RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-247

Test Standard	**FCC Part 15.247** **IC RSS-247 issue 2 and IC RSS-GEN issue 5**
Product name	**Tablet PC**
Brand Name	**ADVANTECH**
Model No.	**FCC: AIM-75S-2 ; AIM-75H-2 ;** **AIM-75S-2XXXXXXXXXXXXXXXX ;** **AIM75S-2XXXXXXXXXXXXXXXX ;** **AIM-75H-2XXXXXXXXXXXXXXXX ;** **AIM75H-2XXXXXXXXXXXXXXXX (where "X" may be any alphanumeric character , "-" or blank)** **IC: AIM-75S-2 ; AIM-75H-2**
Test Result	**Pass**
Statements of Conformity	**Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.**

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report. The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc. (Wugu Laboratory).

Approved by:

Kevin Tsai
Deputy Manager

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.
除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。
This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com.tw/Terms-and-Conditions and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com.tw/Terms-and-Conditions. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Revision History

Rev.		Issue Date		Revisions	Effect Page	Revised By
00		June 18, 2021		Initial Issue	ALL	Doris Chu

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Table of contents

1. GENERAL INFORMATION 4
1.1 EUT INFORMATION 4
1.2 EUT CHANNEL INFORMATION 6
1.3 ANTENNA INFORMATION 7
1.4 MEASUREMENT UNCERTAINTY 7
1.5 FACILITIES AND TEST LOCATION 8
1.6 INSTRUMENT CALIBRATION 8
1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT 10
1.8 TEST METHODOLOGY AND APPLIED STANDARDS 10
2. TEST SUMMARY 11
3. DESCRIPTION OF TEST MODES 12
3.1 THE WORST MODE OF OPERATING CONDITION 12
3.2 THE WORST MODE OF MEASUREMENT 13
4. EUT DUTY CYCLE 14
5. TEST RESULT 15
5.1 AC POWER LINE CONDUCTED EMISSION 15
5.2 6DB BANDWIDTH AND OCCUPIED BANDWIDTH(99%) 20
5.3 OUTPUT POWER MEASUREMENT 38
5.4 POWER SPECTRAL DENSITY 41
5.5 CONDUCTED BANDEDGE AND SPURIOUS EMISSION 51
5.6 RADIATION BANDEDGE AND SPURIOUS EMISSION 76
APPENDIX 1 - PHOTOGRAPHS OF EUT

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

1. GENERAL INFORMATION

1.1 EUT INFORMATION

<table>
<tr><td>Applicant</td><td colspan="3">Advantech Co., Ltd.
No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.</td></tr>
<tr><td>Manufacturer</td><td colspan="3">Advantech Co., Ltd.
No. 1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 114, Taiwan, R.O.C.</td></tr>
<tr><td>Equipment</td><td colspan="3">Tablet PC</td></tr>
<tr><td>Model No.</td><td colspan="3">FCC: AIM-75S-2 ; AIM-75H-2 ; AIM-75S-2XXXXXXXXXXXXXXXX ; AIM75S-2XXXXXXXXXXXXXXXX ; AIM-75H-2XXXXXXXXXXXXXXXX ; AIM75H-2XXXXXXXXXXXXXXXX (where “X” may be any alphanumeric character , “-” or blank)
IC: AIM-75S-2 ; AIM-75H-2</td></tr>
<tr><td rowspan="4">Model Discrepancy</td><td>Model</td><td>Adapter</td><td>Tablet color</td></tr>
<tr><td>AIM-75H-2</td><td>GlobTek, Inc / GTM96605-GEN2-A1-T2
I/P: 100-240VAC, 50-60Hz, 1.5A
O/P: 5VDC, 4.6A
5.8VDC, 4.6A
9VDC, 4.4A
12VDC, 4A
15VDC, 3.6A
20VDC, 3A</td><td>White</td></tr>
<tr><td>AIM-75S-2</td><td>FSP / FSP045-A1BR
I/P: 100-240VAC, 50-60Hz, 1.2A
O/P: 5.0VDC, 3.0A 15.0W
9.0VDC, 3.0A 27.0W
12.0VDC, 3.0A 36.0W
15.0VDC, 3.0A 45.0W
20.0VDC, 2.25A 45.0W</td><td>Black</td></tr>
<tr><td>AIM-75S-2XXXXXXXXXXXXXXXX ; AIM75S-2XXXXXXXXXXXXXXXX ; AIM-75H-2XXXXXXXXXXXXXXXX ; AIM75H-2XXXXXXXXXXXXXXXX (where “X” may be any alphanumeric character , “-” or blank)</td><td colspan="2">All the above models are identical except for the designation of model numbers. The suffix of (where “X” may be any alphanumeric character , “-” or blank) on model number is just for marketing purpose only.</td></tr>
<tr><td>Trade Name</td><td colspan="3">ADVANTECH</td></tr>
<tr><td>Received Date</td><td colspan="3">May 22, 2020</td></tr>
<tr><td>Date of Test</td><td colspan="3">December 07, 2020 ~ April 22, 2021</td></tr>
</table>

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Power Supply	1. Power from Adapter. (1) GlobTek, Inc / GTM96605-GEN2-A1-T2 I/P: 100-240VAC, 50-60Hz, 1.5A O/P: 5VDC, 4.6A 5.8VDC, 4.6A 9VDC, 4.4A 12VDC, 4A 15VDC, 3.6A 20VDC, 3A (2) FSP / FSP045-A1BR I/P: 100-240VAC, 50-60Hz, 1.2A O/P: 5.0VDC, 3.0A 15.0W 9.0VDC, 3.0A 27.0W 12.0VDC, 3.0A 36.0W 15.0VDC, 3.0A 45.0W 20.0VDC, 2.25A 45.0W 2. Power from Battery. ADVANTECH / AIM-BAT-8 Rating: 3.8VDC, 4900mAh/18.62Wh
HW Version	AX2
SW Version	0.3.6.9_20201021.021551
EUT Serial #	200CT32E00140
Operating conditions for the EUT	QRCT v4.0.67.0

Remark:

1. For more details, refer to the User's manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.
3. Disclaimer: Variant information between/among model numbers / trademarks is provided by the applicant, test results of this report are applicable to the sample EUT received of main test model name.

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

1.2 EUT CHANNEL INFORMATION

Frequency Range	802.11b/g/n HT 20: 2412MHz ~ 2462MHz 802.11n HT40: 2422MHz ~ 2452MHz
Modulation Type	1. IEEE 802.11b mode: CCK 2. IEEE 802.11g mode: OFDM 3. IEEE 802.11n HT 20 MHz mode : OFDM 4. IEEE 802.11n HT 40 MHz mode : OFDM
Number of channel	1. IEEE 802.11b mode: 11 Channels 2. IEEE 802.11g mode: 11 Channels 3. IEEE 802.11n HT 20 MHz mode : 11 Channels 4. IEEE 802.11n HT 40 MHz mode : 7 Channels

Remark:
Refer as ANSI C63.10: 2013 clause 5.6.1 Table 4 and RSS-GEN Table A1 for test channels

Number of frequencies to be tested		
Frequency range in which device operates	**Number of frequencies**	**Location in frequency range of operation**
☐ 1 MHz or less	1	Middle
☐ 1 MHz to 10 MHz	2	1 near top and 1 near bottom
☒ More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

1.3 ANTENNA INFORMATION

Antenna Type	Omni-directional antenna
Antenna Gain	IEEE 802.11 b / g / n20 /n40 mode: Chain 0 Gain: 1.78 dBi Chain 1 Gain: 1.96 dBi Power Directional Gain: 1.87 dBi
Antenna Connector	N/A

1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	+/- 1.2575
Emission bandwidth, 20dB bandwidth	+/- 0.0014
RF output power, conducted	+/- 1.14
Power density, conducted	+/- 1.40
3M Semi Anechoic Chamber / 30M~200M	+/- 4.12
3M Semi Anechoic Chamber / 200M~1000M	+/- 4.68
3M Semi Anechoic Chamber / 1G~8G	+/- 5.18
3M Semi Anechoic Chamber / 8G~18G	+/- 5.47
3M Semi Anechoic Chamber / 18G~26G	+/- 3.81
3M Semi Anechoic Chamber / 26G~40G	+/- 3.87

Remark:
1.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan. (R.O.C.)
CAB identifier: TW1309

Test site	Test Engineer	Remark
AC Conduction Room	Jerry Chang, Dally Hong	-
Radiation	Ray Li	-
RF Conducted	Rick Lee	-

Remark: The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.6 INSTRUMENT CALIBRATION

RF Conducted Test Site					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
Coaxial Cable	Woken	WC12	CC003	06/29/2020	06/28/2021
EXA Signal Analyzer	KEYSIGHT	N9010B	MY55460167	09/07/2020	09/06/2021
Power Meter	Anritsu	ML2487A	6K00003260	05/21/2020	05/20/2021
Power Seneor	Anritsu	MA2490A	032910	05/21/2020	05/20/2021
Software	N/A				

Test date for December 7, 2020

3M 966 Chamber Test Site					
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Cal Date**	**Cal Due**
Band Reject Filters	MICRO TRONICS	BRM 50702	120	02/25/2020	02/24/2021
Bilog Antenna	Sunol Sciences	JB3	A030105	07/24/2020	07/23/2021
Coaxial Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/25/2020	02/24/2021
Coaxial Cable	EMCI	EMC105	190914+327109/4	09/19/2020	09/18/2021
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/15/2020	01/14/2021
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	09/30/2020	09/29/2021
Loop Ant	COM-POWER	AL-130	121051	03/27/2020	03/26/2021
Pre-Amplifier	EMEC	EM330	060609	02/25/2020	02/24/2021
Pre-Amplifier	EMEC	EM01G26G	060570	06/29/2020	06/28/2021
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	07/24/2020	07/23/2021
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Software	e3 6.11-20180413				

Remark: Each piece of equipment is scheduled for calibration once a year.

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Test date for April 22, 2021

3M 966 Chamber Test Site					
Equipment	**Manufacturer**	**Model**	**Serial Number**	**Cal Date**	**Cal Due**
Band Reject Filters	MICRO TRONICS	BRM 50702	120	02/08/2021	02/07/2022
Bilog Antenna	Sunol Sciences	JB3	A030105	07/24/2020	07/23/2021
Coaxial Cable	HUBER SUHNER	SUCOFLEX 104PEA	20995	02/24/2021	02/23/2022
Coaxial Cable	EMCI	EMC105	190914+327109/4	09/19/2020	09/18/2021
Digital Thermo-Hygro Meter	WISEWIND	1206	D07	01/06/2021	01/05/2022
Horn Antenna	ETS LINDGREN	3116	00026370	12/11/2020	12/10/2021
double Ridged Guide Horn Antenna	ETC	MCTD 1209	DRH13M02003	09/30/2020	09/29/2021
K Type Cable	Huber+Suhner	SUCOFLEX 102	29406/2	12/09/2020	12/08/2021
K Type Cable	Huber+Suhner	SUCOFLEX 102	22470/2	12/09/2020	12/08/2021
Loop Ant	COM-POWER	AL-130	121051	04/07/2021	04/06/2022
Pre-Amplifier	EMEC	EM330	060609	02/24/2021	02/23/2022
Pre-Amplifier	HP	8449B	3008A00965	12/25/2020	12/24/2021
PSA Series Spectrum Analyzer	Agilent	E4446A	MY46180323	07/24/2020	07/23/2021
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Software	e3 6.11-20180413				

Test date for January 5, 2021

Conducted Emission Room					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
CABLE	EMCI	CFD300-NL	CERF	06/29/2020	06/28/2021
EMI Test Receiver	R&S	ESCI	100064	07/17/2020	07/16/2021
LISN	SCHAFFNER	NNB 41	03/10013	02/13/2020	02/12/2021
Software	EZ-EMC(CCS-3A1-CE)				

Test date for April 15, 2021

Conducted Emission Room					
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Date**	**Calibration Due**
CABLE	EMCI	CFD300-NL	CERF	06/29/2020	06/28/2021
EMI Test Receiver	R&S	ESCI	100064	07/17/2020	07/16/2021
LISN	SCHAFFNER	NNB 41	03/10013	02/02/2021	02/01/2022
Software	EZ-EMC(CCS-3A1-CE)				

Remark: Each piece of equipment is scheduled for calibration once a year.

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

EUT Accessories Equipment					
No.	**Equipment**	**Brand**	**Model**	**Series No.**	**FCC ID**
	N/A				

Support Equipment					
No.	**Equipment**	**Brand**	**Model**	**Series No.**	**FCC ID**
1	NB(J)	TOSHIBA	PT345T-00L002	N/A	N/A

1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247, RSS-247 Issue 2 and RSS-GEN Issue 5.

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

2. TEST SUMMARY

FCC Standard Section	IC Standard Section	Report Section	Test Item	Result
15.203	-	1.3	Antenna Requirement	Pass
15.207(a)	RSS-GEN 8.8	4.1	AC Conducted Emission	Pass
15.247(a)(2)	RSS-247(5.2)(a)	4.2	6 dB Bandwidth	Pass
-	RSS-GEN 6.7	4.2	Occupied Bandwidth (99%)	Pass
15.247(b)(3)	RSS-247(5.4)(d)	4.3	Output Power Measurement	Pass
15.247(e)	RSS-247(5.2)(b)	4.4	Power Spectral Density	Pass
15.247(d)	RSS-247(5.5)	4.5	Conducted Band Edge	Pass
15.247(d)	RSS-247(5.5)	4.5	Conducted Emission	Pass
15.247(d)	RSS-GEN 8.9, 8.10	4.6	Radiation Band Edge	Pass
15.247(d)	RSS-GEN 8.9, 8.10	4.6	Radiation Spurious Emission	Pass

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	IEEE 802.11b mode :1Mbps IEEE 802.11g mode :6Mbps IEEE 802.11n HT20 mode :MCS8 IEEE 802.11n HT40 Mode: MCS8
Test Channel Frequencies	**IEEE 802.11b mode :** 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz **IEEE 802.11g mode :** 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz **IEEE 802.11n HT20 mode :** 1. Lowest Channel : 2412MHz 2. Middle Channel : 2437MHz 3. Highest Channel : 2462MHz **IEEE 802.11n HT40 Mode:** 1. Lowest Channel: 2422MHz 2. Middle Channel: 2437MHz 3. Highest Channel: 2452MHz
Operation Transmitter	IEEE 802.11b mode :1T1R IEEE 802.11g mode :1T1R IEEE 802.11n HT20 mode : 2T2R IEEE 802.11n HT40 mode : 2T2R

Remark:
1. EUT pre-scanned data rate of output power for each mode, the worst data rate were recorded in this report.
2. MIMO mode covered SISO mode due to MIMO mode with the power equal or higher than SISO modes as worst-case scenario.

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

3.2 THE WORST MODE OF MEASUREMENT

AC Power Line Conducted Emission	
Test Condition	AC Power line conducted emission for line and neutral
Power supply Mode	Mode 1: EUT power by Adapter. (GlobTek) 120VAC Mode 2: EUT power by Adapter. (GlobTek) 240VAC Mode 3: EUT power by Adapter. (FSP) 120VAC Mode 4: EUT power by Adapter. (FSP) 240VAC
Worst Mode	☐ Mode 1 ☐ Mode 2 ☒ Mode 3 ☒ Mode 4

Radiated Emission Measurement Above 1G	
Test Condition	Radiated Emission Above 1G
Power supply Mode	Mode 1: EUT power by Adapter. (GlobTek) Mode 2: EUT power by Adapter. (FSP) Mode 3: EUT power by Battery
Worst Mode	☐ Mode 1 ☒ Mode 2 ☐ Mode 3 ☐ Mode 4
Worst Position	☐ Placed in fixed position. ☒ Placed in fixed position at X-Plane (E2-Plane) ☐ Placed in fixed position at Y-Plane (E1-Plane) ☐ Placed in fixed position at Z-Plane (H-Plane)

Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G
Power supply Mode	Mode 1: EUT power by Adapter. (GlobTek) Mode 2: EUT power by Adapter. (FSP) Mode 3: EUT power by Battery
Worst Mode	☐ Mode 1 ☒ Mode 2 ☐ Mode 3 ☐ Mode 4

Remark:
1. The worst mode was record in this test report.
2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(X-Plane) were recorded in this report.
3. AC power line conducted emission and for below 1G radiation emission were performed the EUT transmit at the highest output power channel as worse case.

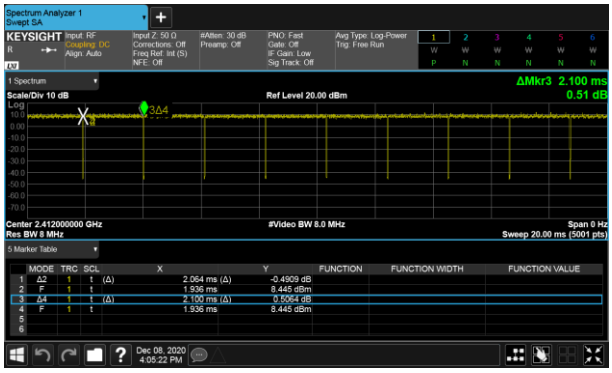
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

4. EUT DUTY CYCLE

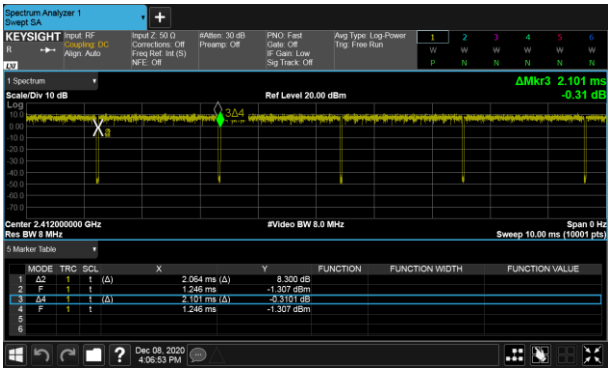
Temperature:	22.3℃	**Humidity:**	58.1% RH
Tested by:	Rick Lee	**Test date:**	December 08, 2020

Duty Cycle				
Configuration	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
802.11b	98.29%	0.08	0.48	0.01
802.11g	98.24%	0.08	0.48	0.01
802.11n HT20	96.38%	0.16	1.02	2.00
802.11n HT40	90.68%	0.43	2.02	3.00

802.11b



802.11g



802.11n HT20

802.11n HT40

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

5. TEST RESULT

5.1 AC POWER LINE CONDUCTED EMISSION

5.1.1 Test Limit

According to §15.207(a)(2) and RSS-GEN section 8.8,

Frequency Range (MHz)	Limits(dBμV)	
	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

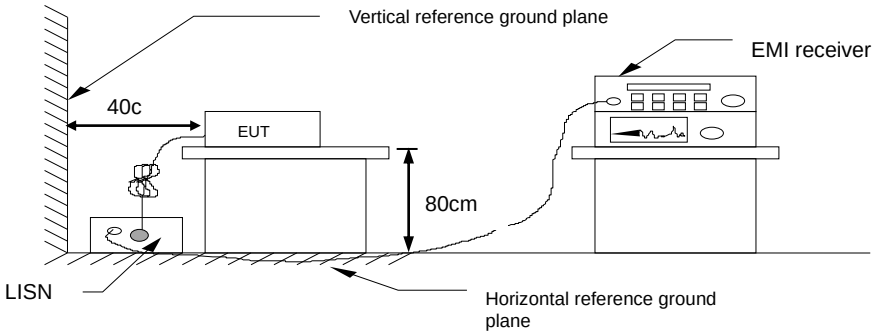
* Decreases with the logarithm of the frequency.

5.1.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 6.2,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

5.1.3 Test Setup



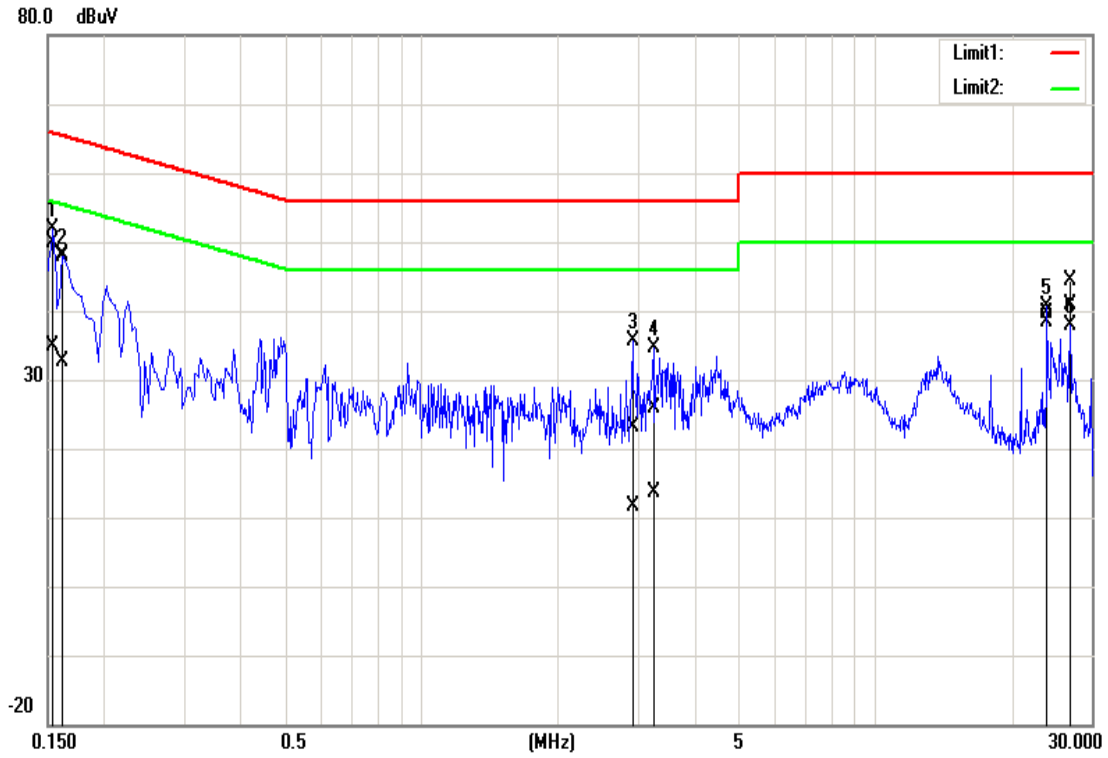
5.1.4 Test Result

PASS

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Test Data

Test Mode:	Mode 3	Temp/Hum	20(℃)/ 63%RH
Phase:	Line	Test Date	January 05, 2021
		Test Engineer	Jerry Chang

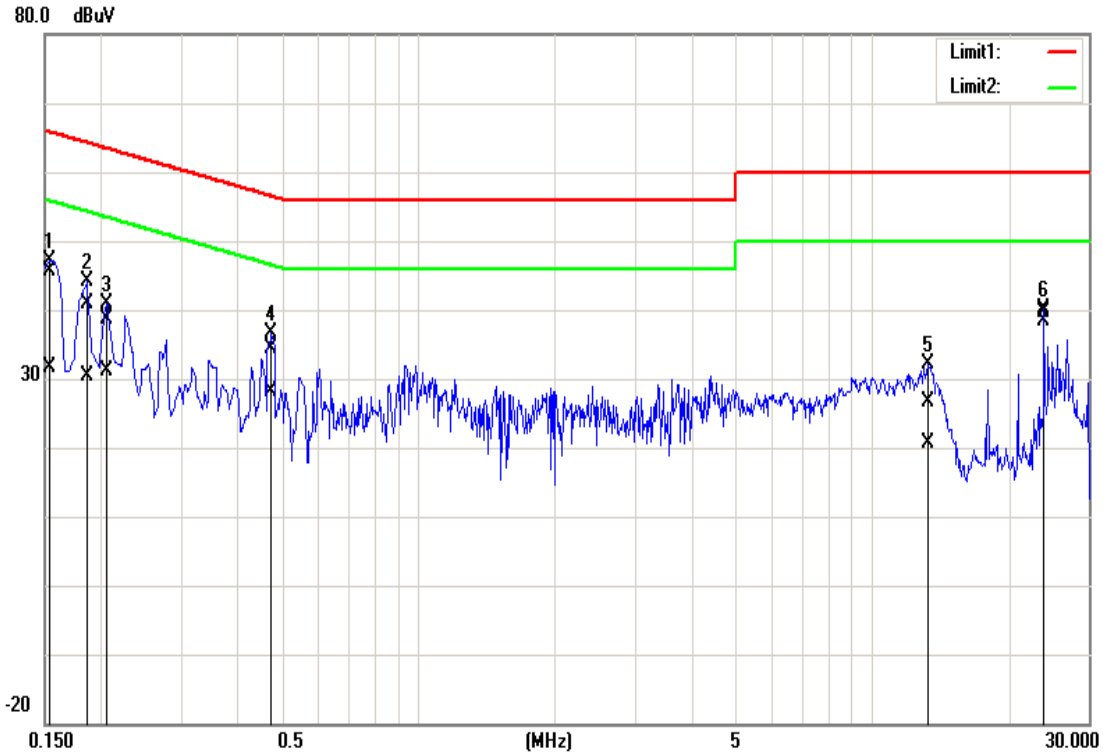


Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1540	39.55	24.79	10.21	49.76	35.00	65.78	55.78	-16.02	-20.78	Pass
0.1620	37.81	22.31	10.21	48.02	32.52	65.36	55.36	-17.34	-22.84	Pass
2.9260	12.82	1.27	10.28	23.10	11.55	56.00	46.00	-32.90	-34.45	Pass
3.2580	15.49	3.40	10.29	25.78	13.69	56.00	46.00	-30.22	-32.31	Pass
23.9500	29.27	27.98	10.31	39.58	38.29	60.00	50.00	-20.42	-11.71	Pass
26.9420	34.04	30.68	10.24	44.28	40.92	60.00	50.00	-15.72	-9.08	Pass

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Report No.: T200522D10-RP3

Test Mode:	Mode 3	Temp/Hum	20(℃)/ 63%RH
Phase:	Neutral	Test Date	January 05, 2021
		Test Engineer	Jerry Chang

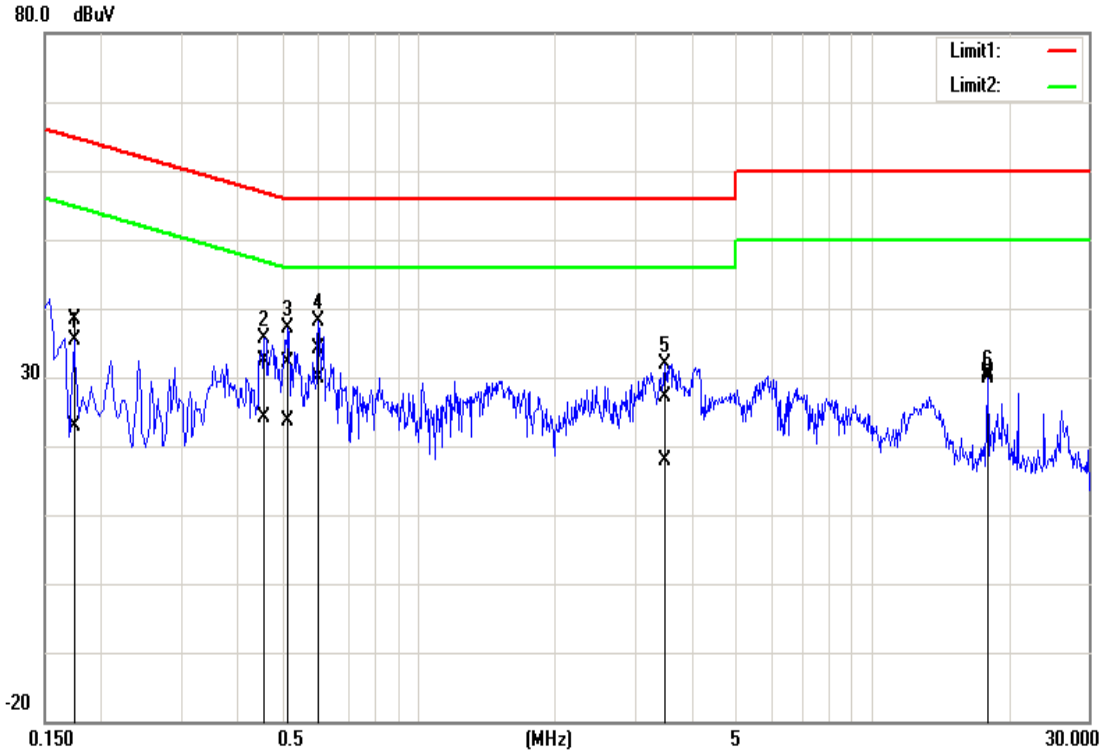


Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1540	35.41	21.50	10.18	45.59	31.68	65.78	55.78	-20.19	-24.10	Pass
0.1860	30.66	20.26	10.19	40.85	30.45	64.21	54.21	-23.36	-23.76	Pass
0.2060	28.39	20.89	10.19	38.58	31.08	63.37	53.37	-24.79	-22.29	Pass
0.4740	24.13	17.93	10.19	34.32	28.12	56.44	46.44	-22.12	-18.32	Pass
13.3180	16.16	10.24	10.37	26.53	20.61	60.00	50.00	-33.47	-29.39	Pass
23.9500	29.13	27.81	10.51	39.64	38.32	60.00	50.00	-20.36	-11.68	Pass

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Report No.: T200522D10-RP3

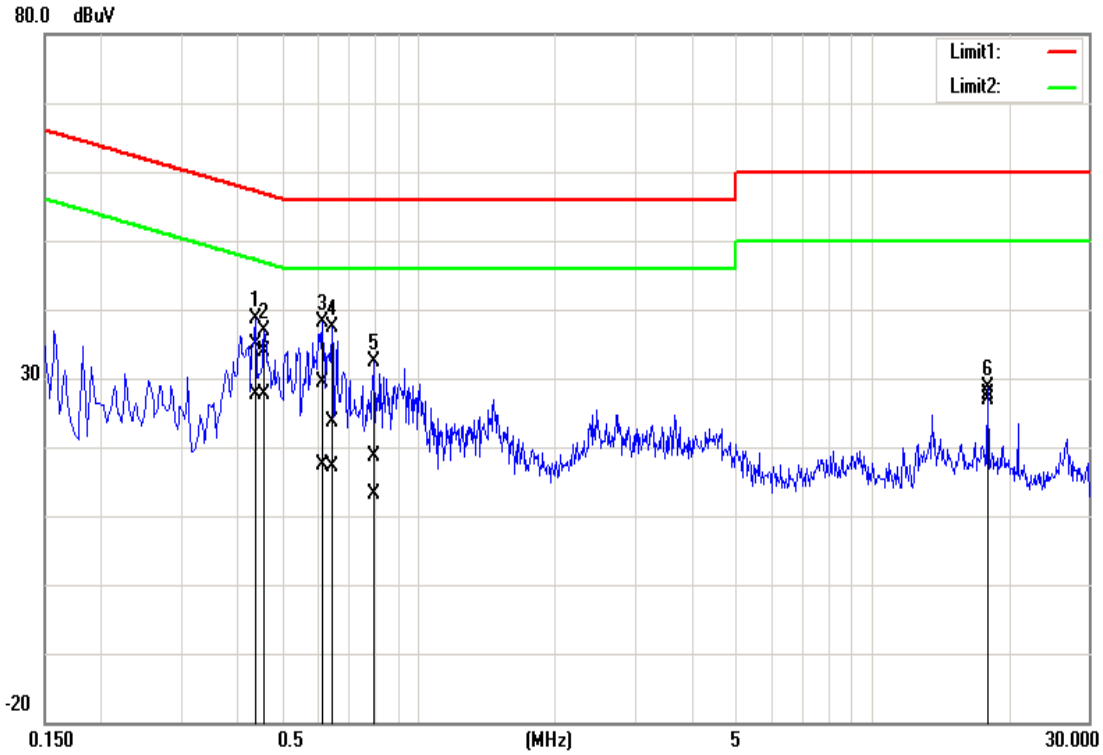
Test Mode:	Mode 4	Temp/Hum	23(℃)/ 51%RH
Phase:	Line	Test Date	April 15, 2021
		Test Engineer	Dally Hong



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.1740	28.16	12.50	10.29	38.45	22.79	64.77	54.77	-26.32	-31.98	Pass
0.4580	22.08	13.91	10.29	32.37	24.20	56.73	46.73	-24.36	-22.53	Pass
0.5180	21.73	13.44	10.29	32.02	23.73	56.00	46.00	-23.98	-22.27	Pass
0.6020	23.87	19.62	10.29	34.16	29.91	56.00	46.00	-21.84	-16.09	Pass
3.5020	16.86	7.57	10.36	27.22	17.93	56.00	46.00	-28.78	-28.07	Pass
17.9580	20.31	19.87	10.44	30.75	30.31	60.00	50.00	-29.25	-19.69	Pass

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Test Mode:	Mode 4	Temp/Hum	23(℃)/ 51%RH
Phase:	Neutral	Test Date	April 15, 2021
		Test Engineer	Dally Hong



Frequency (MHz)	Quasi Peak reading (dBuV)	Average reading (dBuV)	Correction factor (dB)	Quasi Peak result (dBuV)	Average result (dBuV)	Quasi Peak limit (dBuV)	Average limit (dBuV)	Quasi Peak margin (dB)	Average margin (dB)	Remark
0.4380	24.54	17.26	10.26	34.80	27.52	57.10	47.10	-22.30	-19.58	Pass
0.4580	23.68	17.47	10.26	33.94	27.73	56.73	46.73	-22.79	-19.00	Pass
0.6140	19.10	7.13	10.26	29.36	17.39	56.00	46.00	-26.64	-28.61	Pass
0.6460	13.26	6.94	10.26	23.52	17.20	56.00	46.00	-32.48	-28.80	Pass
0.7980	8.46	2.76	10.28	18.74	13.04	56.00	46.00	-37.26	-32.96	Pass
17.9620	17.08	16.42	10.47	27.55	26.89	60.00	50.00	-32.45	-23.11	Pass

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

5.2 6dB BANDWIDTH AND OCCUPIED BANDWIDTH(99%)

5.2.1 Test Limit

According to §15.247(a)(2) and RSS-247 section 5.2(a),

6 dB Bandwidth ：

Limit	Shall be at least 500kHz

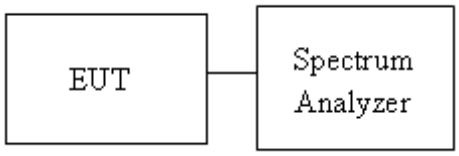
Occupied Bandwidth(99%) ： For reporting purposes only.

5.2.2 **Test Procedure**

Test method Refer as ANSI C63.10: 2013,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 100kHz, VBW = 300kHz and Detector = Peak, to measurement 6 dB Bandwidth.
4. SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth
5. Measure and record the result of 6 dB Bandwidth and 99% Bandwidth. in the test report.

5.2.3 Test Setup



This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

5.2.4 Test Result

Temperature:	22.3℃	**Humidity:**	58.1% RH
Tested by:	Rick Lee	**Test date:**	December 08, 2020
Temperature:	23.5℃	**Humidity:**	58.5% RH
Tested by:	Rick Lee	**Test date:**	December 09, 2020

Test mode: IEEE 802.11b Mode / 2412-2462 MHz						
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain1 OBW(99%) (MHz)**	**Chain 0 6dB BW (MHz)**	**Chain 1 6dB BW (MHz)**	**6dB limit (kHz)**
Low	2412	14.07	13.61	8.12	8.11	≥500
Mid	2437	13.97	13.81	8.12	8.11	
High	2462	13.74	13.65	8.10	8.11	

Test mode: IEEE 802.11g Mode / 2412-2462 MHz						
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain1 OBW(99%) (MHz)**	**Chain 0 6dB BW (MHz)**	**Chain 1 6dB BW (MHz)**	**6dB limit (kHz)**
Low	2412	16.97	16.81	15.73	15.71	≥500
Mid	2437	16.93	16.84	15.91	16.34	
High	2462	16.79	16.80	15.48	15.73	

Test mode: IEEE 802.11n HT20 Mode / 2412-2462 MHz						
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain1 OBW(99%) (MHz)**	**Chain 0 6dB BW (MHz)**	**Chain 1 6dB BW (MHz)**	**6dB limit (kHz)**
Low	2412	18.07	17.92	15.98	15.93	≥500
Mid	2437	18.04	18.02	16.14	16.69	
High	2462	17.80	17.93	15.74	16.11	

Test mode: IEEE 802.11n HT40 Mode / 2422-2452 MHz						
Channel	**Frequency (MHz)**	**Chain 0 OBW(99%) (MHz)**	**Chain1 OBW(99%) (MHz)**	**Chain 0 6dB BW (MHz)**	**Chain 1 6dB BW (MHz)**	**6dB limit (kHz)**
Low	2422	36.12	36.12	35.15	35.17	>500
Mid	2437	36.47	36.47	35.53	35.74	
High	2452	36.35	36.35	35.74	35.74	

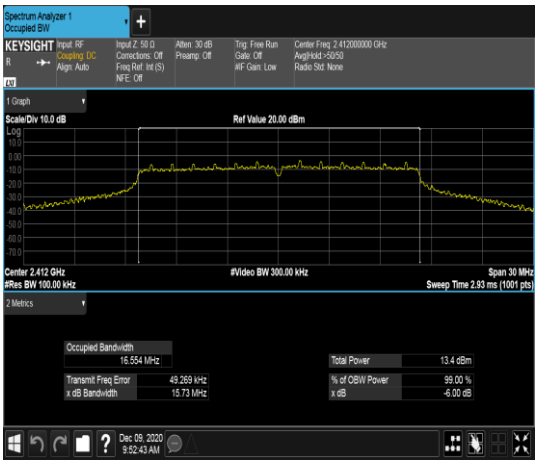
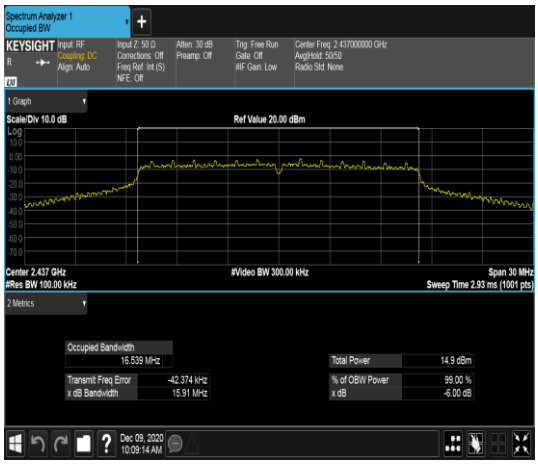
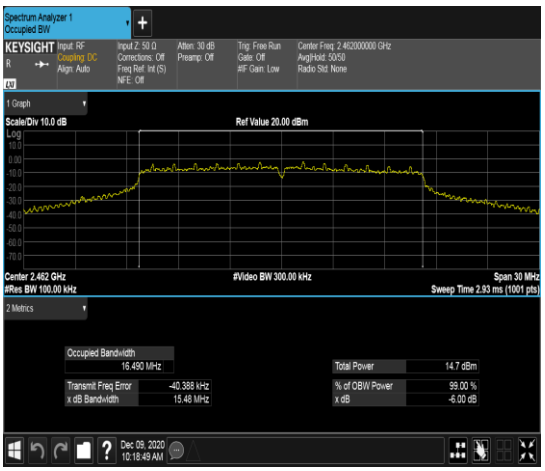
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Test Data

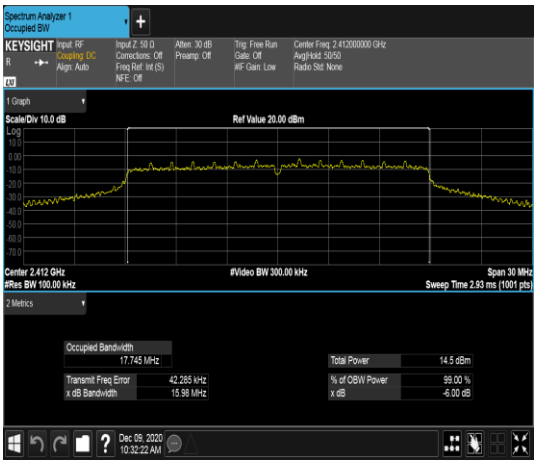
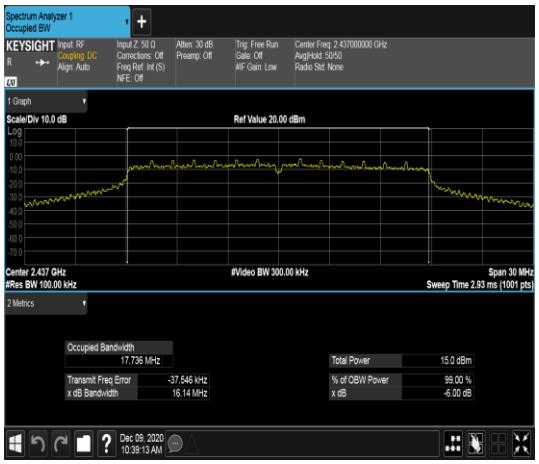
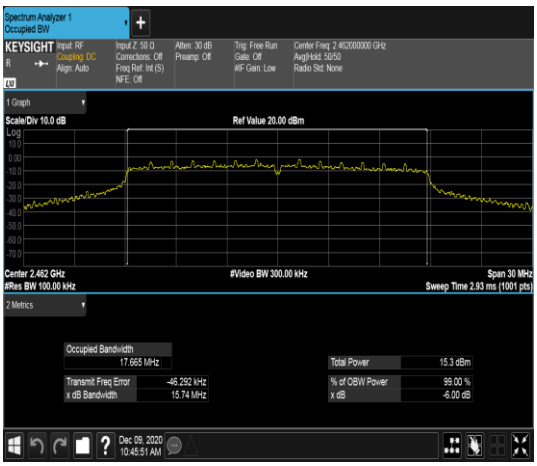
6dB BANDWIDTH

IEEE 802.11b mode- chain 0	
Low CH	**Mid CH**
High CH	

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11g mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11n HT20 mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

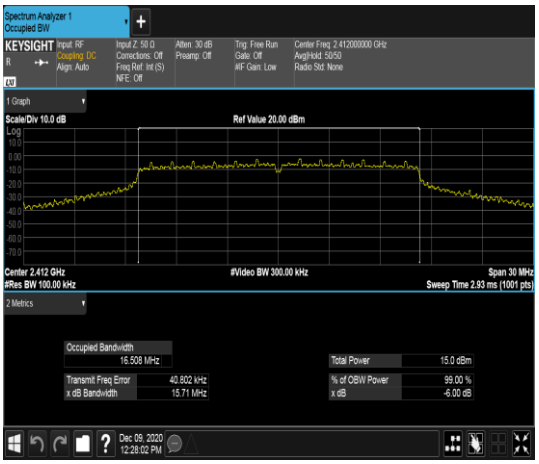
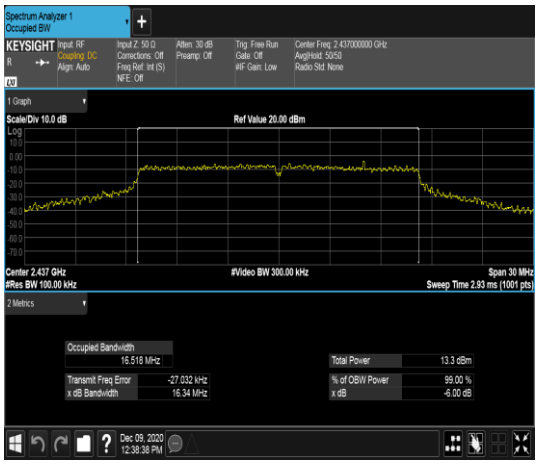
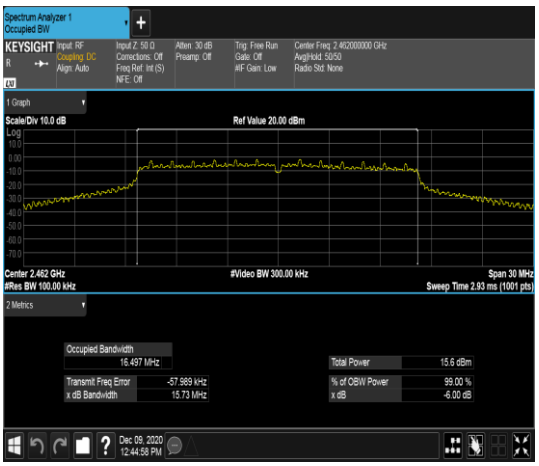
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11n HT40 mode- chain 0	
Low CH	**Mid CH**
High CH	

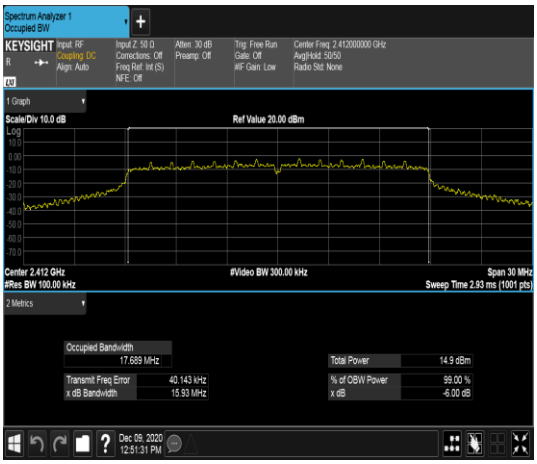
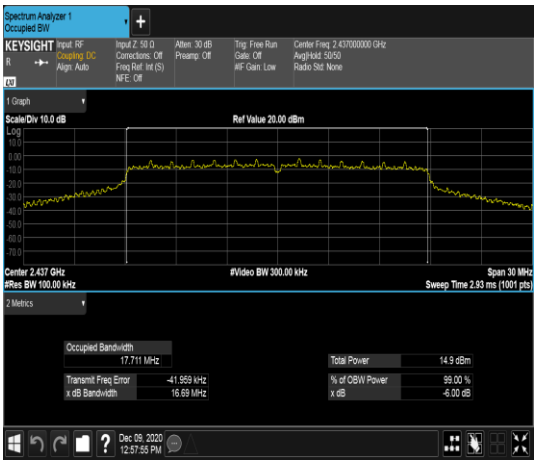
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11b mode- chain 1	
Low CH	**Mid CH**
High CH	

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11g mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11n HT20 mode- chain 1	
Low CH	**Mid CH**
	
High CH	

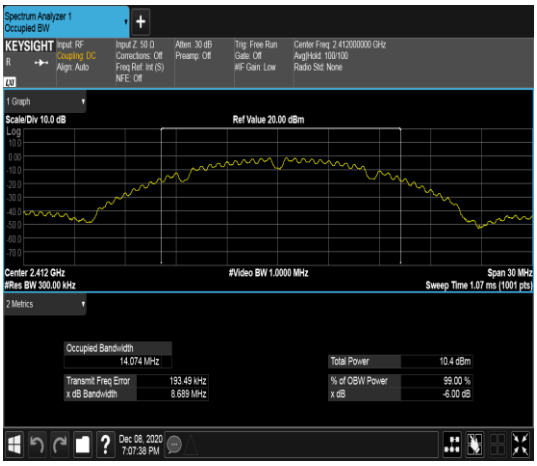
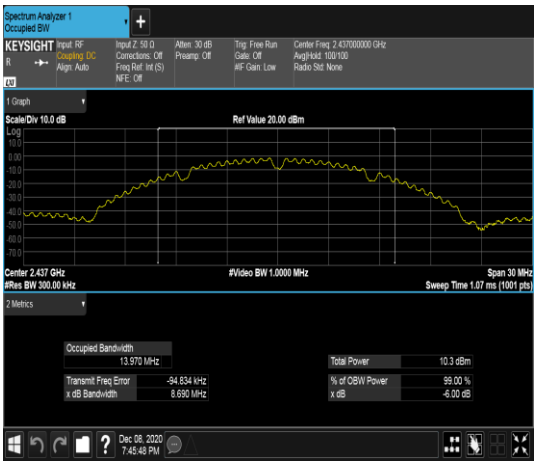
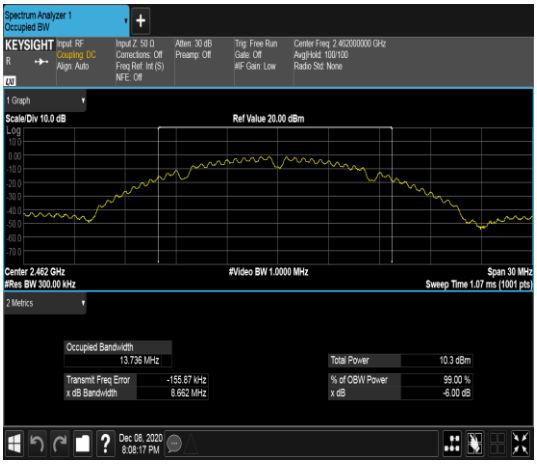
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11n HT40 mode- chain 1	
Low CH	**Mid CH**
High CH	

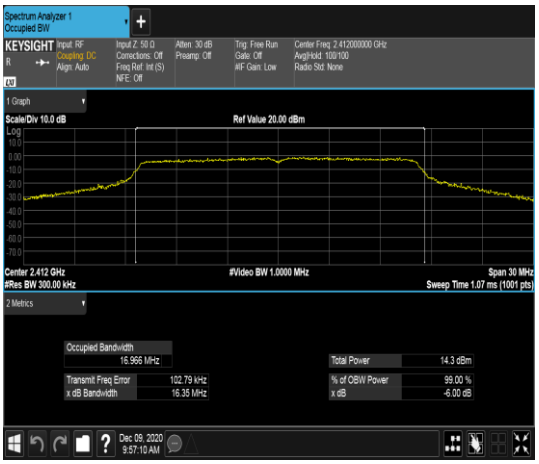
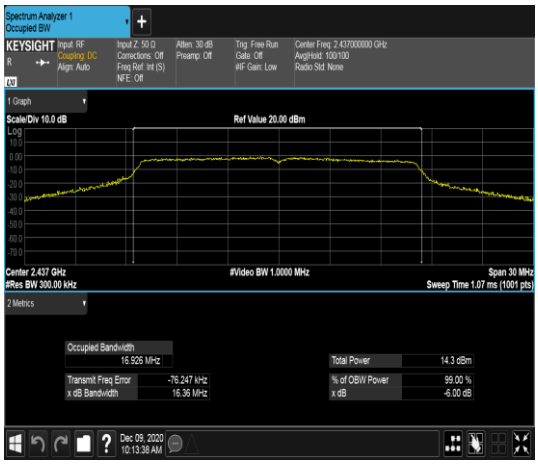
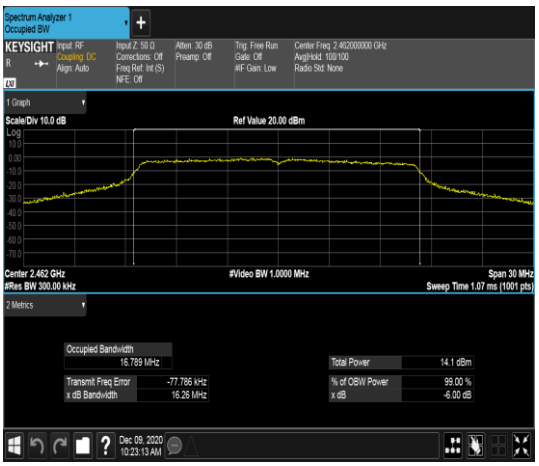
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Test Data

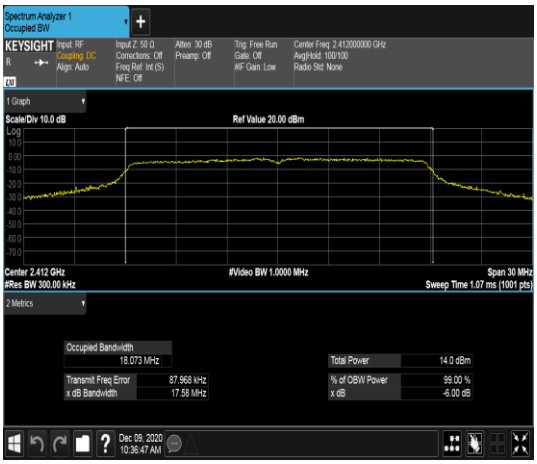
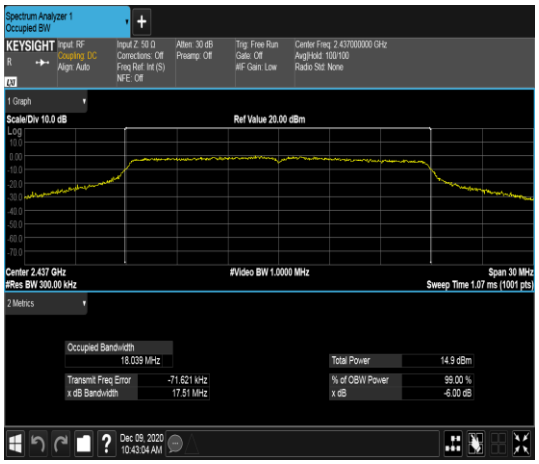
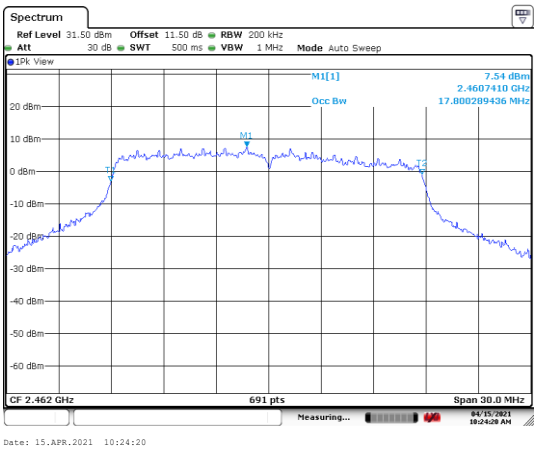
BANDWIDTH 99%

IEEE 802.11b mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11g mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

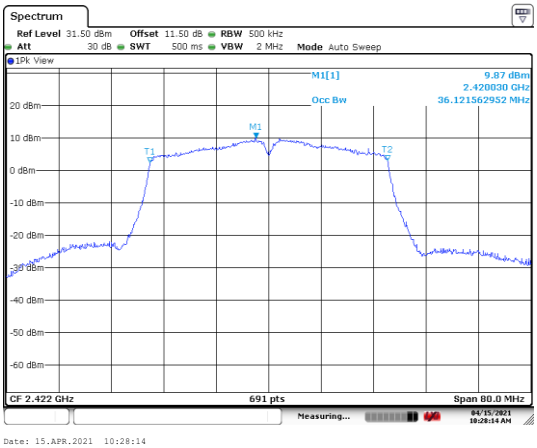
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11n HT20 mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

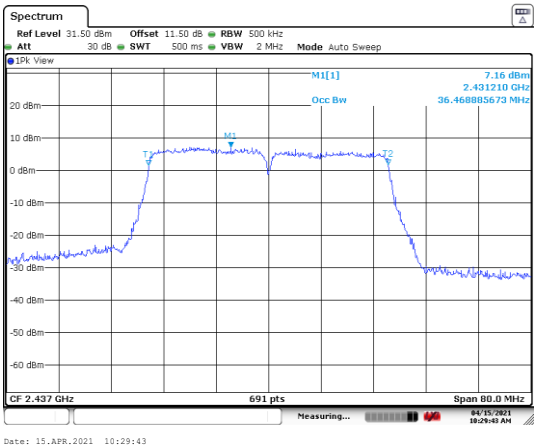
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11n HT40 mode- chain 0

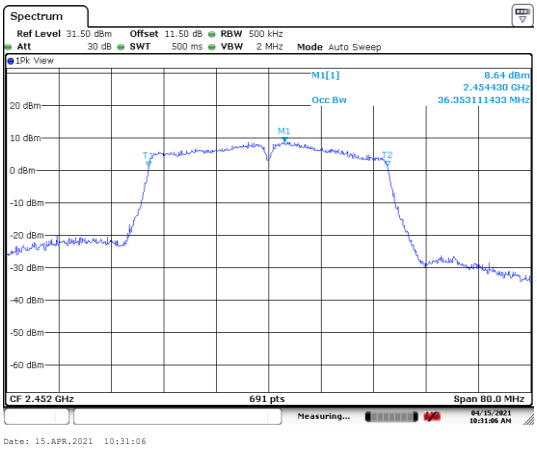
Low CH



Mid CH



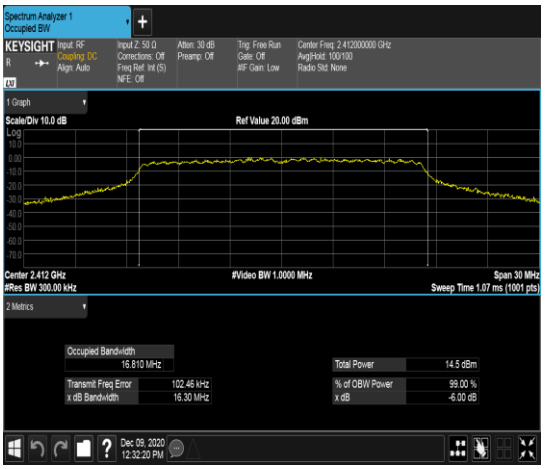
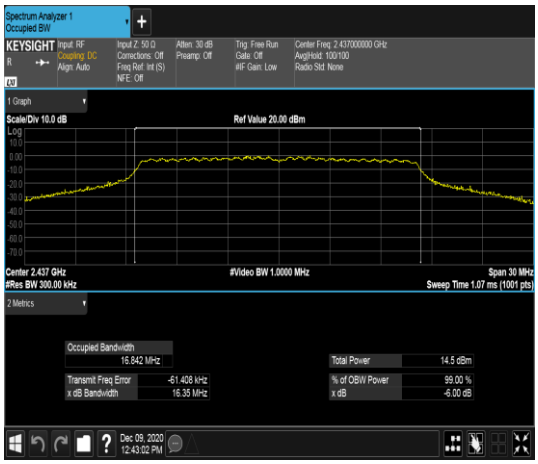
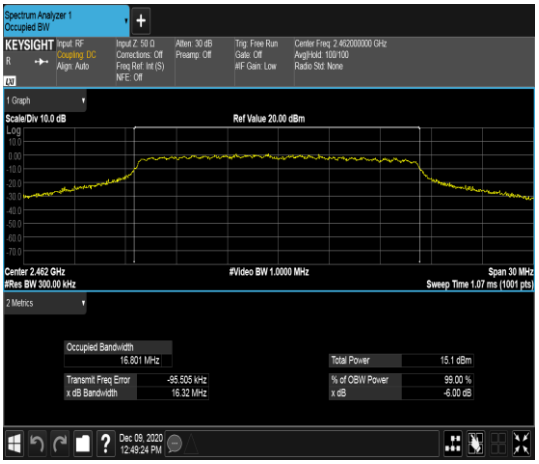
High CH



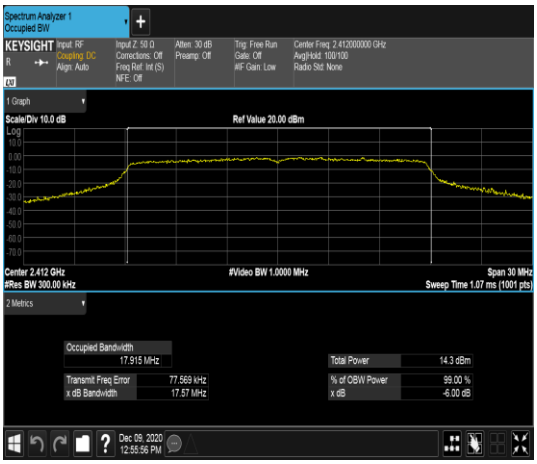
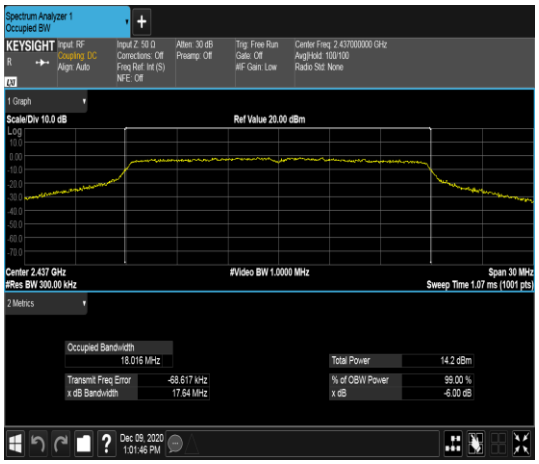
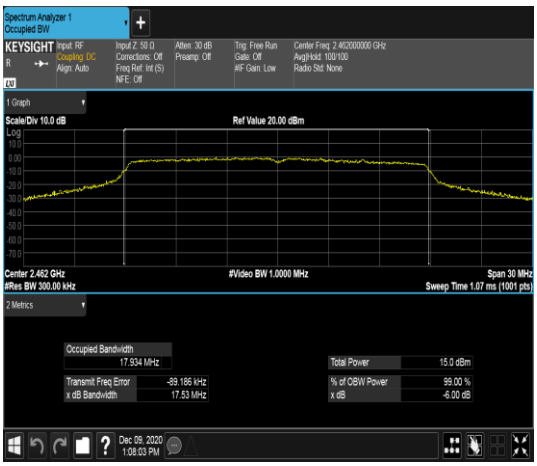
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11b mode- chain 1	
Low CH	**Mid CH**
High CH	

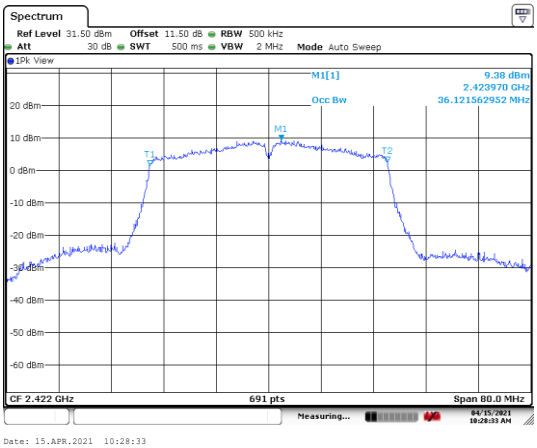
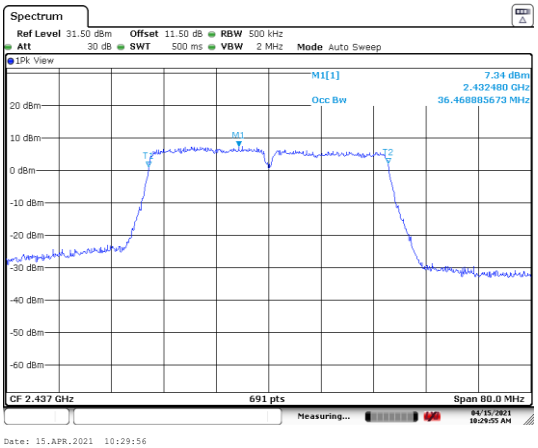
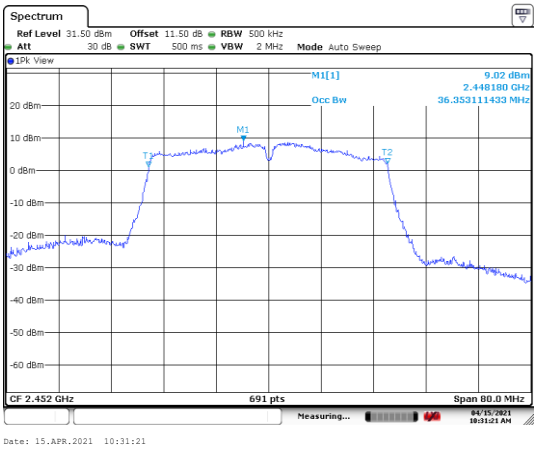
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11g mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11n HT20 mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11n HT40 mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

5.3 OUTPUT POWER MEASUREMENT

5.3.1 Test Limit

According to §15.247(b) and RSS-247 section 5.4(d),

Peak output power：

For systems using digital modulation in the 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt(30 dBm) and the e.i.r.p. shall not exceed 4Watt(36 dBm), base on the use of antennas with directional gain not exceed 6 dBi If transmitting antennas of directional gain greater than 6dBi are used the peak output power the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Limit	☒ Antenna not exceed 6 dBi：30dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 30 – (DG – 6)] ☐ Point-to-point operation：

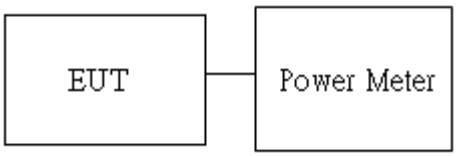
Average output power：For reporting purposes only.

5.3.2 Test Procedure

Test method Refer as ANSI C63.10:2013.

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power. in the test report.

5.3.3 Test Setup



This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

5.3.4 Test Result

Temperature:	23.5℃	**Humidity:**	50% RH
Tested by:	Rick Lee	**Test date:**	December 30, 2020

Peak output power：

Wifi 2.4G												
Config	CH	Freq. (MHz)	power setting		PK Power (dBm)		PK Total Power (dBm)	EIRP PK Total Power (dBm)	EIRP PK Total Power (W)	DG (dBi)	Limit (dBm)	EIRP Limit (dBm)
			chain0	chain1	chain0	chain1						
IEEE 802.11b Data rate: 1Mbps	Low	2412	17.0	-	19.46	-	19.46	21.42	0.1387	1.96	30	36
	Mid	2437	17.5	-	19.66	-	19.66	21.62	0.1452			
	High	2462	17.0	-	19.28	-	19.28	21.24	0.1330			
IEEE 802.11b Data rate: 1Mbps	Low	2412	-	17.0	-	19.38	19.38	21.34	0.1361			
	Mid	2437	-	17.5	-	19.89	19.89	21.85	0.1531			
	High	2462	-	17.0	-	19.26	19.26	21.22	0.1324			
IEEE 802.11g Data rate: 6Mbps	Low	2412	17.0	-	21.43	-	21.43	23.39	0.2183			
	Mid	2437	18.0	-	22.03	-	22.03	23.99	0.2506			
	High	2462	17.0	-	20.66	-	20.66	22.62	0.1828			
IEEE 802.11g Data rate: 6Mbps	Low	2412	-	17.0		21.06	21.06	23.02	0.2004			
	Mid	2437	-	18.0		21.76	21.76	23.72	0.2355			
	High	2462	-	17.0		21.41	21.41	23.37	0.2173			
IEEE 802.11n HT20 Data rate: MCS8	Low	2412	14.0	14.0	20.45	20.92	23.70	25.66	0.3683			
	Mid	2437	17.5	17.5	21.43	21.64	24.55	26.51	0.4474			
	High	2462	16.0	16.0	20.71	21.33	24.04	26.00	0.3982			
IEEE 802.11n HT40 Data rate: MCS8	Low	2422	11.0	11.0	21.83	22.03	24.94	26.90	0.4899			
	Mid	2437	17.0	17.0	22.56	22.75	25.67	27.63	0.5789			
	High	2452	14.0	14.0	21.62	22.21	24.94	26.90	0.4893			

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

Average output power：

Wifi 2.4G					
Config	CH	Freq. (MHz)	AV Power(dBm)		AV Total Power (dBm)
			chain0	chain1	
IEEE 802.11b Data rate: 1Mbps	Low	2412	17.50	-	17.50
	Mid	2437	17.44	-	17.44
	High	2462	17.41	-	17.41
IEEE 802.11b Data rate: 1Mbps	Low	2412	-	17.37	17.37
	Mid	2437	-	17.40	17.40
	High	2462	-	17.26	17.26
IEEE 802.11g Data rate: 6Mbps	Low	2412	17.15	-	17.15
	Mid	2437	17.48	-	17.48
	High	2462	16.17	-	16.17
IEEE 802.11g Data rate: 6Mbps	Low	2412	-	17.21	17.21
	Mid	2437	-	17.46	17.46
	High	2462	-	16.46	16.46
IEEE 802.11n HT20 Data rate: MCS8	Low	2412	16.08	16.09	19.10
	Mid	2437	16.95	17.00	19.99
	High	2462	15.97	16.42	19.21
IEEE 802.11n HT40 Data rate: MCS8	Low	2422	16.38	16.23	19.31
	Mid	2437	17.00	16.94	19.98
	High	2452	16.11	16.52	19.33

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

5.4 POWER SPECTRAL DENSITY

5.4.1 Test Limit

According to §15.247(e) and RSS-247 section 5.2(b),

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.

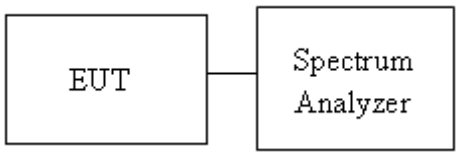
Limit	☒ Antenna not exceed 6 dBi：8dBm ☐ Antenna with DG greater than 6 dBi： [Limit = 8 – (DG – 6)] ☐ Point-to-point operation：

5.4.2 Test Procedure

Test method Refer as ANSI C63.10:2013

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 3kHz, VBW = 10kHz, Span = 1.5 times DTS Bandwidth (6 dB BW), Detector = Peak, Sweep Time = Auto and Trace = Max hold.
4. The path loss and Duty Factor were compensated to the results for each measurement by SA.
5. Mark the maximum level.
6. Measure and record the result of power spectral density. in the test report.

5.4.3 Test Setup



This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

5.4.4 Test Result

Temperature:	22.3℃	**Humidity:**	58.1% RH
Tested by:	Rick Lee	**Test date:**	December 08, 2020
Temperature:	23.5℃	**Humidity:**	58.5% RH
Tested by:	Rick Lee	**Test date:**	December 09, 2020

Test mode: IEEE 802.11b Mode / 2412-2462 MHz				
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Limit (dBm)**
Low	2412	-9.22	-9.19	8
Mid	2437	-8.39	-9.06	
High	2462	-9.83	-8.89	

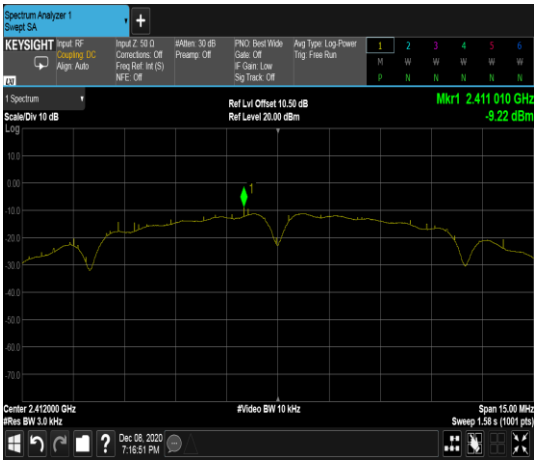
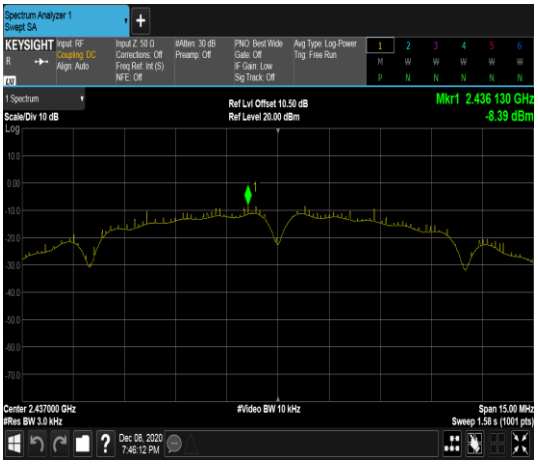
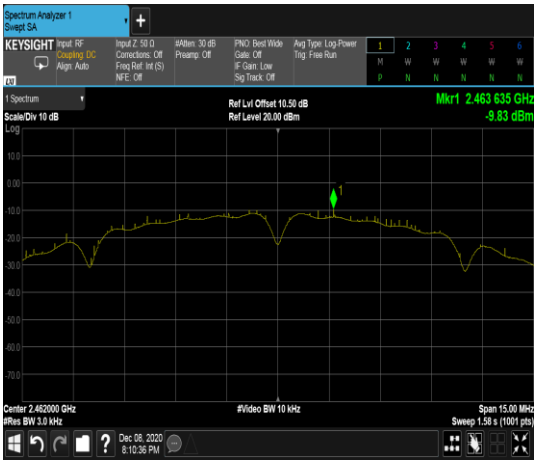
Test mode: IEEE 802.11g Mode / 2412-2462 MHz				
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Limit (dBm)**
Low	2412	-7.44	-7.92	8
Mid	2437	-7.89	-7.42	
High	2462	-6.69	-6.23	

Test mode: IEEE 802.11n HT20 Mode / 2412-2462 MHz					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PSSD (dBm)**	**Limit (dBm)**
Low	2412	-7.97	-7.54	-4.74	8
Mid	2437	-7.32	-7.88	-4.58	
High	2462	-7.7	-7.21	-4.44	

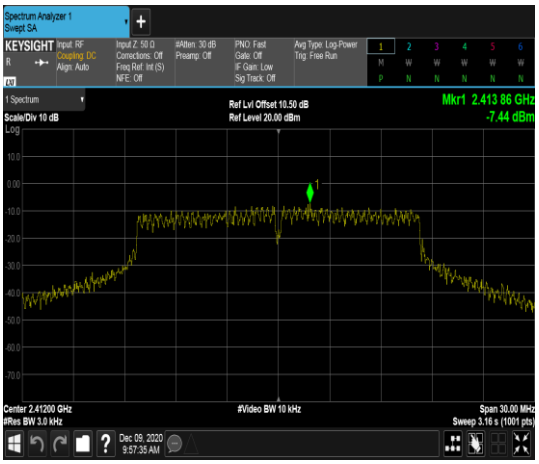
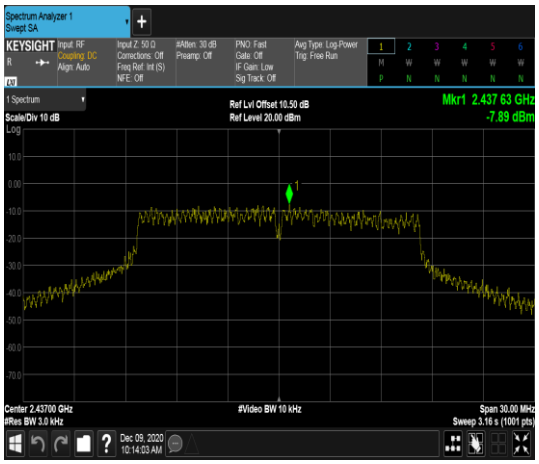
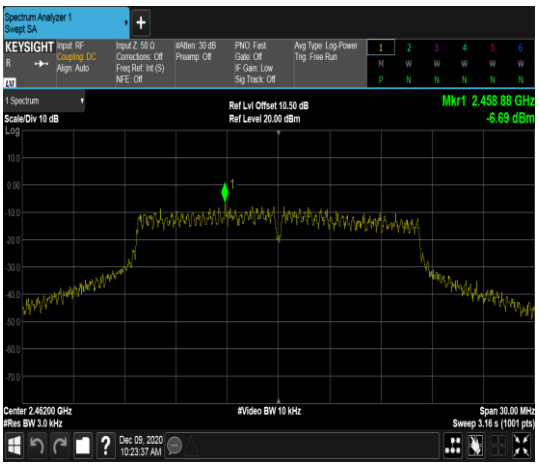
Test mode: IEEE 802.11n HT40 Mode / 2422-2452 MHz					
Channel	**Frequency (MHz)**	**Chain 0 PPSD (dBm)**	**Chain 1 PPSD (dBm)**	**Total PSSD (dBm)**	**Limit (dBm)**
Low	2422	-9.79	-9.41	-6.59	8
Mid	2437	-10.65	-9.22	-6.87	
High	2452	-9.73	-9.34	-6.52	

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

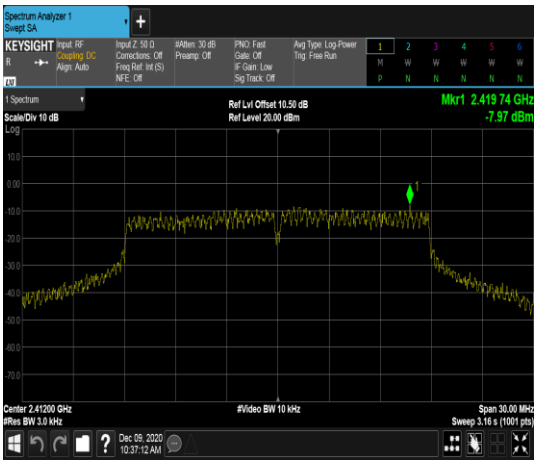
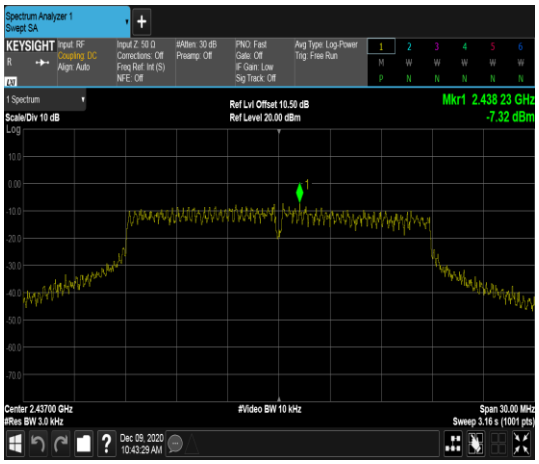
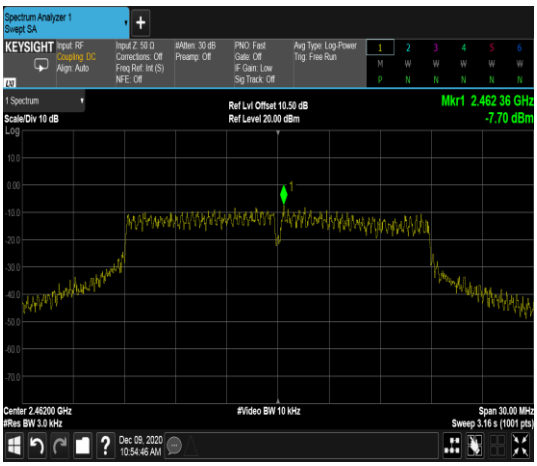
Test Data

IEEE 802.11b mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

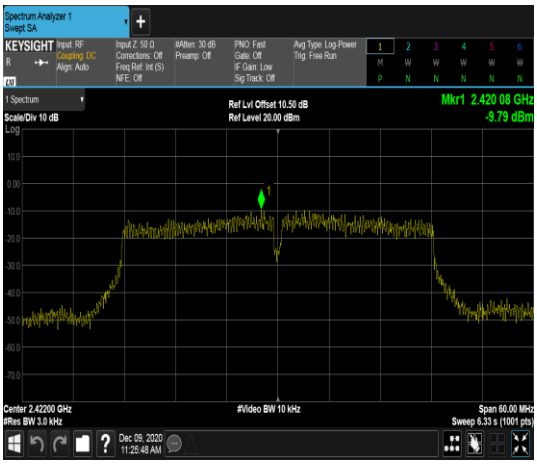
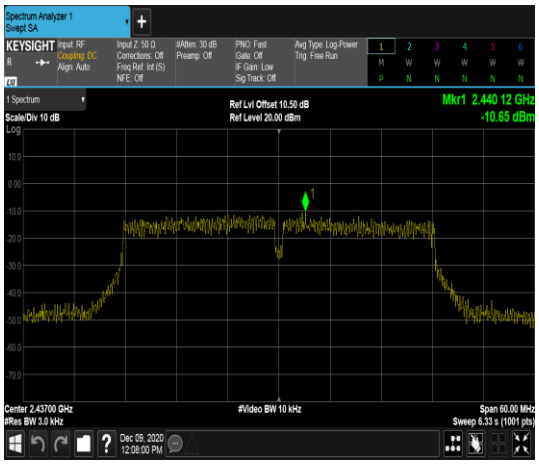
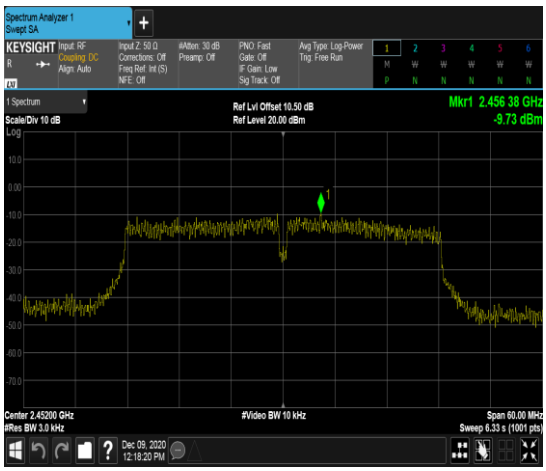
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11g mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

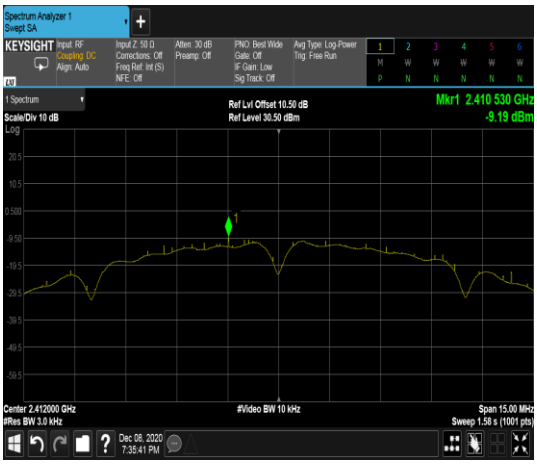
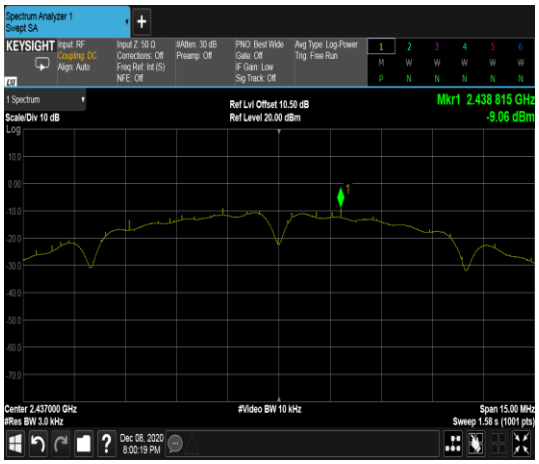
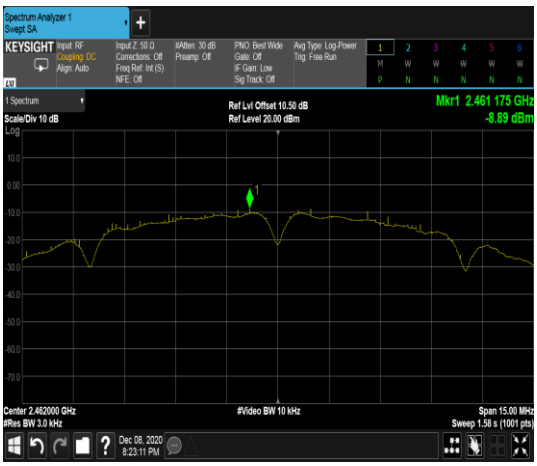
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11n HT20 mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

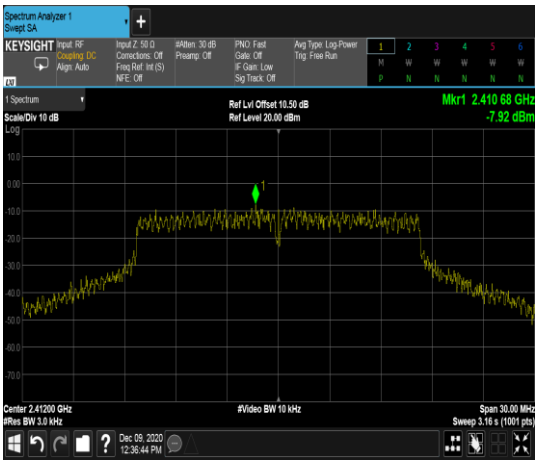
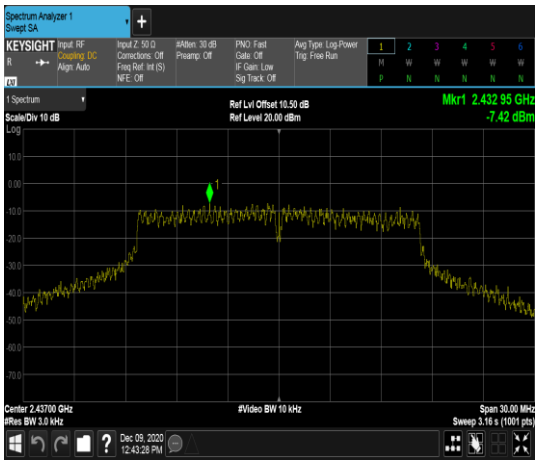
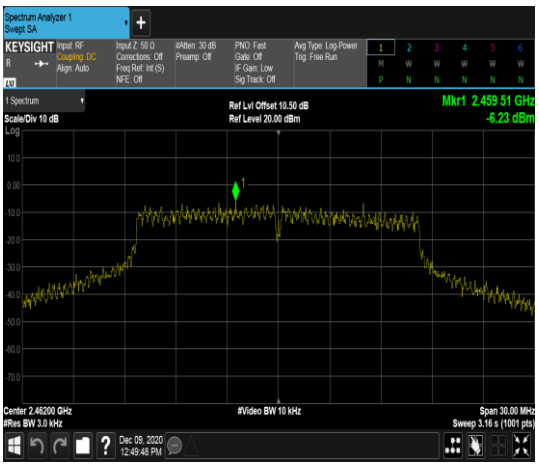
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11n HT40 mode- chain 0	
Low CH	**Mid CH**
	
High CH	
	

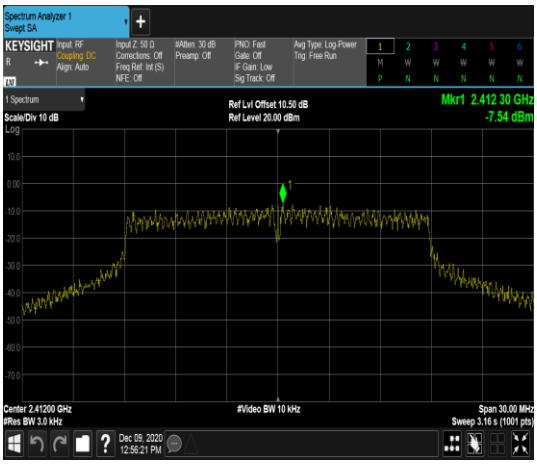
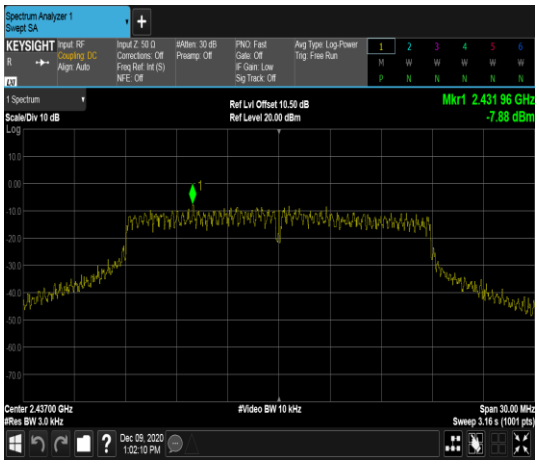
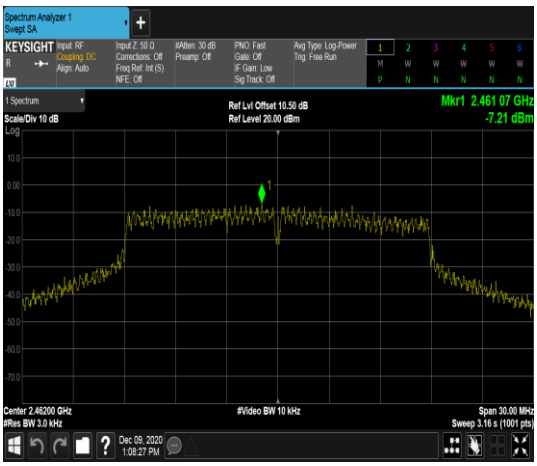
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11b mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

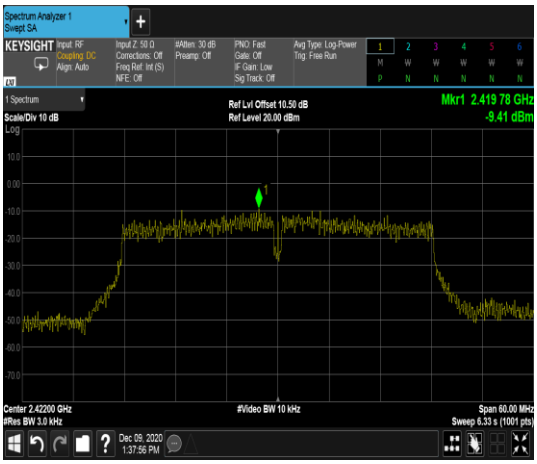
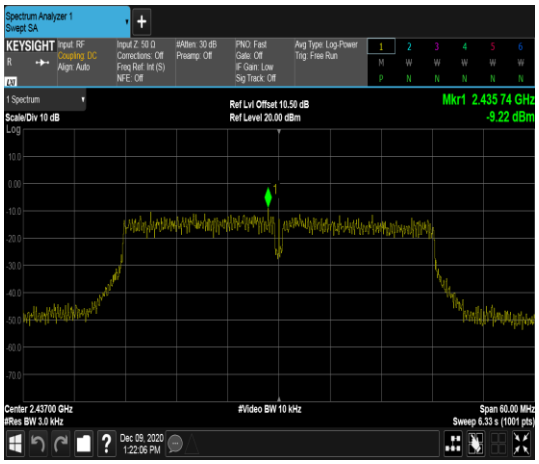
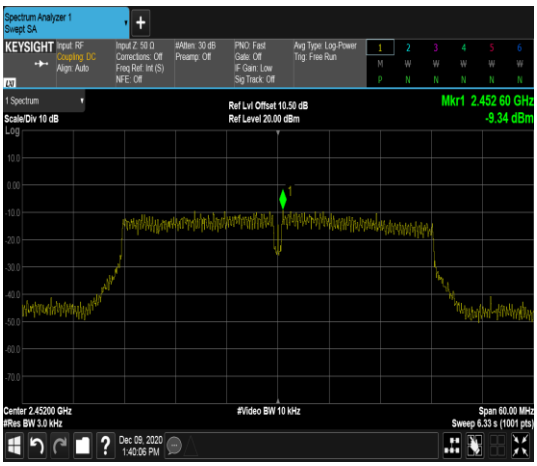
This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11g mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11n HT20 mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

IEEE 802.11n HT40 mode- chain 1	
Low CH	**Mid CH**
	
High CH	
	

This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。

5.5 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

5.5.1 Test Limit

According to §15.247(d) and RSS-247 section 5.5,

In any 100 kHz bandwidth outside the authorized frequency band,

Non-restricted bands shall be attenuated at least 20 dB/30 dB relative to the maximum PSD level in 100 kHz by RF conducted or a radiated measurement which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

5.5.2 Test Procedure

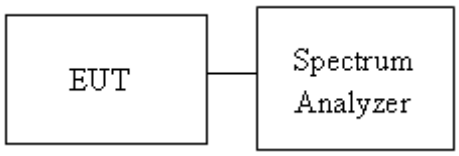
Test method Refer as ANSI C63.10:2013.

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.

2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.

3. In any 100 kHz bandwidth outside the authorized frequency band, shall be attenuated at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when conducted power procedure is used. f the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

5.5.3 Test Setup



This document cannot be reproduced except in full, without prior written approval of the Company. 本報告未經本公司書面許可，不可部份複製。