

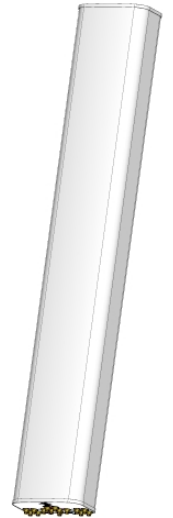
# MX14FRO860-01

## NWAV™ X-Pol 14-Port Antenna

**X-Pol 14-Port 8 ft, 60° Fast Roll Off with Smart Bias Ts, 698-4200 MHz:**

**2 ports 698-894 MHz, 4 ports 1695-2180 MHz, and 8 ports 3700-4200 MHz**

- Fast Roll Off (FRO™) azimuth beam pattern improves Intra- and Inter-cell SINR
- Combination of Hex Port Antenna with integrated 5G 3.5 GHz 8T8R beamforming capability
- Optimized antenna array design for all 3.5 GHz beamforming combinations
- Maintains existing low and mid band RF performance
- Lower antenna weight with new Integrated RF distribution design
- Excellent passive intermodulation (PIM) performance reduces harmful interference.
- Fully integrated internal (iRETs) with SBT for independent RET control on all bands

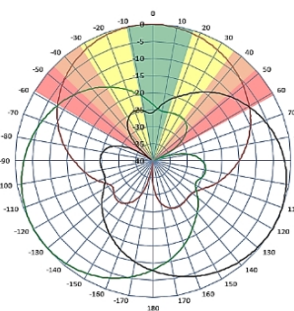


**NWAV™**

### 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.

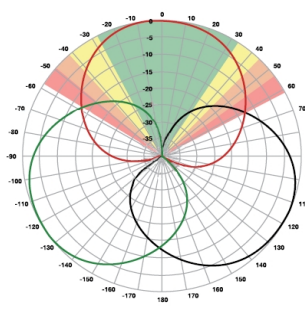
#### Non-FRO antenna



Large traditional antenna pattern overlap creates harmful interference.

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

#### JMA FRO antenna



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.

Electrical specification (minimum/maximum)	Ports 1, 2		Ports 3, 4, 5, 6		
Frequency bands, MHz	698-798	824-894	1695-1880	1850-1990	1920-2180
Polarization	± 45°		± 45°		
Gain over all tilts, dBi	15.7	16.4	17.6	17.9	18.2
Horizontal beamwidth (HBW), degrees <sup>1</sup>	64.0	60.0	61.0	61.0	56.0
Front-to-back ratio, @180°, dB	>29.0	>31.0	>30.0	>29.0	>29.0
X-Pol discrimination (CPR) at boresight, dB	>20.0	>18.0	>19.0	>17.0	>17.0
Vertical beamwidth (VBW), degrees <sup>1</sup>	8.9	7.9	5.7	5.3	4.8
Electrical downtilt (EDT) range, degrees	2-12		0-9		
First upper side lobe (USLS) suppression, dB <sup>1</sup>	≤-15.0	≤-15.0	≤-16.0	≤-16.0	≤-16.0
Cross-polar isolation, port-to-port, dB <sup>1</sup>	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 (1-14), watts	1500				

<sup>1</sup> Typical value over frequency and tilt

Electrical specification (minimum/maximum)	Ports 7, 8, 9, 10, 11, 12, 13, 14
Frequency bands, MHz	3700-4200
Gain over all tilts, dBi	16.0
Horizontal beamwidth (HBW), degrees <sup>1</sup>	85
Horizontal beam width tolerance, degrees	±5
Front-to-back ratio, @180°, dB	27
Vertical beamwidth (VBW), degrees <sup>1</sup>	7.5
Vertical beam width tolerance, degrees	±0.3
Beam tilt, degrees	2-12
First upper side lobe (USLS) suppression, dB <sup>1</sup>	15
Coupling level, Amp, Antenna port to Cal port, dB	26
Coupling level, max Amp Δ, Antenna port to Cal port, dB	±0.7
Coupler, max Amp Δ, Antenna port to Cal port, dB	0.65
Coupler, max Phase Δ, Antenna port to Cal port, degrees	4

<sup>1</sup> Typical value over frequency and tilt

Electrical specification, Broadcast 65°	Ports 7, 8, 9, 10, 11, 12, 13, 14
Frequency bands, MHz	3700-4200
Gain over all tilts, dBi	21.6
Horizontal beamwidth (HBW), degrees <sup>1</sup>	65
Horizontal beamwidth tolerance, degrees	±4
Vertical beamwidth (VBW), degrees <sup>1</sup>	7.5
Vertical beamwidth tolerance, degrees	±0.3
First upper side lobe (USLS) suppression, dB <sup>1</sup>	<-16

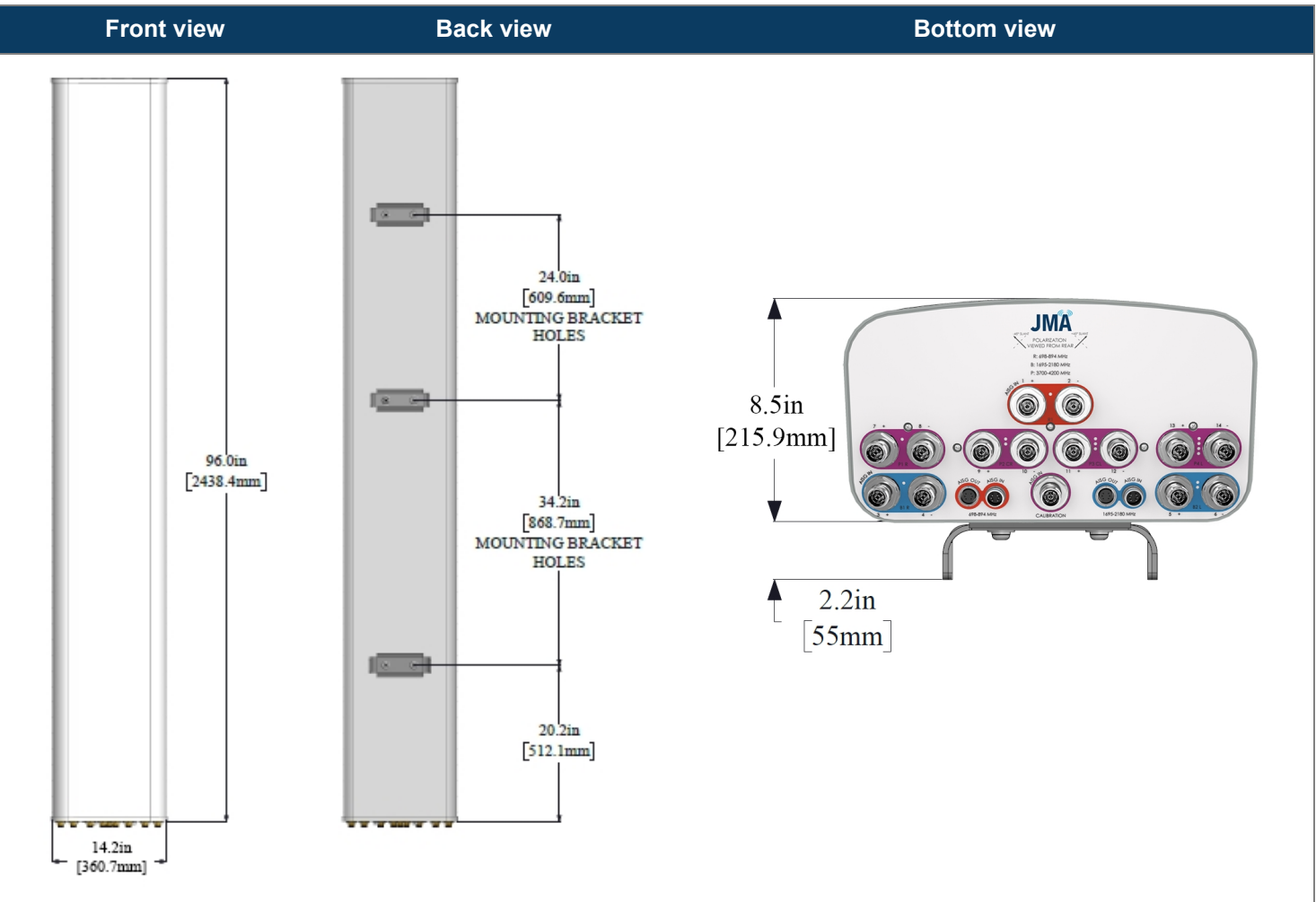
Electrical specification, Service Beam	Ports 7, 8, 9, 10, 11, 12, 13, 14
Frequency bands, MHz	3700-4200
Steered 0° gain, dBi	21.6
Steered 0° Gain tolerance, dBi	±0.6
Steered 0° Beamwidth, Horizontal, degrees	22
Steered 0° CPR at beampeak, dB	18
Steered 0° Horizontal Sidelobe, dB	12
Steered 30° Gain, dBi (max)	21.2
Steered 30° Gain tolerance, dBi	±0.6
Steered 30° Gain, dBi	21
Steered 30° Beamwidth, Horizontal, degree	22
Steered 30° CPR at beampeak, dB	18
Steered 30° Horizontal Sidelobe, dB	10

Electrical specification, Soft Split	Ports 7, 8, 9, 10, 11, 12, 13, 14
Frequency bands, MHz	3700-4200
Gain over all tilts, dBi	20.2
Horizontal beamwidth (HBW), degrees <sup>1</sup>	32
First upper side lobe (USLS) suppression, dB <sup>1</sup>	15

Beamforming weighting table available upon request

Ordering information	
Antenna model	Description
MX14FRO860-01	8F X- Pol 14 Port FRO 60° 2-12°/ 0-9°/ 2-12° RET, 4.3-10 & SBT
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="#">91900314-03</a>	Dual Mount Bracket (see 91900314 bracket document for details)

Mechanical specifications	
Dimensions height/width/depth, inches (mm)	96.0/ 14.2/ 8.5 (2438.4/ 360.7/ 215.9)
Shipping dimensions length/width/height, inches (mm)	106/ 20/ 15 (2692.4/ 508/ 381)
No. of RF input ports, connector type, and location	14 x 4.3-10 female, bottom
Calibration interface port, connector type, and location	1 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)	77.1 (34.97)
Shipping weight, lb (kg)	126.1 (57.19)
Antenna mounting and downtilt kit included with antenna	91900318, 91900319 (middle bracket)
Net weight of the mounting and downtilt kit, lb (kg)	26 (11.82)
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)	89.4 (397.7), 37.5 (166.8)
EPA frontal and lateral, ft <sup>2</sup> , (m <sup>2</sup> )	4.0 (0.37), 1.7 (0.16)

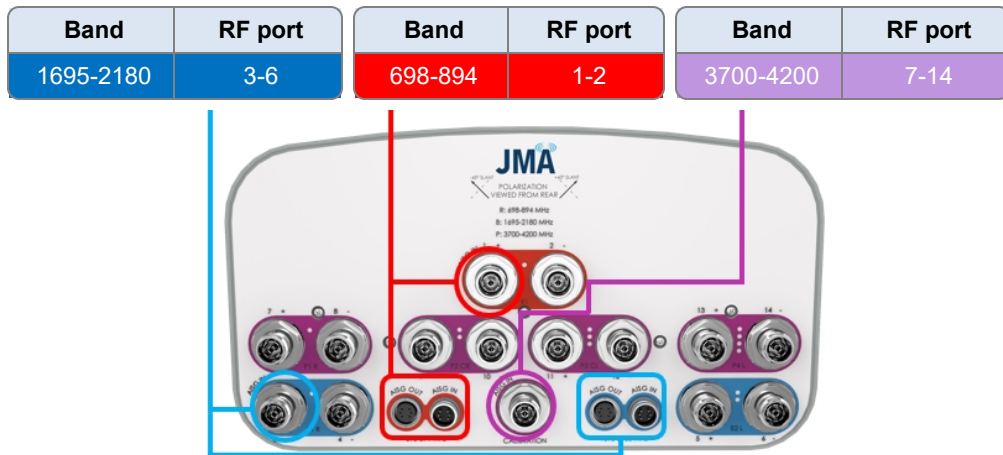


### Remote electrical tilt (RET 1000) information

<b>RET location</b>	Integrated into antenna
<b>RET interface connector type</b>	8-pin AISG connector per IEC 60130-9 or RF port bias-t
<b>RET connector torque</b>	Min 0.5 N·m to max 1.0 N·m (hand pressure & finger tight)
<b>RET interface connector quantity</b>	2 pairs of AISG male/female connectors and 3 RF port bias-ts
<b>RET interface connector location</b>	Bottom of the antenna
<b>Total no. of internal RETs 698-894 MHz</b>	1
<b>Total no. of internal RETs 1695-2180 MHz</b>	1
<b>Total no. of internal RETs 3700-4200 MHz</b>	1
<b>RET input operating voltage, vdc</b>	10-30
<b>RET max power consumption, idle state, W</b>	≤ 2.0
<b>RET max power consumption, normal operating conditions, W</b>	≤ 13.0
<b>RET communication protocol</b>	AISG 2.0 / 3GPP

### RET and RF connector topology

The R1 and B1/B2 RET devices can be controlled via either the designated external AISG connectors or the RF smart bias-t ports. The P1 RET devices can be controlled via the RF smart bias-t port only as shown below:



### Array topology

4 sets of radiating arrays

R1: 698-894 MHz  
 B1: 1695-2180 MHz  
 B2: 1695-2180 MHz  
 P1: 3700-4200 MHz

Band	RF port
698-894	1-2
1695-2180	3-4
1695-2180	5-6
3700-4200	7-14

