



RADIO TEST REPORT


Test Report No. : 10288804H-A-R1

Applicant : DENSO CORPORATION
Type of Equipment : Remote Keyless Entry System (Transmitter)
Model No. : 12BFA
Test regulation : FCC Part 15 Subpart C: 2014
FCC ID : HYQ12BFA
Test Result : Complied

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with above regulation.
4. The test results in this report are traceable to the national or international standards.
5. 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.
6. This report is a revised version of 10288804H-A. 10288804H-A 1 is replaced with this report.

Date of test: April 24, 2014

Representative test engineer:


Tsubasa Takayama
Engineer
Consumer Technology Division

Approved by:


Takashi Nakazawa
Leader
Consumer Technology Division



NVLAP LAB CODE: 200572-0

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<http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap>

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13-EM-F0429

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SECTION 1: Customer information

Company Name : DENSO CORPORATION
Address : 1-1 Showa-cho, Kariya-shi, Aichi-ken, 448-8661 Japan
Telephone Number : +81-566-61-7252
Facsimile Number : +81-566-25-4837
Contact Person : HIROMICHI HANAI

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

2.1 Identification of E.U.T.

Type of Equipment : Remote Keyless Entry System (Transmitter)
Model No. : 12BFA
Serial No. : Refer to Clause 4.2
Rating : DC 3.0V
Receipt Date of Sample : April 22, 2014
Country of Mass-production : Japan
Condition of EUT : Engineering prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No Modification by the test lab

2.2 Product Description

Model No: 12BFA (referred to as the EUT in this report) is the Remote Keyless Entry System (Transmitter).

General Specification

Clock frequency(ies) in the system : 33.6MHz

Radio Specification

Radio Type : Transmitter
Frequency of Operation : 312.10 MHz / 314.35 MHz *
Modulation : FSK (F1D)
Power Supply (radio part input) : DC 3.0V
Type of Battery : One lithium battery
Antenna type : Built-in type (Fixed)

* These two different frequencies are not emitted simultaneously.

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part 15 Subpart C: 2014, final revised on March 6, 2014 and effective April 7, 2014

Title : FCC 47CFR Part15 Radio Frequency Device Subpart C Intentional Radiators
Section 15.231 Periodic operation in the band 40.66 - 40.70MHz
and above 70MHz

3.2 Procedures and results

Item	Test Procedure	Specification	Worst margin	Results	Remarks
Conducted emission	FCC: ANSI C63.4:2003 7. AC powerline conducted emission measurements ----- IC: RSS-Gen 7.2.4	FCC: Section 15.207 ----- IC: RSS-Gen 7.2.4	N/A	N/A*1)	-
Automatically Deactivate	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators ----- IC: -	FCC: Section 15.231(a)(1) ----- IC: RSS-210 A1.1.1	N/A	Complied	Radiated
Electric Field Strength of Fundamental Emission	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators ----- IC: RSS-Gen 4.8	FCC: Section 15.231(b) ----- IC: RSS-210 A1.1.2	3.5dB Horizontal PK with Duty factor (Tx 312.100MHz) (Tx 314.350MHz)	Complied	Radiated
Electric Field Strength of Spurious Emission	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators ----- IC: RSS-Gen 4.9	FCC: Section 15.205 Section 15.209 Section 15.231(b) ----- IC: RSS-210 A1.1.2, 2.5.1 RSS-Gen 7.2.5	9.5dB 2184.700MHz Horizontal PK with Duty factor (Tx 312.100MHz) 2514.800MHz Vertical PK with Duty factor (Tx 314.35MHz)	Complied	Radiated
-20dB Bandwidth	FCC: ANSI C63.4:2003 13. Measurement of intentional radiators ----- IC: -	FCC: Section 15.231(c) ----- IC: Reference data	N/A	Complied	Radiated

Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0420 and 13-EM-W0422.

*1) The test is not applicable since the EUT does not have AC Mains.

FCC 15.31 (e)

This test was performed with the New Battery (DC 3.0V) and the constant voltage was supplied to the EUT during the tests. Therefore, the EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

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3.3 Addition to standard

Item	Test Procedure	Specification	Worst margin	Results	Remarks
99% Occupied Bandwidth	IC: RSS-Gen 4.6.1	IC: RSS-Gen 4.6.1	N/A	Complied	Radiated

Other than above, no addition, exclusion nor deviation has been made from the standard.

3.4 Uncertainty

EMI

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

Test room (semi-anechoic chamber)	Radiated emission						
	(3m*)(+dB)				(1m*)(+dB)		(0.5m*)(+dB)
	9kHz -30MHz	30MHz -300MHz	300MHz -1GHz	1GHz -10GHz	10GHz -18GHz	18GHz -26.5GHz	26.5GHz -40GHz
No.1	4.0dB	5.1dB	5.0dB	5.1dB	6.0dB	4.9dB	4.3dB
No.2	3.9dB	5.2dB	5.0dB	4.9dB	5.9dB	4.7dB	4.2dB
No.3	4.3dB	5.1dB	5.2dB	5.2dB	6.0dB	4.8dB	4.2dB
No.4	4.6dB	5.2dB	5.0dB	5.2dB	6.0dB	5.7dB	4.2dB

*3m/1m/0.5m = Measurement distance

Radiated emission test (3m)

[Electric Field Strength of Fundamental Emission]

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

[Electric Field Strength of Spurious Emission]

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

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3.5 Test Location

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	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	2973C-1	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	2973C-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	2973C-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	4.0 x 4.5 x 2.7m	4.75 x 5.4 m	-
No.6 measurement room	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	3.1 x 5.0 x 2.7m	N/A	-
No.9 measurement room	-	8.8 x 4.6 x 2.8m	2.4 x 2.4m	-
No.11 measurement room	-	3.1 x 3.4 x 3.0m	4.8 x 4.6m	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.6 Data of EMI, Test instruments, and Test set up.

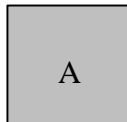
Refer to APPENDIX.

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

4.1 Operating Modes

Test Item	Mode
Automatically Deactivate Duty Cycle Electric Field Strength of Fundamental Emission Electric Field Strength of Spurious Emission -20dB & 99% Occupied Bandwidth	Transmitting mode (Tx), 312.10MHz / 314.35MHz
* The system was configured in typical fashion (as a customer would normally use it) for testing. End users cannot change the settings of the output power of the product.	

4.2 Configuration and peripherals



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

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Remote Keyless Entry System (Transmitter)	12BFA	001	DENSO CORPORATION	EUT

UL Japan, Inc.

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SECTION 5: Radiated emission (Electric Field Strength of Fundamental and Spurious Emission)

Test Procedure and conditions

EUT was placed on a urethane platform of nominal size, 0.5m by 1.0m, raised 0.8m above the conducting ground plane. The EUT was set on the center 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.

[Transmitting mode]

(Below 30MHz)

The noise level was checked by moving a search-coil (Loop Antenna) close to the EUT.

(Above 30MHz)

The Radiated Electric Field Strength has been measured on Semi anechoic chamber with a ground plane and at a distance of 3m.

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

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

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

Test Antennas are used as below;

Frequency	Below 30MHz	30MHz to 300MHz	300MHz to 1GHz	Above 1GHz
Antenna Type	Loop	Biconical	Logperiodic	Horn

	From 9kHz to 90kHz and From 110kHz to 150kHz	From 90kHz to 110kHz	From 150kHz to 490kHz	From 490kHz to 30MHz	From 30MHz to 1GHz	Above 1GHz
Detector Type	Peak	Peak	Peak	Peak	Peak and Peak with Duty factor	Peak and Peak with Duty factor
IF Bandwidth	200Hz	200Hz	9.1kHz	9.1kHz	120kHz	PK: S/A:RBW 1MHz, VBW 3MHz

- The carrier level was measured at each position of all three axes X, Y and Z, and the position that has the maximum noise was determined.

Noise levels of all the frequencies were measured at the position.

- This EUT has two modes which mechanical key is folded in or out. The worst case was confirmed that mechanical key is folded in or out, as a result, the test which mechanical key was folded in was the worst case. Therefore the test was performed under the worst condition.

*The result is rounded off to the second decimal place, so some differences might be observed.

Measurement range : 9kHz-3.2GHz
Test data : APPENDIX
Test result : Pass

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SECTION 6: Automatically deactivate

Test Procedure

The measurement was performed with Electric field strength using a spectrum analyzer.

Test data : APPENDIX
Test result : Pass

SECTION 7: -20dB and 99% Occupied Bandwidth

Test Procedure

The measurement was performed in the antenna height to gain the maximum of Electric field strength.

Test	Span	RBW	VBW	Sweep	Detector	Trace	Instrument used
20dB Bandwidth	300kHz	10kHz	30kHz	Auto	Peak	Max Hold	Spectrum Analyzer
99% Occupied Bandwidth	Enough width to display 20dB Bandwidth	10kHz	Three times of RBW	Auto	Peak *1)	Max Hold *1)	Spectrum Analyzer
*1) The measurement was performed with Peak detector, Max Hold since the duty cycle was not 100%.							

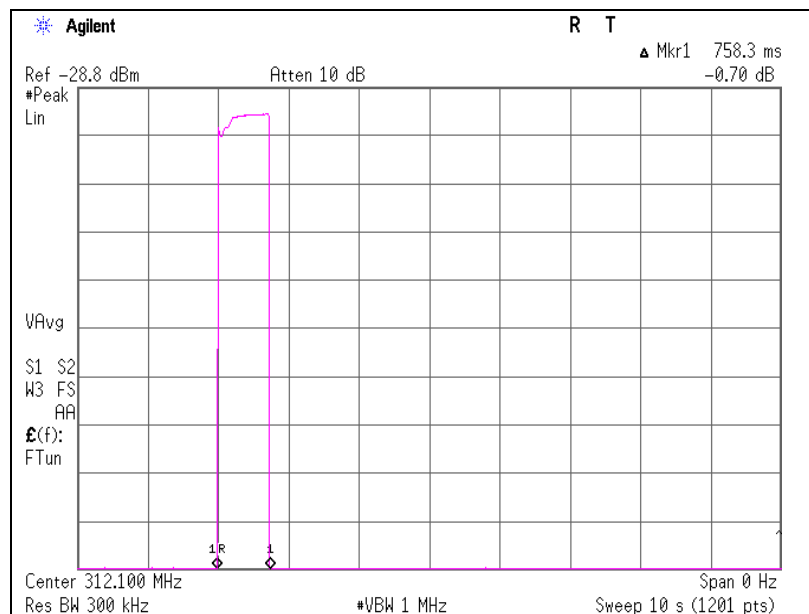
Test data : APPENDIX
Test result : Pass

APPENDIX 1: Data of EMI test

Automatically deactivate

Test place Ise HQ EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10288804H
Date 04/24/2014
Temperature/ Humidity 22 deg. C / 33% RH
Engineer Tsubasa Takayama
Mode Transmitting mode 312.10MHz

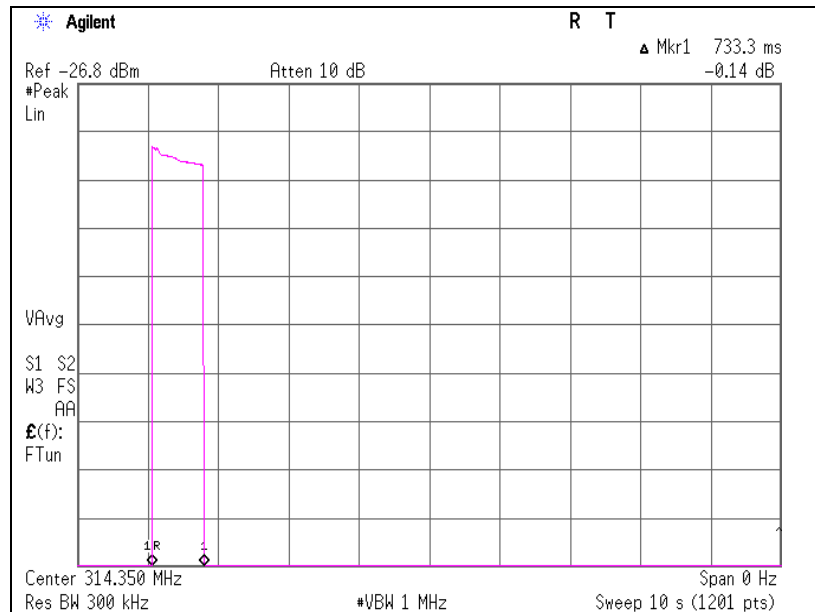
Time of Transmitting [sec]	Limit [sec]	Result
0.7583	5.00	Pass



Automatically deactivate

Test place : Ise HQ EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 10288804H
Date : 04/24/2014
Temperature/ Humidity : 22 deg. C / 33% RH
Engineer : Tsubasa Takayama
Mode : Transmitting mode 314.35MHz

Time of Transmitting [sec]	Limit [sec]	Result
0.7333	5.00	Pass



Radiated Emission (Electric Field Strength of Fundamental and Spurious Emission)

Test place Ise HQ EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10288804H
Date 04/24/2014
Temperature/ Humidity 22 deg. C / 33% RH
Engineer Tsubasa Takayama
Mode Transmitting mode 312.10MHz

PK

Frequency [MHz]	Detector	Reading [dBuV]		Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]		Remark Inside or Outside of Restricted Bands
		Hor	Ver					Hor	Ver		Hor	Ver	
312.100	PK	79.2	75.3	14.6	10.0	31.9	-	71.9	68.0	95.4	23.5	27.4	Carrier
624.200	PK	32.1	30.5	19.7	12.0	32.0	-	31.8	30.2	75.4	43.6	45.2	Outside
936.300	PK	29.6	30.2	23.1	13.4	30.7	-	35.4	36.0	75.4	40.0	39.4	Outside
1248.400	PK	45.9	45.8	24.8	1.9	34.6	-	38.0	37.9	75.4	37.4	37.5	Outside
1560.500	PK	44.5	48.7	25.9	2.1	33.8	-	38.7	42.9	73.9	35.2	31.0	Inside
1872.600	PK	45.1	47.0	26.7	2.2	33.2	-	40.8	42.7	75.4	34.6	32.7	Outside
2184.700	PK	48.7	48.1	27.6	2.4	32.8	-	45.9	45.3	75.4	29.5	30.1	Outside
2496.800	PK	44.1	45.1	28.5	2.5	32.7	-	42.4	43.4	73.9	31.5	30.5	Inside
2808.900	PK	44.5	44.4	28.9	2.7	32.5	-	43.6	43.5	73.9	30.3	30.4	Inside
3121.000	PK	45.3	44.7	29.1	2.9	32.4	-	44.9	44.3	75.4	30.5	31.1	Outside

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amplifier)

PK with Duty factor

Frequency [MHz]	Detector	Reading [dBuV]		Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]		Remark
		Hor	Ver					Hor	Ver		Hor	Ver	
312.100	PK	79.2	75.3	14.6	10.0	31.9	0.0	71.9	68.0	75.4	3.5	7.4	Carrier
624.200	PK	32.1	30.5	19.7	12.0	32.0	0.0	31.8	30.2	55.4	23.6	25.2	Outside
936.300	PK	29.6	30.2	23.1	13.4	30.7	0.0	35.4	36.0	55.4	20.0	19.4	Outside
1248.400	PK	45.9	45.8	24.8	1.9	34.6	0.0	38.0	37.9	55.4	17.4	17.5	Outside
1560.500	PK	44.5	48.7	25.9	2.1	33.8	0.0	38.7	42.9	53.9	15.2	11.0	Inside
1872.600	PK	45.1	47.0	26.7	2.2	33.2	0.0	40.8	42.7	55.4	14.6	12.7	Outside
2184.700	PK	48.7	48.1	27.6	2.4	32.8	0.0	45.9	45.3	55.4	9.5	10.1	Outside
2496.800	PK	44.1	45.1	28.5	2.5	32.7	0.0	42.4	43.4	53.9	11.5	10.5	Inside
2808.900	PK	44.5	44.4	28.9	2.7	32.5	0.0	43.6	43.5	53.9	10.3	10.4	Inside
3121.000	PK	45.3	44.7	29.1	2.9	32.4	0.0	44.9	44.3	55.4	10.5	11.1	Outside

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amplifier) + Duty factor (Refer to Duty factor data sheet)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Radiated Emission (Electric Field Strength of Fundamental and Spurious Emission)

Test place : Ise HQ EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 10288804H
Date : 04/24/2014
Temperature/ Humidity : 22 deg. C / 33% RH
Engineer : Tsubasa Takayama
Mode : Transmitting mode 314.35MHz

PK

Frequency [MHz]	Detector	Reading [dBuV]		Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]		Remark Inside or Outside of Restricted Bands
		Hor	Ver					Hor	Ver		Hor	Ver	
314.350	PK	79.1	75.1	14.7	10.1	31.9	-	72.0	68.0	95.5	23.5	27.5	Carrier
628.700	PK	31.2	30.2	19.7	12.0	32.0	-	30.9	29.9	75.5	44.6	45.6	Outside
943.050	PK	28.8	29.7	23.2	13.5	30.7	-	34.8	35.7	75.5	40.7	39.8	Outside
1257.400	PK	46.2	45.2	24.8	1.9	34.6	-	38.3	37.3	75.5	37.2	38.2	Outside
1571.750	PK	45.0	45.8	25.9	2.1	33.8	-	39.2	40.0	73.9	34.7	33.9	Inside
1886.100	PK	45.4	44.9	26.7	2.2	33.2	-	41.1	40.6	75.5	34.4	34.9	Outside
2200.450	PK	46.0	44.4	27.6	2.4	32.8	-	43.2	41.6	73.9	30.7	32.3	Inside
2514.800	PK	44.0	47.6	28.5	2.6	32.7	-	42.4	46.0	75.5	33.1	29.5	Outside
2829.150	PK	44.2	44.3	28.9	2.7	32.5	-	43.3	43.4	73.9	30.6	30.5	Inside
3143.500	PK	45.2	45.2	29.1	2.9	32.4	-	44.8	44.8	75.5	30.7	30.7	Outside

Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amplifier)

PK with Duty factor

Frequency [MHz]	Detector	Reading [dBuV]		Ant Factor [dB/m]	Loss [dB]	Gain [dB]	Duty Factor [dB]	Result [dBuV/m]		Limit [dBuV/m]	Margin [dB]		Remark
		Hor	Ver					Hor	Ver		Hor	Ver	
314.350	PK	79.1	75.1	14.7	10.1	31.9	0.0	72.0	68.0	75.5	3.5	7.5	Carrier
628.700	PK	31.2	30.2	19.7	12.0	32.0	0.0	30.9	29.9	55.5	24.6	25.6	Outside
943.050	PK	28.8	29.7	23.2	13.5	30.7	0.0	34.8	35.7	55.5	20.7	19.8	Outside
1257.400	PK	46.2	45.2	24.8	1.9	34.6	0.0	38.3	37.3	55.5	17.2	18.2	Outside
1571.750	PK	45.0	45.8	25.9	2.1	33.8	0.0	39.2	40.0	53.9	14.7	13.9	Inside
1886.100	PK	45.4	44.9	26.7	2.2	33.2	0.0	41.1	40.6	55.5	14.4	14.9	Outside
2200.450	PK	46.0	44.4	27.6	2.4	32.8	0.0	43.2	41.6	53.9	10.7	12.3	Inside
2514.800	PK	44.0	47.6	28.5	2.6	32.7	0.0	42.4	46.0	55.5	13.1	9.5	Outside
2829.150	PK	44.2	44.3	28.9	2.7	32.5	0.0	43.3	43.4	53.9	10.6	10.5	Inside
3143.500	PK	45.2	45.2	29.1	2.9	32.4	0.0	44.8	44.8	55.5	10.7	10.7	Outside

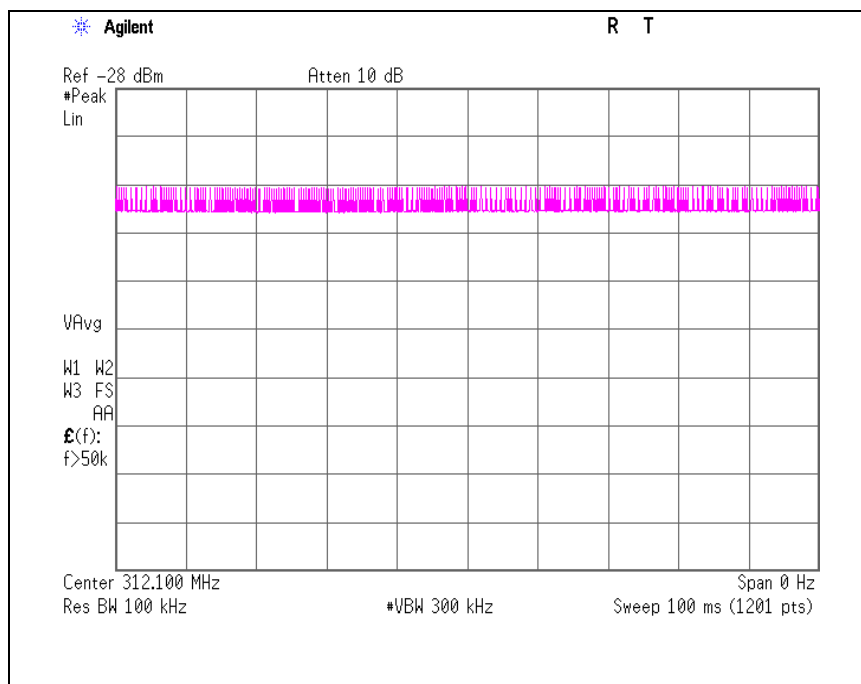
Result = Reading + Ant Factor + Loss (Cable+Attenuator+Filter) - Gain(Amplifier) + Duty factor (Refer to Duty factor data sheet)

*Other frequency noises omitted in this report were not seen or had enough margin (more than 20dB).

Duty Cycle

Test place	Ise HQ EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10288804H
Date	04/24/2014
Temperature/ Humidity	22 deg. C / 33% RH
Engineer	Tsubasa Takayama
Mode	Transmitting mode 312.10MHz

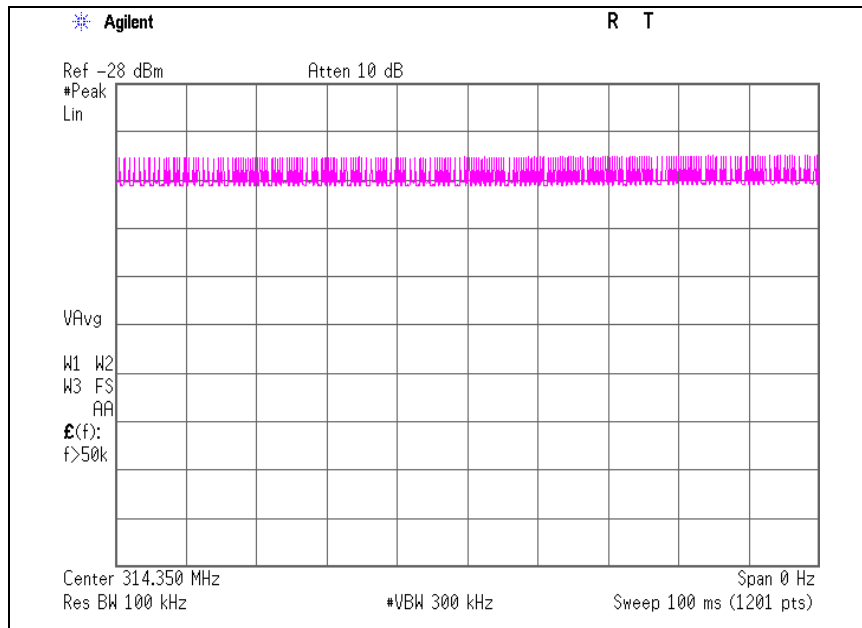
ON time [ms]	Cycle [ms]	Duty (On time/Cycle)	Duty [dB]
100.00	100.00	1.00	0.0



Duty Cycle

Test place	Ise HQ EMC Lab. No.3 Semi Anechoic Chamber
Report No.	10288804H
Date	04/24/2014
Temperature/ Humidity	22 deg. C / 33% RH
Engineer	Tsubasa Takayama
Mode	Transmitting mode 314.35MHz

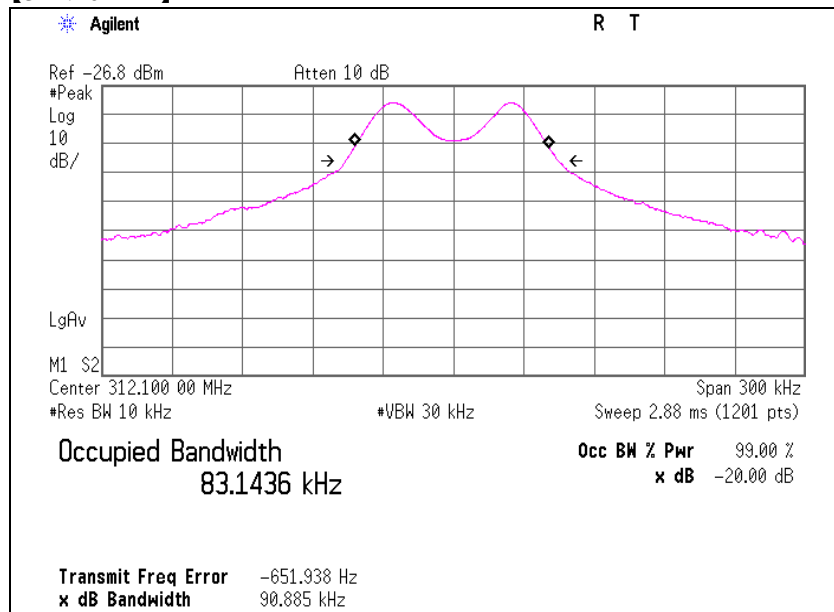
ON time [ms]	Cycle [ms]	Duty (On time/Cycle)	Duty [dB]
100.00	100.00	1.00	0.0



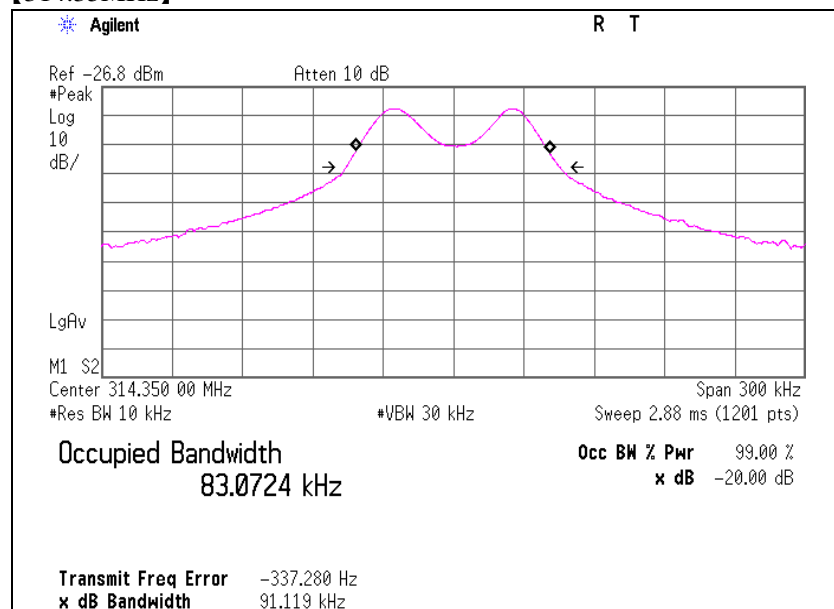
-20dB and 99% Occupied Bandwidth

Test place Ise HQ EMC Lab. No.3 Semi Anechoic Chamber
Report No. 10288804H
Date 04/24/2014
Temperature/ Humidity 22 deg. C / 33% RH
Engineer Tsubasa Takayama
Mode Transmitting mode 312.10MHz / 314.35MHz

【312.10MHz】



【314.35MHz】



-20dB and 99% Occupied Bandwidth

Test place : Ise HQ EMC Lab. No.3 Semi Anechoic Chamber
Report No. : 10288804H
Date : 04/24/2014
Temperature/ Humidity : 22 deg. C / 33% RH
Engineer : Tsubasa Takayama
Mode : Transmitting mode 312.10MHz / 314.35MHz

Bandwidth Limit : Fundamental Frequency **312.10** MHz x 0.25% = 780.25 kHz

* The above limit was calculated from more stringent nominal frequency.

* Method of KDB 926416 for systems employing non sweeping frequencies was referred.

312.10MHz

-20dB Bandwidth [kHz]
90.89

314.35MHz

-20dB Bandwidth [kHz]
91.12

-20dB Bandwidth [kHz]	Bandwidth Limit [kHz]	Result
90.89+91.12=182.01	780.25	Pass

Bandwidth Limit : Fundamental Frequency **312.10** MHz x 0.25% = 780.25 kHz

99% Occupied Bandwidth [kHz]	Bandwidth Limit [kHz]	Result
83.14	780.25	Pass

Bandwidth Limit : Fundamental Frequency **314.35** MHz x 0.25% = 785.88 kHz

99% Occupied Bandwidth [kHz]	Bandwidth Limit [kHz]	Result
83.07	785.88	Pass

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APPENDIX 2: Test Instruments

EMI test equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MAEC-03	Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	RE	2014/02/27 * 12
MOS-13	Thermo-Hygrometer	Custom	CTH-180	1301	RE	2014/02/20 * 12
MJM-16	Measure	KOMELON	KMC-36	-	RE	-
COTS-MEMI	EMI measurement program	TSJ	TEPTO-DV	-	RE	-
MRENT-114	Spectrum Analyzer	Advantest	R3273	160400285	RE	2013/11/08 * 12
MTR-08	Test Receiver	Rohde & Schwarz	ESCI	100767	RE	2013/08/20 * 12
MBA-03	Biconical Antenna	Schwarzbeck	BBA9106	1915	RE	2013/10/13 * 12
MLA-03	Logperiodic Antenna	Schwarzbeck	USLP9143	174	RE	2013/10/13 * 12
MCC-51	Coaxial cable	UL Japan	-	-	RE	2013/07/23 * 12
MAT-70	Attenuator(6dB)	Agilent	8491A-006	MY52460153	RE	2014/04/14 * 12
MPA-13	Pre Amplifier	SONOMA INSTRUMENT	310	260834	RE	2014/03/14 * 12
MHA-20	Horn Antenna 1-18GHz	Schwarzbeck	BBHA9120D	258	RE	2013/05/17 * 12
MCC-133	Microwave Cable	HUBER+SUHNER	SUCOFLEX104	336164/4(1m) / 340640(5m)	RE	2013/09/27 * 12
MPA-11	MicroWave System Amplifier	Agilent	83017A	MY39500779	RE	2014/03/24 * 12

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:

RE: Radiated emission, 99% Occupied Bandwidth, -20dB bandwidth , Automatically deactivate and Duty cycle tests

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