



## LP[G]AM[F]-6-60[-VAR]

- Low Profile 2x2 MiMo Antenna for 4G/5G
- Optional GPS/GNSS
- Optional up to 4x MiMo WiFi 2.4/5.0/7.2GHz
- Meets IP69K for ingress protection

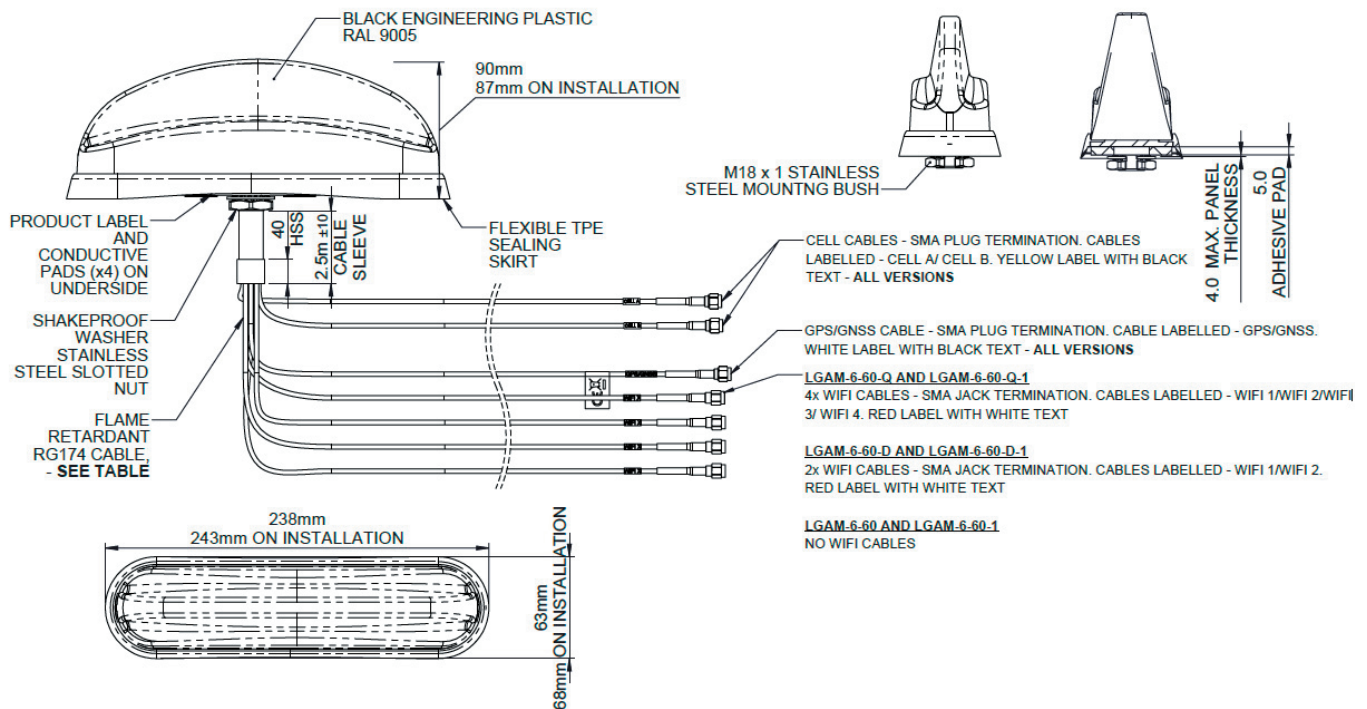
The LP[G]AM[F]-6-60 platform has a 2x2 MiMo antenna function for 4G/5G (617-960/1427-6000MHz) and the option of 2x2, 3x3 or 4x4 MiMo dual-band WiFi, which supports WiFi 6E. An optional active antenna for GPS/GLONASS/Galileo/BeiDou can be included, with 26dB gain LNA and advanced filtering for LTE Band 13/14 operation.

The LP[G]AM[F]-6-60 is designed for use on conductive metal panels but can be used on non-conductive panels with some reduction in performance in the 600MHz band.

This antenna is ideal for IoT applications including vending machines, kiosks, display screens and payment terminals where a cost-effective, efficient and robust antenna is essential. Supplied with integral flexible FR RG174 cables and requiring only a single hole mounting, the LP[G]AM[F]-6-60 range is a convenient and easy to install solution for a range of applications.

### Technical Drawing

LGAM-6-60-Q Shown



# 4G/5G MiMo IOT Antenna

LP[G]AM[F]-6-60[-VAR]

Product Data

Part No.	LGAM-6-60-Q	LGAM-6-60-Q-1	LGAMF-6-60-Q	LGAMF-6-60-Q-1
<b>Electrical Data</b>				
Frequency Range (MHz)	Element 1	1562-1612		
	Elements 2 & 3	2x 617-960, 1427-6000		
	Elements 4+	4 x 2.4/5.0/7.1GHz		
Peak gain: Isotropic*	Elements 2 & 3	5dBi (617-960MHz)		
		8dBi (1427-3800MHz)		
		9dBi (4900-6000MHz)		
	Elements 4+	5dBi (2396-2485MHz)		
		11dBi (4900-7200MHz)		
Isolation**	4G/5G	>12dB		
	WiFi	> 15dB		
Typical Efficiency* W/o Cable Loss	Elements 2 & 3	> 40% (617-698Mz) >60% (698-960/1427-6000MHz)		
Correlation Co-efficient	Elements 2 & 3	<0.2		
Polarisation		Vertical		
Pattern		Omni-directional		
Impedance		50Ω		
Max Input Power (W)		10		
<b>GPS/GNSS Data</b>				
Frequency Range (MHz)		1562-1612		
VSWR		<2:1 ± 4MHz		
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	90 (3.54")		
	Length	243 (9.56")		
	Width	63 (2.48")		
Operating Temp (°C)		-40° / +80°C (-40° / 176°F)		
Material		LEXAN EXL9330 ,Silicone Rubber, Aluminium Alloy		
Colour		Black		
Ingress Protection		IP69K		
<b>Mounting Info</b>				
Fixing		Panel Mount		
Hole Size (mm)		19 (3/4")		
<b>Cable Data</b>				
Cable Type - All Feeds		FR RG174 (UN ECE R 118.03 Compliant)		
Dimensions (mm)	Diameter	2.8 (0.11")		
	Length	3000 (10')	1000 (3' 3")	3000 (10')
Termination	GPS/GNSS	SMA Plug		FAKRA C Jack
	4G/5G	2 x SMA plug		2x FAKRA D Jack
	WiFi	4x SMA Reverse Polarity		4x FAKRA I Jack

\*Swept peak gain and efficiency simulated in CST Microwave Studio with all elements fed together without cable loss on a 600x600mm (2'x2') ground plane

\*\*Typical isolation measured on a 600x600mm (2'x2') ground plane with 0.3m (1') of RG174 cable

# 4G/5G MiMo IOT Antenna

LP[G]AM[F]-6-60[-VAR]

Part No.		LGAM-6-60-T	LGAM-6-60-T-1	LGAMF-6-60-T	LGAMF-6-60-T-1
<b>Electrical Data</b>					
Frequency Range (MHz)	Element 1	1562-1612			
	Elements 2 & 3	2x 617-960, 1427-6000			
	Elements 4+	3x 2.4/5.0/7.1GHz			
Peak gain: Isotropic*		5dBi (617-960MHz)			
	Elements 2 & 3	8dBi (1427-3800MHz)			
		9dBi (4900-6000MHz)			
	Elements 4+	5dBi (2396-2485MHz) 11dBi (4900-7200MHz)			
Isolation**	4G/5G	>12dB			
	WiFi	> 15dB			
Typical Efficiency* W/o Cable Loss	Elements 2 & 3	> 40% (617-698Mz) >60% (698-960/1427-6000MHz)			
Correlation Co-efficient	Elements 2 & 3	<0.2			
Polarisation		Vertical			
Pattern		Omni-directional			
Impedance		50Ω			
Max Input Power (W)		10			
<b>GPS/GNSS Data</b>					
Frequency Range (MHz)		1562-1612			
VSWR		<2:1 ± 4MHz			
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	90 (3.54")			
	Length	243 (9.56")			
	Width	63 (2.48")			
Operating Temp (°C)		-40° / +80°C (-40° / 176°F)			
Material		LEXAN EXL9330, Silicone Rubber, Aluminium Alloy			
Colour		Black			
Ingress Protection		IP69K			
<b>Mounting Info</b>					
Fixing		Panel Mount			
Hole Size (mm)		19 (3/4")			
<b>Cable Data</b>					
Cable Type - All Feeds		FR RG174 (UN ECE R 118.03 Compliant)			
Dimensions (mm)	Diameter	2.8 (0.11")			
	Length	3000 (10')	1000 (3' 3")	3000 (10')	1000 (3' 3")
Termination	GPS/GNSS	SMA Plug		FAKRA C Jack	
	4G/5G	2 x SMA plug		2x FAKRA D Jack	
	WiFi	3x SMA Reverse Polarity		3x FAKRA I Jack	

\*Swept peak gain and efficiency simulated in CST Microwave Studio with all elements fed together without cable loss on a 600x600mm (2'x2') ground plane

\*\*Typical isolation measured on a 600x600mm (2'x2') ground plane with 0.3m (1') of RG174 cable

# 4G/5G MiMo IOT Antenna

LP[G]AM[F]-6-60[-VAR]

Part No.		LGAM-6-60-D	LGAM-6-60-D-1	LGAMF-6-60-D	LGAMF-6-60-D-1
<b>Electrical Data</b>					
Frequency Range (MHz)	Element 1	1562-1612			
	Elements 2 & 3	2x 617-960, 1427-6000			
	Elements 4+	2x 2.4/5.0/7.1GHz			
Peak gain: Isotropic*	Element 1	5dBi (617-960MHz)			
	Elements 2 & 3	8dBi (1427-3800MHz)			
		9dBi (4900-6000MHz)			
	Elements 4+	5dBi (2396-2485MHz)			
		11dBi (4900-7200MHz)			
Isolation**	4G/5G	>12dB			
	WiFi	> 15dB			
Typical Efficiency* W/o Cable Loss	Elements 2 & 3	> 40% (617-698Mz) >60% (698-960/1427-6000MHz)			
Correlation Co-efficient	Elements 2 & 3	<0.2			
Polarisation		Vertical			
Pattern		Omni-directional			
Impedance		50Ω			
Max Input Power (W)		10			
<b>GPS/GNSS Data</b>					
Frequency Range (MHz)		1562-1612			
VSWR		<2:1 ± 4MHz			
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	90 (3.54")			
	Length	243 (9.56")			
	Width	63 (2.48")			
Operating Temp (°C)		-40° / +80°C (-40° / 176°F)			
Material		LEXAN EXL9330, Silicone Rubber, Aluminium Alloy			
Colour		Black			
Ingress Protection		IP69K			
<b>Mounting Info</b>					
Fixing		Panel Mount			
Hole Size (mm)		19 (3/4")			
<b>Cable Data</b>					
Cable Type - All Feeds		FR RG174 (UN ECE R 118.03 Compliant)			
Dimensions (mm)	Diameter	2.8 (0.11")			
	Length	3000 (10')	1000 (3' 3")	3000 (10')	1000 (3' 3")
Termination	GPS/GNSS	SMA Plug		FAKRA C Jack	
	4G/5G	2 x SMA plug		2x FAKRA D Jack	
	WiFi	2x SMA Reverse Polarity		2x FAKRA I Jack	

\*Swept peak gain and efficiency simulated in CST Microwave Studio with all elements fed together without cable loss on a 600x600mm (2'x2') ground plane

\*\*Typical isolation measured on a 600x600mm (2'x2') ground plane with 0.3m (1') of RG174 cable

# 4G/5G MiMo IOT Antenna

LP[G]AM[F]-6-60[-VAR]

Part No.	LGAM-6-60	LGAM-6-60-1	LGAMF-6-60	LGAMF-6-60-1
<b>Electrical Data</b>				
Frequency Range (MHz)	Element 1	1562-1612		
	Elements 2 & 3	2x 617-960, 1427-6000		
Peak gain: Isotropic*	Elements 2 & 3	5dBi (617-960MHz)		
		8dBi (1427-3800MHz)		
		9dBi (4900-6000MHz)		
Isolation**	4G/5G	>12dB		
Typical Efficiency* W/o Cable Loss	Elements 2 & 3	> 40% (617-698Mz) >60% (698-960/1427-6000MHz)		
Correlation Co-efficient	Elements 2 & 3	<0.2		
Polarisation	Vertical			
Pattern	Omni-directional			
Impedance	50Ω			
Max Input Power (W)	10			
<b>GPS/GNSS Data</b>				
Frequency Range (MHz)	1562-1612			
VSWR	<2:1 ± 4MHz			
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	90 (3.54")		
	Length	243 (9.56")		
	Width	63 (2.48")		
Operating Temp (°C)	-40° / +80°C (-40° / 176°F)			
Material	LEXAN EXL9330, Silicone Rubber, Aluminium Alloy			
Colour	Black			
Ingress Protection	IP69K			
<b>Mounting Info</b>				
Fixing	Panel Mount			
Hole Size (mm)	19 (3/4")			
<b>Cable Data</b>				
Cable Type - All Feeds	FR RG174 (UN ECE R 118.03 Compliant)			
Dimensions (mm)	Diameter	2.8 (0.11")		
	Length	3000 (10')	1000 (3' 3")	3000 (10')
Termination	GPS/GNSS	SMA Plug		FAKRA C Jack
	4G/5G	2 x SMA plug		2x FAKRA D Jack

\*Swept peak gain and efficiency simulated in CST Microwave Studio with all elements fed together without cable loss on a 600x600mm (2'x2') ground plane

\*\*Typical isolation measured on a 600x600mm (2'x2') ground plane with 0.3m (1') of RG174 cable

# 4G/5G MiMo IOT Antenna

LP[G]AM[F]-6-60[-VAR]

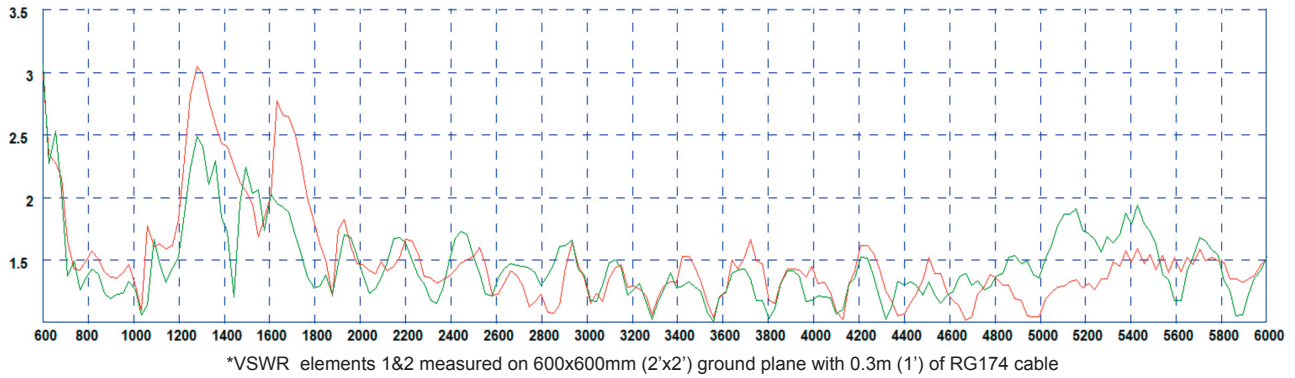
Part No.		LPAM-6-60	LPAM-6-60-1	LPAMF-6-60	LPAMF-6-60-1
<b>Electrical Data</b>					
Frequency Range (MHz)	Elements 1 & 2	2x 617-960, 1427-6000			
Peak gain: Isotropic*	Elements 1 & 2	5dBi (617-960MHz)			
		8dBi (1427-3800MHz)			
		9dBi (4900-6000MHz)			
Isolation**	4G/5G	>12dB			
Typical Efficiency* W/o Cable Loss	Elements 1 & 2	> 40% (617-698Mz) >60% (698-960/1427-6000MHz)			
Correlation Co-efficient	Elements 1 & 2	<0.2			
Polarisation		Vertical			
Pattern		Omni-directional			
Impedance		50Ω			
Max Input Power (W)		10			
<b>Mechanical Data</b>					
Dimensions (mm) - Installed	Total Height	90 (3.54")			
	Length	243 (9.56")			
	Width	63 (2.48")			
Operating Temp (°C)		-40° / +80°C (-40° / 176°F)			
Material		LEXAN EXL9330, Silicone Rubber, Aluminium Alloy			
Colour		Black			
Ingress Protection		IP69K			
<b>Mounting Info</b>					
Fixing		Panel Mount			
Hole Size (mm)		19 (3/4")			
<b>Cable Data</b>					
Cable Type - All Feeds		FR RG174 (UN ECE R 118.03 Compliant)			
Dimensions (mm)	Diameter	2.8 (0.11")			
	Length	3000 (10')	1000 (3' 3")	3000 (10')	1000 (3' 3")
Termination	4G/5G	2 x SMA plug		2x FAKRA D Jack	

\*Swept peak gain and efficiency simulated in CST Microwave Studio with all elements fed together without cable loss on a 600x600mm (2'x2') ground plane

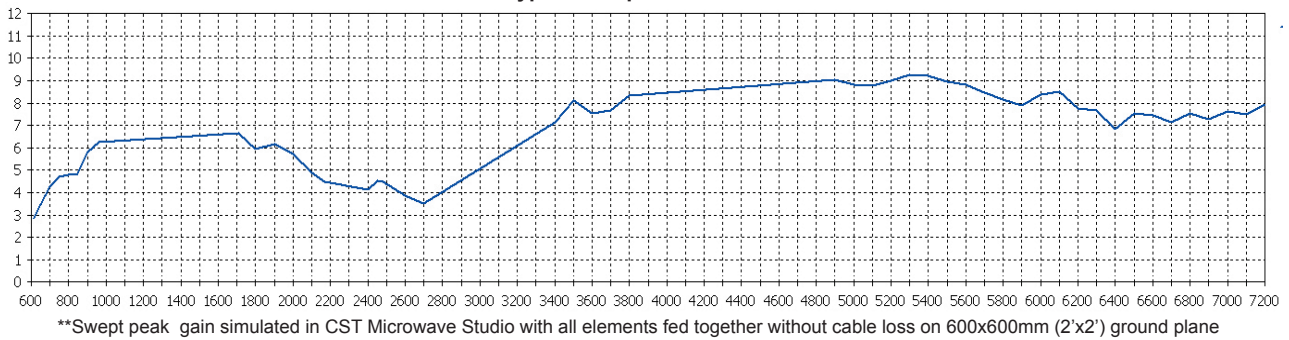
\*\*Typical isolation measured on a 600x600mm (2'x2') ground plane with 0.3m (1') of RG174 cable

Electrical Data on  
Ground Plane - Cell

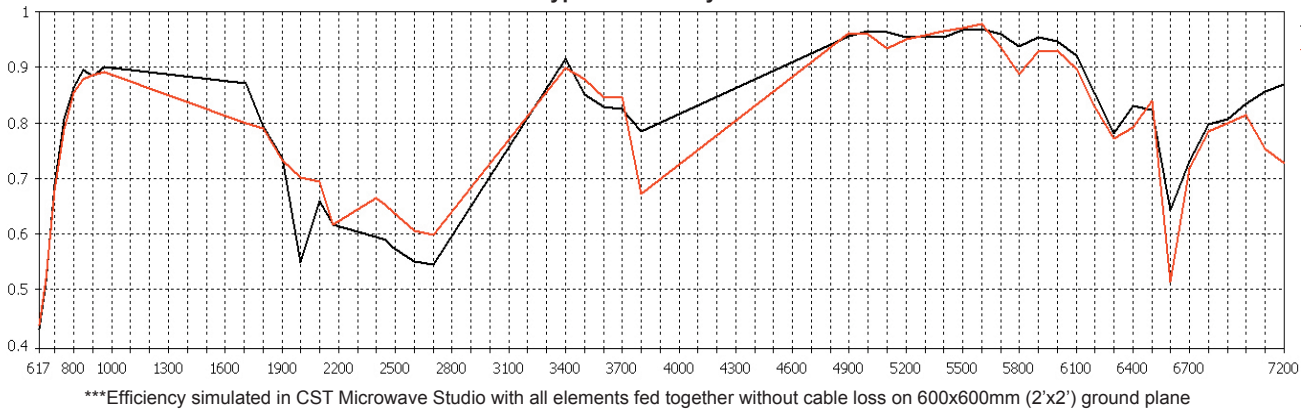
Typical VSWR\*



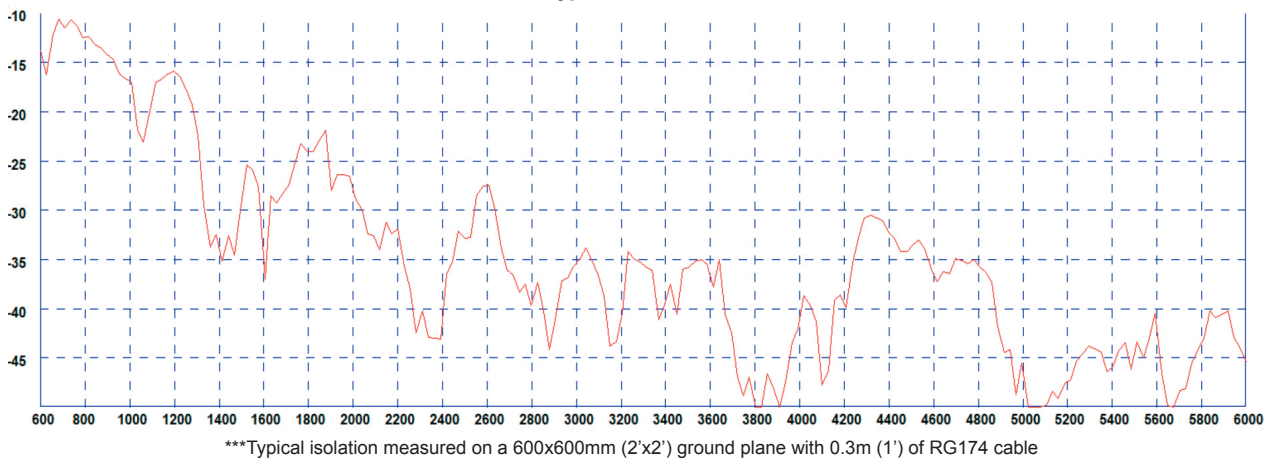
Typical Swept Peak Gain \*\*

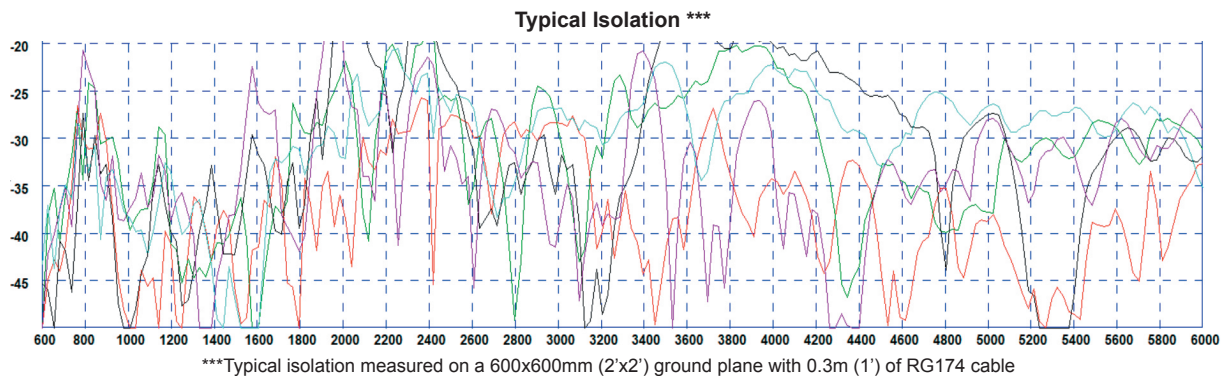
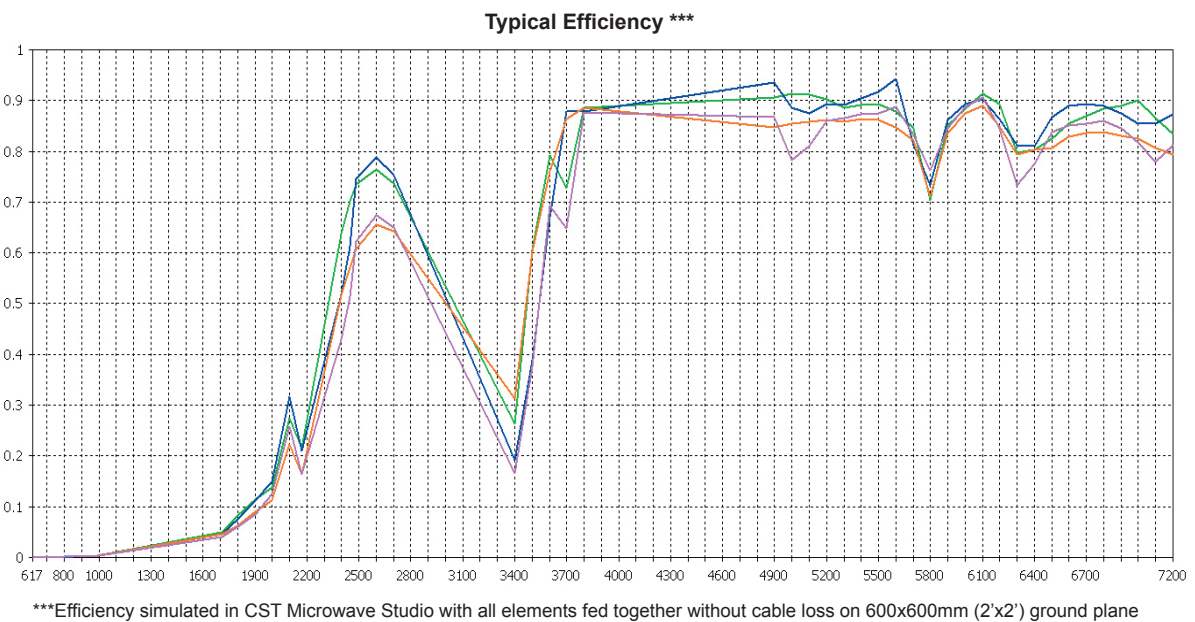
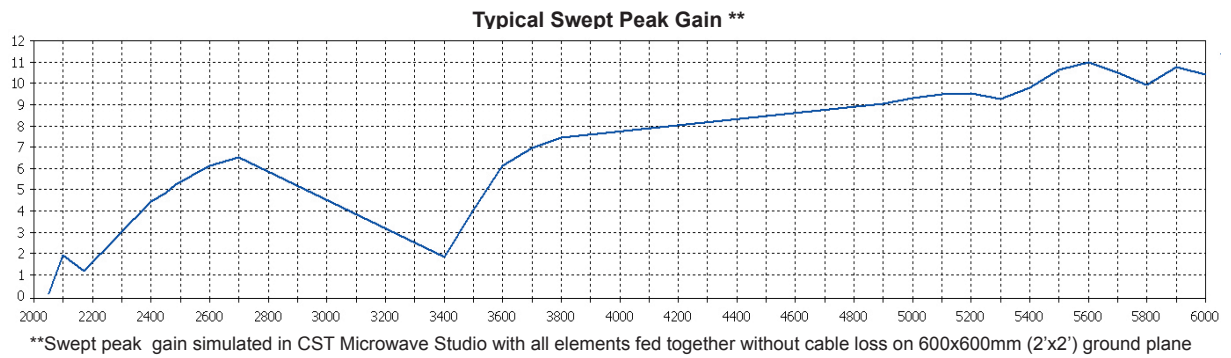
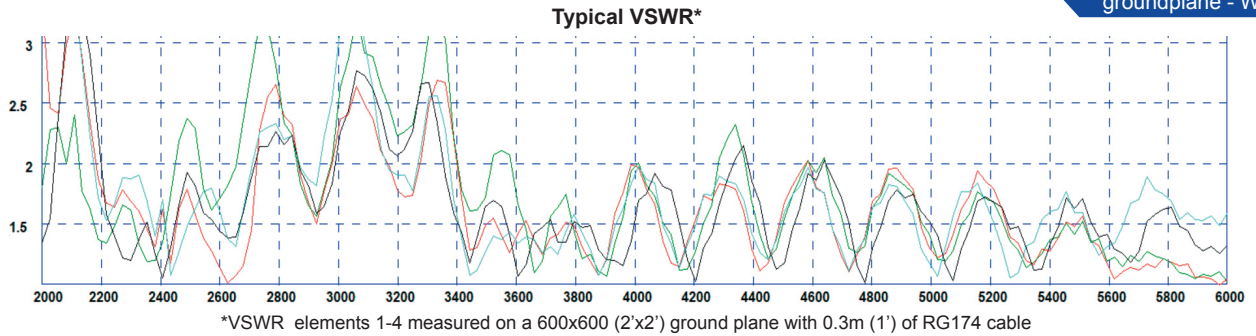


Typical Efficiency \*\*\*



Typical Isolation \*\*\*

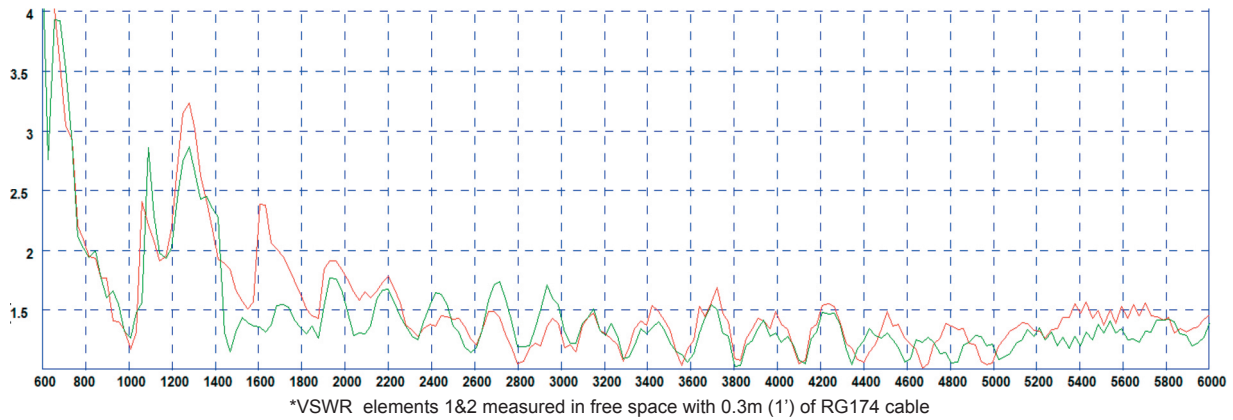




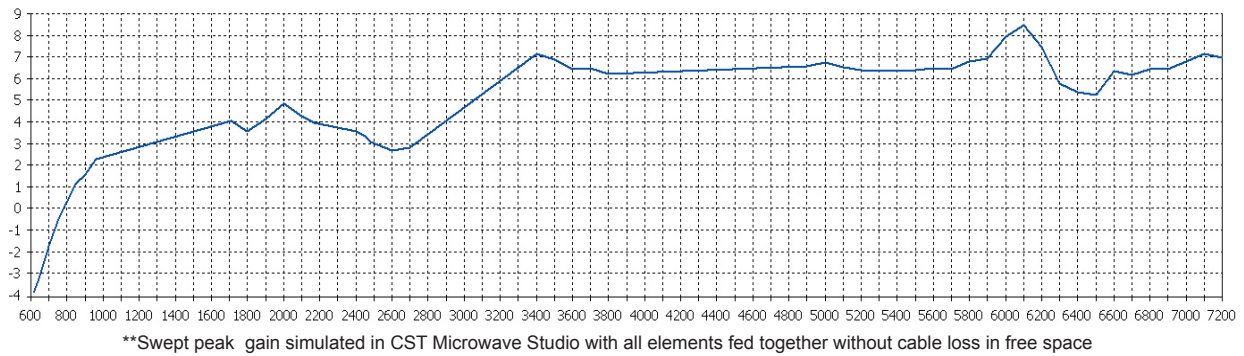


Electrical Data in  
Free Space - Cell

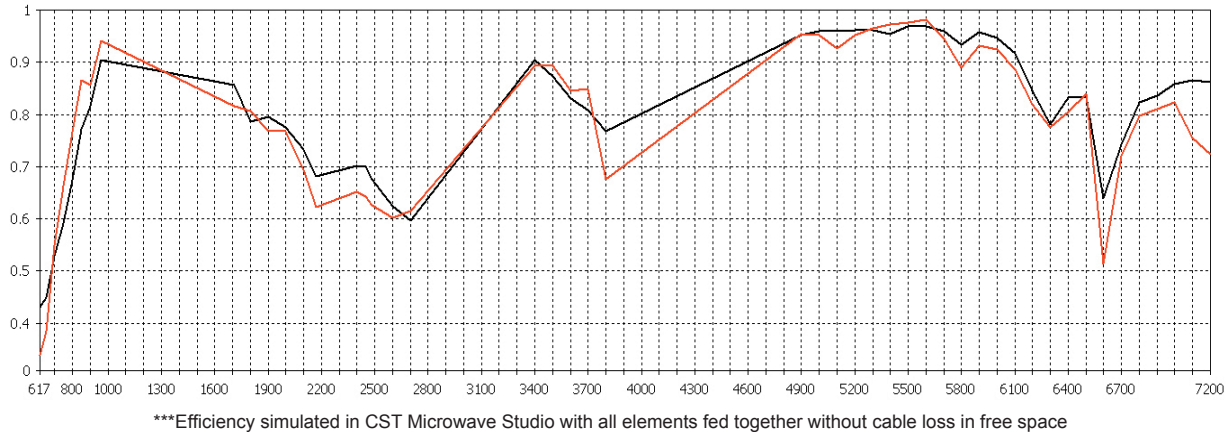
Typical VSWR\*



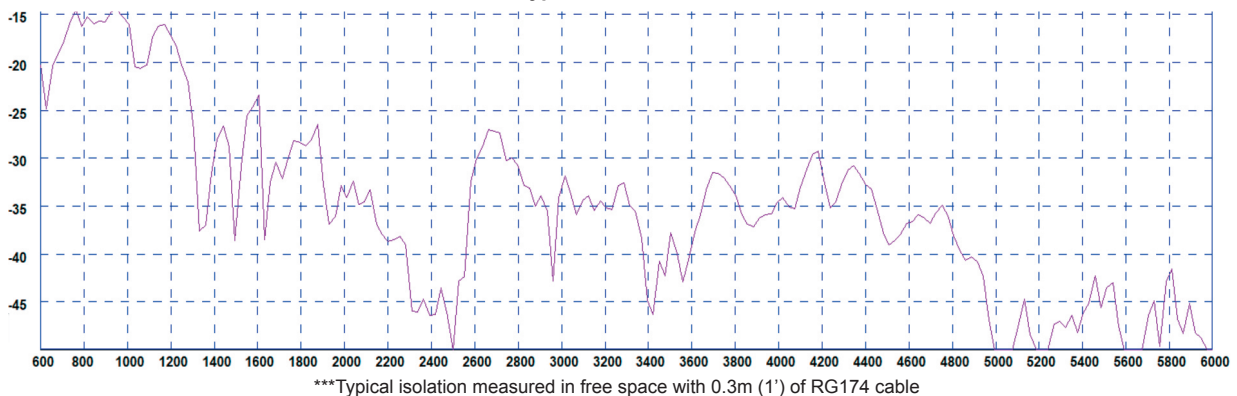
Typical Swept Peak Gain \*\*

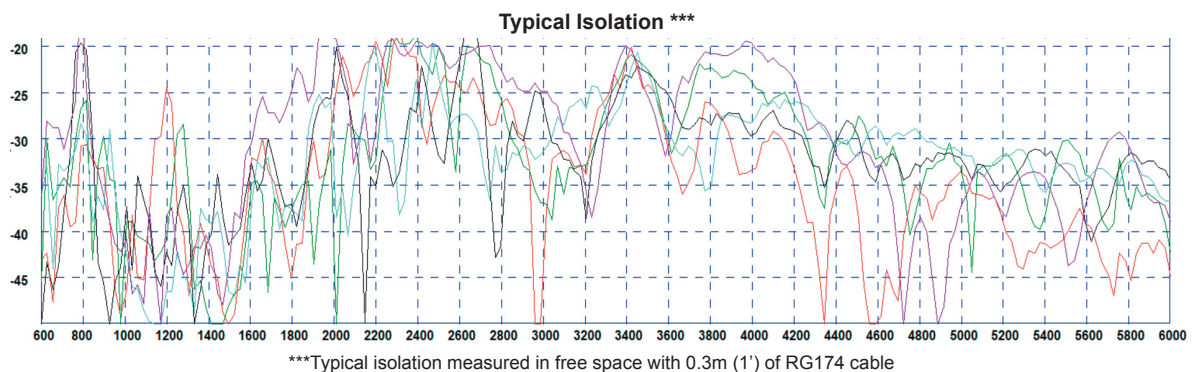
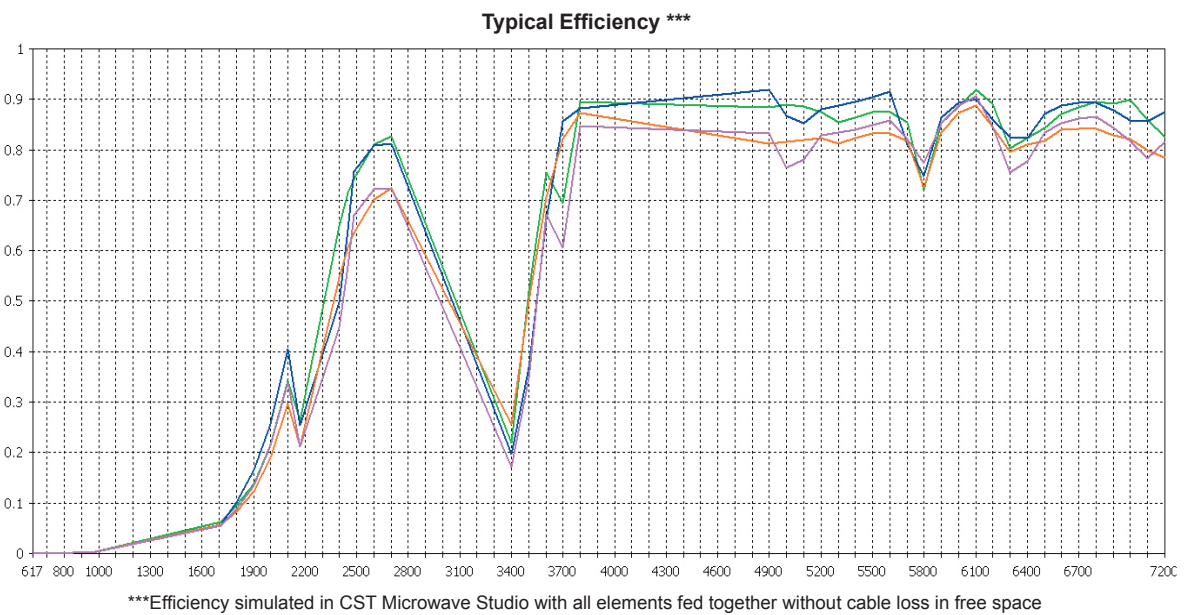
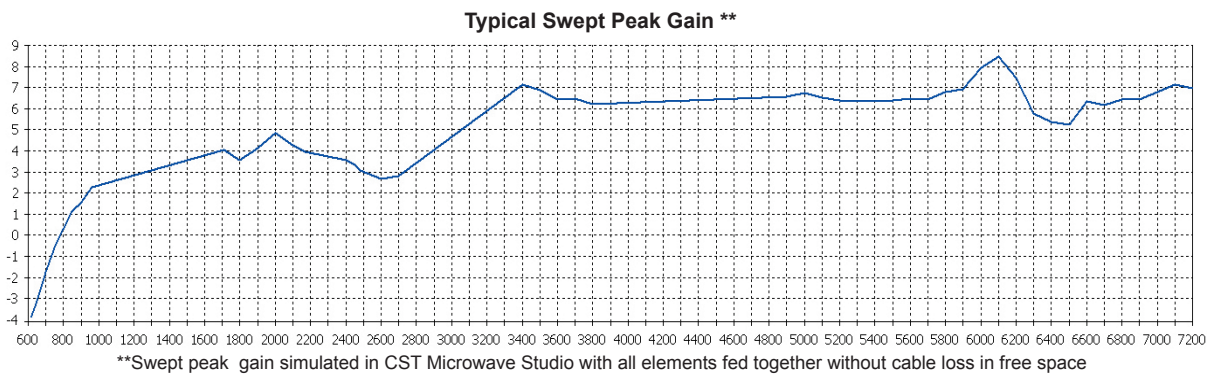
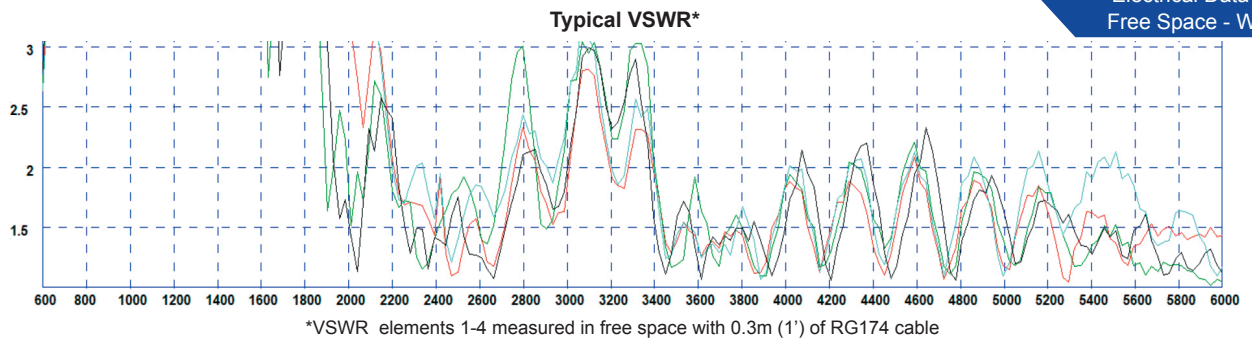


Typical Efficiency \*\*\*



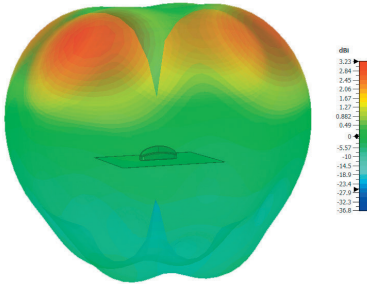
Typical Isolation \*\*\*



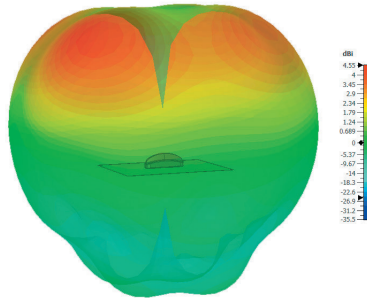


3D Patterns on  
Ground Plane -Cell

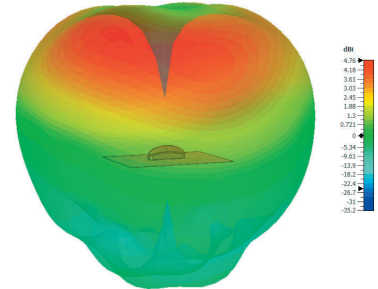
3D Pattern All Elements (650MHz)



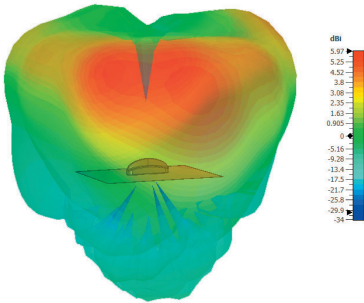
3D Pattern All Elements (750MHz)



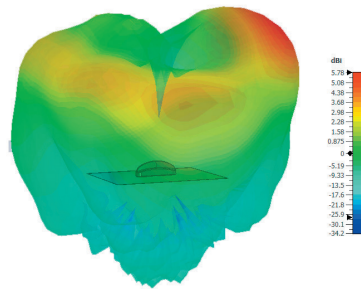
3D Pattern All Elements (850MHz)



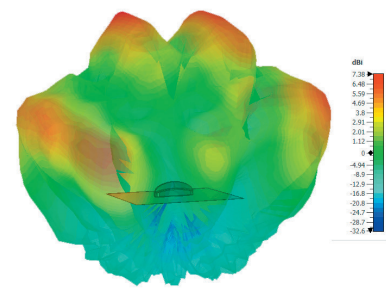
3D Pattern All Elements (1800MHz)



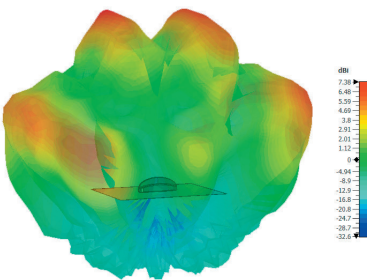
3D Pattern All Elements (2000MHz)



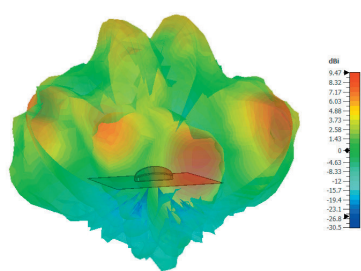
3D Pattern All Elements (2600MHz)



3D Pattern All Elements (3600MHz)

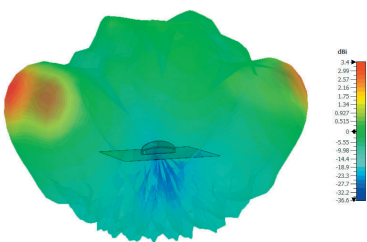


3D Pattern All Elements (5400MHz)

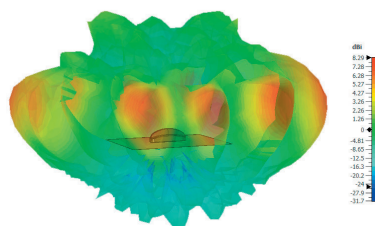


3D Patterns on  
Ground Plane -WIFI

3D Pattern All WiFi Elements (2450MHz)



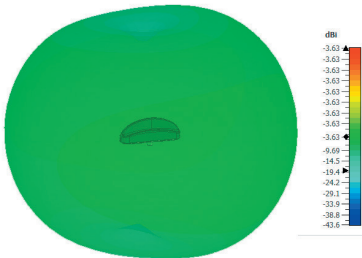
3D Pattern All WiFi Elements (5400MHz)



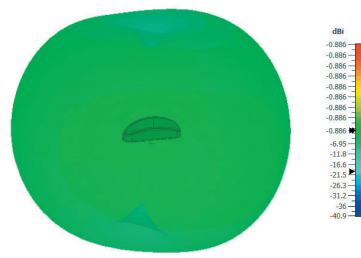
3D patterns all simulated in CST Microwave Studio with all elements of same type fed together excluding cable loss

Electrical Data -in  
Free Space - Cell

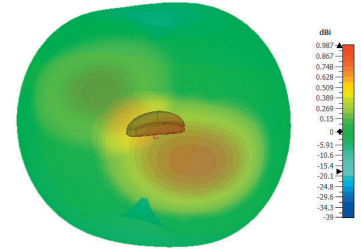
3D Pattern All Elements (650MHz)



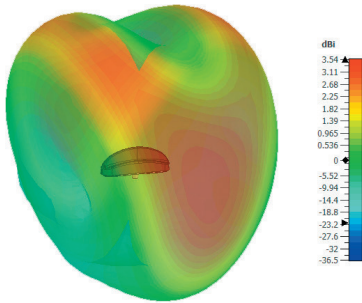
3D Pattern All Elements (750MHz)



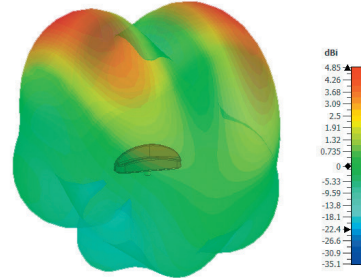
3D Pattern All Elements (850MHz)



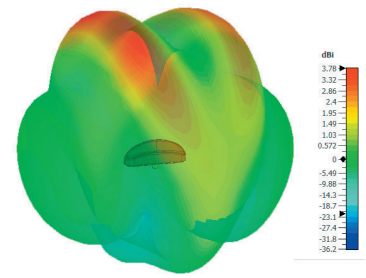
3D Pattern All Elements (1800MHz)



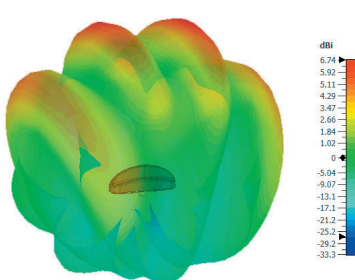
3D Pattern All Elements (2000MHz)



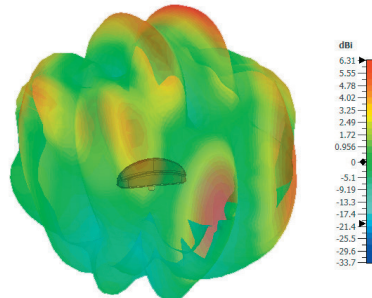
3D Pattern All Elements (2600MHz)



3D Pattern All Elements (3600MHz)

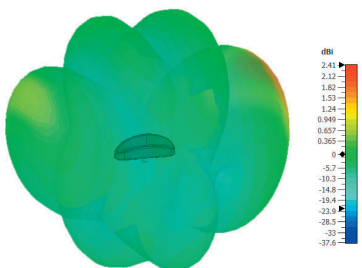


3D Pattern All Elements (5400MHz)

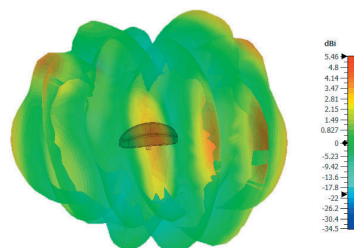


Electrical Data -in  
Free Space - WiFi

3D Pattern All WiFi Elements (2450MHz)



3D Pattern All WiFi Elements (5400MHz)



3D patterns all simulated in CST Microwave Studio with all elements of same type fed together excluding cable loss