CX200

SiteXpert

General Specifications

General	
Display	
Size	8 in (20.3 cm)
Timebase	
Accuracy	0.05 ppm (0°C to 50°C)
Aging	±0.5 ppm/year
Warm-up Time	30 minutes
External Reference	10 MHz
RF Generator	
Frequency	
Range	1 MHz to 1 GHz (standard, usable to 250 kHz)
	1 GHz to 3 GHz (CX200-F3GHz)
Resolution	1 Hz
Accuracy	Same as timebase
Output Level	
RF Duplex Port Range	-135 dBm to -50 dBm (1 MHz to 3 GHz); -37 dBm for AM and Complex modulation (typical)
RF Output Port Range	-65 dBm to 0 dBm (1 MHz to 3 GHz); 10 dBm for AM and Complex modulation (typical)
Resolution	0.1 dB
Accuracy	±1.5 dB (1 MHz to 3 GHz)
Bandwidth	100 MHz
VSWR	
RF Duplex Port	≤ 1.2 for frequency > 1 MHz
RF Output Port	≤ 1.6 typical for frequency > 1MHz
Spectral Purity (Frequency ≥1 MHz and Level ≤0 dBm)	
Phase Noise	-100 dBc/Hz at 10 kHz offset at 1000 MHz
Harmonics	≤35 dBc (-50 dBc typical)
Non-Harmonics	≤ -50 dBc
Residual AM	< 0.5% RMS in 300 Hz to 3 kHz BW
Residual FM	<15 Hz RMS in 300 Hz to 3 kHz BW
	<6 Hz RMS, Typical <800 MHz

General Specifications continued

Analog Modulation	
Modulation	
Modes	AM, FM, PM, SSB
Frequency Range	20 Hz to 20 kHz
Distortion	3% (1000 Hz rate, >2 kHz Deviation, 300 Hz - 3 kHz BP filter)
AM	
Range	0% to 100%
Resolution	0.1%
Accuracy (internal source)	≤±5% of settings
FM	
Range	0 Hz to 100 kHz
Resolution	1 Hz
Accuracy (internal source)	≤±2.5% of setting
PM	
Range	0 rad to 6.3 rad
Resolution	0.1 rad
Accuracy	<±2.5% of setting with frequency response of ±0.5 dB 20 Hz to 10 kHz
SSB	
Modulation Frequency	30 Hz to 20 kHz
Carrier Suppression	>70 dB
Sideband Suppression	>60 dB
Internal Modulation Sources	
Number of Sources	3
Sources	
Waveforms	Sine, Square, Triangle, Ramp, DTMF, DCS, CTCSS, Tone Remote, Tone Sequential, Two-Tone Sequential
Sine Wave	
Range	20 Hz to 20 kHz
Resolution	0.1 Hz
Square Wave	
Range	20 Hz to 20 kHz
CTCSS Tone	Tone 1 (67) to Tone 50 (254.1) Hz
Distortion	THD <1.0%
Frequency Response	Level flatness ≤0.5 dB 20 Hz to 10 kHz

General Specifications continued

RF Receiver	
Frequency	
Range	1 MHz to 1 GHz (standard, usable to 250 kHz)
	1 GHz to 3 GHz (CX200-F3GHz)
Maximum Input Level	
RF Input Port Maximum Input Level	21 dBm (125 mW) max preamp and frequency ≥1 MHz
	14 dBm (25 mW) max preamp and frequency <1 MHz
RF Duplex Port Maximum Input Level	47 dBm (50 Watts) continuous, <35°C
	51 dBm (125 Watts) Cyclical (Max "ON" of 30 sec and Min "OFF" for 90 sec) for power levels >50 Watts
Shutdown	Alarm sounds (no auto shutdown)
VSWR	
RF Duplex Port	≤1.2 (100 kHz to 1 GHz)
RF Input Port	≤1.7 (1 MHz to 3 GHz) with 10 dB input attenuation
Harmonic Response	
2nd Harmonic	<-30 dBc
3rd Harmonic	<-45 dBc, <-60 dBc (typical)
Spurious Response	
Input Related	≤-42 dBc, -60 dBc (typical)
Non-Input Related	≤-95 dBm
Phase Noise	-95 dBc/Hz at 10 kHz
Dynamic Range	>105 dB
TOI	>42 dBm (max gain)
DANL	<-163 dBm/Hz at max gain
Sensitivity	
Analog	< -100 dBm (10 dB SINAD or better with 100 kHZ Bandwidth filter)
Bandwidth	100 MHz (wideband), 8 MHz (narrowband)
RF Bandpass Filter (IF Filters)	5 kHz, 6.25 kHz, 8.33 kHz, 10 kHz, 12.5 kHz, 25 kHz, 30 kHz, 100 kHz, 300 kHz
Power Meter	
Frequency	
Range	1 MHz to 1 GHz (Standard)
	1 GHz to 3 GHz (CX200-F3GHz)
Measurement Modes	RMS, average RMS, minimum, maximum
Bandwidth	5 kHz, 6.25 kHz, 8.33 kHz, 10 kHz, 12.5 kHz, 25 kHz, 30 kHz, 100 kHz, and 300 kHz
Level	
RF Duplex Port	-67 dBm to 45 dBm
RF Input Port	-108 dBm to 10 dBm

General Specifications continued

Accuracy	
RF Duplex Port	±0.4 dB (1 MHz to 1 GHz); ±0.6 dB elsewhere. Accuracy after normalizing at the measurement frequency.
RF Input Port	±0.6 dB (1 MHz to 1 GHz), ±0.9 dB elsewhere. Accuracy after normalizing at the measurement frequency.
RF Error Meter	
Frequency	
Range	1 MHz to 3 GHz
Resolution	1 Hz
Accuracy	Same as timebase
Analog Demodulation Measurements	
FM	
Modes	RMS, √2.RMS, +Pk, -Pk, ±Pk/2
Deviation	0 Hz to 75 kHz
Accuracy	±1.0% for rate ≥1.5 kHz and ≤3 kHz
	±2.0% otherwise
FM Distortion	±0.5% for rate ≤3 kHz
	±1.0% otherwise
Residual FM	≤3 Hz (300 Hz to 3 kHz) and frequency <1 GHz
AM	
Modes	RMS, √2.RMS, +Pk, -Pk, ±Pk/2
Measurement Range	0% to 100%
Accuracy	±1 % for depth ≥30% and ≤90% at 1kHz rate
	±2% otherwise
AM Distortion	±0.5% for rate ≤3 kHz
	±1.0% otherwise
AF Frequency Range	10 Hz to 20 kHz
Residual AM	<0.1% (300 Hz to 3 kHz) and RF frequency ≤ 1 GHz
PM	
Range	0 radians to 6.3 radians
Resolution	0.01 rad for ≤5 rad
	0.1 rad for >5 rad
Accuracy	±2.0%, ±1.0% (rate 1.5 kHz to 3 kHz)
SSB	
Modes	SSB-USB, SSB-LSB
Measurement Range	Frequency error, Power (RMS), Power (PEP)
Audio and Demodulation Meters	
Distortion Meter	
Frequency Range	50 Hz to 10 kHz
Measurement Range	0% to 100%
Accuracy	<3% of reading 0.1% distortion, 1% to 20%

General Specifications continued

SINAD Meter	
Frequency Range	50 Hz to 10 kHz
Measurement Range	0 dB to 60 dB
Accuracy	<±1 dB @12 dB SINAD
Resolution	0.01 dB
S/N Meter	
Frequency Range	50 Hz to 10 kHz
Measurement Range	0 dB to 60 dB
Accuracy	≤1 dB
AF Counter	
Frequency Range	50 Hz to 10 kHz
Accuracy	Timebase ±1 Hz
AF Tones Analyzer	
Modes	DTMF, DCS, CTCSS, Two-Tone, Tone Sequential, Tone Remote
Audio Level Meter	
Input Impedance	100 K Ω, 600 Ω, 300 Ω
Level	
Range	0 Vrms to 30 Vrms
Audio Analyzer	
Frequency Range	DC to 100 kHz
Frequency Resolutions	0.8 Hz to 2.4 Hz RBW
Level	
Range	50 mVrms to 30 Vrms
Accuracy	±5% (Audio) ±1% (DC)
Audio Filters	
Lowpass	300 Hz, 3 kHz, 3.4 kHz, 5 kHz, 15 kHz, 20 kHz, 40 kHz, TIA 3 kHz, TIA 15 kHz
Highpass	50 Hz, 300 Hz, TIA 50 Hz, TIA 300 Hz
Other	C-MSG, CCITT
FFT/Channel Analyzer	
Span	2 kHz to 8 MHz
IF Bandwidth	10 MHz
RBW	1 Hz to 50 kHz
Detector	Normal, positive peak, negative peak, average (RMS)
FFT Windows	Flat top, Rectangular, Hamming, Hanning, Blackman-Harris
Accuracy	RF Duplex Port: ±0.7 dB (1 MHz to 1 GHz), ±1 dB (1 GHz to 6 GHz) for level >-10 dBm. Accuracy after normalizing at the measurement frequency.
	RF Input Port: ±1.0 dB (1 MHz to 1 GHz), ±1.1 dB (1 GHz to 6 GHz) for level >-50 dBm. Accuracy after normalizing at the measurement frequency.

General Specifications continued

Spectrum Analyzer	
Frequency Range	1 MHz to 1 GHz (Standard)
	1 GHz to 3 GHz (CX200-F3GHz)
RBW Range	25 Hz to 6 MHz
Span Range	0 Hz to (9 kHz to max frequency of each band)
VBW Range	5 Hz to 6 MHz
Sweep Time Range	0.4 ms to 1000 s
Spurious Free Dynamic Range	≥80 dB
Display Range	1 dB/div to 20 dB/div with 10 divisions
Trigger	Free run, External
DANL	<-162 dBm/Hz (max gain)
Zero Span Analyzer	
Sweep Time	
Range	24 µs to 200 s
Tracking Generator	
Output Ports	RF Output Port, RF Duplex Port
Level	
Range	Same as RF Generator
Accuracy	Same as RF Generator
AF Generator	
Output	
Impedance	<4 Ω
Max Output Current	100 mA
Frequency	
Range	0 Hz to 100 kHz
Resolution	0.1 Hz
Accuracy	Timebase
Level	
Range	0 Vpk to ±8 Vpk into 600 Ω
Accuracy	±2% (level >=200 mV and frequency from 20 Hz to 20 kHz)
Resolution	0.1 mV
Distortion	
THD+N	<-75 dB for frequency 1 kHz and level 1 Vrms
AF Composite Signals	Sine, Square, Triangle, Ramp, DC Plus, DC Minus, DTMF, DCS, CTCSS, Tone Remote, Tone Sequential, Two-Tone Sequential

General Specifications continued

Oscilloscope	
Display	
Traces	1
Markers	6
Horizontal	
Sweep Per Div	1 µs to 100 ms/div
Accuracy	<2%
Vertical	
Range	1 mV/div to 20 V/div
Accuracy	<5%
Bandwidth	20 kHz
Input Range	20 mV to 30 Vrms (42.4 Vpk)
Coupling	AC, DC
Input Impedance	300 Ω, 600 Ω, 100k Ω single ended, ±1% shunted by <300 pF, 200 k Ω differential, ±8%
Trigger	
Modes	Single, Normal, Automatic, Free run
Digital	
Modes	P25, P25 Phase 2, TETRA, DMR, NXDN
P25 Measurements	
Accuracy	
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
TETRA Measurements	
Modulation	
Type	π/4 DQPSK, 18 ksymbols/sec, TETRA filter (RRC with <0.35)
Accuracy	<3% RMS
	<6% peak
Residual Carrier Power	<-35 dBc
TETRA MS T1	T1 test signals (in accordance with ETSI EN 300 394-1) T1 type 7 (TCH / 7.2)
TETRA BS T1	T1 test signals (in accordance with ETSI EN 300 394-1) T1 type 7 (TCH / 7.2)
	Framed PRBS, Unframed PRBS

General Specifications continued

DMR Measurements	
FSK Error	
Range	0 to 20%
Resolution	0.01%
Accuracy	<5% of reading (2.5 to 10%)
Symbol Deviation	
Range	1500 Hz to 2350 Hz
Resolution	0.1 Hz
Accuracy	±10 Hz (1745 to 2140 Hz)
Symbol Clock Error	
Range	±1000 MHz
Resolution	0.01 MHz
Accuracy	1 ppm (-48 to 48 MHz)
Frequency Error	
Range	±4000 Hz
Resolution	0.01 Hz
Accuracy	Frequency Standard ±1 count
Magnitude Error	
Range	0 to 5%
Resolution	0.01%
Accuracy	<10% of reading (0 to 2%)
UUT TX/RX Bit Error Rate	
Range	0 to 20%
Resolution	0.1%
Signal Power/Slot Power	
Range	Reference Port Range
Resolution	0.1 dB
Accuracy	±1 dB (typically better than ±0.6 dB). Accuracy after normalizing at the measurement frequency
Protocol	
Decode	Color Code, Call ID, Unit ID
Accuracy	Color Code, Call ID

General Specifications continued

Vector Network Analyzer

Frequency	
Range	1 MHz to 3 GHz
Resolution	0.1 Hz
Accuracy	Same as timebase
Test Port Power	
Port 1	0 dBm
Dynamic Range	90 dB
Measurements	
Parameters	S_{11}
Graph Type	Magnitude (dB and Linear), Delay (s), Phase (Degrees), Distance (meters/feet)
Measurements	Magnitude, VSWR, Distance to Fault, Cable Loss, Insertion Loss
Calibration Type	S_{11}
Calibration Method	Short-Open-Load, Thru
Distance Domain	
Maximum Distance	1000 ft (305 m)
Measurement Display	Return Loss, VSWR
Measurement Format	dB, VSWR

General Specifications continued

Environmental/Physical

Weight	8.6 lbs (3.9 kg)
Temperature, Not Operating	-40°C to 71°C
	Note: Battery must not be subjected to temperatures below -20°C, nor above 60°C
Temperature, Operating	0°C to 50°C
Relative Humidity	95% RH (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
Battery	
Type	Lithium Ion, 14.4 V, 6.8 Ah
Operating Time	1.5 hours (typical), 3.75 hours (optional)
Battery Charging Limits	0°C to 45°C (32°F to 113°F) ≤85% RH
Compliance	
EMC	EMC IEC 61000-3-2:2018
	EMC 6100-3-3:2013 +A1:2017
	CISPR 11:2015 +A1:2016 +A2:2019
Safety	EN IEC 61326-1:2021 Class A

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