

## Bluetooth Module : MB8811QAN



[top]



[bottom]

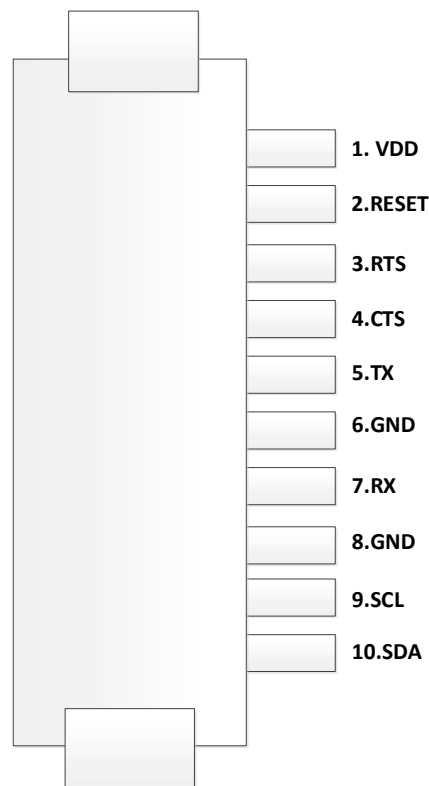
This MB8811QAN Module is compatible with Bluetooth specification version 4.2. MB8811QAN is a fully integrated RF, baseband controller etc.

## SPECIFICATION

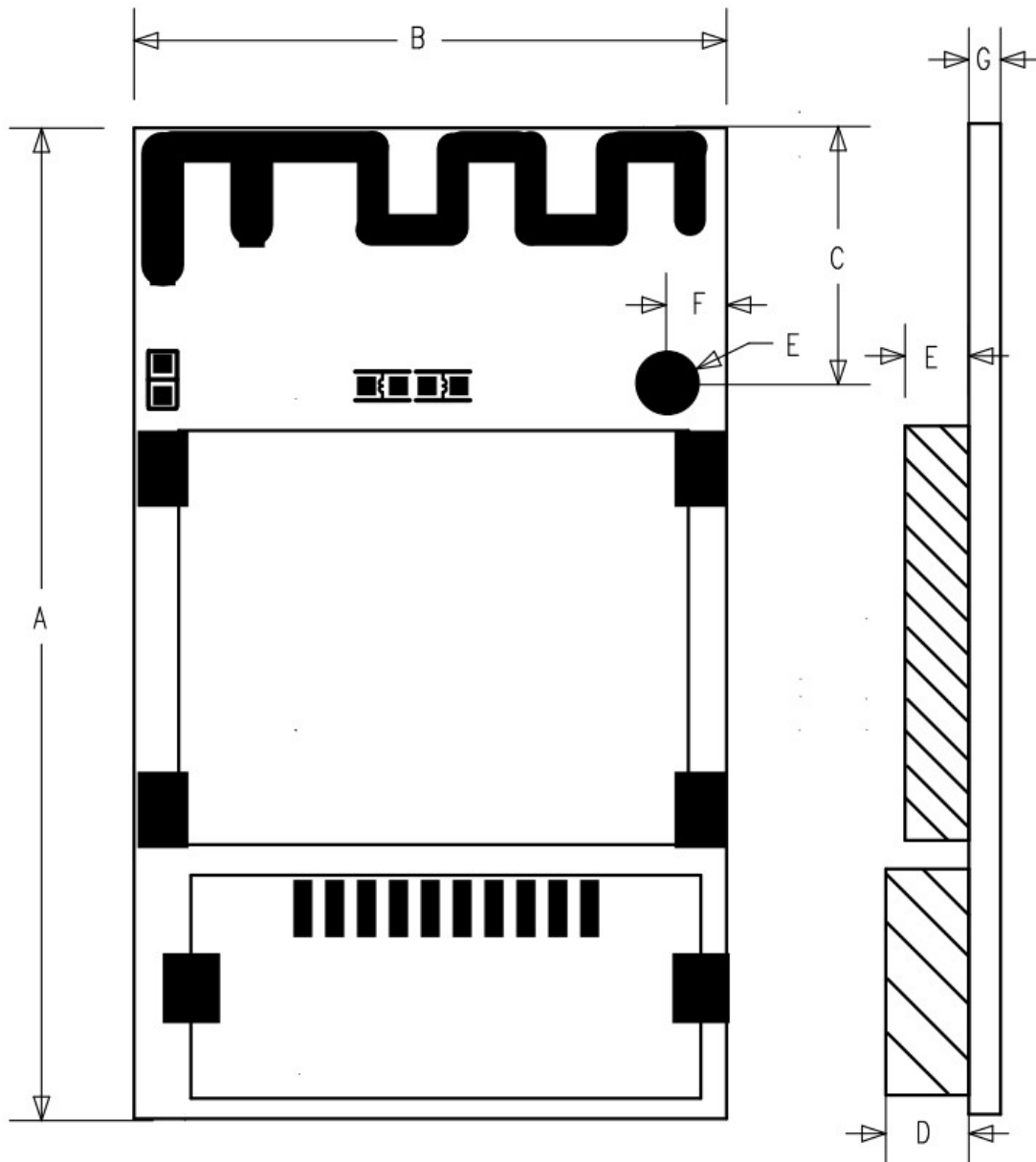
Main Chips	CSR8811A12
Standards	Bluetooth 4.2
Frequency Band	2402 ~ 2480 MHz
Tx Power	0.25 ~ 10mW (Bluetooth Power Class 1)
Rx Sensitivity	< -70dBm (BER 0.1%)
Distance	< 10m (open space)
Power Voltage	3.3V
Dimension	18.6 x 31.2 x 3.4 mm
Environmental Range	Operation temperature : -25 ~ +70°C
Modulation mode	GFSK, 8DPSK
Communication method	FHSS

## Pin define(TOP PIN MAP)

No	Pin Name	I/O	Description
1	VDD	I	Positive Input for the internal regulator (3.0 ~ 3.6V)
2	RESET	I	Reset if low. Input debounced so must be low for >5ms to cause a reset
3	RTS	O	Bluetooth UART Request to Send. Active-low request.
4	CTS	I	Bluetooth UART Clear to Send.Active-low clear.
5	TX	O	Bluetooth UART Serial Output.
6	GND	-	Ground.
7	RX	I	Bluetooth UART Serial Input.
8	GND	-	Ground.
9	SCL	O	I2C interface Clock
10	SDA	I/O	I2C interface DATA



### Dimension



### TOP View

Mark	Dimension	Mark	Dimension	Mark	Dimension
A	$31.60 \pm 0.3$	D	$2.60 \pm 0.2$	G	$1.0 \pm 0.2$
B	$18.60 \pm 0.3$	E	$2.0 \pm 0.2$		
C	$8.0 \pm 0.2$	F	$1.8 \pm 0.2$		

(Unit : mm)

## Electrical Characteristics

Conditions : VDD = 3.3V, Ta = 25 °C, unless otherwise noted.

### Absolute Maximum Ratings

Parameter	Min	Max	Unit
Power Supply Voltage : VDD	-0.4V	3.6V	DCV
Storage Temperature	-40	85	°C

### Recommended Operating Conditions

Parameter	Min	Max	Unit
Power Supply Voltage	3.0V	3.6V	DCV
Operation Temperature	-25	70	°C

### Current consumption

Parameter	Connection Type	Avg	Peak	Unit
Page scan, Time interval = 1.28s	-	2		mA
Inquiry and Page scan, Time interval = 1.28s	-	2	3	mA
ACL No data transfer	Master	10		mA
ACL data transfer	Master	32		mA

### Input/Output Characteristics

Parameter	Min	Max	Unit
V <sub>IL</sub> Input Voltage Low	-0.4	0.8	V
V <sub>IH</sub> Input Voltage High	0.7*VDD	VDD+0.4	V
V <sub>OL</sub> Output Voltage Low	-	0.2	V
V <sub>OH</sub> Output Voltage High	VDD-0.2	-	V

<b>General Performance</b>					
<b>Parameter</b>	<b>Condition</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	<b>Unit</b>
Frequency Range	Normal	2402	-	2480	MHz

<b>Transmitter Performance</b>					
<b>Parameter</b>	<b>Condition</b>	<b>Min</b>	<b>Typ</b>	<b>Max</b>	<b>Unit</b>
Transmit Power	Normal	-6	0	8	dBm
Power density	Normal	-	-	20	dBm
20dB bandwidth	Normal			1000	KHz
Adjacent channel power ( $F_0 = 2441\text{MHz}$ )	$F = F_0 \pm 2\text{MHz}$	-	-	-20	dBm
	$F = F_0 \pm 3\text{MHz}$	-	-	-40	dBm
	$F = F_0 \pm 4\text{MHz}$	-	-	-40	dBm
Out-band Spurious Emission	30MHz ~ 1GHz	-	-	-36	dBm
	1GHz ~ 12.75GHz	-	-	-30	dBm
	1.8GHz ~ 1.9GHz	-	-	-47	dBm
	5.1GHz ~ 5.3GHz	-	-	-47	dBm
Modulation Characteristic	$\Delta F_{1\text{avg}}$	140	-	175	KHz
	$\Delta F_{2\text{max}}$	115	-	-	KHz
	$\Delta F_{2\text{avg}} / \Delta F_{1\text{avg}}$	80	-	-	%
Initial Carrier Frequency Tolerance	DH1 packet	-75	-	75	KHz
Carrier Frequency Drift	DH5 packet	-25		25	KHz

<b>Receiver Performance</b>					
<b>Parameter</b>	<b>Condition</b>	<b>Min</b>	<b>Type</b>	<b>Max</b>	<b>Unit</b>
Sensitivity at 0.1% BER	Single slot (DH1 packet)	-	-	-70	dBm
Sensitivity at 0.1% BER	Multi slot (DH5 packet)	-	-	-70	dBm
Maximum received signal at 0.1% BER		-20	-	-	dBm
Maximum level of intermodulation interferers	$f_1 - f_2 = 5\text{ MHz}$ , $P_{\text{wanted}} = -64\text{ dBm}$	-39	-	-	dBm

### **Federal Communication 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 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 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.

### **FCC 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 device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

### **IMPORTANT NOTE:**

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the FCC radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

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

### **IC Statement**

This Class B digital apparatus complies with Canadian ICES-003.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

The device could automatically discontinue transmission in case of absence of information to transmit, or operational failure. Note that this is not intended to prohibit transmission of control or signaling information or the use of repetitive codes where required by the technology.

**IC Radiation Exposure Statement:**

This equipment complies with IC RSS-102 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 device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

**IMPORTANT NOTE:**

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the IC RSS-102 radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

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

**IC Information to User**

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference; and (2) This device must accept any interference, including interference that may cause undesired operation of the device

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This module is intended for OEM integrator. The OEM integrator is still responsible for the FCC compliance requirement of the end product, which integrates this module.

The module is limited to installation in mobile or fixed applications.

The separate approval is required for all other operating configurations, including portable configurations with respect to Part 2.1093 and different antenna configurations.

## MB8811QAN Test Manual

- 1) RF Test Utility
- 2) First time, CSR Bluesuite program must be installed. you can use BTcli.exe and enter DUT(Device Under Test) mode. So RF equipment can inquiry and test. (reference document.)

\* reference document : MB8811QA\_JIG\_DUT\_BLE\_MANUAL.pdf

- 3) RF Test method  
RF Test tool is BlueTest.exe at CSR bluesuite program. You can see detail explanation from reference document.

\* reference document : BlueTest Instruction Manual.pdf

Conformity Assessment Display

Company name: Samsung Electronics

Model : Specific micro-power wireless devices (wireless data communication system devices)  
(MB8811QAN)

Manufacture Year : 2019. .

Manufacturer / Manufacture Country : Samsung Electronics / Korea

