



Document ID: FAQ-0034  
Date: 16.9.2016  
V1.00

## Satel 868 ... 869 MHz frequency range duty cycle limitation

The duty cycle is defined as the ratio, expressed as a percentage, of the maximum transmitter "on" time monitored over one hour, relative to a one hour period. The purpose of the duty cycle limit is to ensure that no single application can occupy this license-free band for more than a certain percentage of time. The limitations are mentioned in ETSI standard specifications EN 300 220-1 and EN 300 220-2.

Earlier than 3.63.4 firmware versions for the SATEL Compact-Proof (869), SATELLINE-EASy 869 and SATELLINE-M3-TR1 869 do not include the automatic duty cycle limitation. In these cases the duty cycle limitation has been left to the responsibility of the connected hardware, as an upper layer application task.

If the upper layer application is not capable of limiting the duty cycle according to the latest ETSI specification requirements, the firmware of the SATEL Compact-Proof (869), SATELLINE-EASy 869 and SATELLINE-M3-TR1 869 products shall be updated to the required minimum level, version 3.63.4 or later. It is always recommended to use the latest firmware version in the devices for the Satel radio modems.

Updating older than 3.63.4 firmware version to the latest version, the subband of the radio modem shall be selected by the user in order to take the automatic duty cycle limitation in use in the radio modem at first time. This task can be executed either from the programming menu via terminal connection, via LCD user interface or via SL-commands with terminal connection.

The subband settings for SATELLINE-EASy 869 and SATELLINE-M3-TR1 869 with latest firmware versions are by default:

Subband	Subband 1 869.4000 – 869.6500 MHz	Subband 2 869.6500 – 869.7000 MHz	Subband 3 869.7000 – 870.0000 MHz	Subband 4 869.7000 – 870.0000 MHz
Max Tx Power	500 mW	25 mW	25 mW	5 mW
Max Duty cycle	10 %	10 %	1 %	100 % (no limit)
Available Frequencies	869.4125 MHz	869.6625 MHz	869.7125 MHz	869.7125 MHz
	869.4375 MHz	869.6875 MHz	869.7375 MHz	869.7375 MHz
	869.4625 MHz		869.7625 MHz	869.7625 MHz
	869.4875 MHz		869.7875 MHz	869.7875 MHz
	869.5125 MHz		869.8125 MHz	869.8125 MHz
	869.5375 MHz		869.8375 MHz	869.8375 MHz
	869.5625 MHz		869.8625 MHz	869.8625 MHz
	869.5875 MHz		869.8875 MHz	869.8875 MHz
	869.6125 MHz		869.9125 MHz	869.9125 MHz
	869.6375 MHz		869.9375 MHz	869.9375 MHz
			869.9625 MHz	869.9625 MHz
			869.9875 MHz	869.9875 MHz

Active default subband: Subband 1  
Active default frequency: 869.4125 MHz

When the user selects the active subband, RX/TX frequencies will also switch to subband min. freq + 12.5 kHz (for example 869.4125 MHz for Subband 1).

Duty cycle is limited by the firmware by adapting to the transmitted data. The absolute maximum for a transmission is 1 second after which the transmitter is switched off.



Document ID: FAQ-0034

Date: 16.9.2016

V1.00

Example of the 10% duty cycle limitation:

Using subband 2: 869.6500 – 869.7000 MHz, 25 mW, 10 % duty cycle

TX time 100ms → RX time before activating the transmitter again = 900 ms (90 %) of the time.

- Any transmitted data appearing at the serial port outside the duty cycle period is ignored.
- Also the SATELLINE-M3-TR8 product includes the automatic duty cycle limitation, but the Subbands differ and are mentioned in the user manual of the product.
- LCD UI and SATEL Configuration Manager do not currently support the active subband selection (9/2016). The subband selection can be made in the programming menu or by using SL commands with terminal connection.

---

SATEL or its distributors are not responsible in any way of any claims or penalties arising from the operation of its radio equipment in ways contradictory to local regulations and/or requirements and/or laws, if any products manufactured by Satel are used in unlawful ways.