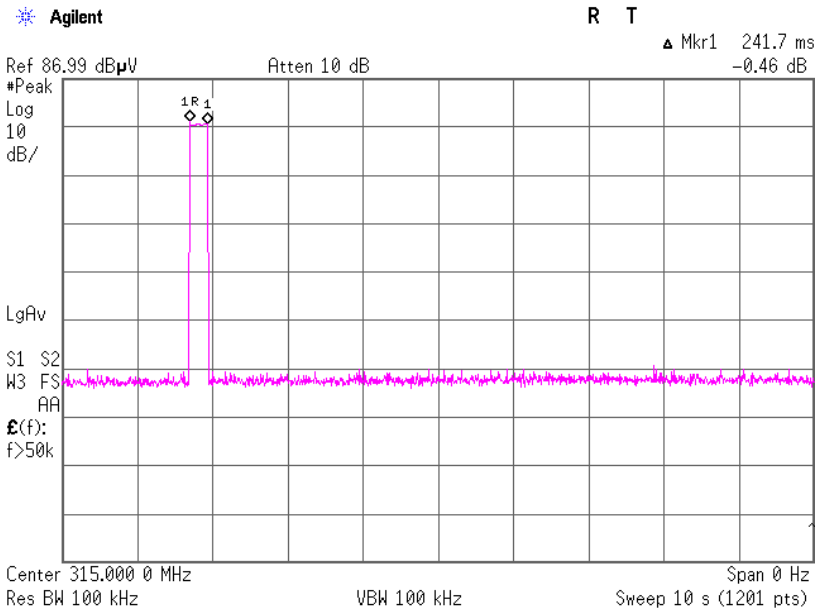
APPENDIX 2: Data of EMI test

Automatically deactivate

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

COMPANY	: Mitsubishi Electric Corporation Himeji Works	REGULATION	: FCC15.231(a)(1)
EQUIPMENT	: SMART KEYLESS SYSTEM (TRANSMITTER)	TEST DISTANCE	: -
MODEL	: SKE11A-03	DATE	: 05/16/2008
S/N	: 20080424-02	TEMPERATURE	: 25 deg.C.
POWER	: DC 3.0V (CR2025)	HUMIDITY	: 44%
Mode	: Normal use mode	ENGINEER	: Akio Hayashi
Axis	: -		

Time of Transmitting [sec]	Limit [sec]	Result
0.24	5.00	Pass



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

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

COMPANY	: Mitsubishi Electric Coporation Himeji Works	REPORT NO	: 28IE0193-HO-01
EQUIPMENT	: SMART KEYLESS SYSTEM (TRANSMITTER)	REGULATION	: FCC Part15 Subpart C 15.231(b) / 15.205 / 15.209
MODEL	: SKE11A-03	TEST DISTANCE	: 3m
S/N	: 20080424-01	DATE	: 05/09/2008
POWER	: DC 3.0V (CR2025)	TEMPERATURE	: 22 deg.C.
Mode	: Transmitting mode	HUMIDITY	: 50%
EUT Axis	: Hor.: X-axis , Ver.: Z-axis	ENGINEER	: Takumi Shimada

PK DETECT

No.	FREQ	T/R READING		ANT	AMP	LOSS	Duty	RESULT		Limit	MARGIN	
		HOR	VER	Factor	GAIN		Factor	HOR	VER		HOR	VER
	[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]		[dBuV/m]	[dB]	[dB]
1	315.00	82.2	78.6	15.0	32.0	10.0	-	75.2	71.6	75.6	0.4	4.0
2	630.00	25.7	31.7	19.4	32.0	11.9	-	25.0	31.0	55.6	30.6	24.6
3	945.00	36.2	32.4	22.2	30.8	13.4	-	41.0	37.2	55.6	14.6	18.4

PK DETECT (RBW: 1MHz , VBW: 1MHz) (Inside Restricted bands)

No.	FREQ	S/A READING		ANT	AMP	LOSS	Duty	RESULT		Limit	MARGIN	
		HOR	VER	Factor	GAIN		Factor	HOR	VER		HOR	VER
	[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]		[dBuV/m]	[dB]	[dB]
5	1575.00	53.9	57.0	25.7	33.8	2.3	-	48.1	51.2	53.9	5.8	2.7
7	2205.00	53.1	52.5	26.3	32.9	2.6	-	49.1	48.5	53.9	4.8	5.4
9	2835.00	42.8	44.6	27.6	32.6	2.9	-	40.7	42.5	53.9	13.2	11.4

PK DETECT Result = Reading (RBW: 1MHz , VBW: 1MHz) (Outside Restricted bands)

No.	FREQ	S/A READING		ANT	AMP	LOSS	Duty	RESULT		Limit	MARGIN	
		HOR	VER	Factor	GAIN		Factor	HOR	VER		HOR	VER
	[MHz]	[dBuV]		[dB/m]	[dB]	[dB]	[dB]	[dBuV/m]		[dBuV/m]	[dB]	[dB]
4	1260.00	45.4	52.9	25.0	34.6	2.1	-	37.9	45.4	55.6	17.7	10.2
6	1890.00	46.8	48.2	25.8	33.2	2.4	-	41.8	43.2	55.6	13.8	12.4
8	2520.00	51.2	50.1	27.0	32.8	2.7	-	48.1	47.0	55.6	7.5	8.6
10	3150.00	52.9	52.3	28.2	32.4	3.0	-	51.7	51.1	55.6	3.9	4.5

REMARKS ANTENNA TYPE:30-300MHz Biconical / 300-1000MHz Logperiodic / 1-3.2GHz Horn

CALCULATION RESULT=Reading + ANT Factor - Amp Gain + LOSS (Cable+ ATTEN.)

* The tests below and above 1GHz were performed with PK DETECT.
* Applying the limit of AV to the PK data, there were some margin and it was adopted.
* The result is rounded off to the second decimal place, so some differences might be observed.
*The limit was converted from V to dBuV, and it is rounded off to the second decimal place.
*Except for the above table : All other spurious emissions were less than 20dB for the limit.

The carrier level (or, noise levels) was (or were) measured at each position of all three axes X, Y and Z,
and the position that has the maximum noise was determined. With the position, the noise levels of all the frequencies was measured.

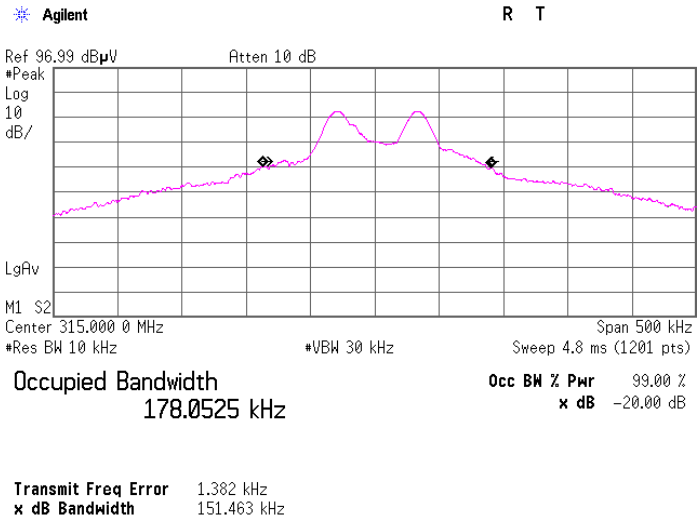
-20dB Bandwidth

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

COMPANY	: Mitsubishi Electric Corporation Himeji Works	REGULATION	: FCC15.231(c)
EQUIPMENT	: SMART KEYLESS SYSTEM (TRANSMITTER)	TEST DISTANCE	: -
MODEL	: SKE11A-03	DATE	: 05/16/2008
S/N	: 20080424-01	TEMPERATURE	: 25 deg.C.
POWER	: DC 3.0V (CR2025)	HUMIDITY	: 44%
Mode	: Transmitting mode	ENGINEER	: Akio Hayashi
Axis	: X-axis		

Bandwidth Limit : Fundamental Frequency 315 MHz X 0.25% = 787.50 kHz

-20dB Bandwidth [kHz]	Bandwidth Limit [kHz]	Result
151.46	787.50	Pass



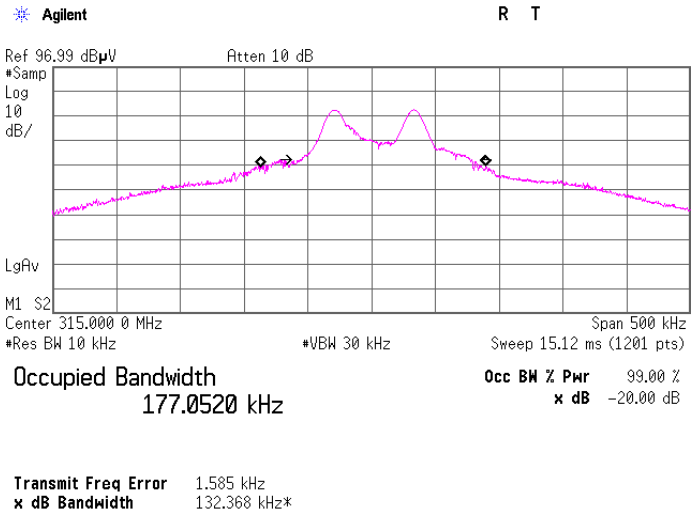
99% Occupied Bandwidth

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

COMPANY	: Mitsubishi Electric Corporation Himeji Works	REGULATION	: RSS-210 A1.1.3
EQUIPMENT	: SMART KEYLESS SYSTEM (TRANSMITTER)	DATE	: 05/16/2008
MODEL	: SKE11A-03	TEMPERATURE	: 25 deg.C.
S/N	: 20080424-01	HUMIDITY	: 44%
POWER	: DC 3.0V (CR2025)	ENGINEER	: Akio Hayashi
Mode	: Transmitting mode		
Axis	: X-axis		

Bandwidth Limit : Fundamental Frequency 315 MHz X 0.25% = 787.50 kHz

99% Occupied Bandwidth [kHz]	Bandwidth Limit [kHz]	Result
177.05	787.50	Pass



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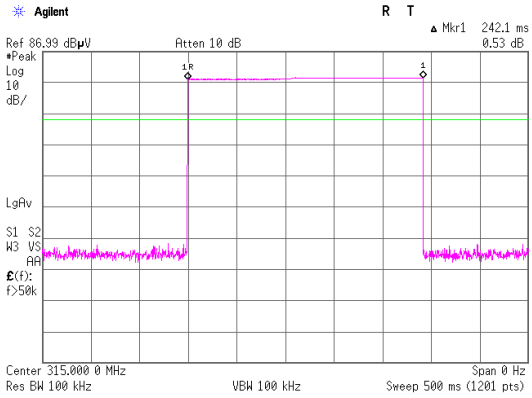
Duty Cycle(Fundamental)

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

COMPANY	: Mitsubishi Electric Corporation Himeji Works	REGULATION	: FCC 15.231(b) / 15.35(c)
EQUIPMENT	: SMART KEYLESS SYSTEM (TRANSMITTER)	TEST DISTANCE	: -
MODEL	: SKE11A-03	DATE	: 05/16/2008
S/N	: 20080424-02	TEMPERATURE	: 25 deg.C
POWER	: DC 3.0V (CR2025)	HUMIDITY	: 44%
Mode	: Normal use mode	ENGINEER	: Akio Hayashi

ON time [ms]	Cycle [ms]	Duty (On time/Cycle)	Duty [dB]
100.00	100.00	1.00	0.0

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



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Receiver Spurious Emission

DATA OF RADIATED EMISSION TEST

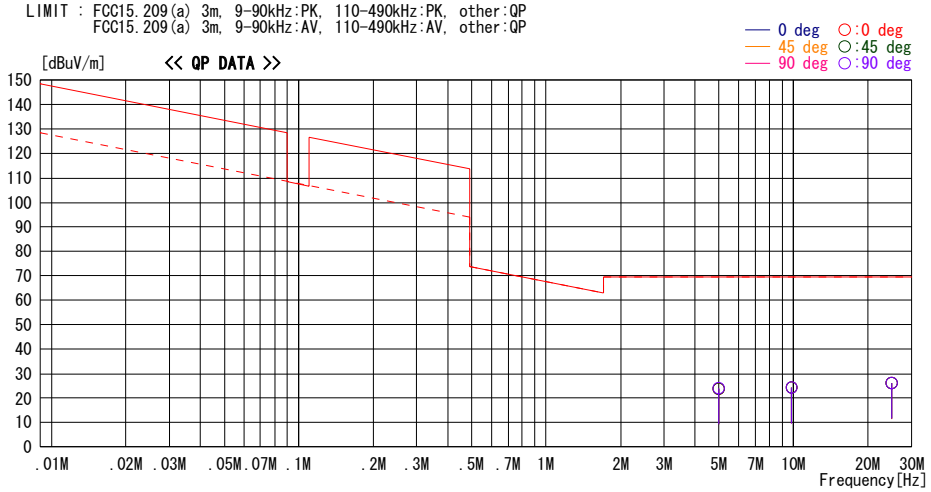
UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2008/05/19

Company : Mitsubishi Electric Corporation
Kind of EUT : SMART KEYLESS SYSTEM (TRANSMITTER)
Model No. : SKE11A-03
Serial No. : 20080424-02

Report No. : 28IE0193-HO-01
Power : DC 3V
Temp. / Humi. : 23deg.C / 53%
Operator : Takumi Shimada

Mode / Remarks : LF Receiving Mode

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. [MHz]	Reading [dBuV]	DET	Ant.Fac [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Antenna	Table [deg]
5.00000	41.3	QP	20.2	0.7	38.2	24.0	69.5	45.5	0deg	0
5.00000	41.3	QP	20.2	0.7	38.2	24.0	69.5	45.5	45deg	0
5.00000	41.4	QP	20.2	0.7	38.2	24.1	69.5	45.4	90deg	0
9.84375	41.2	QP	20.3	1.0	38.2	24.3	69.5	45.2	0deg	0
9.84375	41.4	QP	20.3	1.0	38.2	24.5	69.5	45.0	45deg	0
9.84375	41.2	QP	20.3	1.0	38.2	24.3	69.5	45.2	90deg	0
25.00000	41.7	QP	21.0	1.7	38.2	26.2	69.5	43.3	0deg	0
25.00000	41.8	QP	21.0	1.7	38.2	26.3	69.5	43.2	45deg	0
25.00000	41.8	QP	21.0	1.7	38.2	26.3	69.5	43.2	90deg	0

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

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

Receiver Spurious Emission

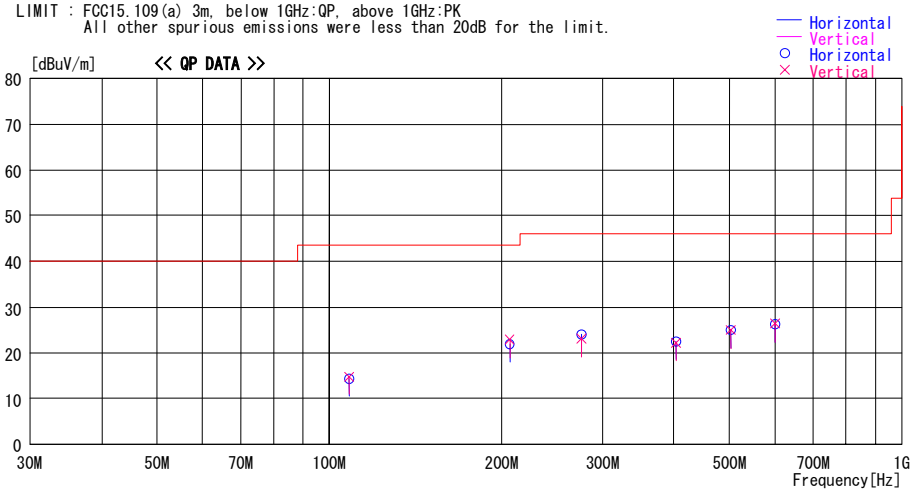
DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2008/05/19

Company	: Mitsubishi Electric Corporation Himeji Works	Report No.	: 28IE0193-HO-01
Kind of EUT	: SMART KEYLESS SYSTEM(TRANSMITTER)	Power	: DC 3V
Model No.	: SKE11A-03	Temp./Humi.	: 23deg.C. / 53%
Serial No.	: 20080424-02	Operator	: Takumi Shimada

Mode / Remarks : LF Receiving mode

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK
All other spurious emissions were less than 20dB for the limit.



Frequency	Reading	DET	Antenna Factor	Loss& Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBuV]		[dB/m]	[dB]	[dBuV/m]	[Deg]	[cm]		[dBuV/m]	[dB]
108.281	23.0	QP	10.8	-19.4	14.4	0	300	Hori.	43.5	29.1
108.281	23.4	QP	10.8	-19.4	14.8	0	100	Vert.	43.5	28.7
206.719	23.1	QP	16.7	-17.8	22.0	0	300	Hori.	43.5	21.5
206.719	24.0	QP	16.7	-17.8	22.9	0	100	Vert.	43.5	20.6
275.625	22.4	QP	18.6	-16.9	24.1	0	300	Hori.	46.0	21.9
275.625	21.5	QP	18.6	-16.9	23.2	0	100	Vert.	46.0	22.8
403.594	22.3	QP	16.7	-16.5	22.5	359	100	Hori.	46.0	23.5
403.594	22.1	QP	16.7	-16.5	22.3	359	100	Vert.	46.0	23.8
502.031	23.1	QP	18.2	-16.2	25.1	359	100	Hori.	46.0	20.9
502.031	23.0	QP	18.2	-16.2	25.0	359	100	Vert.	46.0	21.0
600.469	22.8	QP	19.2	-15.7	26.3	359	100	Hori.	46.0	19.7
600.469	22.9	QP	19.2	-15.7	26.4	359	100	Vert.	46.0	19.6

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.

APPENDIX 3:Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-03	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE	2008/03/25 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	RE	2008/01/10 * 12
MJM-06	Measure	PROMART	SEN1955	RE	-
MSTW-14	EMI measurement program	TSJ	TEPTO-DV	RE	-
MSA-04	Spectrum Analyzer	Agilent	E4448A	RE	2007/06/20 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	RE	2008/02/20 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	RE	2008/01/12 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2008/01/12 * 12
MCC-51	Coaxial cable	UL Japan	-	RE	2007/07/26 * 12
MAT-30	Attenuator(6dB)	TME	UFA-01	RE	2008/03/10 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	RE	2008/03/06 * 12
MCC-56	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	RE	2008/03/12 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	RE	2008/03/13 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	RE	2008/04/23 * 12
MRENT-67	Spectrum Analyzer	Agilent	E4448A	RE	2008/04/02 * 12
MAEC-01	Anechoic Chamber	TDK	Semi Anechoic Chamber 10m	RE	2007/11/23 * 12
MLPA-01	Loop Antenna	Rohde & Schwarz	HFH2-Z2	RE	2007/11/06 * 12
MCC-30	Coaxial cable	UL Japan	-	RE	2007/06/04 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/Agilent/TSJ	-	RE	2007/12/27 * 12
MPA-19	Pre Amplifier	MITEQ	MLA-10K01-B01-35	RE	2008/02/13 * 12
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	RE	2007/10/19 * 12
MOS-01	Digital Humidity Indicator	N.T	NT-1800	RE	2007/11/12 * 12
MJM-01	Measure	KDS	ES19-55	RE	-
MBA-01	Biconical Antenna	Schwarzbeck	BBA9106	RE	2007/10/21 * 12
MLA-09	Logperiodic Antenna	Schwarzbeck	USLP9143B	RE	2008/01/12 * 12
MAT-06	Attenuator(6dB)	Weinschel Corp	2	RE	2007/11/14 * 12
MCC-01	Coaxial Cable 0.1-3000MHz	Suhner/storm/Agilent/TSJ	-	RE	2008/02/29 * 12
MPA-04	Pre Amplifier	Agilent	8447D	RE	2007/07/11 * 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