RADIO TEST REPORT

Test Report No.: 10521136S

Applicant	:	**Fukuda Denshi Co., Ltd.**
Type of Equipment	:	**ECG, Respiration and SpO2 Transmitter**
Model No.	:	**LX-7230N**
FCC ID	:	**DV8LX7230G**
Test regulation	:	**FCC Part 95 Subpart H: 2014** **FCC Part 2 Subpart J: 2014**
Test result	:	**Complied**

1. This test report shall not be reproduced in full or partial, without the written approval of UL Japan, Inc.
2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this test 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 any agency of the Federal Government.

Date of test: October 14 to 27, 2014

Representative test engineer:

Tatsuya Arai
Engineer
Consumer Technology Division

Approved by :

Toyokazu Imamura
Leader
Consumer Technology Division

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa-ken, 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

REVISION HISTORY

Original Test Report No.: 10521136S

Revision	Test report No.	Date	Page revised	Contents
-(Original)	10521136S	November 5, 2014	-	-
1	10521136S	November 10, 2014	p.1, p.2 p.4 p.20 to p.22, p.24 to p.26 p.3, p.8	Changed revision. Added "maximum measurement value" Added "RF Output Power" value & calculation. Changed "6dB Bandwidth" to "Bandwidth"
2	10521136S	November 20, 2014	p.1, p.2 p.4 p.5	Changed revision. Changed antenna gain. Added comment to 3.1.

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SECTION 1: Customer information

Company Name	:	Fukuda Denshi Co., Ltd.
Address	:	35-8, Hongo 2-chome, Bunkyo-ku,Tokyo 113-8420, Japan
Telephone Number	:	+81-3-5684-1300
Facsimile Number	:	+81-3-5684-1449
Contact Person	:	Hiroyuki Sasage

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

2.1 Identification of E.U.T.

Type of equipment	:	ECG, Respiration and SpO2 Transmitter
Model No.	:	LX-7230N
Serial No.	:	Refer to Clause 4.2
Rating	:	DC 3V (Battery)
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.
Receipt Date of Sample	:	October 14, 2014

2.2 Product description

Model: LX-7230N (referred to as the EUT in this report) is ECG, Respiration and SpO2 Transmitter.

Clock frequency(ies) in the system	:	8MHz, 84kHz (Not Radio part), 13.0MHz (Radio part, TCXO)

Radio specification:

Radio Type	:	Transmitter
Frequency of Operation	:	1395.0375 to 1399.9625 MHz, 1427.0375 to 1431.4625 MHz
Modulation	:	DFSK
RF Output Power (E.I.R.P.)	:	5mW ±2dBm *1)
RF Output Power Limit	:	740mV/m at 3m (= 117.3dBuV/m at 3m)
Antenna type	:	Dielectric antenna
Antenna gain	:	-10.5dBi
Operating Temperature	:	+10 to +40 deg. C.
Frequency stability	:	+/- 2.5ppm
ITU code (Emission designator)	:	F1D

*1) RF Output Power is fixed as shown in "08 (Confidential) Theory of Operation.pdf" and this product is shipped.
(* maximum measurement value was 0.70 mW. refer to APPENDIX 1 (p.20 to p.26).)

Supplied voltage:
The EUT is a battery-operated device and test was performed with the new battery. Therefore, the EUT complies power supply regulation.

SECTION 3: Test specification, procedures & results

3.1 Test specification

Test specification : FCC Part 95 Subpart H: 2014, final revised on October 6, 2014 and effective November 5, 2014
Title : FCC 47CFR Part 95 Personal Radio Services
Subpart H Wireless Medical Telemetry Service (WMTS)

* The revision on October 6, 2014 does not affect the test specification applied to the EUT.

Test specification : FCC Part 2 Subpart J: 2014, final revised on August 15, 2014
Title : FCC 47CFR Part 2 Frequency Allocations and Radio Treaty Matters; General Rules and Regulations
Subpart J Equipment Authorization Procedures

The LX-7230N is used for the purpose of being related with medical treatment. Therefore this device applies to §15.103(e), exempted from FCC Part 15 Subpart B.

3.2 Procedures & Results

Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
Field strength of fundamental emission	FCC 2.1046 ANSI/TIA-603-C:2004	FCC 95.1115(a)	Radiated	N/A	25.6dB 1397.5120MHz Vertical, AV Tx 1397.5125MHz	Complied
Field strength of spurious emissions	FCC 2.1053 ANSI/TIA-603-C:2004	FCC 95.1115(b)	Radiated	N/A	0.6dB 2858.525MHz Horizontal, AV Tx 1429.2625MHz	Complied
Frequency stability	FCC 2.1055 ANSI/TIA-603-C:2004	FCC 95.1115(e)	Radiated	N/A	-	Complied
Bandwidth	FCC 2.1049 ANSI/TIA-603-C:2004	Applicant specification	Radiated	N/A	-	Complied
Spurious emission at antenna terminals	FCC 2.1051 ANSI/TIA-603-C:2004	-	Conducted	N/A *1)	-	-
Note: UL Japan, Inc.'s EMI Work Test Procedure 13-EM-W0420. *1) The test is not applicable since the EUT has no antenna terminals.						

3.3 Addition to standard

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

3.4 Uncertainty

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

Item	Frequency range	No.1 SAC*1/SR*2 (±)	No.2 SAC/SR (±)	No.3 SAC/SR (±)
Radiated emission (Measurement distance: 3m)	9kHz-30MHz	3.7 dB	3.5 dB	3.5 dB
	30MHz-300MHz	4.8 dB	4.9 dB	4.7 dB
	300MHz-1GHz	5.0 dB	5.0 dB	4.8 dB
	1GHz-15GHz	4.9 dB	4.9 dB	4.9 dB

*1: SAC=Semi-Anechoic Chamber
*2: SR= Shielded Room is applied besides radiated emission

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

Other test
Frequency Measurement uncertainty for this test was: (±) 5.3 x 10^-6.
Bandwidth Measurement uncertainty for this test was: (±) 0.66%

3.5 Test location

UL Japan, Inc. Shonan EMC Lab.
1-22-3, Megumigaoka, Hiratsuka-shi, Kanagawa-ken 259-1220 JAPAN
Telephone number : +81 463 50 6400
Facsimile number : +81 463 50 6401

	IC Registration No.	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Maximum measurement distance
☐ No.1 semi-anechoic chamber	2973D-1	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☐ No.2 semi-anechoic chamber	2973D-2	20.6 x 11.3 x 7.65	20.6 x 11.3	10m
☒ No.3 semi-anechoic chamber	2973D-3	12.7 x 7.7 x 5.35	12.7 x 7.7	5m
☐ No.4 semi-anechoic chamber	-	8.1 x 5.1 x 3.55	8.1 x 5.1	-
☐ No.1 shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☐ No.2 shielded room	-	6.8 x 4.1 x 2.7	6.8 x 4.1	-
☐ No.3 shielded room	-	6.3 x 4.7 x 2.7	6.3 x 4.7	-
☐ No.4 shielded room	-	4.4 x 4.7 x 2.7	4.4 x 4.7	-
☒ No.5 shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
☐ No.6 shielded room	-	7.8 x 6.4 x 2.7	7.8 x 6.4	-
☒ No.1 measurement room	-	2.55 x 4.1 x 2.5	-	-

3.6 Test setup, Test data & Test instruments

Refer to APPENDIX 1 to 3.

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

4.1 Operating mode

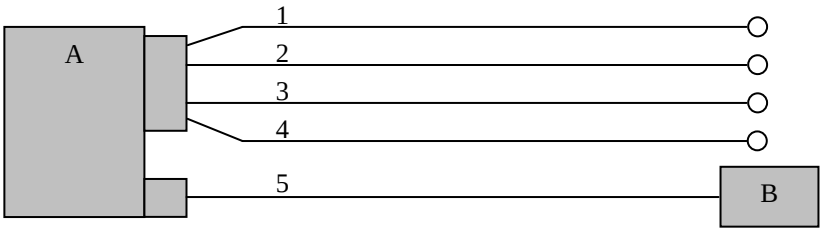
The EUT exercise program used during testing was designed to exercise the various system components in a manner similar to typical use.

Test item	Operating mode	Tested frequency
All items	Transmitting (Modulated)	1395.0375MHz, 1397.5125MHz, 1399.9625MHz, 1427.0375MHz, 1429.2625MHz, 1431.4625MHz

Software: None (Firmware of the EUT)

Justification: The system was configured in typical fashion (as customer would normally use it) for testing.

4.2 Configuration and peripherals



* Test data was taken under worse case conditions.

Description of EUT and support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	ECG, Respiration and SpO2 Transmitter	LX-7230N	26	FUKUDA DENSHI	EUT
B	SpO2 Sensor	DS-100A	26	FUKUDA DENSHI	-

List of cables used

No.	Name	Length (m)	Shield (Cable)	Shield (Connector)	Remarks
1	Patient	0.8	Shielded	Unshielded	Transmitting Antenna
2	Patient	0.8	Shielded	Unshielded	Transmitting Antenna
3	Patient	0.8	Shielded	Unshielded	Transmitting Antenna
4	Patient	0.8	Shielded	Unshielded	Transmitting Antenna
5	SpO2	0.85	Shielded	Unshielded	Transmitting Antenna

SECTION 5: Bandwidth & Occupied bandwidth (99%)

Test procedure
The bandwidth was measured with a spectrum analyzer.

Summary of the test results: Pass
Refer to APPENDIX 1

SECTION 6: Frequency stability

Test procedure
The frequency stability was measured with a spectrum analyzer.
The temperature test was started after the temperature stabilization time of 30 minutes.

* Tested temperature was +10 to +40deg.C, because EUT cannot transmit under the temperature of -20deg.C, -10deg.C, 0deg.C and +50deg.C. (EUT's specification: +10 to +40 deg.C.)

Summary of the test results: Pass
Refer to APPENDIX 1

SECTION 7: Field strength of fundamental emission and spurious emissions

7.1 Operating environment

Test place : See test data (APPENDIX 1)
Temperature : See test data (APPENDIX 1)
Humidity : See test data (APPENDIX 1)

7.2 Test configuration

EUT was placed on a polystyrene platform of nominal size, 0.5m by 0.5m, raised 0.8m above the conducting ground plane. Photographs of the set up are shown in APPENDIX 3.

7.3 Test conditions

Frequency range : 30MHz to 15GHz
EUT position : Table top

7.4 Test procedure

The Radiated Electric Field Strength intensity has been measured 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 intensity.
The measurements were performed for both vertical and horizontal antenna polarization.
Measurements were performed with QP and AV detector.
The radiated emission measurements were made with the following detector function .

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Spectrum Analyzer *1)
Detector IF Bandwidth	QP: BW 120kHz	AV RBW: 1MHz VBW: 10Hz (No pulse emission detected)
Measuring antenna	Biconical (30-300MHz) Logperiodic (300MHz-1GHz)	Horn

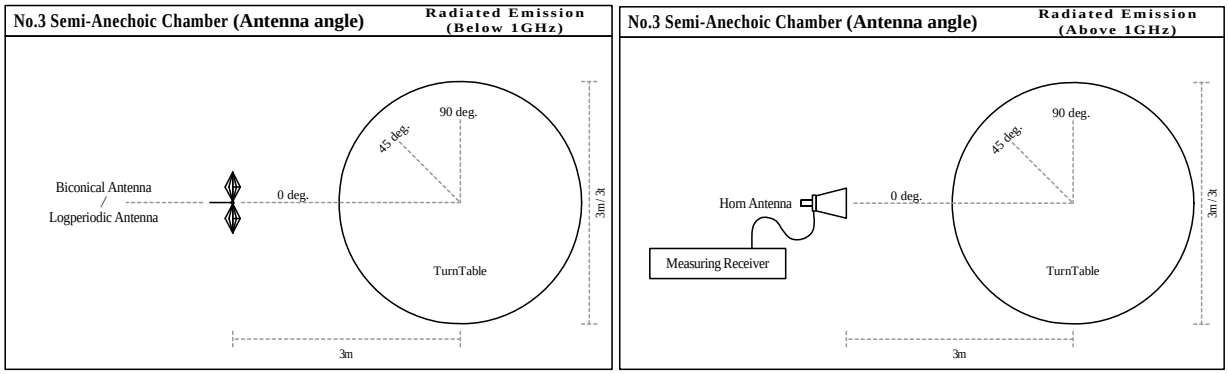
*1) When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

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.

Antenna polarization	Carrier (Band edge)	Spurious (Below 1GHz)	Spurious (1-15GHz)
Horizontal	Y	Z	Y
Vertical	Y	Z	X

* The definition of each position is shown in a ‘Pre-check of the worst position’ in APPENDIX 3.

Figure 1. Antenna angle



7.5 Band edge

To determine the level of band-edge spurious, we use the following procedure:
Set the resolution bandwidth to 1 kHz in the peak detector mode.
Because we don't want to include in-band emission at Band edge measurement if center frequencies are "1395.0375MHz" or "1399.9625MHz" and Band edges are "1395MHz" or "1400MHz", "1427.0375MHz" or "1431.4625MHz" and Band edges are "1427MHz" or "1432MHz",
(The supplementation: There are some granted test report that were measured by 3kHz RBW for the equipment that has 350kHz for 26dB bandwidth in similar case.)
*As we started at section 7.5, we used RBW = 1kHz (greater than 1% bandwidth) to prevent to detect in-band emission. Refer to KDB 662683.

Measure the maximum level of the in-band channel closest to the band edge and the maximum level of the out-of-band emissions close to the same band edge.
Determine the ratio of the in-band signal to the out-of-band emissions. Then, measure the level of the in-band channel in Average mode (= VBW 10Hz) with 1MHz bandwidth. Using the ratio obtained, we calculate the equivalent level of the out-of-band emissions to determine compliance with the limits.
The emission tests, except for the band edge, were performed with the average mode of the spectrum analyzer. (Bandwidth:1MHz)

7.6 Results

Summary of the test results : Pass
* No noise from radio part was detected in 9kHz to 30MHz.

Refer to APPENDIX 1

Contents of APPENDIXES

APPENDIX 1: Data of Radio tests

Frequency stability
26dB bandwidth
Field strength of fundamental emission and spurious emissions
Occupied bandwidth

APPENDIX 2: Test instruments

Test instruments

APPENDIX 3: Photographs of test setup

Field strength of fundamental emission and spurious emissions
Pre-check of the worst position

APPENDIX 2: Data of Radio tests

Frequency Stability

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	October 14, 2014	
Temperature / Humidity	26 deg.C / 40 %RH	
Engineer	Tatsuya Arai	
Mode	Transmitting	

Test Condition deg.C	Volts	Test Timing	Measured freq [MHz]	Freq error [MHz]	Result [ppm]	Limit [+/- ppm]	Margin [ppm]
20deg.C	2.0V (Vmin)	Power on	1395.037781	0.000281	0.20	2.50	2.30
		on 2min.	1395.037840	0.000340	0.24	2.50	2.26
		on 5min.	1395.037821	0.000321	0.23	2.50	2.27
		on 10min.	1395.037886	0.000386	0.28	2.50	2.22
	3V (Vnom)	Power on	1395.037848	0.000348	0.25	2.50	2.25
		on 2min.	1395.037792	0.000292	0.21	2.50	2.29
		on 5min.	1395.038051	0.000551	0.39	2.50	2.11
		on 10min.	1395.037758	0.000258	0.18	2.50	2.32
		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
50deg.C.	3V	Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
40deg.C.		Power on	1395.037769	0.000269	0.19	2.50	2.31
		on 2min.	1395.037741	0.000241	0.17	2.50	2.33
		on 5min.	1395.037964	0.000464	0.33	2.50	2.17
		on 10min.	1395.037931	0.000431	0.31	2.50	2.19
30deg.C.		Power on	1395.037737	0.000237	0.17	2.50	2.33
		on 2min.	1395.037772	0.000272	0.19	2.50	2.31
		on 5min.	1395.037785	0.000285	0.20	2.50	2.30
		on 10min.	1395.037740	0.000240	0.17	2.50	2.33
20deg.C.		Power on	1395.037848	0.000348	0.25	2.50	2.25
		on 2min.	1395.037792	0.000292	0.21	2.50	2.29
		on 5min.	1395.038051	0.000551	0.39	2.50	2.11
		on 10min.	1395.037758	0.000258	0.18	2.50	2.32
10deg.C.		Power on	1395.037793	0.000293	0.21	2.50	2.29
		on 2min.	1395.037891	0.000391	0.28	2.50	2.22
		on 5min.	1395.037709	0.000209	0.15	2.50	2.35
		on 10min.	1395.037774	0.000274	0.20	2.50	2.30
0deg.C.		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-10deg.C.		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-20deg.C		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-30deg.C		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-

Limit : 1395.0375 MHz +/-0.00025 % (+/- 2.5ppm) = +/- 0.003488 MHz

*The test on 50deg.C., 0deg.C., -10deg.C., and -20deg.C. were not apply, since the specification of operating temperature of EUT was 10deg.C to 40deg.C. (It used the manufacturer's specified conditions (refer to FCC 95.1115(e))

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Frequency Stability

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	October 14, 2014	
Temperature / Humidity	26 deg.C / 40 %RH	
Engineer	Tatsuya Arai	
Mode	Transmitting	

Test Condition deg.C	Volts	Test Timing	Measured freq [MHz]	Freq error [MHz]	Result [ppm]	Limit [+/- ppm]	Margin [ppm]
20deg.C	2.0V (Vmin)	Power on	1397.512685	0.000185	0.13	2.50	2.37
		on 2min.	1397.512730	0.000230	0.16	2.50	2.34
		on 5min.	1397.512666	0.000166	0.12	2.50	2.38
		on 10min.	1397.512702	0.000202	0.14	2.50	2.36
	3V (Vnom)	Power on	1397.512887	0.000387	0.28	2.50	2.22
		on 2min.	1397.512830	0.000330	0.24	2.50	2.26
		on 5min.	1397.512710	0.000210	0.15	2.50	2.35
		on 10min.	1397.512699	0.000199	0.14	2.50	2.36
		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
50deg.C.	3V	Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
40deg.C.		Power on	1397.512786	0.000286	0.20	2.50	2.30
		on 2min.	1397.512825	0.000325	0.23	2.50	2.27
		on 5min.	1397.512831	0.000331	0.24	2.50	2.26
		on 10min.	1397.512783	0.000283	0.20	2.50	2.30
30deg.C.		Power on	1397.512781	0.000281	0.20	2.50	2.30
		on 2min.	1397.512789	0.000289	0.21	2.50	2.29
		on 5min.	1397.512846	0.000346	0.25	2.50	2.25
		on 10min.	1397.512835	0.000335	0.24	2.50	2.26
20deg.C.		Power on	1397.512887	0.000387	0.28	2.50	2.22
		on 2min.	1397.512830	0.000330	0.24	2.50	2.26
		on 5min.	1397.512710	0.000210	0.15	2.50	2.35
		on 10min.	1397.512699	0.000199	0.14	2.50	2.36
10deg.C.		Power on	1397.512720	0.000220	0.16	2.50	2.34
		on 2min.	1397.512764	0.000264	0.19	2.50	2.31
		on 5min.	1397.512826	0.000326	0.23	2.50	2.27
		on 10min.	1397.512878	0.000378	0.27	2.50	2.23
0deg.C.		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-10deg.C.		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-20deg.C		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-30deg.C		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-

Limit : 1397.5125 MHz +/-0.00025 % (+/- 2.5ppm) = +/- 0.003494 MHz

*The test on 50deg.C., 0deg.C., -10deg.C., and -20deg.C. were not apply, since the specification of operating temperature of EUT was 10deg.C to 40deg.C. (It used the manufacturer's specified conditions (refer to FCC 95.1115(e))

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Frequency Stability

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	October 14, 2014	
Temperature / Humidity	26 deg.C / 40 %RH	
Engineer	Tatsuya Arai	
Mode	Transmitting	

Test Condition deg.C	Volts	Test Timing	Measured freq [MHz]	Freq error [MHz]	Result [ppm]	Limit [+/- ppm]	Margin [ppm]
20deg.C	2.0V (Vmin)	Power on	1399.962770	0.000270	0.19	2.50	2.31
		on 2min.	1399.962780	0.000280	0.20	2.50	2.30
		on 5min.	1399.962723	0.000223	0.16	2.50	2.34
		on 10min.	1399.962793	0.000293	0.21	2.50	2.29
	3V (Vnom)	Power on	1399.962852	0.000352	0.25	2.50	2.25
		on 2min.	1399.962924	0.000424	0.30	2.50	2.20
		on 5min.	1399.962881	0.000381	0.27	2.50	2.23
		on 10min.	1399.962825	0.000325	0.23	2.50	2.27
		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
50deg.C.	3V	Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
40deg.C.		Power on	1399.962790	0.000290	0.21	2.50	2.29
		on 2min.	1399.962789	0.000289	0.21	2.50	2.29
		on 5min.	1399.962777	0.000277	0.20	2.50	2.30
		on 10min.	1399.962658	0.000158	0.11	2.50	2.39
30deg.C.		Power on	1399.962703	0.000203	0.15	2.50	2.35
		on 2min.	1399.962693	0.000193	0.14	2.50	2.36
		on 5min.	1399.962848	0.000348	0.25	2.50	2.25
		on 10min.	1399.962795	0.000295	0.21	2.50	2.29
20deg.C.		Power on	1399.962852	0.000352	0.25	2.50	2.25
		on 2min.	1399.962924	0.000424	0.30	2.50	2.20
		on 5min.	1399.962881	0.000381	0.27	2.50	2.23
		on 10min.	1399.962825	0.000325	0.23	2.50	2.27
10deg.C.		Power on	1399.962784	0.000284	0.20	2.50	2.30
		on 2min.	1399.962678	0.000178	0.13	2.50	2.37
		on 5min.	1399.962814	0.000314	0.22	2.50	2.28
		on 10min.	1399.962827	0.000327	0.23	2.50	2.27
0deg.C.		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-10deg.C.		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-20deg.C		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-30deg.C		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-

Limit : 1399.9625 MHz +/-0.00025 % (+/- 2.5ppm) = +/- 0.003500 MHz

*The test on 50deg.C., 0deg.C., -10deg.C., and -20deg.C. were not apply, since the specification of operating temperature of EUT was 10deg.C to 40deg.C. (It used the manufacturer's specified conditions (refer to FCC 95.1115(e))

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Frequency Stability

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	October 17, 2014	
Temperature / Humidity	26 deg.C / 41 %RH	
Engineer	Tatsuya Arai	
Mode	Transmitting	

Test Condition deg.C	Volts	Test Timing	Measured freq [MHz]	Freq error [MHz]	Result [ppm]	Limit [+/- ppm]	Margin [ppm]
20deg.C	2.0V (Vmin)	Power on	1427.037668	0.000168	0.12	2.50	2.38
		on 2min.	1427.037726	0.000226	0.16	2.50	2.34
		on 5min.	1427.037765	0.000265	0.19	2.50	2.31
		on 10min.	1427.037703	0.000203	0.14	2.50	2.36
	3V (Vnom)	Power on	1427.037791	0.000291	0.20	2.50	2.30
		on 2min.	1427.037750	0.000250	0.18	2.50	2.32
		on 5min.	1427.037677	0.000177	0.12	2.50	2.38
		on 10min.	1427.037666	0.000166	0.12	2.50	2.38
		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
50deg.C.	3V	Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
40deg.C.		Power on	1427.037867	0.000367	0.26	2.50	2.24
		on 2min.	1427.037824	0.000324	0.23	2.50	2.27
		on 5min.	1427.037851	0.000351	0.25	2.50	2.25
		on 10min.	1427.037886	0.000386	0.27	2.50	2.23
30deg.C.		Power on	1427.037727	0.000227	0.16	2.50	2.34
		on 2min.	1427.037799	0.000299	0.21	2.50	2.29
		on 5min.	1427.037728	0.000228	0.16	2.50	2.34
		on 10min.	1427.037750	0.000250	0.18	2.50	2.32
20deg.C.		Power on	1427.037791	0.000291	0.20	2.50	2.30
		on 2min.	1427.037750	0.000250	0.18	2.50	2.32
		on 5min.	1427.037677	0.000177	0.12	2.50	2.38
		on 10min.	1427.037666	0.000166	0.12	2.50	2.38
10deg.C.		Power on	1427.037644	0.000144	0.10	2.50	2.40
		on 2min.	1427.037477	-0.000023	-0.02	2.50	2.48
		on 5min.	1427.037445	-0.000055	-0.04	2.50	2.46
		on 10min.	1427.037423	-0.000077	-0.05	2.50	2.45
0deg.C.		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-10deg.C.		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-20deg.C		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-30deg.C		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-

Limit : 1427.0375 MHz +/-0.00025 % (+/- 2.5ppm) = +/- 0.003568 MHz

*The test on 50deg.C., 0deg.C., -10deg.C., and -20deg.C. were not apply, since the specification of operating temperature of EUT was 10deg.C to 40deg.C. (It used the manufacturer's specified conditions (refer to FCC 95.1115(e))

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Frequency Stability

Test place UL Japan, Inc. Shonan EMC Lab. No.5 Shielded Room
Date October 17, 2014
Temperature / Humidity 26 deg.C / 41 %RH
Engineer Tatsuya Arai
Mode Transmitting

Test Condition deg.C	Volts	Test Timing	Measured freq [MHz]	Freq error [MHz]	Result [ppm]	Limit [+/- ppm]	Margin [ppm]
20deg.C	2.0V (Vmin)	Power on	1429.262728	0.000228	0.16	2.50	2.34
		on 2min.	1429.262716	0.000216	0.15	2.50	2.35
		on 5min.	1429.262750	0.000250	0.17	2.50	2.33
		on 10min.	1429.262658	0.000158	0.11	2.50	2.39
	3V (Vnom)	Power on	1429.262732	0.000232	0.16	2.50	2.34
		on 2min.	1429.262710	0.000210	0.15	2.50	2.35
		on 5min.	1429.262637	0.000137	0.10	2.50	2.40
		on 10min.	1429.262601	0.000101	0.07	2.50	2.43
		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
50deg.C.	3V	Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
40deg.C.		Power on	1429.262748	0.000248	0.17	2.50	2.33
		on 2min.	1429.262748	0.000248	0.17	2.50	2.33
		on 5min.	1429.262859	0.000359	0.25	2.50	2.25
		on 10min.	1429.262834	0.000334	0.23	2.50	2.27
30deg.C.		Power on	1429.262768	0.000268	0.19	2.50	2.31
		on 2min.	1429.262865	0.000365	0.26	2.50	2.24
		on 5min.	1429.262734	0.000234	0.16	2.50	2.34
		on 10min.	1429.262815	0.000315	0.22	2.50	2.28
20deg.C.		Power on	1429.262732	0.000232	0.16	2.50	2.34
		on 2min.	1429.262710	0.000210	0.15	2.50	2.35
		on 5min.	1429.262637	0.000137	0.10	2.50	2.40
		on 10min.	1429.262601	0.000101	0.07	2.50	2.43
10deg.C.		Power on	1429.262536	0.000036	0.03	2.50	2.47
		on 2min.	1429.262446	-0.000054	-0.04	2.50	2.46
		on 5min.	1429.262430	-0.000070	-0.05	2.50	2.45
		on 10min.	1429.262408	-0.000092	-0.06	2.50	2.44
0deg.C.		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-10deg.C.		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-20deg.C		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-30deg.C		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-

Limit : 1429.2625 MHz +/-0.00025 % (+/- 2.5ppm) = +/- 0.003573 MHz

*The test on 50deg.C., 0deg.C., -10deg.C., and -20deg.C. were not apply, since the specification of operating temperature of EUT was 10deg.C to 40deg.C. (It used the manufacturer's specified conditions (refer to FCC 95.1115(e))

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Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Frequency Stability

Test place	UL Japan, Inc. Shonan EMC Lab.	No.5 Shielded Room
Date	October 17, 2014	
Temperature / Humidity	26 deg.C / 41 %RH	
Engineer	Tatsuya Arai	
Mode	Transmitting	

Test Condition deg.C	Test Condition Volts	Test Timing	Measured freq [MHz]	Freq error [MHz]	Result [ppm]	Limit [+/- ppm]	Margin [ppm]
20deg.C	2.0V (Vmin)	Power on	1431.462745	0.000245	0.17	2.50	2.33
		on 2min.	1431.462689	0.000189	0.13	2.50	2.37
		on 5min.	1431.462615	0.000115	0.08	2.50	2.42
		on 10min.	1431.462692	0.000192	0.13	2.50	2.37
	3V (Vnom)	Power on	1431.462703	0.000203	0.14	2.50	2.36
		on 2min.	1431.462697	0.000197	0.14	2.50	2.36
		on 5min.	1431.462607	0.000107	0.07	2.50	2.43
		on 10min.	1431.462616	0.000116	0.08	2.50	2.42
		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
50deg.C.	3V	Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
40deg.C.		Power on	1431.462820	0.000320	0.22	2.50	2.28
		on 2min.	1431.462785	0.000285	0.20	2.50	2.30
		on 5min.	1431.462884	0.000384	0.27	2.50	2.23
		on 10min.	1431.462832	0.000332	0.23	2.50	2.27
30deg.C.		Power on	1431.462769	0.000269	0.19	2.50	2.31
		on 2min.	1431.462821	0.000321	0.22	2.50	2.28
		on 5min.	1431.462742	0.000242	0.17	2.50	2.33
		on 10min.	1431.462717	0.000217	0.15	2.50	2.35
20deg.C.		Power on	1431.462703	0.000203	0.14	2.50	2.36
		on 2min.	1431.462697	0.000197	0.14	2.50	2.36
		on 5min.	1431.462607	0.000107	0.07	2.50	2.43
		on 10min.	1431.462616	0.000116	0.08	2.50	2.42
10deg.C.		Power on	1431.462512	0.000012	0.01	2.50	2.49
		on 2min.	1431.462447	-0.000053	-0.04	2.50	2.46
		on 5min.	1431.462460	-0.000040	-0.03	2.50	2.47
		on 10min.	1431.462465	-0.000035	-0.02	2.50	2.48
0deg.C.		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-10deg.C.		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-20deg.C		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-
-30deg.C		Power on	-	-	-	-	-
		on 2min.	-	-	-	-	-
		on 5min.	-	-	-	-	-
		on 10min.	-	-	-	-	-

Limit : 1431.4625 MHz +/-0.00025 % (+/- 2.5ppm) = +/- 0.003579 MHz

*The test on 50deg.C., 0deg.C., -10deg.C., and -20deg.C. were not apply, since the specification of operating temperature of EUT was 10deg.C to 40deg.C. (It used the manufacturer's specified conditions (refer to FCC 95.1115(e))

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1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

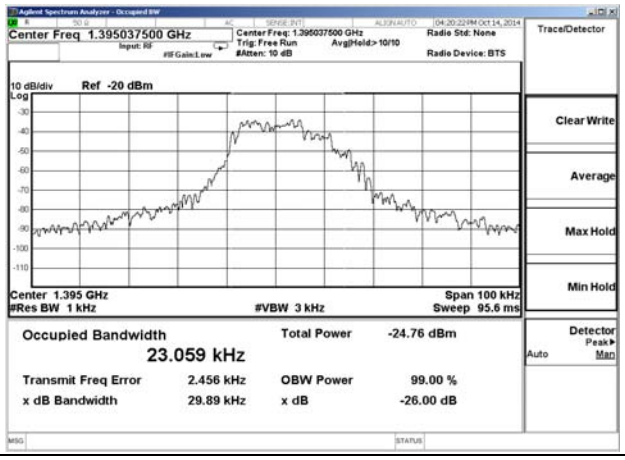
-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	October 14, 2014	
Temperature / Humidity	24deg.C , 53%RH	
Engineer	Kenichi Adachi	
Mode	Transmitting	

Freq. [MHz]	-26dB Bandwidth [kHz]
1395.0375	29.890
1397.5125	28.230
1399.9625	29.550

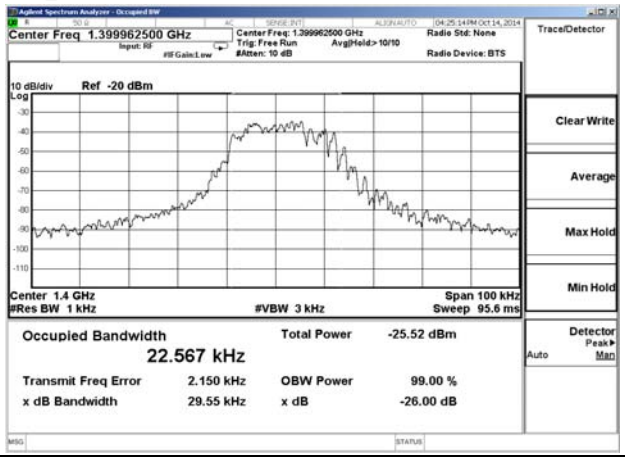
No limit applies to -26dB Bandwidth.

Transmitting(1395.0375MHz)



Transmitting(1397.5125MHz)

Transmitting(1399.9625MHz)



UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
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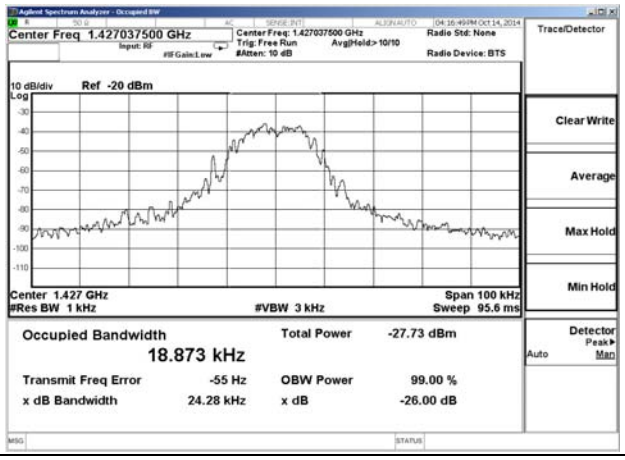
-26dB Bandwidth

Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	October 14, 2014	
Temperature / Humidity	24deg.C , 53%RH	
Engineer	Kenichi Adachi	
Mode	Transmitting	

Freq. [MHz]	-26dB Bandwidth [kHz]
1427.0375	24.280
1429.2625	23.050
1431.4625	23.930

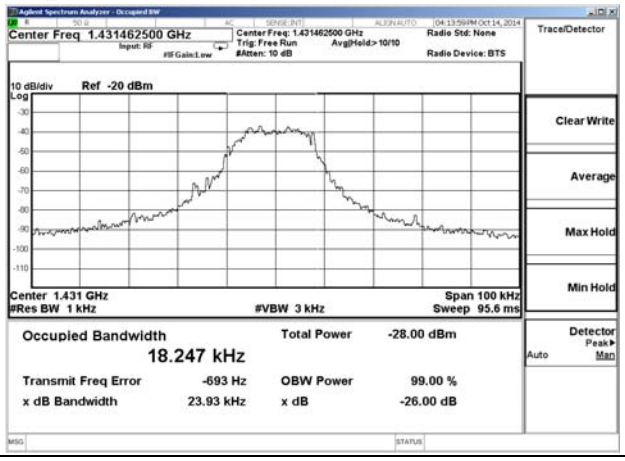
No limit applies to -26dB Bandwidth.

Transmitting(1427.0375MHz)



Transmitting(1429.2625MHz)

Transmitting(1431.4625MHz)



UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Revised date : November 10, 2014

Field Strength(Electric Field Strength of Fundamental Emission , Spurious Emission and Band Edge Compliance)

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	October 25, 2014	October 27, 2014	
Temperature / Humidity	25 deg.C, 41 %RH	25 deg.C, 54 %RH	
Engineer	Shinichi Takano	Tatsuya Arai	
Mode	Tx, 1395.0375 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	239.998	QP	45.9	16.9	8.1	32.0	38.9	46.0	7.1	141	263	
Hori.	280.002	QP	44.5	18.1	8.3	32.0	38.9	46.0	7.1	126	82	
Hori.	319.600	QP	52.9	14.3	8.5	32.0	43.7	46.0	2.3	100	264	
Hori.	359.995	QP	52.8	15.3	8.7	32.0	44.8	46.0	1.2	100	278	
Hori.	399.995	QP	42.9	16.3	8.8	32.0	36.0	46.0	10.0	100	290	
Hori.	1395.037	AV	93.5	24.7	12.5	40.9	89.8	117.3	27.5	106	67	Carrier, VBW 10Hz,
Hori.	2790.075	AV	51.8	27.1	13.8	40.8	51.9	53.9	2.0	100	179	VBW 10Hz,
Hori.	4185.112	AV	54.7	29.2	5.7	40.4	49.2	53.9	4.7	102	74	VBW 10Hz,
Hori.	5580.150	AV	43.1	31.8	6.3	38.8	42.4	53.9	11.5	100	175	VBW 10Hz,
Hori.	6975.188	AV	48.6	36.3	6.9	40.0	51.8	53.9	2.1	100	318	VBW 10Hz,
Hori.	8370.225	AV	40.9	37.5	7.5	40.8	45.1	53.9	8.8	119	311	VBW 10Hz,
Hori.	9765.263	AV	40.0	38.6	8.1	40.0	46.7	53.9	7.2	100	85	VBW 10Hz,
Hori.	11160.300	AV	40.3	40.1	8.8	39.3	49.9	53.9	4.0	136	183	VBW 10Hz,
Hori.	12555.340	AV	41.2	39.2	9.5	40.1	49.8	53.9	4.1	115	108	VBW 10Hz,
Hori.	13950.380	AV	34.1	42.2	9.9	40.3	45.9	53.9	8.0	100	0	VBW 10Hz,
Vert.	359.995	QP	46.4	15.3	8.7	32.0	38.4	46.0	7.6	164	50	
Vert.	1395.037	AV	95.1	24.7	12.5	40.9	91.4	117.3	25.9	100	305	Carrier, VBW 10Hz,
Vert.	2790.075	AV	47.8	27.1	13.8	40.8	47.9	53.9	6.0	127	21	VBW 10Hz,
Vert.	4185.112	AV	54.6	29.2	5.7	40.4	49.1	53.9	4.8	104	222	VBW 10Hz,
Vert.	5580.150	AV	44.1	31.8	6.3	38.8	43.4	53.9	10.5	100	142	VBW 10Hz,
Vert.	6975.188	AV	50.0	36.3	6.9	40.0	53.2	53.9	**0.7**	169	131	VBW 10Hz,
Vert.	8370.225	AV	43.0	37.5	7.5	40.8	47.2	53.9	6.7	134	234	VBW 10Hz,
Vert.	9765.263	AV	39.0	38.6	8.1	40.0	45.7	53.9	8.2	100	74	VBW 10Hz,
Vert.	11160.300	AV	39.7	40.1	8.8	39.3	49.3	53.9	4.6	102	136	VBW 10Hz,
Vert.	12555.340	AV	37.0	39.2	9.5	40.1	45.6	53.9	8.3	100	12	VBW 10Hz,
Vert.	13950.380	AV	34.2	42.2	9.9	40.3	46.0	53.9	7.9	100	0	VBW 10Hz,

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

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

*The 10th harmonic was not seen so the result was its base noise level.

Marker Delta Method(Test distance 3meters)

		Polarity	AV			
			Hor.		Ver.	
		RBW \ VBW	[dBuV] Reading	[dBuV/m] Result	[dBuV] Reading	[dBuV/m] Result
Step1	Fundamental(1395.0375MHz)	1M / 3M or 10Hz	93.5	89.8	95.1	91.4
Step2	Fundamental(1395.0375MHz)	1k/3k	95.0	91.3	96.0	92.3
	Band-edge(1395MHz)	1k/3k	35.3	31.6	38.6	34.9
	Amplitude delta	-	59.7	59.7	57.4	57.4
Step3	Field strength of band-edge	-	-	30.1	-	34.0
	Limit	-	-	53.9	-	53.9
	Margin	-	-	23.8	-	19.9

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

*1 Amplitude delta = Fundamental(RBW:1kHz,VBW:3kHz) - Band-edge(RBW:1kHz,VBW:3kHz)

*2 Field strength of band-edge = Fundamental(AV) - Amplitude delta

(for RF Exposure sheet)

[RF Output Power]

	Result [dBuV/m]	Result 1 [mW]	Result 2 [mW]
carrier Level	91.4	0.41	0.66

Calculation:

Result 1 [mW] = (((10 ^ (Result [dBuV/m] / 20) x (10^(-6)) x (distance=) 3 [m]) ^ 2) / 30 x (gain=) 1) x 10^3

(Fundamental emission with power tolerance = Result 2)

Result 2 [mW] = 10 ^ ((10 x log (Result 1[mW]) + 2dB *) / 10)

* tolerance specification is +/- 2dB

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Revised date : November 10, 2014

Field Strength(Electric Field Strength of Fundamental Emission , Spurious Emission)

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	October 25, 2014	October 27, 2014	
Temperature / Humidity	25 deg.C, 41 %RH	25 deg.C, 54 %RH	
Engineer	Shinichi Takano	Tatsuya Arai	
Mode	Tx, 1397.5125 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	239.999	QP	46.5	16.9	8.1	32.0	39.5	46.0	6.5	136	269	
Hori.	280.000	QP	44.1	18.1	8.3	32.0	38.5	46.0	7.5	128	88	
Hori.	319.998	QP	52.1	14.3	8.5	32.0	42.9	46.0	3.1	100	263	
Hori.	359.995	QP	52.7	15.3	8.7	32.0	44.7	46.0	**1.3**	100	264	
Hori.	400.001	QP	42.6	16.3	8.8	32.0	35.7	46.0	10.3	100	284	
Hori.	1397.5120	AV	94.5	24.7	12.6	40.9	90.9	117.3	26.4	109	72	Carrier, VBW 10Hz,
Hori.	2795.025	AV	50.5	27.1	13.8	40.8	50.6	53.9	3.3	100	176	VBW 10Hz,
Hori.	4192.538	AV	54.5	29.2	5.7	40.4	49.0	53.9	4.9	100	216	VBW 10Hz,
Hori.	5590.050	AV	41.7	31.8	6.3	38.8	41.0	53.9	12.9	100	179	VBW 10Hz,
Hori.	6987.563	AV	48.2	36.3	6.9	40.0	51.4	53.9	2.5	101	330	VBW 10Hz,
Hori.	8385.075	AV	42.0	37.5	7.5	40.7	46.3	53.9	7.6	154	312	VBW 10Hz,
Hori.	9782.588	AV	38.9	38.6	8.1	40.0	45.6	53.9	8.3	100	86	VBW 10Hz,
Hori.	11180.100	AV	40.4	40.1	8.8	39.3	50.0	53.9	3.9	149	305	VBW 10Hz,
Hori.	12577.610	AV	39.5	39.2	9.6	40.1	48.2	53.9	5.7	108	110	VBW 10Hz,
Hori.	13975.130	AV	34.5	42.3	9.9	40.3	46.4	53.9	7.5	100	0	VBW 10Hz,
Vert.	359.9950	QP	47.0	15.3	8.7	32.0	39.0	46.0	7.0	163	61	
Vert.	1397.5120	AV	95.3	24.7	12.6	40.9	91.7	117.3	25.6	136	299	Carrier, VBW 10Hz,
Vert.	2795.025	AV	48.2	27.1	13.8	40.8	48.3	53.9	5.6	118	314	VBW 10Hz,
Vert.	4192.538	AV	54.0	29.2	5.7	40.4	48.5	53.9	5.4	103	222	VBW 10Hz,
Vert.	5590.050	AV	44.0	31.8	6.3	38.8	43.3	53.9	10.6	100	150	VBW 10Hz,
Vert.	6987.563	AV	48.2	36.3	6.9	40.0	51.4	53.9	2.5	100	116	VBW 10Hz,
Vert.	8385.075	AV	41.5	37.5	7.5	40.7	45.8	53.9	8.1	100	234	VBW 10Hz,
Vert.	9782.588	AV	37.9	38.6	8.1	40.0	44.6	53.9	9.3	100	82	VBW 10Hz,
Vert.	11180.100	AV	39.7	40.1	8.8	39.3	49.3	53.9	4.6	131	253	VBW 10Hz,
Vert.	12577.610	AV	36.4	39.2	9.6	40.1	45.1	53.9	8.8	151	10	VBW 10Hz,
Vert.	13975.130	AV	34.5	42.3	9.9	40.3	46.4	53.9	7.5	100	0	VBW 10Hz,

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

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

*The 10th harmonic was not seen so the result was its base noise level.

(for RF Exposure sheet)

[RF Output Power]

	Result [dBuV/m]	Result 1 [mW]	Result 2 [mW]
carrier Level	91.7	0.44	0.70

Calculation:

Result 1 [mW] = (((10 ^ (Result [dBuV/m] / 20) x (10^(-6)) x (distance=) 3 [m]) ^ 2) / 30 x (gain=) 1) x 10^3

(Fundamental emission with power tolerance = Result 2)

Result 2 [mW] = 10 ^ ((10 x log (Result 1[mW]) + 2dB *) / 10)

* tolerance specification is +/- 2dB

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Revised date : November 10, 2014

Field Strength(Electric Field Strength of Fundamental Emission , Spurious Emission and Band Edge Compliance)

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	October 25, 2014	October 27, 2014	
Temperature / Humidity	25 deg.C, 41 %RH	25 deg.C, 54 %RH	
Engineer	Shinichi Takano	Tatsuya Arai	
Mode	Tx, 1399.9625 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	239.999	QP	45.1	16.9	8.1	32.0	38.1	46.0	7.9	138	269	
Hori.	279.995	QP	44.1	18.1	8.3	32.0	38.5	46.0	7.5	124	85	
Hori.	319.998	QP	52.1	14.3	8.5	32.0	42.9	46.0	3.1	100	265	
Hori.	359.995	QP	52.6	15.3	8.7	32.0	44.6	46.0	**1.4**	100	267	
Hori.	399.999	QP	42.8	16.3	8.8	32.0	35.9	46.0	10.1	100	283	
Hori.	1399.9630	AV	93.7	24.7	12.6	40.9	90.1	117.3	27.2	113	13	Carrier, VBW 10Hz,
Hori.	2799.925	AV	51.2	27.1	13.8	40.8	51.3	53.9	2.6	100	180	VBW 10Hz,
Hori.	4199.888	AV	52.9	29.2	5.7	40.4	47.4	53.9	6.5	116	213	VBW 10Hz,
Hori.	5599.850	AV	43.7	31.9	6.3	38.8	43.1	53.9	10.8	111	181	VBW 10Hz,
Hori.	6999.813	AV	48.0	36.3	6.9	40.0	51.2	53.9	2.7	100	326	VBW 10Hz,
Hori.	8399.775	AV	42.7	37.5	7.6	40.7	47.1	53.9	6.8	150	313	VBW 10Hz,
Hori.	9799.737	AV	38.2	38.6	8.1	40.0	44.9	53.9	9.0	112	94	VBW 10Hz,
Hori.	11199.700	AV	40.3	40.1	8.8	39.3	49.9	53.9	4.0	118	309	VBW 10Hz,
Hori.	12599.660	AV	38.9	39.2	9.6	40.1	47.6	53.9	6.3	148	113	VBW 10Hz,
Hori.	13999.630	AV	34.5	42.3	9.9	40.3	46.4	53.9	7.5	100	0	VBW 10Hz,
Vert.	359.995	QP	46.8	15.3	8.7	32.0	38.8	46.0	7.2	165	45	
Vert.	1399.9630	AV	94.8	24.7	12.6	40.9	91.2	117.3	26.1	100	305	Carrier, VBW 10Hz,
Vert.	2799.925	AV	48.9	27.1	13.8	40.8	49.0	53.9	4.9	110	295	VBW 10Hz,
Vert.	4199.888	AV	53.3	29.2	5.7	40.4	47.8	53.9	6.1	100	223	VBW 10Hz,
Vert.	5599.850	AV	45.9	31.9	6.3	38.8	45.3	53.9	8.6	108	231	VBW 10Hz,
Vert.	6999.813	AV	48.2	36.3	6.9	40.0	51.4	53.9	2.5	136	128	VBW 10Hz,
Vert.	8399.775	AV	42.5	37.5	7.6	40.7	46.9	53.9	7.0	150	232	VBW 10Hz,
Vert.	9799.737	AV	37.9	38.6	8.1	40.0	44.6	53.9	9.3	100	81	VBW 10Hz,
Vert.	11199.700	AV	40.2	40.1	8.8	39.3	49.8	53.9	4.1	131	250	VBW 10Hz,
Vert.	12599.660	AV	36.9	39.2	9.6	40.1	45.6	53.9	8.3	186	12	VBW 10Hz,
Vert.	13999.630	AV	34.6	42.3	9.9	40.3	46.5	53.9	7.4	100	0	VBW 10Hz,

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

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

*The 10th harmonic was not seen so the result was its base noise level.

Marker Delta Method(Test distance 3meters)

		Polarity	AV			
			Hor.		Ver.	
		RBW / VBW	[dBuV] Reading	[dBuV/m] Result	[dBuV] Reading	[dBuV/m] Result
Step1	Fundamental(1399.9625MHz)	1M / 3M or 10Hz	93.7	90.1	94.8	91.2
Step2	Fundamental(1399.9625MHz)	1k/3k	94.3	90.7	95.9	92.3
	Band-edge(1400MHz)	1k/3k	36.2	32.6	38.6	35.0
	Amplitude delta	-	58.1	58.1	57.3	57.3
Step3	Field strength of band-edge	-	-	32.0	-	33.9
	Limit	-	-	53.9	-	53.9
	Margin	-	-	21.9	-	20.0

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

*1 Amplitude delta = Fundamental(RBW:1kHz,VBW:3kHz) - Band-edge(RBW:1kHz,VBW:3kHz)

*2 Field strength of band-edge = Fundamental(AV) - Amplitude delta

(for RF Exposure sheet)

[RF Output Power]

	Result [dBuV/m]	Result 1 [mW]	Result 2 [mW]
carrier Level	91.2	0.40	0.63

Calculation:

Result 1 [mW] = (((10 ^ (Result [dBuV/m] / 20) x (10^(-6)) x (distance=) 3 [m]) ^ 2) / 30 x (gain=) 1) x 10^3

(Fundamental emission with power tolerance = Result 2)

Result 2 [mW] = 10 ^ ((10 x log (Result 1[mW]) + 2dB *) / 10)

* tolerance specification is +/- 2dB

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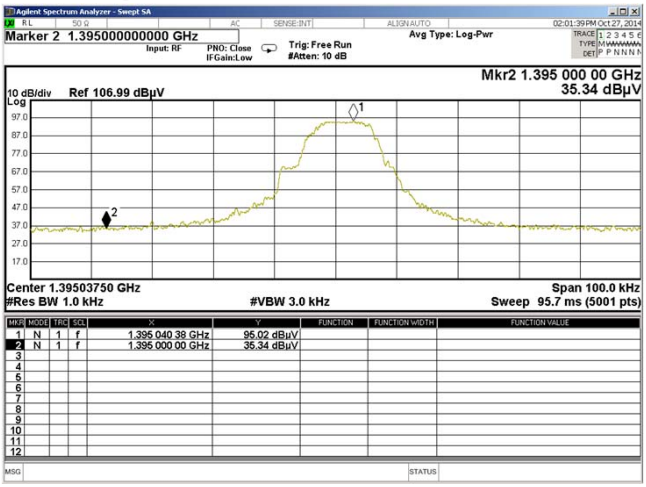
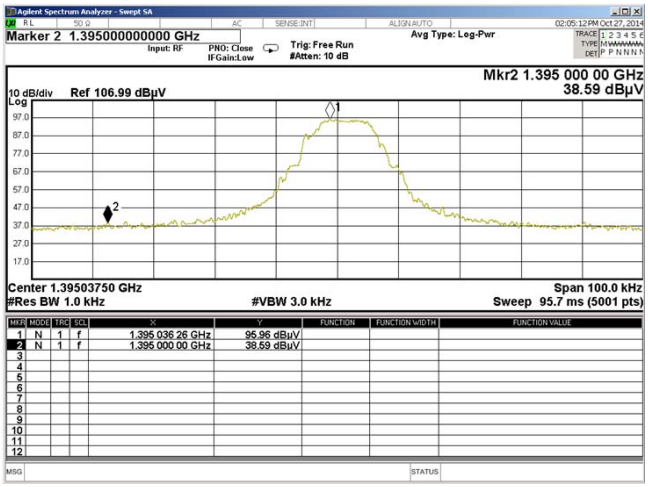
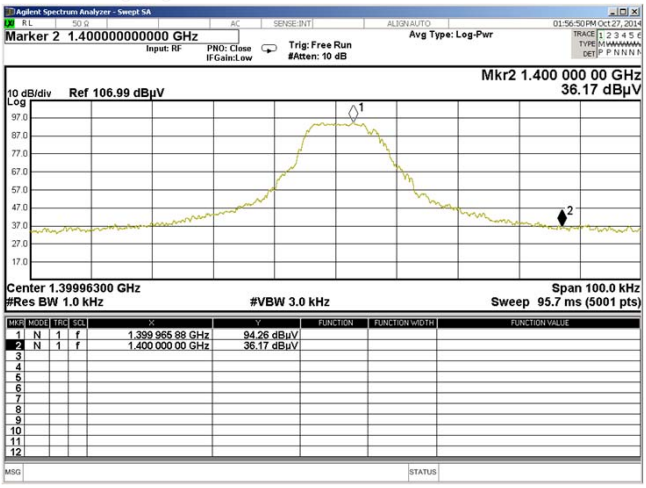
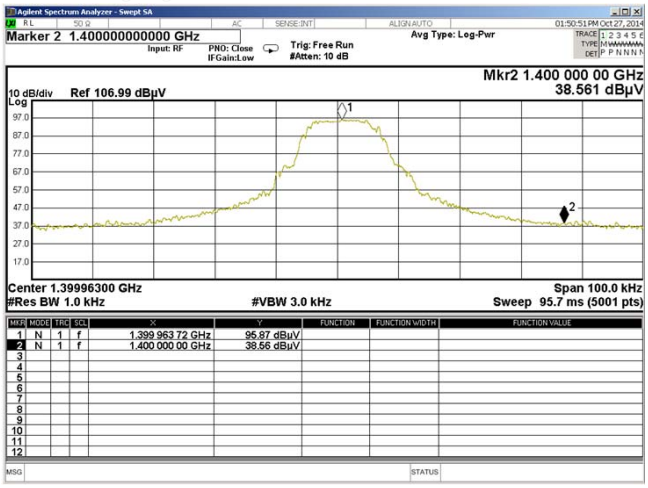
Field Strength(Electric Field Strength of Fundamental Emission , Spurious Emission and Band Edge Compliance)

Band Edge compliance(for Marker Delta Method)

Transmitting(1395.0375MHz)

Horizontal	Vertical
	

Transmitting(1399.9625MHz)

Horizontal	Vertical
	

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
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Field Strength(Electric Field Strength of Fundamental Emission , Spurious Emission and Band Edge Compliance)

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	October 25, 2014	October 27, 2014	
Temperature / Humidity	25 deg.C, 41 %RH	25 deg.C, 54 %RH	
Engineer	Shinichi Takano	Tatsuya Arai	
Mode	Tx, 1427.0375 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	239.999	QP	45.7	16.9	8.1	32.0	38.7	46.0	7.3	135	256	
Hori.	279.995	QP	43.7	18.1	8.3	32.0	38.1	46.0	7.9	127	77	
Hori.	319.996	QP	52.6	14.3	8.5	32.0	43.4	46.0	2.6	100	265	
Hori.	359.994	QP	52.5	15.3	8.7	32.0	44.5	46.0	1.5	100	267	
Hori.	399.997	QP	41.4	16.3	8.8	32.0	34.5	46.0	11.5	100	285	
Hori.	1427.0370	AV	89.9	24.8	12.6	40.9	86.4	117.3	30.9	104	71	Carrier, VBW 10Hz,
Hori.	2854.075	AV	60.8	27.2	5.7	40.8	52.9	53.9	**1.0**	100	256	VBW 10Hz,
Hori.	4281.112	AV	54.8	29.3	5.7	40.3	49.5	53.9	4.4	113	9	VBW 10Hz,
Hori.	5708.150	AV	46.1	32.1	6.3	38.9	45.6	53.9	8.3	115	131	VBW 10Hz,
Hori.	7135.188	AV	46.5	36.5	7.0	40.1	49.9	53.9	4.0	134	48	VBW 10Hz,
Hori.	8562.225	AV	41.9	37.5	7.7	40.7	46.4	53.9	7.5	158	310	VBW 10Hz,
Hori.	9989.263	AV	34.2	38.6	8.1	39.8	41.1	53.9	12.8	100	0	VBW 10Hz,
Hori.	11416.300	AV	40.3	39.9	8.9	39.2	49.9	53.9	4.0	144	148	VBW 10Hz,
Hori.	12843.340	AV	33.3	39.1	9.7	40.0	42.1	53.9	11.8	100	0	VBW 10Hz,
Hori.	14270.380	AV	35.0	42.1	10.0	40.5	46.6	53.9	7.3	100	0	VBW 10Hz,
Vert.	359.994	QP	46.7	15.3	8.7	32.0	38.7	46.0	7.3	165	76	
Vert.	1427.0370	AV	90.1	24.8	12.6	40.9	86.6	117.3	30.7	133	299	Carrier, VBW 10Hz,
Vert.	2854.075	AV	60.1	27.2	5.7	40.8	52.2	53.9	1.7	131	313	VBW 10Hz,
Vert.	4281.112	AV	53.6	29.3	5.7	40.3	48.3	53.9	5.6	100	181	VBW 10Hz,
Vert.	5708.150	AV	43.5	32.1	6.3	38.9	43.0	53.9	10.9	108	171	VBW 10Hz,
Vert.	7135.188	AV	45.9	36.5	7.0	40.1	49.3	53.9	4.6	102	239	VBW 10Hz,
Vert.	8562.225	AV	42.3	37.5	7.7	40.7	46.8	53.9	7.1	115	29	VBW 10Hz,
Vert.	9989.263	AV	34.6	38.6	8.1	39.8	41.5	53.9	12.4	100	0	VBW 10Hz,
Vert.	11416.300	AV	39.3	39.9	8.9	39.2	48.9	53.9	5.0	101	133	VBW 10Hz,
Vert.	12843.340	AV	33.3	39.1	9.7	40.0	42.1	53.9	11.8	100	0	VBW 10Hz,
Vert.	14270.380	AV	35.0	42.1	10.0	40.5	46.6	53.9	7.3	100	0	VBW 10Hz,

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

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

*The 10th harmonic was not seen so the result was its base noise level.

Marker Delta Method(Test distance 3meters)

		Polarity	AV			
			Hor.		Ver.	
		RBW \ VBW	[dBuV] Reading	[dBuV/m] Result	[dBuV] Reading	[dBuV/m] Result
Step1	Fundamental(1427.0375MHz)	1M / 3M or 10Hz	89.9	86.4	90.1	86.6
Step2	Fundamental(1427.0375MHz)	1k/3k	90.3	86.8	89.8	86.3
	Band-edge(1427MHz)	1k/3k	32.3	28.8	32.6	29.1
	Amplitude delta	-	58.0	58.0	57.2	57.2
Step3	Field strength of band-edge	-	-	28.4	-	29.4
	Limit	-	-	53.9	-	53.9
	Margin	-	-	25.5	-	24.5

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

*1 Amplitude delta = Fundamental(RBW:1kHz,VBW:3kHz) - Band-edge(RBW:1kHz,VBW:3kHz)

*2 Field strength of band-edge = Fundamental(AV) - Amplitude delta

(for RF Exposure sheet)

[RF Output Power]

	Result [dBuV/m]	Result 1 [mW]	Result 2 [mW]
carrier Level	86.6	0.14	0.22

Calculation:

Result 1 [mW] = (((10 ^ (Result [dBuV/m] / 20) x (10^(-6)) x (distance=) 3 [m]) ^ 2) / 30 x (gain=) 1) x 10^3

(Fundamental emission with power tolerance = Result 2)

Result 2 [mW] = 10 ^ ((10 x log (Result 1[mW]) + 2dB *) / 10)

* tolerance specification is +/- 2dB

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Revised date : November 10, 2014

Field Strength(Electric Field Strength of Fundamental Emission , Spurious Emission)

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	October 25, 2014	October 27, 2014	
Temperature / Humidity	25 deg.C, 41 %RH	25 deg.C, 54 %RH	
Engineer	Shinichi Takano	Tatsuya Arai	
Mode	Tx, 1429.2625 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	239.997	QP	45.8	16.9	8.1	32.0	38.8	46.0	7.2	132	261	
Hori.	279.995	QP	43.8	18.1	8.3	32.0	38.2	46.0	7.8	126	80	
Hori.	319.998	QP	52.6	14.3	8.5	32.0	43.4	46.0	2.6	100	259	
Hori.	359.995	QP	52.5	15.3	8.7	32.0	44.5	46.0	1.5	100	273	
Hori.	399.997	QP	41.3	16.3	8.8	32.0	34.4	46.0	11.6	100	287	
Hori.	1429.2620	AV	89.4	24.8	12.6	40.9	85.9	117.3	31.4	104	69	Carrier, VBW 10Hz,
Hori.	2858.525	AV	61.1	27.2	5.8	40.8	53.3	53.9	**0.6**	100	359	VBW 10Hz,
Hori.	4287.788	AV	55.3	29.3	5.7	40.3	50.0	53.9	3.9	113	9	VBW 10Hz,
Hori.	5717.050	AV	44.8	32.1	6.3	38.9	44.3	53.9	9.6	179	129	VBW 10Hz,
Hori.	7146.313	AV	45.6	36.5	7.0	40.2	48.9	53.9	5.0	150	220	VBW 10Hz,
Hori.	8575.575	AV	41.5	37.5	7.7	40.7	46.0	53.9	7.9	160	312	VBW 10Hz,
Hori.	10004.840	AV	34.0	38.6	8.2	39.8	41.0	53.9	12.9	100	0	VBW 10Hz,
Hori.	11434.100	AV	43.5	39.9	8.9	39.2	53.1	53.9	0.8	153	139	VBW 10Hz,
Hori.	12863.360	AV	33.3	39.1	9.7	40.0	42.1	53.9	11.8	100	0	VBW 10Hz,
Hori.	14292.630	AV	35.0	42.1	10.0	40.5	46.6	53.9	7.3	100	0	VBW 10Hz,
Vert.	359.9950	QP	46.6	15.3	8.7	32.0	38.6	46.0	7.4	159	68	
Vert.	1429.262	AV	90.1	24.8	12.6	40.9	86.6	117.3	30.7	135	300	Carrier, VBW 10Hz,
Vert.	2858.525	AV	58.9	27.2	5.8	40.8	51.1	53.9	2.8	128	293	VBW 10Hz,
Vert.	4287.788	AV	53.9	29.3	5.7	40.3	48.6	53.9	5.3	100	184	VBW 10Hz,
Vert.	5717.050	AV	44.5	32.1	6.3	38.9	44.0	53.9	9.9	109	212	VBW 10Hz,
Vert.	7146.313	AV	45.4	36.5	7.0	40.2	48.7	53.9	5.2	102	241	VBW 10Hz,
Vert.	8575.575	AV	42.1	37.5	7.7	40.7	46.6	53.9	7.3	130	30	VBW 10Hz,
Vert.	10004.840	AV	34.3	38.6	8.2	39.8	41.3	53.9	12.6	100	0	VBW 10Hz,
Vert.	11434.100	AV	40.0	39.9	8.9	39.2	49.6	53.9	4.3	102	134	VBW 10Hz,
Vert.	12863.360	AV	33.3	39.1	9.7	40.0	42.1	53.9	11.8	100	0	VBW 10Hz,
Vert.	14292.630	AV	35.0	42.1	10.0	40.5	46.6	53.9	7.3	100	0	VBW 10Hz,

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

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

*The 10th harmonic was not seen so the result was its base noise level.

(for RF Exposure sheet)

[RF Output Power]

	Result [dBuV/m]	Result 1 [mW]	Result 2 [mW]
carrier Level	86.6	0.14	0.22

Calculation:

Result 1 [mW] = (((10 ^ (Result [dBuV/m] / 20) x (10^(-6)) x (distance=) 3 [m]) ^ 2) / 30 x (gain=) 1) x 10^3

(Fundamental emission with power tolerance = Result 2)

Result 2 [mW] = 10 ^ ((10 x log (Result 1[mW]) + 2dB *) / 10)

* tolerance specification is +/- 2dB

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
Facsimile : +81 463 50 6401

Revised date : November 10, 2014

Field Strength(Electric Field Strength of Fundamental Emission , Spurious Emission and Band Edge Compliance)

Test place	UL Japan, Inc. Shonan EMC Lab.		No.3 Semi Anechoic Chamber
Date	October 25, 2014	October 27, 2014	
Temperature / Humidity	25 deg.C, 41 %RH	25 deg.C, 54 %RH	
Engineer	Shinichi Takano	Tatsuya Arai	
Mode	Tx, 1431.4625 MHz		

Polarity	Frequency [MHz]	Detector	Reading [dBuV]	Ant.Fac. [dB/m]	Loss [dB]	Gain [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [deg.]	Remark
Hori.	240.000	QP	45.7	16.9	8.1	32.0	38.7	46.0	7.3	142	269	
Hori.	279.999	QP	43.8	18.1	8.3	32.0	38.2	46.0	7.8	128	81	
Hori.	319.997	QP	52.2	14.3	8.5	32.0	43.0	46.0	3.0	100	259	
Hori.	359.995	QP	52.9	15.3	8.7	32.0	44.9	46.0	1.1	100	270	
Hori.	399.997	QP	41.6	16.3	8.8	32.0	34.7	46.0	11.3	100	283	
Hori.	1431.4630	AV	89.8	24.8	12.6	40.9	86.3	117.3	31.0	105	71	Carrier, VBW 10Hz,
Hori.	2862.925	AV	60.9	27.2	5.7	40.8	53.0	53.9	**0.9**	100	25	VBW 10Hz,
Hori.	4294.388	AV	55.3	29.3	5.7	40.3	50.0	53.9	3.9	112	10	VBW 10Hz,
Hori.	5725.850	AV	42.7	32.2	6.3	38.9	42.3	53.9	11.6	100	49	VBW 10Hz,
Hori.	7157.313	AV	45.3	36.6	7.0	40.2	48.7	53.9	5.2	174	127	VBW 10Hz,
Hori.	8588.775	AV	41.3	37.5	7.7	40.7	45.8	53.9	8.1	125	247	VBW 10Hz,
Hori.	10020.240	AV	34.0	38.6	8.2	39.8	41.0	53.9	12.9	100	0	VBW 10Hz,
Hori.	11451.700	AV	40.7	39.9	8.9	39.2	50.3	53.9	3.6	157	137	VBW 10Hz,
Hori.	12883.160	AV	33.7	39.1	9.7	40.0	42.5	53.9	11.4	100	0	VBW 10Hz,
Hori.	14314.630	AV	34.9	42.1	10.0	40.5	46.5	53.9	7.4	100	0	VBW 10Hz,
Vert.	359.995	QP	46.3	15.3	8.7	32.0	38.3	46.0	7.7	152	67	
Vert.	1431.4630	AV	89.9	24.8	12.6	40.9	86.4	117.3	30.9	135	300	Carrier, VBW 10Hz,
Vert.	2862.925	AV	59.6	27.2	5.7	40.8	51.7	53.9	2.2	126	313	VBW 10Hz,
Vert.	4294.388	AV	54.0	29.3	5.7	40.3	48.7	53.9	5.2	100	81	VBW 10Hz,
Vert.	5725.850	AV	45.3	32.2	6.3	38.9	44.9	53.9	9.0	109	213	VBW 10Hz,
Vert.	7157.313	AV	45.1	36.6	7.0	40.2	48.5	53.9	5.4	171	130	VBW 10Hz,
Vert.	8588.775	AV	42.5	37.5	7.7	40.7	47.0	53.9	6.9	105	29	VBW 10Hz,
Vert.	10020.240	AV	34.3	38.6	8.2	39.8	41.3	53.9	12.6	100	0	VBW 10Hz,
Vert.	11451.700	AV	39.3	39.9	8.9	39.2	48.9	53.9	5.0	101	135	VBW 10Hz,
Vert.	12883.160	AV	33.4	39.1	9.7	40.0	42.2	53.9	11.7	100	0	VBW 10Hz,
Vert.	14314.630	AV	35.0	42.1	10.0	40.5	46.6	53.9	7.3	100	0	VBW 10Hz,

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

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

*The 10th harmonic was not seen so the result was its base noise level.

Marker Delta Method(Test distance 3meters)

		Polarity	AV			
			Hor.		Ver.	
		RBW / VBW	[dBuV] Reading	[dBuV/m] Result	[dBuV] Reading	[dBuV/m] Result
Step1	Fundamental(1431.4625MHz)	1M / 3M or 10Hz	89.8	86.3	89.9	86.4
Step2	Fundamental(1431.4625MHz)	1k/3k	89.4	84.1	88.0	84.5
	Band-edge(1432MHz)	1k/3k	13.5	5.6	13.7	10.2
	Amplitude delta	-	76.0	78.6	74.3	74.3
Step3	Field strength of band-edge	-	-	7.7	-	12.1
	Limit	-	-	53.9	-	53.9
	Margin	-	-	46.2	-	41.8

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

*1 Amplitude delta = Fundamental(RBW:1kHz,VBW:3kHz) - Band-edge(RBW:1kHz,VBW:3kHz)

*2 Field strength of band-edge = Fundamental(AV) - Amplitude delta

(for RF Exposure sheet)

[RF Output Power]

	Result [dBuV/m]	Result 1 [mW]	Result 2 [mW]
carrier Level	86.4	0.13	0.21

Calculation:

Result 1 [mW] = (((10 ^ (Result [dBuV/m] / 20) x (10^(-6)) x (distance=) 3 [m]) ^ 2) / 30 x (gain=) 1) x 10^3

(Fundamental emission with power tolerance = Result 2)

Result 2 [mW] = 10 ^ ((10 x log (Result 1[mW]) + 2dB *) / 10)

* tolerance specification is +/- 2dB

UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
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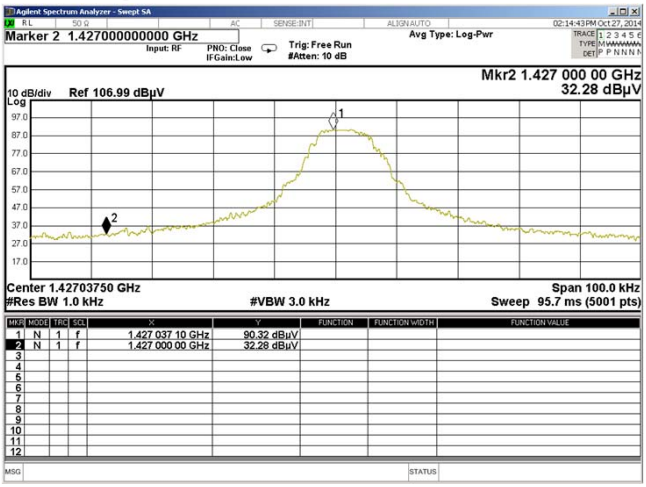
Field Strength(Electric Field Strength of Fundamental Emission , Spurious Emission and Band Edge Compliance)

Band Edge compliance(for Marker Delta Method)

Transmitting(1427.0375MHz)

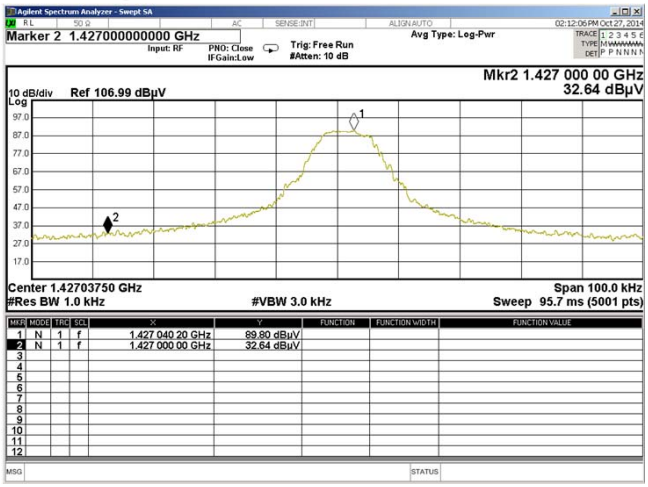
Horizontal

Tx1_BandEdgeLowH



Vertical

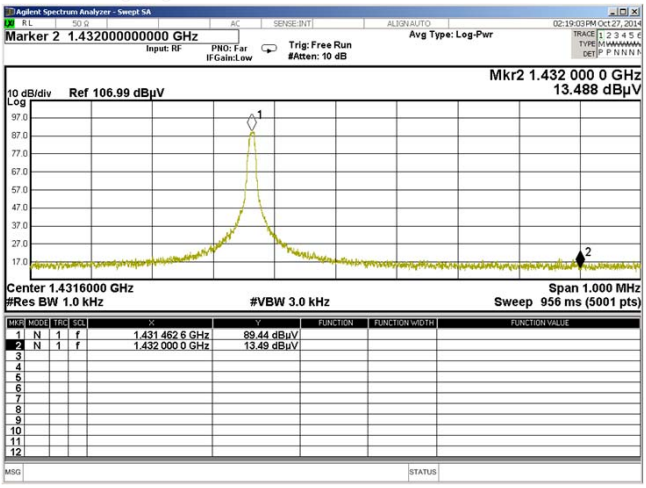
Tx1_BandEdgeLowV



Transmitting(1431.4625MHz)

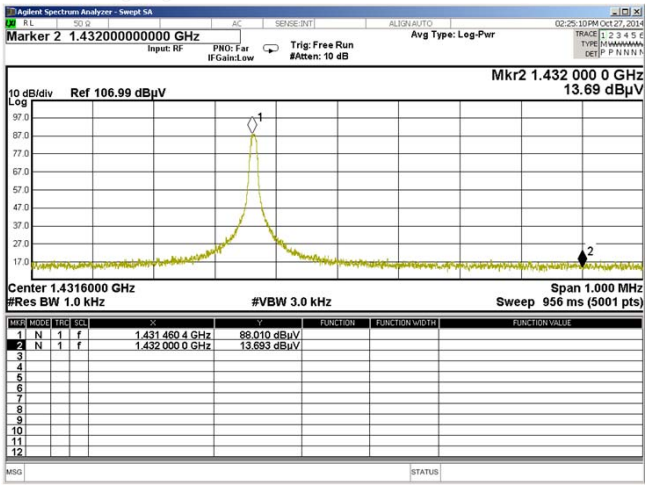
Horizontal

Tx3_BandEdgeHighH



Vertical

Tx3_BandEdgeHighV



UL Japan, Inc.
Shonan EMC Lab.
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Telephone : +81 463 50 6400
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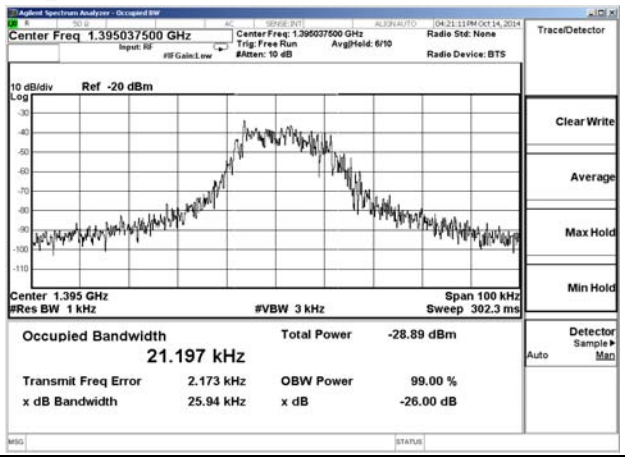
99% Occupied Bandwidth

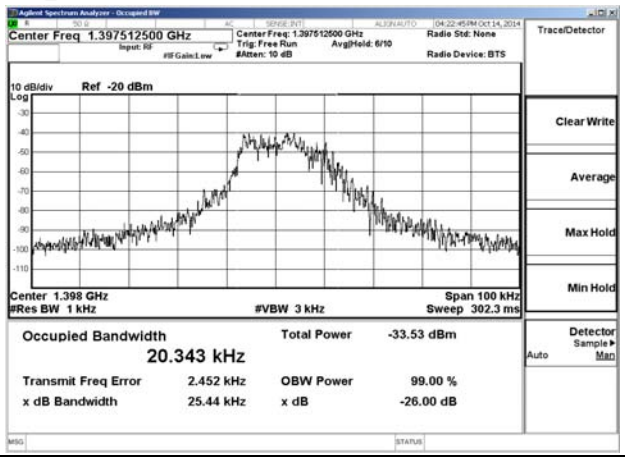
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	October 14, 2014	
Temperature / Humidity	24deg.C , 53%RH	
Engineer	Kenichi Adachi	
Mode	Transmitting	

Freq. [MHz]	99% Occupied Bandwidth [kHz]
1395.0375	21.197
1397.5125	20.343
1399.9625	20.430

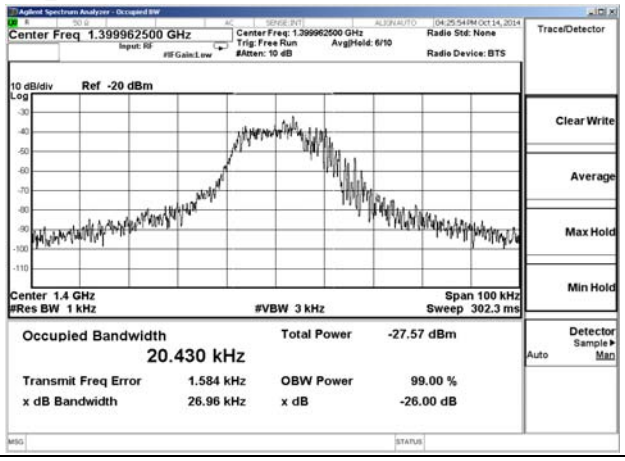
Transmitting(1395.0375MHz)



Transmitting(1397.5125MHz)



Transmitting(1399.9625MHz)



UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
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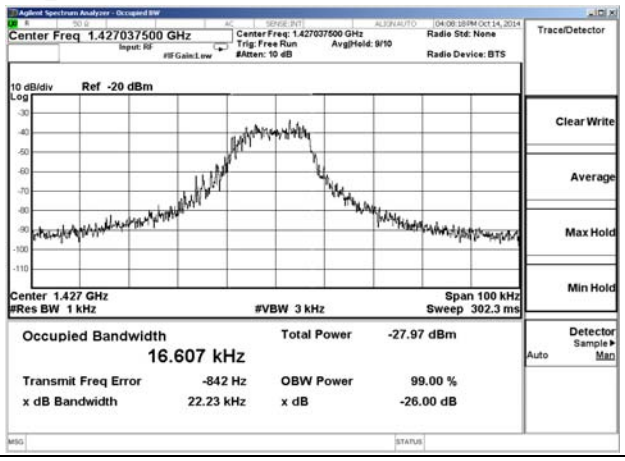
99% Occupied Bandwidth

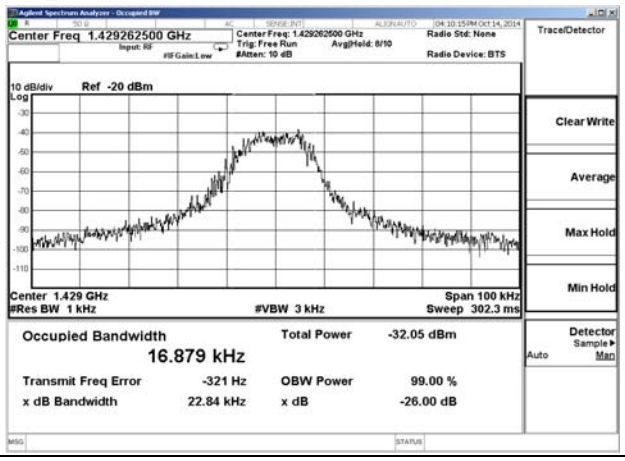
Test place	UL Japan, Inc. Shonan EMC Lab.	No.1 Measurement room
Date	October 14, 2014	
Temperature / Humidity	24deg.C , 53%RH	
Engineer	Kenichi Adachi	
Mode	Transmitting	

Freq. [MHz]	99% Occupied Bandwidth [kHz]
1427.0375	16.607
1429.2625	16.879
1431.4625	16.787

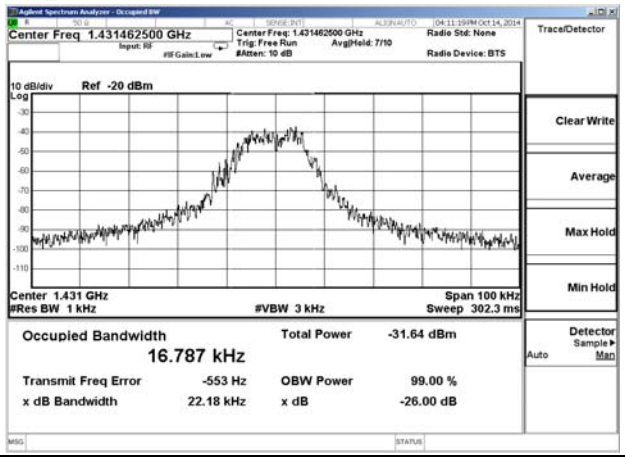
Transmitting(1427.0375MHz)



Transmitting(1429.2625MHz)



Transmitting(1431.4625MHz)



UL Japan, Inc.
Shonan EMC Lab.
1-22-3 Megumigaoka, Hiratsuka-shi, Kanagawa 259-1220 JAPAN
Telephone : +81 463 50 6400
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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)
SSA-01	Spectrum Analyzer	Agilent	N9010A-526	MY48031482	BW/RE	2014/04/07 * 12
SOS-13	Humidity Indicator	Custom	CTH-202	Q.C.17	BW	2014/04/22 * 12
SSA-03	Spectrum Analyzer	Agilent	E4448A	MY48250152	FQ	2014/02/03 * 12
SSCA-01	Search coil	LANGER	RF-R 400-1	02-0634	FQ/BW	Pre Check
SOS-09	Humidity Indicator	A&D	AD-5681	4061484	FQ	2014/03/07 * 12
SCH-01	Temperature and Humidity Chamber	Espec	PL-1KT	14020837	FQ	2014/04/15 * 12
SAEC-03(NSA)	Semi-Anechoic Chamber	TDK	SAEC-03(NSA)	3	RE	2014/07/14 * 12
SAF-06	Pre Amplifier	TOYO Corporation	TPA0118-36	1440491	RE	2014/05/23 * 12
SCC-G04	Coaxial Cable	Junkosha	J12J102207-00	JUN-12-14-018	RE	2014/06/24 * 12
SCC-G23	Coaxial Cable	Suhner	SUCOFLEX 104	297342/4	RE	2014/05/15 * 12
SHA-03	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-739	RE	2014/08/12 * 12
SOS-05	Humidity Indicator	A&D	AD-5681	4062518	RE	2014/02/21 * 12
SSA-02	Spectrum Analyzer	Agilent	E4448A	MY48250106	RE	2014/03/17 * 12
SJM-15	Measure	ASKUL	-	-	RE	-
COTS-SEMI-1	EMI Software	TSJ	TEPTO-DV(RE,CE, RFI,MF)	-	RE	-
SAT10-06	Attenuator	Agilent	8493C-010	74865	RE	2013/11/22 * 12
SFL-02	Highpass Filter	MICRO-TRONICS	HPM50111	051	RE	2013/11/22 * 12
SAF-03	Pre Amplifier	SONOMA	310N	290213	RE	2014/02/14 * 12
SAT6-06	Attenuator	JFW	50HF-006N	-	RE	2014/02/17 * 12
SBA-03	Biconical Antenna	Schwarzbeck	BBA9106	91032666	RE	2014/10/18 * 12
SCC-C1/C2/C3/C4/C5/C10/SRSE-03	Coaxial Cable&RF Selector	Fujikura/Fujikura/Suhner/Suhner/Suhner/TOYO	8D2W/12DSFA/141PE/141PE/141PE/141PE/NS4906	-/0901-271(RF Selector)	RE	2014/04/25 * 12
SLA-03	Logperiodic Antenna	Schwarzbeck	UHALP9108A	UHALP 9108-A 0901	RE	2014/10/18 * 12
STR-06	Test Receiver	Rohde & Schwarz	ESCI	101259	RE	2014/03/04 * 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 :
BW: Bandwidth
FQ: Frequency tolerance
RE: Radiated emissions