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VIAVI Solutions 5G

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Data Sheet

VIAVI

Cable and Antenna Analyzer Modules

CAA06M 6 GHz Modules for CellAdvisor 5G

VIAVI CAA06M CAA Modules are the industry's first compact-sized modular cable and antenna analyzers that enable fast, reliable, and effective characterization and verification of cell site installation.

Most problems in mobile networks occur in cell-site infrastructure, consisting of antennas, cables, amplifiers, filters, connectors, combiners, jumpers, etc. VIAVI CAA06M CAA Modules' optimal functionality, combined with the testing features of the CellAdvisor 5G platform, ensures that cell-site technicians complete comprehensive cell sites installation verification and maintenance in a super professional way.

The CAA Modules make it easy and effective to characterize and verify feed line systems and verify antenna or sector-to-sector isolation.

CA5000 CellAdvisor 5G

CAA06M 6 GHz CAA Module

Features

- Trace overlay that detects signal degradation over time
- Dual display and multiple tabs that allow fast and efficient measurements
- Intuitive pass/fail analysis that instantly notifies a problem
- Integrated RF CW source
- EZ-Cal™ that calibrates faster and easier

Measurements

- Reflection – Return Loss and VSWR
- Distance to Fault – Return Loss and VSWR
- 1-Port Cable Loss
- 1-Port Phase
- Smith Chart
- 2-Port Transmission
- RF Source

Specifications

Specifications in this document are applicable to CAA06M CAA modules under the following conditions, unless otherwise stated:

- With warm-up time of 10 minutes.
- When a measurement is performed after calibrating to OSL standards.
- When a CAA06M module is within its valid calibration period.
- Data without tolerance considered to be typical values.
- A typical value is defined as expected performance under operating temperature of 20 to 30°C for 15 minutes sustainment whereas a nominal value as general, descriptive term or parameters.

Technical Data

Frequency	
Frequency range	12.5 MHz to 6 GHz
Frequency resolution	1 kHz
Frequency accuracy	±2.5 ppm @25°C
Aging per year	±1 ppm
Data points	
126, 251, 501, 1001, 2001	
Measurement bandwidth	
10 kHz	
Measurement accuracy after OSL calibration	
Corrected directivity	> 42 dB
Reflection uncertainty	±(0.3 + |20log (1 + $10^{-EP/20}$)|) typical EP = directivity – measured return loss
Measurement Accuracy after EZ-Cal calibration	
Corrected directivity	> 38 dB (≤ 4 GHz)
	> 33 dB (> 4 GHz)
Reflection uncertainty	±(0.3 + |20log (1 + $10^{-EP/20}$)|) typical (≤ 4 GHz) ±(1 + |20log (1 + $10^{-EP/20}$)|) typical (> 4 GHz) EP = directivity – measured return loss
Output power	
High	0 dBm nominal
Low	-30 dBm nominal
Maximum input level	
Average continuous power	23 dBm nominal
DC voltage	±50 V DC
Interference immunity	
On channel	15 dBm @ ≥ 1.3 MHz
On frequency	15 dBm within 100 kHz

Reflection	
Measurement speed	0.5 ms per data point
VSWR range	1 to 65
Resolution	0.01
Return loss range	0 to 60 dB
Resolution	0.01 dB
Distance to Fault (DTF)	
Measurement speed	0.5 ms per data point
Vertical VSWR range	1 to 65
Vertical resolution	0.01
Vertical return loss range	0 to 60 dB
Vertical resolution	0.01 dB
Horizontal range	0 to (# of data points – 1) x horizontal resolution Maximum = 1500 m (4921 ft)
Horizontal resolution	$(1.5 \times 10^8) \times (VP)/\Delta F$ VP = propagation velocity ΔF = stop frequency – start frequency (Hz)
1-port cable loss	
Measurement range	0 to -30 dB
Resolution	0.01 dB
1-port phase	
Measurement range	-180 to +180°
Resolution	0.01°
Smith chart	
Impedance	50 Ω
Resolution	0.01
2-port transmission	
Output power	High: 5 dBm typical
	Low: -30 dBm typical
Scalar measurement speed	3.8 ms typical
Dynamic range	110 dB typical @average 5 for ≤ 4.5 GHz
	105 dB typical @average 5 for > 4.5 GHz
Measurement range	-120 to +100 dB
Resolution	0.01 dB
Bias voltage	
Voltage range	+12 to +30 V DC, 6 W max.
Voltage resolution	1 V
Current	500 mA
RF CW source	
Output power range	-30 to +10 dBm for 12.5 MHz to 6 GHz
Step	1 dB
Accuracy	±1.5 dB for 20 to 30°C

General Data

Reflection/RF out port	
Connector type	Type-N, female
Impedance	50 Ω nominal
Damage level	30 dBm max. nominal
	±50 V DC max. nominal
Bias voltage port for connecting to an external bias-tee device	
Connector type	SMA, female
Impedance	50 Ω nominal
Power	
Input	19 V DC
Power consumption	6.2 W for CAA06M only, without using external bias-tee
Size and weight	
Size (W x H x D)	130 x 138 x 41 mm (5.12 x 5.43 x 1.65 inch)
Weight	0.43 kg (0.95 lb) for CAA06M module without bias power port
	0.45 kg (0.99 lb) for CAA06M module with bias power port
Environmental	
Operating temperature	-10 to 55°C (14 to 131°F)
Storage temperature	-40 to 70°C (-40 to 158°F)
Maximum humidity	95% RH, non-condensing
Shock	MIL-PRF-28800F Class 2
Vibration	MIL-PRF-28800F Class 2
Transit drop	MIL-PRF-28800F Class 2
Regulatory compliance	
Safety	EN 61010-1:2010
	UL 61010-1:2012
	CAN/CSA-C22.2 No. 61010-1:2012
EMC	IEC/EN 61326-1:2013
	IEC/EN 61326-2-1:2013
	CISPR 11:2015 +A1:2016
	KN 11
	IEC/EN 61000-4-2/3/4/5/6/11
	KN 61000-4-2/3/4/5/6/11
RoHS	Yes
Warranty	
CAA06M Module	3 years
Recommended calibration cycle	
CAA06M Module	2 years

Measurements

Measurement modes	
Standard modes	Reflection VSWR, Reflection Return Loss
	DTF VSWR, DTF Return Loss
	1 Port Cable Loss
	1 Port Phase
	Smith Chart
Optional modes	2 Port Transmission
	RF Source
Features	
Measurement display	Single, dual horizontal, or dual vertical display
	Up to 6 independent measurement tabs
Trace	Trace overlay, trace math
	Trace zoom and up to 4 zoom zones
Alt DTF band	Available for DTF measurements only
Marker	Up to 6 markers
	3 marker types: normal, delta, and delta pair
Peak/valley search	Peak/valley search, peak/valley between markers
Limit	Single limit line, multi segment limit line, limit window
Calibration type	1 Port: Standard OSL, EZ-Cal, and Quick
	2 Port: Thru
Report generation	Onboard report generation in .pdf
Cloud service	StrataSync
Post-processing	JDViewer PC application

Ordering Information

Description	Part Number
CAA Modules and DMC	
CAA06M 6 GHz cable and antenna analyzer module - Requires CA5000-DMC for CA5000 CellAdvisor 5G users - Auto detectable by main instrument when mounted to dual module carrier	CAA06MA
CAA06M 6 GHz cable and antenna analyzer module with bias power and external bias-tee - Required CA5000-DMC for CA5000 CellAdvisor 5G users - Includes G700050653 external bias-tee device and cable - Auto detectable by main instrument when mounted to dual module carrier	CAA06MB
Dual Module Carrier with Dummy Module for CellAdvisor 5G - Includes C10-DMC and C2K-EMPTYMOD	CA5000-DMC
CAA module calibration report	CAA06M-CR

Description	Part Number
Software Options on CA5000 CellAdvisor	
2 Port transmission measurement	CA5000-S005
RF CW source	CA5000-S006
Calibration Accessories	
Dual port Type-N 6 GHz calibration kit - Includes JD78050509 Y-calibration kit (1), G700050530 RF Cable (2), and G700050575 RF Adapter (2)	JD78050507
Dual port DIN 6 GHz calibration kit - Includes JD78050510 Y-calibration kit (1), G710050536 RF Cable (2), and G700050572 RF Adapter (2)	JD78050508
Y-Calibration kit, Type-N(m), DC to 6 GHz, 50 Ω - Included in JD78050507	JD78050509
Y-Calibration kit, DIN(m), DC to 6 GHz, 50 Ω - Included in JD78050508	JD78050510
EZ-Cal kit, Type-N(m), DC to 6 GHz, 50 Ω	JD70050509
RF Cables	
RF cable DC to 8 GHz Type-N(m) to Type-N(m), 1.0 m - Included in JD78050507	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 6 GHz Type-N(m) to DIN(f), 1.5 m - Included in JD78050508	G710050536
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 Adapters	
Adapter Type-N(m) to DIN(f), DC to 7.5 GHz, 50 Ω	G700050571
Adapter DIN(m) to DIN(m), DC to 7.5 GHz, 50 Ω -Included in JD78050508	G700050572
Adapter Type-N(m) to SMA(f) DC to 18 GHz, 50 Ω	G700050573
Adapter Type-N(m) to BNC(f), DC to 4 GHz, 50 Ω	G700050574
Adapter Type-N(f) to Type-N(f), DC to 18 GHz 50 Ω - Included in JD78050507	G700050575
Adapter Type-N(m) to DIN(m), DC to 7.5 GHz, 50 Ω	G700050576
Adapter Type-N(f) to DIN(f), DC to 7.5 GHz, 50 Ω	G700050577
Adapter Type-N(f) to DIN(m), DC to 7.5 GHz, 50 Ω	G700050578
Adapter DIN(f) to DIN(f), DC to 7.5 GHz, 50 Ω	G700050579
Adapter Type-N(m) to Type-N(m), DC to 11 GHz 50 Ω	G700050580
Adapter N(m) to QMA(f), DC to 6.0 GHz, 50 Ω	G700050581
Adapter N(m) to QMA(m), DC to 6.0 GHz, 50 Ω	G700050582
Adapter N(m) to 4.1/9.5 MINI DIN(f), DC to 6.0 GHz, 50 Ω	G700050583
Adapter N(m) to 4.1/9.5 MINI DIN(m), DC to 6.0 GHz, 50 Ω	G700050584

Description	Part Number
Adapter N(m) to 4.3-10(f), DC to 6.0 GHz, 50 Ω	G700050585
Adapter N(m) to 4.3-10(m), DC to 6.0 GHz, 50 Ω	G700050586
Adapter N(f) to SMA(f), DC to 18 GHz, 50 Ω	G700050587
Other Accessories	
Attenuator 40 dB, 100 W, DC to 4 GHz (unidirectional)	G710050581
Bias-Tee, N(m), N(f), BNC(f), 2.5 to 6000 MHz, 1W with 250 mm BNC(f) to SMA(m) Cable - Included in CAA06MB	G700050653

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