Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**
Title	**OFDMA Errata**
Date Submitted	**2002-03-11**
Source(s)	Itzik kitroser Yossi Segal Yigal Leiba Zion Hadad Runcom Technologies Ltd. 2 Hachoma St. 75655 Rishon Lezion, Israel Voice: +972-3-9528440 Fax: +972-3-9528805 itzikk@runcom.co.il yossis@runcom.co.il yigall@runcom.co.il zionh@runcom.co.il
Re:	Call for contribution IEEE 802.16d-03/02
Abstract	This contribution presents some corrections to problems currently exists in the IEEE 802.16a OFDMA mode.
Purpose	Proposal for inclusion in the 802.16d amendment document
Notice	
Release	
Patent Policy and Procedures	

OFDMA Errata

Itzik Kitroser
Yossi Segal
Yigal Leiba
Zion Hadad

Runcom Technologies Ltd.

1 General

The current OFDMA UL and DL MAP information Elements are missing some reserved bit for flexibility of future enhancements, this contribution present a minor modifications to those messages that enables future extensions. Also some correction to the frame duration is defines since the current FDD restriction of multiples of 3 was erroneous and the initialization of DL pilots modulation.

2 Proposed changes

Section 8.5.5.2, Page 196, Line 15
Change the DL-MAP Information Element according to the following table:

Table 116ao: OFDMA DL-MAP Information Element format

Syntax	Size	Notes
DL-Map_Information_Element() {		
DIUC	4 bits	
if (DIUC == 15) {		
Extended DIUC dependent IE	Variable	AAS_DL_IE()
} else {		
OFDM Symbol offset	~~10~~ 8 bits	
Subchannel offset	~~6~~ 5 bits	
Boosting	2 bits	00: normal (not boosted); 01: +6dB; 10: -6dB; 11: reserved
Reserved	1 bits	Reserved set to 0
No. OFDM Symbols	~~10~~ 8 bits	
No. Subchannels	~~6~~ 5 bits	
Reserved	3 bits	Reserved set to 0
}		
}		

Section 8.5.5.3, Page 199, Line 6
Change the UL-MAP Information Element according to the following table:

Table 116bp: OFDMA UL-MAP Information Element format

Syntax	Size	Notes
UL-Map_Information_Element() {		
CID	16 bits	
UIUC	4 bits	

if (UIUC == 4) {		
CDMA_Allocation_IE()	52 bits	
} else if (UIUC == 15) {		
Extended UIUC dependent IE	Variable	Power_Control_IE() or AAS_UL_IE()
} else {		
OFDM Symbol offset	~~9~~ 10 bits	
Subchannel offset	~~5~~ 6 bits	
~~**Boosting**~~	~~2 bits~~	~~00: normal (not boosted);~~ ~~01: +6dB; 10: -6dB; 11: reserved~~
No. OFDM Symbols	~~9~~ 8 bits	
No. Subchannels	5 bits	
Reserved	~~2~~ 3 bits	Reserved set to 0
}		
}		

Section 8.5.4.4, Page 194, Line 8
Change:

Table 116bj – OFDMA frame duration (T_F ms) codes

Code(N)	Nominal(D)	Actual
0	N/A	AAS-only gap up to 200 ms following (see 8.5.6.3)
1	2	FDD: round(D/~~3~~T_S)*~~3~~T_S TDD: max(round(D/T_S),7)*T_S
2	3.5	
3	5	
4	7	
5	10	
6	14	
7	15	
8	20	
9-255	Reserved	

In an FDD case, the frame duration shall be an integer multiple of ~~three~~ one OFDM symbols duration, such that the actual frame duration is as listed in Table 116bj. In a TDD case, the frame duration shall be an integer multiple of one OFDM symbol duration, such that the actual frame duration is as listed in Table 116bj, plus a RTG and TTG guard interval. Both RTG and TTG shall be no less than 5 µs in duration.

Section 8.5.9.4.3, Page 226, line 29:
Change:
When using data transmission on the DL, the initialization vector of the PRBS is: ~~[11111111111]~~done according to Table xxx, except for the OFDMA DL PHY preamble (see 8.5.9.4.3.1).When using data transmission on the UL the initialization vector of the PRBS shall be: [10101010101]. These initializations result in the sequence w_k=[appropriate value from table xxx~~11111111111~~]000000001..... in the DL and the sequence w_k=101010101010000000000.... in the UL.

Table xxx – OFDMA DL PRBS Initialization

$\mathrm{mod}(ID_{cell},6)$	PRBS Initialization

0	[11111111111]
1	[00011101010]
2	[11001010111]
3	[10111000101]
4	[01010100011]
5	[01110001100]

Section 8.5.9.4.3.1, Page 226, line 51:

The initialization vector of the pilot modulation PRBS (defined in 8.5.9.4.3) for the symbol in which the DL-MAP message starts, and two consecutive symbols thereafter is ~~[01010101010]~~done according to table yyy.

Table yyy – OFDMA DL Frame Preamble Initialization

mod(ID_{cell},6)	PRBS Initialization
0	[01010101010]
1	[00011101010]
2	[10011010011]
3	[01000101010]
4	[11100100011]
5	[00111001111]

Reason for the change:
The current definition presents a problem in a multi-cell deployment where sectors using the same frequency interfere one with other. A SS receiving signal from both sectors may be unable to perform channel estimation in such a scenario. The proposed solution provides different set of pilots and preamble to each cell so the wanted signal can be distinguished from the interference.