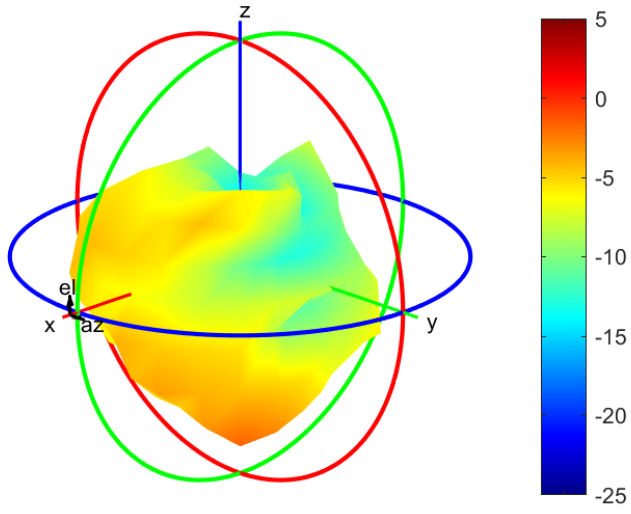


TB mode

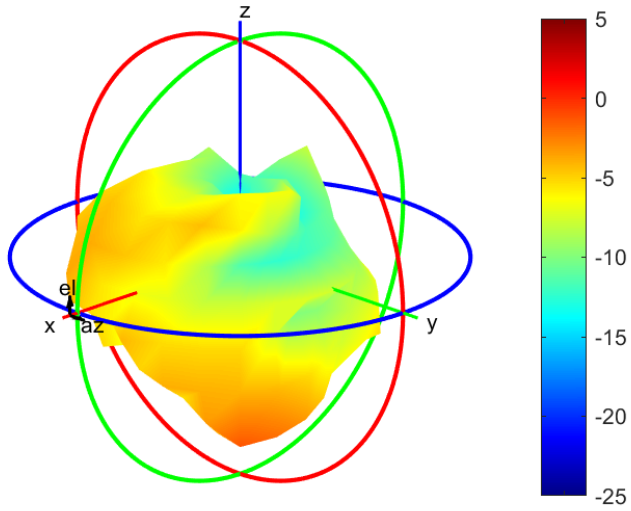
MIMO2 Antenna (Tx2/Rx3)

1452 MHz



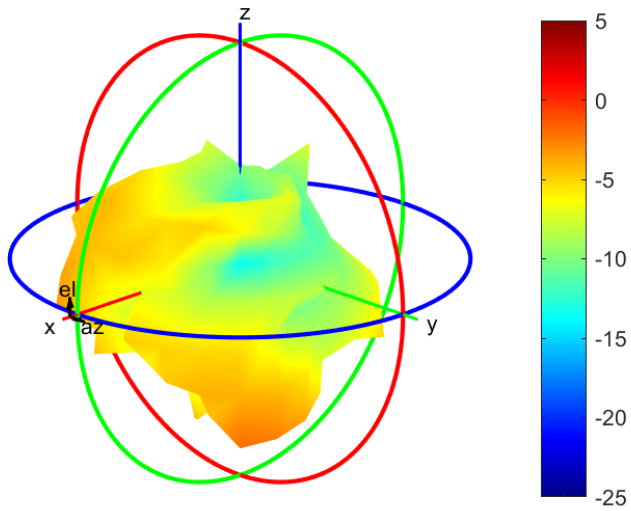
Center Frequency	1452 MHz
Horizontal (dBi) peak	-2.31
Vertical (dBi) peak	-4.72

1474 MHz



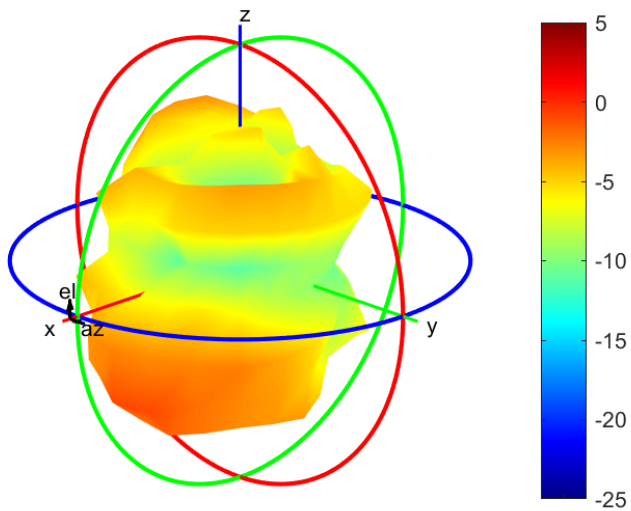
Center Frequency	1474 MHz
Horizontal (dBi) peak	-1.89
Vertical (dBi) peak	-3.97

1496 MHz



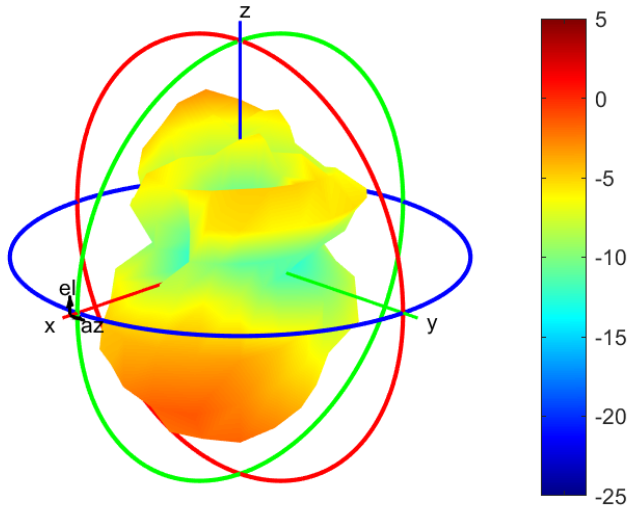
Center Frequency	1496 MHz
Horizontal (dBi) peak	-2.48
Vertical (dBi) peak	-3.69

1710 MHz



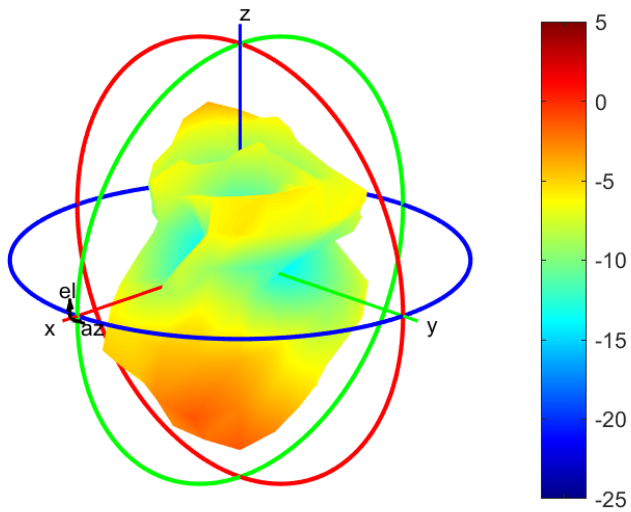
Center Frequency	1710 MHz
Horizontal (dBi) peak	-0.47
Vertical (dBi) peak	-3.93

1732.5 MHz



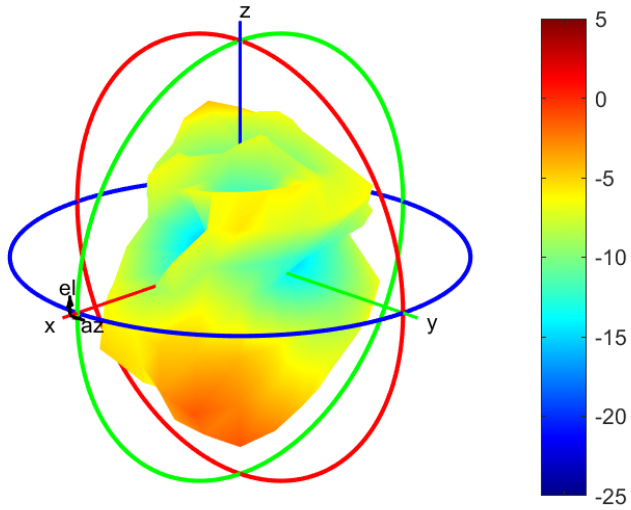
Center Frequency	1732.5 MHz
Horizontal (dBi) peak	-1.72
Vertical (dBi) peak	-3.68

1747.5 MHz



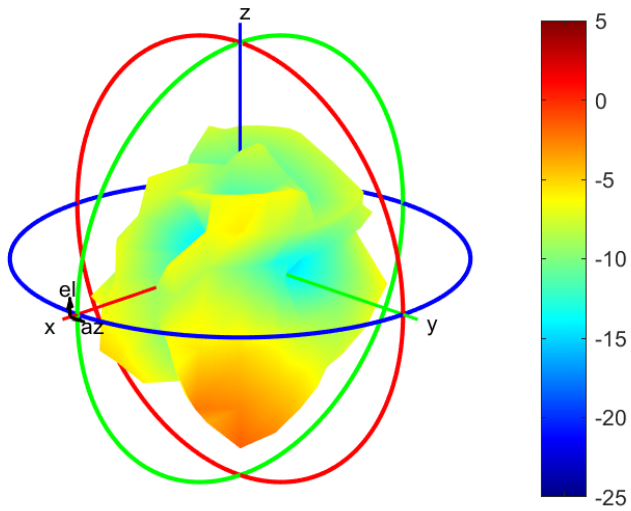
Center Frequency	1747.5 MHz
Horizontal (dBi) peak	-1.41
Vertical (dBi) peak	-4.47

1755 MHz



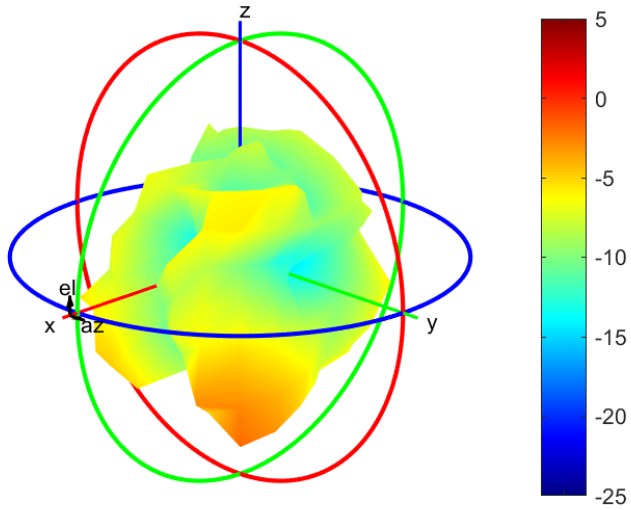
Center Frequency	1755 MHz
Horizontal (dBi) peak	-1.28
Vertical (dBi) peak	-4.88

1785 MHz



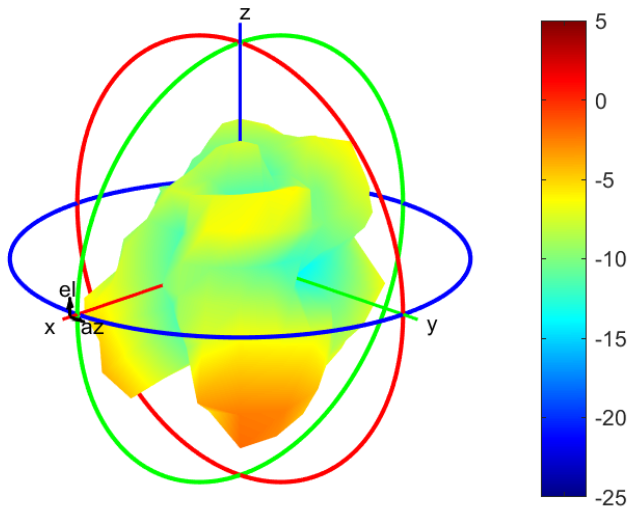
Center Frequency	1785 MHz
Horizontal (dBi) peak	-1.45
Vertical (dBi) peak	-4.96

1805 MHz



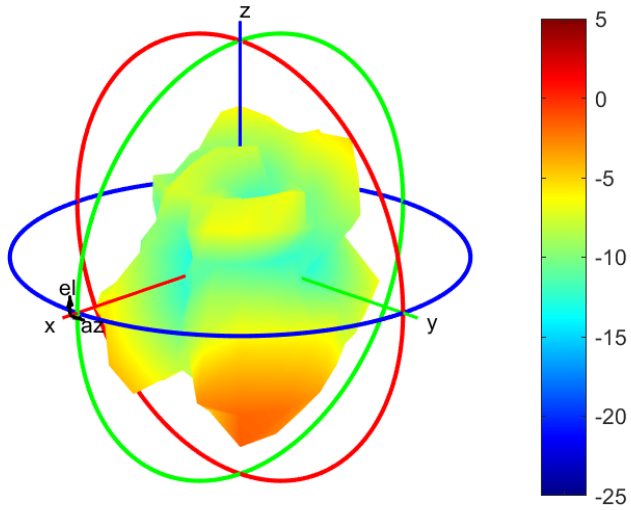
Center Frequency	1805 MHz
Horizontal (dBi) peak	-1.69
Vertical (dBi) peak	-4.88

1850 MHz



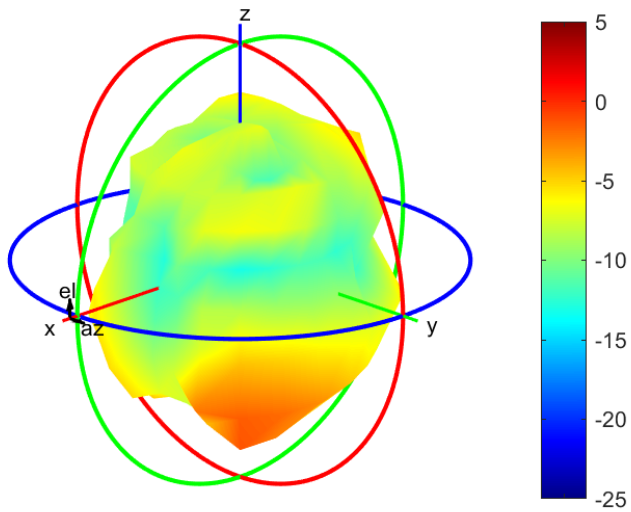
Center Frequency	1850 MHz
Horizontal (dBi) peak	-1.87
Vertical (dBi) peak	-5.11

1880 MHz



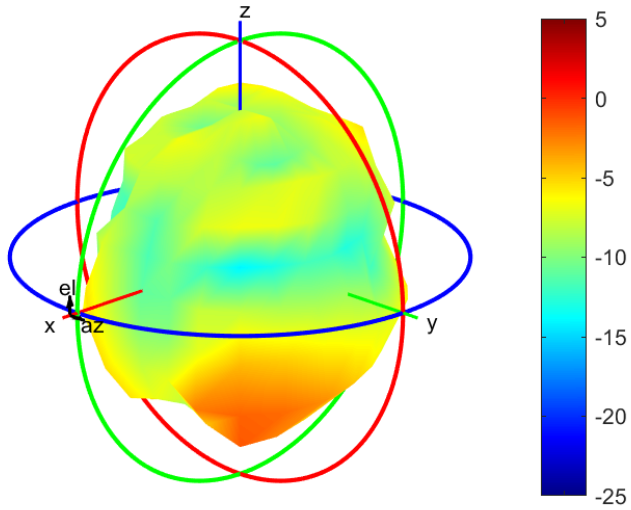
Center Frequency	1880 MHz
Horizontal (dBi) peak	-1.48
Vertical (dBi) peak	-4.78

1910MHz



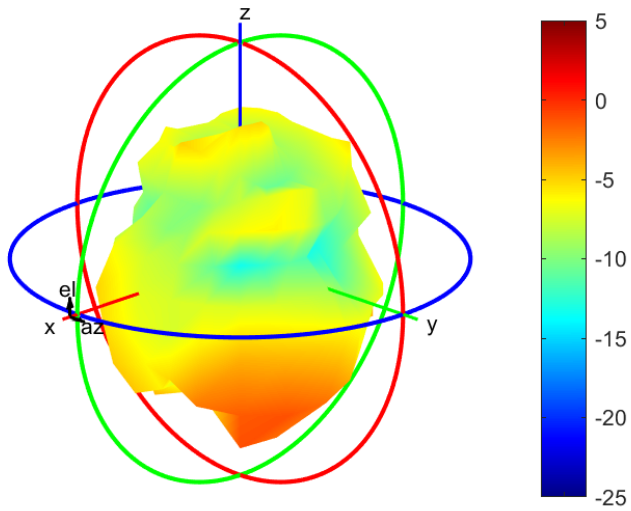
Center Frequency	1910MHz
Horizontal (dBi) peak	-1.19
Vertical (dBi) peak	-4.03

1920MHz



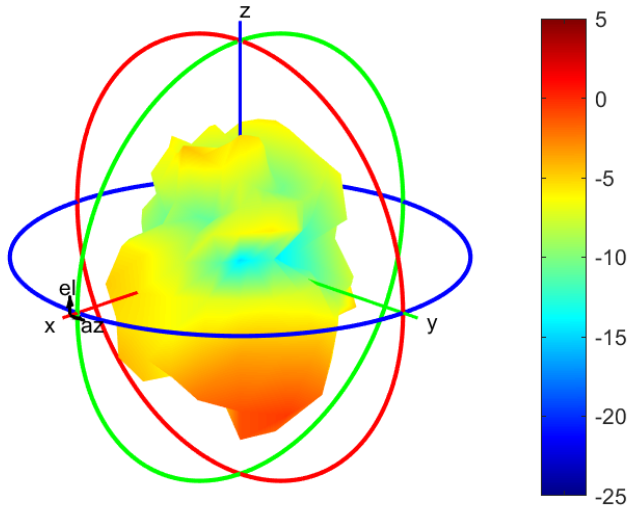
Center Frequency	1920MHz
Horizontal (dBi) peak	-1.35
Vertical (dBi) peak	-3.98

1950MHz



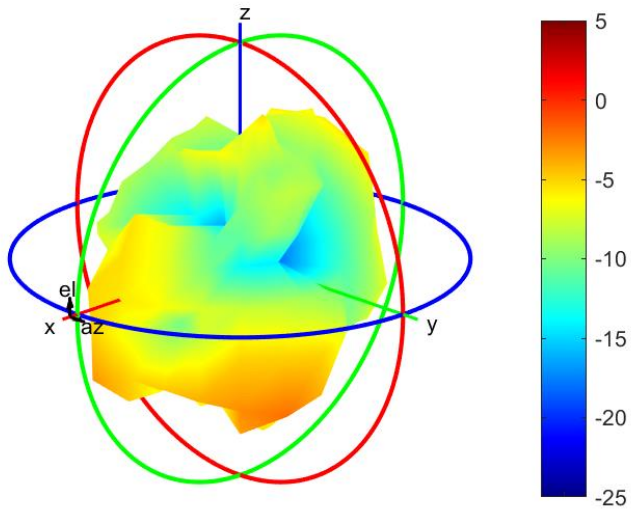
Center Frequency	1950MHz
Horizontal (dBi) peak	-1.07
Vertical (dBi) peak	-4.25

1980MHz



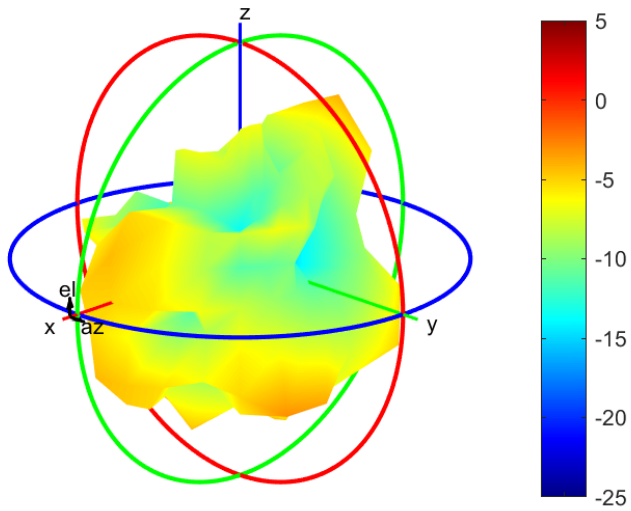
Center Frequency	1980MHz
Horizontal (dBi) peak	-1.23
Vertical (dBi) peak	-4.36

2110MHz



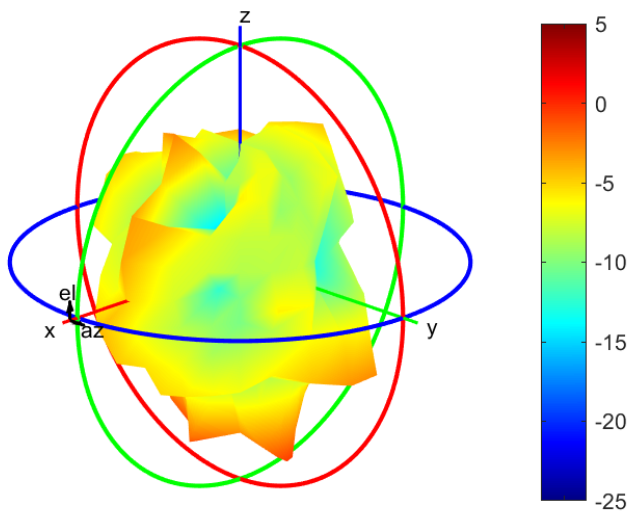
Center Frequency	2110MHz
Horizontal (dBi) peak	-3.77
Vertical (dBi) peak	-4.2

2200MHz



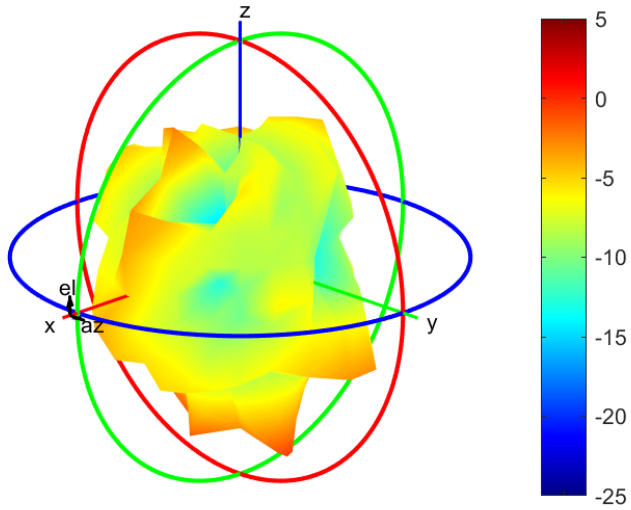
Center Frequency	2200MHz
Horizontal (dBi) peak	-4.46
Vertical (dBi) peak	-3.23

2300MHz



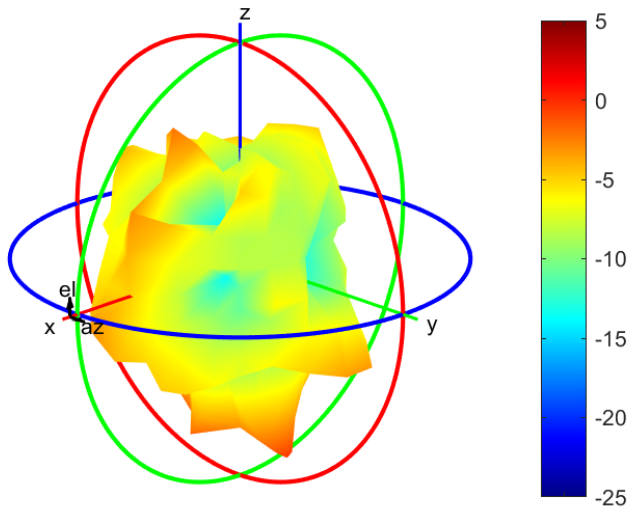
Center Frequency	2300MHz
Horizontal (dBi) peak	-0.45
Vertical (dBi) peak	-2.91

2305MHz



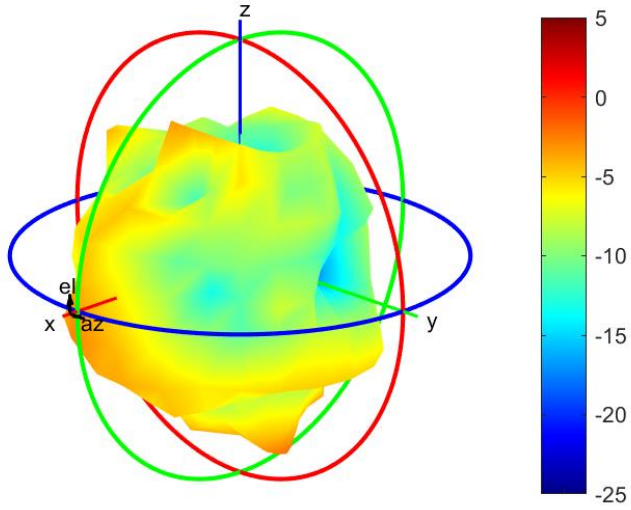
Center Frequency	2305MHz
Horizontal (dBi) peak	-0.35
Vertical (dBi) peak	-3.04

2315MHz



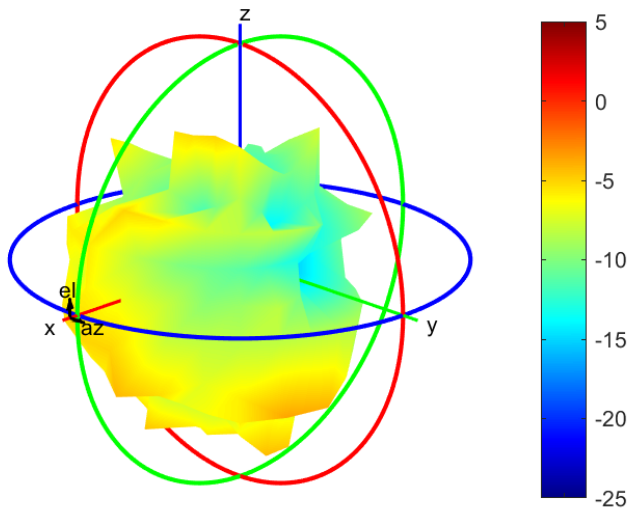
Center Frequency	2315MHz
Horizontal (dBi) peak	-0.27
Vertical (dBi) peak	-3.13

2350MHz



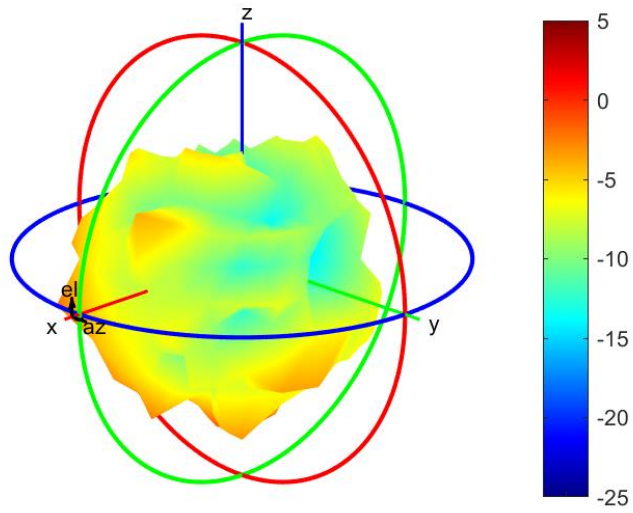
Center Frequency	2350MHz
Horizontal (dBi) peak	-1.71
Vertical (dBi) peak	-4.38

2400MHz



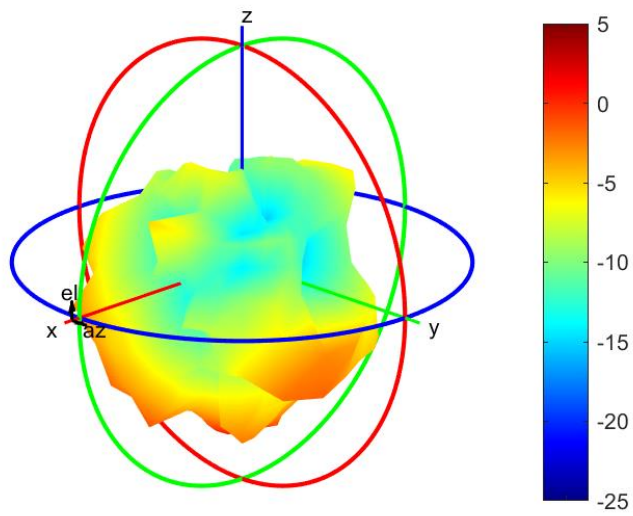
Center Frequency	2400MHz
Horizontal (dBi) peak	-4.25
Vertical (dBi) peak	-4.65

2500MHz



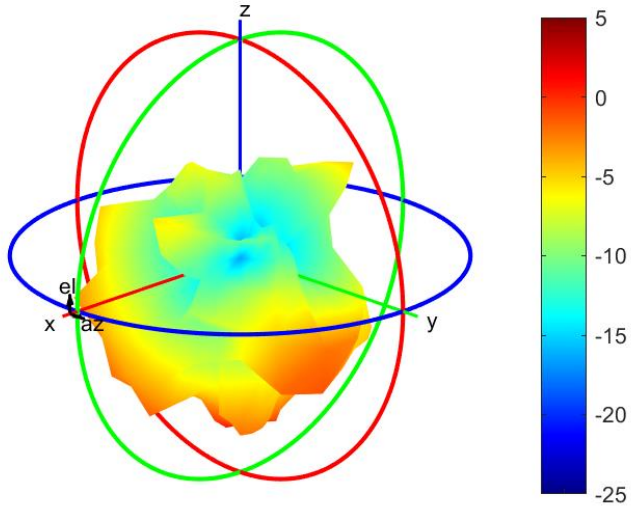
Center Frequency	2500MHz
Horizontal (dBi) peak	-0.96
Vertical (dBi) peak	-2.9

2570MHz



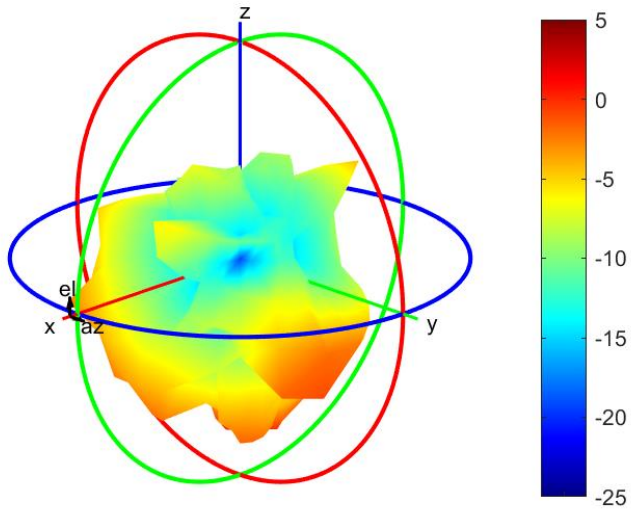
Center Frequency	2570MHz
Horizontal (dBi) peak	-0.15
Vertical (dBi) peak	-1.61

2595MHz



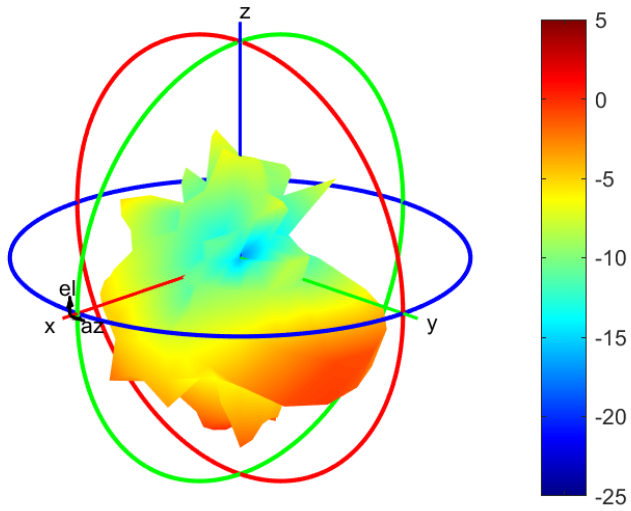
Center Frequency	2595MHz
Horizontal (dBi) peak	-0.18
Vertical (dBi) peak	-2.29

2620MHz



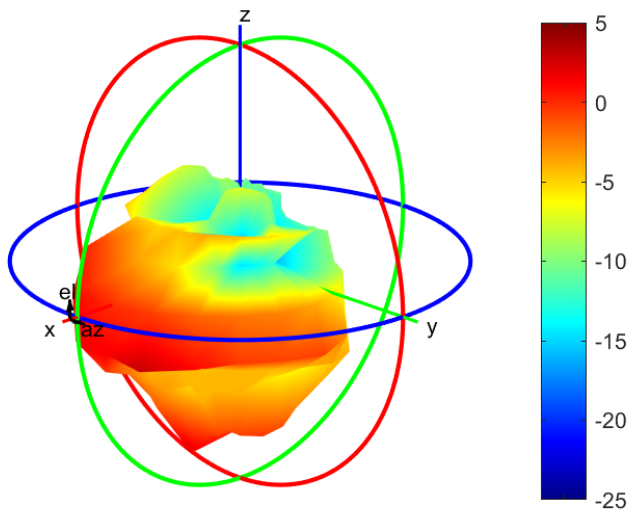
Center Frequency	2620MHz
Horizontal (dBi) peak	0.28
Vertical (dBi) peak	-2.84

2690MHz



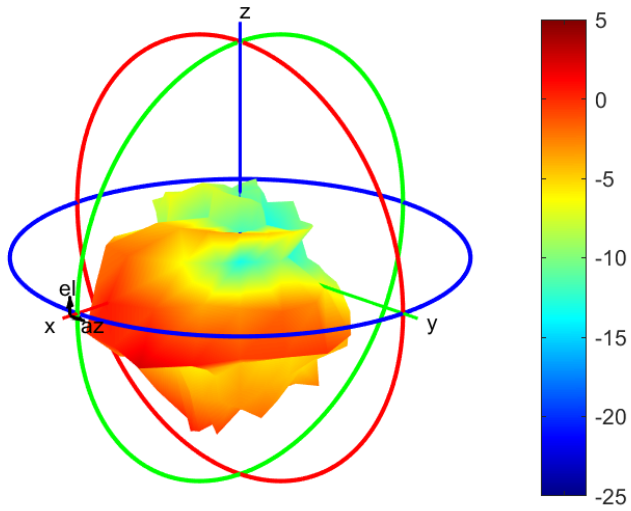
Center Frequency	2690MHz
Horizontal (dBi) peak	0.02
Vertical (dBi) peak	-2.51

3400MHz



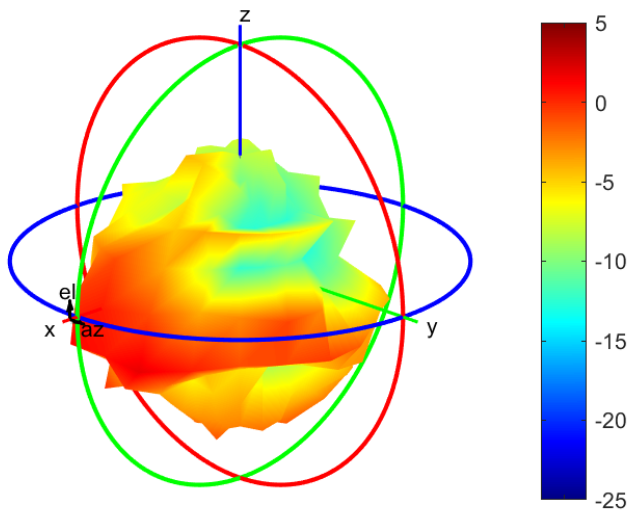
Center Frequency	3400MHz
Horizontal (dBi) peak	0.2
Vertical (dBi) peak	0.6

3500MHz



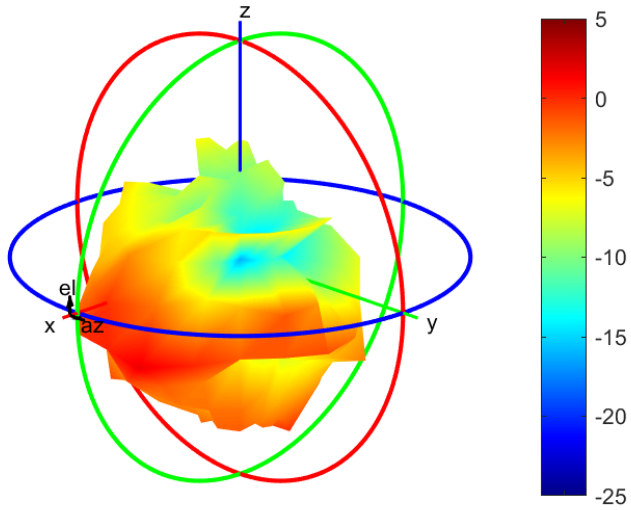
Center Frequency	3500MHz
Horizontal (dBi) peak	0.48
Vertical (dBi) peak	-0.39

3600MHz



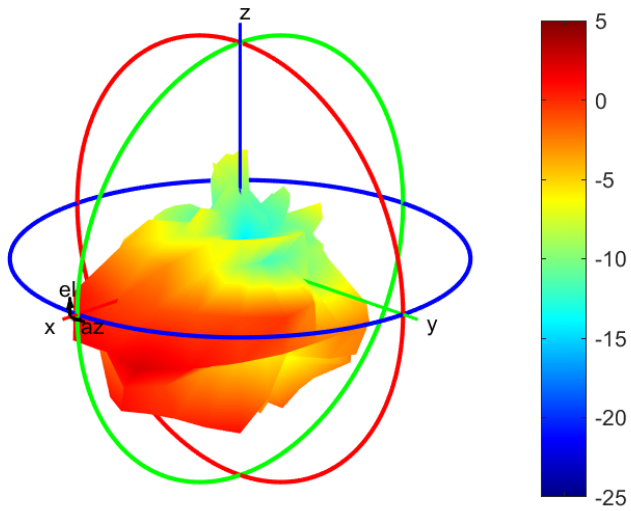
Center Frequency	3600MHz
Horizontal (dBi) peak	0.88
Vertical (dBi) peak	-0.47

3700MHz



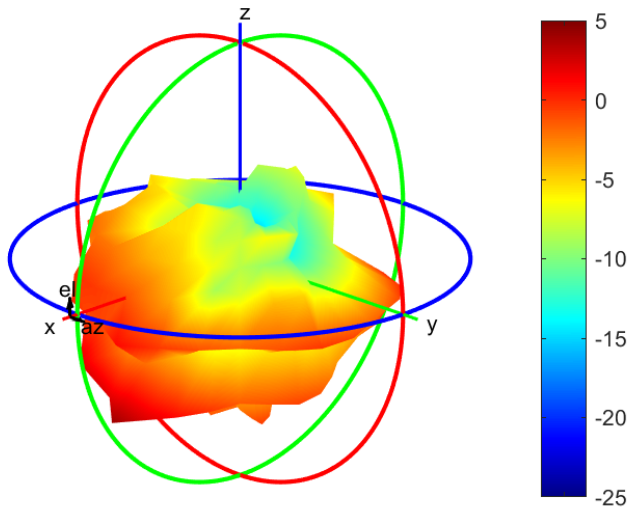
Center Frequency	3700MHz
Horizontal (dBi) peak	0.56
Vertical (dBi) peak	0.65

3800MHz



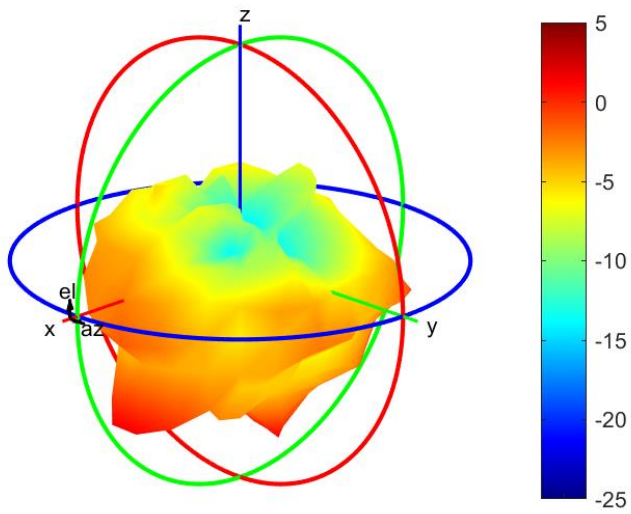
Center Frequency	3800MHz
Horizontal (dBi) peak	0.23
Vertical (dBi) peak	-1.37

4200MHz



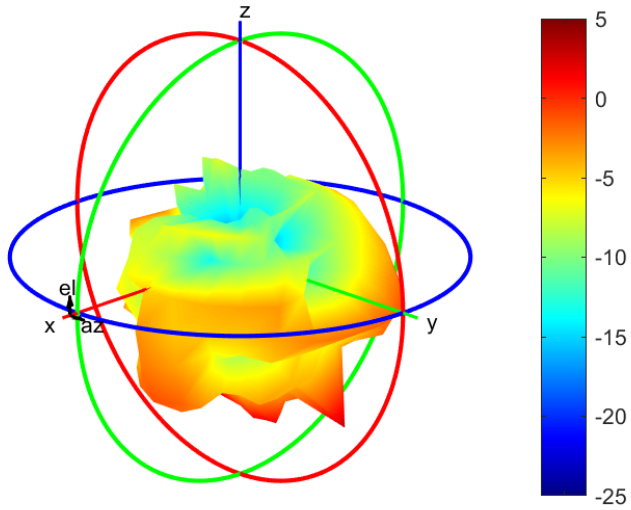
Center Frequency	4200MHz
Horizontal (dBi) peak	0.66
Vertical (dBi) peak	0.69

4400MHz



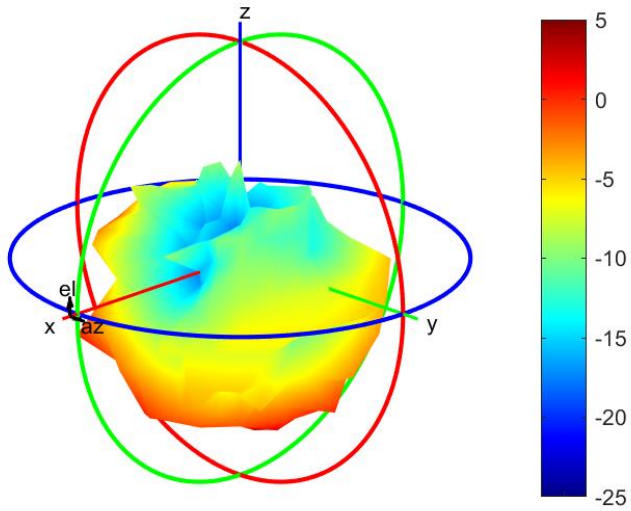
Center Frequency	4400MHz
Horizontal (dBi) peak	0.45
Vertical (dBi) peak	-0.38

4700MHz



Center Frequency	4700MHz
Horizontal (dBi) peak	0.01
Vertical (dBi) peak	0.85

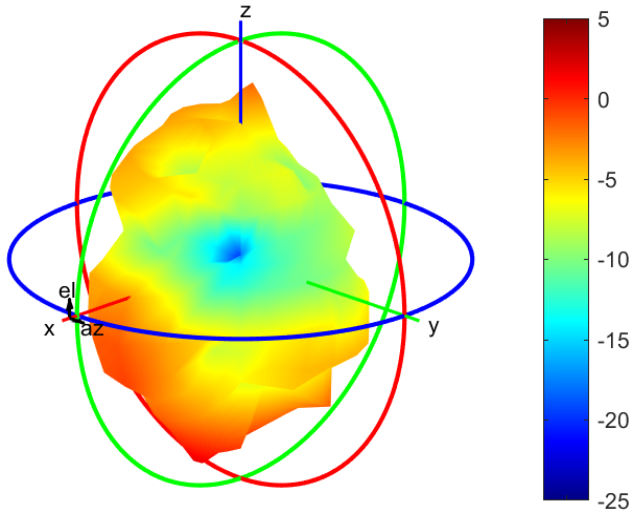
5000MHz



Center Frequency	5000MHz
Horizontal (dBi) peak	0.64
Vertical (dBi) peak	0.26

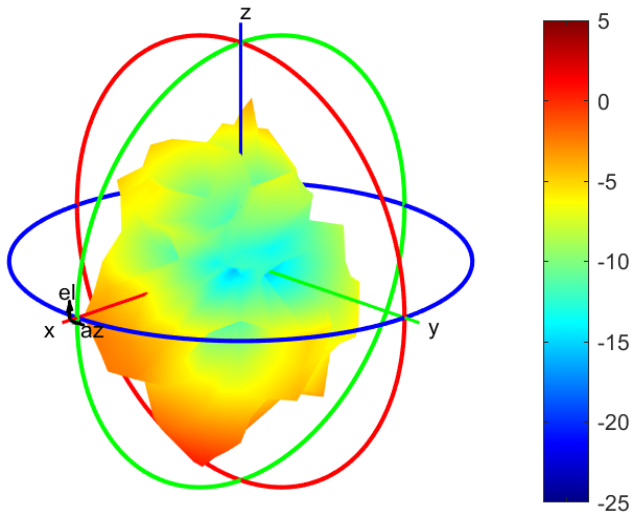
TB mode
MIMO3 Antenna (Rx4)

1805 MHz



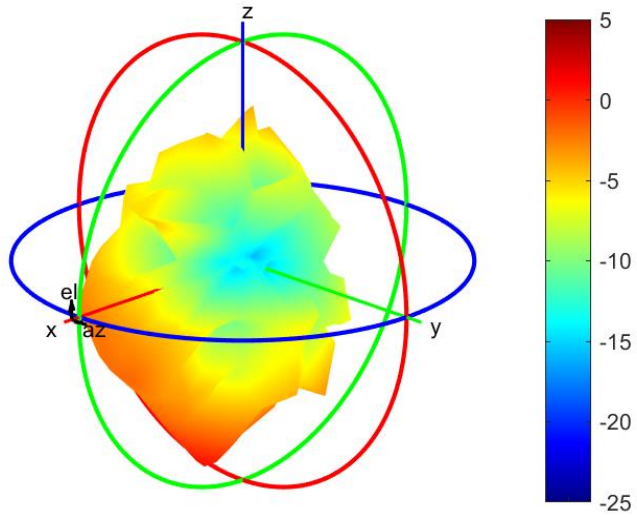
Center Frequency	1805 MHz
Horizontal (dBi) peak	-0.24
Vertical (dBi) peak	0.20

1850 MHz



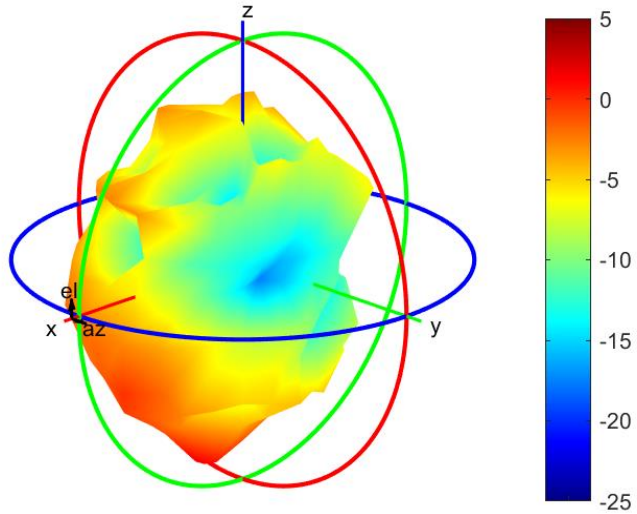
Center Frequency	1850 MHz
Horizontal (dBi) peak	-1.28
Vertical (dBi) peak	-1.66

1880 MHz



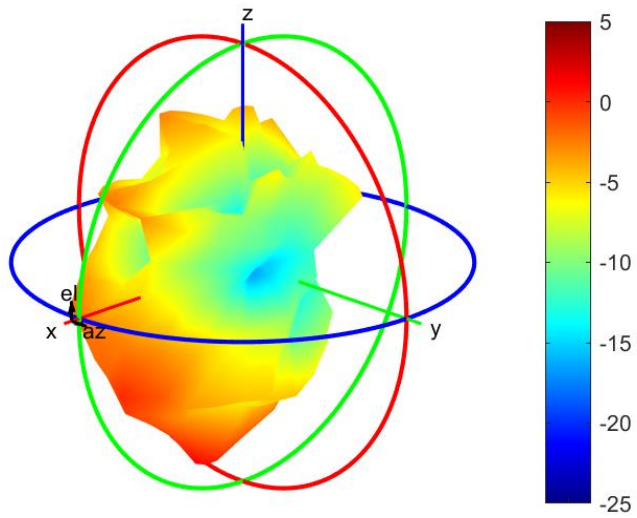
Center Frequency	1880 MHz
Horizontal (dBi) peak	-0.64
Vertical (dBi) peak	-2.81

1910MHz



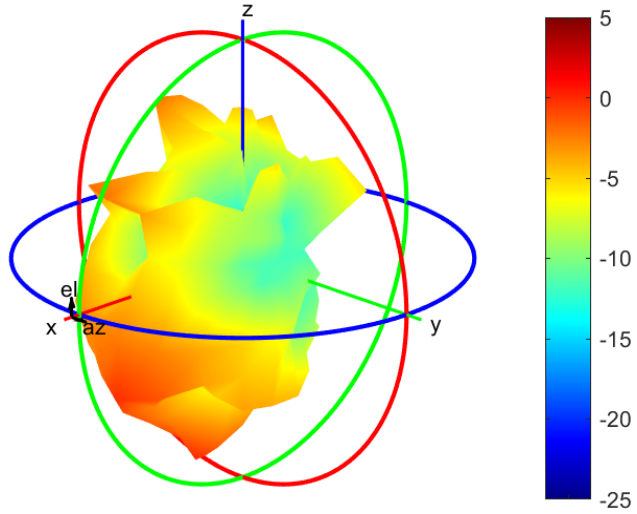
Center Frequency	1910MHz
Horizontal (dBi) peak	0.53
Vertical (dBi) peak	-3.28

1920MHz



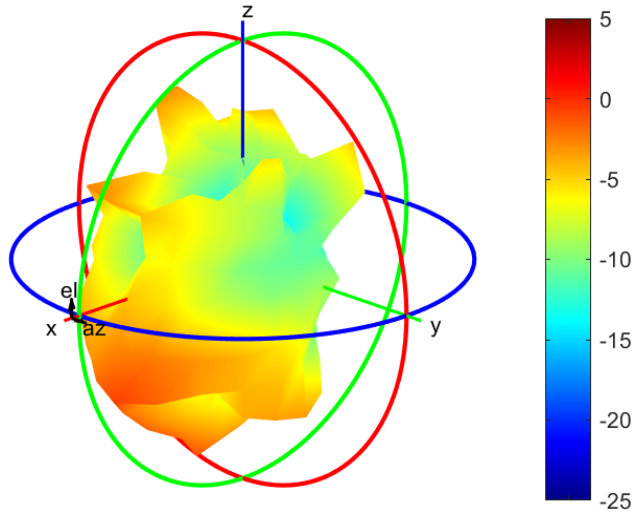
Center Frequency	1920MHz
Horizontal (dBi) peak	0.35
Vertical (dBi) peak	-4.16

1950MHz



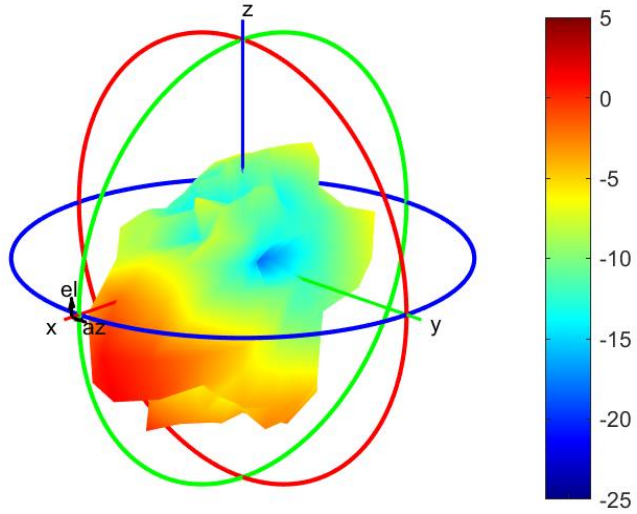
Center Frequency	1950MHz
Horizontal (dBi) peak	-0.52
Vertical (dBi) peak	-3.29

1980MHz



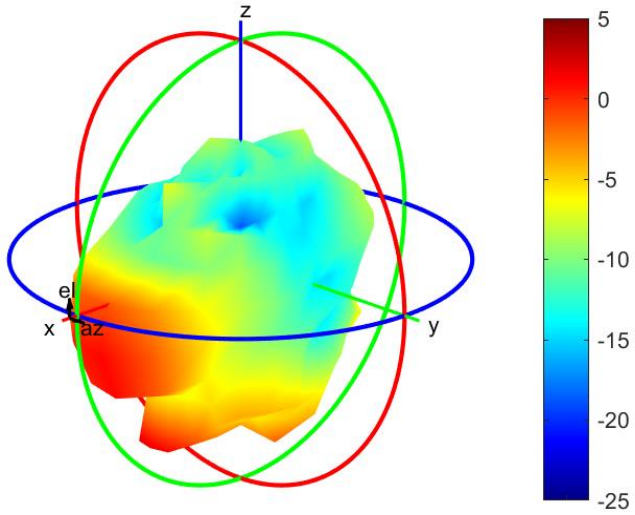
Center Frequency	1980MHz
Horizontal (dBi) peak	-1.15
Vertical (dBi) peak	-3.03

2110MHz



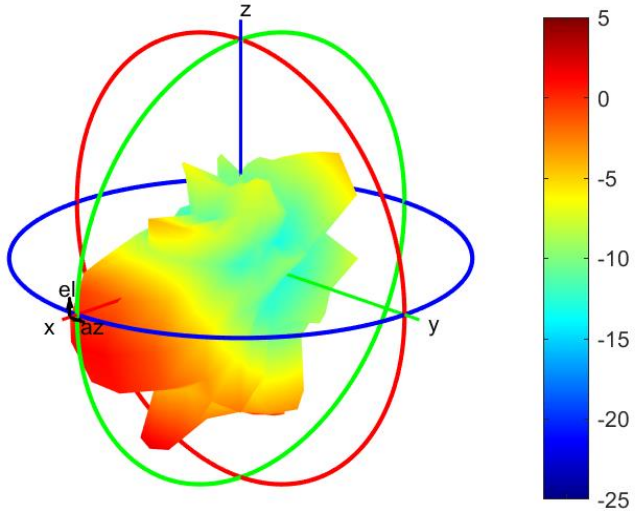
Center Frequency	2110MHz
Horizontal (dBi) peak	1.25
Vertical (dBi) peak	-2.02

2200MHz



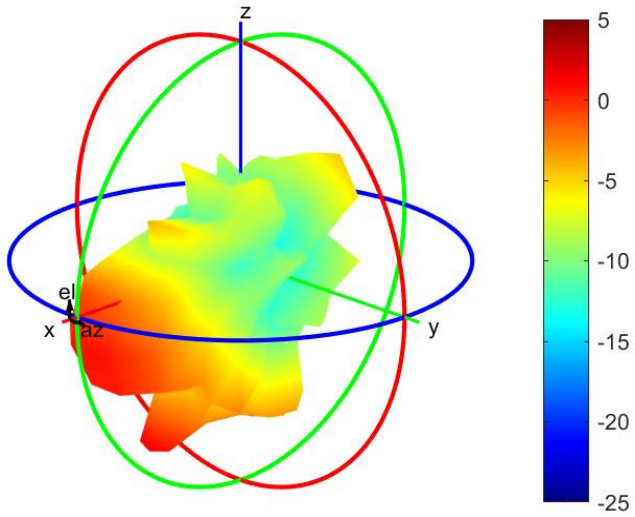
Center Frequency	2200MHz
Horizontal (dBi) peak	1.62
Vertical (dBi) peak	-1.34

2300MHz



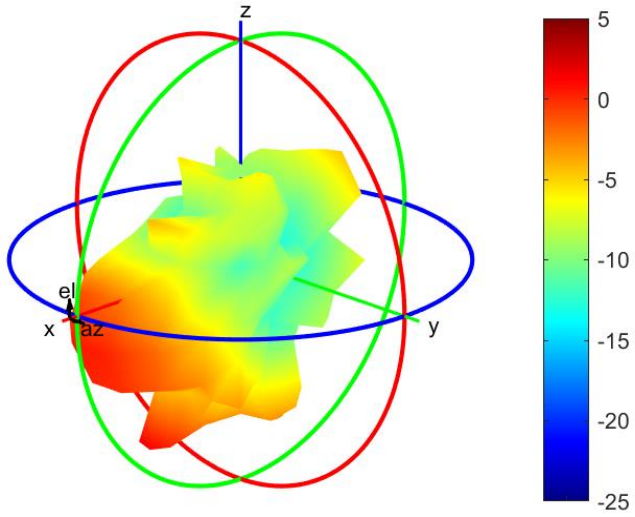
Center Frequency	2300MHz
Horizontal (dBi) peak	1.77
Vertical (dBi) peak	-3.15

2305MHz



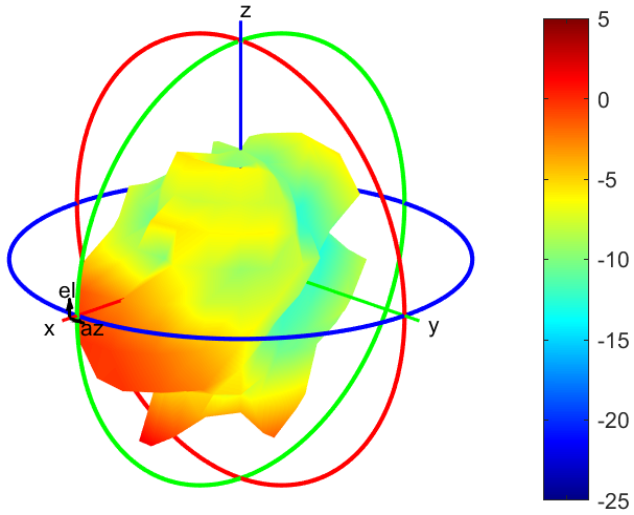
Center Frequency	2305MHz
Horizontal (dBi) peak	1.50
Vertical (dBi) peak	-3.25

2315MHz



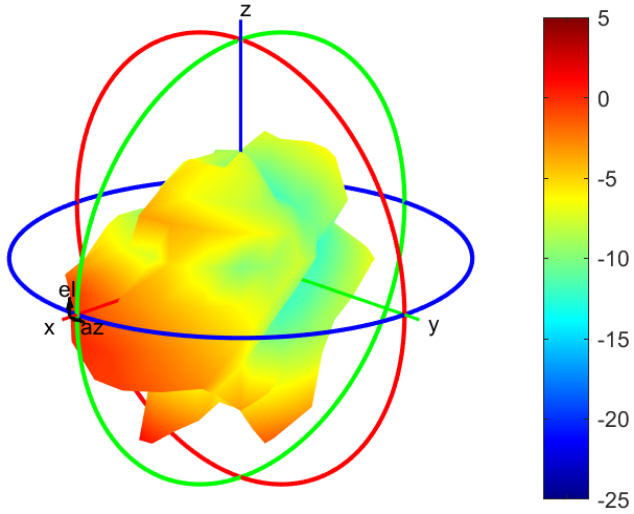
Center Frequency	2315MHz
Horizontal (dBi) peak	1.20
Vertical (dBi) peak	-3.24

2350MHz



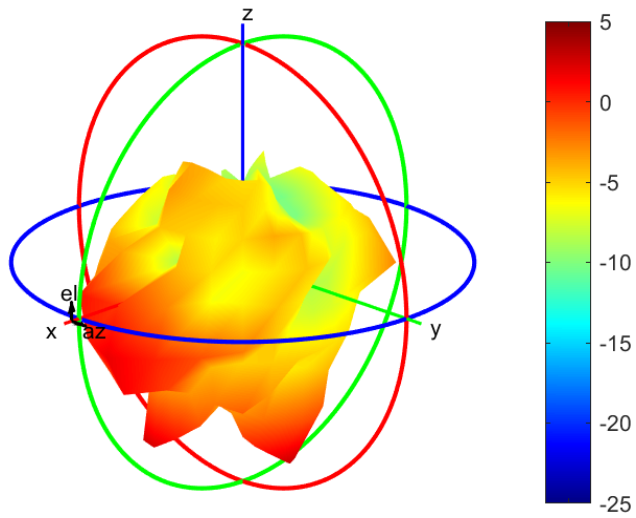
Center Frequency	2350MHz
Horizontal (dBi) peak	0.97
Vertical (dBi) peak	-1.36

2400MHz



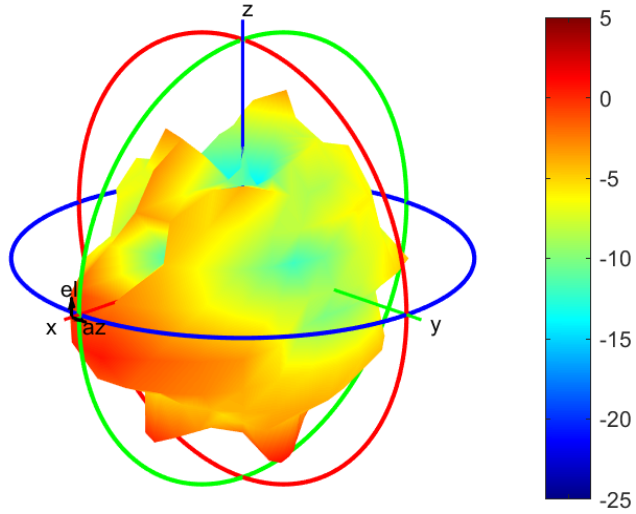
Center Frequency	2400MHz
Horizontal (dBi) peak	0.27
Vertical (dBi) peak	-0.95

2500MHz



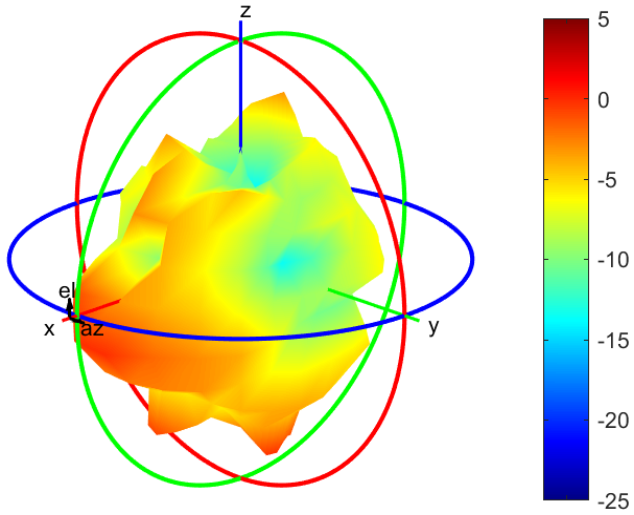
Center Frequency	2500MHz
Horizontal (dBi) peak	1.55
Vertical (dBi) peak	3.01

2570MHz



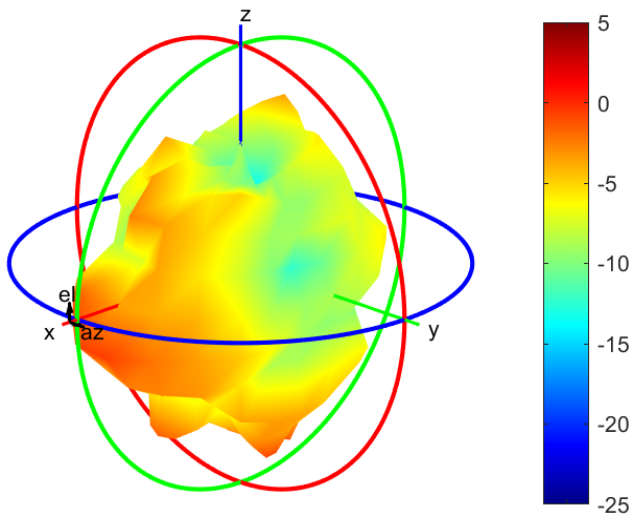
Center Frequency	2570MHz
Horizontal (dBi) peak	0.24
Vertical (dBi) peak	0.28

2595MHz



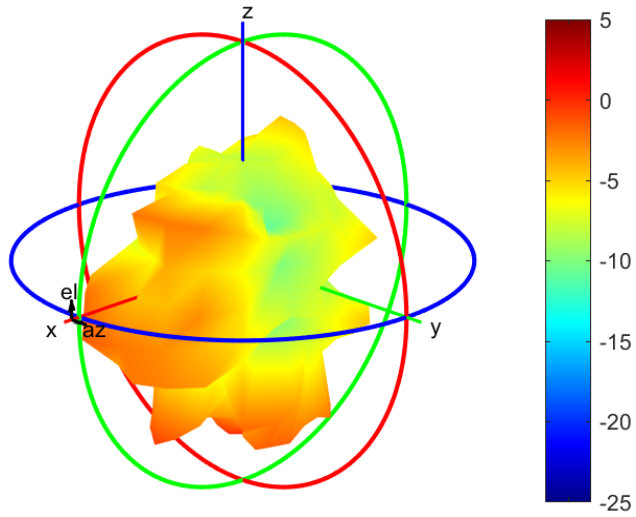
Center Frequency	2595MHz
Horizontal (dBi) peak	-0.30
Vertical (dBi) peak	-1.30

2620MHz



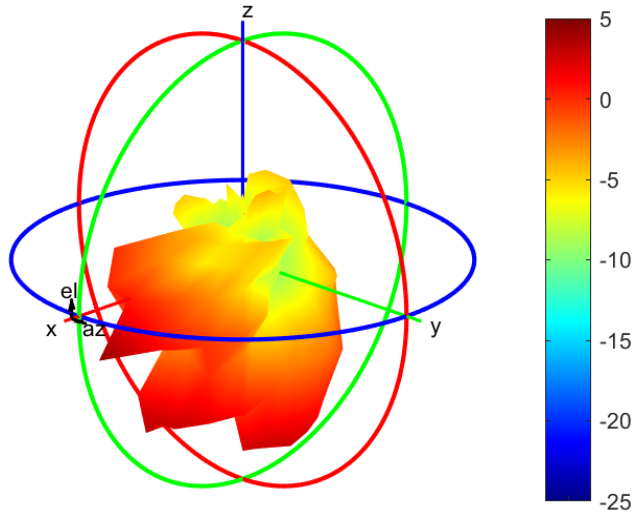
Center Frequency	2620MHz
Horizontal (dBi) peak	-0.64
Vertical (dBi) peak	-1.74

2690MHz



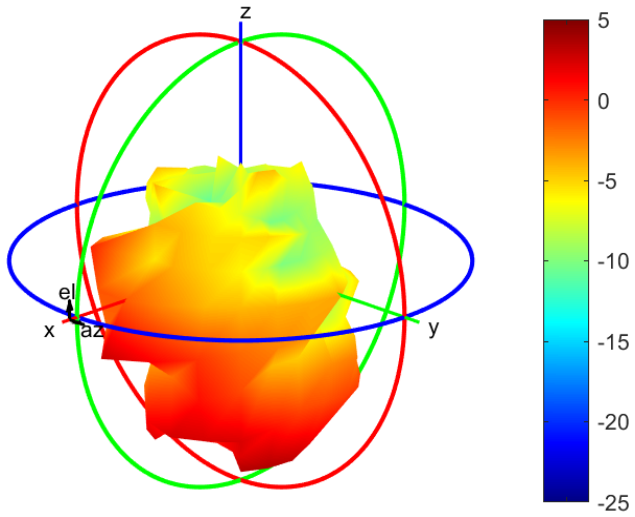
Center Frequency	2690MHz
Horizontal (dBi) peak	-1.10
Vertical (dBi) peak	-0.94

3400MHz



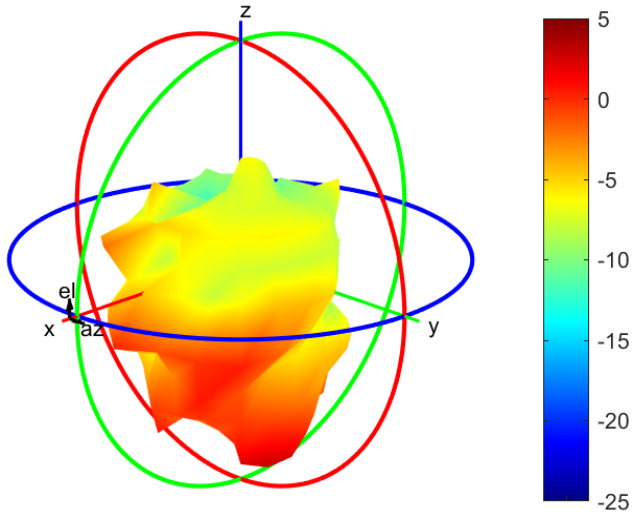
Center Frequency	3400MHz
Horizontal (dBi) peak	3.81
Vertical (dBi) peak	2.54

3500MHz



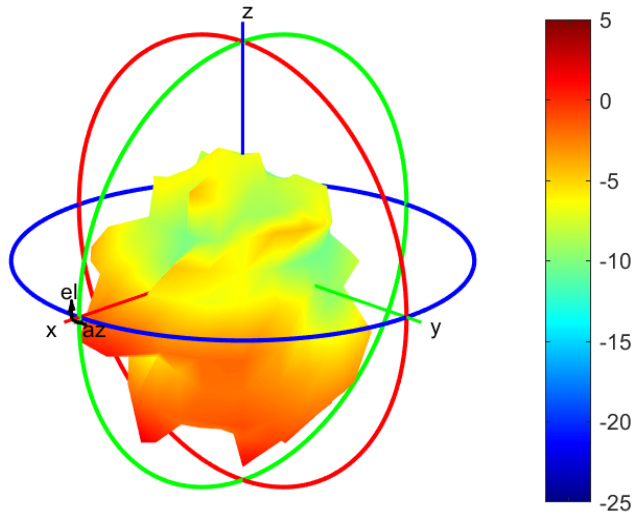
Center Frequency	3500MHz
Horizontal (dBi) peak	1.71
Vertical (dBi) peak	3.19

3600MHz



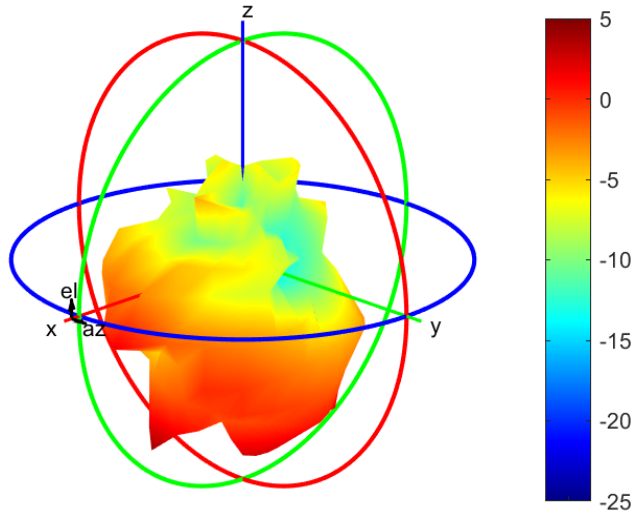
Center Frequency	3600MHz
Horizontal (dBi) peak	0.49
Vertical (dBi) peak	1.42

3700MHz



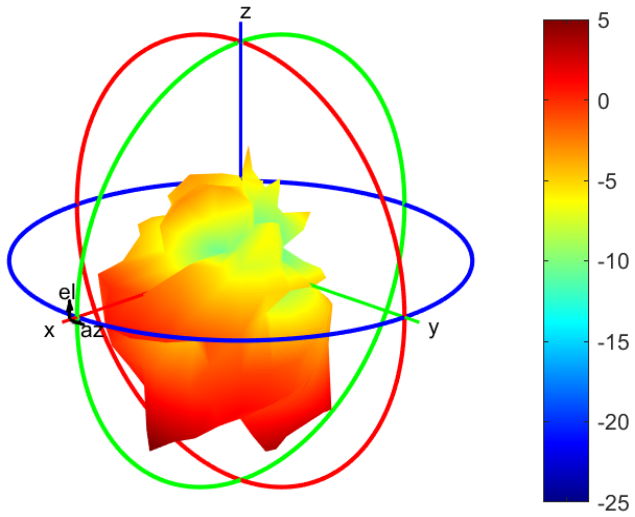
Center Frequency	3700MHz
Horizontal (dBi) peak	1.21
Vertical (dBi) peak	0.04

3800MHz



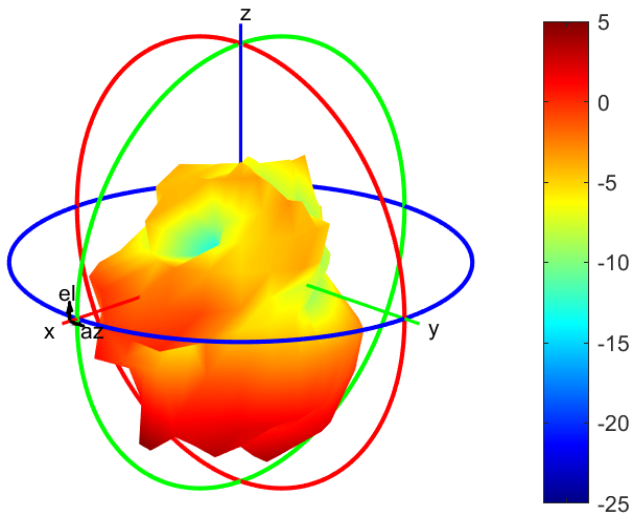
Center Frequency	3800MHz
Horizontal (dBi) peak	3.54
Vertical (dBi) peak	1.56

4200MHz



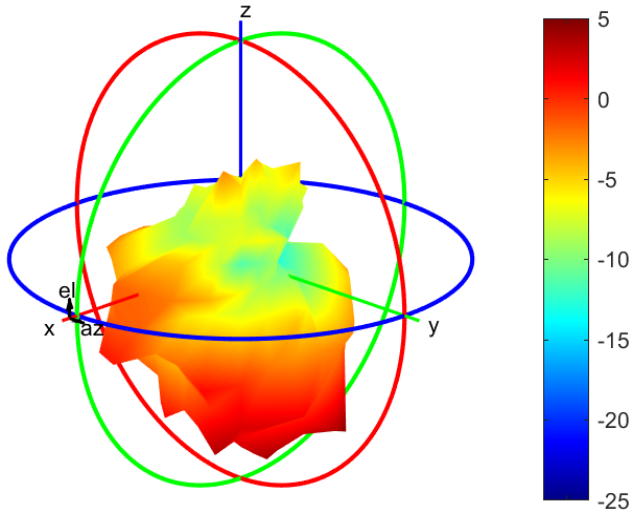
Center Frequency	4200MHz
Horizontal (dBi) peak	5.08
Vertical (dBi) peak	3.80

4400MHz



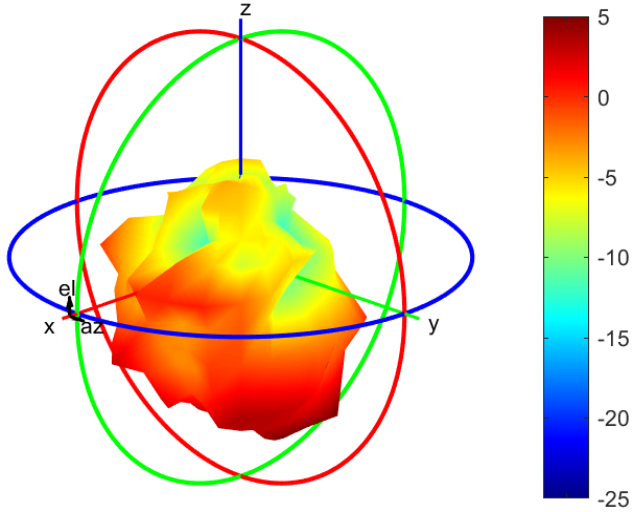
Center Frequency	4400MHz
Horizontal (dBi) peak	4.88
Vertical (dBi) peak	3.88

4700MHz



Center Frequency	4700MHz
Horizontal (dBi) peak	3.94
Vertical (dBi) peak	3.77

5000MHz



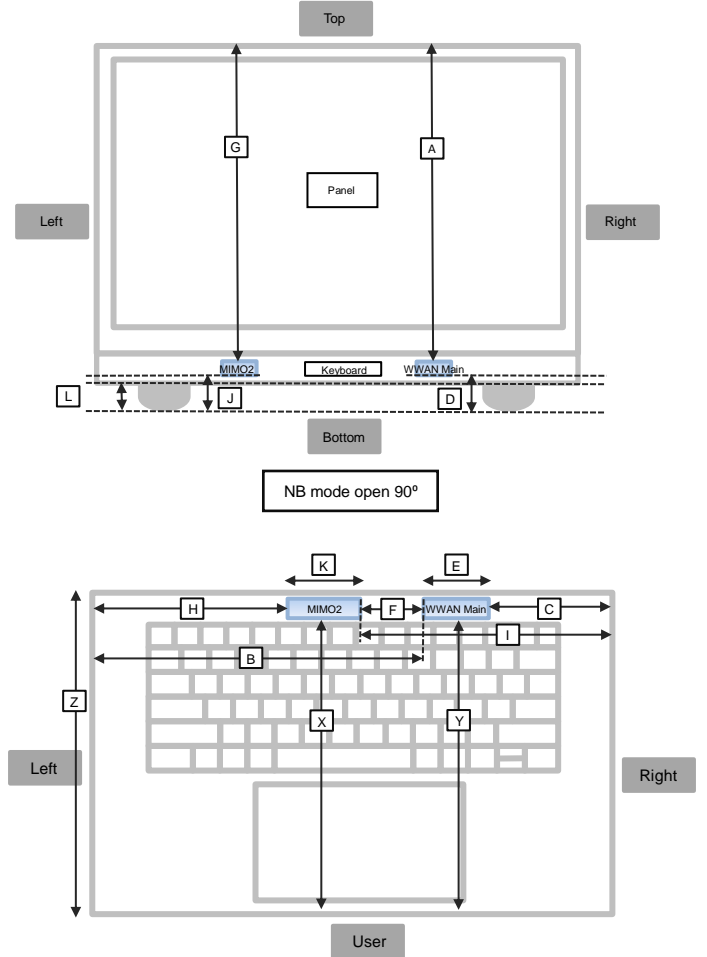
Center Frequency	5000MHz
Horizontal (dBi) peak	5.89
Vertical (dBi) peak	5.15

Section 4. Antenna Host Platform Location Information

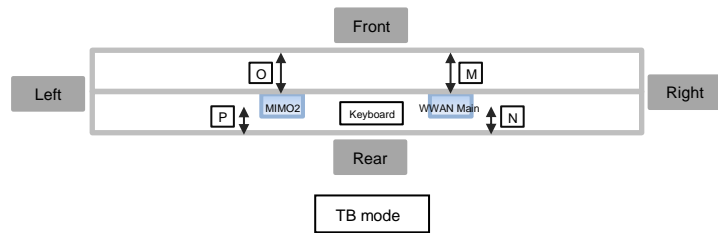
Include a **dimensioned photo(s) or dimensioned drawing(s)** of Main and Aux antenna placements (measurements are not required for receive-only antenna).

Any antenna that transmits must show dimensions to bottom of laptop. Provide a description of the materials that are used for supporting or surrounding transmit antennas; for example, non-conductive plastics vs. conductive coated plastic or metallic materials.

Minimum Separation Distance			
Item	Antenna	Position	Distance (mm)
A	WWAN-Main	To top	204
B	WWAN-Main	To left	134
C	WWAN-Main	To right	114
D	WWAN-Main	To bottom	8
E	WWAN-Main	Main antenna length	63
F	Main-MIMO2	Main to MIMO2	8
G	MIMO2	To top	204
H	MIMO2	To left	70
I	MIMO2	To right	184
J	MIMO2	To bottom	8
K	MIMO2	MIMO2 antenna length	57
L	NB	Bumper thickness	3
X	MIMO2	To user	198
Y	WWAN-Main	To user	198
Z	NB	Keyboard depth	210

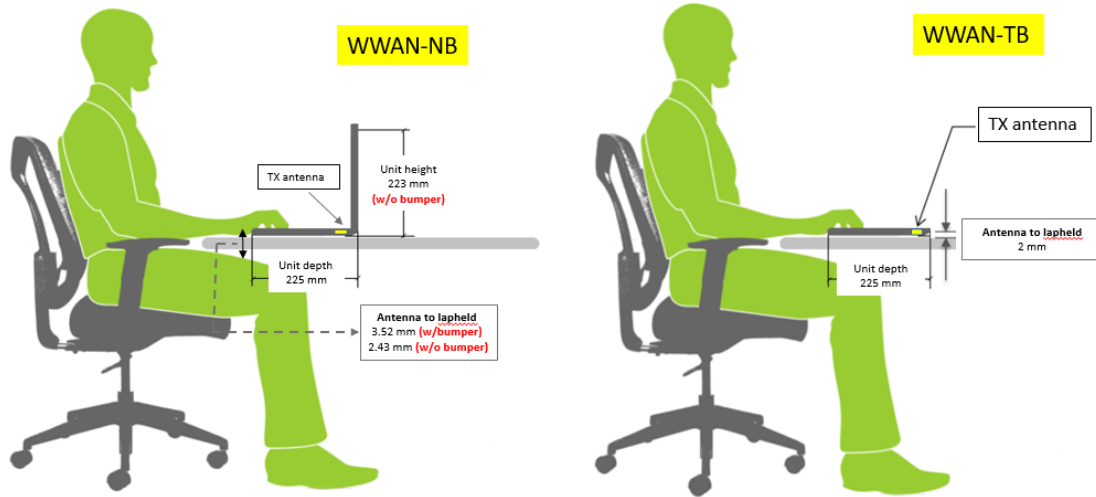


Minimum Separation Distance			
Item	Antenna	Position	Distance (mm)
M	WWAN-Main	To front	5
N	WWAN-Main	To rear	2.5
O	MIMO2	To front	5
P	MIMO2	To rear	2.5

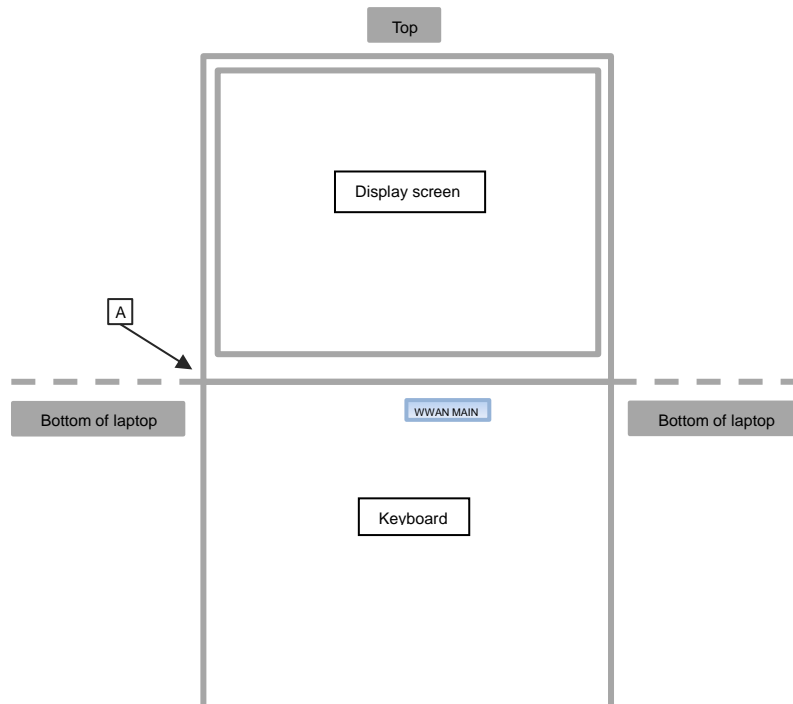


Section 5. Antenna dimensional information for SAR evaluation

Include a **dimensioned photo(s) or dimensioned drawing(s)** showing the distance (mm) between the transmit antennas and the user. For notebook/laptop hosts show lapheld position (example below). For tablet hosts show all orientations including lapheld, primary & secondary portrait, primary & secondary landscape positions. Include a description of any proximity sensors or power throttling implementations that limit or exclude use of any host orientation.



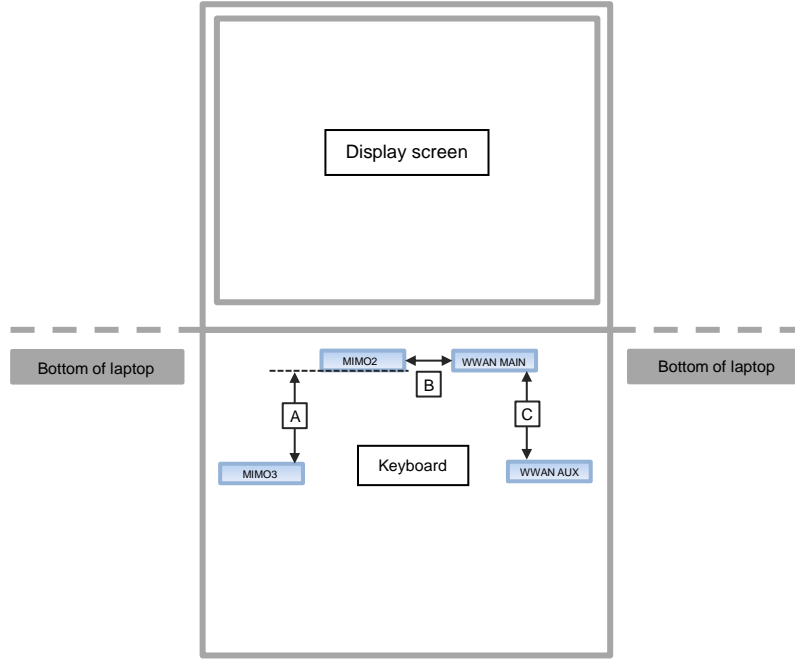
Minimum Separation Distance			
Item	Antenna	Position	Distance (mm)
A	WWAN-Main	to Bottom of Laptop (NOT include Bumper)	0



Section 6. Diagram Example of Co-Location Antenna Separation

Include a **dimensioned photo or dimensioned drawing** showing the distance (mm) between all WLAN transmit antennas and other co-located radiator transmit antenna such as Bluetooth, WWAN,..

(Note: Due to the evolving rules regarding co-location, each platform will need to be reviewed on a case by case basis)



Minimum Separation Distance			
Item	Antenna	Position	Distance (mm)
A	MIMO3	MIMO2	190
B	MIMO2	WWAN-Main	8
C	WWAN-Main	WWAN-Aux	195