Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**Comments to Draft Standard IEEE 802.16 — Part 4: Protocol Implementation Conformance Statement (PICS) Proforma for Frequencies below 11 GHz**
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Re:	Supporting document for call for contribution for IEEE 802.16C
Abstract	Comments on the structure, organization, and technical content of IEEE P802.16/Conformance04/D1, April 2005 draft standard for conformance to IEEE Standard 802.16 — Part 4: Protocol Implementation Conformance Statement (PICS) Proforma for Frequencies below 11 GHz.
Purpose	Adoption of P802.16/Conformance04/D1
Notice	
Release	
Patent Policy and Procedures	

Comments to Draft Standard IEEE 802.16 - Part 4: Protocol Implementation Conformance Statement (PICS) Proforma for Frequencies below 11 GHz (DRAFT)

1 Overview

The purpose of this contribution is to provide comments on the structure, organization, and technical content of draft standard for conformance to IEEE Standard 802.16 — Part 4: Protocol Implementation Conformance Statement (PICS) Proforma for Frequencies below 11 GHz.

2 Comments

2.1 *High-level partition*

High level partitioning of IEEE PICS according to PHY, MAC/PHY, and MAC layer, which is appropriate for RCT and TSS/TP development (based on discussion with test equipment vendor).

Rationale: Using this method of partitioning, the document will be user friendly, in a sense that TSS/TP and RCT development tasks can utilize the relevant sections (MAC and MAC/PHY for TSS/TP and PHY for RCT) more effectively and conveniently.

2.2 *Partition based on Functions*

Partition of the various test cases such that the specific PICS correlated by function and not by specific sections is desired. See Annex A for an example on partitioning of MAC section.

Rationale: The main reason for this recommendation is to make the document more friendly to the end user tasks, i.e. TSS/TP and RCT developments. As an example, it turns out that there is quite a bit of redundancy in the current OFDM PICS document (This applies to the MAC section of the current PICS), and there are quite a few items that are addressed in more than one table. This creates additional burden to all users of the PICS. The proposal for structuring the document based on functionality greatly helps with this regards.

2.3 *Comprehensiveness*

PICS document comprehensiveness should be targeted by including all the PICS requirements and conditions independent on the profiles. This means that the PICS document should be complete even if we do not consider any specific profile. The current base line document does not address this issue.

2.4 *Organization and Structure of the IEEE PICS Document to Support Testability*

Rationale: Since the Test Suite Structures and Test Plan (TSS/TP) are usually derived from the PICS document, it would be highly beneficial if the organization and structure of the PICS is aligned with the organization of the TSS/TP (e.g., if sections and sub-sections of the PICS are aligned with the sections and sub-sections of the Test Plan).

- The use of the status term "Conditional" tends to cause confusion because there could be two kinds of "Conditional items" as follows: a) Conditional items that are derived from purely optional items b) Conditional items that are derived from "Qualified Optional" items (where the vendor must select to implement at least one of the items out of a selection list). It is important to maintain a distinction between these two kinds since, the former case ends up being optional, whereas in the latter case it is still mandatory to support one of the options (and all its associated derivations). So, it would be useful to define a new Status Type called "Qualified Conditional" to account for the latter type.
- The set of optional and conditional PICS should be comprehensive in order to support a complete testing of all the mandatory, optional, and conditional PICS.

2.5 Alignment of IEEE PICS statement format according to ISO/IEC 9646-7 guidelines (1995)

For example:
Notation for conditional requirements:

Conditional requirements, utilizing predicates if desired, may be specified in one of the following ways:
a) Separate status and predicate columns;
b) Merged status and predicate columns;
c) Conditional expressions referenced from the status column;
d) Conditions implied by nested item numbers;
e) Predicates applying to a whole table.

The use of Separate status and predicate columns

A "c" is placed in the status column followed by a colon followed by one or more unconditional status indications on separate lines, each with a predicate, or the negation of a predicate in the predicate column.

Table 1.Use of status and predicate columns

Item #	Item Description	Reference	Status	Predicate	Support
1	Item A	[x]	C: m :o	P1 —P1	
2	Item B	[x]	C: m	P2	

Table 1shows two examples of the use of separate status and predicate columns, with the following meaning:

a) Item A is mandatory if p1 is true, but optional if p1 is false.
b) Item B is mandatory if p2 is true but, by convention, not-applicable if p2 is false: there shall be a statement elsewhere in the ICS Proforma clarifying this convention, if it is used.

For example:

Table A.1 — Roles

Item #	Item Description	Reference	Status	Predicate	Support
1	Subscriber Station (SS)	[1]	C1-01: m :o	P1 —P1	
2	Base Station (BS)	[1]	C1-02: m :o	P1 —P1	

C1-01: IF Table A.1/2 is not supported THEN m ELSE o
C1-02: IF Table A.1/1 is not supported THEN m ELSE o

Table A.12 — Major Receiving CS Functions (SS in PMP)

Item #	Item Description	Reference	Status	Predicate	Support
1	Receipt of the CS PDU	[1] 5.2	m		
2	Rebuilding of the suppressed payload header information (PHS function)	[1] 5.1.2.3 [1] 5.2.4	C12-01: m	P2	

C12-01: IF Table A.10/1 THEN m ELSE i

3 Annex A: Example of PICS Document Partitioning Based on Functions

SS PICS Prioritization – MAC Layer

Test Group	Feature Sets Tested
Network entry and Initialization **(One BS and one SS, no contention resolution needed)**	SS addressing and MPU construction
	SS Network entry and Initialization
	SS Downlink channel acquisition
	SS Uplink channel acquisition
	SS Initial Ranging
	SS negotiate basic capabilities
	SS Authentication and Authorization
	SS Registration
	SS headers and subheaders
	SS global parameters
	SS configuration file
Service flow test (MAC CPS)	SS Uplink Scheduling Service
	SS dynamic service flow control
SS miscellaneous MAC test	SS MAC PDU construction
	SS CRC
	SS Map relevance
	SS contention resolution
	SS periodic ranging
	SS
	Multicast polling group
SS convergence sub-layer test	SS convergence sublayer

4 References

The following documents contain provisions, which, through reference in this text, constitute provisions of the present document. References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific. For a specific reference, subsequent revisions do not apply. For a nonspecific reference, the latest version applies.

[1] IEEE Standard 802.16-2004: "Local and Metropolitan Area Networks – Part 16: Air Interface for Fixed Broadband Wireless Access Systems"

[2] ISO/IEC 9646-1: "Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 1: General concepts" 2004-10-08 IEEE 802.16Conf04-04/04

[3] ISO/IEC 9646-7: "Information technology – Open Systems Interconnection – Conformance testing methodology and framework – Part 7: Implementation Conformance Statements."