

MAKO® 5G DOME

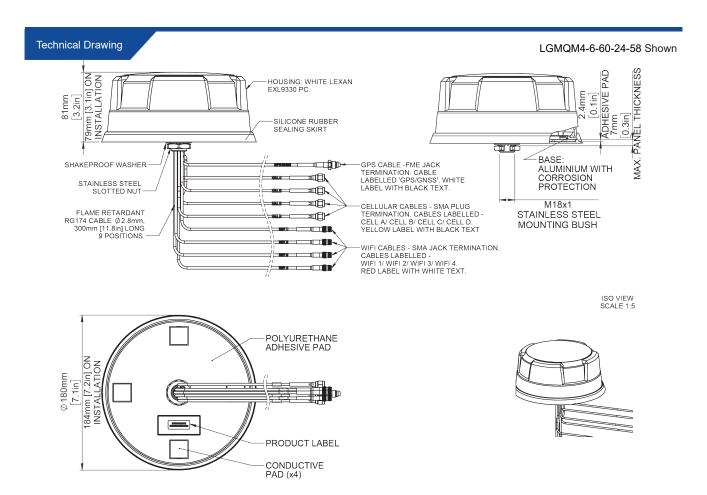
- Low Profile 4x4 4G/5G MiMo
- Up to 6x6 MiMo Dual Band WiFi
- Optional GPS/GNSS Active Antenna 26dB LNA

The L[X]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 2.4/5.15-7.2GHz.

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.





						Product Data		
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			
Frequency Range (MHZ)	WiFi Elements		6x 2.4/5	15-6GHz	4x 2.4/5.	15-7.2GHz		
		617-960MHz		8				
D 10:	4G/5G Elements	1710-5000MHz	7.5					
Peak Gain: Isotropic : (dBi)+		5000-6000MHz		6.	7			
, ,	WiFi Elements	2.4 GHz	7.7					
	Will Liements	5.15-6 (/ 7.2)GHz		8.	7			
		617-960MHz		>54	1%			
T	4G/5G Elements	1710-5000MHz		>65	5%			
Typical Efficiency **		5000-6000MHz		>56	5%			
	WiFi Elements		66%(2400-2485MHz)	> 57%(5150-5925MHz)	>66% (2400-2485MHz) >52%(5150-7125MHz)		
	4G/5G Elements			>10	ldB			
Isolation ***	Wifi Elements			>12	dB			
	4G/5G Elements			< 0	0.2			
Correlation Co-efficient	WiFi Elements		<0.1					
Nominal Impedance			50Ω					
GPS/GNSS Data								
Frequency Range (MHz)				1562-	1612			
VSWR			<2.0:1 ± 4MHz					
Gain: LNA				260	dB			
Out of band rejection				>40dB (@ > +	-/- 100MHz f)			
Typical Noise Figure				-2.7	'dB			
Notch Filter rejection @78	7MHz		23dBm					
Operating Voltage				3 - 5\	/ DC			
Typcal Current (mA)				1:	5			
Mechanical Data								
	Height			80 (3	3.1")			
Dimensions (mm)	Diameter			180 (7.1")			
Operating Temp (°C)				-40°/ +80°C (-4	40° / +176°F)			
Colour			White	Black	White	Black		
Ingress Vandal Protection				IP69K	/ IK10			
Mounting Data								
Mounting type				Panel	mount			
Max panel thickness (mm))		7 (0.27")					
Mounting hole (mm)				19 (3	3/4")			
Cable Data								
	Туре			RG174 -FR (UN EC	E R118 Compliant)			
All Cables	Diameter (mm)			2.8 (0.1")			
	Length (m)			0.3	(1')			
Terminations								
4G/5G				SMA	. (m)			
WiFi				SMA	A (f)			
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 across >95% of stated bands when 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.



_			D
-	$r \circ \circ$	II ICT	Data
	IUU	ucı	Date

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 2.4/5.1	5-7.2GHz	2x 2.4/5.	15-7.2GHz		
		617-960MHz		5.	8			
Peak Gain:	4G/5G Elements	1710-5000MHz		7.	5			
Isotropic : (dBi)+		5000-6000MHz		6.	7			
	WiFi Elements	2.4 GHz		7.	7			
		5.15-7.2GHz		8.	7			
		617-960MHz		>54	1%			
Typical Efficiency **	4G/5G Elements	1710-5000MHz	>65%					
, yp.ou. Eo.o.o.		5000-6000MHz		>56	5%			
	WiFi Elements		66%(2400-2485MHz) > 52%(5150-5925MHz)					
Isolation ***	4G/5G Elements			>10	ldB			
isolation	Wifi Elements			>12	dB			
Correlation Co-efficient	4G/5G Elements			< 0).2			
Correlation Co-enicient	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 @78	37MHz		23dBm					
Operating Voltage				3 - 5\	/ DC			
Typcal Current (mA)				1	5			
Mechanical Data								
Dimensions (mm)	Height			80 (3	3.1")			
Zimenelene (min)	Diameter			180 (7.1")			
Operating Temp (°C)				-40°/ +80°C (-4	40° / +176°F)			
Colour			White	Black	White	Black		
Ingress / Vandal Protectio	n			IP69K	/ IK10			
Mounting Data								
Mounting type				Panel	mount			
Max panel thickness (mm)			7 (0.	27")			
Mounting hole (mm)				19 (3	3/4")			
Cable Data								
	Туре			RG174 -FR (UN EC				
All Cables	Diameter (mm)			2.8 (
	Length (m)			0.3	(1')			
Terminations								
4G/5G				SMA				
WiFi				SMA				
GPS/GNSS				FME	Ē (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 across >95% of stated bands when 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.



							Product Data		
Part No.									
				LGMM4-6-60	LGMM4B-6-60	LPMM4-6-60	LPMM4B-6-60		
Electrical Data									
Frequency Range (M	MHz)	4G/5G Elements			4x 617-960	/ 1710-6000			
			617-960MHz	5.8					
Peak Gain: Isotropic	c : (dBi)+	4G/5G Elements	1710-5000MHz	7.5					
			5000-6000MHz	6.7					
			617-960MHz		>54	4%			
Typical Efficiency **		4G/5G Elements	1710-5000MHz		>6	5%			
			5000-6000MHz		>50	6%			
Isolation ***		4G/5G Elements			>10)dB			
Correlation Co-efficient	o-efficient 4G/5G Elements				< (0.2			
Nominal Impedance					50	Ω			
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	n @787MHz			23dBm -					
Operating Voltage				3 - 5V DC -					
Typcal Current (mA)				15 -					
Mechanical Data	Hairba				00.44	2.4")			
Dimensions (mm)	Height				80 (3				
Operating Tarre	Diameter				180 (
Operating Temp Colour				White	-40°/ +80°C (- Black	40° / +1/6°F) White	Black		
Ingress / Vandal Pro	otection			vviille	IP69K		DIACK		
Mounting Data	ACCHOIT				IFOSK	7 11010			
Mounting bata					Panel	mount			
Max panel thickness	s (mm)			Panel mount					
Mounting hole (mm)				7 (0.27") 19 (3/4")					
Cable Data					10 (/			
	Туре				RG174 -FR (UN EC	CE R118 Compliant)			
All Cables	Diameter ((mm)			2.8 (
	Length (m				0.3				
Terminations									
4G/5G					SMA	A (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.

^{****}Visolation shown is worst case across all element pairings across >95% of stated bands when 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.



	Data

Part No.								
			LPMQM4-6-60-24-58	LPMQM4B-6-60-24-58	LPMDM4-6-60-24-58	LPMDM4B-6-60-24-58		
Electrical Data								
Frequency Range (MHz)	4G/5G Elements			4x 617-960	/ 1710-6000			
r roquerioy ruango (Miriz)	WiFi Elements		4x 2.4/5.	15-7.2GHz	2x 2.4/5.	15-7.2GHz		
		617-960MHz	5.8					
Peak Gain:	4G/5G Elements	1710-5000MHz		7.	.5			
Isotropic : (dBi)		5000-6000MHz		6.	.7			
	WiFi Elements	2.4 GHz		7.	.7			
	VIII I Elemente	5.15-7.2GHz		8.	7			
		617-960MHz		>54	4%			
Typical Efficiency **	4G/5G Elements	1710-5000MHz	>65%					
Typical Efficiency		5000-6000MHz		>50	6%			
	WiFi Elements			66%(2400-2485MHz) >	> 52%(5150-5925MHz)			
11	4G/5G Elements		>10dB					
Isolation ***	Wifi Elements		>12dB					
O and the O attention	4G/5G Elements		< 0.2					
Correlation Co-efficient	WiFi Elements			<0	0.1			
Nominal Impedance				50	Ω			
Mechanical Data								
Dimensions (mm)	Height			80 (3	3.1")			
Difficusions (min)	Diameter			180 ((7.1")			
Operating Temp (°C)				-40°/ +80°C (-	40° / +176°F)			
Colour			White	Black	White	Black		
Ingress Vandal Protection				IP69K	/ IK10			
Mounting Data								
Mounting type				Panel	mount			
Max panel thickness (mm)		7 (0.27")					
Mounting hole (mm)				19 (3	3/4")			
Cable Data								
	Туре			RG174 -FR (UN EC	CE R118 Compliant)			
All Cables	Diameter (mm)			2.8 (0.1")			
	Length (m)			0.3	(1')			
Terminations								
4G/5G				SMA	(m)			
WiFi				SMA	A (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 across >95% of stated bands when 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.

L[X]M[X]M4[X]-6-60[-24-58]



Electrical Data Cell - Ground Plane

Measurement Conditions	4G/5G Antennas					
LGMQM4-6-60-24-58 measured on 600x600mm (2'x2') ground plane.	Frequency Range (MHz)	LTE / NR Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)	
	617-698	71, 105	Cell A	3.7	49	
	017-090	71, 103	Cell B	4.0	49	
			Cell C	3.7	49	
			Cell D	3.8	49	
	699-798	10 10 11 17 00	Cell A	4.4	52	
		12,13, 14 17,28	Cell B	4.7	54	
			Cell C	4.5	53	
			Cell D	4.9	53	
	807- 862	F 40 20 26 27	Cell A	5.4	57	
	007-002	5,19,20,26,27	Cell B	5.6	56	
77.550			Cell C	5.2	56	
			Cell D	5.7	56	
	990 000	0	Cell A	5.4	59	
	880-960	8	Cell B	5.8	59	
A AMARINA			Cell C	5.5	59	
			Cell D	5.7	58	
	4407 4540	11, 21, 74,75,76	Cell A	3.9	48	
	1427-1518		Cell B	4.3	50	
			Cell C	4.5	51	
			Cell D	4.2	50	
	4740 4000	2,3,4,9,25,35,39,66	Cell A	6.4	65	
	1710-1920		Cell B	6.6	71	
			Cell C	6.8	72	
			Cell D	6.7	71	
		1,23	Cell A	5.6	63	
	1920-2170		Cell B	6.3	68	
			Cell C	6.2	70	
			Cell D	6.4	67	
	2200 2400	30,40	Cell A	5.8	66	
	2300-2400		Cell B	5.6	71	
			Cell C	6.0	73	
			Cell D	5.7	71	
	2406 2600	7 39 41	Cell A	4.9	63	
	2496-2690	7,38,41	Cell B	6.0	66	
			Cell C	5.4	69	
			Cell D	5.8	68	
	3300-4200	22,42,43,48,77,78	Cell A	7.5	51	
	3300-4200	22,42,43,40,77,70	Cell B	7.1	59	
			Cell C	6.4	64	
			Cell D	6.8	60	
	4400-5000	79	Cell A	5.6	51	
	.400 0000		Cell B	6.3	57	
			Cell C	5.8	62	
			Cell D	6.4	57	
	5000-6000	96, 102, 104	Cell A	6.0	53	
	2000-0000	55, 102, 104	Cell B	6.6	59	
			Cell C	6.7	58	
			Cell D	5.4	55	

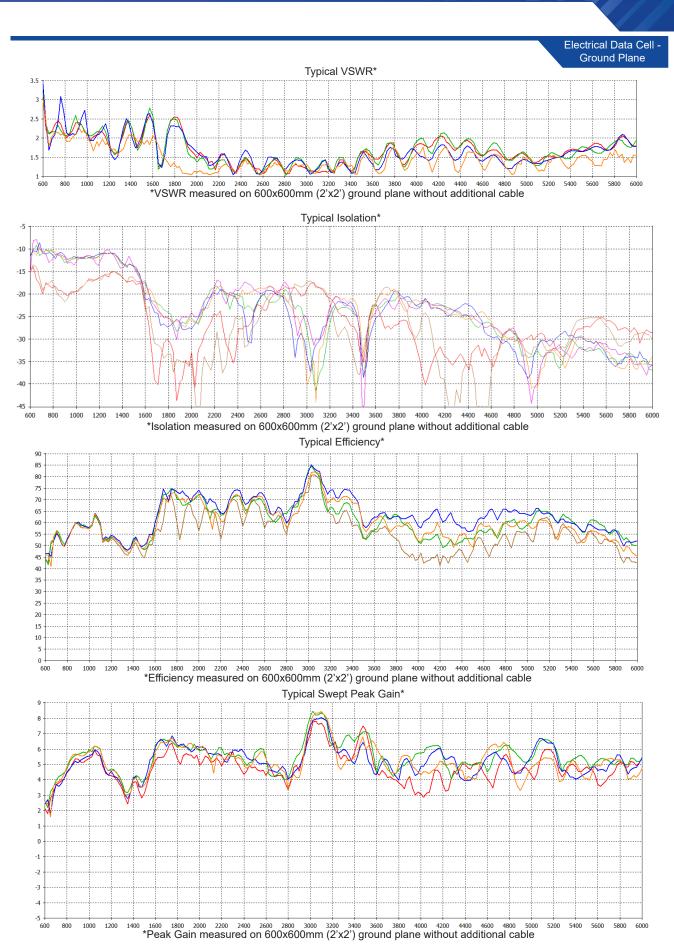


L[X]M[X]M4[X]-6-60[-24-58]

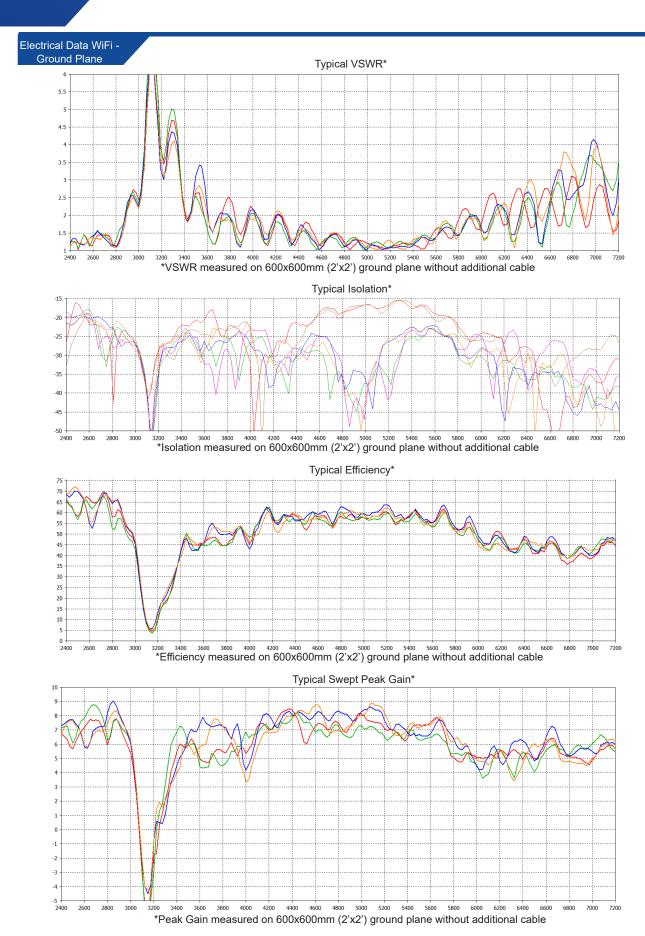
Electrical Data WiFi - Ground Plane

Measurement Conditions	WiFi Antenna	is			
LGMQM4-6-60-24-58 measured on 600x600mm (2'x2') ground plane.	Frequency Range (MHz)	WiFi Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
	2396-2485	2.4GHz	WiFi 1	6.7	62
Land San	2030-2400	2.10112	WiFi 2	7.2	62
			WiFi 3	7.7	69
			WiFi 4	7.7	70
	5150-5250	UNII-1	WiFi 1	7.5	59
			WiFi 2	6.8	59
			WiFi 3	8.4	62
			WiFi 4	8.7	61
	5250-5350	UNII-2A	WiFi 1	7.0	56
7.7.7			WiFi 2	6.8	56
			WiFi 3	7.4	59
			WiFi 4	7.3	58
	5350-5470	UNII-2B	WiFi 1	7.9	59
			WiFi 2	7.0	57
			WiFi 3	7.2	59
	2		WiFi 4	7.5	59
	5470-5725	UNII-2C	WiFi 1	7.9	58
	3470-3723		WiFi 2	6.7	56
			WiFi 3	7.7	59
			WiFi 4	7.9	57
	5725-5850	UNII-3	WiFi 1	6.7	54
	0.20 0000		WiFi 2	6.2	53
			WiFi 3	7.2	55
			WiFi 4	7.4	53
	5850-5925	UNII-4	WiFi 1	5.4	54
	3000-0320	OIVII-4	WiFi 2	5.4	51
			WiFi 3	5.9	55
			WiFi 4	6.3	52
	5925-6425	UNII-5	WiFi 1	5.6	47
	5925-6425	OIVII-5	WiFi 2	5.7	46
			WiFi 3	6.3	47
			WiFi 4	5.8	45
	6425-6525	UNII-6	WiFi 1	5.4	43
	0425-0525	OIVII-0	WiFi 2	5.3	43
			WiFi 3	6.1	44
			WiFi 4	6.0	46
	6525-6875	UNII-7	WiFi 1	6.4	41
	0323-0075	UNII-7	WiFi 2	6.0	43
			WiFi 3	7.3	43
			WiFi 4	6.3	43
	6875 7125	LINII O	WiFi 1	5.8	41
	6875-7125	UNII-8	WiFi 2	6.7	44
			WiFi 3	6.2	43
			WiFi 4	6.1	44

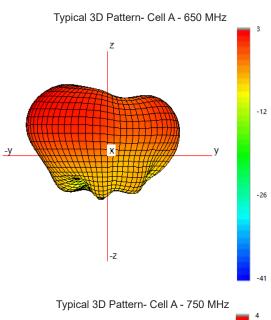
PANORAMA PANTENNAS

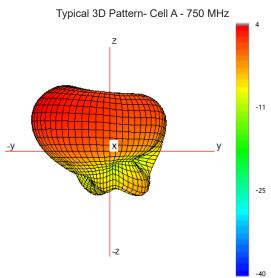


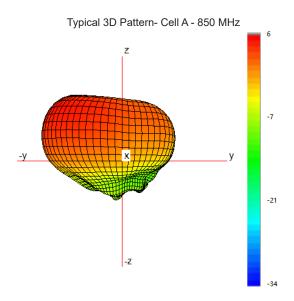
PANORAMA PANTENNAS

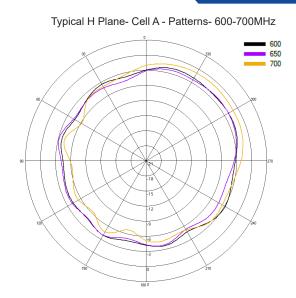


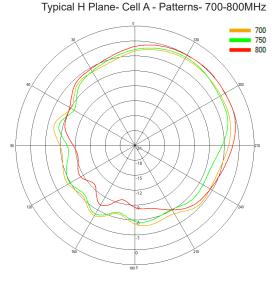
3D Pattern Data on Ground Plane Cell A

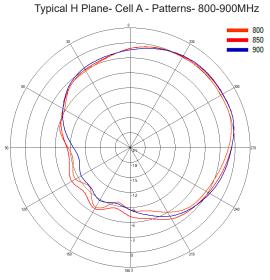








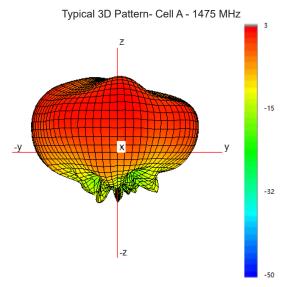


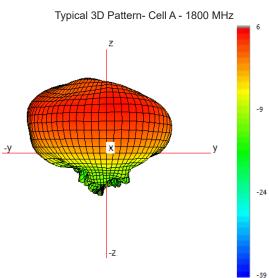


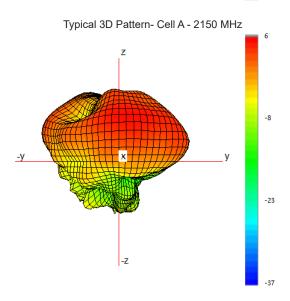
L[X]M[X]M4[X]-6-60[-24-58]

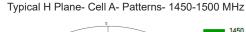


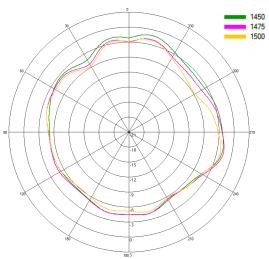
3D Pattern Data on Ground Plane Cell A



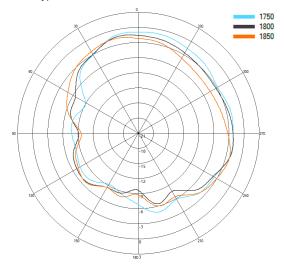




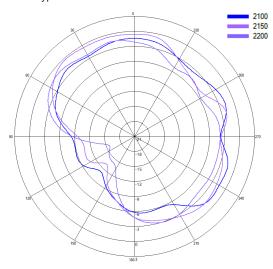




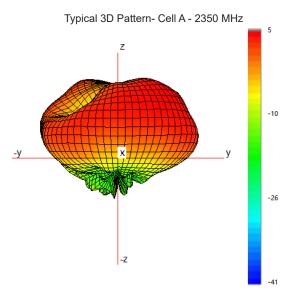
Typical H Plane- Cell A- Patterns- 1750-1850 MHz

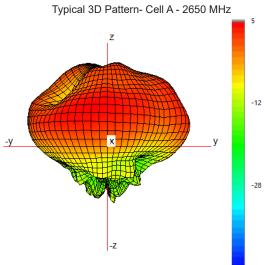


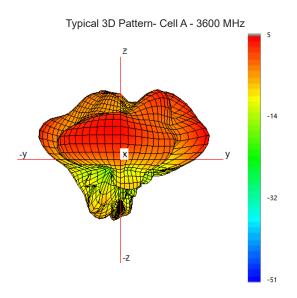
Typical H Plane- Cell A- Patterns- 2100-2200 MHz

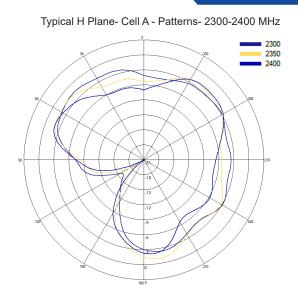


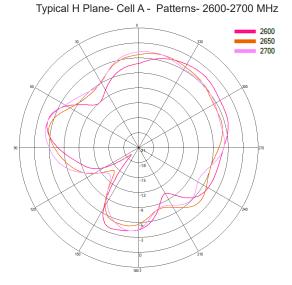
3D Pattern Data on Ground Plane Cell A

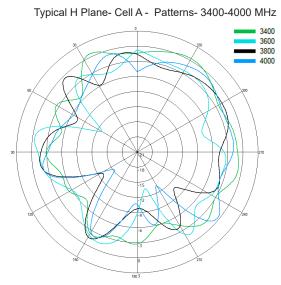






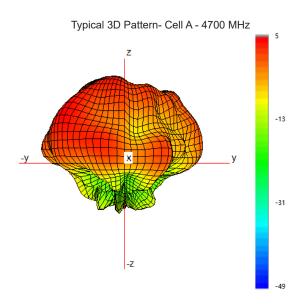


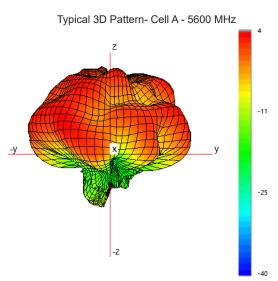


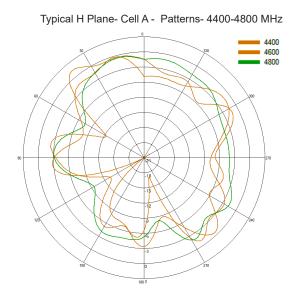


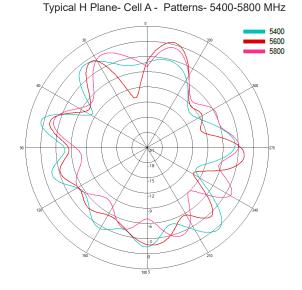
3D Pattern Data on



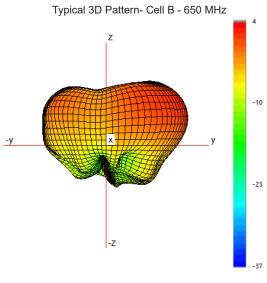


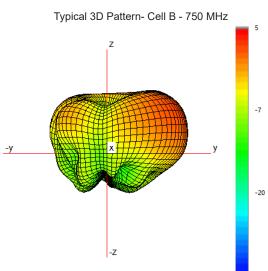


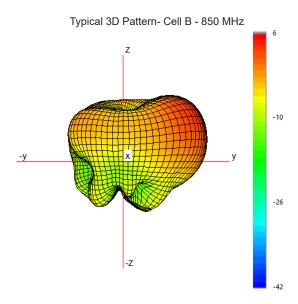




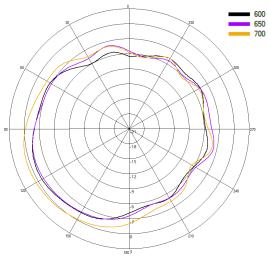
3D Pattern Data on Ground Plane Cell B



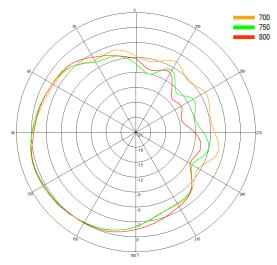




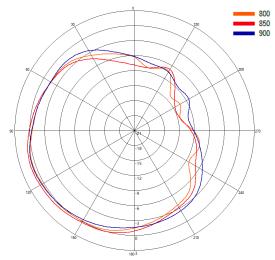
Typical H Plane- Cell B - Patterns- 600-700MHz



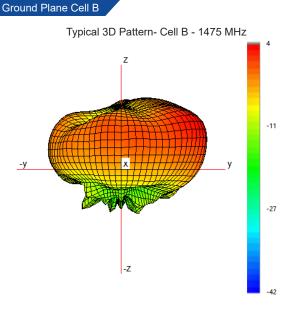
Typical H Plane- Cell B - Patterns- 700-800MHz

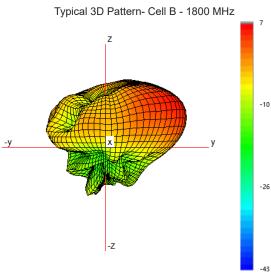


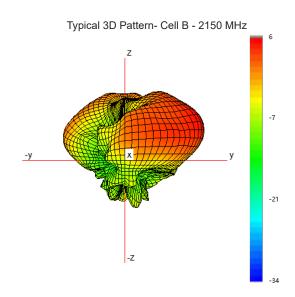
Typical H Plane- Cell B - Patterns- 800-900MHz

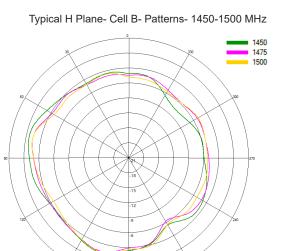


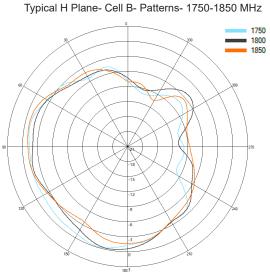
3D Pattern Data on

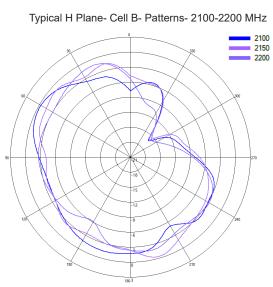




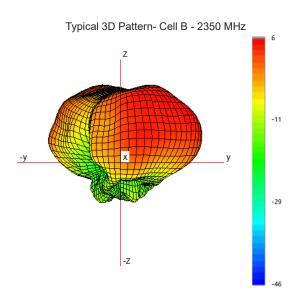


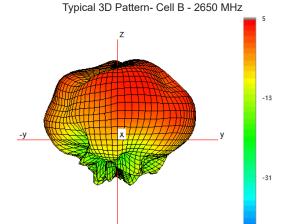


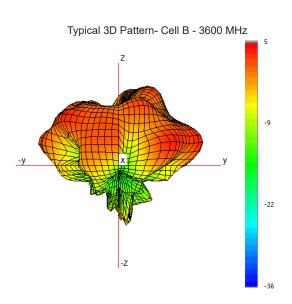


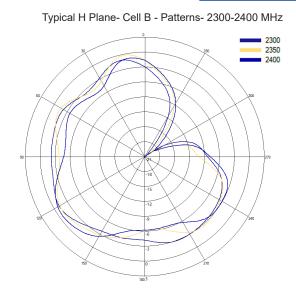


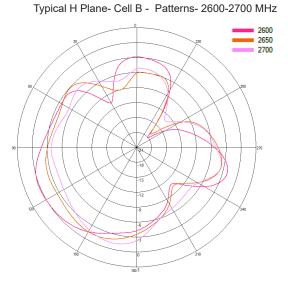
3D Pattern Data on Ground Plane Cell B

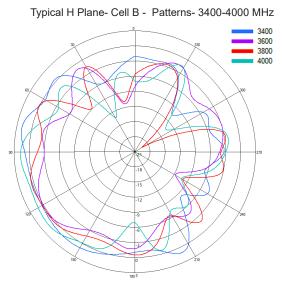








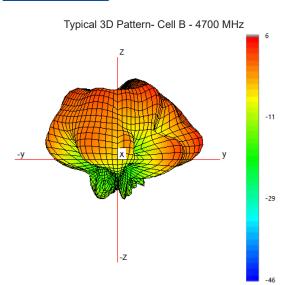


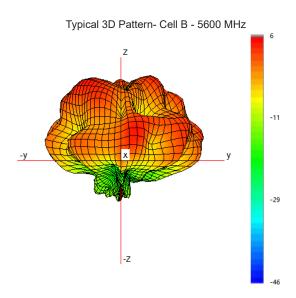




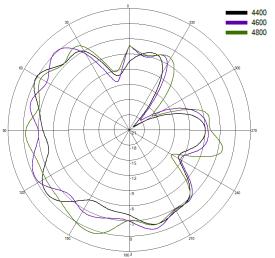
L[X]M[X]M4[X]-6-60[-24-58]

3D Pattern Data on Ground Plane Cell B

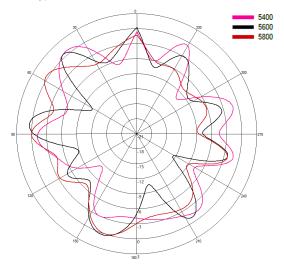




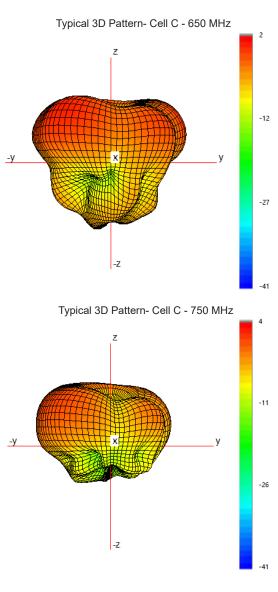
Typical H Plane- Cell B- Patterns- 4400-4800 MHz

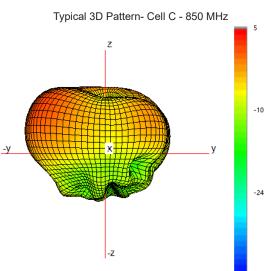


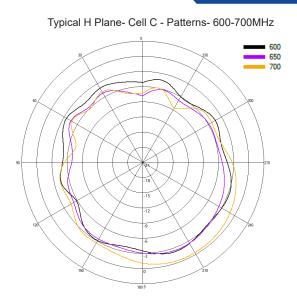
Typical H Plane- Cell B - Patterns- 5400-5800 MHz

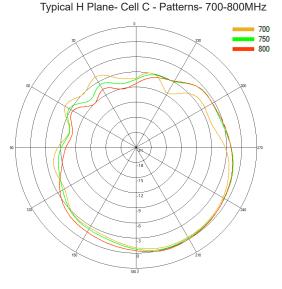


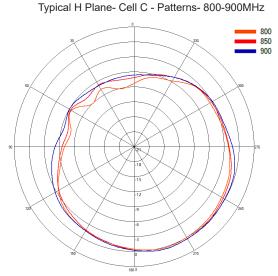
3D Pattern Data on Ground Plane Cell C







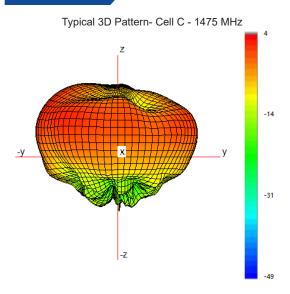


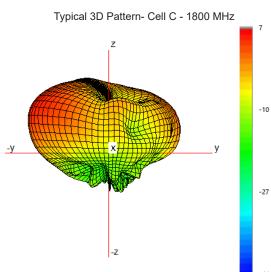


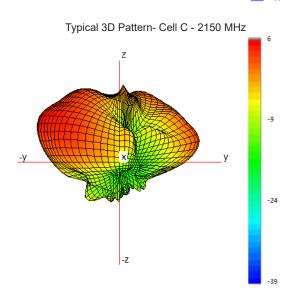
PANORAMA PANTENNAS

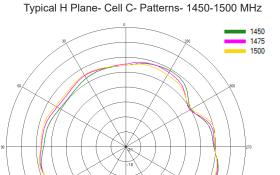
L[X]M[X]M4[X]-6-60[-24-58]

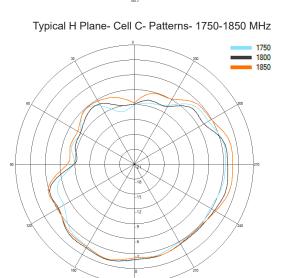
3D Pattern Data on Ground Plane Cell C

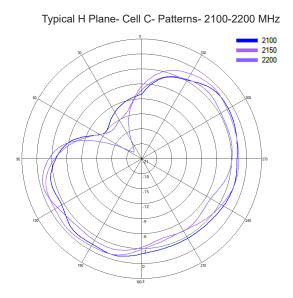






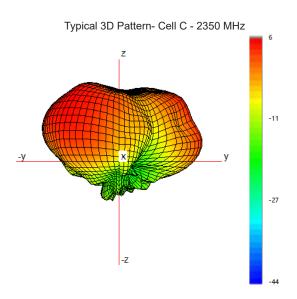


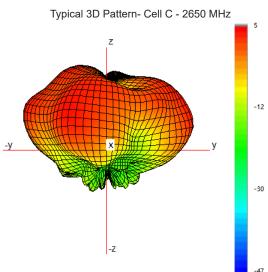


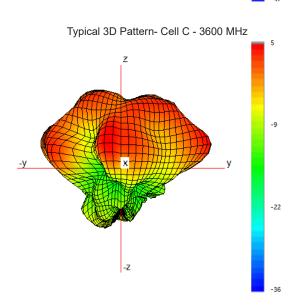


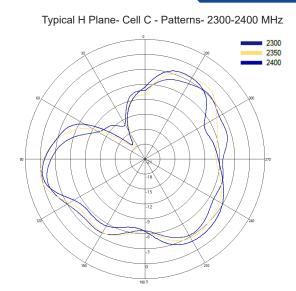
Panorama Antennas Ltd Frogmore, London, SW18 1HF, United Kingdom T: +44 (0)20 8877 4444 | F: +44 (0)20 8877 4477 E: sales@panorama-antennas.com W: www.panorama-antennas.com

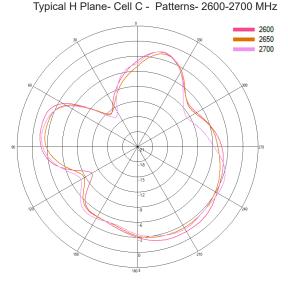
3D Pattern Data on Ground Plane Cell C

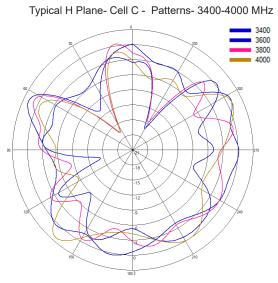










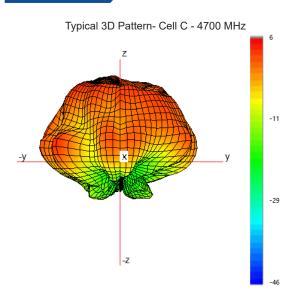


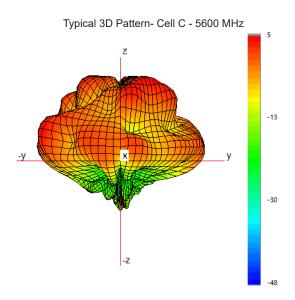
Panorama Antennas Ltd Frogmore, London, SW18 1HF, United Kingdom T: +44 (0)20 8877 4444 | F: +44 (0)20 8877 4477 E: sales@panorama-antennas.com W: www.panorama-antennas.com

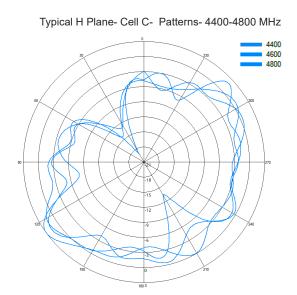


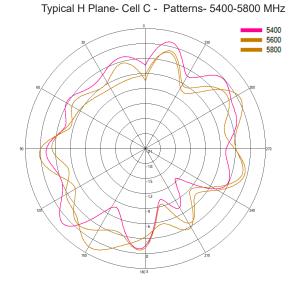
L[X]M[X]M4[X]-6-60[-24-58]

3D Pattern Data on Ground Plane Cell C

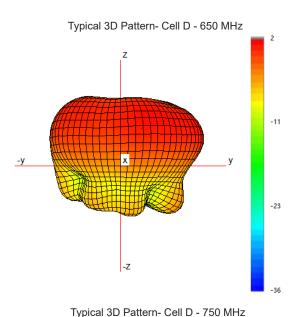


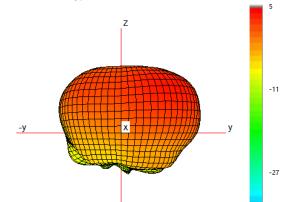




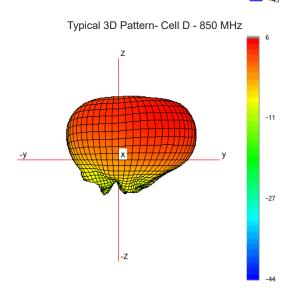


3D Pattern Data on Ground Plane Cell D

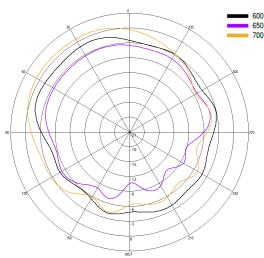




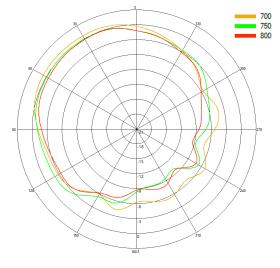
-Z



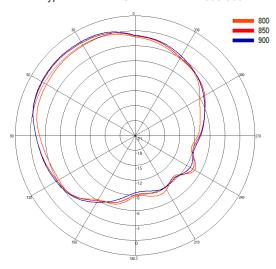
Typical H Plane- Cell D - Patterns- 600-700MHz



Typical H Plane- Cell D - Patterns- 700-800MHz



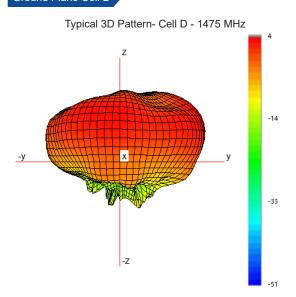
Typical H Plane- Cell D- Patterns- 800-900MHz



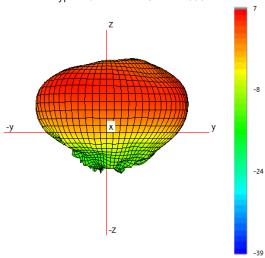
L[X]M[X]M4[X]-6-60[-24-58]



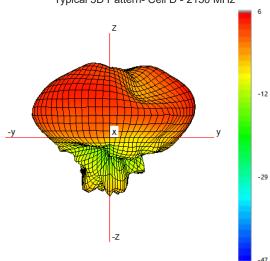
3D Pattern Data on Ground Plane Cell D



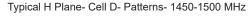
Typical 3D Pattern- Cell D- 1800 MHz

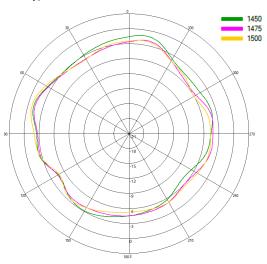


Typical 3D Pattern- Cell D - 2150 MHz

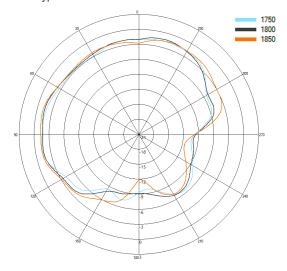


Panorama Antennas Ltd Frogmore, London, SW18 1HF, United Kingdom T: +44 (0)20 8877 4444 | F: +44 (0)20 8877 4477 E: sales@panorama-antennas.com W: www.panorama-antennas.com

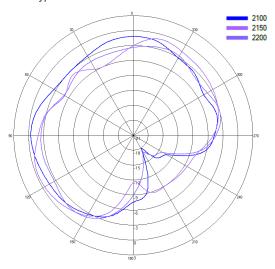




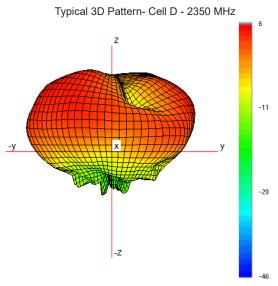
Typical H Plane- Cell D- Patterns- 1750-1850 MHz

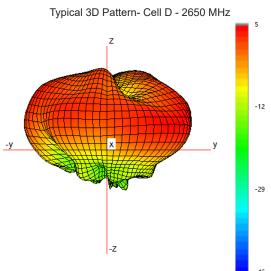


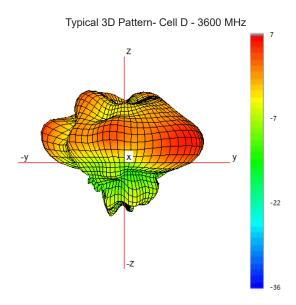
Typical H Plane- Cell D- Patterns- 2100-2200 MHz

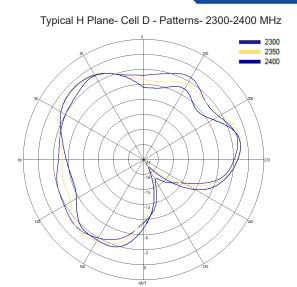


3D Pattern Data on Ground Plane Cell D

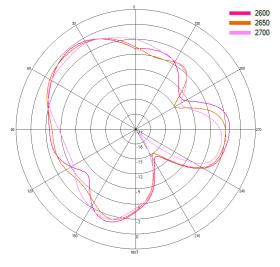




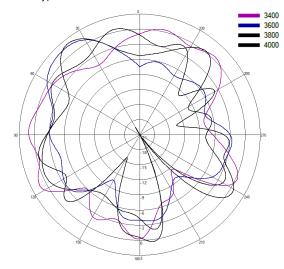




Typical H Plane- Cell D - Patterns- 2600-2700 MHz



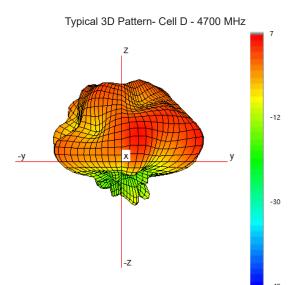
Typical H Plane- Cell D - Patterns- 3400-4000 MHz

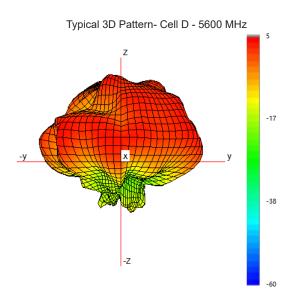


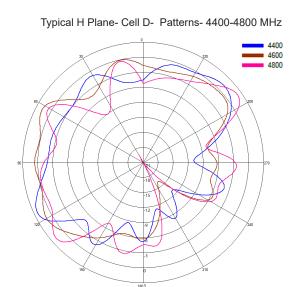
L[X]M[X]M4[X]-6-60[-24-58]

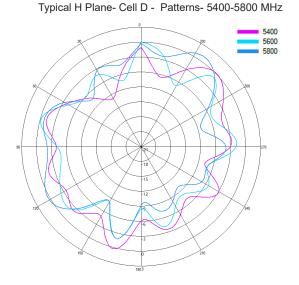


3D Pattern Data on Ground Plane Cell D

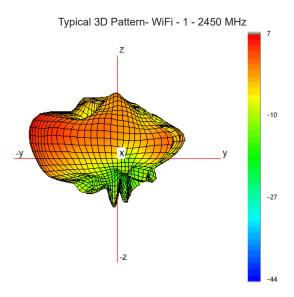


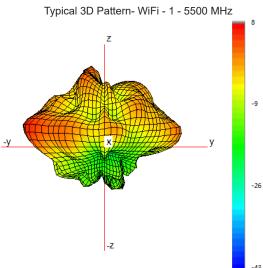


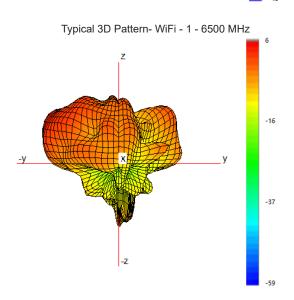


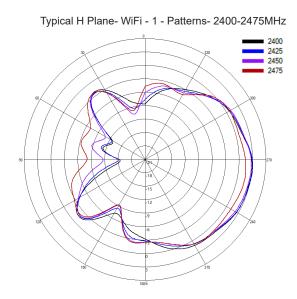


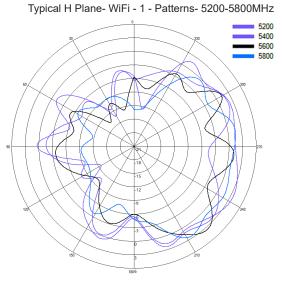
3D Pattern Data on Ground Plane WIFI - 1

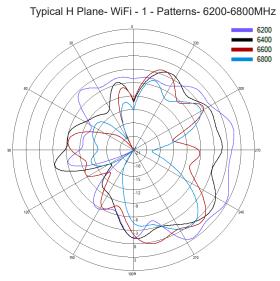




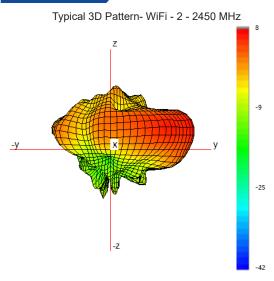


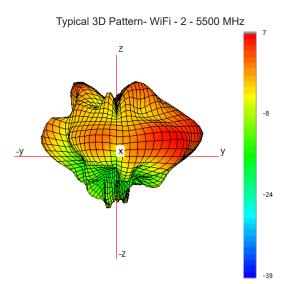


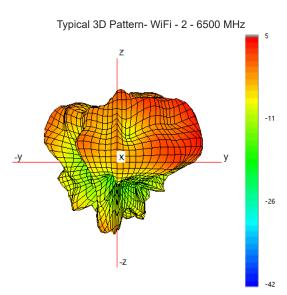


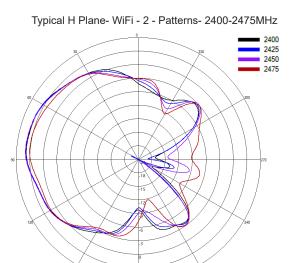


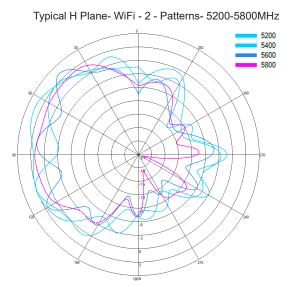
3D Pattern Data on Ground Plane WIFI- 2

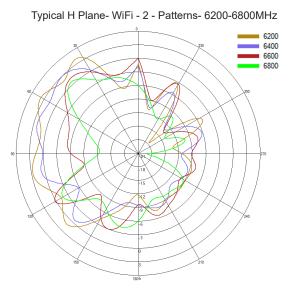




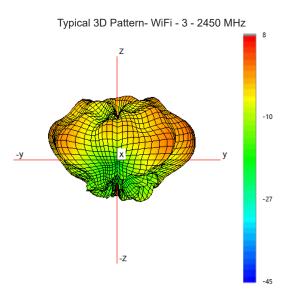


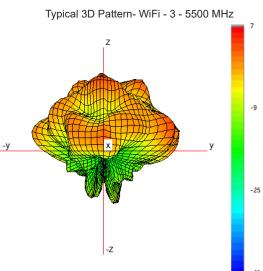


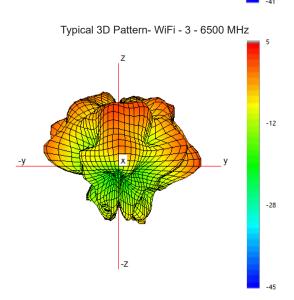


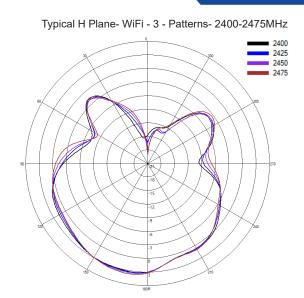


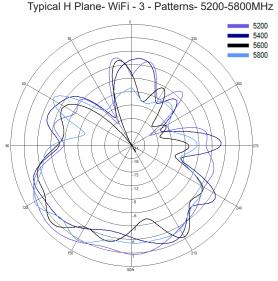
3D Pattern Data on Ground Plane WIFI- 3

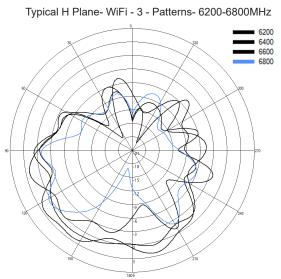






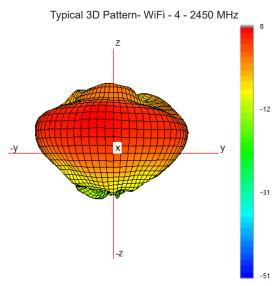


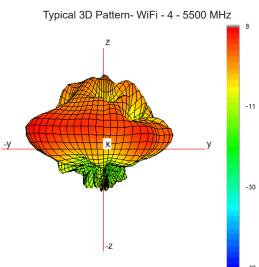


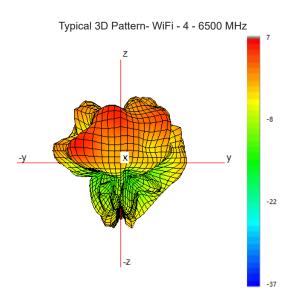


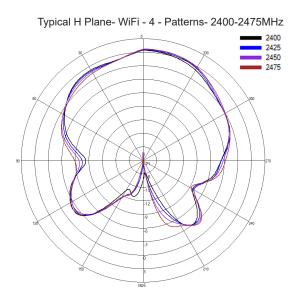
3D Pattern Data on

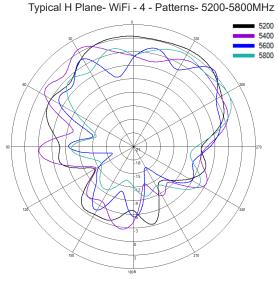
Ground Plane WIFI- 4

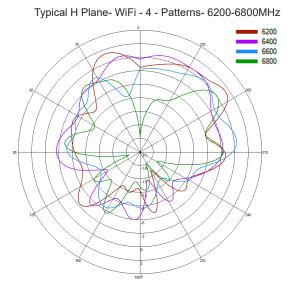














L[X]M[X]M4[X]-6-60[-24-58]

~Page was left intentionally blank~

L[X]M[X]M4[X]-6-60[-24-58]



Electrical Data Cell - Free Space

Measurement Conditions	4G/5G Anten	nas			
LGMQM4-6-60-24-58 measured in free space		LTE / NR Bands	Antenna	Peak Gain (dBi)	Efficiency (%)
LGWQW4-0-00-24-36 Measured III free space	Frequency Range (MHz)	LIE / NR Danus	Element	Feak Gaill (ubi)	Efficiency (70)
		74 405	Cell A	1.5	55
	617-698	71, 105	Cell B	1.7	53
			Cell C	1.3	54
			Cell D	1.5	52
			Cell A	1.8	57
	699-798	12,13, 14 17,28	Cell B	1.7	57
			Cell C	1.6	57
			Cell D	1.8	55
	007 000	5 40 00 00 07	Cell A	3.0	61
	807- 862	5,19,20,26,27	Cell B	3.0	61
			Cell C	3.0	59
			Cell D	3.0	59
	880-960	8	Cell A	3.0	63
	860-960	0	Cell B	3.0	63
			Cell C	2.8	62
			Cell D	3.0	63
	1427-1518	11, 21, 74,75,76	Cell A	1.4	50
	1427-1316		Cell B	1.3	49
			Cell C	1.5	49
			Cell D	1.3	49
	1710-1920	2,3,4,9,25,35,39,66	Cell A	3.8	70
	1710-1920		Cell B	3.4	70
			Cell C	3.7	70
			Cell D	3.8	72
	1920-2170	1,23	Cell A	4.3	72
	1020 2110		Cell B	4.4	72
			Cell C	4.6	72
			Cell D	4.4	73
	2300-2400	30,40	Cell A	4.5	74
	2500-2400		Cell B	4.7	74
			Cell C	5.1	74
			Cell D	4.9	75
	2496-2690	7,38,41	Cell A	4.5	74
	2430-2000	7,00,11	Cell B	4.6	73
			Cell C	5.0	72
			Cell D	4.3	73
	3300-4200	22,42,43,48,77,78	Cell A	4.7	62
			Cell B	4.7	63
			Cell C	4.6	65
			Cell D	4.7	66
	4400-5000	79	Cell A	6.0	54
			Cell B	5.1	57
			Cell C	4.6	64
			Cell D	4.7	64
	5000-6000	96, 102, 104	Cell A	5.3	57
			Cell B	5.7	60
			Cell C	5.2	59
			Cell D	5.0	57

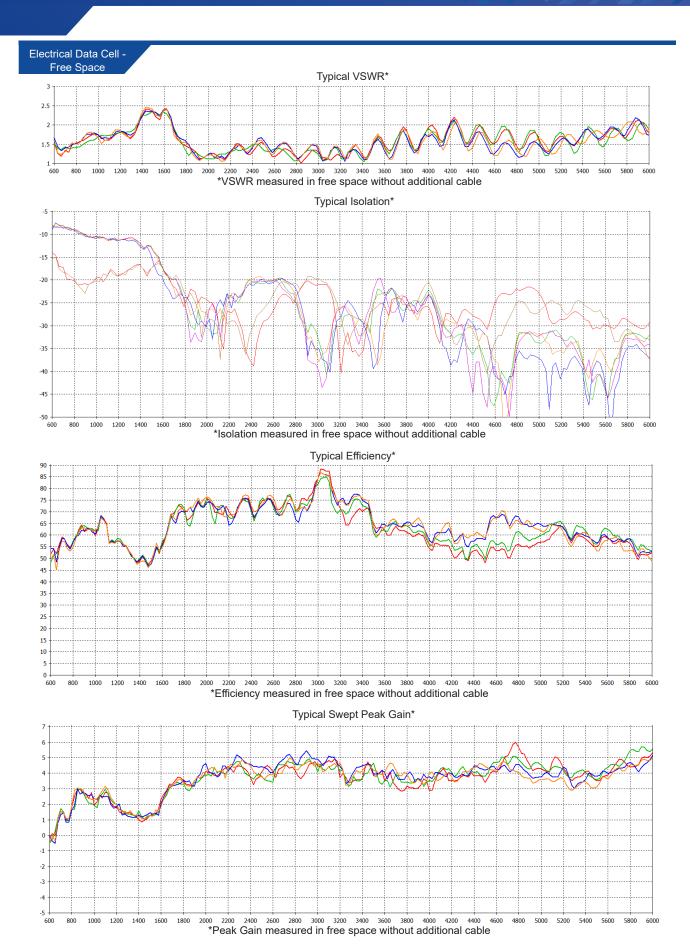
L[X]M[X]M4[X]-6-60[-24-58]



Electrical Data WiFi - Free Space

Measurement Conditions	WiFi Antennas				
LGMQM4-6-60-24-58 measured in free space		WiFi Bands	Antenna	Peak Gain (dBi)	Efficiency (%)
	Frequency Range (MHz)		Element		, ,
	2396-2485	2.4GHz	WiFi 1	WiFi 1 4.1 74	
			WiFi 2	3.8	73
			WiFi 3	3.7	71
			WiFi 4	5.1	72
	5150-5250	UNII-1	WiFi 1	5.6	61
			WiFi 2	5.0	61
			WiFi 3	5.8	64
	5250-5350		WiFi 4	6.1	60
		UNII-2A	WiFi 1	5.3	58
			WiFi 2	4.3	56
			WiFi 3	5.1	58
			WiFi 4 WiFi 1	6.1 6.8	56 60
	5350-5470	UNII-2B	WiFi 2	5.4	56
			WiFi 3	5.9	57
			WiFi 4	5.6	57
	5470-5725	UNII-2C	WiFi 1	6.8	60
			WiFi 2	6.9	56
			WiFi 3	7.3	56
			WiFi 4	6.2	56
	5725-5850	UNII-3	WiFi 1	6.6	56
			WiFi 2	6.9	52
			WiFi 3	6.6	51
			WiFi 4	5.9	51
		UNII-4	WiFi 1	5.9	55
	5850-5925		WiFi 2	5.0	51
			WiFi 3	5.5	51
			WiFi 4	5.2	52
	5925-6425	UNII-5	WiFi 1	5.4	46
			WiFi 2	4.7	47
			WiFi 3	5.5	46
			WiFi 4	5.1	46
	6425-6525	UNII-6	WiFi 1	3.5	43
	0.120.0020	Ortin o	WiFi 2	3.8	47
			WiFi 3	4.3	44
			WiFi 4	3.6	49
	6525-6875	UNII-7	WiFi 1	4.8	42
			WiFi 2	5.7	45
			WiFi 3	5.2	44
			WiFi 4	5.4	44
	6875-7125	UNII-8	WiFi 1	4.9	43
			WiFi 2	5.8	45
			WiFi 3	5.4	43
			WiFi 4	4.6	41

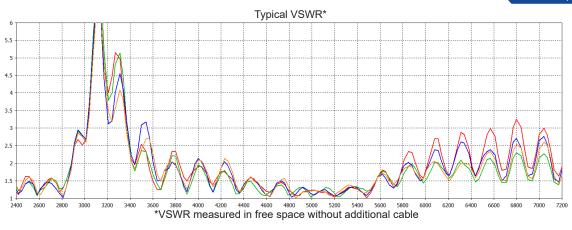
PANORAMA PANTENNAS

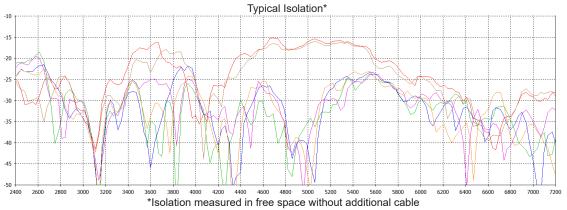


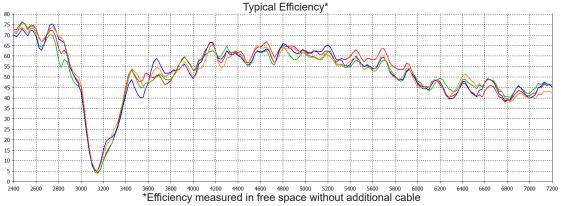
L[X]M[X]M4[X]-6-60[-24-58]

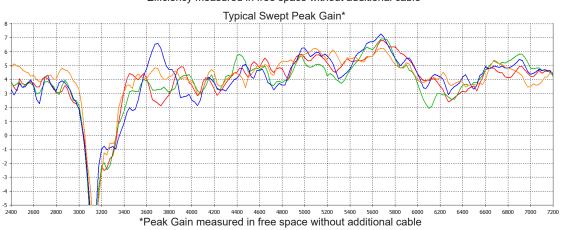


Electrical Data WiFi - Free Space





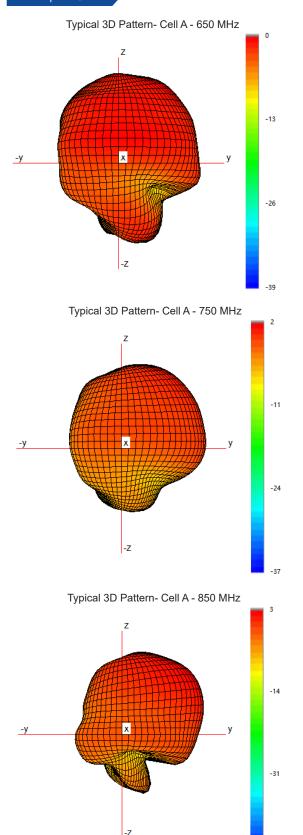


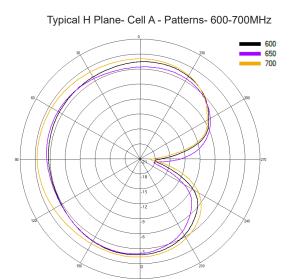


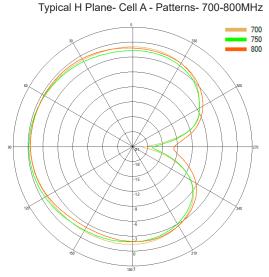
L[X]M[X]M4[X]-6-60[-24-58]

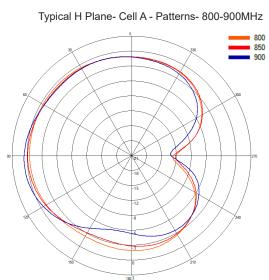


3D Pattern Data in Free Space Cell A



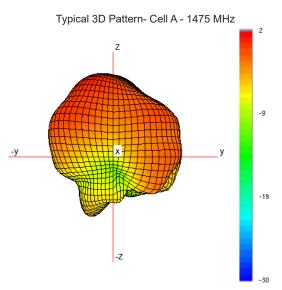


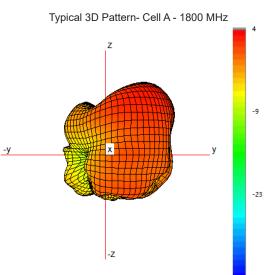


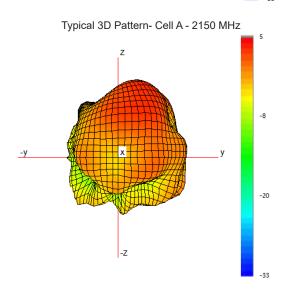


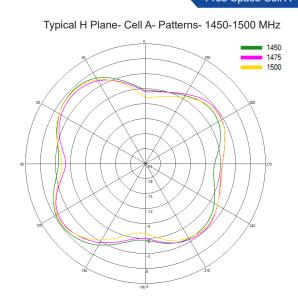
Panorama Antennas Ltd Frogmore, London, SW18 1HF, United Kingdom T: +44 (0)20 8877 4444 | F: +44 (0)20 8877 4477 E: sales@panorama-antennas.com W: www.panorama-antennas.com

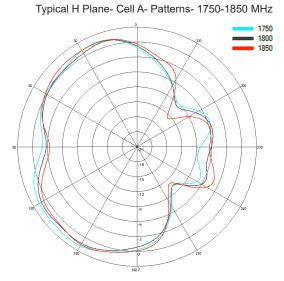
3D Pattern Data in Free Space Cell A

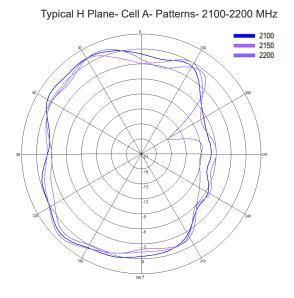






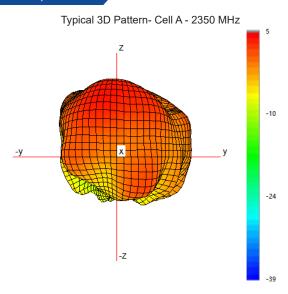




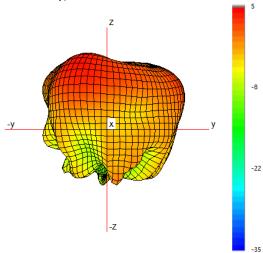


PANORAMA (PANTENNAS

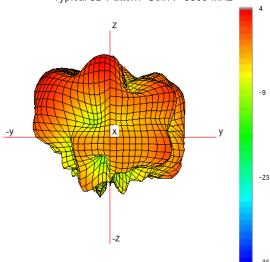
L[X]M[X]M4[X]-6-60[-24-58]



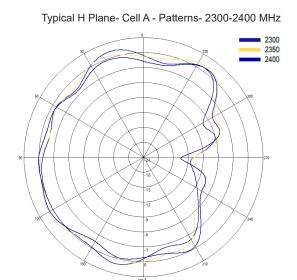
Typical 3D Pattern- Cell A - 2650 MHz



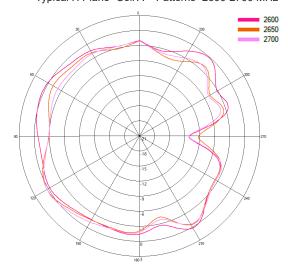
Typical 3D Pattern- Cell A - 3600 MHz



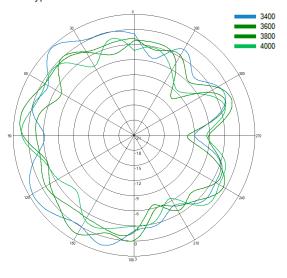
Panorama Antennas Ltd Frogmore, London, SW18 1HF, United Kingdom T: +44 (0)20 8877 4444 | F: +44 (0)20 8877 4477 E: sales@panorama-antennas.com W: www.panorama-antennas.com

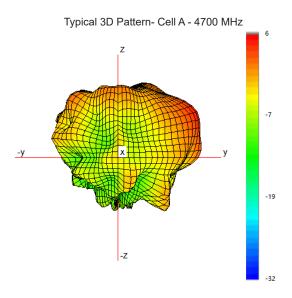


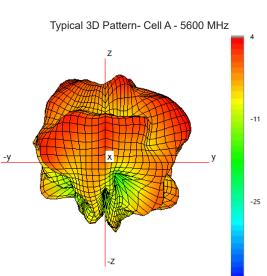
Typical H Plane- Cell A - Patterns- 2600-2700 MHz

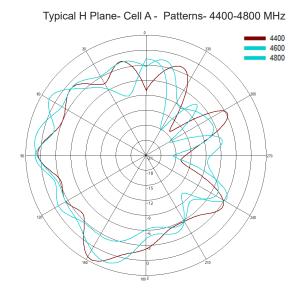


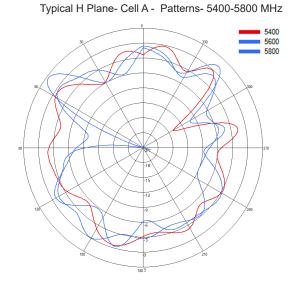
Typical H Plane- Cell A - Patterns- 3400-4000 MHz





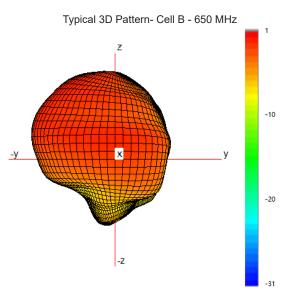


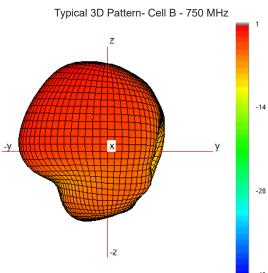


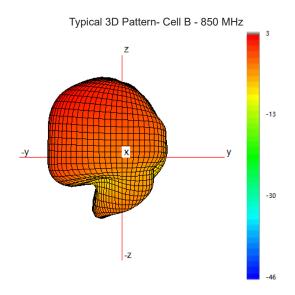


3D Pattern Data in

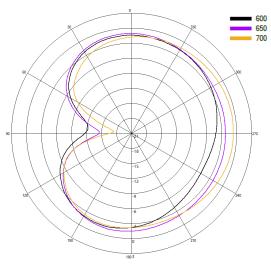
Free Space Cell B



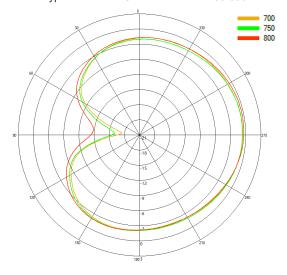




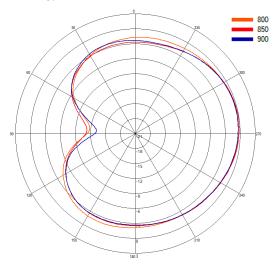
Typical H Plane- Cell B - Patterns- 600-700MHz

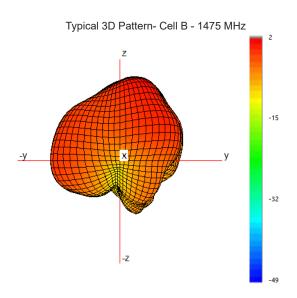


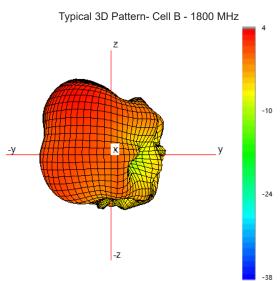
Typical H Plane- Cell B - Patterns- 700-800MHz

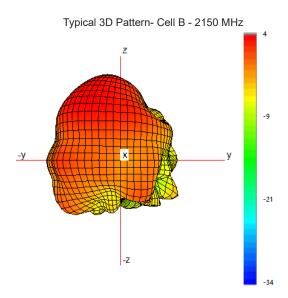


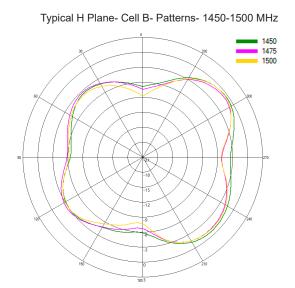
Typical H Plane- Cell B - Patterns- 800-900MHz

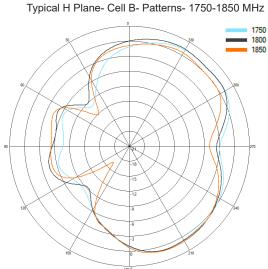


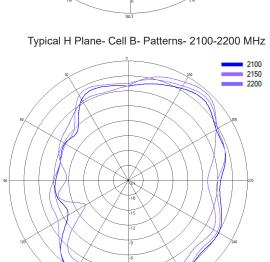






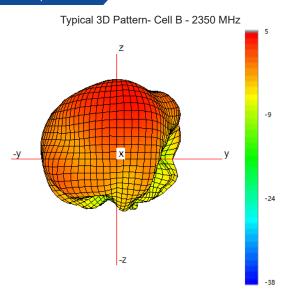


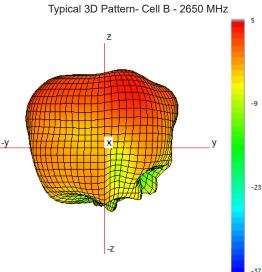


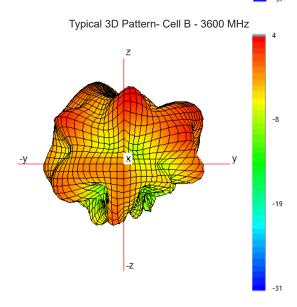


L[X]M[X]M4[X]-6-60[-24-58]

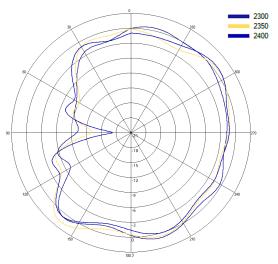




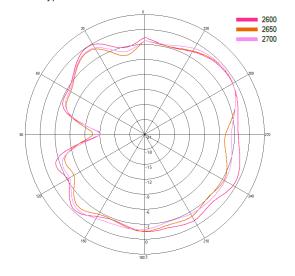




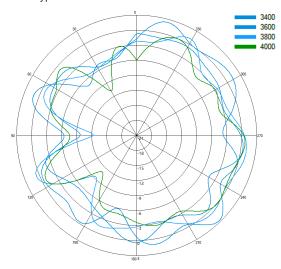
Typical H Plane- Cell B - Patterns- 2300-2400 MHz

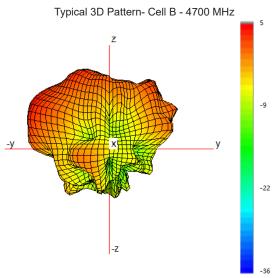


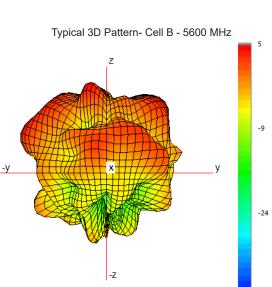
Typical H Plane- Cell B - Patterns- 2600-2700 MHz

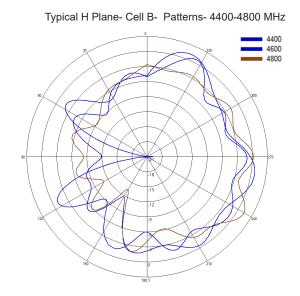


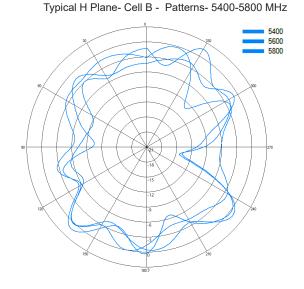
Typical H Plane- Cell B - Patterns- 3400-4000 MHz





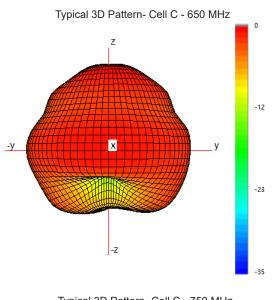


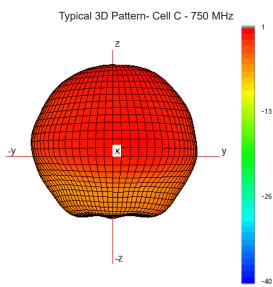


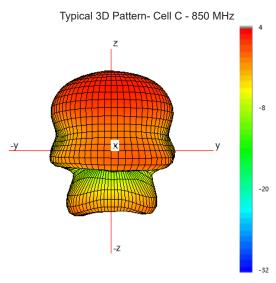


L[X]M[X]M4[X]-6-60[-24-58]

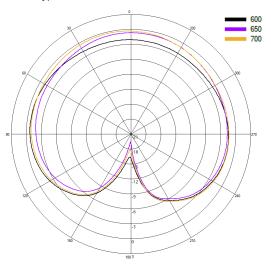




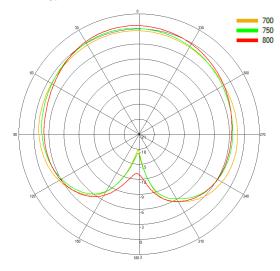




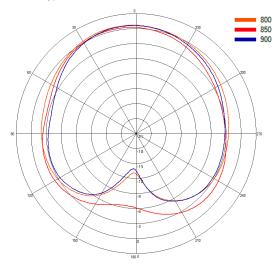
Typical H Plane- Cell C - Patterns- 600-700MHz

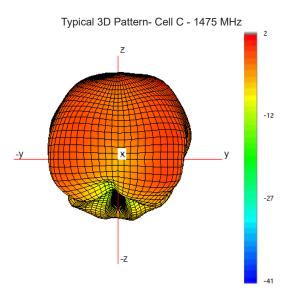


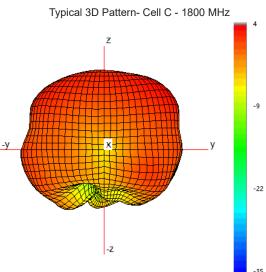
Typical H Plane- Cell C - Patterns- 700-800MHz

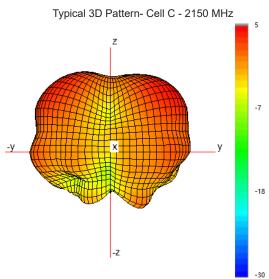


Typical H Plane- Cell C - Patterns- 800-900MHz

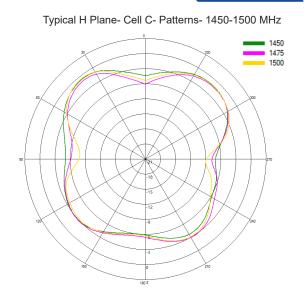


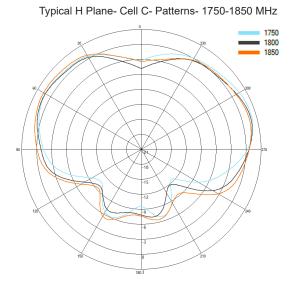


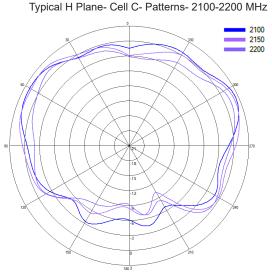






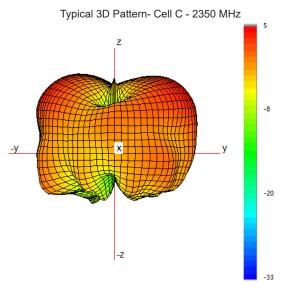


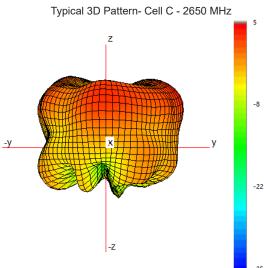


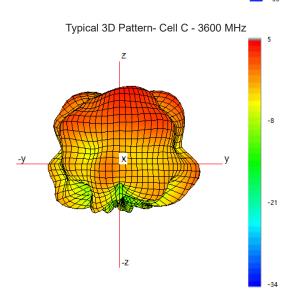


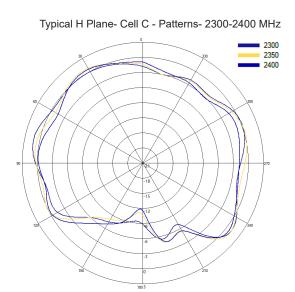
L[X]M[X]M4[X]-6-60[-24-58]

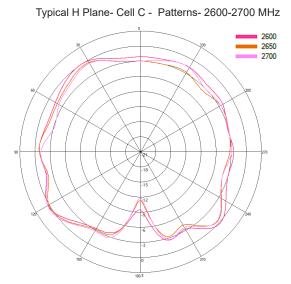


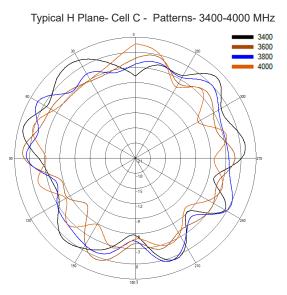


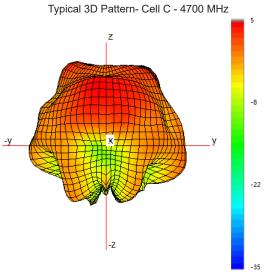


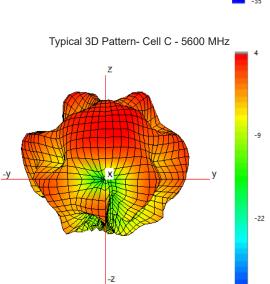


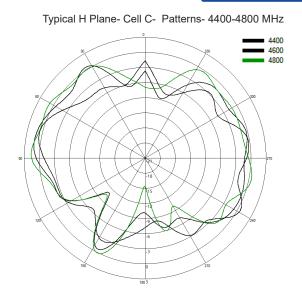


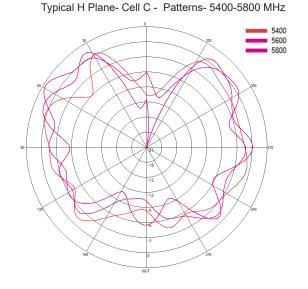






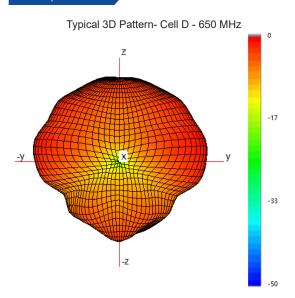


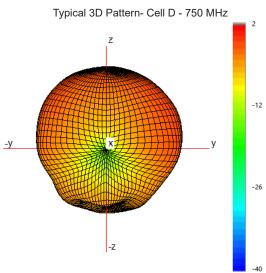


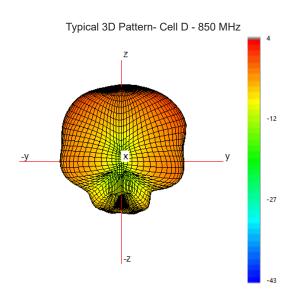


L[X]M[X]M4[X]-6-60[-24-58]

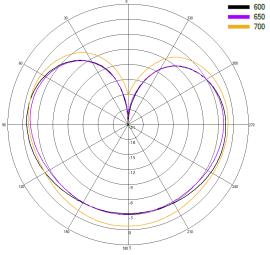




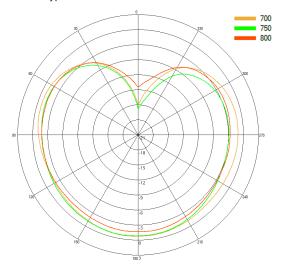




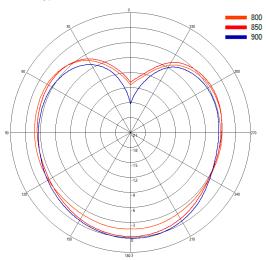
Typical H Plane- Cell D - Patterns- 600-700MHz

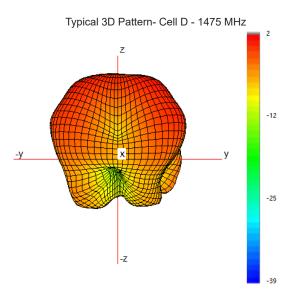


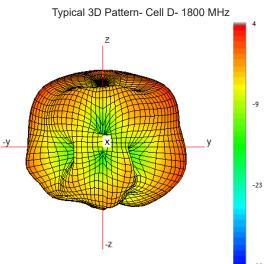
Typical H Plane- Cell D - Patterns- 700-800MHz

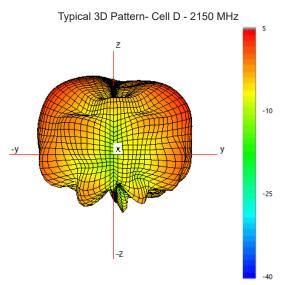


Typical H Plane- Cell D- Patterns- 800-900MHz

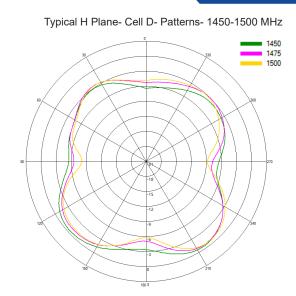


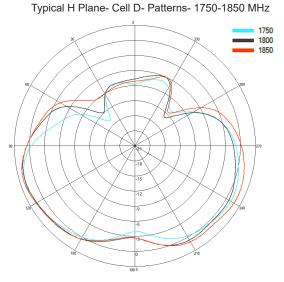


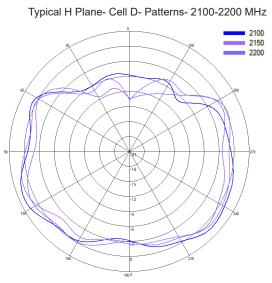






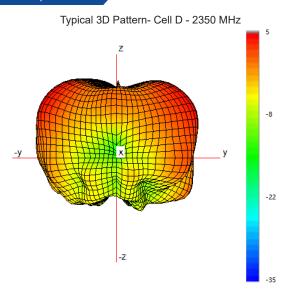




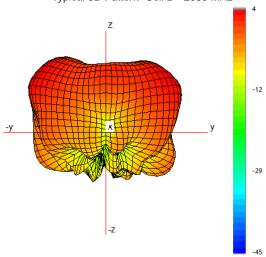


L[X]M[X]M4[X]-6-60[-24-58]

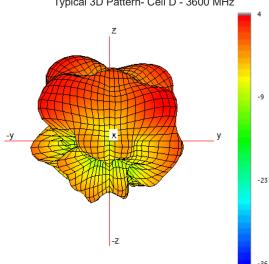




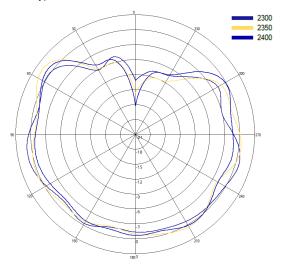
Typical 3D Pattern- Cell D - 2650 MHz



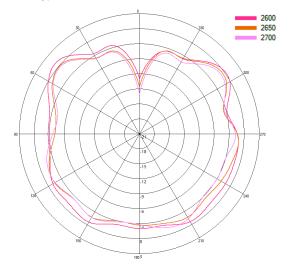
Typical 3D Pattern- Cell D - 3600 MHz



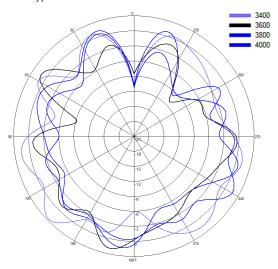
Typical H Plane- Cell D - Patterns- 2300-2400 MHz

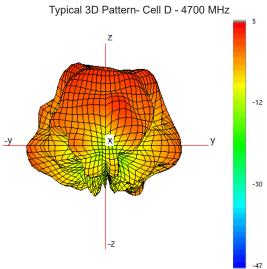


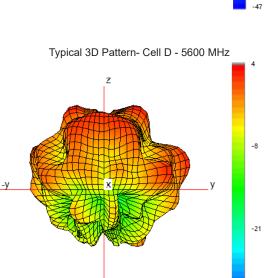
Typical H Plane- Cell D - Patterns- 2600-2700 MHz

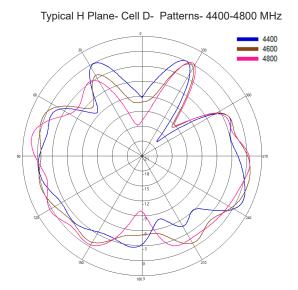


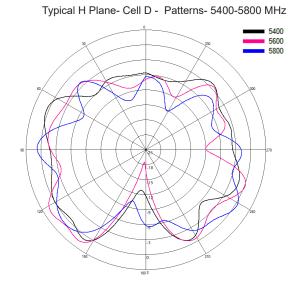
Typical H Plane- Cell D - Patterns- 3400-4000 MHz







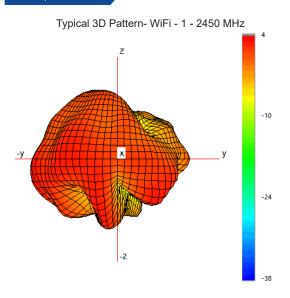


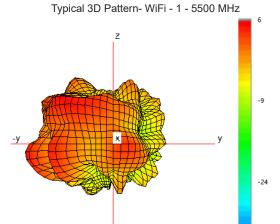


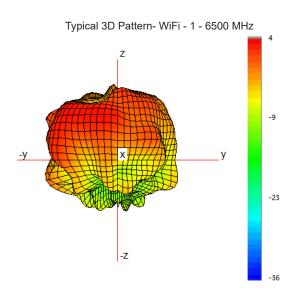
L[X]M[X]M4[X]-6-60[-24-58]

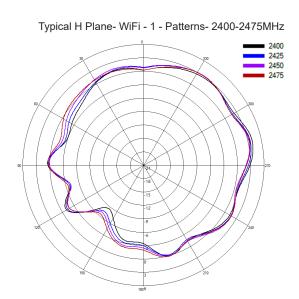


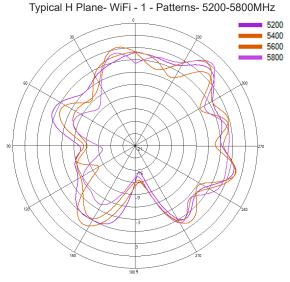
3D Pattern Data in Free Space WIFI - 1

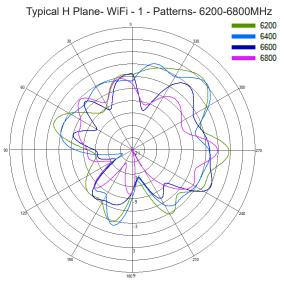




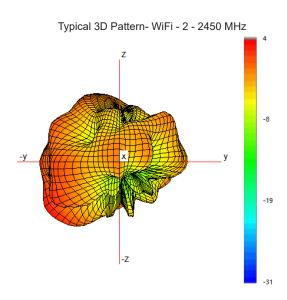


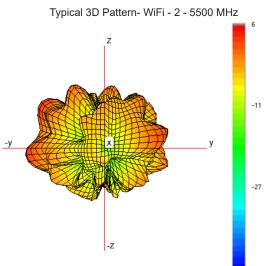


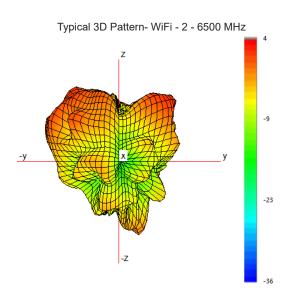


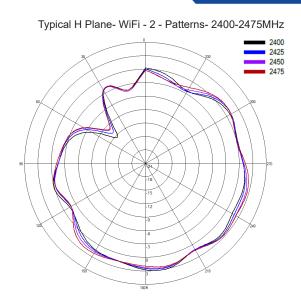


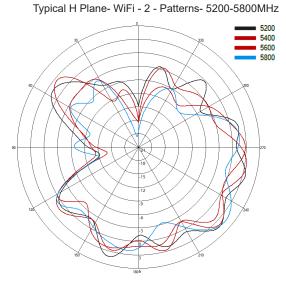
3D Pattern Data in Free Space WIFI - 2

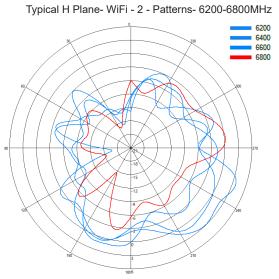




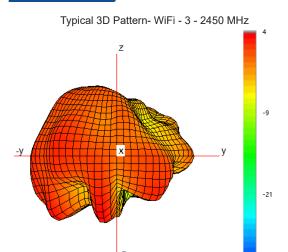




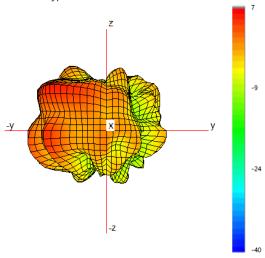




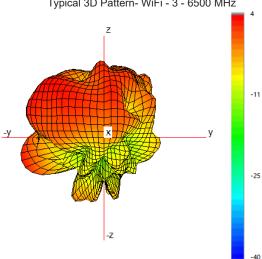
3D Pattern Data in Free Space WIFI - 3



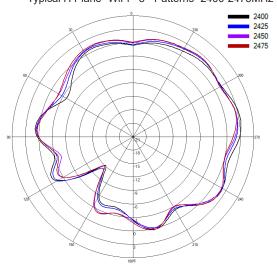
Typical 3D Pattern-WiFi - 3 - 5500 MHz



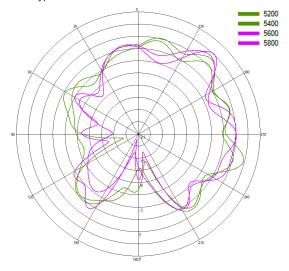
Typical 3D Pattern-WiFi - 3 - 6500 MHz



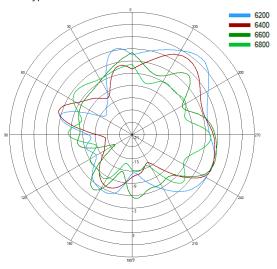
Typical H Plane- WiFi - 3 - Patterns- 2400-2475MHz



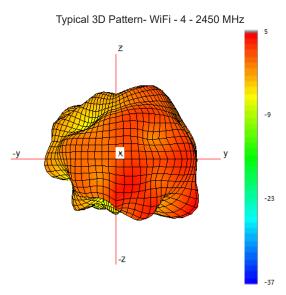
Typical H Plane- WiFi - 3 - Patterns- 5200-5800MHz

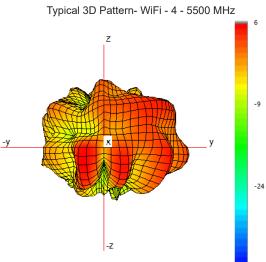


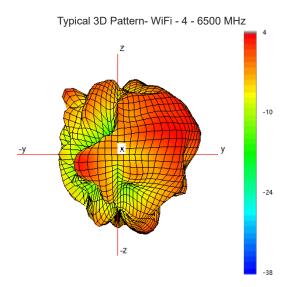
Typical H Plane- WiFi - 3 - Patterns- 6200-6800MHz

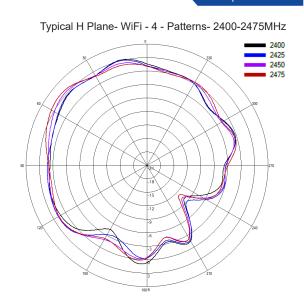


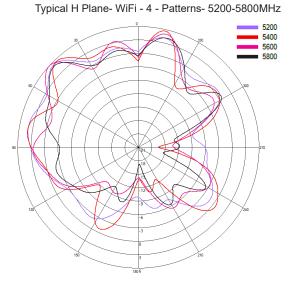
3D Pattern Data in Free Space WIFI - 4

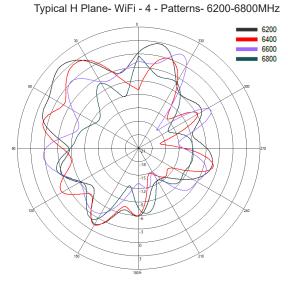








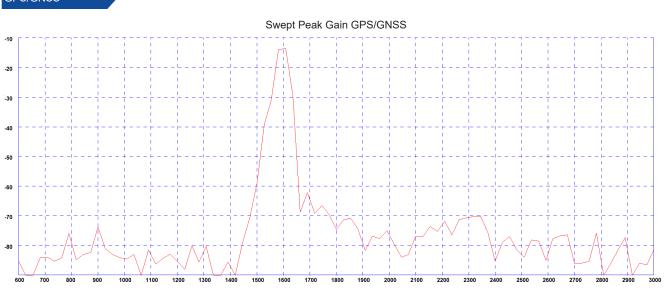




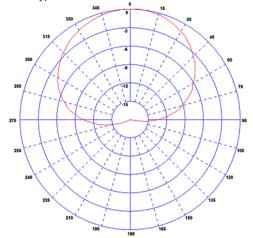
PANORAMA P ANTENNAS

L[X]M[X]M4[X]-6-60[-24-58]

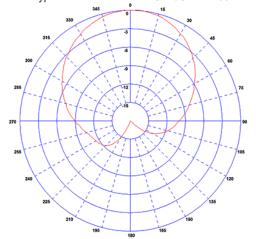




Typical E Plane Pattern - GPS/GNSS 1575 MHz



Typical E Plane Pattern - GPS/GNSS 1602 MHz



GPS/GNSS Measurements taken on 190x190mm (7.4" x 7.4") ground plane excluding cable loss