



# User Manual of WCC940M

## 1. Introduction

WCC940M is a highly integrated single chip which features a low power 2x2 11a/b/g/n/ac/ax Tri band Wi-Fi subsystem and a Bluetooth v5.2 subsystem, offering feature-rich wireless connectivity at high standards, and delivering reliable, cost-effective throughput from an extended distance.

## 2. Product Details

### -Data Modulation

DSSS:CCK,BPSK,QPSK for 802.11b  
OFDM:BPSK,QPSK,16QAM,64QAM,256QAM for 802.11a,g,n,ac,ax  
OFDMA:16QAM,64QAM,256QAM for 802.11ax  
FHSS:GFSK,OQPSK, 8DPSK,  $\pi/4$ DPSK for Bluetooth

### -Frequency Range

2.4GHz: 2.4-2.4835GHz bands  
5GHz: 5.15-5.25GHz, 5.25-5.35GHz, 5.47-5.725GHz, 5.725-5.85GHz, 5.85-5.895GHz bands  
6GHz: 5.925-7.125GHz bands

### -Output Power tolerance

Output power  $\pm 2.0$ dBm

### -Recommended Operating conditions

	Min	Typ.	Max	Unit
Operating voltage	4.5	5	5.5	V
Operating temperature(ambient)	-20	25	50	°C



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# Approval Statement

## *FCC approval*

### RF Software restrictions

1. Contention-Based Protocol, as demonstrated in the FCC test report, is permanently embedded in the module and is not host-dependent, can't change by anyone.
2. Operation of transmitters in the 5.25-5.35GHz, 5.47-5.725GHz, 5.85-5.895GHz, 5.925-7.125GHz bands is this Modular device will only associate and connect with a low-power indoor access point or subordinate device and never directly connect to other client devices.  
This feature is include in its firmware and can't change by anyone.
3. Operation of transmitters in the 5.25-5.35GHz, 5.47-5.725GHz, 5.85-5.895GHz, 5.925-7.125GHz bands is this Modular device will always initiate transmission under the control of a low-power indoor AP or subordinate except for brief transmissions before joining a network. These short messages will only occur if the client has detected an indoor AP or subordinate operating on a channel. These brief messages will have a time-out mechanism such that if it does not receive a response from an AP it will not continually repeat the request.
4. That transmissions will be lower or equal to the power advertised by the indoor low-power access point or subordinate and never above the maximum output power allowed by the FCC grant for equipment class 6XD.

This device complies with Part 15 of the FCC's 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 undesirable operation.

To satisfy FCC exterior labeling requirements, the following text must be placed on the exterior of the end product.  
**Contains Transmitter module FCC ID: A3LWCC940M**

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.
- The OEM integrator is responsible for ensuring the end-user has no manual instruction to remove or install module.
- The module is limited to installation in mobile or fixed applications.



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.

This device meets all the other requirements specified in Part 15E, Section 15.407 of the FCC Rules.

FCC regulations restrict operation of this device to indoor use only. The operation of this device is prohibited on oil platforms, cars, trains, boats, and aircraft, except that operation of this device is permitted in large aircraft while flying above 10,000 feet.

Operation of transmitters in the 5.925-7.125 GHz band is prohibited for control of or communications with unmanned aircraft systems.

**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.



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***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 Subpart C (15.247) and Subpart E (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) will need a separate reassessment through a class II permissive change application or new certification.

This module is authorized for Low Power Indoor Client applications only; final host product must be for indoor operations only.

Further operation restrictions on the host product include:

\*Prohibited for control of or Communications with unmanned aircraft systems.

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. A separate SAR/Power Density 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 except for operations within the 5.925~7.125GHz band.

Use of other antenna types or the same type of antenna with higher gain than listed above must be performed with additional testing and appropriate permissive change approval.

Note2: In the 5.925-7.125GHz band, use of other similar type antennas and the antenna gain not higher/lower than listed above may only require a C1PC without any additional testing/submission.

Note3: Additional testing/submission (C2PC) will be required if the device does not meet the antenna and RF exposure requirements.

Note4: Contact Samsung for additional guidance, if you choose to use different antenna types or higher/lower gain antennas in the end system.



IMPORTANT: The final host product must have an integral antenna which is not removable by the end-user.

<b>Antenna Specification</b>	Antenna type : Chip Antenna
	Bluetooth/BLE : -1.62 dBi (BT0), 0.14 dBi (BT1)
	WLAN 2.4GHz : -0.63 dBi (ANT0), 0.67 dBi (ANT1)
	WLAN 5GHz : UNII 1, UNII 2A : 0.33 dBi (ANT0), 0.08 dBi (ANT1) UNII 2C, UNII 3 : 1.61 dBi (ANT0), 1.58 dBi (ANT1) UNII 4 : 0.32 dBi (ANT0), -0.33 dBi (ANT1)
	WLAN 6GHz : 1.27 dBi (ANT0), -0.04 dBi (ANT1)

IMPORTANT: The final host product must have an integral antenna which is not removable by the end-user.

### 2.8 Label and compliance information

The final end product must be labeled in a visible area with the following: "Contains FCC ID: A3LWCC940M". 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) 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.

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.



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### **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.

Modules: extended to host manufacturers by integration instructions.

### ***IMPORTANT NOTE***

This device complies with FCC & IC radiation exposure limits set forth for an uncontrolled environment. This device should be installed and must not be co-located or operating in conjunction with any other antenna or transmitter.

This device is intended only for OEM integrators under the following conditions:

- 1) This module may not be co-located with any other transmitters or antennas.
- 2) The antenna must be installed such that 20cm is maintained between the antenna and users.

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 with this module installed. In the event that these conditions cannot be met, then the FCC & IC authorizations are no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product including this module and obtaining separate FCC & IC authorizations.

### **Contact info for above certified FCC:**

Company Name: Samsung Electronics America, Inc

Contact Name: JENNI CHUN

Address: 19 Chapin Rd, Building D. Pine Brook, NJ 07058

Telephone No: 973-808-6375

Email: [j1.chun@samsung.com](mailto:j1.chun@samsung.com)



## **IC approval**

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

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

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique 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;
- (2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

The host device must be labeled to display the Industry Canada certification number of the module.

### **Contains transmitter module IC:649E-WCC940M**

*Le dispositif d'accueil doit être étiqueté pour afficher le numéro de certification d'Industrie Canada du module.*

### **Contient module émetteur IC :649E-WCC940M**

*Cet appareil est conforme aux limites de la FCC et IC exposition aux radiations dans un environnement non contrôlé.*

*Cet appareil doit être installé et ne doit pas être co-localisé ou opérant en conjonction avec une autre antenne ou un autre émetteur.*

*Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes :*

*1 ) L'antenne doit être installée de telle sorte que 20 cm est maintenue entre l'antenne et les utilisateurs . 2 )*

*Ce module ne peut pas être co-localisé avec d'autres émetteurs ou des antennes .*

*Aussilongtemps que deux conditions précitées sont remplies, le test du transmetteurs supplémentaires ne seront pas tenus. Toutefois, l'intégrateur OEM est toujours responsable de tester leurs produits finis pour toutes les exigences de conformité supplémentaires avec ce module installé.*

*Dans le cas où ces conditions ne peuvent pas être remplies, alors la FCC et IC autorisations ne sont plus considérées comme valides et l'ID de la FCC ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera responsable de réévaluer le produit final, y compris l'obtention de ce module et séparée de la FCC et IC*

*Autorisations*



## ***User Information***

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

**Attention:** *Toute change ou modifications non expressément approuvées par la partie responsable de la conformité pourraient annuler l'utilisateur `autorité de faire fonctionner cet équipement.*

-This device is restricted to indoor use only within the 5.15 ~ 5.25GHz Band. (Canada)

-User should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

*-Cet appareil est restreint à l'utilisation à l'intérieur seulement dans la bande 5.15 ~ 5.25GHz.*





## ***CE approval***

-This device is restricted to indoor use only within the 5.15 ~ 5.35GHz Band and 5.945~6.425GHz Band. (Europe)

### **Frequency Range and Maximum Output Power (EIRP)**

2400 MHz to 2483.5 MHz : Below 20 dBm for Bluetooth

2400 MHz to 2483.5 MHz : Below 20 dBm for 802.11b,g,n,ax

5150MHz to 5250 MHz : Below 23 dBm for 802.11a,n,ac,ax

5350MHz to 5725 MHz : Below 20 dBm for 802.11a,n,ac,ax

5725MHz to 5875 MHz : Below 14 dBm for 802.11a,n,ac,ax

5945MHz to 6425 MHz : Below 23dBm for 802.11 ax



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IT LI LT LU LV MT NL NO PL  
PT RO SE SI SK TR UK(NI)