antenna conceptor

Product Datasheet

2J6C86MCFa

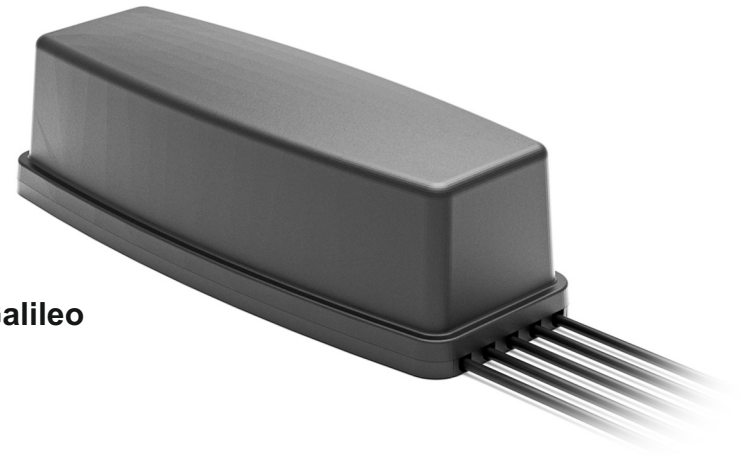
2× 5GNR MIMO, 2× 2.4/5.0/6.0 GHz ISM MIMO and GNSS Screw Mount

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
- 4920-7125 MHz

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



Magnetic Mount
High Performance
Ground Plane Independent
Customizable Cable and Connector
Dimensions: 193 × 76.5 × 56.5 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)	~-10.4	~-13.4	~-14.1	~-6.8
VSWR	~2.1:1	~1.7:1	~1.7:1	~2.8:1
Efficiency (%)	~45.0	~58.2	~53.1	~39.9
Peak Gain (dBi)	~3.6	~5.1	~5.2	~2.7
Average Gain (dB)	~-3.5	~-2.4	~-2.8	~-4.0
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	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)	~-12.6	~-13.8	~-13.9	~-8.6
VSWR	~1.7:1	~1.7:1	~1.6:1	~2.3:1
Efficiency (%)	~59.7	~53.9	~57.2	~36.9
Peak Gain (dBi)	~4.6	~5.1	~5.4	~4.8
Average Gain (dB)	~-2.3	~-2.7	~-2.4	~-4.3
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	LL195 Standard (Other Cables Available)			

Antenna Measurement Conditions:

Mounted on Metal Plate of 30 x 30 cm

100 cm of Cable LL195

Measured in Certified CTIA 3D Anechoic Chamber

Cable 3

Parameters	2.4/5.0/6.0 GHz ISM Antenna		
Standards	WiFi, BT, ZigBee, ISM, **Sigfox, LoRa**		
Band (MHz)	2.4GHz	5.0 GHz	6.0GHz
Frequency (MHz)	2410-2490	4920-5925	5925-7125
Return Loss (dB)	~-12.8	~-12.8	~-12.3
VSWR	~1.6:1	~1.7:1	~1.8:1
Efficiency (%)	~59.0	~44.8	~41.7
Peak Gain (dBi)	~4.5	~5.9	~5.7
Average Gain (dB)	~-2.3	~-3.5	~-3.8
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	LL195 Standard (Other Cables Available)		

Cable 4

Parameters	2.4/5.0/6.0 GHz ISM Antenna		
Standards	WiFi, BT, ZigBee, ISM, **Sigfox, LoRa**		
Band (MHz)	2.4 GHz	5.0 GHz	6.0 GHz
Frequency (MHz)	2410-2490	4920-5925	5925-7125
Return Loss (dB)	~-13.0	~-11.3	~-11.8
VSWR	~1.6:1	~1.9:1	~1.8:1
Efficiency (%)	~60.5	~42.9	~41.8
Peak Gain (dBi)	~5.1	~6.4	~6.6
Average Gain (dB)	~-2.2	~-3.7	~-3.8
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	LL195 Standard (Other Cables Available)		

Antenna Measurement Conditions:

Mounted on Metal Plate of 30 x 30 cm

100 cm of Cable LL195

Measured in Certified CTIA 3D Anechoic Chamber

Cable 5

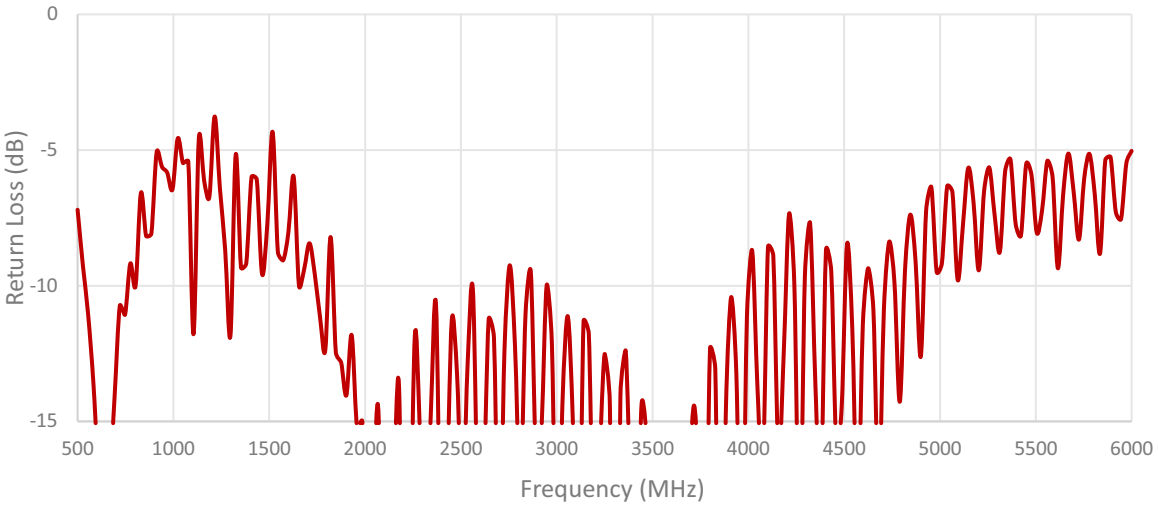
Parameters	GPS/GLONASS/BeiDou Antenna		
Standards	BeiDou	GPS/QZSS/Galileo	GLONASS
Band (MHz)	1561	1575	1602
Frequency(MHz)	1561.098	1575.42	1598-1610
Patch Size (mm)	25 x 25 x 4		
Return Loss (dB)	<=-15.0 dB		
VSWR	<=1.4:1 dB		
Impedance	50		
Radiation Pattern	Hemispherical		
Polarization	RHCP		
Saw 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	LL100 Standard (Other Cables Available)		

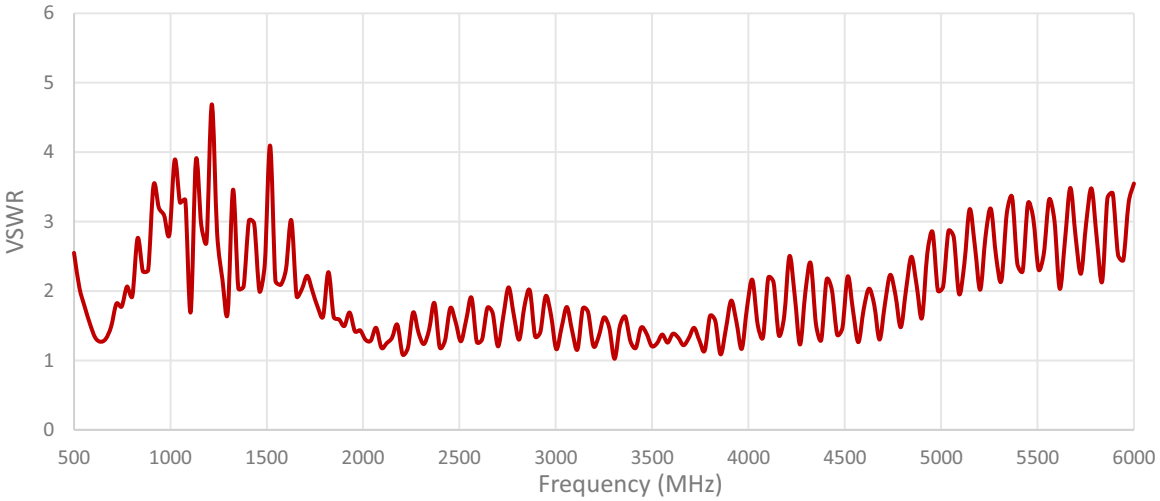
2. Mechanical and environmental specifications

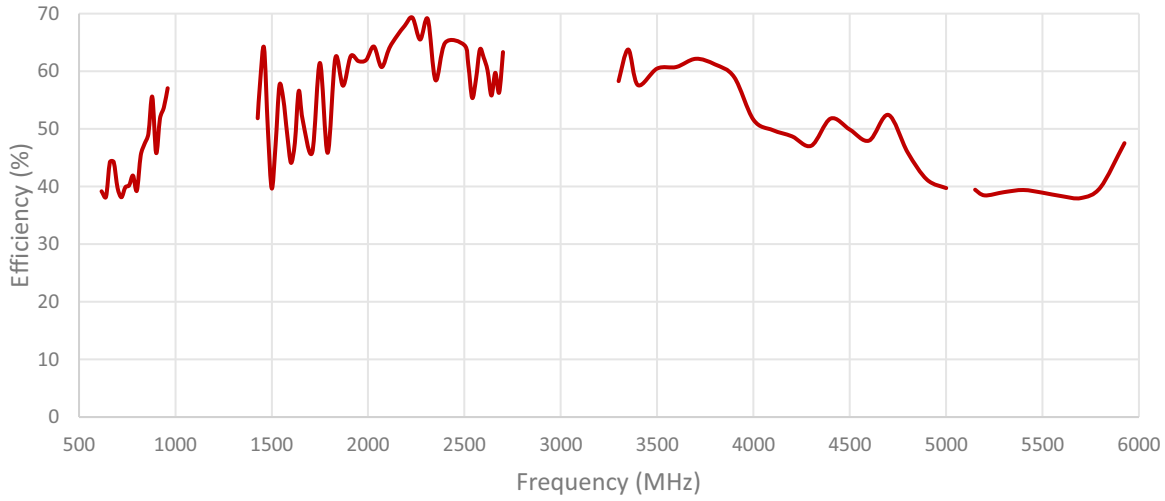
Specifications	2J6C86MCFa
Mounting Type	Magnetic Mount
Dimensions (mm)	193 × 76.5 × 56.5
Radome Type	ASA
Radome color	Black
Operating Temperature (C)	-40 to +85
Storage Temperature (C)	-40 to +85
Substance Compliance	RoHS
Certificates	IP67, IP69

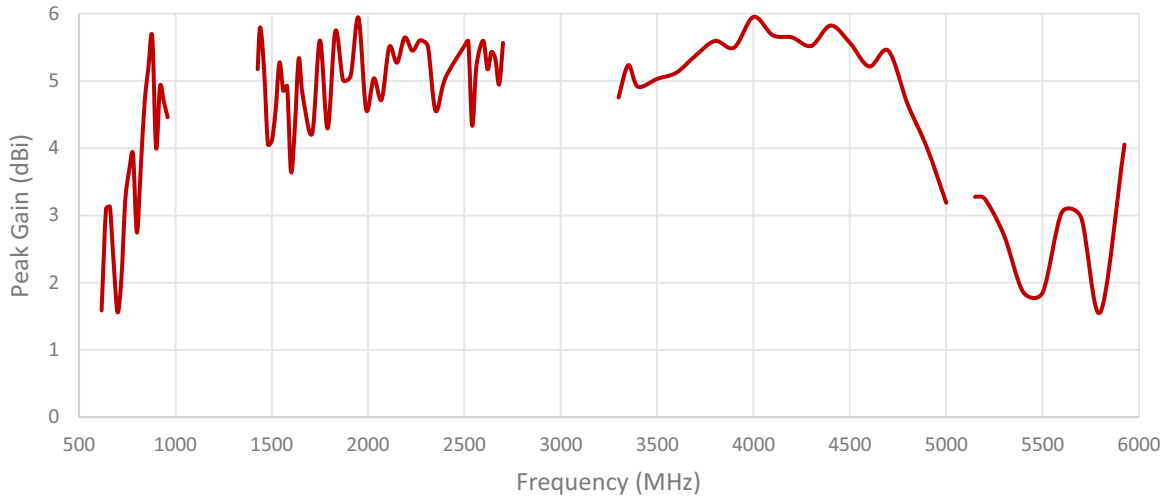
3. Antenna parameters

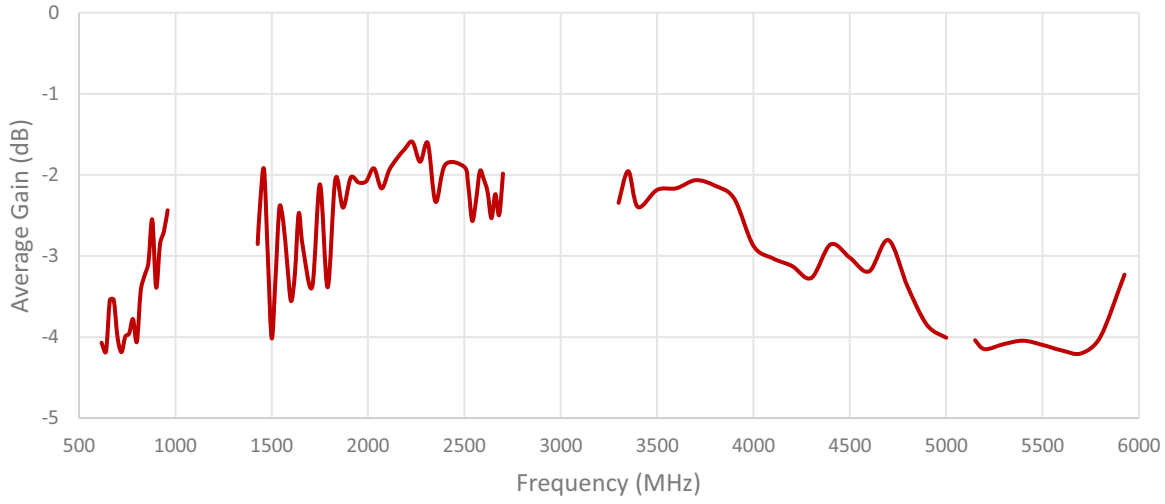
Cable 1: 5GNR



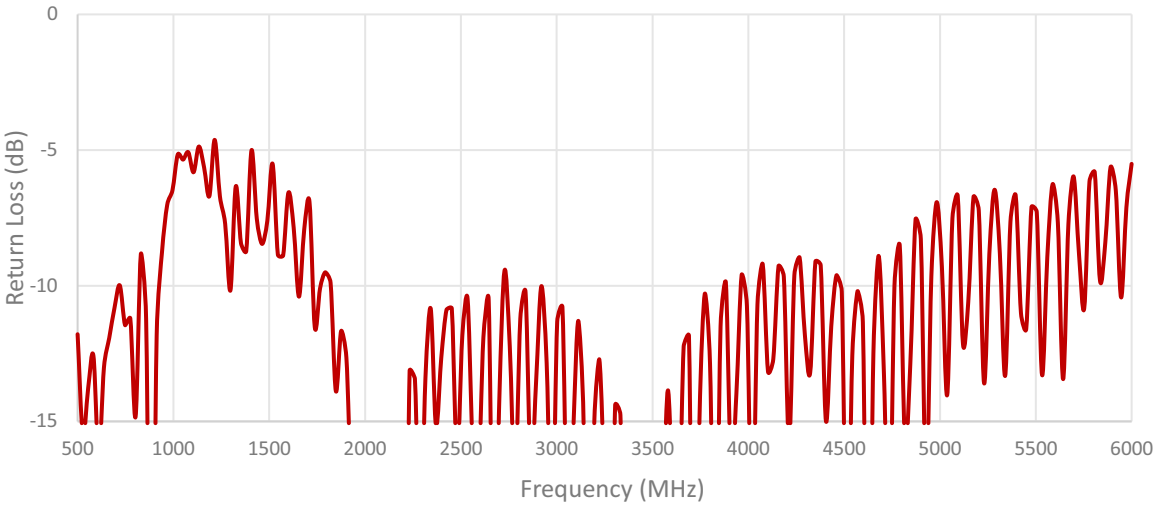


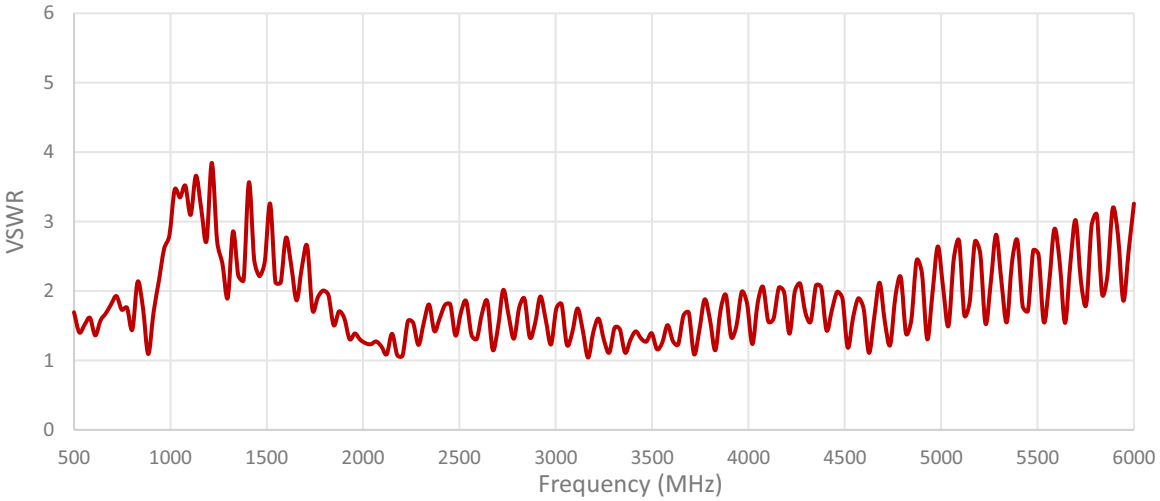

Efficiency (%)
70
60
50
40
30
20
10
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

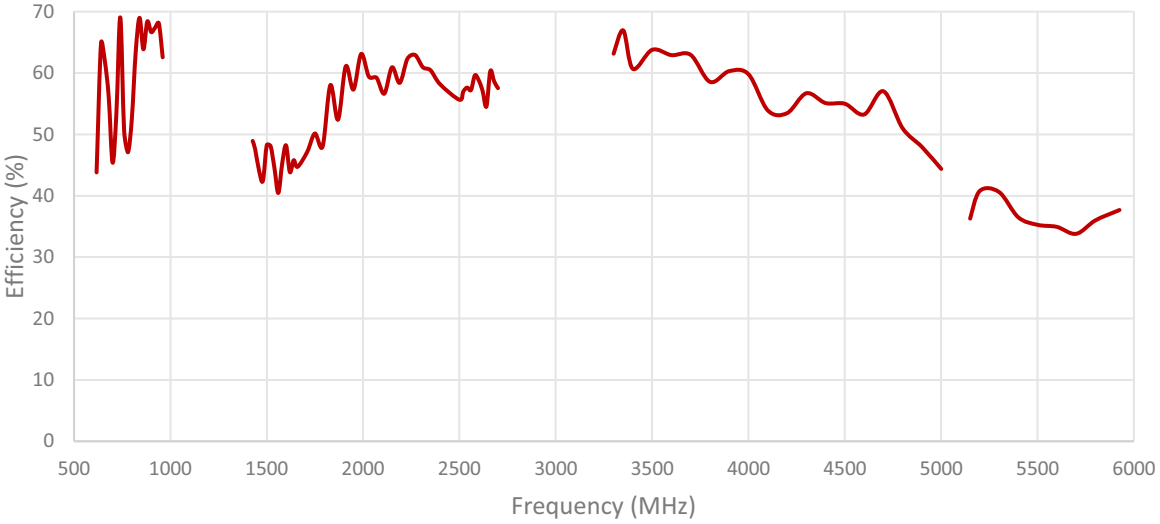

Peak Gain (dBi)
6
5
4
3
2
1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

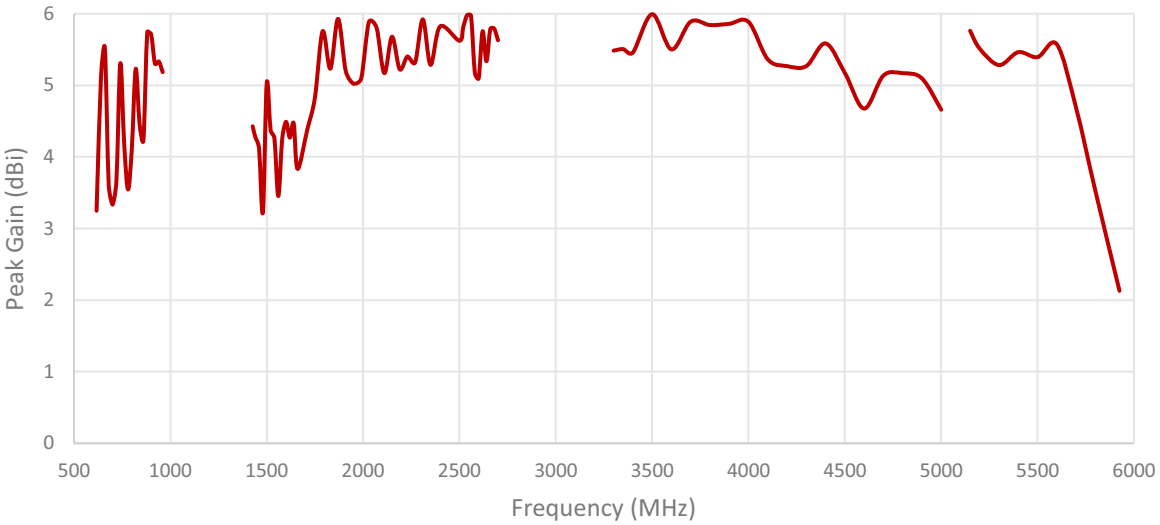

Average Gain (dB)
0
-1
-2
-3
-4
-5
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

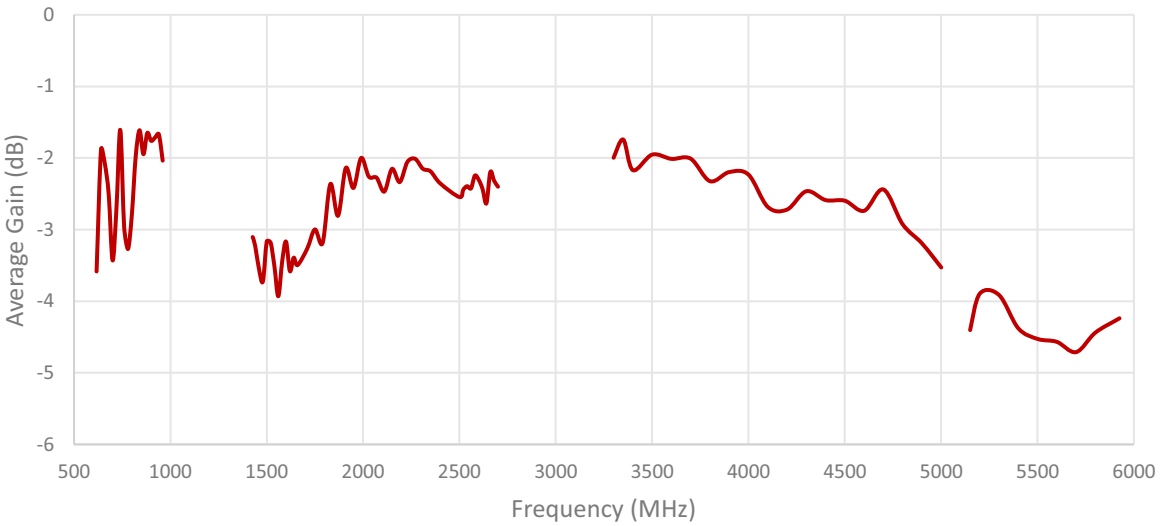
Cable 2: 5GNR


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

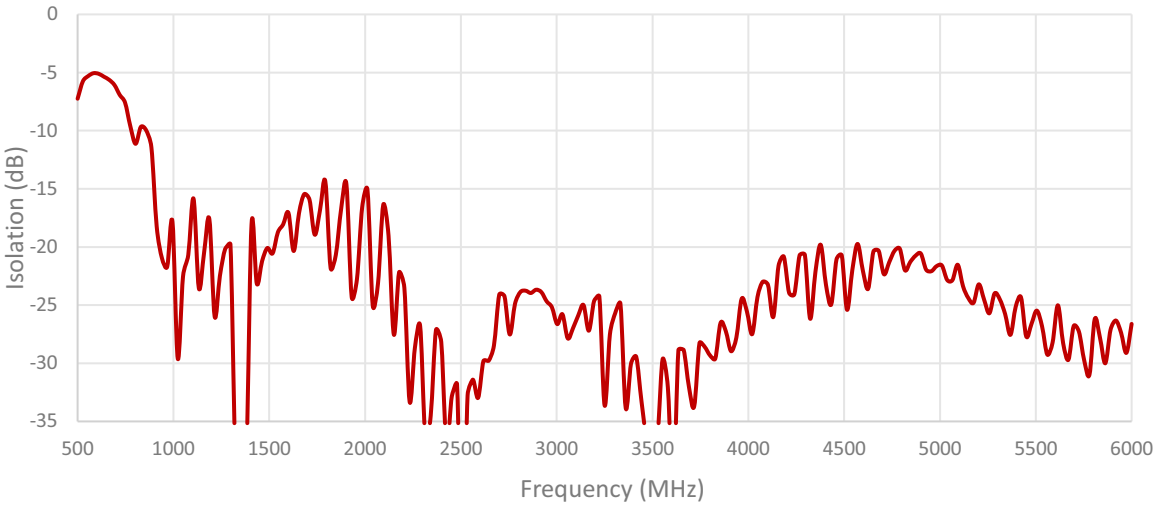

6
5
4
3
2
1
0
VSWR
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)


Efficiency (%)
70
60
50
40
30
20
10
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)

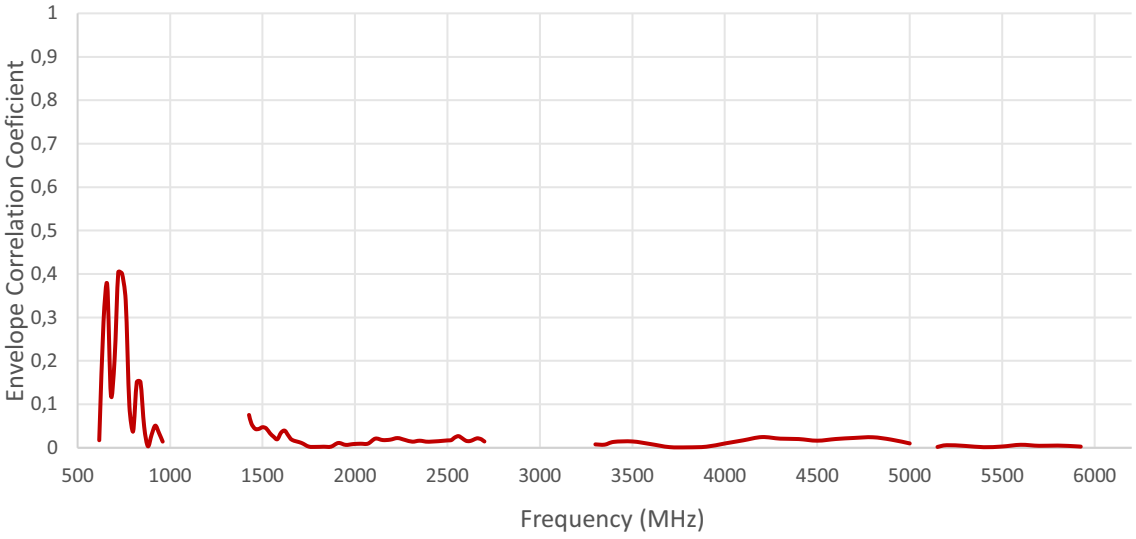

Peak Gain (dBi)
6
5
4
3
2
1
0
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
Frequency (MHz)


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

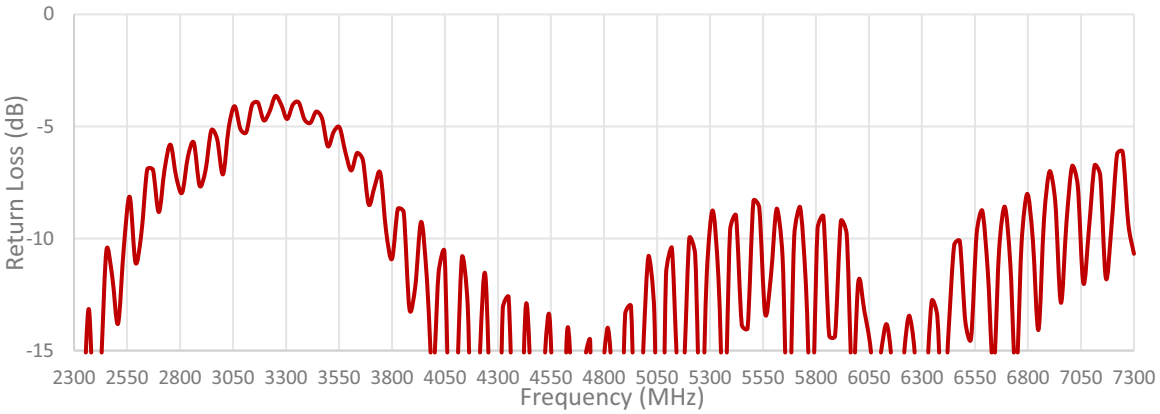
ISOLATION FOR CABLES 1 AND 2

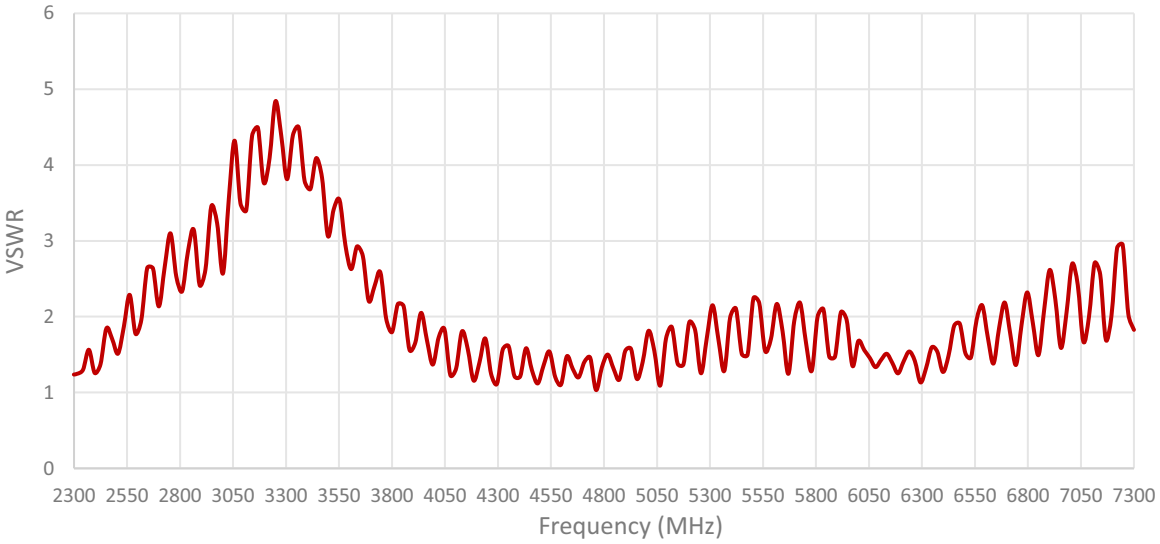


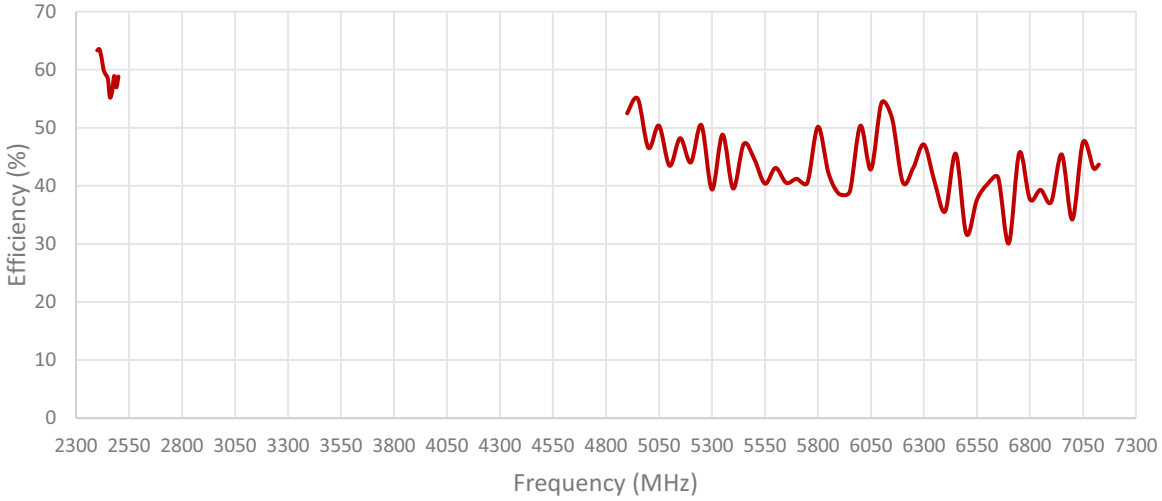
ENVELOPE CORRELATION COEFFICIENT FOR CABLES 1 AND 2

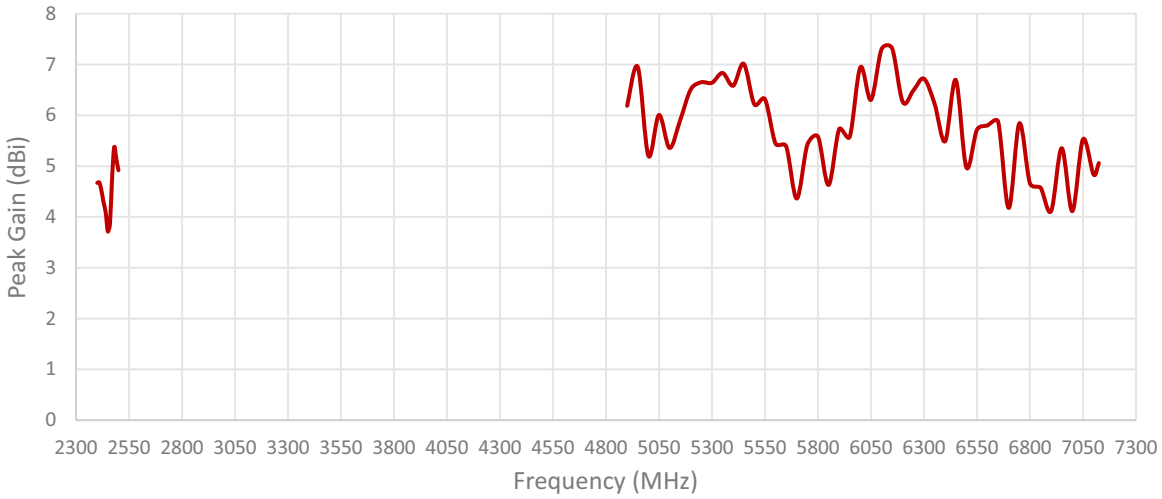


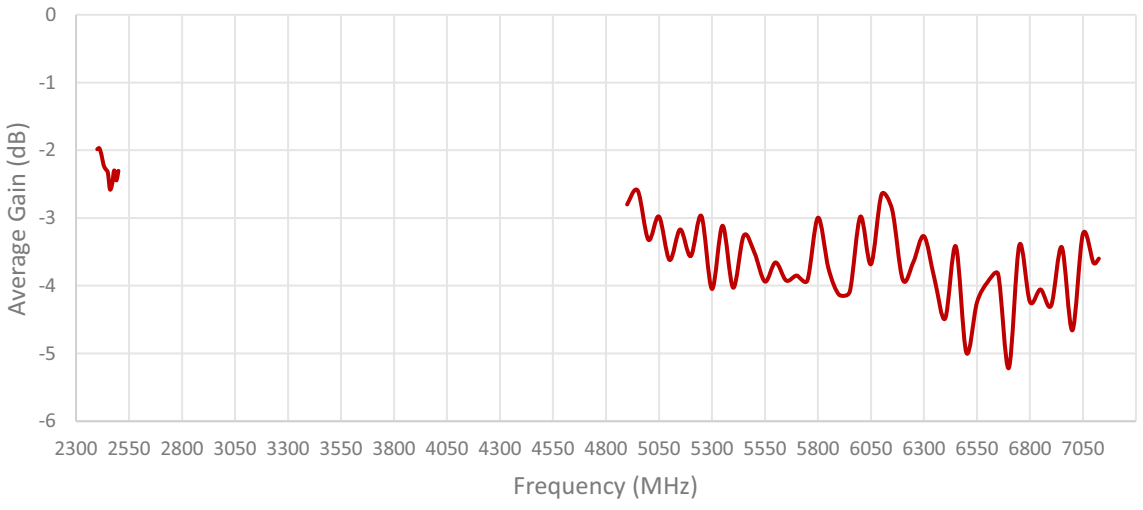
Cable 3: 2.4/5.0/6.0 GHz ISM



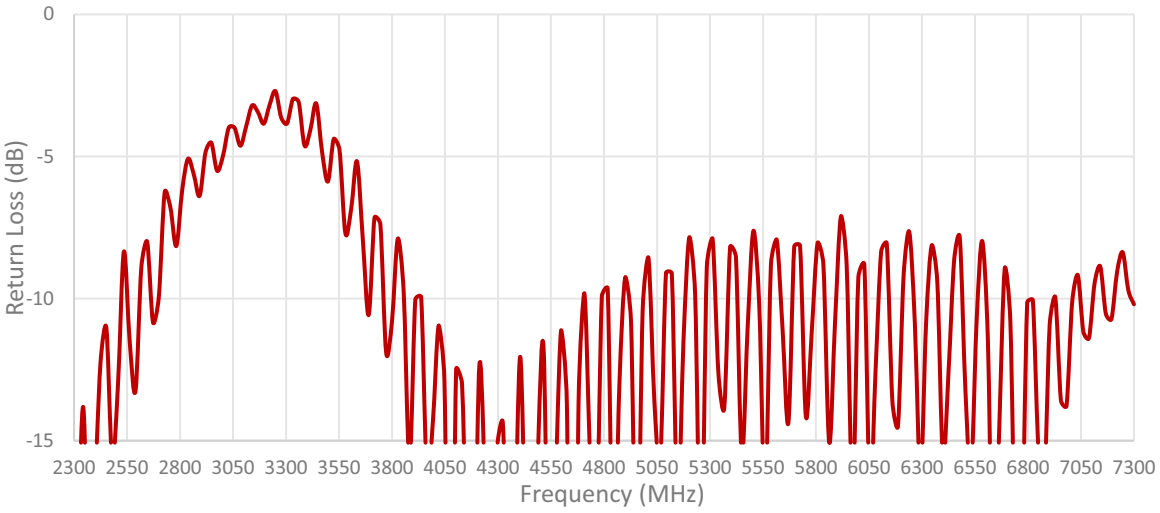


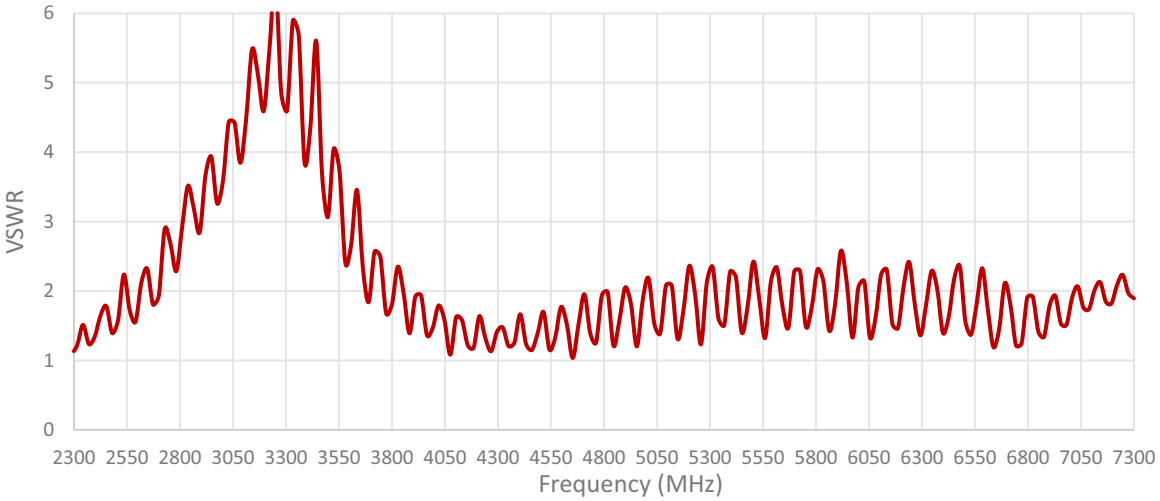

Efficiency (%)
70
60
50
40
30
20
10
0
2300 2550 2800 3050 3300 3550 3800 4050 4300 4550 4800 5050 5300 5550 5800 6050 6300 6550 6800 7050 7300
Frequency (MHz)

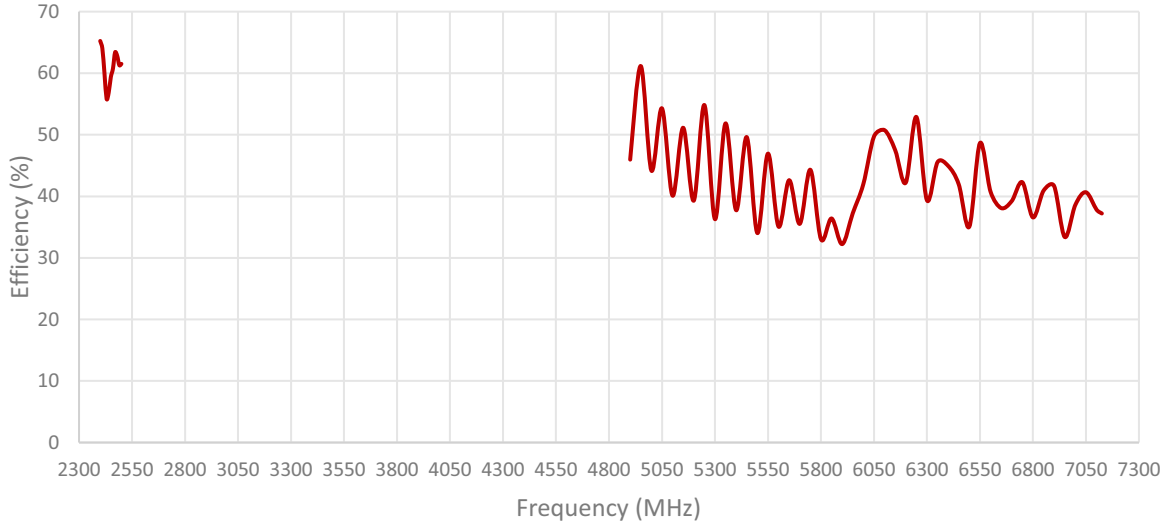

Peak Gain (dBi)
8
7
6
5
4
3
2
1
0
2300 2550 2800 3050 3300 3550 3800 4050 4300 4550 4800 5050 5300 5550 5800 6050 6300 6550 6800 7050 7300
Frequency (MHz)

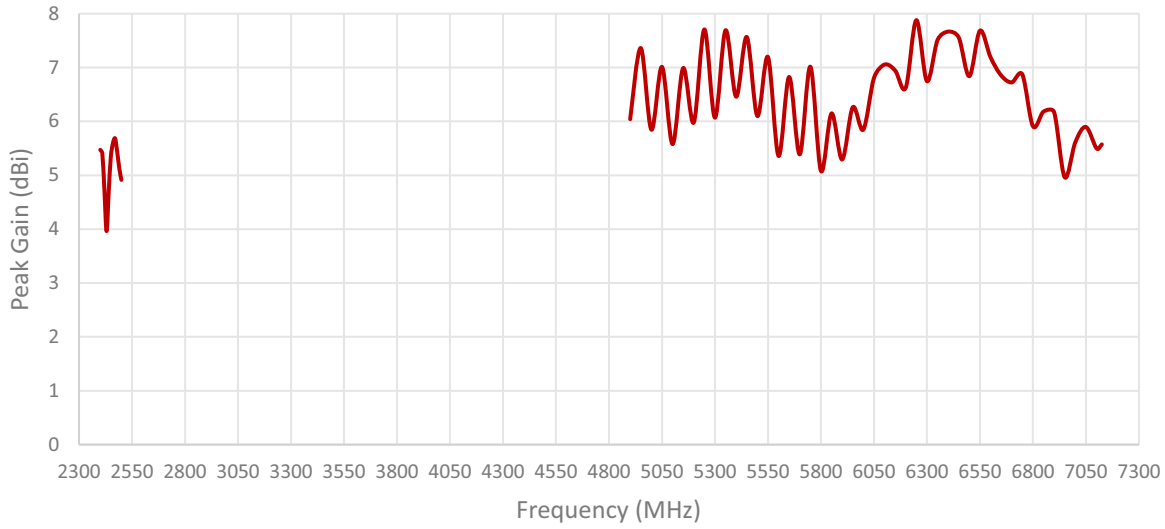

Average Gain (dB)
0
-1
-2
-3
-4
-5
-6
2300 2550 2800 3050 3300 3550 3800 4050 4300 4550 4800 5050 5300 5550 5800 6050 6300 6550 6800 7050
Frequency (MHz)

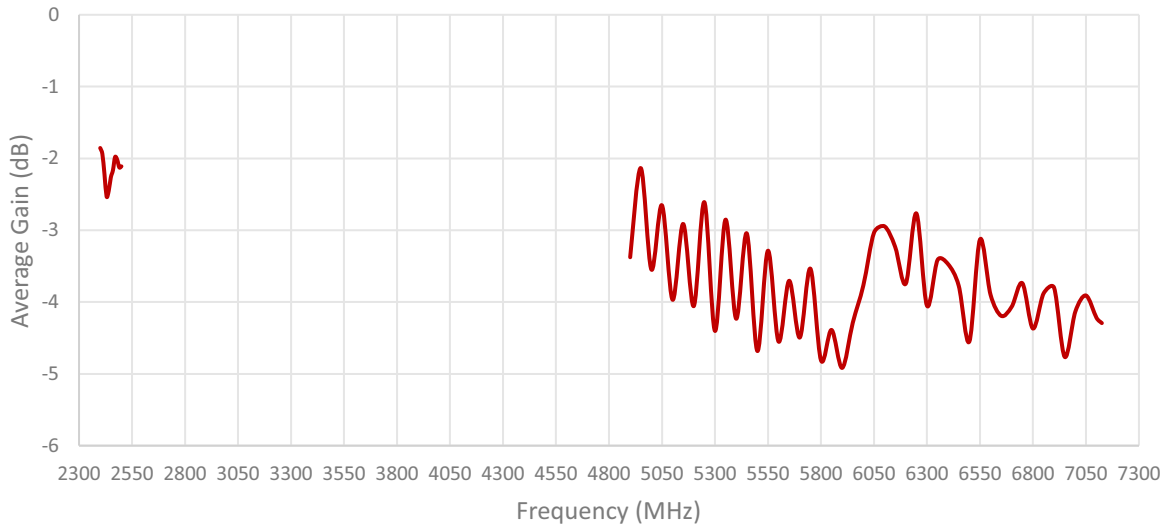
Cable 4: 2.4/5.0/6.0 GHz ISM



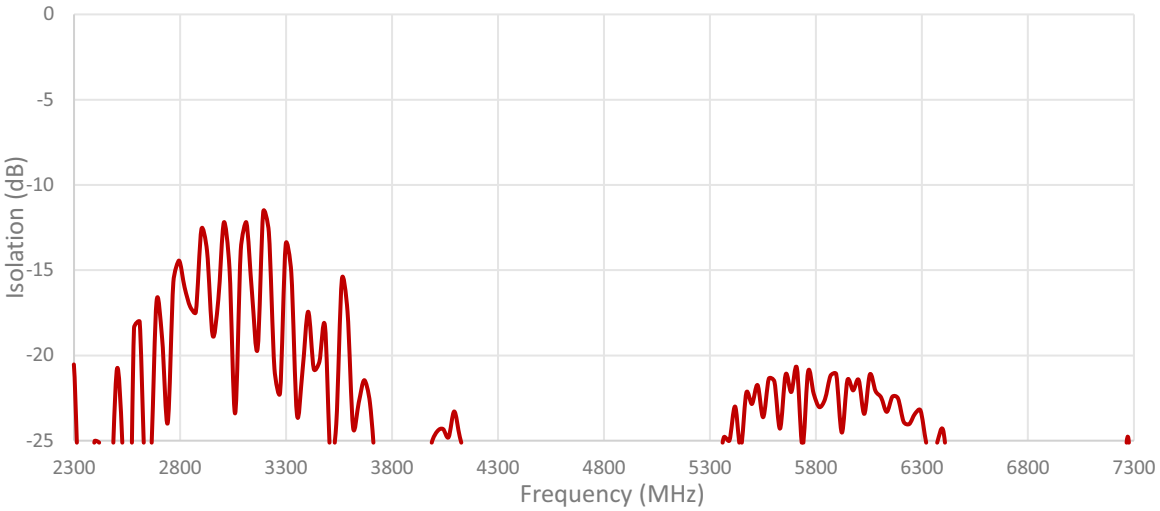



Efficiency (%)
70
60
50
40
30
20
10
0
2300 2550 2800 3050 3300 3550 3800 4050 4300 4550 4800 5050 5300 5550 5800 6050 6300 6550 6800 7050 7300
Frequency (MHz)

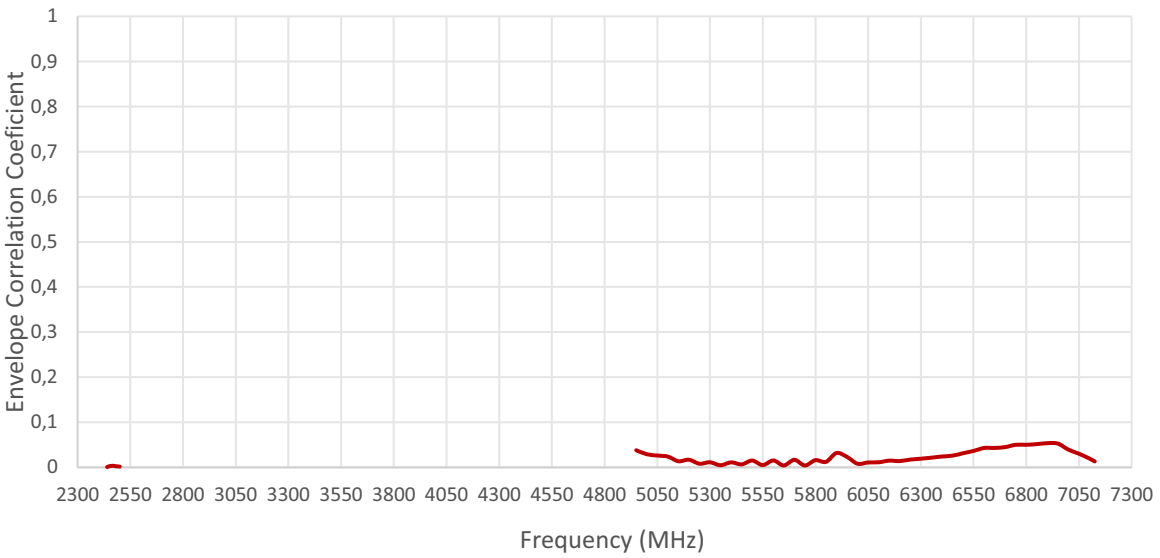

Peak Gain (dBi)
8
7
6
5
4
3
2
1
0
2300 2550 2800 3050 3300 3550 3800 4050 4300 4550 4800 5050 5300 5550 5800 6050 6300 6550 6800 7050 7300
Frequency (MHz)

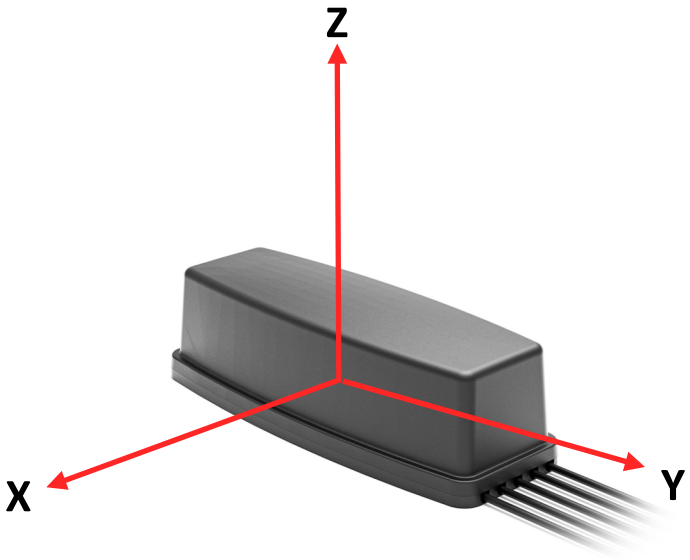

Average Gain (dB)
0
-1
-2
-3
-4
-5
-6
2300 2550 2800 3050 3300 3550 3800 4050 4300 4550 4800 5050 5300 5550 5800 6050 6300 6550 6800 7050 7300
Frequency (MHz)

ISOLATION FOR CABLES 3 AND 4



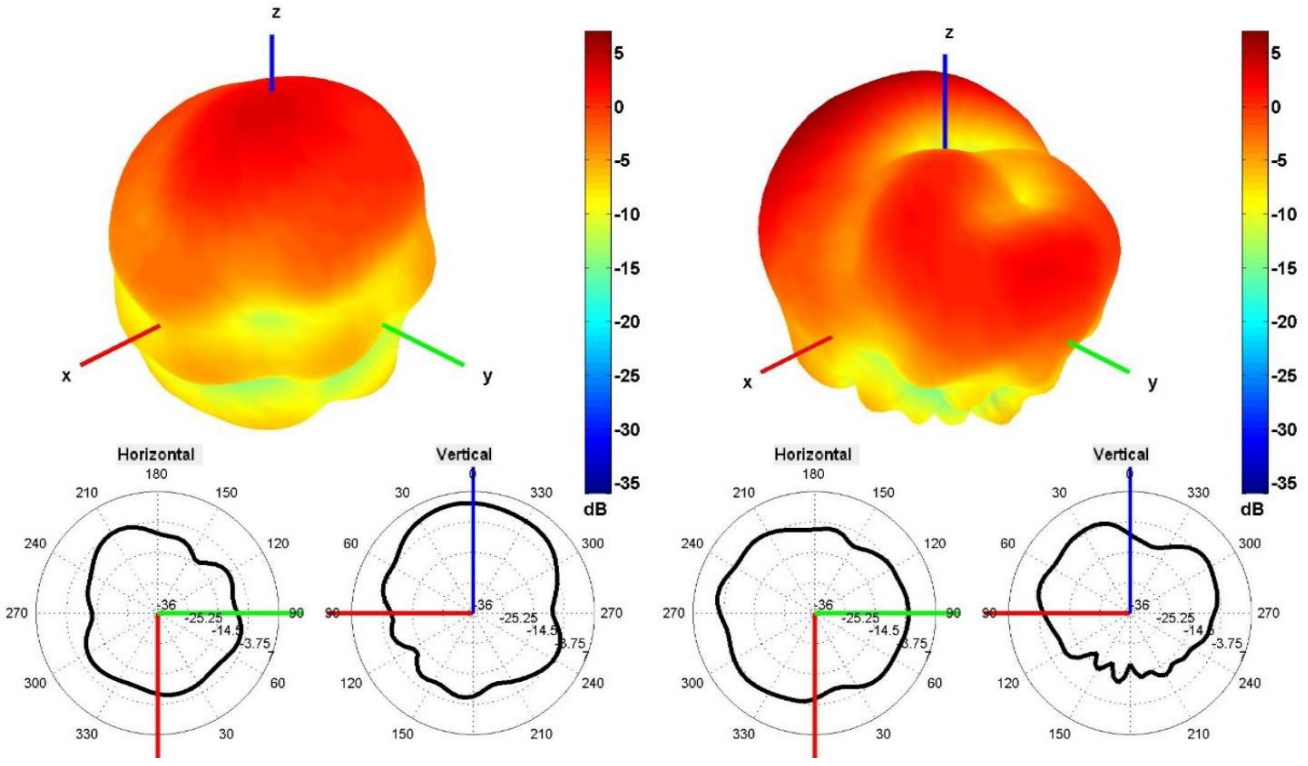
ENVELOPE CORRELATION COEFFICIENT FOR CABLES 3 AND 4



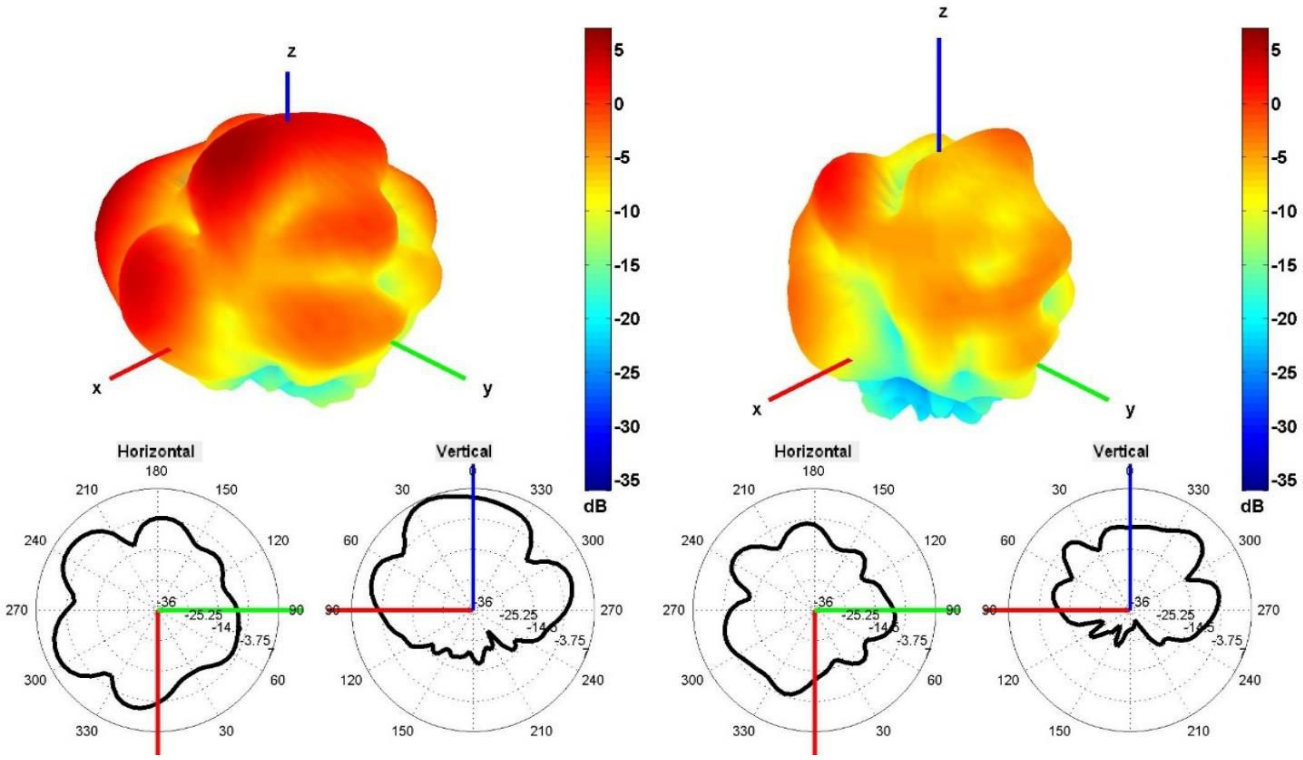


Radiation pattern reference

Cable 1: 5GNR

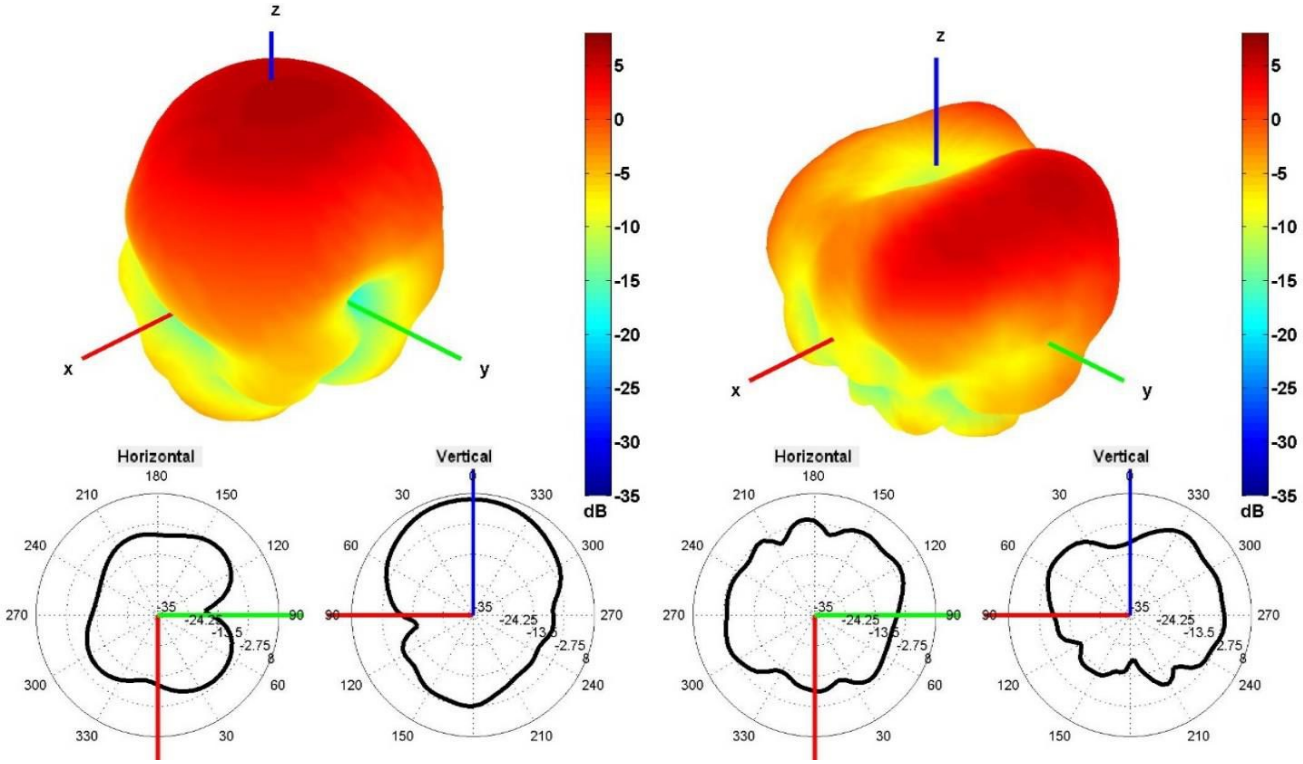


740 and 2500 MHz Radiation pattern

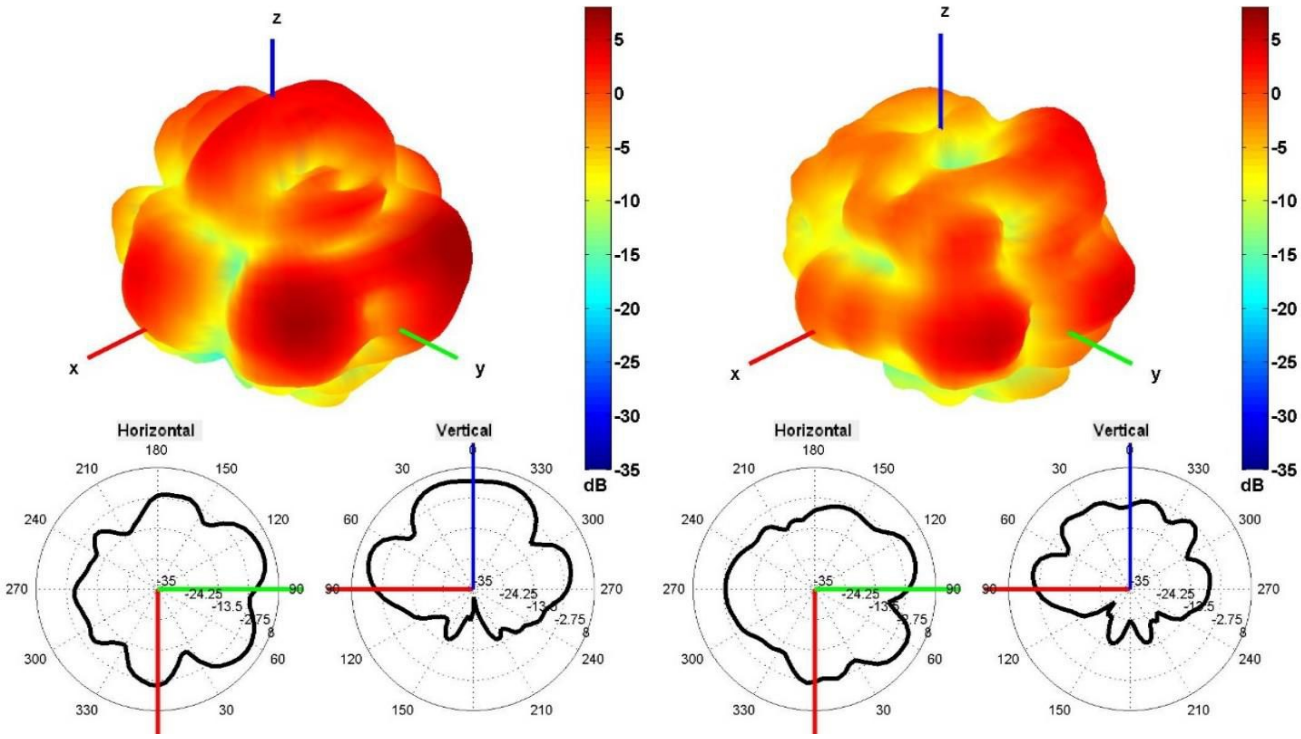


4500 and 5500 MHz Radiation pattern

Cable 2: 5GNR

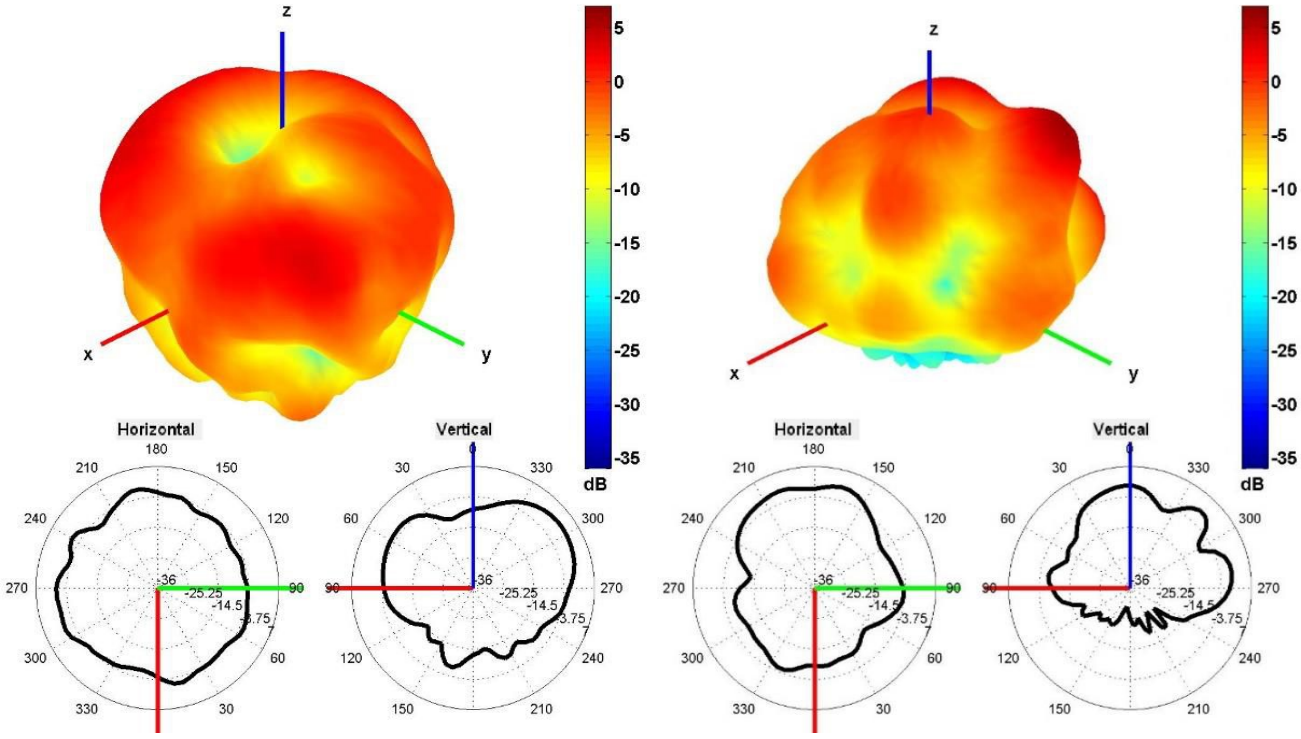


740 and 2500 MHz Radiation pattern

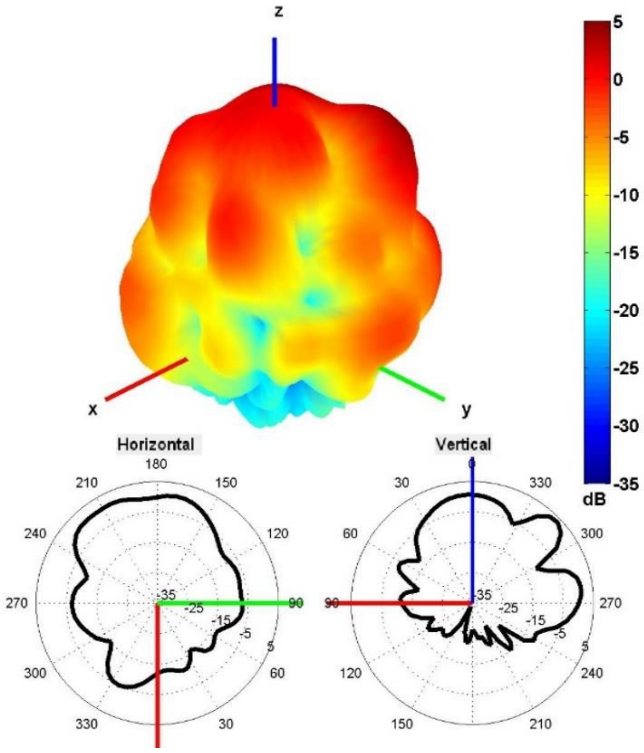


4500 and 5500 MHz Radiation pattern

Cable 3: 2.4/5.0/6.0 GHz ISM

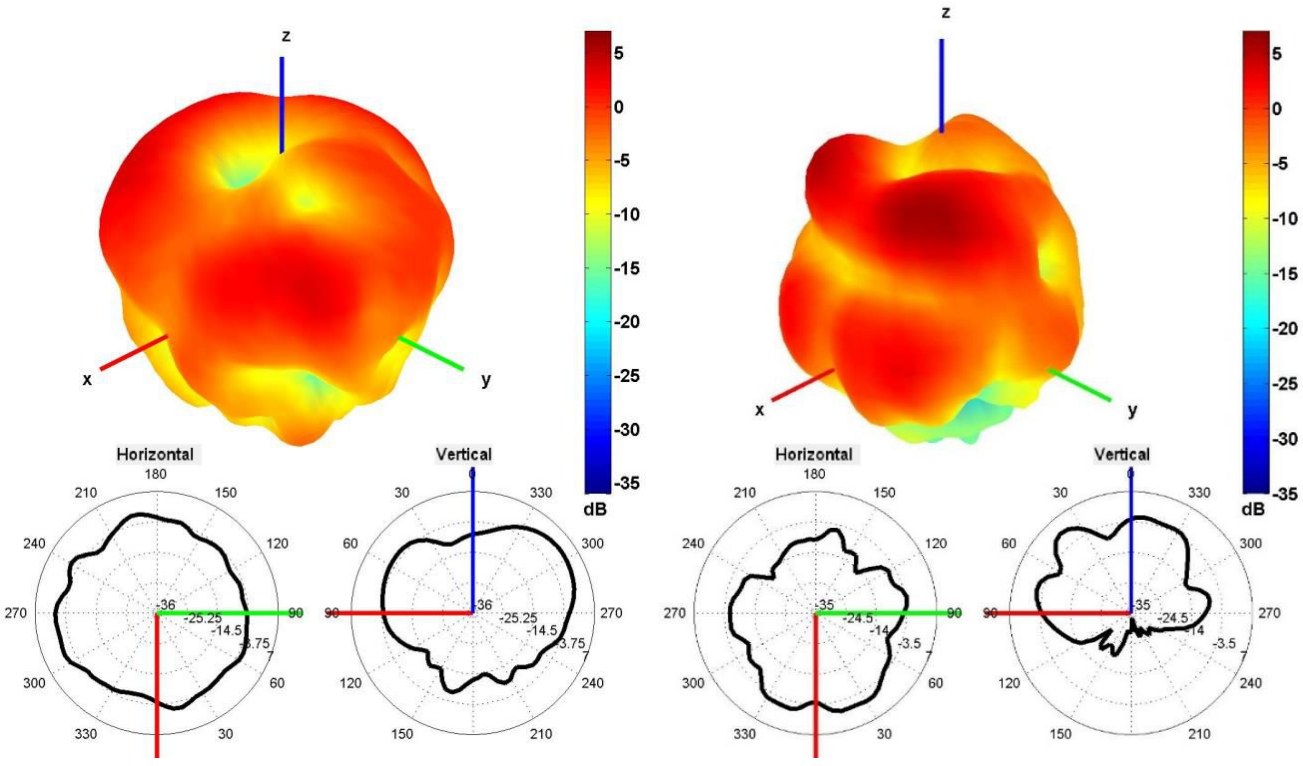


2450 and 5500 MHz Radiation pattern

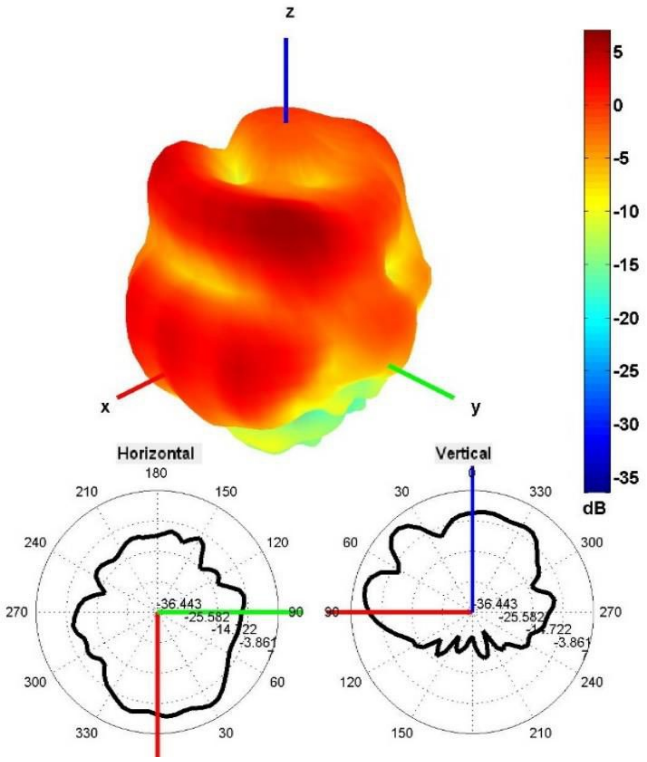


6500 MHz Radiation pattern

Cable 4: 2.4/5.0/6.0 GHz ISM

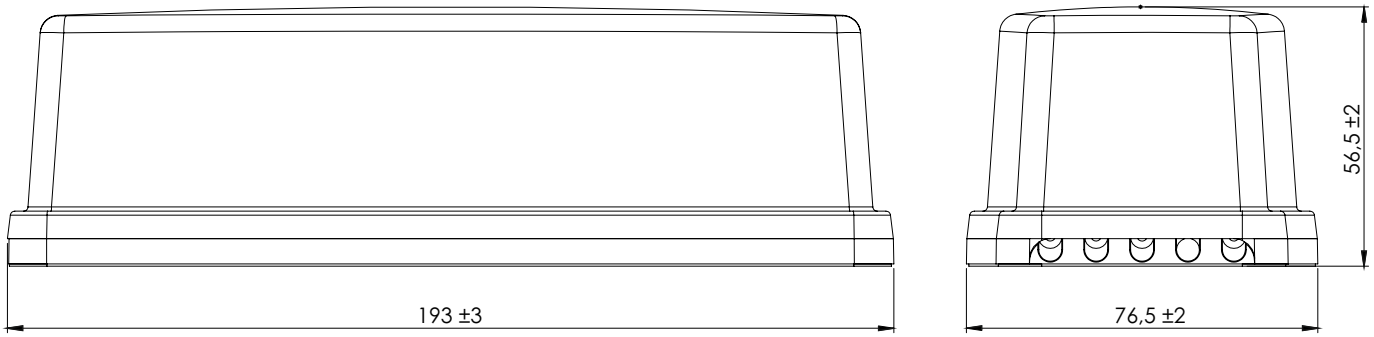


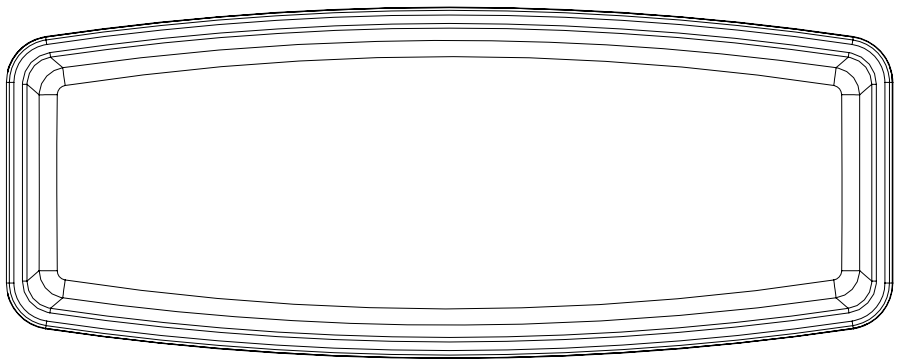
2450 and 5500 MHz Radiation pattern



6500 MHz Radiation pattern

4. Antenna drawings





Note: Dimensions are in milimeters
***Dimensions are after mounting**

5. Antenna Images

