WiMOD LoRaWAN EndNode Modem HCI Specification (IN865)

Specification Version 0.2

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Document Information

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Revision History

Version	Note
0.1	Created, Initial Version Reference: WiMOD LoRaWAN EndNode Modem HCI Spec V1.22
0.2	Reference: WiMOD LoRaWAN EndNode Modem HCI Spec V1.26 Chapters 2.1.2.1 and 2.1.3.1 updated with default settings

Aim of this Document

This document describes the WiMOD LoRaWAN®[1] EndNode Modem Host Controller Interface (HCI) protocol which is part of the WiMOD LoRaWAN EndNode Modem firmware. This firmware can be used in combination with the WiMOD LoRa radio module family.

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[1] LoRa is a registered trademark of Semtech Corporation. LoRaWAN is a registered trademark of the LoRa Alliance.

Table of Contents

1.   Introduction

1.1   Overview

This document is an extension to the WiMOD LoRaWAN EndNode Modem HCI document [1], covering the changes included in the WiMOD LoRaWAN EndNode Modem firmware for INDIA 865-867 MHz ISM Band.

2. Appendix

2.1 Multi Band Support

2.1.1 Radio Band Indices

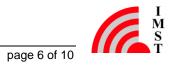| Index	Band Description	Comments
3	IN 865 MHz - India	Default setting
131	IN 865 MHz - India (RX2: SF8)	

2.1.2   India 865 MHz Band

Note that if this band is selected the LoRaWAN stack will disable any duty cycle restrictions automatically.

2.1.2.1 Data Rate Indices

Index	Data Rate / Spreading Factor	Bandwidth	Indicative physical bit rate [bit/s]	Comments
0	LoRa / SF12	125 kHz	250	Default setting
1	LoRa / SF11	125 kHz	440	
2	LoRa / SF10	125 kHz	980	
3	LoRa / SF9	125 kHz	1760	
4	LoRa / SF8	125 kHz	3125	
5	LoRa / SF7	125 kHz	5470	
7	FSK / 50kbps		50000	

2.1.2.2 Channel Indices

Index	Frequency Channel	Comments
0	865 062 500 Hz	Data Rates 0 - 5
1	865 402 500 Hz	Data Rates 0 - 5
2	865 985 000 Hz	Data Rates 0 - 5
128	866 550 000 Hz	Default Frequency for Rx2 Default Data Rate: 2

2.1.3   India 865 MHz (RX2: SF8) Band

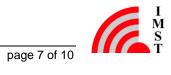Note that if this band is selected the LoRaWAN stack will disable any duty cycle restrictions automatically.

Note that this band is not compliant to the LoRaWAN specification.

2.1.3.1   Data Rate Indices

Index	Data Rate / Spreading Factor	Bandwidth	Indicative physical bit rate [bit/s]	Comments
0	LoRa / SF12	125 kHz	250	Default setting
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3	LoRa / SF9	125 kHz	1760	
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2.1.3.2   Channel Indices

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1	865 402 500 Hz	Data Rates 0 - 5
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128	866 550 000 Hz	Default Frequency for Rx2 Default Data Rate: 4

2.2   List of Abbreviations

FW	Firmware
HCI	Host Controller Interface
LR	Long Range
LoRa	Long Range
RAM	Random Access Memory
RF	Radio Frequency
RSSI	Received Signal Strength Indicator
RTC	Real Time Clock
SLIP	Serial Line Internet Protocol
SNR	Signal to Noise Ratio
UART	Universal Asynchronous Receiver/Transmitter
WiMOD	Wireless Module by IMST

2.3   List of References

[1] WiMOD_LoRaWAN_EndNode_Modem_HCI_Spec.pdf.

3.   Regulatory Compliance Information

The use of radio frequencies is limited by national regulations. The radio module has been designed to comply with the European Union's R&TTE (Radio & Telecommunications Terminal Equipment) directive 1999/5/EC and can be used free of charge within the European Union. Nevertheless, restrictions in terms of maximum allowed RF power or duty cycle may apply.

The radio module has been designed to be embedded into other products (referred as "final products"). According to the R&TTE directive, the declaration of compliance with essential requirements of the R&TTE directive is within the responsibility of the manufacturer of the final product. A declaration of conformity for the radio module is available from IMST GmbH on request.

The applicable regulation requirements are subject to change. IMST GmbH does not take any responsibility for the correctness and accuracy of the aforementioned information. National laws and regulations, as well as their interpretation can vary with the country. In case of uncertainty, it is recommended to contact either IMST's accredited Test Center or to consult the local authorities of the relevant countries.

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