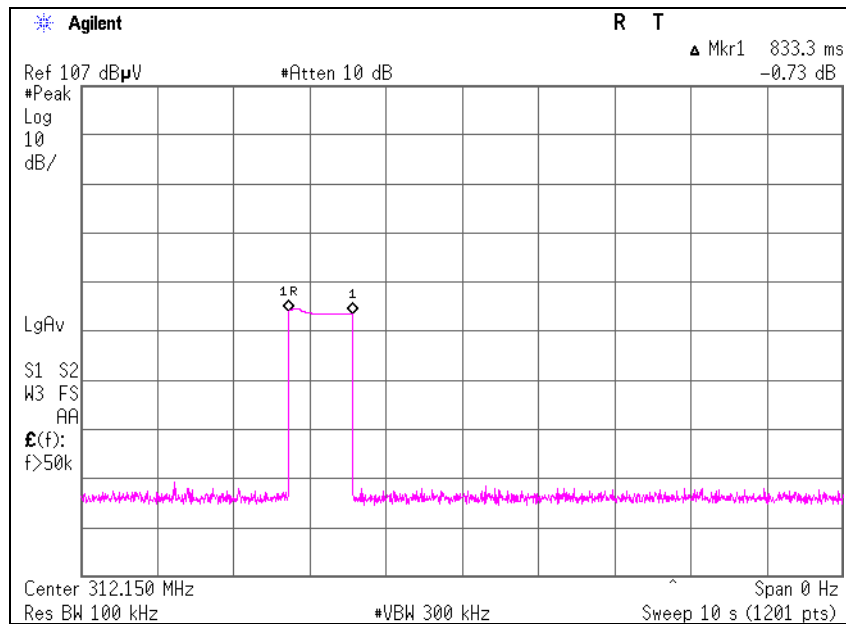


APPENDIX 2: Data of EMI test

Automatically deactivate

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
 Report No. 31BE0178-HO-01
 Date 10/05/2010
 Temperature/ Humidity 23 deg.C./ 63%
 Engineer Hiroyuki Furutaka
 Mode Normal use mode

| Time of Transmitting [sec] | Limit [sec] | Result |
|----------------------------|-------------|--------|
| 0.8333 | 5.00 | Pass |



Radiated Emission (Electric Field Strength of Fundamental and Spurious Emission)

Test place : Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 31BE0178-HO-01
Date : 10/05/2010
Temperature/ Humidity : 23 deg.C./ 63%
Engineer : Hiroyuki Furutaka
Mode : Transmitting mode

PK

| Frequency [MHz] | Detector | Reading [dBuV] | | Ant Factor [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | | Limit dBuV/m | Margin [dB] | | Remark Inside or Outside of Restricted Bands |
|--------------------|----------|-------------------|------|-------------------------|--------------|--------------|------------------------|--------------------|------|-----------------|----------------|------|--|
| | | Hor | Ver | | | | | Hor | Ver | | Hor | Ver | |
| 312.150 | PK | 78.5 | 74.5 | 14.7 | 10.1 | 31.8 | - | 71.5 | 67.5 | 95.4 | 23.9 | 27.9 | Carrier |
| 624.300 | PK | 52.9 | 52.6 | 19.7 | 12.0 | 32.0 | - | 52.6 | 52.3 | 75.4 | 22.8 | 23.1 | Outside |
| 936.450 | PK | 39.7 | 43.7 | 22.7 | 13.5 | 30.8 | - | 45.1 | 49.1 | 75.4 | 30.3 | 26.3 | Outside |
| 1248.600 | PK | 53.8 | 58.2 | 26.0 | 1.9 | 34.4 | - | 47.3 | 51.7 | 75.4 | 28.1 | 23.7 | Outside |
| 1560.750 | PK | 46.2 | 47.1 | 27.1 | 2.1 | 33.6 | - | 41.8 | 42.7 | 73.9 | 32.1 | 31.2 | Inside |
| 1872.900 | PK | 53.0 | 50.8 | 27.9 | 2.3 | 33.0 | - | 50.2 | 48.0 | 75.4 | 25.2 | 27.4 | Outside |
| 2185.050 | PK | 58.9 | 57.9 | 28.0 | 2.5 | 32.6 | - | 56.8 | 55.8 | 75.4 | 18.6 | 19.6 | Outside |
| 2497.200 | PK | 42.3 | 42.2 | 27.6 | 2.7 | 32.4 | - | 40.2 | 40.1 | 73.9 | 33.7 | 33.8 | Inside |
| 2809.350 | PK | 50.4 | 50.0 | 28.6 | 2.9 | 32.2 | - | 49.7 | 49.3 | 73.9 | 24.2 | 24.6 | Inside |
| 3121.500 | PK | 47.6 | 47.4 | 29.3 | 3.1 | 32.1 | - | 47.9 | 47.7 | 75.4 | 27.5 | 27.7 | Outside |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amplifier)

PK with Duty factor

| Frequency [MHz] | Detector | Reading [dBuV] | | Ant Factor [dB/m] | Loss [dB] | Gain [dB] | Duty Factor [dB] | Result [dBuV/m] | | Limit dBuV/m | Margin [dB] | | Remark |
|--------------------|----------|-------------------|------|-------------------------|--------------|--------------|------------------------|--------------------|------|-----------------|----------------|------|---------|
| | | Hor | Ver | | | | | Hor | Ver | | Hor | Ver | |
| 312.150 | PK | 78.5 | 74.5 | 14.7 | 10.1 | 31.8 | -7.3 | 64.2 | 60.2 | 75.4 | 11.2 | 15.2 | Carrier |
| 624.300 | PK | 52.9 | 52.6 | 19.7 | 12.0 | 32.0 | -7.3 | 45.3 | 45.0 | 55.4 | 10.1 | 10.4 | Outside |
| 936.450 | PK | 39.7 | 43.7 | 22.7 | 13.5 | 30.8 | -7.3 | 37.8 | 41.8 | 55.4 | 17.6 | 13.6 | Outside |
| 1248.600 | PK | 53.8 | 58.2 | 26.0 | 1.9 | 34.4 | -7.3 | 40.0 | 44.4 | 55.4 | 15.4 | 11.0 | Outside |
| 1560.750 | PK | 46.2 | 47.1 | 27.1 | 2.1 | 33.6 | -7.3 | 34.5 | 35.4 | 53.9 | 19.4 | 18.5 | Inside |
| 1872.900 | PK | 53.0 | 50.8 | 27.9 | 2.3 | 33.0 | -7.3 | 42.9 | 40.7 | 55.4 | 12.5 | 14.7 | Outside |
| 2185.050 | PK | 58.9 | 57.9 | 28.0 | 2.5 | 32.6 | -7.3 | 49.5 | 48.5 | 55.4 | 5.9 | 6.9 | Outside |
| 2497.200 | PK | 42.3 | 42.2 | 27.6 | 2.7 | 32.4 | -7.3 | 32.9 | 32.8 | 53.9 | 21.0 | 21.1 | Inside |
| 2809.350 | PK | 50.4 | 50.0 | 28.6 | 2.9 | 32.2 | -7.3 | 42.4 | 42.0 | 53.9 | 11.5 | 11.9 | Inside |
| 3121.500 | PK | 47.6 | 47.4 | 29.3 | 3.1 | 32.1 | -7.3 | 40.6 | 40.4 | 55.4 | 14.8 | 15.0 | Outside |

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amplifier) + Duty factor (Refer to Duty factor data sheet)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

- * The test above 1GHz was performed with PK detect. Average emission measurements were calculated with PK detect and Duty cycle factor.
- * Duty Factor was calculated with the assumption of the worst condition in 100msec.
- * The noise measured with PK detect was pulse emission.

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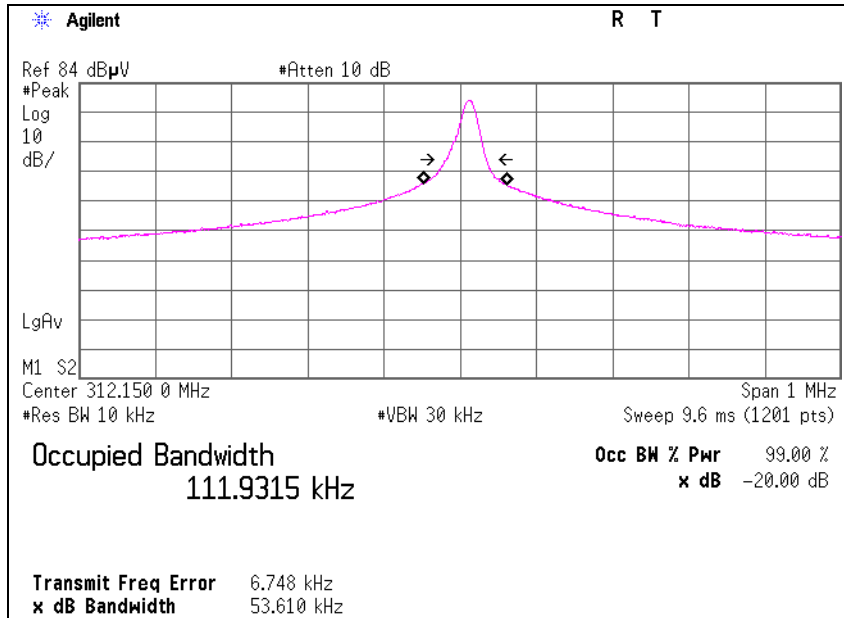
-20dB and 99% Occupied Bandwidth

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
 Report No. 31BE0178-HO-01
 Date 10/05/2010
 Temperature/ Humidity 23 deg.C./ 63%
 Engineer Hiroyuki Furutaka
 Mode Transmitting mode

Bandwidth Limit : Fundamental Frequency $312.15 \text{ MHz} \times 0.25\% = 780.38 \text{ kHz}$

| -20dB Bandwidth [kHz] | Bandwidth Limit [kHz] | Result |
|--------------------------|--------------------------|--------|
| 53.61 | 780.38 | Pass |

| 99% Occupied Bandwidth [kHz] | Bandwidth Limit [kHz] | Result |
|---------------------------------|--------------------------|--------|
| 111.93 | 780.38 | Pass |



Duty Cycle

Test place Head Office EMC Lab. No.3 Semi Anechoic Chamber
Report No. 31BE0178-HO-01
Date 10/05/2010
Temperature/ Humidity 23 deg.C./ 63%
Engineer Hiroyuki Furutaka
Mode Normal use mode

| Type | Times | ON time(One pulse) [ms] | ON time(in 30ms) [ms] | ON time(in 100ms) [ms] |
|------|-------|----------------------------|--------------------------|---------------------------|
| A | 7 | 0.7333 | 5.133 | 17.110 |
| B | 23 | 0.3367 | 7.744 | 25.814 |

*1)ON time(in 100ms) = Times * ON time(One pulse)

*2)The train of pulses was exceeding 100msec, and that sampled 100msec was the worst case against the pulse train.

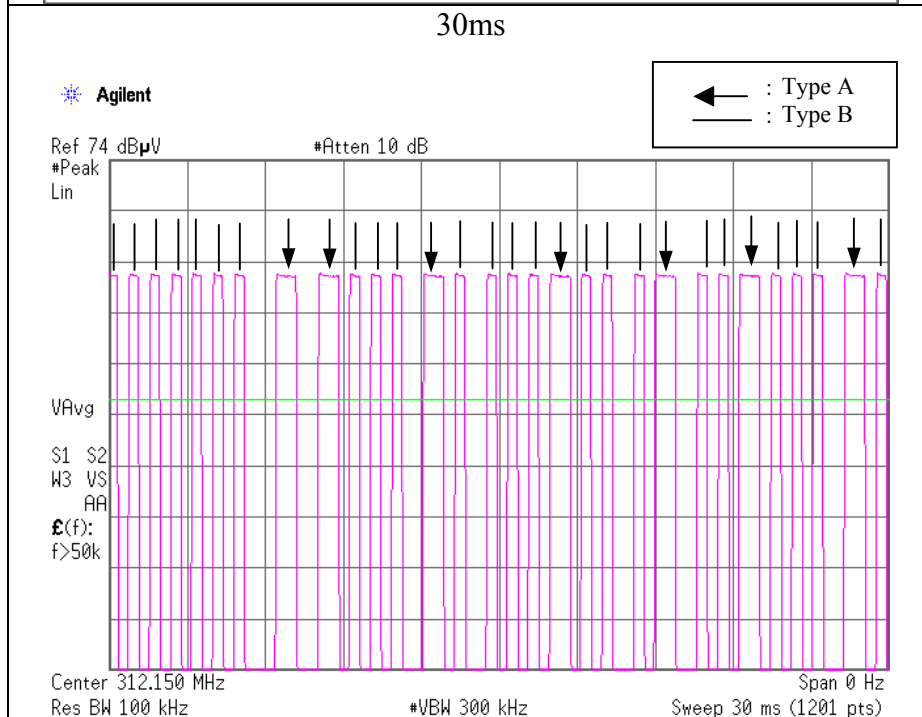
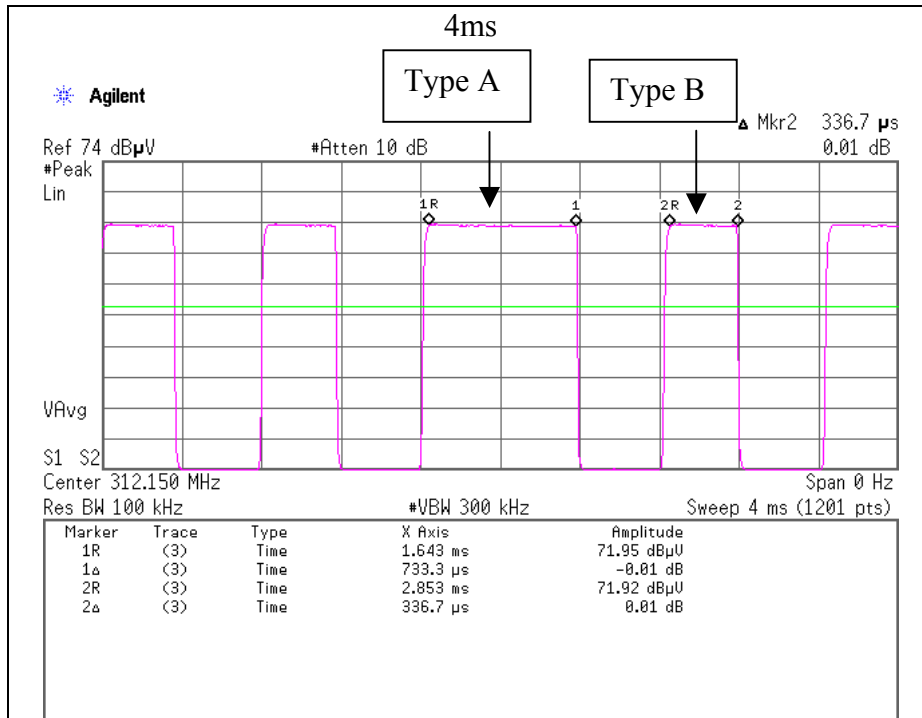
(Total)

| ON time [ms] | Cycle [ms] | Duty (On time/Cycle) | Duty [dB] |
|-----------------|---------------|-------------------------|--------------|
| 42.92 | 100.00 | 0.4292 | -7.3 |

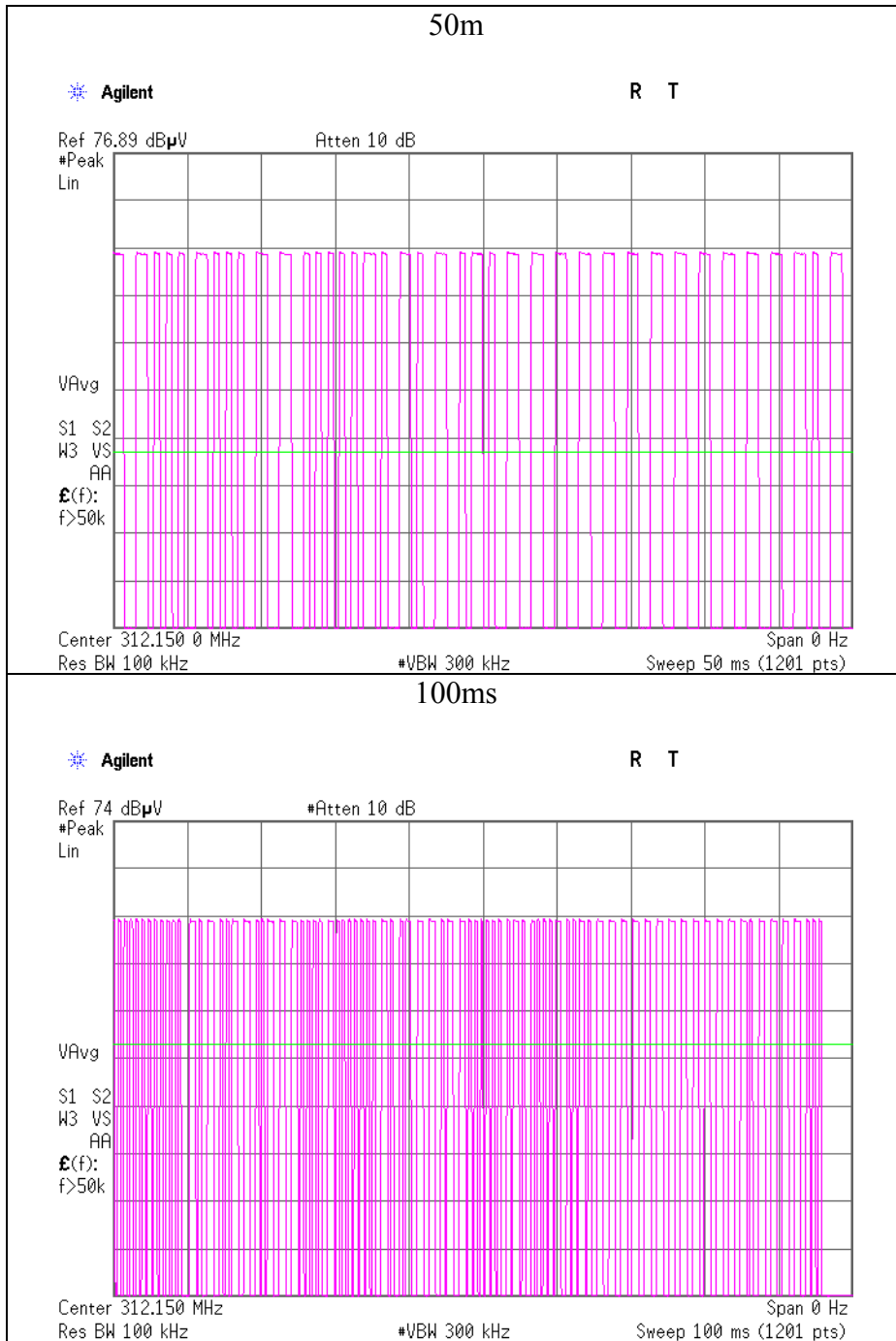
*3)ON time = Type A's ON time (in 100ms) + Type B's ON time (in 100ms)

*4)Duty = $20\log_{10}(\text{ON time/Cycle})$

Duty Cycle



Duty Cycle



APPENDIX 3:Test Instruments

EMI test equipment

| Control No. | Instrument | Manufacturer | Model No | Serial No | Test Item | Calibration Date * Interval(month) |
|--------------------|----------------------------|---------------------|--------------------------|----------------------------|------------------|---|
| MAEC-03 | Semi Anechoic Chamber(NSA) | TDK | Semi Anechoic Chamber 3m | DA-10005 | RE | 2010/02/01 * 12 |
| MOS-13 | Thermo-Hygrometer | Custom | CTH-180 | - | RE | 2010/02/09 * 12 |
| MJM-06 | Measure | PROMART | SEN1955 | - | RE | - |
| COTS-MEMI | EMI measurement program | TSJ | TEPTO-DV | - | RE | - |
| MSA-03 | Spectrum Analyzer | Agilent | E4448A | MY44020357 | RE | 2009/11/20 * 12 |
| MTR-08 | Test Receiver | Rohde & Schwarz | ESCI | 100767 | RE | 2010/08/23 * 12 |
| MBA-03 | Biconical Antenna | Schwarzbeck | BBA9106 | 1915 | RE | 2010/01/23 * 12 |
| MLA-03 | Logperiodic Antenna | Schwarzbeck | USLP9143 | 174 | RE | 2010/01/23 * 12 |
| MCC-51 | Coaxial cable | UL Japan | - | - | RE | 2010/07/06 * 12 |
| MAT-09 | Attenuator(6dB) | Weinschel Corp | 2 | BK7973 | RE | 2009/11/12 * 12 |
| MPA-13 | Pre Amplifier | SONOMA INSTRUMENT | 310 | 260834 | RE | 2010/03/23 * 12 |
| MHA-20 | Horn Antenna 1-18GHz | Schwarzbeck | BBHA9120D | 258 | RE | 2010/05/07 * 12 |
| MCC-56 | Microwave Cable | Suhner | SUCOFLEX104 | 174410(1m) / 284655(5m) | RE | 2010/01/25 * 12 |
| MPA-11 | MicroWave System Amplifier | Agilent | 83017A | MY39500779 | RE | 2010/03/03 * 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: Radiated emission, 99% Occupied Bandwidth, -20dB bandwidth , Automatically deactivate and Duty cycle tests

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