DECISION OF THE DIRECTOR GENERAL OF POST AND TELECOMMUNICATION

NUMBER : 297/DIRJEN/2004

ON

TECHNICL REQUIREMENTS OF CODE DIVISION MULTIPLEX ACCESS (CDMA) TERMINAL

DIRECTOR GENERAL OF POST AND TELECOMMUNICATION

Considering:

a. that the Decision of the Minister of Communication Number KM. 3 Year 2001 on Technical Requirements of Telecommunication Tools and Equipment stipulates that any telecommunication tools and equipment shall fulfil the technical requirements ;

b. that Code Division Multiple Access (CDMA) terminal has not been regulated as regards its technical requirements;

c. that in view of what is stated in points a and b above, it is considered necessary to define the technical requirements of Code Division Multiple Access (CDMA) terminal equipment by the issuance of the Decision of the Director General of Post and Telecommunication.

Bearing in mind:

1. Law of the Republic of Indonesia Number ,36 Year 1999 on Telecommunication (State Gazette of the Republic of Indonesia Number 154 Year 1999, Supplement to the State Gazette of the Republic of Indonesia Number 3881);

2. Government Regulation of the Republic of Indonesia Number 52 Year 2000 on Provision of Telecommunication (State Gazette of the Republic of Indonesia Number 107 Year 2000, Supplement to the State Gazette of the Republic of Indonesia Number 3980);

3. Government Regulation of the Republic of Indonesia Number 53 Year 2000 on Use of Radio Frequency Spectrum and Satellite Orbit (State Gazette of the Republic of Indonesia Number 108 Year 2000,

Supplement to the State Gazette of the Republic of Indonesia Number 3981);

4. Decision of the Minister of Communication Number 3 Year 2001 on Technical Requirements of Telecommunication Tools and Equipment;

5. Decision of the Minister of Communication Number KM. 65 Year 2003 on Procedure of the Issuance of Certificates and Labelling, of Telecommunication Tools and Equipment.

DECIDES

To issue : **DECISION OF THE DIRECTOR GENERAL OF POST AND TELECOMMUNICATION ON TECHNICAL REQUIREMENTS OF CODE DIVISION MULTIPLE ACCESS (CDMA) TERMINAL**

FIRST : Define the Technical Requirements referred to in the Attachment of this Decision, as a guideline in implementing certification and testing of *Code Division Multiple Access (CDMA) Terminal*;

SECOND : Any *Code Division Multiple Access (CDMA) Terminal* Equipment to be used and or traded in the territory of the Republic of Indonesia shall abide by the technical requirements referred to in the Attachment of this Decision and obtain certificate from the Director General of Post and Telecommunication;

THIRD : This Decision shall come into force on the date of its issuance.

Done at: JAKARTA
On : November 25, 2004

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DIRECTOR GENERAL OF POST AND TELECOMMUNICATION

DJAMAHARI SIRAT

In case the English translation gives rise to different interpretation, please refer to the original version in Indonesian language

Copies of this Decision are sent to:

1. Minister of Communication;
2. Secretary General of the Department of Communication;
3. Inspector General of the Department of Communication;
4. Head of Research and Development Body of the Department of Communication.

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Attachment : Decision of the Director General
of Post and Telecommunication
Number : 297/Dirjen/2004
Date : November 25, 2004

TECHNICL REQUIREMENTS OF CODE DIVISION MULTIPLE ACCESS (CDMA) TERMINAL IS2000

1. GENERAL

1.1 Scope

These technical requirements are the ones for Code Division Multiple Access (CDMA) Terminal IS2000 and its interface.

These technical requirements cover definition, abbreviations, terms, general requirement and testing requirement.

1.2 Definition

CDMA Terminal IS2000 is a telephone terminal which in its operation may be connected to telecommunication network of CDMA IS2000 system, both network of Cellular Mobile Telephone Connection and network of Wireless Telephone Connection, which can be used for reciprocal voice communication and data communication.

1.3 Abbreviations

ASCII	:	American Standard Code for Information Interchange
BER	:	Bit Error Rate
CDMA	:	Code Division Multiple Access
CISPR	:	International Special Committee on Radio Interference
EIRP	:	Effective Isotropic Radiated Power
ERP	:	Effective Radiated Power
FER	:	Frame Error Rate
ITU	:	International Telecommunication Union
PLMN	:	Public Land Mobile Network
RF	:	Radio Frequency

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RUIM Removable User Identity Module
3GPP2 : 3rd Generation Partnership Project 2

2. TECHNICAL REQUIREMENTS

2.1 General Requirement

2.1.1 Space/Canal Width : 1.25 MHz

2.1.2 Duplex Separation : 45 MHz for CDMA800 (Band Class 0)
: 80 MHz for CDMA1900 (Band Class 1)
: 10 MHz for CDMA450 (Band Class 5)

2.1.3 Modulation Type : CDMA with chip rate of 1.2288 Mcps

2.2 Transmitter Requirement

2.2.1 Transmission Power

Table 1. Effective Radiated Power at Maximum Output Power

Band Class	Mobile Station Class	Radiating Measurement	Lower Limit	Upper Limit
O	Class I	ERP	1 dBW (1.25 W)	8 dBW (6.3 W)
	Class II	ERP	-3 dBW (0.5 W)	4 dBW (2.5.W)
	Class III	ERP	-7 dBW (0.2 W)	0 dBW (1.0 W)
1	Class I	ERP	-2 dBW (0.63 W)	3 dBW (2.0 W)
	Class II	ERP	-7 dBW (0.2 W)	0 dBW (1.0 W)
	Class III	ERP	-12 dBW (63 mW)	-3 dBW (0.5 W)
	Class IV	ERP	-17 dBW (20 mW)	-6 dBW (0.25 W)
	Class V	ERP	-22 dBW (6.3 mW)	-9 dBW (0.13 W)
5	Class I	ERP	3 dBW (2.0 W)	10 dBW (10 W)
	Class II	ERP	-2 dBW (0.63 W)	5 dBW (3.2 W)
	Class III	ERP	-7 dBW (0.2 W)	0 dBW (1.0 mW)
	Class IV	ERP	-12 dBW (63 mW)	-5 dBW (320 W)

2.2.2 Frequency Band of Reverse Link

Table 2. Band Class 0 System Frequency Correspondence

System Designator	Band Subclass	Transmit Frequency Band (MHz)
		Mobile Station
A	0	824.025 – 835.005
	1	824.025 – 835.005 844.995 – 848.985
B	0	835.005 – 844.995
	1	835.005 – 844.995

Table 3. CDMA Channel Number to CDMA Frequency Assignment Correspondence for Band Class 0

Transmitter	CDMA Channel Number	CDMA Frequency Assignment (MHZ)
Mobile Station	1 ≤ N ≤ 799	0.030 N + 825.000
	991 ≤ N ≤ 1023	0.030 (N – 1023) + 825.000
Base Station	1 ≤ N ≤ 799	0.030 N + 870.000
	991 ≤ N ≤ 1023	0.030 (N -1023) + 870.000

Table 4. Band Class 1 Block Frequency Correspondence

Block Designator	Transmit Frequency Band (MHz)
	Mobile Station
B	1870 – 1885
E	1885 – 1890
F	1890 – 1895
C	1895 – 1910

Table 5. CDMA Channel Number to CDMA Frequency Assignment Correspondence for Band Class 1

Transmitter	CDMA Channel Number	CDMA Frequency Assignment (MHz)
Mobile Station	0 ≤ N ≤ 1199	1850.000 + 0.050 N
Base Station	0 ≤ N ≤ 1199	1930.000 + 0.050 N

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Table 6. Band Class 5 Block Frequency Correspondence and Band Subclasses

Block Designator	Band Subclass	Transmit Frequency Band
		Mobile Station
A	0	452.500 – 457.475
B	1	452.000 – 456.475
C	2	450.000 – 454.800
D	3	411.675 – 415.850
E	4	415.500 – 419.975
F	5	479.000 – 483.480
G	6	455.230 – 459.990
H	7	451.310 – 455.730

Table 7. CDMA Channel Number to CDMA Frequency Assignment Correspondence for Band Class 5

Transmitter	CDMA Channel Number	CDMA Frequency Assignment (MHz)
Mobile Station	0 ≤ N ≤ 1199	0.025(N – 1) + 450.000
	539 ≤ N ≤ 871	0.025(N – 512) + 411.000
	1039 ≤ N ≤ 1473	0.025(N – 1024) + 451.010
	1792 ≤ N ≤ 2016	0.025((N – 1792) + 479.000
Base Station	0 ≤ N ≤ 1199	0.025(N – 1) + 460.000
	539 ≤ N ≤ 871	0.025(N – 512) + 421.000
	1039 ≤ N ≤ 1473	0.025(N – 1024) + 461.000
	1792 ≤ N ≤ 2016	0.025(N – 1792) + 489.000

2.2.3 Frequency Deviation/Tolerance

2.2.3.1 Transmit carrier frequency transmitted by CDMA Band Class 0 terminal must have a distance of 45 MHz ± 300 Hz below the frequency of CDMA Forward Canal carrier..

2.2.3.2 Transmit carrier frequency transmitted by CDMA Band Class 1 terminal must have a distance of 80 MHz ± 150 Hz below the frequency of CDMA Forward Canal carrier.

2.2.3.3 Transmit carrier frequency transmitted by CDMA Band Class 5 terminal must have a distance of 10 MHz ± 300 Hz below the frequency of CDMA Forward Canal carrier.

2.2.4 Emission

2.2.5 Conduction Emission

Table 8. Band Class 0, and 5 Transmitter Spurious Emission Limits for Spreading Rate 1

For I Δfl within the range	Emission Limit
885 kHz to 1.98 MHz	Less stringent of -42 dBc/30 kHz or -54 dBm/1.23 MHz
1.98 MHz to 4.00 MHz	Less stringent of -54 dBc/30 kHz or -54 dBm/1.23 MHz
> 4.00 MHz (ITU Category A only)	-13 dBm/1 kHz; 9 kHz <f< 150 kHz -13 dBm/10 kHz; 150 kHz <f< 30 MHz -13 dBm/100 kHz; 30 MHz <f< 1 GHz -13 dBm/1 MHz; 1 GHz <f< 5 GHz
> 4.00 MHz (ITU Category B only)	-36 dBm/1 kHz; 9 kHz <f< 150 kHz -36 dBm/10 kHz; 150 kHz <f< 30 MHz -36 dBm/100 kHz; 30 MHz <f< 1 GHz -30 dBm/1 MHz; 1 GHz <f< 12.75 GHz

Table 9. Band Class 1 Transmitter Spurious Emission Limits

For I Δfl within the range	Emission Limit
1.25 MHz to 1.98 MHz	Less stringent of -42 dBc/30 kHz or -54 dBm/1.23 MHz
1.98 MHz to 4.00 MHz	Less Stringent of -50 dBc/30 kHz or -54 dBm/1.23 MHz
> 4.00 MHz (ITU Category A only)	-13 dBm/1 kHz ; 9 kHz <f< 150 kHz -13 dBm/10 kHz; 150 kHz <f< 30 MHz -13 dBm/100 kHz; 30 MHz <f< 1 GHz -13 dBm/1 MHz; 1 GHz <f< 10 GHz
> 4.00 MHz (ITU Category B only)	-36 dBm/ 1 kHz; 9 kHz <f< 150 kHz -36 dBm/10 kHz 150 kHz <f< 39 MHz -36 dBm/100 kHz; 30 MHz <f< 1 GHz -30 dBm/1 MHz; 1 GHz <f< 12.75 GHz ;

2.2.6 Radiation Emission

The equipment must comply with CISPR 22 recommendation.

2.3 Receiver Requirement

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2.3.1. RF Level Sensitivity

The terminal must be able to perform reception well at the reception signal level of -104 dBm and FER < 0.5 %.

2.3.2. Forward Link frequency band

Table 10. Band Class 0 System Frequency Correspondence

System Designator	Band Subclass	Transmit Frequency Band (MHz)
		Base Station
A	**0**	869.025 – 880.005
	1	869.025 – 880.005 889.995 – 893.985
B	0	869.025 – 880.005
	1	880.005 - 889.995

Table 11. CDMA Channel Number to CDMA Frequency Assignment Correspondence for Band Class 0

Transmitter	CDMA Channel Number	CDMA Frequency Assignment (MHz)
Mobile Station	1 ≤ N ≤ 799	0.030 N + 825.000
	991 ≤ N ≤ 1023	0.030 (N – 1023) + 825.000
Base Station	1 ≤ N ≤ 799	0.030 N + 870.000
	991 ≤ N ≤ 1023	0.030 (N – 1023) + 870.000

Table 12. Baand Class 1 Block Frequency Correspondence

Block Designator	Transmit Frequency Band (MHz)
	Base Station
B	1950 -1965
E	1965 – 1970
F	1970 – 1975
C	1975 - 1990

Table 13. CDMA Channel Number to CDMA Frequency Assignment Correspondence for Band Class 1

Transmitter	CDMA Channel Number	CDMA Frequency Assignment (MHz)
Mobile Station	0 ≤ N ≤ 1199	1850.000 + 0.050 N
Base Station	0 ≤ N ≤ 1199	1930.000 + 0.050 N

Table 14. Band Class 5 Block Frequency Correspondence and Band Subclasses

Block Designator	Band Subclass	Transmit Frequency Band (MHz)
		Base Station
A	0	462.500 – 467.475
B	1	462.000 – 466.475
C	2	460.000 – 464.800
D	3	421.675 – 425.850
- E	4	425.500 – 429.975
F	5	489.000 – 493.480
G	6	465.230 – 469.990
H	7	461.310 – 465.730

Table 15. CDMA Channel Number to CDMA Frequency Assignment Correspondence for Band Class 5

Transmitter	CDMA Channel Number	CDMA Frequency Assignment (MHz)
Mobile Station	0 ≤ N ≤ 1199	0.025(N – 1) + 450.000
	539 ≤ N ≤ 871	0.025(N - 512) + 411.000
	1039 ≤ N ≤ 1473	0.025(N – 1024) + 451.010
	1792 ≤ N ≤ 2016	0.025(N – 1792) + 479.000
Base Station	0 ≤ N ≤ 1199	0.025(N – 1) + 460.000
	539 ≤ N ≤ 871	0.025(N – 512) + 421.000
	1039 ≤ N ≤ 1473	0.025(N – 1024) + 461.010
	1792 ≤ N ≤ 2016	0.025(N – 1792) + 489.000

2.3.3. Spurious Conduction

Spurious conduction emission of equipment of CDMA terminal must fulfil the conditions of :

1. Less than -76 dBm for band classes of 0, 1, and 5, measured with resolution of bandwidth of 1 MHz at the antenna terminal, connector

for frequencies in the receiver spectrum in line with the band class supported by the terminal.

2. Less than -61 dBm, measured with resolution of bandwidth of 1 MHz at the antenna terminal, connector for frequencies in the transit spectrum in line with the band class supported by the terminal.

3. Less than -47 dBm for band classes of 0, 1, and 5, measured with resolution of bandwidth of 30 kHz at the antenna terminal, connector for all other frequencies.

2.3.4. Radiation

Table 16. Maximum Allowable Radiated Spurious Emissions for Band Classes of 0 and 1

Frequency Range	Maximum Allowable EIRP
216 - 960 MHz	- 49 dBm
960 – 2200 MHz	- 41 dBm

Table 17. Maximum Allowable Radiated Spurious Emissions for Band Classes of 0 and 1

Frequency Range	Maximum Allowable EIRP
260 – 470 MHz	-32 to - 26 dBm
470 – 1000 MHz	- 21 dBm

3. FUNCTIONAL REQUIREMENTS

3.1. General Requirement

1.1.1 RUIM

If terminal supports RUIM, then 3GPP2 standard of C.S 0023 document must be followed

1.1.2 Language

Terminal must support menu in Bahasa Indonesia (Indonesian language).

3.2. Service Requirement

3.2.1 Voice

Terminal is capable of supporting voice service with vocoder of 13 Kbps QCELP and 8 Kbps EVRC.

3.2.2 SMS

Terminal is capable of supporting SMS transmission and reception at the minimum of 160 characters of 7-bit ASCII.

3.2.3 Data

a. Terminal is capable of supporting data communication service of circuit switched (asynchronous) mode, with speed up to 14.4 Kbps.
b. Terminal must be capable of supporting data communication service of packet switched mode, with speed up to 153.6 Kbps.

4. TESTING REQUIREMENTS

4.1 Method of Sampling

Sampling of test material is done at random by test institution with the minimum number of 2 samples.

4.2 Testing Method

Testing method is determined by testing institution which must be able to show in a qualitative and quantitative manner that the test material is measured according to the test procedure and requirement in this standard.

4.3 Conditions for Passing the Test

The testing result is declared PASS THE TEST, if all the tested materials comply with the provision contained in this technical requirement.

4.4 Condition of Marking

Every CDMA terminal shall be marked, containing the name of the manufacturer and manufacturing country, brand/type, serial number, and comply with the certification provision.

Done at: JAKARTA
On : November 25, 2004

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DIRECTOR GENERAL OF POST AND TELECOMMUNICATION

DJAMHARI SIRAT

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