

MULTI-Q™ Multi-Channel Active Bandpass Filtering

“When Communication Is Critical You Can’t Afford Interference”

Features

- Eliminates Adjacent Channel Interference
- Entire Receiver Front End Solution: Includes Pre-Selector, Pre-Amplifier, and Channelization Filtering Banks
- All Channels are Field Programmable Using One USB Port of a PC and the User-Friendly Software Provided
- Low Noise Figure
- Automatic Gain Control Keeps Receivers from Saturating
- Dual Band Operation Available
- Expandable to Filter Up to 128 Channels
- Available Bandwidths: 6.25 kHz, 12.5 kHz, 25 kHz, 30 kHz, 100 kHz, or 200 kHz (All Filter Bandwidths are Available at Any Frequency)
- 8-Pole Filter Response
- Customizable to Meet Specific Requirements

Description

The MULTI-Q is the ultimate receiver front end system comprised of ULTRA-Q active bandpass filters. The system was designed to solve interference problems by eliminating unwanted signals before they get to the receiver. The middle panel consists of the pre-selector, pre-amplifier, and all the control hardware with the upper and lower panels each housing 4 channels. The system is expandable to filter up to 128 channels. The user can easily tune each channel to any desired receive frequency within the MULTI-Q’s operating range by using only one USB port and the supplied software. Incorporated with the optional Automatic Gain Control, AGC, a receivers’ near/far problem is easily resolved. The AGC system is factory set to keep the input power into a receiver 10 dB below the receivers’ saturation point. The AGC system is also software controlled so the end-user can toggle between AGC mode and a manual attenuator mode where a 50 dB attenuator can be stepped in 1 dB increments. Typical applications include Police, Fire, EMS, SCADA, and commercial two-way radio systems.



8 Channel Front View



8 Channel Rear View



Electrical Specifications

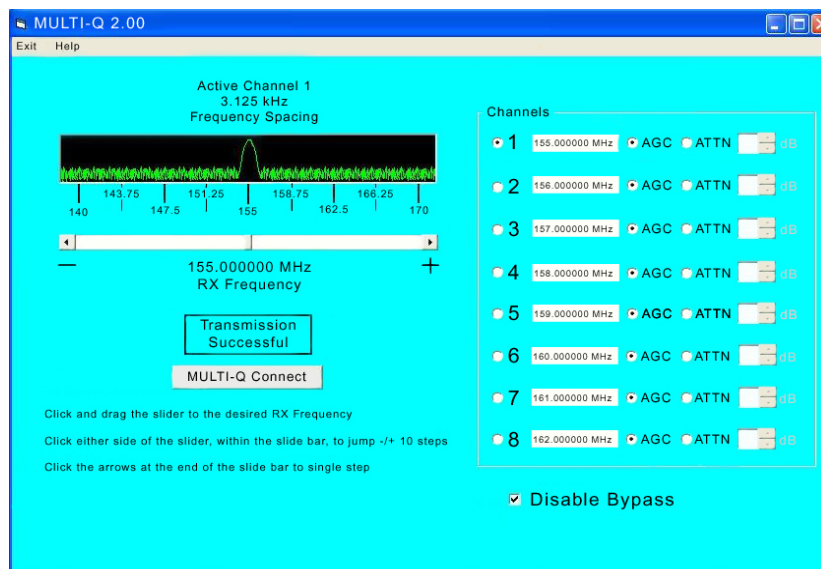
Parameter ¹	Frequency	Min.	Typ.	Max.	Units
Gain per Channel	100 - 960 MHz	-1	1	3	dB
Noise Figure	100 - 500 MHz		5.0	5.5	dB
	501 - 700 MHz		6.0	6.5	dB
	701 - 960 MHz		7.0	7.5	dB
Intermodulation Products ²	100 - 960 MHz			-100	dBm
Input Power for 1 dB Compression	100 - 960 MHz	-14	-12		dBm
VSWR (I/O)	100 - 960 MHz		1.3:1	1.5:1	
Tuning Range	100 - 960 MHz		10	70	MHz
Receive Channel Accuracy	± 0.2 kHz				
Channel Ripple	± 1 dB max				
Available Bandwidths	6.25 kHz, 12.5 kHz, 25 kHz, 30 kHz, 100 kHz, or 200 kHz				
Bandwidth Tolerance	-25% to +5%				
AGC Set-Point Range	-20 to -50 dBm				
Tuning Step Size in Software	3.125 kHz at VHF/UHF Bands, 6.25 kHz at Above Bands (Step Size is Customizable)				
Channel Configuration	Simplex Channels				
I/O Impedance	50 Ω				
I/O Connectors	Type N Female				
Power Requirement	115V AC, 9 - 18V DC, or 18 - 75V DC				
DC Current Consumption	1.5A @ 48V DC per 4 Channels				
Control Interface	USB				
Weight	20 lbs per 4 Channels, Mid-Panel is 10 lbs				
Size	19" Rack Mount Chassis: 4 Channel Panel, 4U, (19" x 13" x 7") Mid-Panel, 2U, (19" x 11" x 3.5")				
Operating Systems Supported	Windows 98 or Later				

1. All measurements made in a 50 Ω system

2. Intermodulation product tone spacing = 500 kHz, Pin per tone = -40 dBm

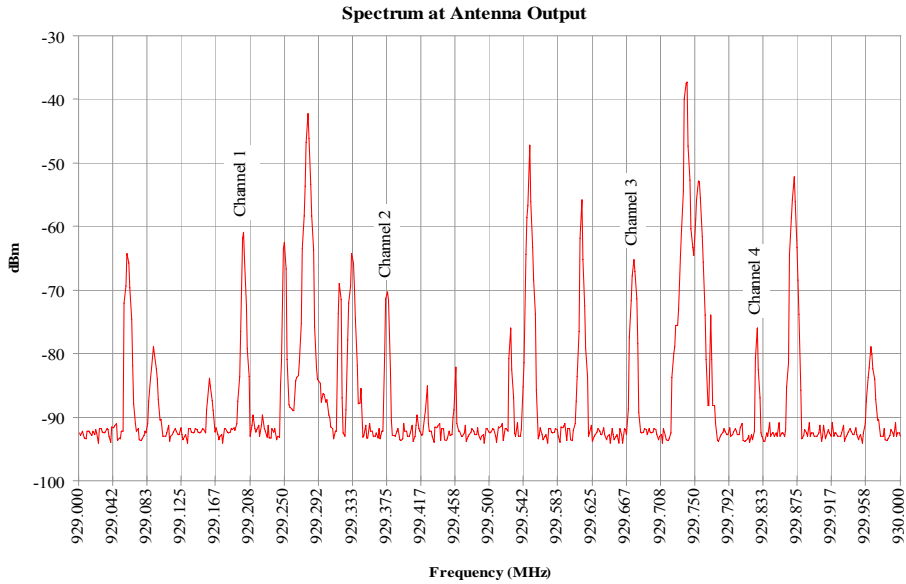
Software Interface

This screen shot shows the MULTI-Q user interface. Just choose the channel and all parameters including RX frequency, AGC mode, attenuator mode, or bypass state are easily adjusted within this single screen. Using a smart unit system the MULTI-Q stores all settings in non-volatile memory which makes set up effortless. The same interface can be used to tune any MULTI-Q you have. Just connect the new MULTI-Q to the USB port, click the MULTI-Q Connect button, and the new units' parameters are loaded.

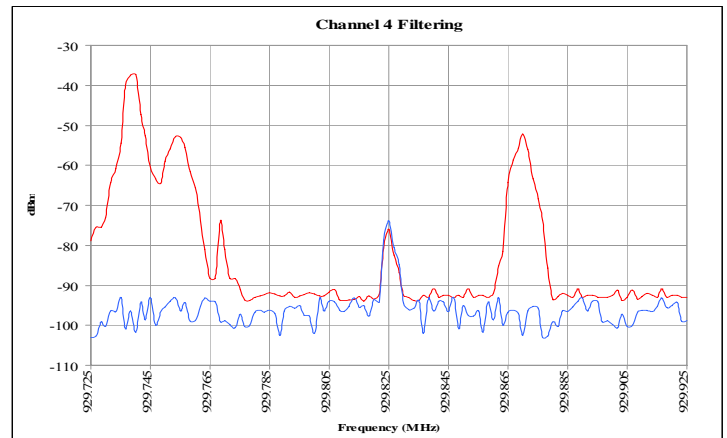
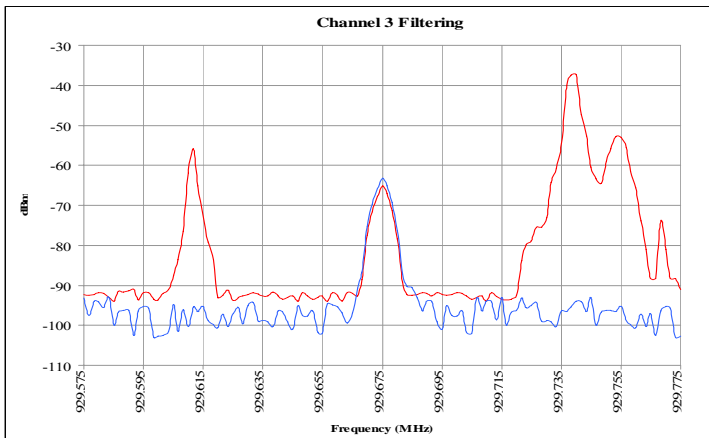
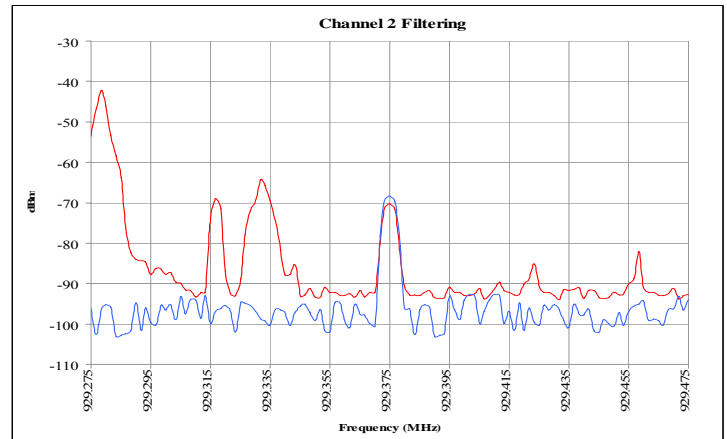
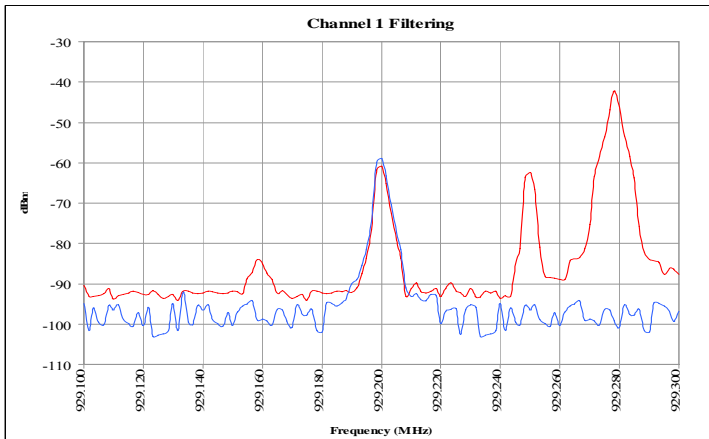


Performance Data

The red trace shows 1 MHz of MAS Band spectrum measured at a multi-channel receiver site in a heavily populated metropolitan area. Without the labels it would be difficult to pick out which signals are wanted and which aren't.

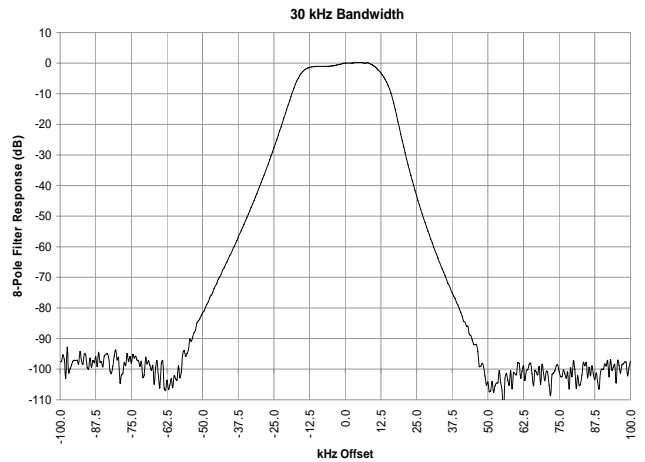
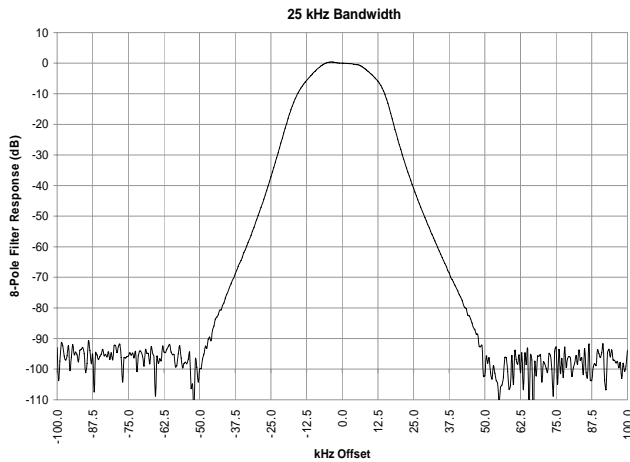
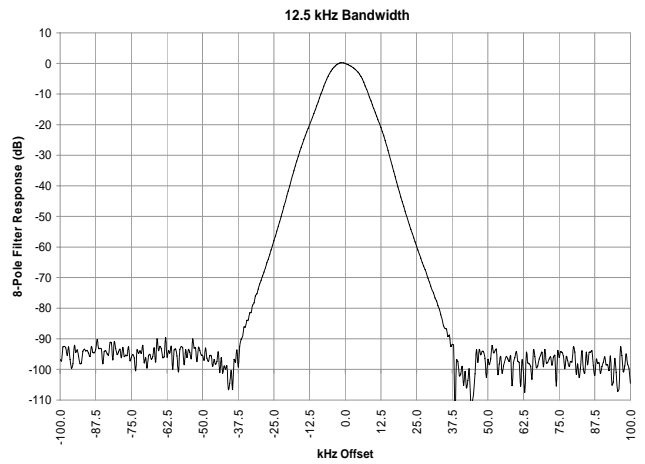
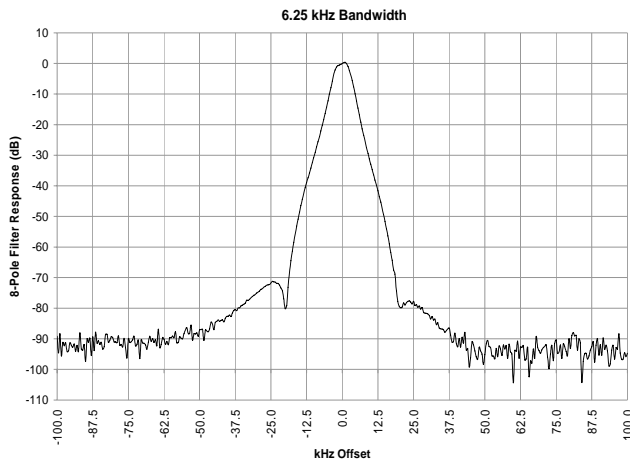


The blue traces show the same spectrum measured after installation of the 4 channel MULTI-Q filter. The desired signals are amplified while the interference is eliminated. The lines of communication are kept clear.



Filter Response Data - Normalized to 0 dB Gain

Note: All filter bandwidths are available at any band.



Interference Rejection Data

Filter Bandwidth	Adjacent Channel Rejection	Rejection 2 Channels Away
6.25 kHz	19 dB	41 dB
12.5 kHz	22 dB	60 dB
25 kHz	40 dB	101 dB
30 kHz	37 dB @ 25 kHz	92 dB @ 50 kHz

Options

A01	15 dB Output Attenuator (1 dB/Step)
A02	AGC (Automatic Gain Control)
B01	Electro-Mechanical Bypass Switch
C05	CAT-5 Network Addressable
M0X	Multiple Options Available

Absolute Maximum Ratings

Characteristic	Value
RF Input Power	0 dBm
Operating Temperature	-20°C to +60°C
Storage Temperature	-40°C to +85°C

Note: Exceeding these parameters may cause permanent damage.

