# 18-Port Panel Antenna

10 Ports FDD (1x) 698-960, (4x) 1710-2690 (65°) | 8T8R 3300-4200 MHz (90° Unit Beam)

HYBRID FDD/TDD | 1405 mm | INTEGRATED RET

# APXVB4LTY14AEB_43MQ-C-I20

## Features

- Hybrid FDD + TDD beamforming within a radome
- 2 ports / 1 cross pol system in low band (698-960 MHz)
- 8 ports / 4 cross pol systems in high band (1710-2690 MHz)
- TDD 8 ports + 1 calibration port in 3.5GHz (3300-4200 MHz)
- Integrated and field replaceable SRET
- ACU HW version: 2.02
- Compliant with AISG v2.0 and 3GPP

| PRODUCT OVERVIEW | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | FDD | | | | | TDD | | | |
| | Frequency Range (MHz) | (1x) 698-960 | (4x) 1710-2690 | | | | (8T8R) 3300-4200 | | | |
| | Array | R1 | Y1 | Y2 | Y3 | Y4 | P1 | | | |
| | Connector | 1-2 | 3-4 | 5-6 | 7-8 | 9-10 | 11-12 | 13-14 | 15-16 | 17-18 |
| | | 2 PORTS | 8 PORTS | | | | 2 CLUSTER CONNECTORS - 8 PORTS | | | |
| | | 4.3-10 Female | 4.3-10 Female | | | | MQ4/MQ5 | | | |
| | Polarization | XPOL | XPOL | | | | XPOL | | | |
| | Azimuth Beamwidth (avg) | 65° | 65° | | | | 90° Unit Beam | | | |
| | Electrical Downtilt | 2-14° | 2-12° | | | | 2-12° | | | |
| | Dimensions | 1405 x 429 x 199 mm (55.3 x 16.9 x 7.8 in) | | | | | | | | |

**ORDERING OPTIONS** Select from the following ordering options

| ANTENNA MODEL NUMBER | CONFIGURATION | MOUNTING HARDWARE | MOUNTING PIPE DIAMETER | SHIPPING WEIGHT |
|---|---|---|---|---|
| APXVB4LTY14AEB_43MQ-C-I20 | Internal RET Included | APM50-B1 Beam Tilt Kit Included | 50-110 mm (2.0-4.3 in) | 37.2 kg (82 lbs) |

# APXVB4LTY14AEB_43MQ-C-I20

## ELECTRICAL SPECIFICATIONS

■ **R1**

| | | | | | |
|---|---|---|---|---|---|
| Frequency Range | | MHz | 698-960 | | |
| | | MHz | 698-806 | 790-894 | 880-960 |
| Polarization | | --- | ±45° | | |
| Gain | Over all Tilts | dBi | 13.5 ± 1.0 | 14.3 ± 0.3 | 14.7 ± 0.3 |
| | Max Gain | dBi | 14.5 | 14.6 | 15.0 |
| Azimuth Beamwidth (3 dB) | | degrees | 71.2° ± 4.8° | 69.9° ± 4.2° | 67.0° ± 4.4° |
| Elevation Beamwidth (3 dB) | | degrees | 17.3° ± 1.8° | 15.5° ± 0.8° | 14.1° ± 0.9° |
| Electrical Downtilt | | degrees | 2-14° | | |
| Impedance | | Ohms | 50Ω | | |
| VSWR (Return Loss) | | --- | 1.5:1 (-14 dB) | | |
| Passive Intermodulation | | dBc | -150 (3rd Order for 2x20 W Carriers) | | |
| Front-to-Back Ratio, Total Power, ± 30° | | dB | 17.6 | 20.5 | 21.4 |
| First Upper Side Lobe | | dB | 15.0 | 13.2 | 13.9 |
| Cross-Pol Over Sector | | dB | 4.3 | 7.2 | 8.6 |
| Cross Polar Discrimination (XPD) at Mechanical Boresight (0°) | | dB | 19.9 | 20.7 | 23.2 |
| Maximum Effective Power Per Port | | Watts | 350 W | | |
| Cross Polar Isolation | | dB | 25 | 25 | 25 |
| Interband Isolation | | dB | 25 | 25 | 25 |

## ELECTRICAL SPECIFICATIONS

■ **Y1**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Frequency Range | | MHz | 1710-2690 | | | | |
| | | MHz | 1710-1880 | 1850-1990 | 1920-2170 | 2300-2400 | 2490-2690 |
| Polarization | | --- | ±45° | | | | |
| Gain | Over all Tilts | dBi | 13.1 ± 0.7 | 13.8 ± 0.5 | 14.2 ± 0.7 | 14.9 ± 0.4 | 15.1 ± 0.7 |
| | Max Gain | dBi | 13.8 | 14.3 | 14.9 | 15.3 | 15.8 |
| Azimuth Beamwidth (3 dB) | | degrees | 65.7° ± 8.7° | 60.6° ± 5.5° | 56.2° ± 8.2° | 51.8° ± 3.8° | 49.7° ± 4.3° |
| Elevation Beamwidth (3 dB) | | degrees | 14.9° ± 1.4° | 12.7° ± 1.5° | 11.8° ± 1.3° | 10.7° ± 0.7° | 10.0° ± 0.8° |
| Electrical Downtilt | | degrees | 2-12° | | | | |
| Impedance | | Ohms | 50Ω | | | | |
| VSWR (Return Loss) | | --- | 1.5:1 (-14 dB) | | | | |
| Passive Intermodulation | | dBc | -150 (3rd Order for 2x20 W Carriers) | | | | |
| Front-to-Back Ratio, Total Power, ± 30° | | dB | 17.1 | 16.9 | 16.8 | 19.0 | 17.3 |
| First Upper Side Lobe | | dB | 8.9 | 10.1 | 11.2 | 12.4 | 11.4 |
| Cross-Pol Over Sector | | dB | 6.8 | 6.5 | 4.2 | 1.1 | 0.9 |
| Cross Polar Discrimination (XPD) at Mechanical Boresight (0°) | | dB | 15.2 | 17.3 | 18.3 | 17.6 | 13.9 |
| Maximum Effective Power Per Port | | Watts | 250 W | | | | |
| Cross Polar Isolation | | dB | 25 | 25 | 25 | 25 | 25 |
| Interband Isolation | | dB | 25 | 25 | 25 | 25 | 25 |

# APXVB4LTY14AEB_43MQ-C-I20

## ELECTRICAL SPECIFICATIONS

■ **Y2**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Frequency Range | | MHz | 1710-2690 | | | | |
| | | MHz | 1710-1880 | 1850-1990 | 1920-2170 | 2300-2400 | 2490-2690 |
| Polarization | | --- | ±45° | | | | |
| Gain | Over all Tilts | dBi | 13.3 ± 0.9 | 14.1 ± 0.5 | 14.3 ± 0.7 | 15.0 ± 0.8 | 15.6 ± 0.9 |
| | Max Gain | dBi | 14.2 | 14.6 | 15.0 | 15.8 | 16.5 |
| Azimuth Beamwidth (3 dB) | | degrees | 66.6° ± 5.7° | 64.4° ± 4.3° | 62.8° ± 5.4° | 53.4° ± 4.5° | 51.0° ± 5.6° |
| Elevation Beamwidth (3 dB) | | degrees | 12.2° ± 1.0° | 11.5° ± 0.7° | 11.1° ± 0.9° | 9.5° ± 0.9° | 8.6° ± 0.7° |
| Electrical Downtilt | | degrees | 2-12° | | | | |
| Impedance | | Ohms | 50Ω | | | | |
| VSWR (Return Loss) | | --- | 1.5:1 (-14 dB) | | | | |
| Passive Intermodulation | | dBc | -150 (3rd Order for 2x20 W Carriers) | | | | |
| Front-to-Back Ratio, Total Power, ± 30° | | dB | 18.5 | 18.0 | 18.5 | 19.4 | 18.2 |
| First Upper Side Lobe | | dB | 13.4 | 12.6 | 11.7 | 11.0 | 10.3 |
| Cross-Pol Over Sector | | dB | 5.3 | 8.8 | 6.2 | 1.2 | 0.6 |
| Cross Polar Discrimination (XPD) at Mechanical Boresight (0°) | | dB | 17.1 | 18.1 | 15.0 | 13.8 | 14.8 |
| Maximum Effective Power Per Port | | Watts | 250 W | | | | |
| Cross Polar Isolation | | dB | 25 | 25 | 25 | 25 | 25 |
| Interband Isolation | | dB | 25 | 25 | 25 | 25 | 25 |

## ELECTRICAL SPECIFICATIONS

■ **Y3**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Frequency Range | | MHz | 1710-2690 | | | | |
| | | MHz | 1710-1880 | 1850-1990 | 1920-2170 | 2300-2400 | 2490-2690 |
| Polarization | | --- | ±45° | | | | |
| Gain | Over all Tilts | dBi | 14.0 ± 0.5 | 14.5 ± 0.3 | 14.7 ± 0.6 | 14.8 ± 0.8 | 15.3 ± 0.8 |
| | Max Gain | dBi | 14.5 | 14.8 | 15.3 | 15.6 | 16.1 |
| Azimuth Beamwidth (3 dB) | | degrees | 66.8° ± 5.6° | 64.6° ± 3.6° | 63.4° ± 4.0° | 60.6° ± 3.6° | 53.2° ± 4.8° |
| Elevation Beamwidth (3 dB) | | degrees | 13.4° ± 0.9° | 12.6° ± 0.5° | 12.0° ± 1.0° | 10.3° ± 0.7° | 9.4° ± 0.8° |
| Electrical Downtilt | | degrees | 2-12° | | | | |
| Impedance | | Ohms | 50Ω | | | | |
| VSWR (Return Loss) | | --- | 1.5:1 (-14 dB) | | | | |
| Passive Intermodulation | | dBc | -150 (3rd Order for 2x20 W Carriers) | | | | |
| Front-to-Back Ratio, Total Power, ± 30° | | dB | 21.2 | 20.5 | 20.5 | 19.9 | 21.4 |
| First Upper Side Lobe | | dB | 16.3 | 15.8 | 14.3 | 15.0 | 12.4 |
| Cross-Pol Over Sector | | dB | 10.3 | 8.5 | 8.2 | 5.3 | 1.8 |
| Cross Polar Discrimination (XPD) at Mechanical Boresight (0°) | | dB | 20.3 | 20.9 | 21.3 | 26.0 | 20.4 |
| Maximum Effective Power Per Port | | Watts | 250 W | | | | |
| Cross Polar Isolation | | dB | 25 | 25 | 25 | 25 | 25 |
| Interband Isolation | | dB | 25 | 25 | 25 | 25 | 25 |

# APXVB4LTY14AEB_43MQ-C-I20

| ELECTRICAL SPECIFICATIONS | | | Y4 | | | | |
|---|---|---|---|---|---|---|---|
| Frequency Range | | MHz | 1710-2690 | | | | |
| | | MHz | 1710-1880 | 1850-1990 | 1920-2170 | 2300-2400 | 2490-2690 |
| Polarization | | --- | ±45° | | | | |
| Gain | Over all Tilts | dBi | 14.4 ± 0.6 | 15.0 ± 0.3 | 15.2 ± 0.5 | 15.4 ± 0.7 | 15.6 ± 0.5 |
| | Max Gain | dBi | 15.0 | 15.3 | 15.7 | 16.1 | 16.1 |
| Azimuth Beamwidth (3 dB) | | degrees | 71.4° ± 4.0° | 68.5° ± 2.1° | 66.5° ± 3.8° | 57.8° ± 2.3° | 57.8° ± 3.0° |
| Elevation Beamwidth (3 dB) | | degrees | 13.2° ± 0.9° | 12.4° ± 0.5° | 12.0° ± 0.9° | 10.3° ± 0.3° | 9.5° ± 0.8° |
| Electrical Downtilt | | degrees | 2-12° | | | | |
| Impedance | | Ohms | 50Ω | | | | |
| VSWR (Return Loss) | | --- | 1.5:1 (-14 dB) | | | | |
| Passive Intermodulation | | dBc | -150 (3rd Order for 2x20 W Carriers) | | | | |
| Front-to-Back Ratio, Total Power, ± 30° | | dB | 22.9 | 23.6 | 23.0 | 21.2 | 21.2 |
| First Upper Side Lobe | | dB | 15.9 | 14.5 | 14.2 | 15.8 | 13.9 |
| Cross-Pol Over Sector | | dB | 10.9 | 15.0 | 12.8 | 7.7 | 0.6 |
| Cross Polar Discrimination (XPD) at Mechanical Boresight (0°) | | dB | 20.8 | 22.0 | 23.4 | 22.0 | 22.8 |
| Maximum Effective Power Per Port | | Watts | 250 W | | | | |
| Cross Polar Isolation | | dB | 25 | 25 | 25 | 25 | 25 |
| Interband Isolation | | dB | 25 | 25 | 25 | 25 | 25 |

| ELECTRICAL SPECIFICATIONS | | P1<br>Cal. Board and S Parameter | | |
|---|---|---|---|---|
| Frequency Range | MHz | 3300-4200 | | |
| | MHz | 3300-3600 | 3600-3800 | 3800-4200 |
| Coupling between Cal. Port to Input Port | dB | -26 ± 2 | | |
| Coupling Amplitude Accuracy | dB | ≤ 0.9 | | |
| Coupling Phase Accuracy | degrees | ≤ 7° | | |
| VSWR | --- | ≤ 1.5 | | |
| Maximum Power | Watts | 50 W | | |
| ISO Co-Polar at 2-6° Tilt | dB | ≥ 19 | | |
| ISO Co-Polar at 7-12° Tilt | dB | ≥ 25 | | |
| ISO Cross-Polar at 2-6° Tilt | dB | ≥ 24 | | |
| ISO Cross-Polar at 7-12° Tilt | dB | ≥ 25 | | |

# APXVB4LTY14AEB_43MQ-C-I20

| ELECTRICAL SPECIFICATIONS | | | ■ P1 Unit Beam | | |
|---|---|---|---|---|---|
| Frequency Range | | MHz | (4x) 3300-4200 | | |
| | | MHz | 3300-3600 | 3600-3800 | 3800-4200 |
| Polarization | | --- | ±45° | | |
| Gain | Over all Tilts | dBi | 13.7 ± 0.8 | 13.8 ± 0.8 | 14.1 ± 1.2 |
| | Max Gain | dBi | 14.5 | 14.6 | 15.3 |
| Azimuth Beamwidth (3 dB) | | degrees | 76.7° ± 8.6° | 75.9° ± 7.9° | 70.8° ± 11.4° |
| Elevation Beamwidth (3 dB) | | degrees | 9.0° ± 0.9° | 8.3° ± 0.8° | 7.8° ± 0.7° |
| Electrical Downtilt | | degrees | 2-12° | | |
| Impedance | | Ohms | 50Ω | | |
| VSWR (Return Loss) | | --- | 1.5:1 (-14 dB) | | |
| Front-to-Back Ratio, Total Power, ± 30° | | dB | 19.2 | 19.0 | 17.0 |
| First Upper Side Lobe | | dB | 12.5 | 12.5 | 11.3 |
| Cross-Pol Over Sector | | dB | 12.4 | 9.8 | 5.0 |
| Cross Polar Discrimination (XPD) at Mechanical Boresight (0°) | | dB | 14.0 | 15.6 | 14.5 |

| ELECTRICAL SPECIFICATIONS | | | ■ P1 Broadcasting Beam | | |
|---|---|---|---|---|---|
| Frequency Range | | MHz | 3300-4200 | | |
| | | MHz | 3300-3600 | 3600-3800 | 3800-4200 |
| Polarization | | --- | ±45° | | |
| Gain | Over all Tilts | dBi | 15.7 ± 0.7 | 15.7 ± 0.6 | 16.2 ± 0.9 |
| | Max Gain | dBi | 16.4 | 16.3 | 17.1 |
| Azimuth Beamwidth (3 dB) | | degrees | 55.2° ± 3.9° | 54.1° ± 3.3° | 43.8° ± 9.7° |
| Elevation Beamwidth (3 dB) | | degrees | 9.2° ± 0.9° | 8.3° ± 1.0° | 7.7° ± 0.9° |
| Electrical Downtilt | | degrees | 2-12° | | |
| Impedance | | Ohms | 50Ω | | |
| VSWR (Return Loss) | | --- | 1.5:1 (-14 dB) | | |
| Front-to-Back Ratio, Total Power, ± 30° | | dB | 21.4 | 20.3 | 19.4 |
| First Upper Side Lobe | | dB | 13.6 | 13.4 | 10.2 |

# APXVB4LTY14AEB_43MQ-C-I20

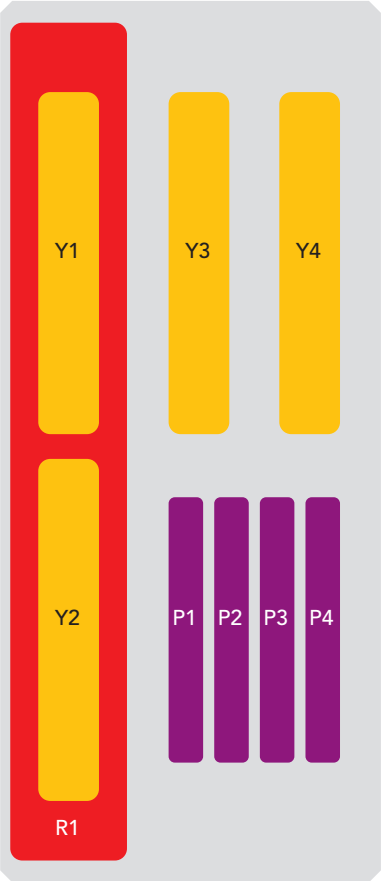
| ELECTRICAL SPECIFICATIONS | | | ■ P1 Working Beam | | |
|---|---|---|---|---|---|
| Frequency Range | | MHz | 3300-4200 | | |
| | | MHz | 3300-3600 | 3600-3800 | 3800-4200 |
| Polarization | | --- | ±45° | | |
| Gain | Over all Tilts | dBi | 19.8 ± 0.5 | 19.7 ± 0.6 | 19.9 ± 0.9 |
| | Max Gain | dBi | 20.3 | 20.3 | 20.8 |
| Azimuth Beamwidth (3 dB) | | degrees | 30.4° ± 1.4° | 21.2° ± 1.0° | 19.9° ± 1.0° |
| Elevation Beamwidth (3 dB) | | degrees | 9.2° ± 0.9° | 8.3° ± 0.6° | 7.7° ± 0.5° |
| Electrical Downtilt | | degrees | 2-12° | | |
| Impedance | | Ohms | 50Ω | | |
| VSWR (Return Loss) | | --- | 1.5:1 (-14 dB) | | |
| Front-to-Back Ratio, Total Power, ± 30° | | dB | 24.6 | 24.6 | 23.6 |
| First Upper Side Lobe | | dB | 14.9 | 14.8 | 12.7 |

# APXVB4LTY14AEB_43MQ-C-I20

## BOTTOM VIEW - LABELING


## ARRAY LAYOUT

| ARRAY | FREQUENCY | CONNECTOR | CONNECTOR TYPE | RET | AISG RET UID |
|---|---|---|---|---|---|
| R1 | 698-960 MHz | 1-2 | (2x) 4.3-10 Female | R1 | RFxxxxxxxxxxx-R1 |
| Y1 | 1710-2690 MHz | 3-4 | (2x) 4.3-10 Female | Y1 | RFxxxxxxxxxxx-Y1 |
| Y2 | 1710-2690 MHz | 5-6 | (2x) 4.3-10 Female | Y2 | RFxxxxxxxxxxx-Y2 |
| Y3 | 1710-2690 MHz | 7-8 | (2x) 4.3-10 Female | Y3 | RFxxxxxxxxxxx-Y3 |
| Y4 | 1710-2690 MHz | 9-10 | (2x) 4.3-10 Female | Y4 | RFxxxxxxxxxxx-Y4 |
| P1 | 3300-4200 MHz | 11-12 | (2x) Cluster Connector MQ4/MQ5 | P1 | RFxxxxxxxxxxx-P1 |




*The illustration is not shown to scale.*

# APXVB4LTY14AEB_43MQ-C-I20

## MECHANICAL SPECIFICATIONS

| | | | |
|---|---|---|---|
| Length | | mm (in) | 1405 (55.3) |
| Width | | mm (in) | 429 (16.9) |
| Depth | | mm (in) | 199 (7.8) |
| Net Weight - Antenna Only | | kg (lbs) | 26.7 (58.9) |
| Net Weight - Mounting Hardware Only | | kg (lbs) | 4.5 (9.9) |
| Wind Load<br><br>Rated at<br>150 km/h (93 mph) | Front | N (lbf) | 399 (90) |
| | Side | N (lbf) | 404 (91) |
| | Rear | N (lbf) | 463 (104) |
| Survival Wind Speed / Rated Wind Speed | | km/h (mph) | 200 (150) |
| Connector Type | | -- | (10x) 4.3-10 Female, (2x) Cluster Connectors MQ4/MQ5,<br>(2x) AISG Connectors (1 Male, 1 Female) at Bottom |
| Radome Color | | --- | Light Grey RAL7035 |
| Radome Material | | --- | Fiberglass |
| Lightning Protection | | --- | DC Ground |
| **Shipping** | Packing Size (Length x Width x Depth) | mm (in) | 1675 x 525 x 295 (65.9 x 20.7 x 11.6) |
| | Shipping Weight | kg (lbs) | 37.2 (82) |

## ENVIRONMENTAL SPECIFICATIONS

| | | |
|---|---|---|
| Environmental Standard | --- | ETS 300 019 |
| Operating Temperature | degrees | -40° to +60° C (-40° to +140° F) |
| Product Environmental Compliance | --- | Product is RoHS Compliant |

# APXVB4LTY14AEB_43MQ-C-I20

## ACCESSORIES

Accessories may be ordered separately unless otherwise indicated.

| ITEM | MODEL NUMBER | WEIGHT |
|---|---|---|
| Beam Tilt Mounting Bracket Kit for Pole Diameter 50-110 mm (2.0-4.3 in)<br>*Shipped with antenna* | APM50-B1 | 4.5 kg (9.9 lbs) |

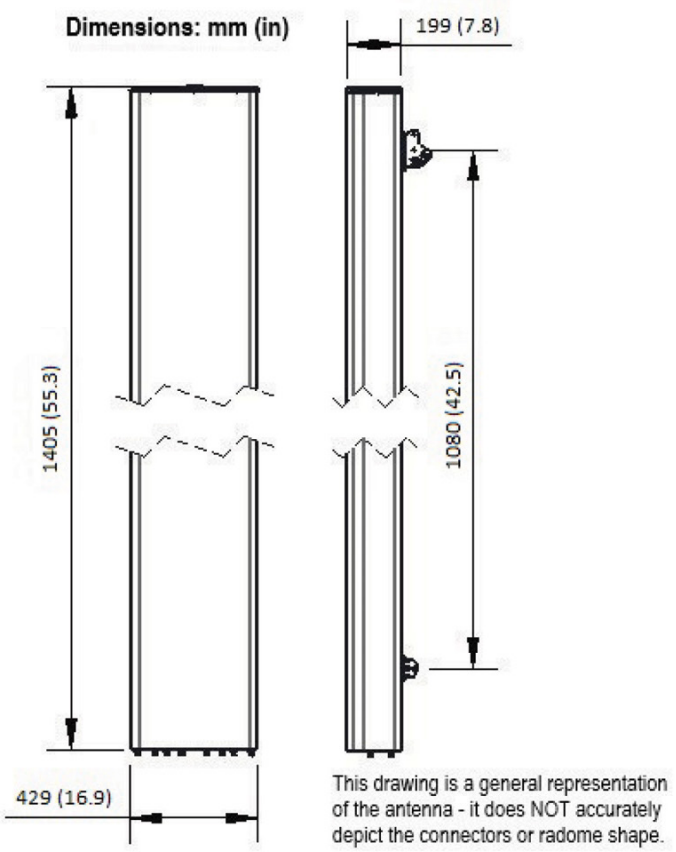
## INSTALLATION

Please read all installation notes before installing product.

| | |
|---|---|
|  | Always attach the antenna using all mounting points. |
| | Do not install antenna with the connectors facing upwards. |

## EXTERNAL DOCUMENT LINKS

APM50 Mounting Kit Series Installation Instructions




## NOTES

Specifications follow BASTA guidelines.

For additional mounting information, please check **External Document Links**.

For Radiating Patterns: Request pattern files