

DASH7 Alliance Protocol v1.3

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1. Legal Notice

2. Intellectual Property Right Claims

2.1. DASH7 IPR Policy

2.2. IPR Claims

3. Scope

4. Overview

5. Physical Layer

6. Data Link Layer

6.1. Hosts

6.1.1. Device Input

6.1.2. Device Output

6.2. Timing Units

6.2.1. Tick

6.2.2. Compressed Format

6.3. Frame structure

Two types of frames are defined: background and foreground. Background frames contain a Sync Word of Class 0. Foreground frames contain a Sync Word of Class 1. Foreground Frames are of variable length, up to 256 bytes. The structure of the Foreground Frame is defined in [Table 1](#).

Table 1. Data Link Foreground Frame Structure

PHY Header	Length	Subnet	CTRL	TADR	Payload	CRC16	PHY Footer
	1 byte	1 byte	1 byte	0/1/2/8 bytes	0-251 bytes	2 bytes	

The first data byte of the frame is a **length** parameter, which measures the total number of bytes in the frame, excluding the length byte itself and including the CRC bytes. The **subnet** is defined in [Section 6.4.2](#). The **CRC16** is defined in [Section 6.4.1](#). The **Control** parameter is composed of 1 byte defined in [Table 2](#).

Table 2. Data Link Foreground Frame Control Byte

b7-b6	ID_TYPE	Target ID identifier type ()
b5-b0	EIRP_I	EIRP index ranged [0, 63]. EIRP (dBm) = (EIRP_I – 32) dBm

Background frames are of fixed length as defined in [Table 3](#).

Table 3. Data Link Background Frame Structure

PHY Header	Subnet	CTRL	Payload	CRC16	PHY Footer
	1 byte	1 byte	2 bytes	2 bytes	

The **subnet** is defined in [Section 6.4.2](#). The **CRC16** is defined in [Section 6.4.1](#). The **control** parameter is composed of 1 byte defined in [Table 4](#).

Table 4. Data Link Background Frame Control Byte

b7-b6	ID_TYPE	Target ID identifier type ()
b5-b0	TAG	Identifier Tag (Section 6.3.4)

6.3.1. ID Structure

D7A devices keep a set of DLL addresses, referred to as Device ID. D7A uses a Device ID structure compliant with ISO 15963, manifested in a fixed-value Unique ID (UID) and a dynamic-value Virtual ID (VID).

6.3.2. Unique ID (UID)

6.3.3. Virtual ID (VID)

6.3.4. Identifier Tags

6.4. Data Link Filtering

6.4.1. CRC16 Validation

6.4.2. Subnet Matching

The Subnet is an 8 bit value that allows configurable, data-based filtering of incoming frames. Each device contains an internal subnet value (the Device Subnet) that is compared with the value of the incoming frame (Frame Subnet). The structure is shown in [Table 5](#). The upper 4 bits of the Subnet contain a specifier, which must be matched exactly, or be valued 0xF, which is universally accepted. The lower 4 bits of the Subnet form a property identifier. The device subnet identifier and frame subnet mask are logically ANDed, and compared. The process for accepting a frame via Subnet value is shown in [Figure 1](#).

Table 5. Subnet ID Construction

Specifier				Mask / Identifier			
b7	b6	b5	b4	b3	b2	b1	b0

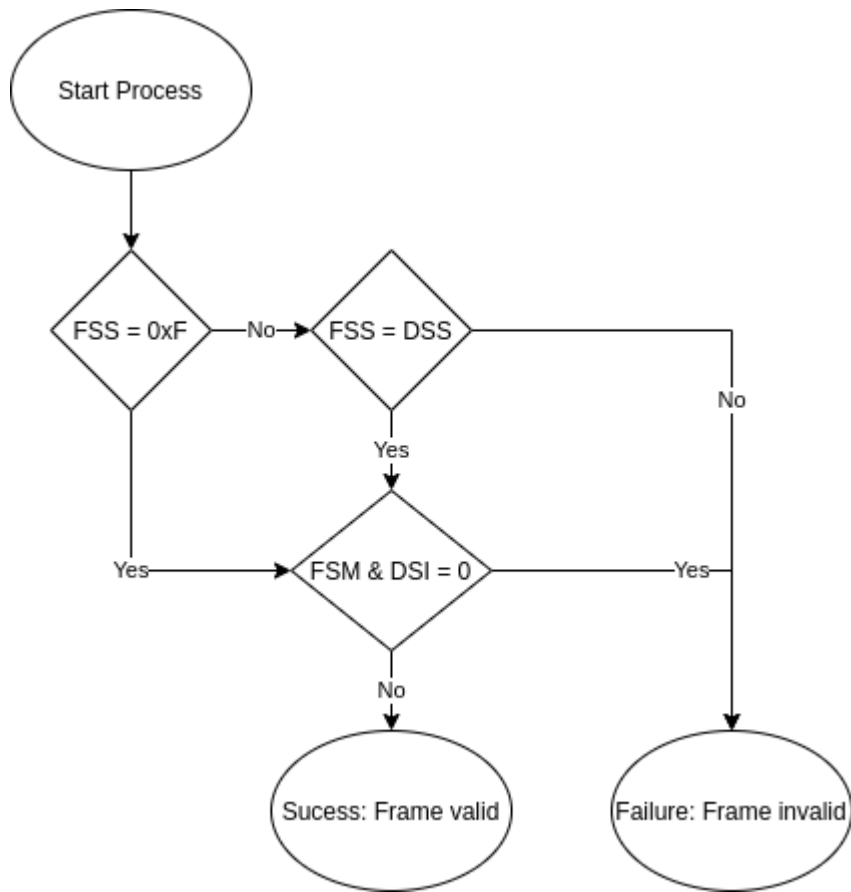


Figure 1. Subnet Filtering Process

6.4.3. Link Quality Assessment

6.4.4. Foreground Device ID Filter

6.4.5. Background Device ID Filter

6.5. Access Profile