

Radiated Emission below 30MHz (Fundamental and Spurious Emission)
Door Antenna

DATA OF RADIATED EMISSION TEST

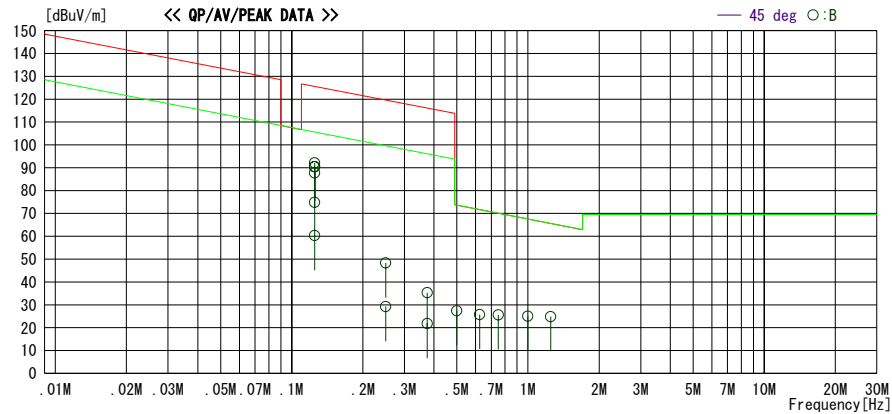
UL Japan, Inc. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
Date : 2009/12/08

Report No. : 30EE0020-HO-01

Temp. / Humi. : 22deg. C / 26%
Engineer : Tomohisa Nakagawa

Mode / Remarks : Tx 125kHz, Modulation ON,

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	92.6	PEAK	20.0	12.0	32.4	92.2	125.6	33.4	0	B	283
0.12500	90.8	PEAK	20.0	12.0	32.4	90.4	125.6	35.2	45	B	247
0.12500	88.1	PEAK	20.0	12.0	32.4	87.7	125.6	37.9	90	B	207
0.12500	90.8	PEAK	20.0	12.0	32.4	90.4	125.6	35.2	135	B	324
0.12500	75.3	PEAK	20.0	12.0	32.4	74.9	125.6	50.7	0	B	180
0.12500	60.7	AV	20.0	12.0	32.4	60.3	105.7	45.4	0	B	283
0.25000	29.7	AV	19.9	12.0	32.3	29.3	99.6	70.3	0	B	243
0.25000	48.8	PEAK	19.9	12.0	32.3	48.4	119.6	71.2	0	B	243
0.37500	22.3	AV	19.8	12.0	32.2	21.9	96.1	74.2	0	B	0 NS
0.37500	35.7	PEAK	19.8	12.0	32.2	35.3	116.1	80.8	0	B	0 NS
0.50000	27.8	QP	19.8	12.0	32.2	27.4	73.6	46.2	0	B	0 NS
0.62500	26.1	QP	19.8	12.1	32.2	25.8	71.7	45.9	0	B	0 NS
0.75000	25.9	QP	19.8	12.1	32.2	25.6	70.1	44.5	0	B	0 NS
1.00000	25.3	QP	19.8	12.1	32.2	25.0	67.6	42.6	0	B	0 NS
1.25000	25.2	QP	19.8	12.1	32.2	24.9	65.6	40.7	0	B	0 NS

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

NS: No detected signal

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

Radiated Emission above 30MHz (Spurious Emission)
Room Antenna

DATA OF RADIATED EMISSION TEST

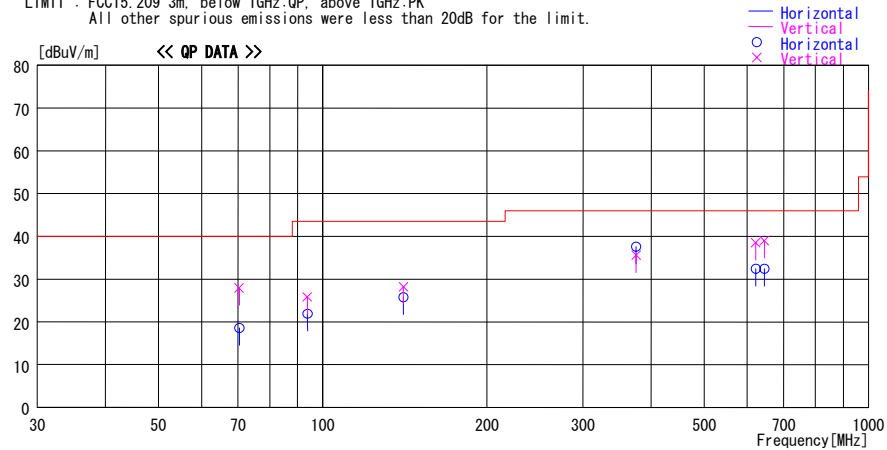
UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2009/12/09

Report No. : 30EE0020-HO-01

Temp./Humi. : 22deg.C / 30%
Engineer : Katsunori Okai

Mode / Remarks : Tx 125kHz, Modulation ON

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		Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Gain [dB]							
70.369	42.2	QP	7.0	-21.3	27.9	189	100	Vert.	40.0	12.1	
70.370	32.9	QP	7.0	-21.3	18.6	218	177	Hori.	40.0	21.4	
93.825	33.6	QP	9.4	-21.1	21.9	284	246	Hori.	43.5	21.6	
93.826	37.5	QP	9.4	-21.1	25.8	154	100	Vert.	43.5	17.7	
140.737	31.2	QP	15.1	-20.5	25.8	238	239	Hori.	43.5	17.7	
140.738	33.6	QP	15.1	-20.5	28.2	212	100	Vert.	43.5	15.3	
375.299	39.3	QP	17.2	-18.9	37.6	83	100	Hori.	46.0	8.4	
375.299	37.3	QP	17.2	-18.9	35.6	146	100	Vert.	46.0	10.4	
621.589	30.5	QP	20.3	-18.4	32.4	134	198	Hori.	46.0	13.6	
621.591	36.6	QP	20.3	-18.4	38.5	154	100	Vert.	46.0	7.5	
645.045	36.7	QP	20.6	-18.3	39.0	156	100	Vert.	46.0	7.0	
645.046	30.1	QP	20.6	-18.3	32.4	152	176	Hori.	46.0	13.6	

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.

Radiated Emission above 30MHz (Spurious Emission)
Door Antenna

DATA OF RADIATED EMISSION TEST

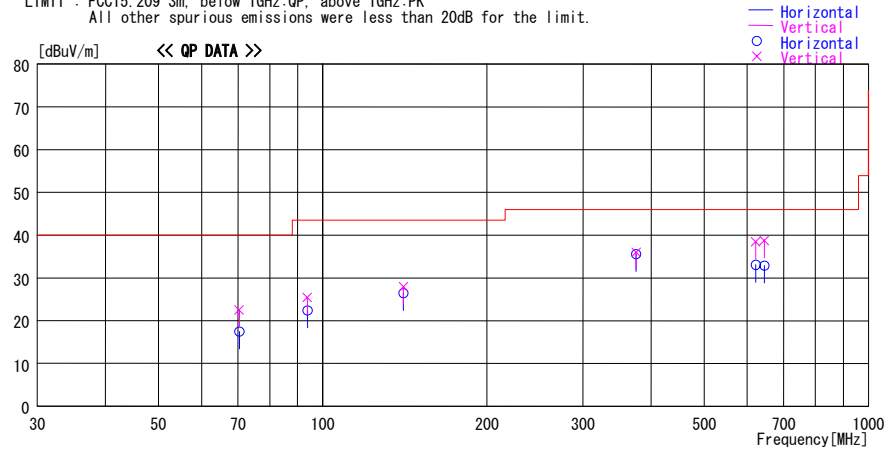
UL Japan, Inc. Head Office EMC Lab. No.2 Semi Anechoic Chamber
Date : 2009/12/09

Report No. : 30EE0020-HO-01

Temp./Humi. : 22deg. C / 30%
Engineer : Katsunori Okai

Mode / Remarks : Tx 125kHz, Modulation ON

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 [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Gain [dB]							
70.369	31.8	QP	7.0	-21.3	17.5	221	212	Hori.	40.0	22.5	
70.370	36.8	QP	7.0	-21.3	22.5	85	100	Vert.	40.0	17.5	
93.825	37.1	QP	9.4	-21.1	25.4	144	100	Vert.	43.5	18.1	
93.826	34.1	QP	9.4	-21.1	22.4	252	312	Hori.	43.5	21.1	
140.737	31.8	QP	15.1	-20.5	26.4	276	207	Hori.	43.5	17.1	
140.737	33.3	QP	15.1	-20.5	27.9	209	100	Vert.	43.5	15.6	
375.299	37.7	QP	17.2	-18.9	36.0	158	100	Vert.	46.0	10.0	
375.299	37.3	QP	17.2	-18.9	35.6	84	100	Hori.	46.0	10.4	
621.589	31.2	QP	20.3	-18.4	33.1	127	143	Hori.	46.0	12.9	
621.589	36.5	QP	20.3	-18.4	38.4	154	100	Vert.	46.0	7.6	
645.045	36.4	QP	20.6	-18.3	38.7	170	100	Vert.	46.0	7.3	
645.046	30.6	QP	20.6	-18.3	32.9	121	203	Hori.	46.0	13.1	

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.

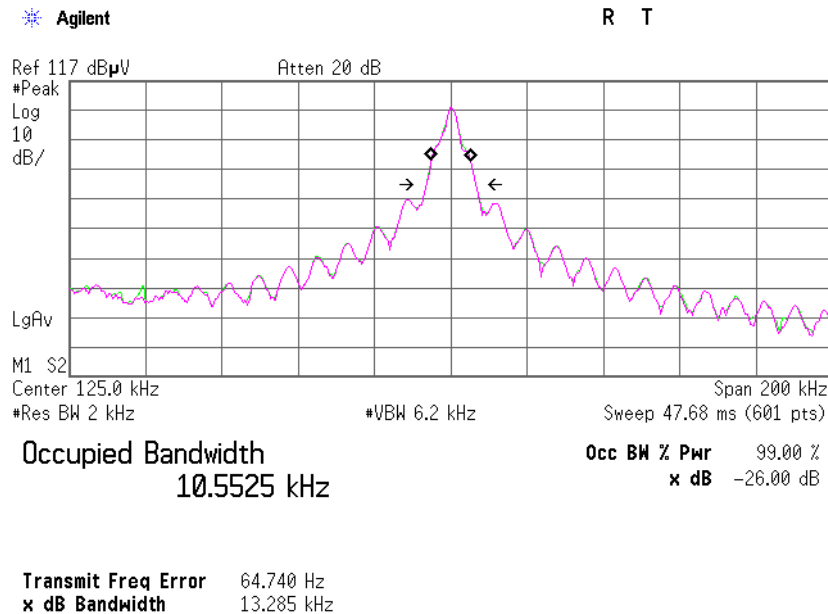
-26dB Bandwidth and 99% Occupied Bandwidth **Room Antenna**

UL Japan, Inc.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY	: Calsonic Kansei Corporation	REPORT NO	: 30EE0020-HO-01
EQUIPMENT	: BCM SYSTEM	REGULATION	: Reference data
MODEL	: BN009	TEST DISTANCE	: 3m
S/ N	: 001	DATE	: 12/08/2009
POWER	: DC 12V	TEMPERATURE	: 22 deg.C
MODE	: Tx	HUMIDITY	: 26 %
		ENGINEER	: Tomohisa Nakagawa

FREQ	-26dB Bandwidth
[kHz]	[kHz]
125.0	13.285

FREQ	99% Occupied Bandwidth
[kHz]	[kHz]
125.0	10.553



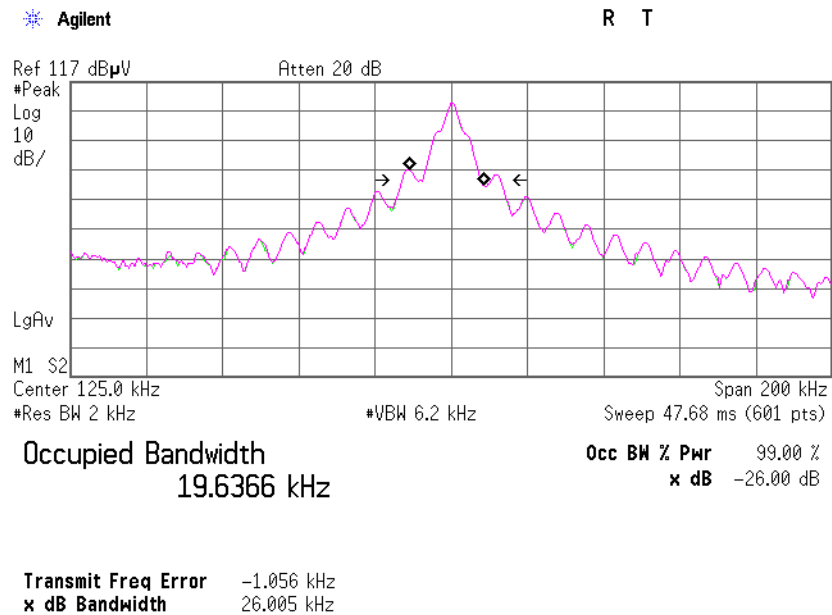
-26dB Bandwidth and 99% Occupied Bandwidth
Door Antenna

UL Japan, Inc.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY	: Calsonic Kansei Corporation	REPORT NO	: 30EE0020-HO-01
EQUIPMENT	: BCM SYSTEM	REGULATION	: Reference data
MODEL	: BN009	TEST DISTANCE	: 3m
S/ N	: 001	DATE	: 12/08/2009
POWER	: DC 12V	TEMPERATURE	: 22 deg.C
MODE	: Tx	HUMIDITY	: 26 %
		ENGINEER	: Tomohisa Nakagawa

FREQ	-26dB Bandwidth
[kHz]	[kHz]
125.0	26.005

FREQ	99% Occupied Bandwidth
[kHz]	[kHz]
125.0	19.637



APPENDIX 3: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-02	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	RE	2009/08/17 * 12
MOS-22	Thermo-Hygrometer	Custom	CTH-201	0003	RE	2009/02/05 * 12
MJM-05	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-03	Test Receiver	Rohde & Schwarz	ESCI	100300	RE	2009/04/14 * 12
MLPA-02	Loop Antenna	Rohde & Schwarz	HFH2-Z2	836553/009	RE	2009/11/19 * 12
MCC-13	Coaxial Cable	Fujikura	3D-2W(12m)/5D-2W(5m)/5D-2W(0.8m)/5D-2W(1m)	-	RE	2009/02/16 * 12
MCC-31	Coaxial cable	UL Japan	-	-	RE	2009/06/22 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2009/03/18 * 12
MAT-09	Attenuator(6dB)	Weinschel Corp	2	BK7973	RE	2009/11/12 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	BK7970	RE	2009/11/12 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	VHA91032008	RE	2009/10/05 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	201	RE	2009/10/05 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	-	RE	2009/02/16 * 12
MPA-09	Pre Amplifier	Agilent	8447D	2944A10845	RE	2009/09/02 * 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

UL Japan, Inc.

Head Office EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN

Telephone : +81 596 24 8116

Facsimile : +81 596 24 8124