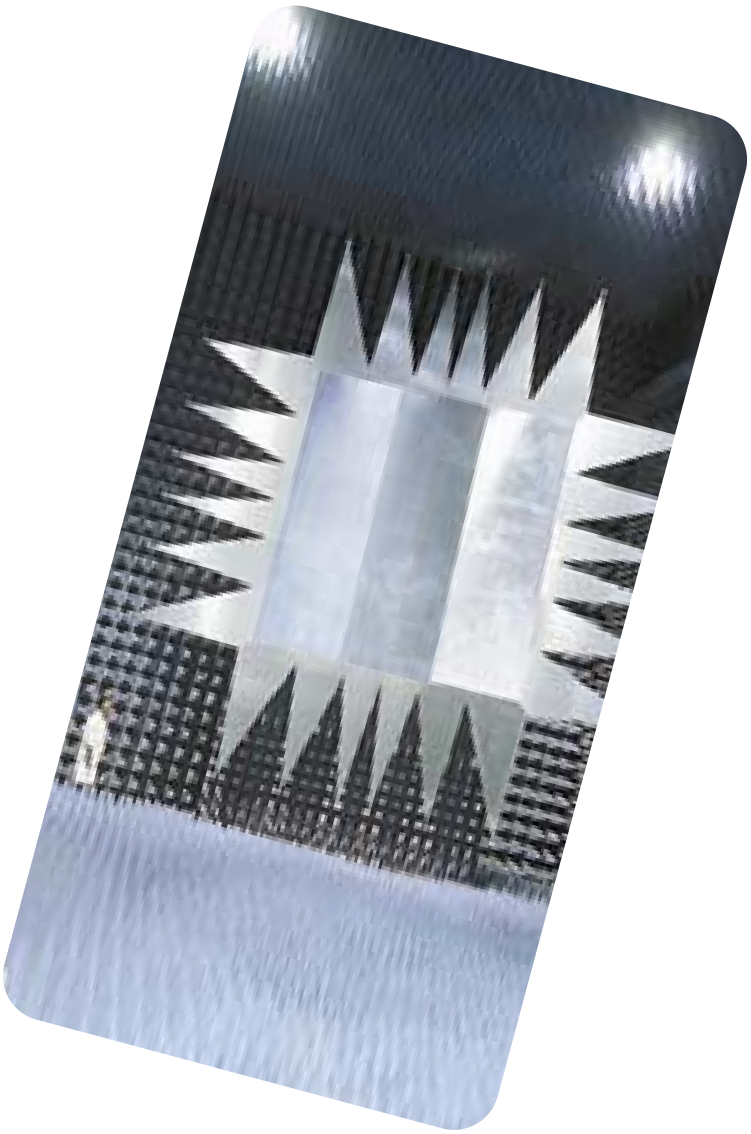
Allgon Antenna Systems

NMT 900, ETACS 900, GSM 900, DCS 1800, UMTS 2100



www.allgon.com

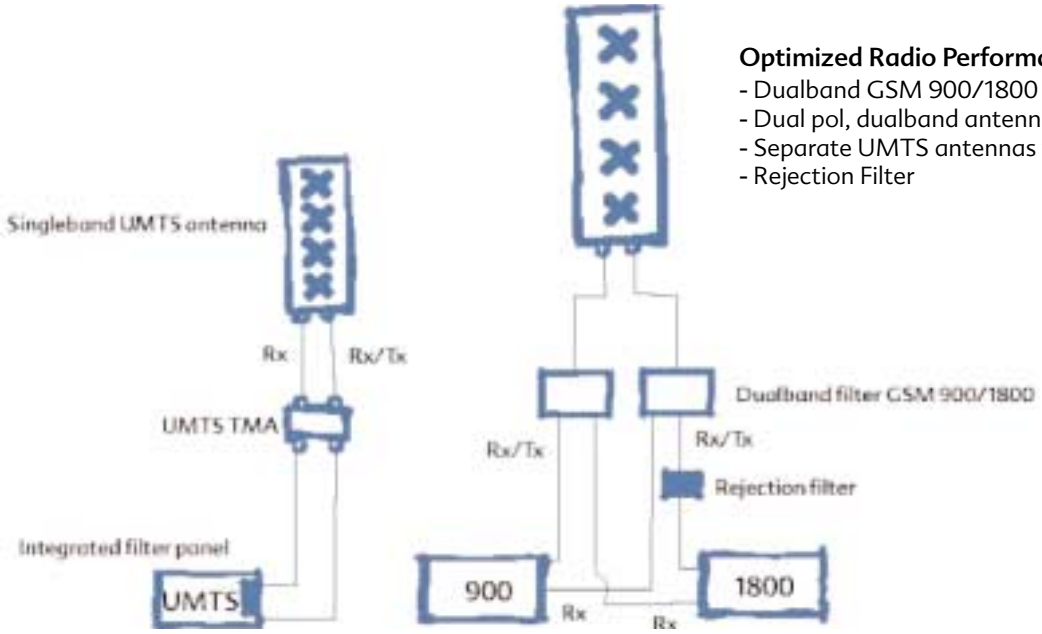
ALLGON

What's Inside

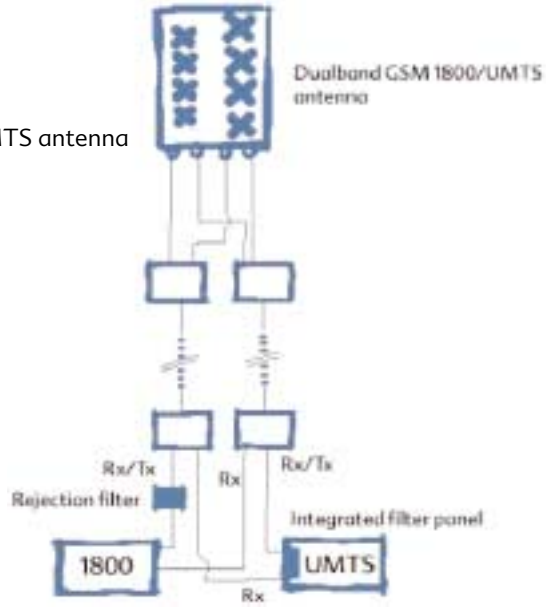
We also have a wide range of 800 and 1900 MHz antennas. For more information, see our website at www.allgon.com.

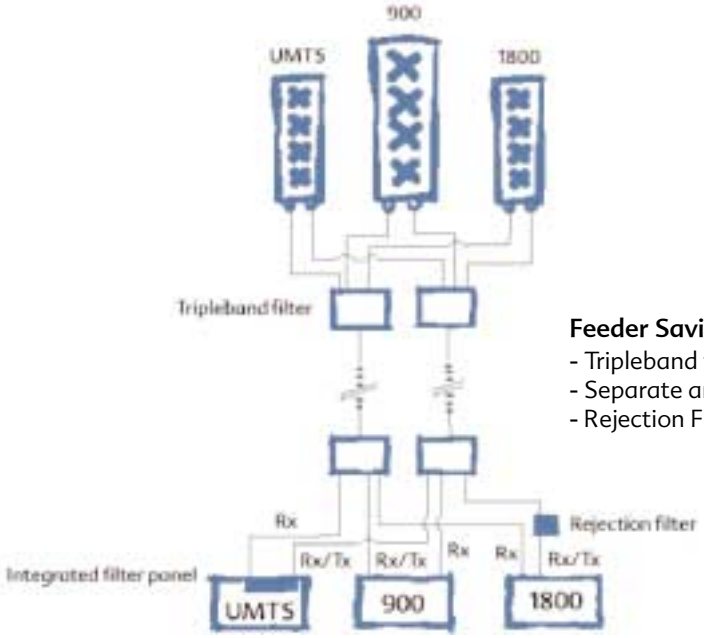
Digital pattern information for 900 and 1800 MHz antennas can be obtained from www.allgon.com.

Optimized Radio Performance
- Dualband GSM 900/1800 Filter
- Dual pol, dualband antenna
- Separate UMTS antennas with MET
- Rejection Filter



Co-siting Benefits
- Dual pol, dualband GSM 1800/UMTS antenna
- Rejection filter





Feeder Savings
- Tripleband filter
- Separate antennas for optimized radio performance
- Rejection Filter

2100 MHz Dual Polarized Antenna

Features

- **Optimum system performance**
- **Top value at lowest total cost over time**
- **Evolved from well-proven leading-edge technology**
- **Discreet, slim, aesthetically pleasing design**
- **Optional Manual adjustable Electrical Tilt (MET) for tuning flexibility**
- **Can be upgraded to remote controlled RET functionality starting in 2002**

Design Philosophy

The Allgon singleband, dual polarized UMTS antenna with its ultra-slim design and sophisticated electrical performance ensures maximum efficiency, as well as a stable pattern over the entire frequency range. This design relies on leading-edge patch technology fed via a micro strip PCB network. The slant ± 45° dual polarization system provides the independent fading signals needed for achieving top-quality coverage via diversity concepts.

The optional Manual adjustable Electrical Tilt (MET) module is based on a patented sliding dielectric that minimizes intermodulation distortion and maximizes efficiency. The MET allows you to field-adjust the electrical tilt from 0° - VBW for optimum roll-off effect.

Quality Materials

Proper use of materials and their structure ensures performance integrity. In antennas the electrical performance is directly related to mechanical performance. The choice of radome material is crucial since it acts as a window between the radiating elements and the coverage area. Our UV stabilized PVC radome is resistant to moisture absorption. Furthermore, our radomes can withstand mechanical stresses, even at low temperatures and long exposure to UV radiation. For corrosion inhibition, we use aircraft quality aluminum alloy that is inherently resistant to corrosion caused by the environment.

Performance

The Allgon UMTS panel antennas have verified vertical pattern performance on 100% of the antennas. Given the narrow mechanical width and depth of the product, the offerings are unmatched in Front-to-Back Ratio for all opening angles. The UMTS panel antenna has consistent reliable performance from frequency to frequency and product to product.

Brackets

Allgon antenna mounts have been carefully designed and tested to ensure a fast and problem-free installation. The mounts are pre-mounted or co-packed with the antenna and ready for mounting directly to a pole, outside diameter 1.0" - 5.0" (25-125 mm). They can be mounted vertically or tilted, see tilt range specified in each antenna specification. For more information, please see pages 48 - 50.

Testing

Allgon prides itself on stringent testing requirements with conservative, yet realistic claims of the performance of our product offering. For more information on testing procedures, see page 47. Our front-to-back ratios are specified for +/- 20° from 180° (worst case) to 0°.

Connectors

7/16 DIN Connector

65 Degree 2100 MHz Dual Polarized Panel Antenna

Gain	Part Number	Description	Page
15.5 dBi	7500.00	UX-2100-65-15.5i-0-D	7
	7500.02	UX-2100-65-15.5i-2-D	7
	7500.06	UX-2100-65-15.5i-6-D	7
18 dBi	7501.00	UX-2100-65-18i-0-D	7
	7501.02	UX-2100-65-18i-2-D	7
	7501.06	UX-2100-65-18i-6-D	7

65 Degree 2100 MHz Dual Polarized Antenna with Manual adjustable Electrical Tilt (MET)

Gain	Part Number	Description	Page
15.5 dBi	7521.00	UX-2100-65-15.5i-A-D	8
15.5 dBi	7520.00	UX-2100-65-18i-A-D	8

Please contact Allgon for the latest updates regarding product availability.

65 Degree Dualband GSM 1800/2100 Antenna with MET

Gain	Part Number	Description	Page
17.5 / 18 dBi	7540.00	UXC-1800/2100-65-17.5/18i-A/A-D	9

UMTS Filters

Part Number	Description	Page
9281.01	Dualband Filter	10
9283.01	Rejection Filter	11
9282.01	Triple band Filter	12

2100 MHz Dual Polarized Antenna

Description Detail:

U X - 2 1 0 0 - 6 5 - 1 8 i - 0 / A - D

- UX: UMTS Dual Polarized Family
- 2100: Frequency Band
- 65: Horizontal Beamwidth
- 18i: Gain in dBi
- 0 / A: Electrical Downtilt Angle or A for MET
- D: 7/16 DIN Connector

Antennas may be ordered using part number or description.

Electrical Specifications

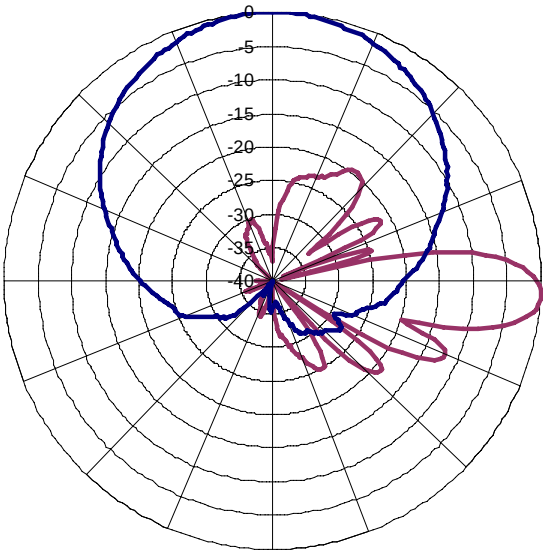
	7500 (UX-2100-65-15.5i)	7501 (UX-2100-65-18i)
Frequency Range (MHz)	1900 - 2170	1900 - 2170
Gain	15.5 dBi (13.5 dBd)	18 dBi (16 dBd)
Polarization	linear, dual slant 45	linear, dual slant 45
VSWR, 50Ω (1920-1980; 2110-2170 MHz)	<1.4:1	<1.4:1
VSWR, 50Ω (1900-1920; 2010-2025 MHz)	<1.5:1	<1.5:1
Horizontal 3dB beamwidth	65°	65°
Vertical 3dB beamwidth	13°	6.5°
Custom electrical downtilts	0°, 2° & 6°	0°, 2° & 6°
Co-pol 40 degree cone Front-to-back-ratio	>30 dB	>30 dB
40 degree cone Front-to-back ratio, total power	>25 dB	>25 dB
Suppression of first upper side lobe (0° ET)	>20 dB	>22 dB
First lower null fill	>-22 dB	>-20 dB
Maximum CW input power	800W	800W
IM, any order in UL-band	<-117 dBm for 2x20W	<-117 dBm for 2x20W

Mechanical Specifications

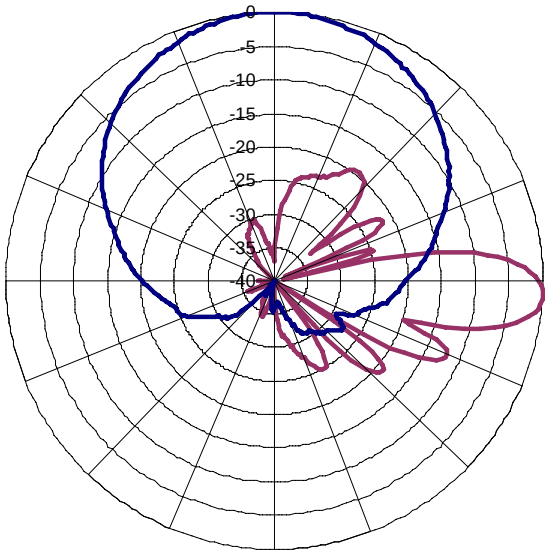
Connector	7/16 DIN bottom	7/16 DIN bottom
Height	697 mm (27.4")	1297 mm (51")
Width	167 mm (6.6")	167 mm (6.6")
Depth	58 mm (2.3")	58 mm (2.3")
Antenna Weight	2.5 kg	4.1 kg
Weight including tilt brackets	6.1 kg	7.7 kg
Survival wind speed	70 m/s (156 mph)	70 m/s (156 mph)
Maximum wind area	0.12 sq.m	0.22 sq.m
Frontal wind load @150 km/h	119 N	221 N
All metallic components DC grounded for Lightning Protection		
Pole mount and downtilt bracket to be pre-mounted and/or co-packed		
Tilt Range	-1.5° to +35°	-1° to +17°

Comments
Gain is typical within frequency band.
Front-to-back ratio is defined within 20° from the backwards direction in any plane.
Sidelobe suppression and null fill is relative to peak of main beam.
Frontal windload is calculated assuming the shape factor C=1
Radome color is NCS 2502-B (RAL 7035)(gray).

For a complete list of released models pertaining to gain, electrical downtilt and connector placement, please see the quick reference guide on page 6.



Typical Horizontal and Vertical 7500.02 Patterns



Typical Horizontal and Vertical 7501.02 Patterns

2100 MHz Dual Polarized Antenna

Electrical Specifications

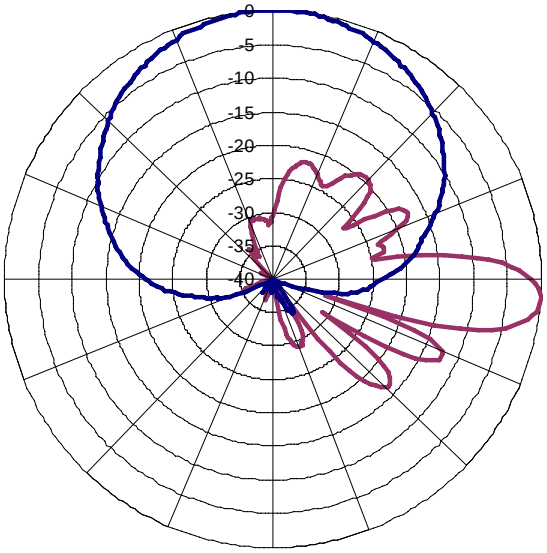
	7521 (UX-2100-65-15.5i-A)	7520 (UX-2100-65-18i-A)
Frequency Range (MHz)	1900 - 2170	1900 - 2170
Gain	15.5 dBi (13.5 dBd)	18 dBi (16 dBd)
Polarization	linear, dual slant 45	linear, dual slant 45
VSWR, 50Ω (1920-1980; 2110-2170 MHz)	<1.4:1	<1.4:1
VSWR, 50Ω (1900-1920; 2010-2025 MHz)	<1.5:1	<1.5:1
Horizontal 3dB beamwidth	65°	65°
Vertical 3dB beamwidth	13°	6.5°
MET (AEDT)	0° - 16°, in 1° increments	0° - 8°, in 1° increments
Co-pol 40 degree cone Front-to-back-ratio	>30 dB	>30 dB
40 degree cone Front-to-back ratio, total power	>25 dB	>25 dB
Suppression of first upper side lobe (0° ET)	>21 dB	>21 dB
First lower null fill	>-24 dB	>-24 dB
Maximum CW input power	800W	800W
IM, any order in UL-band	<-117 dBm for 2x20W	<-117 dBm for 2x20W

Mechanical Specifications

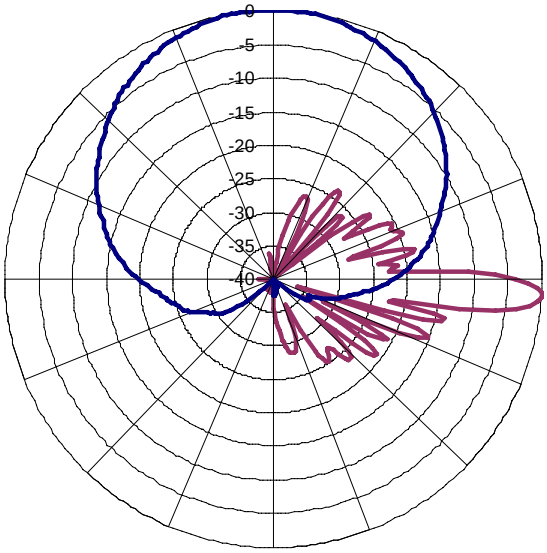
Connector	7/16 DIN bottom	7/16 DIN bottom
Height	697 mm (27.4")	1297 mm (51")
Width	167 mm (6.6")	167 mm (6.6")
Depth	58 mm (2.3")	58 mm (2.3")
Antenna Weight	3.5 kg	5 kg
Weight including tilt brackets	7.1 kg	8.6 kg
Survival wind speed	70 m/s (156 mph)	70 m/s (156 mph)
Maximum wind area	0.12 sq.m	0.22 sq.m
Frontal wind load @150 km/h	119 N	221 N
All metallic components DC grounded for Lightning Protection		
Pole mount and downtilt bracket to be pre-mounted and/or co-packed		
Tilt Range	-1.5° to +35°	-1° to +17°

Comments
Gain is typical within frequency band.
Front-to-back ratio is defined within 20° from the backwards direction in any plane.
Sidelobe suppression and null fill is relative to peak of main beam.
Frontal windload is calculated assuming the shape factor C=1
Radome color is NCS 2502-B (RAL 7035)(gray).

For a complete list of released models pertaining to gain, electrical downtilt and connector placement, please see the quick reference guide on page 6.



Typical Horizontal and Vertical 7521.00 Patterns



Typical Horizontal and Vertical 7520.00 Patterns

Electrical Specifications

	7540 (UXC-1800/2100-65-17.5/18i-A/A-D)
Frequency range	1710 - 1880 / 1900 - 2170
Gain	17.5/18 dBi (15.5/16 dBd)
Polarization	linear, dual slant 45
VSWR, 50Ω	<1.4:1 (1805-1880 and 2110-2170 MHz)
VSWR, 50Ω	<1.5:1 (1710-1785 and 1900-1980 MHz)
Horizontal 3dB beamwidth	65°
Vertical 3dB beamwidth	7° / 6.5°
MET (AEDT)	0° - 8°, in 1° increments
Co-pol 40 degree cone Front-to-back-ratio	>29 / >30 dB
40 degree cone Front-to-back ratio, total power	>23 / >25 dB
Suppression of first upper side lobe (0° ET)	>15 / >17 dB
First lower null fill	N/A
Maximum CW input power	800W
Two tone intermodulation 3rd order (1800 MHz)	<-110 dBm for 2x10W
IM, any order UL-band (2100 MHz)	<-117 dBm for 2x20W

Mechanical Specifications

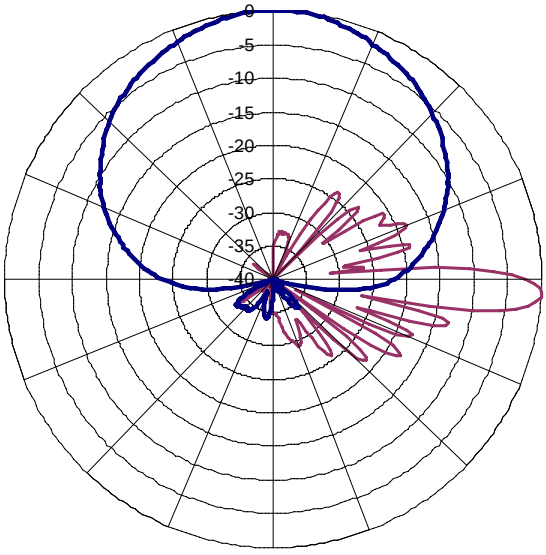
Connector	7/16 DIN bottom
Height	1296 mm (51")
Width	326 mm (6.6")
Depth	80 mm (2.3")
Antenna Weight	10 kg
Weight including tilt brackets	13.6 kg
Survival wind speed	70 m/s (156 mph)
Maximum wind area	0.22 sq.m
Frontal wind load @150 km/h	425 N

All metallic components DC grounded for Lightning Protection

Pole mount and downtilt bracket to be pre-mounted and/or co-packed
Tilt Range -1° to +17°

Comments
Gain is typical within frequency band.
Front-to-back ratio is defined within 20° from the backwards direction in any plane.
Sidelobe suppression and null fill is relative to peak of main beam.
Frontal windload is calculated assuming the shape factor C=1
Radome color is NCS 2502-B (RAL 7035)(gray).
*Values are representative for 0° EDT, variants may differ slightly

For a complete list of released models pertaining to gain, electrical downtilt and connector placement, please see the quick reference guide on page 6.



Typical Horizontal and Vertical 7540.00 Patterns

UMTS Dualband Filter

RF Specifications

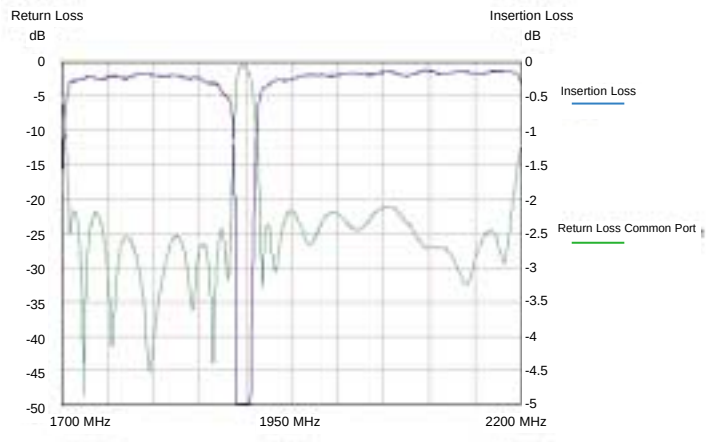
		9281.01 (Dualband filter GSM 1800/UMTS)
Frequency range	GSM 1800 band	1710-1880 MHz
	UMTS band	1920-2170 MHz
Return loss	GSM 1800 port	>20 dB
	UMTS port	>20 dB
	Common port	>20 dB
Maximum input power	GSM 1800 port	6x+43 dBm
	UMTS port	2x+43 dBm
Insertion loss	1710 - 1870 MHz	<0.5 dB
	1870 - 1880 MHz	<0.85 dB
	1920 - 1930 MHz	<0.7 dB
	1920 - 2170 MHz	<0.5 dB
Isolation between ports	GSM 1800 port to UMTS port 1920-2170 MHz	>70 dB
	UMTS port to GSM 1800 port 1710-1880 MHz	>50 dB

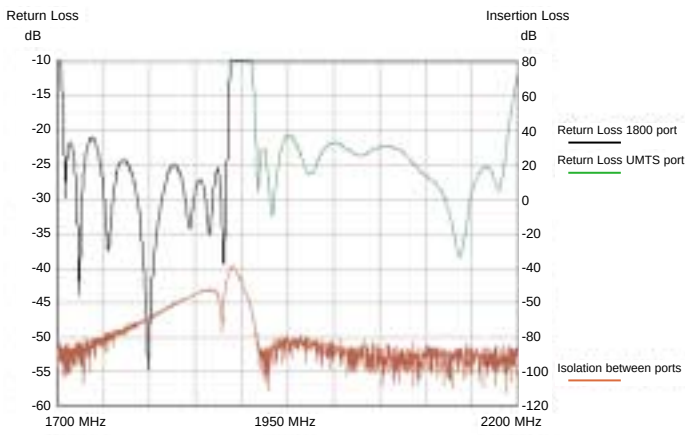
Mechanical Specifications

Connector (all ports) 1)	7/16 female
Height	60 mm (2.4 ")
Width 2)	190 mm (7.5 ")
Depth	110 mm (4.3")
Weight	<2.0 kg

Comments
1) The common connector is placed on the opposite side of the BTS ports (inline).
2) Not including the connectors.

Dualband Filter GSM 1800 / UMTS





UMTS Rejection Filter

RF Specifications

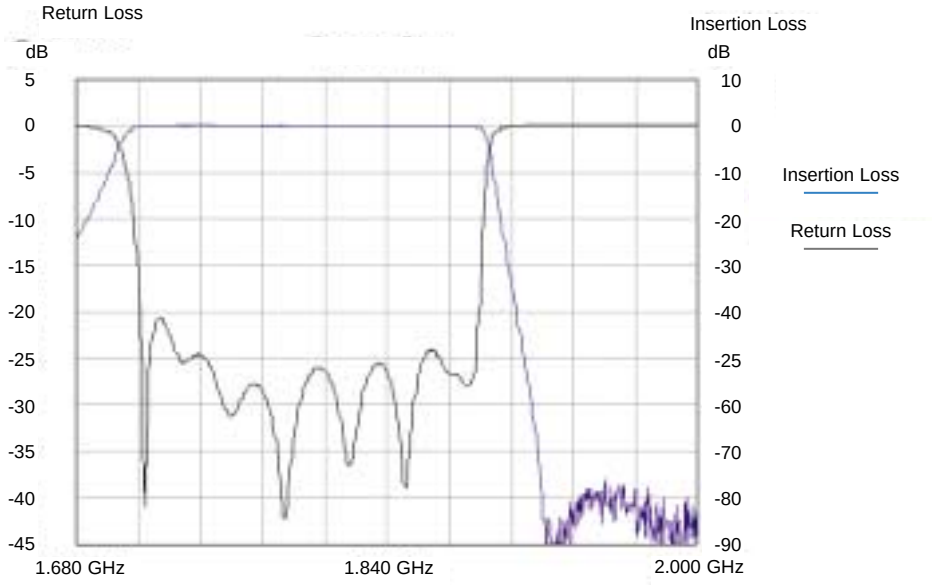
		9283.01 (GSM 1800 MHz rejection filter for UMTS)
Frequency range		1710-1880 MHz
Return loss	BTS port	>20 dB
	ANT port	>20 dB
Maximum input power		6x+43 dBm
Insertion loss	1710 - 1870 MHz	<0.5 dB
	1870 - 1880 MHz	<0.7 dB
Out of band rejection	1920 - 1980 MHz	>70 dB
	2110 - 2170 MHz	>70 dB

Mechanical Specifications

Connector 1)	BTS port	7/16 male
	ANT port	7/16 female
Height		60 mm (2.4")
Width 2)		65 mm (2.6")
Depth		160 mm (6.3")
Weight		<2.0 kg

Comments
1) The connectors are mounted on opposite sides of the filter.
2) Not including the connectors.

GSM 1800 MHz rejection filter for UMTS



UMTS Triple band Filter

Preliminary RF Specifications

Available in volume Q3 2002

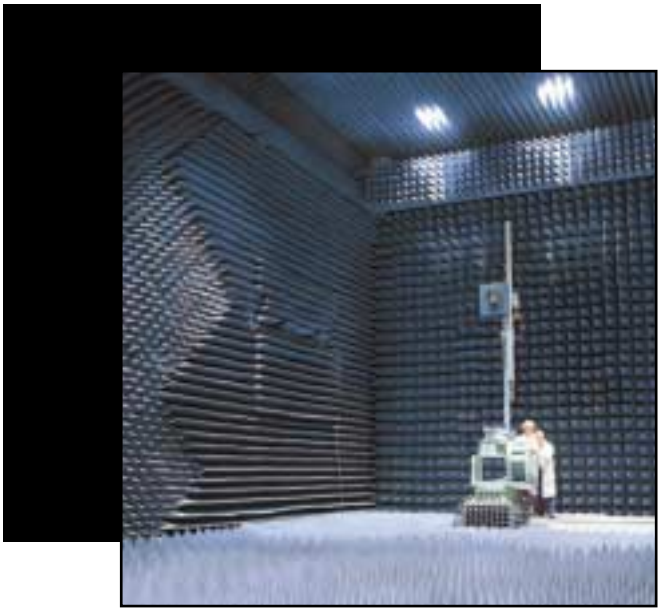
		9282.01 (Triple band filter GSM 900/1800/UMTS)
Frequency range	GSM 900 band	880-960 MHz
	GSM 1800 band	1710-1880 MHz
	UMTS band	1920-2170 MHz
Return loss	GSM 900 port	>18 dB
	GSM 1800 port	>18 dB
	UMTS port	>18 dB
	Common port	>18 dB
Maximum input power	GSM 900 port	6x+43 dBm
	GSM 1800 port	6x+43 dBm
	UMTS port	2x+46 dBm
Insertion loss	880-960 MHz	<0.5 dB
	1710-1870 MHz; 1870-1880 MHz	<0.5 dB
	1920-1930 MHz; 1930-2170 MHz	<0.5 dB
Isolation between ports	GSM 900 port to GSM 1800 and UMTS bands	>40 dB
	GSM 1800 port to GSM 900	>60 dB
	(for triple band) and UMTS bands	>40 dB
	UMTS port to GSM 900	>60 dB
	(for triple band and GSM 1800 bands)	>40 dB
	UMTS port to GSM 1800	>40 dB

Mechanical Specifications

Connector (all ports) 1)	7/16 male
Height	80 mm (3.1")
Width 2)	200 mm (7.9")
Depth	110 mm (4.3")
Weight	<2.0 kg

Comments
1) The common connector is placed on the opposite side of the BTS ports (inline).
2) Not including the connectors.
3) Patent pending

1710 - 2170 MHz Broad Band Antenna



Available in volume in Q3 2002.

Features

- **Covers Several different frequency bands**
- **Superior radiation pattern**
- **High cross polar discrimination factor**
- **Excellent front-to-back ratio**
- **AEDT functionality for tuning flexibility**
- **Field adjustable Manual adjustable Electrical Tilt (MET) in one degree increments**
- **Prepared for remote-controlled MET functionality**

Design Philosophy

The Allgon Broad Band antenna design is based on a patented stacked aperture-coupled patch technology, which provides high isolation performance and a wide VSWR bandwidth. The antennas have superior radiation patterns due to a unique reflector design which provides a very small variation of the -3 dB horizontal beam width over the frequency band as well as a high front-to-back ratio. Allgon Broad Band antennas come with MET for tuning flexibility of tilt angles. For MET information, see page 45. This design ensures the highest possible cross-polar discrimination value.

Quality Materials

Proper use of materials and their structure ensure performance integrity. In antennas, the electrical performance is directly related to mechanical structure. The choice of radome material is crucial since it acts as a window between the radiating elements and the coverage area. Our UV stabilized PVC and extruded fiberglass radomes have extremely low moisture absorption. Further, our radomes withstand mechanical stresses, even at low temperatures and long exposure to UV radiation. For corrosion inhibition, we use aircraft quality aluminum alloy that is inherently resistant to corrosion caused by the environment.

Performance

The Allgon Dual Polarized antenna has been designed and tested to ensure maximum performance and reduced polarization errors. Isolation is another important aspect of dual polarized antennas. A well designed antenna should have at least 30 dB - it is a sign of quality and shows how much effort has been put into the design stage.

Brackets

Allgon antenna mounts have been carefully designed and tested to ensure a fast and problem-free installation. The mounts are pre-mounted or co-packed with the antenna and ready for mounting directly to a pole, outside diameter 1.0" - 5.0" (25-125 mm). They can be mounted vertically or tilted, see tilt range specified in each antenna specification. For more information, please see pages 48 - 50.

Testing

Allgon prides itself on stringent testing requirements with conservative, yet realistic claims of the performance of our product offering. For more information on testing procedures, see page 47. Our front-to-back ratios are specified for ±20° from 180° (worst case) to 0° in a total power configuration.

Connectors

Upper & Lower Placement
7/16 DIN Connector

65 Degree 1710 - 2170 MHz Dual Polarized

Gain	Part Number	Description	Page
15 dBi	7700.00	UXM-1710-2170-65-15i-0-D	15
	7700.06	UXM-1710-2170-65-15i-6-D	15
18 dBi	7701.00	UXM-1710-2170-65-18i-0-D	15
	7701.06	UXM-1710-2170-65-18i-6-D	15
	7721.00	UXM-1710-2170-65-18i-A-D	16
19 dBi	7722.00	UXM-1710-2170-65-19i-A-D	16

90 Degree 1850 - 2170 MHz Dual Polarized

Gain	Part Number	Description	Page
13.5 dBi	7735.00	UXM-1850-2170-90-13.5i-A-D	17
16.5 dBi	7740.00	UXM-1850-2170-90-16.5i-A-D	17
18 dBi	7745.00	UXM-1850-2170-90-18i-A-D	18

Available in volume in Q3 2002.

Please contact Allgon for the latest updates regarding product availability.

1710 - 2170 MHz Broad Band Antenna

Description Detail:

U X M - 1710-2100- 6 5 - 1 8 i - A - D

- U X M: Broad Band Family
- 1710-2100: Frequency Band
- 6 5: Horizontal Beamwidth
- 1 8 i: Gain in dBi
- A: Adjustable Downtilt Angle
- D: 7/16 DIN Connector

Antennas may be ordered using part number or description.

Available in volume Q3 2002

Preliminary Electrical Specifications	7700 (UXM-1710-2170-65-15i)	7701 (UXM-1710-2170-65-18i)
Frequency range (MHz)	1710 - 2170	1710 - 2170
Gain	15 dBi (13 dBd)	18 dBi (16 dBd)
Polarization	dual linear, +/- 45°	dual linear, +/- 45°
VSWR, 50Ω	<1.4:1	<1.4:1
Horizontal 3dB beamwidth	65°	65°
Vertical 3dB beamwidth	13.5°	6.7°
Custom electrical downtilt	0° & 6°	0° & 6°
Co-pol 40 degree cone Front-to-back-ratio	>30 dB	> 30 dB
40 degree cone Front-to-back ratio, total power	>25 dB	> 25 dB
Suppression of first upper side lobe (0° ET)	>18 dB	> 19 dB
First lower null fill	<-20 dB typical	<-20 dB typical
Power handling, average per input	250 W	250 W
Power handling, average total	500 W	500 W
Typical IM3, 2 Tx @ 43 dBm (1800, 1900 MHz)	<-107 dBm	<-107 dBm
Typical IM7, 2 Tx @ 43 dBm (2100 MHz)	<-117 dBm	<-117 dBm
Isolation between ports	>30 dB	>30 dB

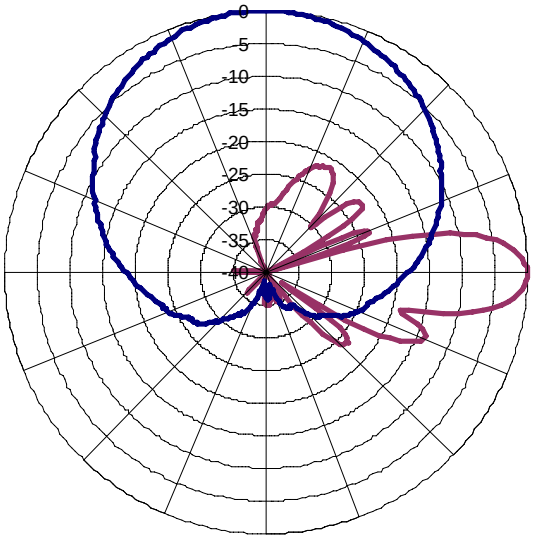
Preliminary Mechanical Specifications		
Connector	7/16 DIN bottom mounted	7/16 DIN bottom mounted
Height	27.4" (697 mm)	51" (1297 mm)
Width	6.6" (167 mm)	6.6" (167 mm)
Depth	3.5" (89.5 mm)	3.5" (89.5 mm)
Survival wind speed	156 mph (70 m/s)	156 mph (70 m/s)

*All feed network components DC grounded for Lightning Protection

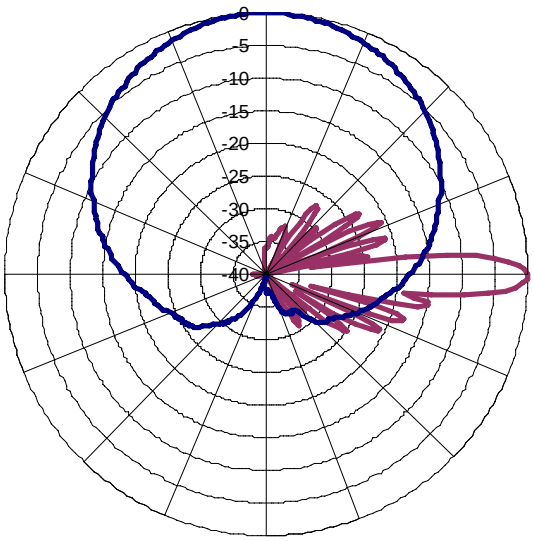
Pole mount and downtilt bracket are pre-mounted.		
Tilt range	-1.5° to +35°	-1° to +17°

Comments
Gain is typical within frequency band.
Radome color is NCS 2502-B (RAL 7035)(gray).

For a complete list of released models pertaining to gain and electrical downtilt, please see the quick reference guide on page 14.



Typical Horizontal and Vertical 7700.00 Patterns



Typical Horizontal and Vertical 7701.00 Patterns

1710 - 2170 MHz Broad Band Antenna

Available in volume Q3 2002

Preliminary Electrical Specifications	7721 (UXM-1710-2170-65-18i-A)	7722 (UXM-1710-2170-65-19i-A)
Frequency range (MHz)	1710 - 2170	1710 - 2170
Gain	18 dBi (16 dBd)	19 dBi (17 dBd)
Polarization	dual linear, +/- 45°	dual linear, +/- 45°
VSWR, 50Ω	<1.4:1	<1.4:1
Horizontal 3dB beamwidth	65°	65°
Vertical 3dB beamwidth	6.8°	4.6°
MET (AEDT)	0° - 8°	0° - 5°
Co-pol 40 degree cone Front-to-back-ratio	>30 dB	> 30 dB
40 degree cone Front-to-back ratio, total power	>25 dB	> 25 dB
Suppression of first upper side lobe (0° ET)	>18 dB	> 18 dB
First lower null fill	<-20 dB typical	<-20 dB typical
Power handling, average per input	250 W	250 W
Power handling, average total	500 W	500 W
Typical IM3, 2 Tx @ 43dBm (1800, 1900 MHz)	<-107 dBm	<-107 dBm
Typical IM7, 2 Tx @ 43dBm (2100 MHz)	<-117 dBm	<-117 dBm
Isolation between ports	>30 dB	>30 dB

Preliminary Mechanical Specifications		
Connector	7/16 DIN bottom mounted	7/16 DIN bottom mounted
Height	51" (1297 mm)	78.7" (~2000 mm)
Width	6.6" (167 mm)	6.6" (167 mm)
Depth	3.5" (89.5 mm)	3.5" (89.5 mm)
Survival wind speed	156 mph (70 m/s)	156 mph (70 m/s)

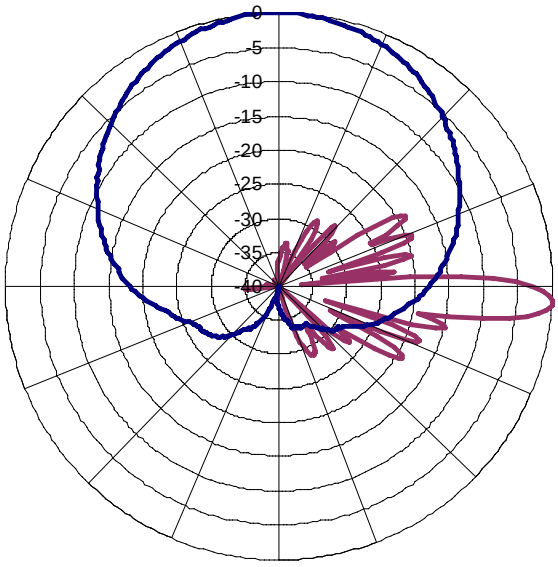
*All feed network components DC grounded for Lightning Protection

Pole mount and downtilt bracket are pre-mounted.

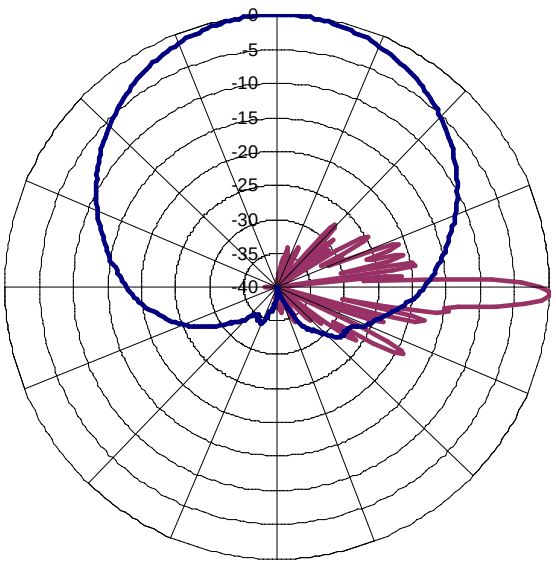
Tilt range	-1° to +17°	-0.4° to +10.6°

Comments
Gain is typical within frequency band.
Radome color is NCS 2502-B (RAL 7035)(gray).

For a complete list of released models pertaining to gain and electrical downtilt, please see the quick reference guide on page 14.



Typical Horizontal and Vertical 7721.00 Patterns



Typical Horizontal and Vertical 7722.00 Patterns

Available in volume Q3 2002

Preliminary Electrical Specifications	7735 (UXM-1850-2170-90-13.5i-A)	7740 (UXM-1850-2170-90-16.5i-A)
Frequency range (MHz)	1850 - 2170	1850 - 2170
Gain	13.5 dBi (15.5 dBd)	16.5 dBi (14.5 dBd)
Polarization	dual linear, +/- 45°	dual linear, +/- 45°
VSWR, 50Ω	<1.4:1	<1.4:1
Horizontal 3dB beamwidth	90°	90°
Vertical 3dB beamwidth	13.5°	7°
MET (AEDT)	0° - 16°	0° - 8°
Co-pol 40 degree cone Front-to-back ratio	>30 dB	>30 dB
40 degree cone Front-to-back ratio, total power	>25 dB	> 25 dB
Suppression of first upper side lobe (0° ET)	>18 dB	> 18 dB
First lower null fill	<-20 dB typical	<-20 dB typical
Power handling, average per input	250 W	250 W
Power handling, average total	500 W	500 W
Typical IM3, 2 Tx @ 43dBm (1800, 1900 MHz)	<-107 dBm	<-107 dBm
Typical IM7, 2 Tx @ 43dBm (2100 MHz)	<-117 dBm	<-117 dBm
Isolation between ports	>30 dB	>30 dB

Preliminary Mechanical Specifications		
Connector	7/16 DIN bottom mounted	7/16 DIN bottom mounted
Height	27.4" (697 mm)	51" (1297 mm)
Width	6.6" (167 mm)	6.6" (167 mm)
Depth	3.5" (89.5 mm)	3.5" (89.5 mm)
Survival wind speed	156 mph (70 m/s)	156 mph (70 m/s)

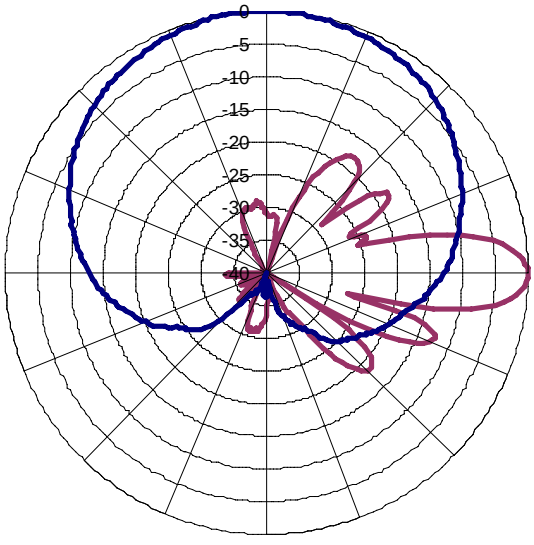
*All feed network components DC grounded for Lightning Protection

Pole mount and downtilt bracket are pre-mounted.

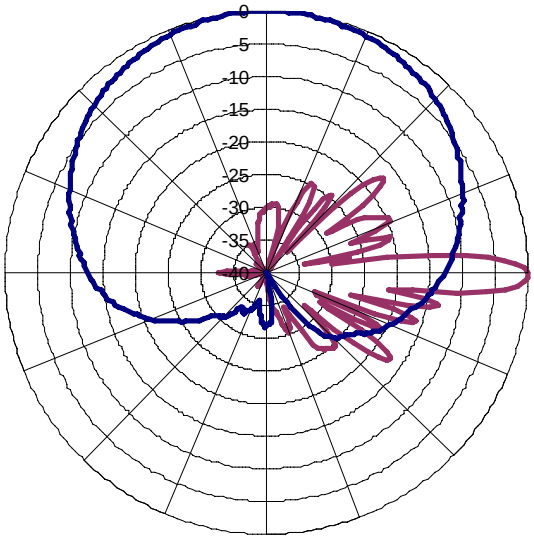
Tilt range	-1.5° to +35°	-1° to +17°

Comments
Gain is typical within frequency band.
Radome color is NCS 2502-B (RAL 7035)(gray).

For a complete list of released models pertaining to gain and electrical downtilt, please see the quick reference guide on page 14.



Typical Horizontal and Vertical 7735.00 Patterns



Typical Horizontal and Vertical 7740.00 Patterns

1850 - 2170 MHz Broad Band Antenna

Available in volume Q3 2002

Preliminary Electrical Specifications	7745 (UXM-1850-2170-90-18i-A)
Frequency range (MHz)	1850 - 2170
Gain	18 dBi (16 dBd)
Polarization	dual linear, +/- 45°
VSWR, 50Ω	<1.4:1
Horizontal 3dB beamwidth	90°
Vertical 3dB beamwidth	4.7°
MET (AEDT)	0° - 5°
Co-pol 40 degree cone Front-back-ratio	>30 dB
40 degree cone Front-to-back ratio, total power	>25 dB
Suppression of first upper side lobe	>18 dB
First lower null fill	<-18 dB typical
Power handling, average per input	250 W
Power handling, average total	500 W
Typical IM3, 2 Tx @ 43dBm (1800, 1900 MHz)	<-107 dBm
Typical IM7, 2 Tx @ 43dBm (2100 MHz)	<-117 dBm
Isolation between ports	>30 dB

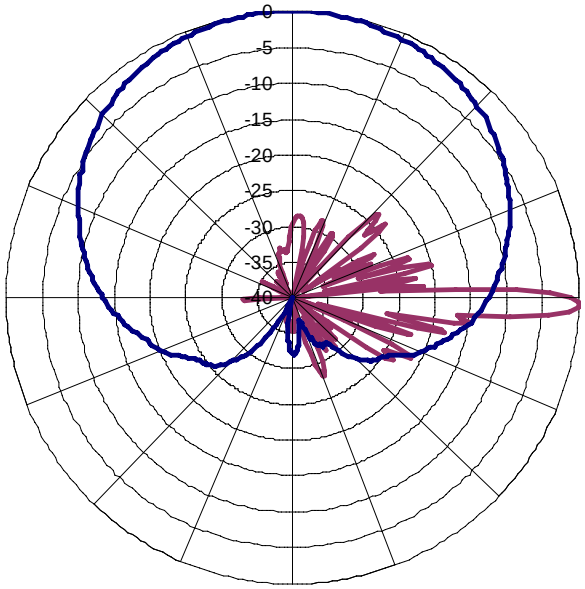
Preliminary Mechanical Specifications	
Connector	7/16 DIN bottom mounted
Height	78.7" (2000 mm)
Width	6.6" (167 mm)
Depth	3.5" (89.5 mm)
Survival wind speed	156 mph (70 m/s)

*All feed network components DC grounded for Lightning Protection

Pole mount and downtilt bracket are pre-mounted.
Tilt range -0.4° to +10.6°

Comments
Gain is typical within frequency band.
Radome color is NCS 2502-B (RAL 7035)(gray).

For a complete list of released models pertaining to gain and electrical downtilt, please see the quick reference guide on page 14.



Typical Horizontal and Vertical 7745.00 Patterns

Features

- **Slant 45 degree design to optimize performance**
- **Superior diversity performance due to patented element design**
- **High cross polar discrimination factor**
- **High port to port isolation**
- **Minimum squint and tracking**
- **Superior vertical pattern shaping for interference reduction**
- **Optional Manual adjustable Electrical Tilt (MET) for tuning flexibility**
- **Can be upgraged to remote controlled RET functionality starting in 2002**

Design Philosophy

The Allgon Dual Polarized antenna is designed with a slant +/- 45˚ configuration which has equal signal strengths on both polarizations. The ultra-slim design and sophisticated electrical performance ensures maximum efficiency, as well as a stable pattern over the entire frequency range. This design relies on leading-edge patch technology fed via a micro strip PCB network. The slant +/- 45˚ dual polarization system provides the independent fading signals needed for achieving top-quality coverage via diversity concepts.

The optional Manual adjustable Electrical Tilt (MET) module is based on a patented sliding dielectric that minimizes intermodulation distortion and maximizes efficiency. The MET function allows you to field-adjust the electrical tilt from 0˚ to VBW for optimum roll-off effect.

Performance

The Allgon Dual Polarized antenna has been designed and tested to ensure maximum performance and reduced polarization errors. Isolation is another important aspect of dual polarized antennas. A well designed antenna should have at least 30 dB - it is a sign of quality and shows how much effort has been put into the design stage.

Brackets

Allgon antenna mounts have been carefully designed and tested to ensure a fast and problem-free installation. The mounts are pre-mounted or co-packed with the antenna and ready for mounting directly to a pole, outside diameter 1.0” - 5.0” (25-125 mm). They can be mounted vertically or tilted, see tilt range specified in each antenna specification. For more information, please see pages 48 - 50.

Quality Materials

Proper use of materials and their structure ensure performance integrity. In antennas, the electrical performance is directly related to mechanical structure. The choice of radome material is crucial since it acts as a window between the radiating elements and the coverage area. Our UV stabilized PVC and ASA radomes have extremely low moisture absorption. Further, our radomes withstand mechanical stresses, even at low temperatures and long exposure to UV radiation. For corrosion inhibition, we use aircraft quality aluminum alloy that is inherently resistant to corrosion caused by the environment.

Connectors

7/16 DIN Connector

65 Degree 1800 MHz Dual Polarized

Gain	Part Number	Description	Page
15 dBi	7600.00	XM-1800-65-15i-0-D	21
	7600.02	XM-1800-65-15i-2-D	21
	7600.06	XM-1800-65-15i-6-D	21
17.5 dBi	7601.00	XM-1800-65-17.5i-0-D	21
	7601.02	XM-1800-65-17.5i-2-D	21
	7601.06	XM-1800-65-17.5i-6-D	21

65 Degree 1800 MHz Dual Polarized with Manual adjustable Electrical Tilt (MET)

Gain	Part Number	Description	Page
17.5 dBi	7630.00	XM-1800-65-17.5i-A-D	22

Please contact Allgon for the latest updates regarding product availability.

1800 MHz Dual Polarized Antenna

Description Detail:

XM-1800-65-17.5i-A-D

- XM: Cross Polarized Metro Family
- 1800: Frequency Band
- 65: Horizontal Beamwidth
- 17.5i: Gain in dBi
- A: Electrical Downtilt Angle or A for MET
- D: 7/16 DIN Connector

A trailing U indicates connector placement on the top, no U indicates connector placement on the bottom.

Antennas may be ordered using part number or description.

Electrical Specifications

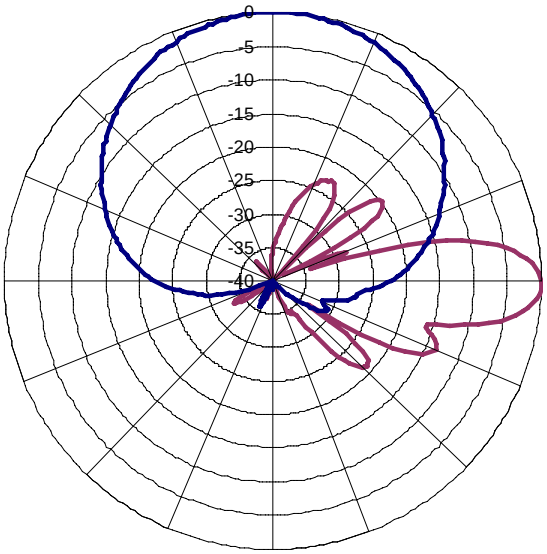
	7600 (XM-1800-65-15i)	7601 (XM-1800-65-17.5i)
Gain	15 dBi (13 dBd)	17.5 dBi (15.5 dBd)
Polarization	linear, dual slant 45	linear, dual slant 45
VSWR, 50Ω (1710 MHz to 1880 MHz)	<1.3:1	<1.3:1
Horizontal 3dB beamwidth	65°	65°
Vertical 3dB beamwidth	15°	7°
Custom electrical downtilts	0°, 2° & 6°	0°, 2° & 6°
Co-pol 40 degree cone Front-to-back-ratio	>23 dB	>20 dB
40 degree cone Front-to-back ratio, total power	>20 dB	>20 dB
Cross-polar discrimination, boresite	>18 dB	>18 dB
Suppression of first upper side lobe	>17 dB	>17 dB
First lower null fill	>-20 dB	>-20 dB
Maximum CW input power	500W total at 250W per input	500W total at 250W per input
Two tone intermodulation 3rd order	<-110 dBm for 2x10W	<-110 dBm for 2x10W
Isolation between ports	> 30 dB	>30 dB

Mechanical Specifications

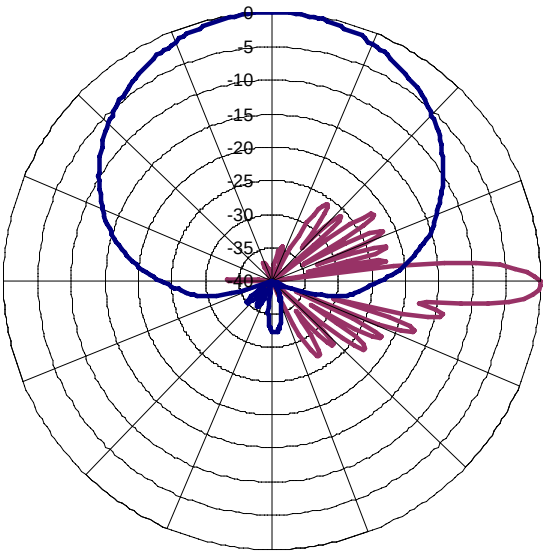
Connector	7/16 DIN bottom	7/16 DIN bottom
Height	697 mm (27.4")	1297 mm (51.1")
Width	167 mm (6.6")	167 mm (6.6")
Depth	58 mm (2.3")	58 mm (2.3")
Antenna Weight	2.2 kg (4.9 lb.)	3.4 kg (7.5 lb.)
Weight including tilt brackets	5.8 kg	7 kg
Survival wind speed	70 m/s (156 mph)	70 m/s
Maximum wind area	0.12 sq.m (1.23 sq. ft.)	0.22 sq.m (2.4 sq. ft.)
Frontal wind load @150 km/h	122N (27.5 lbf)	221 N (53.4 lbf)
All metallic components DC grounded for Lightning Protection		
Pole mount and downtilt bracket included		
Tilt Range	-1.5° to +35°	-1° to +17°

Comments
Gain is typical within frequency band.
Front-to-back ratio is defined within 20° from the backwards direction in any plane.
Sidelobe suppression and null fill is relative to peak of main beam.
Frontal windload is calculated assuming the shape factor C=1
Radome color is NCS 2502-B (RAL 7035)(gray).

For a complete list of released models pertaining to gain, electrical downtilt and connector placement, please see the quick reference guide on page 20.



Typical Horizontal and Vertical 7600.00 Patterns



Typical Horizontal and Vertical 7601.00 Patterns

1800 MHz Dual Polarized Antenna

Electrical Specifications

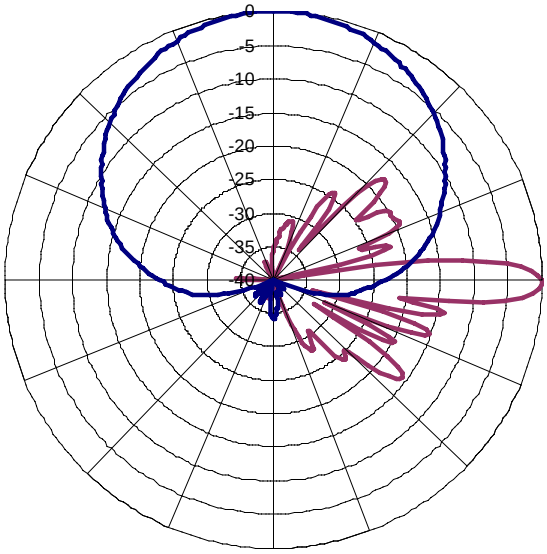
	7630 (XM-1800-65-17.5i-A)
Gain	17.5 dBi (15.5 dBd)
Polarization	linear, dual slant 45
VSWR, 50Ω (1710 MHz to 1880 MHz)	<1.4:1
Horizontal 3dB beamwidth	65°
Vertical 3dB beamwidth	7°
Met (AEDT)	0° to 8° (1° increments)
Co-pol 40 degree cone Front-to-back-ratio	>23 dB
40 degree cone Front-to-back ratio, total power	>20 dB
Cross-polar discrimination, boresite	>18 dB
Suppression of first upper side lobe (0° ET)	>19 dB
First lower null fill	N/A
Maximum CW input power	400W at 200 W per input
Two tone intermodulation 3rd order	<-110 dBm for 2x10W
Isolation between ports	>30 dB

Mechanical Specifications

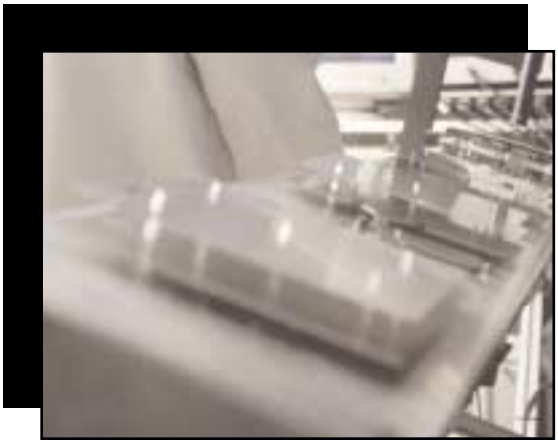
Connector	7/16 DIN bottom
Height	1297 mm (51.1")
Width	167 mm (6.6")
Depth	58 mm (2.3")
Antenna Weight	4.3 kg (9.5 lb.)
Weight including tilt brackets	7.9 kg
Survival wind speed	70 m/s (156 mph)
Maximum wind area	0.22 sq.m (2.4 sq. ft.)
Frontal wind load @150 km/h	221N (53.4 lbf)
All metallic components DC grounded for Lightning Protection	
Pole mount and downtilt bracket included	
Tilt Range	-1° to +17°

Comments
Gain is typical within frequency band.
Front-to-back ratio is defined within 20° from the backwards direction in any plane.
Sidelobe suppression and null fill is relative to peak of main beam.
Frontal windload is calculated assuming the shape factor C=1
Radome color is NCS 2502-B (RAL 7035)(gray).

For a complete list of released models pertaining to gain, electrical downtilt and connector placement, please see the quick reference guide on page 20.



Typical Horizontal and Vertical 7630.00 Patterns



Features

- **Slant 45 degree design to optimize performance**
- **Superior diversity performance due to patented element design**
- **High cross polar discrimination factor**
- **High port to port isolation**
- **Minimum squint and tracking**
- **Exact aperture angle**
- **Superior vertical pattern shaping for interference reduction**

Design Philosophy

The Allgon Dual Polarized antenna is designed with a slant ± 45° configuration which has equal signal strengths. Research has determined that the horizontal/vertical configuration has large differences in mean signal strength between the two branches, because the horizontal component has greater propogation loss than the vertical. Our design is backed by the thorough research and testing to insure the highest possible diversity gain, isolation, and cross polar discrimination.

Testing

Allgon prides itself on stringent testing requirements with conservative, yet realistic claims of the performance of our product offering. For more information on testing procedures, see page 47. Our front-to-back ratios are specified for ±20° from 180° (worst case) to 0° in a total power configuration.

Performance

The Allgon Dual Polarized antenna has been designed and tested to ensure maximum performance and reduced polarization errors. Isolation is another important aspect of dual polarized antennas. A well designed antenna should have at least 30 dB - it is a sign of quality and shows how much effort has been put into the design stage.

Brackets

Allgon antenna mounts have been carefully designed and tested to ensure a fast and problem-free installation. The mounts are pre-mounted or co-packed with the antenna and ready for mounting directly to a pole, outside diameter 1.0" - 5.0" (25-125 mm). They can be mounted vertically or tilted, see tilt range specified in each antenna specification. For more information, please see pages 48 - 50.

Quality Materials

Proper use of materials and their structure ensure performance integrity. In antennas, the electrical performance is directly related to mechanical structure. The choice of radome material is crucial since it acts as a window between the radiating elements and the coverage area. Our UV stabilized PVC and ASA radomes have extremely low moisture absorption. Further, our radomes withstand mechanical stresses, even at low temperatures and long exposure to UV radiation. For corrosion inhibition, we use aircraft quality aluminum alloy that is inherently resistant to corrosion caused by the environment.

Connectors

7/16 DIN Connector

65 Degree 900 MHz Dual Polarized

Gain	Part Number	Description	Page
12.5 dBi	7216.03	XU-900-65-12.5i-0-D	25
15.5 dBi	7217.04	XU-900-65-15.5i-0-D	25
15 dBi	7217.03	XU-900-65-15i-7-D	25
17 dBi	7255.04	XU-900-65-17i-0-D	26
16.5 dBi	7255.03	XU-900-65-16.5i-6-D	26
18 dBi	7218.05	XU-900-65-18i-0-D	26
17.5 dBi	7218.04 7218.03	XU-900-65-17.5i-4-D XU-900-65-17.5i-6-D	26 26

Please contact Allgon for the latest updates regarding product availability.

900 MHz Dual Polarized Antenna

Description Detail:

XU-900-65-12.5i-0-D

- XU: Cross Polarized Metro Family
- 900: Frequency Band
- 65: Horizontal Beamwidth
- 12.5i: Gain in dBi
- 0: Electrical Downtilt Angle or A for MET
- D: 7/16 DIN Connector

A trailing U indicates connector placement on the top, no U indicates connector placement on the bottom.

Antennas may be ordered using part number or description.

Electrical Specifications

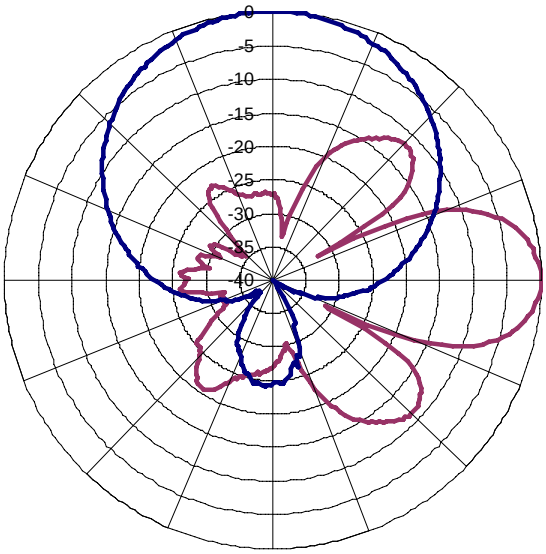
	7216 (XU-900-65-12.5i)	7217 (XU-900-65-15.5i)
Gain	12.5 dBi (10.5 dBd)	15.5 dBi (13.5 dBd)
Polarization	linear, dual slant 45	linear, dual slant 45
VSWR, 50Ω	<1.4:1 (880 MHz to 915 MHz)	<1.4:1 (880 MHz to 915 MHz)
VSWR, 50Ω	<1.3:1 (925 MHz to 960 MHz)	<1.3:1 (925 MHz to 960 MHz)
Horizontal 3dB beamwidth	65°	65°
Vertical 3dB beamwidth	26°	13°
Custom electrical downtilts	0°	0° & 7°
Co-pol 40 degree cone Front-to-back-ratio	>24 dB	>24 dB
40 degree cone Front-to-back ratio, total power	>20 dB	>20 dB
Cross-polar discrimination, boresite	>20 dB	>20 dB
Suppression of first upper side lobe	>10 dB	>17 dB
First lower null fill	N/A	N/A
Maximum CW input power	250W	500W at 250W per input
Two tone intermodulation 3rd order	<-107 dBm for 2x20W (150 dBc at 2x43 dBm)	<-107 dBm for 2x20W (150 dBc at 2x43 dBm)
Isolation between ports	>30 dB	>30 dB

Mechanical Specifications

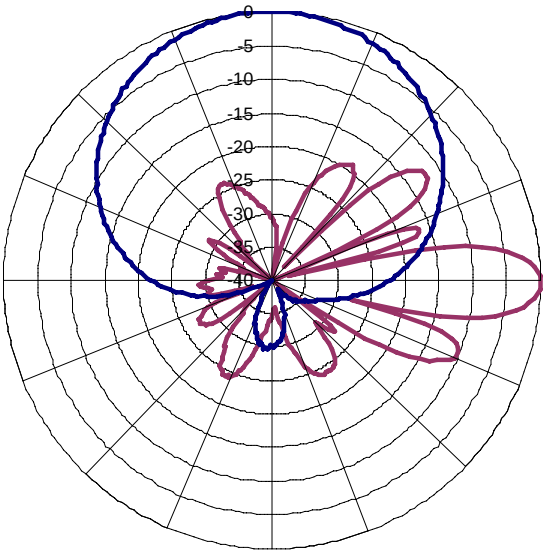
Connector	7/16 DIN bottom	7/16 DIN bottom
Height	660 mm (25.9")	1320 mm (52")
Width	256 mm (10.1")	256 mm (10.4")
Depth	50 mm (2")	50 mm (2")
Antenna Weight	4 kg (8.8 lb.)	6.5 kg (14.3 lb.)
Weight including tilt brackets	7.6 kg	10.1 kg
Survival wind speed	55 m/s (123 mph)	55 m/s (123 mph)
Maximum wind area	0.17 sq.m (1.8 sq. ft.)	0.33 sq.m (3.6 sq. ft.)
Frontal wind load @150 km/h	190N (42.7 lbf)	370 N (83.1 lbf)
All metallic components DC grounded for Lightning Protection		
Pole mount and downtilt bracket included		
Tilt Range	-1.5° to +35°	-0.7° to +16°

Comments
Gain is typical within frequency band.
Front-to-back ratio is defined within 20° from the backwards direction in any plane.
Sidelobe suppression and null fill is relative to peak of main beam.
Frontal windload is calculated assuming the shape factor C=1
Radome color is NCS 2502-B (RAL 7035)(gray).

For a complete list of released models pertaining to gain, electrical downtilt and connector placement, please see the quick reference guide on page 24.



Typical Horizontal and Vertical 7216.03 Patterns



Typical Horizontal and Vertical 7217.04 Patterns

900 MHz Dual Polarized Antenna

Electrical Specifications

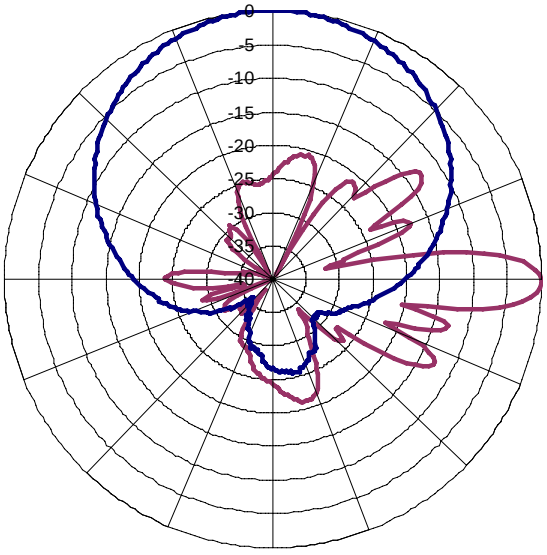
	7255 (XU-900-65-17i)	7218 (XU-900-65-18i)
Gain	17 dBi (15 dBd)	18 dBi (16 dBd)
Polarization	linear, dual slant 45	linear, dual slant 45
VSWR, 50Ω	<1.4:1 (880 MHz to 915 MHz)	<1.5:1 (880 MHz to 915 MHz)
VSWR, 50Ω	<1.4:1 (925 MHz to 960 MHz)	<1.4:1 (925 MHz to 960 MHz)
Horizontal 3dB beamwidth	65°	65°
Vertical 3dB beamwidth	9°	6.5°
Custom electrical downtilts	0° & 6°	0°, 4° & 6°
Co-pol 40 degree cone Front-to-back-ratio	>24 dB	>24 dB
40 degree cone Front-to-back ratio, total power	>20 dB	>20 dB
Cross-polar discrimination, boresite	>20 dB	>20 dB
Suppression of first upper side lobe	>17 dB	>17 dB
First lower null fill	N/A	N/A
Maximum CW input power	500W at 250W per input	500W at 250W per input
Two tone intermodulation 3rd order	<-107 dBm for 2x20W (150 dBc at 2x43 dBm)	<-107 dBm for 2x20W (150 dBc at 2x43 dBm)
Isolation between ports	>30 dB	>30 dB

Mechanical Specifications

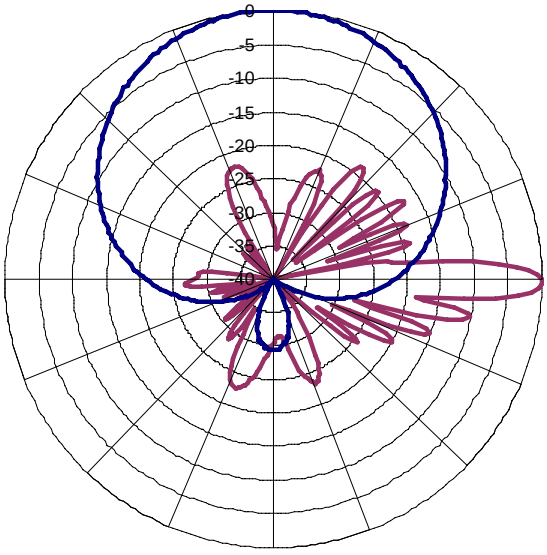
Connector	7/16 DIN bottom	7/16 DIN bottom
Height	1940 mm (76.3")	2580 mm (102")
Width	256 mm (10.1")	256 mm (10.4")
Depth	50 mm (2")	50 mm (2")
Antenna Weight	9 kg (19.8 lb.)	13 kg (28.7 lb.)
Weight including tilt brackets	12.6 kg	16.6 kg
Survival wind speed	55 m/s (123 mph)	55 m/s (123 mph)
Maximum wind area	0.50 sq.m (5.4 sq. ft.)	0.66 sq.m (7.1 sq. ft.)
Frontal wind load @150 km/h	550 N (123.6 lbf)	750 N (168.5 lbf)
All metallic components DC grounded for Lightning Protection		
Pole mount and downtilt bracket included		
Tilt Range	-0.5° to +11°	-0.4° to +8°

Comments
Gain is typical within frequency band.
Front-to-back ratio is defined within 20° from the backwards direction in any plane.
Sidelobe suppression and null fill is relative to peak of main beam.
Frontal windload is calculated assuming the shape factor C=1
Radome color is NCS 2502-B (RAL 7035)(gray).

For a complete list of released models pertaining to gain, electrical downtilt and connector placement, please see the quick reference guide on page 24.



Typical Horizontal and Vertical 7255.04 Patterns



Typical Horizontal and Vertical 7218.05 Patterns

900 MHz Urban Panel Antenna

Features

- **Same pattern across the entire frequency band**
- **100% VSWR testing**
- **Superior vertical pattern shaping for interference reduction**
- **100% verified for vertical pattern performance**
- **Mechanical design allows for thermal expansion**
- **Aesthetically pleasing**

Design Philosophy

The Allgon "Slim Panel" Antenna is designed in a repeatable procedure which requires no tuning or modification, with the specification being the same from product to product. The Urban "Slim Panel" antenna has a robust mechanical design which does not rely on the radome for support. The radome, which is only for weatherproofing, is set inside the endcaps and allows for thermal expansion.

Testing

Allgon prides itself on stringent testing requirements with conservative, yet realistic claims of the performance of our product offering. For more information on testing procedures, see page 47. Our front-to-back ratios are specified for ±20° from 180° (worst case) to 0°.

Connectors

7/16 DIN Connector

Performance

The Allgon "Slim Panel" antennas have verified vertical pattern performance on 100% of the antennas. The product line has a better than 1.4:1 VSWR receive and 1.3:1 transmit. The "Slim Panel" antenna has consistent, reliable performance from frequency to frequency and product to product.

Brackets

Allgon antenna mounts have been carefully designed and tested to ensure a fast and problem-free installation. The mounts are pre-mounted or co-packed with the antenna and ready for mounting directly to a pole, outside diameter 1.0" - 5.0" (25-125 mm). They can be mounted vertically or tilted, see tilt range specified in each antenna specification. For more information, please see pages 48 - 50.

Quality Materials

Proper use of materials and their structure ensures performance integrity. In antennas, the electrical performance is directly related to mechanical performance. The choice of radome materials is crucial since it acts as a window between the radiating elements and the coverage area. Our UV stabilized PVC radome is resistant to moisture absorption. Furthermore, our radomes can withstand mechanical stresses, even at low temperatures and long exposure to UV radiation. For corrosion inhibition, we use aircraft quality aluminum alloy that is inherently resistant to corrosion caused by the environment.

65 Degree 900 MHz Flat Panel

Gain	Part Number	Description	Page
13 dBi	7225.04	U-900-65-13i-0-D	29
15.5 dBi	7226.04	U-900-65-15.5i-0-D	29
17 dBi	7227.04	U-900-65-17i-0-D	30
18 dBi	7228.04	U-900-65-18i-0-D	30
	7228.08	U-900-65-18i-2-D	30

90 Degree 900 MHz Flat Panel

Gain	Part Number	Description	Page
15 dBi	7232.04	U-900-90-15i-0-D	31
	7232.07	U-900-90-15i-4-D	31
16.5 dBi	7233.04	U-900-90-16.5i-0-D	31

Please contact Allgon for the latest updates regarding product availability.

900 MHz Urban Panel Antenna

Description Detail:

U - 900 - 65 - 15.5i - 0 - D

- U — Urban Family
- 900 — Frequency Band
- 65 — Horizontal Beamwidth
- 15.5i — Gain in dBi
- 0 — Electrical Downtilt Angle
- D — 7/16 DIN Connector

Antennas may be ordered using part number or description.

Electrical Specifications

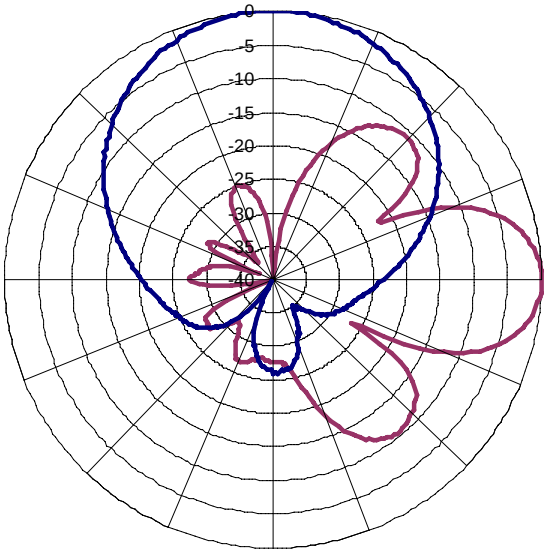
	7225 (U-900-65-13i)	7226 (U-900-65-15.5i)
Gain	13 dBi (11 dBd)	15.5 dBi (13 dBd)
Polarization	linear, vertical	linear, vertical
VSWR, 50Ω	<1.4:1 (870 MHz to 925 MHz)	<1.4:1 (870 MHz to 925 MHz)
VSWR, 50Ω	<1.3:1 (925 MHz to 960 MHz)	<1.3:1 (925 MHz to 960 MHz)
Horizontal 3dB beamwidth	65°	65°
Vertical 3dB beamwidth	26°	14°
Custom electrical downtilts	0°	0°
40 degree cone Front-to-back ratio	>25 dB	>23 dB
Suppression of first upper side lobe	>9 dB	>17 dB
First lower null fill	N/A	N/A
Maximum CW input power	300W	500W
Two tone intermodulation 3rd order	<-107 dBm for 2x20W (150 dBc at 2x43 dBm)	<-107 dBm for 2x20W (150 dBc at 2x43 dBm)

Mechanical Specifications

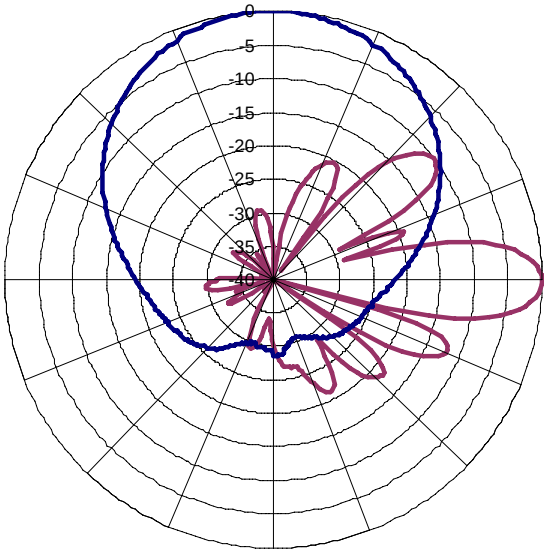
Connector	7/16 DIN bottom	7/16 DIN bottom
Height	660 mm (26")	1320 mm (52")
Width	256 mm (10.1")	256 mm (10.1")
Depth	50 mm (2")	50 mm (2")
Antenna Weight	5 kg (11 lb.)	7 kg (15.4 lb.)
Weight including tilt brackets	8.6 kg	10.6 kg
Survival wind speed	55 m/s (123 mph)	55 m/s (123 mph)
Maximum wind area	0.17 sq.m (1.8 sq. ft.)	0.34 sq.m (3.6 sq. ft.)
Frontal wind load @150 km/h	190N (42.7 lbf @ 100 mph)	370 N (95.6 lbf @ 100 mph)
All metallic components DC grounded for Lightning Protection		
Pole mount and downtilt bracket included		
Tilt Range	-1.3° to +31°	-0.6° to +15°

Comments
Gain is typical within frequency band.
Front-to-back ratio is defined within 20° from the backwards direction in any plane.
Sidelobe suppression and null fill is relative to peak of main beam.
Frontal windload is calculated assuming the shape factor C=1
Radome color is NCS 2502-B (RAL 7035)(gray).

For a complete list of released models pertaining to gain, electrical downtilt and connector placement, please see the quick reference guide on page 28.



Typical Horizontal and Vertical 7225.04 Patterns



Typical Horizontal and Vertical 7226.04 Patterns

Electrical Specifications

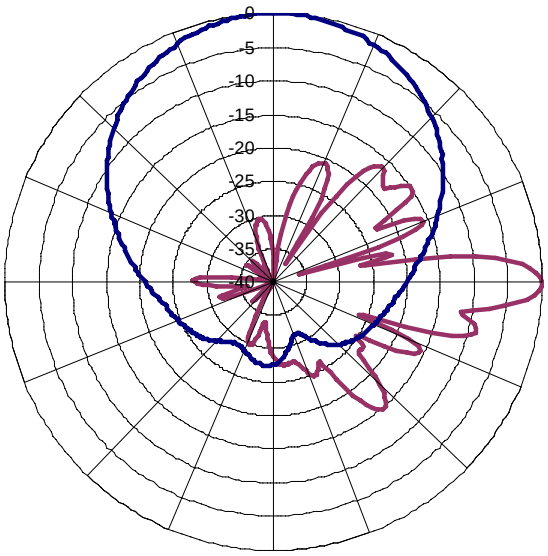
	7227 (U-900-65-17i)	7228 (U-900-65-18i)
Gain	17 dBi (15 dBd)	18 dBi (16 dBd)
Polarization	linear, vertical	linear, vertical
VSWR, 50Ω	<1.4:1 (870 MHz to 925 MHz)	<1.4:1 (870 MHz to 925 MHz)
VSWR, 50Ω	<1.3:1 (925 MHz to 960 MHz)	<1.3:1 (925 MHz to 960 MHz)
Horizontal 3dB beamwidth	65°	65°
Vertical 3dB beamwidth	9°	6.5°
Custom electrical downtilts	0°	0° & 2°
40 degree cone Front-to-back ratio	>23 dB	>23 dB
Suppression of first upper side lobe	>17 dB	>19 dB
First lower null fill	>-13 dB	>-20 dB
Maximum CW input power	500W	500W
Two tone intermodulation 3rd order	<-107 dBm for 2x20W (150 dBc at 2x43 dBm)	<-107 dBm for 2x20W (150 dBc at 2x43 dBm)

Mechanical Specifications

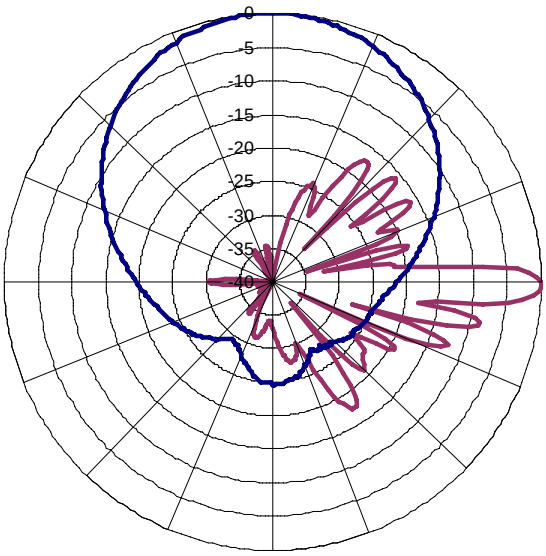
Connector	7/16 DIN bottom	7/16 DIN bottom
Height	1940 mm (76.4")	2580 mm (102")
Width	256 mm (10.1")	256 mm (10.1")
Depth	50 mm (2")	50 mm (2")
Antenna Weight	11 kg (23.2 lb.)	14 kg (30.9 lb.)
Weight including tilt brackets	14.6 kg	17.6 kg
Survival wind speed	55 m/s (123 mph)	55 m/s (123 mph)
Maximum wind area	0.50 sq.m (5.3 sq. ft.)	0.66 sq.m (7.1 sq. ft.)
Frontal wind load @150 km/h	550N (140 lbf @ 100 mph)	730 N (187 lbf @ 100 mph)
All metallic components DC grounded for Lightning Protection		
Pole mount and downtilt bracket included		
Tilt Range	-0.4° to +10°	-0.4° to +8°

Comments
Gain is typical within frequency band.
Front-to-back ratio is defined within 20° from the backwards direction in any plane.
Sidelobe suppression and null fill is relative to peak of main beam.
Frontal windload is calculated assuming the shape factor C=1
Radome color is NCS 2502-B (RAL 7035)(gray).

For a complete list of released models pertaining to gain, electrical downtilt and connector placement, please see the quick reference guide on page 28.



Typical Horizontal and Vertical 7227.04 Patterns



Typical Horizontal and Vertical 7228.04 Patterns

Electrical Specifications

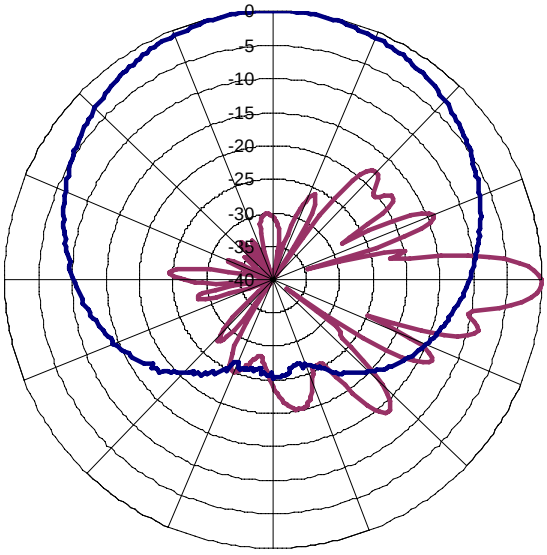
	7232 (U-900-90-15i)	7233 (U-900-90-16.5i)
Gain	15 dBi (14.5 dBd)	16.5 dBi (14.5 dBd)
Polarization	linear, vertical	linear, vertical
VSWR, 50Ω	<1.4:1 (870 MHz to 925 MHz)	<1.4:1 (870 MHz to 925 MHz)
VSWR, 50Ω	<1.3:1 (925 MHz to 960 MHz)	<1.3:1 (925 MHz to 960 MHz)
Horizontal 3dB beamwidth	90°	90°
Vertical 3dB beamwidth	9°	6.5°
Custom electrical downtilts	0° & 4°	0°
40 degree cone Front-to-back ratio	>20 dB	>20 dB
Suppression of first upper side lobe	>-15 dB	>17 dB
First lower null fill	>-15 dB	N/A
Maximum CW input power	500W	500W
Two tone intermodulation 3rd order	<-107 dBm for 2x20W (150 dBc at 2x43 dBm)	<-107 dBm for 2x20W (150 dBc at 2x43 dBm)

Mechanical Specifications

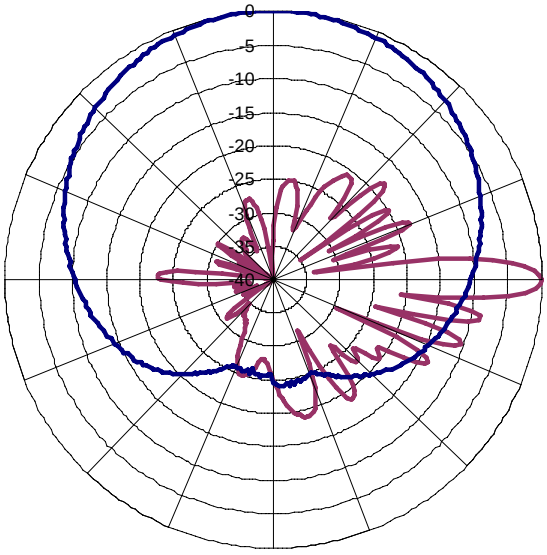
Connector	7/16 DIN bottom	7/16 DIN bottom
Height	1940 mm (76.4")	2580 mm (102")
Width	160 mm (6.3")	160 mm (6.3")
Depth	55 mm (2.2")	55 mm (2.2")
Antenna Weight	9 kg (19.8 lb.)	11 kg (23.2 lb.)
Weight including tilt brackets	12.6 kg	14.6 kg
Survival wind speed	55 m/s (123 mph)	55 m/s (123 mph)
Maximum wind area	0.31 sq.m (3.3 sq. ft.)	0.41 sq.m (4.4 sq. ft.)
Frontal wind load @150 km/h	340 N (87.8 lbf @ 100 mph)	450 N (117 lbf @ 100 mph)
All metallic components DC grounded for Lightning Protection		
Pole mount and downtilt bracket included		
Tilt Range	-0.4° to +10°	-0.4° to +8°

Comments
Gain is typical within frequency band.
Front-to-back ratio is defined within 20° from the backwards direction in any plane.
Sidelobe suppression and null fill is relative to peak of main beam.
Frontal windload is calculated assuming the shape factor C=1
Radome color is NCS 2502-B (RAL 7035)(gray).

For a complete list of released models pertaining to gain, electrical downtilt and connector placement, please see the quick reference guide on page 28.



Typical Horizontal and Vertical 7232.04 Patterns



Typical Horizontal and Vertical 7233.04 Patterns

900 MHz Omnidirectional Antenna

Features

- **Extremely rugged**
- **Minimized tip deflector**
- **Feed path yields consistent RF path and IM performance**
- **Able to manage high wind speeds**
- **Good power handling**
- **No hygroscopic materials**
- **Easily adaptive to customer requirements**
- **Electrical downtilt available**

Design Philosophy

Our Omnidirectional antenna is designed in a repeatable procedure which requires no tuning or modification, with the specification being the same from product to product. The Omni has a somewhat larger diameter allowing room for individual feed of the radiating elements, easy control of the amplitude and phase, and cables of sufficient dimensions for the current. Also, the larger diameter allows for the extruded internal support pipe which gives the Omni its robust and rigid design, a greater survival wind speed, and allows for a radome of extruded PVC plastics, thus avoiding fiberglass.

Testing

Allgon prides itself on stringent testing requirements with conservative, yet realistic claims of the performance of our product offering. For more information on testing procedures, see page 47.

Performance

The Omni antenna is designed to provide good power handling with low intermodulation. It can survive in wind speed of 156 mph, and also has low deflection of <1° at 156 mph wind speed.

Brackets

Bracket hardware for the Omni is made of only the highest quality acid-proof stainless steel and is available in non-tilt mounting to a pipe. For additional information, see pages 48 - 50.

Quality Materials

Proper use of materials and their structure ensures performance integrity. In antennas, the electrical performance is directly related to mechanical performance. The choice of radome material is crucial since it acts as a window between the radiating elements and the coverage area. The Omni antenna is made of silverplated brass with an allydyne treatment to resist corrosion. Also, the dielectric insulators are made of teflon. Our UV stabilized PVC radome is resistant to moisture absorption and can withstand mechanical stresses, even at low temperatures and long exposure to UV radiation.

Connectors

7/16 DIN Connector

900 MHz Omni

Gain	Part Number	Description	Page
11 dBi	4168.11.33.00	O-900-360-11i-0-D	34
	4168.11.33.02	O-900-360-11i-2-D	34
	4168.11.33.03	O-900-360-11i-3-D	34
	4168.11.33.06	O-900-360-11i-6-D	34

900 MHz Omni Electrical Downtilt Inverted Mount

Gain	Part Number	Description	Page
9 dBd	4168.11.33.52	O-900-360-11i+2-D	34

Please contact Allgon for the latest updates regarding product availability.

900 MHz Omnidirectional Antenna

Description Detail:

O - 900 - 360 - 11 i - 0 - D

- O: Omni Family
- 900: Frequency Band
- 360: Horizontal Beamwidth
- 11: Gain in dBi
- 0: Electrical Downtilt Angle
- D: 7/16 DIN Connector

Antennas may be ordered using part number or description.

Electrical Specifications

	4168.11 (O-900-360-11i)
Gain	11 dBi (9 dBd)
Polarization	linear
VSWR, 50Ω, Tx	<1.3:1
VSWR, 50Ω, Rx	<1.5:1
Horizontal 3dB beamwidth	360°
Vertical 3dB beamwidth	6.5°
Custom electrical downtilts	0°, 2°, 3°, 6° & +2°
Maximum CW input power	500W
Two tone intermodulation 3rd order	<-103 dBm for 2x20W (146 dBc at 2x43 dBm)

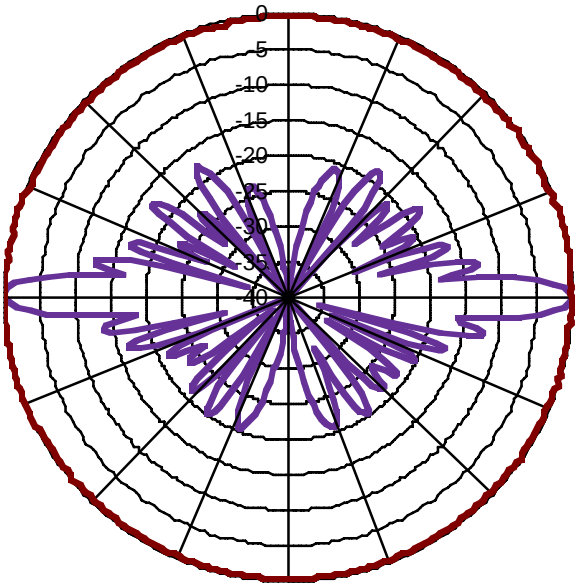
Mechanical Specifications

Connector	7/16 DIN bottom / inverted mount
Height	3000 mm (118.1")
Diameter	78 mm (3.1")
Antenna Weight	11 kg (30.2 lb.)
Survival wind speed	70 m/s (156 mph)
Maximum wind area	0.25 sq.m (2.7 sq. ft.)
Frontal wind load @150 km/h	300 N (56 lbf)

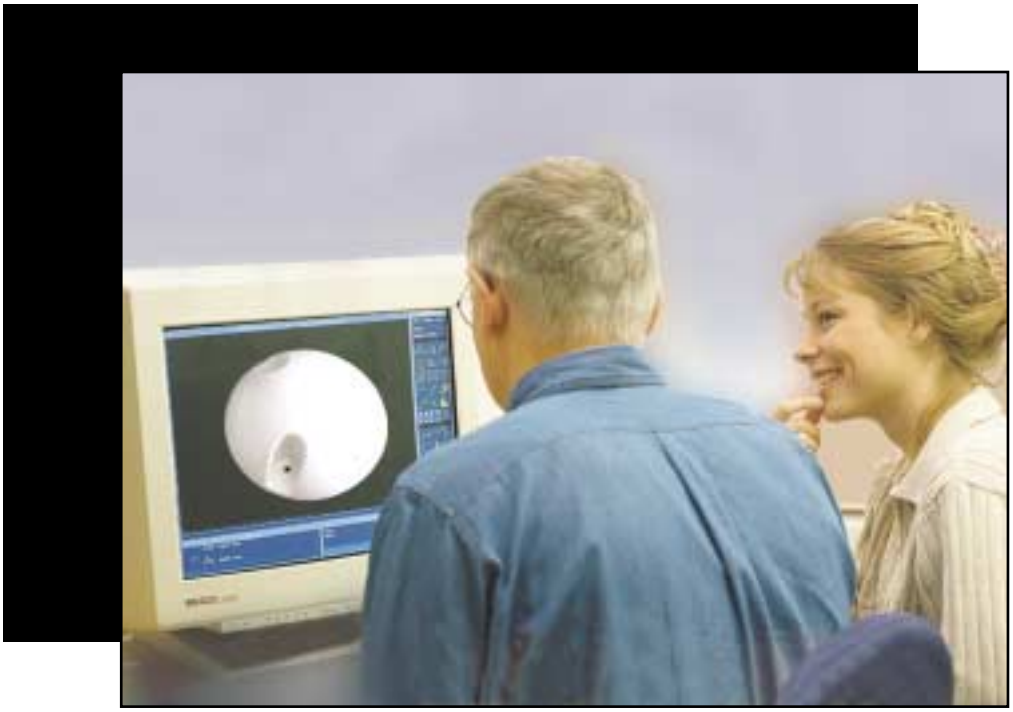
All metallic components DC grounded for Lightning Protection

Comments
Gain is typical within frequency band.
Front-to-back ratio is defined within 20° from the backwards direction in any plane.
Sidelobe suppression and null fill is relative to peak of main beam.
Frontal windload is calculated assuming the shape factor C=1
Radome color is NCS 2502-B (RAL 7035)(gray).

For a complete list of released models pertaining to gain, electrical downtilt and connector placement, please see the quick reference guide on page 33.



Typical Horizontal and Vertical 4168.11 Patterns



Features

- **Perfect for indoor coverage**
- **Sleek design**
- **Easy to install**
- **Feed path yields consistent RF path and IM performance**
- **Easily adaptive to customer requirements**

Design Philosophy

Our Indoor omnidirectional antenna is designed in a repeatable procedure which requires no tuning or modification, with the specification being the same from product to product. The Indoor omni antenna is designed to blend into a wall or ceiling inside a building.

Quality Materials

Proper use of materials and their structure ensures performance integrity. In antennas, the electrical performance is directly related to mechanical performance. The choice of radome material is crucial since it acts as a window between the radiating elements and the coverage area.

Brackets

Bracket hardware for the Indoor omni antenna is designed for easy installation.

Testing

Allgon prides itself on stringent testing requirements with conservative, yet realistic claims of the performance of our product offering. The antenna is tested for VSWR, intermodulation, power handling and gain.

Connectors

Type “N” , female connector.

Multiband (800 MHz/900 MHz/1800 MHz/1900 MHz/2100 MHz) Omni

Gain	Part Number	Description	Page
1 dBd	7336.00	ALIC-8/9/18/19/2100-360-3i-O-N	37

Indoor Omni Antenna

Description Detail:

A L I C - 800-2100- 3 6 0 - 3 i - 0 - N

- A L I C: Indoor Panel Family
- 800-2100: Frequency Band
- 3 6 0: Horizontal Beamwidth
- 3 i: Gain in dBi
- 0: Electrical Downtilt Angle
- N: N Connector

Antennas may be ordered using part number or description.

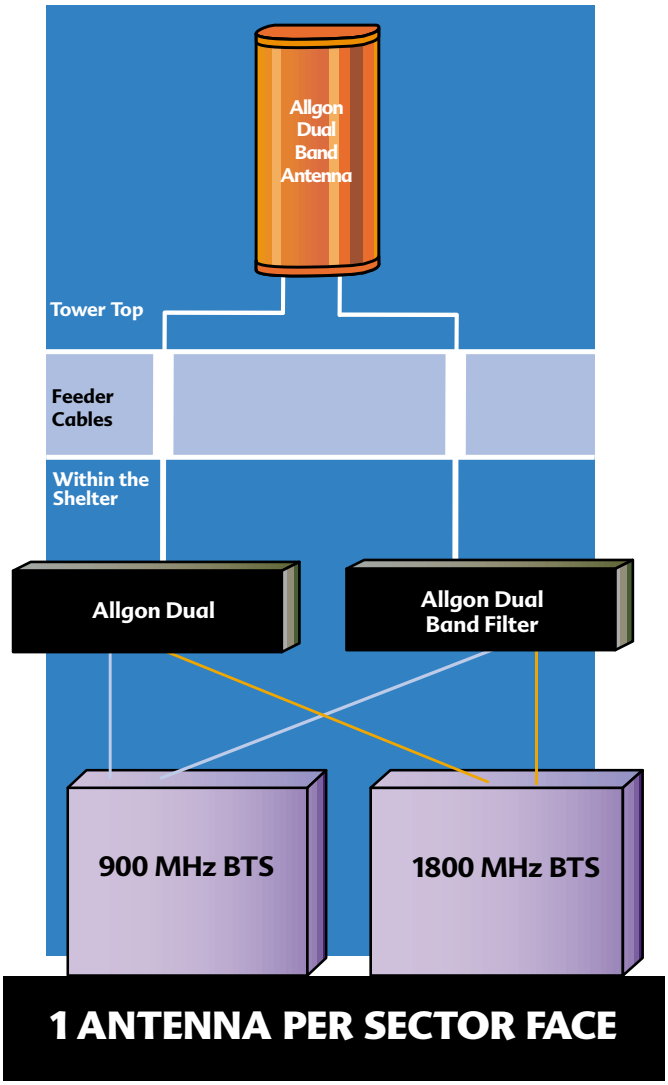
Electrical Specifications

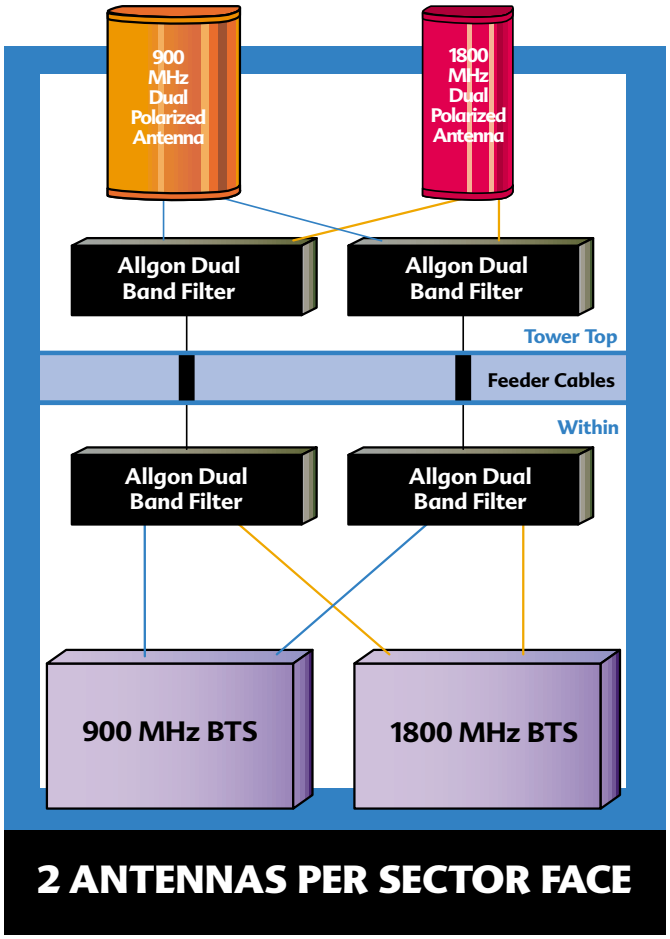
	7336.00 (ALIC-8/9/18/19/2100-360-3i-O-N)
Gain	0 to 2 dBi (806-960 MHz) 2 to 6 dBi (1420-2400 MHz)
VSWR, 50Ω, typical†	1.5:1 (806-960 MHz & 1420-2400 MHz)
Ceiling mounted beamwidth	360˚
Wall mounted beamwidth	70˚
Maximum CW input power	40W
Two tone intermodulation 3rd order	< -107 dBm for 2x20W (150 dBc at 2x43 dBm)

Mechanical Specifications

Connector	Type N center
Width	7.3" (185 mm)
Depth	2.6" (65 mm)
Weight	0.5 lbs (0.2 kg)

Comments
Gain is typical within frequency band.
Radome color is white
†VSWR, 50Ω, worst case, <2:1 (near the band edges at 806 MHz and 960 MHz)


Allgon Dual Band Antenna
Tower Top
Feeder Cables
Within the Shelter
Allgon Dual
Allgon Dual Band Filter
900 MHz BTS
1800 MHz BTS
1 ANTENNA PER SECTOR FACE


900 MHz Dual Polarized Antenna
1800 MHz Dual Polarized Antenna
Allgon Dual Band Filter
Allgon Dual Band Filter
Tower Top
Feeder Cables
Within
Allgon Dual Band Filter
Allgon Dual Band Filter
900 MHz BTS
1800 MHz BTS
2 ANTENNAS PER SECTOR FACE

Features

- **Stable pattern across each frequency band**
- **100% IM testing**
- **Superior vertical pattern shaping for interference reduction**
- **100% verified for vertical pattern performance**
- **Mechanical design allows for thermal expansion**
- **Aesthetically pleasing**
- **Option with Manual Adjustable Electrical Downtilt (MET) for tuning flexibility**

Installation Advantages

- **Save money on cable**
- **Reduce wind load on the installation**
- **Reduce weight**

Design

The Allgon Dual Band Antenna utilizes a dual band feed network to excite the dual band radiating elements. The Allgon Dual Band Antenna and Dual Band Filter can be used together to cut the amount of cable needed in half.

Manual Adjustable Electrical Tilt (MET)

The optional Manual Adjustable Electrical Downtilt (MET) module is based on a patented sliding dielectric that minimizes intermodulation distortion and maximizes efficiency. The MET allow you to field adjust the electrical tilt. For more information on MET, see page 45 .

Benefits

Using three Allgon Dual Band Antennas per sector face, in-band duplexing is not required. You utilize existing Feeder cables. It allows for future 1800 MHz deployment without another tower climb. These can be reduced to two antennas per sector face in full duplex operation (for high environmental impact sites). Using four single band antennas per sector face, you need only two feeder cables per sector. The four single band antennas per sector face allow for ease of mechanical downtilt optimization between bands. You may reduce this setup to three antennas per sector face using a dual polarized 1800 MHz antenna.

QUICK REFERENCE GUIDE

65° Maximum Gain Dualband Panel

Gain	Part Number	Description	Page
15.5 dBi 17.5 dBi	7330.00	ALXC-900/1800-65-15.5/17.5i-0-D	41
	7330.02	ALXC-900/1800-65-15.5/17.5i-2-D	41
	7330.04	ALXC-900/1800-65-15.5/17.5i-4-D	41
	7330.06	ALXC-900/1800-65-15.5/17.5i-6-D	41

65° Equal Gain Dualband Panel

Gain	Part Number	Description	Page
15.5 dBi 15 dBi	7329.00	ALXC-900/1800-65-15.5/15i-0-D	43

65° Equal Beamwidth Dualband Panel

Gain	Part Number	Description	Page
16.5 dBd 16 dBd	7331.00	ALXC-900/1800-65-16.5/16i-0-D	42
	7331.02	ALXC-900/1800-65-16.5/16i-2-D	42
	7331.04	ALXC-900/1800-65-16.5/16i-4-D	42
	7331.06	ALXC-900/1800-65-16.5/16i-6-D	42

Dual Band Filter

Part Number	Description	Page
9215.01	Filter	44

Packages - Antennas and Filters

Part Number	Description
5000.00	ALXC-7330.00 + 9215.01
5000.02	ALXC-7330.02 + 9215.01
5000.04	ALXC-7330.04 + 9215.01
5000.06	ALXC-7330.06 + 9215.01
5001.00	ALXC-7331.00 + 9215.01
5001.02	ALXC-7331.02 + 9215.01
5001.04	ALXC-7331.04 + 9215.01
5001.06	ALXC-7331.06 + 9215.01
5010.00	ALXC-7329.00 + 9215.01

Dualband Antenna

Description Detail:

A L X C - 9 0 0 / 1 8 0 0 - 6 5 - 1 5 . 5 i / 1 7 . 5 i - 0 D

- A L X C — Dual Band Family
- 900/1800 — Frequency Bands
- 65 — Horizontal Beamwidth
- 15.5i — Gain in dBi 900 MHz
- 17.5i — Gain in dBi 1800 MHz
- 0 — Electrical Downtilt Angle or A for MET
- D — 7/16 DIN Connector

Antennas may be ordered using part number or description.

900/1800 MHz Dual Band Antenna

Electrical Specifications

	7330 (ALXC-900/1800-65-15.5/17.5i)
Gain	15.5 dBi (13.5 dBi) 870 to 960 MHz 17.5 dBi (15.5 dBd) 1710 to 1880 MHz
Polarization	linear, dual slant 45
VSWR, 50Ω	<1.5:1 RX, 1.3:1 TX
Horizontal 3dB beamwidth	65°
Vertical 3dB beamwidth	13° (870 MHz - 960 MHz) 7° (1710 MHz - 1880 MHz)
Custom electrical downtilts	0°, 2°, 4° & 6° (same tilt angle for both bands)
40 degree cone Front-to-back ratio	>26 dB co-polar, >22 dB total power
Suppression of first upper side lobe	>16 dB
First lower null fill	>20 dB (870 MHz - 960 MHz) >-18 dB (1710 MHz - 1880 MHz)
Maximum CW input power, 300 W per port	600W (total)
Cross polar discrimination	>11 dB
Two tone intermodulation 3rd order (900 MHz)	<-107 dBm for 2x20W (150 dBc at 2x43 dBm)
Two tone intermodulation 3rd order (1800 MHz)	<-110 dBm for 2x10W (150 dBc at 2x40 dBm)

Mechanical Specifications

Connector	7/16 DIN bottom
Height	1450 mm (53.1")
Width	280 mm (11")
Depth	125 mm (4.9")
Antenna Weight	10.8 kg (20.7 lb.)
Weight including tilt brackets	14.4 kg
Survival wind speed	70 m/s (156 mph)
Maximum wind area	0.41 sq.m (4.1 sq. ft.)
Frontal wind load @150 km/h	450 N (107 lbf)

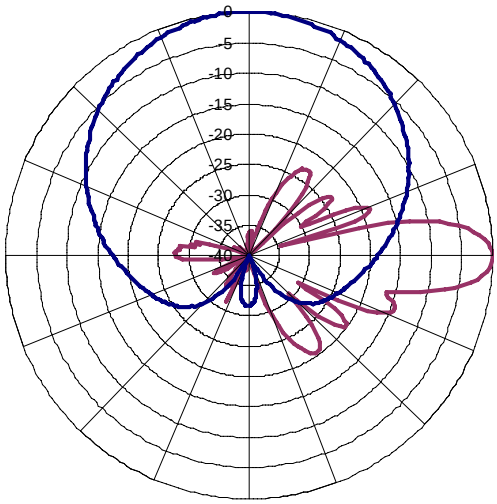
All metallic components DC grounded for Lightning Protection

Pole mount and downtilt bracket included

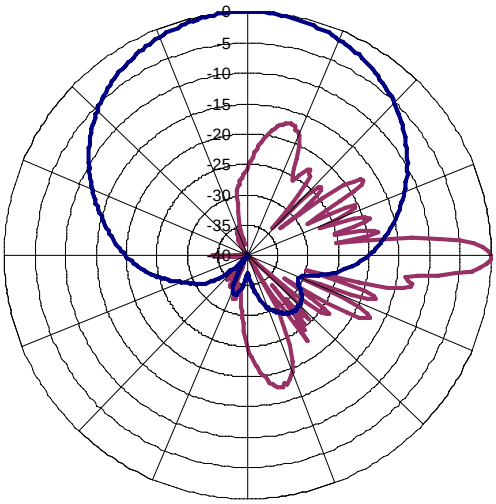
Tilt Range -0.6° to +15°

For a complete list of released models pertaining to gain, electrical downtilt and connector placement, please see the quick reference guide on page 40.

Comments
Gain is typical within frequency band.
Front-to-back ratio is defined within 20° from the backwards direction in any plane.
Sidelobe suppression and null fill is relative to peak of main beam.
Frontal windload is calculated assuming the shape factor C=1
Radome color is NCS 2502-B (RAL 7035)(gray).



Typical Horizontal and Vertical 7330.00 Patterns at 900 MHz



Typical Horizontal and Vertical 7330.00 Patterns at 1800 MHz

900/1800 MHz Dual Band Antenna

Electrical Specifications

	7331 (ALXC-900/1800-65-16.5/16i)
Gain	16.5 dBi (14.5 dBi) 870 to 960 MHz 16 dBi (14 dBd) 1710 to 1880 MHz
Polarization	linear, dual slant 45
VSWR, 50Ω	<1.5:1 RX, 1.3:1 TX
Horizontal 3dB beamwidth	65°
Vertical 3dB beamwidth	9° (870 MHz - 960 MHz) 9° (1710 MHz - 1880 MHz)
Custom electrical downtilts	0°, 2°, 4°, & 6°(same tilt angle for both bands)
40 degree cone Front-to-back ratio	>25 dB co-polar, >21 dB total power
Suppression of first upper side lobe	>16 dB
First lower null fill	>-22 dB (870 MHz - 960 MHz) >-22 dB (1710 MHz - 1880 MHz)
Maximum CW input power, 300 W per port	600W (total)
Cross polar discrimination	>11 dB
Two tone intermodulation 3rd order (900 MHz)	<-107 dBm for 2x20W (150 dBc at 2x43 dBm)
Two tone intermodulation 3rd order (1800 MHz)	<-110 dBm for 2x10W (150 dBc at 2x40 dBm)

Mechanical Specifications

Connector	7/16 DIN bottom
Height	1990 mm (53.1")
Width	280 mm (11")
Depth	125 mm (4.9")
Antenna Weight	13.5 kg (20.7 lb.)
Weight including tilt brackets	17.1 kg
Survival wind speed	70 m/s (156 mph)
Maximum wind area	0.56 sq.m (4.1 sq. ft.)
Frontal wind load @150 km/h	610 N (107 lbf)

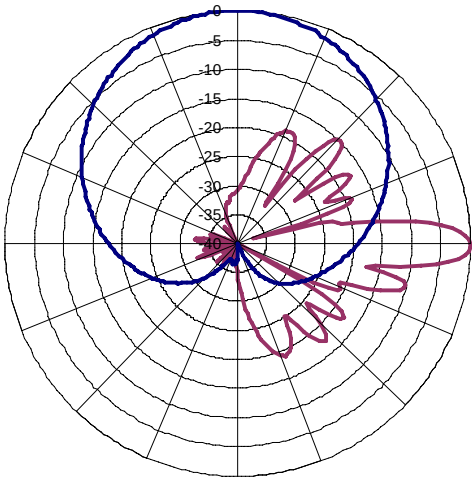
All metallic components DC grounded for Lightning Protection

Pole mount and downtilt bracket included

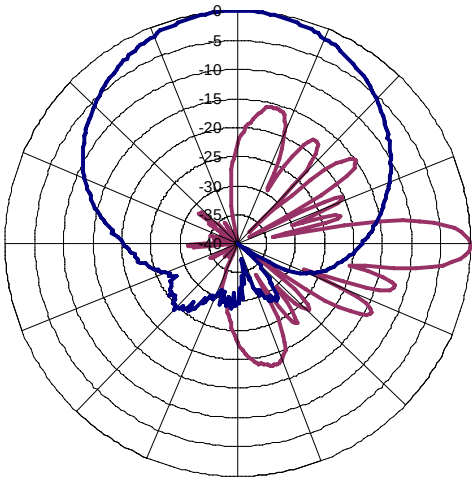
Tilt Range	-0.4° to +10°

For a complete list of released models pertaining to gain, electrical downtilt and connector placement, please see the quick reference guide on page 40.

Comments
Gain is typical within frequency band.
Front-to-back ratio is defined within 20° from the backwards direction in any plane.
Sidelobe suppression and null fill is relative to peak of main beam.
Frontal windload is calculated assuming the shape factor C=1
Radome color is NCS 2502-B (RAL 7035)(gray).



Typical Horizontal and Vertical 7331.00 Patterns at 900 MHz



Typical Horizontal and Vertical 7331.00 Patterns at 1800 MHz

900/1800 MHz Dual Band Antenna

Electrical Specifications

	7329 (ALXC-900/1800-65-15.5/15i)
Gain	15.5 dBi (13.5 dBi) 870 to 960 MHz 15 dBi (13 dBd) 1710 to 1880 MHz
Polarization	linear, dual slant 45
VSWR, 50Ω	<1.5:1 RX, 1.3:1 TX
Horizontal 3dB beamwidth	65°
Vertical 3dB beamwidth	13° (870 MHz - 960 MHz) 13° (1710 MHz - 1880 MHz)
Custom electrical downtilts	0° (same tilt angle for both bands)
40 degree cone Front-to-back ratio	>26 dB co-polar, >22 dB total power
Suppression of first upper side lobe	>13 dB
First lower null fill	N/A (870 MHz - 960 MHz) >-20 dB (1710 MHz - 1880 MHz)
Maximum CW input power, 300 W per port	600W (total)
Cross polar discrimination	>11 dB
Two tone intermodulation 3rd order (900 MHz)	<-107 dBm for 2x20W (150 dBc at 2x43 dBm)
Two tone intermodulation 3rd order (1800 MHz)	<-110 dBm for 2x10W (150 dBc at 2x40 dBm)

Mechanical Specifications

Connector	7/16 DIN bottom
Height	1450 mm (53.1")
Width	280 mm (11")
Depth	125 mm (4.9")
Antenna Weight	10.8 kg (20.7 lb.)
Weight including tilt brackets	14.4 kg
Survival wind speed	70 m/s (156 mph)
Maximum wind area	0.41 sq.m (4.1 sq. ft.)
Frontal wind load @150 km/h	450 N (107 lbf)

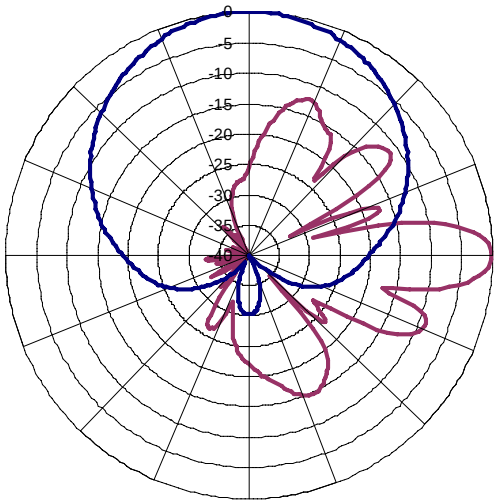
All metallic components DC grounded for Lightning Protection

Pole mount and downtilt bracket included

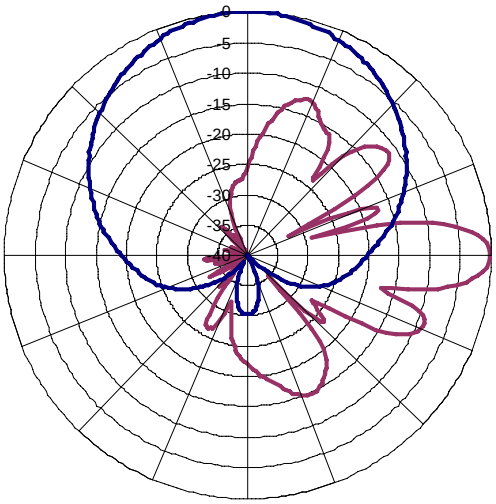
Tilt Range -0.6° to +15°

For a complete list of released models pertaining to gain, electrical downtilt and connector placement, please see the quick reference guide on page 40.

Comments
Gain is typical within frequency band.
Front-to-back ratio is defined within 20° from the backwards direction in any plane.
Sidelobe suppression and null fill is relative to peak of main beam.
Frontal windload is calculated assuming the shape factor C=1
Radome color is NCS 2502-B (RAL 7035)(gray).



Typical Horizontal and Vertical 7329.00 Patterns at 900 MHz



Typical Horizontal and Vertical 7329.00 Patterns at 1800 MHz

900/1800 MHz Dual Band Filter

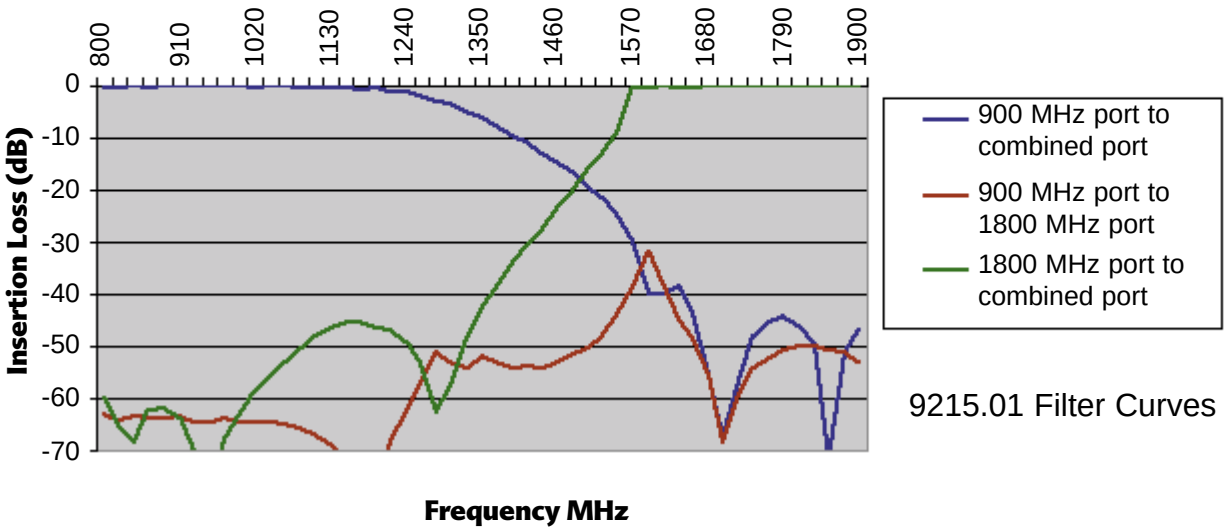
Electrical Specifications

	9215.01
Frequency Range	872-960 MHz and 1710-1880 MHz
Isolation	> 50 dB between the single band ports
Insertion Loss, 900 MHz	< 0.2 dB between the combined and 900 MHz port
Insertion Loss, 1800 MHz	< 0.2 dB between the combined and 1800 MHz port
Return Loss	> 20 dB all ports
Maximum Average Power	300W (900 MHz) or 150W (1800 MHz)
Typical Combined Maximum Average Power	150W (900 MHz) and 75W (1800 MHz)
Two tone intermodulation 3rd order	< -110 dBm for 2x20W (153 dBc at 2x43 dBm)
Lightning Protection	IEC 1312-1 and IEC 1000-4-5

Note: Electrical specifications under normal operating conditions with an antenna Return Loss better than 14 dB, 1.5:1 VSWR.

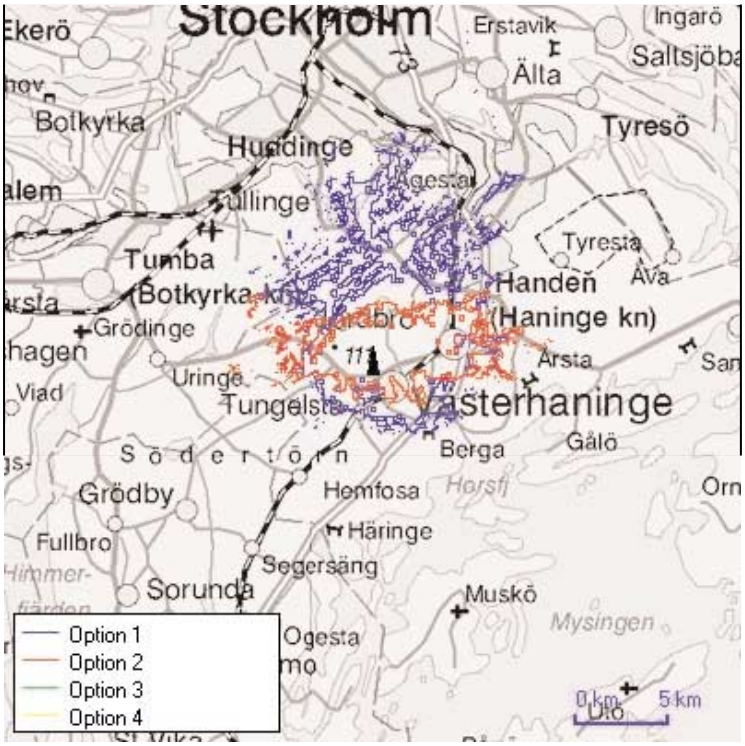
Mechanical Specifications

Connector	7/16 DIN plug all three ports
Height	50 mm(2")
Width	190 mm (7.5")
Depth	60 mm (2.4") excluding connectors
Weight	1.4 kg (3.1 lbs)
Housing	IP 65
Temperature Range, Operational	-40°C to +55°C
Temperature Range, Storage	-45°C to +85°C



9215.01 Filter Curves

Antenna Beam Tilt



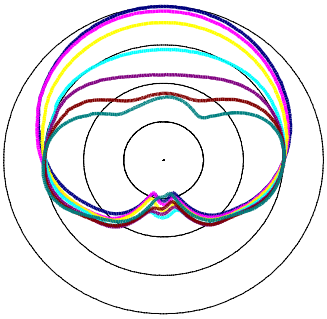
General

In early analog networks, antenna beam tilt was used in order to improve the system performance. The proven effect is that a better illumination control can be achieved.

Mechanical antenna tilt was the inital method used in the industry but electriccal down tilt has become the common industry method.

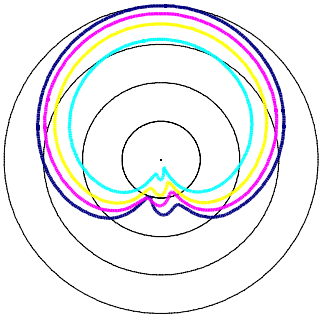
The difference between mechanical and electrical down tilt can be examined in figure 1.

Mechanical Downtilt



Radiation intensity does not change at 90 degrees

Electrical Downtilt



Radiation intensity decreases uniformly along horizon

Figure 1

Note that with mechanical down tilt, the full effect is only seen in one direction (main) and consequently the tilt effect is greater in that direction than others.

However, with electrical tilting, the effect is almost the same in all azimuth directions, maintaining the footprint shape while reducing the total illuminated area.

Initially the electrical tilt was fixed and factory set and field adjustments were made through mechanical tilting. This is still the most common method in 2G networks. However, Allgon has produced and delivered antennas with field adjustable electrical downtilt MET (AEDT) since mid the 1990's.

A lesson from 2G is that flexibility in coverage is of greatest value in the initial rollout phase when the network is immature and the traffic patterns and system behavior are less known. Obviously an operator with experience from 2G systems will have an advantage to those without, since at least the traffic pattern for speech is known. In the discussion and planning of the 3G-network rollout, further flexibility methods of illumination control have been addressed. This has resulted in a number of new acronyms such as,

Fixed Electrical Tilt (FET), a traditional fixed factory set electrical tilted antenna.

Manually adjustable Electrical down Tilt = MET (AEDT) where adjustments are made up in the tower on the physical antenna structure turning a knob or pulling a steering rod.

New Allgon MET (AEDT) Concept

Allgon´s new MET (AEDT) module is based on a patented sliding dielectric that minimizes intermodulation distortion and maximizes efficiency. The MET design ensures constant electrical quality. Dual band antennas with four connector ports allow separate tilts on each frequency band and ensure the use of diversity concepts. The MET allows you to field-adjust the electrical tilt from 0° to the first null at horizon, for optimum roll-off effect. Equipping your system with Allgon´s MET antennas prepares you for optimum control of your cell limits, thus allowing for optimized soft/softer handover areas. Allgon´s MET functionality and reliability optimizes your system for the future.

The MET (AEDT) function is included in Allgon´s antennas released during 2001 such as the UMTS, XMetro and DXC families. It will also be included in the broad band antenna families under development.

Advantages with MET (AEDT) function include:

- Independent adjustable electrical down-tilt for tuning flexibility on both bands for dual band antennas
- Field-adjustable in 1-degree increments, from 0° to first null at horizon
- Prepared for remote-controlled RET functionality

Testing Procedures

Allgon prides itself on stringent testing requirements with conservative, yet realistic claims of the performance of our product offering. Our antennas are evaluated on performance and reliability.

Performance

Electrical performance can be subdivided into a set of parameters/tests that characterizes the antennas ability to function well; however, good performance is also the sign of good quality and that a lot of effort has been put into the antenna at the design stage. Every Allgon antenna is verified with the following list of parameters:

Radiation Pattern

Horizontal Beamwidth	Electrical tilt angle
Elevational beamwidth	Front-to-Back Ratio
First upper sidelobe suppression	First null fill below horizon

Intermodulation Products
Gain
Power Handling
Return Loss
Lightning Protection
Durability

Reliability

The mechanical stability of an antenna directly effects its electrical performance, therefore our antennas are designed to withstand the harshest conditions and still perform appropriately. Allgon antennas are mechanically verified by the following sequence. (These environmental tests are performed as a general specification. The antenna families may have a few individual changes to the specification).

Temperature Change	IEC 60068-2-14, test Nb 1°C/min -45°C - to 60°C, 10 cycles
Dry Heat (Non operating)	IEC 68-2-2, test Bb, +70°C, 16 hours
Cold (Non operating)	IEC 68-2-1, test Ab, -55°C, 16 hours
Water and Dust	IEC 68-2-18, test Rb 2.2, 30 min 60° spray angle
Random Vibration	IEC 60068-2-64, test Fh, severity 1.0 m2/s3 frequency: 5-20 Hz and severity -3 dB/oct frequency 20-200 Hz, duration: 30 min in each of three perpendicular directions. Zero tilt of standard tilt bracket is to be used.
Sinus Vibration	IEC 60028-2-6, test Fc, severity 1.2 mm displacement for frequecies 5-9 Hz and 10 m/s^2 for frequencies 9-200 Hz 5 sweep cycles at zero tilt and 5 sweep cycles at maximum titl (standard tiltbrackets to be used), sweep rate: 1 oct/min in three perpendicular directions
Salt Mist	IEC 68-2-11, test Ka, 35°C, 48h, 5% salt
UV Radiation	IEC 68-2-5, test Sa, procedure C, 56 days at,40°C, performed only on UV exposed and UV sensitive parts
Air Movement	Operating 55m/s verified by calculations or static text, survival 70 m/s verified by calculations or static test

Mounting Brackets

All Allgon antennas are delivered with mounting brackets included. It's a policy designed to reduce your workload and save you money in areas such as tower crew installation costs.

All antennas, except the City (800 MHz Panel), ALVC (800/1900 MHz Dualband), and ALX, will have these mounting brackets pre-mounted. The pre-mounted brackets are functionally equivalent to the 7254.10 brackets, with the same tilt range. The City, ALVC, and ALX antennas will have co-packed brackets.

The new brackets have a high quality surface treatment to maintain Allgon's standards for product exposure to severe environments. Rigidity has been improved by using steel instead of aluminum in the sheet metal parts of the tilt brackets. The tilt brackets are suitable for the majority of the antennas, except for antennas shorter than 20" (0.5 m), which come with no tilting option.

Mounting with Included Brackets:

Tilt mechanism in tilted position

Tilt mechnism in 0° position

Short antennas without tilt or tall antennas with tilt removed

Lower part

Omni antenna mounting

Mounting Brackets

Optional Mounting Brackets

Bracket	Description
2201.11	Wall and panning kit
7455.00	Flush wall and pole brackets - max 59" (1.5m)
2187.0000	Upside-down kit for Omni
7454.00	Triple mount
2198.10	Tilt extender
7456.00	Replacement tilt bracket, 2 mounting points

Mounting with wall- and paninng kit 2201.11:

Panned and tilted

Panned, not tilted

Lower part panned

Wall mounting with flush wall and pole brackets, 7455.00:

Omni antenna with upside down kit 2187.0000

Pole mount with flush wall and pole brackets 7455.00

Optional Mounting Brackets

Mounting with Triple Mount 7454.00

Triple mount can be used with broad or narrow antennas, tilted or not tilted as the pictures show, used together or with tilt as well.

Organized by Part Number

ALIC => Allgon Indoor panel
ALXC => Allgon dualband
O => Omni
U => Urban
UX => Allgon UMTS Cross polarized
UXM => Allgon Broad Band
XM => Cross polarized Metro
XU => Cross polarized Urban

Organized by Product Description

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