

JD748A

CellAdvisor™ Signal Analyzer



Spectrum Analyzer: 100 kHz to 4 GHz

Power Meter: 10 MHz to 4 GHz

Specification Conditions

The JD748A 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	100 kHz to 4 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 4 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	<–90 dBc/Hz (typical)
100 kHz	<–95 dBc/Hz (typical)
1 MHz	<–102 dBc/Hz (typical)
Measurement Range	
	DANL to +20 dBm
Input attenuator range	0 to 50 dB, 5 dB steps
Maximum Input Level	
Average continuous power	+20 dBm
DC voltage	±50 V DC
Displayed Average Noise Level (DANL)	
1 Hz RBW, 1 Hz VBW, 50 Ω termination, 0 dB attenuation, RMS detector	
Preamplifier Off:	
10 MHz to 2.3 GHz	–140 dBm (–146 dBm, typical)
>2.3 GHz to 3 GHz	–138 dBm (–144 dBm, typical)
>3 GHz to 4 GHz	–135 dBm (–140 dBm, typical)
Preamplifier On:	
10 MHz to 2.3 GHz	–155 dBm (–160 dBm, typical)
>2.3 GHz to 3 GHz	–153 dBm (–158 dBm, typical)
>3 GHz to 4 GHz	–150 dBm (–156 dBm, typical)

2

Display Range

Log scale and units (10 divisions displayed)	1 to 20 dB/division in 1 dB steps dBm, dBV, dBmV, dB μ V
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 (20 to 30°C)

5 MHz to 4 GHz	± 1.25 dB, ± 0.5 dB (typical)	Attenuation < 40 dB
	± 1.55 dB, ± 1.0 dB (typical)	Attenuation ≥ 40 dB

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

20 MHz to 4 GHz	1.5:1 (typical)
-----------------	-----------------

Second Harmonic Distortion

Mixer level = -25 dBm

10 MHz to 1.3 GHz	< -65 dBc (typical)
> 1.3 GHz to 4 GHz	< -70 dBc (typical)

Third-order Inter-modulation (Third-order Intercept: TOI)

200 MHz to 2 GHz	$+10$ dBm (typical)
> 2 GHz to 4 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)
> 3 GHz to 4 GHz	-85 dBm (nominal)
Exceptions	< -80 dBm at 311.94 MHz < -84 dBm at 415.92 MHz < -85 dBm at 519.90, 1599.00, and 2497.80 MHz
Input related spurious	< -70 dBc (nominal)

Dynamic Range

2/3 (TOI-DANL) in 1 Hz RBW	> 95 dB
----------------------------	-----------

Sweep Time

Range	80 ms to 1000 s	
	24 μ s to 200 s	Span = 0 Hz (zero span)
Accuracy	$\pm 2\%$	Span = 0 Hz (zero span)
Sweep mode	Continuous, single	

Gated Sweep

Trigger source	External, video, and GPS
Gate length	1 μ s 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 μ s

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

3

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 4 GHz
Span	100 kHz to 100 MHz
Dynamic range	-120 to +20 dBm
Maximum power	+20 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	$\pm(4\% \text{ of reading} + 0.05 \text{ W})^{1,2}$

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	$\pm(4\% \text{ of reading} + 0.05 \text{ W})^{1,2}$

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	$\pm 7\%^1$

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	$\pm 7\%^1$

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	$\pm 7\%^1$

1. CW condition at 25°C \pm 10°C

2. Forward power

Optical Power Meter (Standard)**Optical Power Meter**

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

External Optical Power Sensors**Optical Power Sensor****MP-60A**

Wavelength range	780 to 1650 nm
Max permitted input level	+10 dBm
Connector input	Universal 2.5 and 1.25 mm
Accuracy	$\pm 5\%$

Optical Power Sensor**MP-80A**

Wavelength range	780 to 1650 nm
Max permitted input level	+23 dBm
Connector input	Universal 2.5 and 1.25 mm
Accuracy	$\pm 5\%$

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**

10 MHz to 4 GHz

Measurement Range

-110 to +20 dBm

Measurements

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

4

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	Channel/frequency scanner
Channel power	Burst power	Channels or frequencies
Spectral density	Modulation type	Absolute power
Peak to average power	Frequency error	Group (traffic, control)
Occupied bandwidth	Phase error RMS	BSIC (NCC, BCC)
Occupied bandwidth	Phase error peak	Multipath profile
Integrated power	I/Q origin offset*	(10 strongest)
Occupied power	TSC	Frame average power
Spectrum emission mask	BSIC	SNR, delay
Reference power	C/I*	Modulation analyzer
Peak level at defined range	EVM RMS*	Frame avg power trend
Spurious emissions	EVM Peak*	C/I trend
Peak frequency at defined range	EVM 95 th **	Frame average power
Peak level at defined range		BSIC, frame no. and time
Power vs. time (Slot)		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	$\pm 2.0\%$	$2\% \leq \text{EVM} \leq 20\%$
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	Channel scanner (up to 6)
Channel power	CPICH power	Frequencies or channels
Spectral density	Rho, EVM	Channel power, scramble code, CPICH power, Ec/Io
Peak to average power	Peak CDE	Scramble scanner (up to 6)
Occupied bandwidth	Frequency error	Channel power
Occupied bandwidth	Time offset	CPICH dominance
Integrated power	Carrier feed-through	Scramble code
Occupied power	Scramble code	Ec/Io, CPICH power, delay
Spectrum emission mask	Code domain power	Multipath profile
Reference power	Abs/Rel code power	Channel, multipath power
Peak level at defined range	Individual code EVM and its constellation	Ec/Io, delay
ACLR	Channel power	Code domain power
Reference power	Power bar graph	Abs/Rel code power
Abs power at defined range	(Abs/Rel/Delta power)	Individual code EVM
Rel power at defined range	CPICH, P-CCPCH, S-CCPCH	Channel power
Multi-ACLR	PICH, P-SCH, S-SCH	Scramble code
Lowest reference power	Max, avg active power	CPICH, P-CCPCH, S-CCPCH, PICH, P-SCH, S-SCH
Highest reference power	Max, avg inactive power	Max, avg active power
Abs power at defined range	Scramble code	Max, avg inactive power
Rel power at defined range	Relative code domain error	Frequency error
Spurious emissions	Abs/Rel code power	Time offset, Rho
Peak frequency at defined range	Code error	Carrier feed-through
Peak level at defined range	Individual code EVM, RCDE and its constellation	(Composite) EVM
	Channel power	CPICH EVM, P-CCPCH EVM
	Power bar graph	Amplifier capacity
	(Abs/Rel/Delta power)	Peak amplifier capacity
	CPICH, P-CCPCH, S-CCPCH, PICH, P-SCH, S-SCH	Average amplifier capacity
	AVG RCDE QPSK, 16 QAM, 64 QAM	Code, peak utilization
		Average utilization
		Route map
		CPICH power, Ec/Io

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
		Spectrum emission mask
		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

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	Sync-DL ID scanner (32)
Channel power	(TS [0 to 6], DwPTS, UpPTS)	Scramble code group
Spectral density	Data power right	Ec/Io, Tau
Peak to average power	(TS [0 to 6], DwPTS, UpPTS)	DwPTS power
Occupied bandwidth	Time offset	Pilot dominance
Occupied bandwidth	(TS [0 to 6], DwPTS, UpPTS)	Sync-DL ID vs. Tau (up to 6)
Integrated power	Power vs. time (mask)	ID, power, Ec/Io, Tau
Occupied power	Slot power	DwPTS power
Spectrum emission mask	On/off slot ratio	Pilot dominance
Reference power	Off power	Sync-DL ID multipath
Peak level at defined range	Timogram	Ec/Io, Tau
ACLR	Constellation	DwPTS power
Reference power	Rho	Pilot dominance
Abs power at defined range	EVM RMS, EVM peak	Sync-DL ID analyzer
Rel power at defined range	Peak CDE	DwPTS power, Ec/Io trend
Multi-ACLR	Frequency error	DwPTS power
Lowest reference power	I/Q origin offset	Pilot dominance
Highest reference power	Time offset	EVM, frequency error
Abs power at defined range	Midamble power	Ec/Io, CINR
Rel power at defined range	Slot power	Route Map
Spurious emissions	DwPTS power	DwPTS Power
Peak frequency at defined range	Midamble power (1 to 16)	
Peak level at defined range	Code power	
Power vs. time (slot)	Abs/Rel code power	
Slot power	Individual code EVM	
DwPTS power	and its constellation	
UpPTS power	Data format	
On/off slot ratio	Slot power, DwPTS power	
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 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 (Option 028/030)

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

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

* Measurement is performed when MBMS is enabled.

** Measurement is performed when option 031 is enabled

Wireless Connectivity (Option 006)

Bluetooth Connectivity

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

General Information

Inputs and Outputs

RF in	Spectrum analyzer
Connector	Type-N, female
Impedance	50 Ω (nominal)
Damage level	>+40 dBm, \pm 50 V DC (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
GPIO	RJ45
Audio jack	3.5 mm headphone jack
External power	5.5 mm barrel connector
Speaker	Built-in speaker

Display

Type	Resistive touch screen (as of serial number BEK11791)
Size	8 inch, LED backlight
Resolution	800 x 600

Power

External DC input	12 to 19 V DC
Power consumption	32.5 W 45 W maximum (when charging battery)

Battery

Type	10.8 V, 7800 mA/hr (Lithium ion)
Operating time	>3.5 hours (typical)
Charge time	2.5 hours (80%), 4 hours (100%)
Charging temperature	0 to 45°C (32 to 113°F) \leq 85% RH
Discharging temperature	-10 to 60°C (14 to 140°F) \leq 85% RH
Storage temperature ³	-20 to 50°C (-4 to 122°F) \leq 85% RH (noncondensing)

Data Storage

Internal ⁴	Minimum 20 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	\leq 85% RH (noncondensing)
Shock and vibration	MIL-PRF-28800F class 2
Storage temperature ⁶	-30 to 71°C (-22 to 160°F)

EMC

EN 61326-2-1	Complies with European EMC
--------------	----------------------------

Size and Weight (Standard configuration)

Weight (with battery)	<3.6 kg (7.94 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

Description	Part Number
100 kHz to 4 GHz Spectrum Analyzer	JD748A
10 MHz to 4 GHz RF Power Meter (internal mode)	

Options

NOTE: Upgrade options for the JD748A use the designation JD748AU before the respective last three-digit option number.

Description	Part Number
Bluetooth Connectivity ¹	JD748A006
20 MHz Demodulation Hardware	JD748A009
GPS Receiver and Antenna	JD748A010
Interference Analyzer ^{2,3}	JD748A011
Channel Scanner	JD748A012
cdmaOne/cdma2000 Signal Analyzer ⁴	JD748A020
EV-DO Signal Analyzer ⁵	JD748A021
GSM/GPRS/EDGE Signal Analyzer ⁴	JD748A022
WCDMA/HSPA+ Signal Analyzer ⁴	JD748A023
TD-SCDMA Signal Analyzer ⁴	JD748A025
Mobile WiMAX Signal Analyzer ⁴	JD748A026
LTE-FDD Signal Analyzer ⁴	JD748A028
LTE-TDD Signal Analyzer ⁴	JD748A029
LTE Advanced-FDD Signal Analyzer ^{4,6}	JD748A030
LTE Advanced-TDD Signal Analyzer ^{4,7}	JD748A031
cdmaOne/cdma2000 OTA Analyzer ^{3,8}	JD748A040
EV-DO OTA Analyzer ^{3,8}	JD748A041
GSM/GPRS/EDGE OTA Analyzer ^{3,8}	JD748A042
WCDMA/HSPA+ OTA Analyzer ^{3,8}	JD748A043
TD-SCDMA OTA Analyzer ^{3,8}	JD748A045
Mobile WiMAX OTA Analyzer ^{3,8}	JD748A046
LTE-FDD OTA Analyzer ^{3,8}	JD748A048
LTE-TDD OTA Analyzer ^{3,8}	JD748A049

Standard Accessories

Description	Part Number
AC/DC power adapter ⁹	G710550326
Cross LAN cable (1.5 m) ⁹	G710550335
USB A to B cable (1.8 m) ⁹	GC73050515
>1 GB USB memory ⁹	GC72450518
Rechargeable lithium ion battery ⁹	G710550325
Automotive cigarette lighter 12 V DC adapter ⁹	G710550323
Stylus ⁹	G710550316
JD740A series user's manual and application software — CD	JD740A361

1. Includes a pair of Bluetooth USB dongles with 5 dBi dipole antenna (JD70050006)
2. Recommend adding GPS receiver JD745A010
3. Recommend adding antennas G70005035x and/or G70005036x
4. Requires option 9
5. Requires options 9 and 20
6. Requires option 28
7. Requires option 29
8. Requires options 9 and 10
9. Standard accessories that can be purchased separately

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

Optional Omni Antennas

Description	Part Number
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

Ordering Information

Optional Yagi Antennas

Description	Part Number
RF Yagi antenna Type-N(f), 806 MHz to 896 MHz, 10.2 dBd ¹⁰	G700050364
RF Yagi antenna Type-N(f), 866 MHz to 960 MHz, 10.2 dBd ¹⁰	G700050365
RF Yagi antenna Type-N(f), 1.75 GHz to 2.39 GHz, 9.8 dBd ¹⁰	G700050363
RF Yagi antenna SMA(f), 700 MHz to 4 GHz, 1.85 dBd ¹¹	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
USB Optical Power Meter with software, 2.5 and 1.25 mm interfaces, 30-inch USB extender, and carrying pouch	MP-60A
USB Optical Power Meter—High power with software, 2.5 and 1.25 mm interfaces, 30-inch USB extender, and carrying pouch	MP-80A

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(f) to Type-N(f), DC to 4 GHz, 50 Ω	G710050575
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 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
CellAdvisor Backpack carrying case	JD70050343
RF directional coupler, 700 MHz to 4 GHz, 30 dB, input/output; Type-N(m) to Type-N(f), Tap Off; Type-N(f) ¹²	G710050585
RF combiner, 700 MHz to 4 GHz, Type-N(f) to Type-N(m) ¹²	G710050586
4x1 RF combiner 700 MHz to 4 GHz, Type-N(f) to Type-N(m) ¹³	G710050587
External battery charger	G710550324
JD740A series user's manual – printed version	JD740A362

10. Requires RF cable G710050530

11. Requires RF cable G710050533

12. Recommended for LTE testing

13. Recommended for LTE Advanced testing

Network and Service Enablement 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/nse
---	---	---	---	---