

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, 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) Add ±1.0 dB	20 to 30°C –10 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
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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 –90 dBm (nominal)	
Exceptions	–85 dBm at 164.1 MHz, 1.95, 2.57264, 3.2, and 4.5 GHz –80 dBm at 4.8/7.8 GHz
Input-related spurious	<–70 dBc (nominal)

Dynamic Range

2/3 (TOI-DANL) in 1 Hz RBW	>104 dB	at 2 GHz
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Sweep Time

Range	0.4 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	1.0 ms/point (typical)
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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 at >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	$(1.5 \times 10^3) \times (V_p) / \Delta$ 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

RF Power Meter (Standard)

General Parameters	
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)

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

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}
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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}
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Terminating Power Sensor	JD732B
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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
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Terminating Power Sensor	JD734B
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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
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Terminating Power Sensor	JD736B
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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
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1. CW condition at 25°C ±10°C

2. Forward power

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	at average 5
	>3 GHz to 6 GHz, 75 dB	at 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	<±1 ppm maximum
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
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Interference Analyzer (Option 011)**Measurements**

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

Channel Scanner (Option 012)**Frequency Range**

1 MHz to 8 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 +25 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 +25 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	Code domain power	CDP table	Channel scanner (up to 6)
Channel power	Abs/Rel code power	Reference power	Frequencies or channels
Spectral density	Individual code EVM and its constellation	Code utilization	Channel power, scramble code, CPICH power, Ec/Io
Peak to average power	Channel power	Code, spreading factor	Scramble scanner (up to 6)
Occupied bandwidth	Power bar graph	Allocation (channel type)	Channel power
Occupied bandwidth	(Abs/Rel/Delta power)	EVM, modulation type	CPICH dominance
Integrated power	CPICH, P-CCPCH, S-CCPCH	Relative, absolute power	Scramble code
Occupied power	PICH, P-SCH, S-SCH	Auto measure	Ec/Io, CPICH power, delay
Spectrum emission mask	Max, avg active power	Channel power	Multipath profile
Reference power	Max, avg inactive power	Occupied bandwidth	Channel, multipath power
Peak level at defined range	Scramble code	Spectrum emission mask	Ec/Io, delay
ACLR	Relative code domain error	ACLR	Code domain power
Reference power	Abs/Rel code power	Multi-ACLR	Abs/Rel code power
Abs power at defined range	Code error	Spurious emission mask	Individual code EVM
Rel power at defined range	Individual code EVM, RCDE, and its constellation	Frequency error	Channel power
Multi-ACLR	Channel power	EVM	Scramble code
Lowest reference power	Power bar graph	Peak CDE	CPICH, P-CCPCH, S-CCPCH, PICH, P-SCH, S-SCH
Highest reference power	(Abs/Rel/Delta power)	Carrier feed-through	Max, avg active power
Abs power at defined range	CPICH, P-CCPCH, S-CCPCH, PICH, P-SCH, S-SCH	CPICH absolute power	Max, avg inactive power
Rel power at defined range	Avg RCDE QPSK, 16 QAM, 64 QAM	CPICH relative power	Frequency error
Spurious emissions	Codogram	Max inactive power	Time offset, Rho
Peak frequency at defined range	Code utilization	Scramble code	Carrier feed-through (Composite) EVM
Peak level at defined range	RCSI	Power statistics CCDF	CPICH EVM, P-CCPCH EVM
Constellation	CPICH, P-CCPCH, S-CCPCH, PICH, P-SCH, S-SCH		Amplifier capacity
CPICH power			Peak amplifier capacity
Rho, EVM			Average amplifier capacity
Peak CDE			Code, peak utilization
Frequency error			Average utilization
Time offset			Route map
Carrier feed-through			CPICH power, Ec/Io
Scramble code			

cdmaOne/cdma2000® Signal Analyzer (Option 020)**General Parameters**

Frequency range	Band 0 to 10	
Input signal level	-40 to +25 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 scanner (up to 6)
Channel power	Pilot power	Channel power	Frequencies or channels
Spectral density	Rho	Occupied bandwidth	Channel power, PN offset
Peak to average power	EVM	Spectrum emission mask	Pilot power, Ec/lo
Occupied bandwidth	Frequency error	ACPR	PN scanner (up to 6)
Occupied bandwidth	Time offset	Multi-ACPR	Channel power
Integrated power	Carrier feed-through	Rho	Pilot dominance
Occupied power	PN offset	Frequency error	PN offset
Spectrum emission mask	Code domain power	Time offset	Ec/lo, pilot power, delay
Reference power	Abs/Rel code power	Carrier feed-through	Multipath profile
Peak level at defined range	Channel power	Pilot power	Channel power
ACPR	Power bar graph (Abs/Rel)	Max inactive power	Multipath power
Reference power	Pilot, Paging, Sync, Q-Paging	PN offset	Ec/lo, delay
Abs power at defined range	Max, avg active power	Power statistics CCDF	Code domain power
Rel power at defined range	Max, avg inactive power		Abs/Rel code power
Multi-ACPR	PN offset		Channel power
Lowest reference power	Codogram		PN offset
Highest reference power	Code utilization		Pilot, Paging, Sync, Q-Paging power
Abs power at defined range	RCSI		Max, avg active power
Rel power at defined range	Pilot, Paging, Sync, Q-Paging		Max, avg inactive power
Spurious emissions	CDP table		Frequency error
Peak freq at defined range	Reference power		Time offset, Rho, EVM
Peak level at defined range	Code utilization		Carrier feed-through
	Code, spreading factor		Amplifier capacity
	Allocation (channel type)		Peak amplifier capacity
	Relative, absolute power		Average amplifier capacity
			Code utilization
			Peak utilization
			Average utilization
			Route map
			Pilot power
			Ec/lo

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 +25 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/lo, 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/lo, 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/lo
	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 +25 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 +25 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 power 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/LTE Advanced - FDD Signal Analyzer (Options 028/030)

General Parameters		
Frequency range	Band 1 to 14, 17 to 26	
Input signal level	-40 to +25 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 028/030	Option 048
Channel power	Data channel	Frame	Auto measure
Channel power	MBSFN*	MBSFN*	Channel power
Spectral density	Resource block power	Frame summary table	Occupied bandwidth
Peak to average power	I/Q diagram	(P-SS, S-SS, PBCH, PCFICH, PHICH, PDCCH, RS, MBSFN*, PDSCH/Data*	Spectrum emission mask
Occupied bandwidth	RB power	QPSK, PDSCH/Data* 16 QAM, PDSCH/Data* 64 QAM)	ACLR
Occupied bandwidth	Modulation format	EVM, relative or absolute power, modulation type	Multi-ACLR
Integrated power	I/Q origin offset	Frame average power	Spurious emission mask
Occupied power	EVM RMS, EVM peak	OFDM symbol power	Frame average power
Spectrum emission mask	Control channel	Frequency error	Time alignment error
Reference power	Control channel summary	I/Q origin offset	Frequency error
Peak level at defined range	(P-SS, S-SS, PBCH, PCFICH, PHICH, PDCCH, RS, MBSFN*)	EVM RMS, peak	MBSFN*
ACLR	EVM, relative or absolute power, modulation type	Data EVM RMS, peak	PDSCH/Data* QPSK EVM
Reference power	Each control channels'	Cell, group, sector ID	PDSCH/Data* 16 QAM EVM
Abs power at defined range	I/Q diagram	Time alignment error	PDSCH/Data* 64 QAM EVM
Rel power at defined range	Modulation format	Time alignment error trend	Data EVM RMS, peak
Multi-ACLR	Frequency error	Time alignment error	RS, P-SS, S-SS EVM
Lowest reference power	I/Q origin offset	RS power difference	RS, P-SS, S-SS power
Highest reference power	EVM RMS, EVM peak	Antenna 0 RS power and EVM	PBCH power
Abs power at defined range	Subframe	Antenna 1 RS power and EVM	Subframe power
Rel power at defined range	MBSFN*	Antenna 2 RS power and EVM**	OFDM power
Spurious emissions	Subframe summary table	Antenna 3 RS power and EVM**	Time error
Peak frequency at defined range	(P-SS, S-SS, PBCH, PCFICH, PHICH, PDCCH, RS, MBSFN*, PDSCH/Data* QPSK, PDSCH/Data* 16 QAM, PDSCH/Data* 64 QAM)	Data allocation map	I/Q origin offset
Peak level at defined range	EVM, relative or absolute power, modulation type	Data allocation vs frame	Carrier aggregation**
Power vs. time (frame)	Subframe power	Resource block power	Component carriers: up to 5
Frame average power	OFDM symbol power	Data utilization	Subframe power
Subframe power	Frequency, time error	Resource block power	P-SS, S-SS, PBCH, RS power and EVM
First slot power	Data EVM RMS, peak	Data utilization	PDSCH/Data* QPSK power and EVM
Second slot power	RS EVM RMS, peak		PDSCH/Data* 16 QAM power and EVM
Cell ID, I/Q origin offset	Cell, group, sector ID		PDSCH/Data* 64 QAM power and EVM
Time offset			Cell ID
Constellation			Frequency error
MBSFN*			Time alignment error
RS TX power			Antenna port
PDSCH/Data* QPSK EVM			Power statistics CCDF
PDSCH/Data* 16 QAM EVM			
PDSCH/Data* 64 QAM EVM			
Data EVM RMS			
Data EVM peak			
Frequency error			
Time error			
			Channel scanner (up to 6)
			Frequency or channels
			Cell, group, sector ID
			Channel power
			RSRP/RSRQ
			RS-SINR
			Antenna port
			ID scanner (up to 6)
			RSRP/RSRQ dominance
			S-SS RSSI dominance
			S-SS Ec/Io dominance
			Cell, group, sector ID
			RSRP/RSRQ
			RS-SINR/S-SS RSSI
			P-SS/S-SS Power
			S-SS Ec/Io
			Multipath profile
			Cell, group, sector ID
			Ant 0 RS Ec/Io, delay
			Ant 1 RS Ec/Io, delay
			Ant 2 RS Ec/Io**, delay**
			Ant 3 RS Ec/Io**, delay**
			Control channel
			RS power trend
			Cell, group, sector ID
			Control channel table
			(P-SS, S-SS, PBCH, PCFICH, RS 0, RS 1, RS 2**, RS 3**)
			Absolute power
			Relative power
			EVM RSM, phase
			Frequency error
			Time alignment error
			Time offset
			Datagram
			Datagram
			Resource block power
			Data utilization
			Route Map
			RSRP
			RSRQ
			RS-SINR
			S-SS RSSI
			P-SS, S-SS power
			S-SS Ec/Io

Longitude, latitude, and satellite in all screens

*Measurement is performed when MBMS is enabled.
 **Measurement is performed when option 030 is enabled.

LTE/LTE Advanced - TDD Signal Analyzer (Option 029/031)

General Parameters		
Frequency range	Band 33 to 43	
Input signal level	-40 to +25 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 029/031	Option 049
Channel power	Data channel	Data allocation map	Channel scanner (up to 6)
Channel power	MBSFN*	Data allocation vs frame	Frequency or channels
Spectral density	Resource block power	Resource block power	Cell, group, sector ID
Peak to average power	I/Q diagram	OFDM symbol power	Channel power
Occupied bandwidth	RB power	Data utilization	RSRP/RSRQ
Occupied bandwidth	Modulation format	Data allocation vs subframe	RS-SINR
Integrated power	I/Q origin offset	Resource block power	Antenna port
Occupied power	EVM RMS, EVM peak	Data utilization	ID scanner (up to 6)
Spectrum emission mask	Control channel	Auto measure	RSRP/RSRQ dominance
Reference power	Control channel summary	Channel power	S-SS RSI dominance
Peak level at defined range	(P-SS, S-SS, PBCH, PCFICH, PHICH, PDCCH, RS, MBSFN*)	Occupied bandwidth	S-SS Ec/Io dominance
ACLR	EVM, relative or absolute power, modulation type	Spectrum emission mask	Cell, group, sector ID
Reference power		ACLR	RSRP/RSRQ
Abs power at defined range	Each control channels'	Multi-ACLR	RS-SINR/S-SS RSI
Rel power at defined range	I/Q diagram	Spurious emission mask	P-SS/S-SS power
Multi-ACLR	Modulation format	Slot average power	S-SS Ec/Io
Lowest reference power	Frequency error	Off power	Multipath profile
Highest reference power	I/Q origin offset	Transition period	Cell, group, sector ID
Abs power at defined range	EVM RMS, EVM peak	Time alignment error	Ant 0 RS Ec/Io, delay
Rel power at defined range	Subframe	MBSFN*	Ant 1 RS Ec/Io, delay
Spurious emissions	MBSFN*	PDSCH/Data* QPSK EVM	Ant 2 RS Ec/Io**, delay**
Peak frequency at defined range	Subframe summary table	PDSCH/Data* 16 QAM EVM	Ant 3 RS Ec/Io**, delay**
Peak level at defined range	(P-SS, S-SS, PBCH, PCFICH, PHICH, PDCCH, RS, MBSFN*, PDSCH/Data* QPSK, PDSCH/Data* 16 QAM, PDSCH/Data* 64 QAM)	PDSCH/Data* 64 QAM EVM	Control channel
Power vs. time (frame)	EVM, relative or absolute power, modulation type	Data EVM RMS, peak	RS power trend
Frame average power		RS, P-SS, S-SS EVM	Cell, group, sector ID
Subframe power		RS, P-SS, S-SS power	Control channel table
First slot power		PBCH power	(P-SS, S-SS, PBCH, PCFICH, RS 0, RS 1, RS 2**, RS 3**)
Second slot power		Subframe power	Absolute power
Cell ID, I/Q origin offset		OFDM power	Relative power
Time offset		Time error	EVM RSM, phase
Power vs. time (slot)		I/Q origin offset	Frequency error
Slot average power		Carrier aggregation**	Time alignment error
Transient period length		Component carriers: up to 5	Time offset
Off power		Subframe power	Datagram
Constellation		P-SS, S-SS, PBCH, RS power and EVM	Datagram
MBSFN*		PDSCH/Data* QPSK power and EVM	Resource block power
RS TX power		PDSCH/Data* 16 QAM power and EVM	Data utilization
PDSCH/Data* QPSK EVM		PDSCH/Data* 64 QAM power and EVM	Route Map
PDSCH/Data* 16 QAM EVM		Cell ID	RSRP
PDSCH/Data* 64 QAM EVM		Frequency error	RSRQ
Data EVM RMS		Time alignment error	RS-SINR
Data EVM peak		Antenna port	S-SS RSI
Frequency error		Power statistics CCDF	P-SS, S-SS power
Time error			S-SS Ec/Io

*Measurement is performed when MBMS is enabled.

**Measurement is performed when option 031 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, ALLO, 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, ALLO, 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}

Wireless Connectivity (Option 006)**Bluetooth Connectivity**

Personal Area Network (PAN)
File Transfer Profile (FTP)

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	RJ45
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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, transfective 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 (noncondensing)

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) at charging -10 to 55°C (14 to 131°F) at discharging

Maximum humidity	85% RH (noncondensing)
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Shock and vibration	MIL-PRF-28800F Class 2
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Storage temperature ⁶	-30 to 71°C (-22 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 3800 traces
5. Supports USB 2.0 compatible memory devices
6. With the battery pack removed

Ordering Information

Standard

Description	Part Number
9 kHz to 8 GHz spectrum analyzer	JD785A
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.

Description	Part Number
2-Port Transmission Measurement ²	JD785A001
Bias-Tee (requires option 01)	JD785A002
CW Signal Generator	JD785A003
E1 Analyzer ³	JD785A004
T1 Analyzer ³	JD785A005
Bluetooth Connectivity ⁴	JD785A006
GPS Receiver and Antenna	JD785A010
Interference Analyzer ^{5,6}	JD785A011
Channel Scanner	JD785A012
Optical Power Meter ⁷	JD785A013
cdmaOne/cdma2000 Signal Analyzer	JD785A020
EV-DO Signal Analyzer ⁸	JD785A021
GSM/GPRS/EDGE Signal Analyzer	JD785A022
WCDMA/HSPA+ Signal Analyzer	JD785A023
TD-SCDMA Signal Analyzer	JD785A025
Mobile WiMAX Signal Analyzer	JD785A026
LTE-FDD Signal Analyzer	JD785A028
LTE-TDD Signal Analyzer	JD785A029
LTE Advanced-FDD Signal Analyzer ⁹	JD785A030
LTE Advanced-TDD Signal Analyzer ¹⁰	JD785A031
cdmaOne/cdma2000 OTA Analyzer ^{6,11}	JD785A040
EV-DO OTA Analyzer ^{6,11}	JD785A041
GSM/GPRS/EDGE OTA Analyzer ^{6,11}	JD785A042
WCDMA/HSPA+ OTA Analyzer ^{6,11}	JD785A043
TD-SCDMA OTA Analyzer ^{6,11}	JD785A045
Mobile WiMAX OTA Analyzer ^{6,11}	JD785A046
LTE-FDD OTA Analyzer ^{6,11}	JD785A048
LTE-TDD OTA Analyzer ^{6,11}	JD785A049

Standard Accessories

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

1. Requires calibration kit
2. Requires dual-port calibration kit
3. Requires test cable
4. Includes a pair of Bluetooth USB dongles with 5 dBi dipole antenna (JD70050006)
5. Recommend adding GPS receiver JD785A010
6. Recommend adding antennas G70005035x and/or G70005036x
7. Requires optical power sensors MP-60 or MP-80
8. Requires option 20
9. Requires option 28
10. Requires option 29
11. Requires option 10
12. Standard accessory that can be purchased separately

Optional Calibration Kits

Description	Part Number
Y-Calibration Kit, Type-N(m), DC to 6 GHz, 50 Ω	JD78050509
Dual-port Type-N calibration kit, 50 Ω	JD78050507
• 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

Description	Part Number
1.0 m (3.28 ft) RF cable, DC to 18 GHz, Type-N(m) to Type-N(m), 50 Ω	G710050530
1.5 m (4.92 ft) RF cable, DC to 18 GHz, Type-N(m) to Type-N(f), 50 Ω	G710050531
3.0 m (9.84 ft) RF cable, DC to 18 GHz, Type-N(m) to Type-N(f), 50 Ω	G710050532
1.5 m (4.92 ft) RF cable, DC to 18 GHz, Type-N(m) to SMA(m), 50 Ω	G710050533
1.5 m (4.92 ft) RF cable, DC to 18 GHz, Type-N(m) to QMA(m), 50 Ω	G710050534
1.5 m (4.92 ft) RF cable, DC to 18 GHz, Type-N(m) to SMB(m), 50 Ω	G710050535

Ordering Information (cont'd)
Optional Omni Antennas

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

Optional Yagi Antennas

Description	Part Number
RF Yagi antenna Type-N(f), 806 MHz to 896 MHz, 10.2 dBd ¹³	G700050364
RF Yagi antenna Type-N(f), 866 MHz to 960 MHz, 10.2 dBd ¹³	G700050365
RF Yagi antenna Type-N(f), 1.75 GHz to 2.39 GHz, 9.8 dBd ¹³	G700050363
RF Yagi antenna Type-SMA(f), 700 MHz to 4 GHz, 1.85 dBd ¹⁴	G700050366

Optional RF Power Sensors

Description	Part Number
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	JD731B
Directional Power Sensor (peak and average power) Frequency: 150 MHz to 3.5 GHz Power: average/peak 0.1 to 50 W	JD733A
Terminating Power Sensor (average power) Frequency: 20 MHz to 3.8 GHz Power: -30 to +20 dBm	JD732B
Terminating Power Sensor (peak power) Frequency: 20 MHz to 3.8 GHz Power: -30 to +20 dBm	JD734B
Terminating Power Sensor (peak and average power) Frequency: 20 MHz to 3.8 GHz Power: -30 to +20 dBm	JD736B

Optional Optical Power Sensors

Description	Part Number
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-60
Miniature USB 2.0 Optical Power Sensor Wavelength range: 780 to 1650 nm 1300, 1550 nm: -35 to +23 dBm 980 nm: -30 to +23 dBm	MP-80

Optional RF Adapters

Description	Part Number
Adapter Type-N(f) to Type-N(f), DC to 6 GHz, 50 Ω	G710050570
Adapter Type-N(m) to DIN(f), DC to 4 GHz, 50 Ω	G710050571
Adapter DIN(m) to DIN(m), DC to 4 GHz, 50 Ω	G710050572
Adapter Type-N(m) to SMA(f), DC to 18 GHz, 50 Ω	G710050573
Adapter Type-N(m) to BNC(f), DC to 1.5 GHz, 50 Ω	G710050574
Adapter Type-N(m) to DIN(m), DC to 4 GHz, 50 Ω	G710050576
Adapter Type-N(f) to DIN(f), DC to 4 GHz, 50 Ω	G710050577
Adapter Type-N(f) to DIN(m), DC to 4 GHz, 50 Ω	G710050578
Adapter DIN(f) to DIN(f), DC to 4 GHz, 50 Ω	G710050579

Optional E1/T1 Test Cables

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

Optional Miscellaneous

Description	Part Number
Attenuator 40 dB, 100 W, DC to 4 GHz (unidirectional)	G710050581
Soft carrying case	JD74050341
Hard carrying case	JD71050342
Hard carrying case with wheels	JD70050342
Backpack carrying case	JD74050343
RF directional coupler, 700 MHz to 4 GHz, 30 dB, input/output; Type-N(m) to Type-N(f), tap off; Type-N(f) ¹⁵	G710050585
RF Combiner, 700 MHz to 4 GHz, Type-N(f) to Type-N(m) ¹⁵	G710050586
4x1 RF combiner 700 MHz to 4 GHz, Type-N(f) to Type-N(m) ¹⁶	G710050587
External battery charger	G710550324
JD780A series user's manual – printed version	JD780A362

13. Requires RF cable G710050530

14. Requires RF cable G710050533

15. Recommended for LTE testing

16. Recommended for LTE Advanced testing

Network and Service Enablement Regional Sales

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