LITE-ON TECH. CORP.

PRODUCT SPECIFICATION

BT 4.0+LE Bluetooth Module

WB115C

CSR8311 A08

Version 1.0

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Change History

Revision	Date	Author	Change List
Version 1.0	2013 / 07 / 30	Kaysa Lee	Preliminary

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1 Product Overview

1.1 DESCRIPTION

WB115C/WB115C-I2S is a Bluetooth module which using CSR Chipset CSR8311-A08 (industrial version)

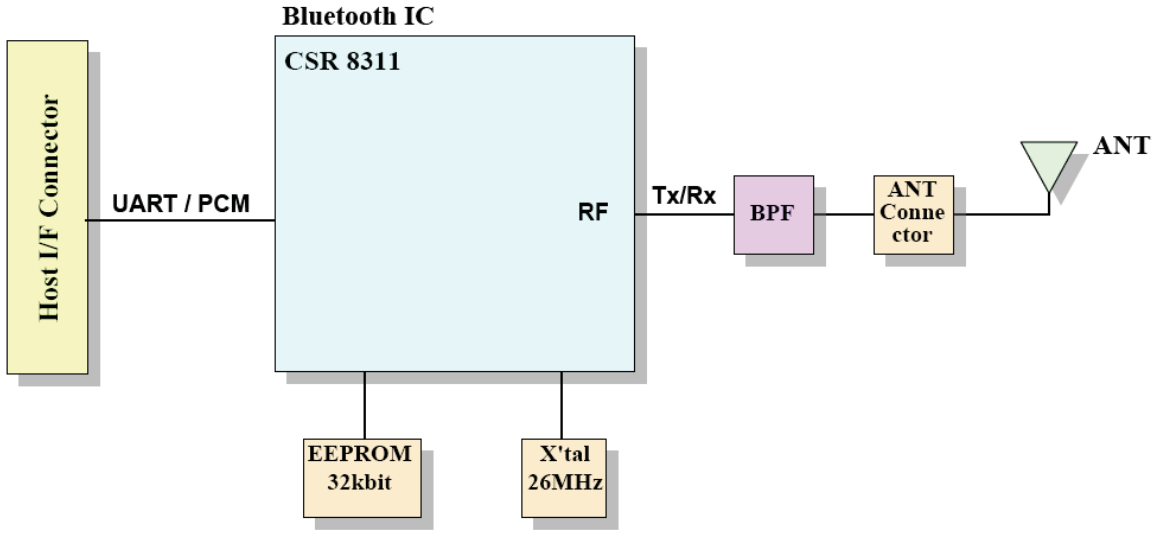
1.2 FEATURES

- Fully qualified Bluetooth ® v4.0 system
- Full-speed Bluetooth operation with full piconet and scatternet support
- Class II (Max +4 dBm, 2.5mW)
- High-sensitivity Bluetooth receiver
- Wideband speech
- SBC encoding
- Full-speed USB 2.0 interface
- High-speed UART port (up to 4Mbps)
- RoHS compliance
- Low Halogen compliance

1.3 GENERAL SPECIFICATIONS

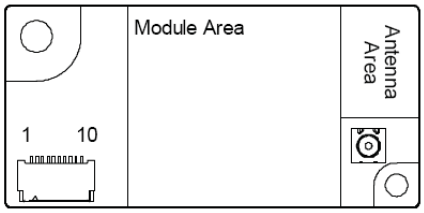
Standard	Bluetooth V4.0 LE
Bus Interface	Data: HS-UART / USB Voice: PCM/I2S(WB115C-I2S)
Form Factor	32.25mm x 18mm x 2.75mm
Data Rate	1 Mbps, 2Mbps and Up to 3Mbps
Frequency Range	2.402 ~ 2.480 GHz
Transmit Output Power	-3 ~ +3 dBm Class 2 Device
Receive Sensitivity	< 0.1% BER at -70 dBm
Operating Voltage	3.3V ±5% I/O supply voltage
OS supported	Windows/Linux
Antenna Type	Printed Antenna

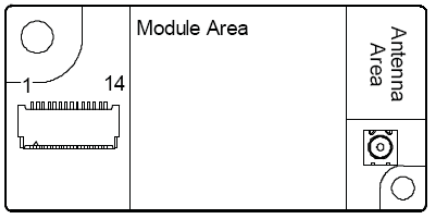
1.4 BLOCK DIAGRAM



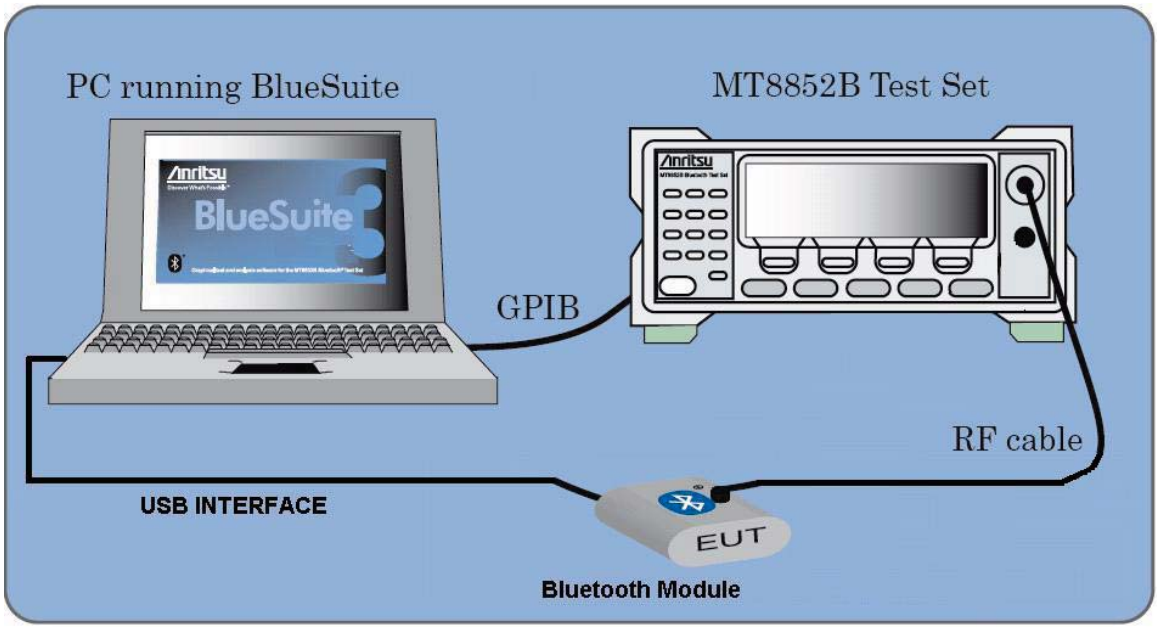
1.5 PIN CONFIGURATION

Pin	WB115C			WB115C-I2S		
	Name	Type	Description	Name	Type	Description
1	GND	-	Ground	GND	-	Ground
2	RESET_N	I	Reset	RESET_N	I	Reset
3	3.3V	PWR	Power	3.3V	PWR	Power
4	UART_CTS	I	UART CTS	UART_CTS	I	UART CTS
5	UART_RTS	O	UART RTS	UART_RTS	O	UART RTS
6	UART_RX	I	UART Rx	UART_RX	I	UART Rx
7	UART_TX	O	UART Tx	UART_TX	O	UART Tx
8	GPIO[0]	I/O	GPIO	GPIO[0]	I/O	GPIO
9	GND	-	Ground	GND	-	Ground
10	GND	-	Ground	PCM2_IN	I	Data In
11				PCM2_SYNC	O	Sync
12				PCM2_CLK	O	Clock
13				PCM2_OUT	O	Data Out
14				GND	-	Ground





2 RF Measurement Environment System



3 EEPROM (PSKEY)

System Area

Index	Name	Description	Value	
0x01EA	UART_BITRATE	Baud Rate	delete or "0"	Auto Bit Rate
0x01F9	HOST_INTERFACE	Host I/F Configuration	0001	UART link running BCSP
0x0246	CLOCK_REQUEST_ENABLE		delete	
0x212C	PATCH50		0000 C47D 5714 0018 FF2B FF0E D800 7918 009E 0018 FF2B FF0E C500 8018 00E2 7080	
0x212D	PATCH51		0002 5B79 0014 E700 9525 011B 0626 089A 0AF4 0218 FF2B FF0E 5B00 4318 009E 0014 011B 0826 0218 FF2B FF0E 5C00 8218 00E2 A63A	
0x212E	PATCH52		0002 D0A7 0316 0318 FF2B FF0E 2300 0618 009E E199 14F4 E119 0812 8000 00C0 10F0 061B 0212 0100 FFC0 0780 0AF0 0316 0010 0318 FF2B FF0E 3800 1318 009E F70F 0218 FF2B FF0E D100 AC18 00E2 CF53	
0x212F	PATCH53		0003 C916 0114 0027 0517 2B00 A484 06F0 2B00 A914 0527 0114 02E0 0014 0127 0014 0227 0323 E315 0318 FF2B FF0E C900 1D18 00E2 CB5F	
0x2130	PATCH54		0002 CA7A 0018 FF2B FF0E 8400 CB18 009E EA00 5F11 0100 0080 0524 0100 00B0 EA00 5F21 0218 FF2B FF0E CA00 7D18 00E2 2513	
0x2200	PATCH112		F100 CF15 01B4 F100 CF25 00E2 9DD1	

RF Area

Index	Name	Description	Value	
0x0017	LC_MAX_TX_POWER	Maximum Tx power	0000	0dBm
0x216D	BT_MIXER_CTRIM_CHAN0_MAX		0007	
0x2175	BT_TX_MIXER_CTRIM_OFFSET		FFFF FFFF EEEE DDDD DDDD	
0x241A	BT_POWER_TABLE_V0	Power Table (0dBm~-20dBm)	2B17 0050 3448 0050 EC00 2D17 0040 3648 0040 F000 2C17 0030 3548 0030 F400 2C17 0020 3548 0020 F800 2D17 0010 3548 0010 FC00 3017 0000 3749 0000 0000	
0x03DA	TEMPERATURE_VS_DELTA_INTERNAL_PA		FFEC 0002 0019 0000 004B 0005	
0x21E1	TEMPERATURE_VS_DELTA_INTERNAL_PA_MR		FFEC 0001 0019 0000 004B 0005	

4 Interface Specifications

4.1 UART Interface

Parameter		Possible Values
Baud rate	Minimum	1200 baud (≤2%Error)
		9600 baud (≤1%Error)
	Maximum	4Mbaud (≤1%Error)
Flow control		RTS/CTS or None
Parity		None, Odd or Even
Number of stop bits		1 or 2
Bits per byte		8

4.2 Digital Audio Interface

The audio PCM interface on the WB115C supports:

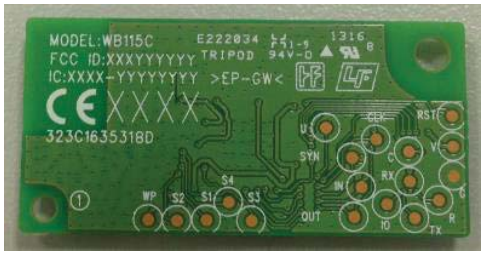
- Continuous transmission and reception of PCM encoded audio data over Bluetooth.
- Processor overhead reduction through hardware support for continual transmission and reception of PCM data.
- A bidirectional digital audio interface that routes directly into the baseband layer of the firmware.
- PCM interface master, generating PCM_SYNC and PCM_CLK.
- PCM interface slave, accepting externally generated PCM_SYNC and PCM_CLK.
- 13-bit or 16-bit linear, 8-bit μ-law or A-law companded sample formats.
- Receives and transmits on any selection of 3 of the first 4 slots following PCM_SYNC.

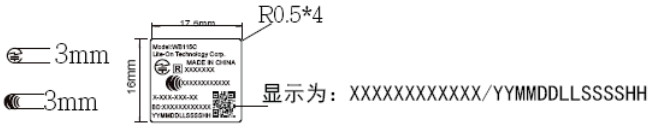
5 Appearance, Marking, Packaging

5.1 MARKING

Top

Bottom





字體高度1.2MM 1:1

備注：

BD ID二维條碼顯使用QR cdoe，

顯示內容為XXXXXXXXXXXX/YYMMDDLLSSSSHH（業務提供）

圖中所有X由業務提供

S/N编码原则如下：

YYMMDDLLSSSSHH

YY:Year(0C-2012;0D-2013.....)

MM:Month(01-1月，02-2月.....10-0A,11-0B,12-0C)

DD:Date(01~09为01~09;10~15为0A~0F;16~25为10~19；26~31为1A~1F)

LL:Line Number（01 for CZ)

SSSS:SN(0001-FFFF为十六进制)

HH：Hardware Version

00:EVT1
01:EVT2
02:DVT
03:PVT
04:MP

FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT

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.

CAUTION:

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

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.

RF exposure warning

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment must be installed and operated in accordance with provided instructions and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: PPQ-WB115C " and "Contains IC: 4491A-WB115C"

Information for the OEMs and Integrators

The following statement must be included with all versions of this document supplied to an OEM or integrator, but should not be distributed to the end user.

1) This device is intended for OEM integrators only.

Please see the full Grant of Equipment document for other restrictions.

Radio Frequency (RF) Exposure Information

The radiated output power of the Wireless Device is below the Industry Canada (IC) radio frequency exposure limits. The Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized.

This device has also been evaluated and shown compliant with the IC RF Exposure limits under portable exposure conditions. (antennas are less than 20 cm of a person's body).

This device has been certified for use in Canada. Status of the listing in the Industry Canada's REL (Radio Equipment List) can be found at the following web address: http://www.ic.gc.ca/app/sitt/reltel/srch/nwRdSrch.do?lang=eng

Additional Canadian information on RF exposure also can be found at the following web address: http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08792.html

Canada, avis d'Industry Canada (IC)

Cet appareil numérique de classe B est conforme aux normes canadiennes ICES-003 et RSS-210.

Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférence et (2) cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.

Informations concernant l'exposition aux fréquences radio (RF)

La puissance de sortie émise par l'appareil de sans fil Dell est inférieure à la limite d'exposition aux fréquences radio d'Industry Canada (IC). Utilisez l'appareil de sans fil Dell de façon à minimiser les contacts humains lors du fonctionnement normal.

Ce périphérique a également été évalué et démontré conforme aux limites d'exposition aux RF d'IC dans des conditions d'exposition à des appareils portables. (les antennes sont moins de 20 cm du corps d'une personne).

Ce périphérique est homologué pour l'utilisation au Canada. Pour consulter l'entrée correspondant à l'appareil dans la liste d'équipement radio (REL - Radio Equipment List) d'Industry Canada rendez-vous sur:

http://www.ic.gc.ca/app/sitt/reltel/srch/nwRdSrch.do?lang=eng

Pour des informations supplémentaires concernant l'exposition aux RF au Canada rendez-vous sur : http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf08792.html