

EMI TEST REPORT

Test Report No. : 25BE0108-HO-3

Applicant : Calsonic Kansei Corp.
Type of Equipment : Control Unit of Smart Keyless Entry System
Model No. : S64J3
Test standard : FCC Part 15 Subpart C : 2004
Section 15.209 (Certification)
FCC Part 15 Subpart B : 2004
Section 15.109 (Declaration of Conformity)
FCC ID : KBR64J3
Test Result : Complied

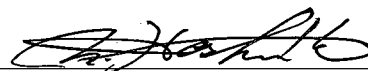
1. This test report shall not be reproduced in full or partial, without the written approval of UL Apex Co., Ltd.
2. The results in this report apply only to the sample tested.
3. This equipment is in compliance with above regulation. We hereby certify that the data contain a true representation of the EMC profile.
4. The test results in this report are traceable to the national or international standards.

Date of test:

December 20, 21, 2004, and January 7, 2005

Tested by:


Kenichi Adachi
EMC Service


Norihisa Hashimoto
EMC Service

Approved by :


Naoki Sakamoto
Group Leader of
EMC Service

UL Apex Co., Ltd.

Head Office EMC Lab.

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MF060b(10.04.03)

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SECTION 1: Client information

Company Name : Calsonic Kansei Corp.
Address : 8 Sakae-cho Sano-shi Tochigi, 327-0816 Japan
Telephone Number : +81-283-21-8409
Facsimile Number : +81-283-21-8547
Contact Person : Kenichiro Kobayashi

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Control Unit of Smart Keyless Entry System
Model No. : S64J3
Sample No. : 5
Country of Manufacture : Japan
Rating : DC12V
Receipt Date of Sample : October 4, 2004
Condition of EUT : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)

2.2 Product Description

Clock frequency	CPU: 4.007MHz
Equipment Type <Transmitter>	Transmitter
Type of modulation	Pulse Width Modulation
Frequency of Operation	125kHz
Antenna Type	Bar Antenna
Method of frequency generation	Crystal
Operating voltage (Inner)	DC12V
Operating frequency range	-30 to +80deg.C.
Equipment Type <Receiver>	Super Heterodyne
Frequency of Operation	315MHz
Intermediate frequency	10.7MHz
Antenna Type	Inverted-F
Method of frequency generation	Crystal
Operating voltage (Inner)	DC12V

FCC 15.31 (e)

This test was performed with the New Battery.

The power supply of this EUT is transformed by ECU and provides stable voltage(DC5.0V) constantly to Radio part. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

Bar Antenna (Tx section) is installed inside the vehicle door and the trunk and users cannot detach it from vehicle. Therefore, the equipment complies with the antenna requirement of Section 15.203.

FCC Part 15.111(b)

The receiving antenna is installed on the EUT, which is unremovable. Therefore, this EUT complies with the requirement in Section FCC Part 15.111(b).

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C : 2004
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.209 Radiated emission limits, general requirements.
Test Specification : FCC Part 15 Subpart B : 2004
Title : FCC 47CFR Part15 Radio Frequency Device
Subpart B Unintentional Radiators
Section 15.109 Radiated emission limits

Remarks : This equipment adopted section 15.101(b) procedure - However, receivers indicated as being subject to Declaration of Conformity that are contained within a transceiver, the transmitter portion of which is subject to certification, shall be authorized under the verification procedure.

3.2 Procedures and results

1) FCC Part 15 Subpart C: 2004

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	Electric Field Strength of Fundamental Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC Section 15.209	Radiated	N/A	34.0dB 125.21kHz 0 deg. AV (Ant-Max)	Complied
2	Electric Field Strength of Spurious Emission	ANSI C63.4:2003 13. Measurement of intentional radiators	FCC Section 15.205 FCC Section 15.209	Radiated	N/A	3.3dB 47.708MHz, Vertical	Complied
3	Conducted Emission	ANSI C63.4:2003	FCC Section 15.207(a)	AC Mains only *1)	N/A	N/A	3

Note: UL Apex's EMI Work Procedures No.QPM05.

*1) This test is not applicable since the EUT does not have AC power port.

Uncertainty:

Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test using Biconical antenna is $\pm 4.5\text{dB}(3\text{m})/\pm 4.7\text{dB}(10\text{m})$.

The measurement uncertainty (with a 95% confidence level) for this test using Logperiodic antenna is $\pm 5.2\text{dB}(3\text{m})/\pm 3.8\text{dB}(10\text{m})$.

The measurement uncertainty (with a 95% confidence level) for this test using Horn antenna is $\pm 6.6\text{dB}$.

Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty (with a 95% confidence level) for this test is $\pm 3.0\text{dB}$.

*In case of the margin below the EMC Head Office's uncertainty.

The data listed in this report meets the limits unless the uncertainty is taken into consideration.

*These tests were performed without any deviations from test procedure except for additions or exclusions.

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2) FCC Part 15 Subpart B: 2004

No.	Item	Test Procedure	Specification	Deviation	Worst margin	Result
1	Radiated emission	ANSI C63.4:2003	FCC Section 15.109(a)	N/A	3.3dB 47.708MHz, Vertical	Complied
2	Conducted Emission	ANSI C63.4:2003	FCC Section 15.107(a) and 207	N/A	N/A*1)	N/A

Note: UL Apex's EMI Work procedures No. QPM05

*1) This test is not applicable since the EUT does not have AC power port.

*These tests were performed without any deviations from test procedure except for additions or exclusions.

3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	RSS-210(issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004 +Amendment4:2004	RSS-210(issue 5): 2001 + Amendment:2002 + Amendment2:2003 + Amendment3:2004 +Amendment4:2004	Radiated	N/A	N/A	N/A
2	-26dB Bandwidth	ANSI C63.4:2003	Reference data	Radiated	N/A	N/A	N/A

3.4 Test Location

UL Apex Co., Ltd. Head Office EMC Lab. *NVLAP Lab. code: 200572-0

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	Listed date (for FCC)	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	February 01, 2002	313583	IC4247	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber	June 05, 2002	846015	IC4247-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 shielded room	-	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.4 measurement room	-	-	-	3.1 x 5.0 x 2.7m	N/A	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1 and No.2 semi-anechoic and No.3 shielded room.

3.5 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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SECTION 4: Operation of E.U.T. during testing

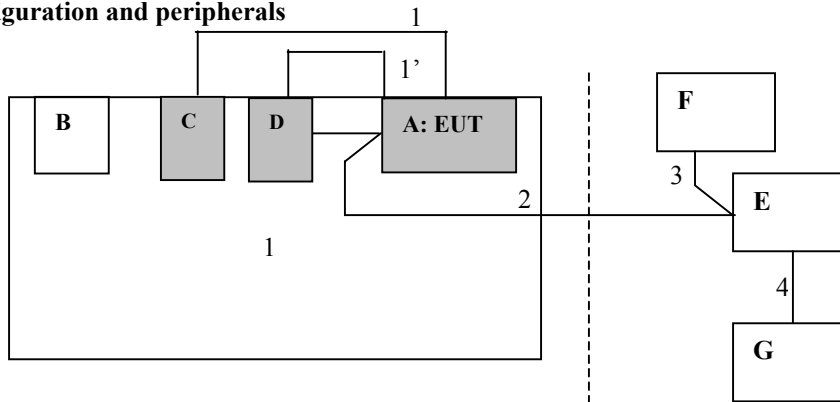
4.1 Operating Modes

The mode is used :
1. Continuous Transmitting mode (125kHz)
2. Continuous Receiving mode (315MHz)
*Receiving mode: the test was performed under the signal from the transmitter.

Justification:

The carrier level of antenna was confirmed by the antennas that have the maximum and minimum level as is demonstrated like in the actual usage. Output powers are controlled at the fixed point of antennas on a vehicle although all these antennas are the same type. The simultaneous transmitting mode of all antennas was not possible based on the specification of EUT. The test for antenna was confirmed in the directions of X, Y and Z. With the position that has the maximum level of antenna, the maximum level for Receiver was confirmed in the directions of X, Y and Z.

4.2 Configuration and peripherals



* Cabling was taken into consideration and test data was taken under worse case conditions.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID
A	Control Unit of Smart Keyless Entry System	S64J3	5	Calsonic Kansei	KBR64J3 (EUT)
B	Hand Unit	TS003	5	Calsonic Kansei	KBRTS003
C	Antenna	-	-	Calsonic Kansei	(EUT)
D	Antenna	-	-	Calsonic Kansei	(EUT)
E	Checker	-	-	Calsonic Kansei	- *1)
F	BCM	-	-	Calsonic Kansei	- *1)
G	Car Battery	40B19L	A030402	YUASA	- *1)

*1) As for the Measurement from 30MHz to 1GHz, E, F, and G were placed on the underground pit.

List of cables used

No.	Item	Length (m)	Shield	Backshell Material
1	Signal Cable	1.0	N	Polyvinyl chloride
1'	Signal Cable	1.0	N	Polyvinyl chloride
2	Signal Cable	3.0	N	Polyvinyl chloride
3	Signal Cable	0.6	N	Polyvinyl chloride
4	DC Cable	1.5	N	Polyvinyl chloride

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SECTION 5: Radiated emission (Fundamental and Spurious Emission and -26dB Bandwidth)

Test Procedure

The Radiated Electric Field Strength intensity has been measured on No.1 and No 2 semi anechoic chamber with a ground plane and at a distance of 3m.

Frequency : From 9kHz to 30MHz at distance 3m

The EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for each antenna angle 0deg. , 45deg. and 90deg.

Frequency : From 30MHz to 1GHz at distance 3m

The measuring antenna height varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization.

Measurements were performed with a QP, PK, and AV detector.

The radiated emission measurements were made with the following detector function of the test receiver.

	From 9kHz to 90kHz and From 110kHz to 150kHz	From 90kHz to 110kHz	From 150kHz to 490kHz	From 490kHz to 30MHz	From 30MHz to 1GHz	Above 1GHz (S/A)
Detector Type	PK/AV	QP	PK/AV	QP	QP	PK/AV
IF Bandwidth	200Hz	200Hz	9kHz	9kHz	120kHz	PK: RBW:1MHz VBW: 1MHz AV : RBW:1MHz VBW: 10Hz

*This EUT is to be installed in vehicles. The antenna of EUT is installed in Key cylinder, and the body of EUT is installed in the front part of vehicles. In the set-up configuration for the tests, the antenna and the body of EUT were set on three positions of X, Y, and Z axis respectively.

- 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 were measured.

* Part 15 Section 15.31 (f)(2) (9kHz-30MHz)

[Limit at 3m]=[Limit at 300m]-40 x log (3[m]/300[m])

[Limit at 3m]=[Limit at 30m]-40 x log (3[m]/30[m])

Test data : APPENDIX 3

Test result : Pass

Date: December 20, 21, 2004 and January 7, 2005

Test engineer: Kenichi Adachi and Norihisa Hashimoto

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APPENDIX 1: Photographs of test setup

Spurious Emission

Front



Rear



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Worst Case Position (EUT: X-axis / Antenna: X-axis)

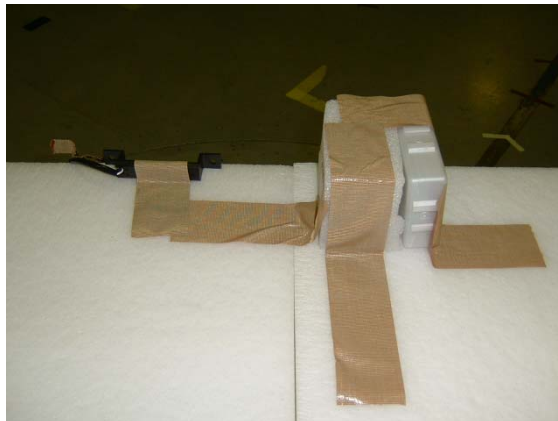
X-axis



Y-axis



Z-axis



APPENDIX 2: Test instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Test Item	Calibration Date * Interval(month)
MAEC-01	Anechoic Chamber	TDK	Semi Anechoic Chamber 10m	RE	2003/12/27 * 12
MTR-01	Test Receiver	Rohde & Schwarz	ESI40	RE	2004/11/12 * 12
MCC-01	Coaxial Cable 0.1-3000Mz	Suhner/storm/Agilent/TSJ	-	RE	2004/12/19 * 12
MPA-04	Pre Amplifier	Agilent	8447D	RE	2004/05/25 * 12
MAT-06	Attenuator(6dB)	Weinschel Corp	2	RE	2004/12/16 * 12
MBA-01	Biconical Antenna	Schwarzbeck	BBA9106	RE	2004/10/14 * 12
MLA-01	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2004/10/14 * 12
MCC-03	Coaxial Cable	Fujikura/Suhner/Agilent/T SJ	-	ME	2003/12/24 * 12
MCC-31	coaxial cable	ULApex	-	ME	2004/06/12 * 12
MAT-02	Attenuator(3dB)	Weinschel Corp	2	ME	2004/12/16 * 12
MLPA-01	Loop Antenna	Rohde & Schwarz	HFH2-Z2	ME	2004/01/08 * 12
MCB-03	Car Battery	YUASA	40B19L	ME	Pre Check
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	ME, RE2	2004/04/12 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	ME, RE2	2004/02/03 * 12
MRENT-09	Spectrum Analyzer	Advantest	R3273	ME, RE2	2004/02/18 * 12
MCC-13	Coaxial Cable	Fujikura/Agilent	-	ME	2004/02/24 * 12
MPA-06	Pre Amplifier	Hewlett Packard	8447D	ME	2004/08/29 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	ME	2004/12/16 * 12
MCC-04	Microwave Cable 1-40G	Storm	421-011	RE2	2005/01/05 * 12
MPA-01	Pre Amplifier	Agilent	8449B	RE2	2004/02/06 * 12
MCC-29	Microwave Cable	Suhner	SUCOFLEX10 1	RE2	2004/08/26 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE2	2004/01/10 * 12

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

Test Item:

ME: Spurious emission (9k-30MHz)

RE: Spurious emission (30M-1GHz)

RE2: Spurious emission (1G-2GHz)

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APPENDIX 3: Data of EMI test

Radiated Emission (125kHz Transmitting)(Ant-gain: Max)

DATA OF MAGNETIC RADIATED EMISSION TEST

UL Apex Co., LTD. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
Date : 2004/12/21 22:02:32

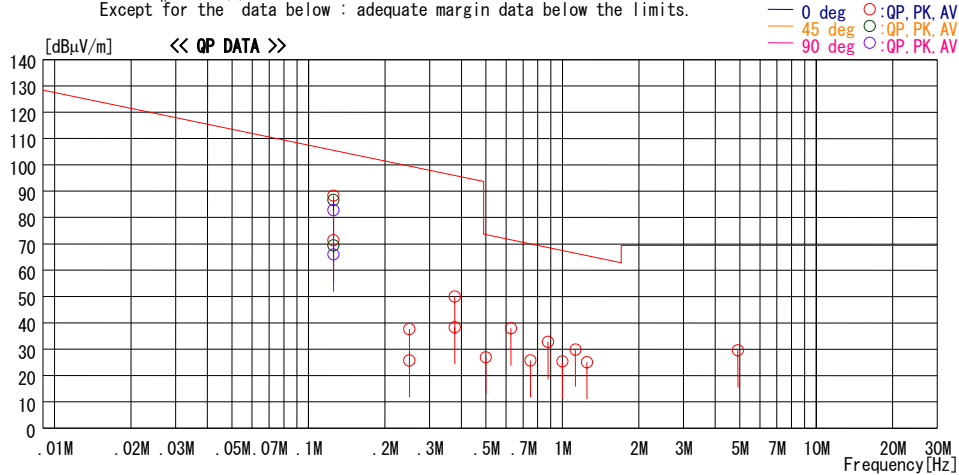
Applicant : Calsonic Kansei Corp.
Kind of EUT : Control Unit of Smart Keyless Entry System
Model No. : S64J3
Serial No. : 5

Report No. : 25BE0108-HO
Power : DC 12V
Temp. / Humi. : 22 deg. C. / 32 %
Operator : Kenichi Adachi

Mode / Remarks : Transmitting 125kHz / EUT-max-axis (X-axis), Ant-Max

LIMIT : FCC15C §15.209(a) 3m

Except for the data below : adequate margin data below the limits.



Freq.	Reading	DET	Ant.Fac	Loss	Gain	Result	Limit	Margin	Antenna	Table	Comment
[MHz]	[dBμV]		[dB/m]	[dB]	[dB]	[dBμV/m]	[dBμV/m]	[dB]		[deg]	
0.12521	89.0	PEAK	19.9	5.8	26.4	88.3	125.5	37.2	0deg	272	PK, BW:200Hz.
0.12521	72.2	AV	19.9	5.8	26.4	71.5	105.5	34.0	0deg	272	AV, BW:200Hz.
0.12521	87.3	PEAK	19.9	5.8	26.4	86.6	125.5	38.9	45deg	241	PK, BW:200Hz.
0.12521	70.2	AV	19.9	5.8	26.4	69.5	105.5	36.0	45deg	241	AV, BW:200Hz.
0.12521	83.5	PEAK	19.9	5.8	26.4	82.8	125.5	42.7	90deg	355	PK, BW:200Hz.
0.12521	66.7	AV	19.9	5.8	26.4	66.0	105.5	39.5	90deg	355	AV, BW:200Hz.
0.25000	39.3	PEAK	19.9	5.8	27.3	37.7	119.5	61.8	0deg	269	PK, BW:9kHz.
0.25000	27.4	AV	19.9	5.8	27.3	25.8	99.5	73.7	0deg	269	AV, BW:9kHz.
0.37650	52.0	PEAK	19.8	5.8	27.6	50.0	116.0	46.0	0deg	270	PK, BW:9kHz.
0.37650	40.4	AV	19.8	5.8	27.6	38.4	96.0	57.6	0deg	270	AV, BW:9kHz.
0.50000	29.0	QP	19.8	5.9	27.7	27.0	73.5	46.5	0deg	270	QP, BW:9kHz.
0.62725	39.9	QP	19.8	5.9	27.7	37.9	71.5	33.6	0deg	268	QP, BW:9kHz.
0.75000	28.0	QP	19.8	5.8	27.8	25.8	70.0	44.2	0deg	270	QP, BW:9kHz.
0.87765	35.0	QP	19.8	5.8	27.8	32.8	68.6	35.8	0deg	268	QP, BW:9kHz.
1.00000	27.5	QP	19.8	5.9	27.8	25.4	67.5	42.1	0deg	265	QP, BW:9kHz.
1.12750	32.0	QP	19.8	5.9	27.8	29.9	66.4	36.5	0deg	268	QP, BW:9kHz.
1.25000	27.2	QP	19.8	5.9	27.8	25.1	65.5	40.4	0deg	265	QP, BW:9kHz.
4.90890	31.4	QP	19.9	6.2	27.9	29.6	69.4	39.8	0deg	99	QP, BW:9kHz.

CHART : WITH FACTOR ANT TYPE : LOOP
CALCULATION : READING + ANT FACTOR + LOSS (CABLE + ATTEN. -AMP.)

Page:

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DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/12/21 03:25:24

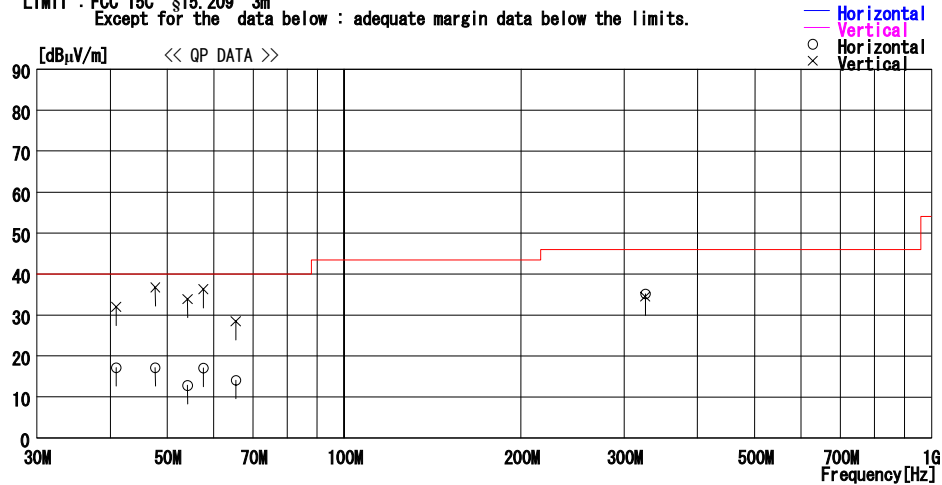
Applicant : CalsonicKansei Corp.
Kind of EUT : Control Unit of Smart Keyless Entry System
Model No. : S64J3
Serial No. : 5

Report No. : 25BE0108-HO
Power : DC12V
Temp./Humi. : 22 deg.C. / 46%
Operator : Kenichi Adachi

Mode / Remarks: Transmitting / EUT Max-axis (X-Axis)

LIMIT : FCC 15C §15.209 3m

Except for the data below : adequate margin data below the limits.



Frequency	Reading	DET	Antenna Factor	Loss & Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBμV]		[dB/m]	[dB]	[dBμV/m]	[Deg]	[cm]		[dBμV/m]	[dB]
40.941	24.5	QP	13.5	-20.8	17.2	0	250	Hori.	40.0	22.8
40.941	39.3	QP	13.5	-20.8	32.0	311	100	Vert.	40.0	8.0
47.708	46.7	QP	10.8	-20.8	36.7	0	100	Vert.	40.0	3.3
47.708	27.2	QP	10.8	-20.8	17.2	0	275	Hori.	40.0	22.8
54.137	44.7	QP	9.4	-20.2	33.9	129	100	Vert.	40.0	6.1
54.137	23.6	QP	9.4	-20.2	12.8	232	147	Hori.	40.0	27.2
57.609	28.6	QP	8.8	-20.3	17.1	193	117	Hori.	40.0	22.9
57.609	47.8	QP	8.8	-20.3	36.3	187	100	Vert.	40.0	3.7
65.408	41.0	QP	7.6	-20.1	28.5	180	100	Vert.	40.0	11.5
65.428	26.6	QP	7.6	-20.1	14.1	176	310	Hori.	40.0	25.9
325.740	37.1	QP	15.6	-17.5	35.2	308	100	Hori.	46.0	10.8
325.740	36.4	QP	15.6	-17.5	34.5	158	100	Vert.	46.0	11.5

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)

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Radiated Emission (125kHz Transmitting) (Ant-gain: Min)

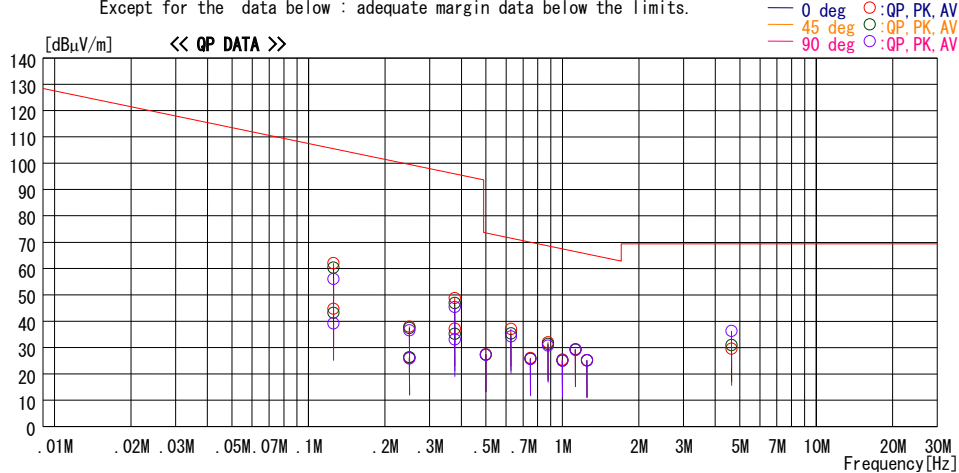
DATA OF MAGNETIC RADIATED EMISSION TEST

UL Apex Co., LTD. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
Date : 2004/12/21 22:34:46

Applicant : Calsonic Kansei Corp. Report No. : 25BE0108-HO
Kind of EUT : Control Unit of Smart Keyless Entry System Power : DC 12V
Model No. : S64J3 Temp./ Humi. : 22 deg.C. / 32 %
Serial No. : 5 Operator : Kenichi Adachi

Mode / Remarks : Transmitting 125kHz / EUT-max-axis (X-axis), Ant-Min

LIMIT : FCC15C §15.209(a) 3m
Except for the data below : adequate margin data below the limits.



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]	
0.12521	56.8	PEAK	19.9	5.8	26.4	56.1	125.5	69.4	90deg	336	PK, BW:200Hz.
0.12521	39.9	AV	19.9	5.8	26.4	39.2	105.5	66.3	90deg	336	AV, BW:200Hz.
0.12521	61.0	PEAK	19.9	5.8	26.4	60.3	125.5	65.2	45deg	229	PK, BW:200Hz.
0.12521	44.0	AV	19.9	5.8	26.4	43.3	105.5	62.2	45deg	229	AV, BW:200Hz.
0.12521	62.7	PEAK	19.9	5.8	26.4	62.0	125.5	63.5	0deg	267	PK, BW:200Hz.
0.12521	45.5	AV	19.9	5.8	26.4	44.8	105.5	60.7	0deg	267	AV, BW:200Hz.
0.25000	39.5	PEAK	19.9	5.8	27.3	37.9	119.5	71.6	0deg	259	PK, BW:9kHz.
0.25000	27.8	AV	19.9	5.8	27.3	26.2	99.5	73.3	0deg	259	AV, BW:9kHz.
0.25000	39.0	PEAK	19.9	5.8	27.3	37.4	119.5	72.1	45deg	230	PK, BW:9kHz.
0.25000	28.0	AV	19.9	5.8	27.3	26.4	99.5	73.1	45deg	230	AV, BW:9kHz.
0.25000	38.2	PEAK	19.9	5.8	27.3	36.6	119.5	82.9	90deg	345	PK, BW:9kHz.
0.25000	27.5	AV	19.9	5.8	27.3	25.9	99.5	73.6	90deg	345	AV, BW:9kHz.
0.37650	50.9	PEAK	19.8	5.8	27.6	48.9	116.0	67.1	0deg	273	PK, BW:9kHz.
0.37650	39.2	AV	19.8	5.8	27.6	37.2	96.0	58.8	0deg	273	AV, BW:9kHz.
0.37650	49.0	PEAK	19.8	5.8	27.6	47.0	116.0	69.0	45deg	229	PK, BW:9kHz.
0.37650	37.2	AV	19.8	5.8	27.6	35.2	96.0	60.8	45deg	229	AV, BW:9kHz.
0.37650	47.5	PEAK	19.8	5.8	27.6	45.5	116.0	70.5	90deg	347	PK, BW:9kHz.
0.37650	35.1	AV	19.8	5.8	27.6	33.1	96.0	62.9	90deg	347	AV, BW:9kHz.
0.50000	29.5	QP	19.8	5.9	27.7	27.5	73.5	46.0	0deg	276	QP, BW:9kHz.
0.50000	29.3	QP	19.8	5.9	27.7	27.3	73.5	46.2	45deg	230	QP, BW:9kHz.
0.50000	29.3	QP	19.8	5.9	27.7	27.3	73.5	46.2	90deg	312	QP, BW:9kHz.
0.62725	39.1	QP	19.8	5.9	27.7	37.1	71.5	34.4	0deg	271	QP, BW:9kHz.

CHART : WITH FACTOR ANT TYPE : LOOP
CALCULATION : READING + ANT FACTOR + LOSS (CABLE + ATTEN. -AMP.)

Page:

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MF060b(10.04.03)

DATA OF MAGNETIC RADIATED EMISSION TEST

UL Apex Co., LTD. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
Date : 2004/12/21 22:34:46

Applicant : Calsonic Kansei Corp.
Kind of EUT : Control Unit of Smart Keyless Entry System
Model No. : S64J3
Serial No. : 5

Report No. : 25BE0108-HO
Power : DC 12V
Temp./ Humi. : 22 deg.C. / 32 %
Operator : Kenichi Adachi

Mode / Remarks Transmitting 125kHz / EUT-max-axis (X-axis), Ant-Min

LIMIT : FCC15C §15.209(a) 3m

Except for the data below : adequate margin data below the limits.

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]	
0.62725	37.4	QP	19.8	5.9	27.7	35.4	71.5	36.1	45deg	223	QP, BW:9kHz,
0.62725	36.3	QP	19.8	5.9	27.7	34.3	71.5	37.2	90deg	352	QP, BW:9kHz,
0.75000	28.3	QP	19.8	5.8	27.8	26.1	70.0	43.9	0deg	269	QP, BW:9kHz,
0.75000	28.0	QP	19.8	5.8	27.8	25.8	70.0	44.2	45deg	230	QP, BW:9kHz,
0.75000	28.0	QP	19.8	5.8	27.8	25.8	70.0	44.2	90deg	314	QP, BW:9kHz,
0.87765	34.2	QP	19.8	5.8	27.8	32.0	68.6	36.6	0deg	277	QP, BW:9kHz,
0.87765	33.6	QP	19.8	5.8	27.8	31.4	68.6	37.2	45deg	223	QP, BW:9kHz,
0.87765	33.0	QP	19.8	5.8	27.8	30.8	68.6	37.8	90deg	345	QP, BW:9kHz,
1.00000	27.6	QP	19.8	5.9	27.8	25.5	67.5	42.0	0deg	272	QP, BW:9kHz,
1.00000	27.2	QP	19.8	5.9	27.8	25.1	67.5	42.4	45deg	242	QP, BW:9kHz,
1.00000	27.2	QP	19.8	5.9	27.8	25.1	67.5	42.4	90deg	318	QP, BW:9kHz,
1.12750	31.5	QP	19.8	5.9	27.8	29.4	66.4	37.0	0deg	273	QP, BW:9kHz,
1.12750	31.3	QP	19.8	5.9	27.8	29.2	66.4	37.2	45deg	232	QP, BW:9kHz,
1.12750	31.3	QP	19.8	5.9	27.8	29.2	66.4	37.2	90deg	342	QP, BW:9kHz,
1.25000	27.3	QP	19.8	5.9	27.8	25.2	65.5	40.3	0deg	266	QP, BW:9kHz,
1.25000	27.3	QP	19.8	5.9	27.8	25.2	65.5	40.3	45deg	242	QP, BW:9kHz,
1.25000	27.3	QP	19.8	5.9	27.8	25.2	65.5	40.3	90deg	318	QP, BW:9kHz,
4.63400	31.4	QP	19.9	6.2	27.9	29.6	69.4	39.8	0deg	91	QP, BW:9kHz,
4.63400	32.8	QP	19.9	6.2	27.9	31.0	69.4	38.4	45deg	330	QP, BW:9kHz,
4.63400	38.1	QP	19.9	6.2	27.9	36.3	69.4	33.1	90deg	181	QP, BW:9kHz,

CHART : WITH FACTOR ANT TYPE : LOOP
CALCULATION : READING + ANT FACTOR + LOSS (CABLE + ATTEN. -AMP.)

Page:

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MF060b(10.04.03)

DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/12/21 03:25:24

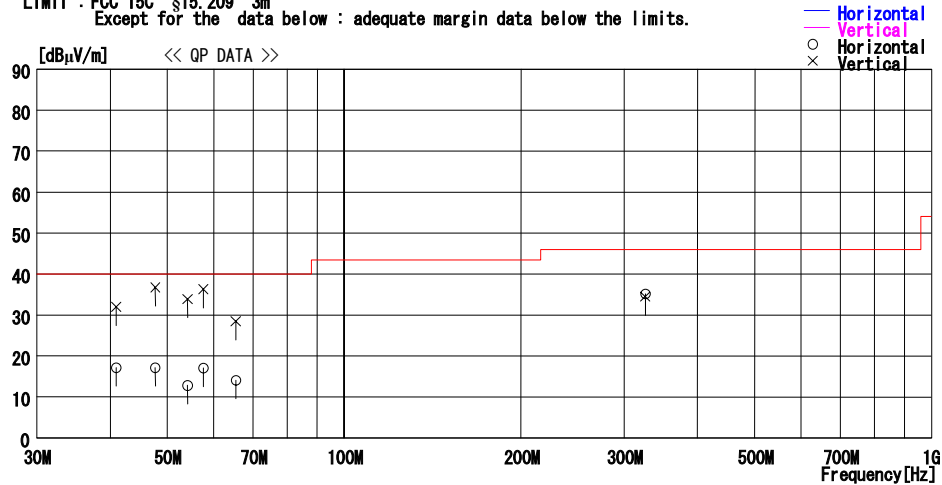
Applicant : CalsonicKansei Corp.
Kind of EUT : Control Unit of Smart Keyless Entry System
Model No. : S64J3
Serial No. : 5

Report No. : 25BE0108-H0
Power : DC12V
Temp./Humi. : 22 deg.C. / 46%
Operator : Kenichi Adachi

Mode / Remarks: Transmitting / EUT Max-axis (X-Axis)

LIMIT : FCC 15C §15.209 3m

Except for the data below : adequate margin data below the limits.



Frequency	Reading	DET	Antenna Factor	Loss & Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBμV]		[dB/m]	[dB]	[dBμV/m]	[Deg]	[cm]		[dBμV/m]	[dB]
40.941	24.5	QP	13.5	-20.8	17.2	0	250	Hori.	40.0	22.8
40.941	39.3	QP	13.5	-20.8	32.0	311	100	Vert.	40.0	8.0
47.708	46.7	QP	10.8	-20.8	36.7	0	100	Vert.	40.0	3.3
47.708	27.2	QP	10.8	-20.8	17.2	0	275	Hori.	40.0	22.8
54.137	44.7	QP	9.4	-20.2	33.9	129	100	Vert.	40.0	6.1
54.137	23.6	QP	9.4	-20.2	12.8	232	147	Hori.	40.0	27.2
57.609	28.6	QP	8.8	-20.3	17.1	193	117	Hori.	40.0	22.9
57.609	47.8	QP	8.8	-20.3	36.3	187	100	Vert.	40.0	3.7
65.408	41.0	QP	7.6	-20.1	28.5	160	100	Vert.	40.0	11.5
65.428	26.6	QP	7.6	-20.1	14.1	176	310	Hori.	40.0	25.9
325.740	37.1	QP	15.6	-17.5	35.2	308	100	Hori.	46.0	10.8
325.740	36.4	QP	15.6	-17.5	34.5	158	100	Vert.	46.0	11.5

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)

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MF060b(10.04.03)

Radiated Emission (315MHz Receiving) (Ant-gain: Max)

DATA OF RADIATED EMISSION TEST

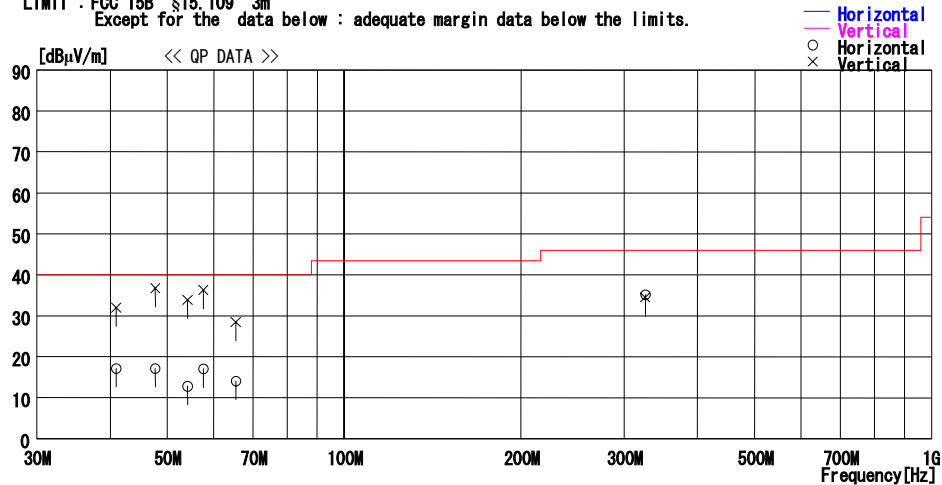
UL Apex Co., Ltd. Head Office EMC Lab. No.1 Semi Anechoic Chamber
Date : 2004/12/21 03:25:24

Applicant : CalsonicKansei Corp.
Kind of EUT : Smart Keyless Entry System (Control Unit & Hand Unit)
Model No. : S64J3, TS003
Serial No. : 5, 5
Report No. : 25BE0108-HO
Power : DC 12V (S64J3), DC 3V (TS003)
Temp./Humi. : 22 deg.C / 46%
Operator : Kenichi Adachi

Mode / Remarks: 315MHz Receiving / EUT Max-axis (X-Axis)

LIMIT : FCC 15B §15.109 3m

Except for the data below : adequate margin data below the limits.



Frequency	Reading	DET	Antenna Factor	Loss & Gain	Level	Angle	Height	Polar.	Limit	Margin
[MHz]	[dBμV]		[dB/m]	[dB]	[dBμV/m]	[Deg]	[cm]		[dBμV/m]	[dB]
40.941	24.5	QP	13.5	-20.8	17.2	0	250	Hori.	40.0	22.8
40.941	39.3	QP	13.5	-20.8	32.0	311	100	Vert.	40.0	8.0
47.708	46.7	QP	10.8	-20.8	36.7	0	100	Vert.	40.0	3.3
47.708	27.2	QP	10.8	-20.8	17.2	0	275	Hori.	40.0	22.8
54.137	44.7	QP	9.4	-20.2	33.9	129	100	Vert.	40.0	6.1
54.137	23.6	QP	9.4	-20.2	12.8	232	147	Hori.	40.0	27.2
57.809	28.6	QP	8.8	-20.3	17.1	193	117	Hori.	40.0	22.9
57.809	47.8	QP	8.8	-20.3	36.3	187	100	Vert.	40.0	3.7
65.408	41.0	QP	7.6	-20.1	28.5	180	100	Vert.	40.0	11.5
65.428	26.6	QP	7.6	-20.1	14.1	178	310	Hori.	40.0	25.9
325.740	37.1	QP	15.6	-17.5	35.2	308	100	Hori.	48.0	10.8
325.740	36.4	QP	15.6	-17.5	34.5	158	100	Vert.	48.0	11.5

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)

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MF060b(10.04.03)

DATA OF RADIATED EMISSION TEST

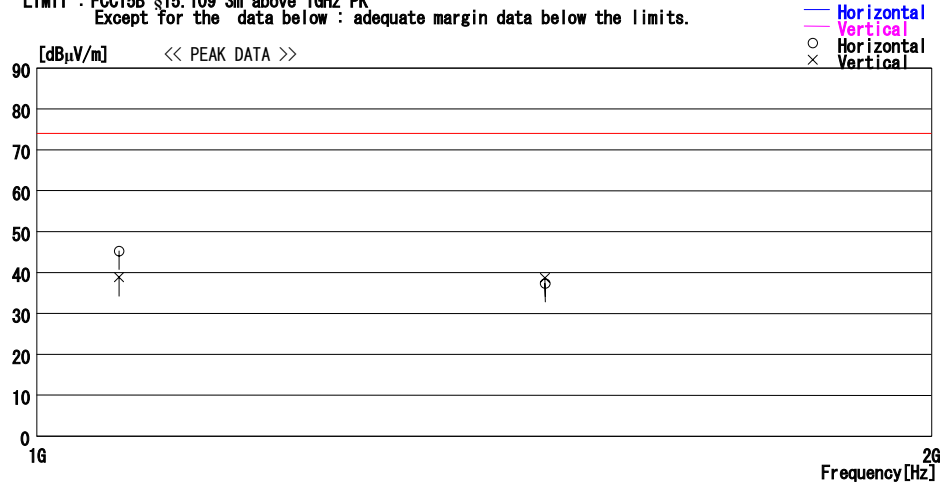
UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
Date : 2005/01/07

Applicant : CalsonicKansei Corp.
Kind of EUT : Control Unit of Smart Keyless Entry System
Model No. : S64J3
Serial No. : 5

Report No. : 25BE0108-HO
Power : DC12V
Temp. / Humi. : 23 deg. C. / 30 %
Operator : Norihisa Hashimoto

Mode / Remarks : Receiving / EUT Max-axis (X-Axis)

LIMIT : FCC15B §15.109 3m above 1GHz PK
Except for the data below : adequate margin data below the limits.



No.	FREQ [MHz]	READING PK [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
Horizontal										
1	1065.600	56.3	22.5	3.6	37.1	45.3	74.0	28.7	100	0
2	1482.535	45.6	24.0	4.3	36.5	37.4	74.0	36.6	100	0
Vertical										
3	1065.640	49.9	22.5	3.6	37.1	38.9	74.0	35.1	100	0
4	1482.466	46.9	24.0	4.3	36.5	38.7	74.0	35.3	100	0

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)

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MF060b(10.04.03)

DATA OF RADIATED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
Date : 2005/01/07

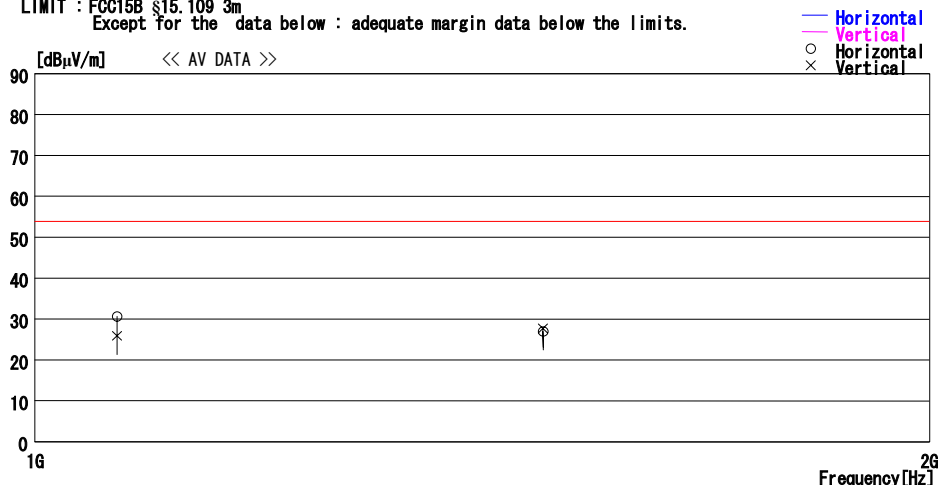
Applicant : CalsonicKansei Corp.
Kind of EUT : Control Unit of Smart Keyless Entry System
Model No. : S64J3
Serial No. : 5

Report No. : 25BE0108-HO
Power : DC12V
Temp./ Humi. : 23 deg. C. / 30 %
Operator : Norihisa Hashimoto

Mode / Remarks: Receiving / EUT Max-axis (X-Axis)

LIMIT : FCC15B §15.109 3m

Except for the data below : adequate margin data below the limits.



No.	FREQ [MHz]	READING [dBμV]	ANT FACTOR [dB/m]	LOSS [dB]	GAIN [dB]	RESULT [dBμV/m]	LIMIT [dBμV/m]	MARGIN [dB]	ANTENNA [cm]	TABLE [DEG]
Horizontal										
1	1065.600	41.7	22.5	3.6	37.1	30.7	54.0	23.3	100	0
2	1482.535	35.2	24.0	4.3	36.5	27.0	54.0	27.0	100	0
Vertical										
3	1065.640	36.9	22.5	3.6	37.1	25.9	54.0	28.1	100	0
4	1482.466	35.9	24.0	4.3	36.5	27.7	54.0	26.3	100	0

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)

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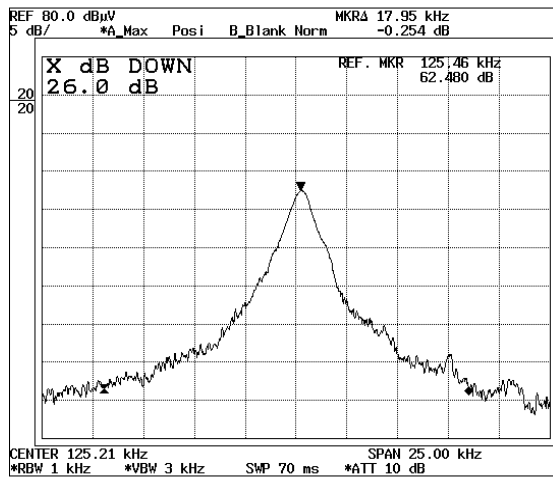
MF060b(10.04.03)

Data of 26dB Bandwidth

UL Apex Co., Ltd.
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY	: Calsonic Kansei Corp.	REPORT NO	: 25BE0108-HO
EQUIPMENT	: Control Unit of Smart Keyless Entry System	REGULATION	: Reference data
MODEL	: S64J3	TEST DISTANCE	: 3m
S/N	: 5	DATE	: 12/21/2004
POWER	: DC 12V	TEMPERATURE	: 22 deg.C
MODE	: Tx	HUMIDITY	: 32 %
	: Ant-Min	Engineer	: Kenichi Adachi

FREQ	26dB Bandwidth
[kHz]	[kHz]
125.5	17.950



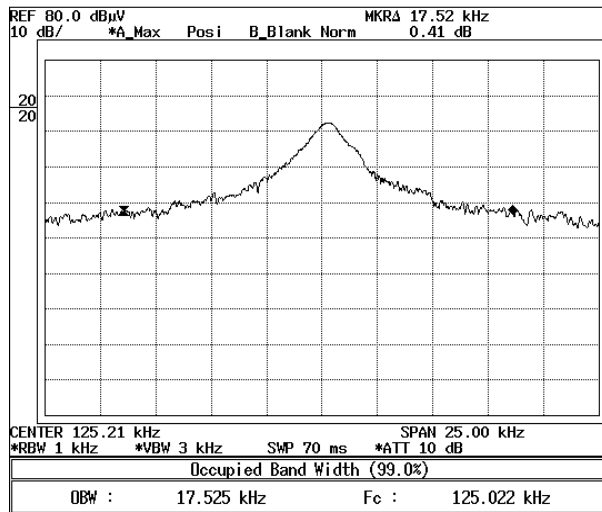
Data of 99% Occupied Bandwidth

UL Apex Co., Ltd.

Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY	: Calsonic Kansei Corp.	REPORT NO	: 25BE0108-HO
EQUIPMENT	: Control Unit of Smart Keyless Entry System	REGULATION	: RSS 210
MODEL	: S64J3	TEST DISTANCE	: 3m
S/ N	: 5	DATE	: 12/21/2004
POWER	: DC 12V	TEMPERATURE	: 22 deg.C
MODE	: Tx	HUMIDITY	: 32 %
	: Ant-Min	Engineer	: Kenichi Adachi

FREQ	99% Occupied Bandwidth
[kHz]	[kHz]
125.2	17.520



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MF060b(10.04.03)