



2026 Workshop Training Event One Pinellas County ACS Training Plan

15 January 2026 Revision (-)

Abstract

This is an instructor lead training event used to demonstrate test equipment operation and provide trainees with the opportunity to practice using the test equipment they may need to operate during an activation event, exercise, or drill.

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Michael Drake
WA1RYQ

1 TRAINING STATIONS

1.1 COAX CABLE ASSEMBLY

1.1.1 Instructors

- a. Michael Drake
- b. Dave Rockwell

1.1.2 Tools, Test Equipment, and Materials

The tools, test equipment, and miscellaneous materials needed to support the training event are listed below.

Table I. Coaxial Cable Test Station Tools, Test Equipment, and Material

QTY	Description	Responsibility
1	DX Engineering Coaxial Cable Prep Tool Kit	M. Drake
1	Coaxial Cable Crimping tool and dies for LMR400 and RG8X	M. Drake
1	Coaxial Cable Crimping tool and dies for LMR400 and RG8X	D. Rockwell
4	UHF Crimp Connectors for LMR400	M. Drake
4	UHF Crimp Connectors for RG8X	M. Drake
2	BNC Crimp Connectors for RG8X	M. Drake
2	N Crimp Connectors for LMR400	M. Drake
6Ft	LMR400 Coaxial Cable	M. Drake
6Ft	RG8X Coaxial Cable	M. Drake
1 Roll	1/2" Heat Shrink Tubing	M. Drake
1 Roll	3/8" Heat Shrink Tubing	M. Drake
1 Roll	3M Temflex Rubber splicing Tape	M. Drake
1	Heat Shrink Gun	M. Drake
1	Heat Shrink Gun	D. Rockwell
1	Jensen Tool Kit	M. Drake
1	Digital Volt-Ohm Meter and cables	M. Drake
1	Connector Data Sheets, UHF, N, and BNC ; RG8X and LMR400	M. Drake

1.1.3 Training Station Preparation

The following actions are performed before the first training period begins. The configuration identified in this section should be re-established prior to each training period.

- a. Tape Connector Data Sheets to White Board in assigned conference room.

1.1.4 Tasking

The instructor will perform the following actions.

- a. Give a brief overview of the tool sets used to prepare and crimp the cables.
 Include in the discussion the advantages of crimping verse soldering.

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- b. Pass around packaged versions of each connector type so that everyone can see them up close.
- c. Demonstrate how to prepare an RG8X cable for installation of a UHF connector.
- d. Install the connector but do not crimp.

WARNING: The blades in each cable preparation tool are extremely sharp. Point out the blades and warn students to be careful when handling.

- e. Demonstrate heat shrink usage. Point out that selected heat shrink also has glue for weather seal.

The trainees will perform the following actions.

- a. Use Coaxial Cable Stripping tools for LMR400 Cable
 - (1) Prepare Cable for installation of UHF Connector
 - (2) Prepare Cable for installation of N Connector
- b. Use Coaxial Cable Stripping tools for RG8X Cable.
 - (1) Prepare Cable for installation of UHF Connector
 - (2) Prepare Cable for installation of BNC Connector
- c. One Student from each group will crimp and finalize a cable connector
 - (1) Install Heat Shrink prior to crimp
 - (2) Crimp Connector
 - (3) Use heat gun to finish connector build.

1.2 NANO VECTOR NETWORK ANALYZER (VNA)

1.2.1 Instructors

- a. Will Scott

1.2.2 Tools, Test Equipment, and Materials

The tools, test equipment, and miscellaneous materials needed to support the training event are listed below.

Table II. Nano VNA Station Tools, Test Equipment, and Material

QTY	Description	Responsibility
1	Nano VNA and test cables and adaptors	W. Scott
1	Laptop Computer and associated power cord	W. Scott
1	USB Cable (Nano VNA to Laptop Computer)	W. Scott
1	50-ohm UHF termination	W. Scott
1	Coaxial attenuator	W. Scott
1	VHF/UHF Antenna	EOC Storage
25Ft	RG8 Coaxial cable with UHF terminations	EOC Storage
1	Coaxial Switch	M. Drake
5 Ft	RG58 Cable with discontinuity	M. Drake

1.2.3 Training Station Preparation

The following actions are performed before the first training period begins. The configuration identified in this section should be re-established prior to each training period.

- a. Setup UHF/VHF antenna system
- b. Connect Nano VNA to shore power and laptop computer. Verify Nano VNA software is operational.

1.2.4 Tasking

The instructor will perform the following actions.

- a. Give the students a short overview of the Nano VNA. The overview should describe the basic elements of the device and list the operations that the device can perform.
- b. Connect Nano VNA to laptop computer. The screen on the Nano VNA is very small. The computer will enable students to see better.
- c. Describe how to calibrate a Nano VNA and why calibration is important.
(Instructor will not perform this task due to time constraints)
- d. Demonstrate the following operations
 - (1) Measurement of Antenna VSWR
 - (2) Cable length using Time Domain Reflectometer (TDR) function
 - (2) Antenna Switch port Isolation
 - (4) Measurement of inline coaxial attenuator

The trainees will perform the following actions.

- a. Time permitting, students may have an opportunity to perform one or more operations demonstrated by the instructor.

1.3 ANTENNA ANALYZER

1.3.1 Instructors

- a. Robert Burke

1.3.2 Tools, Test Equipment, and Materials

The tools, test equipment, and miscellaneous materials needed to support the training event are listed below.

Table III. Antenna Analyzer Test Station Tools, Test Equipment, and Material

QTY	Description	Responsibility
1	RigExpert AA-2300 Zoom Antenna Analyzer	B. Burke
1	Laptop computer running RigExpert AntScope2 Software	B. Burke
1	Antenna Analyzer to computer USB cable	B. Burke
25 Ft	RG8X coaxial cable with UHF terminations	B. Burke
2	Mag mount antennas	B. Burke
1	Metal cookie sheet (Ground plane)	B. Burke
1	RigExpert AA-600 Antenna Analyzer Kit (Includes adaptors and terminations)	M. Drake

1.3.3 Training Station Preparation

The following actions are performed before the first training period begins. The configuration identified in this section should be re-established prior to each training period.

- a. Setup Mag mount antennas within Radio Room.
- b. Connect the antenna analyzer to the computer and verify that the AntScope2 software is communicating with the analyzer.

1.3.4 Tasking

The instructor will perform the following actions.

- a. Give the students a short overview of the Antenna Analyzer and the AntScope2 software. The overview should describe the basic elements of the device and list the operations that the device can perform.
- b. Demonstrate the following operations
 - (1) Measure Mag mount Antenna VSWR
 - (2) Measure HF folded dipole antenna VSWR
 - (3) Cable length using Time Domain Reflectometer (TDR) function

The trainees will perform the following actions.

- a. Time permitting, students may have an opportunity to perform one or more operations demonstrated by the instructor.

1.4 SPECTRUM ANALYZER AND SERVICE MONITOR

1.4.1 Instructors

- a. Clayton Parrott
- b. Dave Byrum

1.4.2 Tools, Test Equipment, and Materials

The tools, test equipment, and miscellaneous materials needed to support the training event are listed below.

Table IV. Spectrum Analyzer / Service Monitor Test Station Tools, Test Equipment, and Material

QTY	Description	Responsibility
1	Spectrum Analyzer	C. Parrott
1	Service Monitor	D. Byrum
1	Bird Power Meter	D. Rockwell
1	UHF Duplexer	C. Parrott
1	VHF/UHF Hand-held Amateur Radio	D. Byrum
1	700/800 MHz P25 Hand-held Radio	D. Byrum

1.4.3 Training Station Preparation

The following actions are performed before the first training period begins. The configuration identified in this section should be re-established prior to each training period.

- a. Setup the Spectrum Analyzer and Service Monitor and verify that they are operational.

1.4.4 Tasking

The trainees in each team will be divided into two subgroups. One subgroup will be assigned to the Spectrum Analyzer, and the second subgroup will be assigned to the Service Monitor; Approximately halfway through the training station period, the teams will swap locations.

1.4.4.1 Service Monitor

The instructor will perform the following actions.

- a. Give the students a short overview of the Service Monitor. The overview should describe the basic elements of the device and list the operations that the device can perform.
- b. Demonstrate the following Service Monitor operations.
 - (1) RF Carrier Deviation
 - (2) Carrier frequency
 - (3) Recovered Audio
 - (4) Spectrum Display

The trainees will perform the following actions.

- a. Time permitting, students may have an opportunity to perform one or more operations demonstrated by the instructor.

1.4.4.2 Spectrum Analyzer

The instructor will perform the following actions.

- a. Give a short overview of the Spectrum Analyzer that describes its purpose and uses.
- b. Demonstrate the following Spectrum Analyzer operations.
 - (1) Tuning a UHF Duplexer
 - (2) **TBD**

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The trainees will perform the following actions.

- a. Time permitting, students may have an opportunity to perform one or more operations demonstrated by the instructor.

2 TRAINING WORKSHOP SCHEDULE

The following schedules detail the timeline of significant events and activities that are planned for the workshop.

2.1 TRAINING WORKSHOP SCHEDULE

The schedule for the training event is shown in Table V.

Table V. Training Event Schedule

January 15 th	Personnel	Activity	Location
1800-1845	Instructors	Equipment Staging	EOC
1845-1900	Trainees	All Trainees arrive at the Public Safety Complex and are escorted to the EOC	EOC
1900-1930	All Participants	Operational Briefing and team assignments.	EOC
1930-1950	All Participants	Training Period one	EOC
1950-1955	All Participants	Break – Training Station Rotation	EOC
1955-2015	All Participants	Training Period two	EOC
2015-2020	All Participants	Break – Training Station Rotation	EOC
2020-2040	All Participants	Training Period three	EOC
2040-2045	All Participants	Break – Training Station Rotation	EOC
2045-2105	All Participants	Training Period four	EOC
2105	Trainee	Depart for home – End of Training	EOC
2105-2130	Instructors	Pack and stow all remaining equipment	EOC

2.2 TEAM ROTATION SCHEDULE

Each team of trainees will spend approximately 20 minutes at each training station. Team assignments for each training period are shown in Table VI.

Table VI. Team Rotation Schedule

Station	Period 1 1930-1950	Period 2 1955-2015	Period 3 2020-2040	Period 4 2045-2105
Coaxial Cable Assembly	Team 1	Team 4	Team 3	Team 2
Nano VNA	Team 2	Team 1	Team 4	Team 3
Antenna Analyzer	Team 3	Team 2	Team 1	Team 4
Spectrum Analyzer and Service Monitor	Team 4	Team 3	Team 2	Team 1