



**MICROWAVE
RADIO** corporation

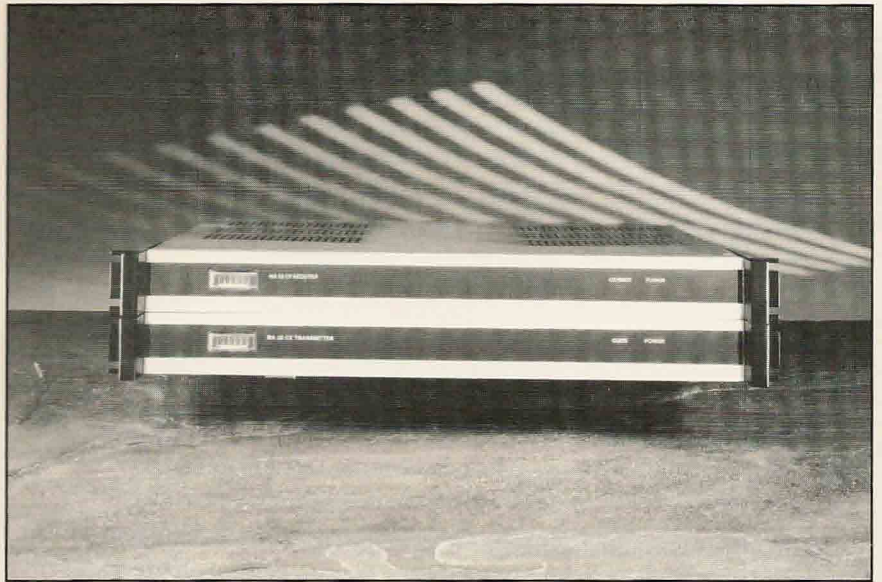
The Microwave Connection

MR-23CX

23 GHz Broadcast-Quality Microwave System

Features

- Full RS-250B performance
- Broadcast-quality 525/625 line video with up to 3 plug-in audio subcarriers
- Range to 10 miles
- 2', 4', or 6' antennas, single or dual polarization
- Simplex or full duplex operation
- RF multiplexing of up to 4 duplex channels on a single antenna
- Optional 12 MHz bandwidth for high-resolution video



With full RS-250B performance specifications over temperature, the MR-23CX is the economical short-haul choice to deliver professional broadcast-quality or high-resolution video.

The 23CX is a solid-state analog microwave radio system operating in the 21.2 to 23.6 GHz frequency band. The system employs an AFC module in the receiver RF subsystem which tracks the transmitter in frequency. This guarantees the system to meet RS-250B specifications over temperature, and minimizes the effect of frequency drift of the transmit oscillator, thereby improving reliability in the field.

With its wide variety of configurations, it's easy to design the ideal system to meet your needs. Three antenna sizes are available in simplex, duplex or multiplex configurations, which allows transmission ranges of up to 10 miles. Repeaters allow even greater distances without significant degradation.

Combined with a digital audio processor, dynamic range audio increases to 90 dB to deliver stereo-quality for AM or FM stations.

Transmission of high-resolution images such as CAD/CAM and medical imaging is achieved with the optional 12 MHz bandwidth, which delivers 1024 x 1024 video.

Easy access is provided to all RF and electronics assemblies. Transmitter and receiver consist of weather-resistant integrated antenna/RF assemblies designed for outdoor use. Rack-mountable indoor Baseband Processing Units contain power supply and baseband circuits. Interconnection between indoor and outdoor units is by coax cable and power cable--no waveguide is necessary.

The compact, lightweight 23CX contains microwave technology that has been proven in thousands of installations worldwide. The combination of proven electronics design and sound innovative techniques assure outstanding performance and reliability.

MICROWAVE RADIO
corporation

847 Rogers Street
Lowell, MA 01852
TEL: (508) 459-7655
FAX: (508) 937-0010
TELEX: (910) 240-5078

MR-23CX SPECIFICATIONS

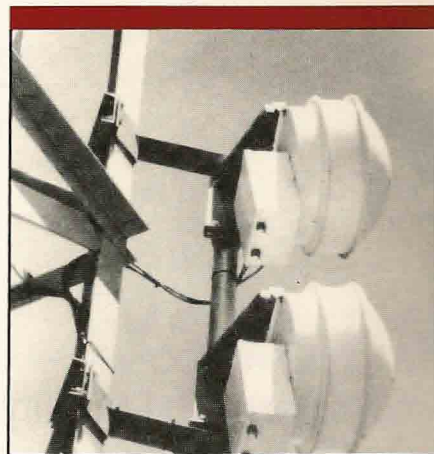
GENERAL

| | |
|-------------------------------|---|
| Operating Frequency Range: | 21.2 to 23.6 GHz (Entire Parts 21 and 94 bands) |
| Input/Output: | |
| Video: | 75 ohm coax, BNC connector |
| Audio: | 600 ohm plug-in connector |
| Video Capacity: | |
| Standard: | 525/625 Line |
| Optional: | 1024 x 1024 Line |
| Audio Capacity: | Up to 3 audio subcarriers Each subcarrier can carry up to 56 Kbps data. Optional configurations can carry T1 (1.544 Mbps). |
| Baseband Bandwidth: | |
| Standard: | 10 MHz |
| Optional: | Up to 12 MHz (± 3 dB) with roll-off to 20 MHz |
| Modulation: | FM |
| Video Signal-to-Noise: | 67 dB min. (CCIR weighted with -40 dBm RCL) |
| FM Deviation: | ± 4 MHz |
| Primary Power: | 115/220 Vac (50 to 60 Hz) 24 or 48 Vdc optional |
| Power Consumption (TX or RX): | 70 W |

VIDEO PERFORMANCE

(-40 dBm RCL, 250' Cable)

| | |
|--|-----------------|
| Amplitude vs. Frequency: | per RS-250B |
| Chrominance to Luminance: | |
| Gain Inequality: | ± 1 IRE |
| Delay Inequality: | ± 20 ns |
| Waveform Distortion: | |
| Field Time: | 3 IRE max P-P |
| Line Time: | 0.5 IRE max P-P |
| Short Time: | 4 IRE max P-P |
| Differential (10 to 90% APL): | |
| Gain: | 2% max. |
| Phase: | 0.5° max. |
| Signal to Noise Ratio (10 KHz to 5.0 MHz): | 67 dB min. |
| Signal to Hum (0 to 10 KHz): | 62 dB min. |
| Signal to Periodic Noise Ratio (300 Hz to 4.2 MHz): | 67 dB min. |
| Audio Performance: | |
| Amplitude vs. Frequency: | per RS-250B |
| Harmonic Distortion a 1 KHz: | 1.0% max. |
| Signal to Noise Ratio: | 66 dB min. |



(above): 2-foot antennas carrying 2 RF channels each.

(right): 4-foot antenna carrying 8 RF channels.

TRANSMITTER

| | |
|----------------------------------|--|
| Power Output (at O/P of source): | |
| Minimum: | 50 mW (+17 dBm) |
| Typical: | 66 mW (+18 dBm) |
| Maximum: | 100 mW (+20 dBm) |
| Frequency Stability: | $\pm 0.03\%$ (-30 to +50°C) |
| Spurious Response: | per FCC Part 94 and Part 21 |
| Video Input: | |
| Input Signal Level: | 1 V P-P |
| Impedance: | 75 ohms |
| Return Loss (0 to 4.2 MHz): | 30 dB (without low pass filter) |
| Audio Input (up to 3): | |
| Input Level: | +8 dBm (adjustable 0 to +18 dBm) |
| Impedance: | 600 ohms |
| Return Loss (50 Hz to 15 KHz): | 30 dB |
| Subcarrier Frequencies: | 6.2, 6.8, or 7.5 MHz standard (other frequencies available) |
| Auxiliary Baseband Unit: | |
| Impedance: | 75 ohms |
| Return Loss (0 to 8 MHz): | 26 dB |
| Input Level: | 1 V P-P |

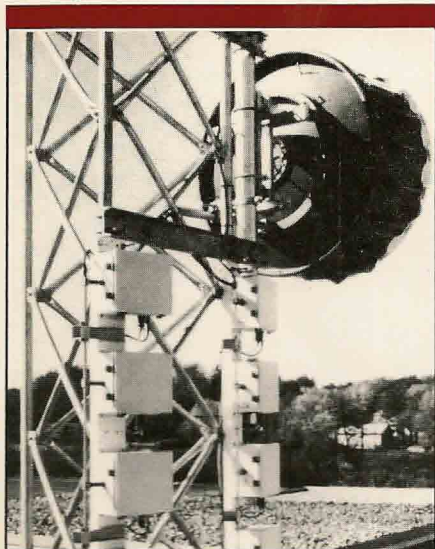
RECEIVER

| | |
|---|---|
| Type: | Superheterodyne |
| Receiver Threshold (37 dB weighted S/N): | -74 dBm |
| Noise Figure: | 12 dB |
| Video Output: | |
| Impedance: | 75 ohms |
| Return Loss: | 30 dB (without low pass filter) |
| Video Level: | 1 V P-P |
| Audio Output (up to 3) | |
| Impedance (Selectable): | 600 ohms balanced (less than 50 ohms via jumper) |
| Return Loss (10 Hz to 15 KHz): | 30 dB |
| Signal Level: | +8 dBm (adjustable 0 to +18 dBm) |
| Auxiliary Baseband Output: | 1 V P-P, 75 ohms |



MICROWAVE RADIO

The Microwave Connection



MICROWAVE RADIO

corporation

847 Rogers Street
Lowell, MA 01852
TEL: (508) 459-7655
FAX: (508) 937-0010
TELEX: (910) 240-5078

ANTENNA

(Simplex, Duplex or Multiplex)

FCC Licensed Use: Entire Part 21 and 94 bands
Type: FCC Category A
Mount: 3" to 4" pole or wall
RF Interface: WR-42 choke and "O" ring

Size: 2' diameter

Gain (including radome loss): 40 dBi
Beamwidth (3 dB): 1.8°
Weight: 24 lbs. (10.9 kg)
Windloading (radome at 125 mph):
F_S 90 lbs. (40.9 kg)
F_A 110 lbs. (50.0 kg)
MT 125 lbs. (56.8 kg)

Size: 4' diameter

Gain (including radome loss): 46.3 dBi
Beamwidth (3 dB): 0.8°

Size: 6' diameter

Gain (including radome loss): 49.9 dBi
Beamwidth (3 dB): 0.52°

ALARMS AND STATUS INDICATORS

Alarms:

Transmitter Summary: Form C
Receiver Summary: Form C

Indicators:

Transmitter Front Panel:
Meter: TX RF monitor
LED: Primary Power

Receiver Front Panel:
Meter: RX Carrier Level
LED: Carrier
LED: Primary Power
LED: Phase Lock

Other Outputs:

AGC Voltage: back panel connection

OPERATING ENVIRONMENT

Temperature Range:

RF Unit: -30 to +50° C
Baseband Processing Unit: +10 to +40° C

Relative Humidity:

RF Unit: up to 100%
Baseband Processing Unit: up to 95%

PHYSICAL

Size (RX or TX):

RF Unit: 6.5" (h) x 12" (d) x 9.875" (w)
(16.5 x 30.5 x 25.1 cm)
Baseband Processing Unit: 1.75" (h) x 13" (d) x 19" (w)
(4.5 x 33.0 x 48.3 cm)

Weight:

RF Unit - Simplex TX: 7 lbs. (3.2 kg)
RF Unit - Simplex RX: 8 lbs. (3.6 kg)
RF Unit - Duplex: 9 lbs. (4.1 kg)
TX Baseband Processing Unit: 9 lbs. (4.1 kg)
RX Baseband Processing Unit: 10 lbs. (4.5 kg)
Interconnection Cables: 50, 100, 250 foot standard kits.
Up to 1000 feet upon request.

FCC DATA

Type Accepted: Parts 21 and 94
FCC Identifier: BV88U4MA23CC
Emission Designator: 25MOF8W

All specifications subject to change without notice.