



### Low Profile 2x2 4G/5G MiMo

Up to 6 x 6 MiMo Dual Band WiFi

Optional GPS/GNSS Active Antenna 26dB LNA

The L[G]M[X]M[X]-6-60[24-58] range has been designed to provide 2x2 4G/5G MiMo performance from 617-960/1710-6000MHz in a robust low profile package. The flexible platform allows the main elements to be combined with a number of other functions including GPS/GNSS and up to 6x6 MiMo WiFi 2.4/5.0GHz.

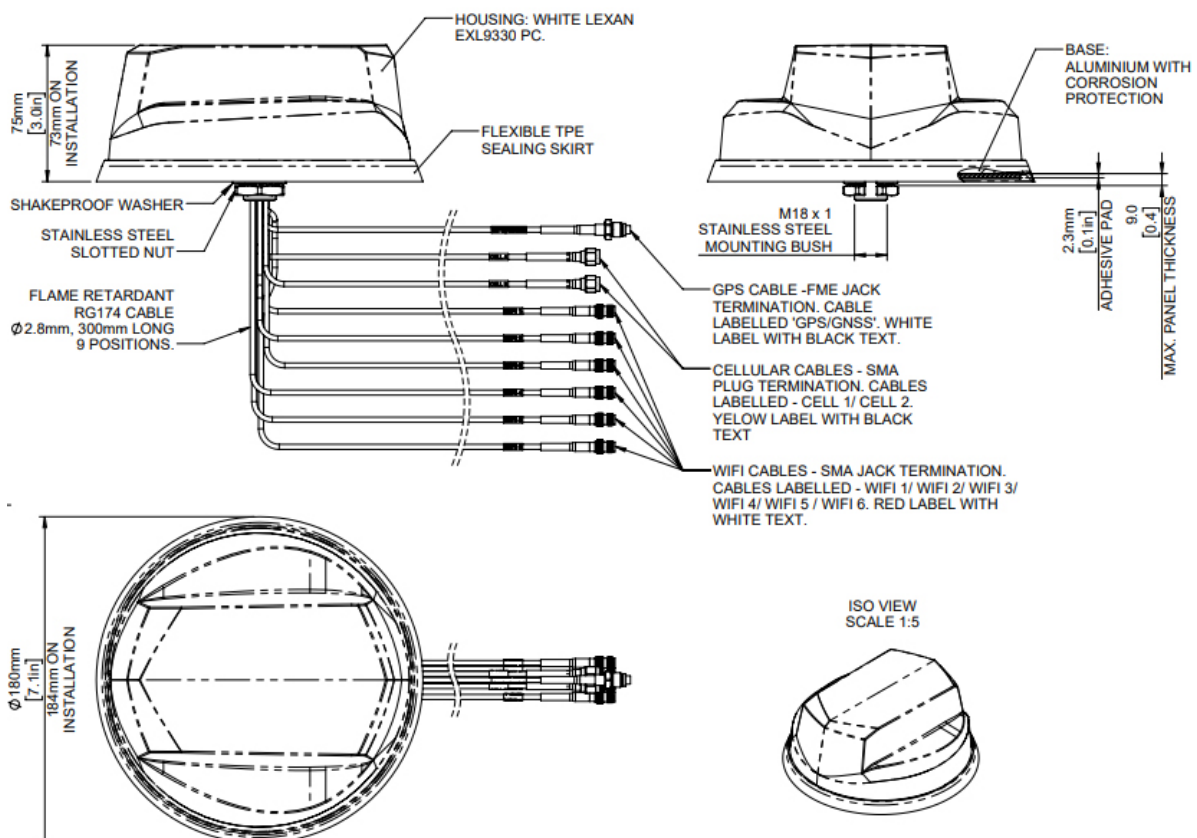
The antenna is designed to be panel mounted and can be fitted on a conductive or non-conductive panel. Supplied with integrated flame retardant RG174 cables (Compliant to UNECE 118.01 and EN45545-2) and a halogen free flame retardant radome the antenna is suitable for many environments and applications.

The LGM variants have an integrated GPS/GNSS module supporting GPS, Glonass, Galileo and Compass with 26dB LNA gain. This GPS module features advanced filtering for LTE B13/14 designed to minimise potential in band interference.

The antenna is available with a black or white radome which meets IK10 for vandal resistance and IP69K for ingress protection.

### Technical Drawing

LGMHM-6-60-24-58 Shown



## Combination Antenna Range

L[G]M[X]M[X]-6-60[-24-58]

Part No.		LGMHM-6-60-24-58	LGMHMB-6-60-24-58	LGMQM-6-60-24-58	LGMQMB-6-60-24-58
<b>Electrical Data</b>					
Frequency Range (MHz)	4G/5G Elements	2x 617-960 / 1710-6000			
	WiFi Elements	6x 2.4/4.9-6GHz		4x 2.4/4.9-6GHz	
Peak Gain: Isotropic : All Elements Fed		617-960MHz	5		
	4G/5G Elements	1710-3800MHz	9		
		4900-6000MHz	10		
	WiFi Elements	2.4GHz	8		
		7.2GHz	10		
	Typical Efficiency	4G/5G Elements	>70%		
WiFi Elements		>80%			
Isolation	4G/5G Elements	>12dB			
	WiFi Elements	>20dB			
Correlation Co-efficient	4G/5G Elements	< 0.1			
	WiFi Elements	<0.1			
Nominal Impedance	50Ω				
<b>GPS/GNSS Data</b>					
Frequency Range (MHz)	1562-1612				
VSWR	<2.0:1 ± 4MHz -				
Gain: LNA	26dB				
Out of band rejection	>40dB (@ > +/- 100MHz f)				
Typical Noise Figure	-2.7dB				
Notch Filter rejection @787MHz	23dBm				
Operating Voltage	3 - 5V DC				
Typical Current (mA)	15				
<b>Mechanical Data</b>					
Dimensions (mm)	Height	75 (3")			
	Diameter	180 (7.1")			
Operating Temp	-40° / +80°C (-40° / +176°F)				
Colour	White	Black	White	Black	
Ingress Protection	IP69K				
<b>Mounting Data</b>					
Mounting type	Panel mount				
Max panel thickness (mm)	7 (0.27")				
Mounting hole (mm)	19 (3/4")				
<b>Cable Data</b>					
	Type	RG174 -FR (UN ECE118.01 Compliant)			
All Cables	Diameter (mm)	2.8 (0.1")			
	Length (m)	0.3 (1')			
<b>Terminations</b>					
4G/5G	SMA (m)				
WiFi	SMA (f)				
GPS/GNSS	FME (f)				

Part No.		LGMTM-6-60-24-58	LGMTMB-6-60-24-58	LGMDM-6-60-24-58	LGMDMB-6-60-24-58
<b>Electrical Data</b>					
Frequency Range (MHz)	4G/5G Elements	2x 617-960 / 1710-6000			
	WiFi Elements	3x 2.4/4.9-6GHz		2x 2.4/4.9-6GHz	
Peak Gain: Isotropic : All Elements Fed		67-960MHz	5		
	4G/5G Elements	1710-3800MHz	9		
		4900-6000MHz	10		
	WiFi Elements	2.4GHz	8		
		7.2GHz	10		
Typical Efficiency	4G/5G Elements	>70%			
	WiFi Elements	>80%			
Isolation	4G/5G Elements	>12dB			
	WiFi Elements	>20dB			
Correlation Co-efficient	4G/5G Elements	< 0.1			
	WiFi Elements	<0.1			
Nominal Impedance	50Ω				
<b>GPS/GNSS Data</b>					
Frequency Range (MHz)	1562-1612				
VSWR	<2.0:1 ± 4MHz				
Gain: LNA	26dB				
Out of band rejection	>40dB (@ > +/- 100MHz f)				
Typical Noise Figure	-2.7dB				
Notch Filter rejection @787MHz	23dBm				
Operating Voltage	3 - 5V DC				
Typical Current (mA)	15				
<b>Mechanical Data</b>					
Dimensions	Height	75 (3")			
	Diameter	180 (7.1")			
Operating Temp	-40°/ +80°C (-40° / +176°F )				
Colour	White	Black	White	Black	
Ingress Protection	IP69K				
<b>Mounting Data</b>					
Mounting type	Panel mount				
Max panel thickness (mm)	7 (0.27")				
Mounting hole (mm)	19 (3/4")				
<b>Cable Data</b>					
All Cables	Type	RG174 -FR (UN ECE118.01 Compliant)			
	Diameter (mm)	2.8 (0.1")			
	Length (m)	0.3 (1')			
<b>Terminations</b>					
4G/5G	SMA (m)				
WiFi	SMA (f)				
GPS/GNSS	FME (f)				

## Combination Antenna Range

L[G]M[X]M[X]-6-60[-24-58]

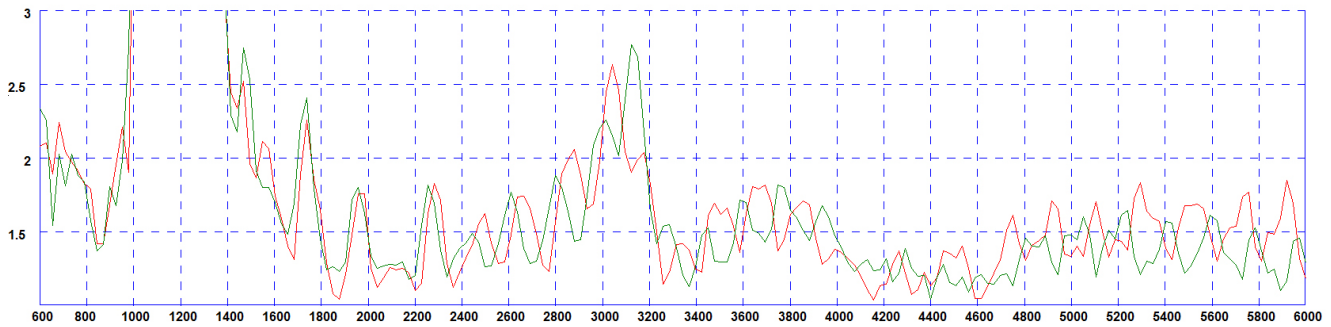
Part No.		LGMM-6-60	LGMMB-6-60	LPMM-6-60	LPMMB-6-60
<b>Electrical Data</b>					
Frequency Range (MHz)	4G/5G Elements	2x 617-960 / 1710-6000			
Peak Gain: Isotropic : All Elements Fed	4G/5G Elements	617-960MHz	5		
		1710-3800MHz	9		
		4900-6000MHz	10		
Typical Efficiency	4G/5G Elements	>70%			
Isolation	4G/5G Elements	>12dB			
Correlation Co-efficient	4G/5G Elements	< 0.1			
Nominal Impedance		50Ω			
<b>GPS/GNSS Data</b>					
Frequency Range (MHz)		1562-1612	-		
VSWR		<2.0:1 ± 4MHz	-		
Gain: LNA		26dB	-		
Out of band rejection		>40dB (@ > +/- 100MHz f)	-		
Typical Noise Figure		-2.7dB	-		
Notch Filter rejection @787MHz		23dBm	-		
Operating Voltage		3 - 5V DC	-		
Typical Current (mA)		15	-		
<b>Mechanical Data</b>					
Dimensions	Height	75 (3")			
	Diameter	180 (7.1")			
Operating Temp		-40° / +80°C (-40° / +176°F )			
Colour		White	Black	White	Black
Ingress Protection		IP69K			
<b>Mounting Data</b>					
Mounting type		Panel mount			
Max panel thickness (mm)		7 (0.27")			
Mounting hole (mm)		19 (3/4")			
<b>Cable Data</b>					
All Cables	Type	RG174 -FR (UN ECE118.01 Compliant)			
	Diameter (mm)	2.8 (0.1")			
	Length (m)	0.3 (1')			
<b>Terminations</b>					
4G/5G		SMA (m)			
GPS/GNSS		FME (f)	-		

\* Typical Isolation and VSWR stated as measured with 0.5m (1.5') of cable

† Peak gain simulated with all elements fed on 600x600mm ground plane excluding cable loss

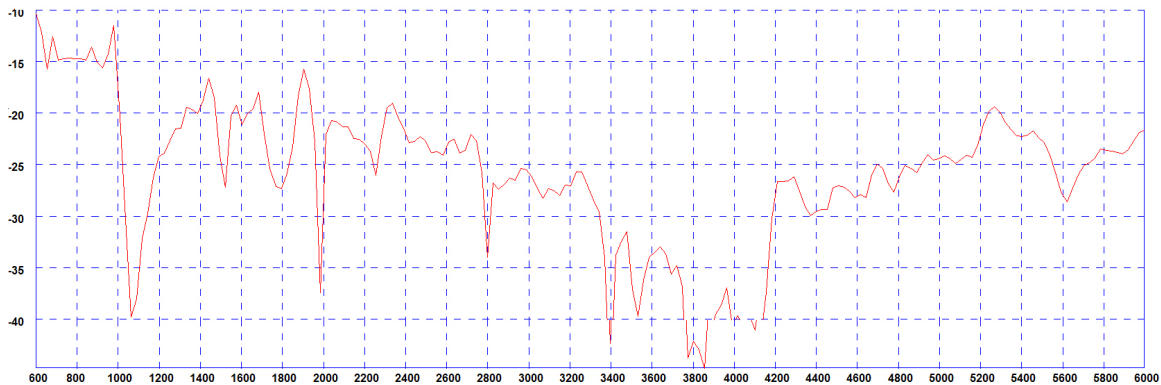
**Electrical Data**

**Typical VSWR - 4G/5G Elements\***



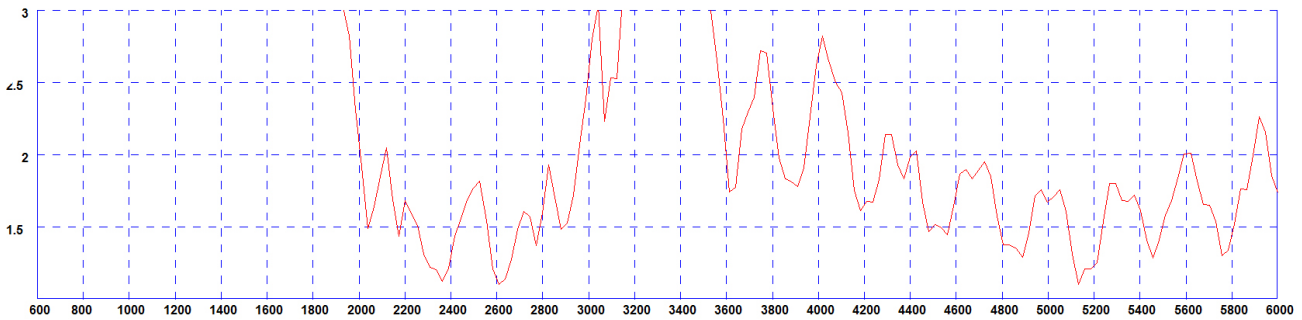
\* measured with 0.5m (1.5') of RG174 cable on a 600x600mm (2'x2') groundplane

**Typical Isolation - 4G/5G Elements\***



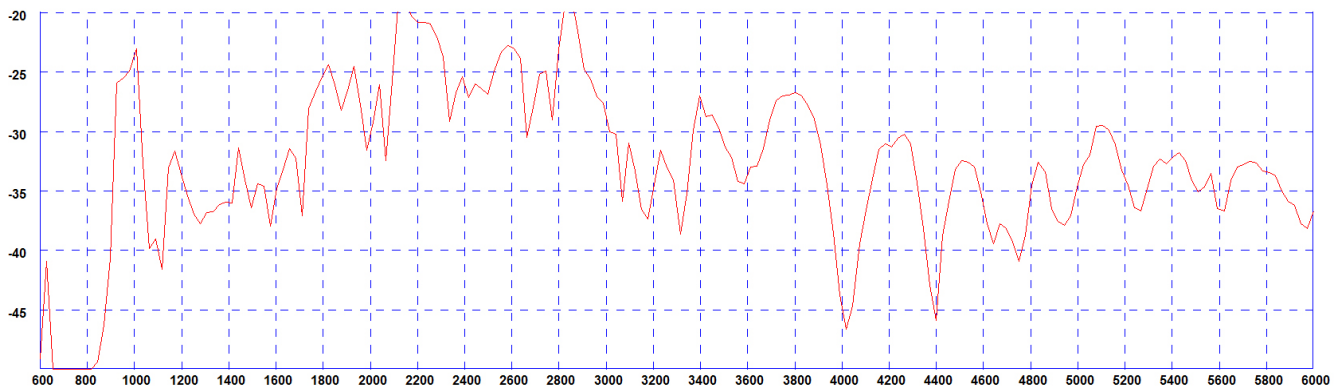
\* measured with 0.5m (1.5') of RG174 cable on a 600x600mm (2'x2') groundplane

**Typical VSWR - WiFi Elements\***



\* measured with 0.5m (1.5') of RG174 cable on a 600x600mm (2'x2') groundplane

**Typical Isolation - WiFi Elements\***

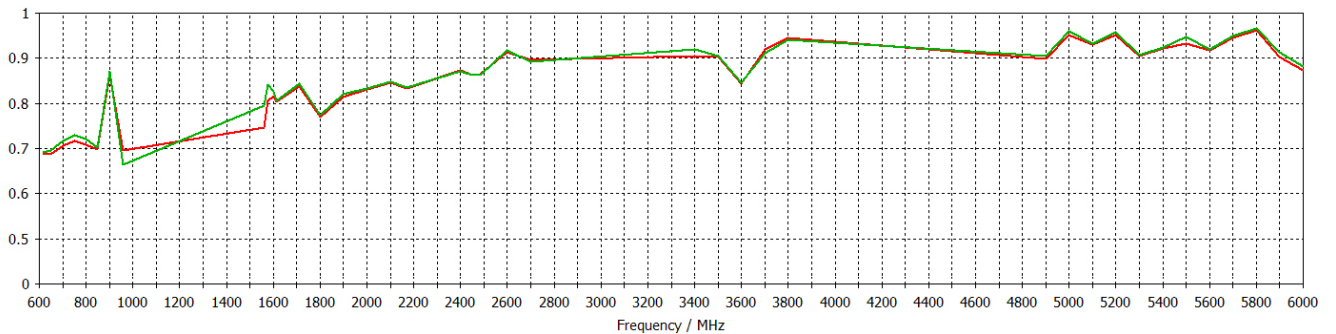


\* measured with 0.5m (1.5') of RG174 cable on a 600x600mm (2'x2') groundplane

# Combination Antenna Range

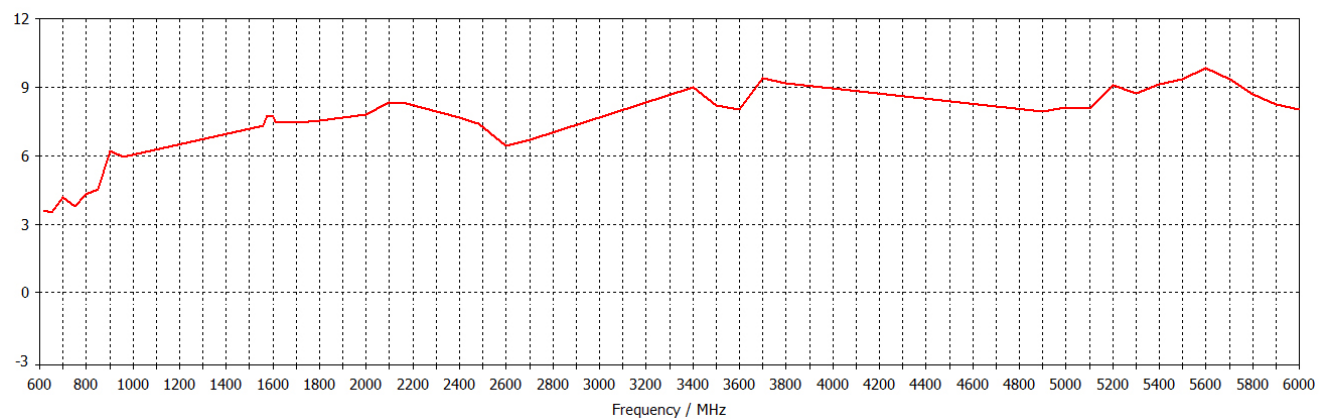
L[G]M[X]M[X]-6-60[-24-58]

Typical Efficiency- 4G/5G Elements\*



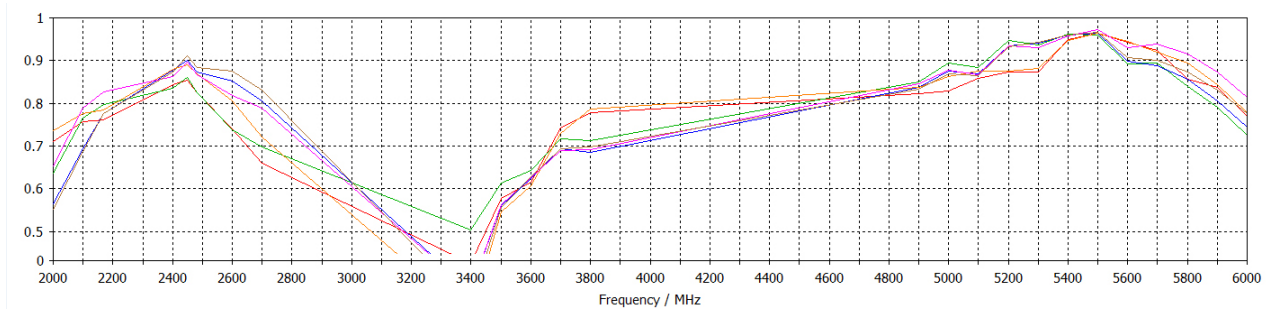
\* Efficiency modelled with CST Microwave Studio and ignores cable losses

Typical Peak Gain - 4G/5G Elements\*



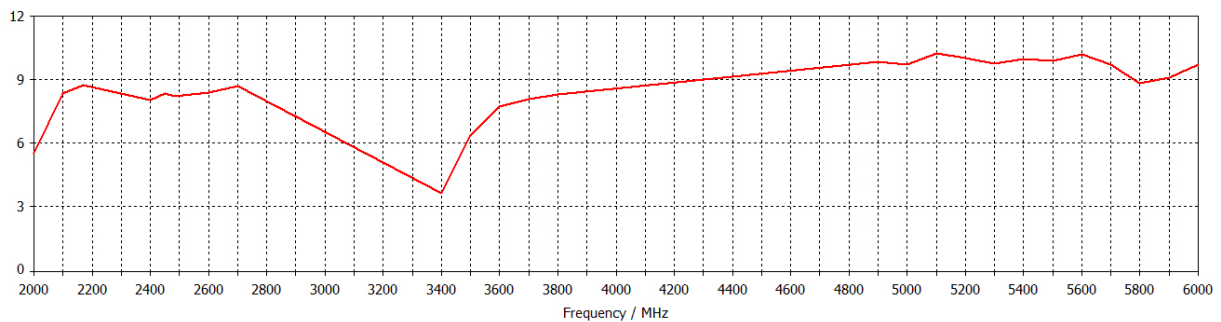
\*Swept peak gain modelled with all elements fed in CST Microwave Studio on a 600x600mm (2'x2') ground plane excluding cable loss

Typical Efficiency - WiFi Elements\*



\* Efficiency modelled with CST Microwave Studio and ignores cable losses

Typical Swept Peak Gain - WiFi Elements\*

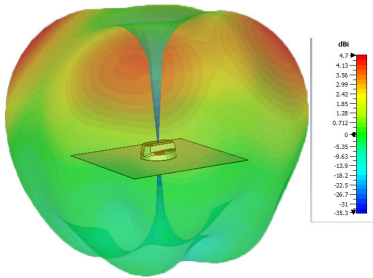


\*Swept peak gain modelled with all elements fed in CST Microwave Studio on a 600x600mm (2'x2') ground plane excluding cable loss

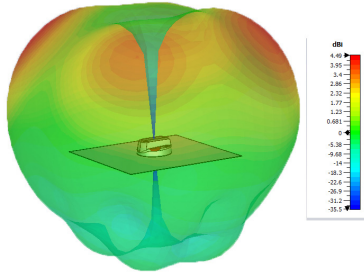


### 4G/5G Pattern Data

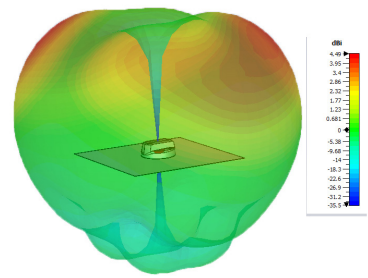
Typical 3D Pattern - 4G/5G Elements 617MHz



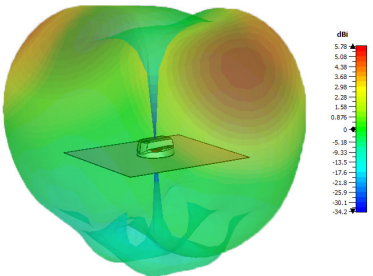
Typical 3D Pattern - 4G/5G Elements 700MHz



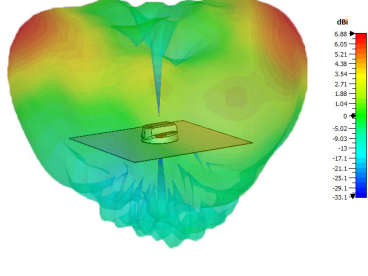
Typical 3D Pattern - 4G/5G Elements 800MHz



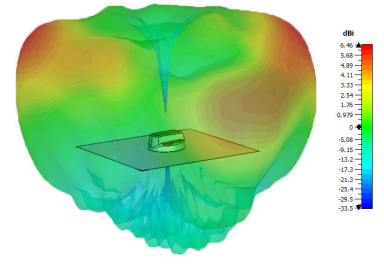
Typical 3D Pattern - 4G/5G Elements 900MHz



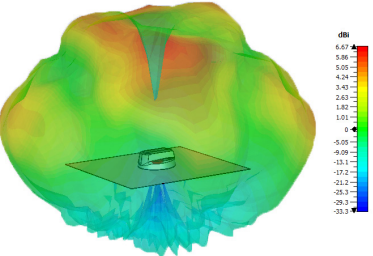
Typical 3D Pattern - 4G/5G Elements 1800MHz



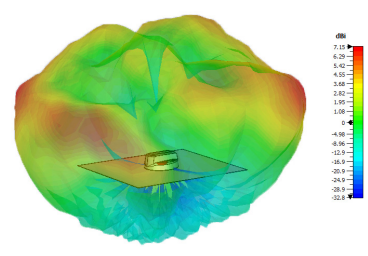
Typical 3D Pattern - 4G/5G Elements 2000MHz



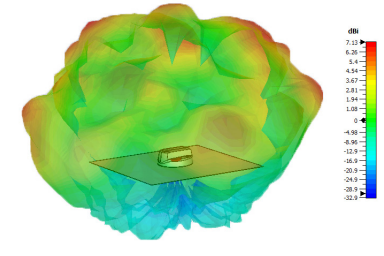
Typical 3D Pattern - 4G/5G Elements 2600MHz



Typical 3D Pattern - 4G/5G Elements 3600MHz

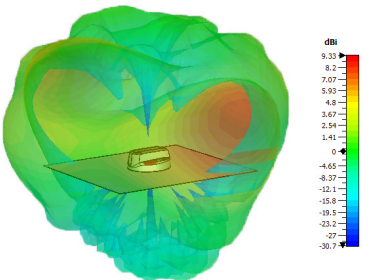


Typical 3D Pattern - 4G/5G Elements 5400MHz

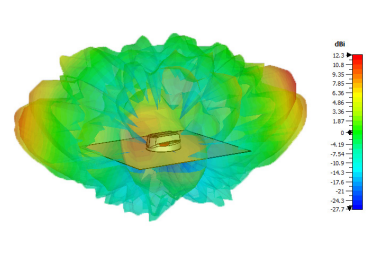


### WiFi Pattern Data

Typical 3D Pattern - WiFi Elements 2400MHz



Typical 3D Pattern - WiFi Elements 5400MHz



\*Patterns are LGMHM-6-60-24-58 modelled in CST Microwave Studio with all elements of each type fed.