



RADIO TEST REPORT

Test Report No. : 26FE0177-HOa

Applicant : OMRON Corporation
Type of Equipment : Radio Identification System
Reader/Writer, Antenna
Model No. : READER/WRITER : V740-BA50C04-US
ANTENNA : V740-HS03L, V740-HS03LA
Test standard : FCC Part 15 Subpart C
Section 15.207, Section 15.247: 2006
(Permissive Change Class II Application)
FCC ID : OZGV740-BA50CX4
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 the 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:


February 20 to March 25, 2006

Tested by:


Makoto Kosaka
EMC Services


Mitsuru Fujimura
EMC Services

Approved by:


Naoki Sakamoto
Group Leader of EMC Services

UL Apex Co., Ltd.

Head Office EMC Lab.

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MF060b(01.06.05)

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SECTION 1: Client information

Company Name : OMRON Corporation
Address : 2-2-1, Nishikusatsu, Kusatsu-city, Shiga-pref. 525-0035 Japan
Telephone Number : +81-77-565-5287
Facsimile Number : +81-77-565-5553
Contact Person : Koji Andou

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

2.1 Identification of E.U.T.

Type of Equipment : Radio Identification System (Reader/Writer and Antenna)
Model No. : READER/WRITER: V740-BA50C04-US
ANTENNA : V740-HS03L, V740-HS03LA
Serial No. : READER/WRITER: 05090007
ANTENNA, V740-HS03L: 062001
V740-HS03LA: 062002
Rating : AC100 to 240V, 2.3A 50/60Hz(with attached AC Adaptor) DC OUT 24V
Country of Manufacture : JAPAN
Receipt Date of Sample : February 15, 2006
Condition of EUT : Production prototype
(Not for Sale: This sample is equivalent to mass-produced items.)

2.2 Product Description

Model No: V740-BA50C04-US and V740-HS03L/V740-HS03LA (referred to as the EUT in this report) is the Radio Identification System (Reader/Writer and Antenna).

[Variant model: V740-BA50C04A-US]

Reader/Writer, V740-BA50C04-US has a variant model, V740-BA50C04A-US, which is the lead-free version of V740-BA50C04-US. As the electrical/radio specifications of those models are identical, the test was performed with V740-BA50C04-US as a representative.

[Changes from the FCC granted (original) model (FCC ID: OZGV740-BA50CX4)]

1. System Control Software (There is no change in the hardware)
2. Addition of Antenna: V740-HS03L and V740-HS03LA

The test items influenced by the above changes were performed. For details, please see Section 3.2: Procedures and results.

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[Specification]

Feature of EUT	The V740 Reader/Writer is a modulated frequency hopping RFID reader. It contains two radio sections with two transmitting and receiving ports on each radio to allow multiple antennas to be connected to enhance the coverage area of the RFID reader. Only one antenna can be utilized at any moment.
Equipment Type	Transceiver
Frequency Range	902.726-927.322MHz
Bandwidth	26MHz
Channel spacing	500kHz
Antenna Type	Small Liner Antenna
Antenna Connector Type	SMA
Antenna Gain	+3.0 dBi max
ITU Code	A1D
Frequency of Operation	CPU: 266MHz (33.333MHz), PLL: 8.0MHz, 25MHz, 33MHz, 54.24MHz
Power Supply	AC100 to 240V, 2.3A 50/60Hz (with attached AC Adaptor) DC OUT 24V
Method of EUT installation	Installed by the professionals

[Antenna information]

Antenna model number	V740-HS03L	V740-HS03LA
Difference of antenna	With 10dB attenuator	Without 10dB attenuator (Same as V740-HS03L except for 10dB attenuator)
Connection between antenna and Reader/Writer	Cables designated by manufacturer	

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part15 Subpart C: 2006
Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.207 Conducted limits: 2006
Section 15.247 Operation within the bands 902-928MHz,
2400-2483.5MHz, and 5725-5850MHz: 2006

FCC 15.31 (e)

The supply voltage of AC Adapter as the ancillary equipment was varied between 85 % and 115% of the nominal rated supply voltage (AC 120V), however, there was no difference in power levels in fundamental emission.

The test was performed at the original application (Please refer to UL Apex test report No. 25IE0180-HO-1)
Since there is no influence by the changes from the original Reader/Writer, the test was performed only with the nominal supply voltage (AC120V) for this permissive change application.

FCC Part 15.203 Antenna requirement

This EUT has the external (particular) antenna connector, and the installation is to be done by the professionals.
Therefore, the equipment complies with the antenna requirement of Section 15.203.

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3.2 Procedures and results

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin*0)	Results
1	Conducted emission	ANSI C63.4: 2003 7. AC powerline conducted emission measurements	Section 15.207	-	N/A	3.1dB 16.22702MHz, N 16.22836MHz, L AV	Complied
2	Carrier Frequency Separation	ANSI C63.4: 2003 13. Measurement of intentional radiators	Section15.247 (a)(1)	Conducted	N/A	N/A	N/A*1)
3	20dB Bandwidth	ANSI C63.4: 2003 13. Measurement of intentional radiators	Section15.247 (a)(1)(i)	Conducted	N/A	N/A	N/A*1)
4	Number of Hopping Frequency	ANSI C63.4: 2003 13. Measurement of intentional radiators	Section15.247 (a)(1)(i)	Conducted	N/A	N/A	N/A*1)
5	Dwell time	ANSI C63.4: 2003 13. Measurement of intentional radiators	Section15.247 (a)(1)(i)	Conducted	N/A	See data	Complied
6	Maximum Peak Output Power	ANSI C63.4: 2003 13. Measurement of intentional radiators	Section15.247 (b)(2)	Conducted	N/A	See data	Complied*2)
7	Band Edge Compliance	ANSI C63.4: 2003 13. Measurement of intentional radiators	Section15.247 (d)	Conducted/ Radiated	N/A	See data	Complied*3)
8	Spurious Emission	ANSI C63.4: 2003 13. Measurement of intentional radiators	Section15.247 (d)	Conducted/ Radiated	N/A	7.6dB 3.610831GHz Ver, AV	Complied*3)

Note: UL Apex's EMI Work Procedures No.QPM05 and QPM15

*0) The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

*1) The test is not applicable, because pre-check found that it was not influenced by the changes from the original model (FCC granted model).

*2) The test was performed with the normal voltage (AC120V) only, in order to confirm that the power level was within +/- 0.5dB compared to the original model (FCC granted model).

*3) Conducted test is not applicable, because pre-check found that it was not influenced by the changes from the original model (FCC granted model).

Conducted Emission

The measurement uncertainty (with a 95% confidence level) for this test is $\pm 1.3\text{dB}$.

The data listed in this test report has enough margin, more than the site margin.

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 $\pm 6.6\text{dB}$.

The data listed in this test report has enough margin, more than the site margin.

Other test except Conducted Emission and Spurious Emission (Radiated)

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

*These tests were also referred to FCC Public Notice DA 00-705 "Guidance on Measurement for Frequency Hopping Spread Spectrum Systems".

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

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3.3 Test Location

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	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	313583	IC4247A	19.2 x 11.2 x 7.7m	7.0 x 6.0m	Preparation room
No.2 semi-anechoic chamber	846015	IC4247A-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.

3.4 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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

4.1 Operating Modes

The mode is used : Transmitting mode
 Low Channel (Ch1) : 902.726MHz
 Mid Channel (Ch25) : 914.773MHz
 High Channel (Ch50) : 927.322MHz

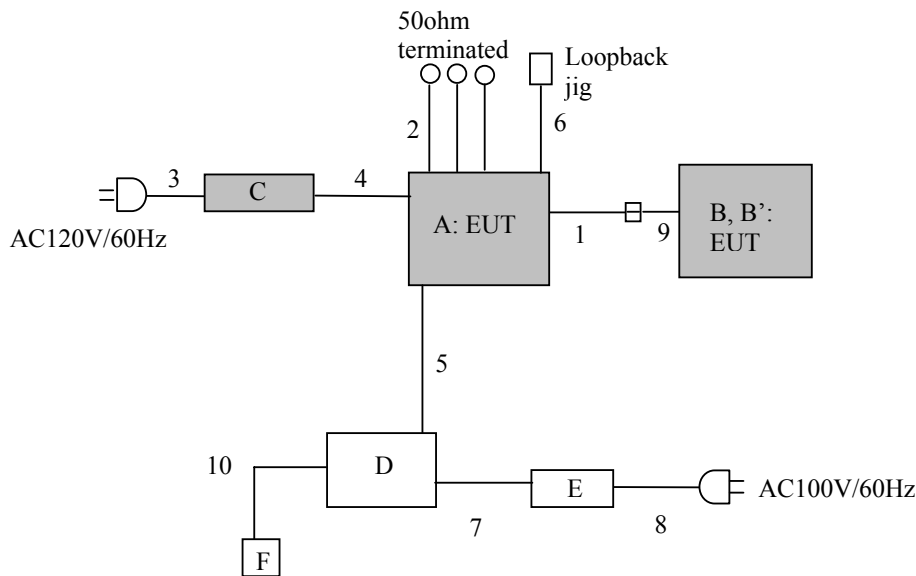
* Note: Maximum Peak Output Power was tested in order to confirm the power level was within +/- 0.5dB compared to the result at the original model (FCC granted model). The test was performed by the maximum power mode based on user setting manual.

4.2 Configuration and peripherals

According to the specification, there is no simultaneous transmitting and receiving mode even if all ports (4 ports) are filled (for transmitting and receiving from time division). Therefore, the test was performed with one antenna, and others ports were connected to cables or terminated in 50 ohm.

EUT can be set with any tags manufactured by the applicant, OMRON Corporation. The test was performed with and without the tag (M/N: V740-D12P01, type: passive) preliminarily. As the result of the pre-test, the formal test was performed without the tag, which has the maximum radiation.

There are two antennas: V740-HS03L and V740-HS03LA, and all the tests were performed with both of them.



*The test configuration is set up in the actual usage, which is in the worst conditions of the noise level.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	FCC ID
A	READER/WRITER	V740-BA50C04-US	05090007	OMRON	OZGV740-BA50CX4
B	ANTENNA	V740-HS03LA	062002	OMRON	OZGV740-BA50CX4
B'	ANTENNA	V740-HS03L	062001	OMRON	OZGV740-BA50CX4
C	AC ADAPTER	SA190A-2438V-P	001	Map Electronics	-
D	Personal Computer	FMV7NUHWC6	R0501470	Fujitsu	-
E	AC Adapter	CA01007-0720	002063288A	Fujitsu	-
F	Mouse	PC-KM5220	HCA13007653	Hitachi	JNZ201213

List of cables used

No.	Name	Length (m)	Shield
1	Antenna Cable: V740-A01-3.0M	3.0	Y
2	Antenna Cable: V740-A01-3.0M	3.0	Y
3	AC adapter cable(AC line)	1.8	N
4	AC adapter cable(DC line)	1.2	N
5	LAN Cable	5.0	Y
6	RS232C Cable	0.9	Y
7	AC adapter cable(DC line)	1.8	N
8	AC adapter cable(AC line)	2.0	N
9	Antenna Cable	0.5	Y
10	Mouse Cable	1.8	Y

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SECTION 5: Conducted Emission

Test Procedure and conditions

EUT was placed on a platform of nominal size, 1.5m by 0.5m, raised 80cm above the conducting ground plane. The rear of tabletop was located 40cm to the vertical conducting plane. The rear of EUT, including peripherals aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80cm from any other grounded conducting surface. EUT was located 80cm from a Line Impedance Stabilization Network (LISN)/ Artificial mains Network (AMN) and excess AC cable was bundled in center.

For the tests on EUT with other peripherals (as a whole system)

I/O cable and AC cables that were connected to the peripherals were bundled in center. They were folded back and forth forming a bundle 30cm to 40cm long and were hanged at a 40cm height to the ground plane.

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT in a Semi Anechoic Chamber or a Measurement Room.

The EUT was connected to a LISN (AMN).

An overview sweep with peak detection has been performed.

Detector : CISPR quasi-peak detector (IF BW 9 kHz)
Measurement range : 0.15-30MHz
Test data : APPENDIX 3
Test result : Pass

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SECTION 6: Spurious Emission

[Radiated]

Test Procedure

EUT was placed on a platform of nominal size, 1.5m by 0.5m, raised 80cm above the conducting ground plane. The Radiated Electric Field Strength intensity has been measured in a Semi Anechoic Chamber with a ground plane and at a distance of 3m(Below 10GHz).

The height of the measuring 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 with the Test Receiver or the Spectrum Analyzer.

In any 100kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator confirmed 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on a radiated measurement.

20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.

Frequency	Below 1GHz	Above 1GHz
Instrument used	Spectrum Analyzer	Spectrum Analyzer
Detector	PK: RBW: 100kHz/ VBW: 300kHz	PK: RBW:1MHz/VBW: 1MHz
IF Bandwidth	20dBc : RBW: 100kHz VBW: 300kHz (S/A)	AV: RBW:1MHz/VBW:10Hz 20dBc : RBW:100kHz/VBW:300kHz

The test was performed on EUT in the normal use position.

Test data : APPENDIX 3
Test result : Pass

SECTION 7: Maximum Peak Output Power

Test Procedure

The Maximum Peak Output Power was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3
Test result : Pass

SECTION 8: Dwell time

Test Procedure

The Dwell time was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3
Test result : Pass

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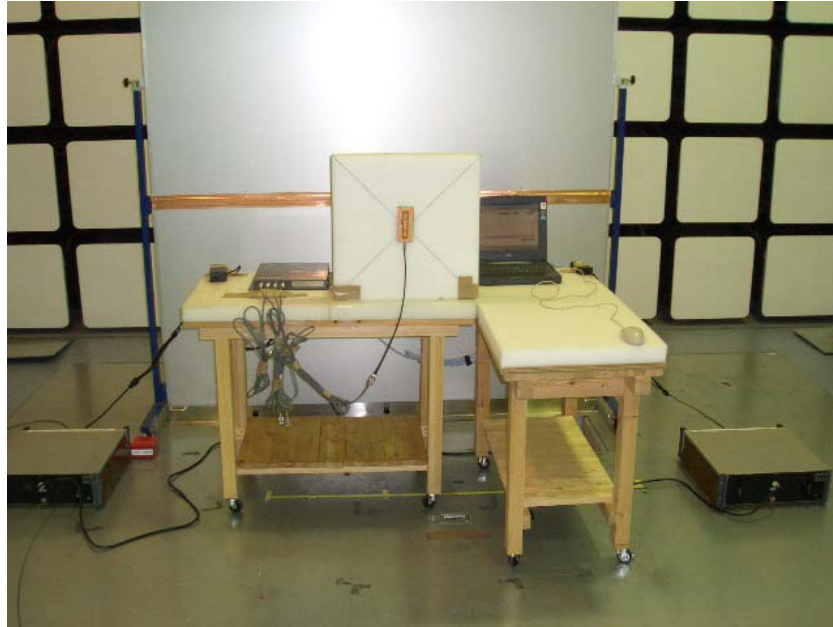
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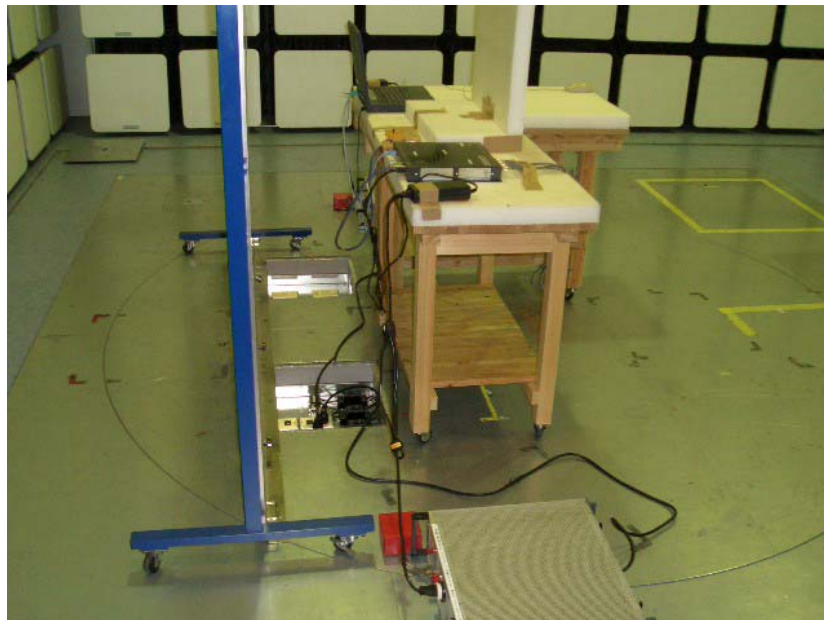
APPENDIX 1: Photographs of test setup

Conducted Emission

Front



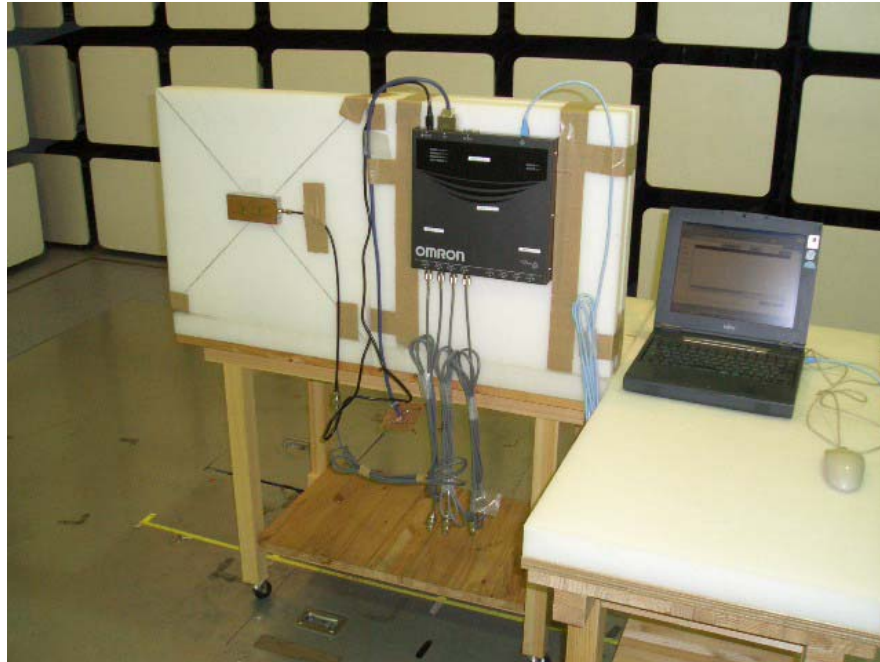
Rear



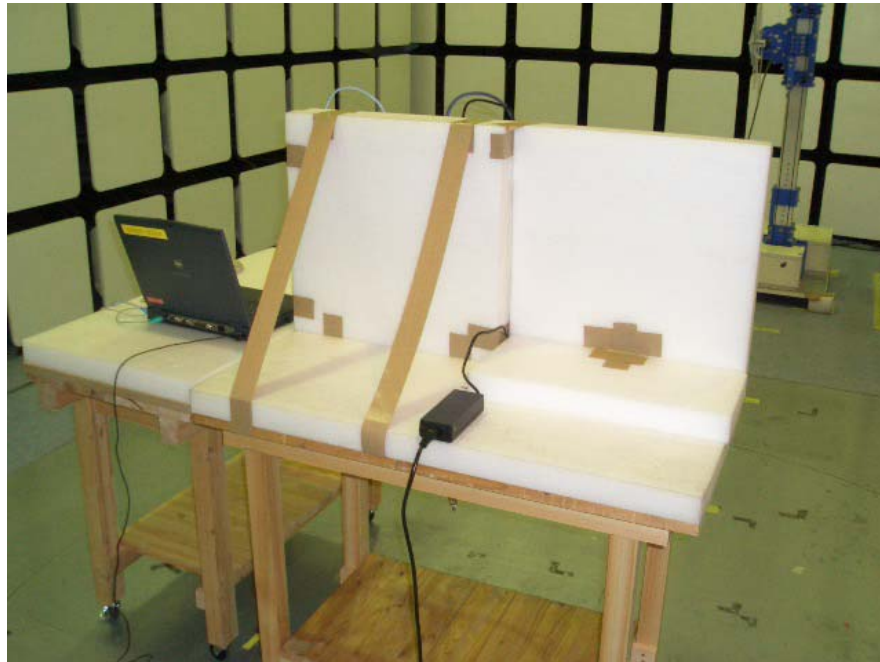
*The test configuration is set up in the actual usage, which is in the worst conditions of the noise level.

Spurious Emission (Radiated)

Front



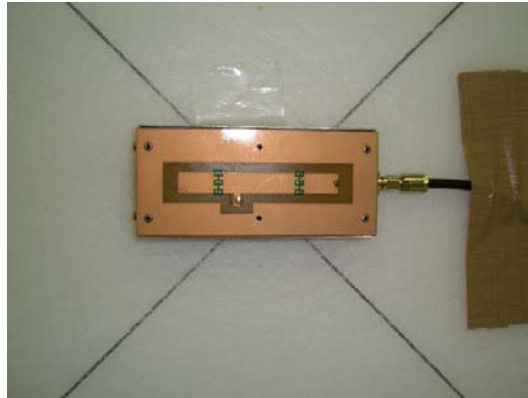
Rear



*The test configuration is set up in the actual usage, which is in the worst conditions of the noise level.

Worst Case Position (Horizontal: X-axis/ Vertical:Y-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-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE/CE	2005/04/11 * 12
MRENT-23	Spectrum Analyzer	Advantest	R3273	CE / RE/ AT	2006/01/10 * 12
MCC-10	Coaxial cable	Storm	90-195-394	RE	2005/03/24 * 12
MCC-16	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX 104	RE	2006/02/02 * 12
MPA-10	Pre Amplifier	Agilent	8449B	RE	2005/09/07 * 12
MHF-03	High pass Filter	Mini-Circuit	VHF-1320	RE	2005/12/09 * 12
MHF-04	High Pass Filter	Mini-Circuit	VHF-1200	RE	2005/12/09 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2006/01/09 * 12
MCC-13	Coaxial Cable	Fujikura/Agilent	-	CE	2005/02/24 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	RE/CE	2006/02/02 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	CE (EUT)	2006/02/06 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	CE (AE)	2006/02/06 * 12
MTA-05	Termination	MCL	NTRM-50	CE	2006/02/06 * 12
MAT-16	Attenuator(40dB)_9k-12.4GHz N	Weinschel Corp	MODEL 1	AT	2006/01/10 * 12
MBA-02	Biconical Antenna	Schwarzbeck	BBA9106	RE	2005/10/10 * 12
MLA-02	Logperiodic Antenna	Schwarzbeck	USLP9143	RE	2005/10/14 * 12
MCC-12	Coaxial Cable	Fujikura/Agilent	-	RE	2005/02/24 * 12
MAT-07	Attenuator(6dB)	Weinschel Corp	2	RE	2005/12/16 * 12
MPA-09	Pre Amplifier	Agilent	8447D	RE	2005/09/07 * 12
MOS-02	Digital Humidity Indicator	N.T	NT-1800	CE / RE / AT	2004/11/25 * 24
MSA-06	Spectrum Analyzer	Agilent	E4408B	AT	2006/03/25 * 12

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

Test Item:

- CE: Conducted emission.**
- RE: Radiated emission.**
- AT: Except for CE and RE**

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APPENDIX 3: Data of EMI test

Conducted Emission
(Antenna:V740-HS03L)

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
 Date : 2006/02/21 03:43:03

Applicant	: OMRON Corporation	Report No.	: 26FE0177-HD
Kind of EUT	: Radio Identification System	Power	: AC120V/60Hz
Model No.	: V740-BA50C04-US+V740-HS03L	Temp./Humi.	: 24deg. C / 31%
Serial No.	: 05090007/062001	Operator	: Mitsuru Fujimura

Mode / Remarks : Tx ch1 902.726MHz

LIMIT : FCC15C §15.207 (QP)
 FCC15C §15.207 (AV)

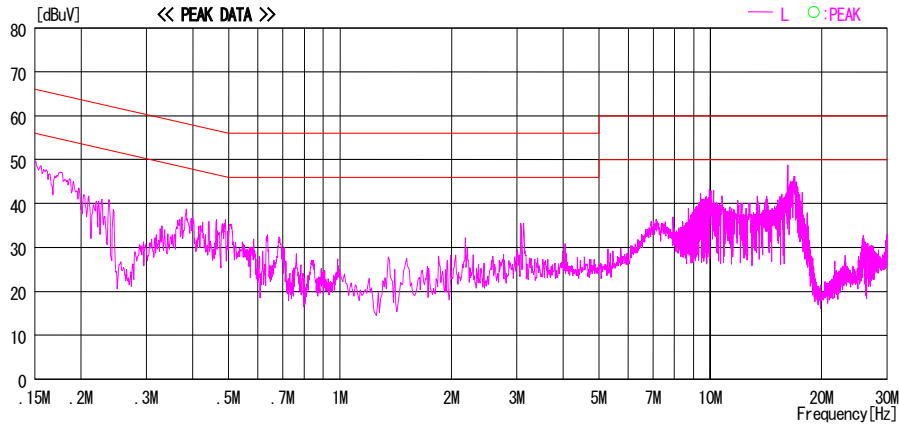
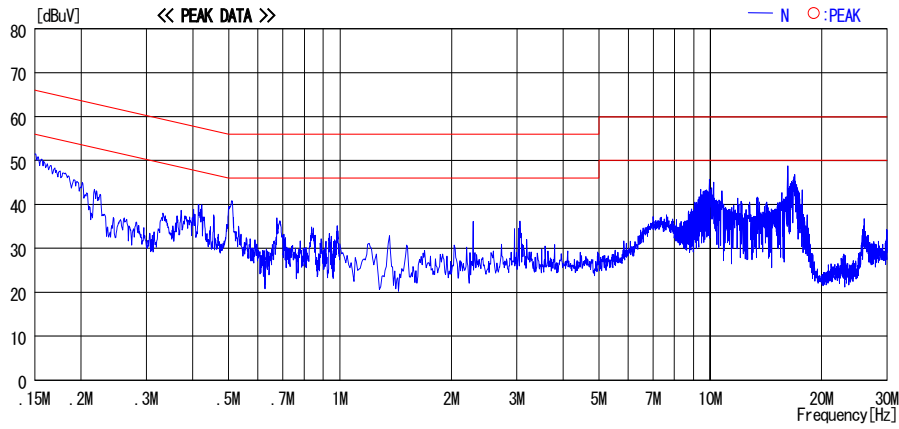


CHART: WITH FACTOR Peak hold data Data is uncorrected. CALCULATION: RESULT=READING+C.F.(LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

Conducted Emission
(Antenna:V740-HS03L)

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
 Date : 2006/02/21 03:47:53

Applicant	: OMRON Corporation	Report No.	: 26FE0177-HO
Kind of EUT	: Radio Identification System	Power	: AC120V/60Hz
Model No.	: V740-BA50C04-US+V740-HS03L	Temp./Humi.	: 24deg. C / 31%
Serial No.	: 05090007/062001	Operator	: Mitsuru Fujimura

Mode / Remarks : Tx ch25 914.773MHz

LIMIT : FCC15C §15.207 (QP)
 FCC15C §15.207 (AV)

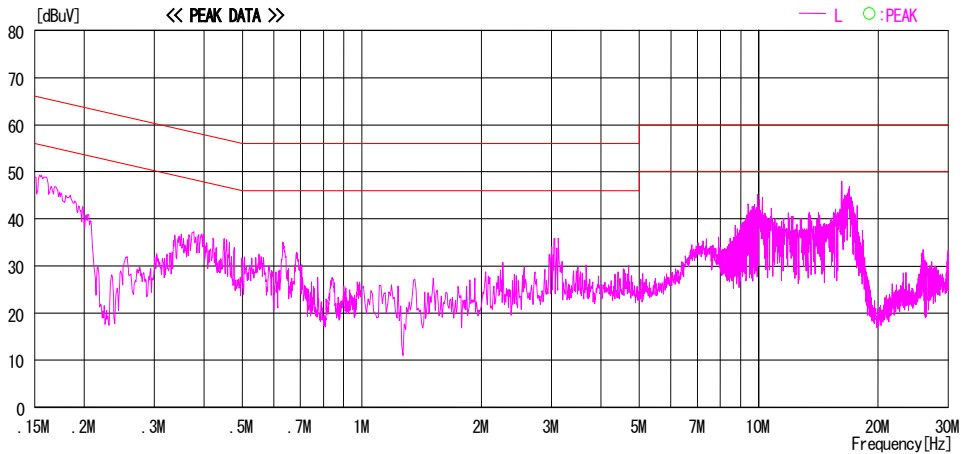
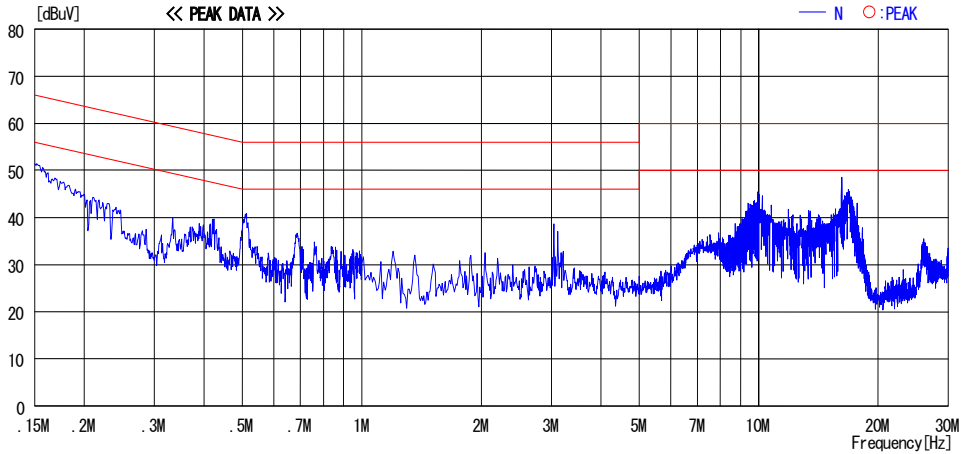


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

Conducted Emission
(Antenna:V740-HS03L)

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
 Date : 2006/02/21 03:51:17

Applicant	: OMRON Corporation	Report No.	: 26FE0177-HO
Kind of EUT	: Radio Identification System	Power	: AC120V/60Hz
Model No.	: V740-BA50C04-US+V740-HS03L	Temp./Humi.	: 24deg. C / 31%
Serial No.	: 05090007/062001	Operator	: Mitsuru Fujimura

Mode / Remarks : Tx ch50 927.322MHz

LIMIT : FCC15C §15.207 (QP)
 FCC15C §15.207 (AV)

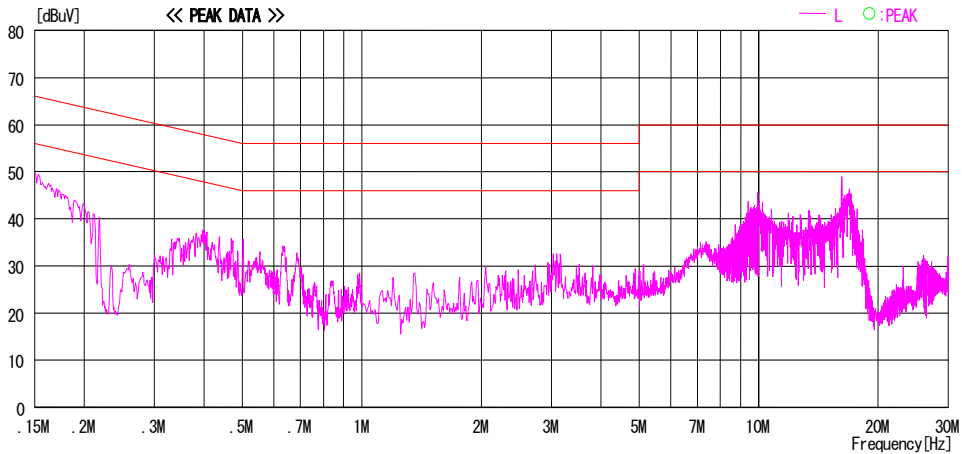
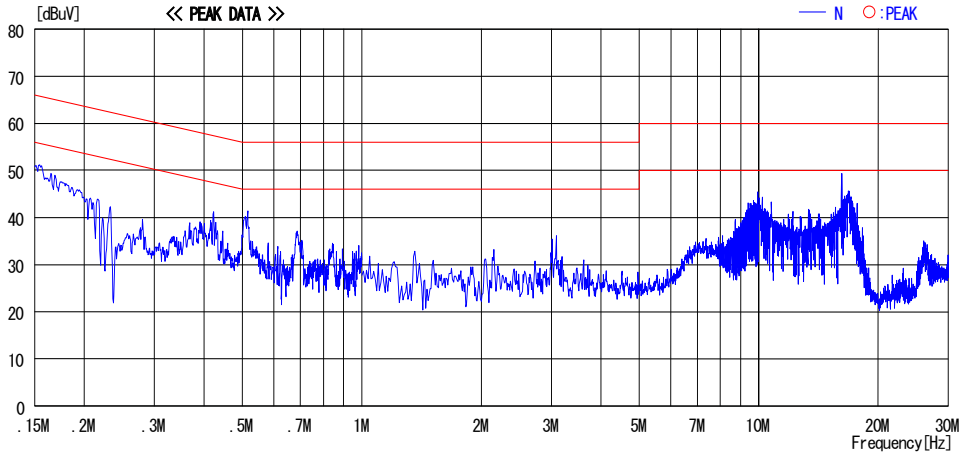


CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

Conducted Emission
(Antenna:V740-HS03LA)

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
 Date : 2006/02/21 04:00:33

Applicant	: OMRON Corporation	Report No.	: 26FE0177-HO
Kind of EUT	: Radio Identification System	Power	: AC120V/60Hz
Model No.	: V740-BA50C04-US+V740-HS03LA	Temp./Humi.	: 24deg C / 31%
Serial No.	: 05090007/062002	Operator	: Mitsuru Fujimura

Mode / Remarks : Tx ch1 902.726MHz

LIMIT : FCC15C §15.207 (QP)
 FCC15C §15.207 (AV)

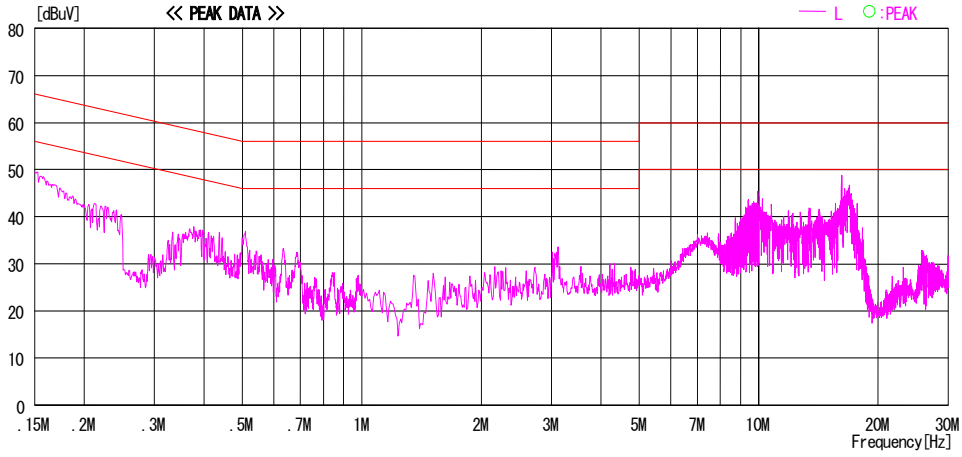
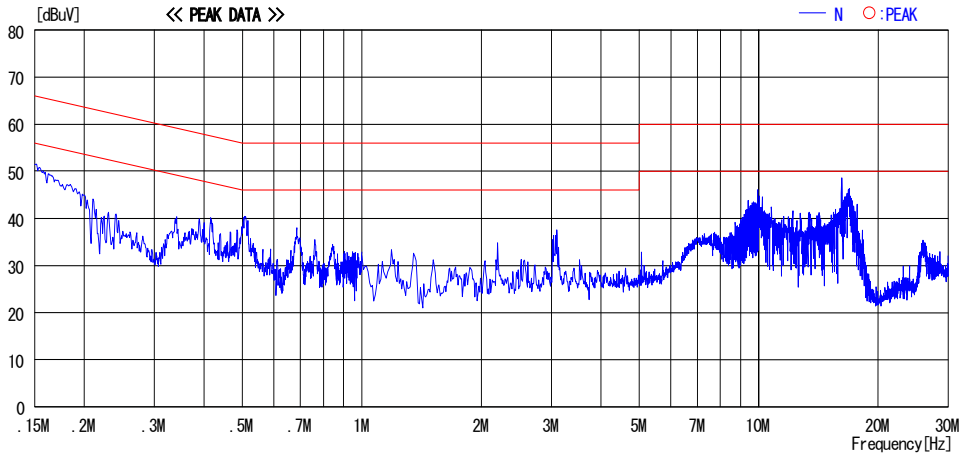


CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALCURATION:RESULT=READING+C.F(LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

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MF060b(01.06.05)

Conducted Emission
(Antenna:V740-HS03LA)

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber
 Date : 2006/02/21 04:04:34

Applicant	: OMRON Corporation	Report No.	: 26FE0177-HO
Kind of EUT	: Radio Identification System	Power	: AC120V/60Hz
Model No.	: V740-BA50C04-US+V740-HS03LA	Temp./Humi.	: 24deg. C / 31%
Serial No.	: 05090007/062002	Operator	: Mitsuru Fujimura

Mode / Remarks : Tx ch25 914.773MHz

LIMIT : FCC15C §15.207 (QP)
 FCC15C §15.207 (AV)

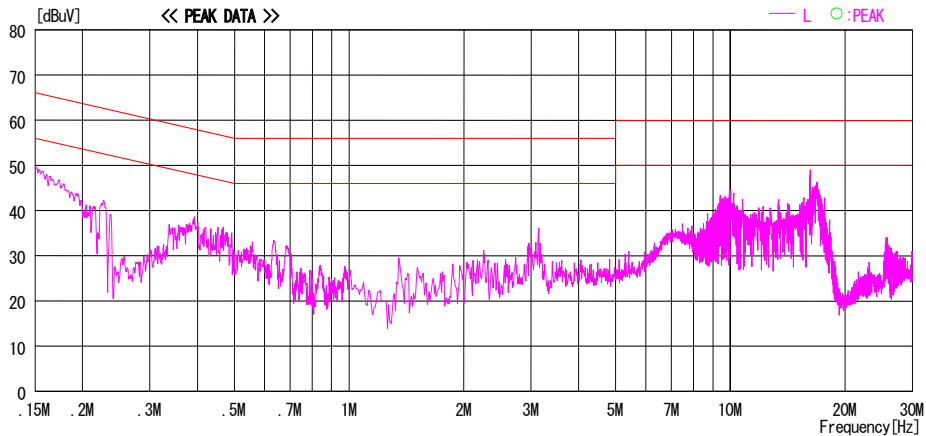
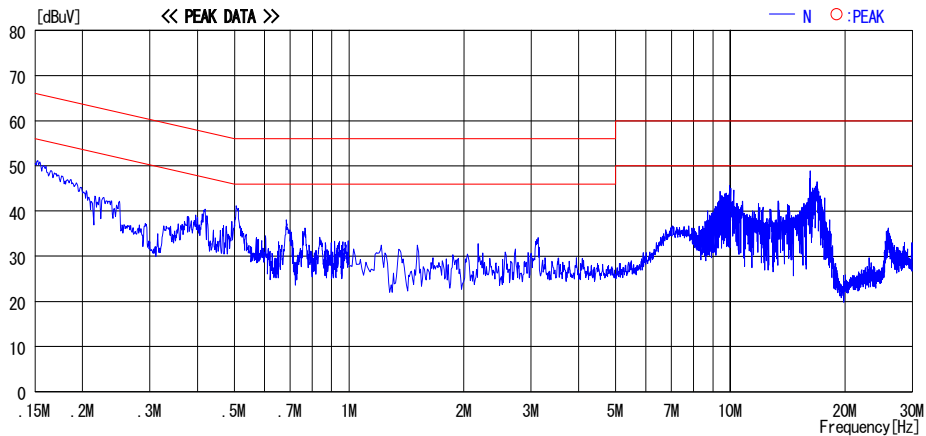


CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALCURATION:RESULT=READING+C.F(L:ISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

Conducted Emission
(Antenna:V740-HS03LA)

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
 Date : 2006/02/21 04:08:45

Applicant	: OMRON Corporation	Report No.	: 26FE0177-HO
Kind of EUT	: Radio Identification System	Power	: AC120V/60Hz
Model No.	: V740-BA50C04-US-V740-HS03LA	Temp./Humi.	: 24deg.C / 31%
Serial No.	: 05090007/062002	Operator	: Mitsuru Fujimura

Mode / Remarks : Tx ch50 927.322MHz

LIMIT : FCC15C §15.207 (QP)
 FCC15C §15.207 (AV)

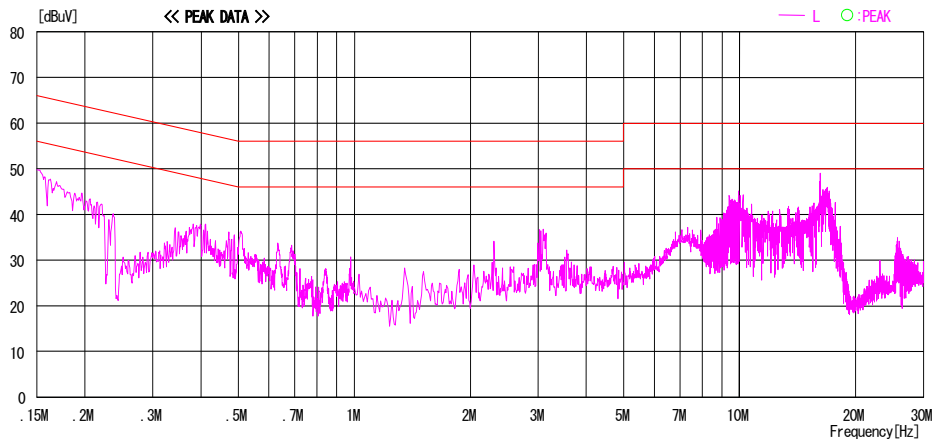
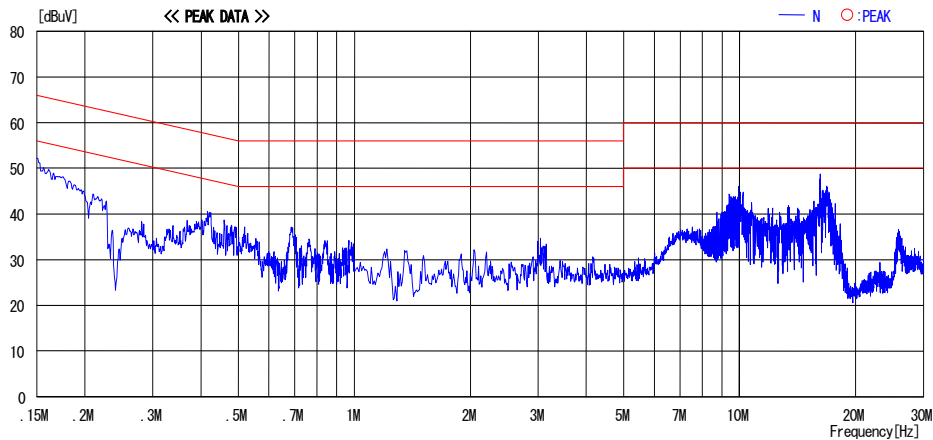


CHART:WITH FACTOR,Peak hold data.Data is uncorrected. CALQRATION:RESULT=READING+C.F(L|SN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

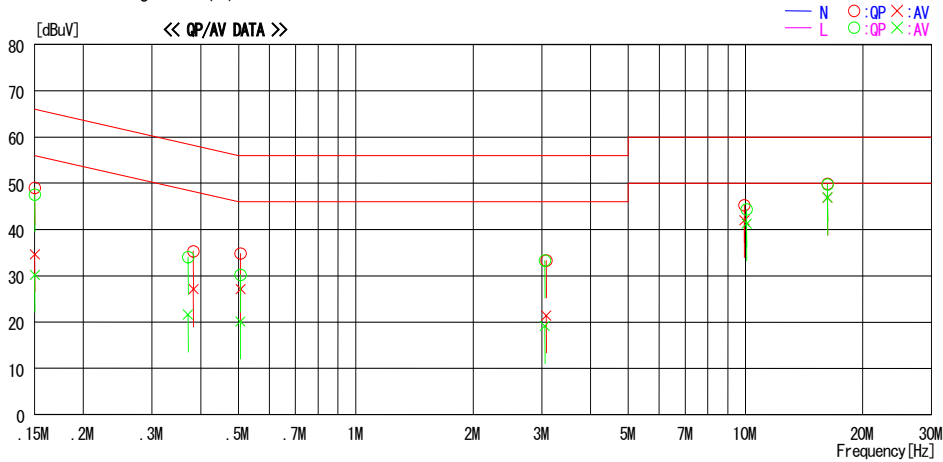
Conducted Emission
(Antenna:V740-HS03LA)

DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber
 Date : 2006/02/21 04:00:33

Applicant : OMRON Corporation
 Kind of EUT : Radio Identification System
 Model No. : V740-BA50C04-US+V740-HS03LA
 Serial No. : 05090007/062002
 Report No. : 26FE0177-HD
 Power : AC120V/60Hz
 Temp./Humi. : 24deg. C / 31%
 Operator : Mitsuru Fujimura
 Mode / Remarks : Tx ch1 902.726MHz

LIMIT : FCC15C §15.207 (QP)
 FCC15C §15.207 (AV)



Frequency [MHz]	Reading Level		Corr. Factor [dB]	Results		Limit		Margin		Phase
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
0.15000	49.0	34.5	0.1	49.1	34.6	66.0	56.0	16.9	21.4	N
0.38347	35.2	27.0	0.1	35.3	27.1	58.2	48.2	22.9	21.1	N
0.50626	34.7	27.0	0.1	34.8	27.1	56.0	46.0	21.2	18.9	N
3.08180	32.7	20.8	0.6	33.3	21.4	56.0	46.0	22.7	24.6	N
9.93834	44.0	40.7	1.3	45.3	42.0	60.0	50.0	14.7	8.0	N
16.22702	48.1	45.1	1.8	49.9	46.9	60.0	50.0	10.1	3.1	N
0.15000	47.4	30.1	0.1	47.5	30.2	66.0	56.0	18.5	25.8	L
0.37137	33.9	21.5	0.1	34.0	21.6	58.5	48.5	24.5	26.9	L
0.50539	30.1	20.0	0.1	30.2	20.1	56.0	46.0	25.8	25.9	L
3.05260	32.7	18.5	0.6	33.3	19.1	56.0	46.0	22.7	26.9	L
10.06100	43.1	40.0	1.3	44.4	41.3	60.0	50.0	15.6	8.7	L
16.22836	48.0	45.1	1.8	49.8	46.9	60.0	50.0	10.2	3.1	L

CHART: WITH FACTOR, Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)
 Except for the above table : adequate margin data below the limits.

Dwell time

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

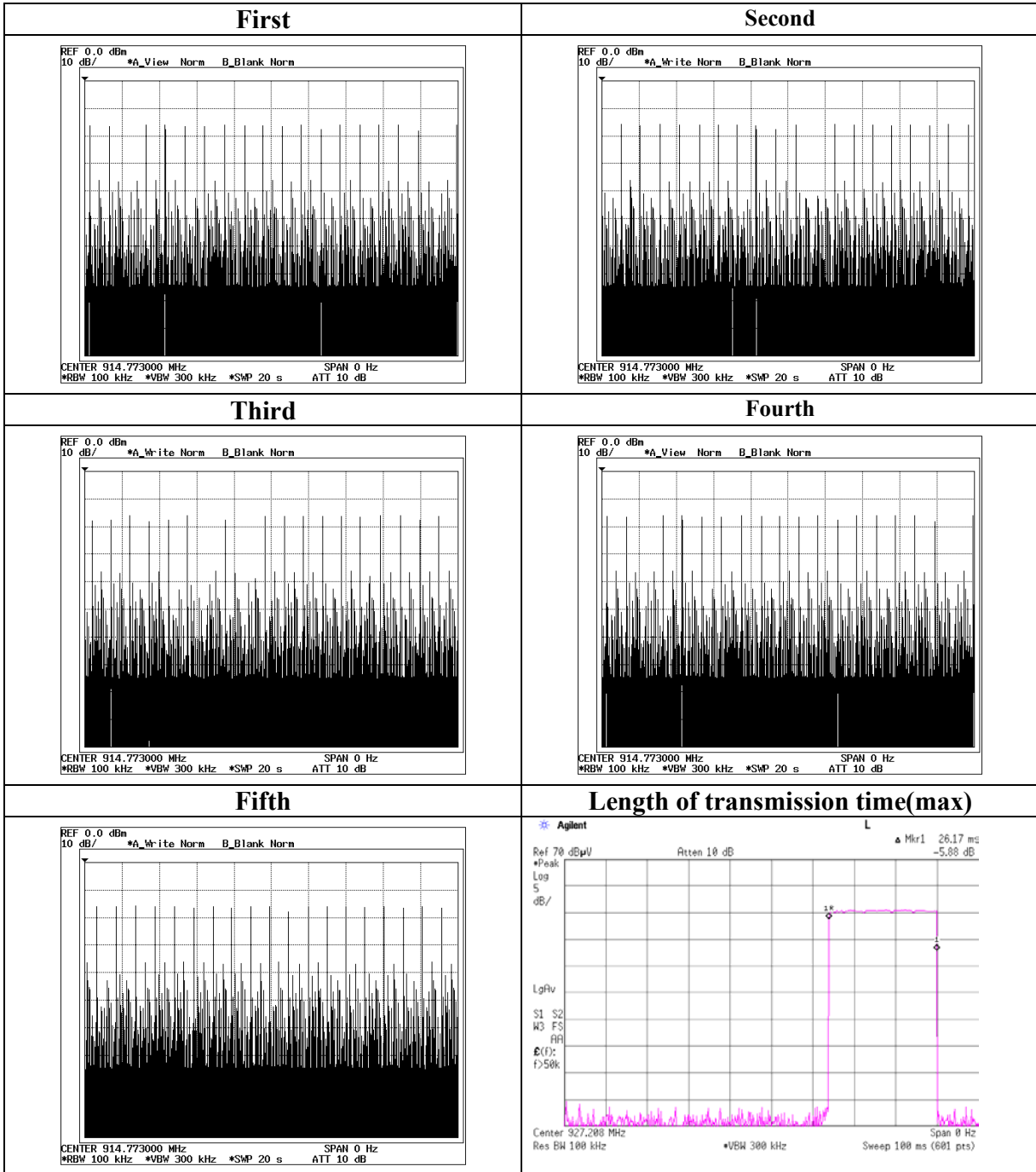
COMPANY : OMRON Corporation	REPORT NO : 26FE0177-HO
EQUIPMENT : RFID System	REGULATION : -
MODEL : V740-BA50C04-US+V740-HS03LA	DATE : Feb 20 & Mar 25, 2006
S/ N : 05090007/062002	TEMPERATURE : 24, 25deg.C
POWER : AC120V/60Hz	HUMIDITY : 32, 43%
MODE : Transmitting (Hopping On)	ENGINEER : Mitsuru Fujimura
	: Makoto Kosaka

times	Number of Hoppings/ 20sec	Length of transmission time AV [msec]	Dwell time [msec]	Result [msec]	Limit [msec]
1	18	* 16.97	18.0* 16.97	305.46	400
2	18				
3	17				
4	18				
5	19				
Average	18.0				

Dwell time factor
 Dwell time factor = $20\log_{10}(\text{dwell time}/100\text{ms})$
 $=20\log_{10}(26.17\text{ms}/100\text{ms})$
 $=-11.64$

*Remarks: Length of transmission time of the EUT randomly varies from the minimum, 1.75 msec to the maximum, 26.17 msec. Therefore, 120 Data sampling (for about 2 minutes) was taken, and the average value was used as the length of transmission time.

Dwell time



Maximum Peak Output Power

COMPANY	: OMRON Corporation	REPORT NO	: 26FE0177-HO
EQUIPMENT	: RFID System	REGULATION	: FCC Part 15C 15.247(b)(2)
MODEL	: V740-BA50C04-US	TEST DISTANCE	: -
SAMPLE No.	: 05090007	DATE	: Feb 20, 2006
POWER	: AC120V/60Hz	Temperature	: 25deg.C
Mode	: Transmitting (Hopping Off)	Humidity	: 31%
		ENGINEER	: Makoto Kosaka

AC120V/60Hz 100%

CH	FREQ [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Attn [dB]	Result [dBm]	Limit [1.0W] [dBm]
Low	902.73	-10.22	0.00	40.00	29.78	30.00
Mid	914.77	-10.33	0.00	40.00	29.67	30.00
High	927.32	-10.59	0.00	40.00	29.41	30.00

***Reference: Original Application, AC120V/60Hz 100%**

CH	FREQ [MHz]	S/A Reading [dBm]	Cable Loss [dB]	Attn [dB]	Result [dBm]	Limit [1.0W] [dBm]
Low	902.73	-10.15	0.00	40.00	29.85	30.00
Mid	914.77	-10.14	0.00	40.00	29.86	30.00
High	927.32	-10.50	0.00	40.00	29.50	30.00

Sample Calculation:

Result = S/A Reading + Cable loss + Attenuator

Used Equipment: MAT-16, MRENT-23

*The result value was calculated with "particular connector + OMRON special cable" terminal.

<The specification of OMRON special cable>

Model Name: V740-A01-3.0M

Cable Loss: 1.5dB

UL Apex Co., Ltd.

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MF060b(01.06.05)

Radiated Spurious Emission
(Antenna:V740-HS03L)

* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

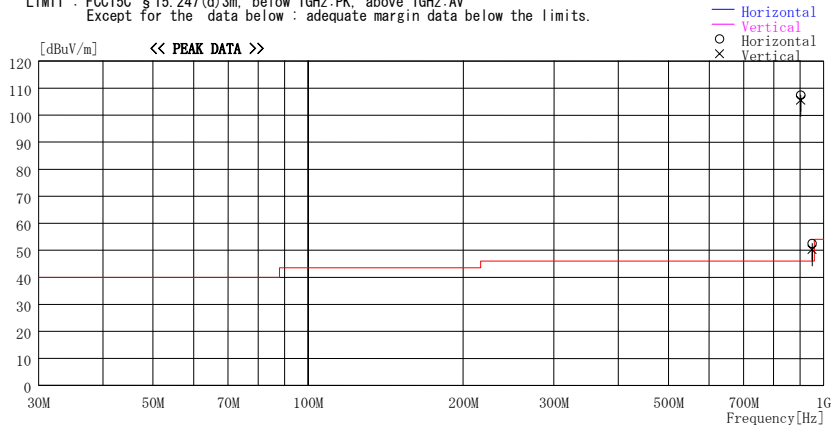
DATA OF RADIATED EMISSION TEST

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

Company : OMRON Corporation
 Kind of EUT : Radio Identification System
 Model No. : V740-BA50C04-US-V740-HS03L
 Serial No. : 05090007/062001
 Report No. : 26FE0177-H0
 Power : AC120V/60Hz (DC24V)
 Temp./Humi. : 25deg. C. / 31%
 Operator : Makoto Kosaka

Mode / Remarks : Tx ch1 902.726MHz X-axis(Hor) Y-axis(Ver)without Tag worst S/A RBW100kHz VBW300kHz

LIMIT : FCC15C §15.247(d)3m, below 1GHz:PK, above 1GHz:AV
 Except for the data below : adequate margin data below the limits.



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]							
902.716	104.2	PK	20.9	-17.7	107.4	315	130	Hori.			Fund
902.716	102.3	PK	20.9	-17.7	105.5	29	100	Vert.			Fund
950.020	47.5	PK	22.4	-17.4	52.5	24	130	Hori.			20dBc
950.020	45.2	PK	22.4	-17.4	50.2	2	100	Vert.			20dBc

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)

20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.

Radiated Spurious Emission
(Antenna:V740-HS03L)

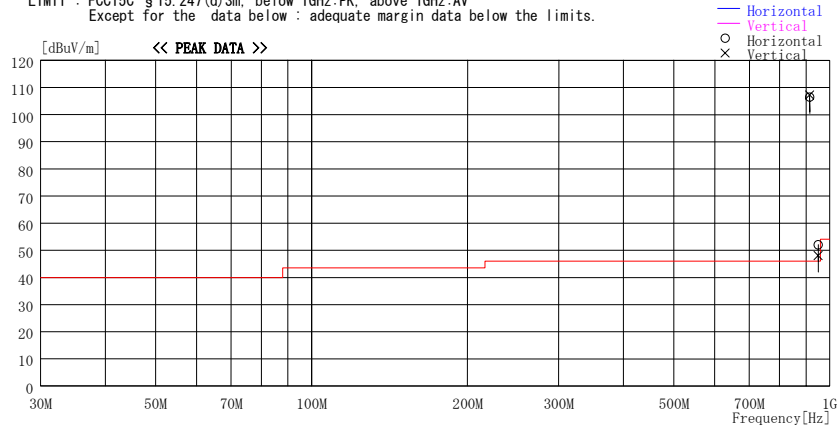
* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

DATA OF RADIATED EMISSION TEST

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

Company : OMRON Corporation
 Kind of EUT : Radio Identification System
 Model No. : V740-BA50C04-US+V740-HS03L
 Serial No. : 05090007/062001
 Report No. : 26FE0177-HO
 Power : AC120V/60Hz (DC24V)
 Temp./Humi. : 25deg. C. / 31%
 Operator : MakoTo Kosaka
 Mode / Remarks : Tx ch25 914.770MHz X-axis(Hor) Y-axis(Ver)without Tag worst S/A RBW100kHz VBW300kHz

LIMIT : FCC15C § 15.247(d)3m. below 1GHz:PK, above 1GHz:AV
 Except for the data below : adequate margin data below the limits.



Frequency [MHz]	Reading [dBuV]	DET	Antenna		Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss& Gain [dB]							
914.717	102.6	PK	21.3	-17.4	106.5	33	127	Hori.			Fund
914.717	103.3	PK	21.3	-17.4	107.2	28	100	Vert.			Fund
950.020	47.0	PK	22.4	-17.4	52.0	337	125	Hori.			20dBc
950.020	43.0	PK	22.4	-17.4	48.0	1	100	Vert.			20dBc

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)

20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.

Radiated Spurious Emission
(Antenna:V740-HS03L)

* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

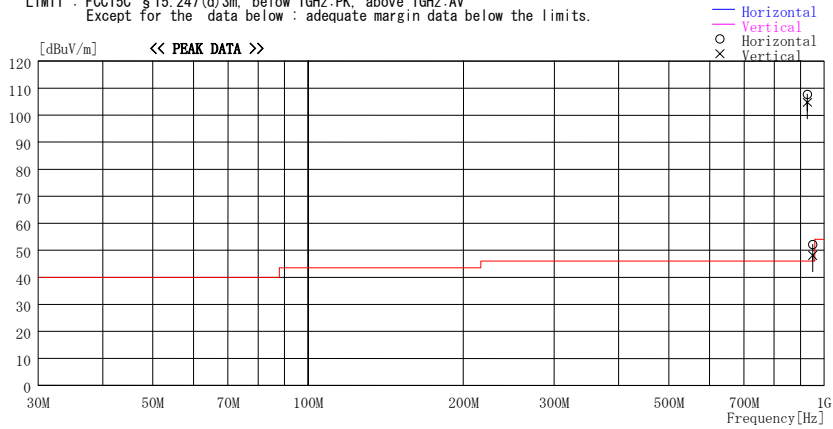
DATA OF RADIATED EMISSION TEST

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

Company : OMRON Corporation Report No. : 26FE0177-H0
 Kind of EUT : Radio Identification System Power : AC120V/60Hz (DC24V)
 Model No. : V740-BA50C04-US+V740-HS03L Temp./Humi. : 25deg.C. / 31%
 Serial No. : 05090007/062001 Operator : Makoto Kosaka

Mode / Remarks : Tx ch50 927.322MHz X-axis(Hor) Y-axis(Ver)without Tag worst S/A RBW100kHz VBW300kHz

LIMIT : FCC15C §15.247(d)3m. below 1GHz:PK, above 1GHz:AV
 Except for the data below : adequate margin data below the limits.



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]							
927.317	103.2	PK	21.7	-17.3	107.6	23	126	Hori.			Fund
927.317	100.3	PK	21.7	-17.3	104.7	25	100	Vert.			Fund
950.020	47.1	PK	22.4	-17.4	52.1	72	116	Hori.			20dBc
950.020	43.1	PK	22.4	-17.4	48.1	2	100	Vert.			20dBc

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)

20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.

Radiated Spurious Emission
(Antenna:V740-HS03LA)

* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

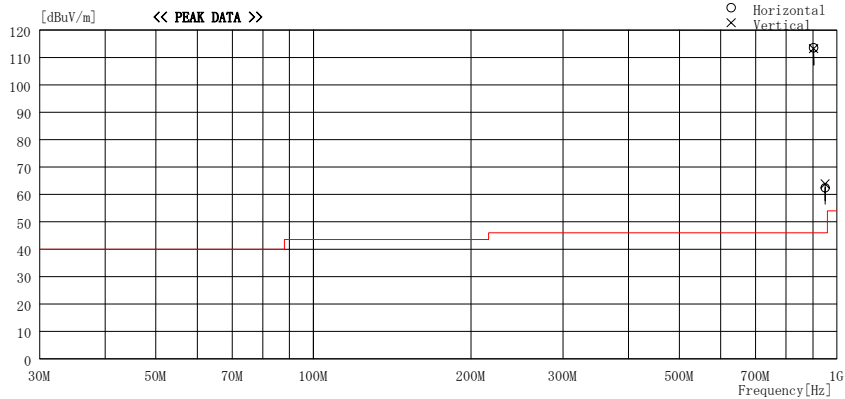
DATA OF RADIATED EMISSION TEST

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

Company : OMRON Corporation Report No. : 26FE0177-HO
 Kind of EUT : Radio Identification System Power : AC120V/60Hz (DC24V)
 Model No. : V740-BA50C04-US-V740-HS03LA Temp./Humi. : 25deg. C. / 31%
 Serial No. : 05090007/062002 Operator : Makoto Kosaka

Mode / Remarks : Tx ch1 902.726MHz X-axis(Hor) Y-axis(Ver)without Tag worst S/A RBW100kHz VBW300kHz

LIMIT : FCC15C §15.247(d)3m, below 1GHz:PK, above 1GHz:AV
 Except for the data below : adequate margin data below the limits.



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]							
902.716	110.3	PK	20.9	-17.7	113.5	335	127	Hori.			Fund
902.716	110.0	PK	20.9	-17.7	113.2	1	100	Vert.			Fund
950.021	57.4	PK	22.4	-17.4	62.4	335	127	Hori.			20dBc
950.021	58.8	PK	22.4	-17.4	63.8	5	100	Vert.			20dBc

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)

20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.

Radiated Spurious Emission
(Antenna:V740-HS03LA)

* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

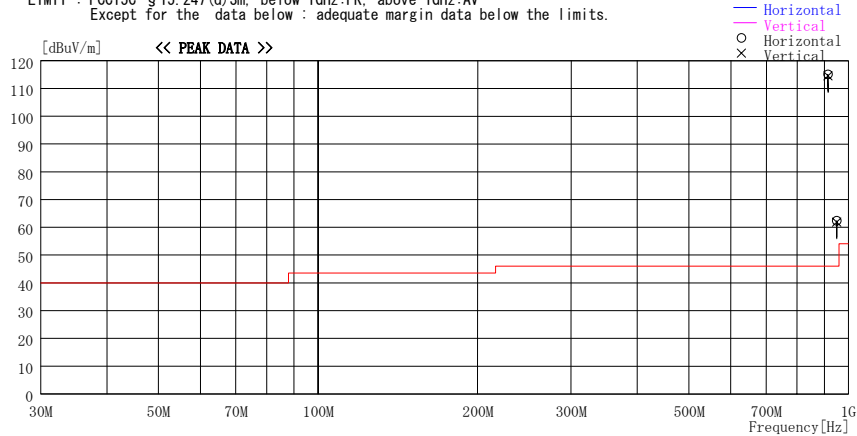
DATA OF RADIATED EMISSION TEST

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

Company : OMRON Corporation Report No. : 26FE0177-H0
 Kind of EUT : Radio Identification System Power : AC120V/60Hz (DC24V)
 Model No. : V740-BA50C04-US+V740-HS03LA Temp./Humi. : 25deg. C. / 31%
 Serial No. : 05090007/062002 Operator : Makoto Kosaka

Mode / Remarks : Tx ch25 914.770MHz X-axis(Hor) Y-axis(Ver) without Tag worst S/A RBW100kHz VBW300kHz

LIMIT : FCC15C §15.247(d)3m, below 1GHz:PK, above 1GHz:AV
 Except for the data below : adequate margin data below the limits.



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]	
914.717	111.1	PK	21.3	-17.4	115.0	20	127	Hori.			Fund
914.717	110.6	PK	21.3	-17.4	114.5	36	100	Vert.			Fund
950.020	57.3	PK	22.4	-17.4	62.3	1	120	Hori.			20dBc
950.020	56.9	PK	22.4	-17.4	61.9	36	100	Vert.			20dBc

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)

20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.

Radiated Spurious Emission
(Antenna:V740-HS03LA)

* The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.

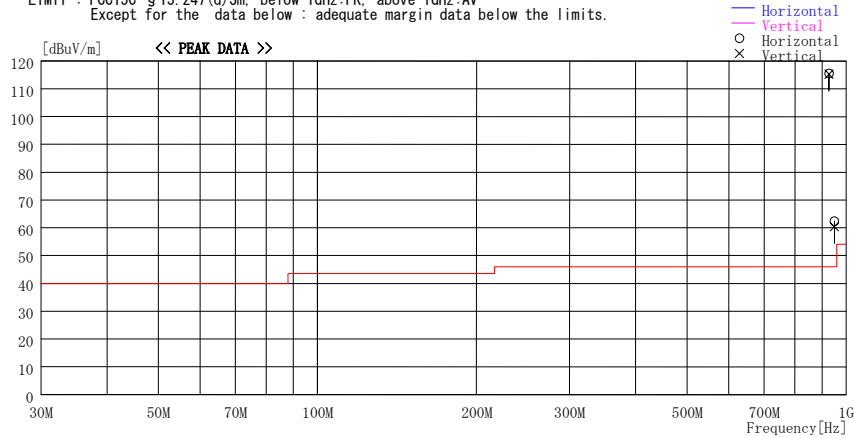
DATA OF RADIATED EMISSION TEST

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

Company : OMRON Corporation Report No. : 26FE0177-H0
 Kind of EUT : Radio Identification System Power : AC120V/60Hz (DC24V)
 Model No. : V740-BA50C04-US+V740-HS03LA Temp./Humi. : 25deg. C. / 31%
 Serial No. : 05090007/062002 Operator : Makoto Kosaka

Mode / Remarks : Tx ch50 927.322MHz X-axis(Hor) Y-axis(Ver) without Tag worst S/A RBW100kHz VBW300kHz

LIMIT : FCC15C § 15.247(d) 3m, below 1GHz:PK, above 1GHz:AV
 Except for the data below : adequate margin data below the limits.



Frequency [MHz]	Reading [dBuV]	DET	Antenna		Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit [dBuV/m]	Margin [dB]	Comment
			Factor [dB/m]	Loss& Gain [dB]							
927.317	111.1	PK	21.7	-17.3	115.5	7	120	Hori.			Fund
927.317	110.8	PK	21.7	-17.3	115.2	28	100	Vert.			Fund
950.020	57.3	PK	22.4	-17.4	62.3	1	120	Hori.			20dBc
950.020	55.4	PK	22.4	-17.4	60.4	5	150	Vert.			20dBc

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)

20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.

**Radiated Spurious Emission
(Antenna:V740-HS03L)**

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

COMPANY : OMRON Corporation
EQUIPMENT : RFID System
MODEL : V740-BA50C04-US+V740-HS03L
SAMPLE No. : 05090007/062001
POWER : AC120V/60Hz
Mode : Transmitting (ch 1: 902.726MHz)

REPORT NO : 26FE0177-HO
REGULATION : FCC Part 15C 15.247(d)
TEST DISTANCE : 3m
DATE : Feb 20, 2006
Temperature : 24deg.C
Humidity : 32%

ENGINEER : Mitsuru Fujimura

PK DETECT(S/A : RBW 1MHz and VBW 1MHz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER							HOR	VER		HOR	VER
2*	1.805380	61.8	61.8	28.8	32.6	3.0	0.0	1.2	-	62.2	62.2	74.0	11.8	11.8
3	2.708096	49.6	49.4	31.1	32.3	3.6	0.0	0.6	-	52.6	52.4	74.0	21.4	21.6
4	3.610831	53.9	55.6	31.8	32.0	4.3	0.0	0.7	-	58.7	60.4	74.0	15.3	13.6
5	4.513593	44.6	43.5	33.9	31.9	4.9	0.0	2.1	-	53.6	52.5	74.0	20.5	21.5
6	5.416356	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
7	6.319082	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
8	7.221808	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
9	8.124534	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
10	9.027260	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-

AV DETECT(S/A : RBW 1MHz and VBW 10Hz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR	VER							HOR	VER		HOR	VER
2*	1.805380	60.4	60.5	28.8	32.6	3.0	0.0	1.2	-11.6	49.2	49.3	54.0	4.8	4.7
3	2.708096	46.1	45.6	31.1	32.3	3.6	0.0	0.6	-11.6	37.5	37.0	54.0	16.6	17.1
4	3.610831	51.3	53.2	31.8	32.0	4.3	0.0	0.7	-11.6	44.5	46.4	54.0	9.5	7.6
5	4.513630	36.1	33.6	33.9	31.9	4.9	0.0	2.1	-11.6	33.5	31.0	54.0	20.6	23.0
6	5.416356	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
7	6.319082	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
8	7.221808	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
9	8.124534	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
10	9.027260	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-

* Reference data

(S/A : RBW 100kHz and VBW 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		Limit dBc
		HOR	VER							HOR	VER	
1	902.716	104.2	102.3	20.9	27.9	4.3	5.9	-	-	107.4	105.5	45.7
2	1805.380	61.3	61.3	28.8	32.6	3.0	0.0	1.2	-	61.7	61.7	43.8

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + High Pass Filter (or Att)

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

*Dwell time factor : See dwell time data page 23.

Used Equipment: MHA-06, MCC-16, MCC-10, MPA-10, MHF-03, MHF-04, MRENT-23

Restricted bands

- * The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.
- * In the above table, factor 0.0dB represents no use of Atten. and/or Filter.
- * 20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.
- * For the frequency over the sixth harmonics, the noise from the EUT was not detected.

**Radiated Spurious Emission
(Antenna:V740-HS03L)**

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

COMPANY : OMRON Corporation
EQUIPMENT : RFID System
MODEL : V740-BA50C04-US+V740-HS03L
SAMPLE No. : 05090007/062001
POWER : AC120V/60Hz
Mode : Transmitting (ch 25:914.773MHz)

REPORT NO : 26FE0177-HO
REGULATION : FCC Part 15C 15.247(d)
TEST DISTANCE : 3m
DATE : Feb 20, 2006
Temperature : 24deg.C
Humidity : 32%

ENGINEER : Mitsuru Fujimura

PK DETECT(S/A : RBW 1MHz and VBW 1MHz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]							HOR [dB]	VER [dB]			
2*	1.829444	62.6	62.2	29.1	32.5	3.0	0.0	1.1	-	63.3	62.9	74.0	10.7	11.1
3	2.744345	45.4	44.8	31.2	32.2	3.7	0.0	0.5	-	48.6	48.0	74.0	25.4	26.0
4	3.658885	54.7	52.5	32.0	32.0	4.3	0.0	0.5	-	59.5	57.3	74.0	14.5	16.7
5	4.573536	44.5	46.1	34.2	31.9	4.9	0.0	2.3	-	54.0	55.6	74.0	20.0	18.4
6	5.488638	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
7	6.403411	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
8	7.318184	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
9	8.232957	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
10	9.147730	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-

AV DETECT(S/A : RBW 1MHz and VBW 10Hz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]							HOR [dB]	VER [dB]			
2*	1.829444	61.7	61.2	29.1	32.5	3.0	0.0	1.1	-11.6	50.8	50.3	54.0	3.2	3.7
3	2.744345	36.8	35.3	31.2	32.2	3.7	0.0	0.5	-11.6	28.4	26.9	54.0	25.6	27.1
4	3.658885	52.2	49.6	32.0	32.0	4.3	0.0	0.5	-11.6	45.4	42.8	54.0	8.6	11.3
5	4.573536	36.9	39.8	34.2	31.9	4.9	0.0	2.3	-11.6	34.8	37.7	54.0	19.2	16.3
6	5.488638	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
7	6.403411	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
8	7.318184	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
9	8.232957	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
10	9.147730	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-

*Reference data

(S/A : RBW 100kHz and VBW 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		Limit [dBuV/m]	dBc	
		HOR [dBuV]	VER [dBuV]							HOR [dB]	VER [dB]			
1	914.717	102.6	103.3	21.3	27.7	4.4	5.9	-	-	106.5	107.2			
2	1829.444	62.2	61.7	29.1	32.5	3.0	0.0	1.1	-	62.9	62.4		43.6	44.8

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + High Pass Filter (or Att)

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

*Dwell time factor : See dwell time data page 23.

Used Equipment: MHA-06, MCC-16, MCC-10, MPA-10, MHF-03,MHF-04, MRENT-23

Restricted bands

- * The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.
- * In the above table, factor 0.0dB represents no use of Atten. and/or Filter.
- * 20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.
- * For the frequency over the sixth harmonics, the noise from the EUT was not detected.

**Radiated Spurious Emission
(Antenna:V740-HS03L)**

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

COMPANY : OMRON Corporation
EQUIPMENT : RFID System
MODEL : V740-BA50C04-US+V740-HS03L
SAMPLE No. : 05090007/062001
POWER : AC120V/60Hz
Mode : Transmitting (ch 50-927.322MHz)

REPORT NO : 26FE0177-HO
REGULATION : FCC Part 15C 15.247(d)
TEST DISTANCE : 3m
DATE : Feb 20, 2006
Temperature : 24deg.C
Humidity : 32%

ENGINEER : Mitsuru Fujimura

PK DETECT(S/A : RBW 1MHz and VBW 1MHz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]							HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]
2*	1.854610	65.6	64.7	29.4	32.5	3.0	0.0	1.1	-	66.6	65.7	74.0	7.4	8.3
3	2.781920	50.0	49.7	31.3	32.2	3.7	0.0	0.5	-	53.3	53.0	74.0	20.7	21.0
4	3.709220	54.6	53.2	32.2	32.0	4.3	0.0	0.5	-	59.6	58.2	74.0	14.4	15.8
5	4.636585	48.4	48.8	34.7	31.9	5.1	0.0	2.3	-	58.6	59.0	74.0	15.4	15.1
6	5.563932	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
7	6.491254	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
8	7.418576	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
9	8.345898	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
10	9.273220	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-

AV DETECT(S/A : RBW 1MHz and VBW 10Hz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]							HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]
2*	1.854610	64.8	63.7	29.4	32.5	3.0	0.0	1.1	-11.6	54.2	53.1	54.0	-0.2	0.9
3	2.781920	45.6	45.5	31.3	32.2	3.7	0.0	0.5	-11.6	37.3	37.2	54.0	16.7	16.8
4	3.709220	52.1	50.5	32.2	32.0	4.3	0.0	0.5	-11.6	45.5	43.9	54.0	8.5	10.1
5	4.636585	44.3	44.1	34.7	31.9	5.1	0.0	2.3	-11.6	42.9	42.7	54.0	11.1	11.4
6	5.563932	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
7	6.491254	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
8	7.418576	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
9	8.345898	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
10	9.273220	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-

*Reference data

(S/A : RBW 100kHz and VBW 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		dBc [dB]
		HOR [dBuV]	VER [dBuV]							HOR [dBuV/m]	VER [dBuV/m]	
1	927.317	103.2	100.3	21.7	27.6	4.4	5.9	-	-	107.6	104.7	
2	1854.610	65.5	64.3	29.4	32.5	3.0	0.0	1.1	-	66.5	65.3	41.2 / 39.4

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + High Pass Filter (or Att)

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

*Dwell time factor : See dwell time data page 23.

Used Equipment: MHA-06, MCC-16, MCC-10, MPA-10, MHF-03, MHF-04, MRENT-23

Restricted bands

- * The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.
- * In the above table, factor 0.0dB represents no use of Atten. and/or Filter.
- * 20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.
- * For the frequency over the sixth harmonics, the noise from the EUT was not detected.

**Radiated Spurious Emission
(Antenna:V740-HS03LA)**

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

COMPANY : OMRON Corporation
EQUIPMENT : RFID System
MODEL : V740-BA50C04-US+V740-HS03LA
SAMPLE No. : 05090007/062002
POWER : AC120V/60Hz
Mode : Transmitting (ch 1: 902.726MHz)

REPORT NO : 26FE0177-HO
REGULATION : FCC Part 15C 15.247(d)
TEST DISTANCE : 3m
DATE : Feb 20, 2006
Temperature : 24deg.C
Humidity : 32%

ENGINEER : Mitsuru Fujimura

PK DETECT(S/A : RBW 1MHz and VBW 1MHz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR [dBuV]	VER							HOR [dBuV/m]	VER		HOR [dB]	VER
2*	1.805380	59.3	62.4	28.8	32.6	3.0	0.0	1.2	-	59.7	62.8	74.0	14.3	11.2
3	2.708096	48.9	48.6	31.1	32.3	3.6	0.0	0.6	-	51.9	51.6	74.0	22.1	22.4
4	3.610831	53.2	53.4	31.8	32.0	4.3	0.0	0.7	-	58.0	58.2	74.0	16.0	15.8
5	4.513593	43.4	45.4	33.9	31.9	4.9	0.0	2.1	-	52.4	54.4	74.0	21.6	19.6
6	5.416356	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
7	6.319082	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
8	7.221808	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
9	8.124534	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
10	9.027260	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-

AV DETECT(S/A : RBW 1MHz and VBW 10Hz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR [dBuV]	VER							HOR [dBuV/m]	VER		HOR [dB]	VER
2*	1.805380	58.6	61.4	28.8	32.6	3.0	0.0	1.2	-11.6	47.4	50.2	54.0	6.6	3.8
3	2.708096	45.2	45.1	31.1	32.3	3.6	0.0	0.6	-11.6	36.6	36.5	54.0	17.4	17.5
4	3.610831	51.1	51.1	31.8	32.0	4.3	0.0	0.7	-11.6	44.3	44.3	54.0	9.7	9.7
5	4.513630	34.1	38.9	33.9	31.9	4.9	0.0	2.1	-11.6	31.5	36.3	54.0	22.5	17.7
6	5.416356	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
7	6.319082	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
8	7.221808	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
9	8.124534	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
10	9.027260	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-

*Reference data

(S/A : RBW 100kHz and VBW 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		dBc
		HOR [dBuV]	VER							HOR [dBuV/m]	VER	
1	902.716	110.3	110.0	20.9	27.9	4.3	5.9	-	-	113.5	113.2	53.9
2	1805.380	59.2	62.1	28.8	32.6	3.0	0.0	1.2	-	59.6	62.5	50.7

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + High Pass Filter (or Att)

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

*Dwell time factor : See dwell time data page 23.

Used Equipment: MHA-06, MCC-16, MCC-10, MPA-10, MHF-03,MHF-04, MRENT-23

Restricted bands

- * The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.
- * In the above table, factor 0.0dB represents no use of Atten. and/or Filter.
- * 20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.
- * For the frequency over the sixth harmonics, the noise from the EUT was not detected.

**Radiated Spurious Emission
(Antenna:V740-HS03LA)**

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

COMPANY : OMRON Corporation
EQUIPMENT : RFID System
MODEL : V740-BA50C04-US+V740-HS03LA
SAMPLE No. : 05090007/062002
POWER : AC120V/60Hz
Mode : Transmitting (ch 25:914.773MHz)

REPORT NO : 26FE0177-HO
REGULATION : FCC Part 15C 15.247(d)
TEST DISTANCE : 3m
DATE : Feb 20, 2006
Temperature : 24deg.C
Humidity : 32%

ENGINEER : Mitsuru Fujimura

PK DETECT(S/A : RBW 1MHz and VBW 1MHz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]							HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]
2*	1.829444	61.9	64.2	29.1	32.5	3.0	0.0	1.1	-	62.6	64.9	74.0	11.4	9.1
3	2.744345	45.1	44.4	31.2	32.2	3.7	0.0	0.5	-	48.3	47.6	74.0	25.7	26.4
4	3.658885	53.8	51.1	32.0	32.0	4.3	0.0	0.5	-	58.6	55.9	74.0	15.4	18.1
5	4.573536	44.6	45.3	34.2	31.9	4.9	0.0	2.3	-	54.1	54.8	74.0	19.9	19.2
6	5.488638	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
7	6.403411	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
8	7.318184	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
9	8.232957	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
10	9.147730	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-

AV DETECT(S/A : RBW 1MHz and VBW 10Hz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]							HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]
2*	1.829444	60.8	63.5	29.1	32.5	3.0	0.0	1.1	-11.6	49.9	52.6	54.0	4.1	1.4
3	2.744345	36.9	36.5	31.2	32.2	3.7	0.0	0.5	-11.6	28.5	28.1	54.0	25.5	25.9
4	3.658885	51.1	47.8	32.0	32.0	4.3	0.0	0.5	-11.6	44.3	41.0	54.0	9.7	13.0
5	4.573536	37.5	38.1	34.2	31.9	4.9	0.0	2.3	-11.6	35.4	36.0	54.0	18.6	18.0
6	5.488638	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
7	6.403411	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
8	7.318184	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
9	8.232957	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
10	9.147730	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-

*Reference data

(S/A : RBW 100kHz and VBW 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		dBC [dB]
		HOR [dBuV]	VER [dBuV]							HOR [dBuV/m]	VER [dBuV/m]	
1	914.717	111.1	110.6	21.3	27.7	4.4	5.9	-	-	115.0	114.5	53.0
2	1829.444	61.3	64.0	29.1	32.5	3.0	0.0	1.1	-	62.0	64.7	49.8

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + High Pass Filter (or Att)

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

*Dwell time factor : See dwell time data page 23.

Used Equipment: MHA-06, MCC-16, MCC-10, MPA-10, MHF-03, MHF-04, MRENT-23

Restricted bands

- * The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.
- * In the above table, factor 0.0dB represents no use of Atten. and/or Filter.
- * 20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.
- * For the frequency over the sixth harmonics, the noise from the EUT was not detected.

**Radiated Spurious Emission
(Antenna:V740-HS03LA)**

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

COMPANY : OMRON Corporation
EQUIPMENT : RFID System
MODEL : V740-BA50C04-US+V740-HS03LA
SAMPLE No. : 05090007/062002
POWER : AC120V/60Hz
Mode : Transmitting (ch 50:927.322MHz)

REPORT NO : 26FE0177-HO
REGULATION : FCC Part 15C 15.247(d)
TEST DISTANCE : 3m
DATE : Feb 20, 2006
Temperature : 24deg.C
Humidity : 32%

ENGINEER : Mitsuru Fujimura

PK DETECT(S/A : RBW 1MHz and VBW 1MHz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]							HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]
2*	1.854610	64.9	66.4	29.4	32.5	3.0	0.0	1.1	-	65.9	67.4	74.0	8.1	6.6
3	2.781920	46.8	47.7	31.3	32.2	3.7	0.0	0.5	-	50.1	51.0	74.0	23.9	23.0
4	3.709220	53.0	52.4	32.2	32.0	4.3	0.0	0.5	-	58.0	57.4	74.0	16.0	16.6
5	4.636585	47.1	48.0	34.7	31.9	5.1	0.0	2.3	-	57.3	58.2	74.0	16.7	15.8
6	5.563932	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
7	6.491254	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
8	7.418576	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
9	8.345898	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-
10	9.273220	N/S	N/S	-	-	-	-	-	-	-	-	74.0	-	-

AV DETECT(S/A : RBW 1MHz and VBW 10Hz)

No.	FREQ [GHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		Limit AV [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]							HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]
2*	1.854610	63.8	65.5	29.4	32.5	3.0	0.0	1.1	-11.6	53.2	54.9	54.0	0.8	-0.9
3	2.781920	41.7	43.4	31.3	32.2	3.7	0.0	0.5	-11.6	33.4	35.1	54.0	20.6	18.9
4	3.709220	50.6	50.0	32.2	32.0	4.3	0.0	0.5	-11.6	44.0	43.4	54.0	10.0	10.6
5	4.636585	42.2	43.5	34.7	31.9	5.1	0.0	2.3	-11.6	40.8	42.1	54.0	13.2	11.9
6	5.563932	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
7	6.491254	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
8	7.418576	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
9	8.345898	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-
10	9.273220	N/S	N/S	-	-	-	-	-	-	-	-	54.0	-	-

*Reference data

(S/A : RBW 100kHz and VBW 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	ATT [dB]	Hi-Pass Filter [dB]	dwell Factor [dB]	RESULT		dBC [dB]
		HOR [dBuV]	VER [dBuV]							HOR [dBuV/m]	VER [dBuV/m]	
1	927.317	111.1	110.8	21.3	27.7	4.4	5.9	-	-	115.0	114.7	/
2	1854.610	64.3	66.1	29.4	32.5	3.0	0.0	1.1	-	65.3	67.1	49.7 / 47.6

Sample Calculation :

RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + High Pass Filter (or Att)

*Except for the above table : All other spurious emissions were less than 20dB for the limit.

*Dwell time factor : See dwell time data page 23.

Used Equipment: MHA-06, MCC-16, MCC-10, MPA-10, MHF-03, MHF-04, MRENT-23

Restricted bands

- * The result is rounded off to the second decimal place. Therefore, there may be 0.1 difference for the result.
- * In the above table, factor 0.0dB represents no use of Atten. and/or Filter.
- * 20dBc was applied to the frequency over the limit of FCC 15.209 and outside the restricted band of 15.205.
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