



Report ITU-R M.2039-2
(11/2010)

Characteristics of terrestrial IMT-2000 systems for frequency sharing/ interference analyses

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***Note:** This ITU-R Report was approved in English by the Study Group under the procedure detailed in Resolution ITU-R 1.*

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1 Introduction

International Mobile Telecommunications 2000 (IMT-2000) third generation mobile systems started service around the year 2000, and provide access by means of one or more radio links to a wide range of telecommunications services supported by the fixed telecommunication networks (e.g. PSTN/ISDN/ Internet protocol (IP)) and to other services specific to mobile users. Since then, IMT-2000 has been continually enhanced.

The Radiocommunication Assembly 2007 adopted Resolution ITU-R 56 that resolves that the term “IMT” be the root name that encompasses both IMT-2000 and IMT-Advanced collectively.

The following bands are identified for IMT in the Radio Regulations (RR):

TABLE 1
Frequency bands identified for IMT

Band (MHz)	Footnotes identifying the band for IMT
450-470	5.286AA
698-960	5.313A, 5.317A
1 710-2 025	5.384A, 5.388
2 110-2 200	5.388
2 300-2 400	5.384A
2 500-2 690	5.384A
3 400-3 600	5.430A, 5.432A, 5.432B, 5.433A

Frequency sharing studies and interference analyses involving IMT systems and other systems and services operating in bands identified for IMT may need to be undertaken within ITU-R. To perform the necessary sharing studies between IMT systems and systems in other services, characteristics of the terrestrial component of IMT systems are needed.

This Report provides the baseline characteristics of terrestrial IMT-2000 systems only for use in frequency sharing and interference analysis studies involving IMT-2000 systems and between IMT-2000 systems and other systems.

Recommendations ITU-R M.1457, ITU-R M.1580 and ITU-R M.1581 provide standardization information relating to IMT-2000 interfaces.

Parameters for IMT-Advanced interfaces are not addressed in this Report.

The characteristics of the IMT-2000 interfaces have been grouped by frequency bands:

- 450-470 MHz, 698-806 MHz, 790-862 MHz, 880-960 MHz.
- 1 800 MHz, 2 GHz, 2.3 GHz, 2.5 GHz.
- 3 400-3 600 MHz.

NOTE 1 – variations in the parameters may appear depending on the band that is considered, among those listed in a group of frequency bands. Such variations are reflected in the respected tables.

2 Acronyms and definitions

CDMA	Code-division multiple access
DECT	Digital enhanced cordless telecommunications
EDGE	Enhanced data rates for GSM evolution
E-UTRA	Evolved UTRA
FDD	Frequency division duplex
FDMA	Frequency-division multiple access
HRPD	High rate packet data
HSPA	High speed packet access
HSPA+	Evolved high speed packet access

IMT	International Mobile Telecommunications – root name that encompasses both IMT-2000 and IMT-Advanced collectively
IMT-2000	International Mobile Telecommunications 2000
IMT-Advanced	International Mobile Telecommunications-Advanced – previously known as systems beyond IMT-2000
LTE	Long term evolution
TDD	Time division duplex
TDMA	Time-division multiple access
TD-SCDMA	Time division synchronous code-division multiple access
UMB	Ultra mobile broadband
UMTS	Universal mobile telecommunication system
UTRA	Universal terrestrial radio access
UWC	Universal wireless communications
WCDMA	Wideband code-division multiple access
WiMAX	Worldwide interoperability for microwave access

3 IMT-2000 interfaces

Table 2 provides an explanation of the terminology used for the IMT-2000 terrestrial technologies.

TABLE 2
IMT-2000 terrestrial radio interfaces

Full name	Common names	Duplex mode
IMT-2000 CDMA Direct Spread (interface No. 1)	UTRA FDD WCDMA UMTS HSPA, HSPA+ E-UTRA FDD (LTE FDD)	FDD
IMT-2000 CDMA Multi-Carrier (interface No. 2)	CDMA2000 CDMA2000 1X and 3X CDMA2000 HRPD CDMA2000 1xEV-DV CDMA2000 1xEV-DO EVDOHRPD UMB	FDD and TDD
IMT-2000 CDMA TDD (time-code) (interface No. 3)	UTRA TDD 7.68 Mchip/s UTRA TDD 3.84 Mchip/s UTRA TDD 1.28 Mchip/s (TD-SCDMA) UMTS HSPA, HSPA+ E-UTRA TDD (LTE TDD)	TDD

TABLE 2 (*end*)

Full name	Common names	Duplex mode
IMT-2000 TDMA Single-Carrier (interface No. 4)	UWC-136 EDGE	FDD
IMT-2000 FDMA/TDMA (frequency-time) (interface No. 5)	DECT	TDD
IMT-2000 OFDMA TDD WMAN (interface No. 6)	Mobile WiMAX	FDD and TDD

4 Characteristics in the bands below 1 GHz

These parameters apply to the frequency bands:

- 450-470 MHz.
- 698-806 MHz.
- 790-862 MHz.
- 880-960 MHz.

4.1 Parameters for IMT-2000 CDMA DS and IMT-2000 OFDMA TDD WMAN

TABLE 3

Parameters for IMT-2000 CDMA DS and IMT-2000 OFDMA TDD WMAN

	IMT-2000 RADIO INTERFACES	IMT-2000 CDMA Direct Spread				IMT-2000 OFDMA TDD WMAN	
		UTRA		E-UTRA		Mobile WiMAX (OFDMA)	
No.	Parameter	Base station	Mobile station	Base station	Mobile station	Base station	Mobile station
1.	Class of emission	5M00V7WEC	5M00V7WEC	For 1.4 MHz, 1M40V7WEW For 3 MHz, 3M00V7WEW For 5 MHz, 5M00V7WEW For 10 MHz, 10M0V7WEW (For 15 MHz, 15M0V7WEW For 20 MHz, 20M0V7WEW ⁽¹⁾	For 1.4 MHz, 1M40V7WEW For 3 MHz, 3M00V7WEW For 5 MHz, 5M00V7WEW For 10 MHz, 10M0V7WEW (For 15 MHz, 15M0V7WEW For 20 MHz, 20M0V7WEW ⁽²⁾	5 MHz, OFDMA 7 MHz, OFDMA 10 MHz, OFDMA ⁽³⁾	
2.	Modulation parameters	QPSK 16-QAM 64-QAM	QPSK 16-QAM	QPSK 16-QAM 64-QAM	QPSK 16-QAM 64-QAM	QPSK 16-QAM 64-QAM	QPSK 16-QAM 64-QAM (optional)
3.	Duplex mode	FDD		FDD(/TDD ⁽⁴⁾)		FDD/TDD	

TABLE 3 (continued)

	IMT-2000 RADIO INTERFACES	IMT-2000 CDMA Direct Spread				IMT-2000 OFDMA TDD WMAN	
		UTRA		E-UTRA		Mobile WiMAX (OFDMA)	
No.	Parameter	Base station	Mobile station	Base station	Mobile station	Base station	Mobile station
4.	Spectral mask of signals, including	(5)	(6)	(7)	(8)	The final mobile WiMAX emission masks for equipment in these frequency ranges remain under development. An example of regulatory unwanted emission requirements can be found in the FCC regulations⁽⁹⁾ §§ 27.53 and 90.543 for the 700 MHz band (698-806 MHz). These provide an example of the target levels that will be taken into consideration during development of the final mobile WiMAX emission masks	
4.1	−3 dB radiation bandwidth	—	—	—	—		
4.2	−30 dB radiation bandwidth	—	—	—	—		
4.3	−60 dB radiation bandwidth	—	—	—	—		
5.	Maximum spectral power density, dB(mW/Hz)	−22.8	−41.8 ⁽¹⁰⁾	−23.5	−43.5 ⁽¹¹⁾	5 MHz: −23.6 7 MHz: −25.1 10 MHz: −26.6 See footnote ⁽¹²⁾	5 MHz: −43.5 ⁽¹³⁾ 7 MHz: −45.2 10 MHz: −46.6 See footnote ⁽¹³⁾
6.	Signal bandwidth (MHz)	3.84	3.84	1.08, 2.7, 4.5, 9, 13.5 and 18	1.08, 2.7, 4.5, 9, 13.5 and 18	4.60, 6.57, 9.20 MHz footnote ⁽¹⁴⁾	4.47, 6.57 and 9.20 MHz footnote ⁽¹⁵⁾

TABLE 3 (continued)

	IMT-2000 RADIO INTERFACES	IMT-2000 CDMA Direct Spread				IMT-2000 OFDMA TDD WMAN	
		UTRA		E-UTRA		Mobile WiMAX (OFDMA)	
No.	Parameter	Base station	Mobile station	Base station	Mobile station	Base station	Mobile station
7.	Transmitter e.i.r.p. (dBm)						
7.1	Maximum transmitter e.i.r.p. (dBm)	55	21	55	23 ⁽¹⁶⁾	55 ⁽¹⁶⁾	23 ⁽¹⁷⁾
7.2	Average transmitter e.i.r.p. (dBm)	Deployment dependant	1 (rural) –10 (urban)	Deployment dependant	3 (rural) –8 (urban)	Deployment dependant	Not communicated
8.	Typical height of the transmitting antenna (m)	20 to 30	1.5	20 to 30	1.5	15 to 32	1.5
9.	Transmitting antenna type (sectorized/omnidirectional)	3 sectors	Omnidirectional	3 sectors	Omnidirectional	Sectorized	Omnidirectional
10.	Transmitting antenna gain (dBi)	15	0	15	0	15	0
11.	Feeder loss (dB)	3	0	3	0	3	0
12.	Antenna pattern width (degrees)						
12.1	– in the horizontal plane (at 3 dB)	65°	N/A	65°	N/A	65°	Omnidirectional
12.2	– in the vertical plane	Recommendation ITU-R F.1336-2	N/A	Recommendation ITU-R F.1336-2	N/A	Recommendation ITU-R F.1336-2	N/A
12.3	– antenna downtilt	3°	N/A	3°	N/A	3°	N/A
13.	Relative level of side lobes	Not standardized ⁽¹⁸⁾	N/A	–20 dB	N/A	–20 dB See footnote ⁽¹⁹⁾	N/A
14.	Channel bandwidth (MHz) ⁽²⁰⁾	5	5	1.4, 3, 5, 10, 15, ₍₁₈₎	1.4, 3, 5, 10, 15, ₍₁₈₎	5, 7, 10	5, 7, 10
15.	Power control range (dB)	> 18	75	₍₂₁₎	63	> 10	> 45

TABLE 3 (continued)

	IMT-2000 RADIO INTERFACES	IMT-2000 CDMA Direct Spread				IMT-2000 OFDMA TDD WMAN	
		UTRA		E-UTRA		Mobile WiMAX (OFDMA)	
No.	Parameter	Base station	Mobile station	Base station	Mobile station	Base station	Mobile station
16.	density of the equipments (number/km ²)	Rural: 4.5 users equipment operating at the same time (average number of simultaneously active users) Urban: 4.5 ⁽²²⁾				Deployment parameter	Deployment parameter
17.	density of the equipment (number/km ²) operating at co-frequency	Rural: 4.5 users equipment operating at the same time (average number of simultaneously active users) Urban: 4.5 ⁽²²⁾				Deployment parameter	Deployment parameter
18.	Polarization discrimination (dB)	3 ⁽²³⁾	0	3 ⁽²³⁾	0	3 dB	0 dB
19.	Capacity criteria, including capacity per cell	Capacity in a cellular system can be measured in terms of simultaneous voice users per cell, data throughput per cell, etc. The actual capacity is dependent on the assumptions made about system configuration, loading, quality, and fairness, among other things				Deployment parameter	Deployment parameter
20.	Frequency reuse factor	1	1	1	1	Deployment parameter	Deployment parameter
21.	Receiver thermal noise	NF = 5 dB	NF = 9 dB	NF = 5 dB	NF = 9 dB	−109 dBm/MHz	−106 dBm/MHz
22.	Reference sensitivity	⁽²⁴⁾	⁽²⁵⁾	⁽²⁶⁾	⁽²⁷⁾	5 MHz QPSK 1/2: −91.6 dBm 7 MHz QPSK 1/2: −89.9 dBm 10 MHz QPSK 1/2: −88.5 dBm	5 MHz QPSK 1/2: −91.5 dBm 7 MHz QPSK 1/2: −89.9 dBm 10 MHz QPSK 1/2: −88.5 dBm
23.	Receiver blocking response	⁽²⁸⁾	⁽²⁹⁾	⁽³⁰⁾	⁽³¹⁾		

TABLE 3 (*end*)

	IMT-2000 RADIO INTERFACES	IMT-2000 CDMA Direct Spread				IMT-2000 OFDMA TDD WMAN	
		UTRA		E-UTRA		Mobile WiMAX (OFDMA)	
No.	Parameter	Base station	Mobile station	Base station	Mobile station	Base station	Mobile station
24.	Coverage radius	Rural: 3.46 km Urban: 2.698 km		Rural: 3.46 km Urban: 2.698 km		Rural: 3.46 km Urban: 2.698 km	
25.	ACLR1					45 dB	30 dB
26.	ACLR2					50 dB	44 dB
27.	ACS1					46 dB	33 dB
28.	ACS2					56 dB	47 dB

NOTE 1 – This table contains only parameters relevant to IMT emissions (i.e. when the IMT system is the source of potential interference). Further parameters (e.g. receiver performance) are relevant for the case where the IMT system is the victim of interference.

NOTE 2 – The density of the mobile terminals (number/km²), operating at the same frequency at the same time and in the same geographical area, as well as the average transmit power of terminals are also important parameters when studying potential interference from IMT mobile terminals particularly in the case of stochastic analysis and should therefore be considered in the coexistence studies.

Notes relatives to Table 3:

- (1) Future possible deployment.
- (2) Future possible deployment.
- (3) Recommendation ITU-R SM.1138 – Determination of necessary bandwidths including examples for their calculation and associated examples for the designation of emissions, does not explicitly cover OFDMA signalling, therefore an alternative simple description is used here.
- (4) Future possible deployment and the preliminary parameters can also be used for LTE TDD related sharing studies.
- (5) See 3GPP Documents: TS 25 104 v 9. 3.0, see § 6.6.3 and TS 25 141 v 9. 3.0, see § 6.5.3.
- (6) See 3GPP Documents: TS 25 101 v 9.3.0, see § 6.6.2.1 and TS 34.121-1 v9.1.0, see § 5.9.
- (7) See 3GPP Documents: TS 36 104 v 9. 3.0, see § 6.6.3 and TS 36 141 v 9. 3.0, see § 6.6.
See 3GPP Documents: TS 36 101 v 9.3.0, see Table 6.6.2.1.1-1 (General E-UTRA spectrum emission mask) and TS 36 521-1 v 9.0.0, see § 6.6.
US Code of Federal Regulations, Title 47, FCC Rules Parts 27 and 90.
- (8) Based on a bandwidth of 3.84 MHz.
- (9) This value corresponds to a 4.5 MHz bandwidth, noting that other measurement bandwidth is possible: 1.08 MHz, 2.7 MHz, 9.0 MHz, 13.5 MHz and 18 MHz.

Notes relatives to Table 3 (end):

- (12) These are average spectral power density values based on Item 7 over the specified channel bandwidth.
- (13) This value is average spectral power density based on Item 7 and assumes the mobile station is transmitting on PUSC (partially used of sub-Channels) with all sub-Channels.
- (14) These values are corresponding to the utilized spectrum within 5, 7 and 10 MHz channel bandwidths in Up Link when PUSC is used.
- (15) These values are corresponding to the utilized spectrum within 5, 7 and 10 MHz channel bandwidths in Up Link when PUSC is used.
- (16) This value does not take account of the effect of multiple transmit antennas.
- (17) WiMAX numbers for MS related to Item 7 are preliminary numbers. WiMAX Forum profiles 7.A and 7.E of Table 2, in general, cover a range of power classes.
- (18) See 3GPP Document TS 25.942, § 8.4.3.1 (Antenna installation) or § 10 (Antenna to antenna isolation).
- (19) A front-to-back ratio of 25 dB should be assumed.
- (20) This value refers to the block size.
- (21) See 3GPP Document TS 36104-830, Table 6.3.2.1-1 (E-UTRA BS total power dynamic range).
- (22) This figure can be used for sharing studies in urban areas, because the increase of population density in urban areas (compared with rural/suburban areas) is expected to be offset by the distribution of offered traffic to parallel networks deployed in the other available frequency bands. The networks expected to be deployed in the 800 MHz band will offer only limited capacity and thus will carry only a small fraction of the total offered traffic in urban areas.
- (23) Typically base stations today use cross-polarized antennas (two sets of dipoles slanted at $\pm 45^\circ$ against the horizontal plane), usually transmitting on one of the two polarisation paths (either $+45^\circ$ or -45° for a given frequency) whilst receiving on both paths (to achieve polarisation diversity). Such signals provide an isolation of 3 dB against both horizontally and vertically polarized signals (e.g. DVB-T signals) due to cross-polarisation discrimination.
- (24) See 3GPP Document TS 25.104, § 7.2.
- (25) See 3GPP Document TS 25.101, § 7.3.
- (26) See 3GPP Document TS 36.104, § 7.2.
- (27) See 3GPP Document TS 36.101, § 7.3.
- (28) See 3GPP Document TS 25.104, § 7.5.
- (29) See 3GPP Document TS 25.101, § 7.6.
- (30) See 3GPP Document TS 36.104, § 7.6.
- (31) See 3GPP Document TS 36.101, § 7.6.

TABLE 4

Complementary information about IMT-2000 OFDMA TDD WMAN (Mobile WiMAX)

Band Class Group (BCG)	Frequency range UL (MHz)	Frequency range DL (MHz)	Channel bandwidth (MHz)	Duplex mode	Comments
7.A	698-862	698-862	5, 7 and 10	TDD	The bandwidths are applicable to both the MS and BS
7.B	776-787	746-757	2 x 5 and 2 x 10	FDD	
7.C	788-793, 793-798	758-763, 763-768	2 x 5	FDD	
7.D	788-798	758-768	2 x 10	FDD	
7.E	698-862	698-862	5, 7 and 10 (TDD) 2 x 5, 2 x 7 and 2 x 10 (FDD)	TDD/FDD	
7.G	880-915	925-960	2 x 5 and 2 x 10	FDD	

4.2 Parameters for IMT-2000 CDMA MC (CDMA 2000, HRPD and UMB)

The values for the system parameters are presented in Tables 5, 6 and 7.

Parameters for IMT-2000 CDMA MC (CDMA 2000, HRPD and UMB)

IMT-2000 RADIO INTERFACES			IMT-2000 CDMA MC											
No.	Parameter		Base station		Mobile station		Base station		Mobile station		Base station		Mobile station	
			cdma2000				HRPD				UMB			
1.	Class of emission													
2.	Modulation parameters	Forward link or downlink	Data modulation: BPSK; QPSK, 8-PSK, 16-QAM Spreading modulation: QPSK				Data modulation: QPSK, 8-PSK, 16-QAM, and 64-QAM Spreading modulation: QPSK				Data modulation: QPSK, 8-PSK, 16-QAM, and 64-QAM			
		Reverse link or uplink	Data modulation: 64-ary Orthogonal Modulation, BPSK; QPSK, 8-PSK Spreading modulation: HPSK				Data modulation: BPSK; QPSK, 8-PSK Spreading modulation: HPSK				Data modulation: QPSK, 8-PSK, 16-QAM, and 64-QAM Spreading modulation: QPSK (CDMA control segment)			
3.	Duplex mode		FDD				FDD				FDD/TDD			
4.	Spectral mask of signals, including		See Recommendations ITU-R M.1580-2 and ITU-R M.1581-2 for CDMA-MC ⁽³³⁾		See Recommendations ITU-R M.1580-2 and ITU-R M.1581-2 for CDMA-MC ⁽³³⁾		See Recommendations ITU-R M.1580-2 and ITU-R M.1581-2 for CDMA-MC ⁽³³⁾		See Recommendations ITU-R M.1580-2 and ITU-R M.1581-2 for CDMA-MC ⁽³³⁾		To be provided		To be provided	
4.1	−3 dB radiation bandwidth													
4.2	−30 dB radiation bandwidth													
4.3	−60 dB radiation bandwidth													
5.	Maximum spectral power density, dB(mW/Hz)		−17.9 ⁽³⁴⁾		−37.9 ⁽³⁵⁾ for 1 x, −42.9 for 3 x		−17.9 ^{(36), (37)} for n = 1		−37.9 ⁽³⁷⁾ for n = 1					

TABLE 5 (continued)

IMT-2000 RADIO INTERFACES		IMT-2000 CDMA MC					
No.	Parameter	Base station	Mobile station	Base station	Mobile station	Base station	Mobile station
		cdma2000		HRPD		UMB	
6.	Signal bandwidth (MHz)	1.2288 per carrier. One or three carriers can be used together, with carriers separated by 1.23 MHz for Band Class 0 and 1.25 MHz in other cases	1.2288 (1x) and 3.6864 (3x)	1.2288 per carrier. One to fifteen carriers can be used together, with carriers separated by 1.23 MHz for Band Class 0 and 1.25 MHz in other cases	1.2288 per carrier. One to fifteen carriers can be used together, separated by 1.23 MHz for Band Class 0 and 1.25 MHz in other cases	0.768-19.6608 with step size of 0.1536	0.768-19.6608 with step size of 0.1536
7.	Maximum transmitter e.i.r.p. (dBm)	Per licence typically 56 per carrier assuming 43 dBm transmitter power	See Table 6	Per licence typically 56 per carrier assuming 43 dBm transmitter power	See Table 6	To be provided	To be provided
8.	Typical height of the transmitting antenna (m)	30	1.5	30	1.5	32	1.5
9.	Transmitting antenna type (sectorized/omnidirectional)	3 sectors	Omnidirectional	3 sectors	Omnidirectional	3 sectors	Omnidirectional
10.	Transmitting antenna gain (dBi)	15	-1	15	-1	17	-1
11.	Feeder loss (dB)	2	2	2	2	2	2
12.	Antenna pattern width (degrees)						

TABLE 5 (continued)

IMT-2000 RADIO INTERFACES		IMT-2000 CDMA MC					
No.	Parameter	Base station	Mobile station	Base station	Mobile station	Base station	Mobile station
		cdma2000		HRPD		UMB	
12.1	– in the horizontal plane (at 3 dB)	70	NA	70	NA	70	NA
12.2	– in the vertical plane	Not specified	Not specified	Not specified	Not specified	Not specified	Not specified
12.3	– antenna downtilt	Not specified	Not specified	Not specified	Not specified	Not specified	Not specified
13.	Relative level of side lobes	Not specified	Not specified	Not specified	Not specified	Not specified	Not specified
14.	Channel bandwidth (MHz) Channel bandwidth(s), some systems being capable of multiple bandwidths	It has a chip rate of $N = 1.2288$ Mchip/s (currently, $N = 1$ and 3 are specified) Carrier spacing is 1.23 MHz for Band Class 0; 1.25 MHz for all other Band Classes		M carriers of 1.2288 Mchip/s can be aggregated in a single or multi-carrier operation, where $M = 1, 2, 3, 4, \dots, 15$. Carriers in a multi-carrier operation do not have to be contiguous and their spacing is multiple of 30, 50, 25 or 12.5 kHz depending on the Band Class		Native bandwidth can fit deployment of 1.25 to 20 MHz ($0.768 + N \times 0.1536$ MHz, $N \times 0, \dots, 123$). Also, multi-carrier configurations can be used to aggregate two or more carriers of possibly different native bandwidths and operating in non-contiguous spectral allocation	
15.	Power control range (dB)	Open loop and Closed loop (800, 400, 200, 50, 25, 12.5 Hz update rate) with power control steps: $0.25 \times N$, $N = 1, 2, 4$ dB		Open loop and Closed loop (600 and 150 Hz update rate) with power control steps: $0.5 \times N$, $N = 1, 2, 3, 4$ dB		Open loop and Closed loop (Once every N data frames (0.911 ms), $N = 4, 8, 16, 32$) with power control steps: $0.25 \times N$, $N = 1, 2, 3, \dots, 8$ dB	
16.	Density of the equipments (number/km ²)	See footnote ⁽³⁶⁾	See footnote ⁽³⁶⁾	See footnote ⁽³⁶⁾	See footnote ⁽³⁶⁾	See footnote ⁽³⁶⁾	See footnote ⁽³⁶⁾
17.	Density of the equipments (number/km ²) operating at co-frequency	See footnote ⁽³⁶⁾	See footnote ⁽³⁶⁾	See footnote ⁽³⁶⁾	See footnote ⁽³⁶⁾	See footnote ⁽³⁶⁾	See footnote ⁽³⁶⁾

TABLE 5 (*end*)

	IMT-2000 RADIO INTERFACES		IMT-2000 CDMA MC					
No.	Parameter		Base station	Mobile station	Base station	Mobile station	Base station	Mobile station
			cdma2000		HRPD		UMB	
18.	Polarization		Not specified; typically vertical	Not specified; typically vertical	Not specified; typically vertical	Not specified; typically vertical	Not specified; typically vertical	Not specified; typically vertical
19.	Capacity criteria, including capacity per cell		Capacity in a cellular system can be measured in terms of simultaneous voice users per cell, data throughput per cell, etc. The actual capacity is dependent on the assumptions made about system configuration, loading, quality, and fairness, among other things. The actual capacity of the system is not part of the cdma2000 specifications					
20.	Frequency reuse factor		Frequency reuse of one is supported					
21.	Receiver thermal noise	Band Class 0, 3, 10	−108 dBm/ 1.23 MHz (5 dB NF)	−103 dBm/ 1.23 MHz (10 dB NF)	−108 dBm/ 1.23 MHz (5 dB NF)	−103 dBm/ 1.23 MHz (10 dB NF)	To be provided	To be provided
22.	Reference sensitivity	Band Class 0, 3, 10	−122 dBm/ 1.23 MHz 9 600 bit/s	−104 dBm/ 1.23 MHz (9 600 bit/s) Traffic/cell −15.6 dB	−122 dBm/ 1.23 MHz 9 600 bit/s	−105.5 dBm/ 1.23 MHz (307 kbit/s in 2 slots)	To be provided	To be provided

Notes relatives to Table 5:

⁽³²⁾ Note that some of the parameters in this table are typically not included in the cdma2000 specifications. These include: maximum spectral power density, transmitting antenna type, antenna gain, antenna height, antenna pattern, antenna downtilt, feeder loss, and polarization. Some information in these categories found in this table is listed in 3GPP2 report C.R1002 (cdma2000 Evaluation Methodology) and may be considered typical in some deployments.

⁽³³⁾ Note that these Recommendations are currently being reviewed by WP 5D.

⁽³⁴⁾ Assumes 43 dBm maximum transmit power over 1.2288 MHz.

⁽³⁵⁾ Assumes 23 dBm maximum transmit power over 1.2288 MHz.

⁽³⁶⁾ This is a function of frequency, coverage desired, propagation, data rates desired, etc.

⁽³⁷⁾ This value refers to the block size.

TABLE 6

Maximum power for IMT-2000 CDMA MC mobile stations and HRPD access terminals for band classes in the 698-862 MHz range

Band class	Mobile station class/ access terminal class	Radiating measurement	Lower limit	Upper limit
0 and 3	Class I	e.r.p.	1 dBW (1.25 W)	8 dBW (6.3 W)
	Class II	e.r.p.	−3 dBW (0.5 W)	4 dBW (2.5 W)
	Class III	e.r.p.	−7 dBW (0.2 W)	0 dBW (1.0 W)
7 and 10	Class I	e.r.p.	−3 dBW (0.5 W)	4 dBW (2.5 W)
	Class II	e.r.p.	−7 dBW (0.2 W)	0 dBW (1.0 W)

Table 7 maps the band classes defined in Table 6 to the actual frequencies.

TABLE 7

Band class designations in the 698-862 MHz range

Band class	Transmit frequency band (MHz)	
	Mobile station	Base station
0	815-849	860-894
3	887-889 893-901 915-925	832-834 838-846 860-870
7	776-788	746-758
10	806-824 896-901	851-869 935-940
18	787-799	757-769
19	698-716	728-746

With regard to the band class 5 (450-470 MHz band), the following parameters have to be adjusted:

- BS antenna gain, which would be 14 dBi.
- The MS power levels are given below. A typical MS uses class III.