ISEE IGEP MODULE

ISEE IGEP MODULE
Hardware Reference Manual
(Revision 03 - 10-Sep-2010)

ISEE

Integration Software and Electronics Engineering

CONTENTS

VERSION CONTROL

REVISION	DATE	ORIGIN	DESCRIPTION
00	12/03/2010	PR	Initial version
01	01/06/2010	PR	Preliminary version
02	02/06/2010	PR	Release revision
03	10/09/2010	PR	Document revision

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ISEE IGEP wiki: http://labs.igep.es

ISEE shop: http://shop.igep.es

ISEE Software Repositories: http://git.igep.es

4 ISEE IGEP MODULE FEATURES

4.1 INTRODUCTION
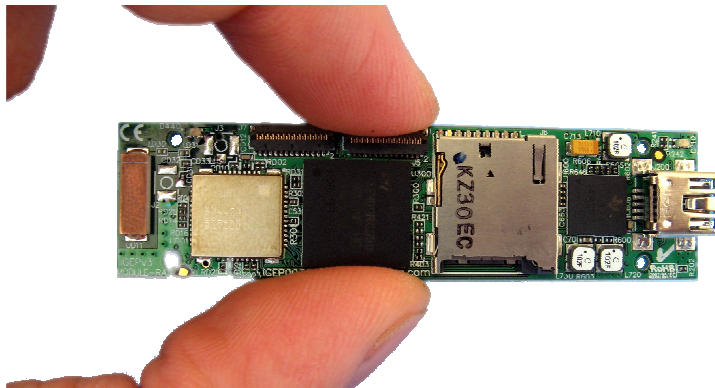
Figure 1 ISEE IGEP MODULE

	Description
CPU	OMAP35xx (OMAP3503 / OMAP3530) ARM Cortex-A8 up to 720Mhz (1440 DMIPS) TMS32064x+ Fixed point DSP up to 520 Mhz (4130 MMAC) POWERVR SGX™ Graphics Accelerator From 1GB up to 4GB RAM (POP) From 2 GB up to 4GB OneNand Flash (POP)
Interfaces	1 x USB OTG (LS/FS/HS Device or Host) 1 x USB Host (HS, UPLI Interface) 1 x Audio stereo Out 1 x Aux stereo Input Slot for uSD card WiFi (802.11 b/g) and Bluetooth (2.0) with common external antenna connector *(Hirose connector U.FL-R.SMT-1)* Expansion connectors with (UART, McSPI, McBSP, I2C. For more information see Connectors chapter) 1 x KEYBOARD (3x3) – *Optional. For more information refer to Chapter 5.7*
Electrical	Supply Voltage from 3V5 to 4V2 VDC +-10% or 5VDC through USB-OTG Power consumption: 80 to 450 mA
Connectors	2 x 70 pin AVX 5602 on bottom

	2 x 27 pin HIROSE FH26 on top
	1 x miniAB USB socket
	1 x hirose UL connector for wifi and Bluetooth external antenna
Environmental	-40..+85 C temperature range / -25.. 80ºC / 0..70ºC
Indicators	2 x bicolor SMD led (green/red)

> ⚠ **NOTE: IGEP MODULE CAN BE POWERED THROUGH J1 and J4 CONNECTORS (3V5-4V2) or THROUGH miniAB USB socket CONNECTOR.**
> **WARNING: DO NOT CONNECT BOTH POWER SUPPLIES AT THE SAME TIME OR THE BOARD WILL BE DAMAGED!**
> **ONLY USE USB POWER or J1-J4 POWER, BUT NEVER AT THE SAME TIME.**

> ⚠ **WARNING: IGEP MODULE CAN ONLY BE POWERED WITH 3V5-4V2 THROUGH J1 and J4 CONNECTORS OR THE BOARD WILL BE DAMAGED!**
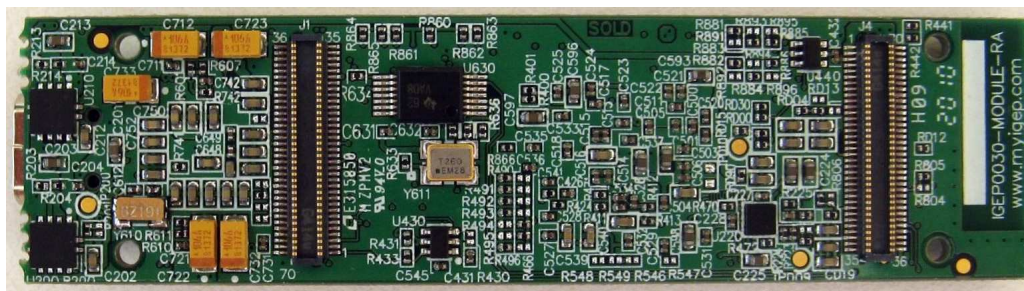

Figure 2 IGEP MODULE Top view

Figure 3 IGEP MODULE Bottom view

Figure 4 ISEE IGEP MODULE Top view

The following sections provide more detail on each feature and components on the ISEE IGEP MODULE.

4.2 AVAILABLE MODELS

Four ISEE IGEP MODULE versions are available:

Product Name	RAM	FLASH					Product Highlights
IGEP_MODULE-RA-3530-WIFI	4Gbit RAM	4Gbit OneNand Flash	OpenGL	DSP	WiFi	Bluetooth	OMAP3530-based IGEP computer-on-module (includes OpenGL and DSP) with Bluetooth and 802.11b/g wireless communications
IGEP_MODULE-RA-3503-WIFI	1Gbit RAM	2Gbit OneNand Flash			WiFi	Bluetooth	OMAP3503-based IGEP computer-on-module with Bluetooth and 802.11b/g wireless communications
IGEP_MODULE-RA-3530	4Gbit RAM	4Gbit OneNand Flash	OpenGL	DSP			OMAP3530-based IGEP computer-on-module (includes OpenGL and DSP)
IGEP_MODULE-RA-3503	1Gbit RAM	2Gbit OneNand Flash					OMAP3503-based IGEP computer-on-module

4.3 GENERAL SPECIFICATIONS

OMAP Processor

The IGEP BOARD uses the OMAP3530 version ES3.1 and comes in a 0.4mm pitch memory POP package on it.

POP (Package on Package) is a technique where the memory, NAND and SDRAM, are mounted on top of the OMAP3530. For this reason, when looking at the IGEP BOARD, you will not find an actual part labeled OMAP3530.
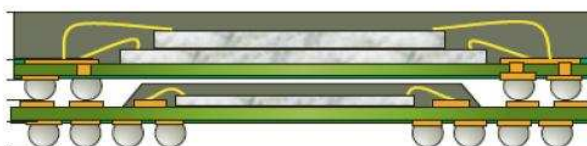
Figure 5 POP Package

Memory

The memory is mounted on top of the processor as mentioned. The key function of the POP memory is to provide:

- 4Gb NAND x 16 (512MB)
- 4Gb LP-DDR SDRAM x32 (512MB @ 200MHz)

Power Management

The TPS65950 is used on the board to provide power to the IGEP Board with the exception of the 3.3V regulator which is used to provide power to the DVI-D encoder and RS232 driver. In addition to the power it also provides:

- Stereo Audio Out
- Stereo Audio in
- Power on reset
- USB OTG PHY
- Status LED

USB 2.0 LS/FS/HS OTG

On the board a single USB 2.0 OTG Port is provided.

Figure 6 USB OTG connector

It is possible to power the board with the USB OTG connector.

USB 2.0 HS HOST

On the board there is a single USB 2.0 HS HOST. Only one port is provided.
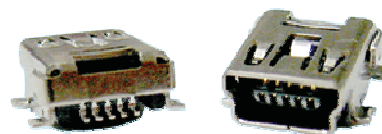
USB HOST Port supports only high speed devices (USB 2.0 HS devices). In order to support low speed devices (USB 1.0 LS devices) or full speed devices (USB 1.1 FS devices), external USB 2.0 HUB must be used.

WIFI

IEEE802.11b/g compliant.

Chipset based on Marvell 88W8686. The 88W8686 integrates a RF transceiver operating at 2.4 GHz, a physical layer, a media access controller, and an ARM processor into a single die.

Figure 7 WIFI/BT Combo module

BLUETOOTH

Bluetooth 2.0 compliant.

Chipset based on CSR BC4ROM/21e.

Class 2, 2.5 mW (4 dBm) ~10 meters

Version 2.0 + EDR 3 Mbit/s

MicroSD Connector

A microSD connector is provided for microSD cards form factor.

The microSD memory card is the smallest memory card available commercially, with the lowest price per capacity and the highest capacity. At 15 mm × 11 mm × 1 mm

(about the size of a fingernail), it is about a quarter the size of an SD card.

The microSD connector supports SD and SDHC cards. SDHC (Secure Digital High Capacity, SD 2.0) is an extension of the SD standard which increases card's storage capacity up to 32GB. SDHC cards shares the same physical and electrical form factor as older (SD 1.x) cards, allowing SDHC-devices to support both newer SDHC cards and older SD-cards.
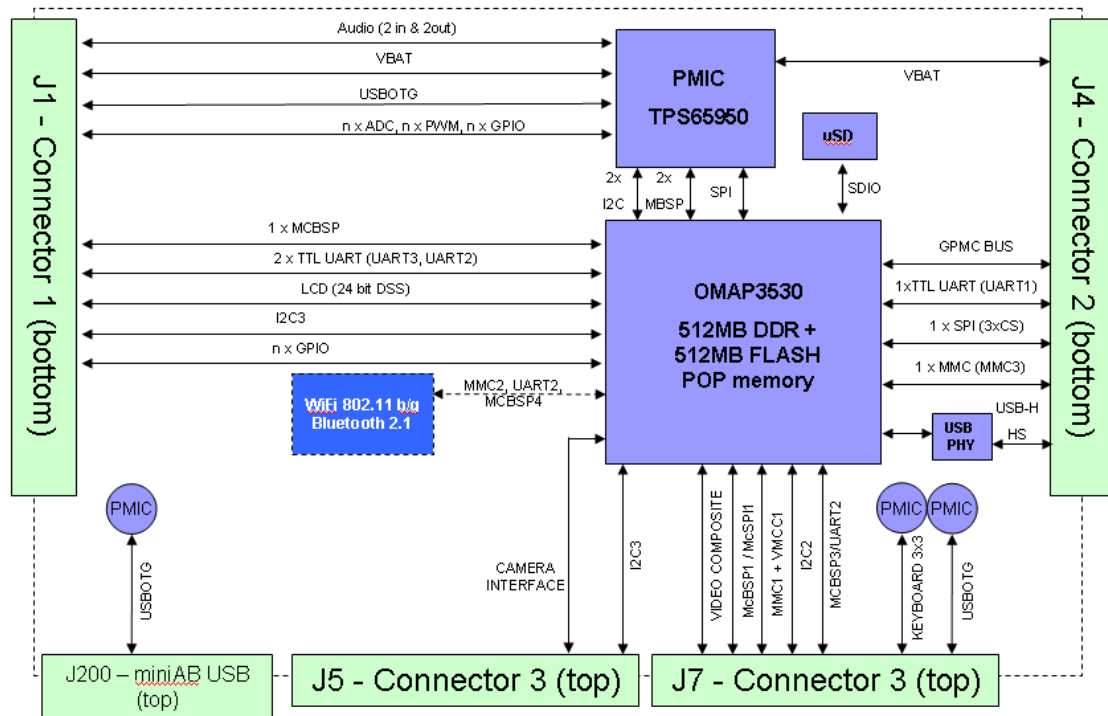
Indicators

There are two bicolor LEDs on the Board that can be controlled by the user. In total 4 individual led and 16 color schemes.

- Three led are controlled via GPIO pins on the OMAP3530 Processor

- One is programmed via the I2C interface on the TPS65950

Figure 8 Leds Detail

4.4 BLOCK DIAGRAM

4.5 ELECTRICAL SPECIFICATIONS

Specification	Min	Typ	Max	Unit
Power				
Input Voltage DC	3.5	3.8	4.2	V
Current DC	80	350	450	mA
USB 2.0 OTG				
High Speed Mode (HS)			480	Mb/s
Full Speed Mode (FS)			12.5	Mb/s
Low Speed Mode (LS)			1.5	Mb/s
USB 2.0 Host				
High Speed Mode (HS)			480	Mb/s
microSD				
Voltage Mode 1.8V	1.71	1.8	1.89	
Voltage Mode 3.3V	3.2	3.3		
Current			220	mA
Clock			48	MHz
Audio-In				
Peak-to-peak single-ended input voltage (0 dBFs)			1.5	Vpp
Total harmonic distortion (sine wave @ 1.02 kHz @ -1 dBFs)		-80	-75	dB
Total harmonic distortion (sine wave @ 1.02		-85	-78	dB

kHz) 20 Hz to 20 kHz, A-weighted audio, Gain = 0 dB				
Audio-Out				
Load Impedance @100 pF	14	16		Ohms
Maximum Output Power (At 0.53 Vrms differential output voltage and load impedance = 16 Ohms)		17.56		mW
Peak-to-Peak output voltage			1.5	Vpp
Total Harmonic Distortion @ 0 dBFs		-80	-75	dB
Idle channel noise (20Hz to 20KHz)		-90	-85	dB
Wifi IEEE802.11b				
Specification		IEEE802.11b		
Frequency 2400 - 2500MHz	2400		2500	MHz
Data rate		1, 2, 5.5, 11		Mbps
Power Levels	15.5	17.5	19.5	dBm
Minimum Input Level Sensitivity 11Mbps (FER < 8%)	-	-87	-81	dBm
Maximum Input Level	-10	-5	-	dBm
Wifi IEEE802.11g				
Specification		IEEE802.11g		
Frequency 2400 - 2500MHz	2400		2483.5	MHz
Data rate		6, 9, 12, 18, 24, 36, 48, 54		Mbps
Power Levels	13	14.8	17.0	dBm
Minimum Input Level Sensitivity 11Mbps (FER < 8%)	-	-71	-65	dBm
Maximum Input Level	-20	-15	-	dBm
Bluetooth 2.0				
Bluetooth specification		2.0		
Channel spacing		1		MHz
Output Power	-4	0	+4	dBm
Frequency range (Rx/Tx)	2400		2483.5	MHz
Sensitivity (BER≦0.1%)				
1) 2402MHz - -81 -73 dBm	-	-81	-73	dBm
2) 2441MHz	-	-81	-73	dBm
3) 2480MHz	-	-79.5	-73	dBm
C/I Performance (BER≦0.1%)				
1) co-channel ratio (-60dBm input)	-	7.6	11	dBm
2) 1MHz ratio (-60dBm input)	-	-2.5	0	dBm
3) 2MHz ratio (-60dBm input)	-	-42.6	-30	dBm

4.6 HOW TO POWER ISEE IGEP MODULE

IGEP MODULE can be used as a stand alone computer on module, so, you don't need any baseboard to start working with it. This makes IGEP MODULE an ideal solution for quick technology evaluation.

Just power IGEP MODULE by using a USB-A to miniAB socket cable and start working with it. For more information refer to IGEP MODULE SDK software Manual.
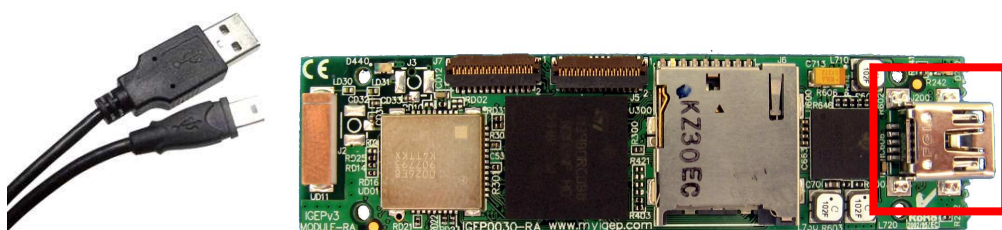

Figure 9 – miniAB USb socket Detail

IGEP MODULE can also be powered by using J1 and J4 connectors located at BOTTOM side. This will be the way you normally will power the board in your product.
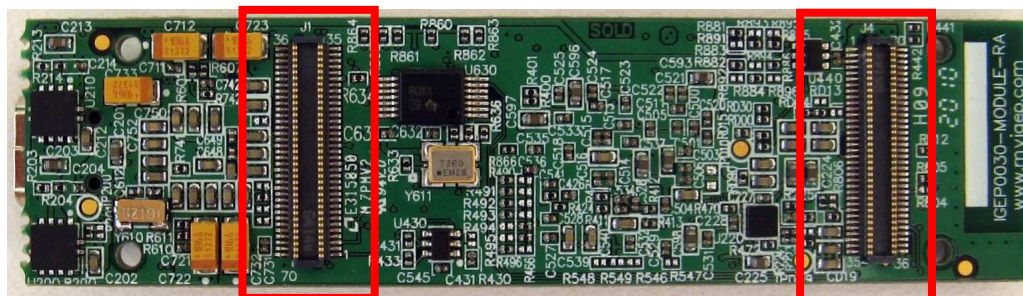

Figure 10 - J1 and J4 Connector Detail

NEVER POWER your IGEP MODULE by using J1-J4 connectors and USB-OTG at the same time.

NOTE: IGEP MODULE CAN BE POWERED THROUGH J1 and J4 CONNECTORS (3V5-4V2) or THROUGH miniAB USB socket CONNECTOR.

**WARNING : DO NOT CONNECT BOTH POWER SUPPLIES AT THE SAME TIME OR THE BOARD WILL BE DAMAGED!
ONLY USE USB POWER or J1-J4 POWER, BUT NEVER AT THE SAME TIME.**

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5   CONNECTORS DESCRIPTION

This section will guide you through the IGEP MODULE connectors:

- J6- MICRO-SD

- J200 – USB MINIAB SOCKET

- J2 – WIFI AND BT EXTERNAL ANTENNA CONNECTOR

- J1 – LCD, PWM AND ANALOG SIGNALS

- J4 - EXTENDED MEMORY BUS AND MMC SIGNALS

- J5 – CAMERA

- J7 – VIDEO COMP, KEYBOARD, USB-OTG

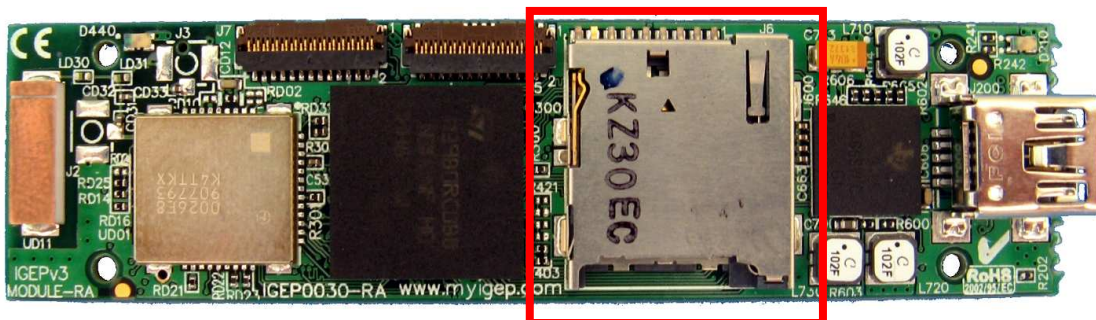### 5.1 J6 - MICRO-SD

Micro SD on board connector.

Figure 11 MicroSD detail

5.2 J200 – USB MINIAB SOCKET

MiniAB USB socket for USBOTG interface on board.

Figure 12 MiniAB USB Socket Detail

5.3 J2 – WIFI AND BT EXTERNAL ANTENNA

HIROSE U-FL-R-SMT-1 connector for external wifi/BT antenna.

Figure 13 - J2 Connector Detail

5.4 J1 – LCD, PWM AND ANALOG SIGNALS
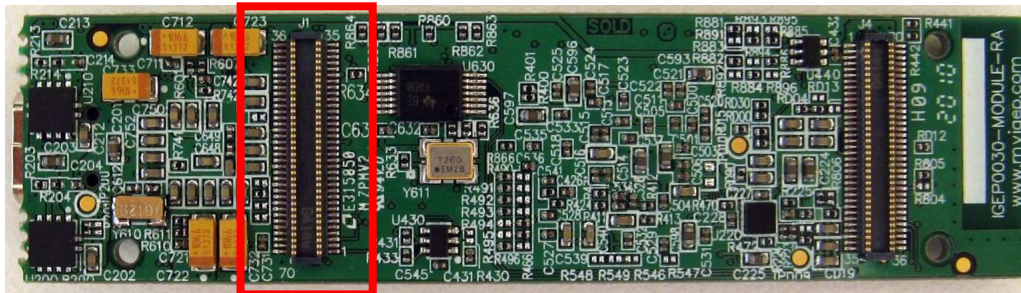
Connector: 70 pin Serie AVX 5602

Figure 14 - J1 Connector Detail

All logic is at 1.8V.

> ⚠️ **WARNING: Most of the signals come directly from/to OMAP processor. Improperly use of this connector could result in damage of the processor.**

The input range of the supply voltage is approximately 3V5 – 4.2V.

> ⚠️ **WARNING: IGEP MODULE CAN ONLY BE POWERED WITH 3V5-4V2 THROUGH J1 and J4 CONNECTORS OR THE BOARD WILL BE DAMAGED!**

The signals of connectors J1 are connected directly to the processor.

USB 2.0 OTG interface supports high speed USB (480MBs).

Comments	Signal	IC	Pin	Pin	IC	Signal	Comments
	N_MANUAL_RESET		1	70	POWER	GND	
LCD INTERFACE DSS	GPIO71_L_DD01	OMAP	2	69	TPS65950	HSORF	Differential single ended headset right output
LCD INTERFACE DSS	GPIO70_L_DD00	OMAP	3	68	TPS65950	HSOLF	Differential single ended headset left output
LCD INTERFACE DSS	GPIO73_L_DD03	OMAP	4	67	POWER	VSYSTEM	Board supply: 3.5V -4.2V
LCD INTERFACE DSS	GPIO75_L_DD05	OMAP	5	66	POWER	VSYSTEM	Board supply: 3.5V -4.2V
LCD INTERFACE DSS	GPIO72_L_DD02	OMAP	6	65	TPS65950	POWERON	Connected to PWRON on PMIC
LCD INTERFACE DSS	GPIO74_L_DD04	OMAP	7	64	TPS65950	ADCIN7	Analog Input
(*)	GPIO10_SYSCLK	OMAP	8	63	OMAP	GPIO164_RTS3	*Optional (see schematic below)*
	GPIO0_WAKEUP	OMAP	9	62	OMAP	GPIO15_MCSPI3_SOMI	*Optional (see schematic below)*
	GPIO185_I2C3_SDA	OMAP	10	61	OMAP	GPIO93_L_DD23	LCD INTERFACE DSS
LCD INTERFACE DSS	GPIO80_L_DD10	OMAP	11	60	OMAP	GPIO82_L_DD12	LCD INTERFACE DSS
LCD INTERFACE DSS	GPIO81_L_DD11	OMAP	12	59	TPS65950 Or TPS65950	PMIC_SYSEN Or PMIC_REGEN (default)	Connected to SYSEN on PMIC Or Connected to REGEN on PMIC
	GPIO184_L_I2C3_SCL	OMAP	13	58	TPS65950	ADCIN2	Analog Input
(*)	GPIO186_SYSCLK	OMAP	14	57	TPS65950	MIC_MAIN_MF	Main microphone left input
LCD INTERFACE DSS	GPIO92_L_DD22	OMAP	15	56	POWER	GND	
MCBSP3_FSX	GPIO147_GPT8__PWM	OMAP	16	55	OMAP	GPIO145_GPT10_PWM	MCBSP3_DR
LCD INTERFACE DSS	GPIO83_L_DD13	OMAP	17	54	TPS65950	USBOTG_VBUS	Power out from the PMIC
MCBSP3_DX	GPIO144_GPT9_PWM	OMAP	18	53	TPS65950	ADCIN6	Analog Input
LCD INTERFACE DSS	GPIO84_L_DD14	OMAP	19	52	TPS65950	VBACKUP	Backup battery input to PMIC
LCD INTERFACE DSS	GPIO85_L_DD15	OMAP	20	51	TPS65950	ADCIN5	Analog Input
MCBSP3_CLK	GPIO146_GPT11_PWM	OMAP	21	50	TPS65950	AGND	Analog Ground
UART3_CTS	GPIO163_IR_CTS3	OMAP	22	49	TPS65950	PWM1	
LCD INTERFACE DSS	GPIO91_L_DD21	OMAP	23	48	TPS65950	ADCIN3	Analog Input
LCD INTERFACE DSS	GPIO87_L_DD17	OMAP	24	47	OMAP	GPIO170_HDQ_1WIRE	
LCD INTERFACE DSS	GPIO88_L_DD18	OMAP	25	46	TPS65950	USBOTG_ID	
UART3_TXD	GPIO166_IR_TXD3	OMAP	26	45	OMAP	GPIO90_L_DD20	LCD INTERFACE DSS
LCD INTERFACE DSS	GPIO89_L_DD19	OMAP	27	44	OMAP	GPIO86_L_DD16	LCD INTERFACE DSS
LCD INTERFACE DSS	GPIO79_L_DD09	OMAP	28	43	OMAP	GPIO69_L_BIAS	LCD INTERFACE DSS

LCD INTERFACE DSS	GPIO77_L_DD07	OMAP	29	42	TPS65950	PWM0	
LCD INTERFACE DSS	GPIO78_L_DD08	OMAP	30	41	TPS65950	AUXRF	Auxiliary audio input right
UART3_RXD	GPIO165_IR_RXD3	OMAP	31	40	TPS65950	ADCIN4	Analog Input
LCD INTERFACE DSS	GPIO66_L_PCLK	OMAP	32	39	TPS65950	MIC_SUB_MF	Main microphone right input
LCD INTERFACE DSS	GPIO76_L_DD06	OMAP	33	38	TPS65950	AUXLF	Auxiliary audio input left
LCD INTERFACE DSS	GPIO68_L_FCLK	OMAP	34	37	TPS65950	USBOTG_DM	
LCD INTERFACE DSS	GPIO67_L_LCLK	OMAP	35	36	TPS65950	USBOTG_DP	

DSS INTERFACE

TOUCH SCREEN INTERFACE

AUDIO

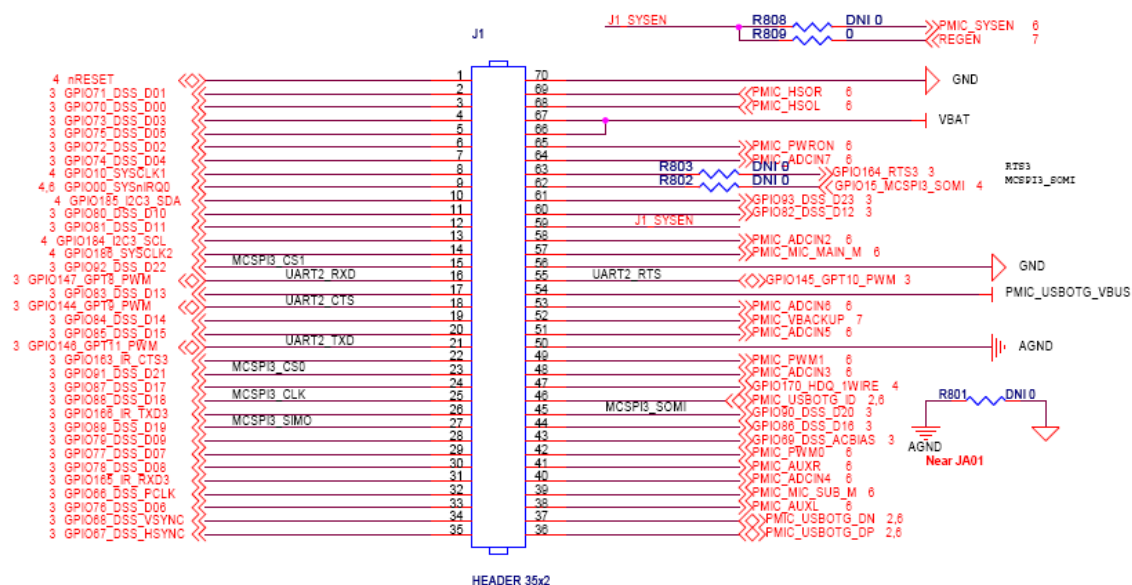McBSP3 or other peripherals (see OMAP35xx GPIO specification)

Figure 15 - J1 Connector schematic

5.5 J4 - EXTENDED MEMORY BUS AND MMC SIGNALS

Connector: 70 pin Serie AVX 5602 (Part Number: 70 Kyocera 14-5602-070-001-829+)
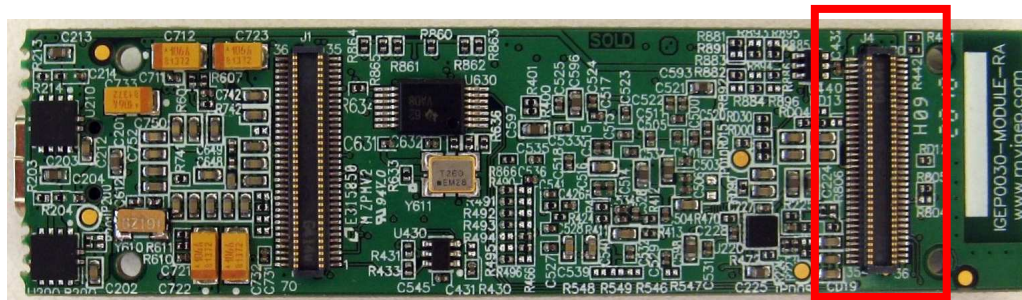

Figure 16 - J4 Connector detail

This connector match with 70 pin Serie AVX 5602 Receptacle, part number: 24-5602-070-001-829+.

All logic is at 1.8V.

> ⚠ **WARNING: Most of the signals come directly from/to OMAP processor. Improperly use of this connector could result in damage of the processor.**

The input range of the supply voltage is approximately 3V5 – 4V2.

> ⚠ **WARNING: IGEP MODULE CAN ONLY BE POWERED WITH 3V5-4V2 THROUGH J1 and J4 CONNECTORS OR THE BOARD WILL BE DAMAGED!**

The signals of connector J4 are connected directly to the processor.

USBH interface supports high speed USB (480MBs).

Comments	Signal	IC	Pin	Pin	IC	Signal	Comments
board supply: 3.5V - 4.2V	VSYSTEM	POWER	1	70	OMAP	GPMC_CLK	
board supply: 3.5V - 4.2V	VSYSTEM	POWER	2	69	OMAP	GPMC_NBE1	
	GND	POWER	3	68	OMAP	GPMC_WAIT0	
	GPMC_NCS5_ETH0	OMAP	4	67	OMAP	GPMC_NCS6	
	GPMC_NCS4	OMAP	5	66	OMAP	GPMC_NCS0	

	GPMC_nWE	OMAP	6	65	OMAP	GPMC_NBE0	
	GPMC_NADV_ALE	OMAP	7	64	OMAP	GPMC_NCS1	
	GPMC_NOE	OMAP	8	63	OMAP	GPMC_NWP	
	GPIO65_ETH1_IRQ1	OMAP	9	62	OMAP	GPMC_A9	
	GPIO64_ETH0_NRESET	OMAP	10	61	OMAP	GPMC_A4	
	GPMC_A2	OMAP	11	60	OMAP	GPMC_A10	
	GPMC_A8	OMAP	12	59	OMAP	GPMC_A3	
	GPMC_A5	OMAP	13	58	OMAP	GPMC_A1	
	GPMC_A7	OMAP	14	57	OMAP	GPMC_A6	
	GPMC_D2	OMAP	15	56	OMAP	GPMC_D0	
	GPMC_D10	OMAP	16	55	OMAP	GPMC_D9	
	GPMC_D3	OMAP	17	54	OMAP	GPMC_D8	
	GPMC_D11	OMAP	18	53	OMAP	GPMC_D1	
	GPMC_D4	OMAP	19	52	OMAP	GPMC_D13	
	GPMC_D12	OMAP	20	51	OMAP	GPMC_D6	
	GPMC_D5	OMAP	21	50	OMAP	GPMC_D14	
	GPMC_D15	OMAP	22	49	OMAP	GPMC_D7	
MMC3 INTERFACE	GPIO13_MMC3_CMD	OMAP	23	48	OMAP	GPIO151_RXD1	UART
UART	GPIO148_TXD1	OMAP	24	47	OMAP	GPIO150_MMC3_WP	MMC3 INTERFACE
	GPIO176_ETH0_IRQ	OMAP	25	46	TPS65950 Or OMAP	PMIC_GPIO1_MMC3_CD Or GPIO149_MMC3_CD (default)	MMC3 INTERFACE See Schematic below.
MMC3 INTERFACE	GPIO18_MMC3_D0	OMAP	26	45	OMAP	GPIO173_SPI1_MISO	SPI INTERFACE
SPI INTERFACE	GPIO174_SPI1_CS0	OMAP	27	44	OMAP	GPIO172_SPI1_MOSI	SPI INTERFACE
See schematic below.	GPIO168_USBH_CPEN Or PMIC_LEDA (default)	OMAP Or TPS65950	28	43	OMAP	GPIO171_SPI1_CLK	SPI INTERFACE
MMC3 INTERFACE	GPIO14_MMC3_D4	OMAP	29	42	OMAP	GPIO175_SPI1_CS1	SPI INTERFACE
MMC3 INTERFACE	GPIO21_MMC3_D7	OMAP	30	41	OMAP	GPIO114_SPI1_NIRQ	SPI INTERFACE
MMC3 INTERFACE	GPIO17_MMC3_D3	OMAP	31	40	OMAP	GPIO12_MMC3_CLK	MMC3 INTERFACE
	USBH_VBUS	USB-PHY	32	39	OMAP	GPIO20_MMC3_D2	MMC3 INTERFACE
	GND	POWER	33	38	OMAP	GPIO23_MMC3_D5	MMC3 INTERFACE
	USBH_DP	USB-PHY	34	37	OMAP	GPIO22_MMC3_D6	MMC3 INTERFACE
	USBH_DM	USB-PHY	35	36	OMAP	GPIO19_MMC3_D1	MMC3 INTERFACE

McSPI1 interface or other peripherals (see OMAP35xx GPIO specification)

MMC3 interface or other peripherals (see OMAP35xx GPIO specification)

GPMC interface

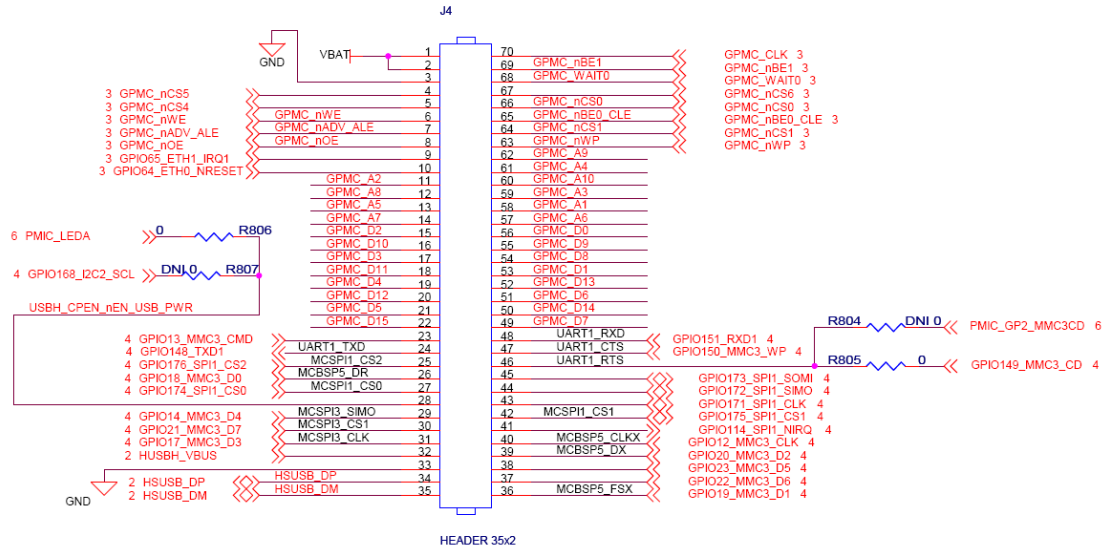UART1 interface or other peripherals (see OMAP35xx GPIO specification)

Figure 17 - J4 Connector Schematic Detail

5.6 J5 - CAMERA

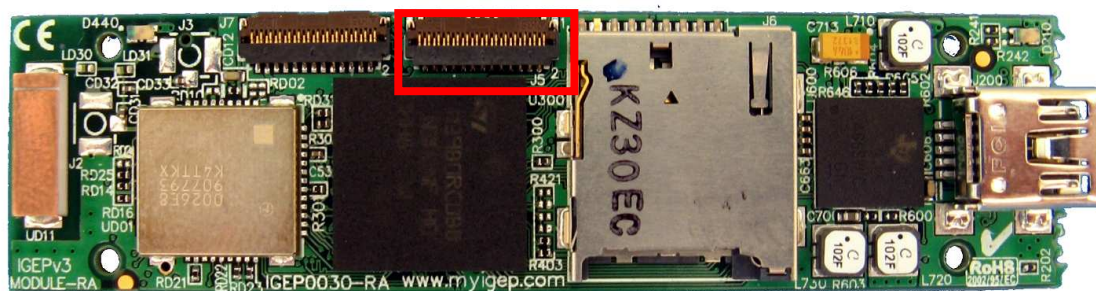27 pin HIROSE Serie FH26 (0.3mm pitch flex circuit).

Figure 18 - J5 connector detail

All logic is at 1.8V. 1.8V power is supplied by the IGEP motherboard for use on the camera module. This power should not be used as a general supply but only to power a level-shifting transceiver, if needed.

> **WARNING: Most of the signals come directly from/to OMAP processor. Improperly use of this connector could result in damage of the processor.**

The input range of the supply voltage is approximately 3V5 – 4V2.

VSYSTEM is power from the baseboard routed through IGEP board for use on camera module.

The signals of connector J5 are connected directly to the processor.

Signal	Pin	IC	Comment
GPIO94_CAM_HS	1	OMAP	
GPIO95_CAM_VS	2	OMAP	
GPIO96_CAM_XCLKA	3	OMAP	
GPIO97_CAM_PCLK	4	OMAP	
GPIO98_CAM_FLD	5	OMAP	
GPIO99_CAM_D0	6	OMAP	
GPIO100_CAM_D1	7	OMAP	
GPIO101_CAM_02	8	OMAP	
GPIO102_CM_D3	9	OMAP	
GPIO103_CIF_DD04	10	OMAP	
GPIO104_CIF_DD05	11	OMAP	
GPIO105_CAM_D6	12	OMAP	
GPIO106_CIF_DD07	13	OMAP	
GPIO107_CIF_DD08	14	OMAP	

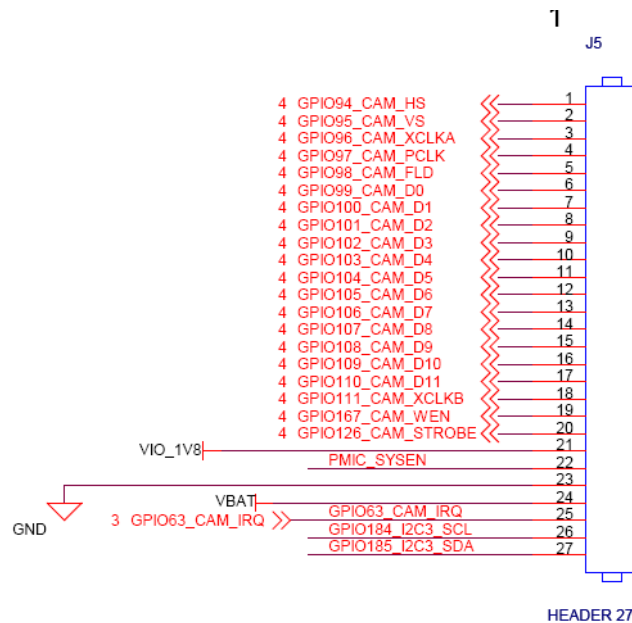|			
CPIO108_CIF_DD09	15	OMAP	
GPIO109_CAM_D10	16	OMAP	
GPIO110_CAM_D11	17	OMAP	
GPIO111_CAM_XCLKB	18	OMAP	
GPIO167_CAM_WEN	19	OMAP	
GPIO126_CAM_STROBE	20	OMAP	
VDDS_1.8	21	PMIC	1.8V power is supplied by the IGEP motherboard for use on the camera module. This power should not be used as a general supply but only to power a level-shifting transceiver, if needed.
SYSEN	22	PMIC	
GND	23		
VSYSTEM	24		board supply: 3V5 - 4.2V
GPIO63_CAM_IRQ	25	OMAP	
GPIO184_I2C3_SCL	26	OMAP	
GPIO185_I2C3_SDA	27	OMAP	

Figure 19 - J5 Connector Schematic Detail

5.7 J7 – VIDEO COMPOSITE, USBOTG, KEYBOARD AND OTHERS

27 pin HIROSE Serie FH26 (0.3mm pitch flex circuit)

Figure 20 - J7 Connector Detail

All logic is at 1.8V.

⚠️	**WARNING: Most of the signals come directly from/to OMAP processor. Improperly use of this connector could result in damage of the processor.**

VMMC1 is provided by module (PMIC).

The signals of connector J7 are connected directly to the processor.

Signal	Alternative signal (optional)	Pin	IC1	IC2	Comment
GPIO156_McBSP1_CLKR		1	OMAP		
GPIO157_McBSP1_FSR		2	OMAP		
GPIO158_McBSP1_DX		3	OMAP		
GPIO159_McBSP1_DR		4	OMAP		
GPIO161_McBSP1_FSX		5	OMAP		
GPIO162_McBSP1_CLKX		6	OMAP		
GPIO.0/CD1		7	PMIC		
VMMC1		8	PMIC		
GPIO121_MMC1_CMD		9	OMAP		
GPIO120_MMC1_CLK0		10	OMAP		
GPIO122_MMC1_DAT0		11	OMAP		
GPIO123_MMC1_DAT1		12	OMAP		
GPIO124_MMC1_DAT2		13	OMAP		
GPIO125_MMC1_DAT3		14	OMAP		
GPIO168_I2C2_SCL	KPD_C2	15	OMAP	PMIC	By using 0R resistor, it is possible to select between OMAP peripherals or

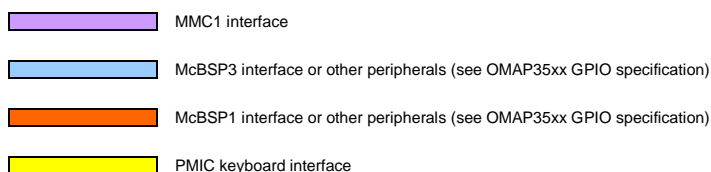|					PMIC keyboard interface.
GPIO183_I2C2_SDA	KPD_C1	16	OMAP	PMIC	
GPIO140_McBSP3_DX	KPD_C0	17	OMAP	PMIC	
GPIO142_ McBSP3_CLKX	KPD_R0	18	OMAP	PMIC	
GPIO141_ McBSP3_DR	KPD_R1	19	OMAP	PMIC	
GPIO143_ McBSP3_FSX	KPD_R2	20	OMAP	PMIC	
USBOTG_ID		21	PMIC		
USBOTG_DN		22	PMIC		
USBOTG_DP		23	PMIC		
USBOTG_VBUS		24	PMIC		
GND		25			
TV_OUT2R		26	OMAP		Video composite output (directly from the processor)
TV_OUT1R		27	OMAP		Video composite output (directly from the processor)

MMC1 interface

McBSP3 interface or other peripherals (see OMAP35xx GPIO specification)

McBSP1 interface or other peripherals (see OMAP35xx GPIO specification)

PMIC keyboard interface
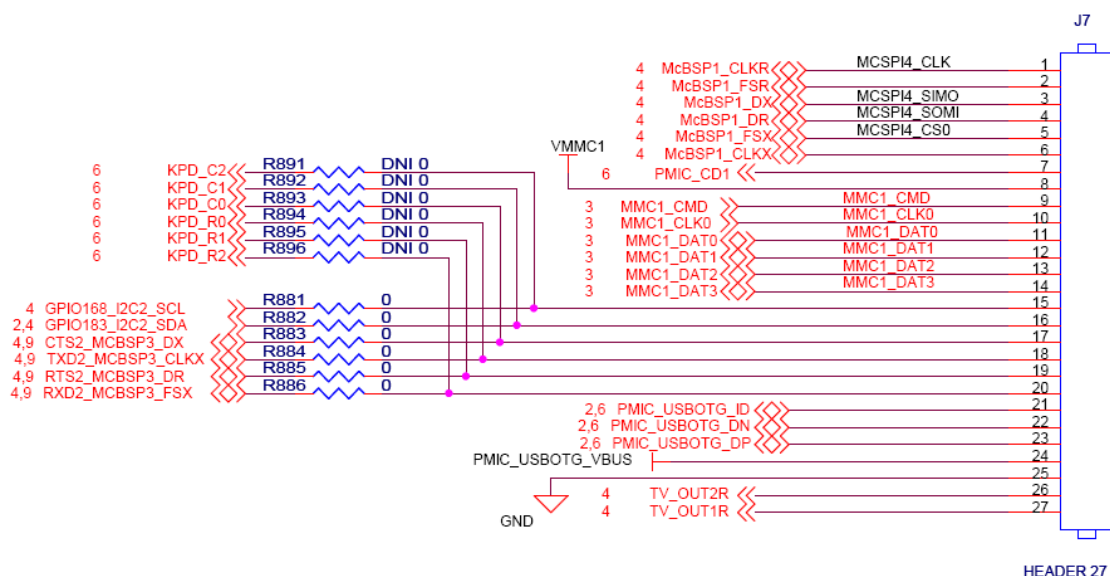
Figure 21 - J7 Connector Schematic Detail

6 MECHANICAL SPECIFICATION

Board size 18x68.5mm.

Connectors:

- o 2x 70-pin AVX 5602-14 with 0.4mm pitch connectors

- o 2 x 27-pin Hirose FH26 Serie connector (0.3mm pitch flex circuit) for Camera IF, VideoOut and USB connections.

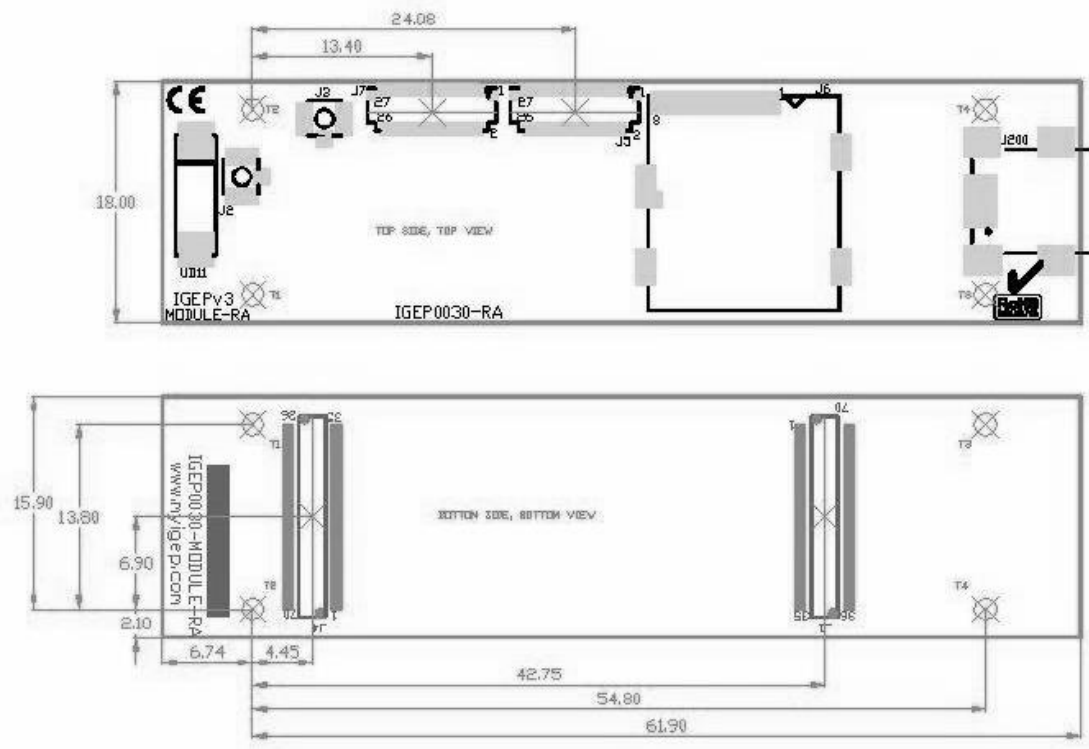4 x #0 mounting holes: one in each corner. Diameter 1.65mm ±0.05

Figure 22 Mechanical drawing

7   BOARD REFERENCE

Product Name: IGEP_MODULE-R*z*-35*xx*-*yy*

IGEP_MODULE	R*z*	35*xx*	*yy*
Product Name	Where z is A,B,C,… and details revision family	Where xx is 35 or 03 35: OMAP3530 processor 03: OMAP3503 processor	Where yy is WIFI or empty. WIFI: Modules comes with WIFI/BT combo module

Example:

IGEP_MODULE-RA-3530-WIFI: OMAP3530 processor + WIFI/BT interface

8 LIST OF FIGURES

9   CHANGELOG

Revision 00
- Initial draft

Revision 01
- Preliminary version

Revision 02
- Release version

Revision 03
- Wifi only operates at 2.4GHz.
- No common embedded antenna available for WIFI and Bluetooth