



CMA Testing and Certification Laboratories

廠商會檢定中心 TEST REPORT

Report No. : AR0066008(9) Date : 22 Nov 2013

Application No. : LR041741(6)

Applicant : C-Max Asia Limited
Room 117, 1/F, Liven House,
61-63 King Yip Street, Kwun Tong, Hong Kong

Sample Description : One(1) item of submitted sample stated to be Bluetooth 4.0 Single Mode HCI Module of Model No. CMM-9301-V3.1S
Sample registration No. : RR047855-003
Radio Frequency : 2402MHz – 2480 MHz Transceiver
Rating : 2 x 1.5V AA size batteries
No. of submitted sample : Four (4) piece (s)

Date Received : 14 Nov 2013

Test Period : 14 Nov 2013 to 22 Nov 2013.

Test Requested : FCC Part 15 Certificate (15.249)

Test Method : 47 CFR Part 15 (10-1-12 Edition), ANSI C63. 4 – 2009

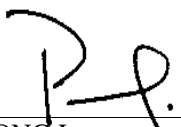
Test Engineer : Mr. LEUNG Shu-kan, Ken

Test Result : See attached sheet(s) from page 2 to 36.

Conclusion : The submitted sample was found to comply with requirement of FCC Part 15 Subpart B and C.

For and on behalf of
CMA Industrial Development Foundation Limited

Authorized Signature : _____


Mr. WONG Lap-pong, Andrew
Assistant Manager
Electrical Division

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FCC ID: 2ABBXCM9301V312013



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1 General Information

1.1 General Description

The equipment under test (EUT) is a transceiver module for 2.4GHz wireless device. It is highly optimized for Bluetooth 4.0 Single Mode (Bluetooth Low Energy) link application requiring ultra low power consumption. It offers a plug and play solution for any BLE application up to the link layer, without any additional hardware nor RF layout.

The EUT is power by 3V dc. The EUT contain shielding, internal grounding and built in with a folded-dipole PCB antenna. The EUT can mount on other device through surface mount or plug in through 9-pin 1.27 mm connector which can be controlled by any external microcontroller featuring BLE profile and applications, through the standard BT HCI interface.

The brief circuit description is listed as follows:

- X1 and its associated circuit act as oscillator
- Q1 and its associated circuit act as on / off switch
- L1, C9, C10 and its associated circuit act as antenna matching
- U1 and its associated circuit act as controller



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1.2 Location of the test site

FCC Registered Test Site Number: 552221

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2009. A Semi-Anechoic Chamber Testing Site is set up for investigation and located at:

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
Hong Kong.

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2009. A shielded room is located at :

Ground Floor, Yan Hing Centre,
9 – 13 Wong Chuk Yeung Street,
Fo Tan, Shatin,
New Territories,
Hong Kong.



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1.3 List of measuring equipment

Equipment	Manufacturer	Model No.	Serial No.	Calibration Due Date	Calibration Period
EMI Test Receiver	R&S	ESCI	100152	08 Jul 2014	1 Year
Spectrum Analyzer	R&S	FSV-40	100964	22 Jan 2014	1 Year
Broadband Antenna	Schaffner	CBL6112B	2692	16 Jan 2014	1 Year
Loop Antenna	EMCO	6502	00056620	15 Sep 2014	1 Year
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-531	09 Oct 2014	1 Year
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170442	16 May 2015	2 Years
Broadband Pre-Amplifier	Schwarzbeck	BBV 9718	9718-119	09 Oct 2014	1 Year
Broadband Pre-Amplifier	Schwarzbeck	BBV 9719	9719-010	16 May 2015	2 Years
Coaxial Cable	Schaffner	RG 213/U	N/A	28 May 2014	1 Year
Coaxial Cable	Suhner	RG 214/U	N/A	28 May 2014	1 Year
Coaxial Cable	Suhner	Sucoflex_102	N/A	09 Oct 2014	1 Year



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1.4 Measurement Uncertainty

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor $k=2$, providing a level of confidence of approximately 95%.

Radiated emissions

Frequency	Uncertainty (U_{lab})
30MHz ~ 200MHz (Horizontal)	4.83dB
30MHz ~ 200MHz (Vertical)	4.84dB
200MHz ~1000MHz (Horizontal)	4.66dB
200MHz ~1000MHz (Vertical)	4.65dB

Conducted emissions

Frequency	Uncertainty (U_{lab})
150kHz~30MHz	3.02dB



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2 Description of the radiated emission test

2.1 Test Procedure

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2009.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

For below 30MHz, a loop antenna with its vertical plane is placed 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1 m above the ground.

For 30MHz to 1GHz, broadband antenna with its vertical and horizontal plane is placed 3m from the EUT and rotated about its vertical and horizontal axis for maximum response at each azimuth about the EUT. And the reference point of antenna shall be 1 m above the ground.

For above 1GHz, horn antenna with its vertical and horizontal plane is placed 3m from the EUT and rotated about its vertical and horizontal axis for maximum response at each azimuth about the EUT. Preamplifier and High Pass filter was used for measurements. The reference point of antenna shall be 1 m above the ground.

The device was rotated through three orthogonal to determine which attitude and configuration produce the highest emission during measurement for Radiated Emission measurement.



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2.2 Test Result

Subpart C

Peak Detector data were measured unless otherwise stated.

“#” means emissions appear within the restricted bands shall follow the requirement of section 15.205.

The frequencies from fundamental up to that tenth harmonics were investigated, and emissions more 20dB below limit were not reported. Thus, those highest emissions were presented in next page (section 2.3).

It was found that the EUT meet the FCC requirement.

Subpart B

The emissions meeting the requirement of section 15.109 are based on measurements employing the CISPR quasi-peak detector below 1000MHz and average detector for frequencies above 1000MHz.

The frequencies from 30MHz to 1000MHz were investigated and emissions more 20 dB below limited were not reported. Thus, those higher emissions were presented on next page (section 2.3).

It was found that the EUT meet the FCC requirement.



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2.3 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	26	° C
Relative humidity:	57	%

For below 1GHz

Detector: Quasi-peak, RBW: 120KHz, VBW: 300KHz

For above 1GHz

Detector: Peak, RBW: 1MHz, VBW: 3MHz

Testing frequency range: 9kHz to 25GHz

Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
242.762	H	12.2	11.9	24.1	46.0	- 21.9
283.222	H	9.8	15.0	24.8	46.0	- 21.2
299.406	H	10.1	15.0	25.1	46.0	- 20.9
315.589	H	9.6	15.9	25.5	46.0	- 20.5
356.049	H	11.5	15.9	27.4	46.0	- 18.6
372.235	H	12.2	15.9	28.1	46.0	- 17.9
396.511	H	13.1	15.9	29.0	46.0	- 17.0
4800.060	H	48.5	2.4	50.9	74.0	- 23.1
4875.988	H	47.8	2.4	50.2	74.0	- 23.8
4956.041	H	46.9	2.4	49.3	74.0	- 24.7

Remark: Other emissions more than 20dB below the limit are not reported.



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2.3 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	26	° C
Relative humidity:	57	%

Detector: Peak RBW: 1MHz VBW: 3MHz

Testing frequency range: 9kHz to 25GHz

Channel	Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBμV)	Transducer Factor (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
00	2401.785	H	97.0	- 6.3	90.7	114.0	- 23.3
	#4803.570	H	57.3	2.4	59.7	74.0	- 14.3
	7203.716	V	50.1	10.8	60.9	74.0	- 13.1
	9607.218	H	46.6	13.6	60.2	74.0	- 13.8
39	2440.082	V	97.1	- 6.3	90.8	114.0	- 23.2
	#4879.624	H	56.7	2.4	59.1	74.0	- 14.9
	7317.959	H	46.7	10.8	57.5	74.0	- 16.5
	9759.240	H	43.9	13.6	57.5	74.0	- 16.5
78	2480.101	H	97.8	- 6.3	91.5	114.0	- 22.5
	#4956.682	H	54.2	2.4	56.6	74.0	- 17.4
	#7438.306	H	45.4	10.8	56.2	74.0	- 17.8
	9919.348	H	41.0	13.6	54.6	74.0	- 19.4

Remark: Other emissions more than 20dB below the limit are not reported.



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2.3 Radiated Emission Measurement Data

Radiated emission

pursuant to

the requirement of FCC Part 15 subpart C

Environmental conditions:

Parameter	Recorded value	
Ambient temperature:	26	° C
Relative humidity:	57	%

Detector: Average RBW: 1MHz VBW: 10Hz

Testing frequency range: 9kHz to 25GHz

Channel	Frequency (MHz)	Polarity (H/V)	Reading at 3m (dBµV)	Transducer Factor (dB/m)	Field Strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
00	2401.908	H	40.5	- 6.3	34.2	94.0	- 59.8
	#4803.860	H	29.7	2.4	32.1	54.0	- 21.9
	7205.554	V	24.2	10.8	35.0	54.0	- 19.0
	9607.392	H	22.7	13.6	36.3	54.0	- 17.7
39	2439.901	V	40.7	- 6.3	34.4	94.0	- 59.6
	#4879.884	H	29.4	2.4	31.8	54.0	- 22.2
	7319.573	H	23.5	10.8	34.3	54.0	- 19.7
	9759.428	H	22.6	13.6	36.2	54.0	- 17.8
78	2479.927	H	41.2	- 6.3	34.9	94.0	- 59.1
	#4959.899	H	29.2	2.4	31.6	54.0	- 22.4
	#7439.551	H	22.7	10.8	33.5	54.0	- 20.5
	9919.356	H	21.4	13.6	35.0	54.0	- 19.0

Remark: Other emissions more than 20dB below the limit are not reported.



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3 Description of the Line-conducted Test

3.1 Test Procedure

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2009. The EUT was setup as described in the procedures, and both lines were measured.

3.2 Test Result

No measurement is required as the EUT is a battery-operated product.

3.3 Graph and Table of Conducted Emission Measurement Data

Not Applicable



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4 Photograph

4.1 Photographs of the Test Setup for Radiated Emission and Conducted Emission

For electronic filing, the photos are saved with filename TSup1.jpg to TSup8.jpg.

4.2 Photographs of the External and Internal Configurations of the EUT

For electronic filing, the photos are saved with filename ExPho1.jpg to ExPho4.jpg and InPho1.jpg to InPho2.jpg.



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5 Supplementary document

The following document were submitted by applicant, and for electronic filing, the document are saved with the following filenames:

Document	Filename
ID Label/Location	LabelSmp.jpg
Block Diagram	BlkDia.pdf
Schematic Diagram	Schem.pdf
Users Manual	UserMan.pdf
Operational Description	OpDes.pdf

5.1 Bandwidth

The plot saved in TestRpt2.pdf shows the fundamental emission is confined in the specified band. It shows the 20dB bandwidth met the 15.215 requirement for frequency band 2400 to 2483.5 MHz.

The plot saved in TestRpt3.pdf shows the band edge is fulfil 15.209 requirement.

5.2 Duty cycle

Not Applicable

5.3 Transmission time

Not Applicable

5.4 Power Spectral Density

Not Applicable

5.5 Average on time

Not Applicable



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6 Appendices

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A2	Photos of External Configurations	2	pages
A3	Photos of Internal Configurations	1	page
A4	ID Label/Location	1	page
A5	Band Edge	2	pages
A6	20dB Bandwidth Plot	2	pages
A7	User Manual	9	pages



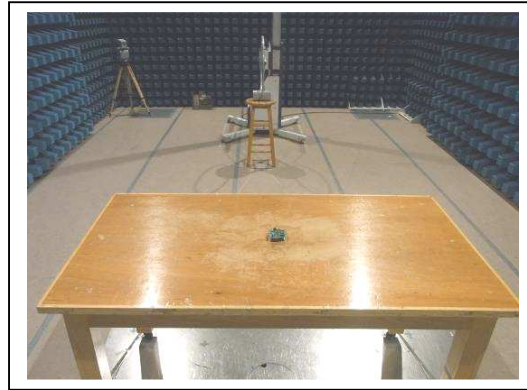
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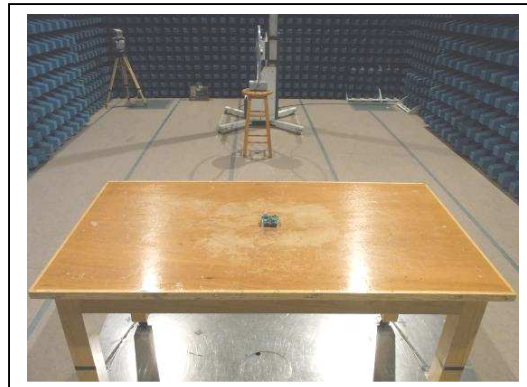
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A1. Photos of the set-up of Radiated Emissions



(Front view, 9KHz – 30MHz)



(Back view, 9KHz – 30MHz)

Tested by:

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew



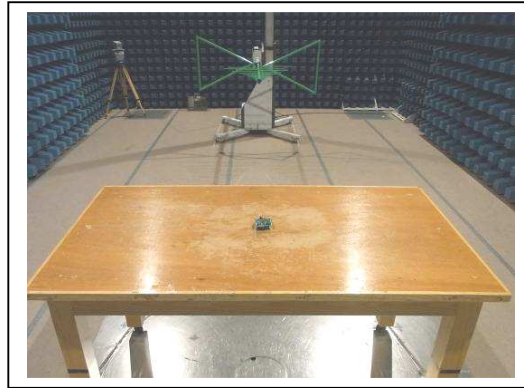
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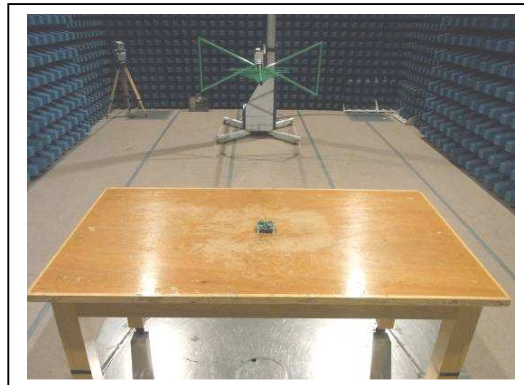
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Date : 22 Nov 2013

A1. Photos of the set-up of Radiated Emissions



(Front view, 30MHz – 1GHz)



(Back view, 30MHz – 1GHz)

Tested by:

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew



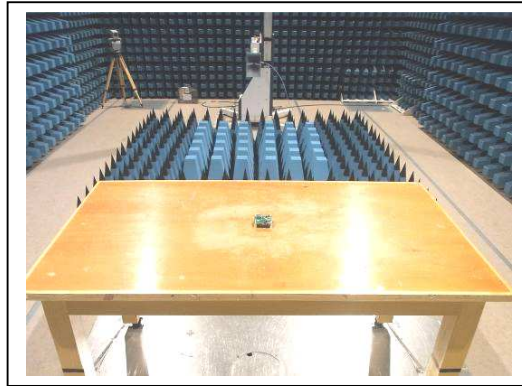
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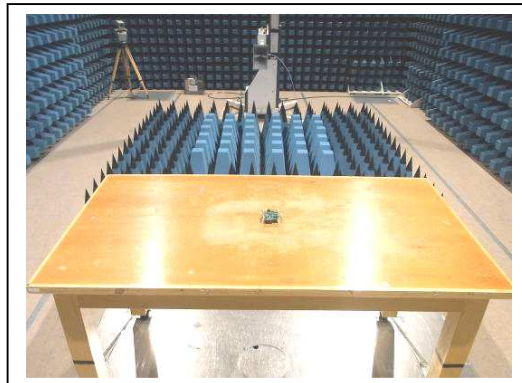
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Date : 22 Nov 2013

A1. Photos of the set-up of Radiated Emissions



(Front view, above 1GHz)



(Back view, above 1GHz)

Tested by:

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew



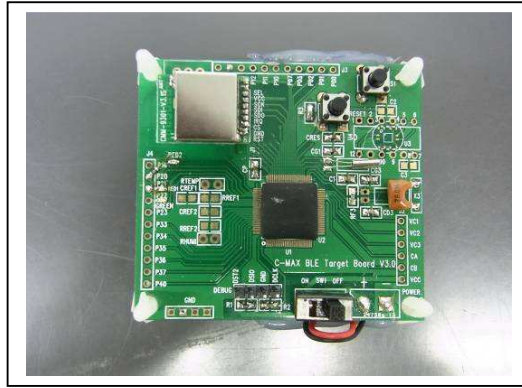
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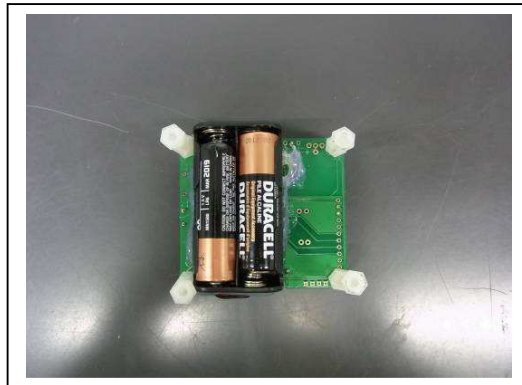
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A1. Photos of the set-up of Radiated Emissions



(Top view, EUT with evaluation board)



(Back view, EUT with evaluation board)

Tested by:

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew



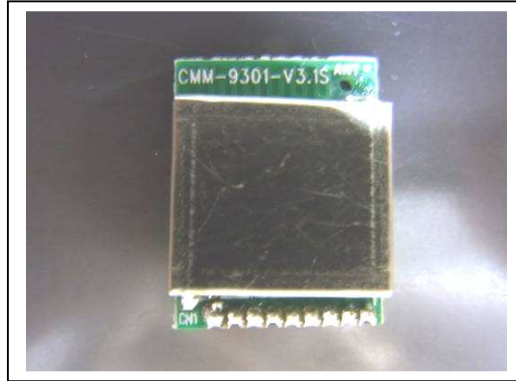
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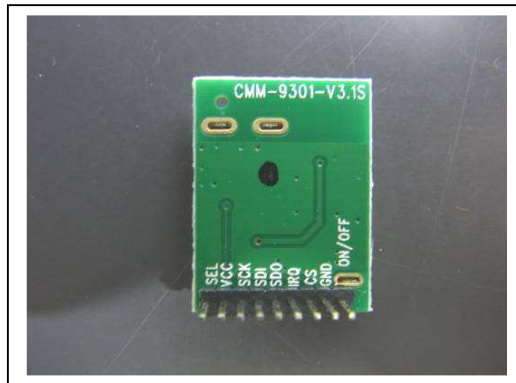
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A2 Photos of External Configurations



External Configuration 1 (Module with pin header)



External Configuration 2 (Module with pin header)

Tested by:

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew



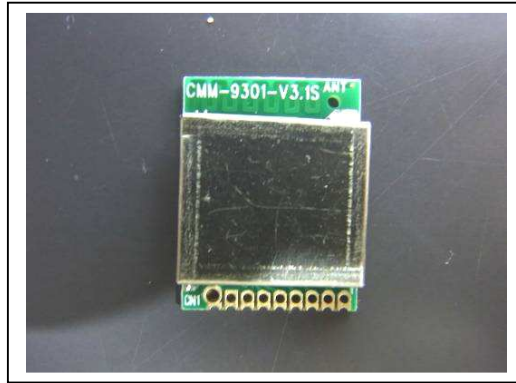
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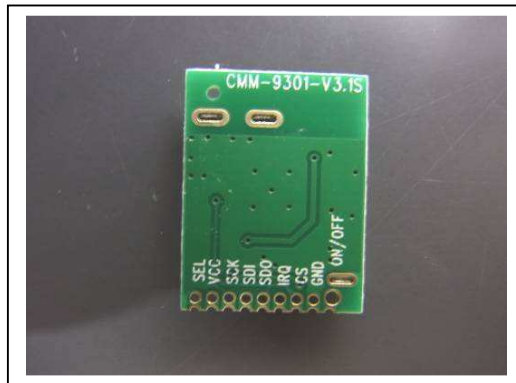
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A2 Photos of External Configurations




External Configuration 3 (Module without pin header)



External Configuration 4 (Module without pin header)

Tested by: 
Mr. LEUNG Shu-kan, Ken

Reviewed by: 
Mr. WONG Lap-pong, Andrew



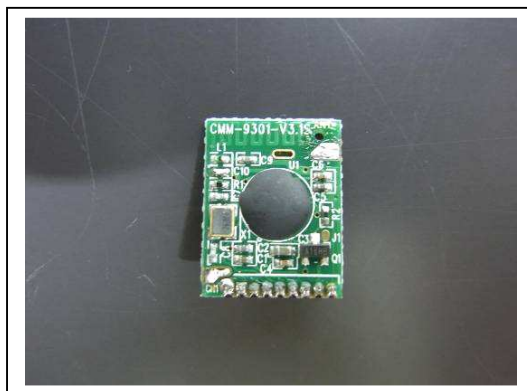
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A3. Photos of Internal Configurations




Internal Configuration 1 (with pin header)



Internal Configuration 2 (without pin header)

Tested by: 
Mr. LEUNG Shu-kan, Ken

Reviewed by: 
Mr. WONG Lap-pong, Andrew

FCC ID: 2AABXCM9301V312013



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A4. ID Label / Location



ID Label 1 (with pin header)



ID Label 2 (without pin header)

Tested by:

Mr. LEUNG Shu-kan, Ken

Reviewed by:

Mr. WONG Lap-pong, Andrew



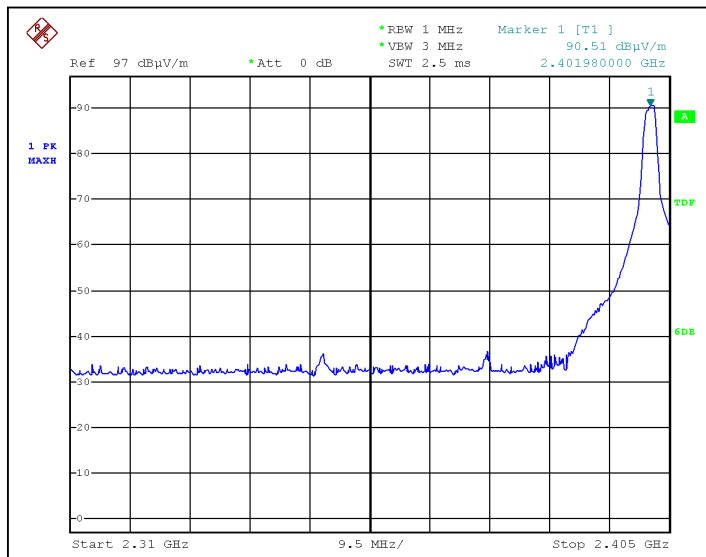
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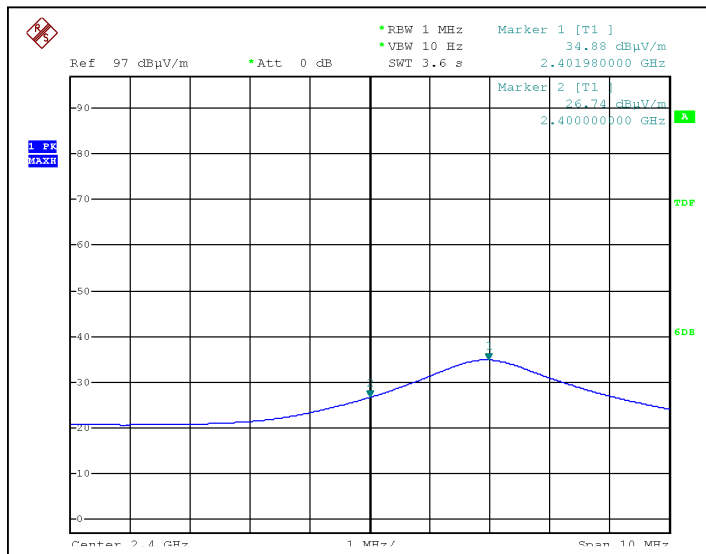
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A5. Band Edge



Lower edge (Peak measurement)



Lower edge (Average measurement)

Tested by: *Ken*
Mr. LEUNG Shu-kan, Ken

Reviewed by: *PP*
Mr. WONG Lap-pong, Andrew



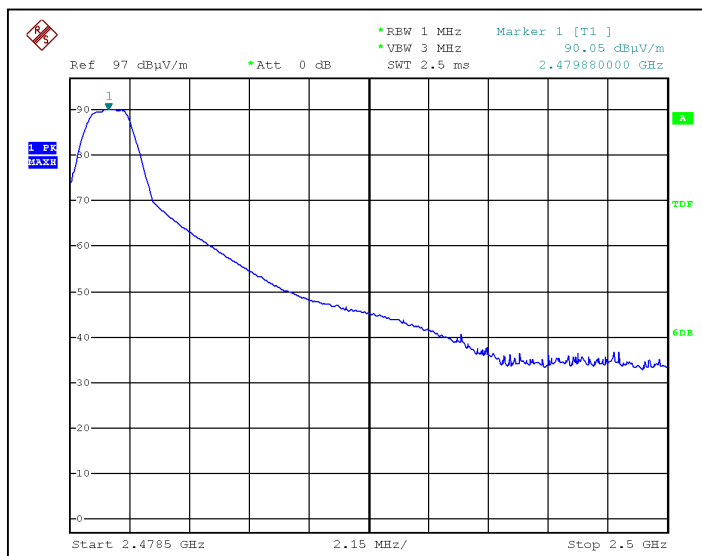
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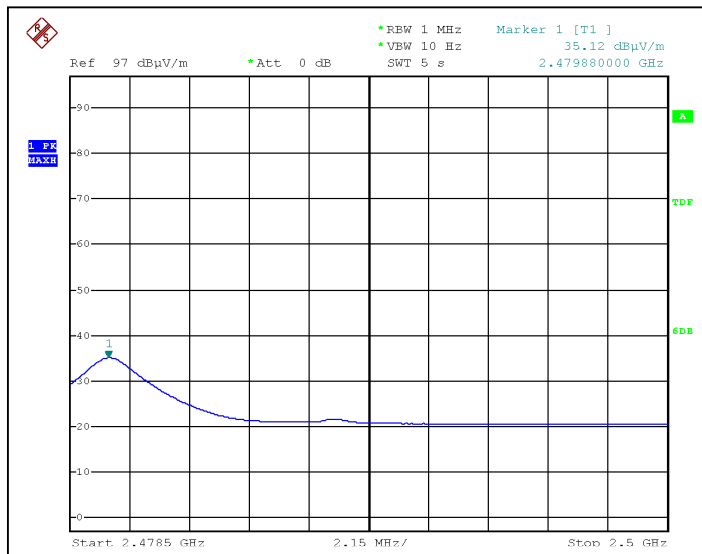
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A5. Band Edge



Higher edge (Peak measurement)



Higher edge (Average measurement)

Tested by: *Ken*
Mr. LEUNG Shu-kan, Ken

Reviewed by: *PP*
Mr. WONG Lap-pong, Andrew



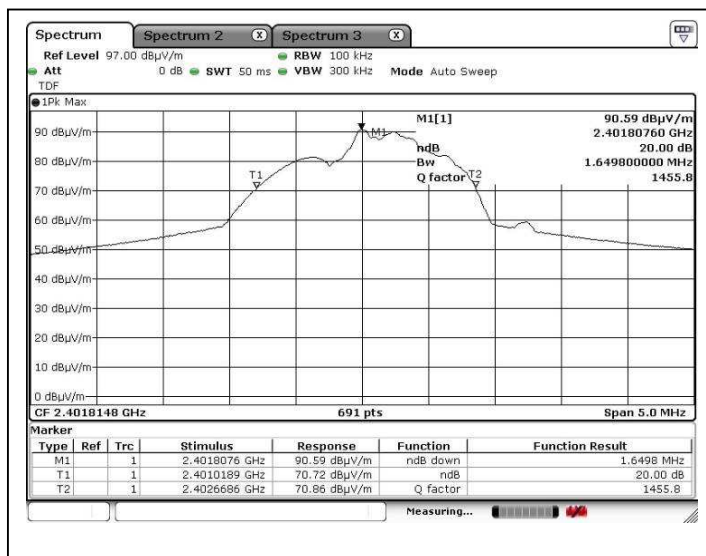
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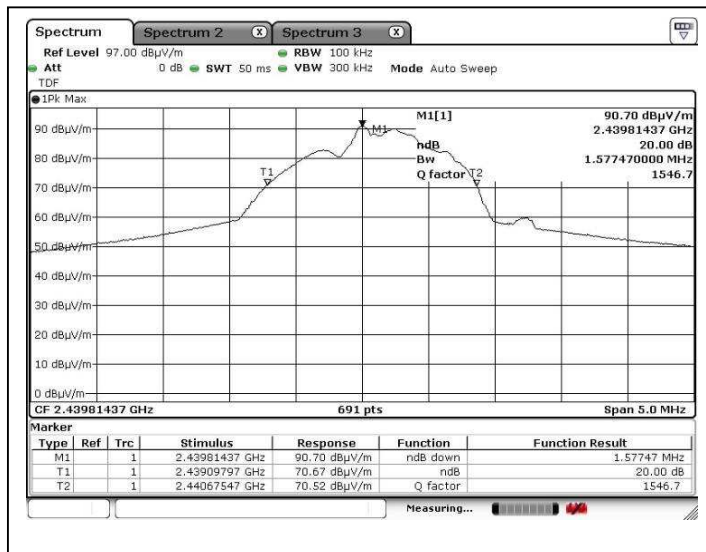
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A6. 20dB Bandwidth Plot



Bandwidth 1 (2402MHz)



Bandwidth 2 (2440MHz)

Tested by: *Ken*
Mr. LEUNG Shu-kan, Ken

Reviewed by: *PP.*
Mr. WONG Lap-pong, Andrew

FCC ID: 2AABXCM9301V312013



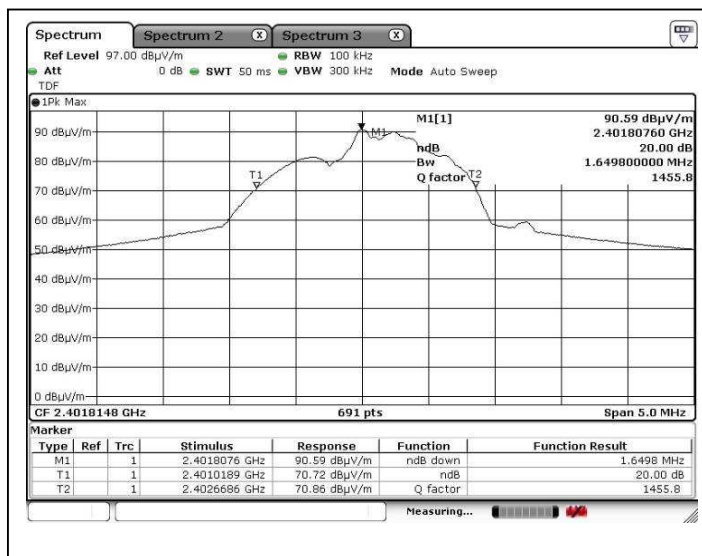
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A6. 20dB Bandwidth Plot



Bandwidth 3 (2480MHz)

Tested by: *Ken*
Mr. LEUNG Shu-kan, Ken

Reviewed by: *PR.*
Mr. WONG Lap-pong, Andrew



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A7. User Manual

CMM-9301-V3.1S
Bluetooth 4.0 Single Mode HCI Module

Bluetooth
QUALIFIED

This Module is limited to OEM installation ONLY

Description

The CMM-9301-V3.1S module is a Bluetooth SIG qualified, miniaturised BLE controller module based on EM Microelectronic's low power fully integrated single-chip Bluetooth Low Energy (BLE) Controller EM9301. The module is highly optimized for Bluetooth 4.0 Single Mode (Bluetooth Low Energy) link application requiring ultra low power consumption and short time-to-market. It offers a plug and play solution for any BLE application up to the link layer, without any additional hardware nor RF layout. Built in with a folded-dipole PCB antenna, this small sized, low cost module provides an ideal solution to the new BLE technology.

The EM9301 is designed to act as BLE master or slave according to the Bluetooth 4.0 specification. It can be controlled by any external microcontroller featuring BLE profile and applications, through the standard BT HCI interface.

1.1 Features

- o Bluetooth SIG qualified Controller Subsystem QDID: B020510

The Bluetooth SIG Hereby Recognizes

C-MAX Asia Limited
Member Company

Bluetooth 4.0 Single Mode HCI Module
Qualified Design Name:

Qualified Design ID(s): B020510

Specification Name: 4.0

Product Type: Controller Subsystem

Model Number: CMM-9301-V3.1S BOE Name: Xuewen Wu

Listing Date: 15 January 2013 Assessment Date: 14 January 2013

Hardware Version Number: 3.1S Software Version Number: NA

This certificate acknowledges the Bluetooth® Specifications declared by the member were achieved in accordance with the Bluetooth® Qualification Process as specified within the Bluetooth Specifications and as required within the current PPSD

- o Master and Slave BLE controller compliant to Bluetooth 4.0 specification
- o Embedded low-power physical layer, Link Layer with security engine, and a Host Controller Interface (HCI)
- o Low average current consumption
- o 1Mbps on-air data rate
- o Mini-sized (18.5mm x 14mm)
- o Integrated Battery Low Detection
- o Programmable RF output level (-18 to +3 dBm) for current consumption optimization.
- o No Tuning necessary
- o SPI interface as HCI transport layer to micro-controller

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1.2 Module Dimension, Pin Assignment and Physical Layout

Pin Number	Pin Name	Input/Output to module	Pin Description
1	RST	I	Reset (controlled via FET by 100ms HI input pulse) / ON (LO) / OFF (HI)
2	GND	GND	Ground Connection
3	CS	I	Chip Select (Active LO)
4	IRQ	O	Interrupt Output for external host Controller
5	SDO	O	SPI Data Output
6	SDI	I	SPI Data Input
7	SCK	I	SPI Clock Input
8	VCC	VCC	Power Supply
9	SEL	I	Interface Selection (0 = UART, 1 = SPI)

Internal Top view

Internal Bottom view

External Top view (Shielded, with pin header)

External Top view (Shielded, without pin header)

Module Dimensions

Module Layout

Connection pin pitch = 1.27mm
 Module Thickness (excluding pin header connectors) = 2.4mm max

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FCC ID: 2AABXCM9301V312013



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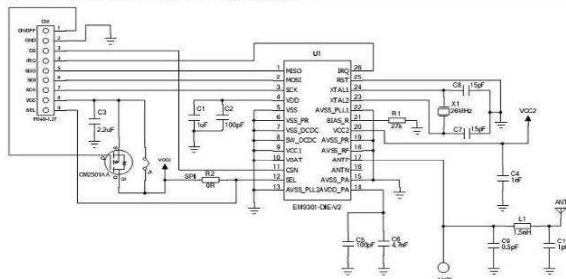
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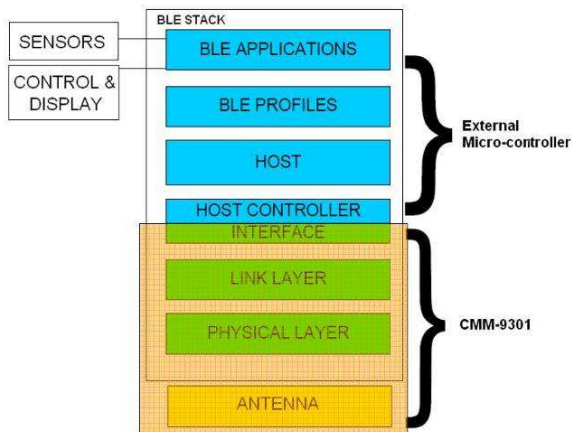
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1.3 Module Reference Circuit diagram



1.4 BLE application reference block diagram



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1.5 Module Electrical Specifications

Specification	CMM-9301-V3.1S
Voltage Range	2.3V to 3.6V
Frequency Range	2.400 to 2.484 GHz
Modulation	GFSK
On-air data rate	1Mbps
RF channels	40
Current Consumption (Vcc = 2.5V)	
- Off mode (RESET = HI)	1 uA typ.
- Active mode (RX)	12.9 mA typ.
- Active mode (TX at 0 dBm)	12.1 mA typ.
Programmable output power	-18 dBm to +3 dBm
SPI speed (bit rate)	5000 kbits/s (max)

Note : For more detailed timing and electrical characteristics, please contact C-MAX Asia Ltd for EM9301 updated datasheet.

2. Ordering information

C-MAX Module Part Number	Delivery Form	Size	Typical Operating Voltage
CMM-9301-V3.1S	Non-shielded, no pin connectors	18.5 x 14 mm	2.3 ~ 3.6V
CMM-9301-V3.1SP	Non-shielded, with pin connectors	18.5 x 14 mm	2.3 ~ 3.6V
CMM-9301-V3.1SF	Shielded, no pin connectors	18.5 x 14 mm	2.3 ~ 3.6V
CMM-9301-V3.1SX	Shielded, with pin connectors	18.5 x 14 mm	2.3 ~ 3.6V

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3. FCC Statement

NOTICE: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications made to this equipment not expressly approved by CMA Industrial Development Foundation Limited may void the FCC authorization to operate this equipment.

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

Radio frequency radiation exposure information:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. Please see the RF Exposure information. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device should be installed and operated with a minimum distance of 20cm between the antenna and all persons.

Label requirements:

Contains: FCC ID: 2ABBXCM9301V312013

FCC RF Exposure Requirement:

- At least 20cm separation distance between the antenna and the user's body must be maintained at all times. And must not transmit simultaneously with any other antenna or transmitter, except in accordance with FCC multi transmitter product procedures.
- To comply with FCC regulations limiting both maximum RF output power and human exposure to RF radiation, the maximum antenna gain including cable loss in a mobile-only exposure condition must not exceed 0dBi in the 2.4GHz band.
- A user manual with the end product must clearly indicate the operating requirements and conditions

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that must be observed to ensure compliance with current FCC RF exposure guidelines.

Note: If this module is intended for use in a portable device, you are responsible for separate approval to satisfy the SAR requirements of FCC Part 2.1093.

Please be noted that the following information and instructions should be placed in the end-user's operating manual.

The CMM-9301-V3.1S Module must be installed in the designated host as specified in this manual.

- Separate approval is required for all other operating configurations, including portable configurations with respect to 2.1093 and different antenna configurations.
- The CMM-9301-V3.1S Module and its antenna must not be co-located or operating in conjunction with any other transmitter or antenna within a host device. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.
- A label must be affixed to the outside of the end product into which the CMM-9301-V3.1S Module is incorporated, with a statement similar to the following: For CMM-9301-V3.1S: This device contains FCC ID: 2ABBXCM9301V312013.
- The module shall be in non-detachable construction protection into the finished products, so that the end-user has to destroy the module while remove or install it.
- This module is to be installed only in mobile or fixed applications. According to FCC part 2.1091(b) definition of mobile and fixed devices is:

Mobile device:

A mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term "fixed location" means that the device is physically secured at one location and is not able to be easily moved to another location.

Portable device:

For purposes of this section, a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.

- Separate approval is required for all other operating configurations, including portable configurations with respect to FCC Part 2.1093 and different antenna configurations.
- A certified modular has the option to use a permanently affixed label, or an electronic label. For a permanently affixed label, the module must be labeled with an FCC ID: 2ABBXCM9301V312013. The OEM manual must provide clear instructions explaining to the OEM the labeling requirements, options and OEM user manual instructions that are required.
- For a host using this FCC certified modular with a standard fixed label, if (1) the module's FCC ID is not visible when installed in the host, or (2) if the host is marketed so that end users do not have straightforward commonly used methods for access to remove the module so that the FCC ID of the module is visible; then an additional permanent label referring to the enclosed module: "Contains: FCC ID: 2ABBXCM9301V312013" must be used. The host OEM user manual must also contain clear instructions on how end users can find and/or access the module and the FCC ID.

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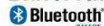
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- Host product is required to comply with all applicable FCC equipment authorizations regulations, requirements and equipment functions not associated with the transmitter module portion, compliance must be demonstrated to regulations for other transmitter components within the host product; to requirements for unintentional radiators (Part 15B). To ensure compliance with all non-transmitter functions the host manufacturer is responsible for ensuring compliance with the module(s) installed and fully operational. If a host was previously authorized as an unintentional radiator under the Declaration of Conformity procedure without a transmitter certified module and a module is added, the host manufacturer is responsible for ensuring that after the module is installed and operational the host continues to be compliant with the Part 15B unintentional radiator requirements. Since this may depend on the details of how the module is integrated with the host, we suggest the host device to recertify part 15B to ensure complete compliance with FCC requirement: Part 2, Subpart J, Equipment Authorization Procedures, KDB784748 D01 v07, and KDB 997198 about importation of radio frequency devices into the United States.

OEM RESPONSIBILITIES TO COMPLY WITH FCC REGULATIONS

The CMM-9301-V3.1S Module has been certified for integration into products only by OEM integrators under the following conditions: This device is granted for use in Mobile only configurations in which the antennas used for this transmitter must be installed to provide a separation distance of at least 20 centimeters from all persons and not be co-located with any other transmitters except in accordance with FCC and Industry Canada multi-transmitter product procedures.

As long as the two conditions above are met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed (for example, digital device emissions, PC peripheral requirements, etc.).

IMPORTANT NOTE: In the event that these conditions cannot be met (for certain configurations or co-location with another transmitter), then the FCC and Industry Canada authorizations are no longer considered valid and the FCC ID and IC Certification Number cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC and Industry Canada authorization.

OEM LABELING REQUIREMENTS FOR END-PRODUCT

The CMM-9301-V3.1S module is labeled with its own FCC ID Certification Number. The FCC ID certification numbers are not visible when the module is installed inside another device, as such the end device into which the module is installed must display a label referring to the enclosed module. The final end product must be labeled in a visible area with the following: "Contains: FCC ID: 2ABBXCM9301V312013".

The OEM of the CMM-9301-V3.1S Module must only use the approved antenna(s) listed above, which have been certified with this module. The device carries FCC authorization and is marked with the FCC ID Number. Whilst any device into which this authorized module is installed will not normally be required to obtain FCC authorization, this does not preclude the possibility that some other form of authorization or testing may be required for the finished device.

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OEM END PRODUCT USER MANUAL STATEMENTS

The OEM integrator should not provide information to the end user regarding how to install or remove this RF module or change RF related parameters in the user manual of the end product.

If this module is intended for use in a portable device, you are responsible for separate approval to satisfy the SAR requirements of FCC Part 2.1093.

The user manual for the end product must include the following information in a prominent location:

This device is granted for use in mobile only configurations in which the antennas used for this transmitter must be installed to provide a separation distance of at least 20 centimeters from all persons and not be co-located with any other transmitters except in accordance with FCC and Industry Canada multi-transmitter product procedures.

The end product with an embedded FCC ID: 2ABBXCM9301V312013 Module may also need to pass the FCC Part 15 unintentional emission testing requirements and be properly authorized per FCC Part 15.

The labeling instructions of finished products refer to following requirements:

A certified module has the option to use a permanently affixed label, or an electronic label (see Electronic Labeling below). For a permanently affixed label, the module must be labeled with an FCC ID - Section 2.926 (see Certification labeling requirements above). The OEM manual must provide clear instructions explaining to the OEM the labeling requirements, options and OEM user manual instructions that are required (see next paragraph).

For a host using a certified module with a standard fixed label, if (1) the module's FCC ID is not visible when installed in the host, or (2) if the host is marketed so that end users do not have straight forward commonly used methods for access to remove the module so that the FCC ID of the module is visible; then an additional permanent label referring to the enclosed module: "Contains FCC ID: 2ABBXCM9301V312013" must be used. The host OEM user manual must also contain clear instructions on how end users can find and/or access the module and the FCC ID.

Other user manual statements may apply.

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