

GATEKEEPER[™] 1U MULTI-LINK ASSEMBLY

Identifies and Suppresses Received Interference

The L3Harris GATEKEEPER 1U Multi-Link Assembly is an innovative product, improving the performance of critical communication systems. GATEKEEPER is an Interference Excision System (IES) used to identify and suppress co-channel interference, static tones, dynamic frequency tones and modulated signals that may be encountered in congested RF environments.

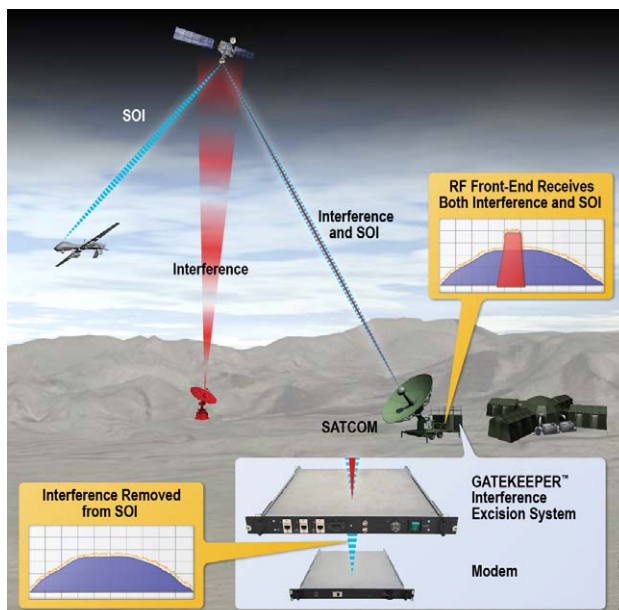
PRODUCT DESCRIPTION

The L3Harris GATEKEEPER product family is based on the GATEKEEPER Modular Core which may be ported to different sets of host hardware. The product family includes a 1U 19-inch rack mount Line-Replaceable Unit (LRU) called the 1U Multi-Link GATEKEEPER Assembly. The 1U Multi-Link GATEKEEPER Assembly can be added in the communications receive chain before the modem. This allows the 1U Multi-Link GATEKEEPER Assembly to provide excision capability as a modem-agnostic, waveform-dependent add-on to existing systems.

The 1U Multi-Link GATEKEEPER Assembly utilizes an interference mitigation technique specially suited to identify and remove wideband signals. This capability is tuned to produce high headroom. The capability also features an emphasis on dead zone performance. This tool is also capable of reporting interferer information to the user, improving situational awareness, and has the added benefit of reducing operator reaction times to link outages. This technique also includes the ability to remove signals both less and more powerful than the SOI, as well as wider than the SOI, all while maintaining the integrity of the SOI.

The 1U Multi-Link GATEKEEPER Assembly utilizes a narrowband interference removal technique to filter interfering signals. The tool has been designed with high headroom. An emphasis has also been placed on dead zone performance of the tool. This tool is the preferred method of excising tones and dynamic signals including FM, AM, sweeping, pulsing, FSK and LTE signals.

The 1U Multi-Link GATEKEEPER Assembly web-based GUI allows access to an easy-to-use interface for the GATEKEEPER excision tool. This includes spectral display, monitoring and control, and interference reporting. The web based GUI is focused around automatic detection and removal of interferers, but is flexible enough to cover any use case when manually configured.



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Interference Excision System Technology

KEY FEATURES

- > Excises a wide variety of interfering waveforms commonly encountered by RF systems worldwide: tones, combs, LTE, out-of-band radars, etc.
- > Broadly applicable to many hosts that must suppress cooperative and non-cooperative interference: SATCOM and terrestrial/LOS downlinks, full-duplex same-bandwidth data links and other platforms with multiple RF systems operated simultaneously
- > Compliments advanced waveforms increasing data throughput and reliability
- > Improves performance of legacy and fielded waveforms with increased reliable data transfer
- > Able to be an add-on to existing systems; level of protection is waveform dependent
- > Supports protection of up to 4 links per 1U LRU
- > Web-based GUI operates stand-alone or seamlessly integrated with existing system GUIs

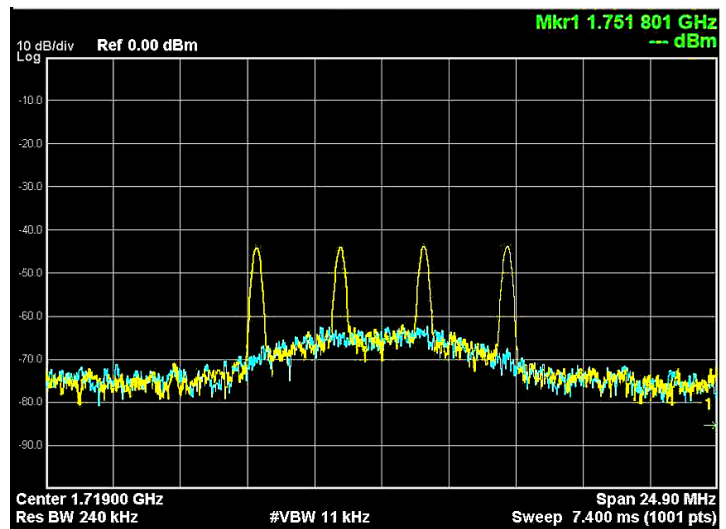
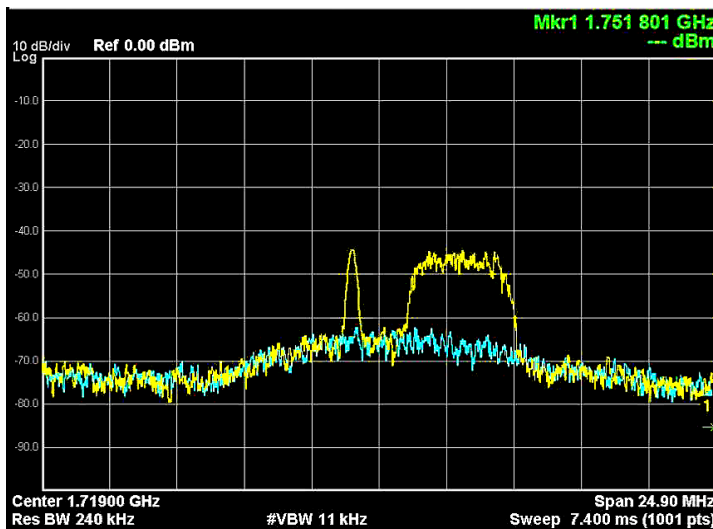


SPECIFICATIONS

PHYSICAL CHARACTERISTICS	
Form Factor	19-inch rack mount
Size	19" (w) x 19.5" (d) x 1.72" (h)
Weight	< 15 lb.
Power	< 150 W
Cooling	Forced convection, fans

ENVIRONMENTAL CHARACTERISTICS	
Operating Temperature	0 °C to 49 °C
Non-Operating Temperature	-10 °C to 63 °C
Operating Altitude	MSL to 10 kft
Non-Operating Altitude	MSL to 40 kft

PERFORMANCE CHARACTERISTICS	
Number of Links Protected	Configurable up to 4
Frequency Range	L-Band
Simultaneous Interferer Removal per Link	> 4
SOI Modulations Protected	BPSK, QPSK, OQPSK, 8PSK
Interferer Modulations Removed (AUTO)	BPSK, QPSK, OQPSK, 8PSK, Tone, Narrowband
Interferer Modulations Removed (Manual)	AUTO plus 16QAM
Headroom:	Configuration dependent
• Tones	• > 20 dB
• Multiple Tones	• > 15 dB
• Dynamic Tones	• > 15 dB
• Modulated Signals	• > 20 dB
Dead Zone	Configuration (SOI) and Interferer dependent performance can be:
	• Tones < 2 dB
	• Modulated < 2 dB
Excision Performance	Advanced Capability Range
	• SOI 0.4 – 8.4 MSPS: BPSK/QPSK/OQPSK
	• SOI 1 – 8.4 MSPS: 8PSK
	Extended Capability Range
	• SOI 8.4 – 32 MSPS: BPSK/QPSK/OQPSK/8PSK
	Other SOI
	• Narrowband and Manual protection only



Excision Examples
Yellow = Input Signal
Blue = After Excision

GATEKEEPER 1U Multi-Link Assembly

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1025 W. NASA Boulevard
Melbourne, FL 32919
t 833 537 6837
CSW.Products@L3Harris.com