

### X-Pol Ten-Port 4 ft, 40° Fast Roll Off, with Smart Bias Ts, 698-4200 MHz:

2 ports 698-894 MHz, 4 ports 1695-2200 MHz, and 4 ports 3400-4200 MHz

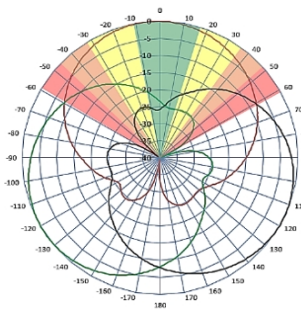
- Fast Roll Off (FRO™) azimuth beam pattern improves Intra- and Inter-cell SINR
- Excellent passive intermodulation (PIM) performance reduces harmful interference.
- Fully integrated (iRETs) with independent RET control for low band and mid band
- FET configured with internal RET for high band & ease of future network optimization.
- SON-Ready array spacing supports beamforming capabilities
- Suitable for 3G, 4G, and 5G interface technologies
- Integrated Smart Bias-Ts reduce leasing costs



#### 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**



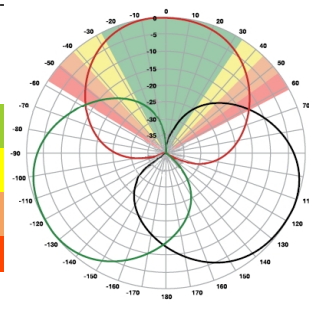
Large traditional antenna pattern overlap creates harmful interference.

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		Ports 3, 4, 5, 6		
	Frequency bands, MHz	698-806	806-894	1695-1880	1850-1990
Polarization	± 45°		± 45°		
Average gain over all tilts, dBi	14.8	15.3	18.1	18.0	18.2
Horizontal beamwidth (HBW), degrees <sup>1</sup>	43	37	41	39	38
Front-to-back ratio, co-polar power @180°± 30°, dB	>32.0	>29.0	>25.0	>25.0	>25.0
X-Pol discrimination (CPR) at boresight, dB	>20.0	>22.0	>27	>24	>23
Vertical beamwidth (VBW), degrees <sup>1</sup>	18.3	16.1	8.0	7.2	7.0
Electrical downtilt (EDT) range, degrees	2-16		0-9		
First upper side lobe (USLS) suppression, dB <sup>1</sup>	≤-15.0	≤-15.0	≤-17.0	≤-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 (1-10), watts	1500				



# MX10FRO440-02

## NWAV™ X-Pol Ten-Port Antenna

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

Electrical specification (minimum/maximum)	Ports 7, 8, 9, 10			
Frequency bands, MHz	3400-3550	3550-3700	3700-3950	3950-4200
Polarization	± 45°			
Average gain over all tilts, dBi	14.7	14.8	15.4	13.2
Horizontal beamwidth (HBW), degrees	42	40	36	33
Front-to-back ratio, co-polar power @180°± 30°, dB	>25	>25	>25	>25
Vertical beamwidth (VBW), degrees <sup>1</sup>	19.0	18.2	18.0	17.0
Electrical downtilt (EDT) range, degrees	2-12			
First upper side lobe (USLS) suppression, dB <sup>1</sup>	≤-15	≤-15	≤-15	≤-15
Cross-polar isolation, port-to-port, dB <sup>1</sup>	24	26	24	18
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			

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

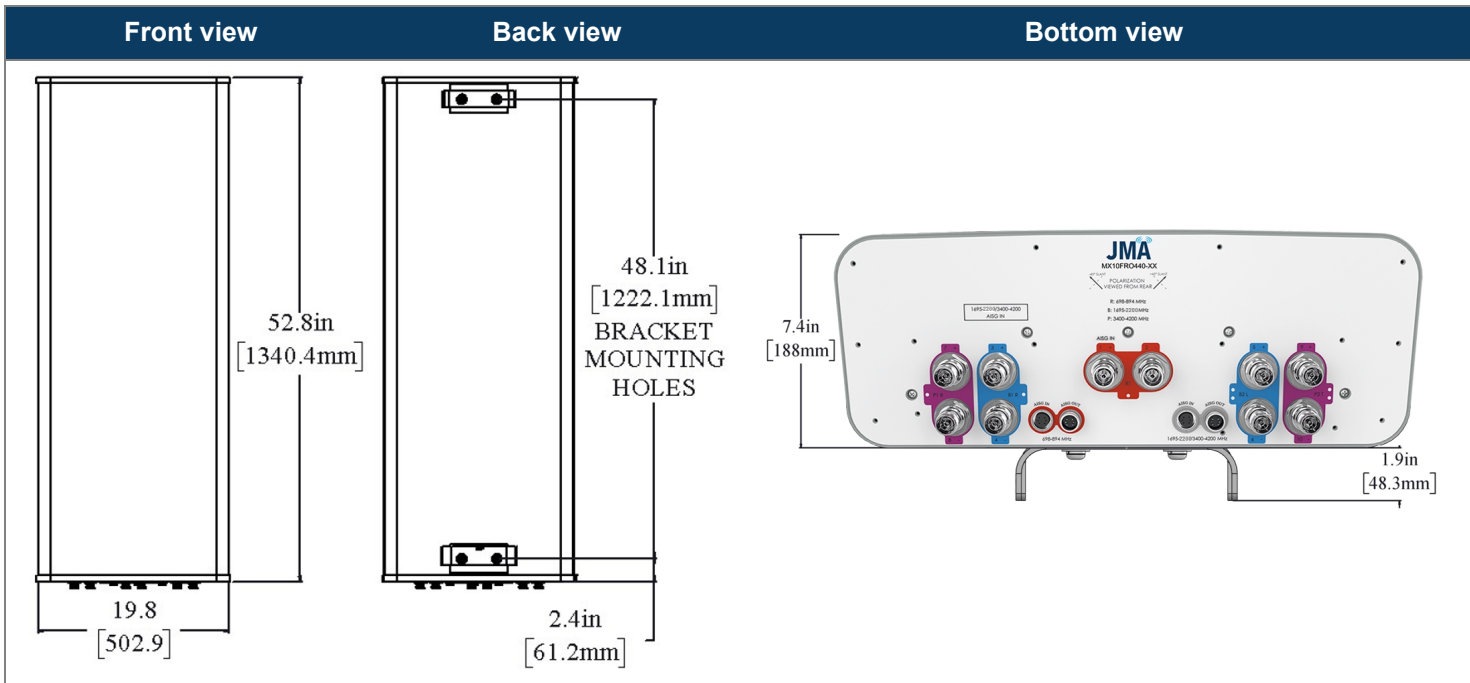
Ordering information	
Antenna model	Description
MX10FRO440-02	4F X- Pol 10 Port FRO 40° 2-16°/ 0-9°/ 2-12°, 4.3-10 & SBTs
Optional accessories	
<a href="#">AISG cables</a>	M/F cables for AISG connections
<a href="#">PCU-1000 RET controller</a>	Stand-alone controller for RET control and configurations
<a href="#">91900314-02</a>	Dual Mount Bracket (see 91900314 bracket document for details)



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## NWAV™ X-Pol Ten-Port Antenna

Mechanical specifications	
Dimensions height/width/depth, inches (mm)	52.8/ 19.8/ 7.4 (1340.4/ 502.9/ 188.0)
Shipping dimensions length/width/height, inches (mm)	60/ 20/ 15 (1524/ 508/ 305)
No. of RF input ports, connector type, and location	10 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)	53.2 (24.1)
Shipping weight, lb (kg)	92.8 (42.1)
Antenna mounting and downtilt kit included with antenna	91900318
Net weight of the mounting and downtilt kit, lb (kg)	18 (8.18)
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)	198 (880.75), 43 (191.27)
Equivalent flat plate @ 100 mph and Cd=2, sq ft	2.55
EPA frontal and lateral, ft <sup>2</sup> , (m <sup>2</sup> )	8.6 (0.80), 2.0 (0.18)

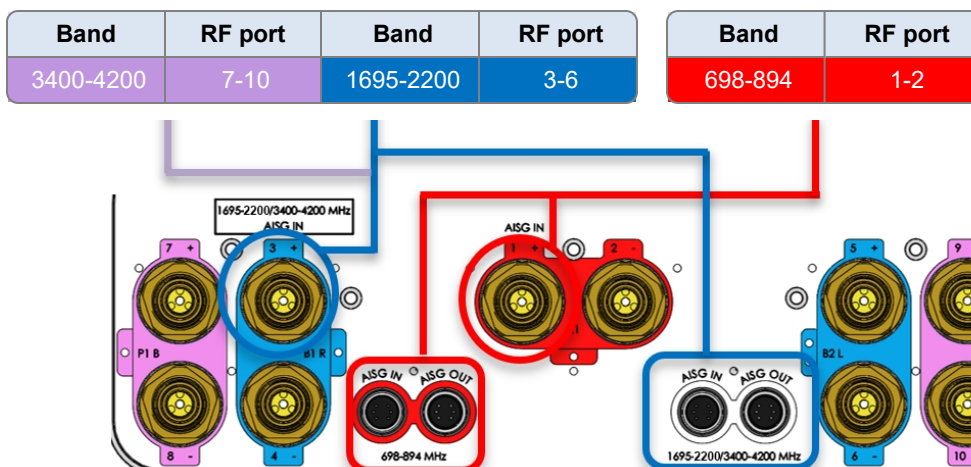


### Remote electrical tilt (RET 1000) information

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	2 pairs of AISG male/female connectors and 2 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 1695-2180 MHz	1
Total no. of internal RETs 3400-4200 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 3400-4200 MHz is connected via the 1695-2200 Port 3 Bias T port or 1695-2200/3400-4200 MHz AISG ports.

### Array topology

5 sets of radiating arrays

- R1: 698-894 MHz
- B1: 1695-2200 MHz
- B2: 1695-2200 MHz
- P1: 3400-4200 MHz
- P2: 3400-4200 MHz

Band	RF port
698-894	1-2
1695-2200	3-4
1695-2200	5-6
3400-4200	7-8
3400-4200	9-10

