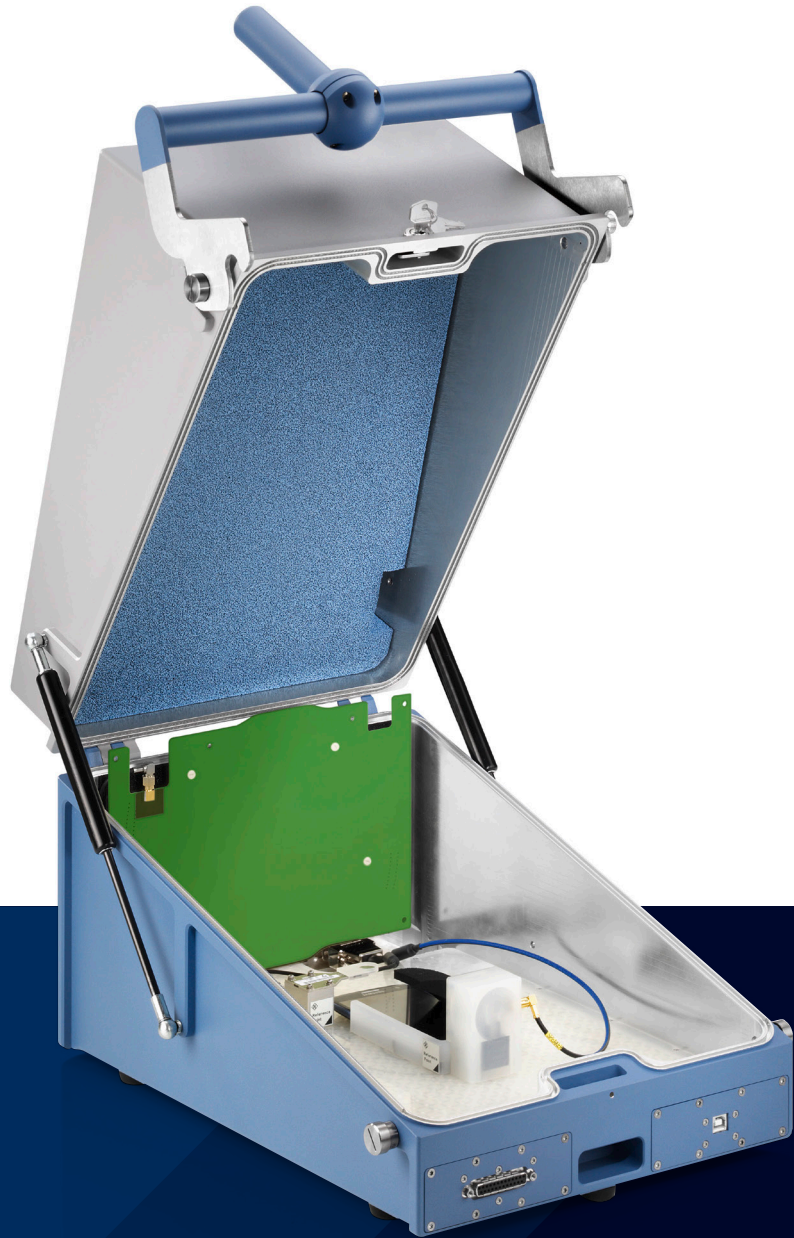


R&S® CMW-Z10 RF SHIELD BOX

The standard in shielding and coupling



Product Brochure
Version 11.00

ROHDE & SCHWARZ

Make ideas real



AT A GLANCE

The R&S®CMW-Z10 RF shield box sets standards. Offering excellent shielding effectiveness and superior coupling characteristics, the box can be used for frequencies up to 8 GHz. The outstanding features combined with a modular options concept make the R&S®CMW-Z10 indispensable for any radiocommunications tester.

Modern mobile devices usually do not have an external antenna connector. Connection to a radiocommunications tester must be made over the air. The link between the device under test (DUT) and the test equipment should be reliable and path losses kept to a minimum. Interference from external radio sources should be prevented as far as possible. The R&S®CMW-Z10 RF shield box perfectly meets these requirements.

The R&S®CMW-Z10 is made of solid aluminum. A lever handle with a defined stop firmly closes the box. The bottom and cover will not distort under normal conditions for uniform compression of the sealing cords around the entire box – an important prerequisite for effective RF shielding. The cover is lined with absorber material to minimize reflections.

The antenna structure on the R&S®CMW-Z11 antenna coupler board has been optimized for an excellent radio connection between the DUT and the tester. The highly broadband spiral antenna allows a wide variety of applications. Further R&S®CMW-Z11 highlights include low coupling attenuation and the ability to place the DUT in any position inside the box without affecting the attenuation from reflection.

Key facts

- ▶ Frequency range up to 8 GHz
- ▶ Broadband spiral antenna for a wide variety of applications
- ▶ Optimized antenna structure for extremely good RF coupling
- ▶ Ergonomic closing mechanism
- ▶ Sufficient space for tablets



As an aid to both opening and closing the shield box, the R&S®CMW-Z120 option includes an additional rotatable handle.

RF chamber overview

Our long experience with innovative solutions and top-quality engineering lets Rohde & Schwarz provide you with a wide variety of OTA chambers.



	R&S®DST200 RF diagnostic chamber	R&S®TS7124 RF shielded box	R&S®CMW-Z10 RF shield box
Application	R&D, production sample testing, diagnostics	R&D, production	R&D, service
Frequency range	0.4 GHz to 18 GHz	0.3 GHz to 18 GHz	0.4 GHz to 8 GHz
Type	Near field	Near field	Coupling
Quiet zone	–	–	–
Positioner	3D great circle cut (optional)	–	–
Shielding effectiveness	100 dB	80 dB	> 55 dB (< 4 GHz)
Dimensions (W × H × D)	0.77 m × 0.76 m × 0.7 m (30.3 in × 29.9 in × 27.5 in)	0.45 m × 0.4 m × 0.48 m (17.7 in × 15.7 in × 18.9 in)	0.32 m × 0.27 m × 0.53 m (12.6 in × 10.6 in × 20.9 in)



	R&S®CMQ200 shielding cube (opt. 1)	R&S®CMQ500 shielding cube	R&S®CMQ200 shielding cube (opt. 2)
Application	R&D, production, automotive device/components	R&D, production, 5G FR1 and 5G FR2 device/components LBS, NPT	R&D, production, automotive device/component
Frequency range	0.3 GHz to 14 GHz	0.7 GHz to 77 GHz	20 GHz to 77 GHz
Type	Near field	Direct far field (FR2)/near field (FR1)	White box direct far field/near field
Quiet zone	–	Ø 2 cm at 40 GHz	Ø 2 cm at 40 GHz
Positioner	–	–	–
Shielding effectiveness	> 80 dB	> 80 dB	> 60 dB
Dimensions (W × H × D)	0.45 m × 0.7 m × 0.72 m (17.7 in × 27.6 in × 28.3 in)	0.45 m × 0.7 m × 0.72 m (17.7 in × 27.6 in × 28.3 in)	0.45 m × 0.7 m × 0.72 m (17.7 in × 27.6 in × 28.3 in)

BENEFITS AND KEY FEATURES

Wide frequency range up to 8 GHz

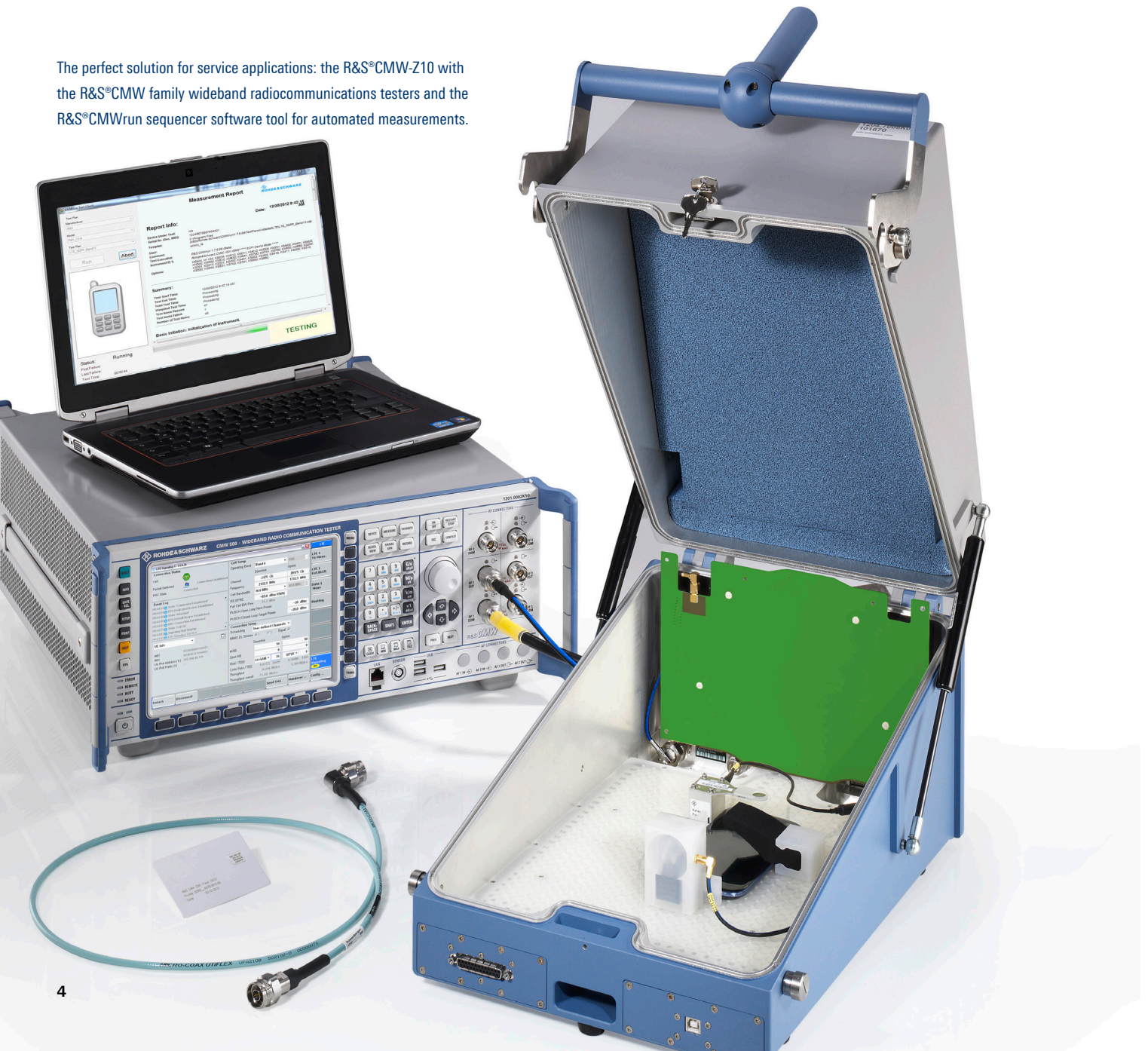
The R&S®CMW-Z10 is suitable for applications up to 8 GHz, covering all common wireless standards such as GSM, UMTS, CDMA2000, WLAN, LTE, Bluetooth® and GPS. The R&S®CMW-Z10 highly effective shielding to keep external interference to a minimum. The R&S®CMW-Z110 RF cable also provides excellent shielding for frequencies from 3 GHz to 18 GHz.

Ultralow reflections

The cover of the R&S®CMW-Z10 is lined with absorber material in order to minimize reflections. Strong reflections would cause a significant variation in attenuation as a function of the DUT position.

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The perfect solution for service applications: the R&S®CMW-Z10 with the R&S®CMW family wideband radiocommunications testers and the R&S®CMWrun sequencer software tool for automated measurements.



Modular options concept and flexible assignment of modules

The R&S®CMW-Z10 has four module slot for various options. Available options currently include a 25-pole D-Sub feedthrough (R&S®CMW-Z12), a USB 2.0 feedthrough (R&S®CMW-Z13), a twin N connector (R&S®CMW-Z14) and an Ethernet feedthrough (R&S®CMW-Z18). All modules are optimized to minimize their effect on shielding characteristics. The optional connectors can be flexibly assigned. User-specific modules can also be inserted. Should the four feedthroughs of the R&S®CMW-Z10 not meet the requirements, feedthroughs from other Rohde&Schwarz RF chambers and shield boxes can be used. The standardized R&S®CMW-Z19 feedthrough adapter is necessary.

Sufficient space for optimum positioning, even of large DUTs such as tablets

Even large DUTs, such as tablets, can be accommodated. The RF shield box provides ample space for positioning DUTs to minimize the coupling attenuation between the DUT and the tester.

Designed for harsh, continuous duty and ergonomic operation

The R&S®CMW-Z10 RF shield box is designed to withstand the harsh conditions encountered in service and manufacturing environments. The hinges and dampers are extremely robust. The aluminum case offers high resistance to distortion, ensuring precise closing of the box over time. The closing mechanism has been optimized for ergonomic use, ensuring fatigue-proof handling while providing high-quality results.

Antenna diversity and MIMO tests

Mobile devices and wireless networks use multiple antenna concepts to benefit from diversity gain and enhance the signal-to-noise ratio or to exploit the spatial multiplexing scenario of the radio channel to offer users much more data capacity. The R&S®CMW-Z16 second antenna option, a circular polarized antenna element, makes it possible to test the limits of wireless communications and benefit from transmit diversity antennas and measurements of the data throughput increase provided by multiple input multiple output (MIMO) systems.

Mounted on the rear of the RF shield box, the R&S®CMW-Z16 allows radiated coupling of a MIMO DUT such as the LTE MIMO 2x2. In applications like these, the standard antenna provides a coupling field in a 90° direction to the second antenna element (R&S®CMW-Z16) for the best coupling of MIMO devices in a near field environment and eliminates the need for using RF cables to connect the DUT to a wireless communications tester like the CMW500.



The R&S®CMW-Z19 feedthrough adapter enables the use of multiple feedthroughs of various RF chambers of Rohde & Schwarz.

SPECIFICATIONS IN BRIEF

Specifications in brief

R&S®CMW-Z10 RF shield box

Scope of delivery: RF shield box, 1 m RF cable with N connectors for frequencies up to 3 GHz

Shielding effectiveness¹⁾

	0.4 GHz to 4 GHz	> 55 dB (meas.)
	4 GHz to 6 GHz	> 45 dB (meas.)
	6 GHz to 8 GHz	> 35 dB (meas.)

Outer dimensions

W × H × D
320.9 mm × 267.5 mm × 527.7 mm
(12.6 in × 10.5 in × 20.8 in)

Weight

9 kg (19.8 lb)

R&S®CMW-Z11 antenna coupler (mandatory selection)

Scope of delivery: antenna coupler, PE bracket and stabilizing piece and spacers for secure repeatable positioning of DUTs

VSWR	VSWR without DUT, with R&S®CMW-Z110, R&S®CMW-Z10 open	
	0.4 GHz to 1.4 GHz	< 3.5
	1.4 GHz to 3.5 GHz	< 2
	3.5 GHz to 8 GHz	< 3.5
Maximum power rating	from DUT	+37 dBm
	from R&S®CMW	+33 dBm
Polarization		circular
Connector		N female

R&S®CMW-Z12 D-Sub feedthrough (var. 02)

Power pins 14 to 18	maximum current rating, per pin	1 A
	maximum rated voltage	15 V
	cut-off frequency	1 kHz
Data pins 1 to 13 and 19 to 25	maximum current rating	50 mA
	maximum rated voltage	15 V
	maximum pass frequency	5 MHz
	filter shunt capacitance	< 800 pF

R&S®CMW-Z12 D-Sub feedthrough, extended DC power pin connectors (var. 04)

Power pins 12 to 18, 24, 25	maximum current rating, per pin	1 A
	maximum rated voltage	15 V
	cut-off frequency	1 kHz
Data pins 1 to 11 and 19 to 23	maximum current rating	50 mA
	maximum rated voltage	15 V
	maximum pass frequency	5 MHz
	filter shunt capacitance	< 800 pF

R&S®CMW-Z13 USB 2.0 feedthrough

Connector inside antenna coupler		USB-A
Connector outside antenna coupler		USB-B
Power supply	maximum rated current	0.5 A
	rated voltage	5 V
Data rate		low speed
		full speed
		USB 2.0 high speed

R&S®CMW-Z14 RF feedthrough

Connector inside antenna coupler		2 × N female
Connector outside antenna coupler		2 × N female
Impedance		50 Ω
Frequency range		0 Hz to 8 GHz

¹⁾ Measurement in line with IEEE 299.

Specifications in brief

R&S®CMW-Z16 second antenna element for diversity/MIMO measurements

(requires R&S®CMW-Z14)

VSWR	VSWR without DUT, with R&S®CMW-Z110, R&S®CMW-Z10 open	
	0.45 GHz to 1.4 GHz	< 3.5
	1.4 GHz to 3.5 GHz	< 2.3
	3.5 GHz to 8 GHz	< 3.5
Maximum power rating	from DUT	+37 dBm
	from R&S®CMW	+33 dBm
Polarization		circular
Connector		N female with N feedthrough

R&S®CMW-Z18 Ethernet feedthrough

Connector		RJ-45 (female – female)
Supported speed classes		1000BASE-T

R&S®CMW-Z19 feedthrough adapter

Recommendation		for use of standardized R&S®TS-Fx feedthrough in the R&S®CMW-Z10 ²⁾
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R&S®CMW-Z110 RF cable, up to 18 GHz

Connectors		N
Recommendation		high shielding effectiveness due to copper foil and copper braid shield, recommended for operation from 3 GHz to 18 GHz

R&S®CMW-Z120 additional handle

Recommendation		additional rotary handle to facilitate opening and closing of the shield box
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²⁾ For further information on feedthroughs and compatibility, see “Feedthroughs | For Rohde&Schwarz RF shielded boxes and OTA chambers”, Rohde&Schwarz flyer, PD 3683.8609.32, [www.rohde-schwarz.com/search.html?term="+3683.8609.32](http://www.rohde-schwarz.com/search.html?term=)

ORDERING INFORMATION

Designation	Type	Order No.
Base unit		
RF shield box, internal gas springs, assembled	R&S®CMW-Z10	1204.7008.02
RF shield box, external gas springs, assembled	R&S®CMW-Z10	1204.7008.04
Antenna coupler, up to 6 GHz (mandatory selection)	R&S®CMW-Z11	1204.7108.02
Options		
D-Sub feedthrough	R&S®CMW-Z12	1204.7208.02
D-Sub feedthrough, extended DC power pin connector	R&S®CMW-Z12	1204.7208.04
USB 2.0 feedthrough	R&S®CMW-Z13	1204.7308.04
RF feedthrough	R&S®CMW-Z14	1204.7408.02
Second antenna element for diversity/MIMO measurements (requires R&S®CMW-Z14)	R&S®CMW-Z16	1204.7808.02
Ethernet feedthrough	R&S®CMW-Z18	1204.7050.02
Feedthrough adapter	R&S®CMW-Z19	1211.5859.02
RF cable, up to 18 GHz	R&S®CMW-Z110	1204.7608.02
Additional handle, rotatable	R&S®CMW-Z120	1204.7708.02

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The Rohde&Schwarz technology group is among the trailblazers when it comes to paving the way for a safer and connected world with its leading solutions in test&measurement, technology systems and networks&cybersecurity. Founded more than 90 years ago, the group is a reliable partner for industry and government customers around the globe. The independent company is headquartered in Munich, Germany and has an extensive sales and service network with locations in more than 70 countries.

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ISO 9001

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ISO 14001

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