AM335xStarterKitHardwareUsersGuide

AM335x Starter Kit Hardware User Guide

Introduction

This document provides the design information on the AM335x processor based Starter Kit (TMDSSK3358) to users.

Description

The AM335x Starter Kit (TMDSSK3358) can be used as an evaluation and development platform for low cost AM335x based solutions and networking platforms. The embedded emulation logic allows emulation and debug using standard development tools such as TI's Code Composer Studio by just using the supplied USB cable. It is not intended for use in end products. All of the design information is freely available and can be used as the basis for the development of an AM335x based product.

EVM System View

TMDSSK3358 is partitioned into two different boards: the main board (processor, peripherals & the main power supply) and the LCD Carrier board (LCD and touch screen). The TMDSSK3358 main board and the LCD carrier board mounted are mounted together using 10mm standoffs. The TMDSSK3358 main board has dimensions of 5.257" x 2.798 "and that of the LCD Carrier board is 4.963" x 2.798 ". The Top and the Bottom side views of the TMDSSK3358 are shown in the pictures provided below.

Top view

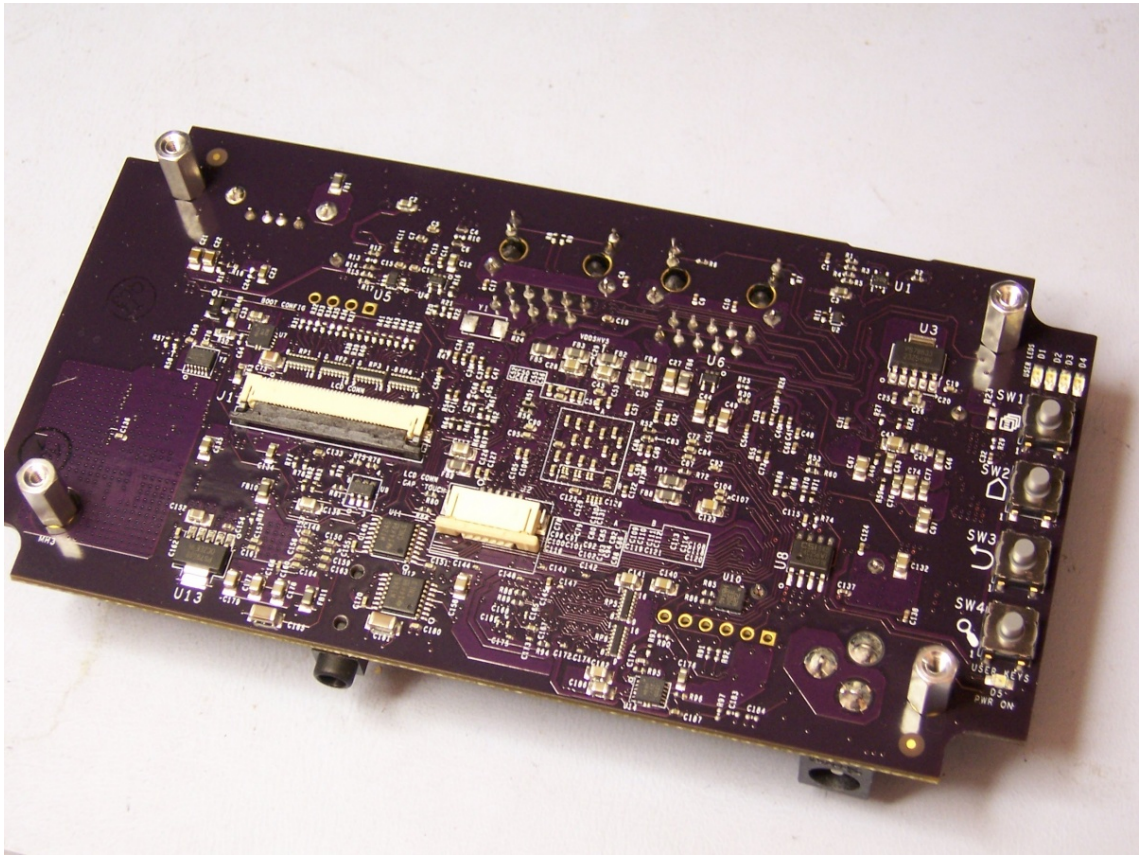

Figure 1: TMDSSK3358 Top view

Bottom view

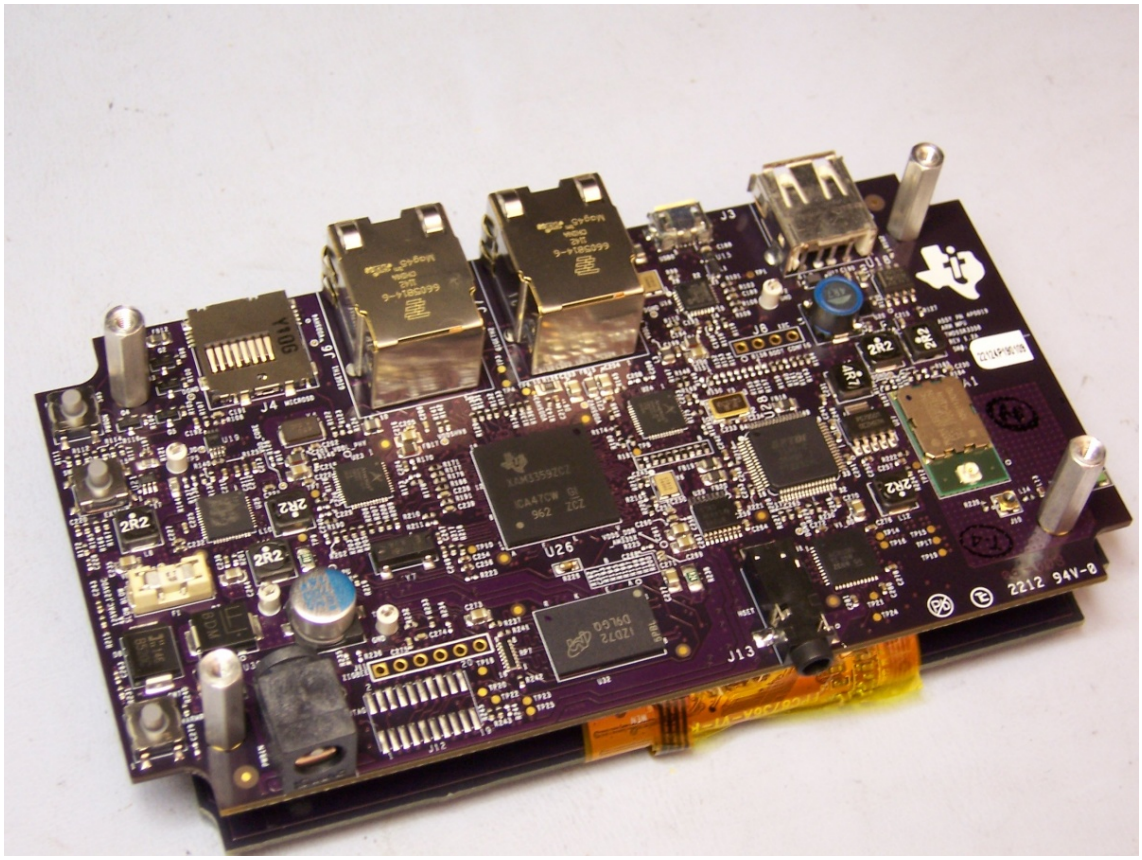

Figure 2: TMDSSK3358 V1.2A Bottom View

System view

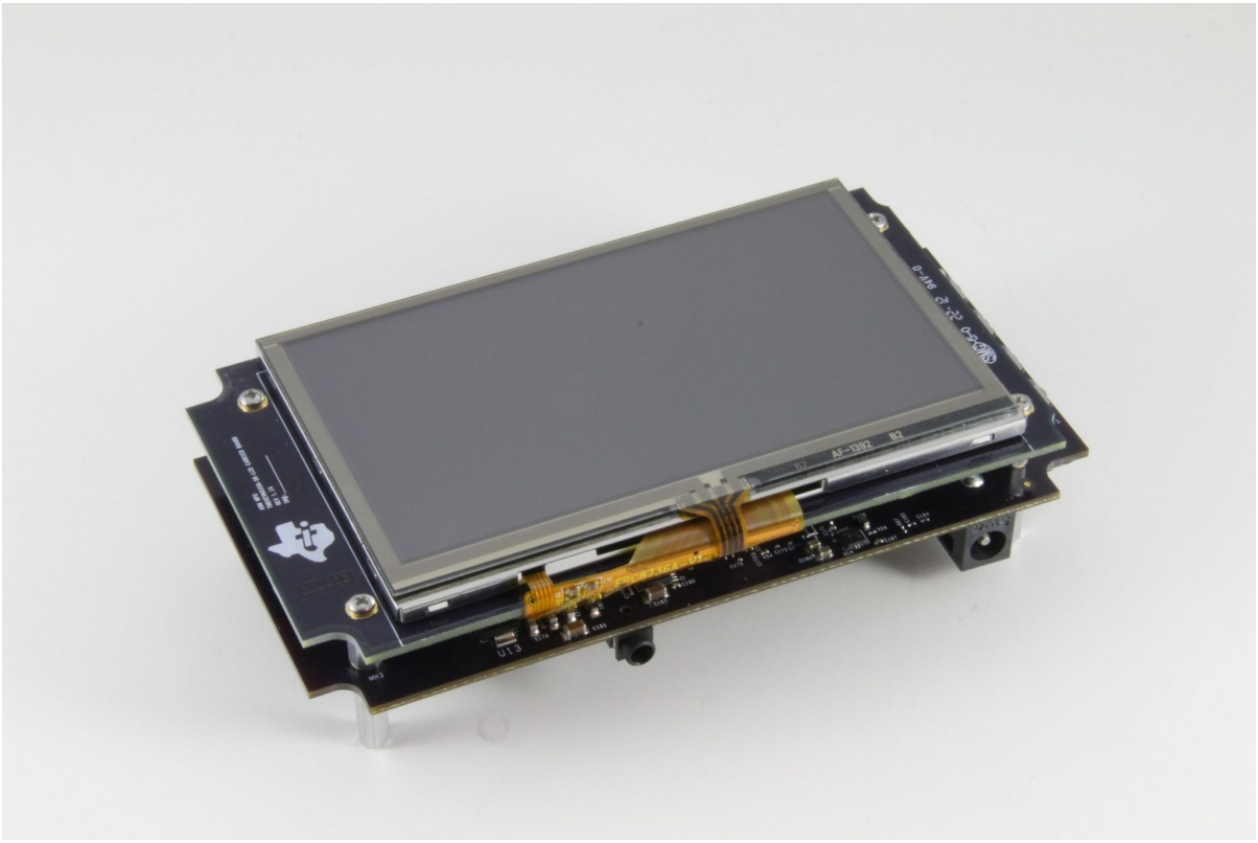

Figure 3: TMDSSK3358 System View

Schematics/Design Files

- HW Documentation [1] - Schematics, Design Files, and other related HW Documentation

Functional Block Diagram

This section describes about the major functional blocks of the TMDSSK3358. The Functional block diagram of the TMDSSK3358 design is shown below.

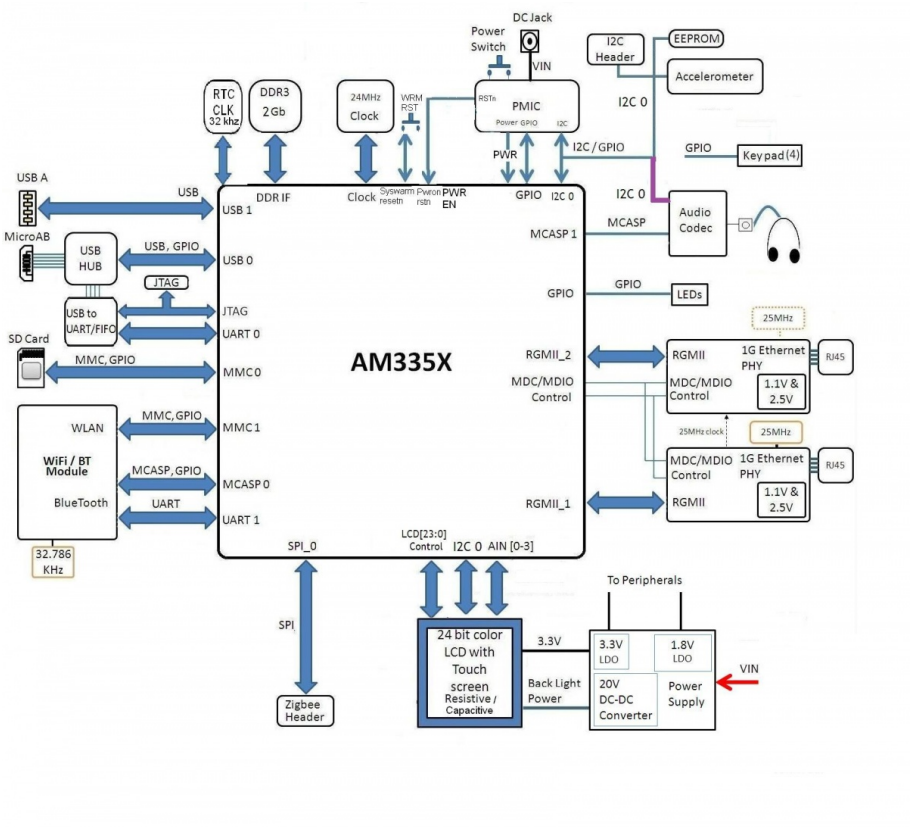

Figure 4: TMDSSK3358 Block Diagram

Processor

The AM3358ZCZ processor is the central processor for TMDSSK3358. All the resources on the board surround the AM3358 processor to provide development capabilities for hardware and software. See the AM3358 datasheet and TRM for the details about the processor.

There are system configuration signals, SYSBOOT, that can be set on the EVM to define some startup parameters on the AM335x processor. See the Configuration/Setup section later for more details.

Clocks

The main clock for the processor is derived from a 24MHz crystal. An on-board oscillator in the AM3358 generates the base clock and subsequent module clocks as needed within the AM3358 processor. A 32kHz clock for the RTC on the AM3358 is derived from a 32kHz crystal on board.

Reset Signals

Power On Reset to the AM335x is driven by the PMIC. SYS_ WARMRESETn is a signal running to several peripherals and AM335x which performs a reset on those peripherals. SYS_WARMRESETn is asserted by a pushbutton on the main board and is used to force a reset of the AM335x. AM335x can also pull down on the RESET_INOUTn signal to cause the SYS_ WARMRESETn line to go active. The RTC_PORZ reset signal for the RTC section is derived using AND Gates.

Power

The power input to TMDSSK3358 is from a 5V Power Supply. This 5V power is provided as power input to the Power Manager TPS65910A3. The power requirements of the processor are taken care of by the Power Manager IC TPS65910A3. The Power ON LED "D5" is ON if the PMIC output power VAUX33 is available (to indicate the active status of the PMIC). The power sequencing requirements of the AM335X processor (see the AM335x datasheet) are handled automatically by the TPS65910A3 PMIC.

> ***Note:*** *When powering the TMDSSK3358 EVM, always use the supplied power supply (CUI/V-Infinity Part Number EMSA050300-P6P-SZ, Model 3A-182WP05) or equivalent model having output voltage of +5VDC and output current max 3.0 Amps.*

Power Management IC

TMDSSK3358 uses the TPS65910A3 power management IC. The I2C0 on AM335x is used to control the TPS65910A PMIC.

The PWRON input of PMIC is connected to an external push-button. The built-in debouncing time defines a minimum button press duration that is required for button press detection. Any button press duration which is lower than this value is ignored, considered an accidental touch.

For AM335x, the following power supplies from the TPS65910A are used.

TPS65910 Power Supply/Other sources	AM335x Power Rail	Voltage
VAUX2 (300mA)	VDDSHV6 (300mA)	3.3V
VMMC (300mA)	VDDSHV2,3,4,5 (300 mA), VDDA3P3V_USB0/1 (10 mA)	3.3V
VDD2 SMPS (1500mA)	VDD_CORE (1000mA)	1.1V
VDD1 SMPS (1500mA)	VDD_MPU (1500mA)	1.2V
No supply needed	VDD_RTC	1.1V
VRTC (External LDO)	VDDS_RTC (10mA)	1.8V
VIO_SMPS (1000mA)	VDDS_DDR (200mA)	1.5V
VIO_SMPS (1000mA)	DDR_VREF (10mA)	0.9V
VDAC (150mA)	VDDS (100mA)	1.8V
VDIG1 (300mA)	VDDSHV1	1.8V
VDIG2 (300mA)	VDDS_SRAM_CORE_BG (40mA)	1.8V
VDIG2 (300mA)	VDDS_SRAM_MPU_BB (40mA)	1.8V

VDIG2 (300mA)	VDDS_PLL_DDR (25mA)	1.8V
VDIG2 (300mA)	VDDS_PLL_CORE_LCD (25mA)	1.8V
VDIG2 (300mA)	VDDS_PLL_MPU (25mA)	1.8V
VDIG2 (300mA)	VDDS_OSC (10mA)	1.8V
VAUX1 (300mA)	VDDA1P8V_USB0/1 (50mA)	1.8V
VPLL (50mA)	VDDA_ADC	1.8V
VDD3 SMPS (100mA)	Not Used	-

Table 1: Power supplies to AM335x from TPS65910A3 PMIC

Configuration/Setup

Boot Configuration

Various boot configurations can be set using the pull up / down resistor combinations provided on the SYS_BOOT pins (LCD_DATA0..15).Boot configuration pins are latched upon de-assertion of PORz pin.

I2C Port Address Assignments

Information on I2C address assignments are provided below.

AM335x STARTER KIT (TMDSSK3358) Function	AM335x I2C Port	Address
Baseboard ID memory	I2C0	0x50
AM355x PMIC Control	I2C0	0x2D
AM355x PMIC Smart Reflex Control	I2C0	0x12
Accelerometer Control	I2C0	0x18
Audio Codec	I2C0	0x1B
Capacitive Touch screen	I2C0	0x38

Table 2:I2C Bus Addresses

Memories Supported

The TMDSSK3358 design supports on-board memories like DDR3 SDRAM and Board ID EEPROM. It also supports an SD card socket.

DDR3 SDRAM

DDR3 SDRAM memory design is provided by using a 2 Gb single chip solution (MT41J128M16JT-125) from Micron. It is internally configured as a16 Meg x 16 x 8 bank memory. A separate Regulator to supply the DDR reference power to the AM335x and the VTT termination voltage to the termination components is provided in the design. The VIO_SMPS output from the PMIC is programmed to provide the required 1.5V to the DDR3 SDRAM.

Board Identity Memory

The board contains a serial EEPROM with the board specific data which allows the processor to automatically detect which board is connected and the version of that board. Other hardware specific data can be stored in this memory as well. The part number of the memory device used is CAT24C256WI-GT3. See the Configuration/Setup section for details on the data in this memory.

Name	Size	Contents
Header	4	MSB 0xEE3355AA LSB
Board Name	8	Name for board in ASCII “A335X_SK” = AM335x TMDSSK3358Board
Version	4	Hardware version code for board in ASCII “1.2A” = rev. 01.2A
Serial Number	12	Serial number of the board. This is a 12 character string which is: WWYY4P19nnnn where: WW = 2 digit week of the year of production YY = 2 digit year of production nnnn = incrementing board number
Configuration Option	32	Codes to show the configuration setup on this board. For the available EVM’s supported, the following codes are used: ASCII “SKU#00” = default configuration Remaining 26 bytes are reserved
Available	32720	Available space for other non-volatile codes/data

Table 3:I2C Configuration

SD/MMC0

The Micro SD/MMC0 port is provided with a card socket SCHA5B0200. This is a standard Micro SD/MMC Card type of connector which is of the low profile compact type. It is connected to the MMC0 port of the AM335x processor. Check the AM335x data sheet and TRM for supported card types/densities.8Gb SD cards are tested with this design. The Pin assignment is as given below.

Pin No	Memory Card PIN No.
uSD#1	DAT2
uSD#2	CD/DAT3
uSD #3	CMD
uSD #4	VCC
uSD #5	CLK
uSD #6	GND
uSD #7	DAT0
uSD #8	DAT1
uSD #9	GND
uSD #10	CD

Table 4: SD/MMC0 Connector Pin Details

Ethernet

TMDSSK3358 has two Giga bit Ethernet transceivers. AR8031-AL1A from Atheros is used as a single port, tri speed PHY. A single 3.3V is enough to power this PHY and the other voltages required were generated internally. Reset for both the chips are driven by the SYS_WARMRESETn signal through a SN74LVC1G07 buffer.Both the PHYs have individual 25MHz, 50ppm crystal as their clock source. The 25MHz Clock out of the EMAC1-PHY port has been connected to the XTLI of the EMAC2-PHY as an optional clock input.

For both the PHYs, mode selection pins MODE [3:0] are set as “0000” to operate it in 1000 BASE-T, RGMII mode. The PHY address for the EMAC1-PHY and EMAC2-PHY are 00100 and 00101 respectively.The interrupts from the both PHYs are connected to both the Non Maskable Interrupt pin and to the processor GPIO pins.

The Wake On LAN interrupts from the both PHYs are connected to the EXT_WAKEUP signal of the processor as an option.

Pin No	Signal Name	Description
1	DGND	Ground
2	NC	No connect
3	ETHER_D3P	MDI 3 POSITIVE
4	ETHER_D3N	MDI 3 NEGATIVE
5	ETHER_D2P	MDI 2 POSITIVE
6	ETHER_D2N	MDI 2 NEGATIVE
7	ETHER_D1P	MDI 1 POSITIVE
8	ETHER_D1N	MDI 1 NEGATIVE
9	ETHER_D0P	MDI 0 POSITIVE
10	ETHER_D0N	MDI 0 NEGATIVE
D1	PHY_ LED_ACTn	PHY ACTIVITY LED signal
D2	GND	Ground
D3	GND	Ground
D4	PHY_ LED_1000n	1000 Base-T LINK LED signal

Table 5: 10/100 PRU Ethernet1 Pin Details

USB

USB to UART/JTAG

Micro AB USB port is provided as an upstream port of the USB HUB USB2412. This is used for USB to JTAG and USB to UART conversion applications through the downstream port 1 of the HUB. FT2232L is used for the USB to UART and JTAG conversion applications. The Downstream port 2 of the Hub is connected to USB port 0 of the AM335x.

The USB to UART/JTAG converter (FT2232L) has 32 configurable multifunction pins. A 16 bit, serial EEPROM 93LC56B from MicroChip is used to store the configuration data. Some of the pins from ADBUS [7:0] and ACBUS [7:0] are configured as JTAG and Reset signals. These JTAG pins from the FT2232 IC are connected to the dedicated processor JTAG pins and as well to the optional JTAG connector.

The Micro AB USB pin out details are provided below.

Pin No	Signal Name	Description
1	USB_DC	USB BUS VOLTAGE
2	USBDM_UP	USB DATA MINUS
3	USBDP_UP	USB DATA PLUS
4	NC (USB_ID)	No connect
5	DGND	Ground

Table 6: Micro AB – USB0

USB 1

The USB port1 of the AM335x is connected to the USB type A connector. USB power (5V)is provided to this connector through a buck-boost converter circuit.

Pin No	Signal Name	Description
1	VUSB_VBUS1	USB BUS VOLTAGE
2	USB1_CONN_DM	USB1 DATA MINUS
3	USB1_CONN_DP	USB1 DATA PLUS
4	DGND	Ground

Table 7: USB A Type – USB1

Audio Codec

The TLV320AIC3106 is a low-power stereo audio codec with stereo headphone amplifier from TI. CLKOUT1 of the processor is sourcing the master clock of the codec (24Mhz). The CODEC I2C is capable of supporting both the standard and fast modes. I2C address of the codec is configured as 0011011. MCASP1 interface of the processor is connected to the audio interface of the codec. The stereo audio output is terminated in a stereo headphone Jack. The Pinout assignments for the headset jack are provided below.

Pin No	Signal	Description
1	AGND_AUD	Analog Ground
3	HS_SPKRP	Headset stereo LOUT
10	NC	No Connect
2	HD_SPKRP	Headset stereo ROUT

Table 8: Headset Jack

WLAN

LBEE5ZSTNC-523 Type TN WiFi / BT Module from Murata is used to provide the WLAN and the Bluetooth connectivity for the TMDSSK3358 design. The WLAN design has IEEE802.11 b, g, n compliance for WLAN and Version4.0 with Blue tooth Low Energy (BLE) for BT. This module requires an external 32.768 KHz, +/-150ppm clock. This is sourced by the CLKOUT2 clock out pin of the processor. The required digital interfaces for the module are connected to the UART1 and McASP0 ports of the processor through voltage level converters.

Note that due to a HW bug in the WiFi Antenna matching network design, customers may observe significant degradation in throughput (15-20 Mbps - Typical) as well as reduced WiFi Range when using the AM335x Starter Kit and COM6M module with AM335-EVM, with the onboard WiFi Antenna.

For optimal throughput we recomend using an external Antenna as describe in the link:<ECO for using external antenna> [2]

> ***Warning:*** *To minimize risks of potential radiation hazards associated with handling and/or moving the energized EVM including compliance with the wireless radio grant licensing provisions, always maintain a minimum distance of 20cm measured between EVM user(s) and the EVM antenna.*

User LEDs

The Four User LEDs implemented are D1-D4 in the user panel area. These are driven by the GPIOs from the AM335x.

All the user LEDs are green in color.

User Keys

This design has 4 user keys SW1,SW2,SW3 & SW4, three of them connected directly to the GPIO bank2 of the processor (Keys 2,3 & 4) and one of them (Key 1) connected to the GPIO bank0 of the processor.

Apart from the above four user keys, the design also has a button to interrupt the processor via the non maskable interrupt pin.

Accelerometer

The LIS331DLH is an ultra low-power high performance three axes linear accelerometer used in TMDSSK3358 board. The accelerometer is mounted closer to the center of the board as to allow the most useful/dynamic data. The accelerometer is connected via I2C0 of the processor. The I2C(0) address is 0011000b.

Pin Use Description

The Pin use description file provides us the information on the pin functionality mode selected. The pin mux utility file is found here Pin Mux Data File [3]

GPIO Definitions

See the updated pinmux document Pin Mux Description [4] which shows the use case columns for GPIOs.

Board Expansion Connectors

The SPI0 and the I2C0 ports are extended through the connectors J11 and J8 respectively. SPI0 Expansion header pinout is provided below.

Pin No	Signal	Description
1	V3_3D	Power 3.3V supply
2	AM335X_SPI0_CS0	SPI0 Chip Select 0
3	AM335X_SPI0_D1	SPI0 Data 1
4	DGND	Ground
5	AM335X_SPI0_SCLK	SPI0 Clock
6	AM335X_SPI0_D0	SPI0 Data 0

Table 9: SPI0 Expansion Header

I2C0 Expansion header is provided below.

Pin No	Signal	Description
1	DGND	Ground
2	AM335X_I2C0_SDA	I2C0 DATA
3	AM335X_I2C0_SCL	I2C0 Clock
4	V3_3D	Power 3.3V supply

Table 10: I2C0 Expansion Header

LCD

TFT color LCD module from Newhaven Display NHD-4.3-480272MF-ATXI#-T-1 with resistive touch screen shall be used as the LCD display for the TMDSSK3358 design. It is 4.3 inches wide and it has a built in driver and no controller is required. It has 480 X 272 pixels and supports up to 16.7M colors. This LCD supports white LED backlight. 24bit RGB signals, control signals and Resistive touch screen signals are terminated in a flex PCB with a 40 pin connector that fits into the TMDSSK3358 main board using a mating connector.

40 pin LCD connector pinout is provided here.

Pin No	Signal	Description
1	LED-	Backlight LED power supply GND
2	LED+	Backlight LED power supply voltage
3	DGND	Ground
4	VCC	3.3V LCD Power Supply
5	R0	Red Data0
6	R1	Red Data1
7	R2	Red Data2
8	R3	Red Data3
9	R4	Red Data4
10	R5	Red Data5
11	R6	Red Data6
12	R7	Red Data7
13	G0	Green Data0
14	G1	Green Data1

15	G2	Green Data2
16	G3	Green Data3
17	G4	Green Data4
18	G5	Green Data5
19	G6	Green Data6
20	G7	Green Data7
21	B0	Blue Data0
22	B1	Blue Data1
23	B2	Blue Data2
24	B3	Blue Data3
25	B4	Blue Data4
26	B5	Blue Data5
27	B6	Blue Data6
28	B7	Blue Data7
29	GND	Ground
30	PCLK	Data Sample clock signal
31	DISP	Display ON/OFF signal
32	HSYNC	Line Sync signal
33	VSYNC	Frame Sync signal
34	DE	Data enable
35	AVDD	No connect
36	GND	Ground
37	XR	Touch Panel Right
38	YD	Touch Panel Down
39	XL	Touch Panel Left
40	YU	Touch Panel Up

Table 11 :LCD Connector

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For EVMs annotated as FCC – FEDERAL COMMUNICATIONS COMMISSION Part 15 Compliant

Caution

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this deice must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Interference Statement for Class A EVM devices

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in

which case the user will be required to correct the interference at his own expense.

FCC Interference Statement for Class B EVM devices

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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This Class A or B digital apparatus complies with Canadian ICES-003.

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Concerning EVMs including radio transmitters

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Concerning EVMs including detachable antennas

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This radio transmitter has been approved by Industry Canada to operate with the antenna types listed in the user guide with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

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Cet appareil numérique de la classe A ou B est conforme à la norme NMB-003 du Canada.

Les changements ou les modifications pas expressément approuvés par la partie responsable de la conformité ont pu vider l'autorité de l'utilisateur pour actionner l'équipement.

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Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son

gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés dans le manuel d'usage et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

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This development kit is NOT certified as Confirming to Technical Regulations of Radio Law of Japan!

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(2) Use this product only after you obtained the license of Test Radio Station as provided in Radio Law of Japan with respect to this product, or

(3) Use of this product only after you obtained the Technical Regulations Conformity Certification as provided in Radio Law of Japan with respect to this product. Also, please do not transfer this product, unless you give the same notice above to the transferee. Please note that if you could not follow the instructions above, you will be subject to penalties of Radio Law of Japan.

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For Feasibility Evaluation Only, in Laboratory/Development Environments. Unless otherwise indicated, this EVM is not a finished electrical equipment and not intended for consumer use. It is intended solely for use for preliminary feasibility evaluation in laboratory/development environments by technically qualified electronics experts who are familiar with the dangers and application risks associated with handling electrical mechanical components, systems and subsystems. It should not be used as all or part of a finished end product.

Your Sole Responsibility and Risk. You acknowledge, represent and agree that:

1. You have unique knowledge concerning Federal, State and local regulatory requirements (including but not limited to Food and Drug Administration regulations, if applicable) which relate to your products and which relate to your use (and/or that of your employees, affiliates, contractors or designees) of the EVM for evaluation, testing and other purposes.
2. You have full and exclusive responsibility to assure the safety and compliance of your products with all such laws and other applicable regulatory requirements, and also to assure the safety of any activities to be conducted by you and/or your employees, affiliates, contractors or designees, using the EVM. Further, you are responsible to assure that any interfaces (electronic and/or mechanical) between the EVM and any human body are designed with suitable isolation and means to safely limit accessible leakage currents to minimize the risk of electrical shock hazard.
3. You will employ reasonable safeguards to ensure that your use of the EVM will not result in any property damage, injury or death, even if the EVM should fail to perform as described or expected.
4. You will take care of proper disposal and recycling of the EVM's electronic components and packing materials

Certain Instructions. It is important to operate this EVM within the input voltage range of 2.7 V to 5.5 V and the output voltage range of -10 V to 15 V. Exceeding these EVM ratings may cause property damage, personal injury or death. If there are questions concerning these ratings please contact a TI field representative prior to connecting interface electronics including input power and intended loads. Any loads applied outside of the specified output range may result in unintended and/or inaccurate operation and/or possible permanent damage to the EVM and/or interface electronics. Please consult the EVM User's Guide prior to connecting any load to the EVM output. If there is uncertainty as to the load specification, please contact a TI field representative. During normal operation, some circuit components may have case temperatures greater than 60°C as long as the input and output are maintained at a normal ambient operating temperature. These components include but are not limited to linear regulators, switching transistors, pass transistors, and current sense resistors which can be identified using the EVM schematic located in the EVM User's Guide. When placing measurement probes near these devices during normal operation, please be aware that these devices may be very warm to the touch. As with all electronic evaluation tools, only qualified personnel knowledgeable in electronic measurement and diagnostics normally found in development environments should use these EVMs.

Agreement to Defend, Indemnify and Hold Harmless. You agree to defend, indemnify and hold TI, its licensors and their representatives harmless from and against any and all claims, damages, losses, expenses, costs and liabilities (collectively, "Claims") arising out of or in connection with any use of the EVM that is not in accordance with the terms of the agreement. This obligation shall apply whether Claims arise under law of tort or contract or any other legal theory, and even if the EVM fails to perform as described or expected.

Safety-Critical or Life-Critical Applications. If you intend to evaluate the components for possible use in safety critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, such as devices which are classified as FDA Class III or similar classification, then you must specifically notify TI of such intent and enter into a separate Assurance and Indemnity Agreement.

ANNEX

This Hardware User's Guide is prepared by using the following documents as references.

1. AM335x Sitara ARM Microprocessors TRM (SPRUH73)

References

[1] http://processors.wiki.ti.com/index.php/AM335x_Starter_Kit#Hardware_Documentation
[2] http://processors.wiki.ti.com/index.php/OMAP_Wireless_Connectivity_AM3358-SK_and_COM6M_ECO_for_using_external_Antenna
[3] http://processors.wiki.ti.com/images/f/fe/TMDSSK3358_1_2A_PinMux_data.zip
[4] http://processors.wiki.ti.com/images/8/82/TMDSSK3358_1.2A_PinMux_Description.zip
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