MICROCHIP

WINC1500 PICtail/PICtail Plus Daughter Board User's Guide

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1   Introduction

The WINC1500 PICtail/PICtail Plus Daughter board is a demonstration and development board for the WINC1510-MR210PB certified Wi-Fi module.

The daughter board has PICtail and PICtail plus connectors to interface with a PIC microcontroller on the development boards that supports either PICtail or PICtail plus interface.The daughter board could be plugged into multiple Microchip Technology demonstration and development boards.For example, for 8-bit microcontroller development using the PIC18 Explorer board or for 16-bit microcontroller development using Explorer 16 Development Board.

Supporting software stacks and application notes could be downloaded from Microchip website – TBD

INFO   Power to the WINC1500 PICtail/PICtail Plus Daughter Board should be in the 3.0-3.6 V. Ensure that the development/demonstartion board that the daughter board is plugged into meets this voltage requirement. Otherwise, damage to WINC1500 may occur

Advance Information

2 WINC1500 PICtail/PICtail Plus Daughter board
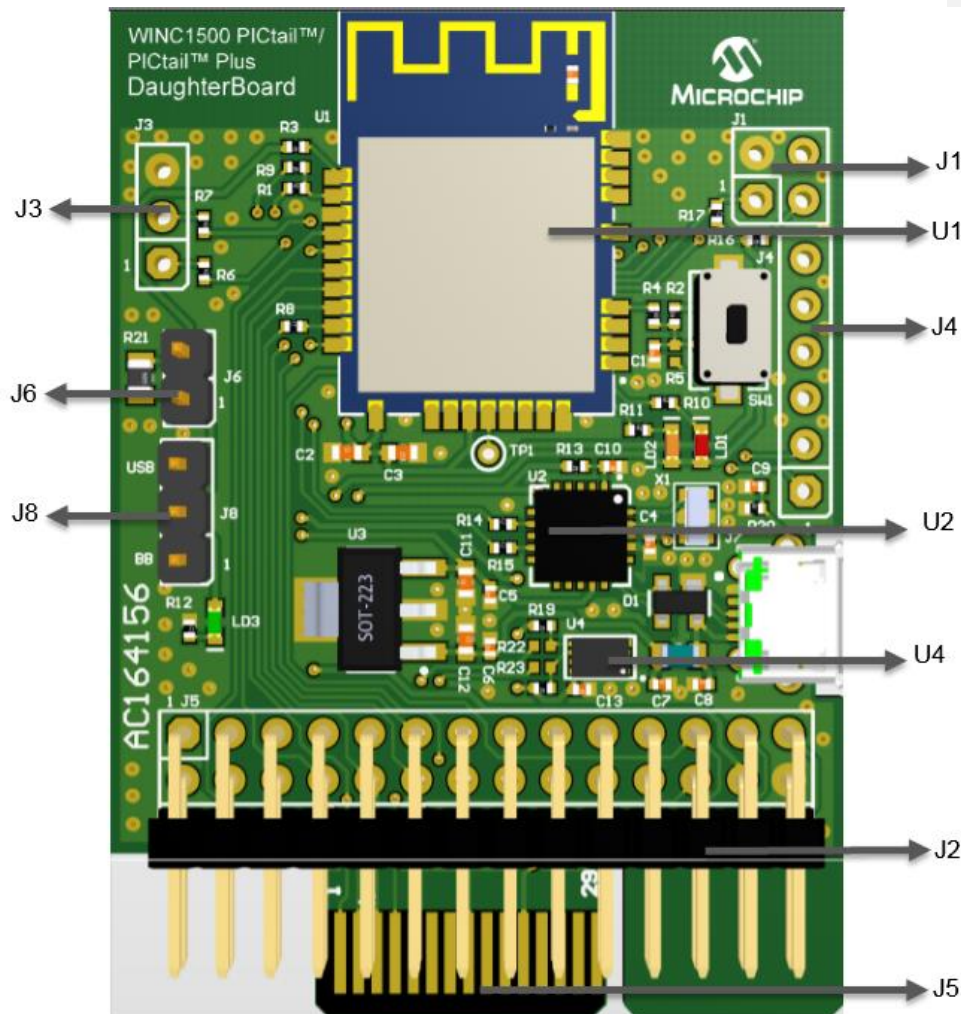
J5 (**PICtail Plus connector**) 30-pin card edge connector for connecting into 16 and 32-bit development boards' PICtail Plus connector.

J2 (**PICtail connector**) 28-pin right angle connector to connect to 8-bit development boards' PICtail connector.

U1 (**WINC1510-MR210PB**) Certified Wi-Fi Module

U2 (**MCP2200**) USB-to-UART serial bridge/converter for viewing debug logs from WINC1500. The UART configuration required is as mentioned below,
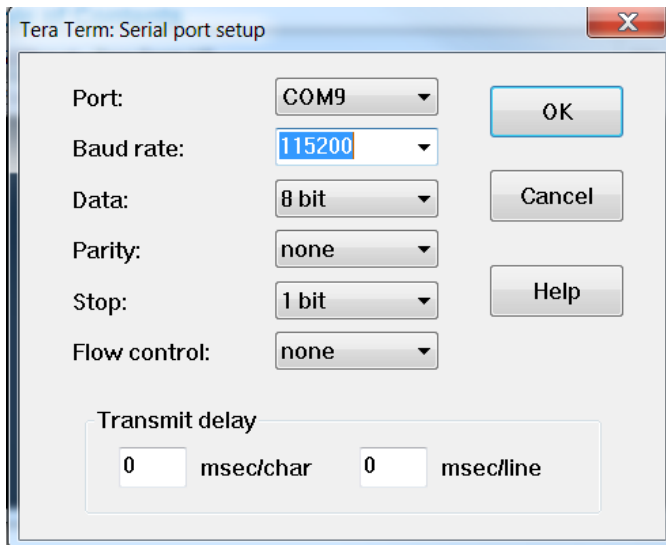
U4(**ATECC508A**) is a Cryptographic Co-Processor which could be used for Crypto authentication

The Jumper header **J8** (**Power selection switch**) can be used to power the board from either the power supply of the base board or from the external USB supply. Keeping the jumper in position 1-2(Pin 1 will be marked with text 'BB' in the Silk screen of the board) will power the board from the base board and keeping the jumper in position 2-3(Pin 3 will be marked with text 'USB' in the Silk screen of the board) will power the board from the USB supply.

Users of Explorer 16 boards with revision 4 and 5.X should power the board from the USB supply only. The daughter board could still be interfaced with the any base board with PICtail/PICtail Plus connectors. The GND of both the PICtail daughter board and the Base board are common and they will both be operating at 3.3V. 5V from USB supply is provided to LDO(U3) to obtain the 3.3V for supplying the daughter board.

The Jumper header **J6** (**Current measurement header**) can be used to measure the current consumption of the daughter board. To measure the current consumption of the board, connect a voltmeter and the relationship between V and A is 1:1. The 1x2 header J6 has a 1 Ohm resistor (1% tolerance) mounted across its pins and hence it doesn't require an ammeter for current measurement.

J1 – I2C Debug header of WINC1500.

J4 – GPIO Debug header of WINC1500

J3 – UART Debug header of WINC1500.

Pin map of the daughter board has been given below,

ATWINC1500-MR210PB Pin	PICtail Plus 30-Pin connector (J5)	PICtail 28-Pin connector (J2)
RESET -4	Pin 28	Pin 25
WAKE -11	Pin 14	Pin 13
IRQ -13	Pin 18	Pin 27
CHIP_EN -22	Pin 30	Pin 23
SPI_SS -16	Pin 1	Pin 24
SPI_MOSI -15	Pin 7	Pin 8
SPI_MISO- 17	Pin 5	Pin 10
SPI_SCK -18	Pin 3	Pin 12
GND -9, 12, 28	Pin 16	Pin 28
Vcc- 20, 23	Pin 22	Pin 26

3   Getting started

The WINC1500 PICtail/PICtail Plus Daughter Board can be plugged into multiple Microchip Technology demonstration and development boards. This allows the developer to choose the microcontroller that best suits the customer's development environment.

The PICtail connector, J2, can plug into 8-bit demonstration and development boards, such as PIC 18 Explorer Board (DM183032). The PICtail Plus card edge connector, J5, could be plugged into Explorer 16 Development Board (DM240001).

This chapter shows how the daughter board is plugged into the PIC18 Explorer and Explorer 16 Development Boards.

INFO   Ensure that the PIC18F87J11 PIM is plugged into the PIC18 Explorer Board. This sets the system VDD voltage to 3.3 volts, which is required by the WINC1500 PICtail/PICtail Plus Daughter Board.

3.1   Plugging into PIC18 Explorer Board

The WINC1500 PICtail/PICtail Plus Daughter Board can be plugged into the PICtail connector,J3 , of

PIC18 Explorer Board as shown in Figure below, Make sure to align pin 1 to RE2 as shown

Comment [MA1]: Just for demonstration. Need to update with latest pictures once proto build arrives

Align Pin 1 to RE2
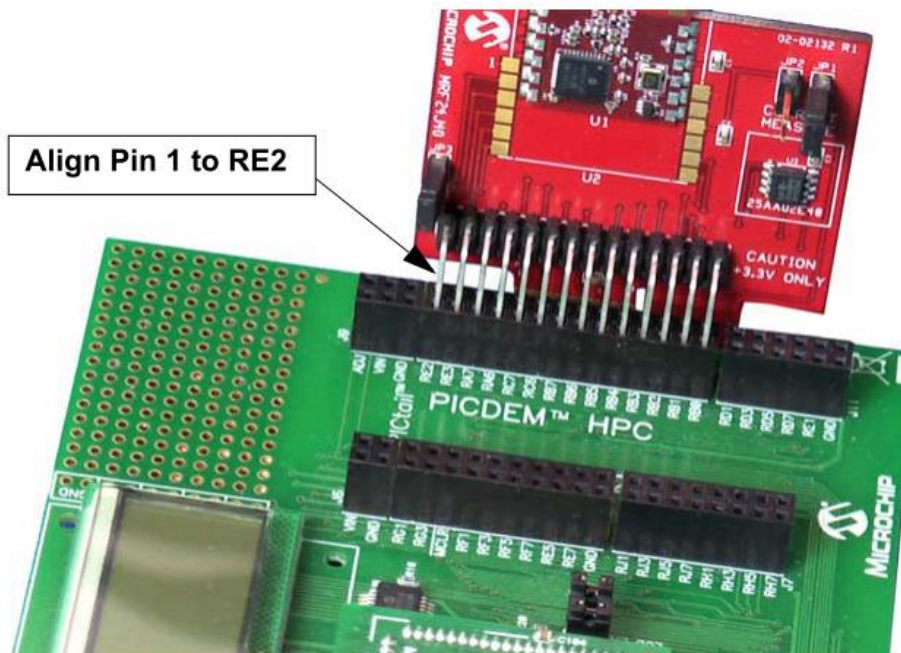
3.2   Plugging into Explorer 16 Development Board

The WINC1500 PICtail/PICtail Plus Daughter Board can be plugged into the Explorer 16 Development Board as shown in the figure below.

The Daughter Board 30-pin card edge connector can be plugged into the top section (Pin 1 -30) of the PICtail Plus connector. This will connect WINC1500 module to the SPI Port 1 on the PIC microcontroller plugged into the PIM socket. If the Daughter Board is plugged into the mid-section of the PICtail Plus connector, this will connect to SPI Port 2 on the PIC microcontroller.

Comment [MA2]: Just for demonstration. Need to update with latest pictures once proto build arrives

4   WINC1500 PICtail/PICtail Plus Daughter Board Schematic

This section provides the WINC1500 PICtail/PICtail Plus Daughter Board schematics, PCB silk
screen and Bill of Materials (BOM).

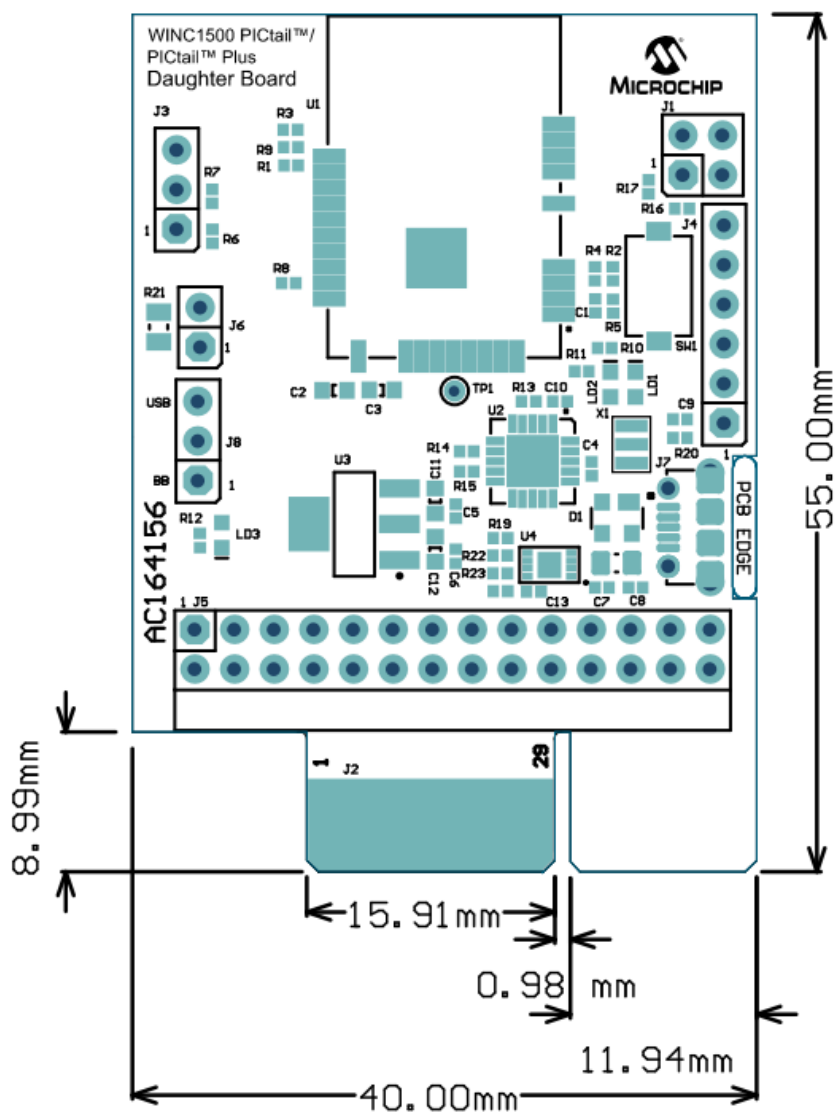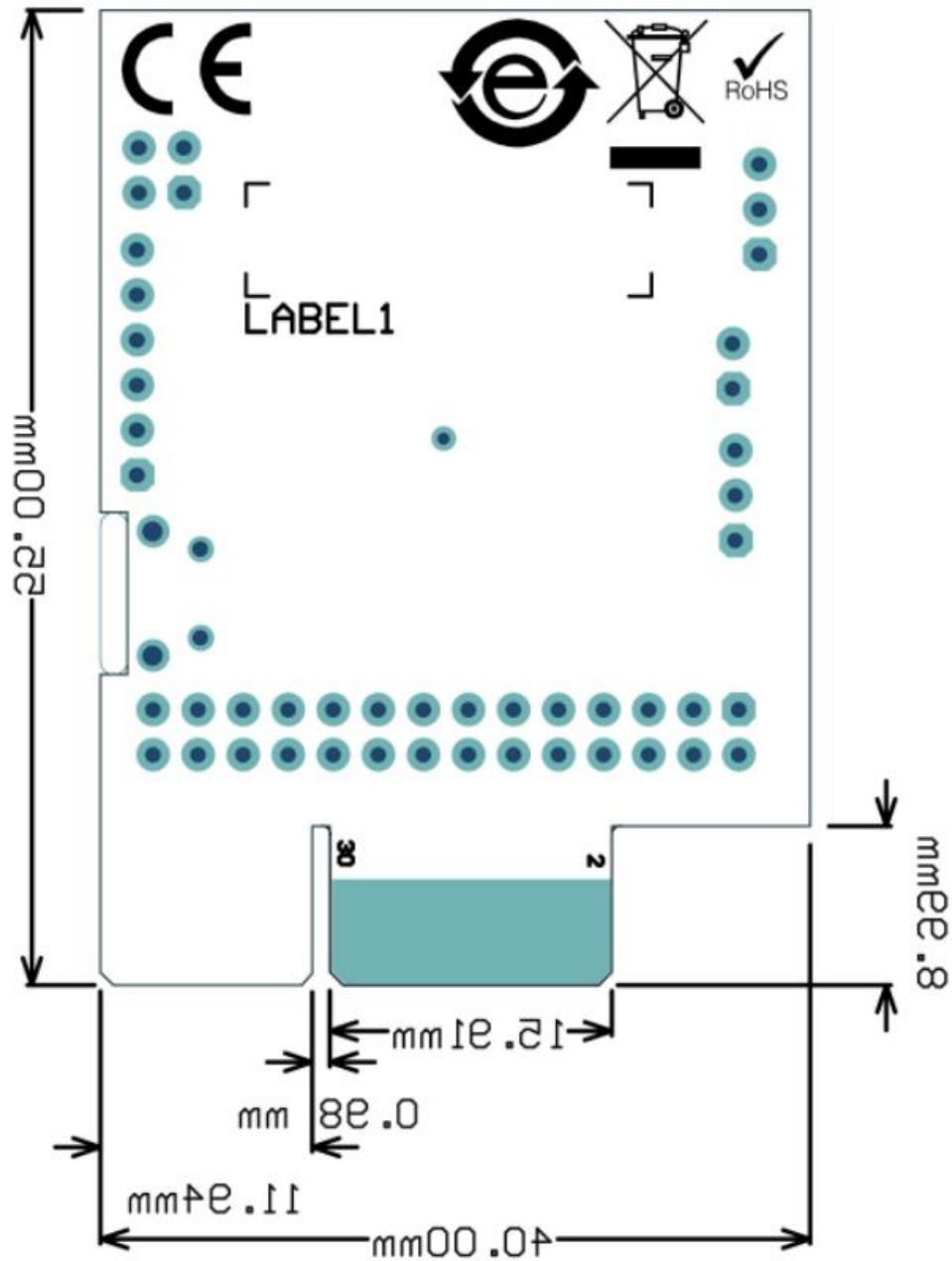**Figure 4-1.** **WINC1500 PICtail/PICtail Daughter Board Silk screen(Top)**

Figure 4-2. **WINC1500 PICtail/PICtail Daughter Board Silk screen(Bottom)**

Table : WINC1500 PICtail/PICtail Plus BOM

Quantity	Designator	Description	Manufacturer	Manufacturer Part Number
4	C1, C4, C10, C13	CAP CER 0.1uF 10V 10% X5R SMD 0402	KEMET	C0402C104K8PACTU
1	C2	CAP CER 10uF 10V 20% X5R SMD 0603	Panasonic	ECJ-1VB1A106M
3	C3, C11, C12	CAP CER 0.010uF 25V 10% X7R SMD 0603	Yageo	CC0603KRX7R8BB103
2	C5, C6	CAP CER 4.7uF 6.3V 20% X5R SMD 0402	Murata	GRM155R60J475ME47D
2	C7, C8	CAP CER 1000pF 25V 5% C0G SMD 0402	TDK	C1005C0G1E102J
1	C9	CAP CER 4700pF 16V 10% X7R SMD 0402	Murata Electronics North America	GRM155R71C472KA01D
1	D1	DIO TVS PRTR5V0U2X 5.5V SMD SOT-143	NXP Semiconductors	PRTR5V0U2X,215
1	FB1	FERRITE 300R@100MHz 2A SMD 0805	Laird-Signal Integrity Products	MI0805L301R-10
1	J5	CON HDR-2.54 Male 2x14 Gold 5.84MH TH R/A	Sullins	PBC14DBDN
1	J6	CON HDR-2.54 Male 1x2 Gold 5.84MH TH VERT	FCI	77311-118-02LF
1	J7	CON USB2.0 MICRO-B FEMALE TH/SMD R/A	FCI	10118194-0001LF
1	J8	CON HDR-2.54 Male 1x3 Tin 5.84MH TH VERT	Samtec	TSW-103-07-T-S
2	JP1, JP2	MECH HW JUMPER 2.54mm 1x2	3M	969102-0000-DA
1	LD1	DIO LED RED 2V 30mA 2mcd Clear SMD 0603	Lite-On	LTST-C190EKT
1	LD2	DIO LED ORANGE 2V 30mA 90mcd Clear SMD 0603	Lite-On	LTST-C190KFKT
1	LD3	DIO LED GREEN 2.1V 30mA 6mcd Clear SMD 0603	Lite-On	LTST-C190GKT

8	R1, R4, R6, R7, R8, R9, R14, R15	RES TKF 0R SMD 0402	Panasonic	ERJ-2GE0R00X
1	R2	RES TF 10k 0.5% 1/16W SMD 0402	SUSUMU	RR0510P-103-D
2	R3, R20	RES TKF 1M 5% 1/16W SMD 0402	Yageo	RC0402JR-071ML
3	R10, R11, R12	RES TKF 560R 5% 1/10W SMD 0402	Panasonic	ERJ-2GEJ561X
5	R13, R16, R17, R18, R19	RES TKF 4.7K 1% 1/10W 0402	KOA Speer	RK73H1ETTP4701F
1	R21	RES TKF 1R 1% 1/8W SMD 0805	Panasonic	ERJ-6RQF1R0V
1	U4	IC INTERFACE ATECC508A UDFN-8	Atmel	ATECC508A-MAHDA-T
1	X1	RESONATOR 12MHz 0.1% SMD CSTCE-G	Murata	CSTCE12M0G15L99-R0
1	U1	MCHP RF WI-FI 802.11b/g/n ATWINC1510-MR210PB MODULE-28	Microchip	ATWINC1510-MR210PB
1	U2	MCHP INTERFACE USB UART MCP2200-I/MQ QFN-20	Microchip	MCP2200-I/MQ
1	U3	MCHP ANALOG LDO 3.3V MCP1825ST-3302E/DB SOT-223-3	Microchip	MCP1825ST-3302E/DB

5   Recommended Reading

- WINC1500-MR210PB IEEE 802.11 b/g/n IoT Module datasheet
- WINC1500B IEEE 802.11 b/g/n Network Controller SoC Datasheet
- PICDEM™ PIC18 Explorer Demonstration Board User's Guide (DS51721)
- Explorer 16 Development Board User's Guide (DS51589)

6   Revision History

Doc Rev.	Date	Comments
A	10/2016	Initial document release.

Advance Information

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