
Edition #	Reason for revision	Issue date
V1.0	Initial Document	2008/08/25
V1.1	Add SENS/EVM draft spec.	2008/09/25
V1.2	Add target power draft spec.	2009/01/21
V1.3	Updated 5 G target power	2009/02/25
V1.4	1_Add the tolerance of current consumption 2_Adopted composite power and included tolerance	2009/2/26
V1.5	Updated EVM tolerance	2009/04/10
V1.6	Add introduction, feature, block diagram and pin define	2009/04/29

1.Introduction:

The DNMA-92 is a Mini-PCI solution for IEEE 802.11a/b/g/n wireless LAN card that enables 2X2 MIMO configurations. The data rate is up to 130/144.4Mbps(800GI/400GI) for 20MHz and 270/300Mbps(800GI/400GI) for 40MHz channel operations respectively, and IEEE 802.11a/b/g data rates.

2. Features:

- 2x2 MIMO technology improves effective throughput and range over existing 802.11b/g products
- Supports spatial multiplexing, cyclic-delay diversity (CDD), and maximal ratio combining (MRC)
- BPSK, QPSK, 16QAM, 64QAM, DBPSK, DQPSK, and CCK modulation schemes
- Data rates of up to 130/144.4Mbps(800GI/400GI) for 20MHz channels and 270/300Mbps(800GI/400GI) for 40MHz channels
- Wireless multimedia enhancements quality of service support (QoS)
- 802.11e-compatible bursting
- WEP, TKIP, and AES hardware encryption
- 32-bit 0-33 and 44MHz PCI 2.3 interface
- Reduced (short) guard interval
- Support for Bluetooth coexistence
- IEEE1149.1 standard test access port and boundary scan architecture supported

3.Hardware Block Diagram:

The major internal components and external interfaces of the DNMA-92 are illustrated in Figure 1-1.

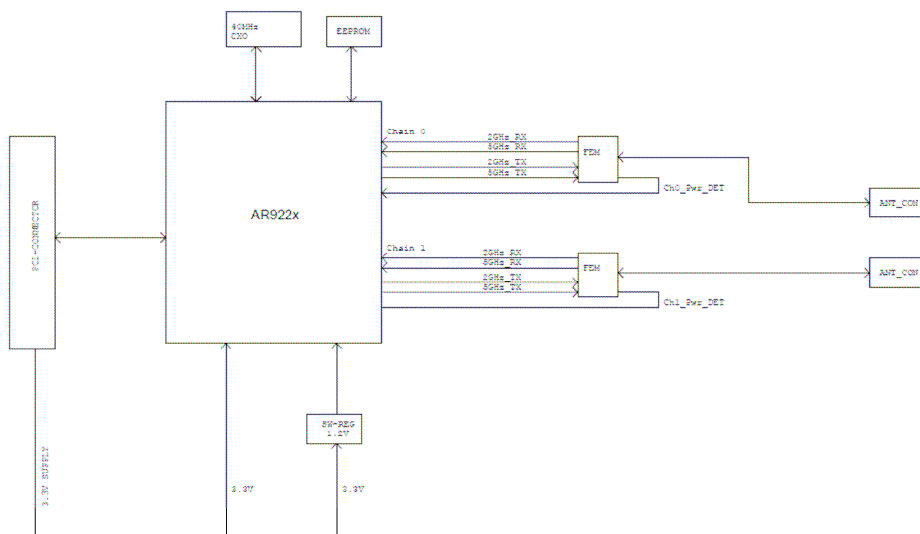


Figure 1-1 DNMA-92 Major Component and System Interface

4. Mini-PCI Pin Definition:

Pin Number	Pin Name	Pin I/O Type	Description
1	TIP	NC	No use
2	RING	NC	No use
3	8PMJ-3	NC	No use
4	8PMJ-1	NC	No use
5	8PMJ-6	NC	No use
6	8PMJ-2	NC	No use
7	8PMJ-7	NC	No use
8	8PMJ-4	NC	No use
9	8PMJ-8	NC	No use
10	8PMJ-5	NC	No use
11	LED1_GRNP	General purpose GPIO pin	Connect to AR9220 GPIO1
12	LED2_YELP	General purpose GPIO pin	Connect to AR9220 GPIO2
13	LED1_GRNN	General purpose GPIO pin	Connect to AR9220 GPIO0
14	LED2_YELN	General purpose GPIO pin	Connect to AR9220 GPIO4
15	CHSGND	Ground	Digital Ground
16	RESERVED	NC	Reserved
17	INTB#	NC	No use
18	5V	NC	5V, no use
19	3.3V	Power	3.3V+/-5%
20	INTA#	CMOS, Output	PCI bus Interrupt A
21	RESERVED	NC	Reserved
22	RESERVED	NC	Reserved
23	GROUND	Ground	Digital ground
24	3.3VAUX	NC	No use
25	CLK	Input, Weak pull down	Providing timing for all transactions on the PCI bus
26	RST#	Input, Weak pull up	PCI reset
27	GROUND	Ground	Digital ground

Pin Number	Pin Name	Pin I/O Type	Description
28	3.3V	Power	3.3V+/-5%
29	REQ#	Output	PCI bus request
30	GNT#	Input, Weak pull high	PCI bus grant
31	3.3V	Power	3.3V+/-5%
32	GROUND	Ground	Digital ground
33	AD[31]	BiDir,, Weak pull down	PCI address/data bus bit 31
34	PME#	NC	No use
35	AD[29]	BiDir,, Weak pull down	PCI address/data bus bit 29
36	RESERVED	NC	No use
37	GROUND	Ground	Digital ground
38	AD[30]	BiDir,, Weak pull down	PCI address/data bus bit 30
39	AD[27]	BiDir,, Weak pull down	PCI address/data bus bit 27
40	3.3V	Power	3.3V+/-5%
41	AD[25]	BiDir,, Weak pull down	PCI address/data bus bit 25
42	AD[28]	BiDir,, Weak pull down	PCI address/data bus bit 28
43	RESERVED	NC	No use
44	AD[26]	BiDir,, Weak pull down	PCI address/data bus bit 26
45	C/BE[3]#	BiDir,, Weak pull up	PCI bus commands and byte 3 enables
46	AD[24]	BiDir,, Weak pull down	PCI address/data bus bit 24
47	AD[23]	BiDir,, Weak pull down	PCI address/data bus bit 23
48	IDSEL	Input, Weak pull down	Initialization device select
49	GROUND	Ground	Digital ground
50	GROUND	Ground	Digital ground
51	AD[21]	BiDir,, Weak pull down	PCI address/data bus bit 21
52	AD[22]	BiDir,, Weak pull down	PCI address/data bus bit 22
53	AD[19]	BiDir,, Weak pull down	PCI address/data bus bit 19
54	AD[20]	BiDir,, Weak pull down	PCI address/data bus bit 20
55	GROUND	Ground	Digital ground
56	PAR	BiDir, Weak pull up	PCI bus parity

Pin Number	Pin Name	Pin I/O Type	Description
57	AD[17]	BiDir,, Weak pull down	PCI address/data bus bit 17
58	AD[18]	BiDir,, Weak pull down	PCI address/data bus bit 18
59	C/BE[2]#	BiDir,, Weak pull up	PCI bus commands and byte 2 enables
60	AD[16]	BiDir,, Weak pull down	PCI address/data bus bit 16
61	IRDY#	BiDir,, Weak pull up	PCI initiator ready
62	GROUND	Ground	Digital ground
63	3.3V	Power	3.3V+/-5%
64	FRAME#	BiDir,, Weak pull down	PCI frame.
65	CLKRUN#	Input, Weak pull up	Control signal for PCI clock
66	TRDY#	BiDir,, Weak pull up	PCI target ready
67	SERR#	BiDir, Weak pull up	PCI system error
68	STOP#	BiDir, Weak pull up	PCI cycle stop signal
69	GROUND	Ground	Digital ground
70	3.3V	Power	3.3V+/-5%
71	PERR#	BiDir, Weak pull up	PCI parity error
72	DEVSEL#	BiDir, Weak pull up	PCI device select
73	C/BE[1]#	BiDir, Weak pull down	PCI bus commands and byte 1 enables
74	GROUND	Ground	Digital ground
75	AD[14]	BiDir, Weak pull down	PCI address/data bus bit 14
76	AD[15]	BiDir, Weak pull down	PCI address/data bus bit 15
77	GROUND	Ground	Digital ground
78	AD[13]	BiDir, Weak pull down	PCI address/data bus bit 13
79	AD[12]	BiDir, Weak pull down	PCI address/data bus bit 12
80	AD[11]	BiDir, Weak pull down	PCI address/data bus bit 11
81	AD[10]	BiDir, Weak pull down	PCI address/data bus bit 10
82	GROUND	Ground	Digital ground
83	GROUND	Ground	Digital ground
84	AD[09]	BiDir, Weak pull down	PCI address/data bus bit 9
85	AD[08]	BiDir, Weak pull down	PCI address/data bus bit 8

Pin Number	Pin Name	Pin I/O Type	Description
86	C/BE[0]#	BiDir, Weak pull up	PCI bus commands and byte 0 enables
87	AD[07]	BiDir, Weak pull down	PCI address/data bus bit 7
88	3.3V	Power	3.3V+/-5%
89	3.3V	Power	3.3V+/-5%
90	AD[06]	BiDir, Weak pull down	PCI address/data bus bit 6
91	AD[05]	BiDir, Weak pull down	PCI address/data bus bit 5
92	AD[04]	BiDir, Weak pull down	PCI address/data bus bit 4
93	RESERVED	NC	No use
94	AD[02]	BiDir, Weak pull down	PCI address/data bus bit 2
95	AD[03]	BiDir, Weak pull down	PCI address/data bus bit 3
96	AD[00]	BiDir, Weak pull down	PCI address/data bus bit 0
97	5V	NC	No use
98	RESERVED_WIP4	NC	No use
99	AD[01]	BiDir, Weak pull down	PCI address/data bus bit
100	RESERVED_WIP4	NC	No use
101	GROUND	Ground	Digital ground
102	GROUND	Ground	Digital ground
103	AC_SYNC	NC	No use
104	M66EN	Power	3.3V+/-5%(No use)
105	AC_SDATA_IN	NC	No use
106	AC_SDATA_OUT	NC	No use
107	AC_BIT_CLK	NC	No use
108	AC_CODEEC_ID0#	NC	No use
109	AC_CODEEC_ID1#	NC	No use
110	AC_RESET#	NC	No use
111	MOD_AUDIO_MON	NC	No use
112	RESERVED	NC	No use
113	AUDIO_GND	Ground	Analog ground
114	GROUND	Ground	Digital ground

Pin Number	Pin Name	Pin I/O Type	Description
115	SYS_AUDIO_OUT	NC	No use
116	SYS_AUDIO_IN	NC	No use
117	SYS_AUDIO_OUT GND	NC	No use
118	SYS_AUDIO_IN GND	NC	No use
119	AUDIO_GND	NC	No use
120	AUDIO_GND	Ground	Analog ground
121	RESERVED	NC	Reserved
122	MPCIACT#	NC	Mini PCI function active, no support
123	VCC5VA	NC	No use
124	3.3VAUX	NC	No use

5. Electric Characteristics:

Category	Key Specifications					
Main Chipset	<ul style="list-style-type: none"> Atheros[®] Communication AR9220 dual band configurable radio 					
Frequency Range	<ul style="list-style-type: none"> USA: 2.400 ~ 2.483 GHz, 5.15 ~ 5.35 GHz, 5.5 ~ 5.7 GHz, 5.725 ~ 5.825 GHz Europe: 2.400 ~ 2.483 GHz, 5.15 ~ 5.35 GHz, 5.47 ~ 5.725 GHz Japan: 2.400 ~ 2.497 GHz, 5.15 ~ 5.35 GHz, 5.47 ~ 5.725 GHz China: 2.400 ~ 2.483 GHz, 5.725 ~ 5.85 GHz <p><i>(Note: A DNMA-92 radio is capable to be operated within FCC DFS2 band or ETSI/EC DFS band, or other countries which is regulating or is planning to regulate mid-5 GHz band. The usage of mid-5 GHz band is subject to the regulatory approval alone with the resided devices like Access Point or Router.)</i></p>					
Host Interface	<ul style="list-style-type: none"> Mini-PCI form factor; Mini-PCI Version 1.0 type 3A 					
Channels support	<ul style="list-style-type: none"> 802.11 b/g/n <ul style="list-style-type: none"> US/Canada: 11 (1 ~ 11) Major European country: 13 (1 ~ 13) France: 4 (10 ~ 13) Japan: 11b: 14 (1~13 or 14th), 11g/n: 13 (1 ~ 13) China: 13 (1 ~ 13) 802.11 a/n <ul style="list-style-type: none"> US/Canada: 23 non-overlapping channels; 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 149, 153, 157, 161 Europe: 19 non-overlapping channel; 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140 Japan: 19 non-overlapping channels; 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140 China: 5 non-overlapping channels; 149, 153, 157, 161, 165 					
Operation Voltage	<ul style="list-style-type: none"> 3.3V +/-5% 					
Typical Current Consumption		802.11a	802.11b	802.11g	802.11n(2.4GHz)	802.11n(5GHz)
		Avg/Max (mA)	Avg/Max (mA)	Avg/Max (mA)	Avg/Max (mA)	Avg/Max (mA)
	Continue Tx	617/744	566/691	706/859	579/712	591/720
	FTP Tx	356/667	363/700	271/743	358/741	379/761
	FTP Rx	224/590	156/685	165/721	184/726	287/707
	Standby mode	180/312	142/254	143/259	142/256	205/325
	The maximum current consumption would be impacted by radiation environment and the driver n					
	Condition: 2T2R @25 ° C (with +15 /-15% tolerance)					

RF Output Power (dB) (Typical composite power) Tolerance: +2/-2 dB @ 25 °C +3/-3 dB @ 0 & 60 °C	<u>802.11a</u>							
	Frequency 6-24_Target 36_Target 48_Target 54_Target							
	5180	21	20	19	17			
	5320	21	20	19	17			
	5700	21	20	19	16			
	5825	21	20	19	16			
	<u>802.11b</u>							
	Frequency 1_Target 2_Target 5.5_Target 11_Target							
	2412	20	21	21	21			
	2484	19	20	21	21			
	<u>802.11g</u>							
	Frequency 6-24_Target 36_Target 48_Target 54_Target							
	2412	23	22	21	19			
	2442	23	22	21	19			
	2472	23	22	21	19			
<u>802.11a/n</u>								
<u>Freq. Range: 5GHz/HT20:</u>								
Frequency	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	21	21	21	20	20	20	19	16
5240	21	21	21	20	20	20	19	15
5320	21	21	21	20	20	20	19	14
5500	20	20	20	20	20	20	19	14
5700	19	19	19	19	19	19	18	14
5745	19	19	19	19	19	19	18	14
5825	19	19	19	19	19	19	18	14
<u>Freq. Range: 5GHz/HT40:</u>								
Frequency	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	19	19	19	19	19	19	18	13
5230	19	19	19	19	19	19	18	13
5270	19	19	19	19	19	19	18	13
5510	18	18	18	18	18	18	18	13
5670	18	18	18	18	18	18	17	13
5755	18	18	18	18	18	18	17	13
5795	18	18	18	18	18	18	17	13
<u>802.11gn</u>								
<u>Freq. Range: 2GHz/HT20:</u>								
Frequency	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	21	21	21	21	21	21	19	17
2442	21	21	21	21	21	21	19	17
2472	21	21	21	21	21	21	19	17
<u>Freq. Range: 2GHz/HT40:</u>								
Frequency	MCS 0/8	MCS 1/9	MCS 2/10	MCS 3/11	MCS 4/12	MCS 5/13	MCS 6/14	MCS 7/15
2422	21	21	21	21	20	20	18	16
2442	20	20	20	20	20	20	18	16
2462	20	20	20	20	19	19	18	16

EVM	802.11a	Data Rate	Relative constellation error (dB) IEEE Spec (1Tx)	Relative constellation error (dB) Typical/Maximum (2Tx)
		6M	-5	-25/-16
9M	-8	-25/-16		
12M	-10	-25/-16		
18M	-13	-26/-16		
24M	-16	-24/-19		
36M	-19	-27/-22		
48M	-22	-28/-23		
54M	-25	-28/-25		
	802.11b	Data Rate	Relative constellation error (dB) IEEE Spec (1Tx)	Relative constellation error (dB) Typical/Maximum (2Tx)
		1M	-10	-18/-15
	5.5M	-10	-18/-15	
	11M	-10	-18/-15	
	802.11g	Data Rate	Relative constellation error (dB) IEEE Spec (1Tx)	Relative constellation error (dB) Typical/Maximum (2Tx)
		6M	-5	-24/-16
	9M	-8	-25/-16	
	12M	-10	-25/-16	
	18M	-13	-26/-16	
	24M	-16	-23/-19	
	36M	-19	-29/-22	
	48M	-22	-31/-23	
	54M	-25	-31/-25	
	802.11ng	Data Rate	Relative constellation error (dB) IEEE Spec (1Tx)	Relative constellation error (dB) Typical/Maximum (2Tx)
		HT20		
	MCS0	-5	-30/-16	
	MCS1	-10	-30/-16	
	MCS2	-13	-30/-16	
	MCS3	-16	-30/-19	
	MCS4	-19	-30/-22	
	MCS5	-22	-31/-23	
	MCS6	-25	-31/-25	
	MCS7	-28	-31/-26	
	MCS8	-5	-30/-16	
	MCS9	-10	-30/-16	
	MCS10	-13	-30/-16	
	MCS11	-16	-30/-19	
	MCS12	-19	-30/-22	
	MCS13	-22	-30/-23	
	MCS14	-25	-30/-25	
	MCS15	-28	-30/-26	
	HT40	MCS0	-5	-30/-16
		MCS1	-10	-30/-16
	MCS2	-13	-30/-16	
	MCS3	-16	-30/-19	
	MCS4	-19	-30/-22	
	MCS5	-22	-30/-23	
	MCS6	-25	-30/-25	
	MCS7	-28	-30/-26	
	MCS8	-5	-30/-16	
	MCS9	-10	-30/-16	
	MCS10	-13	-30/-16	
	MCS11	-16	-30/-19	
	MCS12	-19	-30/-22	
	MCS13	-22	-30/-23	
	MCS14	-25	-30/-25	
	MCS15	-28	-30/-26	

802.11na

Data Rate	Relative constellation error (dB)	Relative constellation error (dB)
HT20	IEEE Spec (1Tx)	Typical/Maximum (2Tx)
MCS0	-5	-28/-15
MCS1	-10	-28/-15
MCS2	-13	-28/-15
MCS3	-16	-28/-19
MCS4	-19	-28/-22
MCS5	-22	-28/-23
MCS6	-25	-28/-25
MCS7	-28	-31/-26
MCS8	-5	-27/-15
MCS9	-10	-27/-15
MCS10	-13	-27/-15
MCS11	-16	-27/-19
MCS12	-19	-27/-22
MCS13	-22	-27/-23
MCS14	-25	-28/-25
MCS15	-28	-30/-26
HT40		
MCS0	-5	-28/-15
MCS1	-10	-28/-15
MCS2	-13	-28/-15
MCS3	-16	-28/-19
MCS4	-19	-28/-22
MCS5	-22	-28/-23
MCS6	-25	-28/-25
MCS7	-28	-30/-26
MCS8	-5	-27/-15
MCS9	-10	-27/-15
MCS10	-13	-27/-15
MCS11	-16	-27/-19
MCS12	-19	-27/-22
MCS13	-22	-27/-23
MCS14	-25	-27/-25
MCS15	-28	-29/-26

Sensitivity	802.11a		
	Data Rate	IEEE Spec (1 Rx dBm)	Typical/Maximum (2 Rx dBm)
	6M	-82	-95/-91
	9M	-81	-95/-91
	12M	-79	-94/-90
	18M	-77	-92/-88
	24M	-74	-88/-84
	36M	-70	-85/-81
	48M	-66	-81/-77
	54M	-65	-79/-75
	802.11b		
	Data Rate	IEEE Spec (1 Rx dBm)	Typical/Maximum (2 Rx dBm)
	1M	-82	-95/-91
	5.5M	-80	-95/-91
	11M	-76	-91/-87
	802.11g		
	Data Rate	IEEE Spec (1 Rx dBm)	Typical/Maximum (2 Rx dBm)
	6M	-82	-95/-91
	9M	-81	-95/-91
	12M	-79	-94/-90
	18M	-77	-93/-89
	24M	-74	-90/-86
	36M	-70	-86/-82
	48M	-66	-82/-78
	54M	-65	-80/-76
	802.11ng		
	Data Rate	IEEE Spec (1 Rx dBm)	Typical/Maximum (2 Rx dBm)
	HT20		
	MCS0	-82	-95/-91
	MCS1	-79	-94/-90
	MCS2	-77	-92/-88
	MCS3	-74	-88/-84
	MCS4	-70	-85/-81
	MCS5	-66	-80/-76
	MCS6	-65	-79/-75
	MCS7	-64	-77/-73
	HT40		
	MCS0	-79	-90/-86
	MCS1	-76	-90/-86
	MCS2	-74	-89/-85
	MCS3	-71	-85/-81
	MCS4	-67	-82/-78
	MCS5	-63	-78/-74
	MCS6	-62	-77/-73
	MCS7	-61	-74/-71

	<p>802.11na</p> <table border="1"> <thead> <tr> <th>Data Rate</th> <th>IEEE Spec (1 Rx dBm)</th> <th>Typical/Maximum(2 Rx dBm)</th> </tr> </thead> <tbody> <tr> <td colspan="3">HT20</td> </tr> <tr> <td>MCS0</td> <td>-82</td> <td>-95/-91</td> </tr> <tr> <td>MCS1</td> <td>-79</td> <td>-93/-89</td> </tr> <tr> <td>MCS2</td> <td>-77</td> <td>-90/-86</td> </tr> <tr> <td>MCS3</td> <td>-74</td> <td>-87/-83</td> </tr> <tr> <td>MCS4</td> <td>-70</td> <td>-84/-80</td> </tr> <tr> <td>MCS5</td> <td>-66</td> <td>-80/-76</td> </tr> <tr> <td>MCS6</td> <td>-65</td> <td>-79/-75</td> </tr> <tr> <td>MCS7</td> <td>-64</td> <td>-77/-73</td> </tr> <tr> <td colspan="3">HT40</td> </tr> <tr> <td>MCS0</td> <td>-79</td> <td>-91/-87</td> </tr> <tr> <td>MCS1</td> <td>-76</td> <td>-90/-86</td> </tr> <tr> <td>MCS2</td> <td>-74</td> <td>-87/-83</td> </tr> <tr> <td>MCS3</td> <td>-71</td> <td>-84/-80</td> </tr> <tr> <td>MCS4</td> <td>-67</td> <td>-82/-78</td> </tr> <tr> <td>MCS5</td> <td>-63</td> <td>-78/-74</td> </tr> <tr> <td>MCS6</td> <td>-62</td> <td>-76/-72</td> </tr> <tr> <td>MCS7</td> <td>-61</td> <td>-74/-70</td> </tr> </tbody> </table>	Data Rate	IEEE Spec (1 Rx dBm)	Typical/Maximum(2 Rx dBm)	HT20			MCS0	-82	-95/-91	MCS1	-79	-93/-89	MCS2	-77	-90/-86	MCS3	-74	-87/-83	MCS4	-70	-84/-80	MCS5	-66	-80/-76	MCS6	-65	-79/-75	MCS7	-64	-77/-73	HT40			MCS0	-79	-91/-87	MCS1	-76	-90/-86	MCS2	-74	-87/-83	MCS3	-71	-84/-80	MCS4	-67	-82/-78	MCS5	-63	-78/-74	MCS6	-62	-76/-72	MCS7	-61	-74/-70
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MCS6	-62	-76/-72																																																								
MCS7	-61	-74/-70																																																								
<p>Operation Distance</p>	<ul style="list-style-type: none"> ▪ 802.11a <ul style="list-style-type: none"> ○ Outdoor: 50 m @54Mbps, 300 m @6Mbps ○ Indoor: 30 m @54Mbps, 100 m @6Mbps ▪ 802.11b <ul style="list-style-type: none"> ○ Outdoor: 150 m @11Mbps, 300 m @1Mbps ○ Indoor: 30 m @11Mbps, 100 m @1Mbps ▪ 802.11g <ul style="list-style-type: none"> ○ Outdoor: 50 m @54Mbps, 300 m @6Mbps ○ Indoor: 30 m @54Mbps, 100 m @6Mbps ▪ 802.11n <ul style="list-style-type: none"> ○ Outdoor: 250 m @6.5Mbps (MCS0: 1 Nss/20MHz BW) ○ 30m @130Mbps (MCS15: 2 Nss/20MHz BW) ○ 30m @300Mbps (MCS15: 2 Nss/40MHz BW) ○ Indoor: 100 m @6.5Mbps (MCS0: 1 Nss/20MHz BW) ○ 20m @130Mbps (MCS15: 2 Nss/20MHz BW) ○ 20m @300Mbps (MCS15: 2 Nss/40MHz BW) <p><i>(Notes :Estimated range are based on 2dB dipole antenna. The real operational distance is depending on (Access Point) system efficiency and antenna performance.)</i></p>																																																									
<p>PCB Dimension</p>	<ul style="list-style-type: none"> ▪ 50.8mm (L/H) x 59.6mm (W) x 1.0mm (T) 																																																									
<p>Data Rate</p>	<ul style="list-style-type: none"> ▪ 802.11b: 1, 2, 5.5, 11Mbps ▪ 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps ▪ 802.11n: @800GI(400GI) <ul style="list-style-type: none"> ○ 20MHz BW <ul style="list-style-type: none"> ▪ 1 Nss: 65(72.2)Mbps maximal ▪ 2 Nss: 130(144.4)Mbps maximal ○ 40MHz BW <ul style="list-style-type: none"> ▪ 1 Nss: 135(150)Mbps maximal ▪ 2 Nss: 270(300)Mbps maximal 																																																									
<p>Operation Temperature</p>	<ul style="list-style-type: none"> ▪ 0° ~ 60° C 																																																									

Storage Temperature	<ul style="list-style-type: none">▪ -20° ~ 80° C
Wi-Fi® Alliance®	<ul style="list-style-type: none">▪ WECA Compliant
Radio & EMC Certificate	<ul style="list-style-type: none">▪ US: 47 CFR 15, FCC Part 15.401~ Part 15.407 (5150 ~ 5350 MHz & 5725~5825 MHz), Part 15.247 (5725~5850 MHz); FCC Part 15.247 (2400~2483.5 MHz), 47CFR 15, FCC-Class B, FCC Part 15.107 & Part 15.109;▪ Limited Module Level Approval,▪ Industry Canada: IC RSS210, RSS139-1, ICES-003; Limited Module Level Approval▪ ETSI, EN301893, EN60950 (Europe); EN 301.893, EN 300.328, & EN 301489-1/17 EN 55022 & EN 55024;
Antenna connector	<ul style="list-style-type: none">▪ 2 x SMT ultra-miniature coaxial connectors (Hirose® U.FL connector)
