2J6986BGFc

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

Key Features

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

Cable 3: 2.4/5.0/6.0 GHz ISM
- 2410-2490 MHz
- 4920-5925 Mhz
- 5925-7125 MHz

Cable 4: GPS/GLONASS/QZSS/Galileo
- 1575-1606 MHz

Screw Mount
Anti-Rotation Mounting
High Performance
Ground Plane Independent
Customizable Cable and Connector
Dimensions 80 × 74 × 25.6 mm
Certificates: IP67, IP69



Note: This product is compatible with Bluetooth® technology but does not incorporate Bluetooth® technology

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)	~-15.5	~-12.1	~-12.3	~-13.0
VSWR	~1.5:1	~1.8:1	~1.9:1	~1.7:1
Efficiency (%)	~35.3	~27.1	~23.6	~22.3
Peak Gain (dBi)	~3.1	~2.7	~0.9	~-0.4
Average Gain (dB)	~-4.6	~-5.4	~-6.5	~-6.5
Impendance (Ohm)	50			
Polarisation	Linear			
Radiation Pattern	Omni-Directional			
Max. Input Power (W)	25			
Connector Type	SMA-Male Standard (Other Connectors Available)			
Cable Length	300 cm Standard (Any Cable Length Available)			
Cable Type	D302 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)	~-16.8	~-12.8	~-13.4	~-13.1
VSWR	~1.4:1	~1.7:1	~1.7:1	~1.7:1
Efficiency (%)	~34.1	~27.3	~20.0	~22.0
Peak Gain (dBi)	~3.2	~2.9	~1.2	~0.4
Average Gain (dB)	~-4.8	~-5.7	~-7.3	~-6.6
Impendance (Ohm)	50			
Polarisation	Linear			
Radiation Pattern	Omni-Directional			
Max. Input Power (W)	25			
Connector Type	SMA-Male Standard (Other Connectors Available)			
Cable Length	300 cm Standard (Any Cable Length Available)			
Cable Type	D302 Standard (Other Cables Available)			

Cable 3

Parameters	2.4/5.0/6.0 GHz ISM Antenna		
Standards	WiFi, Bluetooth®, ZigBee, ISM		
Band (MHz)	2.4 GHz	5.0 GHz	6.0 GHz
Frequency (MHz)	2410-2490	4920-5925	5925-7125
Return Loss (dB)	~-11.4	~-18.0	~-18.5
VSWR	~2.0:1	~1.3:1	~1.3:1
Efficiency (%)	~24.7	~27.4	~25.4
Peak Gain (dBi)	~-0.2	~1.7	~1.6
Average Gain (dB)	~-6.1	~-5.6	~-5.8
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	D302 Standard (Other Cables Available)		

Cable 4

Parameters	GNSS Ceramic Active Antenna	
Standards	GPS/QZSS/Galileo	GLONASS
Bands (MHz)	1575	1602
Frequency (MHz)	1575.42	1598-1606
Passive Gain (dBi)	~3.6	
Impedance (Ohms)	50	
Radiation Pattern	Hemispherical	
Voltage Range (V)	1.5 - 3.6	
Active Gain (dB)	28 @ 2.7 V	
Noise Figure (dB)	1.8 @ 2.7 V	
Current Consumption (mA)	9 @ 2.7 V	
Power Consumption (mW)	24.3 @ 2.7 V	
Saw Filter Type	Pre-Filter	
Out of Band Rejection (dB)	~43	
ESD Protection (kV)	6	
Connector Type	SMA-Male Standard (Other Connectors Available)	
Cable Length	300 cm Standard (Any Cable Length Available)	
Cable Type	D100 Standard (Other Cables Available)	

Antenna Measurement Conditions:

Mounted on Metal Plate of 30 x 30 cm

100 cm of Cable D302

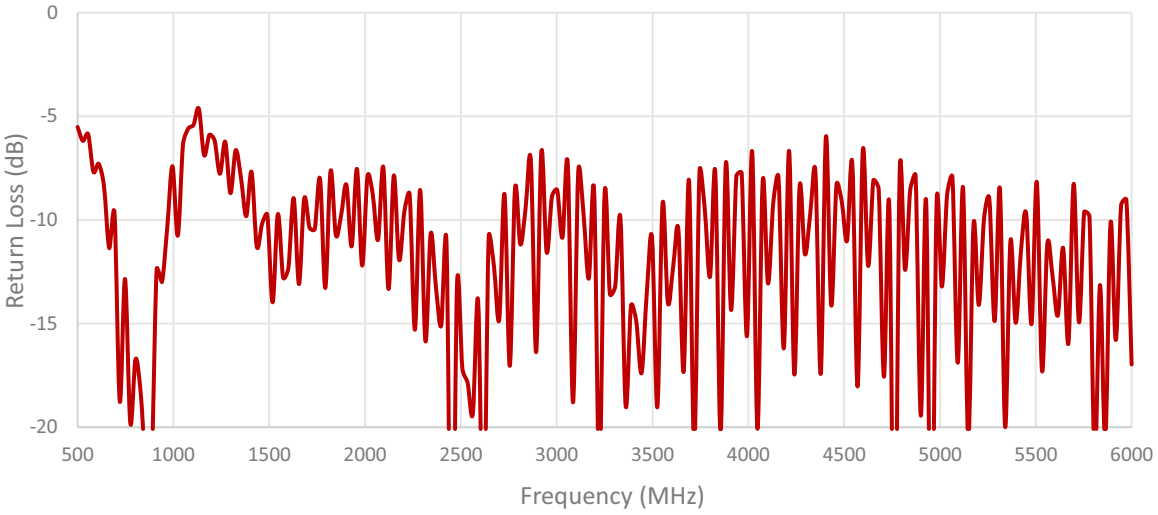
Measured in Certified CTIA 3D Anechoic Chamber

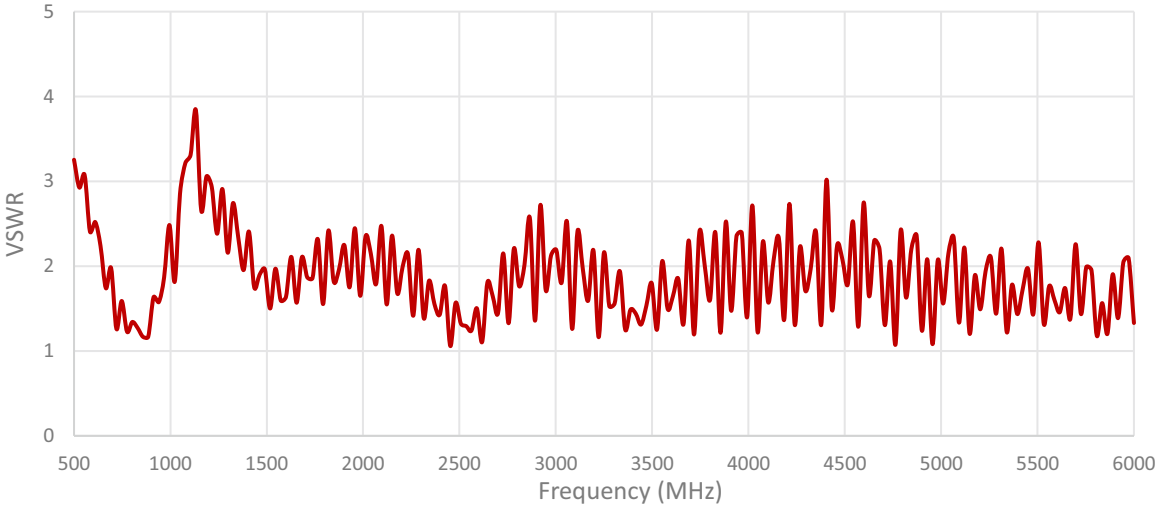
2. Mechanical and environmental specifications

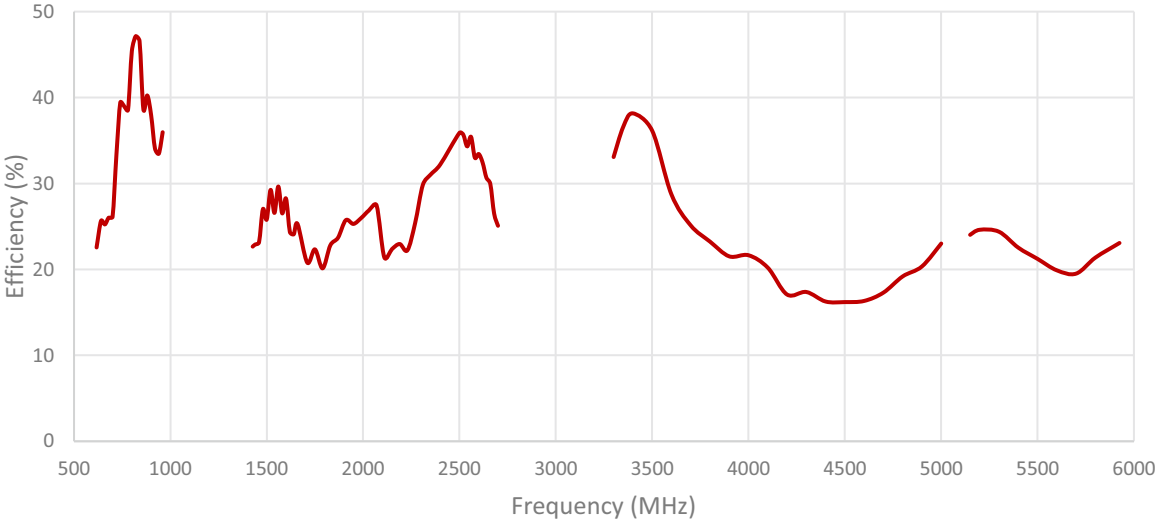
Specifications	2J6986BGFc
Mounting Type	Screw Mount
Dimensions (mm)	80 × 74 × 25.6
Max. Tighten Torque (Nm)	5 Nm
Radome Type	PC/ASA
Radome Color	Black, White
Operating Temperature (C)	-40 to +85
Storage Temperature (C)	-40 to +85
Substance Compliance	RoHS
Certificates	IP67, IP69

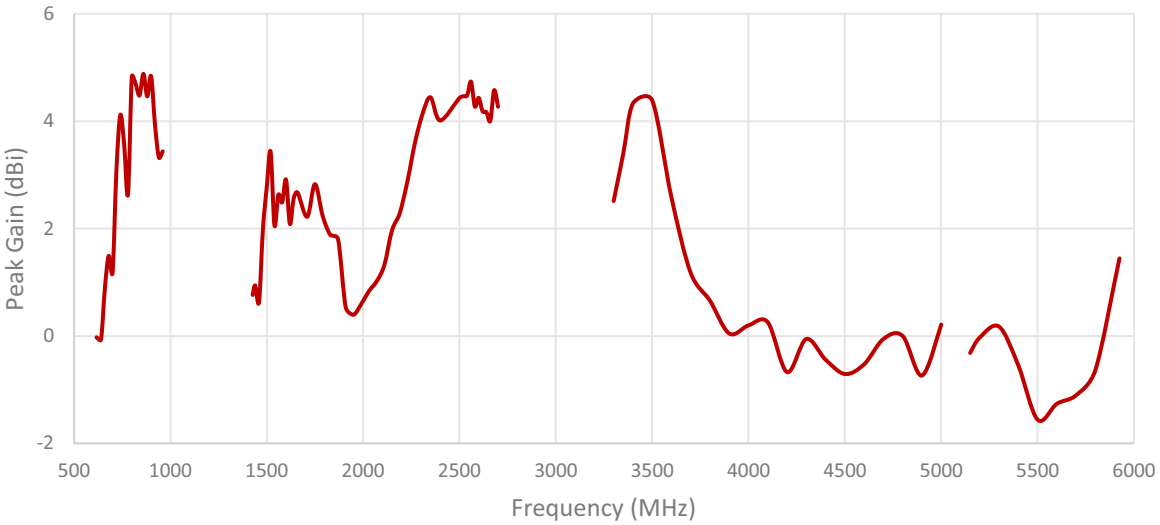
3. Antenna parameters

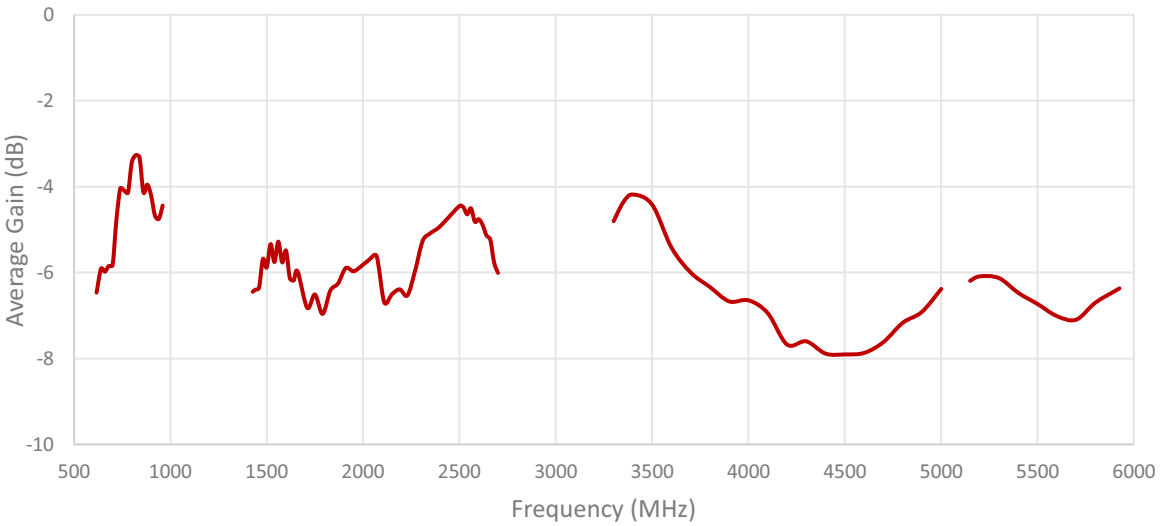
Cable 1: 5GNR



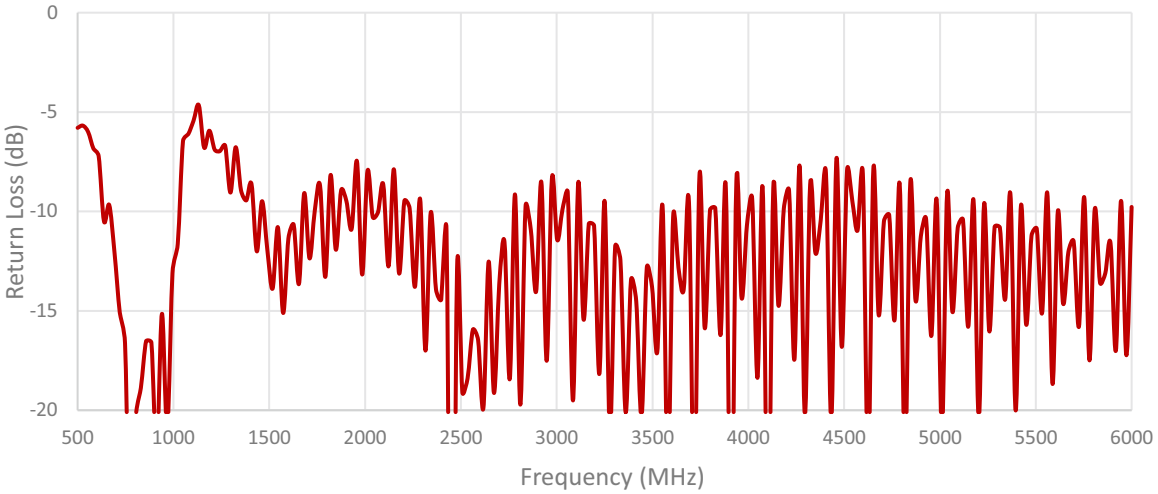


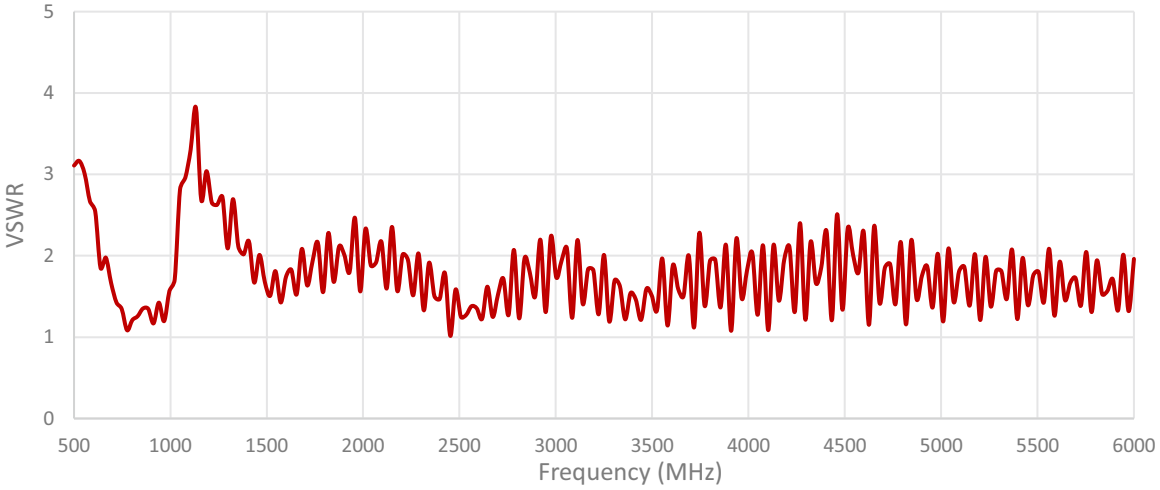

Efficiency (%)
50
40
30
20
10
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

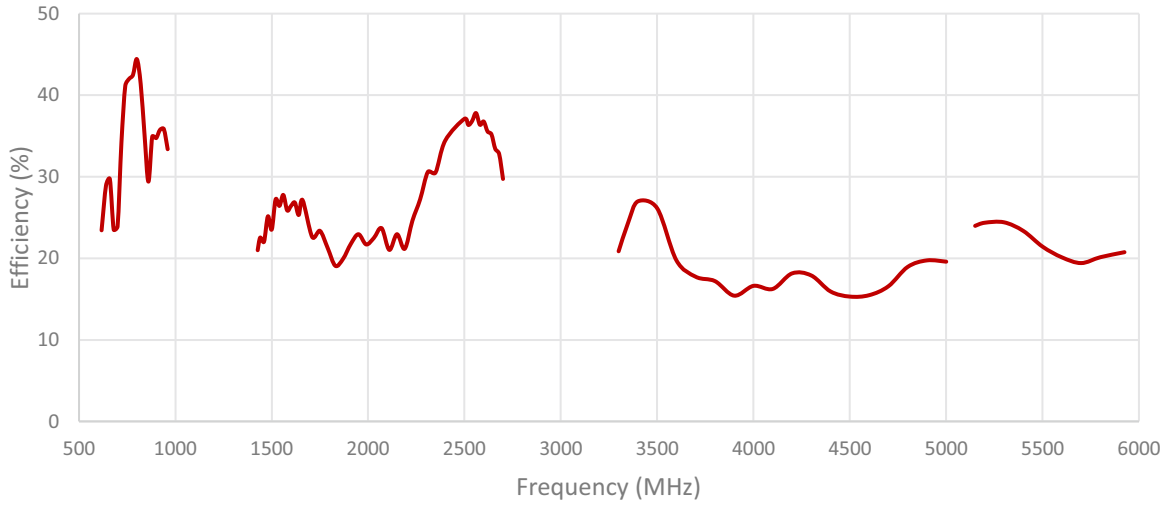

Peak Gain (dBi)
6
4
2
0
-2
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

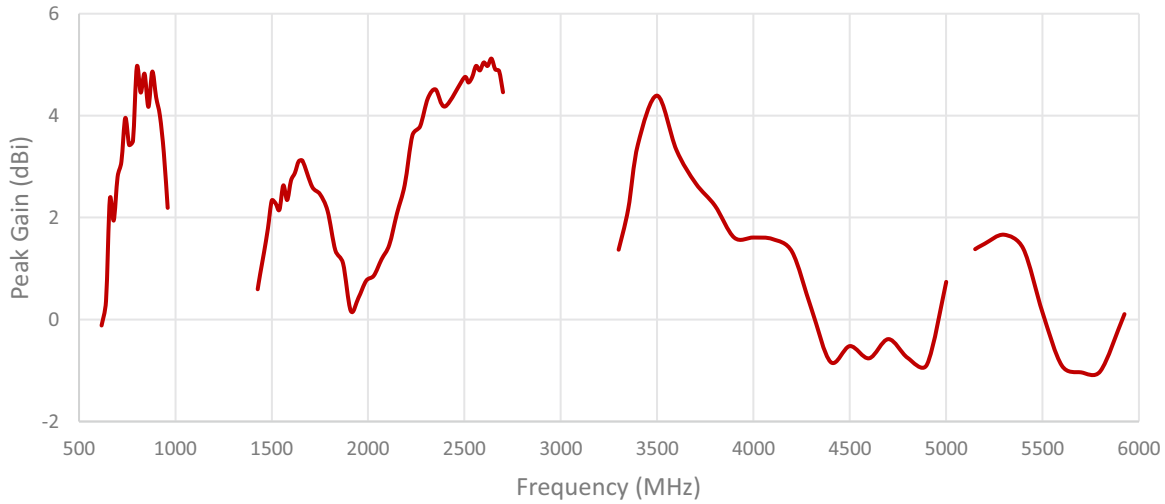

Average Gain (dB)
0
-2
-4
-6
-8
-10
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

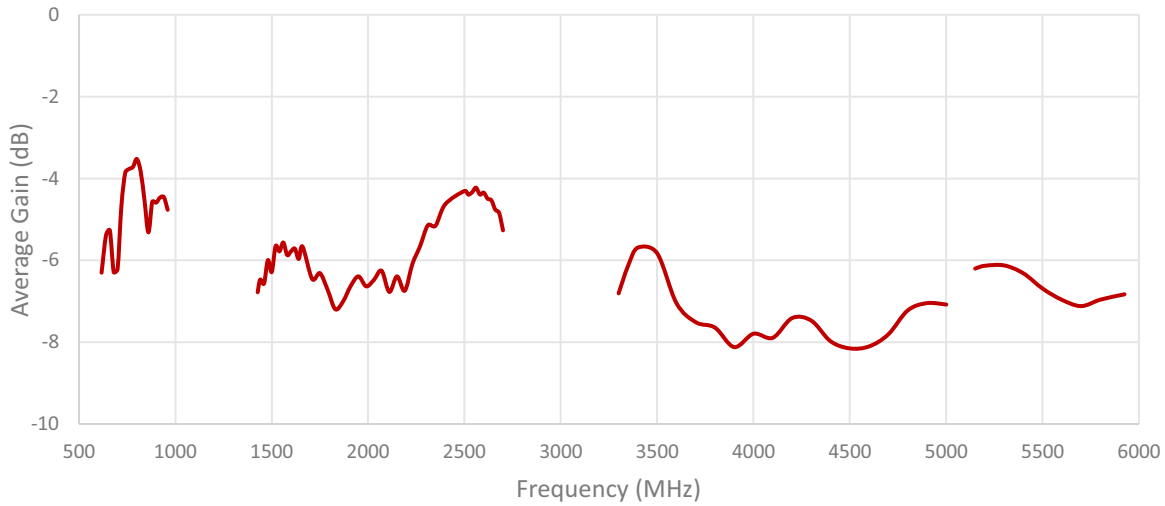
Cable 2: 5GNR


0
-5
-10
-15
-20
Return Loss (dB)
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

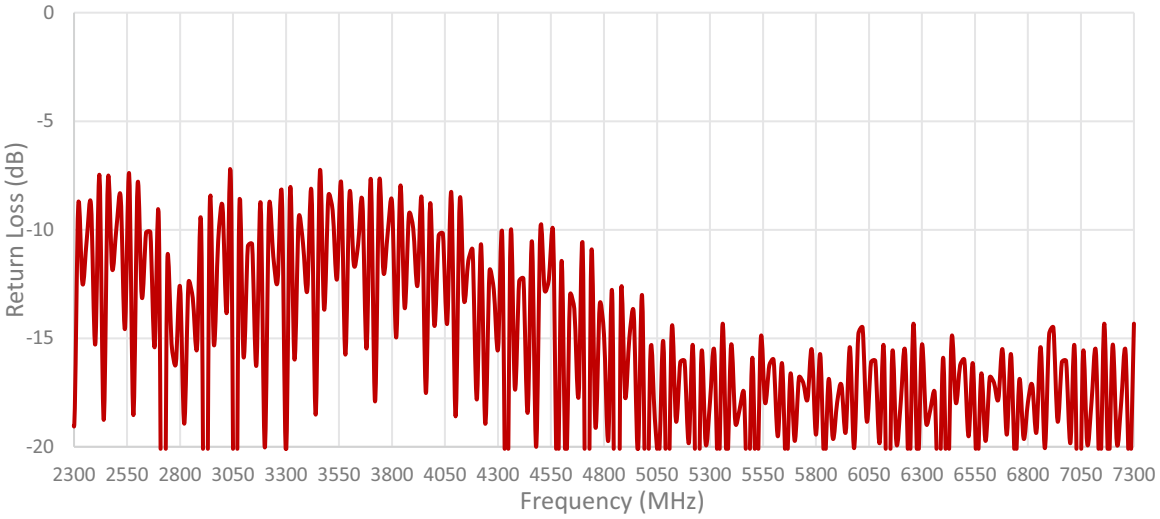

5
4
3
2
1
0
VSWR
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

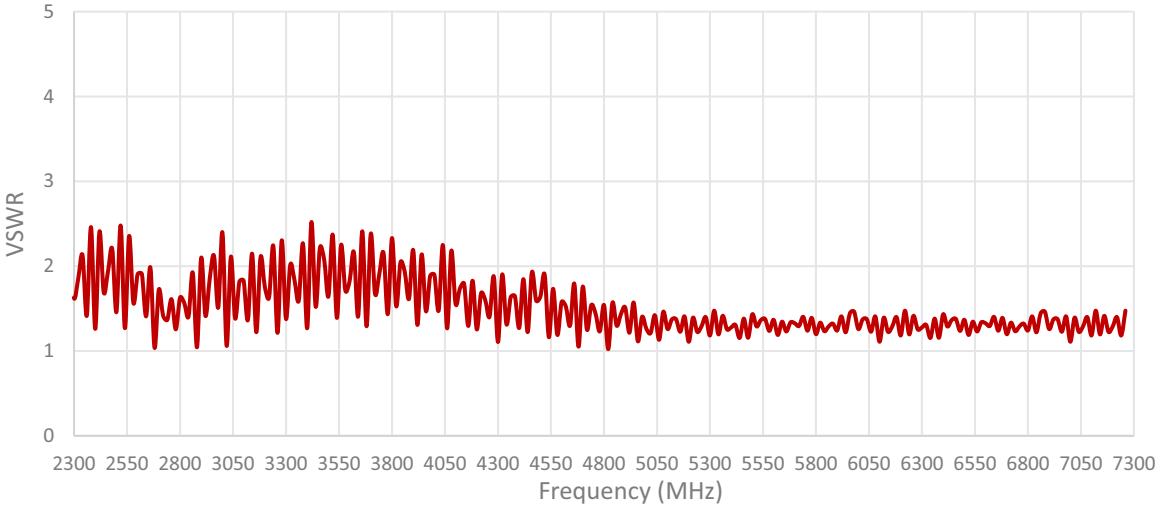

Efficiency (%)
50
40
30
20
10
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

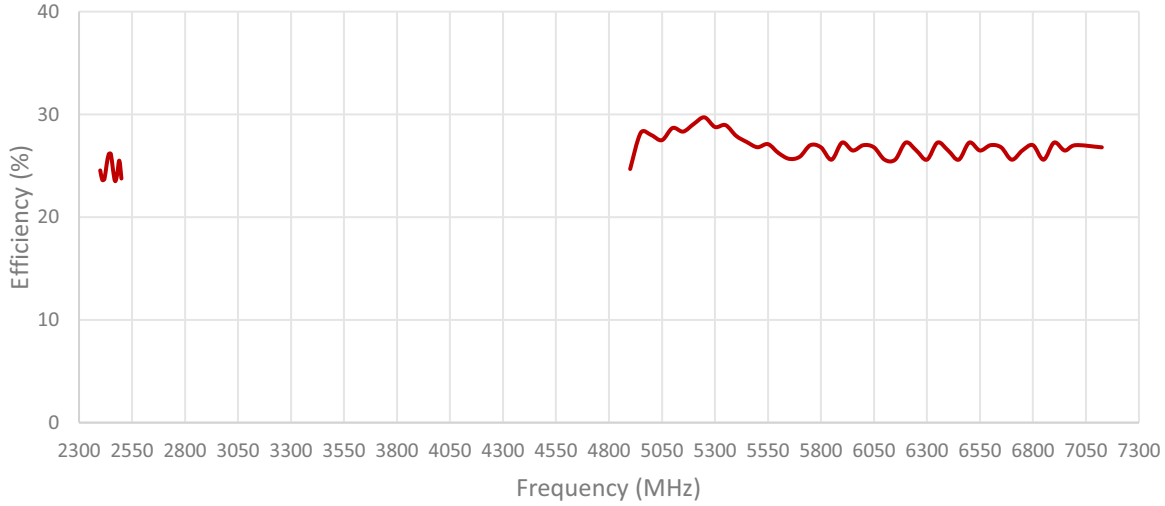

Peak Gain (dBi)
6
4
2
0
-2
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

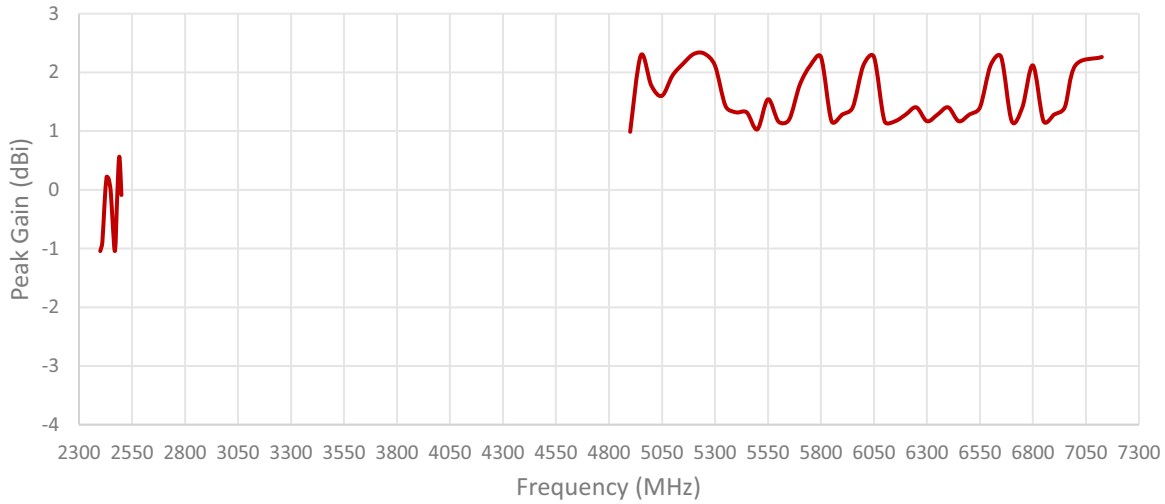

Average Gain (dB)
0
-2
-4
-6
-8
-10
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

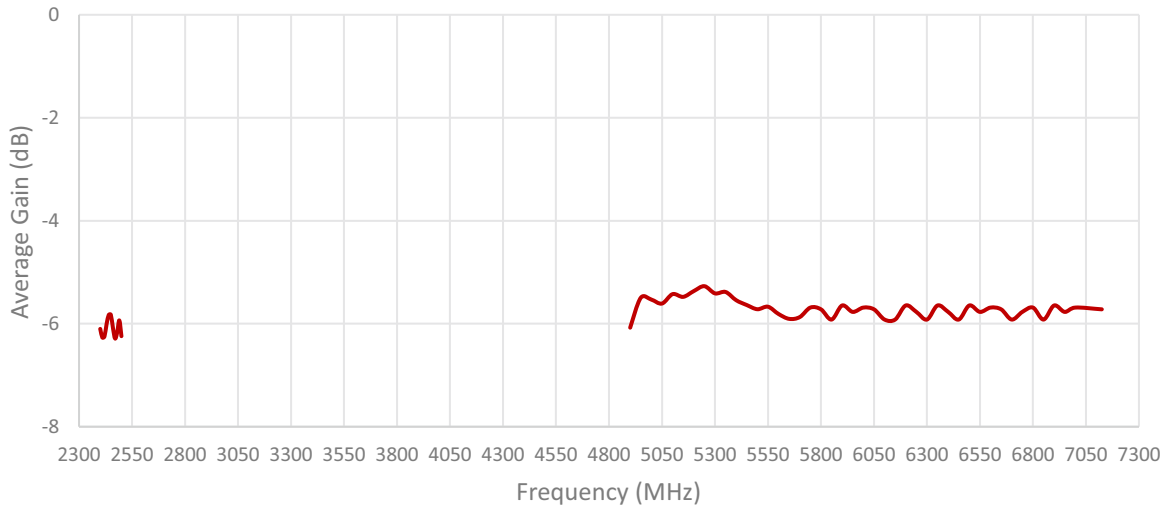
Cable 3: 2.4/5.0/6.0 GHz ISM



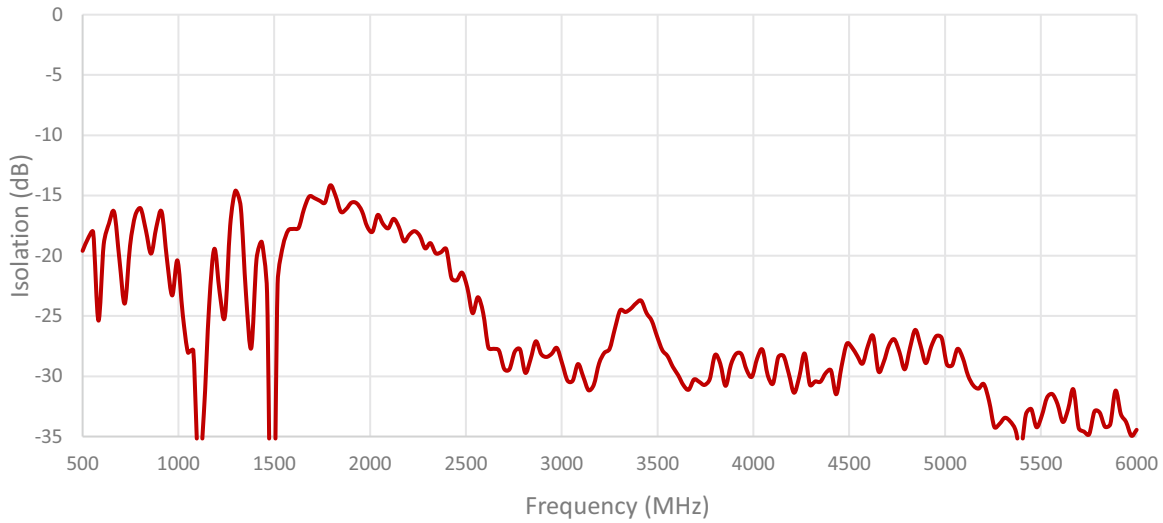



40
30
20
10
0
Efficiency (%)
2300 2550 2800 3050 3300 3550 3800 4050 4300 4550 4800 5050 5300 5550 5800 6050 6300 6550 6800 7050 7300
Frequency (MHz)

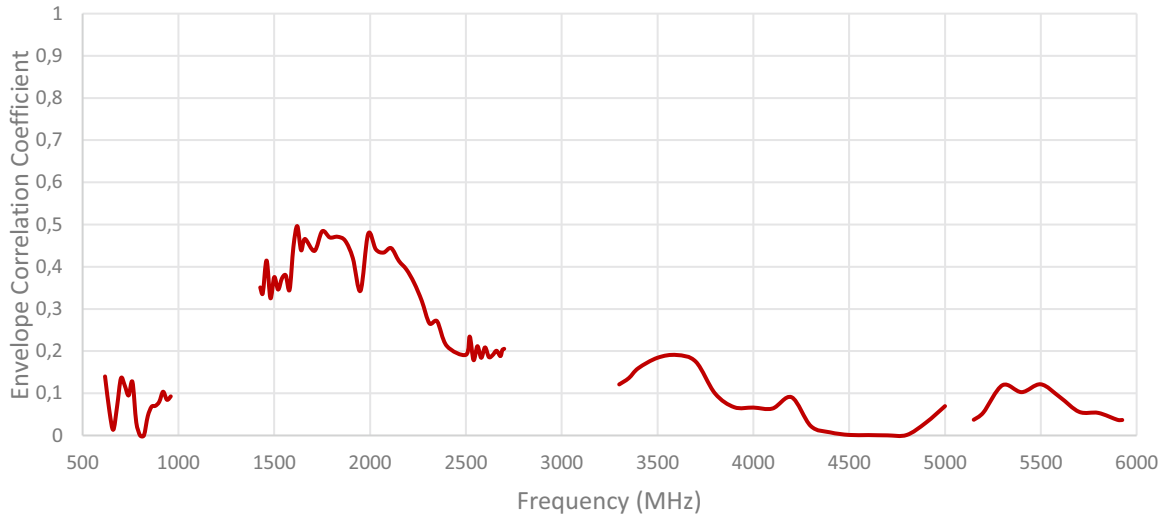

3
2
1
0
-1
-2
-3
-4
Peak Gain (dBi)
2300 2550 2800 3050 3300 3550 3800 4050 4300 4550 4800 5050 5300 5550 5800 6050 6300 6550 6800 7050 7300
Frequency (MHz)

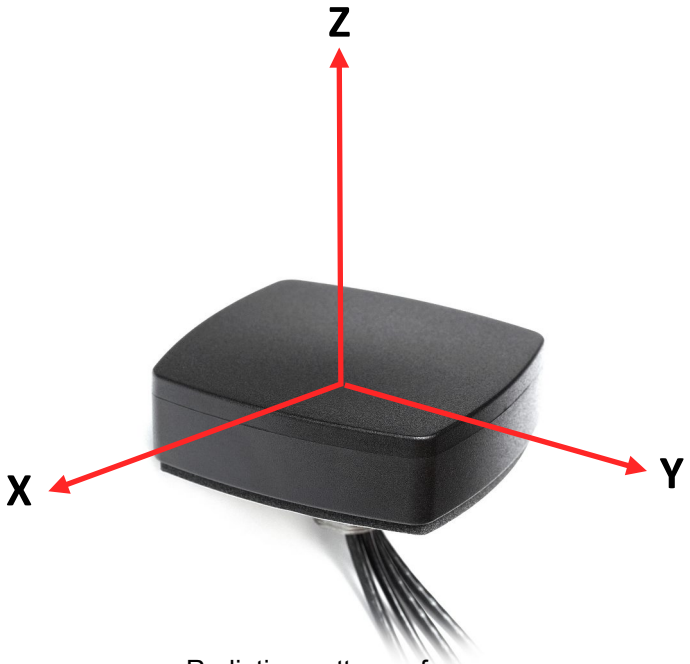

0
-2
-4
-6
-8
Average Gain (dB)
2300 2550 2800 3050 3300 3550 3800 4050 4300 4550 4800 5050 5300 5550 5800 6050 6300 6550 6800 7050 7300
Frequency (MHz)

ISOLATION FOR CABLES 1 AND 2



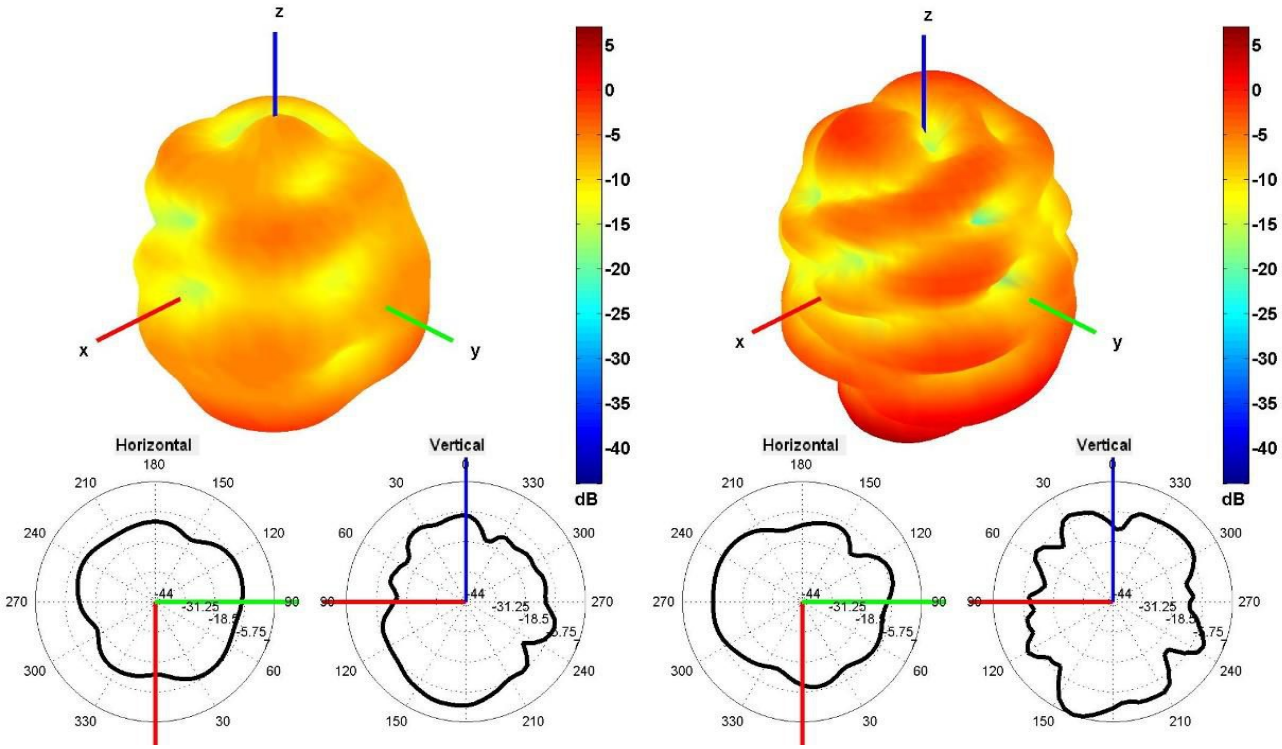
ENVELOPE CORRELATION COEFICIENT FOR CABLES 1 AND 2



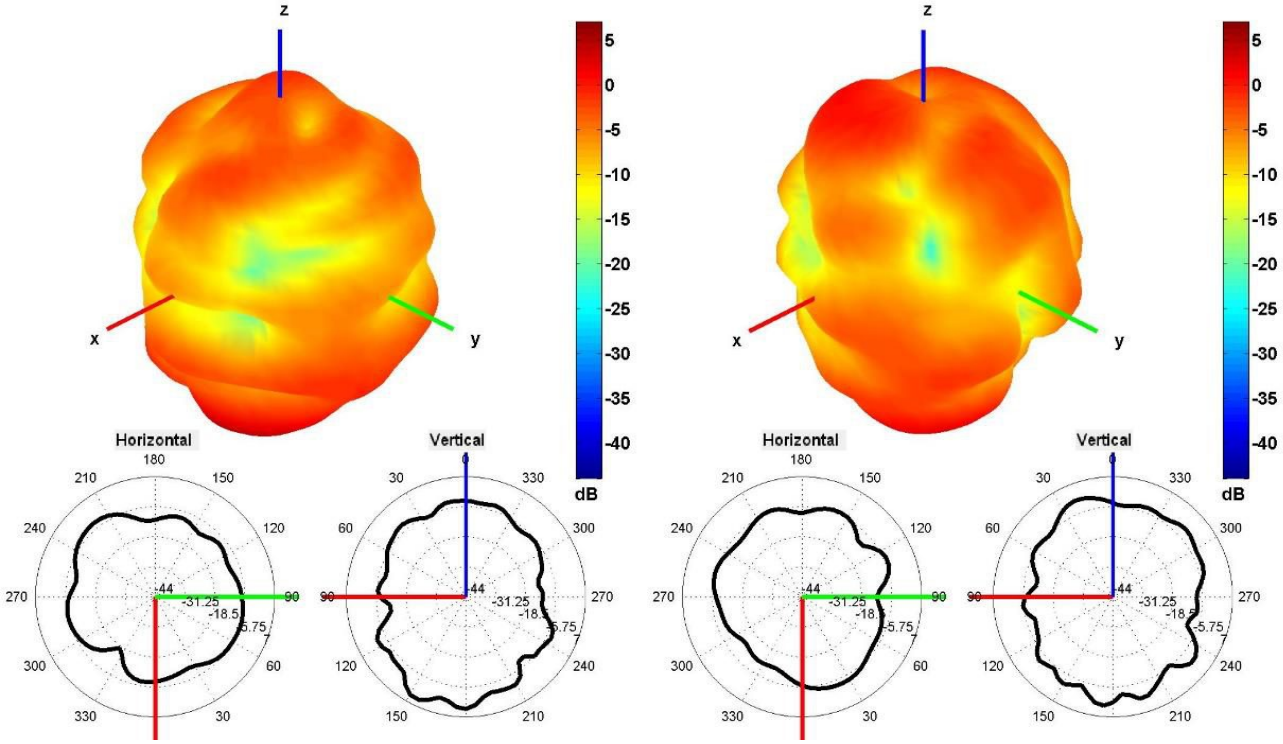


Radiation pattern reference

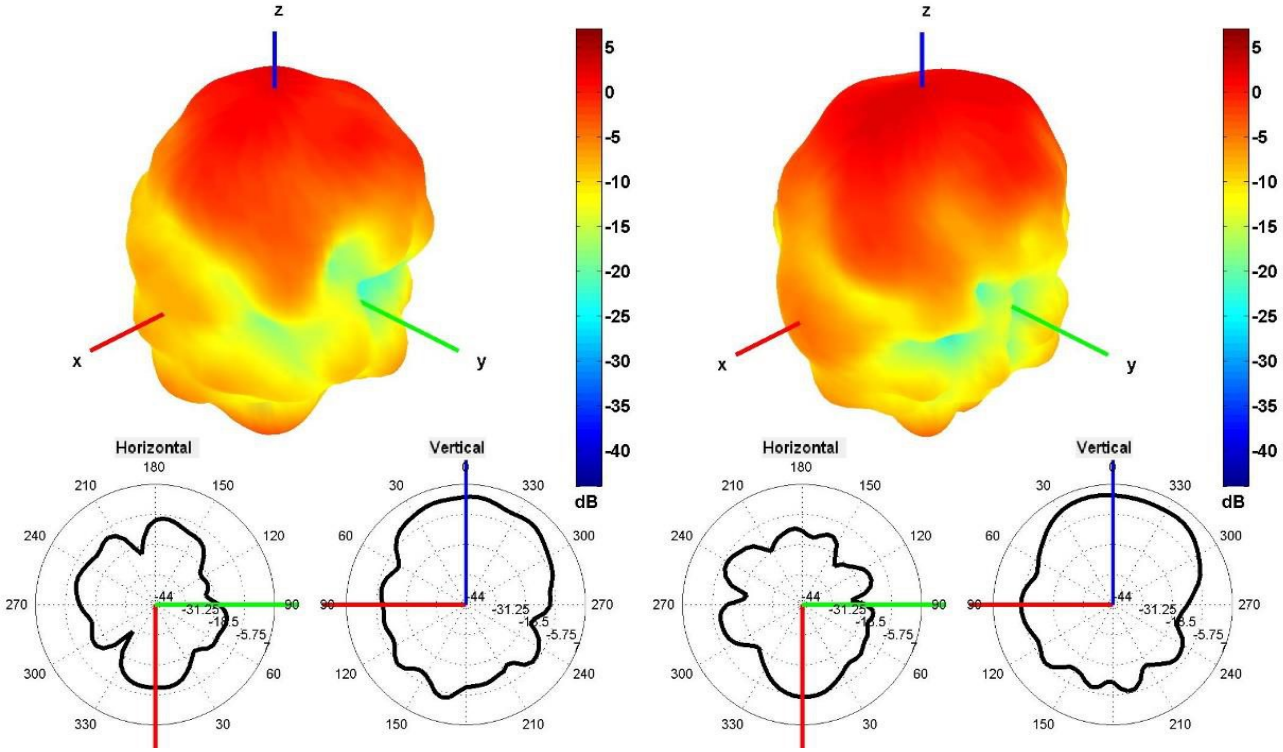
Cable 1: 5GNR



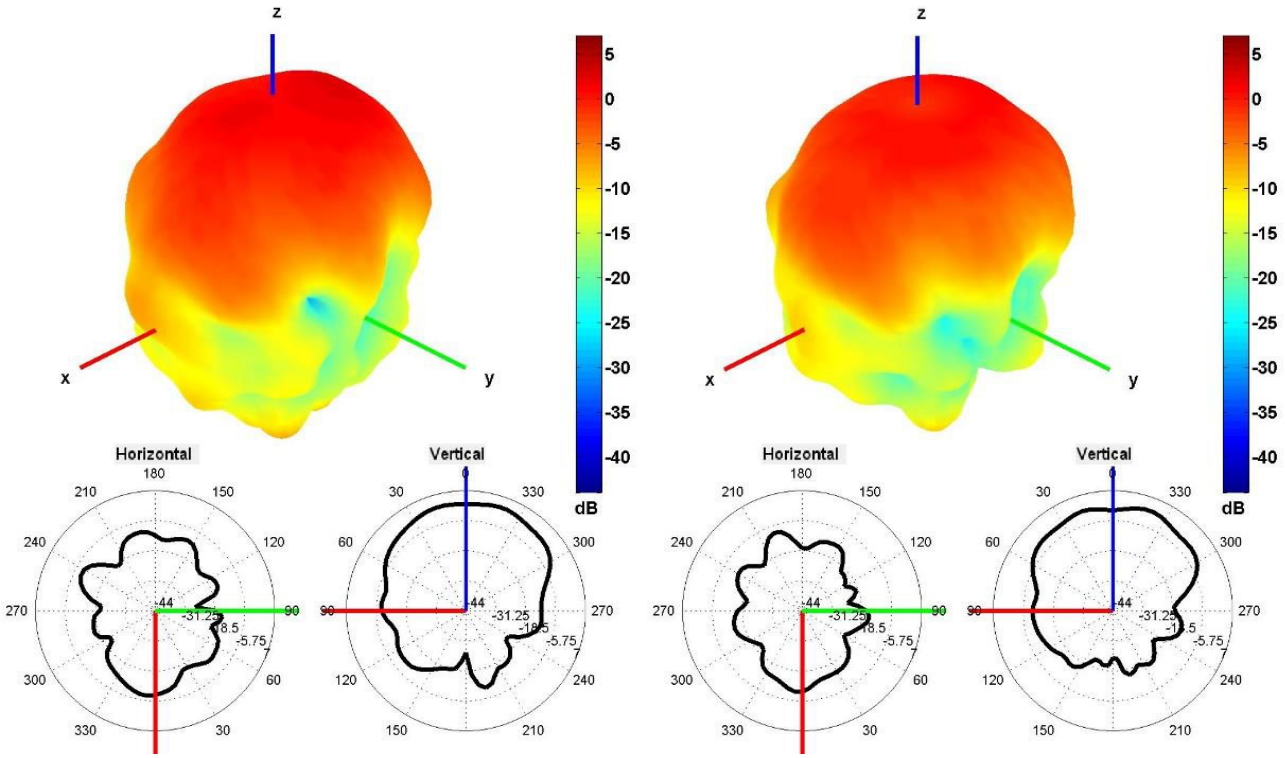
640 and 740 MHz Radiation pattern



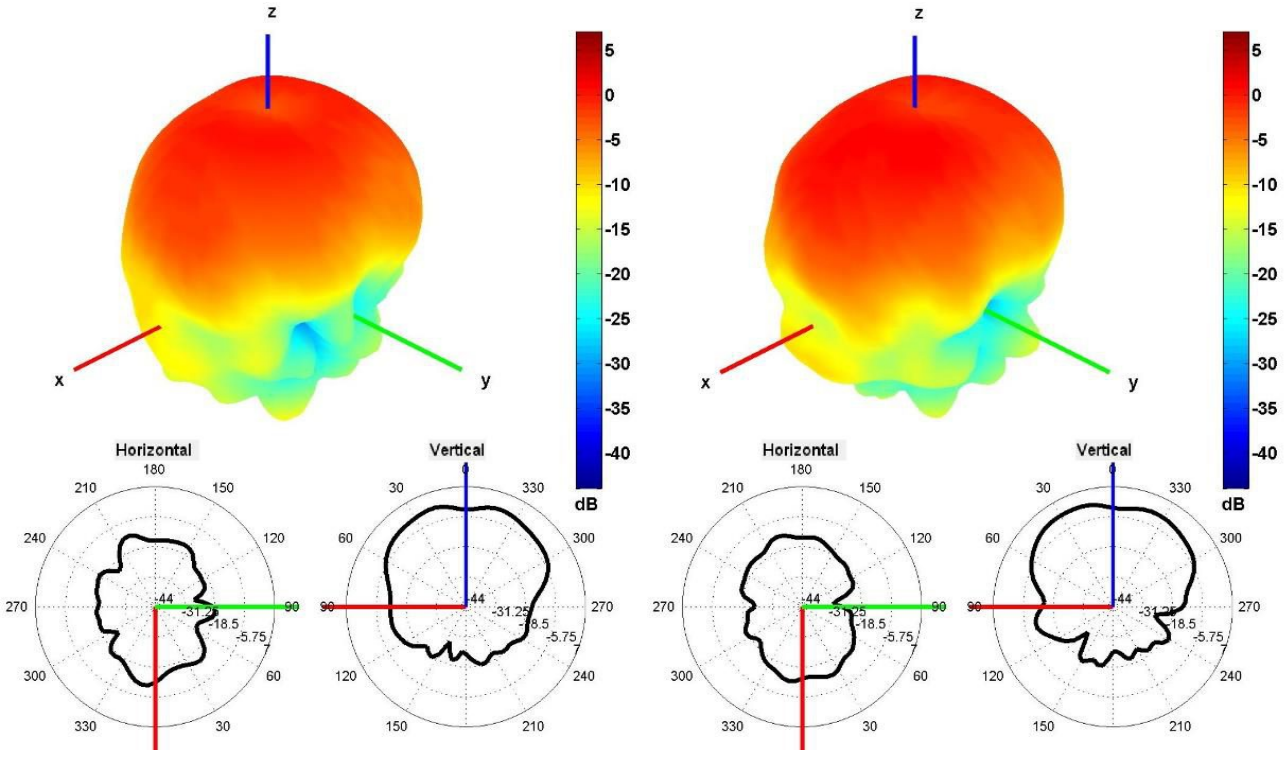
850 and 940 MHz Radiation pattern



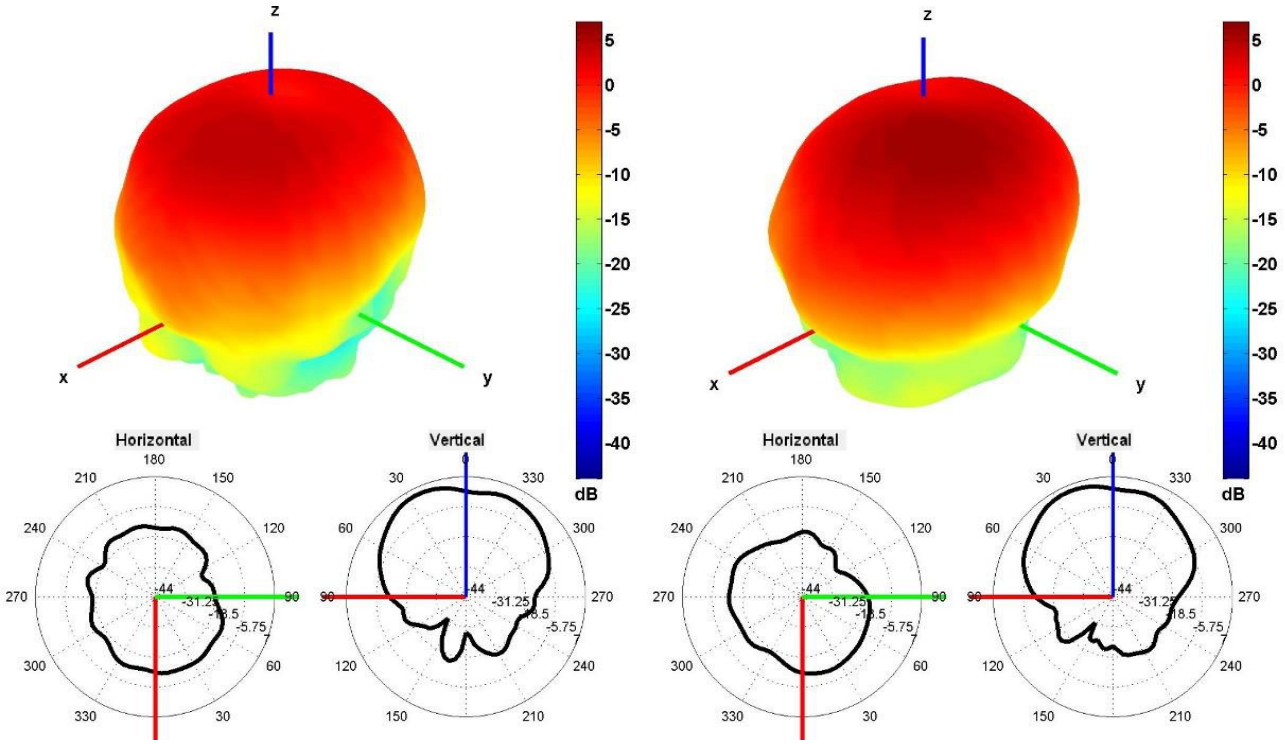
1500 and 1600 MHz Radiation pattern



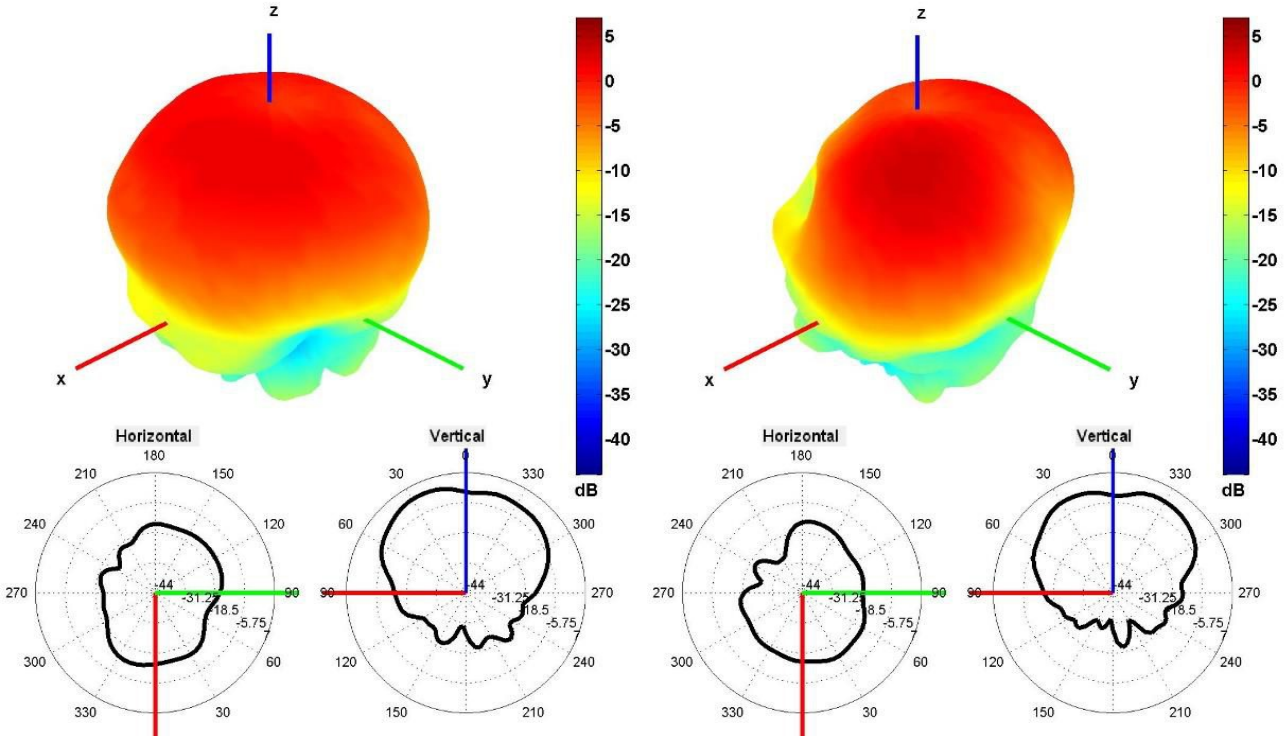
1750 and 1850 MHz Radiation pattern



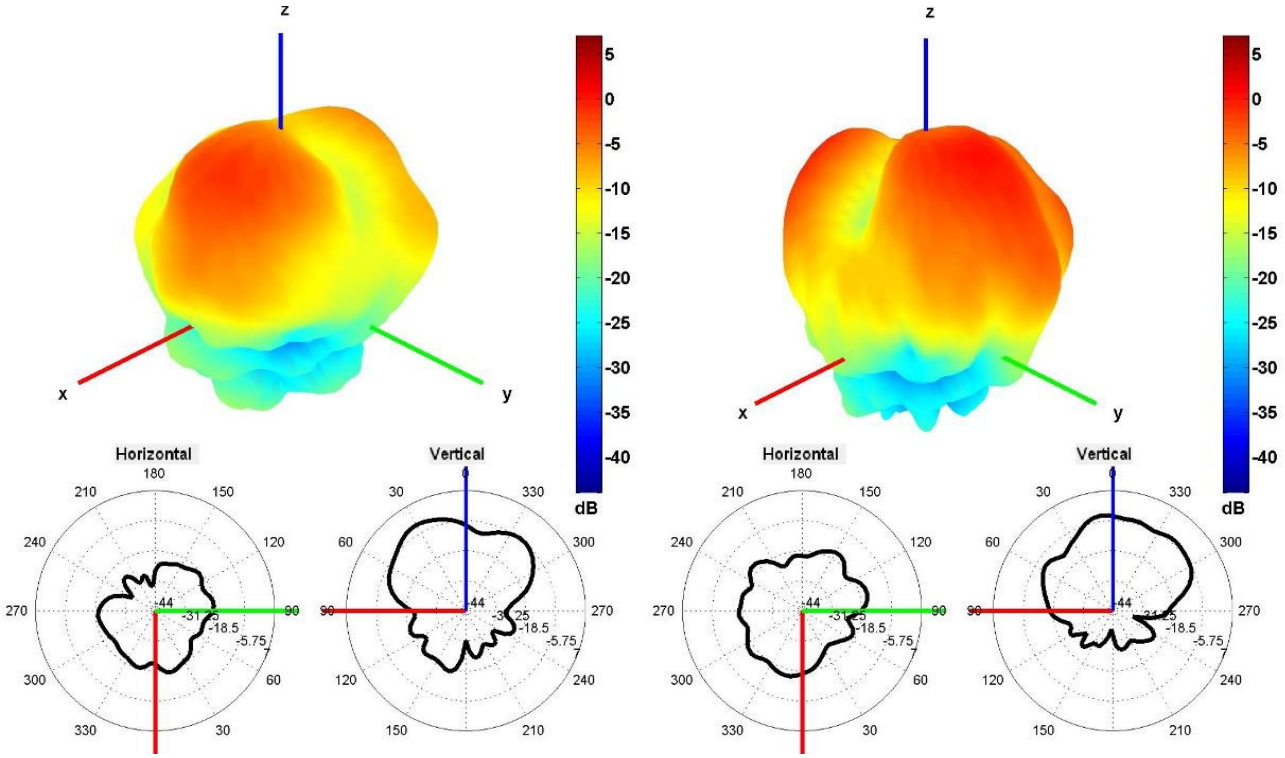
1950 and 2100 MHz Radiation pattern



2350 and 2600 MHz Radiation pattern

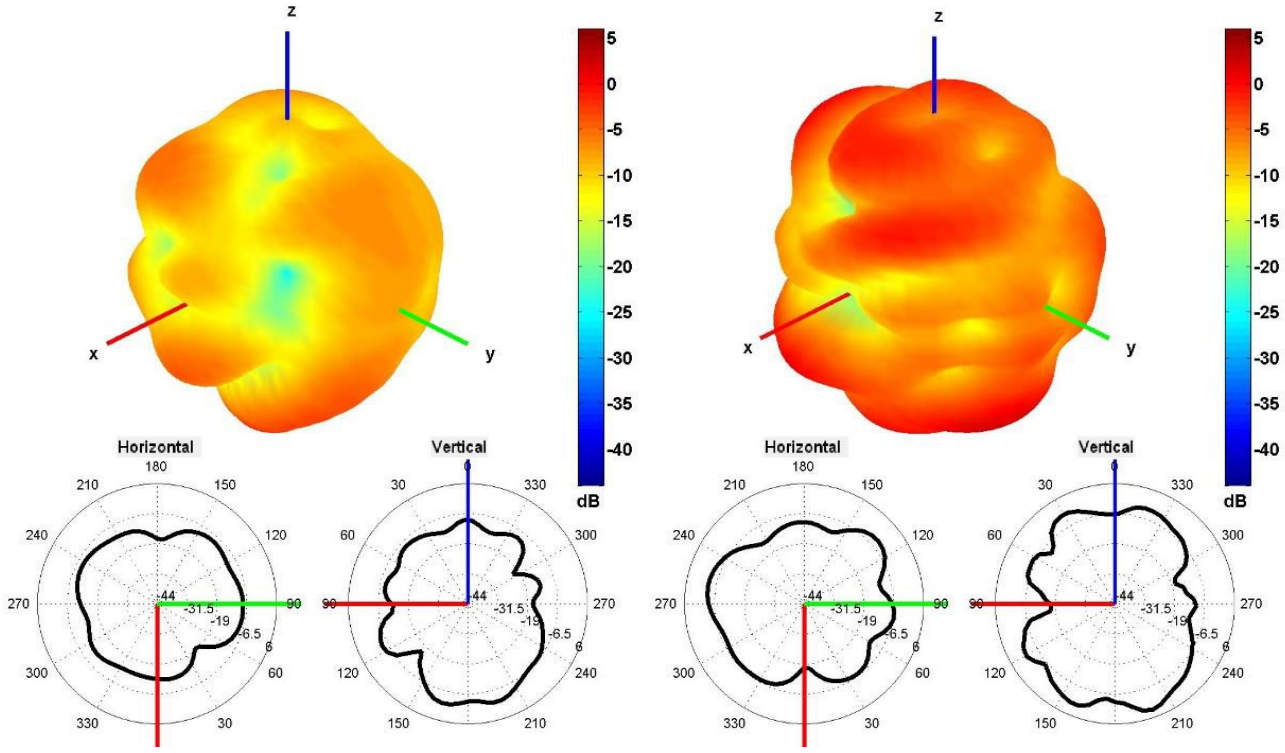


3350 and 3600 MHz Radiation pattern

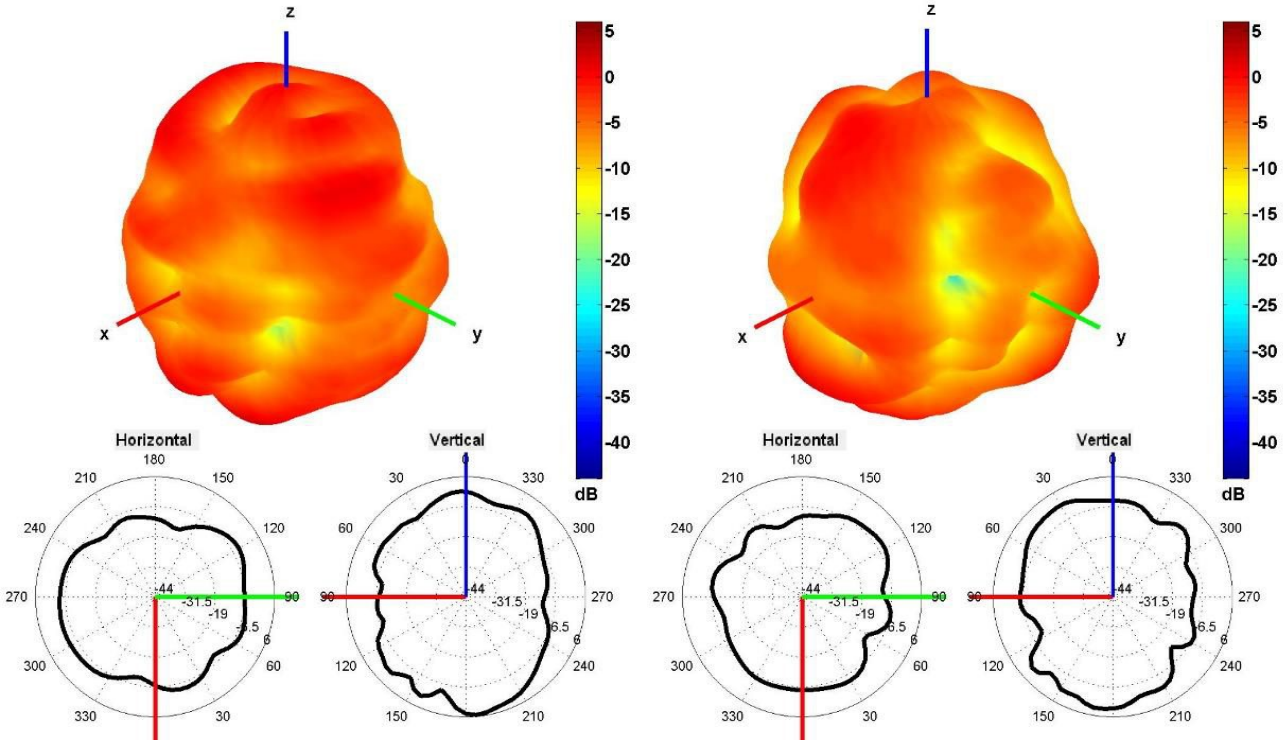


4500 and 5500 MHz Radiation pattern

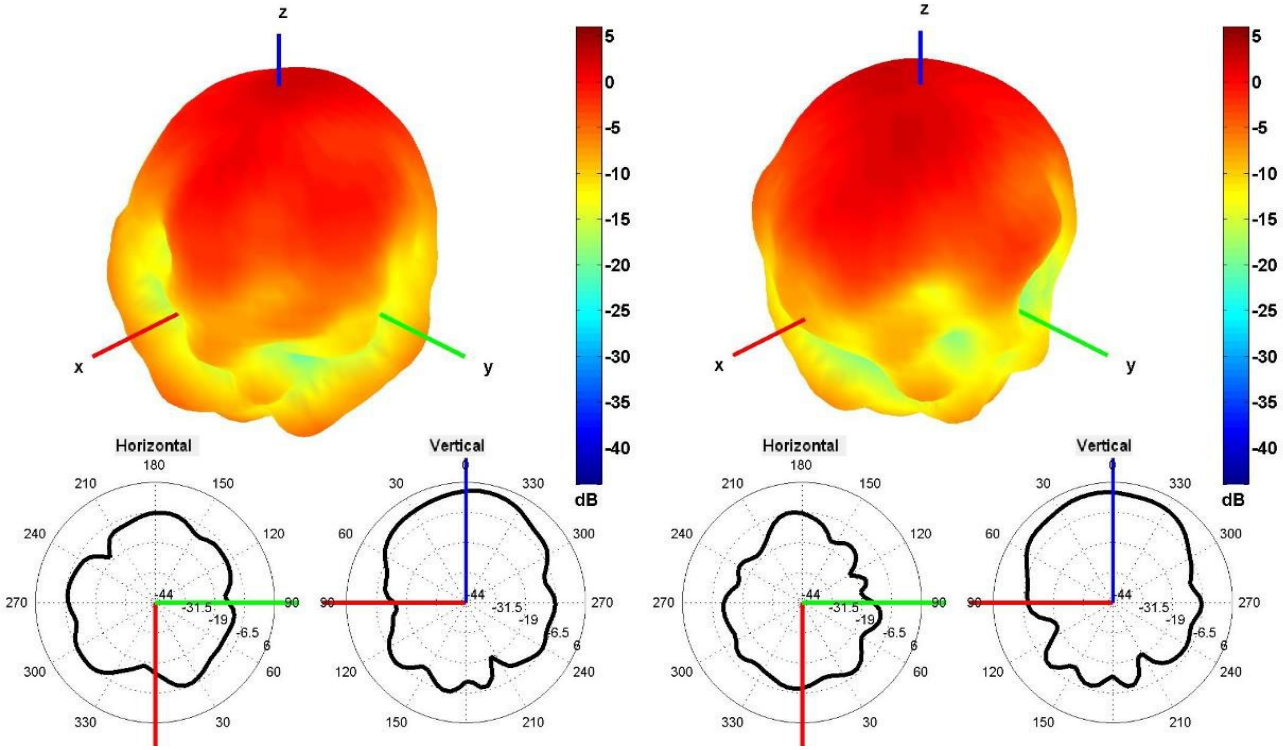
Cable 2: 5GNR



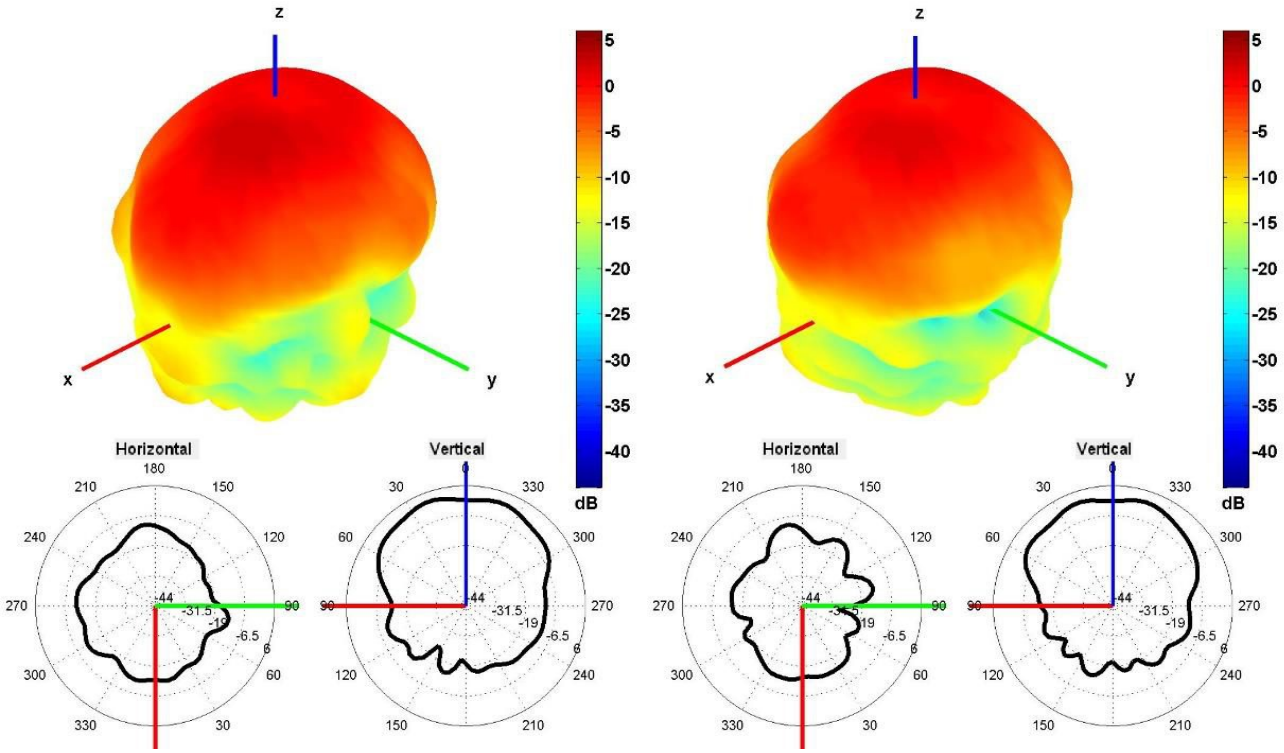
640 and 740 MHz Radiation pattern



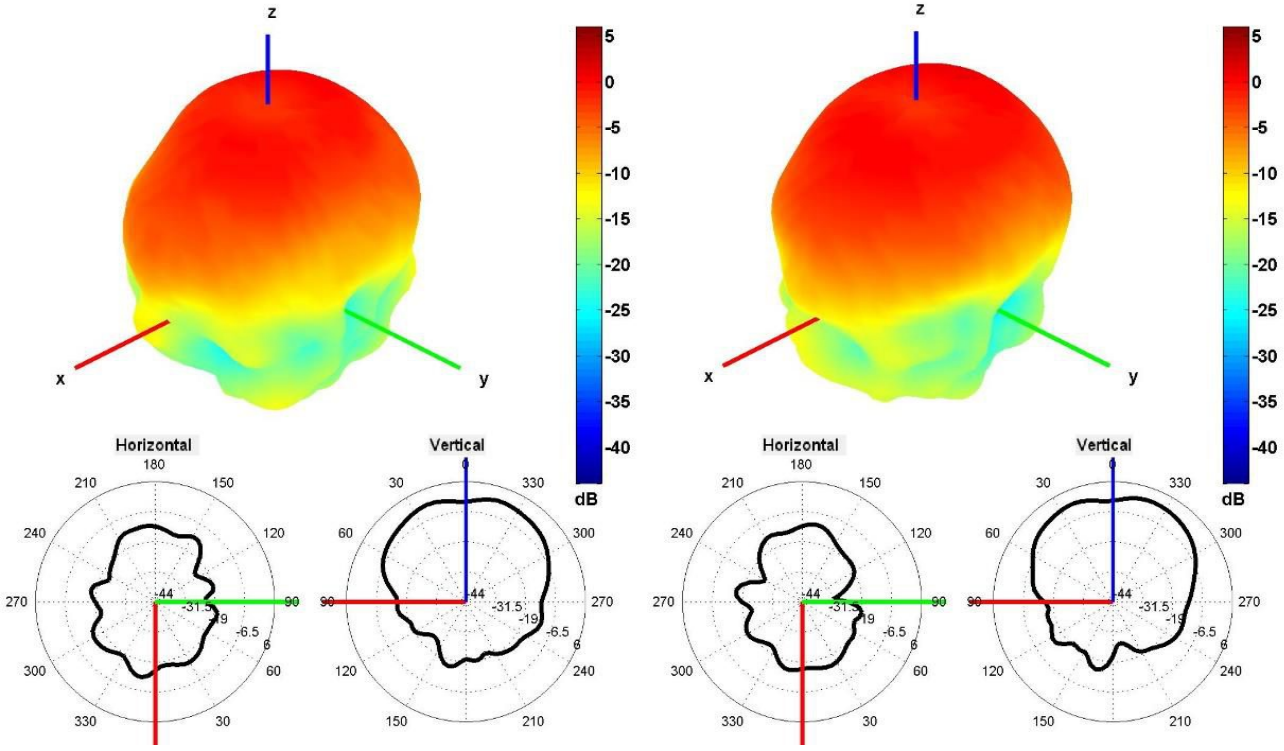
850 and 940 MHz Radiation pattern



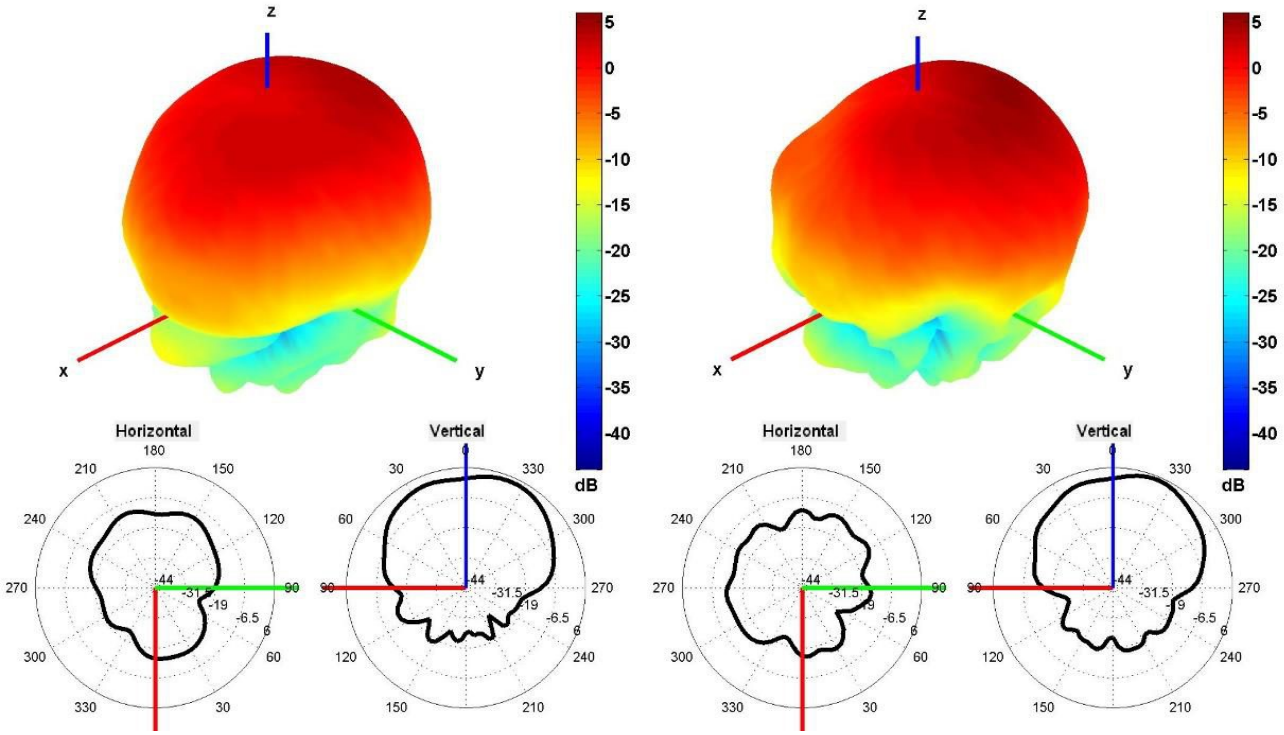
1500 and 1600 MHz Radiation pattern



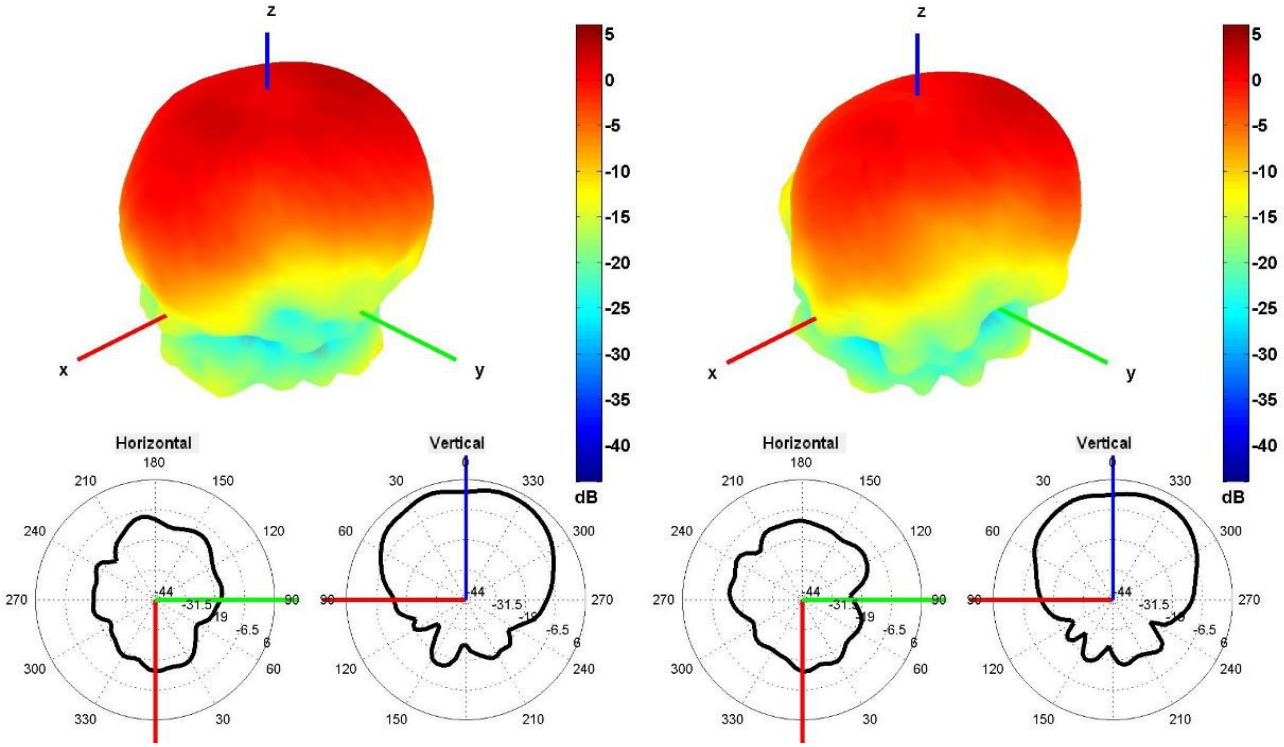
1750 and 1850 MHz Radiation pattern



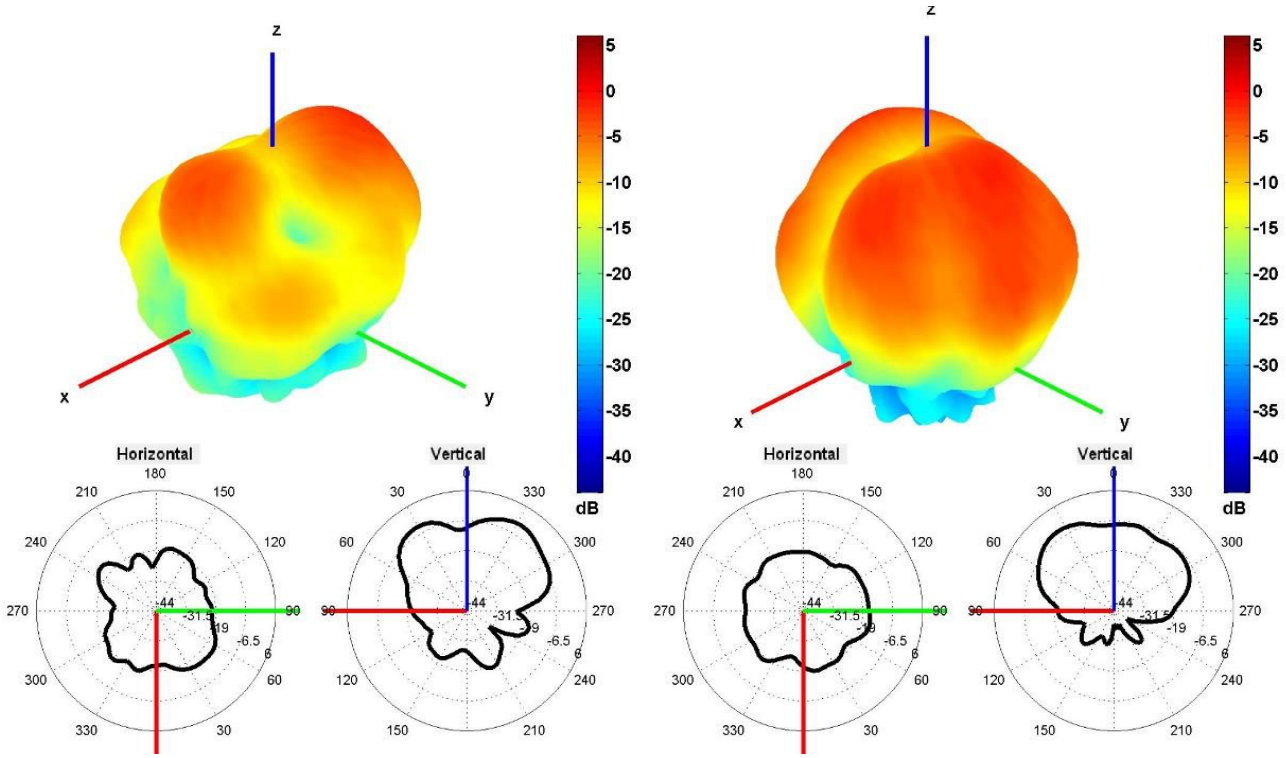
1950 and 2100 MHz Radiation pattern



2350 and 2600 MHz Radiation pattern

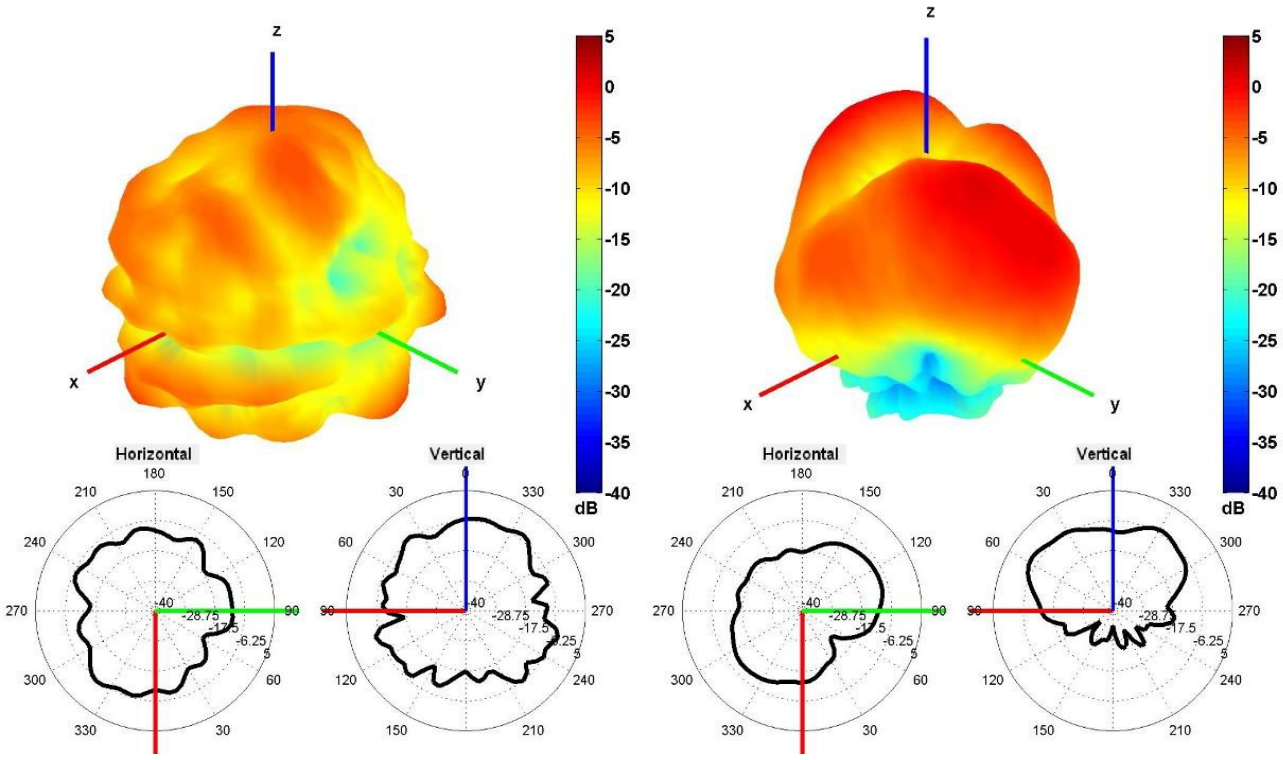


3350 and 3600 MHz Radiation pattern

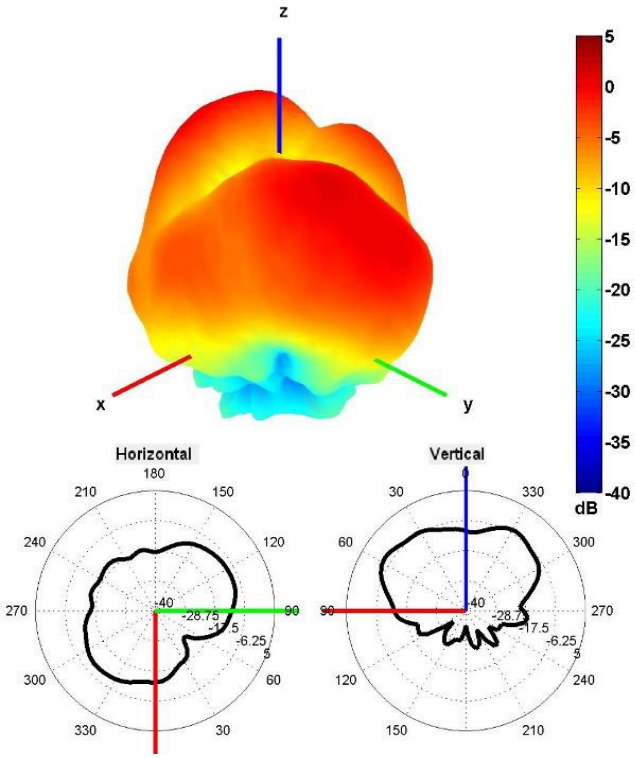


4500 and 5500 MHz Radiation pattern

Cable 3: 2.4/5.0/6.0 GHz ISM

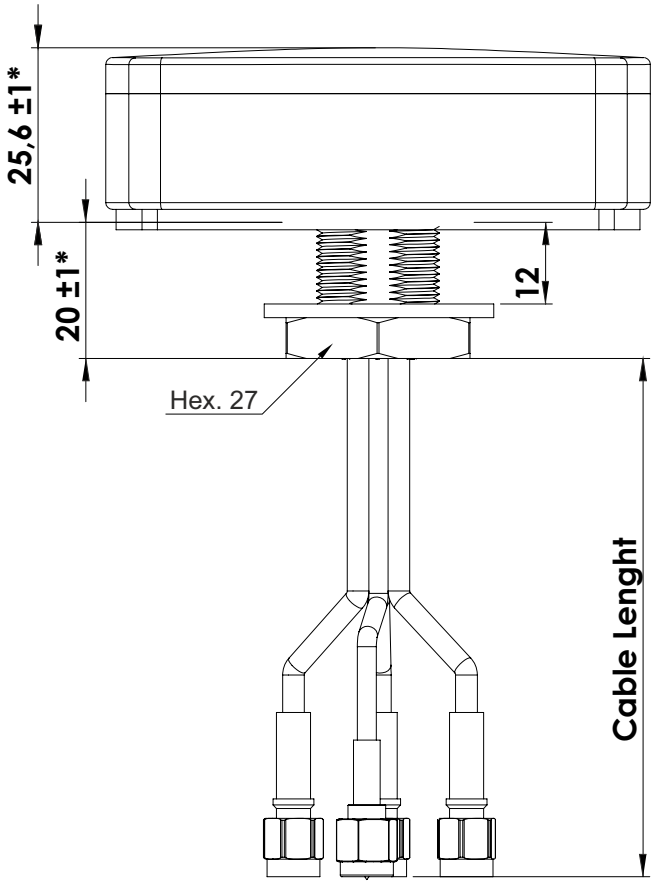


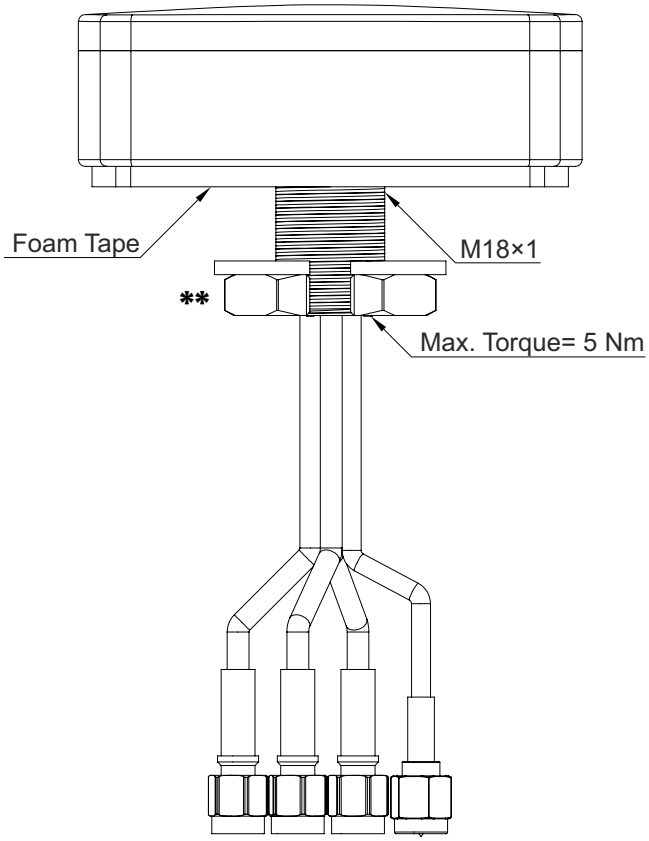
2450 and 5500 MHz Radiation pattern

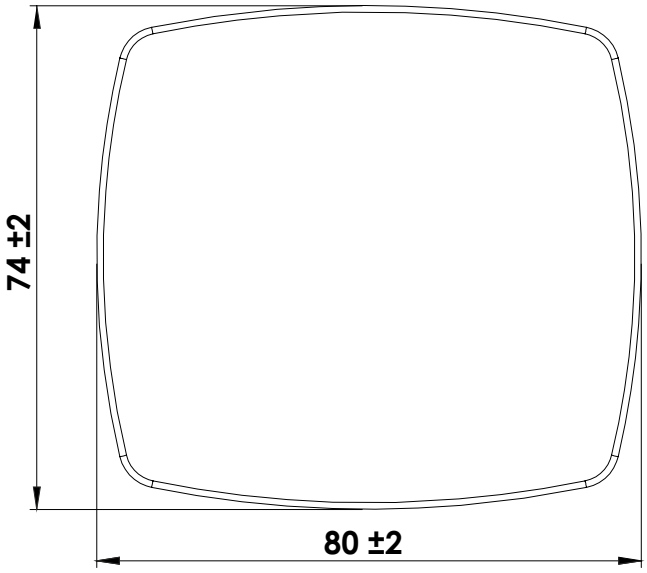


6500 MHz Radiation pattern

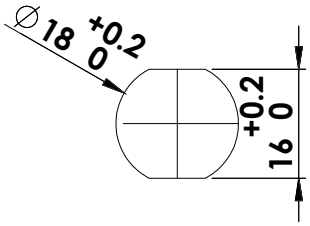
4. Antenna drawings







Mounting hole



Max. mounting thickness 12mm
Note: Dimensions are in milimeters
***Dimensions are after mounting**
****Max. Torque= 5 Nm**

5. Antenna Images







