

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT



Applicant: Montblanc-Simplo GmbH
Hellgrundweg 100 22525 Hamburg Germany

Product Name: Summit

Brand Name: Montblanc

Model No.: S3T22

Model Difference: N/A

Report Number: ER/2021/B0046

FCC ID 2AENP-S3T22

IC: 20163-S3T22

Issue Date: Jan. 06, 2022

Date of Test: Nov. 25, 2021~Dec. 28, 2021

Date of EUT Received: Nov. 16, 2021

Approved By _____

Blue Yang

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Central RF Lab. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT comply with FCC rule part §15.247, ISSED RSS-247.

The results of this report relate only to the sample identified in this report.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
ER/2021/B0046	00	Original.	Jan. 06, 2022	Yami Kuo	

Note:

- 1、The remark "*" indicates modification of the report upon requests from certification body.
- 2、Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

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Table of Contents

1	GENERAL INFORMATION.....	4
2	SYSTEM TEST CONFIGURATION.....	7
3	SUMMARY OF TEST RESULTS	10
4	DESCRIPTION OF TEST MODES	11
5	MEASUREMENT UNCERTAINTY	13
6	MEASUREMENT EQUIPMENT USED	14
7	CONDUCTED EMISSION TEST	16
8	DUTY CYCLE OF TEST SIGNAL	20
9	PEAK OUTPUT POWER MEASUREMENT	22
10	EMISSION BANDWIDTH MEASUREMENT	26
11	CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT	35
12	RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT	46
13	POWER SPECTRAL DENSITY	106
14	ANTENNA REQUIREMENT	111

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1 GENERAL INFORMATION

1.1 Product Description

Product Name:	Summit
Brand Name:	Montblanc
Model No.:	S3T22
Model Difference:	N/A
Hardware Version:	N/A
Firmware Version:	N/A
EUT Series No.:	MBHM1VQ02(Conducted) MBHM1VQ64(Conduction & Radiated)
Power Supply:	3.8Vdc from rechargeable Lithium polymer battery or 5Vdc from USB port
Test Software (Name/Version)	PI eng.supers.20211104.151948

1.2 RF Specification

WLAN 2.4GHz

Wi-Fi	Frequency Range	Channels	Rated Power in dBm (Peak)	Modulation Technology
802.11b	2412~2472	13	17.27	DSSS
802.11g	2412~2472	13	19.25	OFDM
802.11n20	2412~2472	13	19.20	OFDM
Modulation type:		CCK, DQPSK, DBPSK for DSSS		
		64QAM, 16QAM, QPSK, BPSK for OFDM		
Data Rate:		802.11 b: 1/2/5.5/11 Mbps		
		802.11 g: 6/9/12/18/24/36/48/54 Mbps		
		802.11 n_20MHz:6.5 - 72.2Mbps		

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WLAN 2.4GHz for IC

Wi-Fi	Frequency Range	Channels	Rated Power in dBm (Peak)	Rated Power in dBm (EIRP)	Modulation Technology
802.11b	2412~2472	13	17.27	7.24	DSSS
802.11g	2412~2472	13	19.25	2.39	OFDM
802.11n20	2412~2472	13	19.20	2.36	OFDM
Modulation type:		CCK, DQPSK, DBPSK for DSSS			
		64QAM, 16QAM, QPSK, BPSK for OFDM			
Data Rate:		802.11 b: 1/2/5.5/11 Mbps			
		802.11 g: 6/9/12/18/24/36/48/54 Mbps			
		802.11 n_20MHz:6.5 - 72.2Mbps			

1.3 Antenna Designation

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)
Loop	COMPAL	DBW5	2400 - 2485	-7.6

Note:

1. Antenna information is provided by the applicant.

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1.4 Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.247

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

RSS-247 issue 2 Feb. 2017

RSS-Gen, Issue 5 (Amendment 2, February 2021)

ANSI C63.10:2013

1.5 Test Facility

Laboratory	Test Site Address	Test Site Name	FCC Designation number	IC CAB identifier
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	No.134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan.	SAC 1	TW0027	TW3702
		SAC 3		
		Conduction 1		
		Conducted 1		
		Conducted 2		
		Conducted 3		
		Conducted 4		
		Conducted 5		
		Conducted 6		
	No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333	Conduction C	TW0028	
		SAC C		
		SAC D		
		SAC G		
		Conducted A		
		Conducted B		
		Conducted C		
		Conducted D		
		Conducted E		
		Conducted F		
		Conducted G		
Note: Test site name is remarked on the equipment list in each section of this report as an indication where measurements occurred in specific test site and address.				

1.6 Special Accessories

There are no special accessories used while test was conducted.

1.7 Equipment Modifications

There was no modification incorporated into the EUT.

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2 SYSTEM TEST CONFIGURATION

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is placed on a table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz. The CISPR Quasi-Peak and Average detector mode is employed. The two LISNs provide 50 μ H/50 Ω of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

2.3.2 Conducted Test (RF)

The active antenna port of the unlicensed wireless device is connected to the spectrum analyzer with attenuator to protect the instrumentation. If a second antenna port is available, it is tested at one operating frequency, with other port(s) appropriately terminated, to verify it has similar output characteristics as the fully tested port.

2.3.3 Radiated Emissions

The EUT is placed on a turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

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2.4 Measurement Results Explanation Example

2.4.1 Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz

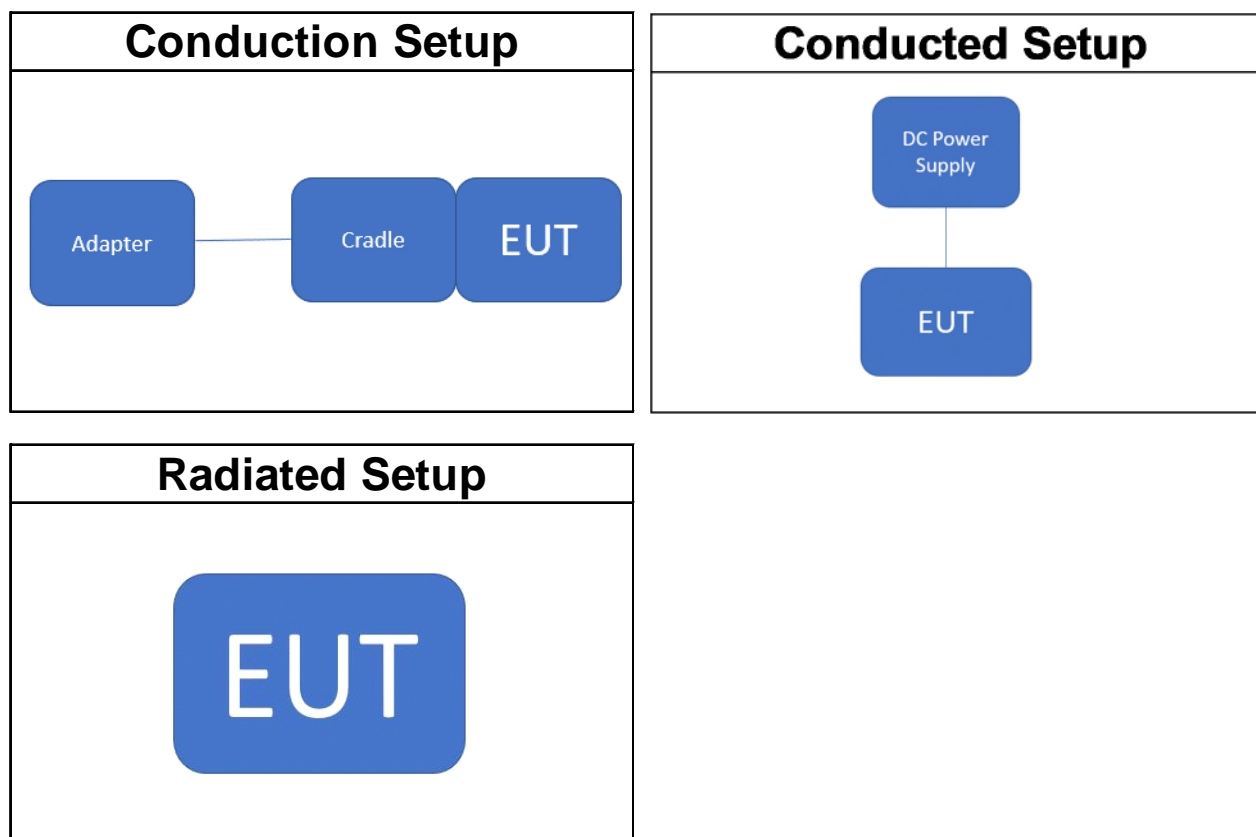
Radiated emission below 30MHz is measured in a 9m*6m*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

2.4.2 For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level.

2.5 Test Configuration



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2.6 Control Unit(s)

Conducted Emission Test Site: Conduction 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Test Software	audix	e3	Ver. 9 210322	N.C.R	N.C.R
Adapter	APPLE	A1385	N/A	N/A	N/A
Cradle	Montblanc	SRB-A011A	N/A	N/A	N/A
USB cable	Montblanc	HW-COC001	N/A	N/A	N/A

Conducted Emission Test Site: Conducted 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Test Software	SGS	Radio Test Software	Ver. 21	N.C.R	N.C.R

Radiated Emission Test Site: SAC 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Test Software	audix	e3	Ver. 9 210322	N.C.R	N.C.R

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3 SUMMARY OF TEST RESULTS

FCC Rules	IC Rules	Description Of Test	Result
§15.207(a)	RSS-Gen §8.8	AC Power Line Conducted Emission	Compliant
§15.247(b) (3)	RSS-247 §5.4 d	Peak Output Power	Compliant
§15.247(a)(2)	RSS-247 §5.2 a RSS-Gen §6.7	Emission Bandwidth	Compliant
§15.205 §15.209 §15.247(d)	RSS-247 §5.5 RSS-Gen §8.9 RSS-Gen §8.10 RSS-Gen §6.13	Radiated & Conducted Band Edge and Spurious Emission	Compliant
§15.247(e)	RSS-247 §5.2 b	Power Spectral Density	Compliant
§15.203	N/A	Antenna Requirement	Compliant

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4 DESCRIPTION OF TEST MODES

4.1 Operatin Frequencies

Modulation of 20MHz nominal bandwidth

CHANNEL	FREQUENCY (MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462
12	2467
13	2472

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4.2 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
3. Investigation has been done on all the possible configurations for searching the worst case.

The gevin UE is pre-scanned among below modes.

Modulation	Transmission Chain				Single Transmission Spatial	Multiple Transmission Spatial
<input checked="" type="checkbox"/> 802.11 b	<input checked="" type="checkbox"/> Ch0	<input type="checkbox"/> Ch1	<input type="checkbox"/> Ch2	<input type="checkbox"/> Ch3	<input checked="" type="checkbox"/> 1TX	<input type="checkbox"/> 2TX
<input checked="" type="checkbox"/> 802.11 g	<input checked="" type="checkbox"/> Ch0	<input type="checkbox"/> Ch1	<input type="checkbox"/> Ch2	<input type="checkbox"/> Ch3	<input checked="" type="checkbox"/> 1TX	<input type="checkbox"/> 2TX
<input checked="" type="checkbox"/> 802.11 n	<input checked="" type="checkbox"/> Ch0	<input type="checkbox"/> Ch1	<input type="checkbox"/> Ch2	<input type="checkbox"/> Ch3	<input checked="" type="checkbox"/> SISO	<input type="checkbox"/> MIMO
<input type="checkbox"/> 802.11 ax	<input type="checkbox"/> Ch0	<input type="checkbox"/> Ch1	<input type="checkbox"/> Ch2	<input type="checkbox"/> Ch3	<input type="checkbox"/> SISO	<input type="checkbox"/> MIMO

4. Therefore, below summary is the modes of test configuration that yield the highest reading and generate the highest emission chosen to carry out the relevantly mandatory test items.

Conducted					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 13	1,6,11,12,13	DSSS	1	ch0
802.11g	1 to 13	1,6,11,12,13	OFDM	6	ch0
802.11n (HT20)	1 to 13	1,6,11,12,13	OFDM	MCS0	ch0

RADIATED EMISSION TEST (BELOW 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11g	1 to 13	1,6,11,12,13	OFDM	6	ch0

RADIATED EMISSION TEST (ABOVE 1 GHz)					
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT
802.11b	1 to 13	1,6,11,12,13	DSSS	1	ch0
802.11g	1 to 13	1,6,11,12,13	OFDM	6	ch0
802.11n (HT20)	1 to 13	1,6,11,12,13	OFDM	MCS0	ch0

Note:

The field strength of radiated emission was measured as the EUT positioned in different orthogonal planes (E1/E2/H) based on actual usage of the EUT to pre-scan the emissions for determining the worst case scenario.

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5 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty
AC Power Line Conducted Emission	+/- 2.34 dB
Emission Bandwidth	+/- 1.53 Hz
The Maximum Output Power Measurement	+/- 1 dB
Peak Power Spectral Density Measurement	+/- 1.53 dB
Frequency Stability	+/- 1.53 Hz
Temperature	+/- 0.4 °C
Humidity	+/- 3.5 %
DC / AC Power Source	+/- 1 %

Radiated Spurious Emission Measurement Uncertainty			
Polarization: Vertical	+/-	2.64 dB	9kHz~30MHz
	+/-	4.93 dB	30MHz - 1000MHz
	+/-	4.81 dB	1GHz - 18GHz
	+/-	4.52 dB	18GHz - 40GHz
Polarization: Horizontal	+/-	2.64 dB	9kHz~30MHz
	+/-	4.45 dB	30MHz - 1000MHz
	+/-	4.81 dB	1GHz - 18GHz
	+/-	4.52 dB	18GHz - 40GHz

Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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6 MEASUREMENT EQUIPMENT USED

6.1 Emission from AC power line

Conducted Emission Test Site: Conduction 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCI 7	100759	08/26/2021	08/25/2022
LISN	SCHWARZBECK	NSLK 8127	8127-465	04/09/2021	04/08/2022
Coaxial Cables	N/A	Coaxial Cable	161207	12/07/2021	12/06/2022

6.2 Conducted Measurement

Conducted Emission Test Site: Conducted 2					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EXA Spectrum Analyzer	KEYSIGHT	N9010B	MY60242081	09/30/2021	09/29/2022
Power Meter	Anritsu	ML2496A	1804001	03/02/2021	03/01/2022
Power Sensor	Anritsu	MA2411B	1726104	03/02/2021	03/01/2022
Power Sensor	Anritsu	MA2411B	1726107	03/02/2021	03/01/2022
Attenuator	Mini-Circuit	BW-S10W2+	2	12/16/2020	12/15/2021
Attenuator	Mini-Circuit	BW-S10W2+	2	12/14/2021	12/13/2022
DC Power Supply	Gwinstek	SPS-3610	GEV856750	08/04/2021	08/03/2022
DC Block	Mini-Circuits	BLK-18-S+	1	12/16/2020	12/15/2021
DC Block	Mini-Circuits	BLK-18-S+	1	12/14/2021	12/13/2022

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6.3 Radiated Measurement

Radiated Emission Test Site: SAC 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Horn Antenna	SCHWARZBECK	BBHA9170	184	12/11/2020	12/10/2021
Horn Antenna	SCHWARZBECK	BBHA9120D	1441	09/27/2021	09/26/2022
Bi-log Antenna	SCHWARZBECK	VULB9168	378	08/20/2021	08/19/2022
Loop Antenna	ETS.LINDGREN	6502	148045	09/29/2021	09/28/2022
PXA Spectrum Analyzer	Agilent	N9030A	MY53120760	04/27/2021	04/26/2022
EMI Test Receiver	R&S	ESCI 7	100759	08/26/2021	08/25/2022
Pre-Amplifier	HP	8449B	3008A00578	12/16/2020	12/15/2021
Pre-Amplifier	EMC Instruments	EMC184045B	980135	12/16/2020	12/15/2021
Pre-Amplifier	HP	8447D	2944A07676	12/16/2020	12/15/2021
Attenuator	Mini-Circuit	BW-S10W2+	4	12/16/2020	12/15/2021
Filter 2400-2483.5 MHz	EWT	EWT-14-0166	M1	12/16/2020	12/15/2021
High Pass Filter	WI	WHKX4.0/18G-10SS	22	12/16/2020	12/15/2021
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2636/2	12/16/2020	12/15/2021
Coaxial Cable	Huber Suhner	SUCOFLEX 104	340057/4	12/16/2020	12/15/2021
Coaxial Cable	Huber Suhner	SUCOFLEX 104PEA	800052/2	12/16/2020	12/15/2021
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2621/2	12/16/2020	12/15/2021
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2617/2	12/16/2020	12/15/2021
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY2630/2	12/16/2020	12/15/2021
Coaxial Cable	Huber Suhner	SUCOFLEX 102	MY22962/2	12/16/2020	12/15/2021
Site Cal	SGS	SAC 3	N/A	01/01/2021	12/31/2021

NOTE: N.C.R refers to Not Calibrated Required.

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7 CONDUCTED EMISSION TEST

7.1 Standard Applicable

Frequency range within 150kHz to 30MHz shall not exceed the Limit table as below.

Frequency range MHz	Limits (dBuV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note 1.The lower limit shall apply at the transition frequencies 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

7.2 Measurement Equipment Used

Conducted Emission Test Site: Conduction 1					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCI 7	100759	08/26/2021	08/25/2022
LISN	SCHWARZBECK	NSLK 8127	8127-465	04/09/2021	04/08/2022
Coaxial Cables	N/A	Coaxial Cable	161207	12/07/2021	12/06/2022

7.3 EUT Setup

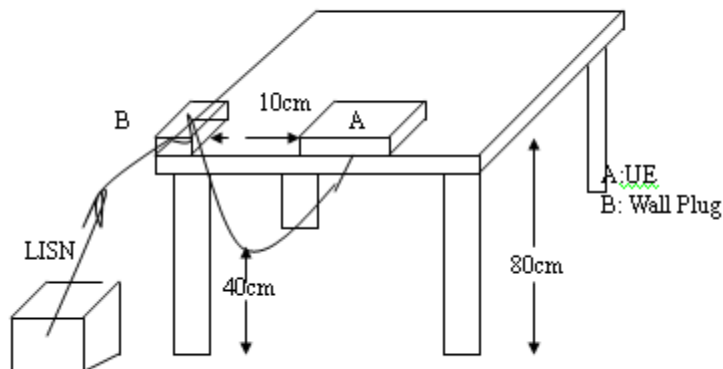
1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.10:2013.
2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
3. The LISN was connected with 120Vac/60Hz power source.

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7.4 Test Setup



7.5 Measurement Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all phases of power being supplied by given UE are completed

7.6 Measurement Result

Note: Refer to next page for measurement data and plots.

Note2: The * reveals the worst-case results that closet to the limit.

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AC POWER LINE CONDUCTED EMISSION TEST DATA

Report Number :ER-2021-B0046

Test Site :Conduction 1

Test Mode :WLAN 2.4G

Test Date :2021-12-06

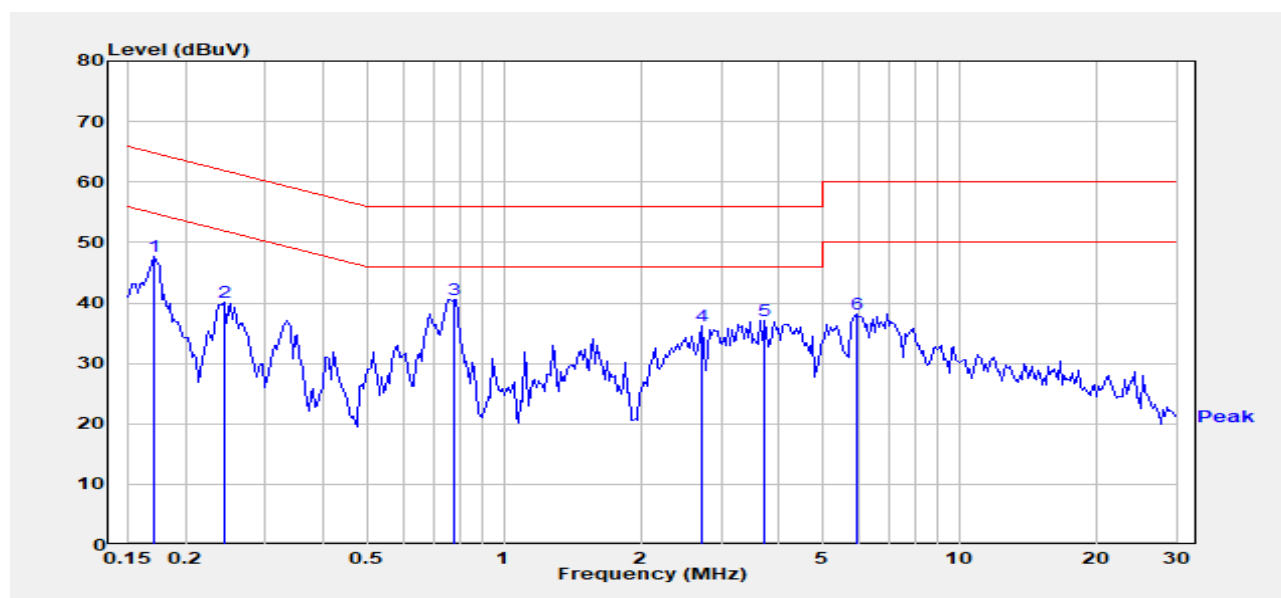
Power :120V/60Hz

Temp./Humi. :23.6/56

Probe :L

Engineer :Ricky Chen

Note: :



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
Mode	Reading Level	FS				
MHz	PK/QP/AV	dBμV	dB	dBμV	dBμV	dB
0.170	Peak	45.51	2.12	47.63	64.94	-17.31
0.244	Peak	38.01	2.12	40.13	61.95	-21.82
0.775	Peak	38.49	2.13	40.61	56.00	-15.39
2.736	Peak	33.70	2.44	36.15	56.00	-19.85
3.720	Peak	34.38	2.73	37.12	56.00	-18.88
5.993	Peak	35.59	2.56	38.16	60.00	-21.84

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Report Number :ER-2021-B0046

Test Mode :WLAN 2.4G

Power :120V/60Hz

Probe :N

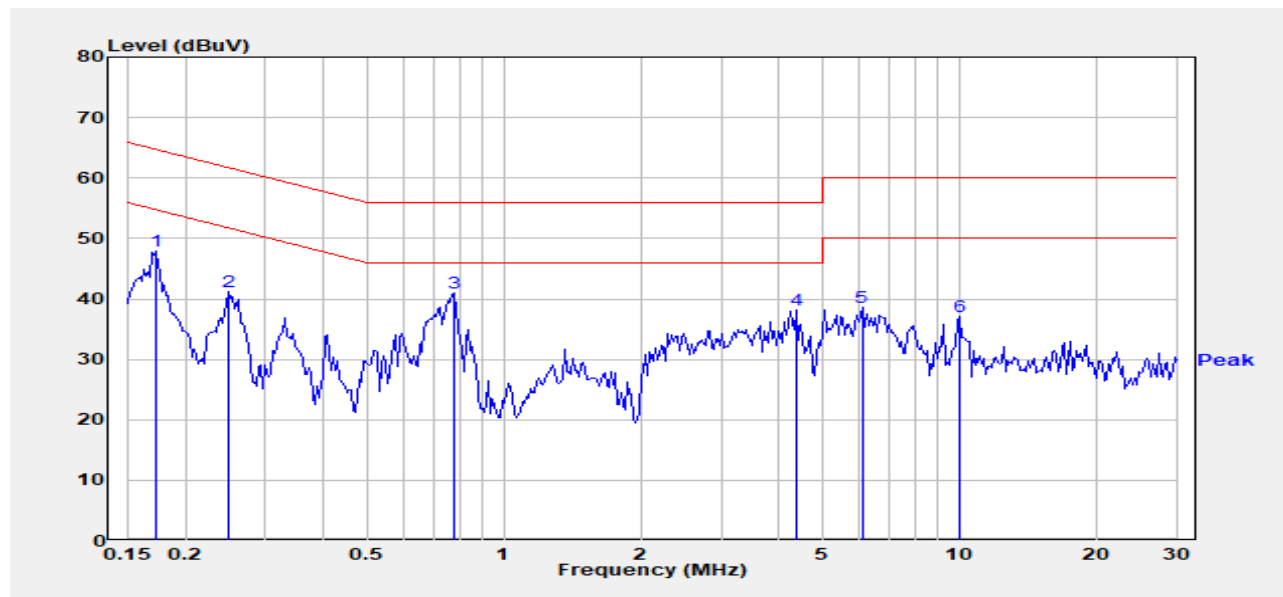
Note: :

Test Site :Conduction 1

Test Date :2021-12-06

Temp./Humi. :23.6/56

Engineer :Ricky Chen



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
Mode		Reading Level		FS		
MHz	PK/QP/AV	dB μ V	dB	dB μ V	dB μ V	dB
0.172	Peak	45.66	2.21	47.86	64.86	-16.99
0.249	Peak	38.93	2.24	41.18	61.78	-20.60
0.775	Peak	38.91	2.13	41.04	56.00	-14.96
4.407	Peak	36.06	2.19	38.25	56.00	-17.75
6.121	Peak	36.28	2.22	38.50	60.00	-21.50
10.072	Peak	34.87	2.27	37.14	60.00	-22.86

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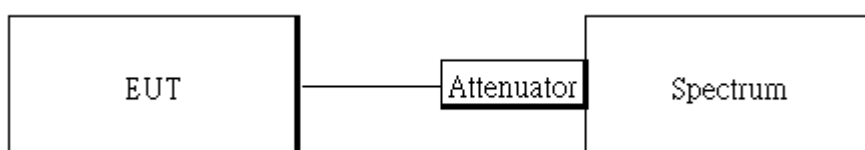
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8 DUTY CYCLE OF TEST SIGNAL

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

8.1 Test Setup



8.2 Measurement Procedure:

1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

8.3 Duty Cycle:

	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11b	97.67	0.10	0.12	1.00
802.11g	87.32	0.59	0.73	1.00
802.11n_20	86.57	0.63	0.78	1.00

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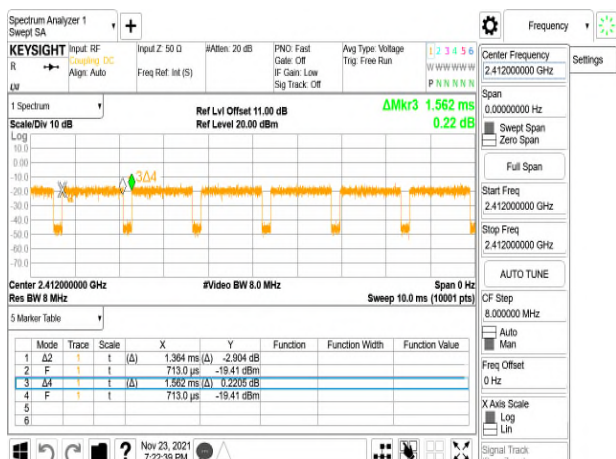
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8.4 Duty Cycle test plots

802.11b_20MHz_Chain0_2412MHz



802.11g_20MHz_Chain0_2412MHz



802.11n_20MHz_Chain0_2412MHz



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9 PEAK OUTPUT POWER MEASUREMENT

9.1 Standard Applicable

For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt and the e.i.r.p. shall not exceed 4 W.

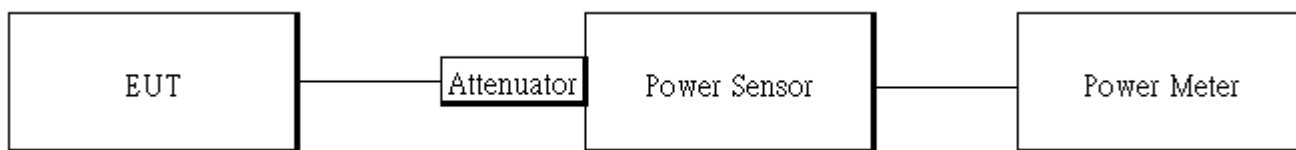
If the transmitting antenna of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6dBi.

In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

The antenna gain is not greater than 6 dBi. Therefore, reduction of power is not required.

9.2 Test Setup

Power Meter:



9.3 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.

Power Meter:

It is used as the auxiliary test equipment to conduct the output power measurement.

4. Record the max. Reading as observed from Spectrum or Power Meter.

*** Note: The duty cycle factor and below is compensated to obtain the maximum value of measurement in average.**

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9.4 Measurement Result

802.11b Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	1	15	16.86	30.00	PASS
6	2437	1	15	16.71	30.00	PASS
11	2462	1	15	17.27	30.00	PASS
12	2467	1	15	16.99	30.00	PASS
13	2472	1	13	16.52	30.00	PASS
802.11b Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	1	15	14.65	30.00	PASS
6	2437	1	15	14.50	30.00	PASS
11	2462	1	15	14.84	30.00	PASS
12	2467	1	15	14.54	30.00	PASS
13	2472	1	13	13.75	30.00	PASS
802.11g Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	6	10	19.25	30.00	PASS
6	2437	6	10	18.73	30.00	PASS
11	2462	6	10	18.88	30.00	PASS
12	2467	6	10	18.69	30.00	PASS
13	2472	6	0	11.39	30.00	PASS
802.11g Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	6	10	9.99	30.00	PASS
6	2437	6	10	9.58	30.00	PASS
11	2462	6	10	9.71	30.00	PASS
12	2467	6	10	9.56	30.00	PASS
13	2472	6	0	1.89	30.00	PASS

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802.11nHT_20M Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Peak Output Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	10	19.20	30.00	PASS
6	2437	MCS0	10	18.13	30.00	PASS
11	2462	MCS0	10	18.58	30.00	PASS
12	2467	MCS0	10	18.40	30.00	PASS
13	2472	MCS0	0	11.22	30.00	PASS
802.11nHT_20M Ch0						
CH	Freq. (MHz)	Data Rate	Power set	Max. Avg. Output include tune up tolerance Power (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	10	9.96	30.00	PASS
6	2437	MCS0	10	9.50	30.00	PASS
11	2462	MCS0	10	9.74	30.00	PASS
12	2467	MCS0	10	9.52	30.00	PASS
13	2472	MCS0	0	1.84	30.00	PASS

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802.11b Ch0							
CH	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
1	2412	1	14.65	-7.60	7.05	36	PASS
6	2437	1	14.50	-7.60	6.90	36	PASS
11	2462	1	14.84	-7.60	7.24	36	PASS
12	2467	1	14.54	-7.60	6.94	36	PASS
13	2472	1	13.75	-7.60	6.15	36	PASS

802.11g Ch0							
CH	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
1	2412	6	9.99	-7.60	2.39	36	PASS
6	2437	6	9.58	-7.60	1.98	36	PASS
11	2462	6	9.71	-7.60	2.11	36	PASS
12	2467	6	9.56	-7.60	1.96	36	PASS
13	2472	6	1.89	-7.60	-5.71	36	PASS

802.11nHT_20M Ch0							
CH	Freq. (MHz)	Data Rate	Avg. Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	RESULT
1	2412	MCS0	9.96	-7.60	2.36	36	PASS
6	2437	MCS0	9.50	-7.60	1.90	36	PASS
11	2462	MCS0	9.74	-7.60	2.14	36	PASS
12	2467	MCS0	9.52	-7.60	1.92	36	PASS
13	2472	MCS0	1.84	-7.60	-5.76	36	PASS

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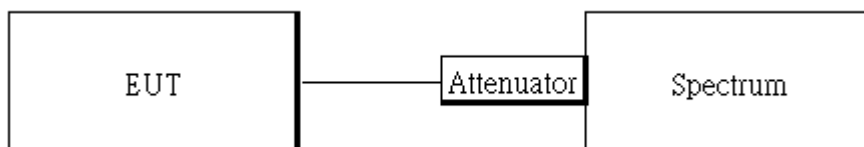
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10 EMISSION BANDWIDTH MEASUREMENT

10.1 Standard Applicable

The minimum 6 dB bandwidth shall be at least 500 kHz.

10.2 Test Setup



10.3 Measurement Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
4. Set the spectrum analyzer as
RBW= 100kHz ,
VBW = 3 X RBW ,
Span= 2 to 5 times of the OBW ,
Sweep=auto,
Detector = Peak, and Max hold for -6dB Bandwidth test.
5. Set the spectrum analyzer as
RBW= 1 % to 5% of 99% Bandwidth ,
VBW \geq 3 X RBW ,
Span= large enough to capture all products of the modulation process,
Sweep=auto,
Detector = Peak, and Max hold for 99% Bandwidth test.
6. Turn on the 99% bandwidth function, max reading.
7. Repeat above procedures until all test default channel is completed

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10.4 6dB Bandwidth

802.11b Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	8115	≥ 500	PASS
2437	8092	≥ 500	PASS
2462	8582	≥ 500	PASS
2467	8558	≥ 500	PASS
2472	8566	≥ 500	PASS

802.11g Ch0

Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	16420	≥ 500	PASS
2437	16400	≥ 500	PASS
2462	16390	≥ 500	PASS
2467	16390	≥ 500	PASS
2472	16430	≥ 500	PASS

802.11nHT_20M Ch0

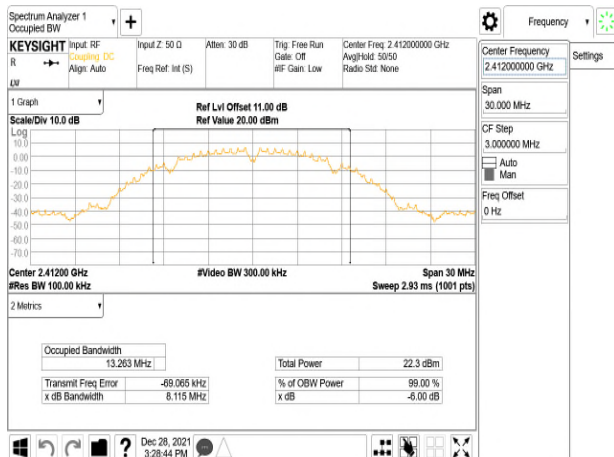
Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result
2412	17610	≥ 500	PASS
2437	17600	≥ 500	PASS
2462	17610	≥ 500	PASS
2467	17620	≥ 500	PASS
2472	16450	≥ 500	PASS

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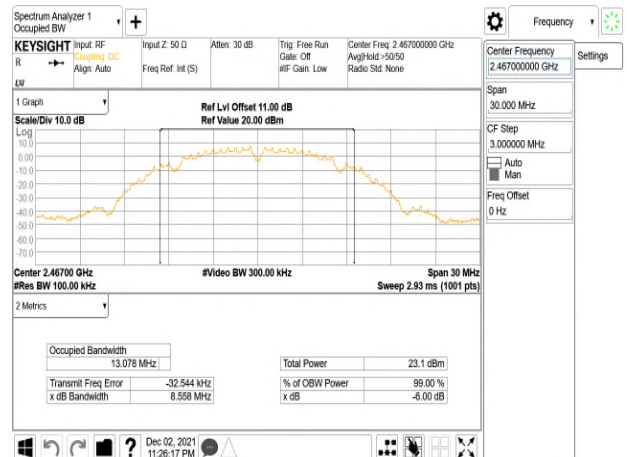
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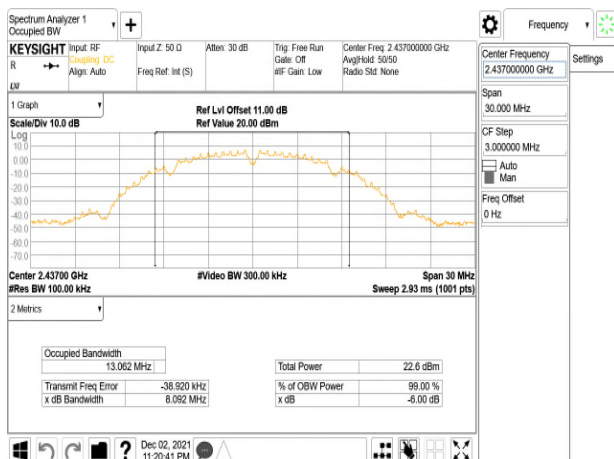
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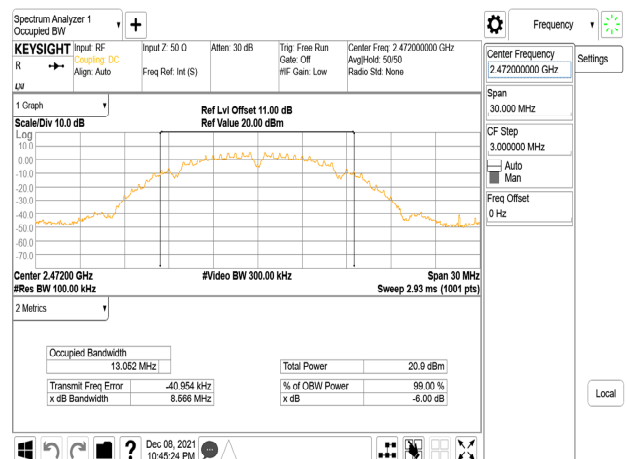
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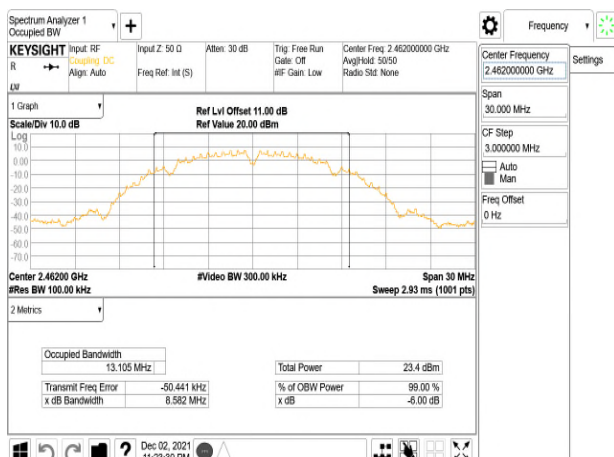
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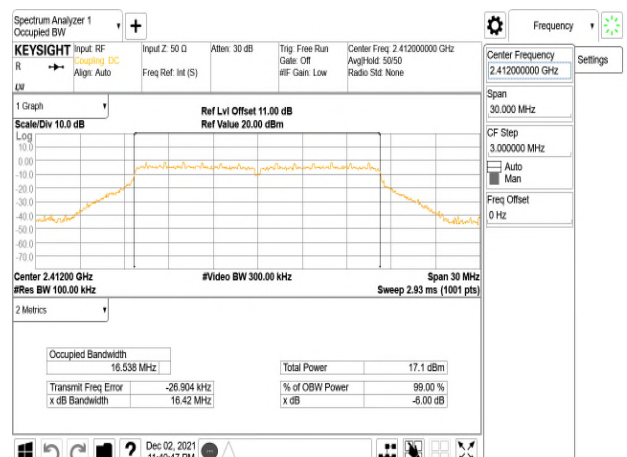
802.11b_20MHz_Chain0_2472MHz



802.11b_20MHz_Chain0_2462MHz



802.11g_20MHz_Chain0_2412MHz



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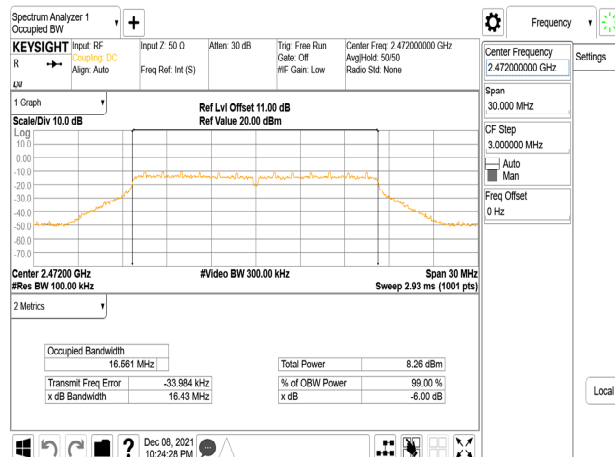
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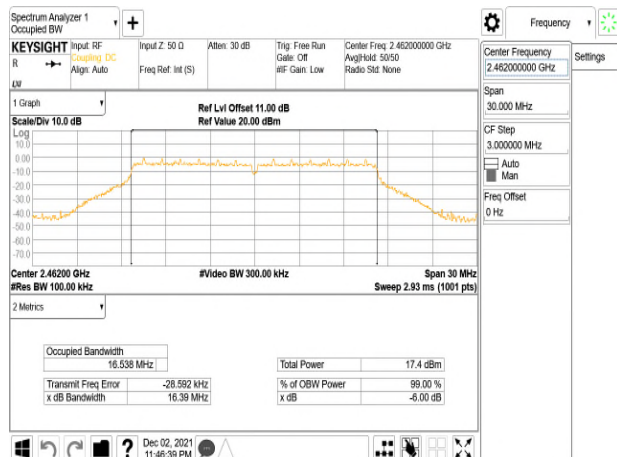
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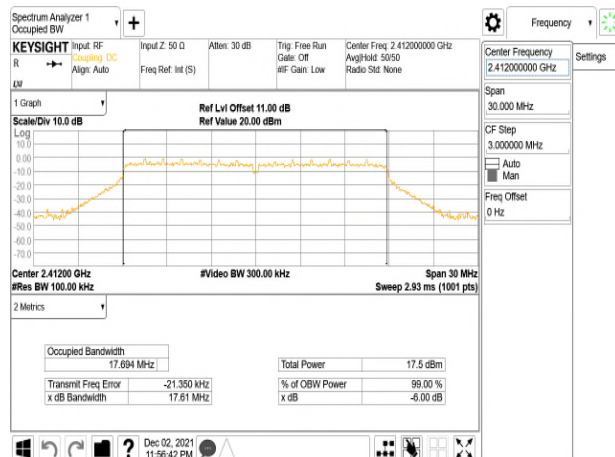
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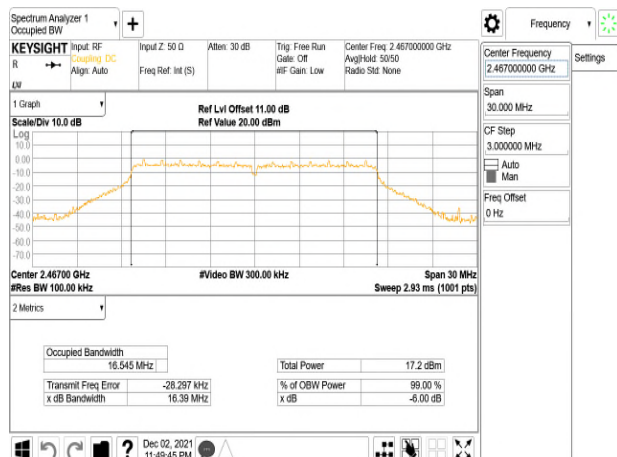
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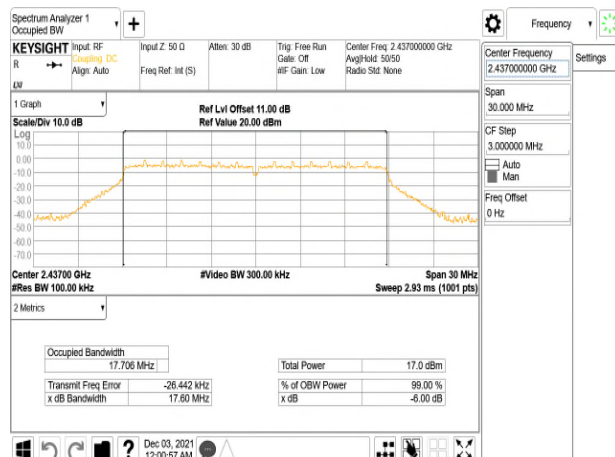
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802.11g_20MHz_Chain0_2467MHz



802.11n_20MHz_Chain0_2437MHz

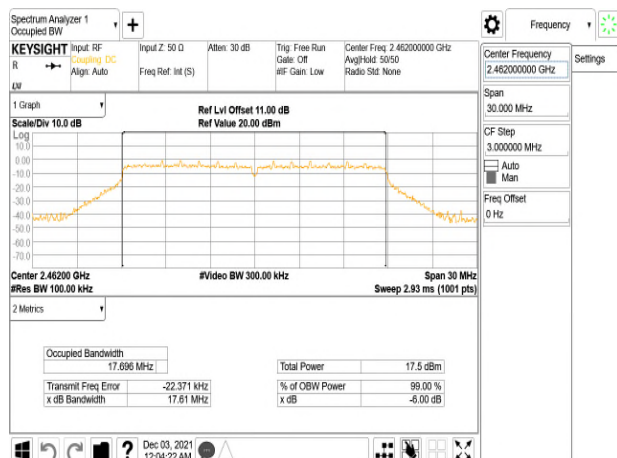


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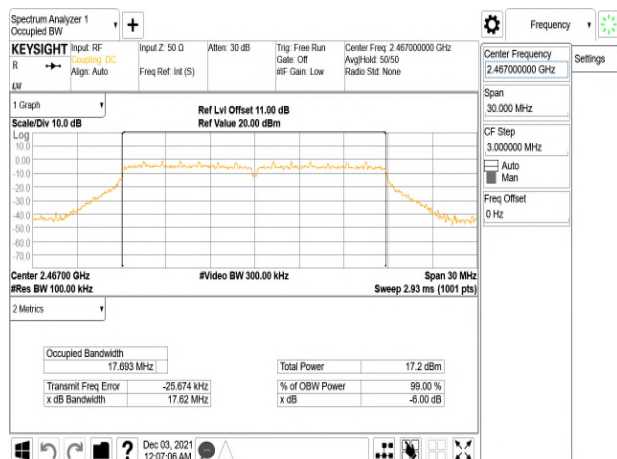
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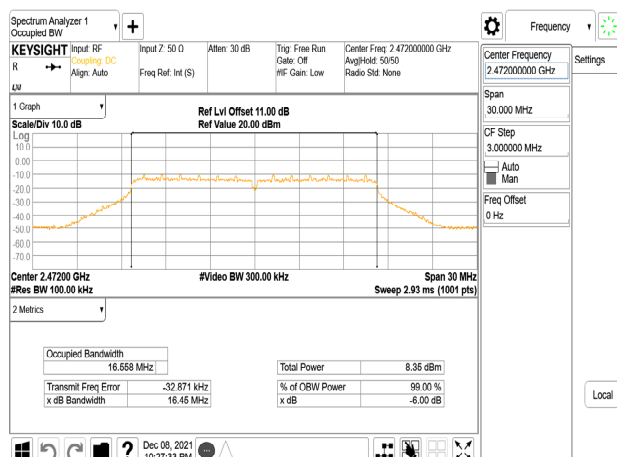
802.11n_20MHz_Chain0_2462MHz



802.11n_20MHz_Chain0_2467MHz



802.11n_20MHz_Chain0_2472MHz



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10.5 99% Bandwidth

802.11b Ch0

Freq. (MHz)	99% BW (MHz)
2412	13.289
2437	13.09
2462	13.115
2467	13.108
2472	13.095

802.11g Ch0

Freq. (MHz)	99% BW (MHz)
2412	17.068
2437	17.068
2462	17.04
2467	17.053
802.11g Ch0	17.088

802.11n_HT20M Ch0

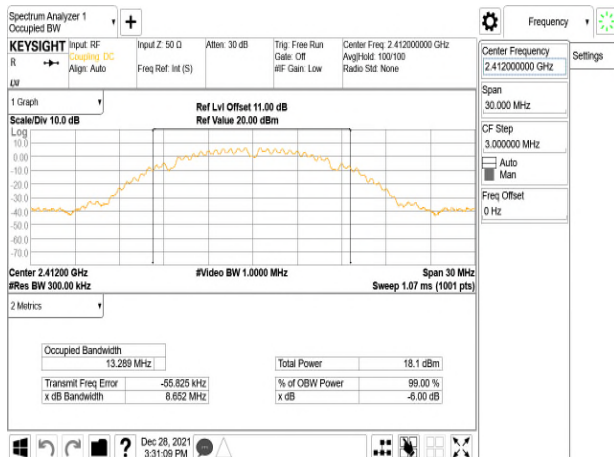
Freq. (MHz)	99% BW (MHz)
2412	18.046
2437	18.016
2462	18.033
2467	18.059
2472	17.091

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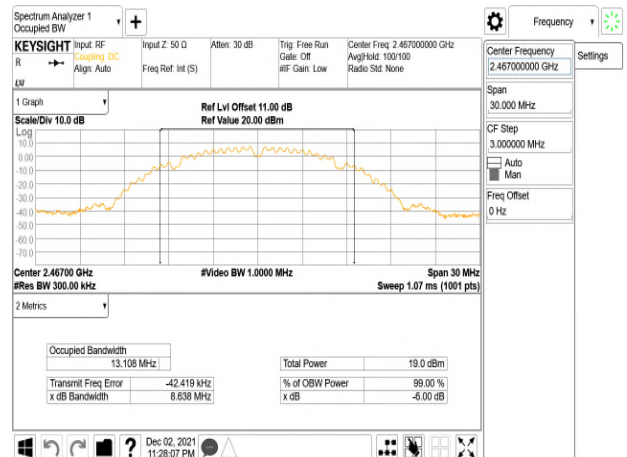
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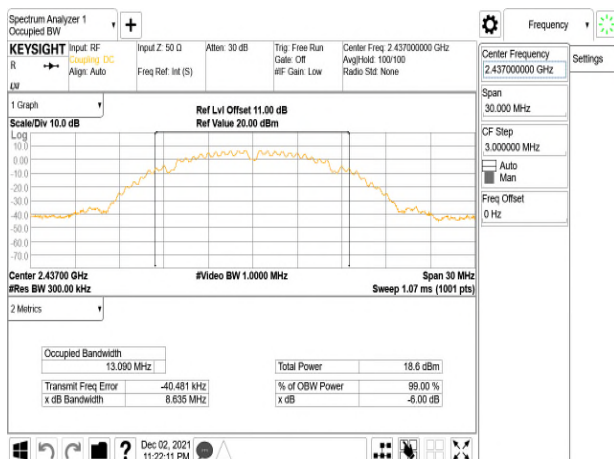
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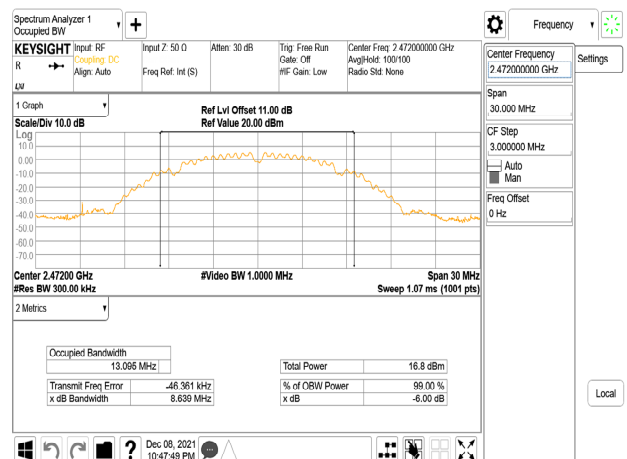
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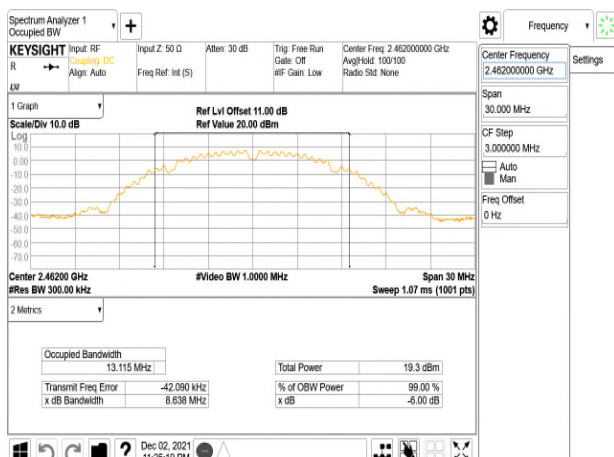
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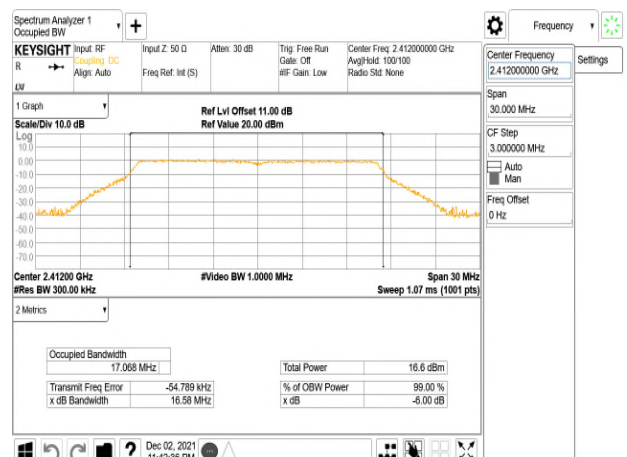
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802.11b_20MHz_Chain0_2462MHz



802.11g_20MHz_Chain0_2412MHz

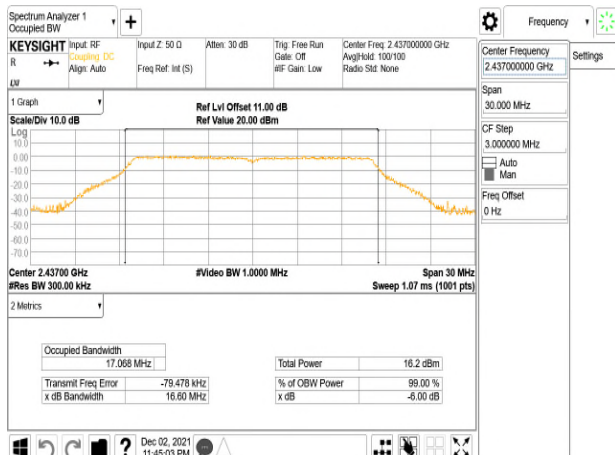


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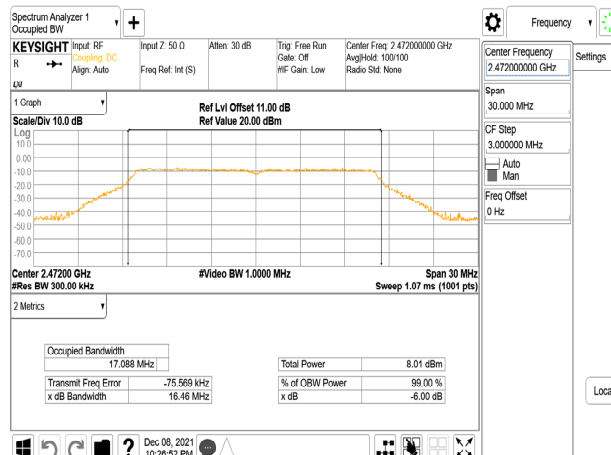
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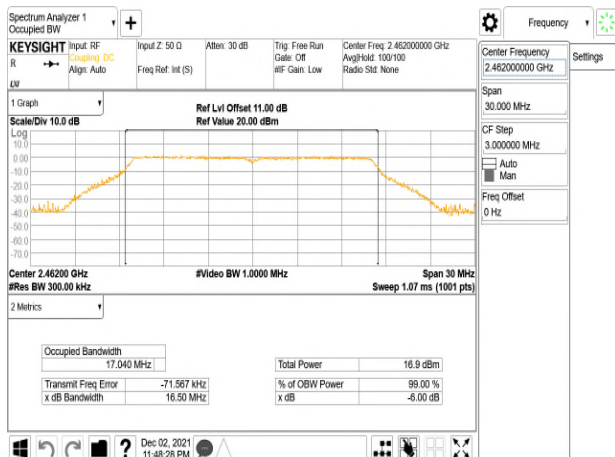
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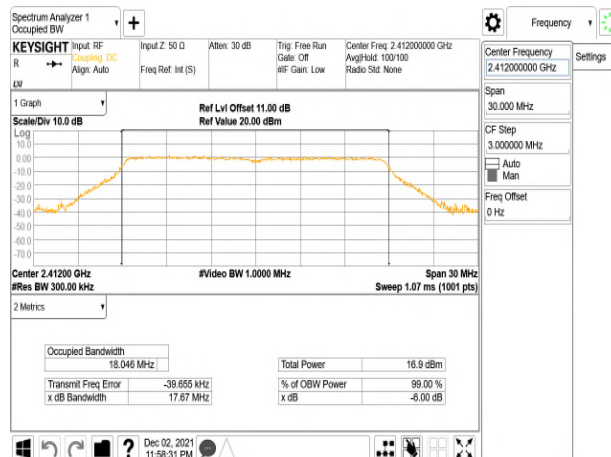
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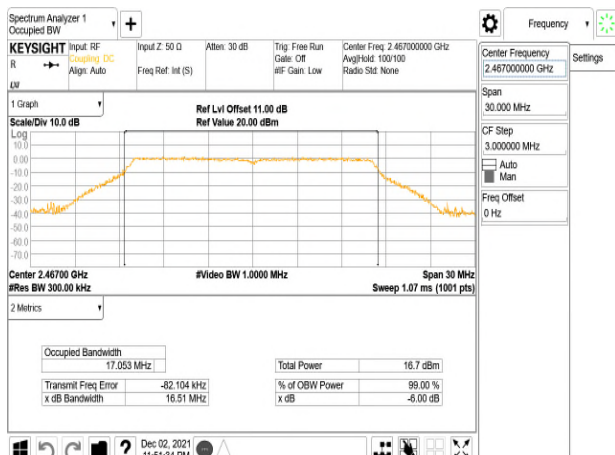
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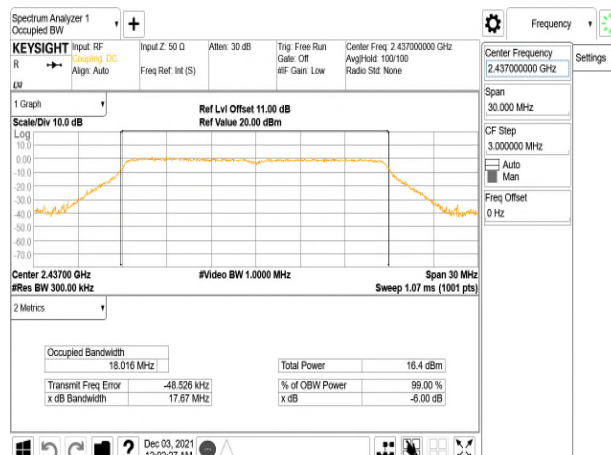
802.11n_20MHz_Chain0_2412MHz



802.11g_20MHz_Chain0_2467MHz



802.11n_20MHz_Chain0_2437MHz



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