

# VRG-1000/VRG-1000SD

Environment Generator for Realistic IFF Signal Testing



## Only AIMS-Certified IFF Environment Generation Test Set

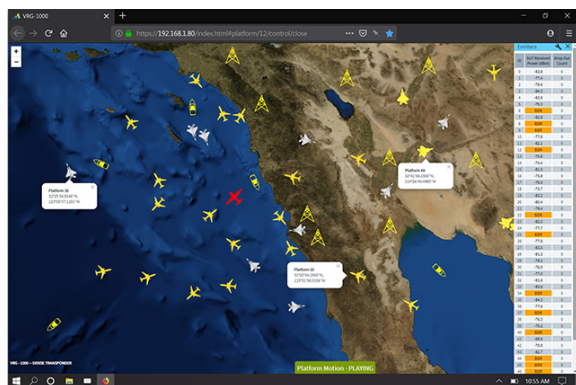
The Viasat Radio Frequency Generator 1000 (VRG-1000) is the only AIMS-certified, true-to-life environment generator for testing Identification, Friend or Foe (IFF) systems in high density signal environments. With 50 independent, synchronized IFF interrogators or 400 independent, interactive transponders capable of squittering ADS-B and/or M5L2, this test set brings realistic signal testing on-location to your installed or in-development IFF system. Replicate crowded airspace and reduce flight test time by evaluating your system in a lab.

## Automated Certification Tools

The VRG-1000 provides automated test tools that reduce certification times from weeks to hours.

## Intuitive Web-Based Interface

This portable RF environment generator includes an intuitive graphical interface that works with a standard web-based browser, no additional software needed. The operator can create and control a test scenario that includes moving platforms, each with an IFF interrogator or transponder. Each IFF interrogator can be associated with an antenna pattern to create a dense, robust, and realistic IFF environment. The System Under Test (SUT) is presented with interactive IFF replies that have the correct relative time delay and amplitude, so they can be received and analyzed as they would in live operation.



With an established library of IFF signals, independent control of all transponders and interrogators, and a convenient compact design, Viasat's VRG-1000 delivers easy, accurate IFF signal testing to your system.



## VRG-1000/VRG-1000SD At-A-Glance

### HIGH-DENSITY SIGNAL ENVIRONMENT

Supports test scenarios with:

- › 400 independent, moving IFF platforms
- › 400 interactive/squittered transponders
- › 50 synchronized interrogators
- › 20 or more in-beam replies
- › Up to 32 simultaneous garbled signals
- › Transponder antenna diversity testing
- › Interrogator sum and difference channels
- › Encrypted interrogations and replies using a single real crypto
- › Link multiple VRGs for increased density

### INDEPENDENT SIGNAL CONTROL

- › Provides all Mark XIIIA modes, including 1, 2, 3/A, C, S, 4, 5, ADS-B, M5L2, M5L2-B, ELS, and EHS
- › Includes Viasat's Software Defined Waveform processor that can be easily upgraded to support new waveforms
- › In-chassis interface for KIV-77 or SIT2010 cryptographic equipment

### DYNAMIC RF ENVIRONMENT

- › Simulation engine enables dynamic platforms and realistic RF environments accounting for path loss, antenna patterns, delay, and more

### COMPACT, PORTABLE DESIGN

- › Bring dense IFF interrogator and transponder signal testing to your system

### DATA EXTRACTION

- › Capture and time stamp (16 nanosecond resolution), all RF generated and received for detailed post-test analysis

### DIS PLATFORM CONTROL

- › Externally control all platform movement with the IEEE DIS Ethernet standard

# Viasat Radio Frequency Generator 1000

## Specifications

### INTERROGATION GENERATION

|                          |                                     |
|--------------------------|-------------------------------------|
| <b>Modes Supported</b>   | 1, 2, 3/A, C, 4, S, 5, and All-Call |
| <b>Frequency</b>         | 1030 MHz                            |
| <b>Amplitude</b>         | -90 to +6 dBm                       |
| <b>PGRI</b>              | 2 ms to 1 second                    |
| <b>Antenna Diversity</b> | VRG-1000SD version                  |

### INTERROGATION RECEPTION

|                        |  |
|------------------------|--|
| <b>Modes Supported</b> | 1, 2, 3/A, C, 4, S, 5, and All-Call                              |
| <b>Frequency</b>       | 1030 MHz   |
| <b>Amplitude</b>       | <b>VRG-1000</b> -50 to 0 dBm<br><b>VRG-1000SD</b> +15 to +65 dBm |

### SCENARIO FEATURES

- > 50 synchronized interrogators or 400 interactive transponders capable of squittering ADS-B and/or M5L2
- > Up to 400 independently moving IFF platforms
- > 6 degrees of freedom (latitude, longitude, altitude, heading, pitch, roll)
- > Transmit/receive antenna patterns
- > Realistic RF environment accounting for path loss and pointing angles
- > DIS (platform motion) interface
- > Reception of external antenna pointing angle
- > Time stamped data extraction for detailed post processing

### TRANSPONDER GENERATION

|                                |   |
|--------------------------------|---|
| <b>Modes Supported</b>         | 1, 2, 3/A, C, 4, S, M5L1, M5L2, M5L2-B, ADS-B, ELS, and EHS |
| <b>Frequency</b>               | 1090 MHz  |
| <b>Amplitude</b>               | -90 to +6 dBm   |
| <b>Sum/Difference Channels</b> | VRG-1000SD version  |

### TRANSPONDER RECEPTION

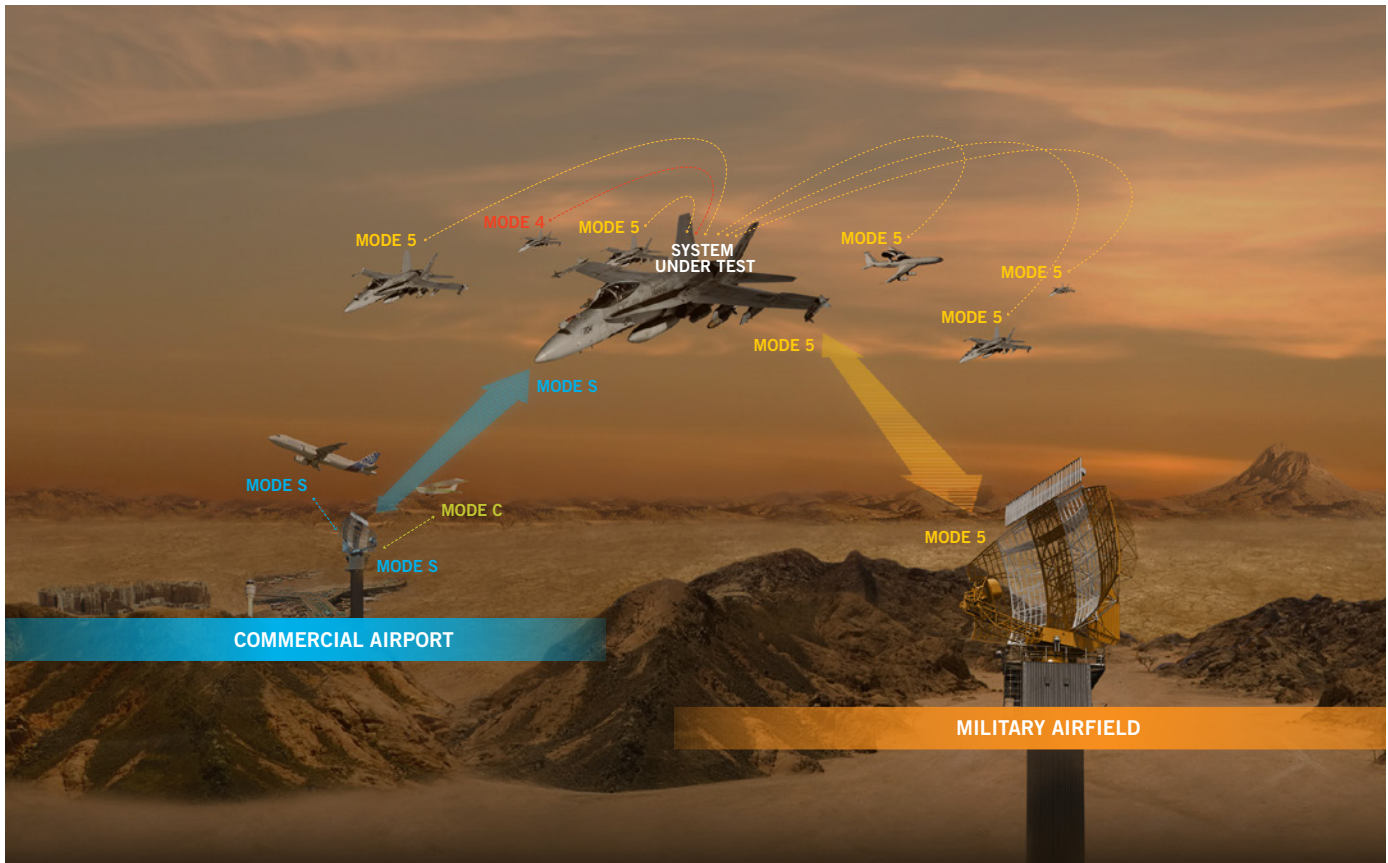
|                        |  |
|------------------------|--|
| <b>Modes Supported</b> | 1, 2, 3/A, C, 4, S, M5L1, M5L2, M5L2-B, and ADS-B                |
| <b>Frequency</b>       | 1090 MHz   |
| <b>Amplitude</b>       | <b>VRG-1000</b> -50 to 0 dBm<br><b>VRG-1000SD</b> +15 to +65 dBm |

### GENERAL

|                                |                              |
|--------------------------------|------------------------------|
| <b>Control Interface</b>       | Ethernet                     |
| <b>RF Interface Connectors</b> | N-Type / TNC                 |
| <b>Operating Temperature</b>   | -10° to +40° C               |
| <b>Power</b>                   | 110 to 240 VAC, 5A, 50/60 Hz |
| <b>Dimensions (W x H x D)</b>  | 19 x 7 x 27 in.              |
| <b>Weight</b>                  | 40 lb.                       |

### PART NUMBERS

|                   |         |
|-------------------|---------|
| <b>VRG-1000</b>   | 1199118 |
| <b>VRG-1000SD</b> | 1170355 |



#### Global headquarters

6155 El Camino Real, Carlsbad, CA 92009-1699, USA

#### Sales

TEL +1 760 476 2506 EMAIL [rf.environment@viasat.com](mailto:rf.environment@viasat.com) WEB [viasat.com](http://viasat.com)

