

Model 2114 is a cellular module supporting 3G, LTE and 5G radios.

The module is intended to be integrated into a host system via an M.2 interface. Data only is supported.

Per FCC KDB 996369 D03 OEM Manual v01 guidance, host product manufacturers must strictly follow the following conditions 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 22, Part 24, Part 27, Part 90 and Part 96

2.3 Summarize the specific operational use conditions

The module is evaluated 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

Any connections other than direct antenna/coax connections to the module ports such as PCB traces, Flex or ribbon cables, would require some additional radiated spurious emissions testing and Permissive Change process in accordance with FCC 2.1043 and KDB 178919.

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 end product must use a permanently attached antenna or a unique antenna connector. Please refer to the Model 2114 Operational Description for maximum permitted antenna gains to comply with EIRP and RF exposure requirements when integrating this module into a host device.

The calculated antenna gains shown below specify the maximum antenna gains permitted to comply with EIRP and RF exposure requirements when integrating this module into a host device.

Maximum antenna gains allowed for host device in Standalone mode.

Technology	Band	Frequency [MHz]	Max Power [dBm]	Max Power [mW]	Distance [cm]	RF Exposure Limit		RFx Limiter	EIRP Limit		EIRP Limiter			
						FCC PD Limit [mW/cm ²]	ISED PD Limit [W/m ²]	PD Limit [mW/cm ²]	FCC EIRP Limit [dBm]	ISED EIRP Limit [dBm]	EIRP Limit [dBm]	Max Gain Based RFX [dBi]	Max Gain Based EIRP [dBi]	Max Gain Standalone [dBi]
NR-FR1	n2	1850	25.5	354.81	20	1.000	4.476	0.448	33.01	33.01	33.01	8.0	7.5	7.5
NR-FR1	n5	824	25.0	316.23	20	0.549	2.576	0.258	40.61	40.61	40.61	6.1	15.6	6.1
NR-FR1	n12	699	25.0	316.23	20	0.466	2.302	0.230	46.92	46.92	46.92	5.6	21.9	5.6
NR-FR1	n14	788	25.0	316.23	20	0.525	N/S	0.525	46.92	N/S	46.92	9.2	21.9	9.2
NR-FR1	n25	1850	25.5	354.81	20	1.000	4.476	0.448	33.01	33.01	33.01	8.0	7.5	7.5
NR-FR1	n26	814	25.0	316.23	20	0.543	N/S	0.543	40.61	N/S	40.61	9.4	15.6	6.1
NR-FR1	n30	2305	24.0	251.19	20	1.000	N/S	1.000	23.98	N/S	23.98	13.0	-0.1	-0.1
NR-FR1	n41 PC2	2496	27.0	501.19	20	1.000	5.493	0.549	33.01	33.01	33.01	7.4	6.0	6.0
NR-FR1	n41 PC3	2496	25.5	354.81	20	1.000	5.493	0.549	33.01	33.01	33.01	8.9	7.5	7.5
NR-FR1	n48	3550	22.0	158.49	20	1.000	N/S	1.000	23.00	N/S	23.00	15.0	1.0	1.0
NR-FR1	n66	1710	25.5	354.81	20	1.000	4.242	0.424	30.00	30.00	30.00	7.8	4.5	4.5
NR-FR1	n71	663	25.0	316.23	20	0.442	2.220	0.222	46.92	46.92	46.92	5.4	21.9	5.4
NR-FR1	n77 PC2	3450	27.0	501.19	20	1.000	N/S	1.000	30.00	N/S	30.00	10.0	3.0	3.0
NR-FR1	n77 PC3	3450	25.0	316.23	20	1.000	N/S	1.000	30.00	N/S	30.00	12.0	5.0	5.0
NR-FR1	n78 PC2	3450	27.0	501.19	20	N/S	6.853	0.685	N/S	30.00	30.00	8.4	3.0	3.0
NR-FR1	n78 PC3	3450	25.0	316.23	20	N/S	6.853	0.685	N/S	30.00	30.00	10.4	5.0	5.0
LTE	2	1850	25.5	354.81	20	1.000	4.476	0.448	33.01	33.01	33.01	8.0	7.5	7.5
LTE	4	1710	25.5	354.81	20	1.000	4.242	0.424	30.00	30.00	30.00	7.8	4.5	4.5
LTE	5	824	25.0	316.23	20	0.549	2.576	0.258	40.61	40.61	40.61	6.1	15.6	6.1
LTE	7	2500	25.5	354.81	20	N/S	5.499	0.550	N/S	33.01	33.01	8.9	7.5	7.5
LTE	12	699	25.0	316.23	20	0.466	2.302	0.230	46.92	46.92	46.92	5.6	21.9	5.6
LTE	13	777	25.0	316.23	20	0.518	2.474	0.247	46.92	46.92	46.92	5.9	21.9	5.9
LTE	14	788	25.0	316.23	20	0.525	N/S	0.525	46.92	N/S	46.92	9.2	21.9	9.2
LTE	25	1850	25.5	354.81	20	1.000	4.476	0.448	33.01	33.01	33.01	8.0	7.5	7.5
LTE	26	814	25.0	316.23	20	0.543	N/S	0.543	40.61	N/S	40.61	9.4	15.6	6.1
LTE	30	2305	24.0	251.19	20	1.000	N/S	1.000	23.98	N/S	23.98	13.0	-0.1	-0.1
LTE	38	2570	25.5	354.81	20	N/S	5.604	0.560	N/S	33.01	33.01	9.0	7.5	7.5
LTE	41 PC2	2496	27.0	501.19	20	1.000	N/S	1.000	33.01	N/S	33.01	10.0	6.0	6.0
LTE	41 PC3	2496	25.5	354.81	20	1.000	N/S	1.000	33.01	N/S	33.01	11.5	7.5	7.5
LTE	48	3550	22.0	158.49	20	1.000	N/S	1.000	23.00	N/S	23.00	15.0	1.0	1.0
LTE	66	1710	25.5	354.81	20	1.000	4.242	0.424	30.00	30.00	30.00	7.8	4.5	4.5
LTE	71	663	25.0	316.23	20	0.442	N/S	0.442	46.92	N/S	46.92	8.4	21.9	8.4
WCDMA	2	1850	25.5	354.81	20	1.000	4.476	0.448	33.01	33.01	33.01	8.0	7.5	7.5
WCDMA	4	1710	25.5	354.81	20	1.000	4.242	0.424	30.00	30.00	30.00	7.8	4.5	4.5
WCDMA	5	824	25.0	316.23	20	0.549	2.576	0.258	40.61	40.61	40.61	6.1	15.6	6.1
NR UL MIMO	n41 PC1.5	2496	30.0	1000.00	20	1.000	5.493	0.549	33.01	33.01	33.01	4.4	3.0	3.0
NR UL MIMO	n48 PC3	3550	22.0	158.49	20	1.000	N/S	1.000	23.00	N/S	23.00	15.0	1.0	1.0
NR UL MIMO	n77 PC1.5	3450	30.0	1000.00	20	1.000	N/S	1.000	30.00	N/S	30.00	7.0	0.0	0.0
NR UL MIMO	n78 PC2	3450	27.0	501.19	20	N/S	6.853	0.685	N/S	30.00	30.00	8.4	3.0	3.0

Maximum antenna gains allowed for host device in EN DC mode.

Technology	Band	Frequency [MHz]	EN-DC Combo Max Power [dBm]	Max Power [dBm]	Max Power [mW]	Distance [cm]	RF Exposure Limit		RfX Limiter	EIRP Limit		EIRP Limiter					
							FCC PD Limit [mW/cm^2]	ISED PD Limit [W/m^2]		FCC EIRP Limit [dBm]	ISED EIRP Limit [dBm]		FCC Percentage MPE Used	ISED Percentage MPE Used	Max Gain Based RfX [dBi]	Max Gain Based EIRP [dBi]	Max Gain EN-DC [dBi]
EN-DC, FR1	n2	1850	25.5	22.5	177.83	20	1.000	4.476	0.448	33.01	33.01	33.01	0.224	0.500	8.0	10.5	8.0
EN-DC, FR1	n5	824	25.0	22.0	158.49	20	0.549	2.576	0.258	40.61	40.61	40.61	0.234	0.500	6.1	18.6	6.1
EN-DC, FR1	n12	699	25.0	22.0	158.49	20	0.466	2.302	0.230	46.92	46.92	46.92	0.247	0.500	5.6	24.9	5.6
EN-DC, FR1	n25	1850	25.5	22.5	177.83	20	1.000	4.476	0.448	33.01	33.01	33.01	0.224	0.500	8.0	10.5	8.0
EN-DC, FR1	n30	2305	24.0	21.0	125.89	20	1.000	N/S	1.000	23.98	N/S	23.98	0.049	N/S	13.0	2.9	2.9
EN-DC, FR1	n41 PC3	2496	25.5	22.5	177.83	20	1.000	5.493	0.549	33.01	33.01	33.01	0.275	0.500	8.9	10.5	8.9
EN-DC, FR1	n48	3550	22.0	19.0	79.43	20	1.000	N/S	1.000	23.00	N/S	23.00	0.040	N/S	15.0	4.0	4.0
EN-DC, FR1	n66	1710	25.5	22.5	177.83	20	1.000	4.242	0.424	30.00	30.00	30.00	0.199	0.469	7.8	7.5	7.5
EN-DC, FR1	n71	663	25.0	22.0	158.49	20	0.442	2.220	0.222	46.92	46.92	46.92	0.247	0.492	5.4	24.9	5.4
EN-DC, FR1	n77 PC2	3450	27.0	24.0	251.19	20	1.000	N/S	1.000	30.00	N/S	30.00	0.199	N/S	10.0	6.0	6.0
EN-DC, FR1	n77 PC3	3450	25.0	22.0	158.49	20	1.000	N/S	1.000	30.00	N/S	30.00	0.199	N/S	12.0	8.0	8.0
EN-DC, FR1	n78 PC3	3450	25.0	22.0	158.49	20	N/S	6.853	0.685	N/S	30.00	30.00	N/S	0.290	10.4	8.0	8.0
EN-DC, LTE	B2	1850	27.0	24.0	251.19	20	1.000	4.476	0.448	33.01	33.01	33.01	0.224	0.500	6.5	9.0	6.5
EN-DC, LTE	B4	1710	25.5	22.5	177.83	20	1.000	4.242	0.424	30.00	30.00	30.00	0.199	0.469	7.8	7.5	7.5
EN-DC, LTE	B5	824	27.0	24.0	251.19	20	0.549	2.576	0.258	40.61	40.61	40.61	0.234	0.500	4.1	16.6	4.1
EN-DC, LTE	7	2500	25.0	22.0	158.49	20	N/S	5.499	0.550	N/S	33.01	33.01	N/S	0.500	9.4	11.0	9.4
EN-DC, LTE	12	699	27.0	24.0	251.19	20	0.466	2.302	0.230	46.92	46.92	46.92	0.247	0.500	3.6	22.9	3.6
EN-DC, LTE	13	777	27.0	24.0	251.19	20	0.518	2.474	0.247	46.92	46.92	46.92	0.239	0.500	3.9	22.9	3.9
EN-DC, LTE	14	788	27.0	24.0	251.19	20	0.525	N/S	0.525	46.92	N/S	46.92	0.500	N/S	7.2	22.9	7.2
EN-DC, LTE	25	1850	25.5	22.5	177.83	20	1.000	4.476	0.448	33.01	33.01	33.01	0.224	0.500	8.0	10.5	8.0
EN-DC, LTE	26	814	25.5	22.5	177.83	20	0.543	N/S	0.543	40.61	N/S	40.61	0.168	N/S	8.8	18.1	4.1
EN-DC, LTE	30	2305	27.0	24.0	251.19	20	1.000	N/S	1.000	23.98	N/S	23.98	0.049	N/S	10.0	-0.1	-0.1
EN-DC, LTE	38	2570	25.0	22.0	158.49	20	N/S	5.604	0.560	N/S	33.01	33.01	N/S	0.500	9.5	11.0	9.5
EN-DC, LTE	41 PC3	2496	25.0	22.0	158.49	20	1.000	N/S	1.000	33.01	N/S	33.01	0.398	N/S	12.0	11.0	11.0
EN-DC, LTE	48	3550	25.5	22.0	158.49	20	1.000	N/S	1.000	23.00	N/S	23.00	0.040	N/S	12.0	1.0	1.0
EN-DC, LTE	66	1710	27.0	24.0	251.19	20	1.000	4.242	0.424	30.00	30.00	30.00	0.199	0.469	6.3	6.0	6.0
EN-DC, LTE	71	663	25.0	22.0	158.49	20	0.442	N/S	0.442	46.92	N/S	46.92	0.494	N/S	8.4	24.9	8.4

2.8 Label and compliance information

The end product must be labeled in a visible area with the following: “Contains FCC ID: **C3K2114**”. End-product may also use electronic labeling provided all conditions of [784748 D02 e labeling v02r01](#) are met. 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. As long as all conditions above are met, further transmitter test will not be required. The integrator is ultimately responsible for testing their end-product for any additional compliance requirements required with this module installed.

IMPORTANT NOTE: If these conditions cannot 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 cannot be used on the final product. In these circumstances, the 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.

Host manufacturer responsibilities

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.

Information to the User

In the following sections, “equipment” refers to the module tested in the standalone configuration.

FCC Statements

FCC Interference Statement

This equipment 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 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.

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 operated in conjunction with any other antenna or transmitter.

RF Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated at a minimum distance 20cm between the radiator & your body.

Per FCC KDB 996369 D03 OEM Manual v01 guidance, the following conditions must be strictly followed when using this certified module:

ISED Statements

Industry Canada statement:

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.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à plus de 20 cm entre le radiateur et votre corps.

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 the two conditions above are met, further transmitter test will not be required, except for the host integration test requirements stated in Section 7 of this document. However, the integrator (Microsoft in this case) is ultimately responsible for testing the end product for any additional compliance requirements required with this module installed.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes: (Pour utilisation de dispositif module)

- 1) L'antenne doit être installée et exploitée avec plus de 20 cm entre l'antenne et les utilisateurs, et
- 2) Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.

Tant que les 2 conditions ci-dessus sont remplies, des essais supplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM est toujours responsable des essais sur son produit final pour toutes exigences de conformité supplémentaires requis pour ce module installé.

IMPORTANT NOTE:

In the event that these conditions cannot 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 cannot 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.

NOTE IMPORTANTE:

Dans le cas où ces conditions ne peuvent être satisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autre émetteur), l'autorisation du Canada n'est plus considérée comme valide et l'ID IC ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y compris l'émetteur) et l'obtention d'une autorisation distincte au Canada.

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 end product must be labeled in a visible area with the following: "Contains IC: **3048A-2114**".

Plaque signalétique du produit final

Ce module émetteur est autorisé uniquement pour une utilisation dans un appareil où l'antenne peut être installée et utilisée à plus de 20 cm entre l'antenne et les utilisateurs. Le

produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: **3048A-2114**".

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.

Manuel d'information à l'utilisateur final

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module. Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.