FCC 47 CFR PART 15 SUBPART B

TEST REPORT

FOR

CDMA/LTE MINI-CARD MODULE

MODEL NUMBER: NM7371

FCC ID: PY3NM7371

REPORT NUMBER: 13U15614-1

ISSUE DATE: SEPTEMBER 5, 2013

Prepared for

NETGEAR INC
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CARLSBAD, CA 92008

Prepared by

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
--	9/5/2013	Initial	P.Kim

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1. ATTESTATION OF TEST RESULTS

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

EUT DESCRIPTION: CDMA/LTE MINI-CARD MODULE

MODEL: NM7371

SERIAL NUMBER: GR325700840102

DATE TESTED: SEPTEMBER 5, 2013

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

UL Verification Services Inc. 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 Verification Services Inc. 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 Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. 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.

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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 Verification Services Inc. 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%.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an STANDALONE MINI-CARD BASED MODULE with CDMA BC0/1/10 (1xRTT, REV A); LTE B 25(1900) / B26 / B41(2600).

GENERAL INFORMATION

AC Adapter Power Requirements	100-240 VAC / 50-60 Hz, 1A
List of frequencies generated or used by the EUT	19.2MHz(Clock Frequency)

SUBASSEMBLIES

The EUT was constructed using the following subassemblies:

Subassembly Description	Model Number	Serial Number
PC	X1060256	1S1871FU1L3AWBP6
AC Adapter	08K8204	11S08K8204Z1Z6LV3BW5ND
USB Cable	N/A	N/A

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5.2. PRELIMINARY TEST CONFIGURATIONS

The following configurations were investigated during preliminary testing:

EUT Configuration	Description
Configuration 1	The EUT standalone with DC power supply.
Configuration 2	The EUT connected to the AC mains with an AC adapter.
Configuration 3	The EUT connected to the AC mains with an AC adapter, Laptop, Serial cable.

The worst-case configuration was determined to be Configuration 3 and was used for the basis of testing in this report. The worst-case orientation was determined to be in the vertical landscape position.

5.3. MODE(S) OF OPERATION INVESTIGATED

Mode	Description
Configuration 1	EUT standalone with radio module in standby mode.
Configuration 2	EUT connected to AC power supply; radio module in standby mode.
Configuration 3	The EUT connected to the AC mains with an AC adapter, Laptop, Serial cable; radio module in standby mode.

5.4. SOFTWARE AND FIRMWARE

The EUT is linked with CMW500 Test Set and radio module in idle mode.

5.5. MODIFICATIONS

No modifications were made during testing.

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5.6. DETAILS OF TESTED SYSTEM

SUPPORT EQUIPMENT & PERIPHERALS

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**S/N**	**FCC ID**
Laptop	Lenovo	T420	C9LMQS027429	DoC
AC adapter	N/A	N/A	N/A	DoC

I/O CABLES

I/O CABLE LIST						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length**	**Remarks**
1	AC Power	1	2-Prong	Un-Shielded	1.5m	N/A
2	RF In/out	1	Communication Test Set	Un-shielded	2m	N/A
3	USB	1	USB	Un-shielded	1m	N/A
4	serial	2	serial Port	Un-shielded	1m	N/A

TEST SETUP

The EUT is connected to a laptop computer during the tests.

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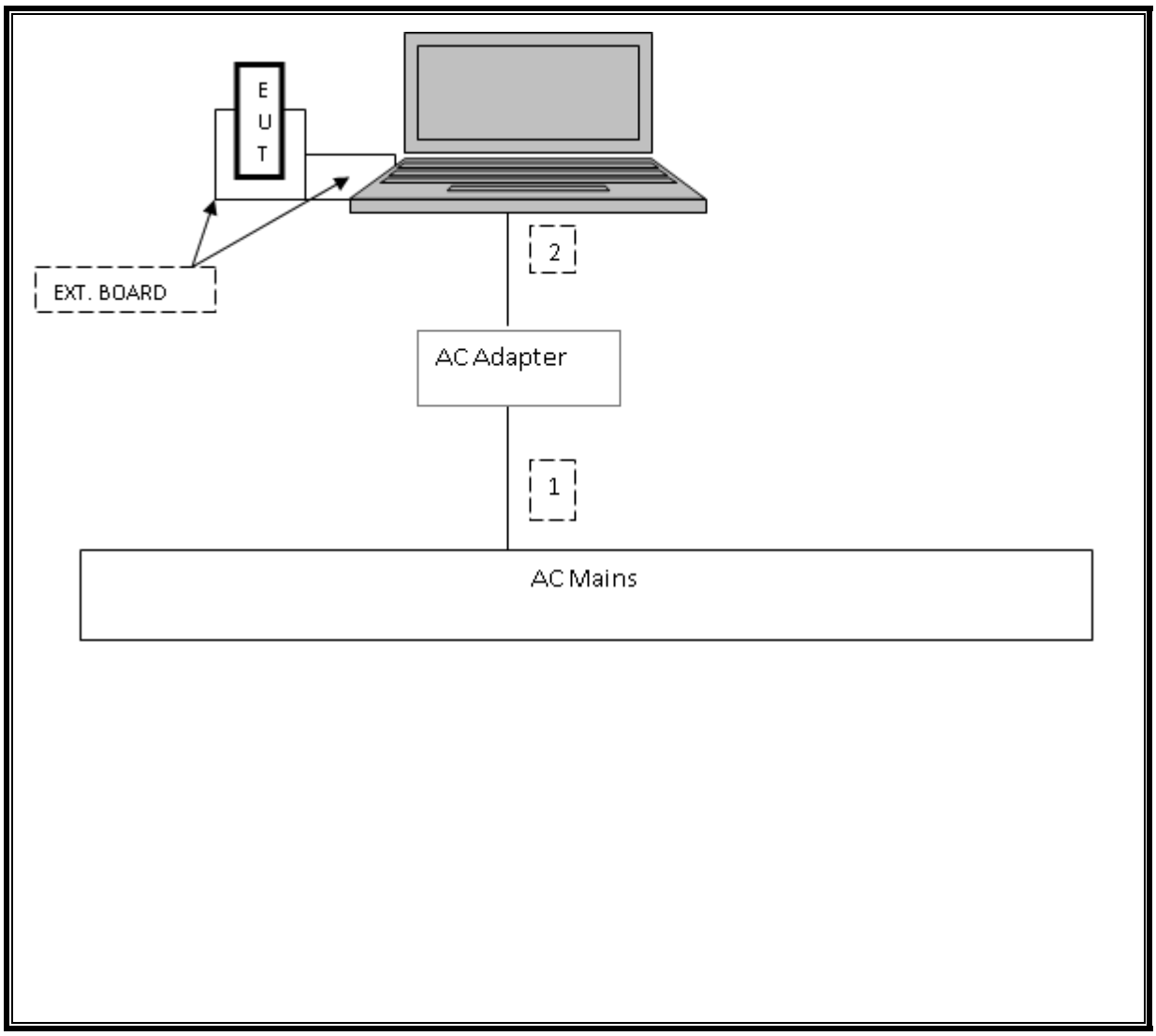
TEST SETUP DIAGRAM



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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**	**S/N**	**Cal Due**
Spectrum Analyzer, 44 GHz	Agilent/HP	E4446A	US42070220	04/01/14
Preamplifier, 1300 MHz	Agilent/HP	8447D	1937A02062	01/16/14
Antenna, Bilog, 30MHz-1GHz	Sunol Sciences	JB1	A0022704	08/14/14
Preamplifier, 26.5 GHz	Agilent/HP	8449B	3008A00931	10/22/13
Antenna, Horn, 18 GHz	ETS	3117	35234	02/21/14
EMI Test Receiver, 30 MHz	R&S	ESHS 20	827129/006	08/08/14
LISN, 30 MHz	FCC	50/250-25-2	114	01/14/14
LISN, 10 kHz-30MHz	Solar	8012-50-R-24-BNC	837990	C.N.R

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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 19.5 MHz, therefore the frequency range was investigated from 30 MHz to 1 GHz. Testing was performed to 1GHz.

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.	

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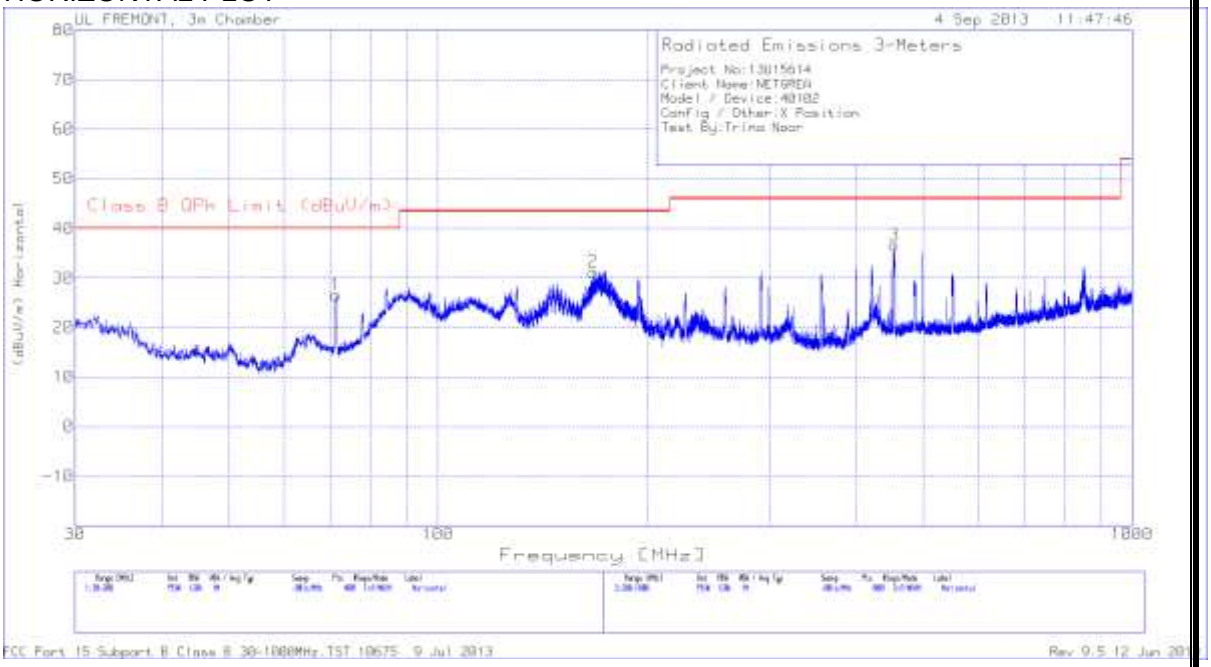
RESULTS

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

HORIZONTAL PLOT



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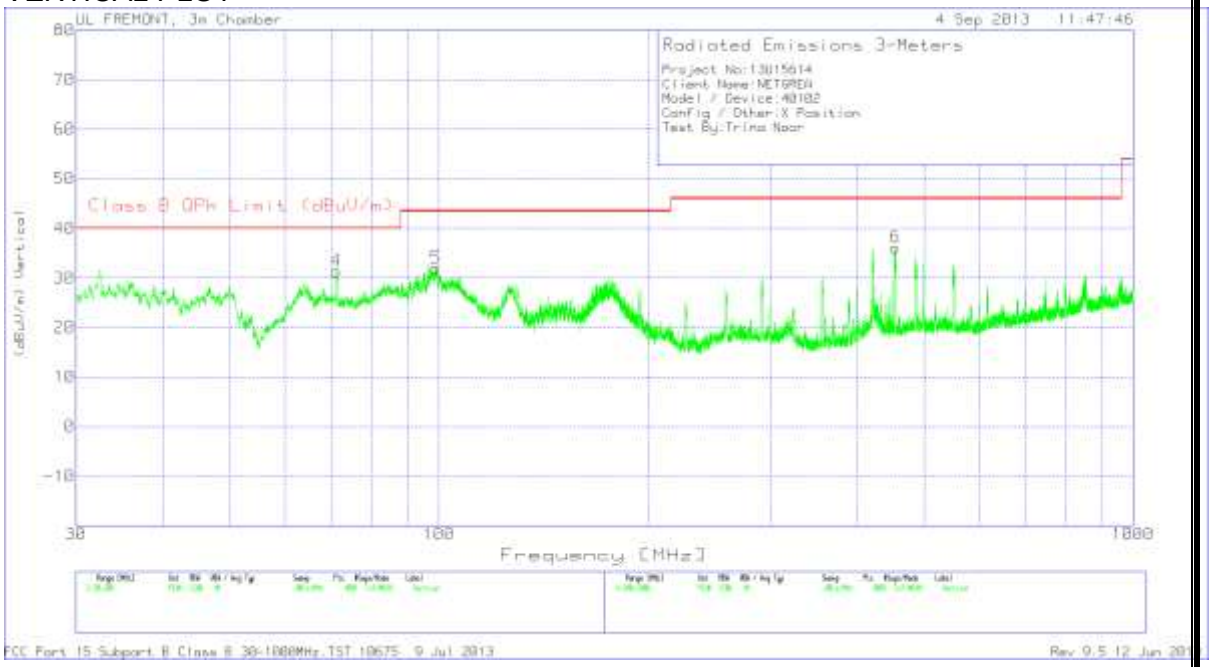
VERTICAL PLOT



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HORIZONTAL AND VERTICAL DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Class B QPk Limit (dBuV/m)	Margin (dB)	Height (cm)	Polarity
1	71.2675	45.55	PK	8.1	-27.1	26.55	40	-13.45	301	Horz
2	167.275	45.7	PK	11.7	-26.2	31.2	43.52	-12.32	200	Horz
4	71.1825	50.37	PK	8.1	-27.1	31.37	40	-8.63	99	Vert
5	98.9775	48.91	PK	9.8	-26.8	31.91	43.52	-11.61	99	Vert
3	454.7	45.6	PK	16.9	-25.9	36.6	46.02	-9.42	201	Horz
6	454.7	45.17	PK	16.9	-25.9	36.17	46.02	-9.85	99	Vert

PK - Peak detector

FCC Part 15 Subpart B Class B 30-1000MHz.TST 10675 9 Jul 2013Rev 9.5 12 Jun 2013

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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.		

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RESULTS

6 WORST EMISSIONS

Line-L1 .15 - 30MHz

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L1 (dB)	LC Cables 1&3 (dB)	Corrected Reading dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin to Limit (dB)	CISPR 11/22 Class B Average	Margin to Limit (dB)
1	.15	36.94	PK	.1	0	37.04	66	-28.96	-	-
2	.15	21.15	Av	.1	0	21.25	-	-	56	-34.75
3	.4245	40.87	PK	.1	0	40.97	57.4	-16.43	-	-
4	.4245	36.65	Av	.1	0	36.75	-	-	47.4	-10.65
5	19.662	34.49	PK	.3	.2	34.99	60	-25.01	-	-
6	19.662	20.55	Av	.3	.2	21.05	-	-	50	-28.95

Line-L2 .15 - 30MHz

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dB(uVolts)	CISPR 11/22 Class B Quasi-peak	Margin to Limit (dB)	CISPR 11/22 Class B Average	Margin to Limit (dB)
7	.15	36.7	PK	.1	0	36.8	66	-29.2	-	-
8	.15	17.78	Av	.1	0	17.88	-	-	56	-38.12
9	.4245	40.65	PK	.1	0	40.75	57.4	-16.65	-	-
10	.4245	36.39	Av	.1	0	36.49	-	-	47.4	-10.91
11	19.779	32.18	PK	.3	.2	32.68	60	-27.32	-	-
12	19.779	25.43	Av	.3	.2	25.93	-	-	50	-24.07

PK - Peak detector

Av - average detection

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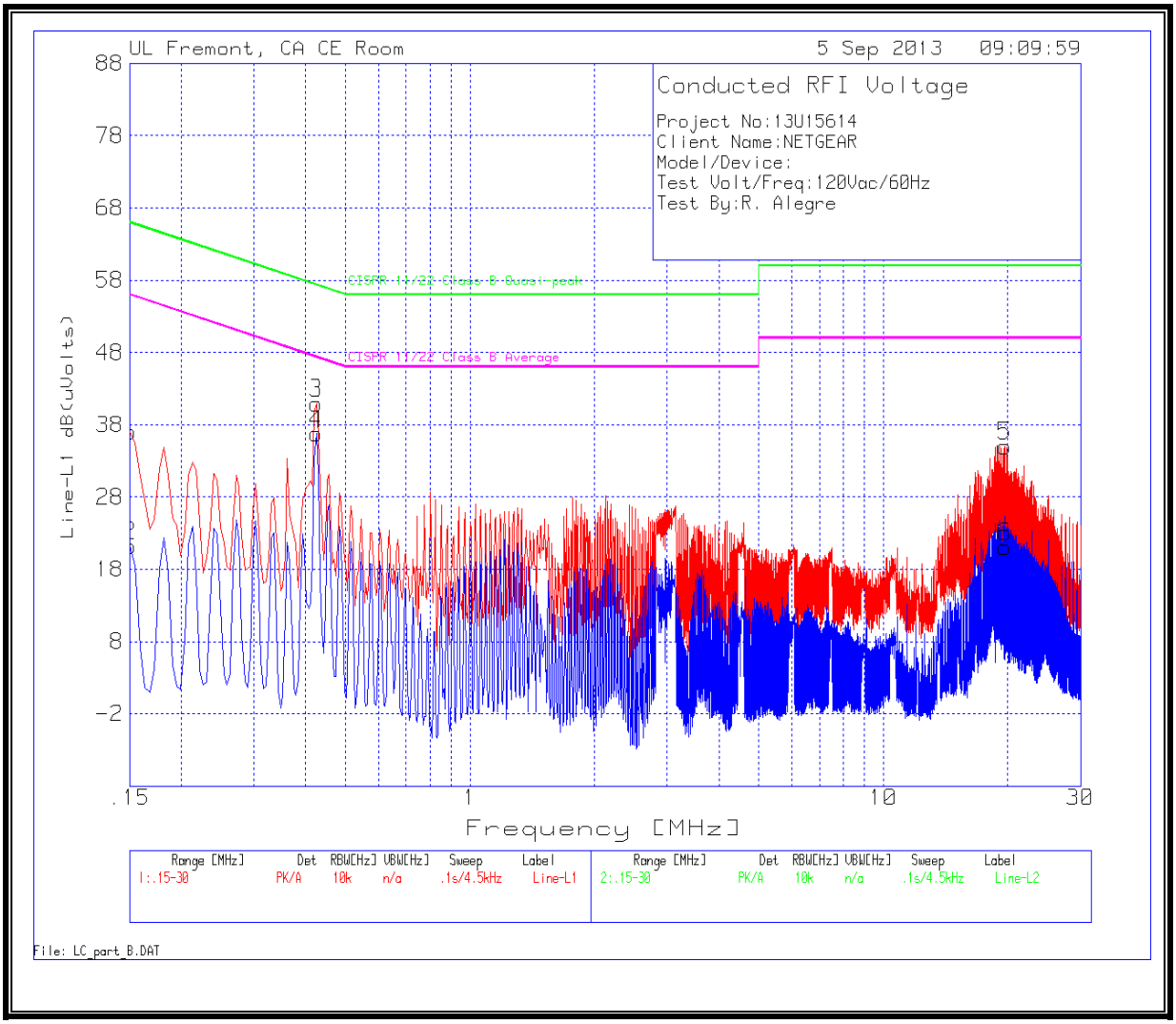
LINE 1 RESULTS



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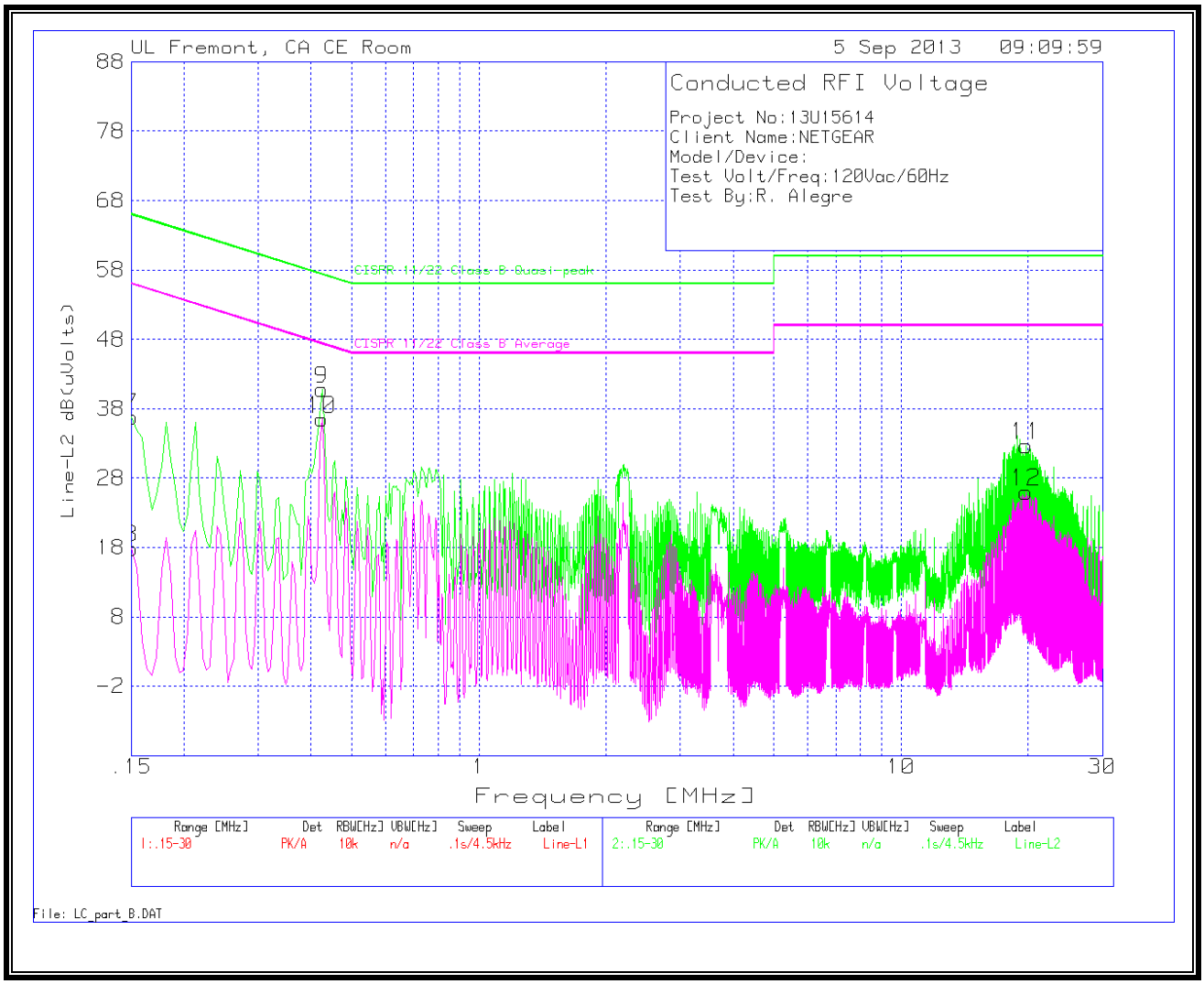
LINE 2 RESULTS



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