4.1 AutoPASS – Requirement specification Signalcodes

DOCUMENT STATUS

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Final	1.1	Part of the tender documents

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DOCUMENT REVISION HISTORY

Version	Date	Author	Main changes
1.0	20.06.2017	Per Einar Pedersli	New document
1.1	27.02.2018	Kåre Inge Viken	Signalcode 21 added . Changed colour for signalcode 10 in OBU validation

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The objectives of this document

This document provides a specification of different signal codes and how to determine the different codes.

The document will be a supplement to the requirements in SSA-T appendix 1 for CPE, and will also be helpful when designing the processing of the signal codes.

1   Signal codes

Signal code describes type of passage and how the passage took place. An indication of lane type, status for OBU passage and type of light signal is given.

Signal codes defined in an automatic tolling station.

SignalCode			
Code	Light	Picture	Description
02	![green plus]	No	Approved passage in AutoPASS lane (**EFC** lane)
08		No	OBU read but no matching vehicle, see table in chapter 3, case 3 an 5.
10	![green plus]	*No*	*Passage in AutoPASS lane with a warning concerning low balance of AutoPASS contract. Obsolete*
20	![yellow]	Yes	Passage in AutoPASS lane with expired validity or passage, no value left, or OBU blacklisted.
21	![yellow]	Yes	Passage in AutoPASS lane with OBU in OBU StatusFile where there is mismatch between registration number in OBU StatusFile versus result from ANPR from roadside.
22	![yellow]	Yes	Passage in AutoPASS lane without detected OBU or EFC Context Mark not approved or
23	![yellow]	Yes	Passage in AutoPASS lane with OBU not in OBU status file (White-list)
25	![green plus]	**Yes**	Passage in AutoPASS lane with **unauthorized** AutoPASS OBU with valid contract
28	![yellow]	Yes	Passage in AutoPASS lane with OBU from an unauthorized Issuer.
40		No	Passage in lane in free modus , for statistics only
41		No	Passage in lane in closed modus , for statistics only
42	![yellow]	Yes	Passage in opposed lane

Reconciliation Record for a transaction file indicates the amount of transactions the file contains.

Code	Description
00	Reconciliation Record

The length of the record is the same as the other records, but only CP, Time and the OBU Serial Number (Service Number) are relevant. CP still identifies CP, and Time the time for the sorting of the file, while the OBU Serial number stands for the **number of records in the file**), except the reconciliation record itself.

For more information on Format of Reconciliation Record, see **Document 4.3 AutoPASS Data formats**

2 Signal codes-process diagram

The diagram shows the different verifications to be done to determine the signal codes and video enforcement. The sequences in the diagram is not mandatory.
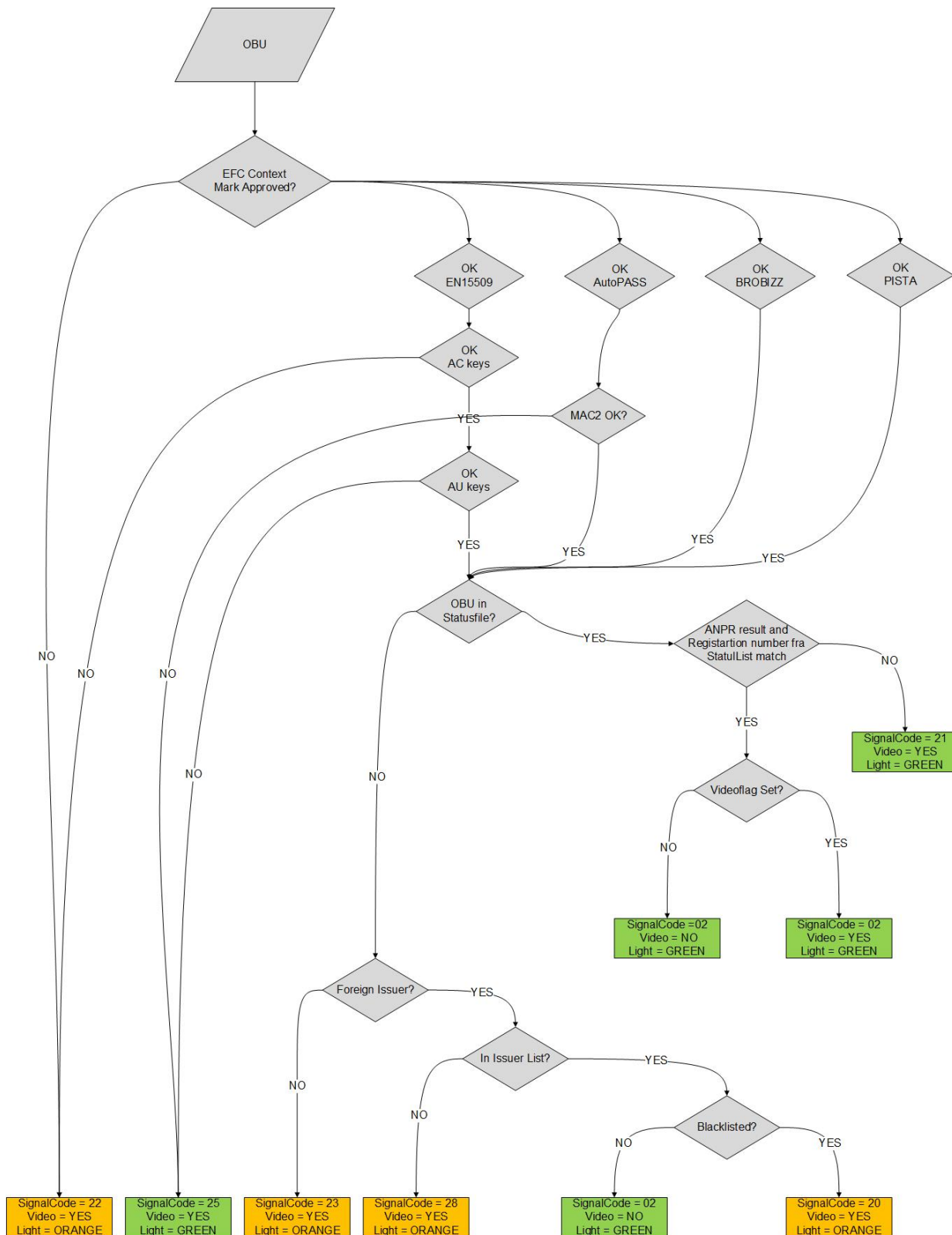
3   Signal codes-exception handling

There are different exception handling at Road side dependent on degraded functionality or user behaviour.

See also

OBU	Detection system	Antenna system	Signalcode	Comments
1.	OK	OK	02,10,20,23,28,25	See chapter 5
2.	Not OK	OK	08	OBU will have no matching vehicle.
3.	OK	Not OK	22	Pictures from video system
4.	OK	OK	OBU1: 02,10,20,23,25 OBU2: Exception	Should select the "most valid" OBU
5.	Not OK	OK	All OBU's 08	
6.	OK	Not OK	22	Pictures from video system

4 Signal codes- driving in opposite lane.

42		Yes	To be used for passage in opposed lane or bus-bay.

→ Traffic direction   ▮ Charging Area
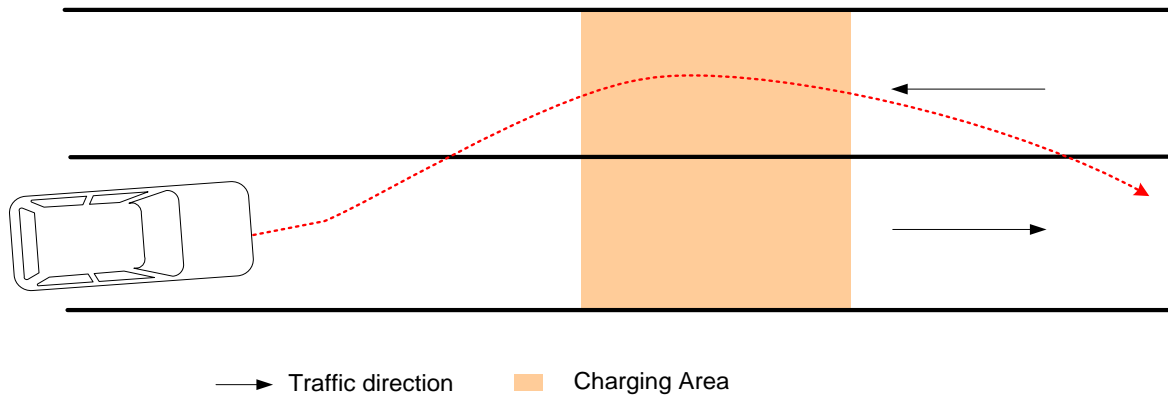
Figure 1 AutoPASS User trying to avoid the toll by passing in the lane for opposite direction.

5   Signal codes- signal lights

Scenario description	DSRC Equipment			Toll Charger's CS generated						CPE generated				User feedback
	OBU read		SAM	OBU Statuslist (OSL)			EasyGo lists			Transaction				
	EFC Context Mark	Access Credential	OBU Authenticated	In OBU Statuslist	OBU Statuslist SignalCode (Signal Light Code)	OBE Video flag set	Foreign Issuer of OBE	In OBU Issuer List	OBU Black-listed	Signal Code	Video Reason	Collect Vehicle Image(s)	Vehicle class	Status light (signal light)
OBU not supported within EasyGO	Not supported	NA	NA	NA	NA	NA	NA	NA	NA	22	22	Yes	00	Video
EN 15509 OBU no access credentials	AP/EasyGO sup	No	NA	NA	NA	NA	NA	NA	NA	22	22	Yes	00	Video
EN 15509 OBU not authenticated	AP/EasyGO sup	Yes	No	NA	NA	NA	NA	NA	NA	25	25	Yes	00	Green
EN 15509 OBU not in statusfile with Norwegian Issuer	AutoPASS	Yes	Yes	No	NA	NA	No	NA	NA	23	23	Yes	00	Video
EN 15509 OBU not in statusfile with foreign Issuer and not in AIT file	EasyGO sup	Yes	Yes	No	NA	NA	Yes	No	NA	28	28	Yes	00	Video
EN 15509 OBU not in statusfile with foreign Issuer and OBU in AIT file	EasyGO sup	Yes	Yes	No	NA	NA	Yes	Yes	No	02	NA	No	00	Green
EN 15509 OBU blacklisted	EasyGO sup	Yes	Yes	No	NA	NA	Yes	Yes	Yes	20	20	Yes	Blacklist	Video
EN 15509 OBU with approved passage, in statusfile	AP/EasyGO sup	NA	Yes	Yes	02	No	NA	NA	NA	02	NA	No	OSL	Green
EN 15509 OBU with approved passage, in statusfile, videoflag set	AP/EasyGO sup	NA	Yes	Yes	02	Yes	NA	NA	NA	02	26	Yes	OSL	Green
EN 15509 OBU with approved passage, in statusfile, mismatch between registration number in statusfile and from ANPR	AP/EasyGO sup	NA	Yes	Yes	02	NA	NA	NA	NA	21	21	Yes	OSL	Green
AutoPASS OBU not authenticated and in OBU Statuslist	AutoPASS	NA	No	No	NA	NA	NA	NA	NA	25	25	Yes	00	Green
AutoPASS OBU with approved passage	AutoPASS	NA	Yes	Yes	02	No	NA	NA	NA	02	NA	No	OSL	Green
AutoPASS OBU with approved passage and Vehicle Image(s)	AutoPASS	NA	Yes	Yes	02	Yes	NA	NA	NA	02	26	Yes	OSL	Green
AutoPASS OBU with approved passage, in statusfile, mismatch between registration number in statusfile and from ANPR	AutoPASS	NA	Yes	Yes	02	NA	NA	NA	NA	21	21	Yes	OSL	Green
AutoPASS OBU not in the OBU statuslist	AutoPASS	NA	Yes	No	NA	NA	NA	NA	NA	23	23	Yes	00	Video
EasyGo OBU for HGV with approved passage	EasyGo sup.	NA	NA	Yes	02	No	NA	NA	NA	02	NA	No	OSL	Green
EasyGo OBU for HGV with approved passage and Vehicle Image(s)	EasyGo sup.	NA	NA	Yes	02	Yes	NA	NA	NA	02	26	Yes	OSL	Green
EasyGo OBU with Norwegian Issuer	EasyGo sup.	NA	NA	No	NA	NA	No	NA	NA	23	23	Yes	00	Video
EasyGo OBU with foreign Issuer but not in OBU Issuerlist	EasyGo sup.	NA	NA	No	NA	NA	Yes	No	NA	28	28	Yes	00	Video
EasyGo OBU with foreign Issuer and in OBU Issuerlist	EasyGo sup.	NA	NA	No	NA	NA	Yes	Yes	No	02	NA	No	OSL	Green
EasyGo OBU blacklisted	EasyGo sup.	NA	NA	No	NA	NA	Yes	Yes	Yes	20	20	Yes	00	Video