

M1742A Transceiver 10 to 32 GHz

Introduction

The M1742A transceiver is designed to be used as the interface between a wireless test system and a Device Under Test. The M1742A upconverts the test system's Tx output to the higher range of the DUT, and downconverts the received signal from the DUT to the lower range of the test system's Rx input. The DUT-facing ports of the M1742A (RF Tx/Rx 1 and RF Tx/Rx 2) are half-duplex ports – that is, either port can transmit or receive (although never both at once).



Remote Radio Head

Confidently test over the air at frequencies in the 10 to 32 GHz band using one M1742A remote radio head (RRH). Verify Tx and Rx performance of 5G RFFE, base stations, chipsets and devices using stimulus and analysis provided by one of several Keysight platforms.

Full Frequency Band

The M1742A is the only RRH supporting bi-directional testing at 10 to 32 GHz frequency band with one hardware set. Two RF ports support Tx and Rx verification.

Reduce path loss

Reduce path loss at frequencies with a broadband remote radio head. Mount the compact head near an over-the air test chamber without losing valuable space. Keep cable lengths short for best repeatability and accuracy.

Versatile 5G Solutions

Flexibly analyze 5G performance with or without signaling using the M1742A RRH with accompanying platforms. Improve time to market by finding and solving issues early in the product life cycle. Save valuable development and test time with consistent results from Keysight's common measurement algorithms.

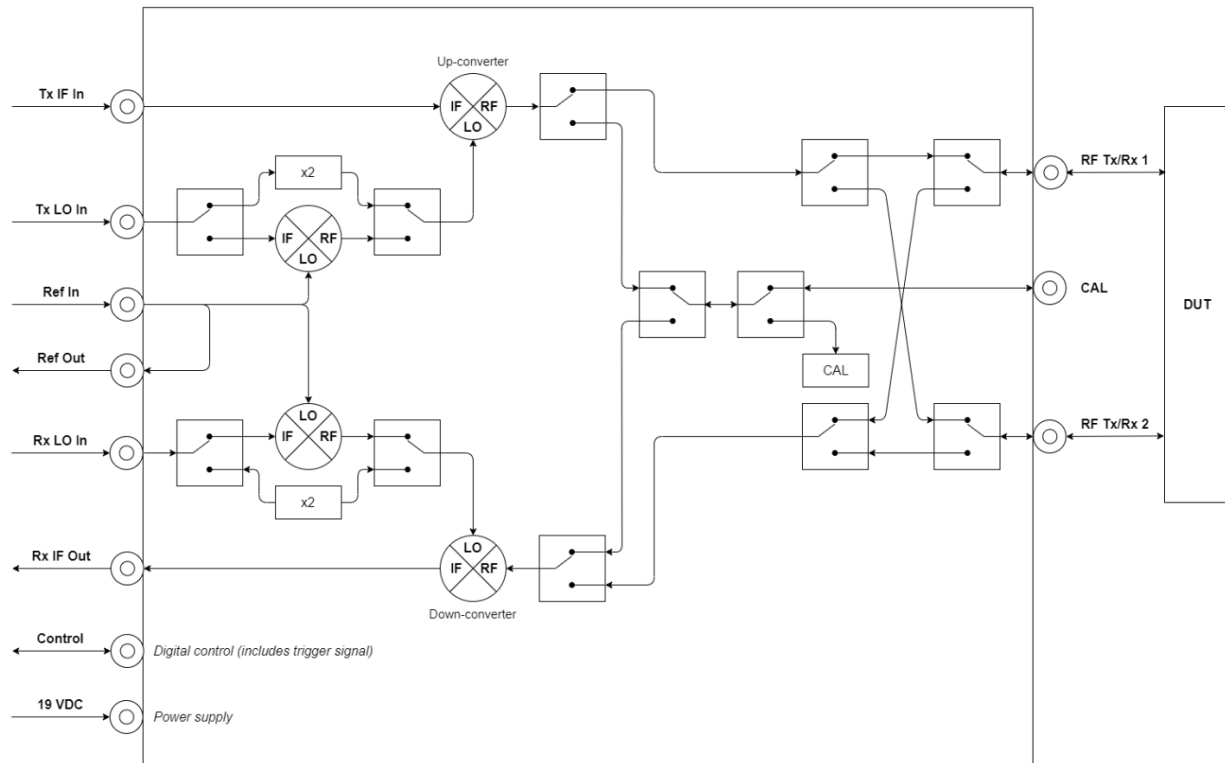


Figure 1. M1742A block diagram

Performance Characteristics

Definitions

Specification (spec)

The warranted performance of a calibrated instrument that has been stored for a minimum of 2 hours within the operating temperature range and after a 30-minute warm up period. Specifications are valid from 20 to 30 °C unless otherwise noted.

Typical (typ)

Typical (typ) describes additional product performance information. It is performance beyond specifications that 95 percent of the units exhibit with a 95 percent confidence level at room temperature (approximately 25 °C). Typical performance does not include measurement uncertainty.

Nominal (nom)

The mean or average characteristic performance, or the value of an attribute that is determined by design. This data is not warranted and is measured at room temperature (approximately 25 °C).

Measured (meas)

An attribute measured during development for purposes of communicating the expected performance. This data is not warranted and is measured at room temperature (approximately 25 °C).

Conditions

The information in the following tables for TX and RX apply to the M1742A remote radio head in CW mode. All the modulation or de-modulation performances apply to their specific base instruments that supply the modulation signal along with other interfaces (IF, LO frequency and reference frequency).

Upconverter (Tx Output) Performance Characteristics

Frequency parameter	Value	Conditions
Frequency range	10 to 32 GHz	CW
Bandwidth, maximum	1.2 GHz	10.6 to 31.4 GHz
Amplitude parameter	Value	Conditions
M1742A with S/N prefix < MY6343		
Settable CW output power range	-70 to +10 dBm	RF Tx 1
	-70 to +8 dBm	RF Tx 2
CW gain (level) accuracy	< ± 2.0 dB, nominal	
CW linearity referenced to 0 dBm	< ± 1.0 dB, < ± 0.5 dB, <i>typical</i>	-20 to +10 dBm, RF Tx 1 -20 to +8 dBm, RF Tx 2
	< ± 1.5 dB, < ± 0.8 dB, <i>typical</i>	-70 to -20 dBm
M1742A with S/N prefix $\geq$ MY6343		
Settable CW output power range	-70 to +15 dBm	RF Tx 1 and RF Tx 2
CW gain (level) accuracy	< ± 2.0 dB, nominal	
CW linearity referenced to 0 dBm	< ± 1.0 dB, < ± 0.5 dB, <i>typical</i>	-20 to +10 dBm, RF Tx 1 and RF Tx 2
	< ± 1.5 dB, < ± 0.8 dB, <i>typical</i>	-70 to -20 dBm

Downconverter (Rx Input) Performance Characteristics

Frequency parameter	Value	Conditions
Frequency range	10 to 32 GHz	CW
Bandwidth, maximum	1.2 GHz	10.6 to 31.4 GHz
Amplitude parameter	Value	Conditions
CW input power range	-70 to +10 dBm, settable	10 to 32 GHz
CW gain (level) accuracy	< ± 2.0 dB, nominal	-70 to +10 dBm
CW linearity referenced to 0 dBm	< ± 0.6 dB, < ± 0.3 dB, <i>typical</i>	-20 to +10 dBm
	< ± 1.2 dB, < ± 0.6 dB, <i>typical</i>	-70 to -20 dBm
Absolute maximum ratings	+25 dBm CW, ± 30 VDC	10 to 32 GHz
RF port to port Isolation	55 dB nominal	10 to 32 GHz

Connectors

Connector	Type	Description
RF Tx/Rx 1	2.4mm female	Test interface
RF Tx/Rx 2	2.4mm female	Test interface
Cal	2.4mm female	Internal use only
Rx LO In	3.5mm female	Variable frequency LO input used to generate downconverter mixer LO
Tx LO In	3.5mm female	Variable frequency LO input used to generate upconverter mixer LO
Ref In	3.5mm female	Frequency reference input used to generate up- and downconverter mixer LOs
Ref Out	3.5mm female	Frequency reference output which can be connected to another M1742A transceiver's Ref In connector
Rx IF Out	3.5mm female	IF output from receiving downconverter
Tx IF In	3.5mm female	IF input to transmitting upconverter
Aux	15-pin Micro D male	Internal use only
USB	micro-USB Type-AB receptacle	USB control communication interface, device side
Trig 1	SMB male	5V-tolerant, 3.3V LVCMOS trigger input/output
Trig 2	SMB male	5V-tolerant, 3.3V LVCMOS trigger input/output
Control	SMA female	Modem and trigger control communication interface, can be used instead of USB
Power	4-pin round female	19 V DC power supply input

Instrument Performance Characteristics

General attributes	
Power consumption	93 W at 19 VDC, typical 103 W at 120 VAC via supplied 0950-6166 AC/DC adapter, typical
Dimensions (D x H x W)	345 x 70 x 175 mm 13.58 x 2.76 x 6.89 inches
Weight	3.5 kg, 7.7 pounds
Operating temperature	15 to 35 °C
Storage temperature	-40 to 70 °C
Regulatory information	
EMC	Complies with the essential requirements of the European EMC Directive as well as current editions of the following standards (dates and editions are cited in the Declaration of Conformity): • IEC/EN 61326-1 • CISPR 11, Group 1, class A • AS/NZS CISPR 11 • ICES/NMB-001 This ISM device complies with Canadian ICES-001. Cet appareil ISM est conforme a la norme NMB-001 du Canada. South Korean Class A EMC declaration: This equipment has been conformity assessed for use in business environments. In a residential environment this equipment may cause radio interference. 사 용 자 안 내 문 이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.
Safety	Complies with the essential requirements of the European Low Voltage Directive as well as current editions of the following standards (dates and editions are cited in the Declaration of Conformity): IEC/EN 61010-1 Canada: CSA C22.2 No. 61010-1 USA: UL std no. 61010-1
Acoustic statement	(European Machinery Directive) Acoustic noise emission LpA <70 dB Operator position Normal operation mode per ISO 7779

Ordering Information

Product	Description
M1742A	Transceiver, 10-32 GHz

Keysight 5G Solutions

Keysight's solutions span the entire 5G workflow. The M1742A RRH is one component of the 5G solutions.

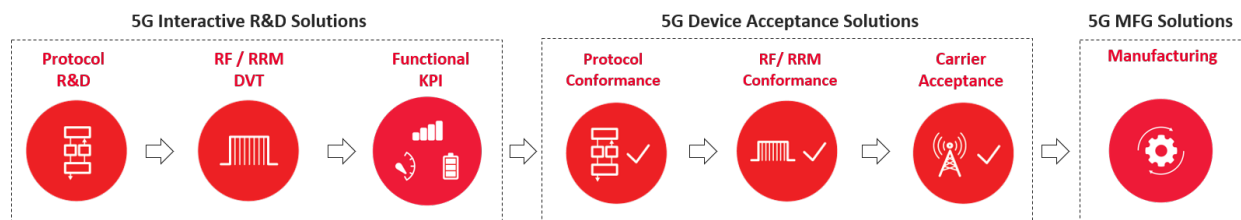


Figure 2. 5G Workflow Solutions

For more information about Keysight's 5G solutions, visit www.keysight.com/find/5G.

For more information about Keysight's PathWave, visit www.keysight.com/find/PathWave.

For more information on the M1742A transceiver, visit [the web page](#).

Additional information about Keysight solutions enabled by the E7515B is available at

- [5G protocol R&D toolset](#)
- [5G RF and RRM DVT toolset with network emulation](#)