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Module Integration Instructions

FCC ID: QCI-SKOWB276P1, IC: 4302A-SKOWB276P1

Dear Application Examiner:
SMART Technologies is seeking modular approval for SMART BLE/BT/WiFi radio module **Model: SKO.WB276P.1, FCC ID: QCI-SKOWB276P1, IC: 4302A-SKOWB276P1**.
The module is not intended for the general public and integrators. It is generally intended for industry/commercial use and must be professionally installed. The connector is contained within the transmitter enclosure and can only be accessed by disassembly of the transmitter, which is not normally required.
Installation must be controlled and requires special training. The OEM integrator is responsible for ensuring that the end-user has no capability to remove or install module.

Per KDB 996369 D03, the integration instructions for the radio module within the host product are described below:

2.2 **List of Applicable Rules:** The radio module has been assessed to comply with following rules applicable to the modular transmitter:

- FCC rule parts: CFR 47 FCC Part 15 C (15.247, DTS and DSS) and CFR 47 FCC Part 15 E (NII)
- ISED rule parts: RSS-247 and RSS-248

2.3 **Summarize the specific operational use conditions:** The SKO.WB276P.1 radio module is specifically intended for mobile application. It is not intended for sale as a stand-alone product. The radio transmitter has been approved to operate with the antenna types listed below with 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.
Specific use conditions are listed below:

1) Must use a dipole antenna with a gain not exceeding:
    - 3.83 dBi for BT/BLE/2.4GHz WiFi,
    - 5.52 dBi for 5GHz WiFi,
    - 5.84 dBi for 6GHz WiFi;
2) Shall be installed such that the end user cannot modify the antenna.
3) Antenna feed line shall be 50ohm. Fine tuning of return loss etc. can be performed using a matching network.
4) The antenna shall not be accessible for modification or change by the end user.

2.4 **Module Procedures:** The SKO.WB276P.1 radio module has been tested in a stand-alone configuration and complies with FCC Part 15.247 / Part 15.407 and RSS-247 / RSS-248. Application is for Single module approval.

2.5 **Trace Antenna Designs:** Not applicable.

Any deviation(s) from the defined parameters of the antenna trace, as described by the instructions, requires that the host product manufacturer must notify the module grantee that they wish to change the antenna trace design. In this case, a Class II Permissive Change application is required to be filed by the grantee, or the host manufacturer can take responsibility through the change in FCC ID / ISED Certification Number (new application) procedure followed by a Class II Permissive Change application.

2.6 RF Exposure Considerations: The module is limited to installation in mobile application. The host device must be operated with a minimum of 20cm to the end user(s). The following conditions are required for compliance with RF exposure limits:

1) This equipment is intended for mobile RF exposure condition. When integrated within the host device, a minimum of 20cm must be maintained between the antenna and the end user(s).
2) This user manual for the host device shall be available for the end user(s) and must include compliance statements related to the transmitter to indicate compliance with FCC and ISED radiation exposure limits set forth for an uncontrolled environment and caution to the end user to maintain a minimum separation distance of 20cm to the antenna.
   If RF exposure statements and use conditions are not satisfied, then the host product manufacturer is required to take responsibility of the module through a change in FCC ID (new application).

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

2.7 Antennas:

BLE/BT:

Antenna Type 1			
Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	2402-2480	Dipole Antenna	3.28

Antenna Type 2			
Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	2402-2480	Dipole Antenna	3.83

Antenna Type 3			
Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	2402-2480	Dipole Antenna	3.57

2.4G wifi:

Antenna Type 1			
Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	2412-2462	Dipole Antenna	3.28
2	2412-2462	Dipole Antenna	3.28

Antenna Type 2			
Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	2412-2462	Dipole Antenna	3.83
2	2412-2462	Dipole Antenna	3.83

Antenna Type 3			
Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	2412-2462	Dipole Antenna	3.57
2	2412-2462	Dipole Antenna	3.57

5G:

Antenna Type 1			
Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	5150-5825	Dipole Antenna	5.52
2	5150-5825	Dipole Antenna	5.52

Antenna Type 2			
Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	5150-5825	Dipole Antenna	4.65
2	5150-5825	Dipole Antenna	4.65

Antenna Type 3			
Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	5150-5825	Dipole Antenna	3.61
2	5150-5825	Dipole Antenna	3.61

Wifi 6E:

Antenna Type 1			
Antenna	Frequency (MHz)	Antenna Type	Minimum Antenna Gain (dBi)
1	5925-6525	Dipole Antenna	2.65
2	5925-6525	Dipole Antenna	2.65

Antenna Type 2			
Antenna	Frequency (MHz)	Antenna Type	Minimum Antenna Gain (dBi)
1	5925-6525	Dipole Antenna	4.01
2	5925-6525	Dipole Antenna	4.01

Antenna Type 3			
Antenna	Frequency (MHz)	Antenna Type	Minimum Antenna Gain (dBi)
1	5925-6525	Dipole Antenna	2.69
2	5925-6525	Dipole Antenna	2.69

Antenna Type 1			
Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	5925-6525	Dipole Antenna	4.46
2	5925-6525	Dipole Antenna	4.46

Antenna Type 2			
Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	5925-6525	Dipole Antenna	5.84
2	5925-6525	Dipole Antenna	5.84

Antenna Type 3			
Antenna	Frequency (MHz)	Antenna Type	Maximum Antenna Gain (dBi)
1	5925-6525	Dipole Antenna	3.99
2	5925-6525	Dipole Antenna	3.99

2.8 Label and Compliance Information:

- The radio module is labeled with radio identifiers. Labeling requirements are also satisfied with a visible label applied to the exterior surface of the host product housing. The label will identify the host product model and include the following statements:

  Contains FCC ID: QCI-SKOWB276P1
  Contains IC: 4302A-SKOWB276P 1

- The following statements apply to the radio module and must be included in the user documentation for the host product:

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.

Note: 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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

Caution: 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.

This device complies with RSS-247 and RSS-248 of the Innovation, Science and Economic Development Canada 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.

Cet appareil est conforme à la norme ISED CNR-247 et ISED CNR-248 pour les appareils radio agréés. Son fonctionnement est soumis aux deux conditions suivantes:

1. le dispositif ne doit pas produire de brouillage préjudiciable, et
2. ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Advertissement: Les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

2.9 Information on test modes and additional test requirements: Testing of host products shall be completed with all the transmitters installed – referred to as the composite investigation test.

This testing is recommended to verify that the host product meets all applicable FCC and ISED rules. The radio spectrum shall be investigated with all the transmitters in the final host product functioning to verify emissions do not exceed the highest limit permitted for any one individual transmitter as required by Section 2.947(f). The host manufacturer is responsible for ensuring that the host product operates as intended and does not have any emissions that are out of compliance which were not present when the transmitters were tested individually.

If the modular transmitter has been fully tested by the module grantee on the required number of channels, modulation types, and modes, it should not be necessary for the host installer to re-test all the available transmitter modes or settings. It is recommended that the host product manufacturer, installing the modular transmitter, perform some investigative measurements to confirm that the resulting composite system does not exceed the spurious emissions limits or band edge limits (e.g., where a different antenna may be causing additional emissions).

The testing should check for emissions that may occur due to the intermixing of emissions with the other transmitters, digital circuitry, or due to physical properties of the host product (enclosure). This investigation is especially important when integrating multiple modular transmitters where the certification is based on testing each of them in a stand-alone configuration.

2.10 Additional test, Part 15 Subpart B disclaimer: The SKO.WB276P.1 radio module is only authorized for the specific rule parts (FCC Part 15.247 / FCC Part 15.407 and RSS-247 / RSS-248) listed on the FCC grant and ISED certificate. The host product manufacturer is responsible for compliance with any other FCC / ISED rules that apply to the host not covered by the modular transmitter grant of certification. The host product, containing unintentional-radiator digital circuitry, shall comply with Part 15 Subpart B and ICES-003 with the radio module installed.

2.11 Note EMI Considerations: D04 Module Integration Guide has been considered as “best practice” for RF design engineering testing and evaluation of non-linear interactions which can generate additional non-compliant limits due to module placement to host components or properties.
For standalone mode, D04 Module Integration Guide was referenced, and simultaneous mode considered for the host product to confirm compliance.

2.12 How to make changes: Only the Grantee is permitted to make permissive changes. The Grantee may seek permissive changes to:

- Address changes to the radio module, or
- Address integration of the radio module within host products using a different antenna type or higher gain.

The transmitter shall be evaluated following the same procedure as identified in 2.4. Each host product model will require AC Powerline Conducted Emissions, Spurious Radiated Emissions, and conducted output power verification.

Please contact me if you have additional questions. Your attention to this matter is greatly appreciated.

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