EtherHaul™ Product Line Release Notes

Release: 7.7.0 (General Availability)

July 2019

Ed.1.0

Introducing EtherHaul™ Product Line

Siklu's EtherHaul™ EH-500, EH-600, EH-700, EH-710, EH-1200, EH-2200, EH-2500 and EH-5500 product lines are carrier-class millimeter wave radios that dramatically lower the cost of wireless backhaul and Ethernet transport, offering high capacity up to 5Gbps full-duplex. The radios are uniquely based on an all-silicon design that results in fewer components, greater reliability and the lowest price in the industry. Operating in the uncongested and inexpensive licensed 71-76/81-86 GHz E-Band and the license-exempt 57-71 GHz V-Band, EtherHaul™ boasts the lowest TCO (Total Cost of Ownership) in the industry, by a wide margin. Designed with stringent performance requirements and ease of deployment in mind, EtherHaul™ provides MEF-compliant networking and QoS, enhanced Hitless Adaptive Bandwidth, Coding & Modulation for maximum spectral efficiency and link availability. Network synchronization, advanced OAM / PM tools, and ring protection make EtherHaul™ ideal for business services, enterprises campuses, and MDU deployments, as well as small cell and mobile backhaul. A variety of form factors, with compact integrated antennas, and a choice of detachable antennas enable deployments at the street level, or optimization of the link budget to bring gigabit to the street, in dense urban and in rural locations.

EH-700TX

EH-710T/TX

EH-500TX

EH-600T/TX

EH-1200T/TX

EH-1200F/FX

EH-2200F/FX

EH-2500F/FX

EH-5500FD

Release History

Date	Version	Version Description
July 2019	*7.7.0*	General Availability software version for Siklu's EtherHaul™ products lines[1]. New features and performance enhancements: 1. IPv6 for management: it is possible to manage EtherHaul™ radios within an IPv6 network. Limitations fixed with this release: 2. GUI management over proxy-server is resolved. 3. Counters in the current (first) row of the interface statistics history table If the EtherHaul™ ODU to be upgraded to R7.7.0 is running R7.2 or lower, then the ODU must be upgraded to R7.3.1 prior to the upgrade to 7.7.0. Review this Upgrade procedure to latest release, from a SW version earlier than 7.1.
June 2019	*7.6.3*	Limited Availability software version, for EtherHaul™ 2500-AES & 2200-AES. Limitations fixed with this release: 1. Corrupted data on the receive side.
April 2019	*7.6.2*	Retired software version.
December 2018	*7.6.1*	General Availability software version for Siklu's EtherHaul™ products lines[2]. New features and performance enhancements: 1. ATRAPE (Automatic TRAnsmit Power Enhanced), a feature designed to optimize link availability in those installations where the transmit power is reduced to avoid saturating the receiver. With ATRAPE engaged, the link will automatically switch to full transmit power in case of rain-induced fading. Limitations fixed with this release: 2. EH-2x00F/FX & EH-5500FD: fixed memory corruptions which caused resets 3. EH-1200FX: fixed cases of no traffic with ETH0 down 4. EH-600T: configuration of CFM will not cause system crash If the EtherHaul™ ODU to be upgraded to R7.6.1 is running R7.2 or lower, then the ODU must be upgraded to R7.3.1 prior to this upgrade. Review this Upgrade procedure to latest release, from a SW version earlier than 7.1.

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[1] Check the *Product Compatibility* section.
[2] Check the *Product Compatibility* section.

Date	Version	Version Description
August 2018	*7.6.0*	General Availability software version for Siklu's EtherHaul™ products lines. New features and performance enhancements: 1. The MAC table size in the integrated switch is doubled to 8k entries. 2. Free activation of all SW licenses for up to 30 days. 3. EH-600T, Australia: extended range when operating in the newly extended 64-66GHz spectrum, following regulator decisions. Limitations fixed with this release: 1. EH-600T/TX, 1200T/TX/F/FX & ATPC: links set with low power & ATPC will sync, will not experience BER. 2. User name authenticated with Radius or TACACS may contain the @ character. 3. DHCP works over a VLAN. 4. EH-1200F/FX: GUI displays correct link length. 5. ODU uses only configured IPv6 address (IPv6 SLAAC announcements are now ignored). 6. IP gateway setting are saved in startup-config file. 7. EH-5500FD: port LED will not light up when SFP+ is not available. 8. EH-5500FD: alarm propagation mode settings are saved in startup-config file. 9. SNMPv3: entry of 'users' information succeeds. 10. NW connectivity check: 'admin' saved. 11. NW connectivity check: no crash when ODU operates NTP. 12. EH-2500-AES, EH-2200-AES: link failed with 1 side RF-down. If the EtherHaul™ ODU to be upgraded to R7.6 is running R7.2 or lower, then the ODU must be upgraded to R7.3.1 prior to this upgrade. Review this Upgrade procedure to latest release, from a SW version earlier than 7.1.
March 2018	*7.5.3*	Limited Availability software version for Siklu's EtherHaul™ products lines. New features and performance enhancements: 1. Rate change (ex: 1G to 100Mbps) on an Ethernet port is reported with a trap. 2. Programmable NW connectivity check and soft-reset upon connectivity check failure. Limitations fixed with this release: 2. File transfer over IPv6. 3. BusyBox CLI auto-completion escape sequence vulnerability. 4. startup-configuration file upload/download to/from radio from the GUI. If the EtherHaul™ ODU to be upgraded to 7.5.3 is running R7.2 or lower, then the ODU must be upgraded to R7.3.1 prior to this upgrade. Review this Upgrade procedure to latest release, from a SW version earlier than 7.1.

Date	Version	Version Description
January 2018	*7.5.2*	Limitations fixed with this release: 1. EtherHaul™ radios now reports correct link distances in all cases. 2. Ethernet port mirroring. 3. Iperf started from CLI performs normally. 4. ODU with IP address from DHCP is reachable and manageable. Upgrading to R7.5.2 is highly recommended. If the EtherHaul™ ODU to be upgraded to R7.5.2 is running R7.2 or lower, then the ODU must be upgraded to R7.3.1 prior to this upgrade. Review this Upgrade procedure to latest release, from a SW version earlier than 7.1.
November 2017	*7.5.1*	Limitations fixed with this release: 1. An EtherHaul™ ODU defined to sync date & time with an NTP server may get into continuous reboot loop. Upgrading to R7.5.1 is mandatory for new TDD links in the EU operating with channel bandwidth of 125MHz or for any link previously loaded with R7.5.0 and obtaining date & time from an NTP server. The update is highly recommended for other links. If the EtherHaul™ ODU to be upgraded to R7.5.1 is running R7.2 or lower, then the ODU must be upgraded to R7.3.1 prior to this upgrade. Review this Upgrade procedure to latest release, from a SW version earlier than 7.1.

Date	Version	Version Description
September 2017	*7.5.0*	New features and performance enhancements: 1. "Save" indicator: the GUI will flash a "save" indicator when a configuration change is not yet saved, in the main screen inside the save button of the concerned ODU, and at the top on all screens. 2. Throughput indicator: throughput is displayed per port in the Ethernet ports screen, expressed in Mbps per second. 3. EH-5500FD fault propagation: the ODU will shut-down the 10G traffic port when the radio link between the 2 ODUs is down (the management port is not affected). 4. EH-5500FD in the UK: a country code is added for operation of the EH-5500FD in the UK. Two 1250MHz channels are available in the self-coordinated spectrum: 74.000 & 75.250 GHz; and a 3rd channel, 71.750 GHz, in the fully-coordinated spectrum. 5. V-band ODUs (EH-500/600) in Switzerland: support of 2 channels added (62,875 & 63,875 KHz). 6. Security updates: OpenSSL updated to R1.0.1U & Dropbear (SSH) updated to 2016.74, in line with Siklu's goal to maintain a high-level network security to our partners and customers. 7. RSSI reading available in adaptive mode on the AUX port, via a volt-meter. Limitations fixed with this release: 1. EH-5500FD GUI: the responsiveness of the GUI has been improved by increasing the communications efficiency between the radios, at all modulation levels. 2. EH-2200/2500 links will not get into situation where status up on 1 side and down on the other. 3. SNMP user/community: GUI clarified with respect to both v2 & v3 authentication parameters. 4. EH-5500FD SFP+ inventory: the inventory now displays the information related to the SFP+. 5. EH-1200 will sync correctly after repeated link-down events. 6. SNMP response to get for a large set of OIDs is corrected. 7. EH-500TX, EH-600T/TX, EH-700TX, EH-710T/TX & EH-1200T/TX meet all requirements of EN 302 217-2 V3.1.1 (2017-05) at channel bandwidth of 125MHz, for compliance to RED 2014/35/EU. Note: no fix needed for compliance with RED at CBW = 250/500MHz. 8. EH-5500FD: optimization of the 10G input buffers 9. SW license when run-time date and time are past the actual time: ODU will use start-date of the license to configure local date & time at startup and will upload licenses correctly, capacity or features.
February 2017	*7.4.0*	New features and performance enhancements: 1. SW image security: the SW image of EtherHaul™ ODU is now encrypted and signed for improved security of EtherHaul™ ODUs. Limitations fixed with this release: 1. Unauthenticated Remote Code Execution (RCE) via login credential leakage prevented by encryption of the command channel. 2. EH-1200F/FX: long/extra-long modes were corrupted in 7.3, now working again.

Date	Version	Version Description
December 2016	*7.3.0*	New features and performance enhancements: 1. SW image security: SW images for releases after R7.3 will be encrypted for added security of EtherHaul™ ODUs; ODUs with R7.3 and above will not accept a non-encrypted SW image. ODUs with SW image prior to R7.3 will require upgrade to R7.3 before upgrading to a version after R7.3. 2. SSL certificate: major Internet browsers will stop supporting SHA-1 certificates in January 2017. The SSL certificate of Siklu ODUs now implements SHA-256. 3. EH-2200/2500/5500 links with short range: the "short" setting is added to the GUI to prevent RX overload when RSSI is close to -35dBm. 4. EH-600/7xx PoE-Out 52W on ETH2: options now supported for PoE-out on Eth2/Eth3 are: 26/26W, 40/13W, 52/0W. 5. EH-500/600 TX power in Canada: the max setting for the TX power is updated to +5dBm, following a recent CRTC regulatory decision. Limitations fixed with this release: 1. EH-5500FD slow GUI: using the web GUI to manage a link of EH-5500FD on both sides of the link can bring the GUI to slow down or stop, what might require reboot. The fix restricts more than single Local+Remote GUI session. Second GUI session will display the local only. 2. ODU with SyncE + SSM may stop normal operations intermittently: T & F ODU models (example EH-600T or EH-2500F, but not EH-600TX or EH-2500FX) configured for SyncE synchronization with SSM, will continue normal operation, even if one of the Ethernet ports is in status=disabled. Upgrading to SW R7.3.0 is mandatory to maintain GUI access to the ODUs and to allow future SW upgrades.
September 2016	*7.2.0*	New features and performance enhancements: 1. Alignment: the highest RSSI value measured while in alignment mode is available in the GUI (in the radio tab, near the alignment status display indicator). This simplifies identification and confirmation of the optimal alignment of the ODU. 2. V-band channels: the channel line-ups have been updated for Australia, Columbia, Hungary, South Africa, Taiwan and Vietnam. Limitation fixed with this release: 1. AES at full 2Gbps throughput: EH-2200 & EH-2500 now support AES at full throughput, as a factory configuration option. NEW part numbers must be ordered: EH-2200F/FX-ODU-AES-H/L-EXT or EH-2500F/FX-ODU-AES-H/L-EXT. There is no need to order EH-OPT-AES and it will be pre-installed on these ODUs in the factory.

Date	Version	Version Description
June 2016	*7.1.0*	New features and performance enhancements: 1. Managed layer 2 switch: the built-in Ethernet switch of EtherHaul™ -FX or -TX products is now fully configurable, turning these products into powerful managed Layer 2 switches, and simplifying the deployment and management of many projects; this applies to EH-500TX, EH-600TX, EH-1200TL/TX, EH-1200FX, EH-1200FX, EH-2200FX and EH-2500FX (some features under special licenses: O&M and reliability features). 2. 3 new operating channels, opening a new range of frequencies up to 66Ghz to the EH-500TX & EH-600T/TX products, for dense mmWave networks: 63,875, 64,375 and 65,175GHz (consult your Siklu partner for applicability, based on the country regulation). 3. Prioritization for control protocols: OSPF added to LACP, STP, LLDP, 1588 Precision Time Protocol (PTP) version 2 over Ethernet, CFM/OAM 4. Port mirroring: a powerful new debug tool is added to the built-in Layer 2 switch of EtherHaul™ products. Port mirroring allows mirroring of all the traffic on 1 Ethernet port to another Ethernet port. 5. The "Extra-Range" license is not required to deploy an EtherHaul™ EH-1200T/F/TX/FX beyond 5 miles (the range setting is still available in the CLI/GUI). 6. OpenSSL updated to R1.0.1T: the OpenSSL stack running inside EtherHaul™ products is updated to a recent version, in line with Siklu's goal to maintain a high-level network security to our partners and customers. Limitation fixed with this release: 1. None.
April 2016	*7.0.0*	New features and performance enhancements: 1. Link Aggregation protocol (LAG) with LACP 2. LLDP pass through 3. Prioritization for control protocols: LACP, STP, LLDP, 1588 Precision Time Protocol (PTP) version 2 over Ethernet, CFM/OAM Limitation fixed with this release: 1. Extend-MM/ERP – mac-learning on blocked port and flush FDB on port down 2. SNMP mib file support for missing modulations [EH-2200/EH-2500] 3. ATPC function 4. Improved RSSI estimation (accuracy) 5. TX-Mute is not symmetric [EH-2200/EH-2500]

Product Compatibility

Version	Version Description
7.7.0	EH-5500FD EH-2500F/FX, except AES version EH-2200F/FX, except AES version EH-1200F/FX EH-1200T/TX EH-700TX/710T/710TX EH-600T/TL/TX EH-500TX
7.6.3	EH-2500F/FX AES version EH-2200F/FX AES version
7.6.x 7.5.x 7.4.0 7.3.0 7.2.x	EH-5500FD EH-2500F/FX EH-2200F/FX EH-1200F/FX EH-1200T/TX EH-700TX/710T/710TX EH-600T/TL/TX EH-500TX
7.1.0 7.0.0	EH-2500F/FX EH-2200F/FX EH-1200F/FX EH-1200T/TX EH-600T/TL/TX EH-500TX

Upgrade procedure to latest release, from a SW version earlier than 7.1
This procedure applies to radios running SW versions 5.x / 6.x and up to 7.1. 1. Upgrade to 6.9.0 (HTTPS GUI added) 2. Upgrade to 7.3.1 (encrypted SW image) 3. Upgrade to latest 7.x (above 7.3.1) Note: upgrade from older version to 6.9.0 requires an FTP/TFTP server installation for the SW upload. With 6.9.0 comes the newest Web GUI, and you can continue to steps 2 and 3 using HTTP file transfers.

Limitations and Known Issues

#	Topic	Limitation / Known Issue	Work Around / Notes
1.	EH-600T	EH-600T- Asymmetric 50:50 and asymmetric 75/25 ratio are supported, asymmetric mode 90:10 is not supported.	Will be added to a next release.
2.	Authentication	TACACS+ and Radius - Authentication and Authorization full support - Accounting – only "login" and "logout" actions logged	
3.	Short Links	The lowest Tx power for EtherHaul™ 1200F/FX FDD ODUs is 0dBm which results in shortest link possible of 200m with 1ft antenna and 1000m with 2ft antenna.	
4.	Low channel	Operation of the EtherHaul™ ODUs in the lower E-band channel pair of 71.375GHz, 81.375GHz is not supported.	
5.	EH-1200F	Configurable Ethertype feature for sync 1588v2 packets – Ethertype 9100 is not supported for 1588v2 C and S VLANs encapsulation packets.	Use 8100 for C/S-Vlan or 88a8 for S-Vlan.
6.	SyncE	transient time to lock on reference clock source form radio port to Ethernet port is about ~ 30sec.	
7.	System	System configured in non-local user auth mode (TACACS/RADIUS) erases user info in /etc/passw on power up.	
8.	System	No traceroute reply from remote unit.	
9.	Management and Configuration	SNMP and Syslog messages may not be sent during reset or during ETH ports down/up events	
10.	Security	The following 5 symbols [?] [;] [,] [$] [%] are reserved and may not be used as part of user defined passwords.	
11.	iPerf	iPerf has limited throughput of 500Mbps in TCP mode. In addition, iPerf is not usable in UDP mode.	Will be added to a next release.
12.	Radio statistics	Radio statistics may show changes in modulation or CINR, while the modulation levels never changed at all (EH-500TX, EH-600T/TX, EH-700TX, EH-710T/TX and EH-1200T/TX/F/FX).	Will be added to a next release.
13.	2x00-AES	Limitations of EH-2x00-AES radios with R7.6.3: - link distance is not reported on -F/-FX models - SyncE or IEEE1588 are not functional on the -F models	Will be added to a next release.

About Siklu

Siklu delivers Gigabit capacity millimeter wave wireless backhaul solutions operating in the 60 and 70-80 GHz bands. Ideal for dense, capacity-hungry urban HLS & safety networks, the ultra-high capacity wireless links can be easily and discreetly installed on the very same street fixtures as the security cameras. The most deployed MMW radios in the world, thousands of units are delivering carrier grade performance in varying weather conditions around the world.

Siklu Communication Ltd.
43, HaSivim St.
Petach Tikva 49517, Israel
Tel: +972 3 921 4015 | Fax: +972 3 921 4162
hello@siklu.com