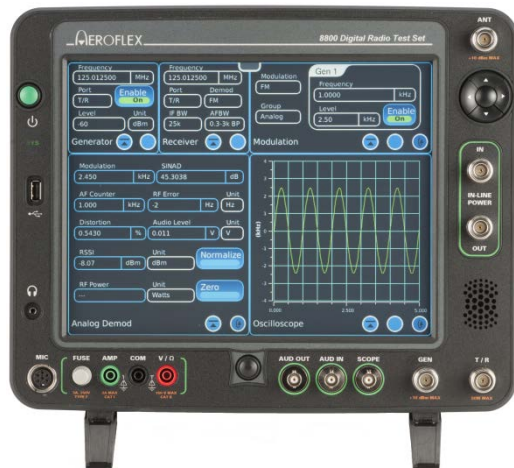


# 8800SX DMR Repeater Test Option 06



# DMR Repeater Test Option

The DMR Repeater test option allows testing of a DMR Repeater that is in conventional DMR Mode. Trunking or analog configurations are not supported.

This feature will simulate a subscriber radio by generating a wakeup burst and then synchronizes with the downlink signal from the repeater to allow the repeater to transmit.

While the repeater is transmitting, transmitter parametric measurements can be made to evaluate:

- Power
- Frequency
- FSK Error
- Symbol Deviation
- Magnitude Error
- Symbol Clock Error
- TX BER

With the 8800SX sending a 1031 pattern to the receiver, the repeater will transmit the pattern back to the 8800SX allowing the repeater RX sensitivity to be measured by monitoring the TX BER while lowering the RF Generator Output level. This method is Forward Error corrected so it is not exactly the same as testing the receiver directly.

# Option Screen

The screenshot displays a mobile application interface for managing options. On the left, a table lists various options with their IDs and names. The option 'OPT006 DMR Repeater Test Option' is highlighted with a yellow border. On the right, there are several blue buttons for actions: 'Install License', 'Remove License', 'Copy from Server', and 'Copy from USB'. Below these buttons are input fields for 'Server IP' (10.200.1.199), 'Unique ID' (ea96660488001c8a), 'Status' (None), and 'Serial Number' (1000000018). The word 'Options' is visible at the bottom left of the screen.

ID	UID Name
AAAA0200	OPT001 DMR
AAAA0300	OPT002 dPMR
AAAA0500	OPT003 NXDN
AAAA0100	OPT004 P25
BBBB0093	OPT005 P25 Phase 2
BBBB0097	OPT006 DMR Repeater Test Option
AAAA0400	OPT009 ARIB-T98
AAAA0070	OPT010 Tracking Gen
BBBB0015	OPT011 Occupied Bandwidth
CCCC0017	OPT012 Internal Precision Thru-Line Power Meter
BBBB0014	OPT013 External PrecisionThru-line Power Meter
CCCC0016	OPT014 PTC
BBBB0013	OPT015 AAR Channel Plan
CCCC0019	OPT017 DMM
AAAA0001	OPT018 Channel Analyzer

Option 06 must be enabled to use the DMR Repeater Test function.

Option 06 requires Option 01 DMR System.

# Advanced Digital Configuration

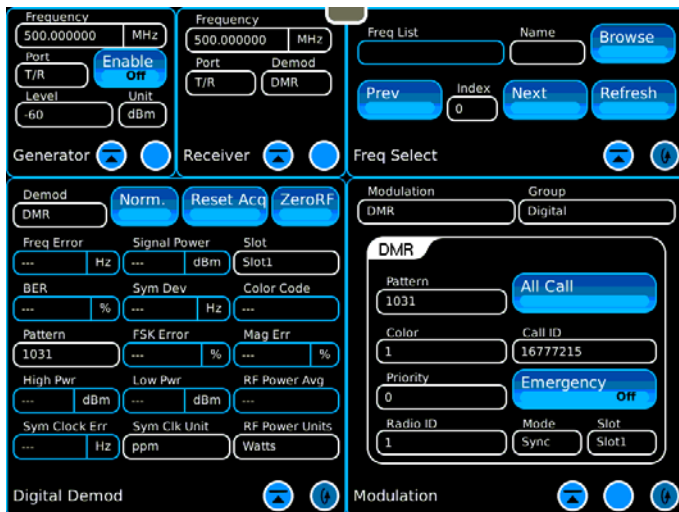
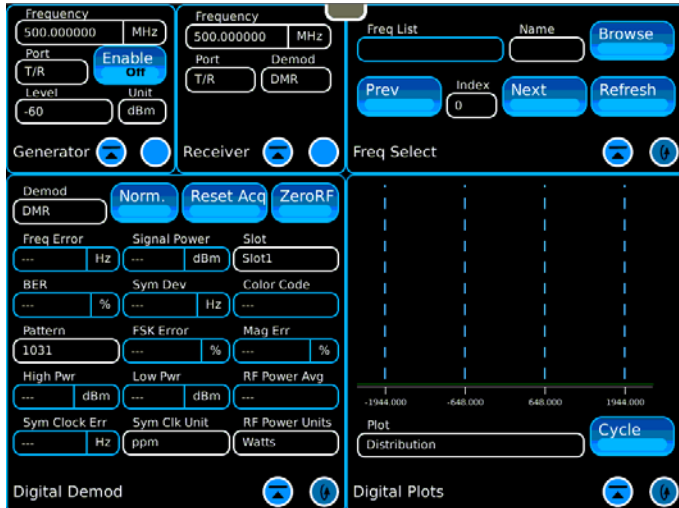




Select the “Advanced Digital” configuration from the System Menu.

The 8800 will reboot to load the Advanced Digital parameters.

When finished testing the repeater, return to the System Menu and return to the LMR system.

# Screen Configuration



- Select the Digital Preset from the Utilities menu. Utilities>Presets>Digital
- Use the Fast Stack button  on the “Freq Select” Tile to reveal the Modulation Tile.
- Expand the Modulation Tile with the Maximize  Icon.
- Move the Modulation Tile to the lower right corner so that it covers the Digital Plots Tile.
- Establish the following settings on the Modulation Tile.

Pattern: 1031

Color Code: (Match the Repeater)

Priority: 0

Radio ID: 1 (Note: 0 is invalid)

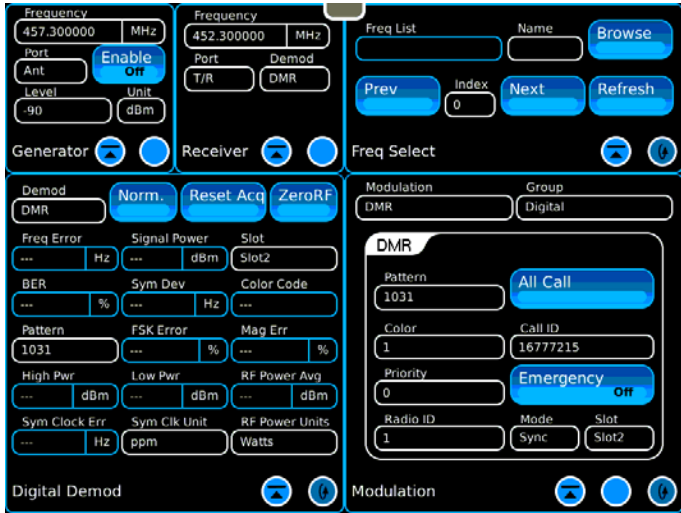
Call ID: 16777215 (All Call)

Emergency: Off

Mode: Sync

Slot: 1

# Screen Configuration



## 8800SX Generator Configuration:

Frequency: Match repeater RX Freq.

Port: ANT

Level: -90 dBm

## 8800SX Receiver Configuration

Frequency: Match repeater TX Freq.

Port: TR

Demod: DMR

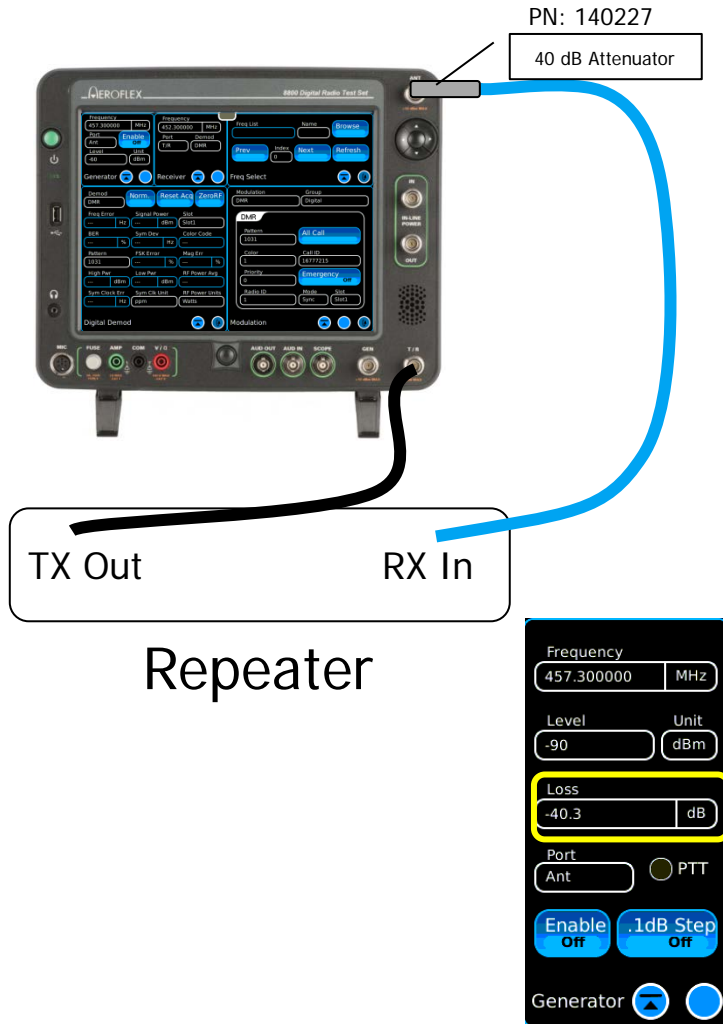
Note: by expanding the 8800SX Receiver and Generator Tiles, Cable Offset values can be entered to correct for cable loss improving measurement accuracy.

Calibrate the 8800SX Power Measurement system:

Select: **ZeroRF** to Zero the RF Broadband Power Meter.

Select: **Norm.** to calibrate the Slot and Signal Power Meters.

# Interconnect



Connect the 8800SX ANT Port to the repeater RX Input.

Note: to test RX Sensitivity, use of an external 40 dB pad is necessary. If used, the 40 dB Pad plus the cable loss can be entered on the Generator Offset entry.

Connect the 8800SX TR Port to the repeater TX Output.

The 8800SX can generate a signal down to -90 dBm from its ANT Port.

The addition of an external 40 dB attenuator allows output levels down to -130 dBm to test repeater RX Sensitivity.

# Test the Transmitter

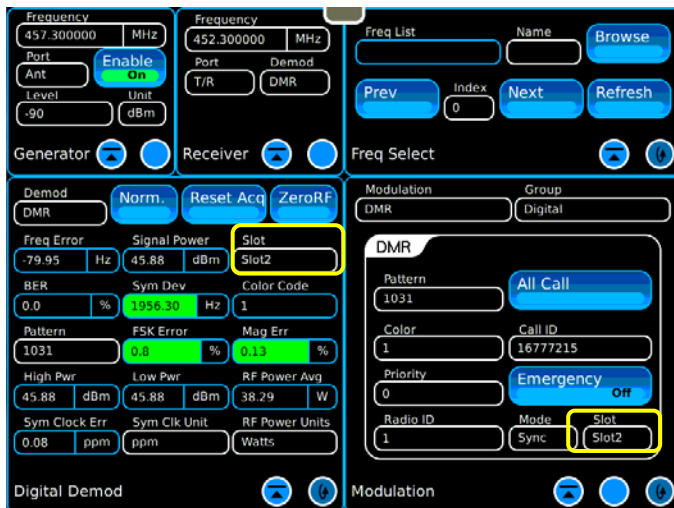


Select the Enable button on the Generator Tile and the repeater should begin to transmit.

On the Digital Demod Tile, set the Pattern to 1031 and the Slot to 1 and Symbol Clock Unit to ppm.

The Digital Demod Tile shows all of the Digital parametric measurements for Slot 1:

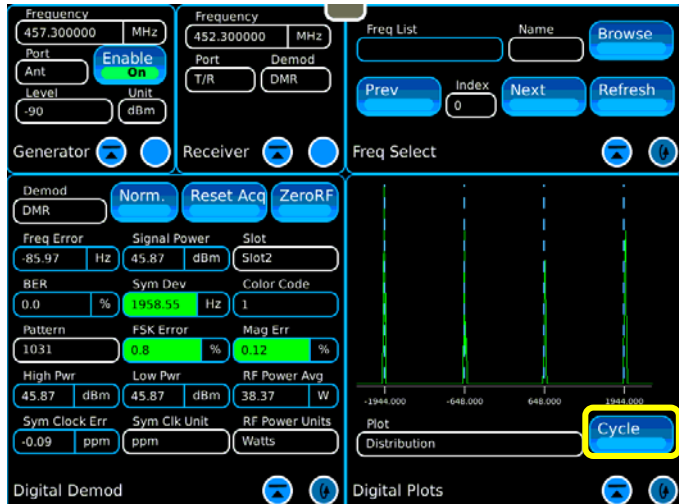
- Frequency Error
- Signal Power
- TX BER – Should be 0
- Symbol Deviation: 1944 Hz +/- 194 Hz
- Decoded Color Code
- FSK Error – Should be < 5%
- Magnitude Error – Should be < 1%
- Low Power – Slot 1 Power
- High Power – Slot 2 Power
- RF Power Avg: Broadband Power measurement
- Symbol Clock Error – Should be < 2 ppm





To test Slot 2, select Slot 2 on the Modulation Tile and Slot 2 on the Digital Demod Tile.



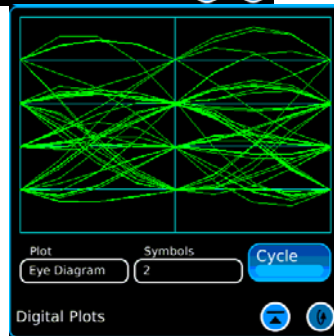
# Test the Transmitter



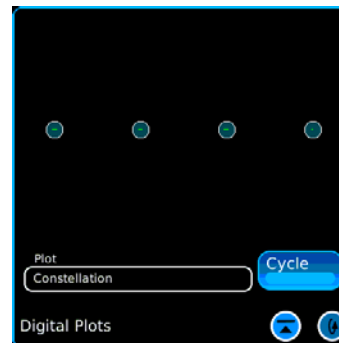
Select the Fast Stack Icon  on the Modulator Tile to reveal the Digital Plots Tile.

Using the  button on the Digital Plots Tile to switch views from Distribution Plot, Constellation Plot and Eye Diagram.

From the Receivers Menu, select the Digital Decode Tile and place it in the lower left corner.



The Digital Decode Tile shows all of the decoded parameters.



# Test the Transmitter

The Emergency feature can be tested by enabling the emergency button on the Generator Modulator Tile and monitoring the Digital Decode emergency field.

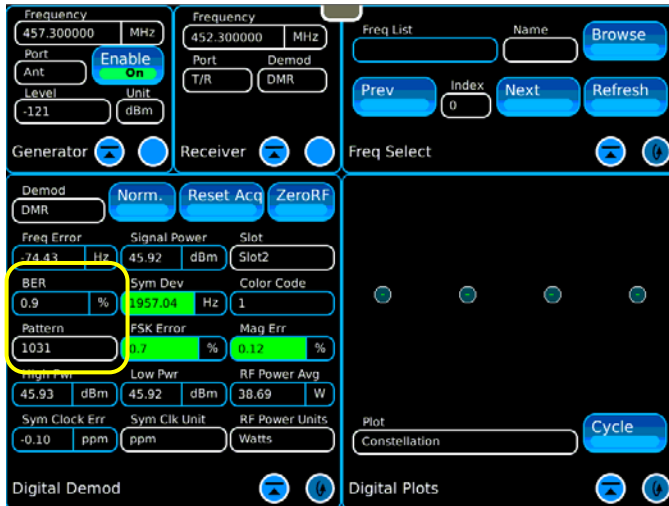


# Test Repeater RX Sensitivity

The receiver RX Sensitivity can be measured by lowering the RF Generator level until an indication near 1% BER is indicated. This is the approximate sensitivity of the receiver portion of the repeater.

In this test, the repeater is receiving the 1031 pattern from the 8800SX. The repeater receiver is forward error correcting this signal and sending the data to the transmitter to transmit back out and is received by the 8800SX receiver. The TX BER meter is now reflecting the BER that the repeater receiver is receiving.

This test can be performed on Slot 1 or Slot 2 by making the slot selections on both the Digital Demod Panel and the Modulator Tile.

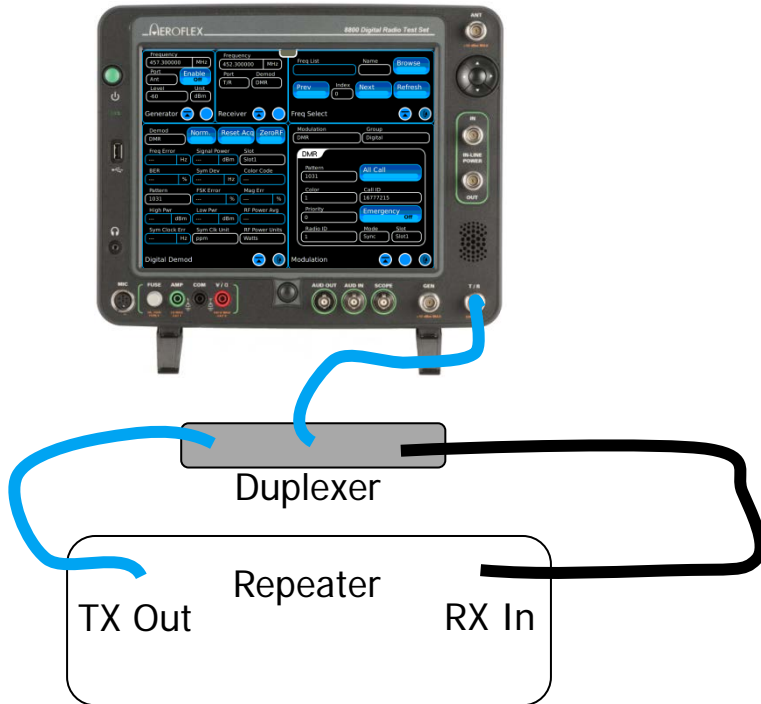


# Alternate Interconnect

## Connecting through a Duplexer

Connect the 8800SX TR Port to the Duplexer ANT Port.  
Connect the Duplexer to the Repeater as indicated.

The 8800SX can generate a signal down to -125 dBm from its TR Port.



# 8800SX Options and Accessories

## 8800SX Options and Accessories

139942 8800SX Digital Radio Test Set

### Standard Accessories

Fuse, 5 A, 32 V, Mini Blade	Power Supply
AC Power Cord - USA	AC Power Cord - China
AC Power Cord - Europe	AC Power Cord - UK
Adapter, N(m) to BNC(f), Qty 3	Front Cover
Internal Battery	

### Options

113334	8800OPT01	DMR
113335	8800OPT02	dPMR
113336	8800OPT03	NXDN
113337	8800OPT04	P25
138895	8800OPT05	P25 Phase 2
140215	8800OPT06	DMR Repeater Test
113338	8800OPT09	ARIB T98
113339	8800OPT10	Tracking Generator
113340	8800OPT11	Occupied Bandwidth
113309	8800OPT12	Internal Precision Power Meter (Meter + Sensor)
113342	8800OPT13	External Precision Thru-Line Meter (for use with Bird WPS Sensor)
113343	8800OPT14	PTC
113344	8800OPT15	AAR Channel Plan
139836	8800OPT20	R&S NRT-Z Power Sensor Support
139837	8800OPT21	Selectable Notch Filters
139838	8800OPT22	SNR Meter
138525	8800OPT101	Kenwood NXDN Auto-Test
138526	8800OPT102	Kenwood 5X20 P25 Series Auto-Test
138527	8800OPT103	Motorola APX Auto-Test
138528	8800OPT104	Motorola MOTOTRBO™ Auto-Test
139315	8800OPT105	Motorola ASTRO® 25 XTS®/XTL™ Auto-Test

### Languages

113350	8800OPT300	Simplified Chinese
113351	8800OPT301	Traditional Chinese

113352	8800OPT302	Spanish
113353	8800OPT303	Portuguese
113354	8800OPT304	Malay/Indonesian
113355	8800OPT305	Korean
113356	8800OPT306	Arabic
113357	8800OPT307	Polish
113358	8800OPT308	Russian
113359	8800OPT309	Japanese
113360	8800OPT310	German
113361	8800OPT311	French
139625	8800OPT312	Italian

### Accessories

138313	Calibration Certificate - 8800 Series
82560	AC27003 Attenuator - 20 dB/150 W
67076	Spare Internal Battery
114479	External Battery Charger
114477	Hard Transit Case
114478	Soft Carrying Case
114475	Antenna Kit
114348	Precision DTF/VSWR Accessory Kit for 8800
63927	AC25081 Site Survey Software
92793	5017D Bird Power Sensor
114312	Mounting Bracket
112861	Microphone
62404	DC Cord/Cigarette Adapter
63936	AC24009 DMM Test Leads
112277	10 AMP Current Shunt, 0.01 Ohm
67411	Scope Probe Kit

### Extended Warranties

114481	Extended Standard Warranty 36 Months
114482	Extended Standard Warranty 60 Months
114483	Extended Standard Warranty 36 Months with Scheduled Calibration
114484	Extended Standard Warranty 60 Months with Scheduled Calibration

## Select 8800SX Accessories Overview

*Soft Case* 114478

The soft case allows full operation of the 8800SX while inside the case. The laptop style design is lightweight and provides extra protection during field operation. Storage pockets provide extra space for spare batteries, test cables, etc.



*Hard Transit Case* 114477

The hard transit case features form-fitted slots for the 8800SX, protective cover, precision VSWR/DTF Kit, power supply, 150 W attenuators, spare battery, and more.



*Precision DTF/VSWR Accessory Kit* 114348

This accessory kit provides all items necessary for accurate and VSWR, Return Loss, and Distance-to-Fault measurement. The kit includes a case, return loss bridge, power divider, 50 Ω calibrator, and two N-type test cables specifically designed for the 8800SX.



*Bird 5017D Thru-Line Power Sensor* 92793

The 8800SX also supports the Bird 5017D Thru-Line Power Sensor as an external power meter for users that already have the 5017D. This capability requires 88XOPT13 and provides simultaneous forward and reverse power measurements up to 500 W and VSWR measurements that are displayed on the 8800SX screen.



# Questions or Comments?

## Contact Information

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For information about pricing for our products, contact the sales office by calling VIAVI Solutions at (800) 835-2352 or emailing [AvComm.Sales@viavisolutions.com](mailto:AvComm.Sales@viavisolutions.com).

For technical/product support, calibration, maintenance and general customer service inquiries, you can contact our help desk by [clicking here](#), calling (800) 835-2350, or emailing [Service.Americas@aeroflex.com](mailto:Service.Americas@aeroflex.com).

[Click here](#) for more information on the 8800SX and latest software versions and training materials.