



## EMI TEST REPORT

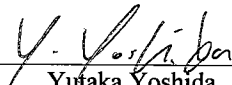
Test Report No. : 26AE0013-HO-1a

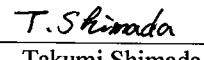
Applicant : OMRON Corporation  
Type of Equipment : Radio Identification System  
Reader/Writer, Antenna  
Model No. : READER/WRITER : V740-BA50C22A-US  
ANTENNA : V740-HS02CA  
Test standard : FCC Part 15 Subpart C  
Section 15.207, Section 15.247: 2005  
FCC ID : OZGV740-BA50C2A  
Test Result : Complied

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.

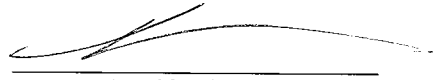
Date of test: Nov. 5, 6 and Dec. 22, 2005

Tested by:

  
Yutaka Yoshida  
EMC Services

  
Takumi Shimada  
EMC Services

Approved by:

  
Naoki Sakamoto  
Group Leader of  
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<b>CONTENTS</b>	<b>PAGE</b>
<b>SECTION 1: Client information</b> .....	<b>3</b>
<b>SECTION 2: Equipment under test (E.U.T.)</b> .....	<b>3</b>
<b>SECTION 3: Test specification, procedures &amp; results</b> .....	<b>5</b>
<b>SECTION 4: Operation of E.U.T. during testing</b> .....	<b>8</b>
<b>SECTION 5: Conducted Emission</b> .....	<b>10</b>
<b>SECTION 6: Spurious Emission</b> .....	<b>11</b>
<b>SECTION 7: 20dB Bandwidth</b> .....	<b>12</b>
<b>SECTION 8: Maximum Peak Output Power</b> .....	<b>12</b>
<b>SECTION 9: Carrier Frequency Separation</b> .....	<b>12</b>
<b>SECTION 10: Number of Hopping Frequency</b> .....	<b>12</b>
<b>SECTION 11: Dwell time</b> .....	<b>12</b>
<b>APPENDIX 1: Photographs of test setup</b> .....	<b>13</b>
<b>Conducted Emission</b> .....	<b>13</b>
<b>Spurious Emission (Radiated)</b> .....	<b>14</b>
<b>APPENDIX 2: Test instruments</b> .....	<b>15</b>
<b>APPENDIX 3: Data of EMI test</b> .....	<b>16</b>
<b>Conducted Emission</b> .....	<b>16</b>
<b>Carrier Frequency Separation</b> .....	<b>20</b>
<b>20dB Bandwidth</b> .....	<b>22</b>
<b>Number of Hopping Frequency</b> .....	<b>24</b>
<b>Dwell time</b> .....	<b>25</b>
<b>Maximum Peak Output Power &amp; Variation of Input AC Power</b> .....	<b>27</b>
<b>Radiated Spurious Emission</b> .....	<b>31</b>
<b>Conducted Spurious Emission</b> .....	<b>37</b>
<b>99% Occupied Bandwidth</b> .....	<b>42</b>

## **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-BA50C22A-US  
ANTENNA : V740-HS02CA  
Serial No. : READER/WRITER: RFP-DS-051104  
ANTENNA : RFP-DS-051104  
Rating : AC100 to 240V, 2.3A 50/60Hz(with attached AC Adaptor) DC OUT 24V  
Country of Manufacture : JAPAN  
Receipt Date of Sample : November 4, 2005  
Condition of EUT : Production prototype  
(Not for Sale: This sample is equivalent to mass-produced items.)

### **2.2 Product Description**

Model No: V740-BA50C22A-US and V740-HS02CA (referred to as the EUT in this report) is the Radio Identification System (Reader/Writer and Antenna).

The antenna, V740-HS02CA has a variant model: V740-HS02C. The difference between two models is the use of lead-free soldering. The lead-free soldering is used for V740-HS02CA, but not for V740-HS02C. There is no difference in the hardware between two antennas.

	<b>Frequency Hopping System (RF-ID)</b>
<b>Equipment Type</b>	Transceiver
<b>Frequency Range</b>	902.726MHz – 927.322MHz
<b>Bandwidth and Channel specing</b>	24.8MHz (Hopping on), 581.5kHz (Hopping off) and 500kHz
<b>Antenna Type</b>	Patch Antenna
<b>Antenna Connector Type</b>	N-type
<b>Antenna Gain</b>	+6.0 dBi max
<b>ITU Code</b>	A1D
<b>Type of Modulation</b>	Frequency Hopping
<b>Frequency of Operation</b>	CPU: 266MHz (33.333MHz), PLL: 8.0MHz, 25MHz, 33MHz, 54.24MHz
<b>Power Supply</b>	AC100 to 240V, 2.3A 50/60Hz (with attached AC Adaptor) DC OUT 24V
<b>Feature of EUT</b>	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.

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**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.

**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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### **SECTION 3: Test specification, procedures & results**

#### **3.1 Test Specification**

Test Specification : FCC Part15 Subpart C: 2005

Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators  
Section 15.207 Conducted limits: 2005  
Section 15.247 Operation within the bands 902-928MHz,  
2400-2483.5MHz, and 5725-5850MHz: 2005

### 3.2 Procedures and results

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin*0)	Results
1	Conducted Emission	<FCC>ANSI C63.4: 2003 7. AC powerline conducted emission measurements <IC>RSS-Gen 7.2.2	<FCC>Section 15.207 <IC>RSS-Gen 7.2.2	-	N/A	10.9dB 0.43692MHz, N, AV	Complied
2	Carrier Frequency Separation	<FCC>ANSI C63.4: 2003 13. Measurement of intentional radiators <IC>-	<FCC>Section 15.247 (a)(1) <IC>RSS-210 A8.1 (2)	Conducted	N/A	See data.	Complied
3	20dB Bandwidth	<FCC>ANSI C63.4: 2003 13. Measurement of intentional radiators <IC>-	<FCC>Section 15.247 (a)(1)(i) <IC>RSS-210 A8.1 (1)	Conducted	N/A		Complied
4	Number of Hopping Frequency	<FCC>ANSI C63.4: 2003 13. Measurement of intentional radiators <IC>-	<FCC>Section 15.247 (a)(1)(i) <IC>RSS-210 A8.1 (3)	Conducted	N/A		Complied
5	Dwell time	<FCC>ANSI C63.4: 2003 13. Measurement of intentional radiators <IC>-	<FCC>Section 15.247 (a)(1)(i) <IC>RSS-210 A8.1 (3)	Conducted	N/A		Complied
6	Maximum Peak Output Power	<FCC>ANSI C63.4: 2003 13. Measurement of intentional radiators <IC>RSS-Gen 4.6	<FCC>Section 15.247 (b)(2) <IC>RSS-210 A8.4 (4)	Conducted	N/A		Complied
7	Band Edge Compliance	<FCC>ANSI C63.4: 2003 13. Measurement of intentional radiators <IC>-	<FCC>Section 15.247 (d) <IC>RSS-210 A8.5	Conducted	N/A		Complied
8	Spurious Emission	<FCC>ANSI C63.4: 2003 13. Measurement of intentional radiators <IC>RSS-Gen 4.7	<FCC>Section 15.247 (d) <IC>RSS-210 A8.5	Conducted/ Radiated	N/A	1.1dB 210.2MHz, HOR, QP, Ch 1	Complied

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.

#### Conducted Emission

The measurement uncertainty (with a 95% confidence level) for this test is  $\pm 1.3$ 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  $\pm 4.5$ dB(3m)/  $\pm 4.7$ dB(10m).

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

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

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

#### Other test except Conducted Emission and Spurious Emission (Radiated)

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

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

\*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 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Band Width	RSS-Gen 4.4.1	RSS-Gen 4.4.1	Conducted	N/A	N/A	N/A

### 3.4 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.

### 3.5 Test set up, Test instruments and Data of EMI

Refer to APPENDIX 1 to 3.

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

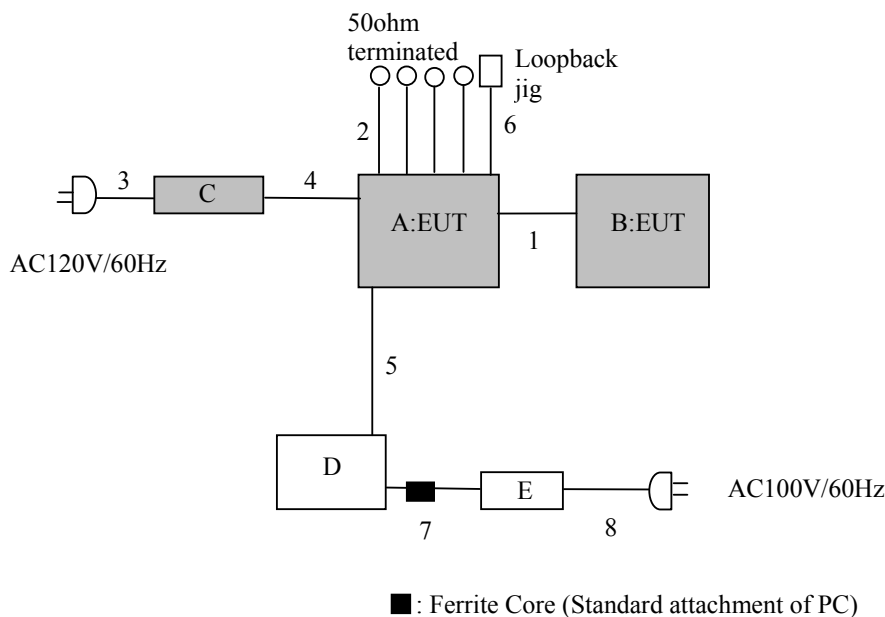
### 4.1 Operating Modes

The mode used for test: Transmitting mode  
 Low Channel (ch1) : 902.726MHz  
 Mid Channel (ch25) : 914.773MHz  
 High Channel (ch50) : 927.322MHz

### 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 made with one antenna, and others ports were connected to cables or terminated in 50 ohm.

EUT is used with any tags manufactured by the applicant, OMRON Corporation.  
 Pre-test was performed with and without the tag (M/N: V740-D12P01, Type: Passive).  
 As a result of pre-test, the formal test was performed without the tag, which was the worse condition.



- \*The test configuration is set up in the actual usage, which is in the worst conditions of the noise level.
- \*Cabling and setup were 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	READER/WRITER	V740-BA50C22A-US	RFP-DS-051104	OMRON	OZGV740-BA50C2A
B	ANTENNA	V740-HS02CA	RFP-DS-051104	OMRON	OZGV740-BA50C2A
C	AC ADAPTER	SA190A-2438V-P	-	Map Electronics	-
D	Personal Computer	2672-C2J	99-PPBWP	IBM	-
E	AC Adapter	02K6810	Z3BJ386769	IBM	-

#### List of cables used

No.	Name	Length (m)	Shield
1	Antenna Cable: V740-A01-3.0M	3.0	Y
2	Antenna Cable: V740-A01-10M	10.0	Y
3	AC adapter cable (AC line)	1.8	N
4	AC adapter cable (DC line)	1.2	N
5	Ethernet Cable (Cross-over)	5.0	Y
6	RS232C Cable	2.5	Y
7	AC adapter cable (DC line)	1.8	N
8	AC Adapter cable (AC line)	1.0	N

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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.

#### 1) 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**

[Conducted]

**Test Procedure**

The Out of Band Emission was measured with a spectrum analyzer connected to the antenna port.

**Test data** : APPENDIX 3  
**Test result** : Pass

[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	Test Receiver / Spectrum Analyzer	Spectrum Analyzer
Detector	QP: BW 120kHz(T/R)	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 made on EUT in the normal use position.

**Test data** : APPENDIX 3  
**Test result** : Pass

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## **SECTION 7: 20dB Bandwidth**

### **Test Procedure**

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

Test data : APPENDIX 3  
Test result : Pass

## **SECTION 8: 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 9: Carrier Frequency Separation**

### **Test Procedure**

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3  
Test result : Pass

## **SECTION 10: Number of Hopping Frequency**

### **Test Procedure**

The Number of Hopping Frequency was measured with a spectrum analyzer connected to the antenna port.

Test data : APPENDIX 3  
Test result : Pass

## **SECTION 11: 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

**APPENDIX 1: Photographs of test setup**

**Conducted Emission**  
**Front**



**Rear**

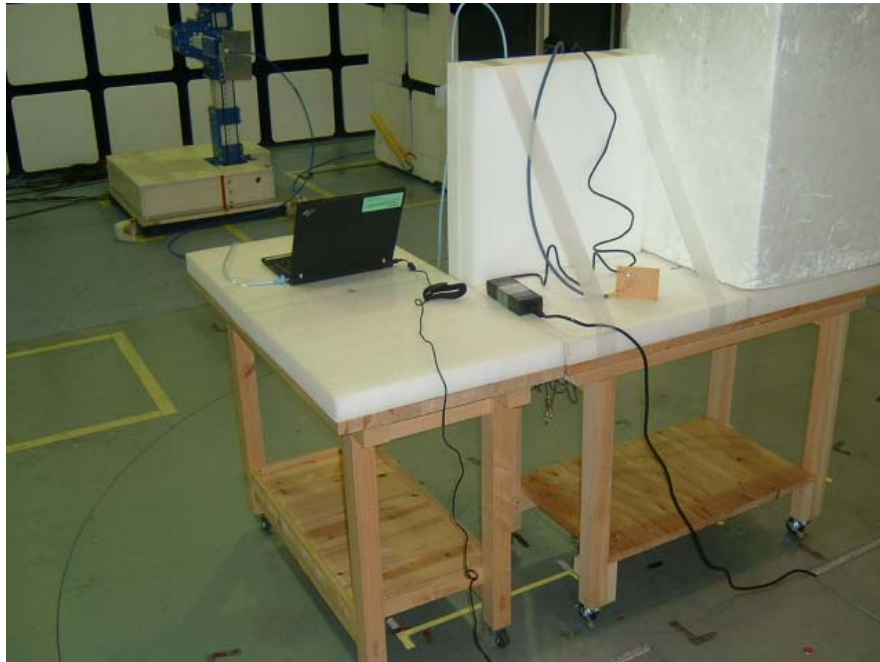


### Spurious Emission (Radiated)

**Front**



**Rear**



## **APPENDIX 2:Test instruments**

### **EMI test equipment**

<b>Control No.</b>	<b>Instrument</b>	<b>Manufacturer</b>	<b>Model No</b>	<b>Test Item</b>	<b>Calibration Date * Interval (month)</b>
MAEC-02	Anechoic Chamber	TDK	Semi Anechoic Chamber 3m	RE/CE	2005/04/11 * 12
MSA-04	Spectrum Analyzer	Agilent	E4448A	RE/CE/AT	2005/05/19 * 12
MTR-02	Test Receiver	Rohde & Schwarz	ESCS30	RE/CE	2005/02/02 * 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	2004/12/16 * 12
MPA-09	Pre Amplifier	Agilent	8447D	RE	2005/09/07 * 12
MHA-06	Horn Antenna	Schwarzbeck	BBHA9120D	RE	2005/01/10 * 12
MCC-04	Microwave Cable 1G-50GHz	Storm	421-011 ( 90-1394-079 )	RE	2005/01/05 * 12
MCC-10	Coaxial cable	Storm	90-195-394	RE	2005/03/24 * 12
MCC-25	Microwave Cable 1G-26.5GHz	Suhner	SUCOFLEX104	RE	2005/08/30 * 12
MHF-03	High pass Filter	Mini-Circuit	VHF-1320	RE	2004/12/09 * 12
MHF-04	High Pass Filter	Mini-Circuit	VHF-1200	RE	2004/12/09 * 12
MPA-01	Pre Amplifier	Agilent	8449B	RE	2005/02/05 * 12
MAT-16	Attenuator(40dB)	Weinschel Corp	93459	AT	2005/01/11 * 12
MLS-06	LISN(AMN)	Schwarzbeck	NSLK8127	CE(EUT)	2005/02/04 * 12
MLS-07	LISN(AMN)	Schwarzbeck	NSLK8127	CE(AE)	2005/02/04 * 12
MTA-01	Termination	TME	CT-01	CE	2005/02/03 * 12
MCC-13	Coaxial Cable	Fujikura/Agilent	-	CE	2005/02/24 * 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: Antenna Terminal Measurements**

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**APPENDIX 3: Data of EMI test**

**Conducted Emission**

**DATA OF CONDUCTED EMISSION TEST**

UL Apex Co., Ltd. Head Office EMC Lab. No.2 Semi Anechoic Chamber  
 Date : 2005/11/06 14:30:44

Applicant	: OMRON Corporation	Report No.	: 26AE0013-HO
Kind of EUT	: RFID System	Power	: AC120V / 60Hz (AC Adapter)
Model No.	: V740-BA50C22A-US, V740-HS02CA	Temp./Humi.	: 22deg. C / 56%
Serial No.	: RFP-DS-051104, RFP-DS-051104	Operator	: Yutaka Yoshida

Mode / Remarks : Transmitting Mode ch1:902.726MHz

LIMIT : FCC15C § 15.207 (QP) / RSS-Gen  
 FCC15C § 15.207 (AV) / RSS-Gen

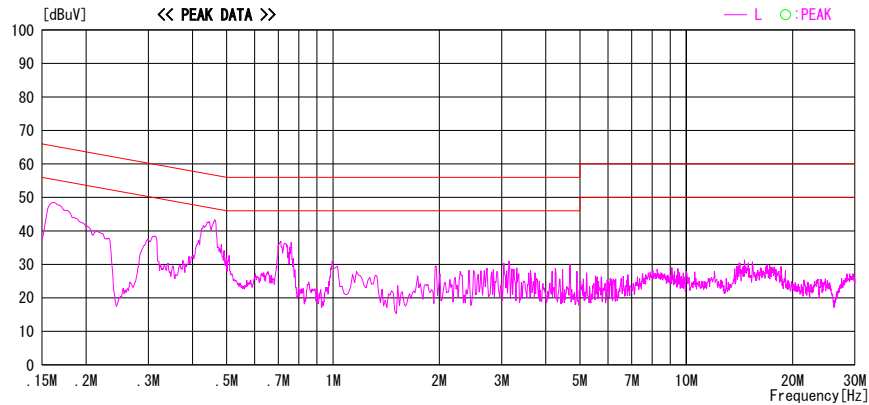
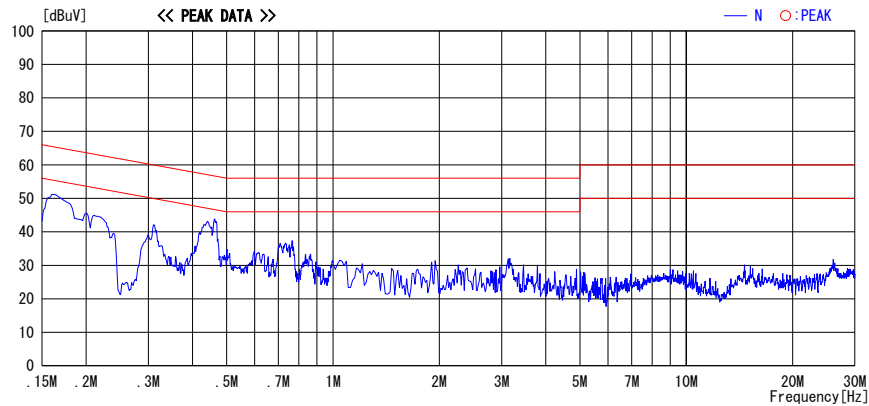


CHART: WITH FACTOR. Peak hold data. Data is uncorrected. CALCULATION: RESULT=READING+C.F (LISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.



## Conducted Emission

### DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
 Date : 2005/11/06 14:37:55

Applicant : OMRON Corporation	Report No. : 26AE0013-HO
Kind of EUT : RFID System	Power : AC120V / 60Hz (AC Adapter)
Model No. : V740-BA50C22A-US, V740-HS02CA	Temp./Humi. : 22deg. C / 56%
Serial No. : RFP-DS-051104, RFP-DS-051104	Operator : Yutaka Yoshida

Mode / Remarks : Transmitting Mode ch25:914.773MHz

LIMIT : FCC15C §15.207 (QP) / RSS-Gen  
 FCC15C §15.207 (AV) / RSS-Gen

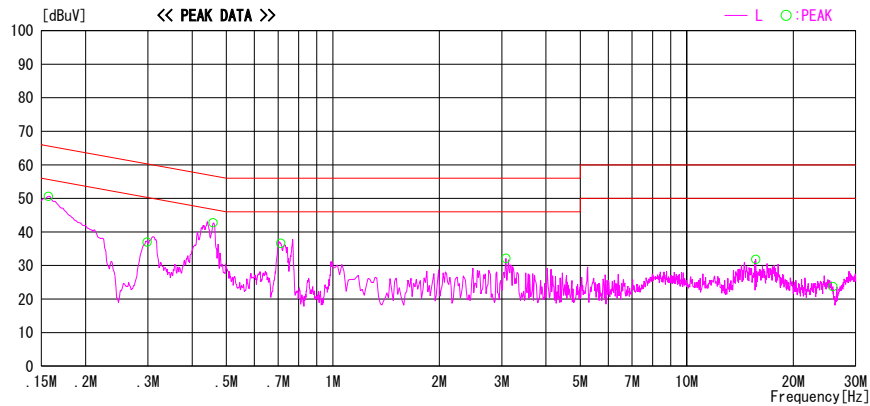
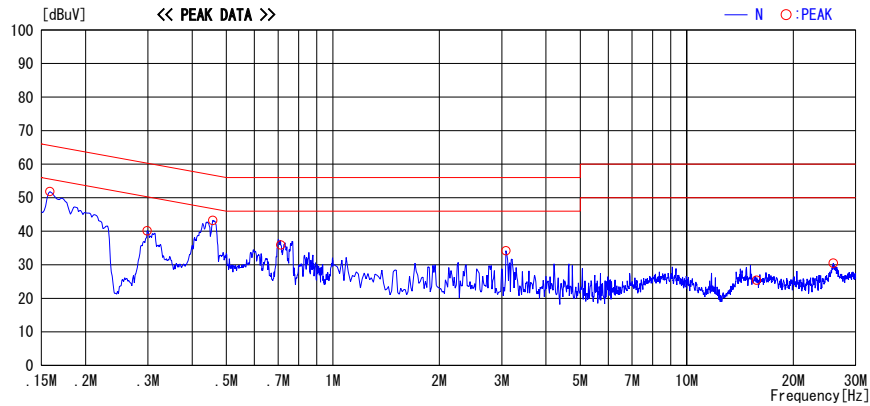


CHART: WITH FACTOR Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F (L ISN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

## Conducted Emission

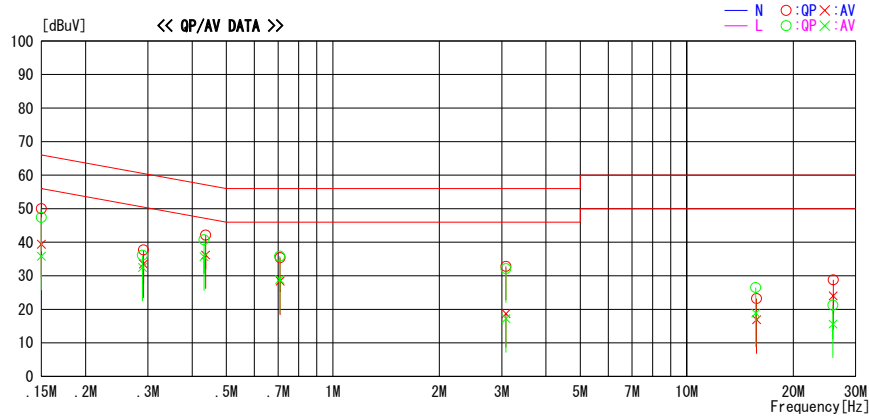
### DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
 Date : 2005/11/06 14:37:55

Applicant : OMRON Corporation  
 Kind of EUT : RFID System  
 Model No. : V740-BA50C22A-US, V740-HS02CA  
 Serial No. : RFP-DS-051104, RFP-DS-051104  
 Report No. : 26AE0013-HO  
 Power : AC120V / 60Hz (AC Adapter)  
 Temp./Humi. : 22deg. C / 56%  
 Operator : Yutaka Yoshida

Mode / Remarks : Transmitting Mode ch25:914.773MHz

LIMIT : FCC15C § 15.207 (QP) / RSS-Gen  
 FCC15C § 15.207 (AV) / RSS-Gen



Frequency [MHz]	Reading Level		Corr. Factor [dB]	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15000	49.9	39.3	0.1	50.0	39.4	66.0	56.0	16.0	16.6	N	
0.29135	37.6	33.4	0.1	37.7	33.5	60.5	50.5	22.8	17.0	N	
0.43692	42.0	36.1	0.1	42.1	36.2	57.1	47.1	15.0	10.9	N	
0.70973	35.1	28.1	0.3	35.4	28.4	56.0	46.0	20.6	17.6	N	
3.08501	32.3	18.2	0.5	32.8	18.7	56.0	46.0	23.2	27.3	N	
15.73341	21.7	15.4	1.5	23.2	16.9	60.0	50.0	36.8	33.1	N	
25.93326	26.8	22.0	2.0	28.8	24.0	60.0	50.0	31.2	26.0	N	
0.15000	47.3	35.7	0.1	47.4	35.8	66.0	56.0	18.6	20.2	L	
0.28956	36.0	32.4	0.1	36.1	32.5	60.5	50.5	24.4	18.0	L	
0.43238	40.6	35.6	0.1	40.7	35.7	57.2	47.2	16.5	11.5	L	
0.70767	35.5	28.6	0.3	35.8	28.9	56.0	46.0	20.2	17.1	L	
3.08367	31.6	16.7	0.5	32.1	17.2	56.0	46.0	23.9	28.8	L	
15.66174	25.0	17.4	1.5	26.5	18.9	60.0	50.0	33.5	31.1	L	
25.88785	19.2	13.6	2.0	21.2	15.6	60.0	50.0	38.8	34.4	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.

## Conducted Emission

### DATA OF CONDUCTED EMISSION TEST

UL Apex Co., Ltd. Head Office EMC Lab. No. 2 Semi Anechoic Chamber  
 Date : 2005/11/06 14:53:09

Applicant : OMRON Corporation Kind of EUT : RFID System Model No. : V740-BA50C22A-US, V740-HS02CA Serial No. : RFP-DS-051104, RFP-DS-051104	Report No. : 26AE0013-H0 Power : AC120V / 60Hz (AC Adapter) Temp./Humi. : 22deg. C / 56% Operator : Yutaka Yoshida
--	---

Mode / Remarks : Transmitting Mode ch50:927.322MHz

LIMIT : FCC15C §15.207 (QP) / RSS-Gen  
 FCC15C §15.207 (AV) / RSS-Gen

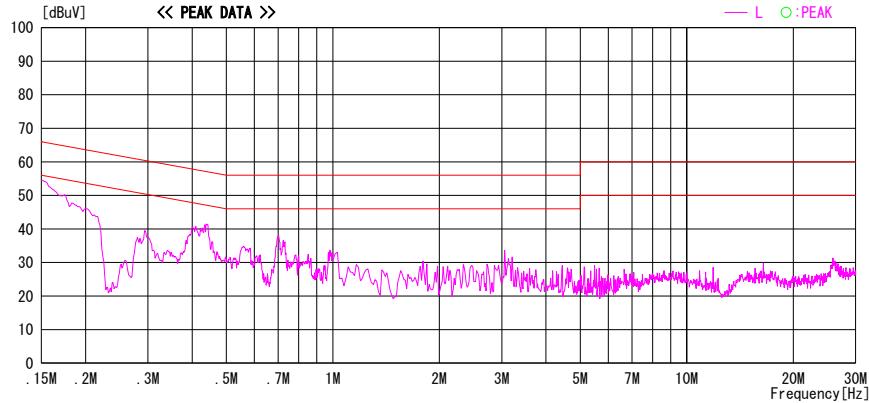
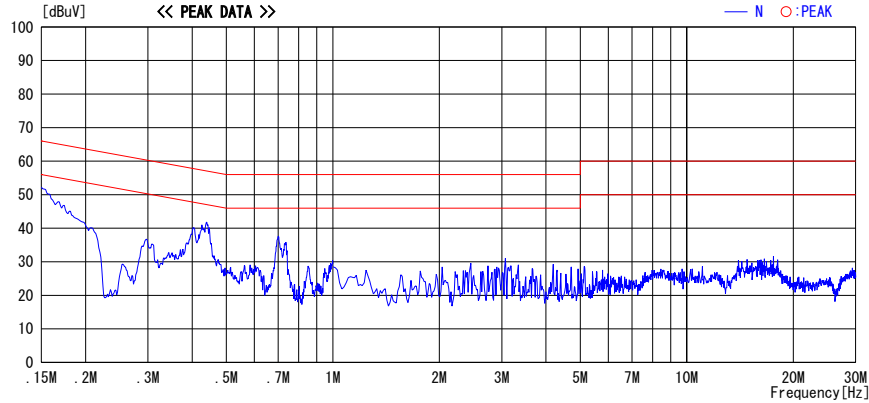


CHART: WITH FACTOR Peak hold data. Data is uncorrected. CALCURATION: RESULT=READING+C.F (L I SN LOSS+CABLE LOSS)  
 Except for the above table : adequate margin data below the limits.

Test report No. : 26AE0013-HO-1a  
Page : 20 of 42  
Issued date : November 24, 2005  
Revised : December 28, 2005  
FCC ID : OZGV740-BA50C2A

## Carrier Frequency Separation

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

COMPANY : OMRON Corporation  
EQUIPMENT : RFID System  
MODEL : V740-BA50C22A-US,V740-HS02CA  
S/N : RFP-DS-051104, RFP-DS-051104  
POWER : AC120V/60Hz  
MODE : Transmitting (Hopping On)

REPORT NO : 26AE0013-HO  
REGULATION : FCC Part15C 15.247(a)(1)  
DATE : November 06, 2005  
TEMPERATURE : 22deg.C  
HUMIDITY : 56%  
ENGINEER : Yutaka Yoshida

(S/A :span 10MHz, RBW 100kHz,VBW 300kHz, sweep time AUTO )

CH	FREQ [MHz]	Channel separation [MHz]	Limit
Low	902.726	0.50	>20dB Bandwidth and 25[kHz]
Mid	914.773	0.50	>20dB Bandwidth and 25[kHz]
High	927.322	0.50	>20dB Bandwidth and 25[kHz]

---

**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

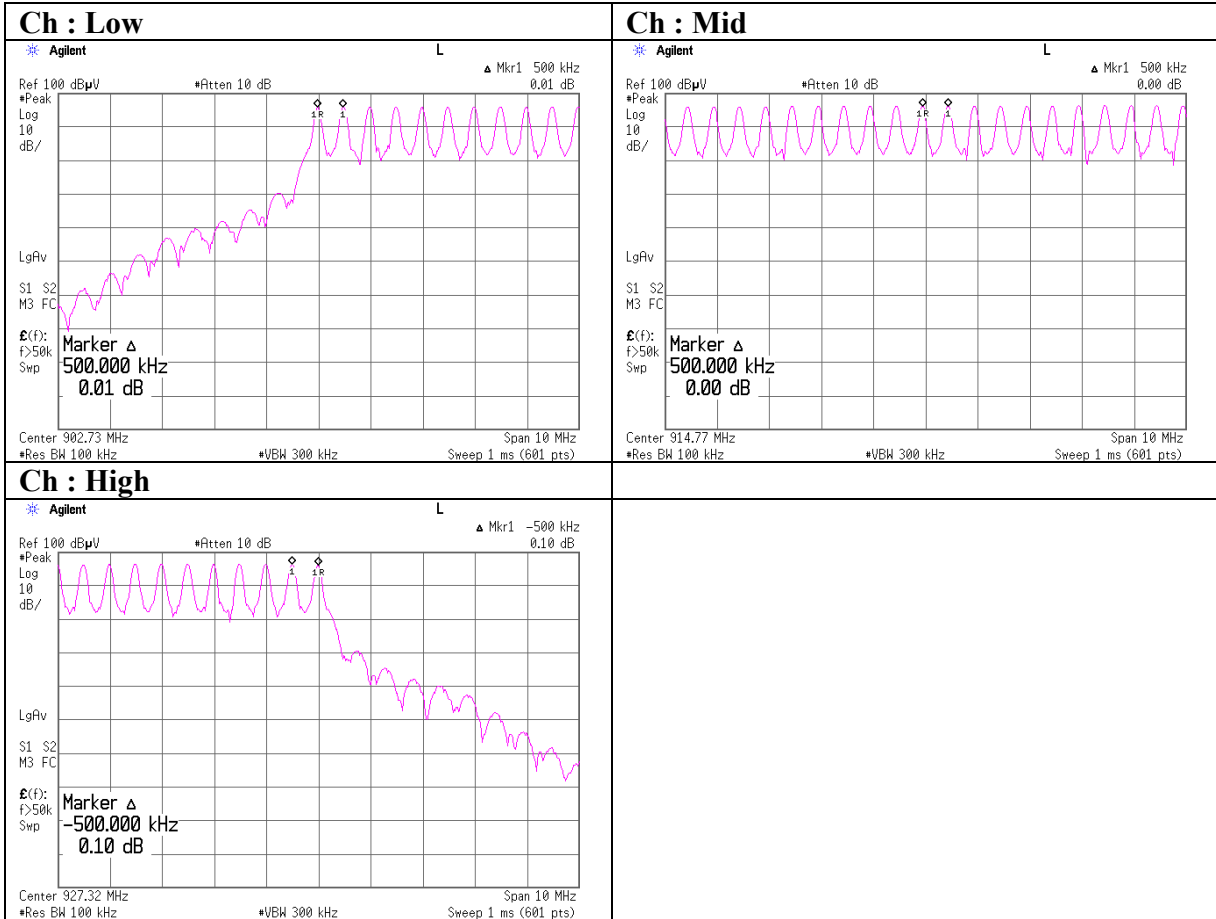
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### Carrier Frequency Separation



Test report No. : 26AE0013-HO-1a  
Page : 22 of 42  
Issued date : November 24, 2005  
Revised : December 28, 2005  
FCC ID : OZGV740-BA50C2A

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## 20dB Bandwidth

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

COMPANY : OMRON Corporation                      REPORT NO : 26AE0013-HO  
EQUIPMENT : RFID System                              REGULATION : FCC Part15C 15.247(a)(1)(i)  
MODEL : V740-BA50C22A-US, V740-HS02CA      DATE : November 06, 2005  
S/ N : RFP-DS-051104,RFP-DS-051104      TEMPERATURE : 22deg.C  
POWER : AC120V/60Hz                              HUMIDITY : 56%  
MODE : Transmitting (Hopping Off)              ENGINEER : Yutaka Yoshida

**PK DETECT(S/A: span 1MHz, RBW 10kHz, VBW 100kHz, sweep time AUTO)**

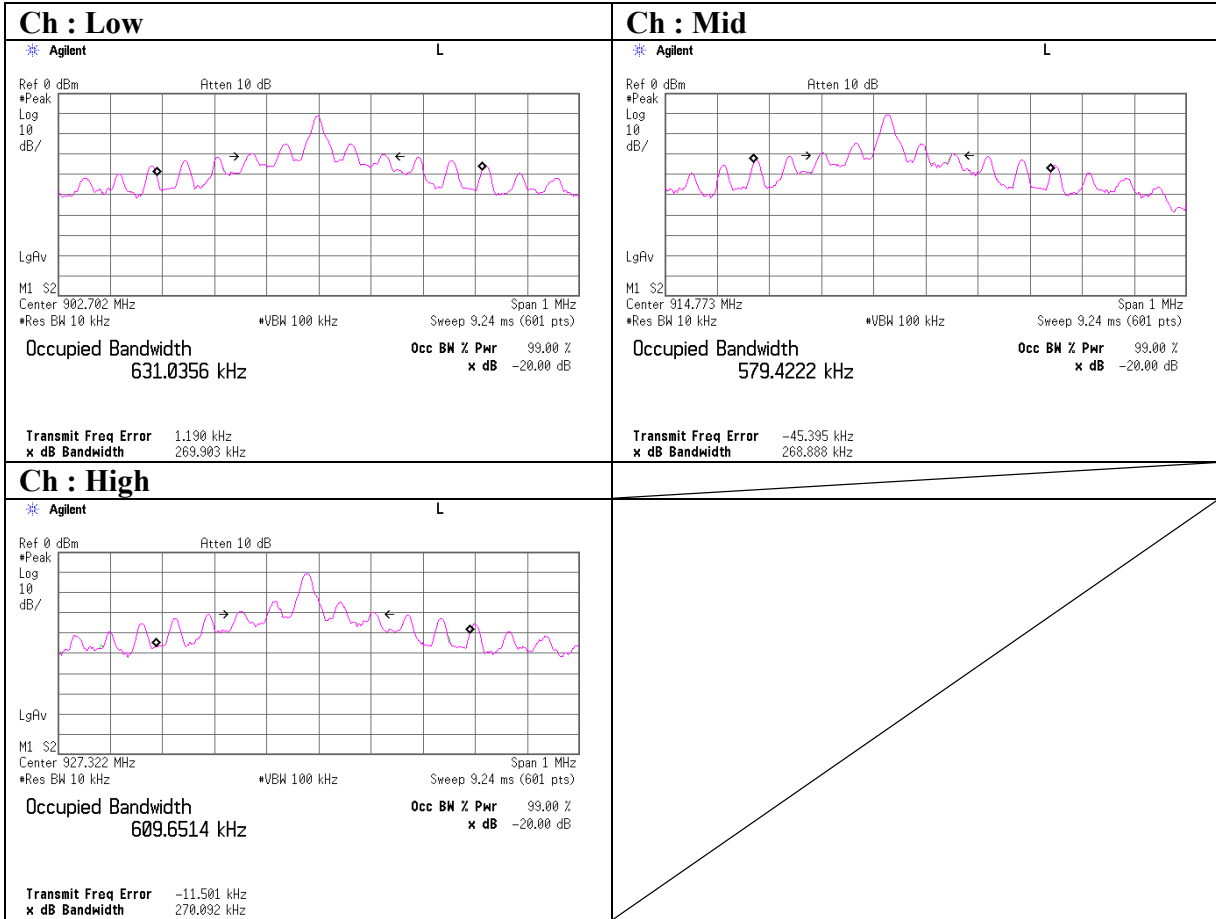
CH	FREQ	20dB Bandwidth	Limit
	[MHz]	[MHz]	[MHz]
Low	902.726	0.269	0.5
Mid	914.773	0.269	0.5
High	927.322	0.270	0.5

---

**UL Apex Co., Ltd.**  
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**20dB Bandwidth**



### Number of Hopping Frequency

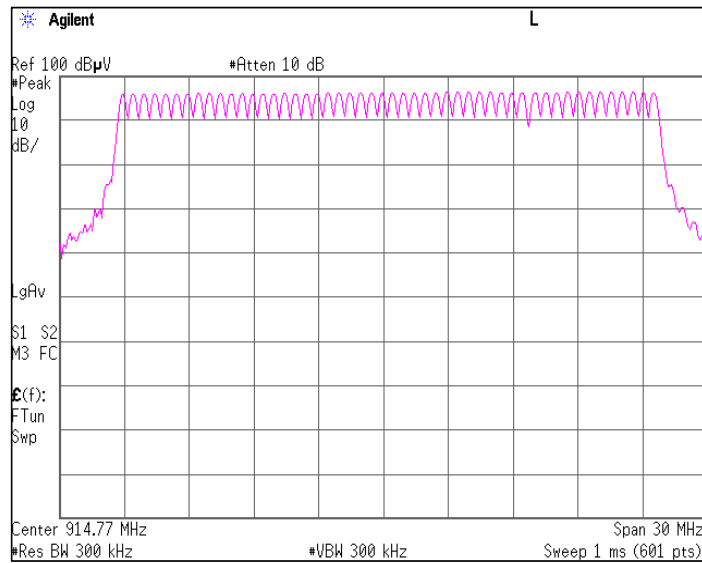
UL Apex Co., Ltd.  
 Head Office EMC Lab. No.2 Semi Anechoic Chamber

**COMPANY** : OMRON Corporation  
**EQUIPMENT** : RFID System  
**MODEL** : V740-BA50C22A-US, V740-HS02CA  
**S/ N** : RFP-DS-051104, RFP-DS-051104  
**POWER** : AC120V/60Hz  
**MODE** : Transmitting (Hopping On)

**REPORT NO** : 26AE0013-HO  
**REGULATION** : FCC Part15C 15.247(a)(1)(i)  
**DATE** : November 06, 2005  
**TEMPERATURE** : 22deg.C  
**HUMIDITY** : 56%  
**ENGINEER** : Yutaka Yoshida

(S/A : RBW 300kHz ,VBW 300kHz, sweep time AUTO )

Mode	Number of channel [time]	Limit [time]
Tx(Hoppng on)	50	≥ 50





### Dwell time

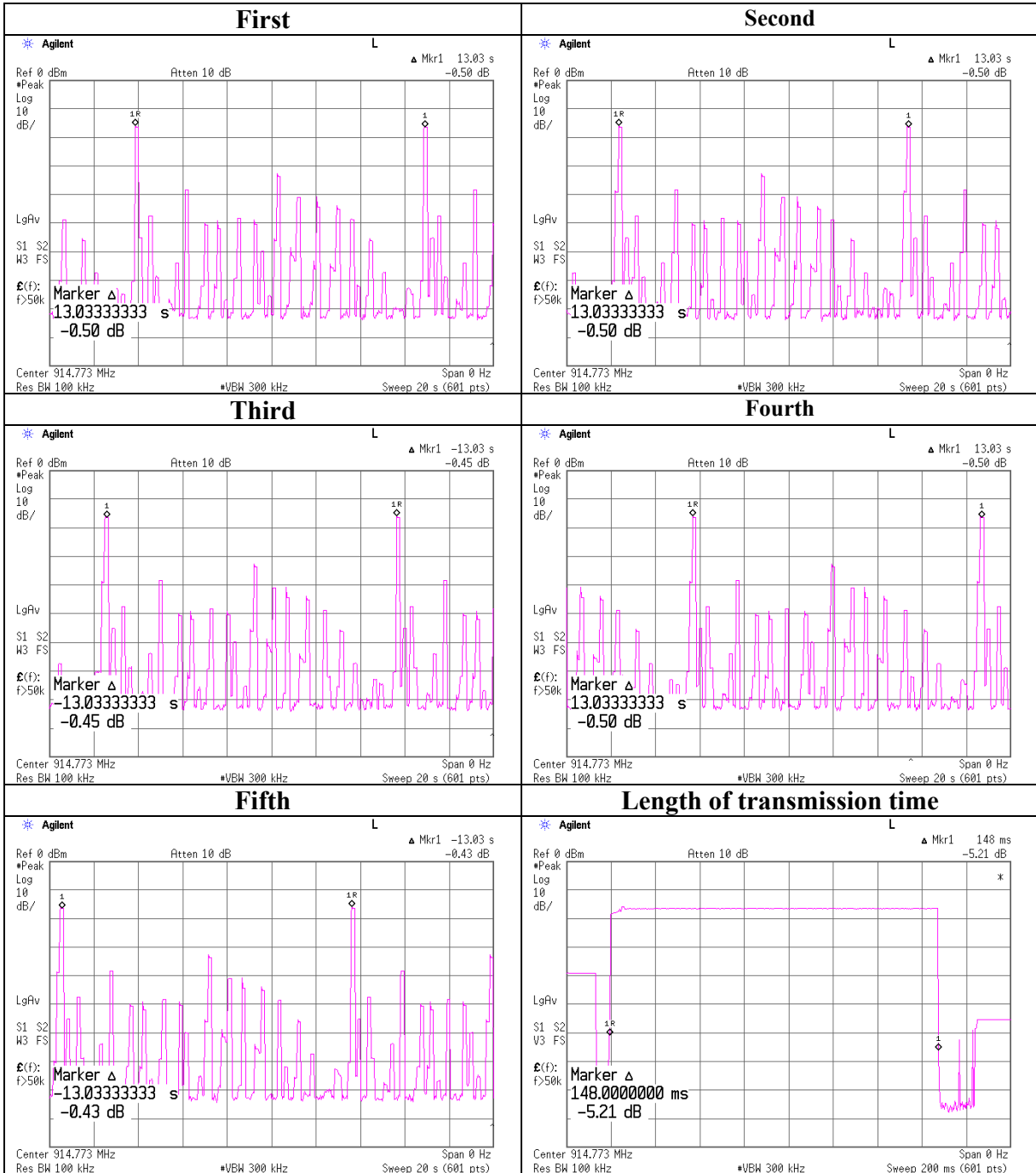
UL Apex Co., Ltd.  
Head Office EMC Lab. No.2 Semi Anechoic Chamber

COMPANY : OMRON Corporation  
EQUIPMENT : RFID System  
MODEL : V740-BA50C22A-US, V740-HS02CA  
S/ N : RFP-DS-051104, RFP-DS-051104  
POWER : AC120V/60Hz  
MODE : Transmitting (Hopping On)

REPORT NO : 26AE0013-HO  
REGULATION : FCC Part15C 15.247(a)(1)(i)  
DATE : November 06, 2005  
TEMPERATURE : 22deg.C  
HUMIDITY : 56%  
ENGINEER : Yutaka Yoshida

times	Number of Hoppings/ 20sec	Length of transmission time [msec]	Dwell time [msec]	Result [msec]	Limit [msec]
1	2	148.0	2.0* 148.0	296.00	400
2	2				
3	2				
4	2				
5	2				
Average	2.0				

### Dwell time



## Maximum Peak Output Power & Variation of Input AC Power

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

COMPANY : OMRON Corporation	REPORT NO : 26AE0013-HO
EQUIPMENT : RFID System	REGULATION : FCC Part 15C 15.247(b)(2)
MODEL : V740-BA50C22A-US, V740-HS02CA	TEST DISTANCE : -
S/N : RFP-DS-051104, RFP-DS-051104	DATE : December 22, 2005
POWER : AC120V/60Hz	Temperature : 21deg C
Mode : Transmitting (Hopping Off)	Humidity : 35%
	ENGINEER : Takumi Shimada

### AC102V/60Hz 85%

CH	FREQ [MHz]	S/A Reading [dBm]	Attn [dB]	Result [dBm]	Limit [1.0W] [dBm]
Low	902.73	-10.39	40.00	29.61	30.00
Mid	914.77	-10.23	40.00	29.77	30.00
High	927.32	-10.08	40.00	29.92	30.00

### AC120V/60Hz 100%

CH	FREQ [MHz]	S/A Reading [dBm]	Attn [dB]	Result [dBm]	Limit [1.0W] [dBm]
Low	902.73	-10.37	40.00	29.63	30.00
Mid	914.77	-10.22	40.00	29.78	30.00
High	927.32	-10.07	40.00	29.93	30.00

### AC138V/60Hz 115%

CH	FREQ [MHz]	S/A Reading [dBm]	Attn [dB]	Result [dBm]	Limit [1.0W] [dBm]
Low	902.73	-10.39	40.00	29.61	30.00
Mid	914.77	-10.21	40.00	29.79	30.00
High	927.32	-10.08	40.00	29.92	30.00

Sample Calculation:

Result = S/A Reading + Attenuator

Used Equipment: MAT-16, MRENT-14

\*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

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**Head Office EMC Lab.**

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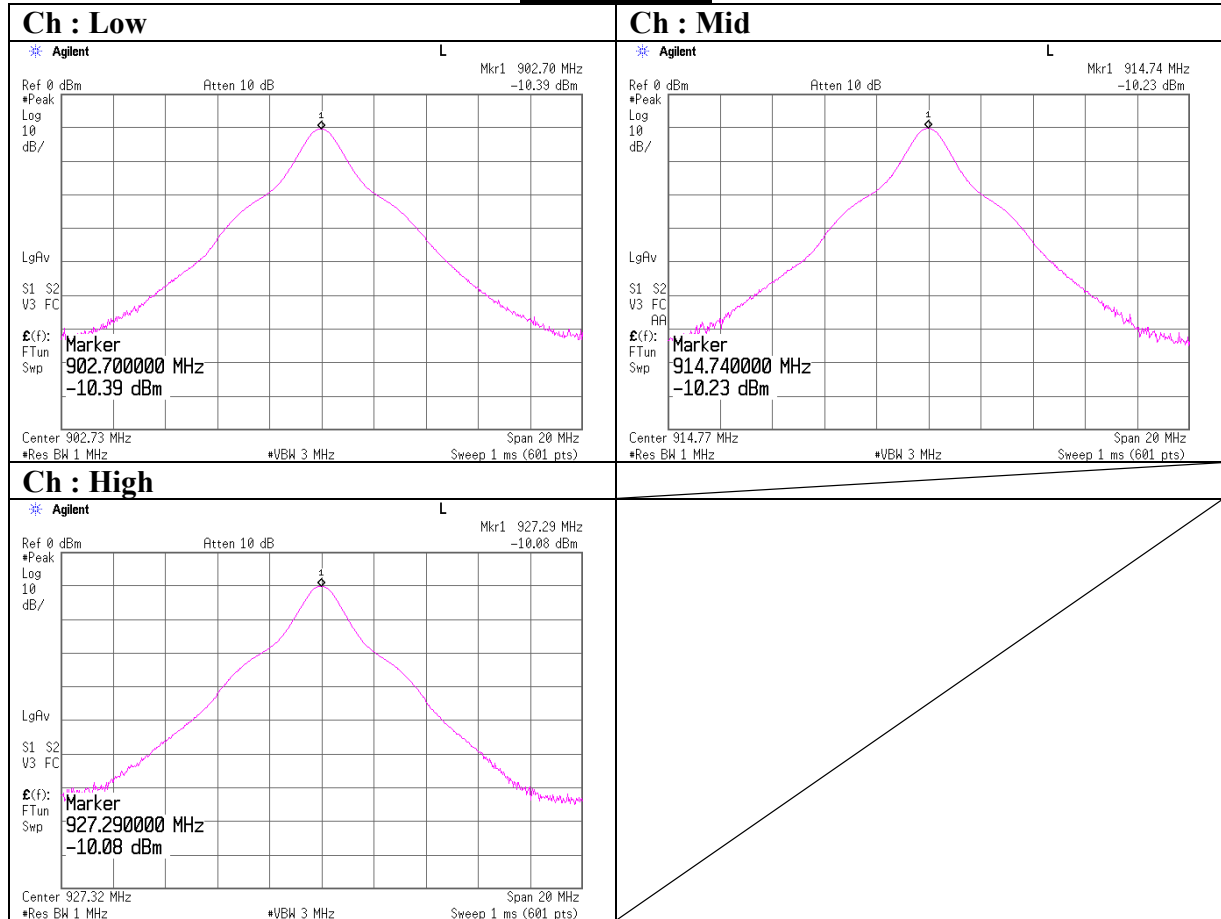
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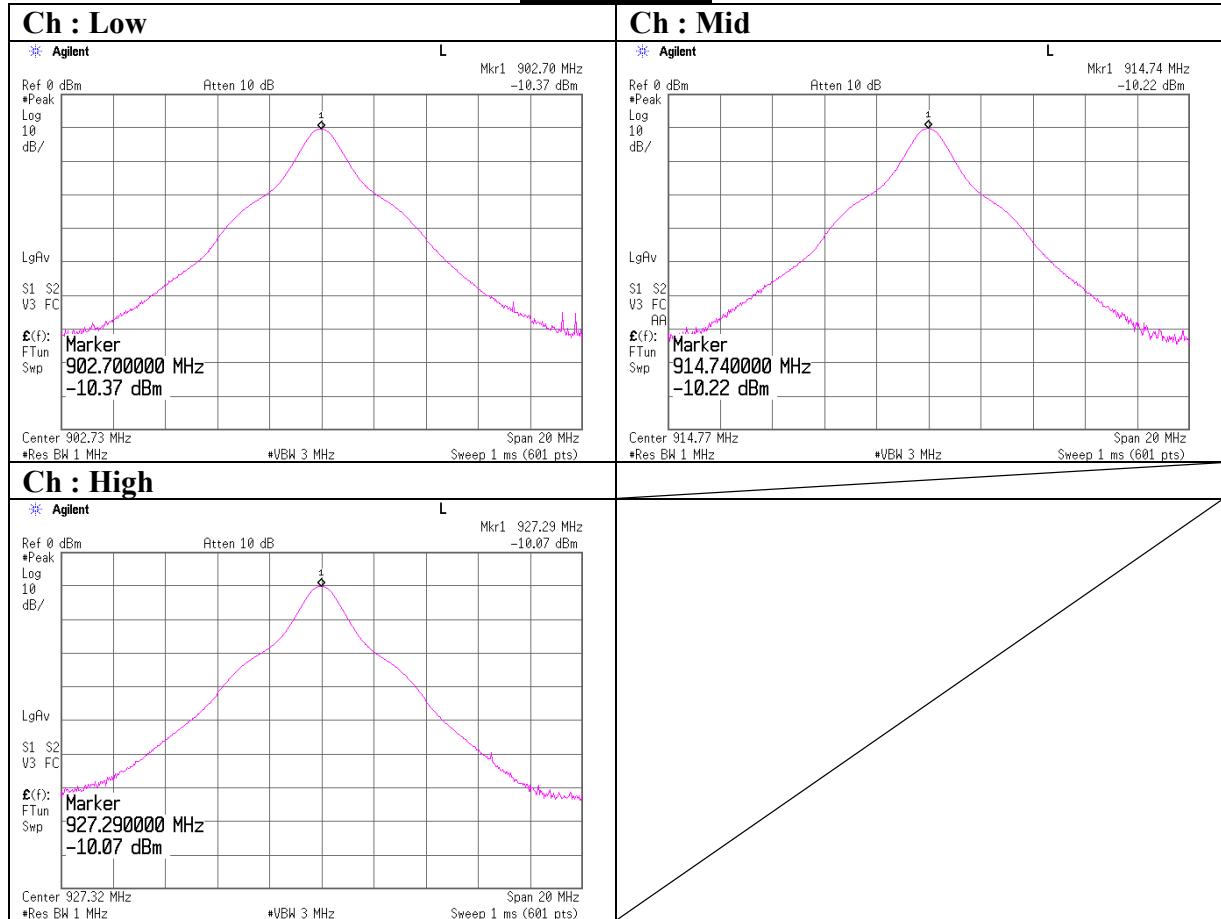
**Maximum Peak Output Power & Variation of Input AC Power**

**AC102V/60Hz**



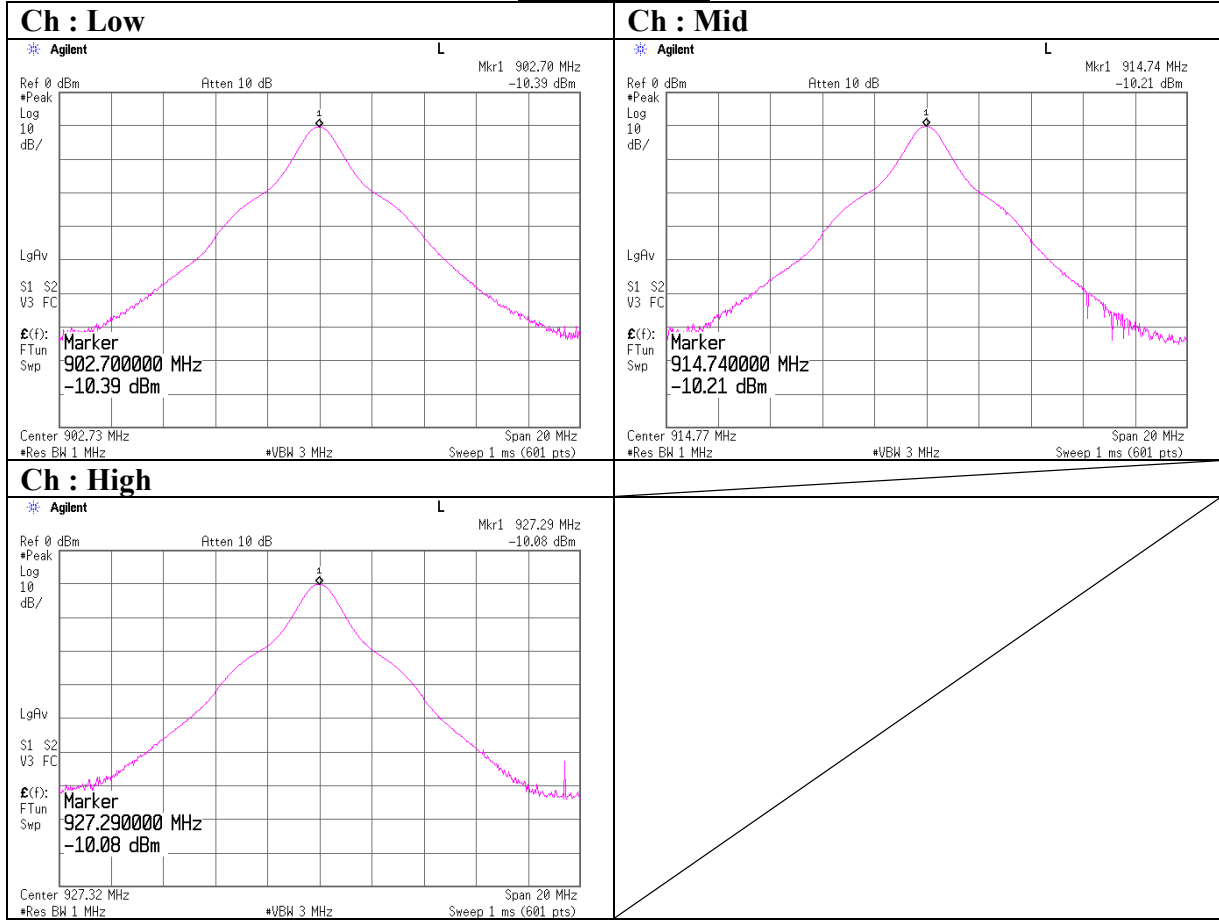
**Maximum Peak Output Power & Variation of Input AC Power**

**AC120V/60Hz**



**Maximum Peak Output Power & Variation of Input AC Power**

**AC138V/60Hz**



## Radiated Spurious Emission

# DATA OF SPURIOUS EMISSIONS(30MHz to 1GHz)

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

Company : OMRON Corporation	REPORT NO : 26AE0013-HO
Equipment : RFID System	REGULATION : Fcc Part15 Subpart C 15.247(d)
Model : V740-BA50C22A-US, V740-HS02CA	TEST DISTANCE : 3m
Sample No. : RFP-DS-051104, RFP-DS-051104	DATE : November 05, 2005
Power : AC120V / 60Hz	TEMPERATURE : 23deg.C
Mode : Transmitting Mode / ch1 : 902.726MHz	HUMIDITY : 57%
	ENGINEER : Takumi Shimada

### QP DETECT (BW:120kHz)

No.	FREQ [MHz]	T/R READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER			
		[dBuV]									[dB]	
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	66.0	47.5	45.9	7.2	28.9	6.3	0.0	32.1	30.5	40.0	7.9	9.5
2	96.5	44.7	46.5	9.2	28.8	6.6	0.0	31.7	33.5	43.5	11.8	10.0
3	128.8	41.2	44.1	13.3	28.5	6.9	0.0	32.9	35.8	43.5	10.6	7.7
4	169.5	46.2	46.2	15.6	28.1	7.2	0.0	40.9	40.9	43.5	2.6	2.6
5	203.4	44.8	43.0	16.6	28.0	7.4	0.0	40.8	39.0	43.5	2.7	4.5
6	210.2	46.4	42.9	16.7	28.1	7.4	0.0	42.4	38.9	43.5	1.1	4.6
7	237.3	46.9	47.2	17.0	28.1	7.6	0.0	43.4	43.7	46.0	2.6	2.3

### 20dBc(Fundamental 927.322MHz) (RBW: 100kHz, VBW: 300kHz)

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER			
		[dBuV]									[dB]	
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	902.7	118.8	120.4	20.9	27.9	10.2	0.0	122.0	123.6	-	-	-
2	223.7	55.3	54.5	16.9	28.3	7.5	0.0	51.4	50.6	Funda-20dB	50.6	53.0
2	800.0	51.5	49.7	21.4	27.7	9.9	0.0	55.1	53.3	Funda-20dB	46.9	50.3
2	827.1	38.8	42.6	21.2	28.2	9.9	0.0	41.7	45.5	Funda-20dB	60.3	58.1
2	844.1	41.8	52.1	21.1	27.9	10.0	0.0	45.0	55.3	Funda-20dB	57.0	48.3
2	867.2	40.6	49.6	21.0	27.8	10.0	0.0	43.8	52.8	Funda-20dB	58.2	50.8
2	955.4	33.2	36.1	22.6	27.7	10.3	0.0	38.4	41.3	Funda-20dB	63.6	62.3

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

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

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

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Facsimile : +81 596 24 8124

MF060b(01.06.05)

**Radiated Spurious Emission**

**DATA OF SPURIOUS EMISSIONS(30MHz to 1GHz)**

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

Company : OMRON Corporation REPORT NO : 26AE0013-HO  
Equipment : RFID System REGULATION : Fcc Part15 Subpart C 15.247(d)  
Model : V740-BA50C22A-US, V740-HS02CA TEST DISTANCE : 3m  
Sample No. : RFP-DS-051104, RFP-DS-051104 DATE : November 05, 2005  
Power : AC120V / 60Hz TEMPERATURE : 23deg.C  
Mode : Transmitting Mode / ch25 : 914.773MHz HUMIDITY : 57%  
ENGINEER : Takumi Shimada

**QP DETECT (BW:120kHz)**

No.	FREQ [MHz]	T/R READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]										
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	66.0	47.5	48.3	7.2	28.9	6.3	0.0	32.1	32.9	40.0	7.9	7.1
2	95.5	43.3	51.1	9.0	28.9	6.6	0.0	30.0	37.8	43.5	13.5	5.7
3	132.0	42.6	45.1	13.6	28.3	6.9	0.0	34.8	37.3	43.5	8.7	6.2
4	169.5	44.4	45.9	15.6	28.1	7.2	0.0	39.1	40.6	43.5	4.4	2.9
5	210.2	45.7	41.9	16.7	28.1	7.4	0.0	41.7	37.9	43.5	1.8	5.6

**20dBc(Fundamental 927.322MHz) (RBW: 100kHz, VBW: 300kHz)**

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]										
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	914.8	119.7	120.2	21.3	27.7	10.3	0.0	123.6	124.1	-	-	-
2	223.7	52.0	53.5	16.9	28.3	7.5	0.0	48.1	49.6	Funda-20dB	55.5	54.5
2	237.3	50.9	49.5	17.0	28.1	7.6	0.0	47.4	46.0	Funda-20dB	56.2	58.1
2	691.0	40.6	40.3	20.5	28.4	9.5	0.0	42.2	41.9	Funda-20dB	61.4	62.2
2	800.0	51.4	54.7	21.4	27.7	9.9	0.0	55.0	58.3	Funda-20dB	48.6	45.8
2	841.0	38.1	46.1	21.1	27.9	10.0	0.0	41.3	49.3	Funda-20dB	62.3	54.8
2	881.4	40.1	45.8	20.9	27.8	10.1	0.0	43.3	49.0	Funda-20dB	60.3	55.1
2	948.0	32.1	37.0	22.3	27.7	10.3	0.0	37.0	41.9	Funda-20dB	66.6	62.2

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

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

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**UL Apex Co., Ltd.**

**Head Office EMC Lab.**

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MF060b(01.06.05)



**Radiated Spurious Emission**

**DATA OF SPURIOUS EMISSIONS(30MHz to 1GHz)**

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

Company : OMRON Corporation REPORT NO : 26AE0013-HO  
Equipment : RFID System REGULATION : Fcc Part15 Subpart C 15.247(d)  
Model : V740-BA50C22A-US, V740-HS02CA TEST DISTANCE : 3m  
Sample No. : RFP-DS-051104, RFP-DS-051104 DATE : November 06, 2005  
Power : AC120V / 60Hz TEMPERATURE : 22deg.C  
Mode : Transmitting Mode / ch50 : 927.322MHz HUMIDITY : 56%  
ENGINEER : Yutaka Yoshida

**QP DETECT (BW:120kHz)**

No.	FREQ [MHz]	T/R READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit PK [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	66.0	45.2	49.0	7.2	28.9	6.3	0.0	29.8	33.6	40.0	10.2	6.4
2	97.8	38.6	53.1	9.4	28.8	6.6	0.0	25.8	40.3	43.5	17.7	3.2
3	132.0	43.6	46.8	13.6	28.3	6.9	0.0	35.8	39.0	43.5	7.7	4.5
4	169.5	44.6	38.5	15.6	28.1	7.2	0.0	39.3	33.2	43.5	4.2	10.3
5	210.2	41.3	41.9	16.7	28.1	7.4	0.0	37.3	37.9	43.5	6.2	5.6
6	237.3	44.2	46.1	17.0	28.1	7.6	0.0	40.7	42.6	46.0	5.3	3.4

**20dBc(Fundamental 927.322MHz) (RBW: 100kHz, VBW: 300kHz)**

No.	FREQ [MHz]	S/A READING		ANT Factor [dB/m]	AMP GAIN [dB]	CABLE LOSS [dB]	Hi-Pass Filter [dB]	RESULT		Limit 20dBc [dBuV/m]	MARGIN	
		HOR	VER					HOR	VER		HOR	VER
		[dBuV]						[dBuV/m]		[dB]		
<b>Test distance 3meters RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + Filter Loss</b>												
1	927.3	120.0	120.3	21.7	27.6	10.3	0.0	124.4	124.7	-	-	-
2	203.4	49.2	41.6	16.6	28.0	7.4	0.0	45.2	37.6	Funda-20dB	59.2	67.1
2	223.7	49.6	50.7	16.9	28.3	7.5	0.0	45.7	46.8	Funda-20dB	58.7	57.9
2	822.1	46.5	58.0	21.3	28.1	9.9	0.0	49.6	61.1	Funda-20dB	54.8	43.6
2	840.7	44.3	52.5	21.1	27.9	10.0	0.0	47.5	55.7	Funda-20dB	56.9	49.0
2	867.2	44.9	54.6	21.0	27.8	10.0	0.0	48.1	57.8	Funda-20dB	56.3	46.9
2	881.4	41.4	52.0	20.9	27.8	10.1	0.0	44.6	55.2	Funda-20dB	59.8	49.5
2	889.2	46.5	53.0	20.9	27.9	10.1	0.0	49.6	56.1	Funda-20dB	54.8	48.6
2	895.0	46.9	59.7	20.8	27.9	10.2	0.0	50.0	62.8	Funda-20dB	54.4	41.9
2	959.6	38.5	42.5	22.7	27.7	10.3	0.0	43.8	47.8	Funda-20dB	60.6	56.9

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

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

\*Hi-Pass Fiter was not used for factor 0.0dB of the above table.

**UL Apex Co., Ltd.**

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MF060b(01.06.05)

## Radiated Spurious Emission

### DATA OF SUPURIOUS EMISSIONS(1GHz to 10GHz)

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

COMPANY : OMRON Corporation  
EQUIPMENT : RFID System  
MODEL : V740-BA50C22A-US, V740-HS02CA  
SAMPLE No. : RFP-DS-051104, RFP-DS-051104  
POWER : AC120V/60Hz  
Mode : Transmitting (ch 1: 902.726MHz)

REPORT NO : 26AE0013-HO  
REGULATION : FCC Part 15C 15.247(d)  
TEST DISTANCE : 3m  
DATE : November 05, 2005  
Temperature : 23deg.C  
Humidity : 57%

ENGINEER : Takumi Shimada

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

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 PK [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]							HOR [dB]	VER [dB]			
1	1805.452	55.2	57	28.2	36.5	4.9	0.0	1.1	-	52.9	54.7	74.0	21.1	19.3
2	2708.178	45.9	46.5	31.1	36.5	5.6	0.0	0.8	-	46.9	47.5	74.0	27.1	26.5
3	3610.904	44.8	45.0	31.5	36.3	6.4	0.0	1.4	-	47.8	48.0	74.0	26.2	26.0
4	4513.630	43.5	44.5	33.4	36.0	7.3	0.0	2.7	-	50.9	51.9	74.0	23.1	22.1
5	5416.356	42.4	42.5	35.9	35.8	8.2	0.0	1.0	-	51.7	51.8	74.0	22.3	22.2
6	6319.082	42.8	42.7	36.7	35.8	8.9	0.0	1.0	-	53.6	53.5	74.0	20.4	20.5
7	7221.808	43.8	43.1	37.7	36.1	9.7	0.0	0.4	-	55.5	54.8	74.0	18.5	19.2
8	8124.537	43.0	43.6	36.8	36.1	10.6	0.0	0.5	-	54.8	55.4	74.0	19.2	18.6
9	9027.260	42.9	43.3	36.8	36.0	11.4	0.0	0.2	-	55.3	55.7	74.0	18.7	18.3

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

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 AV [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]							HOR [dB]	VER [dB]			
1	1805.452	51.8	53.9	28.2	36.5	4.9	0.0	1.1	-	49.5	51.6	54.0	4.5	2.4
2	2708.178	32.7	34.4	31.1	36.5	5.6	0.0	0.8	-	33.7	35.4	54.0	20.3	18.6
3	3610.904	32.7	33.5	31.5	36.3	6.4	0.0	1.4	-	35.7	36.5	54.0	18.3	17.5
4	4513.630	31.0	30.6	33.4	36	7.3	0.0	2.7	-	38.4	38.0	54.0	15.6	16.0
5	5416.356	29.0	28.5	35.9	35.8	8.2	0.0	1.0	-	38.3	37.8	54.0	15.7	16.2
6	6319.082	29.3	29.3	36.7	35.8	8.9	0.0	1.0	-	40.1	40.1	54.0	13.9	13.9
7	7221.808	29.8	29.8	37.7	36.1	9.7	0.0	0.4	-	41.5	41.5	54.0	12.5	12.5
8	8124.537	29.7	29.8	36.8	36.1	10.6	0.0	0.5	-	41.5	41.6	54.0	12.5	12.4
9	9027.260	29.5	29.6	36.8	36	11.4	0.0	0.2	-	41.9	42.0	54.0	12.1	12.0

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.

Used Equipment: MHA-06, MCC-04, MCC-10, MCC-25, MPA-01, MHF-03, MHF-04, MSA-04

\* 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.

## Radiated Spurious Emission

### DATA OF SUPURIOUS EMISSIONS(1GHz to 10GHz)

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

COMPANY : OMRON Corporation	REPORT NO : 26AE0013-HO
EQUIPMENT : RFID System	REGULATION : FCC Part 15C 15.247(d)
MODEL : V740-BA50C22A-US, V740-HS02CA	TEST DISTANCE : 3m
SAMPLE No. : RFP-DS-051104, RFP-DS-051104	DATE : November 05, 2005
POWER : AC120V/60Hz	Temperature : 23deg.C
Mode : Transmitting (ch 25: 914.773MHz)	Humidity : 57%

ENGINEER : Takumi Shimada

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

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 PK [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]							HOR [dB]	VER [dB]			
1	1829.546	53.8	51.8	28.4	36.5	4.9	0.0	1.2	-	51.8	49.8	74.0	22.2	24.2
2	2744.319	45.2	48.0	31.2	36.5	5.7	0.0	0.7	-	46.3	49.1	74.0	27.7	24.9
3	3659.092	47.0	46.4	31.7	36.2	6.4	0.0	1.7	-	50.6	50.0	74.0	23.4	24.0
4	4573.865	43.9	45.3	33.8	36.0	7.4	0.0	2.6	-	51.7	53.1	74.0	22.3	20.9
5	5488.638	41.9	42.2	35.8	35.8	8.3	0.0	1.0	-	51.2	51.5	74.0	22.8	22.5
6	6403.411	42.4	42.2	36.6	35.8	9.0	0.0	1.0	-	53.2	53.0	74.0	20.8	21.0
7	7318.184	43.5	42.9	37.9	36.0	9.8	0.0	0.5	-	55.7	55.1	74.0	18.3	18.9
8	8232.957	42.9	42.7	36.9	36.1	10.7	0.0	0.4	-	54.8	54.6	74.0	19.2	19.4
9	9147.730	43.0	42.3	36.9	36.1	11.5	0.0	0.2	-	55.5	54.8	74.0	18.5	19.2

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

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 AV [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]							HOR [dB]	VER [dB]			
1	1829.546	50.0	46.7	28.4	36.5	4.9	0.0	1.2	-	48.0	44.7	54.0	6.0	9.3
2	2744.319	38.5	40.4	31.2	36.5	5.7	0.0	0.7	-	39.6	41.5	54.0	14.4	12.5
3	3659.092	39.6	36.6	31.7	36.2	6.4	0.0	1.7	-	43.2	40.2	54.0	10.8	13.8
4	4573.865	30.3	34.5	33.8	36	7.4	0.0	2.6	-	38.1	42.3	54.0	15.9	11.7
5	5488.638	28.7	28.6	35.8	35.8	8.3	0.0	1.0	-	38.0	37.9	54.0	16.0	16.1
6	6403.411	29.5	29.5	36.6	35.8	9.0	0.0	1.0	-	40.3	40.3	54.0	13.7	13.7
7	7318.184	29.7	29.7	37.9	36	9.8	0.0	0.5	-	41.9	41.9	54.0	12.1	12.1
8	8232.957	29.5	29.4	36.9	36.1	10.7	0.0	0.4	-	41.4	41.3	54.0	12.6	12.7
9	9147.730	29.3	29.3	36.9	36.1	11.5	0.0	0.2	-	41.8	41.8	54.0	12.2	12.2

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.

Used Equipment: MHA-06, MCC-04, MCC-10, MCC-25, MPA-01, MHF-03, MHF-04, MSA-04

\* 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.

**Radiated Spurious Emission**

**DATA OF SUPURIOUS EMISSIONS(1GHz to 10GHz)**

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

COMPANY : OMRON Corporation  
EQUIPMENT : RFID System  
MODEL : V740-BA50C22A-US, V740-HS02CA  
SAMPLE No. : RFP-DS-051104, RFP-DS-051104  
POWER : AC120V/60Hz  
Mode : Transmitting (ch 50: 927.322MHz)

REPORT NO : 26AE0013-HO  
REGULATION : FCC Part 15C 15.247(d)  
TEST DISTANCE : 3m  
DATE : November 05, 2005  
Temperature : 23deg.C  
Humidity : 57%

ENGINEER : Takumi Shimada

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

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 PK [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]							HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]
1	1854.644	52.7	51.9	28.7	36.5	4.9	0.0	1.3	-	51.1	50.3	74.0	22.9	23.7
2	2781.966	47.3	46.8	31.3	36.5	5.7	0.0	0.9	-	48.7	48.2	74.0	25.3	25.8
3	3709.288	43.6	44.1	32.0	36.2	6.4	0.0	1.8	-	47.6	48.1	74.0	26.4	25.9
4	4636.610	43.5	42.6	34.2	36.0	7.5	0.0	2.5	-	51.7	50.8	74.0	22.3	23.2
5	5563.932	43.1	42.6	36.0	35.8	8.3	0.0	1.0	-	52.6	52.1	74.0	21.4	21.9
6	6491.254	43.8	42.4	36.5	35.8	9.0	0.0	1.0	-	54.5	53.1	74.0	19.5	20.9
7	7418.576	42.9	43.5	38.1	36.0	10.0	0.0	0.7	-	55.7	56.3	74.0	18.3	17.7
8	8345.898	42.3	42.6	37.0	36.1	10.8	0.0	0.3	-	54.3	54.6	74.0	19.7	19.4
9	9273.220	43.3	44.7	37.0	36.2	11.6	0.0	0.2	-	55.9	57.3	74.0	18.1	16.7

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

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 AV [dBuV/m]	MARGIN	
		HOR [dBuV]	VER [dBuV]							HOR [dBuV/m]	VER [dBuV/m]		HOR [dB]	VER [dB]
1	1854.644	43.0	41.7	28.7	36.5	4.9	0.0	1.3	-	41.4	40.1	54.0	12.6	13.9
2	2781.966	36.4	36.4	31.3	36.5	5.7	0.0	0.9	-	37.8	37.8	54.0	16.2	16.2
3	3709.288	30.4	30.3	32.0	36.2	6.4	0.0	1.8	-	34.4	34.3	54.0	19.6	19.7
4	4636.610	29.6	29.5	34.2	36.0	7.5	0.0	2.5	-	37.8	37.7	54.0	16.2	16.3
5	5563.932	28.7	28.7	36.0	35.8	8.3	0.0	1.0	-	38.2	38.2	54.0	15.8	15.8
6	6491.254	29.3	29.3	36.5	35.8	9.0	0.0	1.0	-	40.0	40.0	54.0	14.0	14.0
7	7418.576	29.6	29.6	38.1	36.0	10.0	0.0	0.7	-	42.4	42.4	54.0	11.6	11.6
8	8345.898	29.5	29.5	37	36.1	10.8	0.0	0.3	-	41.5	41.5	54.0	12.5	12.5
9	9273.220	29.8	30.5	37	36.2	11.6	0.0	0.2	-	42.4	43.1	54.0	11.6	10.9

Sample Calculation :

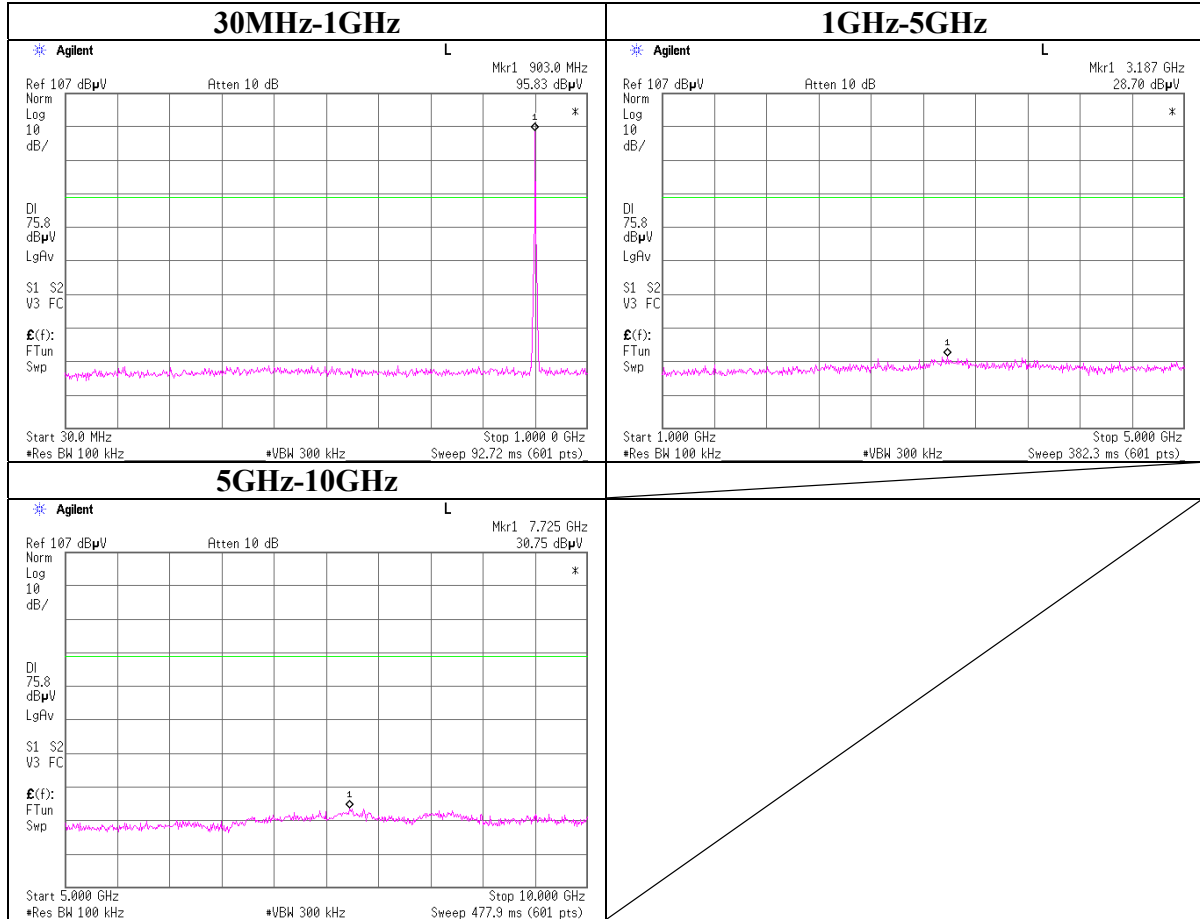
RESULT=Reading + ANT Factor - Amp Gain + Cable Loss + High Pass Filter (or Att)

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

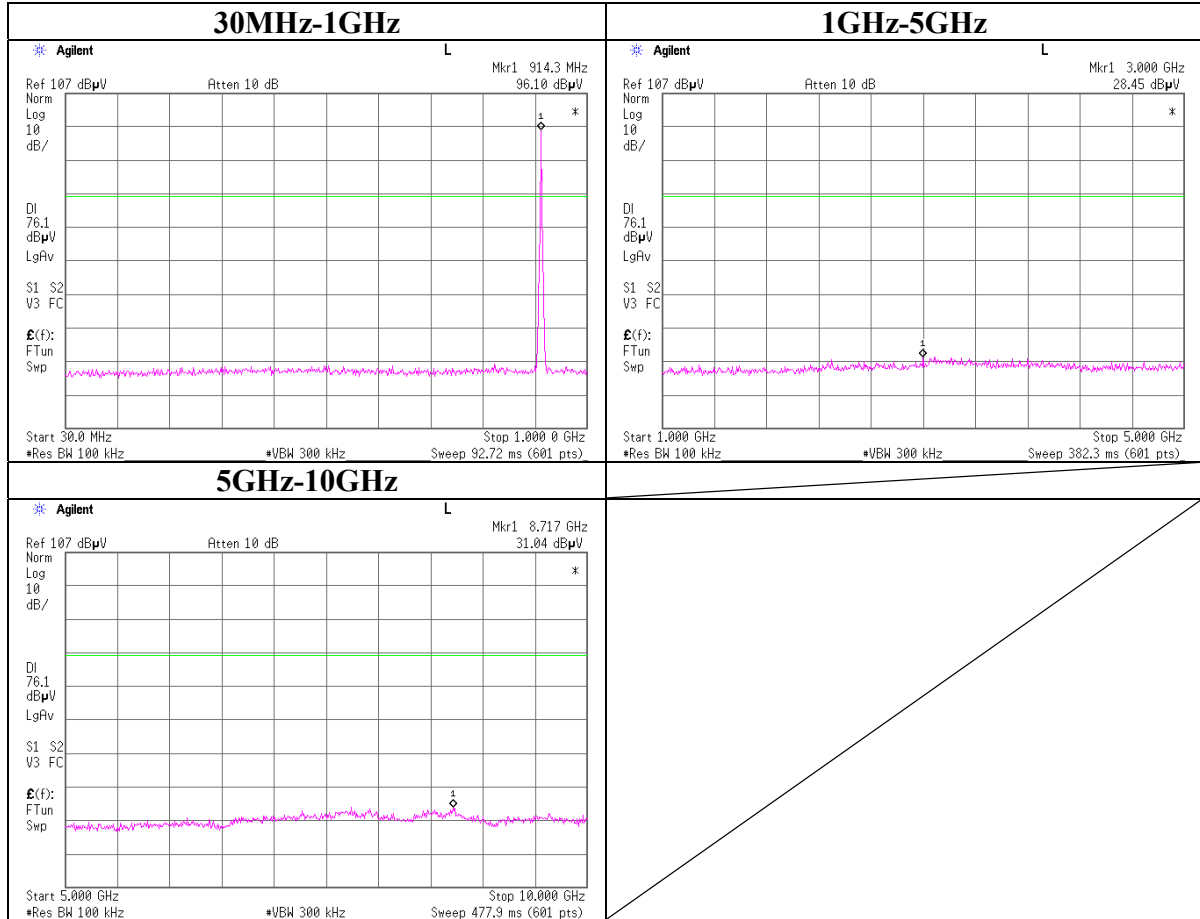
Used Equipment: MHA-06, MCC-04, MCC-10, MCC-25, MPA-01, MHF-03, MHF-04, MSA-04

\* 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.

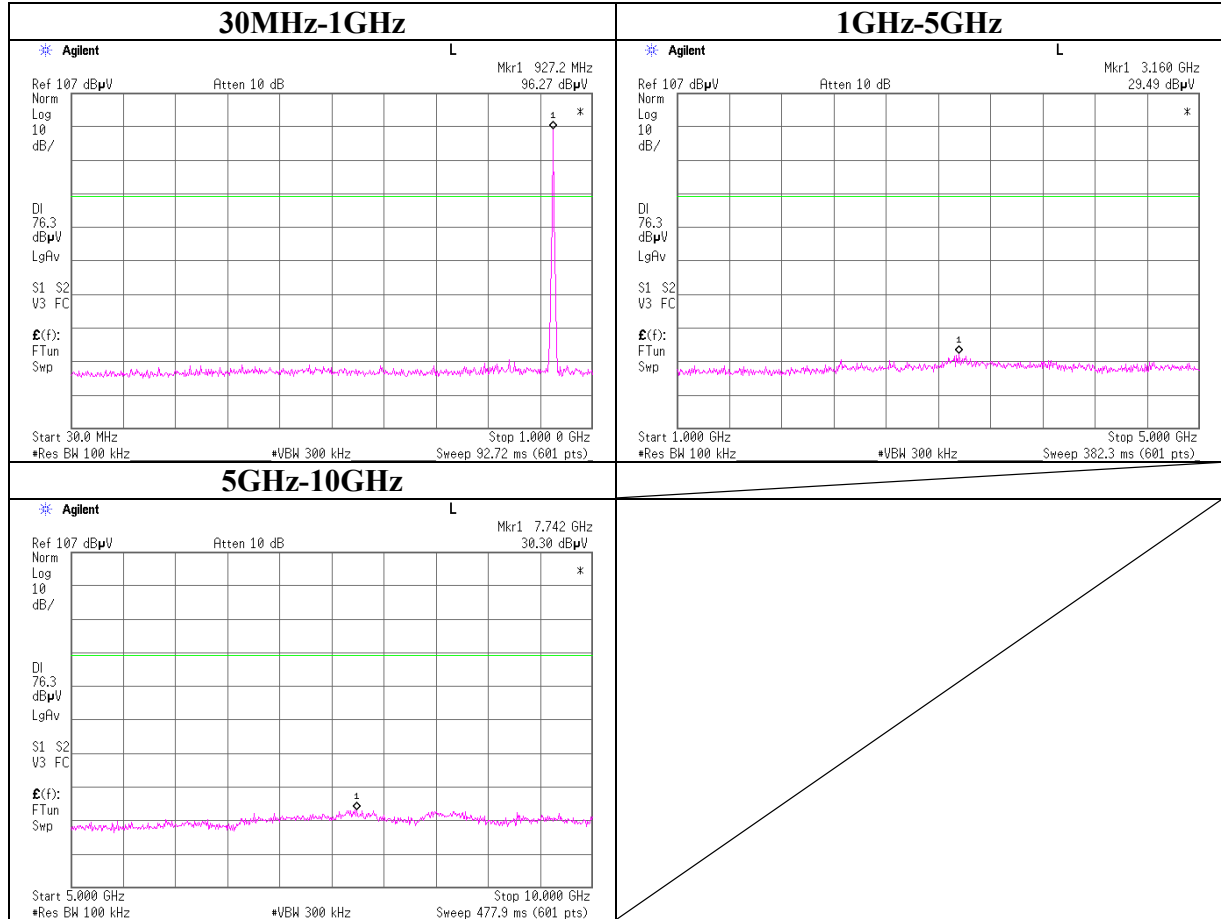
**Conducted Spurious Emission**  
**Ch:Low**



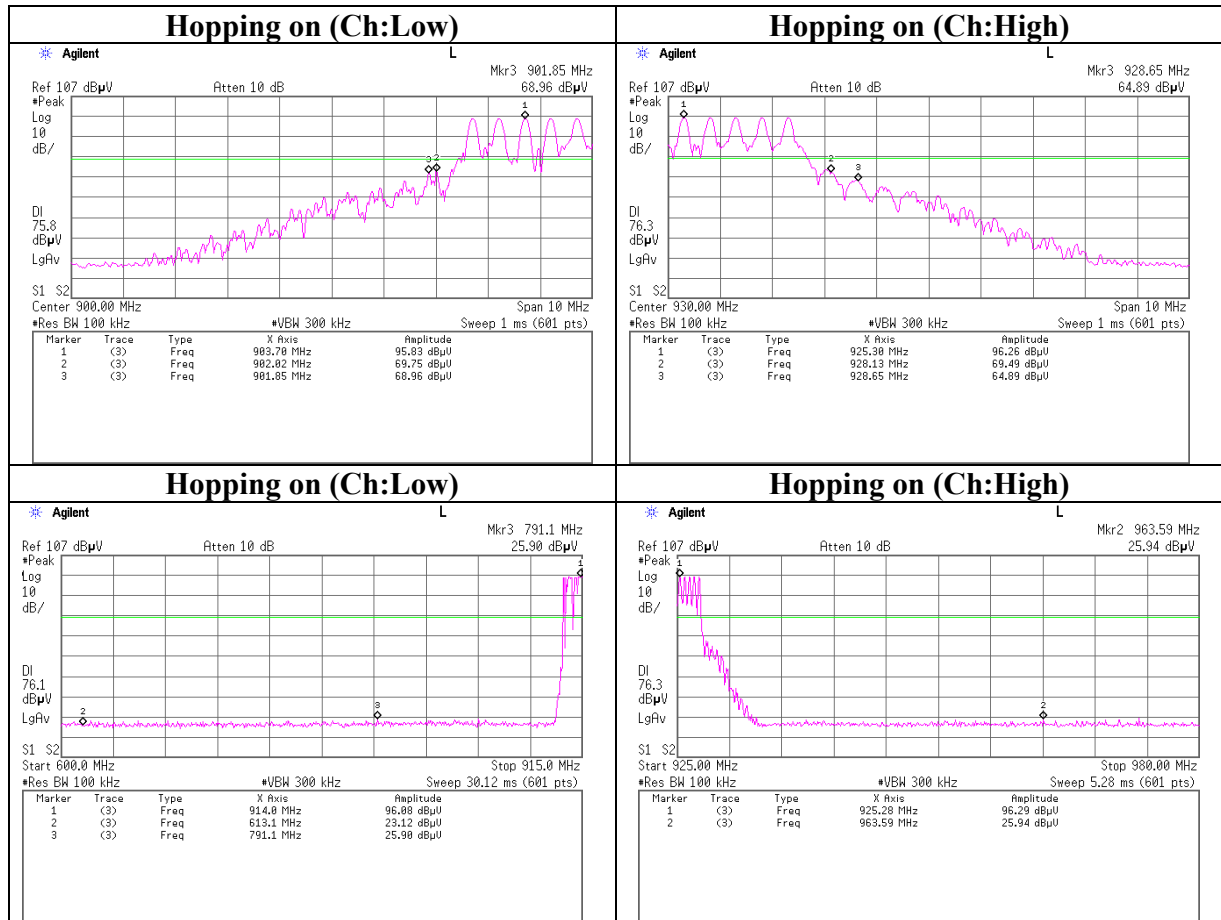
**Conducted Spurious Emission**  
**Ch:Mid**



**Conducted Spurious Emission**  
**Ch:High**

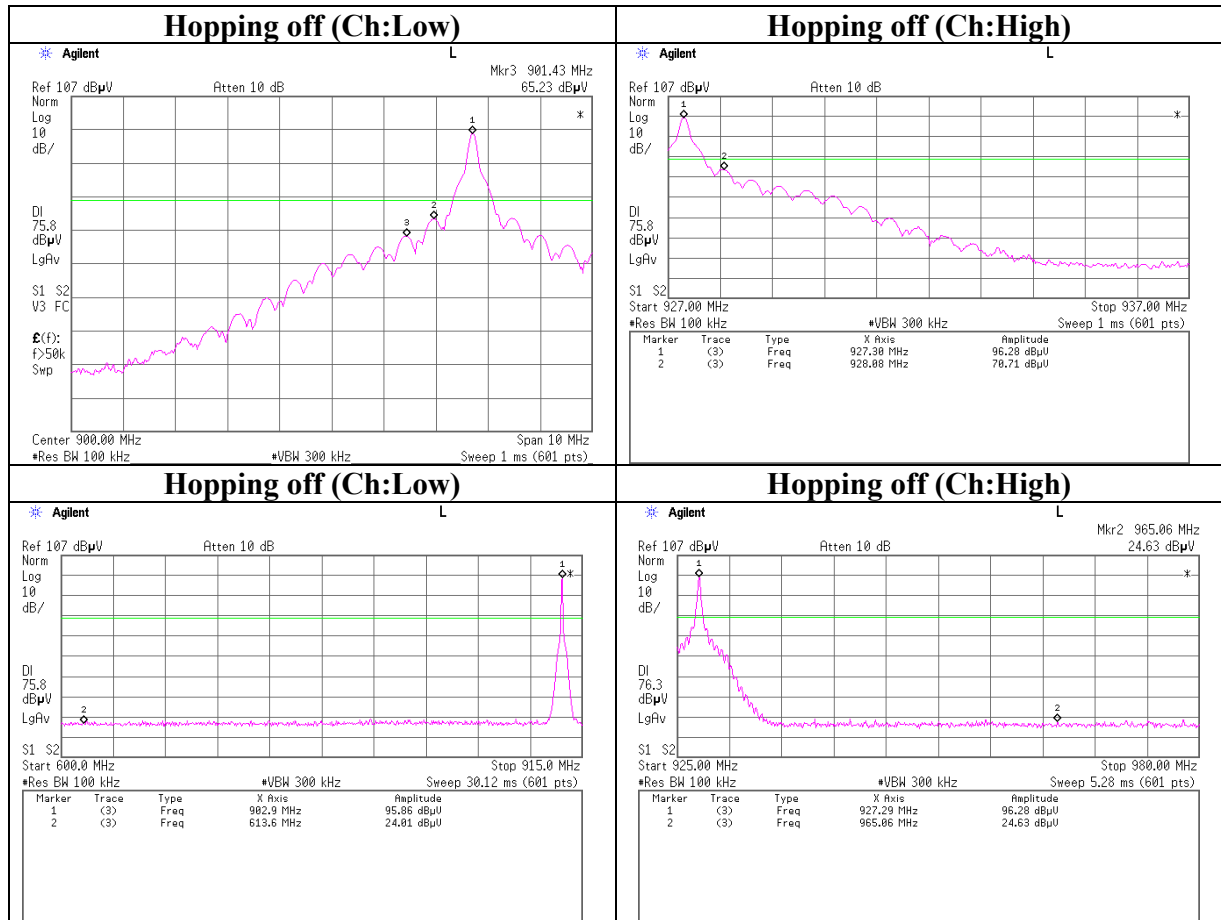


### Conducted Spurious Emission Band Edge Compliance





### Conducted Spurious Emission Band Edge Compliance



### 99% Occupied Bandwidth

