



A Bird Technologies Group Company

IQC-2110

RF Capture & Storage



The **IQC-2110** records and stores wide bandwidth RF spectrum over extremely long time durations. It is plug compatible with industry leading signal analyzers and uses them as a RF front end and down converter. The IQC-2110 stores digital I & Q symbols from the spectrum analyzer so there is no fidelity degradation of the stored signal regardless of the RF center frequency, span, resolution bandwidth or any other parameter that defines the RF capture. Captured data can be post processed using X-COM's Spectro-X software application to enable the user to simultaneously visualize the captured spectrum in the time and frequency domains. Playback speeds of the data file can be changed, paused and restarted on the fly.

Time markers can be inserted in the captured data based on external events allowing the user to easily focus on time segments of interest. The data can be searched for carriers, standard waveforms or user-defined waveforms of interest. The match confidence level and the section of the captured data to be searched are parameters controlled by the user through the graphical user interface, Spectro-X software.

Using the X-COM RF Editor software application, users can edit the captured data or create and insert new spectra and waveforms. The resulting new files are available as digital I&Q, or as analog I&Q samples after exporting them to X-COM's Continuous Playback Generator (CPG-2110). The new files can also be re-created at RF by connecting industry leading Vector Signal Generators to the analog I & Q output of the CPG-2110.

FEATURES

Signal Capture BW up to 110 MHz

No signal fidelity degradation as a result of capture

16 bit I & Q dynamic range for capture and playback

Duration of Capture from 50 minutes to 400 hours depending on memory option and the user-selected capture bandwidth

Up to 510 data markers can be added to points in the captured data file.

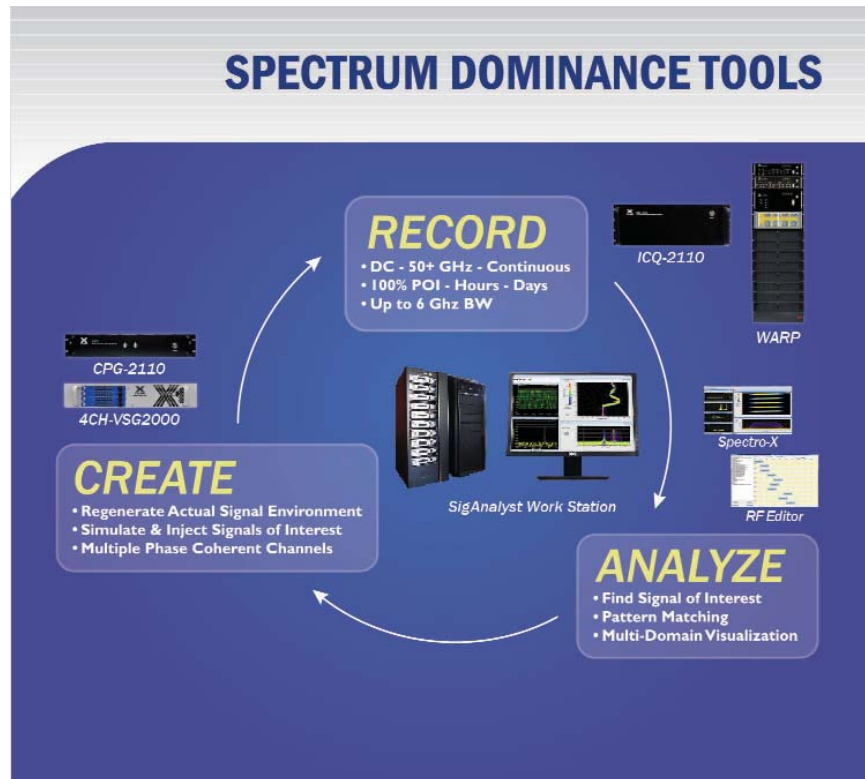
I & Q samples can be time stamped, referenced to an external IRIG-B receiver and time correlated to GPS location data

Data captures can be manually started and stopped or executed for a specific time duration



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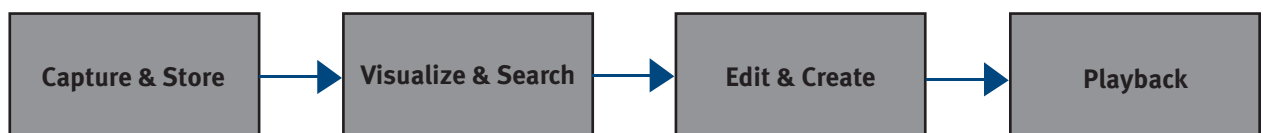
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APPLICATIONS

Electronic Warfare	Visualize and post process broad segments of the battlefield spectrum to design robust communications networks.
Wireless Communications	Capture, identify and play back waveforms or create new ones fundamental to the testing and development of satellite and terrestrial, voice, data and telemetry equipment and networks.
Spectrum Management	Monitor spectrum usage and supplement the use of spectrum snapshots and tedious power surveys with long duration, geo-tagged, time-stamped spectral recordings.
Radar	Capture wide bandwidths over extended time periods to analyze radar effectiveness. Create and test new waveforms to improve performance.
Surveillance	Determine usage patterns, intercept transmissions and correlate data files to receiver locations for military, drug interdiction and homeland security applications.

Rapidly Visualize, Precisely Search, Easily Manipulate Spectrum



X-COM
Products

- IQC-2110
- WARP

- Spectro-X
- Spectro PDW

- RF Editor

- CPG-2110
- 4CH-VSG2000



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Data Capture

Capture Bandwidth	110 MHz maximum, 10 KHz minimum, step size: 10 KHz, Set automatically by the Spectrum Analyzer via IQC2110 gigabit Ethernet equipment bus.
Available Capture Memory	Serial Attached SCSI (SAS) RAID5 Arrays providing 2, 4, 8 or 12 TB of storage using 3Gb/s, 2.5 inch, 146GB hard drives (separate enclosure from IQC2110).
Recording Duration	See Table below.
Sample Markers	Up to 510 markers per data capture file (in addition to files start and end). Markers are stored in the XIQ capture file header. Marker contains sample number, date and time (UTC). Markers created on TTL leading edge at TRIG IN inputs.
Time Stamping	Sample time stamping (Marker Time): Provided by external IRIG-B 120, 121, 122, 123 receiver with millisecond resolution. Capture file Time Stamp: Capture file header contains Date, TOD (YYMMDD HHMMSS.SSS) and sample interval constant.
Geo-Tagging	Provided by external GPS receiver (same receiver providing IRIG time information), stored in separate data file on Windows PC used for data analysis. GPS file data is time correlated to I&Q capture data via IRIG-B time stamp and sample interval in capture file header. ASCII flat file containing UTC time (YYMMDD HHMMSS.SS), Lat (decimal degrees, 4 decimal places), Long (decimal degrees, 3 decimal places) GPS above ground level altitude in feet.

Signal Interfaces

Digital I & Q, In/Out	16 bit, LVDS, via 26 pin MDR for each I & Q stream. Can also accept interleaved I & Q samples via I input.
External Triggers	4, rear panel, 50 ohm, female BNC connectors 0.8V trigger threshold voltage, minimum 5ms trigger pulse width, 20ms minimum pulse interval for consecutive trigger recognition
Data Markers In/Out	(Trig 1 In, Trig 2 In, Trig 1 Out, Trig 2 Out), TTL voltage level, Input valid detected on rising edge
Time Stamps (IRIG IN) Input from GPS/IRIG-B Receiver	Female BNC, 3 Vpp, 50 ohms, IRIG-B 120, 121, 122, 123 amplitude modulated serial time code
External Reference Clock (REF IN, REF OUT)	0 dBm, 50 ohm, female BNC
Data Export	e-SATA, mini-SAS & LAN

Equipment Compatibility, SPECIFICATIONS

Signal Analyzers	
Agilent	PXA, MXA, EXA Series
Tektronix	RSA 6000A, RSA 5000A Series
Rhode & Schwarz	FSV Series
Vector Signal Generators	
Agilent	PSG, MXG, ESG
Rhode & Schwarz	SMBV, SMU, SMJ Series

RECORDING DURATION PER DATAPACK				
Capture BW	2 TB	4 TB	8 TB	12 TB
110 MHz	50 Minutes	1.7 Hours	3.4 Hours	5.1 Hours
60 MHz	1.6 Hours	3.2 Hours	6.4 Hours	9.8 Hours
40 MHz	2.5 Hours	5 Hours	10 Hours	15 Hours
20 MHz	5 Hours	10 Hours	20 Hours	30 Hours
10 MHz	10 Hours	20 Hours	40 Hours	60 Hours
1 MHz	100 Hours	200 Hours	400 Hours	600 Hours



Control

Remote: Windows XP or Windows 7 OS PC with minimum of 50 Mbytes free disk space, 1GByte RAM, running X-COM IQC remote controller software version 2.2.0.25 or later. Interconnect between PC, IQC2110 and external spectrum analyzer or VSG via Gigabit Ethernet, RJ-45 cables and Ethernet switch.

Parameters: IQC IP Address, Network Mask, Gateway and DNS values.
 Manual or Timed data capture, File Name (12 Characters maximum), Center Frequency of data to be captured (typically obtained from spectrum analyzer via Ethernet device control network), Capture BW, Capture time in seconds (ss.s), Input signal strength (monitor only).
 Single or repeated file playback, Playback BW.
 Transfer file to PC memory; full or partial time span based on markers, markers + offset in microseconds, absolute time in microseconds, I File, Q File or I & Q Files.

Front Panel: System ON/OFF, momentary push button

Rear Panel: Master Power Toggle Switch

Power: 110/220VAC, 50/60 Hz, 600W max.

Dimensions: IQC2110 4U, External Memory 2U

Weight: IQC2110 35 lbs, External Memory 25lbs

Environmental

Temperature

Operating: +5 to +50 degrees Celsius

Storage: -20 to +70 degrees Celsius (IQC2110)

-40 to +70 degrees Celsius (External Memory), max gradient 20%/hr.

Humidity (The values below assumes no condensation on the drives)

Operating: 5% to 95% non-condensing relative humidity with a maximum gradient of 20% per hour.

Non-operating: 5% to 95% non-condensing relative humidity.

Effective altitude (relative to sea level)

Operating: -200 to +10,000 feet (-60.96 to +3,048 meters)

Non-operating: -200 to +40,000 feet (-60.96 to +12,210 meters)

ORDERING INFORMATION

IQC-2110-BASE IQC2110 RF Capture and Storage System 40 MHz Bandwidth, 19" Rackmount, 4U

IQC-2110-WB IQC2110 RF Capture and Storage System 150 MHz Bandwidth, 19" Rackmount, 4U

DPP-HDD-2TB HDD Datapack for IQC2110, 1.85 TB Net Capacity (RAID5)

DPP-HDD-4TB HDD Datapack for IQC2110, 3.85 TB Net Capacity (RAID5)

DPP-HDD-8TB HDD Datapack for IQC2110, 7.65 TB Net Capacity (RAID5)

DPP-HDD-12TB HDD Datapack for IQC2110, 11.47 TB Net Capacity (RAID5)

IQC OPTIONS & UPGRADES

IQC-OPT- eSATA eSATA IQC 2 TB Portable Memory Module & Cables

IQC-OPT-BEXWAR Upgrade Base IQC to Extended 3 YR. Warranty

IQC-OPT-AEXWAR Upgrade WB IQC to Extended 3 YR. Warranty

IQC ACCESSORIES

SA-DAT-AN SigAnalyst Workstation

CPG-2110 Continuous Playback Generator



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