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Requirements for Specific ICT Equipment

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Requirements for Specific ICT Equipment

FOREWORD

The Saudi Standards, Metrology and Quality Organization (SASO) and Communications, Space and Technology Commission have prepared the Saudi Standard SASO ----:2025 “**Requirements for Specific ICT Equipment**” based on relevant International and National foreign Standards and references with national modifications applied to suit the conditions in the Kingdom of Saudi Arabia.

This standard after approval will replace and supersede SASO-CITC-GEN002 “**Requirements for Specific ICT Equipment**”.

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Requirements for Specific ICT Equipment

1.0 SCOPE AND OBJECT

This document specifies the minimum requirements for the following product categories:

- 1.0.1 Mobile Phones
- 1.0.2 Tablets and Mobile Computers
- 1.0.3 Routers and Customer Premises Equipment (CPE)
- 1.0.4 Other Cellular-enabled Devices
- 1.0.5 ONT (Optical Network Terminal) and HAG (Home Access Gateway), intended to be used either for carrier-owned or open-access network
- 1.0.6 Wi-Fi Distribution devices

1.1 REQUIREMENTS FOR USE AND TESTING

Device shall be supported with operating system upgrades for at least 5 years after the device placement in the market, to benefit from performance improvements and security fixes.

Regular firmware updates shall address vulnerabilities and enhance device functionality.

Device shall implement robust security measures and features to protect against cyber threats and unauthorized access, such as adopting unique per-device authentications and credentials.

Each interface shall comply with all applicable technical standards that resides within the scope of its functionalities and use.

Device shall acquire confirmations for successful testing and requirements fulfillment of the device with the networks of Saudi mobile network operators.

Device shall ensure compatibility with Saudi mobile networks; testing shall be performed and declaration shall be provided of major software update and receive acceptance from all Saudi mobile network operators before deploying major software updates on their devices.

2.0 NORMATIVE REFERENCES

The following referenced documents are indispensable for the application of this SASO Standard.

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- 2.1 EN 301 511 Global system for mobile communications (GSM); Harmonised standard for mobile stations in the GSM 900 and GSM 1800 bands covering essential requirements under Article 3(2) of the R&TTE directive.
- 2.2 EN 300 328, Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz band; Harmonised Standard for access to radio spectrum.
- 2.3 EN 301 893, 5 GHz RLAN; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.
- 2.4 TR 101 375, Security Algorithms Group of Experts (SAGE); Reports on the specification, evaluation and usage of the GSM GPRS Encryption Algorithm (GEA).
- 2.5 EN 301 908-1, Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS) and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 1: Harmonized EN for IMT-2000, introduction and common requirements, covering essential requirements of article 3.2 of the R&TTE directive.
- 2.6 EN 301 908-13, IMT cellular networks; Harmonised EN covering the essential requirements of article 3.2 of the R&TTE Directive; Part 13: Evolved Universal Terrestrial Radio Access (E-UTRA) User Equipment (UE).

- 2.7 EN 301 908-25, IMT cellular networks; Harmonised Standard for access to radio spectrum; Part 25: New Radio (NR) User Equipment (UE)
- 2.8 RSS-199, Broadband Radio Service (BRS) Equipment Operating in the Band 2500–2690 MHz.
- 2.9 ITU-T G.9807, 10-Gigabit-capable symmetric passive optical network (XGS-PON).
- 2.10 EN 300 330, Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.
- 2.11 EN 303 413, Satellite Earth Stations and Systems (SES); Global Navigation Satellite System (GNSS) receivers; Radio equipment operating in the 1 164 MHz to 1300 MHz and 1559 MHz to 1610 MHz frequency bands; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU
- 2.12 ETSI TR 103 393, Emergency Communications (EMTEL); Advanced Mobile Location for emergency calls.
- 2.13 ETSI TS 123 041, Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; 5G; Technical realization of Cell Broadcast Service (CBS).

3.0 DEFINITIONS:

Throughout this standard, the definitions of normative reference apply, in addition to the following definitions:

- 3.1 **Cellular Customer Premises Equipment (Cellular CPE)**
A generalized equipment set providing connectivity between a Cellular base station (BS) and a subscriber premise.
- 3.2 **Optical Network Terminal (ONT)**
A device installed at a customer's premises that acts as the endpoint of a fiber-optic network and acts to convert the optical signals transmitted through fiber optics into electrical signals.
- 3.3 **Home Access Gateway (HAG)**
A device that manages and distributes connectivity and services within the home network and acts as the premise's primary access device (a router with possible added functionality).
- 3.4 **Other Cellular-enabled Devices**
An electronic device that connects to a network using standardized cellular technologies (such as 2G, 3G, 4G, 5G, NB-IoT, and LTE-M) which has an application or function dependent on data transmission over a cellular network excluding cellular devices defined in this standard's scope like smartphones, tablets, or mobile computers, the definition includes, but not limited to, devices like Cellular Gateways, industrial routers, smart watches, Point-of-Sale (POS), Tracking Devices and any other cellular devices not listed in the definitions.

3.5 Wi-Fi Distribution Device

A device intended for ensuring reliable and high-quality Wi-Fi connectivity across spaces to address signal limitations, the definition includes, but not limited to, devices like Wi-Fi Mesh Systems, Wi-Fi Repeaters, Wi-Fi Adapters, Wi-Fi Range Extenders, Powerline Wi-Fi Extenders, Wi-Fi Access Points.

3.6 Smart Phones

a mobile phone that performs functions of a computer, such as data storage, capability to run downloadable applications, and access to Internet-based services with computer-like functions.

3.7 Smart Watches

a wearable computing device resembling a wristwatch, which integrates an information processing system and supports connectivity, typically with mobile apps and wireless communication features.

3.8 Major Software Update

Any update made to the operating system of the device that changes the technical specifications and the connectivity features of the device or any other technical requirements, thus affecting the technical performance of the device and its connection with the infrastructure of communications and information technology networks for service providers, such as enabling, or modifying of current or new frequencies, transmission modes, or connectivity services.

3.9 Passive Optical Network Optical Line Terminal (PON OLT)

A device that serves as the service provider's endpoint of a passive optical network, it provides conversion between the electrical signals used by the service provider's equipment and the fiber optic signals used by the passive optical network, and it coordinates multiplexing between the conversion devices on the other end of that network.

4.0 E-LABEL REQUIREMENTS

4.1 The following product categories shall have E-Label of Communications, Space and Technology Commission (CST) embedded in their software as a proof of compliance:

- a) Mobile phones
- b) Smart watches
- c) Tablets and Mobile Computers

4.2 E-Label shall be accessible and displayed to the users of the devices as per the design shown in figure (1).

4.3 The issued Certificate of Conformity number (TA xxxx-y) must be inserted in the E-Label as shown in figure (1)



Figure (1) - CST E-Label

5.0 REQUIREMENTS FOR MOBILE PHONES

5.1 Mobile phones* shall support the technologies and features listed in table (1)

Table (1)
Technology and features requirements for Mobile Phones

Category	Requirements
Long Term Evolution (LTE) 4G Cellular Network connection	- To support the following frequencies (B1, B3, B8, B20, B28, B40 and B41) - VoLTE (Voice over LTE), enabled by default - VoLTE roaming
New Radio (NR) 5G Cellular Network connection	5G Standalone (5G SA) 5G Carrier Aggregation of 2CC (Carrier Components) - To support the following frequencies (n1, n3, n8, n20, n28, n40, n41, n71, n77 and n78) 5G Modulation of 256 QAM in DL/UL 5G MIMO 4x4 - VoNR (Voice over NR)
Other Technologies and features	- Wi-Fi 7 (IEEE 802.11 be) for each supported band - Wi-Fi Triple-band support (2.4 GHz, 5 GHz and 6GHz (5.925 – 7.125) bands)** - VoWiFi (Voice over WiFi) - NFC - IPv4/IPv6 with dual-stack enabled by default - GNSS: GPS/GLONASS/Galileo/BeiDou - XCAP and USSD over IMS - Network Slicing support - SMSoIP - Calling Name Presentation Feature (CNAP)

*Note 1: For non-smart phones, compliance with 5.1 requires to support only LTE frequencies ((B1, B3, B8, B20 and B28), NR frequencies (n1, n3, n8, n20, n28 and n71), VoLTE, VoNR, CNAP, XCAP and USSD over IMS

**Note 2: To support 6 GHz (5.925 – 7.125) Wi-Fi, mobile phones shall comply with power limits and bandwidth for both LPI (Low-Power Indoor) and SP (Standard Power) Client devices as per relative standards and national spectrum regulation

5.5 Emergency Communications Services Requirements

5.5.1 Mobile phones shall support the Advanced Mobile Location (AML) emergency communication service and testing shall be carried out to ensure compliance with ETSI TR 103 393.

5.5.1 Mobile phones shall support the Cell Broadcast Service (CBS) to enable cell broadcast service (CBS) alert as illustrated in Annex (A).

6.0 REQUIREMENTS FOR TABLETS AND MOBILE COMPUTERS

6.1 Tablets and Mobile Computers* shall support the technologies and features listed in table (2)

Table (2)

Technology and features requirements for Tablets and Mobile Computers

Category	Requirements
Cellular Network connection	• 4G Long Term Evolution (LTE) • 5G Standalone (5G SA) • 5G Carrier Aggregation of 2CC (Carrier Components) • To support the following 5G frequencies (n1, n3, n8, n20, n28, n40, n41, n71, n77 and n78)
Other Technologies and features	• Wi-Fi 7 (IEEE 802.11 be) for each supported band • Wi-Fi Dual-band support (2.4 GHz and 5 GHz bands) • IPv4/IPv6 with dual-stack enabled by default • If supported, GNSS: GPS/GLONASS/Galileo/BeiDou

*Note 1: For Tablets and Mobile Computers that do not have a cellular connection, compliance with 6.1 requires to meet only the requirements in the category (Other Technologies and features)

7.0 REQUIREMENTS FOR MOBILE ROUTERS AND CELLULAR CPE

7.1 Mobile Routers and CPEs shall support the technologies and features listed in table (3)

Table (3)

Technology and features requirements for Mobile Routers and Cellular CPE

Category	Requirements
Cellular Network connection	4G Long Term Evolution (LTE) 5G Standalone (5G SA) 5G Carrier Aggregation of 2CC (Carrier Components) - To support the following 5G frequencies (n1, n3, n8, n20, n28, n40, n41, n71, n77 and n78) 5G Modulation of 256 QAM in DL/UL 5G MIMO 4x4
Wi-Fi Connectivity	- Wi-Fi 7 (IEEE 802.11 be) for each supported band - Wi-Fi Dual-band support (2.4 GHz and 5 GHz bands) 4 x 4 MIMO (2.4GHz, 5GHz). - UL\DL MU-MIMO
CPU	2 GHz Quad-core
SDRAM	512 MB
Other Technologies and features	- IPv4/IPv6 with dual-stack enabled by default 1× 2.5GE (RJ-45) Port 1×1GE (RJ-45) port with auto-negotiation for 10/100/1000 Mbps.

8.0 REQUIREMENTS FOR OTHER CELLULAR-ENABLED DEVICES

8.1 Other Cellular-enabled Devices shall meet and comply with all the requirements and conditions of the national regulations related to the Internet of Things (IoT).

8.2 Other Cellular-enabled Devices shall support the technologies and features listed in table (4).

Table (4)

Technology and features requirements for Other Cellular-enabled Devices

Category	Requirements
New Radio (NR) 5G Cellular Network connection	5G Standalone (5G SA) - To support the following frequencies (n1, n3, n8, n20, n28)
Other Technologies and features	IPv4/IPv6 with dual-stack enabled by default

9.0 REQUIREMENTS FOR ONT/HAG DEVICES

- 9.1 ONT/HAG Devices shall achieve compatibility with existing PON OLTs, network management systems, and other fiber-connected equipment such as mesh Wi-Fi and similar devices.
- 9.2 Detailed requirements and instructions shall be defined for easy installation and configuration.
- 9.3 ONT/HAG Devices shall support advanced features such as remote management, diagnostics, and user-friendly interfaces.
- 9.4 ONT/HAG Devices* shall support the technologies and features listed in table (5).

Table (5)

Technology and features requirements for ONT/HAG Devices

Category	Requirements
PON Interface	PON (Passive Optical Network) interface shall meet the required standards XGSPON (ITU-T G.9807).
Wi-Fi Connectivity	• Wi-Fi 7 (IEEE 802.11 be) for each supported band • Wi-Fi Dual-band support (2.4 GHz and 5 GHz) • 4 x 4 MIMO (2.4GHz, 5GHz) • UL\DL MU-MIMO • Modulation of 4096 QAM • Band steering • Multi-Link Operation (MLO) • Beamforming
Ethernet Ports	• 4×1GE (RJ-45) port with auto-negotiation for 10/100/1000 Mbps. • 1×10GE (RJ-45) port with auto-negotiation. • RJ-11 port supporting SIP and H.248 protocols for Voice-over-IP (VoIP) capabilities.
Other Technologies and features	• The device shall be manageable remotely via protocols: TR-069, TR-369, and it has to be through encrypted and authenticated channels. • IPv4/IPv6 with dual-stack enabled by default • DNSsec (Domain Name System Security Extensions)

*Note 1: For ONT-only devices, compliance with 9.4 requires to support only the standard XGSPON (ITU-T G.9807) for its PON (Passive Optical Network) interface and 1×10GE (RJ-45) port.

10.0 REQUIREMENTS FOR WI-FI DISTRIBUTION DEVICES

10.1 Wi-Fi Distribution devices shall support the technologies and features listed in table (6)

Table (6)**Technology and features requirements for Wi-Fi Distribution devices**

Category	Requirements
Wi-Fi Connectivity	• Wi-Fi 7 (IEEE 802.11 be) for each supported band • Wi-Fi Dual-band support (2.4 GHz and 5 GHz bands) • 4 x 4 MIMO (2.4Ghz, 5Ghz). • UL\DL MU-MIMO • Modulation of 4096 QAM • Band steering • Multi-Link Operation (MLO) • Beamforming
Other Technologies and features	• IPv4/IPv6 with dual-stack enabled by default • If supported, 1×1GE Ethernet port (RJ-45) with auto-negotiation for 10/100/1000 Mbps.

Annex A
Technical Requirements on Mobile Devices to Enable Cell Broadcast Service (CBS)
Alert

- A.1 Mobile devices shall be enabled to receive all classifications of alerts.
- A.2 The alert message shall not support any features related to forwarding, copying, or replying to the message.
- A.3 The message shall support adding a phone number or a URL link.
- A.4 Mobile phone shall support displaying or deleting the previous alert message if requested by the user.
- A.5 Mobile phone shall enable receiving synchronized alert messages.
- A.6 Mobile phone shall include features that help people with special needs such as converting text to speech or flashing light.
- A.7 Mobile phone shall support giving the priority to the Cell Broadcast Alert Messages over all functions of the mobile phone, including voice calls and SMS.
- A.8 The alert message shall support both Arabic and English, where the primary language being Arabic and secondary language is English.
- A.9 Distribution of the channels shall be according to the Commercial Mobile Alert System (CMAS) as Table (A.1).
- A.10 Mobile phone shall Adopt the behaviors and settings as per Table (A.2)

Table (A.1)

Distribution of channels

Primary Channel	Secondary Channel	Alert Settings Title (Classification)	Alert			
			Alerts Level	Severity Level	Urgency Response Level	Certainty Level
4370	4383	"الرسائل التحذيرية الوطنية" "National Warning Alerts" (Category 1)	This Warning Alert on National Level			
4371	4384	"الرسائل التحذيرية الطارئة جدا"	Extreme	Extreme	Immediate	Observed
4372	4385	"Extreme Emergency"	Extreme	Extreme	Immediate	Likely

		Warning Alerts” (Category 2)				
4373	4386	"الرسائل التحذيرية الطارئة" “Emergency Warning Alerts” (Category 3)	Severe	Extreme	Expected	Observed
4374	4387		Severe	Extreme	Expected	Likely
4375	4388		Severe	Severe	Immediate	Observed
4376	4389		Severe	Severe	Immediate	Likely
4377	4390		Severe	Severe	Expected	Observed
4378	4391		Severe	Severe	Expected	Likely
4379	4392	"الرسائل التحذيرية" “Alerts” (Category 4)	Security Alerts			
4380	4393	"الرسائل التجريبية" “Testing Alerts” (Category 5)	Monthly Test			
4381	4394	"تمارين" “Exercises” (Category 6)	Exercises			

Table (A.2)

Mobile phone behaviors and settings

Primary Channel	Secondary Channel	Alert Classification	Mobile Phone Behavior						
			Mode	Sound	Vibration	Ringtone	Duration (seconds)	Acknowledgement	Settings
4370	4383	Category 1	The alert is activated even in silent mode	Audible Signal	Yes	Default	With a minimum of 10.5 seconds and a maximum of 32.5 seconds	Stopping the alert requires the recipient's acknowledgment	Mandatory Activation
4371	4384	Category 2	The alert is activated even in silent mode	Audible Signal	Yes	Default	10.5	Stopping the alert requires the recipient's acknowledgment	Mandatory Activation

4372	4385							nt	
4373	4386	Category 3	The alert is activated even in silent mode	Audible Signal	Yes	Default	10.5	Stopping the alert requires the recipient's acknowledgment	Mandatory Activation
4374	4387					Default	10.5		
4375	4388					Default	10.5		
4376	4389					Default	10.5		
4377	4390					Default SMS Ringtone	Default SMS Duration		
4378	4391					Default	10.5		
4379	4392	Category 4	The alert is not required during silent mode	Audible Signal	Yes	Default	With a minimum of 5 seconds and a maximum of 10.5 seconds	Stopping the alert requires the recipient's acknowledgment	Optional Activation
4380	4393	Category 5	The alert is not required during silent mode	Audible Signal	Yes or No	Default	10.5	Stopping the alert does not require recipient's acknowledgment	Optional Activation
4381	4394	Category 6	The alert is activated even in silent mode	Audible Signal	Yes	Default	10.5	Stopping the alert requires the recipient's acknowledgment	Mandatory Activation