

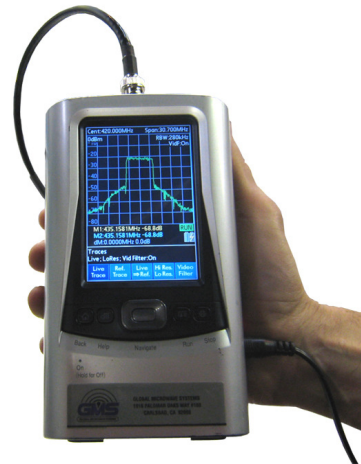
Messenger Spectral Monitor – MSM200

COBHAM

The most important thing we build is trust.

Key Features

- Hand-Held
- Cost effective
- Easy to use
- Helps identify interfering signals
- Covers MSR IF monitor Frequency & power range
- Twin markers with readout of absolute & difference values
- More than 4 hours continuous operation from a charge



All of GMS' Messenger Digital Receivers include a conversion to an IF frequency in the range of 49 – 860 MHz. This IF frequency can be monitored by using a two-way splitter and a Spectral Monitor like the MSM200. The cost effective, hand-held MSM200 Spectral Monitor extends above and below the MSR operating frequency range making it an effective tool to search for interfering signals. The MSM200 comes with a simple operating guide and an addendum explaining the frequency offset formula used by GMS for each band of operation. The operator can know exactly where to pre-tune the MSM200 to center the receiver signal on the display. Additionally, the 0.15 to 1300 MHz frequency range of the MSM200 allows it to be used to trouble shoot most wireless microphones and wireless intercom (IFB) gear.

Messenger Spectral Monitor – MSM200



Specifications:

Frequency Measurement

Frequency Span

Frequency Range: 150 kHz to 1300 MHz
Setting Modes: Center frequency plus Span, or Start plus Stop frequencies
Maximum Span: 1299.85 MHz
Minimum Span: 320 kHz, or Zero Span with demodulation
Set. Resolution: 1 kHz at any frequency
Setting Accuracy: Reference Frequency Accuracy for Start, Stop & Centre (Zero-Span) frequencies

Reference Frequency Accuracy

Initial Accuracy: Better than ± 10 ppm at 20 oC
Stability: Better than ± 10 ppm over 10 oC to 30 oC
Ageing: Better than ± 3 ppm per year

Phase Noise

Phase Noise: Phase noise at 100kHz offset at 500MHz
Typically -100dBc/Hz

Resolution Bandwidth

RBW: Selectable 280 kHz or 15 kHz
Video Filtering: Selectable independently of RBW setting

Markers

No. of Markers: One, Two (or None)
Resolution: 0.1 kHz at all frequencies
Marker Accuracy: 1/320th of Span \pm 0.1kHz plus reference frequency accuracy.
Readout: The frequencies at the marker points and the frequency difference are displayed

Amplitude Measurement

Amplitude Range

Units: Selectable as dBm or dB μ V
Display Range: 80 dB from reference level
Reference Level: Selectable as -20 dBm or 0 dBm (87 dB μ V or 107 dB μ V)

Amplitude Accuracy

Calibration Level

Accuracy: Better than ± 1 dB at 10dB below ref. level @ 50MHz (20oC \pm 5oC)
Flatness: Better than ± 1.5 dB over the range 0.5 MHz to 1300 MHz
Linearity: Better than ± 1 dB over 50dB from the reference level
Noise Floor: Better than -93 dBm average displayed noise floor (typically -96 dBm) (reference level = -20 dBm, RBW = 15 kHz)

Distortion and Spurious

3rd Order Intermodulation (PSA1301T):
< -60dBc for two signals at 10dB below reference level, (500MHz and 501MHz)
1st & 2nd Image: <- 55dBc, typically <- 60dBc
Residual Spurious: Below noise floor

Markers

No. of Markers: One, Two (or None)
Resolution: 0.1 dB
Readout: The level at the marker points and difference are displayed.

Limit Lines

Number of Limit Lines:

Any number of lines can be defined with up to two displayed simultaneously.
Limit Line Editor:
Tables of amplitude versus frequency with automatic straight line drawing between points

Sweep

Sweep Method:

Peak detection for 320 points per sweep. The amplitude and frequency of the peak level found within each sub-span is stored (sub-span = span/320).
Sweep Time:
Set automatically by Span and RBW.

Messenger Spectral Monitor – MSM200



Sweep Modes: Normal (continuous), Single, Peak Hold, Average (2 to 256).
Sweep Control:
Run and Stop buttons. Peak-hold and Average are reset whenever Run is pressed.

Signal Input

Input Connector: SMA connector, 50 Ω
VSWR: 1.5 : 1 typical
Maximum Level: + 20 dBm, (127 dB μ V); 15V DC

DEMODULATION (Zero Span Mode)

Demod. Modes: AM or FM
Display: Carrier amplitude only (horizontal line).
Audio Out: 30 mW into 32 Ω mono or stereo headphones, adjustable volume, 3.5mm jack socket
Audio Filter: Switchable 3kHz Low Pass Filter.

Display

Display Type: 3.7 inch (9.4 cm) backlit TFT LCD, 480 x 320 pixels total, 16 bit color, touch screen.
Trace Area: 300 x 320 pixels (high resolution mode).
Graticule: 8 x 10 divisions, light grey graticule.
Displayed Points: 320 points per sweep (peak detected).
Live Trace: Dot-joined trace from current or held sweep.
Reference Trace: Stored trace either recalled from memory or copied directly from live trace.
Limit Lines: Up to two limit lines can be displayed.
Resolution Modes: Selectable as High or Low Resolution. (In low resolution mode the trace area becomes 150 x 160 points where each point is a block of 4 pixels. Only 160 sweep points are displayed. This mode is useful in situations where the display could otherwise be difficult to see - e.g. when the instrument can not be viewed at an optimum distance.)

Memory Storage

Memory Type:
Non volatile Flash memory, using removable SD or MMC cards (one card supplied).

Store Trace:

Any number of traces can be stored under either default file names or user entered file names. Traces are stored as tables of amplitude versus frequency and can be imported into other programs, as well as being recalled to the screen.

Recall Trace:

Recalls any stored trace to the reference trace of the display.

Store Set-up:

Any number of instrument set-ups can be stored under either default file names or user entered file names. All settings of the instrument are saved.
Recall Set-up: Recalls any stored set-up, overwriting the existing settings of the instrument.

Limit Lines:

Any number of limit lines can be stored and recalled under either default file names or user entered file names.

Store Screen:

This function copies the whole screen area to memory as a bitmap. Any number of screens can be stored under either default file names or user entered file names. Screen bit-maps can be viewed using the Palm TIX picture viewing function, or can be transferred to a PC for printing.

Connectors

RF Input: Standard SMA connector.
DC Power: 1.3 mm power socket for 5.2V/1A external power source.
USB: Mini USB connector which provides direct access to the USB port of the handheld.
Audio Out: 3.5 mm jack socket for demodulated audio out (accepts mono or stereo plugs).

Power Sources

Battery Operation
Battery Type: Ni-Mh 3.6V 700mA-hr (3 x AAA)
Battery Life: > 5 hours operation
Recharge Time: < 3 hours from fully discharged

Messenger Spectral Monitor – MSM200



Ac Line Operation/Charging

The MSM200 can be operated from mains power using the AC line adaptor provided. This powers and recharges both the spectrum analyzer and the handheld computer simultaneously.

Voltage Range: 100V to 240V nominal 50Hz/60Hz

Mechanical

Size: 170mm high x 97mm wide x 47mm deep

Weight: 495 grams total

Tilt Stand: Built-in tilt stand for bench use which angles the unit at approx. 25 degrees to the horizontal.

Mounting Hook:

The stand incorporates a hook to facilitate hands-free operation where no flat surface is available.

Stylus: Casing incorporates standard Palm stylus.

Environmental and Safety

Operating Range: +5oC to + 40oC, 20% to 80% RH.

Storage Range: -10oC to +50oC

Environmental: Indoor use at altitudes to 2000m,

Pollution Degree 2.

Electrical Safety: Complies with EN61010-1.

EMC: Complies with EN61326.