



FCC 47 CFR PART 15 SUBPART B

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA/LTE Tablet + Bluetooth, DTS/UNII a/b/g/n/ac, ANT+ & NFC

FCC ID: PY7TM-0053

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Prepared for
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Revision History

Rev.	Issue Date	Revisions	Revised By
--	9/11/14	Initial issue	D. Corona

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SONY MOBILE COMMUNICATIONS, INC.
EUT DESCRIPTION: GSM/WCDMA/LTE Tablet + Bluetooth, DTS/UNII a/b/g/n/ac, ANT+ & NFC
SERIAL NUMBER: CB5A20E0RY (Radiated)
DATE TESTED: August 26, 2014

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.

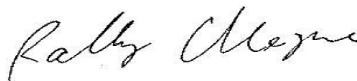
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. 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.

47173 Benicia Street	47266 Benicia Street
☐ Chamber A	☐ Chamber D
☒ Chamber B	☐ Chamber E
☐ Chamber C	☐ Chamber F
	☐ Chamber G
	☐ Chamber H

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:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

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

GSM/WCDMA/LTE Phone + Bluetooth, DTS/UNII a/b/g/n/ac, ANT+ & NFC

GENERAL INFORMATION

AC Adapter Power Requirements	100-240 VAC / 50-60 Hz, 1A
List of frequencies generated or used by the EUT	34.7MHz(Clock Frequency)

5.2. PRELIMINARY TEST CONFIGURATIONS

The EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

5.3. MODE(S) OF OPERATION INVESTIGATED

Mode	Description
Idle	Receive mode

5.4. MODIFICATIONS

No modifications were made during testing.

5.5. DETAILS OF TESTED SYSTEM

SUPPORT EQUIPMENT & PERIPHERALS

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop	Lenovo	TP00001A	60Y5028	DoC
Earphones	Sony	N/A	N/A	DoC
MHL cable	Sony	N/A	N/A	N/A
Mouse	Logitech	M-U0026	1304HS02AX68	N/A
Keyboard	Lenovo	KU-0225	54Y9400	N/A

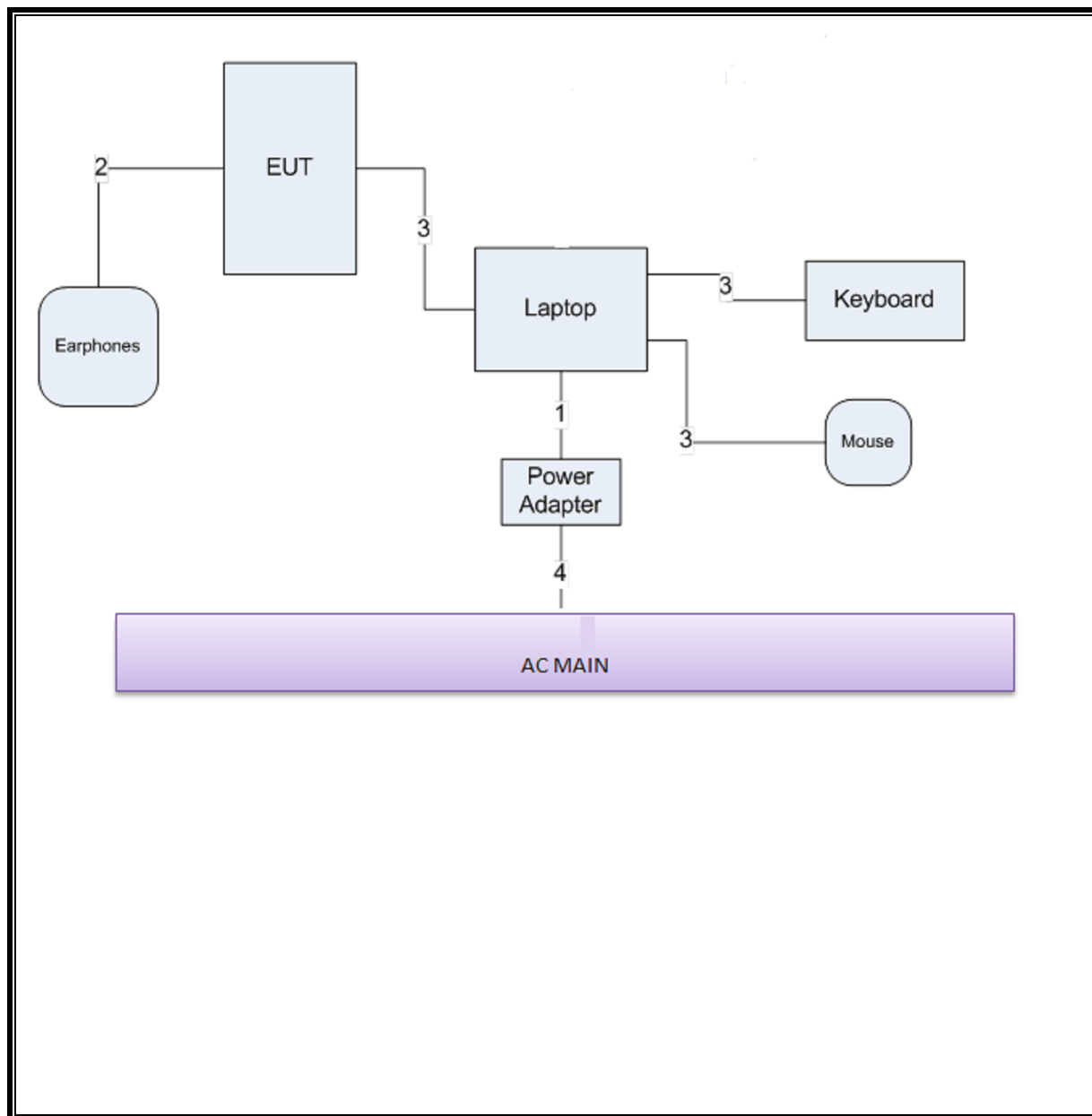
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	DC Power	1	Power	Shielded	1.2m	N/A
2	Audio	1	Mini-Jack	Unshielded	1m	N/A
3	USB	1	Mini-USB	Shielded	2m	N/A
4	AC Power	1	IEC	Unshielded	1m	N/A

TEST SETUP

The EUT is installed in a typical configuration. Test software exercised the EUT.

TEST 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	S/N	Cal Due
Spectrum Analyzer, 44 GHz	Agilent/HP	E4446A	US42070220	04/01/15
Preamplifier, 1300 MHz	Agilent/HP	8447D	1937A02062	01/16/15
Antenna, Bilog, 30MHz-1GHz	Sunol Sciences	JB1	A0022704	08/14/15
Preamplifier, 26.5 GHz	Agilent/HP	8449B	3008A00931	10/22/15
Antenna, Horn, 18 GHz	ETS	3117	35234	02/21/15
EMI Test Receiver, 30 MHz	R&S	ESHS 20	827129/006	08/08/15
LISN, 30 MHz	FCC	50/250-25-2	114	01/14/15
LISN, 10 kHz-30MHz	Solar	8012-50-R-24-BNC	837990	C.N.R

7. APPLICABLE LIMITS AND TEST RESULTS

7.1. RADIATED EMISSIONS

TEST PROCEDURE

ANSI C63.4: 2009

The highest clock frequency generated or used in the EUT is 37.4 MHz, therefore the frequency range was investigated from 30 MHz to 1000 MHz.

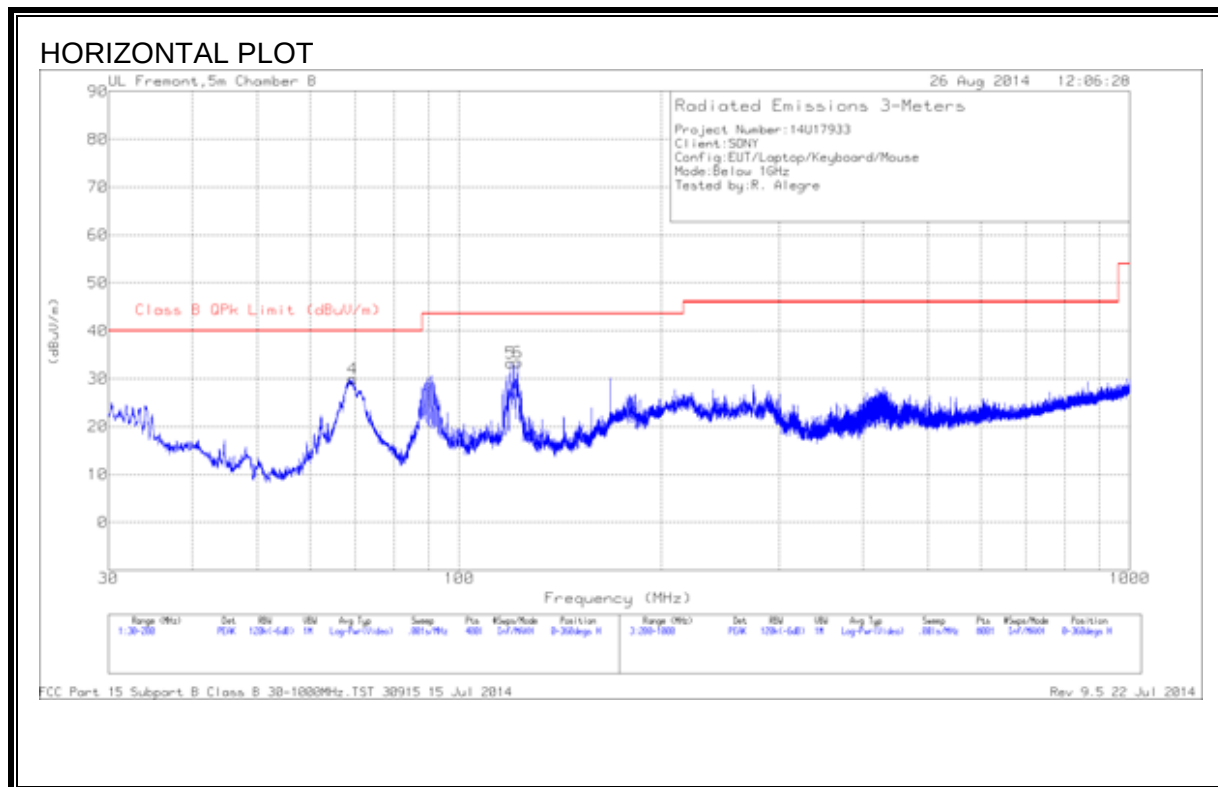
LIMIT

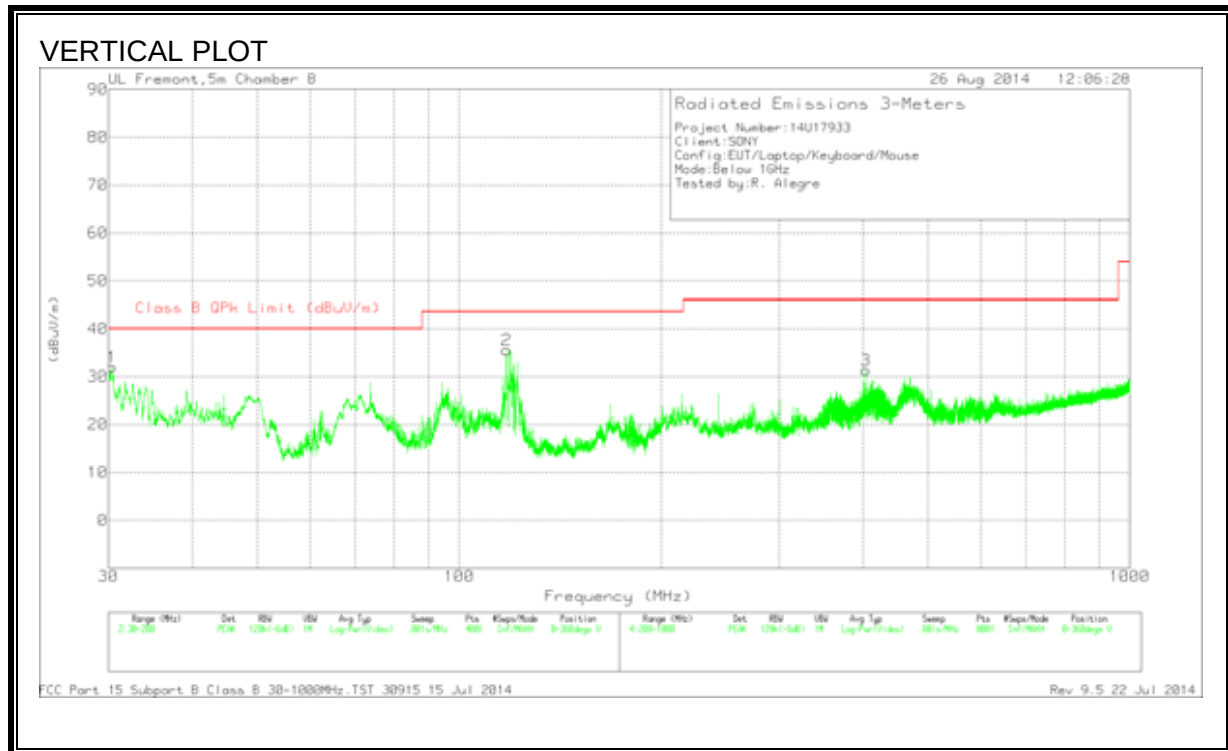
§15.109 (a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Limits for radiated disturbance of Class B ITE at measuring distance of 3 m	
Frequency range (MHz)	Quasi-peak limits (dB μ V/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.	

RESULTS

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





HORIZONTAL AND VERTICAL DATA

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T243 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	Class B QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.3825	39.76	PK	21.1	-28.8	32.06	40	-7.94	0-360	101	V
4	69.3125	50.15	PK	8.1	-28.3	29.95	40	-10.05	0-360	200	H
2	117.72	49.62	PK	13.8	-27.8	35.62	43.52	-7.9	0-360	101	V
5	119.3775	47.14	PK	13.9	-27.8	33.24	43.52	-10.28	0-360	300	H
6	122.2675	47.21	PK	14	-27.8	33.41	43.52	-10.11	0-360	200	H
3	404.5	41.47	PK	15.9	-26	31.37	46.02	-14.65	0-360	101	V

PK - Peak detector

FCC Part 15 Subpart B Class B 30-1000MHz.TST 30915 15 Jul 2014

Rev 9.5 22 Jul 2014

7.2. AC MAINS LINE CONDUCTED EMISSIONS

TEST PROCEDURE

ANSI C63.4: 2009

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 μ H/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 (dB μ V)	
	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

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 dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
1	.1815	55.7	PK	1.1	0	56.8	64.4	-7.6	-	-
2	.1815	37.1	Av	1.1	0	38.2	-	-	54.4	-16.2
3	.51	33.48	PK	.3	0	33.78	56	-22.22	-	-
4	.51	11.95	Av	.3	0	12.25	-	-	46	-33.75
5	4.542	41.82	PK	.2	.1	42.12	56	-13.88	-	-
6	4.542	29.1	Av	.2	.1	29.4	-	-	46	-16.6
7	6.612	42.61	PK	.2	.1	42.91	60	-17.09	-	-
8	6.612	30.3	Av	.2	.1	30.6	-	-	50	-19.4
11	18.195	47.78	PK	.3	.2	48.28	60	-11.72	-	-
12	18.195	31.63	Av	.3	.2	32.13	-	-	50	-17.87
9	18.681	48	PK	.3	.2	48.5	60	-11.5	-	-
10	18.681	32.63	Av	.3	.2	33.13	-	-	50	-16.87

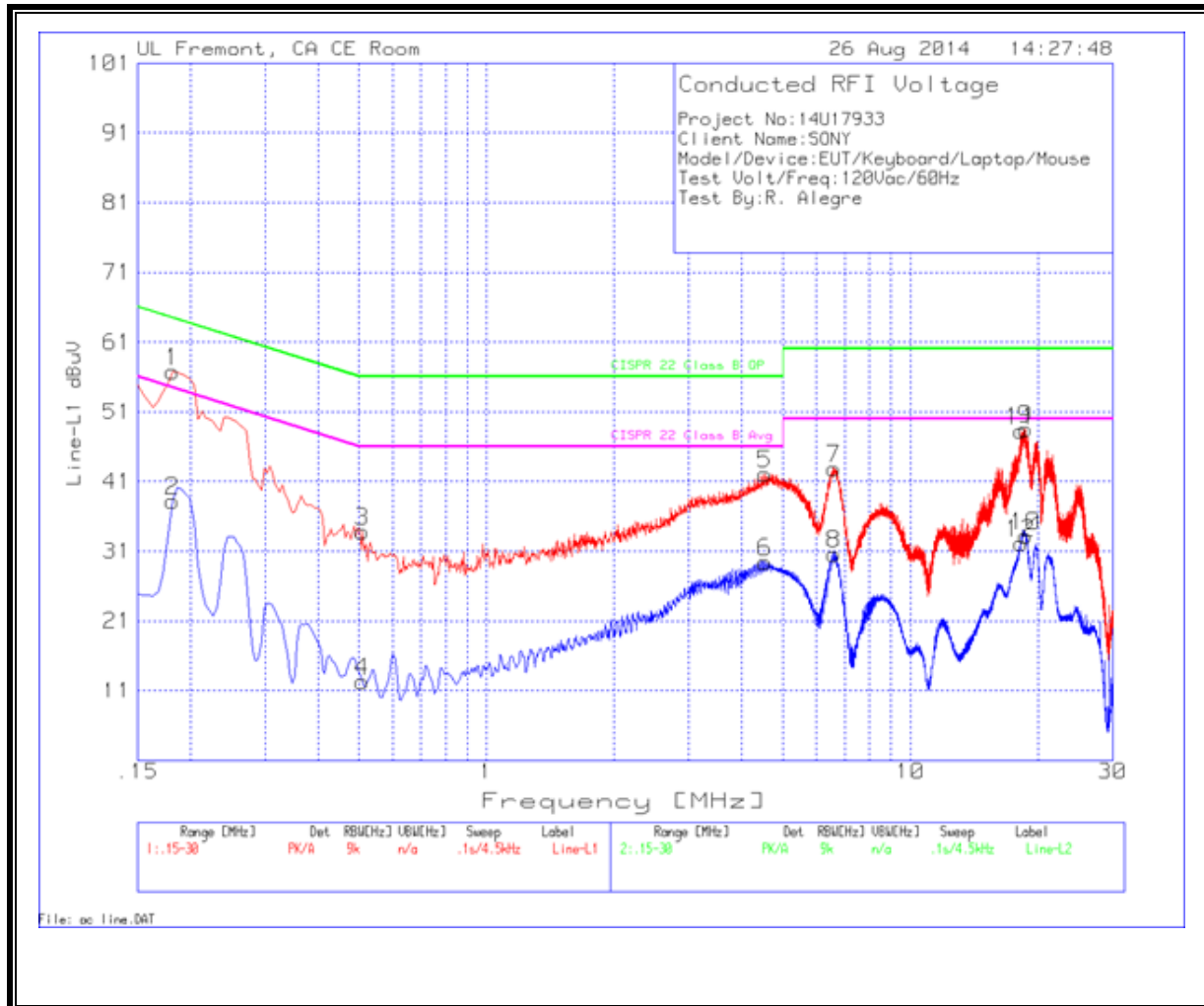
Line-L2 .15 - 30MHz

Trace Markers										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	T24 IL L2 (dB)	LC Cables 2&3 (dB)	Corrected Reading dBuV	CISPR 22 Class B QP	Margin to Limit (dB)	CISPR 22 Class B Avg	Margin to Limit (dB)
13	.186	54.41	PK	1.1	0	55.51	64.2	-8.69	-	-
14	.186	37.42	Av	1.1	0	38.52	-	-	54.2	-15.68
15	.5055	33.66	PK	.4	0	34.06	56	-21.94	-	-
16	.5055	14.32	Av	.4	0	14.72	-	-	46	-31.28
17	4.767	42.15	PK	.2	.1	42.45	56	-13.55	-	-
18	4.767	27.42	Av	.2	.1	27.72	-	-	46	-18.28
19	6.621	41.38	PK	.2	.1	41.68	60	-18.32	-	-
20	6.621	28.9	Av	.2	.1	29.2	-	-	50	-20.8
21	18.186	46.37	PK	.3	.2	46.87	60	-13.13	-	-
22	18.186	30.66	Av	.3	.2	31.16	-	-	50	-18.84
23	20.3505	45.15	PK	.3	.2	45.65	60	-14.35	-	-
24	20.3505	29.95	Av	.3	.2	30.45	-	-	50	-19.55

PK - Peak detector

Av - average detection

LINE 1 RESULTS



LINE 2 RESULTS

