



**Wi-SUN Alliance**

**Protocol Implementation Conformance Statement (PICS) for Field**

Revision 1v05

## **Area Network (FAN) Profile**

## **1 References**

- 1.1 Technical Profile Specification - Field Area Network (Latest Revision)  
20130125-FANWG-FANTPS.docx
- 1.2 Wi-SUN Field Area Network (FAN) - Conformance Test Suite Specification (Latest Revision)  
20141115-TCWG-FAN-Conformance-Test-Spec.docx

## 2 Introduction

To evaluate conformance of a particular implementation, it is necessary to have a statement of which a given technical profile specification. Such a statement is called a protocol implementation conform

### 2.1 Scope

This document provides the protocol implementation conformance statement (PICS) proforma for sp

### 2.2 Purpose

The supplier of a protocol implementation claiming to conform to specification [1.2] shall complete t information necessary to identify fully both the supplier and the implementation.

The PICS is in the form of answers to a set of questions in the PICS proforma. The questions in a profi and options as well as their implementation requirements. The implementation requirement indicat mandatory, optional, or conditional depending on options selected. When a protocol implementer a indicate whether an item is implemented or not, and provide explanations if an item is not implemei

### 2.3 Instructions for completing the PICS Proforma

If a given implementation is claimed to conform to a particular standard, the actual PICS proforma tc to the text of the PICS proforma in this document, and shall preserve the numbering and naming anc A PICS which conforms to this document shall be a conforming PICS proforma completed in accordar document.

The main part of the PICS is a fixed-format questionnaire, divided into tables. Answers to the questio either by simply marking an answer to indicate a restricted choice (such as Yes or No), or by entering

h capabilities and options have been implemented for  
ance statement (PICS).

ecification [1.2]

he following PICS proforma and accompany it with the

orma consist of a systematic list of protocol capabilities  
es whether implementation of a capability is  
nswers questions in a PICS proforma, they would  
nted.

be filled in by a supplier shall be technically equivalent  
f the ordering of the PICS proforma.  
nce with the instructions for completion given in this

onnaire are to be provided in the rightmost column,  
; a value, set, or range of values.

## **3 Identification of the Implementation**

### **3.1 Implementation under test (IUT)**

- 3.1.1 IUT Name:
- 3.1.2 IUT Version:
- 3.1.3 Software Version:
- 3.1.4 Hardware Version:
- 3.1.5 Operating System (optional)

### **3.2 Product Vendor**

- 3.2.1 Name:
- 3.2.2 Address:
- 3.2.3 Telephone Number:
- 3.2.4 Facsimile Number:
- 3.2.5 Email Address:
- 3.2.6 Additional Information:

### **3.3 PICS Contact Person**

- 3.3.1 Name:
- 3.3.2 Address:
- 3.3.3 Telephone Number:
- 3.3.4 Facsimile Number:
- 3.3.5 Email Address:
- 3.3.6 Additional Information:

### **3.4 Vendor Category**

- 3.4.1 Silicon Vendor
- 3.4.2 Module Vendor
- 3.4.3 Product Vendor

### **3.5 Questionnaire**

- 3.5.1 Do you plan to implement the Wi-SUN FAN Profile?

[If your answer for Item 3 is Yes, then please complete t](#)

CC13x4R10/P10

2

WiSUN\_STACK\_02

2

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Yes

No

No

Yes

[The Feature Set worksheet.](#)

PICS Item	TPS 1v29 Reference	Feature	Mandatory (M) / Optional (O)
<b>5.1 Device Type</b>			
DT1	5.1	Device is a border router (6LBR) w/o DHCPv6 server	O.1
DT1-1	5.1	Device is a border router (6LBR) w/ DHCPv6 server	O.1
DT2	5.1	Device is a router	O.1
DT3	5.1	Device is a leaf node	O.1
<b>6.1 Transport Layer</b>			
TL1	6.1.1.1	UDP	M
TL2	6.1.1.2	TCP	O
<b>6.2 Network Layer</b>			
NL1	6.2.3	IPV6	M
NL1-1	6.2.3		DT1:M DT2:N/A DT3:N/A
NL1-2	6.2.3		M
NL2	6.2.3	L2 Routing	O
NL3	6.2.3	L3 Routing	M
NL4	6.2.3	Simultaneously operate just one of L2 or L3 routing	M
NL5	6.2.3	L3 Routing in operation	O.2
NL6	6.2.3.1.1	6LoWPAN support for L3 Routing	NL5:M
NL7	6.2.3.1.2	IPV6 Addressing for L3 Routing	NL5:M
NL7-1	6.2.3.1.2.1		NL5:M
NL7-2	6.2.3.1.2.1.1		NL5:M
NL7-3	6.2.3.1.2.1.2		NL5:M



NL8      6.2.3.1.2.1.2    DHCPv6 support for L3 Routing      NL5:M

NL8-1    6.2.3.1.2.1.2      (NL5 and DT2):O

NL8-2    6.2.3.1.2.1.2      (NL5 and DT2):O

NL8-3    6.2.3.1.2.1.2      (NL5 and DT1-1):O

NL8-4    6.2.3.1.2.1.2      (NL5 and DT1-1):O

NL8-5    6.2.3.1.2.1.2      (NL5 and DT1-1):O

NL8-6    6.2.3.1.2.1.2      (NL5 and DT2):O

NL8-7    6.2.3.1.2.1.2      NL5:O

NL8-8    6.2.3.1.2.1.2      (NL5 and DT2):O

NL9      6.2.3.1.2.2      Multicast for L3 Routing      NL5:M

NL9-1    6.2.3.1.2.2      NL5:O

NL9-2    6.2.3.1.2.2      NL5:O

NL10	6.2.3.1.4	Neighbor Discovery support for L3 Routing	NL5:M
NL10-1	6.2.3.1.4		NL5:O
NL11	6.2.3.1.5	ICMPv6 support for L3 Routing	NL5:M
NL12	6.2.3.1.6	L3 Route Establishment and Maintenance	NL5:M
NL13	6.2.3.1.6.1	L3 Routing Link Metrics	(NL5 and DT2):M
NL13-1	6.2.3.1.6.1		(NL5 and DT2):O
NL14	6.2.3.1.6.2	L3 Routing Objective Function	(NL5 and DT2):M
NL14-1	6.2.3.1.6.2		(NL5 and DT2):O
NL15	6.2.3.1.6.3	L3 Routing Upward Route Formation	NL5:M
NL15-1	6.2.3.1.6.3		NL5:O
NL15-2	6.2.3.1.6.3		NL5:O

NL15-3	6.2.3.1.6.3		(NL5 and DT2):O
NL15-4	6.2.3.1.6.3		(NL5 and DT2):O
NL16	6.2.3.1.6.4	L3 Routing Downward Route Formation	(NL5 and DT2):M
NL16-1	6.2.3.1.6.4		(NL5 and DT2):O
NL17	6.2.3.1.7	Unicast Forwarding for L3 Routing	NL5:M
NL18	6.2.3.1.8	Multicast Forwarding for L3 Routing	NL5:M DT1:M DT2:M DT3:N/A
NL18-1	6.2.3.1.8		NL18:O
NL19	6.2.3.2	L2 Mesh Network (L2M)	O.2
NL19-1	6.2.3.2.1	6LoWPAN support for L2 Routing	NL19: M
NL19-2	6.2.3.2.1		NL19: M
NL19-3	6.2.3.2.1	IPv6 addressing for L2 Routing	NL19: M
NL19-4	6.2.3.2.2.1.1		NL19: M
NL19-5	6.2.3.2.2.1.2		NL19: M
NL19-6	6.2.3.2.2.1.2		NL19:M
NL19-7	6.2.3.2.2.4	Neighbor Discovery support for L2 Routing	NL19:M

NL19-8 6.2.3.2.2.4 NL19:M

NL19-9 6.2.3.2.2.5 ICMPv6 support for L2 Routing NL19:M

**6.3 Data Link Layer**

DL1 6.3.1.1 Configurable Parameters M

DL2 6.3.2.1 Frame Formats M

DL3 6.3.2.1.1 Bit order of transmissions M

DL4 6.3.2.1.2 PAN Advertisement Frame DT1:M  
DT2:M

DL5 6.3.2.1.3 PAN Advertisement Solicit Frame DT2:M  
DT3:M

DL6 6.3.2.1.4 PAN Configuration Frame DT1:M  
DT2:M

DL7 6.3.2.1.5 PAN Configuration Solicit Frame DT2:M  
DT3:M

DL8 6.3.2.1.6 ULAD Frame M

DL9 6.3.2.1.7 Acknowledgement Frame M

DL10 6.3.2.1.8 EAPOL Frame M

DL11 6.3.2.2 Key Data Cryptographic Elements M

DL12 6.3.2.2.1 PMKID M

DL13 6.3.2.2.2 PTKID M

DL14 6.3.2.2.3 GTKL M

DL15 6.3.2.2.4 GTK M

DL16 6.3.2.2.5 Lifetime KDE M

DL17 6.3.2.3 Information Elements O

DL18 6.3.2.3.1 Wi-SUN Header Information Elements

DL19	6.3.2.3.1.1	UTT-IE	M
DL20	6.3.2.3.1.2	BT-IE	M
DL21	6.3.2.3.1.3	FC-IE	M
DL22	6.3.2.3.1.4	RSL-IE	M
DL23	6.3.2.3.1.5	MHDS-IE	NL19: M
DL24	6.3.2.3.1.6	VH-IE	O
DL25	6.3.2.3.1.7	EA-IE	M
DL26	6.3.2.3.2	Wi-SUN Payload Information Elements	
DL27	6.3.2.3.2.1.1	US-IE	M
DL28	6.3.2.3.2.1.2	BS-IE	M
DL29	6.3.2.3.2.2	VP-IE	O
DL30	6.3.2.3.2.3	PAN-IE	M
DL31	6.3.2.3.2.4	NETNAME-IE	M

DL32	6.3.2.3.2.5	PANVER-IE	M
DL33	6.3.2.3.2.6	GTKHASH-IE	M
DL34	6.3.2.3.3	MPX-IE	M
DL34-1	6.3.2.3.3		O
DL34-2	6.3.2.3.3		O
DL35	6.3.3.1	Protocol Dispatch	M
DL36	6.3.2.3.4	Frame Requirements and IE's	M
DL36-1	6.3.2.3.4		O
DL36-2	6.3.2.3.4		O
DL36-3	6.3.2.3.4		O
DL36-4	6.3.2.3.4		O
DL35	6.3.2.4	L2 Mesh Frame Formats	NL19: M

DL36	6.3.3.1	Protocol Dispatch Operation	M
DL37	6.3.3.2	L2 Mesh Operation	NL19: M
DL38	6.3.3.2.1	Construct MHD-HDR	DL37:M
DL39	6.3.3.2.2	Forward MHD-PDU	DL37:M
DL40	6.3.3.2.3	MHD-PDU Reception	DL37:M
DL41	6.3.3.2.4	MHD-PDU Transmission	DL37:M
DL42	6.3.3.2.5	RAMP procedures	DL37:M
DL43	6.3.3.2.5.1	Local Broadcast	DL37:M
DL44	6.3.3.2.5.2	Periodic RAMP actions	DL37:M
DL45	6.3.3.2.5.3	Route Information Update	DL37:M
DL46	6.3.3.2.5.4	Generation of RTA Data Element	DL37:M
DL47	6.3.3.2.5.5	Generation of RTR MHD-PDU	DL37:M
DL48	6.3.3.2.5.6	Generation of SREG MHD-PDU	DL37:M

DL49	6.3.3.2.5.7	Generation of SREG-ACK MHD-PDU	DL37:M
DL50	6.3.3.2.5.8	Generation of SREG-NACK MHD-PDU	DL37:M
DL51	6.3.3.2.5.9	Generation of RTR-REQ MHD-PDU	DL37:M
DL52	6.3.3.2.6	RAMP reception procedures	DL37:M
DL53	6.3.3.2.6.1	RTA Data Element	DL37:M
DL54	6.3.3.2.6.2	SREG Data Element	DL37:M
DL55	6.3.3.2.6.3	SREG-ACK Data Element	DL37:M
DL56	6.3.3.2.6.4	SREG-NACK Data Element	DL37:M
DL57	6.3.3.2.6.5	RTA-REQ Data Element	DL37:M
DL58	6.3.3.2.6.6	RTR Data Element	DL37:M
DL59	6.3.3.2.7	RAMP Transmission Procedures	DL37:M
DL60	6.3.3.2.7.1	Route Announcement	DL37:M
DL61	6.3.3.2.7.2	Route Removal	DL37:M
DL62	6.3.3.2.7.3	Service Registration	DL37:M



DL63	6.3.3.2.7.4	Service Registration Response	DL37:M
DL64	6.3.3.2.7.5	Service Registration Negative Response	DL37:M
DL65	6.3.3.2.7.6	Route Announcement Request	DL37:M
MAC1	6.3.4	MAC Operation	
MAC2	6.3.4.1	Channel Access	M
MAC3	6.3.4.1	Channel Access	O
MAC4	6.3.4.2	Frame Exchange Patterns	
MAC4-1	6.3.4.2		O
MAC4-2	6.3.4.2		O
MAC4-3	6.3.4.2		O
MAC9	6.3.4.3.1	Unicast Frame Exchange	M
MAC10	6.3.4.3.1		O
MAC11	6.3.4.3.1		O
MAC12	6.3.4.3.1		O
MAC13	6.3.4.3.1		O

MAC15	6.3.4.3.1.1	Directed Frame Exchange	M
MAC17	6.3.4.3.1.1.1	DFE Retransmission	M
MAC19	6.3.4.3.1.2	Extended Directed Frame Exchange	M
MAC19-1	6.3.4.3.1.2		O
MAC19-2	6.3.4.3.1.2		O
MAC20	6.3.4.3.1.2.1	EDFE - Retransmission	MAC12: M
MAC21	6.3.4.4.1	BFE - Broadcast Schedule Advertisement	M
MAC21-1	6.3.4.4.1		O
MAC21-2	6.3.4.4.2	BFE - Broadcast Frame Reception	M
MAC21-3	6.3.4.4.3	BFE - Broadcast Frame Transmission	M
MAC22	6.3.4.5	Frequency Hopping	M

MAC22-1	6.3.4.5		O
MAC22-2	6.3.4.5.1.1	Handling channel Exclusions	M
MAC22-3	6.3.4.5.1.1		O
MAC22-4	6.3.4.5.1.2	TR51CF	O
MAC22-4.1	6.3.4.5.1.2		MAC22-4:M
MAC22-4.2	6.3.4.5.1.2		MAC22-4:M
MAC22-5	6.3.4.5.1.3	DH1CF	M
MAC22-6	6.3.4.5.1.4	Fixed Channel	M
MAC22-7	6.3.4.5.1.5	Vendor Defined Channel Function	O
MAC23	6.3.4.6	FAN Discovery and Join	
MAC23-1	6.3.4.6.1	Usage of MLME-WS-ASYNC-FRAME	M
MAC23-2	6.3.4.6.2	Trickle Timers	M
MAC24	6.3.4.6.3	Discovery / Join Algorithm	M
MAC25	6.3.4.6.3.1	Join State 1: Select PAN	DT2:M DT3:M

MAC25-1 6.3.4.6.3.1 DT2:O  
DT3:O

MAC26 6.3.4.6.3.2 Join State 2: Authenticate DT2:M  
DT3:M

MAC26-1 6.3.4.6.3.2 DT2:O  
DT3:O

MAC27 6.3.4.6.3.3 Join State 3: Acquire PAN Config DT2:M  
DT3:M

MAC28 6.3.4.6.3.4 Join State 4: Configure Routing M

MAC28-1 6.3.4.6.3.4.1 NL5:M

MAC28-2 6.3.4.6.3.4.2 NL19: M

MAC31 6.3.4.6.3.5 Join State 5: Operational M

**6.4 PHY**

PHY 6.4 PHY M

**6.5 Security**

SEC1 6.5.1 Wi-SUN PKI DT2:M

SEC1-1 6.5.1 DT2:O

SEC1-2	6.5.1		DT2:O
SEC1-3	6.5.1		DT2: O
SEC1-4	6.5.1		DT2: O
SEC2	6.5.1.1	Wi-SUN IDevId Construction	DT2: M
SEC2-1	6.5.1.1		DT2: O
SEC2-2	6.5.1.1		DT2: O
SEC2-3	6.5.1.1		DT2: O
SEC2-4	6.5.1.1		DT2: O
SEC2-5	6.5.1.1		DT2: O
SEC3	6.5.2	FAN Access Control / Group Key placement	M
SEC4	6.5.2.1	EAPOL Over 802.15.4	M
SEC4-1	6.5.2.1		DT1:O
SEC4-2	6.5.2.1		DT1:O
SEC5	6.5.2.1.1	SUP Operation	DT2: M
SEC6	6.5.2.1.2	Limits on Non Authenticated Node Messaging	M

SEC6-1	6.5.2.1.2		DT1:O DT2:O
SEC7	6.5.2.1.3	EAPOL Relay Agent Operation	DT2: M
SEC7-1	6.2.2.1	EAPOL Relay Datagram	M
SEC8	6.5.2.1.4	Border Router / Authenticator Operation	M
SEC9	6.5.2.2	Authentication and PMK Installation Flow	M
SEC10	6.5.2.3	PTK and GTK Installation Flow	M
SEC11	6.5.2.4	Group Key Update Flow	M
SEC12	6.5.2.5	Revocation of Node Access	M
SEC13	6.5.3	N2N Authentication and Key Generation	O
SEC13-1	6.5.3		SEC13:M
SEC13-2			SEC13:O
SEC13-3		SEC13:O	

SEC14	6.5.3.2.1.1	DevID Certificates	SEC13:M
SEC14-1			SEC13:O
SEC15	6.5.3.2.1.2	Roots of Trust	SEC13:O
SEC16	6.5.3.4.2.4	Session Data	SEC13:M
SEC17	6.5.3.4.3	Cipher Suites	SEC13:M
SEC18	6.5.3.4.3.2	Interoperability	SEC13:M
SEC19	6.5.3.4.3.4	HMAC Key Size	SEC13:M
SEC20	6.5.3.4.4.1	CCM - Counter Mode with Cipher Block Chaining MAC	SEC13:M
SEC21	6.5.3.4.5.1	Key Derivation Functions Using Counter Mode	SEC13:M
SEC22	6.5.3.4.6.1.1	NewAssociation	SEC13:M

SEC23	6.5.3.6.2.1	AssociationAck	SEC13:M
SEC24	6.5.3.4.6.3	NS Shared Secret Messages	SEC13:M
SEC25	6.5.3.4.6.3.1	NS Shared Secret Initiation	SEC13:M
SEC26	6.5.3.4.6.3.2	NS Shared Secret Response	SEC13:M
SEC27	6.5.3.4.6.4.1	NS Session Created	SEC13:M
SEC27-1			SEC13:O
SEC28	6.5.3.4.6.4.2	NS Session Acknowledgement	SEC13:M
SEC28-1			SEC13:O
SEC29	6.5.3.4.6.4.3	NS Session Destruction	SEC13:M
SEC30	6.5.3.4.5.6	Error	SEC13:M
SEC30-1			SEC13:O
SEC31	6.5.3.4.8	PDU Processing using Pairwise Security	SEC13:M
SEC32	6.5.3.4.8.1	Data Elements	SEC13:M



SEC33	6.5.3.4.8.2	Unicast Transmission Processing	SEC13:M
SEC34	6.5.3.4.8.3	Unicast Reception Processing	SEC13:M
SEC35	6.5.4	Frame Security	M
SEC36	6.5.4.1.1	Group AES Key (GAK)	M
SEC37	6.5.4.1.2	Pairwise AES Key (PAK)	SEC13:M
SEC38	6.5.4.2	Auxiliary Security Header	M
SEC38-1	6.5.4.2		O
SEC39	6.5.4.3	CCM* Nonce and Frame Counter	M
SEC40	6.5.4.4	GTK Lifecycle	M
SEC41	6.5.5	Node Hardening	O



## Vendor Support

### Requirements

### Implemented (Y/N/NA)

N

N

Y

Y

Y

N

Y

Y

Border Router's WAN interface MUST support the IPv6 MTU of 1280 bytes

Y

A FAN node's MPX-IE upper layer fragment MUST support an MTU of 1576 bytes

N

Y

Y

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

Unicast address mapping as specified in [RFC4944] MUST be supported

Y

Y

FAN nodes MUST auto configure a link-local IPv6 address as described in [RFC4862]

Y

The Interface Identifier (IID) MUST be of the modified EUI-64 format described [RFC4291], with the EUI-64 being that of the 802.15.4 FAN interface

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

FAN nodes SHOULD NOT generate and MAY ignore receipt of Advertise, Rebind, Request, Renew, Release, Decline, Confirm, Reconfigure, and Information messages

N

An Option Request option MAY be included in the Solicit message. A Vendor Information option MAY be included in the Option Request option

N

A Status Code option MAY be included in the Reply message. Omission of the Status Code option indicates Success (see [RFC3315] section 22.13).

N

Vendor-specific Information options MAY be included in the Reply message

N

DHCP server initiated configuration exchanges are not supported and MAY be ignored

N

DHCP authentication messaging SHOULD NOT be generated and MAY be ignored on receipt

N

The following changes are made to default Transmission and Retransmission Parameters (section 5.5 of [RFC3315])

N

1. SOL\_MAX\_DELAY SHOULD default to 1 min.

2. SOL\_TIMEOUT SHOULD default to 1 min.

3. SOL\_MAX\_RT SHOULD default to 1 hour

FAN nodes MAY support additional GUA/ULA assignments.

N

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

FAN nodes MAY originate multicast ICMPv6 or UDP messaging.

Y

Site and Global scope:

Y

7. For each GUA/ULA acquired, a FAN node SHOULD subscribe to the equivalent unicast-prefix-based IPv6 multicast group (as described in [RFC3306]) supporting a MPL domain on that multicast address.

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

A FAN node MAY ignore potential neighbors which do not support the node's channel function

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

A node SHOULD refresh its neighbor link metrics at least every 30 minutes. In the absence of other messaging, a node SHOULD initiate NUD messaging to refresh its neighbor link metrics.

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

Using the ETX metric, the neighbor path cost SHOULD be calculated per the schedule guidance provided in [RFC6719] section 3.1

N

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

A Prefix Information Option MAY be included to provide an IPv6 address prefix to the DODAG

Y

6LoWPAN Context Option (6CO), as described in RFC [6775], MAY be implemented to support stateful context based source, destination, or multicast address compression.

N

FAN nodes MAY issue unicast or multicast DIS messages as described in [RFC6550] to solicit DIO messages.

A FAN node should determine a set of candidate parents as the set of all neighbor nodes, from which a DIO has been received, whose node-to-neighbor and neighbor-to-node RSL EWMA values both exceed the minimum threshold of CAND\_PARENT\_THRESHOLD using a hysteresis factor of CAND\_PARENT\_HYSTERISIS.

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

FAN nodes SHOULD implement a binary exponential retransmission mechanism (as described in section 14 of [RFC3315]) until either the corresponding DAO-ACK is received or the retry mechanism has exhausted its maximum attempts.

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

A FAN node MAY join its FAN interface to other realm-scope multicast groups.

FAN nodes MUST implement Uncompressed IPv6 Headers as defined in [RFC 4944]

FAN nodes MUST auto configure a link-local IPv6 address as described in [RFC4862].

FAN nodes MUST acquire the prefix information from the MHDS-IE to provide automated generation of IPv6 GUA and ULA addresses

FAN nodes MUST support a total assignment of at least 2 GUA and/or ULA

Y

N

Y

Y

Y

Y

N

N

N

Y

Y

Y

Y

Y

Y

Neighbor discovery, as described in Section 6.2.3.1.4 SHALL be implemented with the following modification:

- 1) Router Discovery using [RFC 6550] DIO and DIS messaging is not performed  
DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

Y

Table 6 2a contains definitions of FAN Data Link Layer configuration parameters which MUST be administratively configurable on a node prior to the node's deployment.

Only [IEEE802.15.4] Data and Enhanced Acknowledge frames are used. Other frame types SHOULD be discarded and the device MUST continue normal operation

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

If an IE not defined by this specification is encountered in a frame, that IE MAY be ignored and the rest of the frame MUST be processed as normal including any additional IEs.

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

N

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

N

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

First, Middle, and Last fragment are OPTIONAL and MAY be supported.

N

- a. A node supporting these Transfer types MUST also support reception of the Abort Transfer type.
- b. A node not supporting these Transfer types MUST support generation of the Abort Transfer type with Total Upper-Layer Frame Size set to 0.

The layer 2 fragmentation capabilities of the MPX-IE MAY be supported

N

The MPX-IE Multiplex ID MUST be set to one of the values described in Table 6 3.

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

all Information Elements defined by this specification SHOULD be accepted in received frames even if the table indicates they are not to be included (allowing for future revisions). Received frames that do not include the required Information Elements from this table SHOULD be dropped.

Y

Zero or more MPX-IEs are allowed

N

Zero or more VH-IEs are allowed, but there SHOULD NOT be more than 1 VH-IE containing the same vendor OUI

N

Zero or more VP-IEs are allowed, but there SHOULD NOT be more than 1 VP-IE containing the same vendor OUI.

N

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section and all sub-sections which are specific to the DUT's operating role (DT1, DT2, or DT3).

T



All upper layer payload transfers are encapsulated within an MPX-IE. FAN nodes MUST implement protocol dispatch by populating (frame transmission) or processing (frame reception) the Multiplex ID of the MPX-IE.

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

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DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

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DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

CCA Mode 1 MAY be used before asynchronous frame transmissions. If CCA indicates a channel is busy then the channel MUST be skipped and the next channel in the frame transmission sequence attempted.

Y

If the node had transmitted an EDFE frame containing an FC-IE, or had transmitted a DFE frame requesting an ACK, the node SHOULD continue to listen for the continuation of the EDFE or DFE ACK on the same channel as the transmission.

Y

The node SHOULD next determine if it is within the dwell interval of its Broadcast Channel Hopping schedule and, if so, tune to the indicated broadcast channel.

Y

the node SHOULD tune to the channel indicated by its unicast listening schedule

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

FAN nodes MAY support initiation of EDFE

N

Nodes MAY initiate ULAD frame exchange using DFE.

Y

Nodes MAY initiate ULAD frame exchange using EDFE.

N

The Sequence Number SHOULD be initialized to a random value.

N

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

The Initial ULAD frame MAY include a MPX-IE and, if included, the Receive Flow Control field of the FC IE MUST NOT be set to zero.

N

The Response ULAD frame MAY include a MPX-IE and, if included, the Receive Flow Control field of the FC-IE MUST NOT be set to zero.

N

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

The BS-IE contents MAY be the same as the BS-IE (and the node's local BT IE identifying the same active BDI) received from the neighbor selected as preferred RPL parent. Alternately, the node may advertise a BS-IE and BT-IE with field values such that the declared BDI does not overlap that of its preferred RPL parent.

N

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

Frequency hopping MAY be implemented to meet other regulatory domain requirements specified in [PHYSPEC].

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

A FAN node MAY advertise an excluded channel list for its listening schedule.

This channel function, described in section 7.1 of [ANSITIA-4957.200], MAY be supported by FAN nodes.

TR51CF MUST be implemented per the additional details provided in Appendix A.

Random number generation as described in Appendix A MUST be used.

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

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DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

N
Y
Y
N
N
N
N
Y
Y
N

Y
Y

Y
Y

The set of nodes from which a joining node accepts a PA constitutes the EAPOL candidate set , which SHOULD be further qualified by the RSSI level of the received PAs (see Appendix K)

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

It is RECOMMENDED that all key material acquired by the node be durably stored on the node (maintained across power cyclings).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

A FAN manufacturer certificate chain MAY include one or more intermediate certificates.

Y

A deployment security profile in which multiple PKI are accommodated, where a FAN node MAY either contain a Wi-SUN issued IDevID or a device certificate issued from a manufacturer's CA.

A deployment security profile in which a single PKI is used, where a FAN node MAY either contain a Wi-SUN issued IDevID or a device certificate issued from the manufacturer CA where all manufacturer CA roots MUST chain to the common Wi-SUN root of trust through cross-signing of the manufacturer CA root certificate.

A FAN node MAY be issued or contain one or more LDevIDs

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

The SubjectName field SHOULD be empty (it is ignored for the purposes of Wi-SUN path validation).

The SANE MAY contain other names but these other names are ignored for the purposes of Wi-SUN path validation.

KeyUsage MAY have keyAgreement bit set

ExtendedKeyUsage MAY contain other key usages.

A CertificatePolicies extension MAY be present

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

The Authentication Server MAY be hosted on the Border Router

The Authentication Server MAY accessed by the Border over a WAN connection.

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y
Y
Y
Y
Y
Y
Y
N
N
N
Y
Y
Y
Y
N
Y
Y

An EAPOL target node SHOULD enforce rate limits upon EAPOL, PAS, and PA frames, incoming from non-authenticated nodes, to within reasonable bounds of the specified transmission rates of these frames.

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

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Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

N

N

Either route over using ROLL RPL or mesh under using RAMP MAY employ Pairwise Authentication and Key Generation

N

A node configured to do pairwise security SHOULD attempt the certificate-based shared-secret initiation first and then fall back to the use of the abbreviated shared secret mechanism.

N



DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

All FAN nodes MAY receive one or more locally produced DevIDs - called LDevIDs. In general, the content of those 2943 certificates SHOULD be identical to that of the node's IDevID with the exception of the IssuerName field, the 2944 AuthorityKeyIdentifier extension and the expiration times. An LDevID MAY have additional extensions which 2945 provide context for the use of the LDevID within a Wi-SUN mesh

N

Each enrolled FAN node SHOULD contain the local trust anchor information necessary to resolve chains of trust for proffered LDevID certificates

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

If this message must be resent, it SHOULD be resent as sequence 1.

N

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

If this message must be resent, it SHOULD be resent as sequence 1.

N

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

An error message MAY be sent with integrity protection once the sender has sent an NS Session Complete (Responder) or NS Session Acknowledgement (Initiator) message.

N

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

N

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

If the selected key is valid but other keys are determined to be invalid the node MAY proceed with frame transmission.

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

Y

DUT implements all mandatory (MUST, MUST NOT) requirements of this TPS section which are specific to the DUT's operating role (DT1, DT2, or DT3).

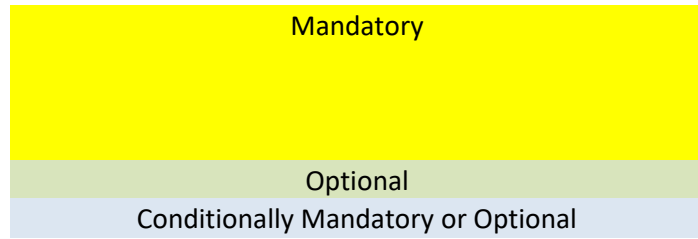
Y

It is RECOMMENDED that FAN nodes implement platform hardening measures.

N

\*\*\* END \*\*\*

### Color Coding Legend



Mandatory
Optional
Conditionally Mandatory or Optional