

DFS TEST REPORT

(for 5 GHz WLAN)

Project No. :JB-Z0943
Client's Control No. :AF21033
Client :Sony Corporation
Client's Address :1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan
Product Name :Digital Media Player
Model No. :YY1298B
FCC ID :AK8YY1298B
Test Standard :47 CFR Part 15 Subpart E (for DFS test)
Sample Receipt Date :July 29, 2021
Test Date :September 16, 2021
Report Date :September 30, 2021
Test Result :Complied

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Note

- indicates that the listed condition, standard or equipment is applicable for this report.
- indicates that the listed condition, standard or equipment is not applicable for this report.

Revision History

Revision	Date	Overview	Page
JB-Z0943 (Original)	September 30, 2021	-	-

Disclaimer

This report includes the information provided by the customer as below;

- Cover page: Client and product related information
- Clause 1.1 : Description of Equipment Under Test (EUT)
- Clause 2 : Operating mode / conditions

* The laboratory is not responsible for any test results affected by the above information.

1. General Information

1.1. Description of Equipment Under Test (EUT)

General Specification

Test Sample Condition : Prototype Pre-production Mass-production
 Product Name : Digital Media Player
 Trade Name : SONY
 Model No. : YY1298B
 Serial No. : 0310150
 Power Rating of the EUT : DC 3.8 V (Internal Battery) or DC 5 V (USB)

Similar model(s) to be covered by this report

Model No. : None

Radio Specification

Function of the Equipment : Transceiver
 Operating Frequency :

IEEE Standard	Operating Frequency	Channel Spacing	Channel Bandwidth	Number of Channel
802.11a/n (HT20)	5180 - 5320 MHz,	20 MHz	20 MHz	8
802.11ac (VHT20)	5500 - 5700 MHz			11
802.11n (HT40)	5190 - 5310 MHz,	40 MHz	40 MHz	4
802.11ac (VHT40)	5510 - 5670 MHz			5
802.11ac (VHT80)	5210 - 5290 MHz	80 MHz	80 MHz	2
	5530 - 5610 MHz			2

Modulation Type : OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
 Antenna Type : Inverted-F Antenna
 Antenna Connector Type : None
 Antenna Gain : +2.39 dBi
 Operating Temperature : +5.0 to +35.0 deg.C

1.2. Summary of Test Result

Test Item	Test Method	Operational Mode: Client Without Radar Detection	Results	Note
U-NII Detection Bandwidth	-	Not required	N/A	-
Initial Channel Availability Check Time	-	Not required	N/A	-
Radar Burst at the Beginning of the Channel Availability Check Time	-	Not required	N/A	-
Radar Burst at the End of the Channel Availability Check Time	-	Not required	N/A	-
In-Service Monitoring for Channel Move Time, Channel Closing Transmission Time	Conducted	Yes (See data)	Complied	-
In-Service Monitoring for Non-Occupancy Period	Conducted	Yes (See data)	Complied	-
Statistical Performance Check	-	Not required	N/A	-

Other requirements

Part 15.31(e) Supply voltage requirement

: Complied (The voltage supplied from USB or battery are converted to regulated DC voltage by the built-in power circuit of the EUT.)

Part 15.203 / 212 Antenna requirement

: Complied (The EUT has an internal antenna which cannot be replaced by users.)

1.3. Tested Methodology

Test Standard : 47 CFR Part15 Subpart E

Test Method : KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02

1.4. Measurement Procedures

We performed the measurements in accordance with NV3-10, available upon the request.

No deviation

Deviation from the above procedure

The summary of the above procedure is mentioned below

Dynamic Frequency Selection (for Client device without radar detection)

- As master device, Access Point AIR-CAP3702E-B-K9 (FCC ID: LDK102087) is used.
- Master device communicates with client device (EUT) by transmitting/receiving a data packet.

Applicability of DFS requirements during normal operation:

Requirements for devices with multiple bandwidth modes	Client Without Radar Detection
Channel Move Time, Channel Closing Transmission Time, Non-Occupancy Period	Test using the widest BW mode available for the link

- Vector Signal Generator set to the Short Pulse Radar Type 0 and level of Detection Threshold + 1 dB at antenna port of the master device.

Radar Test Waveform:

Radar Type	Pulse Width [μsec]	PRI [μsec]	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	-	-

Note : Short Pulse Radar Type 0 is used for the channel move time, and channel closing time tests.

DFS Detection Thresholds for Master Devices:

Maximum Transmit Power	Value [dBm]
EIRP \geq 200 [mW]	-64
EIRP < 200 [mW] and power spectral density < 10 [dBm/MHz]	-62
EIRP < 200 [mW] that do not meet the power spectral density requirement	-64

Note : This is the level at the input of the receiver assuming a 0 dBi receive antenna.

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.

EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

- As Channel Move Time and Channel Closing Transmission Time testing, EUT transmissions are observed on spectrum analyzer from the end of radar burst until after 10 seconds.

As Non-Occupancy Period testing, EUT transmissions are observed on spectrum analyzer more than 30 minutes after the Channel Move.

Spectrum Analyzer Settings:

Parameter	Value
RBW	3 MHz
VBW	10 MHz
Span	Zero Span
Detector	Positive Peak
Trace	Clear / Write (Single Sweep)
Sweep Point	30001

DFS Response Requirement Values;

Parameter	Value	Remark
Non-Occupancy Period	Minimum 30 [min]	-
Channel Move Time	10 [sec]	See Note 1
Channel Closing Transmission Time	200 [msec] + an aggregate of 60 [msec] over remaining 10 [sec] period	See Note 1, 2

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 msec 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 msec) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

1.5. Test Location

Test Facility Name : Sony Global Manufacturing & Operations Corporation
EMC/RF Test Laboratory, Main Lab.

Address : 8-4 Shiomi Kisarazu-shi, Chiba-ken, 292-0834, Japan

Phone : +81 438 37 2750

A2LA Certificate No. : 3203.01

Expiration : 31 October 2021

Channel Move Time, Channel Closing Transmission Time, Non-Occupancy Period

Shielded Room

 4th Site SR1

1.6. Uncertainty

Test Item	Frequency	4th Site SR1
Power Spectrum : Conducted	1 GHz to 6 GHz	± 1.25 dB
Time	-	± 3.00 %

2. Test Specification

2.1. Validation

The system was configured for testing in a typical (as a customer would normally use it).
The tests were conducted with the worst-case modes as follows.

2.2. Operating Condition

The tests have been carried out the following conditions.

Test Item	Test Channel [MHz]	Operating Mode
Channel Move Time, Channel Closing Transmission Time, Non-Occupancy Period	5290	802.11ac (VHT80)

The Software for Operating Mode

Software Name : Magic iperf
Software Version : 1.0

2.3. Special Accessories

Special accessories needed for connecting the EUT to achieve compliance:

Item	Manufacturer	Model No.	Serial No.	Remark
-	-	-	-	-

2.4. EUT Modifications

- No equipment modification to achieve compliance to the standard levels was done during the tests.
 Equipment was modified to achieve compliance to the standard level as below.

Responsible Party Signature

Typed/ Print Name :
Responsible Party :
Position :
Date :

2.5. Configuration of the EUT System

Channel Move Time, Channel Closing Transmit Time, Non-occupancy Period Measurements

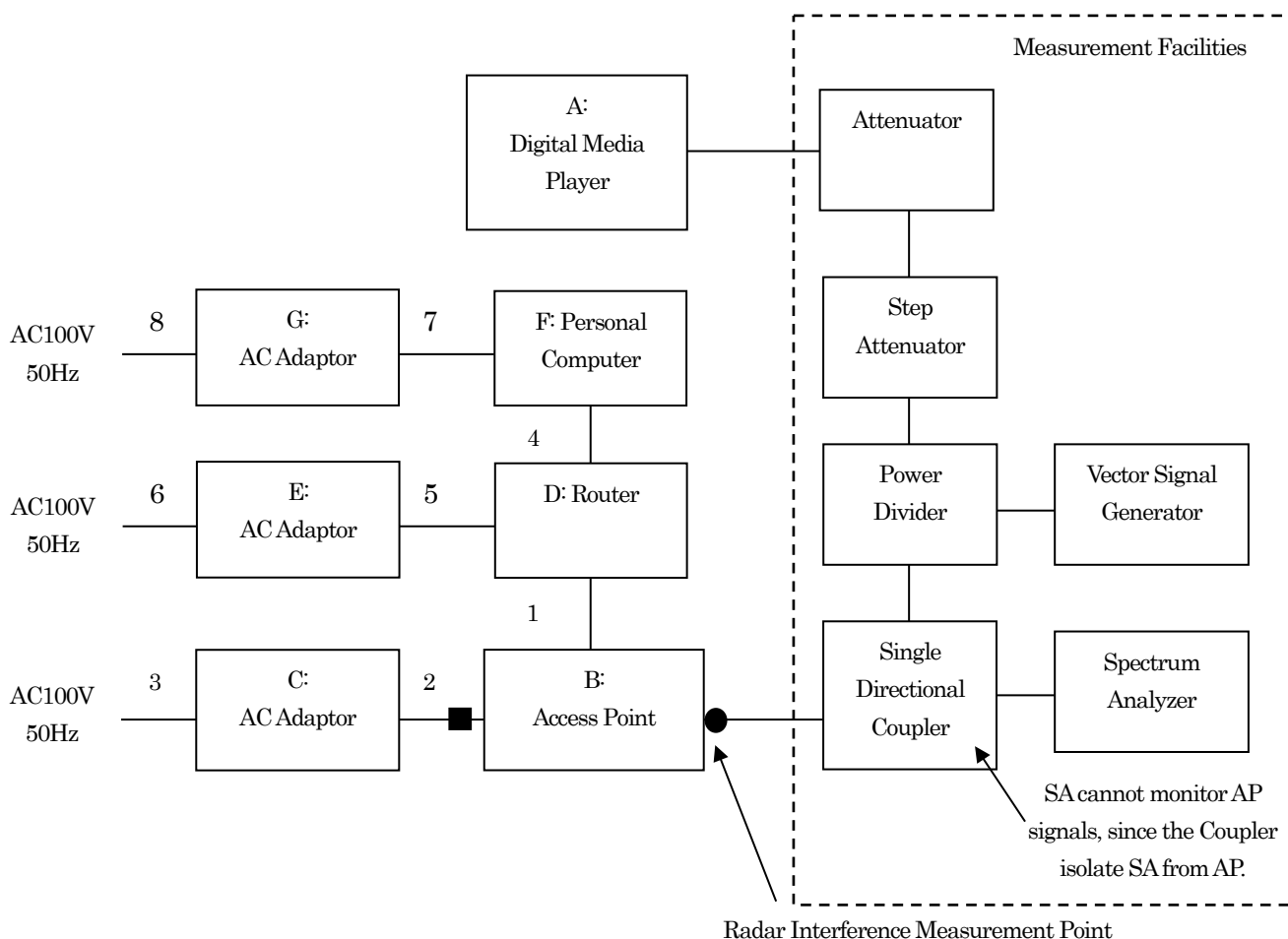
[EUT and Associated Equipment (AE)]

Symbol	EUT / AE	Item	Manufacturer	Model No.	Serial No.
A	EUT	Digital Media Player	SONY	YY1298B	0310150
B	AE	Access Point	CISCO	AIR-CAP3702E-B-K9	FJC2105M41N
C	AE	AC Adaptor	CISCO	EADP-18MB B	DAB1445M1XV
D	AE	Router	NEC Access Technica	AtermWR8500N	85N1960511579C1
E	AE	AC Adaptor	NEC Access Technica	AL1-001427-001	0904
F	AE	Personal Computer	SONY	SVS1311ADZB	27554083 1002141
G	AE	AC Adaptor	SONY	VGP-AC19V41	148753041 0496386

[Type of Cable]

Symbol	Description	Identification (Manufacturer etc.)	Shielded Yes / No	Ferrite Core	Length (m)	Bundled
1	LAN Cable	Cat5e_UTP_ELECOM	No	No	1.00	-
2	DC Cable	-	No	Fixed x1	1.85	-
3	AC Cable	-	No	No	1.90	-
4	LAN Cable	Cat5e_UTP_ELECOM	No	No	1.00	-
5	DC Cable	NEC Access Technica	No	No	1.90	-
6	AC Cable	NEC Access Technica	No	No	0.70	-
7	DC Cable	SONY	No	No	1.80	-
8	AC Cable	SONY	No	No	0.80	-

[Connecting Diagram]



3. Test Data

3.1. Channel Move Time, Channel Closing Transmit Time, Non-occupancy Period

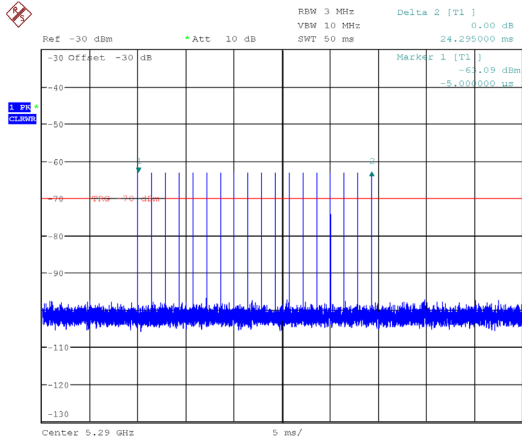
Date of measurement	Ambient temperature	Relative humidity	Measured by
September 16, 2021	23.0 deg.C	51.1 %	Yohei Yamaguchi

Test Parameter Settings:

- Radar interference level : -63 dBm (-64 dBm Detection Threshold + 1 dB, at antenna gain 0 dBi)
- Channel loading : More than approximately 17%
- Sweep point of the spectrum analyzer : 30001 (Dwell time per sampling bin is 0.5 msec in sweep time 15 sec)

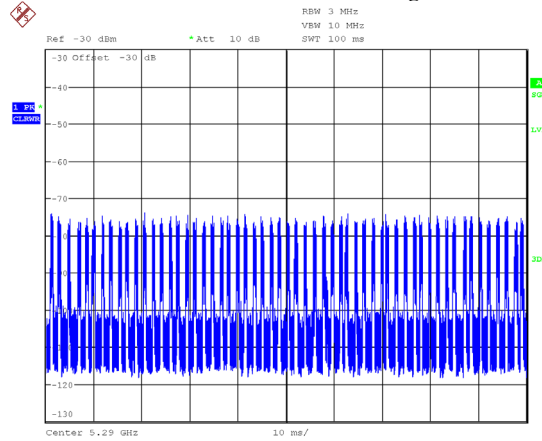
Test Item	bins	Tested Time	Limit	Results
Channel Move Time	-	1.2335 sec	10 sec	Complied
Channel Closing Transmission Time	Data Transmission	236 pts.	118.0 msec	Complied
	aggregate of control signals	5 pts.	2.5 msec	Complied
Non-Occupancy Period	29542 pts.	1802.06 sec	1800 sec	Complied

[Radar Interference Level Plot]



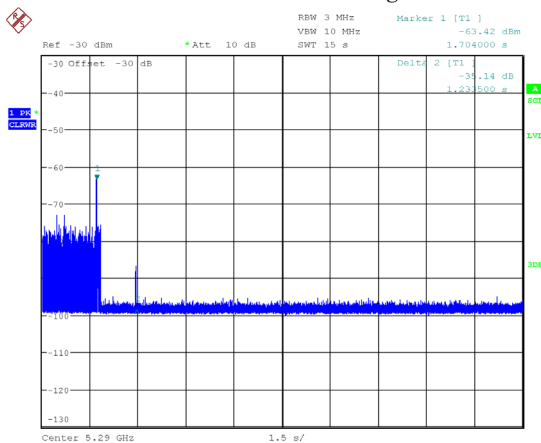
Date: 16.SEP.2021 13:41:53

[EUT Transmit Level / Channel Loading Plot]



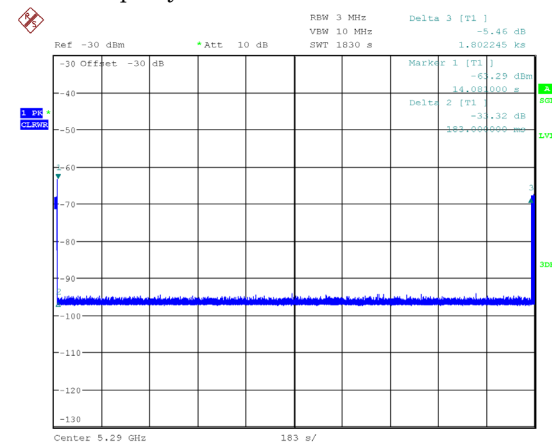
Date: 16.SEP.2021 18:37:02

[Channel Move Time/ Channel Closing Transmission Time]



Date: 16.SEP.2021 19:35:47

[Non-Occupancy Period Plot]



Date: 16.SEP.2021 16:51:53

4. Method of Calculation

4.1. Channel Move Time, Channel Closing Transmit Time, Non-occupancy Period

Method of calculation : Software
 Software Name : SW-0304
 Software Version : Ver.6

Channel Closing Transmission Time

Dwell [msec] = S [msec] / B [point]

Tested Time [msec] = N [point] * Dwell [msec]

Note (a) Dwell : Dwell time per spectrum analyzer sampling bin.
 (b) S : Sweep time settings on the spectrum analyzer.
 (c) B : Number of spectrum analyzer sampling bins.
 (d) N : Number of spectrum analyzer sampling bins showing a U-NII transmission.

5. List of Test Equipment

All test results are traceable to the national and/ or international standards.

5.1. Channel Move Time, Channel Closing Transmit Time, Non-occupancy Period

Used	Ctrl#	Equipment	Model No.	Serial No.	Manufacturer	Cal.Interval	Last Cal.
x	W0099	Signal Generator	MG3710A	6201371416	Anritsu	12 months	21.05.06
-	W0100	Spectrum Analyzer	MS2692A	6201338954	Anritsu	12 months	21.05.06
-	W0110	10dB Attenuator	6610_SK-50-1	0002	HUBER + SUHNER	12 months	20.10.02
x	WC0001	RF Cable	SUCOFLEX 102	34234/2	HUBER + SUHNER	12 months	20.10.02
x	WC0002	RF Cable	SUCOFLEX 102	34124/2	HUBER + SUHNER	12 months	20.10.02
x	WC0003	RF Cable	SUCOFLEX 102	34127/2	HUBER + SUHNER	12 months	20.10.02
-	WC0004	RF Cable	SUCOFLEX 102	34288/2	HUBER + SUHNER	12 months	20.10.02
x	WC0005	RF Cable	SUCOFLEX 102	34287/2	HUBER + SUHNER	12 months	20.10.02
x	WC0006	RF Cable	SUCOFLEX 102	34289/2	HUBER + SUHNER	12 months	20.10.02
x	WC0007	RF Cable	SUCOFLEX 102	34286/2	HUBER + SUHNER	12 months	20.10.02
x	W0060	Directional Coupler	4244-20	03926	Narda	12 months	21.05.06
x	W0021	Power Divider	11636B	57395	Agilent Technologies	12 months	20.10.02
x	W0029	10dB Attenuator	8493C	76549	Agilent Technologies	12 months	20.10.02
x	W0138	Step Attenuator	8496H	MY42147804	Agilent Technologies	12 months	20.10.02
x	M0421	Step Attenuator	8494H	3837M01145	Hewlett-Packard	12 months	20.10.02
x	M0719	Thermometer	TH-321	140053	AS ONE	12 months	21.04.02
x	W0140	Spectrum Analyzer	FSU26	200717	Rohde & Schwarz	12 months	20.10.02

About calibration interval

Valid until the end of the month listed in "Cal. Int." column.