



Telecom Technical  
Specifications

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# **The Third Generation Mobile Telecommunication Terminal Equipment Technical Specifications**

**National Communications Commission**



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## 1. Foundation and Scope

### 1.1 Foundation

The specification is issued pursuant to paragraph 1 of Article 42 of the Telecommunications Acts.

### 1.2 Scope

This specifications are applied to third Generation mobile telecommunication terminal equipment. The relevant frequency bands are as follows:

WCDMA FDD : Band 1 (1920 MHz~1980 MHz/2110 MHz~2170 MHz) , Band 3 (1710 MHz~1785 MHz/1805 MHz~1880 MHz), Band 7 (2500 MHz~2570 MHz/2620 MHz~2690 MHz) , Band 8 (885 MHz~915 MHz/930 MHz~960 MHz) .

WCDMA TDD : (1915 MHz~1920 MHz/2010 MHz~2025 MHz )and (2570 MHz/2620 MHz) .

1915 MHz~1920 MHz and 2010 MHz~2025 MHz frequency bands of WCDMA TDD are not applicable since January 1, 2019.

### 1.3 Contents and Reference

To comply with the international standard, the test items, conformance requirement, method of tests and relevant requirements of the Third Generation mobile telecommunication terminal equipment will be in accordance with the latest requirements of the 3GPP TS25.101, TS25.102, TS34.121, TS34.122, TS34.124 and 3GPP2 C.S0011-A ( TIA/EIA-98-D ) when this specification is not applicable.



## 2. Abbreviations

|       |                                        |
|-------|----------------------------------------|
| ACLR  | Adjacent Channel Leakage power Ratio   |
| CDMA  | Code Division Multiple Access          |
| ERP   | Effective Radiated Power               |
| EIRP  | Effective Isotropic Radiated Power     |
| FCC   | Federal Communications Commission      |
| FDD   | Frequency Division Duplex              |
| ITU   | International Telecommunication Union  |
| MS,UE | Mobile Station, User Equipment         |
| SAR   | Specific Absorption Rate               |
| TDMA  | Time Division Multiple Access          |
| TDD   | Time Division Duplex                   |
| TPC   | Transmit Power Control                 |
| WCDMA | Wideband Code Division Multiple Access |



### 3. Test Items and documents specified

#### 3.1 WCDMA FDD

##### 3.1.1 Test Items

| Item | Test Items                                                                                              | Conformance requirement                                                                                                                                                                                                                                                 | Test result | Compliance |
|------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
| 1    | Frequency bands and channel spacing                                                                     | Comply with table 1-1                                                                                                                                                                                                                                                   |             |            |
| 2    | Maximum output power                                                                                    | Comply with table 1-2                                                                                                                                                                                                                                                   |             |            |
| 3    | Frequency error                                                                                         | Within $\pm 0.1$ PPM                                                                                                                                                                                                                                                    |             |            |
| 4    | Minimum controlled output power                                                                         | $\leq -50$ dBm (in one time slot)                                                                                                                                                                                                                                       |             |            |
| 5    | Occupied bandwidth                                                                                      | $\leq 5$ MHz                                                                                                                                                                                                                                                            |             |            |
| 6    | Spectrum emissions mask                                                                                 | Comply with table 1-3                                                                                                                                                                                                                                                   |             |            |
| 7    | Adjacent Channel Leakage power Ratio (ACLR)<br>(Power class 3,4)                                        | Adjacent Channel Offset $\pm 5$ MHz :<br>ACLR limit 33 dB ;<br>Adjacent Channel Offset $\pm 10$ MHz :<br>ACLR limit 43 dB ;                                                                                                                                             |             |            |
| 8    | Spurious emission                                                                                       | Band 1 : Comply with table 1-4 and table 1-5<br>Band 3 : Comply with table 1-4 and table 1-6<br>Band 7 : Comply with table 1-4 and table 1-7<br>Band 8 : Comply with table 1-4 and table 1-8                                                                            |             |            |
| 9    | EMC                                                                                                     | Complying with CNS13438 or 3GPP TS34.124<br>Device under test (DUT) shall be tested (not applicable if none) in operation mode, standby mode (radiation emission interference), and charging mode (conducted power line emission interference, not applicable if none). |             |            |
| 10   | Electrical safety                                                                                       | Complying with CNS14336-1 or CNS15598-1                                                                                                                                                                                                                                 |             |            |
| 11   | Mobile phones connection interface, power adapter connection interface, charger cable and power adapter | Comply with mobile station device connection interface, power adapter connection interface, charger cable and power adapter relevant provisions of "Technical Specifications for Broadband Terminal Equipment of Mobile Broadband Business".                            |             |            |
| 12   | The Public Warning and Disaster Prevention Messages Reception Function                                  | Adhere to the provisions of Rule 4                                                                                                                                                                                                                                      |             |            |

- Note : 1. For test items 2, 3, 4, 5, 6, 7 and 8, the UE should be operated at low frequency, mid frequency and high frequency meantime and refer to the latest method of measurement of 3GPP TS34.121 and TS34.124.
2. The applicant should submit the test report or certificate of approval in compliance with the relevant regulations for test items 9 and 10.
3. Test items 9 to 11 shall be tested with power adapter and charger cable set; for power adapters and charger cable sets that already received certificate of



approval, it is a must to submit certificate of approval and testing report in order to be inspection free of test item 11.

### 3.1.2 Specified Documents

| Item | Content                           | Conformance requirement                                                                                                                | Note                                                                                       |
|------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 1    | SAR limits (hand-held only)       | Shall comply with the SAR limit for partial body (any part of the head and surrounding area), 2.0 W/Kg(10g)                            | The applicant should provide with test report and test data.                               |
| 2    | RF Exposure Warning Label         | Warning:<br>"For Reducing RF Influence, Use Properly "<br>Method of Labeling:<br>Label on UE, carton and user manual.                  | The applicant should provide with guarantee. when the user manual is English version only. |
| 3    | SAR Label                         | SAR label content:<br>" SAR limit 2.0 W/Kg; testing value: W/Kg"<br>Labeling method:<br>Label on UE, carton and user manual.           | The applicant should provide with guarantee.                                               |
| 4    | A copy of certificate of approval | A copy of certificate of approval (e.g., issued by certification body which is accredited in compliance with the requirements of 3GPP) | Note the code and certification scope of 3GPP.                                             |
| 5    | IMEI number and unique guarantee  | Test equipment may read and record the IMEI number of the unique guarantee proposed by the applicant.                                  |                                                                                            |

- Note : 1. The documents specified by NCC mentioned above are regulated in compliance with Article 10.1.7 and Article 12.1.7 of Compliance Approval Regulations of Telecommunications Terminal Equipment.
2. Procedures of SAR are in accordance with CNS 14958-1: Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures – Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz). Expiration Date to perform the related International Standard IEC 62209-1 and IEEE Std 1528 is June 30, 2012.



Table 1-1 :

| Test Items                 | Band 1                                           | Band 3                                           | Band 7                                           | Band 8                                       |
|----------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|----------------------------------------------|
| Frequency bands            | Tx : 1920 MHz-1980 MHz<br>Rx : 2110 MHz-2170 MHz | Tx : 1710 MHz-1785 MHz<br>Rx : 1805 MHz-1880 MHz | Tx : 2500 MHz-2570 MHz<br>Rx : 2620 MHz-2690 MHz | Tx : 885 MHz-915 MHz<br>Rx : 930 MHz-960 MHz |
| TX-RX frequency separation | 190 MHz                                          | 95 MHz                                           | 120 MHz                                          | 45 MHz                                       |
| Channel spacing            | 5 MHz                                            |                                                  |                                                  |                                              |

Table 1-2 :

| Maximum Output Power | Band 1              | Band 3 | Band 7 | Band 8 |
|----------------------|---------------------|--------|--------|--------|
| Power class 1        | 33 dBm +1.7/-3.7 dB | -      | -      | -      |
| Power class 2        | 27 dBm +1.7/-3.7 dB | -      | -      | -      |
| Power class 3        | 24 dBm +1.7/-3.7 dB |        |        |        |
| Power class 4        | 21 dBm +2.7/-2.7 dB |        |        |        |

Table 1-3 :

| Separation between the carrier frequency and the center of the measuring filter $\Delta f$ (MHz) | Minimum Requirement                                                                           |                            | Measurement Bandwidth |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------|-----------------------|
|                                                                                                  | Relative requirement (dBc)                                                                    | Absolute requirement (dBm) |                       |
| 2.5 - 3.5                                                                                        | $\left\{ -35 - 15 \cdot \left( \frac{\Delta f}{\text{MHz}} - 2.5 \right) \right\} \text{dBc}$ | -71.1                      | 30 kHz                |
| 3.5 - 7.5                                                                                        | $\left\{ -35 - 1 \cdot \left( \frac{\Delta f}{\text{MHz}} - 3.5 \right) \right\} \text{dBc}$  | -55.8                      | 1 MHz                 |
| 7.5 - 8.5                                                                                        | $\left\{ -39 - 10 \cdot \left( \frac{\Delta f}{\text{MHz}} - 7.5 \right) \right\} \text{dBc}$ | -55.8                      | 1 MHz                 |
| 8.5 - 12.5                                                                                       | -49 dBc                                                                                       | -55.8                      | 1 MHz                 |

Note: Minimum requirement is the larger one between relative requirement and absolute requirement.

Table 1-4 :

| Frequency Bandwidth        | Measurement Bandwidth | Minimum requirement |
|----------------------------|-----------------------|---------------------|
| 9 kHz $\leq f < 150$ kHz   | 1 kHz                 | -36 dBm             |
| 150 kHz $\leq f < 30$ MHz  | 10 kHz                | -36 dBm             |
| 30 MHz $\leq f < 1000$ MHz | 100 kHz               | -36 dBm             |
| 1GHz $\leq f < 12.75$ GHz  | 1 MHz                 | -30 dBm             |

Table 1-5 : (Band 1)

| Frequency Bandwidth               | Measurement Bandwidth | Minimum requirement |
|-----------------------------------|-----------------------|---------------------|
| 462.5 MHz $\leq f \leq 467.5$ MHz | 1 MHz                 | -50 dBm             |
| 703 MHz $\leq f \leq 803$ MHz     | 1 MHz                 | -50 dBm             |
| 791 MHz $\leq f \leq 821$ MHz     | 3.84 MHz              | -60 dBm             |
| 852 MHz $\leq f \leq 859$ MHz     | 1 MHz                 | -50 dBm             |
| 859 MHz $\leq f \leq 894$ MHz     | 3.84 MHz              | -60 dBm             |
| 921 MHz $\leq f < 925$ MHz        | 100 kHz               | -60 dBm             |



|                                                     |                     |                    |
|-----------------------------------------------------|---------------------|--------------------|
| $925 \text{ MHz} \leq f \leq 935 \text{ MHz}$       | 100 kHz<br>3.84 MHz | -67 dBm<br>-60 dBm |
| $935 \text{ MHz} < f \leq 960 \text{ MHz}$          | 100 kHz<br>3.84 MHz | -79 dBm<br>-60 dBm |
| $1447 \text{ MHz} \leq f \leq 1467 \text{ MHz}$     | 1 MHz               | -50 dBm            |
| $1452 \text{ MHz} \leq f \leq 1510.9 \text{ MHz}$   | 3.84 MHz            | -60 dBm            |
| $1805 \text{ MHz} \leq f \leq 1880 \text{ MHz}$     | 100 kHz<br>3.84 MHz | -71 dBm<br>-60 dBm |
| $1839.9 \text{ MHz} \leq f \leq 1879.9 \text{ MHz}$ | 3.84 MHz            | -60 dBm            |
| $1884.5 \text{ MHz} < f < 1915.7 \text{ MHz}$       | 300 kHz             | -41 dBm            |
| $2010 \text{ MHz} < f < 2025 \text{ MHz}$           | 3.84 MHz            | -60 dBm            |
| $2110 \text{ MHz} \leq f \leq 2170 \text{ MHz}$     | 3.84 MHz            | -60 dBm            |
| $2170 \text{ MHz} \leq f \leq 2200 \text{ MHz}$     | 1 MHz               | -50 dBm            |
| $2300 \text{ MHz} \leq f \leq 2400 \text{ MHz}$     | 3.84 MHz            | -60 dBm            |
| $2496 \text{ MHz} \leq f \leq 2570 \text{ MHz}$     | 1 MHz               | -50 dBm            |
| $2570 \text{ MHz} \leq f \leq 2690 \text{ MHz}$     | 3.84 MHz            | -60 dBm            |
| $3510 \text{ MHz} \leq f \leq 3590 \text{ MHz}$     | 3.84 MHz            | -60 dBm            |
| $3400 \text{ MHz} \leq f \leq 3800 \text{ MHz}$     | 1 MHz               | -50 dBm            |

Table 1-6 : ( Band 3 )

| Frequency Bandwidth                                 | Measurement Bandwidth | Minimum requirement |
|-----------------------------------------------------|-----------------------|---------------------|
| $462.5 \text{ MHz} \leq f \leq 467.5 \text{ MHz}$   | 1 MHz                 | -50 dBm             |
| $703 \text{ MHz} \leq f \leq 803 \text{ MHz}$       | 1 MHz                 | -50 dBm             |
| $791 \text{ MHz} \leq f \leq 821 \text{ MHz}$       | 3.84 MHz              | -60 dBm             |
| $852 \text{ MHz} \leq f \leq 859 \text{ MHz}$       | 1 MHz                 | -50 dBm             |
| $859 \text{ MHz} \leq f \leq 894 \text{ MHz}$       | 3.84 MHz              | -60 dBm (Note)      |
| $921 \text{ MHz} \leq f < 925 \text{ MHz}$          | 100 kHz               | -60 dBm             |
| $925 \text{ MHz} \leq f \leq 935 \text{ MHz}$       | 100 kHz<br>3.84 MHz   | -67 dBm<br>-60 dBm  |
| $935 \text{ MHz} < f \leq 960 \text{ MHz}$          | 100 kHz<br>3.84 MHz   | -79 dBm<br>-60 dBm  |
| $1447 \text{ MHz} \leq f \leq 1467 \text{ MHz}$     | 1 MHz                 | -50 dBm             |
| $1452 \text{ MHz} \leq f \leq 1496 \text{ MHz}$     | 3.84 MHz              | -60 dBm             |
| $1475.9 \text{ MHz} \leq f \leq 1510.9 \text{ MHz}$ | 3.84 MHz              | -60 dBm (Note)      |
| $1805 \text{ MHz} \leq f \leq 1880 \text{ MHz}$     | 3.84 MHz              | -60 dBm             |
| $1880 \text{ MHz} \leq f \leq 1920 \text{ MHz}$     | 3.84 MHz              | -60 dBm             |
| $1884.5 \text{ MHz} \leq f \leq 1915.7 \text{ MHz}$ | 300 kHz               | -41 dBm (Note)      |
| $2010 \text{ MHz} < f < 2025 \text{ MHz}$           | 3.84 MHz              | -60 dBm             |
| $2110 \text{ MHz} \leq f \leq 2170 \text{ MHz}$     | 3.84 MHz              | -60 dBm             |
| $2170 \text{ MHz} \leq f \leq 2200 \text{ MHz}$     | 1 MHz                 | -50 dBm             |
| $2300 \text{ MHz} \leq f \leq 2400 \text{ MHz}$     | 3.84 MHz              | -60 dBm             |
| $2496 \text{ MHz} \leq f \leq 2570 \text{ MHz}$     | 1 MHz                 | -50 dBm             |
| $2570 \text{ MHz} \leq f \leq 2690 \text{ MHz}$     | 3.84 MHz              | -60 dBm             |
| $3510 \text{ MHz} \leq f \leq 3590 \text{ MHz}$     | 3.84 MHz              | -60 dBm             |
| $3400 \text{ MHz} \leq f \leq 3800 \text{ MHz}$     | 1 MHz                 | -50 dBm             |

Note: Only available for transmissions in 1744.9 MHz to 1784.9 MHz.

Table 1-7 : ( Band 7 )

| Frequency Bandwidth                               | Measurement Bandwidth | Minimum requirement |
|---------------------------------------------------|-----------------------|---------------------|
| $462.5 \text{ MHz} \leq f \leq 467.5 \text{ MHz}$ | 1 MHz                 | -50 dBm             |
| $717 \text{ MHz} \leq f \leq 728 \text{ MHz}$     | 1 MHz                 | -50 dBm             |
| $729 \text{ MHz} \leq f \leq 746 \text{ MHz}$     | 3.84 MHz              | -60 dBm             |
| $738 \text{ MHz} \leq f \leq 758 \text{ MHz}$     | 1 MHz                 | -50 dBm             |
| $746 \text{ MHz} \leq f \leq 756 \text{ MHz}$     | 3.84 MHz              | -60 dBm             |
| $758 \text{ MHz} \leq f \leq 768 \text{ MHz}$     | 3.84 MHz              | -60 dBm             |
| $768 \text{ MHz} \leq f \leq 791 \text{ MHz}$     | 1 MHz                 | -50 dBm             |
| $791 \text{ MHz} \leq f \leq 821 \text{ MHz}$     | 3.84 MHz              | -60 dBm             |
| $852 \text{ MHz} \leq f \leq 859 \text{ MHz}$     | 1 MHz                 | -50 dBm             |
| $859 \text{ MHz} \leq f \leq 894 \text{ MHz}$     | 3.84 MHz              | -60 dBm             |
| $921 \text{ MHz} \leq f < 925 \text{ MHz}$        | 100 kHz               | -60 dBm             |
| $925 \text{ MHz} \leq f \leq 935 \text{ MHz}$     | 100 kHz               | -67 dBm             |
|                                                   | 3.84 MHz              | -60 dBm             |
| $935 \text{ MHz} < f \leq 960 \text{ MHz}$        | 100 kHz               | -79 dBm             |
|                                                   | 3.84 MHz              | -60 dBm             |
| $1452 \text{ MHz} < f \leq 1496 \text{ MHz}$      | 3.84 MHz              | -60 dBm             |
| $1805 \text{ MHz} \leq f \leq 1880 \text{ MHz}$   | 100 kHz               | -71 dBm             |
|                                                   | 3.84 MHz              | -60 dBm             |
| $1900 \text{ MHz} \leq f \leq 1920 \text{ MHz}$   | 3.84 MHz              | -60 dBm             |
| $1930 \text{ MHz} \leq f \leq 1995 \text{ MHz}$   | 3.84 MHz              | -60 dBm             |
| $2010 \text{ MHz} < f < 2025 \text{ MHz}$         | 3.84 MHz              | -60 dBm             |
| $2110 \text{ MHz} \leq f \leq 2170 \text{ MHz}$   | 3.84 MHz              | -60 dBm             |
| $2170 \text{ MHz} \leq f \leq 2200 \text{ MHz}$   | 1 MHz                 | -50 dBm             |
| $2300 \text{ MHz} < f < 2400 \text{ MHz}$         | 3.84 MHz              | -60 dBm             |
| $2350 \text{ MHz} \leq f \leq 2360 \text{ MHz}$   | 1 MHz                 | -50 dBm             |
| $2620 \text{ MHz} \leq f \leq 2690 \text{ MHz}$   | 3.84 MHz              | -60 dBm             |
| $2595 \text{ MHz} \leq f \leq 2620 \text{ MHz}$   | 1 MHz                 | -40 dBm             |
| $3510 \text{ MHz} \leq f \leq 3590 \text{ MHz}$   | 3.84 MHz              | -60 dBm             |
| $3400 \text{ MHz} \leq f \leq 3800 \text{ MHz}$   | 1 MHz                 | -50 dBm             |

Table 1-8 : ( Band 8 )

| Frequency Bandwidth                                 | Measurement Bandwidth | Minimum requirement |
|-----------------------------------------------------|-----------------------|---------------------|
| $462.5 \text{ MHz} \leq f \leq 467.5 \text{ MHz}$   | 1 MHz                 | -50 dBm             |
| $703 \text{ MHz} \leq f \leq 803 \text{ MHz}$       | 1 MHz                 | -50 dBm             |
| $791 \text{ MHz} \leq f \leq 821 \text{ MHz}$       | 3.84 MHz              | -60 dBm             |
| $860 \text{ MHz} \leq f \leq 890 \text{ MHz}$       | 1 MHz                 | -37 dBm (Note)      |
| $925 \text{ MHz} \leq f \leq 935 \text{ MHz}$       | 100 kHz               | -67 dBm             |
|                                                     | 3.84 MHz              | -60 dBm             |
| $935 \text{ MHz} < f \leq 960 \text{ MHz}$          | 100 kHz               | -79 dBm             |
|                                                     | 3.84 MHz              | -60 dBm             |
| $1447 \text{ MHz} \leq f \leq 1467 \text{ MHz}$     | 1 MHz                 | -50 dBm             |
| $1452 \text{ MHz} \leq f \leq 1496 \text{ MHz}$     | 3.84 MHz              | -60 dBm             |
| $1475.9 \text{ MHz} \leq f \leq 1510.9 \text{ MHz}$ | 3.84 MHz              | -60 dBm (Note)      |
| $1805 \text{ MHz} < f \leq 1830 \text{ MHz}$        | 100 kHz               | -71 dBm             |
|                                                     | 3.84 MHz              | -60 dBm             |
| $1830 \text{ MHz} < f \leq 1880 \text{ MHz}$        | 100 kHz               | -71 dBm             |
|                                                     | 3.84 MHz              | -60 dBm             |



|                                                 |          |                |
|-------------------------------------------------|----------|----------------|
| $1880\text{MHz} \leq f \leq 1920\text{MHz}$     | 3.84 MHz | -60 dBm        |
| $1884.5\text{MHz} \leq f \leq 1915.7\text{MHz}$ | 300 kHz  | -41 dBm (Note) |
| $2010\text{MHz} \leq f \leq 2025\text{MHz}$     | 3.84 MHz | -60 dBm        |
| $2110\text{MHz} \leq f \leq 2170\text{MHz}$     | 3.84 MHz | -60 dBm        |
| $2170\text{MHz} \leq f \leq 2200\text{MHz}$     | 1 MHz    | -50 dBm        |
| $2300\text{MHz} < f < 2400\text{MHz}$           | 3.84 MHz | -60 dBm        |
| $2496\text{MHz} \leq f \leq 2570\text{MHz}$     | 1 MHz    | -50 dBm        |
| $2570\text{MHz} \leq f \leq 2640\text{MHz}$     | 3.84 MHz | -60 dBm        |
| $2640\text{MHz} < f \leq 2690\text{MHz}$        | 3.84 MHz | -60 dBm        |
| $3510\text{MHz} \leq f \leq 3590\text{MHz}$     | 3.84 MHz | -60 dBm        |
| $3400\text{MHz} \leq f \leq 3800\text{MHz}$     | 1 MHz    | -50 dBm        |

Note: Only available for transmissions in 900 MHz to 915 MHz.



## 3.2 WCDMA TDD

### 3.2.1 Test Items

| Item | Test Items                                                                                              | Conformance requirement                                                                                                                                                                                                                                                 | Test result | Compliance |
|------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|
| 1    | Frequency bands and channel spacing                                                                     | 1915 MHz - 1920 MHz<br>2010 MHz - 2025 MHz<br>2570 MHz - 2620 MHz<br>channel spacing :<br>5 MHz (3.84 Mcps TDD Option) ,<br>1.6 MHz (1.28 Mcps TDD Option) or<br><u>10 MHz (7.68 Mcps TDD Option)</u>                                                                   |             |            |
| 2    | Maximum output power                                                                                    | Comply with table 2-1                                                                                                                                                                                                                                                   |             |            |
| 3    | Frequency error                                                                                         | Within $\pm 0.1$ PPM                                                                                                                                                                                                                                                    |             |            |
| 4    | Minimum controlled output power                                                                         | $\leq -44$ dBm (3.84 Mcps TDD Option)<br>$\leq -49$ dBm (1.28 Mcps TDD Option)<br>$\leq -41$ dBm (7.68 Mcps TDD Option)<br>(in one time slot excluding the guard period)                                                                                                |             |            |
| 5    | Occupied bandwidth                                                                                      | $\leq 5$ MHz (3.84 Mcps TDD Option)<br>$\leq 1.6$ MHz (1.28 Mcps TDD Option)<br>$\leq 10$ MHz (7.68 Mcps TDD Option)                                                                                                                                                    |             |            |
| 6    | Spectrum emissions mask                                                                                 | As Table 2-2 (3.84 Mcps TDD Option)<br>As Table 2-3 (1.28 Mcps TDD Option)<br>As Table 2-4 (7.68 Mcps TDD Option)                                                                                                                                                       |             |            |
| 7    | Adjacent Channel Leakage power Ratio (ACLR)<br>(Power class 2,3)                                        | Comply with table 2-1                                                                                                                                                                                                                                                   |             |            |
| 8    | Spurious emission                                                                                       | As Table 2-6 and Table 2-7 (3.84 Mcps TDD Option or 7.68 Mcps TDD Option)<br>As Table 2-6 and Table 2-8 (1.28 Mcps TDD Option)                                                                                                                                          |             |            |
| 9    | EMC                                                                                                     | Complying with CNS13438 or 3GPP TS34.124<br>Device under test (DUT) shall be tested (not applicable if none) in operation mode, standby mode (radiation emission interference), and charging mode (conducted power line emission interference, not applicable if none). |             |            |
| 10   | Electrical safety                                                                                       | Complying with CNS14336-1 or CNS15598-1                                                                                                                                                                                                                                 |             |            |
| 11   | Mobile phones connection interface, power adapter connection interface, charger cable and power adapter | Comply with mobile station device connection interface, power adapter connection interface, charger cable and power adapter relevant provisions of "Technical Specifications for Broadband Terminal Equipment of Mobile Broadband Business".                            |             |            |
| 12   | The Public Warning and Disaster Prevention Messages Reception Function                                  | Adhere to the provisions of Rule 4                                                                                                                                                                                                                                      |             |            |

Note : 1. For test items 2, 3, 4, 5, 6, 7 and 8, the UE should be operated at low frequency, mid frequency and high frequency meantime and refer to the latest method of measurement of 3GPP TS34.122 and TS34.124.

2. The applicant should submit the test report or certificate of approval in



compliance with the relevant regulations for test items 9 and 10.

3. Test items 9 to 11 shall be tested with power adapter and charger cable set; for power adapters and charger cable sets that already received certificate of approval, it is a must to submit certificate of approval and testing report in order to be inspection free of test item 11.

### 3.2.2 Specified Documents

| Item | Content                           | Conformance requirement                                                                                                                | Note                                                                                       |
|------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| 1    | SAR limits (hand-held only)       | Shall comply with the SAR limit for partial body (any part of the head and surrounding area), 2.0 W/Kg(10g)                            | The applicant should provide with test report and test data.                               |
| 2    | RF Exposure Warning Label         | Warning:<br>"For Reducing RF Influence, Use Properly "<br>Method of Labeling:<br>Label on UE, carton and user manual.                  | The applicant should provide with guarantee. when the user manual is English version only. |
| 3    | SAR Label                         | SAR label content:<br>" SAR limit 2.0 W/Kg; testing value: W/Kg"<br>Labeling method:<br>Label on UE, carton and user manual.           | The applicant should provide with guarantee.                                               |
| 4    | A copy of certificate of approval | A copy of certificate of approval (e.g., issued by certification body which is accredited in compliance with the requirements of 3GPP) | Note the code and certification scope of 3GPP.                                             |
| 5    | IMEI number and unique guarantee  | Test equipment may read and record the IMEI number of the unique guarantee proposed by the applicant.                                  |                                                                                            |

Note : 1. The documents specified by NCC mentioned above are regulated in compliance with Article 10.1.7 and Article 12.1.7 of Compliance Approval Regulations of Telecommunications Terminal Equipment.

2. Procedures of SAR are in accordance with CNS 14958-1: Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures – Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz). Expiration Date to perform the related International Standard IEC 62209-1 and IEEE Std 1528 is June 30, 2012.

Table 2-1 :

| Maximum output power | 3.84 Mcps TDD Option | 1.28 Mcps TDD Option | 7.68 Mcps TDD Option |
|----------------------|----------------------|----------------------|----------------------|
| Power class 1        | 30 dBm +1/-3 dB      | 33 dBm +1/-3 dB      | 30 dBm +1/-3 dB      |
| Power class 2        | 24 dBm +1/-3 dB      | 24 dBm +1/-3 dB      | 24 dBm +1/-3 dB      |
| Power class 3        | 21 dBm +2/-2 dB      | 21 dBm +2/-2 dB      | 21 dBm +2/-2 dB      |
| Power class 4        | 10 dBm +4/-4 dB      | 27 dBm +1/-3 dB      | 10 dBm +4/-4 dB      |

Table 2-2 : (3.84 Mcps TDD Option)

| Separation between the carrier frequency and the center of the measuring filter $\Delta f$ (MHz) | Minimum Requirement                                                             | Measurement Bandwidth |
|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------|
| 2.5 - 3.5                                                                                        | $\left\{ -35 - 15 \cdot \left( \frac{\Delta f}{MHz} - 2.5 \right) \right\} dBc$ | 30 kHz                |
| 3.5 - 7.5                                                                                        | $\left\{ -35 - 1 \cdot \left( \frac{\Delta f}{MHz} - 3.5 \right) \right\} dBc$  | 1 MHz                 |
| 7.5 - 8.5                                                                                        | $\left\{ -39 - 10 \cdot \left( \frac{\Delta f}{MHz} - 7.5 \right) \right\} dBc$ | 1 MHz                 |
| 8.5 - 12.5                                                                                       | -49 dBc                                                                         | 1 MHz                 |

Table 2-3 : (1.28 Mcps TDD Option)

| Separation between the carrier frequency and the center of the measuring filter $\Delta f$ (MHz) | Minimum Requirement                                                             | Measurement Bandwidth |
|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------|
| 0.8 - 1.8                                                                                        | $\left\{ -35 - 14 \cdot \left( \frac{\Delta f}{MHz} - 0.8 \right) \right\} dBc$ | 30 kHz                |
| 1.8 - 2.4                                                                                        | $\left\{ -49 - 17 \cdot \left( \frac{\Delta f}{MHz} - 1.8 \right) \right\} dBc$ | 30 kHz                |
| 2.4 - 4.0                                                                                        | -44 dBc                                                                         | 1 MHz                 |

Table 2-4 : (7.68 Mcps TDD Option)

| Separation between the carrier frequency and the center of the measuring filter $\Delta f$ (MHz) | Minimum Requirement                                                                              | Measurement Bandwidth |
|--------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------|
| 5.0 - 5.75                                                                                       | $\left\{ -38 - 10.67 \cdot \left( \frac{\Delta f}{\text{MHz}} - 5.0 \right) \right\} \text{dBc}$ | 30 kHz                |
| 5.75 - 7.0                                                                                       | $\left\{ -46 - 5.6 \cdot \left( \frac{\Delta f}{\text{MHz}} - 5.75 \right) \right\} \text{dBc}$  | 30 kHz                |
| 7.0 - 15.0                                                                                       | $\left\{ -38 - 0.5 \cdot \left( \frac{\Delta f}{\text{MHz}} - 7.0 \right) \right\} \text{dBc}$   | 1 MHz                 |
| 15.0 - 17.0                                                                                      | $\left\{ -42 - 5.0 \cdot \left( \frac{\Delta f}{\text{MHz}} - 15.0 \right) \right\} \text{dBc}$  | 1 MHz                 |
| 17.0 - 25.0                                                                                      | -53 dBc                                                                                          | 1 MHz                 |

Table 2-5 :

|                      | Adjacent Channel | Chip Rate for RRC Measurement Filter | ACLR Limit |
|----------------------|------------------|--------------------------------------|------------|
| 3.84 Mcps TDD Option | $\pm 5$ MHz      |                                      | 33 dB      |
|                      | $\pm 10$ MHz     |                                      | 43 dB      |
| 1.28 Mcps TDD Option | $\pm 1.6$ MHz    |                                      | 33 dB      |
|                      | $\pm 3.2$ MHz    |                                      | 43 dB      |
| 7.68 Mcps TDD Option | $\pm 7.5$ MHz    | 3.84 MHz                             | 33 dB      |
|                      | $\pm 12.5$ MHz   | 3.84 MHz                             | 43 dB      |
|                      | $\pm 10$ MHz     | 7.68 MHz                             | 33 dB      |
|                      | $\pm 20$ MHz     | 7.68 MHz                             | 43 dB      |

Table 2-6 : :

| Frequency Bandwidth                        | Measurement Bandwidth | Minimum Requirement |
|--------------------------------------------|-----------------------|---------------------|
| $9 \text{ kHz} \leq f < 150 \text{ kHz}$   | 1 kHz                 | -36 dBm             |
| $150 \text{ kHz} \leq f < 30 \text{ MHz}$  | 10 kHz                | -36 dBm             |
| $30 \text{ MHz} \leq f < 1000 \text{ MHz}$ | 100 kHz               | -36 dBm             |
| $1 \text{ GHz} \leq f < 12.75 \text{ GHz}$ | 1 MHz                 | -30 dBm             |

Table 2-7 : (3.84 Mcps TDD Option , 7.68 Mcps TDD Option)

| Frequency Bandwidth                                 | Measurement Bandwidth | Minimum Requirement |
|-----------------------------------------------------|-----------------------|---------------------|
| $921 \text{ MHz} \leq f < 925 \text{ MHz}$          | 100 kHz               | -60 dBm             |
| $925 \text{ MHz} \leq f \leq 935 \text{ MHz}$       | 100 kHz               | -67 dBm             |
| $935 \text{ MHz} < f \leq 960 \text{ MHz}$          | 100 kHz               | -79 dBm             |
| $1805 \text{ MHz} \leq f \leq 1880 \text{ MHz}$     | 100 kHz               | -71 dBm             |
| $2620 \text{ MHz} \leq f \leq 2690 \text{ MHz}$     | 3.84 MHz              | -37 dBm             |
| $1884.5 \text{ MHz} \leq f \leq 1915.7 \text{ MHz}$ | 300 kHz               | -41 dBm             |



Table 2-8 : (1.28 Mcps TDD Option)

| Frequency bands                          | Frequency Bandwidth                             | Measurement Bandwidth | Minimum Requirement |
|------------------------------------------|-------------------------------------------------|-----------------------|---------------------|
| 1915 MHz~1920 MHz ;<br>2010 MHz~2025 MHz | $703 \text{ MHz} \leq f < 803 \text{ MHz}$      | 1 MHz                 | -50 dBm (Note 2)    |
|                                          | $921 \text{ MHz} \leq f < 925 \text{ MHz}$      | 100 kHz               | -60 dBm             |
|                                          | $925 \text{ MHz} \leq f \leq 935 \text{ MHz}$   | 100 kHz               | -67 dBm             |
|                                          | $935 \text{ MHz} < f \leq 960 \text{ MHz}$      | 100 kHz               | -79 dBm             |
|                                          | $1805 \text{ MHz} \leq f \leq 1880 \text{ MHz}$ | 100 kHz               | -71 dBm             |
|                                          | $2010 \text{ MHz} \leq f \leq 2025 \text{ MHz}$ | 1 MHz                 | -65 dBm (Note 1)    |
|                                          | $1880 \text{ MHz} \leq f \leq 1920 \text{ MHz}$ | 1 MHz                 | -65 dBm (Note 2)    |
|                                          | $2300 \text{ MHz} \leq f \leq 2400 \text{ MHz}$ | 1 MHz                 | -65 dBm (Note 2)    |
|                                          | $2496 \text{ MHz} \leq f \leq 2690 \text{ MHz}$ | 1 MHz                 | -50 dBm (Note 2)    |
|                                          | $3400 \text{ MHz} \leq f < 3600 \text{ MHz}$    | 1 MHz                 | -50 dBm (Note 2)    |
| 2570 MHz~2620 MHz                        | $1900 \text{ MHz} \leq f \leq 1920 \text{ MHz}$ | 1 MHz                 | -65 dBm             |
|                                          | $2010 \text{ MHz} \leq f \leq 2025 \text{ MHz}$ | 1 MHz                 | -65 dBm             |
|                                          | $2620 \text{ MHz} \leq f \leq 2690 \text{ MHz}$ | 3.84 MHz              | -37 dBm             |

Note: 1. Only available for transmissions in 1915 MHz to 1920 MHz frequency band.

2. Only available for transmissions in 2010 MHz to 2025 MHz frequency band.

#### **4. The Public Warning and Disaster Prevention Messages Reception Function.**

4.1 This test is suitable for terminal devices with access voice services function that have been provided by mobile broadband service operators.

4.2 The public warning system (PWS) refers to the use of cell broadcast service (CBS) function of the mobile communication system. The CBS message identifier (MI) and the PWS alert contents will be sent by the base station to the receiving system of the terminal devices of a certain area.

4.3 Terminal devices should have the ability to receive the message identifier (MI) and display PWS alert contents.

4.3.1 The language of the contents PWS alerts, message identifier, classification, preset receiving on or off, and the options of subscribers, etc shall comply with the provisions of table 5.1.

4.3.2 The mobile device has been set up to receive the PWS message identifier (MI). When the mobile device receives the PWS alert, the device should clearly display the alert text and the message identifier (MI) in the subject header. See Figure 1 as a reference.

4.3.3 Each message identifier shall be tested respectively following a PWS alert text.

(1) The language of the PWS content in Traditional Chinese :

[The message 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

(2) The language of the PWS content in English :

[The message 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



4.3.4 Mobile devices should have the ability to recall alert messages for review by the subscriber.

4.3.5 Mobile devices shall not support any user interface capabilities to forward received PWS alerts, or to copy and paste PWS alert contents.

#### 4.4 Audio signal :

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

##### (1) Audio attention signal :

A. The audio attention signal shall have special audio frequency and special break duration. The audio attention signal shall not be set up by the subscriber or modified.

(A) Special audio frequency : For devices that have polyphonic capabilities, the audio attention signal must consist of the fundamental frequencies of 853 Hz and 960 Hz transmitted simultaneously. For devices with only a monophonic capability, the audio attention signal must be 960 Hz.

(B) Special break duration : The audio attention signal must have a temporal pattern of one long tone of two seconds, followed by two short tones of one second each, with a half second interval between each tone. The entire sequence must be repeated twice with a half second interval between each repetition.

(C) The temporal pattern of audio attention signal is shown in Figure 2.

B. The audio attention signal must be restricted to use for alert messages under PWS.

(2) The audio general signal does not have special audio frequency and special break duration. Audio general signal shall be set up by the subscriber or modified into other pattern. When the mobile device receives the message, it shall produce the audio signal.

4.4.2 Generating timing: The mobile device has been set up to receive the PWS message identifier (MI). When mobile device receives the PWS alert, the device should produce corresponding audio signal as shown in Table 5.2 in accordance with the message identifier (MI) and the subscriber's setting.



4.4.3 The audio signal is considered to be an opt-out by the subscriber with the initial default configuration being that all emergency alerts are enabled.

4.4.4 When the mobile device activates the audio signal, the subscriber may deactivate that audio signal early.

#### 4.5 The vibration cadence :

4.5.1 The vibration cadence shall be divided into two kinds of cadences: vibration attention cadence and vibration general cadence.

##### (1) Vibration attention cadence:

A. The vibration attention cadence must have the special break duration. The vibration attention cadence shall not be set up by the subscriber or modified.

(A) Special break duration : The vibration attention cadence must have a temporal pattern of one long vibration of two seconds, followed by two short vibrations of one second each, with a half second interval between each vibration. The entire sequence must be repeated twice with a half second interval between each repetition.

(B) The temporal pattern of vibration attention cadence is shown in Figure 3.

B. The vibration attention cadence must be restricted to use for alert messages under PWS.

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

(2) The vibration general cadence does not have special break duration. When the mobile device receives the message, the device will produce the vibration general cadence.

4.5.2 Generating timing: the mobile device has been set up to receive the PWS message identifier (MI). When mobile device receives the PWS alert, the device should produce corresponding vibration cadence as shown in Table 5.2 in accordance with the message identifier (MI) and the subscriber's setting.

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

4.5.4 When mobile the device activates the vibration cadence, the subscriber may



deactivate that vibration cadence early.

4.6 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.

4.7 Measures of handling duplicate PWS alert messages:

4.7.1 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.

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



Table 5.1

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

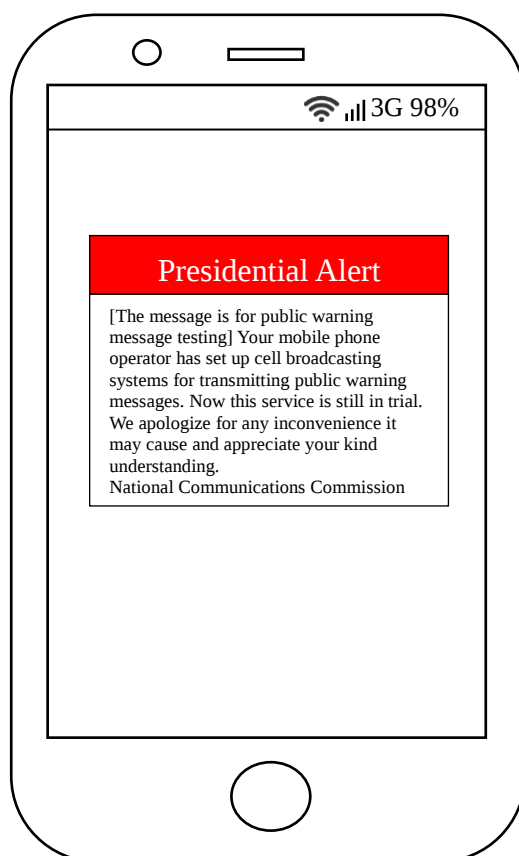
| Message identifier /Language of PWS alert contents |              | Classification        | Preset receiving on or off | The options of subscriber |
|----------------------------------------------------|--------------|-----------------------|----------------------------|---------------------------|
| 911/Chinese                                        | 919/English  | Alert Message         | Preset receiving on        | Yes                       |
| 4370/Chinese                                       | 4383/English | Presidential Alert    | Preset receiving on        | No                        |
| 4371/Chinese                                       | 4384/English | Emergency Alert       | Preset receiving on        | Yes                       |
| 4372/Chinese                                       | 4385/English | Emergency Alert       | Preset receiving on        | Yes                       |
| 4373/Chinese                                       | 4386/English | Emergency Alert       | Preset receiving on        | Yes                       |
| 4374/Chinese                                       | 4387/English | Emergency Alert       | Preset receiving on        | Yes                       |
| 4375/Chinese                                       | 4388/English | Emergency Alert       | Preset receiving on        | Yes                       |
| 4376/Chinese                                       | 4389/English | Emergency Alert       | Preset receiving on        | Yes                       |
| 4377/Chinese                                       | 4390/English | Emergency Alert       | Preset receiving on        | Yes                       |
| 4378/Chinese                                       | 4391/English | Emergency Alert       | Preset receiving on        | Yes                       |
| 4379/Chinese                                       | 4392/English | Emergency Alert       | Preset receiving on        | Yes                       |
| 4380/Chinese                                       | 4393/English | Required Monthly Test | Preset receiving on        | Yes                       |

Table 5.2

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

| Message identifier |      | Subscriber's setting         |                                |                                   |                                     |
|--------------------|------|------------------------------|--------------------------------|-----------------------------------|-------------------------------------|
|                    |      | Deactivate sound             | Activate sound                 | Deactivate vibration              | Activate vibration                  |
| 911                | 919  | Can not produce audio signal | Produce audio general signal   | Can not produce vibration cadence | Produce vibration general cadence   |
| 4370               | 4383 |                              | Produce audio attention signal |                                   | Produce vibration attention cadence |
| 4371               | 4384 |                              |                                |                                   |                                     |
| 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



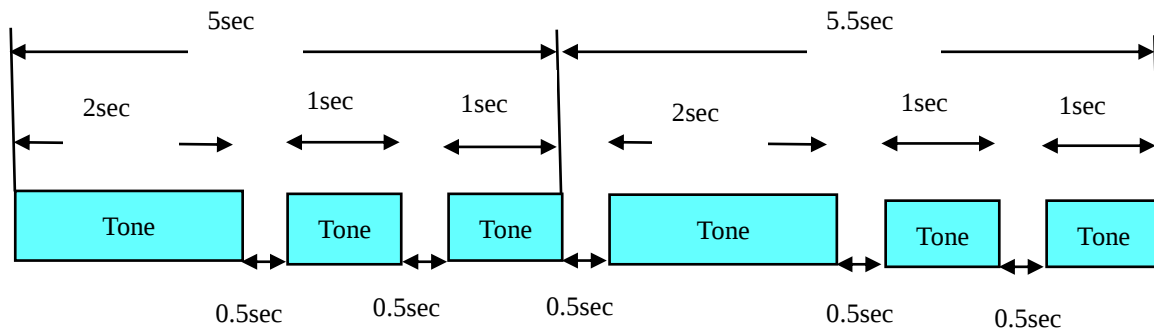


Figure 2: The Pattern of Audio Attention Signal

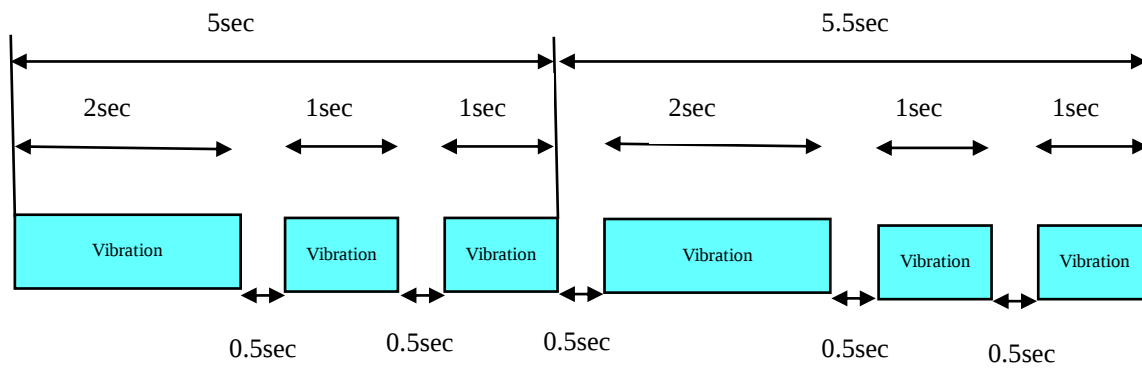


Figure 3: The Pattern of Vibration Attention Cadence