



Technical Committee Glossary

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[GLOSS_TC]

NFC Forum™

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1 Overview

This document provides an overview of the glossary terms used throughout document in the NFC Forum Technical Committee.

1.1 Objectives

Provide a single location for all defined glossary terms.

1.2 Scope

This document applies only to glossary terms used by the NFC Forum Technical Committee.

1.3 Audience

NFC Forum Members are the intended audience of this document.

1.4 Applicable Documents or References

[ACTIVITY]	Activity Technical Specification, NFC Forum
[ANALOG]	Analog Technical Specification, NFC Forum
[BLUETOOTH_CORE]	Bluetooth® Core Specification, Bluetooth SIG
[BTSSP]	Bluetooth® Secure Simple Pairing Using NFC, NFC Forum
[CH]	Connection Handover Technical Specification, NFC Forum
[CPUX]	Cross-platform NFC Tag UX NFC Forum
[DIGITAL]	Digital Protocol Technical Specification, NFC Forum
[LLCP]	Logical Link Control Protocol Technical Specification, NFC Forum
[NAP]	NFC Authentication Protocol Technical Specification, NFC Forum
[NCI]	NFC Controller Interface (NCI) Technical Specification, NFC Forum
[NDEF]	NFC Data Exchange Format (NDEF) Technical Specification, NFC Forum
[NMT]	NFC Money Transfer Technical Specification, NFC Forum
[PROFILES]	Profiles Technical Specification NFC Forum
[RTD]	Record Type Definition (RTD) Technical Specification, NFC Forum

[RTD_DI]	Device Information RTD Technical Specification, NFC Forum
[RTD_SIG]	Signature RTD Technical Specification, NFC Forum
[RTD_SP]	Smart Poster RTD Technical Specification, NFC Forum
[RTD_TEXT]	Text RTD Technical Specification, NFC Forum
[RTD_URI]	URI RTD Technical Specification, NFC Forum
[RTD_VERB]	Verb RTD Technical Specification, NFC Forum
[T2T]	Type 2 Tag Technical Specification, NFC Forum
[T3T]	Type 3 Tag Technical Specification, NFC Forum
[T4T]	Type 4 Tag Technical Specification, NFC Forum
[T5T]	Type 5 Tag Technical Specification, NFC Forum
[WLC]	Wireless Charging Technical Specification, NFC Forum

NOTE Older specification versions may also include Type 1 Tag

1.5 Administration

The NFC Forum Technical Committee Glossary is an open document supported by the Near Field Communication Forum, Inc., located at:

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The **Technical Committee** maintains this specification.

1.6 Name and Logo Usage

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1.7 Intellectual Property

The Technical Committee Glossary conforms to the Intellectual Property guidelines specified in the NFC Forum's *Intellectual Property Rights Policy*, as outlined in the NFC Forum *Rules of Procedure*. These documents are available on the [NFC Forum website](#).

2 Glossary Terms

Access Attribute

The Access Attribute is part of each Service Code (the lowest 6 bits). This value determines the access control setting for the Blocks belonging to this Service.

[T3T]

Access Mode

A field specified in the Block List Element that identifies the method of access to use when accessing Block Data.

[T3T]

Account Type

The type of a payment account, such as payment application account type or bank account type.

[NMT]

Active Communication Mode

A communication mode in which each device generates an Operating Field when it has to send a frame to a peer device.

[ACTIVITY], [ANALOG], [DIGITAL], [NCI], [PROFILES]

Activity

A process within an NFC Forum Device.

[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES], [TNEP], [WLC]

Advertising and Scan Response Data / Bluetooth SIG

A message that provides information about the local Bluetooth device sent in an Advertising or Scan Response event from Bluetooth Low Energy (LE) devices. Defined in [BLUETOOTH_CORE].

[BTSSP]

Alternative Carrier

A communication technology that can be used for data transfers between a Handover Requester and a Handover Selector.

[BTSSP], [CH]

Application Identifier (AID)

Defined in [ISO/IEC_7816-4], this is a specific type of Dedicated File (DF) name that is used in a SELECT command to identify applications.

[NCI], [T4T]

Application User

A person who interacts with an application based on this specification through a user interface.

[RTD_SIG]

Attribute Information

A set of fields that contain information about the NDEF capabilities of the Type 3 Tag and about the length of stored NDEF data.

[T3T]

Attribute Information Block

The Block of a Type 3 Tag that is used to store the Attribute Information.

[T3T]

Auxiliary Information Reference

A pointer to an NFC Data Exchange Format (NDEF) record that contains additional contextual information.

[NMT]

Background FOD

Mechanism to provide Foreign Objects Detections (FODs) of Foreign Objects (FOs) that are inserted into the Wireless Charging Operating Volume (WLC OV) during Wireless Power Transfer (WPT).

[WLC]

Bail-out Option

A configuration option that allows the NFC Forum Device to conclude the Technology Detection Activity, if the respective Bail-out parameter is set.

[ACTIVITY]

Battery Off State

State in which an internal battery or external power source is not available. For example, the battery is removed or empty, so the DH is switched off. The NFC Forum Device can only act in Listen Mode when the NFCC and certain NFCEEs might be powered by a Remote NFC Endpoint via magnetic coupling.

[NCI]

Big Endian

A method of recording or transmitting numerical data of more than one byte, with the highest byte placed at the beginning.

[NCI], [NDEF], [RTD_SIG], [TxT], [TNEP]

Block [DIGITAL]

Unit of data bytes transmitted as part of the ISO-DEP Protocol.

[DIGITAL]

Block [TxT]

The smallest data unit written to or read from memory.

[T2T], [T3T], [T5T]

Block Data

Command or Response parameter for the Data to be written to or read from a Block or a set of Blocks.

[T3T]

Block List

A sequence of Block List Elements.

[T3T]

Block List Element

Indicates the Block Number, the position of the Service within the Service Code List, and the Access Mode for one Block.

[T3T]

Block Number

Identifier of a Block in memory.

[T2T], [T3T], [T5T]

Bluetooth Device

A device that implements [BLUETOOTH_CORE].

[BTSSP]

Byte Sequence

Concatenation of hexadecimal values.

[ACTIVITY]

Card Emulator

Role of an NFC Forum Device, reached when an NFC Forum Device in Listen Mode has gone through a number of States. In this mode the NFC Forum Device behaves as one of the Technology Subsets.

[ACTIVITY], [ANALOG], [DIGITAL], [NAP], [NMT], [PROFILES], [T2T], [T3T], [T5T], [TNEP]

Carrier Configuration Data

The information needed to connect to an alternative carrier. The exact information depends on the carrier technology.

[BTSSP] [CH]

Clean-up

Clean-up is the final step in a Poll Profile. It erases the Greedy Collection and the Operating Field is turned to the Operating Field Off condition.

[PROFILES]

Collision

For NFC-A, a collision is a superposition of a '0' and a '1' as defined in [DIGITAL].

For NFC-B, NFC-F and NFC-V, a collision is a superposition of multiple Responses, resulting in a Transmission Error.

[ACTIVITY], [PROFILES]

Command

An instruction transmitted from one device to another device in order to move the other device through a state machine.

[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES], [TxT], [TNEP], [WLC]

Command Message

A request sent from the DH to the NFCC for action by the NFCC.

[NCI]

Configuration Parameters

Parameters that influence the execution of an Activity and which do not depend on the output of a previous Activity

[ACTIVITY], [PROFILES]

Connection Identifier (Conn ID)

A unique 4-bit identifier for a Logical Connection.

[NCI]

Connectionless Transport

An unacknowledged data transmission service with minimal protocol complexity.

[LLCP]

Connection-oriented Transport

A data transmission service with sequenced and guaranteed delivery of Service Data Units.

[LLCP]

Control Message

A generic name that refers to a Command, Response, or Notification Message, but not a Data Message.

The terms ‘Command’, ‘Response’, and ‘Notification’, as used in this document, mean the same as ‘Command Message’, ‘Response Message’, and ‘Notification Message’.

[NCI]

Correct Frame

A frame without Transmission Error.

[ACTIVITY], [ANALOG], [DIGITAL], [T2T], [T3T], [T4T]

Cyclic Redundancy Check (CRC)

A checksum appended within the data segment before transmission, and verified afterward by the recipient to detect Transmission Errors.

[NCI], [DIGITAL]

Data Link Connection

A unique combination of source and destination Service Access Point addresses used for numbered information transfer.

[LLCP], [PHDC]

Data Message

A message containing data carried over a Logical Connection.

[NCI]

Destination Type

Identifies an entity (NFCC, NFCEE, or Remote NFC Endpoint) for which a Dynamic Logical Connection is intended.

[NCI]

Device Host (DH)

An Execution Environment responsible for the overall management of the NFC Forum Device and any peripherals. This includes the management (e.g., initialization, configuration, power management, etc.) of the NFC Controller peripheral.

[NCI]

Device Information

Attributes describing information for a particular device

[RTD_DI]

DH-NFCEE

An NFCEE residing on or connected to the DH. There is logically only one DH-NFCEE, but it might be composed of more than one environment (for example, an environment on the DH and an environment on a peripheral connected to the DH). The manner in which the DH manages the DH-NFCEE is implementation-specific.

[NCI]

Dynamic Logical Connection

A Logical Connection that is created and closed as needed.

[NCI]

Extended Inquiry Response / Bluetooth SIG

A response message providing information about the local Bluetooth device sent in response to an Inquiry from remote Bluetooth devices. Defined in [BLUETOOTH_CORE].

[BTSSP]

Extended Memory

Offers up to 65536 Blocks ($n \leq 65535$) addressed by two bytes.

[T5T]

File identifier

Data element (two bytes) used to address a file

[T4T]

Foreign Object

Any metallic object or tag, excluding Wireless Charging Listeners (WLC-Ls), that can be heated or be damaged when exposed to a radio frequency (RF) field in which the field strength exceeds $V_{ov,max}$, as defined in [ANALOG] . For example: a contactless legacy tag or a metallic object such as coin or paperclip.

[WLC]

Greedy Collection

Temporary storage for information collected as part of the Activity and used during processing.

[ACTIVITY], [PROFILES]

Handover Mediator

An NFC Forum Device that is currently intending to facilitate connection handover between two other NFC-enabled devices.

[CH]

Handover Requester

An NFC Forum Device that begins the Handover Protocol by issuing a Handover Request Message to another NFC Forum Device.

[BTSSP], [CH]

Handover Selector

An NFC Forum Device that constructs and replies to a Handover Select Message as a result of a previously received Handover Request Message, or an NFC Tag Device that provides a pre-set Handover Select Message for reading.

[BTSSP], [CH]

HCI Network

A Network as defined in [ETSI_102622], consisting of a host controller and one or more hosts.

[NCI]

HCI-NFCEE

A specific type of NFCEE that is connected via the NFCC HCI Network, as described in [ETSI_102622].

[NCI]

Identity Attribute

A type-length-value block in a Device Internet Protocol Identity Record that specifies an attribute.

[CH]

IEEE Agent

A software component that uses the ISO/IEEE 11073-20601 Optimized Exchange Protocol to communicate with an IEEE Manager.

[PHDC]

IEEE Manager

A software component that uses the ISO/IEEE 11073-20601 Optimized Exchange Protocol to communicate with an IEEE Agent.

[PHDC]

IEEE APDU

IEEE APDUs are Application Protocol Data Units defined in [IEEE-20601] that are exchanged between an IEEE Agent and IEEE Manager.

[PHDC]

Initial FOD

Initial Foreign Object Detection (iFOD) is used before entering Wireless Power Transfer (WPT) to detect foreign objects (FOs) that cannot be detected by the NFC Polling FOD.

[WLC]

Initial NDEF message

An NDEF message provided in the Service Ready state by the NFC Tag Device that supports the Tag NDEF Exchange Protocol and announces its supported Services.

[CH], [TNEP]

Initialization

Initialization is the first step in a Poll Profile. It sets the configuration parameters of the Activity to their initial values.

[PROFILES]

Initiator

Role of a Poller when it has gone through a number of Activities. In this mode, the NFC Forum Device communicates using the NFC-DEP Protocol.

[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES]

ISO-DEP Protocol [DIGITAL]

Half-duplex block transmission protocol defined in Section 16 and based on [ISO/IEC_14443] and [EMV_CLESS].

[DIGITAL]

ISO-DEP Protocol

The half-duplex block transmission protocol as defined in [DIGITAL].

[NCI], [ACTIVITY], [PROFILES], [T4T]

Joint Initial FOD

Joint initial Foreign Object Detection (JiFOD) requires both a Wireless Charging Poller device (WLC-P) and a Wireless Charging Listener device (WLC-L) to agree on a specific initial Foreign Object Detection (iFOD) method. It also implies an agreed time interval prior to the Wireless Power Transfer (WPT) in which the JiFOD is performed.

[WLC]

LE legacy pairing

Bluetooth Low Energy (LE) device pairing, as defined in **Error! Reference source not found.** Version 4.0 and 4.1

[BTSSP]

LE Secure Connections pairing

Bluetooth Low Energy (LE) device pairing introduced in **Error! Reference source not found.** Version 4.2 which uses different security algorithms compared to LE legacy pairing.

[BTSSP]

Link Maximum Information Unit (MIU)

The maximum number of octets in the Information field of any possible Logical Link Control (LLC) Protocol Data Unit.

[LLCP]

Listen Frame

A frame sent by a Listener.

[ANALOG], [DIGITAL]

Listen Mode

The mode of an NFC Forum Device where it receives Commands and sends Responses.

[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES], [TxT], [WLC]

Listen Mode [NCI]

The mode of an NFC Forum Device in which it receives RF commands and sends RF responses as defined in [DIGITAL].

[NCI]

Listen Profile

A set of Listen Mode configuration parameter values and device response rules that together enable the NFC Forum Device in Listen Mode to operate as either a P2P Target or as a Card Emulator for one of the defined Tag Platforms.

[ACTIVITY], [PROFILES]

Listener

An NFC Forum Device in Listen Mode.

[ANALOG], [ACTIVITY], [NCI], [PROFILES], [TxT]

Little Endian

A method of recording or transmitting numerical data of at least two bytes, with the lowest byte placed at the beginning.

[NCI], [T3T]

LLCP Link

The reliable communication channel between the local and the remote Logical Link Control (LLC) that provides the transport for all data link connections and logical data links.

[LLCP]

Ln

Length of the NDEF data in bytes.

[T3T]

Local LLC

The Logical Link Control (LLC) component running on the local device.

[LLCP]

Logical Connection

A communication channel between the Device Host (DH) and the NFC Controller (NFCC) that is used for data communication toward the NFCC itself, an NFCEE or a Remote NFC Endpoint.

[NCI]

Logical Data Link

A combination of source and destination Service Access Point addresses used for unnumbered information transfer.

[LLCP]

Lower Level

Term used in [DIGITAL] to mean V_2 for NFC-A.

[ANALOG]

Maximum Information Unit (MIU)

The maximum length of the information field in a single Logical Link Control (LLC) Protocol Data Unit (PDU).

[LLCP]

Mediated Handover

The exchange of NDEF messages that allows a Handover Mediator to facilitate connection handover between two other NFC-enabled devices.

[CH]

Message

A generic term for a Command, Response, Notification, or Data object communicated between the DH and NFCC.

[NCI]

Modulation Index

The modulation index of an amplitude modulated signal

[ANALOG]

Money Transfer Information

A block of information that might be carried in the Money Transfer Request Message or Money Transfer Response Message. This information can include items such as Account Type and Payment Account, Payment Application Identifier, payment role (i.e., payer or payee), and Transaction Amount.

[NMT]

Money Transfer Method Record

An NFC Data Exchange Format (NDEF) record used to describe a single set of Money Transfer Information options for a money transfer transaction.

[NMT]

Money Transfer Method Type

Money Transfer Method Type identifies the type of the Money Transfer Information, it includes an Account Type, and depending on the value of Account Type, it also includes a Payment Application Identifier if the Account Type is PAYMENT_APP_ACCOUNT_TYPE or it could optionally include a bank identifier if the Account Type is BANK_ACCOUNT_TYPE.

[NMT]

Money Transfer Protocol

A procedure for transferring money over the NFC communications medium.

[NMT]

Money Transfer Transaction Request

A specific message to a payment server that corresponds to the selected payment application, providing the necessary information (e.g. Payment Account, Transaction Amount, role of payer or payee, and other possibly related information.) for the payment server to process the money transfer transaction.

[NMT]

Money Transfer Request Message

A message that can only be sent by a Money Transfer Requester to a Money Transfer Selector. This message is sent asynchronously and typically contains at least one block of Money Transfer Information.

[NMT]

Money Transfer Requester

A role of an NFC Forum Device that begins the NFC Money Transfer Protocol by sending a Money Transfer Request Message to another NFC Forum Device.

[NMT]

Money Transfer Response Message

A message that is only sent by a Money Transfer Selector in response to each Money Transfer Request Message received from the Money Transfer Requester. It is sent asynchronously and might contain at least one block of Money Transfer Information.

[NMT]

Money Transfer Selector

An NFC Forum Device that constructs and replies with a Money Transfer Response Message as a result of a previously received Money Transfer Request Message, or an NFC Tag Device that provides a pre-set Money Transfer Response Message for reading.

[NMT]

Negotiated Handover

An exchange of NDEF messages that allows two NFC Forum Devices to agree on a (set of) alternative carrier(s) to be used for further data exchange.

[CH]

Nbc

The number of Blocks used by the NDEF data stored on the Type 3 Tag.

[T3T]

Nbr

The number of Blocks that can be read by the Check Command at one time.

[T3T]

Nbw

The number of Blocks that can be written by the Update Command at one time.

[T3T]

NCI

The logical interface between a DH and an NFCC.

[NCI]

NCI Core

The basic NCI functionality between the (DH and NFCC).

[NCI]

NCI Transport

The physical connection (e.g., SPI, I2C, UART, USB, etc.) and any associated link level protocol between the DH and NFCC. Each supported NCI Transport has a transport mapping that defines the characteristics of the NCI Transport. An NCI Transport provides the ability to reliably transfer data without intimate knowledge of the data being transferred. The NCI specification defines multiple transport mappings.

[NCI]

NDEF-NFCEE

An NFCEE configured to emulate an NFC Tag Device. An NDEF-NFCEE always stores an NDEF message, which might be empty, as defined in [NDEF].

[NCI]

NDEF application

The logical, higher-layer application on an NFC Forum Device using NDEF to format information for exchange with other NFC Forum Devices.

[CH], [CPUX], [NDEF], [RTD], [RTD_DI], [RTD_SP], [RTD_TEXT], [RTD_URI], [TNEP]

NDEF chunked payload

Application data that has been partitioned into multiple chunks each carried in a separate NDEF record,

[NDEF]

NDEF generator

An entity or module that encapsulates application-defined payloads within NDEF messages.

[CH], [NDEF], [RTD], [RTD_VERB]

NDEF Message

The basic message construct defined by the NFC Data Exchange Format Specification. An NDEF Message contains one or more NDEF records.

[NCI], [NDEF], [NMT], [RTD], [RTD_DI], [RTD_SIG], [RTD_SP], [RTD_TEXT], [RTD_URI], [RTD_VERB], [TNEP], [TxT], [WLC]

NDEF-NFCEE

An NFCEE configured to emulate an NFC Tag Device. An NDEF-NFCEE always stores an NDEF message, which might be empty, as defined in [NDEF].

[NCI]

NDEF parser

An entity or module that parses NDEF messages and hands off the payloads to an NDEF application.

[CH], [NDEF], [RTD], [RTD_DI]

NDEF payload

The application data carried in an NDEF record.

[CH], [CPUX], [NDEF], [RTD], [RTD_DI], [RTD_SP], [RTD_TEXT], [RTD_URI], [TNEP], [WLC]

NDEF payload identifier

An optional URI that can be used to identify a payload.

[NDEF]

NDEF payload length

The size of the payload in a single NDEF record indicated as the number of octets.

[CH], [NDEF], [RTD_SP], [RTD_TEXT], [RTD_URI]

NDEF payload type

An identifier that indicates the type of the payload.

[CH], [CPUX], [NDEF], [RTD_TEXT], [RTD_URI], [TNEP]

NDEF Record

An NDEF Record contains a payload described by a type, a length, and an optional identifier.

[CH], [CPUX], [NDEF], [NMT], [RTD], [RTD_DI], [RTD_SIG], [RTD_SP], [RTD_TEXT], [RTD_URI], [RTD_VERB], [TNEP], [TxT], [WLC]

NDEF record chunk

An NDEF record that contains a chunk of a payload rather than a full payload.

[NDEF]

NDEF short record

An NDEF record allowing payloads or chunks of up to 255 bytes to be carried.

[NDEF], [RTD_URI]

NDEF Tag application

An application with AID D2760000850101h that contains all information related to storing and retrieving the NDEF Message.

[T4T]

Negotiated Handover

An exchange of NFC Data Exchange Format (NDEF) messages that allows two NFC Forum Devices to agree on a set of alternative carrier(s) to be used for further data exchange.

[BTSSP], [CH]

Negotiated Money Transfer

A money transfer process in which both NFC Forum Devices communicate by NFC Forum Peer Mode.

[NMT]

Negotiated WLC Control Protocol

A variant of the Wireless Charging (WLC) Control Protocol which uses the Wireless Charging Capability (WLC_CAP) message to inform the Wireless Charging Poller device (WLC-P) about the Wireless Charging Listener device (WLC-L) capabilities and uses the WLCP_INFO and WLCL_CTL messages to negotiate the parameters for the next Wireless Power Transfer (WPT) phase.

[WLC]

NFCC

The entity responsible for the transmission of data via NFC. The NFCC has a connection to the DH and might have connections to additional NFCEEs. Those connections are out of scope of this specification, but the impacts to the NCI are in scope.

[NCI]

NFC Execution Environment (NFCEE)

An environment, in which NFC applications are executed. The NFCEE is either built into the NFCC or connected to the NFCC. The NFCEE might be included in entities with various form factors, some of which can be removable or replaceable.

[NCI]

NFC Forum Device

A device that supports at least one communication protocol for at least one communication mode defined by the NFC Forum specifications. Currently the following NFC Forum Devices are defined:

NFC Universal Device, NFC Tag Device and NFC Reader Device.

[ACTIVITY], [ANALOG], [BTSSP], [CH], [DIGITAL], [NAP], [NCI], [NDEF], [NMT], [PROFILES], [RTD], [RTD_DI], [RTD_SIG], [RTD_TEXT], [TNEP], [TxT], [WLC]

NFC Forum Reference Equipment

A set of NFC Forum Reference Poller and NFC Forum Reference Listener devices in conjunction with which the RF characteristics of this specification are valid.

[ANALOG]

NFC Forum Tag

A contactless tag or (smart) card supporting NDEF.

[ACTIVITY], [ANALOG], [BTSSP], [CH], [CPUX], [PROFILES], [RTD], [RTD_SP], [T3T], [WLC]

NFC Link Establishment

Process to establish an NFC communication link.

[WLC]

NFC Polling FOD

Mechanism to detect Foreign Objects (FOs) during NFC Link Establishment.

[WLC]

NFC Reader Device

An NFC Forum Device that supports the following Modus Operandi: Reader/Writer. It can also support Initiator.

[ACTIVITY], [CH], [DIGITAL], [NAP], [NDEF], [PROFILES], [RTD], [RTD_DI], [RTD_SIG], [RTD_SP], [TNEP], [TxT], [WLC]

NFC Tag Device

An NFC Forum Device that supports at least one communication protocol for Card Emulator and NDEF.

[ACTIVITY], [ANALOG], [BTSSP], [CH], [DIGITAL], [PROFILES], [NCI], [NDEF], [NMT], [RTD_DI], [RTD_SIG], [RTD_SP], [RTD_TEXT], [TNEP], [TxT], [WLC]

NFC Universal Device

An NFC Forum Device that supports the following Modus Operandi: Initiator, Target, and Reader/Writer. It also can support Card Emulator.

[ACTIVITY], [ANALOG], [BTSSP], [CH], [DIGITAL], [NDEF], [PROFILES], [RTD], [RTD_DI], [RTD_SIG], [RTD_SP], [TNEP], [TxT], [WLC]

NFC Wireless Charging Device

An NFC Forum Device that supports either the Modus Operandi for the Reader/Writer or a Tag and additionally supports the wireless charging technology defined by this specification.

[WLC]

NFC-DEP Initiator

The role of an NFC Forum Device reached when a Poller has gone through a number of Activities. In this mode, the NFC Forum Device communicates using the NFC-DEP Protocol.

[NCI]

NFC-DEP Protocol

The half-duplex block transmission protocol as defined in [DIGITAL].

[ACTIVITY], [ANALOG], [LLCP], [NCI], [PROFILES]

NFC-DEP Protocol [DIGITAL]

Half-duplex block transmission protocol defined in Section 17 and based on [ISO/IEC_18092].

[DIGITAL]

NFC-DEP Target

Role of an NFC Forum Device, reached when the Listener has gone through a number of Activities. In this mode, the NFC Forum Device communicates using the NFC-DEP Protocol.

[NCI], [WLC]

NFCEE Discovery Process

Functionality that allows detection of NFCEEs that are physically connected to the NFCC.

[NCI]

NFCEE Interface

A logical entity on the NFCC that communicates with the DH on one side and an NFCEE on the other side.

[NCI]

NFCEE Protocol

A protocol used in the communication between the NFCC and an NFCEE.

[NCI]

NFCIDx

The identifiers NFCID0, NFCID1, NFCID2, NFCID3 and UID for NFC-B, NFC-A, NFC-F, NFC-DEP and NFC-V respectively. Identifiers subsumed under the term NFCIDx always belong to the same Technology.

[ACTIVITY], [DIGITAL]

Nibble

Four bits, half of a byte.

[T2T], [TNEP]

NmaxB

Maximum number of Blocks available for NDEF data on a Type 3 Tag.

[T3T]

No Remote Field Sensed

A condition that indicates the absence of the Remote Field for a certain time.

[ANALOG], [ACTIVITY], [T3T], [WLC]

Notification Message

A message that can only be sent by an NFCC to the DH. It is sent asynchronously and typically contains informational parameters.

[NCI]

Operating Field

The radio frequency field created by the NFC Forum Device.

[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES], [TNEP], [TxT]

Operating Field

The radio frequency field created by the NFC Forum Device or Reference Wireless Charging Poller (WLC-P).

[WLC]

Operating Field Off

A condition of the Operating Field when the field strength is below a well-defined threshold.

[ACTIVITY], [ANALOG], [PROFILES], [WLC]

Operating Field On

A condition of the Operating Field when the field strength is equal to or higher than a well-defined threshold for a minimum period of time.

[ACTIVITY], [ANALOG], [WLC]

Operating Volume

The three-dimensional space, as defined by the NFC Forum, in which an NFC Forum Device in Poll Mode can communicate with an NFC Forum Device in Listen Mode.

[DIGITAL], [ANALOG]

OTHER

A Protocol Error or Transmission Error:

[ACTIVITY], [T3T]

Out-of-Band / Bluetooth SIG

Communication that belongs to but occurs outside of an intended communication channel or method. In this document, “out-of-band” refers to data transmission over NFC for the purpose of pairing devices using Bluetooth SSP and discovering Bluetooth services.

[BTSSP]

Overlap Service

A Service that shares the same Blocks with another Service.

[T3T]

Packet

A structure that is used to transmit a Message over the NCI Transport. There are both Control Packets (for transporting Control Messages) and Data Packets (for transporting Data Messages).

[NCI]

Passive Communication Mode

A communication mode in which one device generates an Operating Field and sends Commands to a second device. To respond, this second device uses load modulation that is, it does not generate an Operating Field but it draws power from a Remote Field.

[ACTIVITY], [ANALOG], [DIGITAL], [NCI], [PROFILES]

Payment Account

Either an account of a payer that can be used to pay money or an account of a payee that can be used to receive money. This account could be a payment application account, a bank account, or another specified type of account.

[NMT]

Payment Application Determination Process

A process to determine the corresponding payment application to be used for the money transfer transaction when one or more Money Transfer Method Records are matched.

[NMT]

Payment Application Identifier

A unique identifier that can be used to identify a specific payment application.

[NMT]

Peer

A role either equal to the role of an Initiator or to the role of a Target.

[ACTIVITY], [PHDC]

Peer Mode

NFC operation mode using an LLCP Link to exchange data between an Initiator and Target

[CH], [PHDC]

PHDC Agent

A software component that communicates with a remote PHDC Manager to allow a local IEEE Agent to exchange data with a remote IEEE Manager.

[PHDC]

PHDC Manager

A software component that communicates with a remote PHDC Agent to allow a local IEEE Manager to exchange data with a remote IEEE Agent.

[PHDC]

PHD Message

A PHD Message is an NDEF Message that starts with a PHD Record and is exchanged between a PHDC Tag Agent and a PHDC Manager in NFC Forum Reader/Writer operation mode.

[PHDC]

PHDC PDU

PHDC PDUs are Protocol Data Units that are exchanged between a PHDC Agent and a PHDC Manager in NFC Forum Peer mode of operation.

[PHDC]

PHDC Peer Agent

A PHDC Agent that communicates with a remote PHDC Manager in NFC Forum Peer mode.

[PHDC]

PHDC Tag Agent

A PHDC Agent that communicates with a remote PHDC Manager in NFC Forum Reader/Writer mode.

[PHDC]

PMm

Manufacturer Parameter that is pre-configured by the Type 3 Tag manufacturer.

[T3T]

Poll Command

A Command to probe for Listeners

- ALL_REQ Command or SENS_REQ Command for NFC-A
- ALLB_REQ Command or SENSB_REQ Command for NFC-B
- SENSF_REQ Command for NFC-F
- INVENTORY_REQ Command for NFC-V
- ATR_REQ Command for NFC-ACM

[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES]

Poll Frame

A frame sent by an NFC Forum Device in Poll Mode.

[ANALOG], [DIGITAL]

Poll Mode

The mode of an NFC Forum Device where it sends Commands and receives Responses.

[ACTIVITY], [ANALOG], [DIGITAL], [PHDC], [PROFILES], [TNEP], [TxT], [WLC]

Poll Mode [NCI]

The mode of an NFC Forum Device in which it sends RF commands and receives RF responses, as defined in [DIGITAL].

[NCI]

Poll Profile

The combination of a Resolution Process managing a set of Activities, an Initialization that chooses a set of values as Configuration Parameters, and Clean-up.

[ACTIVITY], [PROFILES]

Poller

An NFC Forum Device in Poll Mode.

[ANALOG], [ACTIVITY], [DIGITAL], [PHDC], [PROFILES], [TNEP], [TxT], [WLC]

Profile

A set of definitions that determines the behavior of the NFC Forum Device in either Poll Mode (Poll Profile) or Listen Mode (Listen Profile).

[ACTIVITY], [PROFILES]

Proprietary Command

Any Command from one of the NFC technologies of which the meaning is outside of the scope of this specification.

[ACTIVITY], [T2T], [T3T]

Proprietary Technology

Any technology of which the Command(s) used in the Technology Detection Activity do(es) not move the NFC Forum Device (in Listen Mode) out of the IDLE State.

[ACTIVITY]

Proprietary Value

A value that is used by an implementation for an extension that is out of scope of this specification.

[NCI]

Protocol Data Unit (PDU)

The sequence of contiguous octets delivered as a unit to the adjacent lower layer or received as a unit from the adjacent lower layer.

[LLCP]

Protocol Error

A Semantic Error or Syntax Error.

[ACTIVITY], [ANALOG], [DIGITAL], [TxT]

Read-Alike Command

Any Command that does not change the persistent state of the Type 5 Tag.

[DIGITAL], [T5T]

Reader/Writer

Role of a Poller when it has gone through a number of Activities. In this mode the Poller communicates with Type 2 Tags, Type 3 Tags, Type 4 Tags or Type 5 Tags.

[ACTIVITY], [ANALOG], [CH], [DIGITAL], [PHDC], [PROFILES], [RTD_VERB], [TNEP], [TxT], [WLC]

Reader/Writer Mode

NFC operation mode using a communication link between a Reader/Writer and a Card Emulator

[CH], [PHDC], [TNEP]

Reference Listener

Part of the NFC Forum Reference Equipment to evaluate RF characteristics of Pollers.

[ANALOG]

Reference Poller

Part of the NFC Forum Reference Equipment to evaluate RF characteristics of Listeners.

[ANALOG]

Reference WLC-L

The part of the NFC Forum Reference Equipment employed to evaluate the radio frequency (RF), power and digital characteristics of Wireless Charging Pollers (WLC-Ps).

[WLC]

Reference WLC-P

The part of the NFC Forum Reference Equipment employed to evaluate the radio frequency (RF), power and digital characteristics of Wireless Charging Listeners (WLC-Ls).

[WLC]

Regular Memory

Offers up to 256 blocks ($n \leq 255$) addressed by one byte.

[T5T]

Remote Field

The radio frequency field generated by a remote device and sensed by the NFC Forum Device.

[ACTIVITY], [ANALOG], [DIGITAL], [NCI], [PROFILES], [T3T], [T4T], [WLC]

Remote Field Off

A condition where the Remote Field is below a certain threshold as defined in [ANALOG].

[ACTIVITY], [WLC]

Remote Field On

A condition of the Remote Field being stable and strong enough to put the NFC Forum Device in a state that it can operate in Passive Communication Mode. Defined in [ANALOG].

[ACTIVITY], [ANALOG], [T3T], [T4T], [WLC]

Remote LLC

The LLC component running on the remote device.

[LLCP]

Remote NFC Endpoint

A remote device, card, or tag, that is connected wirelessly via NFC to the local NFC Forum Device.

[NCI]

Requestor

An NFC Forum Device that requests a connection.

[NAP]

Reset

For a polling device, switching off and on the carrier to cause the transition of a listening device to its NO_REMOTE_FIELD state and back to the IDLE state

For a listening device, the transition to its NO_REMOTE_FIELD state and back to the IDLE state caused by the polling device switching off and on the carrier.

[ANALOG]

Resolution Process

The part of the adjacent upper layer managing the Activities. The Resolution Process decides the next Activity to perform and hands over the Parameters needed.

[ACTIVITY], [PROFILES]

Resonance Frequency

The frequency where the imaginary part of the impedance is zero is defined as resonance frequency. At this frequency the phase angle of the impedance is zero.

[ANALOG]

Responder

An NFC Forum Device that responds to a requested connection from another NFC Forum Device.

[NAP]

Response

Information sent from one device to another device upon receipt of a Command. The information received by the other device allows it to continue the data exchange.

[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES], [TNEP], [TxT], [WLC]

Response Message

Message sent by the NFCC for each Command Message received from the DH. The Response Message might contain status information pertaining to the results of the Command Message.

[NCI]

Result Record

A record used in the Money Transfer Response Record to indicate the result of the processing of the most recently received Money Transfer Request Message.

[NMT]

RF Discovery Process

Functionality that allows detection of a Remote NFC Endpoint and detection by a Remote NFC Endpoint. The DH can configure the RF Discovery Process, which then runs autonomously within the NFCC.

[NCI]

RF Interface

Logical entities that might contain some protocol logic (e.g., an ISO-DEP RF Interface or an NFC-DEP RF Interface) or might be a transparent conduit (e.g. a Frame RF Interface). The DH can only communicate with a Remote NFC Endpoint via an RF Interface, designated as the “Active RF Interface”. The NFCC contains multiple RF Interfaces.

[NCI]

RF Interface Extension

Extends the functionality of an RF Interface. An Extension is a defined set of tasks in the NFCC that can be invoked by the DH via NCI Commands. Each RF Interface Extension defines its own behavior. Each RF Interface Extension defines the conditions – e.g. active RF Interface(s), Protocol(s) and Mode(s) – under which the RF Interface Extension can be started and stopped. Each RF Interface Extension also defines relationships and conflicts, if any, with other RF Interface Extensions.

[NCI]

RF Protocol

A protocol used in the communication between the NFCC and a Remote NFC Endpoint.

[NCI]

Rwflag

Shows whether NDEF data on a Type 3 Tag is read-only or whether it can also be written.

[T3T]

R/W_Vno

Mapping Version number implemented in the NFC Forum Device.

[T4T]

Sector

Part of the memory consisting of 256 contiguous blocks (1024 bytes or 1 KB).

[T2T]

Semantic Error

A Correct Frame with no Syntax Error is received when it is not expected.

[ACTIVITY], [ANALOG], [DIGITAL], [TxT]

Service [LLCP]

The capabilities and features provided to the adjacent upper layer.

[LLCP], [TNEP]

Service [T3T]

A Service groups a set of Blocks and provides access control to those Blocks. A Type 3 Tag can contain more than one Service. Each Service is identified using its Service Code. A Service Code is also required for addressing Blocks in Commands.

[T3T]

Service Block Count

The number of Blocks assigned to a Service.

[T3T]

Service Code

The value that uniquely identifies each Service.

[T3T]

Service Code List

A field in the Check and Update Commands that lists the Service Codes the Commands intend to access.

[T3T]

Service Code List Order

A field inside a Block List Element. Its value identifies the Service Code that the Block belongs to by providing the index of the corresponding entry in the Service Code List.

[T3T]

Service Data Unit (SDU)

The sequence of contiguous octets received as a unit from the adjacent upper layer or delivered as a unit to the adjacent upper layer.

[LLCP]

Service Discovery Protocol (SDP)

An application protocol to discover Service Access Point users bound at the Remote LLC.

[LLCP]

Service Parameter record

An NDEF record that announces the parameter for a Service.

[CH], [TNEP]

Service Ready state

A state of the NFC Tag Device that supports the Tag NDEF Exchange Protocol and provides the Initial NDEF message.

[TNEP]

Service Select message

An NDEF message that contains a Service Select record.

[TNEP]

Service Select record

An NDEF record that is used to select or deselect a Service.

[TNEP]

Service Selected state

A state of the NFC Tag Device that supports the Tag NDEF Exchange Protocol when a Service is selected.

[TNEP]

Service User

The user of a Service provided by the adjacent lower layer.

[LLCP]

Simple Money Transfer

A money transfer process in which the Money Transfer Selector is an NFC Tag Device.

[NMT]

State

A state of the Listener.

[ACTIVITY], [ANALOG], [PROFILES], [TxT]

Static Handover

Provision of a “Handover Select” message on an NFC Forum Tag that allows a reading NFC Forum Device to select and use alternative carriers for further data exchange.

[BTSSP], [CH]

Static RF Connection

A Logical Connection with a fixed Connection Identifier that always exists after NFCC initialization and is never closed. It is used by the DH to communicate with a Remote NFC Endpoint via an active RF Interface.

[NCI]

Static WLC Control Protocol

A variant of the WLC Control Protocol in which only the Wireless Charging Capability (WLC_CAP) message is used.

[WLC]

Status Flags

Fields in some Type 3 Tag Responses which indicate error conditions occurred while executing the corresponding Command.

[T3T]

Switched On State

In this state, the DH, the NFCC, and all connected NFCEEs are switched on and powered either by internal battery or external power source. The NFC Forum Device can act in both Poll and Listen Modes. NCI is only applicable in the Switched On State.

[NCI]

Switched Off State

In this state, the DH power is off, and the NFCC and all connected NFCEEs are powered either by internal battery or external power source. The NFC Forum Device can only act in Listen Mode.

[NCI]

Syntax Error

A Correct Frame is received with invalid content. In this case, the coding of the Command or the block within the frame is not consistent with [DIGITAL].

[ACTIVITY], [ANALOG], [DIGITAL], [T2T], [T4T]
 „...with this specification“: [T3T]

T4T_Vno

Mapping version number implemented in the Type 4 Tag.

[T4T]

Target

Role of a Listener when it has gone through a number of States. In this mode, the NFC Forum Device communicates using the NFC-DEP Protocol.

[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES]

Technology

A group of transmission parameters defined by the NFC Forum specifications that make a complete communication protocol. A non-exhaustive list of transmission parameters is: RF carrier, communication mode, bit rate, modulation scheme, bit-level coding, frame format, protocol, and command set. NFC Forum defines four groups and therefore four Technologies: NFC-A, NFC-B, NFC-F and NFC-V. The four Technologies use the same RF carrier (13.56 MHz). Each Technology uses its own modulation scheme, bit-level coding, and frame format, but can have the same protocol and Command set.

[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES], [T2T], [T3T], [T5T]

Technology Subset

A legacy platform supporting a subset of a Technology. A Technology Subset supports at least the Poll Command of the Technology. The Technology Subsets are:

- Type 2 Tag Platform, which uses a particular subset of NFC-A, including anti-collision
- Type 3 Tag Platform, which uses a particular subset of NFC-F
- Type 4 Tag Platform, which uses a particular subset of NFC-A or NFC-B, including anti-collision
- Type 5 Tag Platform, which uses a particular subset of NFC-V, including anti-collision

[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES], [T2T], [T3T], [T5T], [TNEP]

Timeout Error

No Response has been received within the Response Waiting Time (RWT). See [DIGITAL].

[ACTIVITY], [ANALOG], [DIGITAL], [T2T], [T3T]

TNEP Status message

An NDEF message that contains a Tag NDEF Exchange Protocol Status record.

[TNEP]

TNEP Status record

An NDEF record that describes the actual state of the Tag NDEF Exchange Protocol communication.

[TNEP]

Transaction Amount

The amount of money, in a given currency type, to be paid in a money transfer transaction.

[NMT]

Transmission Error

An incorrect frame is received. In this case, the signal modulation, the bit coding, the frame format, the timing, or the checksum is not as specified with [DIGITAL].

[ACTIVITY], [ANALOG], [DIGITAL], [T2T], [T3T]

Transport connect indication

The Indication that is received by IEEE Agent or IEEE Manager from PHDC Agent or PHDC Manager once the NFC Communication link is established.

[PHDC]

Transport disconnect indication

The Indication that is received by IEEE Agent or IEEE Manager from PHDC Agent or PHDC Manager once the NFC Communication link is terminated.

[PHDC]

Type-Length-Value (TLV) [LLCP]

A coding method for parameters in which the Type field specifies the parameter type, the Length field specifies the length of the parameter value, and the Value field contains the actual parameter value octets.

[LLCP]

Type-Length-Value Element

A method of encoding optional information “elements” where each element has a different type, and some types are not fixed length (such as text strings). The value is prefixed with a type field and a length field, both of which have a fixed length.

[RTD_DI]

Type 2 Tag

Role of a Listener when it has gone through a number of States. In this mode, the Listener supports the execution of Type 2 Tag Commands to read or write NDEF Messages.

[T2T]

Type 2 Tag Platform

A legacy platform supporting a subset of a Technology (also called Technology Subset). Type 2 Tag Platform uses a particular subset of NFC – Type A technology including anti-collision: For more information, see [DIGITAL].

[T2T]

Type 3 Tag

Role of a Listener when it has gone through a number of States. In this mode, the Listener supports the execution of Type 3 Tag commands to read or write NDEF Messages.

[T3T]

Type 3 Tag Platform

A legacy platform supporting a subset of a Technology (also called Technology Subset). Type 3 Tag Platform uses a particular subset of NFC – Type F technology including anti-collision (for more information, see [DIGITAL]).

[T3T]

Type 4 Tag

Role of a Listener when it has gone through a number of States. In this mode the Listener supports the execution of Type 4 Tag Commands to read or write NDEF Messages.

[T4T]

Type 4 Tag Platform

A legacy platform supporting a subset of a Technology (also called Technology Subset), which uses a particular subset of NFC – Type A technology or NFC- Type B technology, including anti-collision. For more information, see [DIGITAL].

[T4T]

Type 5 Tag

Role of a Listener when it has gone through a number of States. In this mode, the Listener supports the execution of Type 5 Tag commands to read or write NDEF Messages.

[T5T]

Type 5 Tag Area

Area that is allocated for storing the NDEF Message. The size is declared in the Capability Container (CC) area.

[T5T]

Type 5 Tag Platform

A legacy platform supporting a subset of a Technology (also called Technology Subset). Type 5 Tag platform uses a particular subset of NFC – Type V technology including anti-collision (for more information, see [DIGITAL]).

[T5T]

Type X Tag

A contactless tag or smart card that supports NDEF and can be accessed by a device that implements the tag operation defined in the tag specifications.

NOTE “X” must be replaced by “2”, “3”, “4” or “5”.

[TNEP]

UICC

A Smart Card that conforms to the specifications written and maintained by the TC ETSI Smart Card Platform. It is a platform to resident applications (e.g., USIM, CSIM, ISIM, banking, transport, etc.).

[NCI]

Unmodulated Carrier

A condition of the Operating Field with no modulation present. For the purposes of this specification an unmodulated carrier is defined as one with no discernible, detectable or measurable modulation.

[ANALOG]

Unmodulated Carrier [ACTIVITY]

A condition of the Operating Field with no modulation present. Defined in [ANALOG].

[ACTIVITY]

User Application

See *NDEF Application*.

[NDEF], [RTD]

Valid Block, Valid PDU

A block or PDU without Protocol Error within a Correct Frame.

[ACTIVITY], [ANALOG], [DIGITAL]

Valid Command, Valid Response

A Command or Response without Protocol Error within a Correct Frame.

[ACTIVITY], [ANALOG], [DIGITAL], [TxT]

Verb

A capability for action and interaction.

[RTD_VERB]

Wireless Charging Control

A process, performed using NFC communication methods as defined by the NFC Forum, to control the wireless power delivery between a Wireless Charging Poller (WLC-P) and a Wireless Charging Listener (WLC-L).

[WLC]

Wireless Charging Listener

An NFC Forum Device having NFC Wireless Charging capability, which allows such device to receive power from a Wireless Charging Poller (WLC-P).

[WLC]

Wireless Charging Operating Volume

The three-dimensional space, as defined by the NFC Forum, in which an Wireless Charging Poller can communicate with and charge an Wireless Charging Listener.

[WLC]

Wireless Charging Poller

An NFC Forum Device having NFC Wireless Charging capability, which allows such device to perform Wireless Power Transfer (WPT) to a Wireless Charging Listener (WLC-L).

[WLC]

Wireless Charging Technology

General term referring to any wireless charging technology existing in the market today or in the future, including the NFC Wireless Charging.

[WLC]

Wireless Power Transfer

A process during which power is wirelessly transferred from a Wireless Charging Poller (WLC-P) to a Wireless Charging Listener (WLC-L).

[WLC]

WLC Control Protocol

The protocol used to control the Wireless Power Transfer (WPT) between a Wireless Charging Poller (WLC-P) and a Wireless Charging Listener (WLC-L). The Wireless Charging Control Protocol exists in two variants: the Static WLC Control Protocol and the Negotiated WLC Control Protocol.

[WLC]

WLC Protocol Error

Wireless Charging (WLC) Semantic Error: A correct WLC record is received when it is not expected.

WLC Syntax Error: An NFC Data Exchange Format (NDEF) record is received with invalid content.

[WLC]

WriteFlag

A Flag in the Attribute Information that indicates whether a previous NDEF write procedure has finished or not.

[T3T]

Write Alike Command

Any Command that both changes the persistent state of the Type 5 Tag Platform and allows a long response time. For more information, see [DIGITAL].

[DIGITAL], [T5T]

3 Abbreviations

A2DP	Advanced Audio Distribution Profile	[BTSSP]
AAR	Android Application Record	[CPUX]
ABM	Asynchronous Balanced Mode	[LLCP]
ac	Alternative Carrier	[BTSSP]
AD	Advertising and Scan Response Data	[BTSSP]
ADC	Application Data Coding	[DIGITAL]
AES	Advanced Encryption Standard	[LLCP], [NAP]
AES_CCM	Advanced Encryption Standard Cipher Block Chaining-Message Authentication Code	[NAP]
AES_CMAC	Advanced Encryption Standard Cipher-based Message Authentication Code	[NAP]
AFI	Application Family Identifier	[ACTIVITY]
AGF	Aggregated Frame	[LLCP]
AID	Application Identifier	[NCI], [T4T]
AID_NDEF	Application ID of NDEF Tag application, value D2760000850101h	[T4T]
ALL_REQ	ALL NFC-A REQuest	[ACTIVITY]
ALLB_REQ (AFI, N1)	ALL NFC-B REQuest with matching AFI and N equal to 1	[ACTIVITY]
ALLB_REQ (AFI, N>)	ALL NFC-B REQuest with matching AFI and N greater than 1 and if R is greater than 1	[ACTIVITY]
ALLB_REQ (nAFI)	ALL NFC-B REQuest with not matching AFI	[ACTIVITY]
AM	Amplitude Modulation	[WLC]
AMS	Address Mode Selector	[T5T]
ANTICOLL	ANTICOLLision	[ACTIVITY]
APDU	Application Protocol Data Unit	[NCI], [PHDC], [T4T],
API	Application Programming Interface	[CPUX]
ASK	Amplitude Shift Keying	[ANALOG], [DIGITAL]
ATN	Attention	[DIGITAL], [LLCP]
ATR_REQ	Attribute Request	[LLCP]
ATR_RES	Attribute Response	[LLCP]

ATS	Answer to Select	[DIGITAL]
ATTRIB	Attribute	[DIGITAL]
BCC	NFCID1 CLn check byte for NFC-A	[DIGITAL]
BD_ADDR	Bluetooth Device Address	[BTSSP]
BI	Bonding Identifier	[NAP]
BITR	BIT Rate	[ACTIVITY], [PROFILES]
BLen	Block Length	[T5T]
Bno	Block Number	[T5T]
BOM	Unicode Byte Order Mark	[RTD_TEXT]
BOM	Bill of Materials	[WLC]
BR	Basic Rate	[BTSSP]
BPSK	Binary Phase Shift Keying	[ANALOG], [DIGITAL]
bd	Bit Duration	[DIGITAL], [T3T]
bFOD	Background Foreign Object Detection	[WLC]
C-APDU	Command APDU	[T4T]
CA	Certificate Authority	[RTD_SIG]
CC	Connection Complete	[LLCP]
CC	Capability Container	[T2T], [T5T]
CC-File	Capability Container file	[T4T]
CCM	Counter with CBC-MAC	[LLCP]
CF	Chunk Flag	[BTSSP]
CLn	Cascade Level n ($1 \leq n \leq 3$)	[ACTIVITY], [DIGITAL]
CMAC	Cipher-based Message Authentication Code	[NAP]
CMD	CoMmanD	[ACTIVITY]
CMR	Common Mode Rejection	[ANALOG]
Conn ID	Connection Identifier	[NCI]
CONNECT	Connect	[LLCP]
CoD	Class of Device	[BTSSP]
CPS	Carrier Power State	[BTSSP], [CH]
CRC	Cyclic Redundancy Check	[DIGITAL], [NCI], [T2T]
CRC_A	CRC error detection code for NFC-A Technology	[DIGITAL]
CRC_B	CRC error detection code for NFC-B Technology	[DIGITAL]

CRC_F	CRC error detection code for NFC-F Technologia	[DIGITAL]
CRC_V	CRC error detection code for NFC-V Technology	[DIGITAL]
CRLF	Carriage Return – Line Feed	[RTD_TEXT]
CSN	Connect with Service Name	[LLCP]
CT	Cascade Tag	[DIGITAL]
CTF	Carrier Type Format	[CH]
CUP	CHECK Command or UPDATE Command or Proprietary Command for the Type 3Tag Platform	[ACTIVITY], [NCI]
COLL	COLLision	[ACTIVITY]
DA	Device Activation	[ACTIVITY]
DC	Direct Current	[ANALOG]
DD	Device Deactivation	[ACTIVITY]
DDO	Discretionary Data Object (see [ISO/IEC_7816-4])	[T4T]
DE	Data Exchange	[ACTIVITY]
DECL	DECLared	[ACTIVITY]
DEP	Data Exchange Protocol	[DIGITAL], [LLCP], [PROFILES]
DEP_REQ	Data Exchange Protocol Request	[ACTIVITY], [LLCP]
DEP_RES	Data Exchange Protocol Response	[ACTIVITY], [LLCP]
DF	Dedicated File	[NCI], [T4T]
DH	Device Host	[NCI]
DID	Device Identification Number	[DIGITAL], [LLCP]
DISC	Disconnect	[LLCP]
D _{LISTEN→POLL}	Divisor for communication direction Listen→Poll	[DIGITAL]
DM	Disconnected Mode	[LLCP]
DNS-SD	DNS Based Service Discovery [RFC6763]	[CH]
DPC	Data Protection Class	[LLCP]
D _{POLL→LISTEN}	Divisor for communication direction Poll→Listen	[DIGITAL]
DPS	Data Protection Setup	[LLCP]
DRI	Data rate Received by Initiator	[ACTIVITY], [DIGITAL]

DSA	Digital Signature Algorithm	[RTD_SIG]
DSAP	Destination Service Access Point	[LLCP]
DSFID	Data Storage Format Identifier	[DIGITAL]
DSI	Data rate Send by Initiator	[ACTIVITY], [DIGITAL]
DSL	DeSeLect	[ACTIVITY]
DUT	Device Under Test	[WLC]
DVR	Delta Vov Ratio	[ANALOG], [WLC]
ECDH	Elliptic Curve Diffie-Hellman	[LLCP], [NAP]
ECDSA	Elliptic Curve Digital Signature Algorithm	[RTD_SIG]
ECPK	Elliptic Curve Public Key	[LLCP]
EDR	Enhanced Data Rate	[BTSSP]
EIR	Extended Inquiry Response	[BTSSP]
EF	Elementary File	[T4T]
EGT	Extra Guard Time	[DIGITAL]
EMD	Electro-Magnetic Disturbance	[DIGITAL]
EoD	End of Data	[DIGITAL], [T3T]
EoF	End of Frame	[DIGITAL]
EoS	End of Sequence	[DIGITAL]
EPC	Electronic Product Code	[RTD_SP]
etu	Elementary time unit	[ANALOG]
f_c	Carrier Frequency	[ACTIVITY], [ANALOG], [DIGITAL], [T3T]
f_s	Subcarrier Frequency	[ANALOG], [DIGITAL]
FDT	Frame Delay Time	[ACTIVITY], [T3T]
FID_CC-File	File identifier of CC Files, value E103h	[T4T]
FO	Frame Options	[DIGITAL]
FO	Foreign Object	[WLC]
FOD	Foreign Object Detection	[WLC]
FRMR	Frame Reject	[LLCP]
FSC	Frame Size for proximity Card	[DIGITAL]
FSCI	Frame Size for proximity Card Integer	[DIGITAL]
FWI	Frame Waiting Time Integer	[DIGITAL]
FWT	Frame Waiting Time	[ACTIVITY], [DIGITAL]
GB	General Bytes	[ACTIVITY], [PROFILES]

GID	Group Identifier	[NCI]
GT	Guard Time	[ACTIVITY]
HCI	Host Controller Interface	[NCI]
HCP	Host Controller Protocol	[NCI]
HF	Hands-Free Unit	[BTSSP]
HFP	Hands-Free Profile	[BTSSP]
Hr	Handover Request Message	[BTSSP]
Hs	Handover Select Message	[BTSSP]
HTTPS	HyperText Transfer Protocol Secure	[NAP]
I	Information	[CH], [LLCP]
ICV	Integrity Check Value	[LLCP]
ID	Identifier	[ACTIVITY]
IEC	International Electrotechnical Commission	[ANALOG], [DIGITAL]
IEEE	Institute of Electrical and Electronics Engineers	[PHDC]
IETF	Internet Engineering Task Force	[RTD_TEXT]
IL	ID Length	[BTSSP]
IP	Internet Protocol	[CH]
Ipv4	Internet Protocol Version 4 [RFC791]	[CH]
Ipv6	Internet Protocol Version 6 [RFC2460]	[CH]
IRI	International Resource Identifier	[RTD_URI], [RTD_SP]
ISO	International Organization for Standardization	[ACTIVITY], [ANALOG], [DIGITAL], [NCI], [PROFILES]
iFOD	Initial Foreign Object Detection	[WLC]
JIS	Japanese Industrial Standard	[ANALOG], [DIGITAL], [T3T]
JiFOD	Joint initial Foreign Object Detection	[WLC]
KB	Kilobytes (1024 bytes)	[T2T], [T4T]
kb	Kilobits (1024 bits)	[T2T], [T4T]
LC	Link Connected	[PHDC]
LE	Low Energy	[BTSSP]
LLC	Logical Link Control	[LLCP]

LLCP	Logical Link Control Protocol	[ACTIVITY], [CH], [LLCP], [NCI], [PHDC], [PROFILES], [SNEP], [TNEP]
LR	Length Reduction	[DIGITAL], [LLCP]
LSB	Least Significant Byte	[DIGITAL], [NCI], [TxT]
LSC	Link Service Class	[LLCP]
LTO	Link Timeout	[LLCP]
Lc	Length field	[T4T]
Le	Length expected	[T4T]
LR	Length Reduction	[LLCP], [NCI]
lsb	Least Significant Bit	[DIGITAL], [NCI], [RTD_TEXT], [TxT]
M	Mandatory	[BTSSP]
MAC	Media Access Control	[LLCP]
MB	Message Begin	[BTSSP], [CH], [NMT]
MBL	Maximum Buffer Length	[DIGITAL]
MBLI	Maximum Buffer Length Index	[DIGITAL]
MC	Message Counter	[PHDC]
ME	Message End	[BTSSP], [CH], [NMT]
MIME	Multipurpose Internet Mail Extensions. A standard specifying the format of strongly-typed data transferred over the Internet. Defined in [RFC 2045-2049]	[CPUX], [RTD], [RTD_SP], [RTD_TEXT]
MITM	Man In The Middle	[NAP]
MIU	Maximum Information Unit	[LLCP]
MIUX	Maximum Information Unit Extension	[LLCP]
MLEN	Memory Length	[T5T]
MLc	Maximum data size that can be written by the Type 4 Tag in one WRITE Command	[T4T]
Mle	Maximum data size that can be read from the Type 4 Tag in one READ Command	[T4T]
MRT	Maximum Response Time	[DIGITAL], [T3T]
MRTI	Maximum Response Time Information	[DIGITAL], [T3T]
MSB	Most Significant Byte	[DIGITAL], [NCI], [TxT]
MT	Message Type	[NCI]

MT	Money Transfer	[NMT]
MTI	Money Transfer Information	[NMT]
MTU	Maximum Transmission Unit	[NCI]
Max	Maximum	[ACTIVITY], [DIGITAL]
Min	Minimum	[ACTIVITY], [DIGITAL]
ms	millisecond	[ACTIVITY]
msb	Most Significant Bit	[DIGITAL], [NCI], [TxT]
N	Number of slots	[ACTIVITY]
N(R)	Receive Sequence Number	[LLCP]
N(S)	Send Sequence Number	[LLCP]
NAD	Node Address	[DIGITAL], [LLCP]
NB	Number of Blocks	[T5T]
NCI	NFC Controller Interface	[NCI]
NCR	NAP Configuration Protocol	[LLCP]
NDEF	NFC Data Exchange Format	[ACTIVITY], [BTSSP], [CH], [CPUX], [DIGITAL], [NCI], [NDEF], [NMT], [PHDC], [PROFILES], [RTD], [RTD_DI], [RTD_SP], [RTD_URI], [RTD_SIG], [RTD_TEXT], [RTD_VERB],[SNEP], [TNEP], [TxT], [WLC]
NFC	Near Field Communication	[ACTIVITY], [ANALOG], [BTSSP], [CH], [CPUX], [DIGITAL], [LLCP], [NAP], [NCI], [NMT], [PHDC], [PROFILES], [RTD_URI], [SNEP], [TxT], [TNEP]
NFC-A	Near Field Communication – Type A Technology	[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES]
NFC-ACM	Near Field Communication – Active Communication Mode (based on either NFC-A or NFC-F)	[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES]
NFC-B	Near Field Communication – Type B Technology	[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES]
NFC-F	Near Field Communication – Type F Technology	[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES]

NFC-V	Near Field Communication – Type V Technology	[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES]
NFC LE	NFC Link Establishment	[WLC]
NFCC	NFC Controller	[NCI]
NFCEE	NFC Execution Environment	[NCI]
NFCID0	NFC-B identifier. NFCID0 is always 4 bytes long.	[ACTIVITY], [DIGITAL]
NFCID1	NFC-A identifier. NFCID1 can be 4, 7, or 10 bytes long (simple, double, or triple size).	[ACTIVITY], [DIGITAL]
NFCID1 CLn	Contains the portion of the NFCID1 relative to the cascade level n. NFCID1 CLn is always 4 bytes long.	[ACTIVITY], [DIGITAL]
NFCID2	NFC-F identifier NFCID2 is always 8 bytes long.	[ACTIVITY], [DIGITAL], [PROFILES], [T3T]
NFCID3	NFC-DEP identifier NFCID3 is always 10 bytes long.	[ACTIVITY], [DIGITAL]
NFCIP-1	Near Field Communication Interface and Protocol as specified in [ISO/IEC_18092].	[DIGITAL], [ANALOG]
NID	Namespace Identifier. Identifies uniquely an URN namespace. Please see [RFC 2141] for a full definition.	[RTD]
NoB	Number of Blocks	[T3T]
NoS	Number of Services	[T3T]
NRZ-L	Non-Return to Zero, (L for Level)	[ANALOG], [DIGITAL]
NSS	Namespace Specific String. The rest of the URN after the NID. See [RFC 2141] for a full definition.	[RTD]
NVM	Non Volatile Memory	[WLC]
n.a.	Not Applicable	[ACTIVITY], [ANALOG], [DIGITAL], [PROFILES]
O	Optional	[BTSSP]
OBEX	Object Exchange	[BTSSP]
ODO	Offset Data Object (see [ISO/IEC_7816-4])	[T4T]
OEM	Original Equipment Manufacturer	[CPUX]
OF	Option Flag	[T5T]
OID	Opcode Identifier	[NCI]
OOB	Out-of-Band	[BTSSP]

OOK	On-Off Keying	[ANALOG], [DIGITAL]
OPT	Option	[LLCP]
QoS	Quality of Service	[NDEF]
P2P	Peer-to-Peer	[ACTIVITY], [PHDC], [PROFILES]
PAT	Passive ACK Timeout	[T2T]
PAX	Parameter Exchange	[LLCP]
PBF	Packet Boundary Flag	[NCI]
PCB	Printed Circuit Board	[WLC]
PC(R)	Receive Packet Counter	[LLCP]
PC(S)	Send Packet Counter	[LLCP]
PDU	Protocol Data Unit	[ACTIVITY], [CH], [NCI], [DIGITAL], [LLCP], [PHDC]
PEND	PENDING	[ACTIVITY]
PHD	Personal Health Device	[PHDC]
PHDC	Personal Health Device Communication	[PHDC]
PICC	Proximity Integrated Circuit Card	[T3T]
PIN	Personal Identification Number	[BTSSP]
PKI	Public Key Infrastructure	[RTD_SIG]
PSL_REQ (A)	Parameter SeLection REQuest with DSI indicating NFC-A	[ACTIVITY]
PSL_REQ (F)	Parameter SeLection REQuest with DSI indicating NFC-F	[ACTIVITY]
PTGT	Proprietary Technology Guard Time	[ACTIVITY]
PTYPE	Protocol Data Unit Type	[LLCP]
R	Randomly chosen slot number, NFC-B	[ACTIVITY]
R-APDU	Response APDU	[T4T]
R/W	Reader/Writer	[PHDC]
RATS	Request for Answer To Select	[ACTIVITY], [DIGITAL], [PROFILES]
RC	Request Code	[DIGITAL], [T3T]
RD	Request Data	[ACTIVITY], [DIGITAL], [T3T]
REQU	REQUested	[ACTIVITY]

RF	Radio Frequency	[ACTIVITY], [ANALOG], [DIGITAL], [LLCP], [NCI], [PROFILES], [TxT]
RFC	Request For Comments	[BTSSP]
RFU	Reserved for Future Use	[ANALOG], [CH], [DIGITAL], [LLCP], [NAP], [NCI], [NDEF], [NMT], [PHDC], [RTD_SP], [RTD_SIG], [RTD_TEXT], [RTD_URI], [TNEP], [TxT]
RLS	ReLeaSe	[ACTIVITY]
RN	Random Nonce	[LLCP]
RNR	Receive Not Ready	[LLCP]
RR	Receive Ready	[LLCP]
RRDD	Reader-Reader Data Delay	[DIGITAL]
RSA	Rivest-Shamir-Adleman encryption algorithm (public key encryption algorithm)	[RTD_SIG]
RTD	Record Type Definition	[CH], [CPUX], [NMT], [PHDC], [RTD], [RTD_DI], [RTD_SIG], [RTD_SP], [RTD_TEXT], [RTD_URI],
RTOX	Response Timeout Extension	[DIGITAL], [LLCP]
RW	Receive Window	[LLCP]
RWT	Response Waiting Time	[DIGITAL], [LLCP]
SAP	Service Access Point	[LLCP]
SAR	Segmentation and Reassembly	[NCI]
SC	System Code	[ACTIVITY], [DIGITAL], [T3T]
SDD	Single Device Detection	[ACTIVITY], [DIGITAL], [NCI]
SDP	Service Discovery Protocol	[CH], [LLCP]
SDREQ	Service Discovery Request	[LLCP]
SDRES	Service Discovery Response	[LLCP]
SDU	Service Data Unit	[LLCP], [PHDC]
SDP	Service Discovery Protocol	[BTSSP], [CH]
SEL	SElection	[ACTIVITY], [PROFILES]
SENSB_REQ (AFI, N1)	SENS NFC-B REQuest with matching AFI and N equal to 1	[ACTIVITY]

SENSB_REQ (AFI, N>)	SENS NFC-B REQuest with matching AFI and N greater than 1 and if R is greater than 1	[ACTIVITY]
SENSB_REQ (nAFI)	SENS NFC-B REQuest with not matching AFI	[ACTIVITY]
SFGI	Start-up Frame Guard time Integer	[DIGITAL]
SFGT	Start-up Frame Guard Time	[DIGITAL]
SHA-256	Secure Hash Algorithm	[RTD_SIG]
SIG	Special Interest Group	[BTSSP]
SLEEP_AF	SLEEP NFC-A and NFC-F	[ACTIVITY]
SLPV_REQ	SLEEP NFC-V	[ACTIVITY]
SMS	Select Mode Selector	[T5T]
SMS	Short Message Service	[RTD_SP]
SN	Service Name	[LLCP]
SNEP	Simple NDEF Exchange Protocol	[SNEP]
SNL	Service Name Lookup	[LLCP]
SNK	Sink	[BTSSP]
SR	Short Record	[BTSSP]
SSAP	Source Service Access Point	[LLCP]
SSP	Secure Simple Pairing	[BTSSP]
SWIO	Single Wire protocol Input/Output	[NCI]
SYMM	Symmetry	[LLCP]
SoD	Start of Data	[DIGITAL], [NCI], [T3T]
SoF	Start of Frame	[DIGITAL]
SoS	Start of Sequence	[DIGITAL], [NCI]
TECH	TECHnology	[ACTIVITY], [PROFILES]
T2T	Type 2 Tag	[T2T], [TNEP]
T3T	Type 3 Tag	[T3T], [TNEP]
T4T	Type 4 Tag	[T4T], [TNEP]
T5T	Type 5 Tag	[T5T], [TNEP]
T5T_Area	Type 5 Tag Area	[T5T]
T _{ID}	Initial Delay Time	[ACTIVITY]
TID	Transaction Identifier	[LLCP]
TLV	Type-Length-Value	[LLCP], [RTD-DI], [T2T], [T4T], [T5T],

TK	Temporary Key	[BTSSP]
TNEP	Tag NDEF Exchange Protocol	[BTSSP], [CH], [TNEP]
TNF	Type Name Format	[BTSSP], [CH], [CPUX]
TO	Timeout	[LLCP]
TRFW	RF Waiting Time	[ACTIVITY]
TSN	Time Slot Number	[DIGITAL], [T3T]
UART	Universal Asynchronous Receiver/Transmitter	[NCI]
UI	User Interface	[BTSSP]
UI	Unnumbered Information	[LLCP]
UID	NFC-V Unique Identifier	[ACTIVITY], [DIGITAL]
UID	Unique Identifier	[BTSSP]
URI	Uniform Resource Identifier	[CH], [CPUX], [LLCP], [NDEF], [NMT], [RTD], [RTD_SIG] [RTD_SP], [RTD_TEXT], [RTD_URI], [TNEP]
URL	Uniform Resource Locator (a special case of a URI)	[RTD_SIG], [RTD_SP], [RTD_TEXT] [RTD_URI]
URN	Uniform Resource Name. A particular type of URI that is defined in [RFC 8141].	[RTD], [RTD_SIG], [RTD_URI]
UTF-8	8-bit Universal Character Set Transformation Format	[RTD_DI]
UUID	Universal Unique Identifier [RFC4122]	[BTSSP], [RTD_DI]
V(R)	Receive State Variable	[LLCP]
V(RA)	Receive Acknowledgement State Variable	[LLCP]
V(S)	Send State Variable	[LLCP]
V(SA)	Send Acknowledgement State Variable	[LLCP]
VERSION	Version Number	[LLCP]
VNA	Vector Network Analyzer	[WLC]
VNo	Version Number	[T2T], [T4T]
WCC	Wireless Charging Control	[WLC]
WCCA	Wireless Charging Control Activation	[WLC]
WKS	Well-Known Service List	[LLCP]
WLC	Wireless Charging	[WLC]
WLCS	Wireless Charging System	[WLC]

WLC_CAP	Wireless Charging Capability	[WLC]
WLC-L	Wireless Charging Listener device	[WLC]
WLC-P	Wireless Charging Poller device	[WLC]
WLC OV	Wireless Charging Operating Volume	[WLC]
WLCP_INFO	Wireless Charging Poll Information	[WLC]
WLCL_CTL	Wireless Charging Listen Control	[WLC]
WPT	Wireless Power Transfer	[WLC]
WT	Waiting Time, parameter to code Response Waiting Time	[DIGITAL], [LLCP]

4 Notations

Notation	Description						
XYh	Hexadecimal notation. Hexadecimal numbers are represented using the numbers 0 - 9 and the characters A – F. An “h” is added at the end. The most significant byte (MSB) is shown on the left; the least significant byte (LSB) on the right. Example: F5h						
xyb	Binary notation. Binary numbers are represented by strings of the digits 0 and 1, shown with the most significant bit (msb) on the left and the least significant bit (lsb) on the right. A “b” is added at the end. Example: 11110101b						
xy	Decimal notation Decimal numbers are represented without any tailing character. Example: 245						
[..]	A roundup integer function is expressed by the brackets [..] Example: $\lceil 7/8 \rceil = 1$, $\lceil 8/8 \rceil = 1$, $\lceil 9/8 \rceil = 2$						
Specially Defined Names	Terms defined in the Glossary or other NFC Technical Specification Glossaries are written with initial capital letters.						
STATE	Names of defined States are written in bold all-capital COURIER FONT letters.						
COMMAND and RESPONSE	The defined Command and Response names are written in non-bold all-capital letters.						
PARAMETER	Parameter names are written in non-bold all-capital letters. Parameter names start with one of the following prefixes: <table border="1"> <tbody> <tr> <td>CON_</td> <td>Prefix for Configuration Parameters (e.g., CON_DEVICES_LIMIT_A).</td> </tr> <tr> <td>INT_</td> <td>Prefix for variables used in the Activities (e.g., INT_COLL_PEND).</td> </tr> <tr> <td>GRE_</td> <td>Prefix for variables used in the Greedy Collection (e.g., GRE_POLL_A).</td> </tr> </tbody> </table>	CON_	Prefix for Configuration Parameters (e.g., CON_DEVICES_LIMIT_A).	INT_	Prefix for variables used in the Activities (e.g., INT_COLL_PEND).	GRE_	Prefix for variables used in the Greedy Collection (e.g., GRE_POLL_A).
CON_	Prefix for Configuration Parameters (e.g., CON_DEVICES_LIMIT_A).						
INT_	Prefix for variables used in the Activities (e.g., INT_COLL_PEND).						
GRE_	Prefix for variables used in the Greedy Collection (e.g., GRE_POLL_A).						

A. Revision History

Table 1 outlines the revision history of the Technical Committee Glossary.

Table 1: Revision History

Document Name	Revision and Release Date	Status	Change Notice	Supersedes
Technical Committee Glossary	1.0 24 Jan. 2018	Final	Initial version	
Technical Committee Glossary	1.0 20 Apr. 2018	Final	Alignment with PHDC 1.2	1.0 24 Jan. 2018
Technical Committee Glossary	1.0 9 May 2018	Final	Alignment with CH 1.4	1.0 20 Apr. 2018
Technical Committee Glossary	1.0 6 March 2019	Final	Alignment with BSSP 1.2, Digital 2.1, NCI 2.1, NMT 1.0 and WLC 1.0	1.0 9 May 2018
Technical Committee Glossary	1.0 30 April 2019	Final	Editorial corrections, alignment with CH 1.5 and TNEP 1.0	1.0 6 March 2019
Technical Committee Glossary	1.0 19 February 2020	Final	Alignment with Activity 2.1, Digital 2.2, Profiles 1.0, T2T 1.1, T3T 1.1, T4T 1.1, T5T 1.1 and WLC 1.0	1.0 30 April 2019
Technical Committee Glossary	1.0 19 January 2021	Final	Alignment with BTSSP 1.3, LLCP 1.4 and NAP 1.0, removal of T1T	1.0 19 February 2020
Technical Committee Glossary	1.0 7 June 2021	Draft	Alignment with CPUX 1.0	1.0 19 January 2021