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LSM01 is a Wifi transmitter with modular certification, which uses Jorjin Technologies WN8020 WLAN USB module embedded with Ralink RT3070, IEEE 802.11 b/g/n.

## 2 User Manual Regulatory Statements

The LSM01 is a modular transmitter. Therefore, customers who wish to use the LSM01 in their end product must follow region-specific regulations. This application note provides guidelines for the specific United States of America Federal Communications Commission (FCC) and Industry Canada (IC) regulations that pertain to the LSM01. End products may be subject to additional regulations, and it is the responsibility of the end-product manufacturer to determine and comply with those regulations.

### 2.1 FCC / IC Identification Numbers

United States	FCC ID LSM01
Industry Canada	IC: 11327A-LSM01

### 2.2 FCC / IC Compliance Statement

This device complies with Part 15 of 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 operations.

This Device complies with Industry Canada License-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.

Cet appareil est conforme avec les norme(s) exemption de licences RSS d'Industrie Canada. Opération est sujet au deux conditions suivantes. (1) Cet appareil ne peut causer d'interférences, et (2) cet appareil doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement de l'appareil.

<b>CAUTION: ANY CHANGES OR MODIFICATION NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.</b>
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## 2.3 FCC Changes Warning

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

## 2.4 FCC / IC Information To The User

### Unintentional vs. Intentional Radiation

The FCC and IC require end products to comply with both unintentional and intentional radiation regulations.

Unintentional radiation occurs from a product that inherently or unwillingly transmits RF signals.

Intentional radiation occurs from a product that is designed to radiate or transmit RF signals for the purpose of wireless communication. The LSM01 is an intentional radiation emitter.

A modular transmitter is an intentional radiator device, such as the LSM01, which is designed to be installed in a host device. Obtaining modular transmitter approval allows the modular transmitter to be integrated into an end product without the need for additional intentional radiation testing of the final end-product assembly, as long as the modular transmitter is installed and operated in accordance with certain guidelines.

Unintentional conducted and radiated emissions testing of the end product is still required to ensure compliance with the rules governing unintentional radiators. It is the responsibility of the end-product manufacturer to verify the end product meets these regulations. Additionally, the customer is responsible for any and all tests and/or certifications pertaining to their end product. This may include but is not limited to Specific Absorption Rate (SAR) compliance and potential recertification as an intentional radiation emitter if LSM01 is installed or operated in a manner that differs from the instructions herein.

## 2.5 FCC Labeling

While the FCC user ID is placed on the master device circuit board, compliant labeling shall also be placed on the end product housing exterior.

## 2.6 FCC /IC Antenna usage

This module utilizes a permanently mounted antenna. The antenna is not end user serviceable and should never be changed or altered in any way.

<b>CAUTION: DO NOT TRY TO REPLACE THE ANTENNAS</b>
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## 2.7 Mobile Exposure

The user is cautioned to maintain 20cm (8 inch) spacing from the product to ensure compliance with FCC requirements.

## 3 Electrical Characteristics

### 3.1 RF Characteristics



(Condition: VCC= 3.3V @ +25°C)

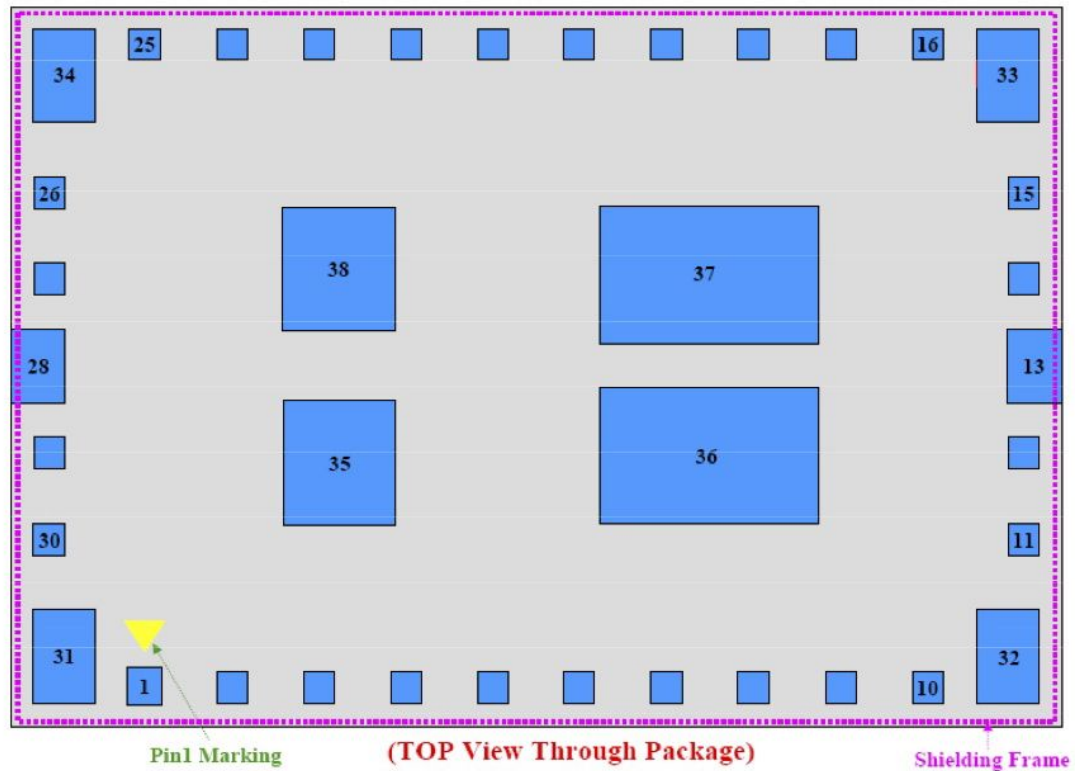
Feature	Description
Standards	Fully Compliant with IEEE 802.11 b/g/n
Frequency Band	2400MHz ~ 2500MHz
Frequency Stability	< ±5ppm @Room Temperature +25°C
Modulation	OFDM and CCK
PHY Data Rate	Up to 150Mbps
Channel Bandwidth	20MHz and 40MHz
OFDM Output Power	15dBm (Typ.) @EVM<3%, all channel
CCK Spectral Mask @Pout=18dBm	-37dBc (Typ.) @ 11~22MHz -60dBc (Typ.) @ 22~33MHz
2f Harmonics	-55dBm (Typ.)
LO Leakage Peak Power	-64dBm (Typ.) @Transmit State
Receive Sensitivity	-65dBm (Typ.) @HT40M, MCS7 -71dBm (Typ.) @54M OFDM -85dBm (Typ.) @11M CCK -90dBm (Typ.) @1M CCK
RF Port Impedance	50Ω±10%
USB Differential Port Impedance	90Ω±10%
Dimension	16.7(L) x 11.4(W) x 1.4(H) mm w/o Shielding Cover

### 3.2 Absolute Maximum Ratings

Parameter	Min.	Typ.	Max.	Unit
Operating Temperature	-10		85	°C
Supply Voltage Range: USB VCC	4.5	5.0	5.5	V
Storage Temperature Range	-55		150	°C

## 4 Package Information

### 4.1 Signal Layout (Top View)



### 4.2 Pin Description

No.	Name	Type	Description	Note
1	3.3V	P	3.3V DC Power Supply Input for Module Circuits	Bypassing Capacitor Free Ferrite Bead Free
5	GND	P	Ground	
11	D+	I/O	D+ Line of USB2.0	
12	D-	I/O	D- Line of USB2.0	

## 5 Mounting Hardware

The LSM01 Module is a Surface Mountable Device and should be assembled using standard Surface Mount Assembly procedures.

## 6 Mechanical Characteristics

