PT. NATRINDO TELEPON SELULER

DOKUMEN PENAWARAN INTERKONEKSI

DPI

DOKUMEN PENDUKUNG D

SPESIFIKASI TEKNIS

PT. NATRINDO TELEPON SELULER
DOKUMEN PENAWARAN INTERKONEKSI
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DOKUMEN PENDUKUNG D
SPESIFIKASI TEKNIS

1. Spesifikasi Generik Interface Fisik dan Kelistrikan

1.1. Port masukan dan port keluaran

1.1.1. Main Traffic Interface Electrical (According to ITU-T Rec. G.703 and ANSI T1.102)

- Nominal bit rate : 155.520 Mbps ± 20 ppm
- Line code : CMI
- Return loss (8-240 MHz) : 1.0 V ± 0.1 V
- Impedance : 75 Ω unbalanced
- Nominal pulse width : 6.43 ns
- Maximum attenuation of input signal at 78 MHz : 12.7 dB
- Connector type : SMZ

1.1.2. Main Traffic Interface Optical (According to ITU-T Rec. G.652, G.957, G.958 and Bellcore GR-253-CORE)

- Nominal bit rate : 155.520 Mbps ± 20 ppm
- Line code : NRZ
- Operating wavelength range : 1261-1360 nm
- Source type : MLM
- Mean launched power (max.) : -8 dBm
- Mean launched power (min.) : -15 dBm
- Minimum sensitivity (Pmin) : -28 dBm
- Overload (Pmax) : -8 dBm
- Optical connector : SC/PC

1.1.3. E1: 2 Mbps (According to ITU-T Rec. G.703)

- Nominal bit rate : 2.048 kbps ± 50 ppm
- Line code : HDB-3
- Return loss at input port 50 -100 KHz : > 12 dB
- Return loss at input port 100 kHz - 2 MHz : > 18 dB
- Return loss at input port 2 MHz -3 MHz : > 14 dB
- Pulse amplitude : 3.0 V ± 0.3 V
- Impedance : 120 Ω balanced
- Nominal pulse width : 244 ns
- Connector type : 9 Pole D-Sub female

1.2. Interference

1.2.1 Co-channel interference

- Limits of co-channel interference stating C/I values for 1 db degradation of the 10^{-6} BER limit as specified in recommendation ETSI EN 300 430 are +35 dB with 128 QAM and +26 dB with 16 QAM

- Limits of co-channel interference stating C/I values for 3 db degradation of the 10^{-6} BER limit as specified in recommendation ETSI EN 300 430 are +31 dB with 128 QAM and +22 dB with 16 QAM

1.2.2. Adjacent Channel Interference

- Limits of adjacent channel interference stating C/I values for 1 db degradation of the 10^{-6} BER limit as specified in recommendation ETSI EN 300 430 are +4 dB with 128 QAM and -5 dB with 16 QAM

- Limits of adjacent channel interference stating C/I values for 3 db degradation of the 10^{-6} BER limit as specified in recommendation ETSI EN 300 430 are 0 dB with 128 QAM and -9 dB with 16 QAM

1.3. Integrasi Jaringan

Integrasi jaringan harus dilakukan dalam tingkat 2 MBps (E1) dan/atau berbasis IP sesuai dengan interface yang tersedia di perangkat NTS.

1.4. Jitter & Wander Tolerance

1.4.1. Mbps Input Port according to ITU-T G.823, 02/00 chapter 7.1.2.

1.4.2. STM-1 Input Port according to ITU-T G.825, 03/00 chapter 6.1.2.

1.4.3. Mbps Output Port according to according to G.742-88, chapter 6.2 with reference:

- 0.25 UI_{pp} 20 Hz – 100 kHz
- 0.075 UI_{pp} 700 Hz – 100 kHz

1.4.4. STM-1 Output Port according to G.783 02/04 Table 9 with reference:

- 0.5 UIpp 500 Hz – 1.3 MHz
- 0.1 UIpp 65 kHz – 1.3 MHz

1.5. Synchronization

1.5.1. Input/Output Reference

- Jitter and Wander tolerance according to ITU-T G.703 0.05 UI_{pp} at 20 Hz – 100 kHz
- Frequency 2.048 MHz $\pm$ 20 ppm (as output)
- Over voltage protection according to ITU-T G.703

1.5.2. Capture range according to ITU-T G.813

1.5.3. Signaling

- If the STM-1/OC-3 (T1) signal at input port fails or does not contain enough transmission, detector inside SPI (Synchronous Physical Interface) will send a Loss of Signal alarm to RST (Regenerator Section Termination) block.
- 2 Mbps tributaries input (T2)
- In free running mode, the internal oscillator (T3) Long-term frequency stability equal to or better than $\pm$ 20 ppm. (ITU-T Rec. G.783)

1.6. Interface characteristic

1.6.1. 2 Mbps Input/Output Port : 75 Ω Coaxial Pair Or 120 Ω Symmetrical Pair.

1.6.2. STM-1 Input/Output Port : 75 Ω Coaxial Pair

1.6.3. LTU 155 provide a STM-1 channel Terminal Multiplex (TM) interface with 63xE1 mapped asynchronously into 63xVC-12

1.7. Specification Generic Interface Transmission PDH/SDH

1.7.1. PDH Interface

- E1 electrical interface according to G.703, chapter 9 for 75 ohm and 120 ohm
- Output pulse mask in resistive load is according to ITU-T Rec. G.703
- Traffic E1 connectors are male SOFIX 24 pin connector with 120 balanced, short haul (6 dB) terminations

1.7.2. STM-1 electrical interface and pulse mask

- The pulse mask is according to G.703 chapter 15.2
- The electrical interface is on SMB 75 Ω coax connectors
- Optical interface is short haul S-1.1 1310 nm according to G.957 using SC/PC single mode connectors.

2. Jenis pensinyalan yang dipergunakan:

a. Interkoneksi dengan Jaringan Bergerak Seluler : CCS#7
b. Interkoneksi dengan Jaringan tetap : CCS#7

3. Spesifikasi Generik Interface Signaling CCS #7

3.1. Daftar berbagai layanan yang dapat ditawarkan

a. Mobile Aplication Protocol (MAP)

Prosedur tes MAP dilakukan dengan diasumsikan digunakan untuk pengiriman dan penerimaan SMS yang secara rinci dituangkan dalam LAMPIRAN II Dokumen ini.

b. ISDN User Part (ISUP)

Prosedur tes ISUP dilakukan sesuai dengan rekomendasi CCITT Blue Book No. Q -784, secara rinci dituangkan dalam LAMPIRAN I Dokumen ini.

3.2. Signaling Point (Address Code)

Signaling Point NTS sebagai alamat pensinyalan CCS #7 dituangkan dalam LAMPIRAN II I Dokumen ini

4. Tata cara permohonan dan penggunaan opsi-opsi tambahan dalam sistem pensinyalan CCS # 7:

a. Permohonan penggunaan CCS #7 dan opsi – opsi tambahan secara tertulis dari PENCARI AKSES.

b. Pemberitahuan dari NTS lepada PENCARI AKSES bahwa permohonan penggunaan CCS #7/opsi – opsi tambahan disetujui/tidak disetujui.
c. Integrasi signaling CCS #7
d. Ujicoba dengan langkah – langkah sebagaimana direkomendasikan dalam CCITT Blue Book No. Q-781 - Q-784, secara rinci dituangkan dalam LAMPIRAN I Dokumen ini.
e. Penggunaan CCS #7 secara permanen.

LAMPIRAN I – DOKUMEN PENDUKUNG D
PROSEDUR TES INISIALISASI (PEMBANGUNAN) CCS #7

Tes level 1

Parameter tes :

BER	1 X 10^{-7}
TEST PATTERN	2047N (PN11)
ES	1,6 %
DURATION	24 jam
SES	0,04 %

Tes level 2 (ITU-T Rec. Q-781)

SEQ #	TEST #	ITEM
1	1.1	Link state control : Power up
2	1.2	Link state control : "Not aligned" Timer T2
3	1.5	Normal aligment : Correct procedure (FISU)
4	9.1	Transmission and receiption control (PCR)
5	1.29	Link state control : Deactivation during link in service
6	1.25	Link state control : Deactivation during initial alignment
7	1.21	Link state control : Both ends set emergency
8	3.5	Transmission failure : Break transmission path

Tes level 3 (ITU-T Rec. Q-782)

SEQ #	TEST #	ITEM
1	1.1	Signaling link management : First signaling link activation
2	3.16	Link state control : "Not aligned" Timer T2
3	4.8	Changeover : Changeover to another linkset with adjacent SP accessible
4	7.1.1	Management inhibiting : inhibition of a link - available link
5	7.6.1	Management inhibiting : Manual uninhibition of a link - with change back
6	7.1.2	Management inhibiting : inhibition of a link - unavailable link
7	7.6.2	Management inhibiting : Manual uninhibition of a link - without change back

8	9.1.1	Sending of a TSP on an alternative route : failure of normal link set
9	9.4.1	Sending of a TSA on an alternative route : recovery of normal link set

Tes level 4 (ITU-T Rec. Q-784) BC = Speech & 3,1 kHz only

SEQ #	TEST #	ITEM
1	1.3.2.1	Circuit blocking / unblocking : BLO received
2	1.3.2.2	Circuit blocking / unblocking : BLO send
3	1.3.2.3	Circuit blocking / unblocking : circuit blocking from both ends, removal of blocking from one end
4	1.4.1	Continuity check test call : CCR received : successful
5	1.4.2	Continuity check test call : CCR sent : successful
6	2.1.1	Bothway circuit selection : IAM sent by controlling SP
7	2.1.2	Bothway circuit selection : IAM sent by non-controlling SP
8	2.2.1	Called address sending : "en bloc" operation
9	2.3.1	Successful call set up : ordinary call (with various indications in ACM)
10	2.3.4	Successful call set up : call switched via sattelite (jika menggunakan satelit)
11	2.3.5	Successful call set up : Echo control procedure for call setup (jika menggunakan echo control)
12	2.3.6	Successful call set up : block / unblock during call (initiated)
13	2.3.7	Successful call set up : block / unblock during call (received)
14	3.2	Normal call release : Calling party clears before ANM
15	3.3	Normal call release : Calling party clears after ANM
16	3.4	Normal call release : Called party clears after ANM
17	3.7	Normal call release : suspend and resume initiated by a called party
18	4.1	Unsuccessful call set up : suspend and resume initiated by a called party
19	4.1.1	Called subscriber busy : #17 user busy
20	4.1.4	Calling to unalocated number : #1 unalocated number
21	4.1.5	Calling party clears before answer : #16 normal call clearing
22	5.2.2	Abnormal situation during call : T9: waiting for an ANM
23	6.1.1	Continuity check call : COT applied on an O/G circuit

LAMPIRAN II – DOKUMEN PENDUKUNG D
PROSEDUR TES PENGIRIMAN DAN PENERIMAAN SMS

User Sending Short Messages

Objective To verify that a user can send short messages	
Function list **WMFD- 010200**	
Network diagram None	
Prerequisites Both A and B are UEs. The user data is saved in the HLR/VLR. Both A and B subscribe to the short message service (SMS). The connection between the MSC and SMSC is in good condition.	
Procedure	**Expected result**
A sends short messages to B.	A can send short messages to the SMSC.
Remarks None	

User Receiving Short Messages

Objective To verify that a user can receive short messages	
Function list WMFD-010200	
Network diagram None	
Prerequisites Both A and B are UEs. The user data is saved in the HLR/VLR. Both A and B subscribe to the SMS. The connection between the MSC and SMSC is in good condition.	
Procedure	**Expected result**
A sends short messages to B.	B can receive short messages.
Remarks None	

LAMPIRAN III– DOKUMEN PENDUKUNG D
DAFTAR POINT CODE CCS #7 NASIONAL NAT-1 (TYPE : NI-3) NTS

No	Hexadecimal	Decimal	Terminasi
1	1 – 20 - 1	3329	Jakarta
2	3 – 20 - 1	5377	Surabaya

No	Hexadecimal	Decimal	Terminasi
1	1 – 20 – 1	3329	Jakarta
2	2 – 20 – 1		Bandung
3	3 – 20 – 1	5377	Surabaya