Anritsu envision : ensure

Network Master™ Series

Network Master Pro
MT1000A

CPRI RF Module
MU100040B

Network Master™ Series MT1000A/MU100040B
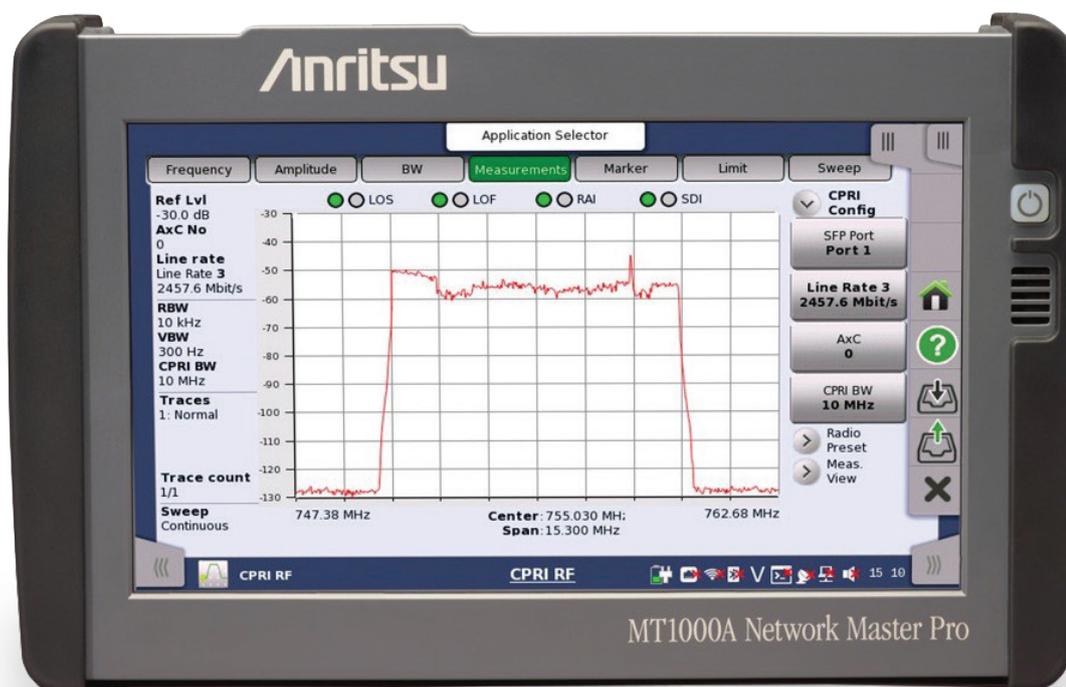
The migration to CPRI technology in cellular networks

Antenna

RF Jumper Cables

RRH RRH RRH

Optical Fibers

Backhaul

BBU
BBU
BBU

Equipment Room
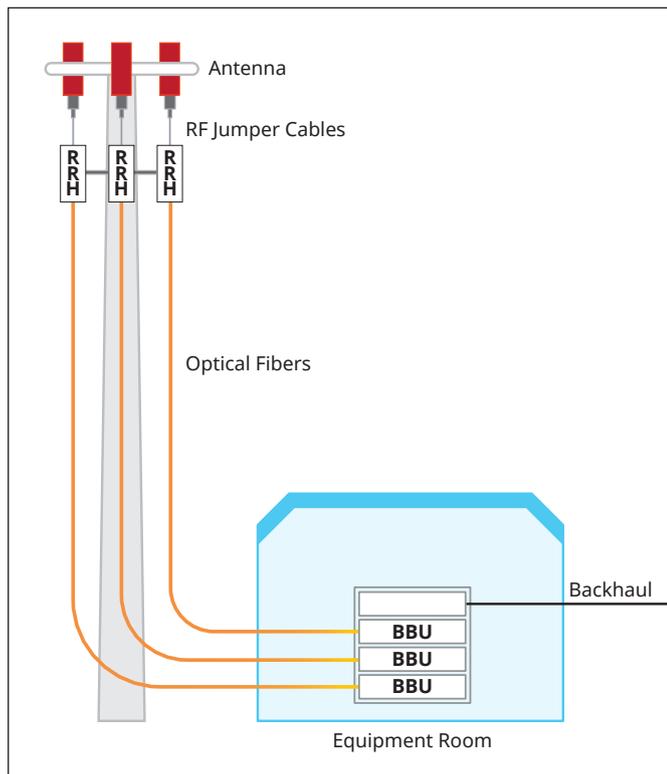
The architecture of cellular networks is evolving rapidly. Demand for greater data throughput from the network and the need to reduce operating costs has led to the implementation of networks that separate the radio from the baseband units.

By moving away from traditional macro cell sites in which ground based radios are connected to tower mounted antennas by long RF cable runs, to using a Remote Radio Head (RRH) at the tower top connected to a BaseBand Unit (BBU) at ground level, the deployment of the cell site can be much more flexible.

BBUs can be located locally at the host cell site or grouped together at BBU hotels up to 25 km from the RRH. This "Hotelling" of BBUs allows radio resources to be allocated dynamically, greatly increasing network efficiency. The interface between the BBU and the RRH is typically a fiber optic cable supporting the Common Public Radio Interface (CPRI) communication standard. The CPRI standard delivers a high speed serial interface with low latency required for LTE network roll out.

Separating the RRH from the BBU has the benefit of reducing the power consumption in the cell site equipment room and reducing the demands on air conditioning, greatly reducing operational expenditure. It also potentially reduces or even eliminates the need for long RF cable runs that can result in significant radio signal losses.

Testing the CPRI link between the BBU and RRH introduces new challenges for the field technician installing and maintaining the network. As the radio may now be located at the top of a tower, access to RF measurements could require the use of a certified tower climbing crew. However, by tapping into the CPRI link, RF measurements can be made from ground level without the need for any tower climb.
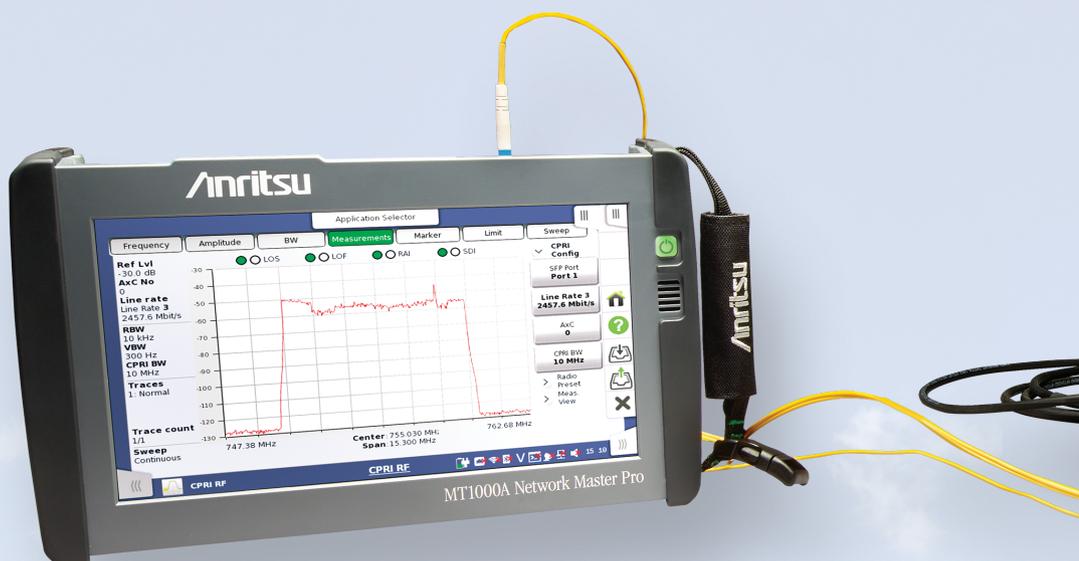
Test challenges for CPRI cell sites implementing CPRI technology
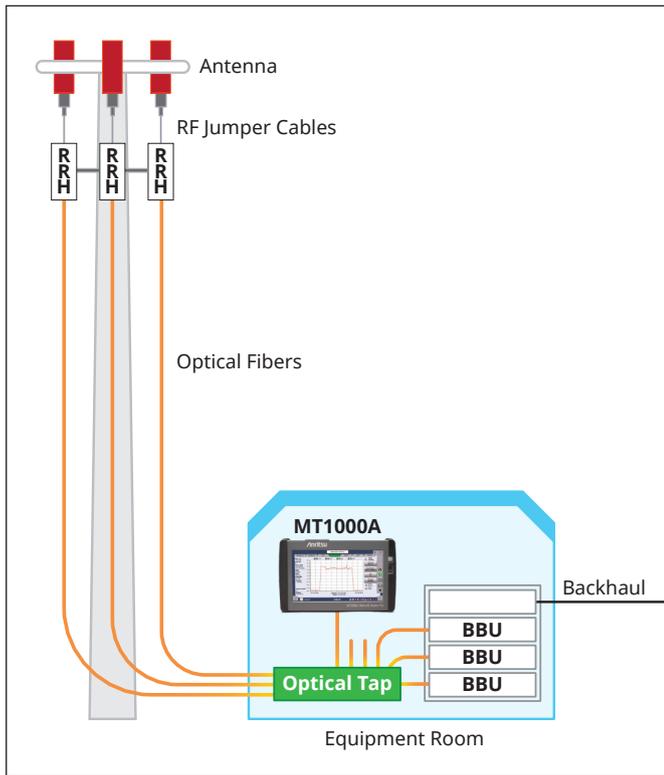
Moving the radio to the tower top and hosting the BBU at the base of the tower or in remote hotels increases network flexibility and performance as well as reducing costs. The increased spectral densification that has been implemented with the roll out of LTE networks as well as overall spectral congestion has made these networks vulnerable to interference and intermodulation. This network degradation may first show up when monitoring KPIs. Especially for dropped calls and reduced data throughput.

MU100040B CPRI RF Module displays the LTE spectrum of the uplink or downlink of Alcatel Lucent/Nokia, Ericsson and Huawei radios.

By monitoring the LTE uplink spectrum on the CPRI uplink, it is possible to monitor for interferers from ground level. The MU100040B CPRI RF Module for the MT1000A Network Master Pro provides the ideal instrument for this application.
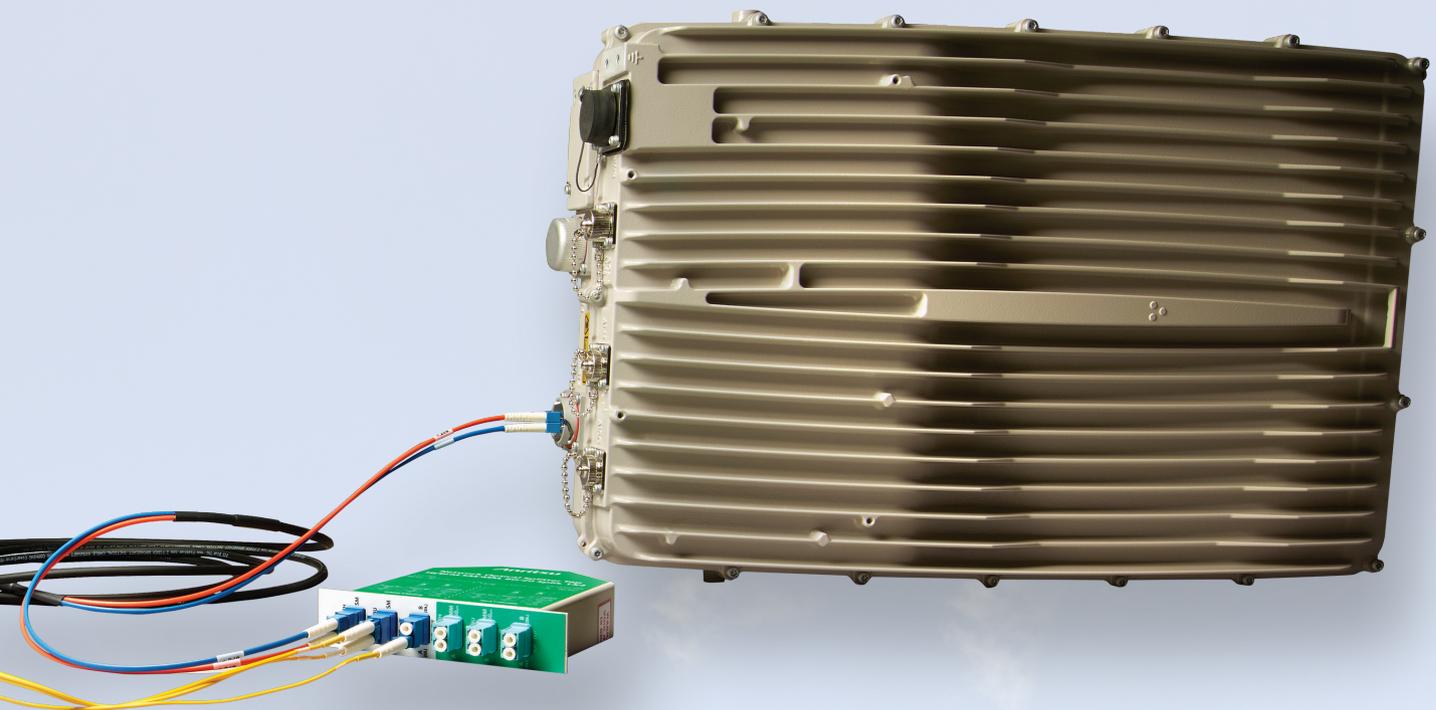
CPRI RF module for the MT1000A Network Master Pro

Key features

- Displays LTE spectrum of ALU/Nokia, Ericsson and Huawei CPRI radios

- Fast update rate to capture intermittent interferers

- Spectrum pan and zoom for detailed analysis of interferers

- Spectrogram display captures and holds data for intermittent interferers

- 2 SFP slots for simultaneous uplink and downlink testing

- SFP data reading and display

- Layer 2 alarm monitoring and display

- Auto configuration of CPRI parameters

- Base Band Unit Emulation ALu-Nokia LTE (Option 10)

- GPS data reading and display (used with Option 10)

- Modular design for use with MT1000A OTDR and 10G/100G transport test modules

- Battery powered for field use

The MU100040B CPRI RF Module for the MT1000A Network Master Pro adds CPRI RF measurements to Anritsu's transport and fiber test platform. The modular design of MT1000A means that it can be configured just for CPRI measurements or combined with the 10G transport module and OTDR module to create the most comprehensive and versatile fiber and transport tester available.

CPRI RF measurements

The MT1000A Network Master Pro is a hand held battery power tester designed to facilitate the installation and maintenance of cellular networks. CPRI RF measurements are configured and displayed on the 9 inch color touch screen.

Network Master™ Series MT1000A / MU100040B

Panel Layout

CPRI RF Module
MU100040B

Network Master Mainframe
MT1000A

1. Audio (3.5ø: CTIA Standard)
2. AUX (G0325A/with MT1000A-005, MU100090A)
3. Clock Input
4. USB Mini-B
5. USB A

6. USB A
7. Ethernet Service Interface
8. DC Input (18 VDC)
9. CPRI SFP Port 1
10. CPRI SFP Port 2
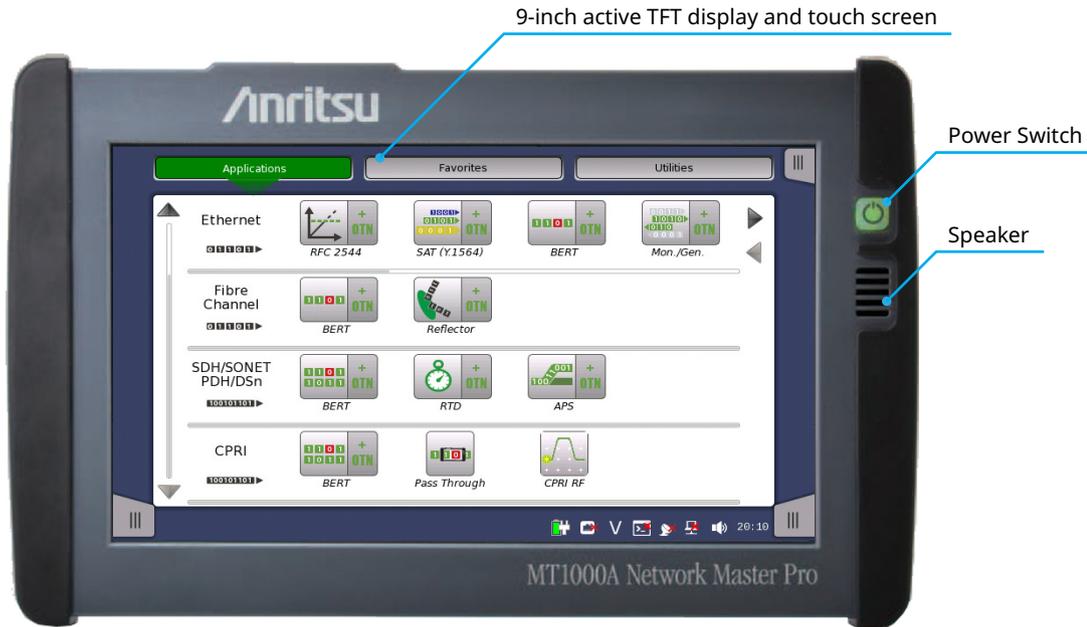
9-inch active TFT display and touch screen

Power Switch

Speaker

## CPRI RF Module Applications

The MT1000A displays all the applications available from the installed modules. For CPRI RF measurements, select the CPRI RF application icon.
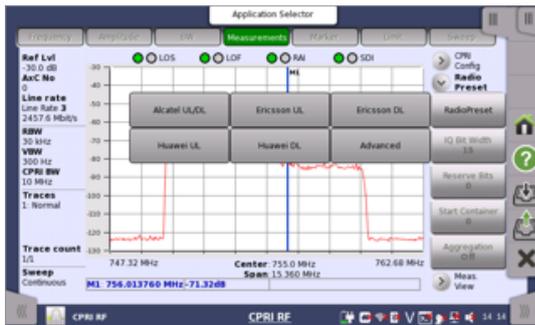
OEM radio presets simplify instrument configuration. By presetting the MT1000A to match the radio under test, key CPRI parameters are automatically configured, reducing chances of incorrect set up giving false results.
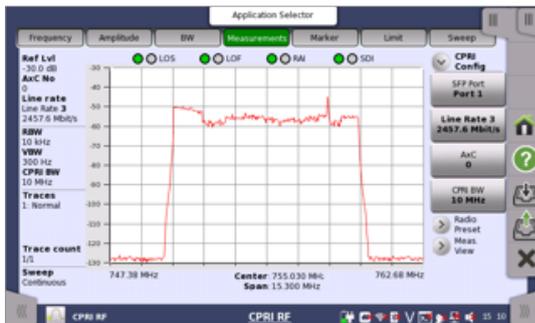
View the live spectrum of an LTE uplink. The fast update rate shows resource blocks being activated dynamically as well as enhancing ability to see intermittent interferes. Layer 2 alarms are displayed by indicator lamps at the top of the screen to confirm the integrity of the signal.

An interfering signal is clearly visible in the LTE spectrum.
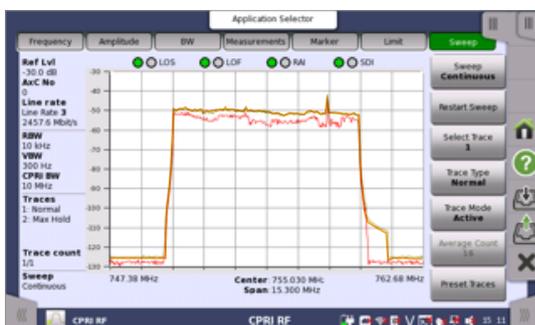
Activating a second trace with Max Hold simplifies identification of intermittent interferers.
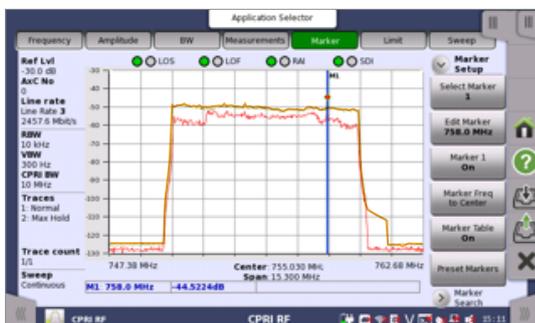
Up to 8 markers can be activated on the trace. Full marker features including Peak Find, Next Peak Left/Right, Marker to Center Frequency and Marker Tables are supported.

Analyzing the CPRI Uplink
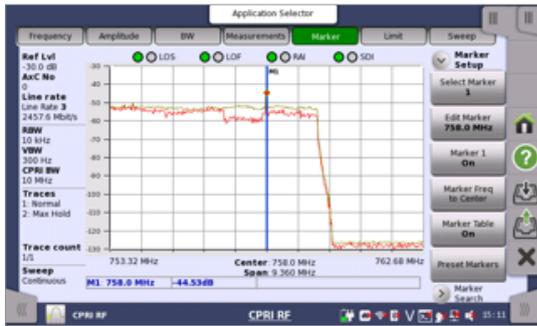
Marker to center frequency positions the interferer to be examined in the center of the display, allowing the user to zoom into the signal for detailed examination.
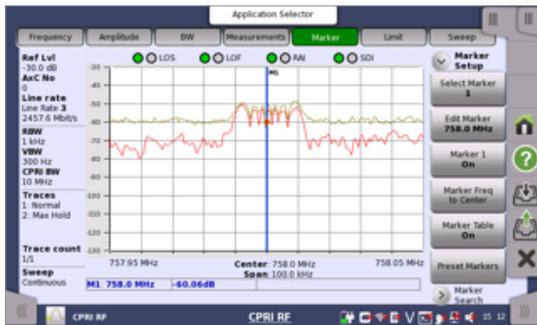
Reducing the span bandwidth gives a detailed view of the interferer signal spectrum, in this case an FM signal. Knowledge of the nature of the interferer gives invaluable information to enable the source to be located.
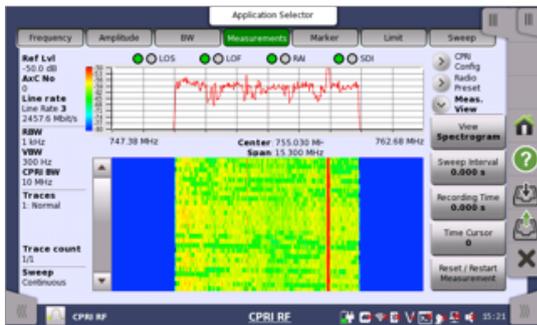
A spectrogram feature is ideal for long term monitoring of the spectrum. The spectrogram provides a timed history of all captured spectrums, so intermittent interferers are not lost.

The Layer 2 alarms screen shows full details of both test ports status.

It is essential that the SFP in the tester matches the requirements of the CPRI link under test. Typically the SFP capability data is hard to read from the manufacturer's label. MT1000A conveniently displays the full configuration of each SFP inserted into ports 1 and 2.

BBU Emulation ALu-Nokia LTE Measurements

The BBU Emulation option provides wireless technicians, engineers and contractors the necessary tools to validate that a newly installed ALu/Nokia RRH is installed properly and functional, before the Base Band Unit (BBU) is commissioned on site.

This unique combination of measurement tools will reduce the number of truck rolls a field technicians, contractor or RF engineer will need to make when installing new RRH.

This leads to faster network rollouts and reduced OpEx (Operational Expense) cost when building new sites.
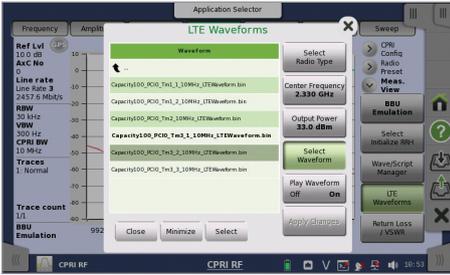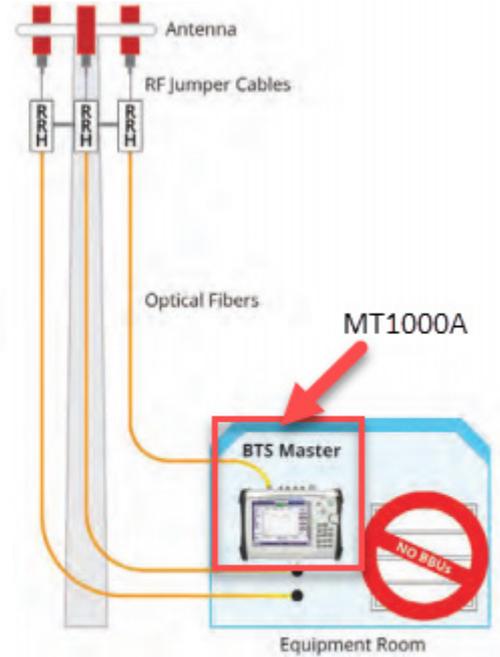
Initialize communications with the RRH. This allows our BBU Emulation option to query and receive the RRH configuration information.

- Manufacturer
- Model Number
- Serial Number
- Firmware
- Frequency Range
- Power
- Location of installed SFP's
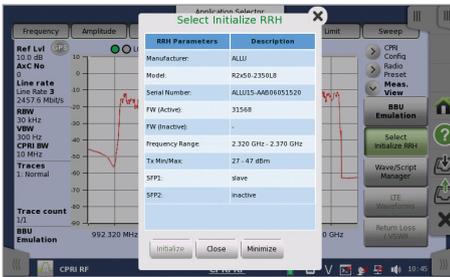
SFP Data, shows which type of SFP(s) is installed in the two ports on the RRH.

- Wavelength
- Bit Rate
- Vendor information

Select RRH to test, IP address of the RRH shows up in order of discovery.

Select Radio type to send the correct commands to initiate a LTE waveform transmission.

- Select Radio Type
- Select LTE Waveform
- Select center frequency of T_x
- Select output power
- Load waveform
- Play (T_x) Waveform

Ordering Information

Mainframe

Part Number	Description
MT1000A	Network Master Pro
Standard Accessories	
MT1000A-006[a]	High Power Supply
B0690A	Soft Case
B0728A	Rear Panel and Screw Kit
G0310A	Li-ion Battery
G0385A	High Power AC Adapter
J1565A[b]	Line Cord USA
J1594A[b]	Line Cord Japan
J1566A[b]	Line Cord Europe
J1567A[b]	Line Cord UK
J1568A[b]	Line Cord Australia
J1596A[b]	Line Cord Korea
Z1746A	Stylus
Z1747A[c]	Shoulder Strap
Z1748A[d]	Handgrip
Options	
MT1000A-003[e]	Connectivity for WLAN/Bluetooth
MT1000A-005[f]	AUX I/O

a. Required for MU100011A (100G Multirate Module).
b. One of the power line cords is supplied with the MT1000A.
c. This strap is mounted on the MT1000A.
d. This handgrip is mounted on the MT1000A.
e. Available for certified countries and regions including USA, Canada, Japan and all EU countries. Please visit the Anritsu web site for updated information.
f. Required to carry MU100090A. Contact Anritsu to retrofit your instrument.

CPRI RF Module

Part Number	Description
MU100040B	CPRI RF Module (requires Option 1)
Options	
MU100040B-001	Option 1, CPRI LTE RF Measurements
MU100040B-010	Option 10, CPRI Base Band Unit Emulation ALu-Nokia LTE
Accessories (included with Option 10)	
2000-1760-R	GPS Antenna, SMA (m), 25 dB gain, 2.5 VDC to 3.7 VDC
Optional CPRI Accessories	
67-12-R	80/20 Optical Tap; Single Mode/Multi Mode
67-13-R	80/20 Optical Tap; Single Mode
67-14-R	50/50 Optical Tap; Single Mode/Multi Mode
67-15-R	50/50 Optical Tap; Single Mode
68-5-R	SFP (Optical Module), 4.25G, 850 nm, 500 m
68-6-R	SFP+ (Optical Module), 8G FC/10G SR 850 nm
68-7-R	SFP (Optical Module), 2.7G, 1310 nm, 15 km
68-8-R	SFP+ (Optical Module), 10G LR, 1310 nm
68-9-R	SFP (Optical Module), 3.07Gbps SFP, 1310 nm
68-10-R	SFP (Optical Module), 3.7Gbps SFP, 850 nm
68-11-R	SFP (Optical Module), 10.5Gbps SFP+, 1310 nm
68-12-R	SFP (Optical Module), 10.5Gbps SFP+, 850 nm
68-16-R	SFP (Optical Module), 9.83Gbps SFP+, 1310 nm
2100-29-R	Fiber Optic Cable, 3 m, LC/UPC, Single Mode (SM), Simplex
2100-30-R	Fiber Optic Cable,10 m, LC-SC, Multi Mode (MM), Simplex
2100-31-R	Fiber Optic Cable, 3 m, LC/UPC, Single Mode (SM), Duplex
971-14-R	Ferrule Cleaner, 2.5 mm SC
971-15-R	Ferrule Cleaner, 1.25 mm LC
971-16	Fiber Ferrule Cleaner
808-16-R	3m, DUPLEX, MM, LC-LC
808-17-R	3m, SIMPLEX, MM, LC-LC
2000-1849-R	ESD Box

Miscellaneous Accessories

Part Number	Description
760-286-R	Compact Transit Case with Wheels and Handle 55.6 cm x 35.5 cm x 22.9 cm (22" x 14" x 9")
G0309A	AC Adapter
G0324A	Battery Charger
J1569B	Car 12 VDC Adapter
J1667A[a]	GPIB–USB Converter
Operation Manuals	
10580-00443	MT1000A/MU100040B Network Master Pro Operation Manual

a. J1667A is required for SCPI remote control via GPIB.

Accessories

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J1569A	Car 12 VDC Adapter
J1667A[a]	GPIB–USB Converter

Operation Manuals

Part Number	Description
10580-00423	MT1000A/MU100040B Network Master Pro Operation Manual

a. J1667A is required for SCPI remote control via GPIB.

Maintenance Service

Part Number	Description
MT1000A-ES210	2 Years Extended Warranty Service
MT1000A-ES310	3 Years Extended Warranty Service
MT1000A-ES510	5 Years Extended Warranty Service
MU100040B-ES210	2 Years Extended Warranty Service
MU100040B-ES310	3 Years Extended Warranty Service
MU100040B-ES510	5 Years Extended Warranty Service

G0306B Video Inspection Probe

The product name and listed name may be different sometimes; contact your sales representivie for more details.

Model/Order Number	Name
G0306B	Video Inspection Probe (x400)
Standard Accessories	Operation Manual (Printed) Soft Bag Seven Connector Tips
Application Parts	
H0360A	2.5PC-M
H0361A	1.25PC-M
H0362A	2.5APC-M
H0363A	LC-PC-F
H0364A	FC-PC-F
H0365A	SC-PC-F
H0366A	SC-APC-F
H0372A	E2000-C-F
H0373A	FC-APC-F
H0375A	ST-PC-F
H0376A	1.25APC-M
H0380A	LC65-PC-F

Fiber Optic Cable, 3 m, LC/UPC, Single Mode (SM), Simplex

A range of SFP's are available as optional accessories

Compact transit Case with wheels and handle 55.6 cm x 35.5 cm x 22.9 cm (22" x 14" x 9")

Video Inspection Probe G0382A / G0306B

Dirty or damaged optical connectors can greatly affect the performance of the CPRI fiber between the BBU and RRH. Scratches, chips and contamination on optical fiber connector end faces reduce transmission quality and increase errors. This leads to additional I&M work and cost. When the external optical fiberscope (G0382A USB Autofocus type, G0306B USB Standard type: sold separately) is connected, scratches and dirt on the optical connector end face can be confirmed visually. The connector image and detailed PASS/FAIL status is displayed as defined by IEC 61300-3-35 ensuring quality and consistency from connector to connector, technician to technician.

Features

	G0382A	G0306B
	USB Autofocus type. Based on Auto Operation.	USB Standard type. Based on Manual Operation.
Automatic focus adjustment		NA
Automatic fiber image centering		NA
Automatic image capture		
Pass/Fail analysis on Screen		
Pass/Fail LED indicator		NA

G0382A

G0306B

MT1000A screen displays details of the fiber tip core, cladding, adhesive and contact, with automatic Pass/Fail result judgement.

Video Inspection Probe G0382A / G0306B

Specification

Model	G0382A	G0306B
Name	Autofocus Video Inspection Probe	Video Inspection Probe
Magnification	400 times with 7" monitor	400 times with 7" monitor
Resolution	1.0 µm/pixel	1.0 µm/pixel
Focus	Automatic/ Manual	Manual
Interface	USB 2.0	USB 2.0 (Compatible USB 1.1)
Dimensions	182 mm x 25 mm x 48 mm	31 mm x 46.5 mm x 165 mm
Mass	152 g	150g
Operation Temperature	–10 to +50°C	–10 to +55°C
Storage Temperature	–40 to +70°C	–20 to +60°C
Report software for Windows PC[*1]	MX900031A Autofocus VIP Software	MX900030A Connector Master

*1: The Report software can download from Anritsu public web site.

Ordering Information

Model	G0382A		G0306B	
Standard Accessories	Quick Reference Guide (Printed)		Operation Manual (Printed)	
	Soft Bug		Soft Bug	
	Seven Connector Tips[*2]:		Seven Connector Tips[*2]:	
	H0383A: 1.25mm PC Male		H0361A: 1.25mm PC Male	
	H0382A: 2.5mm PC Male		H0360A: 2.5mm PC Male	
	H0387A: 2.5mm APC Male		H0362A: 2.5mm APC Male	
	H0385A: 1.25mm PC Female(LC)		H0363A: 1.25mm PC Female(LC)	
	H0386A: 2.5mm PC Female(FC)		H0364A: 2.5mm PC Female(FC)	
	H0384A: 2.5mm PC Female(SC)		H0365A: 2.5mm PC Female(SC)	
	H0398A: 2.5mm APC Female(SC)		H0366A: 2.5mm APC Female(SC)	

	Tip lineup[*2]			
Male type	H0382A	2.5PC-M	H0360A	2.5PC-M
	H0383A	1.25PC-M	H0361A	1.25PC-M
	H0387A	2.5APC-M	H0362A	2.5APC-M
	H0388A	1.25APC-M	H0376A	1.25APC-M
Female type (SC)	H0384A	SC-PC-F	H0365A	SC-PC-F
	H0398A	SC-APC-F	H0366A	SC-APC-F
Female type (FC)	H0386A	FC-PC-F	H0364A	FC-PC-F
	H0395A	FC-APC-F	H0373A	FC-APC-F
Female type (LC)	H0385A	LC-PC-F	H0363A	LC-PC-F
	Not Available		H0380A	LC65-PC-F
	H0393A	LC-PC-F-L	Not Available	
	H0394A	LC-APC-F-L	Not Available	
Female type (ST)	H0396A	ST-PC-F	H0375A	ST-PC-F
Female type (MU)	H0397A	MU-PC-F	H0374A	MU-PC-F
Female type (E2000)	H0390A	E2000-PC-F	H0372A	E2000-PC-F
Female type (MPO)	H0392A[*3]	MPO-PC/APC-F	Not Available	

Notes: *2: These Tips are optional accessories. Not compatible between the G0382A and the G0306B tips.
*3: It is not available to Autofocus and Pass/Fail functions operation.

Notes

Notes

Anritsu envision : ensure

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