

DHUR-AZ63 a/b/g/n/ac 2x2 Module User Manual

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Product Introduction

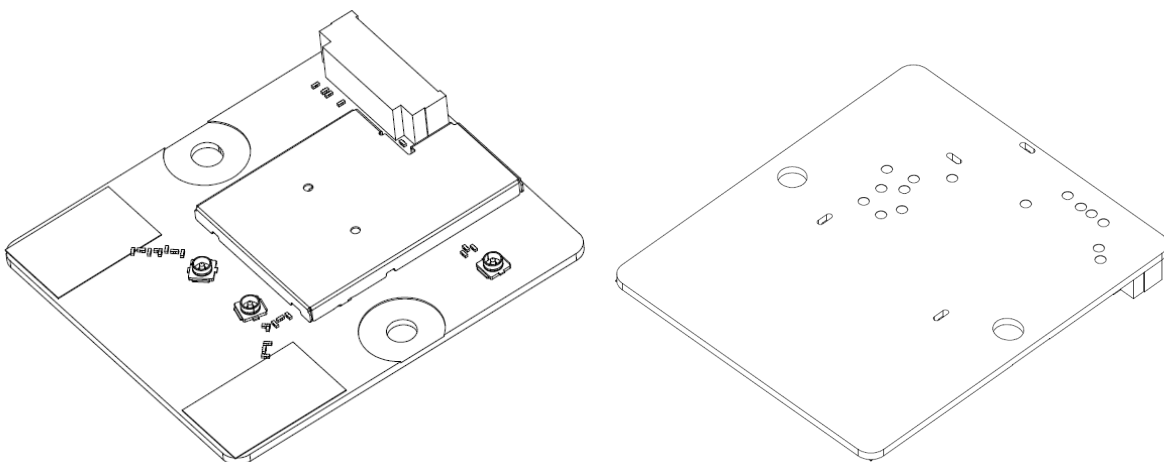
DHUR-AZ63 is an 802.11 a/b/g/n/ac WLAN/Bluetooth 5.0 combo module with USB interface based on MediaTek MT7663BUN chipset solution.

1-1. Features

- IEEE 802.11a/b/g/n/ac compatible + Bluetooth 5.0.
- Dual-band 2T2R mode
- Support 20MHz, 40MHz and 80MHz bandwidth in 2.4GHz band and 5GHz band.
- Support MU-MIMO TX/RX, STBC, LDPC, TX Beamformer and RX Beamformee.
- Supports Bluetooth 5 dual mode for 4x the range, 2x the speed
- Support SCO and eSCO link with re-transmission, up to 7 BT link +16 BLE link.
- 2 Wi-Fi onboard antenna and 1 BT external antenna
- PCB 4 Layers with 46.5 x 40 x1.0 mm³

1-2.Interfaces and Power supply

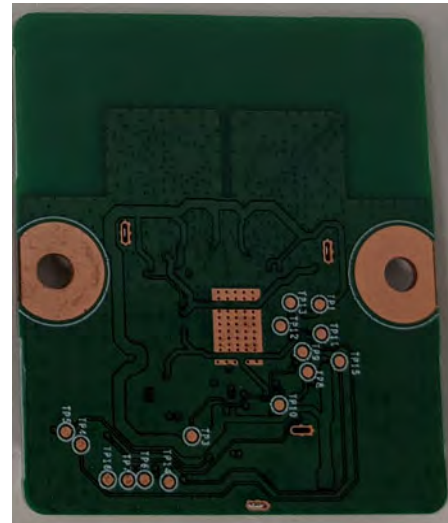
- Power supply with VCC 5.0
- 10 pin wire to board
- USB 2.0 Interface



2 Product Photo



Top Side



Bottom Side

3. Product Specification

5-1. Electrical Specification

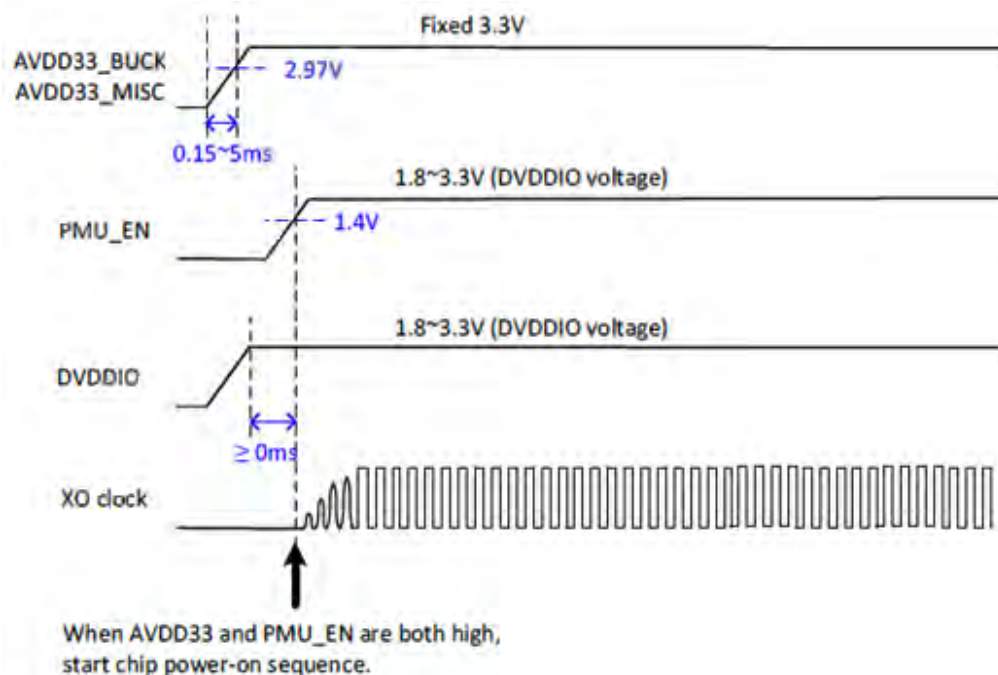
5-1-1. Absolute Maximum Ratings

Symbol (Board level)	Description	Min.	Max.	Units
5V	5V power supply	0	6.0	V
RESET	Controlled by SOC, GPIO input	-0.3	3.63	V
BT_WAKE_HOST	BT wake up host, GPIO output	-0.3	3.63	V
WoWLAN	Wake on Wireless LAN, GPIO output	-0.3	3.63	V
BT_IR	BT_IR signal from MT7658, GPIO output	-0.3	3.63	V
GPIO_X	BT_IR signal select, GPIO output	-0.3	3.63	V
H _{storage}	Storage humidity	5	85	%RH
T _{storage}	Storage temperature	-40	85	°C

5-1-2. Recommended Operating Conditions

Symbol (Board level)	Status	Description	Min.	Typ.	Max.	Units
5V	--	5V power supply	4.5	5.0	5.5	V
RESET	V _{IH}	3.3V Supply Voltage	2.97	3.3	3.63	V
WoWLAN	V _{OH}	Wake on wireless LAN	2.97	3.3	3.63	V
BT_WAKE_HOST	V _{IH}	BT wake up host	2.97	3.3	3.63	V
BT_IR	V _{OH}	BT_IR signal form MT7658	2.97	3.3	3.63	V
GPIO_X	V _{IH}	BT_IR signal select	2.97	3.3	3.63	V
T _{operating}	--	Operating temperature	-10	--	60	°C
H _{operating}	--	Operating humidity	5	--	95	%RH

5-2. Chip Sequence



5-3. Wi-Fi Portion

Item	Key specifications																																					
Main chipset	MT7663BUN																																					
TX/RX	2T2R																																					
Frequency range	2.400 ~ 2.497GHz,5.15GHz ~ 5.85GHz																																					
Modulation technique	➤ 802.11 a/b/g DSSS (DBPSK, DQPSK, CCK) OFDM (BPSK, QPSK, 16-QAM, 64-QAM) DSSS (Direct Sequence Spread Spectrum) with DBPSK (Differential Binary Phase Shift Keying 1Mbps), DQPSK (Differential Quaternary Phase Shift Keying 2Mbps), CCK (Complementary Code Keying 5.5&11Mbps), OFDM (Orthogonal Frequency Division Multiplexing with BPSK for 6,9Mbps 、 QPSK for 12,18Mbps 、 16QAM for 24,36Mbps 、 64QAM for 48,54Mbps) ➤ 802.11n a/g OFDM (BPSK, QPSK, 16-QAM, 64-QAM) ➤ 802.11 ac OFDM (BPSK, QPSK, 16-QAM, 64-QAM,256-QAM)																																					
Host interface	➤ USB2.0																																					
Power consumption @25 °C	<table><tr><th rowspan="2">Description</th><th colspan="2">Current</th></tr><tr><th>average</th><th>Unit</th></tr><tr><td>Sleep mode, radio off</td><td>1.5</td><td>mA</td></tr><tr><td>2.4GHz RX Power saving, DTIM=1</td><td>2.73</td><td>mA</td></tr><tr><td>2.4GHz RX Active, HT20, MCS7</td><td>126</td><td>mA</td></tr><tr><td>2.4GHz TX CCK, 11Mbps</td><td>387</td><td>mA</td></tr><tr><td>2.4GHz TX HT20, MCS15</td><td>473</td><td>mA</td></tr><tr><td>2.4GHz TX HT20, MCS8</td><td>495</td><td>mA</td></tr><tr><td>5GHz VHT80 RX Listen, 2RX</td><td>148</td><td>mA</td></tr><tr><td>5GHz RX Active, VHT80, MCS9, Nss=2</td><td>226</td><td>mA</td></tr><tr><td>5GHz TX VHT80, MCS9, Nss=2</td><td>646</td><td>mA</td></tr><tr><td>5GHz TX VHT80, MCS0, Nss=2</td><td>690</td><td>mA</td></tr></table>			Description	Current		average	Unit	Sleep mode, radio off	1.5	mA	2.4GHz RX Power saving, DTIM=1	2.73	mA	2.4GHz RX Active, HT20, MCS7	126	mA	2.4GHz TX CCK, 11Mbps	387	mA	2.4GHz TX HT20, MCS15	473	mA	2.4GHz TX HT20, MCS8	495	mA	5GHz VHT80 RX Listen, 2RX	148	mA	5GHz RX Active, VHT80, MCS9, Nss=2	226	mA	5GHz TX VHT80, MCS9, Nss=2	646	mA	5GHz TX VHT80, MCS0, Nss=2	690	mA
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Output power (per chain; 2.4G tolerance +/-2.5 dB, 5G tolerance +/-3,0dB)	➤ 802.11a								
	Test Frequencies	6-36_Target	48_Target	54_Target					
	5180	15.5	15.5	14.5					
	5320	15.5	15.5	14.5					
	5500	15.5	15.5	14.5					
	5600	15.5	15.5	14.5					
	5700	15.5	15.5	14.5					
	5825	15.5	15.5	14.5					
	➤ 802.11b								
	Test Frequencies	1/2_Target	5.5_Target	11_Target					
	2412	18.5	18.5	18.5					
	2472	18.5	18.5	18.5					
	2484	18.5	18.5	18.5					
	➤ 802.11g								
	Test Frequencies	6-12_Target	18_Target	24_Target	36_Target	48_Target	54_Target		
	2412	16.5	16.5	16.5	16.5	16.5	15.5		
	2442	16.5	16.5	16.5	16.5	16.5	15.5		
	2472	16.5	16.5	16.5	16.5	16.5	15.5		
	➤ 802.11n								
	Freq. Range: HT20								
	Test Freq	MCS 0/8	MCS 1/9	MCS 2/10	MCS 3/11	MCS 4/12	MCS 5/13	MCS 6/14	MCS 7/15
	5180	15	15	15	15	15	15	15	15
	5240	15	15	15	15	15	15	15	15
	5320	15	15	15	15	15	15	15	15
	5500	15	15	15	15	15	15	15	15
	5700	15	15	15	15	15	15	15	15
	5745	15	15	15	15	15	15	15	15
	5825	15	15	15	15	15	15	15	15
	Freq. Range: HT40								
	Test Freq	MCS 0/8	MCS 1/9	MCS 2/10	MCS 3/11	MCS 4/12	MCS 5/13	MCS 6/14	MCS 7/15
	5190	15	15	15	15	15	15	15	15
	5230	15	15	15	15	15	15	15	15
	5270	15	15	15	15	15	15	15	15
	5510	15	15	15	15	15	15	15	15
	5670	15	15	15	15	15	15	15	15
	5755	15	15	15	15	15	15	15	15
	5795	15	15	15	15	15	15	15	15
	Freq. Range: HT20								
	Test Freq	MCS 0/8	MCS 1/9	MCS 2/10	MCS 3/11	MCS 4/12	MCS 5/13	MCS 6/14	MCS 7/15
	2412	16	16	16	16	16	16	16	16
	2437	16	16	16	16	16	16	16	16
	2472	16	16	16	16	16	16	16	16
	Freq. Range: HT40								
	Test Freq	MCS 0/8	MCS 1/9	MCS 2/10	MCS 3/11	MCS 4/12	MCS 5/13	MCS 6/14	MCS 7/15
	2412	16	16	16	16	16	16	16	16
	2437	16	16	16	16	16	16	16	16
	2472	16	16	16	16	16	16	16	16

	➤ 802.11ac Freq. Range: VHT20 <table><tr><td>Test Freq</td><td>MCS 0</td><td>MCS 1</td><td>MCS 2</td><td>MCS 3</td><td>MCS 4</td><td>MCS 5</td><td>MCS 6</td><td>MCS 7</td><td>MCS 8</td><td>MCS 9</td></tr><tr><td>5180</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td></tr><tr><td>5240</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td></tr><tr><td>5320</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td></tr><tr><td>5500</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td></tr><tr><td>5700</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td></tr><tr><td>5745</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td></tr><tr><td>5825</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td><td>15</td></tr></table> Freq. Range: VHT40 <table><tr><td>Test Freq</td><td>MCS 0</td><td>MCS 1</td><td>MCS 2</td><td>MCS 3</td><td>MCS 4</td><td>MCS 5</td><td>MCS 6</td><td>MCS 7</td><td>MCS 8</td><td>MCS 9</td></tr><tr><td>5210</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td></tr><tr><td>5290</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td></tr><tr><td>5530</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td></tr><tr><td>5610</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td></tr><tr><td>5690</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td></tr><tr><td>5775</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td></tr></table> Freq. Range: VHT80 <table><tr><td>Test Freq</td><td>MCS 0</td><td>MCS 1</td><td>MCS 2</td><td>MCS 3</td><td>MCS 4</td><td>MCS 5</td><td>MCS 6</td><td>MCS 7</td><td>MCS 8</td><td>MCS 9</td></tr><tr><td>5210</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td></tr><tr><td>5290</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td></tr><tr><td>5530</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td></tr><tr><td>5610</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td></tr><tr><td>5690</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td></tr><tr><td>5775</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td><td>14</td></tr></table>										Test Freq	MCS 0	MCS 1	MCS 2	MCS 3	MCS 4	MCS 5	MCS 6	MCS 7	MCS 8	MCS 9	5180	15	15	15	15	15	15	15	15	15	15	5240	15	15	15	15	15	15	15	15	15	15	5320	15	15	15	15	15	15	15	15	15	15	5500	15	15	15	15	15	15	15	15	15	15	5700	15	15	15	15	15	15	15	15	15	15	5745	15	15	15	15	15	15	15	15	15	15	5825	15	15	15	15	15	15	15	15	15	15	Test Freq	MCS 0	MCS 1	MCS 2	MCS 3	MCS 4	MCS 5	MCS 6	MCS 7	MCS 8	MCS 9	5210	14	14	14	14	14	14	14	14	14	14	5290	14	14	14	14	14	14	14	14	14	14	5530	14	14	14	14	14	14	14	14	14	14	5610	14	14	14	14	14	14	14	14	14	14	5690	14	14	14	14	14	14	14	14	14	14	5775	14	14	14	14	14	14	14	14	14	14	Test Freq	MCS 0	MCS 1	MCS 2	MCS 3	MCS 4	MCS 5	MCS 6	MCS 7	MCS 8	MCS 9	5210	14	14	14	14	14	14	14	14	14	14	5290	14	14	14	14	14	14	14	14	14	14	5530	14	14	14	14	14	14	14	14	14	14	5610	14	14	14	14	14	14	14	14	14	14	5690	14	14	14	14	14	14	14	14	14	14	5775	14	14	14	14	14	14	14	14	14	14
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Sensitivity	➤ 802.11a <table><tr><td>Modulation</td><td>Code Rate</td><td>IEEE Spec (1Rx dBm)</td><td>Typical (1Rx dBm)</td></tr><tr><td>BPSK</td><td>1/2</td><td>-82</td><td>-89</td></tr><tr><td>BPSK</td><td>3/4</td><td>-81</td><td>-88</td></tr><tr><td>QPSK</td><td>1/2</td><td>-79</td><td>-87</td></tr><tr><td>QPSK</td><td>3/4</td><td>-77</td><td>-85</td></tr><tr><td>16-QAM</td><td>1/2</td><td>-74</td><td>-82</td></tr><tr><td>16-QAM</td><td>3/4</td><td>-70</td><td>-78</td></tr><tr><td>64-QAM</td><td>2/3</td><td>-66</td><td>-74</td></tr><tr><td>64-QAM</td><td>3/4</td><td>-65</td><td>-67</td></tr></table> ➤ 802.11b <table><tr><td>Modulation</td><td>Code Rate</td><td>IEEE Spec (1Rx dBm)</td><td>Typical (1Rx dBm)</td></tr><tr><td>DBPSK</td><td>-</td><td>not specified</td><td>-97</td></tr><tr><td>DQPSK</td><td>-</td><td>not specified</td><td>-94</td></tr><tr><td>DQPSK</td><td>CCK</td><td>not specified</td><td>-92</td></tr><tr><td>DQPSK</td><td>CCK</td><td>not specified</td><td>-90</td></tr></table> ➤ 802.11g <table><tr><td>Modulation</td><td>Code Rate</td><td>IEEE Spec (1Rx dBm)</td><td>Typical (1Rx dBm)</td></tr><tr><td>BPSK</td><td>1/2</td><td>-82</td><td>-94</td></tr><tr><td>BPSK</td><td>3/4</td><td>-81</td><td>-90</td></tr><tr><td>QPSK</td><td>1/2</td><td>-79</td><td>-91</td></tr><tr><td>QPSK</td><td>3/4</td><td>-77</td><td>-88</td></tr><tr><td>16-QAM</td><td>1/2</td><td>-74</td><td>-84</td></tr><tr><td>16-QAM</td><td>3/4</td><td>-70</td><td>-82</td></tr><tr><td>64-QAM</td><td>2/3</td><td>-66</td><td>-79</td></tr><tr><td>64-QAM</td><td>3/4</td><td>-65</td><td>-76</td></tr></table>										Modulation	Code Rate	IEEE Spec (1Rx dBm)	Typical (1Rx dBm)	BPSK	1/2	-82	-89	BPSK	3/4	-81	-88	QPSK	1/2	-79	-87	QPSK	3/4	-77	-85	16-QAM	1/2	-74	-82	16-QAM	3/4	-70	-78	64-QAM	2/3	-66	-74	64-QAM	3/4	-65	-67	Modulation	Code Rate	IEEE Spec (1Rx dBm)	Typical (1Rx dBm)	DBPSK	-	not specified	-97	DQPSK	-	not specified	-94	DQPSK	CCK	not specified	-92	DQPSK	CCK	not specified	-90	Modulation	Code Rate	IEEE Spec (1Rx dBm)	Typical (1Rx dBm)	BPSK	1/2	-82	-94	BPSK	3/4	-81	-90	QPSK	1/2	-79	-91	QPSK	3/4	-77	-88	16-QAM	1/2	-74	-84	16-QAM	3/4	-70	-82	64-QAM	2/3	-66	-79	64-QAM	3/4	-65	-76																																																																																																																																																						
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➤ **802.11ng (HT20)**

Modulation	Code Rate	IEEE Spec (1Rx dBm)	Typical (1Rx dBm)
(MCS0) BPSK	1/2	-82	-94
(MCS1) QPSK	1/2	-79	-91
(MCS2) QPSK	3/4	-77	-88
(MCS3) 16-QAM	1/2	-74	-82
(MCS4) 16-QAM	3/4	-70	-81
(MCS5) 64-QAM	2/3	-66	-79
(MCS6) 64-QAM	3/4	-65	-77
(MCS7) 64-QAM	5/6	-64	-74

(HT40)

Modulation	Code Rate	IEEE Spec (1Rx dBm)	Typical (1Rx dBm)
(MCS0) BPSK	1/2	-79	-88
(MCS1) QPSK	1/2	-76	-86
(MCS2) QPSK	3/4	-74	-84
(MCS3) 16-QAM	1/2	-71	-81
(MCS4) 16-QAM	3/4	-67	-78
(MCS5) 64-QAM	2/3	-63	-74
(MCS6) 64-QAM	3/4	-62	-69
(MCS7) 64-QAM	5/6	-61	-65

➤ **802.11na (HT20)**

Modulation	Code Rate	IEEE Spec (1Rx dBm)	Typical (1Rx dBm)
(MCS0) BPSK	1/2	-82	-89
(MCS1) QPSK	1/2	-79	-86
(MCS2) QPSK	3/4	-77	-84
(MCS3) 16-QAM	1/2	-74	-82
(MCS4) 16-QAM	3/4	-70	-79
(MCS5) 64-QAM	2/3	-66	-74
(MCS6) 64-QAM	3/4	-65	-73
(MCS7) 64-QAM	5/6	-64	-66

➤ **(HT40)**

Modulation	Code Rate	IEEE Spec (1Rx dBm)	Typical (1Rx dBm)
(MCS0) BPSK	1/2	-79	-86
(MCS1) QPSK	1/2	-76	-84
(MCS2) QPSK	3/4	-74	-82
(MCS3) 16-QAM	1/2	-71	-80
(MCS4) 16-QAM	3/4	-67	-80
(MCS5) 64-QAM	2/3	-63	-78
(MCS6) 64-QAM	3/4	-62	-76
(MCS7) 64-QAM	5/6	-61	-73

➤ **802.11ac (HT80)**

Modulation	Code Rate	IEEE Spec (1Rx dBm)	Typical (1Rx dBm)
(MCS0) BPSK	1/2	-76	-88
(MCS1) QPSK	1/2	-73	-86
(MCS2) QPSK	3/4	-71	-83
(MCS3) 16-QAM	1/2	-68	-80
(MCS4) 16-QAM	3/4	-64	-78
(MCS5) 64-QAM	2/3	-60	-76
(MCS6) 64-QAM	3/4	-59	-73
(MCS7) 64-QAM	5/6	-58	-71
(MCS8) 256-QAM	3/4	-53	-65
(MCS9) 256-QAM	5/6	-51	-59

Transmit spectrum mask	For transmitted spectral mask for 11b shall be less than -50dBm for 22MHz<f<fc+22MHz. For transmitted spectral mask for 11g shall be less than -40dBm for fc-30MHz<f<fc+30MHz. For transmitted spectral mask for 11n 20MHz shall be less than -45dBm for fc-30MHz<f<fc+30MHz. For transmitted spectral mask for 11n 40MHz shall be less than -45dBm for fc-60MHz<f<fc+60MHz.
Transmit spectrum flatness	For 802.11g the average energy of the constellations in each of spectral lines -16..-1 and +1..+16 will deviate no more than +/- 2dB from their average energy. For 802.11n 40MHz mode, the average energy of the constellations in each of spectral lines -42..-2 and +2..+42 will deviate no more than +/- 2dB from their average energy. The transmitted spectral flatness should be within +/- 4dB.
Transmit center frequency tolerance	The transmitted center frequency tolerance shall be ±20 ppm maximum.
Carrier suppression	802.11a: The leakage of the center frequency component shall not exceed -15 dB relative to overall transmitted power or, equivalently, +2 dB relative to the average energy of the rest of the sub-carriers. 802.11b: The RF carrier suppression, measured at the channel center frequency, shall be at least 15 dB below the peak SIN(x)/x power spectrum. 802.11g: The leakage of the center frequency component shall not exceed -15 dB relative to overall transmitted power or, equivalently, +2 dB relative to the average energy of the rest of the sub-carriers. 802.11n: For all 20 MHz modes of transmission, the leakage of center frequency component shall not exceed -15 dB relative to overall transmitted power or, equivalently, +2 dB relative to the average energy of rest of sub-carriers. For all 40 MHz modes of transmission, the center frequency leakage shall not exceed -18 dB relative to overall transmitted power, or, equivalently, +2 dB relative to the average energy of rest of sub-carriers.
Transmit power on ramp and power down ramp time	➤ The transmitting power-on ramp for 10% to 90% of maximum power m shall be no greater than 2 μs. ➤ The transmitting power-down ramp for 90% to 10% of maximum power shall be no greater than 2 μs.
Receiver maximum input level	➤ 802.11a Modulation Code Rate IEEE Spec (1Rx dBm) >-30 ➤ 802.11b Modulation DBPSK IEEE Spec (1Rx dBm) >-10 DQPSK >-10 CCK >-10 ➤ 802.11g Modulation Code Rate IEEE Spec (1Rx dBm) >-20 ➤ 802.11na Modulation Code Rate IEEE Spec (1Rx dBm) >-30 ➤ 802.11ng Modulation Code Rate IEEE Spec (1Rx dBm) >-20 ➤ 802.11ac Modulation Code Rate IEEE Spec (1Rx dBm) >-30
PCB dimension	➤ 46.0+/-0.1mm x 40.00+/-0.1mm x 1.0+/-0.1mm 4L FR4

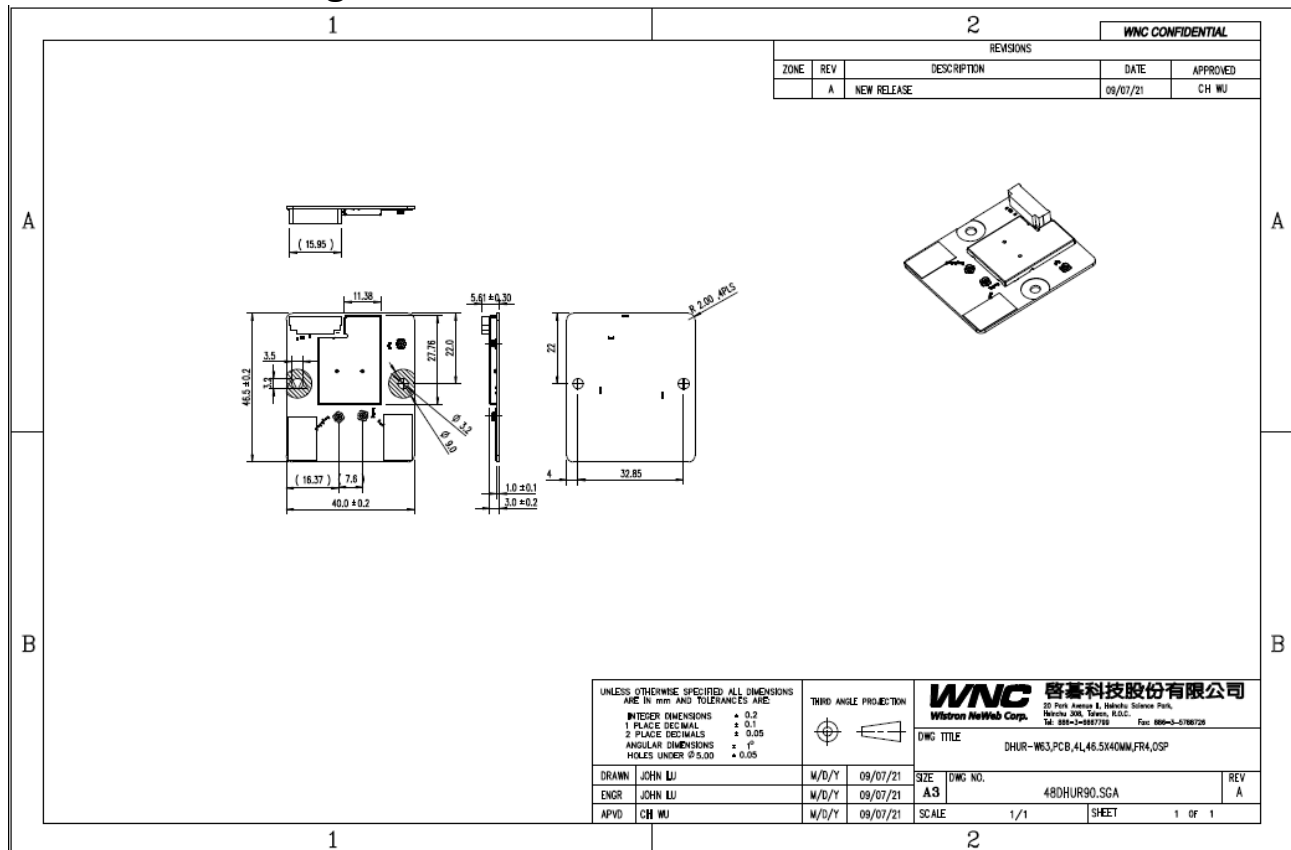
Transfer data rate	➤ 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps ➤ 802.11b: 1, 2, 5.5, 11Mbps ➤ 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps ➤ 802.11n: @800GI(400GI) ● 20MHz BW ▪ 1 Nss: 65(72.2) Mbps maximal ▪ 2 Nss: 130(144.444) Mbps maximal ● 40MHz BW ▪ 1 Nss: 135(150) Mbps maximal ▪ 2 Nss: 270(300) Mbps maximal ➤ 802.11ac: @800GI(400GI) ● 80MHz BW ▪ 1 Nss: 390(433.3) Mbps maximal ▪ 2 Nss: 780(866.7) Mbps maximal
Security	WEP, WPA ,WPA2 ,AES, TKIP
Operation temperature	-10° ~ 60° C
Storage temperature	- 45° ~ 85° C ,R.H:90% (non-condensing)
Antenna	➤ Wi-Fi on-board antenna.

5-4. BT Portion

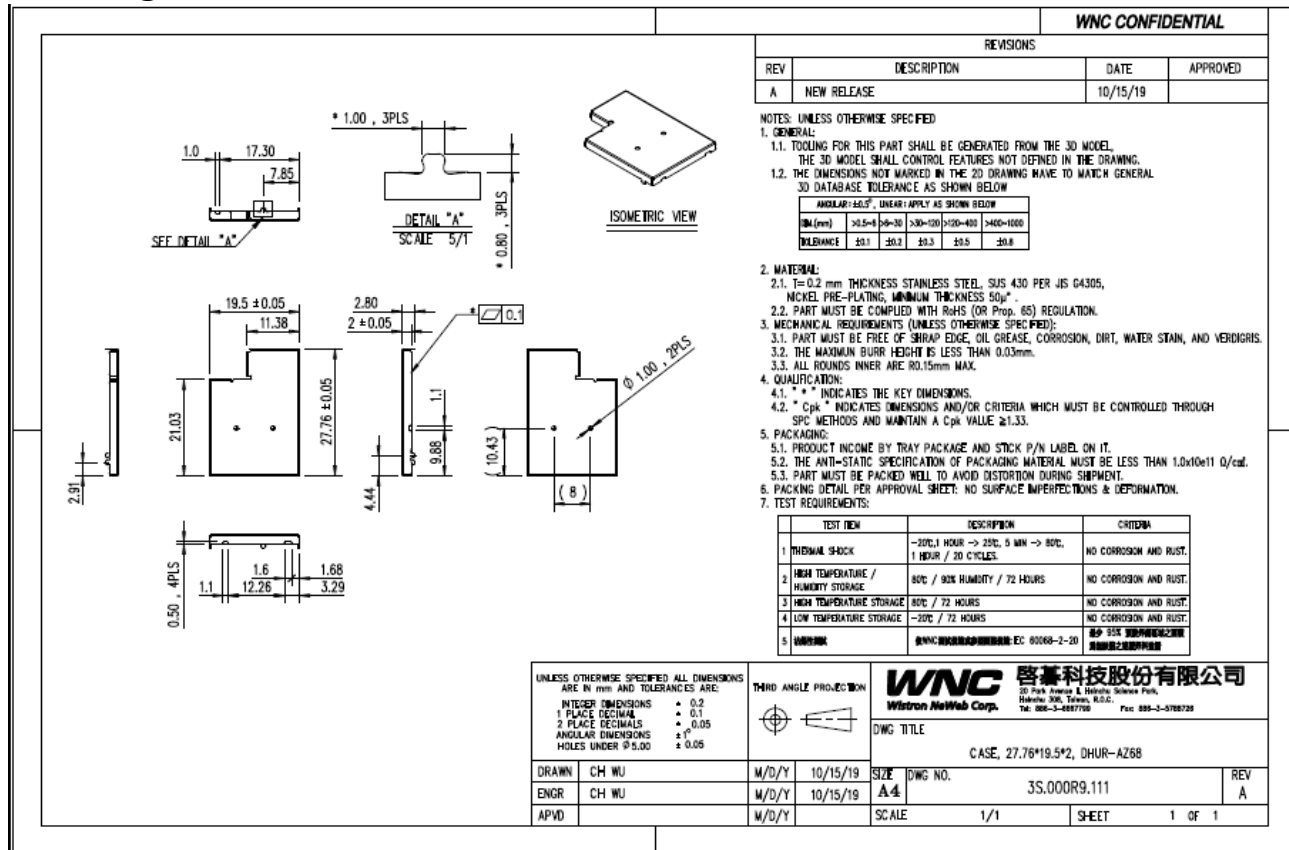
Item	Key specifications																									
Main chipset	➤ MT7663BUN																									
Compliance	➤ Bluetooth 5.0																									
Frequency range	➤ 2400 ~ 2483.5MHz																									
Initial carrier frequency tolerance	➤ +/- 40kHz (typical)																									
Modulation technique	➤ Frequency hopping, 1600 hops/sec																									
Channel spacing	➤ 1MHz																									
Channels support	➤ 79 channels																									
Power consumption @25° C	<table><tr><th rowspan="2">Description</th><th colspan="2">Current</th></tr><tr><th>average</th><th>Unit</th></tr><tr><td>Sleep mode, radio off</td><td>1.5</td><td>mA</td></tr><tr><td>Bluetooth TX</td><td>42</td><td>mA</td></tr><tr><td>Bluetooth RX</td><td>21</td><td>mA</td></tr><tr><td>Bluetooth SCO connection, HV3 packets + sniff mode + scan (Page scan interval = 1.28sec, inquiry scan interval = 2.56s, sniff interval = 500ms)</td><td>21</td><td>mA</td></tr><tr><td>Bluetooth page scan + inquiry scan (Page scan interval = 1.28s, inquiry scan interval = 2.56s)</td><td>1.7</td><td>mA</td></tr><tr><td>Bluetooth page scan (Page scan interval = 1.28s)</td><td>1.6</td><td>mA</td></tr></table>			Description	Current		average	Unit	Sleep mode, radio off	1.5	mA	Bluetooth TX	42	mA	Bluetooth RX	21	mA	Bluetooth SCO connection, HV3 packets + sniff mode + scan (Page scan interval = 1.28sec, inquiry scan interval = 2.56s, sniff interval = 500ms)	21	mA	Bluetooth page scan + inquiry scan (Page scan interval = 1.28s, inquiry scan interval = 2.56s)	1.7	mA	Bluetooth page scan (Page scan interval = 1.28s)	1.6	mA
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		average	Unit																							
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	Bluetooth page scan + inquiry scan (Page scan interval = 1.28s, inquiry scan interval = 2.56s)	1.7	mA																							
	Bluetooth page scan (Page scan interval = 1.28s)	1.6	mA																							
	Note : ※The maximum current consumption would be impacted by radiation environment and the driver mechanism.																									
Output power	➤ + 4 dBm ≤ Output Power ≤ +10dBm （Class I Device）																									

(dBm)	
Sensitivity	➤ -80 dBm (typ.) for pi/4-DQPSK, 0.1%BER
Operation temperature	➤ -10° ~ 60° C
Storage temperature	➤ -45° ~ 85° C, R.H. : 90% (non-condensing)
Antenna	➤ 1 RF connector on module for BT external antenna.

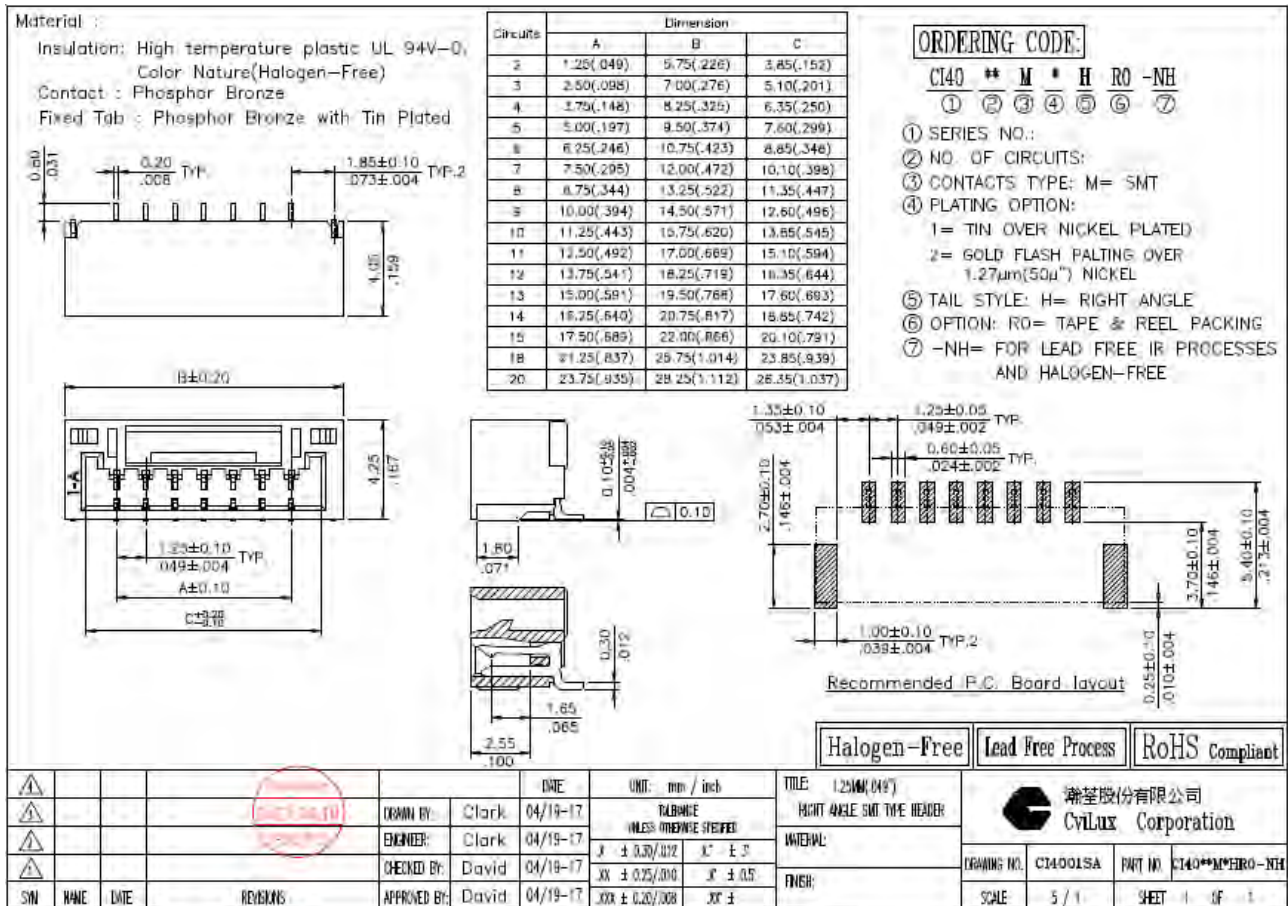
4. Mechanical Drawing



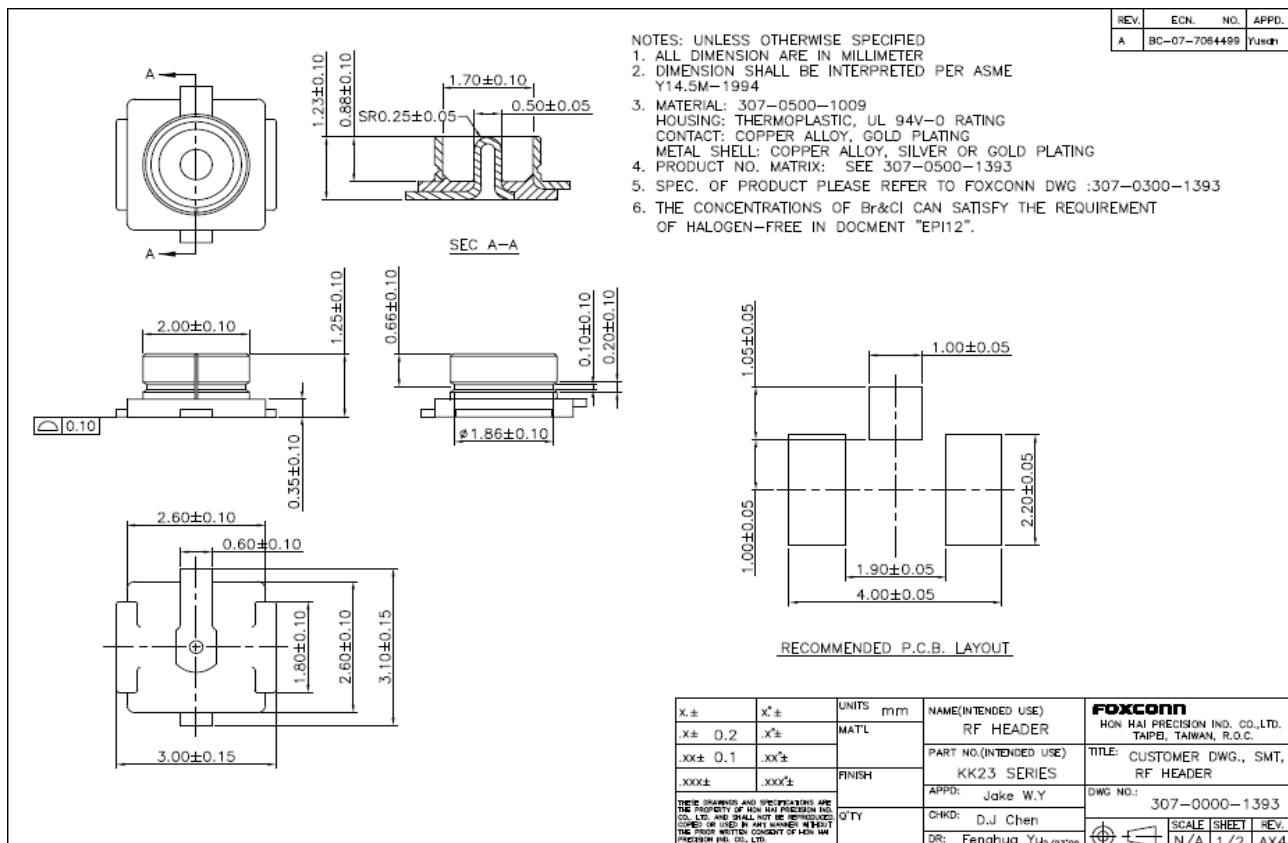
5. Shielding cover Information



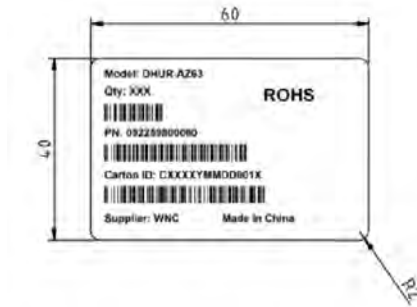
6. Connector Information



7. Coaxial RF Connector



8. Carton Label

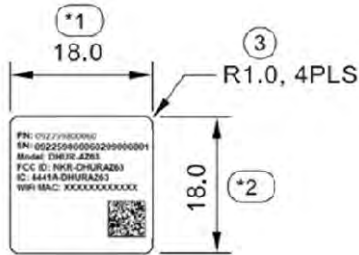


NOTES:

1. MATERIAL: 80G 銅版紙 FASSON: AW3209
ADHESIVE: 壓克力背膠, 上膠厚度 0.020 ± 0.003
2. COLOR: 底色為材質原色 (白色)
3. TEMPERATURE RESISTANT: 85°C
4. 捲狀出貨
5. 離型紙左右間距各 $3 \pm 0.5\text{mm}$, 齒刀上下間距各 $1.5 \pm 0.5\text{mm}$

Item	內容類型	內容說明 & 規則
1	☒ 固定(不變) ☐ 非固定(變量)	抬頭 + 實例: Model: DHUR-AZ63(固定碼) ©Font : Arial Bold
2	☐ 固定(不變) ☒ 非固定(變量)	抬頭 + 實例: Qty: XXX (系統產生) Qty: 900 (滿箱), 未滿箱按實際裝箱數量 ©Font : Arial Bold
3	☒ 固定(不變) ☐ 非固定(變量)	抬頭 + 實例: RoHS(固定碼) ©Font : Arial Bold
4	☒ 固定(不變) ☐ 非固定(變量)	抬頭 + 實例: PN: 092259800060(固定碼) ©Font : Arial Bold
5	☐ 固定(不變) ☒ 非固定(變量)	抬頭 + 實例: Carton ID: XXXXXXXXXXXXXXXX (系統產生) ©Follow WNC 編碼原則
6	☒ 固定(不變) ☐ 非固定(變量)	抬頭 + 實例: Supplier: WNC(固定碼) ©Font : Arial Bold
7	☒ 固定(不變) ☐ 非固定(變量)	抬頭 + 實例: Made In China(固定碼) ©Font : Arial Bold

9. SN Label

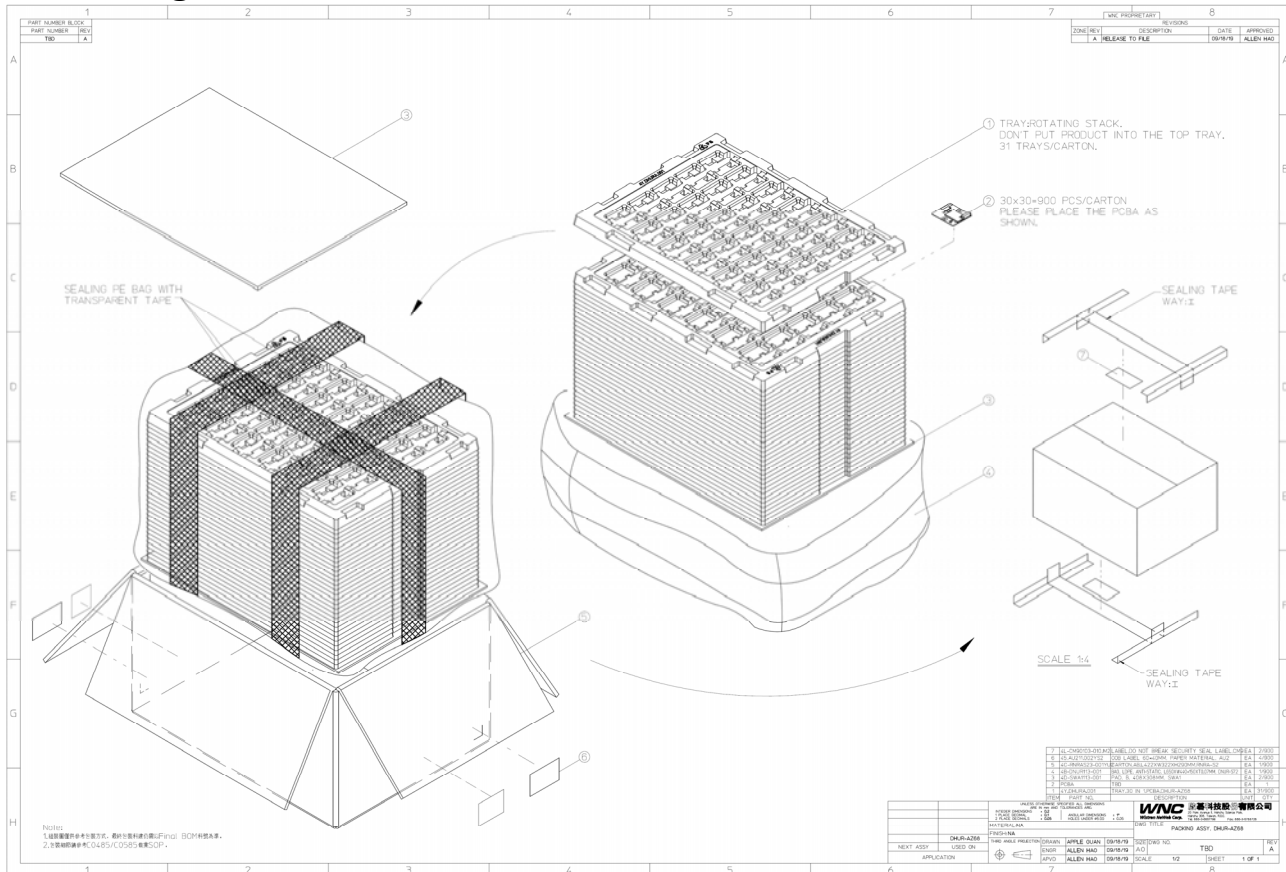


NOTE:

1. MATERIAL: WHITE MATT PET(RHTYL50), t=0.05mm
2. ADHESIVE: ACRYLIC, t=0.024mm
3. TEMPERATURE RESISTANT=80⁰C
4. LABEL EDGE TO LINER EDGE 3±0.5mm
5. ROLLED

Item	內容類型	項目	內容說明 & 規則
1	☒ 固定(不變) ☐ 非固定(變量)	PN	拾頭 + 實例: PN:09225980060(固定碼) ◎Font: Arial Bold
2	☐ 固定(不變) ☒ 非固定(變量)	SN	拾頭 + 實例: SN:09225980060209000001 (系統產生) ◎客戶料號: 09225980060 (固定碼,12碼) ◎YY: 製造年份:Ex: 20代表2020;2碼,10進制 ◎M:製造月Ex:9 代表9月 (1碼,16進制) 月份使用代碼: 1,2,3,4,5,6,7,8,9,A,B,C(A代表10月, B代表11月, C代表12月) ◎流水號: 共6碼,Ex:000001; 從1開始, 10進位 ◎Font: Arial Bold
3	☒ 固定(不變) ☐ 非固定(變量)	Model name	拾頭 + 實例: Model:DHUR-AZ63(固定碼) ◎Font: Arial Bold
4	☒ 固定(不變) ☐ 非固定(變量)	FCC ID	拾頭 + 實例: FCC ID:NKR-DHURAZ63(固定碼) ◎Font: Arial Bold
5	☒ 固定(不變) ☐ 非固定(變量)	IC ID	拾頭 + 實例: IC:441A-DHURAZ63(固定碼) ◎Font: Arial Bold
6	☐ 固定(不變) ☒ 非固定(變量)	MAC Address	拾頭 + 實例: WIFI MAC:XXXXXXXXXX (系統產生) ◎Font: Arial Bold ◎每台用 2組WNC MAC ID Number ◎用WNC MAC Address
7	☐ 固定(不變) ☒ 非固定(變量)	2D code	拾頭 + 實例: DHUR-AZ63,XXXXXXXXXX2,XXXXXXXXXX1,09225980060(系統產生) DHUR-AZ63,WNC BT MAC,WNC WIFI MAC,Amtran PN (各段用,區分) ◎Ex:DHUR-AZ63,XXXXXXXXXX2,XXXXXXXXXX1,09225980060 ◎二維條碼使用格式: ECC200; 尺寸: 5*5mm ◎二維條碼顯示內容區分4段: Module name,BT MAC,WIFI MAC,Amtran PN (各段以“, ” 區分)

10. Packing



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.

This device complies with Industry Canada's licence-exempt RSSs. 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 of the device

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.

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.

IMPORTANT NOTE:

This module is intended for OEM integrator. This module is only FCC authorized for the specific rule parts listed on the grant, and that the host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.

Additional testing and certification may be necessary when multiple modules are used.

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the FCC radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

USERS MANUAL OF THE END PRODUCT:

In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied.

The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

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 operation.

LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following " Contains TX FCC ID: NKR-DHURAZ63 ".

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 operation.

Ant.	Brand	Part Number	Antenna Type	Gain (dBi)		
				WLAN 2.4GHz	WLAN 5GHz	Bluetooth
1	WNC	Wifi Ant0	Printed	5.31	5.92	-
2	WNC	Wifi Ant1	Printed	5.26	5.91	-
3	WNC	81.EK615.GAA	PIFA	2.26	6.93	-
4	WNC	81.EK615.GAF	PIFA	3.09	5.35	-
5	WNC	81.EK615.GAM	PIFA	-	-	4.04
6	WNC	81.EK615.GAV	PIFA	-	-	4.87
7	WNC	81.EK615.G90	PIFA	-	-	0.75

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

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

Cet appareil contient des émetteurs / récepteurs exempts de licence qui sont conformes au (x) RSS (s) exemptés de licence d'Innovation, Sciences et Développement économique Canada. L'opération est soumise aux deux conditions suivantes:

- (1) Cet appareil ne doit pas provoquer d'interférences.*
- (2) Cet appareil doit accepter toute interférence, y compris les interférences susceptibles de provoquer un fonctionnement indésirable de l'appareil.*

This radio transmitter [4441A-DHURAZ63] has been approved by Innovation, Science and Economic Development Canada 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.

Le présent émetteur radio (4441A-DHURAZ63) a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal d'antenne. Les types d'antennes non inclus dans cette liste qui ont un gain supérieur au gain maximal indiqué pour tout type listé sont strictement interdits pour une utilisation avec cet appareil.

Ant.	Brand	Part Number	Antenna Type	Gain (dBi)		
				WLAN 2.4GHz	WLAN 5GHz	Bluetooth
1	WNC	Wifi Ant0	Printed	5.31	5.92	-
2	WNC	Wifi Ant1	Printed	5.26	5.91	-
3	WNC	81.EK615.GAA	PIFA	2.26	6.93	-
4	WNC	81.EK615.GAF	PIFA	3.09	5.35	-
5	WNC	81.EK615.GAM	PIFA	-	-	4.04
6	WNC	81.EK615.GAV	PIFA	-	-	4.87
7	WNC	81.EK615.G90	PIFA	-	-	0.75

The device for operation in the band 5150–5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.

les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une

utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

The maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit.

le gain maximal d'antenne permis pour les dispositifs utilisant les bandes 5250-5350 MHz et 5470-5725 MHz doit se conformer à la limite de p.i.r.e.

The maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate.

le gain maximal d'antenne permis (pour les dispositifs utilisant la bande 5725-5850 MHz) doit se conformer à la limite de p.i.r.e. spécifiée pour l'exploitation point à point et non point à point, selon le cas.

For indoor use only.

Pour une utilisation en intérieur uniquement.

IMPORTANT NOTE:

This module is intended for OEM integrator. The OEM integrator is responsible for the compliance to all the rules that apply to the product into which this certified RF module is integrated.

Additional testing and certification may be necessary when multiple modules are used.

20cm minimum distance has to be able to be maintained between the antenna and the users for the host this module is integrated into. Under such configuration, the IC RSS-102 radiation exposure limits set forth for an population/uncontrolled environment can be satisfied.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

USERS MANUAL OF THE END PRODUCT:

In the users manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the IC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied.

The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. Operation is subject to the following two conditions: (1) this device may not cause harmful interference (2) this device must accept any interference received, including interference that may cause undesired operation.

LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following " Contains IC: 4441A-DHURAZ63 ".

The Host Model Number (HMN) must be indicated at any location on the exterior of the end product or product packaging or product literature which shall be available with the end product or online.