CellAdvisor™

JD725A Dual-Port Cable and Antenna Analyzer

Many modern wireless base stations are a complex system of multiple RF components, such as low-noise amplifiers (LNA), duplexers, and tower-mounted amplifiers (TMA), whose performance directly affects the cell site's coverage and capacity. Having the right instrument to service and verify that these components are functioning properly is essential.

The JD725A CellAdvisor Analyzer includes all of the necessary measurements functions to perform RF component measurements, including insertion gain, insertion loss, antenna isolation, TMA performance, and duplexer antenna verification. It also accurately characterizes a site's antenna system, including voltage standing wave ratio (VSWR), distance to fault (DTF), cable loss, and power measurements.

The JD725A CellAdvisor field instrument is easy to use and is equipped with a color touch-screen display for taking quick measurements and displaying results clearly. Its JDViewer application software lets users easily compare and analyze measurements as well as generate professional reports. Designed for field test use, the JD725A has a rechargeable field-replaceable lithium-ion (LiON) battery that can operate continuously for more than 5 hours*.

Advanced Functions

- Trace overlay lets users comparatively analyze up to four traces on one measurement screen
- Provides up to three marker bands in addition to its six markers
- Reflection measurements are shown in VSWR, return loss, or Smith charts

Features and Benefits

- Portable, lightweight handheld instrument
- Built-in wireless frequency bands and the most commonly used RF cable types
- 7 in color TFT touch-screen display
- Superior immunity to RF interferences
- Up to 1001 data points for high-resolution and long-distance problem location
- USB port for an external USB memory device
- Saves up to 400 measurement traces, 100 measurement screens, and 20 user-definable setups
- Interfaces with JDViewer application software to manage data and create reports
- On-screen keyboard lets users save files quickly and easily
- Rechargeable, field-replaceable lithium-ion battery

Key Measurements

- VSWR
- Return loss
- DTF
- Cable loss
- Insertion loss
- Insertion gain
- Power meter
- RF source

*Available only for serial number 1406G6331 and later.

Panel Overview

Top View

RF Out/Reflection
50 ohm N-type RF connector to measure VSWR, DTF, and one-port cable loss

RF In
50 ohm N-type RF connector, in conjunction with RF Out/Reflection port, to measure amplifier gain and cable insertion loss

DC 15 V IN
External DC input port

LAN Ethernet
Ethernet communication port to connect a PC with the application SW

USB Client
USB port to connect a PC with the application SW

USB Host
USB memory stick port, used to save measurement data or upgrade instrument firmware

SERIAL
D-sub serial interface port to connect an optional external power sensor

Front View

VSWR
Measures impedance matching

DTF
Measures distance to fault location

GAIN/LOSS
Measures amplifier gain and cable insertion loss

POWER METER and SIGNAL GENERATOR
Measures transmission power and generates a CW signal

SYSTEM
Presents system information or upgrades the instrument's firmware

CAL
Performs calibration for VSWR, DTF, cable loss, and gain/loss measurements

POWER & LED
Power ON/OFF
Green LED:
Power ON status
Red LED:
External power

LOAD
Recalls saved traces to compare with current or other saved traces

MARKER
Supports six markers for each trace

AMP
Sets Y-axis Min /Max, limit, and limit level

SAVE
Saves screen, trace, and setup

FREQ/DIST
Sets frequency range or selects a standard or custom frequency band. Sets distance and selects standard or custom cables

TRACE
Captures up to 4 traces
Assigns saved trace to trace number

LIGHT
Sets LCD brightness

PEAK
Identifies the highest peak of the trace

TRACE POINT
Selects trace points among 126, 251, 501, or 1001

SCALE
Changes Y-axis scale, VSWR or return loss or Smith chart

AUTO SCALE
Adjusts Y scale on screen for optimal trace display

ENTER
Finishes an "entry," which is thevalue or test parameter

HOLD
Pauses current measurement display

KNOB & UP/DOWN
Moves an item's marker position on the table list

SPEAKER
Generates audio, if enabled, for alarms and key selections

ESC
Cancels latest selection or moves to previous menu

SCREEN MENU
Displays selectable menu in connection with function keys or soft keys

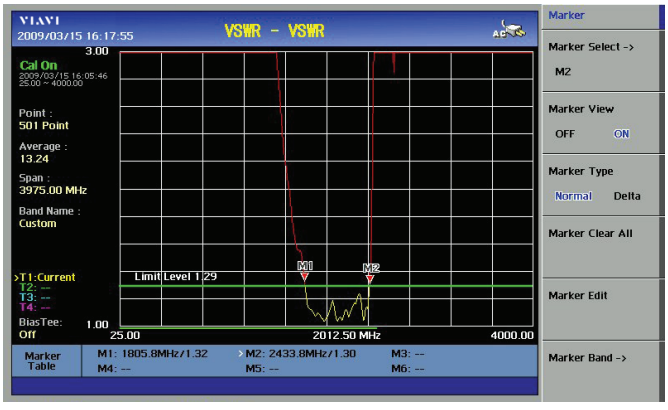
7 INCH COLOR LCD
Daylight viewable high-resolution LCD display

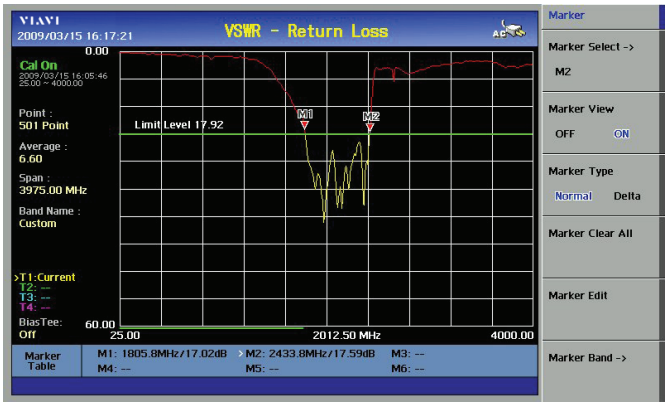
Main Functions

VSWR / Return Loss

VSWR and Return Loss measurements show impedance performance and signal reflection characteristics for cables, connectors, and antenna systems.

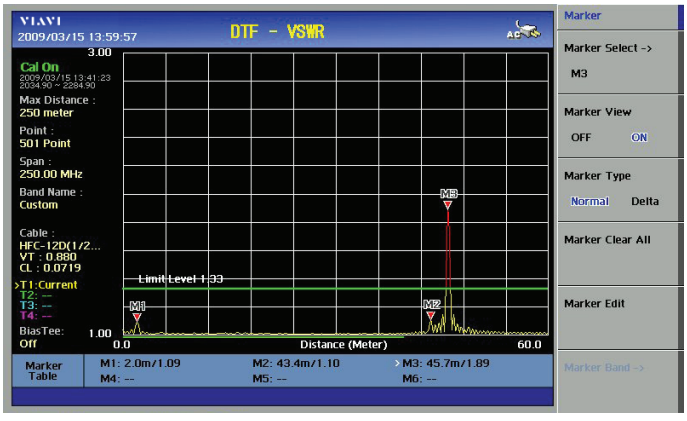
- Frequency range: 25 to 4000 MHz
- Dynamic range: 60 dB
- Over 80 wireless frequency bands built into the instrument's database
- Flexibility to incorporate additional frequency bands
- User-definable limit line for fast pass/fail characterization

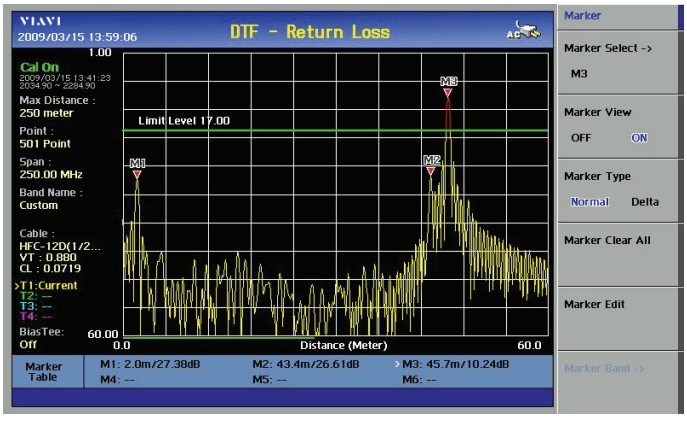




DTF (Distance to Fault)

- The DTF measurement function lets users accurately identify faulty locations.
- Frequency range: 25 to 4000 MHz
- Distance: Up to 1250 m (4125 ft)
- Dynamic range: 60 dB
- High-resolution mode with 1001 points
- Over 95 cable types built into the instrument's database
- Flexibility to incorporate additional cable types
- User-definable limit line for fast pass/fail characterization

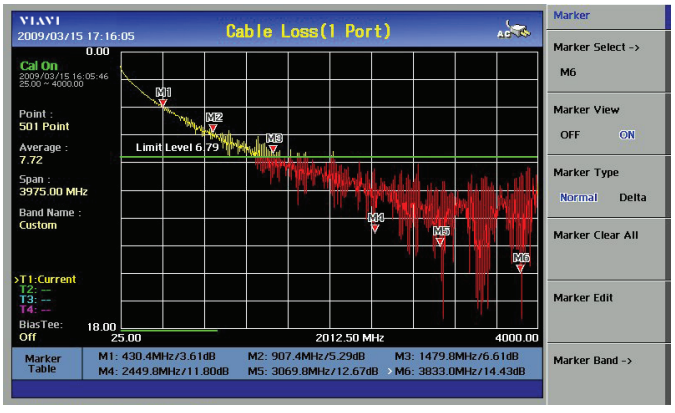


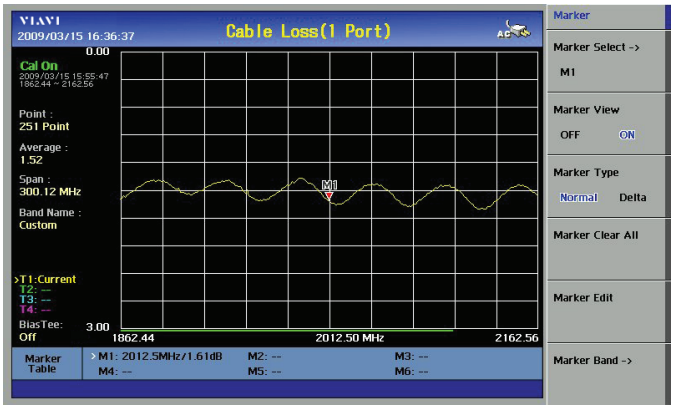


Cable Loss

Cable Loss measures the amount of signal lost by the cable line to facilitate rapid compliance verification analysis throughout the transmission line.

- Frequency range: 25 to 4000 MHz
- Dynamic range: 0 to 30 dB
- User-definable limit line for fast pass/fail characterization



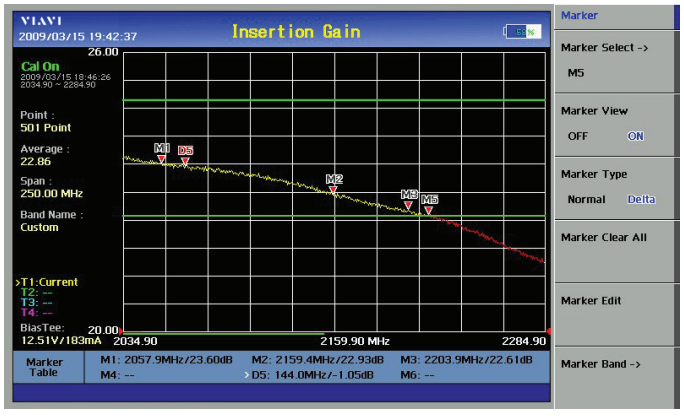


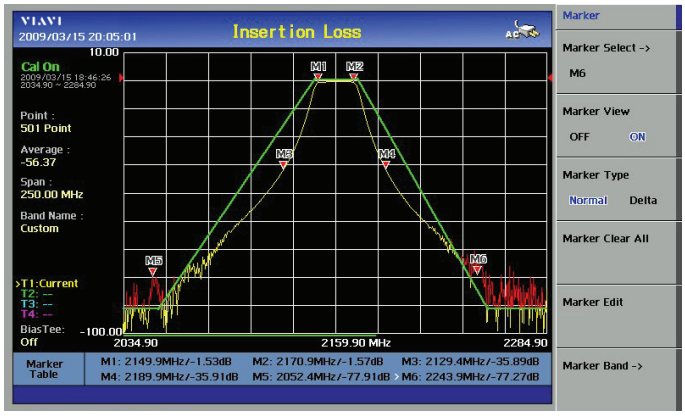
Insertion Gain / Loss

The Insertion Gain measurement simplifies the task of verifying amplifiers and antenna isolation.

The Insertion Loss measurement accurately quantifies the amount of signal loss as it passes through a cable, attenuator, filter, amplifier, or any other RF device.

- Frequency range: 25 to 4000 MHz
- Dynamic range: –90 to 50 dB
- User-definable limit line for fast pass/fail characterization

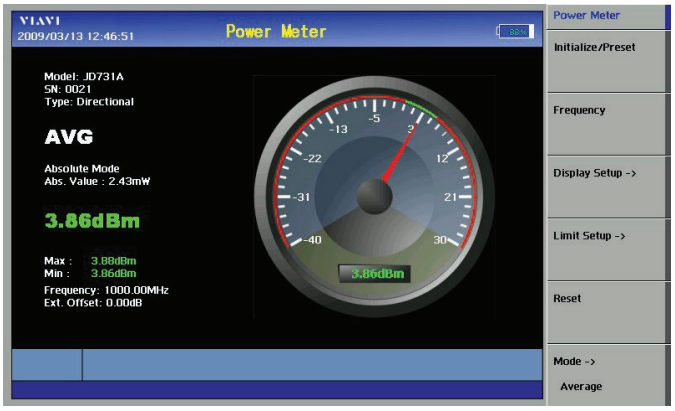


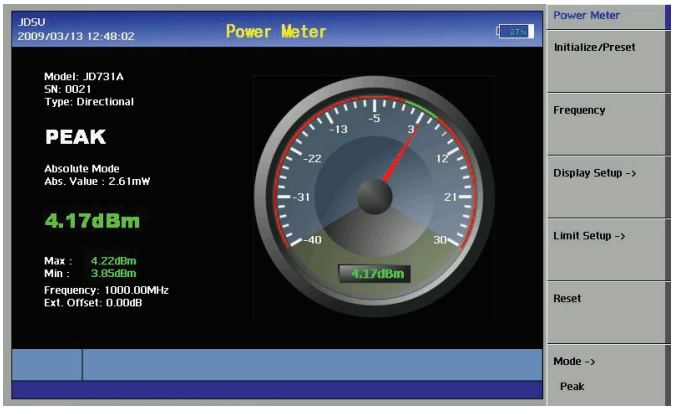


Power Meter

The Power Meter function easily and comprehensively measures power using external power sensors. Its configurable settings let users display range, maximum and minimum limits, and select power units in dBm or Watts.

- Users can set lower/upper power limits for fast testing with pass/fail indication
- Power sensor types: directional and terminating





Bias Tee (Option JD725A001)

The optional built-in Bias Tee lets users choose voltages between 12 V and 24 V in 3 V increments on the RF IN port, eliminating the need for an external power supply.

*Available only for serial number 1406G6331 and later

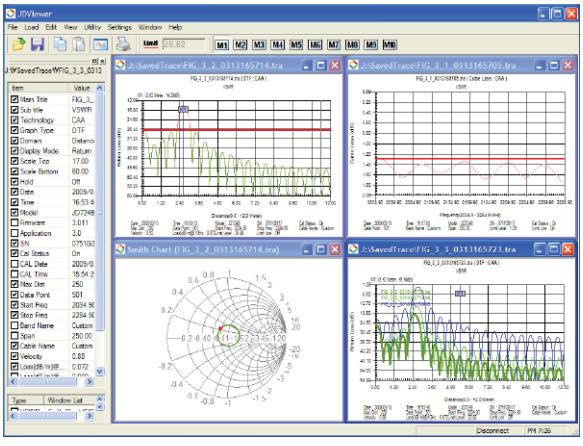
CW Signal Generator (Option JD725A002)*

Provides a sine wave or continuous wave (CW) source for small cell coverage or DAS testing.

Application Software

The JD725A JDViewer Application Software provides all the necessary tools for more convenient instrument operation, including:

- Instrument communication via LAN/USB
- Smith chart support
- VSWR-DTF conversion
- Captures saved plots
- Registers or edits user-definable wireless frequency bands into the instrument's custom bands list
- Registers or edits user-definable cable types into the instrument's custom cable list
- Edits measurement charts
- Report templates available
- Generates and prints reports
- Exports measurement reports



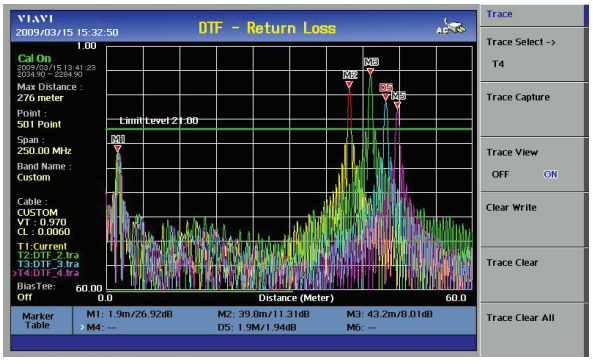
Advanced Functions

The JD725A CellAdvisor provides additional functions for superior analysis.

Trace Overlay

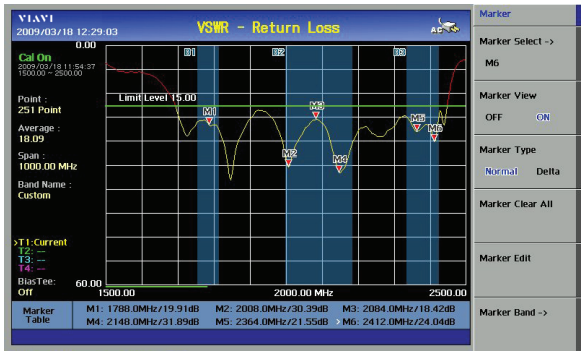
Trace Overlay enables comparative analysis of up to four traces by superimposing them together on one measurement graph.

Additionally, users can set up to six markers on any trace among multiple traces to view corresponding values.



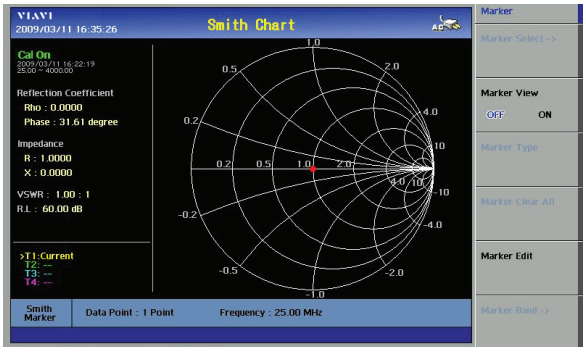
Marker Bands

Marker Bands are user-definable markers on frequency sub-bands to visually identify uplink and downlink frequencies during compliance verification with a single measurement trace.



Smith Chart

The JD725A CellAdvisor can display Smith Chart measurements on the antenna and transmission line site impedance.



Specifications*

General	
Max input power	+25 dBm, ±50 V DC
Frequency range	25 to 4000 MHz
Frequency accuracy	< ± 75 ppm
Frequency resolution	100 kHz
Test port impedance	50 Ω
Test ports	Type N Females
Trace storage	Up to 400
Screen storage	Up to 100
Setup storage	Up to 20
Data points	126, 251, 501, 1001
Measurement speed	1, 1.3, 2.5, 5 s for each data point[1]
One-port power	6 dBm (typical)
Two-port power	6 dBm (typical) –30 dBm (typical)
Corrected directivity	40 dB typical
One-port accuracy	≤ ±(0.8 +|20 log (1+10$^{-EP/20}$)|) dB (typical) EP = Directivity – measured return loss
Immunity to interference	On frequency: +5 dBm On channel: +15 dBm
VSWR	
Range	1 to 65
Resolution	0.01
Return loss	
Range	0 to 60 dB
Resolution	0.01
DTF	
Vertical range	VSWR 1 to 65 Return Loss 0 to 60 dB
Vertical resolution	0.01
Distance	0 to 1250 m (4125 ft)
Horizontal range	0 to (# of data points – 1) x horizontal resolution
Horizontal resolution	(1.5x10^8)(Vp)/(Delta)* 0.95 Vp: cable's relative propagation velocity Delta[Hz] = Stop Freq – Start Freq
Cable Loss (one port)	
Range	0 to 30 dB
Resolution	0.01 dB
Insertion Gain/Loss	
Range	–80 to 50 dB –85 to 50 dB (typical)
Resolution	0.01 dB
RF Source	
Power output**	Selectable –25 dBm or +5 dBm
Resolution	100 kHz
Bias Tee (option 001)	
Voltage	+12 to +24 V (in 3 V increments)
Current	500 mA steady state (850 mA in rush)

* All specifications are based on a calibration at 25°C after a 5-minute warm-up.

**Available only for serial number 1406G6331 and later

1. Measurement speed provided for one-port measurements.

Specifications*

CW Signal Generator (option 002)**	
Frequency	25 MHz to 4 GHz
Resolution	100 kHz
Power output	25 MHz to 3 GHz, +10 to 0 dBm
Step	1 dB
Accuracy	±1.5 dB (20 to 30°C)
Power Meter (requires optional directional/ terminating power sensor)	
Display range	–80 to +120 dBm
Offset range	0 to 60 dB
Resolution	0.01 dB or 0.1 x W
Directional Power Sensors (optional)	
JD731B	
Sensor type	Average and Peak
Frequency range	300 to 3800 MHz
Power range	Average: 0.15 to 150 W (21.76 to 51.76 dBm) Peak: 4 to 400 W (36.02 to 56.02 dBm)
Measurement uncertainty	±4% of reading + 0.05 W[2,3]
Input return loss	≤ 2500 MHz, 27 dB min > 2500 MHz, 25 dB
Directivity	27 dB min
Insertion loss	< 1 GHz, < 0.05 dB 1 to 2 GHz, < 0.1 dB, 2 to 3.8 GHz < 0.13 dB
Connector type	N-female on both ends
JD733A	
Sensor type	Average and peak
Frequency range	150 to 3500 MHz
Power range	Average: 0.25 to 20 W (24 to 43 dBm) Peak: 0.25 to 20 W (24 to 43 dBm)
Measurement uncertainty	±4% of reading + 0.05 W[2,3]
Input return loss	≤ 2500 MHz, 27 dB Min > 2500 MHz, 25 dB Min
Directivity	27 dB Min
Insertion loss	<1 GHz, <0.05 dB 1 to 2 GHz, < 0.1 dB, 2 to 3.5 GHz < 0.13 dB
Connector type	N-female on both ends

Terminating Power Sensors (optional) JD732B, JD734B, JD736B	
Sensor type	Average (JD732B) Peak (JD734B) Average and Peak (JD736B)
Frequency range	20 to 3800 MHz
Power range	–30 to +20 dBm (1 µW to 100 mW)
Measurement uncertainty	±7% of reading[2,3]
Connector type	N-male
JD72450551	
Sensor type	Average
Frequency range	40 to 3000 MHz
Power range	–30 to 0 dBm (1 µW to 1 mW)
Measurement uncertainty	±10% of reading[2,3]
Connector type	N-male
JD72450552	
Sensor type	Peak
Frequency range	40 to 4000 MHz
Power range	–40 to 0 dBm (0.1 µW to 1 mW)
Measurement uncertainty	±10% of reading[2,3]
Connector type	N-male
General	
Size (H x W x D)	260 x 190 x 60 mm (10.2 x 7.5 x 2.4 in)
Weight (with battery)**	< 2.4 kg (5.29 lb)
Battery** Type Operation time	 10.8 V, 7800 mA/hr (LiON) >5 hours (typical)
Operating temperature	–10 to 50°C (14 to 122°F)
Storage temperature	–40 to 80°C (–40 to 176°F)
Maximum humidity	85% RH (noncondensing)
Warranty and Calibration Cycle	2 years

* All specifications are based on a calibration at 25°C after a 5-minute warm-up.

**Available only for serial number 1406G6331 and later

2. At a temperature of 25°C ±10°C

3. CW condition

Ordering Information

Description	Part Number
Mainframe	
Dual-Port Cable and Antenna Analyzer 25 to 4000 MHz	JD725A
Options	
Bias Tee	JD725A001
CW Signal Generator**	JD725A002
Standard Accessories	
Soft carrying case**	JD72050541
AC-DC adapter	GC72450522
Cross LAN cable (1.5 m)	G710550335
1 GB USB memory	GC72450518
Automotive cigarette lighter/12 V DC adapter	GC72450523
LiON battery**	G710550325
Stylus	G710550316
User's manual and application software on CD	JD72550561
Optional Calibration Kit	
Dual-Port Calibration Kit (N), 40 dB 4 GHz · Open-Short-Load, 40 dB, 4 GHz · Load, 40 dB, 4 GHz · Two adapters N(f) to N(f), DC to 18 GHz, 50 Ω · Two RF test cables (1 m), N(m) to N(m)	JD72550507
Optional RF Cables	
RF cable DC to 6 GHz Type-N(m) to DIN(f), 1.5 m	G710050536
RF cable DC to 8 GHz Type-N(m) to Type-N(m), 1.0 m	G700050530
RF cable DC to 8 GHz Type-N(m) to Type-N(f), 1.5 m	G700050531
RF cable DC to 8 GHz Type-N(m) to Type-N(f), 3.0 m	G700050532
Phase-stable RF cable w/grip DC to 6 GHz Type-N(m) to Type-N(f), 1.5 m	G700050540
Phase-stable RF cable w/grip DC to 6 GHz Type-N(m) to DIN(f), 1.5 m	G700050541
Optional RF Adapters	
Adapter Type-N(m) to DIN(f), DC to 7.5 GHz, 50 Ω	G700050571
Adapter DIN(m) to DIN(m), DC to 7.5 GHz, 50 Ω	G700050572
Adapter Type-N(m) to SMA(f) DC to 18 GHz, 50 Ω	G700050573
Adapter Type-N(m) to BNC(f), DC to 4 GHz, 50 Ω	G700050574
Adapter Type-N(f) to Type-N(f), DC to 18 GHz 50 Ω	G700050575
Adapter Type-N(m) to DIN(m), DC to7.5 GHz, 50 Ω	G700050576
Adpater Type-N(f) to DIN(f), DC to 7.5 GHz, 50 Ω	G700050577
Adpater Type-N(f) to DIN(m), DC to 7.5 GHz, 50 Ω	G700050578

Description	Part Number
Adpater DIN(f) to DIN(f), DC to 7.5 GHz, 50 Ω	G700050579
Adapter Type-N(m) to Type-N(m), DC to 11 GHz 50 Ω	G700050580
Adpater N(m) to QMA(f), DC to 6 GHz, 50 Ω	G700050581
Adpater N(m) to QMA(m), DC to 6 GHz, 50 Ω	G700050582
Optional RF Power Sensors	
Directional power sensor, 300 to 3800 MHz, Average 0.15 to 150 W, Peak 4 to 400W	JD731B
Directional power sensor, 150 to 3500 MHz, Average/Peak 0.25 to 20 W	JD733A
Terminating average power sensor, 20 MHz to 3800 MHz, –30 to +20 dBm	JD732B
Terminating peak power sensor, 20 to 3800 MHz, –30 to +20 dBm	JD734B
Terminating average and peak power sensor, 20 to 3800 MHz, –30 to +20 dBm	JD736B
Terminating average power sensor, 40 to 3000 MHz, –30 to 0 dBm	JD72450551
Terminating peak power sensor, 40 to 4000 MHz, –40 to 0 dBm	JD72450552
Optional Accessories	
Attenuator 40 dB, 100 W, DC to 4 GHz (unidirectional)	G710050581
JD720 hard carrying case	JD72350542
Hard carrying case with wheels	JD70050342
CellAdvisor backpack carrying case	JD70050343
External battery charger	G710550324
JD725A user's manual, printed version	JD72550562
Warranty and Calibration	
Warranty extension of 1 year for Asia and North America	GC7256000
Warranty extension of 1 year for Latin America and EMEA	GC7256001
Calibration service for Asia and North America	GC7257000
Calibration service for Latin America and EMEA	GC7257001

* All specifications are based on a calibration at 25°C after a 5-minute warm-up.

**Available only for serial number 1406G6331 and later.

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