



Wi-SUN Alliance

Protocol Implementation Conformance Statement (PICS) for Field Area Network (FAN) Profile

Revision 1v05

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 capabilities and options have been implemented for a given technical profile specification. Such a statement is called a protocol implementation conformance statement (PICS).

2.1 Scope

This document provides the protocol implementation conformance statement (PICS) proforma for specification [1.2]

2.2 Purpose

The supplier of a protocol implementation claiming to conform to specification [1.2] shall complete the following PICS proforma and accompany it with the 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 proforma consist of a systematic list of protocol capabilities and options as well as their implementation requirements. The implementation requirement indicates whether implementation of a capability is mandatory, optional, or conditional depending on options selected. When a protocol implementer answers questions in a PICS proforma, they would indicate whether an item is implemented or not, and provide explanations if an item is not implemented.

2.3 Instructions for completing the PICS Proforma

If a given implementation is claimed to conform to a particular standard, the actual PICS proforma to be filled in by a supplier shall be technically equivalent to the text of the PICS proforma in this document, and shall preserve the numbering and naming and the ordering of the PICS proforma.

A PICS which conforms to this document shall be a conforming PICS proforma completed in accordance with the instructions for completion given in this document.

The main part of the PICS is a fixed-format questionnaire, divided into tables. Answers to the questionnaire are to be provided in the rightmost column, either by simply marking an answer to indicate a restricted choice (such as Yes or No), or by entering a value, set, or range of values.

3 Identification of the Implementation

3.1 Implementation under test (IUT)

- 3.1.1 IUT Name: Lierda WS7300_Wi-SUN FAN_Solution
- 3.1.2 IUT Version: WS7300-P915
- 3.1.3 Software Version: V01.01
- 3.1.4 Hardware Version: V01.01
- 3.1.5 Operating System (optional)

3.2 Product Vendor

- 3.2.1 Name: LIERDA SCIENCE & TECHNOLOGY GROUP CO.,LTD
- 3.2.2 Address: Lierda IoT Science Park, No. 1326, Wenyi West Road, Hangzhou
- 3.2.3 Telephone: +86-0571-88800000
- 3.2.4 Facsimile Number: +86-0571-88256108
- 3.2.5 Email Address: hangzhou@lierda.com
- 3.2.6 Additional Information:

3.3 PICS Contact Person

- 3.3.1 Name: Parry Zhang
- 3.3.2 Address: Lierda IoT Science Park, No. 1326, Wenyi West Road, Hangzhou
- 3.3.3 Telephone: +86-18167172771
- 3.3.4 Facsimile Number: +86-0571-88256108
- 3.3.5 Email Address: zhangyl@lierda.com
- 3.3.6 Additional Information:

3.4 Vendor Category

- 3.4.1 Silicon Vendor: No
- 3.4.2 Module Vendor: Yes
- 3.4.3 Product Vendor: No

3.5 Questionnaire

3.5.1 Do you
plan to
implemen
t the Wi-
SUN FAN
Profile? Yes

[If your answer for Item 3 is Yes, then please complete the Feature Set worksheet.](#)

Vendor Support

PICS Item	TPS 1v29 Reference	Feature	Mandatory (M) / Optional (O)	Implemented (Y/N/NA)
5.1 Device Type				
DT1	5.1	Device is a border router (6LBR) w/o DHCPv6 server	O.1	N
DT1-1	5.1	Device is a border router (6LBR) w/ DHCPv6 server	O.1	Y
DT2	5.1	Device is a router	O.1	Y
DT3	5.1	Device is a leaf node	O.1	NA FAN 1
6.1 Transport Layer				
TL1	6.1.1.1	UDP	M	Y
TL2	6.1.1.2	TCP	O	Y
6.2 Network Layer				
NL1	6.2.3	IPV6	M	Y
NL1-1	6.2.3		DT1:M DT2:N/A DT3:N/A	Y
NL1-2	6.2.3		M	Y
NL2	6.2.3	L2 Routing	O	N
NL3	6.2.3	L3 Routing	M	Y
NL4	6.2.3	Simultaneously operate just one of L2 or L3 routing	M	Y
NL5	6.2.3	L3 Routing in operation	O.2	Y

NL6	6.2.3.1.1	6LoWPAN support for L3 Routing	NL5:M	Y
NL7	6.2.3.1.2	IPV6 Addressing for L3 Routing	NL5:M	Y
NL7-1	6.2.3.1.2.1		NL5:M	Y
NL7-2	6.2.3.1.2.1.1		NL5:M	Y
NL7-3	6.2.3.1.2.1.2		NL5:M	Y
NL8	6.2.3.1.2.1.2	DHCPv6 support for L3 Routing	NL5:M	Y
NL8-1	6.2.3.1.2.1.2		(NL5 and DT2):O	Y
NL8-2	6.2.3.1.2.1.2		(NL5 and DT2):O	N
NL8-3	6.2.3.1.2.1.2		(NL5 and DT1-1):O	N
NL8-4	6.2.3.1.2.1.2		(NL5 and DT1-1):O	N
NL8-5	6.2.3.1.2.1.2		(NL5 and DT1-1):O	Y

NL8-6 6.2.3.1.2.1.2

NL8-7 6.2.3.1.2.1.2

NL8-8 6.2.3.1.2.1.2

NL9 6.2.3.1.2.2 Multicast for L3 Routing

NL9-1 6.2.3.1.2.2

NL9-2 6.2.3.1.2.2

NL10 6.2.3.1.4 Neighbor Discovery support for L3 Routing

NL10-1 6.2.3.1.4

(NL5 and DT2):O
NL5:O

(NL5 and DT2):O

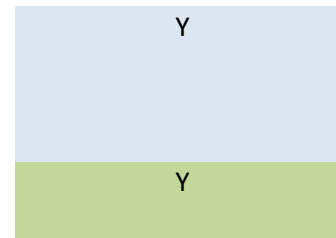
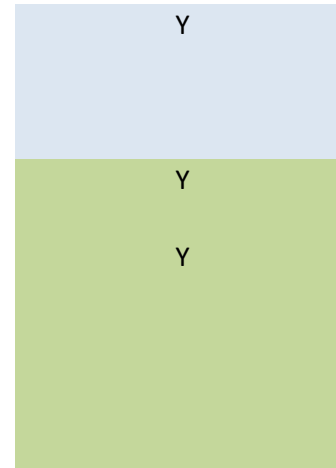
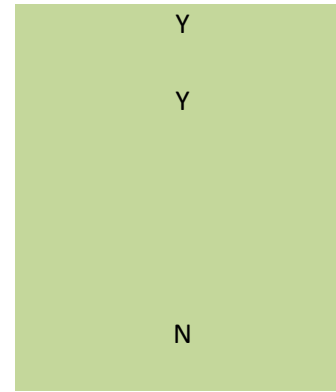
NL5:M

NL5:O

NL5:O

NL5:M

NL5:O



Y

Y

N

Y

Y

Y

Y

Y

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

NL15-2 6.2.3.1.6.3

NL15-3 6.2.3.1.6.3

NL15-4 6.2.3.1.6.3

NL16 6.2.3.1.6.4

L3 Routing Downward Route Formation

NL16-1 6.2.3.1.6.4

NL17 6.2.3.1.7

Unicast Forwarding for L3 Routing

NL5:O

N

(NL5 and DT2):O

Y

(NL5 and DT2):O

Y

(NL5 and DT2):M

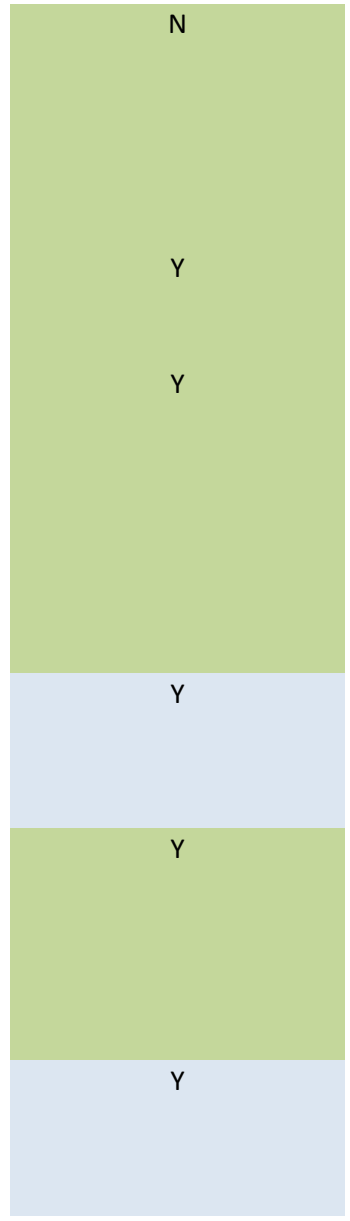
Y

(NL5 and DT2):O

Y

NL5:M

Y



NL18	6.2.3.1.8	Multicast Forwarding for L3 Routing	NL5:M DT1:M DT2:M DT3:N/A	Y
NL18-1	6.2.3.1.8		NL18:O	Y
NL19	6.2.3.2	L2 Mesh Network (L2M)	O.2	N
NL19-1	6.2.3.2.1	6LoWPAN support for L2 Routing	NL19: M	NA
NL19-2	6.2.3.2.1		NL19: M	NA
NL19-3	6.2.3.2.1	IPv6 addressing for L2 Routing	NL19: M	NA
NL19-4	6.2.3.2.2.1.1		NL19: M	NA
NL19-5	6.2.3.2.2.1.2		NL19: M	NA
NL19-6	6.2.3.2.2.1.2		NL19:M	NA
NL19-7	6.2.3.2.2.4	Neighbor Discovery support for L2 Routing	NL19:M	NA
NL19-8	6.2.3.2.2.4		NL19:M	NA
NL19-9	6.2.3.2.2.5	ICMPv6 support for L2 Routing	NL19:M	NA
6.3 Data Link Layer				
DL1	6.3.1.1	Configurable Parameters	M	Y

DL2	6.3.2.1	Frame Formats	M	Y
DL3	6.3.2.1.1	Bit order of transmissions	M	Y
DL4	6.3.2.1.2	PAN Advertisement Frame	DT1:M	Y
DL5	6.3.2.1.3	PAN Advertisement Solicit Frame	DT2:M	Y
DL6	6.3.2.1.4	PAN Configuration Frame	DT3:M	Y
DL7	6.3.2.1.5	PAN Configuration Solicit Frame	DT1:M	Y
DL8	6.3.2.1.6	ULAD Frame	DT2:M	Y
DL9	6.3.2.1.7	Acknowledgement Frame	DT3:M	Y
DL10	6.3.2.1.8	EAPOL Frame	M	Y
DL11	6.3.2.2	Key Data Cryptographic Elements	M	Y
DL12	6.3.2.2.1	PMKID	M	Y
DL13	6.3.2.2.2	PTKID	M	Y
DL14	6.3.2.2.3	GTKL	M	Y
DL15	6.3.2.2.4	GTK	M	Y
DL16	6.3.2.2.5	Lifetime KDE	M	Y
DL17	6.3.2.3	Information Elements	O	Y
DL18	6.3.2.3.1	Wi-SUN Header Information Elements		

DL19	6.3.2.3.1.1	UTT-IE	M	Y
DL20	6.3.2.3.1.2	BT-IE	M	Y
DL21	6.3.2.3.1.3	FC-IE	M	Y
DL22	6.3.2.3.1.4	RSL-IE	M	Y
DL23	6.3.2.3.1.5	MHDS-IE	NL19: M	N
DL24	6.3.2.3.1.6	VH-IE	O	
DL25	6.3.2.3.1.7	EA-IE	M	Y
DL26	6.3.2.3.2	Wi-SUN Payload Information Elements		
DL27	6.3.2.3.2.1.1	US-IE	M	Y

DL28	6.3.2.3.2.1.2	BS-IE	M	Y
DL29	6.3.2.3.2.2	VP-IE	O	
DL30	6.3.2.3.2.3	PAN-IE	M	Y
DL31	6.3.2.3.2.4	NETNAME-IE	M	Y
DL32	6.3.2.3.2.5	PANVER-IE	M	Y
DL33	6.3.2.3.2.6	GTKHASH-IE	M	Y
DL34	6.3.2.3.3	MPX-IE	M	Y
DL34-1	6.3.2.3.3		O	N

DL34-2	6.3.2.3.3		O	N
DL35	6.3.3.1	Protocol Dispatch	M	Y
DL36	6.3.2.3.4	Frame Requirements and IE's	M	Y
DL36-1	6.3.2.3.4		O	N
DL36-2	6.3.2.3.4		O	N
DL36-3	6.3.2.3.4		O	N
DL36-4	6.3.2.3.4		O	N
DL35	6.3.2.4	L2 Mesh Frame Formats	NL19: M	N
DL36	6.3.3.1	Protocol Dispatch Operation	M	Y

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

DL47	6.3.3.2.5.5	Generation of RTR MHD-PDU	DL37:M	NA
DL48	6.3.3.2.5.6	Generation of SREG MHD-PDU	DL37:M	NA
DL49	6.3.3.2.5.7	Generation of SREG-ACK MHD-PDU	DL37:M	NA
DL50	6.3.3.2.5.8	Generation of SREG-NACK MHD-PDU	DL37:M	NA
DL51	6.3.3.2.5.9	Generation of RTR-REQ MHD-PDU	DL37:M	NA
DL52	6.3.3.2.6	RAMP reception procedures	DL37:M	NA
DL53	6.3.3.2.6.1	RTA Data Element	DL37:M	NA
DL54	6.3.3.2.6.2	SREG Data Element	DL37:M	NA
DL55	6.3.3.2.6.3	SREG-ACK Data Element	DL37:M	NA
DL56	6.3.3.2.6.4	SREG-NACK Data Element	DL37:M	NA

DL57	6.3.3.2.6.5	RTA-REQ Data Element	DL37:M	NA
DL58	6.3.3.2.6.6	RTR Data Element	DL37:M	NA
DL59	6.3.3.2.7	RAMP Transmission Procedures	DL37:M	NA
DL60	6.3.3.2.7.1	Route Announcement	DL37:M	NA
DL61	6.3.3.2.7.2	Route Removal	DL37:M	NA
DL62	6.3.3.2.7.3	Service Registration	DL37:M	NA
DL63	6.3.3.2.7.4	Service Registration Response	DL37:M	NA
DL64	6.3.3.2.7.5	Service Registration Negative Response	DL37:M	NA
DL65	6.3.3.2.7.6	Route Announcement Request	DL37:M	NA

MAC1	6.3.4	MAC Operation		
MAC2	6.3.4.1	Channel Access	M	Y
MAC3	6.3.4.1	Channel Access	O	Y
MAC4	6.3.4.2	Frame Exchange Patterns		
MAC4-1	6.3.4.2		O	Y
MAC4-2	6.3.4.2		O	Y
MAC4-3	6.3.4.2		O	Y
MAC9	6.3.4.3.1	Unicast Frame Exchange	M	Y
MAC10	6.3.4.3.1		O	N
MAC11	6.3.4.3.1		O	Y
MAC12	6.3.4.3.1		O	N
MAC13	6.3.4.3.1		O	Y

MAC15	6.3.4.3.1.1	Directed Frame Exchange	M	Y
MAC17	6.3.4.3.1.1.1	DFE Retransmission	M	Y
MAC19	6.3.4.3.1.2	Extended Directed Frame Exchange	M	Y
MAC19-1	6.3.4.3.1.2		O	N
MAC19-2	6.3.4.3.1.2		O	Y
MAC20	6.3.4.3.1.2.1	EDFE - Retransmission	MAC12: M	N
MAC21	6.3.4.4.1	BFE - Broadcast Schedule Advertisement	M	Y
MAC21-1	6.3.4.4.1		O	N

MAC21-2	6.3.4.4.2	BFE - Broadcast Frame Reception	M	Y
MAC21-3	6.3.4.4.3	BFE - Broadcast Frame Transmission	M	Y
MAC22	6.3.4.5	Frequency Hopping	M	Y
MAC22-1	6.3.4.5		O	Y
MAC22-2	6.3.4.5.1.1	Handling channel Exclusions	M	Y
MAC22-3	6.3.4.5.1.1		O	Y
MAC22-4	6.3.4.5.1.2	TR51CF	O	N
MAC22-4.1	6.3.4.5.1.2		MAC22-4:M	N
MAC22-4.2	6.3.4.5.1.2		MAC22-4:M	N
MAC22-5	6.3.4.5.1.3	DH1CF	M	Y

MAC22-6	6.3.4.5.1.4	Fixed Channel	M	Y
MAC22-7	6.3.4.5.1.5	Vendor Defined Channel Function	O	Y
MAC23	6.3.4.6	FAN Discovery and Join		
MAC23-1	6.3.4.6.1	Usage of MLME-WS-ASYNC-FRAME	M	Y
MAC23-2	6.3.4.6.2	Trickle Timers	M	Y
MAC24	6.3.4.6.3	Discovery / Join Algorithm	M	Y
MAC25	6.3.4.6.3.1	Join State 1: Select PAN	DT2:M DT3:M	Y
MAC25-1	6.3.4.6.3.1		DT2:O DT3:O	Y
MAC26	6.3.4.6.3.2	Join State 2: Authenticate	DT2:M DT3:M	Y

MAC26-1	6.3.4.6.3.2			DT2:O DT3:O	Y
MAC27	6.3.4.6.3.3	Join State 3: Acquire PAN Config		DT2:M DT3:M	Y
MAC28	6.3.4.6.3.4	Join State 4: Configure Routing		M	Y
MAC28-1	6.3.4.6.3.4.1			NL5:M	Y
MAC28-2	6.3.4.6.3.4.2			NL19: M	N
MAC31	6.3.4.6.3.5	Join State 5: Operational		M	Y
6.4 PHY					
PHY	6.4	PHY		M	Y
6.5 Security					

SEC1	6.5.1	Wi-SUN PKI	DT2:M	Y
SEC1-1	6.5.1		DT2:O	Y
SEC1-2	6.5.1		DT2:O	Y
SEC1-3	6.5.1		DT2: O	Y
SEC1-4	6.5.1		DT2: O	Y
SEC2	6.5.1.1	Wi-SUN IDevId Construction	DT2: M	Y
SEC2-1	6.5.1.1		DT2: O	Y
SEC2-2	6.5.1.1		DT2: O	Y
SEC2-3	6.5.1.1		DT2: O	Y
SEC2-4	6.5.1.1		DT2: O	Y
SEC2-5	6.5.1.1		DT2: O	Y

SEC3	6.5.2	FAN Access Control / Group Key placement	M	Y
SEC4	6.5.2.1	EAPOL Over 802.15.4	M	Y
SEC4-1	6.5.2.1		DT1:O	Y
SEC4-2	6.5.2.1		DT1:O	Y
SEC5	6.5.2.1.1	SUP Operation	DT2: M	Y
SEC6	6.5.2.1.2	Limits on Non Authenticated Node Messaging	M	Y
SEC6-1	6.5.2.1.2		DT1:O DT2:O	Y
SEC7	6.5.2.1.3	EAPOL Relay Agent Operation	DT2: M	Y
SEC7-1	6.2.2.1	EAPOL Relay Datagram	M	Y

SEC8	6.5.2.1.4	Border Router / Authenticator Operation	M	Y
SEC9	6.5.2.2	Authentication and PMK Installation Flow	M	Y
SEC10	6.5.2.3	PTK and GTK Installation Flow	M	Y
SEC11	6.5.2.4	Group Key Update Flow	M	Y
SEC12	6.5.2.5	Revocation of Node Access	M	Y
SEC13	6.5.3	N2N Authentication and Key Generation	O	N
SEC13-1	6.5.3		SEC13:M	NA
SEC13-2			SEC13:O	NA
SEC13-3			SEC13:O	NA

SEC14	6.5.3.2.1.1	DevID Certificates	SEC13:M	NA
SEC14-1			SEC13:O	NA
SEC15	6.5.3.2.1.2	Roots of Trust	SEC13:O	NA
SEC16	6.5.3.4.2.4	Session Data	SEC13:M	NA
SEC17	6.5.3.4.3	Cipher Suites	SEC13:M	NA
SEC18	6.5.3.4.3.2	Interoperability	SEC13:M	NA
SEC19	6.5.3.4.3.4	HMAC Key Size	SEC13:M	NA

SEC20	6.5.3.4.4.1	CCM - Counter Mode with Cipher Block Chaining MAC	SEC13:M	NA
SEC21	6.5.3.4.5.1	Key Derivation Functions Using Counter Mode	SEC13:M	NA
SEC22	6.5.3.4.6.1.1	NewAssociation	SEC13:M	NA
SEC23	6.5.3.6.2.1	AssociationAck	SEC13:M	NA
SEC24	6.5.3.4.6.3	NS Shared Secret Messages	SEC13:M	NA
SEC25	6.5.3.4.6.3.1	NS Shared Secret Initiation	SEC13:M	NA
SEC26	6.5.3.4.6.3.2	NS Shared Secret Response	SEC13:M	NA
SEC27	6.5.3.4.6.4.1	NS Session Created	SEC13:M	NA
SEC27-1			SEC13:O	NA

SEC28	6.5.3.4.6.4.2	NS Session Acknowledgement	SEC13:M	NA
SEC28-1			SEC13:O	NA
SEC29	6.5.3.4.6.4.3	NS Session Destruction	SEC13:M	NA
SEC30	6.5.3.4.5.6	Error	SEC13:M	NA
SEC30-1			SEC13:O	NA
SEC31	6.5.3.4.8	PDU Processing using Pairwise Security	SEC13:M	NA
SEC32	6.5.3.4.8.1	Data Elements	SEC13:M	NA
SEC33	6.5.3.4.8.2	Unicast Transmission Processing	SEC13:M	NA
SEC34	6.5.3.4.8.3	Unicast Reception Processing	SEC13:M	NA

SEC35	6.5.4	Frame Security	M	Y
SEC36	6.5.4.1.1	Group AES Key (GAK)	M	Y
SEC37	6.5.4.1.2	Pairwise AES Key (PAK)	SEC13:M	NA
SEC38	6.5.4.2	Auxiliary Security Header	M	Y
SEC38-1	6.5.4.2		O	Y
SEC39	6.5.4.3	CCM* Nonce and Frame Counter	M	Y
SEC40	6.5.4.4	GTK Lifecycle	M	Y
SEC41	6.5.5	Node Hardening	O	N

*** END ***

Color Coding Legend

