



**FCC CFR47 PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8**

CERTIFICATION TEST REPORT

FOR

UNIT ASSY ANT MOD (BID R/C)

MODEL NUMBER: CGF-H002

FCC ID: OUCCGF-H002

REPORT NUMBER: 32AE0249-SH-A

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Prepared for

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JAB
Testing
RTL2610

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Revision History

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-	09/26/11	Initial Issue	M. Hosaka

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: OMRON CORPORATION
6368 NENJOZAKA, OKUSA
KOMAKI, AICHI, 485-0802, JAPAN

EUT DESCRIPTION: UNIT ASSY ANT MOD (BID R/C)

MODEL: CGF-H002

SERIAL NUMBER: 4

DATE TESTED: September 20 and 21, 2011

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 2.9	Pass
INDUSTRY CANADA RSS-GEN Issue 3	Pass

UL Japan, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Japan, Inc based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Japan, Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Japan, Inc. will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by any government agency.

Approved & Released For UL Japan, Inc. By: Tested By:



Go Ishiwata
Manager of WiSE Japan,
UL Verification Service



Shinichi Takano
Engineer of WiSE Japan,
UL Verification Service

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 3, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN.

UL Japan is accredited by JAB, Laboratory Code RTL02610. The full scope of accreditation can be viewed at

http://www.jab.or.jp/cgi-bin/jab_exam_proof_i.cgi?page=2&authorization_number=RTL02610

4. CALIBRATION AND UNCERTAINTY

MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY	
Radiated Emission	30MHz-300MHz(3m)	+/- 5.0 dB
	300MHz-1000MHz(3m)	+/- 5.0 dB
	1000MHz- 13GHz(3m)	+/- 4.9 dB

Uncertainty figures are valid to a confidence level of 95% using a coverage factor k=2.

5. EQUIPMENT UNDER TEST

DESCRIPTION OF EUT

The EUT is a UNIT ASSY ANT MOD (BID R/C) operating at 926.85MHz.

DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a printed dipole antenna installed in the glass of car with maximum peak gains of 1.13dBi gain.

SOFTWARE AND FIRMWARE

The test utility software used during testing was EVRemote-ANT Ver. 1.21.

WORST-CASE CONFIGURATION AND MODE

The spurious was measured in three different orientations X, Y and Z to find worst-case orientation, and final testing for radiated emissions was performed with EUT in following orientation.

	Horizontal	Vertical
Carrier	X	X
Spurious (above 1GHz)	Y	Y
Spurious (below 1GHz)	X	Z

DESCRIPTION OF TEST SETUP

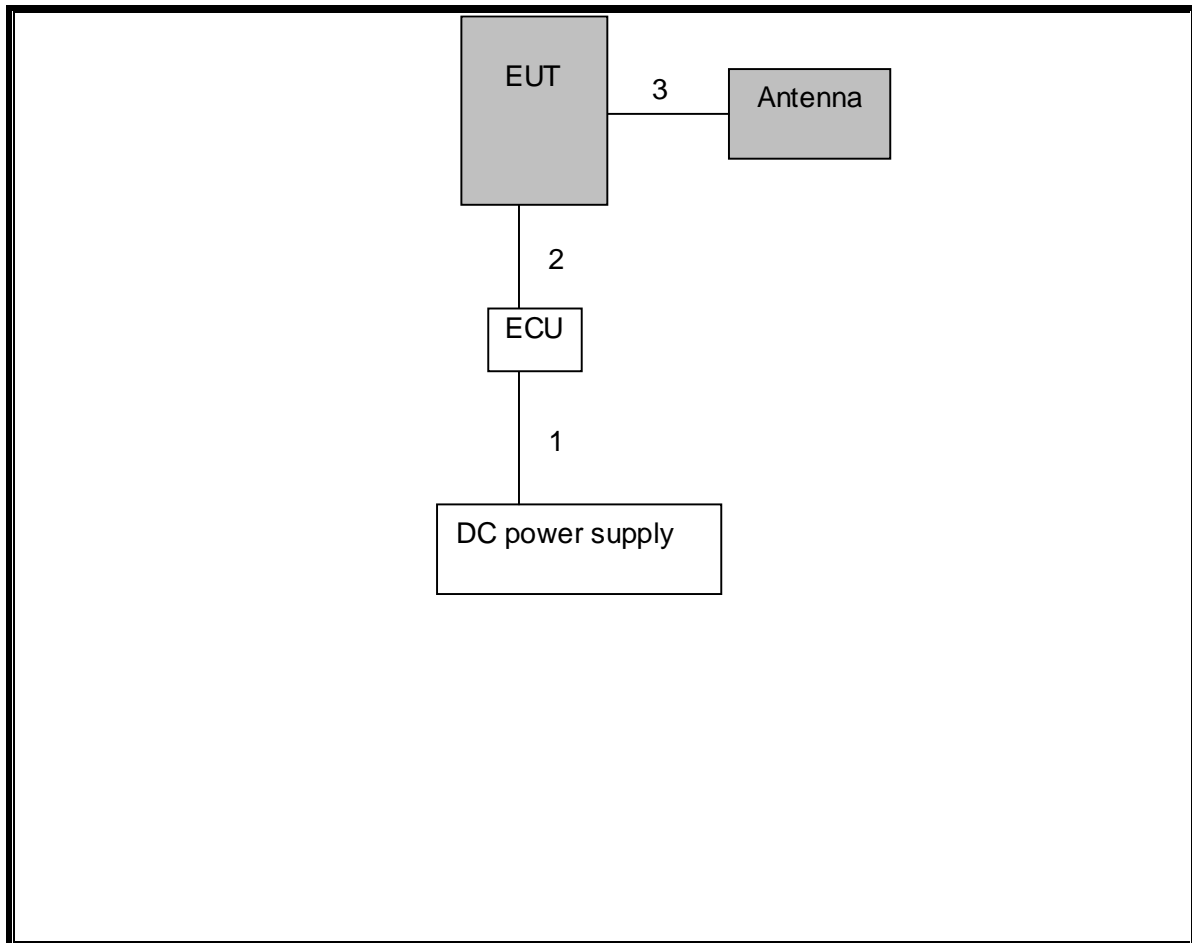
SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST			
Description	Manufacturer	Model	Serial Number
DC Power Supply	KIKUSUI	PAN35-10A	NA000955
ECU	OMRON	-	-

I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC Input	1	DC	Un-Shielded	1.3m	N/A
2	Signal	1	Signal	Shielded	0.5m	N/A
3	Antenna	1	Signal/ SMB	Shielded	1.0m	N/A

SETUP DIAGRAM FOR RADIATED TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Control No	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE,RF1,MF)	-	RE	-
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2011/02/17 * 12
SAT6-03	Attenuator	JFW	50HF-006N	-	RE	2011/02/17 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2010/10/15 * 12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	RE	2011/04/28 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2010/10/15 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2011/02/23 * 12
STR-03	Test Receiver	Rohde & Schwaz	ES140	100054/040	RE	2011/07/28 * 12
SJM-10	Measure	PROMART	SEN1935	-	RE	-
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2010/09/13 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2011/07/19 * 12
SCC-G03	Coaxial Cable	Suhner	SUCOFLEX 104A	46499/4A	RE	2011/04/28 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2011/05/27 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBA9120D	9120D-739	RE	2011/08/28 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2011/03/07 * 12
SFL-01	Highpass Filter	MICRO-TRONICS	HPM50115	001	RE	2010/12/15 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2010/12/15 * 12
SAT10-04	Attenuator(above1GHz)	Agilent	8493C-010	74863	RE	2010/12/15 * 12

The expiration date of the calibration is the end of the expired month.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

Test Item:

RE: Radiated emission

7. ANTENNA PORT TEST RESULTS

20 dB AND 99% BANDWIDTH

LIMIT

None; for reporting purposes only.

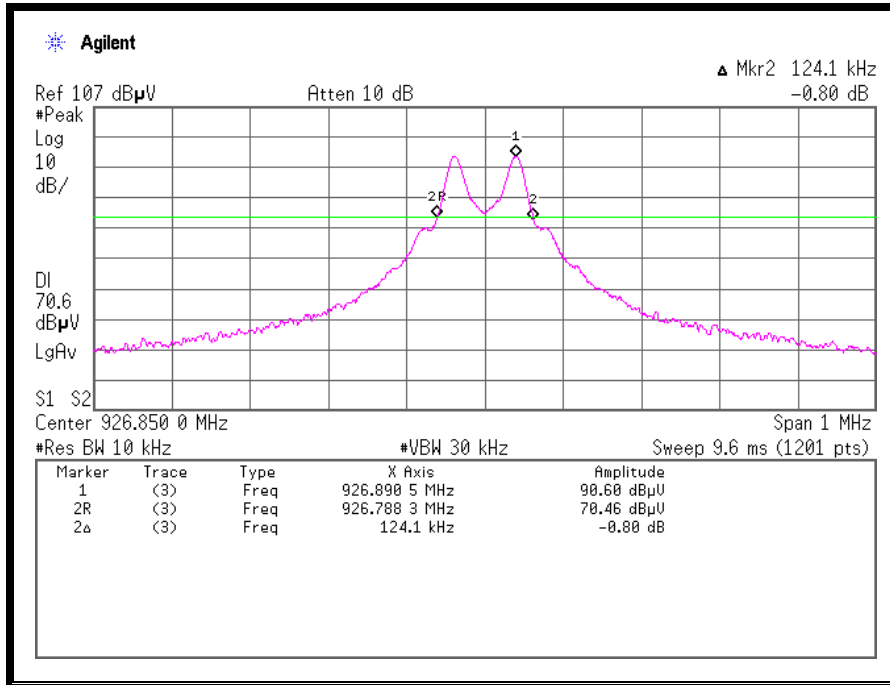
TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode. The RBW is set to $\geq 1\%$ of the 20 dB bandwidth. The VBW is set to 3 times the RBW.

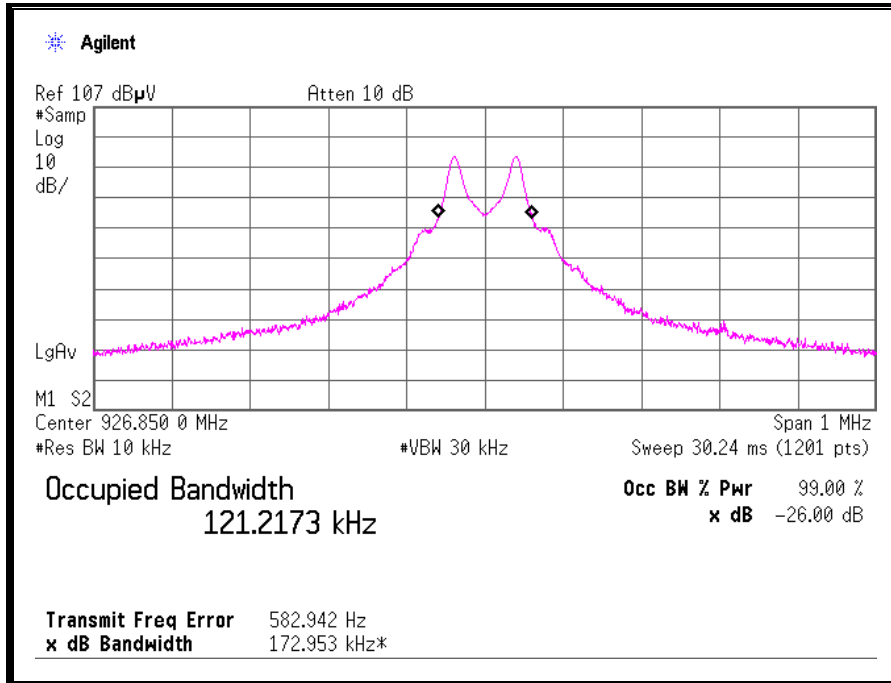
RESULTS

Frequency (MHz)	20 dB Bandwidth (kHz)	99% Bandwidth (kHz)
926.85	124.1000	121.2173

20 dB BANDWIDTH



99% BANDWIDTH



8. RADIATED TEST RESULTS

8.1 LIMITS AND PROCEDURE

LIMITS

The field strengths measured at 3meters shall not exceed the following:

Frequency Range (MHz)	Field Strength (mV/m)	
	Fundamental	Harmonics
902 - 928	50	0.5

FCC §15.209

IC RSS-210 Clause 2.6 (Transmitter) & IC RSS-GEN Clause 6 (Receiver)

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 10 Hz for average measurements.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

8.2 TRANSMITTER BELOW 1 GHz (carrier)

DATA OF RADIATED EMISSION TEST

UL Japan, Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
 Date : 2011/09/20

Company : OMRON CORPORATION
 Kind of EUT : UNIT ASSY ANT MOD (BID R/C)
 Model No. : CGF-H002
 Serial No. : 4
 Mode : Transmitting
 Report No. : 32AE0249-SH-A
 Power : DC4.4V
 Temp./Humi. : 25deg.C. / 57%RH

Remarks : -

Limit1 : FCC15_249 (a)_below1GHz:QP

Engineer : Shinichi Takano

<< QP DATA >>

No.	Freq. [MHz]	Reading	Ant.Fac	Loss	Gain	Result	Limit	Margin	Pola. [H/V]	Height [cm]	Angle [deg]	Ant. Type	Comment
		<QP> [dBuV]	[dB/m]	[dB]	[dB]	<QP> [dBuV/m]	<QP> [dBuV/m]	<QP> [dB]					
1	928.810	60.0	20.9	10.8	0.0	91.7	94.0	2.3	Hori.	109	160	LP	
2	928.850	57.9	20.9	10.8	0.0	89.6	94.0	4.4	Hori.	109	160	LP	
3	928.890	60.0	20.9	10.8	0.0	91.7	94.0	2.3	Hori.	109	160	LP	
4	928.810	48.1	20.9	10.8	0.0	79.8	94.0	14.2	Vert.	303	337	LP	
5	928.850	46.0	20.9	10.8	0.0	77.7	94.0	16.3	Vert.	303	337	LP	
6	928.890	48.1	20.9	10.8	0.0	79.8	94.0	14.2	Vert.	303	337	LP	

Calculation:Result [dBuV/m]=Reading [dBuV]+Ant.Fac [dB/m]+Loss (Cable+ATT) [dB]-Gain (AMP) [dB]
 Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna SHA*: Horn

TRANSMITTER BELOW 1 GHz (Spurious)

DATA OF RADIATED EMISSION TEST

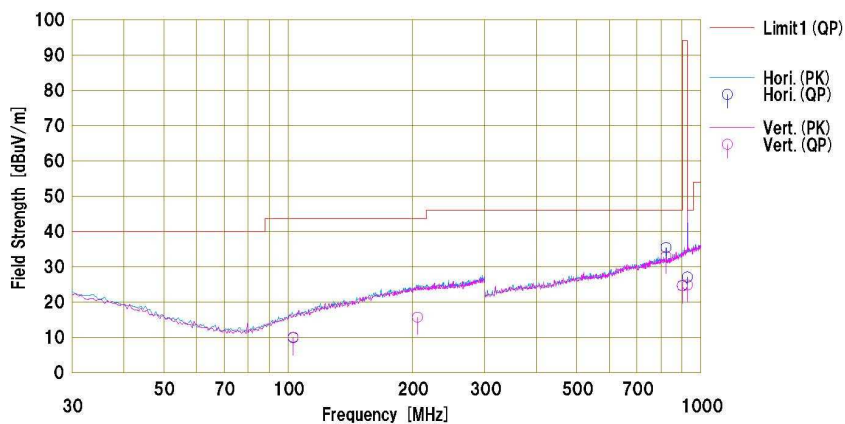
UL Japan, Inc. Shonan EMC Lab. No.3 Semi-Anechoic Chamber
 Date : 2011/09/20

Company : OMRON CORPORATION
 Kind of EUT : UNIT ASSY ANT MOD (BID R/C)
 Model No. : CGF-H002
 Serial No. : 4
 Mode : Transmitting
 Report No. : 32AE0249-SH-A
 Power : DC4.4V
 Temp./Humi. : 25deg.C. / 57%RH

Remarks : -

Limit1 : FCC15_249 (a)_below1GHz:QP

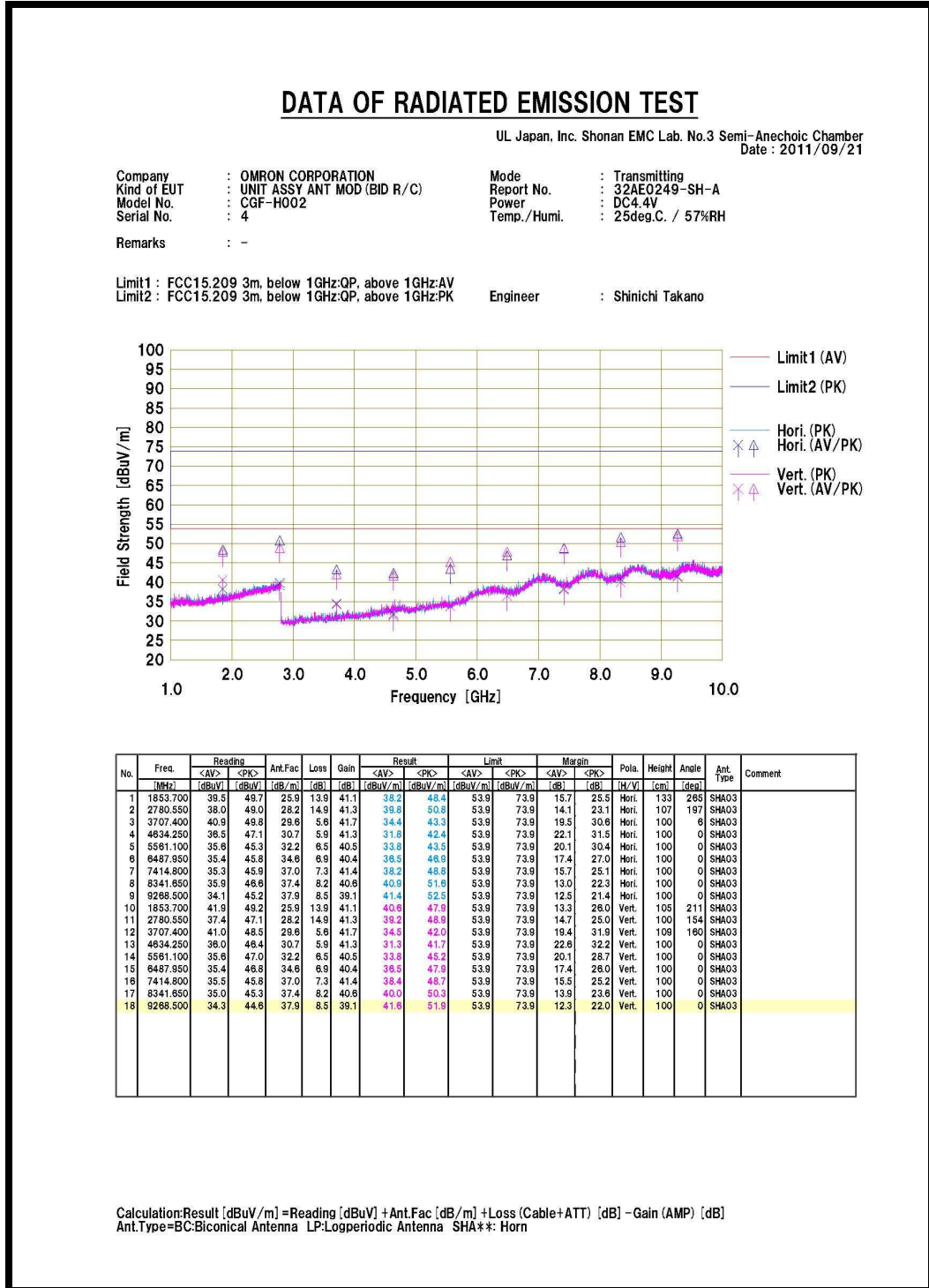
Engineer : Shinichi Takano



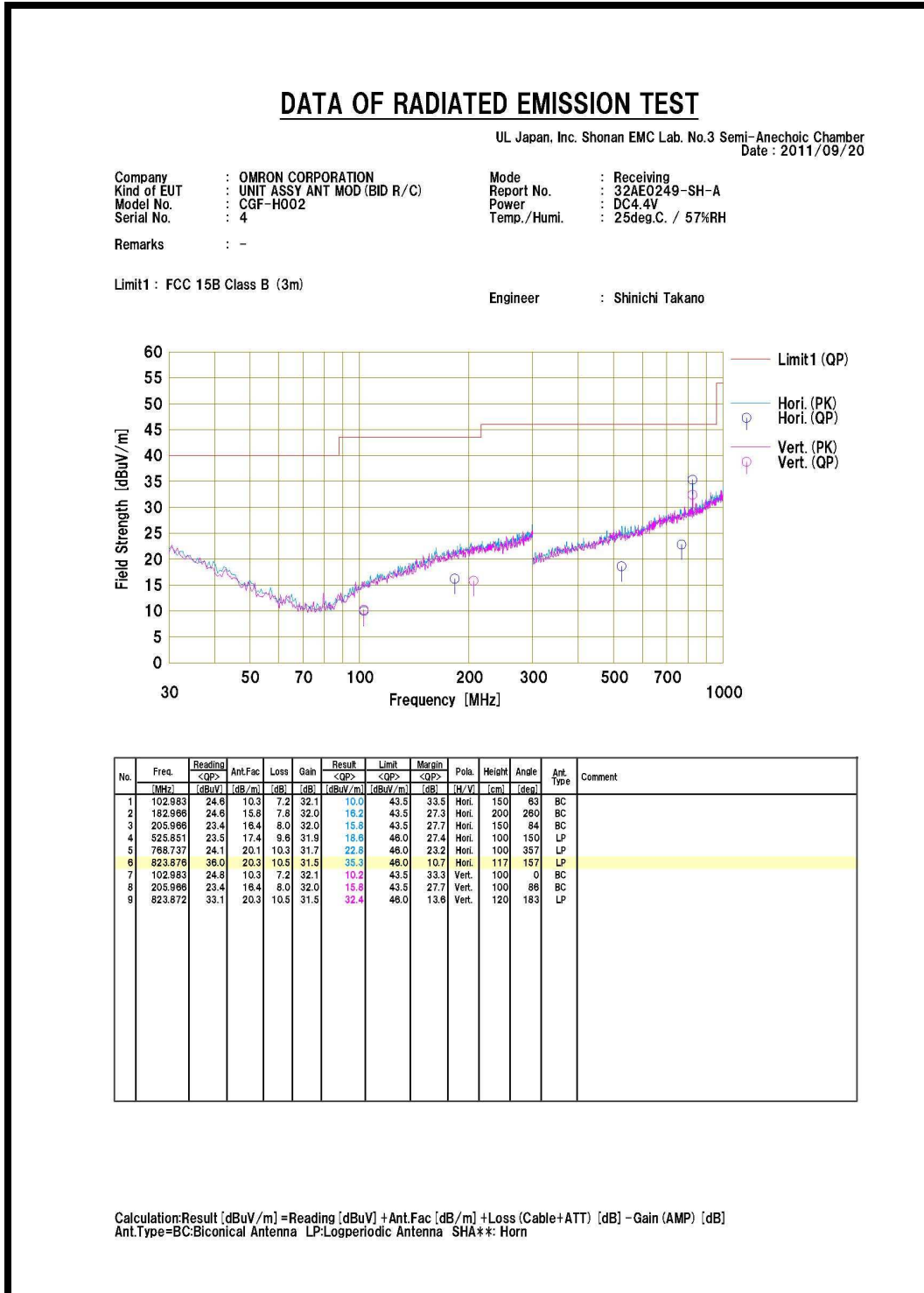
No.	Freq. [MHz]	Reading	Ant.Fac	Loss	Gain	Result	Limit	Margin	Pola.	Height [cm]	Anale	Ant. Type	Comment
		<QP> [dBuV]	[dB/m]	[dB]	[dB]	[dBuV/m]	<QP> [dBuV/m]	<QP> [dB]					
1	102.983	24.4	10.3	7.2	32.1	9.8	43.5	33.7	Hori.	300	98	BC	
2	205.966	23.2	16.4	8.0	32.0	15.6	43.5	27.9	Hori.	200	10	BC	
3	823.873	36.1	20.3	10.5	31.5	35.4	46.0	10.6	Hori.	115	65	LP	
4	902.000	24.2	20.6	10.7	30.9	24.8	46.0	21.4	Hori.	100	156	LP	
5	928.000	26.1	20.9	10.8	30.8	27.0	46.0	19.0	Hori.	100	162	LP	
6	102.983	24.6	10.3	7.2	32.1	10.0	43.5	33.5	Vert.	100	203	BC	
7	205.966	23.2	16.4	8.0	32.0	15.6	43.5	27.9	Vert.	100	239	BC	
8	823.873	33.6	20.3	10.5	31.5	32.9	46.0	13.1	Vert.	114	180	LP	
9	902.000	24.1	20.6	10.7	30.9	24.5	46.0	21.5	Vert.	100	359	LP	
10	928.000	23.9	20.9	10.8	30.8	24.8	46.0	21.2	Vert.	100	330	LP	

Calculation:Result [dBuV/m]=Reading [dBuV]+Ant.Fac [dB/m]+Loss (Cable+ATT) [dB]-Gain (AMP) [dB]
 Ant.Type=BC:Biconical Antenna LP:Logperiodic Antenna SHA*: Horn

8.3 TRANSMITTER ABOVE 1 GHz



8.4 RECEIVER BELOW 1 GHz



8.5 RECEIVER ABOVE 1 GHz

