

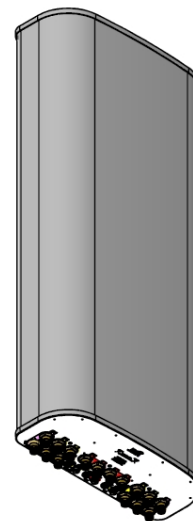


# MX16FRO445-xx

## NWAV™ X-Pol 16-Port Antenna

**X-Pol 16-Port 4 ft, 45° Fast Roll Off, with Smart Bias Ts, 698-3980 MHz:  
4 ports 698-894 MHz, 8 ports 1695-2690 MHz, and 4 ports 3400-3980 MHz**

- 16-Port antenna offering the same functionality as 2 Hex Port antennas in a single unit
- Fast Roll Off (FRO™) Azimuth beam patterns improves intra-inter-cell SINR
- Optimized form factor for reduced wind loading
- Fully integrated (iRETs) with independent RET control for low band and mid band
- Optimized CBRS radiation patterns for improved RSRP and maximum EIRP
- FET configured with internal RET for CBRS and ease of future network optimization
- Excellent passive intermodulation (PIM) performance reduces harmful interference.
- Suitable for 3G, 4G, and 5G interface technologies
- Integrated Smart Bias-Ts reduce leasing costs

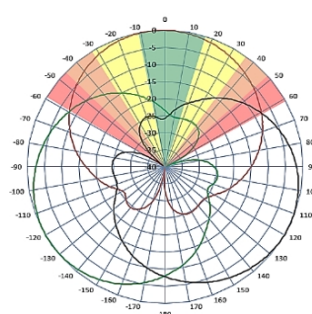


**nwav**

### Fast Roll-Off antennas increase data throughput without compromising coverage

The horizontal beam produced by Fast Roll-Off (FRO) technology increases the Signal to Interference & Noise Ratio (SINR) by eliminating overlap between sectors.

#### Non-FRO antenna



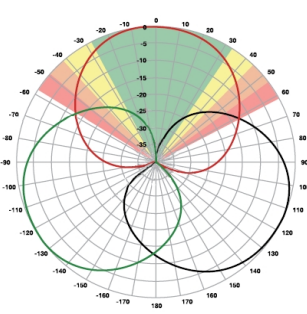
Large traditional antenna pattern overlap creates harmful interference.

JMA's FRO antenna pattern minimizes overlap, thereby minimizing interference.

| LTE throughput | SINR  | Speed (bps/Hz) | Speed increase | CQI  |
|----------------|-------|----------------|----------------|------|
| Excellent      | >18   | >4.5           | 333+%          | 8-10 |
| Good           | 15-18 | 3.3-4.5        | 277%           | 6-7  |
| Fair           | 10-15 | 2-3.3          | 160%           | 4-6  |
| Poor           | <10   | <2             | 0%             | 1-3  |

The LTE radio automatically selects the best throughput based on measured SINR.

#### JMA FRO antenna



| Electrical specification (minimum/maximum)                | Ports 1, 2, 3, 4 |         | Ports 5, 6, 7, 8, 9, 10, 11, 12 |           |           |           |           |
|---|------------------|---------|---------------------------------|-----------|-----------|-----------|-----------|
| Frequency bands, MHz                                      | 698-806          | 806-894 | 1695-1880                       | 1850-1990 | 1920-2180 | 2300-2360 | 2496-2690 |
| Polarization  | ± 45°            |         | ± 45°                           |           |           |           |           |
| Average gain over all tilts, dBi                          | 12.7             | 13.0    | 15.9                            | 16.2      | 16.8      | 16.8      | 16.6      |
| Horizontal beamwidth (HBW), degrees <sup>1</sup>          | 46               | 43      | 40                              | 40        | 36        | 31        | 29        |
| Front-to-back ratio, co-polar power @180°± 30°, dB        | >25.0            | >25.0   | >25.0                           | >25.0     | >25.0     | >25.0     | >25.0     |
| X-Pol discrimination (CPR) at boresight, dB               | >20.0            | >18.0   | >19                             | >18       | >18       | >18       | >18       |
| Vertical beamwidth (VBW), degrees <sup>1</sup>            | 31.0             | 27.0    | 12.0                            | 11.4      | 11.0      | 10.0      | 9.0       |
| Electrical downtilt (EDT) range, degrees                  | 2-16             |         | 0-9                             |           |           |           |           |
| First upper side lobe (USLS) suppression, dB <sup>1</sup> | ≤-18.0           | ≤-18.0  | ≤-18.0                          | ≤-18.0    | ≤-18.0    | ≤-18.0    | ≤-18.0    |
| Cross-polar isolation, port-to-port, dB <sup>1</sup>      | 25               | 25      | 25                              | 25        | 25        | 25        | 25        |
| Max VSWR / return loss, dB                                | 1.5:1 / -14.0    |         | 1.5:1 / -14.0                   |           |           |           |           |
| Max passive intermodulation (PIM), 2x20W carrier, dBc     | -153             |         | -153                            |           |           |           |           |
| Max input power per any port, watts                       | 300              |         | 250                             |           |           |           |           |
| Total composite power all ports, watts                    | 1500             |         |                                 |           |           |           |           |

<sup>1</sup> Typical value over frequency and tilt - \* For ports 13-16, the electrical downtilt is FET configured with internal RET, where the required electrical downtilt is defined at the time of order per the ordering information below.



# MX16FRO445-xx

## NWAV™ X-Pol 16-Port Antenna

| Electrical specification (minimum/maximum)                | Ports 13, 14, 15, 16               |           |           |
|---|------------------------------------|-----------|-----------|
| Frequency bands, MHz                                      | 3400-3550                          | 3550-3700 | 3700-3980 |
| Polarization  | ± 45°                              |           |           |
| Average gain over all tilts, dBi                          | 14.4                               | 14.5      | 14.6      |
| Horizontal beamwidth (HBW), degrees                       | 37                                 | 37        | 36        |
| Front-to-back ratio, co-polar power @180°± 30°, dB        | >25                                | >25       | >25       |
| Vertical beamwidth (VBW), degrees <sup>1</sup>            | 18.0                               | 18.0      | 17.0      |
| Electrical downtilt (EDT) range, degrees                  | 2-12 orderable in 1 deg increments |           |           |
| First upper side lobe (USLS) suppression, dB <sup>1</sup> | ≤-15                               | ≤-15      | ≤-15      |
| Cross-polar isolation, port-to-port, dB <sup>1</sup>      | 25                                 | 25        | 25        |
| Max VSWR / return loss, dB                                | 1.5:1 / -14.0                      |           |           |
| Max input power per any port, watts                       | 150                                |           |           |
| Total composite power all ports (1-10), watts             | 1500                               |           |           |

| Ordering information   |   |
|--|---|
| Antenna model  | Description   |
| MX16FRO445-xx (xx represents the FET in one degree increments for 3.4-3.8 GHz) | 4F X- Pol 16 PORT FRO 45° 2-16°/ 0-9°/2-12°, 4.3-10 & SBT   |
|  | xx=02 thru 12 for each 1 degree tilt 3.4-3.8 GHz<br>Examples: MX16FIT465-02 – 2deg, MX16FIT465-09 – 9deg, MX16FIT465-12-12deg |
| Optional accessories   |   |
| <a href="#">AISG cables</a>  | M/F cables for AISG connections   |
| <a href="#">PCU-1000 RET controller</a>  | Stand-alone controller for RET control and configurations   |
| <a href="#">91900314-02</a>  | Dual Mount Bracket (see 91900314 bracket document for details)  |



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## NWAV™ X-Pol 16-Port Antenna

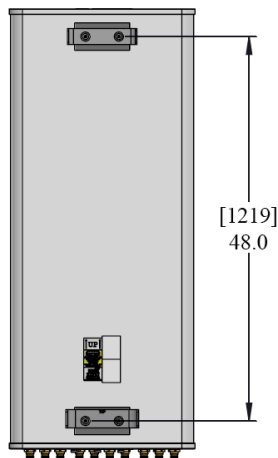
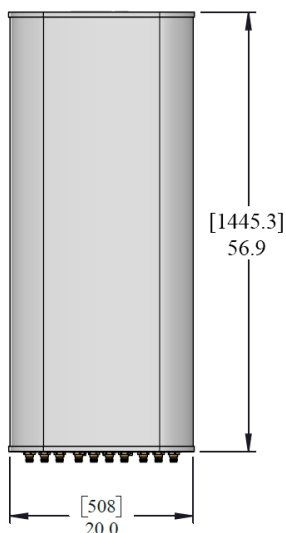
### Mechanical specifications

|  |  |
|--|--|
| Dimensions height/width/depth, inches (mm)                   | 56.9/ 20.0/ 8.0 (1445.3/ 508.0/ 203.2) |
| Shipping dimensions length/width/height, inches (mm)         | 61.9/ 26/ 15 (1572.3/ 600/ 381)        |
| No. of RF input ports, connector type, and location          | 16 x 4.3-10 female, bottom             |
| RF connector torque  | 96 lbf-in (10.85 N·m or 8 lbf-ft)      |
| Net antenna weight, lb (kg)                                  | 51.7 (23.5)                            |
| Shipping weight, lb (kg)                                     | 84.7 (38.4)                            |
| Antenna mounting and downtilt kit included with antenna      | 91900318                               |
| Net weight of the mounting and downtilt kit, lb (kg)         | 18 (8.2)                               |
| Range of mechanical up/down tilt                             | -2° to 12°                             |
| Rated wind survival speed, mph (km/h)                        | 150 (241)                              |
| Frontal and lateral wind loading @ 150 km/h, lbf (N)         | 102.1 (454.2), 47.3 (210.4)            |
| EPA frontal and lateral, ft <sup>2</sup> , (m <sup>2</sup> ) | 4.6 (0.43), 2.1 (0.20)                 |

Front view

Back view

Bottom view





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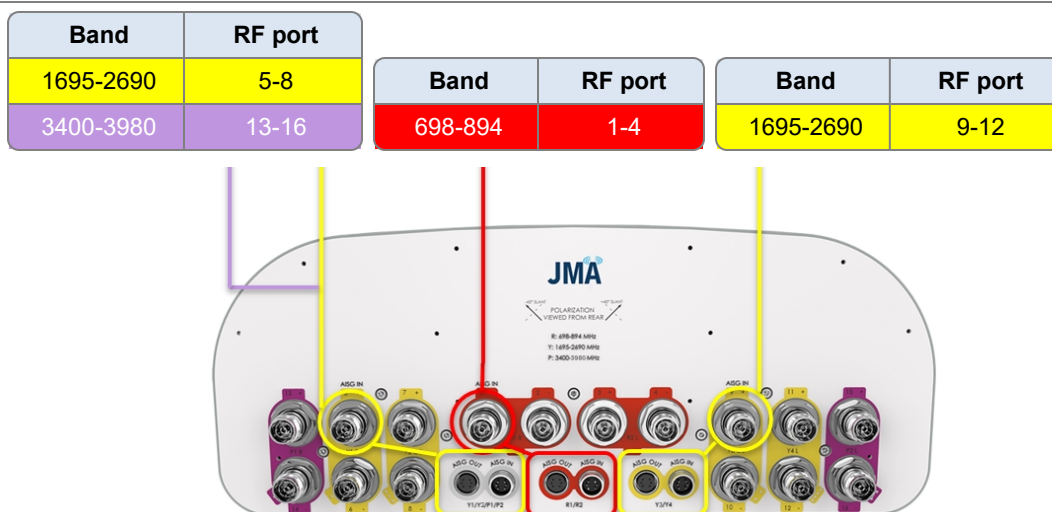
## NWAV™ X-Pol 16-Port Antenna

### Remote electrical tilt (RET 1000) information

|   |  |
|---|--|
| RET location  | Integrated into antenna                                      |
| RET interface connector type                              | 8-pin AISG connector per IEC 60130-9 or RF port bias-t       |
| RET connector torque                                      | Min 0.5 N·m to max 1.0 N·m (hand pressure & finger tight)    |
| RET interface connector quantity                          | 3 pairs of AISG male/female connectors and 3 RF port Bias Ts |
| RET interface connector location                          | Bottom of the antenna  |
| Total no. of internal RETs 698-894 MHz                    | 1  |
| Total no. of internal RETs 1695-2690 MHz                  | 2  |
| Total no. of internal RETs 3400-3980 MHz                  | 1  |
| RET input operating voltage, vdc                          | 10-30  |
| RET max power consumption, idle state, W                  | ≤ 2.0  |
| RET max power consumption, normal operating conditions, W | ≤ 13.0   |
| RET communication protocol                                | AISG 2.0 / 3GPP  |

### RET and RF connector topology

Each RET device can be controlled either via the designated external AISG connector or RF smart bias-t port as shown below:



Note: The RET Device for 3400-3800 MHz is connected via the 1695-2690 Port 5 Bias T port or 1695-2690/3400-3800 MHz AISG ports.

### Array topology

6 sets of radiating arrays

R1: 698-894 MHz  
R2: 698-894 MHz  
Y1: 1695-2690 MHz  
Y2: 1695-2690 MHz  
Y3: 1695-2690 MHz  
Y4: 1695-2690 MHz  
P1: 3400-3980 MHz  
P2: 3400-3980 MHz

| Band      | RF port |
|-----------|---------|
| 698-894   | 1-4     |
| 1695-2690 | 5-12    |
| 3400-3980 | 13-16   |

