

# **Welcome!**

**IEEE P802.3bn EPoC PHY Task Force  
Interim Meeting  
Phoenix, Arizona, USA**

# Agenda and General Information

IEEE P802.3bn EPoC PHY Task Force

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Phoenix, Arizona

January 23rd - 25th, 2013

# Agenda

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- Welcome and Introductions
- Review and approve November 13-15 2012 Minutes
- Goals for this meeting
- Reflector and Web, Task Force Private Area
- Ground Rules
- IEEE
  - Structure, Bylaws and Rules
  - Call for Patents
  - Affiliation
- Liaisons and Communications -> (None)
- Review of updates and business since last meeting
- Presentations
- Approve Agenda
- Closing Business
- Future Meetings

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# **REVIEW / APPROVE MINUTES**

From: 13-15 San Antonia, Texas interim meeting

# Approve Minutes

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- Motion to approve minutes from 13-15 November 2012, San Antonio meeting.
  - Moved:
  - Seconded:

# Task Force Decorum

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- Photography or recording by permission only (2010 SASB Op Manual 5.3.3.4)
- Cell phone ringers off
- Press (i.e., anyone reporting publicly on this meeting) are to announce their presence (5.3.3.5)
- Wear your badges at all times in meeting areas
  - Help the hotel security staff improve the general security of the meeting rooms
  - **PCs HAVE BEEN STOLEN** at previous meetings
  - **DO NOT** assume that meeting areas are secure
- Please observe proper decorum in meetings

# Goals for the meeting

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- Reports from ad hoc committees
  - With face-to-face time as can be scheduled during or outside of TF agenda
- Presentations
- Sub-Task Force parallel tracks on Thursday AM
- Straw Polls and Motions on Friday AM

# Reflector and Web

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- Method 1: To subscribe to the EPoC reflector, send an email to:

[ListServ@ieee.org](mailto:ListServ@ieee.org)

with the following in the body of the message (do not include “<>”):

*subscribe* stds-802-3-epoc <yourfirstname> <yourlastname>  
*end*

- Method 2: Visit Task Force web page URL:
  - <http://www.ieee802.org/3/bn>
  - Follow link: “Subscribing and unsubscribing to the e-mail reflector”
  - Follow link: “ListServ web interface”
- Send EPoC email reflector messages To:
  - [stds-802-3-epoc@listserv.ieee.org](mailto:stds-802-3-epoc@listserv.ieee.org)



# Task Force Private Area

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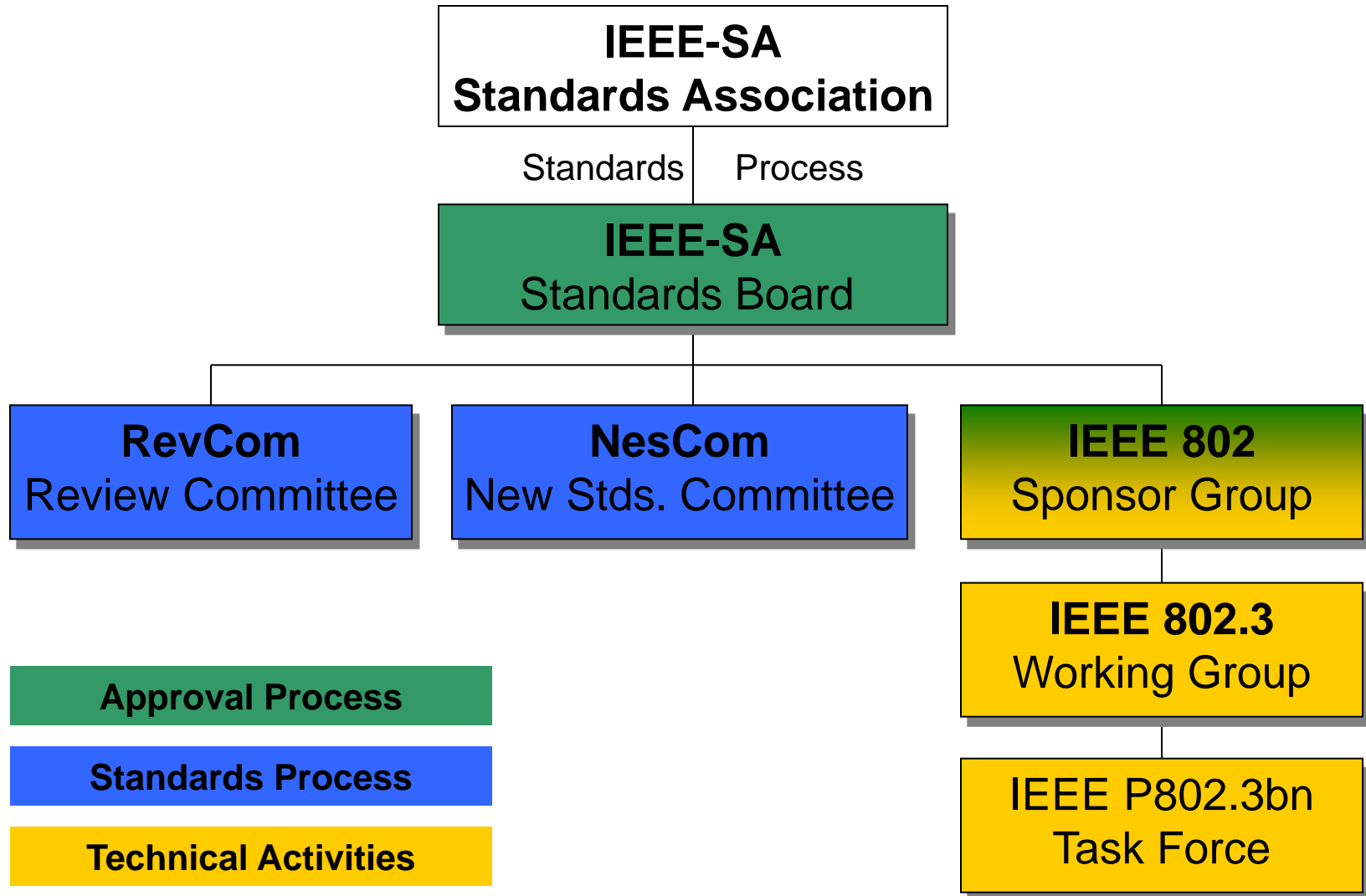
- URL: <http://www.ieee802.org/3/bn/private>
  - Username: 802.3bn
  - Password: xxxx
- There are no private documents at this time
- Expected use: Task Force drafts

# Ground Rules

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- Based upon IEEE 802.3 Rules
  - Foundation based upon Robert's Rules of Order
  - Anyone in the room may speak
  - Anyone in the room may vote
- **RESPECT**... give it, get it
- NO product pitches
- NO corporate pitches
- NO prices!!!
  - This includes costs, ASPs, etc. no matter what the currency
- NO restrictive notices

# IEEE Structure



# Participants, Patents, and Duty to Inform

All participants in this meeting have certain obligations under the IEEE-SA Patent Policy.

- Participants [Note: Quoted text excerpted from IEEE-SA Standards Board Bylaws subclause 6.2]:
  - “Shall inform the IEEE (or cause the IEEE to be informed)” of the identity of each “holder of any potential Essential Patent Claims of which they are personally aware” if the claims are owned or controlled by the participant or the entity the participant is from, employed by, or otherwise represents
    - “Personal awareness” means that the participant “is personally aware that the holder may have a potential Essential Patent Claim,” even if the participant is not personally aware of the specific patents or patent claims
  - “Should inform the IEEE (or cause the IEEE to be informed)” of the identity of “any other holders of such potential Essential Patent Claims” (that is, third parties that are not affiliated with the participant, with the participant’s employer, or with anyone else that the participant is from or otherwise represents)
- The above does not apply if the patent claim is already the subject of an Accepted Letter of Assurance that applies to the proposed standard(s) under consideration by this group
- Early identification of holders of potential Essential Patent Claims is strongly encouraged
- No duty to perform a patent search

# Patent Related Links

All participants should be familiar with their obligations under the IEEE-SA Policies & Procedures for standards development.

Patent Policy is stated in these sources:

IEEE-SA Standards Boards Bylaws

*<http://standards.ieee.org/develop/policies/bylaws/sect6-7.html#6>*

IEEE-SA Standards Board Operations Manual

*<http://standards.ieee.org/develop/policies/opman/sect6.html#6.3>*

Material about the patent policy is available at

*<http://standards.ieee.org/about/sasb/patcom/materials.html>*

If you have questions, contact the IEEE-SA Standards Board Patent Committee Administrator at [patcom@ieee.org](mailto:patcom@ieee.org) or visit:

<http://standards.ieee.org/about/sasb/patcom/index.html>

This slide set is available at  
<https://development.standards.ieee.org/myproject/Public/mytools/mob/slideset.ppt>

# Call for Potentially Essential Patents

- If anyone in this meeting is personally aware of the holder of any patent claims that are potentially essential to implementation of the proposed standard(s) under consideration by this group and that are not already the subject of an Accepted Letter of Assurance:
  - Either speak up now or
  - Provide the chair of this group with the identity of the holder(s) of any and all such claims as soon as possible or
  - Cause an LOA to be submitted

# Other Guidelines for IEEE WG Meetings

- **All IEEE-SA standards meetings shall be conducted in compliance with all applicable laws, including antitrust and competition laws.**
  - **Don't discuss the interpretation, validity, or essentiality of patents/patent claims.**
  - **Don't discuss specific license rates, terms, or conditions.**
    - Relative costs, including licensing costs of essential patent claims, of different technical approaches may be discussed in standards development meetings.
      - Technical considerations remain primary focus
  - **Don't discuss or engage in the fixing of product prices, allocation of customers, or division of sales markets.**
  - **Don't discuss the status or substance of ongoing or threatened litigation.**
  - **Don't be silent if inappropriate topics are discussed ... do formally object.**

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See *IEEE-SA Standards Board Operations Manual*, clause 5.3.10 and “Promoting Competition and Innovation: What You Need to Know about the IEEE Standards Association's Antitrust and Competition Policy” for more details.



# Affiliation

- IEEE-SA Standards Board By-Laws, Section 5.2.1.5  
–(<http://standards.ieee.org/guides/bylaws/sect5.html>)
- Disclosure of Affiliation  
–“Every member and participant in a working group, Sponsor ballot, or other standards development activity shall disclose his or her affiliation.”
- What is “Affiliation”  
–“An individual is deemed "affiliated" with any individual or entity that has been, or will be, financially or materially supporting that individual's participation in a particular IEEE standards activity. This includes, but is not limited to, his or her employer and any individual or entity that has or will have, either directly or indirectly, requested, paid for, or otherwise sponsored his or her participation.”
- Affiliation and participation  
–“Failure to disclose every such affiliation may result in complete or partial loss of rights to participate in IEEE-SA activities. An individual is not excused from compliance with this policy by reason of any claim of a conflicting obligation (whether contractual or otherwise) that prohibits disclosure of affiliation.”



# Attendance

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- Tutorial Material on attendance tool
  - [http://iee802.org/3/minutes/mar11/0311\\_imat.pdf](http://iee802.org/3/minutes/mar11/0311_imat.pdf)
- URL: <https://imat.ieee.org>
  - IEEE account login and password required
  - Sign in to “Attendance Tool”

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Updates and business since 13-15 November Task Force meeting

# **TASK FORCE REVIEW**

# TF Motion #7 results in WG

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- Task Force approved motion text:
  - “Move that the P802.3bn EPoC TF adds the following objective: Define Energy Efficient Ethernet operation.”
- Submitted to and amended and approved by Working Group Motion #10 in closing plenary, 15 November:
  - “Define Energy Efficient Ethernet operation for EPON Protocol over Coax PHYs”

# IEEE P802.3bn EPoC PHY Approved Project Documents

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- **PAR**
  - [http://www.ieee802.org/3/bn/P802\\_3bn\\_PAR\\_300812\\_approved.pdf](http://www.ieee802.org/3/bn/P802_3bn_PAR_300812_approved.pdf)
- **5 Criteria**
  - [http://www.ieee802.org/3/bn/EPoC\\_5Criteria\\_200712\\_approved.pdf](http://www.ieee802.org/3/bn/EPoC_5Criteria_200712_approved.pdf)
- **Objectives** (Updated 15 November 2012)
  - [http://www.ieee802.org/3/bn/EPoC\\_objectives\\_update\\_1115.pdf](http://www.ieee802.org/3/bn/EPoC_objectives_update_1115.pdf)

# Technical Motions Approved to Date

#	Motion Text	Motion #
1	Study support for configurable power saving mechanism for EPoC interface(s), technical details for further study.	5
2	Adopt OFDM for downstream EPoC PHY.	6
3	Adopt OFDMA for upstream EPoC PHY.	7
4	Adopt LDPC for downstream inner code. There is no decision on outer code at this time.	8
5	Support exclusion of one or more OFDM subcarriers.	10
6	Support multiple downstream modulations orders up to 4096QAM, support multiple upstream modulation orders up to 1024QAM.	11
7	In the downstream use OFDM channels of 192 MHz with OFDM sampling frequency of integer multiples of 10.24 MHz.	12
8	The standard shall support the ability for higher capacity by combining multiple 192 MHz OFDM channels.	14
9	The MAC/PLS data rate shall scale linearly with the number of OFDM channels, in the same baseline channel conditions in each channel.	6
10	Move that 802.3 Working Group approve the new additional objective for the IEEE P802.3bn Task Force that reads: Define Energy Efficient Ethernet operation for EPON Protocol over Coax PHYs	7 and WG 10

Decision history at: <http://www.ieee802.org/3/bn/public/decisions/decisions.html>

# ad hoc Committee chartered

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- Date: 11/19/2012 by email
- Multiple Modulation Profiles (MMP)
  - Chair: Jorge Salinger, Comcast
  - Until: January 2013 P802.3bn Interim meeting
  - Focus: facilitate discussion and information sharing on multiple modulation profiles
- Secretary: please record this charter event in the minutes
- ad hoc committee areas:
  - <http://www.ieee802.org/3/bn/public/>

# PHY sub-Task Force chartered

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- Charter date: 12/4/12
- Creating: Sub-Task Force name: PHY
- Sub-Task Force chair: Mark Laubach
- Charter
  - Continue main PHY specification development effort
  - Contribute recommendations to Task Force for approval
  - Maintain approved PHY clause amendments
- NOTES:
  - Task Force editor staff will coordinate draft work output
  - At interim and plenary meetings, when the TDD sub-Task Force meets on a parallel track, the remainder of the Task Force continues to meet as this sub-Task Force.
  - Otherwise follows same procedures as an ad hoc committee
- Secretary: please record this charter event in the minutes.

# TDD sub-Task Force chartered

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- Charter date: 12/4/12
- Creating: Sub-Task Force name: TDD
- Sub-Task Force chair: Steve Shellhammer
- Charter
  - Continue work as started in [law 01a 1112.pdf](#)
  - Contribute recommendations to Task Force for approval:
    - Minimal augmentation to MPCP “logic” to support TDD operation mode for EPoC PHY
  - Communicate “operational needs” to PHY sub-Task Force and Task Force
    - E.g. delay and delay variation tolerances, CLT downstream transmitter control, etc.
  - Maintain approved MPCP clause amendments
- NOTES:
  - Task Force editor staff will coordinate draft work output
  - At interim and plenary meetings, when this sub-Task Force meets on a parallel track, the remainder of the Task Force continues to meet as the PHY sub-Task Force.
  - Otherwise follows same procedures as an ad hoc committee
- Secretary: please record this charter event in the minutes.



# ad hoc charter time extensions

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- Extended in email on: 12/4/12
- Extending: the following ad hoc committee timeframes are extended until March 2013 IEEE 802 Plenary meeting:
  - RF Spectrum
  - Evaluation Criteria and Requirements
  - PHY Link
- Secretary: please record this charter event in the minutes.

# Information Communications

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- Reflector email from Mr. Yao
  - Informal
  - Content will be discussed in Eval Criteria and Requirements ad hoc and possible TDD sub-Task Force and RF Spectrum ad hoc
  - David Law and Mark Laubach will send an informal response via email reflector

# Baseline, Comment Tool, and Editors

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- Upcoming tutorials and presentations
  - Plan on some tutorials from editors on baseline content
  - Comment generator tool introduction
- Editor Team now has some work to do

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# **DAILY AGENDA AND PRESENTATIONS**

# Time Management Suggestions For This Meeting

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- Presentation Q&A
  - At microphone: please try to limit to questions of clarification
  - Queue closes at end of presentation time
  - 1 question per go: 2 minutes per question: 1min for Q & 1min for A
  - May need to take discussions to hallway / email / ad hoc
  - Rebuttals / different approaches: consider a contribution for next meeting
- Motion / Straw Poll Question Discussions
  - 15 minutes discussion limit per question
  - 2 minutes per go person, 2 times max per question (including extensions)
  - TF can extend discussion time by vote
  - Want to keep decision pace, but not get dragged down in parliamentary procedures
- Issues on time management should be addressed to the Chair of that session

# Voting Suggestions

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- For hand votes
  - Raise your hand HIGH
  - Keep hand up until you are sure the appropriate counter has recognized you
  - Counters: if needed, recount your section.
- Please pay attention

# Agenda – Wednesday

Jorge Salinger	Comcast	Face-to-face: MMP ad hoc	1:25	7:30 AM
Wednesday, January 23 2003 - Start of IEEE P802.3bn Task Force Meeting			Length	Time
Mark Laubach	Broadcom	Agenda and General Information	0:45	9:00 AM
Steve Shellhammer	Qualcomm	ad hoc report: Evaluation Criteria and Requirements	0:20	9:45 AM
Steve Shellhammer	Qualcomm	ad hoc report: RF Spectrum	0:20	10:05 AM
Jorge Salinger	Comcast	ad hoc report: MMP	0:20	10:25 AM
Break			0:10	10:45 AM
Ed Boyd	Broadcom	ad hoc report: PHY Link	0:20	10:55 AM
Duane Remein	Huawei	ad hoc report: Channel Model	0:20	11:15 AM
Mark Laubach	Broadcom	Comments on TF process and scope	0:30	11:35 AM
Lunch			1:15	12:05 PM
Andrea Garavaglia, Nicola Varanese	Qualcomm	Multiple Modulation and Coding	0:45	1:20 PM
John Ulm	Motorola	MMP Tool for Capacity and Gain Analysis	0:20	2:05 PM
Eugene Dai	Cox	EPoC Ethernet rate hierarchy and rate adaption	0:40	2:25 PM
Steve Shellhammer, Patrick Stupar, Andrea Garavaglia, Nicola Varanese, Christian Pietsch	Qualcomm	Channel Bonding	0:45	3:05 PM
Break			0:15	3:50 PM
Ed Boyd	Broadcom	Delay / Jitter Performance	0:40	4:05 PM
Duane Remein, Hesham ElBakoury	Huawei	Method to reduce DS jitter in EPoC	0:30	4:45 PM
Bill Powell	Alcatel	EPoC System Level Synchronization Transport	0:40	5:15 PM
Break for Day - Recess IEEE TF meeting until 9AM Thursday				5:55 PM
<open>				

# Agenda – Thursday (TDD Track)

Steve Shellhammer	Ad hoc	Evaluation Criteria and Requirements	1:00	8:00 AM
Thursday 24 January 2013 - Start of TDD sub-Task Force Track			Length	Time
Steve Shellhammer	Qualcomm	Opening	0:20	9:00 AM
Andrea Garavaglia	Qualcomm	EPoC TDD	0:30	9:20 AM
			0:30	9:50 AM
Break			0:15	10:20 AM
			0:30	10:35 AM
			0:30	11:05 AM
Lunch			1:00	11:35 AM

**NOTE: TDD sub-Task Force will meet at most up to the lunch break. When finished (either before or after lunch) attendees should switch to attending the PHY/Main track and rejoin in the main session room.**



# Agenda – Thursday (PHY Track and TF main)

Steve Shellhammer	Ad hoc	Evaluation Criteria and Requirements	1:00	8:00 AM
Thursday 24 January 2013 - Start of PHY sub-Task Force Track			Length	Time
Leo Montreuil, Tom Kolze, Rich Prodan	Broadcom	OFDM TX Symbol shaping	0:30	9:00 AM
Avi Kliger, Rich Prodan	Broadcom	OFDM Numerology for EPOC	0:30	9:30 AM
Christian Pietsch	Qualcomm	OFDM Numerology	0:30	10:00 AM
Break			0:15	10:30 AM
Avi Kliger, Rich Prodan, Tom Kolze	Broadcom	Proposal for PHY Signaling	0:45	10:45 AM
Nicola Varanese	Qualcomm	PHY Link	0:30	11:30 AM
Lunch			1:00	12:00 PM
Andrea Garavaglia, Marek Hajduczenia	Qualcomm, ZTE	Data Rate Adaptation for EPoC (baseline proposal) Part 1	0:35	1:00 PM
Andrea Garavaglia, Marek Hajduczenia	Qualcomm, ZTE	Data Rate Adaptation for EPoC (baseline proposal) Part 2	0:35	1:35 PM
Hal Roberts, Eugene Dai	Calix, Cox	Multiple Modulation Profiles in the Upstream	0:30	2:10 PM
Break for Day - Recess IEEE Task Force meeting until 9AM Friday			0:00	2:40 PM
Break			0:10	2:40 PM
Channel Model Ad Hoc			0:00	2:50 PM
Rob Howald, Duane Remein, Saif Rahman, Hal Roberts	Motorola, Huawei, Comcast, Calix	Channel Model Update	0:45	2:50 PM
Continuing ad hoc			0:15	3:35 PM
<open>			1:00	3:50 PM
<open>			1:00	4:50 PM
End of Thursday meetings				5:50 PM

**NOTE: The Chair will convert from PHY sub-Task Force session to TF Main session sometime after the TDD parallel track ends and those participants are back in the main session meeting room.**

# Agenda - Friday

<open>				8:00
Friday, January 25			Length	Time
Steve Shellhammer	Qualcomm	TDD sub-Task Force report	0:10	<b>9:00 AM</b>
Mark Laubach	Broadcom	PHY sub-Task Force report	0:10	<b>9:10 AM</b>
Mark Laubach	Broadcom	Polls and Motions (Priority to ad hoc recommendations.)	2:30	9:20 AM
Mark Laubach	Broadcom	Closing	0:10	11:50 AM
Suggested Adjourn - by 12Noon				12:00 PM

# Best Effort Requests

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Thushara Hewavithana	Intel	Downstream FEC Proposal for EPoC	0:45
Marek Hajduczenia	ZTE	MMP in EPoC How Hard Can it be?	0:30

# Consensus Challenge Items

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- RF Bandwidth (RF Spectrum) \*
- FDD Downstream is OFDM/OFDMA
- Bonding approach for downstream
- Rate adaptation, which layer and how
- FEC / Interleaving (error performance) (req: channel model)
- MPCP Changes
- Adaptive Bit Rate Loading
- PHY Link \*
- Complexity of hardware scaling with “bandwidth”
- How we are going to do TDD
- Coding Efficiency gains vs cost
- Synchronization in terms of time / frequency (mobile backhaul)
- OFDM Numerology / FFT Size / Symbol Size / CP size (req: channel model)
- Framing Structure
- MAC layer efficiency
- PHY layer efficiency
- Energy Efficiency
- Subcarrier group

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# **STRAW POLLS AND MOTIONS**

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# **CLOSING SESSION**

# Future IEEE P802.3bn Meetings

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- See: <http://www.ieee802.org/3/interims/index.html>
- March 18<sup>th</sup> – 21<sup>st</sup>, 2013 – 802 Plenary
  - Orlando, Florida
- Week of May 13, 2013 – Joint P802.3/802.1 interim
  - Victoria, BC, Canada
- Week of July 15<sup>th</sup> - July 18<sup>th</sup> 2013 – 802 Plenary
  - ITU, Geneva, Switzerland (Mark: consider *making your hotel reservations now*)
- Week of September 2<sup>nd</sup> 2013 – Joint P802.3/802.1 interim
  - York, United Kingdom
  
- Anyone interested in hosting a interim meeting contact the Chair or the IEEE 802.3 Executive Secretary [Steve Carlson](#).

# Future Meetings

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I will attend the March plenary \_\_\_\_\_

I probably will attend the March plenary \_\_\_\_\_

I probably will not attend the March plenary \_\_\_\_\_

I will not attend an March plenary \_\_\_\_\_

I will attend the May interim \_\_\_\_\_

I probably will attend the May interim \_\_\_\_\_

I probably will not attend the May interim \_\_\_\_\_

I will not attend an May interim \_\_\_\_\_



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# Thank You!