



CellAdvisor™

JD746B RF Analyzer Specifications

Spectrum Analyzer (standard)

Frequency		
Frequency accuracy	± (Readout frequency x Internal 10MHz Frequency reference accuracy + RBW centering + 2 Hz + 0.5 x Horizontal resolution)	
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	

Spectrum Analyzer: 100 kHz to 4 GHz

Cable and Antenna Analyzer: 5 MHz to 4 GHz

Power Meter: 10 MHz to 4 GHz

Specification Conditions

JD746B 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 at 20 to 30°C after being at this temperature for 15 minutes
 - Nominal: a general, descriptive term or parameter

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 >2.3 GHz to 3 GHz >3 GHz to 4 GHz	-140 dBm (-146 dBm, typical) -138 dBm (-144 dBm, typical) -135 dBm (-140 dBm, typical)
Preamplifier On 10 MHz to 2.3 GHz >2.3 GHz to 3 GHz >3 GHz to 4 GHz	-155 dBm (-160 dBm, typical) -153 dBm (-158 dBm, typical) -150 dBm (-156 dBm, typical)
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, trace math
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, next peak left, next peak right, minimum search marker to center/start/stop, always peak on/off
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, Sweep mode	
20 MHz to 3 GHz	-90 dBm (nominal)
>3 GHz to 4 GHz	-85 dBm (nominal)
Exceptions	<-70 dBm at 22788/770.4/1791.8/26478/2927.3/3195.2/3915.1/3640 MHz
Input-related spurious	<-67 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)
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 detection	
Dual spectrum	

* CW signal generator (Option 003) can be set up simultaneously.

Cable and Antenna Analyzer (standard)

Frequency	
Range	5 MHz to 4 GHz
Resolution	10 kHz
Accuracy	±25 ppm + aging (20 to 30°C)
Aging	±5 ppm
Data Points	
126, 251, 501, 1001	
Measurement Speed	
1.65 ms/point (nominal)	
Measurement Accuracy	
Corrected directivity	40 dB
Reflection uncertainty	$\pm(0.3 + 20\log(1+10^{-EP/20}))$ (typical) EP = directivity – measured return loss
Output Power	
High	0 dBm (typical)
Low	-30 dBm (typical)
Dynamic Range	
Reflection	60 dB
Maximum Input Level	
Average continuous power	+25 dBm (nominal)
DC voltage	±50 V DC
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
Horizontal resolution	Maximum = 1500 m (4921 ft) $(1.5 \times 10^8) \times (V_p)/\Delta$ 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 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	JD731B	JD733A	
Frequency range	300 MHz to 3.8 GHz	150 MHz to 3.5 GHz	
Dynamic range	0.15 to 150 W (average) 4 to 400 W (peak)	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	JD732B	JD734B	JD736B
Frequency range	20 MHz to 3.8 GHz		
Dynamic range	-30 to +20 dBm		
Connector type	Type-N male		
Measurement type	Average	Peak	Average and peak
Accuracy	±7% ¹		

Optical Power Meter (standard)

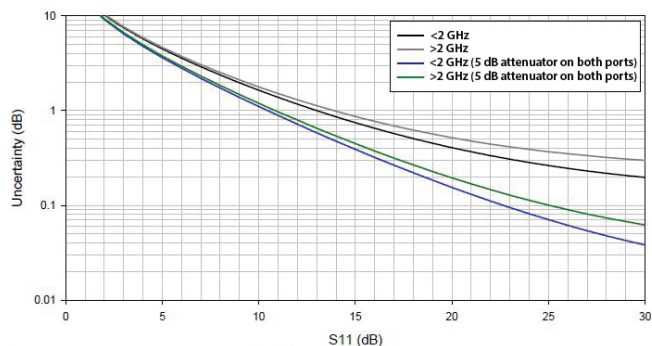
Optical Power Meter		
Display range	-100 to +100 dBm	
Offset range	0 to 60 dB	
Resolution	0.01 dB or 0.1 mW	
External Optical Power Sensors		
	MP-60A	MP-80A
Wavelength range	780 to 1650 nm	
Max permitted input level	+10 dBm	+23 dBm
Connector type	Type-N female on both ends	
Connector input	Universal 2.5 and 1.25 mm	
Accuracy	±5%	

1. CW condition at 25°C ±10°C

2. Forward power

2-Port Transmission Measurements (Option 001)

Frequency	
Frequency range	5 MHz to 4 GHz
Frequency resolution	10 kHz
Transmission uncertainty	



Use 5 dB attenuators on both ports to lessen uncertainty.

Output Power	
High	0 dBm (typical)
Low	-30 dBm (typical)
Measurement Speed	
Vector	2.2 ms/point (nominal)
Dynamic Range	
Vector	5 MHz to 3 GHz, 80 dB >3 GHz to 4 GHz, 75 dB
Scalar	5 MHz to 4 GHz, >100 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 4 GHz
Frequency reference	±25 ppm Maximum
Frequency resolution	10 kHz

Output Power	
Range	0 dBm, -30 to -80 dBm
Step	1 dB
Accuracy	±1.5 dB, (0 dBm, -30 to -70 dBm) ± 2.5 dB (-70 to -80 dBm) (15 to 35°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	
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

Bluetooth Connectivity (Option 013)

Personal area network (PAN)
File transfer profile (FTP)

Wi-Fi Connectivity (Option 016)

Interface type	USB LAN Card
Interface standard	IEEE 802.11 b/g/n
Chipset	RealTek, Ralink
USB wireless mode	Infrastructure mode
Web-based remote control	Internet Explorer, Chrome, Safari
Internet protocol version	IPv4, IPv6

EMF Analyzer (Option 050)

General Parameters		
Supported Antenna	Isotropic Antenna G700050380 26 MHz to 3 GHz	
Mode	Sweep / FFT	
Trace	X-Axis, Y-Axis, Z-Axis, Current, Isotropic, Isotropic Accumulated	
Limit lines	MSL, ICNIRP	
Dwell Time	1 to 60s	
Measurement Time	1 to 30 min (# of measurement = Measurement Time / (Dwell Time x 3))	
Units	dB μ V/m, dBmV/m, dBV/m, V/m, W/m ² , dBm/m ² , dBW/m ² , A/m, dBA/m, and Watt/cm ² .	
Miscellaneous	Spectrum logging and Replay Export to CSV PDF Report Generation	
Measurement		
Option 050 and G700050380		
Trace: X-Axis, Y-Axis, Z-Axis, Current, Isotropic, Isotropic Accumulated	Isotropic EMF Power: AVG, Max, Min	Accumulated Isotropic EMF Power: AVG, Max, Min

RFoCPRI/Interference Analyzer (Options 008, 060, 061, 062, 063, 064, and 065)

General Parameters					
Optical interface		Dual SFP/SFP+ (supports all MSA compliant SFP modules)			
Line rates	614.4 Mbps (1x), 1228.8 Mbps (2x)		Option 008 and 060		
	2457.6 Mbps (4x)		Option 008 and 061		
	3072.0 Mbps (5x)		Option 008 and 062		
	4915.2 Mbps (8x)		Option 008 and 063		
	6144.0 Mbps (10x)		Option 008 and 064		
	9830.4 Mbps (16x)		Option 008 and 065		
Resolution Bandwidth (RBW)					
-3 dB bandwidth		1 kHz to 10 kHz (span ≤ 3.84 MHz) 1 KHz to 100 kHz (3.84 MHz < span < 30.86 MHz)		1-3-10 sequence	
Accuracy		±10% (nominal)			
VBW					
-3 dB bandwidth		1 Hz to 100 KHz		1-3-10 sequence	
Accuracy		±10% (nominal)			
CPRI Parameter					
IQ Sample width		4 – 20 (step 1)			
Mapping method		1 and 3			
TX clock		Internal/external/recovered			
Port type		Master/slave			
Map position		AxC#0 – AxC#7			
Bandwidth		1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz			
Measurements					
Layer-2 Monitoring		Layer-2 Term		Interference Analyzer	
Port 1	Port 2	Port 1 or 2 (exclusive)		Spectrum	Sound indicator, AM/FM audio demodulation, interference ID, spectrum recorder
LOS	LOS	LOS	SDI		
LOF	LOF	LOF	RAI		
SDI	SDI	Optic RX level	dBm		
RAI	RAI	Protocol version	1 to 10	Spectrogram	Collect up to 72 hr of data
Optic RX level	Optic RX level	C and M HDLC rate (kbps)	No HDLC, 240, 480, 960, 1920, 2400	RSSI	Collect up to 72 hr of data
SFP Information	SFP Information			Spectrum replay	X1, x2, x4, x8
Wavelength	Wavelength	C and M Ethernet subchannel number	20 to 63	PIM Detection	
Vendor	Vendor			Single carrier	
Vendor PN	Vendor PN	Alarm Injection		Multi carrier	
Vendor rev	Vendor rev	R-LOS	Single	PIM calculator	
Power level type	Power level type	R-LOF	Single		
Diagnostic byte	Diagnostic byte	Error Injection			
Nominal rate	Nominal rate	Code	Single/rate		
Min rate	Min rate	K30.7	Single/rate		
Max RX level	Max RX level	Error rate	1E-3 to 1E-9		
Max TX level	Max TX level				

RFoCPRI GSM (Option 068)

General Parameters					
Optical interface	Dual SFP/SFP+ (supports all MSA compliant SFP modules)				
Line rates	614.4 Mbps (1x) 1228.8 Mbps (2x) 2457.6 Mbps (4x) 3072.0 Mbps (5x) 4915.2 Mbps (8x) 6144.0 Mbps (10x) 9830.4 Mbps (16x)				
Resolution Bandwidth (RBW)	1 KHz to 30 kHz (Span≤960 kHz)				
	Accuracy	±10% (nominal)			
Video Bandwidth (RBW)	1 Hz to 30 KHz				
	Accuracy	±10% (nominal)			
CPRI Parameter					
IQ Sample Width	4 – 20 (step 1)				
Sample Rate	960 KHz				
Mapping	NA=1, S=1, K=4, NC=1				
TX clock	Internal/external/recovered				
Port type	Master/slave				
Bandwidth	1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Measurements					
Layer-2 Monitoring		Layer-2 Term		Layer-2 Term (cont.)	
Port 1	Port 2	Port 1 or 2 (exclusive)		Error	
LOS	LOS	LOS	Error rate	Code	Single/rate
LOF	LOF	LOF	K30.7	Error rate	Single/rate
RAI	RAI	Optic RX level	dBm	K30.7	
SDI	SDI	Optic TX level	dBm	Interference analyzer	
Optic RX level	Optic RX level	Port Type	Master	Spectrum	
SFP Information	SFP Information	Protocol Version	1 to 10	Sound indicator	
Wavelength	Wavelength	C&M HDLC rate (kbps)	No HDLC, 240, 480, 960, 1920, 2400	AM/FM audio demodulation	
Vendor	Vendor	C&M Ethernet Subchannel number	20 to 63	Interference ID,	
Vendor PN	Vendor PN			Spectrum recorder	
Vendor rev	Vendor rev	Word Sync Loss Event		Spectrogram	
Power level type	Power level type	Code Violation		RSSI	
Diagnostic byte	Diagnostic byte	K30.7 words		Spectrum replay	
Nominal rate	Nominal rate	Frame Sync Loss Events		PIM Detection	
Min rate	Min rate	Alarm Injection		Single Carrier	
Max RX level	Max RX level	R-LOS	SDI	Multi Carrier	
Max TX level	Max TX level	R-LOF	RAI	PIM Calculator	

RFoBSAI™ Interference Analyzer (Option 070, 071, 072, 073)

General Parameters				
Optical interface		Dual SFP/SFP+ (supports all MSA compliant SFP modules)		
Line rates		768 Mbps (1x)	Option 070	
		1536 Mbps (2x)	Option 071	
		3072 Mbps (4x)	Option 072	
		6144 Mbps (8x)	Option 073	
Resolution Bandwidth (RBW)		1 kHz to 10 kHz (span ≤ 3.84 MHz)		
		1 kHz to 100 kHz (3.84 MHz < span ≤ 30.86 MHz)		
Video Bandwidth (RBW)		Accuracy	±10% (nominal)	
		1 Hz to 100 KHz		
RP3 Type		Accuracy		
		±10% (nominal)		
RP3 Address		Hexadecimal		
TX clock		Internal/external/recovered		
Port type		Master/slave		
Bandwidth		LTE-FDD/TDD: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz UMTS: 3MHz for downlink, 5MHz for Uplink		
RP3 Address List		RP3 Address, Technology, Scrambler seed*, Message Count*		
Scrambler Seed		Nx7 Index: 0 – 17, step 1		
Measurements				
Layer-2 Monitoring		Layer-2 Term		Interference analyzer
Port 1	Port 2	Port 1 or 2 (exclusive)		Spectrum
LOS	LOS	LOS		
LOF	LOF	LOF		
Code Violation	Code Violation	Optic RX level	dBm	Spectrogram
K30.7 words	K30.7 words	Optic TX level	dBm	
Optic RX level	Optic RX level	Port Type	Master	RSSI
Optic TX level	Optic TX level	TX State	State machine	
Messages Address	Message Address	RX State	State machine	Spectrum replay
Message Counter	Message Counter	TX Address	RP3 Address (Hexadecimal)	
SFP Information	SFP Information	RX Address	RP3 Address (Hexadecimal)	PIM Detection
Wavelength	Wavelength	Word Sync Loss Event		
Vendor	Vendor	Code Violation		
Vendor PN	Vendor PN	K30.7 words		
Vendor rev	Vendor rev	Frame Sync Loss Events		
Power level type	Power level type	Alarm Injection		
Diagnostic byte	Diagnostic byte	K30.7	Single	
Nominal rate	Nominal rate	Error Injection		
Min rate	Min rate	Code	Single/rate	
Max RX level	Max RX level	Error rate	1E-3 to 1E-9	
Max TX level	Max TX level			

* Available only when the link rate is 61Gbps

RFoCPRI™ LTE-FDD Signal Generator (Option 081)

General Parameters		
Optical interface	Dual SFP/SFP+ (supports all MSA compliant SFP modules)	
Link Rate	614.4 Mbps (1x), 1228.8 Mbps (2x), 2457.6 Mbps (4x), 3072.0 Mbps (5x), 4915.2 Mbps (8x), 6144.0 Mbps (10x), 9830.4 Mbps (16x)	
IQ Sample width	8 – 20 bits	
Mapping method	Packed and Flexible	
Waveform	Off: CW On: LTE-FDD E-TM1.1, E-TM1.2, E-TM2, E-TM3.1, E-TM3.2, E-TM3.3	
Bandwidth	5 MHz, 10MHz, 15MHz, 20MHz	
Sampling Frequency	N x 3.84MHz (N=2, 4, 6, 8)	
Gain dynamic range	0 to -50 dB	
Frequency error	±10 Hz + ref freq accuracy	99% confidence level
Residual EVM (RMS)	0.2% (typical)	Data EVM

RFoCPRI™ LTE-TDD Signal Generator (Option 082)

General Parameters		
Optical Hardware (Option 008)		
Interface	Two SFP/SFP+ ports (supports all MSA compliant SFP modules), One Ethernet port	
CPRI Parameter		
Line coding	8B/10B	
Line rates	614.4 Mbps, 1228.8 Mbps (Option 060) 2457.6 Mbps (Option 061) 3072.0 Mbps (Option 062)	4915.2 Mbps (Option 063) 6144.0 Mbps (Option 064) 9830.4 Mbps (Option 065)
CPRI Parameter		
IQ Sample width	4 – 20 (step 1)	
Mapping method	1 and 3	
Waveform	CW, LTE-TDD E-TM1.1, E-TM1.2, E-TM2, E-TM3.1, E-TM3.2, E-TM3.3	
Bandwidth	5 MHz, 10 MHz, 15 MHz, 20 MHz	
Sampling Frequency	N x 3.84 MHz (N=2, 4, 6, 8)	
Gain dynamic range	0 to -50 dB	
Frequency error	±10 Hz + ref freq accuracy, 99% confidence level	
Residual EVM (RMS)	0.02% (typical), Data EVM	

RFoCPRI LTE-FDD Multi Carrier Signal Generator (Option 083)

General Parameters	
Optical Hardware (Option 008)	
Interface	Two SFP/SFP+ ports (supports all MSA compliant SFP modules)
Max TX	4 carriers / SFP port, Dual port operation is available
CPRI Parameter	
Line coding	8B/10B
Line rates	614.4 Mbps 1228.8 Mbps 2457.6 Mbps 3072.0 Mbps 4915.2 Mbps 6144.0 Mbps 9830.4 Mbps
CPRI Parameter	
IQ Sample width	8 – 20 (step 1)
Waveform mapping	Carrier / TX Container Map Position
Waveform	CW, CW (two tone), LTE-FDD E-TM1.1, E-TM1.2, E-TM2, E-TM3.1, E-TM3.2, E-TM3.3
Bandwidth	5 MHz, 10 MHz, 15 MHz, 20 MHz
Sampling Frequency	N x 3.84 MHz (N=2, 4, 6, 8)
Gain dynamic range	0 to -50 dB
Frequency error	±10 Hz + ref freq accuracy, 99% confidence level
Residual EVM (RMS)	0.02% (typical), Data EVM

RFoCPRI LTE-TDD Multi Carrier Signal Generator (Option 084)

General Parameters	
Optical Hardware (Option 008)	
Interface	Two SFP/SFP+ ports (supports all MSA compliant SFP modules)
Max TX	4 carriers / SFP port, Dual port operation is available
CPRI Parameter	
Line coding	8B/10B
Line rates	614.4 Mbps 1228.8 Mbps 2457.6 Mbps 3072.0 Mbps 4915.2 Mbps 6144.0 Mbps 9830.4 Mbps
CPRI Parameter	
IQ Sample width	8 – 20 (step 1)
Waveform mapping	Carrier / TX Container Map Position
Waveform	CW, CW (two tone), LTE-TDD E-TM1.1, E-TM1.2, E-TM2, E-TM3.1, E-TM3.2, E-TM3.3
Bandwidth	5 MHz, 10 MHz, 15 MHz, 20 MHz
Sampling Frequency	N x 3.84 MHz (N=2, 4, 6, 8)
Gain dynamic range	0 to -50 dB
Frequency error	±10 Hz + ref freq accuracy, 99% confidence level
Residual EVM (RMS)	0.02% (typical), Data EVM

RFoBSAI™ LTE-FDD Signal Generator (Option 086)

General Parameters		
Optical Hardware (Option 008)		
Interface	Two SFP/SFP+ ports (supports all MSA compliant SFP modules), One Ethernet port	
Max TX	4 Carrier/SFP port (Option 083 or 084), Dual port operation	
OBSAI Parameter		
Line coding	8B/10B	
Line rates	768 Mbps (Option 070) 1536 Mbps (Option 071)	3072 Mbps (Option 072) 6144 Mbps (Option 073)
CPRI Parameter		
RP3 Type	LTE	
RP3 Address	Hexadecimal	
Waveform	CW, LTE-FDD E-TM1.1, E-TM1.2, E-TM2, E-TM3.1, E-TM3.2, E-TM3.3	
Bandwidth	5 MHz, 10 MHz, 15 MHz, 20 MHz	
Sampling Frequency	N x 3.84 MHz (N=2, 4, 6, 8)	
Gain dynamic range	0 to -50 dB	
Frequency error	±10 Hz + ref freq accuracy, 99% confidence level	
Residual EVM (RMS)	0.02% (typical), Data EVM	

RFoCPRI BBU Emulation for Alcatel-Lucent (Option 101)

General Parameters			
Optical Hardware (Option 008)			
Interface	Two SFP/SFP+ ports (supports all MSA compliant SFP modules), One Ethernet port		
Max TX	4 Carrier/SFP port (Option 083 or 084), Dual port operation		
CPRI Parameter			
Line coding	8B/10B		
Line rates	614.4 Mbps, 1228.8 Mbps (Option 060) 2457.6 Mbps (Option 061) 3072.0 Mbps (Option 062)	4915.2 Mbps (Option 063) 6144.0 Mbps (Option 064) 9830.4 Mbps (Option 065)	
Resolution Bandwidth (RBW)			
-3 dB bandwidth	1 kHz to 10 kHz (span ≤ 3.84 MHz) 1 KHz to 100 kHz (3.84 MHz < span ≤ 30.86 MHz)		
Accuracy	±10% (nominal)		
CPRI Parameter			
IQ Sample width	4 – 20 (step 1)		
Mapping method	1 and 3		
TX clock	Internal/External		
Port type	Master		
Bandwidth	5 MHz, 10 MHz, 15 MHz, 20 MHz		
Measurements			
Option 101			
Carrier Configuration	SFP Information	Spectrum Clearance	Coverage Range
RRH description	RRH description	Spectrum	Spectrum
Carrier information	SFP information	Spectrogram	Carrier information
CPRI and Active SW	RTD Information	RSSI	VSWR
RRH description	Round Trip Delay	Dual spectrum	Tilt
CPRI state	Round Trip Delay (avg/min/max)	Dual active trace	PIM Analysis
Active SW		Dual spectrogram	Single radio Spectrum flatness
Option 101/083/084			
PIM Analysis with two sweep tones from a single SFP port.		PIM Detection with up to 4 LTE carriers	
PIM Analysis with two sweep tones from each SFP port under dual BBU emulation mode		PIM Detection with up to 8 LTE carriers (2 SFP ports x 4 carriers) under dual BBU emulation mode	

Layer-2 BERT (Option 110)

General Parameters			
Optical interface	Dual SFP/SFP+ (supports all MSA compliant SFP modules)		
Line rates	614.4 Mbps (1x), 1228.8 Mbps (2x), 2457.6 Mbps (4x), 3072.0 Mbps (5x), 4915.2 Mbps (8x), 6144.0 Mbps (10x), 9830.4 Mbps (16x)		
TX clock	Internal/external/recovered		
Port	SFP Port 1 and Port 2 (Dual independent operation)		
Port type	Master/Slave		
Alarm / Error Injection	Alarm	R-LOS/R-LOF/RAI/SDI	
	Error	Code/ K30.7/ Bit	
	Insert Type	Single/ Rate	
PRBS Pattern	Live, Digital Word, ANSI 2 ²³ -1, ANSI 2 ²³ -1 Inv, ANSI 2 ³¹ -1, ANSI 2 ³¹ -1 Inv, ANSI 2 ²⁰ -1, ANSI 2 ²⁰ -1 Inv, ANSI 2 ¹⁵ -1, ANSI 2 ¹⁵ -1 Inv, ANSI 2 ¹¹ -1, ANSI 2 ¹¹ -1 Inv, ITU 2 ²³ -1, ITU 2 ²³ -1 Inv, ITU 2 ³¹ -1, ITU 2 ³¹ -1 Inv, ITU 2 ¹⁵ -1, ITU 2 ¹⁵ -1 Inv, ITU 2 ¹¹ -1, ITU 2 ¹¹ -1 Inv		
PRBS Pattern Mapping mode	Bulk mode for whole payload		
	Channelized mode for AxC Group	Bandwidth: 5MHz, 10MHz, 15MHz, 20MHz Map Position: AxC 0 - 7	
Round Trip Delay	Resolution: ns (min step: 1ns)		
Measurements			
Common			
LOS	RAI	Pattern Sync	Optic Rx level
LOF	SDI		Optic Tx level
BERT	Count	L1 Inband	
Code Violation	Rx Code Words	RX Protocol Version	
Code Violation Rate	Tx Code Words	Rx C&M HDLC Rate (kbps)	
RX K30.7 Words	Rx Frame	Rx C&M Eth Subchannel Number	
Word Sync Loss Events	Tx Frame	TX Protocol Version	
Frame Sync Loss Events	Round Trip Delay	TX C&M HDLC Rate (kbps)	
Bit Errors	Round Trip Delay (Offset)	TX C&M Eth Subchannel Number	
Bit Error Rate	Round Trip Delay (avg)	Port Type	
Svc Disruption (ms)	Round Trip Delay (min)	Start-up State	
	Round Trip Delay (max)		

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)	
Reflection/RF Out	Cable and antenna analyzer	
Connector	Type-N, female	
Impedance	50 Ω (nominal)	
Damage level	>+37 dBm, \pm 50 V DC (nominal)	
RF In	Cable and antenna analyzer	
Connector	Type-N, female	
Impedance	50 Ω (nominal)	
Damage level	>+25 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	
SFP Cage		
Port 1	RFoFiber (with option 008)	
Port 2	SFP/SFP+ compatible	
LAN ³	RJ45, 10/100Base-T	
Audio jack	3.5 mm headphone jack	
External power	5.5 mm barrel connector	
Speaker	Built-in speaker	
Display		
Type	Resistive touch screen	
Size	8 inch, LED backlight, transreflective LCD with anti-glare coating	
Power		
External DC input	18 to 19 V DC	
Power consumption	42 W	54 W maximum (when charging battery)

Battery	
Type	10.8 V, 7800 mA/hr (Lithium ion)
Operating time	>3 hr (typical at spectrum analyzer)
Charge time	3 hr (while not operating) 9 hr (while operating)
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 ⁴	0 to 25°C (32 to 77°F)

Data Storage	
Internal	Maximum 512 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 -10 to 50°C (14 to 122°F) at discharging with Option 008
Maximum humidity	95% RH (noncondensing)
Shock and vibration	MIL-PRF-28800F class 2
Storage temperature ⁶	-30 to 71°C (-22 to 160°F)

EMC	
IEC/EN 61326-1:2013 (complies with European EMC)	
CISPR11:2009 +A1:2010	

ESD	
IEC/EN 61000-4-2	

Size and Weight (standard configuration)		
Weight (with battery)	Standard	4.17 kg (9.19 lb)
	Full loaded	4.34 kg (9.57 lb)
Size (W x H x D)	295 x 195 x 82 mm	

Warranty	
3 years	
Calibration Cycle	
1 year	

1. Connects flash drive, power sensor, EZ-Cal kit, and fiber microscope.
2. Data transfer and PC Application based remote control.
3. Data transfer or PC Application/Web-based remote control.
4. 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.
5. Supports USB 2.0 compatible memory devices.
6. With the battery pack removed

Ordering Information

Description	Part Number
Standard CellAdvisor RF Analyzer	
RF analyzer includes: Spectrum analyzer 100 kHz to 4 GHz RF power meter 10 MHz to 4 GHz Cable and antenna 5 MHz to 4 GHz	JD746B ^{1,2}
Options	
NOTE: Upgrade options for the JD746B use the designation JD746BU before the respective last three-digit option number.	
2 Port transmission measurements for JD746B ³	JD746B001
Bias Tee for JD746B ⁴	JD746B002
CW signal generator for JD746B	JD746B003
Optical hardware for JD746B ⁵	JD746B008
GPS receiver and antenna for JD746B	JD746B010
Interference analyzer for JD746B ^{6,7}	JD746B011
Channel scanner for JD746B	JD746B012
Bluetooth connectivity for JD746B ⁸	JD746B013
Wi-Fi connectivity for JD746B ⁹	JD746B016
EMF analyzer for JD746B ¹⁰	JD746B050
RFoCPRI 614M & 1.2G interference analyzer for JD746B ^{11,12}	JD746B060
RFoCPRI 2.4G interference analyzer for JD746B ^{11,12}	JD746B061
RFoCPRI 3.1G interference analyzer for JD746B ^{11,12}	JD746B062
RFoCPRI 4.9G interference analyzer for JD746B ^{11,12}	JD746B063
RFoCPRI 6.1G interference analyzer for JD746B ^{11,12}	JD746B064
RFoCPRI 9.8G interference analyzer for JD746B ^{11,12}	JD746B065
RFoCPRI GSM interference analyzer for JD746B ^{11,12,13}	JD746B068
RFoBSAI 768M Interference analyzer for JD746B ^{11,12}	JD746B070
RFoBSAI 1.5G interference analyzer for JD746B ^{11,12}	JD746B071
RFoBSAI 3.1G interference analyzer for JD746B ^{11,12}	JD746B072
RFoBSAI 6.1G interference analyzer for JD746B ^{11,12}	JD746B073
RFoCPRI LTE-FDD signal generator for JD746B ^{11,12,13}	JD746B081
RFoCPRI LTE-TDD signal generator for JD746B ^{11,12,13}	JD746B082
RFoCPRI LTE-FDD multi carrier signal generator for JD746B ^{11,12,14}	JD746B083
RFoCPRI LTE-TDD multi carrier signal generator for JD746B ^{11,12,15}	JD746B084
RFoBSAI LTE-FDD signal generator for JD746B ^{11,12,16}	JD746B086
ALU BBU emulation for JD746B ^{11,12}	JD746B101
CPRI Layer-2 BERT for JD746B ^{11,12,13}	JD746B110
2 port transmission measurements floating license for JD740B/JD780B	JD780B001-FL
GPS receiver and antenna floating license for JD740B/JD780B	JD780B010-FL
Interference analyzer floating license for JD740B/JD780B	JD780B011-FL
Channel scanner floating license for JD740B/JD780B	JD780B012-FL
Bluetooth connectivity floating license for JD740B/JD780B	JD780B013-FL
Wi-Fi connectivity floating license for JD740B/JD780B	JD780B016-FL
EMF analyzer floating license for JD740B/JD780B	JD780B050-FL

Description	Part Number
RFoCPRI 614M & 1.2G interference analyzer floating license for JD740B/JD780B	JD780B060-FL
RFoCPRI 2.4G interference analyzer floating license for JD740B/JD780B	JD780B061-FL
RFoCPRI 3.1G interference analyzer floating license for JD740B/JD780B	JD780B062-FL
RFoCPRI 4.9G interference analyzer floating license for JD740B/JD780B	JD780B063-FL
RFoCPRI 6.1G interference analyzer floating license for JD740B/JD780B	JD780B064-FL
RFoCPRI 9.8G interference analyzer floating license for JD740B/JD780B	JD780B065-FL
RFoBSAI 768M interference analyzer floating license for JD740B/JD780B	JD780B070-FL
RFoBSAI 1.5G interference analyzer floating license for JD740B/JD780B	JD780B071-FL
RFoBSAI 3.1G interference analyzer floating license for JD740B/JD780B	JD780B072-FL
RFoBSAI 6.1G interference analyzer floating license for JD740B/JD780B	JD780B073-FL
RFoCPRI LTE-FDD signal generator floating license for JD740B/JD780B	JD780B081-FL
RFoCPRI LTE-TDD signal generator floating license for JD740B/JD780B	JD780B082-FL
RFoBSAI LTE-FDD signal generator floating license for JD740B/JD780B	JD780B086-FL
ALU BBU emulation floating license for JD740B/JD780B	JD780B101-FL

Optional Accessories

Accessory — RF Calibrators (General)

Y- calibration kit Type-N(m), DC to 4 GHz, 50 ohm	JD72450509
Y- calibration kit DIN(m), DC to 4 GHz, 50 ohm	JD72450510
Y- calibration kit Type-N(m), DC to 6 GHz, 50 ohm	JD78050509
Y- calibration kit DIN(m), DC to 6 GHz, 50 ohm	JD78050510
EZ-Cal kit Type-N(m), DC to 6 GHz, 50 ohm	JD70050509
Dual port Type-N 4 GHz calibration kit	JD71050507
Dual port DIN 4 GHz calibration kit	JD71050508
Dual port Type-N 6 GHz calibration kit	JD78050507
Dual port DIN 6 GHz calibration kit	JD78050508
50 ohm Load, DC to 4 GHz, 1 W	GC72550511

Accessory - RF Cables (Cables)

RF cable DC to 8 GHz Type-N(m) to Type-N(m), 1.0 m	G700050530
RF cable DC to 8 GHz Type-N(m) to Type-N(f), 1.5 m	G700050531
RF cable DC to 8 GHz Type-N(m) to Type-N(f), 3.0 m	G700050532
RF cable DC to 18 GHz Type-N(m) to SMA(m), 1.5 m	G710050533
RF cable DC to 18 GHz Type-N(m) to QMA(m), 1.5 m	G710050534
RF cable DC to 18 GHz Type-N(m) to SMB(m), 1.5 m	G710050535
RF cable DC to 6 GHz Type-N(m) to DIN(f), 1.5 m	G710050536
RF cable DC to 4 GHz Type-N(m) to 1.0/2.3 (m), 1.5 m	G710050537

Ordering Information (Continued)

Description	Part Number
Phase-stable RF cable w grip DC to 6 GHz Type-N(m) to Type-N(f), 1.5 m	G700050540
Phase-stable RF cable w grip DC to 6 GHz Type-N(m) to DIN(f), 1.5 m	G700050541
RF cable DC to 18 GHz Type-N(m) to Type-N(f), 1.5 m	G710050531
Accessory - Optic Cables (Cables)	
SM/LC T-Jumper and 1.5 m fiber cable	G700050401
MM/LC T-Jumper and 1.5 m fiber cable	G700050402
Accessory - RF Antennas (General)	
RF omni antenna Type-N(m), 806 to 896 MHz	G700050353
RF omni antenna Type-N(m), 870 to 960 MHz	G700050354
RF omni antenna Type-N(m), 1710 to 2170 MHz	G700050355
RF omni antenna Type-N(m), 720 to 800 MHz	G700050356
RF omni antenna Type-N(m), 2300 to 2700 MHz	G700050357
Mag mount RF omni antenna Type-N(m), 689 to 1200 MHz, 1700 to 2700 MHz, 3000 to 6000 MHz	G700050358
RF yagi antenna Type-N(f), 1750 to 2390 MHz, 10.2 dBd	G700050363
RF yagi antenna Type-N(f), 806 to 896 MHz, 10.2 dBd	G700050364
RF yagi antenna Type-N(f), 866 to 960 MHz, 9.8 dBd	G700050365
RF yagi antenna SMA(f), 700 to 4000 MHz, 1.85 dBd	G700050366
RF yagi antenna SMA(f), 700 to 6000 MHz, 2.85 dBd	G700050367
Isotropic Antenna Type-N(m), 26 MHz to 3 GHz	G700050380
Accessory - RF Power Sensor (General)	
Directional power sensor (peak and average power) 300 to 3800 MHz	JD731B
Terminating power sensor (Average Power) 20 to 3800 MHz	JD732B
Directional power sensor (peak and average power) 150 to 3500 MHz	JD733A
Terminating power sensor (peak power) 20 to 3800 MHz	JD734B
Terminating power sensor (average/peak power) 20 to 3800 MHz	JD736B
Accessory - RF Adapters (Connector & Adapters)	
Adapter Type-N(m) to DIN(f), DC to 7.5 GHz, 50 ohm	G700050571
Adapter DIN(m) to DIN(m), DC to 7.5 GHz, 50 ohm	G700050572
Adapter Type-N(m) to SMA(f) DC to 18 GHz, 50 ohm	G700050573
Adapter Type-N(m) to BNC(f), DC to 4 GHz, 50 ohm	G700050574
Adapter Type-N(f) to Type-N(f), DC to 18 GHz 50 ohm	G700050575
Adapter Type-N(m) to DIN(m), DC to 7.5 GHz, 50 ohm	G700050576
Adapter Type-N(f) to DIN(f), DC to 7.5 GHz, 50 ohm	G700050577
Adapter Type-N(f) to DIN(m), DC to 7.5 GHz, 50 ohm	G700050578
Adapter DIN(f) to DIN(f), DC to 7.5 GHz, 50 ohm	G700050579
Adapter Type-N(m) to Type-N(m), DC to 11 GHz 50 ohm	G700050580

Description	Part Number
Adapter N(m) to QMA(f), DC to 6.0 GHz, 50 ohm	G700050581
Adapter N(m) to QMA(m), DC to 6.0 GHz, 50 ohm	G700050582
Adapter N(m) to 4.1/9.5 MINI DIN (f), DC to 6.0 GHz, 50 ohm	G700050583
Adapter N(m) to 4.1/9.5 MINI DIN (m), DC to 6.0 GHz, 50 ohm	G700050584
Adapter N(m) to 4.3-10 (f), DC to 6.0 GHz, 50 ohm	G700050585
Adapter N(m) to 4.3-10 (m), DC to 6.0 GHz, 50 ohm	G700050586
Adapter Type-N(m) to DIN(f), DC to 4 GHz, 50 ohm	G710050571
Adapter N(f) to N(f), DC to 4 GHz, 50 ohm	G710050575
Adapter Type-N(f) to DIN(f), DC to 4 GHz, 50 ohm	G710050577
Adapter Type-N(f) to DIN(m), DC to 7 GHz, 50 ohm	G710050578
Accessory - RF Miscellaneous (General)	
Attenuator 40 dB, 100 W, DC to 4 GHz (unidirectional)	G710050581
Bandpass filter 696 MHz to 716 MHz, N(m) to N(f), 50 ohm	G700050601
Bandpass filter 776 MHz to 788 MHz, N(m) to N(f), 50 ohm	G700050602
Bandpass filter 806 MHz to 849 MHz, N(m) to N(f), 50 ohm	G700050603
Bandpass filter 1710 MHz to 1755 MHz, N(m) to N(f), 50 ohm	G700050604
Bandpass filter 1850 MHz to 1910 MHz, N(m) to N(f), 50 ohm	G700050605
Accessory - General	
USB Bluetooth dongle and dipole antenna 5 dBi	JD70050006
GPS antenna for JD740 and JD780 series	JD71050351
AntennaAdvisor handle	JD70050007
Cross LAN cable (6ft)	G700550335
USB A to B cable (1.8m)	GC73050515
> 1GB USB memory	GC72450518
Stylus pen	G710550316
Accessory - Battery & Chargers	
Rechargeable lithium ion battery	G710550325
JD700B series AC/DC power adapter_90 W_15 V	JD70050326
Automotive cigarette lighter/12V DC adapter	G710550323
External battery charger	G710550324
Accessory - Manual & Documentation	
JD700B series user's guide - printed version	JD700B362
Accessory - Carrying Case	
Soft carrying case	JD74050341
Hard carrying Case	JD71050342
Hard carrying case with wheels	JD70050342
CellAdvisor backpack carrying case	JD70050343
Optional TAP	
Optical nTAP, three-channel, 50 µm, MM, LC, 50/50 split ratio	TO3-M5-LC-55-K
Optical nTAP, three-channel, 9 µm, SM, LC, 50/50 split ratio	TO3-SM-LC-55-K

Ordering Information (Continued)

Description	Part Number
Optional SFP Transceiver	
SFP 4G/2G/1G Fibre Channel & 1G Ethernet, 850nm, 150-500m, SX	CSFP-4G-8-1
SFP 4G/ 2G/ 1G Fibre Channel & 1G Ethernet, 1310nm, 5km, LX	CSFP-4G-3-1
SFP 4G/2G/1G Fibre Channel & 1G Ethernet, 1310nm, 20km, LX	CSFP-4G-3-2
SFP+ 8G/4G/2G Fibre Channel, 6G/4.9G CPRI 850 nm MM Multirate	CSFPPLUS-8G-8-1
SFP+ 8G/4G/2G Fibre Channel, 6G/4.9G CPRI 1310nm SM, 10km	CSFPPLUS-8G-3-1
SFP+ 1G/10G Ethernet, 1G/10G Fiber Channel & 9.8G CPRI, 850nm, MM, 300m	SFPPLUS-1GE-10GE-8-1
SFP+ 1G/10G Ethernet, 1G/10G Fiber Channel & 9.8G CPRI, 1310nm, SM, 10km	SFPPLUS-1GE-10GE-3-1

Optical Power Meters and Fiber Microscope Kits

USB optical power meter with software, 2.5 and 1.25 mm interfaces, 30-inch USB extender, and carry-ing 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
KIT: FBP-P5000i digital probe, FiberChekPRO software, case, and four tips	FBP-SD101
KIT: FBP-P5000i digital probe, FiberChekPRO software, case, and seven tips	FBP-MTS-101
KIT: FBP-P5000i digital probe, MP-60A USB power meter, FiberChekPRO software, case, tips, and adapters	FIT-SD103
KIT: FBP-P5000i digital probe, MP-60A USB power meter, FiberChekPRO software, case, tips, adapters, and cleaning materials	FIT-SD103-C
KIT: FBP-P5000i digital probe, MP-80A USB power meter, FiberChekPRO software, case, tips, and adapters	FIT-SD113

1. Supplied accessories: User's Guide, USB Memory (1GB), Cross LAN Cable, USB Cable, DC car adapter, Li-Ion Battery, AC/DC adapter, Stylus Pen

2. Highly recommended using the Calibration Kit (JD78050509, JD78050510, JD70050509)

- Highly recommended using the Calibration Kit (JD78050507, JD78050508) and Bias Tee (option 002)
- Requires option 001
- Needs for RFOFIBER options 060,061,062,063,064,065,068,070,071,072,073,081,082,083, 084,091,092,096,101
- Needs Omni or Yagi antenna
- Highly recommended adding option 010
- Includes a Bluetooth USB dongles with 5 dBi dipole antennas (JD70050006)
- Includes a Wi-Fi USB dongle (JD70050008)
- Requires G700050380
- Requires option 008
- Needs proper SFP/SFP+ Transceiver and Optical Tap or thur mode fiber cable (G700050401, G700050402)
- Requires at least one of RFOCPRI Interference Analyzer options (option 060 to 065), needs each of the respective/corresponding Interference Analyzer line rate
- Requires option 081
- Requires option 082
- Requires at least one of RFOBSAI InterferenceAnalyzer options (option 070 to 073), needs each of the respective/corresponding InterferenceAnalyzer line rate



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