



IQC5000B RF Record & Playback System



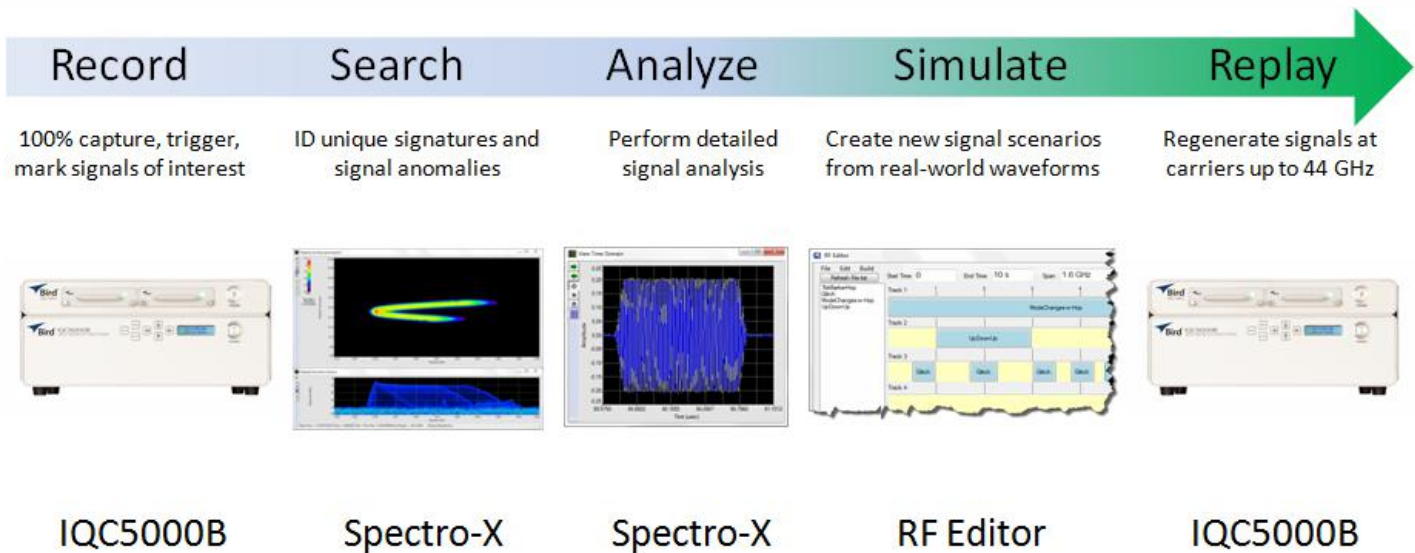
The RF Experts

IQC5000B Series is the industry's smallest high-fidelity dual-channel RF Record & Playback System. With up to 255 MHz of record and playback bandwidth, the IQC5000B can meet recording needs from HF to millimeter wavelengths in mission-critical applications.

The IQC5000B has been designed to support operational security with removable memory for a total of 4TB of storage within the IQC5000B-MEM module, which can provide up to 50 minutes of single-channel record time at full bandwidth. The system's external datapacks (up to 15 TB) also give users over 3 hours of single-channel record time at full bandwidth. The IQC5000B Record & Playback System is suited for laboratory, production, or field applications.

FEATURES

- 255 MHz RF streaming bandwidth on record and playback
- Low-cost, removable storage options
- Time-synchronous dual channel recording
- Fast offload speeds using cabled PCI Express
- Compatible with Keysight, Rhode & Schwarz and Tektronix Signal Analyzers

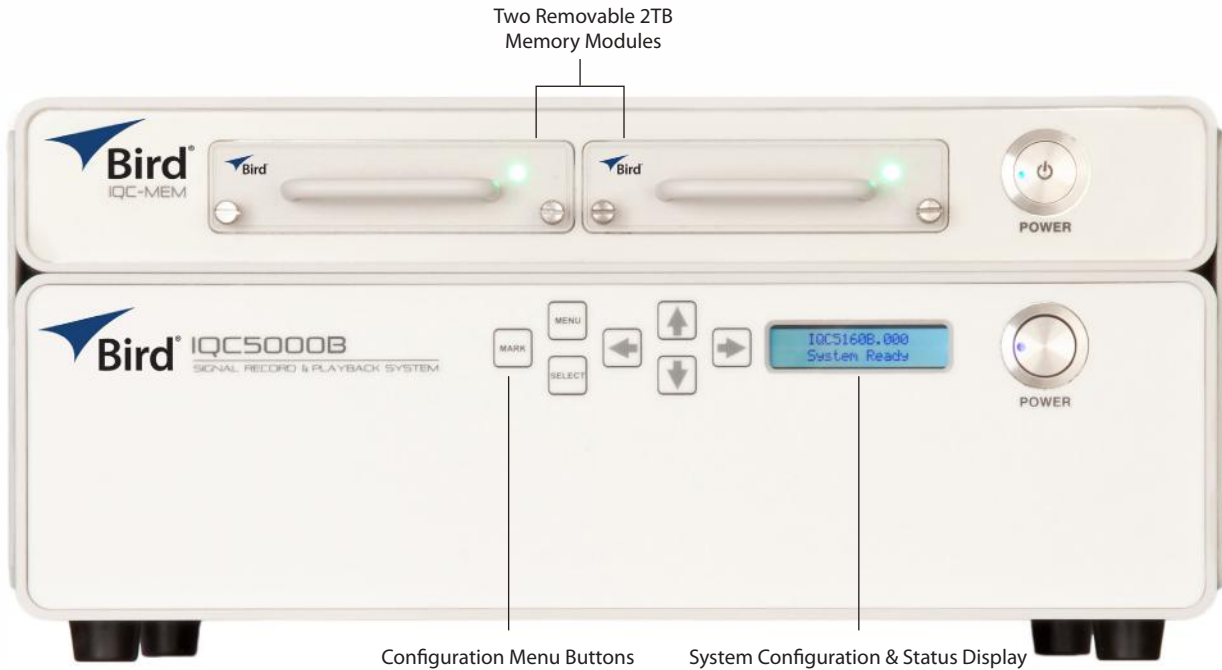


The RF environment is growing increasingly complex. The IQC5000B can be used to bring large datasets back into the laboratory for real-world analysis. The data can be used as-is or modified to margin and stress test system designs for compliance. Whether recording several seconds, hours, or even days of RF data, has the hardware and software tools to get the job done.

IQC5000B

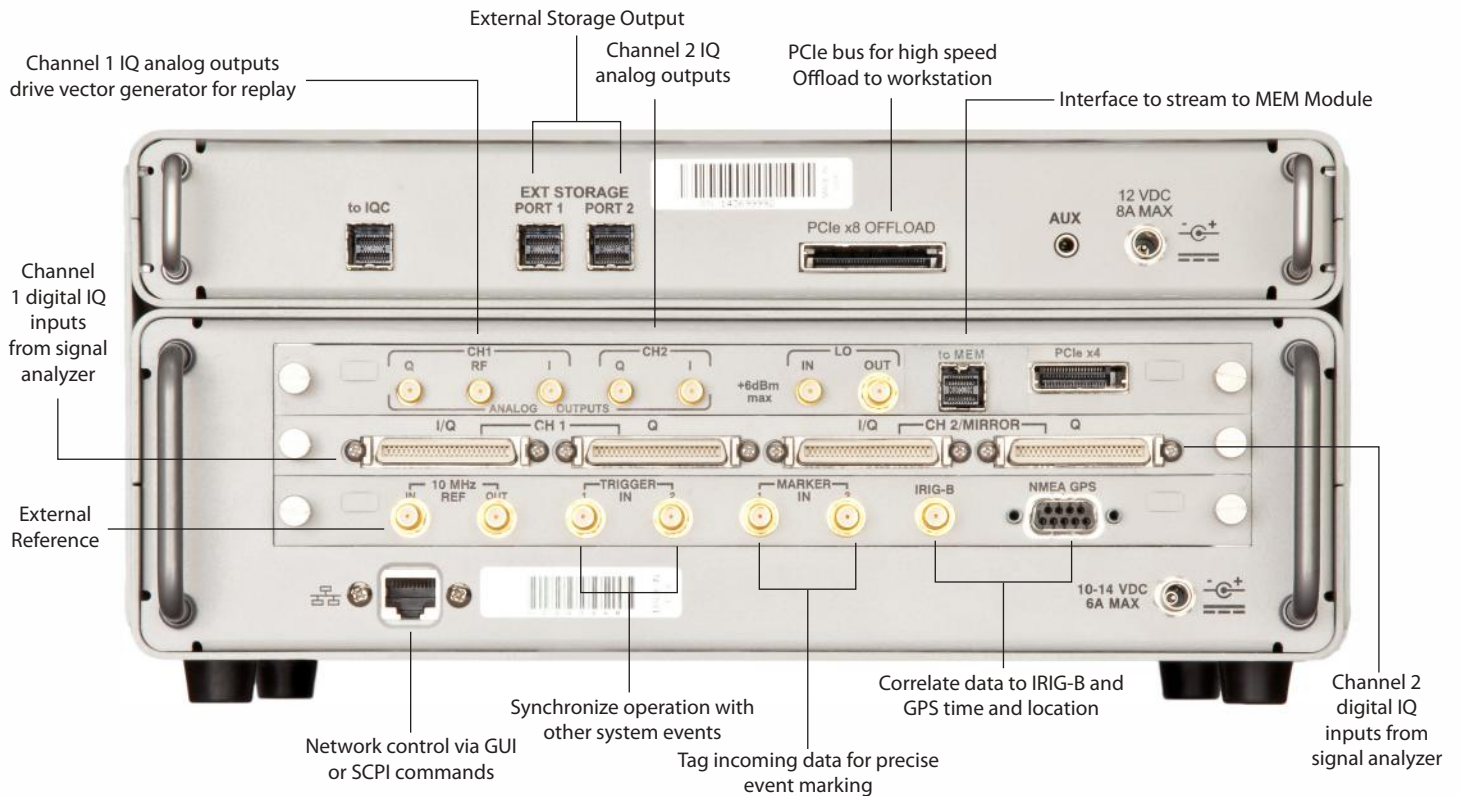
RF Record & Playback System

IQC5000B FRONT PANEL FUNCTIONS AND INTERFACES



The IQC5000B front panel provides local control of basic system functions.

IQC5000B BACK PANEL FUNCTIONS AND INTERFACES



Rear panel interfaces include two analog I&Q Channel Outputs and two digital I&Q Channel Inputs, PCIe data offload, and IRIG-B and GPS inputs.

IQC5000B

RF Record & Playback System

APPLICATIONS

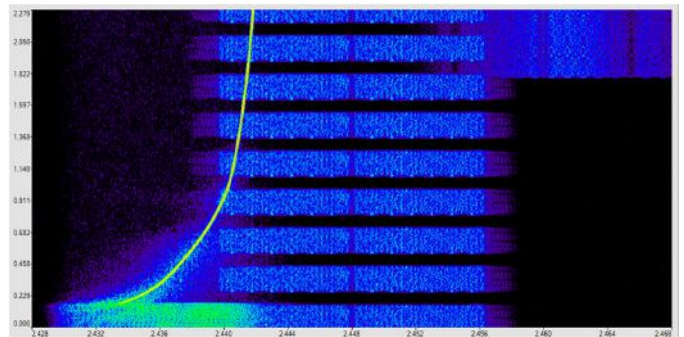
ELECTRONIC WARFARE

Record, store, and playback real-world RF signals for threat analysis and to build EW libraries.



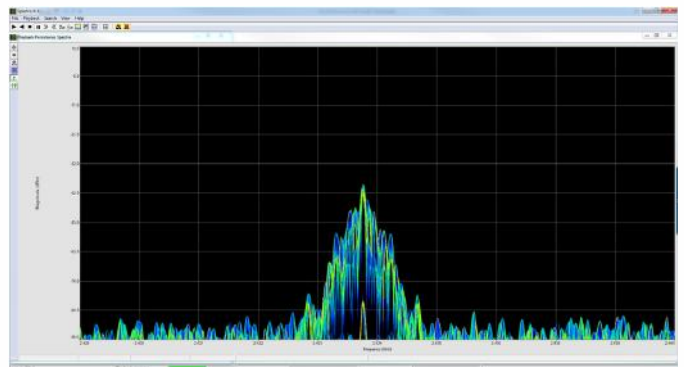
INTERFERENCE ANALYSIS

It is not always easy to record interfering signals. With the IQC5000B's sophisticated triggering capability, you can use up to two external triggers to start recording when the interference occurs. This allows for efficient use of the onboard memory as well as being able to record those elusive interferers.



SURVEILLANCE

With the IQC5000B, you can record in-theater RF signal activity for later offload and analysis in a laboratory.



SPECTRUM MANAGEMENT

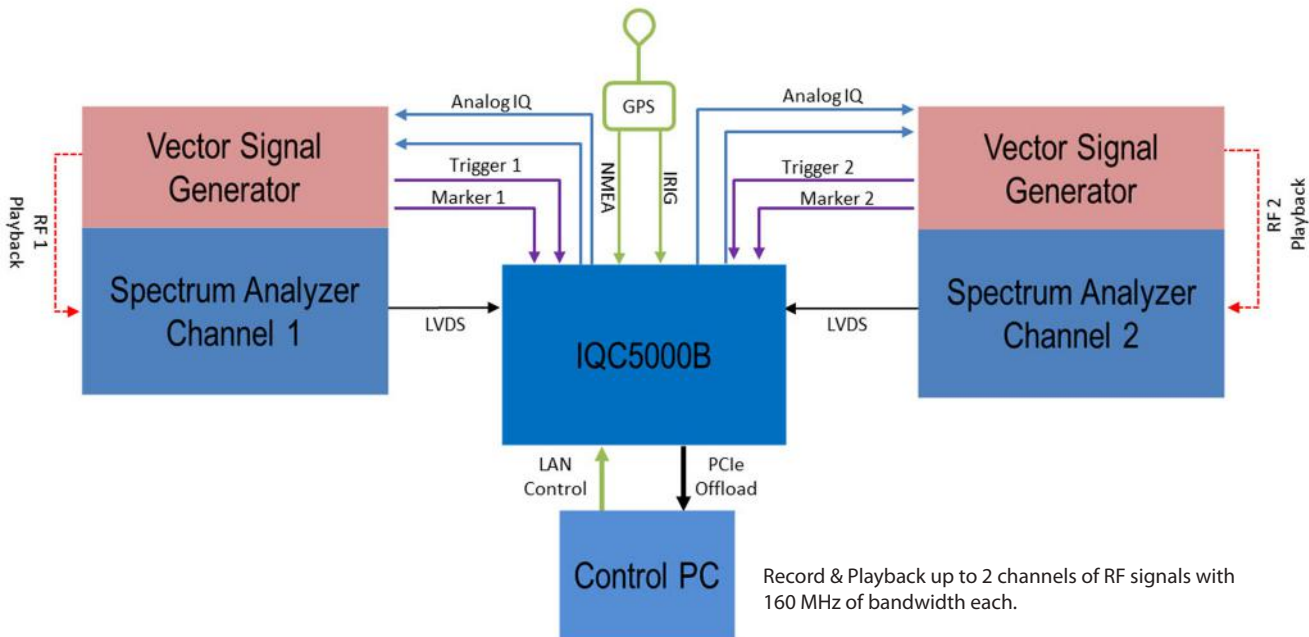
Ensuring that critical communications, radars, and other RF systems have a fighting chance to survive in harsh electromagnetic environments can be an almost impossible task. X-COM Systems provides Spectrum Managers with systems and analysis tools that help to deconflict the RF world we live in to make the impossible...possible.



IQC5000B

RF Record & Playback System

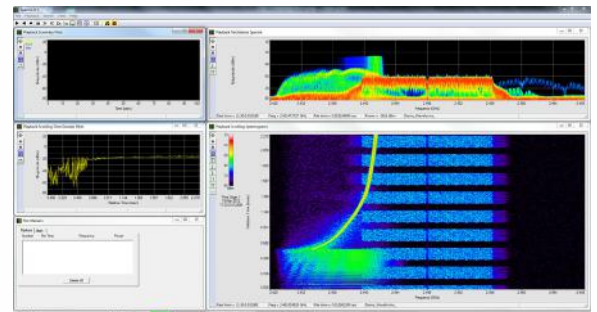
IQC5000B DUAL-CHANNEL CONFIGURATION



SUPPORTING PRODUCTS FOR THE IQC5000B SERIES

SPECTRO-X SIGNAL ANALYSIS TOOLKIT

Spectro-X software allows users to visualize and analyze up to four recorded RF and microwave spectrum files at the same time. You can parse through very large files of RF data with its four powerful search functions to get to the signal or area in the file that interests you the most. Then, export only those smaller portions of the file that require deeper analysis. Several file formats are supported such as .bin (KEYSIGHT®), .mat (MATLAB®), .tiq (Tektronix®) and .txt (ASCII).



RF EDITOR SIGNAL EDITING SOFTWARE

RF Editor is a drag-and drop graphical editing tool that lets you easily modify I&Q signals of any length or create entirely new ones. Users can modify and build signal waveforms in the time and frequency domains make many frequency domain signal modifications, and move any signal or slice of spectrum anywhere among 10 time domain tracks in the recording. Snippets of recorded data can be dragged and dropped onto any track and delayed, filtered, and shifted in frequency before playback.



SIGNAL ANALYSIS WORKSTATION

X-COM's signal analysis workstation is designed to provide an optimum environment for storage, analysis, and editing of files record by the IQC5000B. The Windows 7™ system configuration includes a dual-Quad core Xeon processor, high-resolution graphics, and large SATA hard drive. It can be custom tailored to individual needs, including pre-installed Spectro-X and RF Editor software.



IQC5000B

RF Record & Playback System

IQC5000B SPECIFICATIONS

RF RECORD INTERFACE

I&Q INPUTS

Logic level	LVDS
Sample depth	16-bit I&Q
Number of channels	2 I&Q channels running concurrently
Connector	Four 50-pin 3M MDR
Maximum data rate	400 (MBytes/s)at each connector
Spectrum analyzer compatibility	Keysight® X-Series: N9040B, N9030B/A, N9020B/A, N9010B/A Rohde & Schwarz®: FSV, FSVR, and FSW Tektronix®: RSA5100/6100
Minimum record bandwidth (kHz)	19.531 (24.4140625 ksamples/s, 16 bits, I&Q)
Maximum record bandwidth (MHz)	255 MHz (300 Msamples/s, 16 bits, I/Q)

PLAYBACK INTERFACE

ANALOG I&Q INPUTS

1-dB bandwidth (MHz)	255 MHz centered at 0 Hz (single channel) 160 MHz (dual channel)
Power level (dBm)	0 (fixed)
Amplitude flatness across 255 MHz bandwidth (dB)	+/-2
VSWR	≤ 1.8:1
Impedance (ohms)	50

RF OUTPUTS

Channel 1 Only	2400
Center frequency (MHz)	225 MHz
Power level (dBm)	0 nominal (for full scale recordings)
VSWR	≤ 1.8:1
Impedance (ohms)	50
Connector	SMA female

WAVEFORM STORAGE INTERFACE

Digital I/O Record and Playback Interface	High-speed serial link to/from External IQC5000B-MEM
---	--

GENERAL SPECIFICATIONS

GPS

Protocol	ASCII, 8-bit data, one start and one stop bit, no parity
Supported Speeds	4800, 9600 and 115200 band
Supported NEMA Sentences	GPGGA, GPVTG, GPZDA
Connector	9-pin D female

IRIG-B

Accuracy	RIG-B122
Signal Format	Amplitude modulated sine wave
Connector	SMA female

MARKERS

	2 inputs
Voltage levels (VDC)	0 to 3.3 threshold, 5 maximum
Impedance (ohms)	10,000
Connector	SMA female
Maximum allowed per record	Maximum allowed per record Maximum quantity 100,000 per recording
Marker content	Date, time of day, latitude, longitude, altitude, Ground Speed, sample number
Latency (µs)	<1 from marker valid at connector to insertion in record file

Maximum Marker Record Speed (per second)	1000 per marker input per marker edge
--	---------------------------------------

TRIGGER FUNCTIONS

	2 inputs
Voltage levels (VDC)	0 to 3 threshold, 5 maximum
Impedance (ohms)	10,000
Connector	SMA female
Latency (µs)	0.4 from valid trigger applied to first recorded sample
Re-arm time (ms)	<1
Pre-record memory (µs)	0

START/STOP RECORD

Record Types	Manual, duration, time of day, and event
Port configurations	Port 1, port 2, ports 1 and 2, ports 1 or 2
Logic (user-specified)	Leading edge valid, trailing edge valid (after start pulse or same pulse)

START/STOP PLAYBACK

Playback modes	Timed, manual, looped until trigger, play between markers
Port configurations	Port 1, port 2, ports 1 and 2, ports 1 or 2
Logic (user-specified)	Leading edge valid, trailing edge valid (after start pulse or same pulse)

IQC5000B

RF Record & Playback System

IQC5000B GENERAL SPECIFICATIONS CONTINUED

REFERENCE CLOCKS

	INTERNAL
Frequency (MHz, +/-ppm)	10, +/-10
	EXTERNAL
	Provided by external input port if active. Otherwise internal clock signal is used
Required level (dBm)	> 0 into 50 ohms
Frequency (MHz, +/-ppm)	10, +/-10
Connector	SMA female

INSTRUMENT CONTROL

X-COM Control software	Graphical user interface, full control of record, playback, file offload and upload
Operating environment	Dual-core desktop or laptop, Windows 7, 64bit, 2Gbytes RAM, 100 Mbytes free disk space, mouse
Remote API	RJ-45 connection to LAN switch
Front Panel	Display of instrument parameters and manual marker insertion via membrane switches and 2-line LCD

ENVIRONMENTAL

	MIL-PRF-28800F Class 3 except where noted by*
Temperature	0° to +50° C operating , -20° C to +71° C storage. 95% relative humidity (non-condensing)
Vibration	Sinusoidal: 5 to 55 Hz, 0.33 mm amplitude. Random with solid-state drives installed: in conformance with MIL-PRF-28800F Class
Shock (non-operating)	30g

POWER

	AC	External AC/DC, 100 to 240V +/-10%, 50 to 60 Hz +/-5%, at 1.1 to 2.5 A (72 W)
	DC	12 VDC, 6 A maximum (72 W)

DIMENSIONS

Width x Height x Depth	12 x 3.5 x 10.5 in / 305 x 89 x 266 mm
Weight	8.5 lb / 3.85 kg

PRODUCT CONFORMITY

Electromagnetic conformance	EMC Directive 2014/30/EU EN 61326-1 and electrical equipment for measurement, control, and laboratory use ICES-003 Issue 5, August 2012 for a Class A device FCC Title 47 of the Code of Federal Regulations (CFR), Part 15 Subpart B for a Class A digital device
Electrical safety conformance	CE Compliant IAW EN 61010-1:2010

IQC5000B-MEM WAVEFORM STORAGE

DIGITAL I/O RECORD AND PLAYBACK INTERFACE	Aurora Link from/to External IQC5000B-MEM
Connector	Mini SAS SFF-8644

EXTERNAL STORAGE INTERFACE

Serial Attached SCSI (SAS)	2 Connections of 4 lanes each
Connector	Mini-SAS SFF-8088

INTERNAL STORAGE

Removable Solid State Media Modules	Two Modules, RAID 0
Capacity (TBytes)	2, 4

EXTERNAL STORAGE

Solid State Media	RAID 0, 16 drives
Capacity (TBytes)	8, 15

PCIe (DATA OFFLOAD)

Specification	PCIe Gen2
Lanes	8

ENVIRONMENTAL

Temperature	0° to +50° C operating , -20° C to +71° C storage. 95% relative humidity (non-condensing)
Vibration	Sinusoidal: 5 to 55 Hz, 0.33 mm amplitude. Random with solid-state drives installed: in conformance with MIL-PRF-28800F Class 3
Shock (non-operating)	30g

POWER

	AC	External AC/DC, 100 to 240V +/-10%, 50 to 60 Hz +/-5%, at 1.1 to 2.5 A (72 W)
	DC	12 VDC, 6 A maximum (72 W)

DIMENSIONS

Width x Height x Depth	12 x 1.75 x 10.5 in / 305 x 45 x 266 mm
Weight	5 lb / 2.68 kg

PRODUCT CONFORMITY

Electromagnetic conformance	EMC Directive 2014/30/EU EN 61326-1 and electrical equipment for measurement, control, and laboratory use ICES-003 Issue 5, August 2012 for a Class A device FCC Title 47 of the Code of Federal Regulations (CFR), Part 15 Subpart B for a Class A digital device
Electrical safety conformance	CE Compliant IAW EN 61010-1:2010

IQC5000B

RF Record & Playback System

IQC5000B ORDERING INFORMATION

Model Number	Description
IQC5040B	Signal recorder with up to 40 MHz record bandwidth. Two each LVDS inputs (I & Q) with a maximum data rate per connector of 100 MB/sec. Includes an IQC5000B-MEM interface module, removable AC power supply, X-COM Control SW and documentation on CD.
IQC5160B	Signal recorder with up to 160 MHz record bandwidth. Two each LVDS inputs (I & Q) with a maximum data rate per connector of 400 MB/sec. Includes an IQC5000B-MEM interface module, removable AC power supply, X-COM Control SW and documentation on CD.
IQC5255B	Signal recorder with up to 255 MHz record bandwidth. Two each LVDS inputs (I & Q) with a maximum data rate per connector of 600 MB/sec. Includes an IQC5000B-MEM interface module, removable AC power supply, X-COM Control SW and documentation on CD.
IQC5000B-MEM	Memory interface module for RAID0 storage units
QC5000B-ME2	Internal RAID0 SSD disk storage: 2 TB. Supports single channel operation up to 160 MHz bandwidth. Two units of option ME2 must be purchased for dual channel operation at bandwidths of 160 MHz or single channel operation at 255MHz.
IQC5000B-ME0	Additional blank memory module cover for the IQC5000B-MEM interface module.
IQC5000B-S08	External RAID0 SSD external disk storage: 8 TB. Supports both single and dual channel operation up to 160 MHz bandwidth
IQC5000B-S15	External RAID0 SSD external disk storage: 15 TB. Supports both single and dual channel operation up to 160 MHz bandwidth
IQC5000B-042	Adds second recording channel to support up to 40 MHz capture bandwidth.
IQC5000B-162	Adds second recording channel to support up to 160 MHz capture bandwidth.
IQC5000B-101	Adds single playback channel to support up to 160 MHz; Baseband I & Q (2ea SMA female) and RF Out at 2.4 GHz, 0dBm (1ea SMA female). Not compatible with options 042 or 162.
IQC5000B-102	Adds second playback channel to support up to 160 MHz; Baseband I & Q (4ea SMA female) and one RF Out at 2.4 GHz, 0dBm (1ea SMA female). Requires option 042 or 162.
IQC5000B-XCB	LVDS Cable pair (2ea) for Signal Analyzers supporting up to 255 MHz bandwidth.
IQC5000B-ACB	LVDS Cable (1ea) for Keysight X-series Signal Analyzers supporting 40 MHz bandwidth.
IQC5000B-GPS	GPS/IRIG-B Timing Standard. Includes GPS antenna and interface cable.
IQC5000B-BKT	Non-rackmount bracket for affixing the IQC5000B to the IQC5000B-MEM interface module.
IQC5000B-RM1	19 inch Rack Mount Kit for IQC5000B only (2U)
IQC5000B-RM2	19 inch Rack Mount Kit for IQC5000B and option – MEM Adapter Combined (3U)
IQC5000B-RM3	19 inch Rack Mount Kit for IQC5000B option MEM only (1U)
IQC5000B-PC3	PCIe x4 Express Card 34 host cable adapter for use in laptop computers and systems that use option MEM. Includes 2 meter cable.
IQC5000B-PC4	PCIe x8 host cable adapter for use in desk top computers and systems that use option MEM; Full Height Bracket. Includes 2 meter cable.
IQC5000B-PC7	PCIe x8 to x4 cable 2 meters in length.
IQC5000B-EX1	Extends factory warranty of IQC5000B by one additional year
IQC5000B-EX2	Extends factory warranty of IQC5000B by two additional years
IQC5000B-EX3	Extends factory warranty of IQC5000B by three additional years
IQC5000B-EX4	Extends factory warranty of IQC5000B by four additional years
IQC5000B-TRN	Daily rate for onsite training and consulting by X-COM Applications Engineer.
IQC5000B-CBL	Adds one pair (2ea) of SMA-male to BNC-male cables for IQ analog playback. Each cable is 5 feet long
IQC5000B-1A5	Transit Case for IQC5000B series. Case can hold the IQC5000B, IQC5000B-MEM and related accessories.

IQC5000B

RF Record & Playback System

IQC5000B ORDERING INFORMATION CONTINUED

Model Number	Description
IQC5000B-3UP	Upgrade from 160 MHz to 255 MHz capture bandwidth. Requires option -162 or option -5UP.
IQC5000B-4UP	Upgrade from 40 MHz single channel to 40 MHz dual channel operation.
IQC5000B-5UP	Upgrade from 160 MHz single channel to 160 MHz dual channel operation.
IQC5000B-6UP	Upgrade from 40 MHz single channel to 160 MHz single channel operation.
IQC5000B-WS1	Rackmounted SigAnalyst Workstation Dual Xeon, Quad-Core Workstation, 64GB RAM with 128 TB HDD Storage Archive (96 TB usable).
IQC5000B-WS2	Rackmounted SigAnalyst Workstation Dual Xeon, Quad-Core Workstation, 64GB RAM with 128 TB HDD Storage Archive (96 TB usable), Spectro-X and RF Editor software packages.
IQC5000B-ENL	Rack enclosure to house IQC5000B, down converter, 2ea solid state data packs, upconverter, workstation, storage archive and power distribution.

SOFTWARE

WC-RF-EDITOR	RF Editor Signal Generation software
Spectro-X	Spectro-X Advanced Signal Analysis software

