

APPENDIX 2: Data of EMI test

Radiated Emission below 30MHz (Fundamental and Spurious Emission)

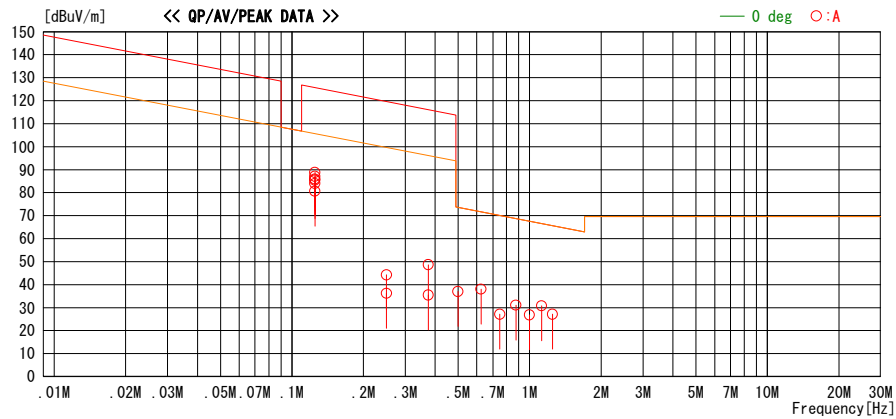
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.3 Semi Anechoic Chamber
Date : 2011/05/30

Report No. : 31BE0219-HO-15
 Temp./ Humi. : 22deg. C / 32% RH
 Engineer : Tomotaka Sasagawa

Mode / Remarks : Tx 125KHz, Worst-axis(ECU:X, ANT:X)

LIMIT : FCC15.209 (a) 3m, 9-90kHz:PK, 110-490kHz:PK, other:QP
 FCC15.209 (a) 3m, 9-90kHz:AV, 110-490kHz:AV, other:QP



| Freq. | Reading | DET | Ant. Fac | Loss | Gain | Result | Limit | Margin | Antenna | Table | Comment |
|---------|---------|------|----------|------|------|----------|----------|--------|---------|-------|---------|
| [MHz] | [dBuV] | | [dB/m] | [dB] | [dB] | [dBuV/m] | [dBuV/m] | [dB] | [deg] | [deg] | |
| 0.12500 | 95.2 | PEAK | 19.9 | 6.0 | 32.2 | 88.9 | 125.7 | 36.8 | 0 | A | 7 |
| 0.12500 | 93.4 | AV | 19.9 | 6.0 | 32.2 | 87.1 | 105.7 | 18.6 | 0 | A | 7 |
| 0.12500 | 92.3 | PEAK | 19.9 | 6.0 | 32.2 | 86.0 | 125.7 | 39.7 | 45 | A | 33 |
| 0.12500 | 90.2 | PEAK | 19.9 | 6.0 | 32.2 | 83.9 | 125.7 | 41.8 | 90 | A | 12 |
| 0.12500 | 91.8 | PEAK | 19.9 | 6.0 | 32.2 | 85.5 | 125.7 | 40.2 | 135 | A | 16 |
| 0.12500 | 86.9 | PEAK | 19.9 | 6.0 | 32.2 | 80.6 | 125.7 | 45.1 | 0 | A | 112 HOR |
| 0.25000 | 18.2 | PEAK | 20.0 | 6.1 | 0.0 | 44.3 | 119.7 | 75.4 | 0 | A | 347 |
| 0.25000 | 10.2 | AV | 20.0 | 6.1 | 0.0 | 36.3 | 99.7 | 63.4 | 0 | A | 347 |
| 0.37500 | 22.7 | PEAK | 19.9 | 6.1 | 0.0 | 48.7 | 116.1 | 67.4 | 0 | A | 347 |
| 0.37500 | 9.5 | AV | 19.9 | 6.1 | 0.0 | 35.5 | 96.1 | 60.6 | 0 | A | 347 |
| 0.50000 | 11.0 | QP | 19.9 | 6.1 | 0.0 | 37.0 | 73.6 | 36.6 | 0 | A | 321 |
| 0.62500 | 12.1 | QP | 19.9 | 6.1 | 0.0 | 38.1 | 71.7 | 33.6 | 0 | A | 89 |
| 0.75000 | 1.2 | QP | 19.9 | 6.1 | 0.0 | 27.2 | 70.1 | 42.9 | 0 | A | 352 |
| 0.87500 | 5.1 | QP | 19.9 | 6.1 | 0.0 | 31.1 | 68.7 | 37.6 | 0 | A | 348 |
| 1.00000 | 0.9 | QP | 19.9 | 6.1 | 0.0 | 26.9 | 67.6 | 40.7 | 0 | A | 2 |
| 1.12500 | 4.8 | QP | 19.9 | 6.1 | 0.0 | 30.8 | 66.5 | 35.7 | 0 | A | 67 |
| 1.25000 | 1.1 | QP | 19.9 | 6.1 | 0.0 | 27.1 | 65.6 | 38.5 | 0 | A | 29 |

CHART: WITH FACTOR, ANT TYPE: LOOP, Except for the data below: adequate margin data below the limits.
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE + ATTEN.) - GAIN AMP.

*The test result is rounded off to one or two decimal places, so some differences might be observed.

Radiated Emission above 30MHz (Spurious Emission)

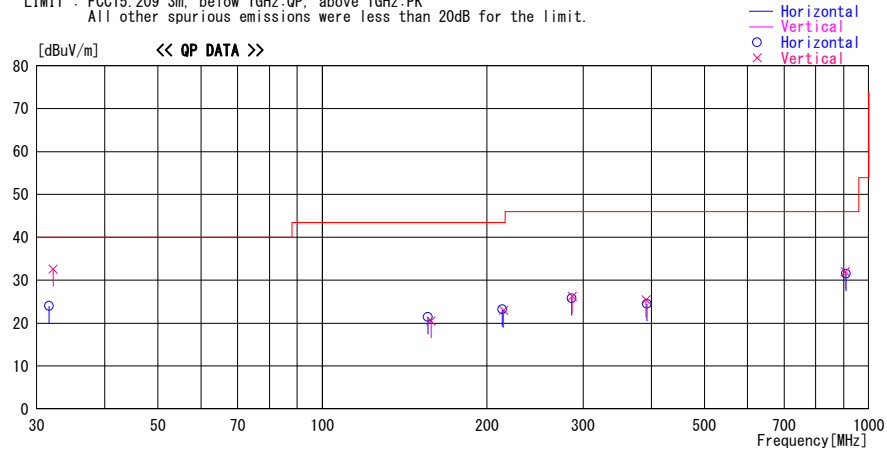
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
 Date : 2011/05/29

Report No. : 31BE0219-HO-15
 Temp. / Humi. : 26deg. C / 32% RH
 Engineer : Tomotaka Sasagawa

Mode / Remarks : Tx 125KHz

LIMIT : FCC15.209 3m, below 1GHz:QP, above 1GHz:PK
 All other spurious emissions were less than 20dB for the limit.



| Frequency [MHz] | Reading [dBuV] | DET | Antenna | Loss& | Level | Angle | Height | Polar. | Limit | Margin | Comment |
|--------------------|-------------------|-----|---------|-------|----------|-------|--------|--------|----------|--------|---------|
| | | | Factor | Gain | | | | | | | |
| | | | [dB/m] | [dB] | [dBuV/m] | [Deg] | [cm] | | [dBuV/m] | [dB] | |
| 31.623 | 40.1 | QP | 17.6 | -33.7 | 24.0 | 186 | 300 | Hori. | 40.0 | 16.0 | |
| 32.164 | 48.9 | QP | 17.4 | -33.7 | 32.6 | 230 | 100 | Vert. | 40.0 | 7.4 | |
| 156.072 | 37.8 | QP | 15.1 | -31.5 | 21.4 | 124 | 300 | Hori. | 43.5 | 22.1 | |
| 158.236 | 36.7 | QP | 15.3 | -31.5 | 20.5 | 291 | 100 | Vert. | 43.5 | 23.0 | |
| 213.426 | 37.4 | QP | 16.6 | -30.8 | 23.2 | 11 | 300 | Hori. | 43.5 | 20.3 | |
| 214.508 | 37.2 | QP | 16.6 | -30.8 | 23.0 | 124 | 100 | Vert. | 43.5 | 20.5 | |
| 285.930 | 37.2 | QP | 18.8 | -30.2 | 25.8 | 310 | 300 | Hori. | 46.0 | 20.2 | |
| 286.472 | 37.5 | QP | 18.9 | -30.2 | 26.2 | 31 | 100 | Vert. | 46.0 | 19.8 | |
| 391.182 | 37.1 | QP | 17.7 | -29.4 | 25.4 | 4 | 100 | Vert. | 46.0 | 20.6 | |
| 392.585 | 36.2 | QP | 17.7 | -29.4 | 24.5 | 63 | 100 | Hori. | 46.0 | 21.5 | |
| 906.019 | 35.6 | QP | 22.5 | -26.1 | 32.0 | 119 | 100 | Vert. | 46.0 | 14.0 | |
| 908.825 | 35.1 | QP | 22.5 | -26.1 | 31.5 | 330 | 100 | Hori. | 46.0 | 14.5 | |

CHART: WITH FACTOR ANT TYPE: -30MHz: LOOP, 30-300MHz: BICONICAL, 300MHz-1000MHz: LOGPERIODIC, 1000MHz-: HORN
 CALCULATION: RESULT = READING + ANT FACTOR + LOSS (CABLE+ATTEN.) - GAIN (AMP)

*The test result is rounded off to one or two decimal places, so some differences might be observed.

-26dB Bandwidth

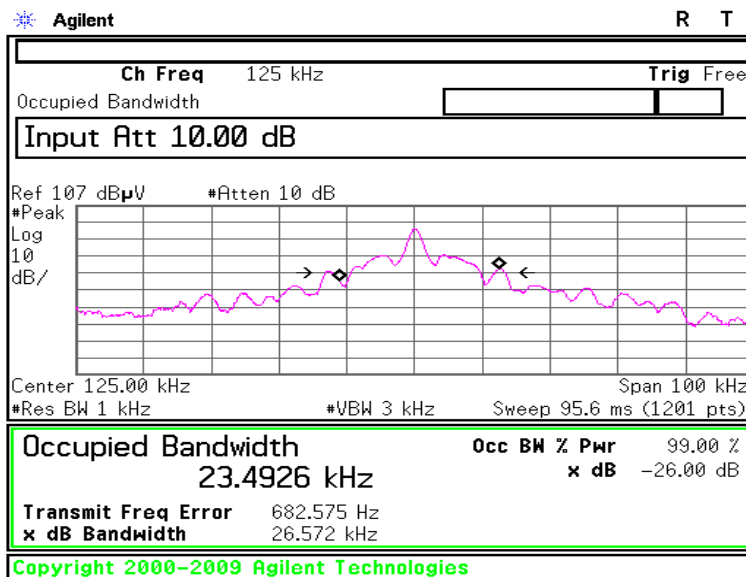
UL Japan, Inc.
 Head Office EMC Lab. No.3 Semi Anechoic Chamber

REPORT NO : 31BE0219-HO-15

TEST DISTANCE : 3m
 DATE : 05/30/2011
 TEMPERATURE : 21 deg.C
 HUMIDITY : 31 % RH
 Engineer : Tomotaka Sasagawa

MODE : Tx

| FREQ | -26dB Bandwidth |
|-------|-----------------|
| [kHz] | [kHz] |
| 125.0 | 26.572 |



APPENDIX 3: Test instruments

EMI test equipment

| Control No. | Instrument | Manufacturer | Model No | Serial No | Test Item | Calibration Date * Interval(month) |
|-------------|----------------------------|---------------------------|---|------------|-----------|---------------------------------------|
| MAEC-01 | Semi Anechoic Chamber(NSA) | TDK | Semi Anechoic Chamber 10m | DA-06881 | RE | 2010/07/02 * 12 |
| MOS-01 | Digital Humidity Indicator | N.T | NT-1800 | MOS01 | RE | 2011/02/23 * 12 |
| MJM-01 | Measure | KDS | ES19-55 | - | RE | - |
| COTS-MEMI | EMI measurement program | TSJ | TEPTO-DV | - | RE | - |
| MTR-01 | Test Receiver | Rohde & Schwarz | ESI40 | 100084 | RE | 2010/12/07 * 12 |
| KBA-05 | Biconical Antenna | Schwarzbeck | BBA9106 | 2513 | RE | 2010/10/15 * 12 |
| KLA-04 | Logperiodic Antenna | Schwarzbeck | USLP9143 | 361 | RE | 2010/10/16 * 12 |
| MAT-08 | Attenuator(6dB) | Weinschel Corp | 2 | BK7971 | RE | 2010/11/05 * 12 |
| MCC-01 | Coaxial Cable 0.1-3000MHz | Suhner/storm/Agilent/T SJ | - | - | RE | 2010/10/14 * 12 |
| MPA-20 | Pre Amplifier | Elena | EPA-4020YA | 030801 | RE | 2011/03/27 * 12 |
| MAEC-03 | Semi Anechoic Chamber(NSA) | TDK | Semi Anechoic Chamber 3m | DA-10005 | RE | 2011/02/22 * 12 |
| MOS-13 | Thermo-Hygrometer | Custom | CTH-180 | - | RE | 2011/02/23 * 12 |
| MJM-06 | Measure | PROMART | SEN1955 | - | RE | - |
| MSA-0 | Spectrum Analyzer | Advantest | R3131A | 101000368 | RE | Pre Check |
| MTR-08 | Test Receiver | Rohde & Schwarz | ESCI | 100767 | RE | 2010/08/23 * 12 |
| MLPA-02 | Loop Antenna | Rohde & Schwarz | HFH2-Z2 | 836553/009 | RE | 2010/12/08 * 12 |
| MCC-112 | Coaxial cable | Fujikura/Suhner/TSJ | 5D-2W(10m)/SFM141(3m)/sucoform141-PE(1m)/421-010(1.5m)/RFM-E321(Switcher) | -/00640 | RE | 2010/07/23 * 12 |
| MCC-31 | Coaxial cable | UL Japan | - | - | RE | 2010/07/20 * 12 |
| MPA-13 | Pre Amplifier | SONOMA INSTRUMENT | 310 | 260834 | RE | 2011/03/04 * 12 |
| MAT-09 | Attenuator(6dB) | Weinschel Corp | 2 | BK7973 | RE | 2010/11/05 * 12 |

The expiration date of the calibration is the end of the expired month.

All equipment is calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

Test Item:

RE: Spurious emission

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