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Contents

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Foreword

[TBD]

Introduction

[TBD]

1 Scope

This present document specifies the measurement procedures for the conformance test of the mobile station that contain transmitting characteristics, receiving characteristics and *performance requirements* in FDD mode.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, subsequent revisions do apply.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] [TBD] 3GPP S4.01A "UTRA (UE) FDD; Radio transmission and reception"

[2] 3GPP S4.03 "RF Parameters in Support of Radio Resource Management"

3 Terms and abbreviations

For the purpose of the present document, the following terms and abbreviations apply.

Chip Rate	Chip rate of W-CDMA system, equals to 4.096 M chips per second.
CPCH	Common Physical Channel.
$CPCH\_E_c$	Average energy per PN chip for CPCH.
$Data\_E_c$	Average energy per PN chip for the DATA fields in the DPCH.
$Data\ \frac{E_c}{I_o}$	The ratio of the received energy per PN chip for the DATA fields of the DPCH to the total received power spectral density at the mobile station antenna connector.
$\frac{Data\_E_c}{I_{or}}$	The ratio of the average transmit energy per PN chip for the DATA fields of the DPCH to the total transmit power spectral density.
DPCH	Dedicated Physical Channel
$DPCH\_E_c$	Average energy per PN chip for DPCH.
$\frac{DPCH\_E_c}{I_{or}}$	The ratio of the received energy per PN chip of the DPCH to the total received power spectral density at the mobile station antenna connector.
DTCH	Dedicated Traffic Channel, which is mapped into Dedicated Physical Channel. DTCH contains the user data.

E_b	Average energy per information bit for the Perch Channel, DPCH CPCH, PCH, and for FACH at the mobile station antenna connector.
$\frac{E_b}{N_t}$	The ratio of combined received energy per information bit to the effective noise power spectral density for the Perch Channel, DPCH CPCH, PCH, and for the FACH at the mobile station antenna connector. Following items are calculated as overhead: pilot, TPC, RI, CRC, tail, repetition, convolution coding and Turbo coding.
E_c	Average energy per PN chip.
$\frac{E_c}{I_{or}}$	The ratio of the average transmit energy per PN chip for different fields or physical channels to the total transmit power spectral density.
FACH	Forward Access Channel
Information Data Rate	Rate of the user information, which must be transmitted over the Air Interface. For example, output rate of the voice codec.
I_o	The total received power spectral density, including signal and interference, as measured at the mobile station antenna connector.
I_{oc}	The power spectral density of a band limited white noise source (simulating interference from other cells) as measured at the mobile station antenna connector.
I_{or}	The total transmit power spectral density of the Forward link at the base station antenna connector.
$\hat{I}_{or}$	The received power spectral density of the Forward link as measured at the mobile station antenna connector.
N_t	The effective noise power spectral density at the mobile station antenna connector.
OCNS	Orthogonal Channel Noise Simulator, a mechanism used to simulate the users or control signals on the other orthogonal channels of a Forward link.
$OCNS\_E_c$	Average energy per PN chip for the OCNS.
$\frac{OCNS\_E_c}{I_{or}}$	The ratio of the average transmit energy per PN chip for the OCNS to the total transmit power spectral density.
PCH	Paging Channel
Perch $\frac{E_c}{I_o}$	The ratio of the received Perch Channel energy per chip to the total received power spectral density at the mobile station antenna connector.
$\frac{Perch\_E_c}{I_{or}}$	The ratio of the average transmit energy per PN chip for the Perch Channel to the total transmit power spectral density.
$Pilot\_E_c$	Average energy per PN chip for the Pilot field in the DPCH.
Pilot $\frac{E_c}{I_o}$	The ratio of the received energy per PN chip for the Pilot field of the DPCH to the total received power spectral density at the mobile station antenna connector.

$\frac{Pilot\_E_c}{I_{or}}$ The ratio of the average transmit energy per PN chip for the Pilot field of the DPCH to the total transmit power spectral density.

RI_E_c Average energy per PN chip for the Rate Information field in the DPCH.

$RI\ \frac{E_c}{I_o}$ The ratio of the received energy per PN chip for the Rate Information field of the DPCH to the total received power spectral density at the mobile station antenna connector.

$\frac{RI\_E_c}{I_{or}}$ The ratio of the average transmit energy per PN chip for the Rate Information field of the DPCH to the total transmit power spectral density.

RSCP Received Signal Code Power

SIR Signal to Interference Ratio

TPC_E_c Average energy per PN chip for the Transmission Power Control field in the DPCH.

$TPC\ \frac{E_c}{I_o}$ The ratio of the received energy per PN chip for the Transmission Power Control field of the DPCH to the total received power spectral density at the mobile station antenna connector.

$\frac{TPC\_E_c}{I_{or}}$ The ratio of the average transmit energy per PN chip for the Transmission Power Control field of the DPCH to the total transmit power spectral density.

4 Transmitter Characteristics

4.1 General

Transmitting performance test of the mobile station is implemented during communicating with the base station or the simulator via air interface. The procedure is used normal call protocol until the mobile station is communicating on traffic channel basically. On the traffic channel, the mobile station provides special function for testing that is called Logical Test Interface and the mobile station is tested using this function. (Refer to TS ××.×× Logical Test Interface)

Transmitting or receiving bit/symbol rate for test channel is shown in Table 4.1.

Table 4.1 Bit / Symbol rate for Test Channel

Type of User Information	User bit rate	Forward DPCH symbol rate	Reverse DPCH bit rate	Remarks
Speech	12.2kbps	32ksps	64kbps	Standard Test
Circuit Switched Data	TBD	TBD	TBD	
Packet Switched Data	[16kbps]	32ksps	64kbps	Standard Test
	TBD	TBD	TBD	

4.2 Maximum Output Power

4.2.1 Definition

[TBD]

4.2.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown in Figure 4.2.

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 4.2. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Set and send continuously TPC bits as '11' to the mobile station.

(4) Measure the output power of the mobile station by Tester. The output power shall be averaged over the transmit one timeslot.

<Editor's Note> The measurement period is related with measurement tolerance and should be defined in conformance testing. It would be deleted after being approved in RAN4.

Table 4.2 Test parameters for Maximum Output Power

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-93]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Closed Power Control	Enabled	

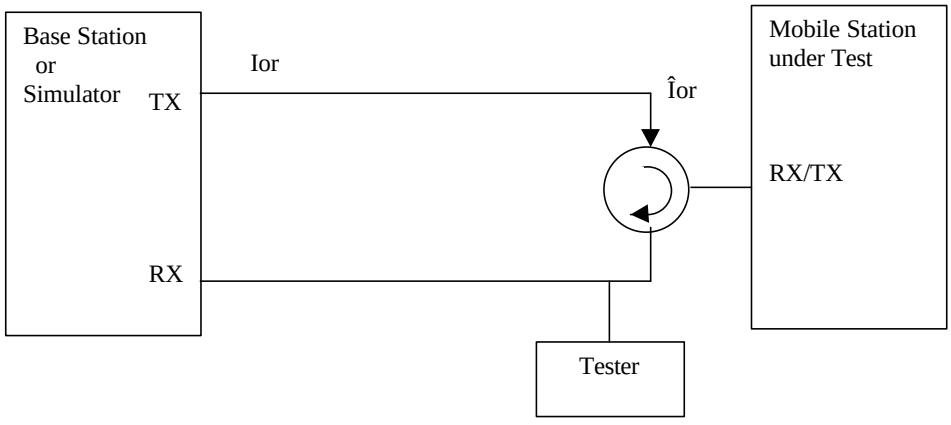

Figure 4.2 Maximum Output Power

4.2.3 Minimum Requirements

4.3 Frequency Stability

4.3.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 6.3 Frequency stability.

4.3.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown in Figure 4.3.

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 4.3. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Measure the frequency error delta f, at the mobile station antenna connector by Tester.
Since counter method leads an incorrect result, EVM method shall be used.

Table 4.3 Test parameters for Frequency Stability

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-103]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Closed Power Control	Enabled	
AFC	ON	
Modulation	ON	

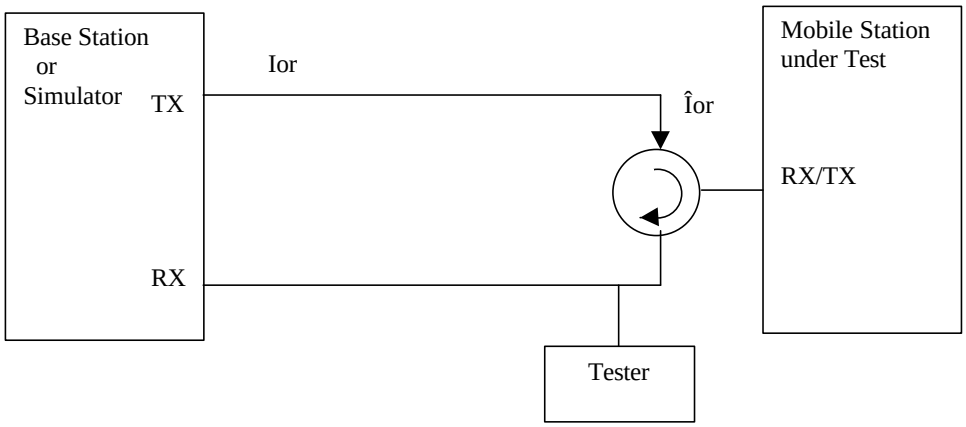

Figure 4.3 Frequency Stability

4.3.3 Minimum Requirements

4.4 Output Power Dynamics

4.4.1 Open Loop Power Control

4.4.1.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 6.4.1 Open loop power control.

4.4.1.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown in Figure 4.4.1

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 4.4.1. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Adjust the TX output level of the simulator to obtain Îor at the mobile station antenna connector. Îor shall be selected out of the range that is shown in the table. [TBD]

(4) Measure the output power of the mobile station during 1 frame at the mobile station antenna connector by Tester.

(5) Repeat the above measurement several times. In this time, Îor shall be varied over the range. [TBD]

(6) RACH shall be used for this measurement.

Table 4.4.1 Test parameters for Open Loop Power Control

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[ ] to [ ]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Closed Power Control	Disabled	

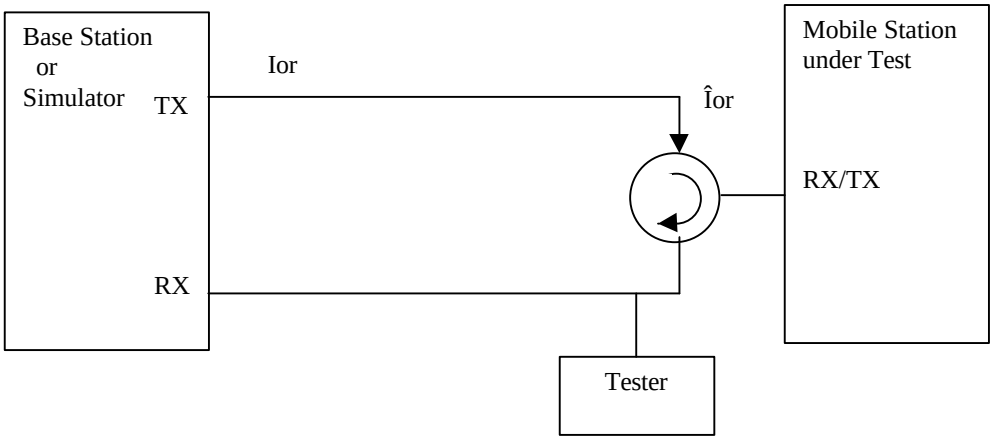

Figure 4.4.1 Open Loop Power Control

4.4.1.3 Minimum Requirements

4.4.2 Closed Loop Power Control

4.4.2.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 6.4.2 Closed loop power control.

4.4.2.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown in Figure 4.4.2.

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 4.4.2. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Set and send alternating TPC bits from the base station, followed by [10] consecutive '11' s TPC bits, followed by [10] consecutive '00' s TPC bits alternately.

(4) Measure the output power of the mobile station during every slot (0.625msec) at the mobile station antenna connector by Tester.

(5) Measure the transient time from the beginning of the next slot to the time when the output power shall be within the defined tolerance of its final value.

Table 4.4.2 Test parameters for Closed Loop Power Control

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-93]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Closed Power Control	Enabled	

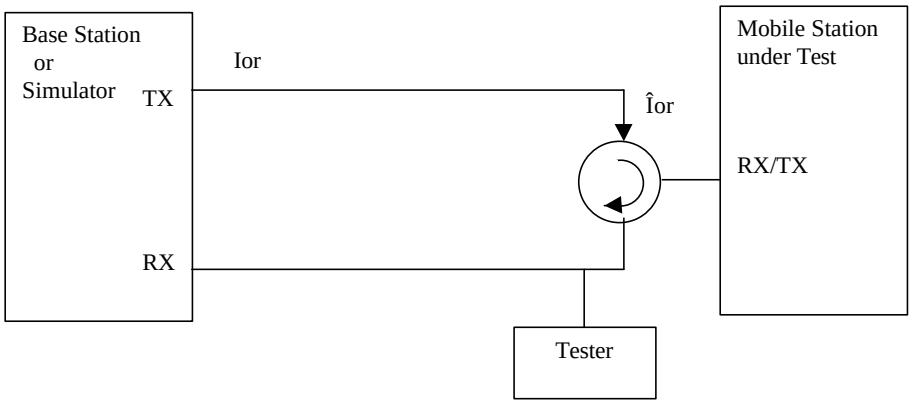

Figure 4.4.2 Closed Loop Power Control

4.4.2.3 Minimum Requirements

4.4.3 Minimum Output Power

4.4.3.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 6.4.4 Minimum transmit output power.

4.4.3.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown in Figure 4.4.3.

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 4.4.3. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Set and send continuously TPC bits as '00' to the mobile station.

(4) Measure the output power of the mobile station by Tester.

<Editor's Note> Both the closed loop and open loop power control indicate a minimum transmit output power is required. And the measurement period should be defined.

Table 4.4.3 Test parameters for Minimum Output Power

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-93]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Closed Power Control	Enabled	

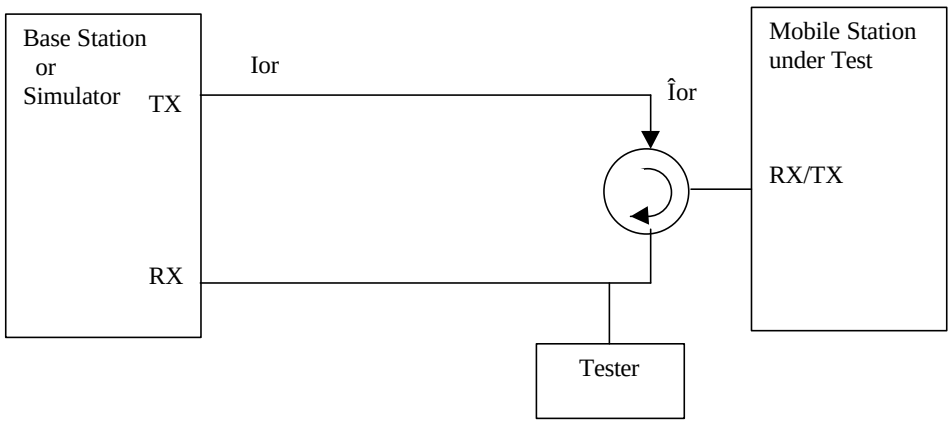

Figure 4.4.3 Minimum Output Power

4.4.3.3 Minimum Requirements

4.5 Transmit OFF Power

4.5.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 6.5 Transmit OFF power.

4.5.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown Figure 4.5.

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 4.5. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Send release message to the mobile station to stop transmitting.

(4) Measure the leakage power within the transmission band from the mobile station by the Tester.

4.5 Test parameters for Transmit OFF Power

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-93]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Closed Power Control	Enabled	

<Editor's Note> "Closed Power Control: Enabled" might be unnecessary in this measurement.

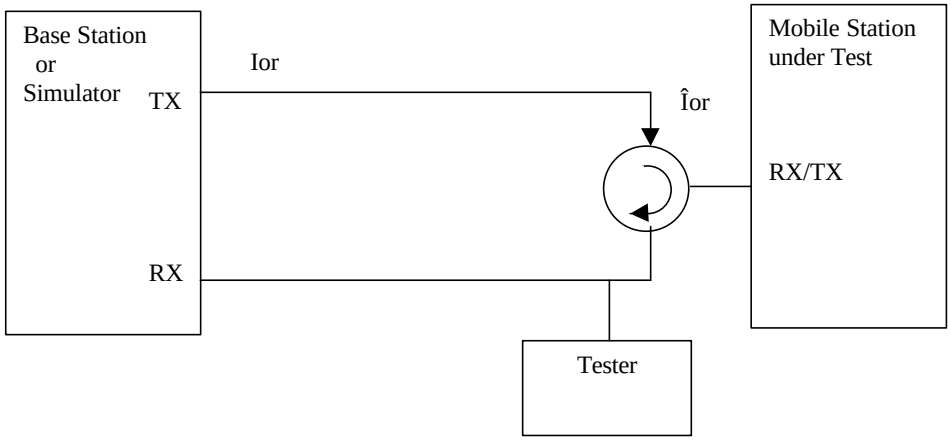

Figure 4.5 Transmit OFF Power

4.5.3 Minimum Requirements

4.6 DTX

4.6.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 6.6 DTX.

4.6.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown in Figure 4.6.

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 4.6. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Measure the average output power at the antenna connector of the mobile station by Tester in three cases, both DPDCH and DPCCH are ON, only DPCCH is ON and both channels are OFF.

Table 4.6 Test parameters for DTX

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-93]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate (PTCH)	[32]	ksps
Reverse Channel bit rate (PTCH)	[64]	kbps
User bit rate	[16]	kbps
Closed Power Control	Enabled	

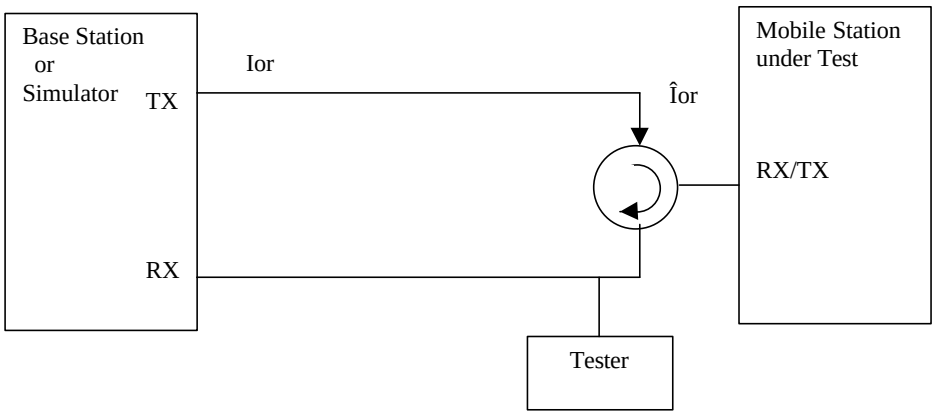

Figure 4.6 DTX

4.6.3 Minimum Requirements

4.7 Occupied Bandwidth

4.7.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 6.6.1 Occupied bandwidth.

4.7.2 Method of measurement

[TBD]

4.7.3 Minimum Requirements

4.8 Adjacent Channel Leakage Power Ratio (ACPR)

<Editor's Note> The abbreviation "ACLR" is currentry used for the substitution of "ACPR".

4.8.1 Leakage Power due to Modulation

4.8.1.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 6.6.2.2 Adjacent channel power ratio (ACPR).

4.8.1.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown in Figure 4.8.1. Connect a spectrum analyzer (or other suitable test equipment) to the mobile station antenna connector.

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 4.8.1. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Set and send continuously TPC bits as '11' to the mobile station until the mobile station output power shall be maximum level.

(4) Measure the power within the bandwidth of current carrier.

(5) Measure the power fallen in the bandwidth of the adjacent channel and the next adjacent channel.

(6) Calculate the ratio of the power between the values measured in '(4)'and '(5)'.

Table 4.8.1 Test parameters for Leakage Power due to Modulation

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-93]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Closed Power Control	Enabled	

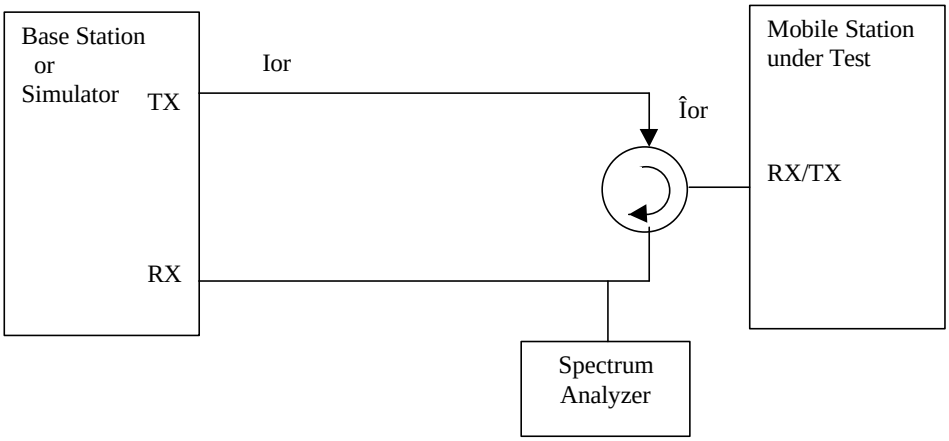

Figure 4.8.1 Leakage Power due to Modulation

4.8.1.3 Minimum Requirements

4.8.2 Leakage Power due to Switching

4.8.2.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 6.6.2.2 Adjacent channel power ratio (ACPR).

4.8.2.2 Method of measurement

[TBD]

4.8.2.3 Minimum Requirements

4.9 Spurious Emissions

4.9.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 6.6.3 Spurious emissions.

4.9.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown in Figure 4.9. Connect a spectrum analyzer (or other suitable test equipment) to the mobile station antenna connector.

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 4.9. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Set and send continuously TPC bits as '11' to the mobile station until the mobile station output power shall be maximum level.

(4) Sweep the spectrum analyzer over a frequency range and measure the average power of spurious emission.

Table 4.9 Test parameters for Spurious Emissions

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-93]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Closed Power Control	Enabled	

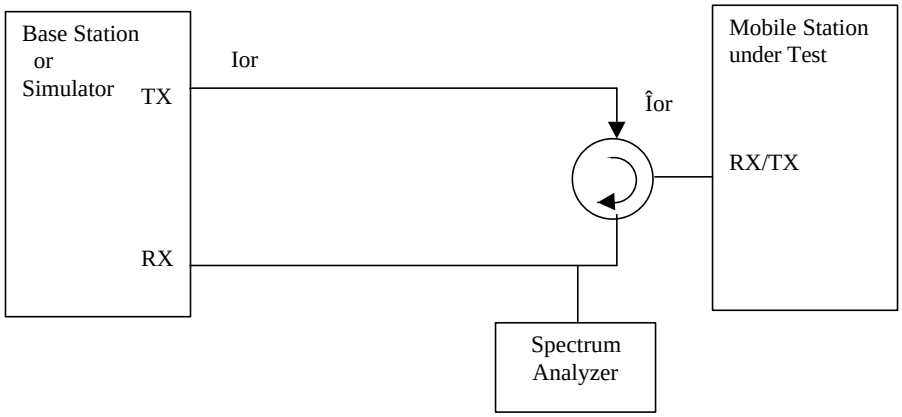

Figure 4.9 Spurious Emissions

4.9.3 Minimum Requirements

4.10 Transmit Intermodulation

4.10.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 6.7 Transmit intermodulation.

4.10.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown in Figure 4.10.

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 4.10. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Set and send continuously TPC bits as '11' to the mobile station until the mobile station output power shall be maximum level.

(4) Measure the average output power of the mobile station by spectrum analyzer.

(5) Set the frequency of the CW generator to the offset 1 or offset 2 as shown in the table.

(6) Check around the frequency of the carrier and [3^{rd}] IM, then measure the average power of transmitting intermodulation.

(7) Repeat the measurement with another tone offset.

Table 4.10 Test parameters for Transmit Intermodulation

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-93]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Closed Power Control	Enabled	
Tone Power	-40	dBc
Tone Offset 1 from Transmitting Carrier	5	MHz
Tone Offset 2 from Transmitting Carrier	10	MHz

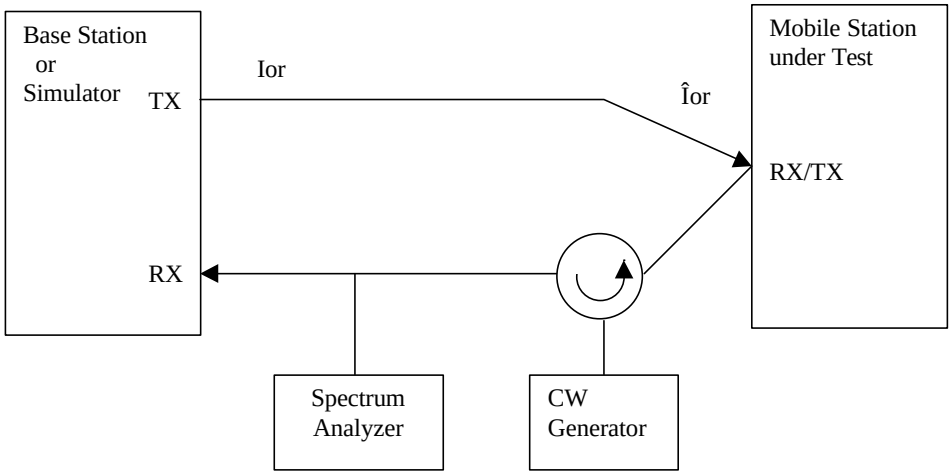

Figure 4.10 Transmit Intermodulation

4.10.3 Minimum Requirements

4.11 Modulation Accuracy

4.11.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 6.8 Modulation Accuracy.

4.11.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown in Figure 4.11.

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 4.11. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Measure the waveform quality factor ρ, and EVM (Error vector magnitude), at the mobile station antenna connector by Tester.

Table 4.11 Test parameters for Modulation Accuracy

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-93]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Closed Power Control	Enabled	

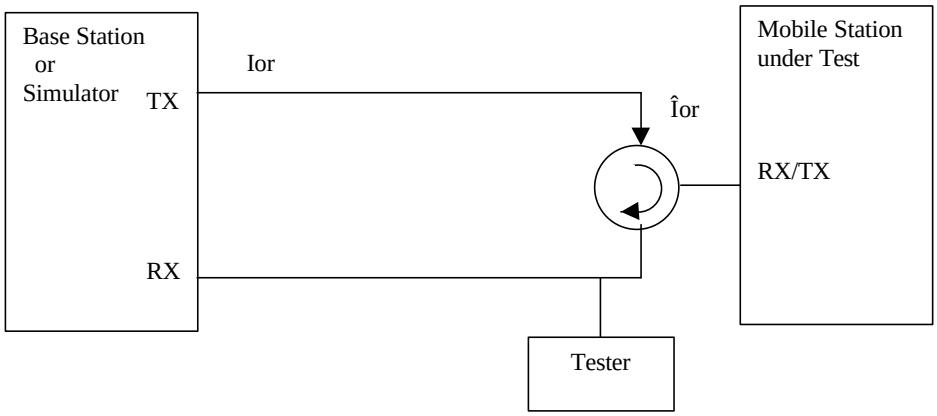

Figure 4.11 Modulation Accuracy

4.11.3 Minimum Requirements

5 Receiver Characteristics

5.1 General

Receiving performance test of the mobile station is implemented during communicating with the base station or the simulator via air interface. The procedure is used normal call protocol until the mobile station is communicating on traffic channel basically. On the traffic channel, the mobile station provides special function for testing that is called Logical Test Interface and the mobile station is tested using this function. (Refer to TS ××.×× Logical Test Interface)

Transmitting or receiving bit/symbol rate for test channel is shown in Table 5.1.

Table 5.1 Bit / Symbol rate for Test Channel

Type of User Information	User bit rate	Forward DPCH symbol rate	Reverse DPCH bit rate	Remarks
Speech	12.2kbps	32ksps	64kbps	Standard Test
Circuit Switched Data	TBD	TBD	TBD	
Packet Switched Data	[16kbps]	32ksps	64kbps	Standard Test
	TBD	TBD	TBD	

5.2 Static Reference Sensitivity Level

5.2.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 7.3 Static reference sensitivity level.

5.2.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown Figure 5.2.

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 5.2. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Measure the BER or FER of DTCH received from the mobile station at the base station or the simulator.

Table 5.2 Test parameters for Static Reference Sensitivity Level

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-110]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Rate information	On	

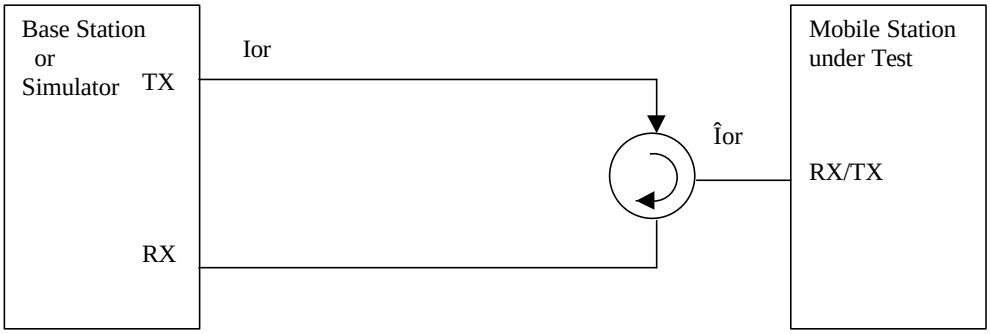

Figure 5.2 Static Reference Sensitivity Level

5.2.3 Minimum Requirements

5.3 Maximum Input Level

5.3.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 7.4 Maximum input level.

5.3.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown Figure 5.3

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 5.3. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Measure the BER or FER of DTCH received from the mobile station at the base station or the simulator.

Table 5.3 Test parameters for Maximum Input Level

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-25]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-10]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-19]	dB
$\frac{OCNS\_Ec}{I_{or}}$	[-0.52]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Rate information	On	

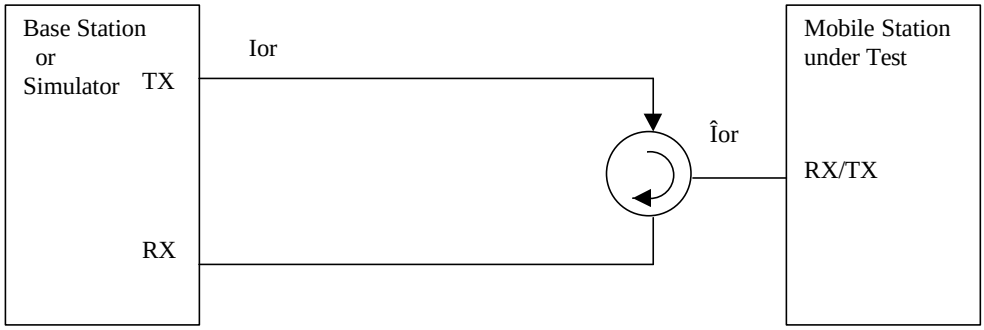

Figure 5.3 Maximum Input Level

5.3.3 Minimum Requirements

5.4 Adjacent Channel Selectivity

5.4.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 7.5 Adjacent channel selectivity.

5.4.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown in Figure 5.4

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 5.4. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Measure the BER or FER of DTCH received from the mobile station at the base station or the simulator.

Table 5.4 Test parameters for Adjacent Channel Selectivity

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-93]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Rate information	On	
I_{oc} (Interference Signal)	[-52]	dBm/4.096MHz

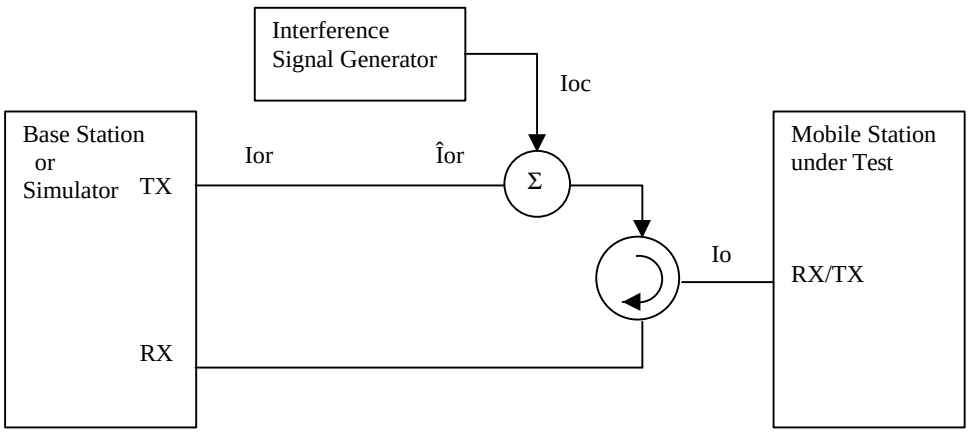

Figure 5.4 Adjacent Channel Selectivity

5.4.3 Minimum Requirements

5.5 Blocking Characteristics

5.5.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 7.6 Blocking characteristics.

5.5.2 Method of measurement

(1) Connect the base station and an interference CW tone generator or an interference signal generator to the mobile station as shown Figure 5.5.

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 5.5.1. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Set the parameters of the CW generator or the interference signal generator as shown in Table 5.5.2.

(4) Measure the BER or FER of DTCH received from the mobile station at the base station or the simulator.

Table 5.5.1 Test parameters for Blocking Characteristics

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-107]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Rate information	On	

Table 5.5.2 Parameters of Blocking Signal

	~~In~~ In-Band	Out of Band 1	Out of Band 2	
Parameter	Level	Level	Level	Unit
$I_{blocking}$ ~~modurated~~modulated	[-44]	—	—	dBm/4.096MHz
$I_{blocking}$ tone	—	[-30]	[-15]	dBm
Blocking Offset ~~modurated~~modulated	[>15]	—	—	MHz
Tone Scanning Range	—	[2025<f<2070 2210<f<2255]	[f<2025 f>2255]	MHz

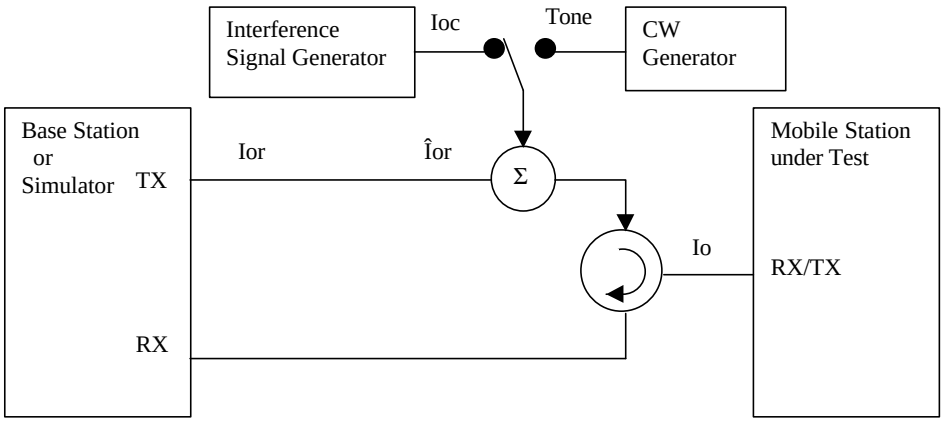

Figure 5.5 Blocking Characteristics

5.5.3 Minimum Requirements

5.6 Spurious Response

5.6.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 7.7 Spurious response.

5.6.2 Method of measurement

(5) Connect the base station and an interference CW generator to the mobile station as shown Figure 5.6.

(6) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 5.6.1. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(7) Set the parameter of the CW generator as shown in Table 5.6.2.

(8) Measure the BER or FER of DTCH received from the mobile station at the base station or the simulator.

Table 5.6.1 Test parameters for Spurious Response

Parameter	Level / Status	Unit
$\hat{I}_{or}$	3dB above the static reference level	
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Rate information	On	

Table 5.6.2 Parameter of Spurious Signal

Parameter	Level	Unit
Tone Power	[ ]	dBm
Tone Offset	[ ]	MHz

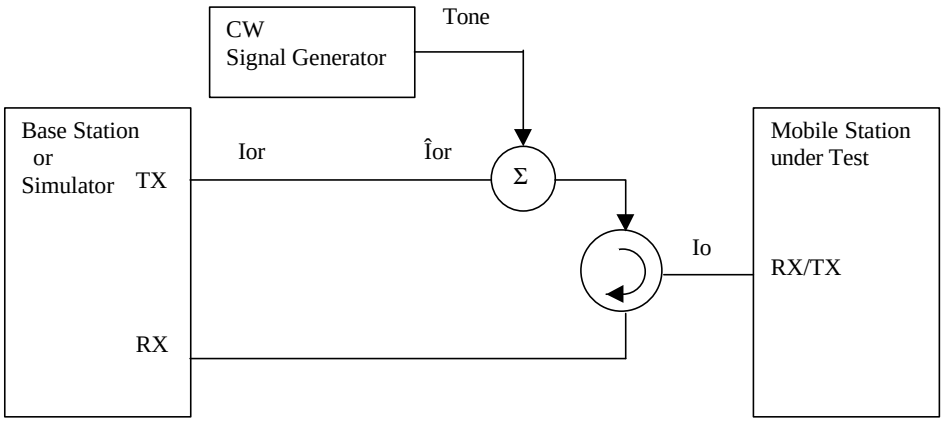

Figure 5.6 Spurious Response

5.6.3 Minimum Requirements

5.7 Intermodulation Characteristics

5.7.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 7.8 Intermodulation characteristics.

5.7.2 Method of measurement

(1) Connect the base station, an interference CW generator and an interference signal generator to the mobile station as shown in Figure 5.7.

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 5.7. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Measure the BER or FER of DTCH received from the mobile station at the base station or the simulator.

Table 5.7 Test parameters for Intermodulation Characteristics

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-107]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Rate information	[On]	
Tone Power	[-46]	dBm
Tone Offset from Receiving Carrier	[10]	MHz
I_{oc} (Interference Signal)	[-46]	dBm/4.096MHz
I_{oc} Offset from Receiving Carrier	[20]	MHz

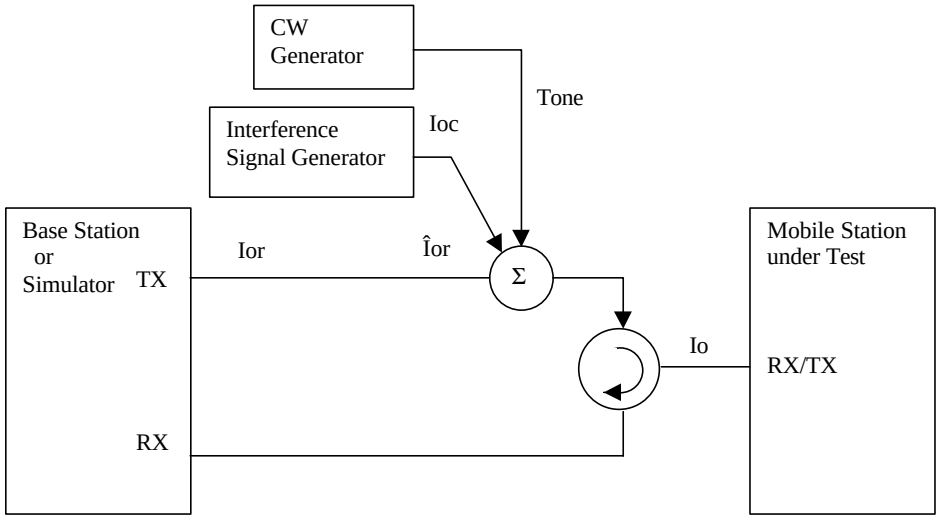

Figure 5.7 Intermodulation Characteristics

5.7.3 Minimum Requirements

5.8 Spurious Emissions

5.8.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 7.9 Spurious emissions.

<Editor's Note> Spurious emission is not clearly defined. (What conditions, operation mode, etc.)

5.8.2 Method of measurement

(1) Connect a spectrum analyzer (or other suitable test equipment) to the mobile station antenna connector as shown in Fig. 5.8.

(2) Enable the mobile station receiver and set Cell Search Mode on a Perch Channel. Since there is no forward link signal, the mobile station should not pass the Cell Search mode.

(3) Sweep the spectrum analyzer over a frequency range from the lowest intermediate frequency or lowest oscillator frequency used in the receiver or 1 MHz, whichever is lowest to at least 3 times the carrier frequency.

Figure 5.8 Spurious Emissions

5.8.3 Minimum Requirements

5.9 RSCP Detection Range and Accuracy

<Editor's Note> This specification shall be defined by RAN4 in future.

5.9.1 Definition

[TBD]

5.9.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown Figure 5.9.

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 5.9. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Select $\hat{I}$or out of the range that is shown in the table.

(4) Send the request message to the mobile station in order to get receiving RSCP value of the mobile station and then mobile station informs the RSCP value. Refer to TS ××.×× Logical Test Interface.

(5) Repeat the above measurement several times. In this time, $\hat{I}$or shall be varied over the range. [TBD]

Table 5.9 Test parameters for RSCP Detection Range and Accuracy

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-111 to –41]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-1]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-7]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Rate information	On	

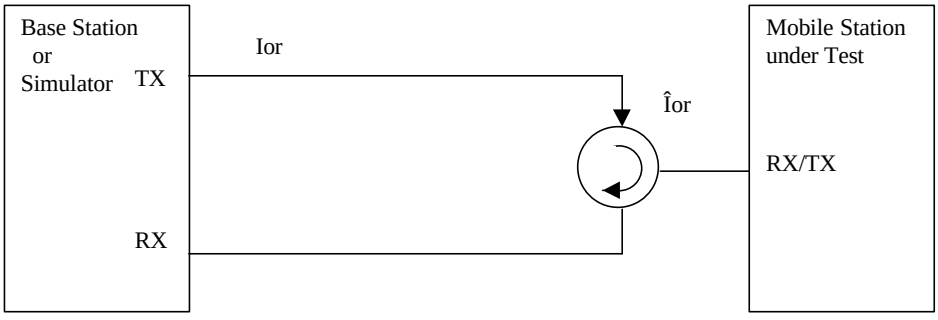

Figure 5.9 RSCP Detection Range and Accuracy

5.9.3 Minimum Requirements

5.10 SIR Measurement Range and Accuracy

<Editor's Note> This specification shall be defined by RAN4 in future.

5.10.1 Definition

[TBD]

5.10.2 Method of measurement

(1) Connect the base station to the mobile station antenna connector as shown Figure 5.10.

(2) Enter the mobile station into loopback test mode and set the test parameters as specified in Table 5.10. Then start the loopback test. The detail of the loopback test shall be in accordance with TS ××.×× Logical Test Interface.

(3) Select Ioc out of the range that is shown in the table. [TBD]

(4) Send the request message to the mobile station in order to get receiving SIR value of the mobile station and then mobile station informs the SIR value. Refer to TS ××.×× Logical Test Interface.

(5) Repeat the above measurement several times. In this time, Ioc shall be varied over the range. [TBD]

Table 5.10 Test parameters for SIR Measurement Range and Accuracy

Parameter	Level / Status	Unit
$\hat{I}_{or}$	[-69]	dBm/4.096MHz
$\frac{Perch\_Ec}{I_{or}}$	[-7]	dB
$\frac{DPCH\_Ec}{I_{or}}$	[-1]	dB
Forward Channel symbol rate	[32]	ksps
Reverse Channel bit rate	[64]	kbps
User bit rate	[12.2]	kbps
Rate information	On	
I_{oc}	[ ] to [ ]	dBm/4.096MHz

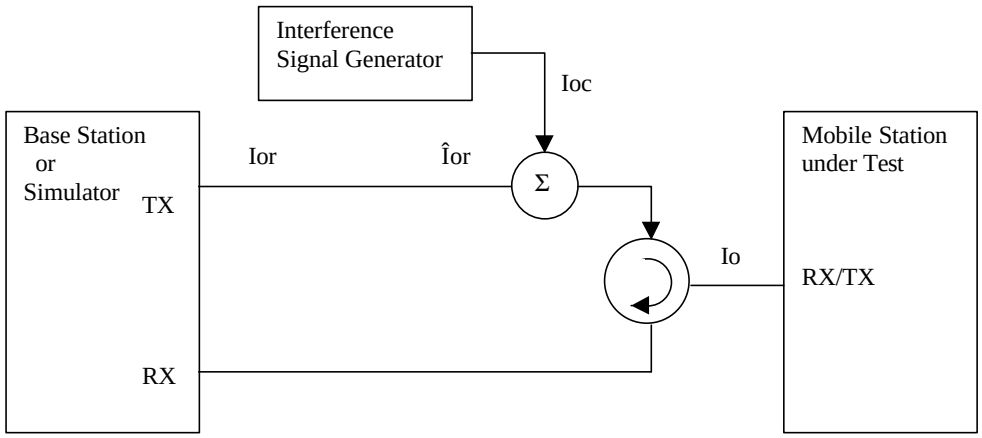

Figure 5.10 SIR Measurement Range and Accuracy

5.10.3 Minimum Requirements

6 Performance requirements

6.1 General

6.1.1 Test Environments

Mobile Station is measured in different environments i.e., static, indoor, and outdoor to indoor and pedestrian, and vehicular environments. Each of these environments is modeled by typical channel models that are defined in Section 6.1.2.

Mobile Station shall be able to receive different channels transmitted from BS for it. These channels may have different bit rates and different BER/FER requirements. Table 6.1.1-1Table 6.1.1 1Table 6.1.1 1 describes shortly test environments.

Table 6.1.1-1 Test Environments for MS Performance Specifications

Test Services	***Static***	***Indoor Office 3 km/h***	***Outdoor to Indoor and Pedestrian 3 km/h***	***Vehicular 120 km/h***
	Information Data Rate, Performance metric	*Information Data Rate, Performance metric*	*Information Data Rate, Performance metric*	*Information Data Rate, Performance metric*
Paging Message	*128 kbps MER <10^{-2}*	-	-	-
FACH Message	*128 kbps MER <10^{-2}*	-	-	-
Speech	*12.2 kbps BER <10^{-3}*	*12.2 kbps BER <10^{-3}*	*12.2 kbps BER <10^{-3}*	*12.2 kbps BER <10^{-3}*
Circuit Switched Data	*64, 384, 2048 kbps, BER < 10^{-6}*	*64, 384 kbps BER < 10^{-6}*	*64, 384 kbps BER < 10^{-6}*	*64, 384 kbps BER < 10^{-6}*
Packet Switched Data	*TBD*	*TBD*	*TBD*	*TBD*

6.1.2 Channel Models

The channel model for the static performance measurement is an Additive White Gaussian Noise (AWGN) environment. No fading and multipaths exist.

Modified ITU channel models[1] are used for the performance measurements in multipath fading channels. The channel models for indoor, indoor to outdoor and pedestrian, and for vehicular environments are depicted in Table 6.1.2-1Table 6.1.2 1Table 6.1.2 1

[1] These channel models are the same that were used in simulations and evaluations of the system presented in "Japan's Proposal for Candidate Radio Transmission Technology on IMT-2000, W-CDMA, June 1998"

Table 6.1.2-1 Channel Models for Non-Static Environments

Indoor		***Indoor to Outdoor and Pedestrian***		***Vehicular***	
Relative Delay [ns]	***Average Power [dB]***	***Relative Delay [ns]***	***Average Power [dB]***	***Relative Delay [ns]***	***Average Power [dB]***
0	*0.0*	*0*	*0.0*	*0*	*0.0*
244	*-9.6*	*244*	*-12.5*	*244*	*-2.4*
488	*-33.5*	*488*	*-24.7*	*488*	*-6.5*
				732	*-9.4*
				976	*-12.7*
				1220	*-13.3*
				1708	*-15.4*
				1952	*-25.4*

6.1.3 CDMA Equations

The equations listed below describe the relationship between various parameters under different conditions.

6.1.3.1 BS Transmission Power

Transmit power of the Base Station is normalized to 1 and can be presented as

$$\frac{Perch\_E_c}{I_{or}} + \frac{Pilot\_E_c}{I_{or}} + \frac{TPC\_E_c}{I_{or}} + \frac{RI\_E_c}{I_{or}} + \frac{DATA\_E_c}{I_{or}} + \frac{CPCH\_E_c}{I_{or}} + \frac{OCNS\_E_c}{I_{or}} = 1.$$

Dedicated Physical Channel consists of four different fields. Therefore, it can be shown that

$$\frac{DPCH\_E_c}{I_{or}} = \frac{Pilot\_E_c}{I_{or}} + \frac{TPC\_E_c}{I_{or}} + \frac{RI\_E_c}{I_{or}} + \frac{DATA\_E_c}{I_{or}}.$$

Hence, transmit power of Base Station can be presented also as

$$\frac{Perch\_E_c}{I_{or}} + \frac{DPCH\_E_c}{I_{or}} + \frac{CPCH\_E_c}{I_{or}} + \frac{OCNS\_E_c}{I_{or}} = 1.$$

6.1.3.2 Received Signal Strength for Mobile Station Not in Handoff (Static Channel)

For Perch channel we get

$$Perch\ \frac{E_c}{I_o} = \frac{\frac{Perch\_E_c}{I_{or}}}{\frac{I_{oc}}{\hat{I}_{or}} + 1}$$

and for a Dedicated Physical Channel

$$DPCH\ \frac{E_c}{I_o} = \frac{\frac{DPCH\_E_c}{I_{or}}}{\frac{I_{oc}}{\hat{I}_{or}} + 1}.$$

For the Common Physical Channel we get

$$CPCH\ \frac{E_c}{I_o} = \frac{\frac{CPCH\_E_c}{I_{or}}}{\frac{I_{oc}}{\hat{I}_{or}} + 1}.$$

E_b/N_t *for the Perch channel is given as*

$$Perch\ \frac{E_b}{N_t} = \frac{\frac{Perch\_E_c}{I_{or}} \times \frac{Chip\ Rate}{Information\ Data\ Rate}}{\frac{I_{oc}}{\hat{I}_{or}}}.$$

The same for Dedicated Traffic Channels is given as

$$DTCH\ \frac{E_b}{N_t} = \frac{\frac{DPCH\_E_c}{I_{or}} \times \frac{Chip\ Rate}{Information\ Data\ Rate}}{\frac{I_{oc}}{\hat{I}_{or}}},$$

Similar equations can be derived for the Paging Channel and for the Forward Access Channel. For the Paging Channel we get

$$PCH\ \frac{E_b}{N_t} = \frac{\frac{CPCH\_E_c}{I_{or}} \times \frac{Chip\ Rate}{Paging\ Data\ Rate}}{\frac{I_{oc}}{\hat{I}_{or}}},$$

and the same for FACH is given as

$$FACH\ \frac{E_b}{N_t} = \frac{\frac{CPCH\_E_c}{I_{or}} \times \frac{Chip\ Rate}{Control\ Data\ Rate}}{\frac{I_{oc}}{\hat{I}_{or}}}.$$

6.1.3.3 Received Signal Strength for Mobile Station Not in Handoff (Non-Static Channel)

Let us assume that the sum of the channel tap powers is equal to one in multipath channel with L taps, i.e.,

$$\sum_{i=1}^{L} {a_i}^2 = 1,$$

where a_i *represent the complex channel coefficient of the tap i. When assuming that a receiver combines all the multipaths* E_b/N_t *for Perch channel is given as*

$$Perch\ \frac{E_b}{N_t} = \frac{Perch\_E_c}{I_{or}} \times \frac{Chip\ Rate}{Information\ Data\ Rate} \times \sum_{i=1}^{L} \frac{{a_i}^2}{\frac{I_{oc}}{\hat{I}_{or}} + \left(1 - {a_i}^2\right)}.$$

As an example E_b/N_t *for Perch channel in Indoor channel is*

$$Perch\ \frac{E_b}{N_t} = \frac{Perch\_E_c}{I_{or}} \times \frac{Chip\ Rate}{Information\ Data\ Rate} \times \left(\frac{0.900824}{\frac{I_{oc}}{\hat{I}_{or}} + 0.099176} + \frac{0.098773}{\frac{I_{oc}}{\hat{I}_{or}} + 0.901227} + \frac{0.000402}{\frac{I_{oc}}{\hat{I}_{or}} + 0.999598} \right).$$

Using the same assumptions, E_b/N_t *for Dedicated Traffic Channels is given as*

$$DTCH\ \frac{E_b}{N_t} = \frac{DPCH\_E_c}{I_{or}} \times \frac{Chip\ Rate}{Information\ Data\ Rate} \times \sum_{i=1}^{L} \frac{{a_i}^2}{\frac{I_{oc}}{\hat{I}_{or}} + \left(1 - {a_i}^2\right)}.$$

6.1.3.4 Received Signal Strength for Mobile Station in Two-Way Handover

When the received power from each cell is $\hat{I}_{or}$ *we get for each Perch Channel*

$$Perch\ \frac{E_c}{I_o} = \frac{\frac{Perch\_E_c}{I_{or}}}{\frac{I_{oc}}{\hat{I}_{or}} + 2}.$$

If the power received from cell 1 and cell 2 are $\hat{I}_{or1}$ *and* $\hat{I}_{or2}$ *, respectively, then*

$$Perch\ \frac{E_c}{I_o}(Cell\ 1) = \frac{\frac{Perch\_E_c}{I_{or1}}}{\frac{I_{oc}}{\hat{I}_{or1}} + \frac{\hat{I}_{or2}}{\hat{I}_{or1}} + 1}$$

and

$$Perch\ \frac{E_c}{I_o}(Cell\ 2) = \frac{\frac{Perch\_E_c}{I_{or2}}}{\frac{I_{oc}}{\hat{I}_{or2}} + \frac{\hat{I}_{or1}}{\hat{I}_{or2}} + 1}.$$

Similarly,

$$DTCH\ \frac{E_b}{N_t} = \frac{DPCH\_E_c}{I_{or}} \times \frac{Chip\ Rate}{Information\ Data\ Rate} \times \sum_{i=1}^{L} \frac{2{a_i}^2}{\frac{I_{oc}}{\hat{I}_{or}} + 1 + \left(1 - {a_i}^2\right)}$$

if the channel is non-static.

6.1.3.5 Measurement Configurations

In all measurements MS should transmit with maximum power while receiving signals from BS. Transmission Power Control is always disable during the measurements. Chip Rate is specified to be 4.096 MHz.

It as assumed that fields inside DPCH have the same energy per PN chip. Also, if the power of CPCH is not specified in

the test parameter table, it should be set to zero. The power of OCNS should be adjusted that the power ratios (Ec/Ior) of all specified forward channels add up to one.

Measurement configurations for different scenarios are shown in Figure 6.1.3.5-1Figure 6.1.3.5-1Figure 6.1.3.5-1, Figure 6.1.3.5-2Figure 6.1.3.5-2Figure 6.1.3.5-2 and-Figure 6.1.3.5-3Figure 6.1.3.5-3.

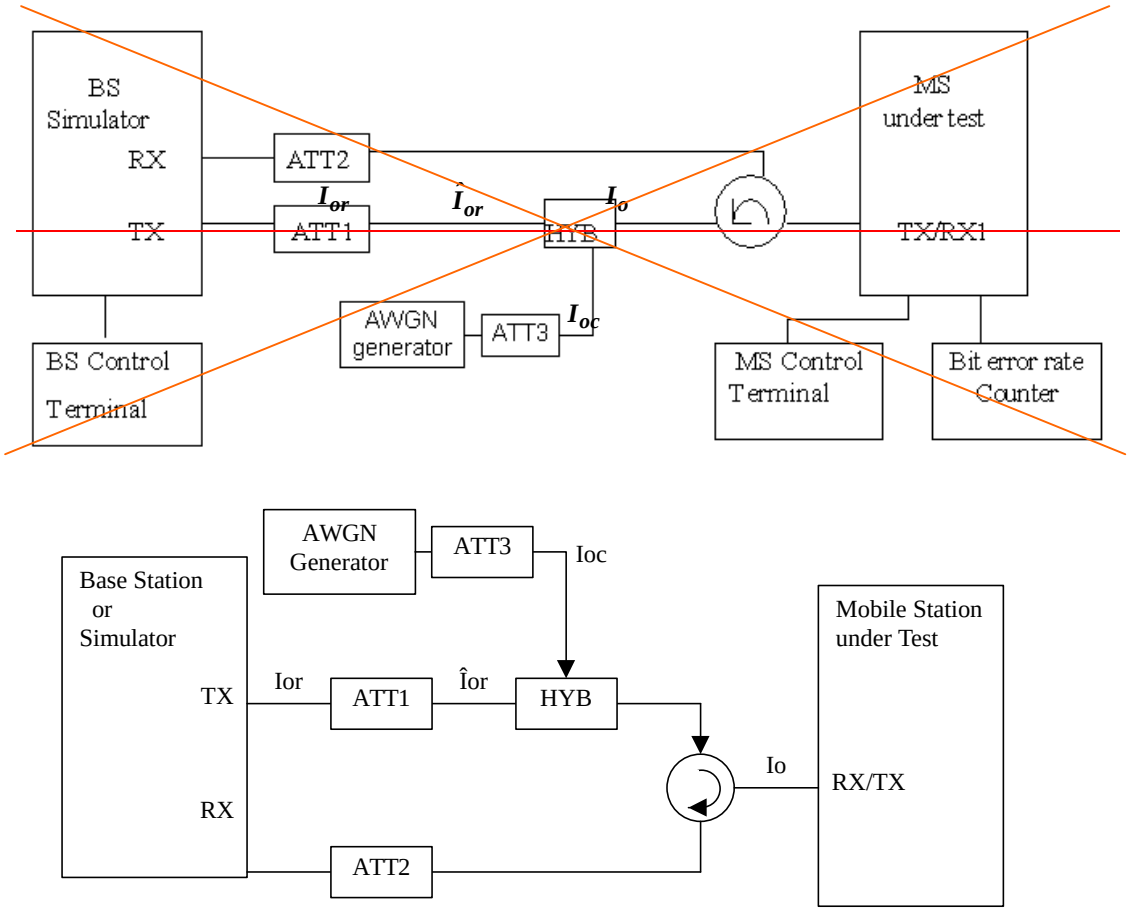

Figure 6.1.3.5-1. Measurement Configuration in Static Channel.

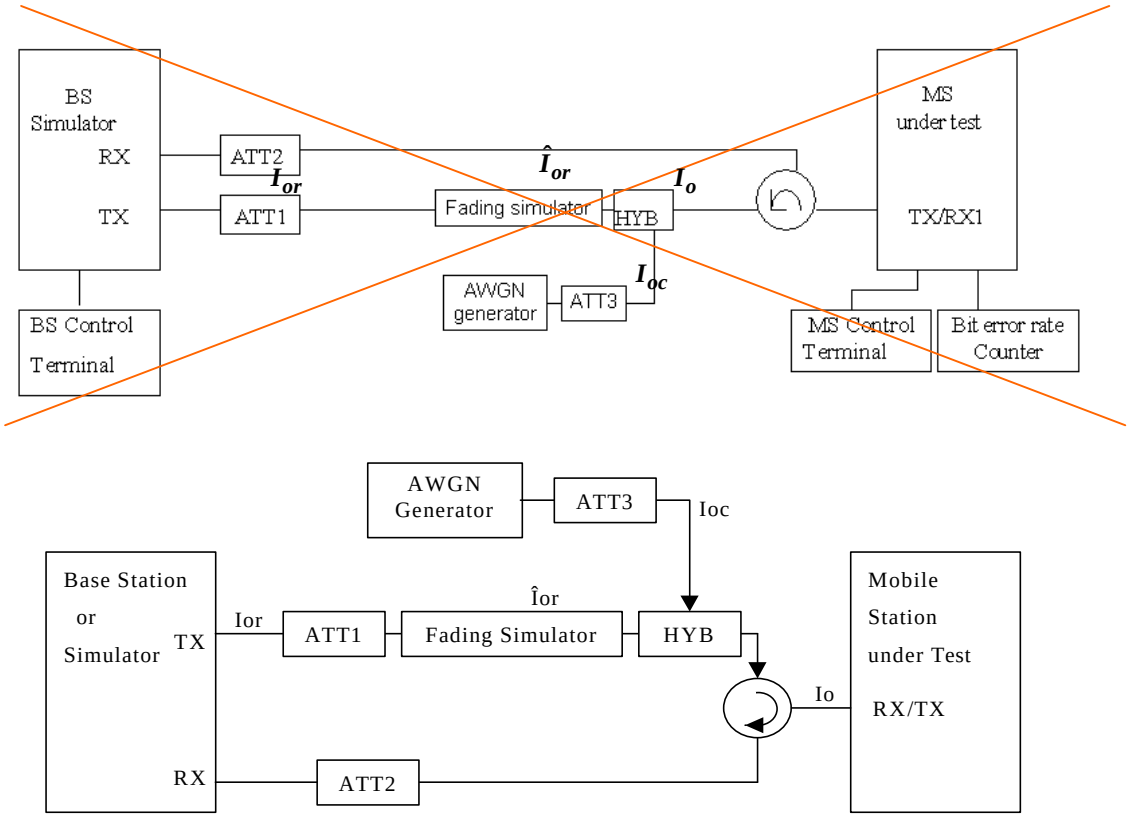

Figure 6.1.3.5-222. Measurement Configuration in Multipath Fading Channel.

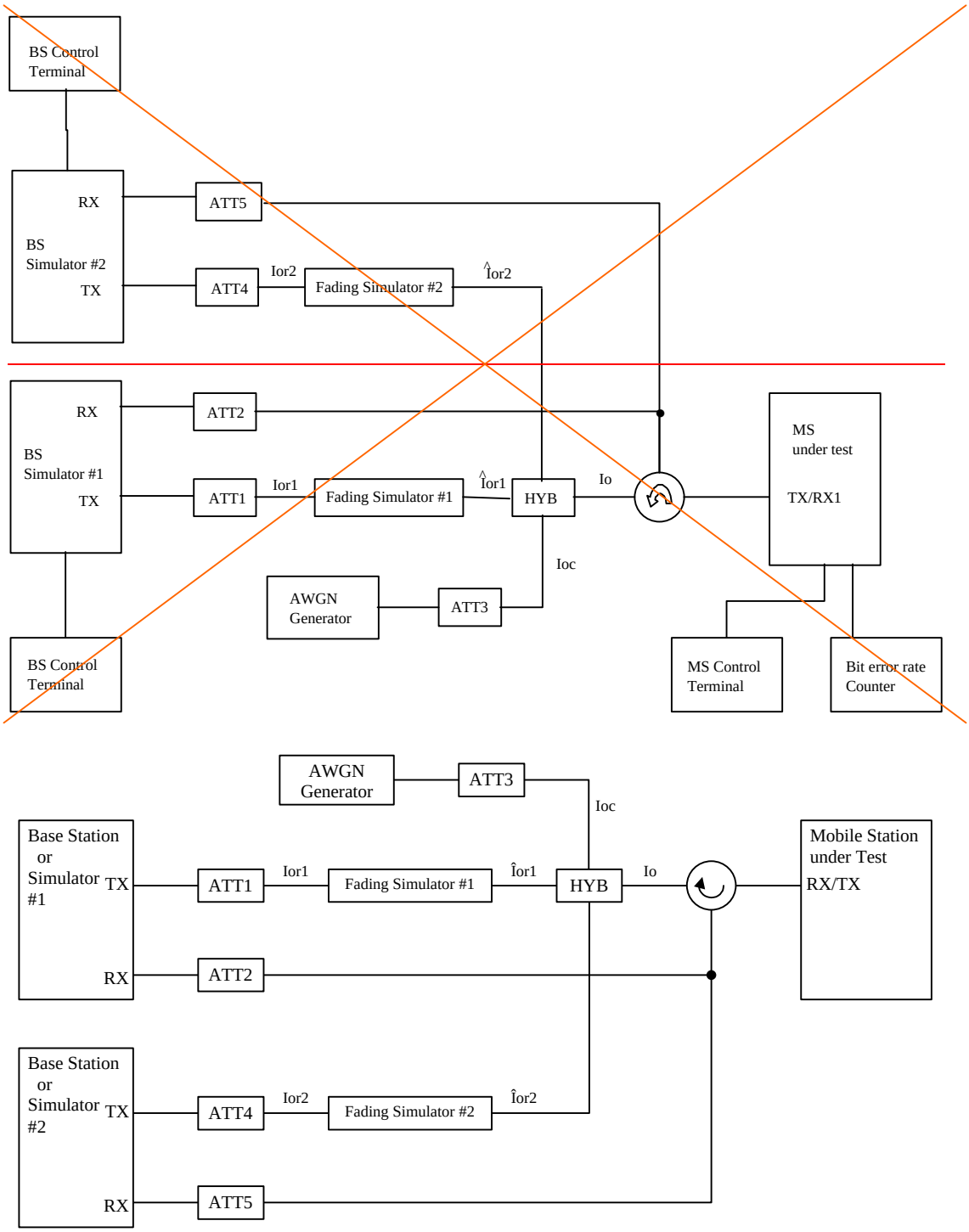

Figure 6.1.3.5-33. Measurement Configuration for Tests in Soft Handoff.

6.2 Demodulation in Static Channel

6.2.1 Demodulation of Paging Channel

6.2.1.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 8.2.1.1 Demodulation of Paging Channel.

6.2.1.2 Test Conditions and Measurement Method

1. *Connect the base station and an AWGN noise source to the mobile station antenna connector as shown in Figure 6.1.3.5-1~~Figure 6.1.3.5-1~~~~Figure 6.1.3.5-1~~.*
2. *Map the Paging Channel information into Common Physical Channel as specified in ARIB Volume 1.*
3. *Set the test parameters as specified in Table 6.2.1.2-1~~Table 6.2.1.2-1~~~~Table 6.2.1.2-1~~.*
4. *Send xx paging messages to Mobile Station.*
5. *Measure MER of received Paging messages.*

Table 6.2.1.2-1. Test Parameters for Paging Channel Reception in an AWGN Channel.

Parameter	***Unit***	***Value***
$\frac{Perch\_E_c}{I_{or}}$	*dB*	
$\frac{DPCH\_E_c}{I_{or}}$	*dB*	
$\frac{CPCH\_E_c}{I_{or}}$	*dB*	
$\hat{I}_{or}/I_{oc}$	*dB*	*-1*
I_{oc}	*dBm/4.096 MHz*	*-60*
Paging Data Rate	*??*	
PCH E_b/N_t	*dB*	

6.2.1.3 Minimum Requirements

6.2.2 Demodulation of Forward Access Channel

6.2.2.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 8.2.2.2 Demodulation of Forward Access Channel.

6.2.2.2 Test Conditions and Measurement Method

1. *Connect the base station and an AWGN noise source to the mobile station antenna connector as shown in Figure 6.1.3.5-1~~Figure 6.1.3.5-1~~~~Figure 6.1.3.5-1~~.*
2. *Map the Forward Access Channel information into Common Physical Channel as specified in ARIB Volume 1.*
3. *Set the test parameters as specified in Table 6.2.2.2-1~~Table 6.2.2.2-1~~~~Table 6.2.2.2-1~~.*
4. *Send xx FACH messages to Mobile Station.*
5. *Measure MER of received FACH messages*

Table 6.2.2.2-1. Test Parameters for Forward Access Channel Reception in an AWGN Channel.

Parameter	*Unit*	*Value*
$\frac{Perch\_E_c}{I_{or}}$	*dB*	
$\frac{DPCH\_E_c}{I_{or}}$	*dB*	
$\frac{CPCH\_E_c}{I_{or}}$	*dB*	
$\hat{I}_{or}/I_{oc}$	*dB*	*-1*
I_{oc}	*dBm/4.096 MHz*	*-60*
Control Data Rate	*??*	
FACH E_b/N_t	*dB*	

6.2.2.3 Minimum Requirements

6.2.3 Demodulation of Dedicated Traffic Channel

6.2.3.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 8.2.2.3 Demodulation of Dedicated Traffic Channel.

6.2.3.2 Test Conditions and Measurement Method

1. *Connect the base station and an AWGN noise source to the mobile station antenna connector as shown in Figure 6.1.3.5-1~~Figure 6.1.3.5-1~~~~Figure 6.1.3.5-1~~.*
2. *Set up the call.*
3. *Set the test parameters for test 1-8 as specified in Table 6.2.3.2-1~~Table 6.2.3.2-1~~~~Table 6.2.3.2-1~~ and Table 6.2.3.2-2~~Table 6.2.3.2-2~~~~Table 6.2.3.2-2~~.*
4. *Count, at the base station, the number of information bits transmitted and the number of correctly received information bits at the mobile station.*
5. *Measure BER of DTCH channel.*

Table 6.2.3.2-1. Test Parameters for Dedicated Traffic Channel Reception in an AWGN Channel.

Parameter	*Unit*	*Test 1*	*Test 2*	*Test 3*	*Test 4*
$\frac{Perch\_E_c}{I_{or}}$	*dB*				
$\frac{DPCH\_E_c}{I_{or}}$	*dB*				
$\hat{I}_{or}/I_{oc}$	*dB*	*-1*			
I_{oc}	*dBm/4.096 MHz*	*-60*			
Information Data Rate	*kbps*	*12.2*	*12.2*	*64*	*64*
Channel Symbol Rate	*ksps*	*32*	*32*	*128*	*128*
Rate Information	-	*off*	*on*	*off*	*on*
DTCH E_b/N_t	*dB*				

Table 6.2.3.2-222. Test Parameters for Dedicated Traffic Channel Reception in an AWGN Channel.

Parameter	*Unit*	*Test 5*	*Test 6*	*Test 7*	*Test 8*
$\frac{Perch\_E_c}{I_{or}}$	*dB*				
$\frac{DPCH\_E_c}{I_{or}}$	*dB*				
$\hat{I}_{or}/I_{oc}$	*dB*	*-1*			
I_{oc}	*dBm/4.096 MHz*	*-60*			
Information Data Rate	*kbps*	*384*	*384*	*2048*	*2046*
Channel Symbol Rate	*ksps*	*512*	*512*	*3*1024*[2]	*3*1024*
Rate Information	-	*off*	*on*	*off*	*on*
DTCH E_b/N_t	*dB*				

6.2.3.3 Minimum Requirements

[2] Multicode transmission with 3 different codes each having 1024 ksps channel symbol rate.

6.3 Demodulation of Dedicated Traffic Channel in Multipath Fading Channel

6.3.1 Single Link Performance

6.3.1.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 8.3.1 Single Link Performance.

6.3.1.2 Test Conditions and Measurement Method

1. *Connect the base station, multipath fading simulator and an AWGN noise source to the mobile station antenna connector as shown in Figure 6.1.3.5-2Figure 6.1.3.5-2Figure 6.1.3.5-2.*
2. *Set up the call.*
3. *Set the test parameters for test 1-20 as specified Table 6.3.1.2-1Table 6.3.1.2-1Table 6.3.1.2-1 to Table 6.3.1.2-4Table 6.3.1.2-4Table 6.3.1.2-4.*
4. *Count, at the base station, the number of information bits transmitted and the number of correctly received information bits at the mobile station.*
5. *Measure BER of DTCH channel.*

Table 6.3.1.2-1. Test Parameters for Dedicated Traffic Channel Reception in a Multipath Channel (Indoor Environment).

Parameter	*Unit*	*Test 1*	*Test 2*	*Test 3*	*Test 4*
$\frac{Perch\_E_c}{I_{or}}$	*dB*				
$\frac{DPCH\_E_c}{I_{or}}$	*dB*				
$\hat{I}_{or}/I_{oc}$	*dB*	*5?*			
I_{oc}	*dBm/4.096 MHz*	*-60*			
Information Data Rate	*kbps*	*12.2*	*12.2*	*64*	*64*
Channel Symbol Rate	*ksps*	*32*	*32*	*128*	*128*
Rate Information	-	*off*	*on*	*off*	*on*
DTCH E_b/N_t	*dB*				

Table 6.3.1.2-2. Test Parameters for Dedicated Traffic Channel Reception in a Multipath Channel (Indoor Environment).

Parameter	***Unit***	***Test 5***	***Test 6***	***Test 7***	***Test 8***
$\frac{Perch\_E_c}{I_{or}}$	*dB*				
$\frac{DPCH\_E_c}{I_{or}}$	*dB*				
$\hat{I}_{or}/I_{oc}$	*dB*	*5?*			
I_{oc}	*dBm/4.096 MHz*	*-60*			
Information Data Rate	*kbps*	*384*	*384*	*2048*	*2048*
Channel Symbol Rate	*ksps*	*512*	*512*	*3*1024*	*3*1024*
Rate Information	*-*	*off*	*on*	*off*	*on*
DTCH E_b/N_t	*dB*				

Table 6.3.1.2-3. Test Parameters for Dedicated Traffic Channel Reception in a Multipath Channel (Indoor to Outdoor and Pedestrian Environment).

Parameter	***Unit***	***Test 9***	***Test 10***	***Test 11***	***Test 12***	***Test 13***	***Test 14***
$\frac{Perch\_E_c}{I_{or}}$	*dB*						
$\frac{DPCH\_E_c}{I_{or}}$	*dB*						
$\hat{I}_{or}/I_{oc}$	*dB*	*5?*					
I_{oc}	*dBm/4.096 MHz*	*-60*					
Information Data Rate	*kbps*	*12.2*	*12.2*	*64*	*64*	*384*	*384*
Channel Symbol Rate	*ksps*	*32*	*32*	*128*	*128*	*512*	*512*
Rate Information	*-*	*off*	*on*	*off*	*on*	*off*	*on*
DTCH E_b/N_t	*dB*						

Table 6.3.1.2-444. Test Parameters for Dedicated Traffic Channel Reception in a Multipath Channel (Vehicular Environment).

Parameter	*Unit*	*Test 15*	*Test 16*	*Test 17*	*Test 18*	*Test 19*	*Test 20*
$\frac{Perch\_E_c}{I_{or}}$	*dB*						
$\frac{DPCH\_E_c}{I_{or}}$	*dB*						
$\hat{I}_{or}/I_{oc}$	*dB*	*5?*					
I_{oc}	*dBm/4.096 MHz*	*-60*					
Information Data Rate	*kbps*	*12.2*	*12.2*	*64*	*64*	*384*	*384*
Channel Symbol Rate	*ksps*	*32*	*32*	*128*	*128*	*512*	*512*
Rate Information	-	*off*	*on*	*off*	*on*	*off*	*on*
DTCH E_b/N_t	*dB*						

6.3.1.3 Minimum Requirements

6.3.2 Inter-Cell Soft Handover Performance

6.3.2.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 8.4 Inter-Cell Soft Handover Performance.

6.3.2.2 Test Conditions and Measurement Method

1. *Connect the base station, multipath fading simulator and an AWGN noise source to the mobile station antenna connector as shown in Figure 6.1.3.5-3.*
2. *Set up the call.*
3. *Set the test parameters for test 1-6 as specified in Table 6.3.2.2-1Table 6.3.2.2-1Table 6.3.2.2-1.*
4. *Count, at the base station, the number of information bits transmitted and the number of correctly received information bits at the mobile station.*
5. *Measure BER of DTCH channel.*

Table 6.3.2.2-1. Test Parameters for Dedicated Traffic Channel Reception in a Multipath Channel during a Soft Handoff (Vehicular Environment).

Parameter	***Unit***	***Test 1***	***Test 2***	***Test 3***	***Test 4***	***Test 5***	***Test 6***
$\frac{Perch\_E_c}{I_{or}}$	*dB*						
$\frac{DPCH\_E_c}{I_{or}}$	*dB*						
$\hat{I}_{or1}/I_{oc}$ *and* $\hat{I}_{or2}/I_{oc}$	*dB*	*5?*					
I_{oc}	*dBm/4.096 MHz*	*-60*					
Information Data Rate	*kbps*	*12.2*	*12.2*	*64*	*64*	*384*	*384*
Channel Symbol Rate	*ksps*	*32*	*32*	*128*	*128*	*512*	*512*
Rate Information	-	*off*	*on*	*off*	*on*	*off*	*on*
DTCH E_b/N_t	*dB*						

6.3.2.3 Minimum Requirements

6.4 Synchronization Performance

6.4.1 Search of other Cells

6.4.1.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 8.5.1.1 Search of other Cells.

6.4.1.2 Test Conditions and Measurement Method

Table 6.4.1.2-1. Test Parameters for the Search of other Cells.

Parameter	***Unit***	***Channel 1***		***Channel 2***	
		Time 1	***Time 2***	***Time 1***	***Time 2***
Perch $\frac{E_c}{I_{or}}$	*dB*				
$\hat{I}_{or}/I_{oc}$	*dB*				
I_{oc}	*dBm/4.096 MHz*	*-60*			
Perch $\frac{E_c}{I_o}$	*dB*				

1. *Setup the equipment as shown in Figure 6.1.3.5-3 (without fading channel blocks)*
2. *Set the test parameters as specified in Table 6.4.1.2-1~~Table 6.4.1.2-1~~~~Table 6.4.1.2-1~~.*
3. *Turn MS on.*
4. *TBD*

6.4.1.3 Minimum Requirements

6.4.2 Inter-Frequency Handover

6.4.2.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 8.5.2 Inter-Frequency Handover.

6.4.2.2 Test Conditions and Measurement Method

TBD

6.4.2.3 Minimum Requirements

6.5 Timing requirements

6.5.1 Synchronization

6.5.1.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 8.6.1 Synchronization.

6.5.1.2 Test Conditions and Measurement Method

The measuring configuration is shown in Figure 6.1.3.5-1~~Figure 6.1.3.5-1~~~~Figure 6.1.3.5-1~~.

6.5.1.3 Minimum Requirements

6.5.2 Channel Timing Dependencies

6.5.2.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 8.6.2 Channel Timing Dependencies.

6.5.2.2 Test Conditions and Measurement Method

TBD

6.5.2.3 Minimum Requirements

6.5.3 Reception Timing

6.5.3.1 Definition

The definition of this measure shall refer 3GPP S4.01A, Section 8.6.3 Reception Timing.

6.5.3.2 Test Conditions and Measurement Method

The measuring configuration is shown in Figure 6.1.3.5-1~~Figure 6.1.3.5-1~~~~Figure 6.1.3.5-1~~.

6.5.3.3 Minimum Requirements

7 Requirement of Test Equipment

[TBD]

Annex <yy> (normative):
Title of normative annex

yy.1 First clause of this normative annex

<Text>

yy.1.1 First subclause of this normative annex

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