

# RAILHAWK® KIT

## Railway RF Cable & Antenna Analyzer

NEW

# RH-RR-KIT

## Signal Maintenance - On Track!

Bird's new Railway RF Cable & Antenna Analyzer solution provides a comprehensive kit that allows technicians to maintain high quality service networks in the railway industry. Based on the need for redundant communications, Bird's Cable & Antenna Analyzer increases reliability and assures maintainability for communication protocols targeted in railway space. Designed to help novice and expert users, our easy-to-use analyzer finds problems before they become time-consuming, expensive repairs.

Bird's RailHawk® RF Railway Test Kit is the result of combining the proven antenna and cable testing functionality of the SiteHawk™ handheld analyzer, Bird's plug and play power sensor – designed specifically to test the UHF analog/digital radio systems, as well as the GSM-R/LTE-R voice/data systems - and all the necessary loads, adapters and cables into a single rugged transit case.

Avoid communication shortfalls, downtime and expense resulting from trial and error of swapping components to fix your issue.

### PRODUCT FEATURES

- Test RF cables & antennas at the frequency of operation, not at DC where problems are masked
- Locate RF cable, connector & antenna problems at the source
- FDR (frequency Domain Reflectometry) pinpoints faults at the frequency of operation, unlike other measurement techniques which can mask pending failures of critical system components
- Distance to Fault (DTF) mode can plot VSWR or Return Loss levels at each distance point along the cable and antenna system length
- Cable Loss function measures insertion loss of the cable system over a given frequency range
- OTG USB communication port for connection to Bird power sensors, storage devices and battery charging



### APPLICATIONS

- Determine if your GSM-R & LTE radio RF cables and antennas are the source of your problem.
- Diagnose antenna and cable problems in fixed, track-side radio infrastructure, and on-board rolling stock
- Accurately pinpoint coaxial cable faults, minimizing downtime associated with removing furniture, panels and bulkheads.
- Early identification of degraded cable performance due to moisture ingress, permitting planned maintenance instead of emergency repairs.

# RAILHAWK® RAILWAY RF CABLE & ANTENNA ANALYZER KIT

## RH-RR-KIT

## Specifications



### MEASUREMENT

Frequency Range	1 MHz to 6000 MHz
Frequency Resolution	1 kHz
Output Power	-10 dBm, typical
Trace Noise Magnitude (IFBW 1kHz)	0.05 dB rms
Measurement Speed	1 ms/data point
Measurement Points	51 to 3201
Measure Bandwidth	100 Hz to 30 kHz
Temperature Stability	0.01 dB/°F (0.02 dB/°C)
Return Loss Measurement Range	0 dB to -60 dB
Resolution	0.01 dB
VSWR Measurement Range	1.0 to 65.0
Cable Loss Measurement Range	0 dB to 30 dB
DTF Range	0 to 5000 ft (0 to 1500 m)
Corrected Directivity	> 38 dB
Maximum Input Voltage	50 V
Immunity to Interfering Signals	+13 dBm
Power Measurement	Yes

### ACCURACY

Frequency Accuracy	$\pm 2.5 \times 10^{-6}$ @ 25 °C
Reflect Amplitude Accuracy	-10 dB to 0 dB: $\pm 0.6$ dB -20 dB to -10 dB: $\pm 0.8$ dB -35 dB to -20 dB: $\pm 3.0$ dB

### CONNECTORS

Connector	USB Type-C, USB 3.0
Test Port Connector Impedance	N-type, Female 50 ohms

### ENVIRONMENTAL

Operating Temperature	14 °F to 131 °F (-10 °C to 55 °C)
Storage Temperature	-40 °F to 176 °F (-40 °C to 80 °C)
Battery Charging Temperature	32 °F to 95 °F (0 °C to 35 °C)

### SYSTEM

Display	5.5 in, 720p
OS	Android
Languages	English, Chinese, Spanish
Battery Type	Lithium-ion rechargeable
Battery Operating Time	10 hours typical
Battery Charge Time	5 hours typical
Storage Capacity	Thousands of trace and setups
Recommended Calibration Interval	2 years
Compatible With	Bird's RF Meter App utilizing RF compatible sensors 501X, 7020, 7022 Series

### PHYSICAL

Size	7.7 in x 3.6 in x 2.4 in (195 mm x 90 mm x 60 mm)
Weight	1.98 lb (0.9 kg)

### CERTIFICATIONS

CE	EMC: Standard EN 61326-1:2006
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### STANDARD ACCESSORIES

Calibration Combo	SK-CAL-MN-C6
Stylus	SK-TP-112
AC Adapter (12 Vdc Output)	SK05T-1200300Z
Hard Carrying Case	FH-AV-CC
Adapter Kit	4240-401
Adapter Kit, 7/16" DIN	4240-550
RF Cable, 10 feet long	5A2970-16-120B
USB Drive	5A2745-1
USB Adapter	SK-CONN-OTG-2

[birdrf.com/products](http://birdrf.com/products)

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## 7020-1-010101 POWER SENSOR

## Specifications

## MEASUREMENT

Frequency Range	350 MHz to 4.0 GHz
Power Measurement Range	0.15 W to 150 W
Impedance	50 Ohms nominal
Insertion Loss	0.1 dB, Max.
Insertion VSWR	1.10, Max.
Directivity	28 dB, Min.

## CONNECTORS

Interface	Protocol USB 2.0 Connector USB Type 'B' with "SeaLATCH" locking USB connector Data Logging with VPM3 Software
Connector	N(f)

## SYSTEM

Power Supply	
USB Port	Less than one low-power load
DC Input Connector	7 to 18 VDC at less than 0.1 A

## ENVIRONMENTAL

Operating Temperature	-30 to +60 °C (-22 to +140 °F)
Storage Temperature	-40 to +80 °C (-40 to +176 °F)

## PHYSICAL

Size	4.8 in x 4.6 in x 1.3 in (122 mm x 117 mm x 35.5 mm)
Weight	1.0 lb (.45 kg)

## CERTIFICATIONS

Mechanical Shock & Vibration	IAQ MIL-PRF-28800F class 3
CE	EMC: European Standard EN 61326-1:2006 – Electronic Equipment for Measurement, Control and Laboratory Use – EMC Require- ments in accordance with EMC Directive (2004/108/EC)
RoHS	Compliant

## SK-CAL-MN-C6 CALIBRATION COMBO

## MEASUREMENT

Frequency	DC to 6 GHz
Resistance	50 Ohm
Average Power	≤ 1 W
Load Return Loss	–35 dB
Load VSWR	≤ 1.025
Open Phase Deviation	≤ ± 0.6°
Short Phase Deviation	≤ ± 0.6°

## INTERFACE

Connectors	N (m)
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## ENVIRONMENTAL

Operating Temperature	15 °C to 35 °C (49 °F to 95 °F)
Storage Temperature	–40 °C to 75 °C (–40 °F to 167 °F)

## FH-AV-CC HARD CASE

## PHYSICAL

Size	15.27 in x 12.13 in x 6.69 in (38.8 cm x 30.8 cm x 17 cm)
Weight	4.5 lb (2.04 kg) without foam
Body	Polypropylene

## CERTIFICATIONS

Compliance	IP67, MIL-STD, 810F, 512.4, Drop Tested Per MIL-STD-3010C Method 5007
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## 4240-401 ADAPTER KIT

## Specifications

## PHYSICAL

Size	6.5 in x 4.63 in x 1.69 in (16.5 cm x 11.8 cm x 4.3 cm)
Weight	1 lb (.45 kg)
Body	Polypropylene

## CONNECTORS INCLUDED

(1) Male, (1) Female, Type N  
 (1) Male, (1) Female, Type BNC  
 (1) Male, (1) Female, Type TNC  
 (1) Male, (1) Female, Type UHF  
 (1) Male, (1) Female, Type SMA  
 (5) 50 Ohm couplers

## 4240-550 ADAPTER KIT 7/16" DIN

## PHYSICAL

Size	9.5 in x 6.5 in x 2.0 in (24.13 cm x 16.51 cm x 5.0 cm)
Weight	1 lb (.45 kg)
Body	Polypropylene

## CONNECTORS INCLUDED

(1) PA-MNME, N (M) to 7/16 DIN (M)  
 (1) PA-FNFE, N (F) to 7/16 DIN (F)  
 (1) PA-FNME, N (F) to 7/16 DIN (M)  
 (1) PA-MNFE, N (F) to 7/16 DIN (F)  
 (1) PA-FEME-R, 7/16 DIN (F) to 7/16 DIN with right angle (M)  
 (1) PA-FEFE, 7/16 DIN (F) to 7/16 DIN (F)

## 25-T-MN TERMINATION/LOAD RESISTOR

## MEASUREMENT

Power Rating	25 W
Frequency	DC - 4 GHz
VSWR DC - 1 GHz	1.10:1 max
VSWR 1 GHz - 4 GHz	1.15:1 max
Impedance	50 Ohms, Nominal

## INTERFACE

Connectors	N (m)
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## ENVIRONMENTAL

Temperature Range	-40 °C to 40 °C (-40 °F to 104 °F)
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## PHYSICAL

Product Type	Dry (Convection-Cooled)
Operating Position	Any
Finish	Black Anodized
Size	4.7 in L x 2.3 in Dia (119.4 mm x 58.5 mm)
Weight	7 oz (198 g)

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