

Narrative in Support of Experimental Authority Application

Janteq Corporation (“Janteq”) submits this Application for Experimental Authority (“Application”) to conduct proof-of-concept testing using a commercially standardized waveform. The tests would allow a government agency to evaluate Janteq’s system and inform agency procurement decisions. Janteq asks the Federal Communications Commission (“Commission”) to grant experimental authority for a period of two years. The narrative below provides further context for the tests and confidential technical details of Janteq’s proposed operations.

Overview of Proposed Operations

[REDACTED]

[REDACTED] Details regarding the proposed operation appear below.

Technical Information

Janteq proposes to conduct tests as part of a demonstration of operations pursuant to a government-funded innovation contract. The tests would be conducted [REDACTED] to support shore-to-shore and ship-to-shore communications links. The testing would use transportable transceivers to establish communications links within the specified radii of each site and between sites, as further illustrated below.

Operating Parameters. The experiments would operate on the 24.05-25.5 GHz band. The transmissions support directional, long-range, two-way communications systems operating at up to 47.1 dBm effective isotropic radiated power (“EIRP”) using an 8x8 element phased array antenna and up to 61.2 dBm EIRP using a 16x16 element phased array antenna. The experiment would include propagation testing using a continuous wave (“CW”) waveform with 1 Hz and 150 Hz bandwidths, with emission designators of 1H00N0N and 150HN0N which represents the following characteristics:

- Bandwidth: 1 Hz and 150 Hz
- Modulation Type: N - Unmodulated carrier
- Modulation Nature: 0 - No modulating signal
- Information Type: N - No information transmitted

Operational testing would also be conducted using 5G NR OFDM waveforms in accordance with 3GPP test models TM3.1 and TM3.1a. Operations would be configured in both unidirectional and bidirectional configurations with up to 100% duty cycle as well as in a Time Division Duplex (TDD) arrangement with a 50% duty cycle. In the unidirectional configuration, one station would serve as the dedicated receiver and the opposing station as the dedicated transmitter. The operations would use bandwidths of 100 MHz, 50 MHz, 40 MHz, 20 MHz, and 10 MHz, with emission designators of 100MD7W, 50M0D7W, 40M0D7W, 20M0D7W, and 10M0D7W, representing the following characteristics for each channel:

- Bandwidth: 100 MHz, 50 MHz, 40 MHz, 20 MHz, and 10 MHz
- Modulation Type: D - Combination of amplitude and angle modulation
- Modulation Nature: 7 - Two or more digital channels containing quantized or digital information
- Information Type: W - Combination

The operations would employ filters to reduce out-of-band emissions. Specifically, a bandpass filter between the up/down converter and the beamformer and a 2nd harmonic lowpass filter between the beamformer and the individual elements. The table below provides core technical parameters associated with the transmissions planned for Janteq's experimental operations.

Antenna	8x8	16x16
Frequency Range	24.05-25.5 GHz	
Maximum Channel Bandwidth	CW: 1 Hz, 150 Hz OFDM: 10 MHz, 20 MHz, 40 MHz, 50 MHz, 100 MHz	
Power Levels (Mean)	Effective transmitter output power: 23.5 dBm (224 mW)	Effective transmitter output power: 32.2 dBm (1.66 W)
Maximum Antenna Gain	23.6 dBi @ 24.45 GHz	29 dBi @ 24.75 GHz
Maximum EIRP	47.1 dBm	61.2 dBm
Maximum ERP	44.95 dBm (31.3 W)	59.05 dBm (803.8 W)
Modulating Signal	CW, OFDM	
Antenna Gain Patterns	See Figure 1	See Figure 2
Height Above Ground Level and Above Average Terrain of Each Antenna Radiation Center	6-15 feet	
Equipment Information	See Figure 3	

Testing Locations. Transmissions would originate from the following locations:

Site	Latitude, Longitude ¹ (NAD 83)	Operations
Test Site A1 Point Mugu, CA – Nike Zeus	34°05'58.98" N 119°07'25.85" W	Fixed within a 400-meter search area
Test Site A2 Point Mugu, CA – Alpha Pad	34°05'52.89" N 119°07'0.04" W	Fixed within a 400-meter search area
Test Site A3 Point Mugu, CA – DESIL Building	34°05'46.84" N 119°06'32.42" W	Fixed within a 400-meter search area
Test Site A4 Point Mugu, CA – RV Park	34°05'55.50" N 119°06'11.30" W	Fixed within a 400-meter search area
Test Site A5 Point Mugu, CA – Cabins	34°05'59.68" N 119°05'43.71" W	Fixed within a 400-meter search area
Test Site A6 Torrance Beach	33°48'48.05" N 118°23'24.91" W	Fixed within a 250-meter search area
Test Site B1 San Nicolas Island	33°15'0.80" N 119°30'30.00" W	Fixed within a 7.4-kilometer search area
Test Site B2 MV Independence	34° 08' 24.26" N 119° 17' 49.99" W	Mobile within a 5.53-kilometer search area
Test Site B3 U.S.C. Dornisfe Wrigley Marine Science Center	33°26'45.47" N 118°29'0.15" W	Fixed within a 200-meter search area
Test Site C1 Seaside Park, NJ	39°55'54.21" N 74°04'21.72" W	Fixed within a 400-meter search area
Test Site C2 Fire Island, NY	40°37'22.06" N 73°15'56.54" W	Fixed within a 400-meter search area
Test Site C3 South Amboy, NJ	40°28'47.40" N 74°16'5.80" W	Fixed within a 400-meter search area
Test Site C4 Sandy Hook, NJ	40°27'54.62" N 74°0'24.73" W	Fixed within a 400-meter search area
Test Site C5 Ocean Place Resort/Seven Presidents Oceanfront Park, Long Branch, NJ	40°18'31.23" N 73°58'38.74" W	Fixed within a 500-meter search area
Test Site C6 Jones Beach State Park, Wantagh, NY	40°35'48.37" N 73°29'41.90" W	Fixed within a 400-meter search area

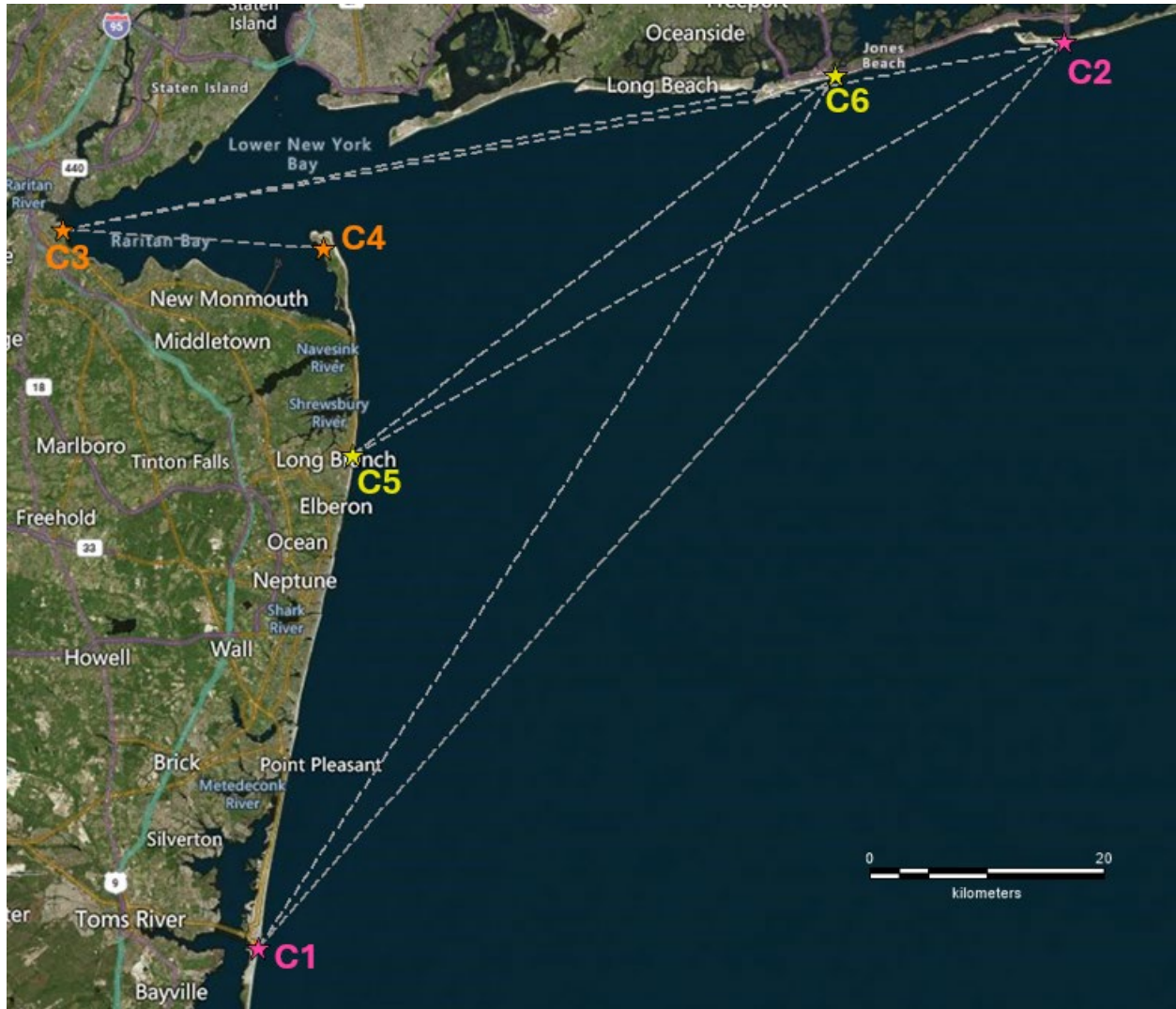
¹ Due to formatting limitations in the Experimental Licensing System, the coordinates reported in the application form are limited to whole seconds. The coordinates provided in this narrative reflect a more precise site location, and any discrepancy results solely from rounding in the form.

Communications Links. In the west, the tests would establish a set of fixed point-to-point links between fixed terrestrial sites at Point Mugu and Torrance Beach (A1, A2, A3, A4, or A5, and A6) and offshore fixed (B1 or B3) and mobile (B2) stations, as shown in the first transmission path map below. In the east, the tests would establish a set of fixed point-to-point links between six fixed terrestrial sites (C1, C2, C3, C4, C5, and C6) as shown in the second transmission path map below. The precise end points of the fixed links would be determined in the field based on local conditions and site availability at the time of testing. To limit variability, Janteq has identified a center point and a radius of operations within which it could position the transceivers on either end of each point-to-point terrestrial link. These search rings would allow operational flexibility in the field, but the terrestrial end points of the link would be fixed, not mobile, during operations.² The offshore mobile stations would operate within a polygonal area defined by corner points as provided in the test location map for Test Site B2 (MV Independence) and represented in the application as a center point with radius.

West Coast Transmission Paths



² The transmission and reception equipment is powered by portable lithium battery packs that allow flexibility to operate anywhere within the search ring.

East Coast Transmission Paths

Directional Phased Array Antenna. The planned tests would employ directional phased array antennas to ensure focused, point-to-point transmissions between designated sites. Each antenna would be mounted with a fixed 0° vertical orientation and carefully aligned in the horizontal plane to establish the link between paired sites. The antennas feature a beamwidth of 13° (8x8) and 6.3° (16x16) at the half power point in both azimuth and elevation to reduce off-axis emissions and support efficient signal transmission. The values for each test site's orientation would vary somewhat based on the final test site locations as determined in the field.

Site	Orientation in Vertical Plane	Orientation in Horizontal Plane	Width of Beam at Half Power Point	
			8x8	16x16
Test Site A1 Point Mugu, CA – Nike Zeus	0°	115° 141° 201° 286°	13°	6.3°
Test Site A2 Point Mugu, CA – Alpha Pad	0°	115° 141° 201° 286°	13°	6.3°
Test Site A3 Point Mugu, CA – DESIL Building	0°	115° 141° 201° 286°	13°	6.3°
Test Site A4 Point Mugu, CA – RV Park	0°	115° 141° 201° 286°	13°	6.3°
Test Site A5 Point Mugu, CA – Cabins	0°	115° 141° 201° 286°	13°	6.3°
Test Site A6 Torrance Beach	0°	239° 293° 295°	13°	6.3°
Test Site B1 San Nicolas Island	0°	11° 21° 59°	13°	6.3°
Test Site B2 MV Independence	0°	106° 113° 136° 191°	13°	6.3°
Test Site B3 U.S.C. Dornisife Wrigley Marine Science Center	0°	316° 321°	13°	6.3°
Test Site C1 Seaside Park, NJ	0°	34° 42°	13°	6.3°
Test Site C2 Fire Island, NY	0°	222° 240° 259°	13°	6.3°
Test Site C3 South Amboy, NJ	0°	79° 80° 94°	13°	6.3°

Test Site C4 Sandy Hook, NJ	0°	274°	13°	6.3°
Test Site C5 Ocean Place Resort/Seven Presidents Oceanfront Park	0°	52° 60°	13°	6.3°
Test Site C6 Jones Beach State Park – Field 6	0°	214° 232° 259°	13°	6.3°

The Qorvo antenna model no. AWA-0237 is a pre-market 8x8 element phased array antenna with the following parameters:

- Antenna Gain: 23.6 dBi
- EIRP: Max 47.1 dBm (51.3 W)
- Beamwidth: ~13° in both azimuth and elevation
- Scan Range: ±30° azimuth, ±15° elevation
- Polarization: Dual Linear (vertical and horizontal)
- Maximum Transmit Output Power at the antenna terminals: 23.5 dBm (224 mW)

The Qorvo antenna model no. DDE-1202 is a pre-market 16x16 element phased array antenna with the following parameters:

- Antenna Gain: 29 dBi
- EIRP: Max 61.2 dBm (1318 W)
- Beamwidth: ~6.3° in both azimuth and elevation
- Scan Range: 60° conical
- Polarization: Dual Linear (vertical and horizontal)
- Maximum Transmit Output Power at the antenna terminals: 32.2 dBm (1.66 W)

RF Safety and Environmental Considerations.

West coast operations in California, except for the Torrance Beach and U.S.C. Dornsife Wrigley Marine Science Center sites, would occur in areas with restricted access that are not open to the general public. For all sites, Janteq personnel, who are fully trained in RF exposure, would establish and enforce a testing perimeter in accordance with FCC radiation hazard rules to further restrict access to the testing area throughout the duration of each testing session. Janteq would comply with all FCC rules for transmitting antennas and power levels, including limits for human radiofrequency (“RF”) exposure.

Hazards of Electromagnetic Radiation

Qorvo Antenna Model No. AWA-0237 (Shasta – 8x8)

Input Parameter	Value	Unit	Source
Antenna Width (D)	52.28	mm	Janteq
Antenna Height (D)	52.28	mm	Janteq
Antenna Gain	23.6	dBi	Janteq - Max Gain at 24.45 GHz
Aperture Efficiency	81.3%	Percentage	Janteq
Frequency	24450	MHz	Assumed Freq
Total Transmitter Power	23.5	dBm	Janteq
Total Transmitter Power	0.22	W	Calc
C	299792458	m/s	Constant

Calculated Variables	Value	Unit	Equation	OET-65 Ref
Wavelength	0.012	meters	$\lambda = \frac{c}{f}$	
Area of Reflector	0.002733	meters ²	$A = D^2$	
Antenna Gain (Linear)	229.1		$G_L = 10^{(G_{dBi}/10)}$	
Near-Field Distance	0.056	meters	$R_{nf} = \frac{D^2}{4\lambda}$	-12
Far-Field Distance	0.134	meters	$R_{ff} = \frac{0.6D^2}{\lambda}$	-16
Power over Antenna Surface	32.8	mW/cm ²	$S_{surface} = \frac{4P}{A}$	-11
Near-Field Power Density (Main Beam)	51.3	mW/cm ²	$S_{nf} = \frac{16\eta P}{\pi D^2}$ but with η in denominator	-13 (modified)
Far-Field Max Power Density (Main Beam)	22.8	mW/cm ²	$S_{ff} = \frac{PG}{4\pi R^2}$	-18

Parameter	Value	Units	Source
General Population Limit	1.0	mW/cm ²	47 C.F.R. 1.1310(e)(1)
General Population Limit	10.0	W/m ²	Unit conversion
Main Beam Distance to GP Limit	0.639	meters	$R = \sqrt{\frac{PG}{4\pi S_{ff}}}$ where $S_{ff} = 10 \text{ W/m}^2$ (OET-65 Eq.18)
Main Beam Distance to GP Limit	63.88	cm	Unit conversion
Main Beam Distance to GP Limit	25.15	inches	Unit conversion

Parameter	Value	Units	Source
Occupational Limit	5.0	mW/cm ²	47 C.F.R. 1.1310(e)(1)
Occupational Limit	50.0	W/m ²	Unit conversion
Main Beam Distance to Occ Limit	0.286	meters	$R = \sqrt{\frac{PG}{4\pi S_{ff}}}$ where $S_{ff} = 50 \text{ W/m}^2$ (OET-65 Eq.18)
Main Beam Distance to Occ Limit	28.57	cm	Unit conversion
Main Beam Distance to Occ Limit	11.25	inches	Unit conversion

Qorvo Antenna Model No. DDE-1202 (16x16)

Input Parameter	Value	Unit	Source
Antenna Width (D)	96	mm	Janteq
Antenna Height (D)	96	mm	Janteq
Antenna Gain	29	dBi	Janteq - Max Gain at 24.45 GHz
Aperture Efficiency	63.1%	Percentage	Janteq
Frequency	24750	MHz	Assumed Freq
Total Transmitter Power	32.2	dBm	Janteq
Total Transmitter Power	1.66	W	Calc
C	299792458	m/s	Constant

Parameter	Value	Units	Source
General Population Limit	1.0	mW/cm ²	47 C.F.R. 1.1310(e)(1)
General Population Limit	10.0	W/m ²	Unit conversion
Main Beam Distance to GP Limit	3.239	meters	$R = \sqrt{\frac{PG}{4\pi S_{ff}}}$ where $S_{ff} = 10 \text{ W/m}^2$ (OET-65 Eq.18)
Main Beam Distance to GP Limit	323.89	cm	Unit conversion
Main Beam Distance to GP Limit	127.52	inches	Unit conversion

Calculated Variables	Value	Unit	Equation	OET-65 Ref
Wavelength	0.012	meters	$\lambda = \frac{c}{f}$	
Area of Reflector	0.009216	meters ²	$A = D^2$	
Antenna Gain (Linear)	794.3		$G_L = 10^{(G_{dBi}/10)}$	
Near-Field Distance	0.190	meters	$R_{nf} = \frac{D^2}{4\lambda}$	-12
Far-Field Distance	0.457	meters	$R_{ff} = \frac{0.6D^2}{\lambda}$	-16
Power over Antenna Surface	72.0	mW/cm ²	$S_{surface} = \frac{4P}{A}$	-11
Near-Field Power Density (Main Beam)	145.4	mW/cm ²	$S_{nf} = \frac{16\eta P}{\pi D^2}$ but with η in denominator	-13 (modified)
Far-Field Max Power Density (Main Beam)	50.3	mW/cm ²	$S_{ff} = \frac{PG}{4\pi R^2}$	-18

Parameter	Value	Units	Source
Occupational Limit	5.0	mW/cm ²	47 C.F.R. 1.1310(e)(1)
Occupational Limit	50.0	W/m ²	Unit conversion
Main Beam Distance to Occ Limit	1.448	meters	$R = \sqrt{\frac{PG}{4\pi S_{ff}}}$ where $S_{ff} = 50 \text{ W/m}^2$ (OET-65 Eq.18)
Main Beam Distance to Occ Limit	144.85	cm	Unit conversion
Main Beam Distance to Occ Limit	57.03	inches	Unit conversion

Coordination with Federal Incumbents

Janteq fully anticipates the need to coordinate Federal spectrum operations through NTIA processes and seeks experimental authorization only for the minimum frequencies and power levels necessary to support its experimental objectives. Janteq would complete any required NTIA coordination prior to commencing operations in Federal-allocated spectrum and would conduct all operations in strict compliance with any conditions or limitations established through that process.

Coordination with Non-Federal Incumbents

Janteq would operate on a non-interference, non-protected basis with respect to non-Federal incumbents. In the 24.25-24.45 GHz and 24.75-25.25 GHz segments, Janteq would coordinate with and protect Upper Microwave Flexible Use Service (“UMFUS”) licensees authorized under part 30 of the Commission's rules. In the 24.75-25.25 GHz segment, Janteq would also coordinate with and protect any fixed-satellite service (Earth-to-space) earth stations in the vicinity. In the 24.0-24.25 GHz segment, Janteq would protect amateur operations and accept interference from industrial, scientific, and medical (“ISM”) equipment operating under part 18. Before commencing operations, Janteq would identify authorized incumbents within the relevant coordination distance and resolve any potential conflicts through frequency selection, geographic separation, antenna alignment, or scheduling. Should harmful interference occur, Janteq would shift to an alternate frequency within the authorized band or discontinue operations, consistent with the stop-buzzer procedures described below.

Interference Mitigation

Janteq recognizes that the operation of any equipment under experimental authority must not cause harmful interference to authorized operations, whether Federal or non-Federal. Janteq also recognizes that its proposed operations may require coordination with existing authorized users of the requested frequencies. Janteq would fully coordinate as needed and operate on a non-interference, non-protected basis. Should interference occur, Janteq would take immediate steps to resolve the interference by shifting operations to an alternate frequency within the authorized band or discontinuing operations.

“Stop Buzzer” Contact Information

If Janteq is required to modify or terminate operations due to any interference concerns, the individual best able to respond promptly to such issues and to act as the technical and interference (“stop buzzer”) point of contact is as follows:

Mau-En Lee
Program Director, Janteq Corporation
Mau-En.Lee@gd-ms.com
(571) 328-0496

This individual would be available during testing operations and would have the authority to suspend transmissions immediately if necessary to resolve any interference concerns.

Station Identification

Janteq respectfully requests a waiver of the station identification requirements of section 5.115(a) of the Commission's rules. In lieu of over-the-air identification, Janteq would maintain detailed operational records and make such records available to the Commission upon request. Given the limited duration, geographic scope, and experimental nature of the operations, grant of this waiver is consistent with the public interest.

Closing and Request for Authority to Operate

Grant of this Experimental Authority Application would serve the public interest.

[REDACTED]

Janteq urges the Commission to grant the requested authority promptly to ensure continuity of testing and to support this emerging capability.

Detailed Maps of Testing Locations.

The proposed operations would take place in the areas identified below. The operations would occur in California at Point Mugu, CA, and San Nicolas Island, CA, on property controlled by the U.S. Navy at Naval Base Ventura County, offshore on the MV Independence, at publicly accessible Torrence Beach, and at the limited access U.S.C. Dornsife Wrigley Marine Science Center. Operations on the east coast would occur in publicly accessible locations within and between the paired locations in Seaside Park, NJ, and Fire Island, NY; South Amboy and Sandy Hook, NJ; and Ocean Place Resort/Seven Presidents Oceanfront Park, NJ and Jones Beach State Park Field 6, NY.

TEST SITES A1, A2, A3, A4, A5: POINT MUGU, CA

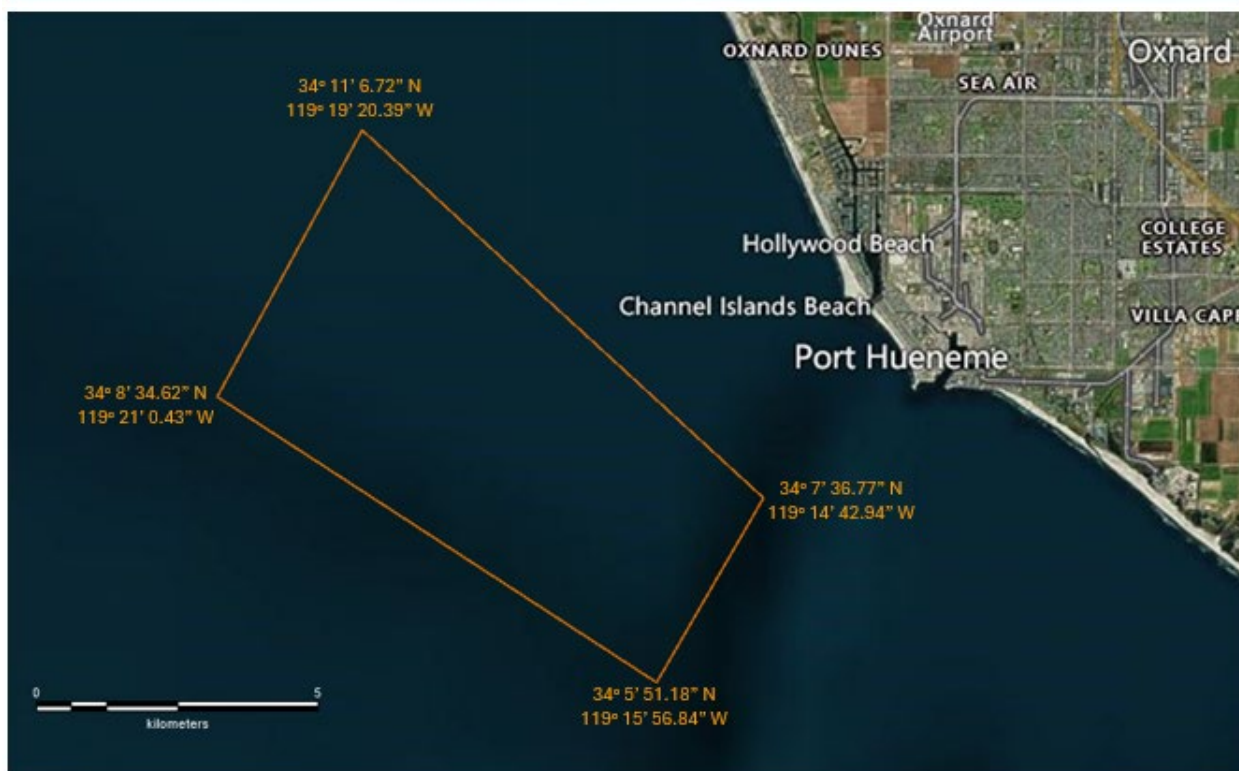
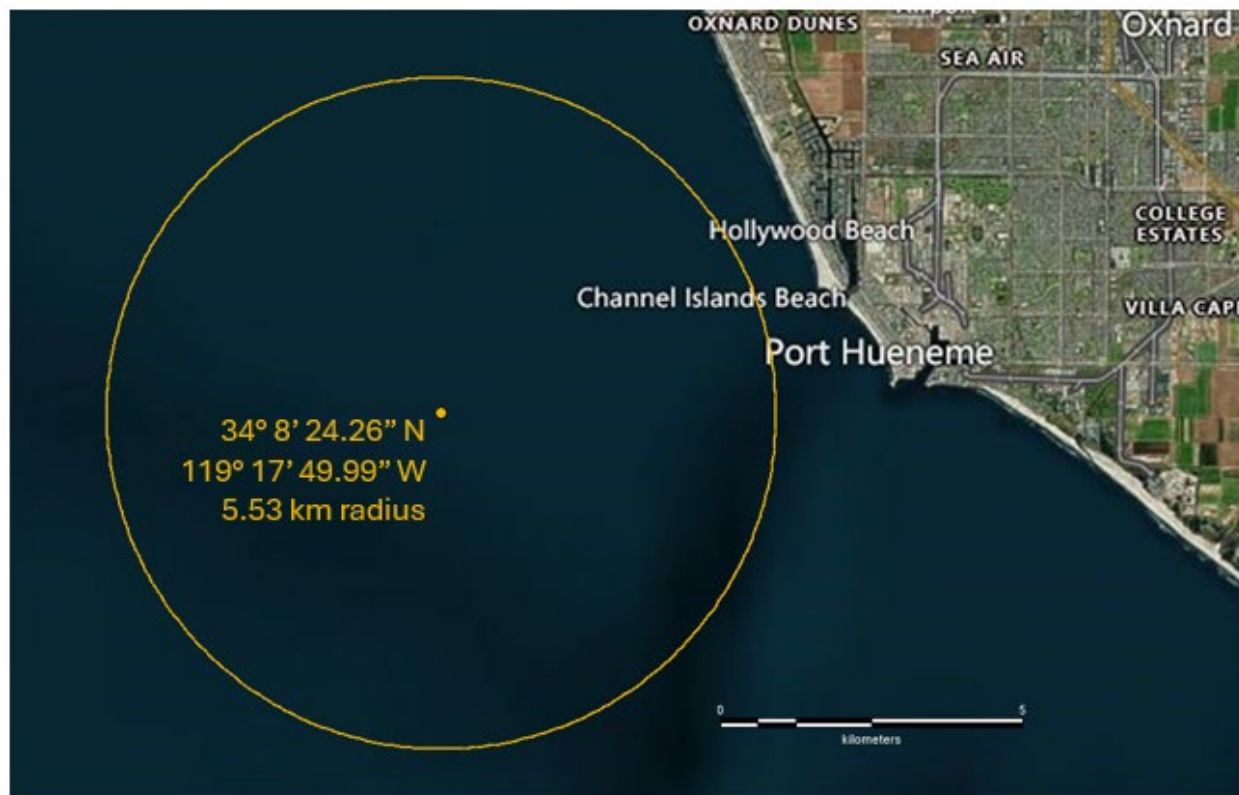
TEST SITE A6: TORRANCE BEACH, CA



TEST SITE B1: SAN NICOLAS ISLAND, CA



TEST SITE B2: MV INDEPENDENCE



TEST SITE B3: U.S.C. DORNSIFE WRIGLEY MARINE SCIENCE CENTER, CA



TEST SITE C1: SEASIDE PARK, NJ



TEST SITE C2: FIRE ISLAND, NY



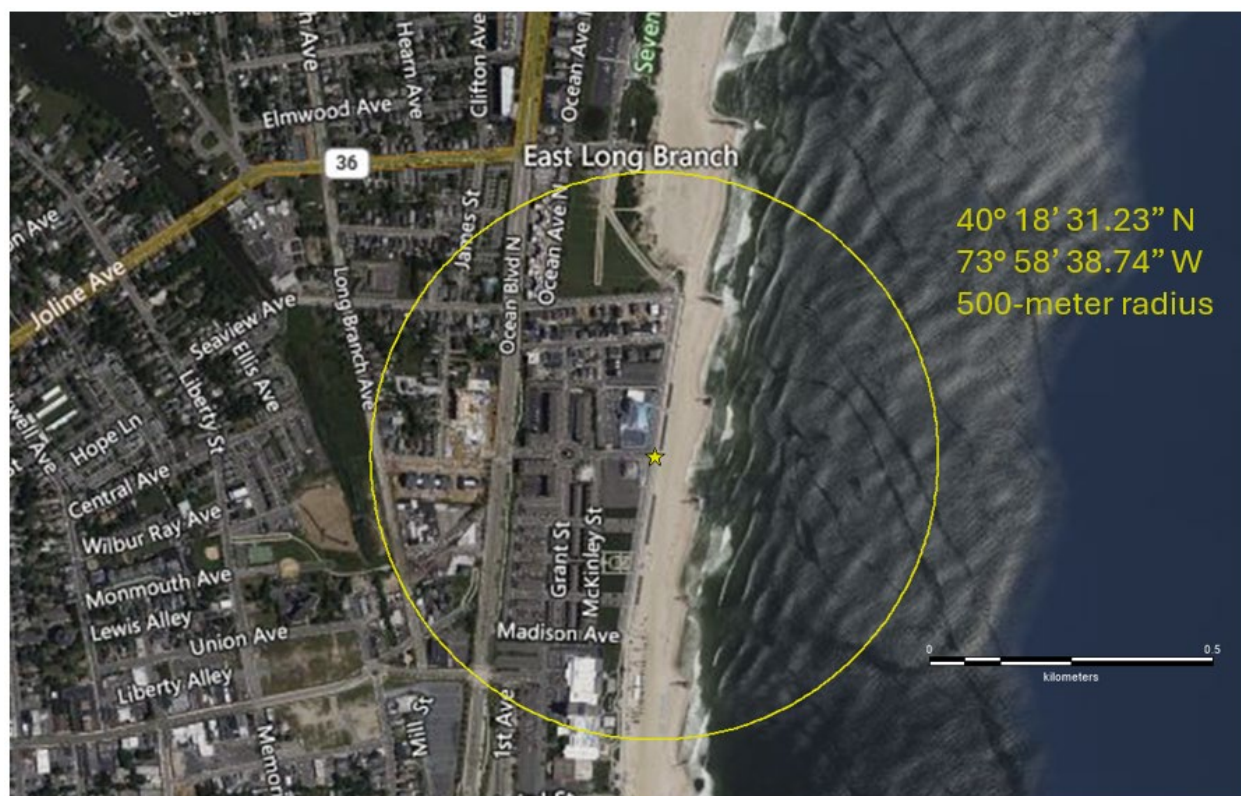
TEST SITE C3: SOUTH AMBOY, NJ



TEST SITE C4: SANDY HOOK, NJ



**TEST SITE C5: OCEAN PLACE RESORT/SEVEN PRESIDENTS OCEANFRONT
PARK, NJ**



TEST SITE C6: JONES BEACH STATE PARK, NY – FIELD 6

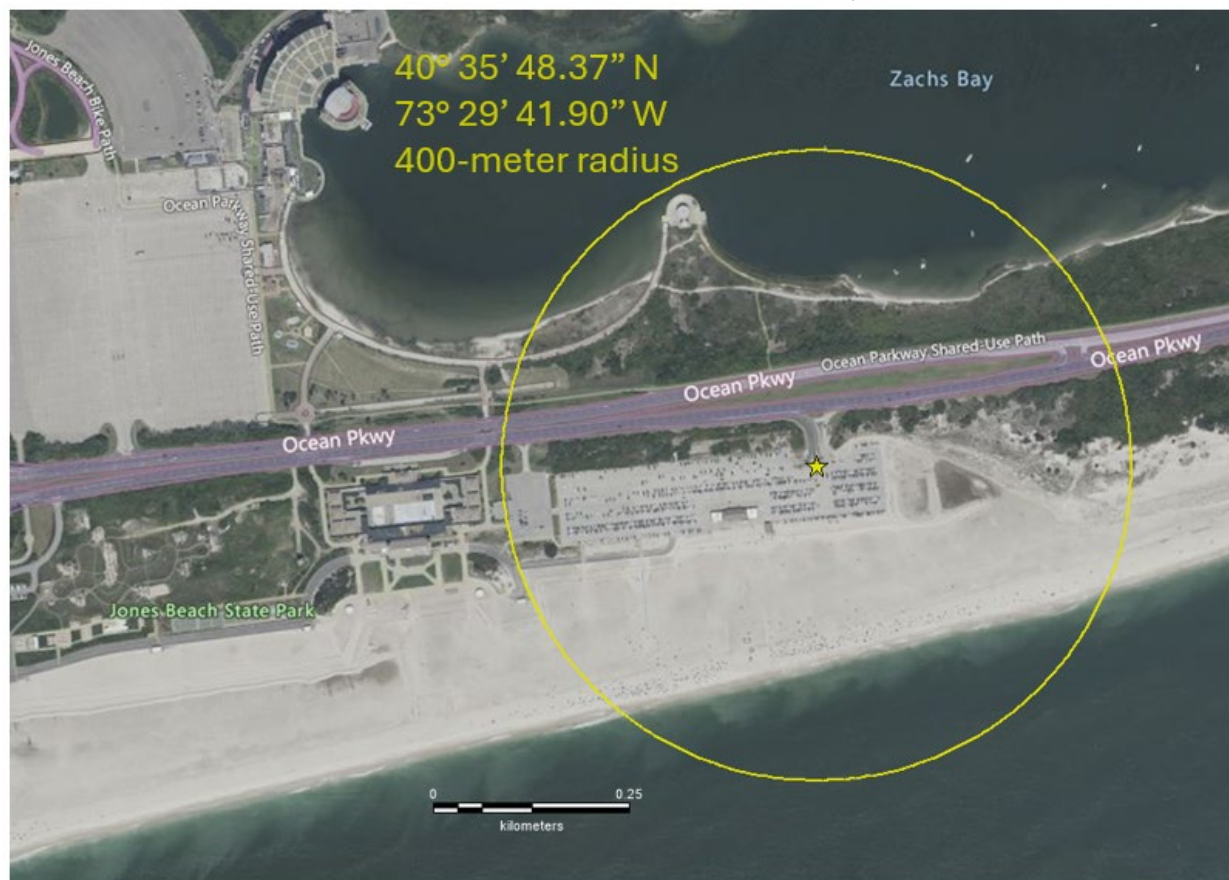
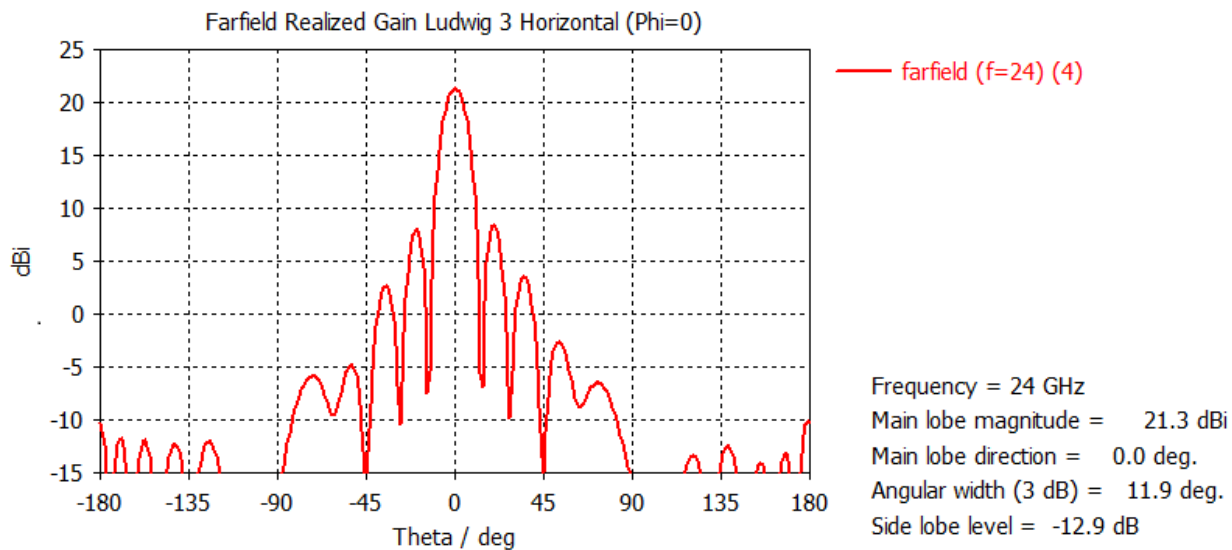
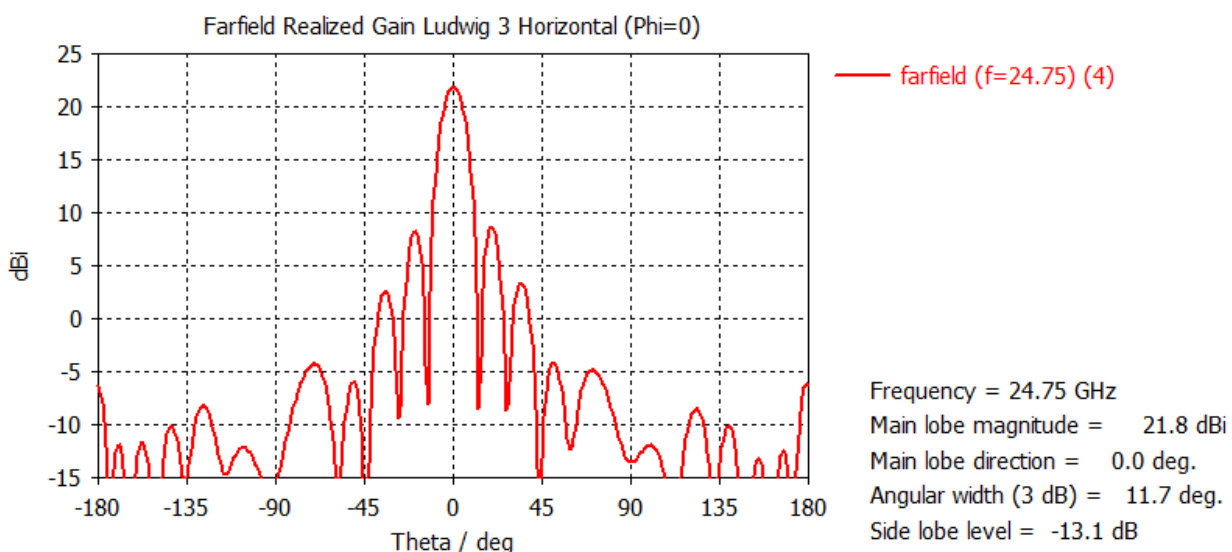
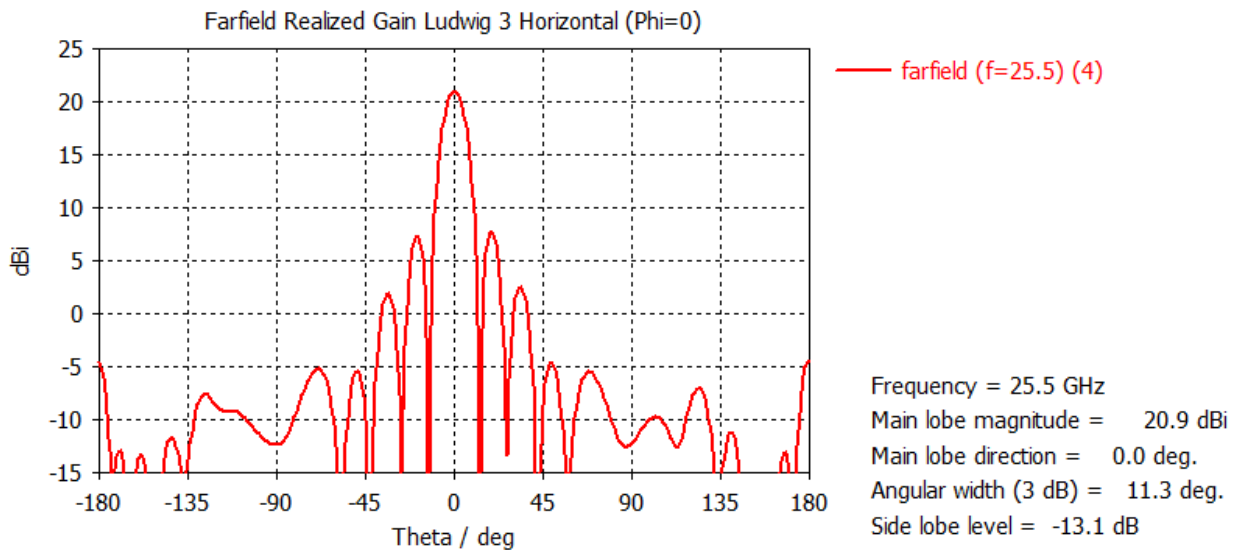


Figure 1: 8x8 Directional Antenna Gain Patterns

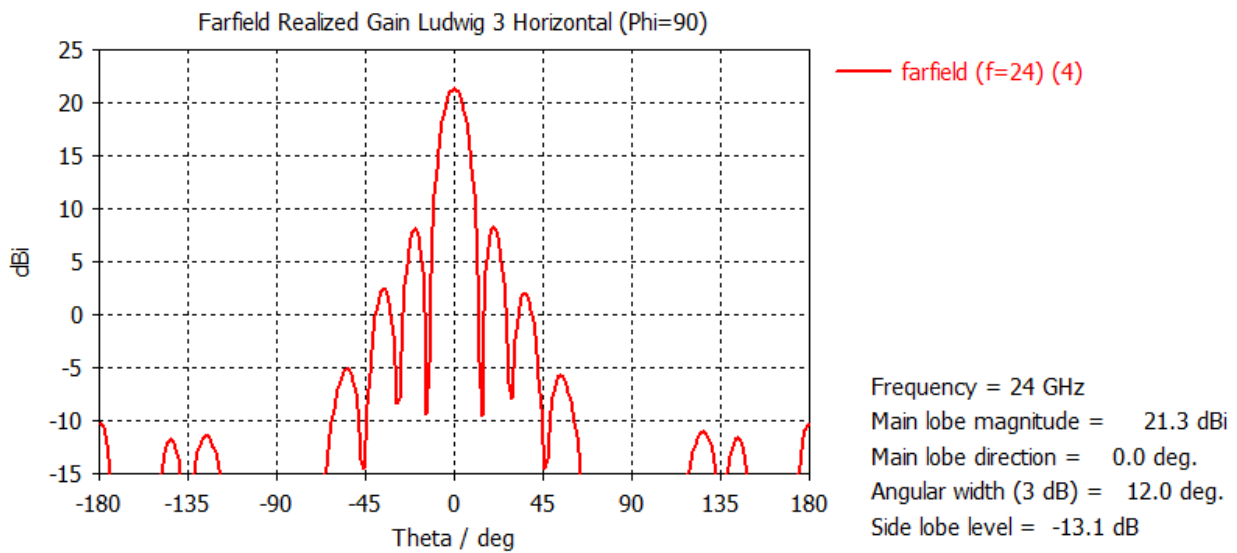
The images below illustrate the vertical and horizontal azimuth and elevation co-pol antenna gain patterns for the 8x8 directional antennas used in the experimental fixed links.

Horizontal Polarization, Azimuth at 24.0 GHz:**Horizontal Polarization, Azimuth at 24.75 GHz:**

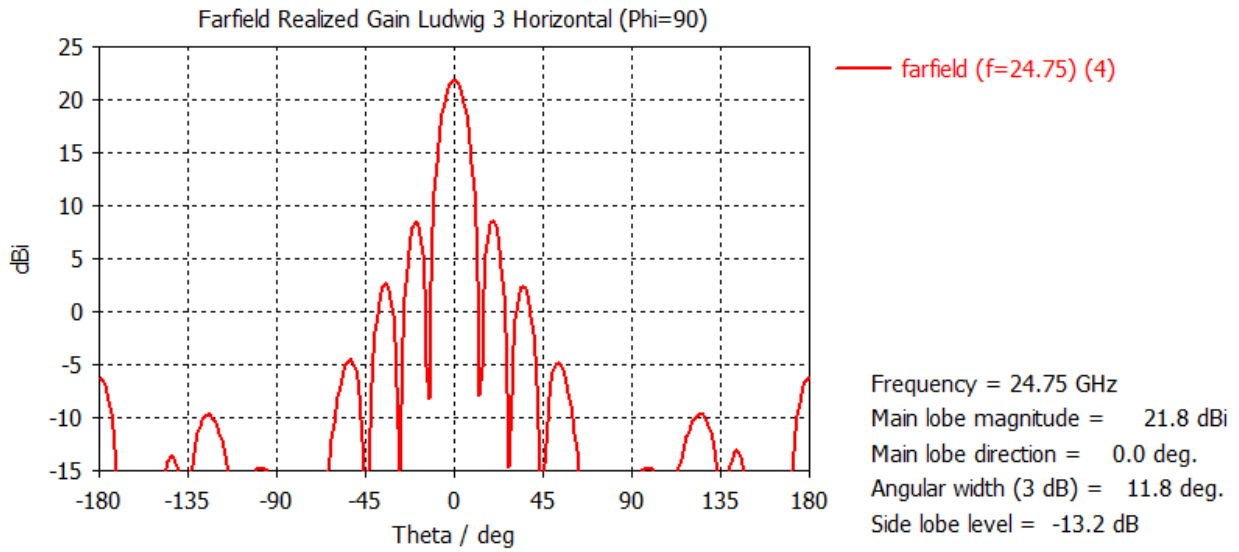
Horizontal Polarization, Azimuth at 25.50 GHz:



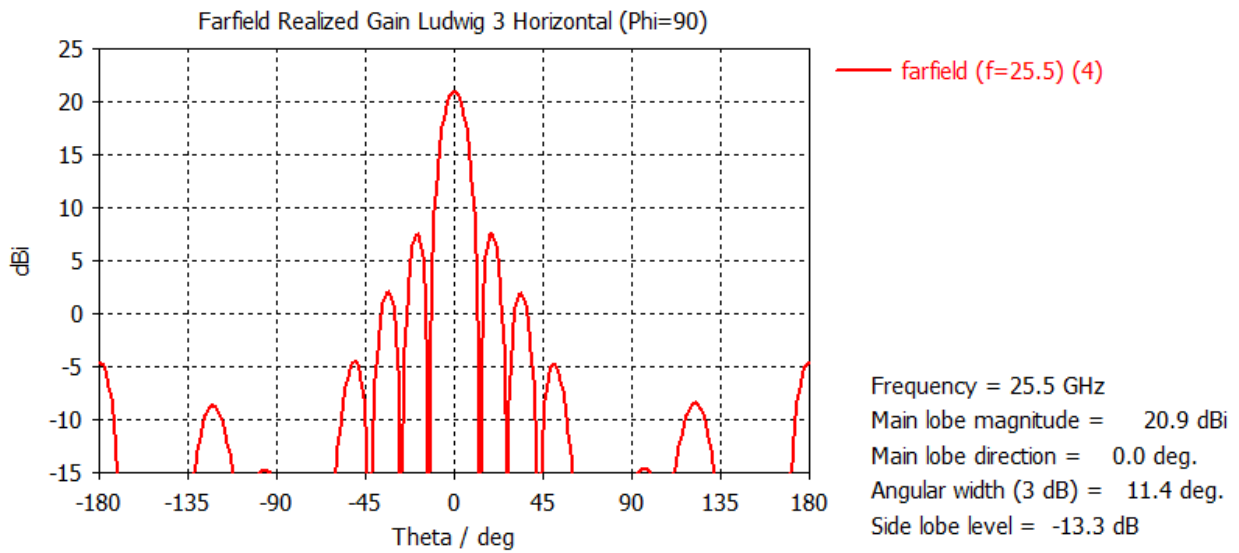
Horizontal Polarization, Elevation at 24.0 GHz:



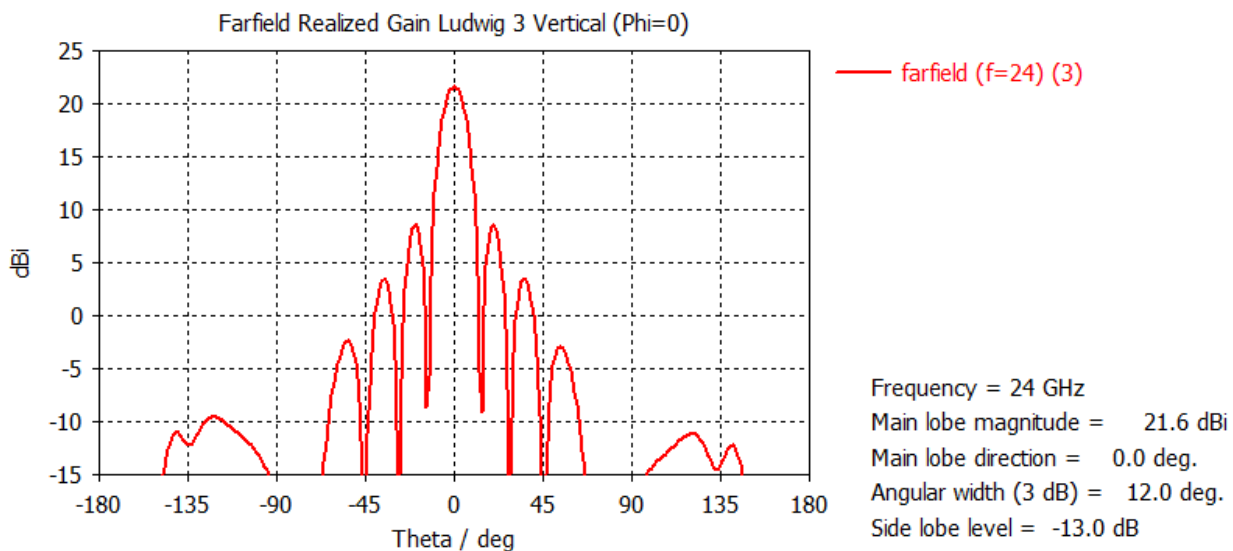
Horizontal Polarization, Elevation at 24.75 GHz:



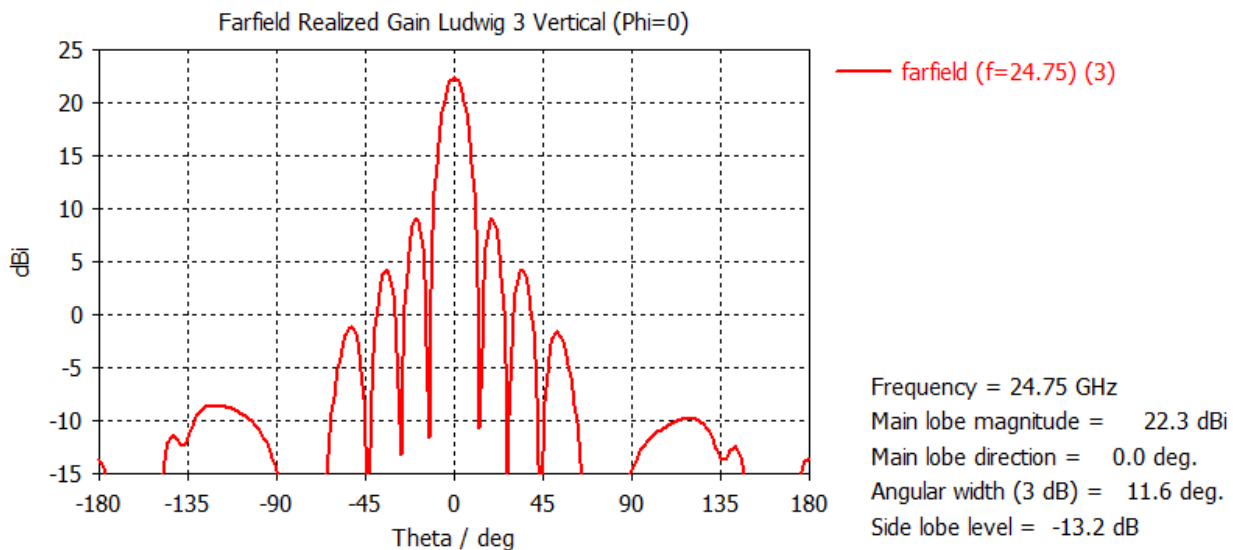
Horizontal Polarization, Elevation at 25.50 GHz:



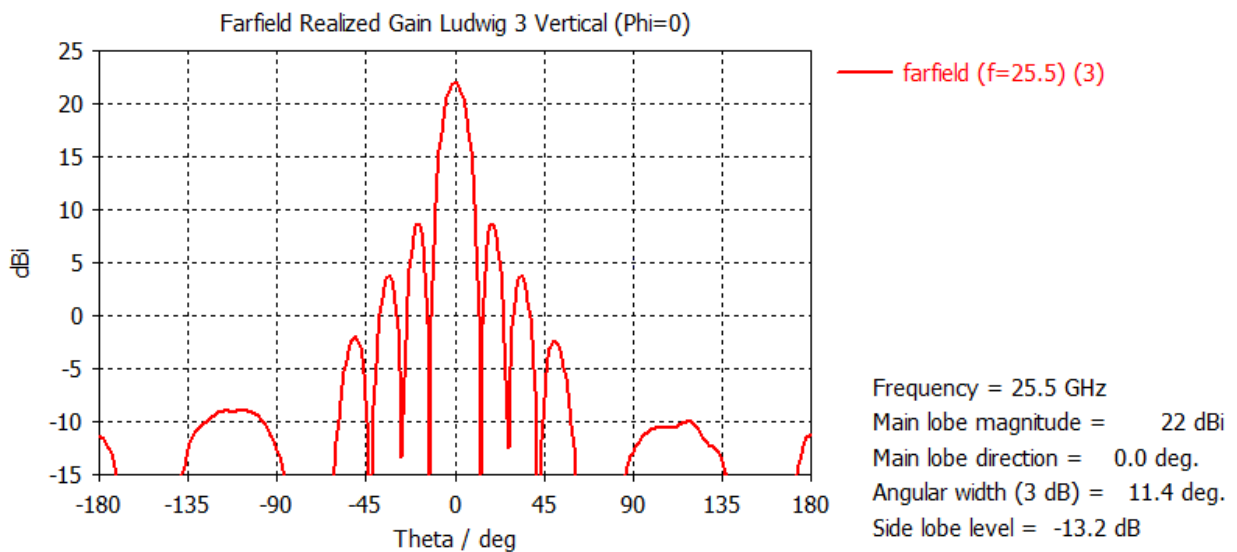
Vertical Polarization, Azimuth at 24.00 GHz:



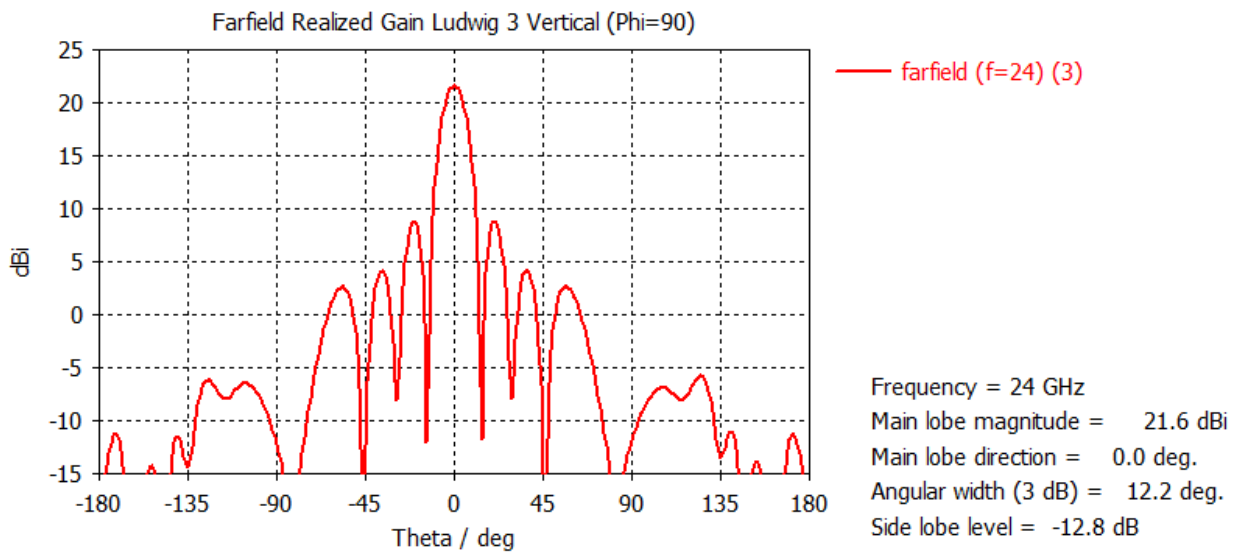
Vertical Polarization, Azimuth at 24.75 GHz:



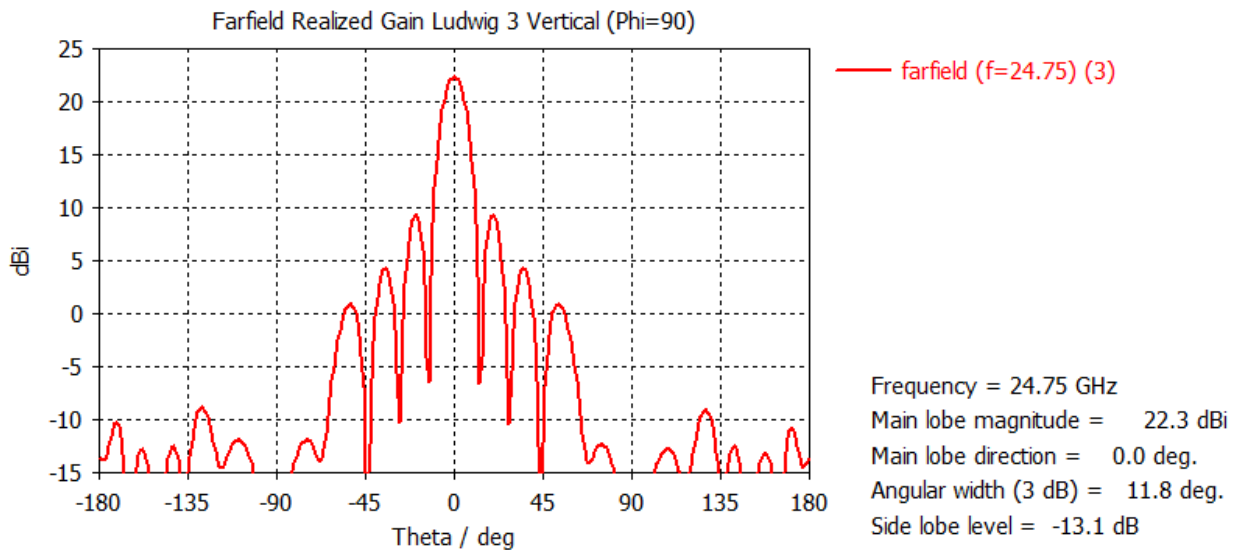
Vertical Polarization, Azimuth at 25.50 GHz:



Vertical Polarization, Elevation at 24.00 GHz:



Vertical Polarization, Elevation at 24.75 GHz:



Vertical Polarization, Elevation at 25.50 GHz:

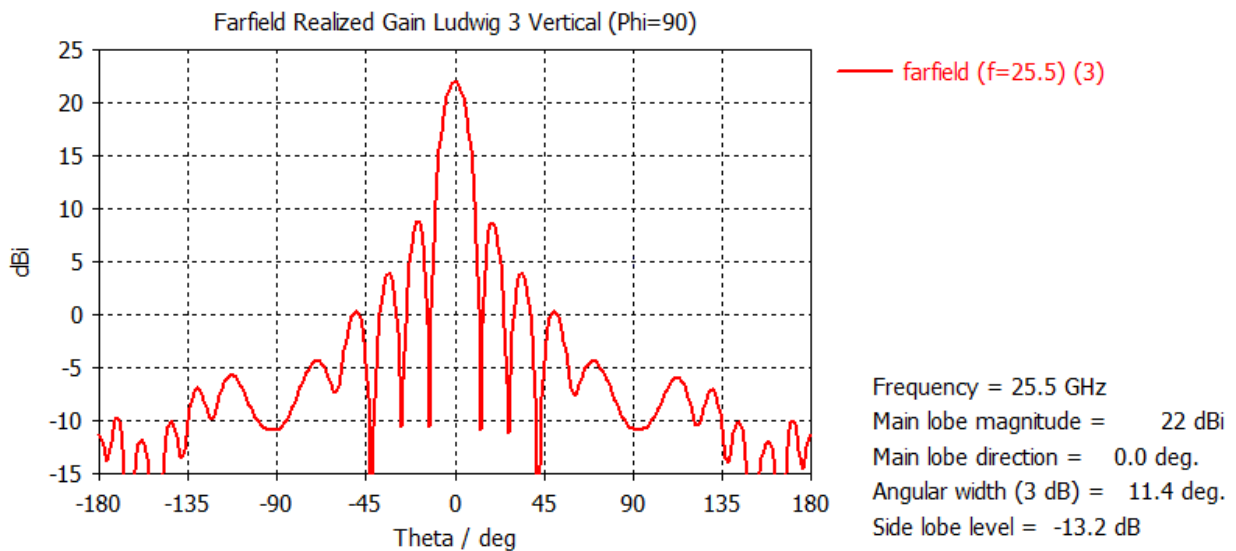
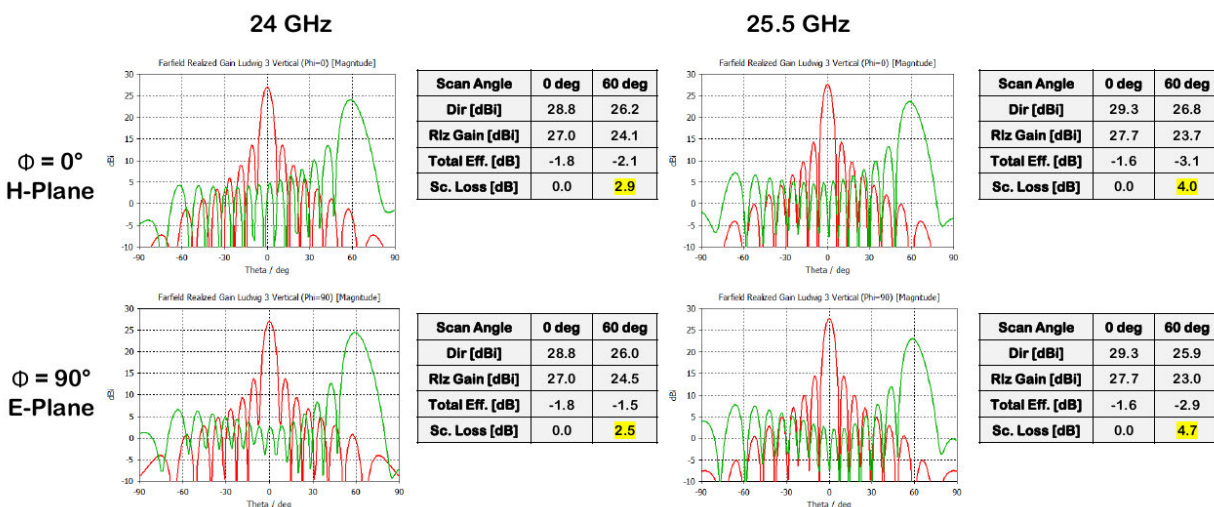


Figure 2: 16x16 Directional Antenna Gain Patterns

The images below illustrate the vertical and horizontal azimuth and elevation co-pol antenna gain patterns for the 16x16 directional antennas used in the experimental fixed links.

Simulated Antenna Performance

16x16 Array Radiation Patterns

V-Pol

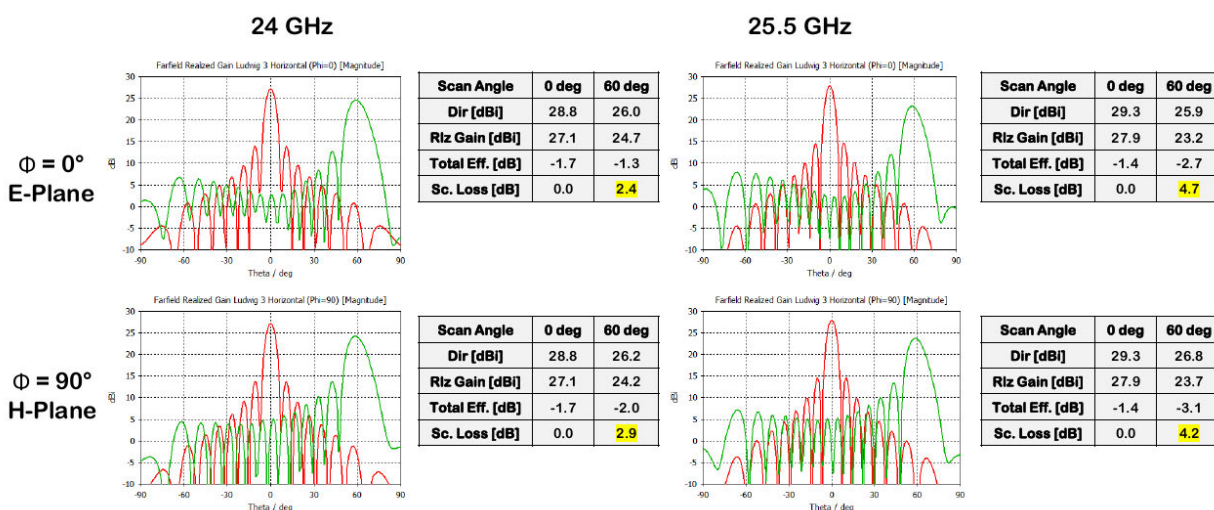
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Simulated Antenna Performance

16x16 Array Radiation Patterns

H-Pol

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Figure 3: Equipment Test Setup

The diagram below illustrates the basic equipment configuration used for the proposed experimental RF link between a base station and a client terminal. The setup reflects a modular, deployable architecture designed to support secure and resilient communication links, consistent with the system parameters detailed elsewhere in this Application.

