ENGLISH TRANSLATION

PERSONAL DIGITAL CELLULAR TELECOMMUNICATION SYSTEM

TEST ITEMS AND CONDITIONS FOR MOBILE STATION COMPATIBILITY CONFIRMATION

ARIB TECHNICAL REPORT

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Preface

The Research & Development Center for Radio Systems (RCR) has been investigating and summarizing the basic technical requirements for establishing standards for developing a digital mobile telephone system. These will appear in the form of standards or technical reports governing the use of radio facilities and equipment for systems that transmit over radiowaves. Such standards are being developed based on the participation of and discussions with the various radio equipment manufacturers, operators and users.

Technical reports such as this serve as guidelines for developing private standards for regulating measurement and testing methods for use of the pertinent radio equipment based on the publicly establish standards so as to ensure the nesessary quality levels and compatibility of the radio equipment being developed.

This technical report specifies "test items and conditions related to the compatibility of mobile stations for the Personal Digital Cellular Telecommunication System." In order to ensure fairness, impartiality and openness among all parties involved, during the drafting states, we are inviting opeators and users both domestically and overseas to participate openly in the activities of the Standard Committee so as to develop standards based on the total agreement of all parties involved.

The scope of application of this technical report covers the basic items for ensuring the compatibility of mobile stations with the networks of individual telecommunication operators. In order to put this technical report into practical use, it is necessary for the telecommunications equipment operators to develop their own original set of values which fall within the scope of this technical report.

We hope that this technical report will aid all parties involved, including radio equipment manufacturers, telecommunications operators, equipment users.

Note: The original "Personal Digital Cellular Telecommunication System, Test Items and Conditions for Mobile Station Compatibility Confirmation" is written in Japanese and was approved by the 18th RCR Standard Committee Meeting September 9,1993.This document is the translation of the technical report into English, which has been approved by the RCR STD-27 English Version Sub-Working Group.

Chapter 1 : General

1.1 Overview

Tests related to compatibility confirmation on "mobile stations as terminal facilities" (hereinafter referred to as "mobile stations" or "MS") are performed for each MS type within the scope of the basic functions and the standardized options specified in the Personal Digital Cellular Telecommunication System RCR Standard (RCR STD-27). The purpose of these tests is to check MS's compatibility with the radio interfaces specified in the RCR STD-27.

As a pre-condition for these tests, the operation of mobile stations based on the said standard shall be confirmed thoroughly in the development and manufacturing stages under the sole responsibility of the manufacturers of the mobile stations.

The tests are conducted within the scope of the general testing environment, and the setting for the test environment or assignment of the functions to the mobile station is chosen in a manner that will not burden the telecommunication operators or mobile station manufacturers.

1.2 Classification of tests

There are two types of tests for checking compatibility of mobile stations: (1) the connection simulator test, and (2) the network compatibility confirmation test. These tests shall be mainly conducted by the mobile station manufacturers.

The connection simulator test shall be conducted to check the specified test items under the specified test conditions using a connection simulator.

The network compatibility confirmation test shall be conducted by connecting a mobile station which has already undergone the connection simulator test with the network for checking the specified test items under the specified test conditions.

Chapter 2 : Connection Simulator Test

2.1 Purpose

The connection simulator test is conducted to check that mobile stations produced by individual mobile station manufacturers satisfy the specifications specified in the Personal Digital Cellular Telecommunication System RCR Standard (RCR STD-27) using a connection simulator.

2.2 Configuration of test system

Fig. 2.1 is an example of the configuration of the connection simulator test.
The connection simulator is generally referred to as a "base station simulator" and features the functions for simulating the basic functions of a base station such as transmission and reception with mobile stations. This technical report does not specify the type of simulator to be used; however, it must be capable of simulating the specified functions.

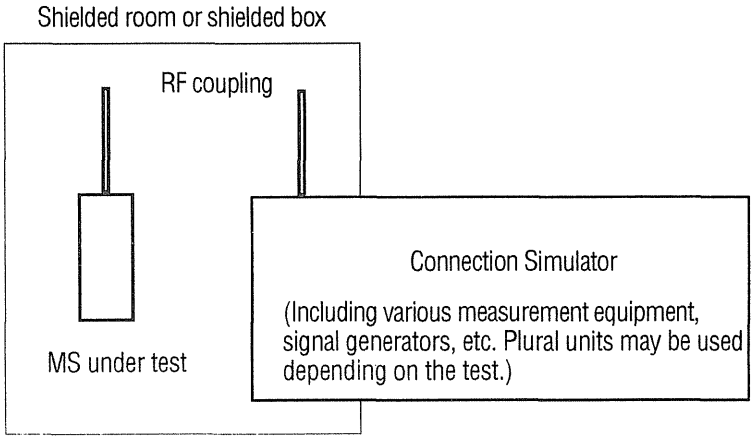

Fig. 2.1 System configuration for the connection simulator test

2.3.Test items and procedures

2.3.1 Test item list

The following are tested by the connection simulator test.

Test no.	Test item
1-1	Location registration operation test
1-1-1	Location registration
1-1-2	Location registration reject
1-2	Call originating operation test
1-2-1	MS call origination -- Call in progress
1-2-2	MS call origination -- MS call disconnection
1-2-3	MS call origination -- Mobile Station Release message reception
1-2-4	MS call origination -- DISConnect message reception before Radio-channel Set message
1-2-5	MS call origination -- Radio-channel Disconnect message reception during alerting
1-3	Call terminating operation test
1-3-1	MS call termination -- Call in progress
1-3-2	MS call termination -- Calling party call disconnection
1-3-3	MS call termination -- Mobile Station Release message reception
1-3-4	MS call termination -- Radio-channel Disconnect message reception during being alerted
1-4	Disconnecting operation test
1-4-1	Call in progress -- MS call disconnection
1-4-2	Call in progress -- Network call disconnection
1-4-3	VOX -- Call disconnection during voice-absence state
1-4-4	Squelch disconnection
1-4-5	Call disconnection by turning power OFF
1-4-6	MS battery drop -- Call disconnection
1-5	Operation test during the call in progress
1-5-1	Handover
1-5-2	MS call origination -- Radio-channel Disconnect message reception during the call in progress
1-5-3	Out-of-sync during the call in progress -- Resynchronization establishment
(Note) 1-5-4	Continuous communication test

Test no.	Test item
1-6	Transmission power control test
1-6-1	Autonomous transmission power control
1-6-2	Transmission power control (Broadcast Information : Maximum transmission power assignment)
1-6-3	Transmission power control (Radio-channel Set : MS transmission power assignment)
1-6-4	Transmission power control (During the call in progress)
1-6-5	Transmission power control (Handover)
1-7	Restriction control operation test
1-7-1	Maintenance restriction
1-7-2	General MS access group restriction (Location registration)
1-7-3	General MS access group restriction (Call origination)
1-7-4	High Priority MS access restriction (Location registration)
1-7-5	High Priority MS access restriction (Call origination)
1-7-6	Peripheral zone access control
1-7-7	Home zone access restriction
1-7-8	Access cycle restriction(Location registration)
1-7-9	Access cycle restriction(Call origination)

(Note)
Test items and conditions for the technical requirements will not be clarified until relevant ministerial ordinances are regulated based on the report, " Technical Requirements for Mobile Station as Terminal Facilities." Therefore, the above test item list includes this "Continuous communication test" which seems to be particularly important. It shall not be deleted from the list unless the test items and conditions for the technical requirements are clarified.

2.3.2 Test items and procedures

The test items and procedures for the connection simulator test are listed below.

2.3.2.1 Location registration operation test

Test item	1-1-1 : Location registration
Overview	Check that the location registration is performed properly when the MS moves into another zone or on turning the power ON for the MS according to the changes in the location identity which occur when the MS moves into another area.
Procedure	1. Set the connection simulator for zone switching and the location identity to A. 2. Turn the power ON for the MS. 3. Change the location identity A to B by the connection simulator. 4. Turn the power OFF for the MS. 5. Set the location identity for the connection simulator back to A. 6. Turn the power back ON for the MS while maintaining the above state.
Check item	1. Check that the location registration is performed in the above procedures 3 and 6.

Test item	1-1-2 : Location registration reject
Overview	Check that the MS does not transmit a Location Registration Request message again after receiving a Location Registration Reject message.
Procedure	1. Turn the power ON for the MS and initiate the location registration. 2. Send a Location Registration Reject message from the connection simulator after receiving an Authentication Response message.
Check item	1. Check that the MS receives the Location Registration Reject message and does not transmit a Location Registration Request message again.
Remark	1. Check the Cause element for "Roaming not allowed" and "Location registration failure."

2.3.2.2 Call originating operation test

Test item	1-2-1 : MS call origination -- Call in progress
Overview	Check that a call originated from the MS to the connection simulator can be put through.
Procedure	1. Originate a call from the MS to the connection simulator. 2. Establish a traffic physical channel.
Check item	1. Check that the above procedures are performed normally.

Test item	1-2-2 : MS call origination -- MS call disconnection
Overview	Check that a call originated from the MS to the connection simulator can be disconnected by the MS before the call is put through.
Procedure	1. Originate a call from the MS to the connection simulator. 2. Disconnect the call by the MS before receiving a Radio-channel Set message.
Check item	1. Check that the MS ends the call originating operation and returns to the stand-by state.

Test item	1-2-3 : MS call origination -- Mobile Station Release message reception
Overview	Originate a call from the MS to the connection simulator, and check that the MS receives a Mobile Station Release message and returns to the stand-by state.
Procedure	1. Originate a call from the MS to the connection simulator. 2. Send a Mobile Station Release message from the connection simulator to the MS before sending a Radio-channel Set message.
Check item	1. Check that the MS ends the call originating operation and returns to the stand-by state.

Test item	1-2-4 : MS call origination -- DISConnect message reception before Radio-channel Set message
Overview	Originate a call from the MS to the connection simulator. Send a DISConnect message from the connection simulator before sending a Radio-channel Set message and check that the MS ends the call originating operation.
Procedure	1. Originate a call from the MS to the connection simulator. 2. Send the DISConnect message from the connection simulator after sending a CALL PROCeeding message and before sending a Radio-channel Set message.
Check item	1. Check that the MS ends the call originating operation and that the busy tone is generated. 2. Check that the MS returns to the stand-by state.

Test item	1-2-5 : MS call origination -- Radio-channel Disconnect message reception during alerting
Overview	Originate a call from the MS to the connection simulator. Check that the MS ends the call originating operation on reception of a Radio-channel Disconnect message while the called party is being alerted.
Procedure	1. Originate a call from the MS to the connection simulator. 2. Alert the called party. 3. Send a Radio-channel Disconnect message from the connection simulator.
Check item	1. Check that the MS ends the call originating operation and returns to the stand-by state.

2.3.2.3 Call terminating operation test

Test item	1-3-1 : MS call termination -- Call in progress
Overview	Request the MS to terminate a call from the connection simulator, and check that the call can be put through.
Procedure	1. Request the MS to terminate a call from the connection simulator. 2. Establish a traffic physical channel.
Check item	1. Check that the above procedures are performed normally.

Test item	1-3-2 : MS call termination -- Calling party call disconnection
Overview	Request the MS to terminate a call from the connection simulator. Check that the call can be disconnected by the calling party before switching to the alerting state.
Procedure	1. Request the MS to terminate a call from the connection simulator. 2. Disconnect the call by the connection simulator before sending a Radio-channel Set message.
Check item	1. Check that the MS ends the call terminating operation and returns to the stand-by state.

Test item	1-3-3 : MS call termination -- Mobile Station Release message reception
Overview	Request the MS to terminate a call from the connection simulator, and check that the MS returns to the stand-by state on reception of a Mobile Station Release message.
Procedure	1. Request the MS to terminate a call from the connection simulator. 2. Send a Mobile Station Release message from the connection simulator to the MS before sending a Radio-channel Set message.
Check item	1. Check that the MS ends the call terminating operation and returns to the stand-by state.

Test item	1-3-4 : MS call termination -- Radio-channel Disconnect message reception during being alerted
Overview	Request the MS to terminate a call from the connection simulator. Check that the MS receives a Radio-channel Disconnect message while the MS is being alerted and returns to the stand-by state.
Procedure	1. Request the MS to terminate a call from the connection simulator. 2. Alert the MS. 3. Send a Radio-channel Disconnect message from the connection simulator to the MS.
Check item	1. Check that the MS ends the terminating operation and returns to the stand-by state.

2.3.2.4 Disconnecting operation test

Test item	1-4-1 : Call in progress -- MS call disconnection
Overview	Check that a call can be disconnected by the MS during the call in progress.
Procedure	1. Originate a call from the MS to the connection simulator. 2. Establish a traffic physical channel. 3. Disconnect the call by the MS.
Check item	1. Check that the above procedures are performed normally.

Test item	1-4-2 : Call in progress -- Network call disconnection
Overview	Check that a call can be disconnected by the connection simulator during the call in progress.
Procedure	1. Originate a call from the MS to the connection simulator. 2. Establish a traffic physical channel. 3. Disconnect the call by the connection simulator. 4. Disconnect the call of the MS after monitoring busy tone.
Check item	1. Check that the above procedures are performed normally.

Test item	1-4-3 : VOX -- Call disconnection during voice-absence state
Overview	Check that the VOX function for the MS operates normally and that the call can be disconnected by the MS during the voice-absence state.
Procedure	1. Set the VOX function for the MS to ON. 2. Originate a call from the MS to the connection simulator. 3. Establish a traffic physical channel. 4. Disconnect the call by the MS during the voice-absence state.
Check item	1. Check that the VOX function operates normally. 2. Check that the call can be disconnected by the MS during the voice-absence state.
Remark	This test applies only to mobile stations which possess a VOX function.

Test item	1-4-4 : Squelch disconnection
Overview	Check that the MS returns to the stand-by state when the downlink radiowave is cut off during the call in progress.
Procedure	1. Originate a call from the MS to the connection simulator. 2. Establish a traffic physical channel. 3. Cut off the downlink radiowave from the connection simulator.
Check item	1. Check that the call is disconnected and the MS returns to the stand-by state.

Test item	1-4-5 : Call disconnection by turning power OFF
Overview	Check that a call can be disconnected by the MS on turning the power OFF for the MS during the call in progress.
Procedure	1. Originate a call from the MS to the connection simulator. 2. Establish a traffic physical channel. 3. Turn the power OFF for the MS.
Check item	1. Check that the MS performs the call disconnecting operation.
Remark	This test applies only to the 300mW or 800mW mobile stations.

Test item	1-4-6 : MS battery drop -- Call disconnection
Overview	Check that a call can be disconnected by the MS when the battery for the MS depletes during the call in progress.
Procedure	1. Originate a call from the MS to the connection simulator. 2. Establish a traffic physical channel. 3. Set the MS to the condition which leads to the battery power drop.
Check item	1. Check that the MS performs the call disconnecting operation.
Remark	This test applies only to the 300mW and 800mW mobile stations.

2.3.2.5 Operation test during the call in progress

Test item	1-5-1 : Handover
Overview	Check that the MS can handover during the call in progress.
Procedure	1. Originate a call from the MS to the connection simulator. 2. Establish a traffic physical channel. 3. Send a Condition Report Information message from the connection simulator. 4. Set the connection simulator to the condition with which Condition Report 2 is activated. 5. Send a Handover Radio-channel Set message from the connection simulator to activate handover.
Check item	1. Check that the Condition Report 1 message is sent periodically. 2. Check that the Condition Report 2 message is sent. 3. Check that the MS is handed-over to the channel specified in the above step 5.

Test item	1-5-2 : MS call origination -- Radio-channel Disconnect message reception during the call in progress
Overview	Originate a call from the MS to the connection simulator. Check that the MS disconnects the call on reception of a Radio-channel Disconnect message after the call is established.
Procedure	1. Originate a call from the MS to the connection simulator. 2. Establish a traffic physical channel. 3. Send a Radio-channel Disconnect message from the connection simulator.
Check item	1. Check that the call is disconnected and the MS returns to the stand-by state.

Test item	1-5-3 : Out-of-sync during the call in progress -- Resynchronization establishment
Overview	Lose the downlink channel synchronization during the call in progress and check that the communication state resumes after establishing resynchronization.
Procedure	1. Originate a call from the MS to the connection simulator. 2. Establish a traffic physical channel. 3. Cut off the downlink radiowave for approx. 2 seconds. 4. Turn the downlink radiowave back ON.
Check item	1. Check that the transmission halts temporarily at the above step 3 and that the traffic physical channel is re-established at the above step 4.

Test item	1-5-4 : Continuous communication test
Overview	Check that the MS operates normally even when it is performing communications continuously.
Procedure	1. Set the VOX function for the MS to OFF and originate a call from the MS to the connection simulator. The transmission power should be the maximum in this step. 2. Keep the MS under call in progress for 3 hours. However, if the maximum communication time of the MS is set for 3 hours or less, keep it in the state up to the maximum communication time. 3. Disconnect the call by the MS.
Check item	1. Check that the above procedures are performed normally.

2.3.2.6 Transmission power control test

Test item	1-6-1 : Autonomous transmission power control
Overview	Check that the MS controls transmission output according to the reception level detected during the stand-by state.
Procedure	1. Divide the MS transmission into two parts: Connect one part to the connection simulator and the other to the power measurement system. 2. Set the "maximum transmission power assignment" in the Broadcast Information for the connection simulator. 3. Set the MS to the stand-by state. 4. Originate a call from the MS to the connection simulator. 5. Measure the transmission power of the MS. 6. Change the transmission level of the connection simulator and repeat the above steps from 3 to 5.
Check item	1. Check that the MS transmission output is controlled.

Test item	1-6-2 : Transmission power control (Broadcast Information : Maximum transmission power assignment)
Overview	Check that the MS transmits the power within the range of the transmission output assigned during the access to the CAC after receiving the Broadcast Information.
Procedure	1. Divide the MS transmission into two parts: Connect one part to the connection simulator and the other to the power measurement system. 2. Set the "maximum transmission power assignment" in the Broadcast Information for the connection simulator. 3. Originate a call from the MS to the connection simulator. 4. Measure the transmission power of the MS. 5. Change the maximum transmission power from the minimum to the maximum and repeat the above steps from 2 to 4.
Check item	1. Check that the MS transmission power is within the range of the maximum transmission power assignment in the Broadcast Information.
Remark	1. Set the reception level of the MS to a level at which the autonomous transmission power control is not performed. 2. Test results must be evaluated by the amount of change in the MS transmission power according to the amount of change in the maximum transmission power assignment.

Test item	1-6-3 : Transmission power control (Radio-channel Set : MS transmission power assignment)
Overview	Check that the MS updates the initial and the maximum transmission power on reception of a Radio-channel Set message, and transmits within the range of the transmission power which is assigned right after the MS switches to the TCH.
Procedure	1. Divide the MS transmission into two parts: Connect one part to the connection simulator and the other to the power measurement system. 2. Set the initial and the "maximum transmission power" in the Radio-channel Set message for the connection simulator. 3. Originate a call from the MS to the connection simulator. 4. Measure the transmission power of the MS, after switching to the TCH. 5. Change the initial transmission power from the minimum to the maximum and repeat the above steps from 2 to 4.
Check item	1. Check that the MS transmission power is within the range of the initial transmission power assignment in the Radio-channel Set message.

Test item	1-6-4 : Transmission power control (During the call in progress)
Overview	Check that the MS receives the RCH and transmits with assigned transmission power.
Procedure	1. Divide the MS transmission into two parts: Connect one part to the connection simulator and the other to the power measurement system. 2. Originate a call from the MS to the connection simulator. 3. Assign the transmission power by the RCH and measure the MS transmission power at each assignment. 4. Change the transmission power from the minimum to the maximum and repeat the above step 3.
Check item	1. Check that the MS transmission power is controlled within the range of the maximum transmission power assignment by the RCH. 2. Check that the maximum transmission power for the MS is within the maximum transmission power in the RCH. 3. Check that the MS with the VOX function transmits with the assigned transmission power both when the VOX is ON and OFF.

Test item	1-6-5 : Transmission power control (Handover)
Overview	Check that the MS updates the initial and the maximum transmission power after being handed-over, and transmits within the range of the assigned transmission power.
Procedure	1. Divide the MS transmission into two parts: Connect one part to the connection simulator and the other to the power measurement system. 2. Originate a call from the MS to the connection simulator. 3. Set the "initial and the maximum transmission power" in the Handover Radio-channel Set message. 4. Send the Handover Radio-channel Set message to make the MS do handover. 5. Measure the MS transmission power. 6. Set a transmission power which exceeds the maximum transmission power for the handover destination radio-channel by the RCH. 7. Change the transmission power from the minimum to the maximum and repeat the above steps from 2 to 6.
Check item	1. Check that the MS transmission power is within the assigned range. 2. Check that the transmission power in the above step 6 is within the range of the maximum transmission power assignment for the handover destination radio-channel.

2.3.2.7 Restriction control operation test

Test item	1-7-1 : Maintenance restriction
Overview	Check the maintenance restriction for the general and priority mobile stations.
Procedure	1. Set the MS for "General MS." 2. Set the connection simulator for "Home zone selection Enabled." 3. Turn the power ON for the MS and originate a call from the MS to the connection simulator. 4. Turn the power OFF for the MS. 5. Set the connection simulator for "Home zone selection Disabled." 6. Turn the power back ON for the MS. 7. Set the MS for "Priority MS" and repeat the above steps from 2 to 6.
Check item	1. Check that the MS can originate a call in the above step 3. 2. Check that the MS does not switch to the stand-by state in the above step 6.

Test item	1-7-2 : General MS access group restriction (Location registration)
Overview	Check that the access group restriction for the general mobile stations.
Procedure	1. Set the connection simulator for "Home zone selection Enabled." 2. Set the connection simulator for "Home zone access Enabled." 3. Set the connection simulator for "Home zone access restriction On." 4. Set the connection simulator for "Access cycle interval No restriction." 5. Set the connection simulator for "General MS location registration restriction On." 6. Set the connection simulator for "Group restriction for the MS under test On." 7. Set the MS for "General MS." 8. Turn the power ON for the MS. 9. Set the connection simulator for "Group restriction for the MS under test Off." 10. Turn the power ON for the MS.
Check item	1. Check that the MS does not perform location registration in the above step 8. 2. Check that the MS performs a location registration in the above step 10.

Test item	1-7-3 : General MS access group restriction (Call origination)
Overview	Check the access group restriction for general mobile stations.
Procedure	1. Set the connection simulator for "Home zone selection Enabled." 2. Set the connection simulator for "Home zone access Enabled." 3. Set the connection simulator for "Home zone access restriction On." 4. Set the connection simulator for "Access cycle interval No restriction." 5. Set the connection simulator for "General MS origination restriction On." 6. Set the connection simulator for "Group restriction for the MS under test On." 7. Set the MS for "General MS." 8. Originate a call from the MS to the connection simulator. 9. Set the connection simulator for "Group restriction for the MS under test Off." 10. Originate a call from the MS to the connection simulator.
Check item	1. Check that the MS cannot originate a call in the above step 8. 2. Check that the MS can originate a call in the above step 10.

Test item	1-7-4 : High Priority MS access restriction (Location registration)
Overview	Check the access restriction for high priority mobile stations.
Procedure	1. Set the connection simulator for "Home zone selection Enabled." 2. Set the connection simulator for "Home zone access Enabled." 3. Set the connection simulator for "Home zone access restriction On." 4. Set the connection simulator for "High Priority MS location registration Disabled." 5. Set the MS for "High Priority MS." 6. Turn the power ON for the MS. 7. Set the connection simulator for "High Priority MS location registration Enabled." 8. Turn the power ON for the MS.
Check item	1. Check that the MS does not perform location registration in the above step 6. 2. Check that the MS performs a location registration in the above step 8.

Test item	1-7-5 : High Priority MS access restriction (Call origination)
Overview	Check the access restriction for high priority mobile stations.
Procedure	1. Set the connection simulator for "Home zone selection Enabled." 2. Set the connection simulator for "Home zone access Enabled." 3. Set the connection simulator for "Home zone access restriction On." 4. Set the connection simulator for "High Priority MS origination Disabled." 5. Set the MS for "High Priority MS." 6. Originate a call from the MS to the connection simulator. 7. Set the connection simulator for "High Priority MS origination Enabled." 8. Originate a call from the MS to the connection simulator.
Check item	1. Check that the MS cannot originate a call in the above step 6. 2. Check that the MS can originate a call in the above step 8.

Test item	1-7-6 : Peripheral zone access control
Overview	Check the peripheral zone access control.
Procedure	1. Set the connection simulator for "Home zone selection Enabled," "Zone selection correction level On,""Home zone access Enabled," and "Home zone access restriction Off." 2. Set the connection simulator for "Zone selection correction level 30dB." 3. Set the connection simulator for the difference in the reception level between the home zone control channel and the peripheral zone control channel to be within 30dB. 4. Turn the power ON for the MS. 5. Originate a call from the MS to the connection simulator. 6. Turn the power OFF for the MS. 7. Set the connection simulator for the difference in the reception level between the home zone control channel and the peripheral zone control channel to be 30dB or more. 8. Change the location identity for the connection simulator. 9. Turn the power ON for the MS. 10. Originate a call from the MS to the connection simulator.
Check item	1. Check that the MS performs a location registration in the home zone in the above step 4. 2. Check that the MS cannot originate a call to the connection simulator in the home zone in the above step 5. 3. Check that the MS performs a location registration in the home zone in the above step 9. 4. Check that the MS can originate a call to the connection simulator in the home zone in the above step 10.

Test item	1-7-7 : Home zone access restriction
Overview	Check that the MS can neither perform location registration nor originate a call in the case of "Home zone access Disabled."
Procedure	1. Set the connection simulator for "Home zone access Disabled." 2. Turn the power ON for the MS and originate a call from the MS to the connection simulator.
Check item	1. Check that the MS does not perform location registration. 2. Check that the MS cannot originate a call to the connection simulator.

Test item	1-7-8 : Access cycle restriction (Location registration)
Overview	Check the access cycle restriction (Location registration).
Procedure	1. Set the connection simulator for "Home zone selection Enabled." 2. Set the connection simulator for "Home zone access Enabled." 3. Set the connection simulator for "Home zone access restriction On." 4. Set the connection simulator for "Access cycle interval '1 1 1 1' (720×60 msec)." 5. Set the connection simulator for "General MS location registration restriction On." 6. Set the connection simulator for "Group restriction for the MS under test On." 7. Turn the power ON for the MS. 8. Set the connection simulator for "Group restriction for the MS under test Off."
Check item	1. Check that the MS does not perform location registration in the above step 7. 2. Check that the MS does not perform location registration before the access cycle timer for the MS sets time out in the above step 8.

Test item	1-7-9 : Access cycle restriction (Call origination)
Overview	Check the access cycle restriction (Call origination)
Procedure	1. Set the connection simulator for "Home zone selection Enabled." 2. Set the connection simulator for "Home zone access Enabled." 3. Set the connection simulator for "Home zone access restriction On." 4. Set the connection simulator for "Access cycle interval '1 1 1 1' (720× 60msec)." 5. Set the connection simulator for "General MS location registration restriction On." 6. Set the connection simulator for "Group restriction for the MS under test On." 7. Turn the power ON for the MS and originate a call from the MS to the connection simulator. 8. Set the connection simulator for "Group restriction for the MS under test Off." 9. Originate a call from the MS to the connection simulator.
Check item	1. Check that the MS cannot originate a call in the above step 7. 2. Check that the MS cannot originate a call before the access cycle timer for the MS sets time out in the above step 9.

Chapter 3 : Network Compatibility Confirmation Test

3.1 Purpose

The network compatibility test is performed for the mobile stations which have already undergone the compatibility simulator tests. These tests are conducted to check that the mobile stations operate normally when they are connected with a network to which the telecommunication operators provide services and use the basic functions, such as origination, termination, location registration, communications, handover and disconnection in the service area.

3.2 Configuration of test system

Fig. 3.1 is an example of the system configuration for the network compatibility confirmation test.

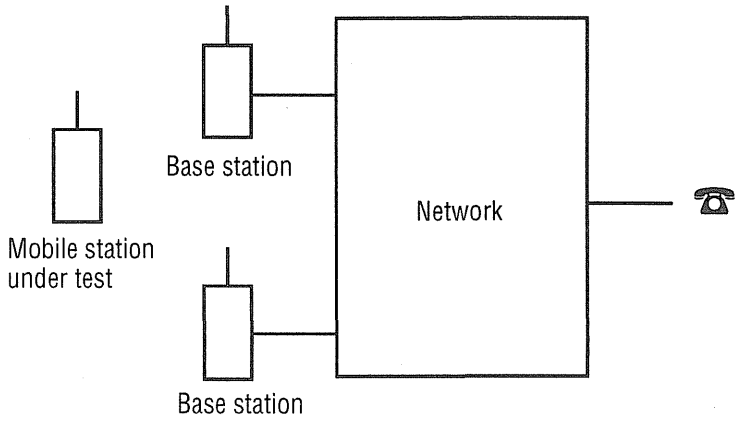

Fig. 3.1 Example of system configuration for network compatibility confirmation test

3.3 Conduct of Network Compatibility Confirmation Test

The network compatibility confirmation test shall be conducted on the network of the telecommunication operator using mobile stations which have already undergone the connection simulator test.

3.4 Test items and procedures

3.4.1 Test item list

The following are tested by the network compatibility confirmation test.

Test no.	Test item
2-1	Location registration operation test
2-1-1	Location registration
2-2	Call originating operation test
2-2-1	MS call origination -- Call in progress
2-2-2	MS call origination -- MS call disconnection
2-2-3	MS call origination -- Called party busy
2-3	Call terminating operation test
2-3-1	MS call termination -- Call in progress
2-4	Disconnecting operation test
2-4-1	Call in progress -- MS call disconnection
2-4-2	Call in progress -- Network call disconnection
2-5	Operation test during the call in progress
2-5-1	Handover

3.4.2 Test items and procedures

The test items and procedures for the network compatibility confirmation test are listed below:

3.4.2.1 Location registration operation test

Test item	2-1-1 : Location registration
Overview	Check that the location registration is performed properly when the MS moves into another zone or on turning the power ON for the MS according to the changes in the location identity which occur when the MS moves into another area.
Procedure	1. Turn the power ON for the MS in the location registration area A. 2. Request the MS to terminate a call. 3. Disconnect the call and move the MS to the location registration area B with the power ON. 4. Request the MS to terminate the call. 5. Turn the power OFF for the MS. 6. Move the MS to the location registration area A with the power OFF. 7. Turn the power back ON for the MS in the location registration area A and request the MS to terminate the call.
Check item	1. Check that the MS can terminate the call in the above steps 2, 4 and 7.

3.4.2.2 Call originating operation test

Test item	2-2-1 : MS call origination -- Call in progress
Overview	Check that a call originated from the MS to the network can be put through.
Procedure	1. Originate a call from the MS to the network. 2. Monitor the ring back tone (RBT). 3. Communicate with the called party.
Check item	1. Check that the above procedures are performed normally.

Test item	2-2-2 : MS call origination -- MS call disconnection
Overview	Check that a call originated from the MS to the network can be disconnected by the MS before the call is put through.
Procedure	1. Originate a call from the MS to the network. 2. Disconnect the call by the MS before the ring back tone (RBT) is generated.
Check item	1. Check that the MS ends the call originating operation and returns to the stand-by state.
Remark	Whether the MS has returned to the stand-by state or not is checked by requesting the MS to terminate the call.

Test item	2-2-3 : MS call origination -- Called party busy
Overview	If the called party is busy when a call is originated by the MS, check that the busy tone can be monitored by the MS.
Procedure	1. Put the called party into the busy state. 2. Originate a call from the MS to the called party. 3. Check that the busy tone is monitored by the MS. 4. Disconnect the call by the MS.
Check item	1. Check that the busy tone is generated. 2. Check that the MS returns to the stand-by state after the call is disconnected.
Remark	Whether the MS has returned to the stand-by state or not is checked by requesting the MS to terminate the call.

3.4.2.3 Call terminating operation test

Test item	2-3-1 : MS call termination -- Call in progress
Overview	Request the MS to terminate a call from the network, and check that the call can be put through.
Procedure	1. Request the MS to terminate a call from the network. 2. Communicate with the called party.
Check item	1. Check that the above procedures are performed normally.

3.4.2.4 Disconnecting operation test

Test item	2-4-1 : Call in progress -- MS call disconnection
Overview	Check that the call can be disconnected by the MS during the call in progress.
Procedure	1. Originate a call from the MS to the network. 2. Communicate with the called party. 3. Disconnect the call by the MS.
Check item	1. Check that the MS returns to the stand-by state.
Remark	1. Whether the MS has returned to the stand-by state or not is checked by requesting the MS to terminate the call. 2. When the MS possesses the VOX function, disconnect the call by the MS even during the voice-absence state.

Test item	2-4-2 : Call in progress -- Network call disconnection
Overview	Check that a call can be disconnected by the calling party during the call in progress.
Procedure	1. Request the MS to terminate a call from the network. 2. Communicate with the called party. 3. Disconnect the call by the calling party. 4. Disconnect the call of the MS after monitoring the busy tone.
Check item	1. Check that the MS returns to the stand-by state.
Remark	1. Whether the MS has returned to the stand-by state or not is checked by requesting the MS to terminate the call.

3.4.2.5 Operation test during the call in progress

Test item	2-5-1 : Handover
Overview	Check that the MS can handover during the call in progress.
Procedure	1. Originate a call from the MS to the network. 2. Communicate with the called party. 3. Move the MS between adjacent zones.
Check item	1. Check that the communication continues while the MS is moving between the adjacent zones.

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