



VM2551

Agile Commercial Video Modulator

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The VM2551 is a vestigial sideband, agile modulator with synthesized visual and aural carriers and a full +55 dBmV output level.

Designed to accept composite NTSC video and audio inputs from a satellite receiver, video server, off-air demodulator, DVD player, VCR, or similar source, the VM2551 features front panel video and audio over-modulation indicators and level controls to permit easy setup of modulation levels.

The use of frequency synthesis provides complete frequency agility in the range of 54 to 550 MHz using off-air or CATV (STD, IRC, or HRC) channel plans. In compliance with FCC regulations, channels that fall in specified aeronautical bands feature automatic frequency offset.

The use of a superior SAW filter in the IF circuitry allows adjacent channel operation when used with other modulators or signal sources. A composite IF loop following the SAW filter and before signal conversion to the final RF output channel allows the insertion of scrambling equipment or an IF switch to provide switchover for EAS operation.

If required, the audio preemphasis may be defeated to allow use with a baseband stereo encoder or the normal internally generated aural carrier can be disabled and an externally sourced 4.5 MHz signal can be applied to the rear panel input.

These features, combined with a carefully designed low distortion output stage, provide reliable and economical performance in an adjacent channel +55 dBmV cable television or private cable environment.

Features

- Frequency agility with 82 channel coverage from 54 MHz to 550 MHz.
- CATV (STD, HRC or IRC) or off-air channel plans selectable from front panel.
- Front panel control of channel selection, video level, audio level, output level, and A/V ratio.
- High output power to +55 dBmV.
- Designed for multiple modulator installations.
- Emergency Alert System (EAS) ready with IF composite loop.
- Composite IF loop to accommodate a variety of encryption systems.
- Audio and Video LED overmodulation indicators.
- Automatic channel offsets where specified by FCC regulations.
- SAW filtering to ensure quality performance.
- External source 4.5 MHz aural input.
- Defeatable pre-emphasis for use with baseband stereo encoders.
- Front panel monitor connection at -30dB

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Specifications

RF	
Frequency Range:	82 channels, 54-550 MHz CATV channels 2-78 and 95-99. Off-air channels 2-27.
Output Level:	+55 dBmV, (typically adjustable +40 to +55 dBmV)
Output Impedance:	75 Ohms, return loss of 12 dB nominal. Type "F" connector.
AV Ratio:	Audio carrier -18 to -12 dB referenced to video carrier, adjustable.
Frequency Stability:	Visual carrier within ± 5 kHz on FCC offset channels, ± 10 kHz on all channels.
Intercarrier Frequency:	4.5 MHz ± 2 kHz.
FCC Frequency Offsets:	Automatic (+12.5 kHz or +25 kHz for aeronautical channels)
In-Channel C/N:	62 dB typical, 60 dB minimum.
Spurious Outputs:	-60 dBc minimum, measured at -15 dB A/V ratio and with modulator output level of +55 dBmV
Broadband Noise:	-75 dBc typical, referenced to video carrier. (4 MHz BW @ ± 12 MHz or greater offset)
Video	
Input Level for 87.5%:	1 Vp-p ± 3 dB, manual gain adjust with overmodulation indicator.
Input Impedance:	75 Ohms, Type "F" connector.
Frequency Response:	30 Hz to 4.2 MHz, ± 1.5 dB
Video S/N:	60 dB, luminance weighted
Differential Gain:	$\pm 5\%$ (10 to 90% APL)
Differential Phase:	± 5 degrees (10 to 90% APL)
L/C Delay:	Within 50 nSec of FCC predistortion. Complies with FCC rules: 76.605
Audio	
Input level for 25KHz Peak Deviation @ 1KHz tone:	175 mV rms minimum. 250 mV rms nominal. Manual gain adjustment with front panel control and overmodulation indicator.
Input Impedance:	10K Ohms, unbalanced. RCA Phono connector.
Pre-emphasis:	75 μ Sec, defeatable
Frequency Response:	50Hz to 15kHz, ± 1.5 dB, referenced to 75 μ Sec pre-emphasis curve.
Total Harmonic distortion:	1.5% maximum
Hum and noise:	-60 dBm minimum, referenced to 25 kHz peak deviation.
4.5 MHz Input Level:	37 dB mV for -15 dB A/V ratio. (Change internal jumper to activate.) Input connector is type "F".
Composite IF Loop	
Loop Level:	+40 dBmV (visual carrier)
IF Frequency:	45.75 MHz visual carrier, 41.25 MHz aural carrier. Loop output is after SAW filtering.
Loop Input/Output Impedances:	75 Ohms, Type "F" connectors.
Isolation:	Greater than 60 dB
General	
AC Power Input:	115 VAC, $\pm 10\%$, 60 Hz, 16 watts
Operating Temperature Range:	0° to 50° C, ambient
Size:	1.75"H x 19"W x 11.8"D
Weight:	9.25 lbs. (4.2 Kg)