



Oldest U.S. broadcast antenna company

Since 1954 Jampro has designed, tested and manufactured FM and TV broadcast systems thereby establishing itself as a leader in RF technology throughout the world. From Alabama to Afghanistan; Jampro has over 25,000 active worldwide installations.

DTV Ready Since 1993

Commitment to innovative solutions for DTV

JAMPRO was the first to develop antennas that would accommodate a DTV signal while conserving tower loading.

Only domestic U.S. manufacturer of complete DTV systems

Jampro was the first U.S. manufacturer to design, test and build a broadband UHF panel antenna in the United States. A UHF antenna panel, combiner and waveguide ensures total DTV system integrity and quality.

First to introduce and develop Circular Polarization to TV

One of the largest contributions to the broadcast industry was the development of Circular Polarization for TV when helical Spiral antenna was introduced. Today, many Spiral antennas are in service including WBBM, WLS and the #1 independent station in the United States - KTVK in Phoenix, Arizona.

One of the largest number of slot antennas delivered

More than 20 years ago, Jampro began designing and producing UHF Slot antennas for the U.S. domestic market. Today, there are hundreds of slot antennas in service around the world.

Largest number of batwing antennas produced *

Leading the way again in VHF broadcasting was the development and production of the Batwing antenna. Jampro has been manufacturing Batwing antennas longer than any other RF manufacturer in the world. This harsh and rugged antenna is the choice for many TV broadcasters.

JAMPRO Continued.

Unequal customer service and support

Jampro has 24-hour, 365 days-per-year customer service is unmatched by any other antenna manufacturer worldwide. The expansion of Jampro's regional office is a strong commitment to unequalled customer service and support.

*By an existing company



AlanDick Broadcast Ltd.

AlanDick is unique in its ability to provide services, products and solutions on a global basis to satisfy the infrastructure needs of the broadcast markets throughout the world.

With offices in multiple continents, AlanDick is a world leading organization with the ability to plan, deploy, maintain, manage and upgrade DVB-T, DAB and DRM technologies for broadcast markets.

A reflection of the company's growth is the development of successful relationships across the globe. Alan Dick is committed to offering both quality products as well as supporting services to their partners worldwide.

Through an extensive product portfolio, high levels of experience, competence and skills, Alan Dick provides practical solutions and confidence to their client base.

AlanDick Broadcast is involved primarily in one distinct market, the Terrestrial Transmission of TV & Radio programs. Terrestrial is the original, most widely used, predominately Free - To - Air and easily accessible means of receiving TV and Radio signals and in most cases quicker to install and less expensive than cable or satellite.

AlanDick has gained an excellent reputation for the supply, installation and commissioning of complete transmission systems using the latest high quality TV & Radio digital technologies.



PRESENTERS:

BEN CREASE

Ben is a Regional Sales Manager for Jampro Antennas and AlanDick Broadcast.

He has worked in the RF Broadcasting industry for almost 20 years in engineering, project management and sales, during which time has visited many transmission stations all over the world.

Ben has a Bachelors of Engineering Degree, in Electronics & Electrical Engineering, gained at Brunel University, London in the UK.

Having started working in the UK on analogue & digital television and radio projects for BBC transmission services (now owned by Arqiva), he then worked internationally on projects in Europe, Asia and North America, with a particular focus in Asia. Ben currently lives in Bangkok, Thailand.

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JIM GODFREY

Jim has worked in the broadcast equipment field for 28 years. He has worked with Jampro Antennas for over 6 years specializing in Radio and TV broadcast stations in all of Latin America and the Caribbean.

Previously he has done work with Radio Computing Services, Comrex, Tieline and was president of Marti Electronics.

Jim has done work in Asia, the US and Latin America. He holds a BBA from the University of Texas in Austin, Tx and an MS from the University of Southern California. Jim is located in Fort Worth, Texas.

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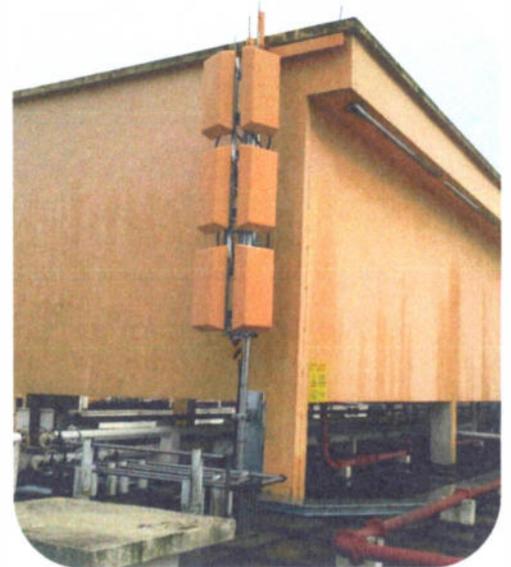
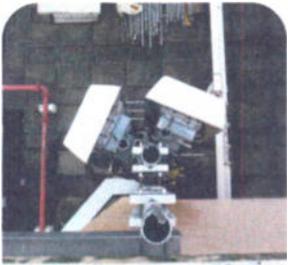
Jimgodfrey0@gmail.com

www.alandickbroadcast.com



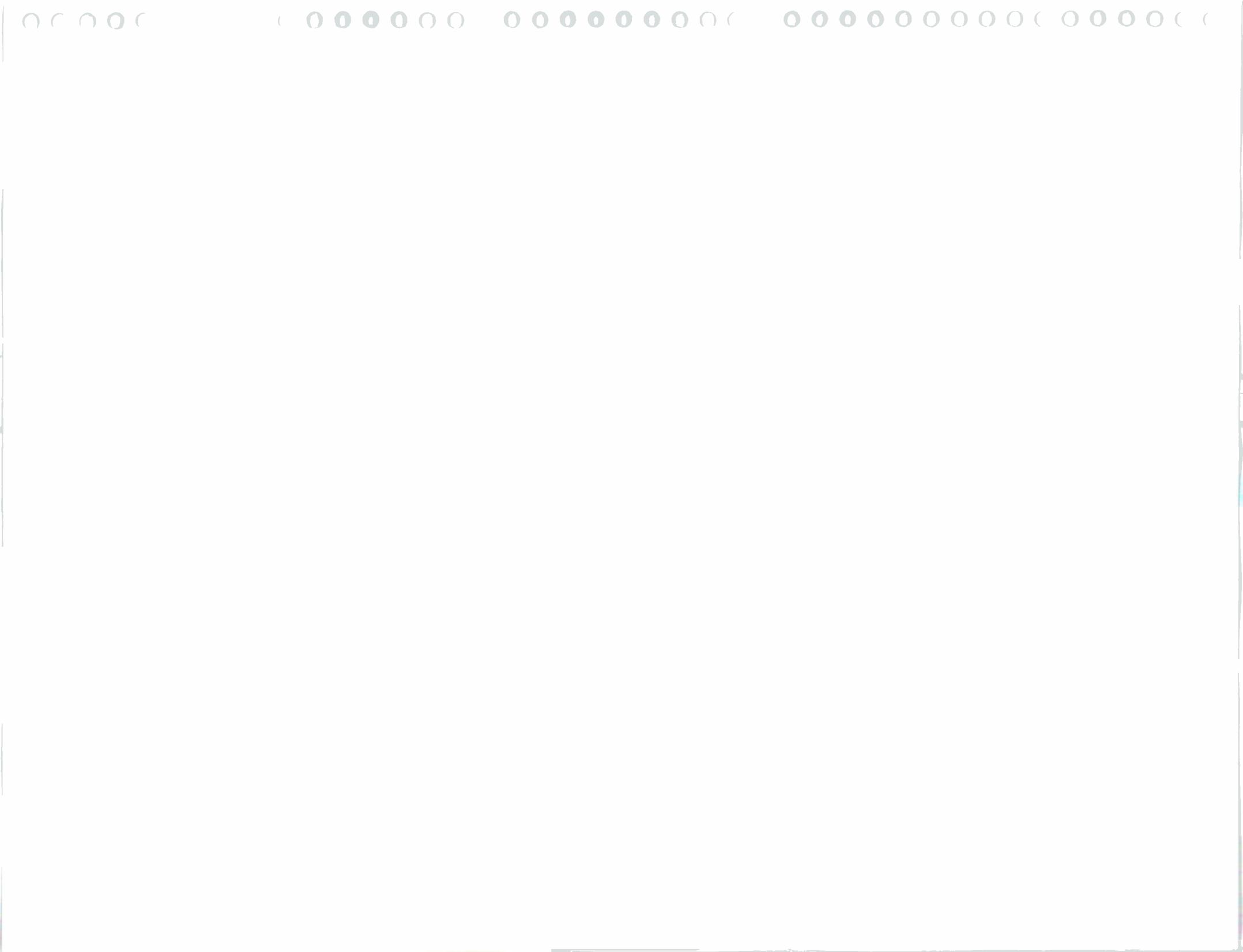
PROJECT SUMMARY

Singapore Rooftop Gap Filler Antenna Systems for National Digital Television



Project Brief:

The project involved the supply & commissioning of rooftop gap filler antennas using a selection of designs based on a broadband UHF antenna system. Each antenna was designed to meet a specific pattern requirement as well as certain physical limitation due to limited rooftop space. After an initial 11 sites, over 100 sites have been required.





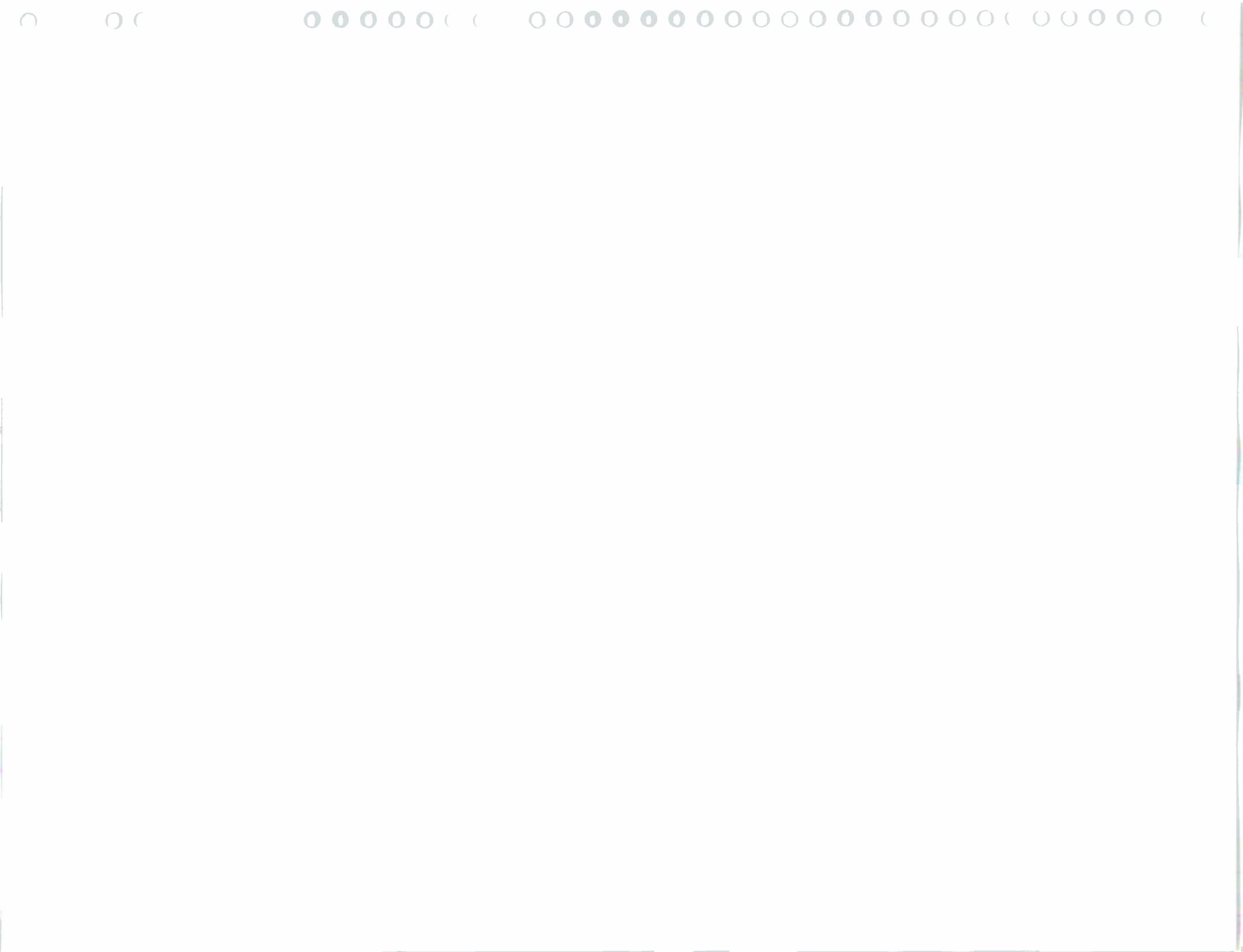
PROJECT SUMMARY

Singapore Main Antenna & Channel Combiner System for National Digital Television



Project Brief:

The project involved the supply & installation of a replacement 12 bay broadband UHF antenna system, dual main transmission lines (~250m / 820ft ea.), low loss dual chain 6 channel combining system with critical mask filtering, cross-site patch panel switching system to back up tower and a power, VSWR & U-link monitoring system with alarms.

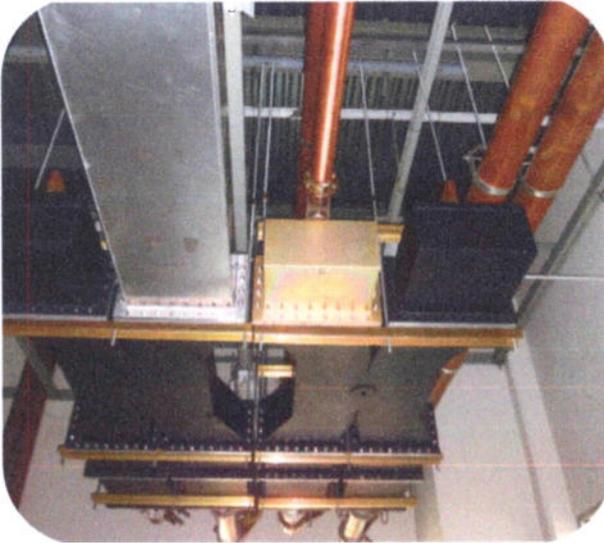


PROJECT SUMMARY



Indonesia, Jakarta

High Power UHF Antenna & Combiner System for Television



Project Brief:

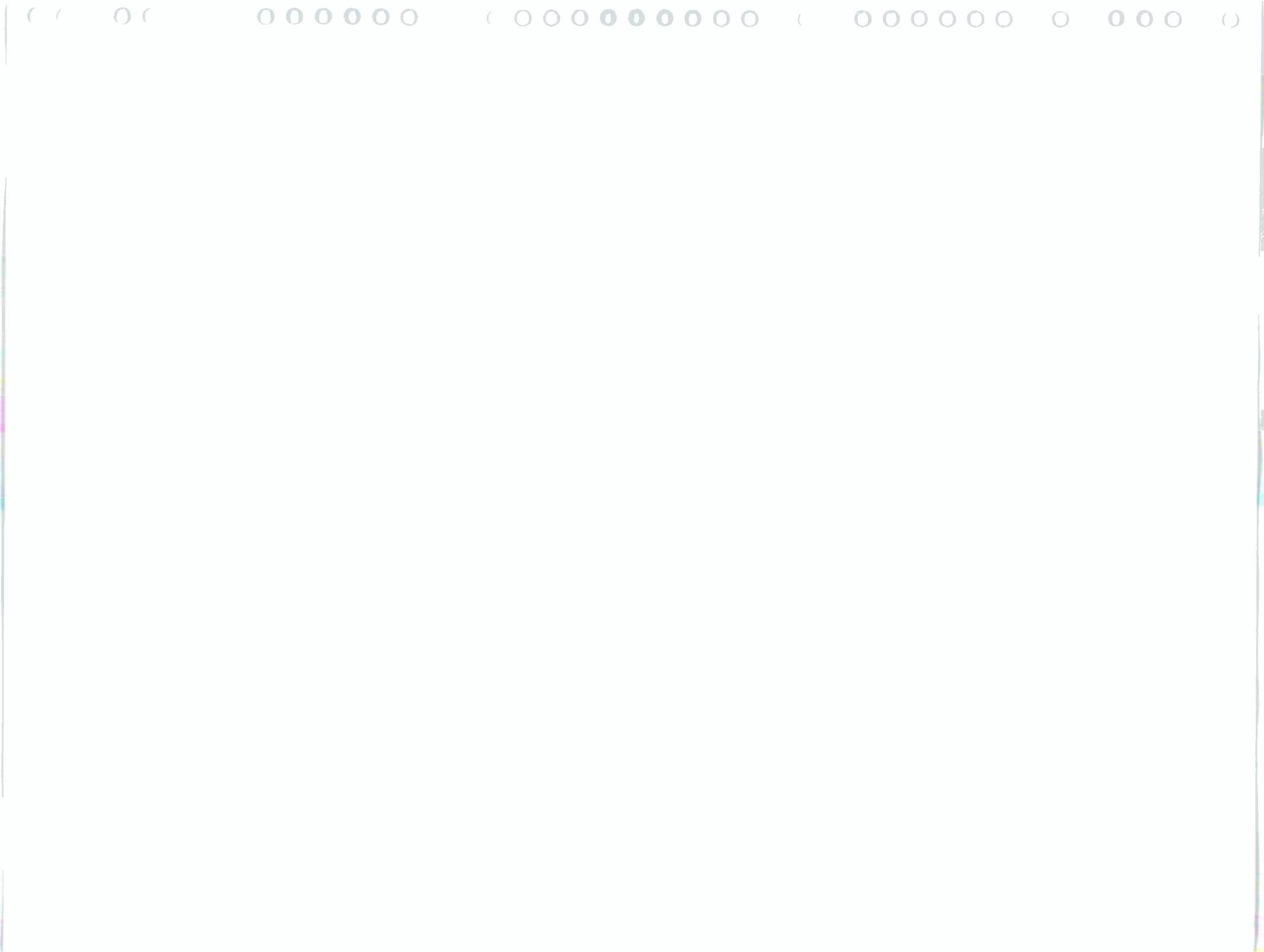
The project involved the supply, installation & commissioning of a 400m hybrid tower, 16 bay UHF antenna system, quad transmission lines and 5 channel digital and analogue combiner. The total combined transmitter power is 320kW, with the highest single powered station having an ERP of 10MW, making it the highest power system in Asia.



Your Partner for DTV Solutions



**Unequaled
Experience in
High Power
Broadband
Solutions
(UHF/VHF/FM)**



UHF ANTENNAS

UHF SLOT ANTENNA



PROSTAR SERIES

Proven performance, quality and reliability

Rugged construction

Directional patterns standard & custom

High power rating to achieve High ERP

Custom electrical & mechanical beam tilt

Horizontal, circular & elliptical polarization

ELECTRICAL SPECIFICATIONS

Polarization	Horizontal, Elliptical, Circular
Power Rating	1 kW to 90 kW
Beam Tilt	As specified by customer
Null Fill	As specified by customer
Input Impedance	50 or 75 ohm
VSWR	1.1:1 or better across band





UHF SLOT ANTENNA



SELECTING YOUR SLOT ANTENNA

Compatible with DTV, NTSC and PAL Broadcasts

JA-LS: 1 kW

JAMPRO's LOW POWER slot antenna is designed with the needs of low power UHF broadcasters in mind. Aluminum construction ensures excellent weather resistance while resisting windload and weight on the tower. The unique design of the low power UHF slot antenna can be configured to provide varying levels of vertically polarized signal. The versatility of the slots allows them to be top, leg or face mounted.

JA-MS: 1 to 30 kW

JAMPRO's JA/MS is the harsh environment version of the JA/LS antenna. The JA/MS is also enclosed by white UV resistant radomes for added protection from the environment. The JA/MS is an excellent choice for low power UHF broadcasters located in areas with heavy air pollution or high salt content in the air.

JSL-SERIES: 5 to 40 kW

JAMPRO's Premium LOW POWER slot antenna, using marine brass, copper and virgin Teflon in construction, is the finest antenna of its type. This excellent antenna was designed from our medium power slot series with the same detail in manufacturing and rugged construction. Now, stations transmitting with lower power can find quality and performance in the JSL Series antenna.

JSM-SERIES: 30 to 70 kW

JAMPRO's Premium MEDIUM POWER slot antenna has been designed for performance. Detail in manufacturing and tuning for your pattern assures premium performance. The feed lines are pressurized for protection, and the slots are Radome sealed to protect the antenna from the environment. The finest quality marine brass, copper and virgin Teflon is used in the construction of the antenna. Computer modeling is used in pattern designs before the antenna is shipped. Factory tuning before shipping give you the confidence - you are getting the finest antenna of its type available.

JSH-SERIES: 60 to 90 kW

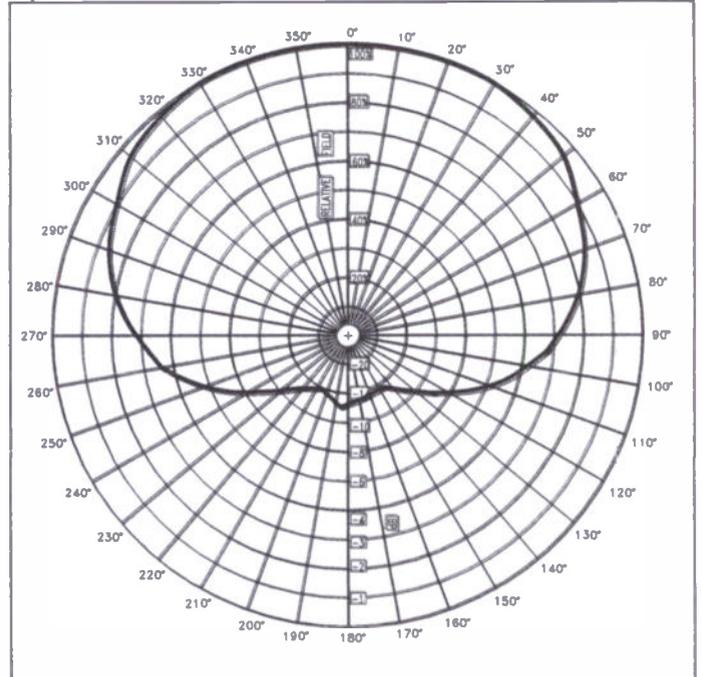
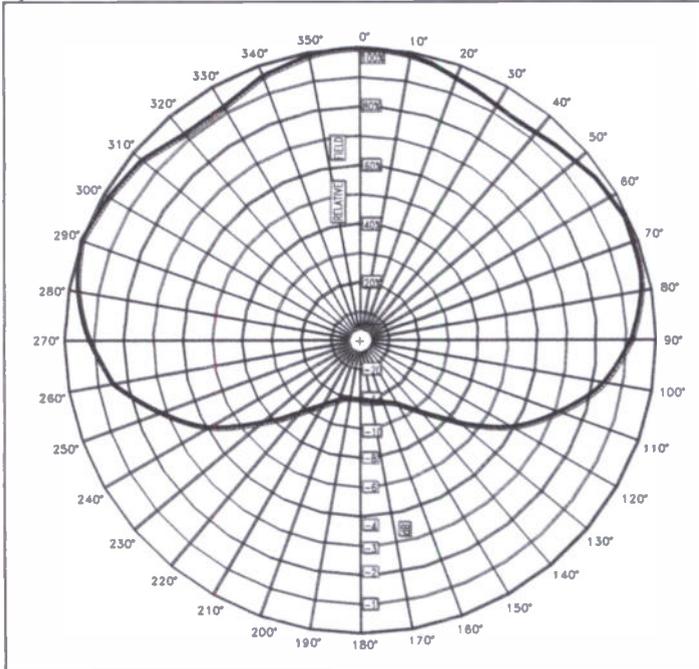
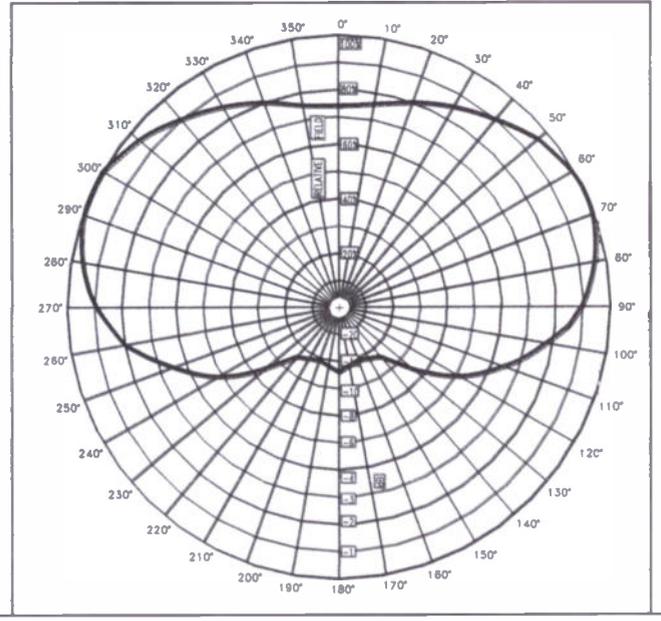
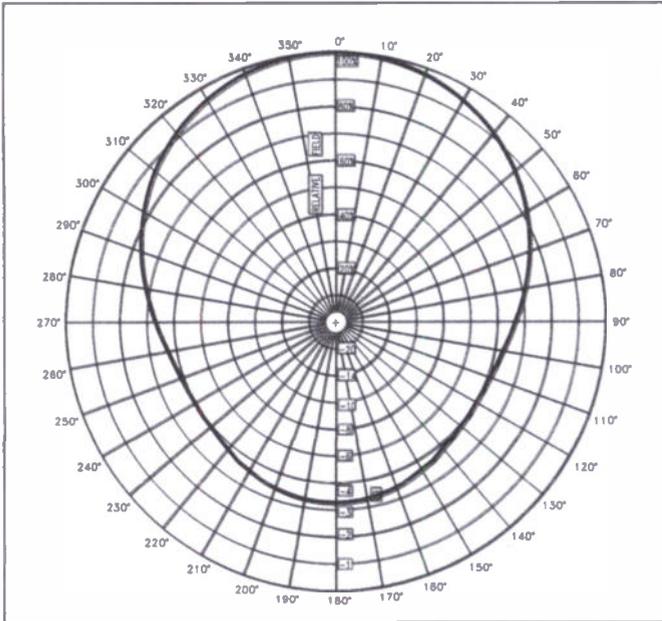
JAMPRO's Premium HIGH POWER slot antenna is Radome enclosed and environmentally sealed. The power rating of this antenna is conservative, and can be increased beyond that shown. The use of waveguide power dividing feed system will double the power rating of the antenna. The finest quality marine brass, copper and virgin Teflon is used in the construction of the antenna, and the Radome enclosure protects the antenna from environmental hazards. Computer modeling is used to design the pattern selected. The antenna is factory tuned and does not require field tuning when installed.

UHF SLOT ANTENNA



TYPICAL AZIMUTH PATTERNS (OVER 50 AVAIL)

A sample of the azimuth patterns offered for JAMPRO's Prostar slot antennas are shown. Variations of these patterns, as well as custom designed patterns, are available for any application. The free space azimuth patterns can be optimized for top mount, leg mount or face mounting on the tower. Top mount antennas include the support pole and must be specified as a top mount when requesting a quote.





UHF SLOT ANTENNA



The FCC will accept any antenna that duplicates the gain and pattern as specified in the Construction Permit filed by the station with the FCC. JAMPRO offers over 50 azimuth patterns for these slot antennas, all of which have been tested and measured on

Our engineers work with each customer to develop the most effective polarization, from a small percentage of elliptical polarization to full circular polarization. This flexibility could allow the station to have different patterns for horizontal and vertical polarizations, maximizing the station's coverage.

Electrical beam tilt to 2° is standard and available with gain reduction, and null fill to 15% is also standard. Properly configured beam tilt and null fill can substantially improve coverage of a station. In most cases, the maximum beam should be below the horizon so that 90% field is on the FCC Radio Horizon. Uniform 10% to 15% null fill will provide an optimum elevation pattern and a more uniform signal level between the horizon and the tower.

JAMPRO employs a staff of highly trained engineers and sales staff who will help you select the best antenna system for your application and design a pattern that best suits your coverage needs. Contact JAMPRO directly for assistance.

Note: Wind loads rating based on 50/33 PSF - 50 lbs. per sq. ft. for flat surfaces and 33 lbs. per sq. ft. for round surfaces. Weights do not include mounting brackets, feed lines or power dividers. Specifications for channels not shown are available upon request. Sample elevation patterns are shown without beam tilt and null fill.



JA-SS

SUPER SLOT LOW & MEDIUM POWER TV ANTENNA SOLUTION

Jampro Antennas, Inc., introduces the next generation of enhanced, low power slot antennas for DTV Channels 14-69 (470 to 860 MHz). Affordability coupled with outstanding performance provides stations an uncompromising value and performance that meets the critical coverage needs of growing stations.

This Jampro JA/SS series is a group of horizontally polarized UHF antennas developed to handle up to 2 kW DTV (average) or 3 kW analog input power. Because this product family was designed to be low weight and wind load, it can be used on many stations existing towers with little or no structural changes. Installation can be side or optional top mount.



VSWR < 1.1:1

50 ohm input impedance

470-860 MHz frequency range

Single or multi-channel broadband

Elliptical or circular polarization available

Partial radome for low wind loading

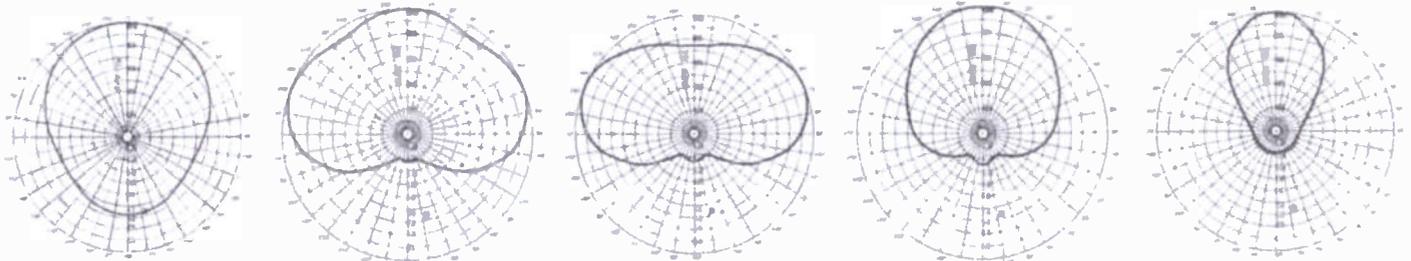
5 Standard Azimuth patterns

TYPICAL SPECIFICATIONS

Frequency Range	470-860 MHz
VSWR	1.1:1 for one channel or multiple channels band
Power Rating	1 kW up to 3 kW
Impedance/Type	50 ohm / EIA Flange: 7/8" & 1-5/8" female



JA-SS



Omnoid

Cardioid

Peanut

Medium Cardioid

Narrow Lobe

TYPICAL SPECIFICATIONS					
# BAYS	Omni	Cardioid	Peanut	Medium-	Lobe
8	*8.0x	13.1x	15.2x	20.4x	35.2x
	*9.03 dBd	11.17 dBd	11.12 dBd	13.0 dBd	15.47 dBd
	15.39x				
12	11.87 dBd				
	*12.0x	19.7x	22.9x	30.6x	52.9x
	*10.8 dBd	12.95 dBd	13.6 dBd	14.8 dBd	17.24 dBd
16	21.49x				
	13.32 dBd				
	*16.0x	26.2x	30.5x	40.8x	70.5x
	*12.0 dBd	14.18 dBd	14.18 dBd	16.1 dBd	18.48 dBd
	28.2x				
	14.5 dBd				

*Value provides average/RMS gain; All other stated gains are Peak gains. Gains do not include losses for feed system, beam tilt, or null full.

Pattern Measurement Service

Optional full size pattern measuring allows observing 'real world' conditions. This service provides measured variations of the Free Space pattern on a full size duplication of your tower to help determine the optimum mounting arrangement for maximum coverage.

*Omnoid Pattern #1 standard, other patterns optionally available. Optional top mount available. Weights and wind loads vary with frequency and are based on 50/33 PSF. Dimensions may vary with frequency, CH26 shown. Contact Factory for weight and dimensions. Optional Patterns # 33, 9, 5 and 7 shown.

NOTE:

1. Contact Factory for weight and wind loading
2. Contact Factory for Loading data
3. All inputs EIA flange, female, 50 ohms. Others upon request

*Specifications are subject to change without notice.



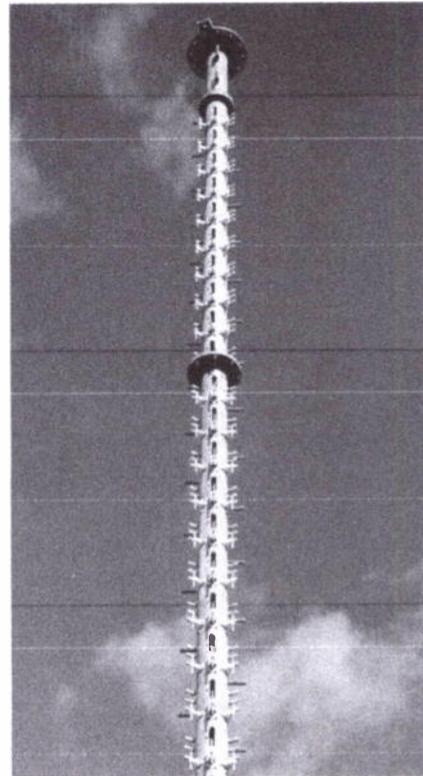


JTW

JAMPRO JTW TRAVELING WAVE UHF SLOT ANTENNA

The Jampro JTW Traveling Wave Slot Antenna is a high power slot antenna which provides outstanding omni-directional coverage as well as customized patterns. This antenna is ideal for broadcasters who require a top mounted antenna that produces highly null filled vertical patterns, handles high power, produces high gains. A single feed point assures optimum pattern performance and low VSWR.

The antenna is available in various patterns and polarizations for effective broadcast coverage to achieve maximum market penetration. The JTW has inherently high efficiency, very low windload characteristics and is now available for DTV applications. The antenna system is mechanically designed to minimize galvanic effects for longer life. Fully radome enclosed protects the antenna against icing conditions and partial radomes for low windload applications are available.



Ideal for DTV applications

Horizontal, Elliptical or circular polarization

Top or side mounted

Performance, quality, and reliability

Rugged construction ideal for harsh environments/conditions

Standard and custom directional patterns

Ideal for high power applications

Fully enclosed or partial radome

TYPICAL SPECIFICATIONS

Polarization	HPOL/CPOL/EPOL
Frequency Range	470-800 MHz
VSWR	Visual 1.05:1 Typical Over channel 1.1:1 or better
Power Rating	60 kW-180 kW
Impedance	50 ohm



PROSTAR SERIES BROADBAND UHF SLOT ANTENNA

The True and Tested Prostar slot antenna available in Broadband for combined Analog & Digital applications.

Eliminates the need for multiple antennas and provides a single, compact solution that conserves tower space and minimizes tower loading.

Delivering UHF Slot antennas for 30+ years

Broadband typical 100-120 MHz
***In excess of 200 MHz available**

Horizontal, Elliptical, Circular Polarization available

Ideal for Multi-Channel operation, Main or Auxiliary System, etc.

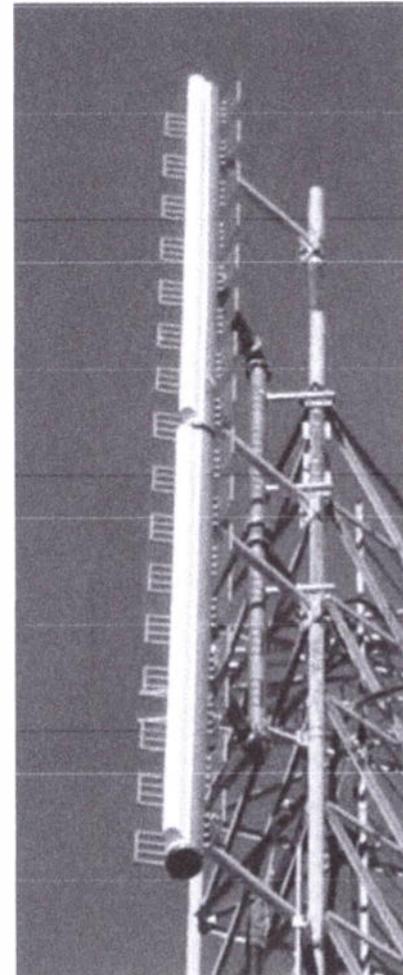
Rugged construction

Ideal for Harsh environments

Partial radome for low wind loading & full radomes available

Constructed of marine brass, copper, aluminum and virgin Teflon

Ideal for Side or Top Mounting



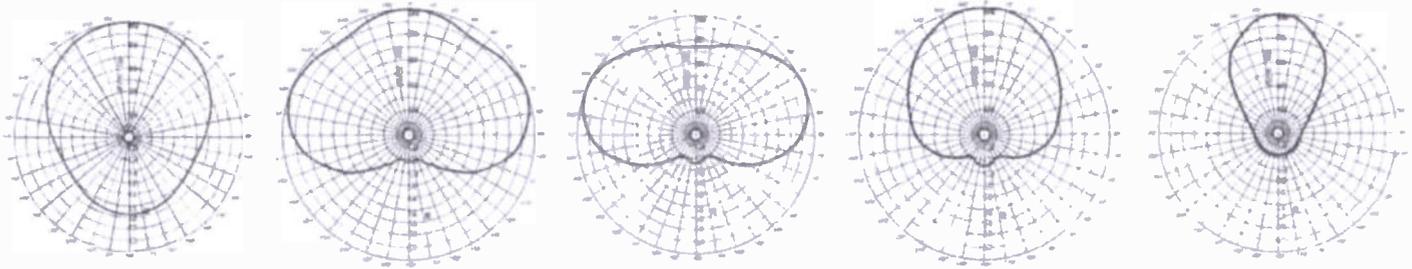
TYPICAL SPECIFICATIONS

Polarization	HPOL, CPOL, EPOL
Power Rating	Up to 60 kW average
Input Impedance	50 ohm
VSWR	1.1:1 or better





JA-MS-BB



TYPICAL SPECIFICATIONS					
# BAYS	Omni	Cardioid	Peanut	Medium-Cardioid	Lobe
12	*12.0x	19.6x	22.9x	30.6x	52.9x
	*10.8 dBd	12.9 dBd	13.6 dBd	14.8 dBd	17.24 dBd
	21.49x 13.32 dBd				
16	*16.0x	26.2x	30.5x	40.8x	70.5x
	*12.0 dBd	14.1 dBd	14.18 dBd	16.1 dBd	18.48 dBd
	28.2x 14.5 dBd				
24	*24.0x	39.3x	45.8x	61.2x	105.8x
	*13.8 dBd	15.9 dBd	16.6 dBd	17.8 dBd	20.2 dBd
	42.86x 16.32 dBd				
32	*32.0x	52.4x	61.1x	81.6x	141.1x
	*15.05 dBd	17.1 dBd	17.8 dBd	19.1 dBd	21.4 dBd
	54.28x 17.35 dBd				

*Value provides average/RMS gain; All other stated gains are Peak gains. Gains do not include losses for feed system, beam tilt, or null fill.

NOTE:

- Contact Factory for weight and wind loading
- Contact Factory for Loading data
- All inputs EIA flange, female, 50 ohms. Others upon request
- Partial Radome standard, Full Radome available. Specifications upon request
- Power and dB gains are typical RMS gains for Omni-directional, horizontal and vertical components.

OPTIONS:

Pattern Measurement Service, Electrical Beam Tilt, Null Fill, Special Mounting Brackets.

Since many factors contribute to a station's compliance with the FCC exposure guidelines for radio frequency radiation, JAMPRO ANTENNAS, INC. cannot accept any responsibility in this matter. The station must examine and determine its status based on each individual situation. For reduced low angle radiation near the tower, a low RFR model of this antenna is available. Contact the factory for pricing data and further details.

*All specifications are subject to change without notice.



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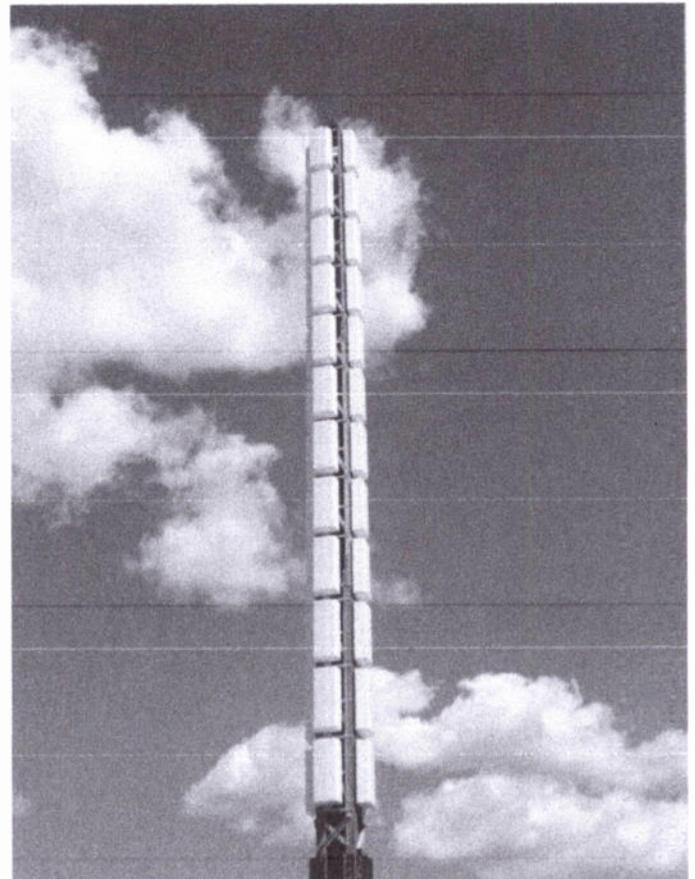


HORIZONTAL/VERTICAL POLARIZED BROADBAND UHF PANEL ANTENNA

The JUHD antenna is a broadband UHF Panel Antenna designed for use over the whole UHF band (470-860 MHz) and suited to the transmission of several high power digital or analog channels. The panel is used as a basic building block to construct high gain antenna arrays.

- JUHD provides a horizontal polarization
- JUVD provides a vertical polarization

Built with corrosion resistant stainless steel aluminum reflecting panels results in long lasting durability. The JUHD & JUVD antenna is based on a modular design and can be configured to provide various azimuth and elevation patterns. By using optional beam tilt and null fill, the elevation pattern can be shaped to maximize coverage.



ATSC, ISDB-T, DVB-T/H, Analog, PAL

UHF bands IV & V

High power rating

Broadband multiple channel operation

Flexible panel placement for custom patterns

Optional mounting spine for top mount configuration

Durable and rugged stainless steel construction

Fiberglass radome protection

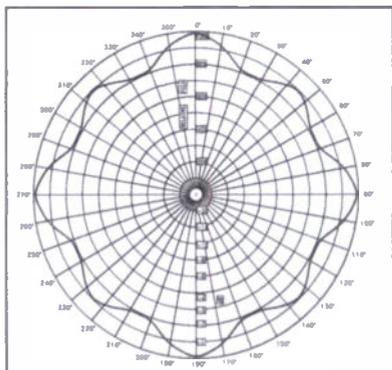
TYPICAL SPECIFICATIONS

Polarization	Horizontal (JUHD) Vertical (JUVD)
Frequency Range	470-860 MHz
Impedance	50 ohm
VSWR	1.1:1
Surface	4.8 square ft / 0.46 m
Power Rating	2.5 kW per Panel

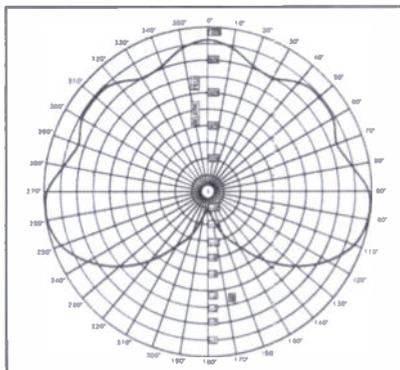


JUHD-JUVD

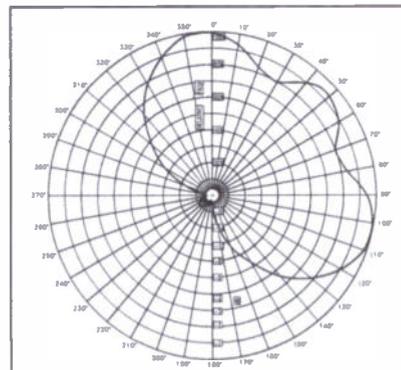
Standard Azimuth Patterns



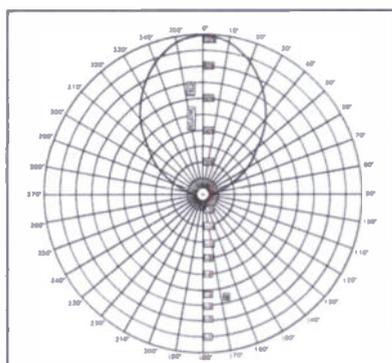
Omni



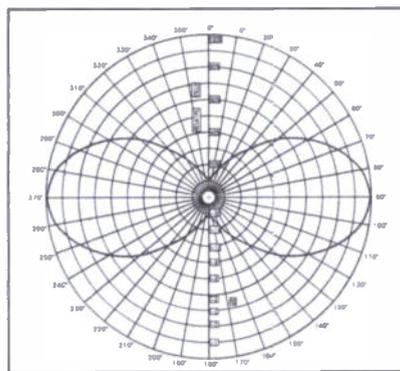
Wide Cardioid



Narrow Cardioid



Lobe



Peanut

All inputs EIA flange, female. In an omni-directional configuration, circularity is ± 2 dB (3 ft./0.91m or smaller). Input connection is EIA 50 ohm.

For assistance in pattern selection or design of a customized pattern, contact JAMPRO. Our Engineers and Sales Staff are highly trained in designing specialized systems, and are always willing to help.

NOTES

- Contact Factory for Weights and wind loading
- All inputs EIA flange, female. 50 ohms. Others upon request.
- VSWR for individual panels and complete systems typical $\leq 1.1:1$
- Power rating per panel varies with input power
- Total number of frequencies limited only by total input power.
- Radomes included. Specifications upon request
- Power and dB gains are typical RMS gains for omni-directional, horizontal and vertical components.
- Specifications are based on one wave spaced bays. Other spacing available.

OPTIONS

FCC Directionalization, Pattern Measurement Service, Electrical Beam Tilt, Null Fill, Special Mounting Brackets.

Since many factors contribute to a station's compliance with the FCC exposure guidelines for radio frequency radiation, JAMPRO ANTENNAS, INC. cannot accept any responsibility in this matter. The station must examine and determine its status based on each individual situation. For reduced low angle radiation near the tower, a low RFR model of this antenna is available. Contact the factory for pricing data and further details.

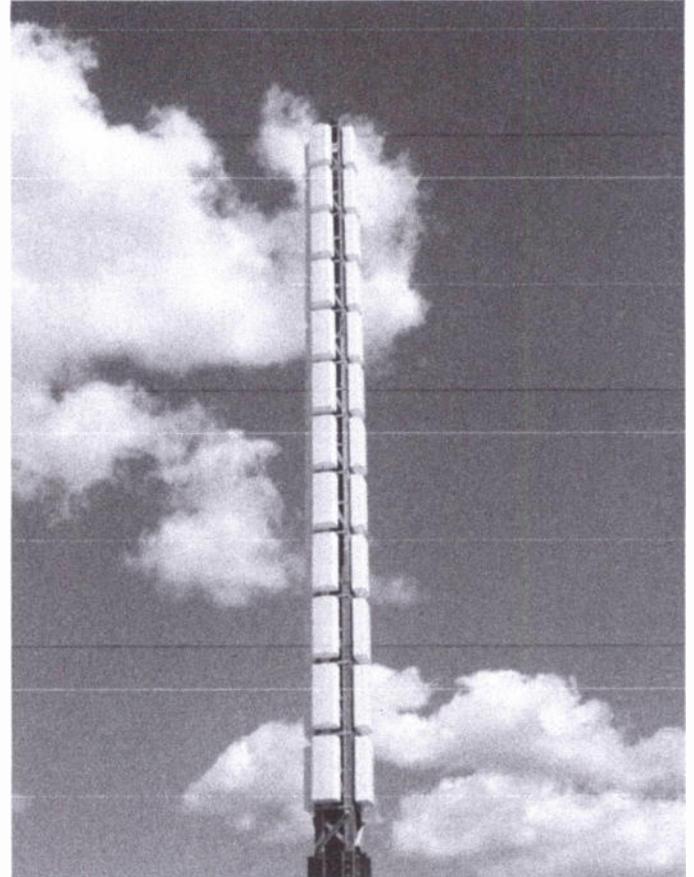
*All specifications are subject to change without notice.



ELLIPTICAL/CIRCULAR POLARIZED BROADBAND UHF PANEL ANTENNA

The JUED broadband panel is ideal for broadband applications where either elliptically or circularly polarized propagation is required. Dual/individual inputs for horizontal or vertical polarization allows for varying levels of polarization split and pattern performance. JUED & JUCD models are engineered and best used for digital/analog TV and mobile video.

Built with corrosion resistant stainless steel aluminum reflecting panels results in long lasting durability. The JUED & JUCD antenna is based on a modular design and can be configured to provide various azimuth and elevation patterns. By using optional beam tilt and null fill, the elevation pattern can be shaped to maximize coverage



ATSC, ISDB-T, DVB-T/H, Analog, PAL

UHF bands IV & V

Broadband multiple channel operation

High power rating available

Flexible panel placement for custom patterns

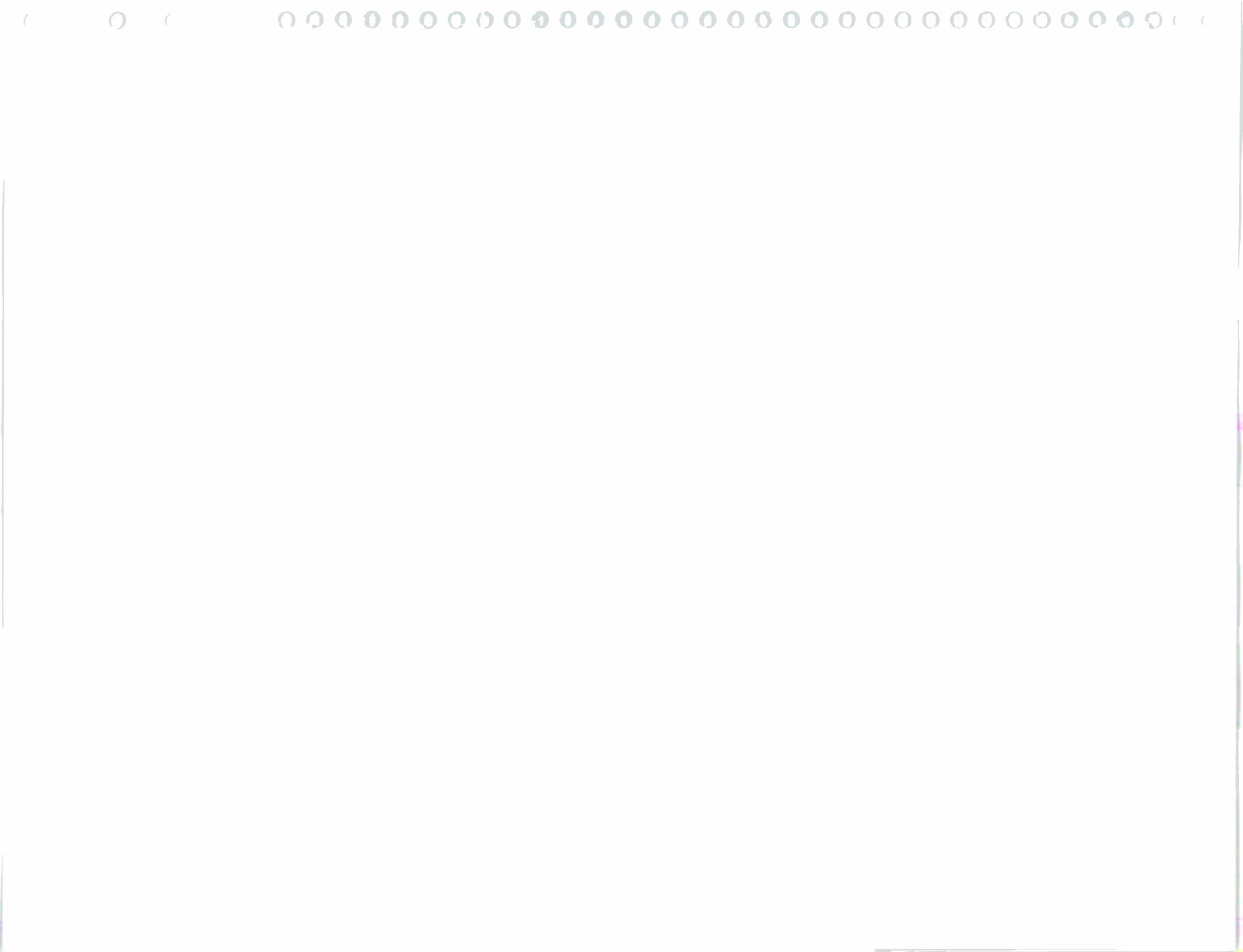
Optional mounting spine for top mount configuration

Durable and rugged stainless steel construction

Fiberglass radome protection

TYPICAL SPECIFICATIONS

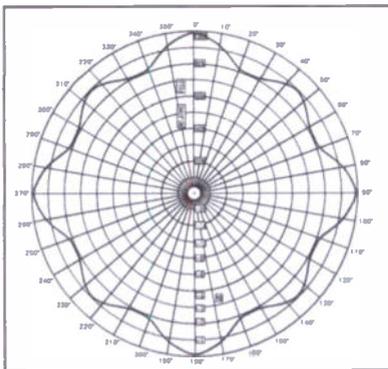
Polarization	Elliptical (JUED) Circular (JUCD)
Frequency Range	470-738 MHz
Impedance	50 ohm
VSWR	1.1:1
Max Power	2.3 kw per Input (2)
Input Connector	2 x 7/8"
Surface	4.8 square ft



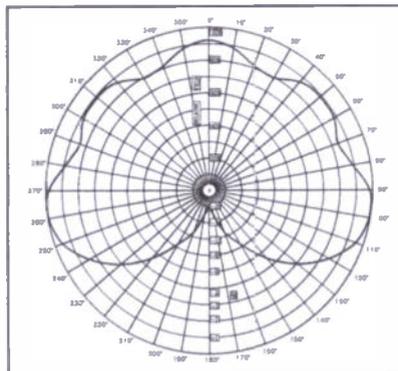


JUED-JUCD

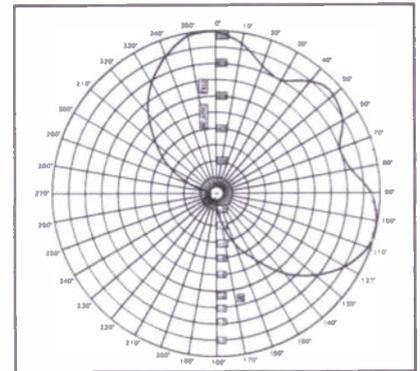
Standard Azimuth Patterns



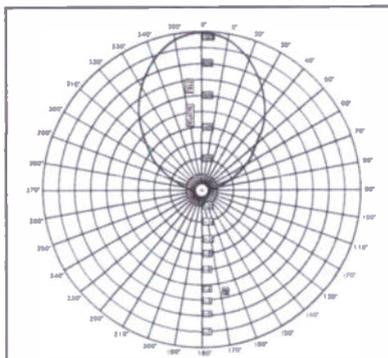
Omni



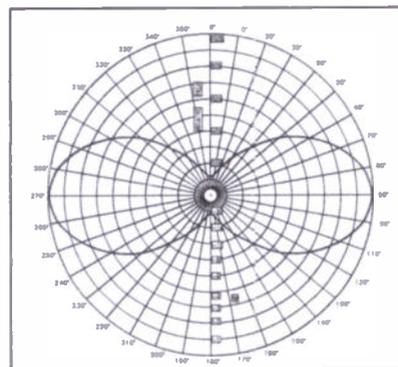
Wide Cardioid



Narrow Cardioid



Lobe



Peanut

All inputs EIA flange, female. In an omni-directional configuration, circularity is ± 2 dB (3 ft. or smaller). Input connection is EIA 50 ohm.

For assistance in pattern selection or design of a customized pattern, contact JAMPRO. Our Engineers and Sales Staff are highly trained in designing specialized systems, and are always willing to help.

NOTES

1. Contact Factory for weight and wind loading
2. All inputs EIA flange, female. 50 ohms. Other upon request
3. VSWR for individual panels and complete systems typical $\leq 1.1:1$
4. Power rating per panel varies with input power
5. Total number of frequencies limited only by total input power.

6. Radomes included. Specifications upon request
7. Power and dB gains are typical RMS gains for omni-directional, horizontal and vertical components.
8. Specifications are based on one wave spaced bays. Other spacing available.

OPTIONS

FCC Directionalization, Pattern Measurement Service, Electrical Beam Tilt, Null Fill, Special Mounting Brackets.

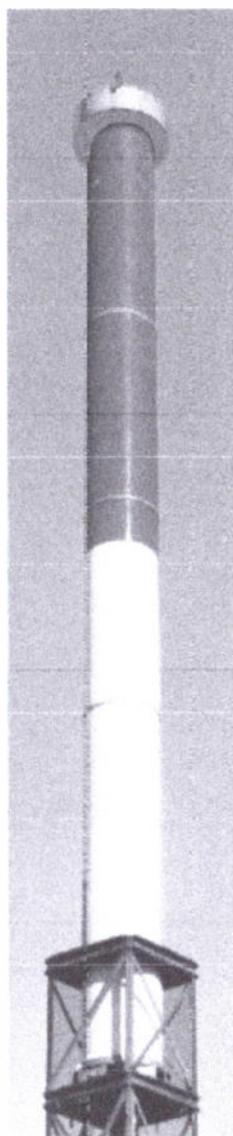
Since many factors contribute to a station's compliance with the FCC exposure guidelines for radio frequency radiation, JAMPRO ANTENNAS, INC. cannot accept any responsibility in this matter. The station must examine and determine its status based on each individual situation. For reduced low angle radiation near the tower, a low RFR model of this antenna is available. Contact the factory for pricing data and further details.

*All specifications are subject to change without notice.





UHF Bandmaster



The UHF Bandmaster is a broadband UHF antenna equally suited to both analog and digital services. It offers all the stability and wide-band characteristics of branch fed arrays. Primarily an Omni directional antenna it offers some directional capabilities. Available in a range of apertures and power ratings it features excellent access to total weather protection.

Frequency range	470 - 806 MHz
HRP circularity	±1dB 470 - 806 MHz
Input impedance	50 ohms (75 ohms available via transformer)
Input connector(s)	To suit main transmission line, appropriate to power rating
Input VSWR	1.10:1 across the band 470 - 806 MHz
Power rating	See table below
Gain	See table below for power gain, including typical distribution harness and VRP (null fill) losses
Physical dimensions	See diagram & table overleaf

HRP Type*	ND			C			P		
	Low Gain	Medium Gain	High Gain	Low Gain	Medium Gain	High Gain	Low Gain	Medium Gain	High Gain
Antenna Mean Gain**	18.1	18.1	18.1	25.6	25.6	25.6	32.0	32.0	32.0
HRP Gain**	1.0	2.0	1.8	1.0	2.0	1.8	1.0	2.0	1.8
Antenna Max. Gain**	18.1	36.2	32.6	25.6	51.2	46.1	32.0	64.0	57.6
Max. Input Power Rating									
High Power Version									
Mean Power kW	156	100	105	234	149	157	311	200	210
Peak Power kW	3504	2240	2362	5256	3360	3543	7008	4480	4725
Low Power Version									
Mean Power kW	67	43	45	100	64	67	133	85	90
Peak Power kW	1200	925	809	1800	1150	1214	2400	1535	1618
No. of 6 1/8 EIA Inputs									
High Power Version	4	2	2	4	3	3	5	4	4
Low Power Version	1	1	1	2	2	1	2	2	2

HRP* ND = Non Directional, C = Cardioid, P = Peanut
 Gain** All values are quoted as Power Gains
 Power rating will depend on frequencies employed
 Figures in table are quoted for 630MHz.

Fig. 1 Electrical performance

- a) 470 MHz
Max/Mean gain 1.2
- b) 600 MHz
Max/Mean gain 1.2
- c) 806 MHz
Max/Mean gain 1.2

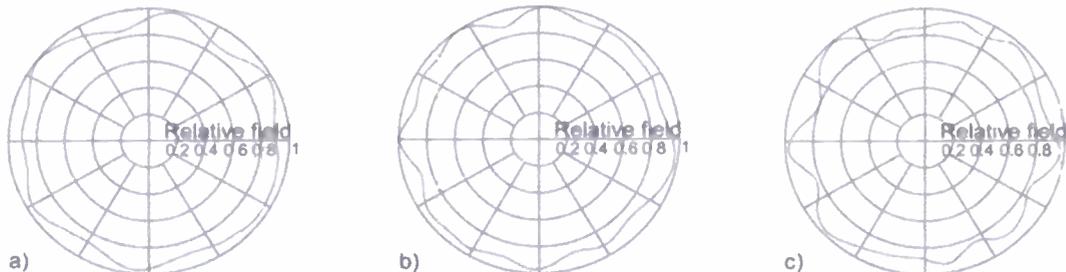


Fig. 2 Measured Omni-directional horizontal plane radiation patterns

**HORIZONTALLY POLARISED . OMNIDIRECTIONAL . COMPLETE UHF BAND . MULTI CHANNEL
 HIGH POWER . TOP MOUNTED . LOW WIND LOAD . CYLINDRICAL GRP RADOME**



UHF Bandmaster

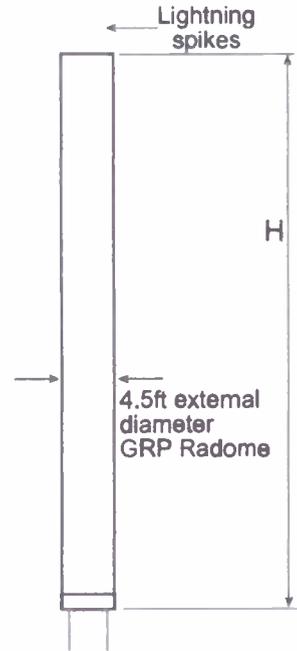
GENERAL DESIGN

This revolutionary antenna has been designed to cover the UHF band from 470 to 806 MHz with the performance indicated in Fig. 1. Housed in and completely protected by a 4.5ft. external diameter GRP cylinder the Bandmaster is available in three apertures, providing Low, Medium and High Gain arrays. At the mean frequency of 630MHz these have apertures of approximately 18, 28 and 37 wavelengths.

An internal ladder runs the complete length of the antenna giving excellent access to both the antenna itself and via a trap door in the steel top cover, to the lightning spikes and any aircraft warning lights. A heavy duty option Bandmaster spine allows a further antenna to be mounted above it. The table in Fig. 2 gives aerodynamic areas calculated in accordance with different

	Low Gain	Medium	High Gain
No. of bays	8	12	16
Radome diameter	4.5ft	4.5ft	4.5ft
Radome height, H	31.5ft	47ft	63ft
Spine diameter	3ft	3ft	3ft
Spine depth below radome	3.5ft	3.5ft	3.5ft
Total installed weight (high power)	5.3tons	7.6tons	9.9tcns
Windload			
EIA 222 C lbs	5065	7375	9785
EIA 222 F ft sq	92	133	177

Fig. 3 Physical dimensions



- a) Cardioid
Max/mean power gain 2.0
- b) Peanut
Max/mean power gain 1.8

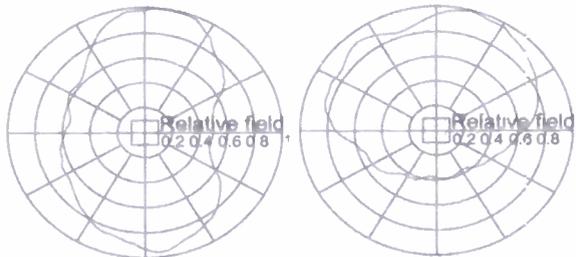


Fig. 4 Directional horizontal plane patterns at

RADIATION PATTERNS

Non-directional horizontal plane patterns are shown in Fig.1 and two typical directional patterns in Fig.4.

Fig.5 shows typical vertical plane patterns for each of the standard apertures. Alternative values of Beam Tilt and Null Fill may be provided.

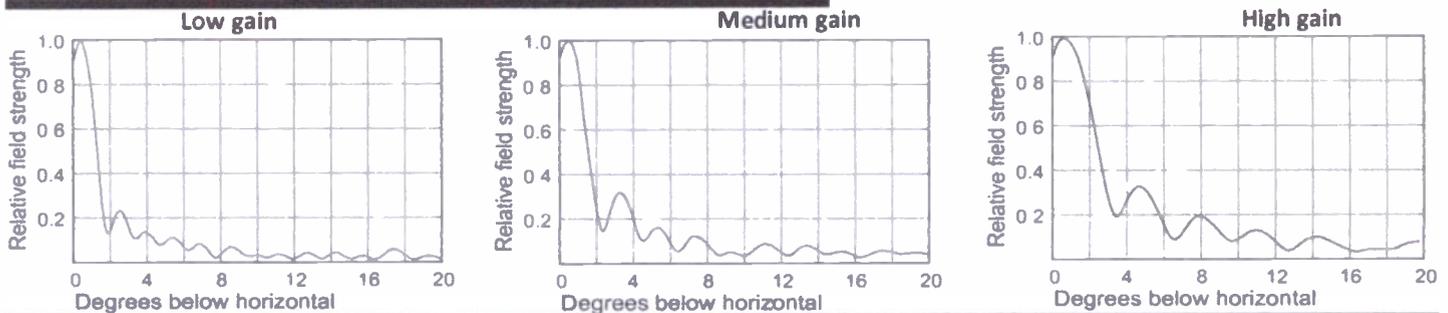


Fig. 5 Vertical plane radiation patterns at

WHAT ELSE CAN WE DO FOR YOU?

Jampro Products and Services include:

- Guyed masts Self Supporting Towers Cellular Antennas Specialized support structures, including Cellular Trees TM Radomes
- AM & FM Radio Transmitting Antennas VHF & UHF TV Transmitting Antennas TV and Radio Transmitter Combining Units
- RF Switching Frames and Transmission Line Components Installation and Commissioning



JAT-U

UHF SUPER TURNSTILE ANTENNA 470-860 MHz

The JAT-U (Horizontally Polarized) super turnstile has many outstanding features that provide great value to today's broadcaster. Radome enclosed for Long life and many years of continuous service. The JAT-U can be either top or side mounted on a tower.

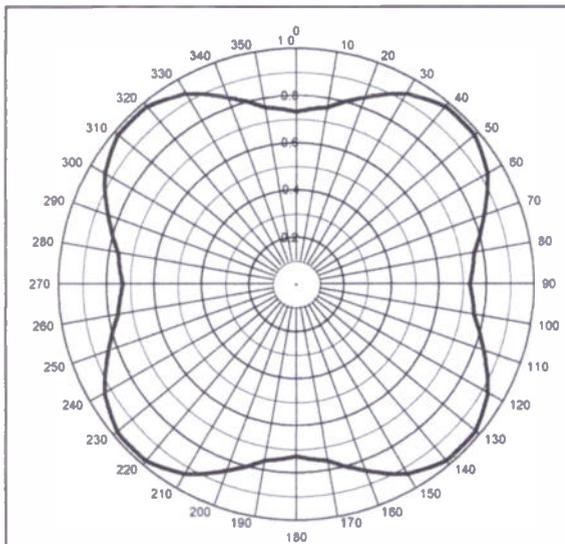
Minimum wind loading while providing broadband response makes the JAT-U an ideal antenna for applications where either the channel is defined or where multiple channels are to be combined.

Band IV/V 470 – 860 MHz

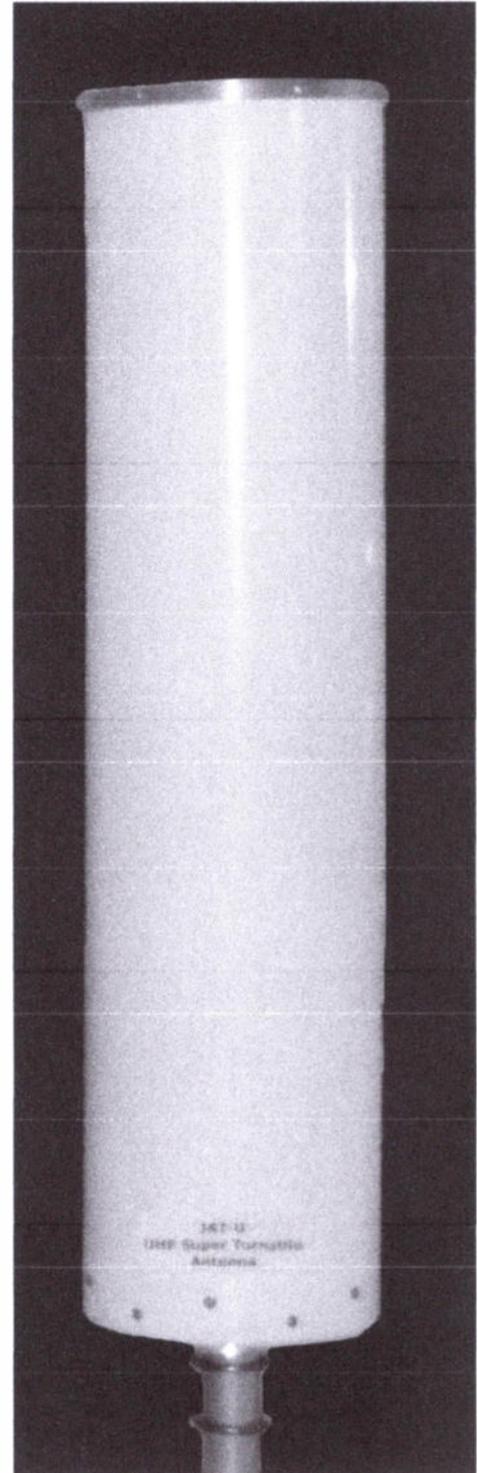
Radome Enclosed

Assembled and Tested

Top or Side Mount



Standard Omni Azimuth Pattern





JAT-U

Notes:

1. High power ratings available.
2. Polarization is Horizontal Polarization.
3. Power Gain is based on half wave dipole in free space.
4. All inputs are EIA flange, female ohm. Others upon request
5. Weights and wind loads shown include standard Top Mounting.
6. Power and dB gains are typical for horizontal components.
7. Power de-rating occurs above 2,000 feet elevation. Contact factory for details.
8. Special mounting brackets are available.
9. Pedestal available as an option. Contact factory for details.
10. Special Radome designs available for extreme conditions

Since many factors contribute to station's compliance with FCC exposure guidelines for radio frequency radiation, Jampro Antennas cannot accept any responsibility in this matter. The station must examine and determine its status based on each individual situation. Contact the factory for pricing and further details.

*All specifications subject to change without notice.

ELECTRICAL DATA			
Antenna Type	JAT-1	JAT-2	JAT-4
# Bays / Lambda	2	4	8
Frequency Range	470-860 MHz		
Impedance	50 OHM		
Connector (EIA)	7/8" / 1-5/8"	1-5/8" / 3-1/8"	
Max Power	2 kW / 5 kW	5 kW / 10 kW*	
VSWR	≤ 1.1 (in the frequency range)		
Polarization	Horizontal		
Gain (referred to half wave dipole)	5 dB	8 dB	11 dB
Lightning Protection	All metal parts DC Grounded		

*Higher power rating available– Contact Factory

MECHANICAL DATA			
	JAT-1	JAT-2	JAT-4
Diameter	406 mm		
# Bays / Lambda	2	4	8
Antenna Height "L"	5.25 ft / 1.6m	9.85ft / 3.0m	17.72ft / 5.4m
Weight	98lb / 45kg	180lbs / 82 kg	380lbs / 172kg
Wind Surface	7.0 sq/ft	13.15 sq/ft	23.6 sq/ft
Max Wind Velocity	147 mph (220 kph)		
Icing Protection	Full Radome		
Radome Color	White		
Mounting	Top Mount/Base Flange Mount/ Side Mount		



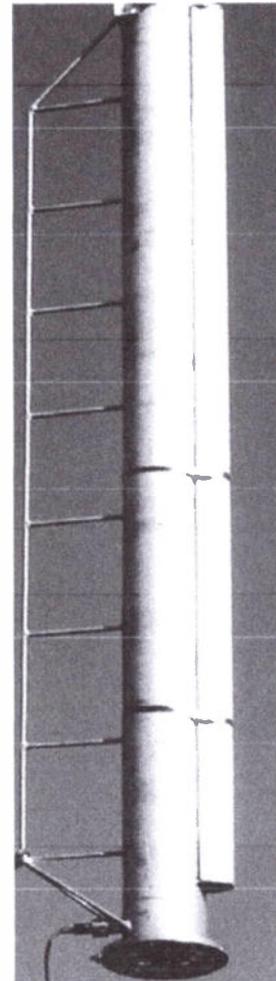
VHF ANTENNAS



VHF SLOT ANTENNA

The Jampro JSL-V Band III VHF Slot Antenna series is designed for premium performance. Detail in engineering, manufacturing and testing assures premium performance. Ideal for Band III applications where weight and tower loading are a concern. With Slot cover radomes it has on of the lowest loading of any Band III Slot antennas. The feed system is pressurized for protection, and the slots are radome sealed to protect the antenna from even the harshest environments.

Also available the JSL-V slot antenna uses marine brass, copper, aluminum and virgin Teflon in construction, is the finest antenna of its type.



VHF Band III (174-230 MHz)

Excellent VSWR

Horizontal, elliptical or circular polarizations available

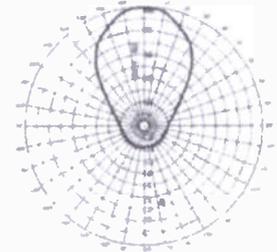
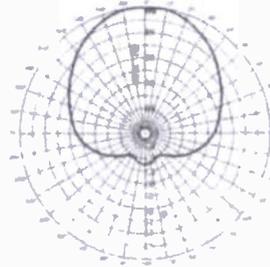
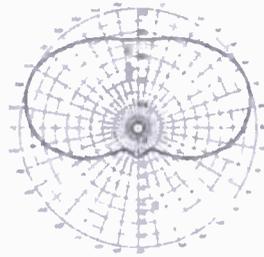
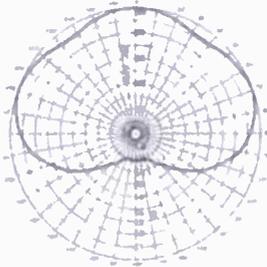
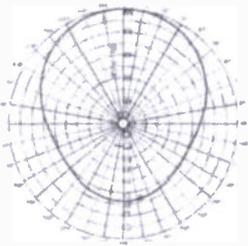
Standard azimuth & custom patterns available

Partial radome for low wind loading & full radomes available

ATSC/DVB-T/DVBT-T2/ISDB-T & Analog Applications

TYPICAL SPECIFICATIONS

Polarization	HPOL/CPOL/EPOL
VSWR	1.1:1 or better across channel
Power Rating	1 kW to 60 kW
Impedance	50 or 75 ohm



TYPICAL SPECIFICATIONS

# BAYS	Omni	Cardioid	Peanut	Medium-Cardioid	Lobe
2	*2.0x				
	*3.0 dBd	3.24x	3.8x	5.0x	8.7x
	3.90x 5.90 dBd	5.1 dBd	5.8 dBd	7.0 dBd	9.4 dBd
4	*4.0x				
	*6.0 dBd	6.5x	7.5x	10.2x	17.6x
	7.79 x 8.91 dBd	8.1 dBd	8.8 dBd	10 dBd	12.4 dBd
6	*6.0x				
	*7.78 dBd	9.88x	11.48x	15.14x	26.5x
	11.50x 10.60 dBd	9.95 dBd	10.6 dBd	11.8 dBd	14.24 dBd
8	*8.0x				
	*9.03 dBd	13.1x	15.2x	20.4x	35.2x
	15.39x 11.87 dBd	11.17 dBd	11.12 dBd	13.0 dBd	15.47 dBd
12	*12.0x				
	*10.8 dBd	19.7x	22.9x	30.6x	52.9x
	21.49x 13.32 dBd	12.95 dBd	13.6 dBd	14.8 dBd	17.24 dBd
16	*16.0x				
	*12.04 dBd	26.2x	30.5x	40.8x	70.5x
	28.20x 14.50 dBd	14.18 dBd	14.18 dBd	16.1 dBd	18.48 dBd

*Value provides average/RMS gain; All other stated gains are Peak gains. Gains do not include losses for feed system, beam tilt, or null fill.

NOTE:

1. Contact Factory for weight and wind loading
2. Contact Factory for Loading data
3. All inputs EIA flange, female, 50 ohms. Others upon request.

*Specifications are subject to change without notice.

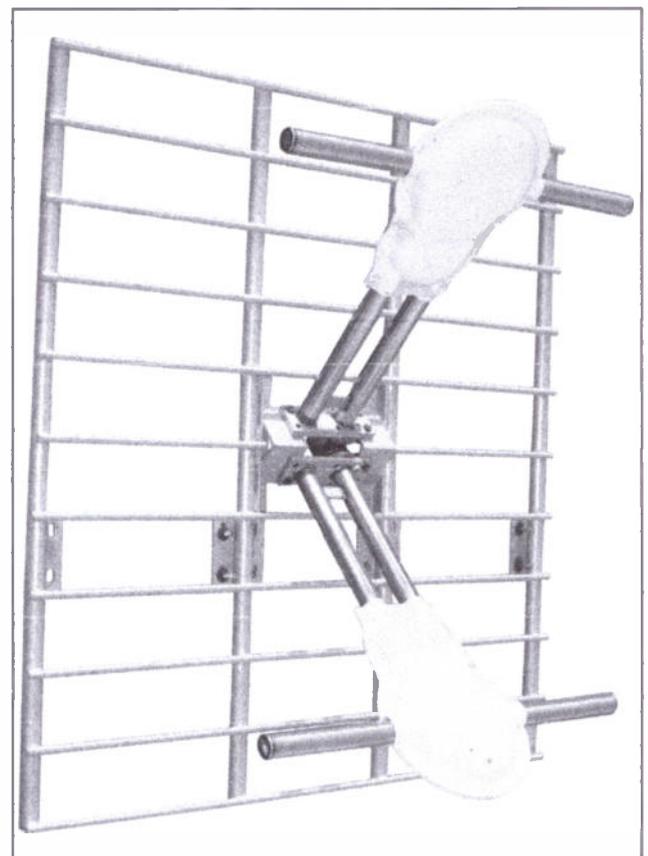


JHD-HV2

HORIZONTAL POLARIZED DUAL DIPOLE BAND III FLAT PANEL ANTENNA

The JAMPRO JHD-HV2 antenna is a half wave spaced dual dipole horizontally polarized flat panel antenna system. Rugged galvanized steel construction insures many years of dependable performance in even the harshest environments. Protective radomes can be added to protect against heavy ice buildup.

The JHD antenna has been proven to have excellent bandwidth, with typical VSWR of $<1.05:1$ on channel, and $<1.1:1$ across the band. Many standard and custom directional patterns are available to fit any of your coverage requirements.



**Designed for high band VHF (Ch 7-13)
Band III (174-230 MHz)**

Typical VSWR 1.05:1 or better

Omni-directional or custom directional patterns

Rugged Hot Dipped Galvanized Steel Construction

Stainless steel dipoles

Pressurized Feed System & Dipoles

Radomes Available

**Custom Mounting Brackets Available for
Easy Installation**

Single Panel Gain 8.0 dB



JHD-HV2

# Bays	Panels per Bay	Pattern	Gain (times)	Gain (dBd)
1	2	Narrow Cardioid	3.2	5.1
	3	Wide Cardio d	2.2	3.5
	4	Omni	1.6 *1.0	2 *0.0
2	2	Narrow Cardioid	6.6	8.2
	3	Wide Cardio d	4.5	6.5
	4	Omni	3.3 *2.1	5.2 *7.2
4	2	Narrow Cardioid	13.2	11.2
	3	Wide Cardio d	8.9	9.5
	4	Omni	6.5 *4.2	8.2 *6.2
6	2	Narrow Cardioid	20	13
	3	Wide Cardioid	13.5	11.3
	4	Omni	10 *6.4	10 *8.0
8	2	Narrow Cardioid	26.3	14.2
	3	Wide Cardioid	17.8	12.5
	4	Omni	13.2 *8.4	11.2 *9.2

* Value provides Average/RMS gain; all other stated gains are Peak gains. Gains do not include losses for feed system, beam tilt, or null fill. Gain computed for 230 MHz

Notes:

- Contact factory for Weights and wind loading
- All input EIA flange, female 50 ohm. Others upon request
- Panel Input 7/8 (other type of connectors on request).
- Frequency range one channel in Band III (174-230 MHz).
- Null fill and beam tilt on request.
- Specifications are based on one wave spaced bays. Other spacing available.
- VSWR for individual panels and complete systems typical $\leq 1.1:1$
- Power rating per panel varies with input power
- Total number of frequencies/channels limited only by total input power.
- In an Omni-directional configuration typical circularity +/- 1.5 dB or better. Directional patterns available

Options

Options available include FCC-Directionalization, Pattern Measurement Service, beam tilt, null fill, and special mounting brackets.

Non-ionizing Radiation

Since many factors contribute to a station's compliance with the FCC exposure guidelines for radio frequency radiation, JAMPRO Antennas, Inc. cannot accept any responsibility in this matter. The station must examine and determine its status based on each individual situation.

*All specifications are subject to change.

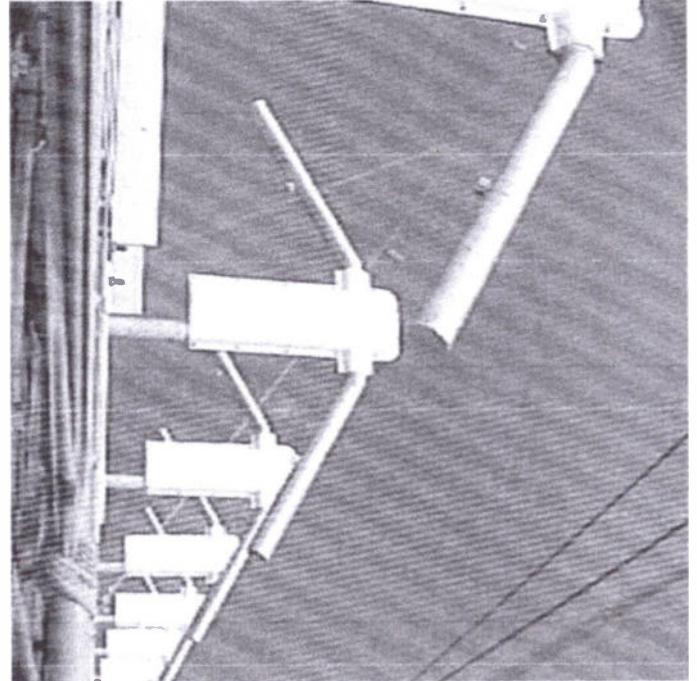




HORIZONTAL POLARIZED DUAL DIPOLE BAND I FLAT PANEL ANTENNA

The JAMPRO JHD-LV2 antenna is a half wave spaced dual horizontally polarized dipole flat panel antenna system. Rugged galvanized steel construction insures many years of dependable performance in even the harshest environments. Protective lightweight radomes can be added to protect against heavy ice buildup.

The JHD antenna has been proven to have excellent bandwidth, with typical VSWR of <math><1.05:1</math> on channel. Many standard and custom directional patterns are available to fit any of your coverage requirements.



**Designed For Low Band VHF
(Ch 2-6) Band I (54-88 MHz)**

Typical VSWR <math><1.05:1</math> or better

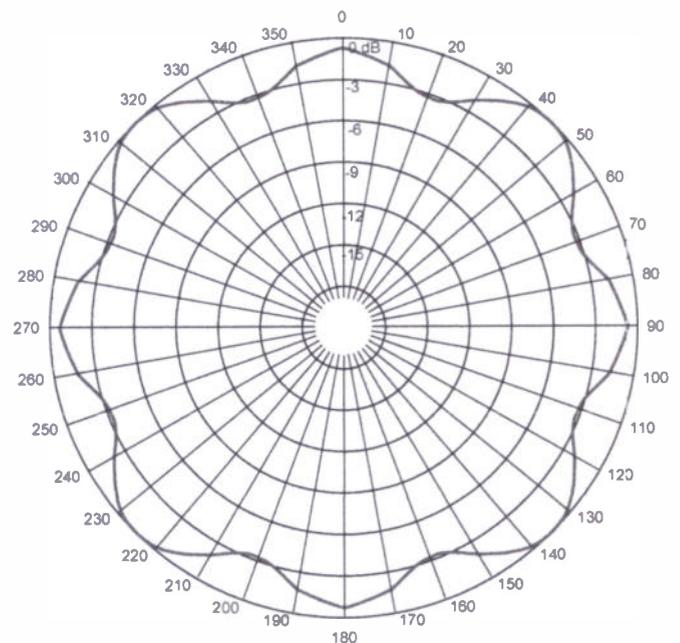
Omni-Directional or Custom Directional Patterns

Rugged Hot Dipped Galvanized Steel Construction

Pressurized Feed System

Radomes Available

**Custom Mounting Brackets Available
for Easy Installation**



Standard 4 Around Omni Azimuth Pattern



# Bays	Panels per Bay	Pattern	Gain (times)	Gain (dBd)
1	2	Narrow Cardioid	3.2	5.1
	3	Wide Cardioid	2.2	3.5
	4	Omni	1.6	2
2	2	Narrow Cardioid	6.6	8.2
	3	Wide Cardioid	4.5	6.5
	4	Omni	3.3	5.2
4	2	Narrow Cardioid	13.2	11.2
	3	Wide Cardioid	8.9	9.5
	4	Omni	7.1	8.5
6	2	Narrow Cardioid	19.9	13
	3	Wide Cardioid	13.5	11.3
	4	Omni	10	10
8	2	Narrow Cardioid	26.3	14.2
	3	Wide Cardioid	17.8	12.5
	4	Omni	13.2	11.2
12	2	Narrow Cardioid	39.8	16
	3	Wide Cardioid	26.9	14.3
	4	Omni	19.9	13

All stated gains are Peak gains. Gains do not include losses for feed system, beam tilt or null fill.

Notes:

- Contact factory for Weights and wind loading
- All input EIA flange, female 50 ohm Others upon request
- Dipole Input 7/8 (other type of connectors on request).
- Frequency range one channel in Band I (174-230 MHz).
- Null fill and beam tilt on request.
- Specifications are based on one wave spaced bays.
Other spacing available.

- VSWR for individual panels and complete systems typical $\leq 1.1:1$
- Power rating per panel varies with input power
- Total number of frequencies/channels limited only by total input power.
- In an Omni-directional configuration typical circularity +/- 1.5 dB or better. Directional patterns available

Options

Options available include FCC-Directionalization, Pattern Measurement Service, beam tilt, null fill, and special mounting brackets.

Non-ionizing Radiation

Since many factors contribute to a station's compliance with the FCC exposure guidelines for radio frequency radiation, JAMPRO Antennas, Inc. cannot accept any responsibility in this matter. The station must examine and determine its status based on each individual situation.

*All specifications are subject to change.



THE JAMPRO JCPD 4-DIPOLE FLAT PANEL ANTENNA

The JAMPRO JCPD antenna is a circularly polarized 4-dipole flat panel antenna system. Rugged galvanized steel construction insures many years of dependable performance in even the harshest environments. Protective lightweight dipole radomes may be added as protection against heavy ice buildup.

The JCPD antenna has proven to provide excellent bandwidth, with typical VSWR of $<1.1:1$ or better. Many standard and custom directional patterns are available to fit any of your coverage requirements.

Band I (Ch. 2-6)

Band II (FM, 87.5 - 108 MHz)

Band III (Ch. 7-13)

Excellent for multi-frequency, broadband applications

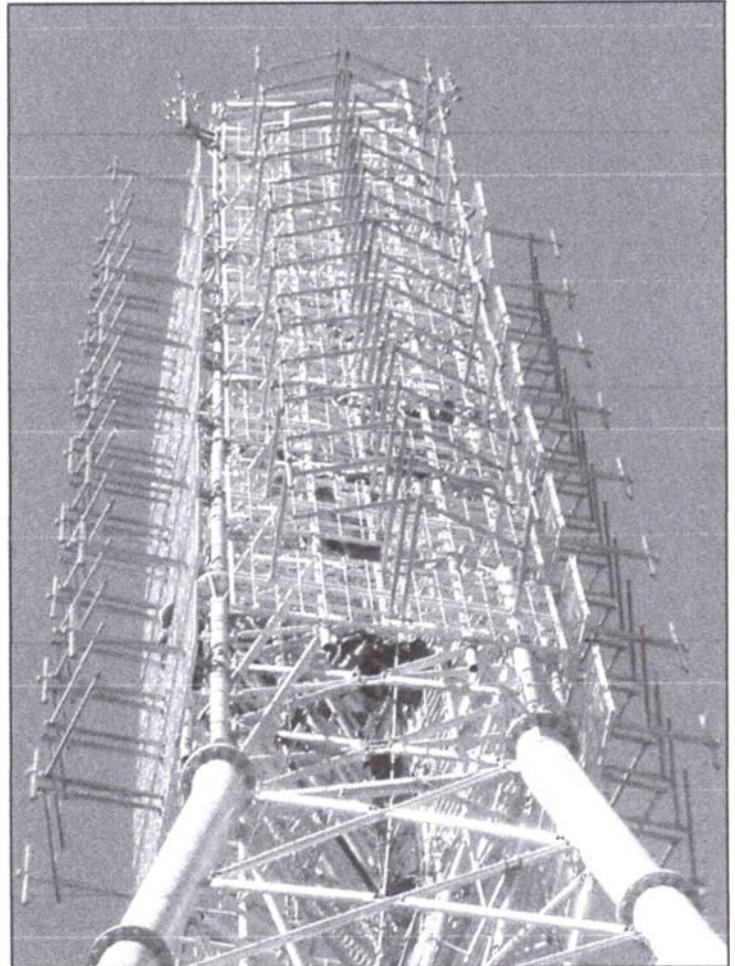
Omni-directional or custom directional patterns available

Rugged construction of stainless steel, marine brass and hot dipped galvanized steel

All insulators constructed from virgin Teflon

Fiberglass radomes & custom mounting brackets available

Pressurized feed system and dipoles



The design of this circularly polarized antenna may be configured to include varying levels of vertical polarization, with results ranging from small amounts of elliptical polarization to full circular polarization.



# Bays	Panels per Bay	Pattern	Gain (times)	Gain (dBd)
1	2	Narrow Cardioid	1.6	2
	3	Wide Cardioid	1.1	0.4
	4	Omni	0.8	-1
2	2	Narrow Cardioid	3.2	5.1
	3	Wide Cardioid	2.2	3.4
	4	Omni	1.6	2
4	2	Narrow Cardioid	6.5	8.1
	3	Wide Cardioid	4.5	6.5
	4	Omni	3.3	5.2
6	2	Narrow Cardioid	9.8	9.9
	3	Wide Cardioid	6.8	8.3
	4	Omni	4.9	6.9
8	2	Narrow Cardioid	13.2	11.2
	3	Wide Cardioid	9.2	9.6
	4	Omni	6.6	8.2
10	2	Narrow Cardioid	16.5	12.17
	3	Wide Cardioid	11	10.4
	4	Omni	8.25	9.15

*Values provided average/RMS gains; All other stated gains are Peak gains. Gains do not include losses for feed system beam tilt or null fill.

NOTES:

1. Contact Factory for weights and wind loading
2. Total area shown in feet and are subject to change.
3. All inputs EIA flange, female, 50 ohm. Others upon request
4. Polarization is circular.
5. Input power capability available in many different ratings.
6. Optimized bandwidth over nominal 50 ohm VSWR of 1.1:1 available. Contact factory for details.

7. Power gain is based on half wave dipole in free space.
8. Radomes optional. Contact factory for details.
9. All specifications are subject to change.

OPTIONS:

Options available include FCC-Directionalization, Pattern Measurement Service, Beam tilt and Null fill, Special mounting brackets.

Non-ionizing Radiation

Since many factors contribute to a station's compliance with the FCC exposure guidelines for radio frequency radiation, JAMPRO ANTENNAS, INC. cannot accept any responsibility in this matter. The station must examine and determine its status based on each individual situation.

*All specifications are subject to change without notice.

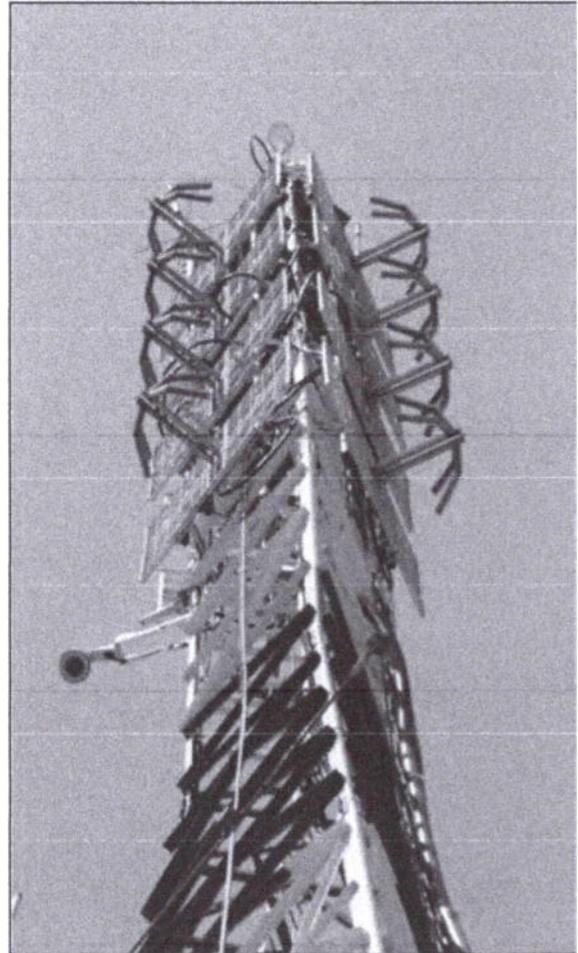


ARROWHEAD CIRCULAR POLARIZED DIPOLE BROADCAST PANEL ANTENNA

The JAMPRO JAH Arrowhead Dipole broadcast panel antenna is an excellent choice for stations looking for above average pattern stability and excellent control over axial ratio. The JAH is designed for Bands I, II (FM), and III and is easily adaptable for multi-station use. The Jampro JAH antenna is designed to be mounted on the sides of a large tower or other large supporting structure. Power rating is 10 kW per panel, however higher powers are available.

The JAMPRO JAH VHF Panel Antenna is designed as a side-mount antenna. The JAH antenna is based on a modular design and can be configured to provide various azimuth and elevation patterns. By using optional beam tilt and null fill, the elevation pattern can be shaped to maximize coverage. The design of this circularly polarized antenna may be configured to include varying levels of vertical polarization, with results ranging from small amounts of elliptical polarization to full circular polarization.

The JAMPRO JAH VHF Panel Antenna can produce a wide variety of standard and custom azimuth patterns. Different configurations will produce various gains, weights and wind loads.



Band I (54-82 MHz) Band II/FM (88.5 –108MHz) or Band III (174-230 MHz)

Excellent VSWR & bandwidth without field tuning

Omni or directional patterns

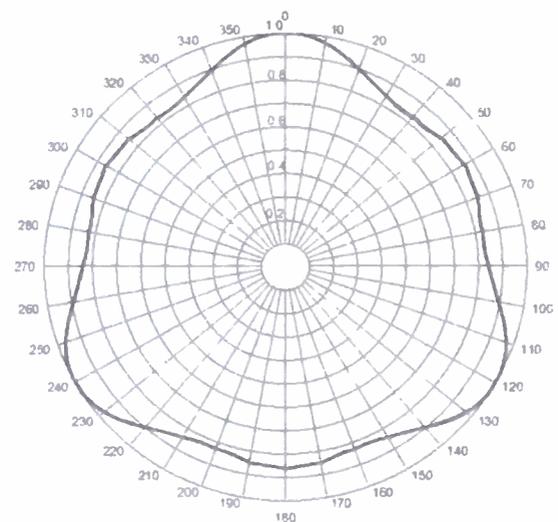
Rugged hot dipped galvanized steel construction

Ideal for multi or single station application

DC ground at each bay

Radomes available

Pressurized feed system & dipoles



Standard Omni Azimuth Pattern



# Bays	Panels per Bay	Pattern	Gain (times)	Gain (dBd)
	1	Lobe	2	3
1	2	Cardioid	1	0
	3	Omni	0.47	-3.2
2	1	Lobe	4	6
	2	Cardioid	2	3
	3	Omni	1	0
4	1	Lobe	8	9
	2	Cardioid	4	6
	3	Omni	2.1	3.22
	1	Lobe	12	10.8
6	2	Cardioid	6	7.8
	3	Omni	3.2	5
8	1	Lobe	16	12
	2	Cardioid	8	9
	3	Omni	4.3	6.3
10	1	Lobe	20	13
	2	Cardioid	10	10
	3	Omni	6.6	8.2

*Values provided average/RMS gains; All other stated gains are Peak gains. Gains do not include losses for feed system beam tilt or null fill.

NOTES:

- Contact Factory for weights and wind loading
- In an Omni-directional configuration, circularity is ± 2 dB or better, 5foot face or smaller tower
- All inputs are EIA flange, female, 50 ohm. Others upon request.
- Power de-rating occurs above 2,000 feet elevation. Contact factory for details
- Power and dB gains are typical for horizontal and vertical components
- Special mounting brackets are available
- Other combinations of EIA inputs and power ratings available
- Power rating is 10kW per panel, special high power designs available
- Total number of Channels may be limited by total input power
- Power gain is based on half wave dipole in free space
- Specifications based on one wave spaced bays, other spacing available
- Polarization right hand CPOL
- Radomes optional

Since many factors contribute to a station's compliance with FCC exposure guidelines for RFR, Jampro Antennas, Inc. cannot accept any responsibility in this manor. The station must examine and determine its status based on each individual situation.

*All specifications are subject to change without notice.





JAT

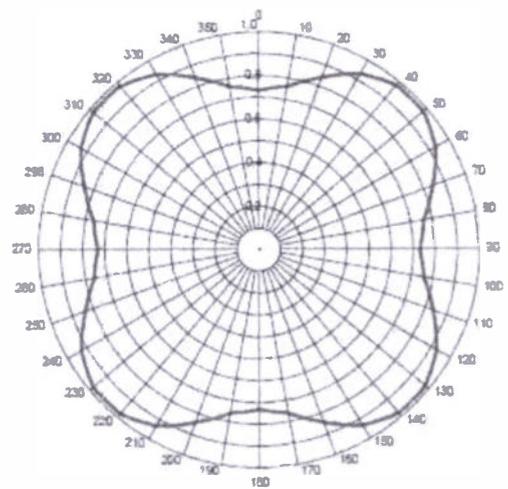
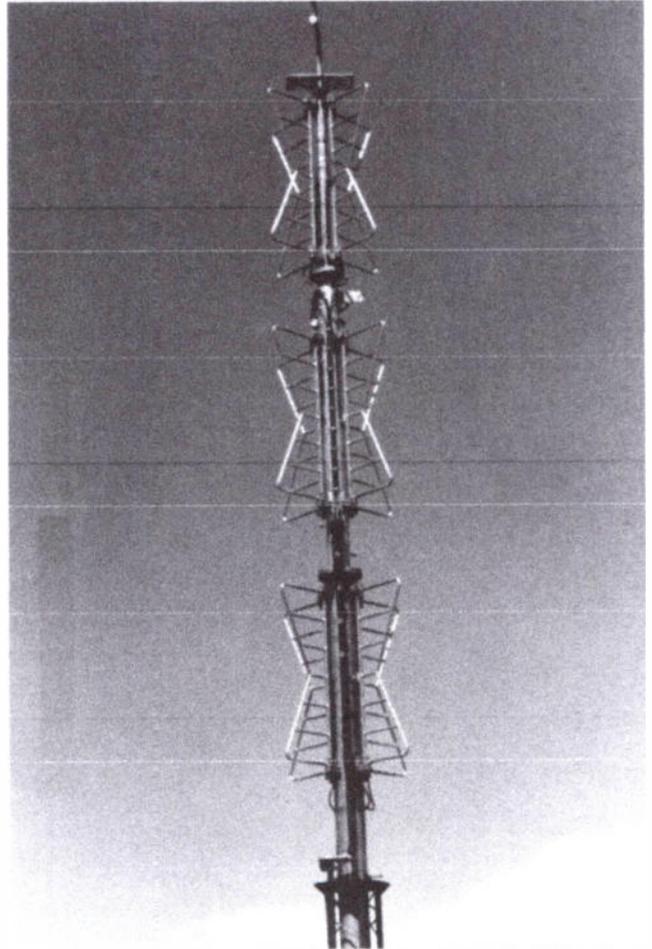
VHF TV BATWING ANTENNA

The Jampro HAT Batwing has provided years of proven performance for Broadcasters worldwide. Engineering, manufacturing and installing VHF Batwing antennas longer than any other supplier worldwide has given Jampro tremendous experience and knowledge of such systems.

The JAMPRO Batwing has many outstanding features that mean great value to today's broadcaster. The entire structure, pole and batwing, are hot-dipped galvanized before assembly. This is important not only for long life, but also means reliable contact at important current carrying points. High strength beryllium copper with brass terminal material is used for fanner straps. All connections in a JAMPRO Batwing are bolted, no hose clamps in the vital field locations.

Add complete assembly, tuning and range testing of your antenna before shipping and you see why there's no question about its performance.

Directional batwings are a custom feature, also batwing re-harness kits are available for any antenna from JAMPRO. Call for Details.



Standard Omni Azimuth Pattern

Band I (54-88 MHz) Ch. 2 - 6

Band III (174-230 MHz) Ch. 7 - 13

ATSC/DVB-T/DVBT-T2/ISDB-T/Analog applications

Hot dipped galvanized steel

Semi flexible interbay lines

Fully assembled and range tested

Beam tilt and null fill available



JAT

MECHANICAL DATA

50/33 PSF, NO ICE

MODEL	A	B	C	D	H1	H2	H3	E	F	G	H
JAT 2/2-3	27.6	9	3.5	6	38.1	32.1	17.3	8.6	1600	29	2150
JAT 2/4-6	22.7	6.9	2.7	6	32.4	26.4	14.1	7.6	1400	16.5	1650
JAT 2/7-13	9.2	3.2	2.5	6	18.9	12.9	7.1	6.6	700	4	1000
JAT 3/2-3	44.6	9	3.5	8	57.1	49.1	25.8	11.8	2600	54	4600
JAT 3/4-6	36.7	6.9	2.7	8	48.4	40.4	21.1	10.8	1800	33.5	3500
JAT 3/7-13	14.8	3.2	2.5	6	24.3	18.3	9.9	8.6	800	7.8	1500
JAT 4/2-3	61.6	9	3.5	12	78.1	66.1	34.3	16	3700	100	7000
JAT 4/4-6	50.7	6.9	2.7	10	64.4	54.4	28.1	14	2750	69	4750
JAT 4/7-13	20.4	3.2	2.5	8	31.9	23.9	12.7	8.6	900	21	2500
JAT 5/2-3	78.6	9	3.5	16	99.1	83.1	42.8	18	5000	190	10000
JAT 5/4-6	64.7	6.9	2.7	16	84.4	68.4	35.1	14	3700	115	7000
JAT 6/2-3	95.6	9	3.5	20	120.1	100.1	51.3	20	6600	287	14000
JAT 6/4-6	78.7	6.9	2.75	18	82.4	82.4	42.1	18	4700	173	12000
JAT 6/7-13	31.6	3.2	2.5	10	35.1	35.1	18.3	8.6	1600	31	2800
JAT 8/7-13	42.8	3.2	2.5	10	46.3	46.3	23.9	10.8	2200	55	4800
JAT 10/7-13	54	3.2	2.5	10	57.5	57.5	29.5	12.8	3200	94	8500

- | | | | |
|----|--|----|---|
| A | Ft. Antenna Aperture | H3 | Ft. Center radiation about tower |
| B | Ft. Antenna Width | E | Inches Pole Diameter at Tower Top |
| C | Ft. Clearance, tower top to batwing | F | Lbs. Wind Force at Radiation Center |
| D | Ft. Bury length* | G | KIP Ft. Overturn Moment, Tower Top |
| H1 | Ft. Overall pole length, includes bury | H | Lbs. Weight of Complete Antenna |
| H2 | Ft. Pole length above tower top | | * No bury section if antenna flange amount. |

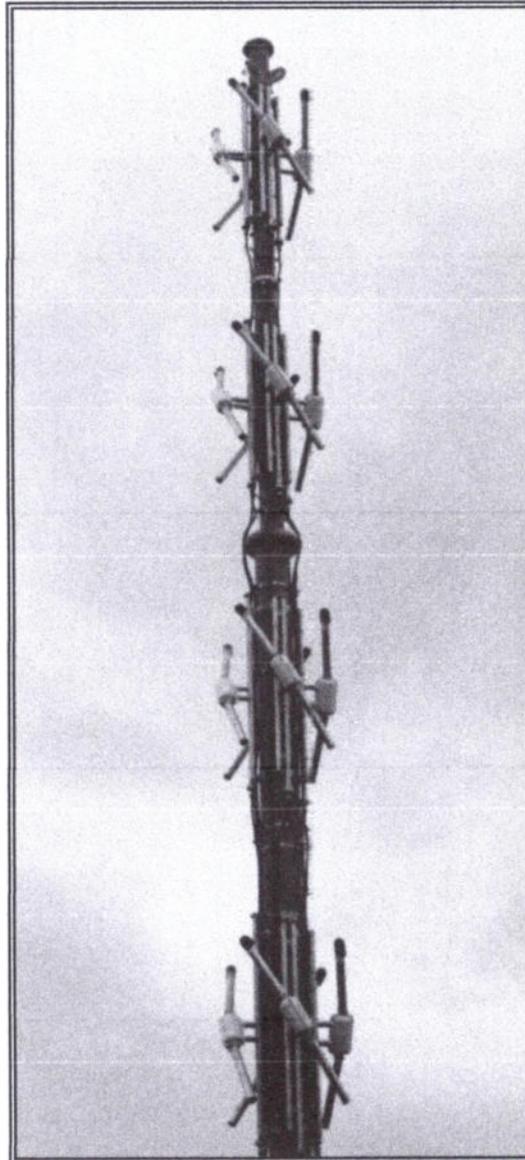
Deicers Ch. 2-3 3 kW per bay
 Ch. 4-6 2 kW per bay
 Ch. 7-13 .8 kW per bay
 Voltage 120 volts to ground

**Special deicer requirements available, contact factory for details

(((



LAMBDA TV OF ANTENNA



Circularly polarized

Channels 2-6 Band I
Channels 7-13 Band III

Top Mounted

Omni Directional

Super-turnstile
Replacement

Grounded copper
feed lines

Radomes

Elements at DC ground
for lightning protection

Hot dipped
galvanized pole



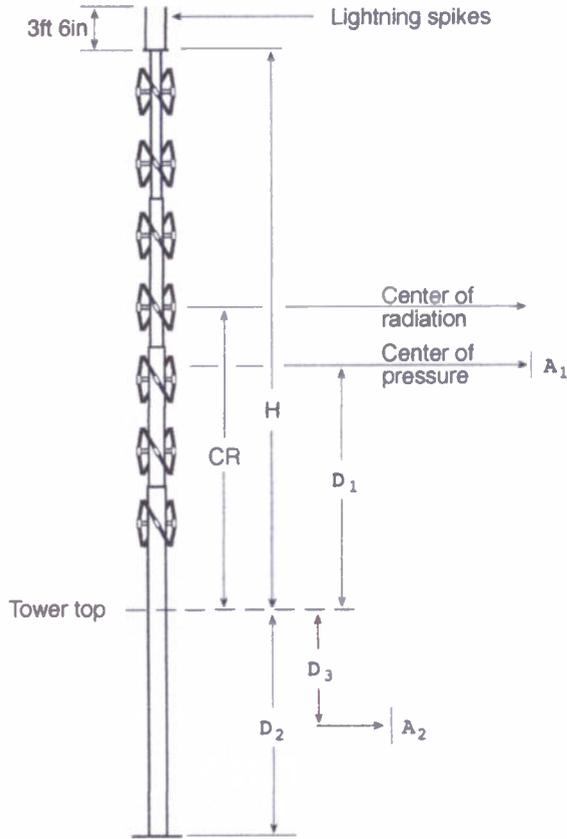


FIG. 1 REF TO DIMENSIONS

Channel	CR ft	H ft	A ₁ ft ²	A ₂ ft ²	D ₁ ft	D ₂ ft	D ₃ ft	Weight lbs
2	53.9	100.1	165	55	44.5	20	10	13,000
3	48.8	90.7	150	50	41.5	20	10	12,000
4	44.6	82.8	135	40	38.5	16.4	8.2	10,000
5	38.9	72.3	125	35	36.5	16.4	8.2	10,000
6	36.2	67.2	115	33	34.5	16.4	8.2	9,500

Note: Above Specifications are for a 7 bay system. For other configurations consult the factory.

FIG. 2 MECHANICAL DETAILS

Operating Voltage	270
Circularity	1.0 dB
AXial Ratio	3.0 dB
Beam tilt	1 deg
Gain (rms each polarization)	4.7 dB
Input Impedance	50 Ohms
VSWR	visual carrier Across channel
	1.05:1 1.10:1
Input Connector	370 EIA
Power Rating (peak synch)	60 kW

Note: Above Specifications are for a 7 bay system. For other configurations consult the factory.

The ADB Lambda CP antenna, for Band I channels 2 through 6, and channels 7 through 13 Band III, developed specifically to provide a top-mounted circularly polarized antenna with comparable loadings to the familiar horizontally polarized Super-turnstile. The antenna is conservatively designed with a power rating to achieve 100kW ERP per plane with ample reserve capacity.

Lambda antennas are ruggedly built for long trouble free life. Great attention has been paid to optimizing both the mechanical and electrical design. Careful selection of materials has resulted in a heavy duty galvanized steel pole and radiating elements, coupled with grounded copper, brass and gun metal distribution feeder components and stainless steel hardware. Radome protection of the feed points eliminates the need for expensive electrical de-icing.

Optimized Lambda antennas are produced for each Band I channel, 2 through 6, and Band III channels 7 through 13. The antenna consists of an array of X bays of 4 slant dipoles per bay. Antennas may be provided with either single or dual 31/8 EIA input flanges as indicated on the back cover schematic diagrams. Input fine matchers are included to minimize installation and commissioning time and provide optimum antenna match to the main transmission line.

Fig. 2 shows mechanical dimensions, aerodynamic areas and weights. Fig. 3 summarizes the electrical performance. The excellent omnidirectional horizontal radiation



pattern performance of both the horizontally and vertically polarized components is shown in Fig. 4 which also shows the axial ratio. Fig. 5 displays the vertical radiation pattern

The mechanical data given in Fig. 2 is appropriate for standard antennas and could vary for a specific installation; ADC should always be consulted for specific sites. Aerodynamic areas have been calculated in accordance with the RS222E standard using the appropriate force coefficients. A1 and A2 are the effective areas above and below the tower top, respectively. A2 includes the main power dividers and incorporates shielding effects.

ANTENNA TYPE NUMBER

The antennas type number provides a convenient reference to its main characteristics as illustrated below. For the Lambda antenna only two items are variable: the operating channel and the number of inputs.

A channel 4 antenna fed by two transmission lines would be designated: T4C7.4LD60ND-2

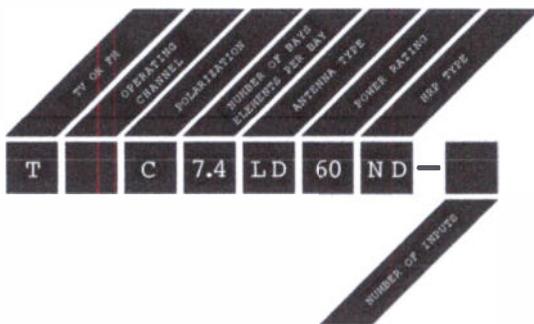


FIG. 3 ELECTRICAL PERFORMANCE

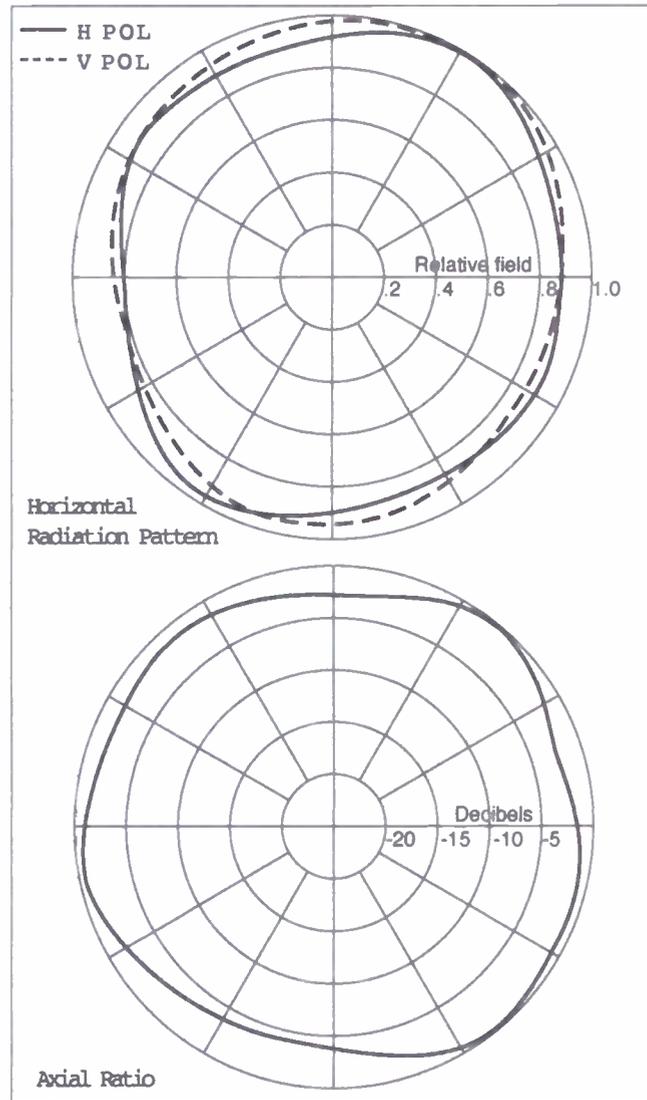


FIG. 4 HORIZONTAL PATTERN DATA

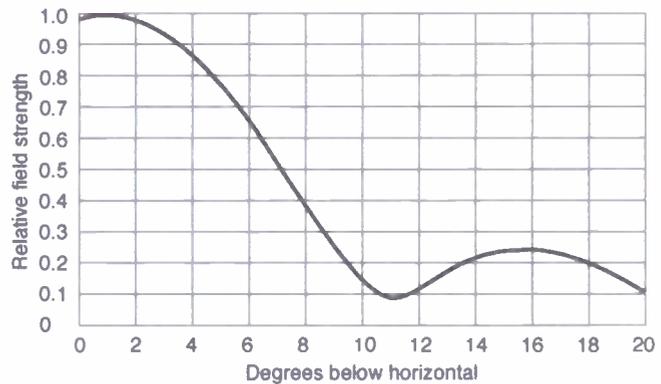


FIG. 5 VERTICAL RADIATION PATTERN



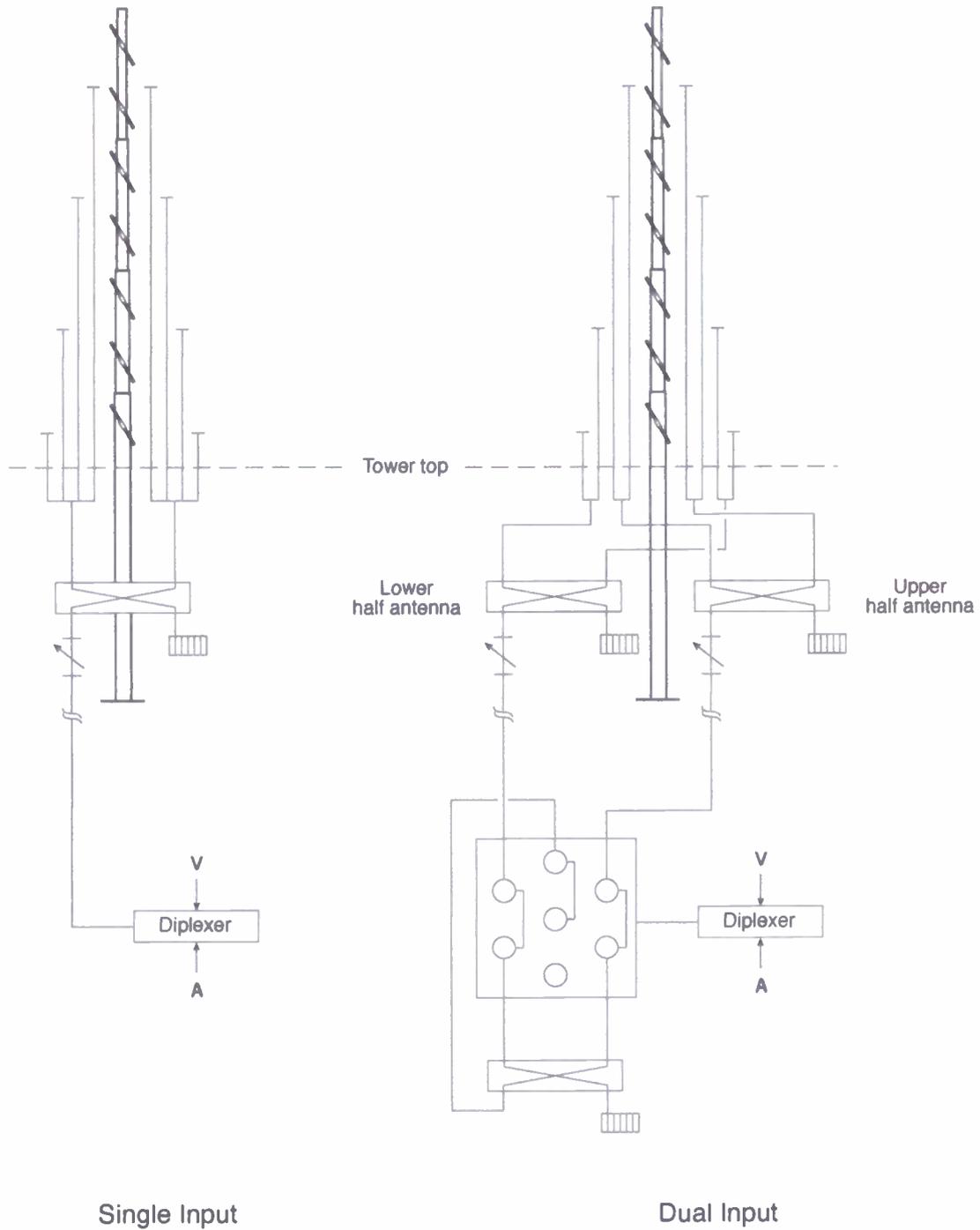


FIG. 6 TYPICAL INSTALLATION SCHEMATICS

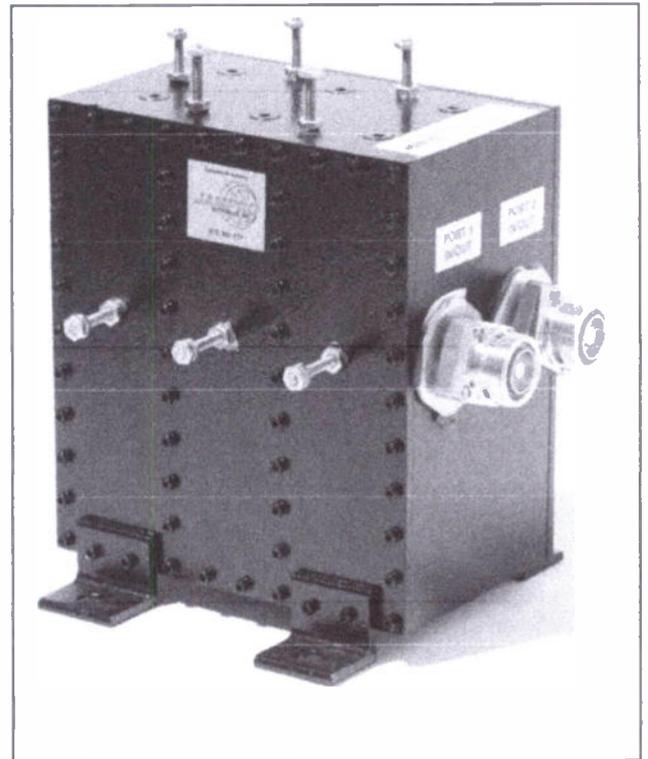
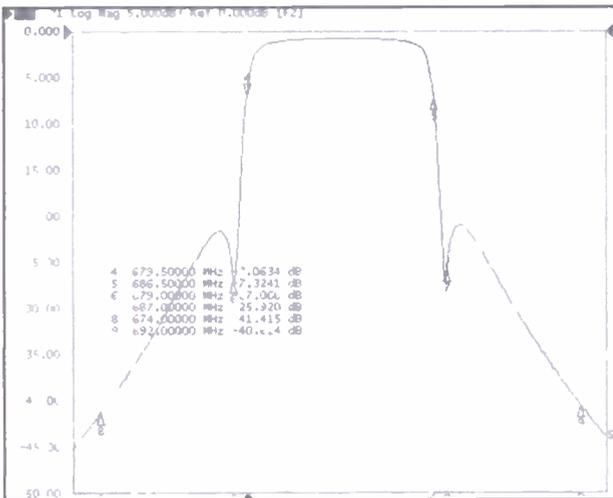
ADBs Products and Services include Guyed towers Self Supporting Towers, AM & FM Radio Transmitting Antennas, VHF & UHF TV Transmitting Antennas, TV and Radio Transmitter Combining Units, RF Switching Frames and Transmission Line Components, Installation and Commissioning

FILTERS



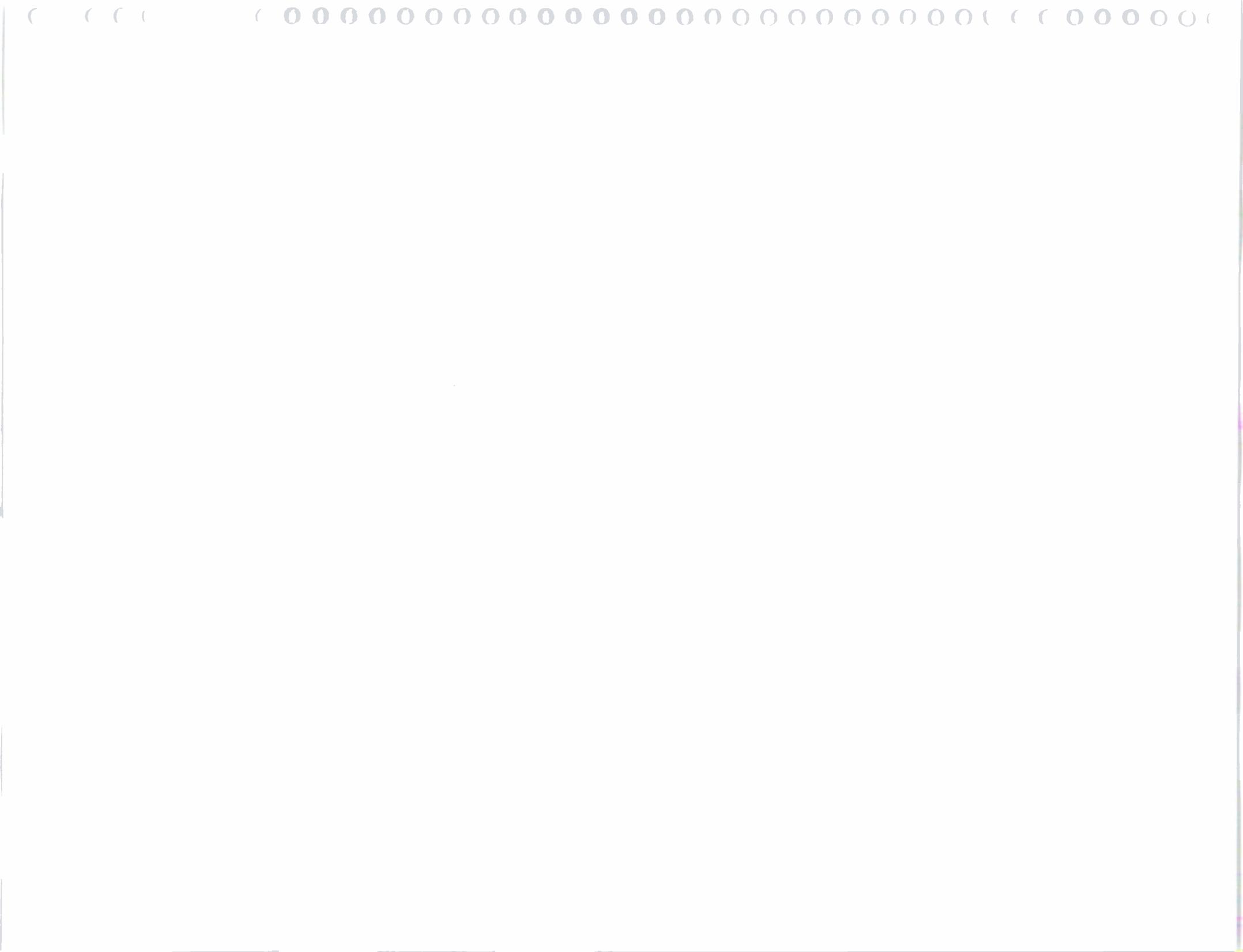
250W, UHF 2"/50.8mm Mask Filter ATSC/DVB-T/ISDB-T

The JAMPRO RCEC 2"/50.8mm UHF Mask Filter is designed to provide superior mask filter performance at an affordable price. Cross coupling creates steep rejection skirts and the high-Q cavities provide low passband insertion loss in a compact design.



TYPICAL SPECIFICATIONS

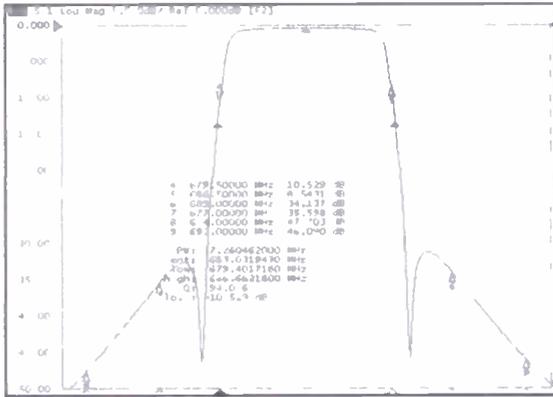
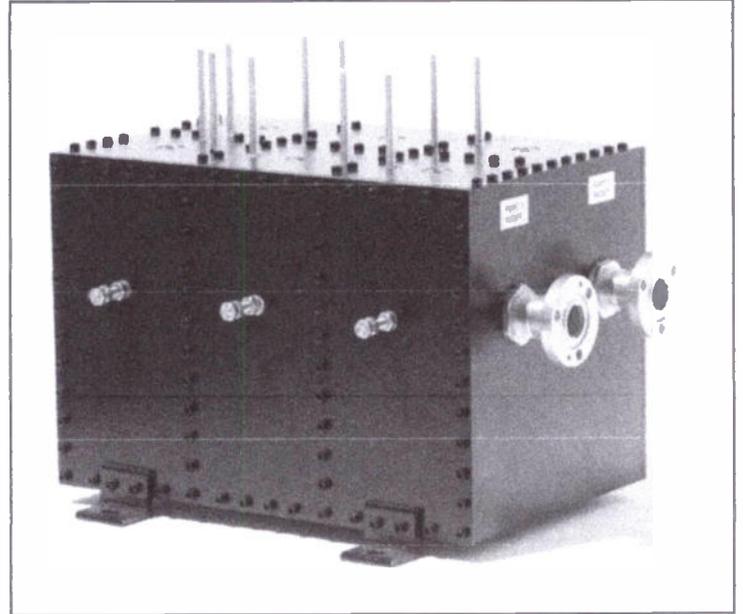
	ATSC	DVB-T2	ISDB-T
Channel Bandwidth	Fc ± 2.69 MHz	Fc ± 3.885 MHz	Fc ± 2.79 MHz
Insertion Loss	FC 0.95 dB Fc ± 2.69 MHz 1.6 dB	FC 0.70 dB Fc ± 3.885 MHz 1.80 dB	FC 1.0 dB Fc ± 2.79 MHz 1.7 dB
VSWR	1.12:1	1.12:1	1.12:1
Rejection	Fc ± 3.5 MHz 7 dB Fc ± 4.0 MHz 22 dB Fc ± 9 MHz 36 dB	Fc ± 3.5 MHz 3 dB Fc ± 4.0 MHz 16 dB Fc ± 9 MHz 36 dB	Fc ± 3.15 MHz 4 dB Fc ± 4.5 MHz 10 dB Fc ± 9 MHz 35 dB
Group Delay	200 nsec	225 nsec	450 nsec
Connectors (#)	DIN 7-16 (D) Type "N" (N)	DIN 7-16 (D) Type "N" (N)	DIN 7-16 (D) Type "N" (N)





500W, UHF 4"/101.6mm Mask Filter ATSC/DVB-T/ISDB-T

The JAMPRO RCEC 4"/101.6mm UHF Mask Filter is designed to provide superior mask filter performance at an affordable price. Cross coupling creates steep rejection skirts and the high-Q cavities provide low passband insertion loss in a compact design.



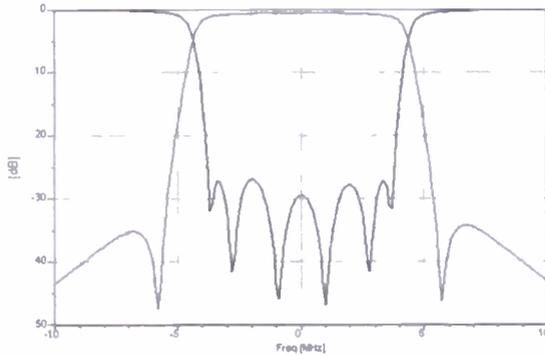
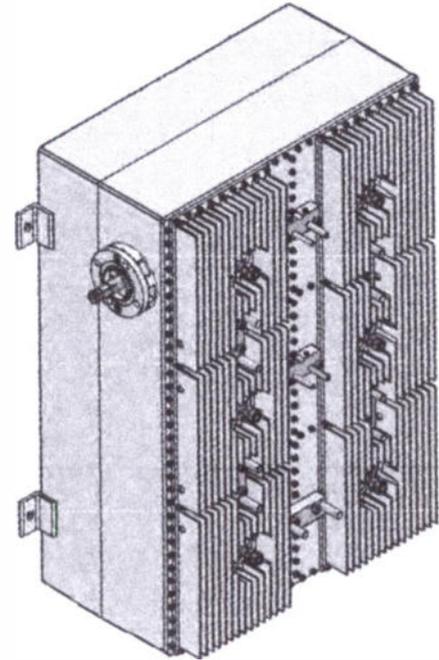
TYPICAL SPECIFICATIONS

	ATSC	DVB-T2	ISDB-T
Channel Bandwidth	Fc \pm 2.69 MHz	Fc \pm 3.885 MHz	Fc \pm 2.79 MHz
Insertion Loss	FC 0.60 dB	FC 0.45 dB	FC 0.6 dB
	Fc \pm 2.69 MHz 1.0 dB	Fc \pm 3.885 MHz 1.35 dB	Fc \pm 2.79 MHz 1.25 dB
VSWR	1.10:1	1.12:1	1.10:1
Rejection	Fc \pm 3.5 MHz 7 dB	Fc \pm 3.5 MHz 3 dB	Fc \pm 3.15 MHz 4 dB
	Fc \pm 4.0 MHz 22 dB	Fc \pm 4.0 MHz 20 dB	Fc \pm 4.5 MHz 10 dB
	Fc \pm 9 MHz 40 dB	Fc \pm 9 MHz 35 dB	Fc \pm 9 MHz 35 dB
Group Delay	200 nsec	300 nsec	450 nsec
Connectors (#)	DIN 7-16 (D)	DIN 7-16 (D)	DIN 7-16 (D)
	Type "N" (N)	Type "N" (N)	Type "N" (N)



1.5 kW 6-SECTION CROSS-COUPLED UHF BANDPASS FILTER

The JAMPRO RCEC 6"/152.4mm UHF Mask filter with heat sinks is designed to provide superior performance at an Affordable price. Cross-coupling creates steep rejection skirts and the high-Q aluminum cavities provide low passband insertion loss in a compact package.



TYPICAL SPECIFICATIONS

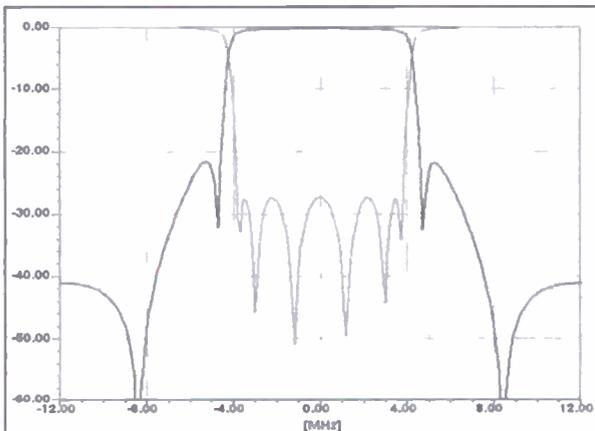
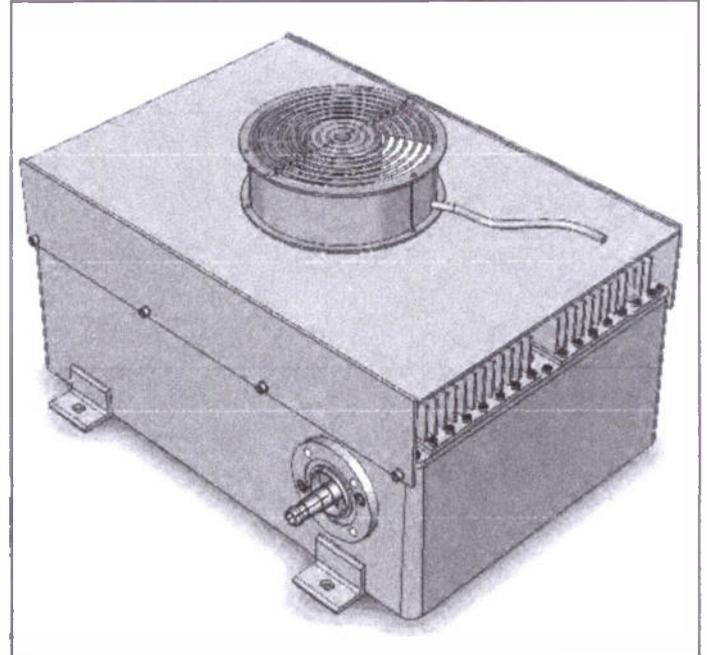
	ATSC	DVB-T2	ISDB-T
Channel Bandwidth	$F_c \pm 2.69$ MHz	$F_c \pm 3.885$ MHz	$F_c \pm 2.79$ MHz
Insertion Loss	FC 0.50 dB $F_c \pm 2.69$ MHz 1.0 dB	FC 0.35 dB $F_c \pm 3.885$ MHz 1.15 dB	FC 0.5 dB $F_c \pm 2.79$ MHz 1.2 dB
VSWR	1.10:1	1.10:1	1.10:1
Rejection	$F_c \pm 3.5$ MHz 10 dB $F_c \pm 4.0$ MHz 33 dB $F_c \pm 9$ MHz 65 dB	$F_c \pm 3.5$ MHz 4 dB $F_c \pm 4.0$ MHz 20 dB $F_c \pm 9$ MHz 35 dB	$F_c \pm 3.15$ MHz 4 dB $F_c \pm 4.5$ MHz 18 dB $F_c \pm 9$ MHz 35 dB
Group Delay	200 nsec	300 nsec	450 nsec
Connectors (#)	7/8" (1) 1-5/8" (2) 3-1/8" (3)	7/8" (1) 1-5/8" (2) 3-1/8" (3)	7/8" (1) 1-5/8" (2) 3-1/8" (3)





2.5 kW AVG, 6-SECTION CROSS-COUPLED UHF DVB-T NON-CRITICAL MASK FILTER

The JAMPRO RCEC 6"/152.4mm UHF Mask Filter with blowers designed to provide superior mask filter performance at an affordable price. Cross coupling creates steep rejection skirts and the high-Q cavities provide low passband insertion loss in a compact package.



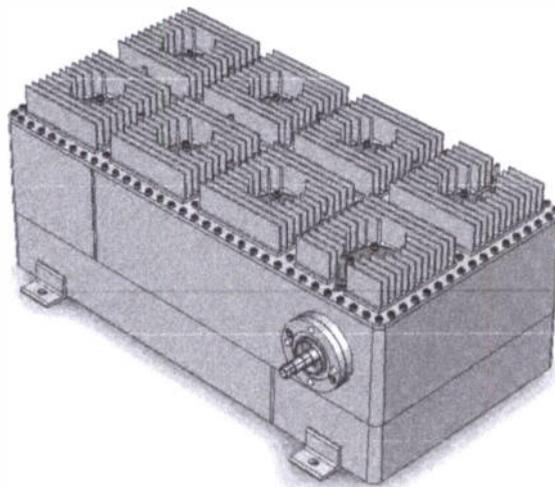
TYPICAL SPECIFICATIONS

	ATSC	DVB-T2	ISDB-T
Channel Bandwidth	$F_c \pm 2.69$ MHz	$F_c \pm 3.885$ MHz	$F_c \pm 2.79$ MHz
Insertion Loss	FC 0.50 dB	FC 0.35 dB	FC 0.5 dB
	$F_c \pm 2.69$ MHz 1.0 dB	$F_c \pm 3.885$ 1.15 dB	$F_c \pm 2.79$ MHz 1.2 dB
VSWR	1.10:1	1.10:1	1.10:1
Rejection	$F_c \pm 3.5$ MHz 10 dB	$F_c \pm 3.5$ MHz 4 dB	$F_c \pm 3.15$ MHz 4 dB
	$F_c \pm 4.0$ MHz 33 dB	$F_c \pm 4.0$ MHz 20 dB	$F_c \pm 4.5$ MHz 18 dB
	$F_c \pm 9$ MHz 65 dB	$F_c \pm 9$ MHz 35 dB	$F_c \pm 9$ MHz 35 dB
Group Delay	200 nsec	300 nsec	450 nsec
Connectors (#)	1-5/8" (2)	1-5/8" (2)	1-5/8" (2)
	3-1/8" (3)	3-1/8" (3)	3-1/8" (3)



1.5 kW 8-SECTION CROSS-COUPLED UHF BANDPASS FILTER

The JAMPRO RCEC 6"/152.4mm UHF Mask filter with heat sinks is designed to provide superior performance at an Affordable price. Cross-coupling creates steep rejection skirts and the high-Q aluminum cavities provide low passband insertion loss in a compact package.



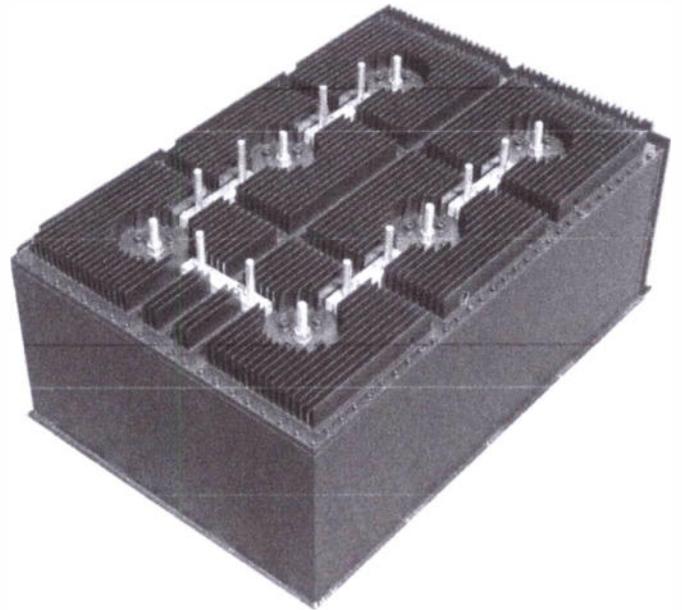
TYPICAL SPECIFICATIONS

	ATSC	DVB-T2	ISDB-T
Channel Bandwidth	$F_c \pm 2.69$ MHz	$F_c \pm 3.885$ MHz	$F_c \pm 2.79$ MHz
Insertion Loss	FC 0.70 dB	FC 0.60 dB	FC 0.75 dB
	$F_c \pm 2.69$ MHz 1.25 dB	$F_c \pm 3.885$ MHz 2.30 dB	$F_c \pm 2.79$ MHz 2.0 dB
VSWR	1.10:1	1.20:1	1.10:1
Rejection	$F_c \pm 3.5$ MHz 15 dB	$F_c \pm 3.5$ MHz 12 dB	$F_c \pm 3.15$ MHz 14 dB
	$F_c \pm 4.0$ MHz 33 dB	$F_c \pm 4.0$ MHz 35 dB	$F_c \pm 4.5$ MHz 31 dB
	$F_c \pm 9$ MHz 65 dB	$F_c \pm 9$ MHz 60 dB	$F_c \pm 9$ MHz 60 dB
Group Delay	300 nsec	600 nsec	600 nsec
Connectors (#)	7/8" (1)	7/8" (1)	7/8" (1)
	1-5/8" (2)	1-5/8" (2)	1-5/8" (2)
	3-1/8" (3)	3-1/8" (3)	3-1/8" (3)



5kW Avg, UHF 8"/203.2mm Mask Filter ATSC/DVB-T/ISDB-T

The JAMPRO RCEC 8"/203.2mm UHF Mask Filter with heat sinks is designed to provide superior mask filter performance at an affordable price. Cross coupling creates steep rejection skirts and the high-Q cavities provide low passband insertion loss in a compact design.



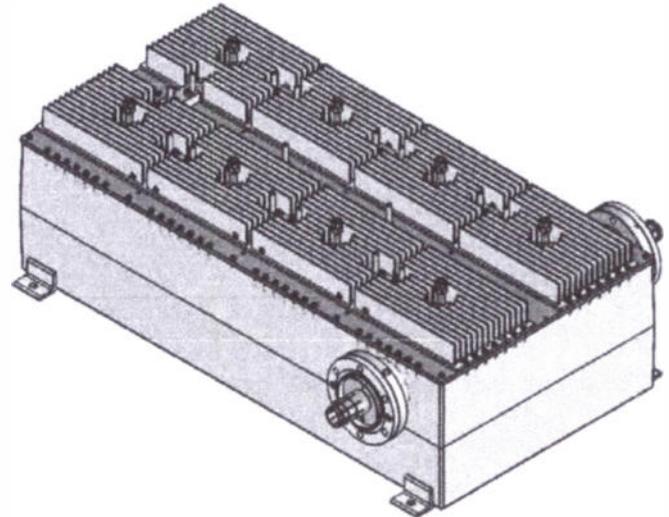
TYPICAL SPECIFICATIONS

	ATSC	DVB-T2	ISDB-T
Channel Bandwidth	$F_c \pm 2.69$ MHz	$F_c \pm 3.885$ MHz	$F_c \pm 2.79$ MHz
Insertion Loss	FC 0.40 dB	FC 0.28 dB	FC 0.4 dB
	$F_c \pm 2.69$ MHz .75 dB	$F_c \pm 3.885$ MHz .95 dB	$F_c \pm 2.79$ MHz 1.0 dB
VSWR	1.10:1	1.12:1	1.10:1
Rejection	$F_c \pm 3.5$ MHz 8 dB	$F_c \pm 3.5$ MHz 3 dB	$F_c \pm 3.15$ MHz 4 dB
	$F_c \pm 4.0$ MHz 30 dB	$F_c \pm 4.0$ MHz 20 dB	$F_c \pm 4.5$ MHz 18 dB
	$F_c \pm 9$ MHz 55 dB	$F_c \pm 9$ MHz 35 dB	$F_c \pm 9$ MHz 35 dB
Group Delay	250 nsec	300 nsec	450 nsec
Connectors (#)	1-5/8" (2)	1-5/8" (2)	1-5/8" (2)
	3-1/8" (3)	3-1/8" (3)	3-1/8" (3)



5kW Avg, UHF 8"/203.2mm Mask Filter ATSC/DVB-T/ISDB-T

The JAMPRO RCEC 8"/203.2mm UHF Mask Filter with heat sinks is designed to provide superior mask filter performance at an affordable price. Cross coupling creates steep rejection skirts and the high-Q cavities provide low passband insertion loss in a compact design.



TYPICAL SPECIFICATIONS

	ATSC	DVB-T2	ISDB-T
Channel Bandwidth	$F_c \pm 2.69$ MHz	$F_c \pm 3.885$ MHz	$F_c \pm 2.79$ MHz
Insertion Loss	FC 0.55 dB	FC 0.45 dB	FC 0.6 dB
	$F_c \pm 2.69$ MHz 1.0 dB	$F_c \pm 3.885$ MHz 1.90 dB	$F_c \pm 2.79$ MHz 1.4 dB
VSWR	1.10:1	1.15:1	1.10:1
Rejection	$F_c \pm 3.5$ MHz 12 dB	$F_c \pm 3.5$ MHz 12 dB	$F_c \pm 3.15$ MHz 14 dB
	$F_c \pm 4.0$ MHz 33 dB	$F_c \pm 4.0$ MHz 35 dB	$F_c \pm 4.5$ MHz 31 dB
	$F_c \pm 9$ MHz 65 dB	$F_c \pm 9$ MHz 60 dB	$F_c \pm 9$ MHz 60 dB
Group Delay	300 nsec	600 nsec	600 nsec
Connectors (#)	1-5/8" (2)	1-5/8" (2)	1-5/8" (2)
	3-1/8" (3)	3-1/8" (3)	3-1/8" (3)

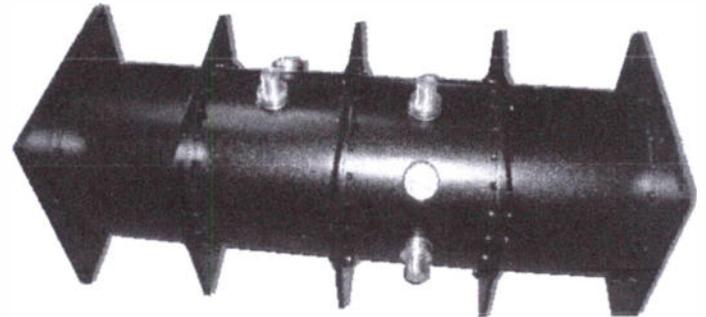




UHF Mask Filter

UHF 6 or 8-section dual mode Waveguide bandpass filter constructed with dual silver plated invar mode cavities. High isolation with very low insertion loss and a compact design is ideal for digital or analog performance.

- Waveguide dual mode cavities
- High isolation
- Compact design
- Low loss
- Convection cooling cavities
- Temperature stable
- Coaxial input/output



Typical Specification - 6-Section ATSC		Typical Specification - 8-Section ATSC	
Max Average Power Capacity	25 kW	Max Average Power Capacity	25 kW
Mask Type	Non-Critical	Mask Type	Critical
Bandwidth (BW)	$F_c \pm 2.69$ MHz.	Bandwidth (BW)	$F_c \pm 2.69$ MHz.
Insertion Loss @ F_c	0.25 dB	insertion Loss @ F_c	0.30 dB
Insertion Loss @ $F_c \pm 2.69$ MHz.	0.35 dB	Insertion Loss @ $F_c \pm 2.69$ MHz.	0.50 dB
VSWR over $F_c \pm 2.69$ MHz.	1.10:1	VSWR over $F_c \pm 2.69$ MHz.	1.10:1
Rejection @ $F_c \pm 3.5$ MHz	8 dB	Rejection @ $F_c \pm 3.5$ MHz	15 dB
Rejection @ $F_c \pm 4.0$ MHz	18 dB	Rejection @ $F_c \pm 4.0$ MHz	25 dB
Rejection @ $F_c \pm 9$ MHz	36 dB	Rejection @ $F_c \pm 9$ MHz	50 dB
Group Delay Variation (Max.) over $F_c \pm 2.69$ MHz.	250 nsec.	Group Delay Variation (Max.) over $F_c \pm 2.69$ MHz.	350 nsec.
Connectors	4-1/16" EIA Male	Connectors	4-1/16" EIA Male





RWBE-UHF

Typical Specification - 6-Section DVB-T		Typical Specification - 8-Section DVB-T	
Max Average Power Capacity	10 kW	Max Average Power Capacity	10 kW
Mask Type	Non-Critical	Mask Type	Critical
Bandwidth (BW)	$F_c \pm 3.80$ MHz.	Bandwidth (BW)	$F_c \pm 3.80$ MHz.
Insertion Loss @ F_c	0.25 dB	Insertion Loss @ F_c	0.30 dB
Insertion Loss @ $F_c \pm 3.80$ MHz.	0.5 dB	Insertion Loss @ $F_c \pm 3.80$ MHz.	0.75 dB
VSWR over $F_c \pm 3.80$ MHz.	1.12:1	VSWR over $F_c \pm 3.80$ MHz.	1.12:1
Rejection @ $F_c \pm 4.2$ MHz	4 dB	Rejection @ $F_c \pm 4.2$ MHz	9 dB
Rejection @ $F_c \pm 6.0$ MHz	18 dB	Rejection @ $F_c \pm 6.0$ MHz	24 dB
Rejection @ $F_c \pm 12$ MHz	35 dB	Rejection @ $F_c \pm 12$ MHz	55 dB
Group Delay Variation (Max.) over $F_c \pm 3.80$ MHz.	300 nsec.	Group Delay Variation (Max.) over $F_c \pm 3.80$ MHz.	500 nsec.
Connectors	3-1/8" EIA Male	Connectors	3-1/8" EIA Male

Typical Specification - 6-Section DVB-T2		Typical Specification - 8-Section DVB-T2	
Max Average Power Capacity	10 kW	Max Average Power Capacity	10 kW
Mask Type	Non-Critical	Mask Type	Critical
Bandwidth (BW)	$F_c \pm 3.885$ MHz.	Bandwidth (BW)	$F_c \pm 3.885$ MHz.
Insertion Loss @ F_c	0.25 dB	Insertion Loss @ F_c	0.30 dB
Insertion Loss @ $F_c \pm 3.885$ MHz.	0.75 dB	Insertion Loss @ $F_c \pm 3.885$ MHz.	0.90 dB
VSWR over $F_c \pm 3.885$ MHz.	1.12:1	VSWR over $F_c \pm 3.885$ MHz.	1.12:1
Rejection @ $F_c \pm 4.2$ MHz	4 dB	Rejection @ $F_c \pm 4.2$ MHz	9 dB
Rejection @ $F_c \pm 6.0$ MHz	18 dB	Rejection @ $F_c \pm 6.0$ MHz	24 dB
Rejection @ $F_c \pm 12$ MHz	35 dB	Rejection @ $F_c \pm 12$ MHz	55 dB
Group Delay Variation (Max.) over $F_c \pm 3.885$ MHz.	350 nsec.	Group Delay Variation (Max.) over $F_c \pm 3.885$ MHz.	550 nsec.
Connectors	3-1/8" EIA Male	Connectors	3-1/8" EIA Male

Typical Specification - 6-Section ISDB-T		Typical Specification - 8-Section ISDB-T	
Max Average Power Capacity	10 kW	Max Average Power Capacity	10 kW
Mask Type	Non-Critical	Mask Type	Critical
Bandwidth (BW)	$F_c \pm 2.79$ MHz.	Bandwidth (BW)	$F_c \pm 2.79$ MHz.
Insertion Loss @ F_c	0.35 dB	Insertion Loss @ F_c	0.45 dB
Insertion Loss @ $F_c \pm 2.79$ MHz.	0.75 dB	Insertion Loss @ $F_c \pm 2.79$ MHz.	1.0 dB
VSWR over $F_c \pm 2.79$ MHz.	1.10:1	VSWR over $F_c \pm 2.79$ MHz.	1.10:1
Rejection @ $F_c \pm 3.15$ MHz	7 dB	Rejection @ $F_c \pm 3.15$ MHz	14 dB
Rejection @ $F_c \pm 4.5$ MHz	27 dB	Rejection @ $F_c \pm 4.5$ MHz	31 dB
Rejection @ $F_c \pm 9$ MHz	40 dB	Rejection @ $F_c \pm 9$ MHz	60 dB
Group Delay Variation (Max.) over $F_c \pm 2.79$ MHz.	500 nsec.	Group Delay Variation (Max.) over $F_c \pm 2.79$ MHz.	650 nsec.
Connectors	3-1/8" EIA Male	Connectors	3-1/8" EIA Male



COMBINERS

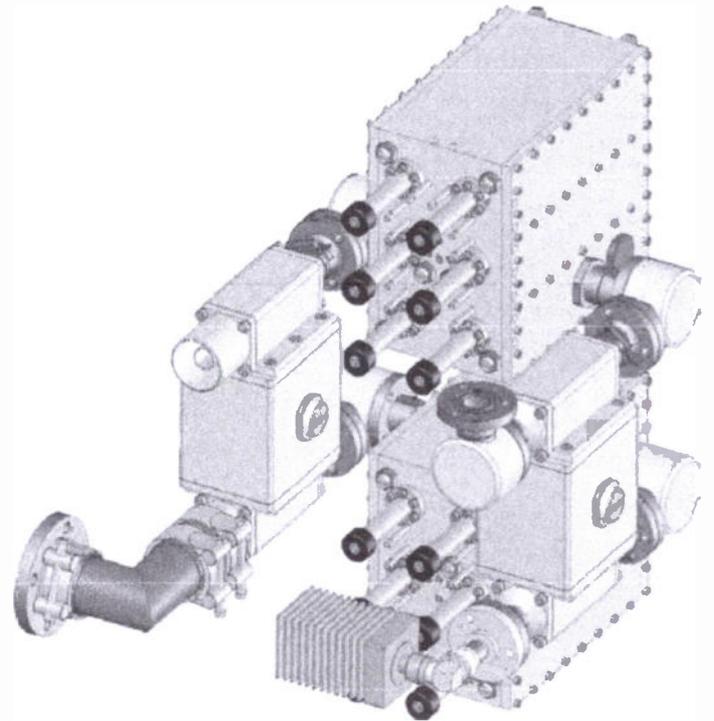




UHF Mask Filter / Combiner

JAMPRO RF Systems' UHF Constant Impedance NTSC, PAL, DVB-T/T2, ISDB-T, DTV Mask Filter / Combining Module provides outstanding performance in a compact design. The RCCC-2T1-1UM combiner module and filter provides excellent results in the bandpass and channel combining application, as well as providing mask filtering. Each unit is electrically and mechanically performance tested to ensure strict adherence to Jampro's superior level of quality. The combiner is designed for applications where size concerns are a premium.

- UHF 470-860 MHz
- Up to 0.5kW average or 1kw pk sync per Channel
- Rugged High Quality Design
- Constant Impedance (Balance Type)
- Integrated DTV Mask Filtering



TYPICAL SPECIFICATIONS

		470-860 MHz		
		1 channel minimum		
		6 poles / cavities, coaxial		
		<1.10:1		
		6 MHz	8 MHz	8 MHz
			8 MHz	(DVB-T2)
Frequency Range				
Channel Spacing				
Filter Type				
VSWR				
Channel Bandwidth				
Insertion Loss	(ATSC)	(ISDB-T)	(DVB-T2)	
Narrowband (NB)	$f_0 < 1.35 \text{ dB}$	$f_0 < 1.35 \text{ dB}$	$f_0 < 1.25 \text{ dB}$	
NB Pass Bandwidth	$f_0 \pm 2.69\text{MHz} < 1.9 \text{ dB}$	$f_0 \pm 2.79\text{MHz} < 2.0 \text{ dB}$	$f_0 \pm 3.885\text{MHz} < 2.2 \text{ dB}$	
NB Rejection Mask	$f_0 \pm 3.50\text{MHz} > 7 \text{ dB}$	$f_0 \pm 3.15\text{MHz} > 4 \text{ dB}$	$f_0 \pm 4.20\text{MHz} > 3 \text{ dB}$	
	$f_0 \pm 4.00\text{MHz} > 22 \text{ dB}$	$f_0 \pm 4.50\text{MHz} > 18 \text{ dB}$	$f_0 \pm 6.00\text{MHz} > 20 \text{ dB}$	
	$f_0 \pm 9.00\text{MHz} > 40 \text{ dB}$	$f_0 \pm 9.00\text{MHz} > 35 \text{ dB}$	$f_0 \pm 12.00\text{MHz} > 40 \text{ dB}$	
Wideband (WB)	$< 0.15 \text{ dB}$	$< 0.15 \text{ dB}$	$< 0.15 \text{ dB}$	
Isolation				
	NB to WB	$> 32 \text{ dB}$		
	WB to NB	$> 50 \text{ dB}$		
Power				
	NB Input	$\leq 0.5\text{kW Avg,}$		
	WB Input	$\leq 4.5\text{kW Avg}$		
	Output	$\leq 5\text{kW Avg}$		
Connectors				
	Inputs	7/8" EIA; 1-5/8" EIA (*other size available)		
	Output	1-5/8" EIA (*other sizes available)		
Dimensions		18" x 14" x 19.5" (460mm x 355mm x 500mm)		
Weight		$\approx 55 \text{ lbs (25 kgs)}$		

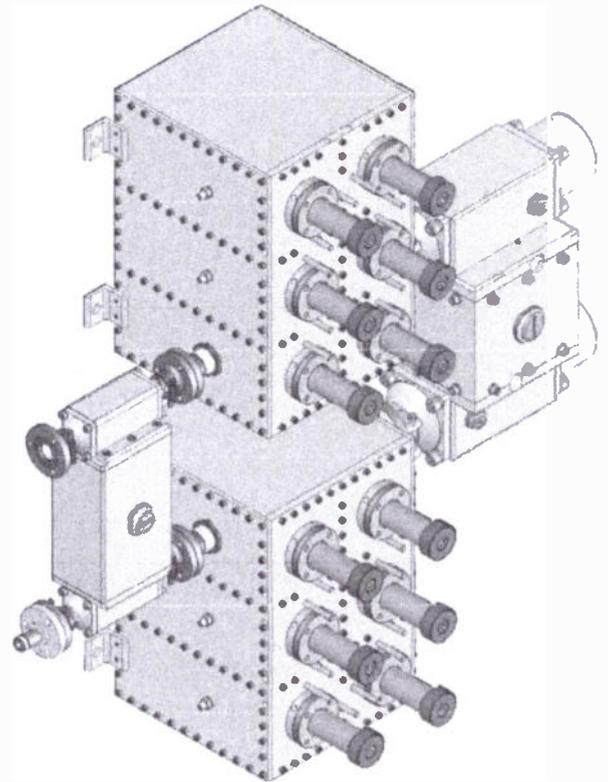




UHF Mask Filter / Combiner

JAMPRO RF Systems' UHF Constant Impedance DVB-T/T2, ISDB-T, DTV Mask Filter / Combining Module provides outstanding performance in a compact design. The RCCC-3F1-1UM combiner module and filter provides excellent results in the bandpass and channel combining application, as well as providing mask filtering. Each unit is electrically and mechanically performance tested to ensure strict adherence to Jampro's superior level of quality. The combiner is designed for applications where size concerns are a premium.

- UHF 470-860 MHz
- Up to 1.0kW average per Channel
- Rugged High Quality Design
- Constant Impedance (Balance Type)
- Integrated DTV Mask Filtering



TYPICAL SPECIFICATIONS

Frequency Range	470-860 MHz		
Channel Spacing	1 channel minimum		
Filter Type	6 poles / cavities, coaxial		
VSWR	<1.10:1		
Channel Bandwidth	6 MHz		8 MHz
Insertion Loss	(ATSC)	(ISDB-T)	(DVB-T2)
Narrowband (NB)	$f_0 < 0.75$ dB	$f_0 < 0.75$ dB	$f_0 < 0.7$ dB
NB Pass Bandwidth	$f_0 \pm 2.69$ MHz < 1.2 dB	$f_0 \pm 2.79$ MHz < 1.4 dB	$f_0 \pm 3.885$ MHz < 1.5 dB
NB Rejection Mask	$f_0 \pm 3.50$ MHz > 7 dB	$f_0 \pm 3.15$ MHz > 4 dB	$f_0 \pm 4.200$ MHz > 3 dB
	$f_0 \pm 4.00$ MHz > 22 dB	$f_0 \pm 4.50$ MHz > 18 dB	$f_0 \pm 6.000$ MHz > 20 dB
	$f_0 \pm 9.00$ MHz > 40 dB	$f_0 \pm 9.00$ MHz > 35 dB	$f_0 \pm 12.000$ > 40 dB
Wideband (WB)	< 0.12 dB	< 0.12 dB	< 0.12 dB
Isolation	NB to WB	> 32 dB	
	WB to NB	> 50 dB	
Power	NB Input	≤ 1.0 kw Avg	
	WB Input	≤ 9.0 kw Avg	
	Output	≤ 10.0 kw Avg	
Connectors	Inputs	7/8" EIA; 1-5/8" EIA; 3-1/8" EIA (*other size available)	
	Output	3-1/8" EIA (*other sizes available)	
Dimensions	34" x 16" x 36" (860mm x 405mm x 915mm)		
Weight	≈ 165 lbs (75 kgs)		

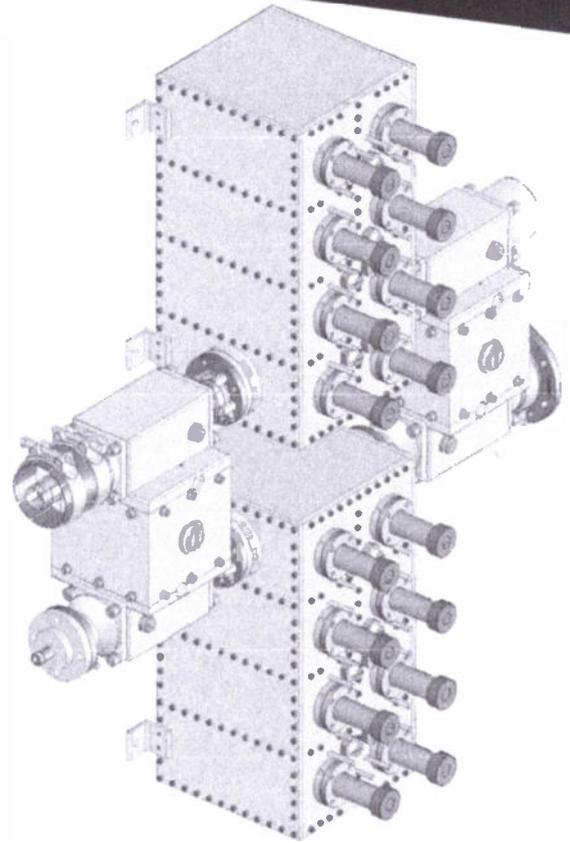


RCCC-3F1-AUM

UHF Mask Filter / Combiner

JAMPRO RF Systems' UHF Constant Impedance DVB-T/T2, ISDB-T, DTV Mask Filter / Combining Module provides outstanding performance in a compact design. The RCCC-3F1-AUM combiner module and filter provides excellent results in the bandpass and channel combining application, as well as providing mask filtering. Each unit is electrically and mechanically performance tested to ensure strict adherence to Jampro's superior level of quality. The combiner is designed for applications where size concerns are a premium.

- UHF 470-860 MHz
- Up to 1.0kW average per Channel
- Rugged High Quality Design
- Constant Impedance (Balance Type)
- Integrated DTV Mask Filtering



TYPICAL SPECIFICATIONS

Frequency Range	470-860 MHz		
Channel Spacing	Adjacent, 0 channel minimum		
Filter Type	8 poles / cavities, coaxial		
VSWR	<1.10:1		
Channel Bandwidth	6 MHz		8 MHz
Insertion Loss	(ATSC)	(ISDB-T)	(DVB-T2)
Narrowband (NB)	$f_0 < 0.95 \text{ dB}$	$f_0 < 0.95 \text{ dB}$	$f_0 < 0.9 \text{ dB}$
NB Pass Bandwidth	$f_0 \pm 2.69 \text{ MHz} < 1.8 \text{ dB}$	$f_0 \pm 2.79 \text{ MHz} < 2.4 \text{ dB}$	$f_0 \pm 3.885 \text{ MHz} < 2.2 \text{ dB}$
NB Rejection Mask	$f_0 \pm 3.50 \text{ MHz} > 15 \text{ dB}$	$f_0 \pm 3.15 \text{ MHz} > 14 \text{ dB}$	$f_0 \pm 4.200 \text{ MHz} > 12 \text{ dB}$
	$f_0 \pm 4.00 \text{ MHz} > 33 \text{ dB}$	$f_0 \pm 4.50 \text{ MHz} > 31 \text{ dB}$	$f_0 \pm 6.000 \text{ MHz} > 35 \text{ dB}$
	$f_0 \pm 9.00 \text{ MHz} > 65 \text{ dB}$	$f_0 \pm 9.00 \text{ MHz} > 60 \text{ dB}$	$f_0 \pm 12.000 > 65 \text{ dB}$
Wideband (WB)	< 0.12 dB	< 0.12 dB	< 0.12 dB
Isolation	NB to WB	> 32 dB	
	WB to NB	> 50 dB	
Power	NB Input	$\leq 1.0 \text{ kW Avg}$	
	WB Input	$\leq 9.0 \text{ kW Avg}$	
	Output	$\leq 10.0 \text{ kW Avg}$	
Connectors	Inputs	7/8" EIA; 1-5/8" EIA; 3-1/8" EIA (*other size available)	
	Output	3-1/8" EIA (*other sizes available)	
Dimensions	34" x 16" x 44" (860mm x 405mm x 1120mm)		
Weight	$\approx 190 \text{ lbs (86 kgs)}$		

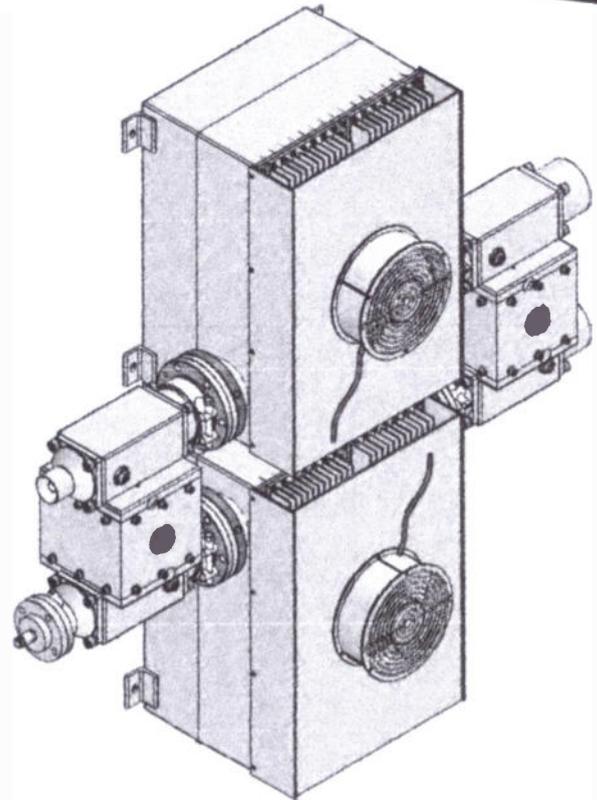




UHF Mask Filter / Combiner

JAMPRO RF Systems' UHF Constant Impedance DVB-T/T2, ISDB-T, DTV Mask Filter / Combining Module provides outstanding performance in a compact design. The RCCC-301-1UMB combiner module and filter provides excellent results in the bandpass and channel combining application, as well as providing mask filtering. Each unit is electrically and mechanically performance tested to ensure strict adherence to Jampro's superior level of quality. The combiner is designed for applications where size concerns are a premium.

- UHF 470-860 MHz
- Up to 5kW average per Channel
- Rugged High Quality Design
- Constant Impedance (Balance Type)
- Integrated DTV Mask Filtering



TYPICAL SPECIFICATIONS

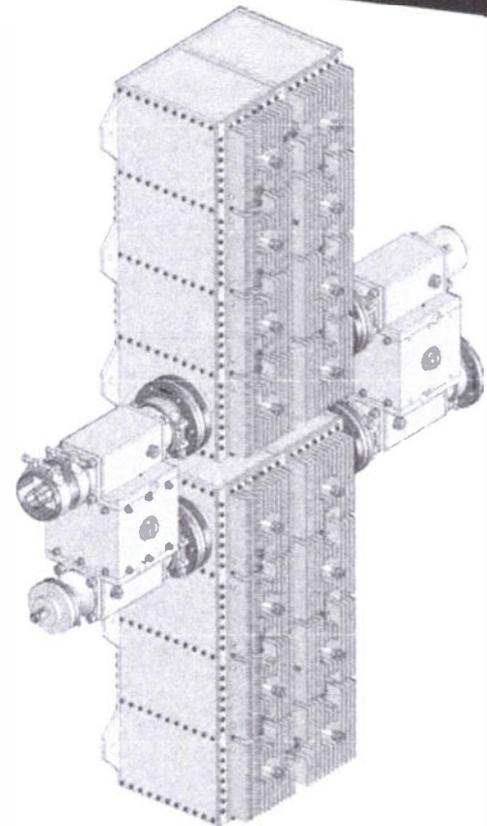
	6 MHz	8 MHz
Channel Bandwidth	6 MHz	8 MHz
Channel Spacing	1 channel minimum	
VSWR	<1.10:1	
Insertion Loss	(ATSC) $f_0 < 0.50$ dB	(ISDB-T) $f_0 < 0.50$ dB
	(DVB-T2) $f_0 < 0.50$ dB	
Narrowband (NB)	$f_0 \pm 2.69$ MHz < 1.0 dB	$f_0 \pm 2.79$ MHz < 1.2 dB
NB Pass Bandwidth	$f_0 \pm 3.50$ MHz > 10 dB	$f_0 \pm 3.15$ MHz > 4 dB
NB Rejection Mask	$f_0 \pm 4.00$ MHz > 33 dB	$f_0 \pm 4.50$ MHz > 18 dB
	$f_0 \pm 9.00$ MHz > 65 dB	$f_0 \pm 9.00$ MHz > 35 dB
Wideband (WB)	< 0.1 dB	< 0.1 dB
Isolation		
	NB to WB	> 32 dB
	WB to NB	> 50 dB
Power		
	NB Input	≤ 5 kw Avg
	WB Input	≤ 15 kw Avg
	Output	≤ 20 kw Avg
Connectors		
	Inputs	1-5/8" EIA (*other size available)
	Output	3-1/8" EIA (*other sizes available)
Dimensions	40" x 16" x 40" (1000mm x 400mm x 1000mm)	
Weight	≈ 220 lbs (100 kgs)	



UHF Mask Filter / Combiner

JAMPRO RF Systems' UHF Constant Impedance DVB-T/T2, ISDB-T, DTV Mask Filter / Combining Module provides outstanding performance in a compact design. The RCCC-301-AUMH combiner module and filter provides excellent results in the bandpass and channel combining application, as well as providing mask filtering. Each unit is electrically and mechanically performance tested to ensure strict adherence to Jampro's superior level of quality. The combiner is designed for applications where size concerns are a premium.

- UHF 470-860 MHz
- Up to 3.0kW average per Channel
- Rugged High Quality Design
- Constant Impedance (Balance Type)
- Integrated DTV Mask Filtering



TYPICAL SPECIFICATIONS

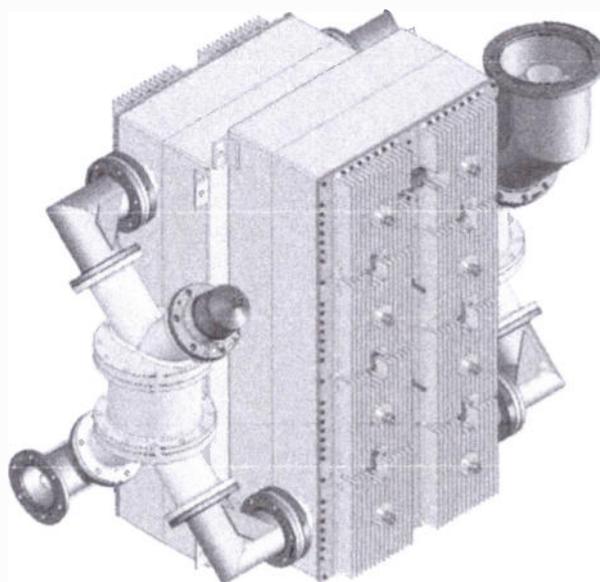
Frequency Range	470-860 MHz		
Channel Spacing	Adjacent, 0 channel minimum		
Filter Type	8 pcles / cavities, coaxial		
VSWR	<1.10:1		
Channel Bandwidth	6 MHz		8 MHz
Insertion Loss	(ATSC) $f_0 < 0.75$ dB	(ISDB-T) $f_0 < 0.8$ dB	(DVB-T2) $f_0 < 0.7$ dB
Narrowband (NB)			
NB Pass Bandwidth	$f_0 \pm 2.69$ MHz < 1.4 dB	$f_0 \pm 2.79$ MHz < 2.0dB	$f_0 \pm 3.885$ MHz < 1.9 dB
NB Rejection Mask	$f_0 \pm 3.50$ MHz > 15 dB	$f_0 \pm 3.15$ MHz > 14 dB	$f_0 \pm 4.200$ MHz > 12 dB
	$f_0 \pm 4.00$ MHz > 33 dB	$f_0 \pm 4.50$ MHz > 31 dB	$f_0 \pm 6.000$ MHz > 35 dB
	$f_0 \pm 9.00$ MHz > 65 dB	$f_0 \pm 9.00$ MHz > 60 dB	$f_0 \pm 12.000$ > 65 dB
Wideband (WB)	< 0.12 dB	< 0.12 dB	< 0.12 dB
Isolation			
NB to WB		> 32 dB	
WB to NB		> 50 dB	
Power			
NB Input		≤ 3.0 kw Avg	
WB Input		≤ 17.0 kw Avg	
Output		≤ 20.0 kw Avg	
Connectors			
Inputs	1-5/8" EIA; 3-1/8" EIA (*other size available)		
Output	3-1/8" EIA (*other sizes available)		
Dimensions	40" x 16" x 60" (1015mm x 405mm x 1525mm)		
Weight	≈ 275 lbs (125 kgs)		



UHF Mask Filter / Combiner

JAMPRO RF Systems' UHF Constant Impedance DVB-T/T2, ISDB-T, DTV Mask Filter / Combining Module provides outstanding performance in a compact design. The RCCC-681-AUMH combiner module and filter provides excellent results in the bandpass and channel combining application, as well as providing mask filtering. Each unit is electrically and mechanically performance tested to ensure strict adherence to Jampro's superior level of quality. The combiner is designed for applications where size concerns are a premium.

- UHF 470-860 MHz
- Up to 10.0kW average per Channel
- Higher powers available with cooling
- Rugged High Quality Design
- Constant Impedance (Balance Type)
- Integrated DTV Mask Filtering



TYPICAL SPECIFICATIONS

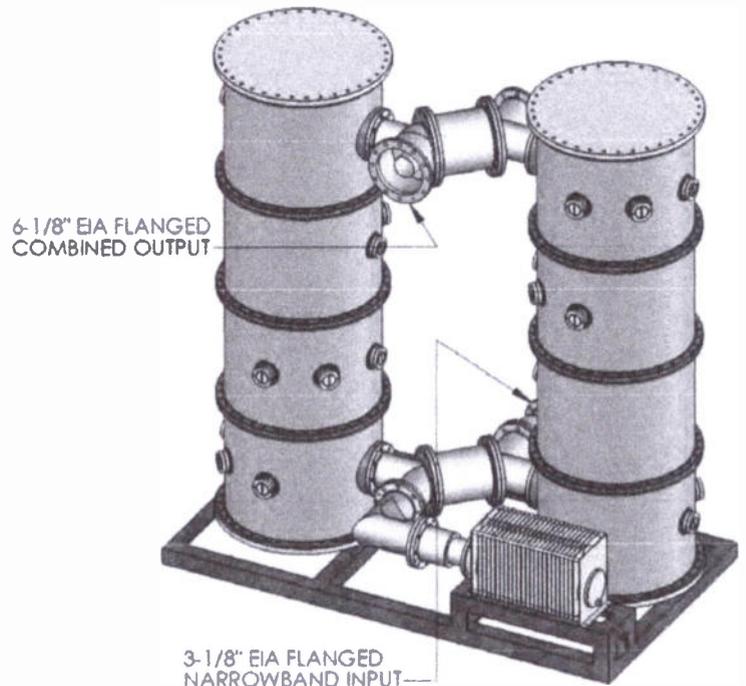
Frequency Range	470-860 MHz		
Channel Spacing	Adjacent, 0 channel minimum		
Filter Type	8 poles / cavities, coaxial		
VSWR	<1.10:1		
Channel Bandwidth	6 MHz		8 MHz
Insertion Loss	(ATSC)	(ISDB-T)	(DVB-T2)
Narrowband (NB)	$f_0 < 0.65$ dB	$f_0 < 0.7$ dB	$f_0 < 0.55$ dB
NB Pass Bandwidth	$f_0 \pm 2.69$ MHz < 1.2dB	$f_0 \pm 2.79$ MHz < 1.5dB	$f_0 \pm 3.885$ MHz < 1.9 dB
NB Rejection Mask	$f_0 \pm 3.50$ MHz > 15 dB	$f_0 \pm 3.15$ MHz > 14 dB	$f_0 \pm 4.200$ MHz > 12 dB
	$f_0 \pm 4.00$ MHz > 33 dB	$f_0 \pm 4.50$ MHz > 31 dB	$f_0 \pm 6.000$ MHz > 35 dB
	$f_0 \pm 9.00$ MHz > 65 dB	$f_0 \pm 9.00$ MHz > 60 dB	$f_0 \pm 12.000$ > 65 dB
Wideband (WB)	< 0.1 dB	< 0.1 dB	< 0.1 dB
Isolation	NB to WB	> 32 dB	
	WB to NB	> 50 dB	
Power	NB Input	≤ 10.0 kw Avg	
	WB Input	≤ 50.0 kw Avg	
	Output	≤ 60.0 kw Avg	
Connectors	Inputs	3-1/8" EIA (*other sizes available)	
	Output	6-1/8" EIA (*other sizes available)	
Dimensions	40" x 40" x 44" (1015mm x 1015mm x 1145mm)		
Weight	≈ 440 lbs (200 kgs)		



UHF Mask Filter / Combiner

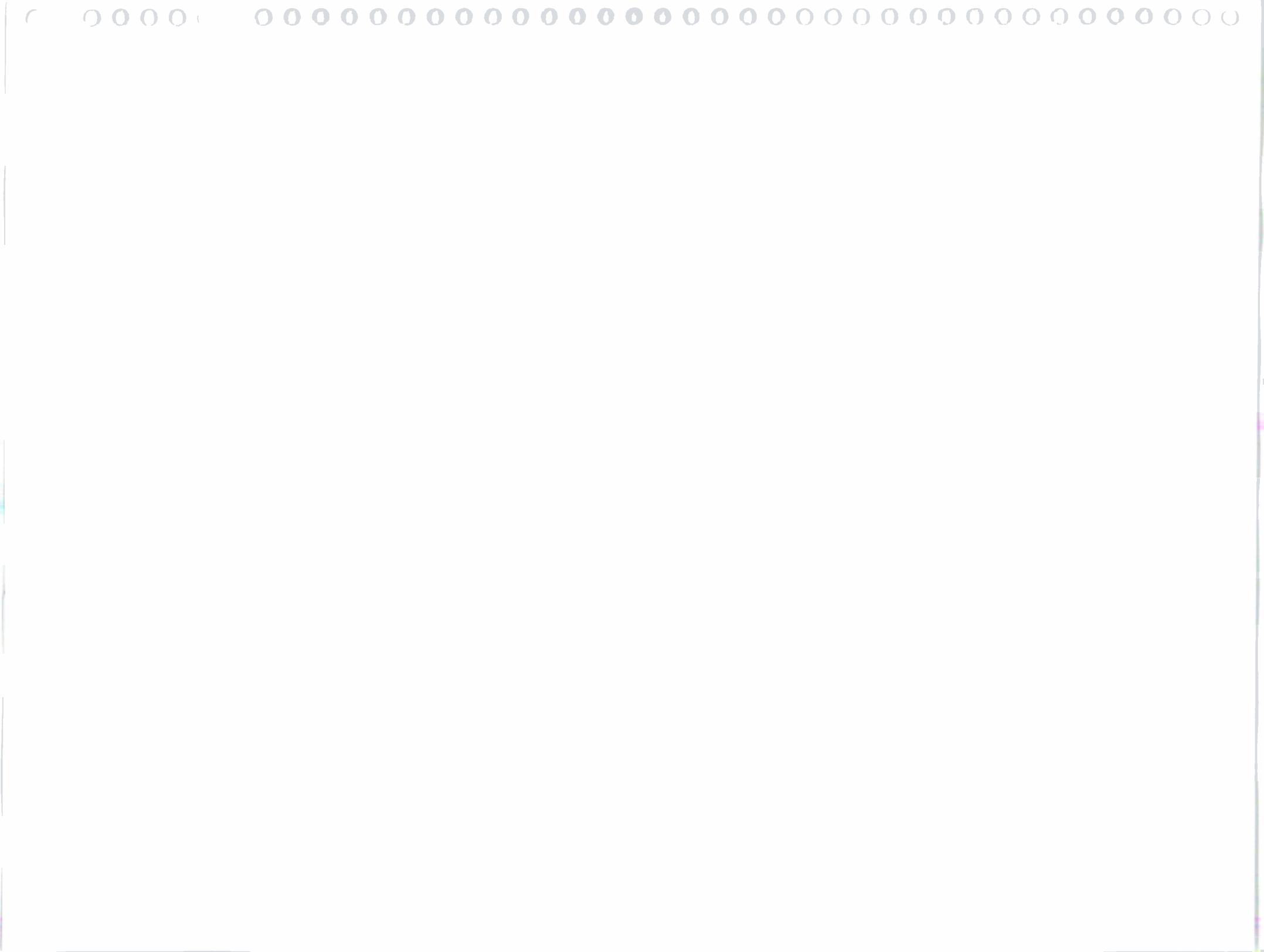
JAMPRO RF Systems' UHF Constant Impedance DVB-T/T2, ISDB-T, DTV Mask Filter / Combing Module provides outstanding performance in a compact design. The RCCW-6E1-AUM combiner module employs low loss Cylindrical Waveguide bandpass filters and broadband Coaxial 3-dB couplers. This combination provides excellent results in the bandpass and channel combing application, as well as providing mask filtering. Each unit is electrically and mechanically performance tested to ensure strict adherence to Jampro's superior level of quality. The combiner is designed for application where size concerns are a premium along with high power.

- UHF 470-860 MHz
- Up to 20.0kW average per Channel
- Higher powers available
- Rugged High Quality Design
- Constant Impedance (Balance Type)
- Integrated DTV Mask Filtering



TYPICAL SPECIFICATIONS

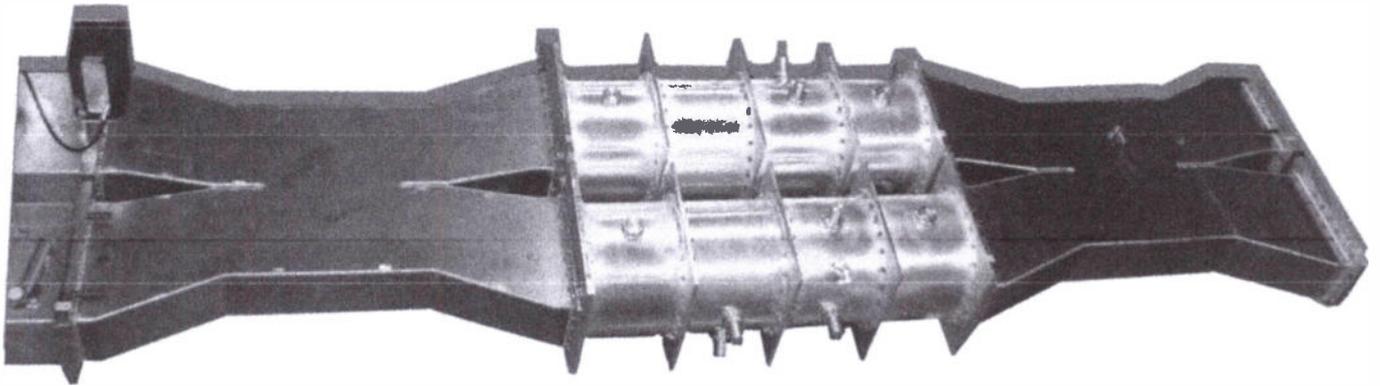
Frequency Range	470-860 MHz		
Channel Spacing	Adjacent, 0 channel minimum		
Filter Type	8 poles / cavities, coaxial		
VSWR	<1.10:1		
Channel Bandwidth	6 MHz		8 MHz
Insertion Loss	(ATSC)	(ISDB-T)	(DVB-T2)
Narrowband (NB)	$f_0 < 0.3 \text{ dB}$	$f_0 < 0.35 \text{ dB}$	$f_0 < 0.25 \text{ dB}$
NB Pass Bandwidth	$f_0 \pm 2.69 \text{ MHz} < 0.8 \text{ dB}$	$f_0 \pm 2.79 \text{ MHz} < 1.1 \text{ dB}$	$f_0 \pm 3.885 < 0.9 \text{ dB}$
NB Rejection Mask	$f_0 \pm 3.50 \text{ MHz} > 15 \text{ dB}$	$f_0 \pm 3.15 \text{ MHz} > 14 \text{ dB}$	$f_0 \pm 4.200 > 12 \text{ dB}$
	$f_0 \pm 4.00 \text{ MHz} > 33 \text{ dB}$	$f_0 \pm 4.50 \text{ MHz} > 31 \text{ dB}$	$f_0 \pm 6.000 > 35 \text{ dB}$
	$f_0 \pm 9.00 \text{ MHz} > 65 \text{ dB}$	$f_0 \pm 9.00 \text{ MHz} > 60 \text{ dB}$	$f_0 \pm 12.000 > 65 \text{ dB}$
Wideband (WB)	$< 0.1 \text{ dB}$	$< 0.1 \text{ dB}$	$< 0.1 \text{ dB}$
Isolation			
NB to WB		$> 32 \text{ dB}$	
WB to NB		$> 50 \text{ dB}$	
Power			
NB Input		$\leq 20.0 \text{ kW Avg}$	
WB Input		$\leq 40.0 \text{ kW Avg}$	
Output		$\leq 60.0 \text{ kW Avg}$	
Connectors			
Inputs		3-1/8" EIA (*other sizes available)	
Output		6-1/8" EIA (*other sizes available)	
Dimensions	40" x 60" x 80" (1015mm x 1525mm x 2030mm)		
Weight	$\approx 1000 \text{ lbs (455kgs)}$		





RWCE

UHF WAVEGUIDE FILTER/COMBINER



Waveguide constant impedance cross-coupled combiner provides the high isolation needed for adjacent channel combining applications. The RWCE series combiners consist of two RWBE filters placed between two RWHE 3-dB hybrids. Out of band reflections are absorbed in the supplied absorber load. This system allows different high power UHF channels to combine & use one common antenna /feed system while still maintaining low insertion loss.

UHF Bands IV & V

Power levels up to 120 kW per channel

Rugged high quality design

Low insertion loss

High isolation

