WiFi Module
CDW-9776010-00
OEM/Integrators Installation Manual

Software：

Customer	Approve	Date

Design	Check	Approve	Version	Date
			V1.2	2018.11.15

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Reversion History：

Version	Date	Modification
V1.2	2018.11.15	New

1. Overview

The CDW-9776010-00 is a highly integrated WI-FI single chip which supports 150Mbps PHY rate. It fully complies with IEEE 802.11n and IEEE 802.11b/g standards, offering feature-rich wireless connectivity at high standards, and delivering reliable, cost-effective thoughput from an exended distance. Optimzed RF architecture and baseband algorithms provide superb performance and low power consumption.Intelligent MAC design deploys a high efficient DMA engine and hardware data processing accelerators which offloads the host processor.

The CDW-9776010-00 is designed to support standard based features in the areas of security, quality of service and international regulations, giving end users the greatest performance any time and in any circumstance.

2. Features

- IEEE 802.11b/g/n
- Embedded high-performance 32-bit RISC microprocessor
- Highly integrated RF with 55nm CMOS technology
- 1T1R mode with support of 150Mbps PHY rate
- Integrate high efficiency switching regulator
- Best –in-class power consumption performance
- MT7601 chip compact 5mm x 5mm QFN40L package
- 1/2/3/4-wire PTA Wi-Fi/Bluetooth coexistence support
- 802.11d/h/k compliant
- Security support for WGA WPA/WPA2 personal,WPS2.0,WAPI
- Supports 802.11w proteced managed frames
- QoS support of WFA WMM,WMM PS
- Supports Wi-Fi Direct
- Fully compliance with USB v2.0 High-speed mode

3. EEPROM Information

Reg Domain	Worldwide Configured by driver
	Offset 0x39 for 2.4G:0xFF
Vendor ID	0X148F
Product ID	0X7601

4. General Specification

Model Name	**CDW-9776010-00**				
wlan standard	IEEE 802.11 b/g/n				
Host interface	USB2.0				
Main Chipset	MTK7601U				
PCBA Dimension	18×16×2.8mm(L×W×H)				
Operating conditions					
Voltage	Min	Typ	Max		
	2.97 V	3.3 V	3.63 V		
Operating Temperature	-20~ +60°C ambient temperature				
Storage Temperature	-40 ~ 80°C ambient temperature				
Operating Humidity	5 to 90% maximum（non-condensing）				
Electrical Specification					
Frequency Range	2.4～2.4835 GHz ISM Band				
Date rates	1,2,5.5,6,11,12,18,22,24,30,36,48,54,60,90,120 and maximum of 150Mbps				
OS support	Windows2000,XP32-64,Vista32/64,Win732/64, Linux, Mac, Android，WIN CE				
Spread Spectrum	IEEE 802.11b: DSSS (Direct Sequence Spread Spectrum) IEEE 802.11g/n:OFDM (Orthogonal Frequency Division Multiplexing)				
Modulation	BPSK/ QPSK/ 16-QAM/ 64-QAM				
Security	WEP, TKIP, AES, WPA, WPA2				
Output power Typical Power tolerance +/-2dB; EVM	Mode	Data Rate	Power	Unit	
	11b	1,2,5.5,11Mbps	17±2	dBm	
	11g	6,9,12,24,36,48Mbps	16±2	dBm	
		54Mbps	15±2	dBm	
	11n	mcs0	17±2	dBm	

	HT20&HT40	mcs6	15±2	dBm
		mcs7	14±2	dBm
	11b	11Mbps	-20	dB
	11g	54Mbps	-25	dB
	11n HT20	mcs7	-28	dB
	11n HT40	mcs7	-28	dB
RX sensitivity	Mode	Data Rate	sensitivity	Unit
	11b	11Mbps	-85	dBm
	11g	54Mbps	-72	dBm
	11n HT20	mcs7	-69	dBm
	11n HT40	mcs7	-65	dBm

5. DC Characteristics

Power Consumption

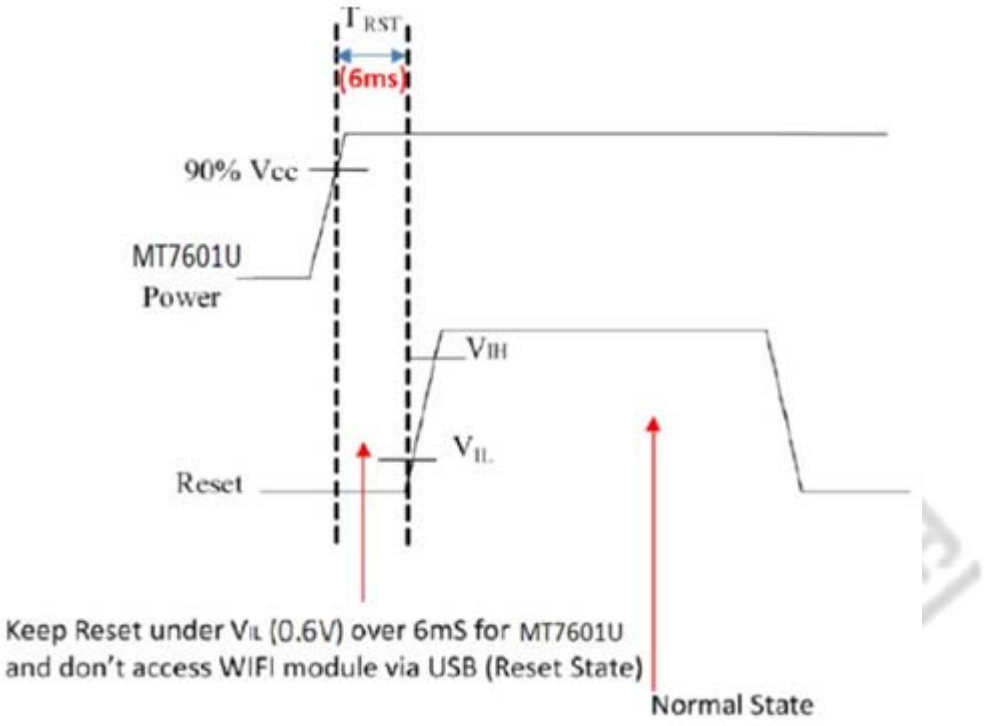
Description	TYPE	Unit
Sleep mode	1.1	mA
RX Active,HT40,MCS7	151	mA
RX Power saving, DTIM=1	15	mA
RX Listen	6	mA
TX HT40,mcs7 @15dBm	210	mA
TX CCK,11Mbps @19dBm	242	mA

Note: All result is measured at the antenna port and VDD33 is 3.3V

DC Characteristics（Units:V）

Symbol	Parameter	Min	Typ	Max
V_{IL}	Input Low Voltage	-0.28	-	0.6
V_{IH}	Input High Voltage	2.0	-	3.63
V_{OL}	Output Low Voltage	-0.28	-	0.4
V_{OH}	Output High Voltage	2.4	-	3.63

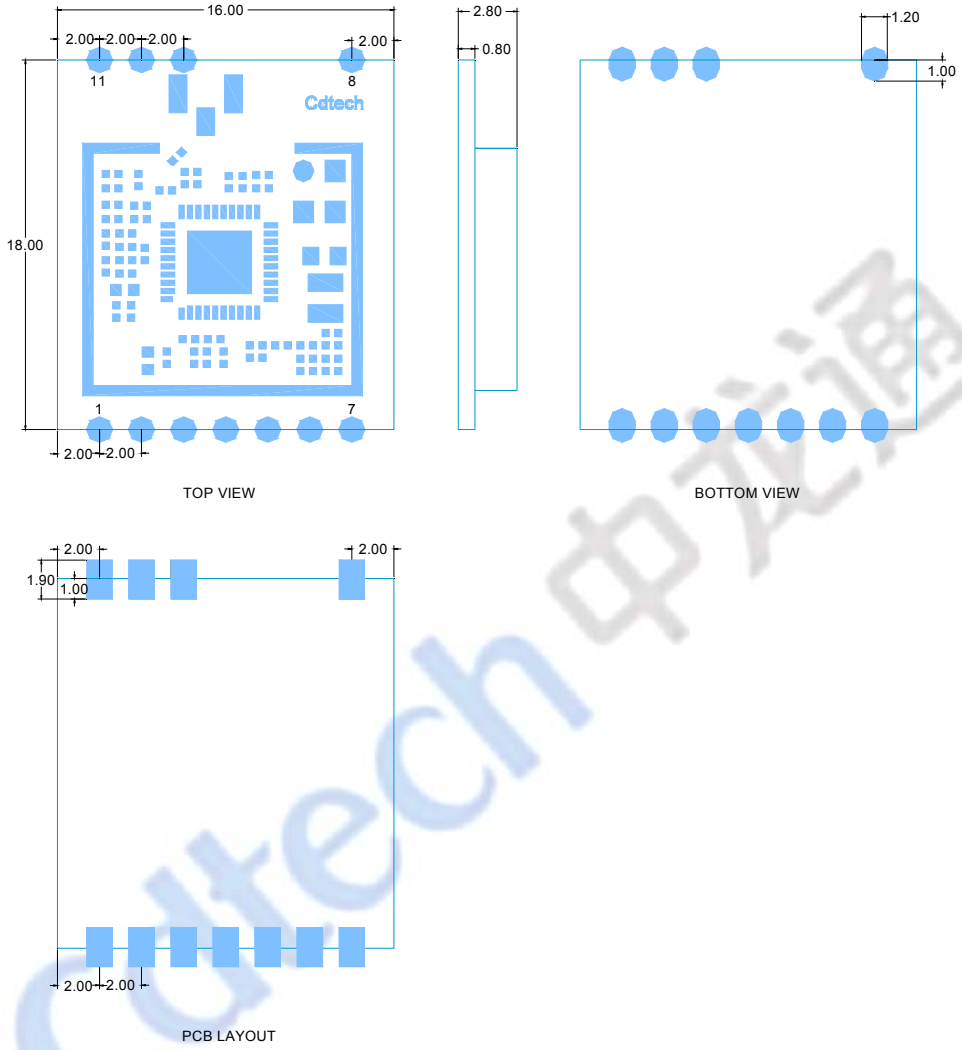
6. Reset Timing SPEC



7. Pin Description

NO	Name	Description
1	RST_N	GPIO Wi-Fi RST
2	GPIO WOL	Wake on WLAN Host Interrupt(active low)
3	NC	
4	VCC	Power supply 3.3V is required
5	UDM	USB negative differential data lines
6	UDP	USB positive differential data lines
7	GND	Ground connections
8	GND	Ground connections
9	GND	Ground connections
10	NC	
11	GND	Ground connections

8. Modular PCB Decal size(unit:mm)



Size	Tolerance(mm)
0-10	±0.1
10-100	±0.2
Half-borehole	±0.075

9. Modular photo

Name	Specification	Manufacturer
Crystal	40Mhz	JWT，FK
PCBA VER	132.977601U-01	A, O

Crystal physical photo

JWT 40MHz 3225

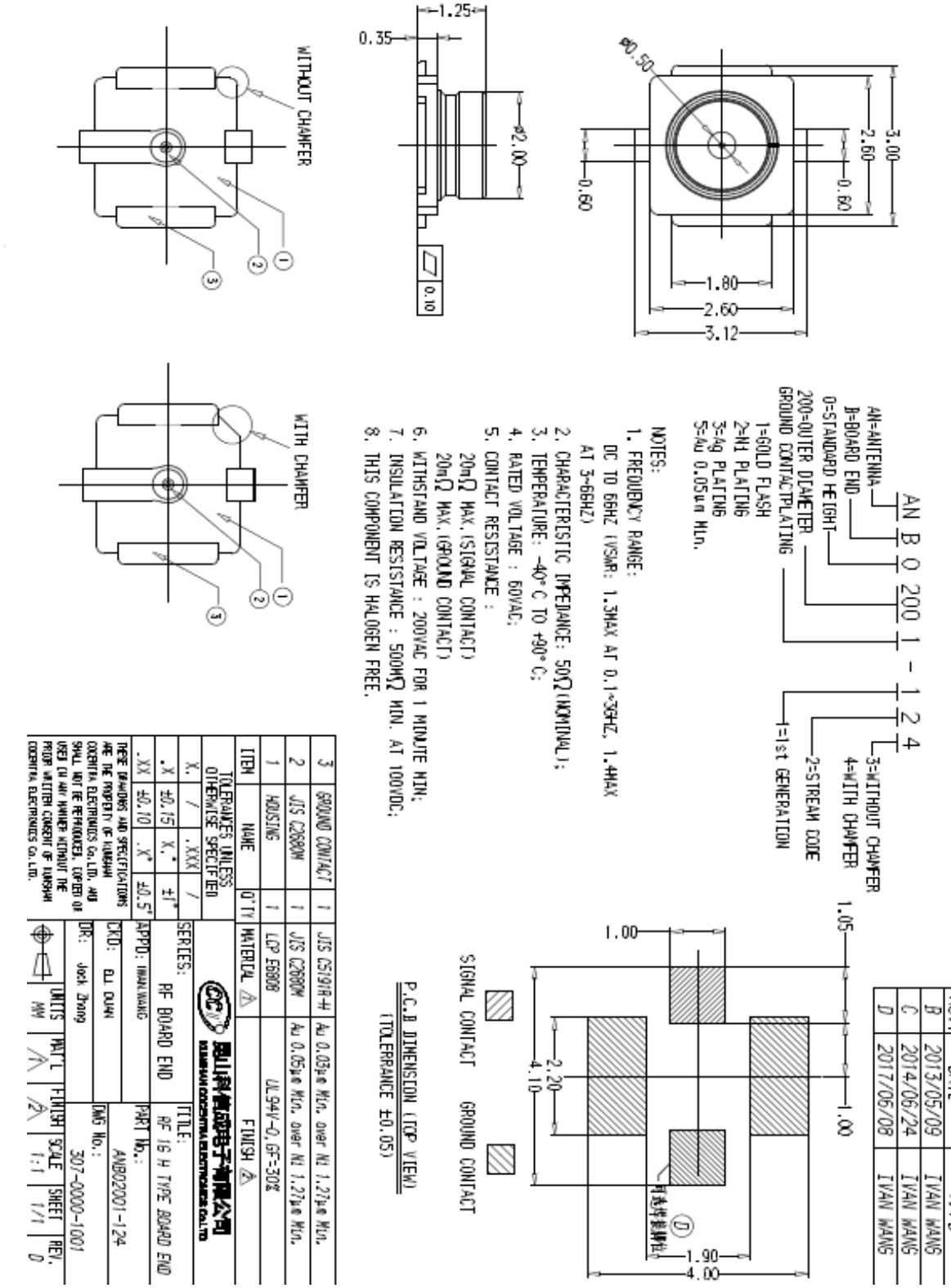
FK 40MHz 3225

PCBA physical photo

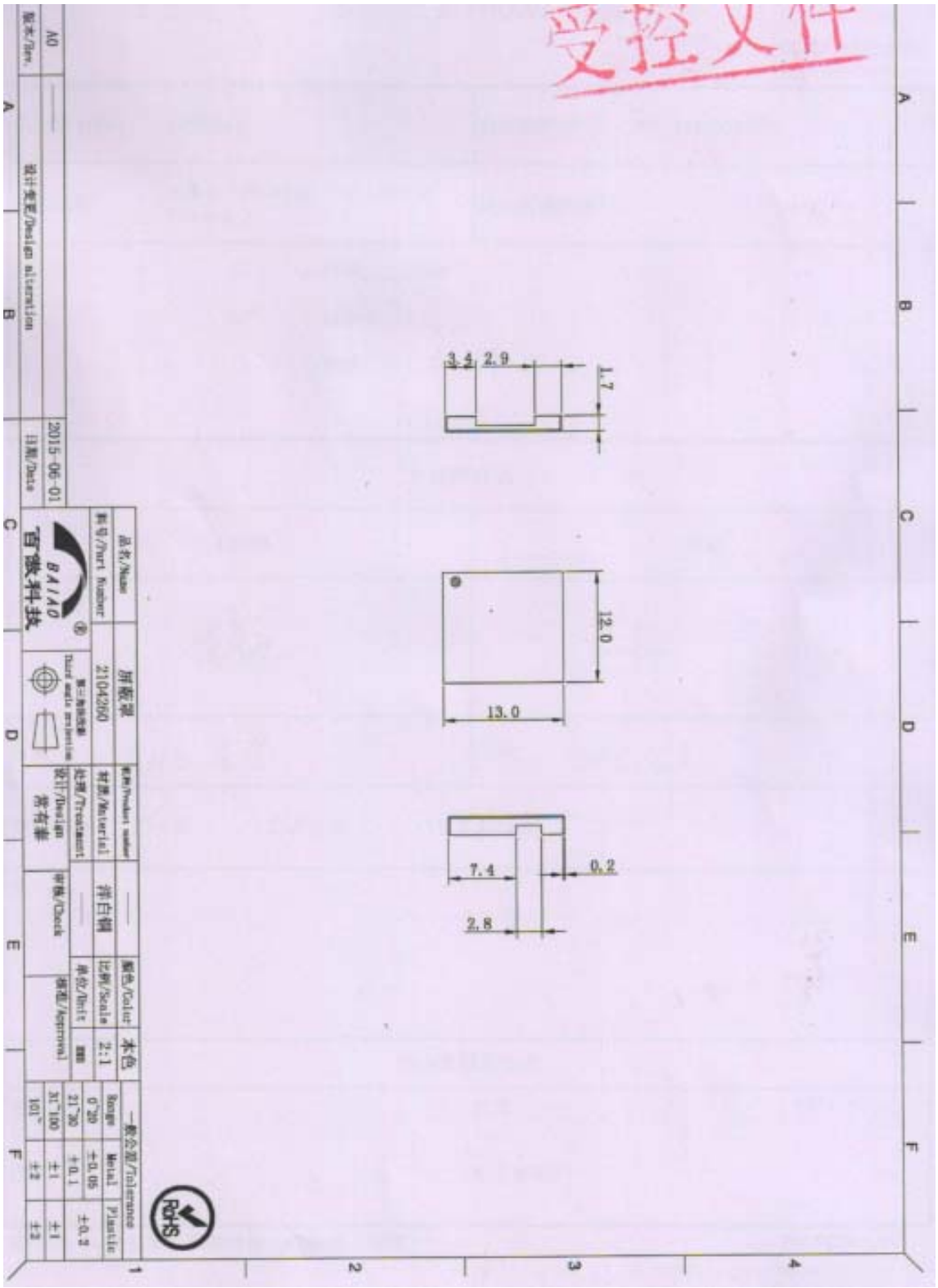
PCBA EVENNESS

PCBA	PCBA Place it face up on a marble platform, or on a glass panel greater than 5mm thick, using a plug Gauge to measure the maximum corner size required≤0.1mm

10. IPEX Connector spec



11. Shielding cover spec



ESD CAUTION

The CDW-9776010-00 is ESD (electrostatic discharge) sensitive device and may be damaged with ESD or spike voltage. Although CDW-9776010-00 is with built-in ESD protection circuitry, please handle with care to avoid the permanent malfunction or the performance degradation.

Appendix 1: BOM

IC	SMT IC MT7601 QFN40 MTK	1	U4
CRYSTAL	SMT CRYSTAL 40MHz +/-10PPM 15PF 3.2x2.5	1	U5
inductance	SMT COIL 0201 18nH +/-5% Sunlord MSDCL0603C18NJTDF	2	L3、L4
inductance	SMT COIL 0201 1.0nH +/-0.3nH Sunlord SDCL0603C1N0STDF	1	L12
inductance	SMT COIL 0201 2.7nH +/-0.3nH Sunlord SDCL0603C2N7STDF	2	L9 L11
inductance	SMT COIL 2016 4.7uH +/-20% 800mA, LVS201610-4R7M-N	1	L20
resistance	SMT RES 0201 100K OHM 1/20W +/-5%	1	R14
resistance	SMT RES 0201 2K OHM 1/20W +/-1%	2	R17 R18
resistance	SMT RES 0201 24K OHM 1/20W +/-1%	1	R107
resistance	SMT RES 0201 3.4K OHM 1/20W +/-1%	1	R16
resistance	SMT RES 0201 8.2K OHM 1/20W +/-1%	1	R15
resistance	SMT RES 0201 97.6 OHM 1/20W +/-1%	1	R19
capacitance	*SMT CAP 0201 0.5pF/50V +/-0.1PF C0G EYANG C0201C0G0R5B500NTA	1	C215
capacitance	*SMT CAP 0201 1.0pF/50V +/-0.1PF C0G EYANG C0201C0G1R0B500NTA	2	C237 C238
capacitance	*SMT CAP 0201 1.2pF/50V +/-0.1PF C0G EYANG C0201C0G1R2B500NTA	3	C96 C105 C1
capacitance	*SMT CAP 0201 5.6pF/50V +/-0.25PF C0G EYANG C0201C0G5R6C500NTA	2	C4、C5
capacitance	*SMT CAP 0201 0.1uF/6.3V +/-10% X5R EYANG C0201X5R104K6R3NTA	9	C48 C49 C56 C57 C58 C93 C97 C98 C103
capacitance	*SMT CAP 0201 1uF/6.3V +/-20% X5R EYANG C0201X5R105M6R3NTA	4	C82 C99 C100 C104
capacitance	*SMT CAP 0603 10uF/6.3V +/-20% X5R Samsung CL10A106MQ8NNNC	1	C59
capacitance	*SMT CAP 0201 22pF/50V +/-5% C0G EYANG C0201C0G220J500NTA	3	C95 C102 L1
capacitance	*SMT CAP 0201 3.3nF/16V +/-10% X7R EYANG C0201X7R332K160NTA	1	C52
capacitance	*SMT CAP 0201 3.9nF/16V +/-10% X7R EYANG C0201X7R332K160NTA	1	C50
capacitance	*SMT CAP 0201 47pF/50V +/-5% C0G EYANG C0201C0G470J500NTA	1	C12
capacitance	*SMT CAP 0402 4.7uF/6.3V +/-20% X5R Samsung CL05A475MQ5NRNC	2	C84 C85
capacitance	*SMT CAP 0201 68pF/50V +/-5% C0G EYANG C0201C0G680J500NTA	1	C38
PCB	PCB FR-4 size:91.56*86.003*0.8mm 20 20181106	1	
Shield	13*12*2mm T=0.2mm	1	
IPX	369.0000017-00 IPX SMD 3*3.1*1.25mm(20279-001E-01)CDT-AMB-00	1	CON2

Module User Manual

The purpose of this manual is to explain correct way how to integrate module CDW-9776010-00 to the end product. It includes procedures that shall assist you to avoid unforeseen problems. This manual presents information that shows how module and OEM product, where module integrated, complies with regulations in certain regions. Note that any modifications, not expressly approved by the manufacturer could void the authority to operate in these regions.

Integration

The RF module, model CDW-9776010-00 has to be installed and used in accordance with the technical installation instructions provided by the manufacturer.

For detail information concerning type approval of this module please contact the authorized local distributor or the manufacturer.

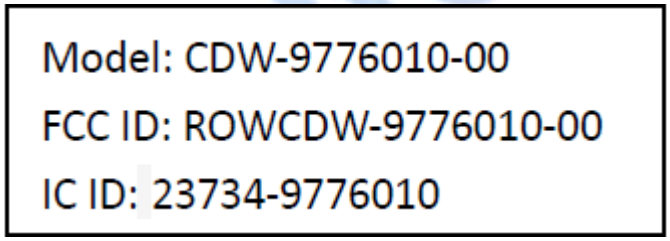
The system may only be implemented in the configuration that was authorized.

USA-Federal Communications Commission (FCC)

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.

Labeling

The RF module CDW-9776010-00 for controller labeled as below.



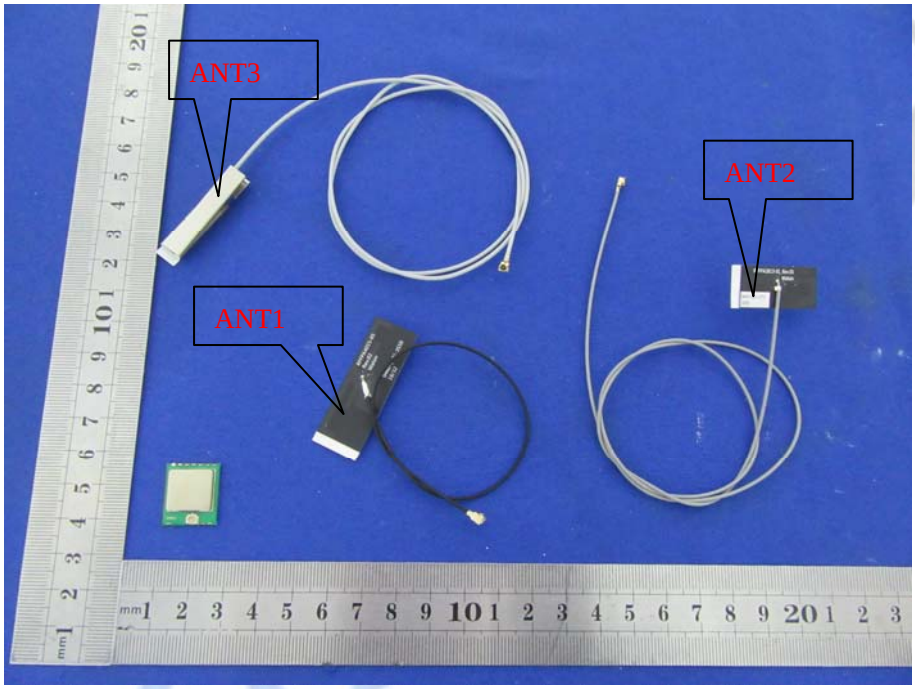
The label that is placed on the module is too small to hold the required FCC information, then that information appear in the user manual for this device. In addition, the" Contains FCC ID : ROWCDW-9776010-00" label also must be placed on the outside of the end product system.

The module is limited to OEM installation only.

That OEM integrators is responsible for ensuring that the end-user has no manual instructions to remove or install the module.

The module is use for three antenna to choose and is use for buckle below

Ant.	Brand	Model Name	Antenna Type	Gain (dBi)	NOTE
1	N/A	RFFPA401520I MLB301	External antenna	3.32	
2	N/A	RFFPA281353I MLB301	External antenna	2.91	
3	N/A	RFMTA340758I MAB701	External antenna	3.52	



This device is to be used only for mobile and fixed applications. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20cm from all persons and must not be collocated or operating in conjunction with any other antenna or transmitter.

OEM integrators must be provided with antenna installation instructions. OEM integrators and end-users must be provided with transmitter operation conditions for satisfying RF exposure compliance. This grant is valid only when the device is sold to OEM integrators and the OEM integrators are instructed to ensure that the end-user has no manual instruction to remove or install the device. Separate approval is required for all other operating configurations, including portable configurations with respect to 2.1093 and different antenna configurations.