



EMI TEST REPORT

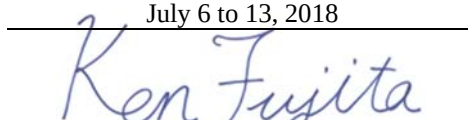
Test Report No. : 12366336H-B-R1

Applicant : Ascensia Diabetes Care Holdings AG
Type of EUT : CONTOUR NEXT
Model Number of EUT : 7901
Test regulation : FCC Part 15 Subpart B: 2020 Class B
ICES-003 Issue 6: 2016 + Amendment 1: 2017 Class B
Test Result : Complied (Refer to SECTION 3.2)

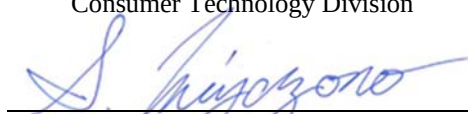
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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report covers EMC technical requirements. It does not cover administrative issues such as Manual or non-EMC test related Requirements. (if applicable)
6. The all test items in this test report are conducted by UL Japan, Inc. Ise EMC Lab.
7. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
8. The information provided from the customer for this report is identified in SECTION 1.
9. This report is a revised version of 12366336H-B. 12366336H-B is replaced with this report.

Date of test: July 6 to 13, 2018

Representative test engineer:


Ken Fujita
Engineer
Consumer Technology Division

Approved by:


Shinichi Miyazono
Engineer
Consumer Technology Division



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http://japan.ul.com/resources/emc_accredited/

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REVISION HISTORY

Original Test Report No.: 12366336H-B

Revision	Test report No.	Date	Page revised	Contents
- (Original)	12366336H-B	December 5, 2018	-	-
1	12366336H-B-R1	October 20, 2020	corresponding page	Correction due to ISO 17025 revision
1	12366336H-B-R1	October 20, 2020	P.1	Change of NVLAP logo to NVLAP combined ILAC MRA mark
1	12366336H-B-R1	October 20, 2020	P.1, 7	Update of FCC version
1	12366336H-B-R1	October 20, 2020	P.3	Addition of the Abbreviations list
1	12366336H-B-R1	October 20, 2020	P.6	Addition of the following variant model; CONTOUR NEXT GEN (7902, 7902H)

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Reference: Abbreviations (Including words undescribed in this report)

AAN	Asymmetric Artificial Network	ILAC	International Laboratory Accreditation Conference
AC	Alternating Current	ISED	Innovation, Science and Economic Development Canada
AM	Amplitude Modulation	ISN	Impedance Stabilization Network
AMN	Artificial Mains Network	ISO	International Organization for Standardization
Amp, AMP	Amplifier	JAB	Japan Accreditation Board
ANSI	American National Standards Institute	LAN	Local Area Network
Ant, ANT	Antenna	LCL	Longitudinal Conversion Loss
AP	Access Point	LIMS	Laboratory Information Management System
ASK	Amplitude Shift Keying	LISN	Line Impedance Stabilization Network
Atten., ATT	Attenuator	MRA	Mutual Recognition Arrangement
AV	Average	N/A	Not Applicable
BPSK	Binary Phase-Shift Keying	NIST	National Institute of Standards and Technology
BR	Bluetooth Basic Rate	NS	No signal detect.
BT	Bluetooth	NSA	Normalized Site Attenuation
BT LE	Bluetooth Low Energy	NVLAP	National Voluntary Laboratory Accreditation Program
BW	BandWidth	OBW	Occupied Band Width
C.F	Correction Factor	OFDM	Orthogonal Frequency Division Multiplexing
Cal Int	Calibration Interval	PK	Peak
CAV	CISPR AV	P _{LT}	long-term flicker severity
CCK	Complementary Code Keying	POHC(A)	Partial Odd Harmonic Current
CDN	Coupling Decoupling Network	Pol., Pola.	Polarization
Ch., CH	Channel	PR-ASK	Phase Reversal ASK
CISPR	Comite International Special des Perturbations Radioelectriques	P _{ST}	short-term flicker severity
Corr.	Correction	QAM	Quadrature Amplitude Modulation
CPE	Customer premise equipment	QP	Quasi-Peak
CW	Continuous Wave	QPSK	Quadri-Phase Shift Keying
DBPSK	Differential BPSK	r.m.s., RMS	Root Mean Square
DC	Direct Current	RBW	Resolution Band Width
DET	Detector	RE	Radio Equipment
D-factor	Distance factor	REV	Reverse
Dmax	maximum absolute voltage change during an observation period	RF	Radio Frequency
DQPSK	Differential QPSK	RFID	Radio Frequency Identifier
DSSS	Direct Sequence Spread Spectrum	RSS	Radio Standards Specifications
EDR	Enhanced Data Rate	Rx	Receiving
e.i.r.p., EIRP	Equivalent Isotropically Radiated Power	SINAD	Ratio of (Signal + Noise + Distortion) to (Noise + Distortion)
EM clamp	Electromagnetic clamp	S/N	Signal to Noise ratio
EMC	ElectroMagnetic Compatibility	SA, S/A	Spectrum Analyzer
EMI	ElectroMagnetic Interference	SG	Signal Generator
EMS	ElectroMagnetic Susceptibility	SVSWR	Site-Voltage Standing Wave Ratio
EN	European Norm	THC(A)	Total Harmonic Current
e.r.p., ERP	Effective Radiated Power	THD(%)	Total Harmonic Distortion
EU	European Union	TR	Test Receiver
EUT	Equipment Under Test	Tx	Transmitting
Fac.	Factor	VBW	Video BandWidth
FCC	Federal Communications Commission	Vert.	Vertical
FHSS	Frequency Hopping Spread Spectrum	WLAN	Wireless LAN
FM	Frequency Modulation	xDSL	Generic term for all types of DSL technology (DSL: Digital Subscriber Line)
Freq.	Frequency		
FSK	Frequency Shift Keying		
Fund	Fundamental		
FWD	Forward		
GFSK	Gaussian Frequency-Shift Keying		
GNSS	Global Navigation Satellite System		
GPS	Global Positioning System		
Hori.	Horizontal		
ICES	Interference-Causing Equipment Standard		
I/O	Input/Output		
IEC	International Electrotechnical Commission		
IEEE	Institute of Electrical and Electronics Engineers		
IF	Intermediate Frequency		

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SECTION 1: Customer information

[Applicant]

Company Name	:	Ascensia Diabetes Care Holdings AG
Address	:	Peter Merian-Strasse 90 4052 Basel, Switzerland

[Manufacturer]

Company Name	:	PHC Corporation
Address	:	2131-1 Minamigata, Toon, Ehime 791-0395 Japan
Telephone Number	:	+81-70-1499-9786
Facsimile Number	:	+81-89-966-2890
Contact Person	:	Masahiro Kishida

The information provided from the customer is as follows;

- Applicant, Type of EUT, Model Number of EUT on the cover and other relevant pages
- Operating/Test Mode(s) (Mode(s)) on all the relevant pages
- SECTION 1: Customer information
- SECTION 2: Equipment under test (EUT) other than the Receipt Date
- SECTION 4: Operation of EUT during testing

* The laboratory is exempted from liability of any test results affected from the above information in SECTION 2 and 4.

SECTION 2: Equipment under test (EUT)

2.1 Identification of EUT

Type	:	CONTOUR NEXT
Model Number	:	7901
Serial Number	:	Refer to Section 4, Clause 4.2
Rating	:	DC 3.0 V
Receipt Date	:	June 26, 2018
Country of Mass-production	:	Japan
Condition	:	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	:	No Modification by the test lab

2.2 Product Description

Model: 7901 (referred to as the EUT in this report) is a CONTOUR NEXT.

Radio Specification

Bluetooth Low Energy (Ver.4.2)

Equipment Type	:	Transceiver
Frequency of Operation	:	2402 MHz - 2480MHz
Type of Modulation	:	GFSK
Antenna Type	:	Pattern Antenna
Antenna Gain	:	2.41 dBi
Operating Temperature	:	0 deg. C to +55 deg. C

Variant models

Tested model; 7901 has following variant models;

CONTOUR NEXT	CONTOUR NEXT GEN	CONTOUR PLUS ELITE
7901(Tested model) 7901H	7902 7902H	7926 7926H

The differences between above variant model's type of equipment are intended country of destination and corresponding test strip.

The differences between above variant model's model No. are range of measurement results displayed and displayed unit.

These models are completely identical in Electrical characteristics and configuration.

SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart B
FCC Part 15 final revised on October 13, 2020

Title : FCC 47CFR Part15 Radio Frequency Device
Subpart B Unintentional Radiators

Test specification : ICES-003 Issue 6: 2016 + Amendment 1: 2017
Title : Spectrum Management and Telecommunications
Interference-Causing Equipment Standard
Information Technology Equipment (Including Digital Apparatus) –
Limits and Methods of Measurement

* The revision does not affect the test result conducted before its effective date.

3.2 Procedures and results

Item	Test Procedure	Limits	Deviation	Worst margin	Result
Conducted emission	FCC: ANSI C63.4: 2014 7. AC power - line conducted emission measurements IC: ICES-003 Issue 6: 2016 + Amendment 1: 2017	Class B	N/A	[QP] 6.8 dB 0.19770 MHz, N [AV] 17.4 dB 0.19770 MHz, N	Complied a)
Radiated emission	FCC: ANSI C63.4: 2014 8. Radiated emission measurements IC: ICES-003 Issue 6: 2016 + Amendment 1: 2017	Class B	N/A	9.3 dB 462.000 MHz, Horizontal, QP	Complied b)
*Note: UL Japan, Inc's EMI Work Procedure 13-EM-W0420.					
エラー! 参照元が見つかりません。 Refer to APPENDIX 1 (data of Conducted Emission)					
エラー! 参照元が見つかりません。 Refer to APPENDIX 1 (data of Radiated Emission)					
Symbols:					
Complied		The data of this test item has enough margin, more than the measurement uncertainty.			
Complied#		The data of this test item meets the limits unless the measurement uncertainty is taken into consideration.			

3.3 Addition to standard

No addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

There is no applicable rule of uncertainty in this applied standard. Therefore, the results are derived depending on whether or not laboratory uncertainty is applied.

EMI

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor $k = 2$.

Frequency range	Conducted emission using AMN(LISN) (+/-)
0.009 MHz to 0.15 MHz	3.8 dB
0.15 MHz to 30 MHz	3.4 dB

Polarity	Radiated emission (Below 1 GHz)			
	(3 m*)(+/-)		(10 m*)(+/-)	
	30 MHz to 200 MHz	200 MHz to 1000 MHz	30 MHz to 200 MHz	200 MHz to 1000 MHz
Horizontal	4.8 dB	5.2 dB	4.8 dB	5.0 dB
Vertical	5.0 dB	6.3 dB	4.9 dB	5.0 dB

Radiated emission (Above 1 GHz)				
(3 m*)(+/-)		(1 m*)(+/-)		(10 m*)(+/-)
1 GHz to 6 GHz	6 GHz to 18 GHz	10 GHz to 26.5 GHz	26.5 GHz to 40 GHz	1 GHz to 18 GHz
5.0 dB	5.3 dB	5.8 dB	5.8 dB	5.2 dB

* Measurement distance

3.5 Test Location

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*NVLAP Lab. code: 200572-0 / FCC Test Firm Registration Number: 199967 / ISED Lab Company Number: 2973C

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Test site	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms	Maximum measurement distance
No.1 semi-anechoic chamber	19.2 x 11.2 x 7.7	7.0 x 6.0	No.1 Power source room	10 m
No.2 semi-anechoic chamber	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room	3 m
No.3 shielded room	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room	3 m
No.4 shielded room	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.5 measurement room	6.4 x 6.4 x 3.0	6.4 x 6.4	-	-
No.6 shielded room	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room	3.1 x 5.0 x 2.7	3.1 x 5.0	-	-
No.9 measurement room	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-

3.6 Test data, Test instruments, and Test set up

Refer to APPENDIX.

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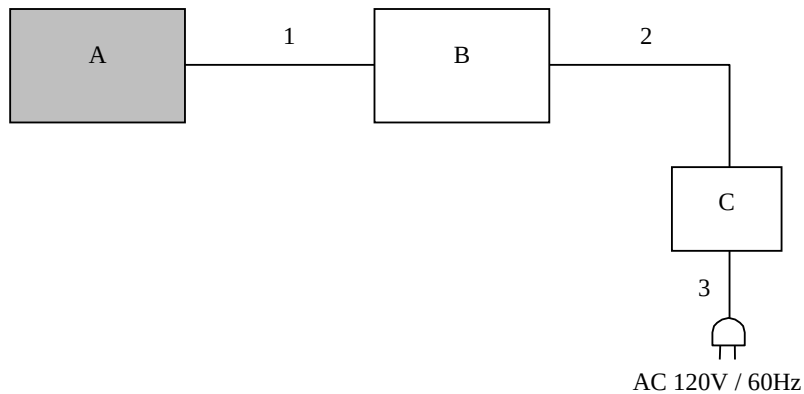
SECTION 4: Operation of EUT during testing

4.1 Operating Mode(s)

Mode	Remarks
1) Measuring mode	Radiated emission test only
2) USB Communication mode	-

4.2 Configuration and peripherals

[Conducted emission test]



* Cabling and setup(s) 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	Remarks
A	CONTOUR NEXT	7901	P200225	PHC Corporation	EUT
B	Laptop PC	CF-N8HWCDPS	9LKSA04258	Panasonic	-
C	AC Adapter	CF-AA6372B	6372BM409X14190B	Panasonic	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	USB Cable	1.5	Shielded	Shielded	-
2	DC Cable	1.8	Unshielded	Unshielded	-
3	AC Cable	0.9	Unshielded	Unshielded	-

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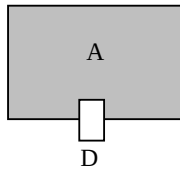
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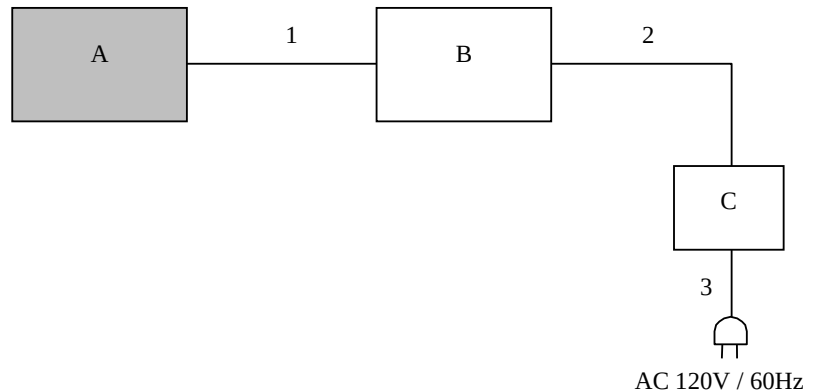
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[Radiated emission test]

[Mode 1]



[Mode 2]



* Cabling and setup(s) 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	Remarks
A	CONTOUR NEXT	7901	P200532	Ascensia Diabetes Care Holdings AG	EUT
B	Laptop PC	CF-N8HWCOPS	0BKSA08723	Panasonic	-
C	AC Adapter	CF-AA6372B	6372BM409X18054B	Panasonic	-
D	Resister strip	-	-	-	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	USB Cable	2.0	Shielded	Shielded	-
2	DC Cable	1.0	Unshielded	Unshielded	-
3	AC Cable	0.9	Unshielded	Unshielded	-

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SECTION 5: Conducted Emission

5.1 Operating environment

Test place : No.2 semi anechoic chamber
Temperature : See data
Humidity : See data

5.2 Test configuration

EUT was placed on a urethane platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane. The rear of tabletop was located 40 cm to the vertical conducting plane. The rear of EUT and its peripherals was aligned and flushed with rear of tabletop. All other surfaces of tabletop were at least 80 cm from any other grounded conducting surface. EUT was located 80 cm from the LISN/AMN and excess AC cable was bundled in center. I/O cables that were connected to the other peripherals were bundled in center. They were folded back and forth forming a bundle 30 cm to 40 cm long and were hanged at a 40 cm height to the ground plane. Each EUT current-carrying power lead, except the ground (safety) lead, was individually connected through a LISN/AMN to the input power source. All unused 50 ohm connectors of the LISN/AMN were resistivity terminated in 50 ohm when not connected to the measuring equipment. Photographs of the set up are shown in Appendix 3.

Frequency range : 0.15 MHz - 30 MHz
EUT position : Table top
EUT operation mode : See Clause 4.1

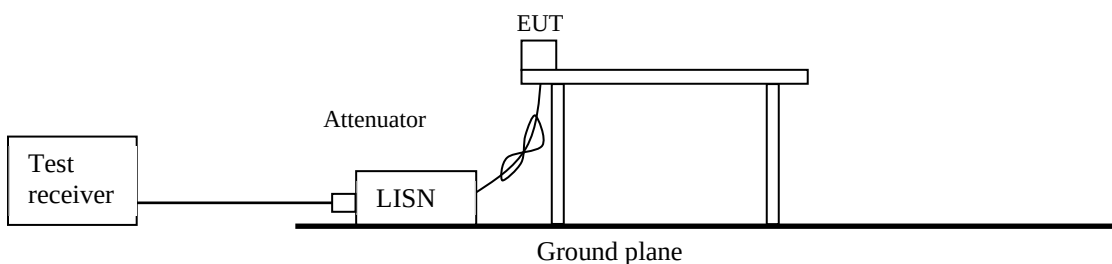
5.3 Test procedure

The AC Mains Terminal Continuous disturbance Voltage has been measured with the EUT within a semi anechoic chamber. The EUT was connected to a Line Impedance Stabilization Network (LISN)/ Artificial Mains network (AMN). An overview sweep with peak detection has been performed. The measurements have been performed with a quasi-peak detector and if required, with an average detector.

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

Detector Type : Quasi-Peak and CISPR AV
IF Bandwidth : 9 kHz

[Test Setup]



5.4 Test result

Summary of the test results: Pass

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

Date: July 6, 2018 Test engineer: Ken Fujita

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SECTION 6: Radiated Emission

6.1 Operating environment

Test place : No.2 semi anechoic chamber
Temperature : See data
Humidity : See data

6.2 Test configuration

EUT was placed on a urethane platform of nominal size, 1.0 m by 1.5 m, raised 0.8 m above the conducting ground plane. The EUT was set on the center (Mode 1) / edge (Mode 2) of the tabletop. Test was made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength. Photographs of the set up are shown in Appendix 3.

6.3 Test conditions

Frequency range : 30 MHz - 200 MHz (Biconical antenna) / 200 MHz - 1000 MHz (Logperiodic antenna)
1000 MHz - 13000 MHz (Horn antenna)
Test distance : 3 m
EUT position : Table top
EUT operation mode : See Clause 4.1

6.4 Test procedure

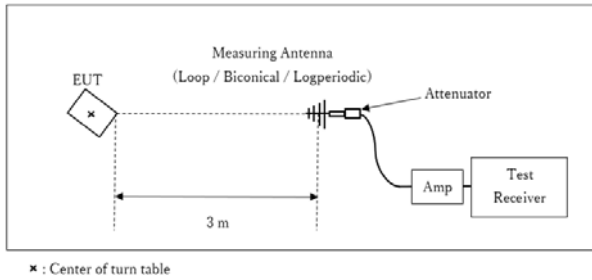
The height of the measuring antenna varied between 1 and 4 m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver. The radiated emission measurements were made with the following detector function of the Test Receiver.

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Test Receiver
IF Bandwidth	QP: BW 120 kHz	PK: BW 1 MHz, CISPR AV: BW 1 MHz

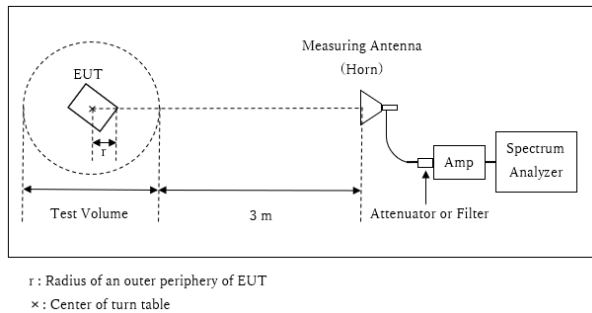
Test Setup

Below 1 GHz



Test Distance: 3 m

1 GHz - 10 GHz



[Mode 1]

Distance Factor: $20 \times \log (3.75 \text{ m} / 3.0 \text{ m}) = 1.94 \text{ dB}$

* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.75 \text{ m}$

Test Volume : 1.5 m

(Test Volume has been calibrated based on CISPR 16-1-4.)

$r = 0.0 \text{ m}$

* The test was performed with $r = 0.0 \text{ m}$ since EUT is small and it was the rather conservative condition.

[Mode 2]

Distance Factor: $20 \times \log (3.55 \text{ m} / 3.0 \text{ m}) = 1.46 \text{ dB}$

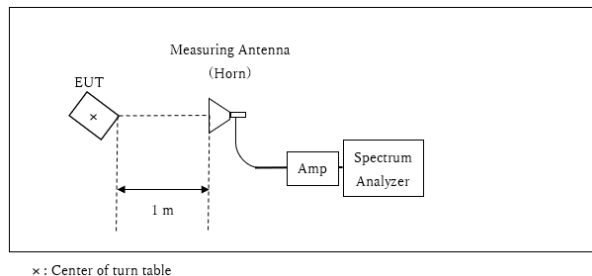
* Test Distance: $(3 + \text{Test Volume} / 2) - r = 3.55 \text{ m}$

Test Volume : 1.5 m

(Test Volume has been calibrated based on CISPR 16-1-4.)

$r = 0.2 \text{ m}$

10 GHz - 13 GHz



Distance Factor: $20 \times \log (1.0 \text{ m} / 3.0 \text{ m}) = -9.5 \text{ dB}$

* Test Distance: 1 m

- The carrier level and noise levels were confirmed at each position of X, Y and Z axes of EUT to see the position of maximum noise, and the test was made at the position that has the maximum noise.

6.5 Test result

Summary of the test results: Pass

The limit is rounded down to one decimal place.

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

Date: July 11, 2018
July 13, 2018

Test engineer: Takafumi Noguchi
Takeshi Hiyaji

UL Japan, Inc.

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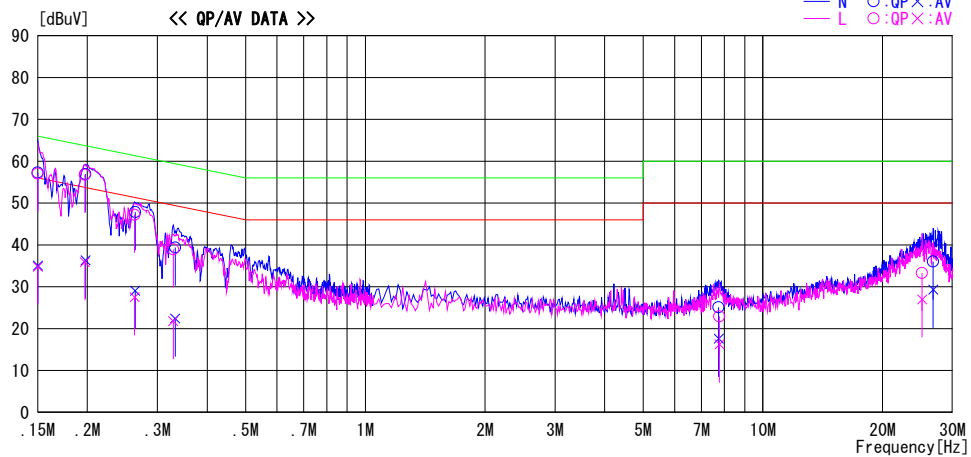
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APPENDIX 1: Test data

Conducted Emission

Report No. 12366336H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date July 6, 2018
Temperature / Humidity 24 deg. C / 54 % RH
Engineer Ken Fujita
Mode Mode 2

LIMIT : FCC15.107(a) QP ClassB
FCC15.107(a) AV ClassB



Frequency [MHz]	Reading Level		Corr. Factor	Results		Limit		Margin		Phase	Comment
	QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]		
0.15000	44.0	21.8	13.3	57.3	35.1	66.0	56.0	8.7	20.9	N	
0.19770	43.6	23.0	13.3	56.9	36.3	63.7	53.7	6.8	17.4	N	
0.26363	34.5	15.8	13.3	47.8	29.1	61.3	51.3	13.5	22.2	N	
0.33236	26.1	9.1	13.3	39.4	22.4	59.4	49.4	20.0	27.0	N	
7.74143	10.6	3.1	14.5	25.1	17.6	60.0	50.0	34.9	32.4	N	
26.80142	18.3	11.6	17.7	36.0	29.3	60.0	50.0	24.0	20.7	N	
0.15000	43.7	21.5	13.3	57.0	34.8	66.0	56.0	9.0	21.2	L	
0.19699	43.4	22.6	13.3	56.7	35.9	63.7	53.7	7.0	17.8	L	
0.26293	33.9	14.2	13.3	47.2	27.5	61.3	51.3	14.1	23.8	L	
0.32886	25.6	8.5	13.3	38.9	21.8	59.5	49.5	20.6	27.7	L	
7.77330	8.4	1.7	14.5	22.9	16.2	60.0	50.0	37.1	33.8	L	
25.16016	15.9	9.6	17.4	33.3	27.0	60.0	50.0	26.7	23.0	L	

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

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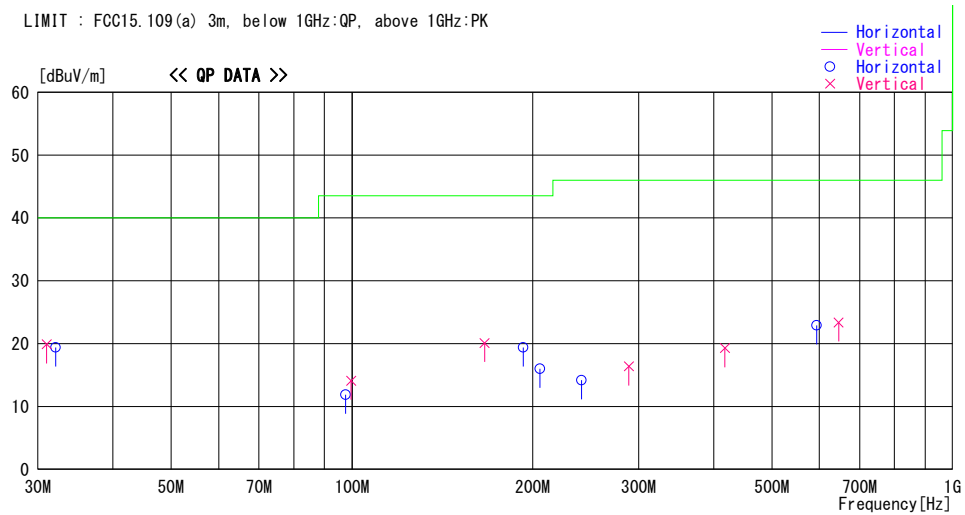
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Radiated emission (Below 1 GHz)

Report No. 12366336H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date July 13, 2018
Temperature / Humidity 22 deg. C / 58 % RH
Engineer Takeshi Hiyaji
(Below 1 GHz)
Mode Mode 1

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit	Margin	Comment
			Factor [dB/m]	Gain [dB]					[dBuV/m]	[dB]	
31.038	25.6	QP	18.1	-23.8	19.9	166	200	Vert.	40.0	20.1	
32.114	25.4	QP	17.7	-23.7	19.4	0	400	Hori.	40.0	20.6	
97.547	25.3	QP	9.5	-22.9	11.9	0	400	Hori.	43.5	31.6	
99.696	26.8	QP	10.0	-22.7	14.1	356	100	Vert.	43.5	29.4	
166.348	26.6	QP	15.4	-21.9	20.1	0	100	Vert.	43.5	23.4	
192.899	24.7	QP	16.3	-21.6	19.4	2	400	Hori.	43.5	24.1	
205.715	26.1	QP	11.3	-21.4	16.0	46	200	Hori.	43.5	27.5	
240.913	23.8	QP	11.4	-21.0	14.2	0	200	Hori.	46.0	31.8	
289.134	23.5	QP	13.3	-20.4	16.4	0	100	Vert.	46.0	29.6	
417.598	23.7	QP	15.9	-20.3	19.3	100	100	Vert.	46.0	26.7	
593.445	23.6	QP	18.8	-19.5	22.9	346	200	Hori.	46.0	23.1	
645.632	23.4	QP	19.1	-19.1	23.4	353	200	Vert.	46.0	22.6	

CHART: WITH FACTOR

ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS & GAIN (CABLE + ATT - GAIN(AMP))

UL Japan, Inc.

Ise EMC Lab.

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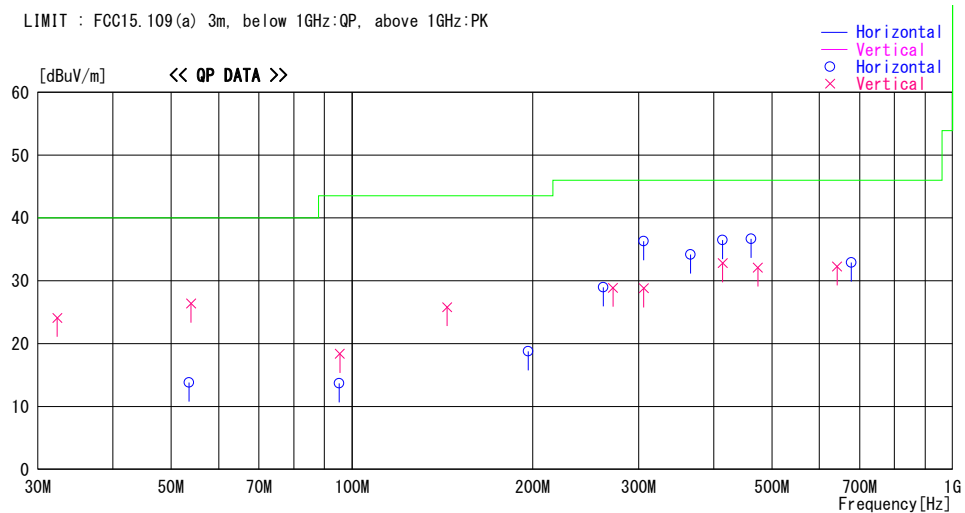
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Radiated emission (Below 1 GHz)

Report No. 12366336H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date July 13, 2018
Temperature / Humidity 22 deg. C / 58 % RH
Engineer Takeshi Hiyaji
(Below 1 GHz)
Mode Mode 2

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit	Margin	Comment
			Factor [dB/m]	Gain [dB]					[dBuV/m]	[dB]	
32.331	30.2	QP	17.6	-23.7	24.1	0	100	Vert.	40.0	15.9	
53.540	27.3	QP	9.9	-23.4	13.8	183	299	Hori.	40.0	26.2	
53.990	40.0	QP	9.8	-23.4	26.4	250	100	Vert.	40.0	13.6	
95.202	27.6	QP	9.0	-22.9	13.7	359	300	Hori.	43.5	29.8	
95.440	32.3	QP	9.0	-22.9	18.4	236	100	Vert.	43.5	25.1	
144.000	33.5	QP	14.5	-22.2	25.8	156	100	Vert.	43.5	17.7	
196.564	23.9	QP	16.5	-21.6	18.8	0	278	Hori.	43.5	24.7	
261.836	37.5	QP	12.2	-20.7	29.0	244	100	Hori.	46.0	17.0	
272.040	36.7	QP	12.8	-20.6	28.9	12	183	Vert.	46.0	17.1	
306.004	43.0	QP	13.6	-20.3	36.3	191	100	Hori.	46.0	9.7	
306.004	35.5	QP	13.6	-20.3	28.8	62	190	Vert.	46.0	17.2	
366.000	39.5	QP	14.9	-20.2	34.2	298	100	Hori.	46.0	11.8	
414.000	40.9	QP	15.9	-20.3	36.5	130	100	Hori.	46.0	9.5	
414.007	37.2	QP	15.9	-20.3	32.8	229	171	Vert.	46.0	13.2	
462.000	40.3	QP	16.7	-20.3	36.7	235	100	Hori.	46.0	9.3	
474.000	35.6	QP	16.8	-20.3	32.1	254	100	Vert.	46.0	13.9	
642.012	32.4	QP	19.0	-19.1	32.3	234	100	Vert.	46.0	13.7	
678.000	32.3	QP	19.4	-18.8	32.9	133	100	Hori.	46.0	13.1	

CHART: WITH FACTOR

ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS & GAIN (CABLE + ATT - GAIN(AMP))

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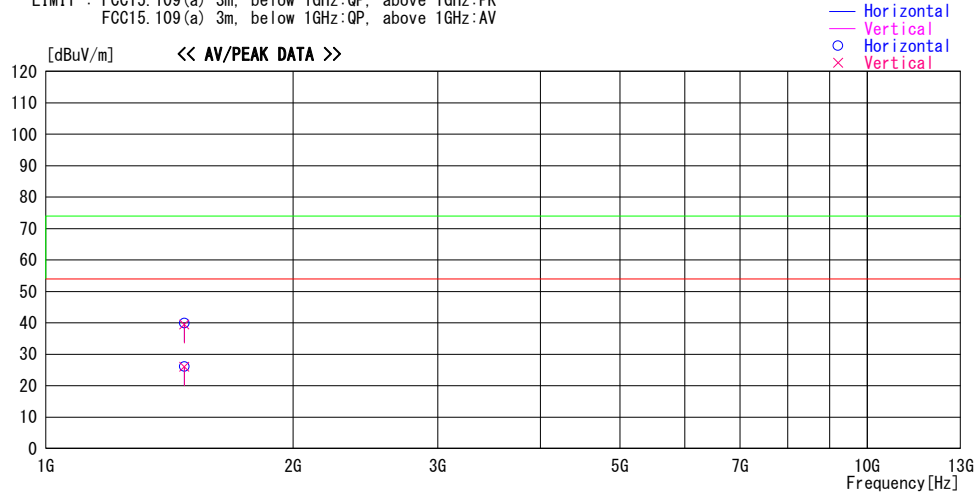
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Radiated emission (Above 1 GHz)

Report No. 12366336H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date July 11, 2018
Temperature / Humidity 20 deg. C / 60 % RH
Engineer Takafumi Noguchi
(Above 1 GHz)
Mode Mode 1

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK
FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit	Margin	Comment
			Factor [dB/m]	Gain [dB]					[dBuV/m]	[dB]	
1475.002	45.4	PK	26.1	-31.6	39.9	0	100	Hor i.	73.9	34.0	
1475.002	31.6	AV	26.1	-31.6	26.1	0	100	Hor i.	53.9	27.8	
1475.002	45.0	PK	26.1	-31.6	39.5	0	100	Vert.	73.9	34.4	
1475.002	31.5	AV	26.1	-31.6	26.0	0	100	Vert.	53.9	27.9	

CHART: WITH FACTOR

ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS & GAIN (CABLE - GAIN(AMP) + D-factor)

UL Japan, Inc.

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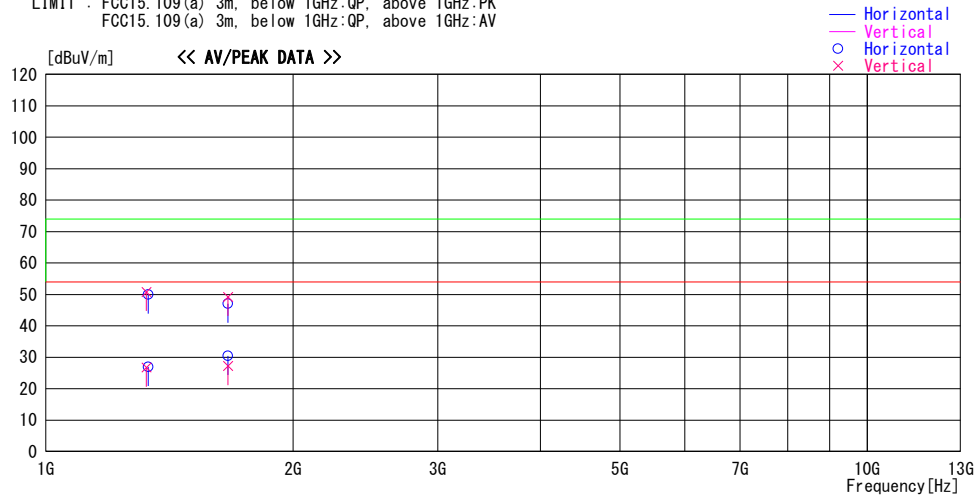
Telephone : +81 596 24 8999

Facsimile : +81 596 24 8124

Radiated emission (Above 1 GHz)

Report No. 12366336H
Test place Ise EMC Lab.
Semi Anechoic Chamber No.2
Date July 11, 2018
Temperature / Humidity 20 deg. C / 60 % RH
Engineer Takafumi Noguchi
(Above 1 GHz)
Mode Mode 2

LIMIT : FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:PK
FCC15.109(a) 3m, below 1GHz:QP, above 1GHz:AV



Frequency [MHz]	Reading [dBuV]	DET	Antenna	Loss&	Level [dBuV/m]	Angle [Deg]	Height [cm]	Polar.	Limit	Margin	Comment
			Factor [dB/m]	Gain [dB]					[dBuV/m]	[dB]	
1332.641	55.7	PK	26.1	-31.8	50.0	264	100	Hor i.	73.9	23.9	
1332.641	32.6	AV	26.1	-31.8	26.9	264	100	Hor i.	53.9	27.0	
1326.251	56.6	PK	26.0	-31.8	50.8	190	100	Vert.	73.9	23.1	
1326.251	32.5	AV	26.0	-31.8	26.7	190	100	Vert.	53.9	27.2	
1666.401	53.2	PK	25.0	-31.2	47.0	256	100	Hor i.	73.9	26.9	
1666.401	36.6	AV	25.0	-31.2	30.4	256	100	Hor i.	53.9	23.5	
1666.401	55.4	PK	25.0	-31.2	49.2	299	100	Vert.	73.9	24.7	
1666.401	33.4	AV	25.0	-31.2	27.2	299	100	Vert.	53.9	26.7	

CHART: WITH FACTOR

ANT TYPE: - 30 MHz: LOOP, 30 MHz - 200 MHz: BICONICAL, 200 MHz - 1000 MHz: LOGPERIODIC, 1000 MHz -: HORN
CALCULATION: RESULT = READING + ANT FACTOR + LOSS & GAIN (CABLE - GAIN(AMP) + D-factor)

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APPENDIX 2: Test instruments

Test Instruments

Test item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Calibration Due Date	Cal Int
CE	141885	Spectrum Analyzer	AGILENT	E4448A	US44300523	11/14/2017	11/30/2018	12
CE	141222	Coaxial Cable	FUJIKURA	3D-2W(12m)/ 5D-2W(5m)/ 5D-2W(0.8m)/5	-	2/23/2018	2/28/2019	12
CE	141246	Attenuator (13dB)	JFW Industries, Inc.	50FP-013H2 N	-	12/19/2017	12/31/2018	12
RE/ CE	142182	Measure	KOMELON	KMC-36	-	-	-	-
RE/ CE	142004	AC2_Semi Anechoic Chamber (NSA)	TDK	Semi Anechoic Chamber 3m	DA-06902	8/31/2017	8/31/2018	12
RE	142006	AC2_Semi Anechoic Chamber (SVSWR)	TDK	Semi Anechoic Chamber 3m	DA-06902	4/2/2018	4/30/2019	12
RE/ CE	141542	Digital Tester	Fluke Corporation	FLUKE 26-3	78030611	8/7/2017	8/31/2018	12
RE	141392	Microwave Cable	Junkosha	MWX221	1604S253(1 m) / 1608S087(5 m)	8/4/2017	8/31/2018	12
RE	141579	Pre Amplifier	AGILENT	8449B	3008A02142	1/23/2018	1/31/2019	12
RE	141512	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	254	6/6/2018	6/30/2019	12
RE/ CE	141556	Thermo-Hygrometer	CUSTOM	CTH-201	0003	12/21/2017	12/31/2018	12
RE	141152	EMI measurement program	TSJ	TEPTO-DV	-	-	-	-
RE	141884	Spectrum Analyzer	AGILENT	E4448A	MY44020357	11/7/2017	11/30/2018	12
RE	141203	Attenuator(6dB)	Weinschel Corp	2	BK7970	11/14/2017	11/30/2018	12
RE	141265	Logperiodic Antenna(200-1000MHz)	Schwarzbeck	VUSLP9111B	911B-190	5/31/2018	5/31/2019	12
RE	141427	Biconical Antenna	Schwarzbeck	VHA9103B	8031	5/31/2018	5/31/2019	12
RE	141317	Coaxial Cable	Fujikura/Agilent	-	-	2/23/2018	2/28/2019	12
RE/ CE	141942	Test Receiver	Rohde & Schwarz	ESCI	100300	8/21/2017	8/31/2018	12
RE	141578	Pre Amplifier	AGILENT	8447D	2944A10845	9/27/2017	9/30/2018	12
RE	141951	EMI Test Receiver	Rohde & Schwarz	ESR26	101408	1/30/2018	1/31/2019	12

*Hyphens for Last Calibration Date, Calibration Due Date and Cal Int (month) are instruments that Calibration is not required (e.g. software), or instruments checked in advance before use.

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

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

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

Test item:

CE: Conducted emission

RE: Radiated emission

UL Japan, Inc.

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