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iChip OS Version i2128D810D34 MBCM

Manufacturer's Firmware for use in Certification Testing

Confidential

Not Approved for Distribution

Table of Contents

1. Introduction to firmware i2128D810D81 MBCM

This firmware is provided with the intention of assisting customers of Connect One in performing certification tests for WiFi systems. This firmware is not recommended for release with production units and does not support the full functionality of the production version i2128D810D34.

The AT+i commands, which are described in this document, control a special test mode of Broadcom's 43362 802.11 b/g/n chipset.

2. Unpacking Instructions

1. Connect the RS232 cable to the serial port on the DUT (Device Under Test) and to COM1 or COM2 serial port on a PC.
2. Connect the power supply to the DUT and turn ON the power switch.
3. Please run HyperTerminal program. To launch from Windows XP:
   Start -> Programs -> Accessories -> Communications.
4. Choose a name for the connection. Click OK to approve.
5. In the option: "Connect using", choose COM1 or COM1 serial port on the PC which is connected to the DUT. Click OK to approve.
6. Choose the following port settings:
   Bits per second: 9600
   Data bits: 8
   Parity: None
   Stop bits: 1
   Flow control: None
   Click OK to approve.
7. a. Type the command: AT+i
   b. Press Enter.
   c. Expect to see the letters "AT+i" as you type. This is an echo by the DUT.
   d. Expect to see the response code: "I/OK" verifying the device is working.

3. AT+i Commands

Test	AT+i Command	parameters	description
Set RF channel	MTCH=x	x = [1-14]	X= channel 1 - 14
Set TX rate	MTTR=r	r = 1 for 1 mbps, r = 2 for 2mbps, r =5 for 5.5 mbps, r = 11 for 11 mbps, r = 6 for 6 mbps, r = 9 for 9 mbps, r = 12 for 12 mbps, r = 16 for 18 mbps, r = 24 for 24 mbps, r = 36 for 36 mbps, r = 12 for 48 mbps, r = 54 for 54 mbps r= 100 for MCS0 r= 101 for MCS1 r= 102 for MCS2 r= 103 for MCS3 r= 104 for MCS4 r= 105 for MCS5 r= 106 for MCS6 r= 107 for MCS7	
Set Power at Antenna	MTRP=p	p = power in dbm [10 - 15]	
TX Carrier Wave continuous mode	MTCW=e	e = 0 – disable this mode e = 1 – enable mode,	Transmits only the carrier signal, continuously. To end the test: MTCW = 0.

TX continuous mode	MTCM=e	e = 1 – enable mode, e = 0 – disable this mode	
SET Inter Packet Gap in us	TTO=uS	On uSEC (20-100)	
Packet length	IATO=l	Length (1000-2000)	
Reset ichip	DOWN		

4. Example 1: Test TX functions

1. Power up the iChip and the RF processor.
2. Set channel 1:
   AT+iMTCH=1
3. Set rate 1 Mbit/sec:
   AT+iMTTR=1
4. Set power 15dbm:
   AT+iMTRP=15
5. Set SET Inter Packet Gap 20us:
   AT+iTTO=20
6. Set Packet length 3000:
   AT+iiato=3000
7. Enable continuous transmit mode:
   AT+iMTCM=1
8. End test: Either Power-Off or send:
   AT+iDOWN

Antenna :
Manufacture :Connect One's
Model No.: iW-ANT2-BL:
Antenna gain: 2dBi

5. In Case of Failure

Please contact our technical support via email: support@connectone.com

Alternatively, call the office in Israel: **+972-9-766-0456**

FCC Statement

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 device 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 Radiation Exposure Statement

The modular can be installed or integrated in mobile or fix devices only. This modular cannot be installed in any portable device, for example, USB dongle like transmitters is forbidden.

This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: “Contains FCC ID: XM5-SMG2N1"

when the module is installed inside another device, the user manual of this device must contain below warning statements;

1. 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.

(2) This device must accept any interference received, including interference that may cause undesired operation.

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

The devices must be installed and used in strict accordance with the manufacturer's instructions as describe

IC STATEMENT

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.

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.

Le modulaire peut être intégrée ou installée dans les appareils mobiles ou fixes seulement. Cette modulaire ne peut être installé dans n'importe quel appareil portable, par exemple, dongle USB comme émetteurs est interdit.
Cette modulaire conforme aux RF IC limites d'exposition aux rayonnements définies pour un environnement non contrôlé. Cet émetteur ne doit pas être co-localisées ou opérant en conjonction avec une autre antenne ou émetteur. Cette modulaire doit être installé et utilisé à une distance minimum de 20 cm entre le radiateur et le corps de l'utilisateur.
Si le nombre IC n'est pas visible lorsque le module est installé à l'intérieur d'un autre appareil, puis l'extérieur de l'appareil dans lequel le module est installé, il doit également afficher une étiquette de renvoi vers le module fermé. Cette étiquette extérieure peut utiliser une formulation telle que la suivante: Contient IC: 8516A-SMG2N1
The modular can be installed or integrated in mobile or fix devices only. This modular cannot be installed in any portable device, for example, USB dongle like transmitters is forbidden.
This modular complies with IC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body.
If the IC number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: Contains IC:8516A-SMG2N1
when the module is installed inside another device, the user manual of this device must contain below warning statements:
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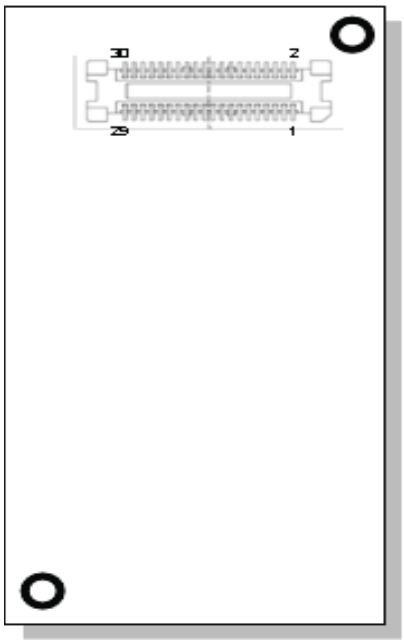
5. Layout and Pin Description

1) Layout



Connector: Molex 53748-0308

Mate with: Molex 52991-0308

2) Pin Functional Description

Pin	Signal	Type	Description
1	VDD	Power	
2	GND	Power	
3	RXD0	Input	UART 0 receive
4	TXD0	Output	UART 0 Transmit
5	nCTS0	Input	UART 0 clear to send
6	nRTS0	Output	UART 0 request to send
7	DATA_RDY	Output	Data ready. Signals incoming Internet data.
8	MSEL	Input	Mode select. Used for inducing rescue mode and forced local FW-update.
9	nRESET	Input	Reset Module
10	nRF_LED	Output	RF LED indicator

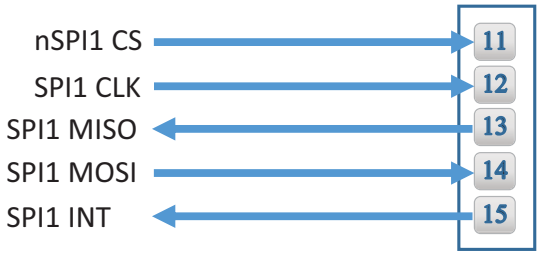
11	nSPI1_CS	Input	SPI 1 chip select for host
12	SPI1_CLK	Input	SPI 1 clock for host (Max 12MHz)
13	SPI1_MISO	Output	SPI 1 slave out for host master in
14	SPI1_MOSI	Input	SPI 1 slave in for host master out
15	SPI1_INT	Output	SPI 1 have data on his buffer
16	Readiness	Output	iChip Ready status line. See AT+I programmers manual.
17	DDP	Analog	USB device positive
18	DDM	Analog	USB device negative
19	VDD	Power	
20	GND	Power	
21	ETX_EN	Output	RMII Transmit Enable
22	RMII-REFCLK	Input	RMII Reference Clock
23	CRSDV	Input	RMII Carrier sense and Data Valid
24	ERXER	Input	RMII Receive Error
25	EMDIO	I/O	Management data I/O
26	EMDC	Output	Management data Clock
27	ETX1	Output	RMII transmit Data 1
28	ERX1	Input	RMII Receive Data 1
29	ERX0	Input	RMII Receive Data 0
30	ERX0	Input	RMII Receive Data 0

6. Interfaces

1) Serial Interface

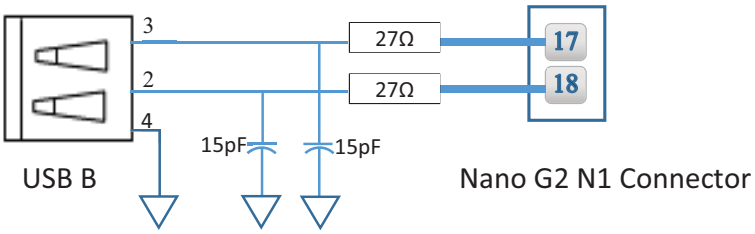
Nano G2 N1 Connector

2) SPI Interface

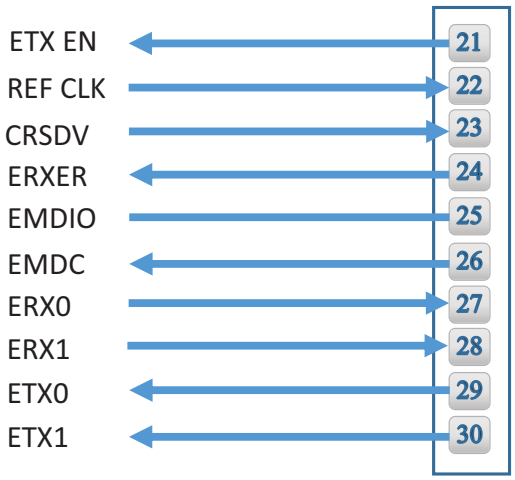


Nano G2 N1 Connector

3) USB 2.0 Device Interface



4) RMII Interface



Nano G2 N1 Connector

7. Electrical Specifications

1) Absolute Maximum Ratings

Parameter	Rating
Voltage at any pin with respect to ground	-0.3V to +3.6V
Operating Temperature	-30°C to +85°C -22°F to +185°F
Storage Temperature	-40°C to +85°C -40°F to +185°F

2) DC Operating Characteristics

Parameter	Min	Typical	Max	Units
VDD	3.0	3.3	3.6	Volts
High Level Input	2.0		VDD I/O +0.3	Volts
Low Level Input	-0.3		0.8	Volts
High Level Output @2mA	VDD I/O -0.4			Volts
High Level Output @0mA	VDD I/O-0.2			Volts
Low Level Output @2mA			0.4	Volts
Low Level Output @0mA			0.2	Volts
Input Leakage Current			10	µA
Power Supply Current from VDD (Tx. Mode)			350	mA
Power Supply Current from VDD (Rcv. Mode)			130	mA
Power Supply Current from VDD (Power Save Mode)			TBD	mA
Input Capacitance			5.3	pF