

# R&S®OSP ATTENUATOR MODULE: R&S®OSP-B171H

## 9 kHz to 40 GHz, 4-Bit RF digital step attenuator



R&S®OSP RF attenuator modules:  
R&S®OSP-B171H (variant.44)

### Functional and adaptable

- From research and development to production, market launch and anything in-between, extensive RF testing is needed in every product life-cycle phase.
- Varying the RF power levels is important when verifying and characterizing an amplifier under test. When identifying distortion product issues, adding an attenuator and varying its levels at the analyzer input helps easily determine the source of distortion products and determine whether they are generated internally or externally.
- The R&S®OSP-B171H OSP attenuator module takes up only a single slot on an R&S®OSP base unit. It can be easily integrated and combined with other R&S® OSP RF relays modules be introduced into any test setup or application.

### Perfect for

Aerospace & defense

Industrial electronics & microwave radio

Wireless & mobile communications

Test houses & system integrators

| Key specifications                |                                                                                     |
|-----------------------------------|-------------------------------------------------------------------------------------|
| Frequency range                   | 9 kHz to 40 GHz                                                                     |
| Connector type                    | 2.92 mm, female                                                                     |
| Attenuation range                 | 0 dB to 30 dB, 2 dB step                                                            |
| Control                           | 4-bit, selectable (WebGUI)/programmable (SCPI)                                      |
| Max. input power                  | 10 dBm (up to 500 kHz)/<br>25 dBm (500 kHz to 30 GHz)/<br>22 dBm (30 GHz to 40 GHz) |
| No. of slots on R&S®OSP base unit | one, single-width module                                                            |

| Your benefit                                      | R&S OSP open switch and control platform                                                                                                                                                                                               |
|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Switching are based on standard R&S®OSP products  | <ul style="list-style-type: none"> <li>► Worldwide service network for standard components</li> <li>► Combines standard and special system modules</li> <li>► Combines standard OSPs and special units based on OSP concept</li> </ul> |
| Same hardware concept for all RF switch solutions | ► Reduce service cost and development resources                                                                                                                                                                                        |
| Same software concept for all RF switch solutions | ► Same software interface to control different units (SCPI); lower cost for system integration                                                                                                                                         |

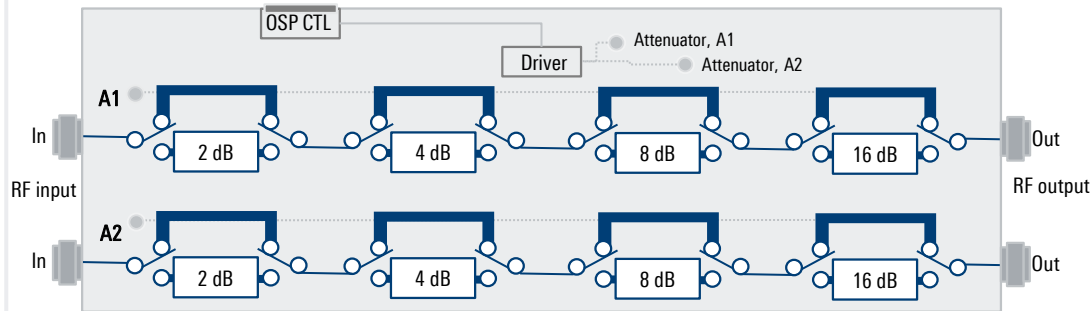
### Feature highlights of R&S OSP Open Switch and Control Platform



R&S®OSP220 (top, left), R&S®OSP230 (bottom, left), R&S®OSP320 (right)

- Modular, reliable and cost-efficient
- Compact, secure and flexible
- Powerful control and RF relay modules up to 67 GHz
- Expandable system configurations
- Convenient manual and remote control and trigger function

## Simplified block diagram of a single 4-bit RF Digital step attenuator, R&S®OSP-B171H (.42) and logic table



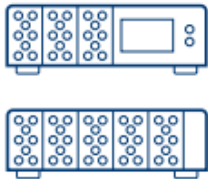
### Logic Table (LHS)

Not all 0 to 3 bit combinations are shown in the table. For 6 dB attenuation, bit 2 and bit 3 are set to 1 (high). On the R&S®OSP Web GUI, 16 user selection is available.

| Step (OSP) | State       | Bit 0 | Bit 1 | Bit 2 | Bit 3 |
|------------|-------------|-------|-------|-------|-------|
| 0          | 0 dB (Ref.) | 0     | 0     | 0     | 0     |
| 1          | 2 dB        | 0     | 0     | 0     | 1     |
| 2          | 4 dB        | 0     | 0     | 1     | 0     |
| 4          | 8 dB        | 0     | 1     | 0     | 0     |
| 8          | 16 dB       | 1     | 0     | 0     | 0     |
| 15         | 30 dB       | 1     | 1     | 1     | 1     |

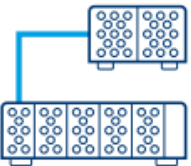
## Highly Flexible in design and operation

### Flexible system wiring



RF modules can be installed on the front, rear or both sides of R&S®OSP base units.

or

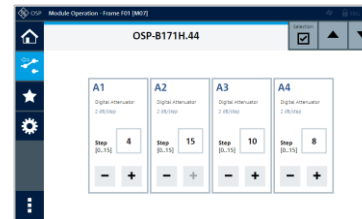


RF modules can be installed on an R&S®OSP-B200S2 satellite unit via fiber-optic links or serial electrical bus cables



### Easy to install

Single-width module can be installed in the R&S®OSP320 vertical slot and the horizontal slot of the R&S®OSP220 or R&S®OSP230



### Simple to operate

R&S®OSP Web GUI: intuitive and interactive graphical display of switch for visualization during path definition

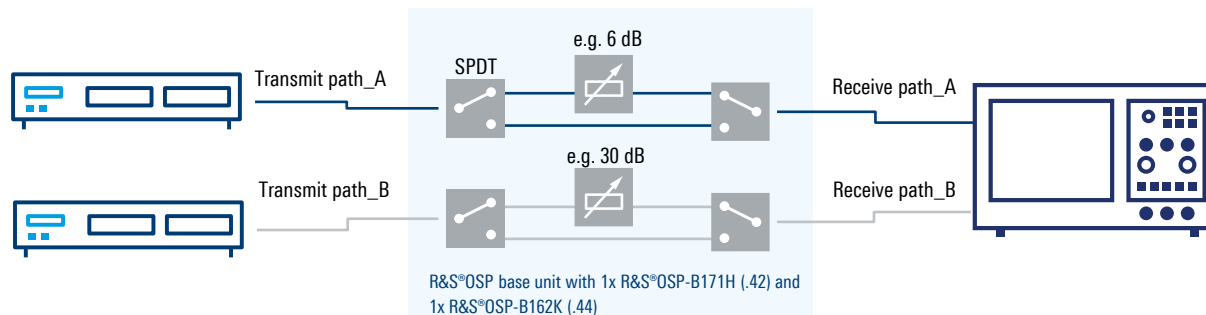
## Ordering Information: Attenuator Modules: 9 kHz to 40 GHz

| Description                                         | Item          | Order No.    |
|-----------------------------------------------------|---------------|--------------|
| 2 × attenuator, 9 kHz to 40 GHz, 4 bit, 2.92 mm (f) | R&S®OSP-B171H | 1528.1577.42 |
| 4 × attenuator, 9 kHz to 40 GHz, 4 bit, 2.92 mm (f) | R&S®OSP-B171H | 1528.1577.44 |

## Feature highlights

- ▶ Wide frequency range, 9 kHz to 40 GHz
- ▶ Wide range of nominal attenuation values; in 2 dB steps
- ▶ Easy control via R&S®OSP Web GUI
- ▶ Simple to set up and operate
- ▶ Automatic detection and individual configuration
- ▶ Fast switching times

## Examples of possible combinations on the R&S®OSP with relays and RF digital step attenuator modules



RF modules require R&S®OSP base units. For more information, [visit our website](#).

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