

## Mountain Lion HDMI Audio - Award

<http://www.tonymacx86.com/mod-house/70758-mountain-lion-hdmi-audio-award-dsdt.html#post438946>

## Mountain Lion HDMI Audio - Award DSDT

Verify first line of an Award dsdt is similar to:

```
DefinitionBlock (".dsdt.aml", "DSDT", 1, "GBT ", "GBTUACPI", 0x00001000)
```

Introducing a new simple and easy HDMI Audio dsdt editing tool for OS X HDMI audio. Based on the DSDT Editor built by MaLdOn, pushing the Apply button automatically adds the HDMI audio dsdt edits to your dsdt. This version edits Award/Gigabyte dsdts from the tonymacx86 - DSDT Database

### Benefits

1. Automated HDMI audio dsdt editing of Award BIOS/dsdt
2. Installs HD3000 or HD4000 integrated graphics HDMI audio dsdt edits
3. Installs AMD/Nvidia discrete graphics card HDMI audio dsdt edits
4. No copy, no paste, no finding the right place to paste....

### Before You Start:

1. OS X does not provide HDMI audio controls (No volume, no mute, no balance, etc.)
2. The connected HDMI device (TV, receiver, etc.) provides any and all audio controls

### Requirements

1. Intel
  - 1a. Ivy Bridge motherboard (7 Series)
  - 1b. Sandy Bridge motherboard (6 series)
  - 1c. Core i/Nehalem motherboard (5 Series)
2. OS X
  - 2a. Mountain Lion - 10.8 and newer
  - 2b. Lion - 10.7 and newer
3. dsdt - no compile errors and no exceptions
- 3a. tonymacx86 - DSDT Database
4. Realtek supported audio codecs (8xy): 885, 887, 888, 889, 892, 898
5. AppleHDA.kext, either
  - 5a. Native ML AppleHDA (no onboard audio)
  - 5b. Edited ML\_AppleHDA\_v2.3.0 or newer (885, 887, 888, 889, 892, 898)
  - 5c. Edited Lion\_AppleHDA\_V2.2.0 only (885, 887, 888, 889, 892, 898)
6. OS X recognized and enabled graphics with HDMI codec
7. Chimera - 1.11 or newer

### Special HDMI Audio Considerations

1. AMD/Nvidia/Intel
  - 1a. HDMI audio works with or without onboard audio working
2. AMD
  - 2a. AMD and Nvidia dsdt edits are the same
  - 2b. HDMI Device\_ID and/or Framebuffer edits may be required.
  - 2c. DVI ports do not support HDMI audio
  - 2d. Surround sound (Encoded Digital Audio) does not work with GE=No
3. Nvidia
  - 3a. AMD and Nvidia dsdt edits are the same
  - 3b. All Nvidia HDMI device-ids native to ML AppleHDA
  - 4c. HDMI audio available on all ports (DVI2HDMI adapter)
4. Intel
  - 4a. dsdt edits are different for HD3000 and HD4000
  - 4b. Framebuffer edits may be required for 1 or 2 HDMI outputs
  - 4c. 2x HDMI audio available by deleting one audio output device (Line Out or Optical)

### Approach

1. The files in the hdmi\_audio\_dsdt\_editing\_kit folder represent the HDMI audio dsdt edit source code.
2. Changes in the HDMI audio dsdt edits are made with a text editor to the appropriate file in the hdmi\_audio\_dsdt\_editing\_kit and installed with DSDT Editor.

3. The `hdmi_audio_dsdt_editing_kit` folder is preserved for BIOS updates and new installations.
4. Ensure the native extracted/downloaded dsdt is saved in a folder called `native dsdt`
5. Do not patch a dsdt more than once. If you do, the dsdt will not compile; start over with a new copy of the native dsdt.

#### Tools

1. DSDT Editor - Registration required, [olarila.com • View topic - DSDT editor and patcher](#)
2. IORegistryExplorer see [\[Guide\] How to Make a Copy of IOReg](#)
3. Applications/Utilities/Console
4. Applications/TextEdit
5. Carbon Copy Cloner or SuperDuper

#### Mountain Lion Audio ID (10.8 AppleHDA.kext\_v2.3.0 or newer)

1. AMD/Nvidia HDMI audio
  - 1a. Audio ID: 1 for 5/6 port on board audio
  - 1b. Audio ID: 2 for 3 port on board audio
2. HD3000/HD4000 HDMI audio
  - 2a. Audio ID: 3 for 3/5/6 port onboard audio

#### Mountain Lion Audio ID (10.7.4 AppleHDA.kext\_v2.2.0 only available at MultiBeast 4.6.1)

1. See Note 1 below

#### Lion Audio ID (10.7.4 AppleHDA.kext\_v2.2.0 only, available at MultiBeast 4.6.1)

1. See Note 1 below

#### Attachments

1. ML\_HDMI Audio Edits - Award dsdts
  - 1a. HD4000\_Award\_hdmi\_audio\_dsdt\_editing\_kit
  - 1b. HD3000\_Award\_hdmi\_audio\_dsdt\_editing\_kit
  - 1c. 5-Series\_Award\_hdmi\_audio\_dsdt\_editing\_kit

#### Mountain Lion HDMI Audio dsdt Edits - Two Steps

1. Preparation
2. dsdt edits

#### Mountain Lion HDMI Audio dsdt Edits - Preparation

1. Backup dsdt.aml
2. Make bootable backup of system (Carbon Copy Cloner or SuperDuper)
3. Make a copy of IOReg

#### Key Information/IOReg

1. Determine graphics device names and address (5-Series)
  - 1a. IOReg/Search display
  - 1b. Example: Discrete Graphics - pci-bridge@3

IOService: /AppleACPIPlatformExpert/PCI0@0/AppleACPIPCI/pci-bridge@3

**pci-bridge@3** Registered Retain Count: 11  
Matched Busy Count: 0  
Active

Class Inheritance: IOPCIDevice : IOService : IORegistryEntry : OSObject

Bundle Identifier: com.apple.iokit.IOPCIFamily

Property	Type	Value
#address-cells	Data	<03 00 00 00>
#size-cells	Data	<02 00 00 00>
acpi-pmcap-offset	Number	0xe0
class-code	Data	<00 04 06 00>
compatible	Data	<"pci8086,d138", "pci8086,060400">
device-id	Data	<38 d1 00 00>
IODTPersist	Data	<>
IOInterruptControllers	Array	1 value
IOInterruptSpecifiers	Array	1 value
IOName	String	pci-bridge
IOPCIConfigured	Boolean	True
IOPCIExpressASPMDefault	Number	0x0
IOPCIExpressLinkCapabilities	Number	0x393d02
IOPCIExpressLinkStatus	Number	0x3101
IOPCIResourced	Boolean	True
IOPowerManagement	Dictionary	3 values
name	String	pci-bridge
pcidebug	String	0:3:0(1:1)

2. Determine graphics device names and address (6-Series)

2a. IOReg/Search display

2b. Example: Discrete Graphics - PEG0@1

2c. Example: Integrated Graphics - GFX0@2

IOService: /AppleACPIPlatformExpert/PCI0@0/AppleACPIPCI/PEG0@1

**PEG0@1** Registered Retain Count: 12  
Matched Busy Count: 0  
Active

Class Inheritance: IOPCIDevice : IOService : IORegistryEntry : OSObject

Bundle Identifier: com.apple.iokit.IOPCIFamily

Property	Type	Value
#address-cells	Data	<03 00 00 00>
#size-cells	Data	<02 00 00 00>
acpi-device	String	IOACPIPlatformDevice is not serializable
acpi-path	String	IOACPIPlane:/_SB/PCI0@0/PEG0@10000
acpi-pmcap-offset	Number	0x80
built-in	Data	<00>
class-code	Data	<00 04 06 00>
compatible	Data	<"pci8086,101", "pci8086,060400">
device-id	Data	<01 01 00 00>
IODTPersist	Data	<>
IOInterruptControllers	Array	1 value
IOInterruptSpecifiers	Array	1 value
IOName	String	pci-bridge
IOPCIConfigured	Boolean	True
IOPCIExpressASPMDefault	Number	0x0
IOPCIExpressLinkCapabilities	Number	0x2214d02
IOPCIExpressLinkStatus	Number	0x5101
IOPCIResourced	Boolean	True
IOPowerManagement	Dictionary	3 values

3. Verify device HDEF

3a. IOReg/Search HDEF, Select HDEF, Cancel Search (X), Scroll up

3b. Example: HDEF/layout-id 0x79 0x03 0x00 0x00

IOService

Search

IOService:/AppleACPIPlatformExpert/PCI0@0/AppleACPIPCI/HDEF@1B

HDEF@1B

☒ Registered    Retain Count: 10  
☒ Matched    Busy Count: 0  
☒ Active

Class Inheritance: IOPCIDevice : IOService : IORegistryEntry : OSObject

Bundle Identifier: com.apple.iokit.IOPCIFamily

▼ HDEF@1B

▼ AppleHDAController@1B

▼ IOHDACodecDevice@1B,2

▼ IOHDACodecDriver

▼ IOHDACodecFunction@1B,2,1

▼ AppleHDACodecGeneric

AppleHDADriver

▼ IOHDACodecDevice@1B,3

▼ IOHDACodecDriver

▼ IOHDACodecFunction@1B,3,1

▼ HUB0@1E

IOPCI2PCIBridge

▼ IGD0@2

▼ IONDRVFramebuffer

▼ AGPM

▼ gpu-control

IOHWControl

▼ AppleMCCSControlModule

AppleMCCSParameterHandler

AppleUpstreamUserClientDriver

▼ LPCB@1F

AppleLPC

▼ pci8086,100@0

AppleSMCPDR

▼ pci8086,1c3a@16

AppleIntelMEIDriver

▼ PEG0@1

▼ IOPCI2PCIBridge

display@0

▼ NVDA,Display-A@0

▼ NVDA

▼ AGPM

▼ gpu-control

▼ AppleMCCSControlModule

AppleMCCSParameterH...

AppleUpstreamUserClient...

▼ gpu-sensor

IOHWSensor

IOFramebufferI2CInterface

IOFramebufferUserClient

▼ NVDA,Display-B@1

▼ NVDA

▼ AppleMCCSControlModule

AppleMCCSParameterH...

AppleUpstreamUserClient...

▼ display0

AppleDisplay

IOFramebufferI2CInterface

IOFramebufferSharedUser...

IOFramebufferUserClient

▼ NVKernel

NV2DContext

NV2DContext

nvDevice

nvDevice

nvFermiGLContext

nvFermiGLContext

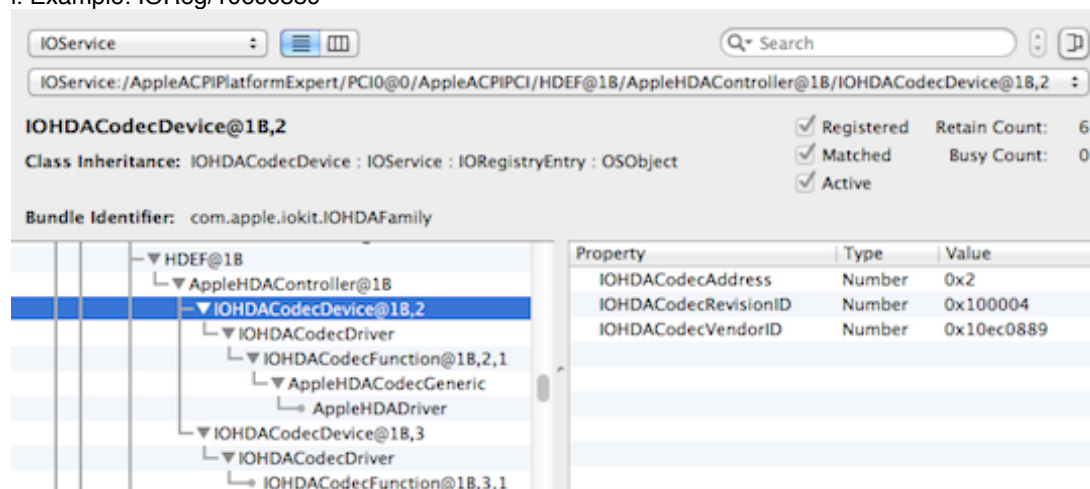
nvTeslaSurface

Property	Type	Value
acpi-device	String	IOACPIPlatformDev ice is not serializable
acpi-path	String	IOACPIPlane:/_SB/ PCI0@0/ HDEF@1b0000
acpi-pmcap-offset	Number	0x50
assigned-addresses	Data	<10 d8 00 82 00 00 00 00 00 40 ff fb 00 00 00 00 00 40 00 00>
built-in	Data	<00>
class-code	Data	<00 03 04 00>
compatible	Data	<"pci1458,a132", " pci8086,1c20", "pc iclass,040300">
device-id	Data	<20 1c 00 00>
▶ IODeviceMemory	Array	1 value
▶ IOInterruptControllers	Array	2 values
▶ IOInterruptSpecifiers	Array	2 values
IOName	String	pci8086,1c20
IOPCIExpressASPMDefault	Number	0x0
IOPCIExpressLinkCapabilities	Number	0x0
IOPCIExpressLinkStatus	Number	0x0
IOPCIMSI Mode	Boolean	True
IOPCIResourced	Boolean	True
▶ IOPowerManagement	Dictionary	3 values
layout-id	Data	<79 03 00 00>
name	String	pci8086,1c20
pcidebug	String	0.27:0
PinConfigurations	Data	<40 01 43 99 f0 11 11 41 10 44 01 01 12 14 01 01 11 64 01 01 14 24 01 01 50 9c a1 01 60 9c a1 02 5f 34 81 01 20 4c 21 02 f0 01 33 59 01 e6 05 40 30 61 4b 01 f0 11 11 41>
reg	Data	<00 d8 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 10 d8 00 02 00 00 00 00 00 00 00 00 00 00 00 00 00 40 00 00>
revision-id	Data	<05 00 00 00>
subsystem-id	Data	<32 a1 00 00>
subsystem-vendor-id	Data	<58 14 00 00>
vendor-id	Data	<86 80 00 00>

4. Determine motherboard audio codec device\_id (Select 2nd line after HDEF)

a. IOREG/AppleHDAController/OHDACodecDevice/OHDACodecVendorId

i. Example: IOREG/10ec0889



#### Evaluate HDMI Audio dsdt edit file with Key Information/IOReg

1. 6 Series/BIOS (Verify PEG0 address)

6 Series BIOS	After HDMI Audio Edits	HDMI Audio Edit file	IOReg
layout-id	0x01, 0x00, 0x00, 0x00	0x79, 0x03, 0x00, 0x00	0x79, 0x03, 0x00, 0x00
discrete graphics	PEGP@1	PEG0@1	PEG0@1
integrated graphics	IGPU@2	IGD0@2	IGD0@2

2. 5 Series/BIOS (Verify PEG0 address)

5 Series BIOS	After HDMI Audio Edits	HDMI Audio Edit file	IOReg
layout-id	0x01, 0x00, 0x00, 0x00	0x79, 0x03, 0x00, 0x00	0x__, 0x__, 0x__, 0x__
discrete graphics	PEGP@3	pci-bridge@3	pci-bridge@3

#### Edit Desktop/.....\_hdm\_i\_audio\_dsdt\_editing\_kit/hdm\_i\_audio\_award....txt - TextEdit

1. TextEdit/Edit layout-id/01 to 02 or 03 (if desired)

1a. Audio ID: 1, layout-id 0x01, 0x00, 0x00, 0x00 /\* 5/6 port on board and/or AMD/Nvidia HDMI audio

1b. Audio ID: 2, layout-id 0x02, 0x00, 0x00, 0x00 /\* 3 port on board and/or AMD/Nvidia HDMI audio

1c. Audio ID: 3, layout-id 0x03, 0x00, 0x00, 0x00 /\* onboard and HD3000/HD4000 HDMI audio only

2. TextEdit/Edit (\_ADR, 0x.....

2b. (\_ADR, 0x00010000) to 0x00020000 or 0x00030000 - 6 Series only, if necessary

2b. (\_ADR, 0x00030000) to 0x00010000 or 0x00020000 - 5 Series only, if necessary

3. Verify edits

4. Save

#### Apply Edits - DSDT Editor

1. DSDT Editor/Open dsdt.aml

2. DSDT Editor/Patch Open/Desktop/.....\_hdm\_i\_audio\_dsdt\_editing\_kit/hdm\_i\_audio\_award....txt

3. DSDT Editor/Patch/Apply

4. DSDT Editor/iASL/Compile

If necessary, Special Configuration/HD4000 graphics on 6 Series

5. DSDT Editor/Patch/Open HD4000 graphics on 6 Series

5a. DSDT Editor/Patch/Apply

5b. DSDT Editor/iASL/Compile

#### Verify Edits - DSDT Editor

1. DSDT Editor/Find HDEF (1x), represented as Device (HDEF)

2. DSDT Editor/Find PEGP (1x), represented as Device (PEGP)

3. DSDT Editor/Find GFX0 (1x), represented as Device (GFX0)

4. DSDT Editor/Find HDAU (1x), represented as Device (HDAU)
5. DSDT Editor/Find IGPU (1x), Next, until represented as Device (IGPU) - N/A 5 Series dsdt

#### **Save dsdt - DSDT Editor**

1. DSDT Editor/iASL/Save .aml As... Desktop/.....\_hdmi\_audio\_dsdt\_editing\_kitdsdt. aml (add extension)

#### **Install dsdt.aml - DSDT Editor**

1. DSDT Editor/iASL/Save .aml As...Extra/dsdt.aml (add extension) Note: may not work.
2. Copy (Drag/Hold Option key) Desktop/.....\_hdmi\_audio\_dsdt\_editing\_kit/dsdt. aml to Extra

#### **Mountain Lion HDMI Audio - Kext Edits**

1. No kext edits required (AppleHDA.kext, AppleIntelFramebufferCapri.kext, AppleIntelSNBGraphicsFB.kext)
2. Exception; some unsupported AMD graphics may required framebuffer edits, see Lion HDMI Audio - Part 3a: Kext Edits - AMD (Mountain Lion procedure same as Lion)

#### **Lion HDMI Audio - Kext Edits**

1. Lion HDMI Audio - Part 3a: Kext Edits - AMD
2. Lion HDMI Audio - Part 3b: Kext Edits - Nvidia
3. Lion HDMI Audio - Part 3c: Kext Edits - Intel HD3000 Revised

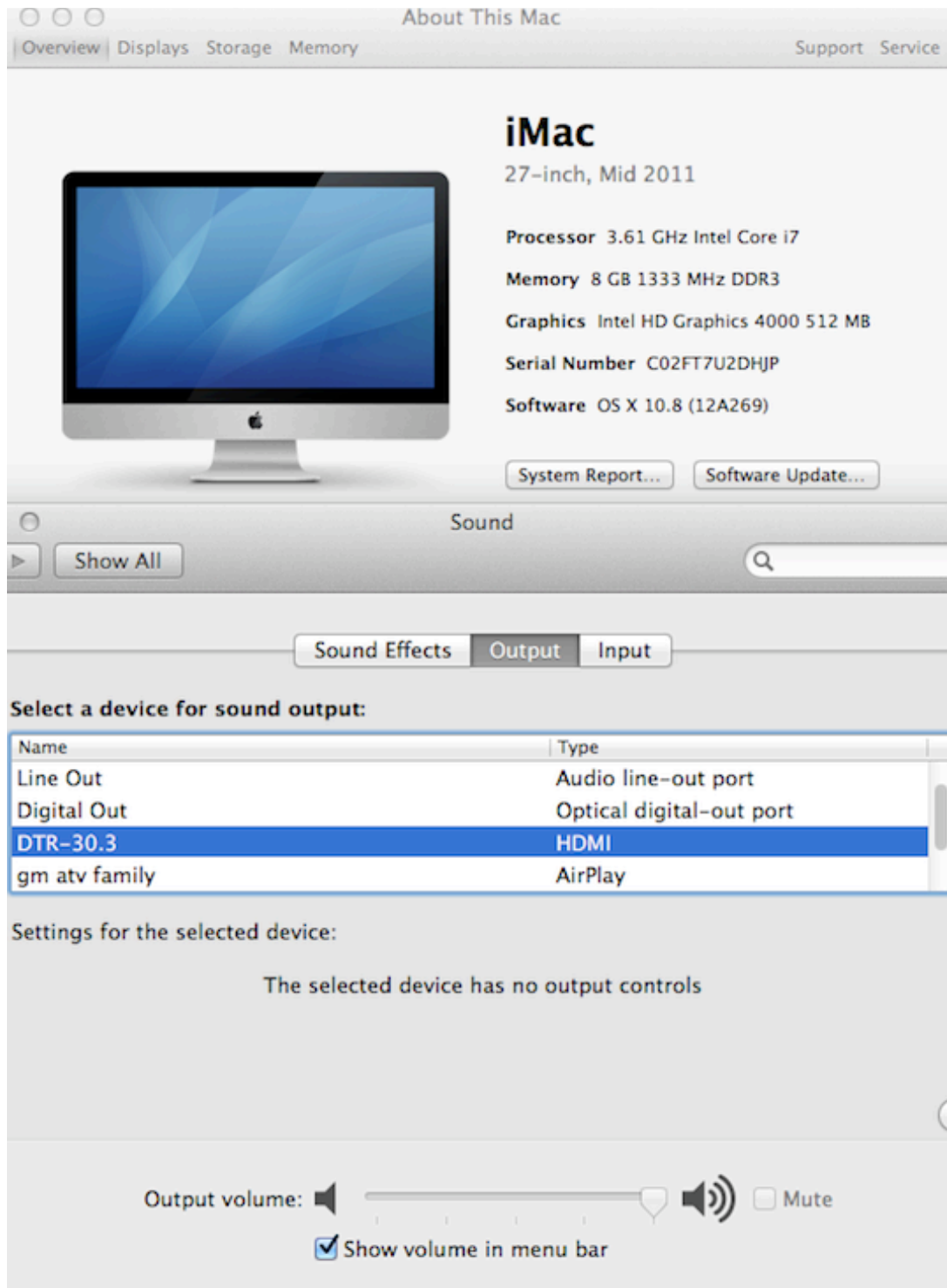
#### **Verify S/L/E and org.chameleon.Boot.plist**

1. Delete any and all audio enablers (HDAEnabler8??), helpers (ALC8??), etc.; AppleHDA.kext only.
2. Delete any and all graphics enablers and property injectors. DSDT injection only.

#### **Restart**

#### **Verify HDMI Audio**

1. System Preferences/Sound/Outputs



### Troubleshooting

1. Verify HDMI device connected
  - 1a. System Information/Graphics/Display/HDMI device name/Television/Yes
2. Verify Extra/dsdt.aml is
  - 2a. a .aml file
  - 2b. edited
3. Run IOREg



- 3a. Verify Devices (see **Verify Edits - DSDT Editor** above)
- 4. Problem Reporting
- 4a. Motherboard/processor/OS and version/graphics
- 4b. Procedure/Guide Used
- 4c. dsdt
- 4d. copy of IOREg

## Notes

- 1. For Lion AppleHDA.kext (10.7.4, v2.2.0) Audio IDs see Optimized Realtek Lion 10.7.4 AppleHDA

## dsdt Edits

### 1. HDEF

Device (HDEF)

```

    {
        Name (_ADR, 0x001B0000)
....
....
        Method (_DSM, 4, NotSerialized)
        {
            Store (Package (0x06)
                {
                    "hda-gfx",
                    Buffer (0x0A)
                    {
                        "onboard-2"
                    },

                    "layout-id",
                    Buffer (0x04)
                    {
                        0x01, 0x00, 0x00, 0x00
                    },

                    "PinConfigurations",
                    Buffer (Zero) {}
                }, Local0)
            DTGP (Arg0, Arg1, Arg2, Arg3, RefOf (Local0))
            Return (Local0)
        }
    }

```

### 2. IGPU - HD3000 (renamed from IGD0/Award)

Device (IGPU)

Name (\_ADR, 0x00020000)

Method (\_DSM, 4, NotSerialized)

```

    {
        Store (Package (0x06)
            {
                "device-id",
                Buffer (0x04)
                {
                    0x26, 0x01, 0x00, 0x00
                },

                "AAPL,snb-platform-id",
                Buffer (0x04)
                {
                    0x10, 0x00, 0x03, 0x00
                },
            }
        )
    }

```

```

        "hda-gfx",
        Buffer (0x0A)
        {
            "onboard-2"
        }
    }, Local0)
    DTGP (Arg0, Arg1, Arg2, Arg3, RefOf (Local0))
    Return (Local0)
}

```

### 3. PEGP (renamed from PEG0/Award)

```

Device (PEGP)
{
    Name (_ADR, 0x00010000) /* Verify display address in IOREG
.
.
.
    }
.
.
.
}

```

### 4. GFX0

```

Device (GFX0)
{
    Name (_ADR, Zero)
    Name (_SUN, One)
    Method (_DSM, 4, NotSerialized)
    {
        Store (Package (0x06)
        {
            "@0,connector-type",
            Buffer (0x04)
            {
                0x00, 0x08, 0x00, 0x00
            },

            "@1,connector-type",
            Buffer (0x04)
            {
                0x00, 0x08, 0x00, 0x00
            },

            "hda-gfx",
            Buffer (0x0A)
            {
                "onboard-2"
            }
        }, Local0)
        DTGP (Arg0, Arg1, Arg2, Arg3, RefOf (Local0))
        Return (Local0)
    }
}

```

### 5. HDAU

```

Device (HDAU)
{
    Name (_ADR, One)
    Method (_DSM, 4, NotSerialized)
    {
        Store (Package (0x02)
            {
                "hda-gfx",
                Buffer (0x0A)
                {
                    "onboard-2"
                }
            }, Local0)
        DTGP (Arg0, Arg1, Arg2, Arg3, RefOf (Local0))
        Return (Local0)
    }
}

```

Credits:

VCH888; [ALC889A, Gigabyte \(Intel\): now having a working front mic - insanely-mac Forum - Page 38](#)

MaLd0n/oldnapalm/cassio: [olarila.com • View topic - DSDT editor and patcher](#)

proteinshake: [HD4000 full acceleration for 10.8 / 10.7.5 - InsanelyMac Forum](#)