



Satellite IoT D2D Ready

TN & NTN Dual-Mode Antenna - Satellite IoT Direct to Device Ready

5-Port Vehicular & IOT MIMO Antenna Covering 4G/5G/Satellite Band 25, Wi-Fi and GNSS

The L001258-01 direct to device (D2D) ready multiport/multiband antenna provides an excellent solution for IoT gateway device pairing.

Configured for 2-port MIMO operation over the 3G/4G/5G/ISM/CBRS bands and 2-port MIMO operation over the low/high frequency Wi-Fi bands. An additional 5th port provides an active antenna for enabling GNSS global navigation services. With multiple connector and cable length options available this antenna series offers versatility for the installer.

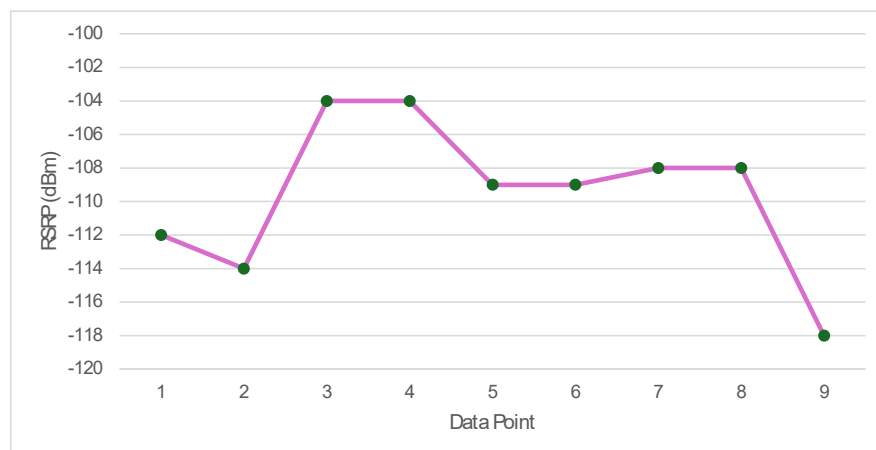
SATELLITE IOT D2D COMMUNICATIONS

Low Earth Orbit (LEO) satellites, positioned a few hundred km's above Earth, orbit rapidly and are ideal for IoT networks. A LEO satellite constellation can now support low data rate communications through specific LTE frequencies.

- Dual-mode capable - Supporting Terrestrial Networks (TN) and Non-Terrestrial Networks (NTN) from a single antenna
 - 698-3800 MHz terrestrial cellular coverage
 - Band 25 (1900 MHz) cellular satellite coverage
 - Testing available for other/future cellular satellite D2D frequency bands used by various network providers
- Enabling dual-mode communications via IoT devices
 - Prioritizing terrestrial networks but capable of automatically switching to satellite when the signal is weak or unavailable

REFERENCE SIGNAL RECEIVED POWER (RSRP) VALUES

The L001258-01 antenna was live-tested for receive signal strength. Data encompasses multiple satellite pass-overs, showing signal strength variation; exceeding the -120 dBm minimum for IoT devices.



An RSRP value of -120 dBm is generally the recognized minimum requirement suitable for the data rates of SMS, CAT-1, CAT-1 Bis connectivity.

RSRP can be susceptible to fluctuations for a variety of reasons. These can include: satellite elevation angle; antenna radiation patterns; solar flares; atmospheric conditions, and more.

FEATURES & BENEFITS

- Validated for use on satcom D2D networks
- Dual-Mode TN and NTN capable
- One single-hole mount/fixing reduces vehicle damage and the cost of installation
- Attractive IP67 low profile aerodynamic housing
- Multi-band/MIMO operation
- Operates well on a ground plane and without a ground plane.

APPLICATIONS

- Non-Terrestrial and Terrestrial Networks
- Satellite IoT D2D (Direct to Device) applications
- FirstNet/Public Safety
- Transportation
- Rugged LTE Gateways
- Remote monitoring
- Remote device control

CONFIGURATION

PART NUMBER	CABLE LENGTH		CONNECTORS			COLOR
	PIGTAIL	JUMPER	LTE/CELL	WIFI	GNSS	
L001258-01	0.3 m (1 ft)	4.9 m (16 ft)	2 x SMA-male	2 x SMA-male	1 x SMA-male	Black

ELECTRICAL SPECIFICATIONS						
Number of Ports	5					
Port Configuration	2x- 3G/4G/5G/ISM/CBRS (LTE/CELL)				2x- Wi-Fi (WI-FI)	
Operating Frequency (MHz)	698-806	824-894	880-960	1690-3800	2400-2500	4900-6000
Avg. Peak Gain* (dBi) – Gnd. Plane [No Gnd. Plane]	0.4 [1.5]	0.8 [2.1]	1.2 [1.7]	4.0 [1.8]	2.6 [0.4]	6.6 [3.8]
Max Peak Gain* (dBi) – Gnd. Plane [No Gnd. Plane]	1.6 [2.5]	1.4 [2.8]	1.5 [2.0]	7.2 [4.8]	3.1 [1.7]	7.5 [4.9]
VSWR** – Avg, Gnd. Plane [No Gnd. Plane]	1.7 [1.8]	1.8 [1.8]	1.9 [1.8]	1.5 [1.5]	1.5 [1.5]	1.2 [1.2]
VSWR** – Max, Gnd. Plane [No Gnd. Plane]	2.5 [2.5]	2.1 [2.5]	2.2 [2.5]	2.1 [2.1]	2.0 [2.0]	

ELECTRICAL SPECIFICATIONS

Isolation (dB)– Gnd. Plane [No Gnd. Plane]						
LTE1 to LTE2	-11 [-11]	-13 [-13]	-14 [-14]	-18 [-18]	-24 [-24]	-33 [-33]
LTE1 to WIFI	-36 [-30]	-37 [-31]	-39 [-32]	-14 [-14]	-14 [-14]	-32 [-32]
LTE1 to WIFI 2	-39 [-40]	-38 [-40]	-38 [-40]	-14 [-25]	-14 [-25]	-35 [-35]
LTE2 to WIFI 1	-39 [-40]	-42 [-42]	-40 [-42]	-14 [-25]	-14 [-25]	-32 [-35]
LTE2 to WIFI 2	-34 [-32]	-36 [-32]	-38 [-32]	-14 [-14]	-14 [-14]	-33 [-31]
WIFI 1 to WIFI 2	-74 [-70]	-75 [-75]	-71 [-71]	-30 [-28]	-30 [-28]	-38 [-40]
GNSS to LTE 1	-68 [-68]	-69 [-69]	-71 [-71]	-52 [-52]	-55 [-55]	-52 [-52]
GNSS to LTE 2	-43 [-43]	-41 [-41]	-41 [-41]	-46 [-46]	-51 [-51]	-54 [-54]
GNSS to WIFI 1	-65 [-62]	-68 [-66]	-71 [-69]	-47 [-45]	-47 [-45]	-52 [-49]
GNSS to WIFI 2	-68 [-66]	-69 [-66]	-71 [-69]	-52 [-50]	-55 [-50]	-52 [-50]
Azimuth Plane 3 dB Beamwidth	360°, Omnidirectional					
Nominal Impedance (Ohms)	50					
Polarization	Linear Vertical					
Max Power - Ambient 25°C (W)	30 (LTE/CELL) /10 (Wi-Fi)					

GNSS ANTENNA SPECIFICATIONS

Frequency of Operation (MHz)	1559 - 1606		
Band	BEIDOU	GPS	G1
Frequency Band (MHz)	1559.052 - 1563.144	1574.42 - 1576.42	1598.0625 - 1605.89
Absolute Gain (dBi) – Gnd. Plane [No Gnd. Plane]	2 [3.2]	2 [5.0]	2 [5.3]
LNA Gain, Typ. @ room temp. (dBi)	28 ± 3		
Noise Figure @ room temp., Max (dB)	≤ 2.5 @ 1575 MHz		
Max VSWR @ room temp.	2.0		
Polarization	RHCP		
Nominal Impedance (Ohms)	50		
DC Voltage (Vdc)	2.5- 7.0		
Current Consumption, Max @ room temp (mA)	8.5 ± 3 @ 3.0V		
Out-of-band Signal Rejection Min @ room temp (dBc)	80 (@698-960MHz)	80 (@1428-2700 MHz)	70 (@4900-5800 MHz)
Input Max Power (dBm)	-10		
Cable Type	RG174		

MECHANICAL SPECIFICATIONS	
Dimensions – L x W x H – mm (inches)	179 x 63 x 48 (7.04 x 2.48 x 1.69)
Weight – kg (lbs.)	1.1 kg (2.42 lbs)
Cable Type	LMR 100- pigtails, LMR 195- jumper cables
Mounting	P-Mount
Radome Material	PC, UL94-V0
Baseplate Material	Aluminum

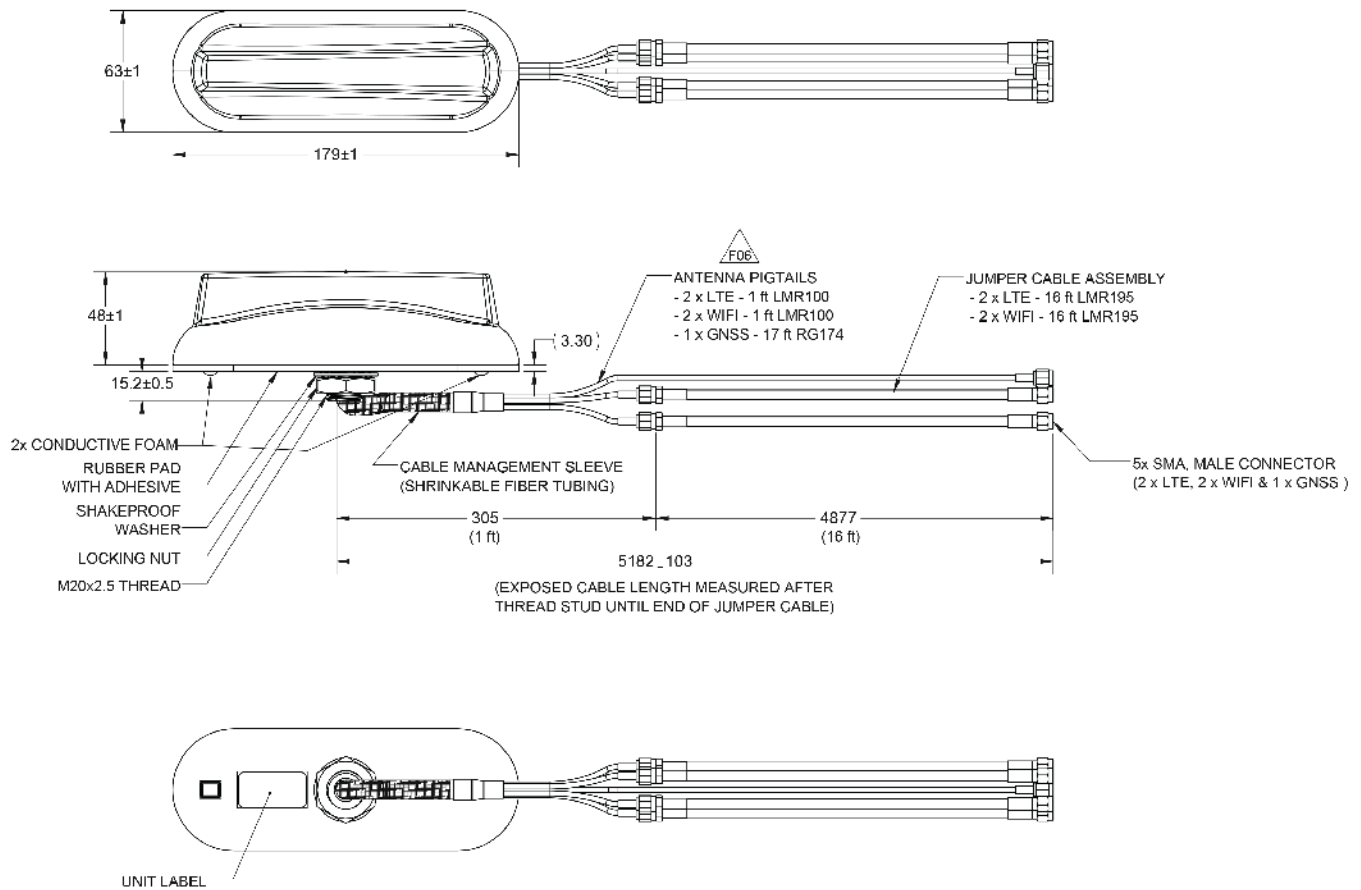
ENVIRONMENTAL SPECIFICATIONS	
Operating Environment	Outdoor Vehicle
Operating Temperature – °C (°F)	-40° to +85°C (-40° to +185°F)
Storage Temperature – °C (°F)	-40° to +85°C (-40° to +185°F)
Ingress Protection Rating	IP67
Rail Compliance Standards	EN61373 (Shock & Vibration), EN50155 (Temperature)
Material Substance Compliance	RoHS

Notes: (*) – This parameter is based on a 30cm (1ft) cable length. For the ground plane measurement, a 30cm (1ft) ground plane was used.

(**) – This parameter is based on a 518cm (17ft) cable length. For the ground plane measurement, a 30cm (1ft) ground plane was used.

Antenna specifications are subject to change according to the ground plane size.

MECHANICAL DRAWINGS



The L001258-01 antenna can create an IP67 water-tight seal when installed on vehicles. Certain vehicles such as a Ford Explorer Interceptor have more narrow roof ridges that are tightly spaced together. For this type, vehicle special adapters are available.

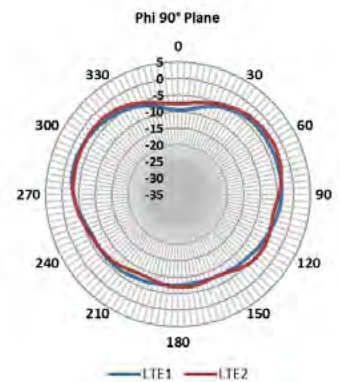
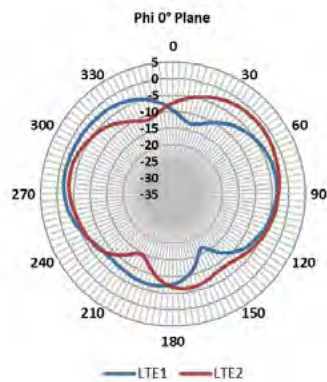
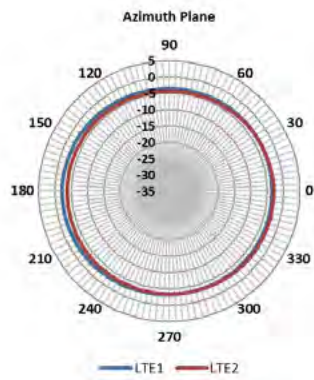
See parts **BKIT-VFX69383-001** (between ridges installation) and **BKIT-VFX69383-003** (atop ridge installation) for product details.

PACKAGING INFORMATION

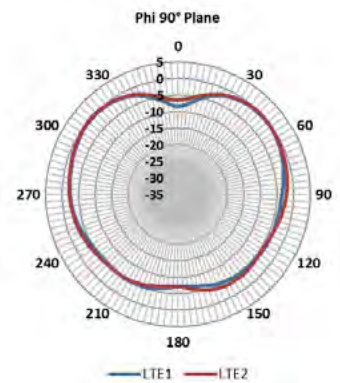
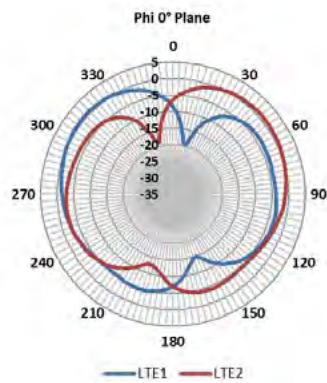
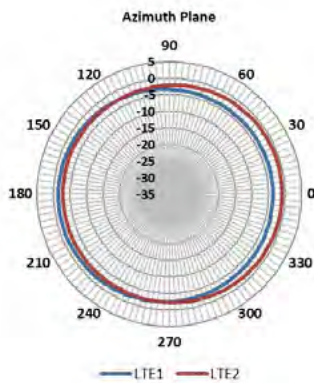
PACKAGED DIMENSIONS	CARTON	MASTER CARTON	AIR PALLET	OCEAN PALLET
Number of Antennas	1	4	140	196
Height - mm (in.)	130 (5.12)	235 (9.25)	1335 (52.56)	1813 (71.38)
Length - mm (in.)	222 (8.74)	543 (21.38)	1200 (47.24)	1200 (47.24)
Width - mm (in.)	222 (8.74)	232 (9.13)	800 (31.5)	800 (31.5)
Shipping Weight - kg (lb.)	1.35 (2.98)	5.85 (12.89)	217 (478.4)	299 (659.18)

RADIATION PATTERNS WITH GROUND PLANE - LTE ANTENNAS

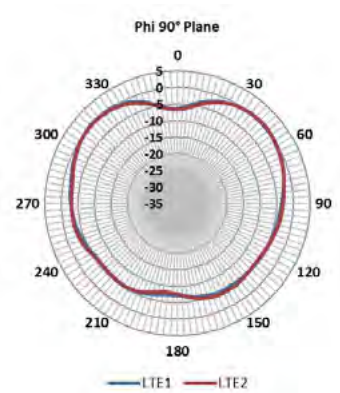
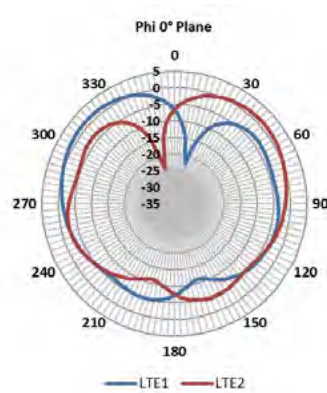
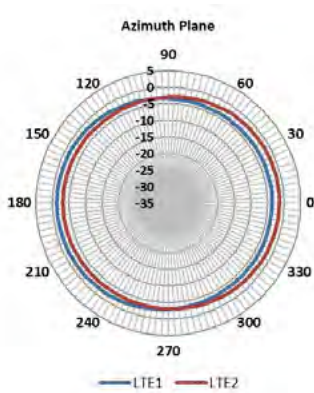
698 MHz



880 MHz

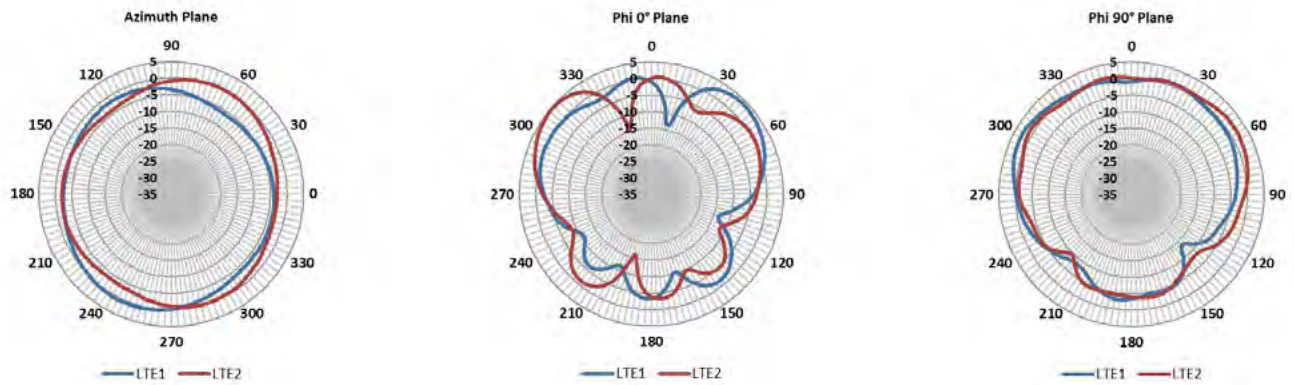


960 MHz

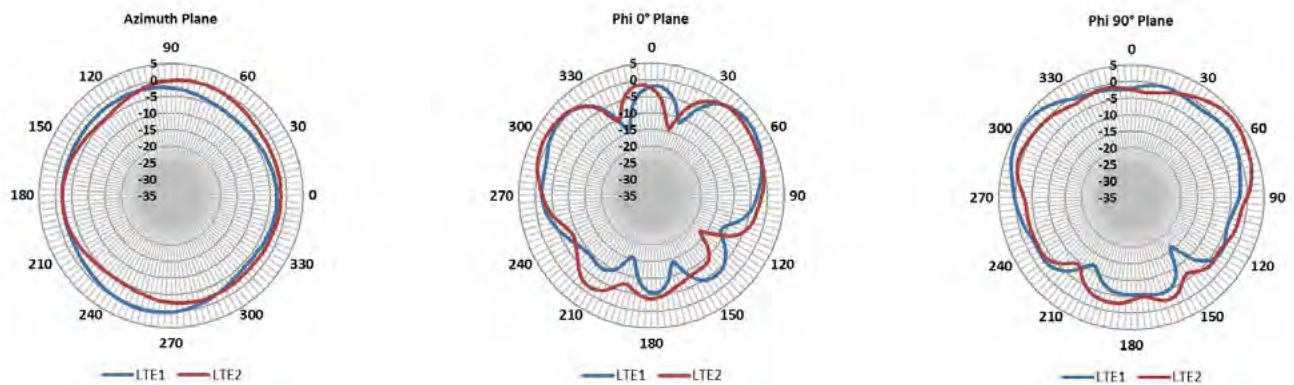


RADIATION PATTERNS WITH GROUND PLANE - LTE ANTENNAS

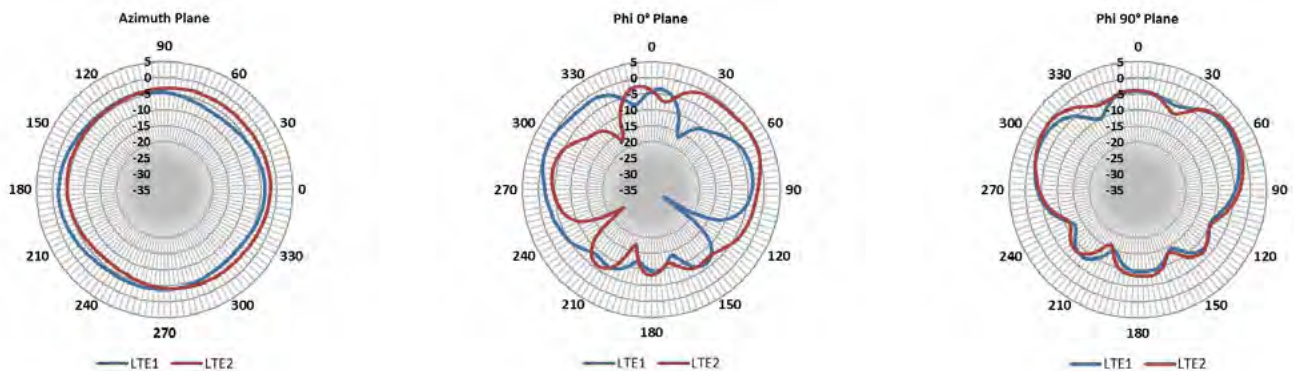
1690 MHz



1850 MHz

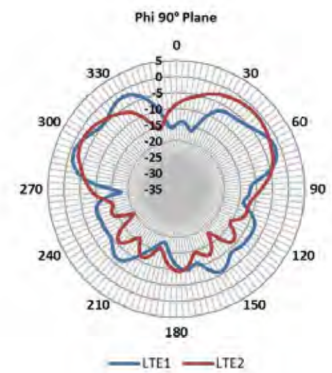
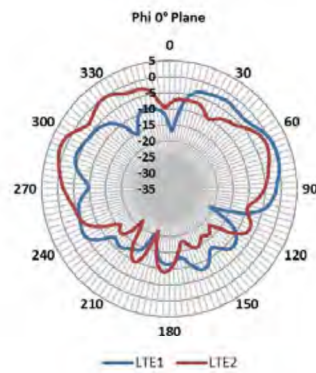
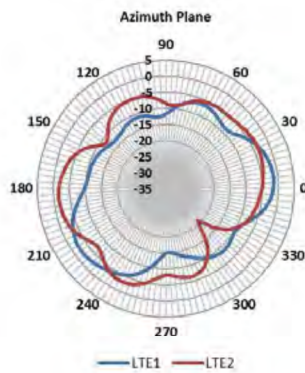
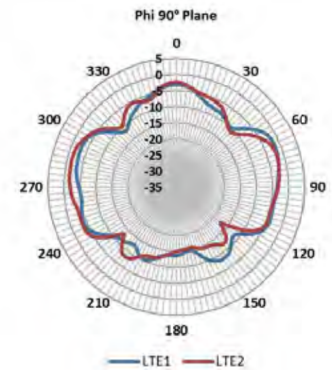
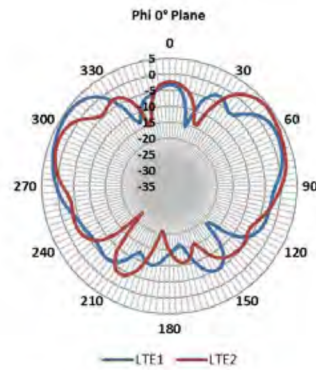
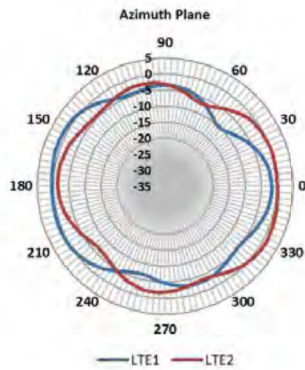


2170 MHz



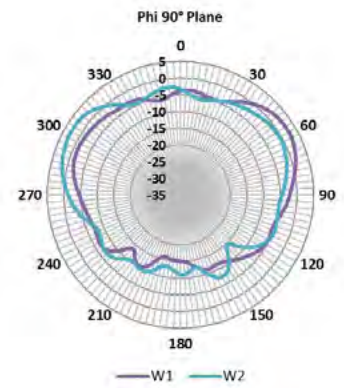
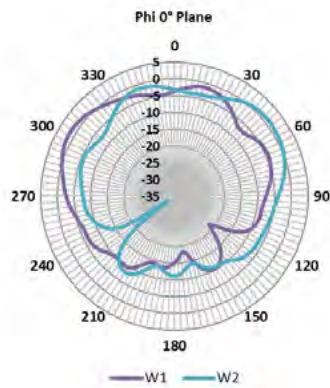
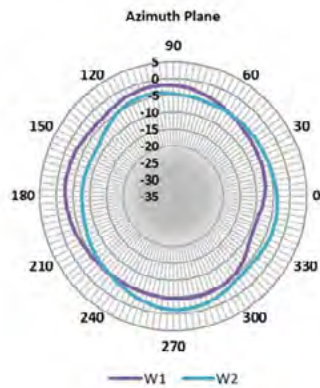
RADIATION PATTERNS WITH GROUND PLANE - LTE ANTENNAS

2700 MHz

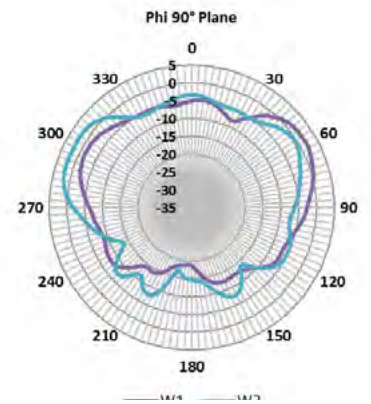
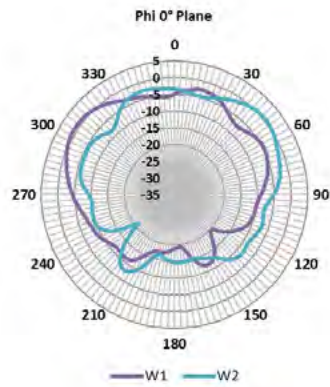
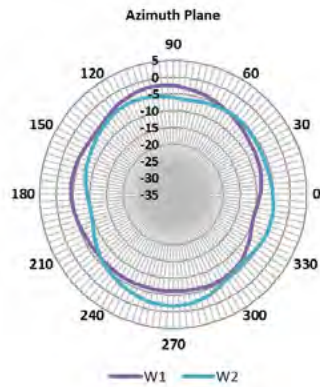


RADIATION PATTERNS with Ground Plane - WiFi ANTENNAS

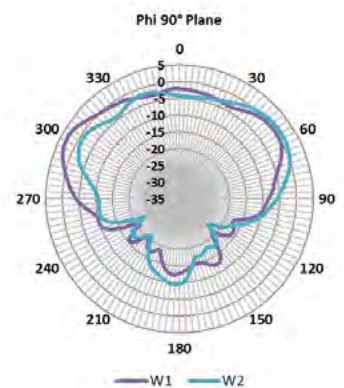
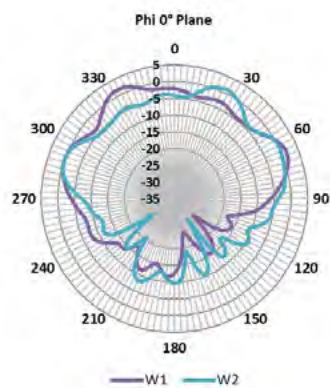
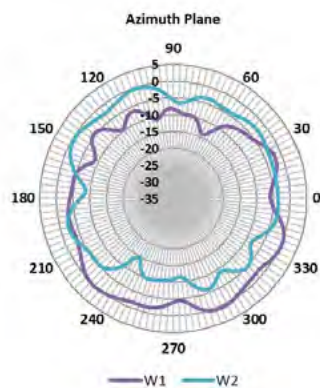
2400 MHz



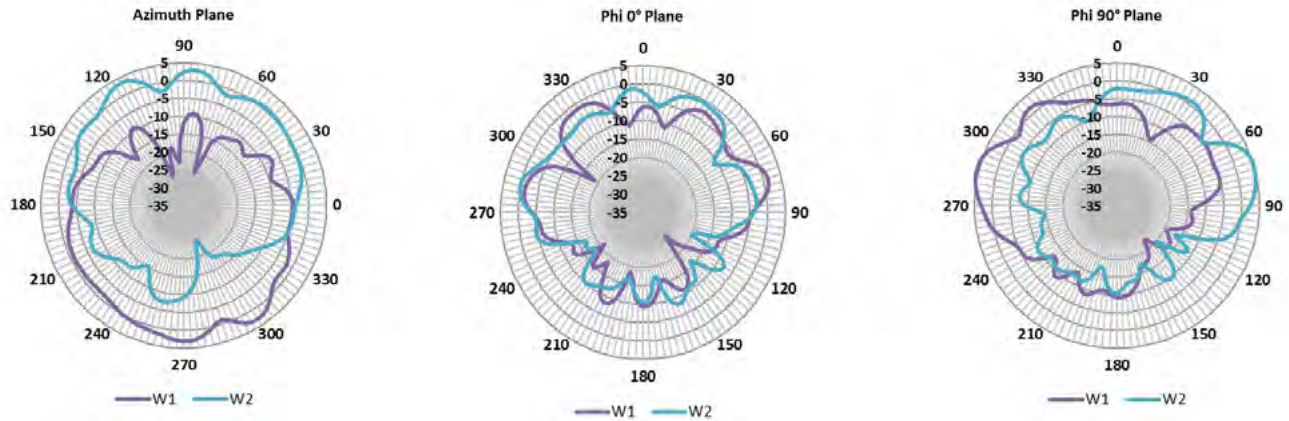
2500 MHz



4900 MHz

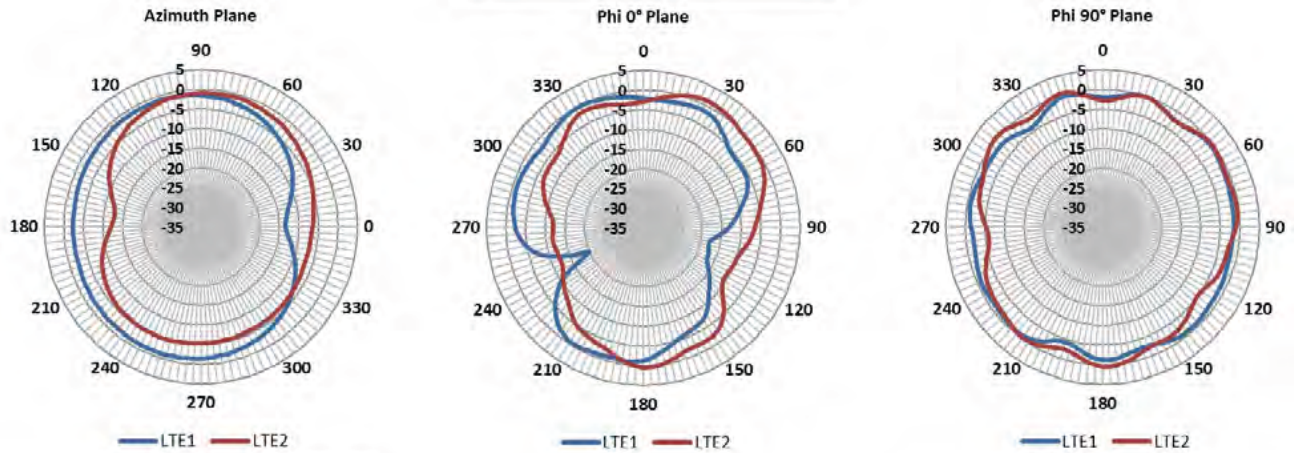


5900 MHz

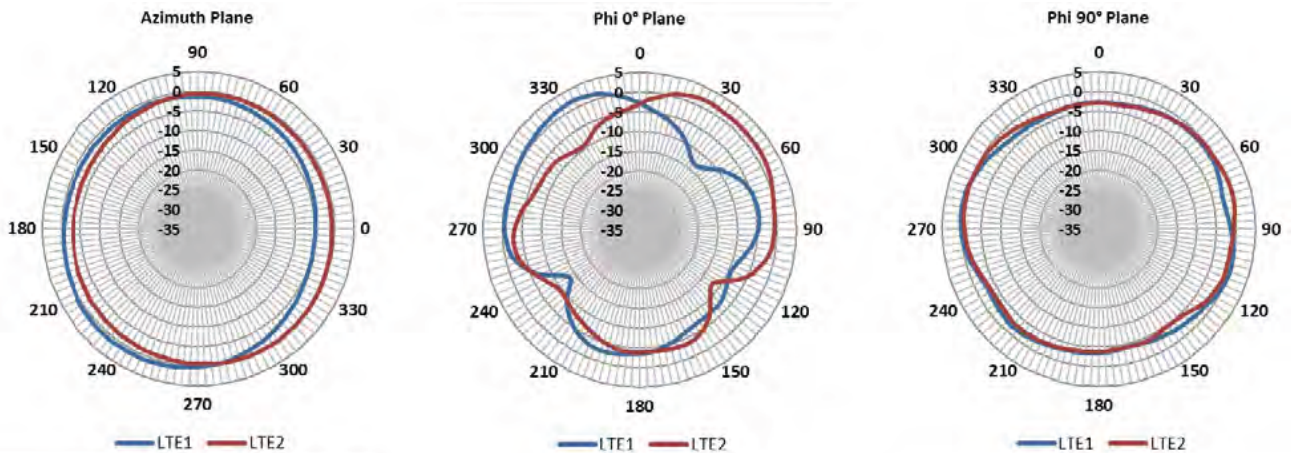


RADIATION PATTERNS *without Ground Plane* - LTE ANTENNAS

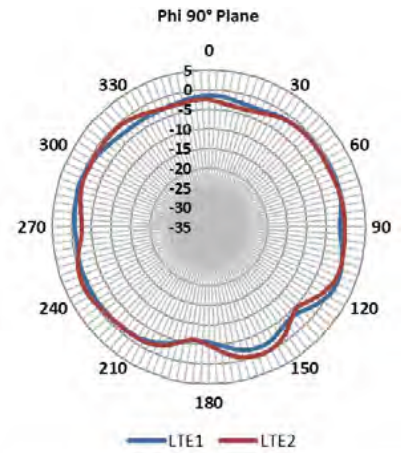
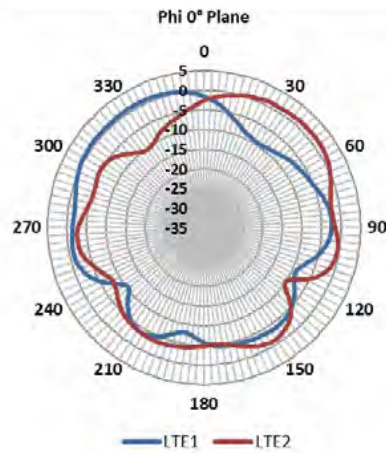
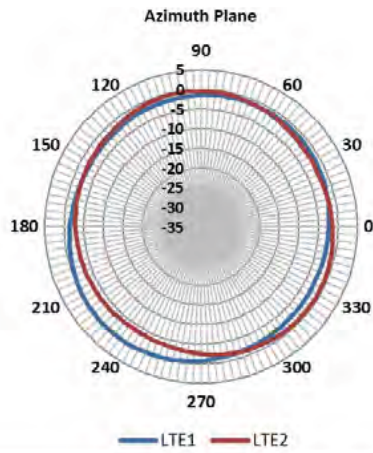
698 MHz



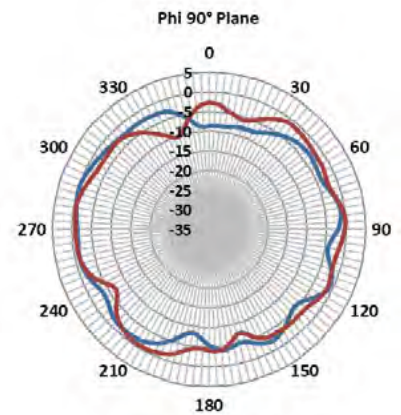
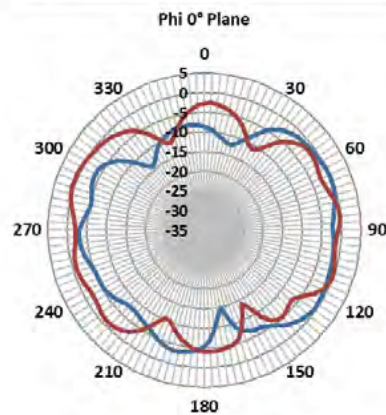
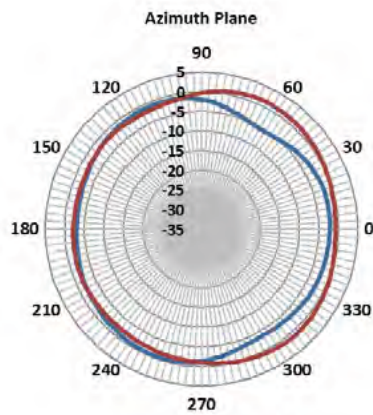
880 MHz



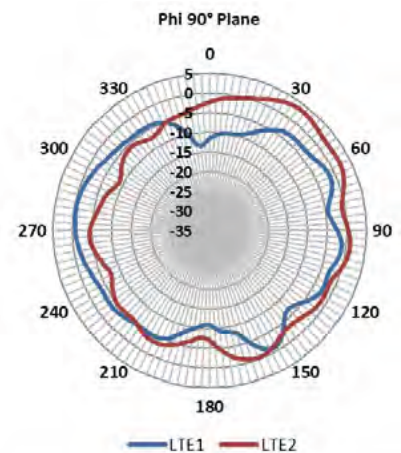
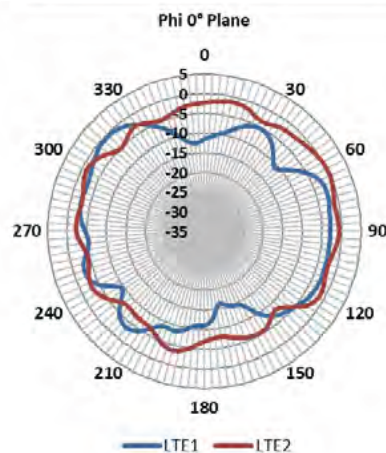
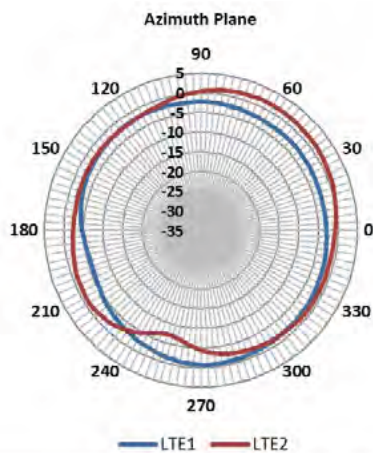
960 MHz



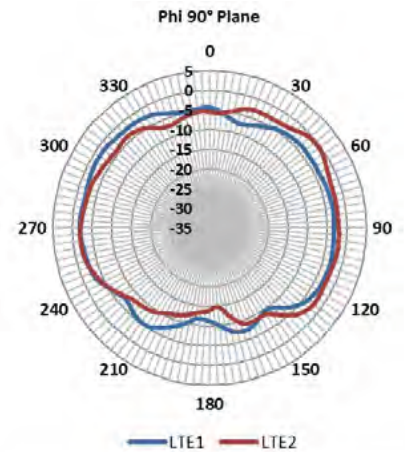
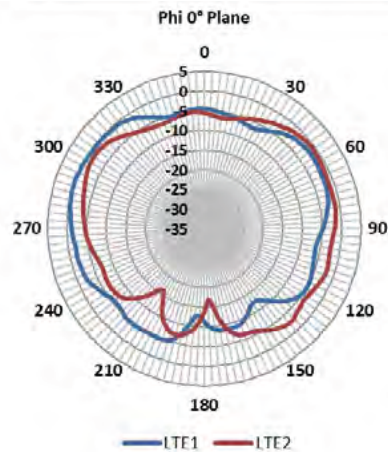
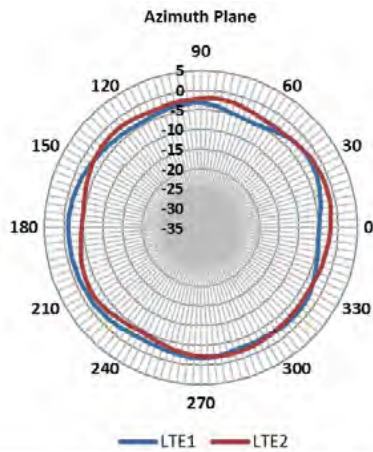
1690 MHz



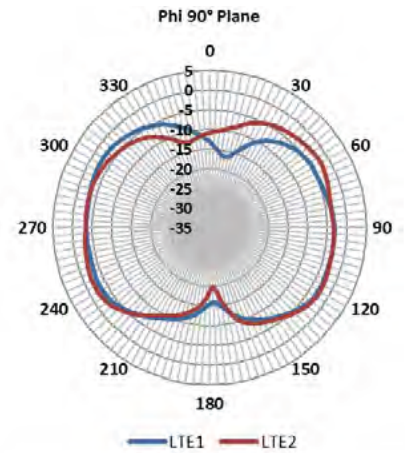
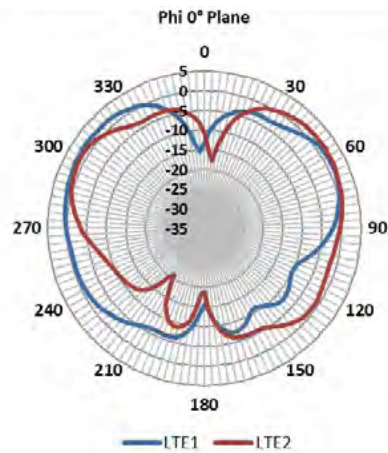
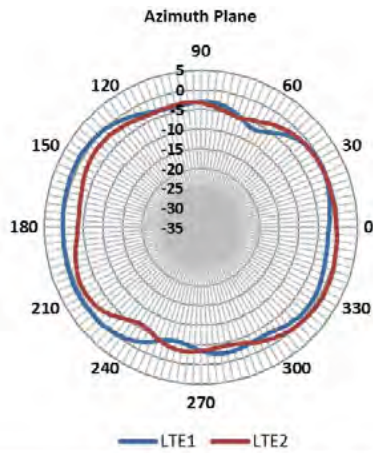
1850 MHz



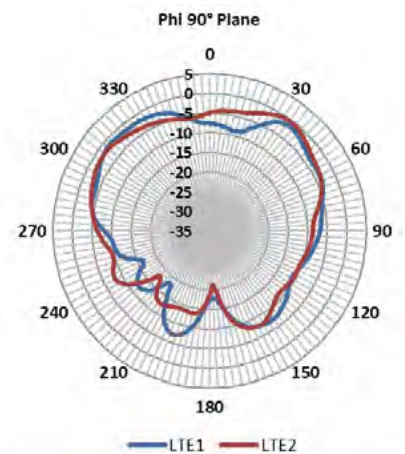
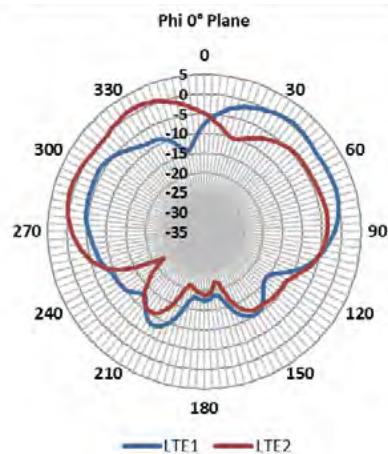
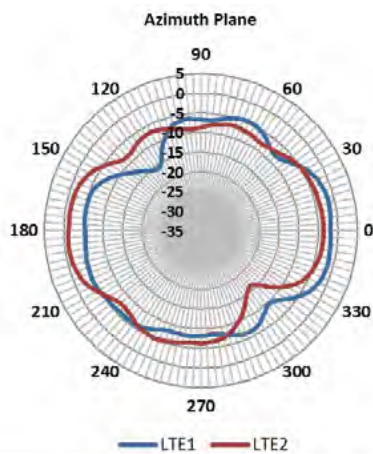
2170 MHz



2700 MHz

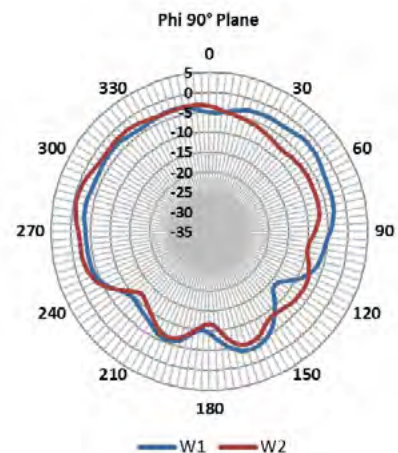
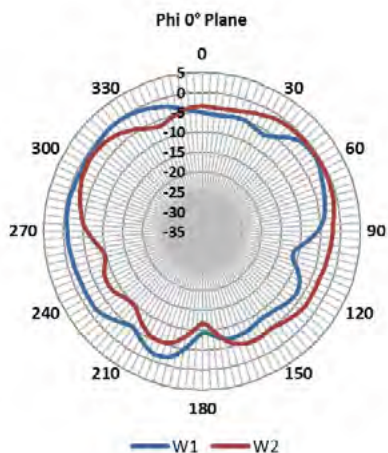
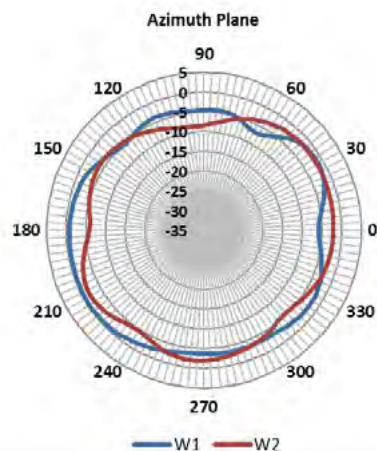


3800 MHz

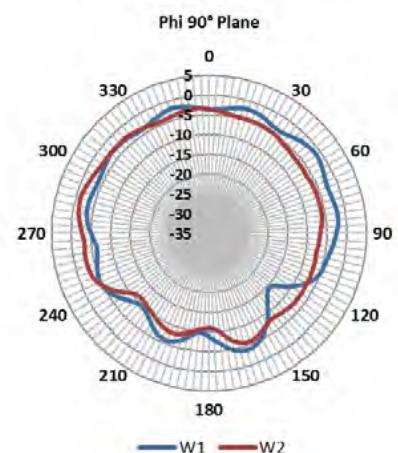
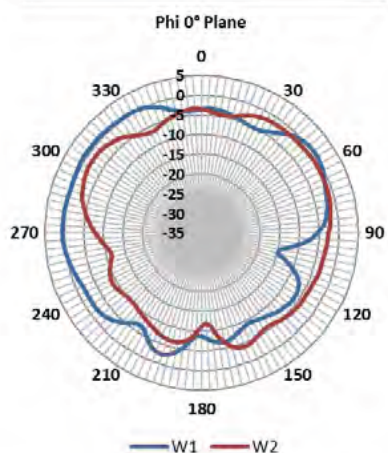
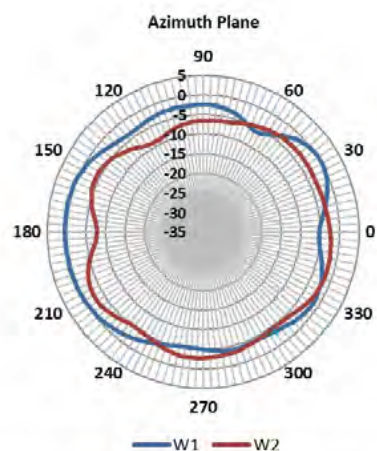


RADIATION PATTERNS *without Ground Plane* - LTE ANTENNAS

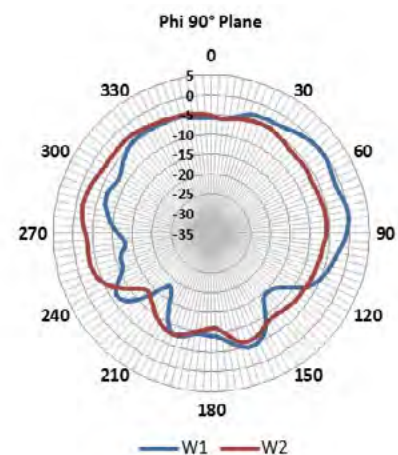
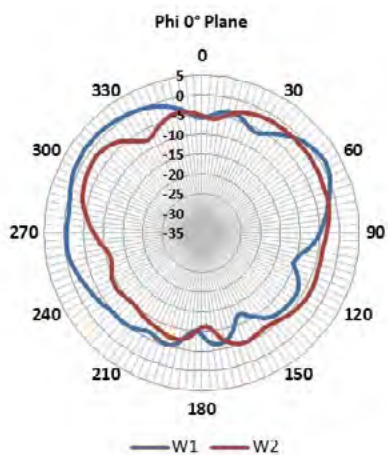
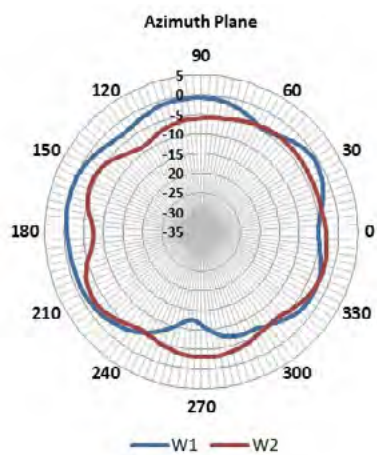
2400 MHz



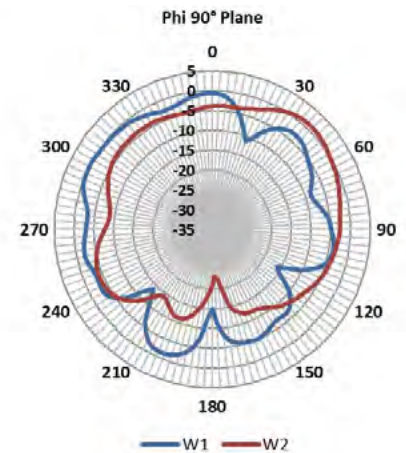
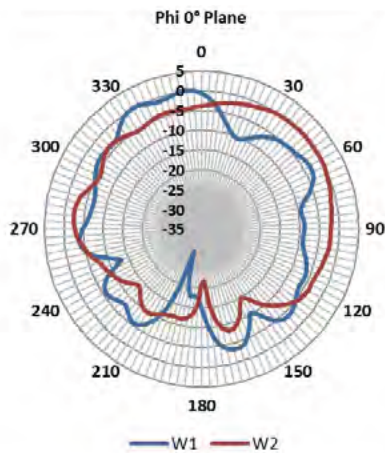
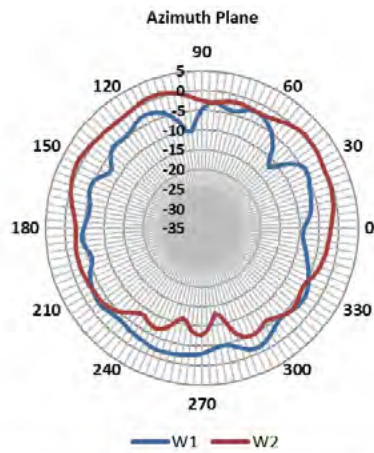
2450 MHz



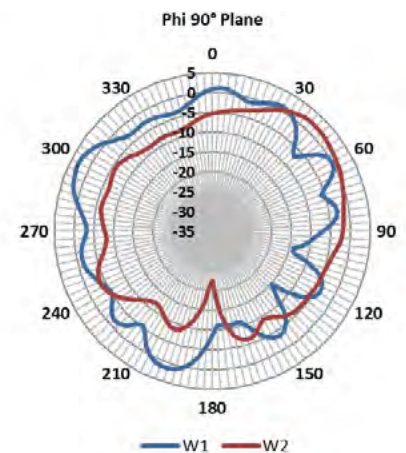
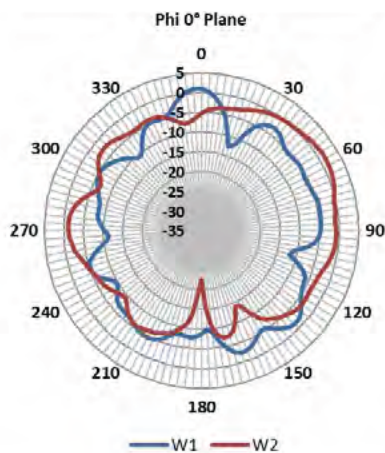
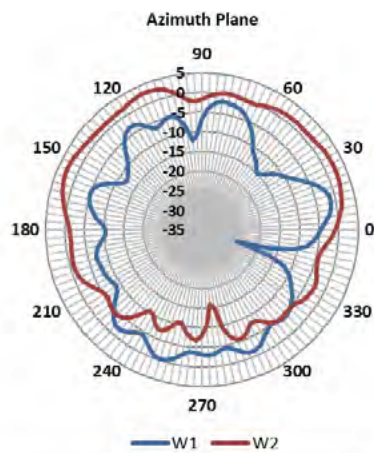
2500 MHz



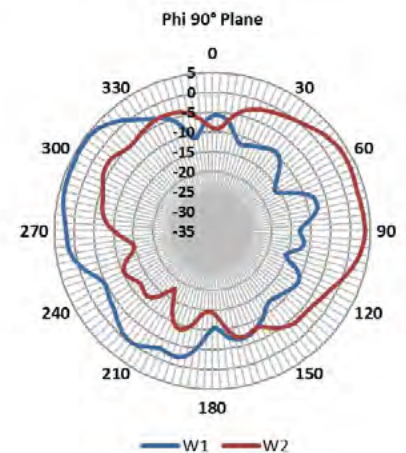
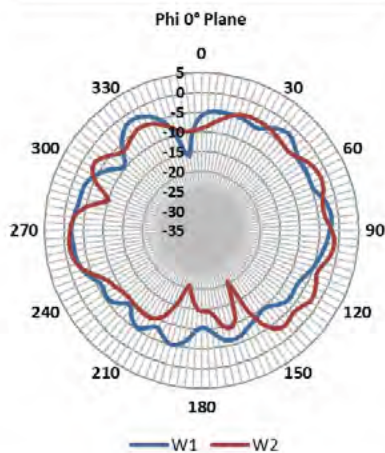
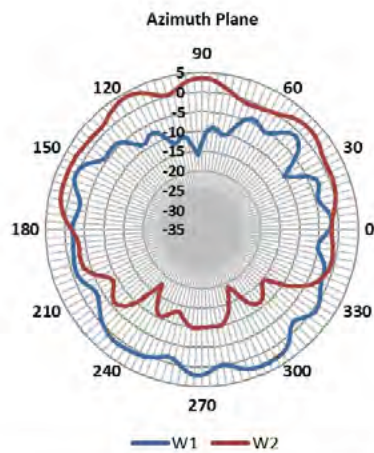
4900 MHz



5250 MHz



5950 MHz



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