

# Act No. 3152, of June 12, 2020

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**Note** : This text does not replace the one published in the Electronic Service Bulletin on 12/6/2020 .

**THE SUPERINTENDENT OF GRANT AND RESOURCES TO PROVISION - ANATEL** , in the use of the powers conferred on him by Resolution No. 715, of October 23, 2019 , and

WHEREAS the competence given by Items XIII and XIV of art. 19 of Law No. 9,472 / 97 - General Telecommunications Law;

WHEREAS the Technical Requirements establish the parameters and technical criteria verified in the Conformity Assessment of one or more types of telecommunications product, pursuant to art. 22 of the Regulations for Conformity Assessment and Homologation of Telecommunications Products, approved by Resolution No. 715, of October 23, 2019;

CONSIDERING the need to publish minimum requirements for quality, safety, interoperability and protection of the radio spectrum applied to devices to be inserted into the country's fifth generation mobile networks (5G), considered essential to meet the growing demand for increasing the capacity of mobile networks, with high data transmission rates and low latency, for emerging applications such as: industry 4.0, intelligent transport systems (ITS) and smart cities; and

CONSIDERING the case file of case number 53500.005609 / 2020-52 .

## **RESOLVES:**

Art. 1 To approve the updating of the technical requirements for assessing the conformity of Mobile Cellular Telephone in the form of the Attachment to this Act.

Art. 2 This Act enters into force on the date of its publication in Anatel's Electronic Service Bulletin.

VINICIUS OLIVEIRA CARAM GUIMARÃES

Superintendent of Granting and Provision of Resources

APPENDIX TO ACT No. 3152, OF 12 JUNE 2020

## **TECHNICAL REQUIREMENTS FOR CELLULAR MOBILE PHONE COMPLIANCE ASSESSMENT**

### 1. OBJECTIVE

1.1. Establish minimum technical requirements for assessing compliance with the National Mobile Telecommunications Agency.

### 2. NORMATIVE REFERENCES

2.1. Act No. 1120, of February 19, 2018 , which approves the Technical Requirements for Electromagnetic Compatibility for the Conformity Assessment of Telecommunications Products.

2.2. Act No. 950, of February 8, 2018 , which approves the Technical Requirements for Electrical Safety for Conformity Assessment of Telecommunications Products.

2.3. Resolution nº 700, of September 28, 2018 , which approves the Regulation on the Evaluation of Human Exposure to Electric, Magnetic and Electromagnetic Fields Associated with the Operation of Radiocommunication Transmitting Stations.

2.4. TIA / EIA-98-C - *Recommended Minimum Performance Standards for Dual-Mode Spread Spectrum Mobile Stations* .

2.5. 3GPP TS 51.010-1 V6.5.0 (2005-11) - *Technical Specification Group GSM / EDGE Radio Access Network Digital cellular telecommunications system (Phase 2+); Mobile Station (MS) conformance specification; Part 1: Conformance specification (Release 6)* .

2.6. TIA / EIA / IS-137-A - *TDMA Cellular / PCS - Radio Interface - Minimum Performance Standard for Mobile Stations* .

2.7. 3GPP2 C.S0011-A: *Recommended Minimum Performance Standards for CDMA 2000 Spread Spectrum Mobile Stations* .

2.8. ETSI TS 134 121-1 V9.1.0 (2010-07) - *Universal Mobile Telecommunications System (UMTS); User Equipment (UE) conformance specification; Radio transmission and reception (FDD); Part 1: Conformance specification (3GPP TS 34.121-1 version 9.0.0 Release 9)* .

2.9. ETSI TS 134 121-1 V9.4.0 (2011-03) *Universal Mobile Telecommunications System (UMTS); User Equipment (UE) conformance specification; Radio transmission and reception (FDD); Part 1: Conformance specification (3GPP TS 34.121-1 version 9.4.0 Release 9)* .

2.10. 3GPP TS 36.521-1 V9.5.0 (2011-06) *3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) conformance specification Radio transmission and reception Part 1: Conformance Testing; (Release 9)* .

2.11. 3GPP TS 38.521-1 V16.2.0 (2019-12) - *3rd Generation Partnership Project; Technical Specification Group Radio Access Network; NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 1: Range 1 Standalone; (Release 16)* .

2.12. 3GPP TS 38.521-3 V16.2.0 (2019-12) - *3rd Generation Partnership Project; Technical Specification Group Radio Access Network; NR; User Equipment (UE) conformance specification; Radio transmission and reception; Part 3: Range 1 and Range 2 Interworking operation with other radios (Release 16)* .

### 3. DEFINITIONS

3.1. The definitions contained in the normative references listed in the previous item apply.

### 4. GENERAL REQUIREMENTS

4.1. The requirements established in this document cover the mandatory minimum characteristics to be observed in the process of assessing the conformity of the mobile cell phone for the purpose of approval with the National Telecommunications Agency.

4.2. Those interested in approval shall observe, in addition to the minimum requirements established by the Agency, standards, norms and criteria for the correct operation of the product in the networks of telecommunications providers in Brazil, as well as those established by other competent institutions.

4.2.1. Cell phones, chargers and batteries for cell phones are identified with separate approval codes.

4.3. The requirements established in this document are complemented by those contained in the current regulation on channeling and conditions of use of the radio spectrum and the Plan for the Assignment, Destination and Distribution of Frequency Bands in Brazil, in the frequency bands of operation of the equipment.

4.3.1. The equipment under conformity assessment must meet the limits of power, spurious emissions, emissions outside the range, the authorized frequency bands and other conditions contained in the respective regulations in force on channeling and conditions of use of the spectrum, even if the normative references point to different limits.

### 5. REQUIREMENTS APPLICABLE TO ALL TECHNOLOGIES

5.1. Meet, where applicable, the Technical Requirements for Electromagnetic Compatibility for the Conformity Assessment of Telecommunications Products.

5.1.1. Do not apply the requirement to emit radiated electromagnetic disturbances.

5.2. Meet, wherever applicable, the Technical Requirements for Electrical Safety for Conformity Assessment of Telecommunications Products.

5.3. Meet the following items of the Regulation on the Evaluation of Human Exposure to Electric, Magnetic and Electromagnetic Fields Associated with the Operation of Radiocommunication Transmitting Stations:

a) Title II - Chapter I - Art. 4, § 1, applying the test procedures defined in Title II - Chapter III (On the Evaluation Procedures of Portable Terminal Stations).

## 6. REQUIREMENTS FOR CDMA TECHNOLOGY

a) Normative reference:

6.1. TIA / EIA-98-C.

6.2. Requirements:

6.2.1. Compliance with the following items of the standard in reference:

- a) 3.5.2 - Emission of spurious radiates (receiver).
- b) 4.1.1 - Frequency accuracy.
- c) 4.4.1 - Output power range in open loop.
- d) 4.4.5 - Maximum RF output power.
- e) 4.4.6 - Minimum controlled output power.
- f) 4.5.1 - Emission of spurious conduct.
- g) 4.5.2 - Emission of spurious radiates (transmitter).

6.3. Test procedures:

- a) The test procedures are found in the normative reference.
- b) The tests should not take into account variations in temperature and supply voltage.

## 7. REQUIREMENTS FOR GSM / GPRS / EDGE TECHNOLOGY

7.1. Normative reference:

a) GSM - 3GPP TS 51.010-1 V6.5.0 (2005-11).

7.2. Requirements:

7.2.1. Compliance with the following items of the standard in reference:

- a) 12.1.1 - Spurious emission conducted - communication terminal.
- b) 12.1.2 - Spurious emission conducted - inactive terminal.
- c) 12.2 - Emission of spurious radiates.
- d) 13.1 - Frequency and phase error.
- e) 13.3 - Transmission output power, power control and burst time, with the exception of temperature and supply voltage variations.
- f) 13.16.1 - Frequency and phase error in the multi-frame GPRS configuration.
- g) 13.16.2 - Transmission output power in the multi-frame GPRS configuration.
- h) 13.17.1 - Frequency error and modulation accuracy in the EGPRS (EDGE) configuration.
- i) 13.17.3 - Output power of the EGPRS (EDGE) transmitter.

7.3. Test procedures:

- a) The test procedures are found in the normative reference.

b) The tests should not take into account variations in temperature and supply voltage.

## 8. TDMA TECHNOLOGY

### 8.1. Normative reference:

a) TIA / EIA / IS-137-A.

### 8.2. Requirements:

a) 2.5 - Emission of spurious radiates (receiver).

b) 3.1.2.2 - Frequency stability.

c) 3.2.1.2 - Digital RF output power.

d) 3.4.1.2 - Suppression of spectral noise - broadband.

e) 3.4.2.2 - Emission of spurious and harmonics conducted.

f) 4.4.3 - Emission of spurious radiates (transmitter).

### 8.3. Test procedures:

a) The test procedures are found in the normative reference.

b) In the test for emission of radiated spurious, also use the requirements of ANSI C63. 4.

c) The tests should not take into account variations in temperature and supply voltage.

## 9. CDMA 2000 TECHNOLOGY

### 9.1. Normative reference:

a) 3GPP2 C.S0011-A.

### 9.2. Requirements:

a) 4.1 - Frequency accuracy.

b) 4.4.1 - Output power range in open loop.

c) 4.4.5 - Maximum RF output power.

d) 4.5.1 - Emission of spurious conduct.

### 9.3. Test procedures:

a) The test procedures are found in the normative reference.

b) The tests should not take into account variations in temperature and supply voltage.

## 10. WCDMA / HSDPA / HSUPA TECHNOLOGY

### 10.1. Normative reference:

a) ETSI TS 134 121-1 V9.1.0 (2010-07).

### 10.2. Requirements:

a) 5.2 - Maximum Output Power.

b) 5.2AA - Maximum Output Power with HS-DPCCH.

c) 5.2B - Maximum Output Power with HS-DPCCH and E-DCH.

d) 5.2C - Accuracy of the EU relative power domain code.

e) 5.2D - Accuracy of the relative power domain code for HS-DPCCH and E-DCH.

f) 5.3 - Frequency error.

g) 5.4.1 - Open *loop* power control on the *uplink*.

- h) 5.4.2 - Power control in internal *loop* in the *uplink*.
- i) 5.4.3 - Minimum Output Power.
- j) 5.5.1 - Power emitted with the transmitter turned off.
- k) 5.5.2 - Transmitter temporal mask.
- l) 5.7 - Power configuration in compressed mode - *uplink*.
- m) 5.7 A - HS-DPCCH power control.
- n) 5.9 - Spectral mask of emission.
- o) 5.9A - HS-DPCCH emission spectral mask.
- p) 5.9B - E-DCH emission spectral mask.
- q) 5.11 - Conducted Spurious Emissions.
- r) 5.13.1 - Magnitude vector error.
- s) 5.13.1 A - Error of the magnitude vector with HS-DPCCH.
- t) 5.13.1 AA - Magnitude vector error and phase discontinuity with HS-DPCCH.
- u) 5.13.2A - Error of relative code domain with HS-DPCCH.
- v) 5.13.2B - Error of relative code domain with HS-DPCCH and E-DCH.

#### 10.3. Test procedures:

- a) The test procedures are found in the normative reference.
- b) The tests should not take into account variations in temperature and supply voltage.

### 11. HSPA + TECHNOLOGY

#### 11.1. Normative reference:

- a) ETSI TS 134 121-1 V9.4.0 (2011-03).

#### 11.2. Requirements:

- a) 5.2E - Relative power accuracy in the code domain for HS-DPCCH and E-DCH with 16QAM.
- b) 5.13.1AAA - EVM and original displacement from IQ to HS-DPCCH and E-DCH with 16QAM.
- c) 5.13.2C - Relative error in the code domain for HS-DPCCH and E-DCH with 16QAM.

#### 11.3. Test procedures:

- a) The test procedures are found in the normative reference.
- b) The tests should not take into account variations in temperature and supply voltage.

### 12. LTE TECHNOLOGY

#### 12.1. Normative reference:

- a) 3GPP TS 36.521-1 V9.5.0 (2011-06).

#### 12.2. Requirements:

- a) 6.2.2- Transmission power.
- b) 6.2.3 - Maximum power reduction.
- c) 6.2.5 - Configured transmission power.
- d) 6.3.2 - Minimum transmission power.
- e) 6.3.4.1 - Transmission / reception time mask.

- f) 6.5.1 - Frequency stability.
- g) 6.5.2.1- Magnitude of the Error Vector - EVM.
- h) 6.5.2.2 - Deviation from carrier power.
- i) 6.5.2.3 - Undesirable emissions in the operating band.
- j) 6.6.1 - Occupied bandwidth.
- k) 6.6.2.1 - Spectral mask of emission.
- l) 6.6.2.3 - Interference ratio to the adjacent channel.
- m) 6.6.3.1- Conducted spurious emissions.

12.3. Test procedures:

- a) The test procedures are found in the normative reference.
- b) The tests should not take into account variations in temperature and supply voltage.

13. REQUIREMENTS FOR 5G NR ( *NEW RADIO* ) TECHNOLOGY *FREQUENCY RANGE 1 STANDALON AND SMP*

13.1. Normative reference:

- a) 3GPP TS 38.521-1 V16.3.0 (2020-03).

13.2. Requirements:

- a) 6.2.1 *UE maximum output power* .
- b) 6.2.4 Configured transmitted power.
- c) 6.3.1 *Minimum output power* .
- d) 6.3.3.2 *General ON / OFF time mask* .
- e) 6.4.1 *Frequency Error* .
- f) 6.4.2.1 *Error Vector Magnitude* .
- g) 6.4.2.2 *Carrier leakage* .
- h) 6.4.2.3 *In-band emissions* .
- i) 6.5.1 *Occupied bandwidth* .
- j) 6.5.2.2 *Spectrum emission mask* .
- k) 6.5.2.4.1 *NR ACLR* .
- l) 6.5.3.1 *General spurious emissions* .
- m) 7.9 *Spurious emissions* .

13.2.1. Test procedures:

- a) The test procedures are found in the normative reference.

14. REQUIREMENTS APPLICABLE TO 5G NR TECHNOLOGY ( *NEW RADIO* ) *FREQUENCY RANGE 1 NON-STANDALONE INTRA-BAND NON- CONTIGUOUS SMP*

14.1. Normative reference:

- a) 3GPP TS 38.521-3 V16.3.0 (2020-03).

14.2. Requirements:

- a) 6.2B.1.2 *UE Maximum Output Power for intra-band non-contiguous EN-DC* .
- b) 6.3B.1.2 *Minimum output power for intra-band non-contiguous EN-DC* .

- c) 6.3B.3.2 *Tx ON / OFF time mask for intra-band non-contiguous EN-DC.*
- d) 6.4B.1.2 *Frequency error for Intra-band non-contiguous EN-DC .*
- e) 6.4B.2.2.1 *Error Vector Magnitude for intra-band non-contiguous EN-DC .*
- f) 6.4B.2.2.2 *Carrier Leakage for intra-band non-contiguous EN-DC .*
- g) 6.4B.2.2.3 *In-band Emissions for intra-band non-contiguous EN-DC .*
- h) 7.9B.2 *Spurious Emissions for non-contiguous intra-band EN-DC in FR1 (2 CCs).*

14.3. Test procedures:

- a) The test procedures are found in the normative reference.

15. REQUIREMENTS APPLICABLE TO 5G NR TECHNOLOGY ( *NEW RADIO* ) *FREQUENCY RANGE 1 NON-STANDALONE INTER-BAND* OF THE SMP

15.1. Normative reference:

- a) 3GPP TS 38.521-3 V16.3.0 (2020-03).

15.2. Requirements:

- a) 6.2B.1.3 *UE Maximum Output Power for inter-band EN-DC within FR1 .*
- b) 6.2B.2.3 *UE Maximum Output Power reduction for inter-band EN-DC within FR1 .*
- c) 6.3B.1.3 *Minimum output power for inter-band EN-DC within FR1 .*
- d) 6.3B.3.3 *Tx ON / OFF time mask for inter-band EN-DC within FR1 .*
- e) 6.4B.1.3 *Frequency error for Inter-band EN-DC within FR1 .*
- f) 6.4B.2.3.1 *Error Vector Magnitude for inter-band EN-DC within FR1 .*
- g) 6.4B.2.3.2 *Carrier Leakage for inter-band EN-DC within FR1 .*
- h) 6.4B.2.3.3 *In-band Emissions for inter-band EN-DC within FR1 .*
- i) 6.5B.1.3 *Occupied bandwidth for Inter-Band EN-DC within FR1 .*
- j) 6.5B.2.3.1 *Spectrum emissions mask for Inter-band EN-DC within FR1 .*
- k) 6.5B.3.3 *Spurious Emissions for Inter-band EN-DC within FR1 .*
- l) 7.9B.3 *Spurious Emissions for inter-band EN-DC within FR1 (2 CCs).*

15.3. Test procedures:

- a) The test procedures are found in the normative reference.
- b) Tests in which the normative reference does not allow the application of the " *LTE anchor agnostic* " approach may be performed with anchoring in 3 (three) LTE bands (band with lower frequency, band with intermediate frequency and band with higher frequency), performing the combination of the 3 LTE bands with all NR 5G bands is used.