

**42nd Session of meetings of IEEE P802.11
TGa (5 GHz PHY) - Online Discussion Record (main points)**

What follows is a PowerPoint outline file which started with doc 97-74 and was modified on line by the chair to capture the main discussion points. For official record, consult minutes (doc 97-87).

Overall objectives

- To start the work of TG a
- To establish cooperation between IEEE P802.11 and ETSI project BRAN
- To establish a strong liaison between TG a and ETSI project BRAN WG3

TG a agenda

- 1 Introductions
- 2 Election of secretary and editor
 - Mike Trompower (both)
- 3 Agenda review
 - 11,0,2 approved
- 5 Project Schedule and major milestones
 - Requirements & Criteria Nov97
 - Text for all modulation proposals by (skeleton by Nov97/ Full text by Jan98)
 - GMSK/OQAM (Naftali, BreezeCom)
 - M-ary Orth. Keying (MOK) (Carl Andren, Harris)
 - Ortogonal ??? (John Cafarella, Micrilor)
 - OFDM (Jan Boer, Lucent)
 - GFSK (Jim McDonald, Motorola)
 - Deadline for modulation proposals (Nov97)
 - Modulation method selection - March98
 - Text finalization - March98+May98
 - Preapproval in March98 to send WG LB
 - Releasing Draft for WG LB from May98 mtg
 -
 - Motion: Accept the Schedule
 - Requirements & Criteria Nov97
 - Text for all modulation proposals by (skeleton by Nov97/ Full text by Jan98)
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- Dean K./Vic Hayes
- Motion to amend: to enable a new proposal with full text to be provided by Jan98.
- Cherry/Reza 5-9-2 fails
- Main motion: 11-1-2 carries.
- Submissions
 - Hitoshi, NTT, FFT implementation
 - Jan Boer, Lucent, OFDM scalability
 - John Cafarella, Micrilor, 5 GHz modulation
 - Jan Boer, SRDC
- 9 Prepare for BRAN/802 meeting.
 - (1) Coexistence with other systems: is it of high priority? straw poll: ; Consult with ETSI
 - Tolerance to delay spread - should outdoor environments be considered?

Multiple rate systems? (General support; probably lower rates should be included for robustness; enables smooth transition to outdoor; enables control of the network in hard conditions)

Two preambles (long/short): no need in 802.11, as fragmentation might disappear at higher speeds; two header types are applicable to tightly controlled networks. Consult with ETSI.

Does ETSI have a position on use of directional antennae? Power vs. EIRP; we would like to pay no significant overhead for training antennae.

- Information on availability of extra 50 MHz in Europe.
- 6 Meetings and process to develop draft.
- 7 Technical Discussions/ Brainstorming
 - PHY baseline (key parameters and requirements)
 - The modulation method comparison will be performed at 20 Mbit/s data rate, net after channel coding
 - The modulation method comparison will be performed at packet sizes of 64 and 1000 bytes
 - multipath performance

Each proposal will include a description of the methods employed to cope with multipath, including acquisition/training algorithms.

- Reference fading channel for modulation comparison - ???

Packet Error Probability without diversity, over the channels generated by the statistical model, without thermal noise (proposed comparison: at which delay spread the PER becomes 90%)

Packet Error Probability without diversity, over the channels generated by the statistical model as before, with thermal noise (proposed comparison: at which delay spread the PER becomes 90%; then increase noise until PER becomes 80%)

- Alternative methods???
- should directional antennae be taken into the comparison?

- Preamble/Slot Size comparison baseline
 - Preamble will include for antenna diversity resolution

Slot size will be recommended based upon an assumption that a detection probability of

90% is required for a transmission starting in the middle of the slot period, with single antenna reception, without multipath.

- .
 - sensitivity
 - . sensitivity at PER of 10% will be provided for both packet lengths.
 - Spectral Occupancy, Number of channels
 - . A channelization scheme will be proposed for each modulation type
 - . An adjacent channel rejection will be provided
 - The proposers will state the points which may turn out to be critical or risky or ...
 - . In case of extreme sensitivity to phase noise, the proposer will point it out.
 - . Power consumption
 - . Excessive complexity
 - . RF PA backoff
 - . Enabling technologies, which are not reasonably widely available.
-
- 7.3 MAC baseline
- 7.4 Evaluation and rating criteria for submitted solutions.
- . 8 Submissions.

(I suggest we sent a call for papers to everybody. It will accelerate our progress if authors can circulate the actual papers or presentations in advance).

 - Review of terms of reference for TF to BRAN WG3
 - Move: To expand the terms of reference of the TF (Naftali,Dave,Ron,Jan) to include
 - . Technology sharing
 - . Spectrum sharing
 - . Cooperation
 - Vic/Roy 13 - 0 - 3

Move to postpone the “go to CEPT” motion until after the TF meeting with parallel TF of WG3, or on Friday, whichever is earlier.

To allow Vic Hayes to initiate an e-mail ballot within 802.11 “to initiate a petition (to CEPT?), through FCC or ANSI, to ask for type certification for 802.11 type devices for operation in the 5 GHz band in Europe.”

- Carl/Keith 0-9-4 fails
-
- . Roy/Vic 17-0-0
- . 4 Revise 5 criteria PAR request.
 - Done
 - Motion to accept: Roy/John F. 11-1-1
- . 10 Next meeting Goals/Agenda.
 - Review of submissions
 - Criteria and requirements
 - HIPERLAN type 1 tutorial (Tue eve)
 - (Attend Mon eve HIPERLAN to tutorial to 802)
 - Time allocation

- . tga+tgb (opening, ,closing)
 - . tga
 - . tgb
 - . full 4 day meeting, prolonged afternoon sessions.
- Joint meeting IEEE P802.11 TG a / ETSI project BRAN WG3
- . 1 Introduction of IEEE P802.11 and its most important rules (15 minutes)
 - . 2 Schedule for new PHY in 5 GHz (5 minutes)
 - . 3 Long term goals for IEEE/ETSI collaboration in 5.2 GHz wireless standard development (10 minutes)
 - 2.1 Common PHY, different MACs
 - 2.2 Allow 802.11 MAC devices in Europe

Joint meeting IEEE P802.11 TG a / ETSI project BRAN WG3

- . 4 Technical Requirements (15 minutes)
 - 4.1 Data rates and types of traffic
 - . primary data rate about 20 Mbit/s + fallback rate? + highspeed?
 - . Asynchronous data packets + Time bounded services
 - . Asynch packets may be 4095 bytes long
 - . Control packets (RTS,CTS, ACK etc.) are typically 20 bytes long
 - 4.2 Multipath and interference robustness
 - . Focus on an indoor environment
 - . Gradual degradation when subjected to longer multipath (large halls, outdoor)
 - . Interference robustness was addressed in the past via adjacent channel interference specs and CCA procedure
 - 4.3 Packet drop probabilities
 - . Sensitivity is defined for a flat channel at packet loss rate derived from a 10⁻⁵ BER
- . 4a Overview of 802.11 typical net topology
 - multiple overlapping networks
- . 4b An overview of 802.11 MAC principles
 - CSMA/CA + Ack
 - Distributed Coordination Function (DCF) and Point Coordination Function (PCF)
 - . Time bounded services are provided by PCF (Point coordination function)
 - CCA and Virtual Carrier Sense as a medium sharing mechanism
 - Optional RTS/CTS before Data/ACK sequence
 - Connection vs connectionless - 802.11 is essentially connectionless
- . 5 Technical proposals (15 minutes)
 - 5.1 Modulation types considered
 - . GMSK/OQAM
 - . M-ary Orth. Keying (MOK)
 - . BiOrthogonal waveform sets
 - . OFDM
 - . GFSK
 - 5.2 Other

Joint meeting IEEE P802.11 TG a / ETSI project BRAN WG3

- . 6 Introduction of ETSI Project BRAN and its most important rules (15 minutes)

- 7 Schedules (5 minutes)
- 8 Technical Requirements (10 minutes)
 - 8.1 Data rates
 - 8.2 Mobility levels to be supported
 - 8.3 ATM service classes to be supported
 - 8.4 Fixed ATM access requirements status

Joint meeting IEEE P802.11 TG a / ETSI project BRAN WG3
- 9 Technical proposals seminar (60 minutes)
 - 5.1 Channel models, modulation & coding issues and proposals
 - 5.2 MAC issues & proposals

Joint meeting IEEE P802.11 officers / ETSI project BRAN Project Management C
- Items for the meeting with the PMC (10 minutes)
 - 10.1 positions on cooperation
 - 10.2 groundrules
 - information dissemination, decision making