



# A Test Lab Techno Corp.

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## MPE Report

Test Report No.	: 1310FS13
Applicant	: Delta Electronics Incorporated
Manufacturer	: AMPAK Technology
Product Type	: NovoConnect A Wireless Presentation & Conference System
Trade Name	: DELTA, VIVITEK
Model Number	: B360
Date of Received	: Sep. 14, 2013
Test Period	: Oct. 03, 2013
Date of Issued	: Nov. 13, 2013
Test Specification	: 47 CFR § 2.1091 47 CFR §1.1310 ANSI / IEEE Std.C95.1-1992
Location of Test Lab.	: Chang-an Lab.

1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
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Approved By : Bill Hu  
(Bill Hu)

Tested By : Sky Chou  
(Sky Chou)



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## 1. Description of Equipment under Test (EUT)

Applicant	Delta Electronics Incorporated
Applicant Address	3 Tungyuan Road, Chungli Industrial Zone, Taoyuan County 32063 Taiwan
Manufacturer	AMPAK Technology
Manufacturer Address	NO.1 Jen Ai Road, Hsinchu Industrial Park, Hukou, HsinChu, Taiwan
Product Type	NovoConnect A Wireless Presentation & Conference System
Trade Name	DELTA, VIVITEK (Those trade names differ from each other in selling region.)
Model Number	B360
FCC ID	H79ESS1310
Frequency Range	IEEE 802.11b / 802.11g / 802.11n 2.4GHz (20MHz): 2412 ~ 2462 MHz IEEE 802.11a / 802.11n 5GHz (20MHz) U-NII Band I: 5180 ~ 5240 MHz IEEE 802.11a / 802.11n 5GHz (20MHz) U-NII Band IV: 5745 ~ 5825 MHz
Transmit Power (conducted power)	IEEE 802.11b: 0.032 W / 15.04 dBm IEEE 802.11g: 0.027 W / 14.34 dBm IEEE 802.11n 2.4GHz (20MHz): 0.021 W / 13.15 dBm IEEE 802.11a U-NII Band I: 0.022 W / 13.33 dBm IEEE 802.11a U-NII Band IV: 0.027 W / 14.34 dBm IEEE 802.11n 5GHz (20MHz) U-NII Band I: 0.019 W / 12.87 dBm IEEE 802.11n 5GHz (20MHz) U-NII Band IV: 0.026 W / 14.12 dBm
Antenna Specification	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n 2.4GHz (20MHz): 1.78594 dBi IEEE 802.11a U-NII Band I: 2.32536 dBi IEEE 802.11a U-NII Band IV: 3.74794 dBi IEEE 802.11n 5GHz (20MHz) U-NII Band I: 2.32536 dBi IEEE 802.11n 5GHz (20MHz) U-NII Band IV: 3.74794 dBi
Antenna Designation	Chip Antenna
Temperature Range	-30 ~ +70°C
RF Evaluation	0.13 W/m <sup>2</sup>

The above equipment was tested by A Test Lab Techno Corp. For compliance with the requirements set forth in 47 CFR § 2.1091 & 47 CFR § 1.1310. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties



## 2. Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR §1.1310 titled "Radiofrequency radiation exposure limits", generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as "a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. " This product is intended to be installed into a vehicle such that the unit is physically secured at one location. In the installation guide supplied with the product,

Client has made the following statement: "IMPORTANT: To meet the FCC's RF Exposure Guidelines, the antenna should be installed so there is at least 20 cm of separation between the body of the user and nearby persons and the antenna". Based on the installation of the transceiver and the antenna, the transmitters radiating structure is more than 20 cm from the user. Thus, this product is a "mobile device" as defined in section § 2.1091 paragraph (b).

### Exposure evaluation

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = \frac{PG}{4\pi R^2}$$

Where

S: power density

P: power input to the antenna

G: power gain of the antenna in the direction of interest relative to an isotropic radiator.

R: distance to the center of radiation of the antenna.



### 3. RF Output Power

Band	Date Rate	CH	Frequency (MHz)	Conducted power Time-Avg. (dBm)
IEEE 802.11b	1M	1	2412.0	15.04
		6	2437.0	14.91
		11	2462.0	14.61
	2M	6	2437.0	14.85
	5.5M	6	2437.0	14.84
	11M	6	2437.0	14.76
IEEE 802.11g	6M	1	2412.0	14.34
		6	2437.0	14.21
		11	2462.0	13.93
	9M	6	2437.0	14.16
	12M	6	2437.0	14.07
	18M	6	2437.0	13.95
	24M	6	2437.0	13.88
	36M	6	2437.0	13.76
	48M	6	2437.0	13.82
54M	6	2437.0	13.67	
IEEE 802.11n 2.4GHz (20MHz)	6.5M	1	2412.0	13.15
		6	2437.0	13.10
		11	2462.0	12.85
	13M	6	2437.0	12.91
	19.5M	6	2437.0	12.87
	26M	6	2437.0	12.86
	39M	6	2437.0	12.85
	52M	6	2437.0	12.83
	58.5M	6	2437.0	12.78
65M	6	2437.0	12.89	



Band	Date Rate	CH	Frequency (MHz)	Conducted power Time-Avg. (dBm)
IEEE 802.11a	6M	36	5180.0	12.78
		40	5200.0	13.07
		44	5220.0	13.23
		48	5240.0	13.33
		149	5745.0	14.34
		153	5765.0	14.05
		157	5785.0	13.82
		161	5805.0	13.70
	54M	165	5825.0	13.68
		36	5180.0	12.52
		40	5200.0	12.76
		44	5220.0	13.00
		48	5240.0	13.11
		149	5745.0	13.53
		153	5765.0	13.36
		157	5785.0	13.08
IEEE 802.11n 5GHz (20MHz)	6.5M	161	5805.0	12.98
		165	5825.0	12.95
		36	5180.0	12.55
		40	5200.0	12.57
		44	5220.0	12.78
		48	5240.0	12.87
		149	5745.0	14.12
		153	5765.0	13.73
	65M	157	5785.0	13.56
		161	5805.0	13.41
		165	5825.0	13.40
		36	5180.0	12.51
		40	5200.0	12.52
		44	5220.0	12.72
		48	5240.0	12.82
		149	5745.0	13.22
153	5765.0	13.03		
157	5785.0	12.85		
161	5805.0	12.77		
165	5825.0	12.66		



#### 4. Test Result

Band	Data Rate	Frequency (MHz)	Limit (mw/cm <sup>2</sup> )	Distance (cm) [R]	Max Tune-up Power (upper limit) (dBm) [P]	ANT Gain [G] (dB)	Numeric Gaom [G]	Duty Cycle	Power with Duty cycle (mW) [TP]	Power Density [S] (mw/cm <sup>2</sup> )	Min. distance (cm)
IEEE 802.11b	1 M	2412	1	20	15.04	1.78594	1.51	1	48.19	0.010	20
		2437	1	20	15.04	1.78594	1.51	1	48.19	0.010	20
		2462	1	20	15.04	1.78594	1.51	1	48.19	0.010	20
IEEE 802.11g	6 M	2412	1	20	14.34	1.78594	1.51	1	41.02	0.008	20
		2437	1	20	14.34	1.78594	1.51	1	41.02	0.008	20
		2462	1	20	14.34	1.78594	1.51	1	41.02	0.008	20
IEEE 802.11n 2.4GHz (20MHz)	6.5 M	2412	1	20	13.15	1.78594	1.51	1	31.19	0.006	20
		2437	1	20	13.15	1.78594	1.51	1	31.19	0.006	20
		2462	1	20	13.15	1.78594	1.51	1	31.19	0.006	20
IEEE 802.11a	6 M	5180	1	20	14.34	2.32536	1.71	1	46.45	0.009	20
		5200	1	20	14.34	2.32536	1.71	1	46.45	0.009	20
		5220	1	20	14.34	2.32536	1.71	1	46.45	0.009	20
		5240	1	20	14.34	2.32536	1.71	1	46.45	0.009	20
		5745	1	20	14.34	3.74794	2.37	1	64.38	0.013	20
		5765	1	20	14.34	3.74794	2.37	1	64.38	0.013	20
		5785	1	20	14.34	3.74794	2.37	1	64.38	0.013	20
		5805	1	20	14.34	3.74794	2.37	1	64.38	0.013	20
IEEE 802.11n 5GHz (20MHz)	6.5 M	5180	1	20	14.12	2.32536	1.71	1	44.16	0.009	20
		5200	1	20	14.12	2.32536	1.71	1	44.16	0.009	20
		5220	1	20	14.12	2.32536	1.71	1	44.16	0.009	20
		5240	1	20	14.12	2.32536	1.71	1	44.16	0.009	20
		5745	1	20	14.12	3.74794	2.37	1	61.20	0.012	20
		5765	1	20	14.12	3.74794	2.37	1	61.20	0.012	20
		5785	1	20	14.12	3.74794	2.37	1	61.20	0.012	20
		5805	1	20	14.12	3.74794	2.37	1	61.20	0.012	20
		5825	1	20	14.12	3.74794	2.37	1	61.20	0.012	20

Note: The Numeric Gain calculated by  $10^{(\text{ant. Gain(dBi)} / 10)}$ .