

# 4x4 MiMo 4G/5G Sharkfin Antenna

GPS[X]D4[X]-6-60[-X]



## GPS[X]D4[X]-6-60[-X]

- 4x4 MiMo Sharkfin for 4G/5G
- Up to 4x GPS/GNSS
- Up to 6x MiMo WiFi 6e
- Whip Position for Optional Comms Whip

The GPS[X]D4[X]-6-60[-X] is an advanced 4G/5G, GPS/GNSS and WiFi antenna with a dual sharkfin style housing. The housing contains a 4x4 MiMo antenna function for 4G/5G (617-960/1427-6000MHz), up to 6x6 MiMo dual-band WiFi, which supports WiFi 6e. It can include up to four active GPS/GNSS antennas, each with a 26dB gain LNA and advanced filtering for LTE Band 13/14 operation.

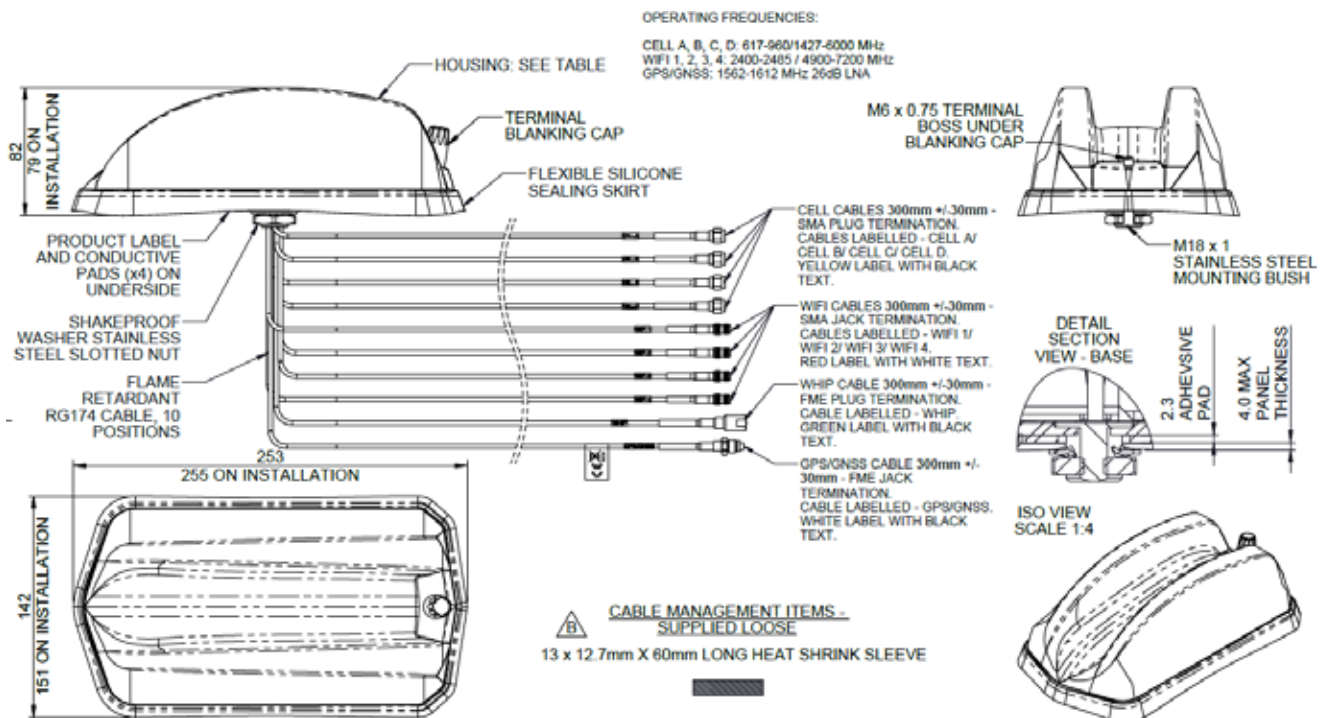
An integral mounting stud for an external antenna whip is provided, with a blanking cap supplied if this function is not required.

The antenna must be installed on a metal panel when a comms whip is used, otherwise, it may be fitted on a non-metallic panel whilst still offering similar performance.

The dual fin design provides multiple antenna functions while remaining discreet and is suitable for public safety (overt/covert), industrial and transport applications, where a cost-effective, efficient and robust antenna is essential. Requiring only a single hole mounting, the antenna reduces vehicle damage, installation time, cost and visual impact whilst protecting a vehicle's resale value.

### Technical Drawing

GPSD4-6-60-Q Shown



# 4x4 MiMo 4G/5G Sharkfin Antenna

GPS[X]D4[X]-6-60[-X]

PANORAMA ANTENNAS

## Product Data

Part No.	GPS2D4[W]-6-60-Q	GPS2D4[W]-6-60-T	GPS2D4[W]-6-60-D	GPS2D4[W]-6-60
<b>Electrical Data</b>				
Frequency Range (MHz)	GPS/GNSS Elements	2x 1562-1612		
	4G/5G Elements	4x 617-960, 1427-6000		
	WiFi Elements	4x 2.4/5.0/7.1GHz	3x 2.4/5.0/7.1GHz	2x 2.4/5.0/7.1GHz -
	Whip	dependent on whip		
Peak gain: Isotropic*	4G/5G Elements	5dBi (617-960MHz)		
		8dBi (1427-4200MHz)		
		9dBi (4900-6000MHz)		
	WiFi Elements	7dBi (2396-2485MHz)	-	
Isolation**	4G/5G Elements	>8dB (617-960 MHz)   > 15dB (1427-6000MHz)		
	WiFi Elements	> 15dB -		
Typical Efficiency* W/o Cable Loss	4G/5G Elements	> 40% (617-698MHz) >70% (698-960/1710-6000MHz)		
Correlation Co-efficient	4G/5G Elements	<0.25		
Polarisation	Vertical			
Pattern	Omni-directional			
Impedance	50Ω			
Max Input Power (W)	Internal elements 5W / main whip 60W			
<b>GPS/GNSS Data</b>				
Frequency Range (MHz)	1562-1612			
Gain: LNA	26dB			
Polarisation	Right Hand Circular			
Out of Band Rejection	>40dB (+/- 100MHz f)   Notch Filter @787MHz - 23dB			
Operating Voltage	3-5V DC (fed via coax)			
Current	Typical <20mA			
<b>Mechanical Data</b>				
Dimensions (mm) - Installed	Total Height (excl whip)	82 (3.2")		
	Length	253 (9.96")		
	Width	142 (5.56")		
Operating Temp (°C)	-40° / +80°C (-40° / 176°F)			
Material	ASA, Silicone Rubber, Aluminium Alloy			
Colour	Black (GPS[X]D4W denotes White variant)			
Ingress Protection	IP69K			
<b>Mounting Info</b>				
Fixing	Panel Mount			
Hole Size (mm)	19 (3/4")			
<b>Cable Data</b>				
Cable Type - All Pigtailed	FR RG174 (UN ECE R 118 Compliant)			
Dimensions (mm)	Diameter	2.8 (0.11")		
	Length	300 mm (12")		
	Whip	1xFME (m)		
	GPS/GNSS	2x FME (f)		
Termination	4G/5G	4x SMA plug		
	WiFi	4x SMA (f)	3x SMA (f)	2x SMA (f) -

\*Peak Gain and efficiency simulated in CST Microwave Studio for each element fed without cable loss on 600x600mm (2'x2') ground plane

\*\* Isolation measured as worst case for elements of the same type on a 600x600 (2'x2') ground plane without additional cable

# 4x4 MiMo 4G/5G Sharkfin Antenna

GPS[X]D4[X]-6-60[-X]

PANORAMA ANTENNAS

## Product Data

### Part No.

GPSD4[W]-6-60-Q      GPSD4[W]-6-60-T      GPSD4[W]-6-60-D      GPSD4[W]-6-60

### Electrical Data

Frequency Range (MHz)	GPS/GNSS Elements	1x 1562-1612			
	4G/5G Elements	4x 617-960, 1427-6000			
	WiFi Elements	4x 2.4/5.0/7.1GHz	3x 2.4/5.0/7.1GHz	2x 2.4/5.0/7.1GHz	-
	Whip	dependent on whip			
Peak gain: Isotropic*	4G/5G Elements	5dBi (617-960MHz)			
		8dBi (1427-4200MHz)			
	WiFi Elements	9dBi (4900-6000MHz)			
		7dBi (2396-2485MHz)			
Isolation**	4G/5G Elements	>8dB (617-960 MHz)   > 15dB (1427-6000MHz)			-
	WiFi Elements	> 15dB			-
Typical Efficiency* W/o Cable Loss	4G/5G Elements	> 40% (617-698MHz) >70% (698-960/1710-6000MHz)			-
Correlation Co-efficient	4G/5G Elements	<0.25			-
Polarisation	Vertical				
Pattern	Omni-directional				
Impedance	50Ω				
Max Input Power (W)	Internal elements 5W / main whip 60W				

### GPS/GNSS Data

Frequency Range (MHz)	1562-1612
Gain: LNA	26dB
Polarisation	Right Hand Circular
Out of Band Rejection	>40dB (+/- 100MHz f)   Notch Filter @787MHz - 23dB
Operating Voltage	3-5V DC (fed via coax)
Current	Typical <20mA

### Mechanical Data

Dimensions (mm) - Installed	Total Height (excl whip)	82 (3.2")
	Length	253 (9.96")
	Width	142 (5.56")
Operating Temp (°C)	-40° / +80°C (-40° / 176°F)	
Material	ASA, Silicone Rubber, Aluminium Alloy	
Colour	Black (GPS[X]D4W denotes White variant)	
Ingress Protection	IP69K	

### Mounting Info

Fixing	Panel Mount
Hole Size (mm)	19 (3/4")

### Cable Data

Cable Type - All Pigtails	FR RG174 (UN ECE R 118 Compliant)			
Dimensions (mm)	Diameter	2.8 (0.11")		
	Length	300 mm (12")		
	Whip	1xFME (m)		
Termination	GPS/GNSS	1x FME (f)		
	4G/5G	4x SMA plug		
	WiFi	4x SMA (f)	3x SMA (f)	2x SMA (f)

\*Peak Gain and efficiency simulated in CST Microwave Studio for each element fed without cable loss on 600x600mm (2'x2') ground plane

\*\* Isolation measured as worst case for elements of the same type on a 600x600 (2'x2') ground plane without additional cable

# 4x4 MiMo 4G/5G Sharkfin Antenna

GPS[X]D4[X]-6-60[-X]

PANORAMA ANTENNAS

Product Data

Part No.		FIND4[W]-6-60-Q	FIND4[W]-6-60-T	FIND4[W]-6-60-D	FIND4[W]-6-60
<b>Electrical Data</b>					
	4G/5G Elements	4x 617-960, 1427-6000			
	WiFi Elements	4x 2.4/5.0/7.1GHz	3x 2.4/5.0/7.1GHz	2x 2.4/5.0/7.1GHz	-
	Whip	dependent on whip			
Peak gain: Isotropic*	4G/5G Elements	5dBi (617-960MHz)			
		8dBi (1427-4200MHz)			
		9dBi (4900-6000MHz)			
	WiFi Elements	7dBi (2396-2485MHz)			
		11dBi (4900-7200MHz)			
Isolation**	4G/5G Elements	>8dB (617-960 MHz)   > 15dB (1427-6000MHz)			
	WiFi Elements	> 15dB			
Typical Efficiency* W/o Cable Loss	4G/5G Elements	> 40% (617-698Mz) >70% (698-960/1710-6000MHz)			
Correlation Co-efficient	4G/5G Elements	<0.25			
Polarisation		Vertical			
Pattern		Omni-directional			
Impedance		50Ω			
Max Input Power (W)		Internal elements 5W / main whip 60W			
<b>Mechanical Data</b>					
Dimensions (mm) - Installed	Total Height (excl whip)	82 (3.2")			
	Length	253 (9.96")			
	Width	142 (5.56")			
Operating Temp (°C)		-40° / +80°C (-40° / 176°F)			
Material		ASA, Silicone Rubber, Aluminium Alloy			
Colour		Black (FIND4W denotes White variant)			
Ingress Protection		IP69K			
<b>Mounting Info</b>					
Fixing		Panel Mount			
Hole Size (mm)		19 (3/4")			
<b>Cable Data</b>					
Cable Type - All Pigtails		FR RG174 (UN ECE R 118 Compliant)			
Dimensions (mm)	Diameter	2.8 (0.11")			
	Length	300 mm (12")			
	Whip	1xFME (m)			
Termination	4G/5G	4x SMA plug			
	WiFi	4x SMA (f)	3x SMA (f)	2x SMA (f)	-

\*Peak Gain and efficiency simulated in CST Microwave Studio for each element fed without cable loss on 600x600mm (2'x2') ground plane

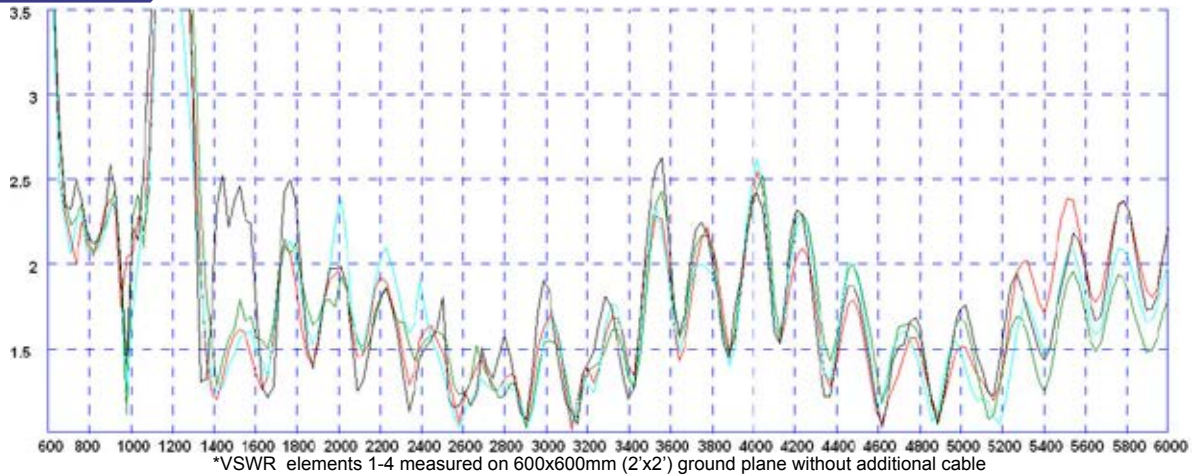
\*\* Isolation measured as worst case for elements of the same type on a 600x600 (2'x2') ground plane without additional cable

# 4x4 MiMo 4G/5G Sharkfin Antenna

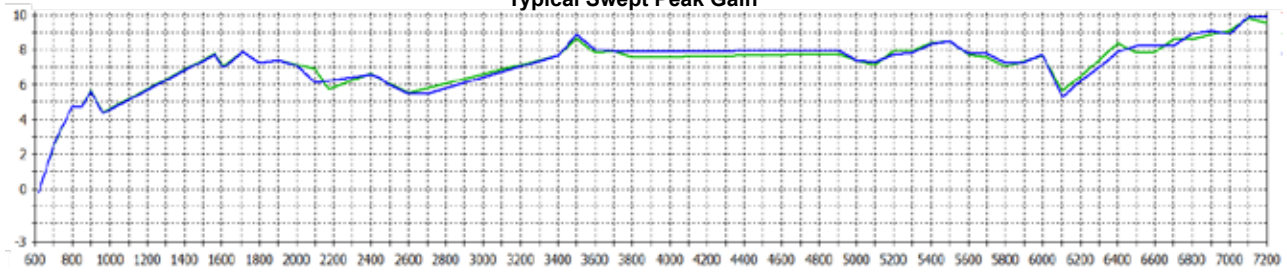
GPS[X]D4[X]-6-60[-X]

Electrical Data on Ground Plane - Cell

Typical VSWR\*

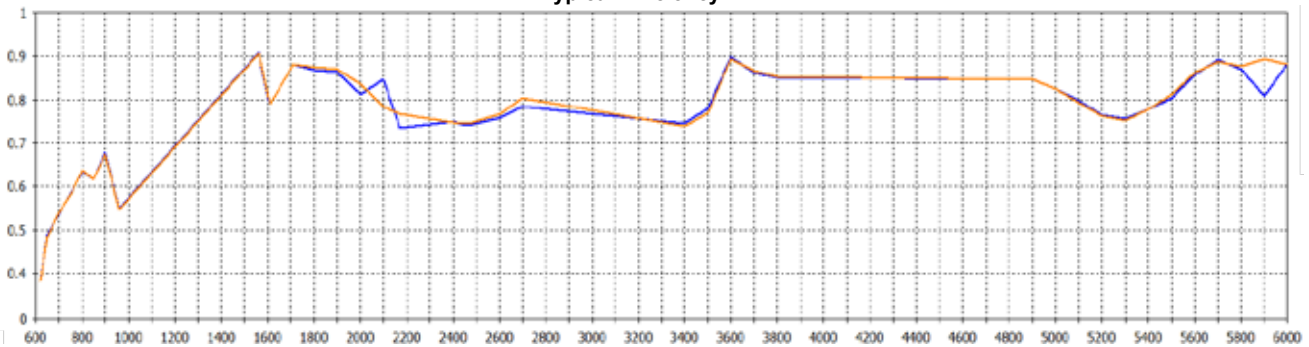


Typical Swept Peak Gain \*\*



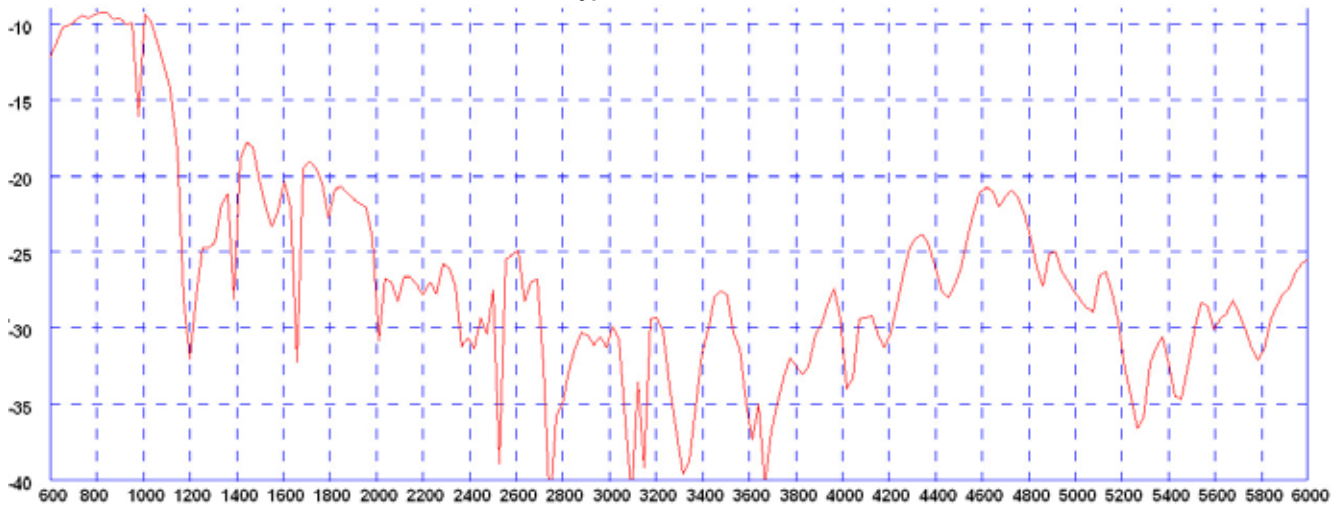
\*\*Swept peak gain simulated in CST Microwave Studio for each element fed without cable loss on 600x600mm (2'x2') ground plane

Typical Efficiency \*\*\*



\*\*\*Efficiency simulated in CST Microwave Studio for each element fed without cable loss on 600x600mm (2'x2') ground plane

Typical Isolation \*\*\*\*

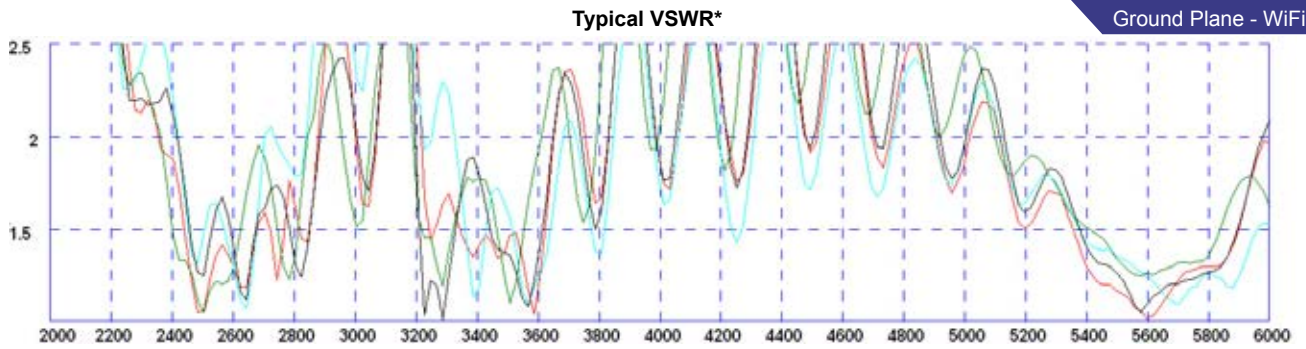


\*\*\*\*Typical worst case isolation measured on a 600x600mm (2'x2') ground plane without cable loss

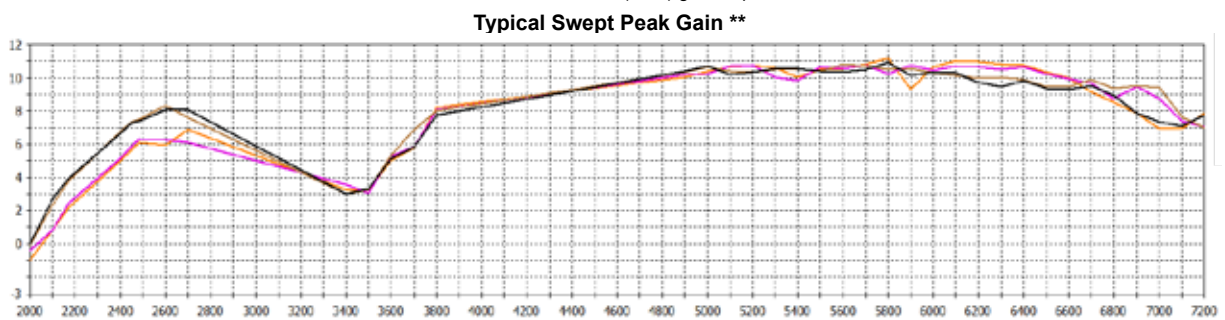
# 4x4 MiMo 4G/5G Sharkfin Antenna

GPS[X]D4[X]-6-60[-X]

Electrical Data -on Ground Plane - WiFi



\*VSWR elements 1-4 measured on a 600x600 (2'x2') ground plane without additional cable



\*\*Swept peak gain simulated in CST Microwave Studio for each element fed without cable loss on 600x600mm (2'x2') ground plane



\*\*\*Efficiency simulated in CST Microwave Studio for each element fed without cable loss on 600x600mm (2'x2') ground plane



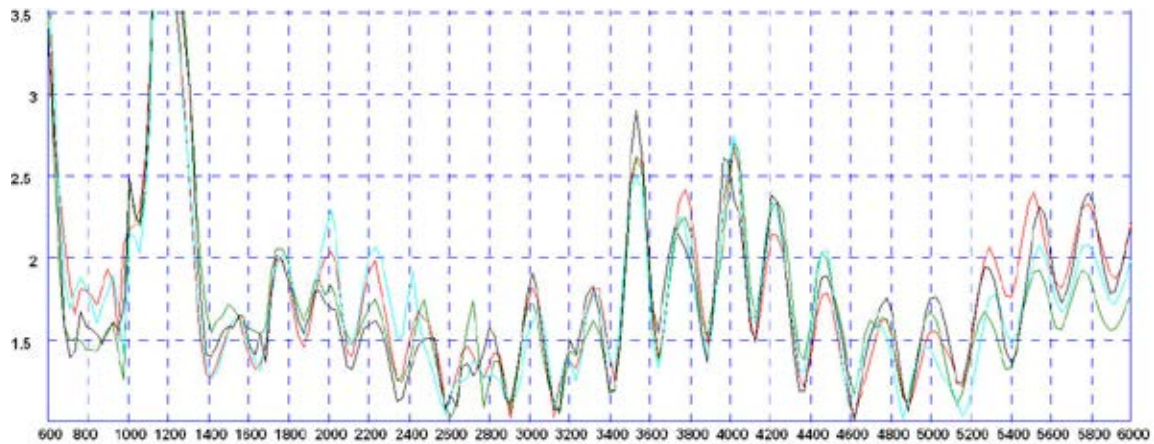
\*\*\*\*Typical worst case isolation measured on a 600x600mm (2'x2') ground plane without cable loss

# 4x4 MiMo 4G/5G Sharkfin Antenna

GPS[X]D4[X]-6-60[-X]

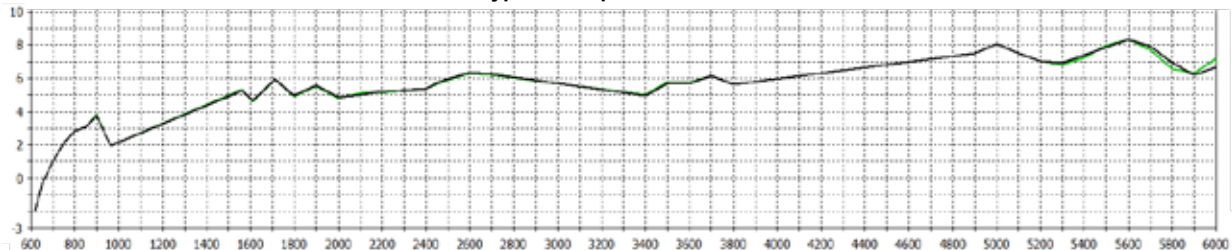
Electrical Data in Free Space - Cell

Typical VSWR\*



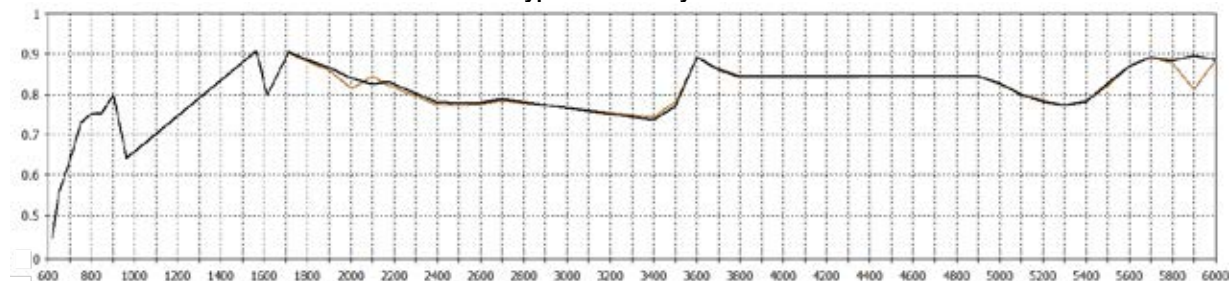
\*VSWR elements 1-4 measured in free space without additional cable

Typical Swept Peak Gain \*\*



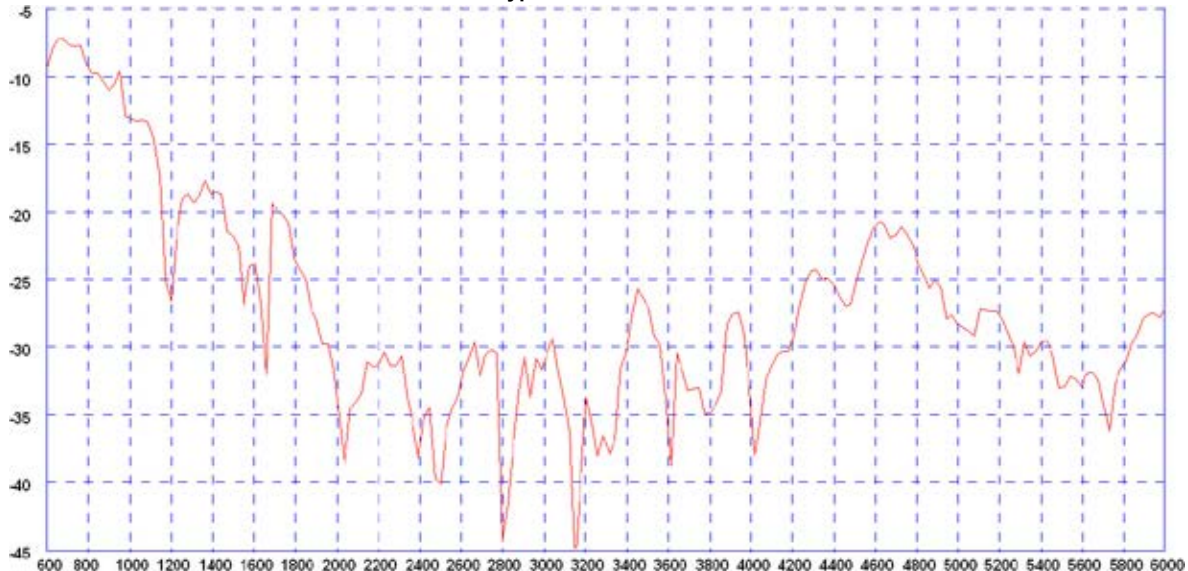
\*\*Swept peak gain simulated in CST Microwave Studio for each element fed without cable loss in free space

Typical Efficiency \*\*\*



\*\*\*Efficiency simulated in CST Microwave Studio for each element fed without cable loss in free space

Typical Isolation \*\*\*\*



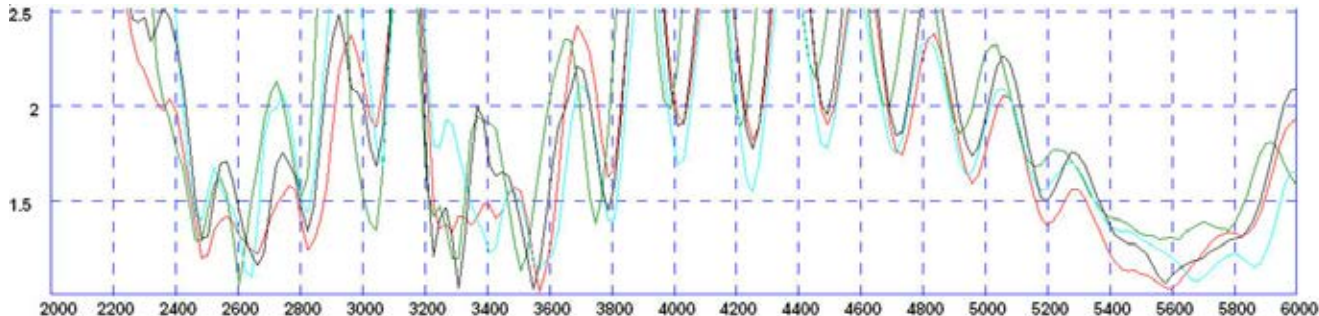
\*\*\*\* Typical worst case isolation measured in free space without additional cable

# 4x4 MiMo 4G/5G Sharkfin Antenna

GPS[X]D4[X]-6-60[-X]

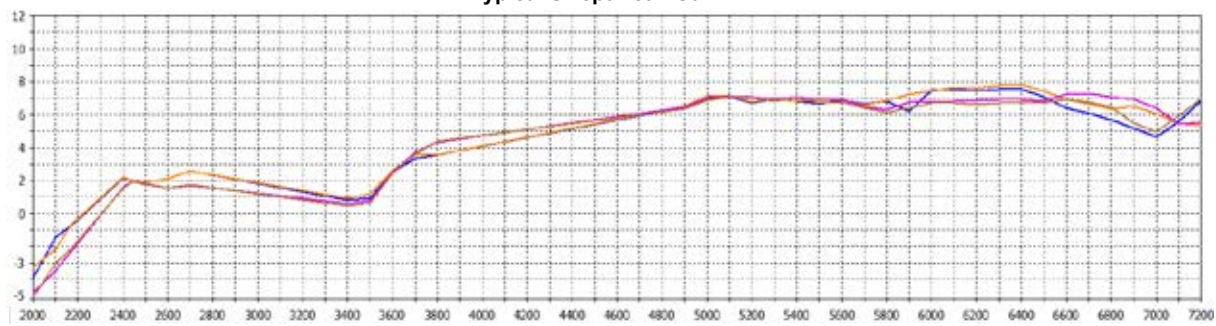
Electrical Data -in Free Space - WiFi

Typical VSWR\*



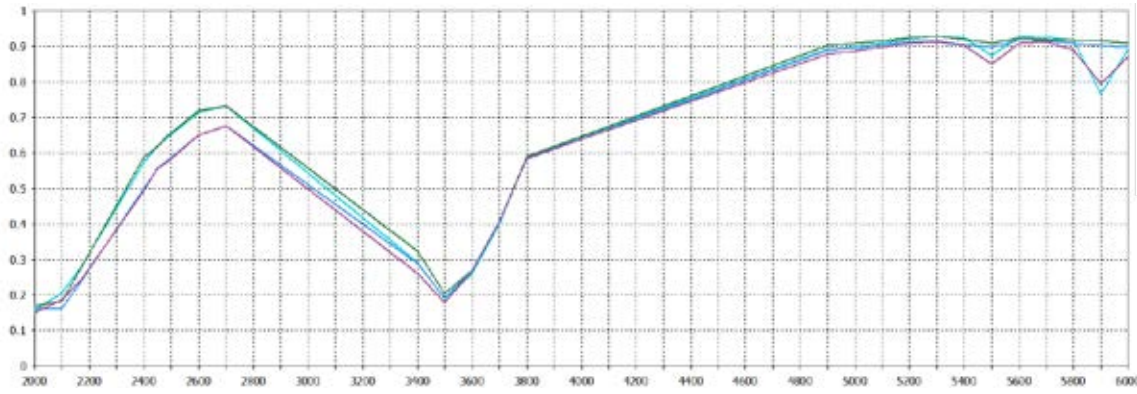
\*VSWR elements 1-4 measured in free space without additional cable

Typical Swept Peak Gain \*\*



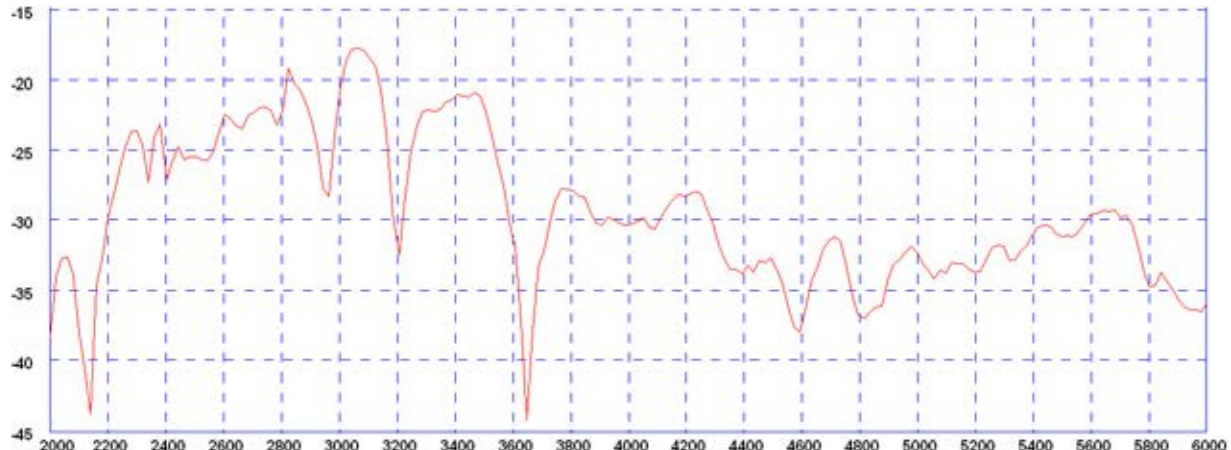
\*\*Swept peak gain simulated in CST Microwave Studio for each element fed without cable loss in free space

Typical Efficiency \*\*\*



\*\*\*Efficiency simulated in CST Microwave Studio for each element fed without cable loss in free space

Typical Isolation \*\*\*\*



\*\*\*Typical worst case isolation simulated in CST Microwave Studio without cable loss

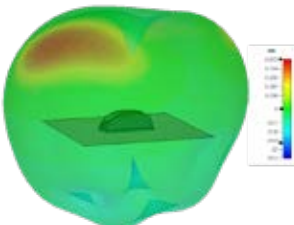


# 4x4 MiMo 4G/5G Sharkfin Antenna

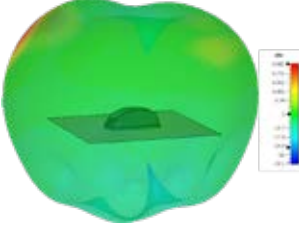
GPS[X]D4[X]-6-60[-X]

## 3D Patterns on Ground Plane -Cell

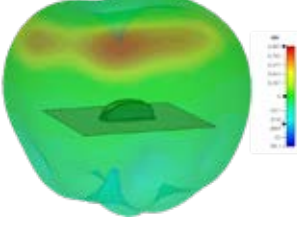
3D Plot Element 1 Side (650 MHz)



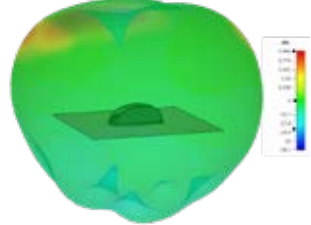
3D Plot Element 2 Side (650 MHz)



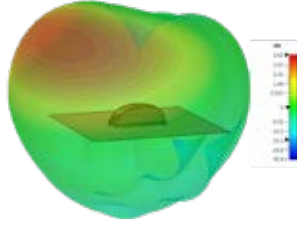
3D Plot Element 3 Side (650 MHz)



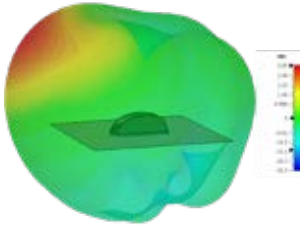
3D Plot Element 4 Side (650 MHz)



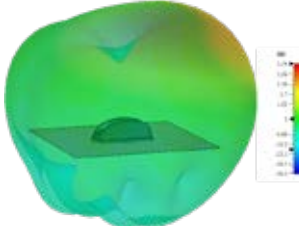
3D Plot Element 1 Side (750 MHz)



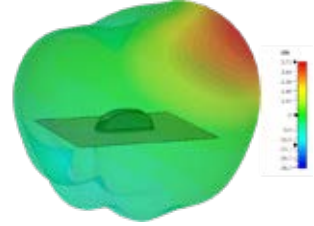
3D Plot Element 2 Side (750 MHz)



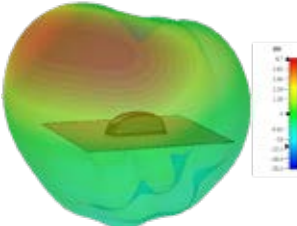
3D Plot Element 3 Side (750 MHz)



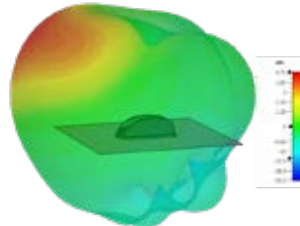
3D Plot Element 4 Side (750 MHz)



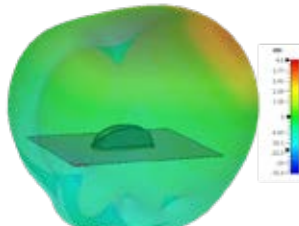
3D Plot Element 1 Side (850 MHz)



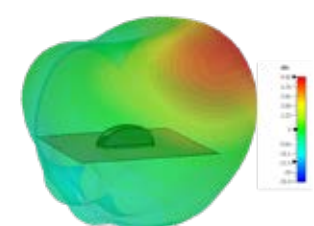
3D Plot Element 2 Side (850 MHz)



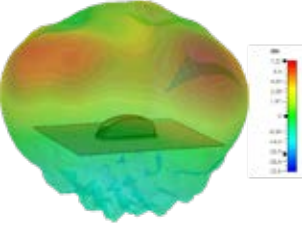
3D Plot Element 3 Side (850 MHz)



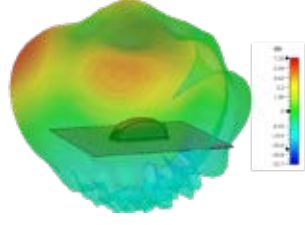
3D Plot Element 4 Side (850 MHz)



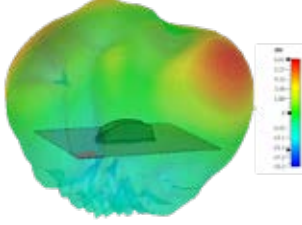
3D Plot Element 1 Side (1800 MHz)



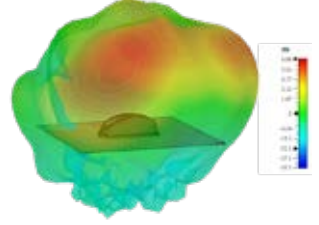
3D Plot Element 2 Side (1800 MHz)



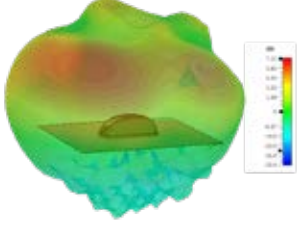
3D Plot Element 3 Side (1800 MHz)



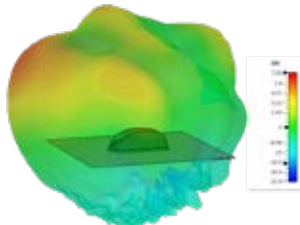
3D Plot Element 4 Side (1800 MHz)



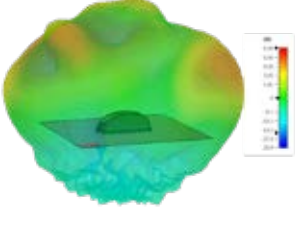
3D Plot Element 1 Side (2000 MHz)



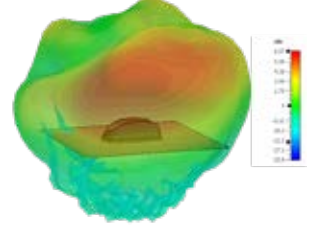
3D Plot Element 2 Side (2000 MHz)



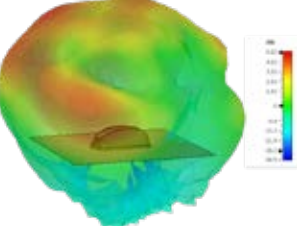
3D Plot Element 3 Side (2000 MHz)



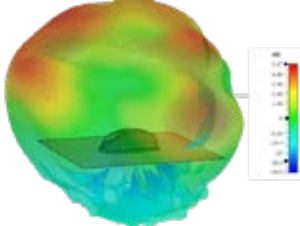
3D Plot Element 4 Side (2000 MHz)



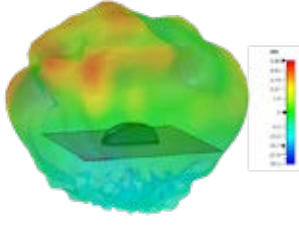
3D Plot Element 1 Side (2600 MHz)



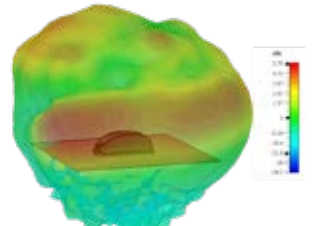
3D Plot Element 2 Side (2600 MHz)



3D Plot Element 3 Side (2600 MHz)



3D Plot Element 4 Side (2600 MHz)



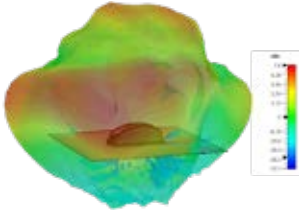
3D patterns all simulated in CST Microwave Studio with each element fed individually excluding cable loss

# 4x4 MiMo 4G/5G Sharkfin Antenna

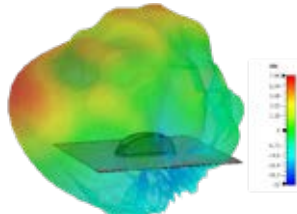
GPS[X]D4[X]-6-60[-X]

## 3D Patterns on Ground Plane -Cell

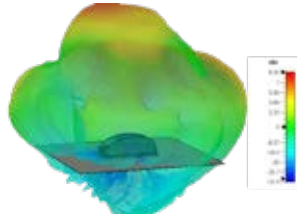
3D Plot Element 1 Side (3600 MHz)



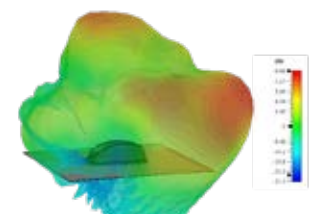
3D Plot Element 2 Side (3600 MHz)



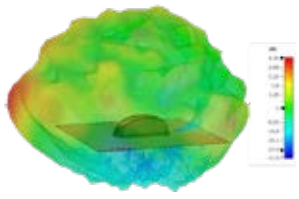
3D Plot Element 3 Side (3600 MHz)



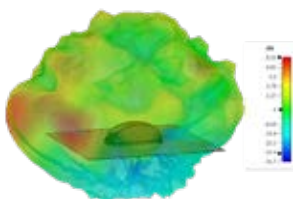
3D Plot Element 4 Side (3600 MHz)



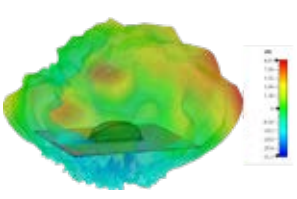
3D Plot Element 1 Side (5400 MHz)



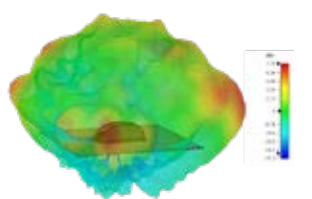
3D Plot Element 2 Side (5400 MHz)



3D Plot Element 3 Side (5400 MHz)

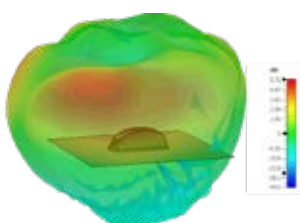


3D Plot Element 4 Side (5400 MHz)

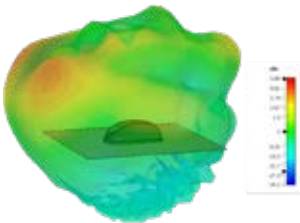


## 3D Patterns on Ground Plane -WiFi

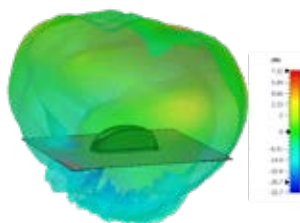
3D Plot Element 1 Side (2450 MHz)



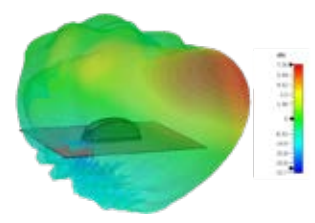
3D Plot Element 2 Side (2450 MHz)



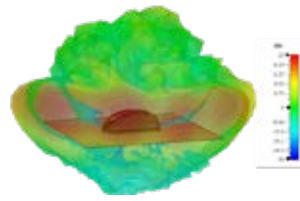
3D Plot Element 3 Side (2450 MHz)



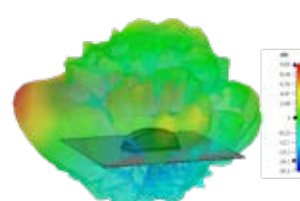
3D Plot Element 4 Side (2450 MHz)



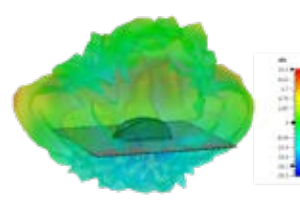
3D Plot Element 1 Side (5400 MHz)



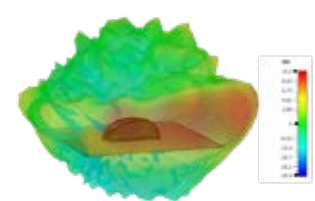
3D Plot Element 2 Side (5400 MHz)



3D Plot Element 3 Side (5400 MHz)



3D Plot Element 4 Side (5400 MHz)



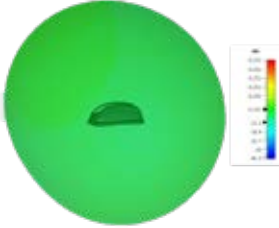
3D patterns all simulated in CST Microwave Studio with each element fed individually excluding cable loss

# 4x4 MiMo 4G/5G Sharkfin Antenna

GPS[X]D4[X]-6-60[-X]

## 3D Patterns in Free Space- Cell

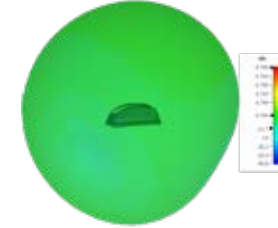
3D Plot Element 1 Side (650 MHz)



3D Plot Element 2 Side (650 MHz)



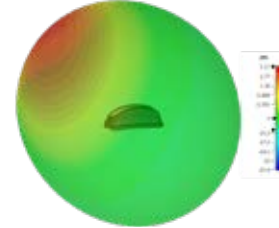
3D Plot Element 3 Side (650 MHz)



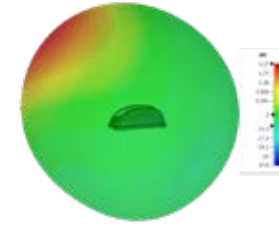
3D Plot Element 4 Side (650 MHz)



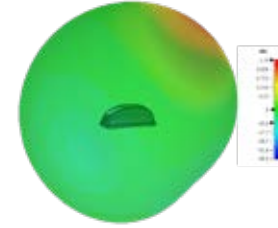
3D Plot Element 1 Side (750 MHz)



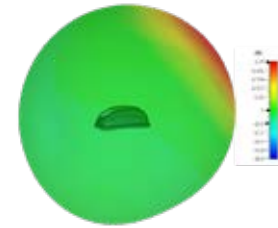
3D Plot Element 2 Side (750 MHz)



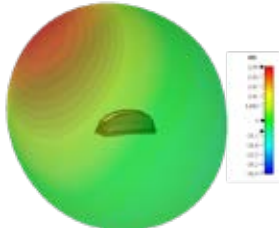
3D Plot Element 3 Side (750 MHz)



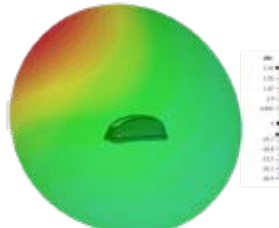
3D Plot Element 4 Side (750 MHz)



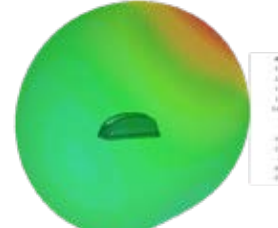
3D Plot Element 1 Side (850 MHz)



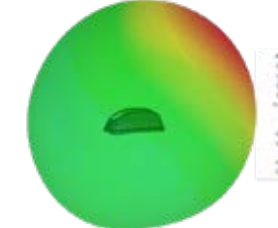
3D Plot Element 2 Side (850 MHz)



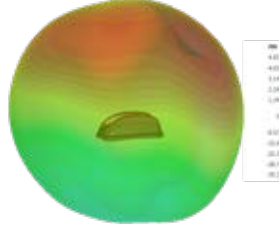
3D Plot Element 3 Side (850 MHz)



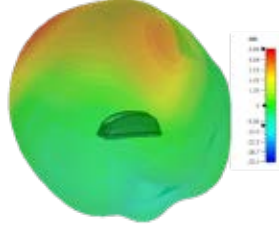
3D Plot Element 4 Side (850 MHz)



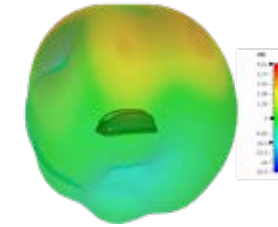
3D Plot Element 1 Side (1800 MHz)



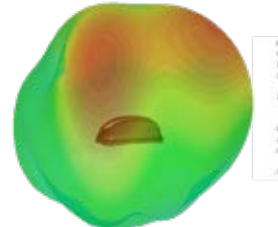
3D Plot Element 2 Side (1800 MHz)



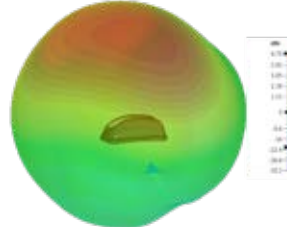
3D Plot Element 3 Side (1800 MHz)



3D Plot Element 4 Side (1800 MHz)



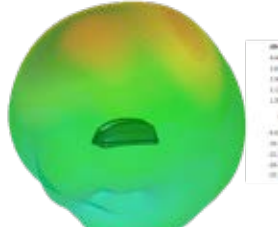
3D Plot Element 1 Side (2000 MHz)



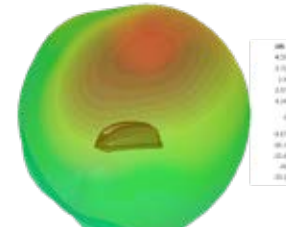
3D Plot Element 2 Side (2000 MHz)



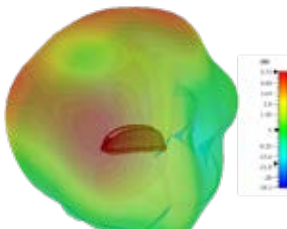
3D Plot Element 3 Side (2000 MHz)



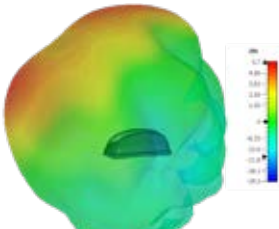
3D Plot Element 4 Side (2000 MHz)



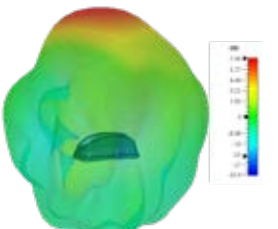
3D Plot Element 1 Side (2600 MHz)



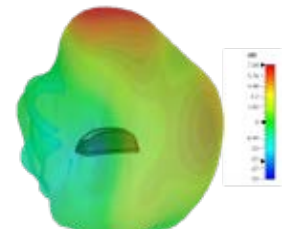
3D Plot Element 2 Side (2600 MHz)



3D Plot Element 3 Side (2600 MHz)



3D Plot Element 4 Side (2600 MHz)



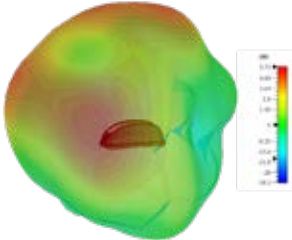
3D patterns all simulated in CST Microwave Studio with each element fed individually excluding cable loss

# 4x4 MiMo 4G/5G Sharkfin Antenna

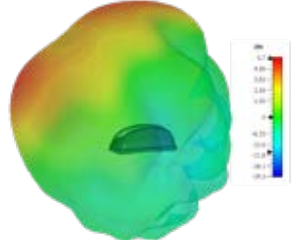
GPS[X]D4[X]-6-60[-X]

## Electrical Data -in Free Space - Cell

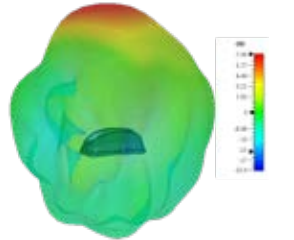
3D Plot Element 1 Side (3600 MHz)



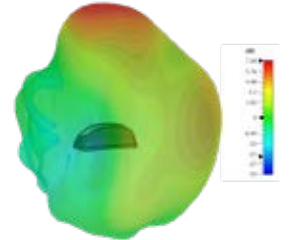
3D Plot Element 2 Side (3600 MHz)



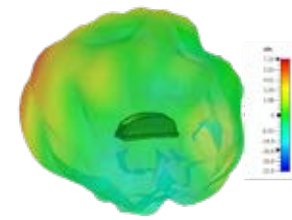
3D Plot Element 3 Side (3600 MHz)



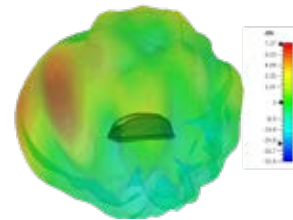
3D Plot Element 4 Side (3600 MHz)



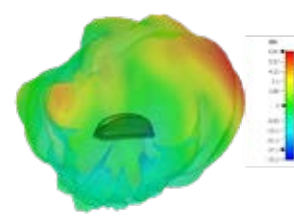
3D Plot Element 1 Side (5400 MHz)



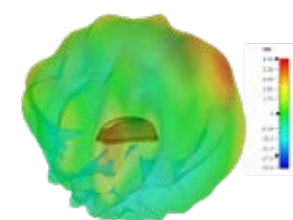
3D Plot Element 2 Side (5400 MHz)



3D Plot Element 3 Side (5400 MHz)

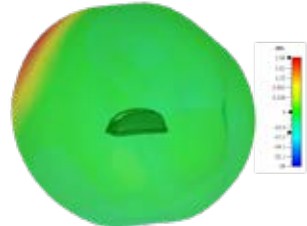


3D Plot Element 4 Side (5400 MHz)

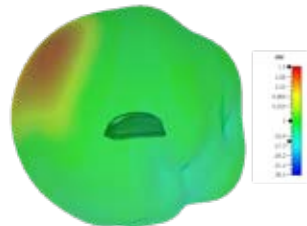


## Electrical Data -in Free Space - WiFi

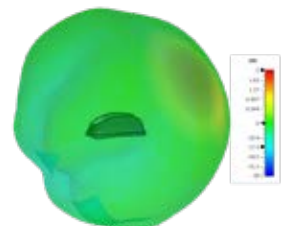
3D Plot Element 1 Side (2450 MHz)



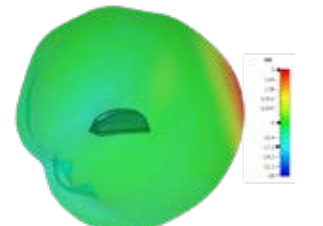
3D Plot Element 2 Side (2450 MHz)



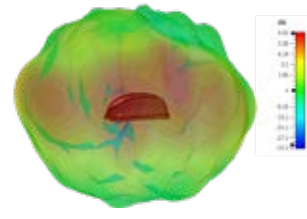
3D Plot Element 3 Side (2450 MHz)



3D Plot Element 4 Side (2450 MHz)



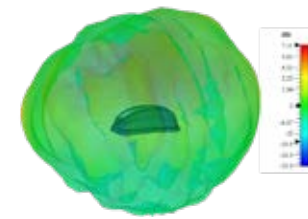
3D Plot Element 1 Side (5400 MHz)



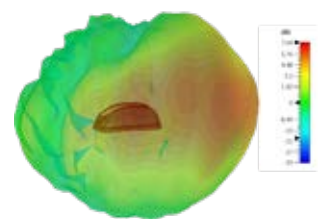
3D Plot Element 2 Side (5400 MHz)



3D Plot Element 3 Side (5400 MHz)

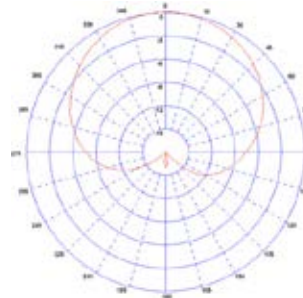


3D Plot Element 4 Side (5400 MHz)

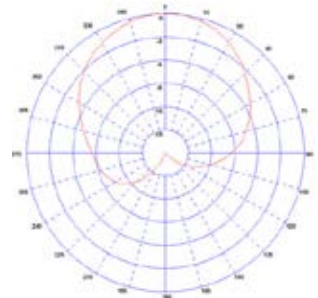


## Electrical Data GPS/GNSS E Plane

GPS 1575MHz Typical E Plane



GPS 1602MHz Typical E Plane



3D patterns all simulated in CST Microwave Studio with each element fed individually excluding cable loss