

# 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



RAILHAWK™



7020-1-010101



SK-CAL-MN-C6



FH-AV-CC



4240-401



4240-550



25-T-MN

### MEASUREMENT

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

### ACCURACY

<b>Frequency Accuracy</b>	±2.5×10 <sup>-6</sup> @25 °C
<b>Reflect Amplitude Accuracy</b>	-15 dB to 0 dB: 0.4 dB
	-25 dB to -15 dB: 1.5 dB
	-35 dB to -25 dB: 4.0 dB

### CONNECTORS

<b>Connector</b>	USB Type-C, USB 3.0
<b>Test Port Connector Impedance</b>	N-type, Female 50 ohms

### ENVIRONMENTAL

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

### SYSTEM

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

### PHYSICAL

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

### CERTIFICATIONS

<b>CE</b>	<b>EMC:</b> Standard EN 61326-1:2006
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### STANDARD ACCESSORIES

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

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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	<b>EMC:</b> 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

<b>Size</b>	6.5 in x 4.63 in x 1.69 in (16.5 cm x 11.8 cm x 4.3 cm)
<b>Weight</b>	1 lb (.45 kg)
<b>Body</b>	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

<b>Size</b>	9.5 in x 6.5 in x 2.0 in (24.13 cm x 16.51 cm x 5.0 cm)
<b>Weight</b>	1 lb (.45 kg)
<b>Body</b>	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

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

## INTERFACE

<b>Connectors</b>	N (m)
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## ENVIRONMENTAL

**Temperature Range** -40 °C to 40 °C (-40 °F to 104 °F)

## PHYSICAL

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

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