



NW-0101 Module Datasheet

Version 1.0

1. Description

The NW-0101 is a highly integrated module designed by RYSE Inc.. It utilizes the Mediatek MT7688AN System on a Chip (SoC) device which is based on the MIPS 24K CPU processor core. The SoC includes 802.11b/g/n Wi-Fi, making the Omega2 ideal for Internet of Things (IoT) applications and projects. In addition to the SoC, the module includes DDR2 DRAM, Flash memory, and all of the components necessary to allow this product to be a fully functional and complete device.

- Mechanical dimensions and footprint: 20mm x 35mm, 2.8mm high
- Greater quantity of I/O signals available to the user, 42 I/O.
- No SD Card slot on the bottom.
- No Wifi chip antenna. An external antenna must be connected.

2. Key features

- Embedded MIPS24KEc (580 MHz) with 64 KB I-Cache and 32 KB D-Cache
- 1T1R 2.4 GHz with 150 Mbps PHY data rate
- Legacy 802.11b/g and HT 802.11n modes
- 20/40 MHz channel bandwidth
- Green AP/STA - Intelligent Clock Scaling (exclusive) - DDRII: ODT off, Self-refresh mode
- 1-port 10/100 FE PHY
- x1 USB 2.0 Host
- SPI/SD-XC/eMMC
- SPI, I2C, I2S, PWM, PCIe, UART, GPIO
- An optimized PMU
- WEP64/128, AES, WPA, WPA2, WAPI
- LEDE Linux Operating System

3. Regulations

3.1. List of applicable FCC rules

CFR 47 FCC PART 15 SUBPART C/E has been investigated. It is applicable to the modular.

3.2. Specific operational use conditions

This module is stand-alone modular. If the end product will involve the Multiple simultaneously transmitting condition or different operational conditions for a stand-alone modular transmitter in a host, host manufacturer have to consult with module manufacturer for the installation method in end system.

3.3. Limited module procedures

Not applicable

3.4. Trace antenna designs

Not applicable

3.5. RF exposure considerations

To maintain compliance with FCC's RF Exposure guidelines, this equipment should be installed and operated with minimum distance of 20cm from your body.

3.6. Antennas

This radio transmitter FCC ID: 2BAAG-NW0101 has been approved by Federal Communications Commission to operate with the antenna types listed below, with the 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.

Antenna type	Maximum Antenna gain
Patch antenna	4.4dBi

3.7. Label and compliance information

The final end product must be labeled in a visible area with the following " Contains FCCID: 2BAAG-NW0101"

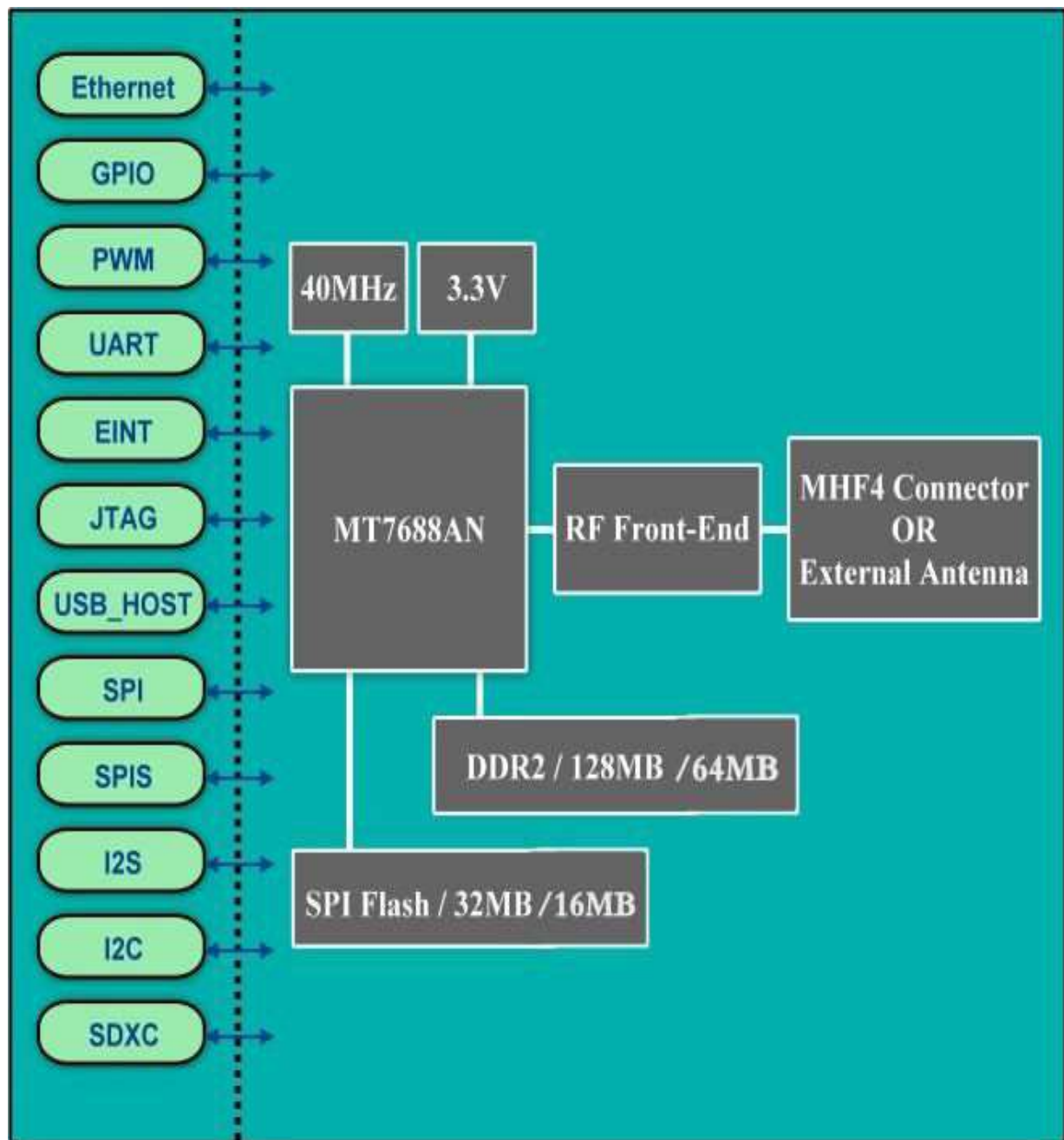
3.8. Information on test modes and additional testing requirements

Host manufacturer is strongly recommended to confirm compliance with FCC requirements for the transmitter when the module is installed in the host.

3.9. Additional testing, Part 15 Subpart B disclaimer

Host manufacturer is responsible for compliance of the host system with module installed with all other applicable requirements for the system such as Part 15 B.

4. Block Diagram

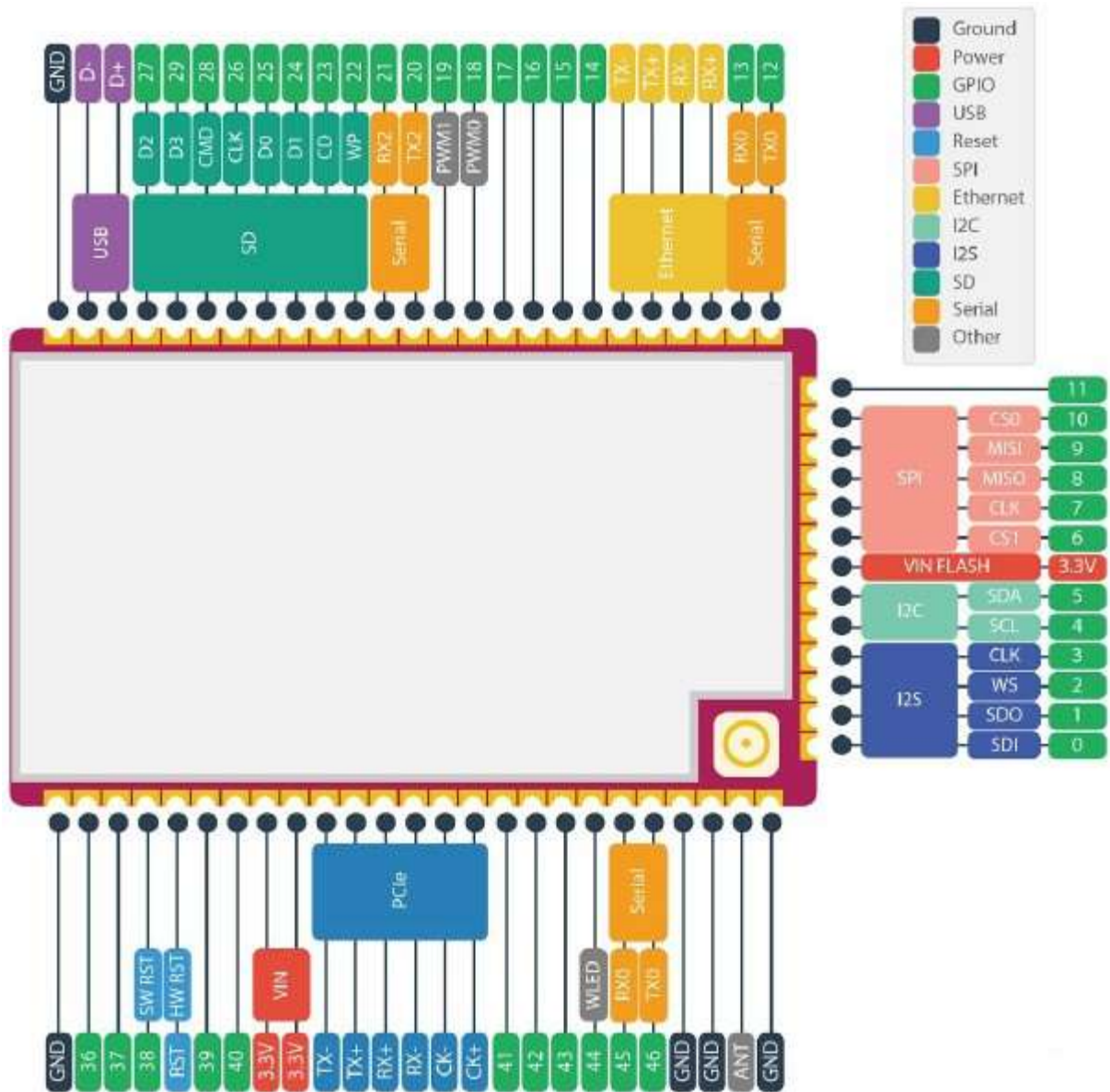


5. Specifications

Item	parameter
Chipset	MT7688AN
Core	MIPS24KEc
Clock Speed	580MHz
Memory	
Flash	16MB or 32MB
DDR2 DRAM	64MB or 128MB
WIFI Protocol and Interface Standard	
WiFi protocol	IEEE 802.11 b/g/n
Ethernet	1 10M/100M
USB 2.0 Host	1
SDIO/eMMC	1
SPI	1
I2C	1
I2S	1
PCIe	1
UART	3
PWM	4
GPIO	Up to 30
Power Supply Requirement	
DC Input	3.3V
No-load Running Current	200±40mA
Supply Current Requirement	More than 800mA
Operation Conditions	
Ambient Temperature	-10°C ~ 55 °C
Storage Temperature	-20°C ~ 80° C
Operating Humidity	10%-95%RH (Non-Condensing)
Storage Humidity	5%-95%RH (Non-Condensing)
Dimension	
Size	35*20*2.8mm

6. Pin-Out Information

6.1. PinOut Diagram



6.2. Pin Definations

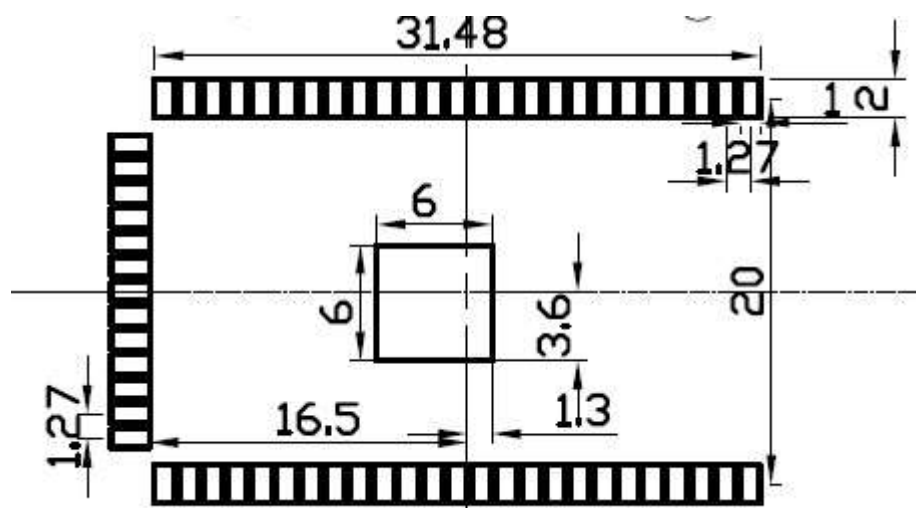
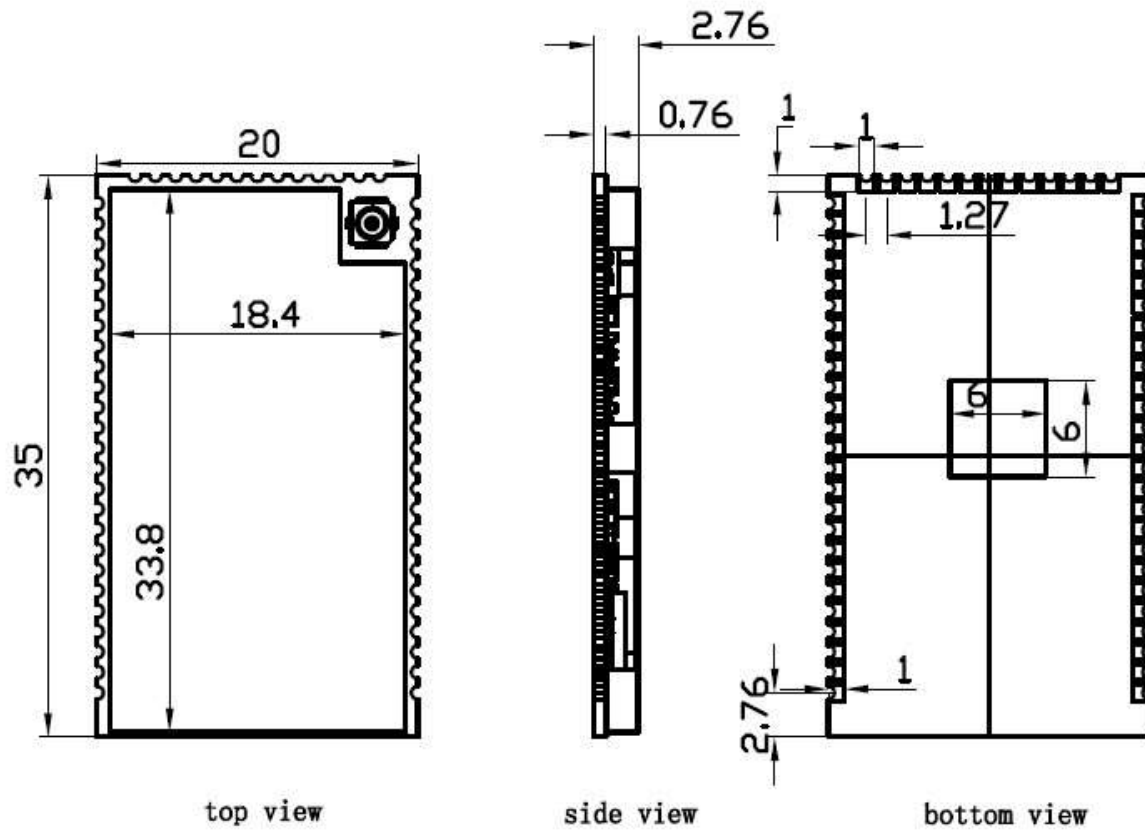
No	PIN Name	Description
A1	GPIO_0/I2S_SDI	General Purpose I/O / I2S Data Input
A2	GPIO_1/I2S_SDO	General Purpose I/O / I2S Data Output
A3	GPIO_2/I2S_WS	General Purpose I/O / I2S word select
A4	GPIO_3/I2S_CLK	General Purpose I/O / I2S clock
A5	GPIO_4/I2C_SCLK	General Purpose I/O / I2C clock
A6	GPIO_5/I2C_SD	General Purpose I/O / I2C Data
A7	VDD_FLASH	3.3V FLASH Power Supply
A8	SPI_CS1	SPI chip select1
A9	SPI_CLK	SPI clock
A10	SPI_MISO	SPI Master input/Slave output
A11	SPI_MOSI	SPI Master output/Slave input
A12	SPI_CS0	SPI chip select 0
A13	GPIO_11	General Purpose I/O
B1	GPIO_12 /UART_TXD0	General Purpose I/O / UART0 Lite TXD
B2	GPIO_13 /UART_RXD0	General Purpose I/O / UART0 Lite RXD
B3	RXI_P0	10/100 PHY Port #0 RXP
B4	RXI_N0	10/100 PHY Port #0 RXN
B5	TXO_P0	10/100 PHY Port #0 TXP
B6	TXO_N0	10/100 PHY Port #0 TXN
B7	GPIO_14	General Purpose I/O
B8	GPIO_15	General Purpose I/O
B9	GPIO_16	General Purpose I/O
B10	GPIO_17	General Purpose I/O
B11	GPIO_18/PWM_CH0	General Purpose I/O / PWM Channel 0
B12	GPIO_19/PWM_CH1	General Purpose I/O / PWM Channel 1

B13	GPIO_20/PWM_CH2/UART_TXD2	General Purpose I/O / PWM Channel 2/UART2 Lite TXD
B14	GPIO_21/PWM_CH3/UART_RXD2	General Purpose I/O / PWM Channel 3/UART2 Lite RXD
B15	SD_WP	SD Write-protect, 1 : yes, 0 : no
B16	SD_CD	Card Detection, 1 : No card ; 0 : Has a card
B17	SD_D1	SDIO Data 1
B18	SD_D0	SDIO Data 0
B19	SD_CLK	SDIO Clock
B20	SD_CMD	SDIO Command
B21	SD_D3	SDIO Data 3
B22	SD_D2	SDIO Data 2
B23	USB_DP	USB Port0 data pin Data+
B24	USB_DM	USB Port0 data pin Data-
B25	GND	Ground pin
C1	GND	Ground pin
C2	WIFI_RF	RF output
C3	GND	Ground pin
C4	GND	Ground pin
C5	GPIO_46/UART_RXD1	General Purpose I/O / UART1 Lite RXD
C6	GPIO_45/UART_TXD1	General Purpose I/O / UART1 Lite TXD
C7	WLED_N	WLAN Activity LED
C8	GPIO_43	General Purpose I/O
C9	GPIO_42	General Purpose I/O
C10	GPIO_41	General Purpose I/O
C11	PCIE_CKP0	External reference clock output (positive)
C12	PCIE_CKN0	External reference clock output (negative)
C13	PCIE_RXN0	PCIe0 differential receiver RX -
C14	PCIE_RXP0	PCIe0 differential receiver RX +

C15	PCIE_TXP0	PCIe0 differential transmit TX +
C16	PCIE_TXN0	PCIe0 differential transmit TX -
C17	3.3V	3.3V Power Supply
C18	3.3V	3.3V Power Supply
C19	GPIO_40/LINK3	General Purpose I/O
C20	GPIO_39/LINK4	General Purpose I/O
C21	CPURST_N	Power on reset
C22	GPIO_38/WPS_RST_PBC	General Purpose I/O / Default User Button
C23	GPIO_37/REFCLK	General Purpose I/O / Reference Clock Output
C24	GPIO_36/PERST_N	General Purpose I/O / PCIe device reset
C25	GND	Ground

7. Mechanical Drawing and Specifications

APPLICABLE IC



ISED 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 ISED 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.

Any company of the host device which install this modular with limit modular approval should perform the test of radiated emission and spurious emission according to RSS-247 and RSSGen requirement, only if the test result comply with RSS-247 and RSS-Gen requirement, then the host can be sold legally.

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'ISED 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. toute entreprise de l'hôte qui installent ce dispositif modulaire avec limite approbation devrait effectuer l'essai des modules et des rayonnements non essentiels des émissions rayonnées selon rss-247 et le cnr - gen, seulement si le résultat d'essai conforme rss-247 et le cnr - gen, puis l'hôte peut être vendu légalement.

End Product Labeling

The final end product must be labeled in a visible area with the following: Contains IC:30116-NW0101.

Plaque signalétique du produit final

Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante:
Contient des IC:30116-NW0101.

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 [30116-NW0101] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below. It has an antenna with the maximum antenna gain is 1.78dBi

Antenna type	Maximum Antenna gain
Patch antenna	4.4dBi

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.

Cet émetteur radio [30116-NW0101] a été approuvé par Innovation, Science et développement économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous. Il dispose d'une antenne avec une prise le gain maximum d'antenne est de 1.78 dBi.

Antenna type	Maximum Antenna gain
Patch antenna	4.4dBi

Les types d'antennes non inclus dans cette liste qui ont un gain supérieur au gain maximum indiqué pour tout type répertorié sont strictement interdits pour l'utilisation avec cet appareil.

FCC Warning

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.**

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

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 Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

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

This equipment should be installed and operated with minimum distance 20cm between the radiator&your body.

ISED Warning

This device complies with Innovation, Science and Economic Development Canada licence-exempt RSS standard (s). Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Innovation, la science et le développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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

Tous les changements ou modifications non expressément approuvés par le responsable de la conformité pourraient vider l'utilisateur de son habilitation à exploiter l'équipement.

ISED Radiation Exposure Statement:

This equipment complies with ISED RF radiation exposure limits set forth for an uncontrolled environment.

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

Cet appareil est conforme aux limites d'exposition de rayonnement RF ISED établies pour un environnement non contrôlé.

Cet émetteur ne doit pas être co-implanté ou fonctionner en conjonction avec toute autre antenne ou transmetteur.

This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

La distance entre le radiateur et le corps doit être d'au moins 20 cm lors de l'installation et du fonctionnement de l'appareil.