R&S®CMPHEAD50 AND R&S®CMXHEAD50 REMOTE RADIO HEADS

The next generation broadband remote radio heads

Product Brochure
https://mod-e.ru/

ROHDE&SCHWARZ
Make ideas real

AT A GLANCE

R&S®CMPHEAD50 and R&S®CMXHEAD50 are high performance mmWave converters for signaling and non-signaling applications in the frequency range from 22 GHz to 50 GHz.

Testing in mmWave frequency ranges beyond 20 GHz presents challenges such as high path losses, wide frequency ranges and large carrier bandwidths. Well-designed remote radio heads (RRH) address these issues by leveraging the benefits of lower frequencies.

The R&S®CMPHEAD50 and R&S®CMXHEAD50 remote radio heads extend the R&S®CMP200 and R&S®CMX500 radio communication testers to frequency range 2 (FR2/FR2-1). Their improved performance ensures optimum accuracy for testing next generation FR2 RF designs – from early development to final certification and regulatory compliance.

Save valuable development time with extended dynamic range and improved EVM performance. The next generation R&S®CMPHEAD50 and R&S®CMXHEAD50 remote radio heads take FR2 communications testing to a new level. RF engineers can now verify TX and RX performance over a wide dynamic range for 5G FR2 RF components, devices and infrastructure with even more confidence.

Best RF quality and individual control for complex scenarios

To optimize the signal-to-noise ratio (SNR), the R&S®CMPHEAD50 and R&S®CMXHEAD50 perform frequency conversion up to 3 m away from the network emulator. Lower intermediate frequencies (IF) are used at this distance and the RRHs up/downconvert the signal as close as possible to the mmWave antennas and device under test. For maximum flexibility, each R&S®CMPHEAD50 and R&S®CMXHEAD50 can be individually controlled by the Rohde&Schwarz network emulator. This enables complex testing scenarios such as the emulation of multiple FR2 cells from different directions with individual timing offsets.

Both downlink and uplink paths use separate local oscillators to ensure the best RF signal quality in the TX and RX directions. For greater flexibility, the internal switch matrix allows each RF port to operate in unidirectional or bidirectional mode. High speed semiconductor components inside the R&S®CMPHEAD50 and R&S®CMXHEAD50 support real-time switching between uplink and downlink, a requirement for time division duplex (TDD) communications in FR2.

R&S®CMPHEAD50 remote radio head – front view.
Right: RX low-noise input for high dynamic range.

R&S®CMPHEAD50 remote radio head – rear view.
Left: external LO input for improved EVM.

5G signaling and non-signaling solutions

The R&S®CMXHEAD50 and R&S®CMPHEAD50 are based on a common hardware and software platform so that both signaling and non-signaling applications benefit from performance improvements.

For signaling scenarios, the R&S®CMXHEAD50 extends the R&S®CMX500 radio communication tester to the full FR2 frequency range of 22 GHz to 50 GHz.

When combined with one of the Rohde&Schwarz best-in-class compact antenna test range (CATR) indirect far-field chambers, such as the R&S®ATS1800C, this configuration addresses device testing from early R&D to conformance. In non-signaling scenarios, combining the R&S®CMPHEAD50 with the R&S®CMP200 radio communication tester and an ultra-compact direct far-field chamber, such as the R&S®CMQ200 shielding cube, is a cost-effective test setup with outstanding RF performance.

All major mmWave bands and EVM booster

The R&S®CMPHEAD50 and R&S®CMXHEAD50 are the only RRHs that support all 3GPP frequency bands in FR2-1 in combination with individual external local oscillator (LO) inputs for both RX and TX. This enables further EVM performance improvements for cutting-edge RF measurements.

Next level dynamic range with low-noise RX port

Every dB counts when refining extra sensitive RF designs, and the R&S®CMPHEAD50 and R&S®CMXHEAD50 offer an outstanding dynamic range that lets RF engineers further extend the limits of FR2 communications. The standard TX and RX ports already have impressive EVM performance over a wide range of power levels, but the low-noise RX port improves sensitivity to a whole new level. This enables RF quality parameter measurements, such as EVM, in even the most challenging FR2 scenarios.

R&S®CMXHEAD50 remote radio head – front view.
Right: RX low-noise input for high dynamic range.

R&S®CMXHEAD50 remote radio head – rear view.
Left: external LO input for improved EVM.

ROHDE&SCHWARZ mmWAVE PORTFOLIO

RF source	Remote radio head	Shielding chamber

Non-signaling (RF analyzer and generator)

R&S®CMP200
radio communication tester

R&S®CMPHEAD50
remote radio head

R&S®CMQ200
shielding cube

Signaling (network emulation)

R&S®CMX500
radio communication tester

R&S®CMXHEAD50
remote radio head

R&S®ATS800R
ultra-compact
CATR based 5G FR1/FR2
test chamber

R&S®ATS1800C
compact
CATR based 5G FR1/FR2
test chamber

HIGHLIGHTS

More dynamic range, full frequency range and excellent EVM performance. Test with confidence and ensured RF performance with the latest state-of-the-art measurement solution from Rohde&Schwarz.

- ► **Enhanced RF performance on regular TX and RX ports**
- ► **Low-noise RX port for extra RX sensitivity**
- ► **Full frequency range, from 21.84 GHz to 50.2 GHz**
- ► **External local oscillator input ports for best EVM**
- ► **Wide dynamic range with extra sensitive RX port**
- ► **Individual LO for best RF quality in TX and RX**

Service that adds value

- Worldwide
- Local and personalized
- Customized and flexible
- Uncompromising quality
- Long-term dependability

Rohde&Schwarz

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 85 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.

www.rohde-schwarz.com

Sustainable product design

- Environmental compatibility and eco-footprint
- Energy efficiency and low emissions
- Longevity and optimized total cost of ownership

Certified Quality Management
ISO 9001

Certified Environmental Management
ISO 14001

Rohde&Schwarz training

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