Micro 23

23 GHz Stability Rebuild

Providing Microwave Technology Solutions

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A phase-lock loop designed to meet 23 GHz FCC stability standards

Microwave Advances has developed phase-lock loop designs that will allow new and existing 23 GHz microwave transmitters to meet recent changes to the FCC stability standards. Existing licensees and new applications in the TV broadcast, cable, common carrier, public safety, and other qualified fields operating in the 21 to 23 frequency band will be exposed to tighter FCC frequency tolerances. The new Micro 23 will meet or exceed video, data, or digital traffic performance of the original unit.

Features:

- Rock solid frequency stability to 0.001% from previous 0.03%
- Cost includes incidental and minor repairs necessary when troubleshooting and repairing the unit including the option of purchasing more significant repairs while the unit is being rebuilt

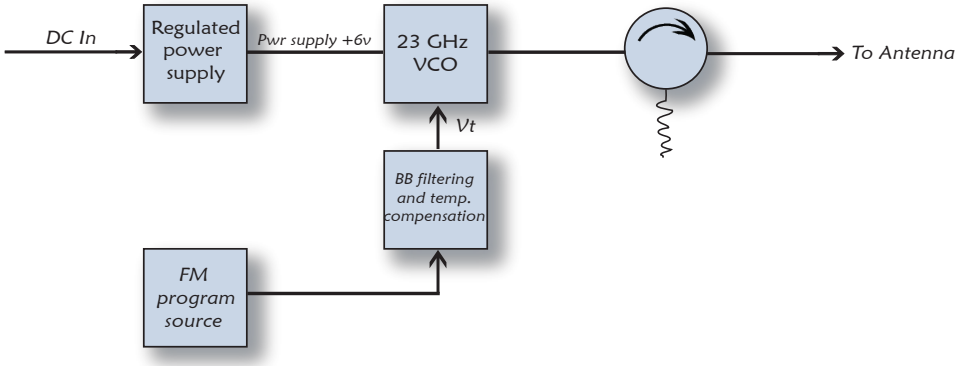
Benefits:

- System-wide compliance at a much lower cost
- Eliminates need to purchase entire new microwave systems
- Eliminates drift and meets new channel requirements
- Differential phase and gain/color brilliance improvement due to phase-lock

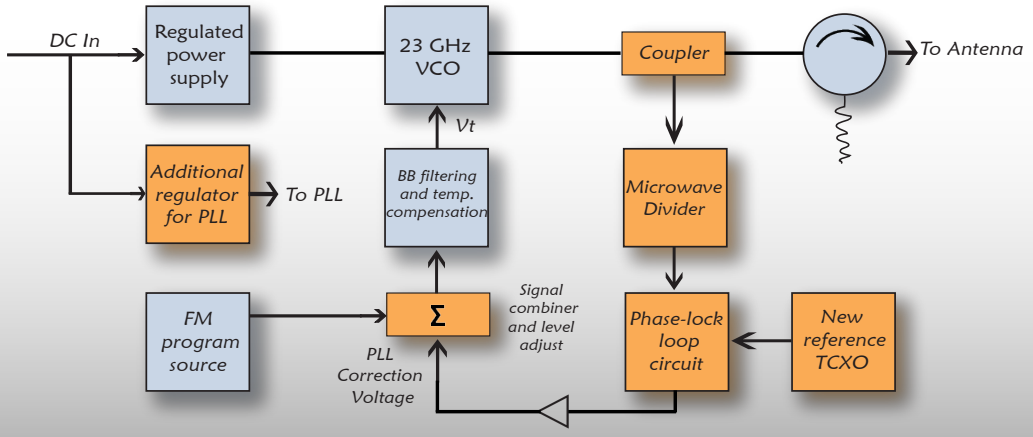
Applications:

- Existing licensees and pending applicants authorized prior to April 1, 2005 who meet the 0.03% specification but who cause harmful interference to other licensees
- Analog systems whose channel bandwidth is greater than 30 Mhz up to 50 Mhz who are not at the 0.03% frequency tolerance standard
- Analog systems whose channel bandwidth is 30 Mhz or less and are not at the 0.003% frequency tolerance standard
- Optionally, companion receivers can benefit from a similar phase lock stability and may be upgraded for improved video S/N, C/N, or fade margin
- Rechanneling a radio to a new frequency within a limited frequency range may be possible while rebuilding the radio. Please call for additional information
- Exisiting licensees and pending applicants should consider an upgrade to 0.001% stability to protect their existing channel (analog) or if changing to digital modulation. Channel frequency change may apply

Existing LO Configuration - TX



New Configuration - TX



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SPECIFICATIONS

MICRO 23-1 - STABILITY REBUILD

Typical Application - Exact specifications dependent upon radio type and use

The Micro 23-1 is an upgrade for the M/A Com 23 VFM type radio in the 1 ft. self-contained dish/antenna configuration. These radios were sold starting in the 1980's, and many are still in service. In 2005, the FCC requirements for frequency stability were tightened, and these radios do not meet the new specification. As existing licences expire, these radios in most cases would have to be decomissioned and newer replacement equipment purchased at great expense.

The Micro 23-1 Rebuild is a comparitively inexpensive alternative to replacing equipment that still has years of useful life left. The existing local oscillator is phase-locked to a temperature compensated crystal reference oscillator using a new modular component which is built into the outdoor unit. With this change, the transmitter will meet or exceed the 0.001% frequency tolerance, and because of the reduced frequency drift, will perform more reliably and with improved color quality in most applications.

General

Model: Micro 23-1

Frequency Bands (part 101):	*21.8 to 22.0 GHz and 23.0 to 23.2 GHz*
Channeling Plan:	
30 MHz Channels at	*21.835, 21.885, 21.935 21.985, 23.035, 23.085 23.135, 23.185, GHz*
Radio Capacity:	*525/625 line video plus two subcarrier program channels*
Modulation:	*FM*
Deviation:	*±4 MHz*
Antenna:	
Size	*1' standard (RF unit mounted inside)*
Gain	*33 dBi typical*
Beamwidth (3dB)	*3.5°*
Video Signal-to-Noise Ratio:	
(with -35 dBm RCL)	*63 dB minimum*
Subcarrier Bandwidth:	*15 kHz*

Primary Power

Source:	*120 Vac (50 to 60 Hz) 230 Vac optional*
Power Consumption:	
Transmitter	*50.5W*
Receiver	*50.5W*

RF Units powered via interconnection cable by Control/Interface Units

Power Supply Voltages:	*110/240 VAC*

Environmental

RF Unit:	
Ambient Temperature:	
Operational	*-30° to + 50° C (-22° to + 122° F)*
Storage	*-40° to 60° C (-40° to + 140° F)*
Relative Humidity	*up to 100%*
Wind Load	*40 psf maximum*
Control Unit:	
Ambient Temperature:	
Operational	*+10° to + 40° C (+50° to + 104° F)*
Storage	*-30° to + 50° C (-22° to +122° F)*
Relative Humidity	*up to 95%*

Transmitter

Power Output:	*+18 dBm, nominal*
Long Term Frequency Stability:	*±0.001%*
Spurious Response:	*per FCC Part 101*
Video Input:	
Level	*1V P-P*
Impedance	*75Ω*
Return Loss	*20 dB minimum*
Audio Input:	
Level	*0 dBm*
Impedance	*600Ω, balanced*
Subcarrier Frequencies:	*6.8 MHz standard (other frequencies available)*

Receiver

Type:	*dual conversion, superheterodyne*
Noise Figure - Standard:	*+12 dB nominal*
Optional:	*+4 dB nominal (w/optional low noise pre-amp)*
Local Oscillator:	*solid-state oscillator*
IF Bandwidth:	*40 MHz*
Video Output:	
Level	*1V P-P*
Impedance	*75Ω*
Audio Output:	
Level	*+9 dBm*
Impedance	*600Ω, balanced*
Receiver Threshold:	
(33 dB weighted S/N)	*-72 dBm (standard)*
Pre-amp	*-80 dBm (optional)*

Physical

Size (Transmitter or Receiver):	
RF Unit (including antenna)	*13" dia. x 10.75 (d) (33.0 x 27.5 cm)*
Control/Interface Unit:	*3" (h) x 10.5" (w) x 8.25" (d) (7.6 x 26.7 x 21.0 cm)*
Weight:	
RF Unit	*9 lbs. (4.1 kg)*
Control/Interface	*4.5 lbs. (2.1 kg)*

FCC Filing Information: Micro 23-1

1) Name and Address of Manufacturer:
Microwave Advances, LLC
36 Mt. Lebanon St.
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978.433.3636 (tel) 978.433.3657 (fax)

2) Model Number: Micro 23-1

3) Frequency Tolerance: ± 0.001%
4) Emission Designator: 25MOF8W
5) Modulation Rate: N/A
6) Modulation Type: 525 line video and two subcarrier audio
7) Max RF Power: Nominal +18 dBm
8) Threshold of Receiver: -72 dBm, 33dB weighted S/N
-80 dBm pre-amp (optional)

Radio Subject to FCC Verification

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