Technical Description

This device is an 11N Wireless LAN CARD with Dual-Band operates in both the 5GHz and 2.4GHz Bands with DSSS and OFDM technique. The transmitter rate could be 11Mbps for 11b; 54Mbps for 11a/g; 144.444Mbps for Draft 802.11n (20MHz); 300Mbps for Draft 802.11n (40MHz). The transmitter of the EUT is powered from host equipment.

NOTE:

1. The EUT has three model names which are identical to each other in all aspects except for the following:

Brand	Model No.	Difference
Alpha	WMP-ND02	For IEEE 802.11a/b/g/n
	WMP-N08	For IEEE 802.11b/g/n, Via Software to disable 11a/n function
	WMP-N10	For IEEE 802.11a/n, Via Software to disable 11b/g/n function

From the above models, model: **WMP-ND02** was selected as representative model for the test and its data were recorded in this report.

2. There are five set antennas provided to this EUT, please refer to the following table:

Set No.	Transmitter Circuit	Antenna Gain	For 2.4GHz Gain (dBi)	For 5.15~ 5.25GHz Gain (dBi)	For 5.725~ 5.850GHz Gain (dBi)	Cable Length (cm)
Set. 1	Chain(0), Chain(1), Chain(2)	Gain (dBi)	2.31	2.26	3.91	18
		Cable Loss (dB)	1.48	1.45	1.53	
		Net Gain (dB)	0.83	0.81	2.38	
Set 2	Chain(0)	Gain (dBi)	2.31	2.26	3.91	40
		Cable Loss (dB)	1.51	2.16	2.29	
		Net Gain (dB)	0.8	0.1	1.62	
	Chain(1)	Gain (dBi)	2.31	2.26	3.91	18
		Cable Loss (dB)	1.48	1.45	1.53	
		Net Gain (dB)	0.83	0.81	2.38	
	Chain(2)	Gain (dBi)	2.31	2.26	3.91	27
		Cable Loss (dB)	1.16	1.17	1.87	
		Net Gain (dB)	1.15	1.09	2.04	
Set 3	Chain(0), Chain(1)	Gain (dBi)	3.72	3.55	2.76	25.5
		Cable Loss (dB)	0.52	0.82	1.00	
		Net Gain (dB)	3.2	2.73	1.76	
	Chain(2)	Gain (dBi)	3.72	3.55	2.76	12
		Cable Loss (dB)	0.51	0.75	0.90	
		Net Gain (dB)	3.21	2.8	1.86	
Set 4	Chain(0)	Gain (dBi) involve cable loss	2.65	NA	NA	11
	Chain(1), Chain(2)	Gain (dBi) involve cable loss	2.49	NA	NA	10
Set 5	Chain(0), Chain(1), Chain(2)	Gain (dBi) involve cable loss	2.43	NA	NA	6

Set No.	Transmitter Circuit	Antenna Type	Manufacture	Model No.	Antenna Connector
Set 1	Chain(0)	Dipole	WANSHIH ELECTRONIC CO., LTD.	WSS001	RP-SMA(M)
	Chain(1)				
	Chain(2)				
Set 2	Chain(0)	Dipole	WANSHIH ELECTRONIC CO., LTD.	WSS001	RP-SMA(M)
	Chain(1)				
	Chain(2)				
Set 3	Chain(0)	Dipole	WHA YU INDUSTRIAL CO., LTD.	C056-510399-A	SMA Plug Reverse
	Chain(1)				
	Chain(2)				
Set 4	Chain(0)	PCB	WHA YU GROUP	C037-510934-A (SSR-83320)	I-PEX
	Chain(1)			C037-510935-A (SSR-83347)	
	Chain(2)			C037-510935-A (SSR-83347)	
Set 5	Chain(0)	PCB	WHA YU GROUP	C037-510953-A (SSR-84244)	MHF Plug
	Chain(1)				
	Chain(2)				

From the above antennas, the worst case was found in set no. 1 & 4 for 2.4GHz, set no. 1 for 5Ghz. Therefore only the test data of the mode was recorded in this report individually.

3. The EUT incorporates a MIMO function with 802.11a, 802.11b, 802.11g, draft 802.11n. Physically, the EUT provides two completed transmits and three completed receivers.
4. The EUT is 2 * 3 spatial MIMO (2Tx & 3Rx) without beam forming function. The antenna configurations are two transmitter antennas and three receiver antennas, as there are 3 Dipole or PCB antennas. Spatial multiplexing modes for simultaneous transmission using 2 antennas, and for simultaneous receiver using 3 antennas. The 11a and 11bg legacy mode is limited to single transmitter only.
5. When the EUT operating in draft 802.11n, the software operation, which is defined by manufacturer, MCS (Modulation and Coding Schemes) from 0 to 15.
6. The EUT complies with draft 802.11n standards and backwards compatible with 802. 11a, 802.11b, 802.11g products.
7. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

FCC 15.407(c) states : The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals.
Applicants shall include in their application for equipment authorization a description of hoe this requirement is met.

Data transmission is always initiated by software, which is then pass down through the MAC, through the digital and analog baseband, and finally to the RF chip. Several special packets (ACKs, CTS, PSPoll, etc…) are initiated by the MAC. There are the only ways the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets are being transmitted.