DATASHEET

TRAFFIC MANAGEMENT ACCESSORY

Handheld Electronic K-Band Target Simulator Doppler Generator
EKTSDG

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CONTENT

1 USER SAFETY WARNING

Please read the entire document carefully before using the device.

INSTALLATION

Please pay attention to the details below before installing and connecting the device:

- Only use provided or approved equipment for the operation.
- Only skilled and instructed persons shall install and connect the device.
- All connectors are pin-coded and fit in only one position.
- Be cautious when using the device on or around active roadways and pay attention to moving traffic.
- Make sure that test procedures are in accordance with local safety policies and procedures as well as company practices.

OPERATION

Please note that the device is not waterproof. Take care of proper rain coverage when working outside. Do not operate the device if the device itself or any cables are damaged.

Transmission of radio frequency waves starts after the device is powered up and stops after it is switched off.

Do not dispose electrical and electronic equipment in household trash.

TECHNICAL SERVICE

Only use provided or approved equipment for operation.

Do not attempt to service or repair this device:

- No user-maintainable parts are contained in the device.
- To avoid electrical shock, do not remove or open the cover.
- Unauthorized opening will void all warranties.
- smartmicro is not liable for any damages or harms caused by unauthorized attempts to open or repair the device.

RADIATION

This device generates radio frequency energy. There are strict limits on continuous emission power levels to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

- Human exposure to transmitted waves from this device is generally considered as safe. Still, it is considered good practice that humans are not subject to higher radiation levels than necessary.

This device may interfere with other devices using the same frequency band.

2 PRODUCT SPECIFICATIONS

EKTSDG (Electronic K-band Target Simulator Doppler Generator) is a battery powered handheld, portable moving target simulator for K-band (24GHz) radar sensors.

It can be used for:

- Alignment of sensors in the field at the time of installation
- Field or lab calibration and year-by-year inspection of sensors
- General functional testing of sensors in the field or in the lab

This device was specifically developed to work with smartmicro 24GHz sensors. It is capable to simulate a moving target in static distances of up to 100m and can for instance be placed close to a stop line of an intersection to check the alignment of one or multiple radar sensors.

A software generated modulation signal allows for generation of low distortion and directional Doppler signals from 44Hz to 13,4kHz corresponding to any speeds from 1 to 300km/h.

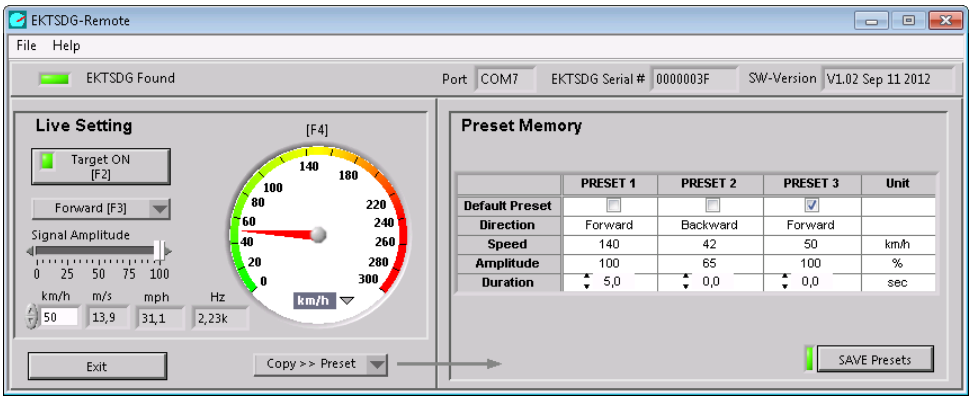
2.1 FEATURES AND APPLICATIONS

The handheld K-Band Target Simulator Doppler Generator has the following features:

- Programmable speed interval from 1 to 300km/h
- Programmable movement direction
- Programmable signal level
- Programmable presets
- Rechargeable battery
- Standalone or hosted operation
- USB interface to host computer
- Compact and rugged construction

2.2 CONFIGURATION SOFTWARE

The device may be connected to any Windows PC via USB. The included configuration software allows real-time remote controlling and the configuration of presets of the EKTSDG.



Configuration Software

3 CHARACTERISTICS

Parameter	Conditions/Notes	Symbols	Typical Values (min… max.)
Operating Conditions			
Supply Voltage	Battery	V_{ccBatt}	3.7V (3.5…4.1V)
	USB	V_{ccUSB}	5V (4.5…5.5V)
External Supply Current	Operating	I_{cc1}	200mA (max. 500mA)
	Charging	I_{cc2}	450mA (max. 500mA)
Battery	Capacity (T=25°C)	C_{LiPo}	1500mAh
	Lifetime (full charging cycles)	-	500 cycles
Temperature	Operating (non-condensing)	T_{op}	(0…+60°C) | (32…+140°F)
	Storage	T_{st}	(-20…+80°C) | (-4…176°F)
Doppler Simulator			
Frequency Range	Transmit frequency	f_{TG}	(24.000…24.250GHz)
Doppler Frequency Range	Digitally adjustable	$f_{Doppler}$	(44…14300Hz)
Simulated Speed Range	Digitally adjustable	$v_{Doppler}$	(1…300km/h) | (0.6…186mph)
Output Power Range	Adjustable signal level	P_{out}	(1…100%)
Antenna Gain	F=24.125GHz	G_{Ant}	15dBi
Antenna Polarization	-	-	Linear, vertical
Horizontal -3dB Beam Width	E-Plane	W_{φ}	24°
Vertical -3dB Beam Width	H-Plane	W_{θ}	27°
Sidelobe Level	E- and H-Plane	D	(max. -15dB)
Overall Gain	For linear polarized transceivers	-	65dB
Equivalent Reflectivity	For linear polarized transceivers	RCS_{lin}	25m²
Frequency Error Doppler Signal	Crystal controlled	$\Delta f_{doppler}$	(max. 1%)
Drift in Overall Gain	-	-	(max. ±3dB)
Harmonics in generated Doppler[1]	$f_{doppler}$ = 1kHz	$H_{Doppler}$	(max. -10dBc)
Harmonics in RF Spectrum	F_{RF} = 24.125GHz	H_{RF}	(max. -30dBm)
Radiated Power	EIRP	P_{sat}	(max. 20dBm)
Mechanical Details			
Outline Dimensions	-	-	68 x 128 x 24mm | 2.7 x 5 x 0.9in
Weight	Including LiPo Battery	-	180g | 6.3oz
Further Information			
Host Interface	USB	-	serial USB, mini-USB connector
Enclosed Accessories	-	-	protection case, soft case, USB cable

[1] Above a simulated speed of ~200km/h (~124mph), the harmonics level in the generated Doppler will degrade.

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