



Approval statement

FCC Statement

To satisfy FCC exterior labeling requirements, the following text must be placed on the exterior of the end product.

Contains Transmitter module FCC ID: A3LWCT732M

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.

This device complies with Part 15 of the FCC's 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 undesirable operation.

IC Information

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 Industrie Canada exempts de licence standard RSS (s). L'opération est soumise aux 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.*

The end product must be labeled to display the Industry Canada certification number of the module.

Contains transmitter module IC: 649E-WCT732M

Le dispositif d'accueil doivent être étiquetés pour afficher le numéro de certification d'Industrie Canada du module.

Contient module émetteur IC : 649E-WCT732M

Operation Description of WCT732M

1. Introduction

WCT732M is a Wi-Fi / Bluetooth Combo module compliant with IEEE802.11 a.b.g.n.ac MAC/baseband/radio and Bluetooth 5.0 optimized for low-power applications. The core chipset is from MediaTek part number MT7668AUN.

2. Hardware Architecture:

2.1 Main Chipset Information

Item	Vendor	Part Number
IEEE802.11 a.b.g.n.ac mac/baseband/radio Bluetooth 5.0	MediaTek	MT7668AUN

2.2 Circuit Block Diagram

The major internal and external block diagram of WCT732M is illustrated in Figure 1-1.

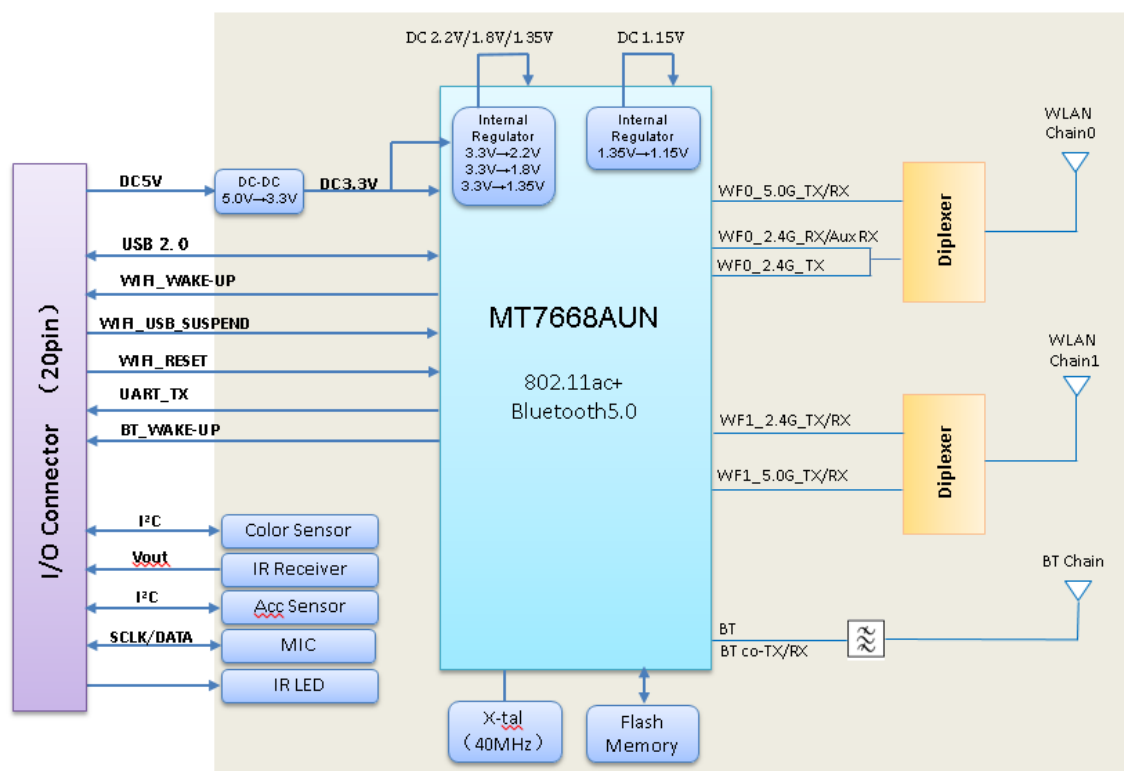


Figure 1-1 WCT732M block diagram and System Interface

3. Operational Description

WCT732M is the 802.11a/b/g/n/ac + Bluetooth 5.0 Combo Module that acts as a communication controller for users of a wireless device to connect to SMART TV

- Features

- > IEEE 802.11ac Draft compliant.
- > Dual-band 2.4GHz / 5 GHz
- > Dual-stream spatial multiplexing up to 600Mbps data rate
- > Support 20, 40, 80MHz channel with optional SGI(256QAM modulation)
- > On-chip power amplifiers and low-noise amplifiers for both bands
- > Complies with Bluetooth Core Specification Version 5.0
- > Supports BT/Wi-Fi coexistence.
- > Adaptive frequency hopping (AFH) for reducing radio frequency interference

- Time base of the RF frequency

For IF and RF frequency, 40MHz crystal is a clock reference.

- Synthesizer

Synthesizer inside Transceiver. Internal voltage controlled oscillator (VCO) provides the desired LO signal based on the phase-locked loop (PLL) with a relatively wide tuning range for this application.

Internal fractional nPLL allows support for a wide range of reference clock frequencies

- Wi-Fi Transmission

Baseband data is modulated and up converted to the 2.4GHz ISM and 5-GHz U-NII bands, respectively.

Linear on-chip power amplifiers are included, which are capable of delivering high output powers while meeting IEEE 802.11ac and IEEE 802.11a/b/g/n specifications without the need for external PAs. When using the internal PAs, closed-loop output power control is completely integrated. Base-band Processing (BBP) IC has DSSS (BPSK/QPSK/CCK) and OFDM (BPSK/QPSK/16QAM/64QAM/256QAM) modulation function, it provides transmission data rates of 1, 2, 5.5, 11Mbps on DSSS and 6, 12, 18, 24, 36, 48, 54 Mbps on OFDM. Digital data signals will be converted to analog (TX IQ) signals through DAC in BBP IC, TX IQ pass through to low pass filter. TX I/Q signals use direct conversion (zero-IF) architecture converter to generate carrier frequency signal. Transceiver IC and internal PA magnify output power.

- Wi-Fi Receiver

The MT7668AUN has a wide dynamic range, direct conversion receiver that employs high-order on-chip channel filtering to ensure reliable operation in the noisy 2.4GHz ISM band or the entire 5GHz U-NII band. Control signals are available that can support the use of optional LNAs for each band, which can increase the receive sensitivity by several decibels. Reverse direction isolation of LNA inside Transceiver IC suppresses unwanted radiation. Then RF signal will be directly down to IF signal (RX IQ) and high frequency spurious emissions are suppressed by LPF. At last RX IQ signal will be demodulated digital data.

-Bluetooth Low Energy

The WCT732M support the Bluetooth 4.2 LE and 5.0 BLE 2Mbps

- Link Control Layer

The link control layer is part of the Bluetooth link control functions that are implemented in dedicated logic in the link control unit(LCU).

Each task performs a different state in the Bluetooth Link Controller.

- Wideband speech

The WCT732M provides supports for wideband speech(WBS) using on-chip Smart Audio technology.

The WCT732M can perform modified Sub Band Codec(mSBC) encoding and decoding of linear 16bitsat 16kHz(256kbps rate) transferred over USB interface.

- Adaptive Frequency Hopping

The WCT732M gathers link quality statistics on a channel by basis to facilitate channel assessment and Channel map selection. The link quality is determined using both RF and baseband signal processing to Provide a more accurate frequency-hop map.

4. Product Details

-Data Modulation

DSSS:CCK,BPSK,QPSK for 802.11b

OFDM:BPSK,QPSK,16QAM,64QAM,256QAM for 802.11a,g,n,ac

FHSS:GFSK,OQPSK, 8DPSK, $\pi/4$ DPSK for Bluetooth

-Frequency Range

2400-2497MHz

5150-5350MHz

5470-5725MHz

5725-5825MHz

5850-5925MHz

- IEEE 802.11nHT20

MCS Index	Modulation	R	$N_{BPSCS(i_{SS})}$	N_{SD}	N_{SP}	N_{CBPS}	N_{DBPS}	Data rate (Mb/s)	
								800 ns GI	400 ns GI (see NOTE)
0	BPSK	1/2	1	52	4	52	26	6.5	7.2
1	QPSK	1/2	2	52	4	104	52	13.0	14.4
2	QPSK	3/4	2	52	4	104	78	19.5	21.7
3	16-QAM	1/2	4	52	4	208	104	26.0	28.9
4	16-QAM	3/4	4	52	4	208	156	39.0	43.3
5	64-QAM	2/3	6	52	4	312	208	52.0	57.8
6	64-QAM	3/4	6	52	4	312	234	58.5	65.0
7	64-QAM	5/6	6	52	4	312	260	65.0	72.2

- IEEE 802.11nHT40

MCS Index	Modulation	R	$N_{BPSCS(i_{SS})}$	N_{SD}	N_{SP}	N_{CBPS}	N_{DBPS}	Data rate (Mb/s)	
								800 ns GI	400 ns GI
8	BPSK	1/2	1	108	6	216	108	27.0	30.0
9	QPSK	1/2	2	108	6	432	216	54.0	60.0
10	QPSK	3/4	2	108	6	432	324	81.0	90.0
11	16-QAM	1/2	4	108	6	864	432	108.0	120.0
12	16-QAM	3/4	4	108	6	864	648	162.0	180.0
13	64-QAM	2/3	6	108	6	1296	864	216.0	240.0
14	64-QAM	3/4	6	108	6	1296	972	243.0	270.0
15	64-QAM	5/6	6	108	6	1296	1080	270.0	300.0

-IEEE 802.11ac

MCS	Modulation & Rate	20 MHz 1x SS	20 MHz 2x SS	20 MHz 4x SS	20 MHz 8x SS	40 MHz 1x SS	40 MHz 2x SS	40 MHz 4x SS	40 MHz 8x SS	80 MHz 1x SS	80 MHz 2x SS	80 MHz 4x SS	80 MHz 8x SS	160 MHz 1x SS	160 MHz 2x SS	160 MHz 4x SS	160 MHz 8x SS
0	BPSK 1/2	7.2	14.4	28.9	57.8	15.0	30.0	60.0	120.0	32.5	65.0	130.0	260.0	65.0	130.0	260.0	520.0
1	QPSK 1/2	14.4	28.9	57.8	115.6	30.0	60.0	120.0	240.0	65.0	130.0	260.0	520.0	130.0	260.0	520.0	1040.0
2	QPSK 3/4	21.7	43.3	86.7	173.3	45.0	90.0	180.0	360.0	97.5	195.0	390.0	780.0	195.0	390.0	780.0	1560.0
3	16-QAM 1/2	28.9	57.8	115.6	231.1	60.0	120.0	240.0	480.0	130.0	260.0	520.0	1040.0	260.0	520.0	1040.0	2080.0
4	16-QAM 3/4	43.3	86.7	173.3	346.7	90.0	180.0	360.0	720.0	195.0	390.0	780.0	1560.0	390.0	780.0	1560.0	3120.0
5	64-QAM 2/3	57.8	115.6	231.1	462.2	120.0	240.0	480.0	960.0	260.0	520.0	1040.0	2080.0	520.0	1040.0	2080.0	4160.0
6	64-QAM 3/4	65.0	130.0	260.0	520.0	135.0	270.0	540.0	1080.0	292.5	585.0	1170.0	2340.0	585.0	1170.0	2340.0	4680.0
7	64-QAM 5/6	72.2	144.4	288.9	577.8	150.0	300.0	600.0	1200.0	325.0	650.0	1300.0	2600.0	650.0	1300.0	2600.0	5200.0
8	256-QAM 3/4	86.7	173.3	346.7	693.3	180.0	360.0	720.0	1440.0	390.0	780.0	1560.0	3120.0	780.0	1560.0	3120.0	6240.0
9	256-QAM 5/6	-	-	-	-	200.0	400.0	800.0	1600.0	433.3	866.7	1733.3	3466.7	866.7	1733.3	3466.7	6933.3

-Output Power tolerance

Output power $\pm$ 2.5dBm

-Simultaneous transmission

	BT	BT LE	2.4GHz Wi-Fi	5GHz Wi-Fi
BT		O	O	O
BT LE	O		O	O
2.4GHz Wi-Fi	O	O		X
5GHz Wi-Fi	O	O	X	

-Recommended Operating conditions

	Min	Typ.	Max	Unit
Operatingvoltage	4.5	5	5.5	V
Operatingtemperature(ambient)	-20	25	50	°C

-AS Information

Company Name:

Fax:

Tel

-Certification Information

1) Name(Model name):

2) Certification ID:

3) Company Name:

4) Production date

5) Vendor: