



# CITC Technical Specification

Document Number: RI114  
Revision: Issue 1  
Date: 15/07/2019 G

## Specification for License - Exempt LPWAN Devices

Issued by the Communications and Information Technology Commission of Saudi Arabia in accordance with article 89 of the Telecommunications Bylaw.

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## Scope

This document generally applies to any type of License - exempt LPWAN devices. In particular, this specification describes the requirements applicable to Low Power-Wide Area Network applications deployed in unlicensed SRD bands, including all kinds of terminal nodes and network gateways/ stations.

All telecommunications and radio terminal equipment must comply with the relevant technical specifications established by CITC. In addition, such equipment may be subject to regulations for Declaration of Conformity or registration. See <http://www.citc.gov.sa/> for details.

If more than one interface type is offered by a piece of equipment, each interface must meet the applicable technical specifications.

## Responsibility for deployment and non-protected status

Deployment of License - exempt LPWAN devices must be carried out by qualified personnel. Using such networks for provision of services to third parties is subject to licensing from CITC as per the Regulatory Framework for Internet of Things published on CITC website.

In any case, service providers must inform end users prior to deploying and activating such License - exempt LPWAN devices that their utilisation of unlicensed frequency bands carries the risk of interference from other users of shared bands, with possible detrimental effect on quality of service.

CITC will not assume responsibility for investigating/resolving any cases of interference/service degradation for the users of shared unlicensed bands. In addition, all the requirements and conditions of the Regulatory Framework for Internet of Things must be met.

## Entry into force

This specification shall enter into force on 15/07/2019 G

## Frequency of operation

Following table is showing information on frequency bands, maximum output power and applicable specifications that can be used:

Frequency band	Maximum Output Power or Magnetic Field	Spectrum access and mitigation requirements (Note 1)	ETSI Standard (Note 2)
863.000 - 870.000 MHz (Note 3)	25 mW e.r.p.	≤ 0.1 % duty cycle.	EN 300 220
865.000 – 868.000 MHz (Note 3) (Note 4)	500 mW e.r.p. Adaptive Power Control (APC) required.	≤ 10 % duty cycle for network access points. ≤ 2.5% duty cycle otherwise.	EN 303 204
868.000 - 868.600 MHz (Note 3)	25 mW e.r.p.	≤ 1 % duty cycle.	EN 300 220
868.700 - 869.200 MHz (Note 3)	25 mW e.r.p.	≤ 0.1 % duty cycle.	EN 300 220
869.400 - 869.650 MHz	500 mW e.r.p.	≤ 10% duty cycle	EN 300 220
869.700 - 870.000 MHz	5 mW e.r.p.	No requirement	EN 300 220
869.700 - 870.000 MHz	25 mW e.r.p.	≤ 1 % duty cycle.	EN 300 220
870.000 – 875.800 MHz	25 mW e.r.p.	≤ 1 % duty cycle.	EN 300 220
870.000 – 874.400 MHz	500 mW e.r.p. Adaptive Power Control (APC) required.	≤ 10% duty cycle for network access points. ≤ 2.5% duty cycle otherwise	EN 303 204
915.000 – 921.000 MHz	25 mW e.r.p.	≤ 0.1 % duty cycle.	EN 300 220
915.200 – 920.800 MHz	25 mW e.r.p.	≤ 1 % duty cycle.	EN 300 220
917.300 – 918.900 MHz (Note 5)	500 mW e.r.p. Adaptive Power Control (APC) required.	≤ 10% duty cycle for network access points. ≤ 2.5% duty cycle otherwise	EN 300 220

Note 1: in addition to minimum interference mitigation requirements listed in this column, the License - exempt LPWAN devices shall employ additional mitigation techniques prescribed in technology-specific standards including industry/multiplier specifications. Such techniques include Adaptive Power Control, Adaptive Data Rate, Listen Before Transmit/Adaptive Frequency Agility, etc.

Note 2: in addition to standards listed in this column, the License - exempt LPWAN devices shall comply as relevant with existing and future technology-specific standards and specifications, including industry/multiplier standards and ETSI System Reference Documents (i.e. TR 103 435, TR 103 526, etc.)

Note 3: use of the band 866-869 MHz by License - exempt LPWAN devices in KSA is currently allowed subject to band sharing with other primary users. License - exempt LPWAN devices may therefore not claim protection from interference possibly caused by the primary users, and shall not cause any interference to the primary users.

Note 4: Transmissions only permitted within the frequency ranges 865.6-865.8 MHz, 866.2-866.4 MHz, 866.8-867.0 MHz and 867.4-867.6 MHz.

Note 5: Transmission only permitted within the frequency ranges 917.3-917.7 MHz and 918.5-918.9 MHz.

Note 6: all service providers must meet all requirements in the Regulatory Framework for Internet of Things especially those related to spectrum.

## **Proof of compliance**

It is required that test reports are obtained from a laboratory that has been accredited by a body that is a member of the ILAC Mutual Recognition Arrangement.

## **Technical requirements**

Testing shall be carried out to ensure compliance with the following specifications as applicable:

### **EN 300 220-2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE directive.

### **EN 303 204-2**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Network Based Short Range Devices (SRD); Radio equipment to be used in the 870 MHz to 876 MHz frequency range with power levels ranging up to 500 mW; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

### **EN 301 489-1**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements.

### **EN 301 489-3**

Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz.

If no issue or revision number is quoted along with the title of a technical specification, the latest published version should be used.

### **General**

In addition to meeting the above requirements, all equipment must comply with the requirement of CIRC specifications GEN001, be safe and must not adversely affect other electrical equipment.

### **Additional requirements**

A licence from CIRC must be obtained to provide license- exempt LPWAN services as per the Regulatory Framework for Internet of Things.

### **Obtaining technical standards**

ETSI technical standards may be obtained free of charge for individual use from the ETSI website [www.etsi.org](http://www.etsi.org).

### **Network information (only for network interfaces)**

Further information on the characteristics and presentation of network interfaces can be found by visiting operator's website.

### **Document history**

Description	Status	Data
	Issue 1	15/07/2019 G

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