

## 860 DSP and 860 DSPi Quick Reference Guide

### Installer Functions #1



#### LEVEL MODE

Measure level of analog and digital signals or single frequency carriers

Set REF Level - **Ref** or **Fn** **Auto Range** **Ent**

Tune by Channel - **CH 003** or **0** **3** **Ent**

Tune by Freq - **VID: 61.250 MHz** or **6** **1** **Fn** **2** **5** **Ent**



#### QAM LITE MODE

Level and MER

Tune By Channel - **CH 087** or **8** **7** **Ent**

Tune By Frequency - **DIG: 603.000 MHz**

OR **6** **0** **3** **Fn** **0** **Ent**

Change Modulation - **256 QAM-Annex B** until the desired modulation, must tune by frequency and not by channel to enter

Change Symbol Rate - **SR: 5.056941 MS/S** **5** **0** **5** **6**

**9** **4** **1** for 5.056941 MSPS must tune by frequency and not by channel to enter

Change Bandwidth - **BW: 6.0000 MHz** **6** **0** **Ent** for 6.0 MHz, must tune by frequency and not by channel to enter



#### QAM DIGITAL MODE (Option QA-1 or QA-2)

Includes all of the features of QAM Lite, plus Digital Constellation, Equalizer TAPS, and BER Graph

Change Display - **DISPLAY** toggles between Level, MER, Constellation, Equalizer and BER Graph (BER Graph will only appear if your 860 DSP or 860 DSPi has received the Enhanced Digital Video Option)



## AUTO TEST MODE

Run macros of preselected tests

Select Macro - select a file, i.e. **test.mac**      **10**      **IMMEDIATE**

Immediate Auto Test - **START** Test executes, then select a Location\* and enter a File Name\*\*

Periodic Auto Test - **START**, select a Location\*, enter a File Name\*\* and enter a Date & Time\*\*\*

to **Test Interval** to select

to **Number of Tests** to select and **Bk**

**Note:** 860 will go into Sleep Mode until selected time

Table of Times Auto Test - **START**, select a Location\*, enter a File Name\*\*

to select test times 1-4

**Ent** Enter a Date & Time\*\*\* to select next Test Time

**Ent** Enter a Date & Time\*\*\* for each Test Time

**Note:** 860 will go into Sleep Mode until selected time

\* To Select Location - **LOCATION** **Ent**

\*\* To Enter File Name - **FILE NAME** Enter File Name

Use for character left/right then **Ent**

\*\*\* To Set Date & Time - **Ent** mm/dd/yyyy then hh/mm/ss (24 hour time)



## AUTO TEST RESULTS MODE

Displays results and detail from Auto Test Macro

Select Macro Log - **LOAD** to select macro log

Show Details of Macro Log - **Ent** to display detail



For additional assistance, refer to your operation manual or call:

(800) 344-2412 or (317) 895-3600

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### Installer Functions #2



#### SPECTRUM ANALYZER MODE

*Displays amplitude of carriers, beats and RF sources in a settable frequency band*

**Note:** This is a standard Mode on 860 DSPs and is only available on 860 DSPis with the Power Pack Option (PP-1).

Set REF Level -   **Ref**   or **Fn**  **Auto Range** **Ent**

Set Tuning Method - **TUNING** then **Center/Span** to see spectrum near a frequency of interest or  **Start/Stop** to see frequency band of interest

Center/Span Tuning -

  **Center: 20.000 MHz**   or **2** **0** **Fn** **0** **Ent**

  **Span: 10.000 MHz**   or **1** **0** **Fn** **0** **Ent**

Start/Stop Tuning -

  **Start: 15.000 MHz**   or **1** **5** **Fn** **0** **Ent**

OR

  **Stop: 25.000 MHz**   or **2** **5** **Fn** **0** **Ent**

Setting Markers -

  **Marker A: 20.000 MHz**   or **2** **0** **Fn** **0** **Ent**

OR

  **Marker B: 20.000 MHz**   or **2** **0** **Fn** **0** **Ent**

Marker Functions - **MARKER** then select **Center => Marker 1** Centers display on Marker 1

**Center => Marker 2** Centers display on Marker 2

**Start=M1/Stop=M2** Sets Start and Stop Marker

Detector Mode - **DETECTOR** then select

**+ AVERAGING**

**DWELL WIDE**

**DWELL NARROW**

Hold Mode - **HOLD** then select

**None**

**MAX**

**MIN**



## ADVANCED SPECTRUM ANALYZER MODE (Option SA-1)

*Includes all of the features of Spectrum analyzer Mode, plus resolution bandwidth changes and zero span*

Change Resolution Bandwidth - **RBW 300 kHz** until desired RBW

### Zero Span Settings

Set Center Frequency - **Center: 50.000 MHz** or **5** **0** **Fn** **0** **Ent** for 50.0 MHz

Adjust Reference - **Ref** until signal is just off the top of the screen without overloading the DSP

Change dB/Div - **1 dB/div** as desired

Change into Zero Span Mode - **Span: 30.000 MHz** press **0** **Ent**

Change Triggering - **(-)** or **(+)** or **Auto** until AUTO is displayed

Change Resolution Bandwidth - **RBW 300 kHz** until desired RBW is displayed

Change Time per Division - **20 usec/div** until desired time per division is displayed

Adjust Triggering Level - **Trig** until desired level is displayed



## RETURN SPECTRUM ANALYZER MODE

*Includes all of the features of the Spectrum Analyzer Mode, but with a frequency restriction of 4 to 65 MHz.*



## TILT MODE

*Measure tilt channel levels and compute system tilt*

Set REF Level - **Ref** or **Fn** **Auto Range** **Ent**

Set Tilt Channels - **LOW** or **HIGH** computes tilt between low and high channel



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### Installer Functions #3



#### PING MODE

*Confirm operation of cable modem or network connection*

Select Host -   Host Name

Enter Host's domain name  or  

Host IP enter Host's IP 

Set Packet Delay -   Pkt Delay 20 msec  

Choose smallest delay and largest size compatible with available upstream/downstream data rate

Set Packet Size -   Pkt Delay 256 bytes  

Start/Stop Test - **START** or **STOP**

Modem Info - **MODEM** displays internal modem statistics



#### VoIP TEST MODE

*Measure VoIP quality*

Select Server IP - type numbers to enter Server IP 

Select **START** - to begin test (it will beep when complete), results shown as "P" for Pass or "F" for Fail

Select **DETAILS** - for in-depth packet transmission statistics



#### BER MODE

*Useful for in-depth investigation of BER problems*

Tune By Channel -   CH 087   or 8 7 

Change Scan Time -   200 sec   to select scan time

Reset Scan Display - **RESET**



## THRU PUT MODE

Measure upstream and downstream data transfer rate

Set Server IP - **Server IP** enter IP of PC that is configured as TFTP and/or HTTP server

Set Downstream File - **Downstream File** \*\*\*\*\* enter file name to download from server for downstream test

Test Upstream - **UPSTREAM** select transfer method **TFTP** or **HTTP** or

**UDP Max** (Must have high speed throughput option installed to use UDP)

Test Downstream - **DOWNSTREAM** select transfer method **TFTP** or **HTTP** or **UDP 5 Mbps**

or **UDP 10 Mbps** (Must have high speed throughput option installed to use UDP)

Modem Info - **MODEM** displays internal modem statistics

*Note: We suggest using the Trilithic Data Server software. Contact Trilithic for more information.*



## WEB TEST MODE

Confirm operation of cable modem and web connectivity

Rerun Test - highlight BROWSER REFRESH



## WEB BROWSER MODE

Browse the World Wide Web

Select URL - to highlight your choice to jump to that page

Home Page - highlight BROWSER HOME

Panning Horizontal - **<<SCROLL** **SCROLL>>** for pages wider than the display

Panning Vertical - for pages longer than the display

*Note: The Home Page is setup via WorkBench software. Contact Trilithic for more information.*



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### Installer Functions #4



#### CM STAT MODE (DOCSIS 2.0 and 3.0)

Display a quick view of the internal DOCSIS 2.0 cable modem information

**Note:** This is a standard mode on 860 DSPis and is not available on 860 DSPs.

Connect the cable drop to the instrument's SLM/Forward input.

Log On to the Network -    

Select CM Stat -    

The connection statistics for the internal cable modem are displayed, including downstream and upstream frequency, transfer rate, power level, downstream modulation type, signal-to-noise ratio, corrected bits, and uncorrected bits.



#### TRACE ROUTE MODE

Display a route and trip time from the source to the destination while displaying routers along the route

**Note:** This is a standard mode on 860 DSPis and optional on 860 DSPs.

Select Host -   Host Name

Enter Host's domain name  or  

Host IP  enter Host's IP 

Start/Stop Test -  or

The trace route is continually displayed in a loop, allowing you to see if a particular router is intermittently passing ping packets and if different routes are being taken.



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## 860 DSP and 860 DSPi Quick Reference Guide

### Service Functions #1



#### CSO/CTB MODE

Measure composite second order, composite triple beat of analog and digital channels

**Note:** This is a standard Mode on 860 DSPs and is only available on 860 DSPis with the Power Pack Option (PP-1).

Select Channel -   **CH 003**   or **0** **3** 

Wait for stable level reading then remove carrier. The 860 will measure and display CSO/CTB. Turn carrier back on, 860 will hold readings until you tune to new channel.

**Note:** Requires 0 dBmV (+60 dBuV) or greater carrier level



#### SCAN MODE

Measure levels of all channels and tests to limits

**Note:** This is a standard Mode on 860 DSPs and is only available on 860 DSPis with the Power Pack Option (PP-1).

Set REF Level -   **Ref**   or **Fn**  **Auto Range** 

Marker -   **CH 003**   or **0** **3** 

Select Limits - **DROP**   highlight your choice 

Limits Results - **LIMITS** View Limits Summary \* = Fail

**Note:** The limits failed if an asterisk appears next to it.



#### FM DEV MODE

Measure FM Deviation and listen to audio

**Note:** This is a standard Mode on 860 DSPs and is only available on 860 DSPis with the Power Pack Option (PP-1).

Select Channel -   **CH 003**   or **0** **3** 

Listen to Audio - **VOL UP** or **VOL DOWN**

**Note:** Analog channels only - see MSG bar



## HUM MODE

Measure hum on non-scrambled analog channels

**Note:** This is a standard Mode on 860 DSPs and is only available on 860 DSPis with the Power Pack Option (PP-1).

Select Channel - CH 003 or 0 3 Ent

**Note:** Analog Channels only - see MSG bar



## C/N MODE

Measure carrier to noise on non-scrambled analog channels

**Note:** This is a standard Mode on 860 DSPs and is only available on 860 DSPis with the Power Pack Option (PP-1).

Set REF Level - Ref or Fn Auto Range Ent

Select Channel - CH 003 or 0 3 Ent

**Note:** Non-scrambled analog channels only - see MSG Bar  
Requires + 10 dBmV (+70 dBuV) carrier level



## MODULATION MODE

Measure % modulation of non-scrambled video and listen to audio

**Note:** This is a standard Mode on 860 DSPs and is only available on 860 DSPis with the Power Pack Option (PP-1).

Select Channel - CH 003 or 0 3 Ent

Listen to Audio - AUDIO then VOL UP or VOL DOWN

**Note:** Analog channels only - see MSG bar



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## 860 DSP and 860 DSPi Quick Reference Guide

### Service Functions #2



#### SWEEP MODE

Allows balancing of forward signal levels

**Note:** This is a standard Mode on 860 DSP's and is only available on 860 DSPi's with the Power Pack Option (PP-1).

#### At Reference Site

Select Channel Plan - **CH PLAN**   highlight your choice **Ent**

Auto Adjust Screen - **Fn**   to highlight AUTO RANGE **Ent**

Save Reference - **SAVE REF**   highlight desired slot **Ent**

#### At Balancing Site

Retrieve Reference - **GET REF**   highlight your choice **Ent**

Change dB/Div -   **2 dB/div**   to desired amount

**Note:** Make adjustments to amplifier until a flat trace at zero is created with minimal Peak to Valley across the frequency range



#### SSR RETURN SWEEP MODE (Option SR-1)

Troubleshoots ingress and balances return band

Set Telemetry Frequency - **Rx LINK** **8** **0** **Ent** for 80.00 MHz

Sweep or Compare - **COMPARE** toggles between sweep, local and headend ingress view, and local only ingress view

Set Tx Level -   **Tx : 25 dBmV**   to set sweep transmit level



## RSVP RETURN TEST MODE (Option VP-1)

Launch level test and carrier to ingress test

To prevent accidental changes, settings for RSVP mode can only be adjusted from the SETUP menu. (Consult your Operation Manual for instructions.)

From this screen you can only perform the RSVP test against previously set limit settings and view test results.

Start Test - **START** and wait for results to be displayed as PASS or FAIL.



## SOURCE MODE

Generates a return band (5 to 65 MHz) test carrier using the REVERSE/BOTH Port

Set Frequency - **Freq 28.10 MHz** or **Fn** **Ent**

Set Level - **Level 40 dBmV**

Set Modulation - **Modulation** highlight your choice - CW, PULSE, TAG, SWEEP 42, SWEEP 65, SINGLE, REPEAT, or LOOP BACK

Start/Stop Transmitter - **START** or **STOP**



## QAM SOURCE MODE

Generates a return band (5 to 65 MHz) QAM test carrier using the SLM/FORWARD Port

Set Frequency - **Freq 28.10 MHz** or **Fn** **Ent**

Set Level - **Tx Level 40 dBmV**

Set Modulation - **Modulation** highlight your choice - QPSK, 16 QAM, 32 QAM, or 64 QAM

Set Symbol Rate - **SYM RATE** highlight your choice - 160, 320, 640, 1280, 2560, or 5120 kbps

Start/Stop Transmitter - **START** or **STOP**



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### Service Functions #3



#### QAM EVS

Allows tuning the meter to a downstream QAM channel and displaying its error vector spectrum to reveal noise and ingress present under the QAM channel

**Note:** This is a component of the QA-1 option for the 860 DSP and a component of the QA-2 option for the 860 DSPi.

- Set Reference Level -   **Ref = 22**  
- Adjust Channel -   **CH 003**   
- Set Vertical Resolution -   **1 dB/div**  
- Adjust Digital Frequency -   **DIG: 603.000 MHz**   
- Adjust Marker -   **Marker A: 20.000 MHz** **Marker B: 20.000 MHz**   
- Select Channel Plan - **CH PLAN**   highlight your choice 



#### FDR

Provides a tool for determining the distance to fault (DTF) of cable systems.

- Set Reference Level -   **Ref = -33 dBRL**  
- Set Velocity of Propagation -   **VoP: 78.0 %**  
- Set Step Size -   **Step: 1.0 MHz**  
- Adjust Markers -   **Marker A: 0.0 ft,** **Marker B: 0.0 ft,**   
- Set Cable Type - **Get Vop**   highlight your choice - RG-59, RG-6, RG-11, Semi-Rigid,  
or Hardline 



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### Utility Functions #1



#### Wi-Fi

##### Wi-Fi Survey Mode

*Provides a means to verify Wi-Fi accessibility and verify that the configured network channel is not conflicting with a neighboring access point. Also provides a communication path for measurement data, hardware configuration, and common Wi-Fi network verification tests.*

Start Wi-Fi Mode - **UTILITY**    

Select from Available Wi-Fi Zones -   

Wi-Fi access points within range are displayed in descending order of signal strength, with the connected access point highlighted in black.

##### Wi-Fi Mode

*Provides a means to verify Wi-Fi access points are broadcasting adequate field strength and security protocols. Also provides a communication path for measurement data, hardware configuration, and common Wi-Fi network verification tests.*

Select Wi-Fi as the Network Login Default - **SETUP**    **COM/NET** 

Select Mode - **INSTALLER**    or  or  

The meter logs in to the Wi-Fi network and functions the same as when connected using the internal cable modem or RJ-45 Ethernet connection.



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