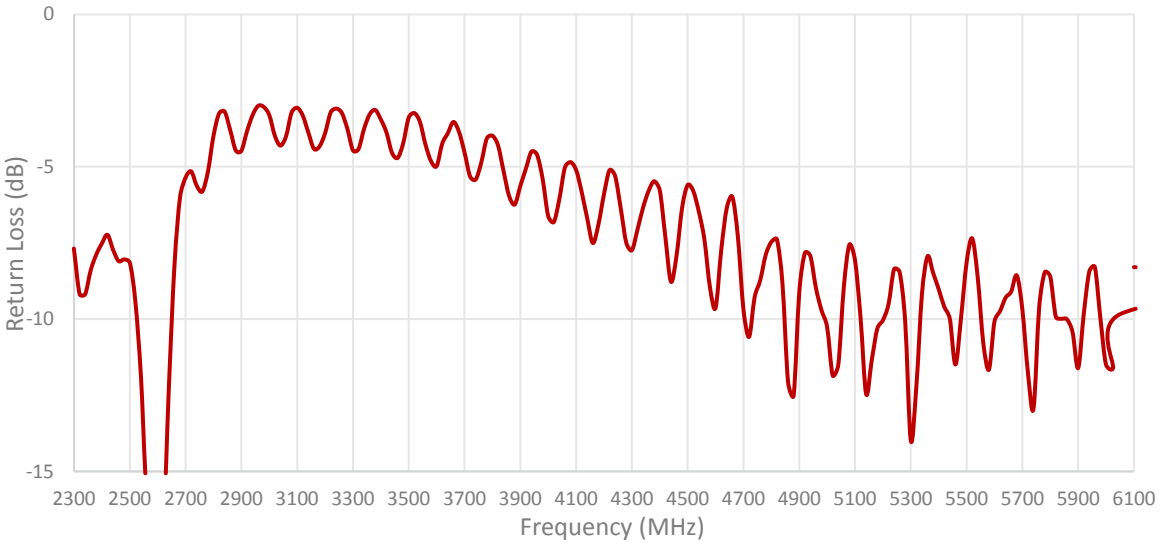
**ISOLATION FOR CABLES 1 AND 2**

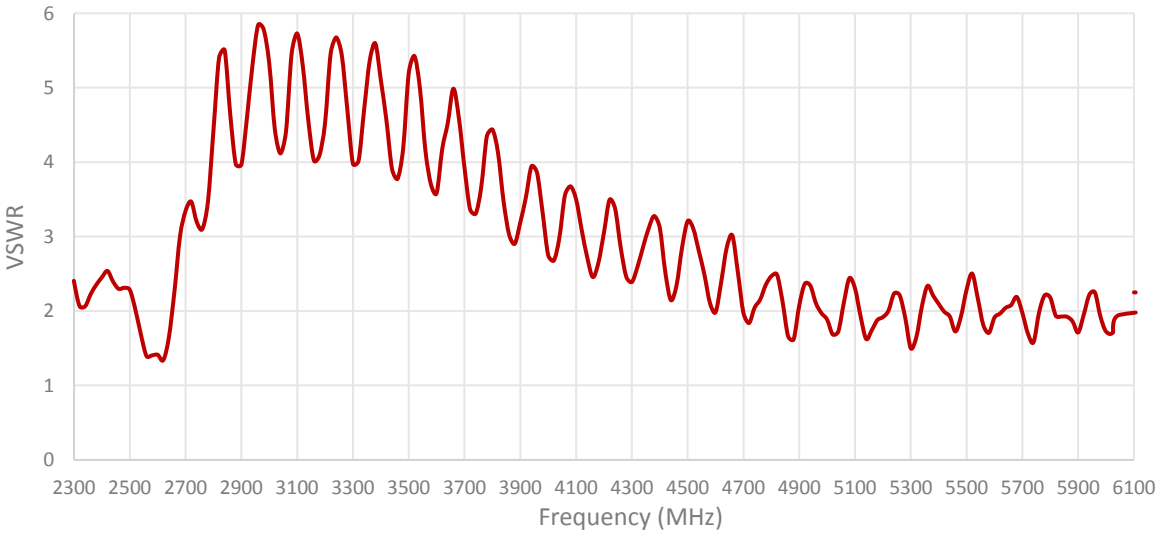


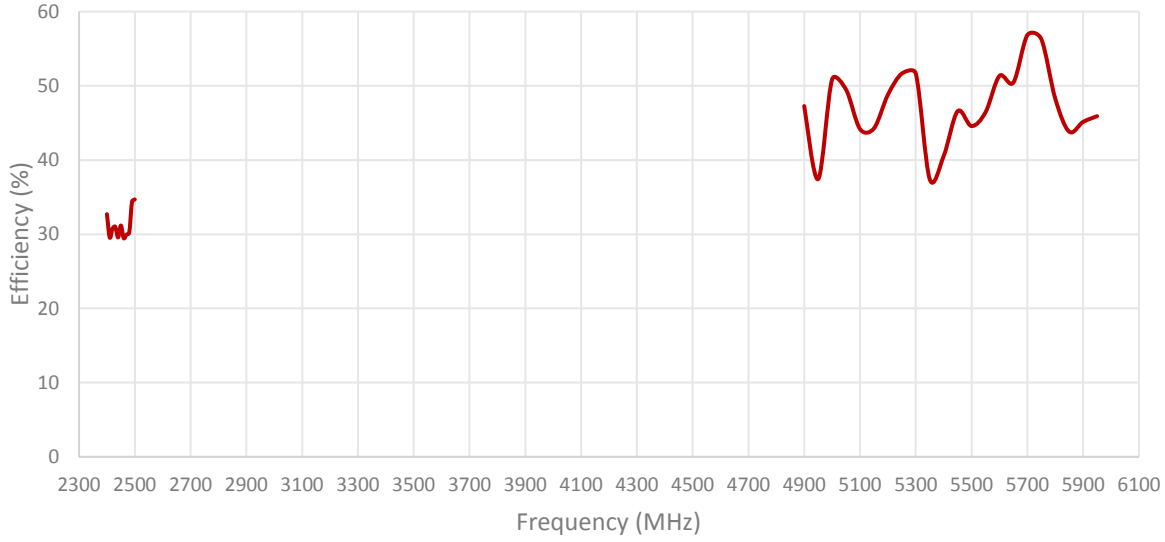

**ENVELOPE CORRELATION COEFFICIENT FOR CABLES 1 AND 2**

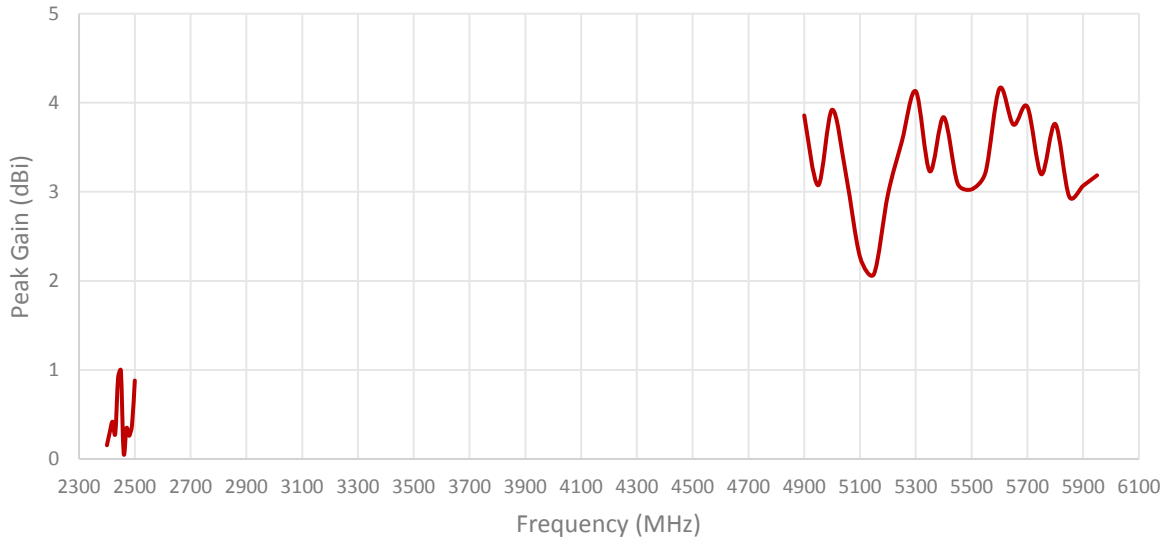


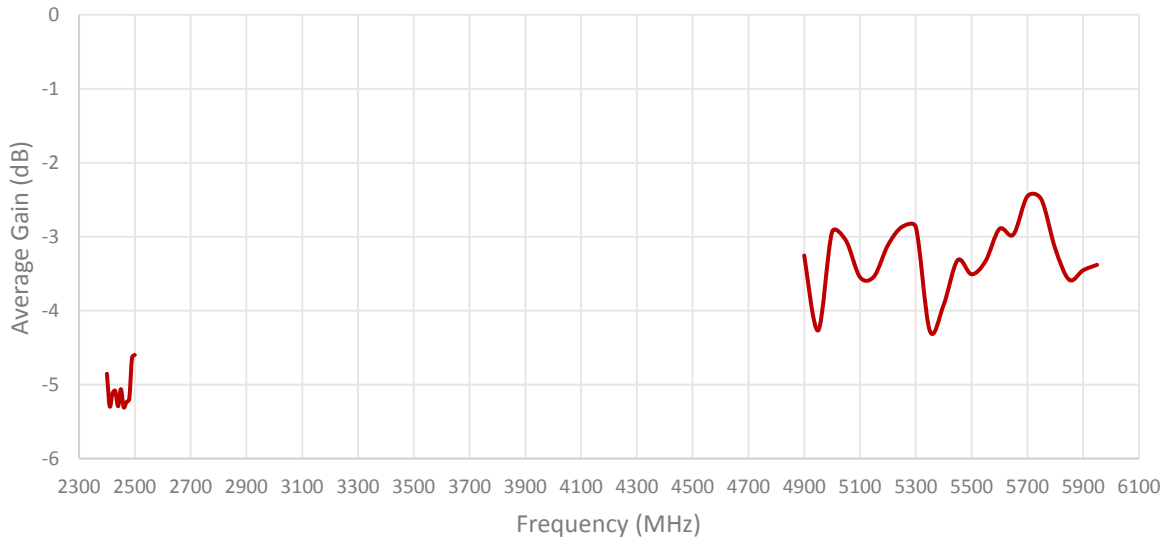
**Cable 3: 2.4/5.0 GHz ISM**



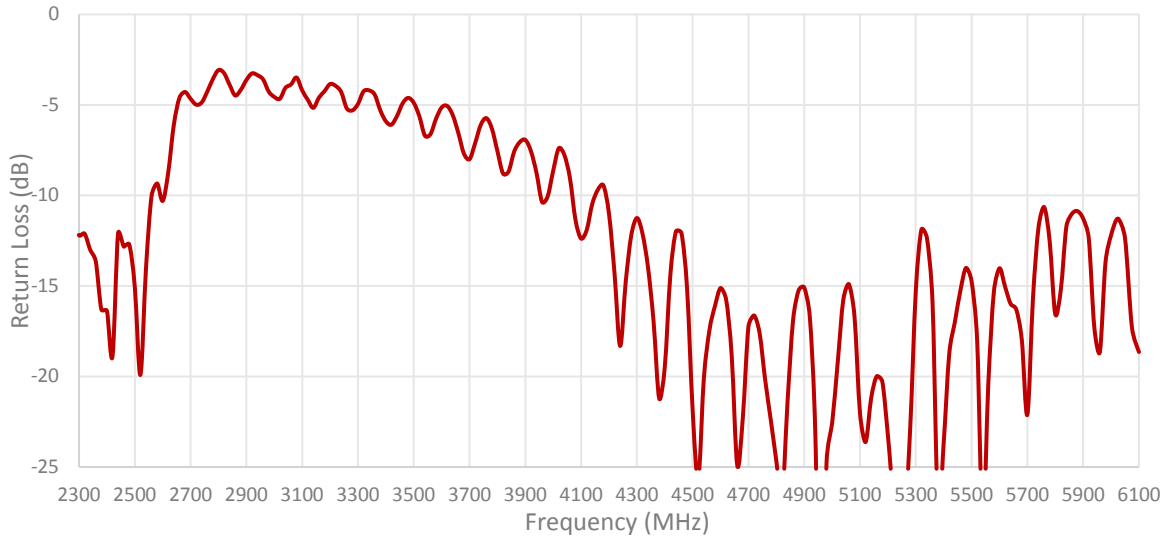



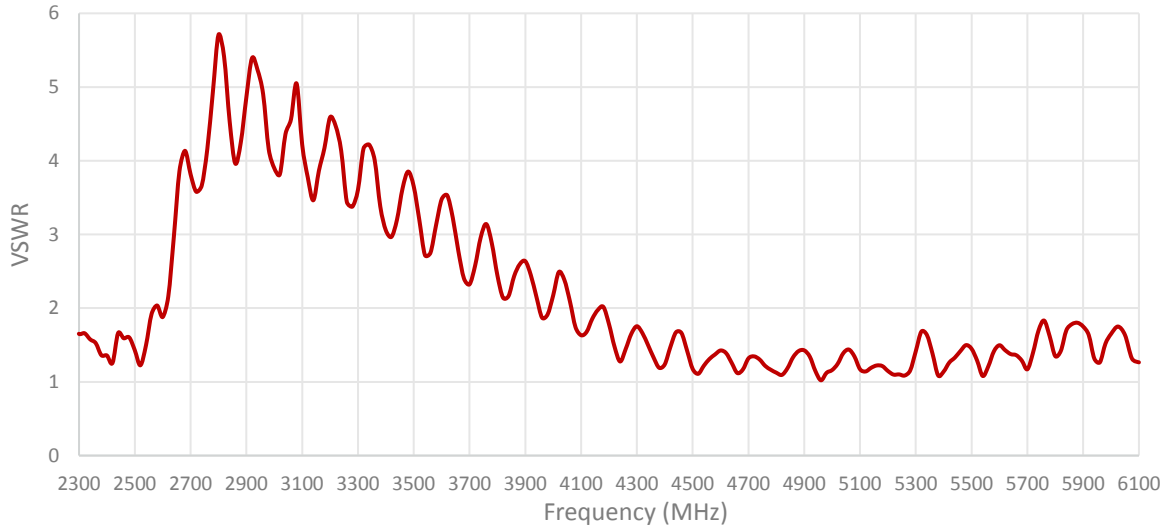

Efficiency (%)
60
50
40
30
20
10
0
2300 2500 2700 2900 3100 3300 3500 3700 3900 4100 4300 4500 4700 4900 5100 5300 5500 5700 5900 6100
Frequency (MHz)

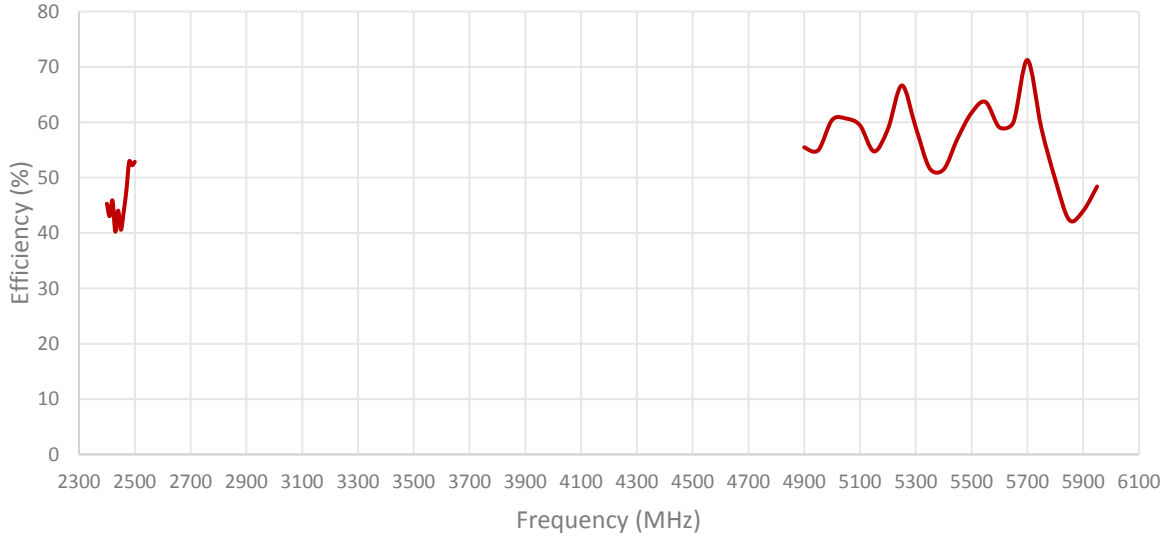

Peak Gain (dBi)
5
4
3
2
1
0
2300 2500 2700 2900 3100 3300 3500 3700 3900 4100 4300 4500 4700 4900 5100 5300 5500 5700 5900 6100
Frequency (MHz)

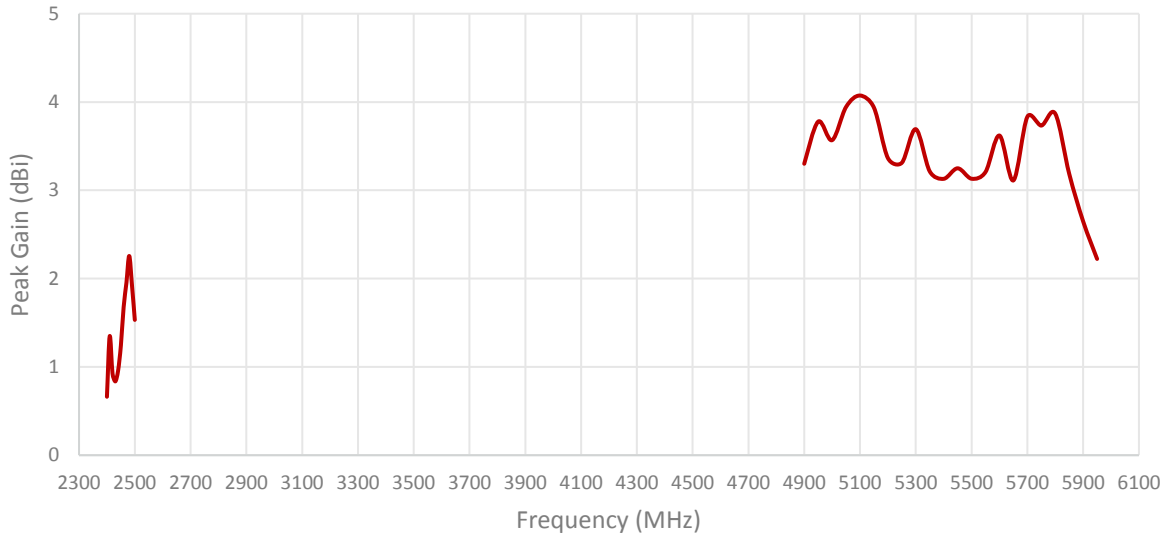

Average Gain (dB)
0
-1
-2
-3
-4
-5
-6
2300 2500 2700 2900 3100 3300 3500 3700 3900 4100 4300 4500 4700 4900 5100 5300 5500 5700 5900 6100
Frequency (MHz)

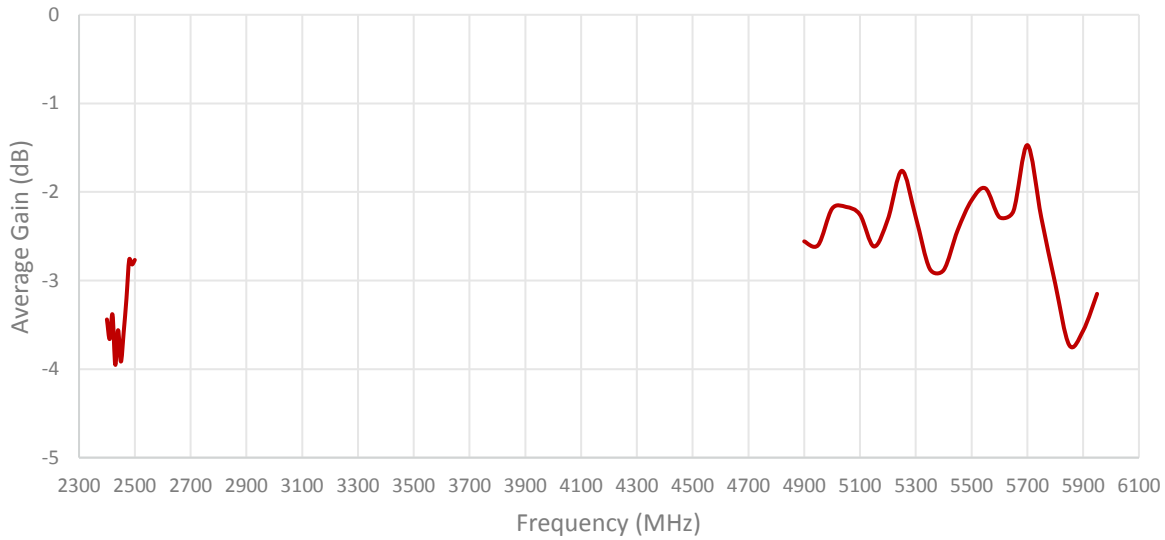
**Cable 4: 2.4/5.0 GHz ISM**



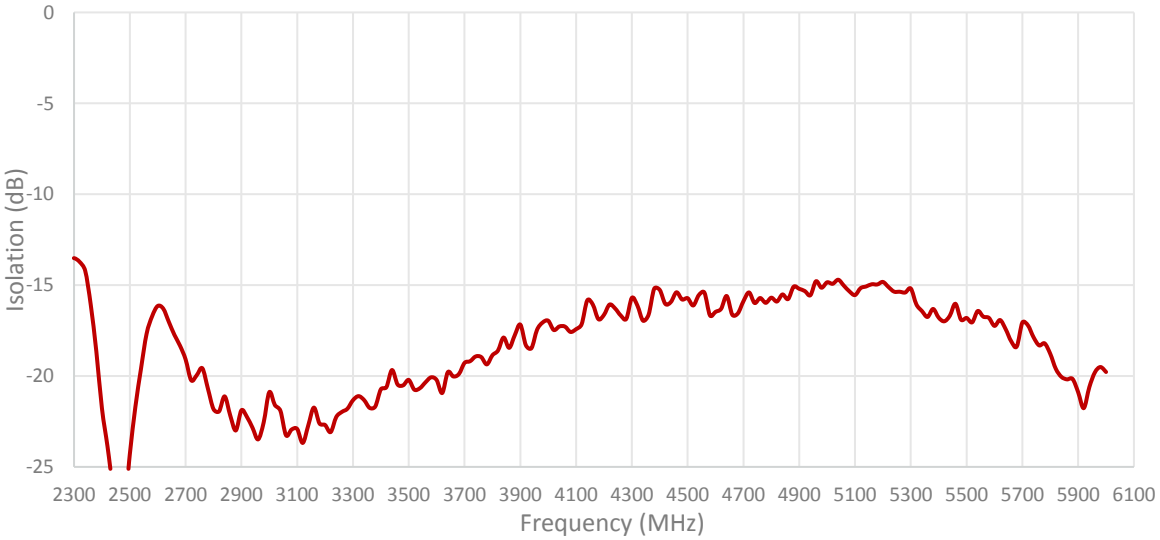




Efficiency (%)
80
70
60
50
40
30
20
10
0
2300 2500 2700 2900 3100 3300 3500 3700 3900 4100 4300 4500 4700 4900 5100 5300 5500 5700 5900 6100
Frequency (MHz)

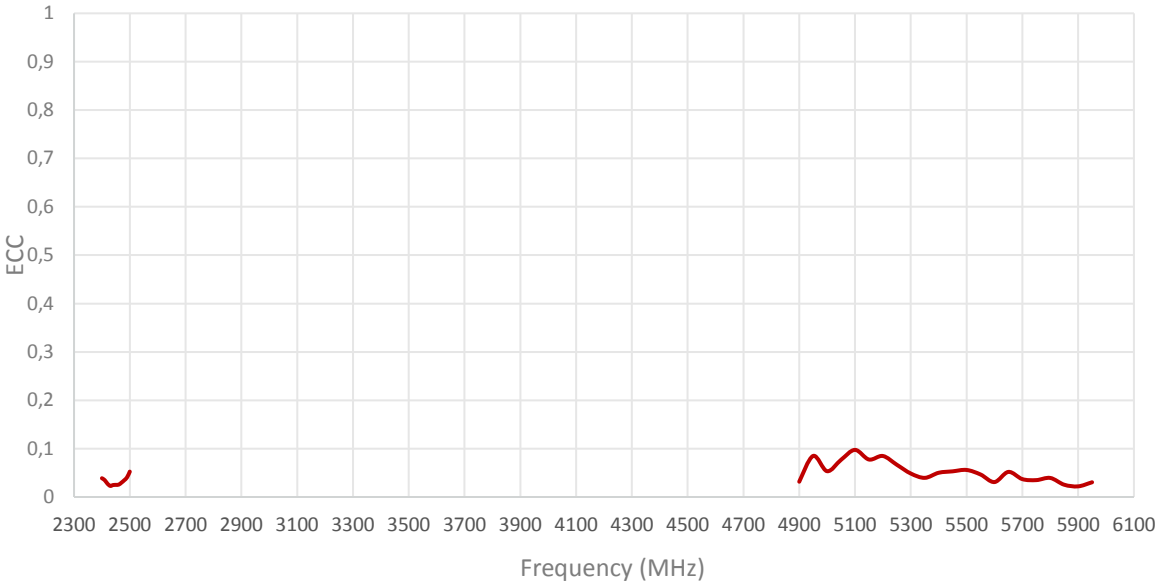

Peak Gain (dBi)
5
4
3
2
1
0
2300 2500 2700 2900 3100 3300 3500 3700 3900 4100 4300 4500 4700 4900 5100 5300 5500 5700 5900 6100
Frequency (MHz)

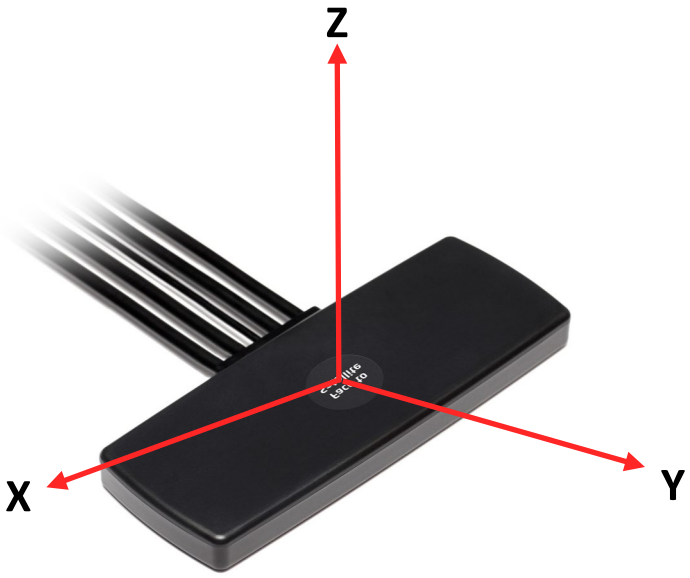

Average Gain (dB)
0
-1
-2
-3
-4
-5
2300 2500 2700 2900 3100 3300 3500 3700 3900 4100 4300 4500 4700 4900 5100 5300 5500 5700 5900 6100
Frequency (MHz)

**ISOLATION FOR CABLES 3 AND 4**



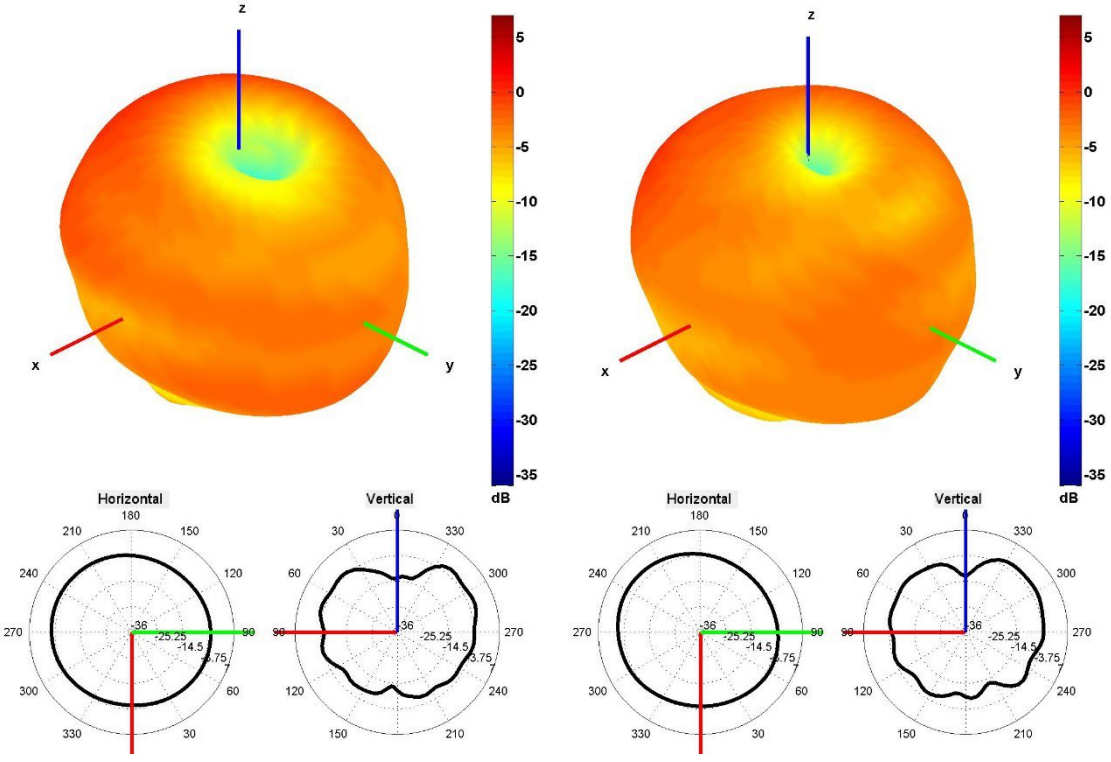

**ENVELOPE CORRELATION COEFFICIENT FOR CABLES 3 AND 4**



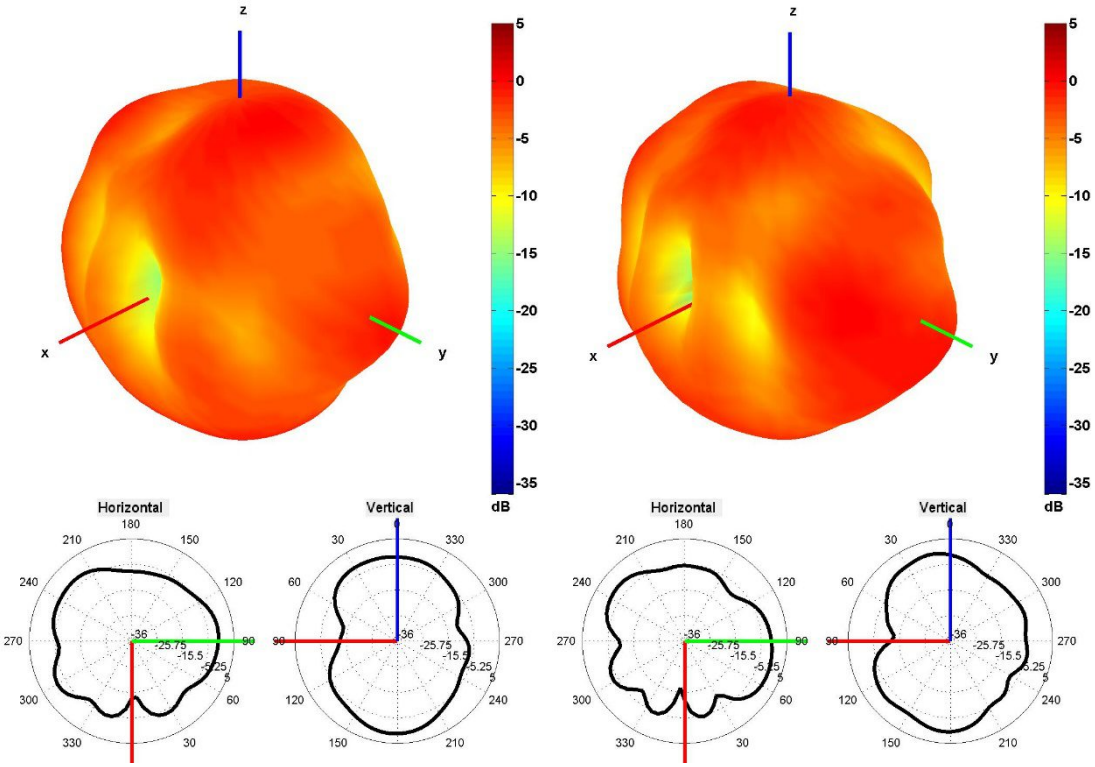



Radiation pattern reference

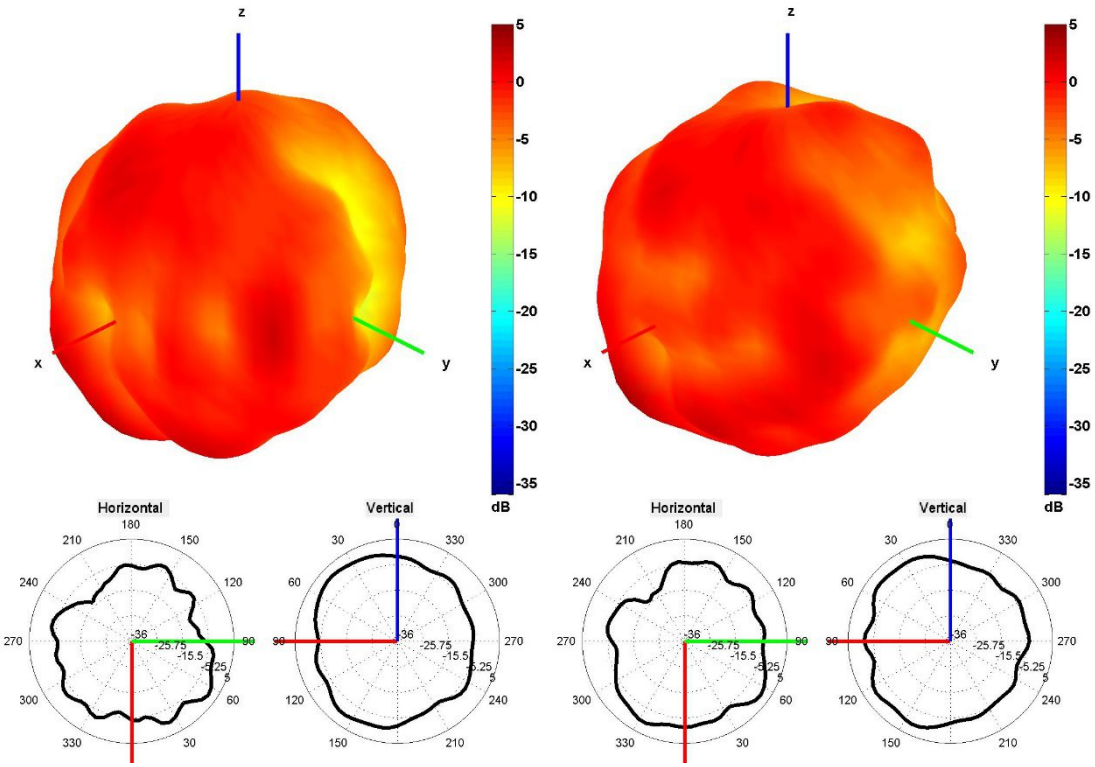
**Cable 1: 5GNR**



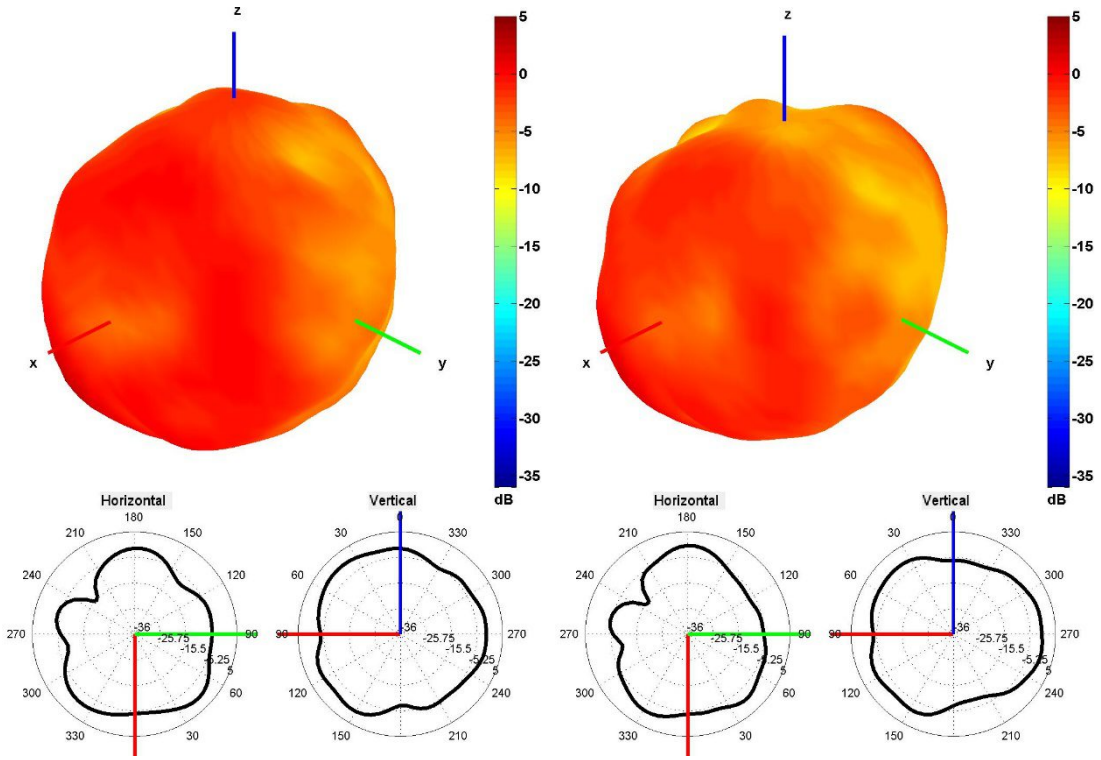

650 and 750 MHz Radiation pattern



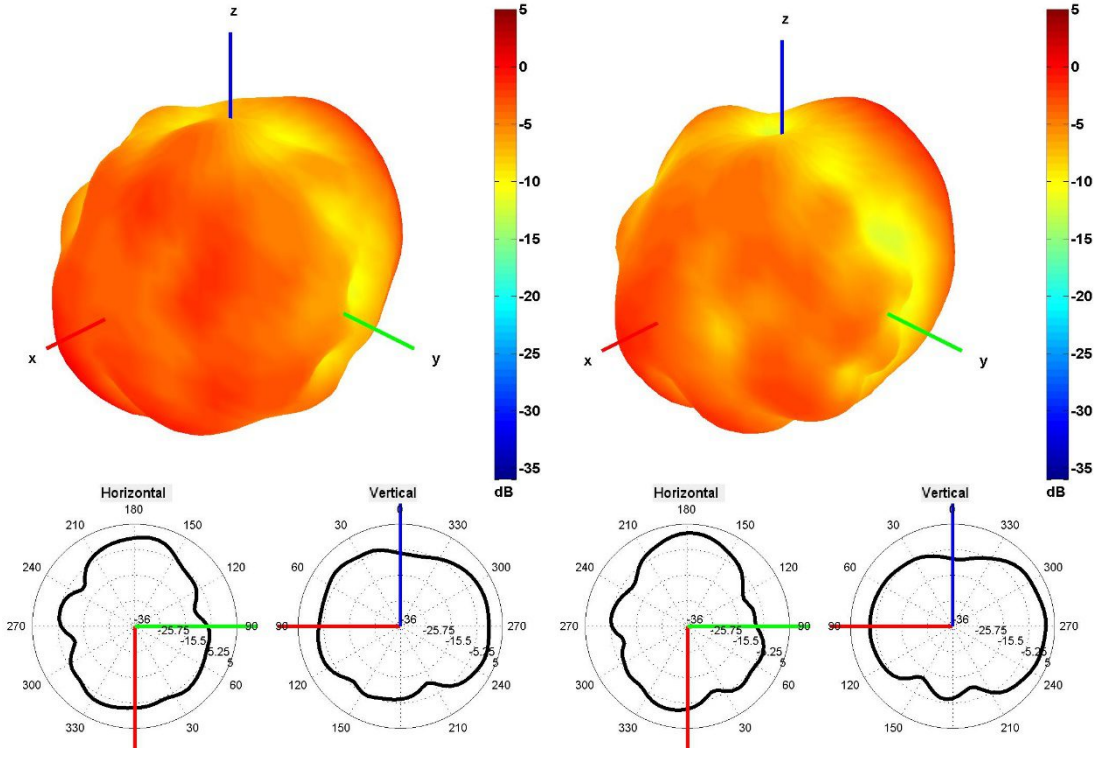

850 and 940 MHz Radiation pattern



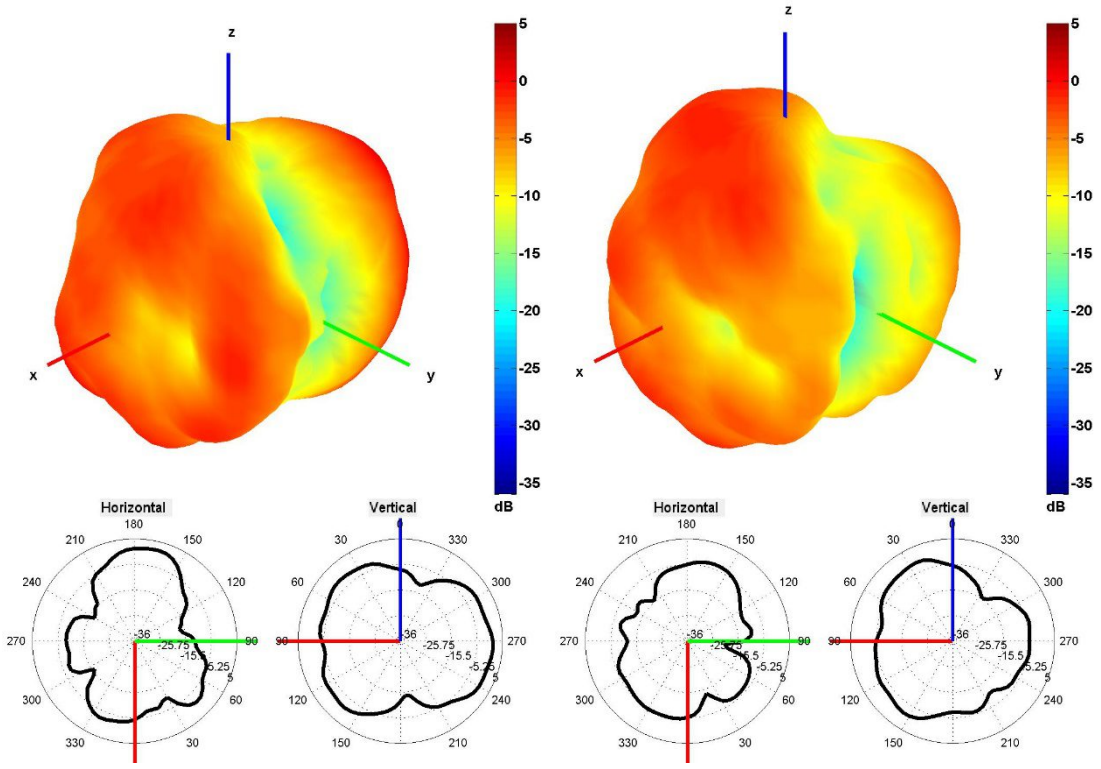

1500 and 1600 MHz Radiation pattern



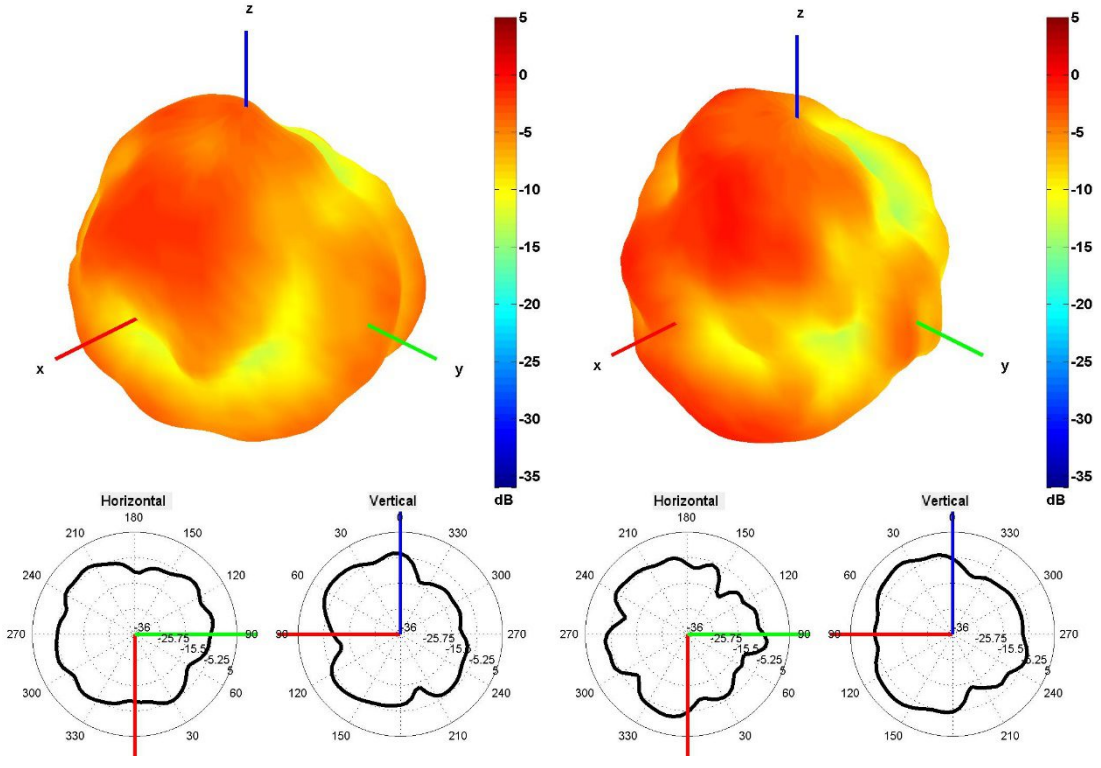

1750 and 1850 MHz Radiation pattern



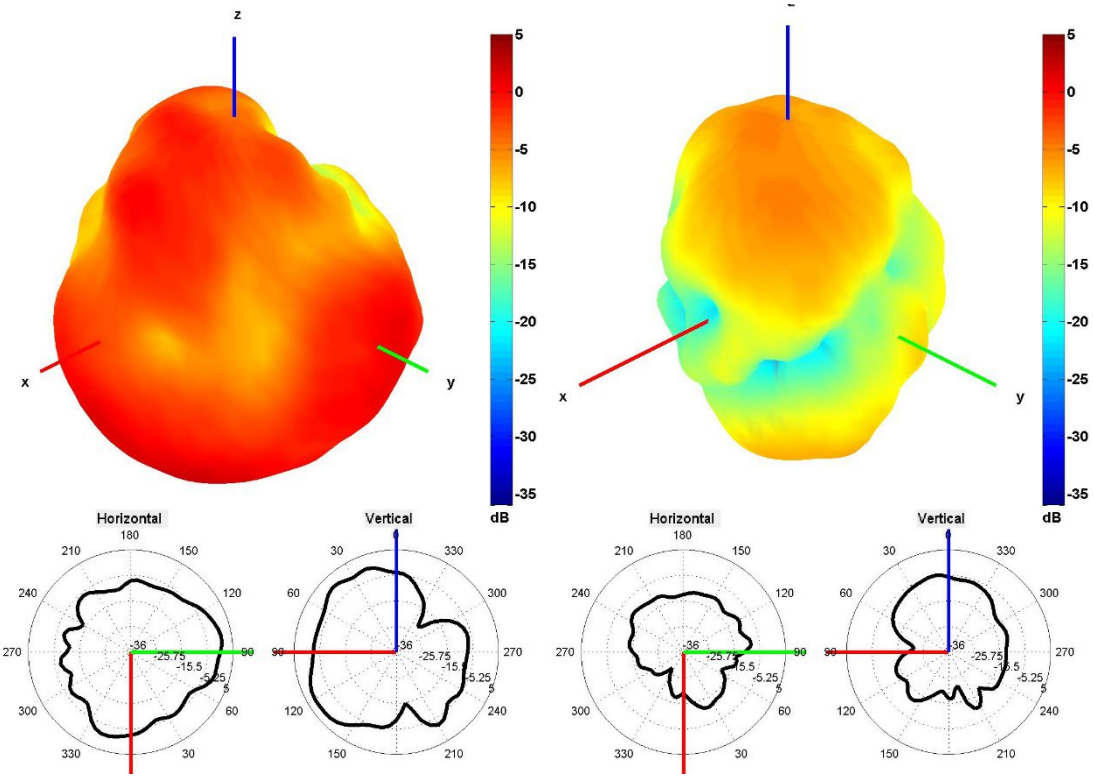

1950 and 2100 MHz Radiation pattern




2350 and 2600 MHz Radiation pattern

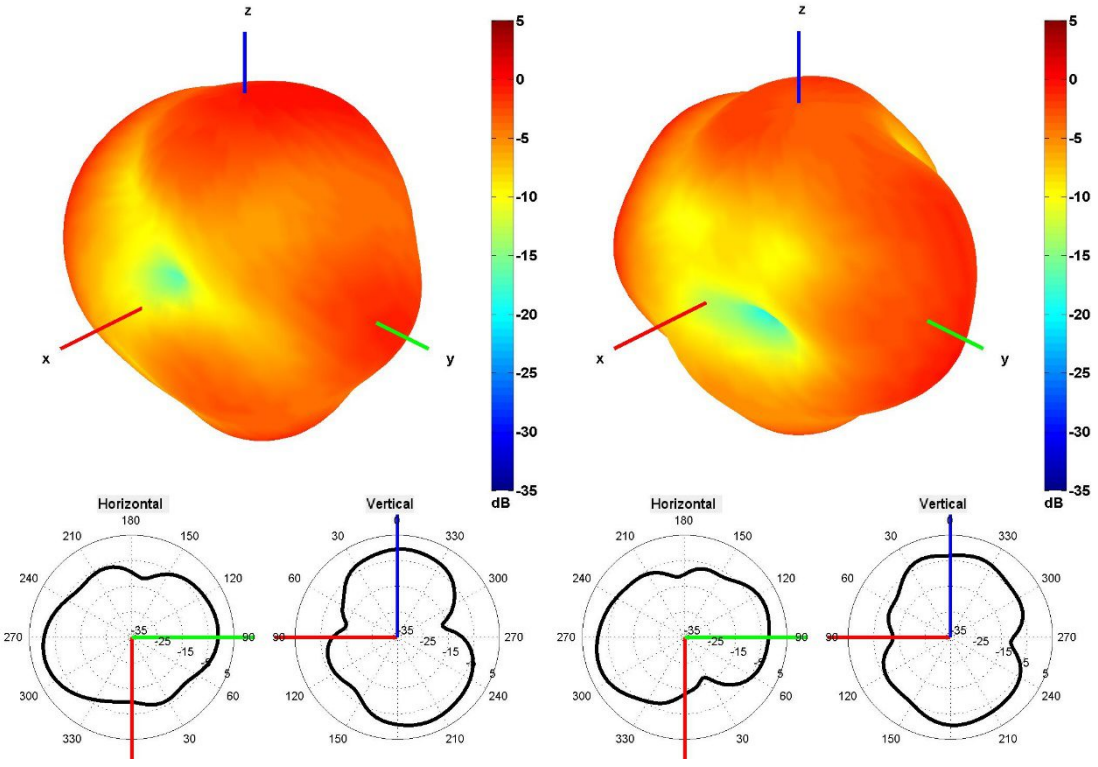



3350 and 3600 MHz Radiation pattern

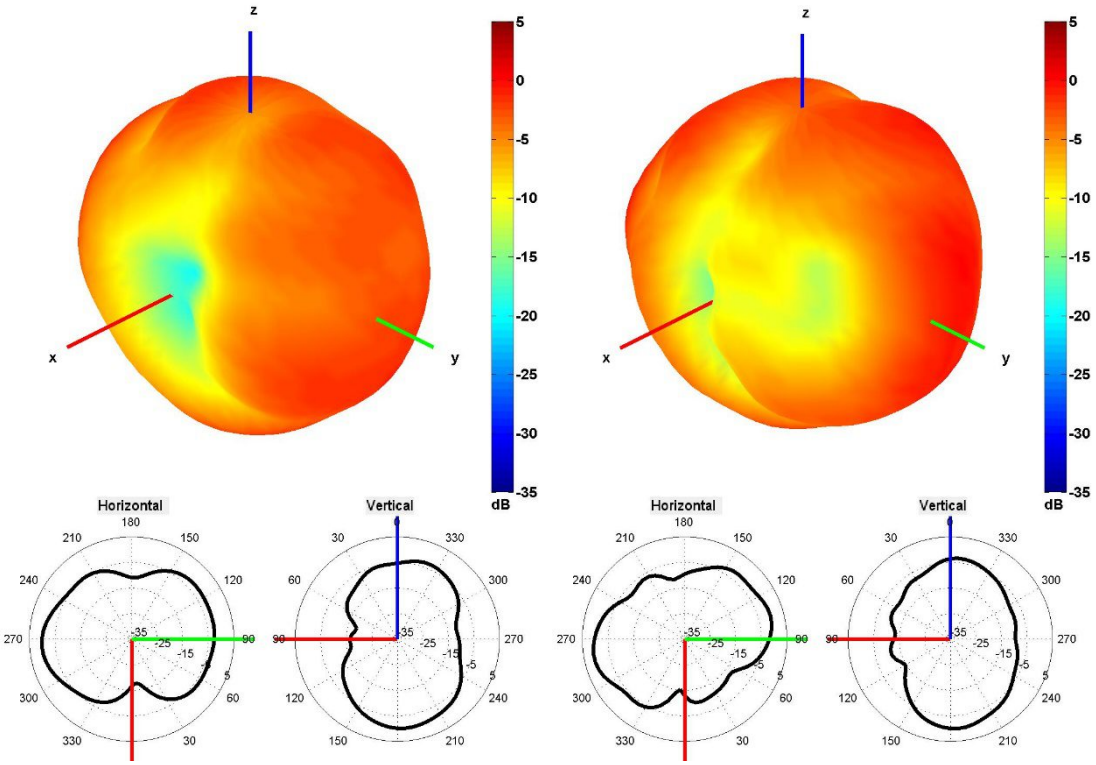



4500 and 5500 MHz Radiation pattern

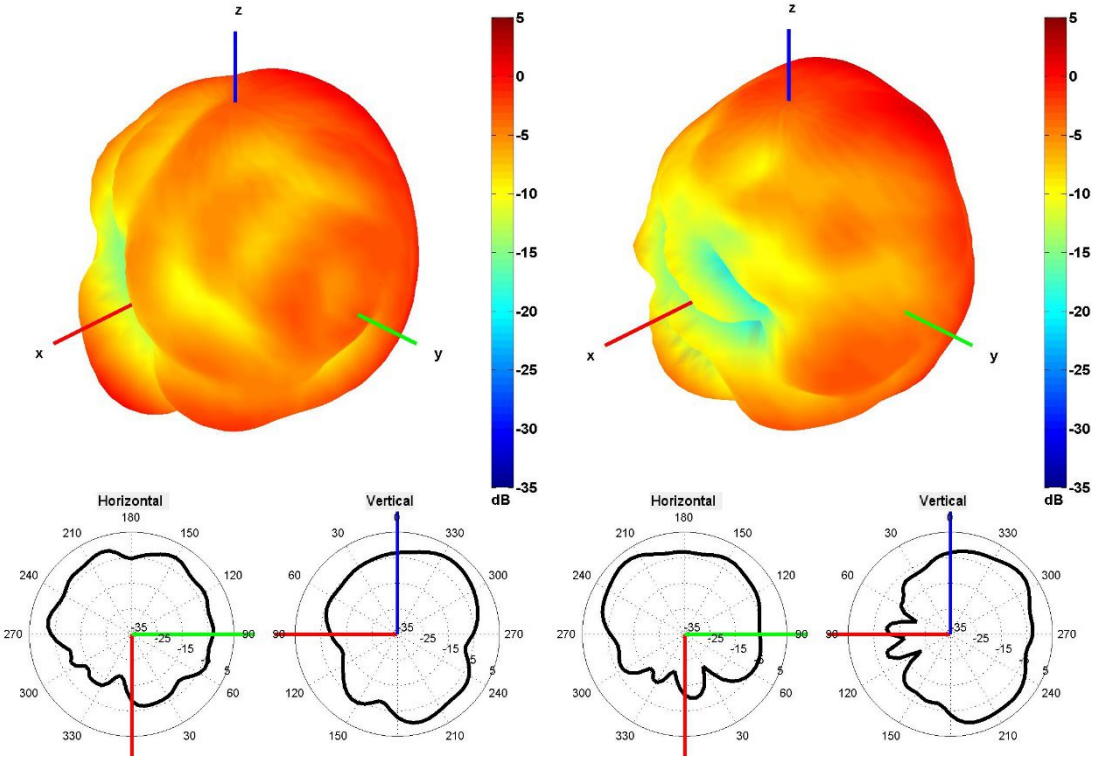
**Cable 2: 5GNR**



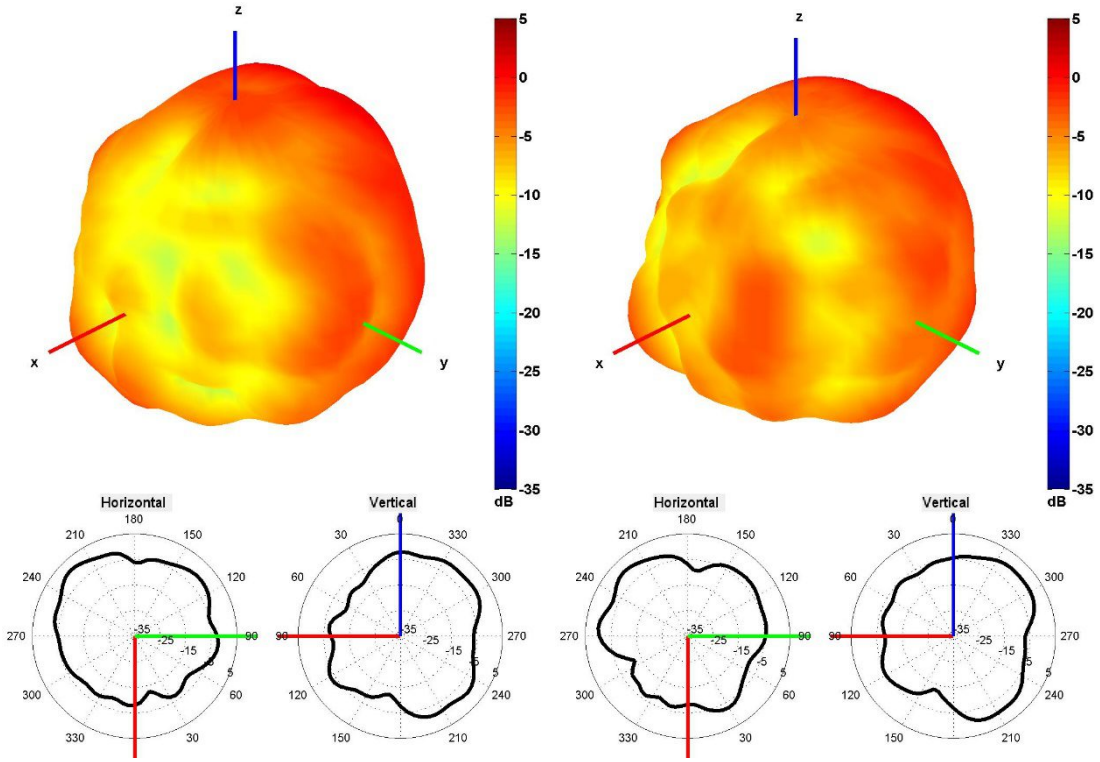

650 and 750 MHz Radiation pattern



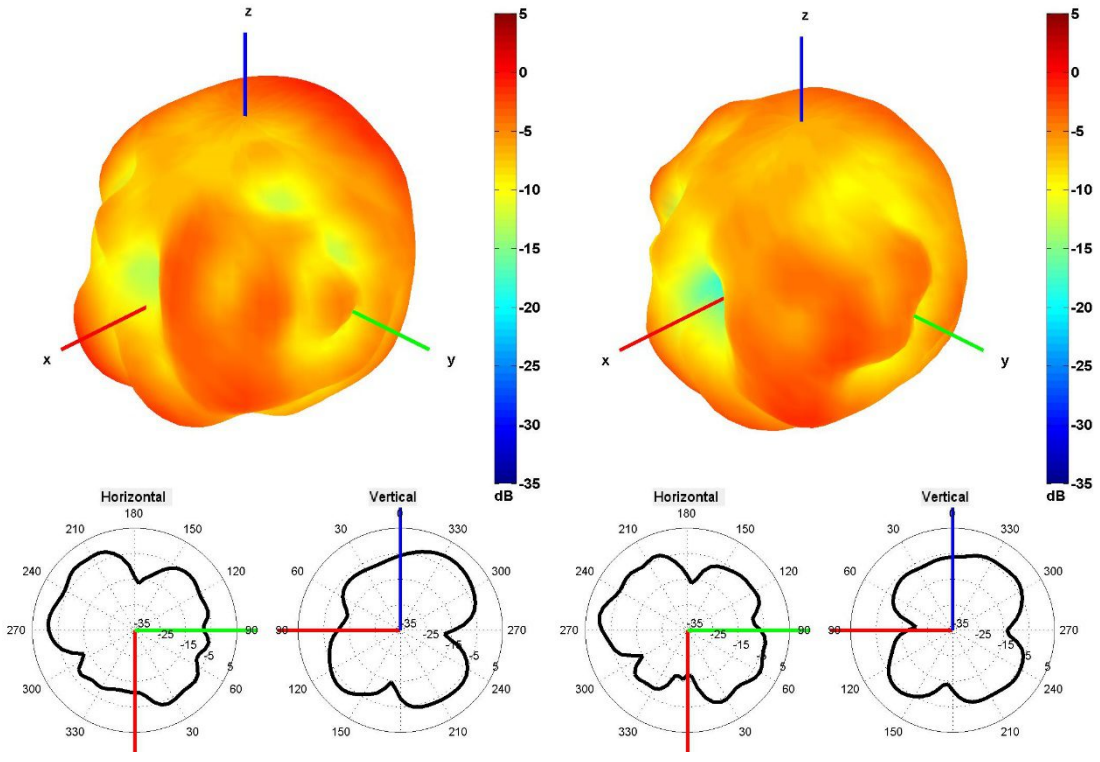

850 and 940 MHz Radiation pattern



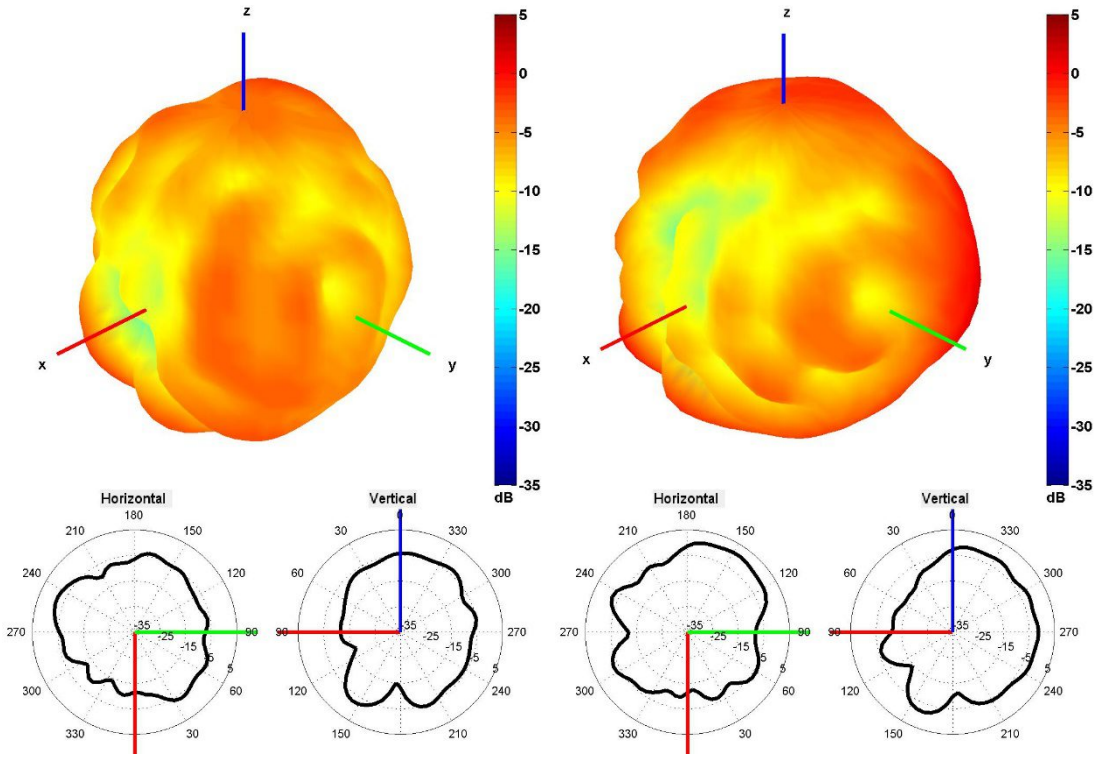

1500 and 1600 MHz Radiation pattern



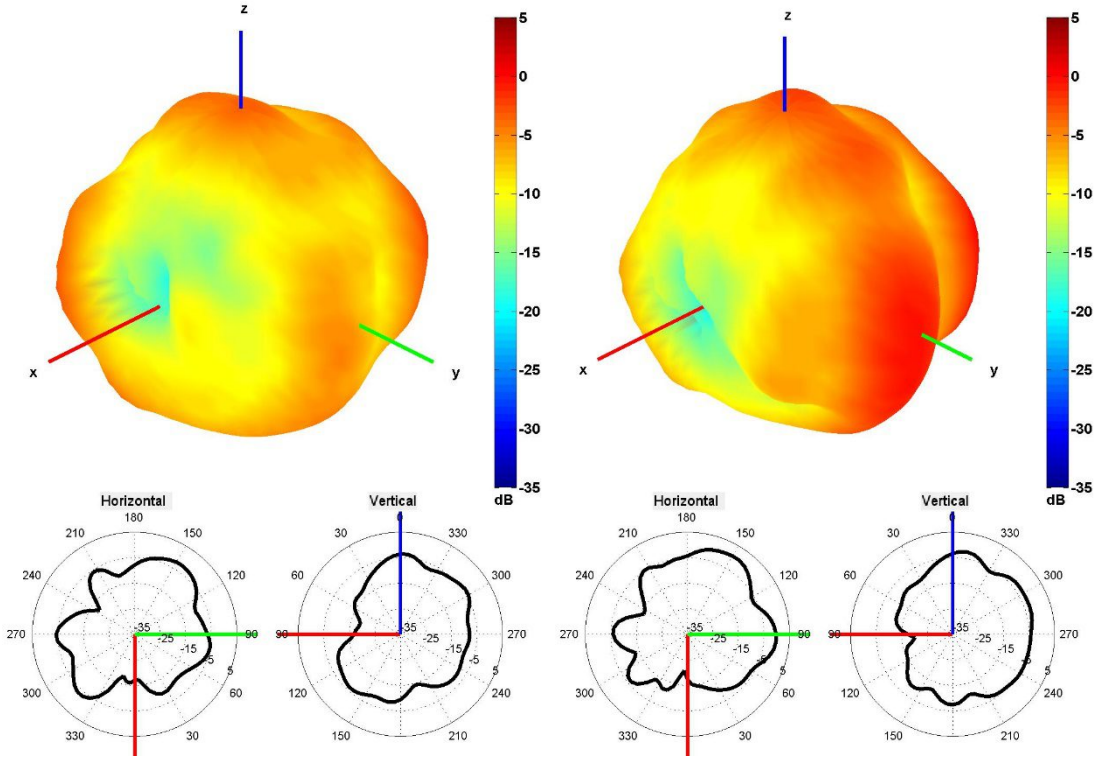

1750 and 1850 MHz Radiation pattern



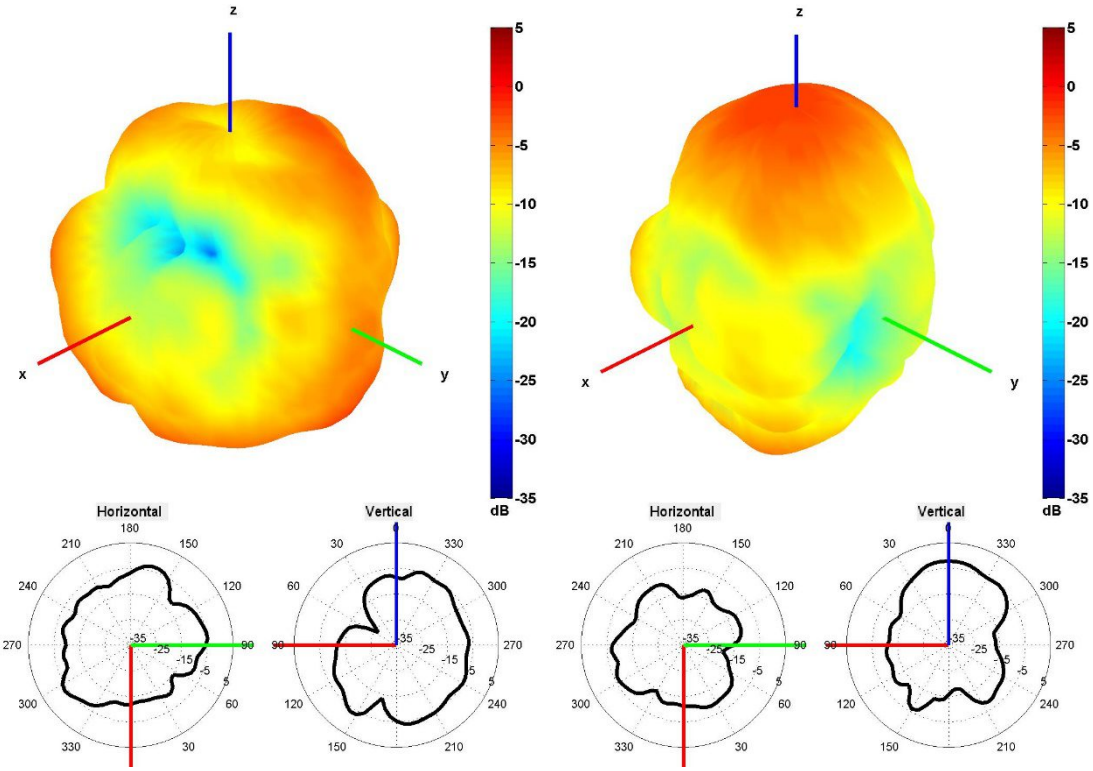

1950 and 2100 MHz Radiation pattern




2350 and 2600 MHz Radiation pattern

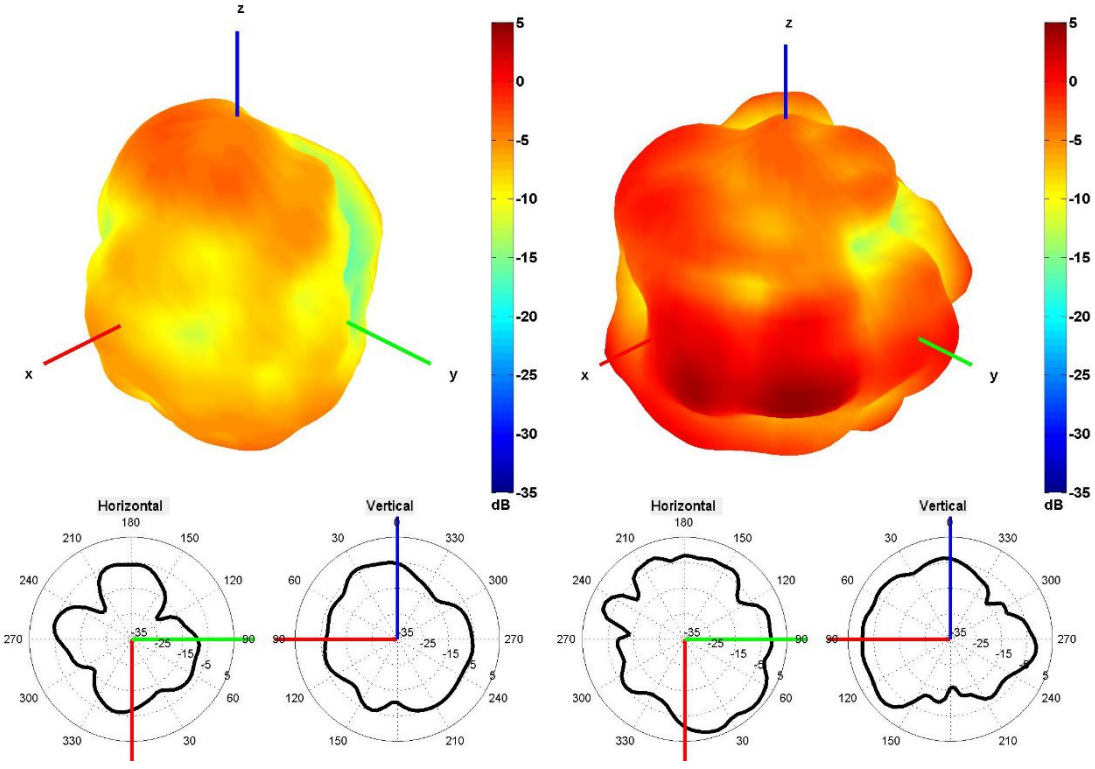



3350 and 3600 MHz Radiation pattern



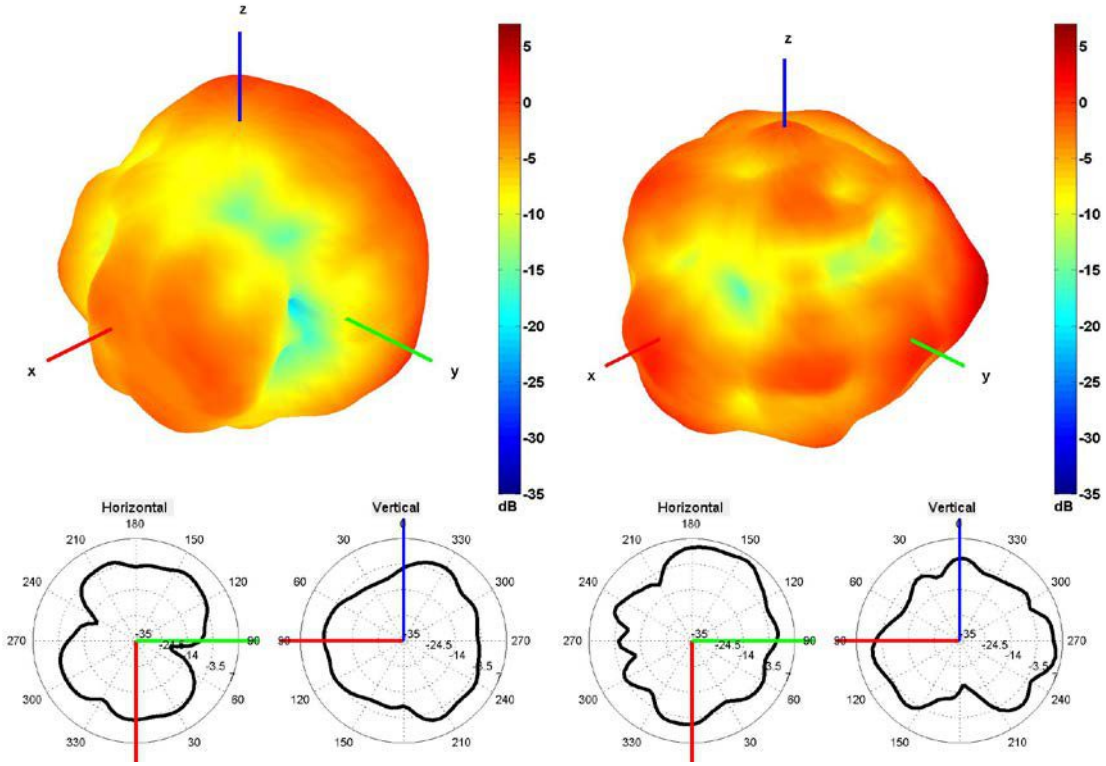

4500 and 5500 MHz Radiation pattern

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



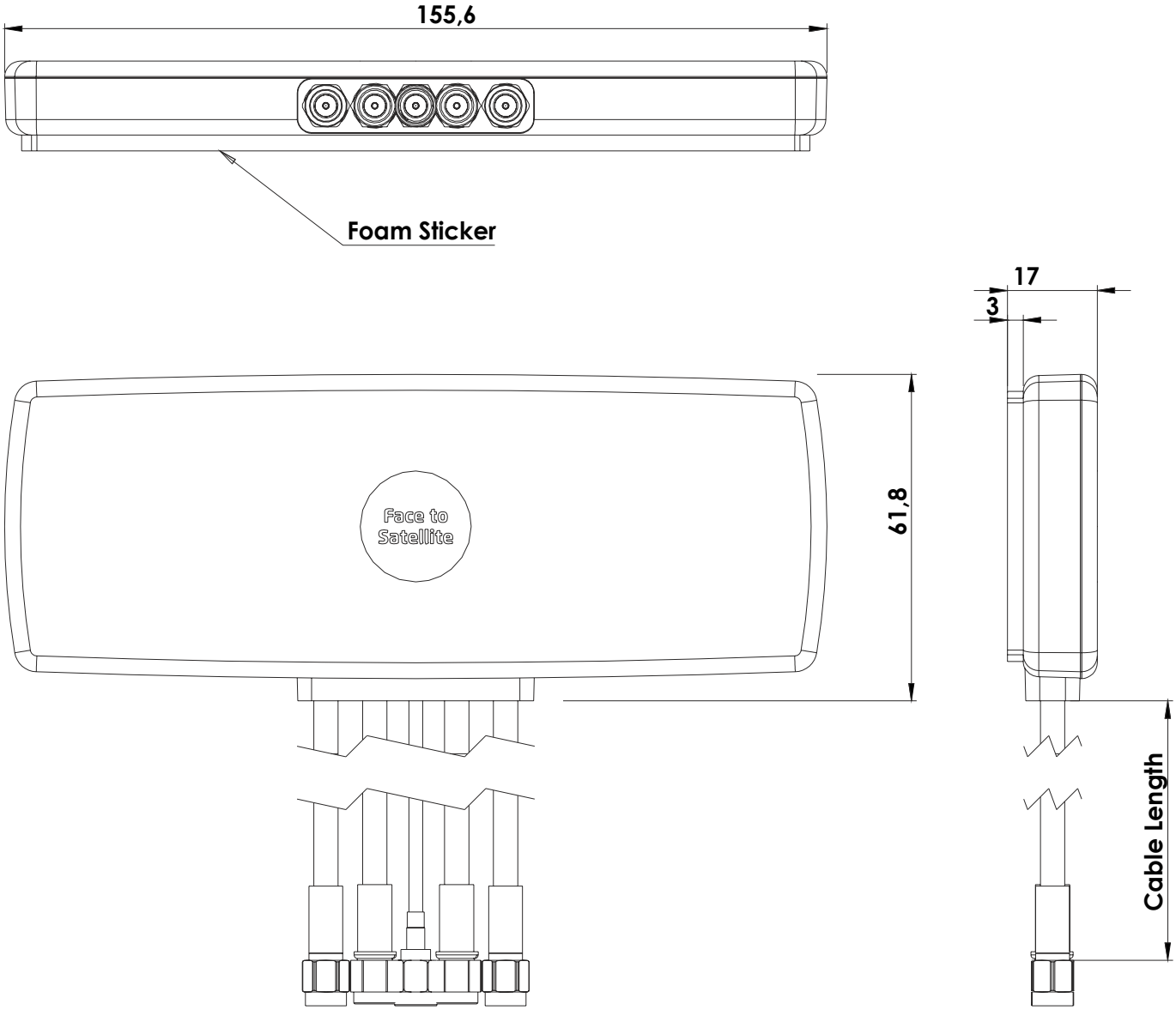

2450 and 5500 MHz Radiation pattern

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




2450 and 5500 MHz Radiation pattern

## 4. Antenna drawings



## 5. Antenna Images

