

IEEE P802.15
Wireless Personal Area Networks

Project	IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)		
Title	Vancouver Meeting Minutes		
Date Submitted	9 December 2005		
Source	[Gregg Rasor] [TimeDerivative] [Lantana, Florida]	Voice: Fax: E-mail:	[561-967-6135] [] [rasor@earthlink.net]
Re:	802.15.3a Task Group Vancouver, BC, Canada Meeting Minutes		
Abstract	Minutes of Task Group 3a in Vancouver		
Purpose	Minutes of Task Group 3a in Vancouver		
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Table of Contents

Monday, November 14, 2005, PM1	3
Monday, November 14, 2005, PM2	4
Wednesday, November 16, AM2,	9
Thursday, November 17, PM1	10

Monday, November 14, 2005, PM1

2:52 PM Gregg Rasor called the session to order.

Agenda 15-05-0628-00-003a-nov05-meeting-objectives-and-agenda.xls

Announcements: none.

Call for contributions. The contributions were recorded into the contribution queue spreadsheet of the agenda and the agenda version updated.

Discussion of the agenda.

Motion: Approve the R0 agenda with the removal of the second confirmation vote on Wednesday. Moved: Roberto Aiello, Seconded by Ron Brown.

Discussion: There was concern that this is not fair to those who traveled for the vote on Thursday and may not be consistent with the process rules.

A member opposed to this motion and threatened a formal protest if it were approved. Response to his position: Many presenters forgot to file "No" vote comments in order to make the process useful, they needed this information. Without the information, there is no reason to vote, and it takes two months to respond so the next opportunity is at the next meeting.

Dilatory motion: Matt Welborn requested to rule this out of order as dilatory. The joint chairs decided this is not a dilatory motion and ruled Matt's request out of order.

Point of order – A request from the floor was made to enforce the 2 visits to the microphone limitation.

Gifford called the question.

No objection to calling the question.

Motion: Approve the R0 agenda with the removal of the second confirmation vote on Wednesday. Moved: Roberto Aiello, Seconded by Ron Brown.

For: 40, Opposed: 27, Abstained: 3
Procedural – 50%+ required
Motion: Carries.

2:19 PM The agenda was modified to remove the vote for Thursday and the discussion about where to move it began.

Matt called for orders of the day.

Motion to approve the minutes from the last meeting 15-0500580-01. No objection. Passed by unanimous consent.

Barr asked the officers to consult with the chair to determine if the agenda process was in order. The chairs offered that “no vote” comments were never requested and not minuted and no email was sent out. Barr was declared out of order but the chairs will take the action to consult with Heile to make sure it was OK. The chairs officially requested the body to send “no vote” comments.

Various members remember the request for “no vote” comments even though they were not minuted.

The chair (Razor) asked if there were any no vote responses available now. No comments were available. A recess was called until 3:49 to consult with the WG chair.

Monday, November 14, 2005, PM2

TG3a Minutes: Nov. 14, 2005
Session: PM2 4:00 to 6:00 pm.

Co-Chairs: Jim Lansford and Gregg Razor.
Acting Secretary: Celestino A. Corral

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Meeting was called to order.
Agenda was placed on screen.

Chair goes to item 1.6 on agenda: UWB regulatory update.

Sonada-san presents “UWB Interference Measurement Report of Japan,” doc. 15-05-0643-01-003a. [Sonada-san is with UWB Demonstration Experiments Task Force in MMAC Forum.]

The floor was opened for questions:

Q1: Slide 15. Want to understand plot correctly. Let’s look at -56.4 on x axis. The blue curve on the bottom is IR at 1 MHz, correct? Is that the most harmful?

A1: Yes, this is the most harmful one. The y-axis shows the signal level that causes 10⁻⁴ error rate.

Q2: How would you like us to deal with this information? Is this educational or do you want a response in some way?

A2: Victim systems wanted to know interference potential of UWB. They wanted to quantify difference between UWB and AWGN.

Q3: Do you need any other information you require from us? Is the task force still conducting experiments?

A3: No. We have handled all systems being considered. For example, in GPS band, MB-OFDM and DS-UWB are not harmful to them.

Q4: Is it possible to recognize in Japan that UWB is exclusively an indoor technology? You brought up many outdoor systems. In ITU it has been determined that UWB is mainly an indoor service so interference to outdoor systems is not a concern. Has Japan reached the same conclusion?

A4: As far as I understand, no conclusion has been reached. For example, it is possible that UWB may be used in a stadium. So outdoor systems must also be tested in terms of interference potential.

Q5: The MIC has a proposed set of rules out that they've presented to ITU. Does testing information like this make it helpful? Will you be participating in that work? How will Japanese regulators get information on testing?

A5: As far as I know, they look at the results.

Yamaguchi-san: Amateur radio, radio astronomy, etc., have objected to UWB. We have to negotiate what is acceptable. Unfortunately, we have not been given much time. We need to come up with a provisional conclusion by the end of December. The ministry is rushing on conclusion, but we are uncertain of outcome. It is my understanding he (Sonada-san) will be involved in DAA tests.

Q6: It seems to me there is a lot of work to be done.

A6: Yes, this is only the tip of the iceberg.

Q7: Is there a timeline from the Japanese government on this?

A7: No.

Q7: In slide 10, the testing that was done, was it radiated or conducted?

A7: Only wired. Radiated tests not conducted yet, we needed stable condition first.

Q8: What was the general feeling of the people you presented these results to? Was UWB perceived as harmful, or was it nominal?

A8: Personal opinion: Based on experimental results, very similar to AWGN so not more harmful than AWGN.

Q9: I saw one of the notes was -153 dBm/MHz trying to resolve the noise (slide 19). So you saw that DS-UWB and other systems were not resolvable in those bands?

A9: In the GPS band, we cannot see any UWB impact. For other systems, I cannot say easily.

Q10: In slides 18 and 19. It doesn't seem that any results were really presented there. You show on slides 20 and 21 with tables, but I don't understand what is being represented there. Were you trying to cast this as I/N? How was I/N measured? What was the reference noise?

A10: We measured minimum sensitivity relative to the spec for 10^{-3} .

Q11: For WCDMA, 3GPP spec, there is a spec for IOR[^], -117dBm/3.84 MHz. Then there is the real spec of -107dBm. The latter spec does not take into account the orthogonal codes, etc. What you then test against is block error rate (BLER). These tests do not seem to reflect these tests. Was this done on a radio and relative to 3GPP spec or other?

A11: We used equipment that simulates base station. We then tested receiver sensitivity, done in a dry lab.

Q12: On slide 15, it appears there is some difference on some systems between different UWB systems. Do you believe there will be restrictions on some forms of UWB?

A12: Graph on x-axis show ratios which incorporate higher I/N.

Q13: These tests show up to 10 dB of difference. Do the results ignore noise?

A13: At -66.4 dBm, I/N=0 dB, above that, I/N is higher. The difference has to be measured in terms of the x-axis.

Q14: There is no DAA on your presentation. How would you cast this work forward? What is the end product of this work? Is there any particular work dealing with other types of UWB?

A14: The information is for discussion by the ministry. No other purpose. Japanese spectral mask states we need DAA, and validate with experiment. Not sure how ministry will come up with experiment. My view is that we will have to think about it.

Chair: That was the extent of the presentation and were on general orders, we now go to no vote responses. We ask that if you have no vote comments, submit them via e-mail. We will have the presentation for no vote responses.

Matt Welborn: Is this a no vote response per the down selection process?

Chair: No. This is informative.

Roberto Aiello: You are asking no voters to send no voter response via e-mail?

Chair: If that is what we want to do that's fine. It's up to the respondent. The company that is up for the second confirmation vote is not affected by this particular presentation as attributed for no vote comment.

Matt Welborn: I see an agenda and I read the down selection. Where is Joe's presentation?

Chair: Joe's presentation is in the contribution queue. This is an informative update that is not done for no vote response. You have to have the no vote comments in by noon tomorrow.

Bob Heile: You have deviated from the agenda. Ask the group for guidance.

Chair: What is your suggestion, Matt?

Matt Welborn: I'd like to understand what is being done. I want to predict where to be and why.

Chair: We are now on general orders. We are governed by down select procedure.

Bob Heile: You could ask the group to see if we can move Joe's contribution out of sequence.

Chair requests 5 minutes for a caucus. Chair meets with WG chair Bob Heile.

Chair: For the Wednesday session there is no set agenda. The presentation from Joe is considered informational. There will be opportunity for no vote responses by noon tomorrow. **We reconvene at Wednesday morning, the proposer can choose to respond or to postpone their No vote responses.** If you believe at that point in time but you don't have enough time to respond to all of them, you can ask to extend the time from the chair and the group.

Roberto Aiello: The no voters have waited for 2 months to submit comments. The authors have only 24 hours to respond. This is not fair.

Chair: You're being speculative. Also, it affects the no voters. Nothing is unfair until it happens. We have to follow the down select procedure. So if after you look at the no vote responses and you may need more time, approach the chair and body to request additional time.

Serdar Yurdakul: Some no vote responses may be incomplete.

Chair: I think what happened this morning with the amendment agenda, the intent was to not go through the full vote process. Now, there will most likely be a vote at this meeting, but there is significant uncertainty as to when that will happen. All we can do is tell you what will transpire between point A and B. We have the general order of events and we are bound by the down selection process. We cannot speculate as to what will happen. Everybody in this room knows what can happen. At this point, we are requesting that the group give us the opportunity to hear Joe's presentation. Any objections to hearing Joe's presentation?

Jason: Point of information. What revision of agenda are we talking about?

Chair: R1 but it has not been posted. The Monday agenda was not changed. Wednesday was changed from R0 to R1.

There were no objections to Joe Decuir presenting the informative update.

Joe Decuir presents "MB-OFDM Proposal Update," doc. 15-05-648r0. [Joe Decuir is with MCCI.]

Q1: Question on the notching. You state technology is here today. It has also been shown that very deep notches are possible. Are systems using AIC?

A1: Slide 29 does not show AIC. Only zeroing.

Q2: Is there AIC in the Wisair unit?

A2: What is shown in presentation does not have this.

Q3: I've seen many presentations that things are possible, but in reality, there are no rules. Other people, including the FCC has looked at this issue. One problem that I have is that you've taken OFDM, you hop it; we've seen from tests from Japan that it can be up to 5 dB more interfering. How can you say that DAA is solved?

A3: I said facilitated, not solved. I don't know if we've done enough.

Q4: I see slide 30 and in Charles' presentation, these notches put more ripple in the spectrum. So we are adding more dB's. Help me understand how this is more helpful?

A4: We are trying to reduce the interference in a specific band.

Q5: You show in slide 21 whether the changes are part of the proposal.

A5: This is only in relation to possible changes in regulatory masks. I believe we need a plan to handle this. The point of the slide is how MB-OFDM would do it. See slide 22 for bands 9, 10 and 11.

Q6: Can you clarify that there is a specific need for DAA?

A6: There are chunks of spectrum that will need some type of mitigation in the lower band. Mitigation can include DAA.

Q7: I want to understand what I'm voting for. What document number am I voting on?

A7: Within 802.15 task group 3a, the fundamental decision for selection and confirmation is to use merged proposal 1 instead of merged proposal 2. I believe in conjunction with 648r0, start with 493 with lists of changes in 648, but we're not done. When we have a standard with a radio to handle mitigation, then we are done.

Q8: Once regulations get codified, at that point, isn't it easier just to hard-wire that in?

A8: If we had picked a radio based on the FCC mask that we have, we would have chips that we can sell in US but not elsewhere. We would need a new PAR to address the changes as required by the emerging regulations.

Q9: In a way, you've lost control of your spectrum. You may turn bands off at any time, so can you guarantee whether you meet 500 MHz minimum bandwidth under FCC?

A9: We've ended up in a different situation now. I believe a design that comes out of TG3a needs mitigation anywhere.

Q10: Am I voting on the same documents? What is the document I am voting on?

A10: 493 from '04 and 648 from this year.

Joe Decuir: If we had provisions in our radios for true geographic awareness, they can offer better performance than they do now. But we don't have this in any agenda. I would prefer to see that.

Meeting is recessed until 10:30 am on Wednesday, November 16, 2005.

Wednesday, November 16, AM2,

10:38 AM Called to order

Agenda was displayed. Document 15-05-0628-01-0005

Charles Razzel, responded to NO voter comments. No responses were received. Since there were no technical objections to the proposal for the past few months, the speaker suggested we move on.

Per general orders, a second conformation vote will be held. Documents 15-04-0493-01-0003a and merged proposal as modified by 15-05-0648-00.

Technical vote (75%) required.
56 For, 49 Against, 9 Abstain. Motion to confirm fails.

(See TG3a PHY Proposal Confirmation Vote #2 at end of this document.)

2:00 Recessed until 1:30 Thursday.

Thursday, November 17, PM1

Minutes of IEEE 802.15 TG3a

Session called to order by co-chairs at 1:43pm 17Nov05

The agenda is 15-05-0626-01-003a R1.

The chair recognized Mark Fidler, who moved:

Motion:

TG3a requests the 802.15 WG to withdraw the project for 802.15.3a.

Second: Kursat Kimyacioglu

Ian Gifford wanted to discuss this.
'we came to discuss proposals for compromise'

co-chair Rasor recognized Allen Heberling as speaker.

He opposes the motion

Glynn is in favor.

Temporary recess at 1:50pm

reconvened at 1:54pm

recognizing the queue for comment

Roberto Aiello
I don't think this group has made progress in many sessions.

The lack of NO vote responses says that there is no interest in progressing the work.
He would like to hear Ian's amendment, to determine what consensus would need.

Matt Welborn

Opposes the motion.

Big believer in IEEE process.

If people are tired of no progress, we should get to a compromise solution.

He would like to hear that.

Mark Fidler

There was a similar motion made in San Francisco.

He said that we would like to see it stay in IEEE, and progress the work.

In this latest round. There were no NO vote responses.

That said that means that the IEEE process is not continuing.

Ivan

Opposes the motion.

Refers to two boxers in the ring, who fight and fight until they are exhausted.
calls the question

Gifford objects to calling the question.

we need to vote on the call for the question.

Vote on that requires 2/3rds.

13-43 Fails

The question is not called, discussion continues...

John Barr:

Opposed the motion.

Something must have changed since San Francisco.

He thinks another group is about to release another standard in another forum.

He has a compromise proposal to present.

There must be merit to both of them, and there should be a way to let them go forward.

I would like to see us go forward.

If they want to go elsewhere go elsewhere; the rest of us should work here.

The IEEE is the place where wireless standards are set, rather than a place that can be bought by a bunch of companies.

Gifford:

We have a contributions to be heard.

We will still have the agenda for the rest of the day.

Subsidiary motion:

To postpone to a definite time, and make it a special order, during the PM1 session on Tuesday in the next meeting.

“It” is the consideration of the motion made by Mark Fidler captured in the preceding text.

Second by Welborn

request for discussion

Fidler: is in favor of this motion

Art Astrin: is still in favor of a compromise proposal. Maybe we could break this group into two group:

One who is not allergic to OFDM, and one who is not allergic to Direct Sequence.
Maybe open a 'TG3d' PAR for Direct Sequence.

Roberto is in favor of the motion to postpone the vote, and make a well considered decision.

Ben Rolfe: let's decide this in this session. He doesn't think the decision will change.

David Leeper: in favor of the subsidiary motion, and calls the question.

57-1-8 subsidiary motion carries

back to general orders of the day.

Roberto: should we suspend down selection in January?

Gregg: this is the first item on the Hawaii agenda.
The agenda will be published 30 days in advance.
The agenda that is proposed by the chairs will be subject to approval at that meeting.
It would require a supermajority to change this special order.

On to contributions:

John Barr 0655 2:18pm

Reasonable Compromise Proposal

"move forward with dignity"

One group has taken their document to ECMA.

Compromise elements: (from slide 4)

- 3.1-4.9 GHz DAA required
 - Mandatory mode is FFI, OFDM, 4.2-4.8 at 53.3 Mbps
 - All other MB-OFDM and DS-UWB rates optional between devices w/TDMA
- 7-10.25 GHz no DAA required
 - mandatory mode is DS-UWB, 7.10.25 at 55 Mbps (or 9 GHz in EU)
 - all other MB-OFDM and DS-UWB rates optional between devices as long as regulatory conditions allow
 - regional location detection
 - DAA

Both sides could go forward into the market into different application areas.
Build the market. Get on to what needs to be done (e.g. meshing, DAA mechanisms).

why this should work: (slide 6)

- all devices desiring to use OFDM would associate in low band
- all devices desiring to use DS-UWB would associate in high band

"We (Motorola) are in the mobile phone market. We are buyers.
I need a scalable solution."

Updates will be needed to both proposals to meet regulatory approval (e.g. June 2006 EU & Japan).

Motion: accept this compromise proposal (slide 4 of 15-05-0655) as a way forward, setting aside the current down selection process, so that we can move forward with this as a baseline for 802.15.3a.

second: Ian Gifford

quoted slide:

- 3.1-4.9 GHz DAA required
- Mandatory mode is FFI, OFDM, 4.2-4.8 at 53.3 Mbps (may allow I-only operation to reduce complexity)
- All other MB-OFDM and DS-UWB rates optional between devices (TDMA)
- 7-10.25 GHz no DAA required
- Mandatory mode is DS-UWB, 7-10.25 at 55 Mbps
- All other MB-ODFM and DS-UWB rates optional between devices as long as regulatory conditions allow:
 - Regional location detection
 - DAA

Roberto: point of order, he claims that this out of order, because it is merging two proposals.

Gregg: there is precedent that we cannot force a merger.

It would require a 75% vote to set aside the down selection procedure.

And then a separate 75% vote would be required to set a new selection process.

Gregg: There is no basis to rule the motion out of order.

There are questions that I did not capture.

Eric Schylander:

John's clarification:

- first vote to set aside the process
- second vote to establish the new baseline

- missing discussion -

Bill Shvodian proposes to change the high band lower limit from 7-10.25 GHz to 6 to 10.26 GHz.

Charles: would this have anti-trust implications, dividing the market?

Gregg: we cannot not discuss this here.

Bill's motion is seconded by Ian Gifford.

Kris Fleming wants to postpone this motion.

Gregg: this is not in order at this time.

question called: one objection, 30-9-1 passes

22-25-0 amendment fails.

Matt Welborn calls the question on the main motion.

Robert objected to calling the question.

motion on calling the question on the main motion.

32-16-2 passes

request for a roll call.

yes	27	44.3
no	34	55.7
abstain	5	
total	66	

Does not pass. (See Roll Call Vote #1 at end of document)

recess a 3:38pm

reconvene at 4:06pm

15-05-0646-01, Charles Razzell
Active Interference Cancellation for OFDM

reference to Yamaguchi's paper.

lots of mathematics...

how to calculate active interference tones to deepen notches.
how to precalculate the coefficients, and then shift them for different notch frequencies.

MATLAB simulation shows ~40db notches (slide 11)
simulating an entire OFDM transmitter shows 37db notch.

comments:

Matt: question on the slide with notch and ripple.

Charles: the small up ripple is about 1.5db. the raised area is a very small amount of area.
there are things that can be done to reduce that. also, if you have more AIC tones, this is flatter.

Yamauguchi: there are more details not yet presented that flatten this more.

Tino: have you looked at multiple disjointed notches?

Charles: yes, but it is more complicated as a superposition of multiple solutions.

Matt: why not treat the whole band is AIC tones?

Charles: -did not capture whole answer-

Hiro: The AIC tones can be placed at the edge of the notch, or farther away.

Tino: have you run simulations on the receiver side?

Charles: yes, and there was a contribution in San Francisco about how many can be erased.
It does help to tell the receiver where they are.

Matt: is this a mandatory part of the OFDM proposal.

Charles: not in terms of TG3a today.

Tino: have you looked at the effect on higher rate modulation?

Charles: it is arbitrary.

Matt: how does this effect the cost of the transmitter?

Charles: it just effects the linearity requirement on the transmitter.
In our case, the linearity was already good enough.

Matt: Is there a complimentary solution that applies to the preamble?

Charles: yes, it can be precalculated and repeatedly applied to the preamble.

Roberto: he would like to move to adjourn.

Second by Kursat.

23-11-0, motion carries.

there are two presentations not heard: 658 by Welborn and 715r1 by Astrin.

we still have to discuss what the next actions are.

Gregg:

- we are not making much progress.
- We have a motion that sets aside time to discuss a special motion in Tuesday PM1.
- if that vote is successful the task group activities will close down.
- we would have to decide if there was anything else to accomplish in that meeting.

John:

- if the motion is not approved, we have to continue the down selection process

Gregg:

there is a chain of events required if the Task Group voted in favor of the motion. including the Working Group, Half of next year would go by before it officially dies.

Closing report:

we will report that we took a second confirmation vote, and the motion to discuss in January.

We will allow the two presentations after adjournment.

Matt is gone so his will not be presented. Reference latest Vancouver agenda.

Art Astrin is here to present 715r1.

The meeting was officially adjourned at 4:48pm

TG3a PHY Proposal Confirmation Vote #2

MERGED MBOFDM PROPOSAL

TG3a Confirmation Vote #2		YES	NO	ABSTAIN	TOTAL
		56	49	9	114
Percentage		53.3%	46.7%		100%
LAST NAME	FIRST NAME	YES	NO	ABSTAIN	
Adams	Jon		1		
Aiello	Roberto	1			
Alfvn	Richard			1	
Allen	James		1		
Arita	Takashi		1		
Arnett	Larry	1			
Astrin	Arthur		1		
Bahreini	Yasaman		1		
Bain	Jay		1		
Barr	John		1		
Batra	Anuj	1			
Beecher	Phil		1		
Berkema	Alan	1			
Bowles	Mark	1			
Brabenac	Charles	1			
Brown	Ronald	1			
Carney	Bill	1			
Carson	Pat	1			
Chang	Kuor-Hsin		1		
Cheah	Jonathon	1			
Choi	Yun	1			
Chou	Chun-Ting	1			
Choudhary	Manoj	1			
Corral	Celestino		1		
Cragie	Robert		1		
Decuir	Joe	1			
Drude	Stefan	1			
Ellis	Jason	1			
Emami	Shahriar		1		
Everest	Paul	1			
Fidler	Mark	1			
Fisher	Reed		1		
Fleming	Kristoffer	1			
Freund	Amir	1			
Gifford	Ian		1		
Goh	Michael		1		
Goldenberg	Sorin	1			
Grohmann	Bernd		1		

TG3a PHY Proposal Confirmation Vote #2

MERGED MBOFDM PROPOSAL

TG3a Confirmation Vote #2		YES	NO	ABSTAIN	TOTAL
		56	49	9	114
Percentage		53.3%	46.7%		100%
LAST NAME	FIRST NAME	YES	NO	ABSTAIN	
Hach	Rainer		1		
Hara	Shinsuke		1		
Harris	Jeff	1			
Hasty	William		1		
Heberling	Allen		1		
Herold	Barry		1		
Heubaum	Karl		1		
Ho	Jin-Meng	1			
Houghton	Patrick			1	
Ikeda	Hideto		1		
Jiang(Chiang)	Tzyy Hong		1		
Karaoguz	Jeyhan	1			
Kim	Dongho	1			
Kim	JinKyeong			1	
Kimyacioglu	Kursat	1			
Kindler	Matthias	1			
Kinney	Patrick			1	
Kohno	Ryuji		1		
Kudo	Yasushi	1			
Kupershmidt	Haim	1			
Kuramochi	Yuzo		1		
Lakkis	Ismail		1		
Lampe	John		1		
Lansford	Jim			1	
Lee	Myung	1			
Leeper	David	1			
Li	Huan-Bang		1		
Li	Liang		1		
Macnamara	Ian	1			
Maeki	Akira		1		
Martin	Frederick		1		
Mc Laughlin	Michael		1		
Miura	Akira			1	
Mo	Samuel	1			
Moore	Mark	1			
Morley	Steven			1	
Naganuma	Ken		1		
Noble	Erwin		1		

TG3a PHY Proposal Confirmation Vote #2

MERGED MBOFDM PROPOSAL

TG3a Confirmation Vote #2		YES	NO	ABSTAIN	TOTAL
		56	49	9	114
Percentage		53.3%	46.7%		100%
LAST NAME	FIRST NAME	YES	NO	ABSTAIN	
Noda	Masaki	1			
O'Connor	John	1			
Pardee	John		1		
Patton	Dave	1			
Poor	Robert			1	
Powell	Clinton		1		
Qi	Yihong		1		
Rasor	Gregg			1	
Razzell	Charles	1			
Reddy	Joseph		1		
Robar	Terry		1		
Rolfe	Benjamin	1			
Rypinski	Chandos		1		
Schylander	Erik	1			
Seyedi	Alireza	1			
Shetty	Siddharth	1			
Shimada	Shusaku	1			
Shor	Gadi	1			
Shvodian	William		1		
Sim	Michael	1			
Siwiak	Kazimierz		1		
Somayazulu	V.	1			
Struik	Marinus		1		
Takahashi	Kazuaki	1			
Taylor	James	1			
Tou	Jarvis	1			
Vogtli	Nanci	1			
Wang	Jing		1		
Weber	Chris		1		
Welborn	Matthew		1		
Wilson	Richard		1		
Wood	Stephen	1			
Worfolk	Patrick	1			
Yamaguchi	Hirohisa	1			
Yong	Su-Khiong	1			
Yu	Zhan	1			
Yurdakul	Serdar	1			
Zhen	Bin		1		

TG3a Roll Call Vote #1

Thursday, November 17, 2005

TG3a Roll Call Vote #1		YES	NO	ABSTAIN	TOTAL
		27	34	5	66
Percentage		44.3%	55.7%		100%
LAST NAME	FIRST NAME	YES	NO	ABSTAIN	
Adams	Jon	1			
Aiello	Roberto		1		
Alfvn	Richard			1	
Aoki	Mikio		1		
Arita	Takashi	1			
Arnett	Larry			1	
Astrin	Arthur	1			
Barr	John	1			
Berkema	Alan		1		
Carney	Bill		1		
Carson	Pat		1		
Chou	Chun-Ting		1		
Choudhary	Manoj		1		
Corral	Celestino	1			
Decuir	Joe			1	
Drude	Stefan		1		
Ellis	Jason		1		
Emami	Shahriar	1			
Everest	Paul		1		
Fidler	Mark		1		
Fisher	Reed	1			
Fleming	Kristoffer		1		
Freund	Amir		1		
Gifford	Ian	1			
Goldenberg	Sorin		1		
Hall	Robert	1			
Hara	Shinsuke	1			
Harris	Jeff		1		
Herold	Barry	1			
Jeon	Ho-In	1			
Jiang (Chiang)	Tzyy Hong	1			
Kimyacioglu	Kursat		1		
Kindler	Matthias		1		
Kohno	Ryuji	1			
Kudo	Yasushi		1		
Kuramochi	Yuzo	1			
Lakkis	Ismail	1			
Lee	Myung		1		

TG3a Roll Call Vote #1

Thursday, November 17, 2005

TG3a Roll Call Vote #1		YES	NO	ABSTAIN	TOTAL
		27	34	5	66
Percentage		44.3%	55.7%		100%
LAST NAME	FIRST NAME	YES	NO	ABSTAIN	
Leeper	David		1		
Li	Huan-Bang	1			
Macnamara	Ian		1		
Naganuma	Ken	1			
Nandagopalan	Saishankar			1	
Noda	Masaki		1		
Noens	Richard	1			
O'Connor	John		1		
Pardee	John	1			
Patra	Nirmalendu		1		
Patton	Dave		1		
Pellon	Miguel	1			
Qi	Yihong	1			
Razzell	Charles		1		
Roberts	Glyn		1		
Schylander	Erik		1		
Seyedi	Alireza		1		
Shetty	Siddharth		1		
Shvodian	William	1			
Siwiak	Kazimierz	1			
Somayazulu	V.		1		
Struik	Marinus			1	
Takahashi	Kazuaki		1		
Weber	Chris	1			
Welborn	Matthew	1			
Yamaguchi	Hirohisa		1		
Yurdakul	Serdar		1		
Zhen	Bin	1			