

## Integration Instructions for ES205

### 2.1 General

This is Limited modular approval as this module is limited to installation by the grantee into our host systems. This user manual describes the integration procedure per Sec. 2.2 to 2.12 of KDB 996369 D03.

### 2.2 List of applicable FCC rules

This device complies with below part 15 of the FCC Rules.

Part 15 Subpart C, FCC Part15 Subpart E

### 2.3 Summarize the specific operational use conditions

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

The straddle channels for 5725MHz shall be disabled by the software of the host device.

5.15-5.35GHz band is restricted to indoor operations only.

The trace design from the module to the U.FL connector must be designed with the shape and impedance specified by Canon. Please see Clause 2.5 for detail.

This is Limited modular approval as this module is limited to installation by the grantee into our host systems. This module is certified as limited modular approval as it does not have its own power supply regulator, Therefore regulated 3.3V/1.8V must be supplied by a host device using voltage regulator, e.g. MAX77540AAWV+ or equivalent.

Mobile – 20 cm from a person's body

Use in portable RF exposure conditions is limited to the specific product and antenna configuration. To be used in any other way them granted, such as mobile to portable or with other transmitters simultaneously, requires additional evaluation, testing, or testing and Class 2 permissive change.

- Client device (per definition in 47 CFR § 15.202) is limited to indoor locations, does not connect directly to the internet nor to other clients.
- No vehicular use, except large aircrafts above 10000 ft.

### 2.4 Limited Modular procedures

This module is certified as limited modular approval as it does not have its own power supply regulator, therefore regulated 3.3V/1.8V must be supplied by a host device using voltage regulator, e.g. MAX77540AAWV+ or equivalent.

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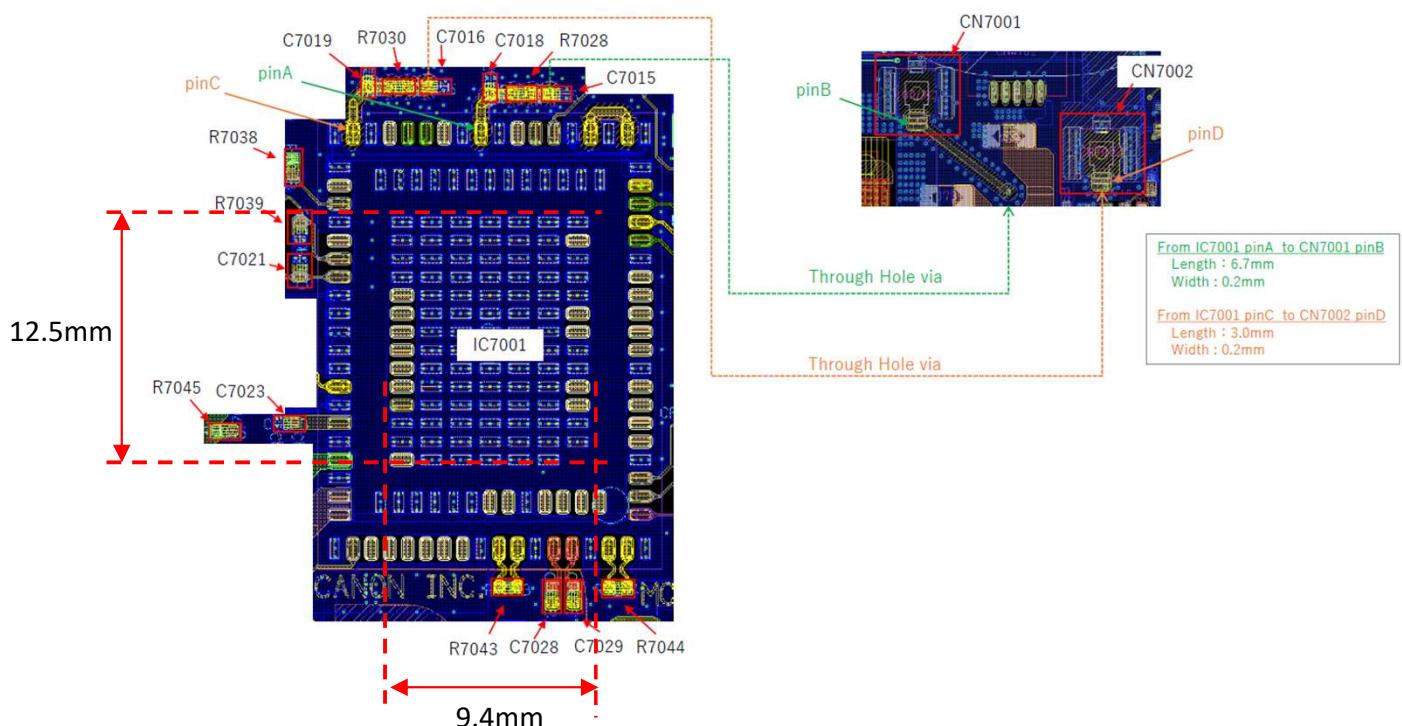
## 2.5 Trace antenna designs

<RF PCB>

The PCB thickness is 0.9 mm.

## Parts list

1	RF Module	IC7001	2.4GHz/5.0GHz/6.0GHz
2	NL/Resistor/Capacitor/Inductor	C7015	NL/0-47ohm/0.1pF-47pF/0.1nH-47nH
3	NL/Resistor/Capacitor/Inductor	C7018	NL/0-47ohm/0.1pF-47pF/0.1nH-47nH
4	NL/Resistor/Capacitor/Inductor	R7028	NL/0-47ohm/0.1pF-47pF/0.1nH-47nH
5	Connector	CN7001	RF Connector
6	NL/Resistor/Capacitor/Inductor	C7016	NL/0-47ohm/0.1pF-47pF/0.1nH-47nH
7	NL/Resistor/Capacitor/Inductor	C7019	NL/0-47ohm/0.1pF-47pF/0.1nH-47nH
8	NL/Resistor/Capacitor/Inductor	R7030	NL/0-47ohm/0.1pF-47pF/0.1nH-47nH
9	Connector	CN7002	RF Connector



IC7001 pin										
1 PCIE_PERST_L	21 GND5	41 GPIO_1_WL_DEV_WAKE	61 SDIO_DATA_2	81 GND31	101 BT_I2S_CLK	121 GND60				
2 PCIE_CLKREQ_L	22 BT_OUT	42 GND13	62 SDIO_DATA_0	82 GND32	102 BT_I2S_DI	122 GND61				
3 PCIE_PME_L	23 GND6	43 GPIO_0_WL_HOST_WAKE	63 SDIO_DATA_1	83 GND33	103 GND47	123 GND62				
4 GND1	24 BT_IN	44 GPIO_7	64 SDIO_CMD	84 GND34	104 GND48	124 GND63				
5 BT_PCM_SYNC	25 GND7	45 BT_REG_ON	65 SDIO_CLK	85 GND35	105 DMIC_DATA	125 LHL_GPIO2				
6 BT_PCM_IN	26 BT_DEV_WAKE	46 GND14	66 SDIO_DATA_3	86 GND36	106 DMIC_CLK	126 LHL_GPIO3				
7 BT_PCM_CLK	27 BT_HOST_WAKE	47 GND15	67 GND23	87 GND37	107 GND49	127 LHL_GPIO0				
8 BT_PCM_OUT	28 BT_CLK_REQ	48 GND16	68 PCIE_RDP	88 GND38	108 GND50	128 RF_SW_CTRL16				
9 GND2	29 GND8	49 GND17	69 PCIE_RDN	89 GND39	109 BT_GPIO_2	129 RF_SW_CTRL14				
10 I2S_DI	30 ANT0	50 GND18	70 GND24	90 GND40	110 BT_GPIO_9	130 RF_SW_CTRL15				
11 I2S_MCK	31 GND9	51 LPO_IN	71 PCIE_TDP	91 GND41	111 GND51	131 GPIO_12				
12 I2S_SCK	32 LHL_GPIO1	52 GND19	72 PCIE_TDN	92 GND42	112 GND52	132 GND64				
13 I2S_LRCK	33 GPIO_10_WL_UART	53 VDDOUT_RF3P3	73 GNS25	93 GND43	113 GND53	133 GND65				
14 I2S_DO	34 GPIO_11_WL_UART	54 GND20	74 PCIE_REFCLKP	94 GND44	114 BT_GPIO_11	134 NC				
15 GND3	35 GPIO_9_WL_UART	55 VDDIO	75 PCIE_REFCLKN	95 GND45	115 GND54	135-199 GND66-130				
16 BT_UART_RXD	36 GND10	56 GND21	76 GND26	96 MIC_P	116 GND55					
17 BT_UART RTS_N	37 ANT1	57 VBAT_1	77 GND27	97 MIC_N	117 GND56					
18 BT_UART_TXD	38 GND11	58 VBAT_2	78 GND28	98 GND46	118 GND57					
19 BT_UART_CTS_N	39 GND12	59 GND22	79 GND29	99 BT_T2S_DO	119 GND58					
20 GND4	40 GPIO_8_WL_UART	60 WL_REG_ON	80 GND30	100 BT_T2S_WS	120 GND59					

Fine tuning of return loss etc. can be performed using a matching network.

However, it is required to check "Class1 change" and "Class2 change" which the authorities define then.

## **2.6 RF exposure considerations**

1) Mobile – 20 cm from a person's body

Use in portable RF exposure conditions is limited to the specific product and antenna configuration.

To be used in any other way them granted, such as mobile to portable or with other transmitters simultaneously, requires additional evaluation, testing, or testing and Class 2 permissive change.

2) The following statements must be described on the user manual of the host device of this module;

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines. This equipment must be installed and operated keeping the radiator at least 20cm or more away from person's body.

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

Use in portable RF exposure conditions is limited to the specific product and antenna configuration.

To be used in any other way them granted, such as mobile to portable or with other transmitters simultaneously, requires additional evaluation, testing, or testing and Class 2 permissive change.

## **2.7 Antennas**

The device is designed to use the antenna below. Do not modify the antenna or any other part of the module. Any modifications will invalidate the modular certifications and require new approvals for the host system.

Model No.19AA-10-tmp

Antenna Type : monopole

Antenna Gain: 2400-2484MHz:2.67dBi@2484MHz

5150-5350MHz:5.14dBi@5150MHz

5470-5725MHz:3.53dBi@5470MHz

5725-5850MHz:3.05dBi@5725MHz

5900-6525MHz:1.61dBi@5950MHz

6525-7150MHz:0.60dBi@7150MHz

Connection: RF Connector(CN7001, CN7002). Please see clause 2.5 for reference.

## **2.8 Label and compliance information**

Following information must be indicated on the device of this module.

Contains FCC ID:AZD248

## **2.9 Information on test modes and additional testing requirements**

Test modes should take into consideration different operational conditions for a stand-alone modular transmitter in a host, as well as for multiple simultaneously transmitting modules or other transmitters in a host product.

For the evaluation to Host device, please contact CANON INC. We will provide the instruments for test.

## **2.10 Additional testing, Part 15 Subpart B disclaimer**

The modular transmitter is only FCC authorized for the specific rule parts (i.e., FCC transmitter rules) listed on the grant (FCC Part 15.247, FCC Part 15.407), and the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification.

The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

## **2.11 Note EMI Considerations**

We recommend to use "best practice" RF design engineering testing and evaluation in case non-linear interactions generate additional non-compliant limits due to module placement to host components or properties. The host manufacturer is responsible for ensuring compliance with the applicable FCC rules for the transmitters operating individually and simultaneously. This includes compliance for the summation of all emissions from all outputs occupying the same or overlapping frequency ranges, as defined by the applicable rules.

## **2.12 How to make changes**

Only the grantee is permitted to make permissive changes. Please contact CANON INC