R&S®AMS32
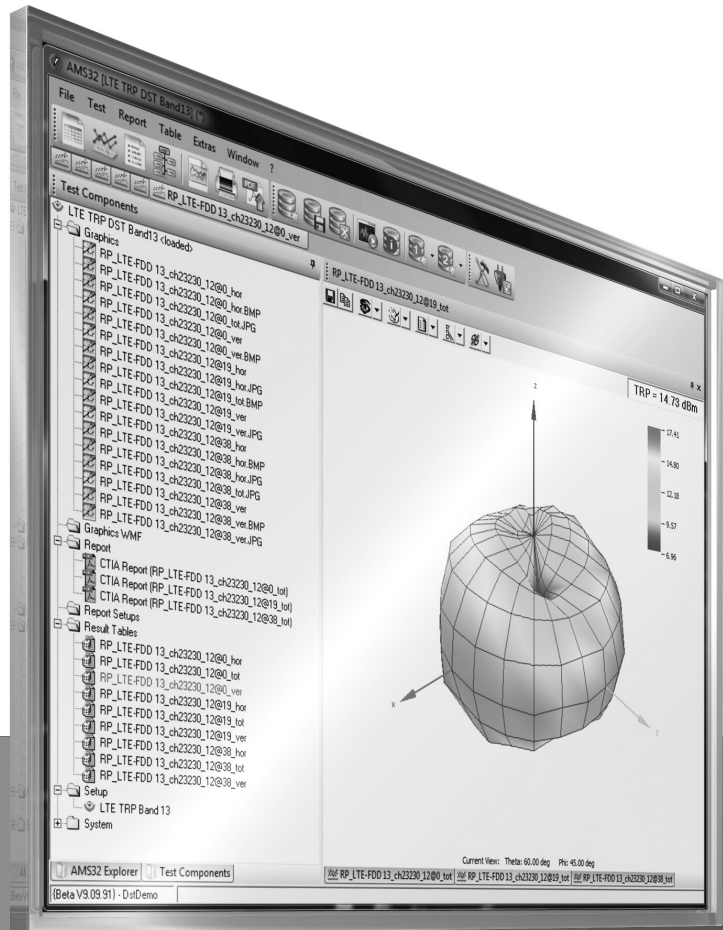# OTA PERFORMANCE MEASUREMENT SOFTWARE

Specifications

ROHDE&SCHWARZ

Make ideas real

CONTENTS

System requirements [1]

Operating system	Windows 10 (64 bit), Windows 7 (32 bit and 64 bit)
CPU	Intel® Core™ models or compatible models with a core speed > 2.4 GHz
Free RAM	≥ 16 Gbyte
Free hard disk space	≥ 512 Gbyte, usage of SDD recommended
Screen resolution	≥ 1280 × 1024 pixel, 65536 colors (higher resolution strongly recommended); screen size: at least 17"
Measuring instrument connection	IEEE bus interface from National Instruments with the latest available IEEE-488 driver (compatible cards from other manufacturers are not supported) ≥ 100 Mbit LAN interface
NI VISA driver	National Instruments VISA I/O library with optional NI GPIB interface card: Compatible GPIB cards from other manufactures are not supported! Not included in CD image.
Software update	The integrated software update manager requires internet access for querying the Rohde & Schwarz website on updates and important messages.
Open source acknowledgement	The R&S®AMS32 OTA performance measurement software contains open source software packages. Copies of the respective licenses are included in the "R&S®AMS32 OTA performance measurement software open source acknowledgement". Refer to the download area at www.emc32.rohde-schwarz.com.

Base software

R&S®AMS32 OTA performance measurement software

Standards	CTIA 3.7 or higher
	3GPP TS 34.114
Measured parameters	• total radiated power (TRP) • near-horizon partial radiated power (NHPRP) (at different angles, upper and lower hemisphere) • total isotropic sensitivity (TIS) • near-horizon partial isotropic sensitivity (NHPIS) (at different angles, upper and lower hemisphere) • antenna gain, efficiency, directivity, peak gain, front-to-back ratio
Key features	• over-the-air (OTA) measurements on mobile phones (one or more options required, see Options) • intermediate channel sensitivity tests on mobile phones • desense tests on mobile phones • passive antenna measurements • near-field to far-field transformation • phase center offset evaluation and correction • conducted and radiated tests • path loss and range calibration • ripple test in line with CTIA • anechoic chamber validation in line with 3GPP • R&D mode • viewer mode • sequencer (ability to run multiple tests in sequential order with little or no user interaction) • configuration through intuitive GUI
Reporting	HTML, RTF, PDF
	3D graphics
Test instruments	
Passive antenna measurements	R&S®ZVx, R&S®ZNx
Total radiated power (TRP)	R&S®NRP2, R&S®NRP-Zxx, R&S®FSx, R&S®ZVL, R&S®NRQ6

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[1] If your PC does not meet these requirements, the performance of the software may be impaired.

Options

R&S®AMS32-K22 option for GSM, GPRS, EDGE

Standards	• CTIA 3.7 or higher • 3GPP TS 34.114
Test instruments	R&S®CMU200, R&S®CMW500

R&S®AMS32-K23 option for CDMA, CDMA2000®, 1xRTT, 1xEV-DO

Standard	CTIA 3.7 or higher
Test instruments	R&S®CMU200, R&S®CMW500

R&S®AMS32-K24 option for WCDMA, HSPA

Standards	• CTIA 3.7 or higher • 3GPP TS 34.114
Test instruments	R&S®CMU200, R&S®CMW500

R&S®AMS32-K25 option for WLAN, Bluetooth®

Standard	CWG 2.0 or higher
Test instruments	
Bluetooth®	R&S®CBT, R&S®CBT32, R&S®CMU200, R&S®CMW500
WLAN	R&S®CMW500, R&S®CMW270

R&S®AMS32-K271 option for TD-SCDMA

Standard	YD/T 1977
Test instrument	R&S®CMW500

R&S®AMS32-K28 option for A-GPS (GSM, CDMA, WCDMA)

Standard	CTIA 3.7 or higher
Test instruments	R&S®CMU200, R&S®CMW500
	R&S®SMU200A, R&S®SMBV100A

R&S®AMS32-K29 option for LTE (FDD, TDD), SISO

Standards	• CTIA 3.7 or higher • 3GPP TS 34.114
Test instrument	R&S®CMW500

R&S®AMS32-K30 option for LTE (FDD, TDD), ECC, CA

Standards	• CTIA 3.7 or higher • 3GPP TS 34.114 • Verizon Wireless, proprietary • 2CC carrier aggregation
Test instrument	R&S®CMW500

R&S®AMS32-K30A option for LTE-Advanced (FDD, TDD)

Standards	• CTIA 3.7 or higher • 3GPP TS 34.114 • Verizon Wireless, proprietary • LTE-U, 3CC, 4CC carrier aggregation
Test instrument	R&S®CMW500

R&S®AMS32-K30L option for LTE license assisted access (LAA)

Standard	CTIA 3.8 or higher
Test instrument	R&S®CMW500

R&S®AMS32-K34 option for standalone GNSS measurements

Standard	CTIA 3.9 or higher
Test instrument	R&S®SMBV100A

R&S®AMS32-K34A option for extension of standalone GNSS measurements for Galileo, BeiDou and GPS L5 technologies

Standard	CTIA 3.9 or higher
Test instruments	R&S®SMBV100A, R&S®SMBV100B

R&S®AMS32-K35 option for LTE Cat-M1, NB-IoT

Standards	CTIA 3.8 or higher
Test instrument	R&S®CMW500

R&S®AMS32-K36 option for Bluetooth® Low Energy

Standard	CTIA 4.0 or higher
Test instruments	R&S®CMW270, R&S®CMW500

R&S®AMS32-K37 option for A-GNSS with location based services (LBS) server, base option

Standard	CTIA 3.7 or higher
Test instruments	R&S®SMBV100A, R&S®SMBV100B, R&S®CMW500

R&S®AMS32-K37B option for A-BeiDou for LTE

Standard	3GPP TS 37.571
Test instruments	R&S®CMW500, R&S®SMBV100B

R&S®AMS32-K37F option for A-GNSS multi-frequency

Standard	CTIA 4.0 or higher
Test instruments	R&S®CMW500, R&S®SMBV100B

R&S®AMS32-K37L option for A-GNSS with LBS server, LTE

Standard	CTIA 3.7 or higher
Test instruments	R&S®SMBV100A, R&S®SMBV100B, R&S®CMW500

R&S®AMS32-K38 option for OTA testing on V2X components

Standard	Chinese FVT standard
Test instruments	R&S®CMW500, R&S®SMBV100B

R&S®AMS32-K48 option for triggered vector network analyzer (VNA) measurements

Test method	passive antenna measurements, triggered VNA measurements with continuous mode of positioner
Test instruments	R&S®ZVx, R&S®ZNx

R&S®AMS32-K48E option for triggered measurements on elevation axis

Test method	passive antenna measurements, triggered VNA measurements with continuous mode of positioner
Test instruments	R&S®ZVx, R&S®ZNx

R&S®AMS32-K49 option for visualization of far-field (FF) antenna measurements

Test method	passive antenna measurements, visualization of far-field antenna measurements
Test instruments	R&S®ZVx, R&S®ZNx

R&S®AMS32-K50 option for near-field to far-field transformation (NF-FF transformation)

Test method	passive antenna measurements
Test instruments	R&S®ZVx, R&S®ZNx

R&S®AMS32-K50G option for calculation of arbitrary ground material

Test method	passive antenna measurements, correction of near-field measurements over arbitrary ground materials
Test instruments	R&S®ZVx, R&S®ZNx

R&S®AMS32-K50P option for PEC correction over metal ground plane

Test method	passive antenna measurements, correction of near-field measurements over metal ground plane (PEC)
Test instruments	R&S®ZVx, R&S®ZNx

R&S®AMS32-K51 option for probe correction (NF-FF transformation)

Test method	passive antenna measurements
Test instruments	R&S®ZVx, R&S®ZNx

R&S®AMS32-K52 option for visualization of equivalent currents (NF-FF transformation)

Test method	passive antenna measurements
Test instruments	R&S®ZVx, R&S®ZNx

R&S®AMS32-K52U option for user-defined surface currents (NF-FF transformation)

Test method	passive antenna measurements
Test instruments	R&S®ZVx, R&S®ZNx

R&S®AMS32-K53 option for, spherical wave expansion (SWE) (NF-FF transformation)

Test method	passive antenna measurements
Test instruments	R&S®ZVx, R&S®ZNx

R&S®AMS32-K54 option for DUT offset correction

Test method	passive antenna measurements, OTA measurements
Test instruments	R&S®ZVx, R&S®ZNx

R&S®AMS32-K55 option for AUT phase center calculation

Test method	passive antenna measurements
Test instruments	R&S®ZVx, R&S®ZNx

R&S®AMS32-K56 option for pattern measurements for AUT with active antennas (NF-FF transformation)

Test method	passive antenna measurements with reference antenna
Test instruments	R&S®ZVx, R&S®ZNx, R&S®RTO

R&S®AMS32-K57 option for antenna tests with frequency converting DUT

Test method	passive antenna measurements, antenna tests with frequency converting DUT
Test instruments	R&S®ZVx, R&S®ZNx

R&S®AMS32-K58 option for RF measurements with digitally modulated signals

Test method	passive antenna measurements, RF measurements on 5G NR, LTE and IEEE802.11ad signals (EVM, EIRP, ACLR, OBW)
Test instruments	R&S®FSWx, R&S®SMW200A

R&S®AMS32-K58D option for RF measurements with digitally modulated signals

Test method	passive antenna measurements, RF measurements with digitally modulated signals for two R&S®SMW200A signal generators
Test instrument	R&S®SMW200A

R&S®AMS32-K59N option for phase measurement with multiple R&S®NRQ6 power sensors

Test method	passive antenna measurements, phase measurement with multiple R&S®NRQ6 frequency selective power sensors, up to 3 units
Test instrument	R&S®NRQ6

R&S®AMS32-K80 option for machine readable report (CTIA)

Standard	CTIA 4.0 or higher
Test instrument	R&S®CMW500

R&S®AMS32-K81 option for path calibration with R&S®AREG800A and R&S®ATS1500C

Standard	CTIA 4.0 or higher
Test instruments	R&S®AREG800A, R&S®ATS1500C, R&S®SMW200A

R&S®AMS32-K90 option for R&S®AMS32 software upgrade service, 1 year

Test software	for base software: R&S®AMS32, R&S®AMS32-DST

R&S®AMS32-BST option for OTA tests on base stations in line with 3GPP

Standard	3GPP TS 38.141-2
Test instruments	R&S®FSW, R&S®SMW200A, R&S®PWC200

R&S®EMC32-K11 test sequencer

Key features	• sequential test runs for OTA measurements with R&S®AMS32 • test plan for different categories • individual and comprehensive reports in line with customer requirements

R&S®EMC32-K974 remote control for R&S®EMC32

Key features	• TCP based remote control interface • test control: create, run, save, load • NF-FF transformation control

Options for R&S®DST200 RF diagnostic chamber

R&S®AMS32-DST OTA measurement software

Standards	CTIA 3.7 or higher, 3GPP TS 34.114 (precompliant)
Measured parameters	• total radiated power (TRP) • near-horizon partial radiated power (NHPRP) (at different angles, upper and lower hemisphere) • total isotropic sensitivity (TIS) • near-horizon partial isotropic sensitivity (NHPIS) (at different angles, upper and lower hemisphere) • intermediate channel sensitivity tests on mobile phones • desense tests on mobile phones
Key features	• OTA measurements on mobile phones • intermediate sensitivity tests on mobile phones • desense tests on mobile phones • conducted and radiated tests • path loss and range calibration • sequencer (ability to run multiple test in sequential order with little or no user interaction) • R&D mode • viewer mode • configuration through intuitive GUI
Reporting	• HTML, RTF, PDF • 3D graphics

R&S®AMS32-RDST TCP remote control for R&S®DST-B160 and R&S®DST-B165 3D positioners

Standards	CTIA 3.7 or higher, 3GPP TS 34.114 (precompliant)
Key features	• TCP based remote control interface • single control of elevation and azimuth axes

R&S®AMS32-PK20 software license package for R&S®DST200

Cellular standards	• GSM, GPRS, EDGE • CDMA2000®, 1xEV-DO • WCDMA, HSPA • LTE (FDD, TDD)

R&S®AMS32-PK25 software license package for R&S®DST200

Cellular and wireless standards	• GSM, GPRS, EDGE • CDMA2000®, 1xEV-DO • WCDMA, HSPA • TD-SCDMA • LTE (FDD, TDD) • WLAN, Bluetooth®

Ordering information

Designation	Type	Order No.	Required software version
OTA performance measurement software	R&S®AMS32	1508.6650K02	≥ 10.00
R&S®AMS32 base software	R&S®AMS32	1508.6680.02	≥ 10.00
OTA measurement software, for R&S®DST200	R&S®AMS32-DST	1518.5270K02	≥ 10.00
R&S®AMS32 base software, for R&S®DST200	R&S®AMS32-DST	1518.5270.02	≥ 10.00
Options			
GSM, GPRS, EDGE	R&S®AMS32-K22	1508.6680.22	≥ 10.00
CDMA, CDMA2000®, 1xRTT, 1xEV-DO	R&S®AMS32-K23	1508.6680.23	≥ 10.00
WCDMA, HSPA	R&S®AMS32-K24	1508.6680.24	≥ 10.00
WLAN, Bluetooth®	R&S®AMS32-K25	1508.6680.25	≥ 10.00
TD-SCDMA	R&S®AMS32-K271	1508.6680.27	≥ 10.00
A-GPS (GSM, CDMA, WCDMA)	R&S®AMS32-K28	1508.6680.28	≥ 10.00
LTE, SISO	R&S®AMS32-K29	1508.6680.29	≥ 10.00
LTE, ECC, CA	R&S®AMS32-K30	1508.6680.30	≥ 10.00
LTE-Advanced	R&S®AMS32-K30A	1508.6680.10	≥ 10.00
LTE, LAA	R&S®AMS32-K30L	1508.6680.15	≥ 10.50
Standalone GNSS measurements	R&S®AMS32-K34	1508.6680.34	≥ 10.40
Extension of standalone GNSS measurements for Galileo, BeiDou and GPS L5 technologies	R&S®AMS32-K34A	1508.6680.71	≥ 11.40
LTE Cat M1, NB-IoT	R&S®AMS32-K35	1508.6680.35	≥ 10.40
Bluetooth® Low Energy	R&S®AMS32-K36	1508.6680.36	≥ 10.50
A-GNSS with LBS server, base option	R&S®AMS32-K37	1508.6680.37	≥ 10.40
A-GNSS for BeiDou with LBS server, LTE	R&S®AMS32-K37B	1508.6680.72	≥ 11.40
A-GNSS multi-frequency	R&S®AMS32-K37F	1508.6680.16	≥ 10.60
A-GNSS with LBS server, LTE	R&S®AMS32-K37L	1508.6680.12	≥ 10.40
OTA testing on V2X components	R&S®AMS32-K38	1508.6680.38	≥ 11.40
Triggered VNA measurements	R&S®AMS32-K48	1508.6680.48	≥ 10.00
Triggered measurements on elevation axis	R&S®AMS32-K48E	1508.6680.74	≥ 11.60
Visualization of far-field antenna measurements	R&S®AMS32-K49	1508.6680.49	≥ 10.35
NF-FF transformation	R&S®AMS32-K50	1508.6680.50	≥ 10.00
Calculation of arbitrary ground material	R&S®AMS32-K50G	1508.6680.63	≥ 11.20
PEC correction over metal ground plane	R&S®AMS32-K50P	1508.6680.62	≥ 11.20
Probe correction for NF-FF transformation	R&S®AMS32-K51	1508.6680.51	≥ 10.00
Visualization of equivalent currents	R&S®AMS32-K52	1508.6680.52	≥ 10.00
User-defined surface currents	R&S®AMS32-K52U	1508.6680.82	≥ 10.59
NF-FF transformation, SWE	R&S®AMS32-K53	1508.6680.53	≥ 10.20
DUT offset correction	R&S®AMS32-K54	1508.6680.54	≥ 10.59
AUT phase center calculation	R&S®AMS32-K55	1508.6680.55	≥ 10.59
Pattern measurements for AUT with active antennas	R&S®AMS32-K56	1508.6680.56	≥ 10.20
Antenna tests for frequency converting DUT	R&S®AMS32-K57	1508.6680.57	≥ 10.35
RF measurements with digitally modulated signals	R&S®AMS32-K58	1508.6680.58	≥ 10.35
RF measurements with digitally modulated signals for two R&S®SMW200A signal generators	R&S®AMS32-K58D	1508.6680.18	≥ 11.10
Phase measurement with multiple R&S®NRQ6 power sensors	R&S®AMS32-K59N	1508.6680.59	≥ 11.20
Machine readable report (CTIA)	R&S®AMS32-K80	1508.6680.80	≥ 11.00
Path calibration with R&S®AREG800A and R&S®ATS1500C	R&S®AMS32-K81	1508.6680.81	≥ 11.50
R&S®AMS32 software upgrade service, 1 year	R&S®AMS32-K90	1508.6680.90	≥ 11.00
OTA test on base stations in line with 3GPP	R&S®AMS32-BST	1508.6680.73	≥ 11.60
Test sequencer, for R&S®AMS32, R&S®EMC32, R&S®WMS32	R&S®EMC32-K11	1117.6862.02	≥ 10.00
Remote control, for R&S®AMS32, R&S®EMC32, R&S®WMS32	R&S®EMC32-K974	1520.9879.02	≥ 10.00

Designation	Type	Order No.	Required software version
Options for R&S®DST200 RF diagnostic chamber (R&S®AMS32-DST required)			
TCP remote control for R&S®DST-B160 and R&S®DST-B165 3D positioners	R&S®AMS32-RDST	1518.5270.04	≥ 10.20
Software license package 1, for R&S®DST200	R&S®AMS32-PK20	1518.5286.02	≥ 10.00
Software license package 2, for R&S®DST200	R&S®AMS32-PK25	1508.5286.25	≥ 10.00

Check the R&S®AMS32 installation CD for the required firmware versions of the test instruments.
Download of R&S®AMS32 OTA performance measurement software: www.emc32.rohde-schwarz.com

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