Omega Engineering MOD-16370-915 Sub-1G Module User Guide

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Contents

Federal Communication Commission Interference 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.

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 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.

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

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 23cm between the radiator & your body.

This module is intended for OEM integrators only. Per FCC KDB 996369 D03 OEM Manual v01 guidance, the following conditions must be strictly followed when using this certified module:

KDB 996369 D03 OEM Manual v01 rule sections:

List of applicable FCC rules
This module has been tested for compliance with FCC Part 15

Summarize the specific operational use conditions

The module is tested for standalone mobile RF exposure use conditions. Any other usage conditions such as co-location with another transmitter (s) or being used in a portable condition will need a separate reassessment through a class II permissive change application or new certification.

Limited module procedures
Not applicable.

Trace antenna designs
Not applicable.

RF exposure considerations
This equipment complies with FCC mobile radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 23cm between the radiator & your body. If the module is installed in a portable host, a separate SAR evaluation is required to confirm compliance with relevant FCC portable RF exposure rules.

Antennas
The following antennas have been certified for use with this module; antennas of the same type with equal or lower gain may also be used with this module.
The antenna must be installed such that 23 cm can be maintained between the antenna and users.

No.	Antenna Type	Model	Connector	Gain (dBi)
1	Rubber Duck Antenna	HG905RD-RSP	SMA	5
2	Omnidirectional Antenna	HG908U-PRO	N-Female	8
3	Heavy Duty Flat Panel Antenna	HG8909P	N-Female	9
4	Yagi Antenna	HG912YE	N Female	12
5	Omnidirectional Antenna	RFDPA171300SBRB804	RP-SMA	2
6	Pnnt Dipole	U.FL (UMCC)	IPEX MHF1	0

Label and compliance information

The final end product must be labeled in a visible area with the following:
“Contains FCC ID: WR3MOD16370915”. The grantee’s FCC ID can be used only when all FCC compliance requirements are met.

Information on test modes and additional testing requirements

This transmitter is tested in a standalone mobile RF exposure condition and any co-located or simultaneous transmission with another transmitter (s) or portable use will require a separate class II permissive change re-evaluation or new certification.

Additional testing, Part 15 Subpart B disclaimer

This transmitter module is tested as a subsystem and its certification does not cover the FCC Part 15 Subpart B (unintentional radiator) rule requirement applicable to the final host. The final host will still need to be reassessed for compliance to this portion of rule requirements if applicable.
As long as all conditions above are met, further transmitter tests 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.

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter),
then the FCC authorization is no longer considered valid and the FCC ID can not 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 authorization.

Manual Information To the End-User

The OEM integrator has to be aware not to provide information to the end-user regarding how to install or remove this RF module in the user’s manual of the
the end product that integrates this module.
The end-user manual shall include all required regulatory information/warning as shown in this manual.

OEM/Host manufacturer responsibilities

OEM/Host manufacturers are ultimately responsible for the compliance of the Host and Module. The final product must be reassessed against all the essential
requirements of the FCC rule such as FCC Part 15 Subpart B before it can be placed on the US market. This includes reassessing the transmitter module for compliance with the Radio and EMF essential requirements of the FCC rules.
This module must not be incorporated into any other device or system without retesting for compliance as multi-radio and combined equipment.

Industry Canada statement

This device complies with ISED's license-exempt RSSs. 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.

Radiation Exposure Statement:
This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with
greater than 20 m between the radiator & your body.

This device is intended only for OEM integrators under the following conditions: (For module device use)

1. The antenna must be installed and operated with greater than 20 cm between the antenna and users
2. The transmitter module may not be co-located with any other transmitter or antenna.
3. Module approval is valid only when the module is installed in the tested host or compatible series of hosts which have similar RF exposure characteristics with equal or larger antenna separation distance.

As long as 3 conditions above are met, further transmitter tests 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.

IMPORTANT NOTE:
In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the Canada authorization is no longer considered valid and the IC ID can not 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 Canada authorization.

End Product Labeling
This transmitter module is authorized only for use in devices where the antenna may be installed and operated with greater than 20 cm between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains IC: 8205A-MOD16370915".

Manual Information To the End-User
The OEM integrator has to be aware not to provide information to the end-user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.
The end-user manual shall include all required regulatory information/warning as shown in this manual.

DETACHABLE ANTENNA USAGE

This radio transmitter (IC: 8205A-MOD16370915 / Model: MOD-16370-915) has been approved by ISED to operate with the antenna type listed below with maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Approved antennas list:

No.	Antenna Type	Model	Connector	Gain(dBi)
1	Rubber Duck Antenna	HG905RD-RSP	SMA	5
2	Omnidirectional Antenna	HG908U-PRO	N-Female	8
3	Heavy Duty Flat Panel Antenna	HG8909P	N-Female	9
4	Yagi Antenna	HG912YE	N Female	12
5	Omnidirectional Antenna	RFDPA171300SBRB804	RP-SMA	2
6	Print Dipole	U.FL (UMCC)	IPEX MHF1	0

Professional installation instruction

1. Installation personal
   This product is designed for specific applications and needs to be installed by a qualified person who has RF and related rule knowledge.
   The general user shall not attempt to install or change the setting.
2. Installation location
   The product shall be installed at a location where the radiating antenna can be kept 20 cm from a nearby person in normal operating conditions to meet regulatory RF exposure requirements.
3. External antenna
   Use only the antennas which have been approved by the applicant. The non-approved antenna(s) may produce unwanted spurious or excessive RF transmitting power which may lead to the violation of the FCC/IC limit and is prohibited.
4. Installation procedure
   Please refer to the user's manual for the detail.
5. Warning
   Please carefully select the installation position and make sure that the final output power does not exceed the limit set force in relevant rules.
   The violation of the rule could lead to serious federal penalties.

Contents

Description

MOD-16370-915 Module is designed by a high-performance ultra-low power RF transceiver, intended for RF wireless applications in the sub-1 GHz band. And is operating in the license-free ISM bands

Mechanical Drawing

Specifications

Operating Frequency	902.4 ~ 927.6MHz
Power Supply Rating	3.3VDC
Modulation Type	2-GFSK
Number of Channel	127
Output Power	242.661mW
Antenna Type	Refer to Note
Operating Temperature	-20℃ ~ +60℃

Note:
Following Antennas were provided for selection

No.	Antenna Type	Model	Connector	Gain(dBi)
1	Rubber Duck Antenna	HG905RD-RSP	SMA	5
2	Omnidirectional Antenna	HG908U-PRO	N-Female	8
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4	Yagi Antenna	HG912YE	N Female	12
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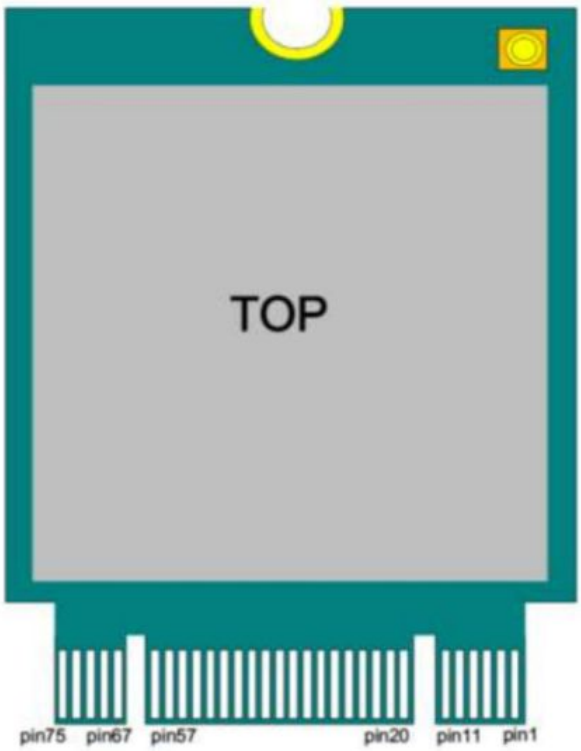
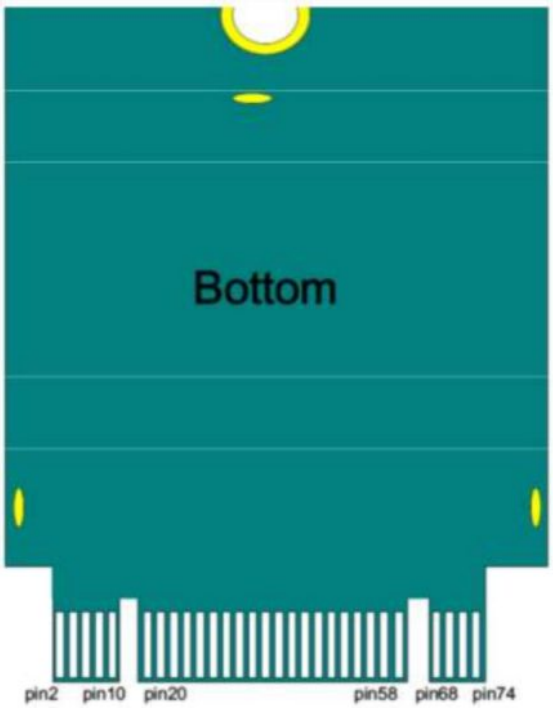
6	**Print Dipole**	**U.FL (UMCC)**	**IPEX MHF1**	**0**

Terminal Description

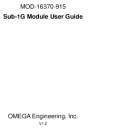


Pin	Description	Pin	Description	Pin	Description
67	NC	21	GND	1	GND
69	GND	23	OTA	3	GND
71	GND	25	SW RESET	5	5V In
73	GND	27	GND	7	5V In
75	GND	29	OPTION	9	5V In
		31	INTR	11	5V In
		33	GND		
		35	RESET		
		37	NC		
		39	GND		
		41	NC		
		46	NC		
		45	GND		
		47	NC		
		49	NC		
		51	GND		
		53	Red LED		
		55	Green LED		
		57	GND		


Bottom
pin2
pin10
pin20
pin58
pin68
pin74

Pin	Description	Pin	Description	Pin	Description
2	3.3V IN	20	NC	68	NC
4	3.3V IN	22	NC	70	3.3V IN
6	JTAG TMS	24	SPI CS	72	3.3V IN
8	JTAG TCK	26	SPIMISO	74	3.3V IN
10	NC	28	SPI_MOSI		
		30	SPECK		
		32	NC		
		34	TDO / RST		
		36	TDI		
		38	NC		
		40	CTS		
		42	RTS / SWO		
		44	RXD		
		46	TXD		
		48	NC		
		50	NC		
		52	NC		
		54	NC		
		56	I2C_SDA		
		58	I2C_SCL		

Documents / Resources

	Omega Engineering MOD-16370-915 Sub-1G Module [pdf] User Guide MOD16370915, WR3MOD16370915, MOD-16370-915 Sub-1G Module, Sub-1G Module