silex technology N6C-SDMAX Wireless Embedded Module User Manual

N6C-SDMAX Wireless Embedded Module
User Manual

Model Name: SX-SDMAX

Contents

N6C-SDMAX Wireless Embedded Module

Since this module is not sold to general end users directly, there is no user manual of module.
For the details about this module, please refer to the specification sheet of module.
This module should be installed in the host device according to the interface specification (installation procedure).

Specification

Power Supply	3.3Vdc and 1.8Vdc from host equipment				
Operating frequencies	Band	Modes	Min	Max	MHz
	bluetooth	BR/EDR/LE/2LE	2402	2480	
	2.4GHz	11b	2412	2472	MHz
		11g/n/ax 20MHz	2412	2472	MHz
		11g/n/ax 40MHz	2422	2462	MHz
	5GHz	11a/n/ac/ax 20MHz	5180	5825	MHz
		11n/ac/ax 40MHz	5190	5795	MHz
		11ac/ax 80MHz	5210	5775	MHz
Data rates	11b	1,2,5.5L,5.5S,11L,11S			Mbps
	11a/g	6,9,12,18,24,36,48,54			Mbps
	11n	MCS 0,1,2,3,4,5,6,7			
	11ac	MCS 0,1,2,3,4,5,6,7,8,9			
	11ax	MCS 0,1,2,3,4,5,6,7,8,9,10,11			
Modulation types	BR	GFSK			
	EDR	π/4-DQPSK, 8-DPSK			
	LE/2LE	GFSK			
	11b	DSSS(DBPSK,DQPSK,CCK)			
	11a/g/n	OFDM(BPSK,QPSK,16QAM,64QAM)			
	11ac	OFDM(BPSK,QPSK,16QAM,64QAM,256QAM)			
	11ax	OFDM(BPSK,QPSK,16QAM,64QAM,256QAM,1024QAM)			

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.
Operations in the 5.15-5.25GHz band are restricted to indoor usage only.
This device meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

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 minimum distance 20cm 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:

2.2 List of applicable FCC rules

This module has been tested for compliance to FCC Part 15.247 and 15.407.

2.3 Summarize the specific operational use conditions

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

2.4 Limited module procedures

Not applicable.

2.5 Trace antenna designs

Not applicable.

2.6 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 20cm 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.

2.7 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 20 cm can be maintained between the antenna and users.

Original							
Antenna NO.	Brand	Model	Antenna Net Gain (dBi)	Frequency range	Antenna Type	Connector Type	Cable Length
	Molex	1461530050	3.	2.4-2.4835GHz	Dipole	IPEX(MHF)	50mm
			3.	5.15-5.25GHz			
			3.	5.25-5.35GHz			
			4.	5.47-5.725GHz			
			4.	5.725-5.85GHz			
Newly							
Antenna NO	Brand	Model	Antenna Net Gain (dBi)	Frequency range	Antenna Type	Connector Type	Cable Length
2	Unitron	AA258 (H2B1PC1A1C)	3.	2.4 -2.4835GHz	Dipole	IPEX(MHF)	50mm
			3.	5.15-5.25GHz			
			4.	5.25-5.35GHz			
			3.	5.47-5.725GHz			
3			4.	5.725-5.85GHz			
	Unitron	AA258	2.	2.4-2.4835GHz	Dipole	IPEX(MHF)	150mm
			3.	5.15-5.25GHz			
			3.	5.25-5.35GHz			
			2.	5.47-5.725GHz			
			4.	5.725-5.85GHz			

2.8 Label and compliance information

The final end product must be labeled in a visible area with the following: “Contains FCC ID: N6C-SDMAX”. The grantee’s FCC ID can be used only when all FCC compliance requirements are met.

2.9 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 other transmitter(s) or portable use will require a separate class II permissive change re-evaluation or new certification.

2.10 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.

2.11 Note EMI Considerations

Please follow the guidance provided for host manufacturers in KDB publications 996369 D02 and D04.

2.12 How to make changes

Only Grantees are permitted to make permissive changes. Please contact us should the host integrator expect the module to be used differently than as granted:

Yukinari Shibuya : **shibuya@silex.jp**

As long as all conditions above are met, further transmitter test 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 end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show 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 licence-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 20cm 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 20cm between the antenna and users, and 2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as 2 conditions above are met, further transmitter test 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 device where the antenna may be installed and operated with greater than 20cm between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains IC: **4908A-SDMAX".**

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 show in this manual.

Caution :

(i) the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

(ii) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit; (iii) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits as appropriate;

(iv) where applicable, antenna type(s), antenna models(s), and worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in section 6.2.2.3 shall be clearly indicated.

DETACHABLE ANTENNA USAGE

This radio transmitter [IC: 4908A-SDMAX] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Original							
Antenna NO.	Brand	Model	Antenna Net Gain (dBi)	Frequency range	Antenna Type	Connector Type	Cable Length
	Molex	1461530050	3.	2.4-2.4835GHz	Dipole	IPEX(MHF)	50mm
			3.	5.15-5.25GHz			
			3.	5.25-5.35GHz			
			4.	5.47-5.725GHz			
			4.	5.725-5.85GHz			
Newly							
Antenna NO.	Brand	Model	Antenna Net Gain (dBi)	Frequency range	Antenna Type	Connector Type	Cable Length
	Unictron	AA258 (H2B1PC1A1C)	3.	2.4 -2.4835GHz	Dipole	IPEX(MHF)	50mm
			3.	5.15-5.25GHz			
			4.	5.25-5.35GHz			
			3.	5.47-5.725GHz			
			4.	5.725-5.85GHz			
	Unitron	AA258	2.	2.4-2.4835GHz	Dipole	IPEX(MHF)	150mm
			3.	5.15-5.25GHz			
			3.	5.25-5.35GHz			
			2.	5.47-5.725GHz			
			4.	5.725-5.85GHz			

This device complies with UK Radio Equipment Regulations 2017 SI 2017/1206.
– Declaration of Conformity

UK Declaration of Conformity
we, Silex Technology, Inc.
(name of manufacturer or authorized representative)
Of 2-3-1 Hilaria, Seika-cho, Soraku-gun, Kyoto 619-0237, Japan (address)
declare under our sole responsibility that the product
Product Description: Wireless Embedded Module
Brand Name: Silex Technology
Model No.: SX-SDMAX
(detailed description of product including name, type, model and supplementary information such as lot, batch or serial number, sources and number of items) to which this declaration relates, is conformity with the following relevant UK legislation, standards and/or other normative documents.
EN 300328 V2.2.2 (2019-07) ; EN 301893 V2.1.1 (2017-05)
Draft EN 301893 V2.1.50 (2022-1 2)
“ENIEC62311:2020, ©
IEC 62368-1:2018

We hereby declare that the above named product is conformity to all the essential requirements of the UK Radio Equipment Regulations 2017 S$! 2017/1206.

The frequency and maximum transmitted power in UK are listed as below

EIRP Power (Measured Max. Average)	**2.4GHz:** 19.81 dBm **5GHz:** 5.18 GHz ~ 5.24 GHz : 19.78 dBm 5.26 GHz ~ 5.32 GHz : 19.45 dBm 5.5 GHz ~ 5.7 GHz : 21.16 dBm 5.745 ~ 5.825 GHz: 21.08 dBm **BT-EDR:** 9.98 dBm **BT-LE:** 6.25 dBm

Documents / Resources

	silex technology N6C-SDMAX Wireless Embedded Module [pdf] User Manual N6C-SDMAX Wireless Embedded Module, N6C-SDMAX, Wireless Embedded Module, Embedded Module, Module

References

- User Manual