RF Test Report

2.4 GHz WLAN 802.11b/g/n

Report No.	:	FCCBVCO-WAY-P21090032-2R2
Customer	:	Samsung Electronics Co., Ltd.
Address	:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Korea
Use of Report	:	Certification
Model Name	:	SM-R885U (Alt. SM-R885F)
FCC ID (Model)	:	A3LSMR885 (SM-R885U, SM-R885F)
IC No. (Model)	:	649E-SMR8851 (SM-R885F)
HVIN	:	SM-R885F1
Date of Test	:	2021.09.23 to 2021.10.18
Test Method Used	:	FCC 47 CFR PART 15 Subpart C (Section §15.247) / ISED RSS-247
Testing Environment	:	Refer to the Test Condition

Test Result : ☒ **Pass** ☐ **Fail**

ISSUED BY: BV CPS ADT Korea Ltd., EMC/RF Laboratory

ADDRESS: Innoplex No.2 106, Sinwon-ro 306, Yeongtong-gu, Suwon-si, Gyeonggi-do, Korea 16675

TEST LOCATION: HeungAn-daero 49, DongAn-gu, Anyang-si, Gyeonggi-do, Korea, 14119

Tested by

Name : David Jang (Signature)

Technical Manager

Name : Jongha Choi (Signature)

2021. 10. 21

BV CPS ADT Korea Ltd.

RELEASE CONTROL RECORD

REPORT NO.	REASON FOR CHANGE	DATE ISSUED
FCCBVCO-WAY-P21090032-2	Original release	2021.10.08
FCCBVCO-WAY-P21090032-2R1	Updated	2021.10.18
FCCBVCO-WAY-P21090032-2R2	Updated	2021.10.21

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1 Summary of Test Results

The EUT has been tested according to the following specifications

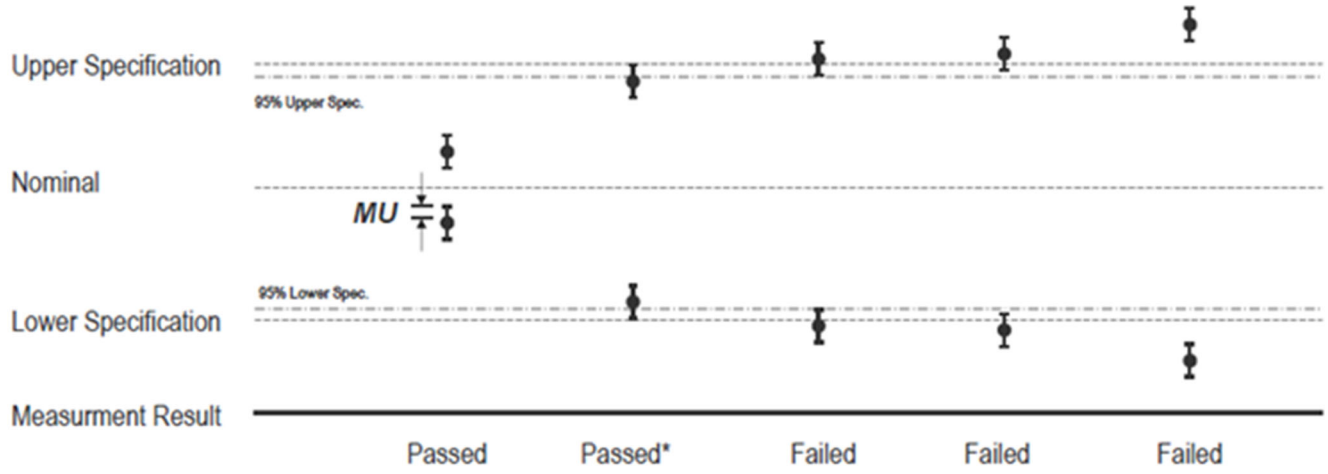
Applied Standard : FCC Part 15, Subpart C 15.247, RSS-247					
FCC Part Section(s)	**RSS Section(s)**	**Test Description**	**Limit**	**Test Result**	**Reference**
15.247(a)(2)	RSS-247 [5.2]	6 dB Bandwidth	> 500 kHz	PASS	Section 3.2
-	-	Occupied Bandwidth (99 % Bandwidth)	N/A	PASS	Section 2.5
15.247(b)(3)	RSS-247 [5.4(4)]	Maximum Conducted Output Power	< 1 Watt	PASS	Section 3.3
15.247(e)	RSS-247 [5.2]	Power Spectral Density	< 8 dBm / 3 kHz Band	PASS	Section 3.4
15.247(d)	RSS-247 [5.5]	Band Edge / Out-of-Band Emissions (Conducted Spurious Emission)	≥ 30 dBc	PASS	Section 3.5
15.205 15.209	RSS-Gen [8.9]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in Restricted bands must meet the radiated limits detailed in 15.209 (RSS-247 limits)	PASS	Section 3.5
15.207	RSS-Gen [8.8]	AC Conducted Emissions (150 kHz – 30 MHz)	< FCC 15.207 limits (RSS-Gen [8.8] limits)	PASS	Section 3.6

NOTES

1) The general test methods used to test on this devices are ANSI C63.10.

2) Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

1.1 Decision Rules for Statement of Conformity



QUA-52 Decision Rule(QA Document) was applied.

Step 1) : Reference Check, Daily Check, Peripheral device Check

Step 2) : Re-test Procedure (Repeat the test maximum 3 times, Different Test Engineer)

1) If the original test results are subject to retesting and the judgement is unclear, the retest is carried out.

2) If the result of the first retest is the same as the initial test, the judgement is made based on the value.

3) If the result of the first retest differ from the results of the initial test, the second re-test is carried out.

4) After completion of the second retest, the average of the three test results is determined as the final result. However, if the deviation of the three test values is more than 5 % of the reference value, the technical manager should review the reproducibility of the test from the beginning.

1.2 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2

Measurement Items	Frequency Range	Expanded Uncertainty U = *k*Uc (*k* = 2)
Conducted Emissions at main ports	150 kHz – 30 MHz	2.99
Radiated Spurious Emissions	9 kHz – 30 MHz	1.92
	30 MHz – 1 GHz	4.00
	1 GHz – 18 GHz	5.68
	18 GHz – 26.5 GHz	5.24

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k = 2.

2 General Information

2.1 General Description of EUT

Product	Smart Wearable
Brand	Samsung
Model	SM-R885U (Alt. SM-R885F) for FCC ID : A3LSMR885
Identification No. of EUT	-
Series Model	SM-R885F for IC No. : 649E-SMR8851
HVIN	SM-R885F1
Model Difference	-
Power Supply	DC 3.88 V
Modulation Type	DSSS, OFDM
Transfer Rate	1, 2, 5.5, 11 Mbps (802.11b) 6, 9, 12, 18, 24, 36, 48, 54 Mbps (802.11g) MCS0 to MCS7 (802.11n(HT20))
Operating Frequency	2 412 to 2 472 MHz
Number of Channel	13 Channels
Output Power	25.16 dBm (328.10 mW)
Antenna Type	LDS Antenna
Antenna Connector	Internal
H/W Version	REV1.0
S/W Version	R885U.001(SM-R885U), R885F.001(SM-R885F)
Test device Information	Model : SM-R885U Serial number - Conducted(410005bee4b248ad, 41000596e4f648df), Radiated(R3AR500TZJZ, T3AR404RNSP, R3AR500TZBK, R3AR500TZ5R

NOTES

1) The above equipment has been tested by **Bureau Veritas Consumer Products Services ADT Korea**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2) The following antennas were provided to the EUT

Antenna	Type	Connector	Peak Gain (dBi)				
			2.4 GHz	U-NII-1	U-NII-2A	U-NII-2C	U-NII-3
Bluetooth/ Wi-Fi	LDS Antenna	Internal	-5.1	-4.1	-5.9	-6.7	-5.0

3) Spurious emission of the simultaneous operation RSDB mode and the test data please refer to report no. FCCBVCO-WAY-P21090032-4 (U-NII Test Report).

4) **List of Accessories**

Accessories	Brand	Model	Manufacturer	Specification
Wireless Charger	Samsung	EP-OR825	Samsung	FCC ID : A3LEPOR825/ IC : 649E-EPOR825

2.2 Description of Test Mode

[Test Channel of EUT]

- 2.4 GHz DTS 802.11b/g/n (20 MHz BW)

Channel	Frequency [MHz]	Channel	Frequency [MHz]
1	2 412	8	2 447
2	2 417	9	2 452
3	2 422	10	2 457
4	2 427	11	2 462
5	2 432	12	2 467
6	2 437	13	2 472
7	2 442		

2.2.1 Test Mode Applicability and Tested Channel Details

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. All Radiated emission tests have been performed two mode(with charger and without charger). The worst case was found when positioned on Y axis and without charger mode for radiated emission. Following channel(s) was(were) selected for the final test as listed below :

EUT Configure mode	Applicable to				Description
	RE < 1G	RE ≥ 1G	PLC	APCM	
Without Charger	√	√	-	√	-
With Charger	-	-	√	-	-

Where RE ≥ 1 G : Radiated Emission above 1 GHz & Bandedge Measurement
RE < 1 G : Radiated Emission below 1 GHz
PLC : Power Line Conducted Emission
APCM : Antenna Port Conducted Measurement

Radiated Emission Test (Below 1 GHz)

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and data rate.

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT mode	Available Channel	Tested Channel	Modulation Type	Data Rate
802.11b	1 to 13	6	DSSS	1 Mbps

NOTES

According to exploratory test no any obvious emission were detected from 9 kHz to 30 MHz.

Although these tests were performed other than open field site, adequate comparison measurements were confirmed against 30 m open field site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

Radiated Emission Test (Above 1 GHz)

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and data rate.

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT mode	Available Channel	Tested Channel	Modulation Type	Data Rate
802.11b	1 to 13	1, 6, 11, 12, 13	DSSS	1 Mbps
802.11g	1 to 13	1, 6, 11, 12, 13	OFDM	6 Mbps
802.11n(HT20)	1 to 13	1, 6, 11, 12, 13	OFDM	MCS0

Radiated Emission Test (Above 18 GHz)

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type.

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT mode	Available Channel	Tested Channel	Modulation Type	Data Rate
802.11b	1 to 13	6	DSSS	1 Mbps

Power line Conducted Emission Test

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and data rate.

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT mode	Available Channel	Tested Channel	Modulation Type	Data Rate
802.11b	1 to 13	6	DSSS	1 Mbps

Antenna Port Conducted Measurement

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and data rate.

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT mode	Available Channel	Tested Channel	Modulation Type	Data Rate
802.11b	1 to 13	1, 6, 11, 12, 13	DSSS	1 Mbps
802.11g	1 to 13	1, 6, 11, 12, 13	OFDM	6 Mbps
802.11n(HT20)	1 to 13	1, 6, 11, 12, 13	OFDM	MCS0

Test Condition

Applicable to	Environmental Conditions	Test Voltage	Tested by
RE < 1G	23 °C, 49 % RH	DC 3.88 V	David Jang
RE ≥ 1G	23 °C, 51 % RH	DC 3.88 V	David Jang
PLC	22 °C, 48 % RH	DC 3.88 V	David Jang
APCM	23 °C, 50 % RH	DC 3.88 V	David Jang

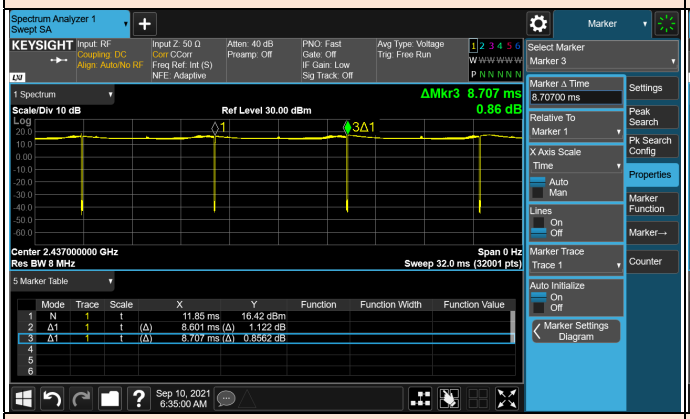
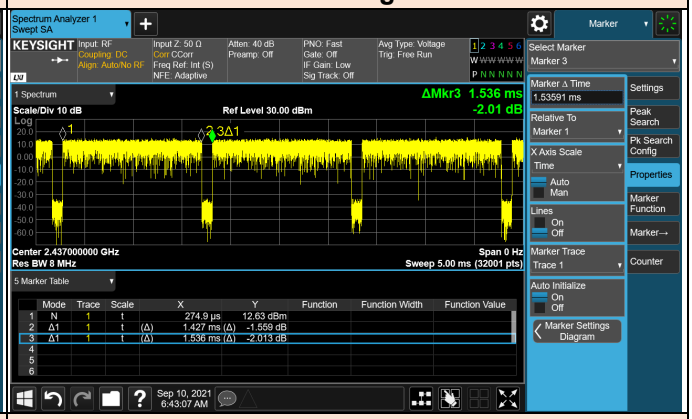
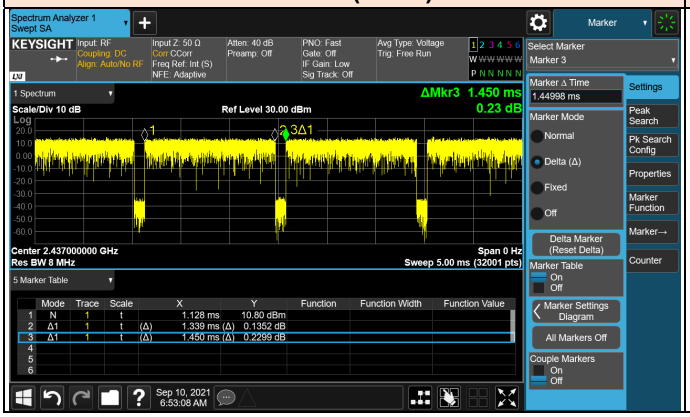
2.3 Maximum Output Power

Frequency Range [MHz]	Test Mode	Average Power [dBm]	Average Power [mW]	Peak Power [dBm]	Peak Power [mW]
2 412 - 2 472	802.11b	18.22	66.37	20.91	123.31
	802.11g	16.64	46.13	24.84	304.79
	802.11n(HT20)	15.39	34.61	25.16	328.10

2.4 Duty Cycle of Test Signal

Test Items	Mode	On Time B [msec]	Period [msec]	Duty Cycle X [Linear]	Duty Cycle [%]	DCF [dB]
Duty Cycle	802.11b	8.60	8.71	0.988	98.78	0.00
	802.11g	1.43	1.54	0.929	92.90	0.32
	802.11n(HT20)	1.34	1.45	0.923	92.34	0.35

[Test Plot of Duty Cycle]

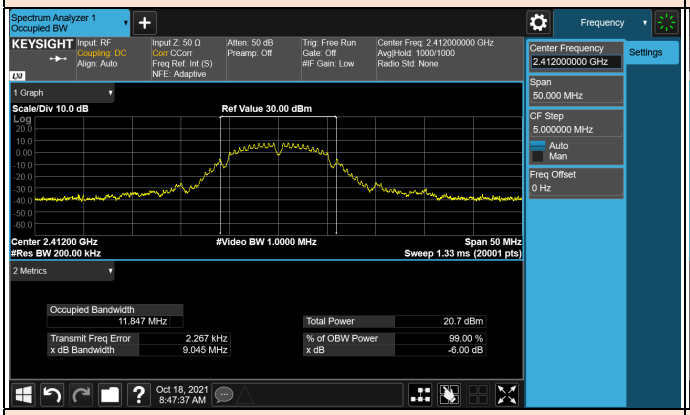
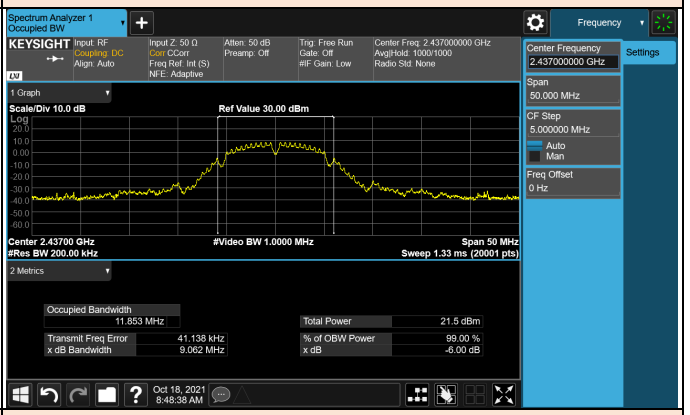
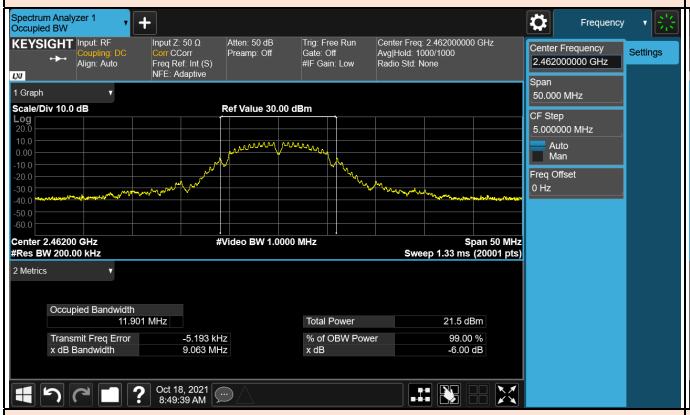
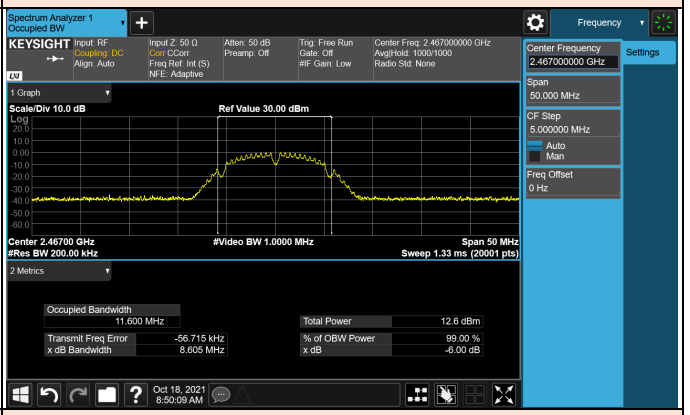
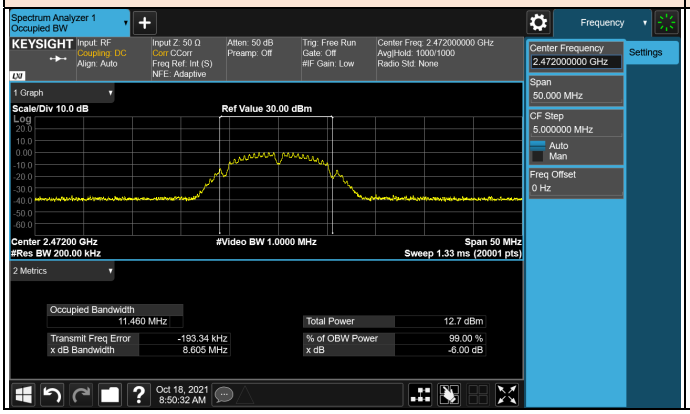
802.11b	802.11g
	
802.11n(HT20)	**-**
	-

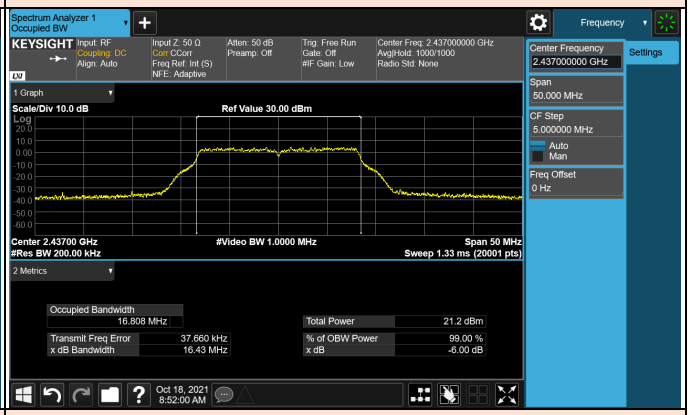
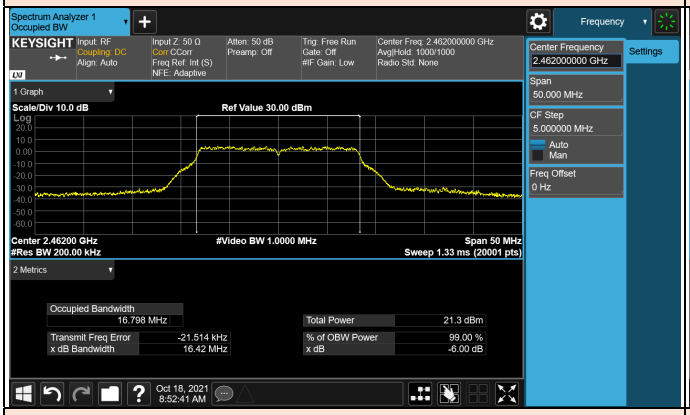
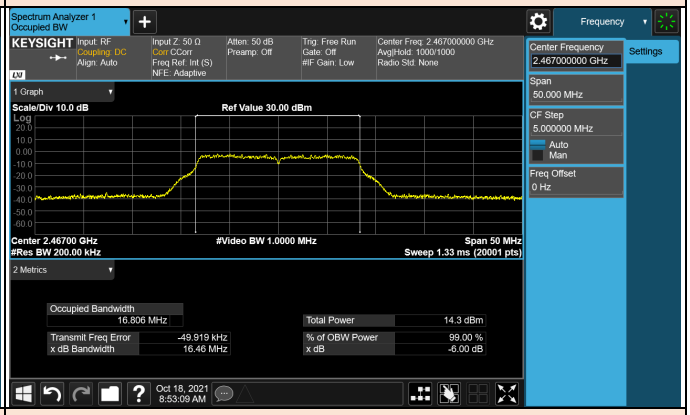
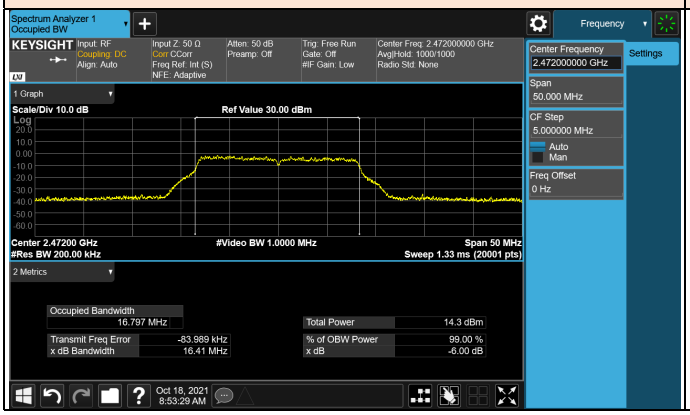
2.5 99 % Bandwidth

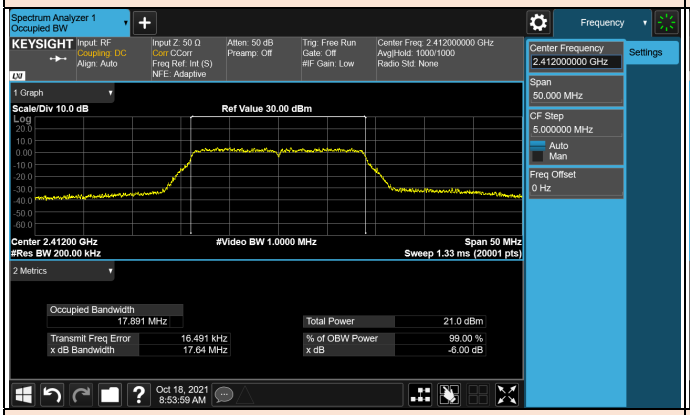
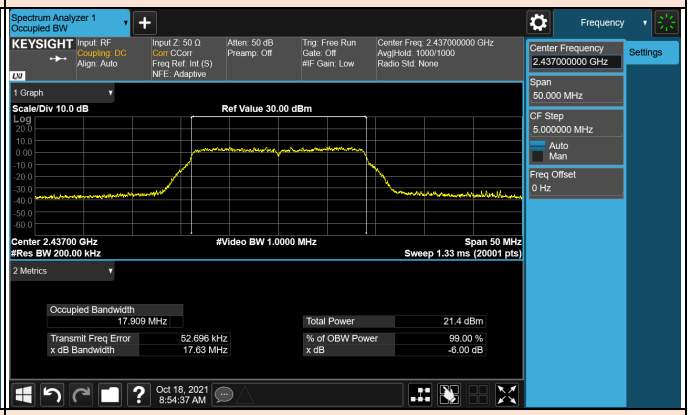
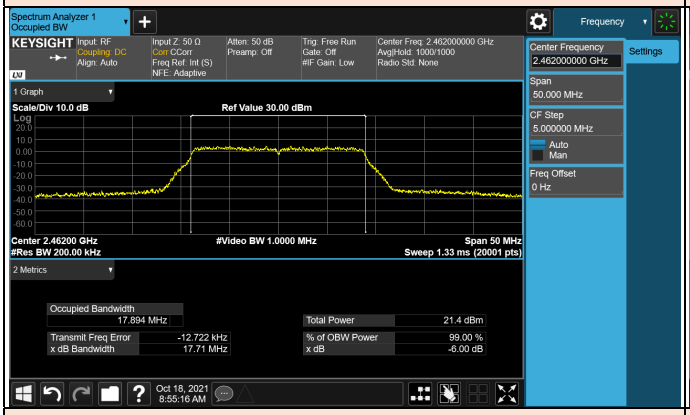
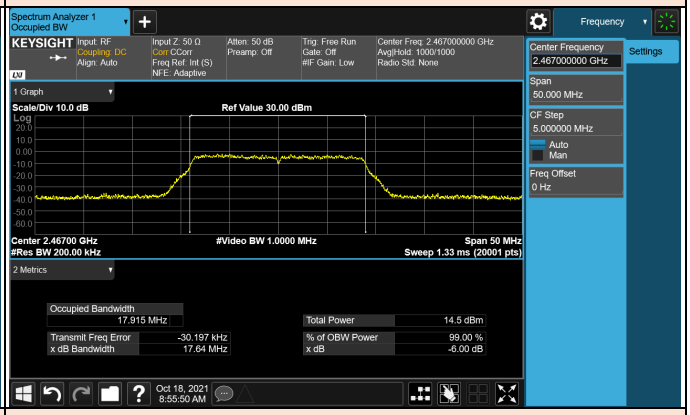
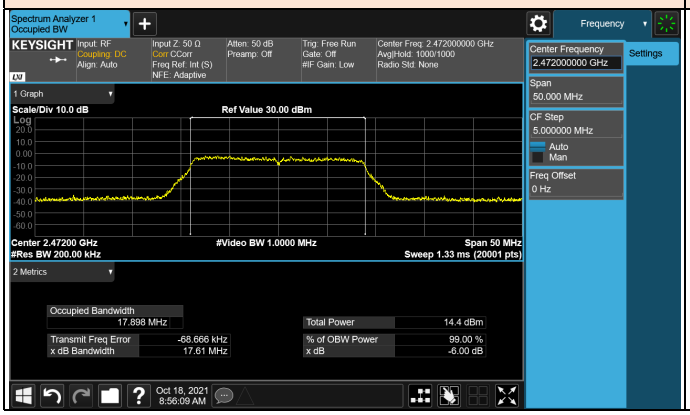
[Test Data of 99 % Bandwidth]

Test Mode	Channel	Frequency [MHz]	99 % Bandwidth [MHz]
802.11b	1	2 412	11.847
	6	2 437	11.853
	11	2 462	11.901
	12	2 467	11.600
	13	2 472	11.460
Worst Result			11.901
802.11g	1	2 412	16.751
	6	2 437	16.808
	11	2 462	16.798
	12	2 467	16.806
	13	2 472	16.797
Worst Result			16.808
802.11n (HT20)	1	2 412	17.891
	6	2 437	17.909
	11	2 462	17.894
	12	2 467	17.915
	13	2 472	17.898
Worst Result			17.915

Test Plot of 99 % Bandwidth

802.11b	
2 412 MHz	2 437 MHz
	
2 462 MHz	2 467 MHz
	
2 472 MHz	-
	-

802.11g	
2 412 MHz	2 437 MHz
	
2 462 MHz	2 467 MHz
	
2 472 MHz	-
	-

802.11n(HT20)	
2 412 MHz	2 437 MHz
	
2 462 MHz	2 467 MHz
	
2 472 MHz	-
	-

2.6 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards.

FCC CFR 47 Part 15, Subpart C (§15.247)
KDB 558074 D01 15.247 Meas Guidance v05r02
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013
RSS-247 Issue 2
RSS-GEN Issue 5

All test items in this test report have been performed and recorded as per the above standards.

2.7 Test Equipment

Test Equipment is traceable to the National Institute of Standards and Technology (NIST). Measurement antenna used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

Manufacturer	Model	Description	Serial Number	Cal Date	Cal Due
R&S	HFH2-Z2E	Active Loop Antenna, 30 MHz	349806	2021.02.18	2023.02.18
Schwarzbeck	VULB 9163	Trilog Antenna, 3 GHz (with 6 dB ATT.)	01199	2021.02.22	2023.02.22
Schwarzbeck	VUBA 9117	30 MHz ~ 1 GHz	403	2020.01.09	2022.01.09
R&S	HF907	Horn Antenna, 18 GHz	102772	2020.12.09	2021.12.09
R&S	SCU08F2	Signal Conditioning Unit, 8 GHz	08400016	2020.12.09	2021.12.09
R&S	SCU-18F	Signal Conditioning Unit, 18 GHz	180111	2020.12.09	2021.12.09
Schwarzbeck	BBHA9170	15 - 40 GHz, 10 W (cont.) 25 W (peak)	00955	2020.12.09	2021.12.09
L3 Narda-MITEQ	JS44-18004000-33-8P	Amplifier, 40 GHz	2142086	2021.01.05	2022.01.05
R&S	FSW50	DC Coupled : 2 Hz to 50 GHz AC Coupled : 10 MHz to 50 GHz	101403	2020.12.09	2021.12.09
R&S	ESW44	EMI Test Receiver, 44 GHz	101812	2020.12.09	2021.12.09
R&S	FSV30	Spectrum Analyzer, 30 GHz	103017	2020.12.07	2021.12.07
Aeroflex	40AH2W-3	Attenuator, 3 dB	1	2020.12.24	2021.12.24
Mini-Circuits	VAT-10W2+	Attenuator, 10 dB	1531	2020.12.08	2021.12.08
Pasternack	PE7087-10	10 dB Atten / 2 W / DC to 26 GHz	1712-2	2021.06.04	2022.06.04
Aeroflex	40AH2W-10	Attenuator, 10 dB	1	2021.06.04	2022.06.01
Micro-Tronics	HPM17543	High Pass Filter 3 GHz	028	2021.06.04	2022.06.04
R&S	NRP6A	Average Power Sensor	102045	2020.12.07	2021.12.07
R&S	NRP6A	Average Power Sensor	102044	2020.12.07	2021.12.07
R&S	NRX	Power Meter, 110 GHz	100947	2020.12.07	2021.12.07
Keysight Technologies	MP400B	MIMO Power Set Master, 18 GHz	None	2020.12.31	2021.12.31
R&S	ENV216	LISN	102437	2020.12.08	2021.12.08
R&S	ESR	EMI Test Receiver, 3.6 GHz	102529	2020.12.08	2021.12.08

3 Test Results

3.1 Antenna Requirement

Except from §15.203 of the FCC Rules/Regulations:

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of the section.

- The antenna(s) of the EUT are Permanently attached.
- There are no provisions for connection to an external antenna.

Result

The EUT complies with the requirement of §15.203

3.2 6 dB Bandwidth

3.2.1 Regulation

§15.247(a)(2) : Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

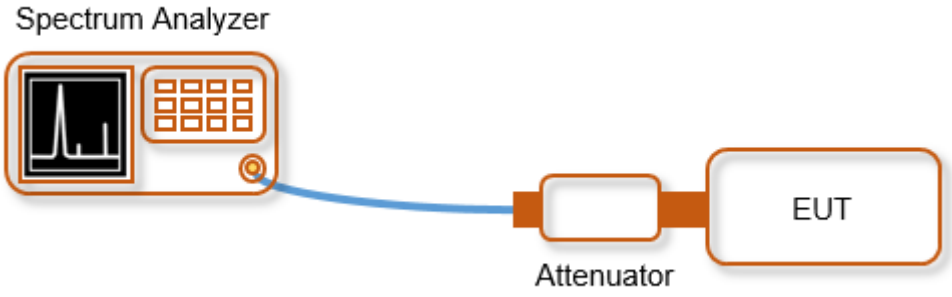
3.2.2 Test Procedure

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1 (i.e., RBW = 100 kHz, VBW ≥ 3 × RBW, and peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥6 dB.

3.2.3 Deviation from Test Standard

No deviation.

3.2.4 Test Setup

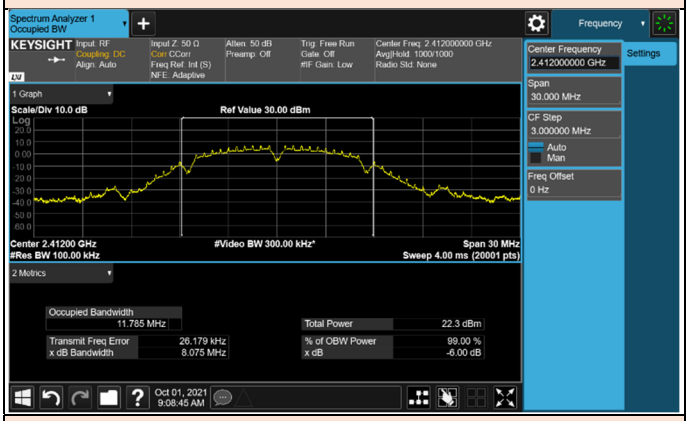
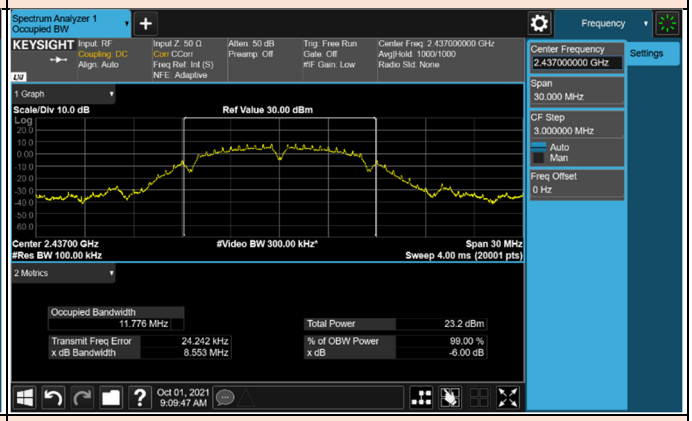


3.2.5 Test Result

[Test Data of 6 dB Bandwidth]

Test Mode	Channel	Frequency [MHz]	6 dB Bandwidth [MHz]		Limit [MHz]
			DTS BW	DTS BW x 1.5	
802.11b	1	2 412	8.075	12.113	0.500
	6	2 437	8.553	12.830	
	11	2 462	8.552	12.828	
	12	2 467	8.551	12.827	
	13	2 472	8.540	12.810	
Worst Result			8.075	12.113	
802.11g	1	2 412	16.340	24.510	0.500
	6	2 437	16.340	24.510	
	11	2 462	16.330	24.495	
	12	2 467	16.320	24.480	
	13	2 472	16.080	24.120	
Worst Result			16.080	24.120	
802.11n (HT20)	1	2 412	17.570	26.355	0.500
	6	2 437	17.590	26.385	
	11	2 462	17.560	26.340	
	12	2 467	17.320	25.980	
	13	2 472	17.180	25.770	
Worst Result			17.180	25.770	

[Test Plot of 6 dB Bandwidth]

<table>
<tr><th colspan="2">802.11b</th></tr>
<tr><th>2 412 MHz</th><th>2 437 MHz</th></tr>
<tr><td> 
</td><td> 
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<tr><th>2 462 MHz</th><th>2 467 MHz</th></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><th>2 472 MHz</th><th>-</th></tr>
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802.11g	
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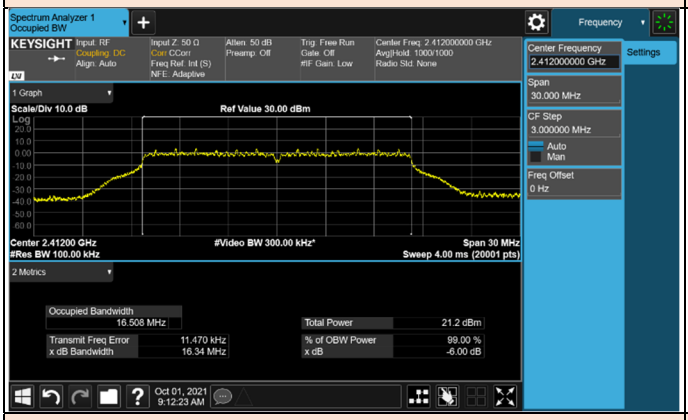	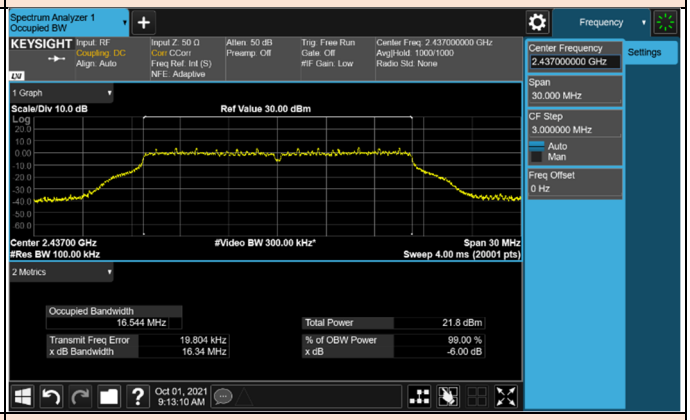
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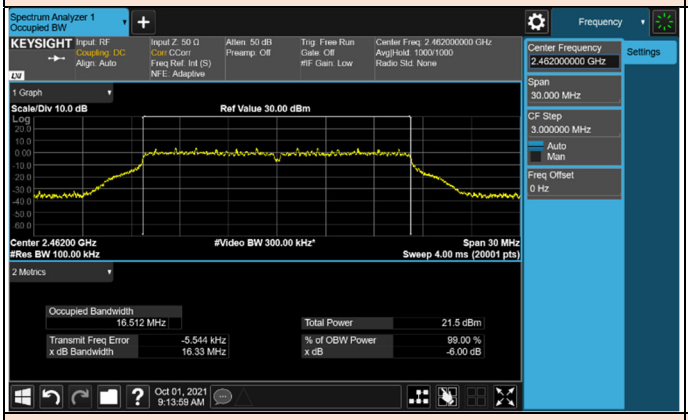	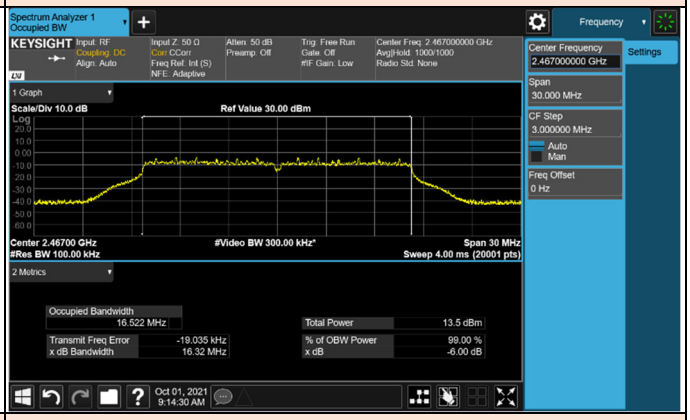
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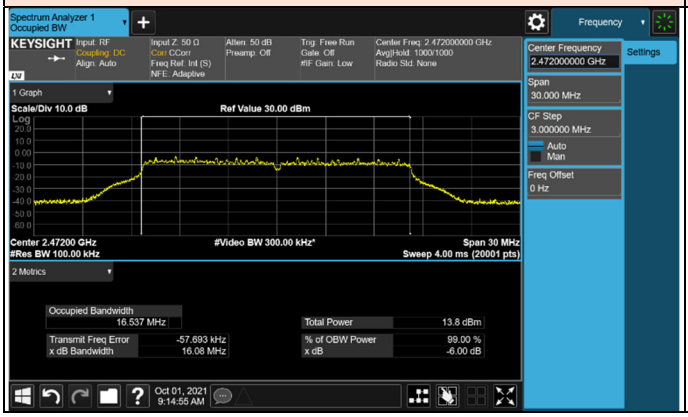	-

802.11n(HT20)	
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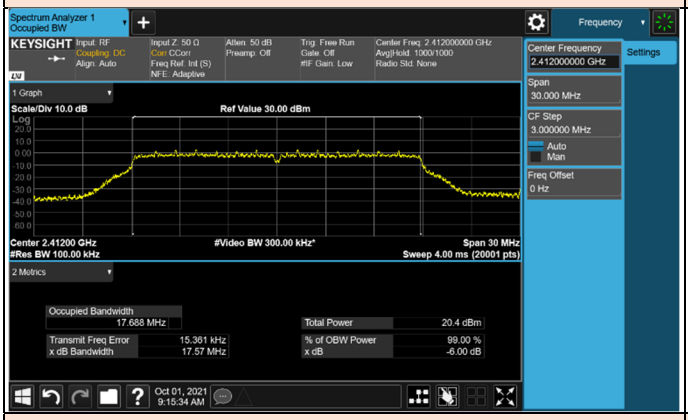	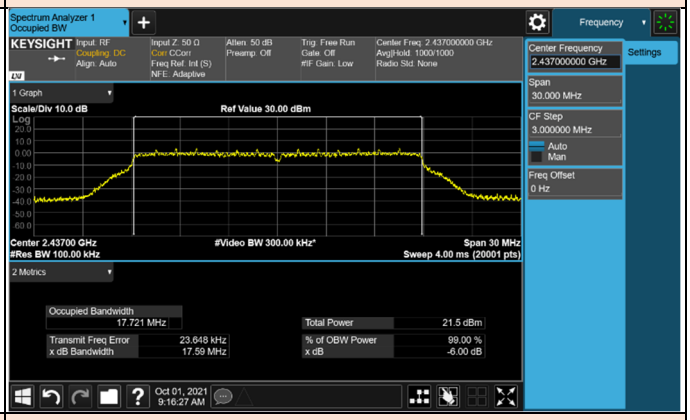
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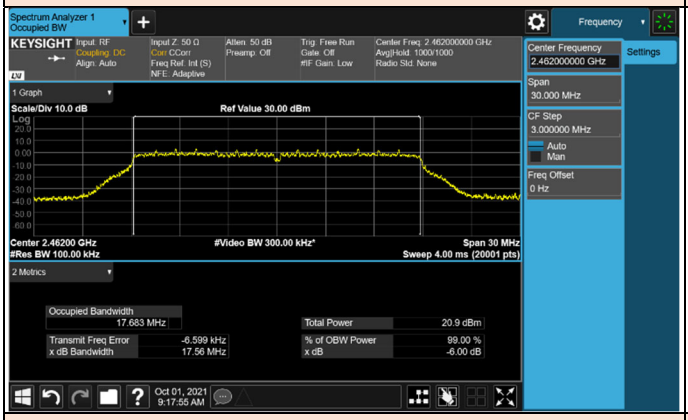	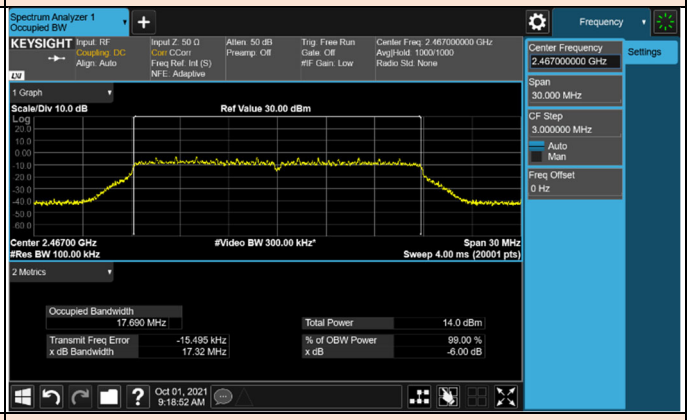
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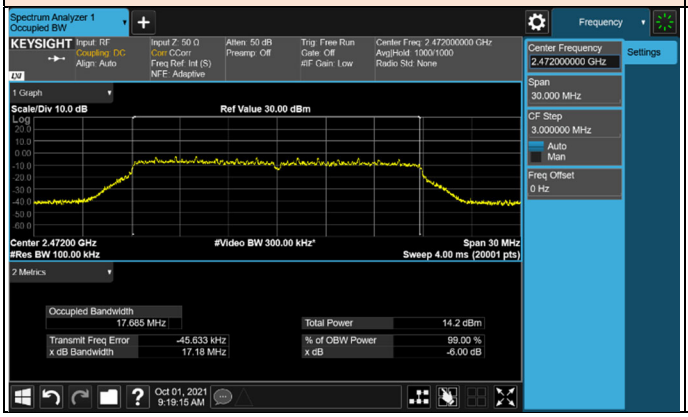
	-

3.3 Maximum Peak Output Power

3.3.1 Regulation

§15.247(b)(3) : For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

§15.247(b)(4) : The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Test Procedure

General

Section 15.247 permits the maximum conducted (average) output power to be measured as an alternative to the maximum peak conducted output power for demonstrating compliance to the limit. When this option is exercised, the measured power is to be referenced to the OBW rather than the DTS bandwidth (see ANSI C63.10 for measurement guidance).

When using a spectrum analyzer or EMI receiver to perform these measurements, it shall be capable of utilizing a number of measurement points in each sweep that is greater than or equal to twice the span/RBW to set a bin-to-bin spacing of ≤ RBW/2 so that narrowband signals are not lost between frequency bins.

If possible, configure or modify the operation of the EUT so that it transmits continuously at its maximum power control level. The intent is to test at 100 % duty cycle; however a small reduction in duty cycle (to no lower than 98 %) is permitted, if required by the EUT for amplitude control purposes. Manufacturers are expected to provide software to the test lab to permit such continuous operation.

If continuous transmission (or at least 98 % duty cycle) cannot be achieved due to hardware limitations (e.g., overheating), the EUT shall be operated at its maximum power control level, with the transmit duration as long as possible, and the duty cycle as high as possible during which sweep triggering/signal gating techniques may be used to perform the measurement over the transmission duration.

3.3.2.1 Maximum peak conducted output power

One of the following procedures may be used to determine the maximum peak conducted output power of a DTS EUT.

RBW ≥ DTS bandwidth

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

a) Set the RBW ≥ DTS bandwidth.

b) Set VBW ≥ [3 × RBW].

c) Set span ≥ [3 × RBW].

d) Sweep time = auto couple.

e) Detector = peak.

f) Trace mode = max hold.

g) Allow trace to fully stabilize.

h) Use peak marker function to determine the peak amplitude level.

PKPM1 Peak power meter method

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

Measurement using a power meter (PM)

Method AVGPM is a measurement using an RF average power meter, as follows:

a) As an alternative to spectrum analyzer or EMI receiver measurements, measurements maybe performed using a wideband RF power meter with a thermocouple detector or equivalent
if all of the conditions listed below are satisfied:
   1) The EUT is configured to transmit continuously, or to transmit with a constant duty cycle.
   2) At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.
   3) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

b) If the transmitter does not transmit continuously, measure the duty cycle, D, of the transmitter output signal as described in 11.6.

c) Measure the average power of the transmitter. This measurement is an average over both the ON and OFF periods of the transmitter.

d) Adjust the measurement in dBm by adding [10 log(1/D)], where D is the duty cycle

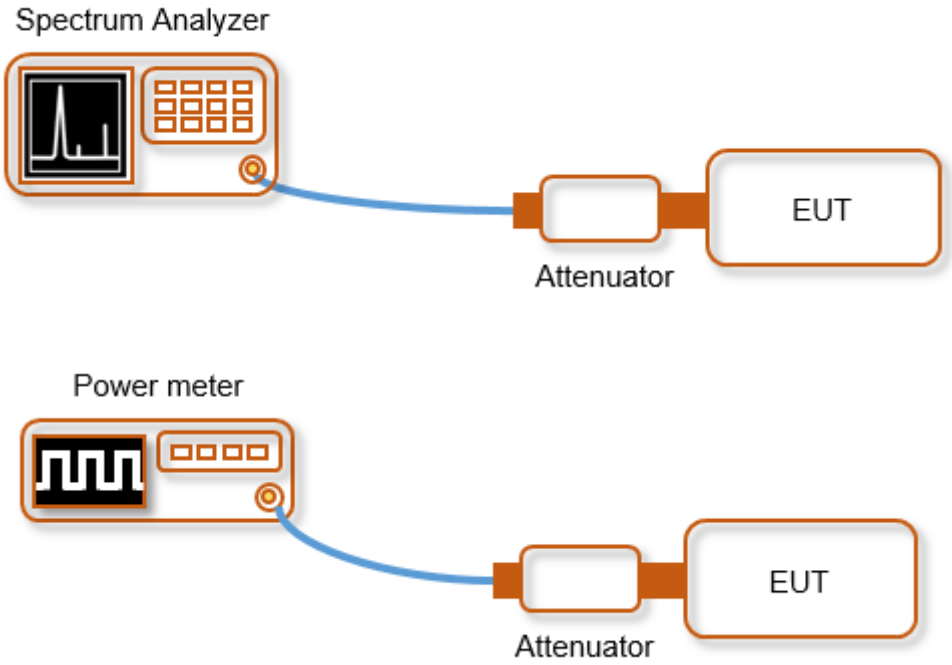
Notes:

A peak responding power sensor is used, where the power sensor system video bandwidth is greater than the occupied bandwidth of the EUT.

3.3.3 Deviation from Test Standard

No deviation.

3.3.4 Test Setup



3.3.5 Test Result

[Test Result of Peak Power]

Frequency Range [MHz]	Antenna Gain [dBi]	Correlated Directional Gain [dBi]	Power Limit [dBm]	Max. Power [dBm]
2 412 - 2 472	-7.70	N/A	30.00	25.16

Duty Cycle Correction Factor	
802.11b	0.00 dB
802.11g	0.32 dB
802.11n(HT20)	0.35 dB

Test Mode	Channel	Frequency [MHz]	Measured Power [dBm]	Peak Power Result [dBm]	Power Limit [dBm]
802.11b	1	2 412	20.66	20.66	30.00
	6	2 437	20.91	20.91	
	11	2 462	20.55	20.55	
	12	2 467	12.00	12.00	
	13	2 472	12.17	12.17	
802.11g	1	2 412	24.69	24.69	30.00
	6	2 437	24.84	24.84	
	11	2 462	24.63	24.63	
	12	2 467	19.58	19.58	
	13	2 472	19.32	19.32	
802.11n (HT20)	1	2 412	25.00	25.00	30.00
	6	2 437	24.84	24.84	
	11	2 462	25.16	25.16	
	12	2 467	21.03	21.03	
	13	2 472	20.64	20.64	

[Test Result of Average Power]

Frequency Range [MHz]	Antenna Gain [dBi]	Correlated Directional Gain [dBi]	Power Limit [dBm]	Max. Power [dBm]
2 412 - 2 472	-7.70	N/A	30.00	18.22

Duty Cycle Correction Factor	
802.11b	0.00 dB
802.11g	0.32 dB
802.11n(HT20)	0.34 dB

Test Mode	Channel	Frequency [MHz]	Measured Power [dBm]	Average Power Result [dBm]	Power Limit [dBm]
802.11b	1	2 412	17.30	17.30	30.00
	6	2 437	18.22	18.22	
	11	2 462	17.79	17.79	
	12	2 467	8.32	8.32	
	13	2 472	8.41	8.41	
802.11g	1	2 412	15.56	15.88	30.00
	6	2 437	16.32	16.64	
	11	2 462	15.83	16.15	
	12	2 467	7.81	8.13	
	13	2 472	7.84	8.16	
802.11n (HT20)	1	2 412	14.65	14.99	30.00
	6	2 437	15.05	15.39	
	11	2 462	15.03	15.37	
	12	2 467	7.86	8.20	
	13	2 472	7.92	8.26	

3.4 Power Spectral Density

3.4.1 Regulation

§15.247(e) : For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

3.4.2 Test Procedure

The following procedure shall be used if maximum peak conducted output power was used to determine compliance, and it is optional if the maximum conducted (average) output power was used to determine compliance:

a) Set analyzer center frequency to DTS channel center frequency.

b) Set the span to 1.5 times the DTS bandwidth.

c) Set the RBW to 3 kHz ≤ RBW ≤ 100 kHz.

d) Set the VBW ≥ [3 × RBW].

e) Detector = peak.

f) Sweep time = auto couple.

g) Trace mode = max hold.

h) Allow trace to fully stabilize.

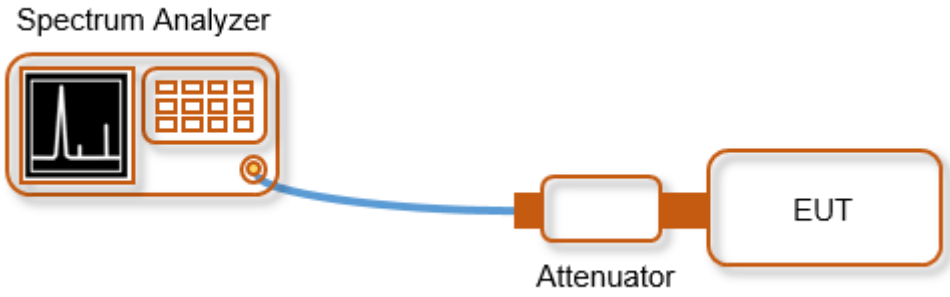
i) Use the peak marker function to determine the maximum amplitude level within the RBW.

j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

3.4.3 Deviation from Test Standard

No deviation.

3.4.4 Test Setup



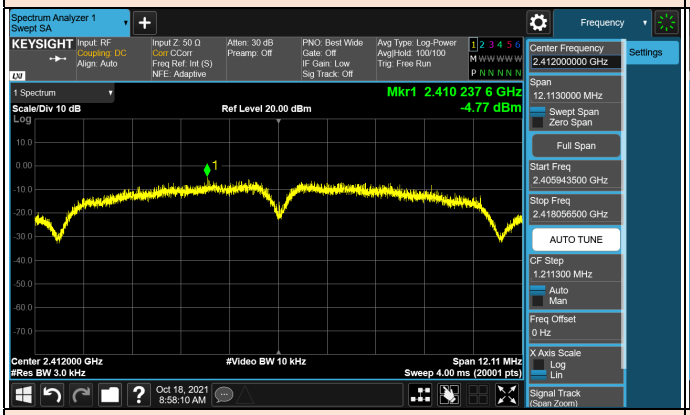
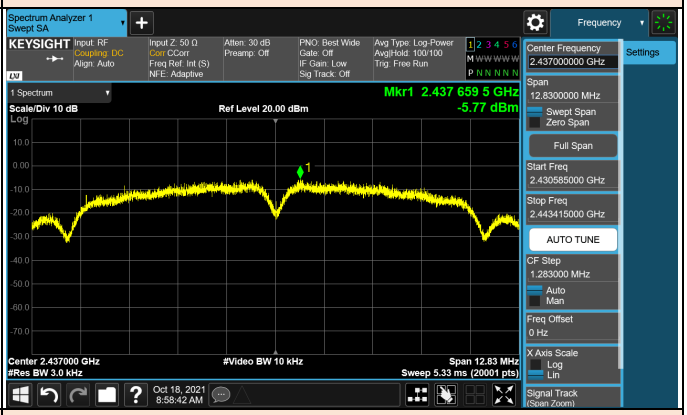
3.4.5 Test Result

[Test Data of Power Spectral Density]

Duty Cycle Correction Factor	
802.11b	0.00 dB
802.11g	0.32 dB
802.11n(HT20)	0.34 dB

Test Mode	Channel	Frequency [MHz]	Measured Power [dBm]	Result [dBm]	Margin [dB]	Power Limit [dBm]
802.11b	1	2 412	-4.77	-4.77	12.77	8.00
	6	2 437	-5.77	-5.77	13.77	
	11	2 462	-5.98	-5.98	13.98	
	12	2 467	-13.28	-13.28	21.28	
	13	2 472	-14.97	-14.97	22.97	
802.11g	1	2 412	-8.75	-8.43	16.43	8.00
	6	2 437	-8.88	-8.56	16.56	
	11	2 462	-8.63	-8.31	16.31	
	12	2 467	-16.35	-16.03	24.03	
	13	2 472	-16.04	-15.72	23.72	
802.11n (HT20)	1	2 412	-10.05	-9.71	17.71	8.00
	6	2 437	-9.05	-8.71	16.71	
	11	2 462	-10.32	-9.98	17.98	
	12	2 467	-17.25	-16.91	24.91	
	13	2 472	-16.62	-16.28	24.28	

[Test Plot of Power Spectral Density]

802.11b	
2 412 MHz	2 437 MHz
	
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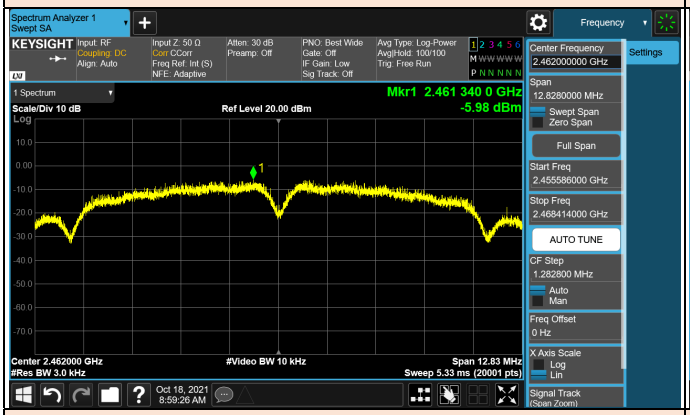	
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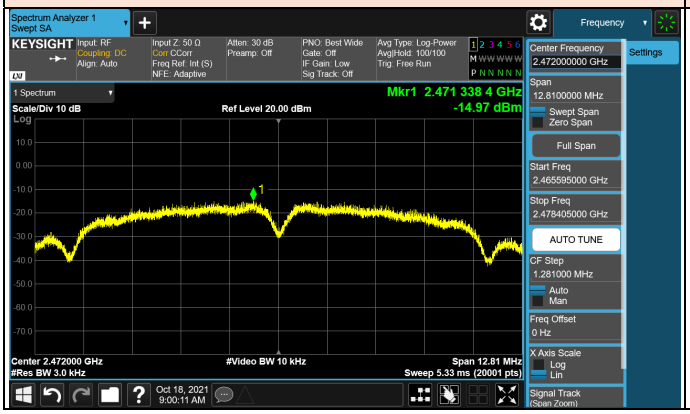	-

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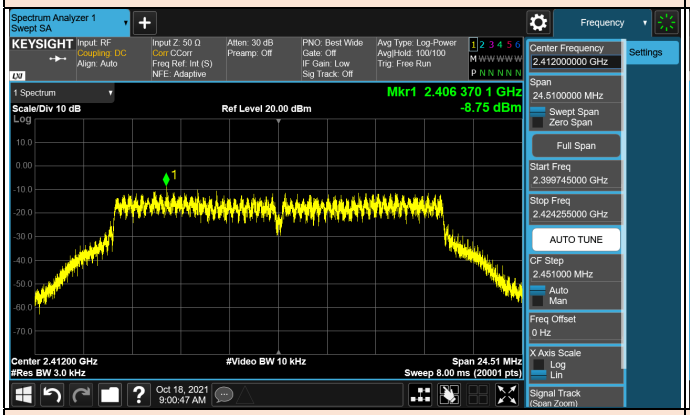
2 412 MHz	2 437 MHz
	
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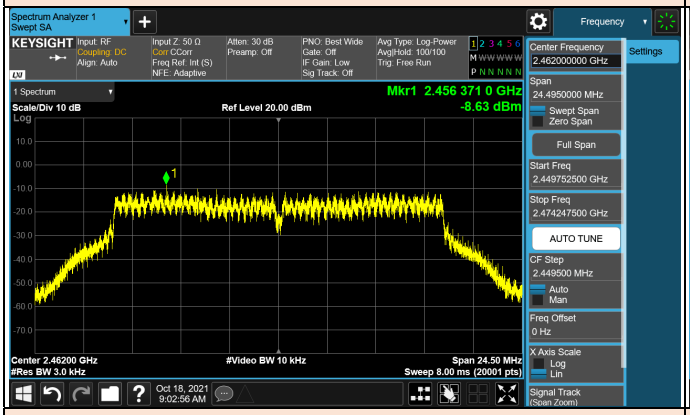	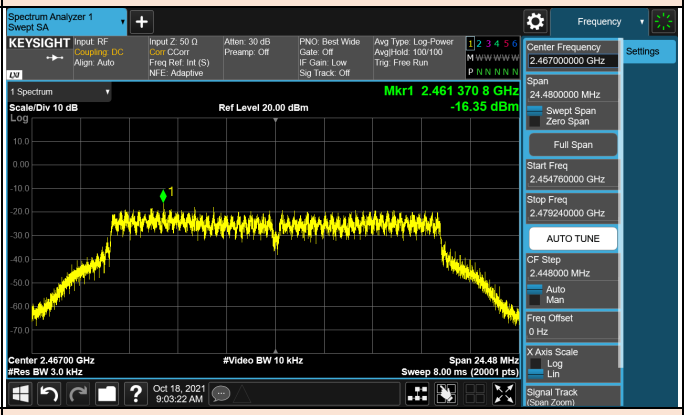
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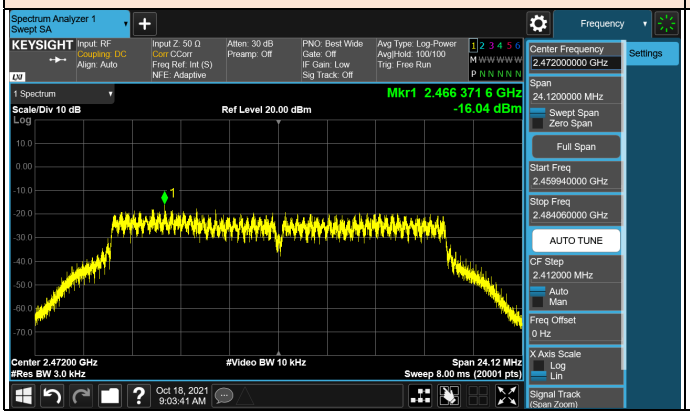	-