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Allowable WCDMA Device in Indonesia

Based on the PERDIRJEN POSTEL Number: 173/DIRJEN/2009

General Requirements

1. Frequency Range & Separation (Tx-Rx)
 ULTRA/FDD depends on the used band frequency

| Band Frek | Freq Uplink UE (Tx) – Node B (Rx) | Freq Uplink UE (Rx) – Node B (Rx) | Separasi Tx – Rx |
|-----------|-----------------------------------|-----------------------------------|------------------|
| I | 1920 – 1980 MHz | 2110 – 2170 MHz | 190 MHz |

2. Channeling
 Canal Space : 5MHz
 Canal Raster : 200 kHz
 Carrier Frequency is accordance with UTRA Absolute Radio Frequency Channel Number (UARFCN) which is adjusted to the frequency band. UARFCN number is defined with this following formula:

Uplink $N_u = 5 * (F_{UL} - F_{UL_OFFSET})$, Frekuensi carrier $F_{UL_low} \leq F_{UL} \leq F_{UL_high}$
 Dowlink $N_D = 5 * (F_{DL} - F_{DL_OFFSET})$, Frekuensi carrier $F_{DL_low} \leq F_{DL} \leq F_{DL_high}$

| Band | Uplink (UL) UE transmit, Node B receive | | Dowlink (DL) UE receive, Node B transmit | |
|------|--|--------------|---|----------------|
| | General | Additional | General | Additional |
| | I | 9612 to 9888 | - | 10562 to 10838 |



Transmitter Requirements

Characteristic measurement is done by making direct connection on the antenna connector on the UE (User Equipment).

1. Maximum Channel Power

| Operating Band | Power Class 1 | | Power Class 2 | | Power Class 3 | | Power Class 4 | | Power Class 5 | |
|----------------|---------------|----------|---------------|----------|---------------|----------|---------------|----------|---------------|----------|
| | Power (dBm) | Tol (dB) | Power (dBm) | Tol (dB) | Power (dBm) | Tol (dB) | Power (dBm) | Tol (dB) | Power (dBm) | Tol (dB) |
| Band I | +33 | +1/-3 | +27 | +1/-3 | +24 | +1/-3 | - | - | +21 | +2/-2 |

*) measurement is done in multi-code DPDCH transmission mode

2. Error Frequency

Error frequency measurement is done by making direct connection at the antenna connector at the UE (User Equipment).

3. Output Spectrum Emission

a. OBW (Occupied Bandwidth)

OBW measurement is done on the 99% from the WCDMA total power which has 5MHz bandwidth. OBW number should be less than 5MHz (OBW<5 MHz).

b. Emission Mask

| Δf in MHz (Note 1) | Minimum requirement (Note 2) | | Additional requirements Band II, IV, V, X (Note 3) | Measurement Bandwidth (Note 6) |
|--------------------|---|----------------------|--|--------------------------------|
| | Relative requirement | Absolute requirement | | |
| 2.5 – 3.5 | $-35-15 \cdot ((f/\text{MHz})-2.5)$ dBc | -71.1 dBm | -15 dBm | 30 KHz (Note 4) |
| 3.5 – 7.5 | $-35-1 \cdot ((f/\text{MHz}) - 3.5)$ dBc | -55.8 dBm | -13 dBm | 1 MHz (Note 5) |
| 7.5 – 8.5 | $-35-15 \cdot ((f/\text{MHz}) - 7.5)$ dBc | -55.8 dBm | -13 dBm | 1 MHz (Note 5) |
| 8.5 – 12.5 | -49 dBc | -55.8 dBm | -13 dBm | 1 MHz (Note 5) |

Note1: Δf is the separation between the carrier frequency and the centre of the measurement bandwidth.
 Note2: The minimum requirement is calculated from the relative requirement or the absolute requirement, whichever is the higher power.



c. Adjacent Channel Channel Leakage Power Ratio

| Power Class | Adjacent channel frequency relative to assigned channel frequency | ACRL limit |
|-------------|---|------------|
| 3 | + 5 MHz or – 5 MHz | 33 dB |
| 3 | + 10 MHz or – 10 MHz | 43 dB |
| 4 | + 5 MHz or – 5 MHz | 33 dB |
| 4 | + 10 MHz or – 10 MHz | 43 dB |

4. Spurious

Spurious measurement is done at 4 frequency ranges where each ranges use the different RBW/VBW.

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

5. Intermodulation

This measurement is done to understand the transmitter capability when there is signal generator, due to the presence target signal influence and also the interference signal influence. The maximum interference is as stated below.

| | | |
|--------------------------------------|--------|--------|
| Interference signal Frequency Offset | 5MHz | 10MHz |
| Interference CW Signal Level | -40dBc | |
| Intermodulation Product | -31dBc | -41dBc |

EVM and PCDE measurements parameters are as followed.

| Parameter | | Unit | Level |
|---|----------|-------|----------------------------|
| UE Output Power | | dBm | ≥ -20 |
| Operating conditions | | | Normal conditions |
| Power control step size | | dB | 1 |
| Measurement period (Note 1) | PRACH | Chips | 3904 |
| | Any DPCH | | From 1280 to 2560 (Note 2) |
| Note 1 : Less any 25 μ s transient periods | | | |
| Note 2 : The longest period over which the nominal power remains constant | | | |



- a. EVM (Error Vector Magnitude)
Error Vector Magnitude measurement is done by comparing reference wave with measured wave. The allowed EVM is <17.5%.
- b. PCDE (Peak Code Domain Error)
Peak Code Domain Error number is calculated from the error vector and domain code from the specific spreading factor. PCDE should be <-15 Db.

Receiver Requirements

1. Sensitivity

Sensitivity measurement is done at the reference level -106.7 dBm and allowed maximum BER is 0.001%.

| Operating Band | Unit | DPCH_Ec<REFSENS> | <REFI _{or} > |
|--|--------------|------------------|-----------------------|
| I | dBm/3.84 MHz | -117 | -106.7 |
| NOTE 1 For Power class 3 and 3bis shall be at the maximum output power | | | |
| NOTE 2 For Power class 4 this shall be at the maximum output power | | | |

Function Requirements

1. Terminal should be able to operate the features owned by WCDMA 3G with maximum speed 384 kbps.
2. If terminal supports the HSPA 3.5G function, the maximum data speed should be 3.6 Mbps.
3. The terminal should be able to do handoff to GSM.

