Summary Of 1994 Motions of the Frequency Hop Group

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Abstract:

This submission is a summary of the technical motions passed in the Frequency Hop Group during 1994. The listing is taken directly from the published minutes. It is hoped that this listing will be useful to the members of the Frequency Hop Group.

Jan 94

Jerry Socci: If your received power is below some threshold, you can go ahead and blast. If your received power is above the threshold, you can also blast but only if you can't detect a clock (no bits are present). That is, you defer iff power is above the threshold AND your clock recovery circuits indicate bit sync.

MOTION: We accept Jerry's proposal [above] as a baseline and call for submissions on CCA

Moved: T. Blaney, Seconded: E. Geiger

The chair ruled Motion 1 passed unanimously.

MOTION: The FH PHY group accepts IBM's proposed hopping sequences, in document 93/@ for 802.11-compatible FH WLANs.

Moved: J. McKown, Seconded: W. Moyers

VOTE ON MOTION: Yes=16, No=0, Abstain=2. Motion 1 passes.

MOTION: We shall remove from 93/161 all reference to the subject matter of line 16 of 93/83r2 (fall back data rates below 1 Mbps).

Moved: J. McKown, Seconded: J. Renfro
VOTE ON MOTION 1: Yes=12, No=0, Abstain=5
MOTION We shall remove from 93/161 all reference to the subject matter of lines 17 and 17a of 93/83r2 (baseband bit jitter & clock accuracy).

Moved: J. McKown, Seconded: M. Traynor

VOTE ON MOTION: Yes=4, No=1, Abstain=2. Motion 3 passes.

MOTION In-band spurious emissions shall be -55 dBC.

Moved: P. Chadwick, seconded R. Jellicoe

VOTE ON MOTION: Yes=9, No=0, Abstain=5. Motion 4 passes.

March 94

MOTION: Editing of the FH draft spec will proceed by simple majority and will be confirmed in the FH ad hoc group by 75% majority of the voting members. Moved: E. Geiger. Seconded: C. Zegelin.

VOTE ON MOTION: Motion passes unanimously by acclaim.


VOTE ON MOTION: for=12, against=1, abstentions=0. The motion passes.

July 94

Motion:
After discussion, proposed Dean Kawaguchi, seconded Stuart Kerry, that CCA must be evaluated with an antenna that has essentially the same coverage and loss as the transmit antenna.

Question called Jerry Loraine, seconded John McKown

In favour 10  Opposed 2  Abstention 1
Motion:
Ed Geiger moved to amend to remove the section "or any signal greater than [-50dBm]."

Question called Ed Geiger seconded John McKown

In favour: 13   Opposed:  4   Abstentions:  1

Motion:

Question called by Ed Geiger, seconded by John McKown, on the motion which reads

"In the presence of any 802.11 compliant FH PHY signal above [-80]dBm, the PHY must signal busy within [16]us at [90]% probability of detection for preamble and a [70]% probability detection for random data. Note: [ ] = TBD"

In favour 13, Against 3, Abstentions 3.

Motion:

Moved by Dean Kawaguchi that the CCA threshold as defined in the proceeding motions above be -85dBm. Seconded Stuart Kerry.

Question called by Jim Renfro, seconded Jerry Loraine

Question called.

In favour 13   Opposed 0   Abstentions 2

Motion:

After discussion, proposed by Jerry Loraine, seconded Dean Kawaguchi, that the receiver sensitivity be -84dBm midband, -82dBm band edge. Friendly amendment to -80dBm, by Jim Renfro, seconded Peter Chadwick. Moved to call the motion Dean Kawaguchi, seconded Jerry Loraine, Unanimous 13,0,0 voting.

MOTION CARRIES

Motion:

Moved to define that the above figure applies at a 1 in 10*5 BER moved by Dean Kawaguchi, seconded Jim Renfro. Question called by Jerry Loraine, seconded Dean Kawaguchi. Question called, 11 in favour, 2 abstentions.

MOTION CARRIES
Motion:

Proposed Jerry Loraine, seconded Dean Kawaguchi, that the IM performance in 94/78 be accepted, except the level be -30dB. Question called by Wayne Moyers, seconded Dean Kawaguchi. On the calling of the question, voting, 7 in favour, 1 against, 1 abstention. Voting on the motion: 7 in favour, 2 against, 0 abstentions.

MOTION CARRIES

Motion:

Proposed Jerry Loraine, that the desense test in 94/78 be accepted, except that at 2MHz, the figure be 30dB, and at 3MHz 40dB, with the desired signal at -3 dB relative to sensitivity. Friendly amendment by Peter Chadwick to amend sensitivity to -80dBm. Accepted. Peter Chadwick raised point of clarification regarding the interfere signal - is it amplitude modulated? AGREED that the signal is NOT amplitude modulated.

Move to call the question: Peter Chadwick, seconded Jerry Loraine, passed.

Voting on the motion: In favour 7, against 1, abstentions 4.

MOTION CARRIES.

Motion:

Moved Ed Geiger, seconded Wayne Moyers that the document (94/159) be accepted, with the proviso that some figures are TBD.

Question called by: Peter Chadwick seconded: Jim Renfro
Question called unanimously

Voting on the motion: for: 11 against: 1 abstentions: 1

MOTION PASSES.
Aug/Sept 94

Motion to remove min column from 9.5.7.2
by JimR and second by EdG.
No discussion
result: 6,0,0 passed.

Motion:

From 94/111:
"The occupied channel bandwidth for the PMD is 1.0 MHz wide. This 1.0 MHz must contain 99% of the emitted energy. The FCC may impose a further restriction on transmitted bandwidth requiring the 20 dB bandwidth, as measured with a spectrum analyzer and referenced to the magnitude at the center of the transmitted bandwidth to be less than 1 MHz.
The transmitter center frequency shall be within +-25ppm of one of the specified operating center frequencies listed in section 9.5.7.3. The following diagram (Fig. 9-11 of 94/068r3) illustrates the relationship of the operating transmitter center frequency to the occupied channel bandwidth."

EdG calls the question John M 2nd.
result: 6, 0,0 question called.
vote on motion
result: 4, 1,1 passed.

MOTION:
"The absolute mid-symbol peak deviation throughout the packet shall be at least 110 kHz with respect to the center frequency during the last 8 bits before the unique word."
2nd by JimR
Discussions on the definition and the measurement of center frequency.
LarryZ: proposes to define the center frequency to be the average of the difference of the average of maximum and minimum deviations.
JL: call the question, JohnM: 2nd, passes.

Vote on motion: 10,1,1 passes.

MOTION:
Zero Crossing error shall be less than +-1/8 of a symbol, per diagram.
This motion will include a picture by EdG.
Moved by CJ. 2nd by EdG.
Vote on Motion: 9,1,2 passes
Motion:
Set Time from MAC command to start a transmission of the first bit of 1,0 usec, Maximum.
   based on the following
   R/T1 as defined in 94/113 < 10 usec
   Xmit Delay, TDt < 1 usec
   Ramp Allocation = 8 usec
   MAC State Machine delay < 1 usec
moved by JimM, 2nd by JL

Vote: 9,1,2 passed

Motion:
   TBD microsecond in 9.5.7.11 of 94/068r3 is 224 usec. The frequency accuracy TBD kHz is changed to 60 kHz.
   Moved by JimM, 2nd by JohnM

Vote on Motion: 6,1,0 the motion passed.

Motion:
9.5.7.15 VSWR
   Move to delete this spec.
   by JL, 2nd by EdG
   Vote: on Motion: 8,0,0 the motion passes

Motion:
   Slot Time is 50 usec.
   The interval from the MAC command to transmit to the appearance of the first bit of the preamble at the RF antenna (also called collision time) is a maximum of 20 usec. The channel shall be assessed for at least 30 usec. The interval from the start of the preamble at the antenna to the time when the ch_busy line goes high is a maximum of 16 usec.
   Moved by JimM, 2nd by EdG
   JohnM calls the question, JL second
   Vote: 8,0,0 the question is called
   Vote on motion: 8,0,1 the motion passes.

Motion: Frame Length of 94/69 proposal is 32 bits
   by EdG, 2nd Stuart
   Vote on Motion: 5,1,1 motion passes.
Motion: Define CCA Threshold as a function of the intended RF power level.
CCA Threshold = -65 dBm - Transmit Power in dBm.

by LarryZ, 2nd by JimR
JL call the question
the question is called.
Vote on Motion: 4,0,4 the motion passes.

...

Motion:

JL: propose a change in the motion text
The 802.11 compliant frequency hopping transmitters shall be labeled in four classes according to their maximum nominal EIRP
Class 1 up to 10 mW
Class 2 up to 100 mW
Class 3 up to 500 mW
Class 4 up to 1 W.
2nd by Wayne Moyers

Stuart: Call the question, Wayne 2nd
Vote: 9,0,0 the question is called.

Vote on Motion: 7,2,2 the motion passes.

Motion:

WayneM: the last word in the text of 9.5.8.2 should be 1000mW rather than 100mW.

Motion:
Change last word in 9.5.8.2 to 1000mW.
CJ 2nd.
Vote on Motion: 7,0,3 the motion passes.

Motion:
The transmit spectrum mask shall be measured under dynamic conditions such that the power generated in a 1 MHz Channel, for a given carrier offset, shall be less than the values in the table below:

<table>
<thead>
<tr>
<th>Channel Offset (MHz)</th>
<th>Specification Limit (dBc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+/- 2</td>
<td>-40</td>
</tr>
<tr>
<td>&gt;= +/-3</td>
<td>-60</td>
</tr>
</tbody>
</table>

The radio shall be set to alternatively xmit and rcv with nominal duty cycle ratio of 1 to 1. And the xmit packet length shall be greater than 300 usec and less than 2 msec.

moved by JL, JimR 2nd.

Vote on Motion: 10,0,2 the motion passes.
JohnM:
Motion: Delete the table and replace the last sentence to
It shall maintain this stability over the stated operating temperature range.
2nd by CJ
Vote on motion: 10,0,0 the motion passes.

Nov 94

(Paragraph numbers in this section in general refer to 58r5.)

Motion: The FHSS PLCP preamble and header per figure 9-3 shall be at PLCP_rate. The
PLCP_PDU may run at 1,2 Mbps & higher rates.
Moved: Pablo 2nd: Wayne Vote: 17/1/2

Motion: Accept frame coding per 94/287
Moved: Mike 2nd: Wayne Vote: 16/2/2

Motion: Add the international specs back into 068/r6. The numbers are subject to the regulatory
authorities.
Moved: Dean 2nd: Kieth Vote: 17/0/1

Motion: Change +/-25ppm to +/-60khz in 9.6.5
Moved: Jim 2nd: Nathan Vote: consensus

Motion: The default dwell time for FH will be 20ms.
Moved: Ed 2nd: John M Vote: 12/0/1

Motion: Approve Changes to 9.6.1 to 9.6.7
Moved: Ed 2nd: Mike Vote: 14/0/0

Motion: Add Equivalent Isotropically Radiated Power and reference to
regulatory authorities in text and delete table.
Moved: John Sonnenberg 2nd: Wayne Vote: 15/0/1

- 9.6.18 Transmit power level control

Motion: Delete section 9.6.18
Moved: Stuart 2nd: Peter Vote: 12/1/1
Motion: Strike section clock recovery time (9.6.28 in 68r5)
Moved: Ed 2nd: John M Vote: 12/0/0
- 9.6.21 Transmit center frequency tolerance
  discussion on temp operating range and tolerance spec in Hz vs ppm.
Motion: Accept the text as defined in 068r6 sect 9.6.21
Moved: Ed 2nd: Keith Vote: 11/0/2

- 9.6.22 PMD receiver specs OK

- 9.6.23 Input dynamic range
  discussion on
Motion: Modify title to Input dynamic range
Moved: Peter 2nd: Dean Vote: 10/0/0
Motion: Accept the text as defined in 068r6 sect 9.6.23
Moved: Peter 2nd: Dean Vote: 13/1/1

- 9.6.24 Selectivity
  Motion: Delete section
Moved: Peter 2nd: Dean Vote: 11/0/2

- 9.6.25 Channel BER
  Motion: Delete section
Moved: Jerry 2nd: Peter Vote: 11/2/1

- 9.6.26 Rx center freq acceptance range
  Motion: Modify title to above and reflect changes as in 068r6 sect 9.6.21
Moved: Ed 2nd: Charlie Vote: 11/0/0

- 9.6.27 CCA response time
  Motion: Ed and Dean to capture spirit of wording from previous meeting
Moved: Peter 2nd: Dean Vote: consensus

- 9.6.29 Rx data jitter tolerance
  Motion: Delete section as interface is not exposed
Moved: Ed 2nd: Jerry Vote: 12/0/0

- 9.6.30 Ramp up period
  Motion: Move to table pending submission of mods
Moved: Ed 2nd: John Vote: consensus

- 9.6.xx _Rx data DC offset & Max run length
  Motion: Delete these sections
Moved: Ed 2nd: John Vote: consensus

- 9.7.1 Introduction: FHSS Phy Medium Dependent sublayer 2.0M bit
  Motion: Accept text as in 068r6
Moved: Ed 2nd: Dean Vote: consensus
9.7.2 Thr 9.7.9 OK
Motion: Accept text as in 068r6 [similar to 1Mbit sections]
Moved: Ed 2nd: Dean Vote: consensus

9.7.11 Channel Data rate
Motion: Accept text as in 068r6
Moved: Ed 2nd: Jerry Vote: consensus

9.7.12 to 9.7.24 OK as 1M Phy except for 9.7.23 below
9.7.23 Input dynamic range
Motion: Accept text as in 068r6
Moved: Ed 2nd: Jerry Vote: consensus

9.7.25 Channel BER
Motion: Delete text as in 068r6
Moved: Ed 2nd: Jerry Vote: consensus

9.7.26 to 9.7.28 OK as 1M Phy

9.7.29 Jitter tol
Motion: Delete section
Moved: Jerry 2nd: Peter Vote: consensus

9.7.30 to 9.7.31 OK as 1M Phy

9.6.32 Rx sensitivity
Motion: Accept text as in 068r6
Moved: Jerry 2nd: Peter Vote: consensus

9.6.33 Intermodulation
Motion: Accept text as in 068r6
Moved: Ed 2nd: Jerry Vote: consensus

9.6.34 Desense
Motion: Accept text as in 068r6
Moved: Ed 2nd: Jerry Vote: consensus

9.6.20 Tx spectrum mask
Motion: Accept inputs as defined by Jerry and edited into 068r6
Moved: Jerry 2nd: Nathan Vote: consensus

Chair's Question: Is the editors' translation of Jerry's input accurate as shown in r6?

9.6.13 RXTx switch time

Motion: Accept inputs as defined by Jerry and edited into 068r6
Moved: Ed 2nd: Jerry Vote: consensus
- 9.6.18 Tx power level control
  
  Motion: Power level adjustment, if performed will be done by a management entity and deletes TwpwrTlv parameter in 9.2.2 of 068/r5
  
  Moved: Jerry 2nd: Ed Vote: consensus

- 9.6.28 CCA Threshold
  
  Motion: Accept edits in 068/r6 (motion of 11/8 by Charlie amended by Dean)
  
  Moved: Jerry 2nd: Charlie Vote: 10/1/2

- 9.6.23 CCA response time
  
  Motion: Add sentence to 9.3.3.2.1 to cover async case (Dean's wording)
  
  Moved: Dean 2nd: Charlie Vote: consensus
  
  Motion: Delete section 9.6.23 (covered in 9.3.3.2.1)
  
  Moved: Dean 2nd: Charlie Vote: consensus

- 9.6.30 & 31 Ramp up & Ramp down periods
  
  Motion: reopen .31
  
  Moved: Peter 2nd: Charlie Vote: consensus
  
  Motion: Modify text as defined in 068/r6 - remove slope limit, change bit period to uS & power levels relative to full Tx power in 9.6.30 & 31
  
  Moved: Peter 2nd: Charlie Vote: consensus

- 9.2 FHSS service parameter lists
  
  Motion: Modify text as defined in 068/r6 - put in text for antsel and RSSI
  
  Moved: Ed 2nd: Charlie Vote: consensus

- 9.7.10 4 level GFSK Modulation
  
  Motion: Modify text as defined in 068/r6
  
  Moved: Jerry 2nd: Brian Messenger Vote: consensus
  
  Motion: Accept text as defined in 068/r6 with understanding that text is being updated to reflect changes approved during FH Phy session to date.
  
  Moved: Dean 2nd: Keith Vote: 16/0/1
  
  Motion: Present to Phy & Plenary, a motion "Accept the 068/r5 plus the errata 94/242 which summarizes the 94/068r6 document."
  
  Moved: Dean 2nd: Keith Vote: 13/0/0

- Par req of 99.5% probability of channel availability
  
  Motion: Delete 9.6.14
  
  Moved: John 2nd: Nathan Vote: consensus

Action: Jim M to prepare a motion to present to plenary in Jan.

- 4 level FSK _ Text has been generated jointly by Naftali and Jerry and given to the editors
  
  Motion: Accept the text as defined for 94/068r7 for Jan.
  
  Moved: Jerry 2nd: Wayne Vote: 13/0/1