



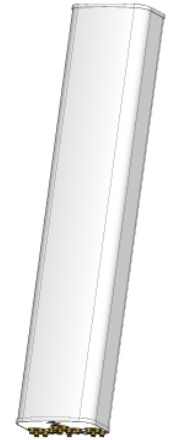
MX20FRO665-01

NWAV™ X-Pol 20-Port Antenna

X-Pol 14-Port 6 ft, 65° Fast Roll Off:

4 ports 617-894 MHz, 8 ports 1695-2700 MHz, and 8 ports 3700-4200 MHz

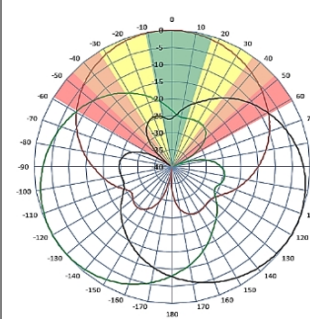
- Multi-Port Antenna with integrated 5G 3.5 GHz 8T8R beamforming capability
- Optimized antenna array design for all 3.5 GHz beamforming combinations
- Maintains existing low and mid band RF performance
- New optimized form factor for reduced wind loading
- Lower antenna weight with new Integrated RF distribution design
- Excellent passive intermodulation (PIM) performance reduces harmful interference.



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.

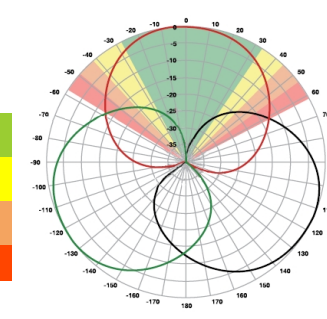
Non-FRO antenna



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, 3, 4		Ports 5, 6, 7, 8, 9, 10, 11, 12		
Frequency bands, MHz	617-798	824-894	1695-2030	2030-2365	2365-2700
Polarization	±45°		±45°		
Gain over all tilts, dBi	14.4	15.0	17.3	17.7	18.0
Horizontal beamwidth (HBW), degrees ¹	66	62	66	63.0	58.0
Front-to-back ratio, @180°, dB	>26.0	>27.0	>28.0	>26.0	>25.0
X-Pol discrimination (CPR) at boresight, dB	>20.0	>18.0	>19.0	>17.0	>17.0
Vertical beamwidth (VBW), degrees ¹	14	12	5.7	5.3	4.8
Electrical downtilt (EDT) range, degrees	0-14		0-9		
First upper side lobe (USLS) suppression, dB ¹	≤-16.0	≤-16.0	≤-16.0	≤-16.0	≤-16.0
Cross-polar isolation, port-to-port, dB ¹	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				

¹ Typical value over frequency and tilt



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Electrical specification (minimum/maximum)	Ports 13, 14, 15, 16, 17, 18, 19, 20
Frequency bands, MHz	3700-4200
Gain over all tilts, dBi	14.7
Horizontal beamwidth (HBW), degrees ¹	85
Horizontal beam width tolerance, degrees	±5
Front-to-back ratio, @180°, dB	27
Vertical beamwidth (VBW), degrees ¹	8.5
Vertical beam width tolerance, degrees	±0.3
Beam tilt, degrees	2-12
First upper side lobe (USLS) suppression, dB ¹	15
Coupling level, Amp, Antenna port to Cal port, dB	26
Coupling level, max Amp Δ, Antenna port to Cal port, dB	±0.9
Coupler, max Amp Δ, Antenna port to Cal port, dB	0.65
Coupler, max Phase Δ, Antenna port to Cal port, degrees	5
Cross-polar isolation, port-to-port, dB ¹	22
Isolation, Inter-band, dB	20
Max VSWR / return loss, dB	1.5 / -14.0
PIM, 3rd Order, 2 x 20 W, dBc	-145
Max input power per any port at 50 °C, watts	75

¹ Typical value over frequency and tilt

Electrical specification, Broadcast 65°	Ports 13, 14, 15, 16, 17, 18, 19, 20
Frequency bands, MHz	3700-4200
Gain over all tilts, dBi	20.2
Horizontal beamwidth (HBW), degrees ¹	65
Horizontal beamwidth tolerance, degrees	±4
Vertical beamwidth (VBW), degrees ¹	8.5
Vertical beamwidth tolerance, degrees	±0.3
First upper side lobe (USLS) suppression, dB ¹	<-16



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Electrical specification, Service Beam	Ports 13, 14, 15, 16, 17, 18, 19, 20
Frequency bands, MHz	3700-4200
Steered 0° gain, dBi	20.2
Steered 0° Gain tolerance, dBi	±0.6
Steered 0° Beamwidth, Horizontal, degrees	24
Steered 0° CPR at beampeak, dB	18
Steered 0° Horizontal Sidelobe, dB	12
Steered 30° Gain, dBi (max)	19.5
Steered 30° Gain tolerance, dBi	±0.6
Steered 30° Gain, dBi	19.2
Steered 30° Beamwidth, Horizontal, degree	22
Steered 30° CPR at beampeak, dB	18
Steered 30° Horizontal Sidelobe, dB	10

Electrical specification, Soft Split	Ports 13, 14, 15, 16, 17, 18, 19, 20
Frequency bands, MHz	3700-4200
Gain over all tilts, dBi	18.8
Horizontal beamwidth (HBW), degrees ¹	33
First upper side lobe (USLS) suppression, dB ¹	15

Beamforming weighting table available upon request

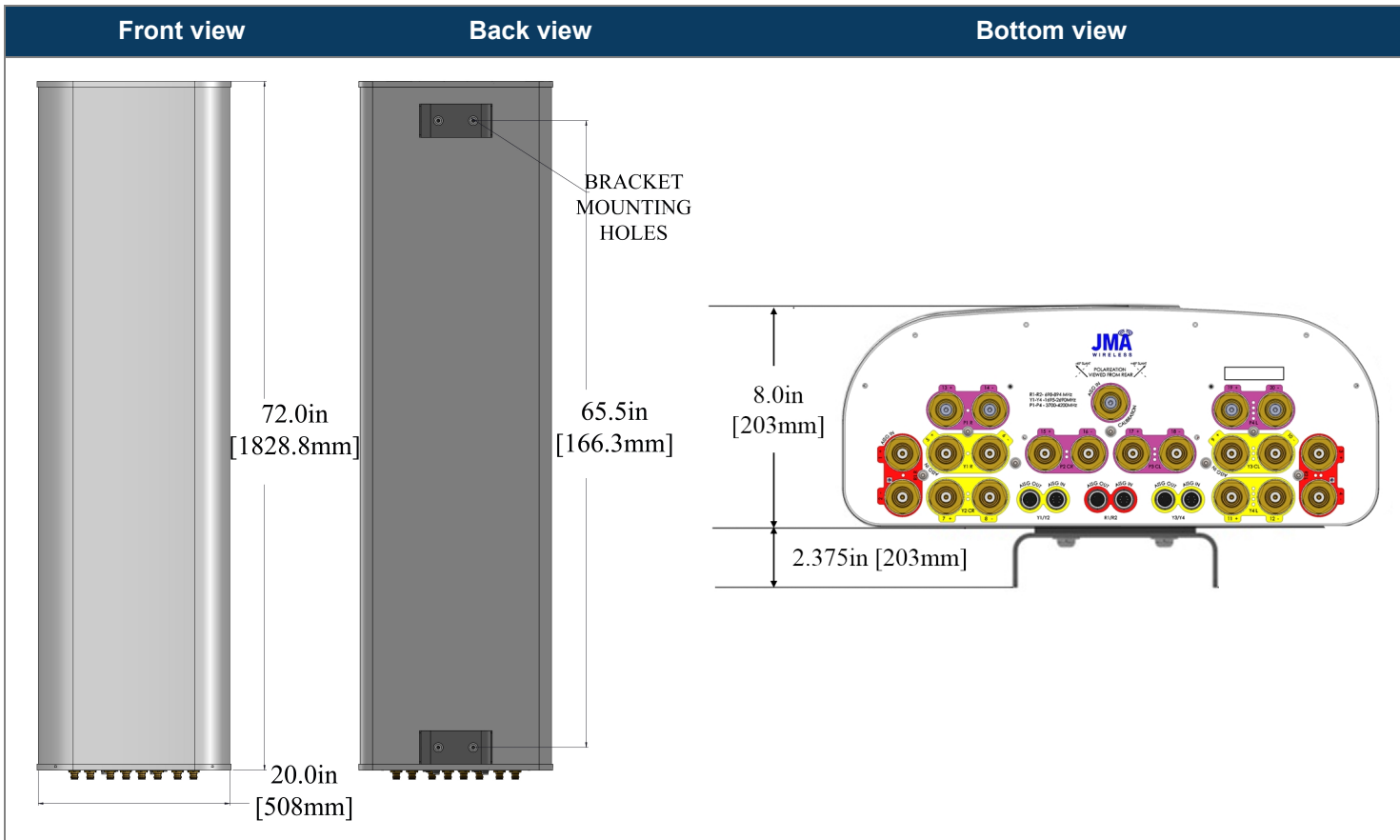
Ordering information	
Antenna model	Description
MX20FRO665-01	6FT X- Pol 20 Port FRO 65° 0-14°/ 0-9°/ 2-12° RET, 4.3-10
Optional accessories	
AISG cables	M/F cables for AISG connections
PCU-1000 RET controller	Stand-alone controller for RET control and configurations
91900314-03	Dual Mount Bracket (see 91900314 bracket document for details)



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Mechanical specifications	
Dimensions height/width/depth, inches (mm)	72.0/ 20.0/ 8.0 (1828.8/ 508.0/ 203.2)
Shipping dimensions length/width/height, inches (mm)	93.4/ 23.8/ 14.5 (2372/ 605/ 368)
No. of RF input ports, connector type, and location	20 x 4.3-10 female, bottom
Calibration interface port, connector type & 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)	83.8 (38.0)
Shipping weight, lb (kg)	123.8 (56.2)
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)	108.1 (480.9), 20.5 (91.2)
Effective projected area (EPA) @ 150 km/h, sq ft	4.9

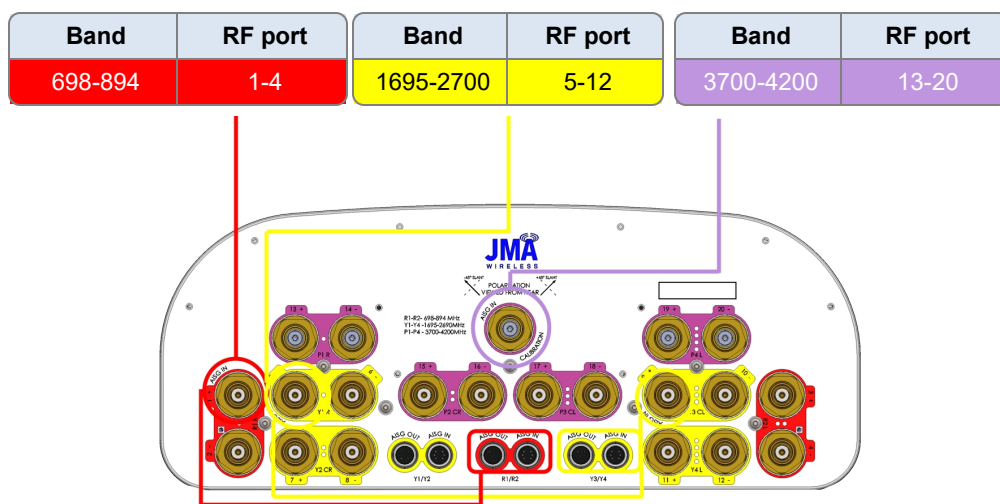


Remote electrical tilt (RET 1000) information

RET location	Integrated into antenna
RET interface connector type	8-pin AISG connector per IEC 60130-9
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
RET interface connector location	Bottom of the antenna
Total no. of internal RETs 617-894 MHz	1
Total no. of internal RETs 1695-2700 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 via the designated external AISG connector as shown below:



Array topology

10 sets of radiating arrays

- R1: 617-894 MHz
- R2: 617-894 MHz
- Y1: 1695-2700 MHz
- Y2: 1695-2700 MHz
- Y3: 1695-2700 MHz
- Y4: 1695-2700 MHz
- P1: 3700-4200 MHz

Band	RF port
617-894	1-2
617-894	3-4
1695-2700	5-6
1695-2700	7-8
1695-2700	9-10
1695-2700	11-12
3700-4200	13-20

