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Data Sheet

Pro Series

RadiLink®

Multifunctional RF Optical Link

Models - RLK3086R

Extreme Low Noise Figure | High Dynamic Range | Eight RF Channels

Publish date: 24/03/2023

RadiLink®

Models - RLK3086R

Versatile RF Optical Link - CISPR25

Extreme Low Noise Figure | High Dynamic Range | Eight RF Channels

During automotive measurements according to CISPR 25, the disturbing signals received on the vehicles on board antennas are measured. During these measurements, the vehicle is normally placed in an shielded room and the measurement receiver is located in the control room. When in this case, a coaxial RF cable is used to connect the receiving antenna(s) to the measurement receiver, not only high cable losses will occur at higher frequencies, the metallic cable also cause common mode currents to flow over the cable, introducing undesired measurement errors.

The RadiLink overcomes all these issues by using a battery-powered analog fibre optic connection between antenna and EMI receiver. In this way, measurements can be performed completely galvanically isolated eliminating any measurement errors.

Eight Channel RF Optical Link

The RadiLink RF optical link system consists of two parts. The first part is the RadiLink model RLK3016C RX plug-in card for the RadiCentre modular test system, which is positioned in the control room near the EMI receiver. The second part is the RadiLink model RLK3086R 8-channel remote unit, which is placed in the vehicle. An integrated RF-switch allows automatic selection of up to 8 different measurement antennas in the car, with a single RadiLink unit.

Integrated Phantom supply

Each RF input can be configured to deliver a phantom power supply to feed active antennas. The phantom supply power is delivered by the replaceable battery pack of the RadiLink. The output voltage can be software configured between 5V and 12VDC, independently for each channel. Each channel can deliver up to 200mA supply current, covering virtually any need. Alternatively, the phantom supply for each channel can also be connected externally.

Integrated Low Noise Pre-Amplifiers

Each input channel of the RadiLink has its own 20dB low noise pre-amplifier, which can be remote controlled between 0 dB and 20dB gain. With a noise figure of less than 5dB typical, this feature allows RF measurements to levels close to the thermal noise floor.

High Dynamic Range

With other common fibre optic link systems, the dynamic range is often too low for use in CISPR 25 EMI applications. The broad dynamic range of the RadiLink allows measurements in presence of strong RF signals. The RadiLink RF Optical Link provides an unprecedented dynamic range of 88 dB. In fact, the high dynamic range in combination with the low noise figure, can even improve the sensitivity of the measurement receiver.

Replaceable battery pack

The RadiLink is equipped with an exchangeable Li-Ion battery pack (model RLK3004B) that can be re-charged using the standard supplied external charger. The battery pack allows up to 4-hour operation of the RadiLink. Optionally, an additional battery pack can be ordered allowing easy replacement and continued battery operation.

Compact and ruggedized housing

The RadiLink RF Optical Link is mounted in a ruggedized aluminum enclosure with external dimensions of only 175 mm x 83 mm x 47.5 mm (LxWxH). Therefore, the RadiLink RF Optical Link can easily be mounted and connected to the antenna measurement setup inside the vehicle.

CISPR 25 Compliant

The RadiLink RF Optical Link is compliant to the CISPR25 standard paragraph 5 'measurement of emissions received by an antenna on the same vehicle' and has a frequency range of 9 kHz to 6 GHz covering different antenna signals, including AM/FM/TV broadcast services (150 kHz to 944 MHz), Digital broadcast (167 MHz to 2.345 GHz) and mobile services (26 MHz to 5.925 GHz).

High Impedance option

The RadiLink can be used with the model RLK3013H, high impedance pre-amplifier probe (>100 kOhm // <10 pF) covering a frequency range from 9 kHz to 30 MHz intended for use of emission measurements using non-matched antennae. The power of the high impedance pre-amplifier is provided by the RadiLInk bias supply.

RadiLink® Technical Specifications

Model RLK3006C | consisting of:	8 Channel RF optical Link System
RLK3086R	RadiLink®, TX Remote Unit, 8 Channels
RLK3016C	RadiLink®, RX Plug-in Card
RLK3013H	RadiLink® LI-ion Battery Pack + Charger
RLK3004B	RadiLink® 25m Extension fibre

Optional Parts

RLK3013H	RadiLink® High-Impedance Pre-amplifier Probe
RLK3004C	RadiLink® Additional Battery Pack

RF Specifications

Frequency range	9 kHz - 6 GHz (usable up to 8 GHz)
Frequency Response[1]	±3 dB
Pre-Amplifier configurations	0 dB, 20 dB and 40 dB
Channel tracking	
• 9 kHz to 2,5 GHz	>1 dB
• 2,5 GHz to 6 GHz	>2,5 dB
1 dB Compression point:	
• 0 dB gain	0 dBm (5 dBm typical)
• 20 dB gain	-20 dBm (-15 dBm typical)
• 40 dB gain	-40 dBm (-35 dBm typical)
Max input power (damage level)	+20 dBm
Noise Figure// noise floor @ 1 GHz	
• 0 dB gain	-154,8 (dBm/Hz) // 19,2 (dB)
• 20 dB gain	-170,4 (dBm/Hz) // 3,6 (dB)
• 40 dB gain	-171,8 (dBm/Hz) // 2,2 (dB)
Dynamic Range @ 1 GHz (Noise floor up to P1dB)	
• 0 dB gain	158,5 dB
• 20 dB gain	154,8 dB
• 40 dB gain	136,8 dB
Channel – channel isolation	40 dB
Harmonic suppression (Pin <p1dB -10dB)	25 dBc
Input and output Impedance	50 ohm
Input VSWR	
• 9 kHz - 1 GHz	2:1
• 1 GHz - 6 GHz	4:1
Output VSWR	3:1
Immunity to fields	200 V/m

Phantom Power Specifications

Bias options	Internal generated/external applied
Impedance bias tee[2]	10,3 ohm
Max bias current	200 mA
Bias output voltage range	5-12 Vdc
Internal voltage setting resolution	1 mV
Voltage readback accuracy[3]	50 mV
Current readback accuracy	10 mA

Power Consumption & Battery Life

RLK3086R (remote unit)	330 mA (laser on, phantom power off, 0dB gain)
RLK3016C (radicentre unit)	500 mA (supplied from RadiCentre)
RLK3004B	3,6 Ah (14,4V nominal)
Battery duration	6 hours

LASER Specifications

Laser product classification	3B
Digital communication laser	2 mW @ 1310 nm
Analogue RF laser	10 mW @ 1310 nm
Laser switch on time	<100 ms
Laser swtich off time	<100 ms
Safety precaution	Closed loop safety-circuit
max fibre length	100m

Warranty

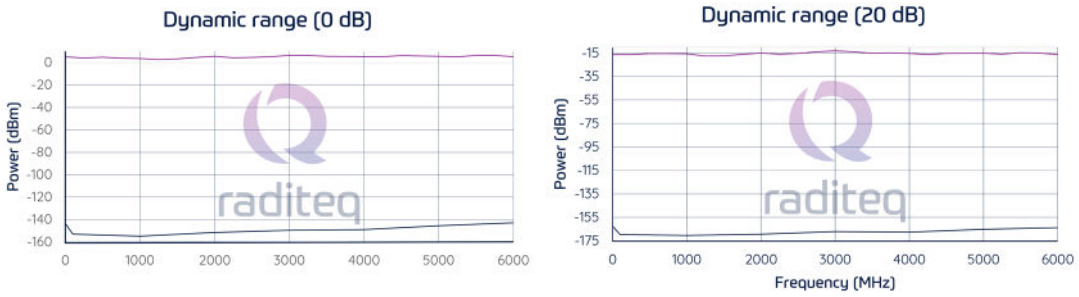
Warranty [4]	Three years

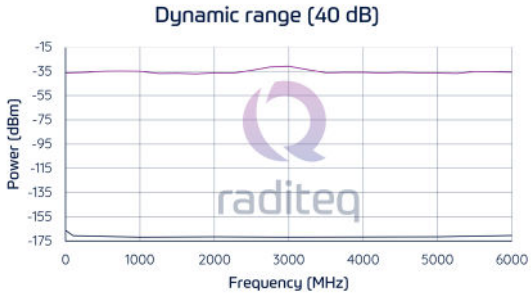
1) Usable up to 8 GHz

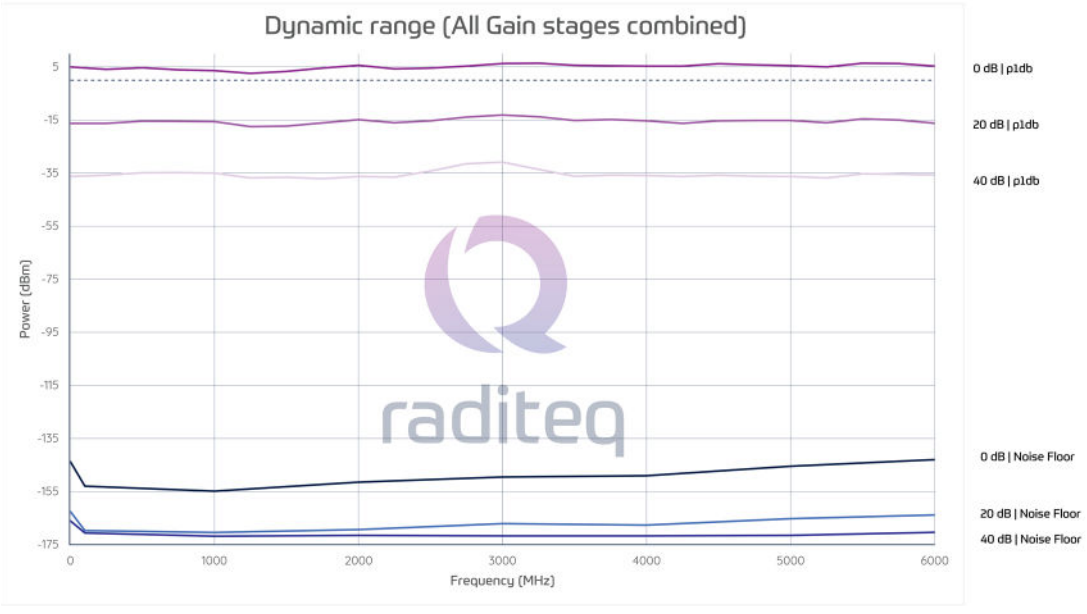
2) Internal voltage is corrected for the bias tee losses

3) Voltage on the RF input

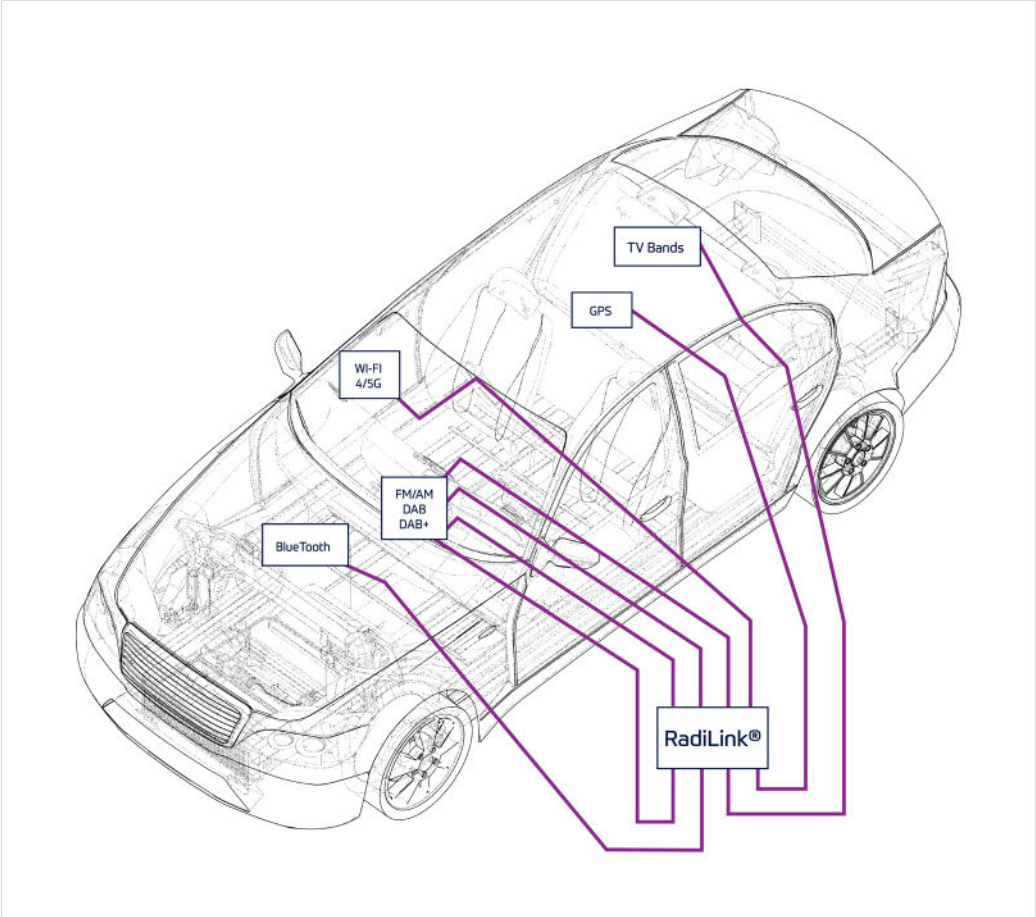
4) Standard 1 year warranty. An additional two (2) years warranty will be added after product registration. Registration can be done at: https://www.raditeq.com/product-registration



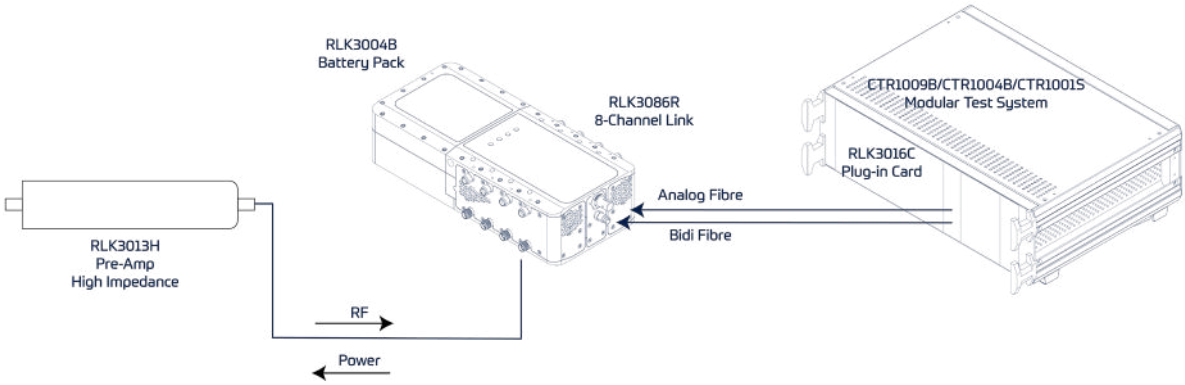




RadiLink® In Practice



RadiLink® Systematic



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