

4x4 MiMo 4G/5G Dome Combination Antenna Range

MAKO 5G DOME

PANORAMA ANTENNAS

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Low Profile 4x4 4G/5G MiMo

Up to 6 x 6 MiMo Dual Band WiFi

Optional GPS/GNSS Active Antenna 26dB LNA

The L[G]M[X]M4[X]-6-60[-24-58] range has been designed to provide 4x4 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.

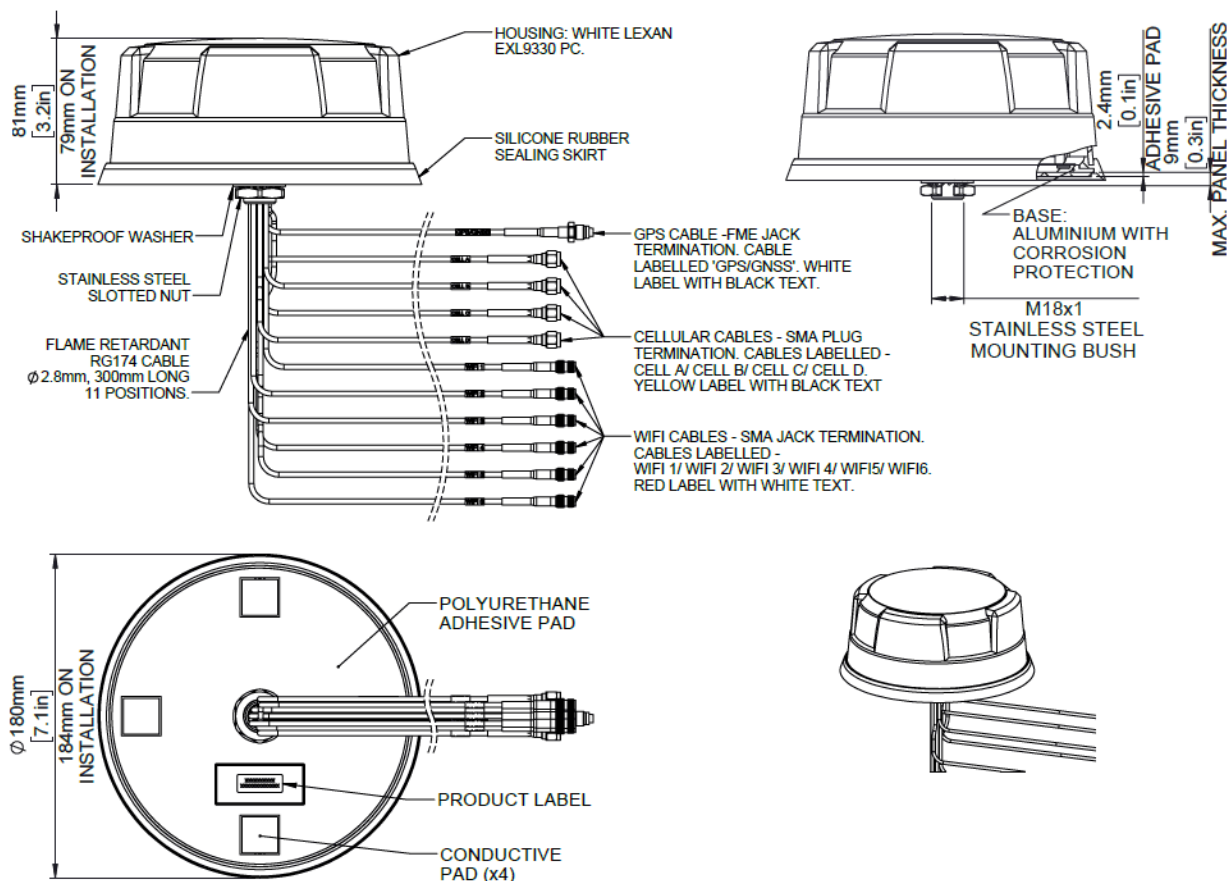
The antenna is designed to be panel mounted and can be fitted on a conductive or non-conductive panel. Supplied with integrated flame retardant RG174 cables (Compliant to UNECE 118.01 and EN45545-2) and a halogen free flame retardant radome the antenna is suitable for many environments and applications.

The LGM variants have an integrated GPS/GNSS module supporting GPS, Glonass, Galileo, QZSS 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

LGMHM4-6-60-24-58 Shown



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Part No.					LGMHM4-6-60-24-58	LGMHM4B-6-60-24-58	LGMQM4-6-60-24-58	LGMQM4B-6-60-24-58
Electrical Data								
Frequency Range (MHz)	4G/5G Elements			4x 617-960 / 1710-6000				
	WiFi Elements			6x 2.4/4.9-6GHz		4x 2.4/4.9-6GHz		
Peak Gain: Isotropic : (dBi)	4G/5G Elements	617-960MHz			4			
		1710-3800MHz			8			
		4900-6000MHz			9			
	WiFi Elements	2.4 GHz			9			
		7.2 GHz			9			
	Typical Efficiency **	4G/5G Elements	617-960MHz			>50%		
1710-3800MHz			>75%					
4900-6000MHz			>85%					
WiFi Elements					>70%			
Isolation ***	4G/5G Elements			>10dB				
	Wifi Elements			>12dB				
Correlation Co-efficient	4G/5G Elements			< 0.2				
	WiFi Elements			<0.1				
Nominal Impedance				50Ω				
GPS/GNSS Data								
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				
Typcal Current (mA)				15				
Mechanical Data								
Dimensions (mm)	Height			80 (3.1")				
	Diameter			180 (7.1")				
Operating Temp (°C)				-40° / +80°C (-40° / +176°F)				
Colour				White	Black	White	Black	
Ingress Protection				IP69K				
Mounting Data								
Mounting type				Panel mount				
Max panel thickness (mm)				7 (0.27")				
Mounting hole (mm)				19 (3/4")				
Cable Data								
All Cables	Type			RG174 -FR (UN ECE118.01 Compliant)				
	Diameter (mm)			2.8 (0.1")				
	Length (m)			0.3 (1')				
Terminations								
4G/5G				SMA (m)				
WiFi				SMA (f)				
GPS/GNSS				FME (f)				

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Part No.

LGMTM4-6-60-24-58

LGMTM4B-6-60-24-58

LGMDM4-6-60-24-58

LGMDM4B-6-60-24-58

Electrical Data

Frequency Range (MHz)	4G/5G Elements	4x 617-960 / 1710-6000	
	WiFi Elements	3x 2.4/4.9-6GHz	2x 2.4/4.9-6GHz
Peak Gain: Isotropic : (dBi)		617-960MHz	4
	4G/5G Elements	1710-3800MHz	8
		4900-6000MHz	9
	WiFi Elements	2.4 GHz	9
		7.2 GHz	9
		617-960MHz	>50%
Typical Efficiency **	4G/5G Elements	1710-3800MHz	>75%
		4900-6000MHz	>85%
	WiFi Elements		>70%
Isolation ***	4G/5G Elements		>10dB
	Wifi Elements		>12dB
Correlation Co-efficient	4G/5G Elements		< 0.2
	WiFi Elements		<0.1
Nominal Impedance		50Ω	

GPS/GNSS Data

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	23dBm
Operating Voltage	3 - 5V DC
Typical Current (mA)	15

Mechanical Data

Dimensions (mm)	Height	80 (3.1")		
	Diameter	180 (7.1")		
Operating Temp		-40° / +80°C (-40° / +176°F)		
Colour	White	Black	White	Black
Ingress Protection		IP69K		

Mounting Data

Mounting type	Panel mount
Max panel thickness (mm)	7 (0.27")
Mounting hole (mm)	19 (3/4")

Cable Data

All Cables	Type	RG174 -FR (UN ECE118.01 Compliant)		
	Diameter (mm)	2.8 (0.1")		
	Length (m)	0.3 (1')		

Terminations

4G/5G	SMA (m)
WiFi	SMA (f)
GPS/GNSS	FME (f)

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Part No.		LGMM4-6-60	LGMM4B-6-60	LPMM4-6-60	LPMM4B-6-60
Electrical Data					
Frequency Range (MHz)	4G/5G Elements	4x 617-960 / 1710-6000			
		617-960MHz		4	
Peak Gain: Isotropic : (dBi)	4G/5G Elements	1710-3800MHz		8	
		4900-6000MHz		9	
		617-960MHz		>50%	
Typical Efficiency **	4G/5G Elements	1710-3800MHz		>75%	
		4900-6000MHz		>85%	
Isolation ***	4G/5G Elements	>10dB			
Correlation Co-efficient	4G/5G Elements	< 0.2			
Nominal Impedance		50Ω			
GPS/GNSS Data					
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		-	
Typcal Current (mA)		15		-	
Mechanical Data					
Dimensions (mm)	Height	80 (3.1")			
	Diameter	180 (7.1")			
Operating Temp		-40° / +80°C (-40° / +176°F)			
Colour		White	Black	White	Black
Ingress Protection		IP69K			
Mounting Data					
Mounting type		Panel mount			
Max panel thickness (mm)		7 (0.27")			
Mounting hole (mm)		19 (3/4")			
Cable Data					
All Cables	Type	RG174 -FR (UN ECE118.01 Compliant)			
	Diameter (mm)	2.8 (0.1")			
	Length (m)	0.3 (1')			
Terminations					
4G/5G		SMA (m)			
GPS/GNSS		FME (f)	-		

**Typical efficiency shown for single element of relevant type simulated in CST Microwave Studio on 600x600mm (23.6"x23.6") ground plane excluding cable loss.

*** Isolation shown is worst case across all element pairings measured on 600x600mm (23.6"x23.6") ground plane with 0.5m (1'5") of Cable.

† Typical peak gain shown for single element of relevant type simulated in CST Microwave Studio on 600x600mm (23.6"x23.6") ground plane excluding cable loss.

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Part No.		
		LPMM4-6-60-24-58 LPMM4B-6-60-24-58
Electrical Data		
Frequency Range (MHz)	4G/5G Elements	4x 617-960 / 1710-6000
	WiFi Elements	2x 2.4/4.9-6GHz
Peak Gain: Isotropic : (dBi)		617-960MHz 4
	4G/5G Elements	1710-3800MHz 8
		4900-6000MHz 9
	WiFi Elements	2.4 GHz 9
		7.2 GHz 9
		617-960MHz >50%
Typical Efficiency **	4G/5G Elements	1710-3800MHz >75%
		4900-6000MHz >85%
	WiFi Elements	>70%
	4G/5G Elements	>10dB
Isolation ***	WiFi Elements	>12dB
	4G/5G Elements	< 0.2
Correlation Co-efficient	WiFi Elements	<0.1
Nominal Impedance		50Ω
Mechanical Data		
Dimensions (mm)	Height	80 (3.1")
	Diameter	180 (7.1")
Operating Temp		-40° / +80°C (-40° / +176°F)
Colour	White	Black
Ingress Protection		IP69K
Mounting Data		
Mounting type		Panel mount
Max panel thickness (mm)		7 (0.27")
Mounting hole (mm)		19 (3/4")
Cable Data		
All Cables	Type	RG174 -FR (UN ECE118.01 Compliant)
	Diameter (mm)	2.8 (0.1")
	Length (m)	0.3 (1')
Terminations		
4G/5G		SMA (m)
GPS/GNSS	FME (f)	-

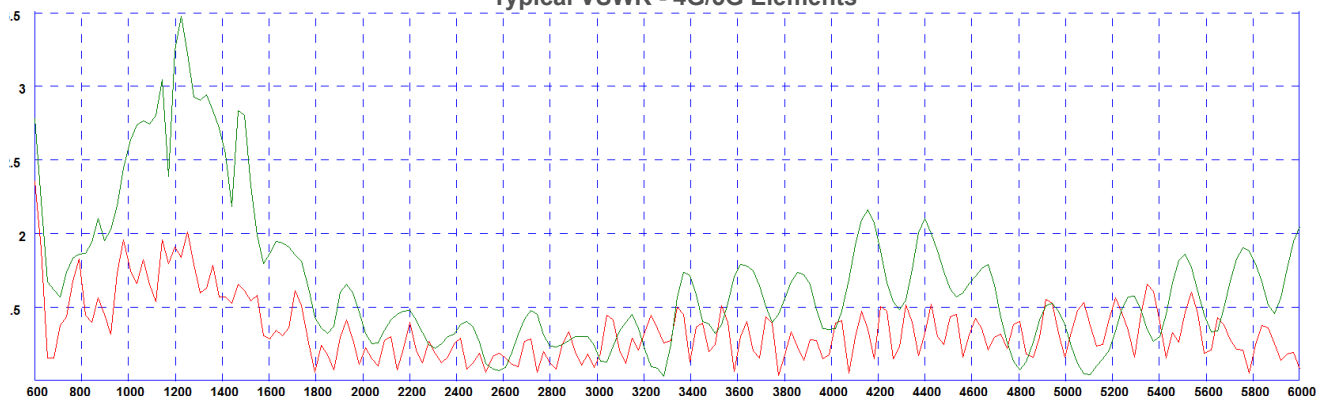
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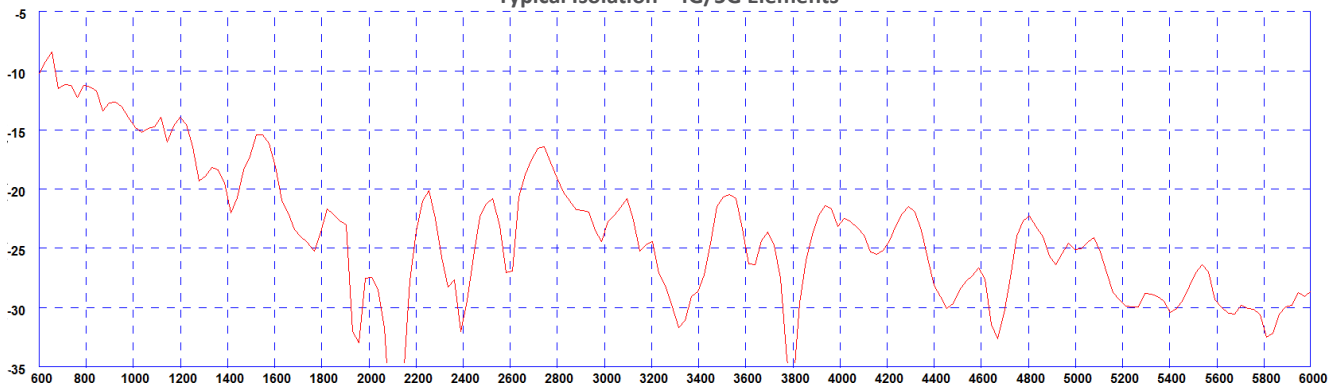
Electrical Data - Cell

Typical VSWR - 4G/5G Elements*



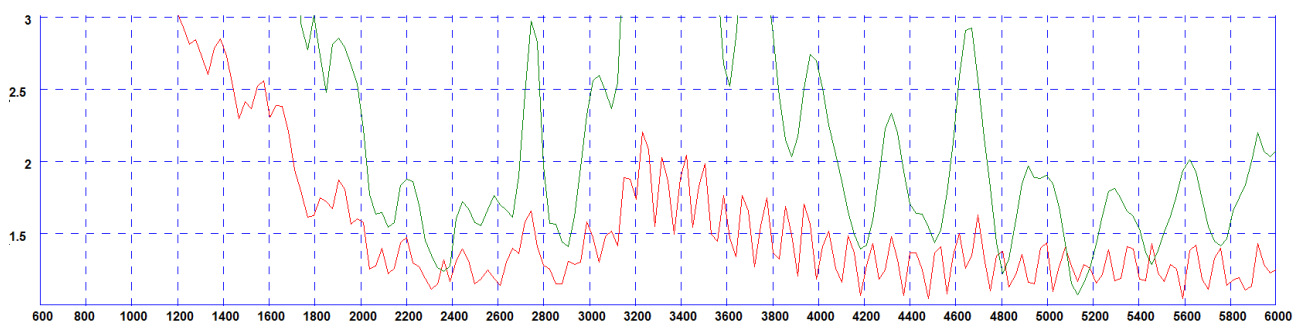
* Green Trace measured with 0.5m (1.5') of RG174 cable Red Trace measured with 5m (17') of CS32 Cable both on a 600x600mm (2'x2') groundplane

Typical Isolation - 4G/5G Elements*



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

Typical VSWR - WiFi Elements*



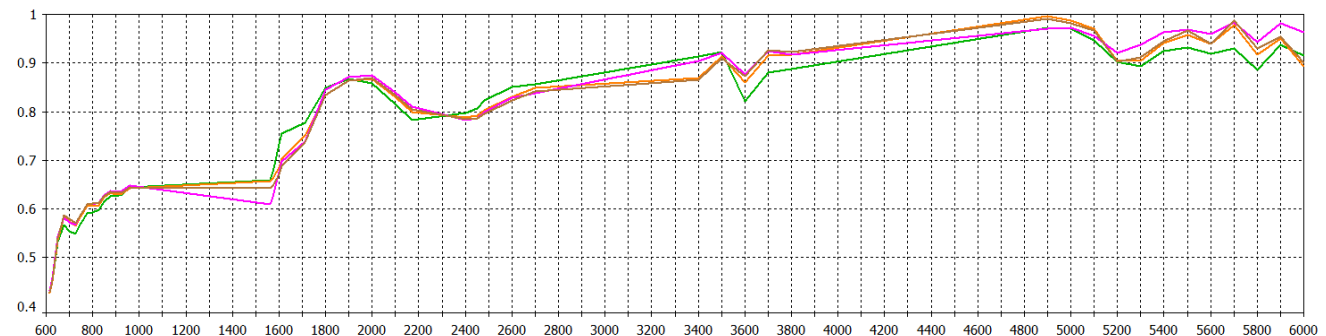
* Green Trace measured with 0.5m (1.5') of RG174 cable Red Trace measured with 5m (17') of CS32 Cable both on a 600x600mm (2'x2') groundplane

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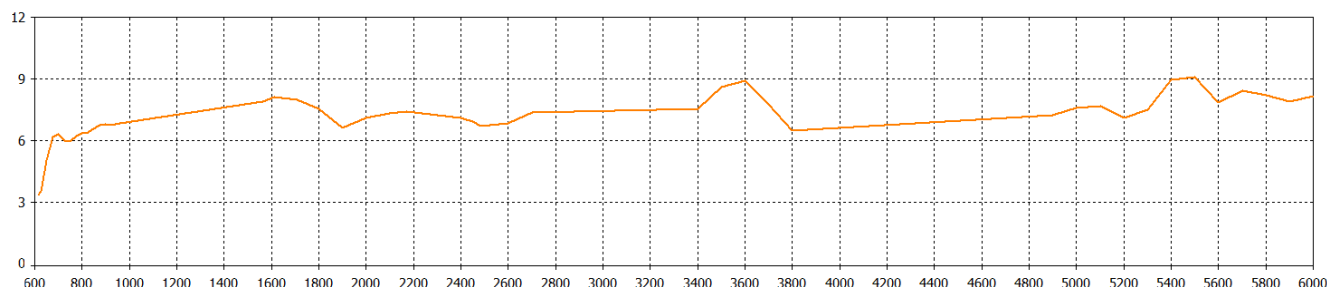
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Typical Efficiency- 4G/5G Elements*



* Efficiency modelled with CST Microwave Studio with antenna mounted on 600x600mm (2'x2') ground plane and ignores cable losses

Typical Peak Gain - 4G/5G Elements*



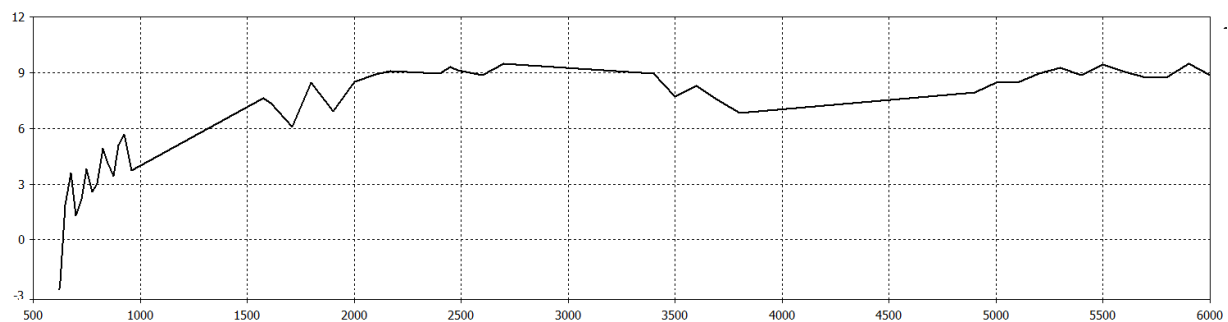
*Swept peak gain modelled with one element fed in CST Microwave Studio on a 600x600mm (2'x2') ground plane excluding cable loss

Typical Efficiency - WiFi Elements*



* Efficiency modelled for 4x4 MiMo Wifi version with CST Microwave Studio with antenna mounted on 600x600mm (2'x2') ground plane and ignores cable losses

Typical Swept Peak Gain - WiFi Elements*



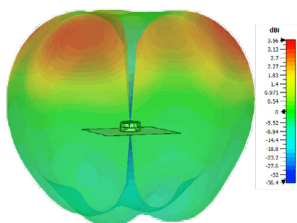
*Swept peak gain modelled with one element fed in CST Microwave Studio on a 600x600mm (2'x2') ground plane excluding cable loss

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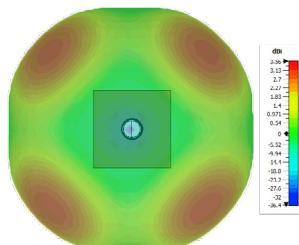
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4G/5G Pattern Data

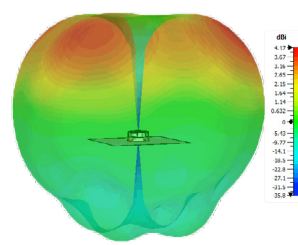
Typical 3D Pattern LTE Elements Side 617MHz



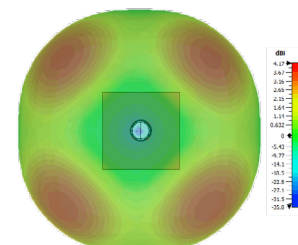
Typical 3D Pattern - LTE Elements Top 617MHz



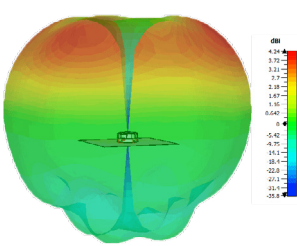
Typical 3D Pattern LTE Elements Side 700MHz



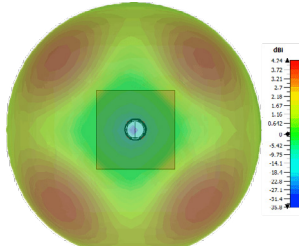
Typical 3D Pattern LTE Elements Top 700MHz



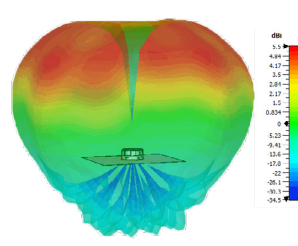
Typical 3D Pattern LTE Elements Side 800MHz



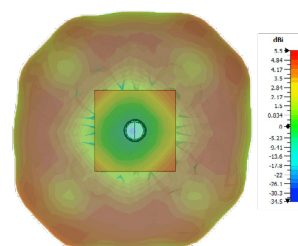
Typical 3D Pattern - LTE Elements Top 800MHz



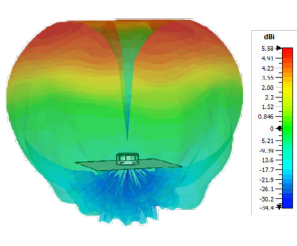
Typical 3D Pattern LTE Elements Side 1800MHz



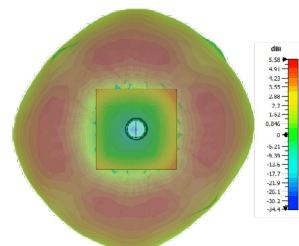
Typical 3D Pattern LTE Elements Top 1800MHz



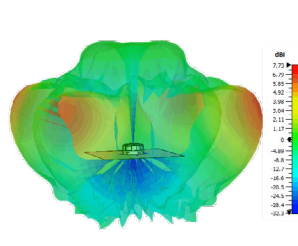
Typical 3D Pattern LTE Elements Side 2100MHz



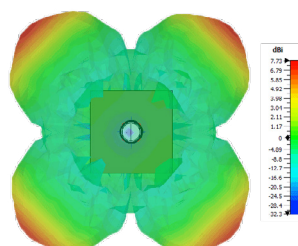
Typical 3D Pattern - LTE Elements Top 2100MHz



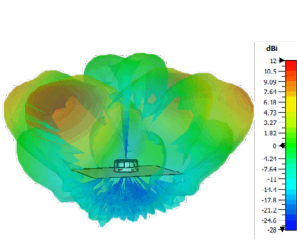
Typical 3D Pattern LTE Elements Side 2600MHz



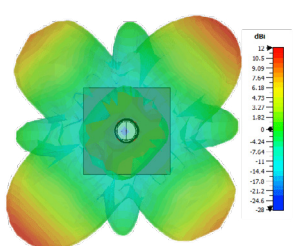
Typical 3D Pattern LTE Elements Top 2600MHz



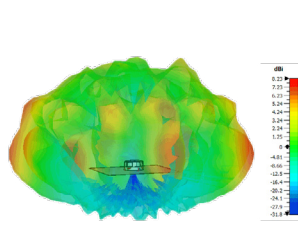
Typical 3D Pattern LTE Elements Side 3600MHz



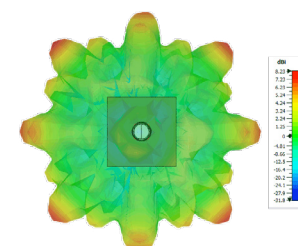
Typical 3D Pattern - LTE Elements Top 3600MHz



Typical 3D Pattern LTE Elements Side 5400MHz



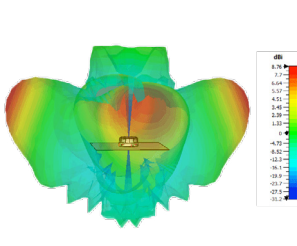
Typical 3D Pattern LTE Elements Top 5400MHz



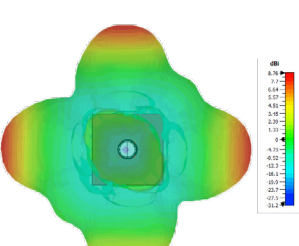
*Patterns are LGMQM4-6-60-24-58 modelled in CST Microwave Studio on a 600x600mm(2'x2') ground plane with all elements of each type fed.

WiFi Pattern Data

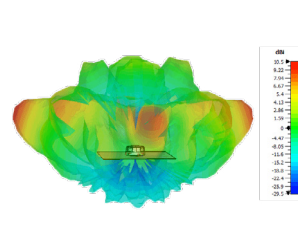
Typical 3D Pattern WiFi Elements Side 2450MHz



Typical 3D Pattern - WiFi Elements Top 2450MHz



Typical 3D Pattern WiFi Elements Side 5400MHz



Typical 3D Pattern WiFi Elements Top 5400MHz

