

Ubee TI D3.0 WLCM

Model Number: DDW3600

User Manual

Rev. 1.0

November 12, 2009

◆ Important Safety Warnings

"Installation" should include bonding the screen of the coaxial cable to the earth at the building entrance per ANSI/NFPA 70, the National Electrical Code (NEC), in particular Section 820.93, Grounding of Outer Conductive Shield of a Coaxial Cable.

◆ Installation

Follow the procedures below to install the hardware. Figure 0 illustrates the connection relationship.

1. Connect one end of the coaxial cable (not included) to the CABLE port on the modem, and connect the other end to the cable wall outlet. Be sure not to bend or over tighten the cables as this may strain the connector and cause damage. If you plan to connect the modem and television to the same wall outlet, you must use a cable line splitter (not included).
2. Connect one end of the Ethernet cable to the ETHERNET port on the modem, and connect the other end to the Ethernet port on the PC.
3. Connect one end of the Phone line cable to the VoIP port on the modem, and connect the other end to the phone port of the phone set.
4. Connect one end of the DC power adapter to the POWER port on the modem, and connect the other end to an electric outlet on the wall.

◆ Connectors on the rear panel of the Modem

This list of connectors describes where to connect the cables and power adapter when installing the cable modem.

1. **POWER:** This is where you plug the included power adapter. Remember to use only the power adapter that came with the Cable Modem.
2. **GigE:** This is where you plug the Ethernet cable. The other end connects to the Ethernet port on the PC or NIC.
3. **RESET button:** This is what you can reset the setting to factory default by pressing button on more than 10 seconds.

4. CABLE Connector: This is where you connect the coaxial cable (not included) that leads to the cable splitter (not included) or the cable wall outlet.

5. USB: This is where you plug the USB cable. The other end connects to the USB port on the PC.

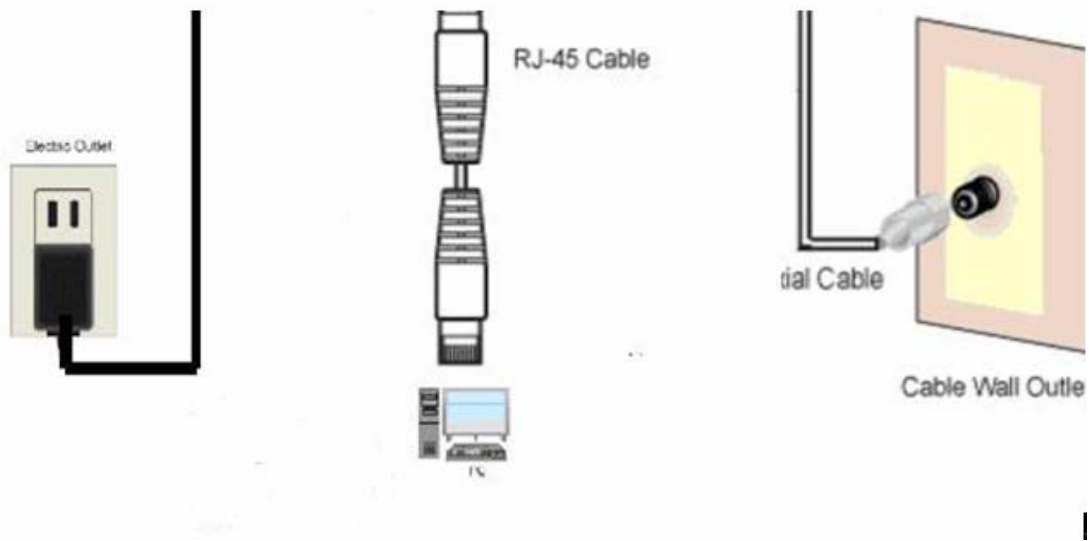
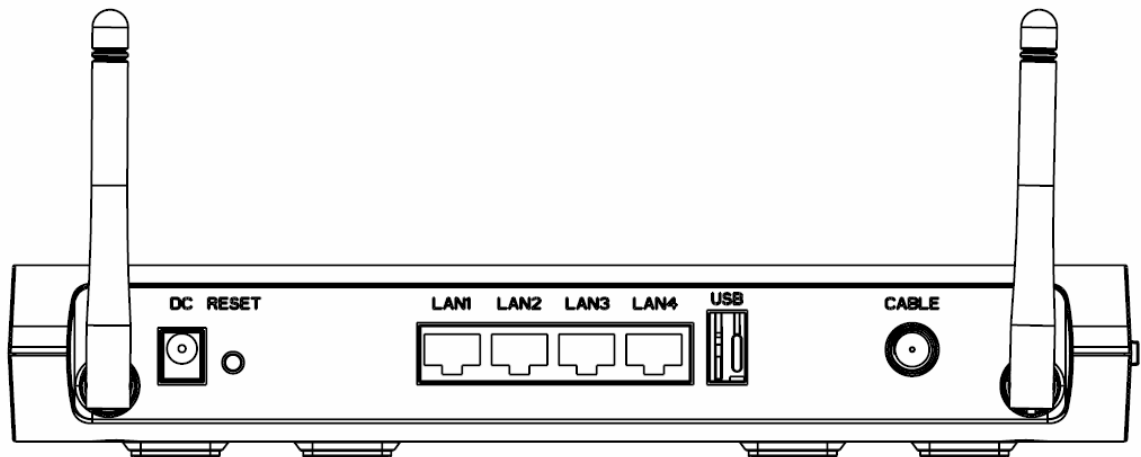
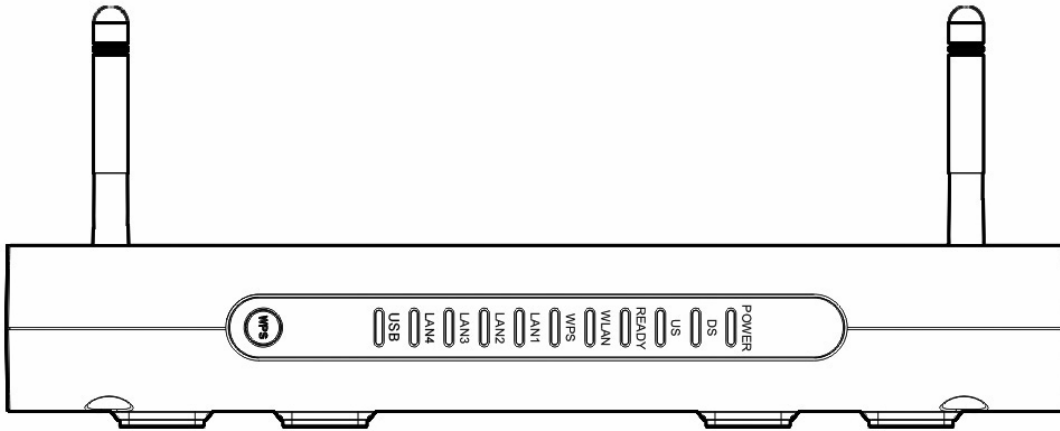


Figure 1 illustrates the connection relationship

◆ LEDs on the front panel of the Modem



Please see the LED descriptions below.

LED	Color	DESCRIPTION
Power	Green	Indicates that the cable modem has successfully completed internal power-on tests. LED flashes if power-on fails.
DS	Green/Orange	Indicates that data is being received from the cable network. Orange indicates more than one Channel is bonded. Green indicates that one Channel is bonded. Prior to registration, DS would flash slowly to indicate it's looking for DS channel. Post-registration (READY LED is lit), DS would flash when traffic is being passed.
US	Green/Orange	Indicates that data is being transmitted from the cable modem to the cable network. Orange indicates more than one Channel is bonded. Green indicates that one Channel is bonded. LED flash when traffic is being passed.
Ready	Green	LED flashes slowly when performing upstream ranging. LED flashes quickly when acquiring IP Address and Configuration File. LED must remain off if device receives disable configuration file.

		LED must be solid once registered with network.
WLAN	Green	Indicates connectivity in the WiFi port LED flashes when traffic is being passed.
WPS	Green	TBD
LAN1 to LAN4	Green/Orange	Indicates connectivity between the Ethernet port on the cable modem and the PC's Ethernet port. LED flashes when traffic is being passed. Green indicates GbE. Orange indicates that 10/100/1000 is enabled.
USB	Green	Indicates connectivity in the USB port LED flashes when traffic is being passed.

◆ Specification

Operating Environment: 40 degree C max.

DOCSIS RF Requirement Specification

Table 3. DOCSIS RF Specification

US-DOCSIS 2.0 Upstream Output	
Parameter	Value
Frequency	5 to 42MHz (edge to edge)
Level range (one channel)	TDMA; +8 to +54 dBmV (32QAM, 64QAM) +8 to +55 dBmV (8QAM, 16QAM) +8 to +58 dBmV (QPSK) S-CDMA: +8 to +53 dBmV (all modulation)
Modulation Type	QPSK, 8QAM, 16QAM, 32QAM, 64QAM, 128QAM and 256QAM
Modulation Rate (nominal)	TDMA: 160, 320, 640, 1280, 2560 and 5120 kHz S-CDMA: 1280, 2560, and 5120 kHz
Bandwidth	TDMA: 200, 400, 800, 1600, 3200 and 6400 kHz S-CDMA: 1600, 3200 and 6400 kHz
Output Impedance	75 ohms
Output Return Loss	> 6 dB (5 – 42 MHz)
Connector	F connector

US-DOCSIS 2.0 Downstream Output

Parameter	Value
Center Frequency	91 to 857 MHz (+/- 30 kHz)
Level Range (one channel)	-15 dBmV to +15 dBmV
Modulation Type	64QAM, 256QAM and 1024QAM (Three Demodulators)
Symbol Rate (nominal)	5.056941 Msym/s (64QAM) and 5.360537 Msym/s (256QAM)
Bandwidth	6 MHz
Total Input Power	< 30 dBmV (40-900 MHz)
Input Load Impedance	75 ohms
Input Return Loss	> 6 dB (88-860 MHz)
Connector	F connector

DOCSIS 3.0 Upstream Output

Parameter	Value
Frequency	5 to 42 MHz (edge to edge)
Level range (one channel)	TDMA/ATDMA; +17 to +57 dBmV (32QAM, 64QAM) +17 to +58 dBmV (8QAM, 16QAM) +17 to +61 dBmV (QPSK) S-CDMA: +17 to +56 dBmV (all modulation)
Modulation Type	QPSK, 8QAM, 16QAM, 32QAM, 64QAM, 128QAM and 256QAM
Modulation Rate (nominal)	TDMA: 160, 320, 640, 1280, 2560 and 5120 kHz S-CDMA: 1280, 2560, and 5120 kHz
Bandwidth	TDMA: 200, 400, 800, 1600, 3200 and 6400 kHz
SCDMA Codes per Sub Frame	1 to 128 S-CDMA: 1600, 3200 and 6400 kHz
Output Impedance	75 ohms
Output Return Loss	> 6 dB (5 – 42 MHz)
Connector	F connector

US-DOCSIS 3.0 Downstream Output

Parameter	Value
Center Frequency	88 to 1002 MHz (+/- 30 kHz)

Level Range (one channel)	-15 dBmV to +15 dBmV
Modulation Type	64QAM, 256QAM
Symbol Rate (nominal)	5.056941 Msym/s (64QAM) and 5.360537 Msym/s (256QAM)
Bandwidth	6 MHz (Alpha = 0.18 @ 64QAM & 0.12 @ 256QAM)
Capture Bandwidth	Supporting four channel bounding on continuous 64MHz CBW
Total Input Power	< 36 dBmV
Input Load Impedance	75 ohms
Input Return Loss	> 6 dB (88-1002 MHz)
Connector	F connector

WLAN RF Requirement Specification

a) frequency range :

[2.412GHz to 2.462GHz](#)

b) EUT frequency list :

[the following frequency is point to centre frequency](#)

[1. There are 11 channel at 802.11 b/g/ n model HT20](#)

Channel ID	Frequency (MHz)	FCC(USA)
1	2412	O
2	2417	O
3	2422	O
4	2427	O
5	2432	O
6	2437	O
7	2442	O
8	2447	O
9	2452	O
10	2457	O
11	2462	O

There are 7 channel at 802.11 b/g/n model HT40

Channel ID	Frequency (MHz)	FCC(USA)
3	2422	O
4	2427	O
5	2432	O
6	2437	O
7	2442	O
8	2447	O
9	2452	O

c) modulation :

Standard		Data Rate		
		(Mbps)	modul.	coding
11b	DSSS-CCK	1	BPSK	
	DSSS-CCK	2	QPSK	
	DSSS-CCK	5.5	CCK	
	DSSS-CCK	11	CCK	
11g	OFDM	6	BPSK	
		9	QPSK	
	OFDM	12	QPSK	
	OFDM	18	QPSK	
	OFDM	24	16QAM	
	OFDM	36	16QAM	
	OFDM	48	64QAM	
11n 20MHz 2 streams	MCS8	13	BPSK	1/2
	MCS9	29	QPSK	1/2
	MCS10	39	QPSK	3/4
	MCS11	52	16QAM	1/2
	MCS12	78	16QAM	3/4
	MCS13	104	64QAM	2/3
	MCS14	117	64QAM	3/4
	MCS15	130	64QAM	5/6
11n 40MHz 2 streams	MCS8	27	BPSK	1/2
	MCS9	54	QPSK	1/2

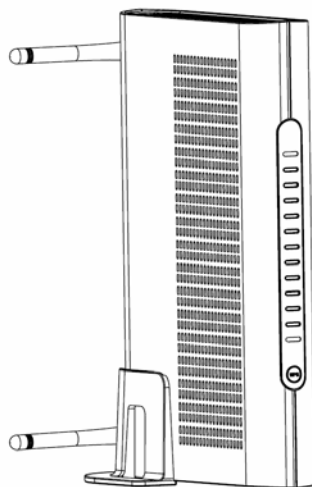
	MCS10	81	QPSK	3/4
	MCS11	108	16QAM	1/2
	MCS12	162	16QAM	3/4
	MCS13	216	64QAM	2/3
	MCS14	243	64QAM	3/4
	MCS15	270	64QAM	5/6

Test	Channels	Rates Mbps	Conditions	Mode	Antenna	Limits
Tx power						
802.11g	1,6,11	6	@target power 20dBm		0&2	+/-2dB(expect the band edge power)
802.11g	1,6,11	36	@target power 20dBm		0&2	
802.11g	1,6,11	48	@target power 19dBm		0&2	
802.11b	1,6,11		@target power 19dBm		0&2	
802.11n	1,6,11	MCS0/8	@target power 20dBm	HT20/40	0&2	
802.11n	1,6,11	MCS4/12	@target power 20dBm	HT20/40	0&2	
802.11n	1,6,11	MCS5/13	@target power 18dBm	HT20/40	0&2	
802.11n	1,6,11	MCS6/14	@target power 14dBm	HT20/40	0&2	
802.11n	1,6,11	MCS7/15	@target power 12dBm	HT20/40	0&2	
Test	Channels	Rates Mbps	Conditions	Mode	Antenna	Limits
Tx Spectral Mask						
802.11g	6		@+/-9MHz offset		0&2	0dBr
802.11g	6		@+/-11MHz offset		0&2	-20dBr
802.11g	6		@+/-20MHz offset		0&2	-28dBr
802.11g	6		@+/-30MHz offset		0&2	-40dBr
802.11n	6		@+/-9MHz offset	HT20	0&2	0dBr
802.11n	6		@+/-11MHz offset	HT20	0&2	-20dBr
802.11n	6		@+/-20MHz offset	HT20	0&2	-28dBr
802.11n	6		@+/-30MHz offset	HT20	0&2	-45dBr
802.11n	6		@+/-19MHz offset	HT40	0&2	0dBr
802.11n	6		@+/-21MHz offset	HT40	0&2	-20dBr
802.11n	6		@+/-40MHz offset	HT40	0&2	-28dBr
802.11n	6		@+/-60MHz offset	HT40	0&2	-45dBr
Channel Accuracy						
802.11g /n	6		@2437MHz center frequency(25±3°C)		0&2	+/-25ppm

Packet Error Rate (PER)						
802.11g	1,6,11		@date rate=6,36,48,54 Mbps		0&2	<10%
802.11n	1,6,11		@date rate=MCS0/8, MCS5/13, MCS6/14 & MCS7/15	HT20	0&2	<10%
802.11n	1,6,11		PER<10% @date rate=MCS0/8, MCS5/13, MCS6/14 & MCS7/15	HT40	0&2	<10%
Receiver Sensitivity Test						
802.11g	1,6,11		@ 10% PER/1000 Byte Pack size/48,54Mbps		0&2	<-70dBm
802.11n	1,6,11		@ 10% PER/1000 Byte Pack size/ MCS6/14 & MCS7/15	HT20	0&2	<-68dBm
802.11n	1,6,11		@ 10% PER/1000 Byte Pack size/ MCS6/14 & MCS7/15	HT40	0&2	<-63dBm

◆ Safety Notices

1. When this device is placed upright with the aid of the stand, the stand must be fixed at a 90 degree angle to the cable modem ; otherwise the device will have the risk of tipping over.



2. "Installation" should include bonding the screen of the coaxial cable to the earth at the building entrance per ANSI/NFPA 70, the National Electrical Code (NEC), in particular

Section 820.93; Grounding of Outer Conductive Shield of a Coaxial Cable.

3. The device is also designed for IT power system with phase to phase voltage 120V.
4. How to disconnect device. The power plug shall be installed near the cable modem and shall be easily accessible. If abnormality happens to the cable modem, disconnect the power plug from the AC wall outlet immediately."

FCC Notice

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.

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.

THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

To comply with FCC RF exposure compliance requirements, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons.

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