RADIO TEST REPORT

Test Report No. : 11081928H-F-R1

Applicant	:	**DENSO CORPORATION**
Type of Equipment	:	**Control Box**
Model No.	:	**DNNS087**
FCC ID	:	**HYQDNNS087**
Test regulation	:	**FCC Part 15 Subpart E: 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 11081928H-F. 11081928H-F is replaced with this report.

Date of test: March 5, 2016

Representative test engineer:
Kazuya Yoshioka
Engineer
Consumer Technology Division

Approved by:
Takayuki Shimada
Engineer
Consumer Technology Division

NVLAP LAB CODE: 200572-0

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REVISION HISTORY

Original Test Report No.: 11081928H-F

Revision	Test report No.	Date	Page revised	Contents
- (Original)	11081928H-F	March 22, 2016	-	-
1	11081928H-F-R1	April 14, 2016	P.11	Correction of power density value

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CONTENTS **PAGE**

SECTION 1: Customer information

Company Name	:	DENSO CORPORATION
Address	:	1-1 Showa-cho, Kariya-shi, Aichi-ken, 448-8661 Japan
Telephone Number	:	+81-566-26-5919
Facsimile Number	:	+81-566-25-4920
Contact Person	:	Isamu Suzuki

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

2.1 Identification of E.U.T.

Type of Equipment	:	Control Box
Model No.	:	DNNS087
Serial No.	:	Refer to Section 4, Clause 4.2
Rating	:	DC 12 V
Receipt Date of Sample	:	February 11, 2016
Country of Mass-production	:	United States of America
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

Model No: DNNS087 (referred to as the EUT in this report) is the Control Box.

General Specification

Clock frequency(ies) in the system : 533 MHz
32.768 kHz, 37.4 MHz (Crystal)
Operating Temperature : -30 deg. C - +70 deg. C

Radio Specification

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

	IEEE802.11b	**IEEE802.11g/n (20 M band)**	**IEEE802.11a/n/ac (20 M band) *1)**	**IEEE802.11n/ac (40 M band) *1)**	**IEEE802.11ac (80 M band) *1)**
Frequency of operation	2412 MHz - 2462 MHz	2412 MHz - 2462 MHz	5180 MHz - 5240 MHz 5260 MHz - 5320 MHz 5500 MHz - 5720 MHz 5745 MHz - 5825 MHz	5190 MHz - 5230 MHz 5270 MHz - 5310 MHz 5510 MHz - 5710 MHz 5755 MHz - 5795 MHz	5210 MHz 5290 MHz 5530 MHz - 5690 MHz 5775 MHz
Type of modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (64QAM, 16QAM, QPSK, BPSK)	OFDM (64QAM, 16QAM, QPSK, BPSK, 256QAM(IEEE802.11ac only))		
Channel spacing	5MHz		20MHz	40MHz	80MHz
Antenna type	ASSEMBLY WiFi Antenna				
Antenna Connector type	MHF PLUG				
Antenna Gain	-3.2 dBi				

	GPS	**Bluetooth Ver.4.1 with EDR function**
Frequency of operation	1575.42 MHz	2402 MHz - 2480 MHz
Type of modulation	BPSK	BT: FHSS (GFSK, π/4-DQPSK, 8-DPSK) LE: GFSK
Channel spacing	-	BT: 1 MHz LE: 2 MHz
Antenna type	ANTENNA ASSY, GPS	ASSEMBLY WiFi Antenna
Antenna Connector type	FAKRA	MHF PLUG
Antenna Gain	26.5 dBi	-3.2 dBi

*1) This test report applies to WLAN (5GHz band).
*Wireless LAN and Bluetooth do not transmit simultaneously.

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 November 23, 2015 *Some parts are effective on and after December 17, 2015 or December 23, 2015. The revision does not affect the test specification applied to the EUT.
Title	:	FCC 47CFR Part15 Radio Frequency Device Subpart E Unlicensed National Information Infrastructure Devices Section 15.407 General technical requirements
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)
The EUT provides stable voltage (DC 1.8 V / DC 3.3.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
It is impossible for end users to replace the antenna, because the antenna is mounted inside of the vehicle. 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
Note: UL Japan, Inc.'s EMI Work Procedures No. 13-EM-W0422.				

*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

UL Japan, Inc. Ise EMC Lab. *NVLAP Lab. code: 200572-0
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone : +81 596 24 8999 Facsimile : +81 596 24 8124

	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 Test instruments of DFS, Test set up

Refer to APPENDIX.

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

5.1 Operating Modes

For FCC the EUT operates over the 5260-5320MHz, 5500-5720MHz, 5270-5310MHz, 5510-5710MHz, 5290MHz and 5530-5690MHz ranges.
For IC the EUT operates over the 5280-5320MHz, 5500-5720MHz, 5310MHz, 5510-5710MHz, 5530-5690MHz ranges, excluding the 5600-5650MHz range.
The EUT has the Client mode without Rader Detection.

For FCC
The highest power level is 8.93 dBm EIRP in the W53 and W56 band.
For IC
The highest power level is 8.72 dBm EIRP in the W53 and W56 band.

Power level (EIRP) of the EUT[dBm]
For FCC

Output Power (Max)		
20Mband	40Mband	80Mband
8.93	8.63	8.45

For IC

Output Power (Max)		
20Mband	40Mband	80Mband
8.72	8.63	7.95

Power spectral density level (Conducted) of the EUT[dBm/MHz]
For FCC

Output Power (Max)		
20Mband	40Mband	80Mband
1.00	-1.85	-5.08

For IC

Output Power (Max)		
20Mband	40Mband	80Mband
0.95	-1.85	-5.50

*Refer to 11081928H-C-R1, FCC Part 15E (FCC 15.407) report for other parts than DFS.

WLAN traffic is generated by traffic data from the Master to the Client device

The EUT utilizes the 802.11a/n/ac architecture, with a 20MHz , 40MHz and 80MHz channel bandwidth.

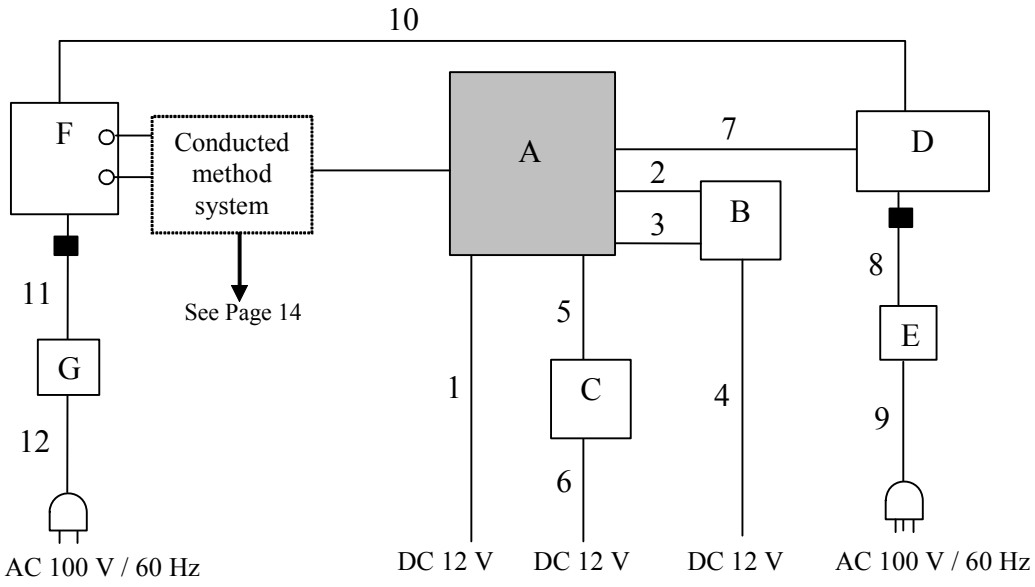
The FCC ID for the Master Device used with EUT for DFS testing is LDK102087.

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: iperf

5.2 Configuration and peripherals



■ : Standard Ferrite Core

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remarks
A	Control Box	DNNS087	003	DENSO CORPORATION	EUT
B	Jig	-	-	-	-
C	Display	703748	AUO-1507019	SPECTRUM DIGITAL INCORPORATED	-
D	Laptop PC	Latitude E6230	D5KTXY1	DELL	-
E	AC Adaptor	LA65NS2-01	CN-06TM1C-72438-3B4-3BA4-A01	DELL	-
F	Wireless LAN access point	AIR-CAP3702E-A-K9	FTX182276QC	Cisco Systems	-
G	AC Adaptor	AA25480L	ALD030406GR	Cisco Systems	-

List of cables used

No.	Name	Length (m)	Shield		Remarks
			Cable	Connector	
1	DC Cable	2.0	Unshielded	Unshielded	-
2	MOST Cable (Red)	2.0	Shielded	Shielded	-
3	MOST Cable (Green)	2.0	Shielded	Shielded	-
4	DC Cable	2.0	Unshielded	Unshielded	-
5	LVDS Cable	2.0	Shielded	Shielded	-
6	DC Cable	2.0	Unshielded	Unshielded	-
7	USB Cable	2.4	Shielded	Shielded	-
8	DC Cable	1.8	Unshielded	Unshielded	-
9	AC Cable	0.9	Unshielded	Unshielded	-
10	LAN Cable	1.8	Unshielded	Unshielded	-
11	DC Cable	1.9	Unshielded	Unshielded	-
12	AC Cable	2.1	Unshielded	Unshielded	-

5.3 Test and Measurement System

SYSTEM OVERVIEW

The measurement system is based on a conducted test method.

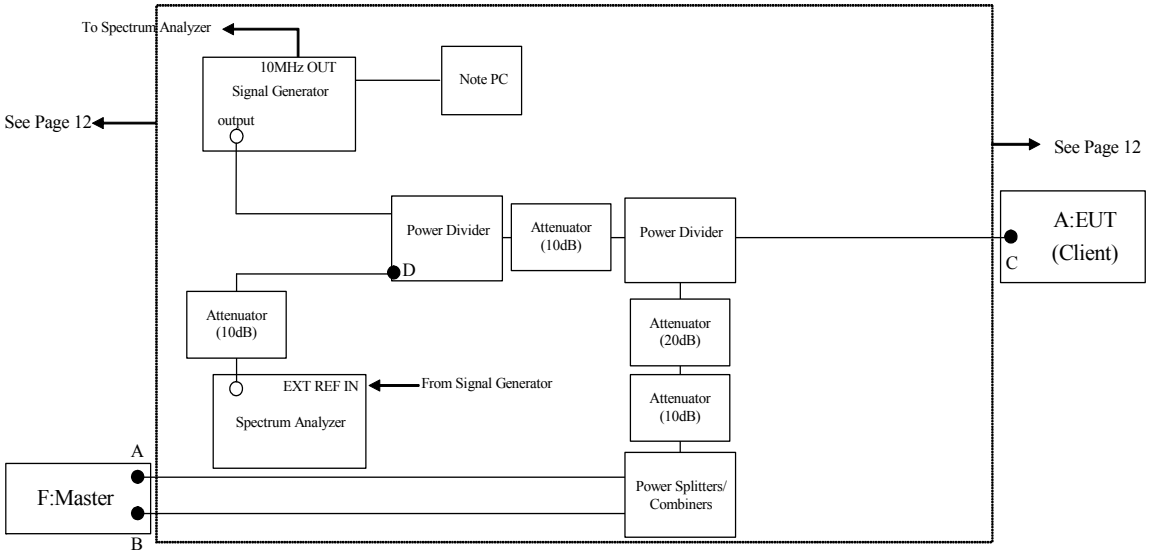
The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution. The short pulse types 2, 3, and 4, the long pulse type 5, and the frequency hopping type 6 parameters are randomized at run-time.

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 10 MHz OUT on the signal generator to the EXT REF IN on the spectrum analyzer and set the spectrum analyzer Ext to On.

SYSTEM CALIBRATION

Step 1: Set the system as shown in Figure 3 of KDB905462 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, C and D 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.

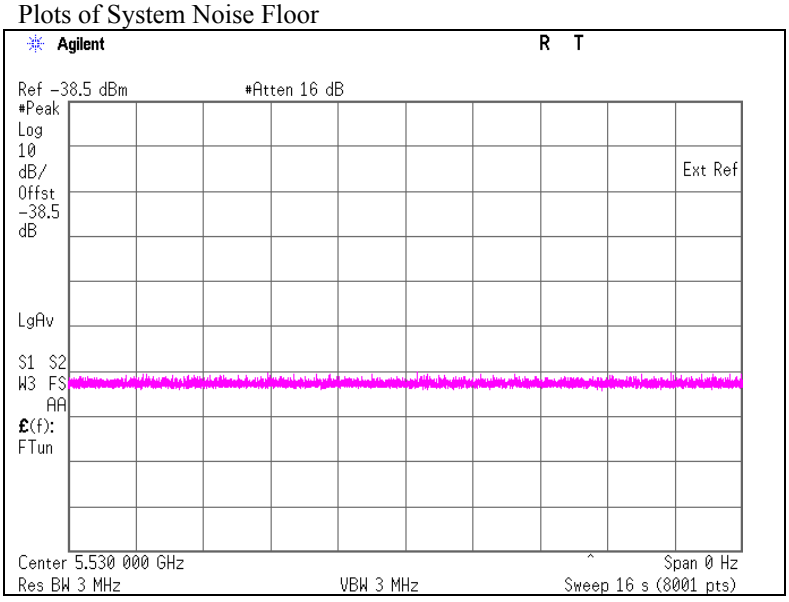
Step 4: Without changing any of the instrument settings, restore the system setting to Step 2 and adjust the Reference Level Offset of the spectrum analyzer to the level at Step 3.

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.

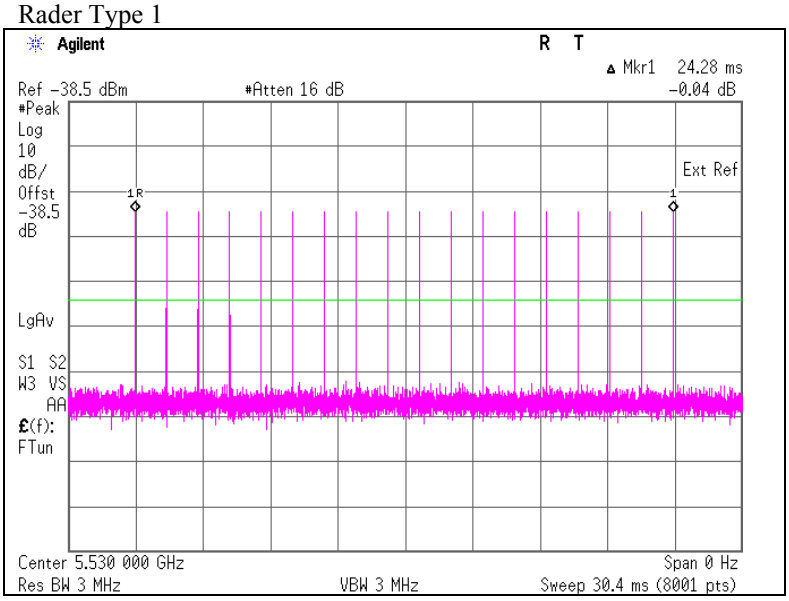
5.4 Plots of Noise, Rader Waveforms, and WLAN signals

Plots of System Noise Floor

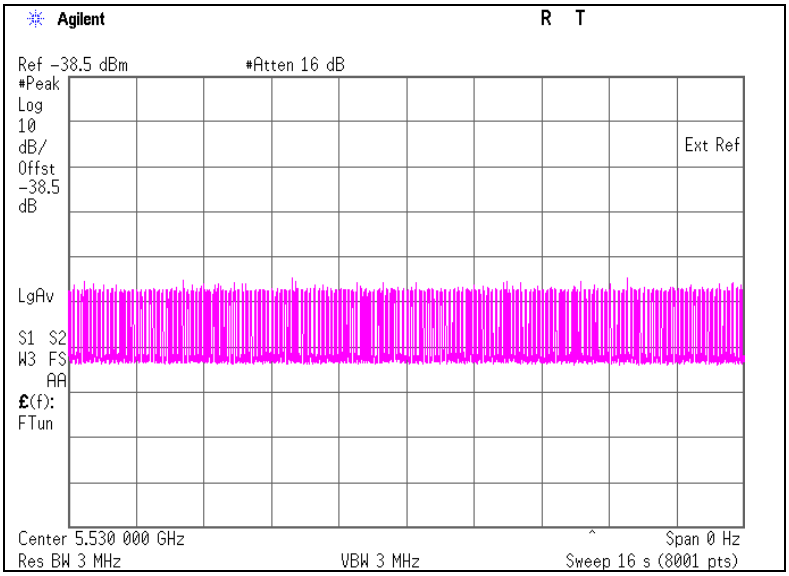


Plots of Radar Waveforms

Rader Type 1



Plots of WLAN Traffic



SECTION 6: Channel Move Time, Channel Closing Transmission Time

6.1 Operating environment

Test place : No.6 measurement room
Temperature : 23 deg. C
Humidity : 36 % RH

6.2 Test Procedure

Traffic 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 one of the 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.

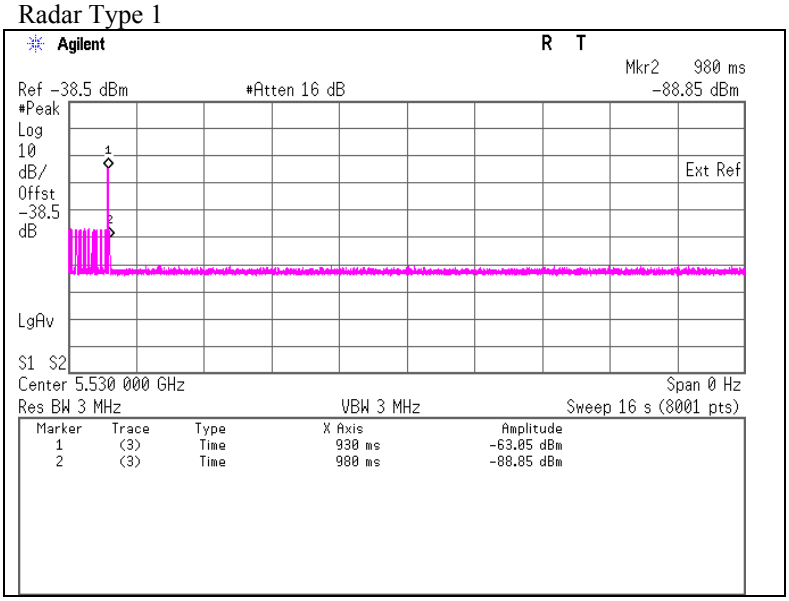
6.3 Test data

Test Item	Unit	Measurement Time	Limit	Results
Channel Move Time *1)	[sec]	0.050	10.000	Pass
Channel Closing Transmission Time *2)	[msec]	0	60	Pass

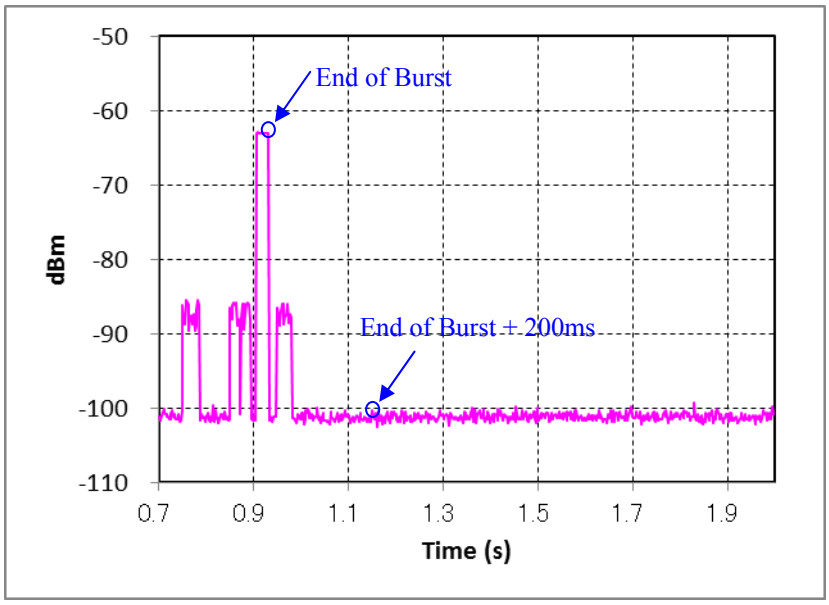
*1) Channel Move Time is calculated as follows:
(Channel Move Time) = (End of Transmission) - (End of Burst) = 0.980-0.930

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

Radar Type 1



Marker 1 : End of Burst : 930 ms
Marker 2 : End of Transmission : 980 ms



6.4 Test result

Test result: Pass

Date :March 5, 2016 Test engineer : Kazuya Yoshioka

SECTION 7: Non-Occupancy Period

7.1 Operating environment

Test place : No.6 measurement room
Temperature : 23 deg. C
Humidity : 36 % RH

7.2 Test Procedure

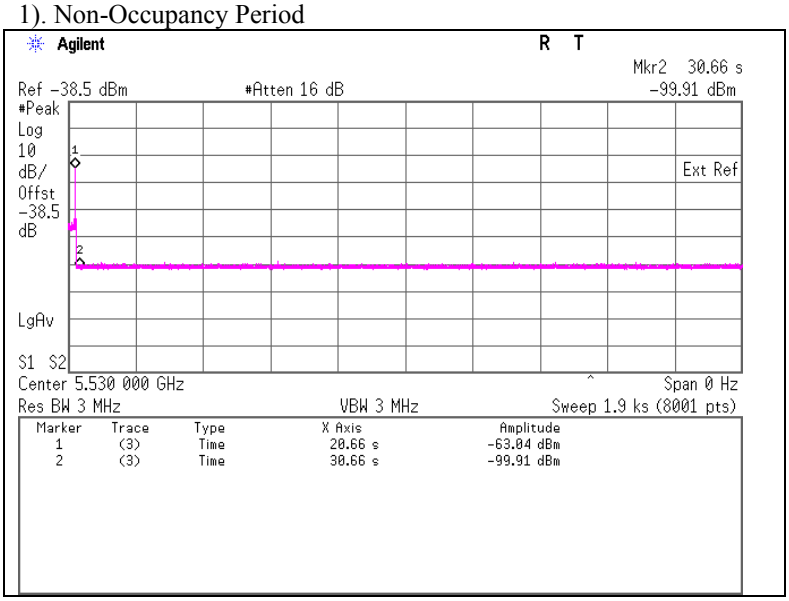
The following two tests are performed:

1) Traffic 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 one of the 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) Traffic 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.

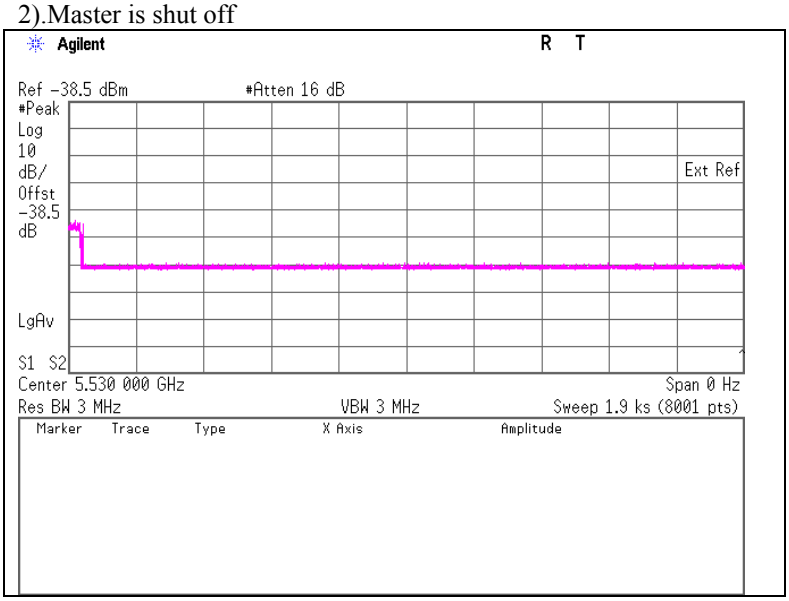
7.3 Test data

1). Non-Occupancy Period



Marker 1 : End of Burst : 20.66 sec
Marker 2 : End of Burst +10sec : 30.66 sec

2).Master is shut off



7.4 Test result

Test result: Pass

Date : March 5, 2016 Test engineer : Kazuya Yoshioka

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	2015/06/02 * 12
MCC-138	Microwave cable	HUBER+SUHNER	SUCOFLEX 102	37953/2	DFS	2015/10/08 * 12
MCC-192	Microwave Cable	Junkosha	MWX-221-02000DMSDMS	1507S111	DFS	Pre Check
MAT-57	Attenuator(10dB)	Suhner	6810.19.A	-	DFS	2016/01/18 * 12
MAT-86	Attenuator	Weinschel Associates	WA56-20	56200213	DFS	2015/06/01 * 12
MAT-88	Attenuator	Weinschel Associates	WA56-10	56100304	DFS	2015/06/01 * 12
MAT-90	Attenuator	Weinschel Associates	WA56-10	56100306	DFS	2015/06/01 * 12
MPSC-04	Power Splitters/Combiners	Mini-Circuit	ZFSC-2-10G	0326	DFS	2015/09/18 * 12
MPSE-07	Power sensor	Agilent	V8486A	MY44420112	DFS	2015/09/04 * 12
MPD-01	PowerDivider DC to 26.5GHz	Agilent	11636B	52258	DFS	2015/03/10 * 12
EST-48 *1)	Signal Generator	Agilent	E4438C	MY45090353	DFS	2015/12/30 * 12
COTS-MDFS-01	Signal Studio Software for DFS	Agilent	N7620A-101	5010-7739	DFS	-
COTS-MDFS-02	Radar Generating Software for DFS	Agilent	-	-	DFS	-
MCC-180	Microwave Cable	Junkosha	MMX221-00500DMSDMS	1502S307	DFS	Pre Check
MCC-181	Microwave Cable	Junkosha	MMX221-00500DMSDMS	1502S308	DFS	Pre Check
MOS-14	Thermo-Hygrometer	Custom	CTH-201	1401	DFS	2016/01/21 * 12
MMM-12	DIGITAL HiTESTER	Hioki	3805	060500120	DFS	2016/02/23 * 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