

# IGUP-CAT1

Datasheet

v1.0

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**Note:** This module is only for use inside of the Laird Sentrius IG60 Gateway.

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## 1 GENERAL FEATURES

The following are the general features of the IGUP-CAT1:

- 3GPP Rel.9 Compliant Protocol Stack
- Twelve bands FDD-LTE: 700, 800, 850, 900, 1700/2100 (AWS), 1800, 1900, 2100, MHz (bands 1, 2, 3, 4, 5, 8, 12, 20, 28)
- Seven bands UMTS (WCDMA/FDD): 800, 850, 900, 1700/2100 (AWS), 1800, 1900 and 2100 MHz (bands 1, 2, 4, 5, 8, 9, 19)
- Quad band GSM: 850, 900, 1800, and 1900 MHz
- SIM application toolkit, letter classes b, c, e with BIP and RunAT support
- Secure Connection with TLS
- Internet Services TCP/UDP server/client, DNS, Ping, HTTP, SMTP, FTP client
- Supply voltage range: 4.8-5.25V
- Dimension: 55.88 x 42 x 0.8 mm
- Operating temperature: -30C to +85
- RoHS compliant
- USB and UART interface to Sentrius IG60 host board
- M.2 connector interface (proprietary pinout – contact Laird Connectivity for details)
- Software control provided by Sentrius IG60 application
- External antenna required

## 2 REGULATORY

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

**IMPORTANT NOTE:**

**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 a minimum distance of 20 centimeters between the radiator and your body.

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

### 2.1.1 Integration Instructions for Host Product Manufacturers

**Applicable FCC Rules to Module**

FCC Part 22/24/27

**Summarize the Specific Operational Use Conditions**

The module is must be installed in mobile device.

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

1. The antenna must be installed such that 20 cm is maintained 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 tests are not 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 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 OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization. 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.

**Limited Module Procedures**

Not applicable

**Trace Antenna Designs**

Not applicable

**RF Exposure Considerations**

20-centimeter separation distance and co-located issue shall be met as mentioned in the *Summarize the Specific Operational Use Conditions* section.

Product manufacturer shall provide the below text in the end-product manual:

*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 and your body.*

### Antennas

Brand	Model	Antenna Type	Antenna Gain	Antenna Connector	Remarks
Laird	DBA6927C1	Dipole	2.2 dBi @ 1710~1910 MHz 0.5 dBi @ 699~849 MHz	U.FL	For WWAN

### **Label and Compliance Information**

Product manufacturers must provide a physical or e-label with the finished product that states the following:

**Contains FCC ID: SQG-IGUPCAT1**

### **Information on Test Modes and Additional Testing Requirements**

LTE: Simulator is required to link up and set the module to transmit at specific frequency, output power level under operation mode.

### **Additional Testing, Part 15 Subpart B Disclaimer**

The module is only FCC authorized for the specific rule parts listed on the grant, and that 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.

## **2.2 Industry Canada Statement**

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

Cet appareil contient des émetteurs / récepteurs exempts de licence qui sont conformes au (x) RSS (s) exemptés de licence d'Innovation, Sciences et Développement économique Canada. L'opération est soumise aux deux conditions suivantes:

1. Cet appareil ne doit pas causer d'interférences
2. Cet appareil doit accepter toute interférence, y compris les interférences pouvant provoquer un fonctionnement indésirable de l'appareil

### **Radiation Exposure Statement:**

This equipment complies with Canada 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.

### **Déclaration d'exposition aux radiations:**

Cet équipement est conforme Canada limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement doit être installé et utilisé à distance minimum de 20cm entre le radiateur et votre corps.

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

1. **The transmitter module may not be co-located with any other transmitter or antenna.**

As long the condition above is met, further transmitter testing is not required. However, the OEM integrator is still responsible for testing their 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:

1. **Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.**

Tant que les 1 condition 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 considéré 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**

The final end product must be labeled in a visible area with the following: **Contains IC: 3147A-IGUPCAT1**

**Plaque Signalétique du Produit Final**

Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: **Contient des IC: 3147A-IGUPCAT1**

**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.

This radio transmitter (*IC: 3147A-IGUPCAT1*) has been approved by *Industry Canada* to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (*IC: 3147A-IGUPCAT1*) a été approuvé par *Industrie Canada* pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Brand	Model	Antenna Type	Antenna Gain	Antenna Connector	Remarks
Laird	DBA6927C1	Dipole	2.2 dBi @ 1710~1910 MHz 0.5 dBi @ 699~849 MHz	U.FL	For WWAN

**3 REVISION HISTORY**

Version	Date	Notes	Contributor(s)	Approver
1.0	22 Oct 2019	Initial Release	Connie Lin	Paul Elvikis

FCC

Maximum permitted antenna gain of each mode is as below table

Mode	Antenna Gain (dBi)
GSM 850	8.44
WCDMA 850	9.41
LTE Band 5	9.41
LTE Band 12	8.7
GSM 1900	10.04
WCDMA1700	5
WCDMA 1900	8.01
LTE Band 2	8.01
LTE Band 4	5

IC

Maximum permitted antenna gain of each mode is as below table



Mode	Antenna Gain (dBi)
LTE Band 12	5.63
GSM 850	5.16
WCDMA 850	6.13
LTE Band 5	6.13
WCDMA1700	5.00
LTE Band 4	5.00
GSM 1900	10.04
WCDMA 1900	8.01
LTE Band 2	8.01