Features at a Glance

WIRELESS AND WIRED CONNECTIVITY

Gather data via Bluetooth 5, Ethernet, Serial, and USB, and then send it over high-performance 2x2 MIMO 802.11ac Wi-Fi or Global LTE Cat 1 to the cloud.

SOFTWARE SUPPORT FOR THE CLOUD-NATIVE OR EMBEDDED-EXPERT

Choose the best software for you – go cloud-native with built-in integration of AWS IoT and AWS IoT Greengrass or use our long-term supported Linux BSP.

SIGNED AND SECURED AT EVERY LAYER

Our Chain of Trust architecture creates secure devices that only runs approved software and stores data and files in encrypted memory.

STAY SECURE FOR YEARS

Get peace of mind with Laird Connectivity's continuous security updates to the Laird Connectivity OS. With the AWS variant, get updates deployed over-the-air right to your gateways in the field.

CERTIFIED FOR DEPLOYMENT AROUND THE WORLD

Regulatory approvals for FCC (USA), IC (Canada), CE (Europe), MIC (Japan), UL. LTE variants carry PTCRB, GCF, AT&T, and Vodafone certifications [all pending].

PERSONAL SUPPORT AND SERVICES FOR YOUR IMPLEMENTATION

Laird Connectivity's Tier 2 and FAE support bring expert assistance to your integration, working with you and our engineering team to reduce your time to market.

Laird CONNECTIVITY

Sentrius™ IG60 Wireless IoT Gateways

Multi-wireless IoT gateways with Bluetooth 5, Wi-Fi, LTE Cat 1, Ethernet, USB, Serial (RS-232/422/485), and SD card

- Best-in-class wireless performance with Bluetooth 5, 802.11ac Wave 2 Wi-Fi, Global LTE Cat 1
- Over-the-air security and application updates and hardware root-of-trust security
- Cloud-native software and mobile app allows AWS connectivity in minutes with no coding
- Linux BSP provides an option for embedded experts

The Sentrius™ IG60 brings all of Laird Connectivity's industrial wireless and IoT capabilities into one unique solution. Based on Laird Connectivity's 60-series and BL654, capture data from legacy serial (RS-232, 422, 485) industrial devices or Bluetooth 5 sensors, add cloud-managed edge intelligence, and send to the cloud with 802.11ac Wi-Fi and global LTE Cat 1 wireless connectivity.

For cloud-native organizations:

AWS IoT Greengrass Version:

- Manage your applications over-the-air, from the cloud, using integrated AWS IoT Greengrass
- Take the expertise out of deployment with our iOS and Android mobile app
- Stay secure in the field with automatic over-the-air security updates for 2 years

For embedded Linux experts:

Laird Connectivity Linux Version: A long-term supported, open platform for your application, provided with our Linux Buildroot platform, hardware root of trust, and development tools.

- **802.11ac Wave 2 Wi-Fi (Marvell 88W8997) -** 2x2 MIMO
- **Onboard Cortex A5 (Microchip SAMA5D36)**
- **Nordic nRF52840 (IG60-BL654 variant only)** – BT v5, Coded PHY (long range), 2MPHY, Cortex-M4F co-processor
- **LTE Cat 1 global connectivity (Gemalto PLS62-W, LTE variants only)**
- **Industrial Temp Range** – Operating range -30° to +85° C (+60° C for LTE variants)
- **Globally & Carrier Certified** – FCC, IC CE, MIC, UL, BT SIG plus PTCRB, GCF and **End Device** certified – AT&T, and Vodafone
- **Native AWS IoT Greengrass integration** – iOS and Android mobile app allow connection to your AWS account in minutes with no coding
- **Long term OS updates,** delivered over-the-air (AWS variant only) or through Laird Connectivity's support team (Linux variant)
- **Hardware root-of-trust based secure boot**

Bluetooth 5 Sensor Connectivity | Industrial IoT | Medical IoT | Smart Buildings

IG60-BL654	IG60-BL654-LTE (coming Q2-2020)	IG60-SERIAL	IG60-SERIAL-LTE (coming Q2-2020)
			

COMMON TO ALL IG60 GATEWAYS		
Compute	MPU	Microchip SAMA5D36 – Cortex A5, 536 MHz
Memory	RAM	256 MB LPDDR RAM
	Onboard Flash	512 MB NAND Flash
	Additional Storage	SD card support
External Interfaces	Ethernet	1x 10/100 Mbit/s and 1x 10/100/1000 Mbit/s with IEEE 1588
	USB	1x USB 2.0 Host
	SD Card	1x MicroSD slot (SDHC, SD Card 2.0) for additional external storage
Wi-Fi	Wi-Fi Standard	802.11ac with 2x2 MU-MIMO
	Radio	Marvell 88W8997
	Security Standards	WEP, WPA, WPA2, EAP-FAST, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-TLS*, EAP-TTLS* *Note: Available with Linux software version only
Physical	Dimensions	85mm x 22mm 100mm (without antennas or mounting brackets)
Electrical	Input Voltage	9-30 VDC (AC power adapters available)
Environmental	Relative Humidity	0-95% Non-condensing

	IG60-BL654	IG60-BL654-LTE
	With Bluetooth Co-Processor	
Specification	Bluetooth 5	Bluetooth 5
PHY Support	LE, 1M, 2M	LE, 1M, 2M
Radio	Nordic nRF52840	Nordic nRF52840
CPU	Cortex-M4F	Cortex-M4F
Memory	1 Mbit Flash	1 Mbit Flash
	256k RAM	256k RAM
Software	Laird *smart*Basic	Laird *smart*Basic
	Nordic SoftDevice	Nordic SoftDevice
	Zephyr	Zephyr
	FreeRTOS	FreeRTOS
Cellular	N/A	
Radio		Gemalto PLS62-W
Region		Global
4G LTE		Bands 1,2,3,4,5,7,8, 12,18,19,20,28
3G		Bands 1,2,4,5,8,9
2G		850, 900, 1800, 1900 MHz
Certifications		
RF	FCC, IC, CE, MIC	FCC, IC, CE, MIC
Safety	CE, UL, IEC62368-1	CE, UL, IEC62368-1
Cellular Certifications	N/A	PTCRB, GCF, AT&T, Vodafone
Operating Temperature	-30° to +85°C (-22° to +185°F)	-30° to +60°C (-22° to +140°F)
Antenna Ports	3x SMA, front-face	3x SMA, front-face 2x SMA, back-face
Mounting	DIN-rail, wall mount	Wall mount only

	IG60-SERIAL	IG60-SERIAL-LTE
	With Serial Port	
Connector	1x DB-9	1x DB-9
Standards	RS-232/422/485	RS-232/422/485
Isolation	1.5 kV	1.5 kV
Protocols	ASCII	ASCII
	Modbus	Modbus
	Proprietary	Proprietary
Bluetooth		
Specification	Bluetooth 4.2	Bluetooth 4.2
Radio	Marvell 88W8997	Marvell 88W8997
Software	BlueZ (HCI)	BlueZ (HCI)
Cellular	N/A	
Radio		Gemalto PLS62-W
Region		Global
4G LTE		Bands 1,2,3,4,5,7,8, 12,18,19,20,28
3G		Bands 1,2,4,5,8,9
2G		850, 900, 1800, 1900 MHz
Certifications		
RF	FCC, IC, CE	FCC, IC, CE
Safety	CE, UL, IEC62368-1	CE, UL, IEC62368-1
Cellular Certifications	N/A	PTCRB, GCF, AT&T, Vodafone
Operating Temperature	-30° to +85°C (-22° to +185°F)	-30° to +60°C (-22° to +140°F)
Antenna Connectors	2x SMA, front-face	2x SMA, front-face 2x SMA, back-face
Mounting	DIN-rail, wall mount	Wall mount only

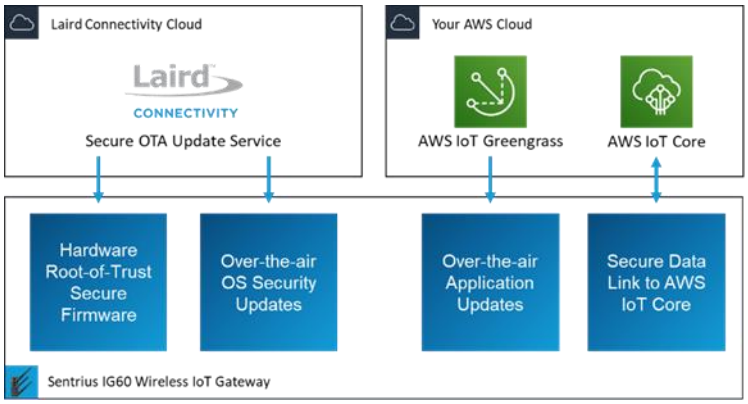
Interested in Laird's Sentrius IG60? Visit us at https://www.lairdconnect.com/iot-devices/iot-gateways/sentrius-ig60-wireless-iot-gateway

Laird™ CONNECTIVITY

For cloud-native organizations without embedded or wireless expertise

Sentrius IG60 with integrated AWS IoT Greengrass, deployment tools, and managed IoT security services

- Securely connect to your AWS cloud in minutes with a mobile app – *no coding or compiling required!*
- Deploy your applications instantly, over-the-air, using AWS IoT Greengrass
- Data flows directly to your cloud via AWS IoT Core
- Gateways in the field receive automatic, over-the-air security updates
- All gateway firmware is secured out-of-box with a hardware root-of-trust

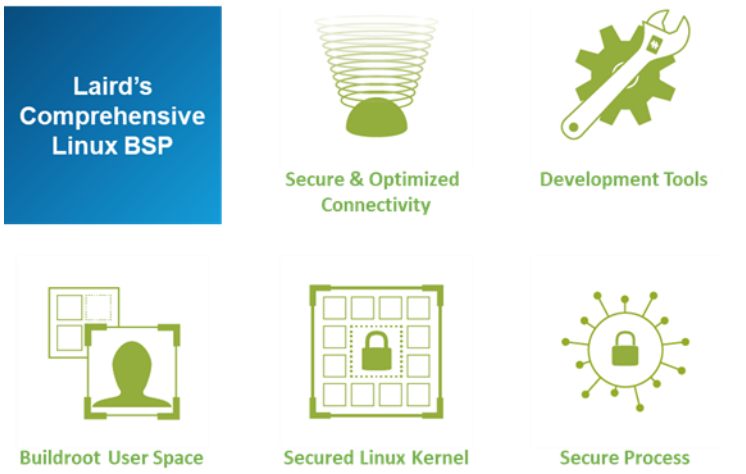


IoT Technology	Application	AWS IoT Greengrass
	Scripting Languages Supported	Python, Node.JS
	Data Broker	AWS IoT Core (MQTT)
	IoT Security	X.509 Certificates
	Mobile App Support	iOS, Android
Embedded Security	Secure Boot	Hardware Root-of-Trust Enabled
	Over-the-Air Linux Security Updates	2 years

For engineering organizations with embedded experience looking for multi-wireless connectivity

Sentrius IG60 with Laird Linux and Chain of Trust Security

- Develop your application on top of a long-term supported (LTS) Buildroot environment
- Complete set of development tools including precompiled SDK and tool chain, IDE support, and a host communications API
- Annual major releases and bi-annual minor releases for new security updates
- Achieve best-in-class wireless performance using our performance-optimized Wi-Fi supplicant and Bluetooth programming language, *smart*Basic (IG60-BL654 only).
- Secure processes for secure boot and ongoing security maintenance via Laird's Chain of Trust



Linux	Linux Kernel	v4.19
	Build Environment	Buildroot
	Development Tools	Use precompiled SDKs & images or build your own. Host communications API, Eclipse IDE Support, Laird Connection Manager
Security	Chain of Trust	Secure boot, encrypted file system

One wireless IoT hardware platform.
Two software approaches to match your needs.

Ordering a Sentrius IG60

Gateways

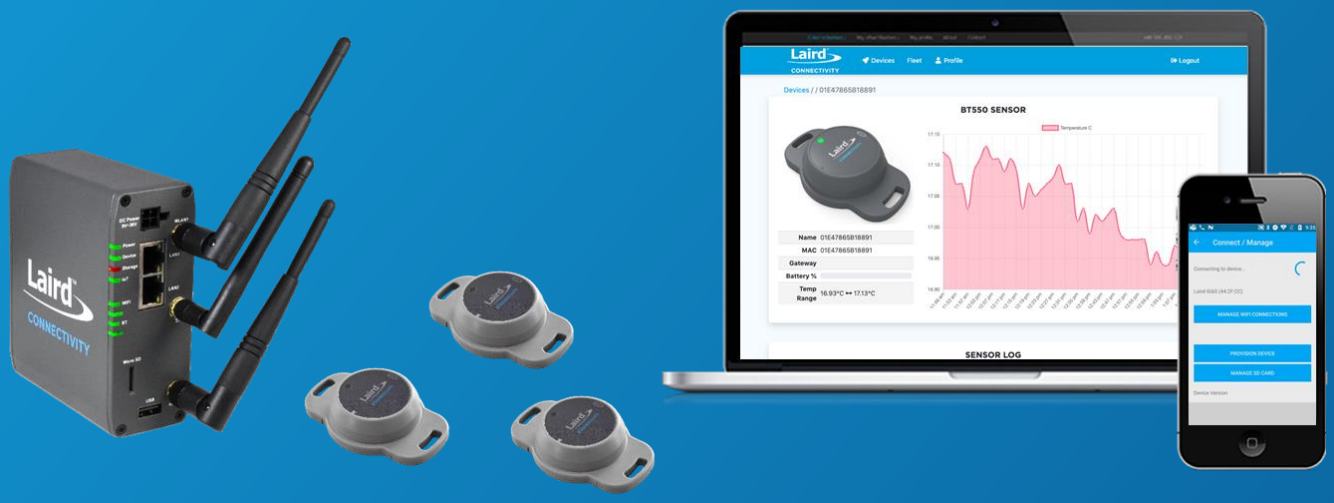
GATEWAY	CONTENTS	SOFTWARE	PART NUMBER
IG60-BL654	• 1x Sentrius IG60 Bluetooth 5 (BL654) and Wi-Fi • 3x dipole antennas • 1x DIN-rail mounting bracket • 1x wall mounting bracket • 8x screws for mounting brackets ***Power supply not included – choose an option below***	Laird Linux	455-00076
		AWS IoT Greengrass	455-00081
IG60-BL654-LTE	• 1x Sentrius IG60 Bluetooth 5 (BL654), Wi-Fi, and LTE gateway • 5x dipole antennas • 2x SIM cards (AT&T and Global) • 1x wall mounting bracket • 8x screws for mounting brackets ***Power supply not included – choose an option below***	Laird Linux	*Coming Soon*
		AWS IoT Greengrass	*Coming Soon*
IG60-SERIAL	• **1x Sentrius IG60 Serial, BLE4.2, and Wi-Fi gateway** • **2x dipole antennas** • **1x DIN-rail mounting bracket** • **1x wall mounting bracket** • **8x screws for mounting brackets** • 1x AC power supply included 1x DC power cable included	Laird Linux	455-00006
		AWS IoT Greengrass	455-00008
IG60-SERIAL-LTE	• 1x Sentrius IG60 Serial, BLE4.2, Wi-Fi, and LTE gateway • 4x dipole antennas • 2x SIM cards (AT&T and Global) • 1x wall mounting bracket • 8x screws for mounting brackets ***Power supply not included – choose an option below***	Laird Linux	*Coming Soon*
		AWS IoT Greengrass	*Coming Soon*

Power Supplies

REGION	DESCRIPTION	PART NUMBER
US	AC Adapter, 12V-4A, US, 4-pin 7.5mm x 9.2mm Plug	223-00007
Europe	AC Adapter, 12V-4A, EU, 4-pin 7.5mm x 9.2mm Plug	223-00008
UK	AC Adapter, 12V-4A, UK, 4-pin 7.5mm x 9.2mm Plug	223-00009
Global	DC Cable, 20AWG, UL2464, 41 Strands, Black	131-00225

For documentation visit documentation.lairdconnect.com

To launch the out-of-box demonstration, visit demo.lairdconnect.com



Laird Connectivity's Sentrius Wireless IoT Starter Kit

Everything you need in one box to start your wireless IoT proof-of-concept in minutes.

Contains:

- 1x Sentrius IG60-BL654 Wireless IoT Gateway with global power supplies
- 3x Sentrius BT510 – Long-range Bluetooth 5 temperature, motion, and open door sensor
- Laird Connectivity's free AWS-based IoT monitoring platform
- Sentrius IG Connect - iOS and Android mobile app for fast, in-field provisioning

Use Cases:

- Cold chain transportation monitoring
- Refrigeration monitoring
- Discover the power of Bluetooth 5, long-range battery-powered sensors

DESCRIPTION	PART NUMBER
Sentrius Wireless IoT Starter Kit with IG60-BL654 and BT510s (Wi-Fi and Ethernet uplink)	455-00113
Sentrius Wireless IoT Starter Kit with IG60-BL654-LTE and BT510s (Wi-Fi, Ethernet, and LTE uplink)	Coming Soon

IG60-LTE Regulatory Statements

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.

IMPORTANT NOTE: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.

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

Country Code selection feature to be disabled for products marketed to the US/CANADA

Operation of this device is restricted to indoor use only

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

This radio transmitter (**contains IC: 3147A-SU60SOMC and 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 (**contains IC: 3147A-SU60SOMC and :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.*

For WI-FI:

Manufacturer	Laird Part Number	Type	Connector	2.4GHz	5GHz
Laird	LSR/001-0009	Dipole	IPEX U.FL	2 dBi	2 dBi

For LTE:

Brand / Model	Type	Connector	Peak gain (dBi)
Laird/DBA6927C1	Dipole	SMA_MALE	2.2
Laird/DBA6927C1	Dipole	SMA_MALE	2.2
Laird/DBA6927C1	Dipole	SMA_MALE	0.5
Laird/DBA6927C1	Dipole	SMA_MALE	0.5
Laird/DBA6927C1	Dipole	SMA_MALE	2.2
Laird/DBA6927C1	Dipole	SMA_MALE	2.2
Laird/DBA6927C1	Dipole	SMA_MALE	2.2
Laird/DBA6927C1	Dipole	SMA_MALE	0.5
Laird/DBA6927C1	Dipole	SMA_MALE	0.5
Laird/DBA6927C1	Dipole	SMA_MALE	0.5

Caution:
(i) 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;

(ii) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;

(iii) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate; and

Operations in the 5.25-5.35GHz band are restricted to indoor usage only.

Avertissement:
les dispositifs fonctionnant dans la bande de 5150 à 5250MHz 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;

pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis pour les dispositifs utilisant les bandes de 5250 à 5350MHz et de 5470 à 5725 MHz doit être conforme à la limite de la p.i.r.e;

pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5725 à 5850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée pour l'exploitation point à point et l'exploitation non point à point, selon le cas;

Les opérations dans la bande de 5.25-5.35GHz sont limités à un usage intérieur seulement.

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.

Europe – EU Declaration of Conformity

This device complies with the essential requirements of the Radio Equipment directive: 2014 / 53 / EU. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the Radio Equipment directive: **2014 / 53 / EU**:

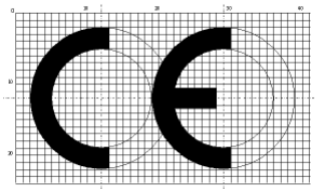
- EN 300 328 V2.2.2
- EN 301 893 V2.1.1
- EN 301 511 V12.5.1
- EN 301 908-1 V11.1.1
- EN 62311: 2008
- EN 50385: 2017
- EN 50665: 2017
- EN 301 489-1 V2.2. 3
- EN 301 489-17 V3.2.0 (Draft)
- EN 301 489-52 V1.1.0 (Draft)
- IEC 62368-1:2014;and/or
  - EN62368-1:2014+A11:2017

20dBm, 5.15~5.25GHz
20dBm, 5.25~5.35GHz
20dBm, 5.45~5.725GHz
19 dBm, 2.4G: 2.412 MHz~2.472MHz

SW version: R2.0
The minimum distance between the user and/or any bystander and the radiating structure of the transmitter is 20cm.

5150 ~ 5350 MHz is limited to indoor used in below countries.

	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR
	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT
	RO	SI	SK	FI	SE	UK	LI	IS	NO	TR	CH



IG60-BL654 Regulatory Statements

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.

IMPORTANT NOTE: 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.

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

Country Code selection feature to be disabled for products marketed to the US/CANADA

Operation of this device is restricted to indoor use only

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

This radio transmitter (**contains IC: 3147A-SU60SOMC and IC: 3147A-BL654**) *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 (**contains IC: 3147A-SU60SOMC and IC: 3147A-BL654**) *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.*

For Bluetooth:

Manufacturer	Laird Part Number	Type	Connector	2400~2483.5MHz
WALSIN	RFDPA870900SBAB8G1	Dipole	RP-SMA Male	2

For WI-FI

Manufacturer	Laird Part Number	Type	Connector	2.4GHz	5GHz
Laird	LSR/001-0009	Dipole	IPEX U.FL	2 dBi	2 dBi

Caution:

(i) 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;
(ii) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;
(iii) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate; and

Operations in the 5.25-5.35GHz band are restricted to indoor usage only.

Avertissement:

(i) les dispositifs fonctionnant dans la bande de 5150 à 5250MHz 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;
(ii) pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis pour les dispositifs utilisant les bandes de 5250 à 5350MHz et de 5470 à 5725 MHz doit être conforme à la limite de la p.i.r.e;
(iii) pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5725 à 5850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée pour l'exploitation point à point et l'exploitation non point à point, selon le cas;

Les opérations dans la bande de 5.25-5.35GHz sont limités à un usage intérieur seulement.

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.

IG60-LTE-BL654 Regulatory Statements

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.

IMPORTANT NOTE: 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.

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

Country Code selection feature to be disabled for products marketed to the US/CANADA

Operation of this device is restricted to indoor use only

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

*This radio transmitter (**contains IC: 3147A-SU60SOMC and IC: 3147A-BL654 and 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 (**contains IC: 3147A-SU60SOMC and IC: 3147A-BL654 and 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.*

For Bluetooth :

Manufacturer	Laird Part Number	Type	Connector	2400~2483.5MHz
WALSIN	RFDPA870900SBAB8G1	Dipole	RP-SMA Male	2

For Wi-Fi

Manufacturer	Laird Part Number	Type	Connector	2.4GHz	5GHz
Laird	LSR/001-0009	Dipole	IPEX U.FL	2 dBi	2 dBi

For WWAN:

Brand / Model	Type	Connector	Frequency	Peak gain (dBi)
Laird/DBA6927C1	Dipole	SMA_MALE	1710MHz ~ 2570MHz	2.2
			699MHz ~ 915MHz	0.5

For LTE :

Brand / Model	Type	Connector	Peak gain (dBi)
Laird/DBA6927C1	Dipole	SMA_MALE	2.2
Laird/DBA6927C1	Dipole	SMA_MALE	2.2
Laird/DBA6927C1	Dipole	SMA_MALE	0.5
Laird/DBA6927C1	Dipole	SMA_MALE	0.5
Laird/DBA6927C1	Dipole	SMA_MALE	2.2
Laird/DBA6927C1	Dipole	SMA_MALE	2.2
Laird/DBA6927C1	Dipole	SMA_MALE	2.2
Laird/DBA6927C1	Dipole	SMA_MALE	0.5
Laird/DBA6927C1	Dipole	SMA_MALE	0.5
Laird/DBA6927C1	Dipole	SMA_MALE	0.5

Caution:

(i) 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;

(ii) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;

(iii) for devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate; and

Operations in the 5.25-5.35GHz band are restricted to indoor usage only.

Avertissement:

(i) les dispositifs fonctionnant dans la bande de 5150 à 5250MHz 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;

(ii) pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis pour les dispositifs utilisant les bandes de 5250 à 5350MHz et de 5470 à 5725 MHz doit être conforme à la limite de la p.i.r.e;

(iii) pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5725 à 5850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée pour l'exploitation point à point et l'exploitation non point à point, selon le cas;

Les opérations dans la bande de 5.25-5.35GHz sont limités à un usage intérieur seulement.

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.

Europe – EU Declaration of Conformity

This device complies with the essential requirements of the Radio Equipment directive: 2014 / 53 / EU. The following test methods have been applied in order to prove presumption of conformity with the essential requirements of the Radio Equipment directive:

- **2014 / 53 / EU**:
- EN 300 328 V2.2.2
- EN 301 893 V2.1.1
- EN 301 511 V12.5.1
- EN 301 908-1 V11.1.1
- EN 301 908-2 V11.1.2
- EN 301 908-13 V11.1.2
- EN 62311: 2008
- EN 50385: 2017
- EN 50665: 2017
- EN 301 489-1 V2.2.3
- EN 301 489-3 V2.1.1
- EN 301 489-17 V3.2.0 (Draft)
- EN 301 489-52 V1.1.0 (Draft)
- IEC 62368-1:2014;and/or
- EN62368-1:2014+A11:2017

20dBm, 5.15~5.25GHz

20dBm, 5.25~5.35GHz

20dBm, 5.45~5.725GHz

10 dBm, 2.4G: 2.412 MHz~2.472MHz

SW version: R2.0

The minimum distance between the user and/or any bystander and the radiating structure of the transmitter is 20cm.

5150 ~ 5350 MHz is limited to indoor used in below countries.

	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR
	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT
	RO	SI	SK	FI	SE	UK	LI	IS	NO	TR	CH