

WML- 30## User Manual (system model: MI)

The purpose of this manual is to explain correct way how to integrate module WML- 30## to the end product. It includes procedures that shall assist you to avoid unforeseen problems.

This manual presents information that shows how module and OEM product, where module integrated, complies with regulations in certain regions. Any modifications, not expressly approved by the manufacturer could void the authority to operate in these regions.

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1. General

This Bluetooth radio module has to be installed and used in accordance with the technical description/installation instructions provided by the manufacturer.

This Bluetooth radio module is intended to be placed on the market in all States, where the Bluetooth™ technology and the used frequency band is released.

For detail information concerning type approval of this module (e.g. where this module is already pre-approved) please contact the authorised local distributor or the manufacturer.

The system may only be implemented in the configuration that was authorized.

Note that any changes or modifications to this equipment not expressly approved by the manufacturer could void the user's authority to operate this equipment.

2. Module design application.

2.1 Model Number

Model number	Contents	
WML-C30##	1 st #	N : without Antenna , A : with Antenna
	2 nd #	B : BCSP , H : UART , U : USB

2.2 Hardware: Version 1

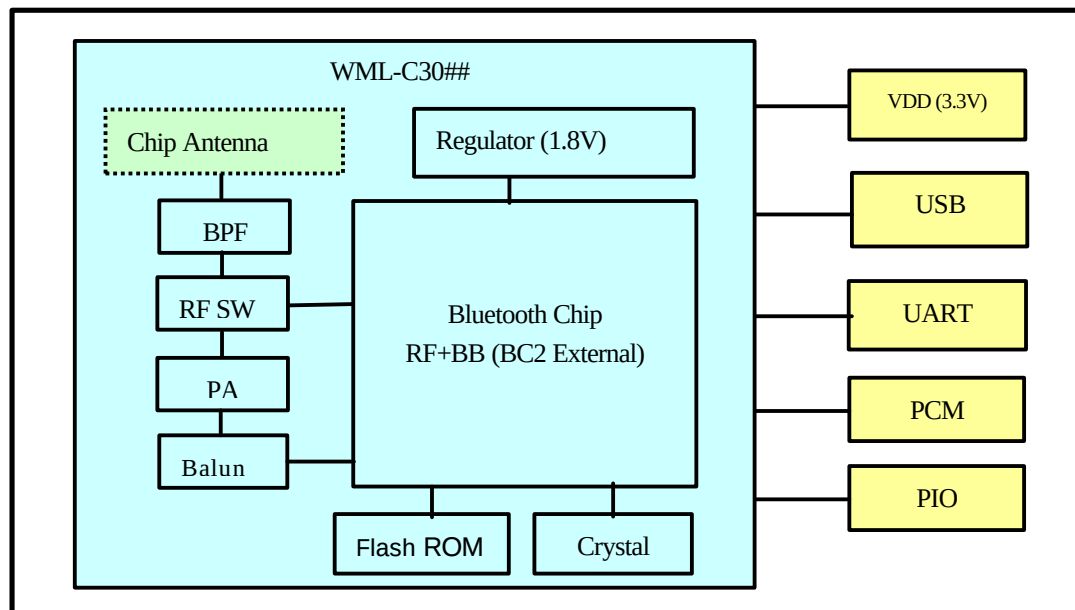
This document describes the reference design for application as follows.

2.3 FEATURES

- 1) Wireless communication module conforming to Bluetooth Ver.1.2.
- 2) Small and thin size achieved through use of high density mounting technology.
WML-C30N# : 13.2 x 18.8 x 2.05mm
WML-C30A# : 13.2 x 24.8 x 2.05mm
- 3) High sensitivity: -80dBm
- 4) UART and PCMIF interfaces enable wide range of applications.
- 5) Conforms to FCC, CE and other countries' EMI standards.
- 6) Supports Bluetooth Class1.
- 7) Built-in Link controller and Link Manager Protocol.
- 8) HCI interface over UART and USB.

2.4 APPLICATIONS

Notebook PCs, mobile phones, digital cameras, PC peripherals, PDA, Car



WML-C30## has Bluetooth chip, Flash ROM and Crystal inside.

UART/USB HCI interface and PCM interface are used for customer's application.

Following figure shows Software Stack for WML-C30## and customer's application as example.

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2.5 Terminal functions

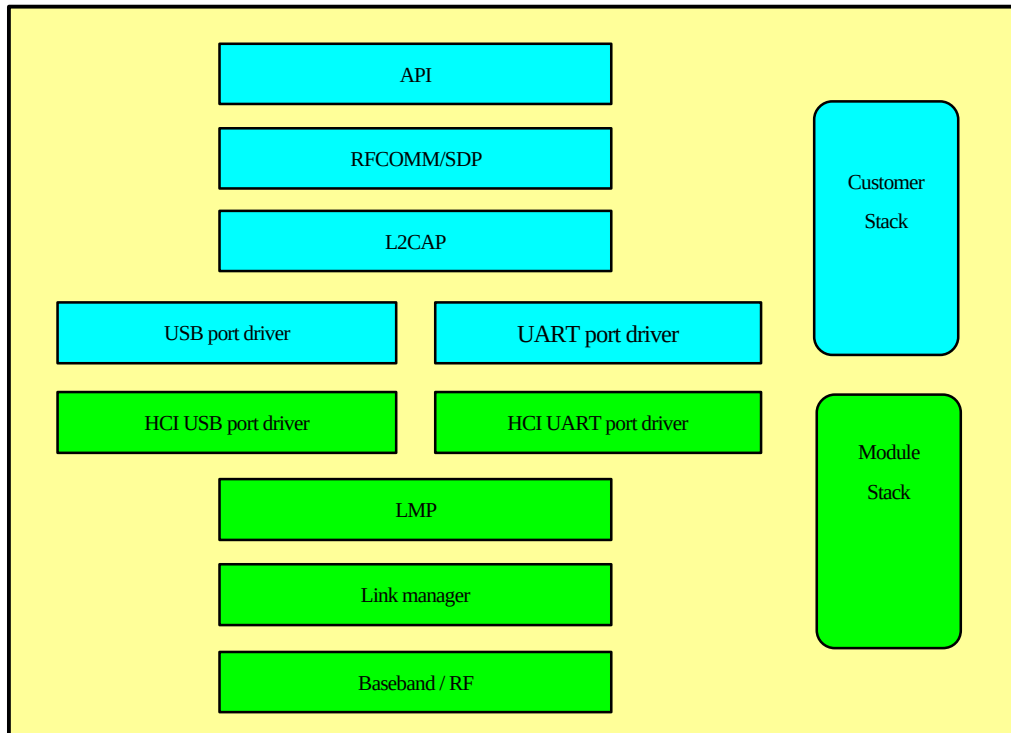
Symbol	I/O	Description	Terminal Numbers	
			USB	UART/ BCSP
ANT	I/O	RF input/output	26	26
GND		Ground	1	1
GND		Ground	12	12
GND		Ground	25	25
GND		Ground	27	27
GND		Ground	28	28
GND		Ground	29	29
PCM_CLK	I/O	Synchronous PCM data clock	7	7
PCM_IN	I	Synchronous PCM data input	9	9
PCM_SYNC	I/O	Synchronous data strobe	8	8
PCM_OUT	O	Synchronous PCM data out	10	10
PIO [2] / USB_PULL_UP	I/O	Programmable I/O line / USB pull-up	19	19
PIO [3] / USB_RESUME	I/O	Programmable I/O line / USB resume	20	20
PIO [4]	I/O	Programmable I/O line	22	22
PIO [5]	I/O	Programmable I/O line	21	21
PIO [6]	I/O	Programmable I/O line	3	3
PIO [7]	I/O	Programmable I/O line	4	4
RESET	I	Reset if high	5	5
SPI_MISO	O	Synchronous Serial Interface data output	24(N.C.*)	24(N.C.*)
SPI_CSB	I	Chip select for Synchronous Serial Interface	23(N.C.*)	23(N.C.*)
SPI_CLK	I	Synchronous Serial Interface Clock	6(N.C.*)	6(N.C.*)
SPI_MOSI	I	Synchronous Serial Interface data input	2(N.C.*)	2(N.C.*)
UART_CTS	I	Asynchronous serial data CTS	16(N.C.*)	16
UART_RTS	O	Asynchronous serial data RTS	15(N.C.*)	15
UART_TX	O	Asynchronous serial data output	14(N.C.*)	14
UART_RX	I	Asynchronous serial data input	13(N.C.*)	13
USB_D+	I/O	USB Data +	17	17(N.C.*)
USB_D-	I/O	USB Data -	18	18(N.C.*)
VDD		Supply voltage 3.3V	11	11

* N.C. = Open

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2.6 Software Stack for module and customer side example



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3. Regulatory and Safety Compliance . European Union.

3.1 Declaration about performed tests.

The Mitsumi module WML-C30## is wireless data transmission system. This 'Bluetooth' module can be integrated into various end products.

MITSUMI declares that The Mitsumi module WML-C30## complys with the following directive and standards:

Directive **1999/5/EG** (R&TTE Directive):

EN 300328-2 V1.2.1 (11-2001), Radio Equipment and Systems (RES); Wideband transmission systems; Technical characteristics and test conditions for data transmission equipment operating in the 2,4 GHz ISM band and using spread spectrum modulation techniques. Part 2: Harmonized EN covering essential requirements under article 3(2) of the R&TTE directive.

EN 301489-01 V1.3.1 (09/2001), Electromagnetic Compatibility and radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements

EN 301489-17 V1.1.1 (09-2000), Electromagnetic Compatibility and radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 17: Specific conditions for wideband data Hiperlan equipment

We hereby declare that the human exposure of the Mitsumi module WML-C30## is below the SAR limits specified in the EU recommendation 1999/519/EC (the applicable limits are specified in table 1 with 2W/kg).

SAR testing must be performed to the end user devise, where WML-30## module integrated. More detail information present on chapter 4.

The technical documentation as required by the Conformity Assessment procedure is kept at the following address :

2-11-2,TSURUMAKI,TAMA-SHI,TOKYO,206-8567 JAPAN.

MITSUMI ELECTRIC CO.,LTD.

ACCESS DEVICE ENGINEERING DEPT.

INTERFACE EQUIPMENT BUSINESS DIVISION

COMPONENT DEVICES BUSINESS HQ

TEL: +81-42-310-5829

FAX: +81-42-310-5582

3.2 Labelling

CE conformity marking for product.



OEM product / application, where this radio module is integrated/ installed in , has to be labelled in accordance to R&TTE directive, Article 12. An auxiliary label is included in the packaging to the radio module, which can be used for that purpose and has to be permanently affixed to the OEM product/ application.

Regulatory information on the OEM devise should contain following labelling :

Approved in accordance to R&TTE directive transmitter module marked by “ CE product label”, manufactured by MITSUMI incorporated to OEM product.

More detail information present below in chapter 5.

4. FCC Regulatory Information

The Federal Communication Commission Radio Frequency Interference Statement includes the following paragraph:

This equipment has been tested and found to comply with the limits 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 radiates radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication.

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.

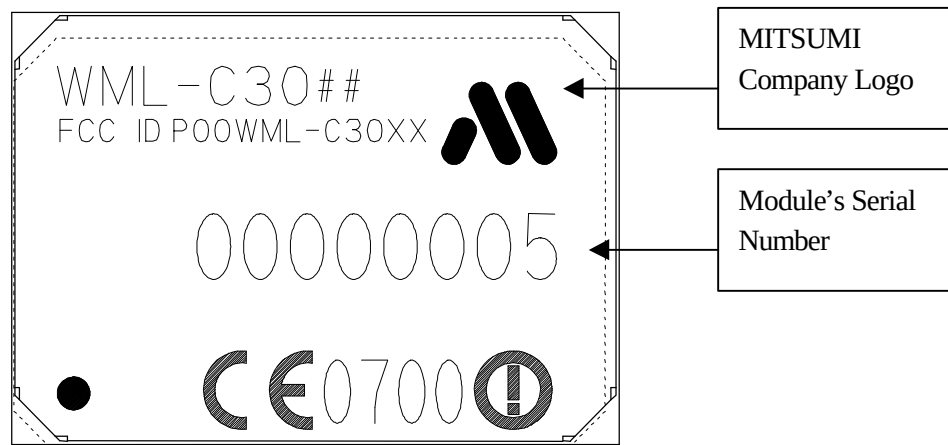
Not Authorized modification could void authority to use this equipment.

4.1 Labelling.

MITSUMI module WML 30## labelled as below.

]

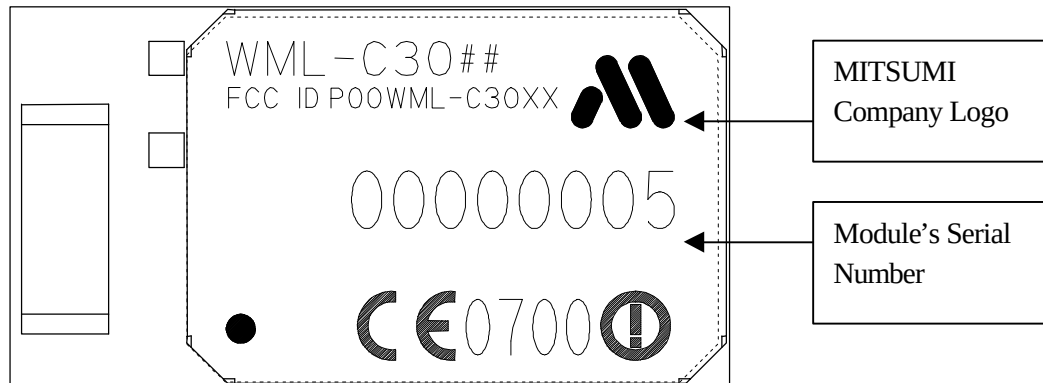
Module without antenna



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Module with antenna



FCC Regulatory information. OEM device should contain labelling that:

Approved in accordance to FCC rules transmitter module marked by FCC-ID POOWML-C30XX label, manufactured by MITSUMI incorporated to OEM product. When its not possible, in user manual should be included such information.

For example :

"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." This device contains FCC-ID POOWML-C30XX

The modules can be integrated in the following ways:

- a) if the minimum distance 2,5 cm between the antenna and the body of the user or nearby persons is ensured, so a statement in the users manual for end product is not necessary, and product where this module incorporated can be used as portable application.
- b) In case that the distance 2,5 cm between the antenna and the body of the user or nearby persons cannot be ensured, the users manual of the endproduct in which the module will be integrated has to inform the user about a minimum distance of 20 cm between the equipment and the body if the equipment is considered for mobile application
- c) In case that the distance 2,5 cm between the antenna and the body of the user or nearby persons cannot be ensured, and equipment, where this module incorporated intend to use as portable device, evaluation against the applicable SAR limits is required.

RF-exposure statement. Label example:

RF-exposure statement.

This mobile modular transmitter must have a separation distance of at least 20 cm between the antenna and the body of the user or nearby persons. With a separation distance of 20cm or more, the MPE limits are well above the potential this module is capable to produce.

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All this labelling will be placed on the final product, clearly visible to all persons exposed to the transmitter. The specific location on the final product will be consistent with each same final product, but will vary in location across various final products, and in any case will always be clearly visible to all persons exposed to the transmitter. The physical size of the label and font size of the lettering will be dependent on the size of the final product, but in any case will always be clearly visible to all persons exposed to the transmitter

4.2 Antenna implementation notes.

Any antenna of a similar type with listed in antenna declaration may be used without retesting. Use of an antenna of a different type than the tested antenna or one that exceeds the gain of a tested antenna would require retesting and new approval by either a Telecommunication Certification Body or the Commission. Manufacturers OEM would be expected to supply a list of acceptable antenna types with applications for equipment authorization.

External antenna that should be less than +2.14dBi maximum antenna gain can be used.

Model Name	Manufacturer	Max.Gain [dBi]
HAN8030B2R4GT	TDK	2.14
DA095S-2450M	NEC TOKIN	2.14
KIA1003	KYOCERA	2.14
AHD1403-244ST01	Mitsubishi Materials	2.14
AHD1206-244ST01	Mitsubishi Materials	2.14
YCE-5223	Yokowo	-1

Radio module WML-30## can be incorporated into many different devices. The modules generally consist of a completely self-contained radiofrequency transmitter missing only an input and a power source to make it functional. Once the modules are authorized by the Commission under our certification procedure, they may be incorporated into a number of host devices such as, PCs or PDAs, which have been separately authorized. The completed product generally is not subject to requirements for further certification by the FCC.

More detail information present below in chapter 5.

5. Other regulatory notes for OEM.

Modular transmitters save manufacturers the time and any related expenses that would be incurred if a new equipment authorization were needed for the same transmitter when it is installed in a new device. This means that it can be integrated into end products without further testing or approval listing. The manufacturer must state the MITSUMI part number and product reference in his literature in order to meet the requirements of the Bluetooth and regulatory. This should be clearly indicated in the OEM manuals.

The purchaser / integrator (developer) must satisfy all relevant FCC, SAR, EMC and Radio regulations which apply to their finished product. We believe such parties have the technical competence to ensure that the systems they deploy continue to comply with all those rules.

Further information and guidance on this subject and other equipment authorization matters can be found under

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- Regarding FCC regulatory information on the FCC's website at:
www.fcc.gov/oet/info/database/letters/.
- Regarding R&TTE directive
<http://europa.eu.int/comm/enterprise/rtte/dir99-5.htm>

6. A separate approval.

A separate approval of the device into which the module is incorporated is only required when it cannot be insured that the conditions on the module grant will be met. The purchaser must satisfy all relevant FCC, EMC and Radio regulations R&TTE directive which apply to their finished product.