



A cost effective alternative for analog cellular, SSB, paging and mobile radio testing

1200 Super S Communications Service Monitor



- Analog meter and VFD (Vacuum Fluorescent Display) offer high visibility in all lighting conditions
- Convenient service analyzer with duplex and simplex connectors
- Standard internal spectrum analyzer to 1 GHz
- Built-in 1 MHz oscilloscope
- Comprehensive testing of analog and advanced digital paging with the AC510 option

RF Solutions

Designed for land mobile professionals with demanding RF testing requirements, the 1200 Super S has a sensitive 2 μV triple conversion receiver capable of monitoring AM, FM and SSB carriers within the low band, VHF, UHF and high band ranges.

Depending on your specific needs, the 1200 Super S also gives you the choice of receiving straight "off the air" or through a direct connection to a T/R port.

Recognized for its versatility, the 1200 Super S supports DCS, DTMF and pulsed audio signaling formats.

The 1200 Super S also meets RF measurement needs for:

- RF frequency error
- RF power
- Audio frequency error
- CTCSS frequency
- CTCSS modulation

In duplex mode the 1200 Super S is capable of simultaneously generating and

receiving frequency offsets in 2.5 kHz steps. The duplex feature can be configured to operate in three modes:

- Testing using separate transmit and receive ports
- Testing using one common transmit/receive port
- "Off-the-air" duplex testing

With standard features like a 1000 MHz spectrum analyzer and built-in 1 MHz oscilloscope, the 1200 Super S virtually eliminates the need for costly additional equipment purchases. An optional tracking generator makes cable testing simple.

Paging Solutions

The versatility of the 1200 Super S also allows comprehensive testing of the most popular paging protocols, including encode/decode or 2-tone sequential, 5/6 Tone testing..

For those involved with advanced paging protocol systems, the AC510 option supports the following paging standards:

- Flex
- POCSAG
- Golay Sequential Code (GSC)
- NEC D3

Trunking Solutions

With the CLEARCHANNEL LTR® trunking option, the 1200 Super S is an ideal platform for testing LTR mobiles, portables and repeaters. For basic repeater testing, the 1200 Super S allows you to perform extensive receiver and transmitter tests. For more in-depth analysis, the LTR test option emulates the repeater system and

allows testing of home repeater access and next repeater access, including Handshake and Hand-off operation.

In addition, with 760 trunking channels, an internal LTR tracking generator and user friendly LTR programming screens, the 1200 Super S is designed to give you the greatest control and flexibility possible.

Complex Functionality That's Simple to Use

From the user interface to functions and displays, the 1200 Super S allows technicians of any skill level to fully utilize its vast testing resources.

- Intuitive user interface makes complex testing simple and efficient.
- CTCSS encode/decode feature makes it easy to work with sub-audible tones.
- A standard RS-232 port allows remote testing.
- Internal memory allows storage of up to 99 RF frequencies.

From programming automatic test sequences to executing standard measurements, the operating system of the 1200 Super S provides a high level of testing. Yet the 1200 Super S is so user-friendly, you'll spend less time setting up tests and more time testing.

1200 Super S

Specification

RF Signal Generator

Frequency Range
250 kHz to 999.9999 MHz

Resolution
100 Hz

Accuracy
Same as Master Oscillator

Output (T/R)

Range
-127 to -20 dBm

Resolution
10 dB steps with 11 dB vernier

Accuracy
2.5 dB
3.0 dB @ -20 dB attenuator setting

Spectral Purity Harmonics
-30 dBc

Spectral Purity Nonharmonics
-55 dBc

IF Image
≤ -35 dB

Residual FM
< 100 Hz (RMS, 0.3 to 3 kHz BW)

Input Protection
150 W

Duplex Generator

Frequency Range
0 to ±49.9975 MHz from receive frequency

Resolution
2.5 kHz

Accuracy
See Master Oscillator

Duplex Output Level
-40 dBm (Low), -15 dBm (High) into 50 Ω

Input Protection
0.25 W

T/R Port
-85 dBm ±10 dB fixed level

Modulation

Internal Frequency Modulation Range
0 to 50 kHz (1 kHz tone)

FM Rate
10 Hz to 30 kHz (Internal)
2 Hz to 30 kHz (External) (DC when in variable generate)

FM Accuracy
±5% of reading, ±3% of full scale (1 kHz tone)

FM Distortion
< 1% (to 20 kHz deviation)

EXT MOD Sensitivity
0.1 VRMS/kHz (-0% + 30%)

Amplitude Modulation Range
0 to 90%

AM Rate
10 Hz to 10 kHz (30% maximum modulation above 5 kHz)

AM Accuracy
±5% of reading, ±3% of full scale (1 kHz tone)

AM Distortion
< 10% (to 60% modulation)

EXT MOD sensitivity
0.01 VRMS (0% to +30%)

Audio Generators

Generator #1 Frequency Range
1 kHz

#1 Accuracy
Same as Master Oscillator

#1 Output Range
0 to 2.5 V (RMS, into 150 Ω)

#1 Distortion
< 0.5%

#1 Waveshape
Sine

Audio Generator #2 Frequency Range:
10 Hz to 30 kHz

#2 Resolution
0.1 Hz

#2 Accuracy
±0.01%

#2 Output Range
0 to 2.5 V (RMS, into 150 Ω)

#2 Distortion (at 2.5 VRMS)
< 2% (10 Hz to 100 Hz) < 0.7% (100 Hz to 30 kHz)

#2 Waveshapes
Sine, Square, Ramp, Triangle, TTL

Receiver

Frequency Range
100 kHz to 999.9999 MHz

Resolution
100 Hz

Sensitivity
2 μV typical (1 MHz to 1000 MHz, FM narrow)

Antenna Input Protection
0.25 W

Selectivity

Mode	Rx BW	AF BW
FM WIDE	200 kHz	80 kHz
FM MID	200 kHz	8 kHz
FM NAR	15 kHz	8 kHz
SSB	6 kHz	8 kHz
AM NAR	6 kHz	8 kHz
AM NORM	15 kHz	8 kHz

Adjacent Channel Rejection

Rx BW	BW > 40 dB Down
200 kHz	±300 kHz
15 kHz	±27 kHz
6 kHz	±12 kHz

Demodulation Output

AM Output Level
5 mV RMS/%

FM Output Level
60 mV RMS/1 kHz

Impedance
600 Ω

RF Frequency Error Meter

Meter Range
± 30 Hz to ± 10 kHz (full scale, 1-3-10 sequence)

Meter Accuracy
± Master Oscillator, +3% of full scale

AF Frequency Error Meter

Frequency Range
10 Hz to 12 kHz

Meter Range
±3 Hz to ±300 Hz (full scale, decade sequence)

Meter Accuracy
±0.01%, ±3% of full scale

FM Deviation Meter

Meter Range
2 kHz to 60 kHz (full scale, 2-6-20 sequence)

Meter Accuracy
±5% of reading, ±3% of full scale (1 kHz tone)

AM Modulation Meter

Meter Range
60% and 200% full scale

Meter Accuracy
±5% of reading, ±3% of full scale (1 kHz tone)

RF Power Meter

Input Level Ranges
0 to 15 W and 0 to 150 W (peak or average responding)

Accuracy
±7% of reading, ±3% of full scale (1 to 600 MHz)
±20% of reading, ±3% of full scale (600 to 1000 MHz)

Operating Conditions
50 W continuous
>50 W to 150 W (1 min ON, 5 min OFF)

Distortion Meter

Range
0 to 20% at 1 kHz

Accuracy
± 1% (at 10% distortion)

Signal Frequency
1 kHz

Input Level
0.25 to 2 VRMS

Input Impedance
10 kΩ nominal

SINAD Meter

Range
3 to 20 dB at 1 kHz

Accuracy
± 1 dB (at 12 dB SINAD)

Signal Frequency
1 kHz

Input Level
0.25 to 2 VRMS

Input Impedance
10 kΩ nominal

Spectrum Analyzer

Level Display
10 dB/div

Dynamic Range
70 dB

Log Linearity
±2 dB (-90 to -30 dBm)

Frequency Span Modes

Scan Width	RBW
1 MHz/div	30 kHz
500 kHz/div	30 kHz
200 kHz/div	30 kHz
100 kHz/div	30 kHz
50 kHz/div	30 kHz
20 kHz/div	3 kHz
10 kHz/div	3 kHz
5 kHz/div	3 kHz
2 kHz/div	300 Hz
1 kHz/div	300 Hz

Oscilloscope

Bandwidth (3 dB)
DC to 1 MHz

Input Ranges
10 mV/div to 10 V/div (decade sequence)

Horizontal Sweep Rate
10 msec/div to 10 μsec/div (decade sequence)

Digital Voltmeter

AC VOLTS

Voltage Range
0 to 100 VRMS

Accuracy
10% ± 2 counts

Frequency Range
45 Hz to 10 kHz

DC VOLTS

Voltage Range
0 to 100 V

Accuracy
10% ± 2 counts

Master Oscillator

TCXO

Temperature Stability
±0.2 ppm (0 to 50°C)

Ageing
±0.5 ppm/year

Power Requirements

Line Voltage
105 to 130 VAC
210 to 260 VAC

Frequency
50 to 400 Hz

Power Consumption
60 W typical

DC Input
12 to 30 VDC

General Characteristics

Dimensions
332 mm (13.06 in) wide, 185 mm (7.3 in) high,
445 mm (17.5 in) deep

Weight
17.2 kg (38 lbs) without options

0.05 ppm OCXO (Premium)

Stability
0.05 ppm/year (0 to 50°C)

Generate Amplifier (Premium)

Gain
30 dB (±2 dB) typical, 250 kHz to 1000 kHz

Test Set Output with Analyzer Installed
Variable to +10 dBm, FM and CW
Variable to +4 dBm, AM

Tracking Generator (Premium)

Frequency Range
1 to 999.9999 MHz

Output Level

Track High	-5 dBm (+3/-5 dB)
Track Mid	-15 dBm (±7 dB)
Track Low	-40 dBm (+5/-10 dB)

Flatness
±1 dB over center 30% of display
±5 dB over remaining display

Tracking Span
10 kHz to 10 MHz

Output Impedance
50 Ω (nominal)

Spurious

Harmonic and non harmonic are <5 dBc, <10 dB typical
Image (RF + 180 MHz) 0 dB typical

Dynamic Range

70 dB

Tracking Range

200 Hz to 1.0 kHz

Versions and Accessories

When ordering please quote the full order number information

Ordering

Numbers	Versions
1200SS-110	1200 Super S, 110 VAC
1200SS-110-C	1200 Super S, 110 VAC with Certificate of Calibration
1200SS-220	1200 Super S, 220 VAC operation
1200SS-220-C	1200 Super S, 220 VAC with Certificate of Calibration
1200SSH-110	1200 Super S Hi Stability (0.05 ppm OCXO time base, tracking generator) 110 VAC operation
1200SSH-110-C	1200 Super S Hi Stability, 110 VAC, Cert. Cal
1200SSH-220	1200 Super S Hi Stability, 220 VAC operation
1200SSH-220-C	1200 Super S Hi Stability, 220 VAC with Certificate of Calibration
Accessories	
AC0002	Soft padded carrying case
AC0488	IEEE-488 (in lieu of RS-232) (not avail. with 1200SSP or AC0450)
AC0489	CLEAR CHANNEL LTR
AC510	Paging encoder
AC1201	Telescopic antenna
AC1205	Microphone
AC2200	Maintenance manual
AC2201	Rack mounting kit
AC4101	Return loss bridge 5 MHz to 1 GHz (req. 1200 Super S Premium)
AC5249	Generate Amplifier +30 dBm

1200 Super S



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