TECHNICAL REQUIREMENTS
to SOSM function facilities
at mobile radiotelephony networks
(SOSM - MRS)

CONTENTS

1. SOSM purpose

1.1. Technical facilities for System of Operative-Search Measures (SOSM) at mobile radiocommunication (wireless) telephone networks (MRS) are intended for operative monitoring of connections and locations of certain users of the mobile communications according with current legislation of the Russian Federation. Operative monitoring should be fulfilled from the remote Control Point (CP) by its interaction with hardware and software of SOSM MRS.

1.2. The present Technical Requirements (TR) covers SOSM of MRS networks, included in Russian PSTN irrespective of departmental belonging and property forms.

1.3. The present Technical Requirements are applied to SOSM of the following public networks of land mobile wireless telephone communications and subscriber radioaccess:

federal cellular networks - of GSM and NMT-450 standards;

regional cellular networks - of AMPS (NAMPS, DAMPS) standard;

subscriber radioaccess networks - of DECT, CDMA standards;

and other standards for cellular, radial, trunking, cordless radiosystems and subscriber radioaccess systems when introducing them at Russian networks

1.4. SOSM MRS should be fulfilled as hardware and software included in MRS equipment, which is supplied or developed in accordance with standard MRSs (Mobile Switching Centres (MSC), location registers and other).

1.5. The present requirements should be provided on using cryptography or other methods for transmitted information security.

1.6. SOSM MRS should provide the following:

- the database to keep information about mobile communication users under monitoring and operative managing data from CP;
- interaction with CP via data communication channels (links), and output to CP speech channels for monitoring of connections;
- interface with equipment of line path 2048 Kbit/s, and in some cases - with physical lines;
- protection against unauthorized access to SOSM MRS information, including protection

against MSC personnel access;

- access into databases and receiving at CP information about MRS subscriber's sets accompanied with exact addresses of physical persons or enterprises irrespective of property forms, users of mobile wireless networks.

1.7. SOSM MRS should be an obligatory part of regular equipment of MRS.

SOSM MRS should include the following:

- software of SOSM-MSC registers, CP operator's position;

- hardware, including SOSM hardware as a part of MSC, registers, and also equipment of digital transmission systems (DTS), data communication equipment, modems, PC, printers, which are installed at MSC and CP.

1.8. Realizing SOSM functions shouldn't deteriorate qualitative characteristics of MSC subscribers servicing.

2. Technical requirements to SOSM-MRS

2.1. Monitoring at MRS

2.1.1. SOSM MRS should provide monitoring of definite subscribers of the mobile communications on using the following parameters:

mobile subscriber (MSb):

on using assigned PSTN or ISDN number;

on using identity of a mobile subscriber;

mobile station (MSt):

on using identity of a mobile station;

Note: monitoring on using identity of MSt is fulfilled accordingly possibilities of mobile communication standards.

2.1.2. SOSM MRS should provide the following:

- monitoring of outgoing and incoming calls for MRS mobile subscribers, which have been set for monitoring;

- monitoring of outgoing calls (local, intrazonal, toll, international) from all the MRS subscribers to definite subscribers (analysis according B number);

- affording data about locations of MSb, MSt under monitoring, during their moving within MRS;

- keep monitoring of connected call in a case of call handover between stations both within the same MSC and in different MSCs;

- monitoring of calls when furnishing supplementary services for MSb, which change the call direction in particular (Call Forwarding). When furnishing such the service for MSb, numbers where call is forwarded to (repeated call forwarding is possible before setting conversation state) should be under monitoring during connection set up.

- monitoring of connections, which provide transmission of telephone and non-telephone information (data communications, facsimile communications, short messages);

- when furnishing supplementary service which provides simultaneous conversation with several subscribers for MSb under monitoring, for example conference-call, all the participant numbers should be under monitoring;

- possibility to obtain information about MSb according its identity or assigned PSTN, ISDN number, namely information about provided communication services, in response to request from CP.

2.1.3. Identities of MRS MSb under monitoring and phone numbers (both full or short) of subscribers under monitoring in fixed telephone network and other MRSs for monitored outgoing call of the given MRS subscribers should be assigned from CP and stored in the corresponding SOSM MRS database.

2.1.4. Maximum number of identities of mobile subscribers under monitoring, which are attached to given MSC, should be 128 for exchanges with capacity 10000 MSb, but not more than 1024 while increasing exchange capacity up to maximum value. Number of subscribers B (subscribers of other networks) under monitoring should be not more than 1024 at any MSC capacity.

Then SOSM MRS should provide simultaneous monitoring for the following utmost number of completed connections (see Table 1).

Table 1

MSC capacity	Number of MSC mobile subscribers under monitoring	Simultaneous monitoring of connections, not more than	Number of monitored subscribers of other networks	Number of channels, not more than	Number of PCM-30 highways, not more than

10000	128	28	1024	56	2
20000	256	56	1024	112	4
40000	512	112	1024	224	8
60000 and more	1024	168	1024	224	8

2.1.5. Communication channel, used to transmit information via speech path to CP, is set in parallel with monitored call. At this only unidirectional path to CP is set.

2.2. Categories of monitoring

2.2.1. The following categories of monitoring should be assigned to monitored MSb, MSt of given MRS:

a) full monitoring:

combined monitoring of A and B subscribers mode;

separated monitoring of A and B subscribers mode;

b) statistical monitoring.

2.2.2. In the case of full monitoring, information about phases of connection set up, data about monitored calls should be transferred in real time. Information, transmitted in the speech path or in data channel of the subscriber under monitoring should be taken away and transferred to CP.

In the mode of separate monitoring of A and B subscribers, two connecting lines should be dedicated for them.

In the case of full monitoring, a status can be assigned to a subscriber under monitoring, which provides possibility of priority taking away information transmitted in the speech path and its transferring to CP.

2.2.3. Category “statistical monitoring” means, that a speech channel doesn’t switched through to CP, but information about phases of a connection set up and data about calls under monitoring should be transmitted to CP in real time.

2.2.4. When both the subscribers in a call are objects under monitoring, a category is assigned according priority of the categories:

a) full monitoring:

b) statistical monitoring.

2.2.5. Possibility to change monitoring category and parameters during observation should be provided.

2.3. Monitoring of MSb, MSt location

2.3.1. Monitoring of location means, that data about MSb, MSt location when moving within MRS should be transferred to CP. During monitoring of location a basic station (BS) should be defined (network number in a region and BS number within the network), which services MSb, MSt at the present moment according possibilities of mobile communication standards.

2.3.2. Monitoring of location should be fulfilled both in active state of MSb, MSt (conversation phase) and in passive state of MSt (moving MSt without communication sesssion).

2.3.3. Monitoring of MSb, MSt location and sending of corresponding information to CP should be provided on moving MSb, MSt within all the territory of MRS federal networks (national roaming).

2.3.4. Monitoring of location should be included by request of SOSM administrator into full and statistical monitoring.

2.4. Information about phases of connection set up and data about calls under monitoring

2.4.1. The following information about phases of connection set up should be transferred for every call of MSb, MSt under monitoring:

- receiving of a full phone number of called subscriber;
- answer of a called subscriber;
- disconnection;
- using supplementary services;
- changing a status of observed subscriber (registration and cancelling of subscribers).

2.4.2. At this, messages with data about calls under monitoring should be sent to CP for

every phase in accordance with requirements, described in i. 7.

Note:

Information about location should be sent at the following time moments:

at the moment of subscriber registration or cancelling ;

when changing location MSb, MSt in active and passive states;

on request from CP.

When communicating within MRS, information about location is sent for both the subscribers.

2.5. Setting for monitoring and removal from monitoring

2.5.1. SOSM should provide setting for monitoring and removal from monitoring for MSb, MSt of given MSC and subscribers of a network at receiving commands with data from CP in accordance with requirements described in i.7.

2.5.2. Admissible time of setting for monitoring or changing SOSM data tables after completing a session of transmitting a full package of necessary information from CP should be not more than 30 sec.

3. Methods of monitoring

3.1. Digital information about connections under monitoring and data about calls should come in SOSM from the control device (CD) of MSC or MRS registers and should be transmitted to CP via data communication channel.

3.2. Calling number identification (when CCS is absent) for incoming communication from fixed telephone network should be fulfilled by the line signal “response” and sending request signal of frequency 500 Hz to outgoing exchange and following reception frequency information about the calling subscriber number from it.

Electrical parameters of transmitted and received frequency signals should correspond with requirements to similar signals used in ANI equipment at its operation at exchanges of the national fixed telephone network.

3.3. Connecting CP equipment to speech paths of subscribers under monitoring in MRS

equipment should be fulfilled through monitoring connecting lines (channels). Number of monitoring connecting lines (channels) should correspond with necessary number of simultaneous connections under monitoring.

3.4. Reaction time of SOSM (from the moment of event registration at the exchange till the moment of writing information about this event into SOSM transmission port) should be not more than 200 ms when operating in real time.

4. SOSM operability check

4.1. During operating of SOSM hardware and software, functional check of its efficiency against the background of MRS equipment operation, and checkup with using metrological facilities and maintenance facilities should be foreseen.

4.2. All the information about faults, which affect SOSM operation, should be transferred to CP.

5. Protecting information against unauthorized access

5.1. Possibility of unauthorized access to data and software of SOSM and CP interaction should be eliminated.

5.2. Possibility of unauthorized intervention in the process of SOSM and CP functioning and interaction should be eliminated.

5.3. All the attempts of unauthorized access and intervention in SOSM and CP functioning or in the process of information interchange via data channels between SOSM and CP should be reported to CP.

5.4. Possibility of logging data about subscribers under monitoring and interaction between SOSM and CP into system log or other storage medium should be eliminated.

6. Initializing and restart of SOSM

6.1. When restarting MRS equipment corresponding message should be sent to CP.

6.2. In the case of emergency stop of MRS equipment and its following restart, no data about objects under supervision are restored, they should be resent from CP.

6.3. Technological conditions of MRS equipment restart should include SOSM restart procedures. Possibility of SOSM restart by the command from CP against the background of the exchange operation should be provided.

7. Technical requirements to information interchange channels between SOSM and CP

“Technical requirements to information interchange channels between SOSM and CP for mobile radiotelephony networks” are issued separately and intended for the limited circle of persons.