

MARK-III A AM&FM Channelized Signal Conditioner System & Override Generator Data Sheet

MARK-III A AM&FM Channelized Signal Conditioner System

MODEL:

MARK-III A-options (see table below)

DESCRIPTION:

AM&FM Channelized Signal Conditioner/Driver and Override Generator

A.1 SUMMARY

The Mark-III A is the AM&FM Channelized Signal Conditioner, Driver and Override Generator for the CANAM Technology, Inc.'s Rebroadcast System.

Features:

- Extraordinary receiver front-end intermodulation rejection
- Preserves the frequency, stability and audio quality of the original over the air signal.
- Each radio station is processed by an independent module. Therefore, the system could be configured for as many modules as needed.
- Multizone override capability. Allows substitution of the normal station signal with local generated messages to handle emergency situations and traffic advisories.



The MARK-III A features extraordinary receiver front-end intermodulation rejection. It allows effectively receiving and rebroadcasting a large number of stations, even the weaker ones, in typical metropolitan urban areas with high density of radio spectrum saturation.

The MARK-III A preserves the frequency, stability and audio quality of the original over-the-air signal, because it does not demodulate the received signals.

Each station processor is an independent module, fully digital synthesized programmable to any radio channel within the band, per American or European channel spacing. Each channel module could have up to two separate RF outputs, for different override content. The system could be configured for as many modules per band as needed.

The MARK-III A system could be configured for multi-zone override (break-in) extended capabilities. For example, it enables the possibility for overriding (breaking-in) each station in its normal broadcast language even with separate content per module output (perhaps for separate tunnel bores). Or the coverage area can be divided into zones, each

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one having independent override messages.

Two Override Generators are provided as standard, so that different override messages can be broadcasted into two different tunnel bores or traffic zones simultaneously, or a zone could be in normal rebroadcast while the others are in override. Up to four separated override generators could be provided per system

OPTIONS SUMMARY:

Model number= MARK-IIIA-# of AM&FM channels
- options letters

Example:

Model number MARKIIIA-2236-DH(AM) denotes a MARK-IIIA system with 22 AM and 36 FM channel processors, with default 2 OG and 2 separate RF outputs, Discrete remote controlled, having one

extra AM module configured as H.A.R. (Highway Advisory Radio) channel.

Option	Option's brief description
#OG	Number of Override Generators per system (default=2)
#B	Number of separate RF outputs (default=2)
D	Discrete-mode Remote Control
H(AM)	H.A.R. AM channel generator/transmitter
H(FM)	H.A.R. FM channel generator/transmitter

Datasheet		
OVERALL SYSTEM	AM Band	FM Band
ELECTRONICS		
Radio Station Channel Processors		
Model number	AMP-options	FMP-options
Frequency range	0.53 to 1.7 MHz	88 to 108 MHz
Channel bandwidth (modulation response +/- 3 dB)	± 6.5 KHz	± 200 KHz
Adjacent Channel frequency spacing (minimum)	30 kHz	400 kHz
Channel frequency programming steps	Digital synthesized in 9 or 10 kHz steps	Digital synthesized in 200 kHz
• RF outputs		
OPTIONAL number of RF outputs per channel module= 1 or 2. It corresponds to system's #B option.		
OPTIONAL number of Override Inputs per channel module = 1 or 2. It corresponds to system's #B option.		
Different selections for each channel/system's outputs	<ul style="list-style-type: none"> ▪ Normal rebroadcast, or ▪ Override 1 or 2 at output 1, or ▪ Override 1 or 2 at output 2 	<ul style="list-style-type: none"> ▪ Normal rebroadcast, or ▪ Override 1 or 2 at output 1, or ▪ Override 1 or 2 at output 2
Outputs impedance (typical)	50 ohms	50 ohms
Output power per channel (typical +/- 1.5 dB)		

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At the combined system's outputs	-23 dBm	-23 dBm
At each channel processor	-3 dBm	-3 dBm
Output level manual adjustment range	10 dB	10 dB
Maximum output level variation with input level variations within range	+/- 2 dB	+/- 2 dB
Frequency stability and distortion: The system does not demodulate the input signals. They are converted to an IF, processed and then converted back to RF, keeping the same modulation quality and characteristics as the station's broadcast signal received off-the-air.	Tracks input signal frequency and modulation exactly	Tracks input signal frequency and modulation exactly
Spurious & harmonics outputs	> 50 dBc	> 60 dBc
Adjacent Channel Rejection (minimum)	55 dB +/- 30 kHz	70 dB +/- 400 kHz
Duty cycle	100%	100%
• RF Input		
Input impedance (typ.)	50 ohms	50 ohms
Input sensitivity, single signal		
For greater than 20 dB SINAD (3.4 DAQ), with module's Rx Threshold in the AGC range:	-80 dBm	-95 dBm
NOTE: Per FCC rules, the FM stations minimum field strength in their primary coverage area contour should be 100 μ V/m, which traduces to -75 dBm at 100 MHz, measured with a unity gain antenna. The current commercial FM radios are able to receive & reproduce signals off a field strength as low as 15 μ V/m (less than -90 dBm at 100 MHz off a unity gain antenna, 50 ohms load). The current commercial AM radios are able to receive & reproduce input signals as low as -75 dBm.		
Receive Intermodulation (IM) Rejection: (per TIA/EIA definition) This is a key dynamic range performance parameter that determines the system's actual ability to receive and rebroadcast weak stations in highly RF dense urban environments having very strong stations on the air.	50 dB	60 dB
Maximum input power level (composite) at antenna input, for no-damage		
At the system's ANT IN	10 dBm	10 dBm
At each channel processor's ANT IN	0 dBm	0 dBm