



FCC PART 90

TEST REPORT

For

Communication Networks LLC

3 Corporate Drive, Danbury, Connecticut, United States

FCC ID: 2ANZ6NW10

Report Type: CIIPC Report	Product Type: Wireless AP
Test Engineer: <u>Chris Wang</u>	<i>Chris. Wang</i>
Report Number: <u>RKSA180104001-00B</u>	
Report Date: <u>2018-01-12</u>	
Reviewed By: <u>RF Leader</u>	<i>Oscar Ye</i>
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan) No.248 Chenghu Road, Kunshan, Jiangsu province, China Tel: +86-0512-86175000 Fax: +86-0512-88934268 www.baclcorp.com.cn

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

TABLE OF CONTENTS

GENERAL INFORMATION.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST METHODOLOGY	3
MEASUREMENT UNCERTAINTY	4
TEST FACILITY	4
SYSTEM TEST CONFIGURATION.....	5
DESCRIPTION OF TEST CONFIGURATION	5
EUT EXERCISE SOFTWARE	5
SPECIAL ACCESSORIES.....	5
EQUIPMENT MODIFICATIONS	5
SUPPORT EQUIPMENT LIST AND DETAILS	5
EXTERNAL I/O CABLE.....	5
BLOCK DIAGRAM OF TEST SETUP	6
SUMMARY OF TEST RESULTS	7
TEST EQUIPMENT LIST	8
FCC §2.1053, §90.210 (m)(6)(7) - RADIATED SPURIOUS EMISSIONS	9
APPLICABLE STANDARD	9
TEST PROCEDURE	9
TEST DATA	9

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant	Communication Networks LLC
Tested Model	NW10IC
Product Type	Wireless AP
Dimension	45 mm(L) × 15 mm(W) × 35 mm(H)
Power Supply	DC48-56V from adapter

Adapter Information:

Model: PSE801G

Input: AC100-240 V 50/60Hz

Output: DC48-56V

**All measurement and test data in this report was gathered from production sample serial number: 20180104001. (Assigned by BACL, Kunshan). The EUT was received on 2018-01-04.*

Objective

This test report is prepared on behalf of Communication Networks LLC in accordance with Part 2, and Part 90 of the Federal Communication Commissions rules.

This is a CIIPC report base on the original report RKS170721003-00B with FCC ID: 2ANZ6NW10 which was granted on 2017-12-27, the differences between the original device and the current one are as follows:

Add the POE module to the EUT.

Related Submittal(s)/Grant(s)

FCC Part 15B JBP and Part 15.407 NII submissions with FCC ID: 2ANZ6NW10.

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of federal Regulations Title 47 Part 2, Part90 as well as the following individual parts:

Part 90 – Private Land Mobile Radio Service

Applicable Standards: KDB 971168 D01, ANSI C63.26-2016.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Item		Uncertainty
Radiated emission	30MHz~1GHz	5.91dB
	1GHz~6GHz	4.68dB
	6 GHz ~18 GHz	4.92dB
	18 GHz~40 GHz	5.21dB
Temperature		1.0°C
Humidity		6%

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) Lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4323.01) and the FCC designation No. CN1185 under the FCC KDB 974614 D01. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The EUT was configured for testing in an engineering mode which was provided by the manufacturer.

In 4940~4990 MHz band, test channel list is as below, EUT was tested with channel 3, 6 and 9.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	4950	7	4970
4	4955	8	4975
5	4960	9	4980
6	4965	/	/

EUT Exercise Software

RF test tool: Telnet.

Mode	Data rate	Power level
20M	6 Mbps	0

Special Accessories

No special accessory was used.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

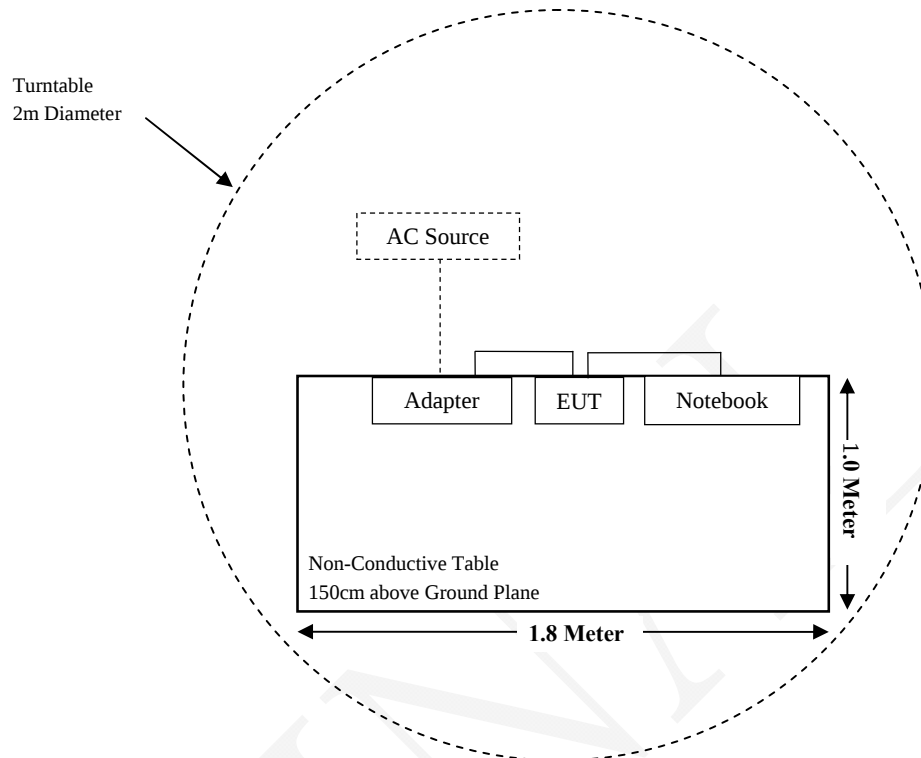
Manufacturer	Description	Model	Serial Number
DELL	Notebook	GX620	D65874152

External I/O Cable

Cable Description	Shielding Type	Length (m)	From Port	To
RJ45 Cable	Un-shielding	1.0	Notebook	EUT

Block Diagram of Test Setup

For Radiated Emissions(Below & Above 1GHz):



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Results
§1.1307(b), §2.1091	Maximum Permissible Exposure (MPE)	Compliance*
§2.1046, § 2.1046, 90.205(p), 90.1215(a)(1)	Power Output	Compliance*
§2.1049, 90Y	Occupied Bandwidth	Compliance*
§ 90.1215(a)(2)	Power Spectral Density	Compliance*
§ 90.1215(e)	Peak Excursion	Compliance*
§2.1051, § 90.210(m)	Conducted Spurious Emission at the Antenna Terminals	Compliance*
§2.1053, § 90.210(m)	Radiated Spurious Emissions	Compliance
§ 2.1055, § 90.213	Frequency Stability	Compliance*

Compliance*: Please referred to FCC ID: 2ANZ6NW10, granted on 2017-12-27, report No.: RKS170721003-00B, which was tested by Chris Wang, Bay Area Compliance Laboratories Corp. (Kunshan).

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test (Chamber 1#)					
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2017-11-12	2018-11-11
Sunol Sciences	Broadband Antenna	JB3	A090413-1	2016-12-26	2019-12-25
Sunol Sciences	Broadband Antenna	JB3	A090314-2	2016-01-09	2019-01-08
HP	Signal Generator	8341B	DE23437	2017-08-29	2018-08-28
Sonoma Instrunent	Pre-amplifier	310N	171205	2017-08-15	2018-08-14
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-8	008	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-9	009	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-10	010	2017-08-15	2018-08-14
Radiated Emission Test (Chamber 2#)					
Rohde & Schwarz	Signal Analyzer	FSIQ26	100048	2017-12-25	2018-12-24
Rohde & Schwarz	Signal Analyzer	FSV40	101116	2017-07-22	2018-07-21
ETS-LINDGREN	Horn Antenna	3115	9311-4159	2016-01-11	2019-01-10
ETS-LINDGREN	Horn Antenna	3115	6229	2016-01-11	2019-01-10
ETS-LINDGREN	Horn Antenna	3116	00084159	2016-10-18	2019-10-17
ETS-LINDGREN	Horn Antenna	3116	2516	2016-12-12	2019-12-12
HP	Signal Generator	8341B	DE23437	2017-08-29	2018-08-28
Narda	Pre-amplifier	AFS42-00101800	2001270	2017-12-22	2018-12-21
Heatsink Required	Amplifier	QLW-18405536-J0	15964001009	2017-12-12	2018-12-11
SINOSCITE	Band Reject Filter	BSF	/	2017-08-05	2018-08-04
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-6	006	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-11	011	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-12	012	2017-08-15	2018-08-14
MICRO-COAX	Coaxial Cable	Cable-13	013	2017-08-15	2018-08-14

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC § 2.1053, § 90.210 (m)(6)(7) - RADIATED SPURIOUS EMISSIONS**Applicable Standard**

FCC Part 2.1053, 90.210 (m)(6)(7)

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to teeth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB = 10 lg (TXpwr in Watts/0.001)-the absolute level

Spurious attenuation limit in 50 dB or $55 + 10 \log (P)$ dB, whichever is the lesser attenuation.

Test Data**Environmental Conditions**

Temperature:	22.4 °C
Relative Humidity:	50 %
ATM Pressure:	101.2 kPa

The testing was performed by Chris Wang on 2018-01-10.

EUT operation mode: Transmitting

Test Result: Compliance.

30MHz - 40GHz:

Pre-scan with X,Y and Z axes of orientation, the worst case **Y-axis of orientation** was recorded

Frequency (MHz)	Receive r Reading (dBμV)	Turn Table Angle Degree	Rx Antenna		Substituted			Absolute Level (dBm)	Limit (dBm)	Margin (dB)
			Height (cm)	Polar (H/V)	Submitted Level (dBm)	Cable Loss (dB)	Antenna Gain (dB)			
Channel 4950MHz										
745.20	44.43	66	135	H	-56.70	0.62	-1.52	-58.84	-25.00	33.84
745.20	42.08	129	190	V	-55.19	0.62	-1.52	-57.33	-25.00	32.33
9900.00	34.17	328	239	H	-57.93	1.95	11.62	-48.26	-25.00	23.26
9900.00	33.09	205	200	V	-59.17	1.95	11.62	-49.50	-25.00	24.50
14850.00	16.03	126	160	H	-69.22	2.62	13.33	-58.51	-25.00	33.51
14850.00	15.55	310	157	V	-70.57	2.62	13.33	-59.86	-25.00	34.86
Channel 4965MHz										
745.20	44.81	140	157	H	-56.32	0.62	-1.52	-58.46	-25.00	33.46
745.20	41.77	353	101	V	-55.50	0.62	-1.52	-57.64	-25.00	32.64
9930.00	33.46	324	224	H	-58.59	1.95	11.64	-48.90	-25.00	23.90
9930.00	33.41	72	202	V	-58.80	1.95	11.64	-49.11	-25.00	24.11
14895.00	15.24	310	179	H	-69.96	2.63	13.34	-59.25	-25.00	34.25
14895.00	15.22	307	149	V	-70.85	2.63	13.34	-60.14	-25.00	35.14
Channel 4980MHz										
745.20	44.39	213	192	H	-56.74	0.62	-1.52	-58.88	-25.00	33.88
745.20	42.31	230	245	V	-54.96	0.62	-1.52	-57.10	-25.00	32.10
9960.00	33.28	330	106	H	-58.72	1.95	11.67	-49.00	-25.00	24.00
9960.00	32.76	338	208	V	-59.40	1.95	11.67	-49.68	-25.00	24.68
14940.00	15.36	171	174	H	-69.79	2.64	13.35	-59.08	-25.00	34.08
14940.00	14.96	207	216	V	-71.07	2.64	13.35	-60.36	-25.00	35.36

***** END OF REPORT*****