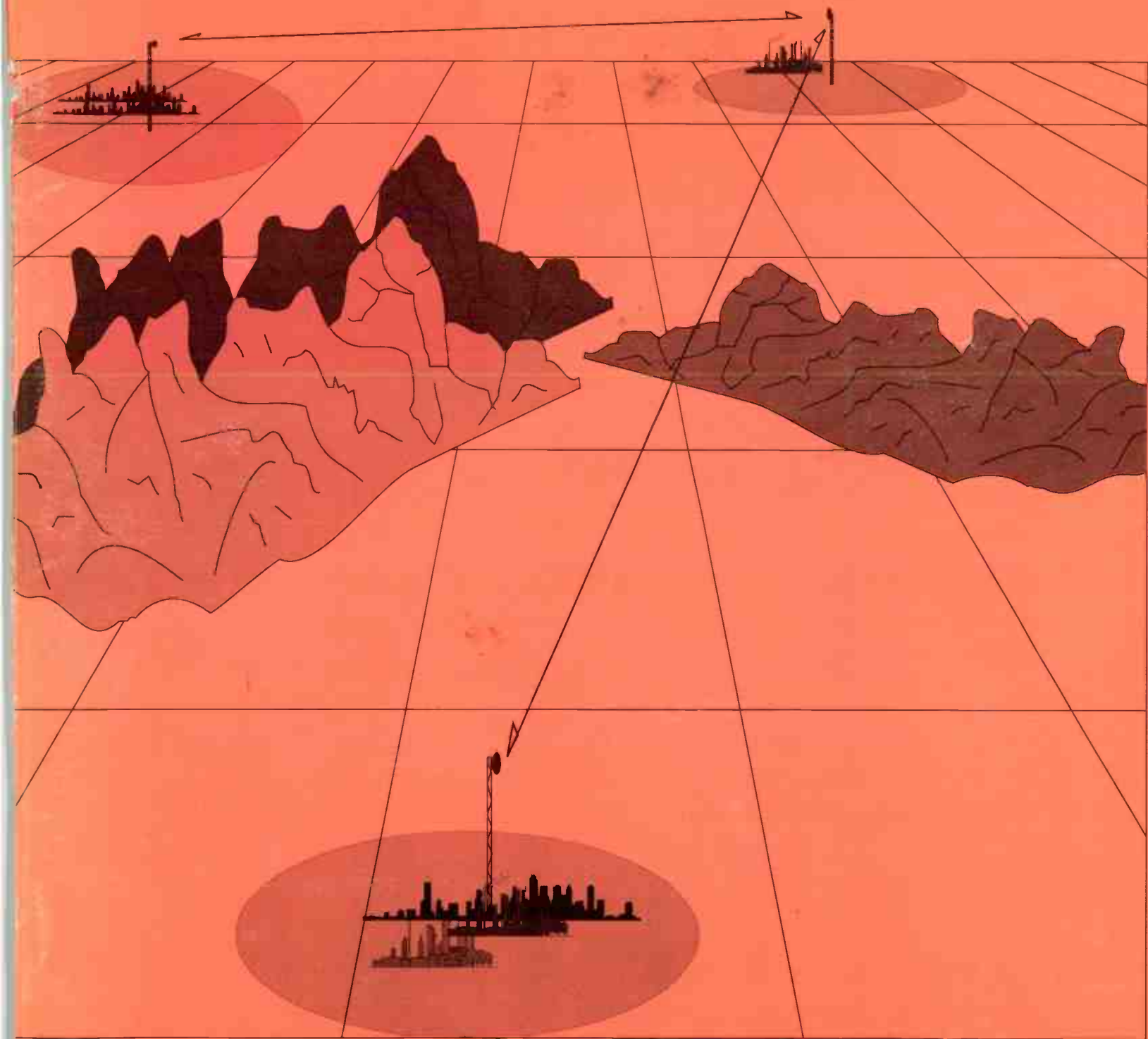


MARTI *The performance-value leader in Broadcast equipment*



GENERAL CATALOG 1991

ACCEPTANCE OF ORDERS

All orders are subject to acceptance in writing by Seller. All orders must be confirmed by purchase order signed by Buyer. Signed orders via FAX will be accepted if they meet our terms and conditions of sale.

PRICES

All prices are shown F.O.B. Seller's plant and are subject to change without notice. Prices are in U.S. dollars and do not include export packing, insurance, duties, Federal, State or local sales or excise taxes.

TERMS OF PAYMENT

All orders are subject to approval of Seller's Credit Department. Payment is due net 30 days from date of invoice. Buyer is responsible for all reasonable attorney and/or collection agency fees should action become necessary by reason of Buyer's default. Orders over \$500.00 require a 25% downpayment.

SHIPPING TERMS

Shipments F.O.B. Seller's plant will be sent transportation charges collect unless prior arrangements are agreed upon in writing. In the absence of specific instructions, Seller will ship by method deemed appropriate by Seller.

TITLE TO GOODS AND RISK OF LOSS

Title to goods shall pass to the Buyer upon delivery to carrier and risk of loss or damage shall thereafter rest with the Buyer. Claims for damage or loss while material is in transit must be made against the carrier by the Buyer. All claims for shortage must be made within thirty days after the date of shipment of material. Claims for damage or loss in transit must be made immediately against the carrier by the Buyer.

DELAYS

All scheduled delivery dates are subject to delays caused by contingencies beyond Seller's reasonable control. Seller is not liable for failure to perform due to any such contingency.

SPECIFICATION CHANGES

All designs and specifications of Seller's products are subject to change without notice.

CANCELLATION

Cancellation of, or changes to acknowledged order by the Buyer are accepted only upon the terms that protect the Seller against loss.

LIMITED WARRANTY

The Seller warrants that, at the time of shipment, the products manufactured by the Seller are free from defects in material and workmanship. The Seller's obligation under this warranty is limited to replacement or repair of such products within one year from the date of shipment (two years on STL'S).

The Seller is in no event liable for consequential damages, installation cost or other costs of any nature as a result of the use of the products manufactured or supplied by the Seller whether used in accordance with instructions or not.

This warranty is in lieu of all others, either expressed or implied. No representative is authorized to assume for the Seller any other liability in connection with seller's products.

RETURNED MATERIAL

Material cannot be returned for credit without written authorization. Such material is subject to a handling charge of not less 15% upon return and inspection of material at factory. Credit for returned material is issued by the Seller only to the original purchaser. Freight charges for returned material are the responsibility of the Buyer.

**MARTI STL-10 STUDIO-TRANSMITTER LINKS
INTERCITY RELAY PACKAGES**

MARTI

FREQUENCY BAND	STL TRANSMITTERS AND RECEIVERS - NO ANTENNAS	STL MONAURAL SYSTEMS WITH ANTENNAS	STL STEREO SYSTEMS WITH ANTENNAS
950 MHZ	Package 50 Mono \$3,290.00 1 STL - 10/950 transmitter 1 R-10/950 receiver Package 51 \$7,005.00 2 STL - 10/950 transmitter 2 R - 10/950 receiver 1 HRC - 10 transmitter combiner 1 MTS - 1 receiver combiner	Package 50MA \$4,367.00 1 STL - 10/950 transmitter 1 R - 10/950 receiver 2 PA48 4' parabolic antennas 2 K-1 weatherproofing kits 2 PG - 1.7B jumper cables * Two "N" female and two "N" male connectors and 1/2" transmission line required.	Package 51SA \$8,082.00 2 STL - 10/950 transmitter 2 R-10/950 receiver 1 HRC-10 transmitter combiner 1 MTS-1 receiver combiner 2 PA48 4' parabolic antennas 2 PG - 1.7B jumper cables 2 K-1 weatherproofing kits * Two "N" female and two "N" male connectors and 1/2" transmission line required.
150 MHZ Export Only	Package 52 \$3,290.00 1 STL - 10/150 transmitter 1 R-10/150 receiver	Package 52MA \$3,694.00 1 STL - 10/150 transmitter 1 R-10/150 receiver 2 YC-150 Yagi antennas 2 PG - 2B jumper cables 2 K-1 grounding kits * Two "N" female and two "N" male connectors and 1/2" transmission line required.	Package 52SA \$7,251.00 2 STL - 10/150 transmitter 2 R-10/150 receiver 3 YC-150 Yagi antennas 3 PG - 2B jumper cables 1 MTS-1 receiver combiner 3 K-1 grounding kits * Three "N" female and two "N" male connectors and 1/2" transmission line required.
215 MHZ Export Only	Package 53 \$3,290.00 1 STL - 10/215 transmitter 1 R-10/215 receiver	Package 53MA \$3,694.00 1 STL - 10/215 transmitter 1 R-10/215 receiver 2 YC-215 Yagi antennas 2 PG - 2B jumper cables 2 K-1 grounding kits * Two "N" female and two "N" male connectors and 1/2" transmission line required.	Package 53SA \$7,251.00 2 STL - 10/215 transmitter 2 R-10/215 receiver 3 YC-215 Yagi antennas 3 PG - 2B jumper cables 1 MTS-1 receiver combiner 3 K-1 grounding kits * Three "N" female and two "N" male connectors and 1/2" transmission line required.
300 MHZ Export Only	Package 54 \$3,290.00 1 STL - 10/300 transmitter 1 R-10/300 receiver	Package 54MA \$3,694.00 1 STL - 10/300 transmitter 1 R-10/300 receiver 2 YC-300 Yagi antennas 2 PG - 2B jumper cables 2 K-1 grounding kits * Two "N" female and two "N" male connectors and 1/2" transmission line required.	Package 54SA \$7,251.00 2 STL - 10/300 transmitter 2 R-10/300 receiver 3 YC-300 Yagi antennas 3 PG - 2B jumper cables 1 MTS-1 receiver combiner 3 K-1 grounding kits * Three "N" female and two "N" male connectors and 1/2" transmission line required.
450 MHZ Export Only	Package 55 \$3,290.00 1 STL - 10/450 transmitter 1 R-10/450 receiver	Package 55MA \$3,694.00 1 STL - 10/450 transmitter 1 R-10/450 receiver 2 YC-450 Yagi antennas 2 PG - 2B jumper cables 2 K-1 grounding kits *Two "N" female and two "N" male connectors and 1/2" transmission line required.	Package 55SA \$7,251.00 2 STL - 10/450 transmitter 2 R-10/450 receiver 3 YC-450 Yagi antennas 3 PG - 2B jumper cables 1 MTS-1 receiving combiner 3 K-1 grounding kits *Three "N" female and two "N" male connectors and 1/2" transmission line required.

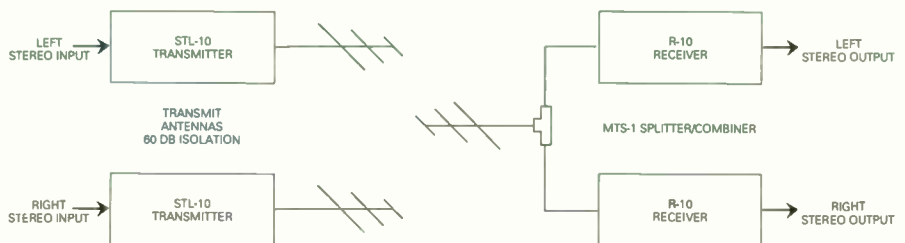
Specifications for above systems are on page 3.

Orders for radio links must include operating frequencies and bandwidth.
Export orders must also include line voltage and frequency.

MARTI STEREO STL (DUAL SYSTEM 200-480 MHz)
International Export

STEREO SYSTEM SPECIFICATIONS
200-480 MHz.

Stereo channel crosstalk separation -72DB
 Noise (left or right channel) -72DB
 Frequency Response 20-15000 Hz +0.25 DB
 Distortion (THD) 0.3%



STL-10 AURAL STUDIO- TRANSMITTER LINKS

World Class Performance and Value

Since its introduction, the Marti STL-10 has taken on and beaten two generations of the competitors' STL's. Today the STL-10 continues to offer the highest stereo separation, signal-to-noise ratio, reliability and value of any FM STL available - anywhere.

Look closely at the total STL system costs and you will see that the STL-10 saves your money two ways - in lower equipment cost and lower antenna cost. Because of the greater noise quieting sensitivity of the STL-10 system (about 10 times better than composite STL's), greater distances can be covered with smaller, lower cost antennas.

This is why thousands of STL-10 systems have been sold worldwide and are on the air every day from Alaska to Zimbabwe.

STEREO STL SYSTEM **\$7,005.00**

Package 51:
2 STL - 10/950 transmitter
2 R-10/950 receiver
1 HRC-10 transmitter combiner
1 MTS-1 receiver combiner

MONO SYSTEM **\$3,290.00**

Package 50:
1 STL - 10/950 transmitter
1 R-10/950 receiver

Prices do not include antennas and transmission line.



STL-10 TRANSMITTER



R-10 RECEIVER

SCPC STEREO SYSTEM FEATURES

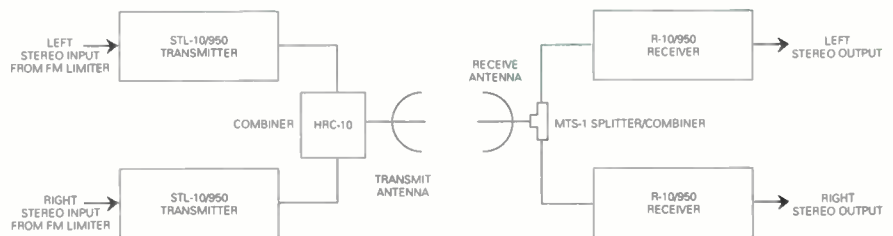
- ★ Unexcelled stereo separation, noise and distortion specs.
- ★ High interference rejection receivers.
- ★ Backup reliability of SCPC stereo.
- ★ Full 10 watts power.
- ★ Ga As FET low noise amplifier.
- ★ Available for new narrow channels.
- ★ Matched phase and amplitude.
- ★ Provision for automatic switching.
- ★ Two year limited warranty.
- ★ 12 volt battery operation.
- ★ Selectable 0, 25, 50 or 75 us. emphasis.
- ★ FCC approved under parts 74 and 94
FCC ID: BEN9EZSTL-10/950
- ★ Up to 4 subcarriers per stereo system.
- ★ Accurate watt meters for forward and reflected power.

STEREO SYSTEM SPECS.

600-960 MHz
500 KHz channel

L-R differential phase 20-15000 Hz	0.5 degrees
L-R differential amplitude 20-15000 Hz	0.1 DB
Stereo channel crosstalk/separation	-80 DB
Ultimate noise (left or right channel)	-80 DB
Frequency response 20-15000 Hz	±0.25 DB
Distortion (THD)	0.25%
Type emission 180 KF8E EACH	
Channel spacing 250 KHz (±125 KHz offset)	

MARTI STEREO STL (SCPC SYSTEM 800-960 MHz.)



STL-10 TRANSMITTER SPECIFICATIONS

Frequency Range 600-960, 400-480, 280-340, 200-260, 140-180 MHz.

RF Power Output 15 watts 200-480, 10 watts 800-960 MHz.

Carrier Frequency Stability + .00025%, 0° C to 50° C.

Type of Modulation Direct FM

Audio Input Balanced 600 ohms +8dbm, Barrier strip. BNC connector for unbalanced input.

Subcarrier Inputs Two BNC connectors for Remote Control and Subcarrier Inputs, 50 to 600 ohms unbalanced.

Power Requirements 120/220* VAC, 50/60 Hz. 80 Watts. 13.5 V. D.C. 2.6 Amps 24-28 V. D.C. 2.6 Amps**

AC Power Supply Precision, electronically regulated with current limiting.

Spurious Emission More than 60 db. below carrier.

Automatic Changeover Provision for Automatic Changeover.

Accessory Connector 15 pin connector on rear panel provides filtered outputs for Remote Control, Automatic Changeover, Remote Power Metering and External D.C. power.

Metering Calibrated RF wattmeter reads forward and reflected power. Test meter reads main channel and peak modulation, subcarrier level, supply voltage, P.A. current, RF Drive 1 and RF Drive 2.

Dimensions 3 1/2" high x 19" wide x 14" deep.

Weight Net 12 lbs. Domestic packed 17 lbs.

RF Connector UG-58 = N Female

R-10 RECEIVER SPECIFICATIONS

Frequency Range 800-960, 400-480, 280-340, 200-260, 140-180 MHz.

Sensitivity See systems specs.

Input Impedance 50 ohms.

Frequency Stability + .00025%, 0° C to 50° C.

Selectivity Filter 3 DB 60 DB
F200 200 570
F 90 90 180

Spurious Response -90 db. 200-480 MHz, -70 db. 800-960 MHz.

Audio Output Balanced 600 ohms +10dbm, Barrier strip. BNC connector for unbalanced output.

Subcarrier Outputs Two BNC connectors for Remote Control and/or Subcarrier outputs.

Front Panel Controls 10 db. attenuation switch, program level adjust, meter switch and squelch adjust.

Power Requirements 120/220* VAC, 50/60 Hz. 10 Watts.

AC Power Supply Precision, electronically regulated with current limiting.

Metering RF signal level, studio output level, subcarrier output level, +13 V. D.C. supply, L.O. level, mixer level, LED indicators for power and open squelch.

Dimensions 3 1/2" high x 19" wide x 12" deep.

Weight Net 8 lbs. Domestic packed 12 lbs.

RF Connector UG-58 = N Female

FCC approved under parts 74 and 94. FCC ID: BEN9EZSTL-10/950

STL-10 TRANSMITTER \$1645.00

R-10 RECEIVER \$1645.00

STL-30 TRANSMITTER \$1995.00

Export mono STL transmitter 45W @ 150 MHz, 40W @ 215 MHz, 35W @ 300 MHz, 30W @ 450 MHz. Specifications on page 7.

*220 V. AC 50 Hz. available on request with original order

** 24-28 V. DC operation with APS-28/18. See page 8 accessories.

#	APPLICATION	FREQ RANGE MHz	CHAN BW KHz	SCPC STEREO OFFSET FROM C.F. ± KHz	FCC EMISSION DESIGNATOR	FCC PART	OPTIONAL SUBCARRIERS (NUMBER) KHz	TX PWR WATT	TX FM DEV. ± KHz	REQUIRED RECEIVER SIGNAL (UV) FOR QUIETING			MAIN CHANNEL RESPONSE	T.H.D. < %	ULT. NOISE - DB	CHANNEL SEPARATION DB	EQUIPMENT PACKAGE
										50 DB	60 DB	ULT					
1	FM Stereo STL	945-952	500	125	180KF8E (2) each	74	(2) 39, 67, 92	10	50	3.0	10	80	±0.25 DB 20 Hz - 15 KHz	25	-80	-80	51
2	FM Stereo STL	945-952	300	62.5	80KF8E (2) each	74	(1) 39	10	20	8.0	25	130	±0.25 DB 20 Hz - 15 KHz	0.3	-72	-72	51
3	AM Stereo STL	945-952	200	50.0	80KF8E (2) each	74	(1) 26	10	15	8.0	25	130	±0.3 DB 20 Hz - 15 KHz	0.3	-72	-72	51
9	Audio/Data 1-4 Channels**	200-480	100	each	export	--	(1) 39	15	15	8.0	25	120	±0.3 DB 20 Hz - 15 KHz H2	0.3	-72	-72	53
			200					each	export	--	(2) 39, 67	15					15

** For 2 or more channels on export frequencies use separate TX Yagi antennas spaced 60 DB



\$695.00

MODEL SCG-10 SUBCARRIER GENERATOR

The Martí model SCG-10 Subcarrier Generator is designed to operate in SCA service with an FM transmitter or, with a model SCD-10 Subcarrier Demodulator to form a subcarrier link on a microwave (STL) system. The SCG-10 has several options available which allow it to perform a wide range of functions in broadcasting and communications.

Audio processing options include selectable pre-emphasis of zero, 75, 150 or 225 microseconds. Low pass audio filters of 3 KHz, 5 KHz or 7.5 KHz are available. Maximum cutoff is 12% of SCA frequency.

For subcarrier link systems using the SCD-10 demodulator, a compander encode board plugs into the generator and a decode board into the demodulator to adapt the system to audio companding. The companding system will reduce noise and can mask certain types of main to sub channel crosstalk.

The SCG-10 has an illuminated panel meter to aid in adjusting modulation and subcarrier output level.

MODEL SCG-10 SUBCARRIER GENERATOR SPECIFICATIONS

Subcarrier Frequency	Specify 26 KHz, 39 KHz, 41 KHz, 67 KHz or 92 KHz. Frequency test jack on front panel.
Frequency Stability	±0.18% - 10° C to 50° C.
Subcarrier Purity	Less than 0.5% THD.
Modulation	Direct FM.
FM Deviation	Factory set for ±7.5% of subcarrier frequency.
Modulator Distortion	Less than 1% THD
Frequency Response	±1.5 DB 25 Hz to 95% of low pass filter cut-off frequency.
FM Noise	More than 65 DB below 5 KHz deviation (measured through SCD-10 demodulator directly connected to SCG-10 output, 225 us., with companding). With companding -72 DB.
Audio Input Impedance	600 ohms balanced (screws terminals or "D" connector pins)
Audio Input Level	Front panel adjustment -10 DBM to +8 DBM for 100% modulation.
Muting Level	Adjustable from 0 DB to 40 DB below 100 modulation (soft mute).
Muted Carrier Level	60 DB below rated Maximum output level.
Subcarrier Output	Front panel adjustment 0.3 V. to 7 V. P-P into 600 ohm load. BNC connector.
Remote Control	Subcarrier can be remotely controlled by grounding a pin of accessory "D" connector.
Metering	Illuminated panel meter indicates peak modulation or subcarrier output.
Controls	Meter switch, subcarrier control switch, modulation level, automatic mute delay, mute level, subcarrier output level, and subcarrier frequency. Subcarrier frequency test jack also located on front panel.
Connectors	BNC jack for subcarrier output, 9 pin "D" connector for balanced input, remote control, FSK/subaudible input, ground, +18-20 V. input, +13.5 V. input and AC receptacle. No. 6-32 screw terminals for balanced 600 ohm audio input.
RF protection	All input/output circuits filtered for RF. Totally shielded and bonded aluminum enclosure.
Operating Temp. Range	-10° C to 50° C.
Power Requirements	120/220* VAC, 50/60 Hz. 10 Watts or 12-14 V. DC at 50 MA., or 24-28 V. at 70 MA.**
Dimensions	19" wide x 12" deep x 13/4" high.
Weight	5 lbs net, domestic packed 8 lbs.



\$695.00

MODEL SCD-10 SUBCARRIER DEMODULATOR

The model SCD-10 Subcarrier Demodulator is designed for use with model SCG-10 Subcarrier Generator to provide a high quality subcarrier channel on microwave link (STL) or FM station. The SCD-10 may be specified for operation on a standard subcarrier frequency used in FM broadcasting. The subcarrier input to this demodulator should be from a high quality FM receiver having adequate IF bandwidth with group delay characteristics sufficient for subcarrier work. The Martí R-10 receiver with 200 KHz phase linear IF filter is excellent in this respect.

The SCD-10 has several options available, allowing it to perform a wide range of functions in broadcasting and communications.

Audio processing options include selectable de-emphasis of zero, 75, 150 or 225 microseconds. Low pass audio filters of 3 KHz, 5 KHz or 7.5 KHz are available.

For subcarrier link systems using the SCG-10 generator, a compander decode board plugs into the demodulator and an encode board into the generator to adapt the system to audio companding.

The SCD-10 employs an illuminated panel meter to aid in adjusting subcarrier input level and audio output.

MODEL SCD-10 SUBCARRIER DEMODULATOR SPECIFICATIONS

Subcarrier Frequency	Specify 26 KHz, 39 KHz, 41 KHz, 67 KHz or 92 KHz. Frequency test jack on front panel of transmitter.
Subcarrier Input	0.1 to 1 V. RMS, 10K ohms impedance, BNC connector (panel adjustment)
Demodulator Distortion	Phase locked FM detector has less than 0.6% THD
Frequency Response	±1.5 DB 25 Hz to 95% of low pass filter cut-off frequency.
Signal/Noise Ratio	More than 65 DB below 5 KHz deviation (using SCG-10 as signal source directly connected to SCD-10 input, 225 us).
Audio Output Level	+10 DBM maximum output level balanced and isolated into 600 ohms. Front panel adjustment range -60DBM to +10 DBM.
Subcarrier Squelch	Front panel adjustable squelch relay will squelch audio output over subcarrier level range of 0.1 to 2.0 volt input. Normally open relays contacts available at accessory "D" connector for external functions. LED on front panel indicates "squelch open" condition.
Metering	Illuminated panel meter indicates subcarrier input level or audio output level.
Controls	Meter switch, squelch adjust/squelch open (LED panel indicator) subcarrier input level adjust, audio output level adjust.
Connectors	BNC jack for subcarrier input, 9 pin "D" connector for audio output, squelch relay contacts, FSK output, ground, +18-20 V. input, +13.5 V. input and AC receptacle. No. 6-32 screw terminals for balanced 600 ohm output.
RF protection	All input/output circuits filtered for RF. Totally shielded and bonded aluminum enclosure.
Operating Temp. Range	-10° C to 50° C.
Power Requirements	120/220* VAC, 50/60 Hz. 10 Watts or 12-14 V. DC at 50 MA., or 24-28 V. at 70 MA.**
Dimensions	19" wide x 12" deep x 13/4" high.
Weight	5 lbs net, domestic packed 8 lbs.

SYSTEM SPECIFICATIONS

10% injection 225 us. Pre-Emphasis (NO COMPANDING)	Back to Back KHz Bandwidth			STL-10 Link KHz Bandwidth		
	3	5	7.5	3	5	7.5
NOISE DB	66	65	64	64	60	57
DISTORTION %	1.2	1.2	1.35	1.4	1.5	1.6
CROSSTALK MAIN-SUB DB	--	--	--	55	52	49

10% injection 0 us. Pre-Emphasis WITH COMPANDING	Back to Back KHz Bandwidth			STL-10 Link KHz Bandwidth		
	3	5	7.5	3	5	7.5
NOISE DB	73	73	73	70	70	70
DISTORTION %	1.2	1.2	1.35	1.4	1.5	1.6
CROSSTALK MAIN-SUB DB	--	--	--	58	55	52

Optional 800-728 companding \$400 per system

MARTI TSL-10 SYSTEMS FOR PART 94, 928-960 MHz

If you are serious about data/voice transmission (TSL, ICR, TRL, etc.) you should look at part 94 "Private Operational-Fixed Microwave System" in the 928-960 MHz band. Bandwidths of 25, 50, 100 and 200 KHz are available to broadcasters for many uses except the final link of an STL. These frequencies are professionally data base coordinated interference free channels for reliable communications. Marti has been providing FCC authorized equipment for this service over the past three years. Bandwidths are licensed based on demonstrated need; the wider channels reserved for wide band FM, high data rate, or multi-channel uses. Marti multi-channel systems are not time shared, which means that data flows continuously on each channel. License application is on Form 402. Frequency coordination is by approved firms like Spectrum Planning (214) 680-1000, Moffet, Larson and Johnson (703) 841-0500, Comm Search (703) 620-6300. If you have requirements not met by the following part 94 packages, contact Marti for assistance.



TSL-10 FEATURES (PART 94, 928-960 MHz)

- ★ Four continuous data/voice channels on single carrier.
- ★ Multiple receiver sites possible.
- ★ 25 KHz, 50 KHz, 100 KHz, 200 KHz bandwidths available
- ★ Transmitter FCC approved for part 94 service. FCC ID: BEN9EZSTL-10/950
- ★ Battery backup available with Marti UPS-12

Package 94-1 Single Channel

\$3,290.00

- 1 STL-10 transmitter
- 1 R-10 receiver

Package 94-2 Two Channels

\$4,680.00

- 1 STL-10 transmitter
- 1 R-10 receiver
- 1 Subchannel

Package 94-3 Three Channels

\$6070.00

- 1 STL-10 transmitter
- 1 R-10 receiver
- 2 Subchannels

Package 94-4 Four Channels \$7,460.00

- 1 STL-10 transmitter
- 1 R-10 receiver
- 3 Subchannels

Additional receiver sites **\$2,340.00**

Antenna systems for above packages depend upon path length, number of receiver sites, etc. Contact factory for assistance.



Available with Marti Mux. See page 7.

#	APPLICATION	FREQ RANGE MHz	CHAN BW KHz	SCPC STEREO OFFSET FROM C.F. ± KHz	FCC EMISSION DESIGNATOR	FCC PART	OPTIONAL SUBCARRIERS (NUMBER) KHz	TX PWR WATT	TX FM DEV. ± KHz	REQUIRED RECEIVER SIGNAL (UV) FOR QUIETING			MAIN CHANNEL RESPONSE	T.H.D. < %	ULT. NOISE - DB	CHANNEL SEPARATION DB	EQUIPMENT PACKAGE
										50 DB	60 DB	ULT					
4	Audio/Data 1-4 Channels *	928-960	200	--	180KF8E each	74 94	(2) 39, 67, 92	10	50	3.0	10	80	±0.25 DB 20 Hz - 15 KHz	0.25	-78	-78	50
5	Audio/Data 1-4 Channels *	928-960	100	--	80KF8E each	74 94	(1) 39	10	15	8.0	25	130	±0.25 DB 20 Hz - 15 KHz	0.3	-72	-72	50
6	Audio/Data 1-4 Channels *	928-960	50	--	36KF3E each	74 94	--	10	7	16	90	130	±2 DB 20 Hz - 10 KHz	2.0	-65	--	50
7	Audio/Data 1-4 Channels *	928-960	25	--	16KF3E each	74 94	--	10	4	27	130	130	±2 DB 20 Hz - 15 KHz	2.0	-60	--	50
8	2-4 MUX Channels 1-4 Channels *	928-960	200	--	180KF3E each	94	(3) 39, 67, 92	10	12	12	35	130	±1.5 DB 20 Hz - 15 KHz	0.3	-62	60	95-4

* For 2 channels use TX combiner TAD-900-2. For 3 or 4 channels use TX combiner TAD-900-4.

MARTI TSL SYSTEMS FOR PART 74, 450-456 MHz

The Marti TSL Telemetry Links provide reliable circuits for AM, FM and television stations. Expensive and unreliable Telco lines can now be replaced with cost effective Marti TSL systems. These links are simple to install, easy to operate and maintain. Marti has assembled complete equipment packages consisting of transmitter, receiver, Yagi antennas, identifier and optional items.



Systems Specifications

Frequencies Available (Group P) 450.01, 450.02, 450.98, 450.99, 455.01, 455.02, 455.98, 455.99 MHz.
Modulation 10F3 (+ 1.5 KHz Deviation)
Frequency Response 50 Hz - 2800 Hz + 2.0 DB
Distortion 2% THD
Signal to Noise Ratio 45 DB

TSL-30 Package (30 Watts)

- 1 RPT-30/450 transmitter
- 1 CR-10/450 receiver
- 1 model 1300 station identifier
- 1 700-253 rack mounting kit

Package price \$3,129.50

TSL-15 Package (15 Watts)

- 1 RPT-15/450 transmitter
- 1 CR-10/450 receiver
- 1 model 1300 station identifier
- 1 RMH-3B rack shelf

Package price \$2,544.50

TSL-2 Package (2.5 Watts)

- 1 RPT-2/450 transmitter
- 1 CR-10/450 receiver
- 1 model 1300 station identifier
- 1 RMH-3 rack shelf

Package price \$2,445.00

TSL-2, TSL-15 AND TSL-30 FEATURES (PART 74, 450-456 MHz)

- ★ Choice of transmitter power 2.5, 15 or 30 watts continuous duty.
- ★ Transmitters are FCC type accepted.
- ★ Super-selective receiver with 90 db spurious rejection.
- ★ Test meter built into both transmitter and receiver.
- ★ Receiver has adjustable squelch and carrier operated relay.
- ★ Built-in modulation control.
- ★ Internal AC supply in transmitter and receiver with provision for external DC operation.
- ★ Optional automatic station identifier.
- ★ Analog or digital telemetry or voice modulation in 50 Hz 2800 Hz band.
- ★ Mic and line level level inputs with mixing controls.
- ★ Built-in 27 Hz status channel with relay contacts.

Part 74 Antenna Packages

- 2 YC 450 Yagi gain antenna
- 1 PG-2A jumper cable
- 1 PG-2B jumper cable
- 1 K-1 weatherproofing kit

Package price \$362.00

Transmitter

See specification for RPT 2/450, RPT 15/450 or RPT-30/450

Receiver

See specification for CR 10/450 receiver

Station Identifier

A model 1300 station identifier is required by FCC rules for all domestic TSL systems to identify the TSL transmitter. Call signs for the identifier are assigned by the FCC when TSL frequencies are approved.

RPT-30 FCC ID: BEN9EZRPT30-450

RPT-15 FCC ID: BEN9EZRPT15-450

RPT-2 FCC ID: BEN9EZRPT2-450

***Package prices do not include cost of two "N" female and two "N" male connectors and 1/2" transmission line.**

ATS-15D TRANSMITTER SWITCHER



\$750.00

ATS-15D TRANSMITTER SWITCHER SPECIFICATIONS

The ATS-15D provides switching between two Marti transmitters at power levels up to 50 watts delivering .5 db loss or less with type "N" female connectors. DC samples of relative power output are provided from each transmitter to the switcher through adjustable pots to a voltage comparator. Switching can be set to occur at any RF power level. Unit can be operated from front panel and terminals provided on the back for remote operation. The ATS-15D can be operated with the Marti UPS-12 uninterruptible power supply, so when AC power is lost, DC power is supplied through the ATS-15D to both transmitters. The ATS-15D operates off 12 V. DC furnished by both transmitters. Dimensions are 1 3/4" high x 19" wide x 13" deep. Weight is 4 lbs.

ASO-200D RECEIVER SWITCHER



\$650.00

ASO-200D RECEIVER SWITCHER SPECIFICATIONS

Marti's ASO-200D provides audio and SCA switching between two receivers on the same frequency. The ASO-200D switches all functions to the backup receiver upon loss of the signal to the main receiver. The standby receiver may be selected by using a latching relay tied to the station's remote control. A positive voltage output indicates which receiver is in use and the remote signal level sample is also available to be metered by the station's remote control. Two LEDs are provided on the front panel to indicate which receiver is in use. The standby receiver can be selected by pushing the test switch. The ASO-200D provides two separate fail-safe output both normally closed, and open contacts are available. Power requirements are 12 volts DC - supplied by each receiver. Dimensions are 1 3/4" high x 19" wide x 13" deep. Weight is 3 lbs.

MW-500 AURAL BROADCAST MICROWAVE BOOSTER



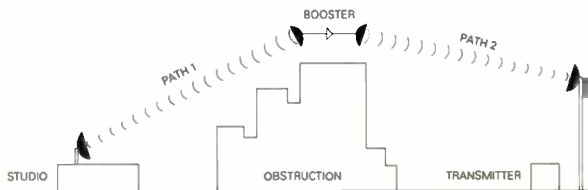
\$2495.00

MW-500 AURAL BROADCAST MICROWAVE BOOSTER

The Model MW-500 Microwave Booster is designed to receive, amplify and redirect an aural STL signal in the direct path between transmitting and receiving antennas. Since the booster uses the same frequency for re-transmitting, scarce spectrum is conserved. The booster will provide a maximum of 500 milliwatts output power. It will also provide 60 DB power gain at any point it is inserted in the microwave path. Where applicable, the MW-500 can provide considerable cost savings over other types of repeaters. The MW-500 is available with internal battery backup and charger capable of operating the unit for 36 hours without commercial power.

MW-500 SPECIFICATIONS

Frequency Range	944-952 MHz.
Gain (power)	60 DB Max. (adjustable 35-60 DB)
Output (power)	+27 DBM (500 MW.) maximum operating power +30 DBM (1 watt) maximum output.
Selectivity	3 DB bandwidth + 3 MHz. NOTE: One or more external bandpass cavity resonators may be required for additional selectivity.
Emission and Bandwidth	Meet requirements of Part 74.535 (g)
Stability	Input-output antenna and coaxial line attenuation must exceed amplifier gain for stability.
Metering	RF output power (0-2 watts).
Connectors	UG-58 (type "N" female) Accessory connector is subminiature D 15 pin male.
Power Supply	Internal AC Supply - Precision regulated 13.6 V supply with current limiting and thermal shut-down. 115 V 50 Hz available on request. Internal Battery Supply - 12 volt 6.5 amp-hour sealed battery is included by the AC supply.
Temp. Range	-20°C to +50°C operating
Dimensions	3 1/2" high x 19" wide x 12" deep
Weight	Net 13 lbs. with battery. Domestic packed 17 lbs.



UPS-12 UNINTERRUPTIBLE POWER SYSTEM



\$425 LESS BATTERY

UPS-12 UNINTERRUPTIBLE POWER SYSTEM

The Marti model UPS-12 battery back-up power system is for use with equipment capable of both AC and 12 volt DC operation. The system instantly and automatically switches to a battery source when the primary AC fails. The UPS-12 is the perfect companion for Marti STL-10/R-10 Radio Link Systems as well as Marti automatic relay stations and TSL data links. The DC power is a sealed 12 volt GEL Electrolyte battery. Batteries of 24, 38 and 60 amp-hours are available. Refer to price list for battery options and prices.

UPS-12 SPECIFICATIONS

Type of System	DC-DC (Loss of primary AC power causes relay to select 12 volt battery power).
Panel Indicators	Led indication of AC or DC operation.
DC Power Supply	Sealed GEL Electrolyte Lead-Acid battery rated at 12 volts 24 amp-hours. The battery is external and priced separately.
Battery Charger	Precision constant voltage charging with current limiting and trickle charge. 3 amp current limit.
DC Polarity Protection	Circuit breaker, fuse and diode reduce reverse polarity damage.
Connectors	Screw terminals for DC, 3-pin, receptacle for AC.
Panel Size	Standard 19" x 3"
UPS-12 Weight	9 lbs.
Battery Weight	19.5 lbs shipped separately. Approved for shipments as "Dry Cell" by DOT and IATA.

INTERNATIONAL STUDIO-TRANSMITTER LINKS INTERCITY RELAY

MARTI

The Marti STL-30/R-10 is a broadcast quality point-to-point line of sight radio communications link. This system meets worldwide need for higher transmission power for longer transmission distances over rugged terrain. The STL-30 transmitter delivers continuous duty power in several transmission bandwidths to meet international standards. For stereo transmission, Marti offers the time proven SCPC (dual) stereo link, which provides superior noise quieting, much higher stereo channel separation, greater redundancy, less bandwidth and lower cost than "Composite" STL's.

Mono System \$3,640.00



STL-30 Transmitter \$1,995.00



R-10 Receiver \$1,645.00

Applications for the STL-30 includes:

- ★ Intercity relay for linking two or more broadcast facilities.
- ★ Multi-relay system for radio network distribution.
- ★ Communications link between satellite earth station and broadcast facilities.
- ★ STL for FM stereo broadcast (dual system).
- ★ STL for AM stereo broadcast (dual system).
- ★ STL for FM mono or AM broadcast.
- ★ Telecommunications with Marti Mux system.

SYSTEM SPECIFICATIONS

Freq. Range MHz	Transmitter	Maximum Power	Maximum Deviation	Receiver	Receiver IF Bandwidth	Frequency Response	System Specifications*		Subcarrier Capability
							Distortion*	Noise	
400-480	STL-30/450	30 Watts	± 25 KHz	R-10/450	200 KHz	± 0.25 db. 20-15000 Hz.	0.25 % or less	-75 db. or better	39 or 67 KHz
400-480	STL-30/450	30 Watts	± 15 KHz	R-10/450	75 KHz	± 0.3 db. 20-15000 Hz.	0.3 % or less	-72 db. or better	
280-340	STL-30/300	35 Watts	± 15 KHz	R-10/300	75 KHz	± 0.3 db. 20-15000 Hz.	0.3 % or less	-72 db. or better	
200-260	STL-30/215	40 Watts	± 15 KHz	R-10/214	75 KHz	± 0.3 db. 20-15000 Hz.	0.3 % or less	-72 db. or better	
140-180	STL-30/150	40 Watts	± 9 KHz	R-10/150	75 KHz	± 0.3 db. 20-15000 Hz.	0.3 % or less	-65 db. or better	

STL-30 Transmitter Specifications

Frequency Range and

Maximum Power Output ... 140-180 MHz. - 45 watts
200-260 MHz. - 40 watts
280-340 MHz. - 30 watts
400-480 MHz. - 35 watts

RF Connector SO-239

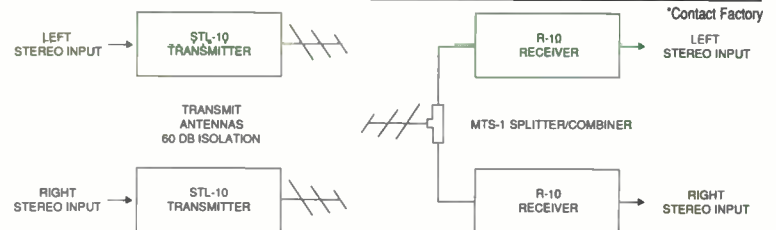
Audio Input Balanced 600 ohms +8 dbm, 9 pin "D" connector

Subcarrier Input One RCA connector for remote control or subcarrier input 50 to 600 ohms unbalanced.

Accessory Connector..... 9 pin "D" connector for DC power, 600 ohm balanced line level.

Dimensions 3 1/2" high x 19" wide x 13.3" deep

Weight Net 12 lbs., 19 lbs. shipping weight



Other specifications same as the STL-10. See page 3
R-10 Receiver Specifications see page 3

MARTI MUX

CUT THE PHONE LINES TO YOUR REMOTE STUDIOS

With the Marti Mux system you can eliminate expensive tie lines to your remote studios. The Marti Mux system can send high quality audio program material, several telephone circuits, intercom, computer data and remote control data all on one simple microwave system.

Marti Mux connects from the microwave link at each end to the local phone company in each city to provide telephone service between your remote studios. You can cut the on-going expense of tie lines and long distance service. This allows you to communicate from your home office to clients in the remote city and visa versa without long distance charges where applicable. With one flick of a switch you can call forward your remote studio to the home office when the remote studio is unmanned. This provides your listeners and customers with constant communication to you from your remote office.

There is even the provision for an intercom circuit to give you an open audio link between the sites. This is vital for quick communication when clients need a spot produced ASAP. The production director can be in constant communication with the sales force in the remote studio to produce exactly the spot your client wants.

The Marti Mux even handles your Fax machine. Now you can have on line communication between two sites with your Fax machine. Move copy from one site to another quickly and efficiently. Fax contracts back and forth to minimize time lost when your correspondence is in storage at the post office.

Does your remote site generate original programming... Have you been paying for high quality tie lines for just a few hours of programming a week? With Marti Mux you can even have program quality audio, mono or stereo! You can back haul local program material on your Marti Mux without the fear of the phone lines being cut or a phone company computer problem cutting your phone service.

How about remote control. If you've been paying through the nose for lines to your transmitter to control the Marti Mux is the answer. We can add the remote control to the Marti Mux to give you freedom from the phone company.

Even your RPU equipment can be fed through the main channel of your Marti Mux. If your remote site is beyond the range of your RPU gear you can have a receiver at the remote site and feed that back to your main studio for transmitting. Maximize the revenue potential of remote broadcasts without the cost of telephone lines. With the proper Interface you can even use the remote equipment to break into an automated station for on the spot, up to the minute new breaks.

What is the Marti Mux besides a way to cut expensive phone lines, maximize revenue and speed up communications? It's a versatile, dependable unit that offers a range of user-selectable operating features. Each plug-in module is self-contained which includes the field selectable carrier frequency generator, synchronization function, frequency translation, E and M type signaling circuitry and VF transmit and receive circuitries for bi-directional operation.

The Marti Mux system can be designed for your present requirements without it being out of date when your needs grow.

Call Marti for more information on this exciting way to cut your communication costs.

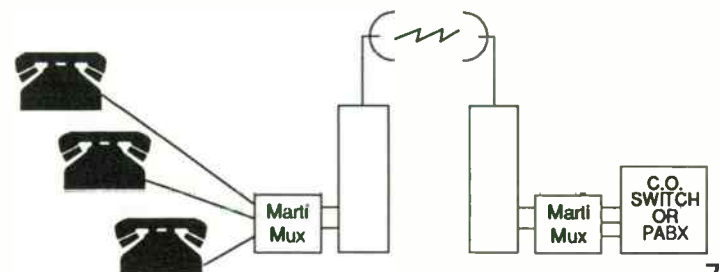
MARTI MUX

PROVIDE TELEPHONE SERVICE TO WHERE REGULAR WIRED SERVICE IS UNAVAILABLE

The Marti Mux system can provide low density phone service for remote villages or towns where wired service is unavailable or to cost prohibitive to install.

Many geographic areas are cut off from the rest of the world by phone because it is difficult or impossible to install the land lines required for the service. Marti Mux systems just need a tower at each end of the link and power for the system to bring the world closer.

The low cost of a Marti Mux system when compared to conventional telephone line construction makes it the logical choice.



23 GHz DIGITAL STL

The Marti STL-23 digital studio-transmitter link delivers all the remarkable performance of today's compact disc digital audio to the transmitter. With a dynamic range of more than 90DB and stereo separation of more than 80DB, the STL-23 makes old style composite STL's obsolete. Exceptional frequency response of .5 db from 10 Hz to 20 Hz and distortion of less than .005% make the STL-23 the logical choice for your new digital link. The STL-23 transmitter, receiver and subcarrier boards are located inside the weatherproof antenna assembly for cost saving and ease of installation. When comparing the cost of the STL-23 to 950 MHz "composite" STL's the cost of all antennas, coaxial cable and connectors, subcarriers and telemetry return link must be charged to the real costs of 950 MHz STL's. Such comparison will show the STL-23 to be cost effective. Microwave path length at 23 GHz is limited by atmospheric absorption, with rainfall having the greatest effect. Contact Marti for data for use in calculation of 23 GHz links in your area.

PACKAGE A (5003E) BASIC VIDEO

1 Transmitter with 24" antenna\$6600.00
1 Receiver with 24" antenna

PACKAGE B (5006E) BASIC VIDEO

1 Transmitter with 24" antenna\$7300.00
1 Receiver with 24" antenna
1 Subcarrier channel (studio to transmitter, 12 KHz BW)

PACKAGE C STEREO STL WITH BIDIRECTIONAL SUBCARRIER

2 Transmitter/receiver with 24" antenna\$8200.00
1 Subcarrier channel (studio to transmitter, 12 KHz BW)
1 Subcarrier channel (transmitter to studio, 12 KHz BW)

PCM-601ES 16 Bit Digital Processor\$1,400.00

OPTIONS:

COLOR VIDEO - For high quality video applications, order option RS-250B \$1,000.00

TO ADD SUBCARRIERS ABOVE VIDEO BAND (6.2-8 MHz)

Order option "WB"\$1050.00
and option "SCI"\$1500.00

FCC LICENSING: License application is on Form 402 Part 94 "Private operational fixed microwave service". Part 94 frequencies are not coordinated by SBE. For frequency search and filing application, contact FCC Approved Date Base Service such as Spectrum Planning (214) 680-1000, Moffet, Larson and Johnson (703) 841-0500, Comm Search (703) 620-6300. MFG, in USA by Racon, FCC ID B2N9CL 10050.



SPECIFICATIONS

General
Frequency 21.2 to 23.6 GHz.
FM Deviation + 7 MHz, designator 33800F9
Channel Capacity 1 video plus 2 full duplex audio/data/control subcarriers
Antenna Shrouded 24 inch, 38 DBI, V or H polarization, 2° beamwidth, +57 DBM ERP, with Radome
Alarms Loss of carrier alarm 10-15 VDC/1K ohms
Transmitter
Power Output 65 mw typical (+18 DBM)
Frequency Stability + .02% - 30°C to +50°C
Spurious Output Meets FCC Part 94 requirements
Video Input 1 Vp-p 75 ohms
Subcarrier Input 0 DBM 600 ohm bal. screw terminals
Receiver
Noise Figure 22 DB nominal
Threshold -77 DB
Video Output 1 Vp-p 75 ohms
Subcarrier Input 0 DBM 600 ohm bal. screw terminals
Power Requirement 30 watts, 120 VAC into class 2 UL 24 V transformer. 240 VAC and Dc options available - contact factory.
Weight 25 lbs.
Options
(contact factory) Hot standby switching, optical alignment tool, horizontal pipe mounting kit, 4.5 inch O.D. pipe mtg. hardware kit, 48: antenna.

Price and specifications subject to change.

THE MARTI PA-48 4' FULL PARABOLIC ANTENNA IS THE ANSWER TO HIGH ANTENNA COSTS. THE PA-48 GIVES YOU A BETTER VALUE FOR YOUR ANTENNA DOLLAR.

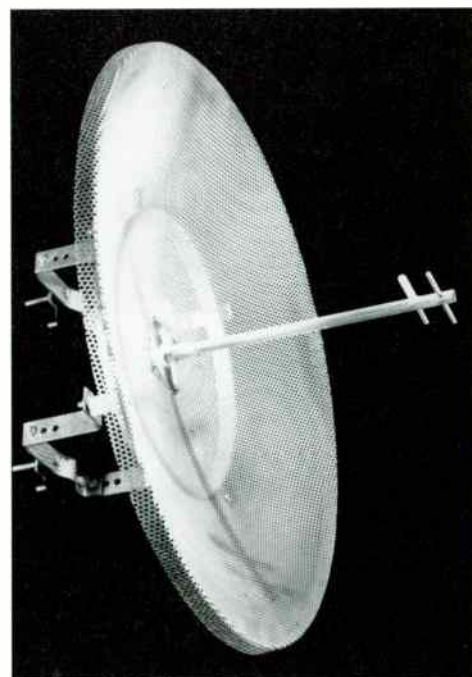
The most exciting development in STL antennas in over a decade is ready to ship now. The PA-48 is broadband for the 940 to 960 MHz aural STL band and has the specifications you need for getting the most from your Marti STL system. The PA-48 is category B rated in vertical and horizontal planes. The 16 degree 1/2 power beam width is the maximum beam width a 4' parabola is capable of at 950 MHz.

ELECTRICAL SPECIFICATIONS

Frequency 940-960 MHz.
Bandwidth 20 MHz.
Gain at 950 MHz 18.9 dbi
Impedance 50 ohm
VSWR 1.3:1
1/2 power beam width 16 degrees
F/B ratio 23 db
Maximum Power 100 watts
Termination "N" female
FCC Category B

MECHANICAL SPECIFICATIONS

Weight
Net 52 pounds
Shipping 69 pounds
Dimensions
Diameter 4' diameter
Depth (including feed and mount) 38 inches
Wind Load (100 MPH with ice) 565 pounds
Mounting dimensions 1.75" to 3.50"



PA-48 4' foot parabolic antenna 500.00

STL RADIOS

Model	Description of Item	Price
STL-10 Transmitter	STL-10 transmitter for all mono and stereo STL systems in 150, 215, 300, 450 or 950 bands.	\$1,645.00
STL-30 Transmitter	Export Mono STL transmitter 45 watts-150 MHz, 40 watts-215 MHz, 35 watts-300 MHz, 30 watts-450 MHz band.	\$1,995.00
R-10 Receiver	STL receiver in 150, 215, 300, 450 or 950 bands, low pass filter, two IF bandwidths, low power consumption, test meter.	\$1,645.00
MW-500 Booster	On-frequency microwave booster for re-transmitting STL signal around obstructions- 500 mw output power. Comes with internal battery.	\$2,495.00

STL ACCESSORIES

Model	Description of Item	Price
SCA-1	SCA receiver for metering.....	\$168.00
580-016	AC power cord for STL-10 transmitters and R-10 receivers	\$5.50
APS-28/18	Power supply for operation of STL-10 transmitters and R-10 receivers from 24 V DC.....	\$65.00
ASO-200D	Unit for switching between two STL receivers. User needs to specify frequency.....	\$650.00
ATS-15D	Automatic transmitter switcher: (2) PG-1.5 cables with UG-58 "N" female connectors.....	\$750.00
BPF-39/67	39/67 KHz subcarrier band pass filter/amplifier for R-10 receiver. Filters and amplifier sub signal at STL relay station.	\$249.00
WP-498-1	Wacom single section, selective cavity resonator, 950 MHz.....	\$245.00
WP-430-1	Selective cavity resonator, single-section for operation in th 148-174 MHz. band	\$210.50
WP-470-1	Selective cavity resonator, single-section for operation in the 406-512 MHz.	\$180.00
Crystal	For replacement crystals call International Crystal Manufacturing, 800-426-9825. Specify Marti model number and desired operatng frequency. 2 weeks or more delivery.	\$17.95
	Expedited delivery, 2 weeks or less	\$32.95
540-075	Duplexer, combines transmitter and receiver to common antenna & line; 3.6 MHz separation. Ferrite isolator and PG-2B included.	\$1,236.00
TAD-900-2	Transmitter combiner with cables to combine output of (2) STL-10/950 transmitters to one antenna. Nominal isolation 70 DB, 3.45 DB loss.	*
TAD-900-4	Transmitter combiner with cables to combine output of (4) STL-10/950 transmitters to one antenna. Nominal isolation 70 DB loss.	*
K-1	Grounding and weatherproofing kit.....	\$12.00
RMC-10	Remote control for STL-10 Transmitters.....	\$315.00
SCG-10	Subcarrier Generator tuned to 26, 39, 41, 67 or 92 KHz, rack mount, 120 VAC (220 VAC on request).	\$695.00
SCD-10	Subcarrier Demodulator tuned to 26, 39, 41, 67 or 92 KHz, rack mount, 120 VAC (220 VAC on request)	\$695.00
800-263	Optional compander board for factory or field installation in SCG-10 and SCD-10. Two (2) plug-in boards.	\$400.00
UPS-12	Uninterruptible power system for Marti STL-10, R-10 ARS-15 relay and TSL-15 data link. (LESS LCR-12V-24P battery)	\$425.00
LCR-12V-24P	Battery, sealed gel lead-acid, 12 volt. 24 amp.-hours for use with Marti uninterruptible power supply UPS-12	*
040-007	Spare battery for MW-500	*

STL ANTENNAS TYPE N FEMALE CONNECTORS

Model	Description of Item	Price
DB-438	Yagi antenna, 6 element, 10.0 db gain, 450-470 MHz	*
PA-48	Marti 4' full parabolic antenna, 18.9 db gain, non-pressurized feed, 940-960 MHz.	\$500.00
P-9A48GN-1	Mark Product parabolic antenna, 4' multi-element dish, 18.9 db gain, non-pressurized feed, 890-960 MHz.	*
P-9A72GN-1	Mark Product parabolic antenna, 6' multi-element dish, 22 db gain, non-pressurized feed, 890-960 MHz.	*
P-9A96GN-1	Mark Product parabolic antenna, 8' multi-element dish, 25 db gain, non-pressurized feed, 890-960 MHz.	*
P-9A120GN-1	Mark Product parabolic antenna, 10' multi-element dish, 27 db gain, non-pressurized feed, 890-960 MHz.	*
SH-872GN	Mark Product "Shorthaul" cylindrical antenna, 19 db gain, 890-960 MHz.	*
SSH-9A72GN	Mark product super "Shorthaul" parabolic section, 20 db gain	*
YC-150	Yagi export antenna, 6 element, 9 db gain, 140-180 MHz. Specify frequency	\$165.00
YC-215	Yagi export antenna, 6 element, 10 db gain, 200-260 MHz. Specify frequency	\$165.00
YC-300	Yagi export antenna, 6 element, 10 db gain, 280-340 MHz. Specify frequency	\$165.00
YC-450	Yagi export antenna, 6 element, 10 db gain, 360-450 MHz Specify frequency	\$165.00

STL TRANSMISSION LINE, CABLES, CONNECTORS

Model	Description of Item	Price
L44N	Andrew type "N" female connector for 1/2" foam transmission line	*
L44W	Andrew type "N" male connector for 1/2" foam transmission line	*
L45N	Andrew type "N" female connector for 7/8" foam transmission line	*
L45W	Andrew type "N" male connector for 7/8" foam transmission line	*
LDF4-50	Andrew foam transmission line, 1/2", 50 ohm, jacketed	*
LDF5-50	Andrew foam transmission line, 7/8", 50 ohm, jacketed	*

Marti Electronics, Inc., P.O. Box 661, Cleburne, Texas 76033-0661
 (817) 645-9163 Telex #794835 "Marti CLBN" Fax (817) 641-3869

PLAN A: Radio survival in the 90's

LOCAL NETWORKS CAN SAVE MANY STATIONS

Too many radio stations have gone dark or will go dark in the near future. In many instances, these stations were built in communities too small to support a fully staffed, debt-leveraged radio station. There are good reasons these stations should be rescued. They can still serve their communities and can, under certain conditions, turn an operating profit. How can a station be profitable in a market too small to support it? The answer proposed in Plan A is to reduce overhead and operating costs to the point of profitability.

LOWER OPERATING COSTS BY COMBINING SERVICES

By using a form of networking between one or more unprofitable radio stations and a profitable station, levels of efficiency can be reached which can make winners out of losers. The successful station provides most of the organizational support at little additional cost. "Satellite stations" require only a sales staff in their service communities. A central staff provides profitable local programming to satellite communities in the form of sports and other events.

LINK STATIONS WITH MARTI STL/ICR

Communications links for programming, remote control, and other support functions must be obtained at lowest possible cost. This usually is accomplished by station owned radio links called Inter-City Relay (ICR) or Studio Transmitter Links (STL). By multiplexing these communications carry all auxiliary communications with a modest investment in equipment.

MARTI PROVIDES COST EFFECTIVE COMMUNICATIONS

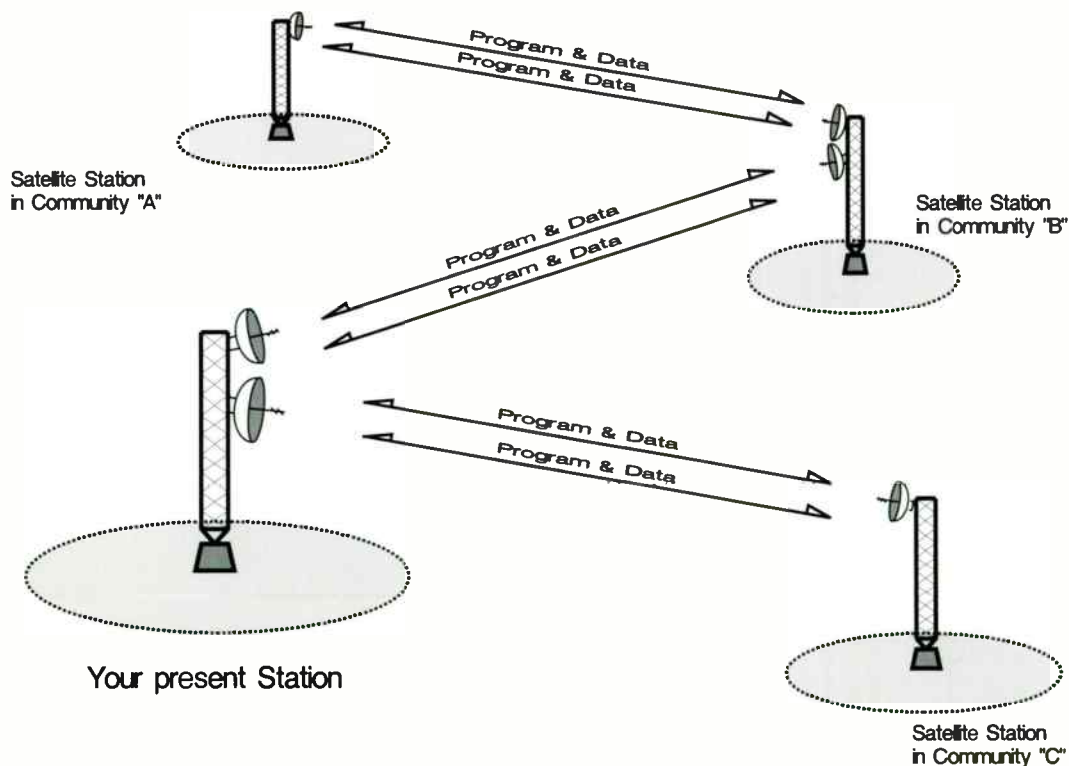
By effecting a greater economy of scale in combining office and administrative services and doing programming, either simulcast, automated, or separate, from one central location there is opportunity to turn once unprofitable or dark radio stations into profitable ones.

MARTI HAS THE ANSWER TO COMMUNICATIONS QUESTIONS

Marti Electronics can engineer systems that link stations together with properly designed communications networks to help broadcasters form their own local networks and achieve greater operating profits.

CAPTURE A RARE INVESTMENT OPPORTUNITY

Many fortunes were made during the "Great Depression" of the 1930's by creative business people. There are hundreds of dark radio stations waiting for someone to turn them into profit centers. The decade of the 90's is going to require a lot of new thinking and action on the part of station owners and managers. The survival of local radio depends upon creative ideas from everyone. Forming local networks, a network of satellite stations, to combine services may be the only way a lot of broadcasters will survive. Contact George Marti or Dan Rau at 817/645-9163 for more information on Plan A.



Marti answers common STL questions

1. *Q. What is a Marti STL-10 System ?*

A. The Marti STL-10 System is a Studio-Transmitter Link/InterCity Relay that provides line of sight communication with high quality audio channels. STL (Studio-Transmitter Links) applications include FM or AM stereo or mono broadcasts from the studio location to the transmitter. Inter-City relays are for linking two or more broadcast facilities. Multi-relay systems using STL and ICR (InterCity Relay) are used for radio network distribution and communication links between satellite downlinks and broadcast facilities. The Marti STL-10 System derives its excellence from Marti's experience in supplying thousands of STL systems worldwide over the past 34 years.

2. *Q. What are the differences between the Marti STL-10 Dual (stereo) Systems and "composite" STL systems?*

A. Marti STL-10 Dual Systems consists of two identical links, one for the left and one for the right stereo audio channel. Only one transmitting and one receiving antenna is required. The dual STL requires only one 300KHz. STL frequency allocation. The Marti STL-10 Dual Systems provide better than 80DB signal to noise and stereo separation. By contrast, the "composite" STL uses only one transmitter and receiver and is multiplexed for the left and right channels by using an FM stereo generator ahead of the transmitter. The penalties for using a composite system are: less reliability (only one transmitter and receiver), less channel separation than a Marti STL-10 Dual System, greater required signal strength for full quieting which results in higher antenna and coax costs, and higher initial equipment costs. The Marti STL-10 Dual System is more reliable because failure of one channel does not affect the other, thus providing mono backup capability. If any one piece of equipment fails would you rather be off the air in stereo or on the air in mono?

3. *Q. How can a Marti STL-10 System save me money?*

A. In the last several years radio broadcasters have seen monthly program telephone line charges increase 300% to 1100%. Broadcasters can now save money by purchasing a Marti STL-10 System to replace leased lines for distances of less than one mile up to 40 miles or more. In addition to eliminating leased line charges, Marti STL-10 Systems provide improved audio quality and reliability. When replacing a brand "X" or "Y" composite system you can save thousands of dollars with the Marti STL-10 System over the competitors' radios and get better performance.

4. *Q. How long of an STL shot can I make?*

A. An STL needs "line of sight" to work properly. That is, the transmit antenna and receive antenna must be visible to one another. If the antennas were sitting on the ground the practical distance would only be a mile or less due to the curvature of the earth. But since we can overcome the earth's curve by mounting antennas on poles or towers the path distance is then only limited by the height available for transmit and receive antennas. Typically STL paths are less than 10 miles and only require about 100' of elevation at each end. Longer paths of up to 40, 60 and even 80 miles are possible when sufficient transmit and receive antenna height is available.

5. *Q. What things should I consider when planning an STL path.*

A. First you should know the distance from the the transmit site to the receive site and the height available at each site for antennas. Then you must plot the path along its course to make sure there are no obstructions in the way of the microwave beam. This path must take into consideration a .6 Fresnel Zone clearance. The .6 Fresnel Zone is the amount of distance from the center of the microwave beam to the closest obstruction. The required Fresnel Zone can be calculated with the simple mathematical formula found on page 22, Chart #5.

6. *Q. What if I don't have line of sight?*

A. If you don't have line of sight for a direct path try plotting a "Double Hop". From the studio site you would shoot to another site and relay the signal around the obstruction with another microwave system. Although the cost of a double hop system is greater than a single hop system due to the extra equipment involved it will still save you thousands of dollars in leased program line charges. Marti system designers can help you plot a path for your STL. Just give us a call at (817) 645-9163.

7. *Q. How many subcarriers can I put on my Marti STL System?*

A. With a mono Marti STL-10 System we can use up to 2 Marti SCG-10 subcarrier generators and 2 Marti SCD-10 subcarrier demodulators. On the Marti STL-10 Dual System (stereo) you can use up to 4 Marti SCG-10 subcarrier generators and 4 Marti SCD-10 subcarrier demodulators.

8. *Q. What can I use the subcarriers for?*

A. Generally subcarriers are used to carry remote control data to the transmitter and background music program feeds to your FM SCA. Additional uses include intercom channels from the studio to the FM SCA for communication with remote vans, intercom channels to the transmitter site, and satellite feeds.

9. *Q. What type and size of antennas are best for an STL?*

A. We recommend full parabolic dish antennas due to their superior directivity and gain. The size of the antennas is dependent upon the length of the path, amount of coax required at each site and other path considerations such as partial obstruction of the beam. Marti STL-10 Dual Systems, both mono and dual, need smaller antennas and coax than composite systems to achieve the required signal level for full quieting. Smaller antennas and coax result in an overall lower installed cost of your STL system. For most STL paths the cost effective Marti PA-48 4' full parabolic antenna is a good choice. Two Marti PA-48 antennas will save you over \$1000.00 on the typical STL installation. Some customers have asked if they can use Yagi antennas to transmit or receive with. The answer is no. Yagi antennas have very wide patterns that will either cause interference to others from the transmitter or cause you to receive interference from other transmitters. Of course you can call us at (817) 645-9163 to get help with antenna selection for your Marti STL-10 System.

10. *Q. What kind of coax is recommended for my Marti STL-10 System?*

A. For 90% of the Marti STL-10 Systems we engineer, we recommend 1/2" foam coax. In cases where there is a long path or long coax requirement we might specify 7/8" foam coax or even 1-5/8" pressurized coax. Under no circumstances should RG-8 be used because of it's extremely high loss in the STL band. If you have a specific question about coax requirements call us for engineering help at (817) 645-9163.

12. *Q. How do I license my Marti STL-10 System?*

A. Marti STL-10 Systems are licensed by the FCC under Part 74. The licensing procedure is very simple and inexpensive. You will need to frequency coordinate the system with your local frequency coordinator and fill out an FCC Form 313 and send it with an \$85.00 fee and the Form 155 Fee Processing Form to FCC, Mass Media Services, PO Box 358200, Pittsburgh, PA, 15251-5200. We will be happy to give you the name and phone number of the frequency coordinator in your area and send you all the forms required. Give us a call at (817) 645-9163 for more information.

MARTI

The Performance-value leader in Broadcast Equipment

Marti Electronics, Inc., P.O. Box 661, Cleburne, Texas 76033-0661
(817) 645-9163 Telex #794835 "Marti CLBN" Fax (817) 641-3869



Single Freq. \$1695.00
Dual Freq. \$1725.00

RPT-30 FEATURES

- ★ Frequency switch selects both frequency and deviation - preventing operator error and interference
- ★ Subaudible encoder activates repeaters or other equipment simply by a single switch (standard equipment on all Marti RPU).
- ★ Illuminated meter displays compressor gain reduction, relative power output or power supply voltage.
- ★ Flashing LED's indicate antenna VSWR problems and over-temperature condition.
- ★ Automatic modulation control by built-in FM compressor limiter.
- ★ Four balanced microphone mixing inputs, one switchable to balanced line level.
- ★ Continuous duty-broadcast quality.
- ★ FCC type accepted.
- ★ Compatible with Marti mobile repeater, fixed automatic repeater and base station.

RPT-30 SPECIFICATIONS

Frequency Range and
 Maximum Power Output 140-180 MHz - 45 watts
 200-260 MHz - 40 watts
 280-340 MHz - 30 watts
 400-480 MHz - 35 watts

RF Connector SO-239

Operating Temp. Range 10° C to +45°C.

Modulation (specify) See system spec.

Channels (frequencies) Two frequencies selected by switch. Freq. separation 1.1% max. Also selects FM deviation.

Frequency Stability Mobile .0005% Base .00025% (above 400 MHz)

Spurious Emission Meets FCC requirements.

Audio Inputs Four balanced microphone (150 ohm) inputs (XLR3) with mixing controls. One input switchable to balanced line level at mic. No. 4 input and "D" connector on rear.

Modulation Control Broadcast quality compressor/limiter built-in.

Encoding Subaudible tone (27 Hz) encoder built-in.

Metering/Indicators Frequency select switch, line level adjust, meter switch, squelch adjust.

A REMOTE PICKUP TRANSMITTER IS A "MARTI"

Most everyone know what a "Marti" is. It is a trusted friend that is used on remote pickup broadcasts. The model RPT-30 transmitter incorporates the best, most practical mix of features requested by our customers and implemented in the very latest electronic and manufacturing technology. We never forget the most important feature of all - **SIMPLICITY - THE FEATURE THAT ENABLES NON TECHNICAL PERSONNEL TO PRODUCE PROFESSIONAL SOUNDING LIVE REMOTES.**

MCS-800 AUDIO COMPANDING

After 34 years of leadership, Marti is still innovating. Our optional noise reduction system, under development for several years, utilizes a combination of adaptive filtering and audio companding to achieve remarkable improvements in receiver threshold performance in the presence of noise, interference and multi-path signal propagation. This advanced noise reduction system produces results equivalent to increasing transmitter power to 250 watts. For more details on the MCS-800 system see page 15.

Power Requirements 120/220* VAC, 50/60 Hz. 10 watts. 13 V DC 300 MA.

AC Power Supply Precision, electronically regulated with current limiting.

Metering Illuminated meter indicates audio compression, relative RF output, relative supply voltage. Flashing LED's indicate "Antenna" (VSWR) and high "Temp".

Controls (4) input level, meter sw., encode sw., frequency sw., monitor jack.

Power Requirements 110-125 V V. 50-60 Hz (220 V. 50 Hz available on special order) DC operation on 11-13.5 V. negative ground.

Accessory Connector 9 pin "D" connector, DC power, remote control, encode, line level output.

Dimensions 3 1/2" high x 11.5" wide x 13.3" deep.

Weight Net 13 lbs. 18 lbs. shipping weight.

FCC Approved under Part 15. FCC ID: BEN9EZAR-10/150, BEN9EZAR-10/450.

KHz Channel Bandwidth	FCC Emission Designator	Transmitter Deviation ±KHz	Receiver Model	System Freq. Response Hz ±1.5 DB	THD > %	S/N without MCS-800 Reduction DB	S/N with MCS-800 Reduction DB
50	50KOF3E	8	AR-10 CR-10	50-10,500	2	54	65
25	25KOF3E	5	AR-10 DR-10 CR-10	50-7,500	2	50	57
10	10KOF3E	1.4	CR-10	50-3,000	2	45	--

Radio World

Special Report

Broadcasters Benefit From Part 94 Band

by Rick Neace
Marti Electronics

Cleburne TX All broadcast engineers are familiar with broadcast auxiliary communications provided under Part 74 of the FCC rules. In recent years, however, we have seen demand exceed availability of Part 74 frequencies for aural STL, TSL and RPU around the larger cities.

SPECIAL REPORT

The situation is far from hopeless, however. Many frequencies are available to broadcasters for various uses in the Private Operational-Fixed Microwave Service (Part 94).

This service has 18 frequency bands from 928 MHz to 40 GHz. We feel that the 928 to 960 MHz and the 21.2 GHz to 23.6 GHz bands are of special interest to radio broadcasters because of the availability of cost effective equipment in those areas.

Relatively low cost 23 GHz equipment has found applications in digital and analog STL, TSL and Inter-City Relay. Full 16-bit PCM can easily be handled within the video bandwidth of this equipment. Path lengths and reliability are somewhat limited by rain attenuation, prompting some 23 GHz users to provide backup communications.

928-960 MHz band

Few broadcast engineers are aware of the great potential of the 928-960 MHz Part 94 frequencies for broadcast related communications.

Radio and television stations qualify

under Part 94.9, with the exception cited in 94.9 (b)(2)(i): "The facilities may be used to transmit program material from one location to another, provided that the operational-fixed frequencies do not serve as the final link in the chain of distribution of the program material to broadcast stations."

Maximum bandwidths of 25, 50, 100 and 200 kHz are available in this band, but are licensed based upon a supplemental exhibit justifying need.

An example of a Part 94, 928-960 MHz link in use by broadcasters would be first hop of stereo STL relay. The first hop is done on Part 94 and the final hop on Part 74. This avoids STL frequency coordination problems in the city.

Many stations have given up on the "P" channels in the 450-455 MHz RPU band and have installed interference free data links on Part 94, 928-960 MHz frequencies. The 200 kHz channels will carry several multiplexed data channels.

Over the past several years Marti has supplied multichannel links with up to five channels of data and 7.5 kHz high quality companded audio (RPU backhaul and network feeds).

Satellite downlink receivers are often located in outlying areas to avoid interference. Getting satellite audio from the downlink receivers to the studio is being done on Part 94 frequencies.

Getting equipment authorization

Part 94 license applications must specify: transmitters that have been tested and FCC authorized for operation on required Part 94 frequencies; emission designators and stability.

License application for station authorization in the private operational fixed microwave service is made on FCC Form 402.

The procedure is much more complicated than Part 74. Certified supplemental showings of frequency coordination and interference analysis pursuant to the applicable rules sections in Part 94 must accompany the application.

Because of the time and extensive database required for coordination, have your favorite frequency search firm do this work and file the application for you.

■ ■ ■

Editor's note: Rick Neace can be reached at Marti Electronics: 817-645-9163.

Reprinted from Radio World
October 25, 1989

**MODEL RPT-15
PORTABLE/MOBILE TRANSMITTER**

RPT-15 SPECIFICATIONS

Frequency Range	400-480, 280-340, 200-260 and 140-180 MHz.
RF Output	15 watts max. into 50 ohms.
RF Connector	S0-239
Operating Temp.	-10°C to 45°C
Modulation	See system specifications page 12.
Dual Frequency	Selectable dual-frequency operation. Freq. separation 1.1% max.
Spurious Emission	Meets FCC requirements.
Audio Inputs	One microphone and one high level unbalanced input. Individual mixing gain controls.
Audio Input Level	Microphone input level can be from -68 DB to -35 DB. High level can be from 0.2 volts rms. 8-600 ohms.
Audio Input Impedance	Will accept microphone from 150 to 500 ohms.
Audio Connectors	Input No. 1 (XLR-3). Input No. 2 miniature phone jack.
Power Requirements	110-125 V. 50-60 Hz. 12.6 V DC (neg. gnd.) 2.25 amps.*
Modulation Control	Broadcast quality. Compressor limiter built-in.
Metering	Panel meter indicates audio compression, RF output, power supply DC.
Weight	9 1/4 lbs. net; 14 lbs gross.
Dimensions	8 3/4" wide x 3 3/4" high x 12 1/2" deep.

*28 V. DC operation requires APS-28 18 power supply.



MODEL RPT-15 is a compact 15 watt transmitter designed for portable and mobile remote broadcast service. The RPT-15 has a built-in power supply for operation on 115 V. AC. It will also operate on external 12-14 volt DC supply. Standard features include dual frequency and subaudible encoder for use with Marti automatic fixed repeaters. All this plus famous Marti broadcast quality and continuous duty operation.

**Single Frequency \$1,075.00
Dual Frequency \$ 1,105.00**

FCC ID: BEN9EZRPT15-150, BEN9EZRPT15-450

See system specifications page 12.

RPT-15 FEATURES

- ★ Type accepted on all VHF-UHF RPU channels.
- ★ 15 watts continuous output.
- ★ Dual frequency capability. Automatic FM deviation selection
- ★ Subaudible encoder.
- ★ Built-in metering.
- ★ Built-in AC supply
- ★ FM compressor-limiter
- ★ Mixing mic and line inputs.
- ★ MCS-800 Companding option available (see page 15)

RPT-2 FEATURES

- ★ Type accepted on all VHF-UHF RPU channels.
- ★ 2.5 watts continuous output.
- ★ Dual frequency provision.
- ★ Subaudible encoder.
- ★ Built-in metering.
- ★ 3-way power option.
- ★ Internal ni-cad battery.
- ★ Internal charger and AC supply.
- ★ FM compressor-limiter.
- ★ Mixing mic and line inputs.

RPT-2 without internal battery:

**Single Frequency - \$995.00
Dual Frequency - \$1,025.00**

RPT-2 with internal battery:

**Single Frequency - \$1,045.00
Dual Frequency - \$1,075.00**

FCC ID: BEN9EZRPT2-150, BEN9EZRPT2-450



**RPT-2
HAND-CARRIED TRANSMITTER**

The RPT-2 is a hand-carried broadcast quality continuous duty transmitter. It will operate from it's internal ni-cad battery, from 115 V. AC power, or from external 12 V. DC power. A special subaudible encoder enables the RPT-2 to access Marti mobile repeaters for coverage of indoor events. 2.5 watts is the maximum power allowed by FCC Rule 74.431 (C) (1).

MCS-800 Companding option available (see page 15)

See system specifications page 12.

RPT-2 SPECIFICATIONS

RF Output	Maximum 2.5 watts into 50 ohms.
RF Connector	S0-239
Operating Temp.	-10°C to 45°C
Modulation	See system specifications page 12.
Dual Frequency	Selectable dual-frequency operation.
Spurious Emission	Meets FCC requirements.
Frequency Stability	-30°C to +50°C +.0005%
Audio Inputs	One microphone input (push to talk) and one high level unbalanced input. Individual mixing gain controls.
Audio Input Level	Microphone input level can be from -68 DB to -35 DB. High level can be from 0.2 volts rms. 8-600 ohms.
Audio Input Impedance	Will accept microphone from 150 to 500 ohms.
Audio Connectors	Input No. 1 (XLR-3). Input No. 2 miniature phone jack.
Power Requirements	110-125 V. 50-60 Hz. 12.6 V DC (neg. gnd.) 750 MA internal ni-cad battery and charger.
Modulation Control	Broadcast quality. Compressor limiter built-in.
Metering	Panel meter indicates audio compression, RF output, power supply DC.
Weight	7 lbs net; 10 lbs gross
Dimensions	8 3/4" wide x 3 3/4" high x 11" deep.



CR-10 FEATURES

- ★ GaAs Fet low noise RF amplifier 200-480 MHz
- ★ Double balanced mixer.
- ★ Four I.F. bandwidths.
- ★ Companding option available.
- ★ Six function illuminated test meter.
- ★ Monitor speaker and control.
- ★ All modular construction.

Model CR-10 is a rack-mounted VHF or UHF base station receiver designed for remote pickup service. This receiver has dual frequency capability built-in. Marti technology has provided the highest frequency response with the lowest noise and distortion possible for the assigned channel band width. Special attention has been given to solving today's high interference problems. The CR-10 features a built-in test meter, squelch relay, monitor speaker, subaudible tone decoder, special noise reduction circuit, 90 DB spurious rejection.

- CR-10 Single Frequency without Decoder Board \$1,195.00**
- CR-10/2 Dual Frequency without Decoder Board \$1,225.00**
- CR-10-D Single Frequency with Decoder Board \$1,295.00**
- CR-10/2-D Dual Frequency with Decoder Board \$1,325.00**

CR-10 SPECIFICATIONS

Frequency Range	400-800, 280-340, 200-260 and 140-180 MHz		
Dual Frequency	Provision for Dual Frequency. Separation 0.2% Max.		
Sensitivity	0.5 microvolts for 20 db S/N.		
Input Impedance	50 ohms.		
Selectivity	Filter	3 DB	60 DB
	F 50	50 KHz	100 KHz
	F 36	36 KHz	60 KHz
	F 25	25 KHz	42 KHz
	F10	8 KHz	15 KHz
Spurious Response	-90 db.		
Audio Output (Line Level)	Balanced 600 ohms. -10 DBM., Barrier strip.		
Monitor Output	0.5 watts monitor amp, speaker and level control.		
Subaudible Tone Decoder	800-229 decode board provides relay closure upon receipt of 27 Hz. tone.		
Front Panel Controls	Frequency select switch, line level adjust, meter switch, squelch adjust.		
Power Requirements	120/220* VAC, 50/60 Hz. 10 watts. 13 V DC 300 MA.		
AC Power Supply	Precision, electronically regulated with current limiting.		
Metering	RF signal level, audio output level, sub. level +13 V. DC supply, L.O. level, mixer level, LED indicators for power and open squelch.		
Squelch Indicator	A panel LED indicates when the squelch relay is open to aid squelch adjustment.		
Accessory Connector	A 15 pin "D" connector on rear panel provides access to a +13 V. and +18 V. supplies, squelch relay contacts, signal level sample, subaudible tone level, decode relay contact, balanced audio output, receiver mute, and ground.		
RF protection	All input/output circuits filtered for RF. An all aluminum enclosure insures total shielding and bonding for RF protection.		
Operating Temp. Range	-10° C to 50° C.		
Dimensions	3 1/2" high x 19" wide x 12" deep.		
Weight	Net 8 lbs. Domestic packed 12 lbs.		
RF Connector	UG-58		

See system specifications page 12

FCC Approved under Part 15. FCC ID: BEN9EZAR-10/150, BEN9EZAR-10/450.
*Available on 220 VAC, 50 Hz. upon request.

MODEL DR-10 BASE RECEIVER

DR-10 SPECIFICATIONS

Frequency Range	400-800, 280-340, 200-260 and 140-180 MHz
Dual Frequency	Provision for Dual Frequency. Separation 0.2% Max.
Sensitivity	0.5 microvolts for 20 db S/N.
Input Impedance	50 ohms.
Frequency Stability	± .00025% 0° C to 50° C.
Selectivity	± 13 KHz - 3 db ± 30 KHz -80 db
Spurious Response	-70 db.
Audio Output (Line Level)	Balanced 600 ohms. +10 DBM.
Subaudible Tone Decoder	800-229 at extra cost.
Metering	Illuminated panel meter indicates relative signal strength and audio output level.
Panel Light	LED indicates when squelch is open.
Controls	Frequency select switch, meter function switch, squelch pot.
Accessory Connector	A 15 pin "D" connector on rear panel provides access to a +13 V. and +18 V. supplies, squelch relay contacts, signal level sample, subaudible tone level, decode relay contact, balanced audio output, receiver mute, and ground.
RF connector	UG-58
AC Power Supply	Precision, electronically regulated with current limiting.
Power Requirements	120 V. AC, 50/60 Hz., 10 watts, 13.5 V DC 300 MA. (220 V. AC 50/60 Hz. available if specified with order) 24-28 V. DC operation with optional APS-28/18 supply.
Operating Temp. Range	-10° C to 50° C.
Dimensions	3 1/2" high x 19" wide x 12" deep.
Weight	Net 6 lbs. Domestic packed 12 lbs.



Replace your MR-10 or MR-30 with DR-10 Receiver

The model DR-10 is a rack mounted base station receiver designed for VHF or UHF broadcast remote pickup service. The receiver only requires 1 3/4" of rack space and is recommended as a cost effective replacement for older tube-type and solid state receivers in areas of moderate signal density and interference. Dual frequency capability is standard, with tone decoding and audio companding available as options. The DR-10 is designed for 25 KHz bandwidth channels only and has 7.5 KHz audio low pass filtering.

- DR-10 Single Frequency \$895.00**
- DR-10 Dual Frequency \$925.00**

AR-10 SPECIFICATIONS

Frequency Range	400-800, 280-340, 200-260 and 140-180 MHz		
Dual Frequency	Provision for Dual Frequency. Separation 0.2% Max.		
Sensitivity	0.5 microvolts for 20 db S/N.		
Input Impedance	50 ohms.		
Frequency Stability	+ .00025% - 10°C to 50°C		
Selectivity	Filter	3 DB	60 DB
	F 50	50 KHz	100 KHz
	F 36	36 KHz	60 KHz
	F 25	25 KHz	42 KHz
	F10	8 KHz	15 KHz
Spurious Response	-90 db.		
Audio Output (Line Level)	Balanced 600 ohms. -9 DBM., Barrier strip. Unbalanced 600 ohms + 4 DBM at 15 pin connector.		
Monitor Output	Built-in monitor amp. (0.5 watts) monitor speaker and level control. Headset monitor jack mutes speaker.		
Subaudible Tone Decoder	800-229 decode board provides relay closure upon receipt of 27 Hz. ± 0.1 Hz. tone.		
Front Panel Controls	Frequency select switch, line level adjust, meter switch, squelch adjust, monitor speaker level, power switch, headset jack.		
Power Requirements	120/220* VAC, 50/60 Hz. 10 watts. 13 V DC 300 MA.		
AC Power Supply	Precision, electronically regulated with current limiting.		
Metering	RF signal level, audio output level, decode level.		
Dimensions	3 1/2" high x 9" wide x 13 1/2" deep.		
Weight	Net 6 lbs. Domestic packed 9 lbs.		
RF Connector	UG-58		

FCC Approved under Part 15.
 FCC ID: BEN9EZAR-10/150, BEN9EZAR-10/450.
 *Available on 220 VAC, 50 Hz. upon request.



The Marti AR-10 series receiver is a portable or mobile repeater receiver. This receiver has a built-in AC power supply, and will operate from an external source of 12-15 volts DC. A built-in sub-audible tone decoder meets FCC rule 74.431 allowing this receiver to automatically turn on a mobile transmitter upon receiving an encoded signal from a hand-carried portable transmitter, thus automatically relaying a broadcast to the base station receiver over a greater distance. The receiver operates on all remote pick-up frequencies and band widths. Other built-in features include dual frequency capabilities, monitor speaker, and terminals for feeding telephone lines in portable operations. A special noise reduction circuit provides an improvement of 6 db in S/N ratio for weak signals. The unit weighs only 5 1/2 lbs.

AR-10 Single Frequency \$1,295.00
AR-10 Dual Frequency \$1,325.00

MCS-800 AUDIO COMPANDING SYSTEM
EXTEND YOUR REMOTE HORIZONS (AND DO IT QUIETLY)

Marti's exclusive MCS-800 audio companding system gives you the power to do remotes from even farther away with better sound.

MCS-800 is a Marti exclusive system that installs in your RPT-30, RPT-15 and RPT-2 transmitters and the CR-10, AR-10 and DR-10 receivers. MCS-800 is a 2:1 companding system that dramatically lowers noise and raises effective transmitting power. The effect of adding MCS-800 to an RPT-30 is equivalent to raising the power from 30 watts to a powerful 250 watts. This results in audio quality that rivals being in the studio and the ability to do remotes from distances that were previously thought were out of range.

Since we first introduced the MCS-800 system we have installed hundreds in existing systems and in new equipment.

Customers have reported increased coverage from area where previous remotes were weak and noisy. In many cases remotes have been done from areas that were previously out of range. You might say that companding literally expands the horizon for the broadcaster by letting him go farther than ever with this RPU signal. The companding option results in better signal to noise, sharper IF filtering, and you still get the great studio sound!

"The best part about this system over "singled ended" methods is that the MCS-800 lets you reduce the noise and still have full broadcast quality audio."
 Greg Hahn, Chief Engineer, WRKA

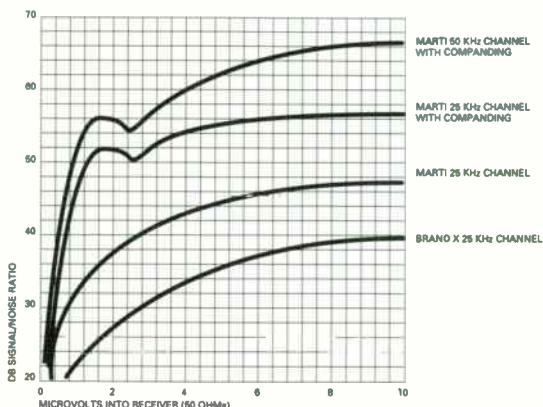
Although objective testing indicates noise suppression with the MCS-800 is about 20 db, subjective evaluation (listening comparisons), indicates a much higher figure, in the order of 30 db.

Regular companding works nicely with signal to noise ratio greater than 40 db. Below that level noise holds the expander open and performance becomes quite poor. However the MCS-800 system employs adaptive filtering to reduce the noise band width to allow the compander to continue working without bringing up unwanted noise. Probably 90% of all remote pick-up transmissions occur over a signal path where the received signal is less than 10 microvolts. The graph shows that even at extremely low signals the SNR remains high. At lower levels the audio bandwidth is reduced somewhat but that is preferable to the alternative of increased noise.

The nice thing about the MCS-800 is that it can be installed in your existing RPT-30, RPT-15 and RPT-2 transmitters as well as the CR-10, AR-10 and DR-10 receivers. The cost to modify an existing system is \$250.00 for each transmitter or receiver (\$500.00 for the set). The best part is that to get MCS-800 in a new system just adds \$400.00 to the total price of an entire system.

Two important things to note: 1. The system MUST be installed by the technicians here at the plant. We have had customers insist they could properly align the system but found it's tougher than it sounds. 2. The system is not switchable. Due to the complex nature of the way the compander works and the precise alignment required once the MCS-800 is installed, it MUST work together as a complete system.

"In addition to improving sound quality, the MCS-800 has enabled us to perform other remotes that, previously, were not possible. This week WMIL conducted remote broadcasts 45 and 60 miles from the station."
 Phil Klingler, Technical Director, WMIL/WOKY



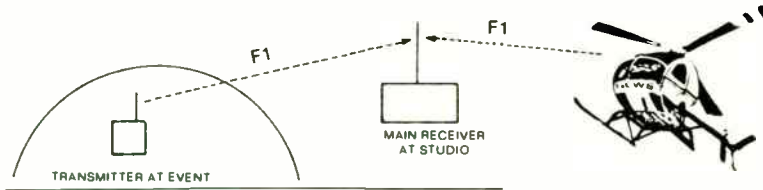
MCS-800 PRICES

Factory installed with new equipment order on RPT-30, RPT-15 and RPT-2 transmitters and CR-10, AR-10 and DR-10 receivers. **\$400.00**

Factory installed in USED RPT-30, RPT-15 and RPT-2 transmitters and CR-10, AR-10 and DR-10 receivers. **\$500.00**

SYSTEM WILL NOT OPERATE IN OLDER EQUIPMENT

MARTI REMOTE PICKUP (RPU) ONE-WAY SYSTEMS



PACKAGE 1 \$3,543.30
Mono RPU 140-180 MHz

- Mobile or Portable:**
- 1 RPT-30/150 Transmitter
 - 1 MCD-70C Microphone
 - 1 700-251 Mobile Mounting Kit for RPT-30
 - 1 ASPS-177 Mobile Antenna
 - 1 PAV/150 Portable Antenna
- Studio:**
- 1 CR-10/150 Receiver
 - 1 SC-155AC Base Antenna
 - 1 PG-2B Jumper Cable
 - 1 K-1 Weatherproofing Kit
 - * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED

PACKAGE 2 \$2,899.90
Mono RPU 140-180 MHz

- Mobile or Portable:**
- 1 RPT-15/150 Transmitter
 - 1 MCD-70C Microphone
 - 1 700-252 Mobile Mounting Kit for RPT-15
 - 1 ASPS-177 Mobile Antenna
 - 1 PAV/150 Portable Antenna
- Studio:**
- 1 CR-10/150 Receiver
 - 1 SC-155AC Base Antenna
 - 1 PG-2B Jumper Cable
 - 1 K-1 Weatherproofing Kit
 - * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED

PACKAGE 3 \$3,630.35
Mono RPU 400-480 MHz

- Mobile or Portable:**
- 1 RPT-30/450 Transmitter
 - 1 MCD-70C Microphone
 - 1 700-251 Mobile Mounting Kit for RPT-30
 - 1 ASP-1650 Mobile Antenna
 - 1 YC-450 Portable Yagi Antenna
 - 1 PG-20A Jumper Cable
- Studio:**
- 1 CR-10/450 Receiver
 - 1 ASPD-700 Base Antenna
 - 1 PG-2B Jumper Cable
 - 1 K-1 Weatherproofing Kit
 - * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED

PACKAGE 4 \$2,986.95
Mono RPU 400-480 MHz

- Mobile or Portable:**
- 1 RPT-15/450 Transmitter
 - 1 MCD-70C Microphone
 - 1 700-252 Mobile Mounting Kit for RPT-15
 - 1 ASP-1650 Mobile Antenna
 - 1 YC-450 Portable Yagi Antenna
 - 1 PG-20A Jumper Cable
- Studio:**
- 1 CR-10/450 Receiver
 - 1 ASPD-700 Base Antenna
 - 1 PG-2B Jumper Cable
 - 1 K-1 Weatherproofing Kit
 - * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED

PACKAGE 5 \$6,743.00
Stereo RPU 400-480 MHz

- Mobile or Portable:**
- 2 RPT-30/450 Transmitters
 - 2 MCD-70C Microphones
 - 2 YC-450 Portable Yagi Antennas
 - 2 PG-20A Jumper Cables
- Studio:**
- 2 CR-10/450 Receivers
 - 1 ASPD-700 Base Antenna
 - 1 2-YC Receiver Combiner
 - 1 PG-2B Jumper Cable
 - 1 K-1 Weatherproofing Kit
 - * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED

PACKAGE 6 \$5,503.00
Stereo RPU 400-480 MHz

- Mobile or Portable:**
- 2 RPT-15/450 Transmitters
 - 2 MCD-70C Microphones
 - 2 YC-450 Portable Yagi Antennas
 - 2 PG-20A Jumper Cables
- Studio:**
- 2 CR-10/450 Receivers
 - 1 ASPD-700 Base Antenna
 - 1 2-YC Receiver Combiner
 - 1 PG-2B Jumper Cable
 - 1 K-1 Weatherproofing Kit
 - * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED

PACKAGE 7 \$2,845.25
Mono Aircraft RPU 400-480 MHz

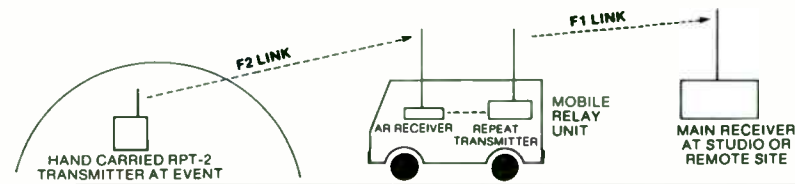
- Mobile:**
- 1 RPT-15/450 Transmitter
 - 1 MCD-70D Microphone
 - 1 AV-15 Aircraft Antenna
 - 1 APS-28/18 Airborne Power Supply
- Studio:**
- 1 CR-10/450 Receiver
 - 1 ASPD-700 Base Antenna
 - 1 PG-2B Jumper Cable
 - 1 K-1 Weatherproofing Kit
 - * TWO "N" FEMALE CONNECTORS AND 1/2" TRANSMISSION LINE REQUIRED

A Marti one-way Remote Pickup System is used by a broadcaster to send a program from an event to the studio. Voice or sound travels one direction, from the event to the studio. Programming from an aircraft requires special equipment which is included in Package 7.

*Where connectors and transmission line are required use Female connectors and 1/2" transmission line and contact factory for pricing.

MARTI UNATTENDED AUTOMATIC MOBILE RELAY

In applications where the Marti One-Way RPU system will not communicate from the event to the studio, an AUTOMATIC MOBILE RELAY station may be required. Additional components can be added to the Marti One-Way system to make it a Mobile Relay System. Components from the Marti One-Way system would still be used in the F1 link in the mobile relay system. Components listed below would make-up the F2 part of the Mobile Relay link.



PACKAGE 11 \$2,617.40
Automatic Mobile Relay For Use With Packages 1 & 2

- 1 RPT-2/450 Transmitter
- 1 MCD-70D Microphone
- 1 AR-10/450 Receiver
- 1 700-252 Mobile Mounting Kit for AR-10
- 1 585-037-2 Control Cable
- 1 ASP-1650 Mobile Antenna
- 1 PAV/450 Portable Antenna

PACKAGE 12 \$2,797.40
Automatic Mobile Relay For Use With Packages 3 & 4

- 1 RPT-2/450 Transmitter
- 1 MCD-70D Microphone
- 1 AR-10/450 Receiver
- 1 700-252 Mobile Mounting Kit for AR-10
- 1 585-037-2 Control Cable
- 1 ASP-1650 Mobile Antenna
- 1 PAV/450 Portable Antenna
- 1 WP-470-1 Cavity

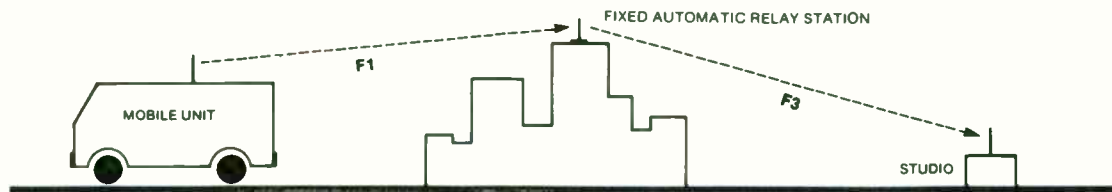
PACKAGE 13 \$2,622.90
Automatic Mobile Relay For Use With Packages 3 & 4

- 1 RPT-2/150 Transmitter
- 1 MCD-70D Microphone
- 1 AR-10/150 Receiver
- 1 700-252 Mobile Mounting Kit for AR-10
- 1 585-037-2 Control Cable
- 1 ASPS-177 Mobile Antenna
- 1 PAV/150 Portable Antenna

For additional information on Mobile Repeaters, see AR-10 Specification Sheet.

ON ALL MOBILE REPEATERS F-2 MUST BE AT LEAST 4.0 MHz FROM F-1.

MARTI UNATTENDED AUTOMATIC FIXED RELAY STATION



Automatic Relay Stations greatly increase the operating range and coverage areas of broadcast news and remote coverage of events. When used with MARTI portable, mobile and base station units, full broadcast quality audio is provided. Unlimited transmitting time is available since this equipment is designed for continuous 24 hour per day operation. Automatic Relay Stations (ARS) are available in two models. An ARS-15 transmits with a RPT 15 transmitter and an ARS-30 transmits with a RPT 30 transmitter. Both systems transmit the F3 frequency above in the 450 to 455 MHz band. F-3 must be at least 4.0 MHz from F-1.

EQUIPMENT TO BE LOCATED AT AUTOMATIC RELAY SITE

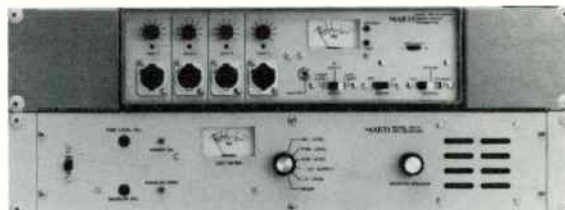
PACKAGE 40	PACKAGE 41	PACKAGE 42	PACKAGE 43
\$3,616.50	\$3,051.50	\$4,145.50	\$3,580.50
160 MHz In/450-455 MHz Out:	160 MHz In/450-455 MHz Out:	450 MHz In/455 MHz Out:	450 MHz In/455 MHz Out:
1 CR-10/150 Receiver 1 585-037-1 Repeater Cable 1 SC-155AC Receiving Antenna 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit *TWO "N" FEMALE CONNECTORS AND ½" TRANSMISSION LINE REQUIRED	1 CR-10/150 Receiver 1 585-037-1 Repeater Cable 1 SC-155AC Receiving Antenna 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit *TWO "N" FEMALE CONNECTORS AND ½" TRANSMISSION LINE REQUIRED	1 CR-10/450 Receiver 1 585-037-1 Repeater Cable 1 ASPD-700 Base Antenna 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit *TWO "N" FEMALE CONNECTORS AND ½" TRANSMISSION LINE REQUIRED	1 CR-10/450 Receiver 1 585-037-1 Repeater Cable 1 ASPD-700 Base Antenna 1 PG-2B Jumper Cable 1 K-1 Weatherproofing Kit *TWO "N" FEMALE CONNECTORS AND ½" TRANSMISSION LINE REQUIRED
1 RPT-30/450 Transmitter 1 700-253 Rack Mounting Kit for RPT-30 1 PG-2A Jumper Cable 1 K-1 Weatherproofing Kit *TWO "N" FEMALE CONNECTORS AND ½" TRANSMISSION LINE REQUIRED 1 YC-450 Yagi Antenna**	1 RPT-15/450 Transmitter 1 RMH-3B Rack Shelf 1 PG-2A Jumper Cable 1 K-1 Weatherproofing Kit *TWO "N" FEMALE CONNECTORS AND ½" TRANSMISSION LINE REQUIRED 1 YC-450 Yagi Antenna**	1 RPT-30/450 Transmitter 1 700-253 Rack Mounting Kit for RPT-30 1 WP-678 Duplexer & Cables	1 RPT-15/450 Transmitter 1 RMH-3B Rack Shelf 1 WP-678 Duplexer Cables
*If TWO-WAY communication is required, replace YC-450 with ASPD-700 Base Antenna	**If TWO-WAY communication is required, replace YC-450 with ASPD-700 Base Antenna	*Where connectors and transmission line are required use Female connectors and ½" transmission line and contact factory for pricing.	

EQUIPMENT TO BE LOCATED AT STUDIO

PACKAGE 46 \$1,668.00

One Way w/Fixed Repeater:

- 1 CR-10/450 Receiver
- 1 ASPD-700 Base Antenna
- 1 PG-2B Jumper Cable
- 1 K-1 Weatherproofing Kit
- *TWO "N" FEMALE CONNECTORS AND ½" TRANSMISSION LINE REQUIRED



MODEL ARS-30

160 MHz Mobile Frequency to Fixed Repeater with a 450 or 455 MHz output frequency use Mobile part of Package 1, Package 40 or 41 and Package 46.

160 MHz Mobile Frequency to Fixed Repeater with a 450 or 455 MHz output frequency use Mobile part of Package 2, Package 40 or 41 and Package 46.

450 MHz Mobile Frequency to Fixed Repeater with a 455 MHz output frequency use Mobile part of Package 3, Package 42 or 43 and Package 46.

450 MHz Mobile Frequency to Fixed Repeater with a 455 MHz output frequency use Mobile part of Package 4, Package 42 or 43 and Package 46.

For Two-Way Communication on either Fixed Automatic Repeater or Two-Way Communication between event and direct to Studio, contact factory for equipment and quote.

RPU GENERAL PRICE LIST

Transmitters	Description of Item	Price
RPT-2	Hand carried, portable 2.5 watt transmitter without battery, single frequency, tone encoder, UHF or VHF	\$995.00
RPT-2	Hand carried, portable 2.5 watt transmitter with battery, single frequency, tone encoder, UHF or VHF	\$1,045.00
RPT-2-2	Hand carried, portable 2.5 watt transmitter without battery, dual frequency, tone encoder, UHF or VHF	\$1,025.00
RPT-2-2	Hand carried, portable 2.5 watt transmitter with battery, dual frequency, tone encoder, UHF or VHF	\$1,075.00
RPT-15	15 watt transmitter, single frequency, compact portable or airborne, with tone encoder, UHF or VHF	1,075.00
RPT-15-2	15 watt transmitter, dual frequency, compact portable or airborne, with tone encoder, UHF or VHF	1,105.00
RPT-30	30 watt transmitter at 450 MHz and 45 watts at 140-180 MHz, continous duty , single frequency, 4 audio inputs, tone encoder, UHF or VHF	\$1,695.00
RPT-30-2	30 watt transmitter at 450 MHz and 45 watts at 140-180 MHz, continous duty , dual frequency, 4 audio inputs, tone encoder, UHF or VHF	\$1,725.00
Receivers	Description of Item	Price
AR-10	RPU mobile repeat receiver, single frequency, UHF or VHF, built in AC supply or operates on 12-15 V DC	\$1,195.00
AR-10-2	RPU mobile repeat receiver, dual frequency, UHF or VHF, built in AC supply or operates on 12-15 V DC	\$1,225.00
CR-10	RPU rack mount receiver, single frequency, UHF or VHF with monitor speaker in front panel without decoder board.....	\$1,195.00
CR-10-2	RPU rack mount receiver, dual frequency, UHF or VHF with monitor speaker in front panel without decoder board.....	\$1,225.00
CR-10-D	RPU rack mount receiver, single frequency, UHF or VHF with monitor speaker in front panel with decoder board	\$1,295.00
CR-10-2-D	RPU rack mount receiver, dual frequency, UHF or VHF with monitor speaker in front panel with decoder board	\$1,325.00
DR-10	RPU rack mount receiver, single frequency, UHF or VHF, does not include monitor speaker, tone decode	\$895.00
DR-10-2	RPU rack mount receiver, dual frequency, UHF or VHF, does not include monitor speaker, tone decode	\$925.00

RPU ACCESSORIES

Model	Description of Item	Price
Crystal	For replacement crystals call International Crystal Manufacturing, 800-426-9825. Specify Marti model number and desired operatng frequency. 2 weeks or more delivery.....	\$17.95
	Expedited delivery, 2 weeks or less	\$32.95
APS-28/18	Airborne power supply 28-18 V. DC for RPT-15	\$65.00
K-1	Grounding and weatherproofing kit	\$12.00
040-001-1	Internal battery for RPT-2 transmitter	\$72.00
040-009	Portable battery for RPT-15 transmitter with belt strap, case and charger	\$100.00
2-YC	RPU receiver combiner 152-456 MHz	\$65.00
2YC-150	Stacking harness, for stacking two YC-153, YC-161, YC-160, YC-166 or YC-170 Yagi antennas	\$65.00
2YC-450	Stacking harness, for stacking two YC-450 Yagi antennas and "T" assembly.....	\$85.00
580-116	AC power cord for RPT-2, RPT-15, RPT-30, AR-10 and CR-10	\$5.50
585-069	DC power cord for RPT-2 transmitter with connectors	\$21.00
585-070	DC power cord for RPT-15 transmitter with connectors	\$21.00
586-074	DC power cord for RPT-30 transmitter with fuse and cable	\$19.50
700-251	Mobile mounting kit for RPT-30	\$48.60
700-252	Mobile mounting kit for RPT-2/15 & AR-10, please specify model number of equipment to be mounted	\$25.20
700-253	Rack mounting kit for RPT-30 transmitter	\$19.50
800-226	Coaxial relay board, 50 ohm, N female connectors	\$54.60
800-278 System	Audio companding boards for RPT-2, RPT-15 or RPT-30 transmitters. ONLY (2 boards) and AR-10, BR-10, CR-10 or DR-10 receivers ONLY (1 board) NOT FOR OTHER MODELS	\$400.00

RPU ACCESSORIES

PRICES EFFECTIVE 4/1/91

Model	Description of Item	Price
633-6	Duplexer with cables to connect AR-10/450 receiver & RPT 30- transmitter to common antenna. MOBILE USE ONLY.	\$350.00
WP-430-1	Selective cavity resonator, single section for operation in the 148-174 MHz band.	\$210.00
WP-440-1	Selective cavity resonator with female connectors 200-300 MHz	\$200.00
WP-470-1	Selective cavity resonator, single section for operation in the 406-512 MHz band.	\$180.00
WP-678	Duplexer with cables to join CR-10 & RPT-15 or RPT-30 to common line & antenna. USED WITH FIXED AUTO RELAY. UHF ONLY.....	\$730.00
MCD-70	Microphone with push to talk switch & 14' standard cord 4 pin XLR-4.	\$80.00
MCD-70B	Microphone with push to talk switch & 9' coil cord 4 pin XLR-4.	\$80.00
MCD-70C	Microphone with 3 pin XLR-3 plug & 14' cord	\$80.00
MCD-70D	Microphone with 3 pin XLR-3 plug & 9' coil cord.	\$80.00
Racom 1300	Station identifier for use in TSL system.	\$200.00
RMH-3	Rack shelf for mounting RPT-2 transmitter.	\$55.00
RMH-3B	Rack shelf with fan for mounting RPT-15	\$74.50
TR-2	Coaxial switching unit required in RPT-15 if used for base station or mobile two-way communications	\$35.00
TR-3	Antenna relay for RPT-30 for two-way operation.	\$35.00
800-229	Decoder, subaudible tone for CR-10 receivers	\$106.50

RPU ANTENNAS

Model	Description of Item	Price
Omnidirection RPU Base Antennas (SPECIFY FREQUENCY)		
SC-155AC	Base Antenna vertically polarized, 6 db gain, top mounting, includes PG-15A cable, for 152-171 MHz band with "N" male connector. Required a 12' x 1 1/4" mounting pipe with standard threads (NOT INCLUDED)	\$350.00
ASPRD-700	Base Antenna, vertically polarized, 7 db gain, top mounting with ASPR-616 mounting clamps, for 450-470 MHz band, with "N" male connector.	\$336.00
DB-5007	Side mount kit for ASPRD-700 & SC-155AC antennas	\$145.00
Omnidirectional RPU Mobile Whip Antennas (SPECIFY FREQUENCY)		
ASPS-177	Whip Antenna, vertically polarized mobile roof top, 3 db gain, for 130-174 MHz band, with 15' RG58 & PL259 connector	\$61.75
ASP-1650	Whip antenna, vertically polarized mobile roof top, 4 db gain, for 450-470 MHz band, with 15' RG58U & PL259 connector.	\$56.25
MM-150	Magnetic Mount Antenna, vertically polarized, 3 db gain, for 150-174 MHz band, with 12' RG58U & PL259 connector.	\$69.95
MM-450	Magnetic Mount Antenna, vertically polarized, 4 db gain, for 450-470 MHz band, with 12' RG58U & PL259 connector	\$69.95
AV-15	Aircraft Antenna, vertically polarized, for 450-470 MHz band, with "N" female connector.....	\$57.25
MA-1	Ring Antenna, horizontally polarized with 4' mast, for 150-170 MHz band with 10' RG58 & PL259 connector.	\$80.00
Omnidirectional RPU Portable Antennas (SPECIFY FREQUENCY)		
PO-150	A 5/8 wave base loaded antenna, vertically polarized, 3 db gain for RPT-2 for 150-174 MHz band with PL259 connector.	\$39.95
PO-450	Colinear Antenna with Phasing coils, vertically polarized, 4 db gain for RPT-2, for 450-470 MHz band with PL259 connector.	\$39.95
PA-1	Ring antenna with standard mic threads, horizontally polarized with 2' mast, for 150-170 MHz band with 10' RG58 & PL259 connector.	\$80.00
PAV/150	Mic Stand Mount Antenna, vertically polarized, 3 db gain, for 150-170 MHz band with 12' RG58 & PL259 connector. (MIC STAND NOT INCLUDED)	\$75.95
PAV/450	Mic Stand Mount Antenna, vertically polarized, 4 db gain, for 450-470 MHz band with 12' RG58 & PL259 connector. (MIC STAND NOT INCLUDED)	\$75.95
DB-438	Yagi Antenna, horizontally or vertically polarized depending on mounting, 6 elements, 10 db gain, for 450-470 MHz band, recommended for TSL use, "N" female connector	*
YC-153	Yagi Antenna, horizontally or vertically polarized depending on mounting, 5 elements, 9 db gain, for 152.08-153.40 MHz band with "N" female connector.	\$150.00
YC-161	Yagi Antenna, horizontally or vertically polarized depending on mounting, 5 elements, 9 db gain, for 161.4-162.0 MHz band with "N" female connector.	\$150.00
YC-160	Yagi Antenna, horizontally or vertically polarized depending on mounting, 5 elements, 9 db gain, for 160.89-161.40 MHz band with "N" female connector.	\$150.00
YC-166	Yagi Antenna, horizontally or vertically polarized depending on mounting, 5 elements, 9 db gain, for 165.95-166.55 MHz band with "N" female connector.	\$150.00

YC-170	Yagi Antenna, horizontally or vertically polarized depending on mounting, 5 elements, 9 db gain, for 169.85-170.45 MHz band with "N" female connector.	\$150.00
YC-450	Yagi Antenna, horizontally or vertically polarized depending on mounting, 6 elements, 10 db gain, for 450.01-455.99 MHz band with "N" female connector. Specify frequency	\$150.00

RPU TRANSMISSION LINE, CABLES, CONNECTORS

Model	Description of Item	Price
585-037-1	Automatic fixed relay station control cable to connect RPT-15 or RPT-30 transmitters to CR-10 receiver	\$33.00
585-037-2	Mobile relay station control cable used to connect RPT-15 or RPT-30 transmitters to AR-10 receiver.	\$40.00
585-038-2	Base station mute cable to connect mute relay in RPT-15 or RPT-30 to mute connector in CR-10 receiver	\$20.00
586-026	Base station RF cable to connect coaxial relay in RPT-15 or RPT-30 to RF input of CR-10. RPT-15. MUST have TR-2, RPT-30 MUST have TR-3	\$15.00
PG-2A	Jumper cable with 2' of RG-8 with PL-259 & UG-21 connectors	\$25.00
PG-2B	Jumper cable with 2' of RG-8 with UG-21 connectors	\$25.00
PG-12B	Jumper cable with 12' of RG-8 with UG-21 connectors for 360° rotation of Yagi antennas	\$29.00
PG-20A	Jumper cable with 20' of RG-8 with UG-21 & PL-259 connectors	\$32.50
PG-20B	Jumper cable with 20' of RG-8 with UG-21 connectors	\$32.50
L44N	Andrew type "N" female connector for 1/2" foam line	*
L44W	Andrew type "N" male connector for 1/2" foam line	*
L45N	Andrew type "N" female connector for 7/8" foam line	*
L45W	Andrew type "N" male connector for 7/8" foam line	*
LDF4-50	Andrew foam transmission line, 1/2", 50 ohm, jacketed	*
LDF5-50	Andrew foam transmission line, 7/8", 50 ohm, jacketed	*
PL-259	Type "UHF" male connector for RG-8 cable	\$4.00
UG-21B/U	Type "N" male connector for RG-8 cable	\$6.00
UG-23B/U	Type "N" female connector for RG-8 cable	\$6.00
RG-8U	Foam transmission line, 50 ohm, jacketed per foot	\$0.40

RPU MANUALS

Model	Description of Item	Price
Manual	Descriptions for all Marti equipment	\$18.00

Marti Electronics, Inc., P.O. Box 661, Cleburne, Texas 76033-0661
 (817) 645-9163 Telex #794835 "Marti CLBN" Fax (817) 641-3869

**Call Factory for Current Price*

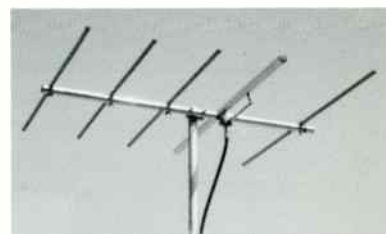
YC SERIES FOR RPU & TSL

Marti YC series Yagi antennas are designed for use in a variety of situations, from permanent tower mount to portable applications.

All functional components except the connector are handfitted and each antenna is tuned across a wide band of frequencies to assure proper performance in the field. The 9 db gain of the YC antennas assures you of full performance from your system. The standard "N" female connector on the antenna assures quick and easy installation.

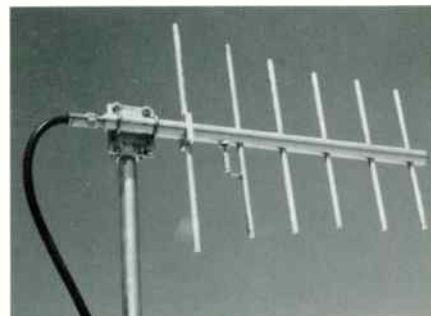
All Marti YC antennas are designed for either horizontal or vertical polarization.

YC-153	152.08-153.40 MHz (Specify freq.)	\$150.00
YC-160	160.89-161.40 MHz (Specify freq.)	\$150.00
YC-161	161.40-162.00 MHz (Specify freq.)	\$150.00
YC-166	165.95-166.55 MHz (Specify freq.)	\$150.00
YC-170	169.85-170.45 MHz (Specify freq.)	\$150.00
YC-450	450.01-455.99 MHz (Specify freq.)	\$150.00
2 YC-150	Stacking harness, for stacking 2 YC-153, YC-160, YC-161, YC-166, YC-170 and YC-170 Yagi antennas for 1 db gain	\$65.00
2 YC-450	Stacking Harness for stacking two YC-450 Yagi antennas. Includes "T" bar assembly	\$85.00



YC-160

Typical of YC-153, YC-161, YC-166 and YC-170



YC-450

1. Q. What's the minimum equipment I need to get started doing remote broadcasts?

A. You will need a transmitter, transmit antenna, transmit coax & connectors, receiver, receive antenna, receive coax & connectors and any jumper cables to prevent mechanical strain on the receiver.

2. Q. How far away will a Marti let me do remotes?

A. Depends upon terrain, antenna height and antenna polarization and the installation. Call Marti for engineering help.

3. Q. Will my equipment work on 12 VDC?

A. Yes, all Marti equipment will work on 12 VDC.

4. Q. How do I license my RPU system?

A. The FCC is in charge of licensing your system. You need to frequency coordinate the system with your local frequency coordinator and fill out an FCC Form 313 and send it in with an \$85.00 fee and the Form 155 Fee Processing Form. We will be happy to give you the name and phone number of the frequency coordinator in your area and send you all the forms required. Give us a call at (817) 645-9163 for more information.

5. Q. Is this equipment FCC type-accepted for broadcast use?

A. Yes, all current Marti equipment is FCC type-accepted.

6. Q. What is MCS-800?

A. MCS-800 is the Marti companding system for remote pickup equipment. It gives a system the power to do remotes from even greater distances with better sound. MCS-800 is a Marti exclusive system that installs in your RPT-30, RPT-15, and RPT-2 transmitters and the CR-10, DR-10, and AR-10 receivers. This is a 2:1 companding system that dramatically lowers noise and raises EFFECTIVE transmitting power. The affect of adding MCS-800 to an RPT-30 is equivalent to raising the power from 30 watts to a powerful 250 watts resulting in audio that rivals being in the studio and the ability to do remotes from distances that were previously thought to be out of range. The cost of adding MCS-800 to a new system is \$400.00. There is one note of caution. MCS-800 must work as a system. A companded transmitter will not work with a non-companded receiver and vice-versa.

7. Q. What kind of audio frequency response can I get?

A. On the VHF band 7.5 KHz of audio is typical. On the UHF frequencies we can do up to 10.5 KHz. This is two to three items better than telephone frequency response.

8. Q. Should I use the VHF (160 MHz. band) or the UHF (450-455 MHz.) band?

A. Depends upon your area. We suggest VHF in rural and small to medium markets. Contrary to some rumors the 160 band is alive and well and NOT scheduled to be taken away from broadcasters. But there are only 6 VHF channels and they have a tendency to "skip" long distances so your chance of interference is greater. If you decide to use the VHF band you should frequency coordinate your Marti receive antenna to ensure a clear frequency. In or near metropolitan areas we suggest the UHF band. There is more possibility of interference with the VHF band. One thing to note is that several customers near large metropolitan areas successfully use the VHF band because it has been virtually abandoned by broad casters due to congestion. If you are near a large market check into the availability of a VHF frequency.

10. Q. Can I put a composite stereo signal into my RPU system?

A. No. Allowable bandwidth is not great enough for composite stereo. If you want to do a stereo remote we recommend a dual link. Remember Murphy's Law? Anytime you are trying to do something

as sophisticated as a stereo remote you will have a greater chance of something going wrong. With a dual link you can at least be on the air if any one transmitter or receiver fails. Would you rather be on the air in mono or off the air in stereo? Of course, this also applies to STL. Think about a dual link like the Marti STL-10 system the next item you are considering a composite STL.

11. Q. When are cavities necessary?

A. All repeaters in the same band should have them for protection of the receiver. And around all large cities virtually all VHF systems SHOULD have cavities in front of the receivers. There is so much activity in the VHF band that it will help protect you.

12. Q. Can I use stacked channels to protect me from channels adjacent to me? That is, can I use 12.5 KHz. spaced channels instead?

A. Yes, if the channels are 12.5 KHz. apart you would need to use an 8 KHz receive filter giving you only 3 kHz. telephone quality audio. It's best, though, to stay with the standard band plan so your get maximum audio quality.

13. Q. What kind of transmit antenna do I need?

A. For most remote broadcasts from a fixed location we recommend a Yagi. Aim it towards the receive antenna with enough height to ensure a good signal path. If you are doing a distant remote, elevate the Yagi at least 20' on a mast. Many TV antenna masts are portable and can be raised to that height. In some instances, in the VHF band or for short range UHF communications, we have the PAV series omni-directional antennas for microphone stand mounting. These include antenna, ground plane and 12' of RG-58 with a PL-259 connector. They DO NOT include the microphone stand. For vehicle use the proper omni-directional whip antenna should be used.

14. Q. What receive antennas do I need?

A. For general coverage as omni-directional antenna, such as the ASPRD-700 or the UHF band of the SC155AC for the VHF band, are fine. For more distance or greater gain we recommend a Yagi for the base antenna. However, you need the ability to point the Yagi toward your remote broadcast transmitter. The use of a rotor or manual turning device is recommended.

15. Q. How high should I put my receive antennas?

A. As high as you can get them. But in reality probably no more than 400' on UHF or 200' on VHF. With VHF heights of over 200' you will be subject to receiving signals from outside your market due to "skip". Since the UHF band is more line of site, 400' is about the maximum height you can get using 1/2' coax before significant line loss occurs. In either case the maximum length of 1/2' coax should not exceed 400'.

16. Q. Should I use vertical or horizontal polarization for my antennas?

A. If you are using a whip or omni receive antenna, you must use the Yagi transmit antenna vertically polarized so that the director elements are pointing up and down. If you are using Yagi's for transmit and receive use horizontal polarization. (Director elements sticking out to the side.)

17. Q. How much RG-58 coax can I use?

A. RF loss in RG-58 is too great to use more than 20' in any band.

18. Q. Can I use two transmitters or receive and transmit on one antenna?

A. Yes, but call for engineering advice!

CHART #1

—at 950 MHz—
Path Loss in DB

Distance in Miles	Loss in DB
1	-96.2
2	-102.2
3	-105.7
4	-108.2
5	-110.1
6	-111.7
7	-113.1
8	-114.2
9	-115.3
10	-116.2
11	-116.9
12	-117.7
13	-118.4
14	-119.1
15	-119.7
16	-120.2
17	-120.7
18	-121.3
19	-121.7
20	-122.2
21	-122.6
22	-123.0
23	-123.4
24	-123.8
25	-124.1
26	-124.5
27	-124.8
28	-125.1
29	-125.4
30	-125.7

CHART #2

—at 950 MHz—
Coax Loss per 100' in DB

Andrew

LDF4-50	-2.4 DB/100'	1/2"
LDF5-50	-1.4 DB/100'	7/8"
RG-8/U, RG-214/U		8.5"

(use less than 2-foot length of jumpers.)

CHART #3

—at 950 MHz—
Antenna Gain in DBI

Full Parabolos Diameter	Gain
4'	18.9 DBI
5'	21.0 DBI
6'	22.0 DBI
8'	25.0 DBI
10'	27.0 DBI

CHART #4

—at 950 MHz—
Fade margin in DB for
% of Reliability

Distance in miles	99.9% % of Reliability
5	5 DB
10	7 DB
15	15 DB
20	22 DB
25	27 DB
30	30 DB

CHART #5

—at 950 MHz—
.6 Fresnel Zone Clearance at
Path Mid Point in Ft.

Distances in Miles	Height Feet
1	21.3
2	30.2
3	37.0
4	42.7
5	47.7
6	52.9
7	56.5
8	60.4
9	64.1
10	67.5
11	70.8
12	74.0
13	77.0
14	79.9
15	82.7
16	85.4
17	88.0
18	90.6
19	93.1
20	95.5
21	97.8
22	100.1
23	102.4
24	104.6
25	106.7

$$H = 1316 \sqrt{\frac{D_1 \times (D_2 - D_1)}{D_2 \times F}}$$

H = .6 Fresnel Zone Clearance in Feet.
 D_1 = Distance to Obstruction in Miles.
 D_2 = To Path Distance in Miles.
 F = Frequency in MHz.

CHART #6

Miscellaneous Losses
 2-foot jumper cable with "N"
 connectors 0.5 dB
 "isocoupler" tower isolator 0.5 dB
 2-transmitter combiner 3.1 dB
 4-transmitter combiner 6.9 dB
 2-receiver power divider 3.1 dB

CHART #7

Transmitter Power (Watts)
to dBm

1	30
2	33
3	34.7
4	36
5	37
6	37.8
7	38.5
8	39
9	39.5
10	40
11	40.4
12	40.8
13	41.1
14	41.5
15	41.8

CHART #8

Microvolts dBm

2	-101
3	-97
4	-95
5	-95
6	-91
7	-90
8	-89
9	-88
10	-87
11	-86
12	-85
14	-84
16	-83
18	-82
20	-81
25	-79
30	-77
35	-76
40	-75
45	-74
50	-73
60	-71
70	-70
80	-69

CHART #9

Conversion of dBw to dBm:
dBw + 30dB

CHART #10

—at 950 MHz—
60 dB of quieting = -87
dBm required signal level

SYSTEM LOSSES

- 1. Path Attenuation _____ miles _____dB
 - 2. Coaxial cable loss:
 - (a) Transmitting _____dB/100' x _____ ft. _____dB
 - (b) Receiving _____dB/100' x _____ ft. _____dB
 - 3. Total jumper cable loss _____dB (Chart #6)
 - 4. Transmitter coupler cable loss (dual system) _____dB (Chart #6)
 - 5. Receiver coupler loss (dual system) _____dB (Chart #6)
 - 6. Isocoupler, pre-selector or other loss _____dB (Chart #6)
- Total Loss _____dB

SYSTEM GAINS

- 7. Transmitter output power _____dBm (Chart #7)
 - 8. Antenna gain: (Chart #3)
 - (a) Transmitting _____dBi
 - (b) Receiving _____dBi
- Total gain _____dB

LOSS:

Total System Loss - _____dB
 (subtracting) Total System Gain + _____dB

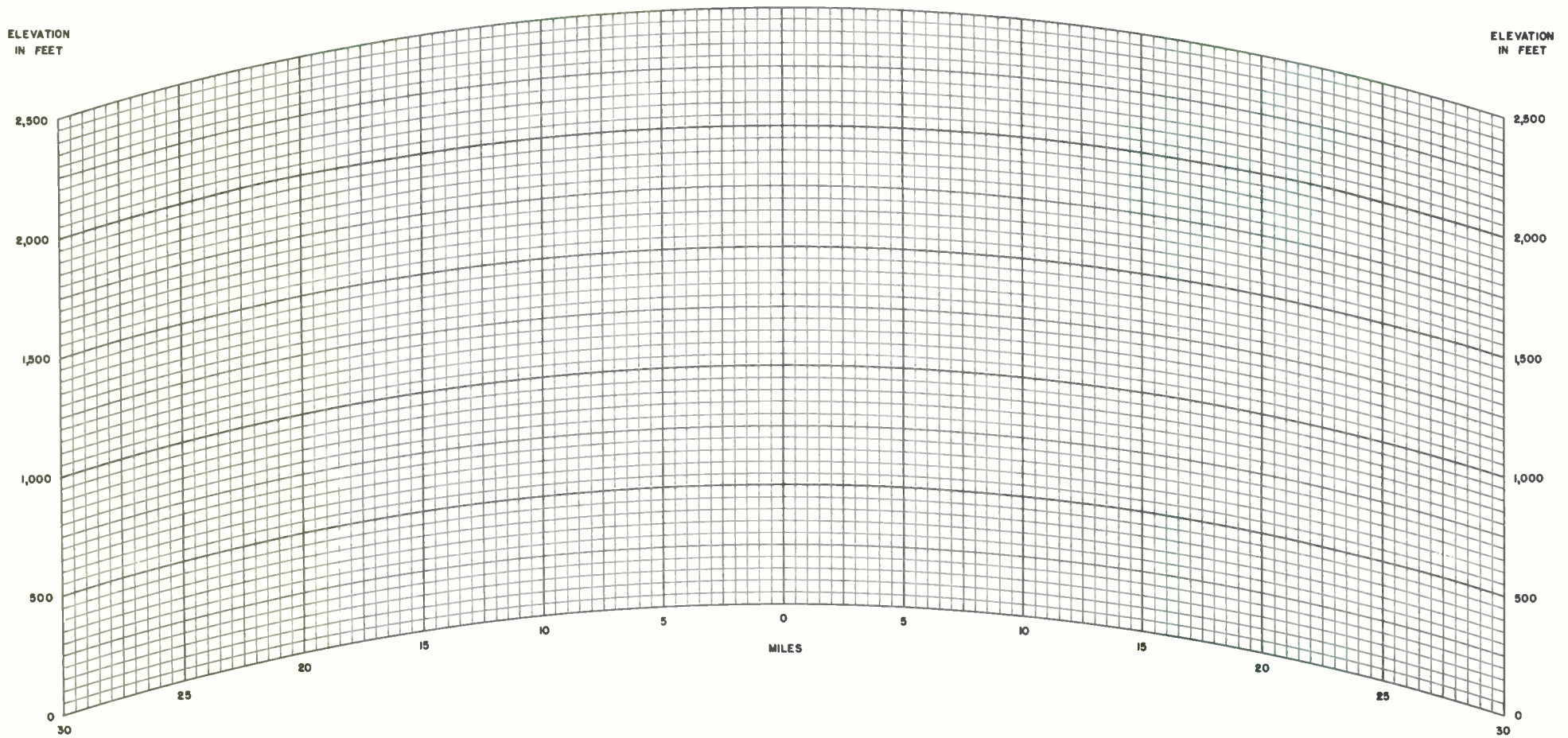
Signal Level at Receiver - _____dB

Subtract the actual receiver signal level (above) from the required signal level specified for desired signal/noise ratio to obtain system fade margin:

Actual Receiver Signal Level - _____dB
 Required Receiver Signal Level - _____dB (Chart #10)
 Fade Margin _____db (Chart #4)

If the fade margin obtained does not meet system reliability requirements, recalculate the system using larger antennas or coax.

PROFILE
BASED ON 1.33X EARTH'S RADIUS



MARTI *The Performance-value leader in Broadcast Equipment*

Marti Electronics, Inc., P.O. Box 661, Cleburne, Texas 76033-0661
(817) 645-9163 Telex #794835 "Marti CLBN" Fax (817) 641-3869

**TYPICAL AUTOMATIC MOBILE RELAY TO A FIXED RELAY TO STUDIO
ALL FREQUENCIES IN 450 AND 455 MHz BANDS**

PACKAGE 12 - From An Event With A Portable Transmitter To A Repeat Receiver
In A Mobile Van \$2,795.40

- 1 RPT-2/450 Transmitter
- 1 MCD-70C Microphone
- 1 AR-10/450 Receiver
- 1 700-252 Mobile Mounting Kit for AR-10
- 1 585-037-2 Control Cable
- 1 ASP-1650 Mobile Antenna
- 1 PAV-450 Portable Antenna
- 1 WP-470-1 Cavity

PACKAGE 3 - Retransmit From Automatic Mobile Relay To A Fixed Relay Station
(Mobile Part) \$2,062.35

- 1 RPT-30 Transmitter
- 1 MCD-70C Microphone
- 1 700-251 Mobile Mounting Kit for RPT-30
- 1 ASP-1650 Mobile Antenna
- 1 YC-450 Portable Antenna
- 1 PG-20A Cable

PACKAGE 42 - Automatic Fixed Relay Station Equipment \$4,145.50

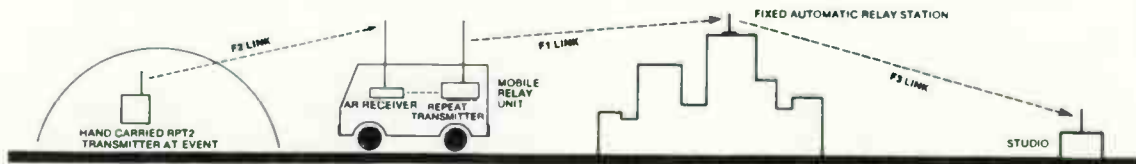
- 1 CR-10/450 Receiver
 - 1 585-037-1 Repeater Cable
 - 1 ASPD-700 Base Antenna
 - 1 PG-2B Jumper Cable
 - 1 K-1 Weatherproofing Kit
 - *TWO "N" FEMALE CONNECTIONS AND
1/2" TRANSMISSION LINE REQUIRED
-
- 1 RPT-30/450 Transmitter
 - 1 700-253 Rack Mounting Kit
 - 1 WP-678 Duplexer & Cables

PACKAGE 46 - Equipment At The Studio \$1,668.00

- 1 CR-10/450 Receiver
- 1 ASPD-700 Base Antenna
- 1 PG-2B Jumper Cable
- 1 K-1 Weatherproofing Kit
- *TWO "N" FEMALE CONNECTIONS AND
1/2" TRANSMISSION LINE REQUIRED

Complete Package Price for Automatic Mobile Relay Used With An
Automatic Fixed Relay System With Antennas LESS Connectors **\$10,671.25**

ON ALL MOBILE REPEATERS F-2 MUST BE AT LEAST 4.0 MHz FROM F-1
ON ALL FIXED REPEATERS F-3 MUST BE AT LEAST 4.0 MHz FROM F-1



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MARTI *The performance-value leader in Broadcast equipment*

STL-10 AURAL STUDIO- TRANSMITTER LINKS

World Class Performance and Value

Since its introduction, the Marti STL-10 has taken on and beaten two generations of the competitors' STL's. Today the STL-10 continues to offer the highest stereo separation, signal-to-noise ratio, reliability and value of any FM STL available - anywhere.

Look closely at the total STL system costs and you will see that the STL-10 saves your money two ways - in lower equipment cost and lower antenna cost. Because of the greater noise quieting sensitivity of the STL-10 system (about 10 times better than composite STL's), greater distances can be covered with smaller, lower cost antennas.

This is why thousands of STL-10 systems have been sold worldwide and are on the air every day from Alaska to Zimbabwe.

STEREO STL SYSTEM

Package 51:
2 STL - 10/950 transmitter
2 R-10/950 receiver
1 HRC-10 transmitter combiner
1 MTS-1 receiver combiner

MONO SYSTEM

Package 50:
1 STL - 10/950 transmitter
1 R-10/950 receiver

Does not include antennas and transmission line.



STL-10 TRANSMITTER



R-10 RECEIVER

SCPC STEREO SYSTEM FEATURES

- Unexcelled stereo separation, noise and distortion specs.
- High interference rejection receivers.
- Backup reliability of SCPC stereo.
- Full 10 watts power.
- Ga As FET low noise amplifier.
- Available for new narrow channels.
- Matched phase and amplitude.
- Provision for automatic switching.
- Two year limited warranty.
- 12 volt battery operation.
- Selectable 0, 25, 50 or 75 us. emphasis.
- FCC approved under parts 74 and 94
FCC ID: BEN9EZSTL-10/950
- Up to 4 subcarriers per stereo system.
- Accurate watt meters for forward and reflected power.

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