JD720C-Series

Cable and Antenna Analyzers

Key Benefits

- Intuitive user interface with touch screen and indoor/outdoor display modes
- Dual display and zoom zones for faster analysis
- RF port protection up to 40 dBm (10 W)
- Controls RF and optical power sensors

Key Features

- *Favorite* and *Quick Save* keys for easier and faster testing
- Broadband calibration for maximum test time
- 7.5 hours of continuous battery operation

Applications

- Trace overlay
- Zoom zones
- Dual display
- Alternate sweep in DTF

Key Measurements

- Reflection — VSWR/return loss
- DTF — VSWR/return loss
- 1-Port cable loss
- Smith chart
- 1-Port phase
- RF power meter (optional)
- Optical power meter (optional)

The majority of problems in mobile networks occur in the base station's infrastructure, consisting of the antenna system, cables, and connectors. To properly service and install cell sites requires suitable test equipment. The JDSU JD720C-Series Cable and Antenna Analyzers are optimal test solutions for characterizing cell-site infrastructure because of their handheld design, ease of use, and rich functionality.

The JD720C-series analyzers offer the measurement functions necessary to accurately verify a site's transmission line and antenna system from signal reflections (voltage standing wave ratio [VSWR] or return loss) to RF or optical transmission power.

In addition, the JD720C-series analyzers accurately measure the distance to fault (DTF) for proper identification of its location.

The instrument's touch-panel operation and 7-inch-wide thin-film transistor (TFT) color display for easier measurements and display. Also, its application-specific software for easier measurement comparison and analysis and for generating professional reports.

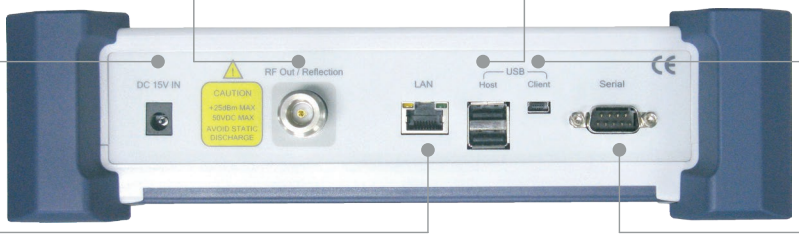
Top view

15V DC Port
External DC input port

RF Out / Reflection
RF Out/Reflection port for Cable & Antenna Analysis

USB Host
USB port for memory devices or power sensors

USB Client
USB port for the interface with JDViewer



LAN
Ethernet port for the interface with JDViewer or JDRemote

Serial
Serial port for power sensors

Front view

Transflective LCD
TransflectiveTouch-screen display

Measurement Keys
Quick access to measurements

Data Entry
Convenient numerical entry and data selection

Analysis Keys
Quick access to analysis tools

Dual Display
Convenient display arrangement in horizontal or vertical mode

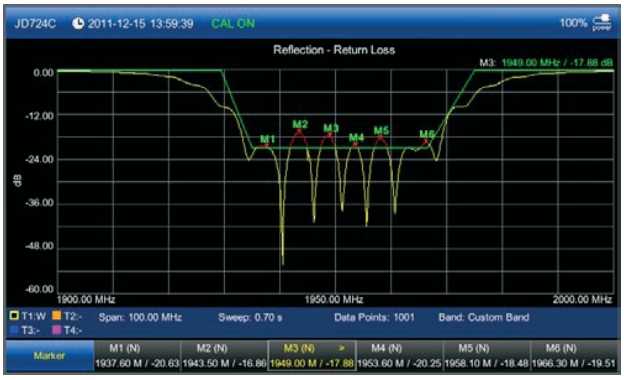
Screen Menu
Touch-screen interface allows fast and easy operation

Backlight
Illuminated key panel ideal for dark environment

Key Measurements

Reflection measures the impedance performance of the cell-site transmission line across the frequency range of interest in VSWR or return loss.

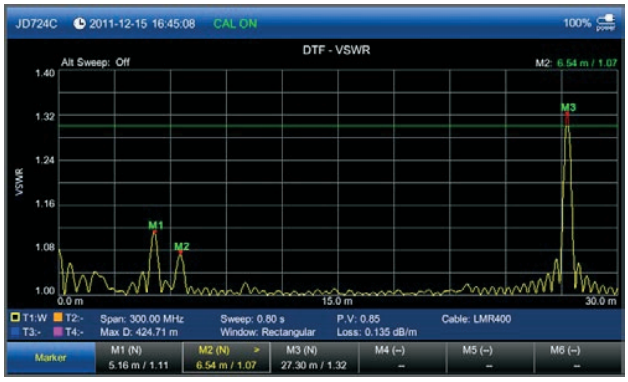
- More than 80 wireless frequency bands are built into the instrument's database
- Capable of incorporating additional frequency bands
- User-definable limit line for automatic Pass/Fail indication
- Users can set up to 6 markers for trace analysis



Reflection — Return loss

Distance to Fault (DTF) measures fault locations in the cell site transmission system to indicate signal discontinuities in VSWR or return loss.

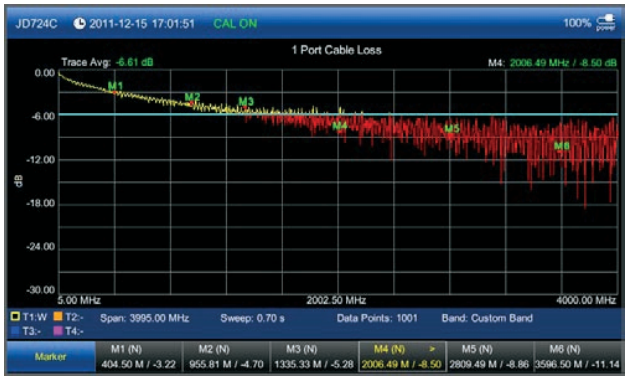
- Measurement distance: up to 1,500 m (4,921 ft)
- High resolution mode with 2001 data points
- More than 95 cable types are built into the instrument's database
- Capable of incorporating additional cable types
- User-definable limit line for automatic pass/fail indication
- Users can set up to 6 markers for trace analysis.



DTF — VSWR

1-Port cable loss measures signal loss through a cable or other devices over a defined frequency range.

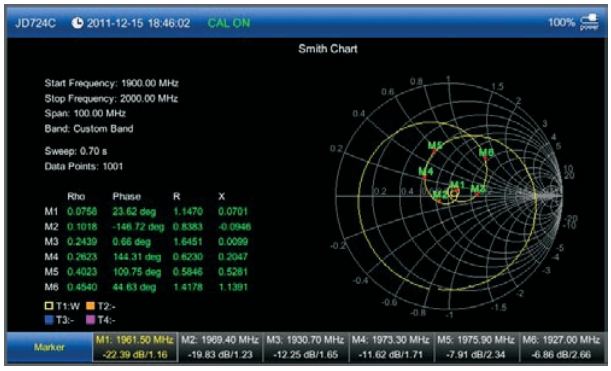
- User-definable limit line for automatic pass/fail indication
- Users can set up to 6 markers for trace analysis.



1-Port cable loss

Smith charts can be used to display impedance matching characteristics in cable and antenna systems as well RF devices.

Users can set up to 6 markers for trace analysis.



Smith chart

1-Port phase measures S11 phase to tune antennas and phase-match cables.

Users can set up to 6 markers for trace analysis.

1-Port phase

Optional **power meter** functions enable easy, comprehensible power measurements using external power sensors.

- JD72450551/2: Economic RF power sensors via serial connection
- JD730 Series: High-precision RF power sensors via USB connection
- MP60/80: Optical power sensors via USB connection

Power sensors

The optional **power meter** displays the power level in two formats: as a real-time power level value in an analog meter and as a power level trend through time in a histogram chart. Its configurable settings include display range, maximum and minimum limits, and power units in dBm or watts.

Users can set minimum and maximum power limits for an automatic pass/fail indication.

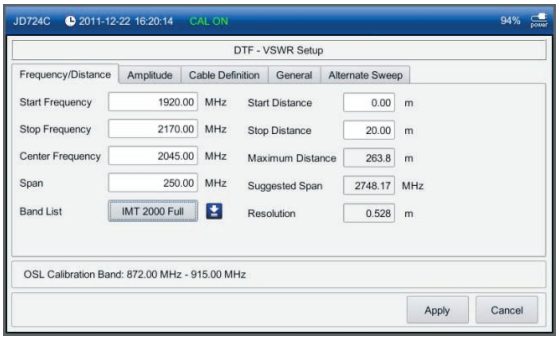
Power meter

Key Benefits

Easy to Use

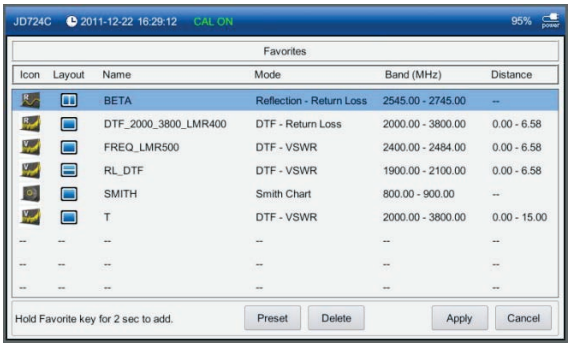
The JD720C-series analyzer has an intuitive interface with a task-driven key layout for convenient access to settings.

The consolidated setup menu lets users view and change settings using a single button.



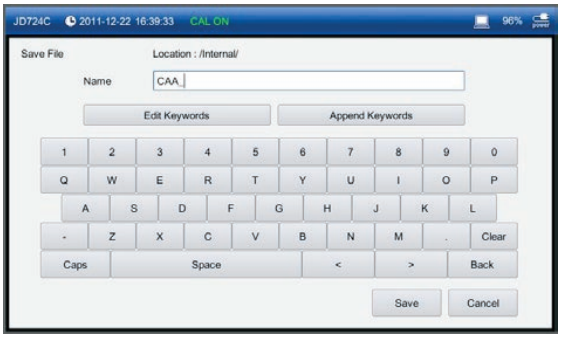
Setup

Favorite keys capability provides convenient access or a shortcut to the most frequently used measurements. Instead of configuring different measurements every time, users can create favorite measurements to more quickly perform certain tasks.



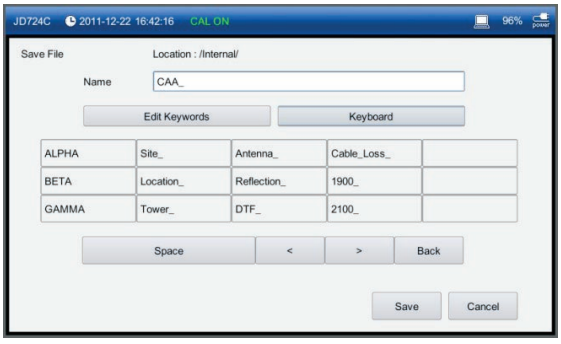
Favorite

A full-sized touch-based on-screen keyboard lets users conveniently and easily enter alphanumeric characters.



On-screen keyboard

Users can add editable key words to quickly create unique file names.



Key words

Designed for Field Use

The compact, lightweight JD720C-series analyzers are especially convenient for users performing measurements in the field. The analyzers weigh less than 2.35 kg fully loaded and include a Li ion battery that can last more than 7.5 hours. Its portability lets users take it anywhere, even to the top of a tower.

Its transflective display can be set for outdoor mode for viewing measurements in direct sunlight. Also, its backlit key panel with night-display mode makes it easy to use in the dark.

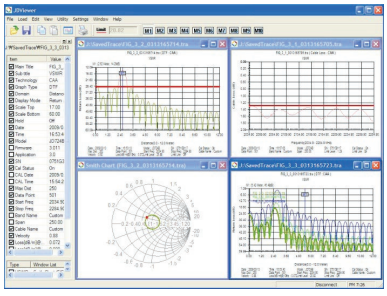
The JD720C-series analyzers can operate in temperatures ranging from –10 to 55°C; and its rugged bumper design protects it if dropped or if it receives an external impact that exceeds the MIL-PRF-28800F class 2 specification.

Quickly Sweeps

Capable of performing measurements in less than 0.8 ms/point making it the fastest cable and antenna analyzers on the market. This fast sweep speed is uncompromised in dual-display mode.

Multilanguage User Interface

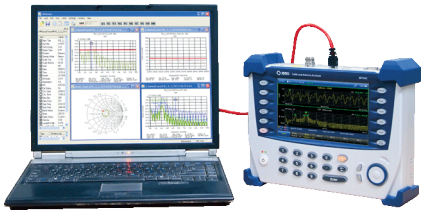
The instruments' architecture allows for the menu structure to incorporate different languages.



Powerful Data Analysis Software

The JD720C-series application software, JDViewer, provides all of the necessary tools to operate these instruments more conveniently including:

- Quickly exchange data via USB or LAN connection
- Retrieve or save measurements
- Export measurement results
- Analyze measurement results by displaying, hiding, and moving markers
- Configure limit lines
- Register or edit user-definable frequency bands into the instrument's custom bands' list
- Register or edit user-definable cable types into the instrument's custom cable list
- Easily compare measurement results
- Convert VSWR-DTF
- Available report templates
- Generate and print reports

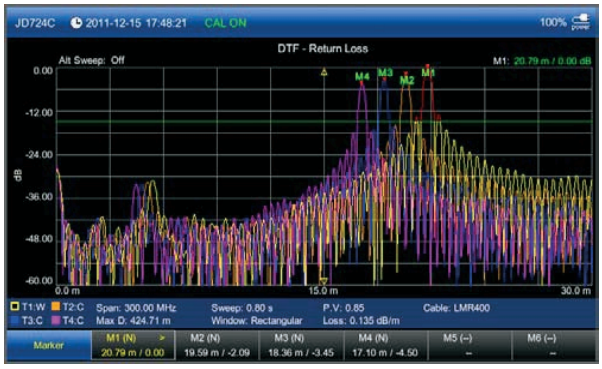


Applications

Trace overlay

Lets users compare analyses of up to four traces by superimposing them onto one measurement display.

Additionally, users can set up to 6 markers on any trace independently.



Trace overlay

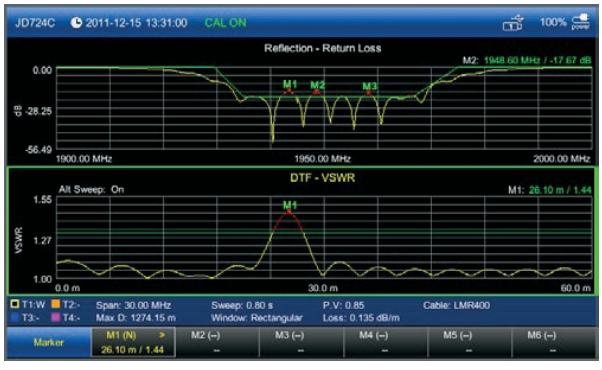
Zoom zones

User-definable zones on frequency sub-bands enable visual identification of uplink and downlink frequencies so users can verify compliance within a single measurement window for closer analysis of user-definable zones in separate windows.

Zoom zones

Alternate sweep in DTF

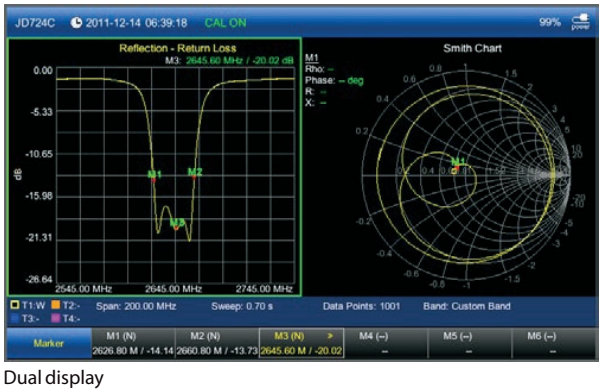
Users can perform two independent sweeps; for example, a reflection measurement and a DTF measurement.



Alternate sweep

Dual display

Users can display two measurements simultaneously, even when measurements are performed independently, to reduce test time.



Dual display

Specifications

Cable and antenna analyzer specifications apply under these conditions:

- Cable and antenna measurements apply after calibration to OSL standards.
- The instrument is operating within a valid calibration period.
- Data without tolerance are considered typical values.
- Typical or nominal values are defined as:
  - **Typical:** Expected instrument performance operating under 20 to 30°C when remaining at this temperature for 15 minutes.
  - **Nominal:** A general, descriptive term or parameter.

All specifications subject to change without notice.

Frequency		***Supplemental Information***
Range		
JD723C	100 MHz to 2.7 GHz	
JD724C	5 MHz to 4 GHz	
Resolution	10 kHz	
Accuracy	< ±25 ppm @ 25°C	
Data points		
126, 251, 501, 1001, 2001		
Measurement speed		
Reflection	< 0.7 ms/point	
DTF	< 0.8 ms/point	
Measurement accuracy		
Corrected directivity	40 dB	Typical
Reflection uncertainty	$\pm(0.3 + \lvert 20\log(1 + 10^{-EP/20})\rvert)$ EP = directivity – measured return loss	Typical
Output power		
	0 dBm	Nominal
Interference immunity		
On channel	+17 dBm	Nominal
On frequency	+0 dBm	Nominal
Measurements		
Reflection (VSWR)		
VSWR range	1 to 65	
Return loss range	0 to –60 dB	
Resolution	0.01	
DTF		
Vertical VSWR range	1 to 65	
Vertical return loss range	0 to –60 dB	
Vertical resolution	0.01	
Horizontal range	0 to (# of data point – 1) x Horizontal resolution	Maximum = 1500 m (4921 ft)
Horizontal resolution	$(1.5 \times 10^8) \times (V_p)/(\text{Delta})$	V_p = Propagation velocity Delta = Stop – Start freq (Hz)
Cable loss (1 Port)		
Range	0 to –30 dB	
Resolution	0.01 dB	
1-Port phase		
Range	–180 to +180°	
Smith chart		
Resolution	0.01	

Specifications *continued*

Optional RF power meter (Option 001)

Display range	–80 to +120 dBm		
Offset range	0 to 60 dB		
Resolution	0.01 dB or 0.1 x W		x = m, u, p

RF power sensors

Directional power sensors	**JD731B**		**JD733A**
Frequency range	300 MHz to 3.8 GHz		150 MHz to 3.5 GHz
Dynamic range	0.15 to 150 W (Forward avg)		0.1 to 50 W (Forward avg)
	4 to 400 W (Peak)		0.1 to 50 W (Peak)
Measurement type	Forward/reverse average power, forward peak power, VSWR		
Accuracy	±(4 % of reading + 0.05 W)[1,2]		
Connector type	Type-N(f) on both ends		
Connectivity	USB		

Terminating power sensors	**JD732A**	**JD734A**	**JD736A**
Frequency range		20 MHz to 3.8 GHz	
Dynamic range		–30 to +20 dBm	
Measurement type	Average	Peak	Average and Peak
Accuracy		±7%[1]	
Connector type		Type-N(m)	
Connectivity		USB	

Terminating power sensors	**JD72450551**	**JD72450552**
Frequency range	40 MHz to 3 GHz	40 MHz to 4 GHz
Dynamic range	–30 to 0 dBm	–40 to 0 dBm
Measurement type	Average	Peak
Accuracy	±10%[1]	
Connector type	Type-N(m)	
Connectivity	Serial	

1. CW condition at 25°C ±10°C
2. Forward power

Optional optical power meter (Option 002)

Display range	–100 to +100 dBm	
Offset range	0 to 60 dB	
Resolution	0.01 dB or 0.1 x W	x = m, u, p

Optical power sensors

Optical power sensors	**MP-60***	**MP-80***
Wavelength range	780 to 1650 nm	
Max permitted input level	+10 dBm	+23 dBm
Accuracy	±5%	
Connector input	Universal 2.5 and 1.25 nm connector	
Connectivity	USB	

*The MP-60 and MP-80 data sheets provide detailed specifications.

Specifications *continued*

General information		*Supplemental Information*
Reflection/RF out		
Connector	Type-N(f)	
Impedance	50 Ω	Nominal
Damage level	> +40 dBm, > ±50 VDC	Nominal
Connectivity		
USB	Type A, 2 ports Mini B, 1 port	For flash drive or power sensor For JDViewer connection
LAN	RJ45, 10/100Base-T	For JDViewer connection
Serial	9-pin D-SUB male	For JD72450551/50552
Display		
Type	Resistive touch screen	
Size	7-inch transflective	
Resolution	800 x 480	
Speaker		
Built-in speaker		
Power		
External DC input	12 to 15 VDC	
Power consumption	12 W 37.5 W maximum when battery charging	
External AC power adapter		
Input	100 to 250 V 50 to 60 Hz, 1.2 A	
Output	15 VDC, 3 A	
Battery		
Type	10.8 V, 7200 mA/hr	Lithium ion
Operation time	>7.5 hours	Typical
Storage temperature	–10 to 60°C, 20 to 85% RH (–14 to 140°F, 20 to 85% RH)	Store battery pack in a low-humidity environment. Extended exposure to temperatures above 45°C can degrade battery performance and life.
Data storage		
Internal	Minimum 120 MB	
External	Limited by size of USB flash drive	
Environmental		
Operating temperature	–10 to 55°C (14 to 131°F)	
Humidity	95%	With no condensation
Shock and vibration	MIL-PRF-28800F Class 2	
Storage temperature:	–40 to 80°C (–40 to 176°F)	
EMC		
EN 61326-2-1		Complies with European EMC
Weight and size (with battery)		
Weight (with battery)	< 2.35 kg (5.18 lb)	
Size (W x H x D)	260 x 190 x 60 mm (10.2 x 7.5 x 2.4 in)	Approximate
Warranty		
2 years		
Calibration cycle		
2 years		

Ordering information

Basic model

JD723C	Cable and Antenna Analyzer (100 MHz to 2.7 GHz)[1]
JD724C	Cable and Antenna Analyzer (5 MHz to 4 GHz)[1]

Options

NOTE: Upgrade options for the JD720C are designated by JD720CU before the respective last three digits of the option number.

Product Number	***Description***
JD720C001	RF Power Meter[2]
JD720C002	Optical Power Meter[3]

Standard accessories

JD72050541	JD720C Soft Carrying Case[4]
GC72450522	JD720 AC-DC Adapter[4]
G710550335	Cross LAN Cable (1.5 m)[4]
GC72450536	USB A to Mini B Cable (1.8 m)[4]
GC72450518	> 1 GByte USB Memory[4]
GC72450523	JD720 Automotive Cigarette Lighter/12 VDC Adapter[4]
G710550325	Rechargeable Lithium Ion Battery[4]
G710550316	Stylus Pen[4]
JD72050561	JD720C User's Manual and Application Software CD

[1]Requires a calibration kit
[2]Requires an RF power sensor
[3]Requires an optical power sensor
[4]Standard accessories can be purchased separately.

Optional calibration kits

JD72450509	Y - Calibration Kit, Type-N(m), DC to 4 GHz, 50 Ω
JD72450510	Y - Calibration Kit, DIN(m), DC to 4 GHz, 50 Ω

Optional RF cables

G710050530	1.0 m (3.28 ft) RF Cable, DC to 18 GHz, Type-N(m) to Type-N(m), 50 Ω
G710050531	1.5 m (4.92 ft) RF Cable, DC to 18 GHz, Type-N(m) to Type-N(f), 50 Ω
G710050532	3.0 m (9.84 ft) RF Cable, DC to 18 GHz, Type-N(m) to Type-N(f), 50 Ω

Optional RF power sensors

JD731B	Directional Power Sensor, 300 MHz to 3.8 GHz, Average 0.15 to 150 W, Peak 4 to 400 W
JD733A	Directional Power Sensor, 150 MHz to 3.5 GHz, Average/Peak 0.1 to 50 W
JD732A	Terminating Average Power Sensor, 20 MHz to 3.8 GHz, –30 to +20 dBm
JD734A	Terminating Peak Power Sensor, 20 MHz to 3.8 GHz, –30 to +20 dBm
JD736A	Terminating Average and Peak Power Sensor, 20 MHz to 3.8 GHz, –30 to +20 dBm
JD72450551	Terminating Average Power Sensor, 40 MHz to 3 GHz, –30 to 0 dBm
JD72450552	Terminating Peak Power Sensor, 40 MHz to 4 GHz, –40 to 0 dBm

Optional adapters

G710050571	Adapter Type-N(m) to DIN(f), DC to 4 GHz, 50 Ω
G710050572	Adapter DIN(m) to DIN(m), DC to 4 GHz, 50 Ω
G710050573	Adapter Type-N(m) to SMA(f), DC to 18 GHz, 50 Ω
G710050574	Adapter Type-N(m) to BNC(f), DC to 1.5 GHz, 50 Ω
G710050575	Adapter Type-N(f) to Type-N(f), DC to 4 GHz, 50 Ω
G710050576	Adapter Type-N(m) to DIN(m), DC to 4 GHz, 50 Ω
G710050577	Adapter Type-N(f) to DIN(f), DC to 4 GHz, 50 Ω
G710050578	Adapter Type-N(f) to DIN(m), DC to 4 GHz, 50 Ω
G710050579	Adapter DIN(f) to DIN(f), DC to 4 GHz, 50 Ω

Optional optical power sensors

MP-60	Miniature USB 2.0 Optical Power Sensor, +10 dBm
MP-80	Miniature USB 2.0 Optical Power Sensor, +23 dBm

Optional accessories

G710050581	Attenuator 40 dB, 100 W, DC to 4 GHz (Unidirectional)
JD72350542	JD720 Hard Carrying Case
JD720C362	JD720C User's Manual – Printed Version

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