



هيئة الاتصالات وتقنية المعلومات
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CITC Technical Specification

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Specification for Mobile Repeaters

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Communications and Information Technology Commission
Alnakheel Quarter
Riyadh

Telephone: + 966 11 461 8000
Fax: + 966 11 461 8120
E-mail: info@citc.gov.sa
Website: www.citc.gov.sa

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Scope

This document applies to Mobile Repeaters. All mobile repeaters must comply with this technical specification. The mobile repeaters must have the functions mentioned in the additional requirement of this specification.

If a mobile repeater offers more than LTE, each of the other interfaces must comply with the applicable technical specifications.

Entry into force

This specification shall enter into force on 03/01/2021 G

Frequency of operation

The following table shows the allowed frequency bands and the related maximum permitted output power:

Frequency band - Uplink (MHz)	Frequency band - Downlink (MHz)	Maximum Uplink Output Power	Maximum Downlink Output Power (Indoor Only)	Technology
703 – 748 MHz	758 – 803 MHz	24 dBm e.i.r.p.	17 dBm e.i.r.p.	4G
832 – 862 MHz	791 - 821 MHz	24 dBm e.i.r.p.	17 dBm e.i.r.p.	4G
880 - 915 MHz	925 – 960 MHz	33 dBm e.i.r.p.	17 dBm e.i.r.p.	2G
880 - 915 MHz	925 – 960 MHz	24 dBm e.i.r.p.	17 dBm e.i.r.p.	3G
880 - 915 MHz	925 – 960 MHz	24 dBm e.i.r.p.	17 dBm e.i.r.p.	4G
1710 – 1785 MHz	1805 – 1880 MHz	24 dBm e.i.r.p.	17 dBm e.i.r.p.	4G
1920 - 1980 MHz	2110 – 2170 MHz	24 dBm e.i.r.p.	17 dBm e.i.r.p.	4G

Proof of compliance

For the mobile repeaters, it is required to obtain type approval from CITC with test reports issued by a laboratory that has been accredited by a body that is a member of the ILAC Mutual Recognition Arrangement.

Technical requirements

Testing must be carried out to ensure compliance with relevant harmonized ETSI standards including the following specifications:

ETSI EN 303 609

Global System for Mobile Communications (GSM); GSM Repeaters; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.

EN 301 908-1

IMT cellular networks; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 1: Introduction and common requirements.

EN 301 908-11

IMT cellular networks; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 11: CDMA Direct Spread (UTRA FDD) Repeaters.

EN 301 908-15

IMT cellular networks; Harmonised Standard covering the essential requirements of article 3.2 of the Directive 2014/53/EU; Part 15: Evolved Universal Terrestrial Radio Access (E-UTRA FDD) Repeaters.

EN 301 489-1

Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU.

EN 301 489-50

Electromagnetic Compatibility (EMC) standard for radio equipment and services; Part 50: Specific conditions for Cellular Communication Base Station (BS), repeater and ancillary equipment; Harmonised Standard covering the essential requirements of article 3.1(b) of the Directive 2014/53/EU.

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 CITC specifications GEN001, be safe and must not adversely affect other electrical equipment.

Additional requirements

In addition to meeting all requirements detailed in the related regulation of the mobile repeater, all mobile repeaters must comply with the following:

Signals detection and relay

The equipment must detect and relay only mobile signals. Therefore, it is going to ignore any other types of signals.

Automatic Standby/Shutoff

The equipment must reduce its output power to no more than -70 dBm/MHz when not in use for 1 minute.

Anti-Oscillation

The equipment must be able to detect and mitigate any oscillations in the uplink or downlink bands. Detection and mitigation must occur within 0.3 seconds in the uplink band and 1 second in the downlink. The device shall either power off, restart or reduce its output power until oscillations are no longer detected.

Gain

The maximum gain of the equipment is limited to 71 dB. The system gain shall be calculated as the difference between the carrier power received at the devices input port and the carrier power submitted at the devices output port.

Gain Control:

The equipment must have automatic gain control to protect against excessive input signals that would produce output power emissions that would cause interference to a mobile base station. The gain adjustment shall limit the uplink noise to the following formula:

$$-103 \text{ dBm/MHz} - \text{RSSI}$$

where RSSI is the Received Signal Strength expressed in dBm per band of operation at the port of the device.

The device must power off completely if the restrictions cannot be met.

Noise figure:

The equipment noise figure shall not exceed 7 dB.

Obtaining technical standards

ETSI technical standards can be obtained from the ETSI website www.etsi.org.

Document history

Description	Status	Data
	Issue 1	03/01/2021 G