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Stage 3
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Contents

Intellectual Property Rights	2
Legal Notice	2
Modal verbs terminology.....	2
Foreword.....	5
1 Scope	7
2 References	7
3 Definitions and abbreviations.....	8
3.1 Definitions	8
3.2 Abbreviations	8
4 Overview	8
4.1 Introduction	8
5 Services offered by the 5G-EIR NF	8
5.1 Introduction	8
5.2 N5g-eir_EquipmentIdentityCheck Service.....	9
5.2.1 Service Description	9
5.2.2 Service Operations	9
5.2.2.1 Introduction.....	9
5.2.2.2 CheckEquipmentIdentity.....	9
5.2.2.2.1 General	9
5.2.2.2.2 Procedure using CheckEquipmentIdentity Operation	9
6 API Definitions	10
6.1 N5g-eir_EquipmentIdentityCheck Service API	10
6.1.1 API URI.....	10
6.1.2 Usage of HTTP.....	10
6.1.2.1 General	10
6.1.2.2 HTTP standard headers	10
6.1.2.2.1 General	10
6.1.2.2.2 Content type	10
6.1.2.3 HTTP custom headers	11
6.1.2.3.1 General	11
6.1.3 Resources.....	11
6.1.3.1 Overview.....	11
6.1.3.2 Resource: equipmentStatus	11
6.1.3.2.1 Description	11
6.1.3.2.2 Resource Definition.....	11
6.1.3.2.3 Resource Standard Methods	11
6.1.3.2.3.1 GET.....	11
6.1.4 Data Model	12
6.1.4.1 General	12
6.1.4.2 Structured data types	13
6.1.4.2.1 Introduction	13
6.1.4.2.2 Type: EirResponseData	13
6.1.4.3 Simple data types and enumerations	13
6.1.4.3.1 Introduction	13
6.1.4.3.2 Simple data types.....	13
6.1.4.3.3 Enumeration: EquipmentStatus	13
6.1.5 Error Handling	13
6.1.5.1 General	13
6.1.5.2 Protocol Errors	13
6.1.5.3 Application Errors.....	13
6.1.6 Feature Negotiation.....	14
6.1.7 Security	14

6.1.7.1 General 14
6.1.7.2 Transport Layer Security Protection of Messages..... 14
6.1.7.3 Authorization of 5G-EIR NF Service Access 15

Annex A (normative): OpenAPI specification.....16
A.1 General 16
A.2 N5g-eir_EquipmentIdentityCheck Service API 16

Annex B (informative): Change history18
History 19

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This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

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In the present document, modal verbs have the following meanings:

- shall** indicates a mandatory requirement to do something
- shall not** indicates an interdiction (prohibition) to do something

The constructions "shall" and "shall not" are confined to the context of normative provisions, and do not appear in Technical Reports.

The constructions "must" and "must not" are not used as substitutes for "shall" and "shall not". Their use is avoided insofar as possible, and they are not used in a normative context except in a direct citation from an external, referenced, non-3GPP document, or so as to maintain continuity of style when extending or modifying the provisions of such a referenced document.

- should** indicates a recommendation to do something
- should not** indicates a recommendation not to do something
- may** indicates permission to do something
- need not** indicates permission not to do something

The construction "may not" is ambiguous and is not used in normative elements. The unambiguous constructions "might not" or "shall not" are used instead, depending upon the meaning intended.

- can** indicates that something is possible
- cannot** indicates that something is impossible

The constructions "can" and "cannot" are not substitutes for "may" and "need not".

- will** indicates that something is certain or expected to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document
- will not** indicates that something is certain or expected not to happen as a result of action taken by an agency the behaviour of which is outside the scope of the present document
- might** indicates a likelihood that something will happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

might not indicates a likelihood that something will not happen as a result of action taken by some agency the behaviour of which is outside the scope of the present document

In addition:

is (or any other verb in the indicative mood) indicates a statement of fact

is not (or any other negative verb in the indicative mood) indicates a statement of fact

The constructions "is" and "is not" do not indicate requirements.

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1 Scope

The present document describes the stage 3 protocol and data model for the N5g-eir Service Based Interface between the 5G-EIR and its consumers over which the service to check the equipment identity as described in 3GPP TS 23.501 [2] is performed. It provides the stage 3 protocol definitions and message flows, and specifies the API for each service offered by the 5G-EIR.

The 5G System stage 2 architecture and procedures are specified in 3GPP TS 23.501 [2] and 3GPP TS 23.502 [3].

The Technical Realization of the Service Based Architecture and the Principles and Guidelines for Services Definition are specified in 3GPP TS 29.500 [4] and 3GPP TS 29.501 [5].

2 References

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

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".
- [3] 3GPP TS 23.502: "Procedures for the 5G System; Stage 2".
- [4] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".
- [5] 3GPP TS 29.501: "5G System; Principles and Guidelines for Services Definition; Stage 3".
- [6] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".
- [7] IETF RFC 7540: "Hypertext Transfer Protocol Version 2 (HTTP/2)".
- [8] OpenAPI Initiative, "OpenAPI 3.0.0 Specification", <https://github.com/OAI/OpenAPI-Specification/blob/master/versions/3.0.0.md>.
- [9] IETF RFC 8259: "The JavaScript Object Notation (JSON) Data Interchange Format".
- [10] IETF RFC 7807: "Problem Details for HTTP APIs".
- [11] 3GPP TS 33.501: "Security Architecture and Procedures for 5G System".
- [12] IETF RFC 6749: "The OAuth 2.0 Authorization Framework".
- [13] 3GPP TS 29.510: "5G System; Network Function Repository Services; Stage 3".
- [14] 3GPP TR 21.900: "Technical Specification Group working methods".

3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in 3GPP TR 21.905 [1] and the following apply. A term defined in the present document takes precedence over the definition of the same term, if any, in 3GPP TR 21.905 [1].

N5g-eir: Service-based interface exhibited by 5G-EIR

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply. An abbreviation defined in the present document takes precedence over the definition of the same abbreviation, if any, in 3GPP TR 21.905 [1].

5G-EIR	5G-Equipment Identity Register
EIR	Equipment Identity Register
PEI	Permanent Equipment Identifier

4 Overview

4.1 Introduction

N5g-eir is a Service-based interface exhibited by 5G-EIR (5G-Equipment Identity Register) which is an optional network function that supports the following functionality:

- Check the status of Equipment's identity (e.g. to check that it has not been blacklisted).

The reference point N17 (see Fig 4-1 below) shows the interaction between the 5G-Equipment Identity Register 5G-EIR and the AMF (Access and Mobility Management Function) enabling the check of the status of the mobile equipment identity.

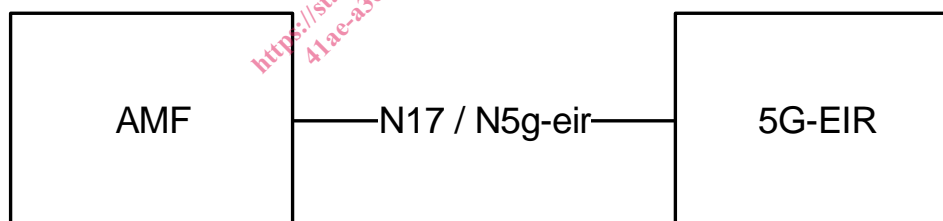


Figure 4-1: Reference Model – N5g-eir

During any procedure establishing a signalling connection with the UE the network may optionally perform an ME identity check with 5G-EIR via the N5g-eir_Equipment Identity Check Service exhibited by 5G-EIR.

5 Services offered by the 5G-EIR NF

5.1 Introduction

The following NF service is offered by the N5g-eir to check the ME whether it is black-listed or not:

- N5g-eir_EquipmentIdentityCheck

Table 5.1-1: NF Services provided by 5G-EIR

Service Name	Description	Consumer
N5g-eir_EquipmentIdentityCheck	This service offered by the 5G-EIR allows the consumer to check the Permanent Equipment Identifier (PEI) and check whether the PEI is in the black list or not.	AMF

The N5g-eir_Equipment Identity Check service is specified in 3GPP TS 23.502 [3], clause 4.2.2.2.2

5.2 N5g-eir_EquipmentIdentityCheck Service

5.2.1 Service Description

The N5g-eir_Equipment Identity Check service is provided by the 5G-EIR to check the Permanent Equipment Identifier (PEI) whether it is in the black list or not. The service can be consumed by AMF which initiates ME identity check by invoking the N5g-eirEquipmentIdentityCheckGet service operation (see clause 5.2.4.2. of 3GPP TS 23.502 [3]).

During the initial registration the Permanent Equipment Identifier is obtained from the UE. The AMF operator may check the PEI with an EIR.

5.2.2 Service Operations

5.2.2.1 Introduction

5.2.2.2 CheckEquipmentIdentity

5.2.2.2.1 General

The CheckEquipmentIdentity operation shall be used to check the PEI and determine whether the subscriber is allowed to use the equipment, in the following procedures:

- ME Identity check procedure (see clause 4.7 of 3GPP TS 23.502 [3]);

5.2.2.2.2 Procedure using CheckEquipmentIdentity Operation

The NF Service Consumer (e.g. AMF) shall check the PEI by using the HTTP GET method as shown in Figure 5.2.2.2.2-1.

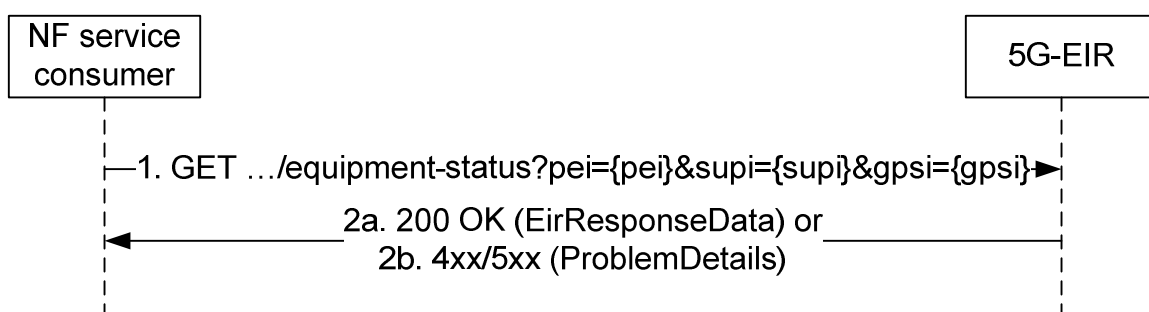


Figure 5.2.2.2.2-1: PEI status check by the NF Service Consumer