Technical Specifications for New Radio Broadband Terminal Equipment of Mobile Broadband Business

(Unofficial Translation*)

National Communications Commission

April 21 2020

*Should there be any discrepancy between the English and Chinese versions, the Chinese version shall prevail.

Technical Specifications for New Radio Broadband Terminal Equipment of Mobile Broadband Business

1. Legal Basis
   The Specifications are established on Paragraph 1, Article 42 of the Telecommunications Act.
2. Scope of Application
   The Specifications apply to the type approval for the handheld, vehicular or mobile broadband terminals for new radio (NR) of mobile broadband services and fixed wireless access terminals of mobile broadband services. Depending on terminal duplexing, the frequency division duplex (FDD) and time division duplex (TDD) are available depending on and operate on the following frequency bands:
   2.1 Frequency Division Duplex:
   2.1.1 Frequency range 1 (FR1):
   700 megahertz (MHz hereafter) band (703 MHz～748 MHz for uplink and 758 MHz～803 MHz for downlink), 900 MHz band (885 MHz～915 MHz for uplink and 930 MHz～960 MHz for downlink), 1800 MHz band (1710 MHz～1785 MHz for uplink and 1805 MHz～1880 MHz for downlink), 2100 MHz band (1920 MHz～1980 MHz for uplink and 2110 MHz～2170 MHz for downlink), 2500 MHz and 2600 MHz bands (2500 MHz～2570 MHz for uplink and 2620 MHz～2690MHz for downlink).
   2.2 Time Division Duplex:
   2.2.1 Frequency range 1 (FR1):
   2500 MHz and 2600 MHz bands (2500 MHz～2570 MHz, 2570 MHz～2620 MHz, 2620MHz～2690 MHz), 3500 MHz band (3300 MHz～3570 MHz).
   2.2.2 Frequency range 2 (FR2):
   28000 MHz band (27000 MHz～29500MHz).
3. Technical Standards
   The Specifications are established by referencing the National Standards, including CNS14958-1, CNS14959, CNS14336-1, CNS13438, CNS15285, CNS15364, and other applicable international technical standards.
4. Definitions
   4.1 Handheld terminal:
   A terminal that is used on the move in the normal operating mode with the transmission source less than 20 cm from human body.
   4.2 Vehicular or mobile terminal:
   A terminal that is used on the move at a non-specific location in the normal operating mode with the transmission source more than 20 cm from human body.
   4.3 Fixed wireless access terminal (not handheld high-power):
   A terminal that is used at a specific fixed location in the normal operating mode.
5. Conditions for Test Environment
   5.1 Temperature and Relative Humidity:
   The conditions for test environment in 6.1 through 6.5 shall meet the following:

	FR1	FR2
Normal environment	Temperature : +15℃ to +35℃ Relative Humidity : 25% to 75%	Temperature: +15℃ to +35℃ Relative Humidity: 25% to 75%
Extreme environment	Temperature: -10℃ to +55℃ IEC 60068-2-1 and IEC 60068-2-2 shall be met for additional requirements.	Temperature: -10℃ to +55℃ IEC 60068-2-1 and IEC 60068-2-2 shall be met for additional requirements.

*Should there be any discrepancy between the English and Chinese versions, the Chinese version shall prevail.

Outside this temperature range, the terminal, if powered on, shall not make ineffective use of the radio frequency band in Article 2.

5.2 Voltage:

The voltage of power to a terminal shall be between lower and higher extreme voltages. The applicant for terminal type approval shall declare the nominal voltage, lower extreme voltage, higher extreme voltage and shutdown voltage. In case that a terminal is capable of operating one or more power sources, the lower extreme voltage shall not be higher than the limits shown in the table below and the higher extreme voltage shall not be lower than the limits shown in the table below.

Power source	Lower extreme voltage	Higher extreme voltage	Normal conditions voltage
AC mains	0.9 × nominal	1.1 × nominal	nominal
Regulated lead acid battery	0.9 × nominal	1.3 × nominal	1.1 × nominal
Non regulated batteries:			
Leclanché	0.85 × nominal	nominal	nominal
Lithium	0.95 × nominal	1.1 × nominal	1.1 × nominal
Mercury/nickel & cadmium	0.90 × nominal	1.1 × nominal	nominal

For the voltage of power source lower than the lower extreme voltage shown in the table above or higher than the higher extreme voltage shown in the table above, the terminal, if powered on, shall not make ineffective use of the radio frequency band in Article 2.

In particular, the terminal shall inhibit all RF transmissions when the power supply voltage is below the manufacturer declared shutdown voltage.

6. Tests to Be Performed and Criteria

6.1 Transmitter power:

6.1.1 FR1:

6.1.1.1 Terminal maximum output power:

6.1.1.1.1 Terminal power class 2: 26 dBm;

6.1.1.1.2 Terminal power class 3: 23 dBm;

6.1.1.1.3 The frequency bands applicable for power classes and allowable tolerance shall meet Table 1, where the test tolerances (TTs) are shown in Table 2.

6.1.1.2 Test method:

Three frequencies (low, mid and high) are tested in accordance with Table 3. The lowest, mid and highest operating bandwidths are tested.

6.1.2 FR2:

6.1.2.1 Effective isotropic radiated power (EIRP) limits:

6.1.2.1.1 The limit is 43 dBm for handheld terminals;

6.1.2.1.2 The limit is 43 dBm for vehicular or mobile terminals;

6.1.2.1.3 The limit is 55 dBm for fixed wireless access terminals.

6.1.2.2 Test method:

Three frequencies (low, mid and high) are tested in accordance with Table 4. The lowest, 100MHz, and highest operating bandwidths are tested.

6.2 Frequency Error

6.2.1 FR1:

6.2.1.1 Limits:

The carrier frequency shall be within ±0.1 part per million (PPM) of the major frequency of channel.

6.2.1.2 Test method:

The test is performed on the highest operating bandwidth in the mid range Frequency according to Table 5.

6.2.2 FR2:

6.2.2.1 Limits:

The carrier frequency shall be within ±0.1 PPM of the major frequency of channel.

6.2.2.2 Test method:

The test channel is the mid range channel. The test is performed on the highest operating bandwidth according to Table 6.

6.3 Adjacent channel leakage ratio (ACLR)

6.3.1 FR1:

6.3.1.1 NR adjacent channel leakage power ratio (NR_{ACLR}) is the ratio of the filtered mean power centered on the assigned NR channel frequency to the filtered mean power centered on an adjacent NR channel frequency at nominal channel spacing.

6.3.1.1.1 Limits: if the measured adjacent channel power is greater than –50 dBm then the measured NR ACLR shall be higher than the limits in Table 7, where the test tolerances (TT) are shown in Table 8.

6.3.1.1.2 Test method:

The measurement bandwidth is specified in Table 9. A rectangular filter is used. The test is performed on the lowest and highest operating bandwidths on low and high channels according to Table 10.

6.3.1.2 UTRA adjacent channel leakage power ratio ($UTRA_{ACLR}$) is the ratio of the filtered mean power centered on the assigned NR channel frequency to the filtered mean power centered on an adjacent(s) UTRA channel frequency.

6.3.1.2.1 Limits: if the measured adjacent channel power is greater than –50 dBm, then the measured UTRA ACLR shall be higher than the limits in Table 11.

6.3.1.2.2 Test method:

The UTRA channel power is measured with an RRC filter with roll-off factor α=0.22 and bandwidth of 3.84 MHz. The assigned NR channel power is measured with a rectangular filter with measurement bandwidth specified in Table 9. The test is performed on the lowest and highest operating bandwidths on low and high channels according to Table 10.

6.3.2 FR2:

6.3.2.1 Limits:

If the measured adjacent channel power is greater than –35 dBm then the NR_{ACLR} shall be higher than the value specified in Table 12, where the test tolerances (TT) are shown in Table 13.

6.3.2.2 Test method:

The assigned NR channel power and adjacent NR channel power are measured with rectangular filters with measurement bandwidths specified in Table 12. The test is performed on the lowest and highest operating bandwidths on low and high channels according to Table 14.

6.4 Spectrum emission mask

6.4.1 FR1:

6.4.1.1 Limits:

The specified values for spectrum mask in Table 15 shall be met, where the test tolerances (TT) are shown in Table 16.

6.4.1.2 Test method:

6.4.1.2.1 The spectrum emission limits vary depending on the Δ frequency of out-of-band emission (Δf_{OOB}). For measurement, the resolution bandwidth shall not be smaller than the settings in Table 15.

6.4.1.2.2 The test is performed on the lowest and highest operating bandwidths on low and high channels according to Table 17.

6.4.2 FR2:

6.4.2.1 Limits:

The general specified values for NR spectrum emission mask in Table 18 for FR2 shall be met, where the test tolerances (TT) are shown in Table 19.

6.4.2.2 Test method:

6.4.2.2.1 The resolution bandwidth for measurement shall not be smaller the settings in Table 18. The measurement is performed for total radiated power.

6.4.2.2.2 The test is performed on the lowest and highest operating bandwidths on the medium channel according to Table 20.

6.5 Spurious emissions

6.5.1 FR1:

6.5.1.1 Limits:

The limits for spurious emission shall meet those shown in Table 21.

6.5.1.2 Test method:

6.5.1.2.1 Unless otherwise stated, the spurious emission limits apply for the frequency ranges that are more than F_{OOB} (MHz) in Table 22 from the edge of the channel bandwidth. For measurement, the resolution bandwidth shall not be smaller than the settings in Table 21. F_{OOB} is the boundary between the NR out of band emission and spurious emission domains.

6.5.1.2.2 The test is performed on the lowest, medium and highest operating bandwidths on low, medium and high channels according to Table 23.

6.5.2 FR2:

6.5.2.1 Limits:

6.5.2.1.1 General limits:

The limits for spurious emission shall meet those shown in Table 24.

6.5.2.1.2 Spurious emissions Terminal co-existence limits:

The limits for spurious emission in the co-existence in terminals shall meet the limits shown in Table 25.

6.5.2.1.3 Additional limits: the requirements for additional spurious emission shall be met for the applications of area broadcasting, for example. The limits for additional spurious emission shall meet those shown in Table 26.

6.5.2.2 Test method:

6.5.2.2.1 General limits:

6.5.2.2.1.1 The Δf_{OOB} in Table 18 is not included in the measurement frequency range. For measurement, the resolution bandwidth shall not be smaller than the settings in Table 24. The measurement is performed for total radiated power.

6.5.2.2.1.2 The test is performed on the highest operating bandwidth on low and high channels according to Table 27.

6.5.2.2.2 Limits for co-existing bandwidths in terminals:

6.5.2.2.2.1 The spurious emission in the co-existing bandwidths in terminals shall meet the limits shown in Table 25. However, the Δf_{OOB} in Table 18 is not included. The measurement is performed for total radiated power.

6.5.2.2.2.2 The test is performed on the highest operating bandwidth on low and high channels according to Table 27.

6.5.2.2.3 Additional limits:

6.5.2.2.3.1 The limits for additional spurious emission shall meet the limits shown in Table 26. The measurement is performed for total radiated power.

6.5.2.2.3.2 The test is performed on the highest operating bandwidth on low and high channels according to Table 27.

6.6 Limits for Electromagnetic Exposure

6.6.1 This test applies to handheld terminals.

6.6.1.1 FR1:
The standard values of specific absorption rate (SAR) for electromagnetic energy shall meet CNS14959. The limit for SAR for the use of a terminal close to head is 2 W/kg. The measurement procedure specified in IEC 62209-1 shall be used.

6.6.1.2 FR2:
The limits for power density (PD) shall meet the requirement of 1.0 mW/cm². The measurement procedure specified in IEC TR 63170 shall be used.

6.6.2 This test applies to vehicular , mobile or fixed wireless access terminals.

6.6.2.1 Limits for Maximum Permissible Exposure (MPE):
0.35 mW/cm² for 700 MHz band;
0.45 mW/cm² for 900 MHz band;
0.9 mW/cm² for 1800 MHz band;
1.0 mW/cm² for 2100 MHz, 2500 MHz, 2600 MHz, 3500MHz and 28GHz bands.
The measurement is performed at a distance of 20 cm or the distance claimed by the terminal manufacturer for human activities in the vicinity of the terminal antenna.

6.7 Electromagnetic Compatibility (EMC)
CNS13438 or any other applicable standards established by the competent authority shall be met.

6.8 Electrical Safety
CNS14336-1 or any other applicable standards established by the competent authority shall be met.

6.9 Handheld Terminal Connection Interface, Power Adaptor Connection Interface, Charging Cord and Power Adaptor

6.9.1 This test applies to mobile phones.

6.9.2 The basic structure shown in Figure B.1 of CNS15285 shall be used for the connection interface. An adapting charging cord or adaptor shall be used for mobile phones with a socket for a specific mobile terminal in Figure B.1.

6.9.3 The rated charging current range for the power adaptor shall meet CNS15285 B.2.1(c).

6.9.4 Handheld terminal connection interface, power adaptor connection interface, charging cord and power adaptor shall meet the general characteristics in CNS15285 B.2.2. The no-load power consumption of power adaptor shall be smaller than 0.15W.

6.9.5 Rechargeable batteries shall be used in mobile phones. CNS 15364 shall be met.

6.9.6 The insulation materials used on handheld terminal connection interface and power adaptor connection interface shall meet IEC 60695-11-10 or be of Class V-2 or higher in UL 94.

6.9.7 The fire rating of the charging cord materials shall meet IEC 60332-1 or be of Class VW-1 or higher in UL 1581.

6.10 Message Reception from Public Warning System

6.10.1 This test applies to handheld terminals that are equipped with access to voice service provided a mobile broadband service provider.

6.10.2 The public warning system (PWS) refers to a system that transmits CBS message identifier and contents from a base station to a certain area using the cell broadcast service (CBS) of mobile communication system.

6.10.3 A terminal shall be provided with functions to receive message identifiers and display message contents, such as:

6.10.3.1 The language of the contents PWS alerts, message identifier, classification, preset receiving on or off, and the options of users, etc shall comply with the provisions of Table 28.

6.10.3.2 When a terminal set to receive messages receives a PWS message, the content of the message shall be displayed explicitly with the classification of message identifier shown at the title of the message content; see Figure 1 for an example.

6.10.3.3 The message identifier shall be tested together with the following message contents: 6.10.3.3.1 and 6.10.3.3.3 shall be tested; 6.10.3.3.2 shall be tested starting from January 1 2021; however, the test may be scheduled on an earlier day if such a request is made by the applicant for the type approval of terminal.

6.10.3.3.1 For a terminal with an interface in Chinese, the message content shall be: [本訊息為災防告警訊息測試]業者配合政府政策，已建置細胞廣播系統，目前在發送測試用災防告警細胞廣播訊息，造成不便，敬請見諒，國家通訊傳播委員會關心您。

6.10.3.3.2 For a terminal with an interface in Chinese and English, the message content shall be shown in both Chinese and English, as follows: [災防告警測試]業者依照政府政策，測試災防告警，造成不便，敬請見諒，國家通訊傳播委員會關心您。[Public warning testing] Your mobile phone operator complies with government policies and tests public warning. We apologize for any inconvenience and appreciate your kind understanding. National Communications Commission

6.10.3.3.3 For a terminal with an interface in English, the message content shall be: [The message is for public warning message testing] Your mobile phone operator has set up cell broadcasting systems for transmitting public warning messages. Now this service is still in trial. We apologize for any inconvenience it may cause and appreciate your kind understanding.
National Communications Commission

6.10.3.4 The terminal shall allow user to view the content of previous message received.

6.10.3.5 Users are not allowed to forward a PWS message received by the terminal or edit the content of the message.

6.10.4 Audio signals:

6.10.4.1 The audio signal shall be categorized into two kinds of signal: audio attention signal and audio general signal:

6.10.4.1.1 Audio attention signal:

6.10.4.1.1.1 The audio attention signal shall consist of a special audio frequency and interval, and the audio attention signal shall not be set up by the user or modified:

6.10.4.1.1.1.1 Special audio frequency: for the function of audio mixing, the signal shall be generated by mixing the fundamental frequencies of 853 hertz (Hz) and 960 Hz; for the function of monotone, the signal shall be generated using a single tone of 960 Hz.

6.10.4.1.1.1.2 Special interval: the audio attention signal consists of two sections with an interval of 0.5 seconds in between; the composition of the signal is a sound lasting 2 seconds + a second sound lasting 1 second with an interval of 0.5 second between the sounds.

6.10.4.1.1.1.3 The pattern of the audio attention signal is provided in Figure 2.

6.10.4.1.1.2 The audio alert signal is used only for PWS broadcasting.

6.10.4.1.2 General audio signal: the general audio signal contains no special audio frequency and interval and can be defined or altered by users; i.e. the audio signals generated by the terminal when a typical message is received.

6.10.4.2 When to generate: for a terminal set to receive message identifiers, when a PWS message is received, an audio signal shall be generated corresponding to the message identifier and user's definitions, as shown in Table 29.

6.10.4.3 The default shall be that the audio signals are activated, and the user is allowed to deactivate or activate.

6.10.4.4 When the terminal generates an audio signal, the user may terminate the signal before it ends.

6.10.5 Vibration cadence:

6.10.5.1 For vibration cadence, there are vibration attention cadence and general vibration cadence:

6.10.5.1.1 Vibration attention cadence:

6.10.5.1.1.1 An vibration attention cadence shall be provided with a special interval. The vibration attention cadence shall not be set up by the user or modified:

6.10.5.1.1.1.1 Special interval: the vibration attention cadence consists of two sections of vibrations with an interval of 0.5 second in between. Every section of vibration is made up of one vibration of 2 seconds, followed by two vibrations of 1 second with an interval of 0.5 second between vibrations.

6.10.5.1.1.1.2 The temporal pattern of vibration attention cadence in Figure 3.

6.10.5.1.1.2 The vibration attention cadence is used only for PWS broadcasting.

6.10.5.1.1.3 The vibration attention cadence and audio attention signal does not need to be synchronized.

6.10.5.1.2 General vibration signal: The general vibration cadence shall not have special interval of vibration when a general message is received by the terminal.

6.10.5.2 When to generate: for a terminal set to receive message identifiers, when a PWS message is received, a vibration shall be generated corresponding to the message identifier and user's definitions, as shown in Table 29.

6.10.5.3 The vibration cadence is considered to be an opt-out by the user with the initial default configuration being that all emergency alerts are enabled.

6.10.5.4 When the terminal generates a vibration signal, the user may terminate the signal before it ends.

6.10.6 The presentation of the received PWS alert message should take priority over other mobile device functions. The PWS alert message shall not preempt an active voice or data session.

6.10.7 The processing of receiving the duplicate PWS message:

6.10.7.1 Duplicate PWS alert message refers to PWS alert messages with the same message identifier and serial number, indicating that they have been sent repeated. The definition of serial number shall refer to the technical standard 3GPP TS 23.041.

6.10.7.2 Where the equipment receives duplicate PWS alert message from the base station, it shall not show the message content or generate signal and vibration.

6.10.8 For a terminal with a hardware interface of mobile broadband service terminal or Generation 3 mobile telecommunications terminal, the PWS message receiving function of the terminal shall meet the requirements specified in 6.10 of the Specifications.

6.11 IMEI Number and Guarantee of uniqueness

The IMEI number is read and recorded by test instrument. The applicant shall submit the guarantee of IMEI uniqueness.

7. Test Requirements

7.1 For the test procedures and limits specified in the Specifications, the requirements in the latest version of 3GPP TS 38.101-1, 3GPP TS 38.101-2, 3GPP TS 38.521-1 and 3GPP TS 38.521-2, if any, may be adopted.

7.2 Unless otherwise specified in the Specifications, Article 5 of the Technical Specifications for Low-Power Radio Frequency Machines shall apply to the test methods for the tests specified in 6.1, 6.2 and 6.5. For test procedures, the reference procedure for transmitter test in Appendix 1 of the Technical Specifications for Low-Power Radio Frequency Machines shall apply.

7.3 6.7 through 6.9 of the Specifications shall be performed jointly with power adaptor and charging cord; however, for the submitted power adaptor and charging cord for which the type approval has been obtained, the tests for power adaptor and charging cord specified in 6.9 of the Specifications may be waived with the presence of approval certificate and test report.

8. Warning indication

8.1 Electromagnetic warning indication

8.1.1 The content of warning shall be similar to: "Use with caution to minimize electromagnetic impacts."

8.1.2 Indication: the warning shall be labeled visibly on the body of terminal and indicated on the outer package of terminal and in the user's instructions.

8.2 Warning Indication for Electromagnetic Exposure

8.2.1 For Handheld Mobile Terminals

8.2.1.1 The content of warning for 6GHz or lower shall be similar to: "Standard SAR value: ____ W/kg, actual value measured on product: ____ W/kg."

8.2.1.2 The content of warning for 6GHz or higher shall be similar to: "Standard PD: 1.0 mW/cm^2, actual value measured on product: ____ mW/cm^2."

8.2.2 For Vehicular, Mobile or Fixed Wireless Access Terminals

The content of warning shall be similar to: "Standard MPE: ____ mW/cm^2, actual value measured on product: ____ mW/cm^2; it is advised to keep the antenna at least ____ cm away from human body when using the device."

8.2.3 Indication: the warning shall be labeled visibly on the body of terminal and indicated on the outer package of terminal and in the user's instructions.

*Should there be any discrepancy between the English and Chinese versions, the Chinese version shall prevail.

Table 1 FR1 Maximum Output Power test requirement (see 3GPP TS 38.521-1 Table 6.2.1.5-1 and Table 6.2.1.5-2)

NR uplink frequency band (MHz)	Class 2 (dBm)	Tolerance (dB)	Class 3 (dBm)	Tolerance (dB)
1920～1980			23	+2+TT/-2-TT
1710～1785			23	+2+TT/-2-TT (note)
2500～2570			23	+2+TT/-2-TT (note)
885～915			23	+2+TT/-2-TT (note)
703～748			23	+2/-2.5
2500～2690	26	+2+TT/-3-TT (note)	23	+2+TT/-2-TT (note)
3300～3570	26	+2+TT/-3-TT	23	+2+TT/-3-TT
Note: Refers to the transmission bandwidths confined within FUL_low and FUL_low + 4 MHz or FUL_high – 4 MHz and FUL_high, the maximum output power requirement is relaxed by reducing the lower tolerance limit by 1.5 dB				

Table 2 Test tolerance (TT) for FR1 Terminal maximum output power (see 3GPP 38.521-1 Table 6.2.1.5-3)

	f ≤ 3.0GHz	3.0GHz < f ≤ 4.2GHz	4.2GHz < f ≤ 6.0GHz
Channel bandwidth ≤ 40MHz	0.7 dB	1.0 dB	1.0 dB
40MHz < channel bandwidth ≤ 100MHz	1.0 dB	1.0 dB	1.0 dB

Table 3 Test Configuration Table for FR1 transmitter output power (see 3GPP 38.521-1 Table 6.2.1.4.1-1)

Initial conditions			
Test environment	Normal		
Test channel	Low range, Mid range, High range		
Test channel bandwidth	Lowest, Mid, Highest		
Subcarrier spacing	Lowest, Highest		
Test parameters			
Test ID	Downlink Configuration	Uplink Configuration	
	Not applicable	Modulation (note 2)	RB allocation (note 1)
1		DFT-s-OFDM PI/2 BPSK	Inner Full
2		DFT-s-OFDM PI/2 BPSK	Inner 1RB Left
3		DFT-s-OFDM PI/2 BPSK	Inner 1RB Right
4		DFT-s-OFDM QPSK	Inner Full
5		DFT-s-OFDM QPSK	Inner 1RB Left
6		DFT-s-OFDM QPSK	Inner 1RB Right
Note 1: The specific configuration of each resource block (RB) distribution is defined in 3GPP TS 38.521-1 Table 6.1-1. Note 2: the DFT-s-OFDM PI/2 BPSK test applies only for UEs which supports half Pi BPSK in FR1.			

Table 4 Test Configuration Table for FR2 effective isotropic radiated power (see 3GPP 38.521-2 Table 6.2.1.1.4.1-1)

Default conditions					
Test environment			Normal		
Test Frequencies			Low range, Mid Range, High range		
Test channel bandwidth			Lowest, 100MHz, highest		
Subcarrier spacing			120 kHz		
	Test parameters				
Test ID	Channel bandwidth	Subcarrier spacing	Downlink Configuration	Uplink Configuration	
		Default	Not applicable	Modulation	RB allocation (note)
1	50 MHz			DFT-s-OFDM QPSK	Inner_Full
2	100 MHz				
3	200 MHz				
4	400 MHz				
Note: The specific configuration of each RF allocation is defined in 3GPP TS 38.521-2 Table 6.1-1.					

Table 5 Test Configuration Table for FR1 frequency error (see 3GPP TS 38.521-1 Table 6.4.1.4.1-1)

Initial conditions				
Test environment	Normal environment + normal voltage, lower extreme temperature + lower extreme voltage, lower extreme temperature + higher extreme voltage, higher extreme temperature + lower extreme voltage, higher extreme temperature + higher extreme voltage			
Test Frequencies	Mid range			
Test channel bandwidth	Highest			
Subcarrier spacing	Lowest			
Test parameters				
	Downlink Configuration		Uplink Configuration	
Test ID	Modulation	RB allocation	Modulation	RB allocation
1	CP-OFDM QPSK	Full RB (note 1)	DFT-s-OFDM QPSK	REFSENS (note 2)
Note 1: Full RB allocation shall be used per each SCS and channel BW as specified in 3GPP 38.521-1 Table 7.3.2.4.1-2. Note 2: The reference sensitivity (REFSENS) refers to 3GPP 38.521-1 Table 7.3.2.4.1-3 which defines uplink RB configuration and start RB location for each SCS, channel BW and NR band.				

Table 6 Test Configuration Table for FR2 frequency error (see 3GPP TS 38.521-2 Table 6.4.1.4.1-1)

Initial conditions	
Test environment	Normal environment + normal voltage, lower extreme temperature + normal voltage, higher extreme temperature + normal voltage
Test Frequencies	Mid range
Test channel bandwidth	Highest
Test SCS as specified in 3GPP 38.521-1 Table 5.3.5-1	Lowest

Test parameters				
Test ID	Downlink Configuration		Uplink Configuration	
	Modulation	RB allocation	Modulation	RB allocation
1	CP-OFDM QPSK	Full RB (note 1)	DFT-s-OFDM QPSK	REFSENS (note 2)
Note 1: Full RB allocation shall be used per each SCS and channel BW as specified in 3GPP 38.521-1 Table 7.3.2.4.1-2. Note 2: The reference sensitivity (REFSENS) refers to 3GPP 38.521-1 Table 7.3.2.4.1-3 which defines uplink RB configuration and start RB location for each SCS, channel BW and NR band.				

Table 7 NR ACLR requirement for FR1 (see 3GPP TS 38.521-1 Table 6.5.2.4.1.5-2)

	Terminal power class 2	Terminal power class 3
NR ACLR	31 - TT dB	30 - TT dB

Table 8 Test tolerance (TT) of FR1 NR ACLR (see 3GPP TS 38.521-1 Table 6.5.2.4.1.5-3)

	f ≤ 3.0GHz	3.0GHz < f ≤ 4.2GHz	4.2GHz < f ≤ 6.0GHz
BW ≤ 100MHz	0.8 dB	0.8 dB	0.8 dB

Table 9 FR1 NR_{ACLR} measurement bandwidth (see 3GPP 38.521-1 Table 6.5.2.4.1.5-1)

NR Channel bandwidth / NR ACLR measurement bandwidth												
	5 MHz	10 MHz	15 MHz	20 MHz	25 MHz	30 MHz	40 MHz	50 MHz	60 MHz	80 MHz	90 MHz	100 MHz
NR ACLR measurement bandwidth (MHz)	4.515	9.375	14.235	19.095	23.955	28.815	38.895	48.615	58.35	78.15	88.23	98.31

Table 10 FR1 ACLR Test Configuration Table (see 3GPP TS 38.521-1 Table 6.5.2.4.1.4.1-1)

Initial conditions						
Test environment			Normal environment + normal voltage			
Test channel			Low range, High range			
Test channel bandwidth			Lowest, Highest			
Subcarrier spacing			Lowest and highest			
Channel bandwidth test parameters						
Test ID	Frequency	Channel bandwidth	Subcarrier spacing	Downlink Configuration	Uplink Configuration	
		Default	Default	N/A for Adjacent Channel Leakage Ratio test case	Modulation (note 2)	RB allocation (note 1)
1 (note 3)	Default				DFT-s-OFDM PI/2 BPSK	Inner_Full
2 (note 3)	Low channel				DFT-s-OFDM PI/2 BPSK	Edge_1RB_Left
3 (note 3)	High channel				DFT-s-OFDM PI/2 BPSK	Edge_1RB_Right
4	Default				DFT-s-OFDM PI/2	Outer_Full

(note 3)	
5 (note 4)	Default
6 (note 4)	Low channel
7 (note 4)	High channel
8 (note 4)	Default
9	Default
10	Low channel
11	High channel
12	Default
13	Default
14	Low channel
15	High channel
16	Default
17	Low channel
18	High channel
19	Default
20	Low channel
21	High channel
22	Default
23	Default
24	Low channel
25	High channel
26	Default
27	Default
28	Low channel
29	High channel
30	Default
31	Low channel
32	High channel
33	Default
34	Low

	BPSK	
	DFT-s-OFDM PI/2 BPSK	Inner_Full
	DFT-s-OFDM PI/2 BPSK	Edge_1RB_Left
	DFT-s-OFDM PI/2 BPSK	Edge_1RB_Right
	DFT-s-OFDM PI/2 BPSK	Outer_Full
	DFT-s-OFDM QPSK	Inner_Full
	DFT-s-OFDM QPSK	Edge_1RB_Left
	DFT-s-OFDM QPSK	Edge_1RB_Right
	DFT-s-OFDM QPSK	Outer_Full
	DFT-s-OFDM 16 QAM	Inner_Full
	DFT-s-OFDM 16 QAM	Edge_1RB_Left
	DFT-s-OFDM 16 QAM	Edge_1RB_Right
	DFT-s-OFDM 16 QAM	Outer_Full
	DFT-s-OFDM 64 QAM	Edge_1RB_Left
	DFT-s-OFDM 64 QAM	Edge_1RB_Right
	DFT-s-OFDM 64 QAM	Outer_Full
	DFT-s-OFDM 256 QAM	Edge_1RB_Left
	DFT-s-OFDM 256 QAM	Edge_1RB_Right
	DFT-s-OFDM 256 QAM	Outer_Full
	CP-OFDM QPSK	Inner_Full
	CP-OFDM QPSK	Edge_1RB_Left
	CP-OFDM QPSK	Edge_1RB_Right
	CP-OFDM QPSK	Outer_Full
	CP-OFDM 16 QAM	Inner_Full
	CP-OFDM 16 QAM	Edge_1RB_Left
	CP-OFDM 16 QAM	Edge_1RB_Right
	CP-OFDM 16 QAM	Outer_Full
	CP-OFDM 64 QAM	Edge_1RB_Left
	CP-OFDM 64 QAM	Edge_1RB_Right
	CP-OFDM 64 QAM	Outer_Full
	CP-OFDM 256 QAM	Edge_1RB_Left

	channel				
35	High channel			CP-OFDM 256 QAM	Edge_1RB_Right
36	Default			CP-OFDM 256 QAM	Outer_Full

Note 1: The specific configuration of each RF allocation is defined in 3GPP TS 38.521-1 Table 6.1-1.
Note 2: DFT-s-OFDM PI/2 BPSK test applies only for UEs which supports half Pi BPSK in FR1.
Note 3: For Power Class 3 testing, UE operating in TDD mode with PI/2 BPSK modulation, and UE indicating support for UE capability powerBoosting-pi2BPSK, the IE powerBoostPi2BPSK is set to 1 for frequency band at 2500-2690 MHz (n41)/3300-3570 MHz (n78).
Note 4: For Power Class 3 testing, UE operating in FDD mode, or in TDD mode in bands other than 2500-2690 MHz (n41)/3300-3570 MHz (n78) , or in TDD mode the IE powerBoostPi2BPSK is set to 0 for bands 3300-3570 MHz (n78).

Table 11 UTRA ACLR requirement for FR1 ($UTRA_{ACLR}$) (see 3GPP 38.521-1 Table 6.5.2.4.2.5-2)

	Terminal power class 3 (note 1)
$UTRA_{ACLR1}$ (note 2)	33 dB - TT
$UTRA_{ACLR2}$ (note 3)	36 dB - TT

Note 1: TT = 0.8 dB。
Note 2: $UTRA_{ACLR1}$ is first adjacent UTRA channel ($UTRA_{ACLR1}$) which centre frequency is ± 2.5 MHz from NR channel edge.
Note 3: $UTRA_{ACLR2}$ is the 2nd adjacent UTRA channel ($UTRA_{ACLR2}$) which centre frequency is ± 7.5 MHz from NR channel edge.

Table 12 General requirements for NR adjacent channel leakage ratio(NR_{ACLR}) for FR2 (see 3GPP TS 38.521-2 Table 6.5.2.3.5-1)

	Channel bandwidth			
	50 MHz	100 MHz	200 MHz	400 MHz
NR ACLR limits	17+TT dB	17+TT dB	17+TT dB	17+TT dB
NR channel measurement bandwidth	47.52 MHz	95.04 MHz	190.08 MHz	380.16 MHz
Adjacent channel centre frequency offset	±50 MHz	±100 MHz	±200 MHz	±400 MHz

Table 13 Test tolerance (TT) for NR adjacent channel leakage ratio for FR2 (see 3GPP TS 38.521-2 Table 6.5.2.3.5-1a)

Test environment (Test Metric)	23.45GHz ≤ f ≤ 30.3GHz
Indirect far field (IFF) (quiet zone size ≤ 30 cm)	4.6 dB

Table 14 Channel bandwidth test parameters for FR2 NR_{ACLR} (see 3GPP TS 38.521-2 Table 6.5.2.3.4.1-1)

Default Conditions	
Test environment	Normal environment + normal voltage
Test Frequencies	Low range, High range
Test channel bandwidths	Lowest, Mid, Highest

Subcarrier spacing			Lowest and highest			
Test parameters						
Test ID	Frequency	Channel bandwidth	**SCS**	Downlink Configuration	Uplink Configuration	
					Modulation	RB allocation (note)
1	Low channel	Default	Default	Not applicable	DFT-s-OFDM PI/2 BPSK	Outer_1RB_Left
2	High channel				DFT-s-OFDM PI/2 BPSK	Outer_1RB_Right
3	Default				DFT-s-OFDM PI/2 BPSK	Outer_Full
4	Low channel				DFT-s-OFDM QPSK	Outer_1RB_Left
5	High channel				DFT-s-OFDM QPSK	Outer_1RB_Right
6	Default				DFT-s-OFDM QPSK	Outer_Full
7	Low channel				DFT-s-OFDM 16 QAM	Outer_1RB_Left
8	High channel				DFT-s-OFDM 16 QAM	Outer_1RB_Right
9	Default				DFT-s-OFDM 16 QAM	Outer_Full
10	Default				DFT-s-OFDM 64 QAM	Outer_Full
11	Low channel				CP-OFDM QPSK	Outer_1RB_Left
12	High channel				CP-OFDM QPSK	Outer_1RB_Right
13	Default				CP-OFDM QPSK	Outer_Full
Note: The specific configuration of each RF allocation is defined in 3GPP TS 38.521-2 Table 6.1-1.						

Table 15 FR1 spectrum emission mask specifications (see 3GPP TS 38.521-1 Table 6.5.2.2.5-1)

Emission limits (dBm)/Channel bandwidth													
Δf_{OOB} (MHz)	5 MHz	10 MHz	15 MHz	20 MHz	25 MHz	30 MHz	40 MHz	50 MHz	60 MHz	80 MHz	90 MHz	100 MHz	Resolution bandwidth
± 0-1	-13 +TT	-13 +TT	-13 +TT	-13 +TT	-13 +TT	-13 +TT	-13 +TT						1 % of Channel bandwidth
± 0-1								-24 +TT	-24 +TT	-24 +TT	-24 +TT	-24 +TT	30 kHz (note 1)
± 1-5	-10 +TT	-10 +TT	-10 +TT	-10 +TT	-10 +TT	-10 +TT	-10 +TT	-10 +TT	-10 +TT	-10 +TT	-10 +TT	-10 +TT	1 MHz (note 2)
± 5-6	-13 +TT	-13 +TT	-13 +TT	-13 +TT	-13 +TT	-13 +TT	-13 +TT	-13 +TT	-13 +TT	-13 +TT	-13 +TT	-13 +TT	
± 6-10	-25 +TT												
± 10-15		-25 +TT											
± 15-20			-25										

			+TT										
± 20-25				-25 +TT									
± 25-30					-25 +TT								
± 30-35						-25 +TT							
± 35-40													
± 40-45							-25 +TT						
± 45-50													
± 50-55								-25 +TT					
± 55-60													
± 60-65									-25 +TT				
± 65-80													
± 80-85										-25 +TT			
± 85-90													
± 90-95											-25 +TT		
± 95-100													
± 100-105												-25 +TT	

Note 1: The first and last measurement position with a 30 kHz filter is at Δf_{OOB} equals to 0.015 MHz and 0.985 MHz.

Note 2: At the boundary of spectrum emission limit, the first and last measurement position with a 1 MHz filter is the inside of +0.5MHz and -0.5MHz, respectively.

Note 3: The measurements are to be performed above the upper edge of the channel and below the lower edge of the channel specified in Article 2 of the Specifications for applicable frequency bands.

Note 4: Test Tolerance(TT) for each frequency and channel bandwidth is specified in Table 16.

Table 16 Test tolerance (TT) for FR1 spectrum emission mask (see 3GPP TS 38.521-1 Table 6.5.2.2.5-2)

	f ≤ 3.0GHz	3.0GHz < f ≤ 4.2GHz	4.2GHz < f ≤ 6.0GHz
BW ≤ 100MHz	1.5 dB	1.8 dB	1.8 dB

Table 17 Channel bandwidth test parameters for FR1 spectrum emission mask (see 3GPP TS 38.521-1 Table 6.5.2.2.4.1-1)

Default Conditions						
Test environment	Normal environment + normal voltage					
Test Frequencies	Low range, High range					
Test channel bandwidths	Lowest and highest					
Subcarrier spacing	Lowest and highest					
Test ID	Test Parameters for Channel Bandwidths					
	Frequency	Channel bandwidth	Subcarrier spacing	Downlink Configuration	Uplink Configuration	
		Default	Default	Not	Modulation	RB allocation

				applicable	(note 2)	(note 1)
1 (note 3)	Low channel				DFT-s-OFDM PI/2 BPSK	Edge_1RB_Left
2 (note 3)	High channel				DFT-s-OFDM PI/2 BPSK	Edge_1RB_Right
3 (note 3)	Default				DFT-s-OFDM PI/2 BPSK	Outer_Full
4	Low channel				DFT-s-OFDM QPSK	Edger_1RB_Left
5	High channel				DFT-s-OFDM QPSK	Edge_1RB_Right
6	Default				DFT-s-OFDM QPSK	Outer_Full
7	Low channel				DFT-s-OFDM 16 QAM	Edge_1RB_Left
8	High channel				DFT-s-OFDM 16 QAM	Edge_1RB_Right
9	Default				DFT-s-OFDM 16 QAM	Outer_Full
10	Low channel				DFT-s-OFDM 64 QAM	Edge_1RB_Left
11	High channel				DFT-s-OFDM 64 QAM	Edge_1RB_Right
12	Default				DFT-s-OFDM 64 QAM	Outer_Full
13	Low channel				DFT-s-OFDM 256 QAM	Edge_1RB_Left
14	High channel				DFT-s-OFDM 256 QAM	Edge_1RB_Right
15	Default				DFT-s-OFDM 256 QAM	Outer_Full
16	Low channel				CP-OFDM QPSK	Edge_1RB_Left
17	High channel				CP-OFDM QPSK	Edge_1RB_Right
18	Default				CP-OFDM QPSK	Outer_Full
19	Low channel				CP-OFDM 16 QAM	Edge_1RB_Left
20	High channel				CP-OFDM 16 QAM	Edge_1RB_Right
21	Default				CP-OFDM 16 QAM	Outer_Full
22	Low channel				CP-OFDM 64 QAM	Edge_1RB_Left
23	High channel				CP-OFDM 64 QAM	Edge_1RB_Right
24	Default				CP-OFDM 64 QAM	Outer_Full
25	Low channel				CP-OFDM 256 QAM	Edge_1RB_Left
26	High channel				CP-OFDM 256 QAM	Edge_1RB_Right
27	Default				CP-OFDM 256 QAM	Outer_Full

Note 1: The specific configuration of each RF allocation is defined in 3GPP TS 38.521-1 Table 6.1-1.
Note 2: DFT-s-OFDM PI/2 BPSK test applies only for terminals which supports half Pi BPSK in FR1..
Note 3: For Power Class 3 testing, include two steps for terminals operating on 2500-2690 MHz (n41) / 3300-3570 MHz (n78) , with IE *powerBoostPi2BPSK* set to 1 and 0 separately.

Table 18 General NR spectrum emission mask specifications for FR2 (see 3GPP TS 38.521-2 Table 6.5.2.1.5-1)

Spectrum Emission limits (dBm) / Channel bandwidth					
Δf_{OOB} (MHz)	50MHz	100MHz	200MHz	400MHz	Measurement bandwidth
± 0-5	-5+TT	-5+TT	-5+TT	-5+TT	1 MHz
± 5-10	-13+TT	-5+TT	-5+TT	-5+TT	1 MHz
± 10-20	-13+TT	-13+TT	-5+TT	-5+TT	1 MHz
± 20-40	-13+TT	-13+TT	-13+TT	-5+TT	1 MHz
± 40-100	-13+TT	-13+TT	-13+TT	-13+TT	1 MHz
± 100-200		-13+TT	-13+TT	-13+TT	1 MHz
± 200-400			-13+TT	-13+TT	1 MHz
± 400-800				-13+TT	1 MHz

Note 1: see Table 19 for test tolerance (TT).
Note 2: At the boundary of spectrum emission limit, the first and last measurement position with a 1 MHz filter is the inside of +0.5MHz and -0.5MHz, respectively.
Note 3: The measurements are to be performed above the upper edge of the channel and below the lower edge of the channel, specified in Article 2 of the Specifications for applicable frequency bands.

Table 19 Test tolerance (TT) for general NR spectrum emission mask specifications for FR2 (see 3GPP TS 38.521-2 Table 6.5.2.1.5-1a)

Test environment (Test Metric)	23.45GHz ≤ f ≤ 32.125GHz
Indirect far field (IFF) (quiet zone size ≤ 30 cm)	3.21 dB

Table 20 Test Configuration for FR2 spectrum emission mask (see 3GPP TS 38.521-2 Table 6.5.2.1.4.1-1)

Initial Conditions			
Test environment		Normal environment + normal voltage	
Test Frequencies		Mid range	
Test channel bandwidths		Lowest, Mid, Highest	
Subcarrier spacing		Lowest and highest	
Test parameters			
Test ID	Downlink Configuration	Uplink Configuration	
	Not applicable	Modulation	RB allocation (note)
1		DFT-s-OFDM PI/2 BPSK	Outer_1RB_Left
2		DFT-s-OFDM PI/2 BPSK	Outer_1RB_Right

3		DFT-s-OFDM PI/2 BPSK	Outer_Full
4		DFT-s-OFDM QPSK	Outer_1RB_Left
5		DFT-s-OFDM QPSK	Outer_1RB_Right
6		DFT-s-OFDM QPSK	Outer_Full
7		DFT-s-OFDM 16 QAM	Outer_1RB_Left
8		DFT-s-OFDM 16 QAM	Outer_1RB_Right
9		DFT-s-OFDM 16 QAM	Outer_Full
10		DFT-s-OFDM 64 QAM	Outer_1RB_Left
11		DFT-s-OFDM 64 QAM	Outer_1RB_Right
12		DFT-s-OFDM 64 QAM	Outer_Full
13		CP-OFDM QPSK	Outer_1RB_Left
14		CP-OFDM QPSK	Outer_1RB_Right
15		CP-OFDM QPSK	Outer_Full
Note: The specific configuration of each RF allocation is defined in 3GPP TS 38.521-1 Table 6.1-1.			

Table 21 Limits for spurious emission for FR1 (see 3GPP TS 38.521-1 Table 6.5.3.1.3-2)

Frequency range	Maximum level	Resolution bandwidth	Note
9 kHz ≤ f < 150 kHz	-36 dBm	1 kHz	
150 kHz ≤ f < 30 MHz	-36 dBm	10 kHz	
30 MHz ≤ f < 1000 MHz	-36 dBm	100 kHz	
1 GHz ≤ f < 12.75 GHz	-30 dBm	1 MHz	
	-25 dBm	1 MHz	3
12.75GHz≤f< 5 x highest harmonics of the maximum UL operating frequency, in GHz	-30 dBm	1 MHz	1
12.75 GHz < f < 26 GHz	-30 dBm	1 MHz	2
Note 1: Applies for Band that the upper frequency edge of the UL Band more than 2.69 GHz Note 2: Applies for Band that the upper frequency edge of the UL Band more than 5.2 GHz Note 3: Applies for 2500-2690 MHz (n41 band)			

Table 22 Boundary between FR1 NR out of band and general spurious emission domain (see 3GPP TS 38.521-1 Table 6.5.3.1.3-1)

Channel bandwidth	OOB boundary F_{OOB} (MHz)
$BW_{Channel}$	$BW_{Channel}$ + 5

Table 23 Spurious emissions Test Configuration Table for FR1 (see 3GPP TS 38.521-1 Table 6.5.3.1.4.1-1)

Initial Conditions	
Test environment	Normal environment + normal voltage
Test Frequencies	Low range, Mid range, High range
Test channel bandwidth	Lowest, Mid, Highest
Subcarrier spacing	Lowest
Test parameters	
Downlink Configuration	Uplink Configuration

Not applicable	Modulation	RB allocation (note)
	CP-OFDM QPSK	OuterFull
	CP-OFDM QPSK	Edge_1RB_Left
	CP-OFDM QPSK	Edge_1RB_Right
Note: The specific configuration of each RB allocation is defined in 3GPP TS 38.521-1 Table 6.1-1.		

Table 24 Spurious emissions limits for FR2 (see 3GPP TS 38.521-2 Table 6.5.3.1.3-2)

Frequency range	Maximum level	Measurement bandwidth	Note
30 MHz ≤ f < 1000 MHz	-36 dBm	100 kHz	
1 GHz ≤ f < 12.75 GHz	-30 dBm	1 MHz	
12.75 GHz ≤ f ≤ 2nd harmonic of the upper frequency edge of the UL operating band in GHz	-13 dBm	1 MHz	

Table 25 Spurious emissions Terminal co-existence limits for FR2 (see 3GPP TS 38.521-2 Table 6.5.3.2.3-1 and Table 5.2-1)

NR band	Spurious emission						
	Protected band / frequency range	Frequency range (MHz)			Maximum level (dBm)	Resolution bandwidth (MHz)	Note
28000 MHz band (27000 MHz-29500 MHz)	NR Band n260 (37000-40000MHz)	F_{DL_low} (37000)	-	F_{DL_high} (40000)	-2	100	
	Frequency range (MHz)	57000	-	66000	2	100	
Note: F_{DL_low} and F_{DL_high} refer to each NR frequency band specified in 3GPP TS 38.521-2 Table 5.2-1.							

Table 26 Limits for additional spurious emission for FR2 (see 3GPP TS 38.521-2 Table 6.5.3.3.3-1)

Frequency range (GHz)	Maximum level (dBm) / Channel bandwidth				Measurement bandwidth	Note
	50MHz	100 MHz	200 MHz	400 MHz		
23.6 ≤ f ≤ 24	-8	-8	-8	-8	200 MHz	1
Note 1: The protection of frequency range from 23.6 to 24 GHz is meant for protection of satellite passive services.						

Table 27 Test Configuration for FR2 spectrum emission mask (see 3GPP TS 38.521-2 Table 6.5.3.1.4.1-1)

Initial Conditions		
Test environment		Normal environment + normal voltage
Test Frequencies		Low range, High range (note 2)
Test channel bandwidth		Highest
Subcarrier spacing		120kHz
Test parameters		
Test ID	Downlink Configuration	Uplink Configuration

	Not applicable	Modulation	RB allocation (note 1)
1		DFT-s -OFDM QPSK	Inner_Full
2		DFT-s -OFDM QPSK	Inner_1RB (note 3)

Note 1: The specific configuration of each RB allocation is defined in 3GPP TS 38.521-2 Table 6.1-1.

Note 2: When testing Low range test only in Frequency Range lower than ($F_{UL\_low} - \Delta f_{OOB}$) and when testing High range test only in Frequency Range higher than ($F_{UL\_high} + \Delta f_{OOB}$).

Note 3: When testing Low range configure uplink RB to Inner_1RB_Left and when testing High range configure uplink RB to Inner_1RB_Right.

Table 28 The Language of PWS Alert Contents of Message Identifier, Classification, Preset Receiving On or Off, and Options of Users, etc.

Message identifier /Language of PWS alert contents		Classification	Default = activated or deactivated	Are users allowed to select receiving message identifier or deactivating?
911/Chinese	919/English	Alert Message	Default = receive	Yes
4370/Chinese	4383/English	Presidential Alert	Default = receive	No
4371/Chinese	4384/English	Emergency Alert	Default = receive	Yes
4372/Chinese	4385/English	Emergency Alert	Default = receive	Yes
4373/Chinese	4386/English	Emergency Alert	Default = receive	Yes
4374/Chinese	4387/English	Emergency Alert	Default = receive	Yes
4375/Chinese	4388/English	Emergency Alert	Default = receive	Yes
4376/Chinese	4389/English	Emergency Alert	Default = receive	Yes
4377/Chinese	4390/English	Emergency Alert	Default = receive	Yes
4378/Chinese	4391/English	Emergency Alert	Default = receive	Yes
4379/Chinese	4392/English	Emergency Alert	Default = receive	Yes
4380/Chinese	4393/English	Required Monthly Test	Default = deactivated	Yes

Table 29 Device should produce corresponding audio signal and vibration cadence in accordance with the message identifier (MI) and the user's setting.

Message identifier		User's setting			
		Deactivate sound	Activate sound	Deactivate vibration	Activate vibration
911	919	Can not produce audio	Produce audio general signal	Can not produce	Produce vibration general cadence
4370	4383		Produce audio		Produce vibration

*Should there be any discrepancy between the English and Chinese versions, the Chinese version shall prevail.

4371	4384	signal	attention signal	vibration cadence	attention cadence
4372	4385				
4373	4386				
4374	4387				
4375	4388				
4376	4389				
4377	4390				
4378	4391				
4379	4392				
4380	4393				

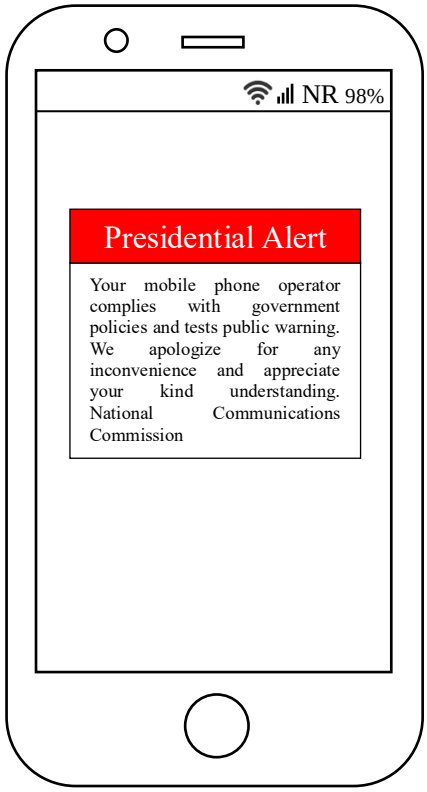

Figure 1 Example of PWS Alert Content and Headers

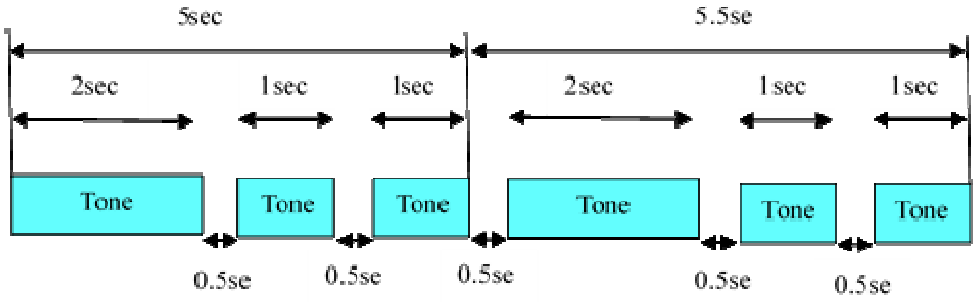

Figure 2 Pattern of Audio Attention Signal

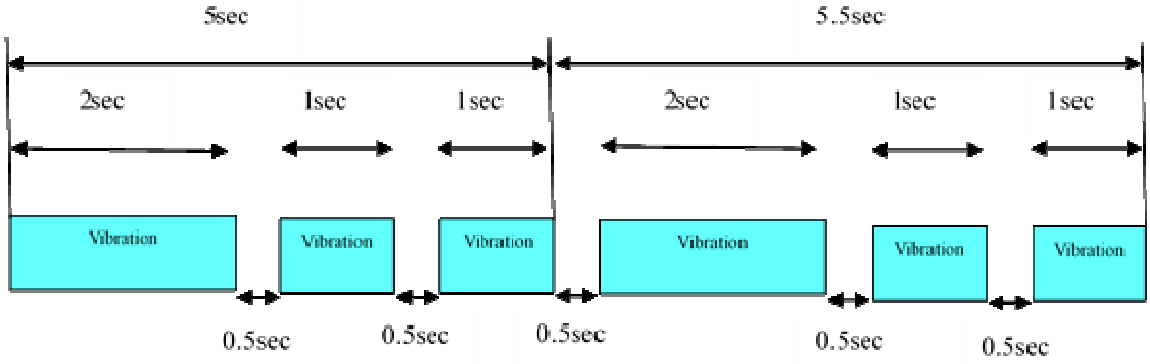

Figure3 Pattern of Vibration Attention Signal