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LTE

7100 RF Combiner Unit, Option 7100-02



Features

- Combines RF paths of two 7100 units
- Extends functionality, supporting more complex test scenarios
- Automatic switching between configurations
- USB powered and controlled
- Complete package, including cables and brackets

Product Description

The 7100-02 RF Combiner Unit is an option for the 7100 Digital Radio Test Set that allows two 7100 units to be combined and hence provides support for more complex test configurations. With two 7100's, the following additional test scenarios can be supported:

- 4 cells, each independently controllable
- 4x4 MIMO
- 2x2 MIMO Handover testing
- All Evolved HSPA configurations, including MIMO and Dual Carrier
- Simultaneous support for four different Radio Access Technologies

The 7100-02 RF Combiner Unit is a 1U high (43.75 mm) tray that sits between two 7100 units. Brackets supplied with the unit allow the two 7100 units to be mechanically linked together, forming a stable bench-top or rack-mountable solution. The upper 7100 unit becomes the Master unit and the lower 7100 the Slave. The Master unit controls the RF Combiner Units via a standard USB link.



Calibration

The path loss between the 7100 Master and Slave RF ports and the UE RF ports is calibrated during the manufacturing process. All calibration factors are stored within the combiner unit itself and are accessed by the Master 7100 via the USB interface, allowing for automatic compensation of the path loss for each switchable signal path. As a result it is possible to set RF signal levels directly on the 7100 GUI. Storing the calibration factors inside the RF Combiner Unit ensures interoperability with any pair of 7100 units.

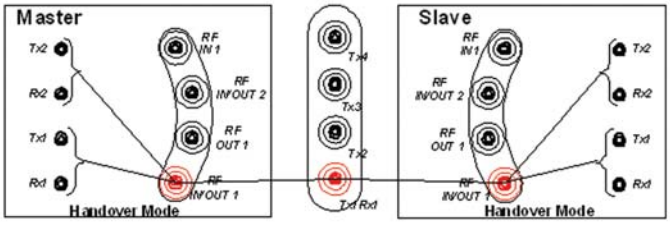
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Combiner Modes

The 7100-02 RF Combiner Units option provides the following signal paths.

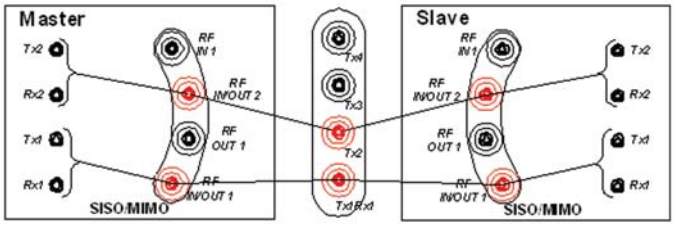
Any Four SISO Cells

Four SISO cells can be configured, with the Tx1Rx1 port providing the uplink and downlink signal paths. The 7100 units are automatically put into Handover Mode, with two cells being generated by each unit. The cells can be of any supported radio access technology.



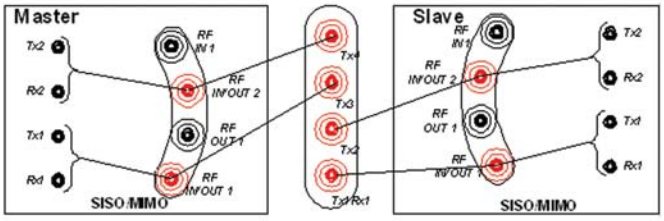
Two 2x2 MIMO Cells

Two MIMO cells can be configured, with the Tx1Rx1 port providing the uplink and downlink signal paths for antenna port 1 and the Tx2 port providing the antenna 2 port. The 7100 units are automatically put into SISO/MIMO Mode, with one MIMO cell being generated by each unit. The cells can be any technology for which MIMO is an option, eg LTE, Evolved HSPA.



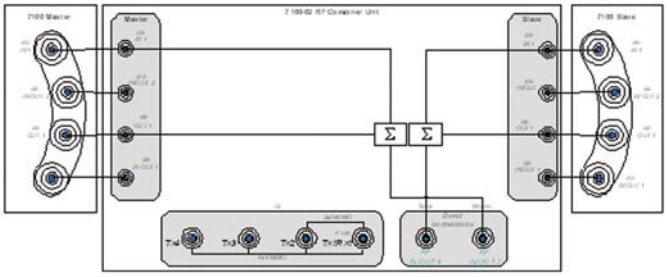
One 4x4 MIMO Cell

One 4x4 MIMO cell can be configured, with the Tx1Rx1 port providing the uplink and downlink signal paths for antenna port 1 and the Tx2, Tx3 and Tx4 ports providing the antenna 2, 3 and 4 ports. The 7100 units are automatically put into SISO/MIMO Mode. For this mode of operation, the baseband sub-systems aof the two 7100 units must be synchronised via their rear-panel Digital IQ ports.



Direct Connection Ports

In addition to the four switchable ports, two further non-switched ports are available. These ports offer more direct connection between the 7100 units and the unit under test, and therefore lower path losses. As a result, higher transmitter signal levels and improved input sensitivity are available.



Cabling

Each 7100-02 RF Combiner Unit is supplied with a set of high-quality RF cables to allow two 7100 units (N-Type ports) to be connected to the combiner via its SMA ports. The cable lengths supplied require the Master 7100 to be fitted on top of the system.



Post-Sales Support

Support of the instrument is an essential element in maximizing efficiency and return on investment of your equipment. There are several features of the support available, including routine hardware calibration and warranty support for repairs plus software support, essential for keeping your equipment up to date.

Due to Aeroflex's global presence, technical support is available in region to help you get the best out of your instrument. Local, factory-trained Application Support Engineers keep you up to date via phone calls, e-mail or, if necessary, on site visits.

The support service also provides access to the Aeroflex Helpdesk, which provides the first point of contact in case of a need for support. The Helpdesk provides a guaranteed response, allocating a reference number for internal tracking of progress and reporting.

Users can elect to purchase the 7100 Digital Radio Test Set and its options with optional warranty extensions. Standard Extended Warranty provides either 36 months or 60 months warranty period plus the benefits of guaranteed product repair times in the event of failure. Standard Extended Warranty can also be provided inclusive of scheduled calibration.

On request Aeroflex can provide customized Premium Warranty support designed around your specific needs.

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SPECIFICATION

EXTERNAL COMBINER RF PERFORMANCE

Frequency Range

380 MHz to 6 GHz

Input Level Range

+33 dBm Max. (380 MHz to 6 GHz)

Note. Combiner ports connected to 7100 systems

Maximum DC Voltage

RF IN/OUT 2, RF IN/OUT 1, TX3, TX4 3V

All other ports 16 V

Path Loss

Switched Ports

10 dB max in any configuration mode between UE ports and 7100 RF ports (380 MHz to 6 GHz)

Direct I/O Ports:

Between Direct connectors (RF IN/OUT3 and RF IN/OUT4) and 7100 RF ports:

6 dB max (380 MHz to 3 GHz)

7 dB max (3 GHz to 6 GHz)

RF Port VSWR:

<1.5 (380 MHz to 3.5 GHz)

<1.7 (3.5 GHz to 6 GHz)

Note. All unused ports terminated in 50Ω

Isolation

Any 2 RF ports for all configurable combiner modes:

>13 dB (380 MHz to 500 MHz)

>25 dB (500 MHz to 3.5 GHz)

>20 dB (3.5 GHz to 6 GHz)

Direct I/O Port:

>13 dB (380 MHz-500 MHz)

>16 dB (500 MHz-650 MHz)

>20 dB (650 MHz-3.5 GHz)

>18 dB (3.5 GHz to 6 GHz)

Note. All unused ports terminated in 50Ω

INTERFACES

RF Front Panel

Master 7100 connections:

RF IN1

SMA Input port

RF IN/OUT1

SMA Duplex port

RF OUT 1

SMA Output port

RF IN/OUT2

SMA Duplex port

RF IN/OUT3

N-Type Duplex port

Slave 7100 Connections:

RF IN1

SMA Input port

RF IN/OUT1

SMA Duplex port

RF OUT 1

SMA Output port

RF IN/OUT2

SMA Duplex port

RF IN/OUT4

N-Type Duplex port

Unit Under Test Connections

Tx1Rx1

N-Type Duplex port

VSWR

1.5 (380 MHz to 3 GHz), 1.7 (3 GHz to 5 GHz), 1.7 (5 GHz to 6 GHz)

Tx2

N-Type Duplex port

VSWR

1.5 (380 MHz to 3 GHz), 1.7 (3 GHz to 5 GHz), 1.7 (5 GHz to 6 GHz)

Tx3

N-Type Duplex port

VSWR

1.5 (380 MHz to 3 GHz), 1.7 (3 GHz to 5 GHz), 1.7 (5 GHz to 6 GHz)

Tx4

N-Type Duplex port

VSWR

1.5 (380 MHz to 3 GHz), 1.7 (3 GHz to 5 GHz), 1.7 (5 GHz to 6 GHz)

Note. All unused ports terminated in 50Ω

Port Impedance

All RF ports 50Ω

Rear Panel

USB 2.0

Power Supply

Powered from standard USB 2.0 port

GENERAL

Standard Warranty

24 months

Calibration Interval

Recommended 24 months

Electromagnetic Compatibility

EN 61326-1:2006

EN55011:1998 CLASS A

For the very latest specifications visit www.aeroflex.com

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Safety

EN 61010-1:2006 Safety requirements for electrical equipment for measurement, control and laboratory use-Part 1, General requirements

Certification

CE Compliant, FCC Class A

RATED RANGE OF USE

Operating Temperature

0 to 50°C, meets IEC-60068-2-1 and 60068-2-2

Operating Humidity

Up to 93% at 40°C

WEIGHT AND DIMENSIONS

Dimensions

444 mm × 83 mm × 505 mm

Mass

4.75 Kg

CONDITIONS OF STORAGE AND TRANSPORT

Storage Temperature

-20 TO +70 ºC meets IEC-60068-2-1 AND 6008-2-2

Storage Humidity

5 % to 93 % R.H non condensing IEC 60068-2-56

Shock

IEC 60068-2-27

Vibration

IEC 60068–2-64

ORDERING INFORMATION

Ordering Numbers	Version
7100-02	7100 RF Combiner Unit

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