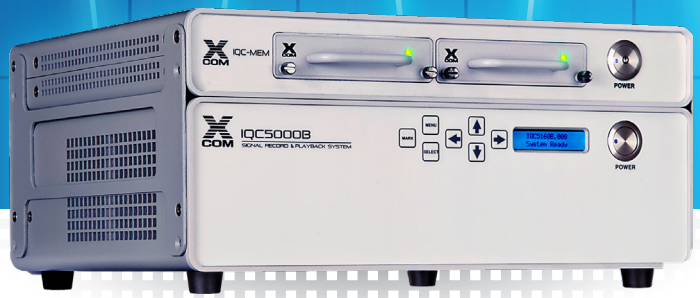
The **RF** Experts

RF RECORD & PLAYBACK
Dual Channel

IQC5000B



Detect. Analyze. Defeat.

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

Supporting today's operational security requirements, the IQC5000B has 4 TB of removable memory storage and can provide an impressive 55 minutes of single-channel record time at full bandwidth. For additional capabilities, up to 24 TB with the system's external data packs provide over three hours of single-channel record time at full bandwidth.

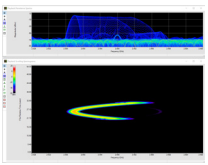
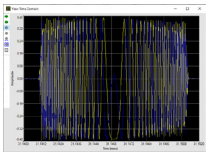
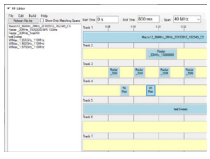
PRODUCT FEATURES

- 255 MHz RF streaming bandwidth
- Low-cost, removable storage options
- Dual channel time-synchronous recording
- Fast offload speeds using cabled PCI Express
- Compatible with Keysight®, Rhode & Schwarz®, Anritsu®, and Tektronix® signal analyzers

APPLICATIONS

- Interference analysis
- Electronic warfare
- Surveillance
- Spectrum management
- Drone detection
- Device test validation

RECORD | **SEARCH** | **ANALYZE** | **SIMULATE** | **PLAYBACK**

RECORD	SEARCH	ANALYZE	SIMULATE	PLAYBACK
100% capture, trigger, mark signals of interest	ID unique signatures and signal anomalies	Perform detailed signal analysis	Create new signal scenarios from real-world waveforms	Regenerate signals at carriers up to 44 GHz
				
IQC5000B	**SPECTRO-X**	**SPECTRO-X**	**RF EDITOR**	**IQC5000B**

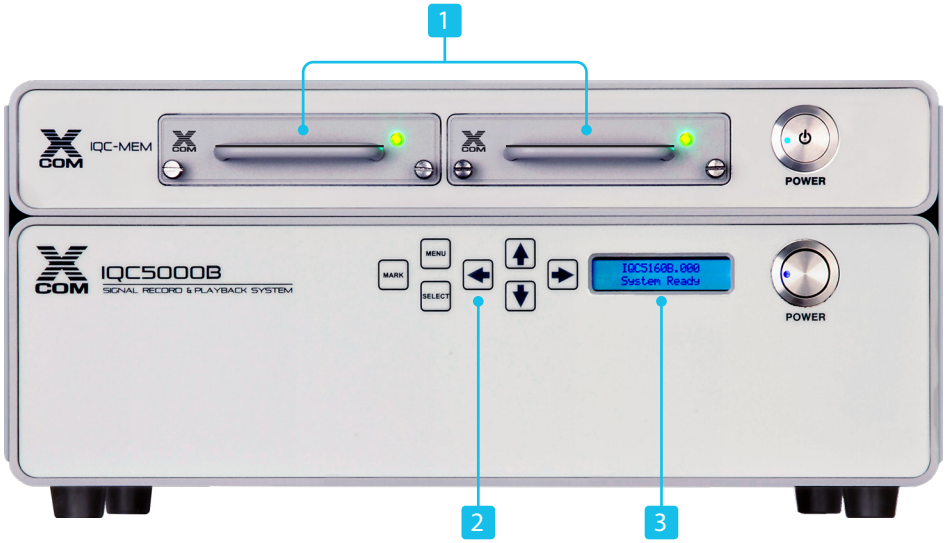
DUAL CHANNEL RF RECORD & PLAYBACK

IQC5000B SERIES

Functions & Interfaces

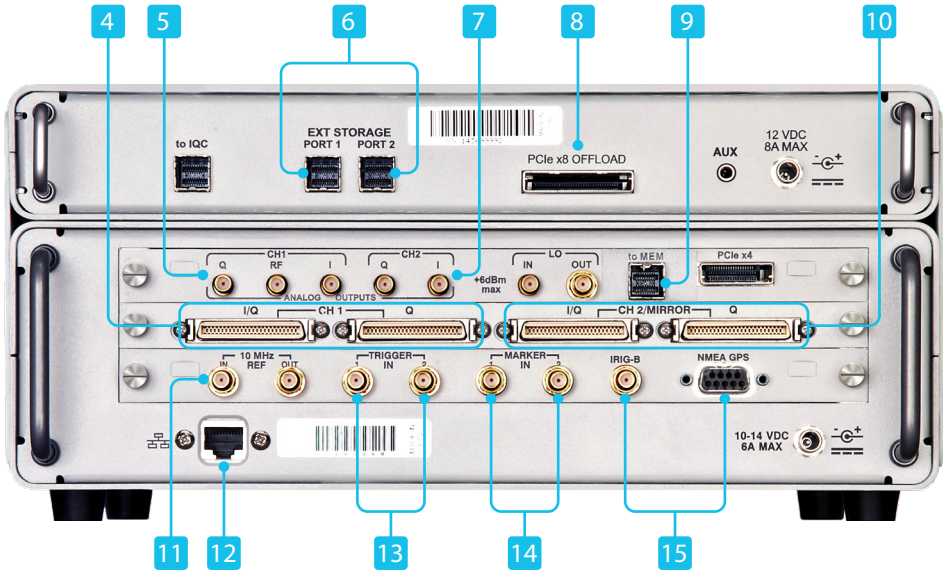
FRONT PANEL

1. Two Removable 2 TB Memory Modules
2. Configuration Menu Buttons
3. System Configuration & Status Display



BACK PANEL

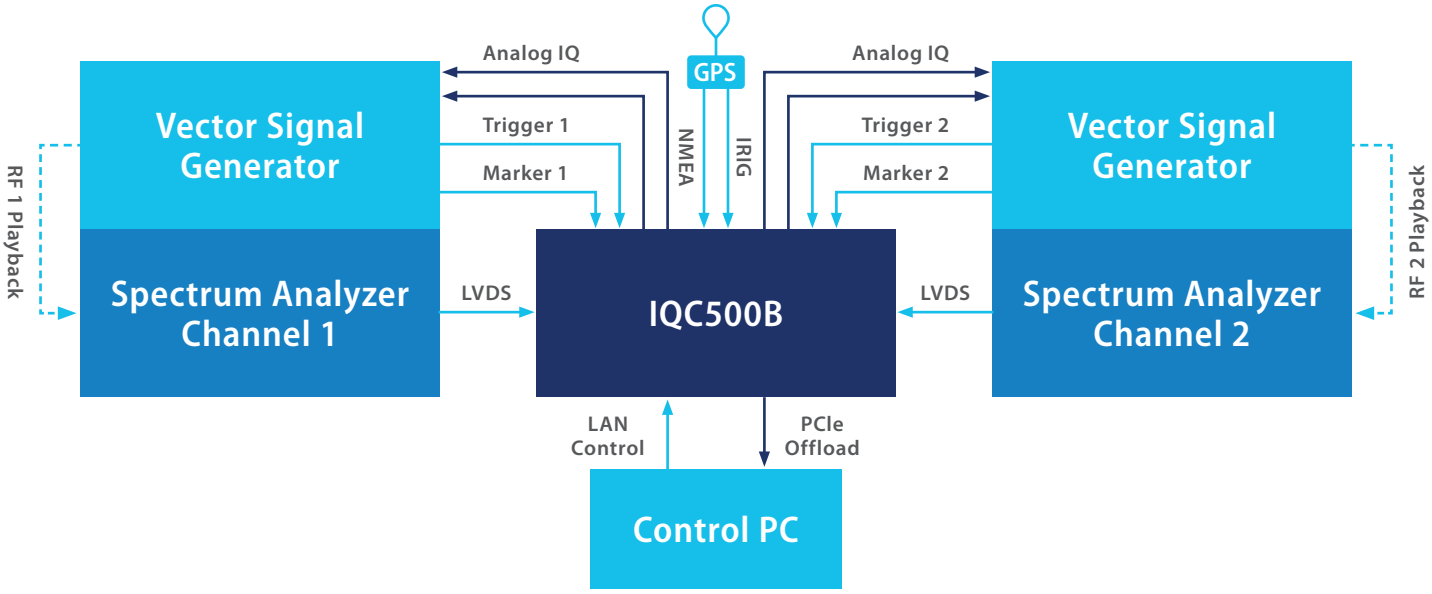
4. Channel 1 digital IQ inputs from signal analyzer
5. Channel 1 IQ analog outputs drive vector generator display
6. External storage output
7. Channel 2 IQ analog outputs
8. PCIe bus for high speed offload to workstation
9. Interface to stream to MEM module
10. Channel 2 digital IQ inputs from signal analyzer
11. External reference
12. GB Ethernet for device control via IQC Control software and IQC Control API
13. Synchronize operation with other system events
14. Tag incoming data for precise event marking
15. Correlate data to IRIG-B and GPS time and location



DUAL CHANNEL RF RECORD & PLAYBACK

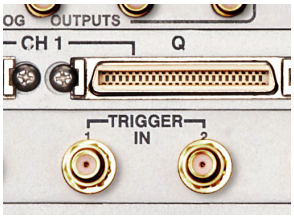
IQC5000B SERIES

DUAL-CHANNEL CONFIGURATION



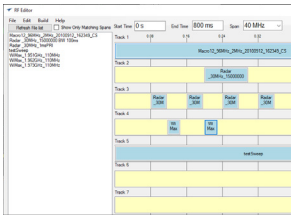
IQC5000B SMART TRIGGERING

- Use up to two external triggers to start recording when the interference occurs.
- Enables efficient use of onboard memory as well as being able to record elusive interference signals.



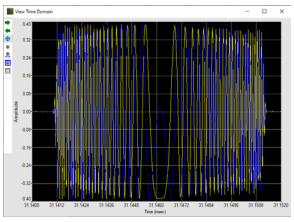
RF EDITOR SIGNAL EDITING SOFTWARE

- Graphical editing tool to easily modify or create new I&Q signals.
- Build or modify signal waveforms in time or frequency domains.
- Create customized playback signals with 10 time-domain tracks.
- Drag-and-drop recorded data onto any track and delay, filter or frequency shift before playback.



SPECTRO-X SIGNAL ANALYSIS SOFTWARE TOOLKIT

- Visualize up to four recorded spectrum files at the same time.
- Parse very large data files with powerful search functions to find the area of interest quickly.
- Save time and storage by exporting only portions of the file that require deeper analysis.



SIGNAL ANALYSIS WORKSTATION

- Pre-configured workstation for storage, analysis, and editing of I&Q signals.
- Installed with Spectro-X Signal Analysis Toolkit and RF Editor software.
- Dual Xeon Quad-Core, 96 GB of RAM, 128 TB archive RAID (96 TB formatted).

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DUAL CHANNEL RF RECORD & PLAYBACK

IQC5000B SERIES

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	
Single-Channel	1200 MB/s
Dual-Channel	1600 MB/s
Compatible Spectrum Analyzers	
Anrtitsu	MS2090A
Keysight® X-Series	N9040B, N9030B/A, N9020B/A, N9010B/A
Rhode & Schwarz®	FSV, FSVR, and FSW
Tektronix®	RSA5100/6100
Minimum Record Bandwidth (dependent on spectrum analyzer)	19.531 kHz (24.4140625 ksamples/s, 16 bits, I&Q)
Maximum Record Bandwidth	
Single-Channel	255 MHz (300 MSPS)
Dual-Channel	160 MHz (200 MSPS)

PLAYBACK INTERFACE - ANALOG I&Q OUTPUTS

1-dB Bandwidth	255 MHz centered at 0 Hz (single channel) 160 MHz (dual channel)
Power Level	0 dBm (fixed)
Amplitude Flatness Across 255 MHz Bandwidth	±2 dBm
VSWR	≤1.8:1
Impedance	50 ohms
Connector	SMA female

RF OUTPUT

Channel 1 Only	2400
Center Frequency	225 MHz
Power Level	0 dBm (fixed)
VSWR	≤1.8:1
Impedance	50 ohms
Connector	SMA female

WAVEFORM STORAGE INTERFACE

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

GPS

Protocol	RS-232, ASCII, 8-bit data, one start and one stop bit, no parity
Supported Speeds	4800, 9600 and 115200 BAUD
Supported NEMA Sentences	GPGGA, GPVTG, GPZDA
Connector	9-pin D female

IRIG-B

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

MARKERS - 2 INPUTS

Voltage Levels (VDC)	TTL Logic Levels: 0 to 3.3, 5 maximum
Impedance	4.7 kOhms
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 (captured ONLY if GPS NMEA data is supplied)
Latency	<1 µs from marker valid at connector to insertion in record file
Maximum Marker Record Speed (per second)	1000 per marker input per marker edge

TRIGGER - 2 INPUTS

Voltage Levels (VDC)	TTL Logic Levels: 0 to 3.3, 5 maximum
Impedance	4.7 kOhms
Connector	SMA female
Latency	<0.4 µs from valid trigger applied to first recorded sample
Re-Arm Time	<1 ms
Pre-Record Memory	0 µs

IQC5000B SERIES

Specifications (cont.)

START/STOP RECORD

Record Types	Manual, duration, samples, time of day, and event
Trigger Port Configurations	Start/stop on Trigger 1 or Trigger 2
Trigger Detect Logic	Rising or falling edge

START/STOP PLAYBACK

Playback Modes	Manual, looped play between markers, or user specific file segments

REFERENCE CLOCKS

Internal Frequency	10 MHz, ±10 ppm
External	Provided by external input port if active, otherwise internal clock signal is used.
Required Level	>0 dB into 50 ohms
Frequency Accuracy	± 1 kHz
Frequency	10 MHz, ±10 ppm
Connector	SMA female

INSTRUMENT CONTROL

IQC Control Software	Graphical user interface, full control of record, playback, file offload and upload, and system configuration and management
Operating Environment	Dual-core desktop or laptop, Windows™ 10, 64bit, 2 GB RAM, 100 MB free disk space, mouse
API	IQC Control API Server
Front Panel	Display of instrument parameters and manual marker insertion via membrane switches and 2-line LCD

POWER

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

ENVIRONMENTAL

Operating Temperature	0 °C to 50 °C (32 °F to 122 °F)
Storage Temperature	-20 °C to 71 °C (-4 °F to 159 °F)
Vibration	Sinusoidal: 5 to 55 Hz, 0.33 mm amplitude. Random with solid-state drives installed: in conformance with MIL-PRF-28800F Class
Compliance	Designed to meet MIL-PRF-28800F Class 3 except where noted by *
Shock	30 g

PHYSICAL

Size	12 in x 3.5 in x 10.5 in (305 mm x 89 mm 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

Specifications (cont.)

IQC5000B-MEM WAVEFORM STORAGE

Digital I/O Record & 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	2 TB, 4 TB

EXTERNAL STORAGE

Solid State Media	RAID 0
Capacity	12 TB, 24 TB

DATA OFFLOAD INTERFACE

Specification	CIe Gen2
Lanes	8

ENVIRONMENTAL

Operating Temperature	0 °C to 50 °C (32 °F to 122 °F)
Storage Temperature	-20 °C to 71 °C (-4 °F to 159 °F)
Vibration	Sinusoidal: 5 to 55 Hz, 0.33 mm amplitude. Random with solid-state drives installed: in conformance with MIL-PRF-28800F Class
Compliance	Designed to meet MIL-PRF-28800F Class 3 except where noted by *
Shock	30 g

PHYSICAL

Size	12 in x 1.75 in x 10.5 in (305 mm x 45 mm 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

DUAL CHANNEL RF RECORD & PLAYBACK

IQC5000B SERIES

Ordering Information

IQC5000B MODEL OPTIONS

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

MEMORY INTERFACE MODULE

IQC5000B-MEM	Memory interface module for RAID0 storage units

MEMORY / STORAGE OPTIONS

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 255 MHz
IQC5000B-ME0	Blank memory module cover for the IQC5000B-MEM interface module
IQC5000B-S08	External RAID0 SSD external disk storage: 12 TB. Supports both single channel, up to 255 MHz bandwidth and dual channel, up to 160 MHz bandwidth
IQC5000B-S15	External RAID0 SSD external disk storage: 24 TB. Supports both single channel, up to 255 MHz bandwidth and dual channel, up to 160 MHz bandwidth

RECORDING CHANNEL OPTIONS

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-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

PLAYBACK CHANNEL OPTIONS

IQC5000B-101	Adds single playback channel to support up to 255 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. Two units of option ME2 must be purchased for single channel operation at 255MHz.
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, 0 dBm (1ea SMA female). Requires option 042 or 162.
IQC5000B-DP1	Adds single channel digital playback when using the Keysight N5172B (options 653 & 655) or N5182B (options 656 and 657) vector signal generators for playback rates up to 200 MS/s
IQC5000B-DP2	Adds dual channel digital playback when using the Keysight N5172B (options 653 & 655) or N5182B (options 656 and 657) vector signal generators for playback rates up to 200 MS/s

IQC5000B SERIES Ordering Information (cont.)

CABLE OPTIONS

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-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-CBL	Adds one pair (2ea) of SMA-male to BNC-male cables for IQ analog playback (each cable is 5 feet long)

GPS/IRIG-B OPTION

IQC5000B-GPS	GPS/IRIG-B Timing Standard. Includes GPS antenna and interface cable.

MOUNTING OPTIONS

IQC5000B-BKT	Non-rack mount 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)

WARRANTY OPTIONS

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

WORKSTATION OPTIONS

IQC5000B-WS1	Rack-mounted SigAnalyst Workstation -Dual Xeon, Quad-Core Workstation, 96 GB RAM with 128 TB archive RAID storage (96 TB formatted)
IQC5000B-WS2	Rack-mounted SigAnalyst Workstation - Dual Xeon, Quad-Core Workstation, 96 GB RAM with 128 TB archive RAID storage (96 TB formatted), Spectro-X and RF Editor software packages
IQC5000B-ENL	Rack enclosure to house IQC5000B, Spectrum Analyzer, external storage (optional), Vector SIgnal Generator, SigAnalyst workstation, network switch, and power distribution

SOFTWARE OPTIONS

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

TRAINING OPTION

IQC5000B-TRN	Daily rate for on-site training and consulting by Bird Applications Engineer

TRAVEL CASE OPTION

IQC5000B-1A5	Transit Case for IQC5000B series. Case can hold the IQC5000B, IQC5000B-MEM and related accessories

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The **RF** Experts | X-COM Sales: 1875 Campus Commons Dr. Suite 101, Reston, VA 20191 | xcomsystems.com
Phone: +1 571.612.5480 | Fax: +1 440.248.5426 / 866.546.4306 [Toll Free]