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

MAKO 5G DOME

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- Low Profile 4x4 4G/5G MiMo
- Up to 6x6 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 or 4x4 WiFi 6E 2.4/4.9-7.2GHz.

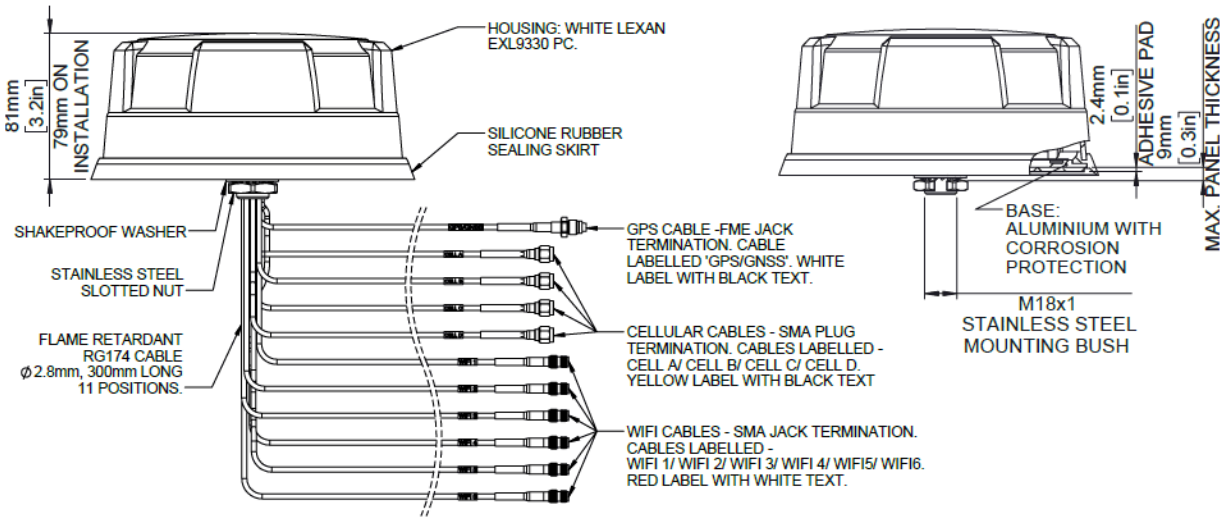
The antenna is designed to be panel mounted and can be fitted on a conductive or non- conductive panel. Supplied with integrated flame retardant RG174 cables (Compliant to UN ECE R118 and EN45545-2) and a halogen free flame retardant radome the antenna is suitable for many environments and applications.

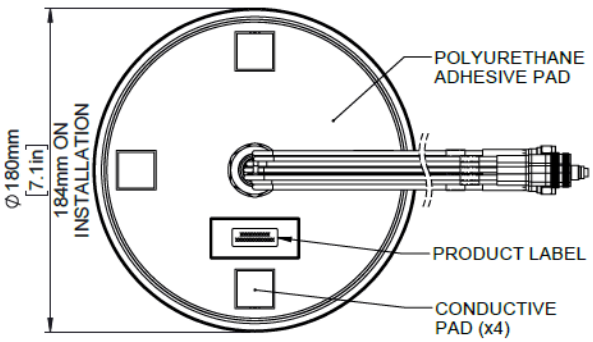
The LGM variants have an integrated GPS/GNSS module supporting GPS, Glonass, Galileo, QZSS and Compass with 26dB LNA gain. This GPS module features advanced filtering for LTE B13/14 designed to minimise potential in band interference.

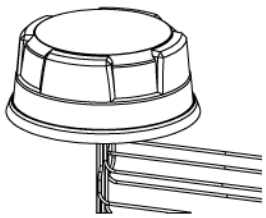
The antenna is available with a black or white radome which meets IK10 for vandal resistance and IP69K for Ingress protection.

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 2.4/4.9-7.2GHz	
Peak Gain: Isotropic : (dBi)ı	4G/5G Elements	617-960MHz	4			
		1710-3800MHz	8			
		4900-6000MHz	9			
	WiFi Elements	2.4 GHz	9			
		4.9-6 (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 ECE R118 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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PANORAMA ANTENNAS

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 2.4/4.9-7.2GHz		2x 2.4/4.9-7.2GHz	
Peak Gain: Isotropic : (dBi)ı	4G/5G Elements	617-960MHz	4			
		1710-3800MHz	8			
		4900-6000MHz	9			
	WiFi Elements	2.4 GHz	9			
		4.9-7.2 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			-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 ECE R118 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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MAKO 5G DOME

PANORAMA ANTENNAS

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			
Peak Gain: Isotropic : (dBi)ǂ	4G/5G Elements	617-960MHz	4			
		1710-3800MHz	8			
		4900-6000MHz	9			
Typical Efficiency **	4G/5G Elements	617-960MHz	>50%			
		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 ECE R118 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 wort case across all element pairings measured on 600x600mm (23.6"x23.6") ground plane with 0.5m (1'5") of Cable.
ǂ 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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PANORAMA ANTENNAS

Part No.			LPMM4-6-60	LPMDM4-6-60-24-58	LPMQM4-6-60-24-58
Electrical Data					
Frequency Range (MHz)	4G/5G Elements			4x 617-960 / 1710-6000	
	WiFi Elements			2x 2.4/4.9-7.2GHz	4x 2.4/4.9-7.2GHz
Peak Gain: Isotropic : (dBi)ı	4G/5G Elements	617-960MHz		4	
		1710-3800MHz		8	
		4900-6000MHz		9	
	WiFi Elements	2.4 GHz		9	
		4.9-7.2 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	
Mechanical Data					
Dimensions (mm)	Height			80 (3.1”)	
	Diameter			180 (7.1”)	
Operating Temp				-40°/ +80°C (-40° / +176°F)	
Colour			White	White	White
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 ECE R118 Compliant)	
	Diameter (mm)			2.8 (0.1”)	
	Length (m)			0.3 (1’)	
Terminations					
4G/5G				SMA (m)	
WiFi				SMA (f)	

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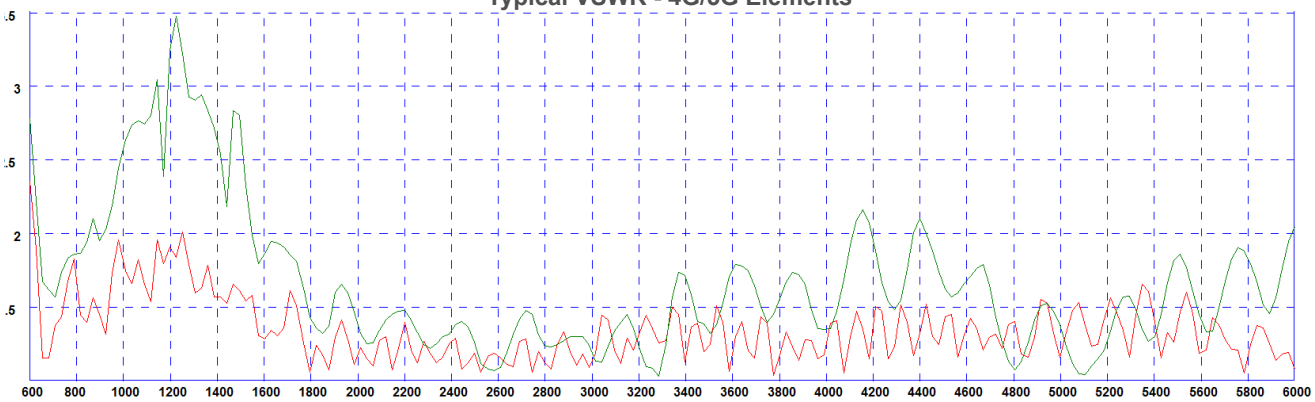
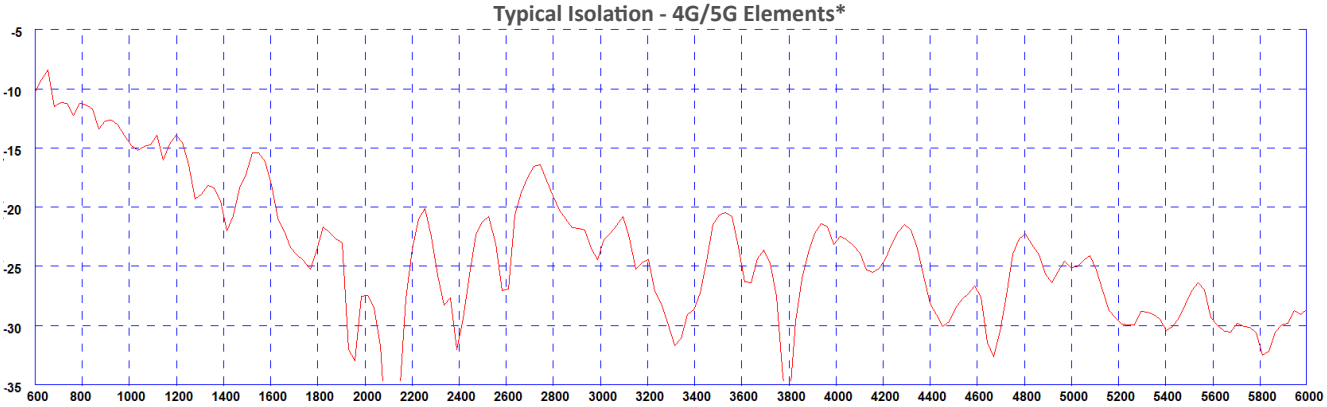
Electrical Data - Cell

Typical VSWR - 4G/5G Elements*



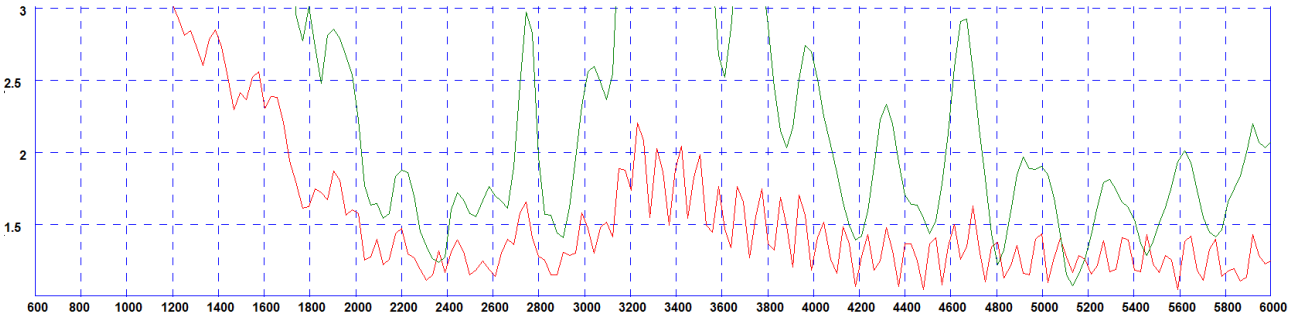
* Green Trace measured with 0.5m (1.5') of RG174 cable Red Trace measured with 5m(17') of CS32 Cable both on a 600x600mm (2'x2') groundplane

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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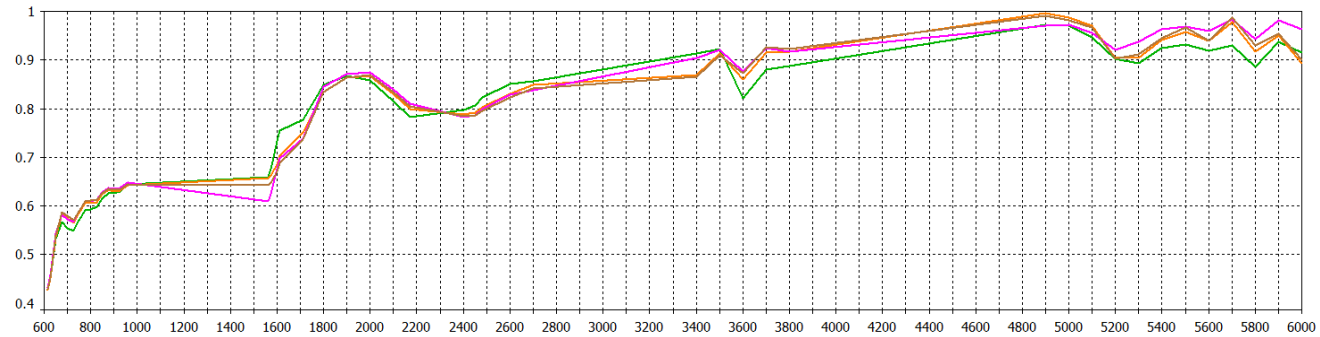
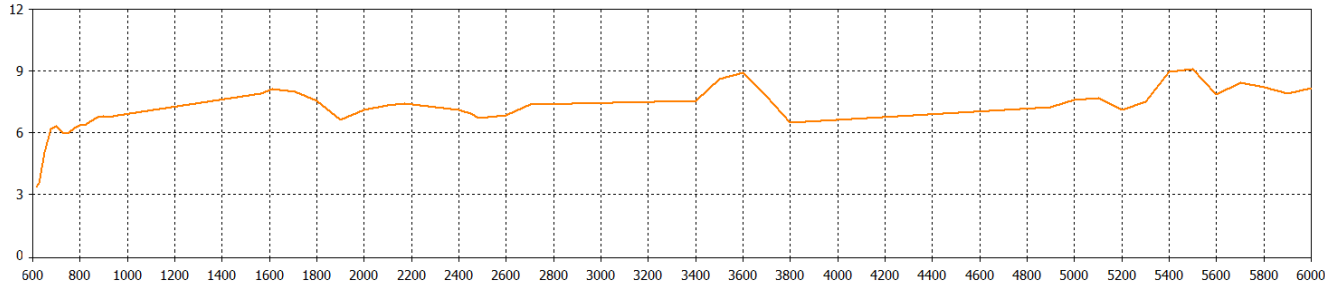
Typical Efficiency- 4G/5G Elements*



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

Typical Peak Gain - 4G/5G Elements*

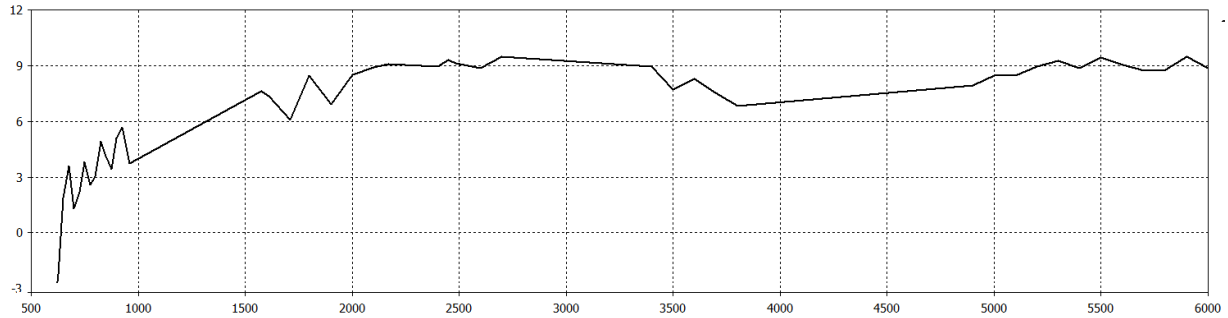


*Swept peak gain modelled with one element fed in CST Microwave Studio on a 600x600mm (2'x2') ground plane excluding cable loss

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 and ignores cable

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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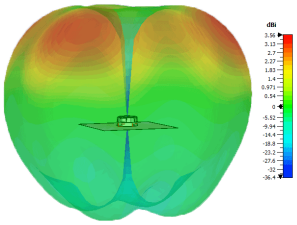
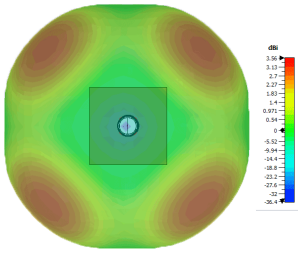
4G/5G Pattern Data

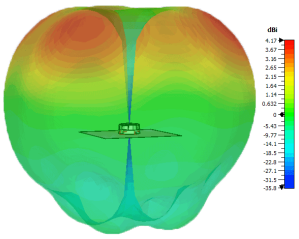
Typical 3D Pattern LTE Elements
Side 617MHz



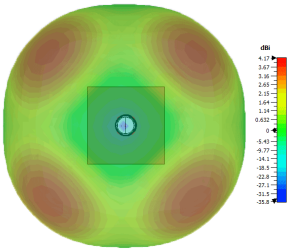
Typical 3D Pattern - LTE Elements
Top 617MHz



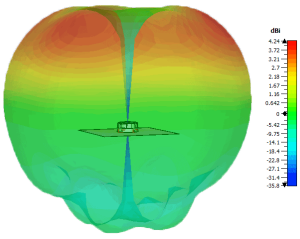
Typical 3D Pattern LTE Elements
Side 700MHz



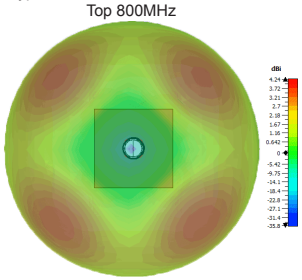
Typical 3D Pattern LTE Elements
Top 700MHz



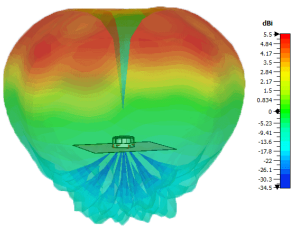
Typical 3D Pattern LTE Elements
Side 800MHz



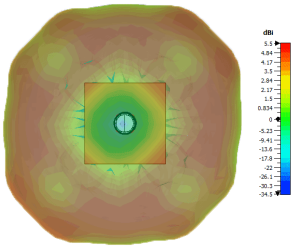
Typical 3D Pattern - LTE Elements
Top 800MHz



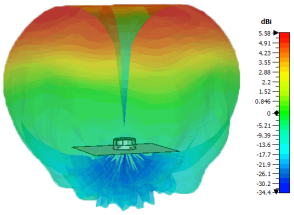
Typical 3D Pattern LTE Elements
Side 1800MHz



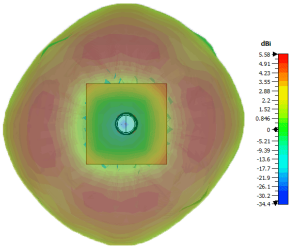
Typical 3D Pattern LTE Elements
Top 1800MHz



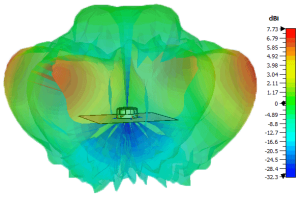
Typical 3D Pattern LTE Elements
Side 2100MHz



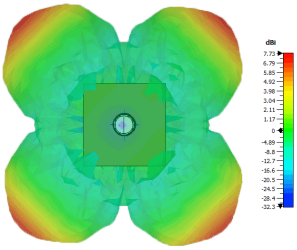
Typical 3D Pattern - LTE Elements
Top 2100MHz



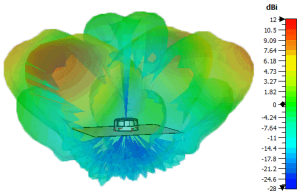
Typical 3D Pattern LTE Elements
Side 2600MHz



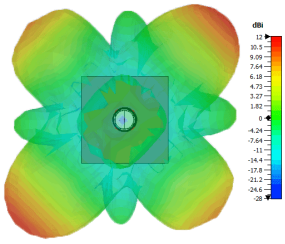
Typical 3D Pattern LTE Elements
Top 2600MHz



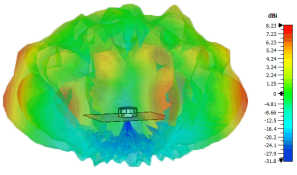
Typical 3D Pattern LTE Elements
Side 3600MHz



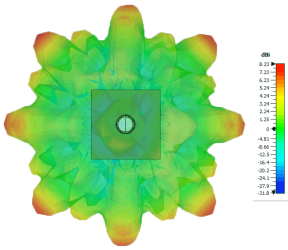
Typical 3D Pattern -LTE Elements
Top 3600MHz



Typical 3D Pattern LTE Elements
Side 5400MHz



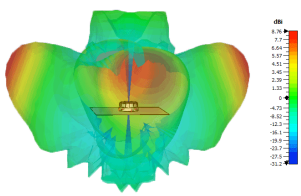
Typical 3D Pattern LTE Elements
Top 5400MHz



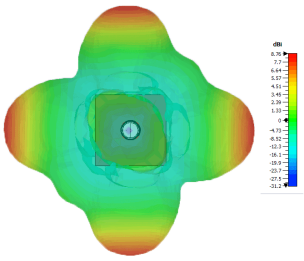
*Patterns are LGMQM4-6-60-24-58 modelled in CST Microwave Studio on a 600x600mm(2'x2') ground plane with all elements of each type fed.

WiFi Pattern Data

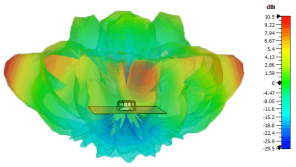
Typical 3D Pattern WiFi Elements
Side 2450MHz



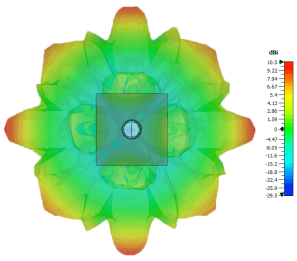
Typical 3D Pattern - WiFi Elements
Top 2450MHz



Typical 3D Pattern WiFi Elements
Side 5400MHz



Typical 3D Pattern WiFi Elements
Top 5400MHz



*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.

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