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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.

