

SUBJECT:

DATE:

2/23/00



USB DIAGNOSTIC COMMAND SUMMARY

- ✓ - GET FIRMWARE VERSION
- LOOPBACK SOURCE/DESTINATIONS
- ✓ - LOCK BOOT BLOCK
- ENTER USER MODE (SETS THINGS TO DEFAULT)
(VALUE: VOLUME, ETC)
- ENTER DIAGNOSTIC MODE
- ENABLE RTC CLOCK OSCILLATOR
- SET RTC
- READ RTC
- PROGRAM INTERRUPT KEYS/ETC (DRM CERTIFICATE)
- DELETE PRODUCTION TEST FILES FROM HARD DISK
- Enable IrDA XCVR

2/29/00

Oxii Production Conf Call

- Flash P/N:
TE2BF004 B3B 90/100/110
- What is the size of the content of the Hard Drive?
- ★ • How to duplicate Hard Disk Drives for Engineering Run? Send Churn via email ✓
- ★ • Detailed Marketing Spec → When? David Bristow ✓
3/1/00
- ★ • Send Alerts code by end of week.
- USB commands to write flash will be ready in about 2 weeks.

Oasis Production Meeting

2/29/00
(CONT)

- ★ • Dan to send Chun wzi List of Oasis test points
- Cheng: Can we use top boot flash?
No
- ★ • look at Micron for flash
- ★ • Send Cheng info on Jw Miller cap
- ★ • look at JPK MLC Ceramic caps
- ★ • Send description of charger test that could be run on test fixture
- ★ •

Next meeting: Tue 5PM / Wed 9AM
USA SIN

OASIS EVA MTO

3/1/00

Mech/ITB (Stores)

- Passed environmental testing!
- Problems with some mounting bosses in plastic, encoder PCB mounting hole not placed through.

SUBJECT:

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- J2 plastic in transit

HW status (Mihai)

- 1st Rev 3 board built up, starting to work
- Need to send board databases

SW status Howard

- Eng run release - need a plan
- Howard working on power management
- need to implement downloading of OS. over USB.

Andrei

- HID class support in USB code
- New

DSP SW - Gerald

- working on 20-bit ADC SW support
- memory map changes to accommodate Scott's code
- working on 32 bit output interface to DAC's
- will work on power up POP

Scott

- Got 2 reverb running. Needs tweaking. 16-bit reverb. "High school gymnasium".

Host SW status (Ron)

- Oasis host SW complete, merged with play center.

MARKETING STEPS

- Dave gave me MKTG specs & Storyboard doc.
- In-C2- but staff will go to Christie, Shannon, Franco. European Brand Manager.
- Euro trip report

Dept Stats - Lee

- Houso Jukebox voted majority at CEBIT
- Compaq approached us to buy Oasis
- Kenobi is \$300, way too expensive.
- \$599 price for Oasis "not a problem" according to reports at CEBIT.
- Germany: GEMA fee on music storage devices, based on # of megabytes.
- Internet world - 1st week of April, will take 20 units from SIN engineering run.
- Will set IBM drives in at end of week.
- Hitachi = possibility for HD mfg.
- 5 open Reqs. 2 HW, 3 SW. Will make offer to Don & to Mike Irwin. Want to set Tech Req. Research associate for MKTG side.
- Jukebox Pro: 24/126 Support, encoding, audio quality, 1384 I/F, microphone preamp.

SUBJECT:

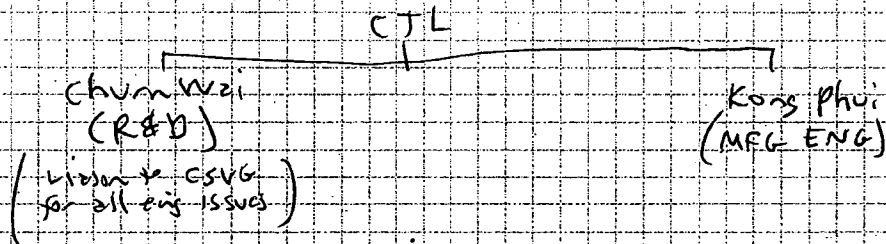
DATE:

3/7/00

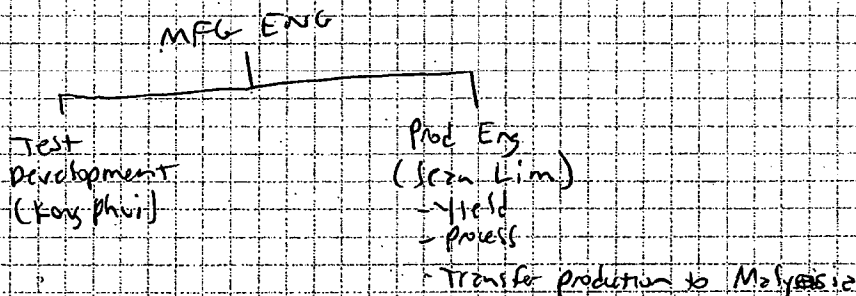
Jer Loon - Test Engineer in Singapore
(Howard, Dan, Siow Kiat, Leow)

Engineering Run - Issues to Deal With

- Flash programming - SIN does not have device programmer yet. We need to bring test fixture, Serial cable, PC SW
- Send test point list & Descriptions to Kong Phui Ng



Cheng Soon:
 Proj Mgr
 - Engineering
 - Mfg
 - Materials
 - Schedule

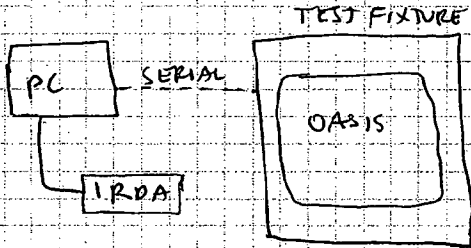


Production Flow Diagram

3/7/00
(CONT)

STATION 1

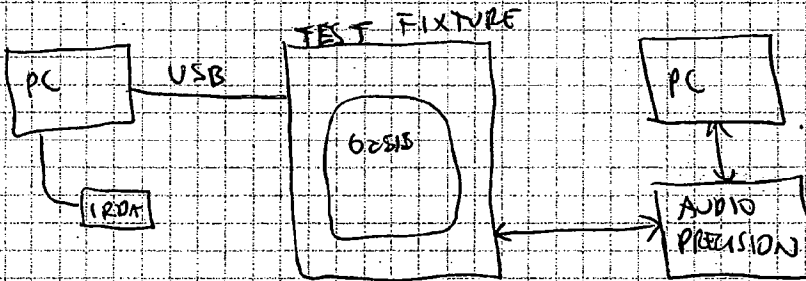
RAW OASIS BOARD



- SELF TEST RESULTS REPORTED OVER IRDA
- TEST VECTORS

STATION 2

OASIS Boards with hard drive



- Diagnostics tests
- SDMS keys loaded

STATION 3

Assembled OASIS Units

SUBJECT:

DATE:

Checklist Do this for Eng Run 3/7/00

- ✓ Test fixture - send to SIN (QTY 2)
- ✓ Test point description & Test vectors
- ✓ Release PAL code ~~***~~
- All data sheets on CD
- ✓ Tell Chun wai to install test connectors CN4, CN5 JP10597
- ✓ Send Board Databases
~~(Test fixture etc)~~
- Do NOT MOUNT PIC — Get Jeanette to build more P3 boards
- BUY IRDA ~~GRMO~~
- ✓ REWORK FOR FARTCHARGE INDICATION
- Rework for PIC processors.

Kong Phui, Shawn, Edwin, Chun wai, Ann Howard

Oasis Production Meeting 3/7/00

- How is self test FW working? Expect release of Eng Run FW on Mon 3/13/00. (Howard)
- PICS: Don't solder PIC's on Eng Run boards. We won't release PIC code until about 3/20/00 will have eng run PIC code on monday along with ENG RUN FW.

- Flash programming - will be done on Test fixtures. We need to send them
- Can we find VSOE adapters for Flash programmer?
- Ozon needs to send list of rework for Oasis boards.
- Hard Disk duplication? Saw kit that that can use plaster PC disk duplication fixture.
- FUJITSU Reps in Japan don't think this drive is suitable for mobile applications
 FUJITSU Rep:
 KEZU Hide Ohba
 Manager Eng Dept Hard Drive Division

Hitachi Drives very expensive, can't support our volumes.

- Next Meeting - some time next week.

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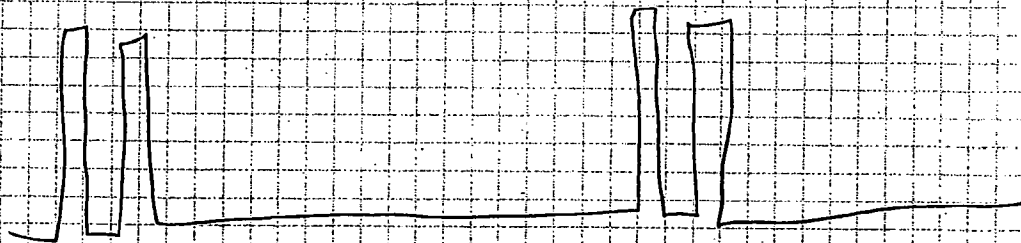
Oasis EAs Meeting 3/8/00

Dept News Lee

- Fujitsu: Japanese Mgmt team concerned about using their drive in our application, will only warranty 0.3% of their drives
- Armet Flash problem is now gone. They can get product by June.
- Compup meeting 3/16/00 in Milpitas - McCarthy
1635 McCarthy 3PM

Mechanical

- rec'd T2 plastics. Problems with B/H orientation ribs.
- Transferred design responsibility to M.J.O. in SIN.
- will use T2 plastic & modify them for Eng Run.
- will start production plastics



3/8/00

- Dan - Can we add charge LED to front panel? Steve will investigate.

HW (Dan)

- Power supply problem - Needs board spin.
- Need to finish DVT test. Need SW support.
- Lee expressed high confidence in product reliability.
- Singapore production team not grokking things very fast.
- Mihai

a got 2 boards working in test fixture

- Assy problems, Bad Cypress parts.
- Fix pin supply to Cypress part.

SW (Howard)

- USB I/F Boss on play lists
- OS loader/reader work
- Eng Run Release Monday evening 3/13/00
- Howard will make "golden drive" for eng run, Lee will deliver to Joe Leon to take to Singapore.

Andre

- support for P2 & P3 boards for the time being
- will switch to P3 boards next week.
- will CVS P1L code
- Dan will CVS P2L code
- finished startup codes for rev 8K.

SUBJECT:

DATE:

5/2/00

- verified IrDA, works both directions, 12: Pense.
- working with Yi Ming & Howard on USB SW for playlist control.
- work on Flash programming over USB.

DSP SW (Gerald)

- DSP diagnosed. Memory test to narrow
- write speed changes
- Power off pop problems. HW fix?
- 32 bit audio working
- 20 bit ADC data doesn't work.

Scott

- Memory allocation (Gerald)
- rewrite EQ to take 1/2 bandwidth & less code.
- will optimize reverb
- "Elementary School Gymnasium"
- Tone controls in VI should be $\pm 10\text{dB}$ not $\pm 16\text{dB}$ on tone settings.
- 32 bit EQ data goes directly to output buffer.

Ron

- Cold
- ~~Procenter 2~~
- "Procenter 2" SW proceeding.
- Ron giving feedback
- voice recognition testing Converter: crappy

3/10/00

PIC Changes

Howard, Andrei, Gerald, Dan,
Charlie Payne

- Test fixtures need Watchdog patch
- ★ { Watchdog enabled in power up. }
 - Scheduled wakeup. RTC chip?
- ★ { Reset command
- ★ { Check battery voltage before starting ARM. Min voltage = 3.5V (156? decimal)
- Kill scheduled wakeup command
- ★ • Fix get lock command
- ★ • Split code into 2 parts. Boot up, & command part TBD

EVS update -d

Design Production Cont Call 3/14/00

Flash Vendors

ST	} Not same footprint
MOSEL	
VITEC	
MICRON	

• IBM Drives - No go, because the head park mechanism rattles.

SUBJECT:

DATE:

- Eng Run delayed until Tuesday
3/21/00.
- Trip to Singapore Monday 3/27/00 (Soonest)
- Sumida Inductor - Chun wei will
send samples, and will send PCB
footprint.

Next meeting
Wed PM / Thursday

02115 Eng Mtg 3/15/00

- ~~Steve - All done with mechanical~~
- T2 plastics in - QTY 10 Silver, 10 Blue.
- T3 mods underway - battery door, sticky
buttons.
- 20 TH - Full production starts on 200K units.
- Remote design ~~is~~ underway

Mihai

- 11 units built & tested. 3 spares now.

Dan

- April 3 Singapore Trip
- Full test Tuesday
- Rev A PCB in process

CREATIVE
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Howard

3/15/00

- Got Eng SW release distributed
- SW revision next Monday
- Minor known problems
- Reasonably complete bootloader code.
- Cel: Get bug list reviews happening.
- 2 week turn on bug fixes.
- Finishing support bugs in USB chain.
- Backlight control: "in the plan"

Andrei

- Secondary bootloader upgrade over USB just about working
- Flash upgrade over USB works.
- Flash library changes checked in today.
- Finalizing USB protocol with Yi Ming
- Will come up with minimal USB command set so can update secondary bootloader in flash.
- Code release Friday

Gevert

- Sans playback at different speed.
- Support of variable recording speed.
- Dan: Need ADC gain settings FW support.
- DSP diagnostics - Memory test only reports
- Fall through setting on
- Dan: want power-off pop FW support. will be in 2nd Eng release.

SUBJECT:

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Scott

3/15/00

- Dialing in revs
- Specialization, EQ, Revs all work simultaneously now.
- writing time scaling routines in assembly now.

David

- Remote control design underway.
- Story board needs revising there are placeholders in for some functions now.
- Can use remote to turn on Oasis? No, unless Al adapts plugged in.

Lee

- Pink & pearl - color choices of young females.
- Playcenter II host app- Lee's big concern.
- Ron doesn't think Singapore will change their current design plans.
- Ron on vacation for 2 weeks.
- DRM support not req'd for FCS.
- In our best interest to support unprotected ~~WMA~~ WMA format.

3/15/00

Download Content to Osis

- Floppy with 3 files.

Copy Osis test to projects directory
or make shortcut & put on desktop.

Plus in USB. Add new HW wizard
NEXT, search for best driver, look on
floppy. Yes. Install Driver

put cursor in center window right click,
create track, for albums, click next
track, shift-click 1st track

Use XING ripper.

3/20/00

Osis power supply noise problems
AP10404 Rev 3.

problem: hear audible whine coming from
power supply when operating from AC jack

SUBJECT:

DATE:

Oasis EY Mtg3/22/00HW

- FCC passed
- working on acoustic noise problem - change power magnetism to smaller parts
- Charge shut-off - still a problem
- SIN can't figure out how to use felt fixture
- Trip to SIN for Dan - postpone until 4/10/00?
- Power-off pop problem needs fixing

MKTG

- Made bitmap icons for battery charging, low battery, will give to Howard
- I³ online company visiting ("Unencumbered" collections) (books collections) want to OEM Oasis & bundle content.
- Remote control technology problems.
- Updated story board.
- Alarm fraction still in product, but only when unit is powered up.

Mechanical

- Tool try-outs this week.
- will make 1200 sets this week & do interchange tests. Will send US samples.
- Still going up to Mass Pro.

- SIN will do their own shock & vibration testing
- IBM still has door open as far as using their drives - they need to send us acoustically quiet drives

Lee

- 64.3 MHz is critical frequency, -5.7 dB during playback.
- Concern. Switching power supply. (Walt wants)
- Think will submit paperwork to Taiwan. (will get ready for)
- ~~Think~~ Think suggests we use USB cable from web cam that has ferrite.

DSP SWGeoff:

- Reverb works with new code. Scott will tweak values. ARM can download parameters.
- Possible trip to Singapore
- Will need to solve power off pop problem

Scott

- Reverb settings tweaking
- Time scaling

SINAndrei

- Slacker
- Yi Ming left. His protocol is reasonable.
- Sent out protocol spec & driver spec for MAC App

SUBJECT:

DATE: 3/22/00⁵⁹

- Flash programming over USB works
- Charlie Payne sent updated PIC code.
- Lock switch bug in PIC code - Asked Charlie to come in & debug PIC problem.
- Fixing error handling problems with USB.
- Memory leak problem
- Crash during download.

Mihai

- Battery voltage experiments. found low battery point. DSP crashes at 3.2V.
- Want DSP watchdogs
- Thermistor location change experiment.
- Battery display
- Inductance experiments.

Oasis Production Meeting

3/22/00

Chew Sian, Kous Phui, HL Cheng
??

Lee M, Gerald, Andrei, Mihai.

- SIN having trouble programming Flash they weren't powering up the Oasis board.
- Review of "QA Reliability Labs Test Specifications"
- Sent new zip file with Gerbers.
- Singapore visit 4/10/00 Dan & Gerald

SW Support Mts

3/27/00

Howard, Dan, Gerald, Lee

- ① Headphones pop - Gerald will implement SW to mute the Amp.
- ② Input gain - Gerald implemented. Also will verify "pass through" mode.
- ③ Playkey boot up: Howard will post msg if boot up fails.
- ④ Dan - Use Real to J25 - WAV files so can do audio tests.
- ⑤ Adjust mps playback level to be "typical"

Oasis Eng Mts

3/29/00

Don

- Too much fun on vacation, fired
- Taking assignment with Tech Center

Lee

- Juicy news
- Less contact; Cheng soon changing "pilot run"

SUBJECT:

DATE:

3/29/00

- on 4/10/00 to "Sample Run" can't have
 pilot run until RBU's sign off on it
 100 Sample Run. (still until RBU sign off)
 100 pilot Run. (After RBU sign off)
- QA has started on Eng Run units.
 - Our team needs to review QA test plan.
 - Lee passed out list of bugs that must be addressed for Internet world.
 - Big Internet world Hoops
 - Hook made deal with Nexus on content for OSK

Dave

- Storyboard II ready to send out. "Out it goes!"

Scott

- 30-50% done with time scaling.
- TI FFT appears to work.
- Tweak EAU: Still to be done before release.

Andrei

- Trying to fit USB driver in flash so if OS gets corrupted, can download new OS over USB.
- Worked on PIC code with Charlie Payne. Hook switch problem fixed. Still a problem with the watchdog.
- Tried to increase USB XFER rate. Got up to 550K, but bottleneck Xfering files to hard disk. We can achieve 100K writing to hard drive.



SUBJECT:

DATE: 3/20/00

Howard

- Got more storyboard items implemented in UI.
- Code release Tuesday (V.O. 2.) 3/20/00
- Concern: we need to help Singapore guys with production testing procedures. we will outline USB command set.

Dan

- on schedule for pilot run: release PUB Escibes by Mon 4/3/00
- Steve: can we close up holes in Batt compartment since we are using alternate inductors.

Miki

- Power supply experiments.
- Batt charge indication
- Added "102 hrs" LED msg at boot up.
- working on debugging 11 units we got from Singapore.
- Si W sick will take time to rework boards.

Steve T

- Fixed cases that we got from S.I.N. Battery door etc.
- will get T3/T4 photos this week.
- Problem with volume indication? Robin's design note? Steve to "NO CHANGES"

SUBJECT:

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3/29/00

Oasis Production Meeting

Churn wzi, Sean, ~~Ken~~ Ou wai chong
lee, Howard, Andrei, mihzi

• IBM HD - Actuators knock on HD because
Oasis has noisy powersupply? Churn wzi will
ask about IBM current requirements.

• ER units: 9 more units work. Mostly soldering
problems.

• Bad Audio problem: One whole side of PCB being
stuffed with new SMT machine. Bad soldering?

• Thermistors were known shorted.

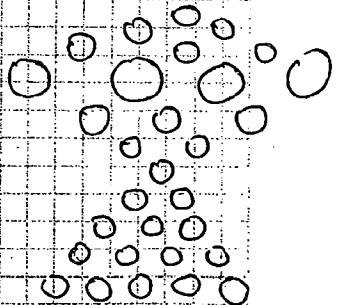
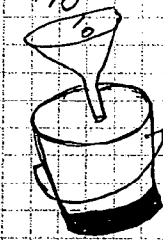
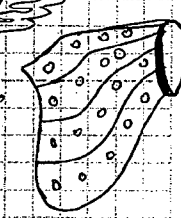
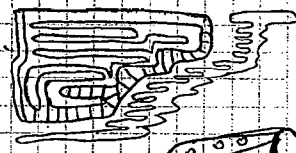
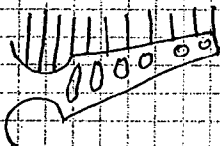
• DSP rework not implemented.

• Sean, KP, & Churn wzi are debussing
deck boards.

• 2 boards: Smoke comes from ground
pin 1 of Hard drive connector.

• CTL Spec for polarity: put parallel
lines to indicate polarity of TANT
caps.

• Can we change 1206 PKs
2200PF to 0603?
(1206 PKs being EOL'd)



Oasis prod MFG COMMIT 3/29/00

Action Items - D2

- Change 2200 pF CAP
- Send rework list for FASTCHGN pullup resistor

Oasis Eng Meeting 4/5/00

Steve Thompson

- Mechanics at Rev A
- 2nd tools up & running
- Alternate MFG thermistor units. Bill C should check them.

Howard - SW

- caught fish.
- Release for Internet World
- Won't fix any more bugs until feature set complete.
- Production Diagnostics Meeting tonight - Yi, Ming will help with prod diagnostics?

Andrei

- USB: fixed problem with multiple file downloads.
- Working on Production diagnostics comments.

SUBJECT:

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Orsis Eng Mtg Cont

4/5/00

Dave B:

- need to stand firm on our V.I. Don't let Cheng Soon & Robin change our spec on Sony board.

Scott

- 18 bit DSP hassles.
- Implementing time scaling will take an extra week for time scaling.
- Then will need to tweak reverb.

Gerald

- Got rid of pops & clicks between songs?
- working on "center position" on EQ.

Dan

- Power supply ripple problem
- Charger problem with new inductors.
- LED flickering

Mihai

- Debugged Singapore Eng Rev board.
 - Charlie fixed PIC code.
 - Mihai fixed power-up pop
- Andrei

Oasis AP10404

Component Temperature Measurements

AP10404 REV 3

- ZI10690 Inductors: QTY 4 at L3, QTY 2 at L4
- 23°C ambient temperature
- board out of case
- Temp measurements with Tektronix TX3 multimeter with temp probe
- R48 thermistor location stuffed with 4.7K

Temp readings taken with batteries charging, backlight on Record ARM mode (drive spinning)

	Q81	65° C	5255	R630	49°	54
	UB1	51°	48	P.L.B. above D81	50°	
	UB2	60°	51	D3	58°	50
Ambient	DB1	63°	47	D2	52°	48
25°C	UB3	62°	45	L3 Inductors	73°	59
			4/11/00	L4 Inductors	65°	61
						53

Annotations: "Stock" (near R630), "0.167Ω AT R630" (near D2), "0.167Ω AT R630" (near D3), "0.167Ω AT R630" (near D4), "0.167Ω AT R630" (near D5), "0.167Ω AT R630" (near D6), "0.167Ω AT R630" (near D7), "0.167Ω AT R630" (near D8), "0.167Ω AT R630" (near D9), "0.167Ω AT R630" (near D10), "0.167Ω AT R630" (near D11), "0.167Ω AT R630" (near D12), "0.167Ω AT R630" (near D13), "0.167Ω AT R630" (near D14), "0.167Ω AT R630" (near D15), "0.167Ω AT R630" (near D16), "0.167Ω AT R630" (near D17), "0.167Ω AT R630" (near D18), "0.167Ω AT R630" (near D19), "0.167Ω AT R630" (near D20), "0.167Ω AT R630" (near D21), "0.167Ω AT R630" (near D22), "0.167Ω AT R630" (near D23), "0.167Ω AT R630" (near D24), "0.167Ω AT R630" (near D25), "0.167Ω AT R630" (near D26), "0.167Ω AT R630" (near D27), "0.167Ω AT R630" (near D28), "0.167Ω AT R630" (near D29), "0.167Ω AT R630" (near D30), "0.167Ω AT R630" (near D31), "0.167Ω AT R630" (near D32), "0.167Ω AT R630" (near D33), "0.167Ω AT R630" (near D34), "0.167Ω AT R630" (near D35), "0.167Ω AT R630" (near D36), "0.167Ω AT R630" (near D37), "0.167Ω AT R630" (near D38), "0.167Ω AT R630" (near D39), "0.167Ω AT R630" (near D40), "0.167Ω AT R630" (near D41), "0.167Ω AT R630" (near D42), "0.167Ω AT R630" (near D43), "0.167Ω AT R630" (near D44), "0.167Ω AT R630" (near D45), "0.167Ω AT R630" (near D46), "0.167Ω AT R630" (near D47), "0.167Ω AT R630" (near D48), "0.167Ω AT R630" (near D49), "0.167Ω AT R630" (near D50), "0.167Ω AT R630" (near D51), "0.167Ω AT R630" (near D52), "0.167Ω AT R630" (near D53), "0.167Ω AT R630" (near D54), "0.167Ω AT R630" (near D55), "0.167Ω AT R630" (near D56), "0.167Ω AT R630" (near D57), "0.167Ω AT R630" (near D58), "0.167Ω AT R630" (near D59), "0.167Ω AT R630" (near D60), "0.167Ω AT R630" (near D61), "0.167Ω AT R630" (near D62), "0.167Ω AT R630" (near D63), "0.167Ω AT R630" (near D64), "0.167Ω AT R630" (near D65), "0.167Ω AT R630" (near D66), "0.167Ω AT R630" (near D67), "0.167Ω AT R630" (near D68), "0.167Ω AT R630" (near D69), "0.167Ω AT R630" (near D70), "0.167Ω AT R630" (near D71), "0.167Ω AT R630" (near D72), "0.167Ω AT R630" (near D73), "0.167Ω AT R630" (near D74), "0.167Ω AT R630" (near D75), "0.167Ω AT R630" (near D76), "0.167Ω AT R630" (near D77), "0.167Ω AT R630" (near D78), "0.167Ω AT R630" (near D79), "0.167Ω AT R630" (near D80), "0.167Ω AT R630" (near D81), "0.167Ω AT R630" (near D82), "0.167Ω AT R630" (near D83), "0.167Ω AT R630" (near D84), "0.167Ω AT R630" (near D85), "0.167Ω AT R630" (near D86), "0.167Ω AT R630" (near D87), "0.167Ω AT R630" (near D88), "0.167Ω AT R630" (near D89), "0.167Ω AT R630" (near D90), "0.167Ω AT R630" (near D91), "0.167Ω AT R630" (near D92), "0.167Ω AT R630" (near D93), "0.167Ω AT R630" (near D94), "0.167Ω AT R630" (near D95), "0.167Ω AT R630" (near D96), "0.167Ω AT R630" (near D97), "0.167Ω AT R630" (near D98), "0.167Ω AT R630" (near D99), "0.167Ω AT R630" (near D100).

Oasis Production Conference Call 4/5/00

KP, Sean, Elaine from Test Engineering

- VCC Regulation - Add inductor in series with VCC 330uH 1210 Inductor.
- Dan F reports 4 bugs with P3: ① App pop ② VCC regulation ③ Backlight Flicker ④ charger broken

SUBJECT:

DATE:

Remote

A/S/00 (CONT)

- Chew San suggests that we drop the IrDA remote control. please tell Cheng Soon.

Osis Documentation

- KP will send me specs he wants me to finish.
- I need to finish Technical Spec

DSP Loopback test

- Want volume indication on LCD. Want max volume by default for loopback test.
- KP will send us list of production tests that will be performed. We should add to this list.
i.e. DSP Loopback

Battery Charger test

- To test charger, want to put variable resistor in parallel with thermistor. What value should this be?

SPM1 Number

- Do we need to keep track of SPM1

Schedule

- Cheng Soon sez I need to release PS PCB design by next week to keep schedule.

Elaine: Bus list

4/5/00 CONT

- ① Recording levels
- ② Pause problem
- ③ Bus problem: On 3 out of 5 tests, they won't play for 8 hours. Seems like the DSP crashes.

Eng Run Boards

- They were having problems programming flash on about 10 boards. When they program flash in programmer, ^{some of} the boards work.

Next meeting: 5:30 PM
WED

Bill Cross Meeting 4/6/00

Ways to improve SV ripple performance

- ① Increase vcc by 0.2V
- ② put L_{ESR} Electrolytic cap on VCC
- ③ Try larger inductors in VCC circuit.
- ④ Add series inductor on VCC (churn wsi)

SUBJECT:

DATE:

~~① Make VCC inductor larger via~~

Oasis PWR SUPPLY

4/9/00

CHARGER CIRCUIT MODS

(Rework on P3 board: Add series diode from VBAT+ to 5V converter, Add series diode from DC PWR to 5V converter)

- ~~① Cut fat trace from via to L4-2, top side. Scrape solder mask from trace on via side so can glue diode on trace.~~
- ~~② Connect Anode of MBR3240 diode to C28+. Connect wire from Cathode of diode to L4-2.~~
- ~~③ Solder anode of another MBR3240 diode to via side of cut trace from step ①. Connect Cathode of diode to L4-2.~~

OASIS ENG MTR

4/12/00

Spec - Mechanical

- Loose Cannon fail II - Lee agreed to change "Menu" button to "EAX"
- Add Silkscreen under Play button: ON
STOP button: OFF
- Received 20 sets of Rev A plastic.

4/12/00

- Completed "Real world" testing ~~of~~ ~~of~~ of various situations. No will test ~~on~~ ~~is~~ to these shock/vibration tests.

Howard

- Got schedule requests for release contribute I shooting for 4/21/00. Not all features will be implemented (Time scaling)
- ~~Get~~ ^{with} shuffle & repeat modes, search modes.

Andrei

- Yi ming helping with production diagnostics. All but 3 commands implemented & tested. Yi ming working on driver, someone else working on App.
- Some ~~USB~~ ^{USB} functionality in Flash wde.

Scott

- Time scaling works for X2 playback
- His challenge is integration with other DSP code.

Gerold

- Found glitch bug ~~is~~ during playback. Still need to fix.
- Rear Speaker Supp.A. Percentages wet/dry for Rcvrb.

Mihai

- Worked with Maxcin on ripple on hard drive. "Solved"
- Flickering backlight - del exp on backlight LEDs,

SUBJECT:

DATE:

71
4/12/00

- reduces flicker during playback of DC power plugged in. Still flickers during battery playback.
- Encoder bug - if encoder between detents, get false button reading. Will test encoder with diodes to see if it works.
- will test per 4 boards today we hope.

Don

- Bill C - charger fixed, changes required, working with Singapore
- Azei's testing - going well
- PS board layout - in progress
- Andrei: lock & unlock boot block.

Oasis Production Meeting

4/12/00

Elaine, Chun wai, Howard, Mihai
Andrei

Agenda: Bug List
PS PCB

- Bug List: No bug fixes last week. Bug fixes will be in next release.
- we need to test boot block lock/unlock (Andrei)
- USB test commands implemented
- Andrei wants more info on how to support audio precision tests.

4/12/00

- Chum wai - will send samples of
- Chum wai - still troubleshooting PS boards!
Short circuits with ARM pins?
- Gerber files - Many custom polygons in
Daxiny's output files (for composite files)
- Non-Composite Gerbers are fine. Send those next
time.
- Leave #1 crystal as is. If have room,
add more solder pad.
- ★ Ask Yuhui Bui to send environmental tests
to Chum wai
- Sean - Production Issues.
- ★ Send Audio test results by Monday SIN
- ★ Find out value of thermistor where charge
cuts off.
- ★ Send new PIC code for SIN pt Assembly
- ★ Design Review planned for Tuesday
PM / Wed AM SIN

SUBJECT:

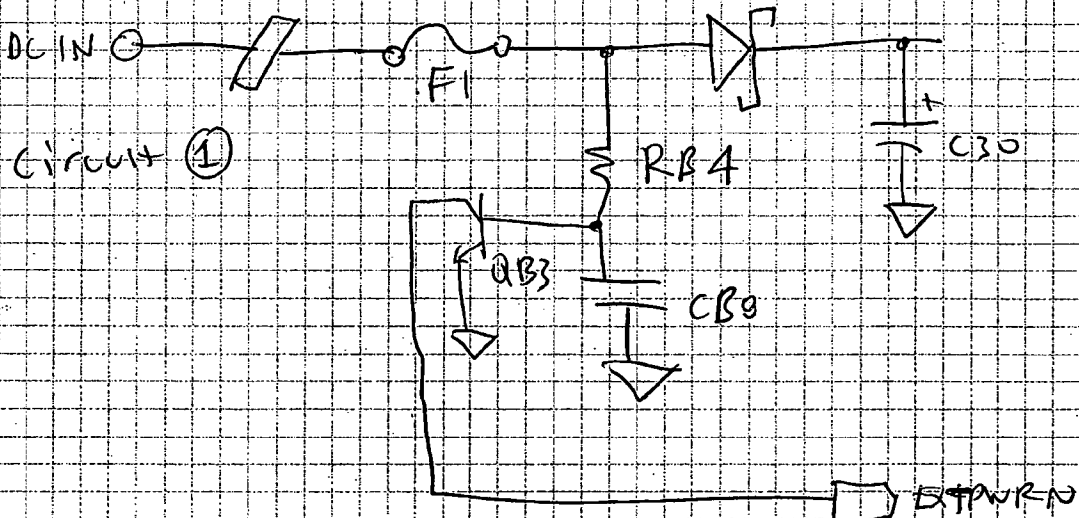
DATE:

Oasis Design Review

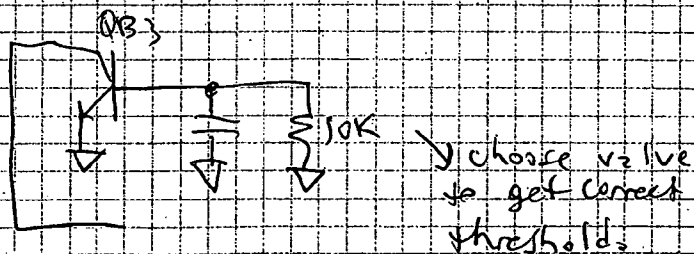
4/14/00

Action Items

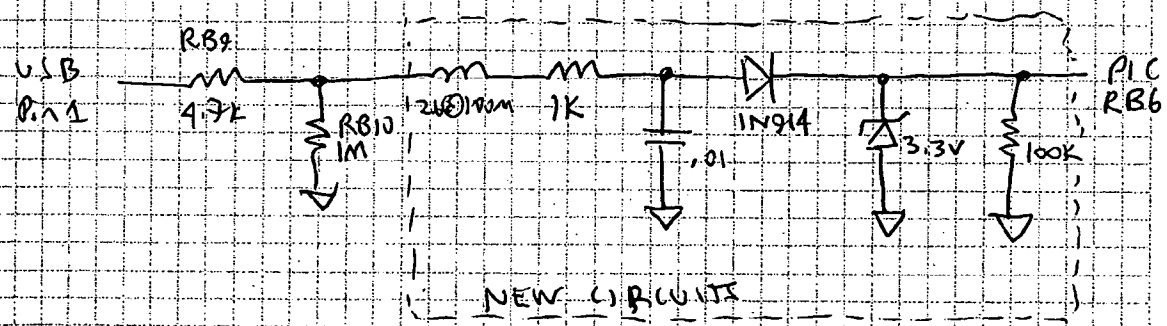
- ① Get Fujitsu Apps Engineers here to "bless" our power supply design.
- ② Move C57 cap to right of D6.
- ③ Let people review backlight flicker fix.
- ④ Get 25 IBM drives for evaluation.
- ⑤ External power detect circuit change.
 - ← most fix →



②



- ⑥ ESD testing? follow up with Chun Wzi on who is doing ESP testing (Koh Nzi Gee)
- ⑦ Do ESD testing ourselves
- ⑧ Add test pads that are "easy". Make sure that important test points are included.
- ⑨ Fix encoder problem - re arrange switch matrix. Increment Board ID.
- ⑩ Make sure that silicon glue is used on ~~the~~ RTC battery.
- ⑪ Auto wakeup on USB plug-in



SUBJECT:

DATE:

(12) LCD change for "Instant On" feature.

Leave LCD powered-up all the time. When Oasis powered off, Blank the LCD by shorting out switched cap on LCD refresh circuit.

OASIS AUDIO TESTS 4/18/00

SOURCE	DESTINATION	TEST	FILES	NOTES
AIN	LINE OUT	FREQ RESP	oasis-?-?-resp	

Oasis PS PCB Design Review.

4/10/00

KP Seem, Chum Wei

Lee, Howard, Mihel, Andrei

- ① Test Issues.
 - LCD display for button test? Andrei will outline button test mode in email.
 - Don't enter more than one test mode at a time
 - Lock boot block not implemented.
 - Use new PIC code for Sample run. Send CW (current) check sum for current PIC code, send .Hex file Send ASAP, need to program chips today.
 - Need to have test tone on Oasis HD to test line out 2, since can't monitor line in to line out 2.
 - Want diagnostics version of code that has recording as 1st option so can minimize key presses.

② VIAs - want to add more test points. SIN CAD/CAM group will work with production test to add the additional test points.

③ P4 Sample run - boards come in 20th, with on 22nd.

④ Design Review

• New parts:

QTY	PART
2	20.0K 1% 0603
2	27.4K
2	100uF
1	22uF
1	100NF
1	10NF
1	1000 PF
1	10K 5%

SUBJECT:

DATE:

4/15/00

- Will set samples of the Amla Tech Indicator this week.
- NO WAKEUP ON USB PLUG IN
- NO "INSTANT ON"

② Other issues

- SIN will do ESD testing this week.
- Battery for RTC needs to be secured with Silicon glue. Chum Wzi will decide.

SW Issues: when is Beta release?

• Howard: "Feature complete" release next week. This is "RC1"

• RC1 26 April

RC2 8 May - Code freeze for Play Center II

★ Send Gerber files in Non-composite format

- will only get 10 P4 samples from Singapore.

Oxley Eng Mts

5/3/00

Dan, Howard, Steve, Bruce, Gerald, Mihai, Andrei

Andrei

- Working on USB protocol
- Moved diagnostics (PIC Comm, Batt measurement, Lock switch) into secondary boot loader.
- Will have board ID detect & will use correct switch scanning algorithm.
- Can update primary, secondary, and flash boot images without disassembling units.
- Toshiba drives don't work. Investigation - TBD.

Howard

- Intertrust support - Intertrust changed their header length. Intertrust support almost done.
- Will have library summary file now, so don't have to generate it at power-up. Makes unit boot faster.
- fishing

Gerald

- Recalling Gain. Setting gain step size, etc.
- Want to back off on max gain to DAC's

Scott

- Polishing algorithms.
- Waiting for unit control of time-scaling.

SUBJECT:

DATE:

Steve

- No status. Mechanics done.

Bruce

- Escaping the stress

Mihai

- Got Rev 5 PCB finished & ordered fabs.
- Debussed P4 boards from Singapore - Actual flash bad, Thermistor not stuffed, no glue on battery, battery terminals not installed correctly.
- Rev 5 boards due in today.

5/4/00

New Product Concepts Meeting

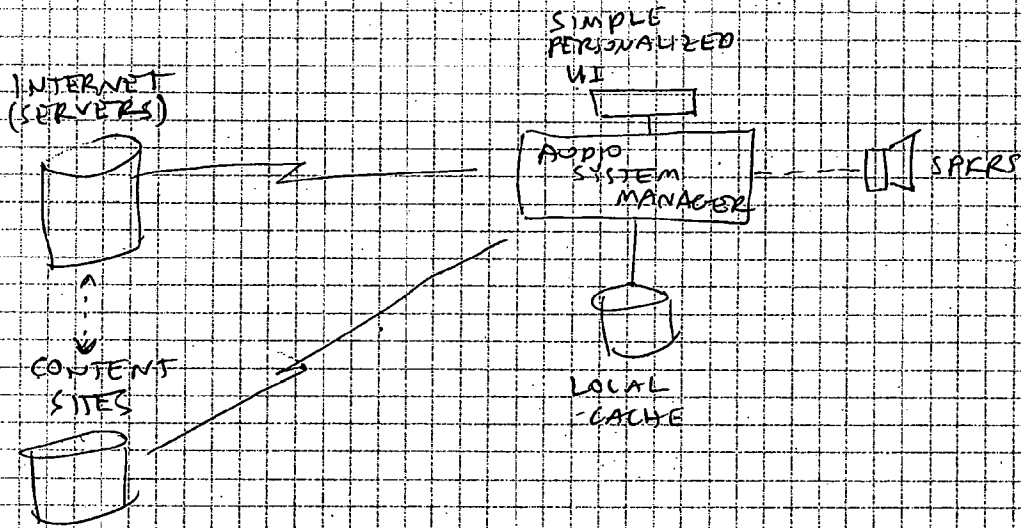
Carl W, ?, Brian S, Lee R, Mark D, Martin R, Martin?
Lee M

Product Ideas:

- ① Internet Radio / IAX
- ② Powered Speakers / Home Audio Server
- ③ Wireless Personal Headset
- ④ Home Voice Navigation
- ⑤ Interactive Music / Audio Controller
- ⑥ Dictation Device / Speaker Phone

- Powered Speakers: (overall wireless) or other in-home distribution of audio, from central server.

- wireless personal headset - Full Duplex (Built-in mic)
can integrate Audio playback & telephony
- IAX: Internet Radio. Reprogrammable from Host.
Services Component: Can choose "station" to listen to
like OMX. No control over content except genre.
2nd layer of service: Interactive, builds
profile of what user likes, then feeds selective
content. Remote control could allow you to
select profile



Action Items:

Lee Ray - Start MRD w/ Dave B, Lee M

Dan F. start system design, Martin Randall
interested in helping

SUBJECT:

DATE:

Ossis Eng Mtg

5/10/00

Howard, Gerald, Andrei, Mihai, Bruce

Howard

- Released PC2 SW release.
- Ed's bus tracking database in use
- Howard will filter bugs & keep "real list" (internal) updated
- CLOK involved in product testing now, they are providing best bus feedback
- Bus fixes this week.
- will do performance enhancements for Y.Ming.
- Intertrust support & Aime: No plans now.

Andrei

- Fixed Toshiba drive problem ~~fixed~~.
- worked on USB
- finalized 2nd - env header
- Removed battery testing from PIC
- Removed Lock switch detect from PIC
- PIC ARM checks for valid O.S., if can't load O.S., message written to LCD.

Gerald

- Got rid of click between songs
- helped Dan find click bug during record monitor
- still click bug when skip between tracks.
- Got record playback working again
- Scott (Gerald report)
- Got UI for time scaling.

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5/10/00 Con't

- Will test time scaling at various speeds.
- Swift going on vacation for 2 months starting on June 1st
- Time scaling & reverse mutually exclusive.

Steve

- Waiting on HW, like always.
- failed shock & vibration. oh well.

Mihzi

- Built 6 ps units.
- will set 25 boards (assembled) back on Monday
 - Dan
 - Untede Tech
 - FCC (Think)
 - Lee
 - Lee
 - Busted

Bruce

- Helped Kit new Fab's.
- Getting HP to come demo scopes

Don

- found click bus w/ceroid
- Headphones volume needs to be increased
- Bill cons reduced ripple on VCC3.3 by using
- 1 ohm sense resistor on VCC3.3 circuit

SUBJECT:

DATE:

Oasis Conf Call5/10/00

Lee, Chun wzi, Kang phui, Sean
Mihzi, Andrei

- HDD Duplication - how to handle encryption? how to verify content once disk is loaded?
- Duplication includes verification
- QA person should listen to every track on master HDD to make sure content is good.

P4 Board - Status of 100 boards

- Intermittent xtalk, R/L channel swap sometimes.
- Tell Gerald about this
- High distortion on Line-In to Line-Out Audio test.
- PS Audio testing: ① Install 12K resistors
Don't install
- C29 is blowing on some PS boards. Can we use lower value caps? (Don't want to)
Use 25V caps for next BOM
- Want to move recording to 1st item in menu so can reduce key presses during production test.
- P4 boards - failing audio test (should be fixed w/12K fix)
- PS boards - 15 boards assembled w/changes, waiting for testing. Testing occurs today.

- ★ Ask bill to document how he tested thermal shutdown.
- ★ Have Howard generate list of bus fixes planned for RC3 code release.
- RC3 release should be avail on 5/15 or 5/16

Oasis Eng Mtg

5/17/00

Dan

- Cheng soon reported "showstopper" bug - if charge Alkaline batteries, batteries leak.
- UL test this week to check out above problem.

Mihai

- Debugging 10 PS boards assembled by United technologies. Lots of soldering errors.
- USB problem - "PS + RC2", USB doesn't work. SW problem?
- Getting back 15 more PS boards today.
- Flaky boot problem. Mihai will investigate.
- DF blows on PS boards, need to investigate.

SUBJECT:

DATE:

5/17/00

Bruce

- checking out charger temperature cutoff.
- charged alkalies, measured temp of 45°C
- will measure temp of charging NiMH.
- clock jitter of 1.4% measured. Within spec.
- will work with Bill Cross on charger & other power supply stuff.

Steve T

- 30,000 housings molded.

Howard

- Singapore expecting RC3 SW May 17th.
- Delay due to "DAC static" problem - need to keep DAC data pin active 100% of time. This was fixed, but other things were broken.
- RC3 will be released today.
- CLOCK^{found} bus - unit crashes on delete multiple playlists.

Andrei

- Got Dolby @ AAC library, integrated into code base.
- "USB Secure" on PS boards with RC2 SW. Boards won't communicate. Andrei unable to duplicate bug.

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o helped Mihzi debug boards.

5/17/00

o Added features to support Play Center II

Gerald

o Fixed recording today.

o fixed popping bug on audio outputs - DSP data pin was tri-stating ^{DAC data pin} ~~before~~ during pause/stop

& causing DAC to play garbage.

o will commit DSP changes for PC's code build today

o Scott added changes to prevent clipping for certain EQ settings.

Oasis - Charger Modification Brain Storm Andrei, Bruce, Mihzi

First, modify existing power supplies so can get power from DC power

→ Mihzi - mod 3.2V supply to get power from

DS/D6 junction. Measure current through DS (DC power) & D6 (Batt power). Make sure

→ on PIC 3.3 regulator VBS, add zener circuit. Set resistor value so VIN to VBS not below

4V when running on batteries.

SUBJECT:

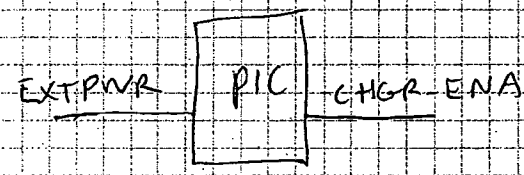
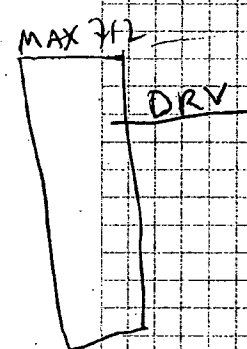
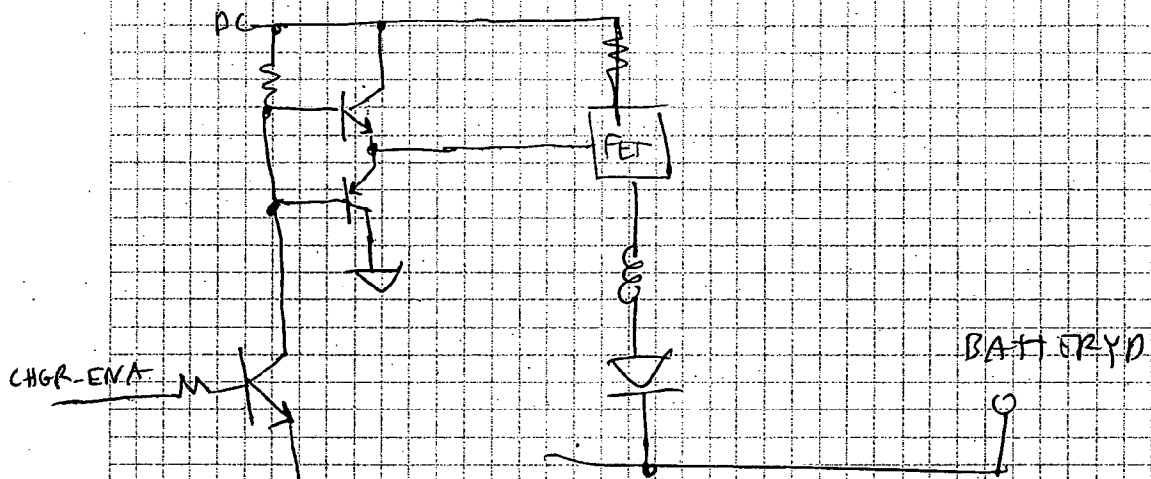
DATE:

- Figure out how to Kludge Q1B as a charger shutoff transistor.
- make sure A20 in PIC can read 6.5V before clipping.
- Adjust RB9 so get correct ADC range.
- Measure Batt Voltage relative to GND instead of across terminals.
- Current through RB6 when Batteries not installed.

ORISIS POWER SUPPLY / CHARGER MEETING

Charlie Payne, Andrei, Mihail

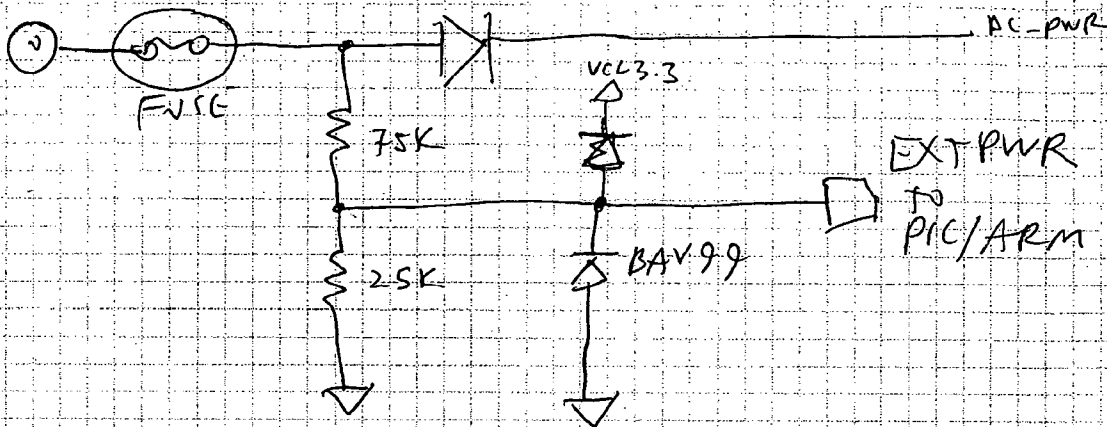
charlie: Don't need FET to turn off Batt charger?



"charlie's cheap Method to Disable Charger"

DC power detect circuit

CON'T



Action Items

- ① Prototype charger enable circuit. What happens to MAX712 when disable DRV pin?
- ② Prototype EXT PWR Detect circuit
- ③ Test with Li-Ion and Zinc oxide batteries

Change

- ① Keep pic alive whenever DC power in
- ② Constantly monitor voltage
- ③ Remove lock switch SW
- ④ Investigate whether we can use RA1 on PIC as A/D input. Move PICDI signal to RB3. 2.5 ENA goes away. Fe ledesic

5/22/00

Ozsis Power Supply Subsystem - Paul's and
circuit review.

① RB4 wrong value & wattage. (SH9)

Want current to UB2-15 ~~to~~ be between 5mA-20mA
for 8.5V input. (Minimum input voltage @ DL-IN)

$$R = \frac{V}{I} = \frac{8.5 - 5}{5 \text{ mA}} = 700 \Omega \quad 650 \Omega \Rightarrow 5 \text{ mA}$$

\Rightarrow use 2 1.3K resistors in parallel, 650 Ω

then for 12V supply + 10%: (13.2V)

$$I = \frac{V}{R} = \frac{13.2}{650} = 20 \text{ mA}$$

② Power consumption

- Fast Charge
- Backlight on
- Recording
- 12V DC Input
- 0.2 Ω Sense resistor at RB36 (Ch 9)

Current Draw
is 1.16A @ 12V

\rightarrow Increase RB36 to 0.25 Ω

Current Draw
is 1A @ 12V

Ozsis Conference Call 5/23/00

Lee M @ Home: 409 249 6744

Chun Wai, KP, Sezn, Chew San, Howard E.

- Chew San sent a prototype of the remote control
- Howard: No support for IrDA in code yet. No plans in schedule to support IrDA for FCS.
- Chew San will let Cheng San know that

SUBJECT:

DATE:

We don't plan to support I/DA for FCC.

• Churn w/zi: proto'd p-Mos switch in charger circuit.

- ① work with AC & Batt
- ② AC only
- ③ Batt only

• Dan: Forward Email about test points & FCC.
Sean, KP, Cheng Soon.

• Change R10 & R11 to 0.1 Ω

• Fairchild Sub for IRF7404 / IRF7416

• PMOS Switch for charger mod: Fairchild Sub ^{OK} FR544
for 7404

• Include Sigs in emails

• Audio performance Big problem: Cross talk
→ too high. -55 dB LI to LO, with input
-10 dBu.

Show stopper

~~THD+N~~ THD+N 0 dB WAV = 0.326"

(Whatever that means)

→ I said NO P6 Gerber until week from
Friday. (USA time)

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Keith Goss

5/26/00

- Keith can start on PIC code Friday 6/2/00
- \$70/hour
- Fox Ind Contractors agreement
- Tech. tools

Complete PICmicro ICE system \$699

Hi

- No minimum for hours, but 4 hour min per time.

OASIS ENG MTG

5/31/00

HW ISSUES (DAN)

- 3.3V power supply - Start-up problem causes flaky boot
- Inductor whine - No ^{good} solution yet
- Audio Quality seems to be fixed with headphones circuit mod
- Charger - do we change to BP2000 charger IC
- Think Bui needs part for shock & vibration test
- Siang, Thiz & Victor visiting from CTL to help us finish HW.

inhal

- Working with MAXIM on 3.3V power supply circuit.
- Got PIC SW working for battery charger circuit.
- MAXIM or PIC can't detect backwards cells

SUBJECT:

DATE:

5/31/00

Steve

- Closing up gap on battery door.
- Two thumb grips on batt door.

Howard

- Substantial performance improvements in system SW
- will diagnose "shuffle" & other bugs.

Andrei

- USB code fixes
- IrDA performance poor.

Cerall

- working with Sutt on time scaling, works to slow down, have artifacts on speed up.
- Pop in speed-up - Jim Mac can help Cerall find bug.

Dave B

No stars

Lee

- Brazil Trade Show - we don't have to go
- chastised for not saying "No" by Dave Sparks.
- Biggest issue on project now. Play Center 2 SW Not ready for Prime Time.
- CLE had to pull out of Cannes film festival because we can't deliver product by mid June.
- Kevin Sheperdson doing a QA audit on whole JB package - Manual, Packaging, Unit, etc.
- offack is "comfortable" with UI & unit operation with RC3 SW & Headphones & Infrared Mod.

Scott

- Pending vacation.

SUBJECT:

DATE:

Singapore Conference Call
Sean, KP, Chun Wzi

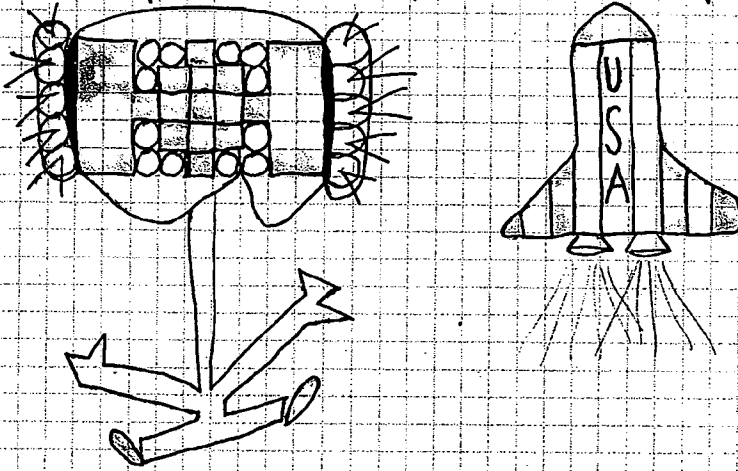
5/31/00

- MAX1771 part is OK for now.

→ Send instructions on how to modify headphones circuit.

→ Test crosstalk on headphones with 322 load. Showstopper if big crosstalk

- New PIC code req'd for 33V pur supply fixes.



Oasis Conf Call

6/5/00

Stang Thia, Victor,
Lee M, Michael

- KA34063 Battery Charger IC. (Fairchild)
Investigate & feedback, then will do test time study.

SUBJECT:

DATE:

- 2 boards on Singapore side had boot problems.
- CW will send us these boards so we can diagnose.
- Send 0.1 μ resistors if possible.

OASIS ENG MTG

6/7/00

Siang Thie, Victor, Mihai, Bruce, Andrei David, Howard

- Dave B.
 - Mtg with CV, Dave S, Lee. about project assignments. Disconnects pointed out for MKTG + Eng + Bus plan for OASIS.
 - Big meeting about business plans for various groups in Milpitas today.
 - Up until 2-3 days ago, Cheng Soon didn't have full responsibility for OASIS.
 - We need to design to \geq SPEC.
 - Hammering on Relocating with Last Build SW 6/6/00.
- Siang Thie:
 - CV assigned ST to help fix the power supply circuits.
 - Testing & verifying charger, etc & reporting to Singapore.
 - Ripper project cancelled - ~~ST~~ ^{now} ST can help with OASIS.

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6/7/00

Cheng Soon's Assignments:

- Alkaline batteries - charging + play time
- check charging time, termination, etc.
- Predict play time.
- Flaky boot up.
- Pending problems: Headphone output level, Inductor whine.
- Victor is logging data on power consumption & playback time / battery life.
- Working with Howard on charging SW to increase battery life.

Howard

- R4A released last Friday. Problems with blank disc.
- R4A. Issue due to recording bug.
- R4S will be released today. Fixes Playcenter II problems.
- tuning SW for battery life increase.
- long Bug list from SIM
- Howard's Showstoppers: 2 couple of crash bugs w/ Playcenter II.
- 10 showstoppers on SW side prior to R4A.

Andrei

- WMA Playback Got some sound out.
- Andrei received remote controls from Cheng Soon. No SW scheme for remote support.

Gerald

- Fixing recording bugs. Waiting for DSP bugs.
- Scott W on Leave of Absence.
- Scott gave Gerald some SW documentation.

Steve

- Caught a fish.
- Waiting for HW.
- Closing ~~battery~~ gap on battery door. Tools were rebuilt.

Bruce

- Built PSA Boards.
- Finished Battery Matrix.
- Ordered Lab Supplies & Furniture.
- Order components for next build.
- Need more chairs.

Dan

- PSA network test.
- Proving PSA.
- Getting ready for P6.

Mihai

- Flaky boot. fixed.
- Waked with Maxon on whining noise. No progress.
- Slow UI response in response to button press.

6/7/00

Lee

- McHugh called mty - Wants roadmaps of product development & Business plans.
- Cheng Soon - not officially assigned to Project Mgr until last month.
- Sony notified us on patent infringement on headphones we wanted to ship.
- testing battery life.

KP, Sean, Chumwei OASIS CONF CALL
 Dan, Lee, ST, Howz, Mihai, Victor. 6/7/00

- PG update: Change per supply topology.
- Inductor whine: I say use JW Miller Inductor. CW will send me data sheet on shielded Anla Tech.
- Cheng: ^{we} Want to use BQ2000.
- Want to build 50K Oasis next quarter.
- • Send Cheng emails about:
 - ① resistors & caps we plan to use
 - BQ2000
 - .2, .25, .1, .05 ~~for~~ resistors
- Cheng will send 50 samples of shielded AnlaTech Inductors.
- • Send Cheng email about O.K. to use BC thermistor.

SUBJECT:

DATE:

→ Send Cheng PM75-220K Inductors
Call JW Miller about availability.

- CW modified 21 PSA boards.
All went through production test. 3 boards failed. 2 failed RTE, 1 hangs during recording mode.
- CW will send ~~10~~ sets of PSA Boards for us to test.

ST

- ST doesn't find any problems on PS network instructions.
- A few issues: IRDA range, Headphones level, Inductor whining noise.
- CW to send audio performance data on PSA boards.
- collected ~~best~~ dischs during play. Achieve about 4 hours after full charge. Improvement due to only FW updates. 96Kbps source material.

Oasis Conference Call

Soon, KP, Chun Wai
YK Tan, Don G, Sings This

6/13/00

CW PSA Status:

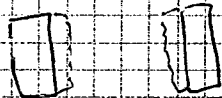
- Reliability complaints on PSA - FW only.
- Will give reliability report on PSA early next week.

ST

- Caps on 32KHz XTAL reversed, will change back on Pb.

HL Cheng

- Big problems with lead time on Tant Caps.
- will buy .2, .3, .25 2512 1%



CW1

- Voltage spec on DL input jack is 6.3V - 10.5V. We are exceeding the spec.

Cheng Soon:

- Need Gerber by June 22nd. Otherwise pay premiums.
- Send email to Cheng Soon with conditions

SUBJECT:

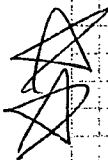
DATE:

on releasing pb gerbox.

- need more units

- Fast Assy of pb samples Qty 25
5 days turnaround. Includes testing

- send plan for Friday morning SIM
time



Siang Thia, Victor, Bruce, Gerald,
Mihzi, Howard, David, Lee,
Dan, Steve, Andrei

Oasis Eng MTG 6/21/00

Lee

- Glowing reports on fixing showstopper bugs on PCB
- Building 2000 PSAs. 200 built, 9 were busted. Problems with disk drive problems.
- Biggest problem: Copying disk drives.
- Charger: 200,000 Maxima per 2000. Covers us through Q1.
- TI has 350K BQ2000 avail. When can we have new Oasis design with TI charger circuit?
- Chian Yi was asked to see if CAD/CAM in Singapore can do our layout.

Siang Thia

- tested all PSA & Pb design changes.
- ST. is comfortable with the schematics.
- Charging testing & verification still a challenge.
- Charging terminates properly when charging without unit powered up.

Mihzi

- Expansion into PIC not yet tested.
- will implement on 2 more boards.
- Working with Maxxim on inductor whining problem.

Dan

- Pb layout complete
- Film today
- Can't have P7 w/BQ2000 until 1 September

Howard

- Many showstopper bugs have been fixed.

Oasis Eng MTR
6/21/00

Howard

- RCB released. Will be installed on 2000 PSA units.
- 500 to CLI. very few to PR.
- 500 to CLE. will have aggressive July PR campaign before Europe shutdown in August.
- 300 to CLA, mostly to Japan.
- 700 to CTL. to test facilities, to ~~SEA~~ ATC QA, & to investors and analysts.

Andrei

- Minor USB changes.
- Skip forward/reverse functionality.
- WMA with DRM works.
- PSA & Pb testing support.
- MP3 playback fix with bogus MP3 file from Pearl Ripper. 1st 64k was bogus.
- Remotes from Singapore Don + work.

Gezell

- Done with DSP Code. extra cycles available.
- Could work on PIC code.

David

- Got manual for Oasis. will proofread.
- Hammering on recording.
- Noise when recording with no input.
- Shitty quality jacks.
- Want VU meter

Bruce

- Pass - Kits, etc.
- Lab organization - more benches & chairs.

Oasis conference call
 KP, Sean Chum Wai

6/26/00

DSP change:

~~0 ohm~~

DSP 541b

1.5V regulator

1.5K resistor

2222 transistor

- OS hangs problem with unit that was sent to Lee M - Mihai & Andrei figured out that ARM was bad.
- Howard got unit that hangs at OS load. Is looking at it.
- Using 2 0.2 ohm resistors. Cheng only did risk buy on .2 + .1 ohm, not .2 + .2 ohm. Don't have enough 0.2 ohm resistor now.

SUBJECT:

DATE:

- Gerber files - fixed dangling traces.
No problem with silkscreen

- 1300 PSA boards built so far.

- Will send pb new gerbers today

- PSA problems: power-up fail, unit hangs at Creative logo. (top three)

- Yield was 59% of build of 1300 units.

- T1 test is PCBA level with LCD mounted

- T2 is auto precision test

- T3 is based-up units.

Yield on build of 1300 PSA boards

T1: 72.4% (power-up failures)

T2: 92.5%

T3: 88.2%

T1 test fixture: TESTS battery charger, thermistor.

PIN 4 of batt charging circuit.

5416

→ send reel of 500 pieces of JW miller

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Oasis Eng MTG 6/28/00

Lee

- SIN Production will want support on P6 - Regular & frequent confcalls on this subject, Time = TBD.
- Lee will work with Cheng soon to nail down final specs of shipping products for P6 and future products. This includes PlayCenter, Oasis FW, HW, etc.
- RBV's surprised that PlayCenter 2.0 merges Jukebox & SB Live functionality. Must solicit input from all groups and cement feature set & bug fixes before FES.
- No action items for us on users manual.
- P7 - 1 action item is schematics for P6
- Send Schematics for P6 in electronic format.
- P7 might actually be Jukebox plus
- P6 will ship during Q1 & Q2 (through December)
- plus:
 - 1394
 - Li Ion battery
 - Better audio quality
 - ~~But~~ Faster UI
 - 5416 DSP
 - Better ADC + VU meters.

SUBJECT:

107.
DATE: 6/29/00

- Steve: want to have conf call on having JIN use our tool chain (Allegro vs. Mentor)
- Early July: pin down Specs on Jukebox Plus.
- prototype Plus on out-of-firm-factor board gets SW dev going
- Jukebox selected as "one of best new designs of millenium" by London museum of modern art.
- Communication is biggest problem, on all of our PDE products.

Oasis Conf cost

7/5/00

our Agenda:

- ✓ → Can you send us 10 PCB Assys
- ✓ → Did you test 22pF Caps on Y4 on PSA boards
- ✓ → Can you read Orcad Schematic files. (I sent)
- ✓ → we are testing PIC code now

- I said CTL should switch to ~~Mentor~~ Allegro.
- Chum wei has changed BOM on his side to include 22pF Caps on Y4 crystal on PIC.

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O&S Eng Meeting

7/12/00

Topics for Discussion:

① P6 battery charger

- P6 will ~~to~~ charge non-rechargeable Lithiums.
- should use 3rd battery contact
- P6 will not charge NiCd batteries
- PIC needs to do averaging on ADC readings to correctly detect battery type

GM Meeting:



• P7 is "mashed"

- focus on plus version.
- First: Development board
 - Power Supply topology
 - reduced cost
 - 1394
 - Docking station
 - Audio improvements
 - Cirrus 7212 + Motorola DSP + AT&T Cloer
- Clover 1st ship wouldn't be before fall '01
- Have mat'l for 130K units.
- P6 boards + new PIC requires new bootloader + new OS.
- Sleep mode on Fujitsu Drive gives better battery life.

SUBJECT:

DATE:

9/12/00

Ozis Pb Checklist before Production

- Release PIC Code
- Test XILINX Coolrunner PAL & Release
- SW: OS Issues: full disk, fragmentation issues, corrupt disk recovery
- Final OS release planned for Friday. If testing passes, can distribute Monday.

Clower Meeting - Paul M 9/21/00

- Use "cheapest SDRAM" that we use. Milton 10ns.
- Need databus buffer bet Clower & other peripherals so SDRAM won't see big capacitive load.
- Should separate JTAG interfaces. Assume we can share the TDO pin across emulators.
- Big questions.

① loose GPIO + Interrupts + switch inputs into GPIO Dan to propose

② How to support 56367 co-processor Dan to figure out

③ Firmware support details (DATA + S.T.)

★ ④ power management

- Internal logic runs off 1.22V. Can shut down. 1.20V & 1.200V.

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8/28/00

Jukebox Plus Meeting

- Fujitsu EOLing 6GB Drives - we will change to 10GB/12GB, or Fujitsu will modify 10GB mechanism for 6GB.
- want higher precision encoder - needs 10 week tooling time! (more segments, less bounce)

9/29/00

Clover Meeting

Jane, Paul M, Mike, ?, Gerald, Howard

- We need to get Motorola debug tools in-house
- want bootstrap mode - next Rev
- if tape out 9/30/00, will set chips back st of NOV

Pete Johnson
Mike Skripek

TI Meeting on 1394

8/30/00

Randy Lawson - 1394 Product Development

214 480 2315 rlawson@ti.com

Bryce Leach SW Mgr

- # 41AB - phy lower EMI, 196 MHz is problem freq.
147 MHz
540 MHz

SUBJECT:

DATE:

9/25/00

Oasis Sustaining Eng Mtg

Dan, Bruce, Mihai, Andrei

- Jukebox is stop-shopped because of charger problem - units won't charge completely discharged batteries.
- possible with current PIC code to indicate that charger is charging batteries on LCD
- Best fix: modify PIC so will do pre-charge on batteries.

Action Items:

- check new PIC code (Bruce & Mihai)
- call Keith Cross to have him see if we need him this week (Mihai)
- send Singapore PIC code, have them help us test it. (Mihai)
- DVT done (Mihai)
- Overcurrent problem on DB18 - Mihai & Bruce arrived at 2 solutions, communicated to Singapore.
- 10GB drive is qualified
- 12GB drives are qualified. >4 hrs playtime observed with externally charged batteries.

9/25/00

- Hang problem: Bruce has unit which will repeatedly hang.
- IORDY logic doesn't work!! Fix for future.
- want diag version of code that has DSP diagnostics, to detect when DSP hangs.
- Gerald: Work with Andrei to implement. Hold ARM + DSP code review on ARM ↔ DSP interaction, propose how to detect problems.
- Xilinx qualification: Push off until later.
- Phase delay between channels → write unit later. (Ho Ton)
- Need centralized source of outstanding sustaining engineering issues.
- Audio performance on HP with HP mod - we need to verify.
- Static Zap on encoder - using SA615 TVS diodes on encoder fixed static discharge problem.
- (Industry) orientation - No action now.
- Engineering Spec on Jakobox - low priority

SUBJECT:

DATE:

Jukebox conf call 9/25/00
 (charging problem) (REAL BIG Problem)

Hock, CY, Lee, Howa, Mihai, Andrei,
 ST, Cheng Soon

- shipped 20K units already.
- ON stop-ship
- \$6 for external charger.
- Lee. Maybe better to provide charger to customers rather than recall 20K units.
- Hock. Find source of fast chargers, ASAP. Get them to the RBUS. Find out how much trickle chargers & fast chargers.
- ATC. Find out solution (PIC code) ASAP
- 2000/day is production limitation due to burn-in.
- Fall-out is about 3-4%. Failures: Unit Hangs, Unit has no sound.
- Cheng Soon - Ask RBUS if it is OK to take out auto-on feature from PIC.
- TAKE OUT Auto PWR-ON
- 5:30 PM CONF CALL, Some call-
 Conf ID 272506

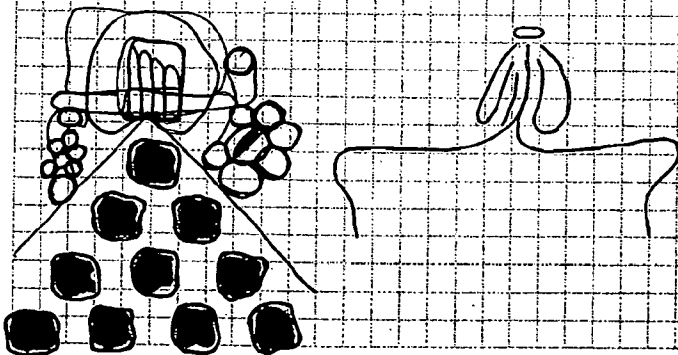
CONF CALL

9/26/00

JUKEBOX STOPSHIP

Christi, Huck, Cheng Soon, Howze, Siang, Thid
Ken Fong.

- Want charge indication on LCD to help detect dead battery situation.
- Howze says we could provide SW release for this ready for Monday.
- CY: Need to Calibrate HW & SW on charger circuits.
- Other production units are displaying this problem. Yikes.
- Cheng Soon found ^{external} fast chargers for about \$8. 45-day lead time
Panasonic gave spec but no quote on fast charger.
- GP slow charger is \$6-\$7. 30-day lead time.



SUBJECT:

DATE:

CONF CALL

9/27/00

Jukebox Stop Ship

- PIC Code released to Singapore.
- Need extensive testing of PIC code.
- RC14 Code release distributed - implements Fast Charge indication.
- Singapore - Do PIC testing, email out results.
- CY - PIC regression testing could be completed by Monday.
- CY - Programming PIC code not an issue for ramping production back up. Could reach 2K/day from production line starting at 2nd day.
5K+
+ PCBAS (15K)
- There are 12K units in finished goods locations - Reworking these is required. Could affect yield of re-test.

Hock (408) 203 5992
cell
phone

Cloner Board Design Review

10/19/00

- OK to not have FW
- Boot Flash: Must use 16 bit Flash.
- Boot Flash interface is slow $\approx 150 \text{ ns}$.
- Add an additional 16M x 16 DRAM. Total = 32M x 16.
- Boot Flash: Add an additional large Flash on another address region.
- Add jumper options to accommodate different power supplies (i.e. linear)
- Some pins on Cloner power up in tri state.
- Jumper blocks on all power rails.
- Use separate 3.3V regulator for Cloner.
- Add ESD protection where needed.
- Design Review Attendees
Mike
Shawn
Paul B
- George L will find out about ZIF Socket
- Find Flash Sockets

SUBJECT:

DATE:

Action Items

- Martin-pete. How do interrupts work - flash/SDRAM. Can int vectors be mapped to SDRAM?
- Distribute V.I.O of Clover spec. - Paul
- Ad

Clover Board Design Review 10/24/00

Mike S, Mark C, Gerald I, ^{Conrum, Pete J, Shawn S,}
^{Andrei, Mihai, Paul M, Paul B,}

- ① Fix Schematic Index ^{niel}
- ② Add TP to LowvoltageEN input. (PIC)
- ③ Paul M checked pinout
- ④ Clover DSPDEBUG PIN NEEDS TO BE TERMINATED (DSP JTAG I/F?)
- ⑤ Mark C - Find out about what is this WP2 SmartMedia
- ⑥ Investigate IORDY behavior on Hard Disk
- ⑦ pullups on clock inputs (I2S)
- ⑧ No termination on Data pins on Clover
- ⑨ Paul M - Need termination on DSP Data bus
- ⑩ Mark figure out SMSEN pin

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CON'T

10/29/00

- ⑪ Add SRAM to resident with Extra Flash. Hook up VBN & CBN
- ⑫ Gerald - give me
- ⑬ Figure out if FLASH is connected correctly (Address Bus) (Paul / Mike)
- ⑭ Shaun - check SRAM addressing
- ⑮ Connect Bus XCPs for S Meds & Hard Disk to D bus.
- ⑯ NO ACCOMMODATION FOR SOCKETS
- ⑰ ~~check~~ check voltage tolerance on VASA VCB.3A

SUBJECT:

DATE:

12/13/00

Cirrus Meeting, John Woosley, Bus Dev Mgr.
Alison Kemp, Sr. FAE. Cedric Lee, Aut Mgr, Singapore.

Product

IDS Samba 6mm CR/RW USB peripheral
Storage > 150MB, has Audio output & built-in
MP3/WMA decoder. IDS is looking for a
marketing channel.

Uses Cirrus

EP7312

CS43L43

CR3400

www.infinitestorage.com

concept

D.M. on Digital Audio jukebox. Home stereo
type unit. System includes stereo component,
Home network, powered speakers kind of concept.

chip

Maretek ^(C0,11ion) EP9312, Product Brief on web.

Datasheet due in Feb 01. 1st silicon working
200 MHz. 1W. 250 micron ARM920T +
custom co-processors

Digital Audio Receiver

Silicon & Eval boards avail in April or so.

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SUBJECT:

DATE:

CIRCUITS (CONT)

CS 53L32 stereo ADC for MIC.

7312 avail early next year. Has
SDRAM, HW SRC, 10K more internal SDRAM,
unique ID in HW.

EP 7A09 - Rev A sample fab

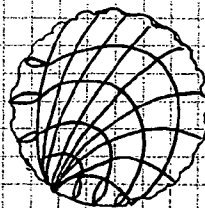
1K VOL JUL

10K'S VOL AUG

A360 6-channel DAC

New inexpensive low-power ADC. 53L32

Q0A27 S/PDIF XCVR 96KHz \$12-\$15



SUBJECT:

DATE:

12/21/00

Veritronix visit - Juan Baeza, Act. Exec.

- Can build 1.1mm thickness displays.
- 3 std PDA displays.
- 160x100
- TAB controller (Hitachi) - chip on flexcable.
(Tape Automated Bonding)
- Avail in touch panel. (2-wire). Adds 2-layers to assembly. Limits contrast.
- LED backlights Avail. ALSO EL

Sharp Electronics. Richard Palamidessi, Regional Sales Mgr. Karl King, Criterion Sales.

• Does color displays for Palm Pilot & Handspring.

• 3.9" HRTFT 320x240 Display

LQ039 Q2D554 } off the shelf
0.2 } High-volume. \$30

• Custom: 6 weeks to samples. ~~backlight~~ No touch screen.
10-12 weeks for prod. volume.

• Datasheets available on website

SEC.com → 3 1/2" version \$60 target price, 6-9 month swap

★ 1.64" 128 x 96 RGB color display.
2 mW Backlight off white LED backlight with light tube.
125 mW Backlight on

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Arrow, Future 2ne
Distributors. future has eval boards for X53, X54

CONFIDENTIAL

Daisy Staff meeting Notes

1/3/01

Hardware Support Reqs

- GP CPU Horsepower (MMU req'd for embedded linux)

- DSP CPU HP

I²C

I²S

RTC + Alarms

PWR Mgmt

SDRAM

SRAM

ATA < IDE
ATA-66
ATA-100 (serial)
ATA 100

IR (duplex)

USB

1394A

LCD

TOUCHSCREEN

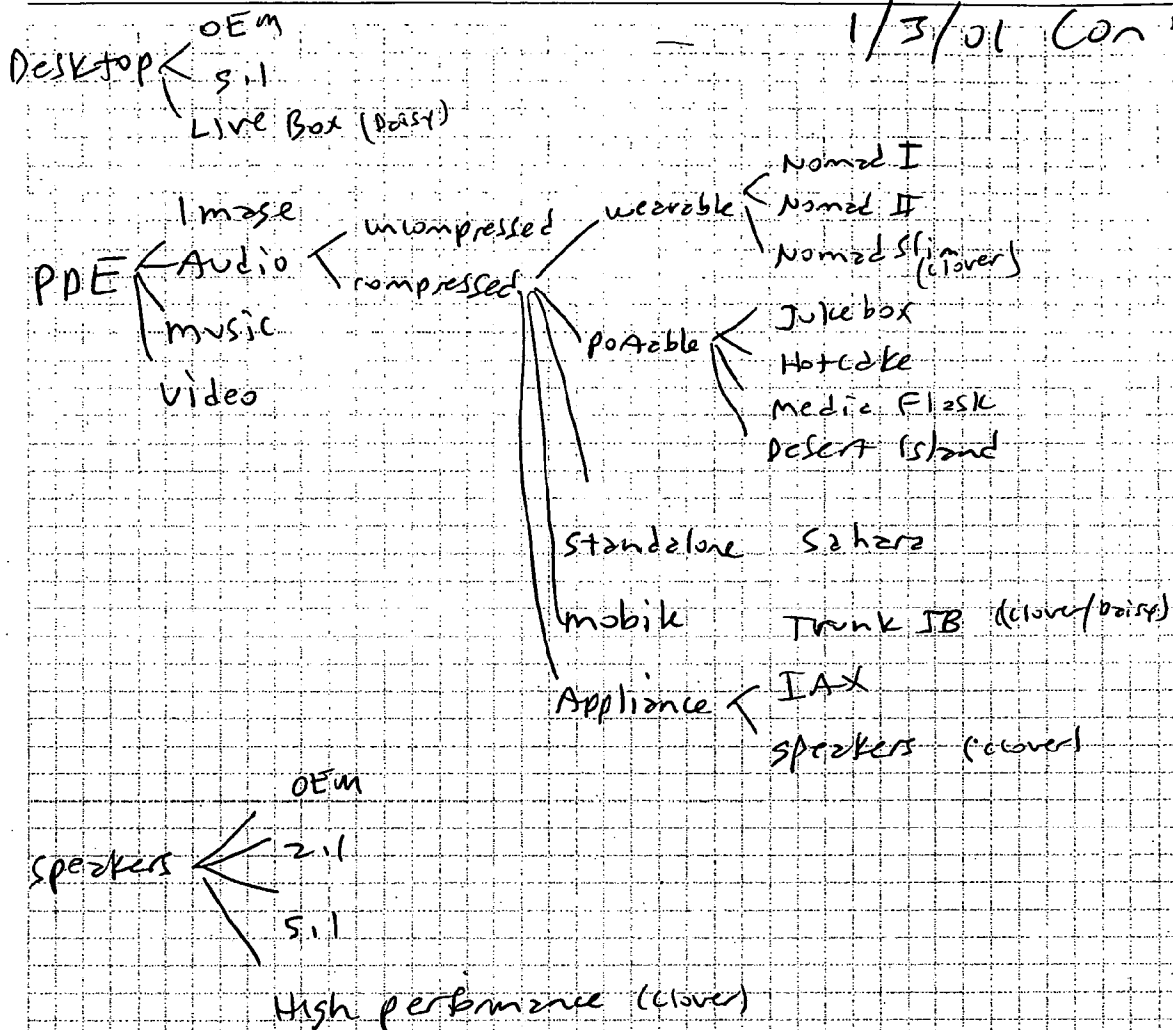
Buttons/Encoders

AM/FM Support

SUBJECT:

DATE:

1/3/01 Con H



★ Pull DSP from Daisy, use TI chip being used for Hotcake to implement CODECS? I need to propose architecture.

★ Proposed changes to Daisy:

- ① Add support for 2nd coprocessor (TI DSP)
- ② Add additional ARM core
- ③ Remove M032A core. Keep Internal SRAM

1/16/01

Jam Class D Amp TEST RESULTS
Audio Precision Files (Apwin/Jam folder)

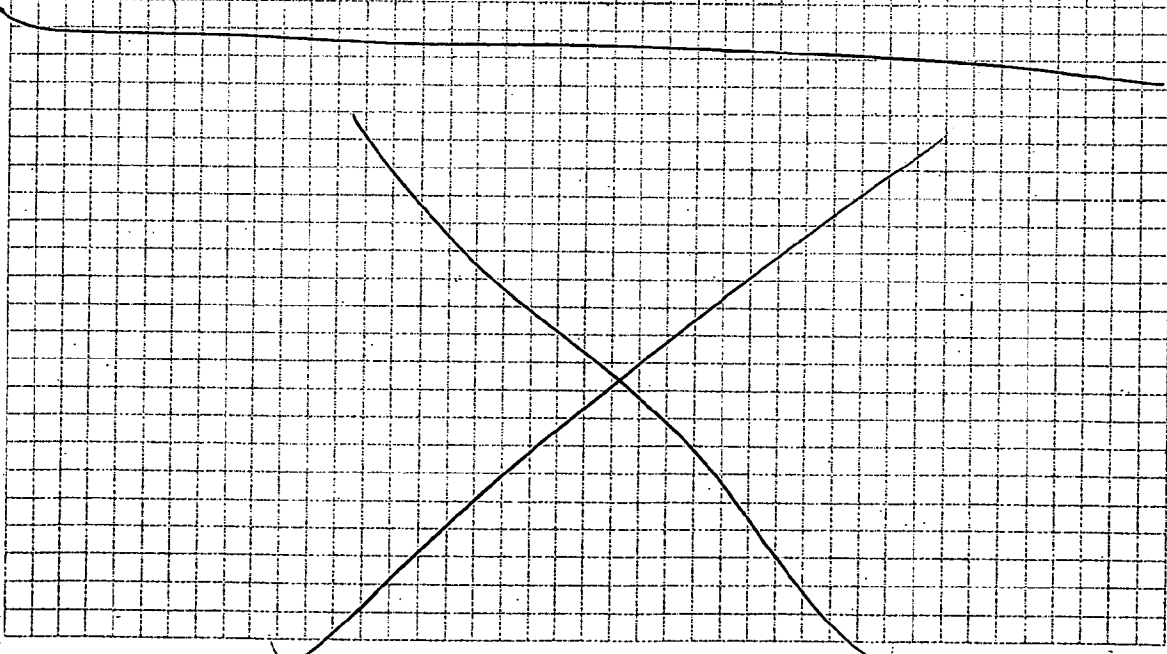
THD+N VS FREQ:

- Red: Full scale
 - Blue: -1 DBFS
 - Magenta: -12 DBFS
 - Cyan: FULL SCALE SPEAKER LOAD
- } 4Ω resistive load

FREQ RESP - resistive load 4Ω

- Magenta: FULL SCALE
- ~~Cyan~~
- Green: -12 DBFS

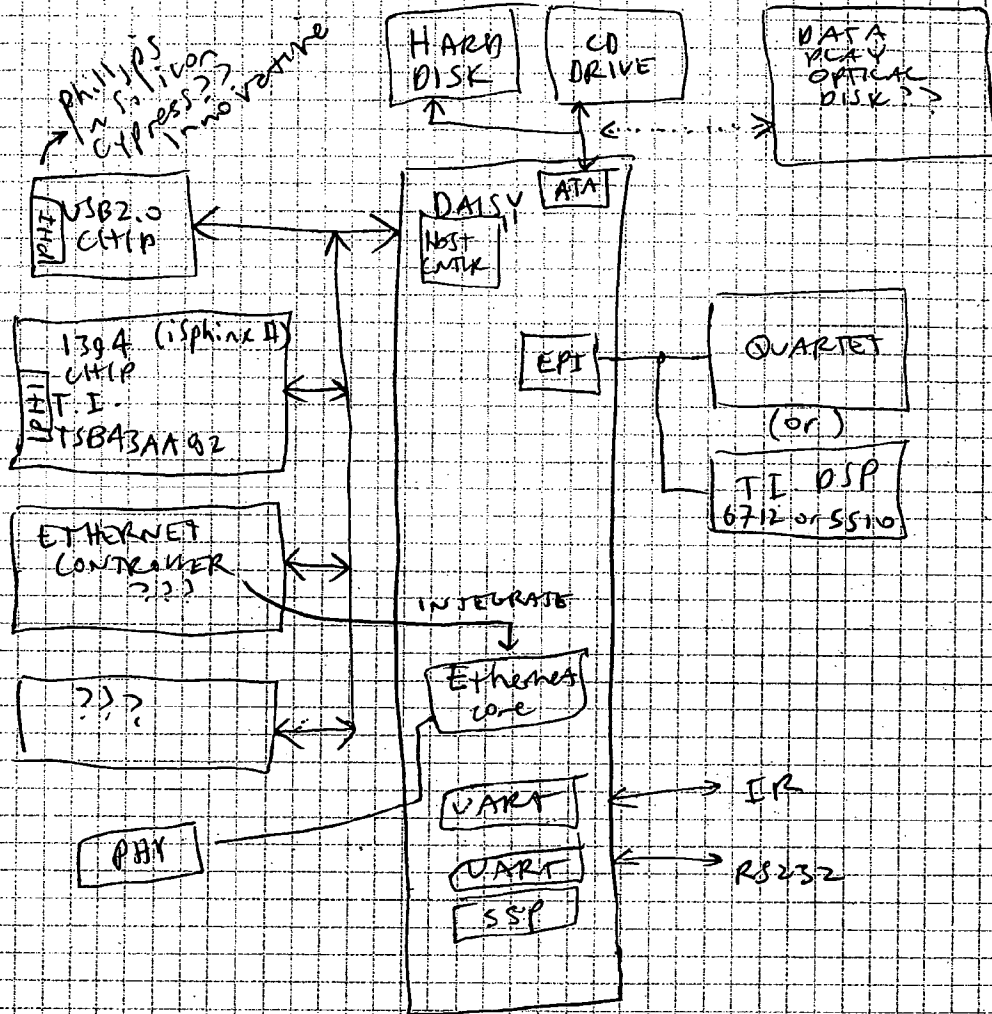
THD+N VS AMP: Full scale 4Ω resistive load



SUBJECT:

DATE:

Daisy Meeting 1/17/01



- Rick M - Can handle business end of USB 2.0 chip selection
- Ethernet: 10/100 requires 20 pins? "MI² interface (Media Interchange Interface)
- Lee - Figure out other TI 1394 chip
- IS Architecture (Oz / Howard)

22 Jan 2001

Cloner Meetings

Dave S, Don, Anne, Pete J. Brian L

Possible Cloner apps:

- Rainbow
- Tamba
- Wireless Speakers (CY, HC, Chuo)
- Desktop Speaker System + Jukebox Dock (Dr Lim, AVP)
- Cost-down Nomad (Malvern?) (Not Nomad JB) → SmartMedia I/F
- ~~AVP USB speaker~~

Priority

- ① • Test USB to level 2
- ② • Leave IrDA untested
- ③ • Test SmartMedia
- ④ • Power management features
- ⑤ • Power consumption
- ⑥ • DSP testing (Brian L's group)
- ⑦ • A-corners testing
- ⑧ • Performance testing
- ⑨ • Standardize on O.S. (Embedded Linux?)

SUBJECT:

DATE:

Lee M - JB2 Meetings

22 Jan 2001

3 Diagrams:

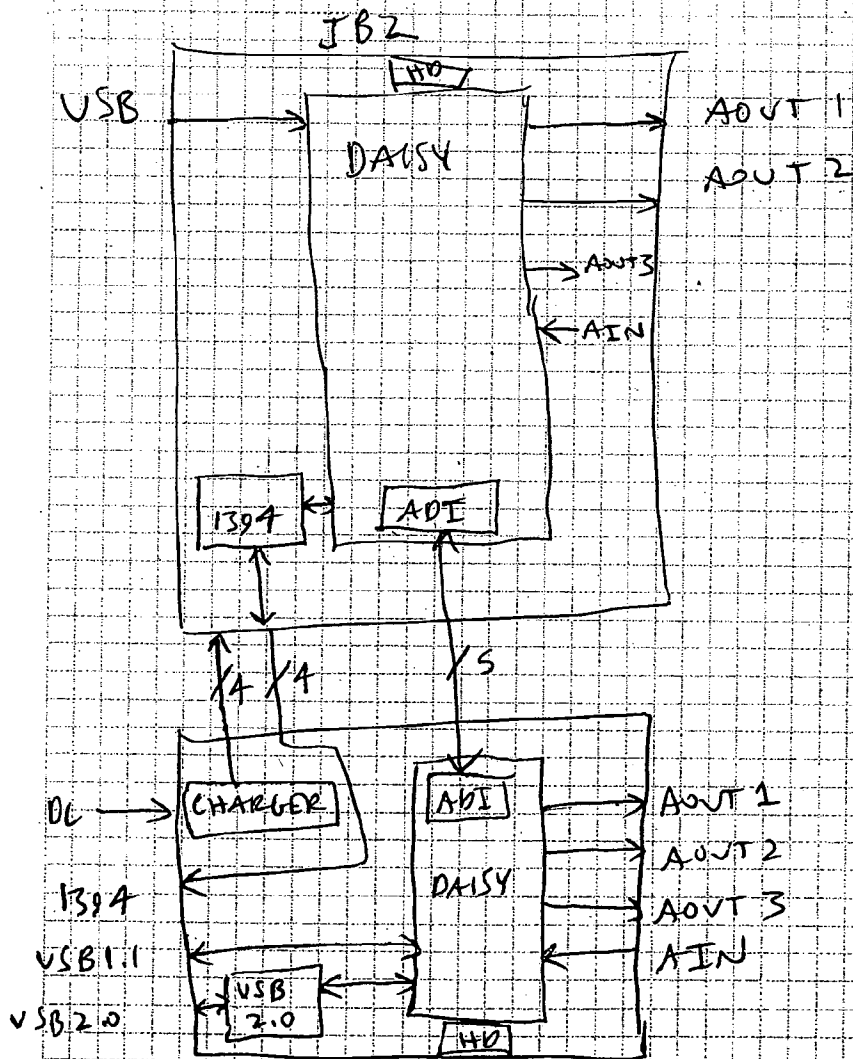
CD DOCK (include USB 2.0)

Simplified DOCK (1394 + charger)

Field Receiver Dock

JB2 + CD DOCK

22 JAN 2001



POE Strategic Directives

1/24/01

① 1394

② S.I

③ Modularity to accommodate other technologies
(like video)

25 Jan '01

Dockings Architecture Meetings

Ray L, Howard, Steve T

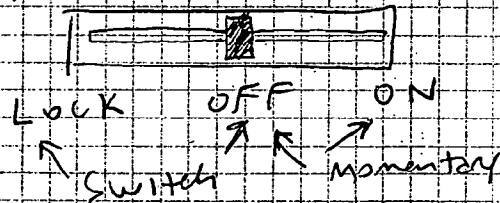
• Dockings I/F is 1394.

→ • Must disable audio outs on JB2 when unit is docked into dock with audio outputs. Test for acceptance.

• Me: Find out how much phys lost for 1394. Want 2 phys maybe on JB2

• Send Ray L down for JB.

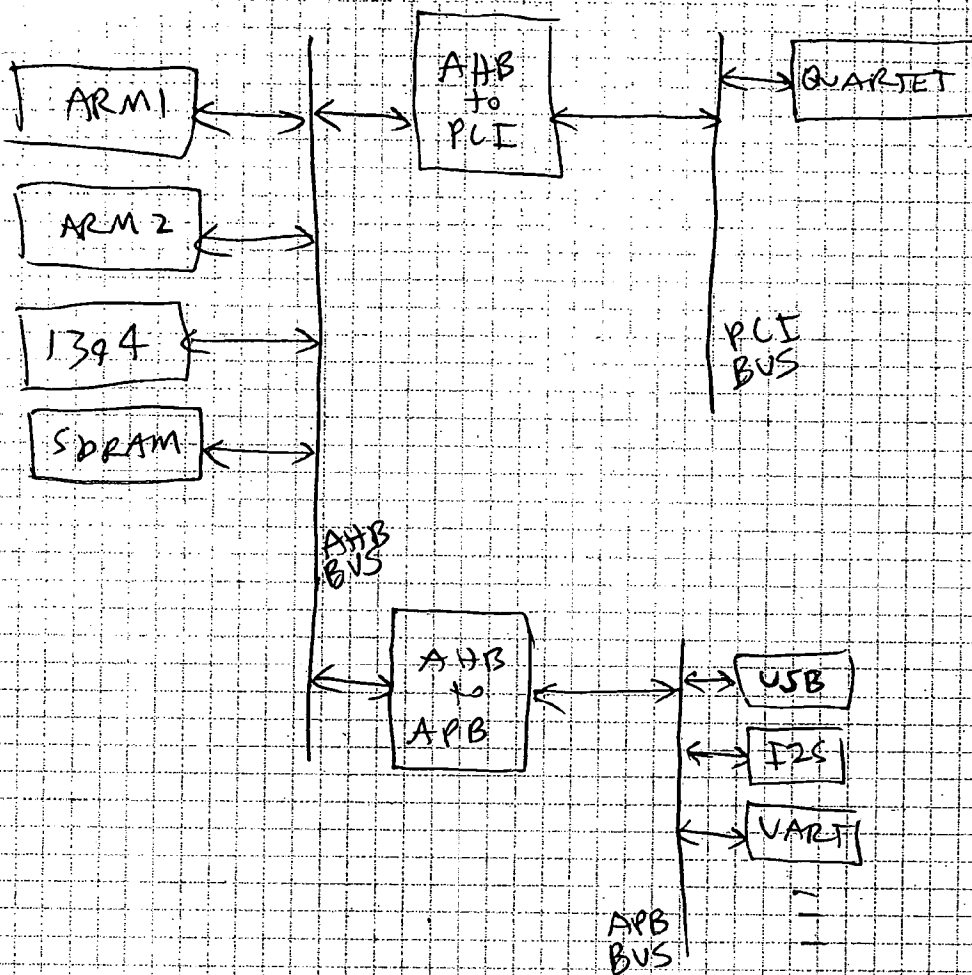
• 3-position on/off/lock switch



SUBJECT:

DATE: 25 JAN 2001

"NEW" DAISSY ARCHITECTURE



Pal L Conversation.

TJ. Contact. Shawn Storm has contact.

Tiger team Meetings - Kickoff

- Want 2 vendors we can go to for Dinky. Could affect processor core?
- Matrix of Design Issues will be generated format.

	ARM7	ARM9	ARC
OS Azil			
VLSI DEV TOOLS			
— — —			
PWR mgmt			

SUBJECT:

DATE: 5 February 2001

Desert Island R&D Tasks Meeting

Mihai, Leng, Mark, Ron, Dan

~~At~~R&D TASK assignments

- Steve: Contact ST. on what they use. Investigate Docking connectors. Need Product Spec before can set I.D. quotes.
- Steve: Find out from ST. about battery design for H+cake. Propose battery pack design (7.2V 2 AH) & Identify vendors.
- Mihai: Get Design Info from ST. on Battery Charger. Heat problems? Otherwise, begin independent charger design.
- Mark: Test Micro (power supplies on Clover. Produce DVT report.
- Mark: Come up with Equipment list for testing power supplies & chargers. (HP/IB Card, Lablink SW, Additional Electronic Load Card, PC)
- Mihai
- Leng: Get info from ST on 1324
- Next Meeting: 2 weeks.
- Dan: Talk to Ray L about Display Controller chips.

SUBJECT:

DATE: 9 February 2001

IM Tuning Meetings Sonicbox.com

David Frerichs - CTO

Bob Mesantz - Bus Dev

Mark Bolas - Founder

FET-SUN

March 16-18 SFO Airport - Embedded

Internet Appliance Conference (AES)

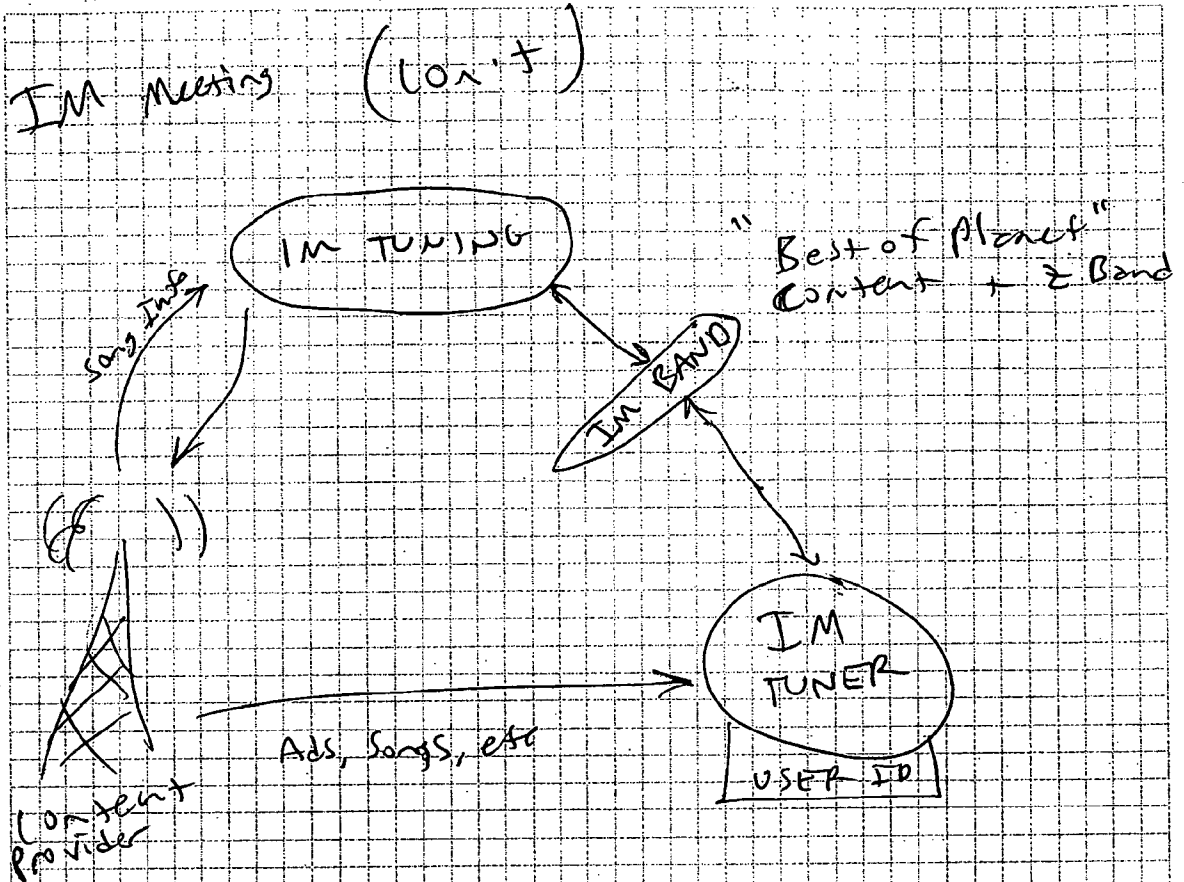
Agenda

- Intro of IM
- Demos 2 embedded solutions
- Ideas for products that incorporate IM
- "Internet Tuning" technology
- At CES, announced 1st Major OEM:
Phillips Internet Audio player.
- "AM/FM/IM"
- FWCB5 mini system by Phillips. TriMedia-based.

2001

SUBJECT:

DATE: 7 Feb 2001



Content goes directly from provider to IM tuner.
 ⇒ Reliability

- IM pays Content providers for content.
- With many content sources, IM can attract advertisers.
- Ads are inserted in content stream based on listener demographics.
- 65% of add revenue kicked back to content providers.
- 35% of add revenue goes to IM

HW Ref designs:

- Trimedia (Phillips)
- Linus Maverick

SW

- PIM ^{"possible IM" → licence fee} C++ module, ~~possible~~

9 MB SDRAM footprint

1M code + data (Flash)

→ 4M internet + clip buffer
4M code & static data

- OS ports:

PSOS
WINDOWS
ECOS
LINUX (maybe)

- IMOM COM SW (Playcenter app)

- Service over Internet (Licence fee)

Product SW Requirements:

- P/PIP Stack
- Multithreaded OS
- COPEC

SUBJECT:

DATE:

14 Feb 2001

Docking Interface Meeting

Dan, Lee, Ray L, Howard

Dan's Agenda

- ① Propose docking Interface. Dan to generate doc. ATC team to review. Then send to GVP.
- ② Ray L - Do we intend to develop Dock chip? Can we accommodate GVP schedule?

- Johnson Chua - working on Docking Interface design.
- Lee will send email to CY, ST, Cheng Soon, Johnson.
- 11 AM Cont Call
(1 PM)
- Include paragraphs about why to not use 125.
- Dan to write Docking I/F spec, distribute tonight - only to ATC.

15 Feb 2001

Review

- Include mobile - Stereo out, power, Remote ~~Remote~~ Dock.
- Want 2A/96 Jukebox by fall this year.

AL

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SUBJECT:

DATE:

- In section 3.2, move item ③ to ①
- Include line that sez that proposed docks
- Portable dock for high end field recorder could have 24/96

Supported operating systems:

- VX works
- windows CE
- MicrOS (Embedded Linux)
- PSOS (Wind River)

Supported processors:

- X86
- SH3
- SH4
- MIPS
- POWER PC
- Fairly easy to port to other platforms
- POCs are available if sign NDA.
- Creative's Plan: ARM Processor running ThreadX
- High-level protocol: we plan on FC/IP (IP135A)
- Zyanke has tested 90% of all phys and know their capabilities / shortcomings.

SUBJECT:

DATE:

- 1394B: 800 Mbps, 100m. Zynate plans to make chips. Final spec expected in March, 1st Silicon in 3rd Quarter.
- 1394A: 400 Mbps, 4.5m
- 1394 cores avail in VHDL. Can target FPGA for early prototype.
- "Very well written" documentation.
- Prototype system available: Z-Box
 - Celeron-based PC running VXworks
 - Linkable SW components
 - IP1394
 - ETC
 - \$10K
- Kernel + IP1394 source code: \$100K
- JE. LVAL recommended for A/V app ("ZE Lynx")

COST Model.

1394A Universal Link Core (VHDL)	\$75K
Reverse Fee	40%
Maintenance	20%
TNF Kernel + IP1394A SDK source	\$90K
Z-Box platform	\$10K

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2/21/01

Ron Botz

Jerry McBreson

25.5 hours - 2/15/01 - 2/16/01

\$12/hour.

Jane - Moulthrop. Honda LCD's.
 (Color STN LCD's)
 25 461 7100
 (\$250 US)

2/21/01

Desca Island R&D Tasks meeting

- Mihzi: Looking at 3 charger chips. Write report.
- Mihzi: ① Get info on battery mfg's from S.T.
 ② Identify which Hilton batteries we could get samples of. ③ What form factors can we get battery packs in? ④ Price estimates on prismatic pack & packs with standard cells.
- Battery for Horoske not chosen yet.
- Mark: Designed DVT for pur supply testing on clover board. Ready to start testing.
- Generated Equipment list & P Reqs for tools needed to perform testing.
- Steve T - Hasn't done research on Docking connectors. will hold off until dust settles on Docking interface negotiations w/ GVP.

2/21/01

- Leng: Add rows to 1394 selection matrix: Availability, Notes.
- Leng: Identify 1394. Solution for a short-term prototype.
- Mark - start doing tests.
- Get info on larger displays. (Steve)
- Dan - order Lab stuff. ^{D.I.} System block diagram.
- Call Mentor Meeting

Daily Meeting

2/21/01

- Live Box might use Clover. Steve Ericson working on it. Steve works for Craig McHugh.
- Eisenglass chip does on-the-fly decryption of encrypted data. Talks to Intertrust chip.
- Daisy needs interface to Intertrust chip. Daisy could incorporate Eisenglass functionality. Charlene will investigate
- Dan: finalize comm interface between Daisy and System control micro.
- Dan: Get info on KCP interface.
- Need 2 separate JTAG interfaces?
- Shawn: ATA Block
- JoAnn - I2S Blocks
- Jane:
- Paul: Int controller, Video/LCD controller, AHB APB/Bridge,
- Rom controller, AHB control
- Charlene: USB, Eisenglass/Intertrust
- Phil: I2C stuff, SDRAM, 1394 cores
- CURT: S/PDIF
- George: DMA, I2S

Docking Interface Conference Call 2/26/01

CY, Lee M, Ray L, Dan F, Johnson

• Docking I/F Apps:

→ Hotzke, Lambda.
Not visited: Omega micro drive

- High-level I.D. done on Hotzke. Need to Finalize I.D. by 26 Feb 01.
- 14-pin implementation Subset of 24-pin implementation.
- No connector available, need to custom-engineer.
- Palm-III type connector will be implemented.
- Total connector size will be 40mm
- NPE of 110K - 91.5K.
- CY will email me name of connector company.
- With 24-pins, 60-70 mm wide connector will be required.
- Need to work out connector compatibility.
- Problem comes with Boom-box dock. Boom box uses vertical mounting scheme.
- Lee: Desert Wind I.D. might not start for another month.
- Kevin Brandon will get physical samples next week of Hotzke I.D.

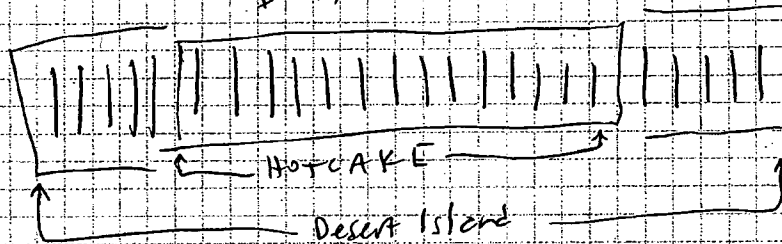
SUBJECT:

DATE:

2/26/07 (cont)

- CY will send samples of 9-pin connector for our reference.
- look at Skywalker schematic for docking I/F details - ~~USB~~ Paralleling USB signals to dock ~~&~~ USB connector.
- 2A ~~(power)~~ per connector on docking I/F.
- 1A for signals.
- DC adapter voltage: Lee sez ~~9V~~ 9V. Dan wants $>2A$.
- DAN: No bidir buffers in USB/1394 I/F on docks.

PHYSICAL LAYOUT OF
DOCKING CONNECTOR?



- Howard should send comments on embedded linux to _____.
- We need to verify our requirements for current rating of connectors.

29 Feb 2001

Cirrus Conf Call

Tom Stein - Cirrus

Dan Ondrasek - NCTR

Current: CS4331 85dB THD+N 60mW
VDA1360 IT ADC 85dB THD+N 42mW

Want: (our targets)

D/A 95dB THD+N } BATT
 — mW } PWR

A/D 95dB THD+N ? } BATT
 — mW } PWR

D/A will shutdown if clocks/data interrupted

want 2VRMS output level (LINE)

D/A: Tom suggests CS4391 \$1-\$2
94dB THD+N 100dB DR 36mW
20-pin TSSOP

A3L42 - Has separate PWR supply pin
for analog output. In I River CD MP3
Player.

Tom suggests CS5337 ADC
80dB THD+N 90dB DR 9mW 3.3V supply.

SUBJECT:

DATE:

US 53L32A - Has Analog input gain. \$1 - \$2

S/PDIF inputs:

Q41A Receiver (≈ 8411 functionality)

Q405A XMITTER

Q427A XCVR

Q420 RCVR + XMITTER + SRC.

Daisy Meeting 2/20/01

Ref: tool purchases for Daisy Development

- Mentor Seamless Co-verification tool. Fast Simulator
- Veracity SPEC-MAN. Spec-driven verification tool.
- Starting Monday 3/5, there will be reviews of functional blocks of Daisy.
- Paul will present bus controller on Monday. Phil will do SDRAM CONTROL next.

3/5 MONDAY 1PM BUS CONTROLLER
 3/6 TUESDAY 2PM SDRAM



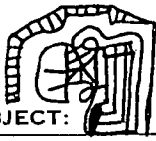
3/2/01

D.I. PROPOSAL REVIEW

Ray L, Steve T, Mark C, Howard E, Louis, Andrei, Mihai

① WHY BUILD PLATFORM

- Expand scope of prototype: Integrate embedded O.S. (ThreadX or Linux)
- Yes, there will be throwaway code - Howard thinks it will mostly be in device drivers.
- Not a lot of Jukebox code will be used.
- Need to outline limitations of prototype (i.e. 1394 performance)
- Compelling reasons to implement Dev Platform
 - Tangibility
 - UI Prototype
 - O.S. Development
 - 1394 functionality
 - HW Dev platform.
- Concerns:
 - FW resources
 - Don't have back-end of O.S. (FX portion) implemented for this prototype.
 - To keep it snappy, will be required to play wave files and not MP3.
 - Battery life on this proto might not map to actual D.I.
 - Requirement to reiterate



SUBJECT:

(CONT)

V.I board (Display type, button placement, etc.)

② Proposal Review

- SDRAM: ① 16 vs 32 bit
- ② 8M x 16 vs ~~8M~~ 16M x 32
- Instant-on implementation (s)
- Want 512K x 16 of Flash so can store entire OS in Flash.

Capital Equipment

- 1394 Protocol Analyzer
- 1394 PCI cards for PCs

6 March 2001

Desert Island Meeting

- Docking connector - MID & CTL will investigate accommodating over 24 pin docking connector. No results we are aware of since 2/26/01 conf call w/CTL.
- Dynamic processing metadata - How to best create & xfer bet Hrt & Network/Desert Island?
- Schedule for Quartz pushed out beyond 20K1.
- Development platform - Cirrus-based. Had design review on 3/2/01.

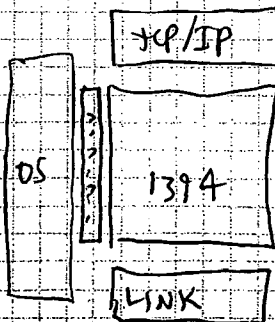
SUBJECT:

DATE: 6 March 2001

Precise SW Technologies Meeting
(Embedded RTOS vendor)

Jim Chung - Sales Mgr
Andre Piquette - FAS
Howard E, David B

- All products include source code.
- Products are configurable - small footprints achievable
- ARM tools, Metaware Code Warrior are supported compilers.
- Precise is owned by ARC. Metaware is sister company.
- Need diagram of 1394 protocol stack architecture
- Licensed for specific product / specific CPU.
- Pricing:
 - (OS) MEX \$12.5K
 - (TCP/IP) RTCS \$17.5K
 - 1394 \$30K
- Compiler / Debuzzer req'd, typically \$4K/seat
- Reuse fee - full price of each component.
- We want to know list of customers that use Precise Tech SW.
- could set up multi-product license.
- Get tech info on 1394
- Set up cont call about 1394

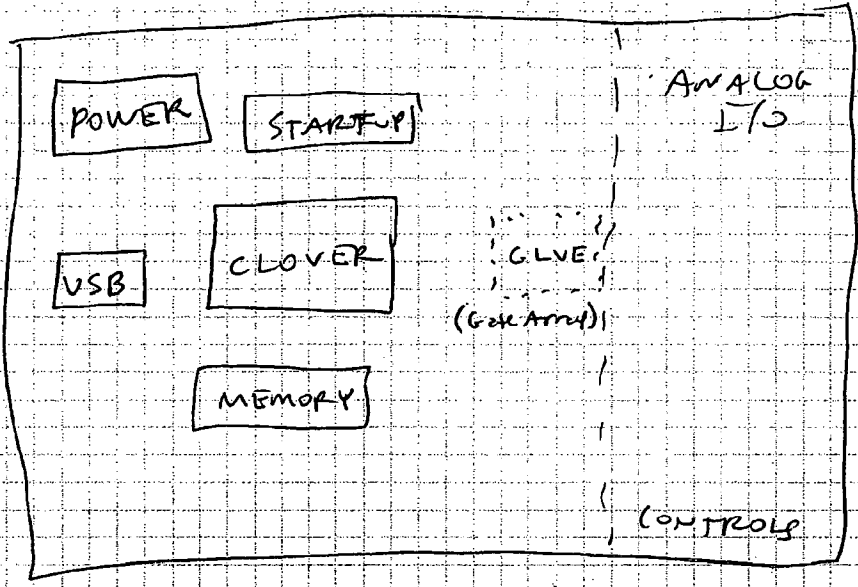


SUBJECT:

DATE:

6 March 2001

KS1000 Meeting Lee M, Aime, Gerald, Pete J.



ATC Provides

AVP

• ATC would provide HW support on Clover Subsystem.

- Schematics
- FW Development
- USB API
- Compression Deliverables

} want to know
 key milestones, schedule,
 risks.

6 March 2001

K51000 Meeting (CONT)

Dan's Schedule:

MARCH: Architecture

APRIL: Design: FW, FPGA/GA, HW

MAY:

JUNE: ASSY/FAB

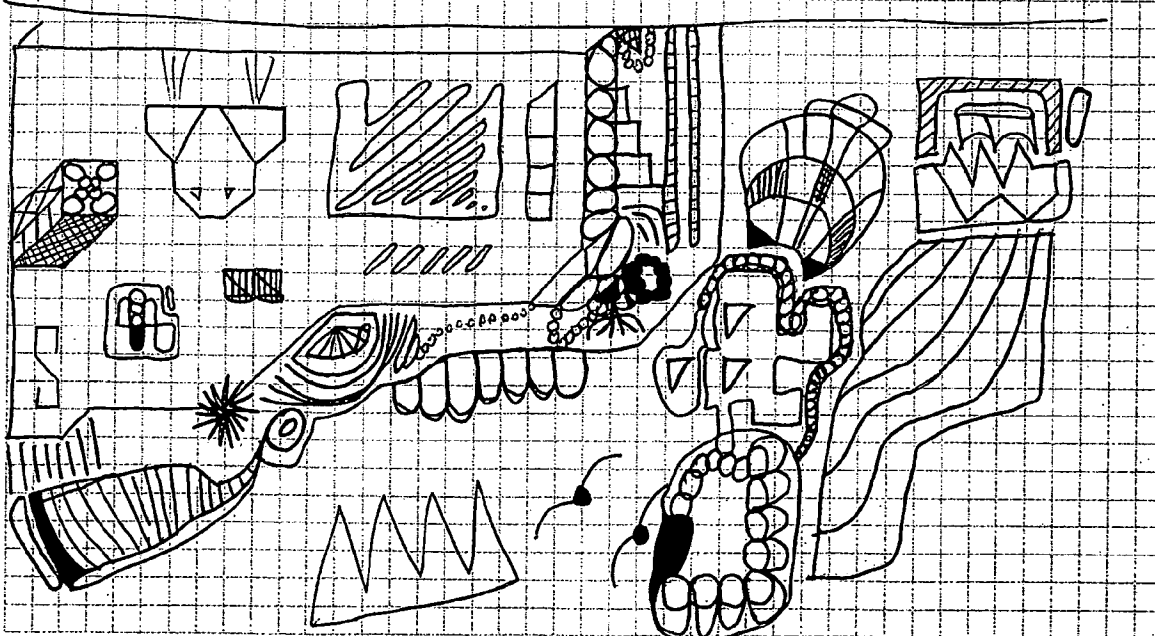
JULY: FW INTEGRATION

AUG: Freeze HW 8/1/01 - XFER ownership to AVP

SEPT: Production Rev

OCT: QA

NOV: RELEASE TO MFG



SUBJECT:

DATE: 7 March 2001

→ 1:00 THURSDAY - 3/8/00 DRM meeting (Lee)

TI Conf (201) 8 March 2001

Dallas: Danny Mitchell PC Periph MGR
 Keith APPS ENG 1394
 Russel Crane Marketing
 Michelle 1394 APPS ENG

TI. San Jose
 Matt Mather

ATC: Long, Mihai

1394 Solutions for D.I. prototype.

isphinx II -

- 12^{LV} 32 - @/16-bit I/F up I/F with 2 2K
 FIFOs (Xmit/Receive)
- "GP2 Lynx" chip - Ref schem avail
 to hook up to ARM7. Also have C code
 for HW layer & API layer.
- 41AB2 - Phy layer chip.
- TI has app note on EMI stuff for
 41AB2.

CON'T

- Sample code avail for ISPhynx 2, T.I. IS porting to Amedus for Singapore group
- SW architecture for all link chips is the same.
- 1394 Upper layer API same.
- If use PCI-based 1394 solution, will be lots of work to port code.
- If use integrated 1394 chip, little porting effort required.
- OHCS - Tailored to memory-mapped topology.

TI meetings - CODECS

8 March 2001

Troy Doyle - FAE Matt Masher, Patrick

D/A: Burr Brown PCM1737. Competes with
CJ 4391. 90 mW. < \$2 Price.

A/D:

D/A 6 channel: PCM1602K. Same specs as PCM1737
Used on lots of DVD players. ≈ \$3 - \$4.

PCM

SUBJECT:

DATE:

- JLB320AIC23 - 2 ch DAC + 2 ch ADC
 ★ APC w/mic preamp. 52 High-volume (500K)
 BGA package
- DAC23: Same DAC as in 320AIC23
 \$1.50 500K ~~500K~~)
- TPA611A2 Headphones Amp - less pop
 than TPA122
- T.I. working on USB DAC - (2902)
- PCM2702 Self-powered USB DAC.
- PCM2706 USB multi-channel DAC.

Lee Morse Performance Meeting 3/9/01

Resources for D.I. Prototype

• Mihai, after PF board. 4/1/01

KS 1000 HW Meeting (Conf Call)

Siew Ling, Dr. Lim, Aime, Lehs, Andrei

Pete J, Lee M.

- MIDI - Latency & jitter would result in poor user experience. ~~Spec: N/A for sequencing.~~

Way to get around this: Time-stamp MIDI data over USB via SW.

We won't plan to implement this feature in SW for FCS, but will support MIDI in HW.

Jit Wee was aware of potential problems here.

- Pete: SPAM on DSP won't help AFM side and vice versa.
- Concentrate on core of FPGA. Wait until later on S/PDIF implementation
- Send list of parts to Dr. Lim for A/D's & D/A's
- Need ZVRM on outputs.
- Need S/PDIF valid detect.
- Send pdf of clover BGA package.
- Dr Lim thinks we might do a reference board?

2001

SUBJECT:

DATE:

Daisy Meeting

3/14/01

- Block reviews on Daisy

Thu 3 PM USB RTL Review - Chetene

Friday 9 AM DMA Review

~~SAT~~

Monday 2 PM S/PDIF Review - Kurt

- Clover - Bug in S6K core? One instruction doesn't work correctly. Martin A found this.
- K31000 - Need FPGA CURA - can do FPGA.
- Clover Board - Passed 4 corners test - ran up to 100°C.

SDRAM Guy: Phil B.

I2S: JOANN

IPE Module: Paul.

Daisy DMA Module Design Review 3/16/01
(George)

- Howard: Correlate D.I. - use size models to
- DMA # of channels & source / destination design wants.

19 March 2001

Clover Pin Strapping Meeting for KS1000
 Pete, Paul B, Shawn, lens

FIQ - Int from FPGA

- INTERRUPT [3:0] GP IN
- SWI4 [9:0] GP IN

CANNOT USE LOWVOLTAGEN OR MASTERPOWEREN

- MONOSTEREN GP OUT

MIGHT BE ABLE TO USE RADIODATA, RADIODATA
 AS SPI I/F

- GPIO [7:0] GP I/O

- HODIRQ - GP IN

- ONE OF FLASHCE [3:0]N GPO

(Divider - one of these low at once)

- FLASHBSYN GP IN

→ COULD BE FOR SPI CHIP SELECTS

- FLASHWPN GP OUT

SEN GP OUT

ALE GP OUT

LLE GP OUT

- HODOMARON GP IN

- HODIORDY GP IN

SUBJECT:

DATE: 9 March 2001

KS1000 Parts

Flash: ST M29W800AB 80N1T
512K x 16, 80ns, JESOP48,

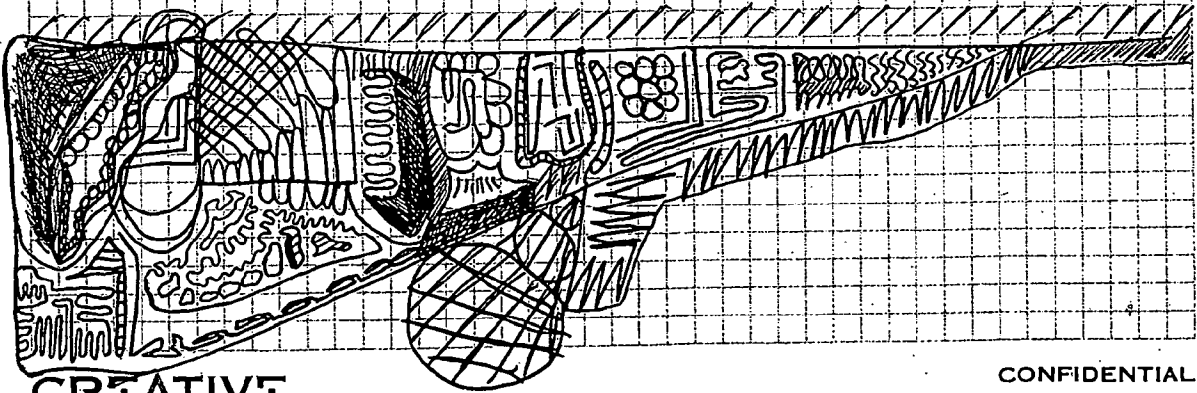
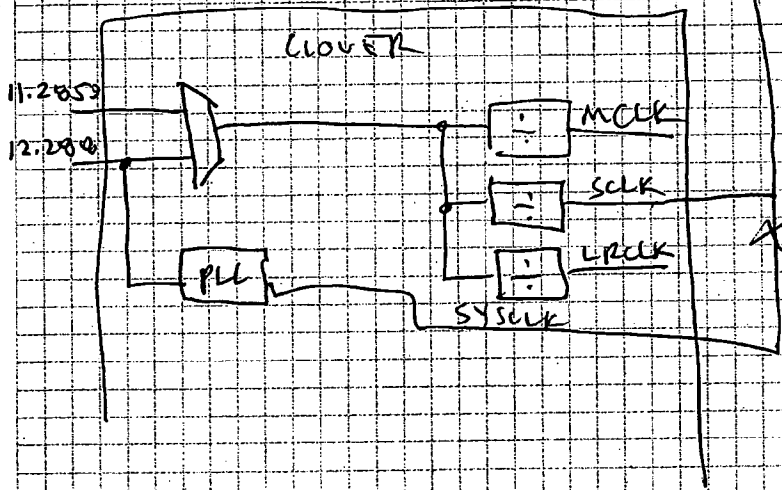
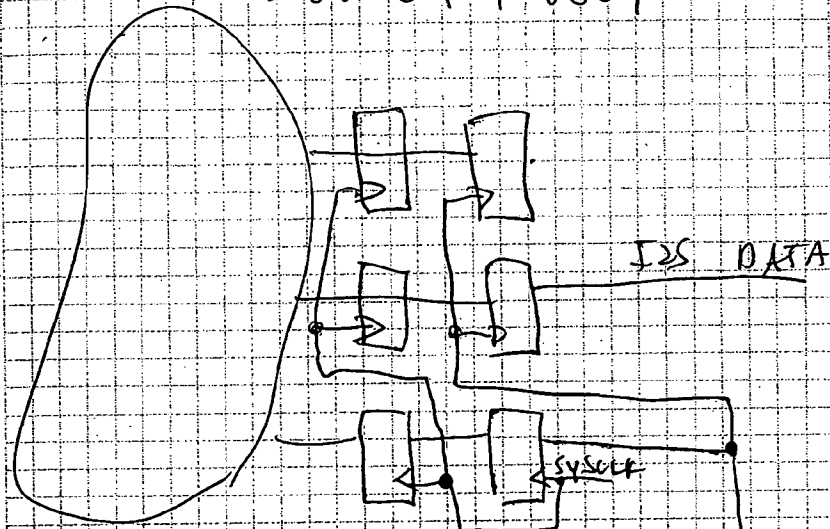
ADC: CYPRESS CSS3L32A-KZ
ADC, JESOP 20

DAE: CYPRESS CS4391-KZ
DAC, JESOP 20

S/P D/F: CSQ420-GS
REVR: DUAL AUDIO SRC, SOLC 28

CLK GEN: CYPRESS CY20B1SL-XXX (Production)
OBS: low cost three PLL clock generator
CY2292 F (Prototypes)

CLOVER AUDIO OUTPUT LOCAL TOPOLOGY



SUBJECT:

DATE: 21 March 200

KS1000 Meeting

- Clover USB xfer rate is $\approx 500 \text{ KB/s}$.
- Clover USB cannot support Isochronous transfer. Kills OEM sales potential.
- Needs external USB I/F so can accommodate Iso xfers. Me, Andrei, Leng, Lee to propose solution.

ATC OWNERS:HW

- FBGA Subsystem (Netlist, Theory of Ops, RTL Code, etc. etc.)
- Clover Subsystem (x11)
- NOT CODECS, Analog I/O, Power Supply.

FW

- All including DSP Algor, CODECS, etc.
- xfer of knowledge to ADP

HOST SW API

- Specification
- Implementation, including USB transport I/F

KS1000 Meeting (Cont)
Test Sw Algos

FW / HW Integration

DIAE / production Test Support

WHQL / USB Certification

KS1000 Conference Call

21 March 2001

Steve Erickson, Ray, Aime, Lee, Leng, Jean Marc,

- Need to be able to accept AC3 on S/PDIF input - cannot sample rate convert data - need to bypass SRC & dump data directly to system memory.
- Output sample rate should be 48KHz
- JIS will tell us which ADC is
- How many wait states on I/F to FPGA?

SUBJECT:

DATE: 3 April 2001

Motorola Battery Meeting

Don Blanton - Mktg Mgr, Energy Systems Group
 → Larry Bay, PGM Mgr.
 Lee, Steve T, Mihai, Leng

- Mot provides solutions for products: from plug in wall all the way to the battery.
- Cell phones are driving standardized cell sizes. (30 x 40 mm)
- Motorola now has standardized products to offer

- New product: 1500 mAh, 30 mm x 40 mm x 11.2 mm
 - sub \$9 in embedded form factor.

570, 800, 900, 1100, 1500 mAh configurations will be avail. in same family.

Burns makes mating connector. no need to tool contacts.

7.2V cell avail which is 2 x 1500 mAh.

- By measuring voltage, can determine cell charge to within 10%
- 2 AH cell avail: 22 mm x 30 mm (18 x 65)

Want from Motorola:

- ① PIN's of cell types
- ② Data sheets for cells
- ③ Burns PIN for contacts, LT 173142
- ④ Charger circuit design - schematic & Bill of Materials
- ⑤ App note for determining cell charge capacity
- ⑥ Quiescent ^{max} current draw allowed by our device to achieve 1 month ^{max} power-off shelf life before batteries are discharged.
- ⑦ Predict battery life based on our discharge rate.

Custom part program: 4 months, design to production ramp

Prices: 1500 MATH (L1103450E) \$8.20 100K
(not encased - has pistol) (China) \$6.50 100K

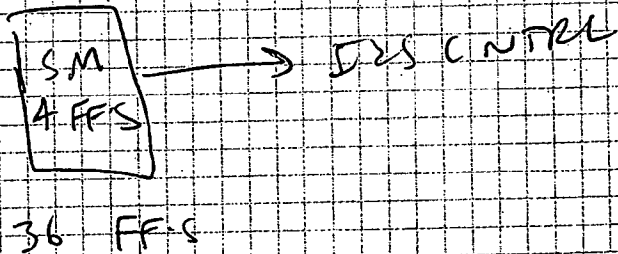
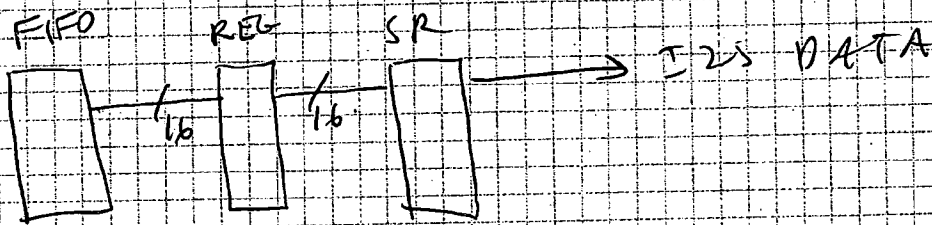
ADD \$1.25 for encased version.

1:30 Wed 4/4/01 - Martin R

KAOS 1000 FPGA NVR 3 April 2001

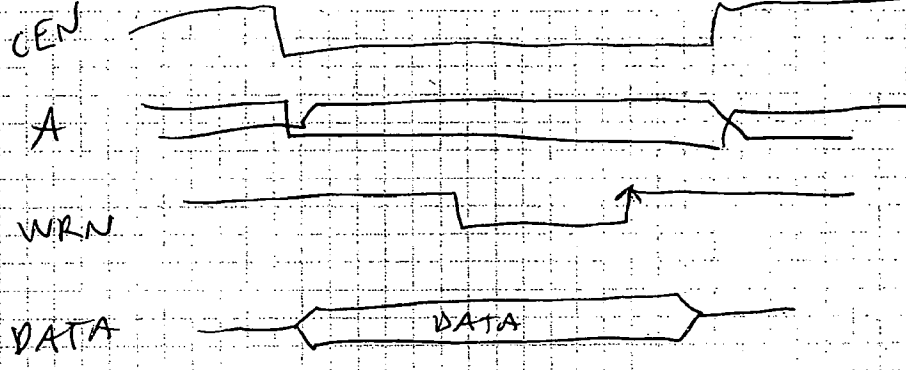
I2S Encoder in K1000 FPGA

CURTIS, JOHN A., Longo



SUBJECT:

DATE: 3 April 2001



Dan - pdf-ize Block Diagram & email to John & Curt. ✓

Daisy Meeting 4/4/01

[5 PM Thursday, Peter's office
SPI/I2C Discussion.
Mihai, Paul, Pete, Dan F]

- X51000 FPGA - Curt getting tool going, will generate schedule by end of week
- TI admits that USB core in ~~their~~ Clover is lame. They might provide us a USB chip for cheap to allow us to implement synchronous USB.

[5 pm Thursday April 4
LED Spec Review]

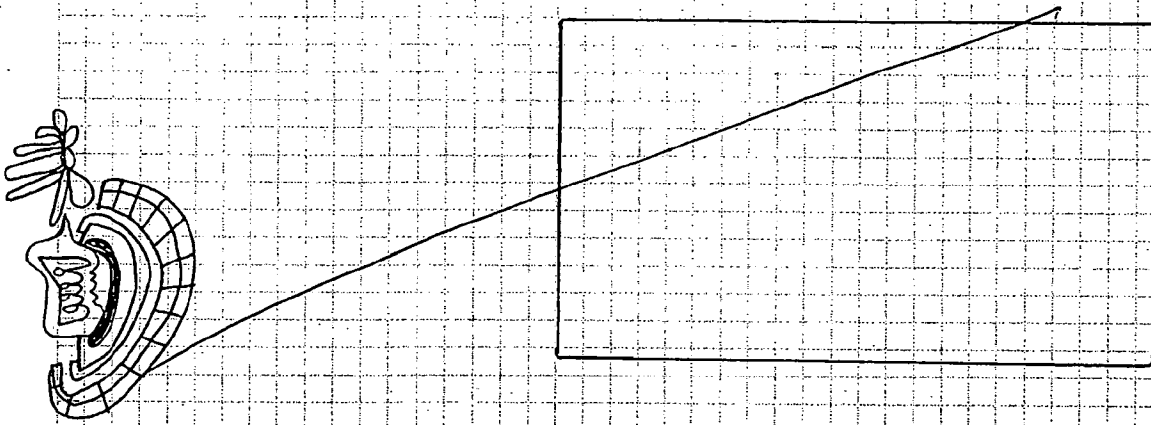
AL

SUBJECT:

DATE: 4 April 2001

(CONT)

- OLED Support - we are not pursuing this. Steve T. hung up getting an NDA signed with Kodak.
- S/POIF - using code from 10K2.



Desert Island Meetings
Ray, Lee, Howard

9 APRIL 2001

Action Item for Me:

- Generate schedule for Desert Island Prototype

200j

SUBJECT:

DATE:

10 April 2001

Veritronix / Novatech Meetings



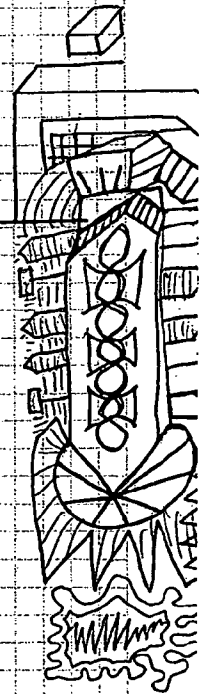
NOVATECH: Raymond Kridle, Sales MGR
 Novatech makes EL backlights
 ART Ramirez: Zerimar Sales Inc.
 MFG'S REP.

- Half-life: 3200 - 4000 hours
- Current consumption: 1.2 mW/in²
- Dupont, Ostrom, Durell? Alternate MFG'S.
- Prototypes in 2 weeks, production in 6 weeks
- NRE is about \$1K
- Driver: Superfex ~~HV830~~ HV830

Daisy Meeting

4/11/01

- KS1000 FPGA Meeting - Friday 10 AM
 Leng, Ahlert, Dan Joann, Curt, Ryz.
- David Watson starts s/f/p



LAOS 1000 Meeting

- Design Review req'd to correlate HW & SW architecture
- Went gate array for FCS.
- should use NEC or Samsung for the Gate Array.
- 2 Gate arrays:
 FCS: FIFO's, S/PDIF
 next: FIFO's, S/PDIF, USB, etc.
- Lens will verify availability of Altera
 1K10, 1K30, 1K50 parts
- might should use EP1-type config EPROM
 to program Altera FPGA.
- Need prelim BOM to send to AVP.
- Email pdf film of Clover to Jit Vee.

SUBJECT:

DATE:

Cirrus 802.11 Meeting12/19/01

"Shorewave" wireless home networking

Samuel Leung - Dir. of Sales

Brad Stewart - Technology Director, Industry Sales

Narash Baliga - VP. Consumer Mktg Development
Wireless Division

Alson Kemp - FAE

Kurt Fry - Sales MGR

Brian Thayer - NCTR MFG Rep.

• "Bodega" Technology. Bodega Chipset.

• "Whitex 2" is name of technology

Daisy Meeting1/9/02• Seamless training. Classes at Mentor not avail
until 2/25

• Need to explore packaging options with Phillips.

Questions for Phillips

- ① USB connectivity → will send black box model. Already have lib model
- ② Oscillator Black model → will send Black Box model
- ③ Package type questions - smaller pkg than BGA 304

• Phillips will answer questions on pad types and package types. Conf call @ 1:30 today.

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1/16/02

EWD - Embedded Wireless Devices Inc. Meetings

John Troutman, VP Sales

Scott Avey - VP Bus. Dev.

- Q8025 chip \$7-\$15 2.4GHz link (Bluetooth, 802.11b) and 5GHz link (802.11a).

- RF solution is external to Q8025.

- PC-based tool set.

- Ability to port existing ARM code to Q8025 processor.

- Code execution out of Flash, 12-15ns access time. No external SRAM req'd. (embedded 2003)

- Infineon & National are RF partners for 2.4GHz.

- Silicon Q2, Volume Q4. Fab is UMC

- Single-chip solution (embedded Flash, phys) in 2004.

SUBJECT:

DATE: 8/30/01

Deisy Reqsmts Mtg

- AC3 Decode will be done on 56K DSP in Deisy on KSxxx products.

Desert Island Hw Mtg. 8/31/01

Steve W, Tony, Mihai, Lee.

- ① Good to go on current D.I. Hw architecture. use KS1000 USB chip.
- ② Use Mentor & CTL for schem capture & PCB Fab.
- ③ Work with Steve T on how to integrate Mentor with h/w Mechanical Design.
- ④ Doubling I/F lower priority.

10 September 2001

ARM Meeting

From ARM:

Chris Ward - soc Bus Mgr

Liam Gooch - Bus Dev Mgr

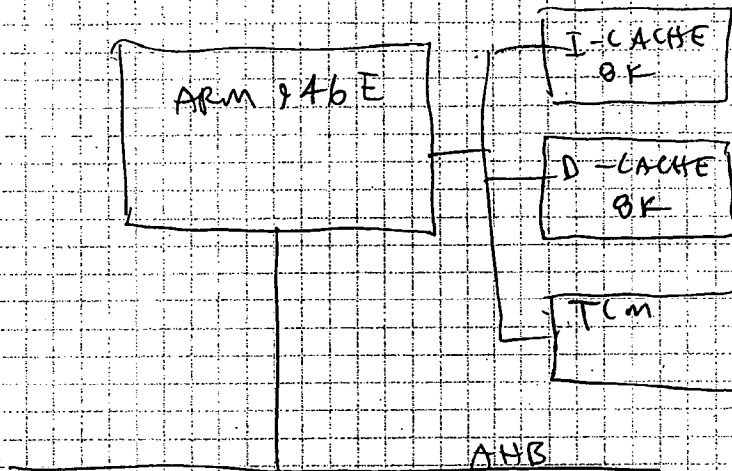
Giles Gillison - FAE

Chris Mark Clark - FAE, SW

Memory Architecture

Mark: Encourages tightly-coupled memory for encoder, want 64K. 9K caches should be good solution. Might only get 10% improvement if increase cache size to 32K. Data cache more

important (size-wise) than I-cache.



ICACHE (KB)

	8	16	32	64
8	47		45	
16	45	44	43	
32	42	41	40	39
64			36	35

MHz for encode

- 6 cycle external memory
- No TCM

• 4-cycle hit to access memory over AHB ARM core is optimized to run from caches & TCM.

SUBJECT: ARM Meeting (Unit)

DATE: 10 September '01

Power Management:

- ARM core is fully static design. (can do clock gating, Vendor-dependent).
- Wait for interrupt feature - only interrupt logic is powered up. (Under SW control)
- Extend clock phase indefinitely.
- Dynamic clock frequency switching.
- Do not glitch clock.

Power consumption for GABEs:

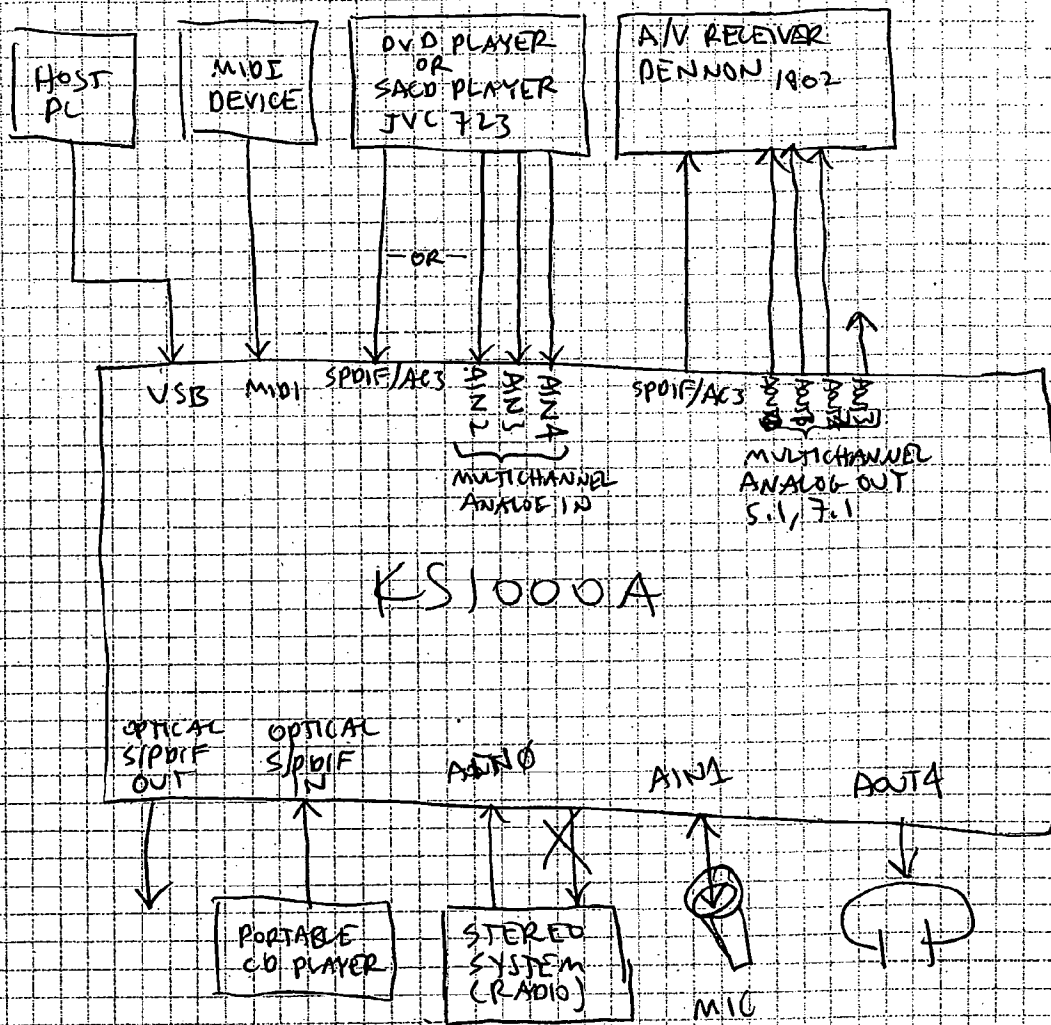
- 1.5 MW/MHz @ 0.13u process running
Draystore 2.1, 1 wait-state memory.

- Programming in Thumb code vs. ARM code -
Thumb mode uses less power than ARM mode.
Thumb mode uses smaller instruction size.

Test & Verification Issues

SUBJECT:

AUDIO
KS1000A Application Diagram



Lee Morse
Dan Freeman

SUBJECT:

DATE: 70/2/01

KS1000 AUDIO BUSSES

INPUT

OUTPUT

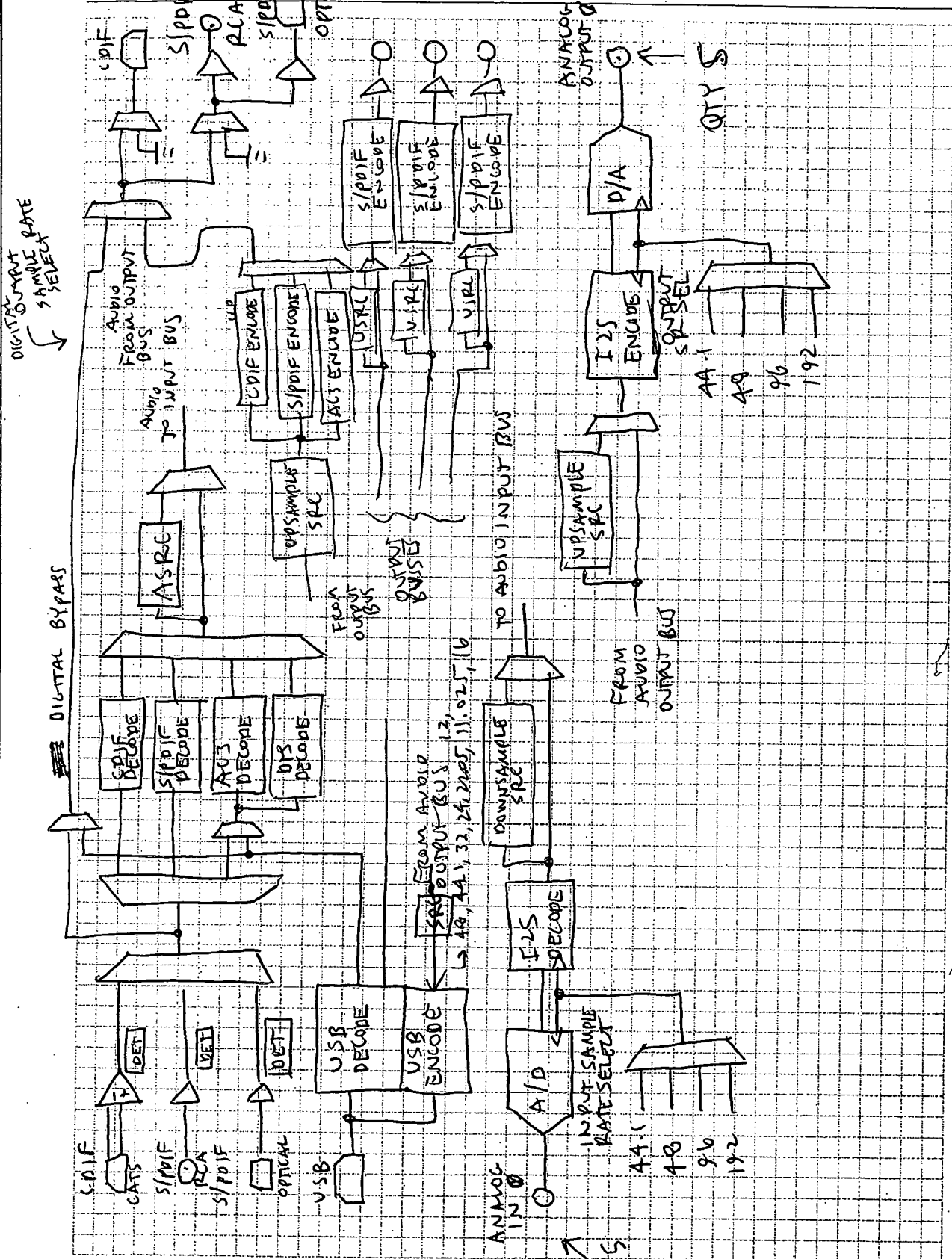
0	XDIF IN		0	XDIF 0
1	AIN 0	USB MC	1	XDIF 1
2	AIN 1	USB 0	2	USB 0 (RECORD)
3	AIN 2	USB 1	3	AOUT 0
4	AIN 3	USB 2	4	AOUT 1
5	AIN 4	USB 3	5	AOUT 2
6	AIN 0		6	AOUT 3
7	AIN 1		7	AOUT 4
8	AIN 2		8	
9	AIN 3		9	
10	AIN 4		10	

Lee Morse

Den Freeman

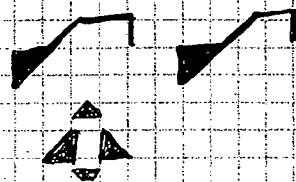
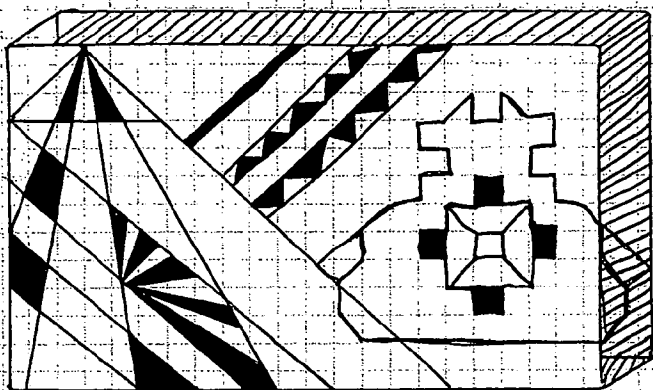
SUBJECT

S/PDIF, ACS
S/PDIF, ACS
OPTICAL



SUBJECT:

DATE:



Mentor Meetings

10/19/01

Guy Quarter - Apps Engineer (408) 451 5657

William Wong - Acct Mgr (408) 451 5702

- List of Service Bureau available - Mentor Layout houses. (DVK - Los Gatos)

- AutoActive RE - base SW.

- Guy will let us know if Mentor can read ^{original} ~~member~~ Schematics.

- • Board Architect + Library Manager can do database + BOM generation. \$15K per seat

- can accept .IDF Pro-E Files.

- • Basic Router: About \$10K

- Maintenance: 15-18% per year.

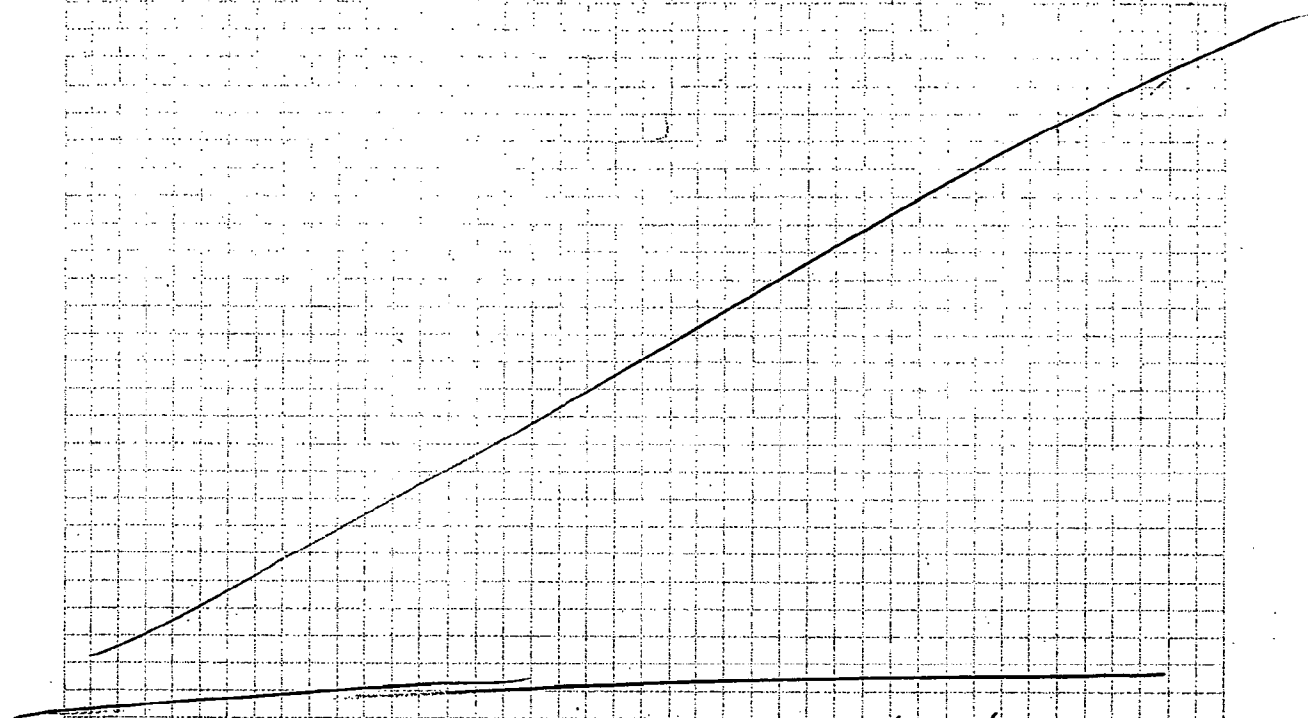
- Upgrade from Design Architect to Board Architect: \$4K

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SUBJECT:

DATE:



10/26/01

Mentor Graphics - San Jose, CA

Guy Wertz - Sales

Dan McCarthy - Apps Engineer

- Interactive Layout - Minimum Interactive router.

SUBJECT:

DATE:

Minimum Requirements

- ① Board Architect -
 - ② Librarian -
 - ③ Interactive Layout -
 - ③ PCB Mechanical -
- } same PKs

Value-add of Board Architect: Hierarchical design capabilities.

Integration with PRO-E requires Librarian Package.

- FLAG: KORN shell req'd to invoke tool.
- FLAG: File path requirements.
- BOM is ASCII file only.
- Entire Design (Schem + PCB) is about 1 MB / simple pass in a ZIP file.
- FLAG - very very very keystroke/mouse intensive.
- Windows version: more than a year out.

Singapore: Board Station RE High Speed.

ATC:

SUBJECT:

DATE:

Mentor (cont)

10/26/01

- Ask cadence about forward/back annotation

Quote Req:

LIST Price	SV	SING
14K	1. Board Architect	
25K	2. Interactive Layout (Boardstation)	
10K	3. Librarian	
10K	4. PCB-MEDIA	
10K	5. Interactive (\$10K)	5. RE Autoroute High Speed (\$50K)

Service from ~~REVIEW~~ Bureau. 0VK (Bought Qty 6 of RE Autoroute)

SUBJECT:

DATE:

T.I. Conference Call

11/13/01

Danny Mitchell
Randy Lawson
Keith Quiring

- Reference Schematic ✓ T.I. will send.
 - Mode G - No good because doesn't support CRC, which is required by the drive.
 - Next Rev of the iSphinx will support iSphinx.
 - Current customers:
 - ① BD → Processor, DMA twice.
 - ② SCSI DMA controller. (Mode H?) Double DMA.
 - T.I. has an FPGA implementation which implements the CRC generation. Implemented in graphical format.
 - Mode G1 18MB/s Max capability of iSphinx II.
 - Should be able to load data into DTF/DRF & read via host interface via _____ register.
- Kquiring@ti.com HW contact

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Sphinx 3 Features Summary:

- CPL
- Endian Features
- 32 bit Host I/F
- Fix errata
- Power-down modes / remove reqm't for external resistors

Schedule: Q3 CY 2002. (Bull-Park)

- TI - provide schematics
- MC - provide Block Diagram to Keith Q
- TI - provide timing waveforms

11/29/01

DAISY MTK

Requirements Changes:

- Daisy is only for KS1000A / KS2000.
- KS2000 MRP is MTK with list.
- Daisy changes:
 - 120 M DSP, NO expansion SRAM
 - 60MHz - ARM + all other periph.
 - Dump Data cache
 - USB is device-only
 - SRAM is only expansion RAM.
 - Eliminate LCD CNTRL
 - Eliminate SPMA
 - Scratch mem increased to 64KB

SUBJECT:

DATE:

- Eliminate PWR MGMT

Dan:

- ① Draw critical timing diagrams for Host & DMA & interfaces
- ② Finish pin list & distribute

Daisy Bus I/F Meeting 12/5/01

Sanjiv, David W., Ray L., Paul B.

Questions for TI.

- ① What is max bus cycle time on Host xfers.
(224 ns)

ACTION ITEMS

- ① Dan: Update timing diagrams to show delays on actual diagrams
- ② Dan: Nuke 1394HWAITN, IORDY pins.
- ③ Paul, Sanjiv: Sanity check on timing diagrams
- ④ Draw diagram of BUFOEN & BUFOIR.

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Action Items (cont)

CONT

- ⑤ Dan - ask Charlene about s/PPDF in & CDIF in stream detection & selection

12/6/01

Portal Player Meetings

Jeff Hawkey - VP HW Eng

Subir Ghosh - CTO

George Fong - VP Sales

Tyler Stavros - Premier Technical Sales

PPS001, PPS002 - Currently in Production

Future: PPS003 Network capable, high-speed encoding
P.A & resistor compatible with PPS002.

MP3 decode: 25 MHz.

S002: ARM's run at 90 MHz.

S003: 2X encode.

Ampire: Smart LCD panels.

Veritronix " " "

Development tools: ARM ADS.

Source code provided for GUI layer.

Development Board: 6002.

SUBJECT:

DATE: 12/6/01

- (cont)
- SIXX family: 2003. Will use dual ARM 9E processors. Not 946E or 920T due to desire to keep existing vector coprocessor in architecture.
 - 5003: Samples April.
→ 1st production: June (10K qty) if get early commitment for production

Kodak OLED Display Meeting 12/14/01
 Presenters: Rogelio Sobers
 Sr. Product MGR
 (925) 943 1622

Awesome 5.5" color Display - Demo is DVD playback.
 Lots of smaller displays.
 Pioneer, Alpine car stereos use OLEDs.
 Brightness up to 120cd
 Developers kit will be available

TI Meetings Conf Call 12/14/01

Lee Ratliff
 Danny Mitchell

- CE-lynx Questions
- isphinx Questions | submitted
- isphinx \$4-5 range. ice lynx - \$13

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celynx - 4.5¢ + \$2 phyCONFIDENTIAL

SUBJECT:

DATE:

TF Cont Cntl (Cont)

12/14/01
March 2002

- Ice Lynx micro-samples
- We would do board development on ce lynx, transition to ice lynx later.
- Ce lynx - 4 major product design-ins
- Phy chip: 2-pot. TSB41AB2
- App note on web site on EMI compliance issues.
- Conductive coatings might be req'd to pass FCC in plastic case.
- 18 months to production - ce lynx + phy.

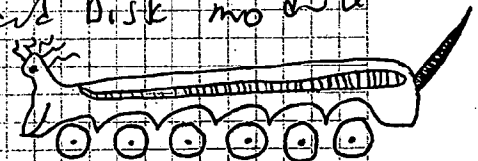
Deserted Island.

12/14/01

- Need 0.9 MRB for stack by end of February 2002
- ~~Eric~~ Steve Erickson thinks ATC has primary responsibility for Stack Architecture
- we will develop HW for Hard Disk module & KSxxx module.



Gilligan's Island



- PBUs: Product Business Units
 - { CVP - CY (PDE)
 - { AVP - Steve Erickson (Sand 205)
 - { MSP - chua (speakers)

RSU's: Regional Sales Units.

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SUBJECT:

DATE:

11 April 2001

Daisy Feature Requirements

- USB Master/Slave port
- 4 I2S Inputs 24/96
- 4 I2S outputs 24/96, 2 ch 24/192K?
- 1 ~~4~~ S/PDIF INPUTS (Sample Rate Trackers?)
or SRC
- 4 ~~S/PDIF~~ OUTPUTS
- LCD I/F
- 32 GPIO - some should drive LEDs
- 1394 LINK
- PCI I/F
- IRDA (FAST IR DA)
- UARTS (wired remote, MIDI, IR remote,)
- SPI MASTER/SLAVE
- 2.5V I/O, 3.3V tolerant.
- External I/F bus with bus-cycle extension capability
- Boot from serial port
- JTAG Reset on DSP does not reset ARM.
- Direction & enable controls for bus buffers.
- Jog Dial support

12 April 2001

Daisy Lab Controller Spec

16 April 2001

Desert Island Meeting

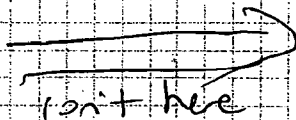
• will use user-centric design methodologies to spec & implement D.I.

Prototyping Tasks: HW

- IOA Experience w/I/F
 - EMI
 - Stack Integration
 - Pocketing I/F
 - Host + Peer SW Development
- Power
 - Battery Technology
 - Peak leveling experiment
 - More efficient power supplies
- Display
 - Touch Screen
 - EL Backlight
 - Controller Solutions
- User Control Interface
 - Jog wheels
 - Touch screen controller
 - "Bristow button test" (what buttons are dedicated)
 - Dedicated Processor (Management Subsystem)
 - Remote controls

Audio

- Mic Input
- 2V RMS output



(or + here)

SUBJECT:

DATE:

12 April 2001

Desert Island Prototype Feature List

- Move FPGA to prototype Daisy modules, i.e. LCD controller?

Cont - Desert Island Meetings

10 April 2001

• Docking Interface

1394
Power
EMI

Prototyping Tasks: SW

- 1394 stack integration
- RTOS integration
- Development tools.

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PeBERT Island Meeting (cont) 16 April 2001

- User Centric - UI usage.
- Host SW prototype
- Marketing

Clover Meeting 23 April 2001
Howard, Martin H, Lee M, Jerry,
Pete S, Andrei, Howard, Ray

Agenda

- ① DEV tools - ARM vs. GNU, Talking tools.
- ② CLOVER DEMO SUPPORT
- ③ CLOVER DVT SUPPORT
- ④ KAOS & TAMBAs SUPPORT
- ⑤ Howard's Agenda.

① Will use ARM multi-ice for KAOS. No commitment for Tamba. Pete will assist getting a boot loader implemented in Flash, etc. Need another Talking DSP emulator. Jerry will fill out P.O.

② Martin H will hand off Demo to Jerry. Jerry will complete SW for Clover Demo.

③ Pete working on code to support power consumption tests. Preparing Dhrystone Memory performance tests for the various memory locations. IMA will not be tested. Serial port being tested.

④ Support from Pete & Martin - KAOS is priority over DVT & Demo.

SUBJECT:

DATE:

Girault Jones
 135 Lake Dr
 Boulder Creek, CA 95006
 831 339 3461

24 April 2001

Mic Input Specs for Desert Island:

- ① a -45 dBu mic input level will just clip the input if max gain selected
- ② a +22 dBu input level will clip the input if min gain selected.
- ③ Accommodate +13 dBu max input for differential input signal, +7 dBu for single-ended signal.

30 April 2001

KS1000 HW Design Review

- Must have 24/96 S/PDIF support.
- No need for separate headphones path.
- Need SW mute for S/PDIF out (No change to FPGA/GA spec.)
- Update signal path diagram
 Pro logic recording + monitoring
 + mixing with MIC in.
 - FPGA Support - Mute output data but don't turn off S/PDIF stream.
- Need feedback from Ozny G on preferred pinout on BEA.

2 May 2001

Daisy Meeting

- Jane, Phil, Curt, Mazan & Pete have resigned.
- IP purchases not approved - Dave's didn't go to the GM meeting.
- David Watson starts Tuesday 5/8/01.
- Someone from Conexant might start in June.
- Steve Ericson very interested in Daisy for K11000 follow-on product → 1394, PCI not ~~needed~~ needed. Might ^{on} could do KS2000 chip before Daisy, ~~especially~~ might be more suitable project to do given the reduced VLSI staff.
- Big discussion about replacing AHB bus with VCI bus. VCI bus gives best performance for Daisy. Resistance to using bus by Paul B & MSKP.
- Designers need to estimate time to convert their AHB-based modules to a VCI-based modules.
- JTAG Ports - Daisy web site posting incorrectly reports that JTAG ports will be removed from Daisy.
- Might need 3rd JTAG port to access test modes? → function of vendor requirements & requirements from Singapore.
- Got quote from ST. Quote was high.
- Expecting quotes from LSI & Phillips.
- No word from Agere, won't return Rick's phone calls.

SUBJECT:

DATE:

KR1000 Meeting2 May 2001

- Craig McHugh is reviewing the MRP. Writing for his signature.
- 2 ID Specs - One with text on controls & Jacks, one with symbols/icons.
- Only things that can affect spec: Competition, market, cost, schedule.
- \$73 cost FOB Singapore
- Core Logic (electronics) designs Lens. Sent prelim Schematics. Design review held.
- DSP SW Spec in sync with MRP & HW Spec.
- Base Array: Samsung is selected vendor

KR1000 Base Array Meeting -7 May 2001S/PDIF R/W Implementation

Scott F

- Need \times oversampling clock to recover S/PDIF.
- Scott's module gives -

Data
Data Strobe
Strobe bit
Lock Bit

- need 17 bits of pitch estimate to do SRC

- Want a "How full" Fifo. Then can get frequent pitch into readings.
- Address generators should be gray code. Then can compare asynchronous addresses to determine how full.
- Better idea: ^{small} random logic FIFO (4 or 8 deep) to cross clock domains, then 8 synchronous Fifo from one clock.
- Can do up converter for 20k output with 256x clock. 0.01dB ripple, .005% THD+N (83dB)
- 2x oversampling filter, 4th order. Uses 32x32 bits = 1K \Rightarrow use Flip Flops, not memory.

20k1 Meeting - Brent Elder 7 May 2001

- Want EMV32 Input (Priority) & outputs if possible. } Scott F (self) probably not.
 - Varspeed? Yes. Key'd. } provide spec, Scott will ask
 - AC97 Codec Support? } Yes up to 2 of them, 6 ch each
 - Details on ACS support? } can bring in data, use MIP1 in chip, can encode.
 - Extended memory for Embedded mode > 128 MB, } NO
 - Base mode ROM, SDRAM, DDRAM Support? } only 128 MB max
- 32 MB on chip max regular SDRAM VPA driver has hooks. not shipped

SUBJECT:

DATE:

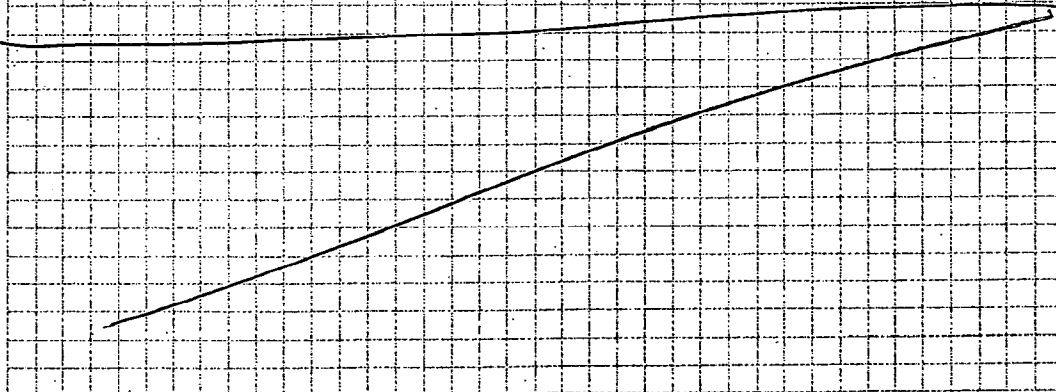
Desert Island Proposal Review ^{9 May 2001}

Problem changes since last meeting:

- Employ user-centric design methodology
- RTOS & I386 Support
- Device Drivers
- Command Protocol
- Power Management

Other Items:

- Docking I/F will be implemented
 - user experience
 - Mechanical Study
 - EMI Compliance
 - Overall functionality
- Add IR development: External board that connects to wired remote I/F
- Get wired remote design from Johnson
- Accommodate Removable Battery/Power supply module



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Datsy DMA Review 9 May 2001

Mike S, Shawn S, Paul B, Pzk, Huzza,

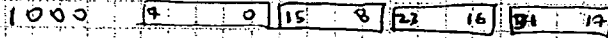
Little Endian

00 LSB } LSW

01 MSB }

10 LSB } MSW

11 MSB }



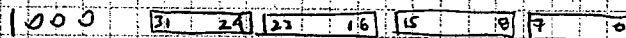
BIG ENDIAN

00 MSB } MSW

01 LSB }

10 MSB } LSW

11 LSB }



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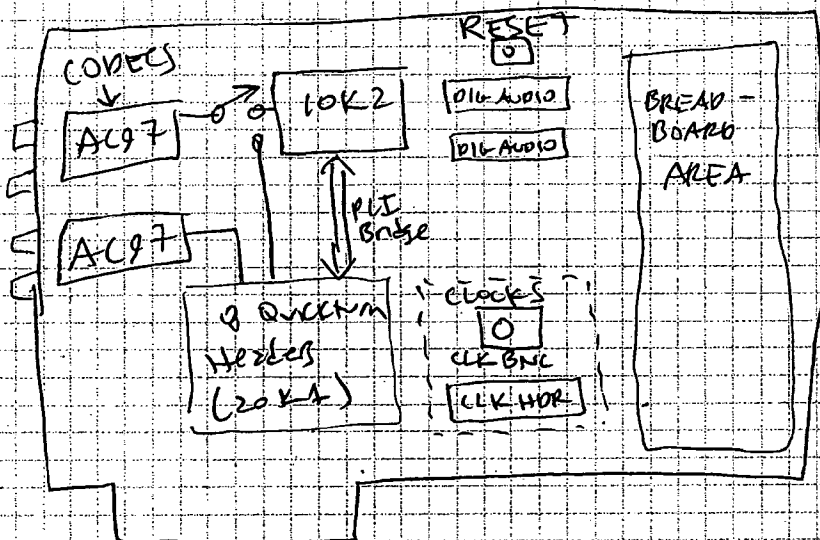
DATE:

17 May 2001

20K1 HW meeting

Swiff F, Tom S, Dan F.

Want 20K1 reference board for Quickturn Emulator. See "EMU 20K1 Quickturn Eval PCB Requirements" doc.



20K1
 • Reset = PCI RESET OR PUSHBUTTON RESET

17 May 2001

20K1 SW Meetings

John K, Mike G, Charles, Rick, Steve V, Sam Dicker

- 20K1 Tiger Team Meetings. Goal was to identify reqmts of 20K1. Target price was \$10, last estimated cost was \$21. want to trim features to reduce cost.
- Denny is targeted chip for KS2000
- "Way away" from having a schedule.
- LFL wants 20K1 product for XMAS 2002.

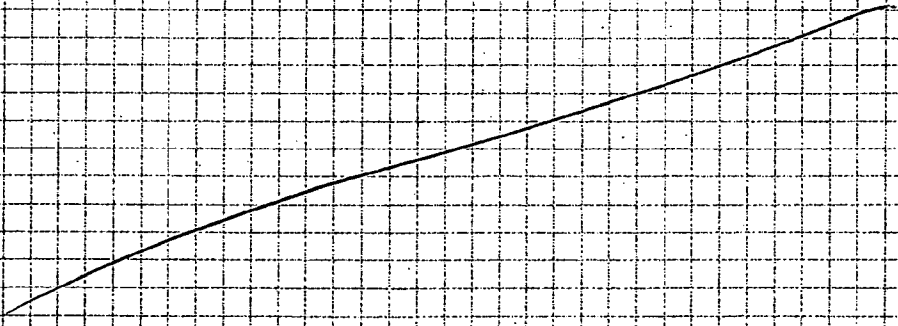
21 May 2001

SB Live Model SB9020

chips on board:

Sigmatel STAC908T

TI TSB41AB2



SUBJECT:

DATE:

24 May 2001

KS1000 Schematic Design Review

Paul B, Dan E, Mihai, Niel W, Shaun S,
John Keith, Lens O.

Notes:

- ① USB IRQ from Philips USB chip not yet tested.
- ② Action Item Shaun: OK to tie Masterpower low?
Or must have transition after reset? Run 6MHz
clock to Masterpower?
- ③ Masterpower shouldn't have off P30 connector
- ④ H0BIORN does not need to be terminated.
- ⑤ H0BIORBY needs to be pulsed high.
- ⑥ Action Item Lens: Make sure JTAG ports are terminated correctly. Make sure and refer to redlined ~~lower~~ board schems
- ⑦ LCD Data bus needs to be terminated.
- ⑧ Series-terminate ASYNCLBYTEN, ASYNCLBYTEN
CAN USE R07, R205
- ⑨ Terminate USBPLUS, USBMINUS. (TO GND)
- ⑩ Terminate UARTCTS
- ⑪ Terminate U205 unused inputs.
- ⑫ Need final schematics & need another design review.
- ⑬ GPIO6 does not have enough current to drive an LED? Add buffer?
- ⑭ If connect data bus from ARM to ZORAN through 0 ohm R11, ARM data bus will be shorted to virtual GND until ~~VC~~ VC 3.3V_SHDN is powered up. ~~(Zoran page)~~
- ⑮ Can you leave PII-DIS on Zoran floating?

JST Connector Meetings

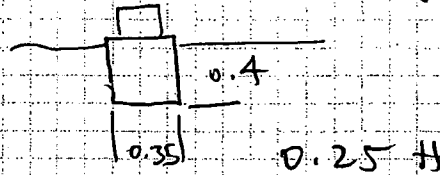
5/30/01

Kiyoshi Ishii
MKT MGR

Jonathan Ando
Proj. Eng.
jando@jst.com

MINI USB CONNS.

1394A device side:



Hinge connectors

JAV connector - 1.5 mm mating height

JAS " 4 mm .3A 30V 70mA

JMB " 4.5 mm .5A 50V 50mA

Program Review Meeting

5/31/01

Dave S, Mark D, Lee M, Dan F, Howard E, Huck L,
Ray L, Michael L.

DAISY, FANG

- | | |
|------------------|-------------------------|
| AGENDA: | |
| 1. DAISY | 4. 20K1 |
| 2. DESERT ISLAND | 5. AUDIO FINGERPRINTING |
| 3. RAINBOW | |

- Not much progress. Daisy team working on FANG FPLA & ASIC
- Fang: finishing up verification. On schedule. Samsung D354
- FPGA being done to facilitate SW development
- ASIC Available 2nd week in July.

- Ray, Shawn, Paul, Charlene, JO Ann now working on it.
- Lots of Feature Creep. 24/96 Support, S/PDF I/O, etc.
- \$2.60/ea, \$10K NRE, for QTY 50K/month.
- First pass at ASIC synthesis happened yesterday - anticipate clean synthesis run in a few days.

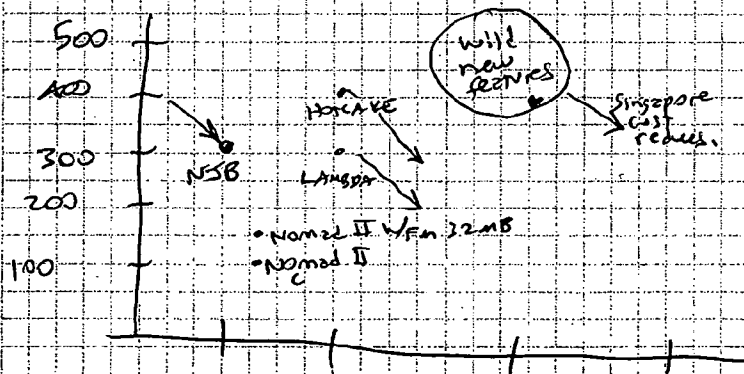
(Dave Sparks) 1st priorities:

- ① AUDIGY
- ② K81000

DESERT ISLAND

Huck: Singapore is taking what we have done (Jukebox) and value engineering it further (smaller, battery life, etc).

- Wants us to focus on wild new features.
- Field recorder market much smaller than Player market. Don't focus lots of effort on this.
- we will need to sell the KBU's on something.



U.N.I.T

- Could be good to generate a list of wild new features that we could use to sell REV'S.
- Localization has been important to sales. Example: we sold 4K NJB'S to supermarket chain in Germany.
- Contextual functionality: Pack the unit, functionality increases.
- Voice Navigation important.
- Women have differences in opinion on some features - they don't like to use jog wheels on computer mice.
- Metabolic - Networking of some sort.
- Content Navigation Important.
- Apple will come into this market.
- Must balance ^{new} concepts with cost factor.

→ Involve Steve & Jim in deciding the "wow" features we want to go after.
Mosher Carlton

PGM Review Meeting

6/1/01

EXHIBIT X

**PORTIONS
REDACTED**

Dan Freeman <danf@emu.com>

12/28/1999 02:19 PM

To: andreiv <andreiv@emu.com>, Howard Egan <howarde@emu.com>

cc: Dan Freeman <danf@emu.com>

Subject: ARM Initialization Pwr Up/Down for CES

Hi Andrei-

It appears the the initialization procedure you have implemented for the ARM works for the time being. Test for understanding: Somewhere in your init code, you set the ARMFLAG (PD6) pin high on the ARM.

Please implement the power-off feature as follows:

If the STOP key is held down for 3 (three) (threagh) (tree) (tres) (4 minus 1) seconds, set the ARMFLAG (PD6) pin LOW on the ARM. This, of course, assumes that the ARMFLAG pin was set high previously.

Thanks for being a pal.

Your pal,
-Dan

EXHIBIT Y

**PORTIONS
REDACTED**

Dan Freeman <danf@emu.com>

12/30/1999 09:34 AM

To: Howard Egan <howarde@emu.com>

cc:

Subject: [Fwd:]

----- Message from "Dave Bristow" <daveb@emu.com> on Wed, 29 Dec 1999 17:01:42 -0800 -----

To: "Crispian Leong" <crispian@ctlsg.creaf.com>, "Christi Wilkerson" <Christi_Wilkerson@climail.cli.creaf.com>

cc: "Dan Freeman" <danf@emu.com>, "Lee Morse" <leem@emu.com>

Hi Crispian, Christi,

Please find enclosed a word document. This contains Nomad JukeBox Demo Guidelines for our presenters at CES; a Quickstart Tutorial and a list of FAQ's. Feel free to edit and adjust the document or send me feedback by e.mail and I will make necessary changes.

The CES functionality is almost set now, but there is still a little

**PORTIONS
REDACTED**

uncertainty about the level of functionality of the Host App. If there are any important changes I will contact you. (Note, it is very important that our presenters understand that we should be explaining/selling FCS functionality while demonstrating CES functionality.)

We may need another doc for presenters which lists the content in the CES units and indicates which tracks may be legally played in the public demo area. I'll do this when we have mastered the HD's.

NOTE: All Nomad JukeBoxes at CES must be powered with the wall adaptors. It is important that batteries are NOT used. I will let you know if there is any change to this requirement.

regards/dave

Script Guideline : Public Demonstration

Presentation Format Summary

Station xx – Nomad JukeBox : FCS march

- Overview of **Nomad JukeBox**
- Overview of compressed audio - MP3 and other codecs (coder/decoder)
- Overview of **Nomad JukeBox Manager (Host SW)**
- Demonstration Outline
- Demonstration Steps
 - **Nomad JukeBox Manager (Host SW)**
 - **Nomad JukeBox**

Overview of Nomad JukeBox: *(User is the focus)*

- Creative offers you a family of compact, compressed audio players allowing you to take a selection of your music and audio wherever you want it. Nomad II and Nomad II MG offer the ultimate in solid state music and audio playback, coupled with maximum portability.
- The product family is now extended to include Nomad Jukebox, bringing the benefit of making your whole music collection portable, available for you to listen to anywhere, anytime.
- **NOMAD JukeBox** is a portable, high quality compressed audio player capable of storing over 100 hours of CD quality music and audio. It is designed to help you get the very most from your music and audio collection. Though not as small as NOMAD II, it is lightweight and compact, and resistant to vibration, with a 5 minute skip and anti-shock play buffer.
- To enhance your listening experience whether in headphones or through loudspeakers, the onboard DSP features include 4 channel surround sound, EQ, headphone spatialization, time compression/expansion and reverb effects.
- Easy navigation through your content and the use of personalized playlists make selection of music a breeze. The accompanying host application enables you to use your PC to extend and organize the content in NOMAD JukeBox, by providing high quality CD ripper and encoder, as well as downloading further files from the Internet. [*Link to other stations & demos* – "Our NOMAD II station will be demonstrating how files can be downloaded over the net."]]
- Because we don't want our customers to be victims of changing industry standards, NOMAD JukeBox will playback all major compressed audio formats as well as raw digital audio, and can accommodate future changes with its user- upgradeable Operating System; this will be available over the internet.
- You can record directly onto NOMAD JukeBox via the line inputs. So when we say you can now store your complete music collection in one place, we do mean all of it, including old vinyl or cassettes! The host application will take care of clean-up, compression and adding text information about the tracks.

Overview of compressed audio:

- MP3 is the file extension for MPEG 1, Layer 3 – probably the most well known digital audio compression format. MP3 uses perceptual audio coding and psychoacoustic compression to reduce the redundant or irrelevant parts of an audio signal (those you cannot hear anyway) and compresses the file to about 1:12th the original size.
- MP3 is the current standard for downloading audio files from the Internet, yet there are other emerging codecs that will challenge MP3, offering better compression ratios or audio quality, as well as implementing security or watermarking for copyright protection. AAC is the next MPEG standard for example that will replace MP3. All formats will be supported by **NOMAD JukeBox** through future, internet downloadable, OS upgrades.

- WMA (Windows Media Audio) offers comparable audio quality to MP3 (CD quality), at about half of the size of an MP3 file. Ex: If you pull the raw data from 1 of your favorite tracks off of a CD, this will be about a 40MB .wav file. The MP3 file will be about 4MB. An AAC or WMA file will be about 2MB, giving you the ability to store even more content on a portable digital audio player, CD-RW drive, or a hard drive.
 - The WAV format is the way in which analog recording is digitally stored. As this is raw uncompressed data it takes up more hard disk space than the compressed files. However, WAV files can later be uploaded to the NOMAD Jukebox PC Application and converted to MP3. There is no limit to actual track size that NOMAD Jukebox can playback.
 - Creative Digital Audio Centre is our general purpose CD ripping, encoding and archiving software that can also be used with NOMAD JukeBox, and this is being demo'd at the NOMAD II station.
-

Overview of the Nomad JukeBox Manager (Host Application SW)

- An intuitive, easy-to-use application that acts like a large window into Nomad JukeBox. It allows you to organize and manage content in **NOMAD JukeBox**, convert and download new content from the PC.
 - You can also use the application to access the Internet, and transfer content directly to **NOMAD JukeBox**
 - All **NOMAD JukeBox** transport controls can be remotely operated from the PC
-

Demonstration Outline (Nomad JukeBox and Host SW application)

- *Start with the Host SW Application (JukeBox Manager) explaining that it acts like an organizer for NOMAD JukeBox and mirrors the controls, but with the added convenience of a drag and drop, large screen GUI.*
 - *It also adds functionality: CD ripping; adding information to content; downloading content from the net; use of CDDDB for track information as well as keeping the NOMAD JukeBox organized and tidy.*
 - *Demonstration of the basic functions of the **Nomad JukeBox***
Note: at all times, explain FCS functionality but show CES functionality.
 - *Describe the button actions, how to navigate the content library, how to play selected content using the PlayKey*
 - *Give a demo of the sound quality with examples*
 - *Introduce Queue-ing tracks and show to save the Queue-list as a simple playlist*
 - *Show direct recording facility of **Nomad JukeBox** (not functional at CES)*
 - *Allow the person/audience to handle the **Nomad JukeBox** player – "That's the size and weight of your entire music library!"*
-

Demonstration Steps:

- **Demonstration of Nomad JukeBox Manager (Host SW Application)**
 - ⇒ Have the JukeBox Manager software active on the desktop, with the start icon pressed.
 - ⇒ There are two main activities – Organize and Import. These pages can also be reached with the Library and Import buttons always present in the lower toolbar. Press Organize...
 - ⇒ This shows the content view, where tracks can be deleted, information added and playlists created using simple drag and drop techniques (not active at CES).
 - ⇒ From the Library view, click on Import in the lower toolbar... This brings up a screen which shows the four ways of introducing content into the JukeBox: CD ripping, Download from the Internet, moving files from the PC and direct line recording. (Note: the JukeBox can be used standalone for Line recording)
 - ⇒ Finally, show the transport controls on the lower left of the screen. Use the Q button to make a list and display the list by clicking on the QUEUE LIST title bar.
 - ⇒ The settings button allows you to adjust the Nomad JukeBox system settings (not active at CES)

- **Demonstration of the Nomad JukeBox**
 - ⇒ (Begin with connection to loudspeakers turned up. System Menu Output – Normal. Headphones will mirror loudspeaker stereo output. Rear speakers mirrors front speakers)
 - ⇒ Point out and describe the Keys. Volume encoder, TransportKeys – these work like any personal CD player transport keys; ScrollKeys for selecting from a list; LibraryKey – displays all the contents of the JukeBox; MenuKey – displays a list of system settings and special features; SoftKeys – these are labelled in the display depending on the screen displayed.
 - ⇒ Lets start with the LibraryKey – show that this skips between the top library Screen and the “now playing” Screen.
 - ⇒ SoftKeys – repeat that the softkeys are labelled depending on the screen, and for example, when searching the library, they are used to expand the view via different categories. Show the use of the ScrollKeys by moving up and down lists of albums, styles, artists or tracks.
 - ⇒ Mention 6GB HD holds 100 hours of CD-quality music, equivalent to 150 CDs
 - ⇒ Touch the LibraryKey again to return to the top Libraryscreen and select an album. (let the audience choose a style) . Show how to play this directly from the Library by pressing the PLAY transport key.
 - ⇒ Emphasise: “You find and select what you want to hear and simply press Play”
 - ⇒ Show that the Jukebox automatically displays the “Now Playing” screen soon after audio has started. See the softkeys have changed now and can be used to see the list of tracks waiting to be played.
 - ⇒ Now direct the audience to the sound quality. Have them put on a headset (if available). Explain the system settings found under the MenuKey and choose OUTPUT. Show spatialization effects by selecting Medium, Wide and Surround for Headphones.
 - ⇒ Anytime during this section of the demo, use the PlayKey as a pause button. (**Remember:** if the PlayKey is pressed when the Library Screen is active, it will immediately play the selection and will not act as pause -this is the only case where PlayKey does not pause.)
 - ⇒ Show another DSP effect. Select Parametric EQ from Menu list and demonstrate. Reset to normal after demo.
 - ⇒ Ask audience to remove headphones and set OUTPUT to 4 channel speaker surround – show and explain that this creates a surround effect by delivering a special phase adjusted ambient signal to the rear speakers.
 - ⇒ Stop the playback using the StopKey. Explain: Building and playing playlists is an important part of the JukeBox’s function. We’ve shown how easy it is to immediately Play any Album from the library by selecting and using the PlayKey. However, whenever you repeat this action with the PlayKey, whatever is playing will stop and the new selection will take its place on the “virtual turntable”. Show an example of this by selecting and playing a track from the Library followed by a second “played” track after about 10 seconds.
To build up a list of selections, instead of pressing the PlayKey when searching through the library, press the QueueKey (One of the SoftKeys labelled at the bottom right of the LibraryScreen). This will add your selection to the currently playing list, and you can check this by looking at the list view of the PlayScreens. After any listening session, you can choose to save all the music you have been listening to as a playlist for future occasions.
 - ⇒ At the beginning of the demo, we explained that the JukeBox Manager program was how we bring content into the JukeBox via its’ USB port. It is also possible to record an analog source directly into the unit. Press the MenuKey and scroll down to RECORDING. Press the Go! SoftKey to activate the recording page. Show how to set the level then press PLAY to start recording. STOP to stop recording. (Input meters will not function at CES). You can use this feature to record old vinyl or cassettes and then merge this data with your CD collection.
 - ⇒ Allow the audience/person to handle the unit and answer questions.

Nomad JukeBox Quick Tutorial

[please note – not all functions are implemented at CES]

Once Nomad JukeBox is loaded with a music and audio collection, enjoying your music is simple. Nomad JukeBox is a very versatile media player, and you will soon find that you can get more value and listening pleasure out of your music library, anywhere, anytime than ever before.

The user interface of Nomad JukeBox is simple and intuitive – this tutorial is designed to get you started with playing music. It starts by looking at the control buttons and the main display screens. Then you'll see how easy it is to listen to music by either Playing tracks directly from the Library or Queue-ing them into a list which can be repeated, played in random order or saved as a favorite list for another day.

The Control Buttons

There are four groups of buttons grouped together just below the display screen:

TransportKeys – these keys act in a similar manner to those found on a typical CD Player and are located in the centre of the control panel.

Play/Pause – Start, Pause, Re-start Key with one important exception: from the Library screen it always starts to play the current selection.

Stop – Stops Play and cancels pause. It resets the PlayPointer to the beginning of the current PlayList (depending on the preference settings)

Skip Forwards – Skips audio to the next track in the PlayList. Holding the key increments through tracks to the last track in the List. Pressed with the PlayKey, speeds up audio through the current track (Not yet implemented)

Skip Backwards – Skips audio to the beginning of the currently playing track (after at least 3 seconds of elapsed track time). Next press skips to start of previous track in current list. Holding the key decrements through tracks to the head of the current list.

ScrollKeys - These are marked with up/down arrows and are located on the right of the control panel. They allow you to select different items in any list that is displayed in the LCD.

Up Arrow Scrolls up any list displayed and highlights each subsequent item

Down Arrow Scrolls down the list

SoftKeys – These three keys are located directly beneath the main display. The function of the SoftKeys are context dependent, actions are clearly labelled at the base of the display screen.

Library & Menu Keys –These are two special function keys located on the left of the control panel.

Library - the LibraryKey is the "Home" button on OASIS, causing the LCD to display a list of Library contents. It also toggles between the LibraryScreen and the NowPlayingScreen

Menu – this displays the main list of the System Settings for Nomad JukeBox, such as EQ, Headphone Spatialization, Recording set-up, Time Zone Settings etc.

Other Controls:

Volume encoder – located on the right side of the device. This is always active as a volume control.

Lock Switch – located on the left side of the device, this switch disables the control panel buttons, preventing accidental pressing of keys, for example when listening to and carrying the JukeBox in a backpack.

The Main Display Screens

There are three main sets of screens that you will use for searching and selecting from your library, seeing what is currently playing and what is in the PlayList, and finally, adjusting the System Settings of Nomad JukeBox.

LibraryScreen – this displays the entire collection contained in OASIS whenever the LibraryKey is pressed. The content view can be “expanded” using SoftKeys to show individual tracks, or “compacted” to show Albums and other Categories of music, depending upon what you want to view or search. TO DO THIS use ScrollKeys to select a line then press the OPEN or CLOSE SoftKey to change the view.

NowPlayingScreen – this is the default screen when music is playing, it shows you information about the currently playing track, or what is coming up next on your list depending again on the view you choose. It can be expanded or compacted just like the LibraryScreen

As long as tracks are queued up or playing, and there is no other buttons are pressed, the PlayScreen will be the default display.

MenuScreen – this contains a list of all the cool, advanced set-up preferences, recording choices, data management functions and system tools of Nomad JukeBox. Selecting an item, then pressing the “Do It!” SoftKey at the bottom left of the display will take you to a screen where that particular feature can be edited or controlled. As you become more used to Nomad JukeBox, you will be adjusting these settings more and more in order to tune it to your personal preferences, but for the time being, its enough to know that these controls are there!

Music Playback from Nomad JukeBox

There are two ways to listen to music on Nomad JukeBox. You either PLAY selected items (for example and Album or a track) directly from the Library or you Queue them into a longer list. It depends how you feel – do you want to actively choose each track or album as you go, or would you prefer to line up a list of Albums and tracks to play through automatically while you concentrate on something else. Nomad JukeBox handles either method easily. It just depends on how items are selected from the Library – either “Played” or “Queued”. A track (or Album) “Played” from the Library goes straight to the head of the list – a track (or Album) “Queued” is placed at the end of the list and has to wait its turn.

To **PLAY** a Track or Album, simply find the Track or Album you want to listen to in your Library by using the OPEN/CLOSE SoftKeys to get to the right view, then scroll up and down with the ScrollKeys until the right item is highlighted. Now, **press the PlayKey** and the music will start; at the same time the NowPlayingScreen will automatically be displayed. If you tire of the track or Album you selected, go back to the LibraryScreen (use the Library Button) and select another item. When you press PLAY, the currently playing track will stop and the new selection will start, just as if you’d removed one disk from the player and inserted another. This is a great way to quickly bounce around your music collection.

QUEUE-ING means that instead of playing items immediately from the Library, they are entered into a list and played one after the other (or in random fashion, if you prefer). The list does not have to be decided in one go - items can be appended to your list at any time. For example, as one Album draws to a close, you can select another, ready to start playing as soon as the first selection is finished. A track is queued by selecting from the Library as before, but instead of pressing PLAY, **press the QUEUE labelled SoftKey**.

You can continue to add as many items as you want to the QUEUE LIST - as soon as you stop searching for more tracks, the display screen will automatically revert to the PlayScreen and show you details of the music you are currently hearing. Pressing the PlayKey when the PlayScreen is displayed, will simply pause the current track where it is; pressing the PlayKey again will re-start the list, operating just like the Play/Pause

button on a CD player or VCR. During playback of a QUEUED list, you can still pop into your library and instantly PLAY a selected track (by using the Play method and hitting the PlayKey directly). The current list will stop playing and play the selected track immediately. When it is finished, the cued List will pick up again. You can mix Playing and Cue-ing as you like.

Once a list is playing, the PlayMode can be set to Repeat, Shuffle or PlayOnce – this is selected using the righthand SoftKey from the main track view of the NowPlayingScreens.

Pressing the StopKey during any of the above operations will always stop the currently playing music and reset for play at the head of the List. Play will re-start from the top of the list. At anytime, you can save the active CUE-LIST by pressing the MenuKey, selecting SAVELIST from the options displayed then the "Do It!" SoftKey - one of the neatest functions of OASIS is the ability to save PlayLists for another day!

How Content is organized in Nomad JukeBox

The total audio content of Nomad JukeBox is collectively known as the Library. The Library is indexed by using Categories and sub-Categories, PlayLists and Tracks. Icons in the display help to keep the levels clear.

Each audio file (for example a track of music) has a number of descriptive fields associated with it. Most of these fields (but not all) will have an entry in it. Some of these fields are equivalent to the Library's Categories.

Audio Content	CONTENT DESCRIPTION FIELDS						
Data File	Album	Artist	Style	Title	Release Date	User 1...	Etc...

When a Category is opened or expanded, it shows a list of all the different entries that can be found in a particular description field. For example, if the Album category is expanded, a new sub-category, which is a list of every entry that can be found in the Album field of each audio file, will be displayed – in other words, a list of all the Albums stored in the JukeBox.

From this sub-category list, a particular Album can be selected and opened or expanded. A new list, a PlayList, will now be displayed which contains every audio file that has the selected Album as the entry in its Album Field – in other words a list of all the tracks on the Album.

This quick tutorial focuses on Albums and Tracks because they are familiar to us and it is the way most music is grouped, and is therefore a useful paradigm for getting started. However, the principles apply just as well to other forms of audio data such as books, news clippings, personally recorded items and so on.

NOMAD JUKEBOX: FAQs

1. Why are there different encoder rates?

It is generally agreed that MP3 encoded at 128kbs provides compressed audio which is virtually indistinguishable from the uncompressed version in most listening environments. Encoding at a lower bit rate gives the advantage of a smaller file size and although there is some loss of quality, the results may still suit listeners under certain conditions.

2. Does NJ play CD's?

No. It looks like a portable CD player, but all files are played off an internal HD

3. Can I use NJ to store other files from my computer?

Not in the current version. However, the JukeBox is oriented toward multi-media entertainment storage – future releases will allow additional non-audio data to be stored alongside the audio. OS upgrades will be available over the internet.

4. Can I play NJ in the car?

Yes. A neat kit accessory kit is available from (Creative) with a platform, DC power source from the cigarette lighter and a built in transmitter to your cars FM radio. It's easy to install and costs about \$30..

5. I don't have USB on my PC. Can I use a serial to USB adaptor?

To download content onto the JukeBox from a PC, USB is a requirement but after that it operates standalone. (By the way, you'll probably find that you can upgrade your PC with USB quite cheaply)

6. How long will it take to rip, say, 10 CDs?

If the CD drive is NOT equipped with a digital out, the audio can only be removed at a 1x rate. If there is a digital out, depending upon the system configuration, you will probably get between 3x and 10x extraction rate assuming that your PC has a least a 12x drive. After the audio is extracted, it needs to be encoded and this rate will vary according to your processor speed and memory available. For a ballpark figure, a 450MHz Gateway Laptop is able to rip and encode 10 albums in about one hour and a half. For a less highly specified PC, 3 or 4 albums an hour is a reasonable expectation.

7. Does the NJ have a built in FM tuner?

No, but NOMAD II does.

8. How do I back up my NJ contents, playlists and settings?

The Host application deals with archiving.

9. What sort of Drive is in NJ?

A 2.5" 6 GB hard drive similar to those found in laptops.

10. What does encryption mean?

This has to do with digital rights management and copyright protection. When you download an encrypted music file for example, there are a set of usage/playback rules which apply. Such as...“This file can be used on your JukeBox and Nomad II, but cannot be used on anyother devices, or, if you lend it to a friend, it is available on his/her player, but not yours”. Nomad JukeBox will be able to implement these rules which means that as the recording industry sets its standards for digital distribution, you will be able to participate in this market, as you see fit.

11. What does MP3 stand for?

MP3 is short for MPEG 1, layer 3. MPEG stands for Motion Picture Engineering Group

12. What is the advantage of NJ over a cheap laptop installed with say MusicMatch?

The JukeBox is more portable, with a cool functional design, has higher quality audio outputs, better battery life, large capacity and it is cheaper. It also has a proprietary file system which allows the playback of large files not found on a PC. (Note: You'd be hard pushed to find a LapTop with all the necessary requirements for \$500...)

13. If NJ can hold 100 hours of music, why is the battery life only 6 hours?

There are two different aspects of the units performance when we talk about total content time and battery life. The NJ was designed as a portable desktop music library. with very large content capacity allowing you to choose your listening selection anywhere at anytime. The battery life of NJ was chosen to avoid expensive and exotic battery technology. With the smaller portable players such as Nomad II, you are selecting and loading your listening content for a specific listening situation, in which case it is a reasonable expectation that the battery life is longer than the content length.

14. Can I jog with NJ?

Yes you can – it is robust, compact and light. There is a 5 minute anti-shock memory buffer.

15. Is it possible for me to replace NJ's HD with an even larger one?

No. There is a proprietary file system in the NJ which allows it to provide its high performance playback of large file sizes.

16. Can I use my iMac to run the Host Software?

Not at FCS – but support for Mac Platform is planned within a few months. All of Creatives' PDE family of products will be cross-platform. At Macworld (January 2000) Creative is showing the Nomad II and WebCamGo integrated with the Mac OS.

17. What's the Infra Red window for?

This is for receiving commands from a remote control accessory available a few months after Nomad JukeBox is in the stores.

18. Will other colors be available?

Not yet decided. What colors would you like to see?

19. Can I use Nomad JukeBox like a portable Mini-Disk or DAT player, for recording?

Yes, absolutely! Quality will be better than Mini-Disk and as good as DAT. If microphones are used, rather than line level source, an external preamp is required. (Some mics are available with this built in). Recording sample rates can be 48Khz, 44.1KHz or 32KHz at 16 bit. The Nomad JukeBox will be able to store up to 10 hours of uncompressed recorded music. The host PC can later be used to compress and organize this data.

EXHIBIT Y

**PORTIONS
REDACTED**

Dan Freeman <danf@emu.com>

12/30/1999 09:34 AM

To: Howard Egan <howarde@emu.com>

cc:

Subject: [Fwd:]

----- Message from "Dave Bristow" <daveb@emu.com> on Wed, 29 Dec 1999 17:01:42 -0800 -----

To: "Crispian Leong" <crispian@ctlsq.creaf.com>, "Christi Wilkerson" <Christi_Wilkerson@climail.cli.creaf.com>
cc: "Dan Freeman" <danf@emu.com>, "Lee Morse" <leem@emu.com>

Hi Crispian, Christi,

Please find enclosed a word document. This contains Nomad JukeBox Demo Guidelines for our presenters at CES; a Quickstart Tutorial and a list of FAQ's. Feel free to edit and adjust the document or send me feedback by e.mail and I will make necessary changes.

The CES functionality is almost set now, but there is still a little

**PORTIONS
REDACTED**

uncertainty about the level of functionality of the Host App. If there are any important changes I will contact you. (Note, it is very important that our presenters understand that we should be explaining/selling FCS functionality while demonstrating CES functionality.)

We may need another doc for presenters which lists the content in the CES units and indicates which tracks may be legally played in the public demo area. I'll do this when we have mastered the HD's.

NOTE: All Nomad JukeBoxes at CES must be powered with the wall adaptors. It is important that batteries are NOT used. I will let you know if there is any change to this requirement.

regards/dave

Script Guideline : Public Demonstration

Presentation Format Summary

Station xx – Nomad JukeBox : FCS march

- Overview of **Nomad JukeBox**
- Overview of compressed audio - MP3 and other codecs (coder/decoder)
- Overview of **Nomad JukeBox Manager (Host SW)**
- Demonstration Outline
- Demonstration Steps
 - **Nomad JukeBox Manager (Host SW)**
 - **Nomad JukeBox**

Overview of Nomad JukeBox: *(User is the focus)*

- Creative offers you a family of compact, compressed audio players allowing you to take a selection of your music and audio wherever you want it. Nomad II and Nomad II MG offer the ultimate in solid state music and audio playback, coupled with maximum portability.
- The product family is now extended to include Nomad Jukebox, bringing the benefit of making your whole music collection portable, available for you to listen to anywhere, anytime.
- **NOMAD JukeBox** is a portable, high quality compressed audio player capable of storing over 100 hours of CD quality music and audio. It is designed to help you get the very most from your music and audio collection. Though not as small as NOMAD II, it is lightweight and compact, and resistant to vibration, with a 5 minute skip and anti-shock play buffer.
- To enhance your listening experience whether in headphones or through loudspeakers, the onboard DSP features include 4 channel surround sound, EQ, headphone spatialization, time compression/expansion and reverb effects.
- Easy navigation through your content and the use of personalized playlists make selection of music a breeze. The accompanying host application enables you to use your PC to extend and organize the content in NOMAD JukeBox, by providing high quality CD ripper and encoder, as well as downloading further files from the Internet. [*Link to other stations & demos* – “Our NOMAD II station will be demonstrating how files can be downloaded over the net.”]
- Because we don't want our customers to be victims of changing industry standards, NOMAD JukeBox will playback all major compressed audio formats as well as raw digital audio, and can accommodate future changes with its user- upgradeable Operating System; this will be available over the internet.
- You can record directly onto NOMAD JukeBox via the line inputs. So when we say you can now store your complete music collection in one place, we do mean all of it, including old vinyl or cassettes! The host application will take care of clean-up, compression and adding text information about the tracks.

Overview of compressed audio:

- MP3 is the file extension for MPEG 1, Layer 3 – probably the most well known digital audio compression format. MP3 uses perceptual audio coding and psychoacoustic compression to reduce the redundant or irrelevant parts of an audio signal (those you cannot hear anyway) and compresses the file to about 1:12th the original size.
- MP3 is the current standard for downloading audio files from the Internet, yet there are other emerging codecs that will challenge MP3, offering better compression ratios or audio quality, as well as implementing security or watermarking for copyright protection. AAC is the next MPEG standard for example that will replace MP3. All formats will be supported by **NOMAD JukeBox** through future, internet downloadable, OS upgrades.

- WMA (Windows Media Audio) offers comparable audio quality to MP3 (CD quality), at about half of the size of an MP3 file. Ex: If you pull the raw data from 1 of your favorite tracks off of a CD, this will be about a 40MB .wav file. The MP3 file will be about 4MB. An AAC or WMA file will be about 2MB, giving you the ability to store even more content on a portable digital audio player, CD-RW drive, or a hard drive.
 - The WAV format is the way in which analog recording is digitally stored. As this is raw uncompressed data it takes up more hard disk space than the compressed files. However, WAV files can later be uploaded to the NOMAD Jukebox PC Application and converted to MP3. There is no limit to actual track size that NOMAD Jukebox can playback.
 - Creative Digital Audio Centre is our general purpose CD ripping, encoding and archiving software that can also be used with NOMAD JukeBox, and this is being demo'd at the NOMAD II station.
-

Overview of the Nomad JukeBox Manager (Host Application SW)

- An intuitive, easy-to-use application that acts like a large window into Nomad JukeBox. It allows you to organize and manage content in **NOMAD JukeBox**, convert and download new content from the PC.
 - You can also use the application to access the Internet, and transfer content directly to **NOMAD JukeBox**
 - All **NOMAD JukeBox** transport controls can be remotely operated from the PC
-

Demonstration Outline (Nomad JukeBox and Host SW application)

- *Start with the Host SW Application (JukeBox Manager) explaining that it acts like an organizer for NOMAD JukeBox and mirrors the controls, but with the added convenience of a drag and drop, large screen GUI.*
 - *It also adds functionality: CD ripping; adding information to content; downloading content from the net; use of CDDDB for track information as well as keeping the NOMAD JukeBox organized and tidy.*
 - *Demonstration of the basic functions of the **Nomad JukeBox***
Note: at all times, explain FCS functionality but show CES functionality.
 - *Describe the button actions, how to navigate the content library, how to play selected content using the PlayKey*
 - *Give a demo of the sound quality with examples*
 - *Introduce Queue-ing tracks and show to save the Queue-list as a simple playlist*
 - *Show direct recording facility of **Nomad JukeBox** (not functional at CES)*
 - *Allow the person/audience to handle the **Nomad JukeBox** player – "That's the size and weight of your entire music library!"*
-

Demonstration Steps:

- **Demonstration of Nomad JukeBox Manager (Host SW Application)**
 - ⇒ Have the JukeBox Manager software active on the desktop, with the start icon pressed.
 - ⇒ There are two main activities – Organize and Import. These pages can also be reached with the Library and Import buttons always present in the lower toolbar. Press Organize...
 - ⇒ This shows the content view, where tracks can be deleted, information added and playlists created using simple drag and drop techniques (not active at CES).
 - ⇒ From the Library view, click on Import in the lower toolbar... This brings up a screen which shows the four ways of introducing content into the JukeBox: CD ripping, Download from the Internet, moving files from the PC and direct line recording. (Note: the JukeBox can be used standalone for Line recording)
 - ⇒ Finally, show the transport controls on the lower left of the screen. Use the Q button to make a list and display the list by clicking on the QUEUE LIST title bar.
 - ⇒ The settings button allows you to adjust the Nomad JukeBox system settings (not active at CES)

- **Demonstration of the Nomad JukeBox**

- ⇒ (Begin with connection to loudspeakers turned up. System Menu Output – Normal. Headphones will mirror loudspeaker stereo output. Rear speakers mirrors front speakers)
- ⇒ Point out and describe the Keys. Volume encoder, TransportKeys – these work like any personal CD player transport keys; ScrollKeys for selecting from a list; LibraryKey – displays all the contents of the JukeBox; MenuKey – displays a list of system settings and special features; SoftKeys – these are labelled in the display depending on the screen displayed.
- ⇒ Lets start with the LibraryKey – show that this skips between the top library Screen and the “now playing” Screen.
- ⇒ SoftKeys – repeat that the softkeys are labelled depending on the screen, and for example, when searching the library, they are used to expand the view via different categories. Show the use of the ScrollKeys by moving up and down lists of albums, styles, artists or tracks.
- ⇒ Mention 6GB HD holds 100 hours of CD-quality music, equivalent to 150 CDs
- ⇒ Touch the LibraryKey again to return to the top Libraryscreen and select an album. (let the audience choose a style) . Show how to play this directly from the Library by pressing the PLAY transport key.
- ⇒ Emphasise: “You find and select what you want to hear and simply press Play”
- ⇒ Show that the Jukebox automatically displays the “Now Playing” screen soon after audio has started. See the softkeys have changed now and can be used to see the list of tracks waiting to be played.
- ⇒ Now direct the audience to the sound quality. Have them put on a headset (if available). Explain the system settings found under the MenuKey and choose OUTPUT. Show spatialization effects by selecting Medium, Wide and Surround for Headphones.
- ⇒ Anytime during this section of the demo, use the PlayKey as a pause button. (**Remember:** if the PlayKey is pressed when the Library Screen is active, it will immediately play the selection and will not act as pause -this is the only case where PlayKey does not pause.)
- ⇒ Show another DSP effect. Select Parametric EQ from Menu list and demonstrate. Reset to normal after demo.
- ⇒ Ask audience to remove headphones and set OUTPUT to 4 channel speaker surround – show and explain that this creates a surround effect by delivering a special phase adjusted ambient signal to the rear speakers.
- ⇒ Stop the playback using the StopKey. Explain: Building and playing playlists is an important part of the JukeBox’s function. We’ve shown how easy it is to immediately Play any Album from the library by selecting and using the PlayKey. However, whenever you repeat this action with the PlayKey, whatever is playing will stop and the new selection will take its place on the “virtual turntable”. Show an example of this by selecting and playing a track from the Library followed by a second “played” track after about 10 seconds.

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