



N-Squared Software N2TTG  
SMPP Protocol Conformance Statement

Version 2021-09

# 1 Document Information

## 1.1 Scope and Purpose

This document describes the implementation of the SMPP protocol for real-time flows for text-based subscriber self-management using the N-Squared (N2) Text Telephony Gateway (TTG) running on the N-Squared Service Daemon (N2SVCD) framework. It should be read in conjunction with the N2TTG Technical Guide [R-1] and the N2SVCD Technical Guide [R-2].

This document assumes a working knowledge of the relevant SMPP and other telephony concepts, including the standard interactions between an SMSC and an ASP such as N2TTG.

## 1.2 Definitions, Acronyms, and Abbreviations

Term	Meaning
3GPP	Third-Generation Partnership Project
3GTS	3GPP Technical Specification
ASCII	American Standard Code for Information Interchange
ASP	Application Service Provider
DLR	Delivery Receipt
ESME	External Short Message Entity
GSM	Global System for Mobile communications
IEC	International Electrotechnical Commission
IP	Internet Protocol
ISO	International Organisation for Standardisation
N2	N-Squared Software
PDU	Protocol Data Unit
SAR	Segmentation and Reassembly
STCP	Secure TCP
SME	Short Message Entity
SMPP	Short Message Peer-to-Peer
SMSC	Short Message Service Centre
TCP	Transmission Control Protocol
TLV	Tag, Length, Value
UCS	Universal Coded Character Set
UDH	Userdata Header

### 1.3 References

The following documents are referenced within this document:

Reference	Document
[R-1]	N2TTG Technical Guide
[R-2]	N2SVCD Technical Guide
[R-3]	SMPP Developer Forum <i>Short Message Peer-to-Peer Protocol Specification (v5.0)</i>
[R-4]	3GPP <i>Interface protocols for the connection of Short Message Service Centres (SMSCs) to Short Message Entities (SMEs)</i> (3GTS 23.039 version 2.0.0)
[R-5]	GSM TS 03.38 / ETSI TS 123 038 (3GPP TS 23.038)
[R-6]	SMPP Developer Forum <i>Short Message Peer-to-Peer Protocol Specification (v3.4)</i>
[R-20]	<a href="https://www.lua.org/">https://www.lua.org/</a>

### 1.4 Ownership and Usage

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### 3 Introduction

#### 3.1 N2TTG Overview

The N-Squared Text Telephony Gateway (N2TTG) is a software system for processing inbound self-management subscriber text messages from the network and performing the necessary service logic to determine the appropriate response text. This may involve follow-up interaction, e.g. offering menus or further choices.

The supported inbound network side protocols are:

- a) MAP-USSD over SIGTRAN from the HLR, and/or
- b) SMPP Short Message from the SMSC.

Typical uses of these subscriber self-management messages are:

- Balance Query
- Voucher Top-Up
- Service Pack Activation/Renewal
- IOU Services
- Friends & Family Number Management, etc.

The N2TTG platform services are defined using the Lua embedded scripting language [R-20], and the service logic may also include external service access via REST, SOAP, Diameter, etc. Refer to [R-2].

A standard N2TTG deployment contains several integration points:

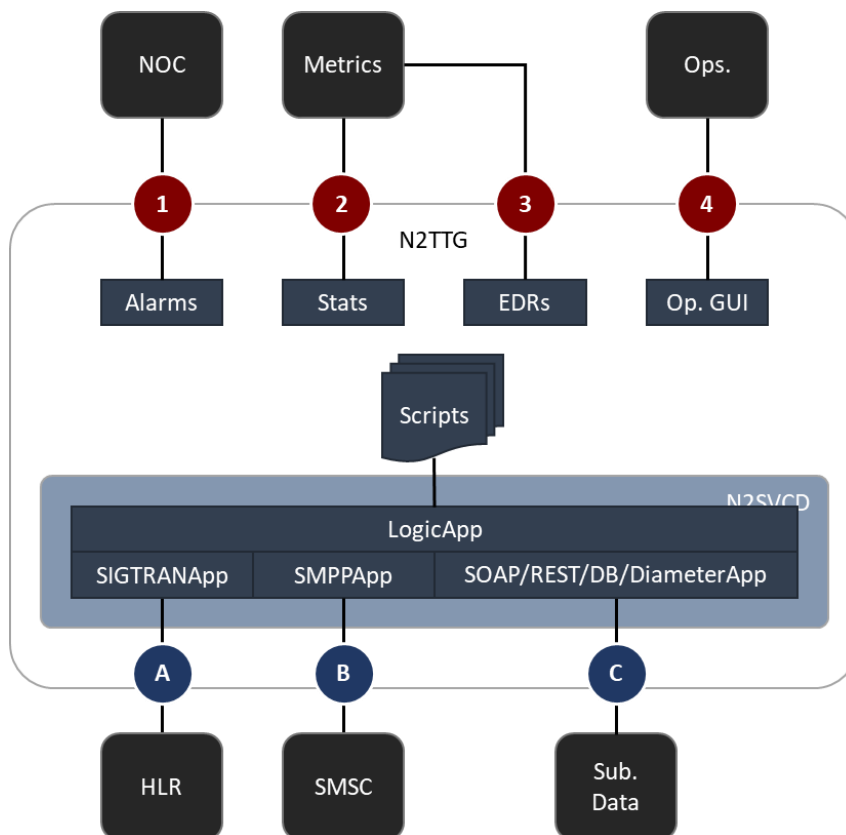


Figure A: N2TTG Integration

This document relates to the N2TTG Compliance for the SMPP Interface "B".

The MAP-USSD protocol conformance is specified in a separate document.

Conformance is based on the referenced standards or other non-standard functionality but noting that solution conformance to the above is limited to the extent expressly described herein. I.e. statement of conformance to a standard in no way implies conformance to or compliance with the complete standard.

### 3.2 SMPP Overview

The SMPP protocol is widely used for short message exchange in IP networks. There are currently three versions that are used: v3.3, v3.4, and v5.0.

One notable feature of the SMPP protocol is its ability to allow custom Tag, Length, Value (TLV) message parameters to be used when both the SME and SMSC are configured to understand them.

### 3.3 General Restrictions

Specific compliance to the protocol documentation is described in section 5: RFC Compliance, but there are some high-level SMPP interactions and features that are not supported by the N2 N2TTG:

- Transport over X.25 is not supported. If desired, an external gateway can provide encapsulated transport over this protocol.
- Intermediate Notification and SME Delivery Acknowledgement (i.e. end-user read receipt) are not supported.
- Replace, query, and cancel message operations are only supported for SMPP proxying.

## 4 SMPP Messaging

### 4.1 Message Encoding

All SMPP messaging sent by the N2TTG will follow the basic encoding of the protocol documents [R-6, R-3]. Received SMPP messages must also follow this encoding.

#### 4.1.1 SMPP Headers

All SMPP headers generated by the N2TTG are set in compliance with SMPP v3.4/5.0 section 3.2 [R-6, R-3].

Field	Type / Length	Notes
<i>command_length</i>	Integer, 4 octets	Total message length, including header.
<i>command_id</i>	Integer, 4 octets	Identification value for operation. All operation types are supported.
<i>command_status</i>	Integer, 4 octets	Set according to SMPP v3.4 [R-6].
<i>sequence_number</i>	Integer, 4 octets	Set to 0 on the first message sent on a connection and increased by 1 for each subsequent message.

Table 1: SMPP headers

#### 4.1.2 SMPP Body

All SMPP PDU bodies generated by the N2TTG are set in compliance with SMPP v3.4/v5.0 section 4 [R-6, R-3].

All fixed body fields in all SMPP operations are supported.

#### 4.1.3 SMPP TLVs

All SMPP TLVs generated by the N2TTG are set in compliance with SMPP v3.4 section 5.3 [R-6] and SMPP v5.0 sections 4.2.4/4.2.5 [R-3].

Field	Type / Length	Notes
<i>tag</i>	Integer, 2 octets	Set according to configuration and/or input.
<i>length</i>	Integer, 2 octets	Length of the TLV <i>value</i> .
<i>value</i>	Variable	As specified by the TLV <i>tag</i> and TLV <i>length</i> .

Table 2: SMPP TLVs

In addition to the stated compliance to standard TLVs given in *Table 12: N2TTG compliance to SMPP v3.4*, the N2TTG may be configured to receive and send arbitrary standard or vendor-specific TLVs. Refer to the N2SVCD technical guide [R-2] for further details.

#### 4.1.4 PDU Data Types

The N2TTG supports all data types specified in SMPP v3.4/5.0 section 3.1 [R-6, R-3]. Specifically, the following data types are supported for both fixed and optional fields:

- Octet String
- Integer
- C-Octet String (including Decimal and Hexadecimal)

#### 4.1.5 SMPP Data Coding

The N2TTG supports flexible per-message encoding and/or decoding of SMS text based on the configured allowed data codings and the input and/or processing that has taken place. Refer to the N2SVCD technical guide [R-2] for further details.

The following encodings are supported:

- GSM 7-bit/8-bit, default language table only (GSM 23.38)
- Latin 1 (ISO/IEC 8859-1)
- Latin/Cyrillic (ISO/IEC 8859-5)
- Latin/Hebrew (ISO/IEC 8859-8)
- Latin 9 (ISO/IEC 8859-15)
- Windows-1252 (CP-1252)
- IA5 (CCITT T.50)/ASCII (ANSI X3.4)
- UCS2 (ISO 10646-UCS2)
- UTF8 (ISO 10646-UTF8)

Note that the correlation of the data coding used and the value of the *data\_coding* fixed field is configurable globally.

For flash messaging, the N2TTG offers multiple operation modes per SMSC connection:

1. Use the standard SMPP flash class *1111xxxx* format for 7-bit and 8-bit encodings and optionally use the alternate GSM [R-5] *00xxxxxx* format with message class indicator for 16-bit encoding.
2. Use only the alternate GSM [R-5] *00xxxxxx* format with message class indicator for 7-bit, 8-bit, and 16-bit encodings.
3. Use the non-flash SMPP data coding values with the alternate SMPP message class indicator in the *dest\_addr\_subunit* TLV.

#### 4.1.6 SMPP Message Segmentation

For overlength messages generated by the N2TTG, no segmentation will be applied; the *payload* TLV will be used for the entire message.

The N2TTG does not support receiving segmented messages - either the *short\_message* body field or the *payload* TLV must be used to contain the entire message text.

## 4.2 Connection Management

The N2TTG may be configured to accept inbound TCP connections from or to invoke outbound TCP connections to other SMPP SMEs or SMSCs, following the *bind* operation specified in SMPP v3.4 section 4.1 [R-6] and SMPP v5.0 section 4.1.1 [R-3]. All SMPP connection management operations are supported by the N2TTG, specifically:

- *bind\_transmitter* and *bind\_transmitter\_resp*
- *bind\_receiver* and *bind\_receiver\_resp*
- *bind\_transceiver* and *bind\_transceiver\_resp*
- *outbind*
- *unbind* and *unbind\_resp*
- *enquire\_link* and *enquire\_link\_resp*



The message parameters for these operations are shown in the following sections.

The N2TTG must be configured with a whitelist of information for SMEs or SMSCs that initiate connections to the N2TTG.

Connections may be made to and from the N2TTG over TCP. STCP is not supported.

Refer to the N2SVCD Technical Guide [R-1] for details of the configuration allowed for SMPP connection management.

#### 4.2.1 BIND Operation

The N2TTG supports all forms of *bind* messages for the establishment of connections to SMEs and SMSCs. Depending on whether the N2TTG is configured to listen or initiate connections, both *bind* requests and responses may be sent and/or received.

Field	Size	Type	Presence		Inbound Notes	Outbound Notes
			Req.	Resp.		
<i>system_id</i>	1..16	C-Octet String	1	1	Must match configured entity credentials.	Set globally from configuration. Only included in responses if bind was successful
<i>password</i>	1..9	C-Octet String	1	0	Must match configured entity credentials.	Set globally from configuration.
<i>system_type</i>	1..13	C-Octet String	1	0	Not used.	Set globally from configuration.
<i>interface_version</i>	1	Integer	1	0	Not used.	Set to 0x34.
<i>addr_ton</i>	1	Integer	1	0	Not used.	Set to NULL.
<i>addr_npi</i>	1	Integer	1	0	Not used.	Set to NULL.
<i>address_range</i>	1..41	C-Octet String	1	0	Not used.	Set to NULL.
<i>sc_interface_version</i>	0+	TLV	0	0+	Not used.	Not sent.

Table 3: BIND request/response body parameters

#### 4.2.2 OUTBIND Operation

The N2TTG supports receiving *outbind* messages to request a *bind\_receiver* message to be sent. These messages do not have responses.

The N2TTG does not send *outbind* messages.

Field	Size	Type	Presence	Inbound Notes
<i>system_id</i>	1..16	C-Octet String	1	Must match configured entity credentials.
<i>password</i>	1..9	C-Octet String	1	Must match configured entity credentials.

Table 4: OUTBIND request/response body parameters

#### 4.2.3 UNBIND Operation

When the N2TTG platform is taken out of service, an *unbind* message is sent to all connected SMEs and SMSCs. These entities may attempt to reconnect as required.

In cases where an *unbind* is received from a SME or SMSC and the N2TTG is configured to initiate connections, reconnections will be made on the configured schedule.

No body is present on *unbind* requests or responses.

#### 4.2.4 ENQUIRE\_LINK Operation

The N2TTG will send *enquire\_link* requests to connected SMEs and SMSCs after no traffic is received from them for a configurable period. If no response or new traffic is received, or the request cannot be delivered, the N2TTG will behave as if an *unbind* request has been received, as set out in section 4.2.3: *UNBIND Operation*.

Under normal circumstances, the N2TTG will always send a response to a received *enquire\_link* from a connected entity to indicate that the system is functioning nominally.

No body is present on *enquire\_link* requests or responses.

### 4.3 SMPP Messaging

The supported SMPP PDU operations for SMPP generation and processing are:

- Send and receive *generic\_nack*
- Send and receive *submit\_sm* and *submit\_sm\_resp*
- Send and receive *submit\_multi* and *submit\_multi\_resp*
- Send and receive *deliver\_sm* and *deliver\_sm\_resp*
- Send and receive *data\_sm* and *data\_sm\_resp*
- Send and receive *alert\_notification*

The following operations are not supported:

- *broadcast\_sm* and *broadcast\_sm\_resp*
- *cancel\_broadcast\_sm* and *cancel\_broadcast\_sm\_resp*
- *query\_broadcast\_sm* and *query\_broadcast\_sm\_resp*
- *query\_sm* and *query\_sm\_resp*
- *cancel\_sm* and *cancel\_sm\_resp*
- *replace\_sm* and *replace\_sm\_resp*

#### 4.3.1.1 GENERIC\_NACK Operation

The N2TTG supports both sending and receiving *generic\_nack* operations.

SMPP entities may return a *generic\_nack* in cases where a message-specific response is not suitable. In such cases, the N2TTG will be unable to determine any specific error details from the response and will apply default error handling.

The N2TTG will only send *generic\_nack* responses if the received SMPP message is corrupt and the appropriate response with a corresponding *command\_id* cannot be selected.

No body is present on *generic\_nack* responses.

#### 4.3.1.2 SUBMIT\_SM Operation

The N2TTG supports receiving SMS via the *submit\_sm* operation. This includes the generation of appropriate *submit\_sm\_resp* messages.

Field	Size	Type	Presence		Inbound Notes
			Req.	Resp.	
<i>service_type</i>	1..6	C-Octet String	1	0	Not used.
<i>source_addr_ton</i>	1	Integer	1	0	Used in number normalisation.
<i>source_addr_npi</i>	1	Integer	1	0	Used in number normalisation.
<i>source_addr</i>	1..21	C-Octet String	1	0	Used as source address.
<i>dest_addr_ton</i>	1	Integer	1	0	Used in number normalisation.
<i>dest_addr_npi</i>	1	Integer	1	0	Used in number normalisation.
<i>destination_addr</i>	1..21	C-Octet String	1	0	Used as destination address.
<i>esm_class</i>	1	Integer	1	0	Not used.
<i>protocol_id</i>	1	Integer	1	0	Not used.
<i>priority_flag</i>	1	Integer	1	0	Not used.
<i>schedule_delivery_time</i>	1 17	C-Octet String	1	0	Not used.
<i>validity_period</i>	1 17	C-Octet String	1	0	Not used.
<i>registered_delivery</i>	1	Integer	1	0	Not used.
<i>replace_if_present_flag</i>	1	Integer	1	0	Not used.
<i>data_coding</i>	1	Integer	1	0	Must match configured values for successful message decode.
<i>sm_default_msg_id</i>	1	Integer	1	0	Not used.
<i>sm_length</i>	1	Integer	1	0	Used for message decode.
<i>short_message</i>	0..254	Octet String	1	0	Used for message decode.
<i>message_id</i>	0..65	C-Octet String	0	0..1	Used for message correlation to DLR.
(TLVs)	As per Table 10: Message submission TLVs.				

Table 5: SUBMIT\_SM request/response body parameters

#### 4.3.1.3 SUBMIT\_MULTI Operation

The N2TTG supports receiving multiple SMS via the *submit\_multi* operation. This includes the processing of appropriate *submit\_multi\_resp* messages.

Field	Size	Type	Presence		Inbound Notes
			Req.	Resp.	
<i>service_type</i>	As per Table 5: SUBMIT_SM request/response body parameters.				
<i>source_addr_ton</i>	As per Table 5: SUBMIT_SM request/response body parameters.				
<i>source_addr_npi</i>	As per Table 5: SUBMIT_SM request/response body parameters.				
<i>source_addr</i>	As per Table 5: SUBMIT_SM request/response body parameters.				
<i>number_of_dests</i>	1	Integer	1	0	Used as destination address count.
<i>dest_flag</i>	1	Integer	1+	0	Used in destination determination.
<i>dest_addr_ton</i>	1	Integer	0+	0	Used in number normalisation. Requires aligned <i>dest_addr_npi</i> and <i>destination_addr</i> .
<i>dest_addr_npi</i>	1	Integer	0+	0	Used in number normalisation. Requires aligned <i>dest_addr_ton</i> and <i>destination_addr</i> .
<i>destination_addr</i>	1..21	C-Octet String	0+	0	Used as destination address. Requires aligned <i>dest_addr_ton</i> and <i>dest_addr_npi</i> .
<i>dl_name</i>	1..21	C-Octet String	0+	0	Used as destination address.
<i>esm_class</i>	As per Table 5: SUBMIT_SM request/response body parameters.				

Field	Size	Type	Presence		Inbound Notes
			Req.	Resp.	
<i>protocol_id</i>			As per Table 5: SUBMIT_SM request/response body parameters.		
<i>priority_flag</i>			As per Table 5: SUBMIT_SM request/response body parameters.		
<i>schedule_delivery_time</i>			As per Table 5: SUBMIT_SM request/response body parameters.		
<i>validity_period</i>			As per Table 5: SUBMIT_SM request/response body parameters.		
<i>registered_delivery</i>			As per Table 5: SUBMIT_SM request/response body parameters.		
<i>replace_if_present_flag</i>			As per Table 5: SUBMIT_SM request/response body parameters.		
<i>data_coding</i>			As per Table 5: SUBMIT_SM request/response body parameters.		
<i>sm_default_msg_id</i>			As per Table 5: SUBMIT_SM request/response body parameters.		
<i>sm_length</i>			As per Table 5: SUBMIT_SM request/response body parameters.		
<i>short_message</i>			As per Table 5: SUBMIT_SM request/response body parameters.		
<i>message_id</i>			As per Table 5: SUBMIT_SM request/response body parameters.		
<i>no_unsuccess</i>	1	Integer	0	1	Used as failed destination address count.
<i>unsuccess_sme</i>	1	Integer	0	1	Used as failed destination address count.
<i>dest_flag</i>	1	Integer	0	1+	Used in failed destination determination.
<i>dest_addr_ton</i>	1	Integer	0	0+	Used in number normalisation. Requires aligned <i>dest_addr_npi</i> , <i>destination_addr</i> , and <i>error_status_code</i> .
<i>dest_addr_npi</i>	1	Integer	0	0+	Used in number normalisation. Requires aligned <i>dest_addr_ton</i> , <i>destination_addr</i> , and <i>error_status_code</i> .
<i>destination_addr</i>	1..21	C-Octet String	0	0+	Used in failed destination determination. Requires aligned <i>dest_addr_ton</i> , <i>dest_addr_npi</i> , and <i>error_status_code</i> .
<i>error_status_code</i>	4	Integer	0	0+	Used in failed destination determination. Requires aligned <i>dest_addr_ton</i> , <i>dest_addr_npi</i> , and <i>destination_addr</i> .
<i>message_id</i>	0..65	C-Octet String	0	0..1	Used for message correlation to DLR.
(TLVs)			As per Table 10: Message submission TLVs.		

Table 6: SUBMIT\_MULTI request/response body parameters

#### 4.3.1.4 DELIVER\_SM Operation

The N2TTG supports sending SMS via the *deliver\_sm* operation. This includes the processing of appropriate *deliver\_sm\_resp* messages.

Note that, as the N2TTG may only ever request SMSC delivery receipts in the *registered\_delivery* field, the only supported delivery receipts are for the case of SMSC Delivery Receipt. SME Delivery Acknowledgment, SME Manual/User Acknowledgement, and Intermediate Notification are not supported.

When processing SMSC delivery receipts:

- The N2TTG will preferentially use the TLVs *network\_error\_code* and *message\_state* to determine the status of the sent message.
- The N2TTG will preferentially use the TLV *receipted\_message\_id* to identify the original sent message. If this TLV is not available, the regular expression `^id: ([^ ]+).*` is used to determine the message identifier from the short message text.

Field	Size	Type	Presence		Outbound Notes
			Req.	Resp.	
<i>service_type</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>source_addr_ton</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>source_addr_npi</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>source_addr</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>dest_addr_ton</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>dest_addr_npi</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>destination_addr</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>esm_class</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>protocol_id</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>priority_flag</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>schedule_delivery_time</i>	1	C-Octet String	1	0	Set to NULL.
<i>validity_period</i>	1	C-Octet String	1	0	Set to NULL.
<i>registered_delivery</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>replace_if_present_flag</i>	1	Integer	1	0	Set to NULL.
<i>data_coding</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>sm_default_msg_id</i>	1	Integer	1	0	Set to NULL.
<i>sm_length</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>short_message</i>	0..254	Octet String	1	0	Set per-message by input or processing.
<i>message_id</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.

Table 7: *DELIVER\_SM* request/response body parameters

#### 4.3.1.5 DATA\_SM Operation

The N2TTG supports receiving SMS via the *data\_sm* operation. This includes the generation of appropriate *data\_sm\_resp* messages.

Field	Size	Type	Presence		Inbound Notes
			Req.	Resp.	
<i>service_type</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>source_addr_ton</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>source_addr_npi</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>source_addr</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>dest_addr_ton</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>dest_addr_npi</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>destination_addr</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>esm_class</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>registered_delivery</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>data_coding</i>					As per Table 5: <i>SUBMIT_SM</i> request/response body parameters.
<i>message_id</i>	0..65	C-Octet String	0	0..1	Used for message correlation to DLR.
(TLVs)					As per Table 10: Message submission TLVs.

Table 8: *DATA\_SM* request/response body parameters

#### 4.3.1.6 QUERY\_SM Operation

The N2TTG does not support the *query\_sm* / *query\_sm\_resp* operations.

#### 4.3.1.7 CANCEL\_SM Operation

The N2TTG does not support the *cancel\_sm* / *cancel\_sm\_resp* operations.

#### 4.3.1.8 REPLACE\_SM Operation

The N2TTG does not support the *replace\_sm* / *replace\_sm\_resp* operations.

#### 4.3.1.9 ALERT\_NOTIFICATION Operation

The N2TTG supports receiving *alert\_notification* operations.

Field	Size	Type	Presence		Inbound Notes
			Req.	Resp.	
<i>source_addr_ton</i>	As per Table 5: SUBMIT_SM request/response body parameters.				
<i>source_addr_npi</i>	As per Table 5: SUBMIT_SM request/response body parameters.				
<i>source_addr</i>	As per Table 5: SUBMIT_SM request/response body parameters.				
<i>esme_addr_ton</i>	1	Integer	1	0	Used in number normalisation.
<i>esme_addr_npi</i>	1	Integer	1	0	Used in number normalisation.
<i>esme_addr</i>	1..65	C-Octet String	1	0	Used as destination address.
<i>ms_availability_status</i>	0+	TLV	0..1	0	Not used.

Table 9: ALERT\_NOTIFICATION request/response body parameters

#### 4.3.1.10 Message Submission TLVs

The message submission operations *submit\_sm*, *deliver\_sm*, and *data\_sm* and their associated responses may have various TLVs included in them. The N2TTG's support for sending and receiving these TLVs is given below.

Field	Size	Type	Presence		Inbound Notes	Outbound Notes
			Req.	Resp.		
<i>additional_status_info_text</i>	0+	TLV	0	0..1	Not used.	Set per-message by input or processing.
<i>alert_on_msg_delivery</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>billing_identification</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>callback_num</i>	0+	TLV	0+	0	Not used.	Set per-message by input or processing.
<i>callback_num_atag</i>	0+	TLV	0+	0	Not used.	Set per-message by input or processing.
<i>callback_num_pres_ind</i>	0+	TLV	0+	0	Not used.	Set per-message by input or processing.
<i>delivery_failure_reason</i>	0+	TLV	0	0..1	Not used.	Set per-message by input or processing.
<i>dest_addr_np_country</i>	0+	TLV	0+	0	Not used.	Set per-message by input or processing.
<i>dest_addr_np_information</i>	0+	TLV	0+	0	Not used.	Set per-message by input or processing.
<i>dest_addr_np_resolution</i>	0+	TLV	0+	0	Not used.	Set per-message by input or processing.
<i>dest_addr_subunit</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing. See section 4.1.5: SMPP Data Coding.
<i>dest_bearer_type</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>dest_network_id</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>dest_network_type</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.

Field	Size	Type	Presence		Inbound Notes	Outbound Notes
			Req.	Resp.		
<i>dest_node_id</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>dest_subaddress</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>dest_telematics_id</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>destination_port</i> [R-6] <i>dest_port</i> [R-3]	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>display_time</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>dpf_result</i>	0+	TLV	0	0..1	Not used.	Set per-message by input or processing.
<i>its_reply_type</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>its_session_info</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>language_indicator</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>message_payload</i>	0+	TLV	0..1 <sup>1</sup> or 1 <sup>2</sup>	0	Used for message decode.	Set per-message by input or processing.
<i>more_messages_to_send</i>	0+	TLV	0..1	0	Not used.	Set per-message automatically if UDH segmentation is used.
<i>ms_msg_wait_facilities</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>ms_validity</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>network_error_code</i>	0+	TLV	0	0..1	Not used.	Set per-message by input or processing.
<i>number_of_messages</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>payload_type</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>privacy_indicator</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>qos_time_to_live</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>sar_msg_ref_num</i>	0+	TLV	0..1	0	Not used.	Set per-message automatically if SAR segmentation is used.
<i>sar_segment_seqnum</i>	0+	TLV	0..1	0	Not used.	Set per-message automatically if SAR segmentation is used.
<i>sar_total_segments</i>	0+	TLV	0..1	0	Not used.	Set per-message automatically if SAR segmentation is used.
<i>set_dpf</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>sms_signal</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>source_addr_subunit</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.

<sup>1</sup> For *submit\_sm* and *submit\_multi*.

<sup>2</sup> For *data\_sm*.

Field	Size	Type	Presence		Inbound Notes	Outbound Notes
			Req.	Resp.		
<i>source_bearer_type</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>source_network_id</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>source_node_id</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>source_port</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>source_subaddress</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>source_telematics_id</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>user_message_reference</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>user_response_code</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.
<i>ussd_service_op</i>	0+	TLV	0..1	0	Not used.	Set per-message by input or processing.

Table 10: Message submission TLVs

#### 4.3.1.11 Message Delivery TLVs

The message delivery operations *deliver\_sm* and *data\_sm* and their associated responses may have various TLVs included in them. The N2TTG's support for sending and receiving these TLVs is given below.

Field	Size	Type	Presence		Inbound Notes	Outbound Notes
			Req.	Resp.		
<i>additional_status_info_text</i>			As per Table 10: Message submission TLVs.			
<i>callback_num</i>			As per Table 10: Message submission TLVs.			
<i>callback_num_atag</i>			As per Table 10: Message submission TLVs.			
<i>callback_num_pres_ind</i>			As per Table 10: Message submission TLVs.			
<i>delivery_failure_reason</i>			As per Table 10: Message submission TLVs.			
<i>dest_addr_np_country</i>			As per Table 10: Message submission TLVs.			
<i>dest_addr_np_information</i>			As per Table 10: Message submission TLVs.			
<i>dest_addr_np_resolution</i>			As per Table 10: Message submission TLVs.			
<i>dest_addr_subunit</i>			As per Table 10: Message submission TLVs.			
<i>dest_network_id</i>			As per Table 10: Message submission TLVs.			
<i>dest_node_id</i>			As per Table 10: Message submission TLVs.			
<i>dest_subaddress</i>			As per Table 10: Message submission TLVs.			
<i>destination_port [R-6]</i> <i>dest_port [R-3]</i>			As per Table 10: Message submission TLVs.			
<i>dpf_result</i>			As per Table 10: Message submission TLVs.			
<i>its_reply_type</i>			As per Table 10: Message submission TLVs.			
<i>its_session_info</i>			As per Table 10: Message submission TLVs.			
<i>language_indicator</i>			As per Table 10: Message submission TLVs.			
<i>message_payload</i>			As per Table 10: Message submission TLVs.			
<i>message_state</i>	0+	TLV	0..1	0	Used for delivery status determination. May be used in processing SMSC delivery receipts.	Set per-message by input or processing.



Field	Size	Type	Presence		Inbound Notes	Outbound Notes
			Req.	Resp.		
<i>network_error_code</i>	0+	TLV	0..1	0..1	Used for delivery status determination. May be used in processing SMSC delivery receipts.	Set per-message by input or processing.
<i>payload_type</i>	As per Table 10: Message submission TLVs.					
<i>privacy_indicator</i>	As per Table 10: Message submission TLVs.					
<i>received_message_id</i>	0+	TLV	0..1	0	Used for delivery status determination. May be used in processing SMSC delivery receipts.	Set per-message by input or processing.
<i>sar_msg_ref_num</i>	As per Table 10: Message submission TLVs.					
<i>sar_segment_seqnum</i>	As per Table 10: Message submission TLVs.					
<i>sar_total_segments</i>	As per Table 10: Message submission TLVs.					
<i>source_addr_subunit</i>	As per Table 10: Message submission TLVs.					
<i>source_network_id</i>	As per Table 10: Message submission TLVs.					
<i>source_node_id</i>	As per Table 10: Message submission TLVs.					
<i>source_port</i>	As per Table 10: Message submission TLVs.					
<i>source_subaddress</i>	As per Table 10: Message submission TLVs.					
<i>user_message_reference</i>	As per Table 10: Message submission TLVs.					
<i>user_response_code</i>	As per Table 10: Message submission TLVs.					
<i>ussd_service_op</i>	As per Table 10: Message submission TLVs.					

Table 11: Message delivery TLVs

## 5 RFC Compliance

### 5.1 Compliance to SMPP v3.4

Section	Section Heading	Compliance	Notes
1	Introduction	Not applicable.	-
1.1	SMPP Overview	Not applicable.	-
1.2	Scope	Not applicable.	-
1.3	Glossary	Not applicable.	-
1.4	References	Not applicable.	-
2	SMPP Protocol Overview	Fully compliant.	-
2.1	SMPP Protocol Definition	Fully compliant.	-
2.2	SMPP Session Description	Fully compliant.	-
2.2.1	Outbind	Fully compliant.	-
2.3	SMPP PDUs	Partially compliant.	<i>query_sm / query_sm_resp, cancel_sm / cancel_sm_resp, and replace_sm / replace_sm_resp</i> not supported.
2.4	SMPP Network Layer Connections	Partially compliant.	X.25 not supported.
2.5	SMPP messages sent from ESME to SMSC	Partially compliant.	<i>query_sm, cancel_sm, and replace_sm</i> not supported.
2.5.1	SMPP Message Response from SMSC to ESME	Partially compliant.	<i>query_sm_resp, cancel_sm_resp, and replace_sm_resp</i> not supported.
2.5.2	Typical SMPP session sequence - ESME Transmitter	Partially compliant.	<i>query_sm / query_sm_resp</i> not supported. Responses may be out of order due to processing or external entities.
2.6	SMPP messages sent from SMSC to ESME	Fully compliant.	-
2.6.1	SMPP Message Response from ESME to SMSC	Fully compliant.	-
2.6.2	Typical SMPP session sequence - ESME Receiver	Partially compliant.	Responses may be out of order due to processing or external entities.
2.7	Duplex message exchange between an SMSC and an ESME	Partially compliant.	<i>query_sm, cancel_sm, and replace_sm</i> not supported.
2.7.1	Typical SMPP session sequence - ESME Transceiver	Partially compliant.	Responses may be out of order due to processing or external entities.
2.8	SMPP Error Handling	Fully compliant.	-
2.9	SMPP Timers	Fully compliant.	-
2.10	Message Modes	Not applicable.	-
2.10.1	Store and Forward Message Mode	Not applicable.	N2TTG is a network endpoint.

Section	Section Heading	Compliance	Notes
2.10.2	Datagram Message Mode	Not applicable.	N2TTG is a synchronous endpoint.
2.10.3	Transaction Message Mode	Not applicable.	N2TTG is a synchronous endpoint.
2.11	Message Types	Partially compliant.	SME Delivery Acknowledgment, SME Manual/User Acknowledgement, and Intermediate Notification not supported.
3	SMPP PDU Type and Format Definitions	Not applicable.	-
3.1	SMPP PDU – Type Definitions	Fully compliant.	-
3.1.1	SMPP Parameter Field Size Notation	Not applicable.	-
3.2	SMPP PDU Format - Overview	Fully compliant.	-
3.2.1	SMPP PDU Layout	Fully compliant.	-
3.2.2	SMPP PDU Length	Fully compliant.	-
3.2.3	SMPP Message length and extended message length	Fully compliant.	-
3.2.4	Optional Parameters	Fully compliant.	-
3.2.4.1	Optional Parameter Format	Fully compliant.	-
3.3	Guidelines for SMPP Forward Compatibility	Fully compliant.	-
3.4	Guidelines for SMPP Backward Compatibility	Fully compliant.	-
4	SMPP PDU Definition	Not applicable.	-
4.1	"BIND" Operation	Fully compliant.	-
4.1.1	"BIND_TRANSMITTER" Syntax	Fully compliant.	-
4.1.2	"BIND_TRANSMITTER_RESP" Syntax	Partially compliant.	<i>sc_interface_version</i> not used.
4.1.3	"BIND_RECEIVER" Syntax	Fully compliant.	-
4.1.4	"BIND_RECEIVER_RESP" Syntax	Partially compliant.	<i>sc_interface_version</i> not used.
4.1.5	"BIND_TRANSCEIVER" Syntax	Fully compliant.	-
4.1.6	"BIND_TRANSCEIVER_RESP" Syntax	Partially compliant.	<i>sc_interface_version</i> not used.
4.1.7	"OUTBIND" Operation.	Fully compliant.	-
4.1.7.1	"OUTBIND" Syntax	Fully compliant.	-
4.2	"UNBIND" Operation	Fully compliant.	-
4.2.1	"UNBIND"	Fully compliant.	-
4.2.2	"UNBIND_RESP"	Fully compliant.	-
4.3	"GENERIC_NACK" PDU	Fully compliant.	-
4.3.1	"GENERIC_NACK" Syntax	Fully compliant.	-
4.4	"SUBMIT_SM" Operation	Not applicable.	-

Section	Section Heading	Compliance	Notes
4.4.1	"SUBMIT_SM" Syntax	Partially compliant.	Refer to <i>Table 5: SUBMIT_SM request/response body parameters.</i>
4.4.1.1	Source and Destination Addressing	Fully compliant.	-
4.4.1.2	Message Replace operation in "SUBMIT_SM"	Partially compliant.	Refer to <i>Table 5: SUBMIT_SM request/response body parameters.</i>
4.4.2	"SUBMIT_SM_RESP"	Fully compliant.	-
4.5	"SUBMIT_MULTI" Operation	Not applicable.	-
4.5.1	"SUBMIT_MULTI" Syntax	Partially compliant.	Refer to <i>Table 6: SUBMIT_MULTI request/response body parameters.</i>
4.5.1.1	Destination Address definition	Fully compliant.	-
4.5.1.2	Distribution List (DL) definition	Fully compliant.	-
4.5.2	"SUBMIT_MULTI_RESP" Syntax	Fully compliant.	-
4.5.2.1	Unsuccessful deliveries	Fully compliant.	-
4.6	"DELIVER_SM" Operation	Partially compliant.	SME Delivery Acknowledgment, SME Manual/User Acknowledgement, and Intermediate Notification not supported.
4.6.1	"DELIVER_SM" Syntax	Partially compliant.	Refer to <i>Table 7: DELIVER_SM request/response body parameters.</i>
4.6.2	"DELIVER_SM_RESP" Syntax	Fully compliant.	-
4.7	"DATA_SM" Operation	Partially compliant.	SME Delivery Acknowledgment, SME Manual/User Acknowledgement, and Intermediate Notification not supported. Supported only as an inbound operation.
4.7.1	"DATA_SM" Syntax	Partially compliant.	Refer to <i>Table 8: DATA_SM request/response body parameters.</i>
4.7.2	"DATA_SM_RESP" Syntax	Fully compliant.	-
4.8	"QUERY_SM" Operation	Not applicable.	-
4.8.1	"QUERY_SM" Syntax	Not compliant.	Not supported.
4.8.2	"QUERY_SM_RESP" Syntax	Not compliant.	Not supported.
4.9	"CANCEL_SM" Operation	Not applicable.	-
4.9.1	"CANCEL_SM" Syntax	Not compliant.	Not supported.
4.9.2	"CANCEL_SM_RESP" Syntax	Not compliant.	Not supported.
4.10	"REPLACE_SM" Operation	Not applicable.	-
4.10.1	"REPLACE_SM" Syntax	Not compliant.	Not supported.
4.10.2	"REPLACE_SM_RESP" Syntax	Not compliant.	Not supported.
4.11	"ENQUIRE_LINK" Operation	Fully compliant.	-

Section	Section Heading	Compliance	Notes
4.11.1	"ENQUIRE_LINK" Syntax	Fully compliant.	-
4.11.2	"ENQUIRE_LINK_RESP" Syntax	Fully compliant.	-
4.12	"ALERT_NOTIFICATION" Operation	Partially compliant.	Supported only as an inbound operation.
4.12.1	"ALERT_NOTIFICATION" Syntax	Fully compliant.	-
5	SMPP Parameter Definition	Not applicable.	-
5.1	Command Header Parameters	Not applicable.	-
5.1.1	command_length	Fully compliant.	-
5.1.2	command_id	Fully compliant.	-
5.1.2.1	SMPP Command set	Fully compliant.	-
5.1.3	command_status	Fully compliant.	-
5.1.4	sequence_number	Fully compliant.	-
5.2	Mandatory SMPP Parameters	Not applicable.	-
5.2.1	system_id	Fully compliant.	-
5.2.2	password	Fully compliant.	-
5.2.3	system_type	Fully compliant.	-
5.2.4	interface_version	Fully compliant.	-
5.2.5	addr_ton, source_addr_ton, dest_addr_ton, esme_addr_ton	Fully compliant.	-
5.2.6	addr_npi, source_addr_npi, dest_addr_npi, esme_addr_npi	Fully compliant.	-
5.2.7	address_range	Fully compliant.	-
5.2.8	source_addr	Fully compliant.	-
5.2.9	destination_addr	Fully compliant.	-
5.2.10	esme_addr	Fully compliant.	-
5.2.11	service_type	Fully compliant.	-
5.2.12	esm_class	Fully compliant.	-
5.2.13	protocol_id	Fully compliant.	-
5.2.14	priority_flag	Fully compliant.	-
5.2.15	schedule_delivery_time	Fully compliant.	-
5.2.16	validity_period	Fully compliant.	-
5.2.17	registered_delivery	Fully compliant.	-
5.2.18	replace_if_present_flag	Fully compliant.	-
5.2.19	data_coding	Fully compliant.	Refer to section 4.1.5: <i>SMPP Data Coding</i> .
5.2.20	sm_default_msg_id	Fully compliant.	-
5.2.21	sm_length	Fully compliant.	-

Section	Section Heading	Compliance	Notes
5.2.22	short_message	Fully compliant.	-
5.2.23	message_id	Fully compliant.	-
5.2.24	number_of_dests	Fully compliant.	-
5.2.25	dest_flag	Fully compliant.	-
5.2.26	no_unsuccess	Fully compliant.	-
5.2.27	dl_name	Fully compliant.	-
5.2.28	message_state	Fully compliant.	-
5.3	SMPP Optional Parameter Description	Not applicable.	-
5.3.1	Optional Parameter Tag Identifiers	Fully compliant.	-
5.3.2	SMPP Optional Parameter Tag definitions	Fully compliant.	-
5.3.2.1	dest_addr_subunit	Fully compliant.	See section 4.1.5: <i>SMPP Data Coding</i> .
5.3.2.2	source_addr_subunit	Fully compliant.	-
5.3.2.3	dest_network_type	Fully compliant.	-
5.3.2.4	source_network_type	Fully compliant.	-
5.3.2.5	dest_bearer_type	Fully compliant.	-
5.3.2.6	source_bearer_type	Fully compliant.	-
5.3.2.7	dest_telematics_id	Fully compliant.	-
5.3.2.8	source_telematics_id	Fully compliant.	-
5.3.2.9	qos_time_to_live	Fully compliant.	-
5.3.2.10	payload_type	Fully compliant.	-
5.3.2.11	additional_status_info_text	Fully compliant.	-
5.3.2.12	receipted_message_id	Fully compliant.	-
5.3.2.13	ms_msg_wait_facilities	Fully compliant.	-
5.3.2.14	privacy_indicator	Fully compliant.	-
5.3.2.15	source_subaddress	Fully compliant.	-
5.3.2.16	dest_subaddress	Fully compliant.	-
5.3.2.17	user_message_reference	Fully compliant.	-
5.3.2.18	user_response_code	Fully compliant.	-
5.3.2.19	language_indicator	Fully compliant.	-
5.3.2.20	source_port	Fully compliant.	-
5.3.2.21	destination_port	Fully compliant.	-
5.3.2.22	sar_msg_ref_num	Fully compliant.	-
5.3.2.23	sar_total_segments	Fully compliant.	-
5.3.2.24	sar_segment_seqnum	Fully compliant.	-
5.3.2.25	sc_interface_version	Fully compliant.	-
5.3.2.26	display_time	Fully compliant.	-
5.3.2.27	ms_validity	Fully compliant.	-

Section	Section Heading	Compliance	Notes
5.3.2.28	dpf_result	Fully compliant.	-
5.3.2.29	set_dpf	Fully compliant.	-
5.3.2.30	ms_availability_status	Fully compliant.	-
5.3.2.31	network_error_code	Fully compliant.	-
5.3.2.32	message_payload	Fully compliant.	-
5.3.2.33	delivery_failure_reason	Fully compliant.	-
5.3.2.34	more_messages_to_send	Fully compliant.	-
5.3.2.35	message_state	Fully compliant.	-
5.3.2.36	callback_num	Fully compliant.	-
5.3.2.37	callback_num_pres_ind	Fully compliant.	-
5.3.2.38	callback_num_atag	Fully compliant.	-
5.3.2.39	number_of_messages	Fully compliant.	-
5.3.2.40	sms_signal	Fully compliant.	-
5.3.2.41	alert_on_message_delivery	Fully compliant.	-
5.3.2.42	its_reply_type	Fully compliant.	-
5.3.2.43	its_session_info	Fully compliant.	-
5.3.2.44	ussd_service_op	Fully compliant.	-
6	Network Implementation	Not applicable.	-
6.1	Network Error Codes	Not applicable.	-
6.2	Maximum Message Length	Not applicable.	-
7	General Definitions	Not applicable.	-
7.1	Time Definitions	Not applicable.	-
7.1.1	Time Format	Fully compliant.	-
7.1.1.1	Absolute Time format	Fully compliant.	-
7.1.1.2	Relative Time Format	Fully compliant.	-
7.2	Timer Definitions	Fully compliant.	-
Appendix A	Unix Regular Expressions	Not applicable.	-
Appendix B	Delivery Receipt Format	Not applicable.	Refer to section 4.3.1.4: <i>DELIVER_SM Operation.</i>
Appendix C	SMPP and Year 2000 Conformance	Not applicable.	-

Table 12: N2TTG compliance to SMPP v3.4

## 5.2 Compliance to SMPP 5.0

Section	Section Heading	Compliance	Notes
1	Introduction	Not applicable.	-
1.1	Scope Of This Document	Not applicable.	-
1.2	Glossary	Not applicable.	-
1.3	References	Not applicable.	-
1.4	SMPP Overview	Not applicable.	-
1.4.1	Protocol Versions	Not applicable.	-

Section	Section Heading	Compliance	Notes
1.4.2	Supported Cellular Technologies	Not applicable.	-
1.4.3	Typical Applications of SMPP	Not applicable.	-
1.4.4	SMPP Sessions	Fully compliant.	-
1.4.5	Protocol Operations and PDUs	Not applicable.	-
1.4.5.1	Session Management Operations	Fully compliant.	-
1.4.5.2	Message Submission Operations	Fully compliant.	-
1.4.5.3	Message Delivery Operations	Fully compliant.	-
1.4.5.4	Message Broadcast Operations	Not applicable.	N2TTG is a network endpoint.
1.4.5.5	Ancillary Submission Operations	Not applicable.	N2TTG is a synchronous endpoint.
1.4.5.6	Ancillary Broadcast Operations	Not applicable.	N2TTG is a synchronous endpoint.
2	SMPP Sessions	Not applicable.	-
2.1	Application Layer Communication	Not applicable.	-
2.2	Establishing a SMPP Session	Partially compliant.	X.25 not supported.
2.3	Session States	Partially compliant.	X.25 not supported.
2.3.1	Open	Fully compliant.	-
2.3.2	Bound_TX	Partially compliant.	Replace, query, and cancel message not supported.
2.3.3	Bound_RX	Fully compliant.	-
2.3.4	Bound_TRX	Partially compliant.	Replace, query, and cancel message not supported.
2.3.5	Unbound	Fully compliant.	-
2.3.6	Closed	Fully compliant.	-
2.3.7	Outbound	Fully compliant.	-
2.4	Operation Matrix	Partially compliant.	Replace, query, and cancel message not supported.
2.5	Sample Sessions	Not applicable.	-
2.5.1	Example Transmitter Session	Fully compliant.	-
2.5.2	Example Receiver Session	Fully compliant.	-
2.5.3	Example Transceiver Session	Partially compliant.	<i>query_sm / query_sm_resp</i> not supported.
2.5.4	Example Transmitter Session (Cell Broadcast Entity)	Partially compliant.	Broadcast messages not supported.
2.5.5	Example Outbind Session	Fully compliant.	-
2.6	PDU Sequencing	Not applicable.	-
2.6.1	The PDU Sequence Number	Fully compliant.	-
2.6.2	Why use Monotonically Increasing Sequence numbers?	Fully compliant.	-
2.6.3	Sequence Numbers Across Sessions	Fully compliant.	-



Section	Section Heading	Compliance	Notes
2.6.4	Synchronous Vs. Asynchronous	Fully compliant.	-
2.6.5	Why Asynchronous?	Not applicable.	-
2.7	Session Timers	Fully compliant.	-
2.8	Error Handling	Not applicable.	-
2.8.1	Handling Connection Failure	Fully compliant.	-
2.8.2	Operation Failure	Fully compliant.	-
2.9	Flow Control and Congestion Avoidance	Not compliant.	<i>congestion_state</i> not supported.
2.10	Session Security and Encryption	Not applicable.	-
2.10.1	Leased Lines	Not applicable.	-
2.10.2	Secure Transport Layer	Partially compliant	No native support for transport security. OS-level transparent security may be used.
2.10.3	Secure VPN	Not applicable.	-
2.10.4	Secure Tunnel	Not applicable.	-
2.11	Forward and Backward Compatibility	Fully compliant.	-
2.11.1	Forward Compatibility	Fully compliant.	-
2.11.2	Backward Compatibility	Fully compliant.	-
3	SMPP Parameter and PDU Format	Not applicable.	-
3.1	Parameter Type Definitions	Fully compliant.	-
3.1.1	NULL Settings	Fully compliant.	-
3.1.2	SMPP Parameter Field Size Notation	Not applicable.	-
3.2	General PDU Format	Fully compliant.	-
3.2.1	PDU Format	Fully compliant.	-
3.2.1.1	Command_length	Fully compliant.	-
3.2.1.2	Command_id	Fully compliant.	-
3.2.1.3	Command_status	Fully compliant.	-
3.2.1.4	Sequence_number	Fully compliant.	-
3.2.1.5	Standard Parameters	Fully compliant.	-
3.2.1.6	TLV Parameters	Fully compliant.	-
3.2.2	A sample PDU	Not applicable.	-
4	SMPP PDU Definitions	Not applicable.	-
4.1	Session Management Operations	Not applicable.	-
4.1.1	Bind Operation	Fully compliant.	-
4.1.1.1	bind_transmitter Syntax	Fully compliant.	-
4.1.1.2	bind_transmitter_resp Syntax	Partially compliant.	<i>sc_interface_version</i> not used.
4.1.1.3	bind_receiver Syntax	Fully compliant.	-
4.1.1.4	bind_receiver_resp Syntax	Partially compliant.	<i>sc_interface_version</i> not used.

Section	Section Heading	Compliance	Notes
4.1.1.5	bind_transceiver Syntax	Fully compliant.	-
4.1.1.6	bind_transceiver_resp Syntax	Partially compliant.	<i>sc_interface_version</i> not used.
4.1.1.7	outbind Syntax.	Fully compliant.	-
4.1.1.8	unbind Syntax	Fully compliant.	-
4.1.1.9	unbind_resp Syntax	Fully compliant.	-
4.1.2	Enquire Link Operation	Fully compliant.	-
4.1.2.1	enquire_link Syntax	Fully compliant.	-
4.1.2.2	enquire_link_resp Syntax	Fully compliant.	-
4.1.3	Alert Notification Operation	Fully compliant.	-
4.1.3.1	alert_notification Syntax	Fully compliant.	-
4.1.4	Generic NACK Operation	Fully compliant.	-
4.1.4.1	generic_nack Syntax	Fully compliant.	-
4.2	Message Submission Operations	Not applicable.	-
4.2.1	submit_sm Operation	Not applicable.	-
4.2.1.1	submit_sm Syntax	Partially compliant.	Refer to <i>Table 5: SUBMIT_SM request/response body parameters.</i>
4.2.1.2	submit_sm_resp Syntax	Fully compliant.	-
4.2.2	data_sm Operation	Not applicable.	-
4.2.2.1	data_sm Syntax	Fully compliant.	-
4.2.2.2	data_sm_resp Syntax	Fully compliant.	-
4.2.3	submit_multi Operation	Not applicable.	-
4.2.3.1	submit_multi Syntax	Partially compliant.	Refer to <i>Table 6: SUBMIT_MULTI request/response body parameters.</i>
4.2.3.2	submit_multi_resp Syntax	Fully compliant.	-
4.2.4	Message Submission Request TLVs	Partially compliant.	Refer to <i>Table 10: Message submission TLVs.</i>
4.2.5	Message Submission Response TLVs	Partially compliant.	Refer to <i>Table 10: Message submission TLVs.</i>
4.2.6	Source and Destination Addressing	Fully compliant.	-
4.2.6.1	TON	Fully compliant.	-
4.2.6.1.1	International and National Format	Fully compliant.	-
4.2.6.1.2	Alphanumeric Format	Fully compliant.	-
4.2.6.2	NPI	Fully compliant.	-
4.2.6.3	ESME Addresses	Fully compliant.	-
4.2.7	Message Replace operation in submit_sm	Not applicable.	N2TTG is a synchronous endpoint.
4.2.8	Message Length	Fully compliant.	-
4.2.9	Message Types	Not applicable.	-
4.2.9.1	Registered	Fully compliant.	-

Section	Section Heading	Compliance	Notes
4.2.9.2	Scheduled	Fully compliant.	-
4.2.9.3	Pre-defined	Fully compliant.	-
4.2.10	Message Modes	Fully compliant.	-
4.2.10.1	Default Message Mode	Fully compliant.	-
4.2.10.2	Store and Forward Message Mode	Partially compliant.	Replace, query, and cancel message not supported.
4.2.10.3	Datagram Message Mode	Fully compliant.	-
4.2.10.4	Transaction Message Mode	Fully compliant.	-
4.3	Message Delivery Operations	Not applicable.	-
4.3.1	deliver_sm Operation	Not applicable.	-
4.3.1.1	deliver_sm Syntax	Partially compliant.	Refer to <i>Table 7: DELIVER_SM request/response body parameters.</i>
4.3.1.2	deliver_sm_resp Syntax	Fully compliant.	-
4.3.2	data_sm Operation	Partially compliant.	Refer to <i>Table 8: DATA_SM request/response body parameters.</i>
4.3.3	Message Delivery Request TLVs	Partially compliant.	Refer to <i>Table 11: Message delivery TLVs.</i>
4.3.4	Message Delivery Response TLVs	Partially compliant.	Refer to <i>Table 11: Message delivery TLVs.</i>
4.3.5	Delivery Message Types	Partially compliant.	SME Delivery Acknowledgment, SME Manual/User Acknowledgement, and Intermediate Notification not supported.
4.3.5.1	MC Delivery Receipt	Fully compliant.	Refer to section 4.3.1.4: <i>DELIVER_SM Operation.</i>
4.3.5.2	Intermediate Notification	Not compliant.	Intermediate Notification not supported.
4.3.5.3	SME Delivery Acknowledgement	Not compliant.	SME Delivery Acknowledgment not supported.
4.3.5.4	SME Manual/User Acknowledgement	Not compliant.	SME Manual/User Acknowledgement not supported.
4.3.5.5	Conversation Abort	Fully compliant.	-
4.4	Message Broadcast Operations	Not applicable.	-
4.4.1	broadcast_sm Operation	Not applicable.	-
4.4.1.1	broadcast_sm Syntax	Not compliant.	Broadcast not supported.
4.4.1.2	broadcast_sm_resp Syntax	Not compliant.	Broadcast not supported.
4.4.2	Broadcast Request Optional TLVs	Not compliant.	Broadcast not supported.
4.4.3	Broadcast Response Optional TLVs	Not compliant.	Broadcast not supported.

Section	Section Heading	Compliance	Notes
4.4.4	Message Replacement with broadcast_sm	Not compliant.	Broadcast not supported.
4.5	Ancillary Submission Operations	Not applicable.	-
4.5.1	cancel_sm Operation	Not applicable.	N2TTG is a synchronous endpoint.
4.5.1.1	cancel_sm Syntax	Not applicable.	N2TTG is a synchronous endpoint.
4.5.1.2	cancel_sm_resp Syntax	Not applicable.	N2TTG is a synchronous endpoint.
4.5.2	query_sm Operation	Not applicable.	N2TTG is a synchronous endpoint.
4.5.2.1	query_sm Syntax	Not applicable.	N2TTG is a synchronous endpoint.
4.5.2.2	query_sm_resp Syntax	Not applicable.	N2TTG is a synchronous endpoint.
4.5.3	replace_sm Operation	Not applicable.	N2TTG is a synchronous endpoint.
4.5.3.1	replace_sm Syntax	Not applicable.	N2TTG is a synchronous endpoint.
4.5.3.2	replace_sm_resp Syntax	Not applicable.	N2TTG is a synchronous endpoint.
4.5.3.3	Message Replacement TLVs	Not applicable.	N2TTG is a synchronous endpoint.
4.6	Ancillary Broadcast Operations	Not applicable.	-
4.6.1	query_broadcast_sm Operation	Not applicable.	N2TTG is a synchronous endpoint.
4.6.1.1	query_broadcast_sm Syntax	Not applicable.	N2TTG is a synchronous endpoint.
4.6.1.2	Query Broadcast Request Optional TLVs	Not applicable.	N2TTG is a synchronous endpoint.
4.6.1.3	query_broadcast_sm_resp Syntax	Not applicable.	N2TTG is a synchronous endpoint.
4.6.1.4	Query Broadcast Response Optional TLVs	Not applicable.	N2TTG is a synchronous endpoint.
4.6.2	cancel_broadcast_sm Operation	Not applicable.	N2TTG is a synchronous endpoint.
4.6.2.1	cancel_broadcast_sm Syntax	Not applicable.	N2TTG is a synchronous endpoint.
4.6.2.2	Cancel Broadcast Optional TLVs	Not applicable.	N2TTG is a synchronous endpoint.
4.6.2.3	cancel_broadcast_sm_resp Syntax	Not applicable.	N2TTG is a synchronous endpoint.
4.7	PDU Field Definitions	Not applicable.	-
4.7.1	addr_ton, source_addr_ton, dest_addr_ton, esme_addr_ton	Fully compliant.	-

Section	Section Heading	Compliance	Notes
4.7.2	addr_npi, source_addr_npi, dest_addr_npi, esme_addr_npi	Fully compliant.	-
4.7.3	address_range	Partially compliant.	Refer to <i>Table 3: BIND request/response body parameters.</i>
4.7.3.1	UNIX Regular Expressions	Not applicable.	-
4.7.4	command_length	Fully compliant.	-
4.7.5	command_id	Fully compliant.	-
4.7.6	command_status, error_status_code	Fully compliant.	-
4.7.7	data_coding	Fully compliant.	Refer to section 4.1.5: <i>SMPP Data Coding.</i>
4.7.8	destination_addr	Fully compliant.	-
4.7.9	dest_flag	Fully compliant.	-
4.7.10	dl_name	Fully compliant.	-
4.7.11	esme_addr	Fully compliant.	-
4.7.12	esm_class	Fully compliant.	-
4.7.13	interface_version	Fully compliant.	-
4.7.14	message_id	Fully compliant.	-
4.7.15	message_state	Fully compliant.	-
4.7.16	no_unsuccess	Fully compliant.	-
4.7.17	number_of_dests	Fully compliant.	-
4.7.18	password	Fully compliant.	-
4.7.19	priority_flag	Fully compliant.	-
4.7.20	protocol_id	Fully compliant.	-
4.7.21	registered_delivery	Fully compliant.	-
4.7.22	replace_if_present_flag	Fully compliant.	-
4.7.23	scheduled_delivery_time, validity_period, final_date	Fully compliant.	-
4.7.23.1	scheduled_delivery_time	Fully compliant.	-
4.7.23.2	validity_period	Fully compliant.	-
4.7.23.3	final_date	Fully compliant.	-
4.7.23.4	Absolute Time Format	Fully compliant.	-
4.7.23.5	Relative Time Format	Fully compliant.	-
4.7.24	sequence_number	Fully compliant.	-
4.7.25	service_type	Fully compliant.	-
4.7.26	short_message	Fully compliant.	-
4.7.27	sm_default_msg_id	Fully compliant.	-
4.7.28	sm_length	Fully compliant.	-
4.7.29	source_addr	Fully compliant.	-
4.7.30	system_id	Fully compliant.	-
4.7.31	system_type	Fully compliant.	-

Section	Section Heading	Compliance	Notes
4.8	PDU TLV Definitions	Fully compliant.	-
4.8.1	TLV Tag	Fully compliant.	-
4.8.2	TLV Length	Fully compliant.	-
4.8.3	TLV Value	Fully compliant.	-
4.8.4	TLV Definitions	Fully compliant.	-
4.8.4.1	additional_status_info_text	Fully compliant.	-
4.8.4.2	alert_on_message_delivery	Fully compliant.	-
4.8.4.3	billing_identification	Fully compliant.	-
4.8.4.4	broadcast_area_identifier, failed_broadcast_area_identifier	Fully compliant.	-
4.8.4.4.1	Broadcast Area Format types	Fully compliant.	-
4.8.4.5	broadcast_area_success	Fully compliant.	-
4.8.4.6	broadcast_content_type_info	Fully compliant.	-
4.8.4.7	broadcast_channel_indicator	Fully compliant.	-
4.8.4.8	broadcast_content_type	Fully compliant.	-
4.8.4.9	broadcast_end_time	Fully compliant.	-
4.8.4.10	broadcast_error_status	Fully compliant.	-
4.8.4.11	broadcast_frequency_interval	Fully compliant.	-
4.8.4.12	broadcast_message_class	Fully compliant.	-
4.8.4.13	broadcast_rep_num	Fully compliant.	-
4.8.4.14	broadcast_service_group	Fully compliant.	-
4.8.4.15	callback_num	Fully compliant.	-
4.8.4.16	callback_num_atag	Fully compliant.	-
4.8.4.17	callback_num_pres_ind	Fully compliant.	-
4.8.4.18	congestion_state	Fully compliant.	-
4.8.4.19	delivery_failure_reason	Fully compliant.	-
4.8.4.20	dest_addr_np_country	Fully compliant.	-
4.8.4.21	dest_addr_np_information	Fully compliant.	-
4.8.4.22	dest_addr_np_resolution	Fully compliant.	-
4.8.4.23	dest_addr_subunit	Fully compliant.	See section 4.1.5: SMPP Data Coding.
4.8.4.24	dest_bearer_type	Fully compliant.	-
4.8.4.25	dest_network_id	Fully compliant.	-
4.8.4.26	dest_network_type	Fully compliant.	-
4.8.4.27	dest_node_id	Fully compliant.	-
4.8.4.28	dest_subaddress	Fully compliant.	-
4.8.4.29	dest_telematics_id	Fully compliant.	-
4.8.4.30	dest_port	Fully compliant.	-
4.8.4.31	display_time	Fully compliant.	-
4.8.4.32	dpf_result	Fully compliant.	-
4.8.4.33	its_reply_type	Fully compliant.	-

Section	Section Heading	Compliance	Notes
4.8.4.34	its_session_info	Fully compliant.	-
4.8.4.35	language_indicator	Fully compliant.	-
4.8.4.36	message_payload	Fully compliant.	-
4.8.4.37	message_state	Fully compliant.	-
4.8.4.38	more_messages_to_send	Fully compliant.	-
4.8.4.39	ms_availability_status	Fully compliant.	-
4.8.4.40	ms_msg_wait_facilities	Fully compliant.	-
4.8.4.41	ms_validity	Fully compliant.	-
4.8.4.42	network_error_code	Fully compliant.	-
4.8.4.43	number_of_messages	Fully compliant.	-
4.8.4.44	payload_type	Fully compliant.	-
4.8.4.45	privacy_indicator	Fully compliant.	-
4.8.4.46	qos_time_to_live	Fully compliant.	-
4.8.4.47	receipted_message_id	Fully compliant.	-
4.8.4.48	sar_msg_ref_num	Fully compliant.	-
4.8.4.49	sar_segment_seqnum	Fully compliant.	-
4.8.4.50	sar_total_segments	Fully compliant.	-
4.8.4.51	sc_interface_version	Fully compliant.	-
4.8.4.52	set_dpf	Fully compliant.	-
4.8.4.53	sms_signal	Fully compliant.	-
4.8.4.54	source_addr_subunit	Fully compliant.	-
4.8.4.55	source_bearer_type	Fully compliant.	-
4.8.4.56	source_network_id	Fully compliant.	-
4.8.4.57	source_network_type	Fully compliant.	-
4.8.4.58	source_node_id	Fully compliant.	-
4.8.4.59	source_port	Fully compliant.	-
4.8.4.60	source_subaddress	Fully compliant.	-
4.8.4.61	source_telematics_id	Fully compliant.	-
4.8.4.62	user_message_reference	Fully compliant.	-
4.8.4.63	user_response_code	Fully compliant.	-
4.8.4.64	ussd_service_op	Fully compliant.	-

Table 13: N2TTG compliance to SMPP v5.0

### 5.3 Compliance to 3GPP TS 23.039 (version 2.0.0)

Section	Section Heading	Compliance	Notes
-	Intellectual Property Rights	Not applicable.	-
-	Foreword	Not applicable.	-
1	Scope	Not applicable.	-
2	References	Not applicable.	-
3	Abbreviations and definitions	Not applicable.	-

Section	Section Heading	Compliance	Notes
3.1	Abbreviations	Not applicable.	-
3.2	Definitions	Not applicable.	-
4	General	Not applicable.	-
Annex A	Short Message Peer to Peer (SMPP) Interface Specification	Not applicable.	-
A.1	Introduction	Not applicable.	-
A.1.1	Purpose	Not applicable.	-
A.1.2	Scope	Not applicable.	-
A.2	Functional overview	Not applicable.	-
A.2.1	ESMEs to SMSC	Fully compliant.	-
A.2.2	SMSC to ESME	Fully compliant.	-
A.2.3	Backward compatibility	Fully compliant.	-
A.3	Interface Specification	Partially compliant.	X.25 not supported.
A.4	Protocol Messages	Fully compliant.	-
A.5	Use of Primitives	Not applicable.	-
A.5.1	Initiation of Communication with SMSC	Fully compliant.	-
A.5.2	Steady-State Communication with the SMSC	Fully compliant.	-
A.5.3	Terminating Communication with the SMSC	Fully compliant.	-
A.5.4	Error Handling and Retransmission	Fully compliant.	-
A.5.5	Protocol Message Types	Fully compliant.	-
A.5.5.1	ESME to SMSC	Partially compliant.	<i>query_sm, cancel_sm, and replace_sm</i> not supported.
A.5.5.2	SMSC to ESME	Partially compliant.	<i>query_sm_resp, cancel_sm_resp, and replace_sm_resp</i> not supported.
A.6	Message Layouts	Fully compliant.	-
A.6.1	Definitions	Fully compliant.	-
A.6.2	Message Header Format	Fully compliant.	-
A.6.2.1	"Generic_Nack" Command	Fully compliant.	-
A.6.2.1.1	"Generic_Nack" Syntax	Fully compliant.	-
A.6.3	Message Body Formats	Not applicable.	-
A.6.3.1	"BIND" Operation	Fully compliant.	-
A.6.3.1.1	"BIND_RECEIVER" Syntax	Fully compliant.	-
A.6.3.1.2	"BIND_RECEIVER_RESP" Syntax	Fully compliant.	-
A.6.3.1.3	"BIND_TRANSMITTER" Syntax	Fully compliant.	-
A.6.3.1.4	"BIND_TRANSMITTER_RESP" Syntax	Fully compliant.	-
A.6.3.2	"UNBIND" Operation	Fully compliant.	-



Section	Section Heading	Compliance	Notes
A.6.3.2.1	"UNBIND" Syntax	Fully compliant.	-
A.6.3.2.2	"UNBIND_RESP" Syntax	Fully compliant.	-
A.6.3.3	"SUBMIT_SM" Operation	Fully compliant.	-
A.6.3.3.1	"SUBMIT_SM" Syntax	Fully compliant.	-
A.6.3.3.2	SUBMIT_SM_RESP" Syntax	Fully compliant.	-
A.6.3.4	"DELIVER_SM" Operation	Fully compliant.	-
A.6.3.4.1	"DELIVER_SM" Syntax	Fully compliant.	-
A.6.3.4.2	"DELIVER_SM_RESP" Syntax	Fully compliant.	-
A.6.3.5	"QUERY_SM" Operation	Not compliant.	Not supported.
A.6.3.5.1	"QUERY_SM" Syntax	Not compliant.	Not supported.
A.6.3.5.2	"QUERY_SM_RESP" Syntax	Not compliant.	Not supported.
A.6.3.6	"CANCEL_SM" Operation	Not compliant.	Not supported.
A.6.3.6.1	"CANCEL_SM" Syntax	Not compliant.	Not supported.
A.6.3.6.2	"CANCEL_SM_RESP" Syntax	Not compliant.	Not supported.
A.6.3.7	"REPLACE_SM" Operation	Not compliant.	Not supported.
A.6.3.7.1	"REPLACE_SM" Syntax	Not compliant.	Not supported.
A.6.3.7.2	"REPLACE_SM_RESP" Syntax	Not compliant.	Not supported.
A.6.3.8	"ENQUIRE_LINK" Operation	Fully compliant.	-
A.6.3.8.1	"ENQUIRE_LINK" Syntax	Fully compliant.	-
A.6.3.8.2	"ENQUIRE_LINK_RESP" Syntax	Fully compliant.	-
A.7	System Definitions	Fully compliant.	-
A.7.1	Error Codes	Fully compliant.	-
A.7.2	Command I.D. Values	Fully compliant.	-
A.7.3	GSM Error Codes	Fully compliant.	-
A.7.4	Message States	Fully compliant.	-
A.7.5	Time Format	Fully compliant.	-
Annex B	Short Message Service Centre External Machine Interface	Not applicable.	-
Annex C	SMSC to SME interface specification	Not applicable.	-
Annex D	SMSC Open Interface Specification	Not applicable.	-
Annex E	SMSC Computer Access Service and Protocol Manual	Not applicable.	-
Annex F	Change Request History	Not applicable.	-
-	History	Not applicable.	-

Table 14: N2TTG compliance to 3GPP TS 23.039