

TRXVU transponder mode

Description

The transponder mode will work as a secondary mode implemented into the main functionality of the TRXVU transceiver radio. Therefore the user will be able to choose between nominal and transponder as the running mode of the transmitter. The transponder mode will enable the system to receive an FM modulated signal by the receiver section of the radio and retransmit it with an FM modulation using the transmitter section.

The transmitter in transponder mode will be set into a waiting state with the power amplifier of the transmitter disabled. The transmitter will be waiting for a specific level on the RSSI telemetry value. When the RSSI value goes over a defined threshold the power amplifier is activated and the transponder is enabled completely. If the RSSI goes below after an amount of measurements the power amplifier is disabled and set again into a waiting state.

Set Transmitter Mode

Command Name	Command Code
Set Transmitter Mode	00111000 (0x38)

Description

Sets the transmitter current running mode. The TRXVU transmitter section is able to work on two different types of modes: nominal and transponder. The nominal mode will include all the functionalities contemplated in the transmitter's user configuration. The transponder mode will enable the system to transmit back in FM modulation any audio signal that will be received by the receiver section of the radio.

Parameters

[001 - 001] 000000xx

The modes of the transmitter to be set. The values listed below correspond to the available modes. If another value is specified this command will have no effect.

00000001 - transmitter is set to nominal mode

00000010 - transmitter is set to transponder mode

Response

None.

Set RSSI Transponder Threshold

Command Name	Command Code
Set RSSI Transponder Threshold	01010010 (0x52)

Description

Sets the RSSI threshold used in the TRXVU transmitter's transponder mode. On transponder mode the TRXVU transmitter section will wait for a specific level of RSSI to activate the power amplifier of the transmitter and start transmitting back the audio being received by the receiver section.

Parameters

[000 - 001] xxxxxxxx xxxxxxxx

RSSI threshold value. This value will be used as the new RSSI threshold for the transponder chain activation. The value received here will be the raw value, therefore between 0 and 4095. The most significant byte is transmitted first (big endian).

Response

None.

Recommendations

As it has been described above, the transponder mode functionality will be based on a system that waits to receive a signal on the receiver section of the radio to activate the transmitter chain. When the level of the RSSI telemetry value is over a defined threshold then the transmitter chain is activated. The transmitter chain switches off after 3 seconds, after which the RSSI value drops below the threshold.

Since the transmitter activation is based on the RSSI threshold it is important to customize this value based on RSSI values observed in orbit. A raw RSSI value of 2500 is set as a default but since the levels of noise can vary between missions it may be important to update the value using the command described above (*Set RSSI Transponder Threshold*).

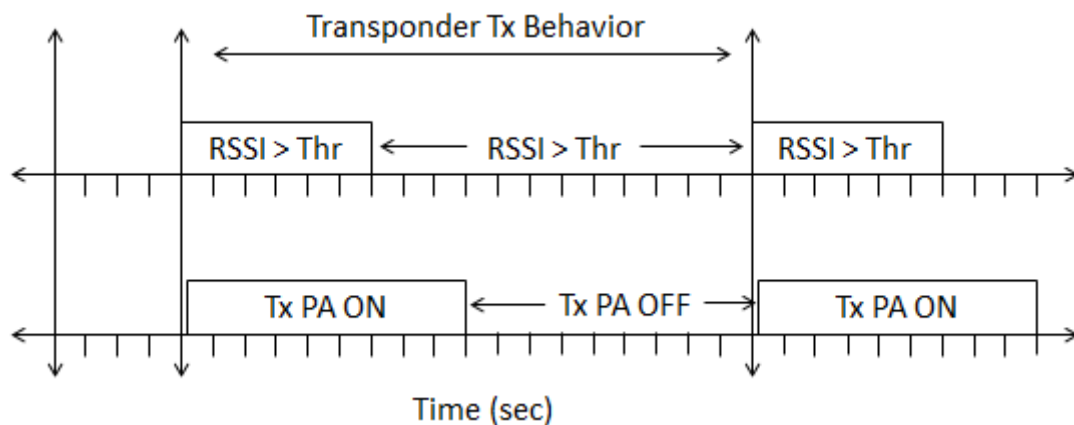


Figure 1. Transponder Transmitter time behavior.