RADIO TEST REPORT

Test Report No. : 10706993H-G-R2

Applicant	:	**MITSUBISHI ELECTRIC CORPORATION SANDA WORKS**
Type of Equipment	:	**Display Audio**
Model No.	:	**NR-000**
FCC ID	:	**UJHNR000**
IC Number	:	**662K-NR000**
Test regulation	:	**FCC Part 15 Subpart E: 2015** **RSS-247 Issue 1: 2015** **(DFS test only)**
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 test report covers Radio technical requirements. It does not cover administrative issues such as Manual or non-Radio test related Requirements. (if applicable)
7. This report is a revised version of 10706993H-G-R1. 10706993H-G-R1 is replaced with this report.

Date of test: April 30, 2015

Representative test engineer:

Tsubasa Takayama
Engineer
Consumer Technology Division

Approved by:

Takayuki Shimada
Engineer
Consumer Technology Division

NVLAP LAB CODE: 200572-0

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*As for the range of Accreditation in NVLAP, you may refer to the WEB address,
http://www.ul.com/japan/jpn/pages/services/emc/about/mark1/index.jsp#nvlap

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REVISION HISTORY

Original Test Report No.: 10706993H-G

Revision	Test report No.	Date	Page revised	Contents
- (Original)	10706993H-G	June 3, 2015	-	-
1	10706993H-G-R1	June 5, 2015	P5, 12	Addition of Power Supply (inner): DC 1.8 V
1	10706993H-G-R1	June 5, 2015	P6	Correction of sentence for FCC 15.31 (e) / Supplied Voltage Information
2	10706993H-G-R2	July 6, 2015	P11	Correction of output power value

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SECTION 1: Customer information

Company Name	:	MITSUBISHI ELECTRIC CORPORATION SANDA WORKS
Address	:	2-3-33, Miwa, Sanda-city, Hyogo, 669-1513, Japan
Telephone Number	:	+81-79-559-3623
Facsimile Number	:	+81-79-559-3875
Contact Person	:	Kenji Otani

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

2.1 Identification of E.U.T.

Type of Equipment	:	Display Audio
Model No.	:	NR-000
Serial No.	:	Refer to Clause 4.2
Rating	:	DC 12.0 V
Receipt Date of Sample	:	March 7, 2015
Country of Mass-production	:	Thailand
Condition of EUT	:	Production 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

General Specification

Clock frequency(ies) in the system : 900 MHz (Radio part: 26 MHz)

Radio Specification

Radio Type : Transceiver
Power Supply (inner) : DC 3.3 V / DC 1.8 V

Radio Specification

	IEEE802.11b	IEEE802.11g/n (20 M band)	IEEE802.11a/n (20 M band)	IEEE802.11n (40 M band)
Frequency of operation	2412 MHz -2462 MHz	2412 MHz - 2462 MHz	**[For FCC]** 5180 MHz - 5240 MHz 5260 MHz - 5320 MHz 5500 MHz - 5700 MHz 5745 MHz - 5825 MHz **[For IC]** 5280 MHz - 5320 MHz 5745 MHz - 5825 MHz	**[For FCC]** 5190 MHz - 5230 MHz 5270 MHz - 5310 MHz 5510 MHz - 5670 MHz 5755 MHz - 5795 MHz **[For IC]** 5310 MHz 5755 MHz - 5795 MHz
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK)	
Channel spacing	5 MHz		20 MHz	40 MHz
Antenna type	Inverted F Antenna			
Antenna Gain	0.29 dBi		W52, W53 band: 3.6 dBi W56, W58 band: 2.17 dBi	

* This test report applies for DFS Testing.

	GPS/GLONASS	Bluetooth Ver.3.0 with EDR function
Frequency of operation	GPS: 1575.42 MHz GLONASS: 1597.55 MHz - 1605.89 MHz	2402 MHz – 2480 MHz
Type of modulation	GPS: BPSK GLONASS: BPSK	FHSS (GFSK, π/4-DQPSK, 8-DPSK)
Channel spacing	GLONASS: 0.5625 MHz	1 MHz
Antenna type	Inverted F Antenna	Inverted F Antenna
Antenna Gain	0 dBi	0.29 dBi

SECTION 3: Scope of Report

This report only covers DFS requirement, as specified by the following referenced procedures.

SECTION 4: Test specification, procedures & results

4.1 Test Specification

Test Specification	:	FCC Part 15 Subpart E: 2015, final revised on January 21, 2015
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart E Unlicensed National Information Infrastructure Devices Section 15.407 General technical requirements
Test Specification	:	RSS-247 Issue 1: 2015
Title	:	Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
Test Specification	:	KDB905462 D02 UNII DFS Compliance Procedures New Rules v01r02
Title	:	COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5250-5350MHz AND 5470-5725MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION
Test Specification	:	KDB905462 D03 Client Without DFS New Rules v01r01
Title	:	U-NII CLIENT DEVICES WITHOUT RADAR DETECTION CAPABILITY

FCC 15.31 (e) / Supplied Voltage Information

The EUT provides stable voltage (DC 3.3 V / DC 1.8 V) constantly to the wireless transmitter regardless of input voltage.
Instead of a new battery, DC power supply was used for the test.
That does not affect the test result, therefore the EUT complies with the requirement.

FCC Part 15.203 Antenna requirement / Antenna Information

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

4.2 Procedures and results

Table 1: Applicability of DFS Requirements

Requirement	Operating Mode Client without Radar Detection	Test Procedures & Limits	Deviation	Results
U-NII Detection Bandwidth	Not required	KDB905462 D02 UNII DFS Compliance Procedures New Rules v01r02	N/A	N/A
Initial Channel Availability Check Time	Not required	FCC15.407 (h) KDB905462 D02 UNII DFS Compliance Procedures New Rules v01r02 RSS-247 6.3	N/A	N/A
Radar Burst at the Beginning of the Channel Availability Check Time	Not required	FCC15.407 (h) KDB905462 D02 UNII DFS Compliance Procedures New Rules v01r02 RSS-247 6.3	N/A	N/A
Radar Burst at the End of the Channel Availability Check Time	Not required	FCC15.407 (h) KDB905462 D02 UNII DFS Compliance Procedures New Rules v01r02 RSS-247 6.3	N/A	N/A
In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time	Yes	FCC15.407 (h) KDB905462 D02 UNII DFS Compliance Procedures New Rules v01r02 RSS-247 6.3	N/A	Complied
In-Service Monitoring for Non-Occupancy period	Yes *	FCC15.407 (h) KDB905462 D02 UNII DFS Compliance Procedures New Rules v01r02 RSS-247 6.3	N/A	Complied
Statistical Performance Check	Not required	FCC15.407 (h) KDB905462 D02 UNII DFS Compliance Procedures New Rules v01r02	N/A	N/A

*Although this test was not required in FCC, KDB 905462 D02, it was performed as additional test.

Table 2 DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

Maximum Transmit Power	Value (See Notes 1,2, and 3)
≥ 200 milliwatt	-64 dBm
< 200 milliwatt and power spectral density < 10dBm/MHz	-62 dBm
< 200 milliwatt that do not meet the power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. Note 3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.	

Table 3 DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds See Note 1
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth See Note 3
Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. **Note 2:** The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signal will not count quiet periods in between transmissions. **Note 3:** During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

Table 4 Short Pulse Radar Test Waveform

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Traials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	Roundup{(1/360)* ($19*10^6$/PRI_{usec})}	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 µsec, with a minimum increment of 1 µsec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Rader Types 1-4)				80%	120
Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.					

Table 5 Long Pulse Radar Test Waveform

Radar Type	Pulse Width (µsec)	Chip Width (MHz)	PRI (µsec)	Number of Pulses per *Burst*	Number of *Burst*	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

Table 6 Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulse per Hop (kHz)	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

4.3 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	4.0 x 4.5 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	-	8.0 x 4.6 x 2.8m	2.4 x 2.4m	-
No.11 measurement room	-	6.2 x 4.7 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.

4.4 Uncertainty

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor $k = 2$.
Time Measurement uncertainty for this test was: (±) 0.012 %

4.5 Data of DFS test, Test instruments of DFS, Test set up

Refer to APPENDIX.

SECTION 5: Operation of E.U.T. during testing

5.1 Operating Modes

The EUT, which is a Client Device without Radar detection capability, operates over the below.
5260-5320MHz, 5270-5310MHz, 5500-5700MHz and 5510-5670MHz (for FCC).
5280-5320MHz, 5310MHz (for IC).

Power level of the EUT[dBm] for FCC

Band	Output Power (Min)	Output Power(Max)
W53	6.50	7.77
W56	7.00	8.28

*Refer to 10706993H-E-R1, FCC Part 15E (FCC 15.407) report for other parts than DFS.

Power level of the EUT[dBm] for IC

Band	Output Power (Min)	Output Power(Max)
W53	6.60	7.86

*Refer to 10706993H-F-R1, RSS-Gen / RSS-247 report for other parts than DFS.

The channel-loading of approximately 17% or greater was used for testing, and its test data was transferred from the Master Device to the Client Device for all test configurations.

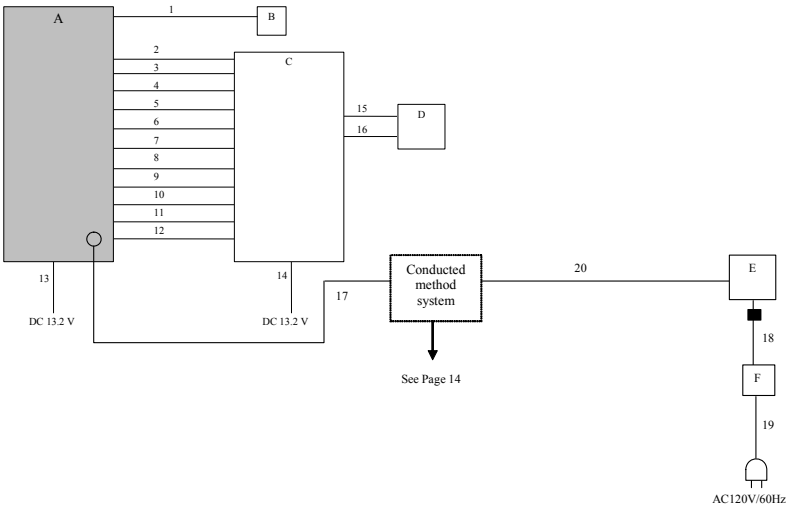
The EUT utilizes the 802.11a, 11n with 20MHz bandwidth and 40MHz bandwidth.

The FCC ID for the Master Device used with EUT for DFS testing is LDK102073.
The rated output power of the Master unit is >200mW(23dBm). Therefore the required interference threshold level is -64 dBm. After correction for antenna gain and procedural adjustments, the required conducted threshold at the antenna port is -64 + 1 + 0 = -63.0 dBm (threshold level + additional 1dB + antenna gain).

It is impossible for users to change DFS control, because the DFS function is written on the firmware and users cannot access it.

The EUT was set by the software as follows:
Software name & version: Android web browser with stream contents

5.2 Configuration and peripherals



* Cabling and setup(s) were taken into consideration and test data was taken under worse case conditions.

* The testing was performed with DC 13.2 V only.
As the stable voltage (DC 3.3 V / DC 1.8 V) is provided to RF module via the internal regulator, it does not influence on the test result.

Description of EUT

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Display Audio	NR-000	94ZN6003	MITSUBISHI ELECTRIC CORPORATION SANDA WORKS	EUT
B	GPS Antenna	-	-	MITSUMI	-
C	Dummy board	-	320496A002	MITSUBISHI ELECTRIC CORPORATION SANDA WORKS	-
D	Display	39710-TBAA-A110-M1	411VIFW000803	LG	-
E	Wireless LAN access point	AIR-AP1262N-A-K9	FTX1620K39Q	Cisco Systems	FCC ID : LDK102073
F	AC Adapter	AA25480L	ALD0520G7R6	Cisco Systems	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	GPS Cable	3.0	Shielded	Shielded	-
2	Signal Cable	2.0	Shielded	Shielded	-
3	Signal Cable	2.0	Shielded	Shielded	-
4	Signal Cable	2.0	Shielded	Shielded	-
5	Signal Cable	2.0	Shielded	Shielded	-
6	Signal Cable	2.0	Unshielded	Unshielded	-
7	Signal Cable	2.0	Unshielded	Unshielded	-
8	Signal Cable	2.0	Unshielded	Unshielded	-
9	Signal Cable	2.0	Shielded	Shielded	-
10	Signal Cable	2.0	Shielded	Shielded	-
11	Signal Cable	2.0	Shielded	Shielded	-
12	Signal Cable	2.0	Unshielded	Unshielded	-
13	DC Cable	2.0	Unshielded	Unshielded	-
14	DC Cable	2.0	Unshielded	Unshielded	-
15	Display Cable	0.3	Shielded	Shielded	-
16	Display Cable	0.3	Unshielded	Unshielded	-
17	Antenna Cable	0.2	Shielded	Shielded	-
18	DC Cable	1.8	Shielded	Shielded	-
19	AC Cable	2.3	Unshielded	Unshielded	-
20	RF Cable	1.5	Shielded	Shielded	-

5.3 Test and Measurement System

SYSTEM OVERVIEW

The measurement system is based on a conducted test method.

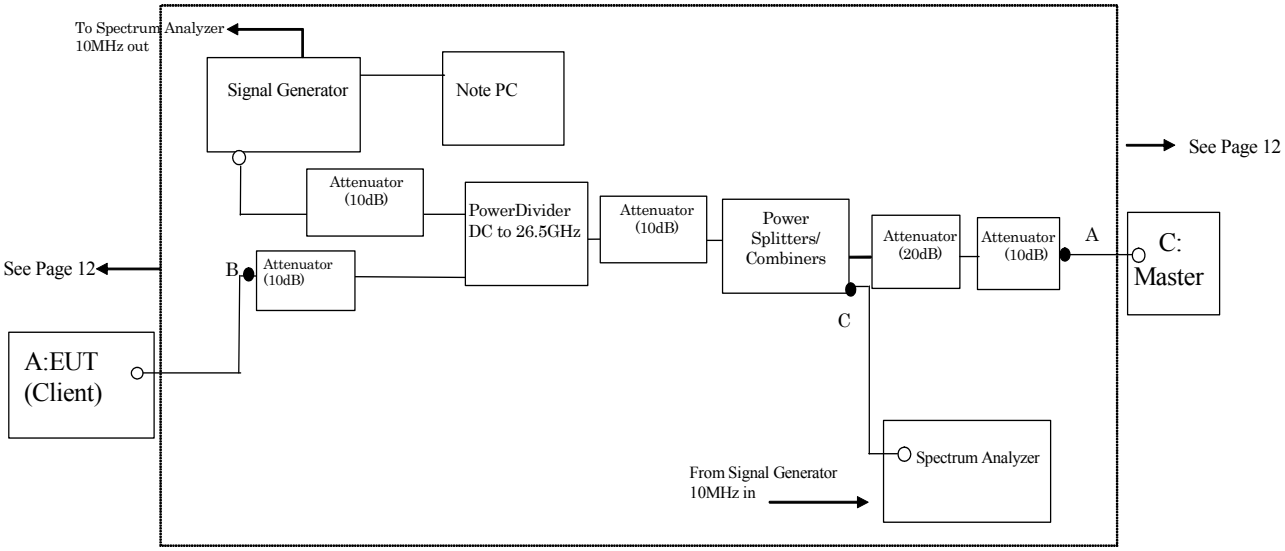
The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution. The short pulse types 0, 1, 2, 3, and 4, the long pulse type 5, and the frequency hopping type 6 parameters are randomized at run-time.

The signal monitoring equipment consists of a spectrum analyzer with the capacity to display 8001 bins on the horizontal axis. A time-domain resolution of 2 msec/bin is achievable with a 16 second sweep time, meeting the 10 seconds short pulse reporting criteria. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection. A time-domain resolution of 3 msec/bin is achievable with a 24 second sweep time, meeting the 22 second long pulse reporting criteria and allowing a minimum of 10 seconds after the end of the long pulse waveform.

FREQUENCY HOPPING RADAR WAVEFORM GENERATING SUBSYSTEM

The first 100 frequencies are selected out of the hopping sequence of the randomized 475 hop frequencies.
Only a *Burst* that has the frequency falling within the receiver bandwidth of the tested U-NII device is selected among those frequencies. (Frequency-domain simulation). The radar waveform generated at the start time of the selected *Burst* (Time-domain simulation) is download to the Signal Generator.
If all of the randomly selected 100 frequencies do not fall within the receiver bandwidth of the U-NII device, the radar waveform is not used for the test.

CONDUCTED METHODS SYSTEM BLOCK DIAGRM



MEASUREMENT SYSTEM FREQUENCY REFERENCE

Lock the signal generator and the spectrum analyzer to the same reference sources as follows: Connect the 10MHz OUT on the signal generator to the 10MHz IN on the spectrum analyzer and set the spectrum analyzer 10MHz In to On.

SYSTEM CALIBRATION

Step 1: Set the system as shown in Figure 3 of KDB905462 D02 7.2.2.

Step 2: Adjust each attenuator to fulfill the following three conditions:
- WLAN can be communicated, and
- Rader detection threshold level is bigger than Client Device traffic level on the spectrum analyzer, and
- Master Device traffic level is not displayed on the spectrum analyzer.

Step 3: Terminate 50 ohm at B and C points, and connect the spectrum analyzer to the point A. (See the figure on page 14)
At the point A, adjust the signal generator and spectrum analyzer to the center frequency of the channel to be measured.
Download the applicable radar waveforms to the signal generator. Select the radar waveform, trigger a burst manually and measure the amplitude on the spectrum analyzer. Readjust the amplitude of the signal generator as required so that the peak level of the waveform is at a displayed level equal to the required or desired interference detection threshold.
Separate signal generator amplitude settings are determined as required for each radar type.

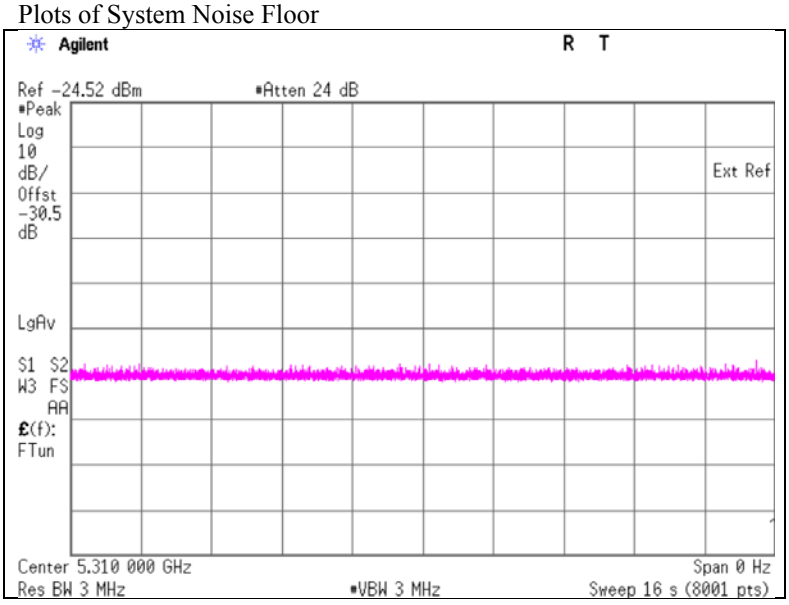
Step 4: Without changing any of the instrument settings, restore the system setting to Step 2 and adjust the Reference Level Offset of the spectrum analyzer to the level at Step 3.

By taking the above steps 1 to 4, the spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device.

See Clause 5.4 for Plots of Noise, Rader Waveforms, and WLAN signals.

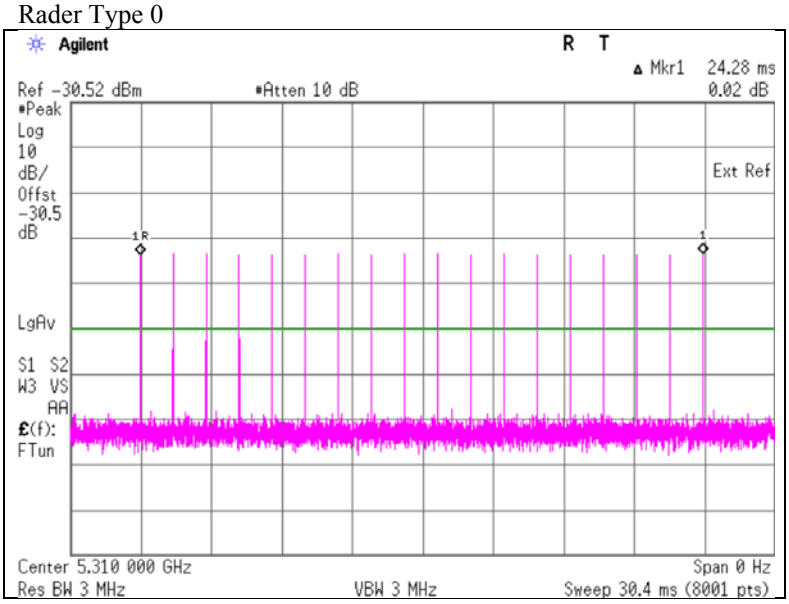
5.4 Plots of Noise, Rader Waveforms, and WLAN signals

Plots of System Noise Floor

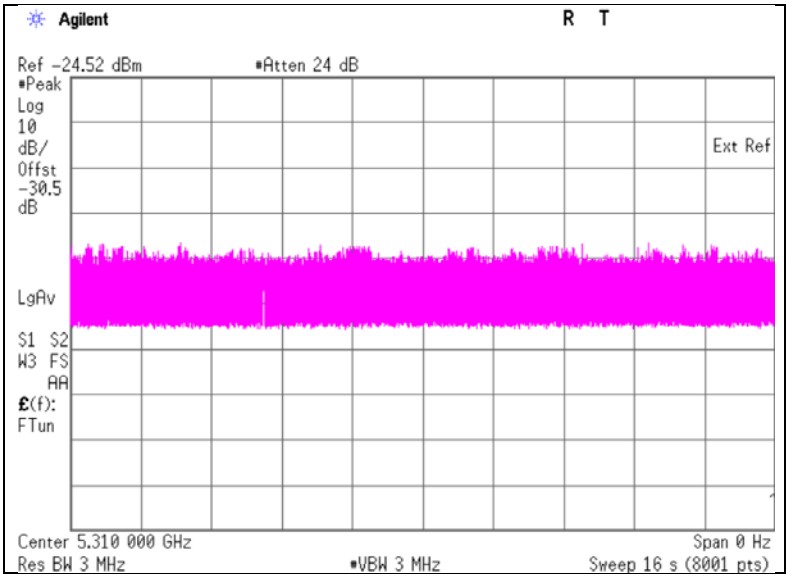


Plots of Radar Waveforms

Rader Type 0



Plots of WLAN Traffic



SECTION 6: Channel Move Time, Channel Closing Transmission Time

6.1 Operating environment

Test place : No.7 Shield room
Temperature : 24 deg. C
Humidity : 41 % RH

6.2 Test Procedure

Transmit the data from the Master Device to the Client Device on the test Channel for the entire period of the test.
The Radar Waveform generator sends a Burst of pulses for Radar Types 0 at levels defined,
on the Operating Channel. An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors.
Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds.

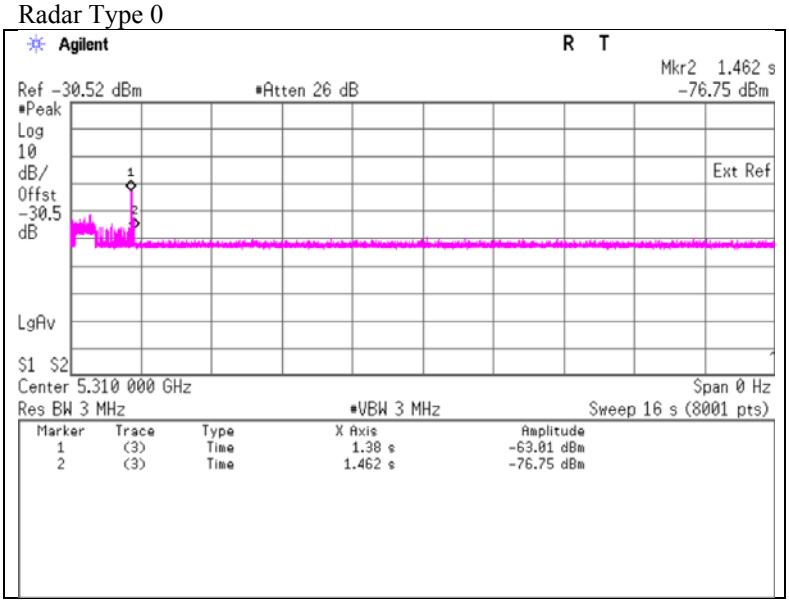
6.3 Test data

Test Item	Unit	Measurement Time	Limit	Results
Channel Move Time *1)	[sec]	0.082	10.000	Pass
Channel Closing Transmission Time *2)	[msec]	0	60	Pass

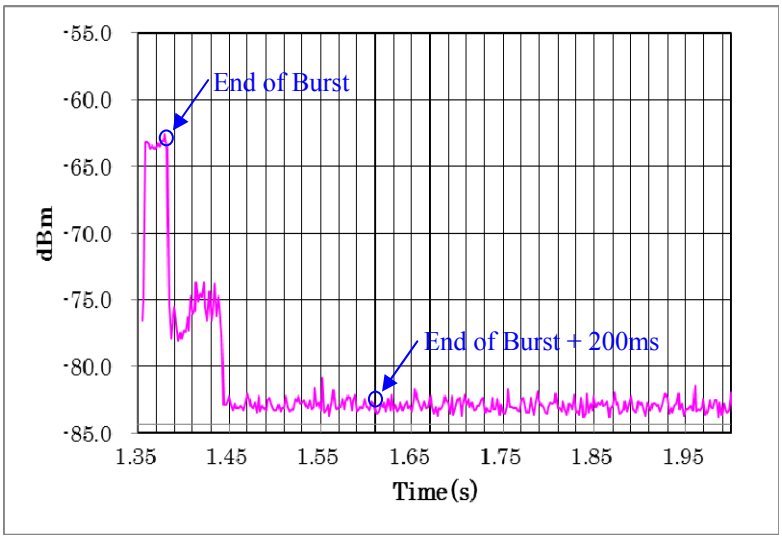
*1) Channel Move Time is calculated as follows:
(Channel Move Time) = (End of Transmission) - (End of Burst) = 1.462-1.380

*2) Channel Closing Transmission Time is calculated from (End of Burst + 200msec) to (End of Burst + 10sec)
(Channel Closing Transmission Time) = (Number of analyzer bins showing transmission) * (dwell time per bin)
= 0 * 2(msec)

Radar Type 0



Marker 1 : End of Burst : 1380ms
Marker 2 : End of Transmission : 1462 ms



6.4 Test result

Test result: Pass

Date : April 30, 2015 Test engineer : Tsubasa Takayama

SECTION 7: Non-Occupancy Period

7.1 Operating environment

Test place : No.7 Shield room
Temperature : 24 deg. C
Humidity : 41 % RH

7.2 Test Procedure

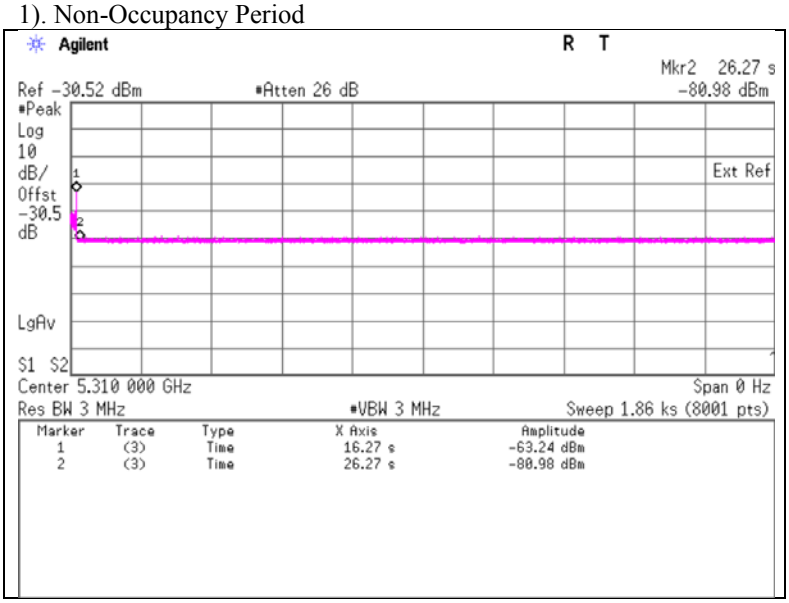
The following two tests are performed:

1) Transmit the data from the Master Device to the Client Device on the test Channel for the entire period of the test. The Radar Waveform generator sends a Burst of pulses for Radar Types 0 at levels defined on the Operating Channel. An additional 1 dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors.
Observe the transmissions of the EUT after the Channel Move Time on the Operating Channel for duration greater than 30 minutes.

2) Transmit the data from the Master Device to the Client Device on the test Channel for the entire period of the test. Observe the transmissions of the EUT on the Operating Channel for duration greater than 30 minutes after the Master Device is shut off.

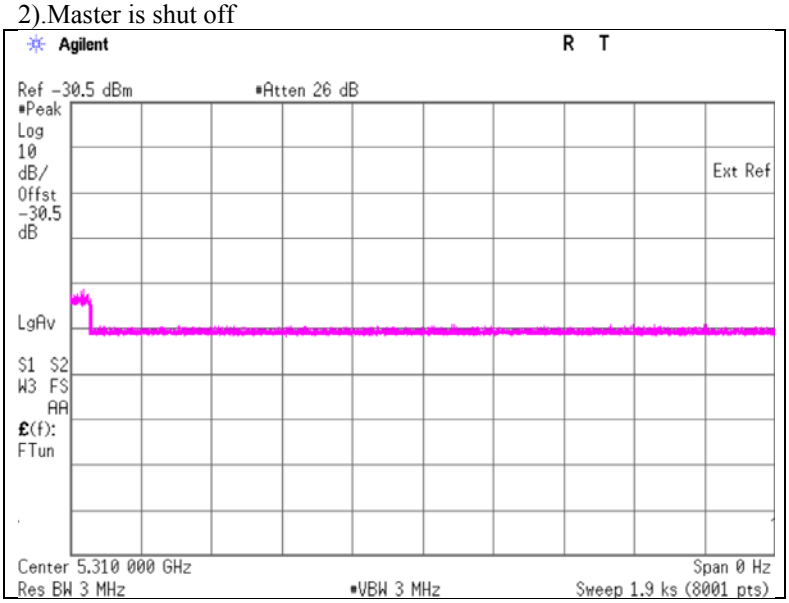
7.3 Test data

1). Non-Occupancy Period



Marker 1 : End of Burst : 16.27 sec
Marker 2 : End of Burst +10sec : 26.27 sec

2).Master is shut off



7.4 Test result

Test result: Pass

Date : April 30, 2015 Test engineer : Tsubasa Takayama

APPENDIX 1: Test instruments

EMI Test Equipment

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MSA-13	Spectrum Analyzer	Agilent	E4440A	MY46185823	DFS	2014/06/06 * 12
EST-48 *1)	Signal Generator	Agilent	E4438C	MY45090353	DFS	2014/12/19 * 12
MCC-102	Microwave Cable	Hirose Electric	U.FL-2LP-066J1-A(200)	-	DFS	2014/06/12 * 12
MCC-182	Microwave Cable	Junkosha	MMX221-00500DMSDMS	1502S309	DFS	Pre Check
MCC-67	Microwave Cable 1G-40GHz	Suhner	SUCOFLEX102	28635/2	DFS	2015/04/09 * 12
MCC-170	Microwave Cable	Junkosha	MWX221	1409S493	DFS	2015/03/04 * 12
MCC-171	Microwave Cable	Junkosha	MWX221	1409S494	DFS	2015/03/04 * 12
MPSC-06	Power Splitters/Combiners	Pasternack Enterprises	ZFRSC-123-S+	ZFRSC-123-00231	DFS	Pre Check
MPSC-07	Power Splitters/Combiners	Pasternack Enterprises	ZFRSC-123-S+	ZFRSC-123-00232	DFS	Pre Check
MAT-58	Attenuator(10dB)	Suhner	6810.19.A	-	DFS	2015/01/09 * 12
MAT-23	Attenuator(10dB) 1-18GHz	Orient Microwave	BX10-0476-00	-	DFS	2015/03/13 * 12
MAT-60	Attenuator(20dB)	Suhner	6820.19.A	-	DFS	Pre Check
MAT-61	Attenuator(20dB)	Suhner	6820.19.A	-	DFS	Pre Check
MOS-34	Thermo-Hygrometer	Custom	CTH-201	3401	DFS	2015/01/13 * 12

***1) Signal generator is only used to generate radar test signal, and the wave form is confirmed with spectrum analyzer every time before the test.**

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.

DFS: Dynamic Frequency Selection