EMC

IRD Commands Definition

for ADB Set-Top Boxes

1.0.0

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1 Introduction

1.1 Purpose

This document specifies all EMC specific IRD commands. Generic NagraVision commands are defined in [1].

1.2 Document History

Version	Date	Author	Description
1.0.0	09-Avr-2001	Jean-Luc Bussy	First issue

Table 1 - Document History

1.3 Definitions, Acronyms, and Abbreviations

Acronym Abbreviation	Definition
API	Application Programming Interface
CA	Conditional Access
CAK	Conditional Access Kernel
IRD	Integrated Receiver Decoder
STB	Set-top box

Table 2 - Definitions, Acronyms, and Abbreviations

1.4 Notational Conventions

All source code occurrences appear in `courier` writing style

1.5 References

[1]   Conditional Access Kernel, IRD Command Definitions, V1.2

1.6 Trademarks

Any company's or product name(s) found herein may be the trademarks or registered trademarks of their respective companies.

1.7 Overview

The following table lists all the specific commands defined herein.

Name	command_id	operation
Set PIN Code	0x12	0x01
Enable Cold Reset	0x14	0x01
Set Network ID	0xC2	0x01
Set Network ID with Timeout	0xC3	0x01

Table 3 - Commands Summary

2 Command Definition

2.1 Command Format

Description

Defines the general format of an IRD command.

Format

```
IRD_command(){
  EMM_command              8      uimsbf     always equal to 0x64
  length                   8      uimsbf     maximum value = 55 (0x37)
  command_body{
    sequence_number        32     uimsbf
    command_id             8      uimsbf
    operation              8      uimsbf
    for(i=0; i < N; i++){
      data                 8      bslbf
    }
    checksum               8      bslbf
  }
}
```

Parameters

sequence_number	value incrementing with each command. Command with the same sequence number is processed only once.
command_id	IRD command number, described in the next sections.
operation	used in conjunction with the command_id.
data	additional data.
checksum	two's complement of the sum of all bytes from the command_id to the last data byte. The sum of all bytes from the command_id to the checksum must be equal to 0.

2.2 Set PIN Code

Description

This command forces the PIN code to be set to a new value.

Format

command_id	0x12		set PIN code
operation	0x01		
data{			
pin_0	8	uimsbf	byte 0 of PIN
pin_1	8	uimsbf	byte 1 of PIN
pin_2	8	uimsbf	byte 2 of PIN
pin_3	8	uimsbf	byte 3 of PIN
}			
checksum	8	bslbf	checksum

Parameters

`pin_x`   byte x of PIN code

Note

1. For reasons beyond our control, this command is conflicting with the NagraVision generic 'Reset PIN Code' command defined in [1]. Indeed both commands are using the same command identifier. As a result the generic command cannot be used on EMC set-top boxes.

2.3 Enable Cold Reset

Description

This command enables the set-top box to perform a cold reset.

Format

command_id	0x14		enable cold reset
operation	0x01		
data{			
byte_0	0x2A		'*' character
byte_1	0x2A		'*' character
byte_2	0x2A		'*' character
byte_3	0x2A		'*' character
}			
checksum	8	bslbf	checksum

Parameters

None

2.4 Set Network ID

Description

This command will set the STB's Network ID if it differs from the current network_id. The network_id must be set to allow the correct Network Information Table to be retrieved. This permits 'Test Network IDs' to be assigned to specific STBs.

Format

command_id	0xC2		set network id
operation	0x01		
data{			
network_id	16	uimsbf	network id
original_network_id	16	uimsbf	original network id
}			
checksum	8	bslbf	checksum

Parameters

network_id   Unique identifier indicating the network ID.

original_network_id   Unique identifier indicating the original network ID.

Note

1. For reasons beyond our control, this command is conflicting with the NagraVision generic 'Force Identification' command defined in [1]. Indeed both commands are using the same command identifier. As a result the generic command cannot be used on EMC set-top boxes.

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2.5 Set Network ID with Timeout

Description

This command will set the STB's Network ID, if the network_id is different to the current network_id, and reboot the STB after the specified timeout.

Format

command_id	0xC3		set network id with timeout
operation	0x01		
data{			
network_id	16	uimsbf	network id
timeout	16	uimsbf	timeout in sec
}			
checksum	8	bslbf	checksum

Parameters

network_id   Unique identifier indicating the network ID.

timeout   Number of seconds before rebooting the set-top box as of receiving the IRD command.