CX200 SiteXpert

Functional Specifications

General Specifications

Dimensions	11.2 in. (284.3 mm) x 6.8in. (173.5 mm) x 4.2 in. (106.8 mm)
Weight	8.6 lbs
Display	8 in. (203.2 mm)
Environmental	
Operating Temperature	0 to 50°C
Non-Operating	-40 to 71°C (battery removed)
Relative Humidity	95% non-condensing
Altitude	4600 m
Vibration	MIL-PRF-28800F Class 3
Shock Functional	MIL-PRF-28800F Class 3
Bench Handling	MIL-PRF-28800F Class 3
Transit Drop	MIL-PRF-28800F Class 3
Warm-up Time	30 min
Battery	
Type	14.4 V, 6.8 Ah (Lithium Ion)
Operating Temperature	-20°C to 60°C battery temperature
Charging Temperature	0°C to 45°C battery temperature
Storage Temperature	-20°C to 60°C
Weight	1 lbs.
Runtime	3 Hours
Compliance	
EMC	IEC/EN 61326-1:2006, CISPR11:2009 +A1:2010
Safety	EN 61010-1, 3rd Edition

General Specifications continued

Timebase	
Temperature Stability	0.05 ppm (0 - 50°C)
Aging	0.5 ppm/year
Ports	
RF Output	
Type	N-Type
Impedance	50 Ω
Reverse Power Input	35 dBm max frequency ≥1 MHz
VSWR	≤1.6:1 typical for frequency >1 MHz
RF Input	
Type	N-Type
Impedance	50 Ω
Power Input, Damage Level	27 dBm max min gain and frequency ≤1 MHz
	21 dBm max other gains and frequency ≥1MHz
Power Input, Nominal Power	10 dBm max nominal power
	±50 Vdc max
VSWR	≤1.7:1 typical for frequency 1 MHz to 3 GHz
Duplex	
Type	N-Type
Impedance	50 Ω
Power Input	47 dBm max (50 W continuous, temperature ≤35°C ambient)
	51 dBm max (125 W, 30 seconds on, 90 seconds off)
VSWR	≤1.2:1
Audio In 1	
Type	BNC
Selectable Impedance	300 Ω, 600 Ω, 100 k Ω single ended, ±1 % shunted by ≤ 300 pF
	200 k Ω differential, ±8 %
Max Input Voltage	200 V
Max Input Power	1.5 W
Audio In 2	
Type	BNC
Max Input Voltage	7 Vrms
Max Input Power	1.5 W

General Specifications continued

Audio AF Out	
Type	BNC
Impedance	≤4 Ω
Max Output Current	100 mA typical
Mic/Accessory Connector	
Connector	8 pin, standard Din (SDF-80J)
Voltage Source	8 V @ 150 mA or Battery Voltage 11 V to 28 V @ 2.0 A
PTT Output	Open Collector, +10 V max, 20 mA sink
PTT Input	5.0 V pullup, 5 mA
RF Generator	
Frequency	
Range	1 MHz to 3 GHz, usable to 250 kHz (max power: -20 dBm)
Resolution	0.1 Hz
Accuracy	Same as timebase
Amplitude	
RF Out	
Range	0 to -65 dBm
Accuracy	1.5 dB
Duplex	
Range	-50 to -135 dBm
Accuracy	1.5 dB
Resolution	0.1 dB
Spectral Purity	
Harmonics	≤-40 dBc, (-50 dBc Typical)
Non-harmonics	≤-40 dBc, (-50 dBc typical)
Phase Noise	-95 dBc/Hz at 10 kHz
Residual FM	<15 Hz RMS in 300 Hz to 3 kHz BW, <6 Hz RMS, Typical <800 MHz
Residual AM	<0.5% RMS in 300 Hz to 3 kHz BW
Analog Modulation	
Sources	
Number	2
Type	Internal
Mode	Analog (AM, FM)
Rate	0 Hz to 20 kHz
Distortion THD	3% (1000 Hz rate, >2 kHz Deviation, 300 Hz - 3 kHz BP filter)

General Specifications continued

AM Modulation	
Range	0 to 100%
Resolution	0.1%
Accuracy	10% setting (150 Hz to 5 kHz rate, 10% to 90% modulation) Usable from 20 Hz to 20 kHz
Flatness	±0.5 dB from 20 Hz to 10 kHz
FM Modulation	
Range	0 to 100 kHz
Resolution	1 Hz
Accuracy	≤±2.5% of settings
Flatness	±0.5 dB from 20 Hz to 10 kHz
Digital Modulation	
Mode	P25
Receiver (Transmitter Test)	
Frequency Range	1 MHz to 3 GHz, usable to 250 kHz (max power: -20 dBm)
Demodulation Selection	AM, FM, AM USB, AM-LSB
Sensitivity	Less than -100 dBm (10 dB SINAD or better)
RF Power Meter	
Frequency	
Range	1 MHz to 3 GHz
Bandwidth	5 kHz, 6.25 kHz, 8.33 kHz, 10 kHz, 12.5 kHz, 25 kHz, 30 kHz, 100 kHz, and 300 kHz
Amplitude	
RF Input Port	10 dBm to -108 dBm
Duplex Port	45 dBm to -67 dBm Note: Minimum calculated for 5 kHz BW, 16 dB SNR for 0.1 dB noise contribution
Accuracy After Normalizing at the Measurement Frequency	
Duplex Port	±0.4 dB (frequency ≤1 GHz and ≥1 MHz), ±0.6 dB (elsewhere)
RF Input Port	±0.6 dB (frequency ≤1 GHz and ≥1 MHz), ±0.9 dB (elsewhere)
RF Frequency Meter	
Frequency	
Range	1 MHz to 3 GHz
Resolution	1 Hz
Frequency Find	≤2 seconds
Accuracy	Same as timebase

General Specifications continued

RF Analyzer (Channel Analyzer)	
Frequency	
Range	1 MHz to 3 GHz
Resolution	0.1 Hz
Accuracy	Same as timebase
Spurious	
Input Related	≤-65 dBc typical
Non-Input Related	≤-95 dBm typical
Analysis	
RBW	1 Hz to 50 kHz in 1,2,5 sequence
Amplitude	
Range	RF Input port: +10dBm max, minimum limited by DANL
	Duplex port: +45dBm max, minimum limited by DANL
Displayed Average Noise Level in 1 Hz RBW	
RF Input Port	<-162 dBm/Hz at max gain
Duplex Port	<-120dBm/Hz at max gain
RF Analyzer (Modulation Analyzer)	
General Analysis Specification	
Analysis Bandwidth	8 MHz, 100 MHz wideband option
Demodulation Bandwidth	5 kHz, 6.25 kHz, 8.33 kHz, 10 kHz, 12.5 kHz, 25 kHz, 30 kHz, 100 kHz, and 300 kHz
Post-Demodulation Low-pass Filters	300 Hz, 3 kHz, 3.4 kHz, 5 kHz, 15 kHz, and 20 kHz
Post-Demodulation High-pass Filters	20 Hz, 50 Hz, 300 Hz
Post-Demodulation Band-pass Filters	CCITT, A-weighted, C-weighted, C-message
Post-Demodulation Deemphasis Filters	75 µs, 750 µs
Amplitude	
RF Input Port	+20 dBm (+13 dBm ≤1 MHz) to -80 dBm (with preamp enabled)
Duplex Port	+51 dBm to -20 dBm
FM Demodulation	
Detectors	RMS, √2.RMS, +Pk, -Pk, ±Pk/2
Deviation	0 Hz to 75 kHz (peak)
Rate	10 Hz to 20 kHz
Resolution	0.1 Hz

General Specifications continued

Accuracy	±1 % for deviation ≥1.5 kHz and ≤3 kHz at 1 kHz rate
	±2% otherwise
Distortion	±0.5% for rate ≤3 kHz
	±1.0% otherwise
Residual	≤3 Hz for post-detection BW 300 Hz to 3 kHz and RF frequency ≤1 GHz
AM Demodulation	
Detectors	RMS, √2.RMS, +Pk, -Pk, ±Pk/2
Depth	0% to 100%
Rate	10 Hz to 20 kHz
Resolution	0.1%
Accuracy	±1% for depth ≥30% and ≤90% at 1 kHz rate
	±2% otherwise
Distortion	±0.5% for rate ≤3 kHz
	±1.0% otherwise
Residual	≤0.1% for post-detection BW 300 Hz to 3 kHz and RF frequency ≤1 GHz
SSB Demodulation	
Mode	LSB, USB
Power	RMS, √2.RMS, Pk
Rate	10 Hz to 20 kHz
Resolution	0.1 Hz
Digital Demodulation	
Mode	P25
P25 Measurements	
Modulation Fidelity	≤5 % of reading (2.5 to 12 %)
Symbol Deviation	±1 %
Frequency Error	Timebase ±0.5 Hz
Symbol Rate Error	Timebase ±0.1 ppm
Spectrum Analyzer	
Frequency	
Range	1 MHz to 3 GHz
Resolution	1 Hz
Frequency Span	0 Hz (zero span) to 3 GHz (full span)
Accuracy	Same as timebase

General Specifications continued

Spectral Purity	
Phase Noise	-95 dBc/Hz at 10 kHz
Spurious	
Input Related	≤-65 dBc typical
Non-Input Related	≤-95 dBm typical
Analysis	
RBW	25 Hz to 6 MHz
RBW Mode	Auto (ratio of span), Manual
Trace Detectors	Normal, +Pk, -Pk, Sample, Average (RMS)
Sweep Time	0.4 ms to 1000 s
Sweep Time Mode	Auto, Manual
VBW	5 Hz to 6 MHz
VBW Mode	Auto, Manual
Trace Point Range	101 to 8192
Trigger	
Sources	Free run, External, Video
Delay	1 µs to 500 ms
	-150 ms to 500 ms (zerospan)
Resolution	1 µs
Displayed Average Noise Level in 1 Hz RBW	
RF Input Port	<-162 dBm/Hz at max gain
Duplex Port	<-120 dBm/Hz at max gain
Third-Order Intercept	
RF Input Port	IIP3 > 37 dBm
Duplex Port	IIP3 > 37 dBm
	2 CW tones 4 dBm, 10 kHz apart
Tracking Generator	
Output Ports	RF Output Port, RF Duplex Port
Level	
Range	Same as RF Generator
Accuracy	Same as RF Generator

General Specifications continued

AF Function Generator	
Frequency Specifications	
Range	20 Hz to 20 kHz (±0.2 dB)
	DC to 100 kHz (±0.5 dB)
Resolution	0.1 Hz
Accuracy	Same as timebase
Amplitude Specifications	
Range	0 to ±8 Vpk into 600 Ω
	0 to ±4 Vpk into 50 Ω
Resolution	0.1 Hz
DC Accuracy	±2 %
AC Accuracy	±2 % (level ≥200 mV and frequency from 20 Hz to 20 kHz)
	±5 % (level ≥2 mV and frequency from 20 Hz to 100 kHz)
Residual THD+Noise	≤75 dB for frequency 1 kHz and level 1 Vrms
AF Composite Signals	Sine, Square, DTMF, DCS, Two-Tone, Tone Remote, Tone Sequential,
AF Analyzer	
Channels	
Number	2 single ended or 1 double ended combining Audio 1 and Audio 2
	Microphone input is routed through Audio 2
Frequency Specifications	
Range	20 Hz to 20 kHz (±0.2 dB)
	DC to 100 kHz (±0.5 dB)
Resolution	0.1 Hz
Amplitude Specifications	
Range	20 mV to 30 Vrms, auto-ranging
DC Accuracy	±2% of reading
AC Accuracy	±2% of reading (level ≥200 mV and freq from 20 Hz to 20 kHz)
	±5% of reading (level ≥20 mV and freq from 20 Hz to 100 kHz)
	±10% of reading for Mic input (freq from 100 Hz to 15 kHz)
Residual THD+Noise	≤75 dB for frequency (20 Hz to 20 kHz single-ended 1 Vrms)
CMRR	≥60 dB typical for differential input
AF Composite Signals	Sine, Square, DTMF, DCS, Two-Tone, Tone Remote, Tone Sequential

General Specifications continued

Audio Filters	
Lowpass	300 Hz, 3 kHz, 3.4 kHz, 5 kHz, 15 kHz, 20 kHz, 40 kHz
Highpass	20 Hz, 50 Hz, 300 Hz
Other	C-MSG, CCITT
Audio and Demodulation Meters	
Distortion Meter	
Frequency Range	50 Hz to 10 kHz
Level Range	50 mVrms to 30 Vrms
Measurement Range	0 to 100%
Resolution	0.1%
Accuracy	≤3% of reading + 0.1% distortion for 1% to 20%
SINAD meter	
Frequency Range	50 Hz to 10 kHz
Level Range	50 mVrms to 30 Vrms
Measurement Range	0 to 60 dB
Resolution	0.1 dB
Accuracy	≤1 dB @ 12 dB SINAD
Frequency Counter	
Frequency Range	50 Hz to 20 kHz
Resolution	0.1 Hz
Accuracy	Timebase ±1 Hz
Tone Analyzer Modes	DTMF, DCS, Two-Tone, Tone Sequential, Tone Remote
Audio FFT Analyzer	
Frequency Range	DC to 100 kHz
Level Range	50 mVrms to 30 Vrms
Resolution	0.1 Hz
Accuracy	Timebase ±1 Hz
Level Accuracy	Same as Audio Frequency Analyzer
Filters	Same as Audio Frequency Analyzer and Modulation Analyzer
Vector Network Analyzer	
Frequency	
Range	1 MHz to 3 GHz
Resolution	0.1 Hz
Accuracy	Same as timebase

General Specifications continued

Test Port Power	
Dynamic Range	90 dB
Port 1	+10 dBm
Measurements	
Parameters	S_{11}
Graph Type	Log Magnitude (dB), SWR (Linear)
Domains	Frequency, Distance
Calibration Type	Full S_{11}
Calibration Method	Short-Open-Load
Corrected Accuracy	Source Match > 30 dB
	Reflection Tracking ±0.5 dB
Distance Domain	
Maximum Distance	100 m (327.75 ft) or 40 dB Return Loss, whichever comes first for a 3 GHz span
Measurement Display	Return Loss, VSWR
Measurement Format	dB, VSWR

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