FCC CFR47 PART 15 SUBPART B

TEST REPORT

FOR

CDMA BC0/1/10, LTE B25(1900)/B26/B41(2600) USB MODEM

MODEL NUMBER: AC341U

FCC ID: PY3AC341U

REPORT NUMBER: 13U14931-2

ISSUE DATE: APRIL 26, 2013

Prepared for

NETGEAR INC
2200 FARADAY AVE.
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Prepared by

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	4/26/13	Initial Issue	S. Leitner

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: NETGEAR INC
2200 FARADAY AVE.
CARLSBAD, CA 92008

EUT DESCRIPTION: CDMA BC0/1/10, LTE B25(1900)/B26/B41(2600) USB MODEM

MODEL: AC341U

SERIAL NUMBER: 302879HX2A

DATE TESTED: April 19, 2013

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC PART 15 SUBPART B	Pass

UL CCS tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL CCS By:

STEVE LEITNER
OPERATIONS MANAGER
UL CCS

Tested By:

FRANCISCO DE ANDA
PROJECT LEAD
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2009.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a wireless USB modem that supports CDMA BC0/1/10, LTE, B25(1900) / B26/B41(2600) communications.

GENERAL INFORMATION

Power Requirements	5V DC, 250 mA
Highest frequencies generated or used by the EUT	125 MHz

5.2. TEST CONFIGURATIONS

The following configuration was tested:

EUT Configuration	Description
Normal	EUT connected to laptop via USB port.

5.3. MODE(S) OF OPERATION

Mode	Description
Radios Off	Laptop running scrolling H's, EUT USB connection verified via control panel settings.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was
Revision number: 04.03.07
IMEI: 001027009999999
IMEI SV: 4
FSN: EW309700240203

The EUT driver software installed in the host support equipment during testing was 12.10.1050. 35.

The test utility software used during testing was EMCTEST Scrolling H'S

5.5. MODIFICATIONS

No modifications were made during testing.

5.6. DETAILS OF TESTED SYSTEM

SUPPORT EQUIPMENT & PERIPHERALS

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**S/N**	**FCC ID**
Laptop	Dell	PP18L	11985	Doc
AC Adapter	Dell	PA-1900-0202	73A-114B	N/A
Mouse	Dell	0F4177	HCD45166898	Doc
Ethernet switch	Linksys	EZXS55W	R9160KA222670	Doc

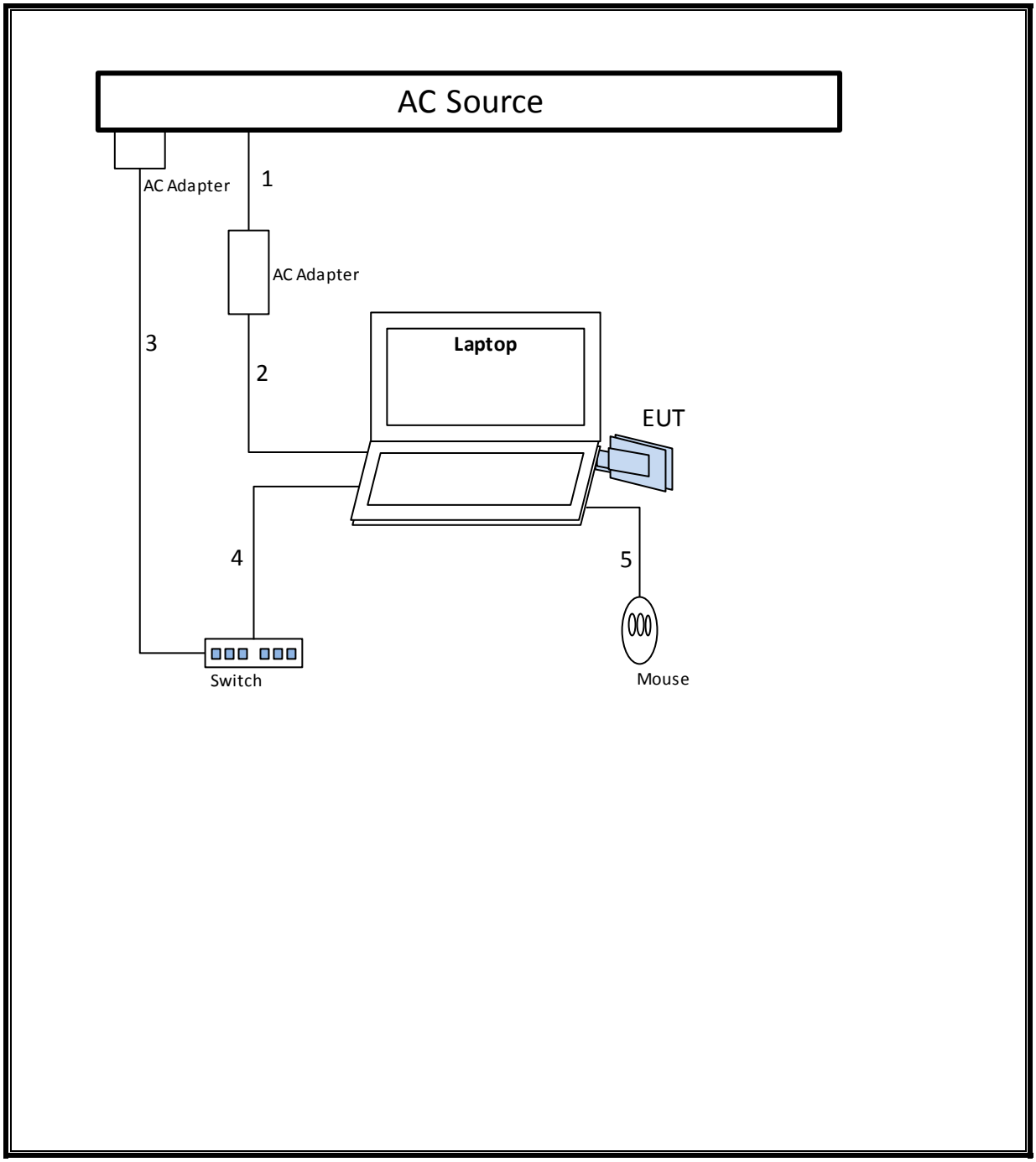
I/O CABLES

I/O CABLE LIST						
Cable No.	**Port**	**No. of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	1	3-Prong	Unshielded	1.6	
2	DC	1	Barrel	Shielded	1.8	To laptop
3	DC	1	Barrel	Shielded	1.75	To Switch
4	LAN	1	RJ45	Unshielded	2	
5	USB	1	USB	Shielded	1.75	To mouse

TEST SETUP

The EUT is installed in a typical configuration. EUT connected to laptop via USB port.

SETUP DIAGRAM



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	Calibration Due
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	MY48250925	08/18/2013
Preamplifier, 1300 MHz	Agilent / HP	8447D	2944A06589	01/28/2014
Antenna, Bilog, 30MHz-1GHz	Sunol Sciences	JB1	A092308	03/06/2014
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	10/22/2013
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/2013
EMI Test Receiver, 30 MHz	R & S	ESHS 20	J1568	08/08/2013
LISN, 30 MHz	FCC	50/250-25-2	50/250-25-2	01/13/2014
LISN, 10 kHz - 30 MHz	Solar	8012-50-R-24-BNC	8379443	NCR

7. APPLICABLE LIMITS AND TEST RESULTS

7.1. RADIATED EMISSIONS

TEST PROCEDURE

ANSI C63.4

The highest clock frequency generated or used in the EUT is 125 MHz, therefore the frequency range was investigated from 30 MHz to 2 GHz.

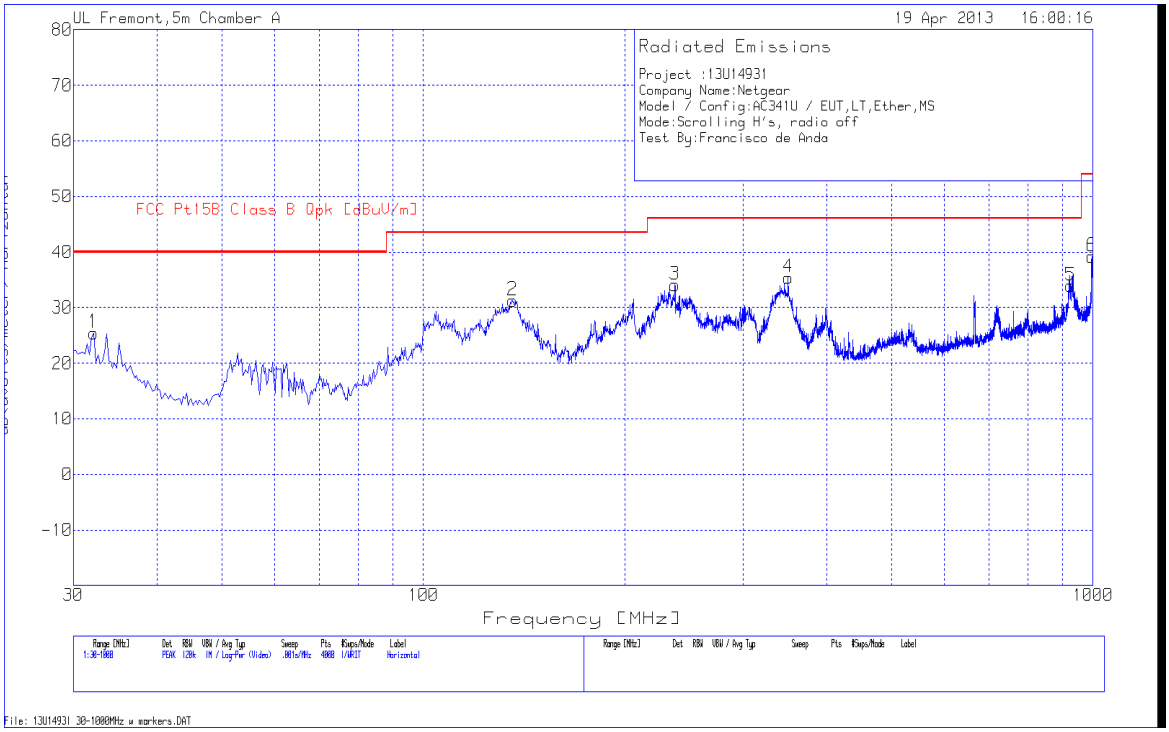
LIMIT

§15.109 (a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

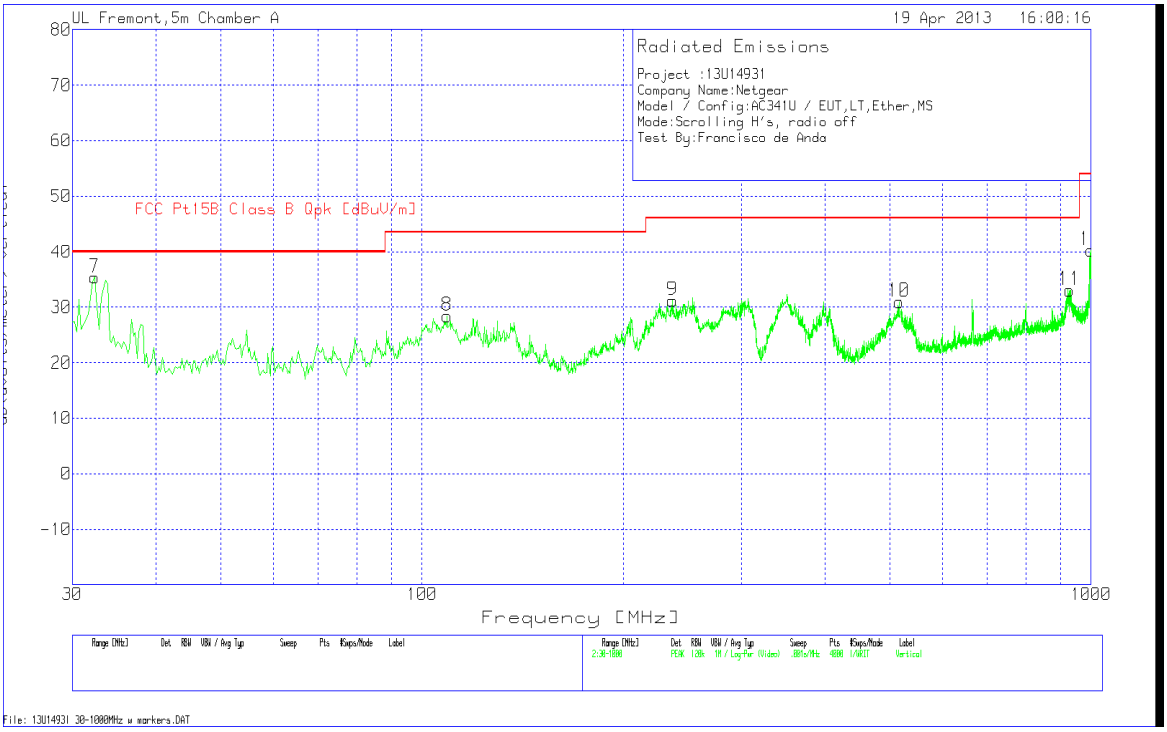
Limits for radiated disturbance of Class B ITE at measuring distance of 3 m	
Frequency range (MHz)	Quasi-peak limits (dBµV/m)
30 to 88	40
88 to 216	43.5
216 to 960	46
Above 960 MHz	54
Note: The lower limit shall apply at the transition frequency.	

RADIATED EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)

HORIZONTAL PLOT



VERTICAL PLOT



WORST EMISSIONS

DATA SUMMARY

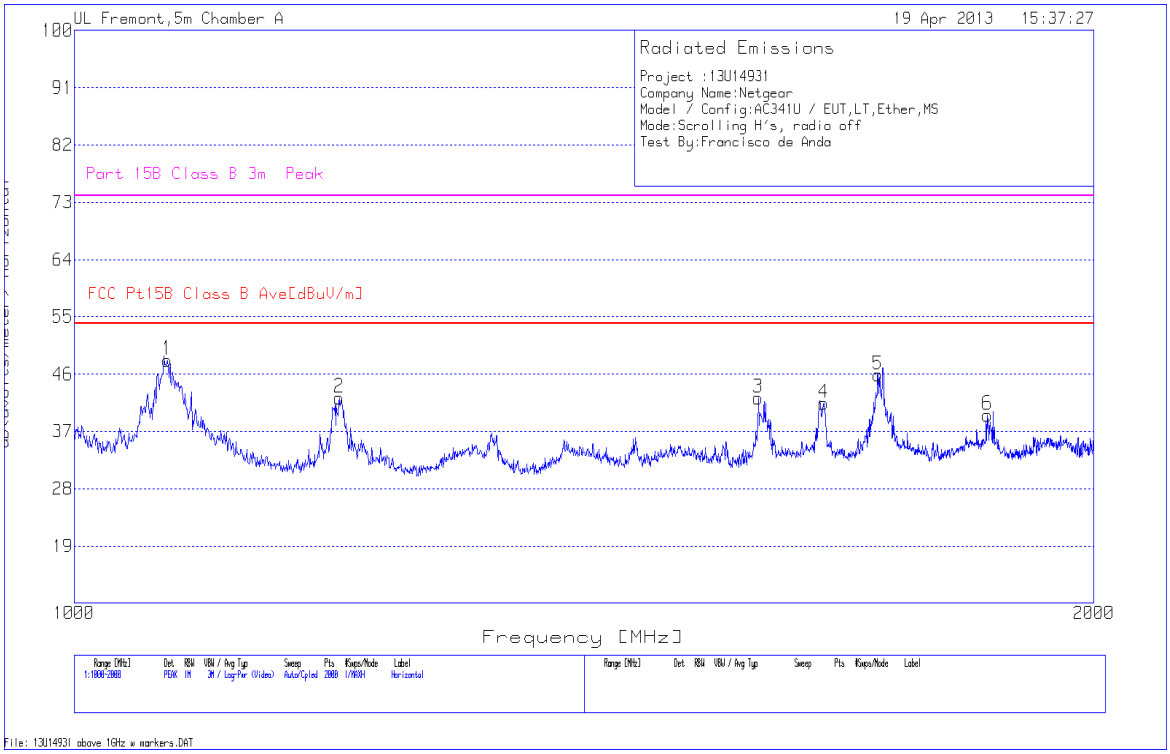
Project :13U14931
Company Name: Netgear
Model / Config:AC341U / EUT,LT,Ether,MS
Mode:Scrolling H's, radio off
Test By:Francisco de Anda

Marker No.	Test Frequency MHz	Meter Reading dBµV	Detector	Antenna Factor dB/m	cable loss dB	dB(uVolts/ meter)	FCC Pt15B Class B Qpk [dBµV/m]	Margin dB	Height cm	Polarity
Horizontal 30 - 1000MHz										
1	32.1809	33.66	PK	19.5	-27.7	25.46	40	-14.54	200	Horz
2	135.8931	44.57	PK	13.5	-26.8	31.27	43.52	-12.25	200	Horz
3	237.4244	48.69	PK	11.4	-26	34.09	46.02	-11.93	100	Horz
4	350.5871	46.49	PK	14.3	-25.4	35.39	46.02	-10.63	100	Horz
5	925.8506	34.24	PK	22.4	-22.7	33.94	46.02	-12.08	100	Horz
6	995.6383	38.75	PK	23.1	-22.6	39.25	53.97	-14.72	100	Horz
Vertical 30 - 1000MHz										
7	32.4232	43.78	PK	19.3	-27.7	35.38	40	-4.62	200	Vert
8	108.9958	43.16	PK	12.1	-26.8	28.46	43.52	-15.06	200	Vert
9	236.9398	45.71	PK	11.4	-25.9	31.21	46.02	-14.81	200	Vert
10	516.5751	37.7	PK	17.7	-24.4	31	46.02	-15.02	200	Vert
11	929.0007	33.6	PK	22.3	-22.8	33.1	46.02	-12.92	200	Vert
12	999.273	39.91	PK	23.3	-22.9	40.31	53.97	-13.66	200	Vert

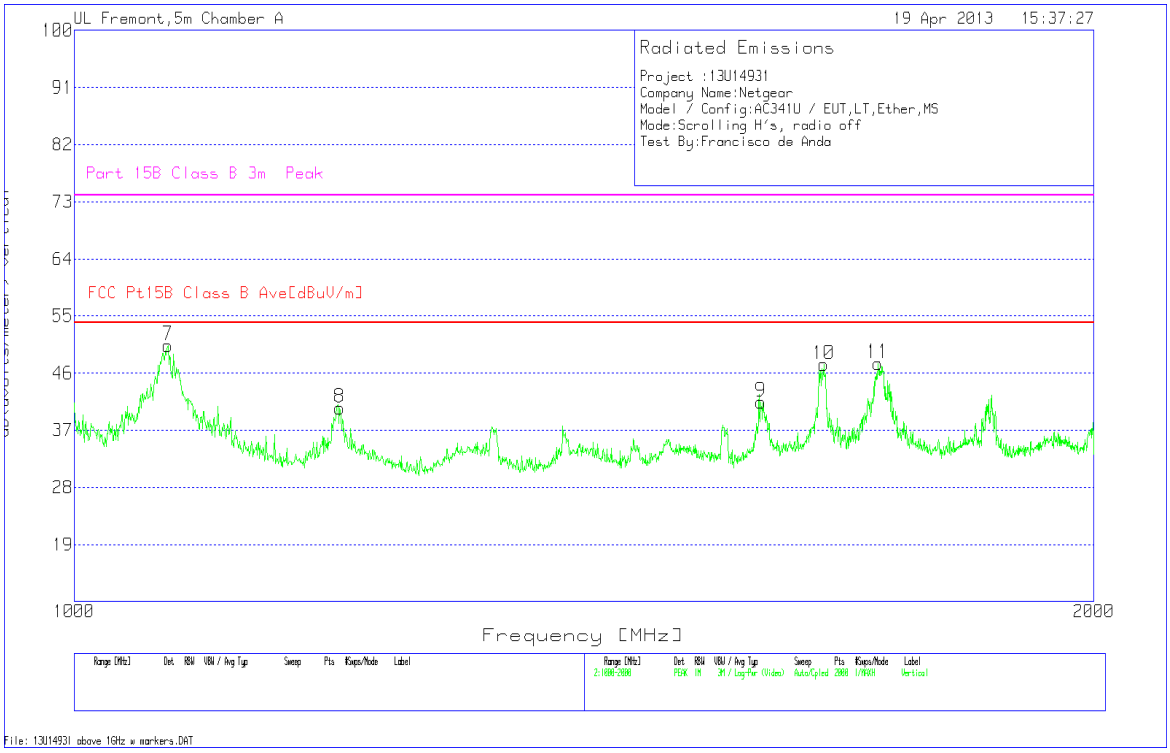
PK - Peak detector
QP - Quasi-Peak detector

RADIATED EMISSIONS - ABOVE 1 GHz (WORST-CASE CONFIGURATION)

HORIZONTAL PLOT



VERTICAL PLOT



WORST EMISSIONS

DATA SUMMARY

Project :13U14931
Company Name: Netgear
Model / Config:AC341U / EUT,LT,Ether,MS
Mode:Scrolling H's, radio off
Test By:Francisco de Anda

Marker No.	Test Frequency MHz	Meter Reading dBµV	Detector	Antenna Factor dB	Amp Gain dB	Cable Factor dB	Corrected (dBµV/m)	FCC Pt 15B Class B 3m Peak	Margin dB	FCC Pt15B Class B 3m Ave	Margin dB	Height cm	Polarity
Horizontal 1000 - 2000MHz													
1	1065.5	59.21	PK	24.6	-38.7	3.1	48.21	74	-25.79	54	-5.79	200	Horz
2	1197.5	52.41	PK	25.1	-38.4	3.2	42.31	74	-31.69	54	-11.69	200	Horz
3	1592	50.74	PK	25.5	-37.6	3.6	42.24	74	-31.76	54	-11.76	200	Horz
4	1664.5	49.12	PK	26.1	-37.5	3.7	41.42	74	-32.58	54	-12.58	200	Horz
5	1727	52.97	PK	26.6	-37.4	3.7	45.87	74	-28.13	54	-8.13	100	Horz
6	1860.5	45.82	PK	27.2	-37.3	3.9	39.62	74	-34.38	54	-14.38	200	Horz
Vertical 1000 - 2000MHz													
7	1066	61.34	PK	24.6	-38.7	3.1	50.34	74	-23.66	54	-3.66	100	Vert
8	1198	50.62	PK	25.1	-38.4	3.2	40.52	74	-33.48	54	-13.48	100	Vert
9	1595	49.96	PK	25.5	-37.6	3.6	41.46	74	-32.54	54	-12.54	200	Vert
10	1664.5	55.06	PK	26.1	-37.5	3.7	47.36	74	-26.64	54	-6.64	200	Vert
11	1727	54.61	PK	26.6	-37.4	3.7	47.51	74	-26.49	54	-6.49	100	Vert

PK - Peak detector
Av - Average detector

7.2. AC MAINS LINE CONDUCTED EMISSIONS

TEST PROCEDURE

ANSI C63.4

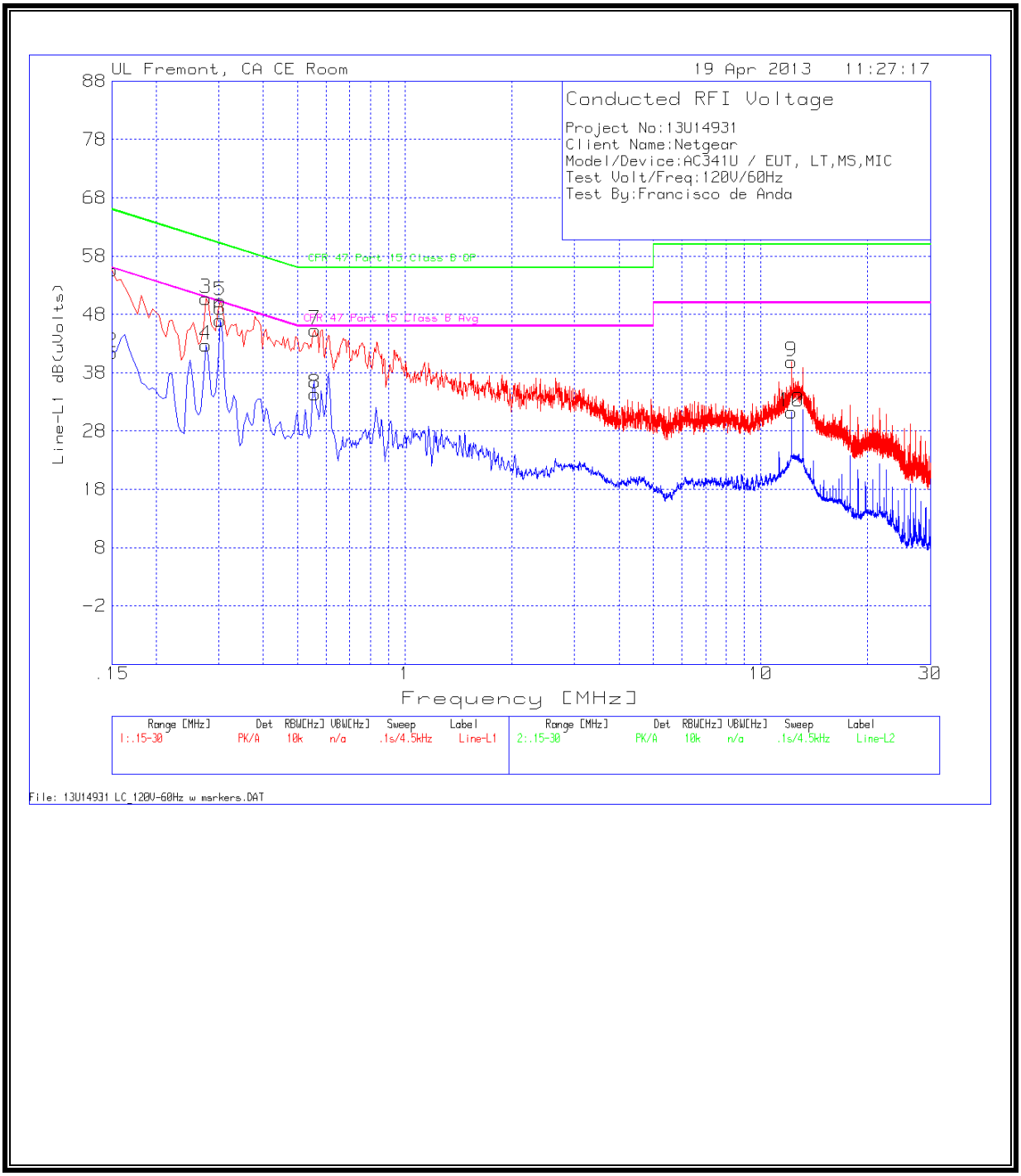
LIMIT

§15.107 (a) Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

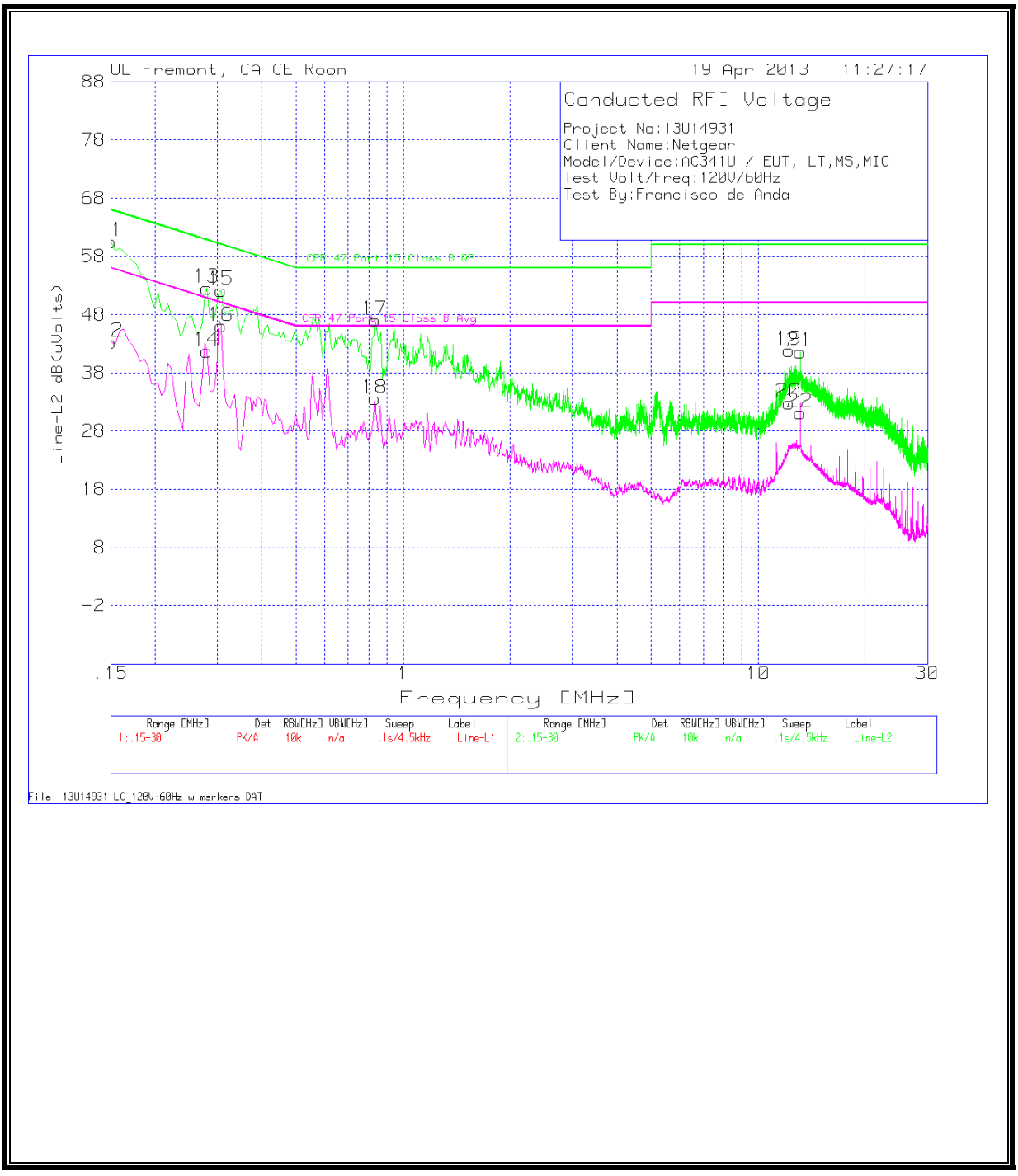
Frequency range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Notes: 1. The lower limit shall apply at the transition frequencies 2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

RESULTS

LINE 1 RESULTS



LINE 2 RESULTS



WORST EMISSIONS

DATA SUMMARY

Project No:13U14931
Client Name:NETGEAR
Model/Device:AC341U / EUT, LT,MS,MIC
Test Volt/Freq:120V/60Hz
Test By:Francisco de Anda

Test Frequency	Meter Reading dBµV	Detector	T24 LISN dB	Cables Loss dB	Corrected dB(µVolts)	CFR 47 Part 15 Class B QP	Margin dB	CFR 47 Part 15 Class B Avg	Margin dB
Line-L1 .15 - 30MHz									
0.15	55.48	PK	0.1	0	55.58	66	-10.42	-	-
0.15	41.3	Av	0.1	0	41.4	-	-	56	-14.6
0.276	50.63	PK	0.1	0	50.73	60.9	-10.17	-	-
0.276	42.67	Av	0.1	0	42.77	-	-	50.9	-8.13
0.303	50.19	PK	0.1	0	50.29	60.2	-9.91	-	-
0.303	46.88	Av	0.1	0	46.98	-	-	50.2	-3.22
0.5595	45.25	PK	0.1	0	45.35	56	-10.65	-	-
0.5595	34.25	Av	0.1	0	34.35	-	-	46	-11.65
12.21	39.49	PK	0.2	0.2	39.89	60	-20.11	-	-
12.21	30.91	Av	0.2	0.2	31.31	-	-	50	-18.69
Line-L2 .15 - 30MHz									
0.15	60.41	PK	0.1	0	60.51	66	-5.49	-	-
0.15	43.16	Av	0.1	0	43.26	-	-	56	-12.74
0.2805	52.46	PK	0.1	0	52.56	60.8	-8.24	-	-
0.2805	41.56	Av	0.1	0	41.66	-	-	50.8	-9.14
0.3075	52.07	PK	0.1	0	52.17	60	-7.83	-	-
0.3075	45.93	Av	0.1	0	46.03	-	-	50	-3.97
0.834	46.96	PK	0.1	0	47.06	56	-8.94	-	-
0.834	33.43	Av	0.1	0	33.53	-	-	46	-12.47
12.2055	41.42	PK	0.2	0.2	41.82	60	-18.18	-	-
12.2055	32.37	Av	0.2	0.2	32.77	-	-	50	-17.23
13.1505	41.15	PK	0.2	0.2	41.55	60	-18.45	-	-
13.1505	30.79	Av	0.2	0.2	31.19	-	-	50	-18.81

PK - Peak detector
Av - Average detector