



Satellite IoT D2D Ready

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

Panel Mount 5G/LTE Antenna Covering 4G/5G/Satellite Band 25

The L001266-01 direct to device (D2D) antenna offers 4G/5G/satellite band 25 cellular coverage through an external panel mount puck-style multiband antenna.

L001266-01 provides a ground plane independent antenna solution which mounts permanently to metallic and non-metallic surfaces. The antenna terminates in an SMA plug (male pin) connector on RG-174/U coaxial cable enabling an environmentally sealed enclosure and protection from tampering.

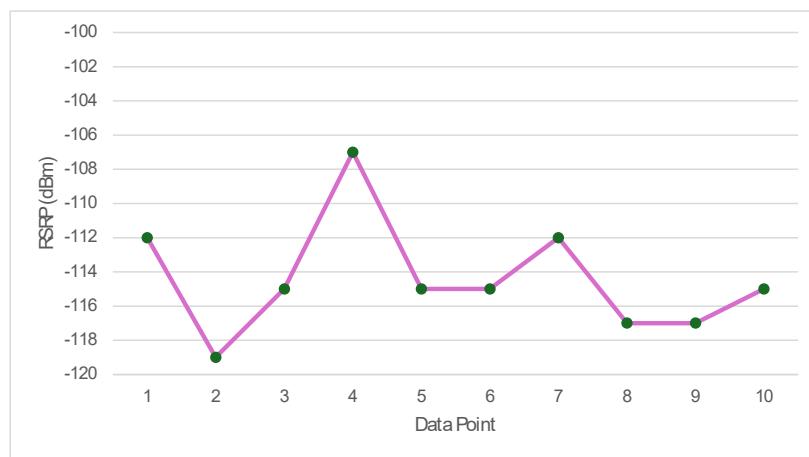
SATELLITE IOT D2D COMMUNICATIONS

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
 - 410-5925 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 L001266-01 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

- Wide Bandwidth: 617 MHz to 960 MHz
- Performance at 617 MHz to 5925 MHz
 - VSWR: ≤ 3.0
 - Peak Gain: 5.4 dBi
 - Efficiency: 27%
- Performance at 3300 MHz to 4200 MHz
 - VSWR: ≤ 1.6
 - Peak Gain: 2.7 dBi
 - Efficiency: 32%
- Ground plane independent dipole antenna
- External mount, includes all hardware for installation including M12x1 hex nut, washer and optional boot
- SMA plug (male pin) gold plated connection
- IP65/IP67 rated
- Impact resistant UV stabilized ABS radome material

APPLICATIONS

- Worldwide 5G/4G/3G/2G
- Cellular IoT: LTE-M (Cat-M1) and NB-IoT
- Private cellular networks
 - Citizens Broadband Radio Service (CBRS)
- 410 MHz LTE
- 4.9 GHz Public Safety
- Emerging 5G C-Band applications
- Emerging 5G 2.5 GHz EBS applications
- Remote control, monitoring and sensing
- Internet of Things (IoT) devices
- ISM applications

ORDERING INFORMATION

Part Number	Description
L001266-01	1 meter (39.37 in) 5G/LTE panel mount antenna with SMA plug (male pin) on RG-174/U coaxial cable and mounting hardware, including M12x1 hex nut, washer and rubber boot

TABLE 1. ELECTRICAL SPECIFICATIONS

Bands	Frequency Range	VSWR (max.)	Peak Gain (dBi)	Avg. Gain (dBi)	Efficiency (%)
87, 88	410 MHz to 426 MHz	1.8	-0.1	-5.1	33
72, 73	450 MHz to 470 MHz	2.9	-4.2	-12.8	8
5, 8, 12, 13, 14, 17, 18, 19, 20, 26, 27, 28, 29, 44, 67, 69, 81, 82, 83, 89	617 MHz to 960 MHz	3.0	5.4	-6.9	27
1, 2, 3, 4, 9, 10, 25, 33, 34, 35, 36, 37, 39, 65, 66, 80, 84, 86, 95	1695 MHz to 2200 MHz	2.2	3.8	-10.4	26
30, 40	2300 MHz to 2400 MHz	1.3	4.2	-3.1	52
7, 41	2496 MHz to 2690 MHz	1.6	2.7	-5.2	33
22, 42, 43, 48, 49, 52, n77, n78	3300 MHz to 4200 MHz	1.6	2.7	-5.7	32
n79	4400 MHz to 5925 MHz	1.6	5.1	-4.6	39

Electrical specifications and plots measured with the antenna in a free space orientation.

Electrical specifications and plots measured with a 300 mm x 300 mm (11.8 in x 11.8 in) ground plane.

TABLE 2. MECHANICAL SPECIFICATIONS

Parameter	Value
Operating Temperature Range	-40 °C to +70 °C
Weight	63.4 g (2.24 oz)
Dimensions	23.3 mm x Ø54.7 mm (0.92 in x Ø2.15 in)
Connection	SMA Plug (male pin)
Cable	1 meter (39.37 in), 2 meters (78.74 in)
IP Rating	IP65/IP67 Ratable
Fire rating	UL94 HB

PACKAGING INFORMATION

The L001266-01 antenna is individually sealed in a clear plastic bag. Plastic bags are sealed in a larger plastic bag in quantities of 50 pcs. Distribution channels may offer alternative packaging options.

PRODUCT DIMENSIONS

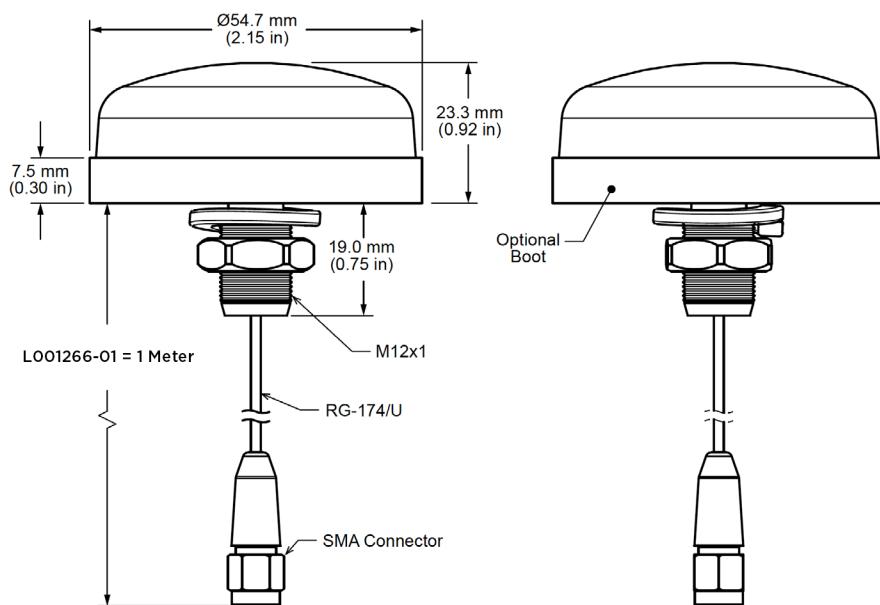
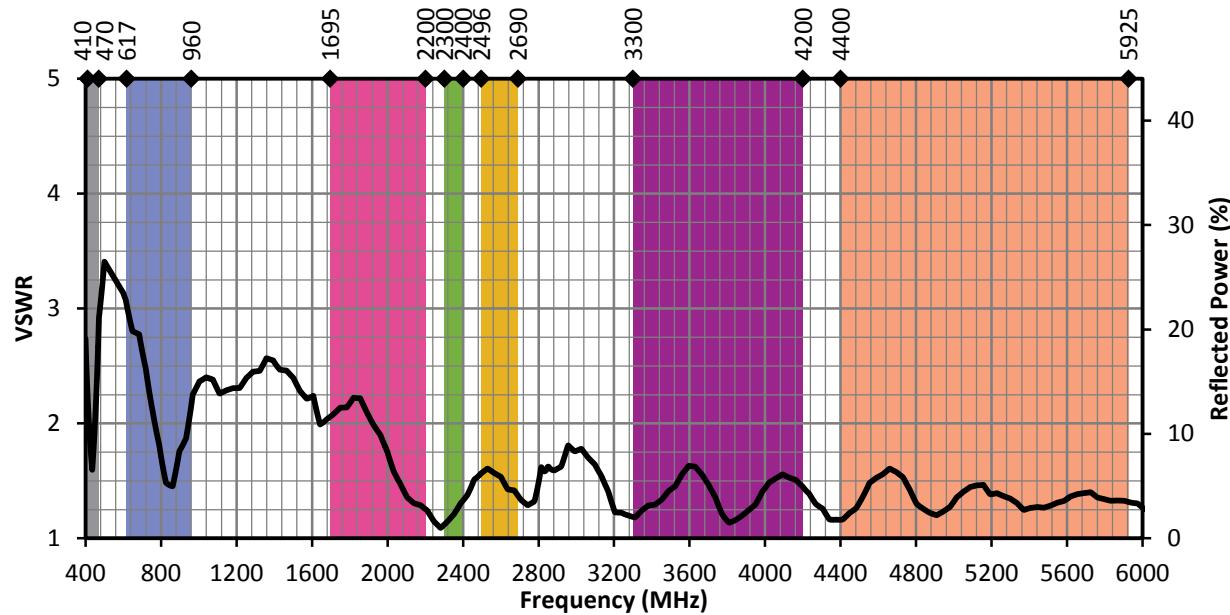


Figure 1. L001266-01 Dimensions

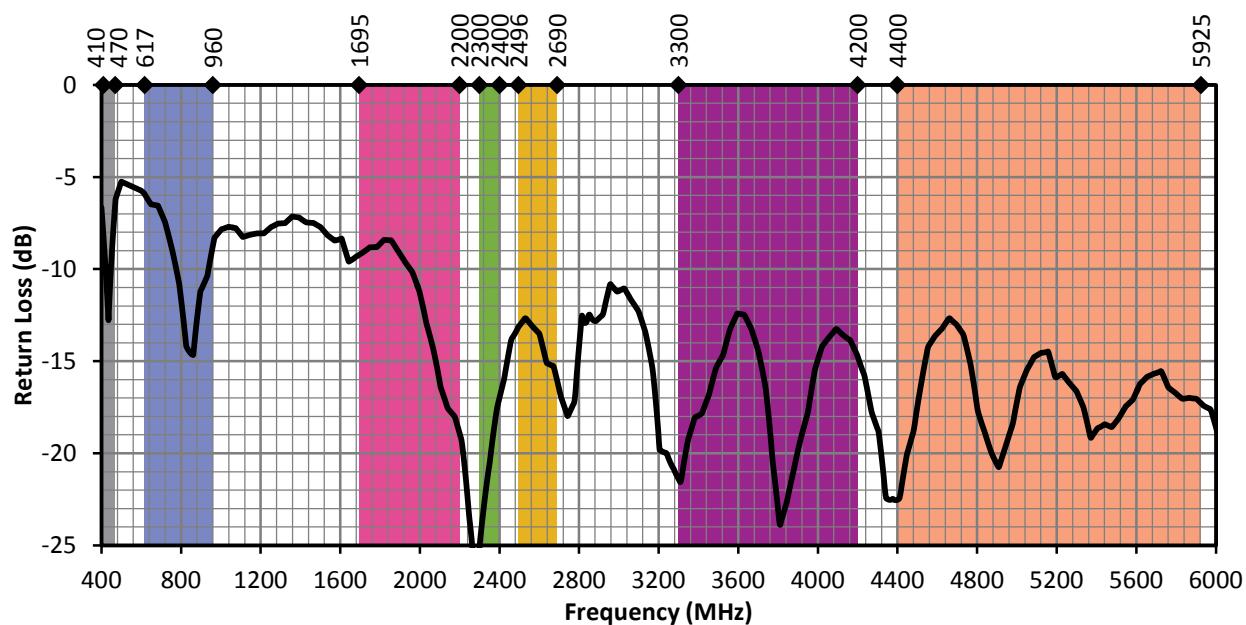
VSWR

Figure 2 provides the voltage standing wave ratio (VSWR) across the antenna bandwidth. VSWR describes the power reflected from the antenna back to the radio. A lower VSWR value indicates better antenna performance at a given frequency. Reflected power is also shown on the right-side vertical axis as a gauge of the percentage of transmitter power reflected back from the antenna.



RETURN LOSS

Return loss (Figure 3), represents the loss in power at the antenna due to reflected signals. Like VSWR, a lower return loss value indicates better antenna performance at a given frequency.



PEAK GAIN

The peak gain across the antenna bandwidth is shown in Figure 4. Peak gain represents the maximum antenna input power concentration across 3-dimensional space, and therefore peak performance at a given frequency, but does not consider any directionality in the gain pattern.

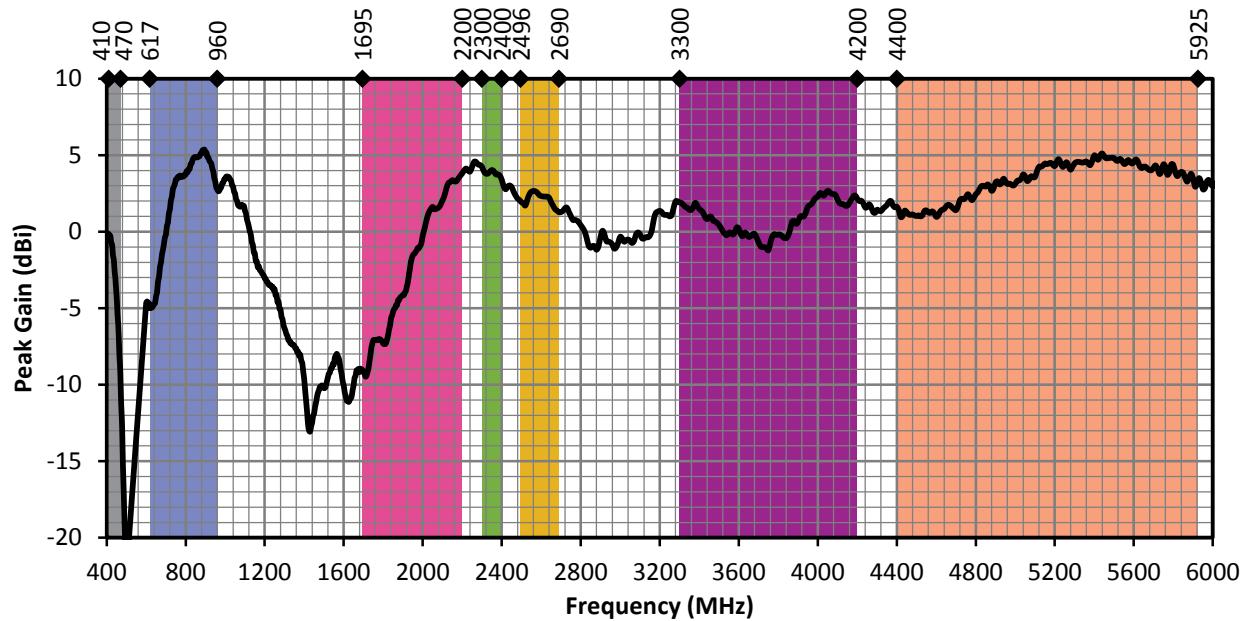


Figure 4. L001266-01 Peak Gain

AVERAGE GAIN

Average gain (Figure 5), is the average of all antenna gain in 3-dimensional space at each frequency, providing an indication of overall performance without expressing antenna directionality.

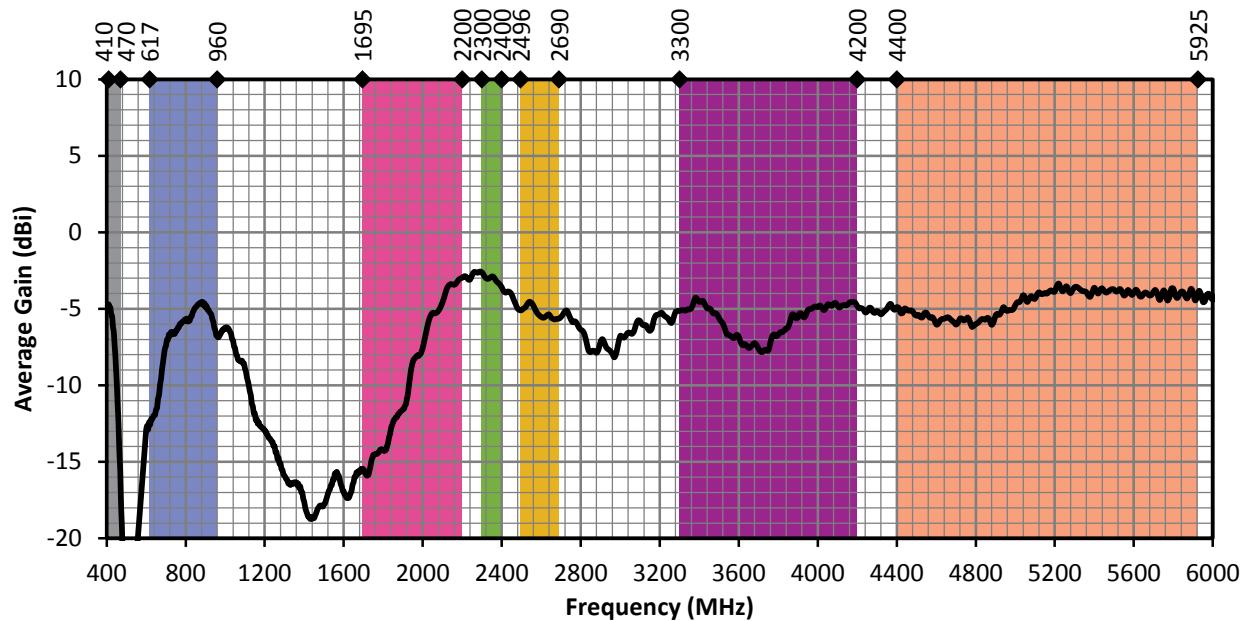


Figure 5. L001266-01 Antenna Average Gain

RADIATION EFFICIENCY

Radiation efficiency (Figure 6), shows the ratio of power delivered to the antenna relative to the power radiated at the antenna, expressed as a percentage, where a higher percentage indicates better performance at a given frequency.

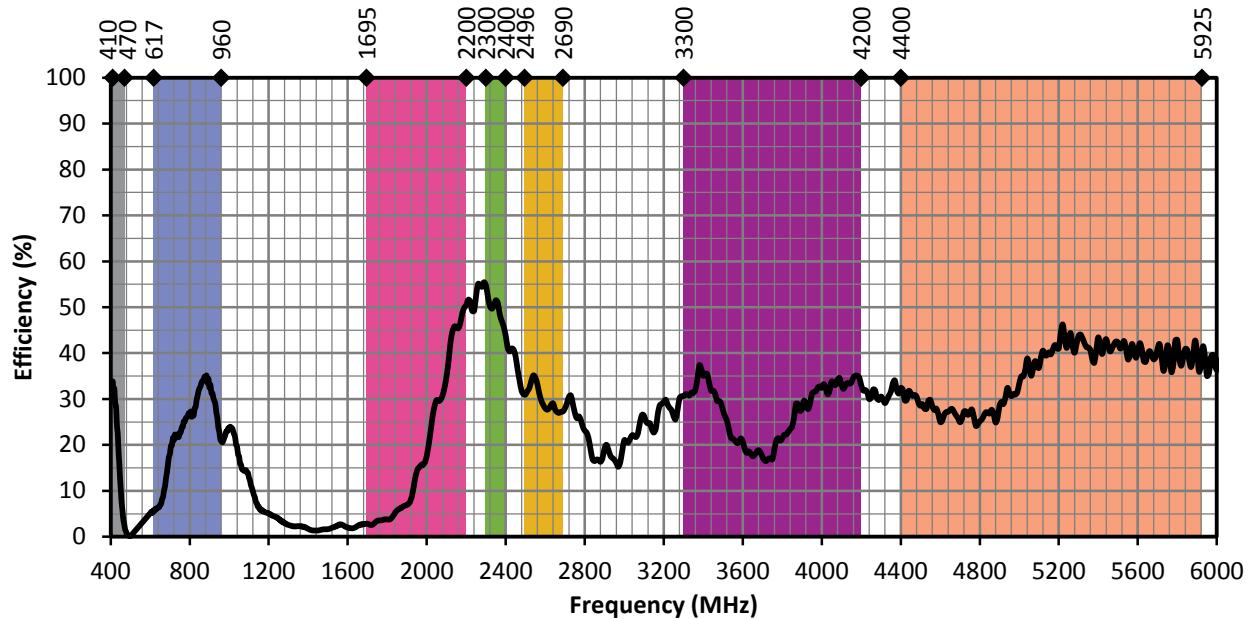


Figure 6. L001266-01 Antenna Efficiency

RADIATION PATTERNS

Radiation patterns provide information about the directionality and 3-dimensional gain performance of the antenna by plotting gain at specific frequencies in three orthogonal planes. Antenna radiation patterns for a straight orientation are shown in Figure 9 using polar plots covering 360 degrees. The antenna graphic at the top of the page provides reference to the plane of the column of plots below it. Note: when viewed with typical PDF viewing software, zooming into radiation patterns is possible to reveal fine detail.

RADIATION PATTERNS - STRAIGHT



XZ-Plane Gain

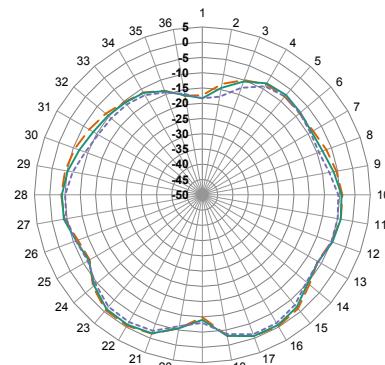


YZ-Plane Gain

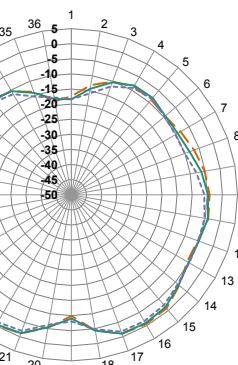


XY-Plane Gain

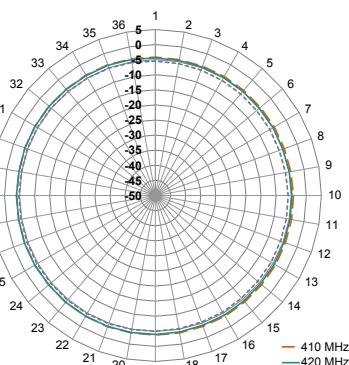
410 MHz TO 426 MHz (420 MHz)



XZ-Plane Gain

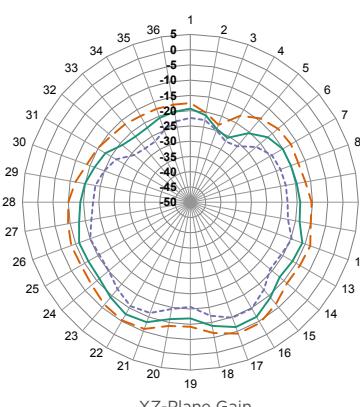


YZ-Plane Gain

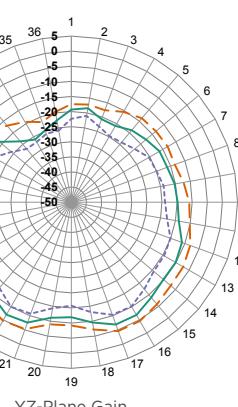


XY-Plane Gain

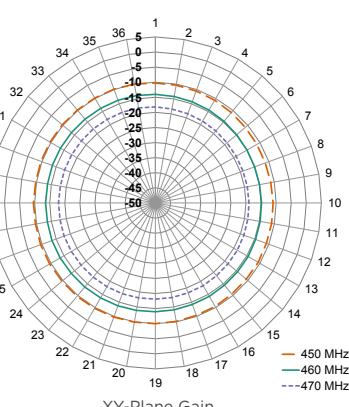
450 MHz TO 470 MHz (460 MHz)



XZ-Plane Gain



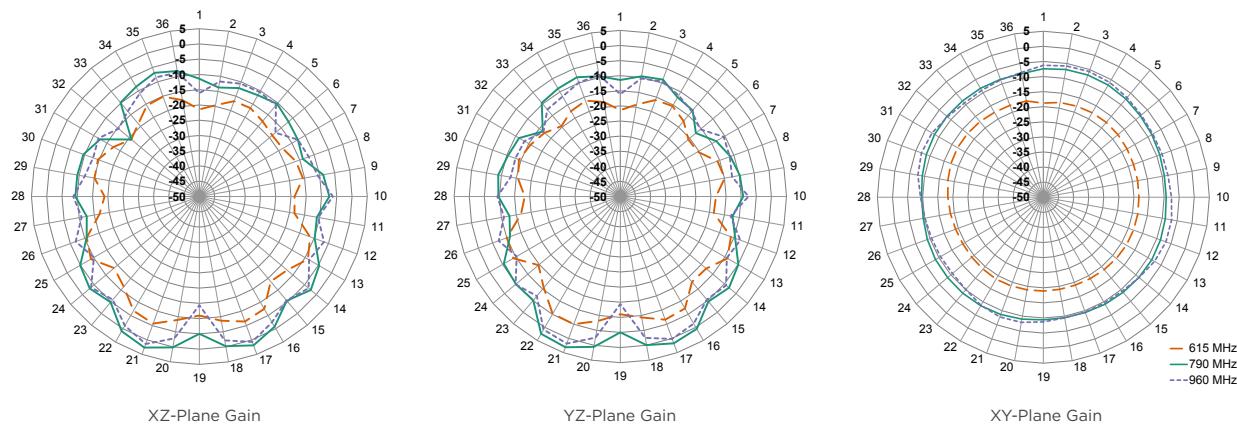
YZ-Plane Gain



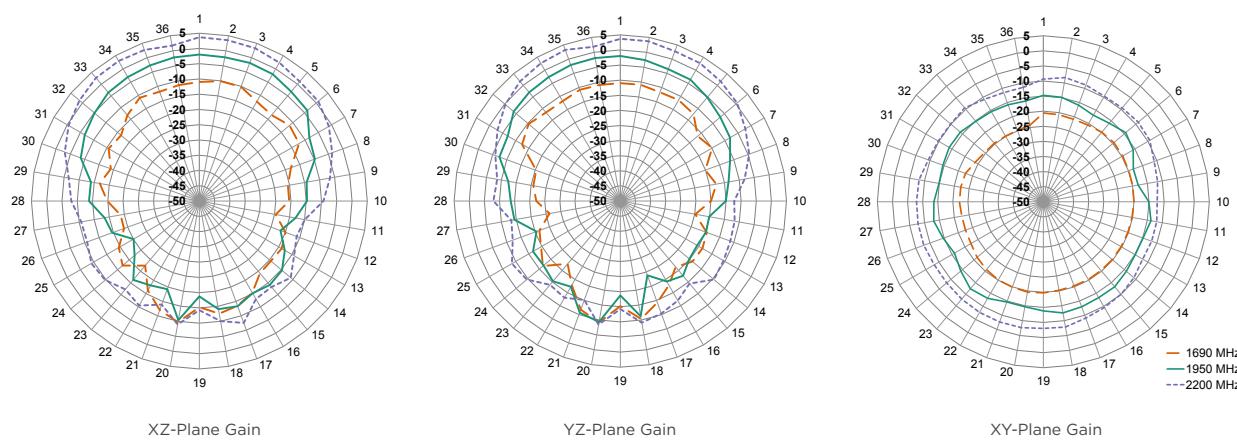
XY-Plane Gain

RADIATION PATTERNS - STRAIGHT

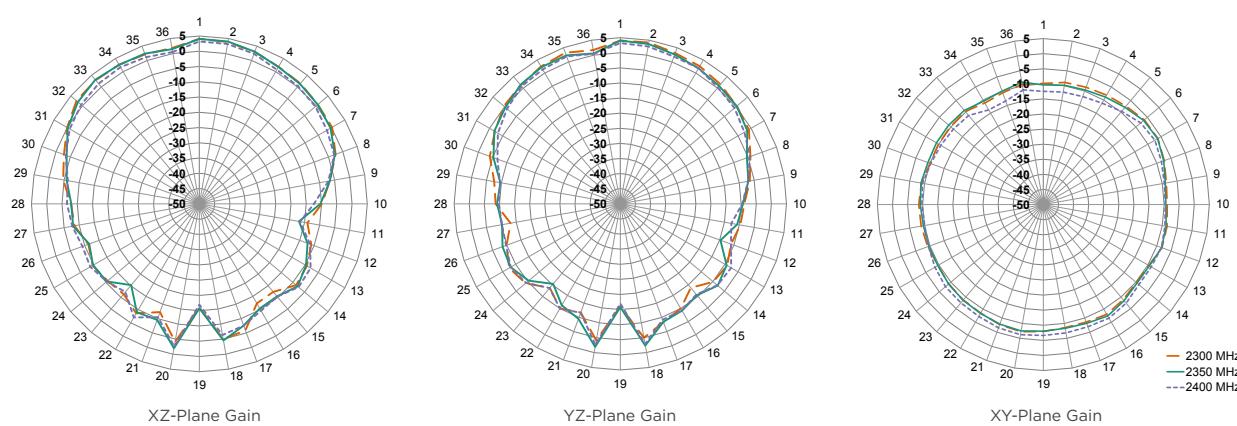
617 MHz TO 960 MHz (790 MHz)



1695 MHz TO 2200 MHz (1950 MHz)

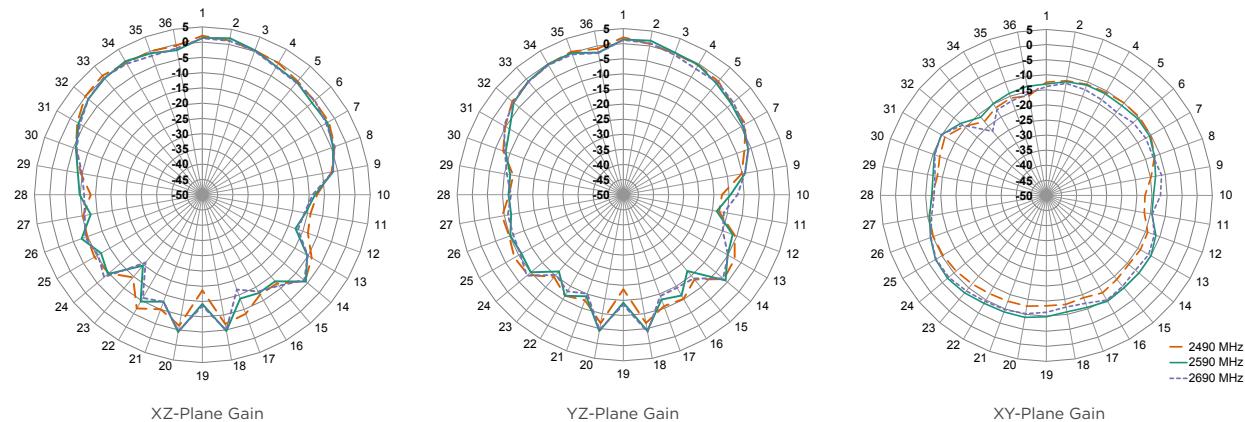


2300 MHz TO 2400 MHz (2350 MHz)

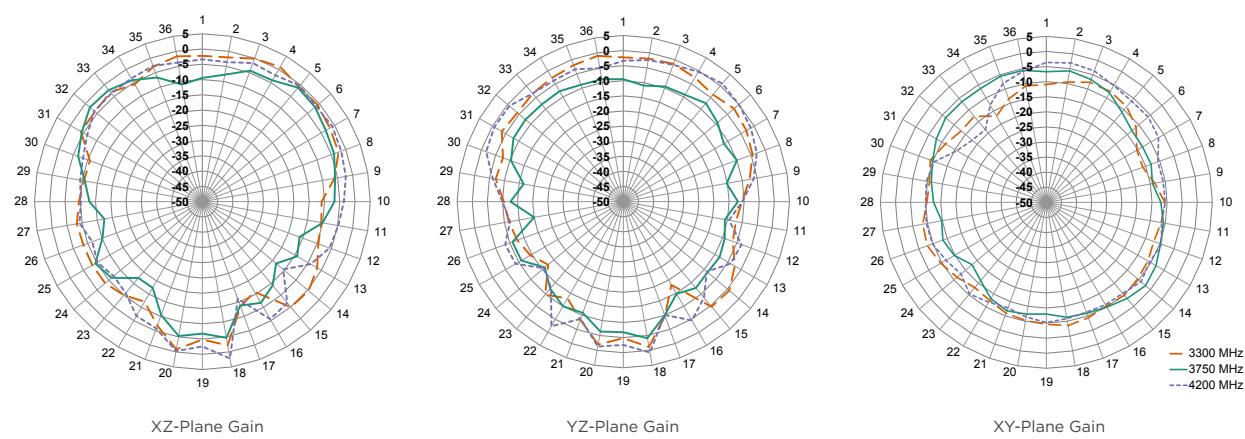


RADIATION PATTERNS - STRAIGHT

2496 MHz TO 2690 MHz (2590 MHz)



3300 MHz TO 4200 MHz (3750 MHz)



4400 MHz TO 5925 MHz (5170 MHz)

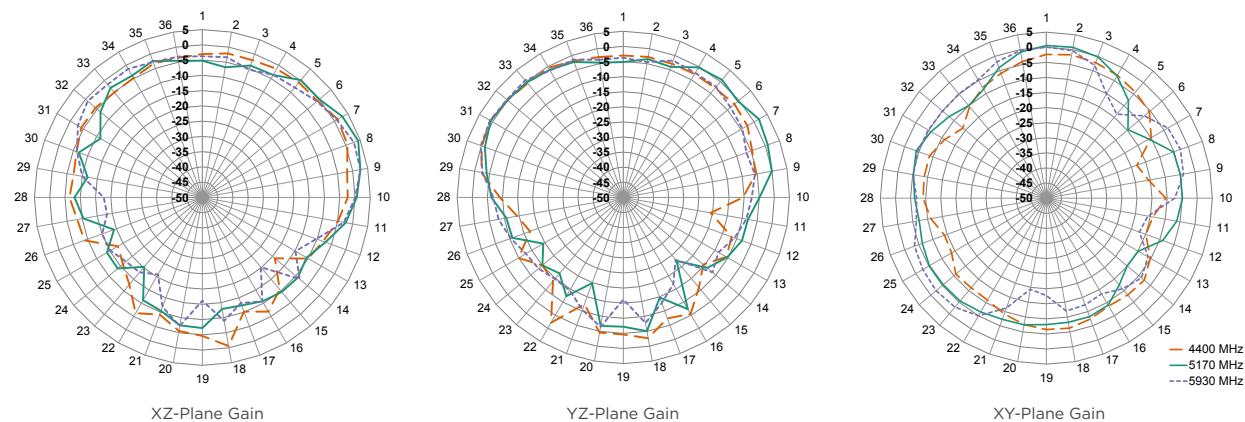


Figure 7. L001266-01 Radiation Patterns

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