

JD785A

CellAdvisor™ Base Station Analyzer



Spectrum Analyzer: 9 kHz to 8 GHz

Cable and Antenna Analyzer: 5 MHz to 6 GHz

Power Meter: 10 MHz to 8 GHz

Specification* Conditions

The JD785A specifications apply under these conditions:

- The instrument has been turned on for at least 15 minutes
- The instrument is operating within a valid calibration period
- Data with no tolerance are considered typical values
- Cable and antenna measurements apply after calibration to the OSL standard
- Typical and nominal values are defined as:
 - Typical: expected performance of the instrument operating under 20° to 30°C after being at this temperature for 15 minutes
 - Nominal: a general, descriptive term or parameter

Spectrum Analyzer (Standard)

Frequency	
Frequency range	9 kHz to 8 GHz
Internal 10 MHz Frequency Reference	
Accuracy	±0.05 ppm + aging (0 to 50°C)
Aging	±0.5 ppm/year
Frequency Span	
Range	0 Hz (zero span) 10 Hz to 8 GHz
Resolution	1 Hz
Resolution Bandwidth (RBW)	
-3 dB bandwidth	1 Hz to 3 MHz 1-3-10 sequence
Accuracy	±10% (nominal)
Video Bandwidth (VBW)	
-3 dB bandwidth	1 Hz to 3 MHz 1-3-10 sequence
Accuracy	±10% (nominal)

Single Sideband (SSB) Phase Noise	
Fc = 1 GHz, Fc 1 GHz, RBW 10 kHz, VBW 1 kHz, RMS detector	
Carrier offset:	
30 kHz	-100 dBc/Hz (-102 dBc/Hz, typical)
100 kHz	-105 dBc/Hz (-112 dBc/Hz, typical)
1 MHz	-115 dBc/Hz (-120 dBc/Hz, typical)
Measurement Range	
	DANL to +25 dBm
Input attenuator range	0 to 55 dB, 5 dB steps
Maximum Input Level	
Average continuous power	+25 dBm
DC voltage	±50 VDC
Displayed Average Noise Level (DANL)	
1 Hz RBW, 1 Hz VBW, 50 Ω termination, 0 dB attenuation, RMS detector	
Preamplifier off:	
10 MHz to 3 GHz	-140 dBm (-145 dBm, typical)
>3 GHz to 5 GHz	-138 dBm (-142 dBm, typical)
>5 GHz to 7 GHz	-135 dBm (-138 dBm, typical)
>7 GHz to 8 GHz	-132 dBm (-135 dBm, typical)
Preamplifier on:	
10 MHz to 3 GHz	-160 dBm (-165 dBm, typical)
>3 GHz to 5 GHz	-158 dBm (-162 dBm, typical)
>5 GHz to 7 GHz	-155 dBm (-158 dBm, typical)
>7 GHz to 8 GHz	-152 dBm (-155 dBm, typical)

*All specifications are subject to change without notice.

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Display Range	
Log scale and units (10 divisions displayed)	1 to 20 dB/division in 1 dB steps dBm, dBV, dBmV, dBμV
Linear scale and units (10 divisions displayed)	V, mV, mW, W
Detectors	Normal, positive peak, sample, negative peak, RMS
Number of traces	6
Trace functions	Clear/write, maximum hold, minimum hold, capture, load view on/off
Total Absolute Amplitude Accuracy	
Preamplifier off, power level >–50 dBm, auto-coupled	
1 MHz to 8 GHz	±1.3 dB (±0.5 dB typical) 20°C to 30°C ±1.0 dB –10°C to 55°C after 60-minute warm up
Reference Level	
Setting range	–120 to +100 dBm
Setting resolution	
Log scale	0.1 dB
Linear scale	1% of reference level
Markers	
Marker types	Normal, delta, delta pair, noise, frequency count marker
Number of markers	6
Marker functions	Peak, next peak, peak left, peak right, minimum search marker to center/start/stop
RF Input VSWR	
1 MHz to 8 GHz	1.5:1 (typical) Atten >20 dB
Second Harmonic Distortion	
Mixer level = –25 dBm	
50 MHz to 2.6 GHz	<–65 dBc (typical)
>2.6 GHz to 8 GHz	<–70 dBc (typical)
Third-Order Inter-Modulation (Third-order Intercept: TOI)	
200 MHz to 3 GHz	+10 dBm (typical)
>3 GHz to 8 GHz	+12 dBm (typical)
Spurious	
Inherent residual response Input terminated, 0 dB attenuation, preamplifier off, RBW at 10 kHz	
20 MHz to 3 GHz	–90 dBm (nominal)
Exceptions	–85 dBm @164.1 MHz, 2.57264, 3.2, and 4.5 GHz –80 dBm @4.8 and 7.8 GHz
Input-related spurious	<–70 dBc (nominal)
Dynamic Range	
2/3 (TOI-DANL) in 1 Hz RBW	>104 dB @ 2 GHz
Sweep Time	
Range	80 ms to 1000 s 24 μs to 200 s Span = 0 Hz (zero span)
Accuracy	±2% Span = 0 Hz (zero span)
Mode	Continuous, single
Gated Sweep	
Trigger source	External, video, and GPS
Gate length	1 μs to 100 ms
Gate delay	0 to 100 ms
Trigger	
Trigger source	Free run, video, external
Trigger delay	
Range	0 to 200 s
Resolution	6 μs
Measurements*	
Channel power	
Occupied bandwidth	
Spectrum emission mask	
Adjacent channel power	
Spurious emissions	
Field strength	
AM/FM audio demodulation	
Route map	
PIM detect	
Dual spectrum	
* CW signal generator (Option 003) can be set up simultaneously.	
Cable and Antenna Analyzer (Standard)	
Frequency	
Range	5 MHz to 6 GHz
Resolution	10 kHz
Accuracy	±1 ppm
Data Points	
	126, 251, 501, 1001, 2001
Measurement Speed	
Reflection/DTF	1.00 ms/point (typical)
Measurement Accuracy	
Corrected directivity	40 dB
Reflection uncertainty	±(0.3 + 20log(1+10 ^{-EP/20})) (typical) EP = directivity – measured return loss

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Output Power	
High	5 MHz to 5.5 GHz, 0 dBm (typical) 5.5 GHz to 6 GHz, -5 dBm (typical)
Low	5 MHz to 6 GHz, -30 dBm (typical)
Dynamic Range	
Reflection	60 dB
Maximum Input Level	
Average continuous power	+25 dBm (nominal)
DC voltage	±50 VDC
Interference Immunity	
On channel	+17 dBm @ >1.4 MHz from carrier frequency (nominal)
On frequency	0 dBm within ±10 kHz from the carrier frequency (nominal)
Measurements	
Reflection (VSWR)	
VSWR range	1 to 65
Return loss range	0 to 60 dB
Resolution	0.01
Distance to Fault (DTF)	
Vertical VSWR range	1 to 65
Vertical return loss range	1 to 60 dB
Vertical resolution	0.01
Horizontal range	0 to (# of data points - 1) x horizontal resolution Maximum = 1500 m (4921 ft)
Horizontal resolution	$(1.5 \times 10^8) \times (V_p) / (\Delta) \times (0.95)$ V_p = propagation velocity Δ = stop freq - start freq (Hz)
Cable Loss (1-port)	
Range	0 to 30 dB
Resolution	0.01 dB
1-port Phase	
Range	-180° to +180°
Resolution	0.01°
Smith Chart	
Resolution	0.01

External RF Power Sensors	
Directional Power Sensor JD731B	
Frequency range	300 MHz to 3.8 GHz
Dynamic range	0.15 to 150 W (average) 4 to 400 W (peak)
Connector type	Type-N female on both ends
Measurement type	Forward/reverse average power, forward peak power, VSWR
Accuracy	±(4% of reading + 0.05 W) ^{1,2}
Directional Power Sensor JD733A	
Frequency range	150 MHz to 3.5 GHz
Dynamic range	0.1 to 50 W (average) 0.1 to 50 W (peak)
Connector type	Type-N female on both ends
Measurement type	Forward/reverse average power, forward peak power, VSWR
Accuracy	±(4% of reading + 0.05 W) ^{1,2}
Terminating Power Sensor JD732B	
Frequency range	20 MHz to 3.8 GHz
Dynamic range	-30 to +20 dBm
Connector type	Type-N male
Measurement type	Average
Accuracy	±7% ¹
Terminating Power Sensor JD734B	
Frequency range	20 MHz to 3.8 GHz
Dynamic range	-30 to +20 dBm
Connector type	Type-N male
Measurement type	Peak
Accuracy	±7% ¹
Terminating Power Sensor JD736B	
Frequency range	20 MHz to 3.8 GHz
Dynamic range	-30 to +20 dBm
Connector type	Type-N male
Measurement type	Average and Peak
Accuracy	±7% ¹

1. CW condition at 25°C ±10°C.

2. Forward power.

RF Power Meter (Standard)

General Parameters	
Display range	-100 to +100 dBm
Offset range	0 to 60 dB
Resolution	0.01 dB or 0.1xW (x = m, u, p)
Internal RF Power Sensor	
Frequency range	10 MHz to 6 GHz
Span	1 kHz to 100 MHz
Dynamic range	-120 to +25 dBm
Maximum power	+25 dBm
Accuracy	Same as spectrum analyzer

Optical Power Meter (Option 13)

Optical Power Meter	
Display range	-100 to +100 dBm
Offset range	0 to 60 dB
Resolution	0.01 dB or 0.1 mW

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External Optical Power Sensors

Optical Power Sensor	MP-60
Wavelength range	780 to 1650 nm
Max permitted input level	+10 dBm
Connector input	Universal 2.5 and 1.25 mm
Accuracy	±5%
Optical Power Sensor	MP-80
Wavelength range	780 to 1650 nm
Max permitted input level	+23 dBm
Connector input	Universal 2.5 and 1.25 mm
Accuracy	±5%

2-Port Transmission Measurements (Option 001)

Frequency	
Frequency range	5 MHz to 6 GHz
Frequency resolution	10 kHz

Output Power	
High	5 MHz to 5.5 GHz, 0 dBm (typical) 5.5 GHz to 6 GHz, -5 dBm (typical)
Low	5 MHz to 6 GHz, -30 dBm (typical)

Measurement Speed	
Vector	1.6 ms/point (typical)
Scalar	3.4 ms/point (typical)

Dynamic Range		
Vector	5 MHz to 3 GHz, 80 dB >3 GHz to 6 GHz, 75 dB	@average 5 @average 5
Scalar	5 MHz to 4.5 GHz, >110 dB 4.5 GHz to 6 GHz, >105 dB	

Measurements	
Insertion Loss/Gain	
Range	-120 to 100 dB
Resolution	0.01 dB
2-Port Phase	
Range	-180° to +180°
Resolution	0.01°

Bias-Tee (Option 002)

Voltage	
Voltage range	+12 to +32 V
Voltage resolution	0.1 V

Power	
	8 W Max

CW Signal Generator (Option 003)

Frequency	
Frequency range	25 MHz to 6 GHz
Frequency reference	<±25 ppm
Frequency resolution	10 kHz

Output Power	
Range	5 MHz to 5.5 GHz, -60 to 0 dBm >5.5 to 6 GHz, -60 to -5 dBm
Step	1 dB
Accuracy	±1.5 dB (20 to 30 °C)

GPS Receiver and Antenna (Option 010)

GPS Indicator	
	Latitude, longitude, altitude

High-Frequency Accuracy		
Spectrum, interference, and signal analyzer		
GPS lock	±25 ppb	
Hold over (for 3 days)	±50 ppb (0 to 50°C)	15 minutes after satellite locked
Connector	SMA, female	

Interference Analyzer (Option 011)

Measurements		
Spectrum analyzer	Sound indicator, AM/FM audio demodulation, interference ID, spectrum recorder	
Spectrogram	Collect up to 72 hours of data	
RSSI	Collect up to 72 hours of data	
Interference finder		
Spectrum replayer		
Dual spectrogram		

Channel Scanner (Option 012)

Frequency Range	
	1 MHz to 4 GHz

Measurement Range	
	-110 to +25 dBm

Measurements	
Channel scanner	1 to 20 channels
Frequency scanner	1 to 20 frequencies
Custom scanner	1 to 20 channels or frequencies

GSM/GPRS/EDGE Signal Analyzer (Option 022)

General Parameters

Frequency range	450 MHz to 500 MHz 820 MHz to 965 MHz 1.705 GHz to 1.995 GHz	
Input signal range	-40 to +20 dBm	
Burst power	±1.0 dB	
Frequency error	±10 Hz + ref freq accuracy	99% confidence level
GMSK modulation quality		
Phase RMS accuracy	±1.0 degrees	(0 < Phase RMS < 8)
Residual error	0.7 degrees (typical)	
Phase peak accuracy	±2.0 degrees	(0 < Phase peak < 30)
8 PSK modulation quality		
EVM accuracy	±1.5%	(2% < EVM < 8%)
Residual error	2.5%	
RF power vs. time	±0.25 symbol	

Measurements

	Option 022		Option 042
Channel power	Constellation	Auto measure	Channel/frequency scanner
Channel power	Burst power	Channel power	Channels or frequencies
Spectral density	Modulation type	Occupied bandwidth	Absolute power
Peak to average power	Frequency error	Spectrum emission mask	Group (traffic, control)
Occupied bandwidth	Phase error RMS	Spurious emission mask	BSIC (NCC, BCC)
Occupied bandwidth	Phase error peak	Burst power	Multipath profile
Integrated power	I/Q origin offset*	PvsT – Mask	(10 strongest)
Occupied power	TSC	Frame average power	Frame average power
Spectrum emission mask	BSIC	Frequency error	SNR, delay
Reference power	C/I*	Phase error RMS	Modulation analyzer
Peak level at defined range	EVM RMS*	Phase error peak	Frame avg power trend
Spurious emissions	EVM Peak*	EVM RMS*	C/I trend
Peak frequency at defined range	EVM 95 th *	EVM Peak*	Frame average power
Peak level at defined range		I/Q origin offset	BSIC, frame no. and time
Power vs. time (Slot)		C/I*	C/I, frequency error
Burst power			Burst power
Max/min point			Modulation type
Power vs. time (Frame)			
Frame average power			
Burst power (Slot 0 to 7)			
TSC (Slot 0 to 7)			

Longitude, latitude, and satellite in all screens

* Measurements performed for 8PSK modulation signals (edge) only.

WCDMA/HSPA+ Signal Analyzer (Option 023)

General Parameters		
Frequency range	Band 1 to 14, 19 to 22, 25, 26	
Input signal range	-40 to +20 dBm	
RF channel power accuracy	±1.0 dB, ±0.7 dB (typical)	
Occupied bandwidth accuracy	±100 kHz	
Adjacent channel leakage ratio (ACLR)	<-56 dB, ±0.7 dB at 5 MHz offset <-58 dB, ±0.8 dB at 10 MHz offset	
WCDMA modulation	QPSK	
HSPA+ modulations	QPSK, 16 QAM, 64 QAM	
Frequency error	±10 Hz + ref freq accuracy	99% confidence level
EVM accuracy	±2.0%	2% ≤ EVM ≤ 20%
Residual EVM	2.5% (typical)	
Code domain power	±0.5 dB relative power ±1.5 dB absolute power	Code channel power >-25 dB Code channel power >-25 dB
CPICH power accuracy	±0.8 dB (typical)	

Measurements

	Option 023		Option 043
Channel power	Constellation	Codogram	Channel scanner (up to 6)
Channel power	CPICH power	Code utilization	Frequencies or channels
Spectral density	Rho, EVM	RCSI	Channel power, scramble code, CPICH power, Ec/Io
Peak to average power	Peak CDE	CPICH, P-CCPCH, S-CCPCH, PICH, P-SCH, S-SCH	Scramble scanner (up to 6)
Occupied bandwidth	Frequency error	CDP table	Channel power
Occupied bandwidth	Time offset	Reference power	CPICH dominance
Integrated power	Carrier feed-through	Code utilization	Scramble code
Occupied power	Scramble code	Code, spreading factor	Ec/Io, CPICH power, delay
Spectrum emission mask	Code domain power	Allocation (channel type)	Multipath profile
Reference power	Abs/Rel code power	EVM, modulation type	Channel, multipath power
Peak level at defined range	Individual code EVM and its constellation	Relative, absolute power	Ec/Io, delay
ACLR	Channel power	Auto measure	Code domain power
Reference power	Power bar graph	Channel power	Abs/Rel code power
Abs power at defined range	(Abs/Rel/Delta power)	Occupied bandwidth	Individual code EVM
Rel power at defined range	CPICH, P-CCPCH, S-CCPCH	Spectrum emission mask	Channel power
Multi-ACLR	PICH, P-SCH, S-SCH	ACLR	Scramble code
Lowest reference power	Max, avg active power	Multi-ACLR	CPICH, P-CCPCH, S-CCPCH, PICH, P-SCH, S-SCH
Highest reference power	Max, avg inactive power	Spurious emission mask	Max, avg active power
Abs power at defined range	Scramble code	Frequency error	Max, avg inactive power
Rel power at defined range	Relative code domain error	EVM	Frequency error
Spurious emissions	Abs/Rel code power	Peak CDE	Time offset, Rho
Peak frequency at defined range	Code error	Carrier feed-through	Carrier feed-through
Peak level at defined range	Individual code EVM, RCDE and its constellation	CPICH absolute power	(Composite) EVM
	Channel power	CPICH relative power	CPICH EVM, P-CCPCH EVM
	Power bar graph	Max inactive power	Amplifier capacity
	(Abs/Rel/Delta power)	Scramble code	Peak amplifier capacity
	CPICH, P-CCPCH, S-CCPCH, PICH, P-SCH, S-SCH	Power statistics CCDF	Average amplifier capacity
	AVG RCDE QPSK, 16 QAM, 64 QAM		Code, peak utilization
			Average utilization
			Route map
			CPICH power, Ec/Io

Longitude, latitude, and satellite in all screens

cdmaOne/cdma2000® Signal Analyzer (Option 020)

General Parameters		
Frequency range	Band 0 to 10	
Input signal level	-40 to +20 dBm	
RF channel power accuracy	±1.0 dB (typical)	
CDMA compatibility	cdmaOne and cdma2000	
Frequency error	±10 Hz + ref freq accuracy	99% confidence level
Rho accuracy	±0.005	0.9 < Rho < 1.0
Residual Rho	>0.995 (typical)	
PN offset	1 x 64 chips	
Code domain power	±0.5 dB relative power ±1.5 dB absolute power	Code channel power >-25 dB Code channel power >-25 dB
Pilot power accuracy	±1.0 dB (typical)	
Time offset	±1.0 μs, ±0.5 μs (typical)	External trigger

Measurements	Option 020	Option 040
Channel power	Constellation	Auto measure
Channel power	Pilot power	Channel power
Spectral density	Rho	Occupied bandwidth
Peak to average power	EVM	Spectrum emission mask
Occupied bandwidth	Frequency error	ACPR
Occupied bandwidth	Time offset	Multi-ACPR
Integrated power	Carrier feed-through	Rho
Occupied power	PN offset	Frequency error
Spectrum emission mask	Code domain power	Time offset
Reference power	Abs/Rel code power	Carrier feed-through
Peak level at defined range	Channel power	Pilot power
ACPR	Power bar graph (Abs/Rel)	Max inactive power
Reference power	Pilot, Paging, Sync, Q-Paging	PN offset
Abs power at defined range	Max, avg active power	Power statistics CCDF
Rel power at defined range	Max, avg inactive power	
Multi-ACPR	PN offset	
Lowest reference power	Codogram	
Highest reference power	Code utilization	
Abs power at defined range	RCSI	
Rel power at defined range	Pilot, Paging, Sync, Q-Paging	
Spurious emissions	CDP table	
Peak freq at defined range	Reference power	
Peak level at defined range	Code utilization	
	Code, spreading factor	
	Allocation (channel type)	
	Relative, absolute power	
		Channel scanner (up to 6)
		Frequencies or channels
		Channel power, PN offset
		Pilot power, Ec/Io
		PN scanner (up to 6)
		Channel power
		Pilot dominance
		PN offset
		Ec/Io, pilot power, delay
		Multipath profile
		Channel power
		Multipath power
		Ec/Io, delay
		Code domain power
		Abs/Rel code power
		Channel power
		PN offset
		Pilot, Paging, Sync, Q-Paging power
		Max, avg active power
		Max, avg inactive power
		Frequency error
		Time offset, Rho, EVM
		Carrier feed-through
		Amplifier capacity
		Peak amplifier capacity
		Average amplifier capacity
		Code utilization
		Peak utilization
		Average utilization
		Route map
		Pilot power
		Ec/Io

Longitude, latitude, and satellite in all screens

EV-DO Signal Analyzer (Option 021)

General Parameters		
Frequency range	Band 0 to 10	
Input signal level	-40 to +20 dBm	
RF channel power accuracy	±1.0 dB (typical)	
EV-DO compatibility	Rev 0, Rev A and Rev B	
Frequency error	±10 Hz + ref freq accuracy	99% confidence level
Rho accuracy	±0.005	0.9 < Rho < 1.0
Residual Rho	>0.995 (typical)	
PN offset	1 x 64 chips	
Code domain power	±0.5 dB relative power ±1.5 dB absolute power	Code channel power >-25 dB Code channel power >-25 dB
Pilot power accuracy	±1.0 dB (typical)	
Time offset	±1.0 μs, ±0.5 μs (typical)	External trigger

Measurements	Option 021		Option 041
Channel power	Constellation	MAC codogram	Channel scanner (up to 6)
Channel power	(Composite 64/128)	Code utilization	Frequencies or channels
Spectral density	Channel power	RCSI	PN offset
Peak to average power	Rho, EVM, Peak CDE	Slot, pilot, MAC, data	Pilot, MAC, data power
Occupied bandwidth	Frequency error	MAC CDP table	PN scanner (up to 6)
Occupied bandwidth	Time offset	Reference power	Channel power
Integrated power	Carrier feed-through	Code utilization	Pilot dominance
Occupied power	PN offset	Code, spreading factor	PN offset
Spectrum emission mask	Pilot, MAC, data power	Allocation (channel type)	Ec/Io, pilot power, delay
Reference power	Pilot, MAC, data EVM	Relative, absolute power	Multipath profile
Peak level at defined range	Constellation	Auto measure	Channel power
ACPR	(Pilot, MAC 64/128, and data)	Channel power	Multipath power
Reference power	Channel power	Occupied bandwidth	Ec/Io, delay
Abs power at defined range	Rho, EVM, peak CDE	Spectrum emission mask	Code domain power
Rel power at defined range	Frequency error	ACPR	Slot average power
Multi-ACPR	Time offset	Multi-ACPR	PN offset
Lowest reference power	Carrier feed-through	Pilot, MAC, data power	Pilot, MAC, data power
Highest reference power	PN offset	On/off ratio	Pilot, MAC, data Rho
Abs power at defined range	Modulation type*	PvsT mask (idle slot) or	(Composite) EVM
Rel power at defined range	Code Domain Power	PvsT mask (active slot)	Frequency error
Spurious emissions	(Pilot and MAC 64/128)	Frequency error	Time offset
Peak frequency at defined range	Pilot/MAC channel power	Time offset	Carrier feed-through
Peak level at defined range	Slot average power	Carrier feed-through	Max active I/Q power
Power vs. Time	Max active I/Q power	Pilot, MAC, data Rho	Avg active I/Q power
(Idle and Active Slot)	Avg active I/Q power	Max inactive I/Q power	Code utilization
Slot average power	Max inactive I/Q power	PN offset	Peak utilization
On/off ratio	Avg inactive I/Q power	Power statistics CCDF	Average utilization
Idle activity	PN offset		Route Map
Pilot, MAC, data power	Code Domain Power (Data)		Pilot power
	Data channel power		Ec/Io
	Slot average power		
	Max, avg active power		
	Max, avg inactive power		
	PN offset		

Longitude, latitude, and satellite in all screens

*Measurement is performed in Data Constellation only.

TD-SCDMA Signal Analyzer (Option 025)

General Parameters

Frequency range	1.785 GHz to 2.22 GHz	
Input signal level	-40 to +20 dBm	
Channel power (RRC) accuracy	±1.0 dB (typical)	
Modulations	QPSK, 8 PSK, 16 QAM, 64 QAM	
Frequency error	±10 Hz + ref freq accuracy	99% confidence level
Residual EVM (RMS)	2.0% (typical)	P-CCPCH slot and 1 channel
Time error (Tau)	±0.2 μs (typical)	External trigger
Spreading factor	Auto (DL, UL), 1, 2, 4, 8, 16	

Measurements

	Option 025		Option 045
Channel power	Midamble power	Code error	Sync-DL ID scanner (32)
Channel power	(TS [0 to 6], DwPTS, UpPTS)	Code power and error	Scramble code group
Spectral density	Data power right	Individual code EVM	Ec/Io, Tau
Peak to average power	(TS [0 to 6], DwPTS, UpPTS)	and its constellation	DwPTS power
Occupied bandwidth	Time offset	Data format	Pilot dominance
Occupied bandwidth	(TS [0 to 6], DwPTS, UpPTS)	Slot, DwPTS power	Sync-DL ID vs. Tau (up to 6)
Integrated power	Power vs. time (mask)	No. of active code	ID, power, Ec/Io, Tau
Occupied power	Slot power	Scramble code	DwPTS power
Spectrum emission mask	On/off slot ratio	Max active code power	Pilot dominance
Reference power	Off power	Avg active code power	Sync-DL ID multipath
Peak level at defined range	Timogram	Max inactive code power	Ec/Io, Tau
ACLR	Constellation	Avg inactive code power	DwPTS power
Reference power	Rho	Peak CDE and peak active CDE	Pilot dominance
Abs power at defined range	EVM RMS, EVM peak	Auto measure	Sync-DL ID analyzer
Rel power at defined range	Peak CDE	Channel power	DwPTS power, Ec/Io trend
Multi-ACLR	Frequency error	Occupied bandwidth	DwPTS power
Lowest reference power	I/Q origin offset	Spectrum emission mask	Pilot dominance
Highest reference power	Time offset	ACLR	EVM, frequency error
Abs power at defined range	Midamble power	Multi-ACLR	Ec/Io, CINR
Rel power at defined range	Slot power	Slot power	Route Map
Spurious emissions	DwPTS power	DwPTS power	DwPTS Power
Peak frequency at defined range	Midamble power (1 to 16)	UpPTS power	
Peak level at defined range	Code power	On/off slot ratio	
Power vs. time (slot)	Abs/Rel code power	Frequency error	
Slot power	Individual code EVM	EVM RMS	
DwPTS power	and its constellation	Peak CDE	
UpPTS power	Data format	Max inactive power	
On/off slot ratio	Slot power, DwPTS power	Scramble code	
Slot PAR	No. of active code		
DwPTS code	Scramble code		
Power vs. time (frame)	Max active code power		
Slot power	Avg active code power		
(TS [0 to 6], DwPTS, UpPTS)	Max inactive code power		
Data power left	Avg inactive code power		
(TS [0 to 6], DwPTS, UpPTS)			

Mobile WiMAX Signal Analyzer (Option 026)

General Parameters

Frequency range	2.1 GHz to 2.7 GHz 3.4 GHz to 3.85 GHz	
Input signal level	-40 to +20 dBm	
Channel power accuracy	±1.0 dB (typical)	
Supported bandwidth	7 MHz, 8.75 MHz, and 10 MHz	
Frequency error	±10 Hz + ref freq accuracy	99% confidence level
Residual EVM (RMS)	1.5% (typical)	

Measurements

	Option 026		Option 046
Channel power	Constellation	Auto measure	Preamble scanner (up to 6)
Channel power	Channel power	Channel power	Total preamble power
Spectral density	RCE RMS, RCE peak	Occupied bandwidth	Preamble, relative power
Peak to average power	EVM RMS, EVM peak	Spectrum emission mask	Cell ID, sector ID
Occupied bandwidth	Frequency error	Spurious emission mask	Time offset
Occupied bandwidth	Time offset	Preamble power	Multipath profile
Integrated power	Segment ID, cell ID	DL burst power	Total preamble power
Occupied power	Preamble index	UL burst power	Multipath power
Spectrum emission mask	Spectral flatness	Frame average power	Relative power, delay
Reference power	Average subcarrier power	Time offset	Preamble power trend
Peak level at defined range	Subcarrier Pwr variation	I/Q origin offset	Preamble power trend
Spurious emissions	Max, min, avg power	Spectral flatness	Relative power trend
Peak frequency at defined range	EVM vs. subcarrier	Frequency error	Preamble power
Peak level at defined range	RCE RMS, RCE peak	RCE RMS	Frame avg power
Power vs. time (frame)	EVM RMS, EVM peak	RCE peak	Relative power
Channel power	Segment ID, cell ID	EVM RMS	C/I
Frame average power	Preamble index	EVM peak	Preamble
Preamble power	EVM vs. symbol	Power statistics CCDF	Cell ID, sector ID
DL burst power	RCE RMS, RCE peak		Time offset
UL burst power	EVM RMS, EVM peak		Route map
I/Q origin offset	Segment ID, cell ID		Preamble power
Time offset	Preamble index		

Longitude, latitude, and satellite in all screens

LTE-FDD Signal Analyzer (Option 028)

General Parameters		
Frequency range	Band 1 to 14, 17 to 26	
Input signal level	-40 to +20 dBm	
Channel power accuracy	±1.0 dB (typical)	
Supported bandwidths	1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, and 20 MHz	
Frequency error	±10 Hz + ref freq accuracy	99% confidence level
Residual EVM (RMS)	2.0% (typical)	Data EVM

Measurements	Option 028	Option 048
Channel power	I/Q diagram	ID scanner (up to 6)
Channel power	RB power	RSRP/RSRQ dominance
Spectral density	Modulation format	S-SS RSSI dominance
Peak to average power	I/Q origin offset	S-SS Ec/Io dominance
Occupied bandwidth	EVM RMS, EVM peak	Cell, group, sector ID
Occupied bandwidth	Control channel	RSRP/RSRQ
Integrated power	Control channel summary	RS-SINR/S-SS RSSI
Occupied power	(P-SS, S-SS, PBCH, PCFICH, PHICH, PDCCH, RS, MBSFN*)	P-SS/S-SS Power
Spectrum emission mask	EVM, relative or absolute power, modulation type	S-SS Ec/Io
Reference power	Each control channels' I/Q diagram	Multipath profile
Peak level at defined range	Modulation format	Cell, group, sector ID
ACLR	Frequency error	Ant 0 RS Ec/Io, delay
Reference power	I/Q origin offset	Ant 1 RS Ec/Io, delay
Abs power at defined range	EVM RMS, EVM peak	Ant 0 Sync Ec/Io, delay
Rel power at defined range	Subframe	Ant 1 Sync Ec/Io, Delay
Multi-ACLR	MBSFN*	Control channel
Lowest reference power	Subframe summary table	RS power trend
Highest reference power	(P-SS, S-SS, PBCH, PCFICH, PHICH, PDCCH, RS, MBSFN*, PDSCH/Data* QPSK, PDSCDH/Data* 16 QAM, PDSCH/Data* 64 QAM)	Cell, group, sector ID
Abs power at defined range	EVM, relative or absolute power, modulation type	Control channel table
Rel power at defined range	Subframe power	(P-SS, S-SS, PBCH, PCFICH, RS 0, RS 1)
Spurious emissions	OFDM symbol power	Absolute power
Peak frequency at defined range	Frequency, time error	Relative power
Peak level at defined range	Data EVM RMS, peak	EVM RSM, phase
Power vs. time (frame)	RS EVM RMS, peak	Frequency error
Frame average power	Cell, group, sector ID	Time alignment error
Subframe power	Frame	Time offset
First slot power	MBSFN*	Datagram
Second slot power	Frame summary table	Datagram
Cell ID, I/Q origin offset	(P-SS, S-SS, PBCH, PCFICH, PHICH, PDCCH, RS, MBSFN*, PDSCH/Data* QPSK, PDSCDH/Data* 16 QAM, PDSCH/Data* 64 QAM)	Resource block power
Time offset	EVM, relative or absolute power, modulation type	Data utilization
Constellation	Frame average power	Route Map
MBSFN*	OFDM symbol power	RSRP
RS TX power	Frequency error	RSRQ
PDSCH/Data* QPSK EVM	Cell, group, sector ID	RS-SINR
PDSCH/Data* 16 QAM EVM	Power statistics CCDF	S-SS RSSI
PDSCH/Data* 64 QAM EVM		P-SS, S-SS power
Data EVM RMS		S-SS Ec/Io
Data EVM peak		
Frequency error		
Time error		
Data channel		
MBSFN*		
Resource block power		

Longitude, latitude, and satellite in all screens

* Measurement is performed when MBMS is enabled.

LTE-TDD Signal Analyzer (Option 029)

General Parameters

Frequency range	Band 33 to 43	
Input signal level	-40 to +20 dBm	
Channel power accuracy	±1.0 dB (typical)	
Supported bandwidth	1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, and 20 MHz	
Frequency error	±10 Hz + ref freq accuracy	99% confidence level
Residual EVM (RMS)	2.0% (typical)	Data EVM

Measurements

	Option 029		Option 049
Channel power	Data EVM RMS	Time alignment error	ID scanner (up to 6)
Channel power	Data EVM peak	Time alignment error trend	RSRP/RSRQ dominance
Spectral density	Frequency error	Time alignment error	S-SS RSRQ dominance
Peak to average power	Time error	RS power difference	S-SS Ec/Io dominance
Occupied bandwidth	Data channel	Antenna 0 RS power	Cell, group, sector ID
Occupied bandwidth	MBSFN*	Antenna 0 RS EVM	RSRP/RSRQ
Integrated power	Resource block power	Antenna 1 RS power	RS-SINR/S-SS RSRQ
Occupied power	I/Q diagram	Antenna 1 RS EVM	P-SS/S-SS power
Spectrum emission mask	RB power	Cell, group, sector ID	S-SS Ec/Io
Reference power	Modulation format	Data allocation map	Multipath profile
Peak level at defined range	I/Q origin offset	Data allocation vs frame	Cell, group, sector ID
ACLR	EVM RMS, EVM peak	Resource block power	Ant 0 RS Ec/Io, delay
Reference power	Control channel	OFDM symbol power	Ant 1 RS Ec/Io, delay
Abs power at defined range	Control channel summary	Data utilization	Ant 0 Sync Ec/Io, Delay
Rel power at defined range	(P-SS, S-SS, PBCH, PCFICH, PHICH, PDCCH, RS, MBSFN*)	Data allocation vs subframe	Ant 1 Sync Ec/Io, Delay
Multi-ACLR	EVM, relative or absolute power, modulation type	Resource block power	Control channel
Lowest reference power	Each control channels'	Data utilization	RS power trend
Highest reference power	I/Q diagram	Auto measure	Cell, group, sector ID
Abs power at defined range	Modulation format	Channel power	Control channel table
Rel power at defined range	Frequency error	Occupied bandwidth	(P-SS, S-SS, PBCH, PCFICH, RS 0, RS 1)
Spurious emissions	I/Q origin offset	Spectrum emission mask	Absolute power
Peak frequency at defined range	EVM RMS, EVM peak	ACLR	Relative power
Peak level at defined range	Subframe	Multi-ACLR	EVM RSM, phase
Power vs. time (frame)	MBSFN*	Spurious emission mask	Frequency error
Frame average power	Subframe summary table	Slot average power	Time alignment error
Subframe power	(P-SS, S-SS, PBCH, PCFICH, PHICH, PDCCH, RS, MBSFN*, PDSCCH/Data*	Off power	Time offset
First slot power	QPSK, PDSCDH/Data* 16 QAM, PDSCCH/Data* 64 QAM)	Transition period	Datagram
Second slot power	EVM, relative or absolute power, modulation type	Time alignment error	Datagram
Cell ID, I/Q origin offset	Subframe power	MBSFN*	Resource block power
Time offset	OFDM symbol power	PDSCCH/Data* QPSK EVM	Data utilization
Power vs. time (slot)	Frequency, time error	PDSCCH/Data* 16 QAM EVM	Route Map
Slot average power	Data EVM RMS, peak	PDSCCH/Data* 64 QAM EVM	RSRP
Transient period length	RS EVM RMS, peak	Data EVM RMS, peak	RSRQ
Off power	Cell, group, sector ID	RS, P-SS, S-SS EVM	RS-SINR
Constellation		RS, P-SS, S-SS power	S-SS RSRQ
MBSFN*		PBCH power	S-SS RSRQ
RS TX power		Subframe power	P-SS, S-SS power
PDSCCH/Data* QPSK EVM		OFDM power	S-SS Ec/Io
PDSCCH/Data* 16 QAM EVM		Time error	
PDSCCH/Data* 64 QAM EVM		I/Q origin offset	
		Power statistics CCDF	

Longitude, latitude, and satellite in all screens

* Measurement is performed when MBMS is enabled.

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E1 Analyzer (Option 004)**Electrical Interface**

Connectors RX/TX	RJ45 (120 Ω)
Output	0 dB, -6 dB (ITU-T Rec.G.703)
Line code	AMI, HDB3
Impedance	Term, monitor 120 Ω, bridge >1000 Ω

Input

Term/bridge/monitor	0 to -20 dB
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Transmitter and Receiver

Framing	PCM-30, PCM-30 with CRC PCM-31, PCM-31 with CRC
Channel formats	Full E1
Test pattern	1-4, 1-8, ALL1, ALL0, 0101

Additional Functions

Reference clock	Received or internal
Event log capability	Internal memory
Error insertion	1, 1E-3, 1E-4, 1E-5
Error rate count	CRC, Frame, Code, Bit

Measurements**Monitoring**

Indicators
E1 signal
Frame sync
Pattern sync
Code sync
FAS RAI
AIS
HDB3
Bit error ²

Error count/rate

Frame error
Code error
Bit error ²

Alarm count

FAS
AIS

Loss count

Frame sync
Pattern sync

BERT

Indicators
E1 signal
Frame sync
Pattern sync
Code sync
FAS RAI
AIS
HDB3
Bit error ²

Error count/rate

CRC error ¹
Frame error
Code error
Bit error ²

Alarm count

FAS
AIS

Loss count

Frame sync
Pattern sync

1. When CRC-4 is set to On.
2. When PCM31 is set to On.

T1 Analyzer (Option 005)**Electrical Interface**

Connectors RX/TX	RJ45 (120 Ω)
Output	0 dB, -7.5 dB, -15 dB
Line code	AMI, B8ZS
Impedance	100 Ω or 1000 Ω (bridge)

Input

Term/bridge/monitor	0 to -20 dB
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Transmitter and Receiver

Framing	D4, ESF
Channel formats	Full T1
Test pattern	1-8, 1-16, ALL1, ALL0, 0101 2E-24, QRSS, 2E-23, 2E-15, 2E-23 inverse, 2E-15 inverse

Additional Functions

Reference clock	Received or internal
Event log capability	Internal memory
Error insertion	1, 1E-3, 1E-4, 1E-5
Alarm insertion	AIS, RAI
Error/alarm count	Bit RAI, AIS, BPV, BER
Loopback modes	Self, CSU, NIU, line, network

Measurements**Monitoring/BERT/loop test**

Indicators
T1 signal
Frame sync
Pattern sync
B8ZS
Red alarm
RAI (yellow alarm)
AIS (blue alarm)
BPV indicator

Loss count

Signal loss
Frame sync loss
Pattern sync loss

Alarm count

RAI
AIS
BPV

Error rate

Bit error rate
Bit error count

RX signal level

Indicators
T1 signal
Frame sync
Pattern sync
B8ZS
Red alarm
RAI (yellow alarm)
AIS (blue alarm)
BPV indicator

Vp-p

Vp-p Max
Vp-p Min
dB _{dsx}

General Information

Inputs and Outputs

RF in	Spectrum analyzer
Connector	Type-N, female
Impedance	50 Ω (nominal)
Damage level	>+33 dBm, \pm 50 VDC (nominal), 3 min

Reflection/RF out	Cable and antenna analyzer
Connector	Type-N, female
Impedance	50 Ω (nominal)
Damage level	>+40 dBm, \pm 50 VDC (nominal), 3 min

RF in	Cable and antenna analyzer
Connector	Type-N, female
Impedance	50 Ω (nominal)
Maximum level	>+25 dBm, \pm 50 VDC (nominal)

External trigger, GPS

Connector	SMA, female
Impedance	50 Ω (nominal)

External ref

Connector	SMA, female
Impedance	50 Ω (nominal)
Input frequency	10 MHz, 13 MHz, 15 MHz
Input range	-5 to +5 dBm

USB

USB host ¹	Type A, 1 port
USB client ²	Type B, 1 port

LAN	RJ45, 10/100Base-T
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E1/T1	RJ45C
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Audio jack	3.5 mm headphone jack
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External power	5.5 mm barrel connector
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Speaker	Built-in speaker
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Display

Type	Resistive touch screen
Size	8 inch, LED backlight, transreflective LCD with anti-glare coating
Resolution	800 x 600

Power

External DC input	12 to 19 VDC	
Power consumption	37 W	49 W maximum (when charging battery)

Battery

Type	10.8 V, 7800 mA/hr (Lithium ion)
Operating time	>3 hours (typical)
Charge time	2.5 hours (80%), 5 hours (100%)
Charging temperature	0° to 45°C (32° to 104°F) \leq 85% RH
Discharging temperature	-20° to 55°C (4° to 131°F) \leq 85% RH
Storage temperature ³	0° to 25°C (32° to 77°F) \leq 85% RH (non-condensing)

Data Storage

Internal ⁴	Maximum 100 MB
External ⁵	Limited by size of USB flash drive

Environmental

Operating temperature

AC Power	0° to 40°C (32° to 104°F) with no derating
Battery	0° to 40°C (32° to 104°F) @charging -10° to 55°C (14° to 131°F) @discharging

Maximum humidity	85% RH (non-condensing)
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Shock and vibration	MIL-PRF-28800F Class 2
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Storage temperature ⁶	-55° to 71°C (-67° to 160°F)
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EMC

IEC/EN 61326-1:2006 (complies with European EMC)
CISPR11:2009 +A1:2010

ESD

IEC/EN 61000-4-2

Size and Weight (standard configuration)

Weight (with battery)	<4.3 kg (9.5 lb)
Size (W x H x D)	295 x 195 x 82 mm (11.6 x 7.7 x 3.2 in)

Warranty

2 years

Calibration Cycle

1 year

1. Connects flash drive and power sensor.
2. Connects to PC for data transfer.
3. 20 to 85% RH, store battery pack in low-humidity environment.
Extended exposure to temperature above 45°C could significantly degrade battery performance and life.
4. Up to 700 traces.
5. Supports USB 2.0 compatible memory devices.
6. With the battery pack removed.

Ordering Information

Standard

9 kHz to 8 GHz	Spectrum analyzer
5 MHz to 6 GHz	Cable and antenna analyzer ¹
10 MHz to 8 GHz	RF power meter (internal mode)

Options

NOTE: Upgrade options for the JD785A use the designation JD785AU before the respective last three-digit option number.

JD785A001	2-Port Transmission Measurement ²	
JD785A002	Bias-Tee	(requires option 01)
JD785A003	CW Signal Generator	
JD785A004	E1 Analyzer ³	
JD785A005	T1 Analyzer ³	
JD785A010	GPS Receiver and Antenna	
JD785A011	Interference Analyzer ^{4,5}	
JD785A012	Channel Scanner	
JD785A013	Optical Power Meter ⁶	
JD785A020	cdmaOne/cdma2000 Signal Analyzer	
JD785A021	EV-DO Signal Analyzer	(requires option 20)
JD785A022	GSM/GPRS/EDGE Signal Analyzer	
JD785A023	WCDMA/HSPA+ Signal Analyzer	
JD785A025	TD-SCDMA Signal Analyzer	
JD785A026	Mobile WiMAX Signal Analyzer	
JD785A028	LTE-FDD Signal Analyzer	
JD785A029	LTE-TDD Signal Analyzer	
JD785A040	cdmaOne/cdma2000 OTA Analyzer ⁵	(requires option 10)
JD785A041	EV-DO OTA Analyzer ⁵	(requires option 10)
JD785A042	GSM/GPRS/EDGE OTA Analyzer ⁵	(requires option 10)
JD785A043	WCDMA/HSPA+ OTA Analyzer ⁵	(requires option 10)
JD785A045	TD-SCDMA OTA Analyzer ⁵	(requires option 10)
JD785A046	Mobile WiMAX OTA Analyzer ⁵	(requires option 10)
JD785A048	LTE-FDD OTA Analyzer ⁵	(requires option 10)
JD785A049	LTE-TDD OTA Analyzer ⁵	(requires option 10)

Standard Accessories

G710550326	AC/DC power adapter ⁷
G710550335	Cross LAN cable (1.5 m) ⁷
GC73050515	USB A to B cable (1.8 m) ⁷
GC72450518	>1 GB USB memory ⁷
G710550325	Rechargeable lithium ion battery ⁷
G710550323	Automotive cigarette lighter 12 VDC adapter ⁷
G710550316	Stylus pen ⁷
JD780A361	JD780A Series user's manual and application software — CD

1. Requires calibration kit.
2. Requires dual-port calibration kit.
3. Requires test cable.
4. Highly recommend adding JD785A010.
5. Highly recommend adding G70005035x and/or G70005036x.
6. Requires MP-60 or MP-80.
7. Standard accessories can be purchased separately.

Optional Calibration Kits

JD78050509	Y-Calibration Kit, Type-N(m), DC to 4 GHz, 50 Ω
JD78050507	Dual-port type-N calibration kit, 50 Ω <ul style="list-style-type: none"> • Y-calibration kit, Type-N(m), DC to 6 GHz, 50 Ω • Two adapters type-N(f) to Type-N(f), DC to 6 GHz, 50 Ω • Two 1 m RF test cables, type-N(m) to type-N(m), DC to 18 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
G710050533	1.5 m (4.92 ft) RF cable, DC to 18 GHz, type-N(m) to SMA(m), 50 Ω
G710050534	1.5 m (4.92 ft) RF cable, DC to 18 GHz, type-N(m) to QMA(m), 50 Ω
G710050535	1.5 m (4.92 ft) RF cable, DC to 18 GHz, type-N(m) to SMB(m), 50 Ω

Ordering Information (cont'd)
Optional Omni Antennas

G700050351	RF omni antenna type-N(m), 400 MHz to 450 MHz
G700050352	RF omni antenna type-N(m), 450 MHz to 500 MHz
G700050353	RF omni antenna type-N(m), 806 MHz to 896 MHz
G700050354	RF omni antenna type-N(m), 870 MHz to 960 MHz
G700050355	RF omni antenna type-N(m), 1.71 GHz to 2.17 GHz
G700050356	RF omni antenna type-N(m), 720 MHz to 800 MHz
G700050357	RF omni antenna type-N(m), 2.3 GHz to 2.7 GHz

Optional Yagi Antennas

G700050364	RF Yagi antenna type-N(f), 806 MHz to 896 MHz, 10.2 dBd
G700050365	RF Yagi antenna type-N(f), 866 MHz to 960 MHz, 10.2 dBd
G700050363	RF Yagi antenna type-N(f), 1.75 GHz to 2.39 GHz, 9.8 dBd
G700050366	RF Yagi antenna type-SMA(f), 700 MHz to 4 GHz, 1.85 dBd

Optional RF Power Sensors

JD731B	Directional Power Sensor (peak and average power) Frequency: 300 MHz to 3.8 GHz Power: average 0.15 to 150 W, peak 4 to 400 W
JD733A	Directional Power Sensor (peak and average power) Frequency: 150 MHz to 3.5 GHz Power: average/peak 0.1 to 50 W
JD732B	Terminating Power Sensor (average power) Frequency: 20 MHz to 3.8 GHz Power: -30 to +20 dBm
JD734B	Terminating Power Sensor (peak power) Frequency: 20 MHz to 3.8 GHz Power: -30 to +20 dBm
JD736B	Terminating Power Sensor (peak and average power) Frequency: 20 MHz to 3.8 GHz Power: -30 to +20 dBm
G700050366	RF omni antenna type-N(m), 2.3 GHz to 2.7 GHz

Optional Optical Power Sensors

MP-60	Miniature USB 2.0 Optical Power Sensor Wavelength Range: 780 to 1650 nm 1300, 1310, 1490, 1550 nm: -50 to +10 dBm 850 nm: -45 to +10 dBm
MP-80	Miniature USB 2.0 Optical Power Sensor Wavelength range: 780 to 1650 nm 1300, 1550 nm: -35 to +23 dBm 850 nm: -30 to +23 dBm

Optional RF Adapters

G710050570	Adapter type-N(f) to Type-N(f), DC to 6 GHz, 50 W
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
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 E1/T1 Test Cables

G710050317	RJ45 to Y bantam cable
G710050318	RJ45 to Y BNC cable
G710050319	RJ45 to 4 alligator clips

Optional Miscellaneous

G710050581	Attenuator 40 dB, 100 W, DC to 4 GHz (unidirectional)
JD74050341	soft carrying case
JD71050342	hard carrying case
JD74050343	backpack carrying case
G710050585	RF directional coupler, 700 MHz to 4 GHz, 30 dB, input/output; type-N(m) to type-N(f), tap off; type-N(f) ⁸
G710050586	RF Combiner, 700 MHz to 4 GHz, Type-N(f) to Type-N(m) ⁸
G71050324	External battery charger
JD780A362	JD780A series user's manual – printed version

8. Highly recommended for LTE testing.

Test & Measurement Regional Sales

NORTH AMERICA TOLL FREE: 1 855 ASK-JDSU 1 855 275-5378	LATIN AMERICA TEL: +1 954 688-5660 FAX: +1 954 3454668	ASIA PACIFIC TEL: +852 2892 0990 FAX: +852 2892 0770	EMEA TEL: +49 7121 86 2222 FAX: +49 7121 86 1222	www.jdsu.com/test
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