

# FCC Test Report

Product Name	Notebook
Model No.	NU50;NUx0xx (x=0~9;A~Z;a~z;_-)
FCC ID.	WL6-NU509560D2W

Applicant	ELITEGROUP COMPUTER SYSTEMS CO., LTD
Address	No.239, Sec. 2, Ti Ding Blvd., Taipei, Taiwan

Date of Receipt	June 23, 2020
Issued Date	Dec. 21, 2020
Report No.	2060931R-E3032110108
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

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The test report shall not be reproduced without the written approval of DEKRA Testing and Certification Co., Ltd.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

# Test Report

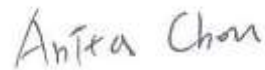
Issued Date: Dec. 21, 2020

Report No.: 2060931R-E3032110108



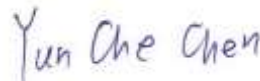
Product Name	Notebook
Applicant	ELITEGROUP COMPUTER SYSTEMS CO., LTD
Address	No.239, Sec. 2, Ti Ding Blvd., Taipei, Taiwan
Manufacturer	Golden Elite Technology (SHENZHEN) Co., Ltd.
Model No.	NU50;NUx0xx (x=0~9;A~Z;a~z;_- )
FCC ID.	WL6-NU509560D2W
EUT Rated Voltage	AC 100-240V, 50-60Hz
EUT Test Voltage	AC 120V / 60Hz
Trade Name	ECS ELITEGROUP
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C ANSI C63.4: 2014, ANSI C63.10: 2013
Test Result	Complied

Documented By :



( Senior Engineering Adm. Specialist / Anita Chou )

Tested By :



( Engineer / Yunche Chen )

Approved By :



( Director / Vincent Lin )

## TABLE OF CONTENTS

Description	Page
<b>1. GENERAL INFORMATION .....</b>	<b>5</b>
1.1. EUT Description.....	5
1.2. Tested System Details.....	7
1.3. Configuration of Tested System .....	7
1.4. EUT Exercise Software .....	8
1.5. Test Facility .....	9
1.6. List of Test Equipment.....	10
1.7. Uncertainty .....	12
<b>2. CONDUCTED EMISSION .....</b>	<b>13</b>
2.1. Test Setup .....	13
2.2. Limits.....	13
2.3. Test Procedure .....	14
2.4. Test Result of Conducted Emission.....	15
<b>3. PEAK POWER OUTPUT .....</b>	<b>17</b>
3.1. Test Setup .....	17
3.2. Limit .....	17
3.3. Test Procedure .....	17
3.4. Test Result of Peak Power Output.....	18
<b>4. RADIATED EMISSION .....</b>	<b>20</b>
4.1. Test Setup .....	20
4.2. Limits.....	21
4.3. Test Procedure .....	22
4.4. Test Result of Radiated Emission.....	23
<b>5. RF ANTENNA CONDUCTED TEST .....</b>	<b>39</b>
5.1. Test Setup .....	39
5.2. Limits.....	39
5.3. Test Procedure .....	39
5.4. Test Result of RF Antenna Conducted Test.....	40
<b>6. BAND EDGE .....</b>	<b>42</b>
6.1. Test Setup .....	42
6.2. Limit .....	43
6.3. Test Procedure .....	43
6.4. Test Result of Band Edge .....	44
<b>7. CHANNEL NUMBER.....</b>	<b>56</b>
7.1. Test Setup .....	56
7.2. Limit .....	56
7.3. Test Procedure .....	56
7.4. Test Result of Channel Number.....	57
<b>8. CHANNEL SEPARATION.....</b>	<b>59</b>
8.1. Test Setup .....	59
8.2. Limit .....	59
8.3. Test Procedure .....	59
8.4. Test Result of Channel Separation.....	60
<b>9. DWELL TIME.....</b>	<b>64</b>
9.1. Test Setup .....	64
9.2. Limit .....	64
9.3. Test Procedure .....	64
9.4. Test Result of Dwell Time .....	65
<b>10. OCCUPIED BANDWIDTH .....</b>	<b>69</b>
10.1. Test Setup .....	69
10.2. Limits.....	69
10.3. Test Procedure .....	69
10.4. Test Result of Occupied Bandwidth .....	70
<b>11. DUTY CYCLE.....</b>	<b>74</b>
11.1. Test Setup .....	74
11.2. Test Procedure .....	74
11.3. Test Result of Duty Cycle.....	75
<b>12. EMI REDUCTION METHOD DURING COMPLIANCE TESTING .....</b>	<b>77</b>
Attachment 1: EUT Test Photographs	
Attachment 2: EUT Detailed Photographs	

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## Revision History

Report No.	Version	Description	Issued Date
2060931R-E3032110108	V1.0	Initial issue of report.	2020-12-21

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	Notebook
Trade Name	ECS ELITEGROUP
Model No.	NU50;NUx0xx (x=0~9;A~Z;a~z;_ - )
FCC ID.	WL6-NU509560D2W
Frequency Range	2402 – 2480MHz
Channel Number	79
Type of Modulation	FHSS: GFSK(1Mbps) / $\pi$ /4DQPSK(2Mbps) / 8DPSK(3Mbps)
Antenna Type	PIFA Antenna
Channel Control	Auto
Antenna Gain	Refer to the table “Antenna List”
Power Adapter	MFR: FSP, M/N: FSP065-A1BR3 Input: AC 100-240V , 50-60Hz 1.7A Output: DC 5V, 3A; 9V, 3A; 12V, 3A; 15V, 3A; 20V, 3.25A Cable Out: Shielded, 1m Power cord: Non-shielded, 0.8m

#### Antenna List

No.	Manufacturer	Part No. (Vendor)	Antenna Type	Peak Gain
1	WGT	13-130-XD2050 (Main) 13-130-XD2051 (Aux)	PIFA Antenna	2.00 dBi for 2.4GHz

Note: The antenna of EUT is conforming to FCC 15.203.

Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 20:	2422 MHz	Channel 40:	2442 MHz	Channel 60:	2462 MHz
Channel 01:	2403 MHz	Channel 21:	2423 MHz	Channel 41:	2443 MHz	Channel 61:	2463 MHz
Channel 02:	2404 MHz	Channel 22:	2424 MHz	Channel 42:	2444 MHz	Channel 62:	2464 MHz
Channel 03:	2405 MHz	Channel 23:	2425 MHz	Channel 43:	2445 MHz	Channel 63:	2465 MHz
Channel 04:	2406 MHz	Channel 24:	2426 MHz	Channel 44:	2446 MHz	Channel 64:	2466 MHz
Channel 05:	2407 MHz	Channel 25:	2427 MHz	Channel 45:	2447 MHz	Channel 65:	2467 MHz
Channel 06:	2408 MHz	Channel 26:	2428 MHz	Channel 46:	2448 MHz	Channel 66:	2468 MHz
Channel 07:	2409 MHz	Channel 27:	2429 MHz	Channel 47:	2449 MHz	Channel 67:	2469 MHz
Channel 08:	2410 MHz	Channel 28:	2430 MHz	Channel 48:	2450 MHz	Channel 68:	2470 MHz
Channel 09:	2411 MHz	Channel 29:	2431 MHz	Channel 49:	2451 MHz	Channel 69:	2471 MHz
Channel 10:	2412 MHz	Channel 30:	2432 MHz	Channel 50:	2452 MHz	Channel 70:	2472 MHz
Channel 11:	2413 MHz	Channel 31:	2433 MHz	Channel 51:	2453 MHz	Channel 71:	2473 MHz
Channel 12:	2414 MHz	Channel 32:	2434 MHz	Channel 52:	2454 MHz	Channel 72:	2474 MHz
Channel 13:	2415 MHz	Channel 33:	2435 MHz	Channel 53:	2455 MHz	Channel 73:	2475 MHz
Channel 14:	2416 MHz	Channel 34:	2436 MHz	Channel 54:	2456 MHz	Channel 74:	2476 MHz
Channel 15:	2417 MHz	Channel 35:	2437 MHz	Channel 55:	2457 MHz	Channel 75:	2477 MHz
Channel 16:	2418 MHz	Channel 36:	2438 MHz	Channel 56:	2458 MHz	Channel 76:	2478 MHz
Channel 17:	2419 MHz	Channel 37:	2439 MHz	Channel 57:	2459 MHz	Channel 77:	2479 MHz
Channel 18:	2420 MHz	Channel 38:	2440 MHz	Channel 58:	2460 MHz	Channel 78:	2480 MHz
Channel 19:	2421 MHz	Channel 39:	2441 MHz	Channel 59:	2461 MHz		

Note:

1. The EUT is a Notebook with a built-in 2.4 GHz and 5 GHz WLAN and Bluetooth V5.0, V3.0, V2.1+EDR transceiver, this report for Bluetooth V3.0, V2.1+EDR.
2. These tests were conducted on a sample for the purpose of demonstrating compliance of Bluetooth transmitter with Part 15 Subpart C Paragraph 15.247 for spread spectrum devices.
3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.

Test Mode	Mode 1: Transmit - 1Mbps Mode 2: Transmit - 3Mbps
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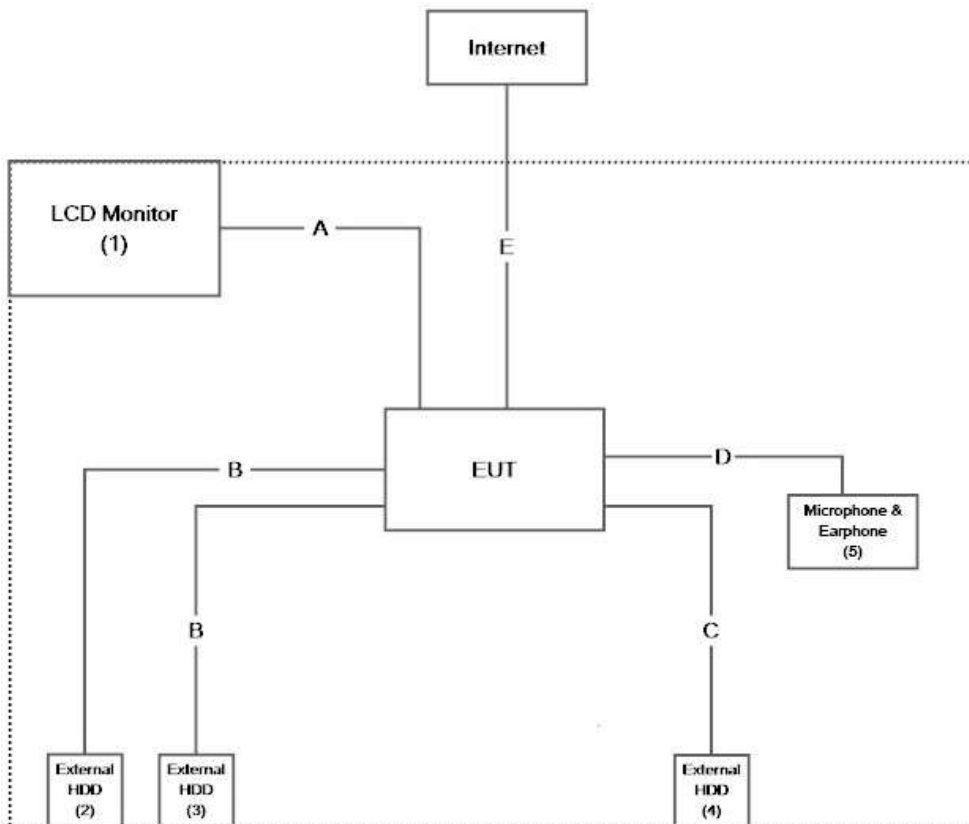
### 1.2. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	Power Cord
1 LCD Monitor	DELL	ST2320Lf	CN-0M2NN6-72872-22I-C9VS	Non-Shielded, 1.8m
2 External HDD	Transcend	TS1TSJ25H3B	F21786-0125	N/A
3 External HDD	Transcend	TS1TSJ25H3B	F21786-0005	N/A
4 External HDD	Transcend	TS1TSJ25MC	F30467-0003	N/A
5 Microphone & Earphone	RONEVER	MOE241	N/A	N/A

Signal Cable Type	Signal cable Description
A HDMI Cable	Non-shielded, 1.8m
B USB Cable	Shielded, 0.5m, two PCS.
C USB Type-C Cable	Shielded, 0.5m
D Microphone & Earphone Cable	Non-shielded, 1.2m
E LAN Cable	Non-shielded, 2.0m

### 1.3. Configuration of Tested System



#### **1.4. EUT Exercise Software**

1. Setup the EUT as shown in Section 1.4.
2. Execute software “DRTU V.11.1941.0-10270” on the EUT.
3. Configure the test mode, the test channel, and the data rate.
4. Press “OK” to start the continuous Transmit.
5. Verify that the EUT works properly.



## 1.5. Test Facility

Ambient conditions in the laboratory:

Performed Item	Items	Required	Actual
Conducted Emission	Temperature (°C)	10~40 °C	26.5 °C
	Humidity (%RH)	10~90 %	56.0 %
Radiated Emission	Temperature (°C)	10~40 °C	26.1 °C
	Humidity (%RH)	10~90 %	73.0 %
Conductive	Temperature (°C)	10~40 °C	28.0 °C
	Humidity (%RH)	10~90 %	72.9 %

**USA : FCC Registration Number: TW3023**

**Canada : IC Registration Number: 4075A**

Site Description: Accredited by TAF  
Accredited Number: 3023

Test Laboratory: DEKRA Testing and Certification Co., Ltd  
Address: No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451,  
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Website: <http://www.dekra.com.tw>

## 1.6. List of Test Equipment

### For Conducted measurements /CB3/SR8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
	Temperature Chamber	WIT GROUP	TH-1S-B	EQ-201-00146	2020/04/06	2021/04/05
X	Spectrum Analyzer	Agilent	N9010A	MY53470892	2019/09/25	2020/09/24
X	Peak Power Analyzer	Keysight	8990B	MY51000410	2020/07/01	2021/06/30
X	Wideband Power Sensor	Keysight	N1923A	MY56080003	2020/07/01	2021/06/30
X	Wideband Power Sensor	Keysight	N1923A	MY56080004	2020/07/01	2021/06/30
X	EMI Test Receiver	R&S	ESCS 30	100369	2019/11/27	2020/11/26
X	LISN	R&S	ENV216	101105	2020/04/27	2021/04/26
X	LISN	R&S	ESH3-Z5	836679/014	2020/04/26	2021/04/25
X	Coaxial Cable	DEKRA	RG 400	LC018-RG	2020/06/19	2021/06/18

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version : DEKRA Conduction Test SystemV9.0.5.

**For Radiated measurements /Site3/CB8**

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
X	Test Receiver	R&S	ESR7	101602	2019/12/16	2020/12/15
X	Signal Analyzer	R&S	FSV40	101869	2020/06/24	2021/06/23
X	Loop Antenna	Teseq	HLA6121	37133	2019/10/15	2021/10/14
X	Bilog Antenna	Schaffner Chase	CBL6112B	2916	2020/01/20	2021/01/19
X	Coaxial Cable	DEKRA	L1907-001C	280280.F141.1000D	2020/07/09	2021/07/08
X	Amplifier	EMCI	EMC001330	980254	2020/07/28	2021/06/10
X	Horn Antenna	ETS-LINDGREN	3117	00228113	2020/05/28	2021/05/27
X	Coaxial Cable	DEKRA	L1907-002C	280280.F141.1000D	2020/07/09	2021/07/08
X	Amplifier	EMCI	EMC05820SE	980361	2019/09/23	2020/09/22
X	Amplifier	SGH	PRAMP118	20200202	2020/03/17	2021/03/16
X	Horn Antenna	Com-Power	AH-1840	101101	2019/10/31	2020/10/30
X	Amplifier + Cable	EMCI	EMC184045SE	980369	2020/04/23	2021/04/22
	Bilog Antenna	Schaffner Chase	CBL6112B	2916	2020/01/20	2021/01/19
	Coaxial Cable	DEKRA	L1907-003C	00100A1B3A120M	2020/07/09	2021/07/08
	Amplifier	EMCI	EMC001330	980255	2020/03/17	2021/03/16
	Horn Antenna	ETS-LINDGREN	3117	00228111	2020/05/28	2021/05/27
	Amplifier	SGH	PRAMP0510	20200206	2020/03/17	2021/03/16
	Amplifier	SGH	PRAMP118	20200202	2020/03/17	2021/03/16
X	Filter	MICRO-TRONICS	BRM50702	G270	2019/08/08	2020/08/07
X	Filter	MICRO-TRONICS	BRM50716	G196	2019/08/08	2020/08/07

## Note:

1. Loop Antenna is calibrated every two years, the other equipments are calibrated every one year.
2. The test instruments marked with "X" are used to measure the final test results.
3. Test Software version : DEKRA Test SystemV1.1.

## 1.7. Uncertainty

Uncertainties have been calculated according to the DEKRA internal document, and is described in each test chapter of this report.

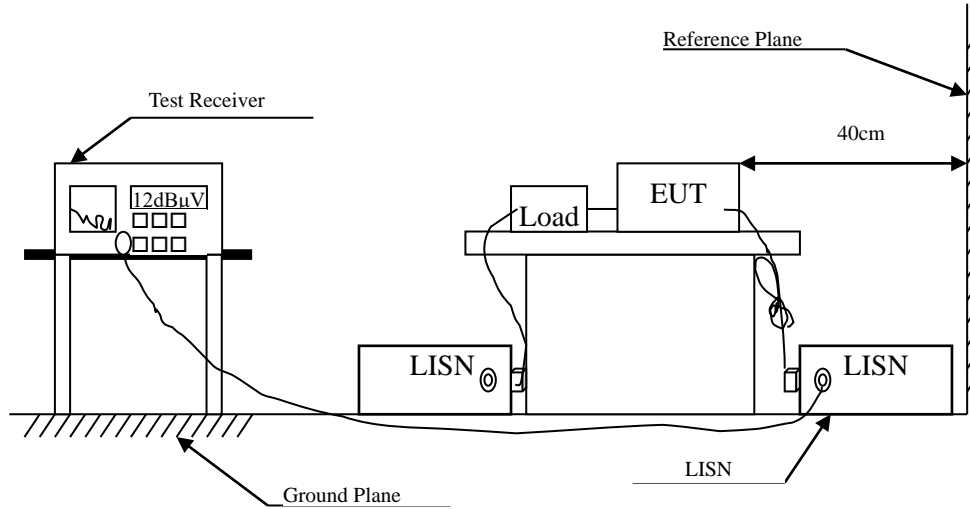
The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95%.

Measurement uncertainties evaluated for each testing system and associated connections are given here to provide the system information for reference. Compliance determinations do not take into account measurement uncertainties for each testing system, but are based on the results of the compliance measurement.

Test item	Uncertainty	
Conducted Emission	±3.42dB	
Peak Power Output	Power Meter ±0.89dB	Spectrum Analyzer ±2.06dB
Radiated Emission	9kHz~30MHz: ±3.88dB 30MHz~1GHz: ±4.06dB 1GHz~18GHz: ±3.71dB 18GHz~40GHz: ±3.73dB 40GHz~50GHz: ±3.75dB 50GHz~325GHz: ±4.39dB	
RF antenna conducted test	±2.06dB	
Band Edge	9kHz~30MHz: ±3.88dB 30MHz~1GHz: ±4.06dB 1GHz~18GHz: ±3.71dB 18GHz~40GHz: ±3.73dB 40GHz~50GHz: ±3.75dB 50GHz~325GHz: ±4.39dB	
Channel Separation	±1544.74Hz	
Dwell Time	±2.31msec	
Occupied Bandwidth	±1544.74Hz	
Duty Cycle (2.4GHz)	±2.31msec	

## 2. Conducted Emission

### 2.1. Test Setup



### 2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dB $\mu$ V) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges.

### **2.3. Test Procedure**

The EUT and Peripherals are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

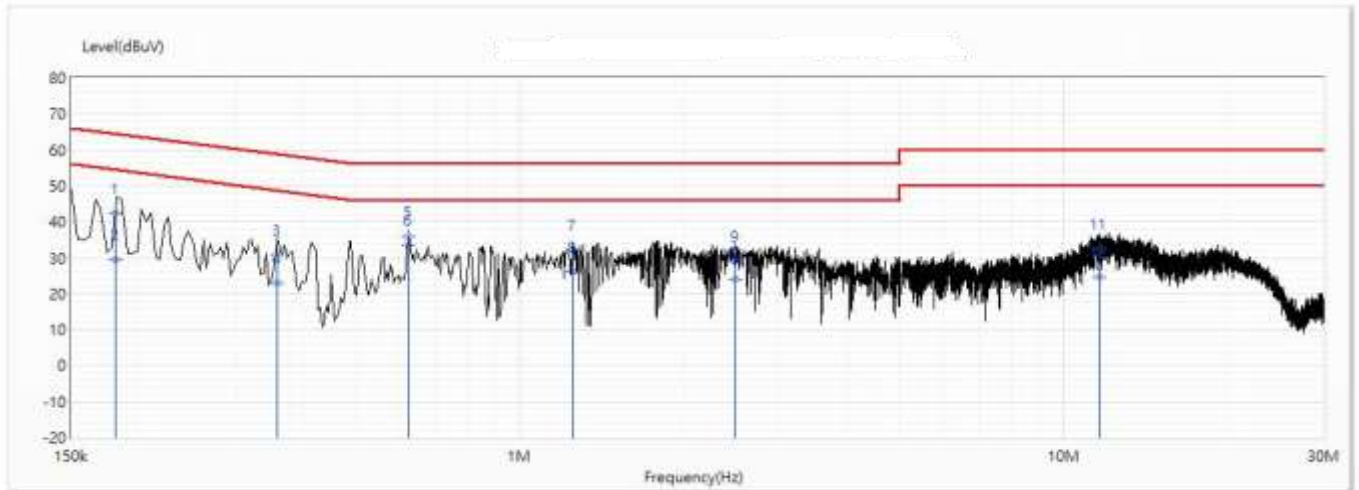
Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

The EUT setup and the test procedure are according to ANSI C63.4, 2014 to comply with the requirements of FCC 47CFR Subpart C.

## 2.4. Test Result of Conducted Emission

Product : Notebook  
 Test Item : Conducted Emission Test  
 Test date : 2020/08/15  
 Test Mode : Mode 2: Transmit - 3Mbps (2441MHz)

Line1



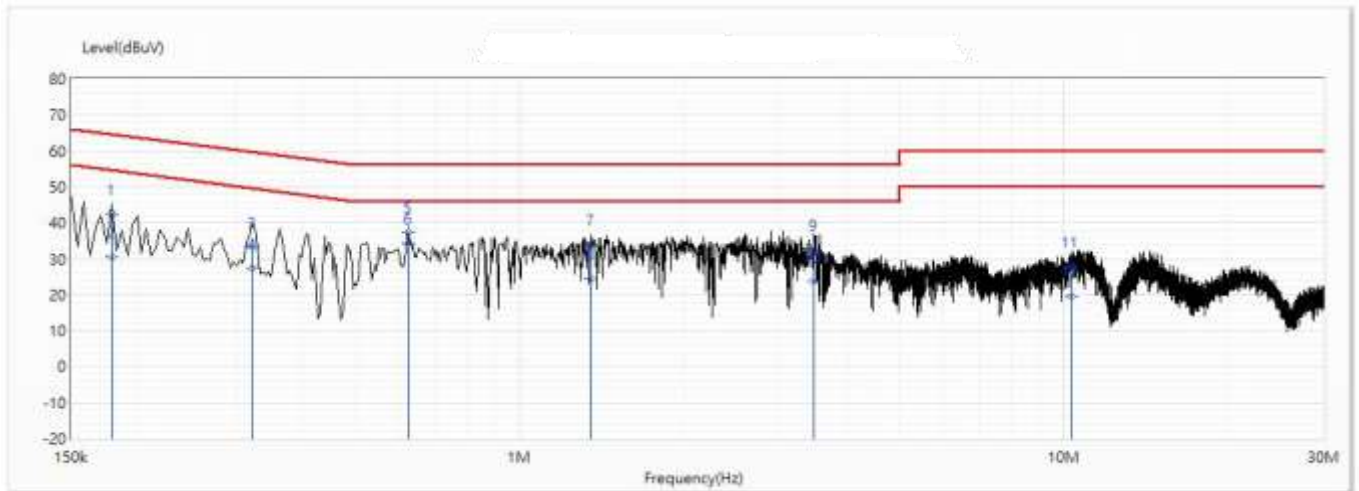
No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.181	42.40	64.46	-22.06	32.59	9.80	QP
2	0.181	29.42	54.46	-25.03	19.62	9.80	AV
3	0.357	30.94	58.79	-27.84	21.15	9.80	QP
4	0.357	22.96	48.79	-25.82	13.17	9.80	AV
5	0.625	35.98	56.00	-20.02	26.18	9.80	QP
*6	0.625	33.75	46.00	-12.25	23.95	9.80	AV
7	1.25	32.06	56.00	-23.94	22.25	9.81	QP
8	1.25	26.00	46.00	-20.00	16.19	9.81	AV
9	2.492	29.02	56.00	-26.98	19.15	9.86	QP
10	2.492	23.90	46.00	-22.10	14.03	9.86	AV
11	11.592	32.69	60.00	-27.31	22.60	10.09	QP
12	11.592	24.61	50.00	-25.39	14.51	10.09	AV

Remark:

1. "\*" means this data is the worst emission level; "!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=LISN Factor+Cable Loss).
3. Margin=Emission Level-Limit

Product : Notebook  
 Test Item : Conducted Emission Test  
 Test date : 2020/08/15  
 Test Mode : Mode 2: Transmit - 3Mbps (2441MHz)

Neutral



No	Frequency (MHz)	Emission Level (dBuV)	Limit (dBuV)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB)	Detector Type
1	0.178	42.54	64.58	-22.04	32.75	9.78	QP
2	0.178	30.63	54.58	-23.94	20.85	9.78	AV
3	0.323	33.19	59.62	-26.43	23.41	9.78	QP
4	0.323	27.49	49.62	-22.13	17.71	9.78	AV
5	0.625	37.19	56.00	-18.81	27.40	9.79	QP
*6	0.625	34.14	46.00	-11.86	24.35	9.79	AV
7	1.351	33.83	56.00	-22.17	24.03	9.80	QP
8	1.351	24.22	46.00	-21.78	14.41	9.80	AV
9	3.475	32.70	56.00	-23.30	22.82	9.88	QP
10	3.475	23.65	46.00	-22.35	13.77	9.88	AV
11	10.337	27.89	60.00	-32.11	17.79	10.09	QP
12	10.337	19.48	50.00	-30.52	9.39	10.09	AV

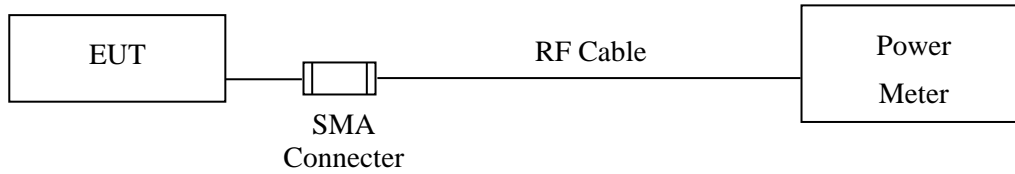
Remark:

1. "\*" means this data is the worst emission level; "!" means this data is over limit.
2. Emission Level=Reading Level + Correct Factor(Correct Factor=LISN Factor+Cable Loss).
3. Margin=Emission Level-Limit



### 3. Peak Power Output

#### 3.1. Test Setup



#### 3.2. Limit

The maximum peak power shall be less 1Watt.

#### 3.3. Test Procedure

Tested according to FHSS test procedure of KDB 558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements.

### 3.4. Test Result of Peak Power Output

Product : Notebook  
Test Item : Peak Power Output  
Test Mode : Mode 1: Transmit - 1Mbps  
Test Date : 2020/08/28

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit	Result
Channel 00	2402	8.42	1 Watt= 30 dBm	Pass
Channel 39	2441	8.89	1 Watt= 30 dBm	Pass
Channel 78	2480	9.13	1 Watt= 30 dBm	Pass

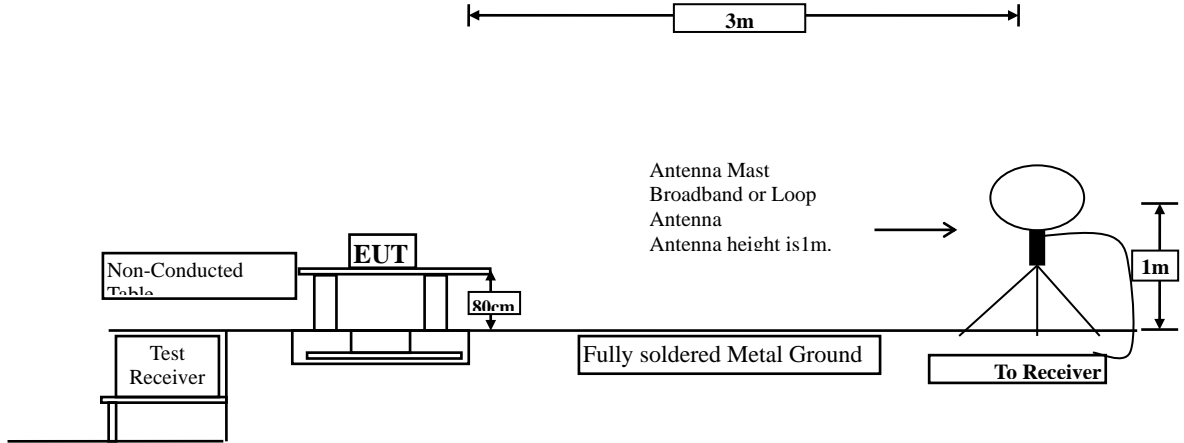
Product : Notebook  
Test Item : Peak Power Output  
Test Mode : Mode 2: Transmit - 3Mbps  
Test Date : 2020/08/28

Channel No.	Frequency (MHz)	Measurement (dBm)	Required Limit	Result
Channel 00	2402	7.78	1 Watt= 30 dBm	Pass
Channel 39	2441	7.68	1 Watt= 30 dBm	Pass
Channel 78	2480	7.90	1 Watt= 30 dBm	Pass

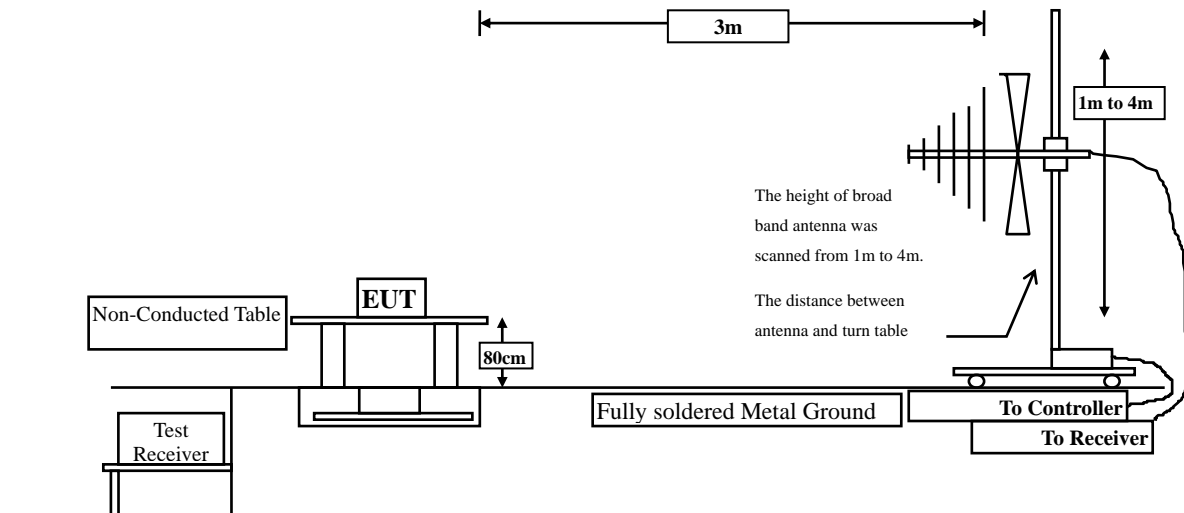
## 4. Radiated Emission

### 4.1. Test Setup

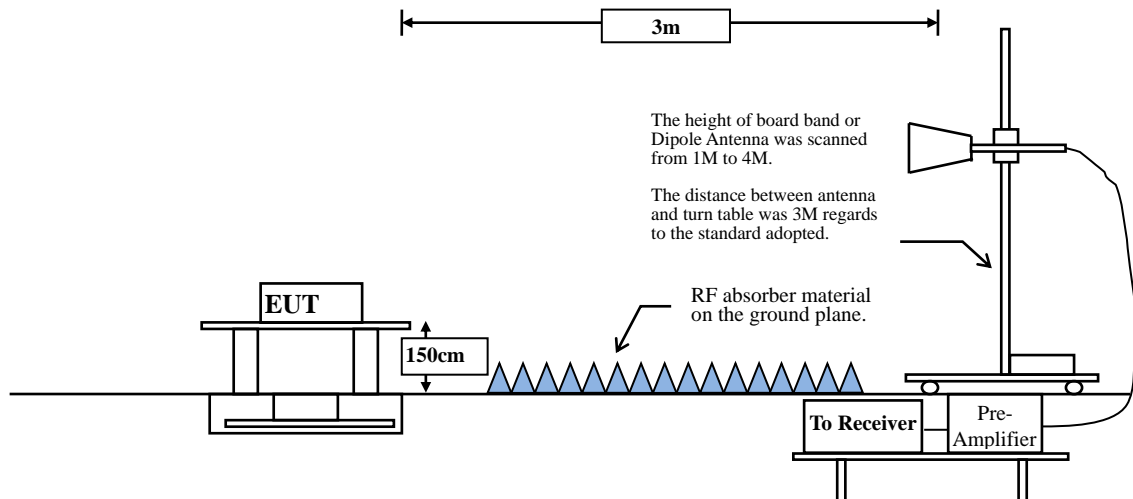
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



## 4.2. Limits

### ➤ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

<b>FCC Part 15 Subpart C Paragraph 15.209 Limits</b>		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

- Remarks:
1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
  2. In the Above Table, the tighter limit applies at the band edges.
  3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

### 4.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013 and tested compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

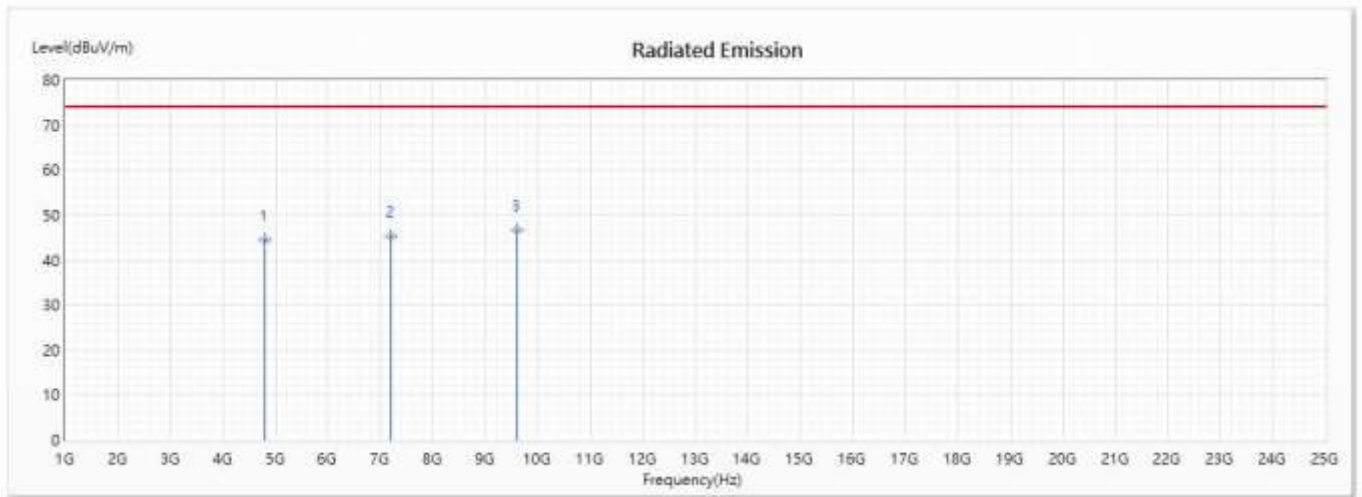
The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

#### 4.4. Test Result of Radiated Emission

Product : Notebook  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 1: Transmit - 1Mbps(2402MHz)  
 Test Date : 2020/07/28

Horizontal



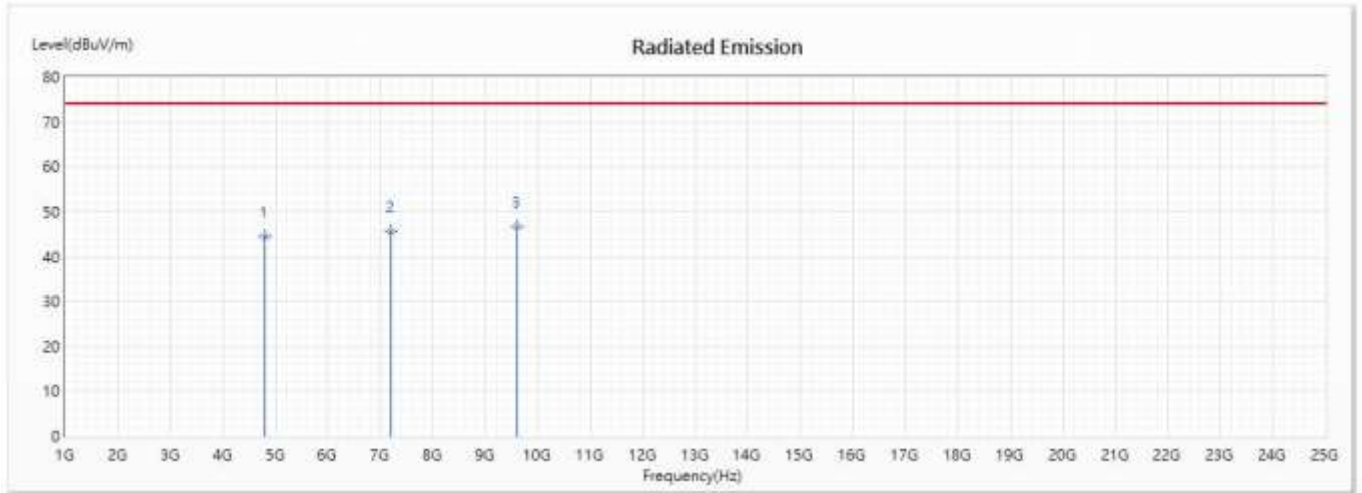
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4804	44.56	74.00	-29.44	56.79	-12.23	PK
2	7206	45.36	74.00	-28.64	58.22	-12.86	PK
* 3	9608	46.56	74.00	-27.44	59.88	-13.32	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 1: Transmit - 1Mbps(2402MHz)  
 Test Date : 2020/07/28

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4804	44.63	74.00	-29.37	56.86	-12.23	PK
2	7206	45.57	74.00	-28.43	58.43	-12.86	PK
* 3	9608	46.75	74.00	-27.25	60.07	-13.32	PK

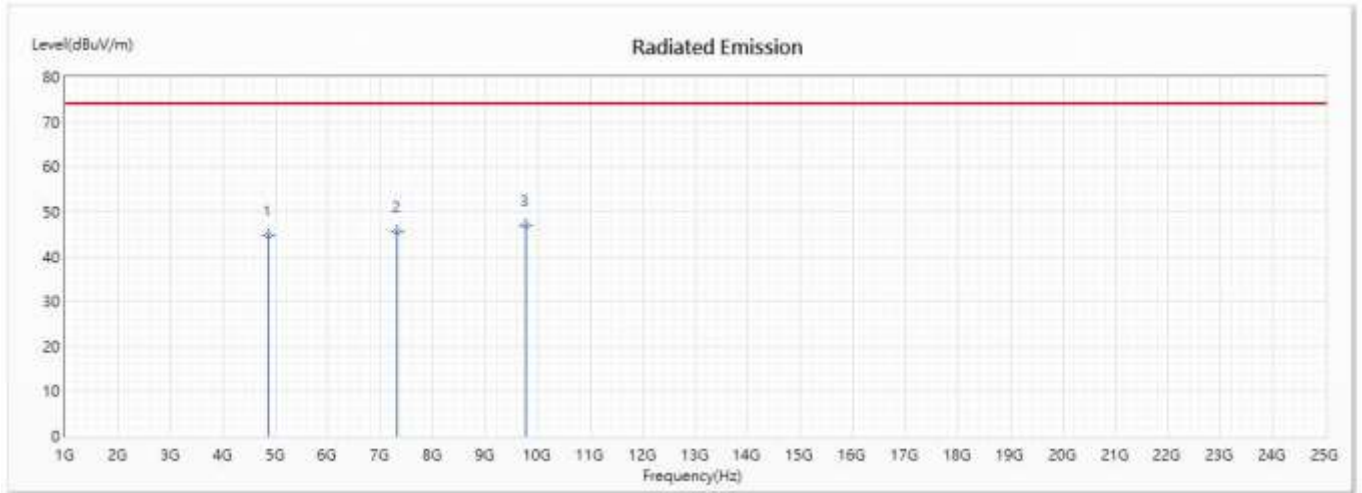
Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product : Notebook  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 1: Transmit - 1Mbps(2441MHz)  
 Test Date : 2020/07/28

Horizontal



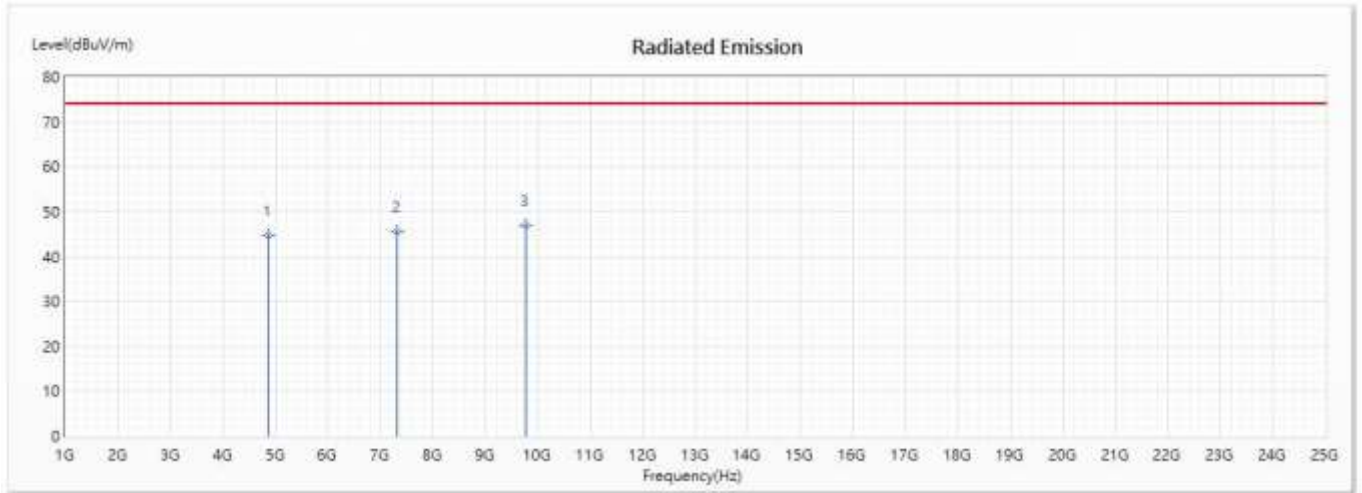
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4882	44.66	74.00	-29.34	56.08	-11.42	PK
2	7323	45.55	74.00	-28.45	59.02	-13.47	PK
* 3	9764	46.83	74.00	-27.17	59.15	-12.32	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 1: Transmit - 1Mbps(2441MHz)  
 Test Date : 2020/07/28

Vertical



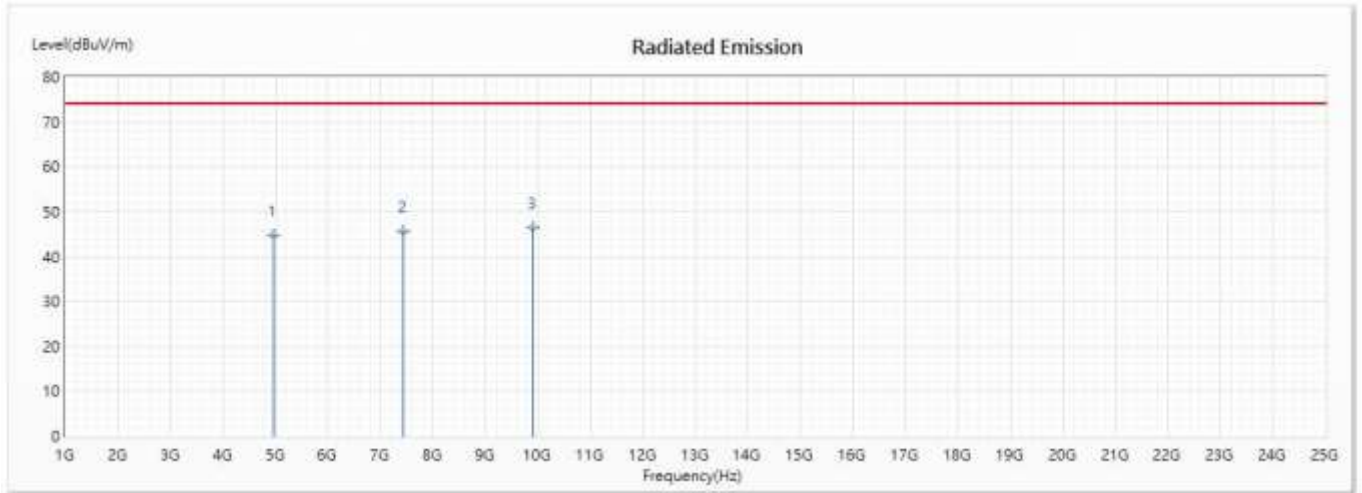
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4882	44.72	74.00	-29.28	56.14	-11.42	PK
2	7323	45.61	74.00	-28.39	59.08	-13.47	PK
* 3	9764	46.89	74.00	-27.11	59.21	-12.32	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 1: Transmit - 1Mbps(2480MHz)  
 Test Date : 2020/07/28

Horizontal



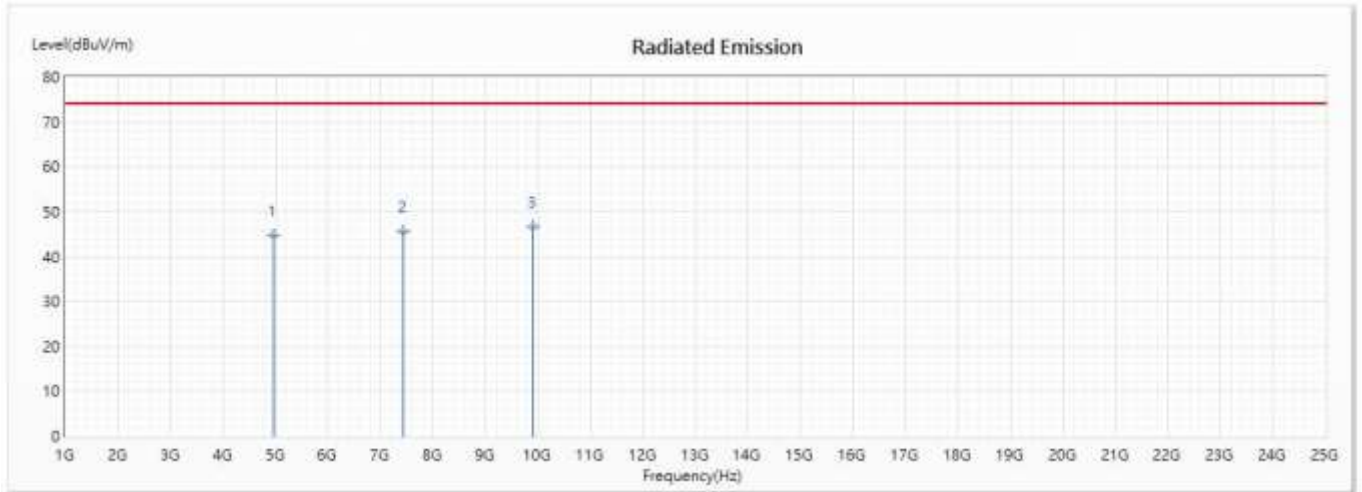
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4960	44.83	74.00	-29.17	55.54	-10.71	PK
2	7440	45.61	74.00	-28.39	60.13	-14.52	PK
* 3	9920	46.53	74.00	-27.47	60.60	-14.07	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 1: Transmit - 1Mbps(2480MHz)  
 Test Date : 2020/07/28

Vertical



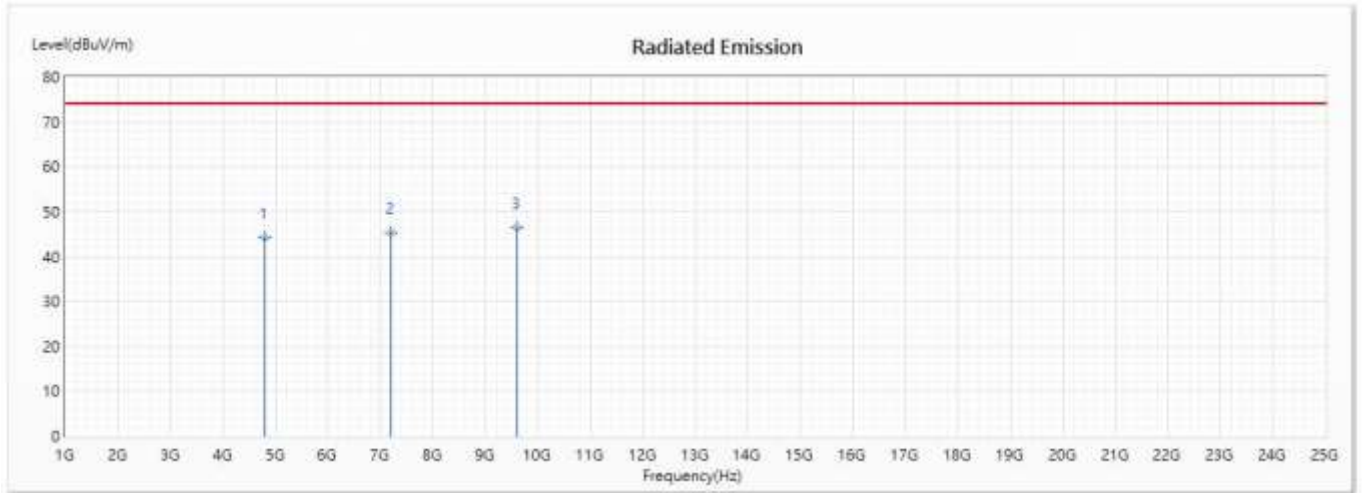
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4960	44.81	74.00	-29.19	55.52	-10.71	PK
2	7440	45.58	74.00	-28.42	60.10	-14.52	PK
* 3	9920	46.58	74.00	-27.42	60.65	-14.07	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 2: Transmit - 3Mbps (2402MHz)  
 Test Date : 2020/07/28

Horizontal



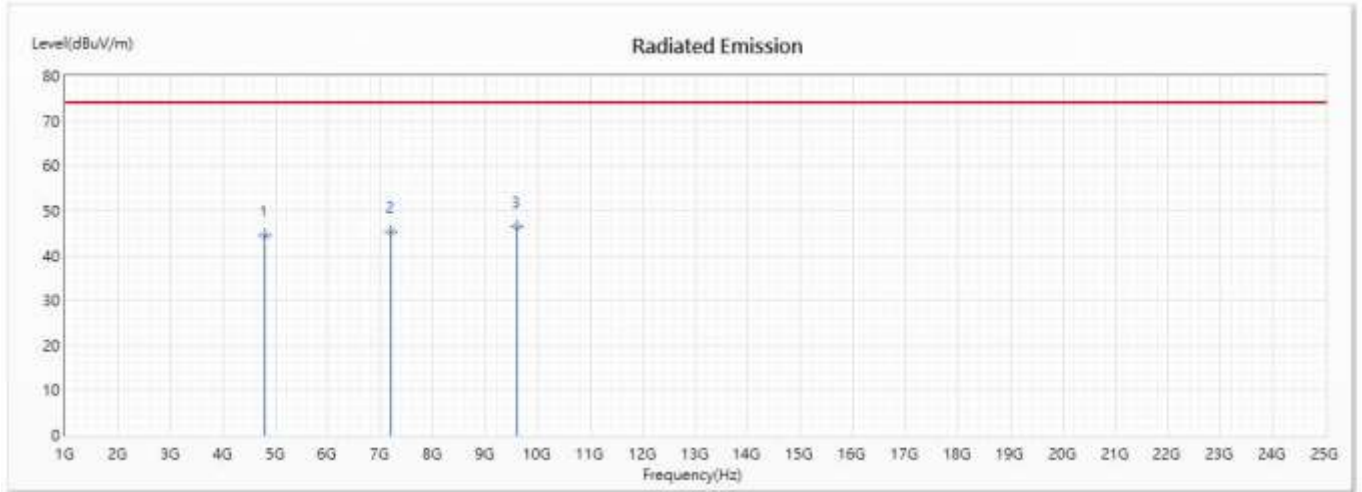
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4804	44.35	74.00	-29.65	56.58	-12.23	PK
2	7206	45.26	74.00	-28.74	58.12	-12.86	PK
* 3	9608	46.43	74.00	-27.57	59.75	-13.32	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Notebook  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 2: Transmit - 3Mbps (2402MHz)  
 Test Date : 2020/07/28

Vertical



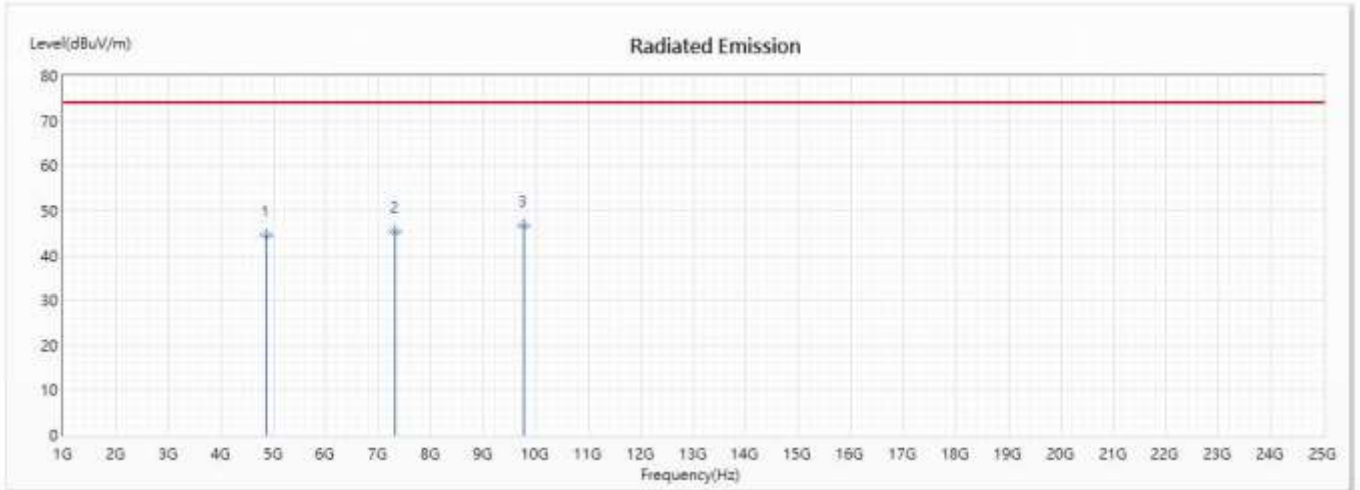
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4804	44.39	74.00	-29.61	56.62	-12.23	PK
2	7206	45.33	74.00	-28.67	58.19	-12.86	PK
* 3	9608	46.55	74.00	-27.45	59.87	-13.32	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Notebook  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 2: Transmit - 3Mbps (2441MHz)  
 Test Date : 2020/07/28

Horizontal



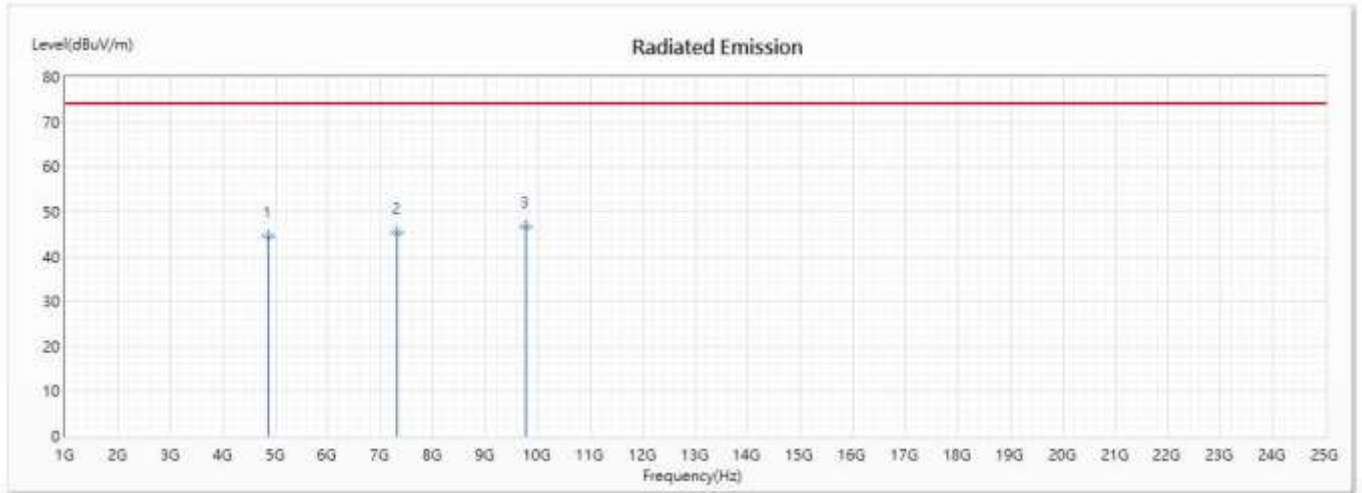
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4882	44.43	74.00	-29.57	55.85	-11.42	PK
2	7323	45.37	74.00	-28.63	58.84	-13.47	PK
* 3	9764	46.63	74.00	-27.37	58.95	-12.32	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 2: Transmit - 3Mbps (2441MHz)  
 Test Date : 2020/07/28

Vertical



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4882	44.56	74.00	-29.44	55.98	-11.42	PK
2	7323	45.45	74.00	-28.55	58.92	-13.47	PK
* 3	9764	46.71	74.00	-27.29	59.03	-12.32	PK

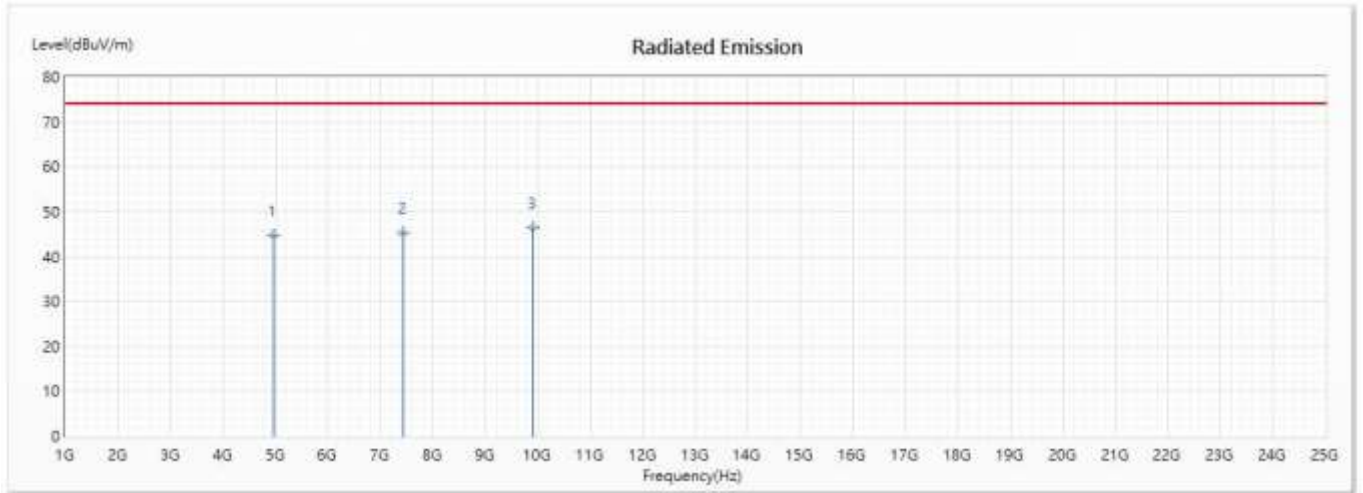
Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product : Notebook  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 2: Transmit - 3Mbps (2480MHz)  
 Test Date : 2020/07/28

Horizontal



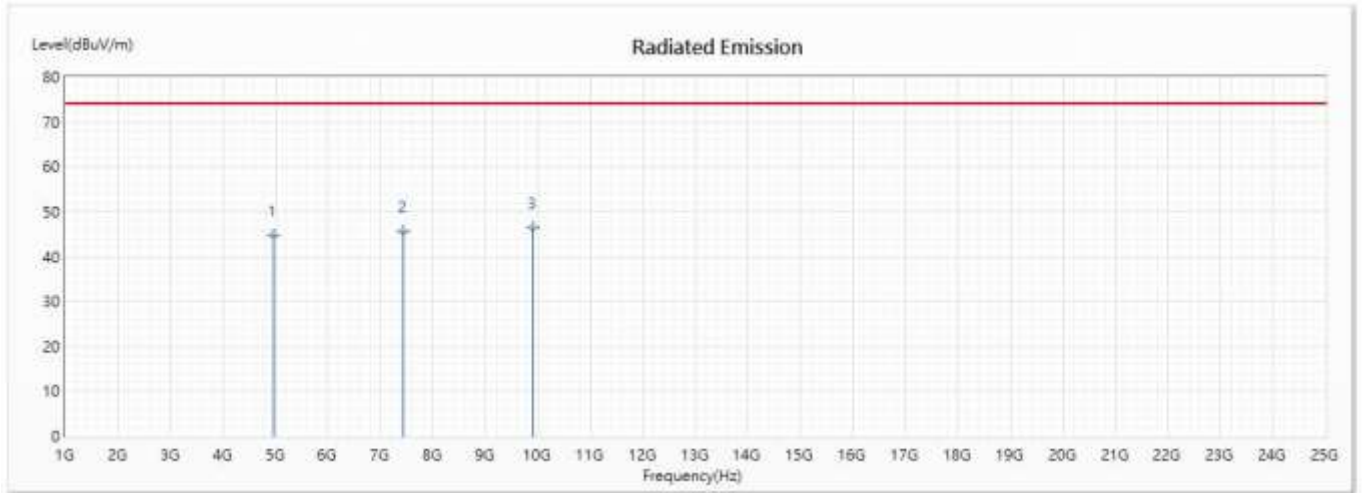
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4960	44.67	74.00	-29.33	55.38	-10.71	PK
2	7440	45.45	74.00	-28.55	59.97	-14.52	PK
* 3	9920	46.38	74.00	-27.62	60.45	-14.07	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook  
 Test Item : Harmonic Radiated Emission  
 Test Mode : Mode 2: Transmit - 3Mbps (2480MHz)  
 Test Date : 2020/07/28

Vertical



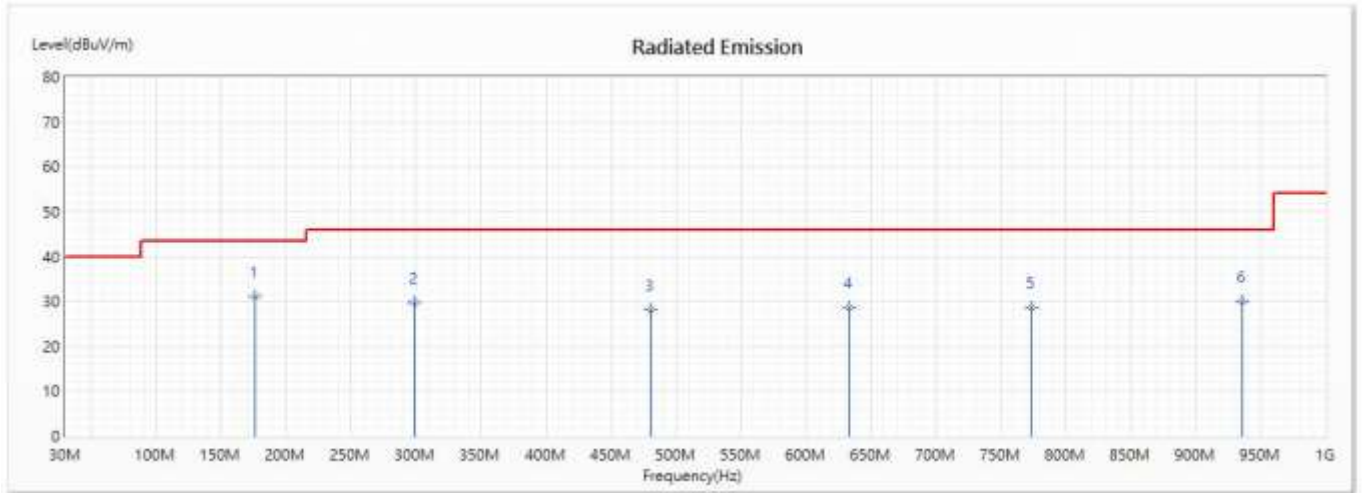
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	4960	44.75	74.00	-29.25	55.46	-10.71	PK
2	7440	45.66	74.00	-28.34	60.18	-14.52	PK
* 3	9920	46.45	74.00	-27.55	60.52	-14.07	PK

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The average measurement was not performed when the peak measured data under the limit of average detection.
5. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Notebook  
 Test Item : General Radiated Emission  
 Test Mode : Mode 1: Transmit - 1Mbps (2441MHz)  
 Test Date : 2020/07/28

Horizontal



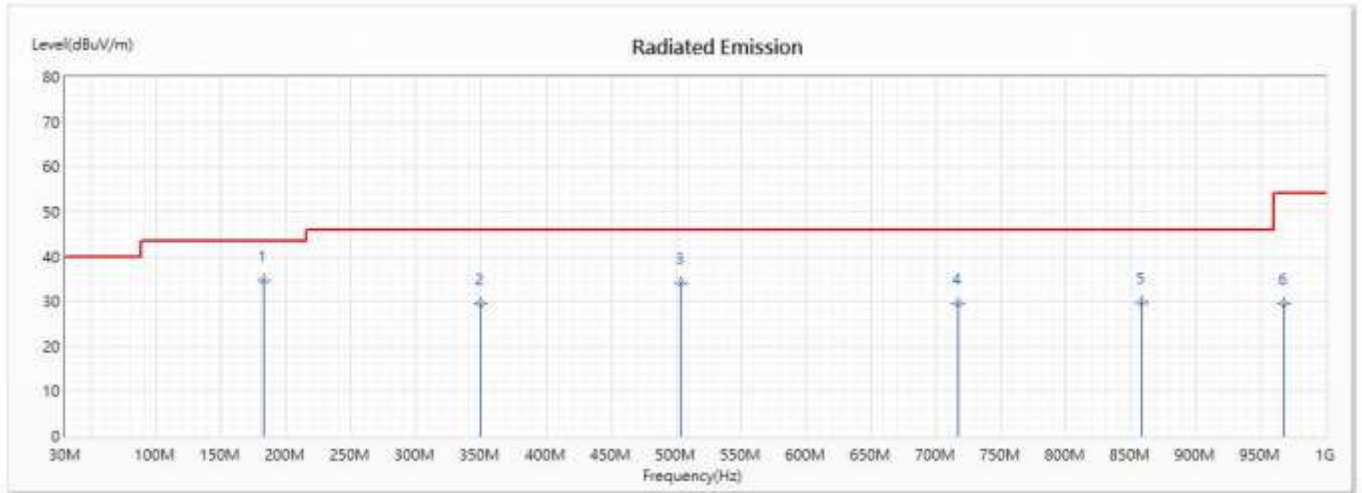
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	176.47	31.03	43.50	-12.47	42.58	-11.55	QP
2	298.69	29.63	46.00	-16.37	36.78	-7.15	QP
3	481.05	28.00	46.00	-18.00	32.51	-4.51	QP
4	633.34	28.66	46.00	-17.34	30.03	-1.37	QP
5	773.99	28.56	46.00	-17.44	29.90	-1.34	QP
6	935.98	30.17	46.00	-15.83	32.14	-1.97	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Notebook  
 Test Item : General Radiated Emission  
 Test Mode : Mode 1: Transmit - 1Mbps (2441MHz)  
 Test Date : 2020/07/28

Vertical



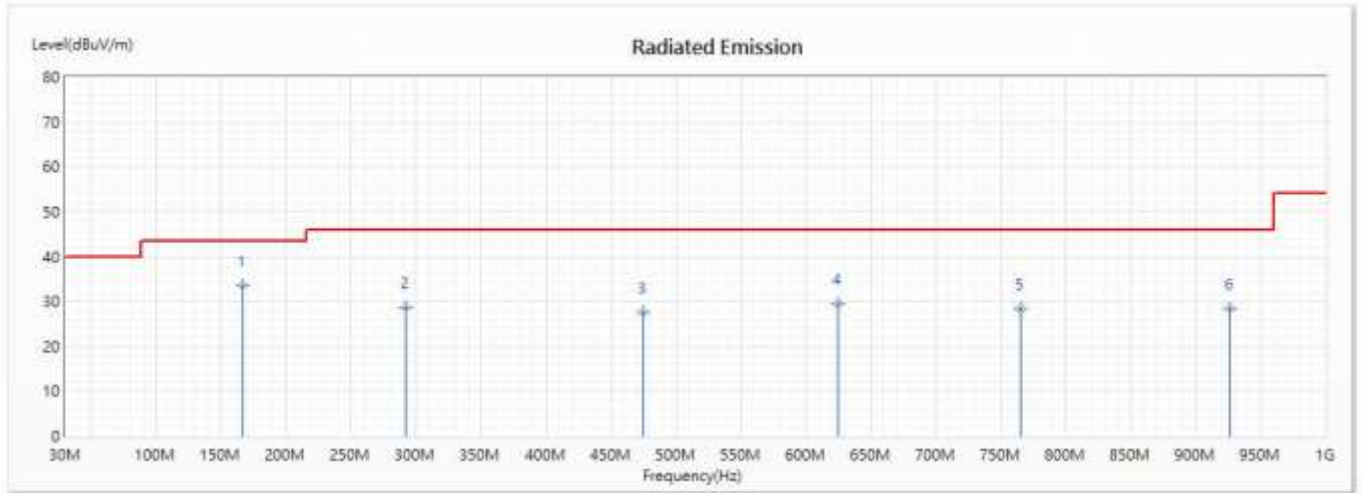
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	182.29	34.59	43.50	-8.91	45.80	-11.21	QP
2	349.13	29.49	46.00	-16.51	35.18	-5.69	QP
3	504.33	34.15	46.00	-11.85	37.57	-3.42	QP
4	716.76	29.49	46.00	-16.51	31.59	-2.10	QP
5	858.38	29.64	46.00	-16.36	31.06	-1.42	QP
6	967.99	29.49	54.00	-24.51	30.83	-1.34	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Notebook  
 Test Item : General Radiated Emission  
 Test Mode : Mode 2: Transmit - 3Mbps (2441MHz)  
 Test Date : 2020/07/28

Horizontal



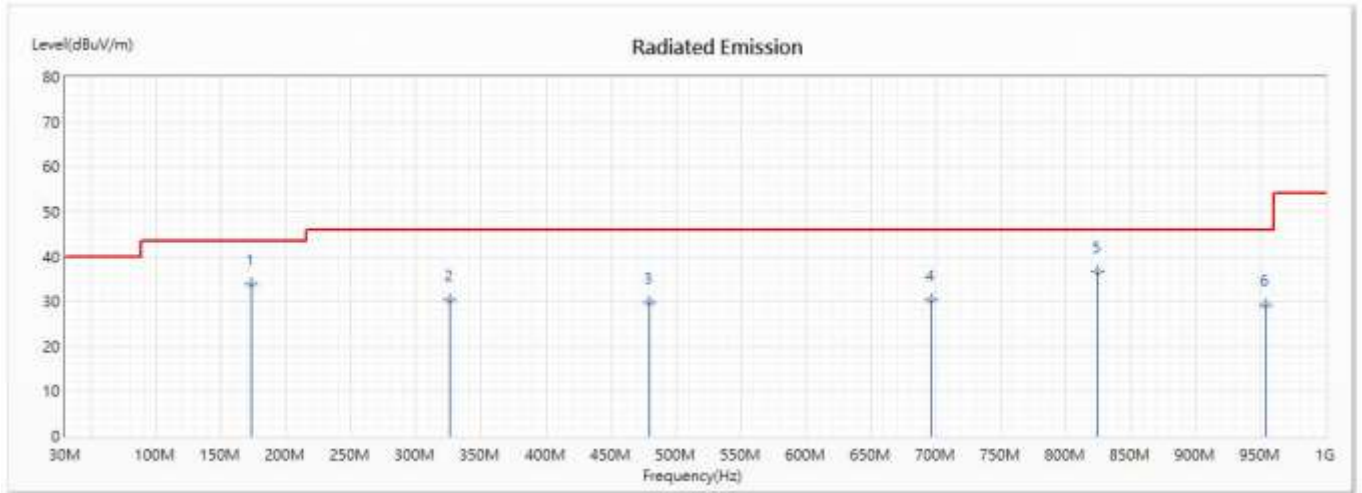
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
* 1	166.77	33.55	43.50	-9.95	45.62	-12.07	QP
2	291.9	28.68	46.00	-17.32	37.54	-8.86	QP
3	475.23	27.60	46.00	-18.40	31.79	-4.19	QP
4	624.61	29.39	46.00	-16.61	30.38	-0.99	QP
5	765.26	28.43	46.00	-17.57	29.43	-1.00	QP
6	926.28	28.36	46.00	-17.64	31.27	-2.91	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Notebook  
 Test Item : General Radiated Emission  
 Test Mode : Mode 2: Transmit - 3Mbps (2441MHz)  
 Test Date : 2020/07/28

Vertical



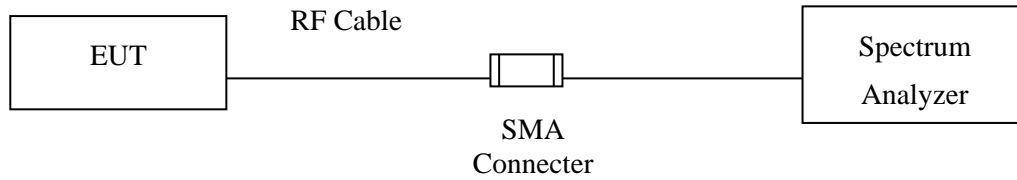
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	173.56	33.79	43.50	-9.71	45.54	-11.75	QP
2	325.85	30.35	46.00	-15.65	36.73	-6.38	QP
3	480.08	29.66	46.00	-16.34	34.23	-4.57	QP
4	696.39	30.28	46.00	-15.72	32.45	-2.17	QP
* 5	824.43	36.70	46.00	-9.30	38.68	-1.98	QP
6	953.44	29.15	46.00	-16.85	30.72	-1.57	QP

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Emission Level = Reading Level + Correct Factor.
3. Correct Factor = Antenna factor + Cable loss – Amplifier gain.
4. The emission levels of other frequencies are very lower than the limit and not show in test report.
5. No emission found between lowest internal used/generated frequency to 30MHz.

## 5. RF Antenna Conducted Test

### 5.1. Test Setup



### 5.2. Limits

According to FCC Section 15.247(d). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If 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.

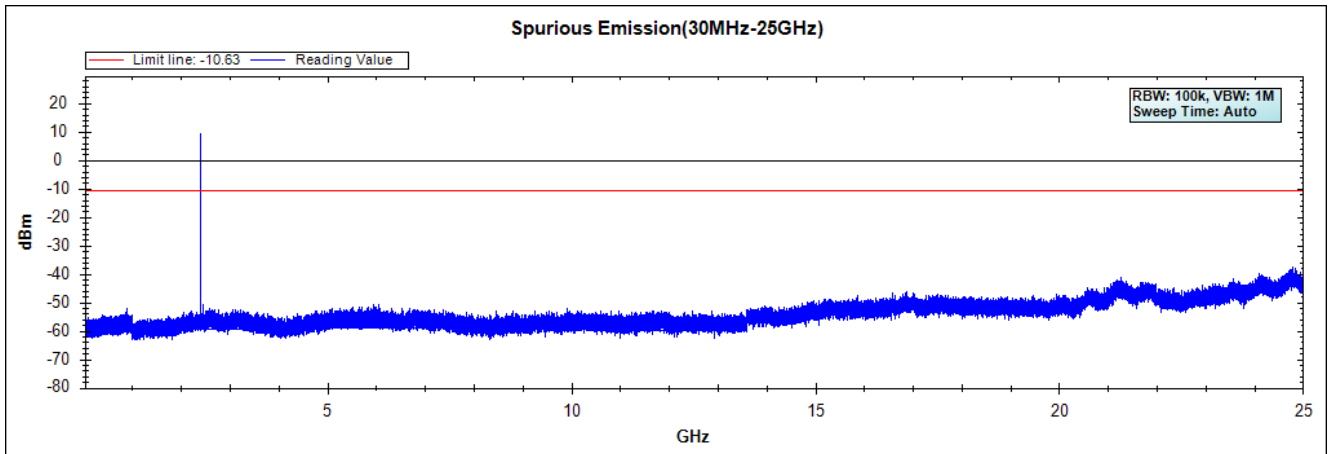
### 5.3. Test Procedure

Tested according to FHSS test procedure of KDB558074 section 9 b) for compliance to FCC 47CFR 15.247 requirements.

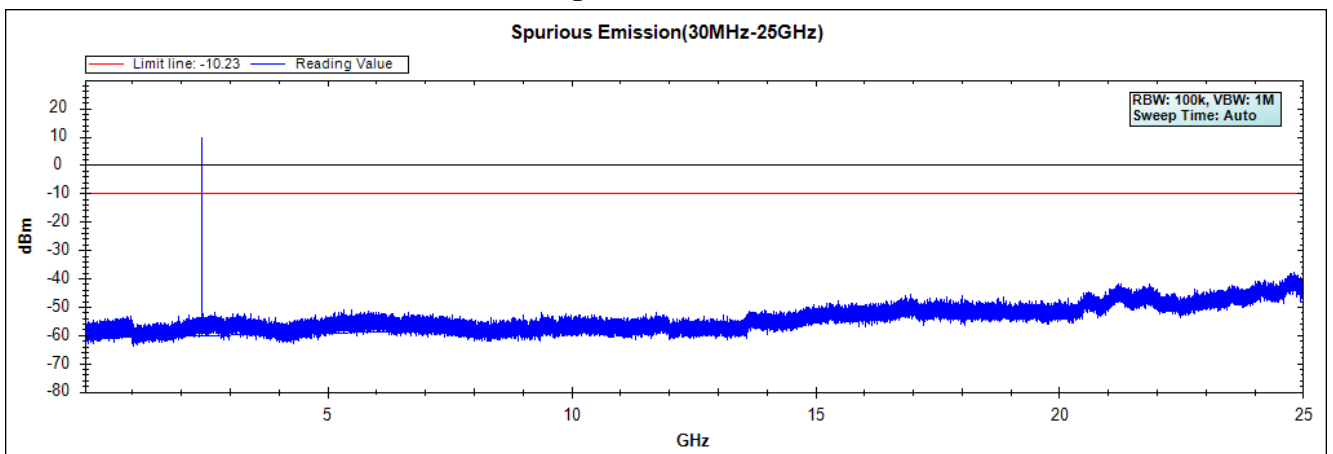
### 5.4. Test Result of RF Antenna Conducted Test

Product : Notebook  
 Test Item : RF Antenna Conducted Test  
 Test Mode : Mode 1: Transmit - 1Mbps  
 Test Date : 2020/08/15

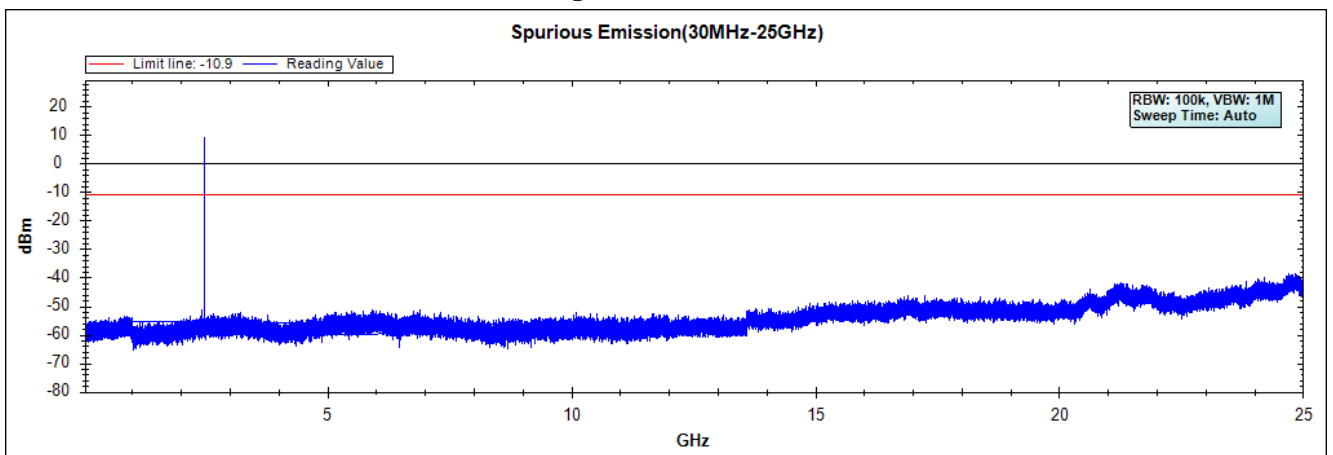
**Figure Channel 00:**



**Figure Channel 39:**



**Figure Channel 78:**

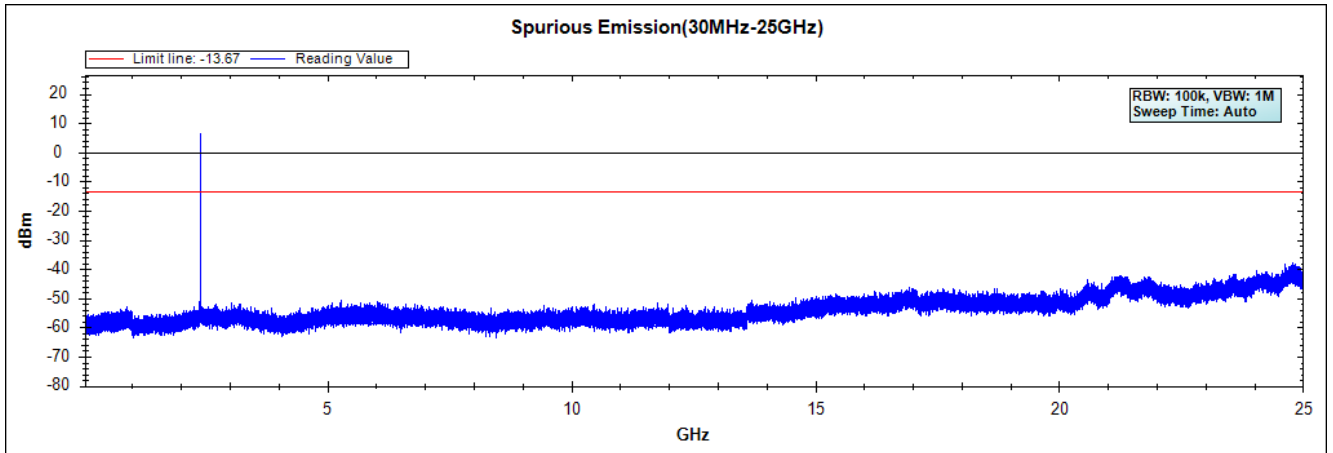


Note: The above test pattern is synthesized by multiple of the frequency range.

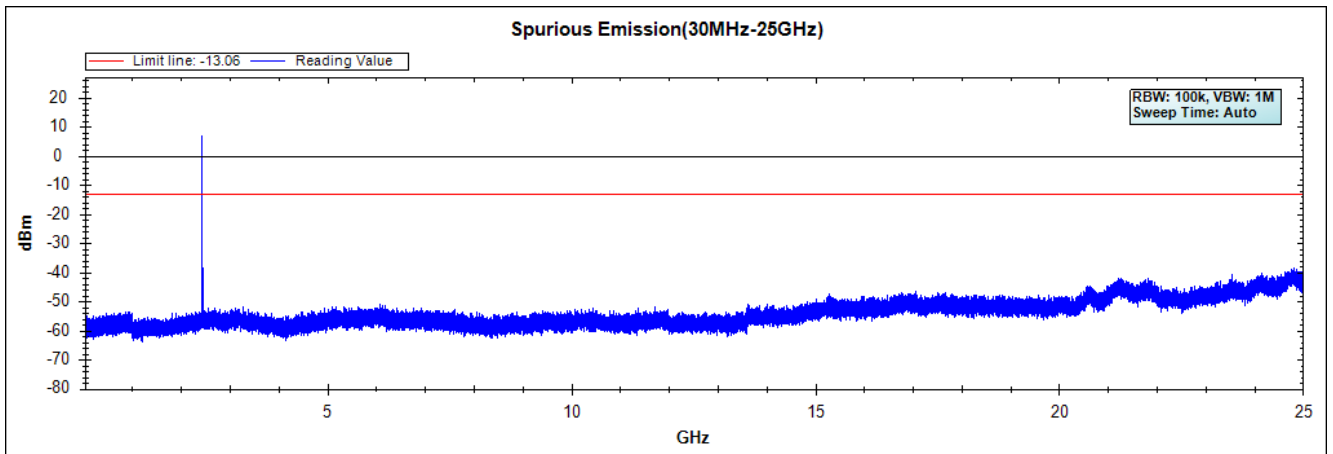


Product : Notebook  
Test Item : RF Antenna Conducted Test  
Test Mode : Mode 2: Transmit - 3Mbps  
Test Date : 2020/08/15

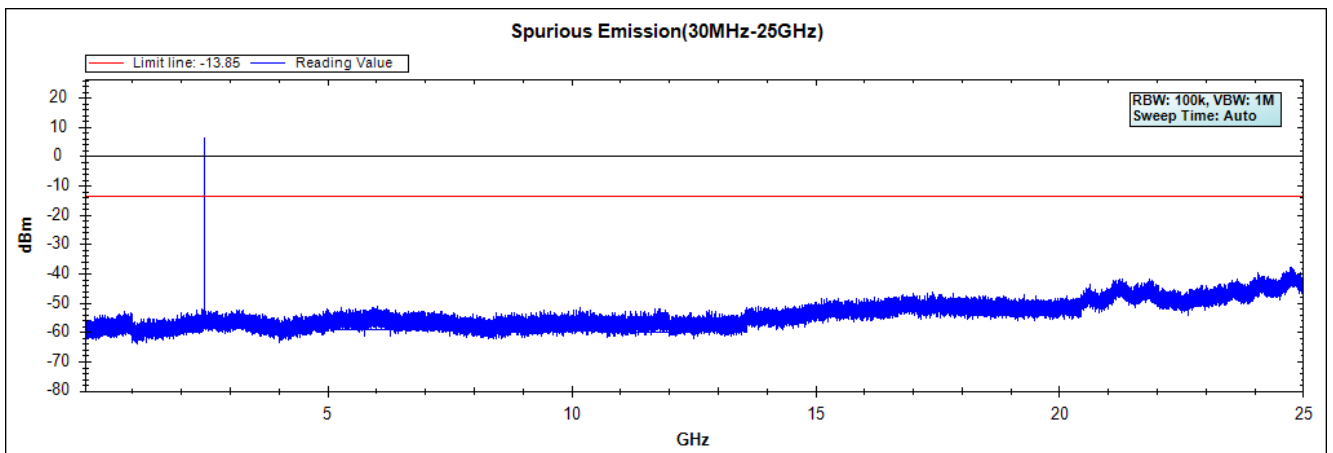
**Figure Channel 00:**



**Figure Channel 39:**



**Figure Channel 78:**

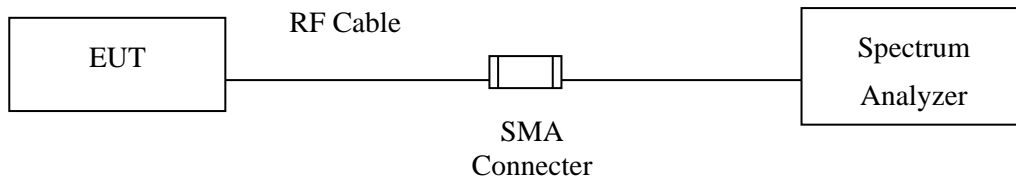


Note: The above test pattern is synthesized by multiple of the frequency range.

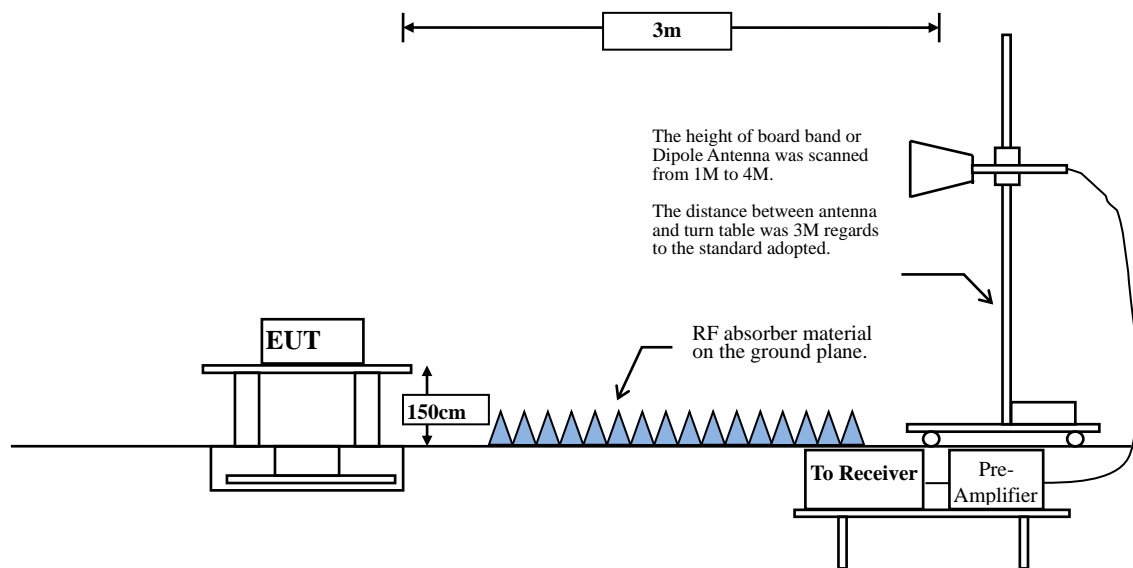
## 6. Band Edge

### 6.1. Test Setup

#### RF Conducted Measurement



#### RF Radiated Measurement:



## 6.2. Limit

According to FCC Section 15.247(d). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If 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. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

## 6.3. Test Procedure

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

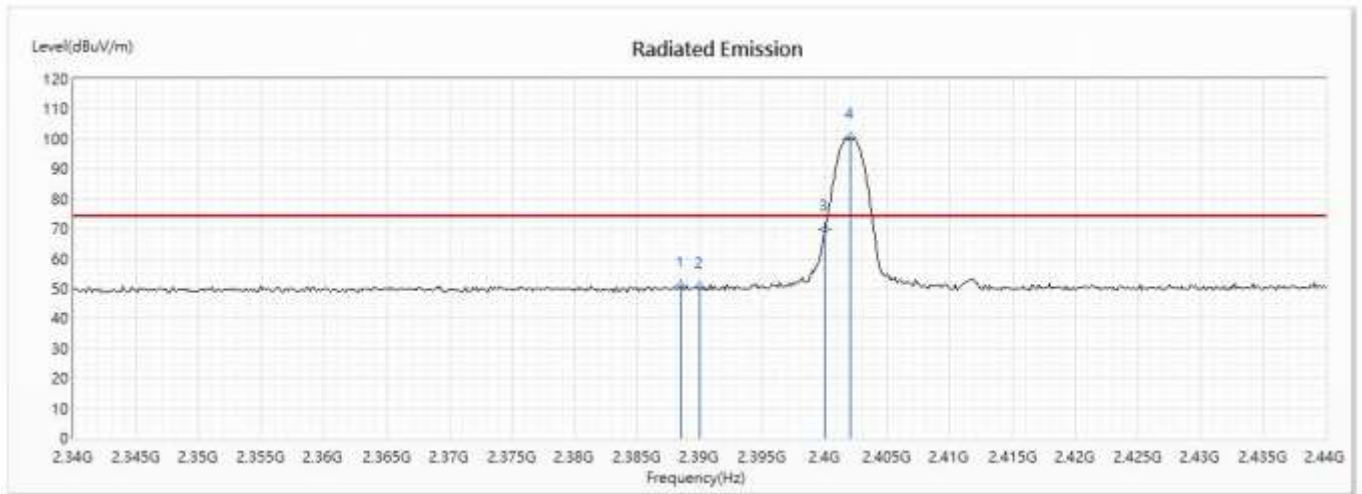
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth setting below 1GHz and above 1GHz on the field strength meter is 120 kHz and 1MHz, respectively.

### 6.4. Test Result of Band Edge

Product : Notebook  
 Test Item : Band Edge  
 Test Mode : Mode 1: Transmit - 1Mbps (2402MHz)  
 Test Date : 2020/07/28

#### Horizontal



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2388.551	50.83	74.00	-23.17	37.99	12.84	PK
2	2390	50.20	74.00	-23.80	37.36	12.84	PK
3	2400	69.70	--	--	56.78	12.92	PK
!4	2402.029	100.18	--	--	87.25	12.93	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

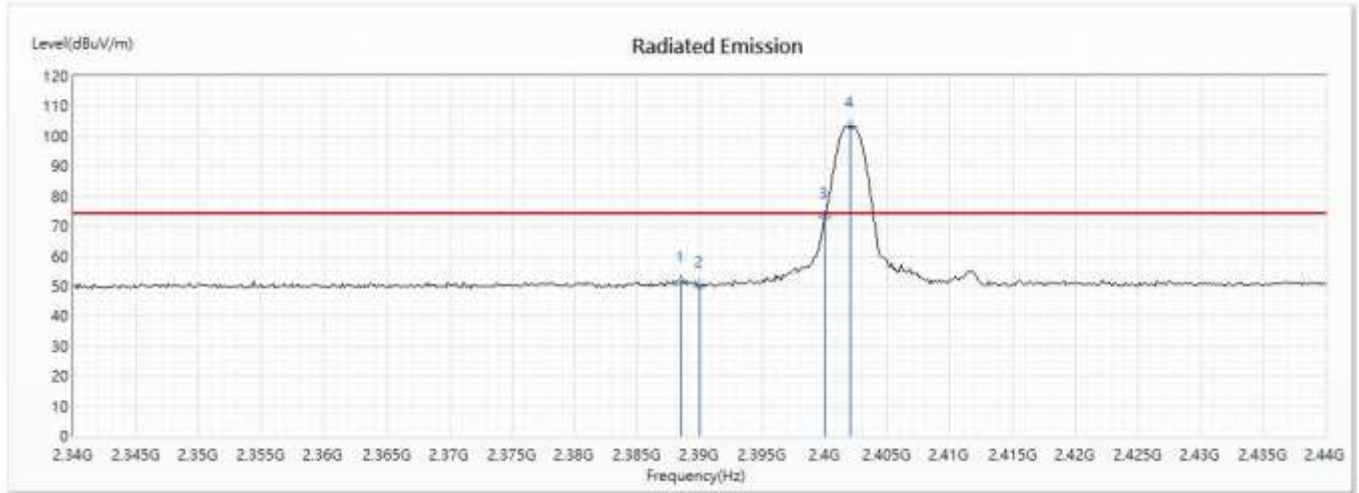
Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Measurement (dBμV/m)	Margin (dB)	Limit (dBuV/m)
00 (Average)	2388.551	50.83	-30.542	20.288	-33.712	54.000
00 (Average)	2390	50.2	-30.542	19.658	-34.342	54.000
00 (Average)	2400	69.7	-30.542	39.158	--	--
00 (Average)	2402.029	100.18	-30.542	69.638	--	--

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Notebook  
 Test Item : Band Edge  
 Test Mode : Mode 1: Transmit - 1Mbps (2402MHz)  
 Test Date : 2020/07/28

**Vertical**



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2388.551	51.74	74.00	-22.26	38.90	12.84	PK
2	2390	50.11	74.00	-23.89	37.27	12.84	PK
3	2400	73.02	--	--	60.10	12.92	PK
! 4	2402.029	103.17	--	--	90.24	12.93	PK

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

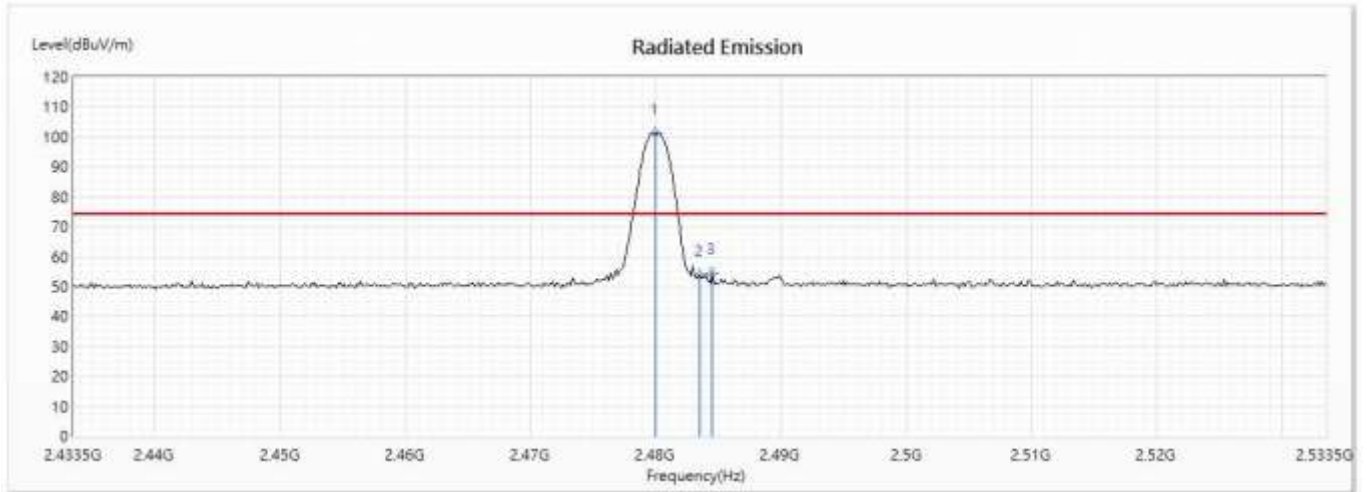
Channel No.	Frequency (MHz)	Peak Measurement (dBuV/m)	Duty Cycle Factor (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)
00 (Average)	2388.551	51.74	-30.542	21.198	-32.802	54.000
00 (Average)	2390	50.11	-30.542	19.568	-34.432	54.000
00 (Average)	2400	73.02	-30.542	42.478	--	--
00 (Average)	2402.029	103.17	-30.542	72.628	--	--

**Note:**

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Notebook  
 Test Item : Band Edge  
 Test Mode : Mode 1: Transmit - 1Mbps (2480MHz)  
 Test Date : 2020/07/28

**Horizontal**



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2480.022	101.23	--	--	87.82	13.41	PK
2	2483.5	53.47	74.00	-20.53	40.02	13.45	PK
3	2484.514	54.41	74.00	-19.59	40.95	13.46	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

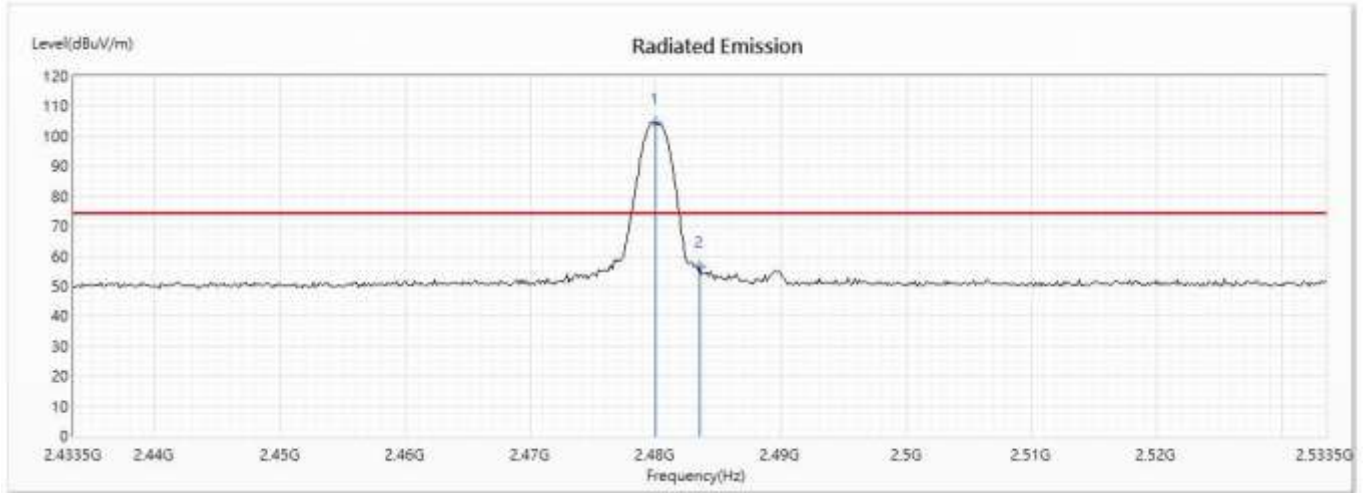
Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Measurement (dBμV/m)	Margin (dB)	Limit (dBuV/m)
78 (Average)	2480.022	101.23	-30.542	70.688	--	--
78 (Average)	2483.5	53.47	-30.542	22.928	-31.072	54.000
78 (Average)	2484.514	54.41	-30.542	23.868	-30.132	54.000

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Notebook  
 Test Item : Band Edge  
 Test Mode : Mode 1: Transmit - 1Mbps (2480MHz)  
 Test Date : 2020/07/28

**Vertical**



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2480.022	104.32	--	--	90.91	13.41	PK
2	2483.5	56.56	74.00	-17.44	43.11	13.45	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

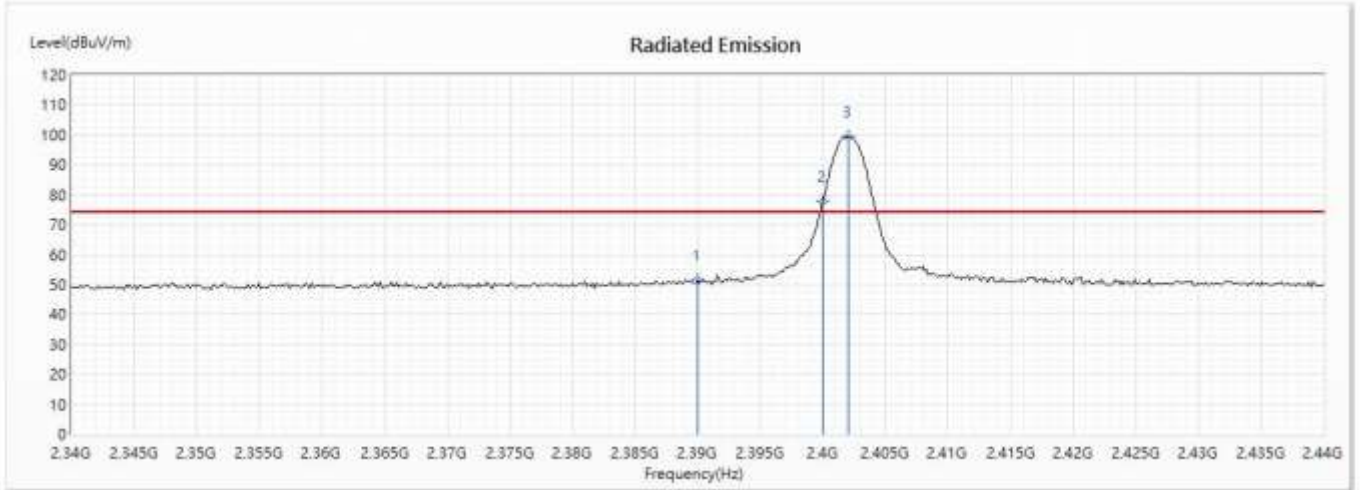
Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Measurement (dBμV/m)	Margin (dB)	Limit (dBuV/m)
78 (Average)	2480.022	104.32	-30.542	73.778	--	--
78 (Average)	2483.5	56.56	-30.542	26.018	-27.982	54.000

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Notebook  
 Test Item : Band Edge  
 Test Mode : Mode 2: Transmit - 3Mbps (2402MHz)  
 Test Date : 2020/07/28

**Horizontal**



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2390	51.46	74.00	-22.54	38.62	12.84	PK
! 2	2400	77.88	--	--	64.96	12.92	PK
! 3	2402.029	99.33	--	--	86.40	12.93	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Measurement (dBμV/m)	Margin (dB)	Limit (dBuV/m)
00 (Average)	2390	51.46	-30.888	20.572	-33.428	54.000
00 (Average)	2400	77.88	-30.888	46.992	--	--
00 (Average)	2402.029	99.33	-30.888	68.442	--	--

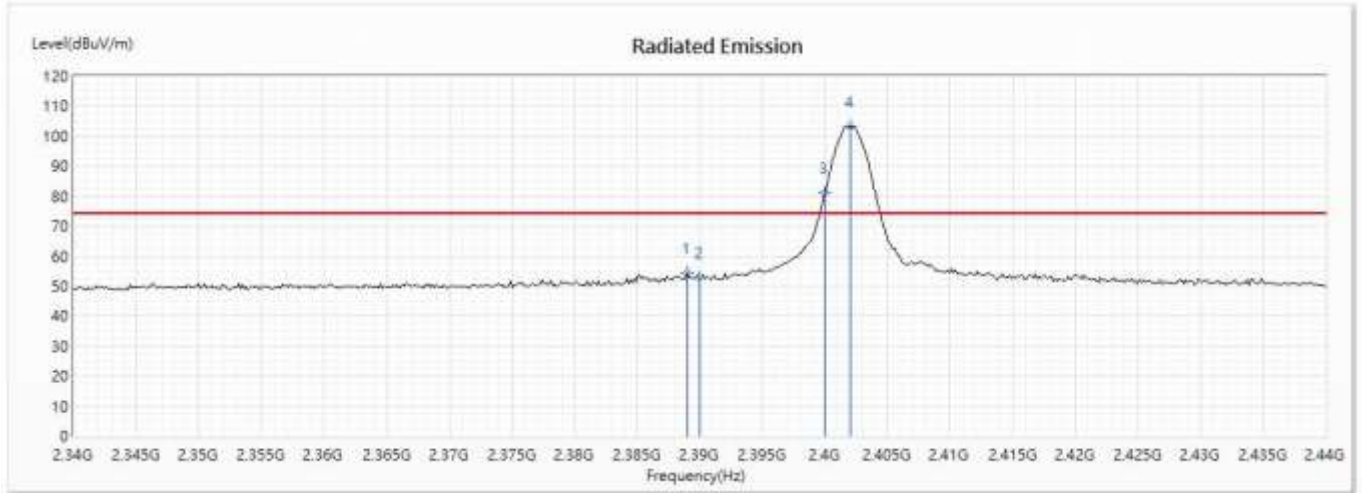
Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.



Product : Notebook  
 Test Item : Band Edge  
 Test Mode : Mode 2: Transmit - 3Mbps (2402MHz)  
 Test Date : 2020/07/28

**Vertical**



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
1	2388.986	54.29	74.00	-19.71	41.45	12.84	PK
2	2390	52.80	74.00	-21.20	39.96	12.84	PK
! 3	2400	81.11	--	--	68.19	12.92	PK
! 4	2402.029	103.14	--	--	90.21	12.93	PK

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

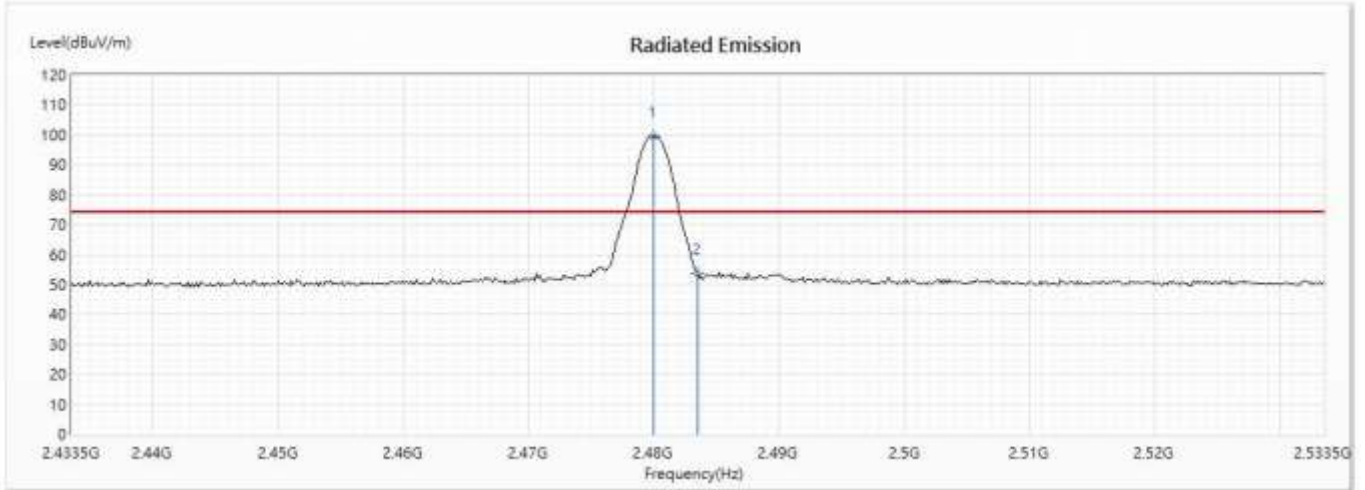
Channel No.	Frequency (MHz)	Peak Measurement (dBuV/m)	Duty Cycle Factor (dB)	Measurement (dBuV/m)	Margin (dB)	Limit (dBuV/m)
00 (Average)	2388.986	54.29	-30.888	23.402	-30.598	54.000
00 (Average)	2390	52.80	-30.888	21.912	-32.088	54.000
00 (Average)	2400	81.11	-30.888	50.222	--	--
00 (Average)	2402.029	103.14	-30.888	72.252	--	--

**Note:**

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Notebook  
 Test Item : Band Edge  
 Test Mode : Mode 2: Transmit - 3Mbps (2480MHz)  
 Test Date : 2020/07/28

**Horizontal**



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2480.022	99.52	--	--	86.11	13.41	PK
2	2483.5	53.80	74.00	-20.20	40.35	13.45	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

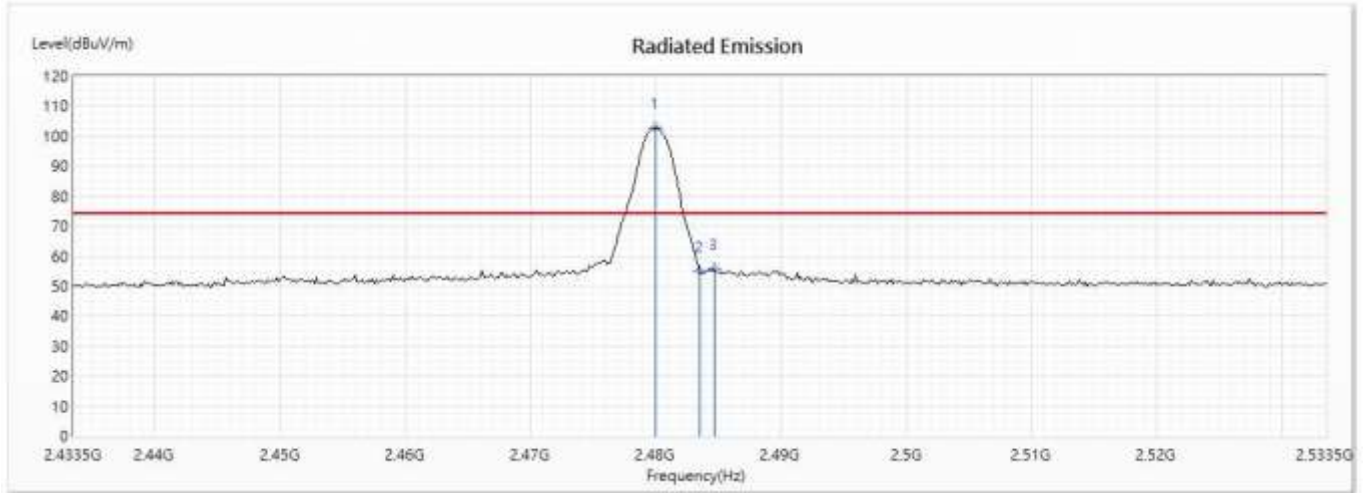
Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Measurement (dBμV/m)	Margin (dB)	Limit (dBuV/m)
78 (Average)	2480.022	99.52	-30.888	68.632	--	--
78 (Average)	2483.5	53.80	-30.888	22.912	-31.088	54.000

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Notebook  
 Test Item : Band Edge  
 Test Mode : Mode 2: Transmit - 3Mbps (2480MHz)  
 Test Date : 2020/07/28

**Vertical**



No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Reading Level (dBuV)	Correct Factor (dB/m)	Detector Type
! 1	2480.022	102.63	--	--	89.22	13.41	PK
2	2483.5	54.98	74.00	-19.02	41.53	13.45	PK
3	2484.659	55.66	74.00	-18.34	42.20	13.46	PK

Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Emission Level = Reading Level + Correct Factor.
4. The average measurement was not performed when the peak measured data under the limit of average detection.

Channel No.	Frequency (MHz)	Peak Measurement (dBμV/m)	Duty Cycle Factor (dB)	Measurement (dBμV/m)	Margin (dB)	Limit (dBuV/m)
78 (Average)	2480.022	102.63	-30.888	71.742	--	--
78 (Average)	2483.5	54.98	-30.888	24.092	-29.908	54.000
78 (Average)	2484.659	55.66	-30.888	24.772	-29.228	54.000

Note:

1. Average Measurement=Peak Measurement + Duty Cycle Factor
2. The Duty Cycle is refer to section 11.

Product : Notebook  
 Test Item : Band Edge  
 Test Mode : Mode 1: Transmit - 1Mbps(Hopping off)

Measurement Level $\Delta$ (dB)	Result
> 20	PASS

Figure Channel 00:

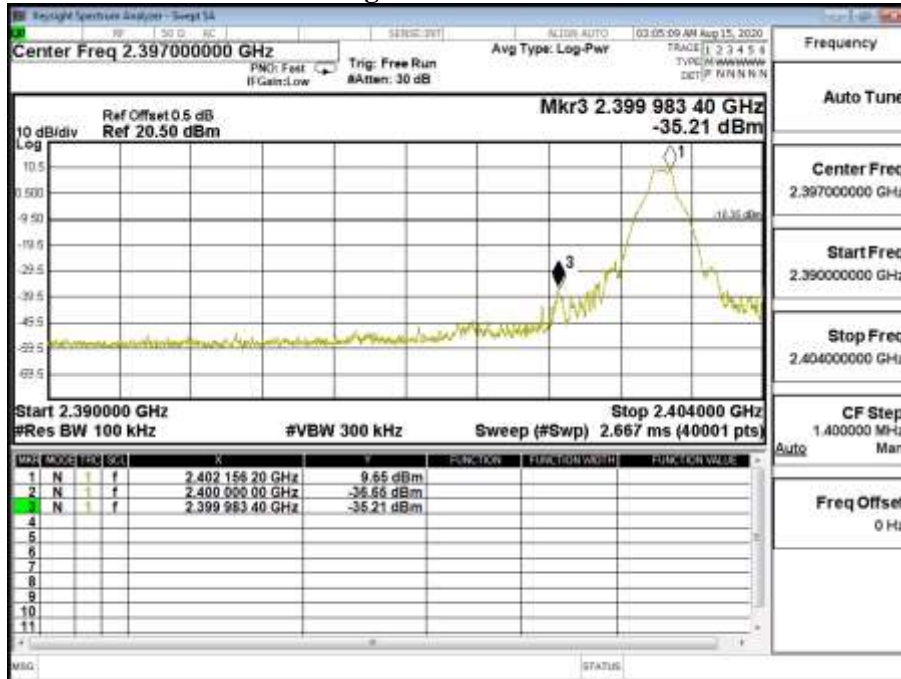
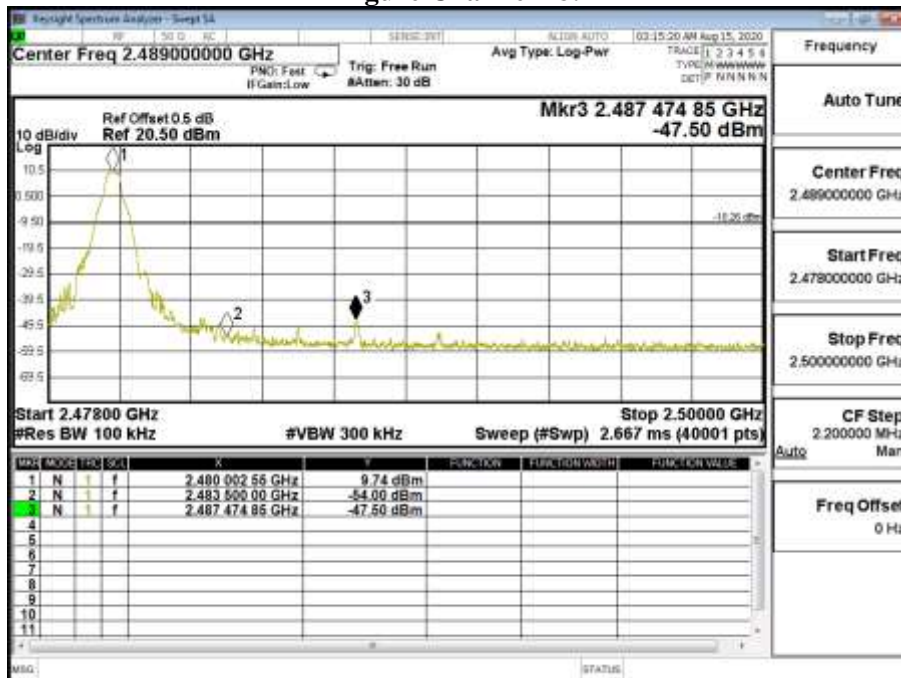


Figure Channel 78:



Product : Notebook  
 Test Item : Band Edge  
 Test Mode : Mode 1: Transmit - 1Mbps(Hopping on)

Measurement Level $\Delta$ (dB)	Result
> 20	PASS

Figure Channel 00 Hopping:

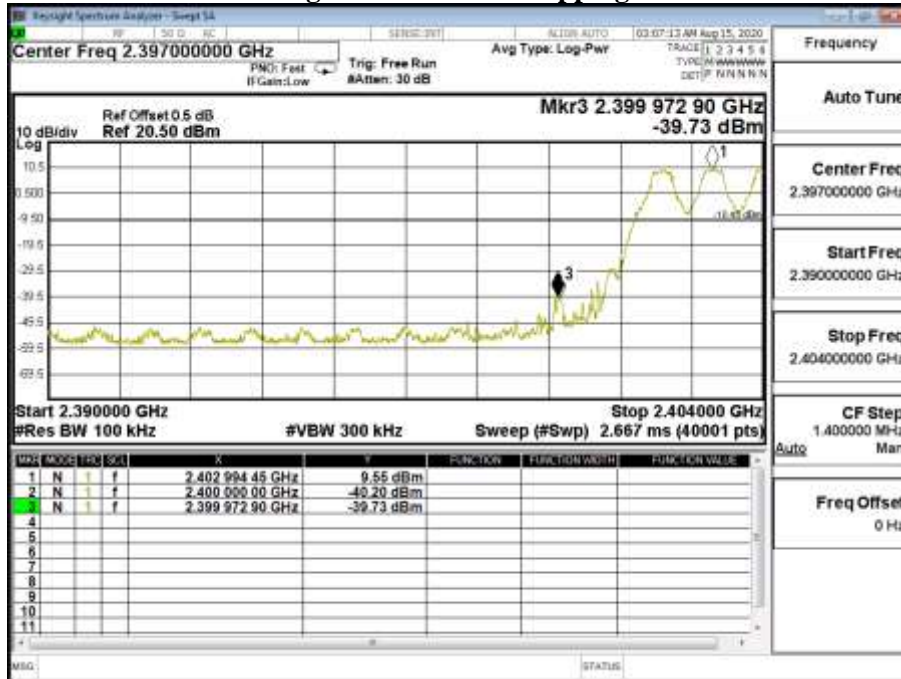
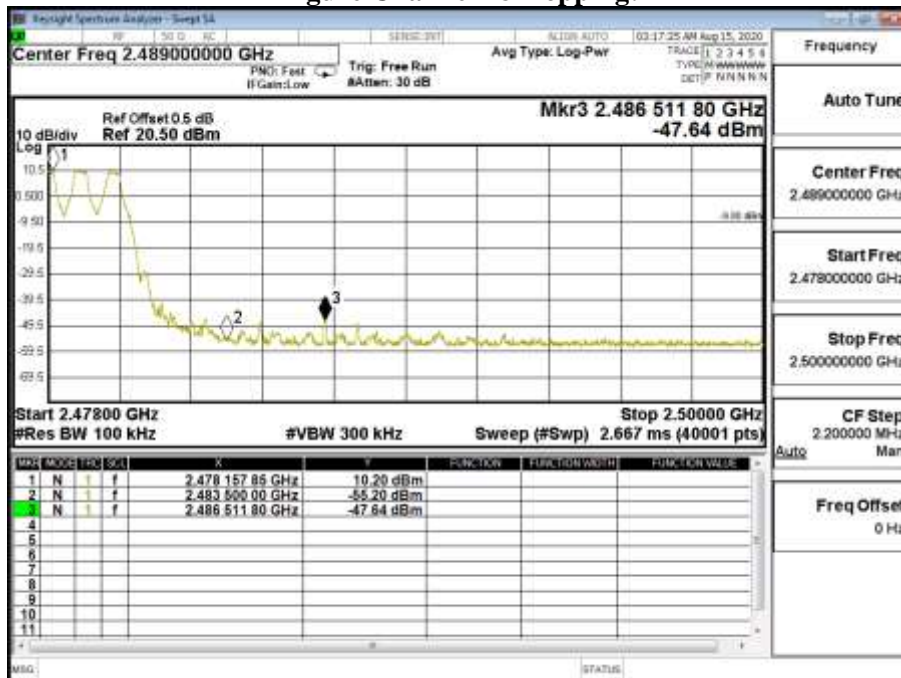


Figure Channel 78 Hopping:



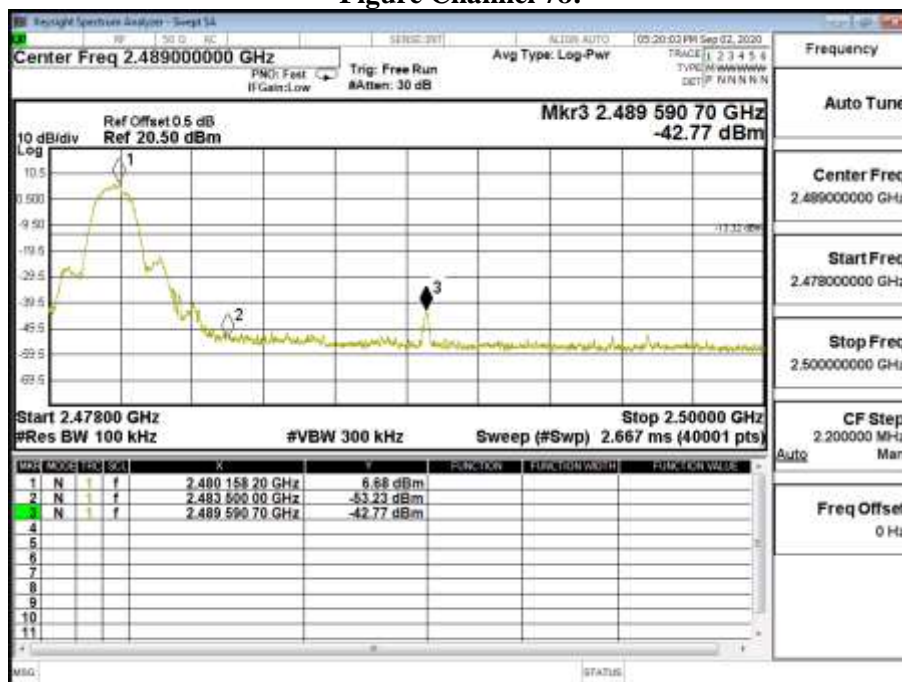
Product : Notebook  
 Test Item : Band Edge  
 Test Mode : Mode 2: Transmit - 3Mbps(Hopping off)

Measurement Level	Result
$\Delta$ (dB)	
> 20	PASS

Figure Channel 00:



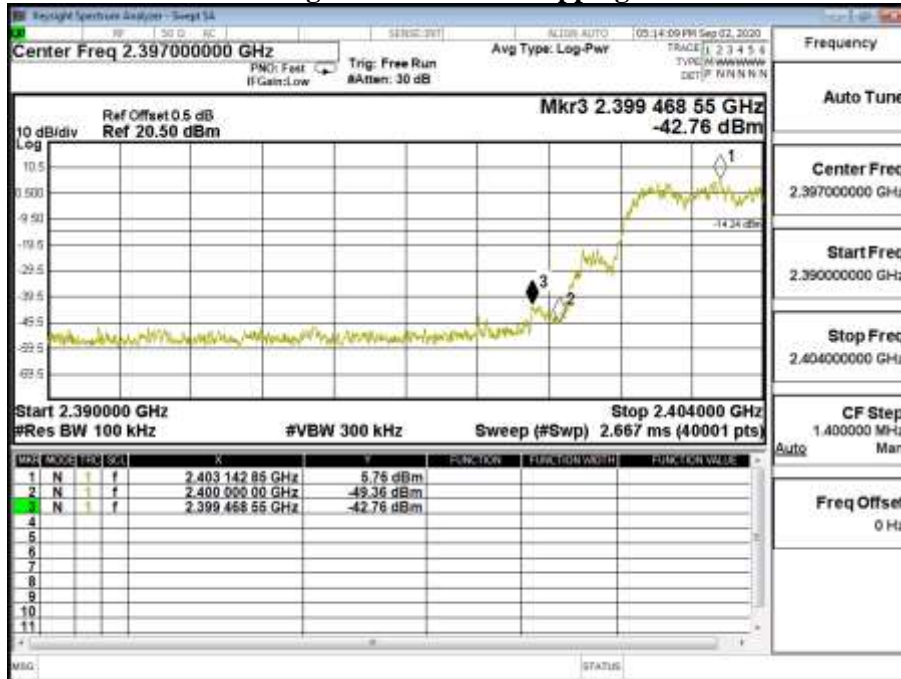
Figure Channel 78:



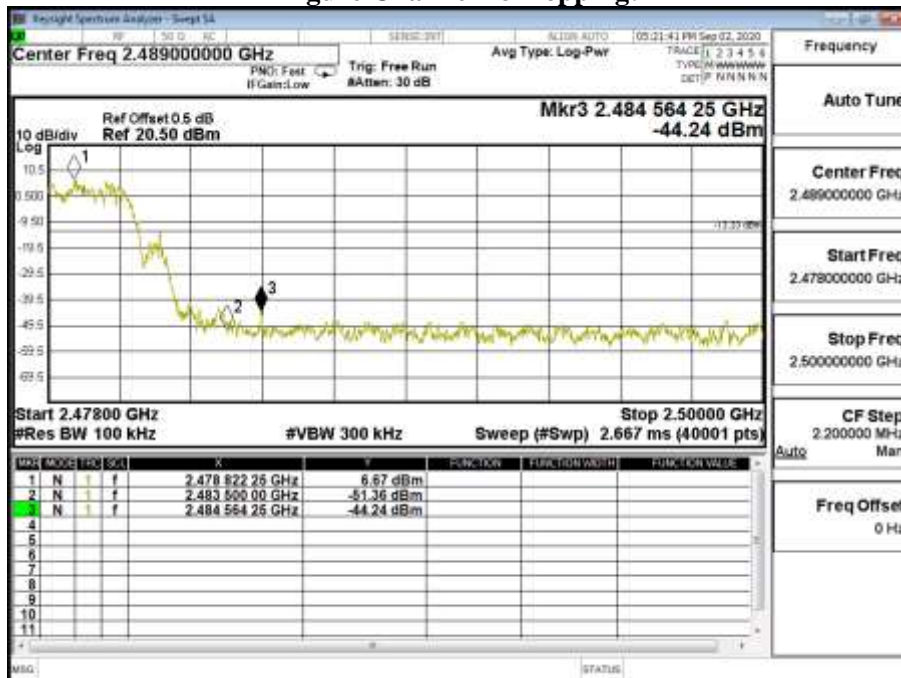
Product : Notebook  
 Test Item : Band Edge  
 Test Mode : Mode 2: Transmit - 3Mbps(Hopping on)

Measurement Level $\Delta$ (dB)	Result
> 20	PASS

**Figure Channel 00 Hopping:**

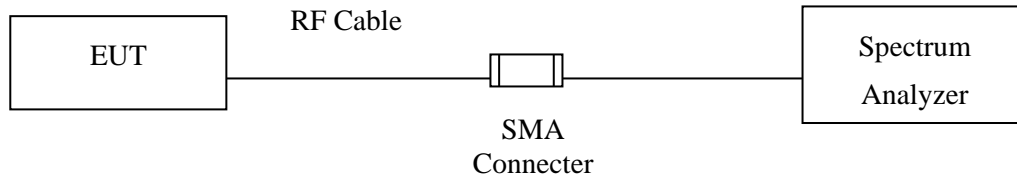


**Figure Channel 78 Hopping:**



## 7. Channel Number

### 7.1. Test Setup



### 7.2. Limit

Frequency hopping systems operating in the 2400-2483.5 MHz bands shall use at least 75 hopping frequencies.

### 7.3. Test Procedure

Tested according to FHSS test procedure of KDB558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements).

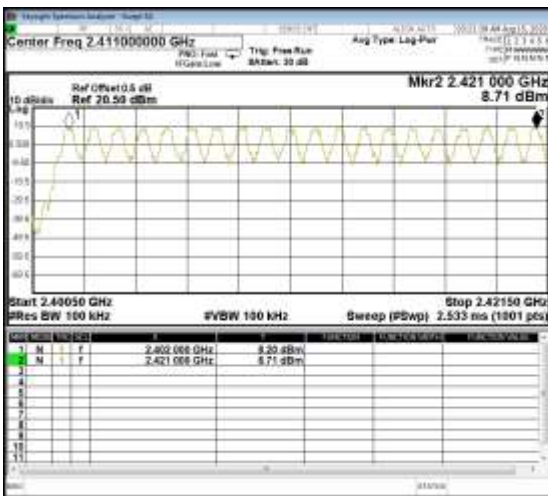


### 7.4. Test Result of Channel Number

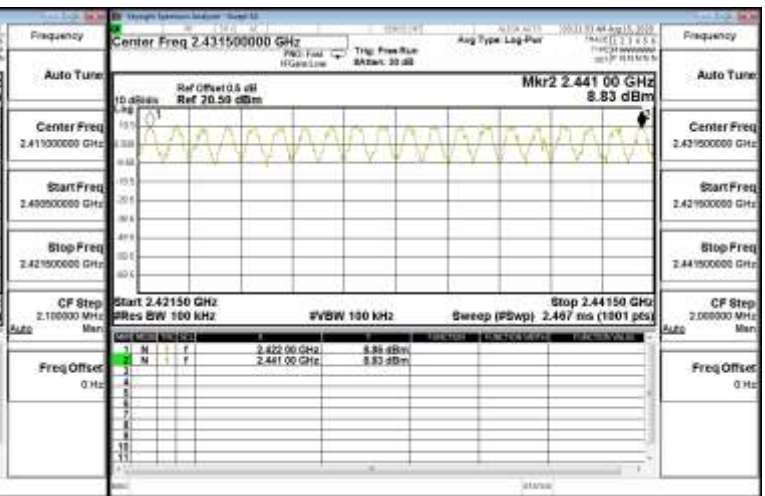
Product : Notebook  
 Test Item : Channel Number  
 Test Mode : Mode 1: Transmit - 1Mbps  
 Test Date : 2020/08/15

Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

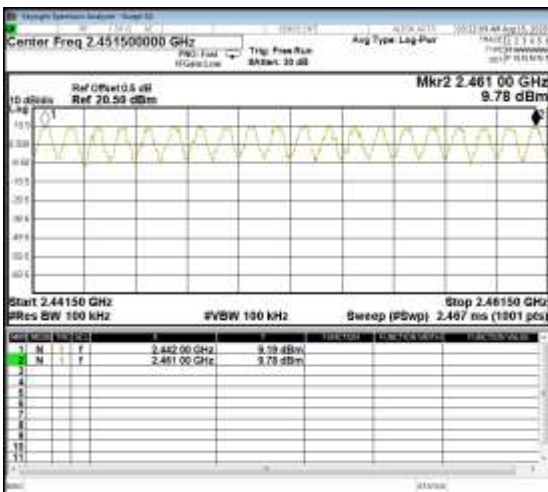
2402-2421MHz



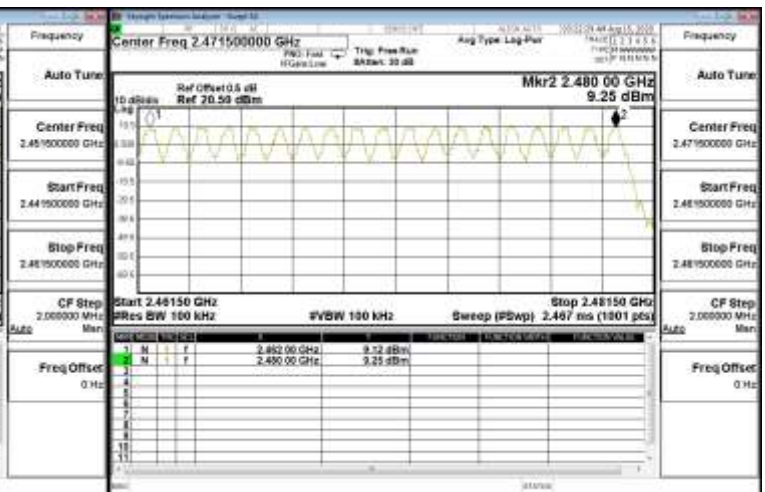
2422-2441MHz



2442-2461MHz



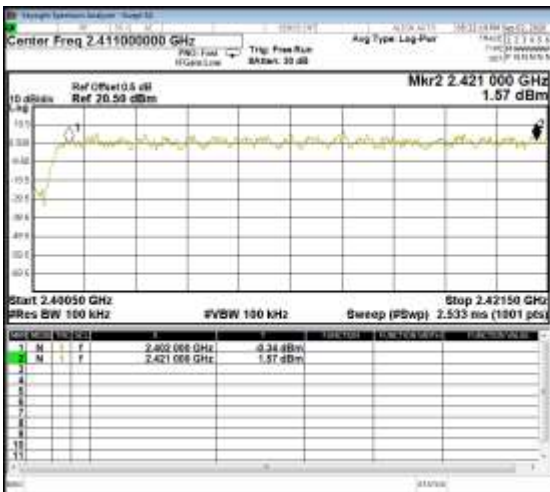
2462-2480MHz



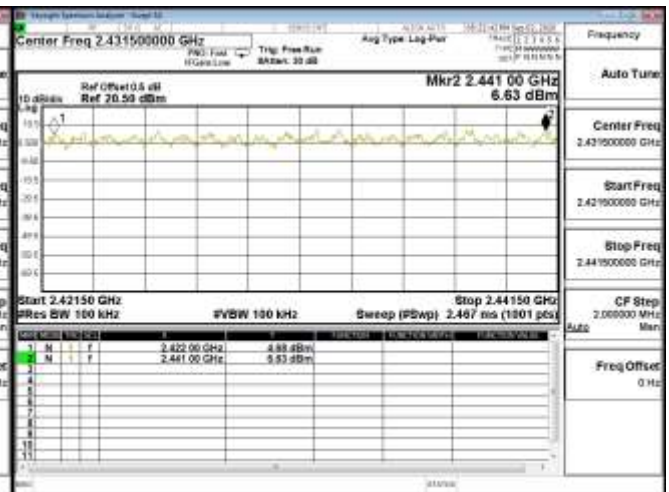
Product : Notebook  
 Test Item : Channel Number  
 Test Mode : Mode 2: Transmit - 3Mbps  
 Test Date : 2020/08/15

Frequency Range (MHz)	Measurement (Hopping Channel)	Required Limit (Hopping Channel)	Result
2402 ~ 2480	79	>75	Pass

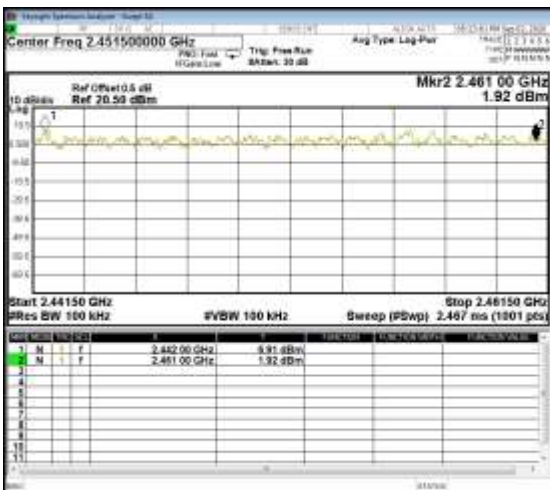
2402-2421MHz



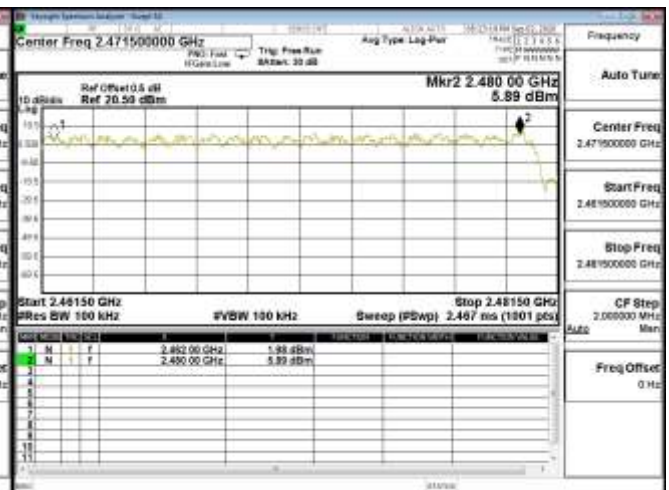
2422-2441MHz



2442-2461MHz

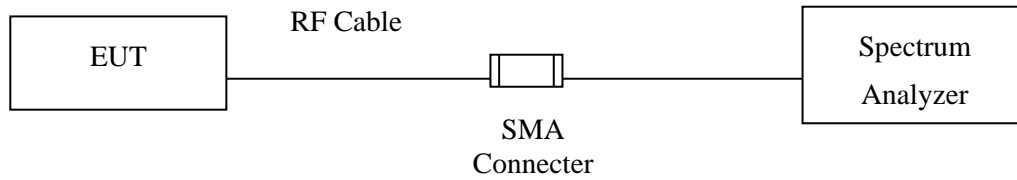


2462-2480MHz



## 8. Channel Separation

### 8.1. Test Setup



### 8.2. Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

### 8.3. Test Procedure

Tested according to FHSS test procedure of KDB558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements).

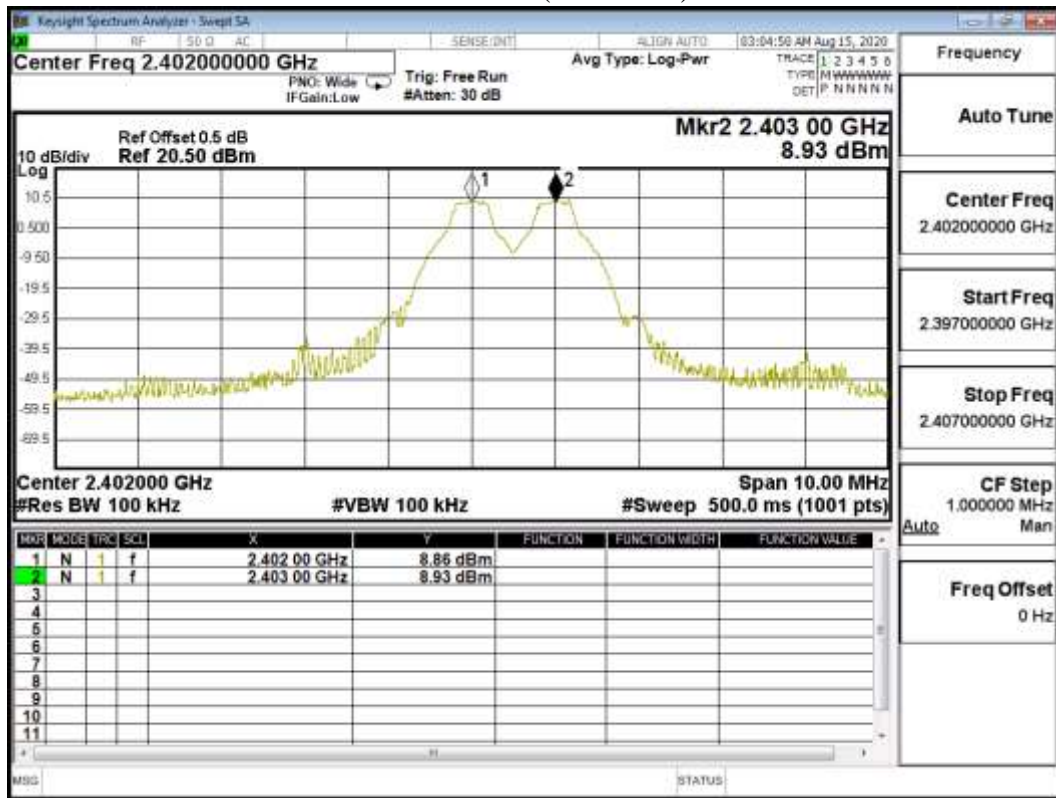
### 8.4. Test Result of Channel Separation

Product : Notebook  
 Test Item : Channel Separation  
 Test Mode : Mode 1: Transmit - 1Mbps  
 Test Date : 2020/08/15

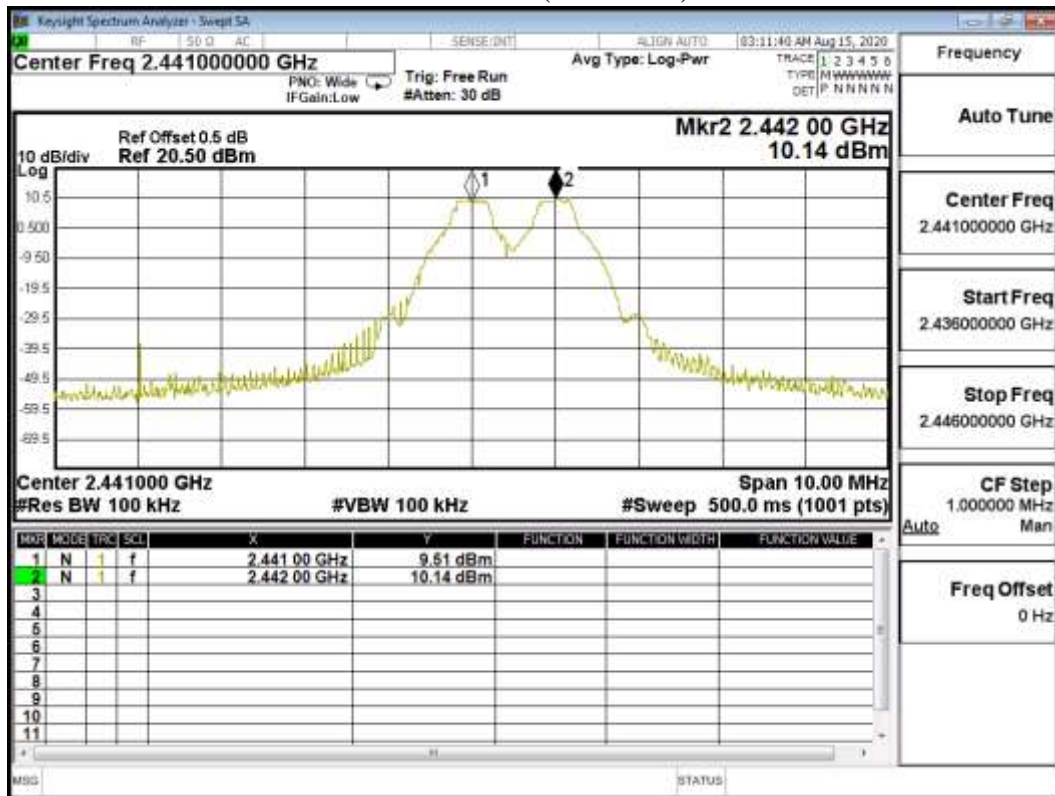
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Limit (kHz)	Limit of (2/3)*20dB Bandwidth (kHz)	Result
00	2402	1000	>25 kHz	646.0	Pass
39	2441	1000	>25 kHz	646.0	Pass
78	2480	1000	>25 kHz	646.0	Pass

NOTE: The 20dB Bandwidth is refer to section 10.

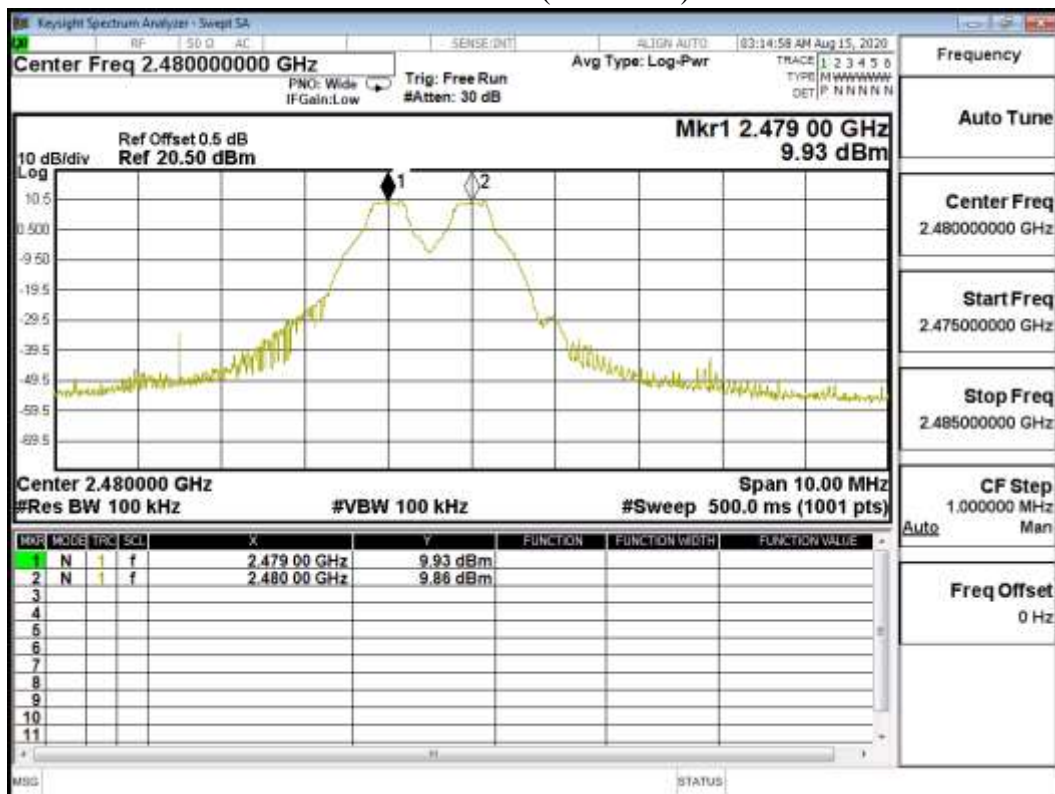
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)

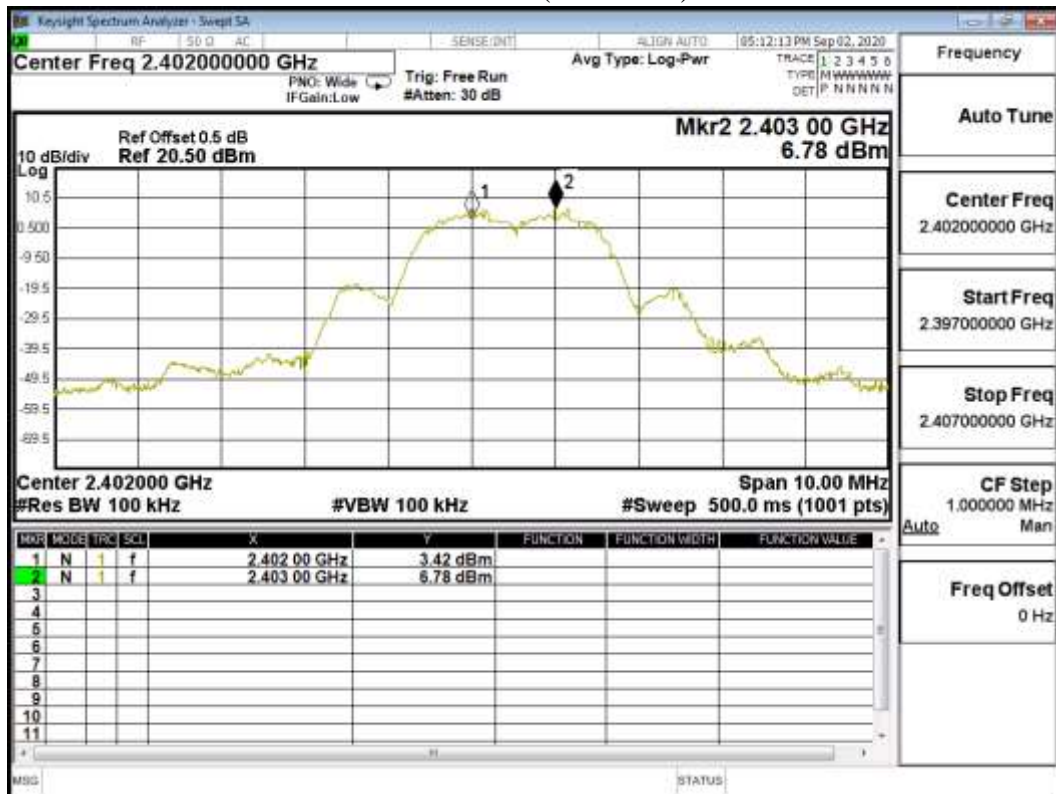


Product : Notebook  
 Test Item : Channel Separation  
 Test Mode : Mode 2: Transmit - 3Mbps  
 Test Date : 2020/08/15

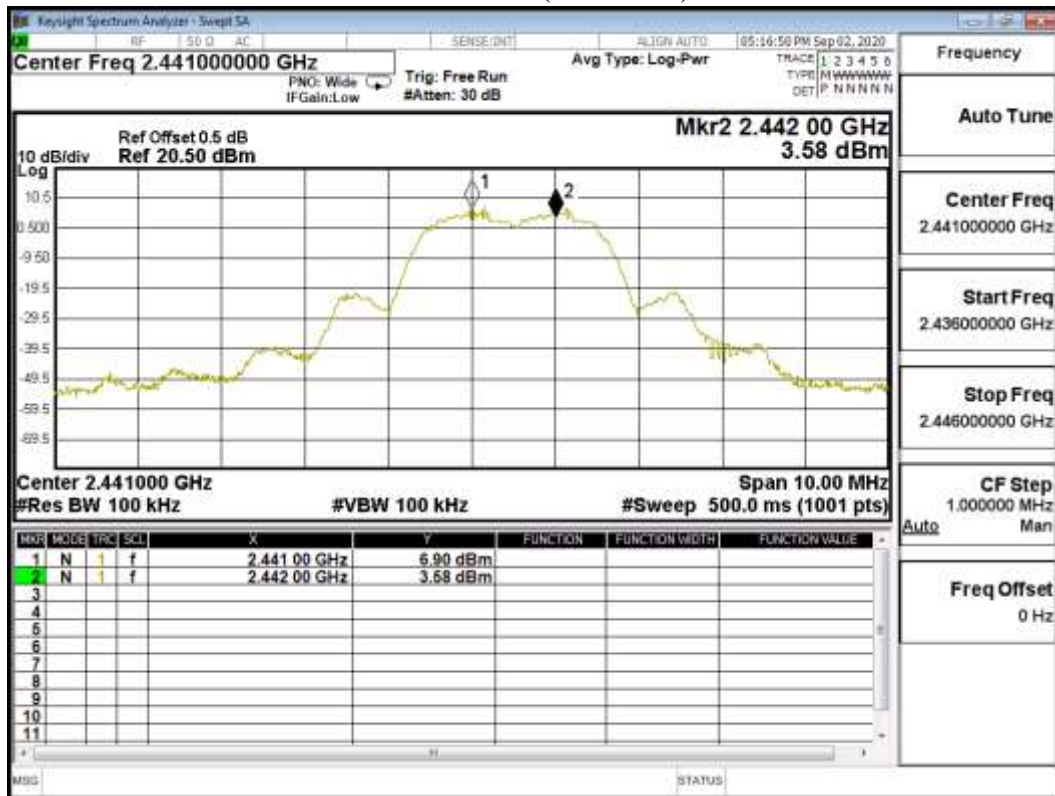
Channel No.	Frequency (MHz)	Measurement Level (kHz)	Limit (kHz)	Limit of (2/3)*20dB Bandwidth (kHz)	Result
00	2402	1000	>25 kHz	990.0	Pass
39	2441	1000	>25 kHz	988.0	Pass
78	2480	1000	>25 kHz	990.0	Pass

NOTE: The 20dB Bandwidth is refer to section 10.

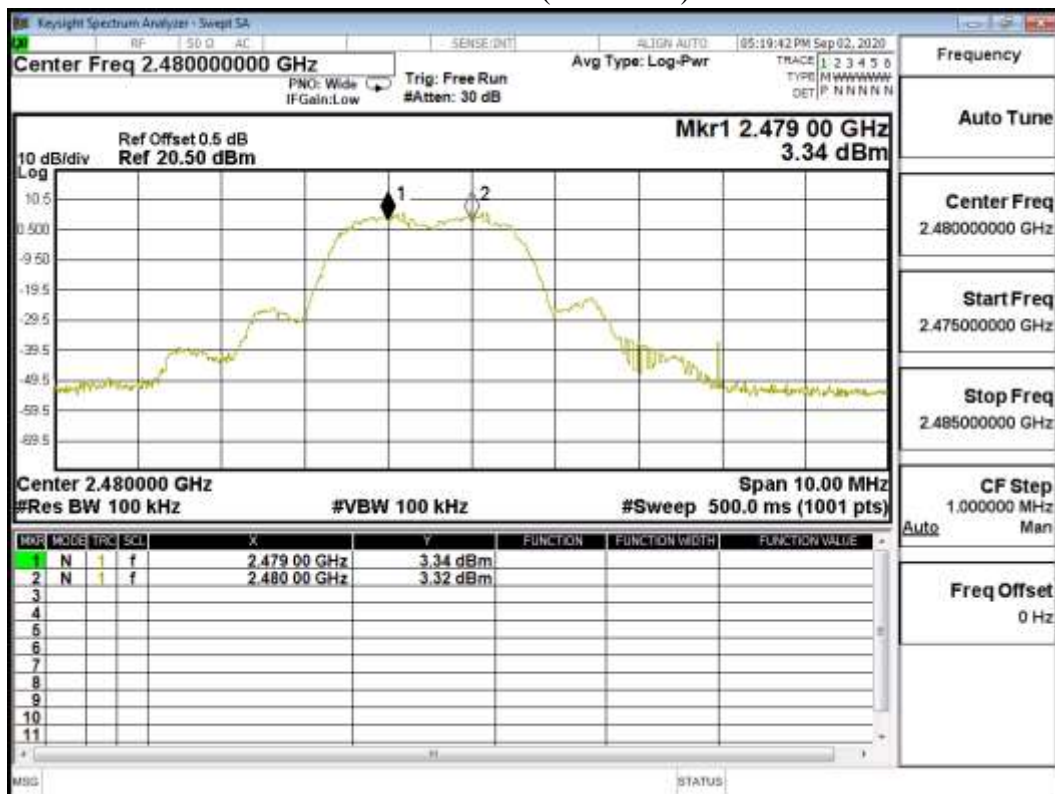
Channel 00 (2402MHz)



Channel 39 (2441MHz)

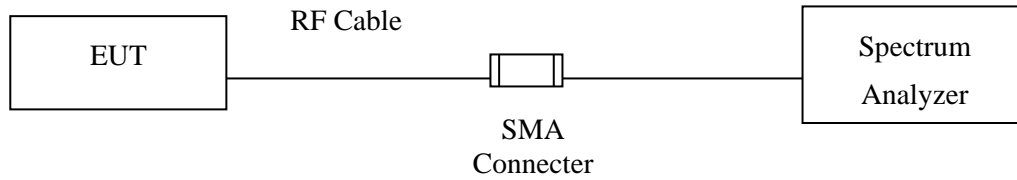


Channel 78 (2480MHz)



## 9. Dwell Time

### 9.1. Test Setup



### 9.2. Limit

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

### 9.3. Test Procedure

Tested according to FHSS test procedure of KDB558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements.



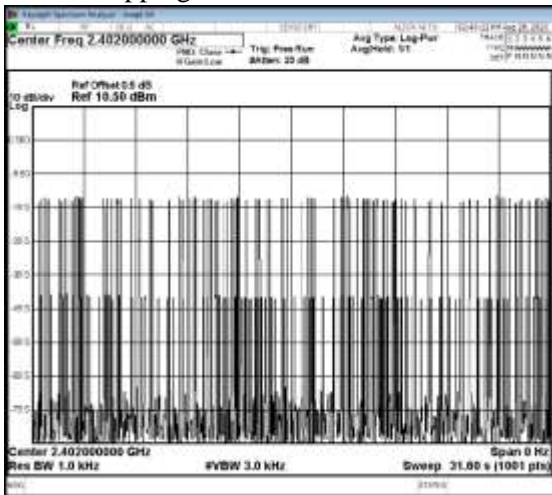
### 9.4. Test Result of Dwell Time

Product : Notebook  
 Test Item : Dwell Time  
 Test Mode : Mode 1: Transmit - 1Mbps (Channel 00,39,78)  
 Test Date : 2020/08/28

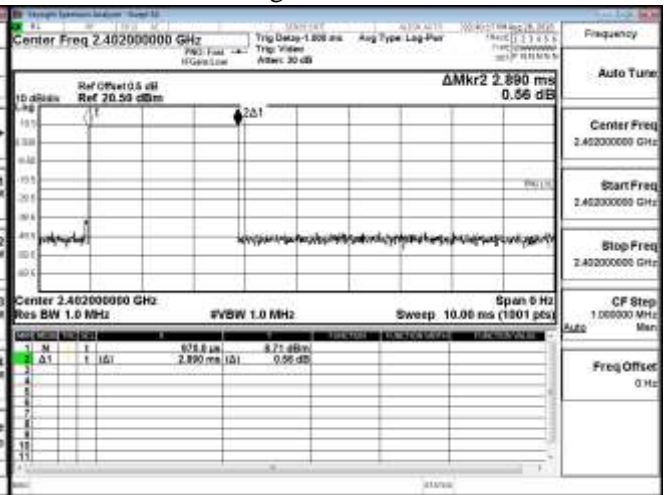
Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Dwell Time (ms)	Limit (ms)	Result
2402	2.890	95	31600	274.550	400	Pass
2441	2.880	98	31600	282.240	400	Pass
2480	2.880	113	31600	325.440	400	Pass

Dwell time = Time slot length(ms)\*Hopping of Number

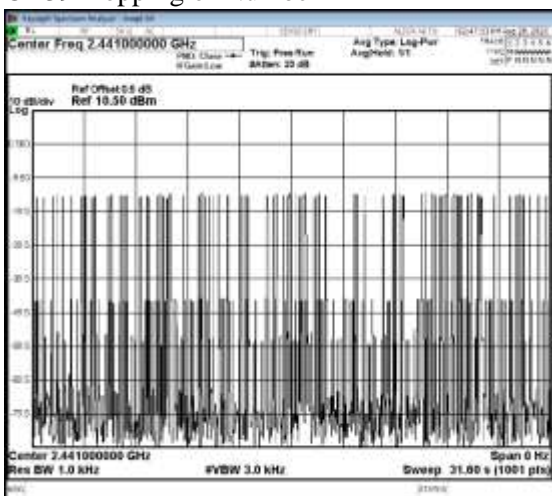
CH 00 Hopping of Number



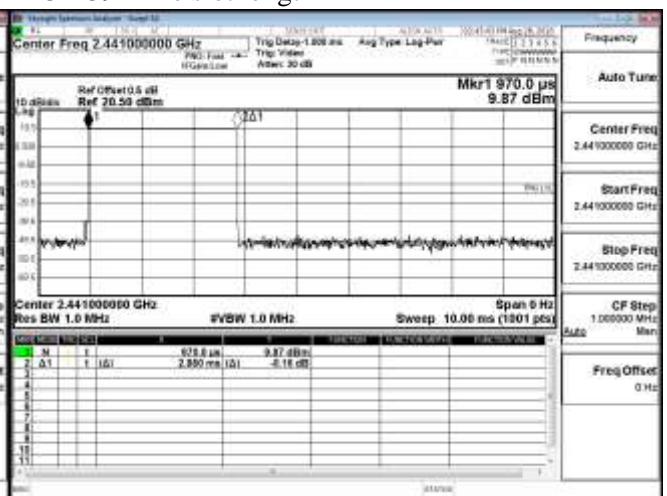
CH 00 Time slot length



CH39 Hopping of Number

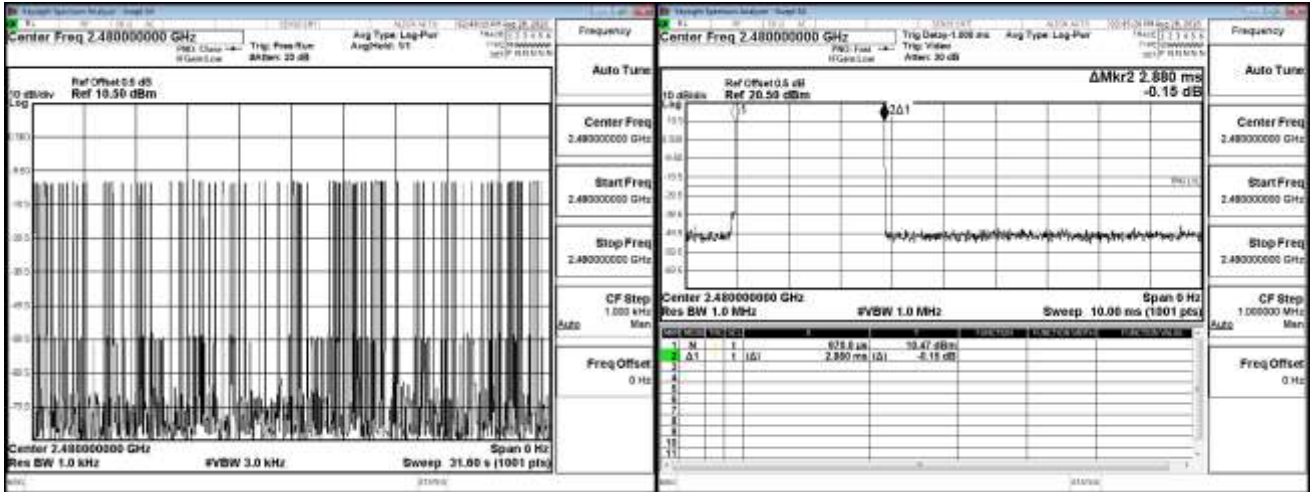


CH 39 Time slot length



CH 78 Hopping of Number

CH 78 Time slot length



Note:

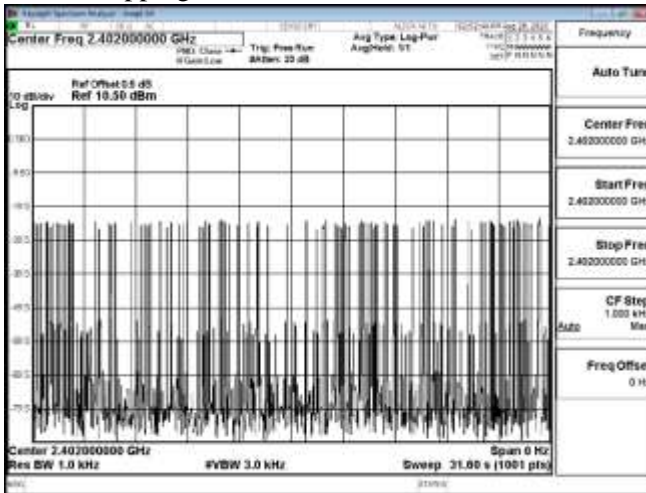
The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.

Product : Notebook  
 Test Item : Dwell Time  
 Test Mode : Mode 2: Transmit - 3Mbps (Channel 00,39,78)  
 Test Date : 2020/08/28

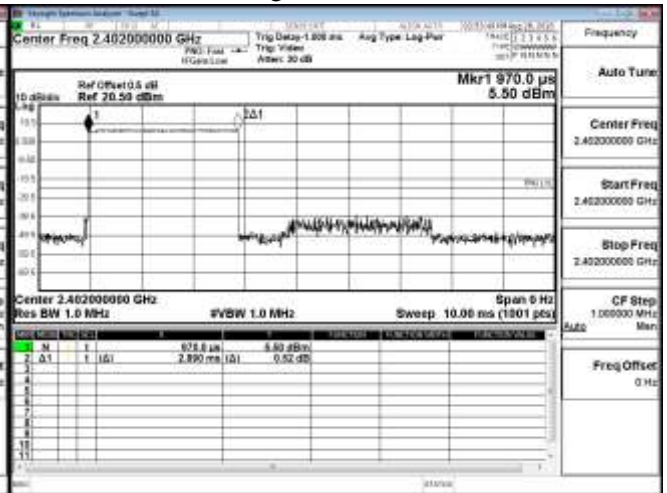
Frequency (MHz)	Time slot length (ms)	Hopping of Number	Sweep time (ms)	Dwell Time (ms)	Limit (ms)	Result
2402	2.890	104	31600	300.560	400	Pass
2441	2.890	96	31600	277.440	400	Pass
2480	2.890	90	31600	260.100	400	Pass

Dwell time = Time slot length(ms)\*Hopping of Number

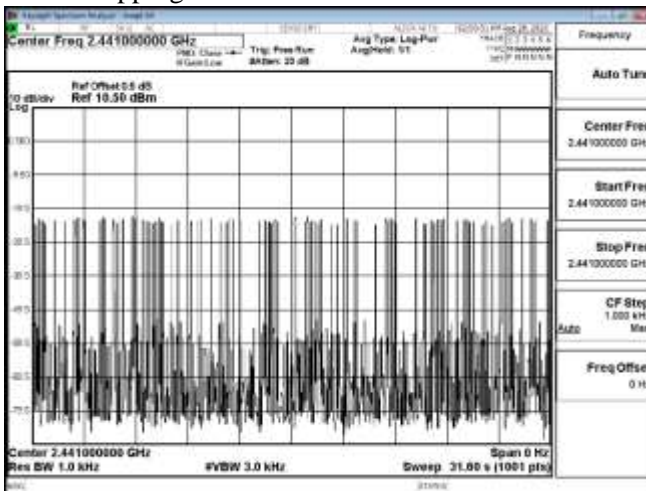
CH 00 Hopping of Number



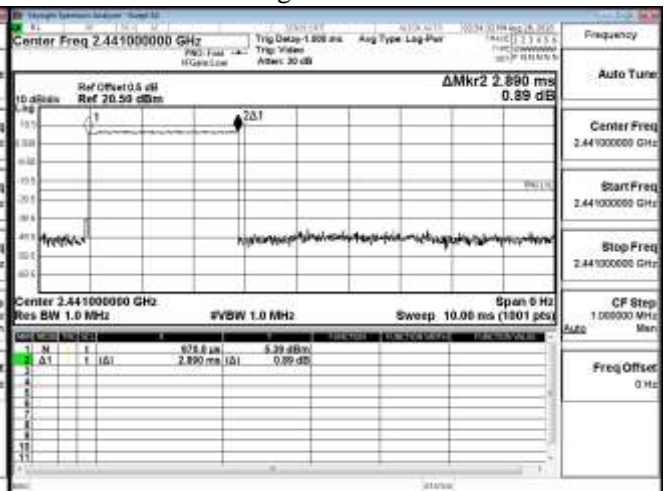
CH 00 Time slot length



CH39 Hopping of Number

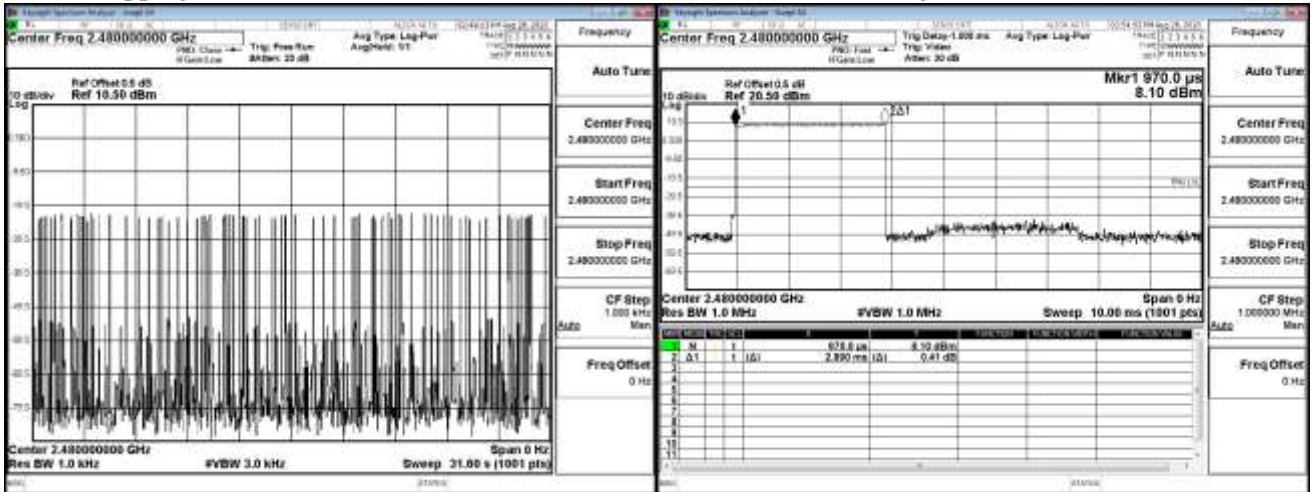


CH 39 Time slot length



CH 78 Hopping of Number

CH 78 Time slot length

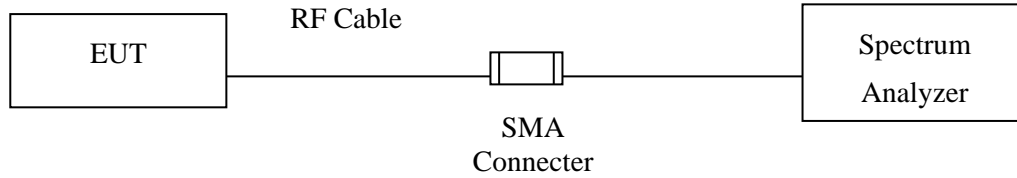


Note:

The dwell times of the packet type of DH1, DH3, and DH5 are tested. Only the worst case is shown on the report.

## 10. Occupied Bandwidth

### 10.1. Test Setup



### 10.2. Limits

N/A

### 10.3. Test Procedure

Tested according to FHSS test procedure of KDB558074 section 9 (b for compliance to FCC 47CFR 15.247 requirements.

### 10.4. Test Result of Occupied Bandwidth

Product : Notebook  
 Test Item : Occupied Bandwidth Data  
 Test Mode : Mode 1: Transmit - 1Mbps  
 Test Date : 2020/08/15

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	969	--	NA
39	2441	969	--	NA
78	2480	969	--	NA

Figure Channel 00:

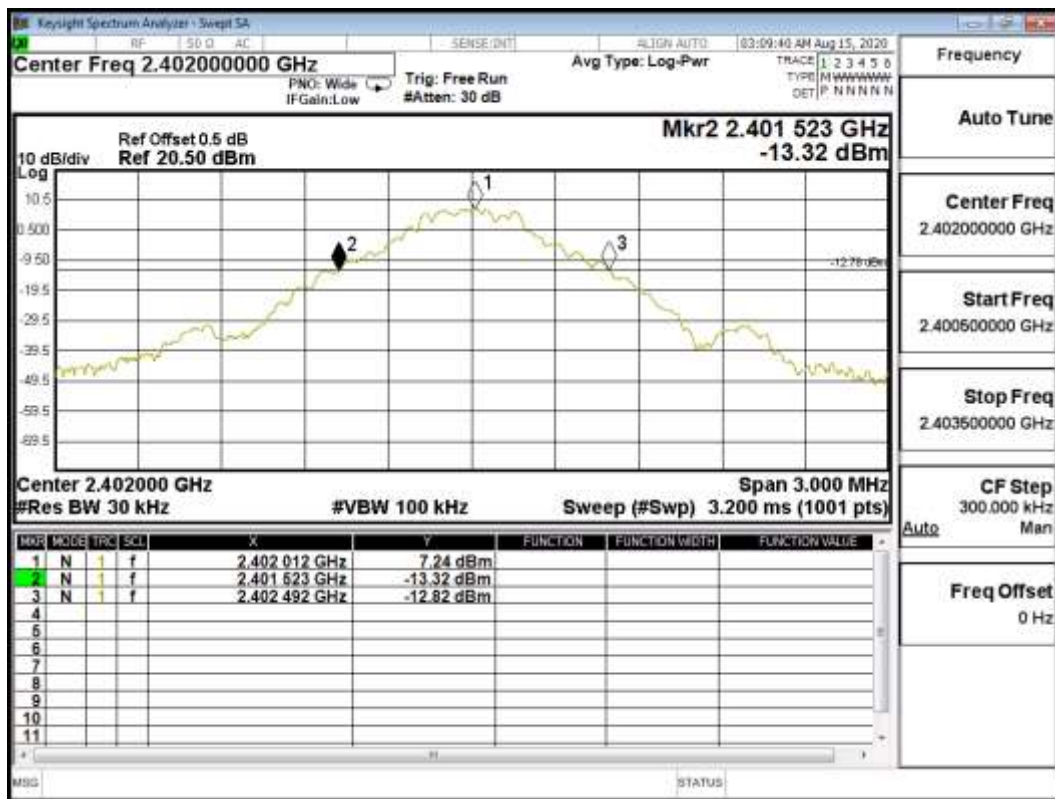


Figure Channel 39:

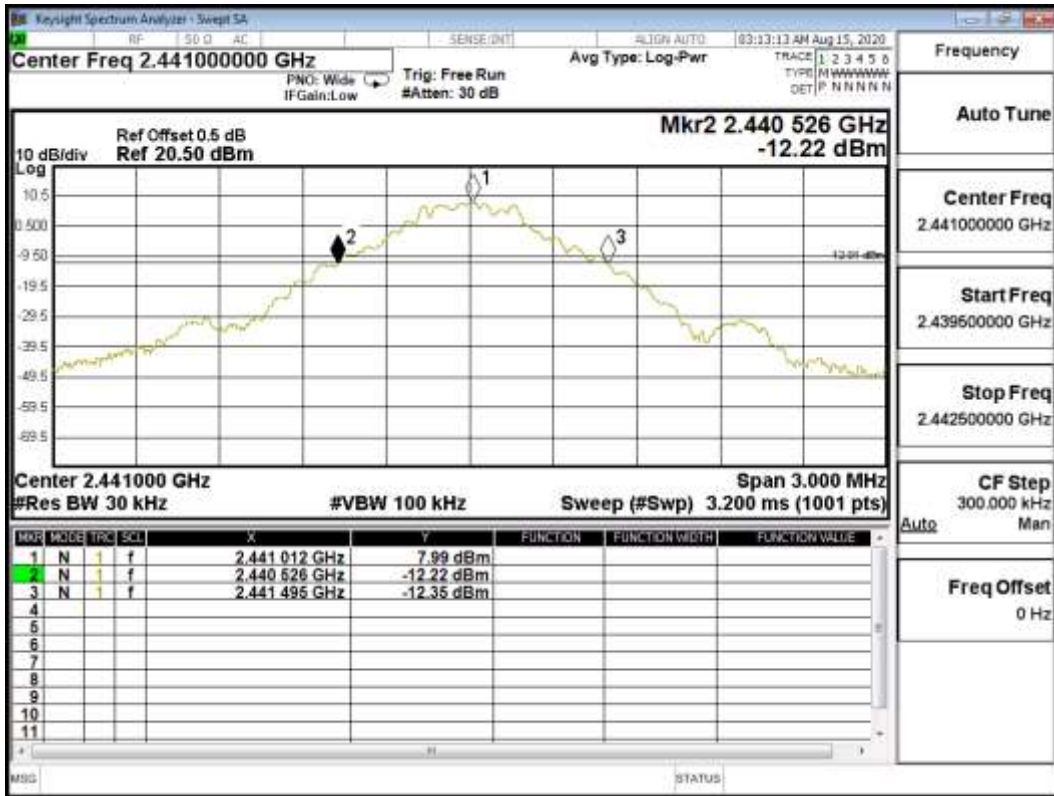
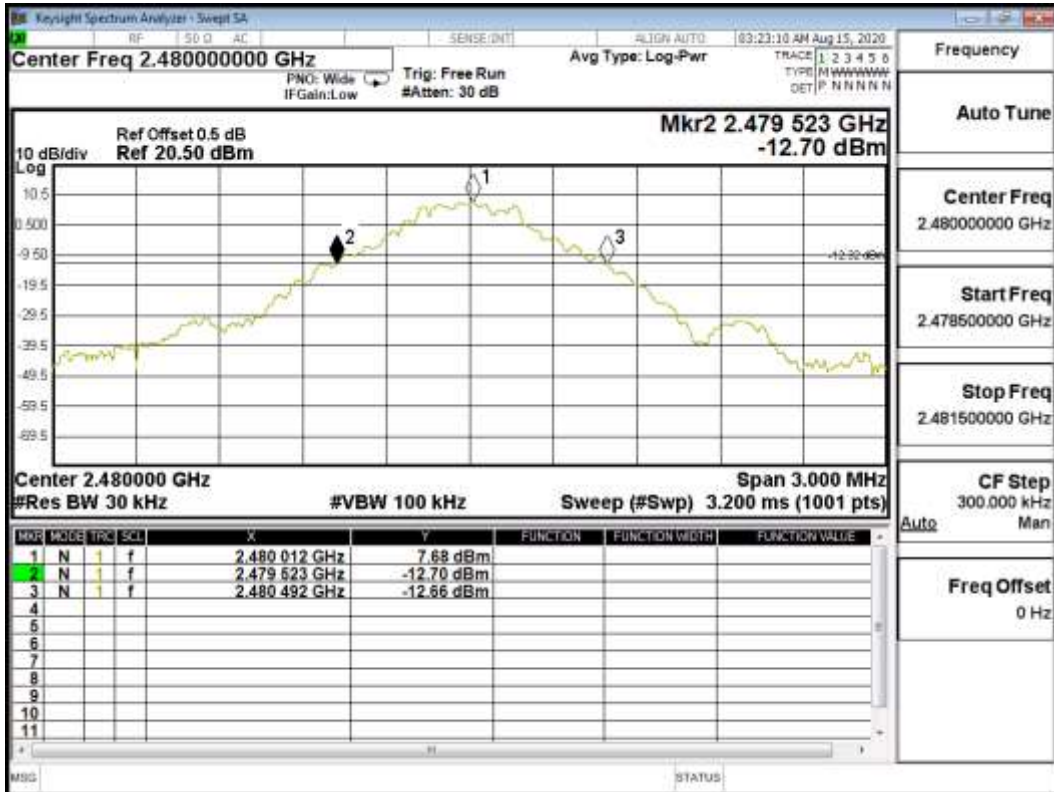


Figure Channel 78:



Product : Notebook  
 Test Item : Occupied Bandwidth Data  
 Test Mode : Mode 2: Transmit - 3Mbps  
 Test Date : 2020/09/02

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1485	--	NA
39	2441	1482	--	NA
78	2480	1485	--	NA

Figure Channel 00:

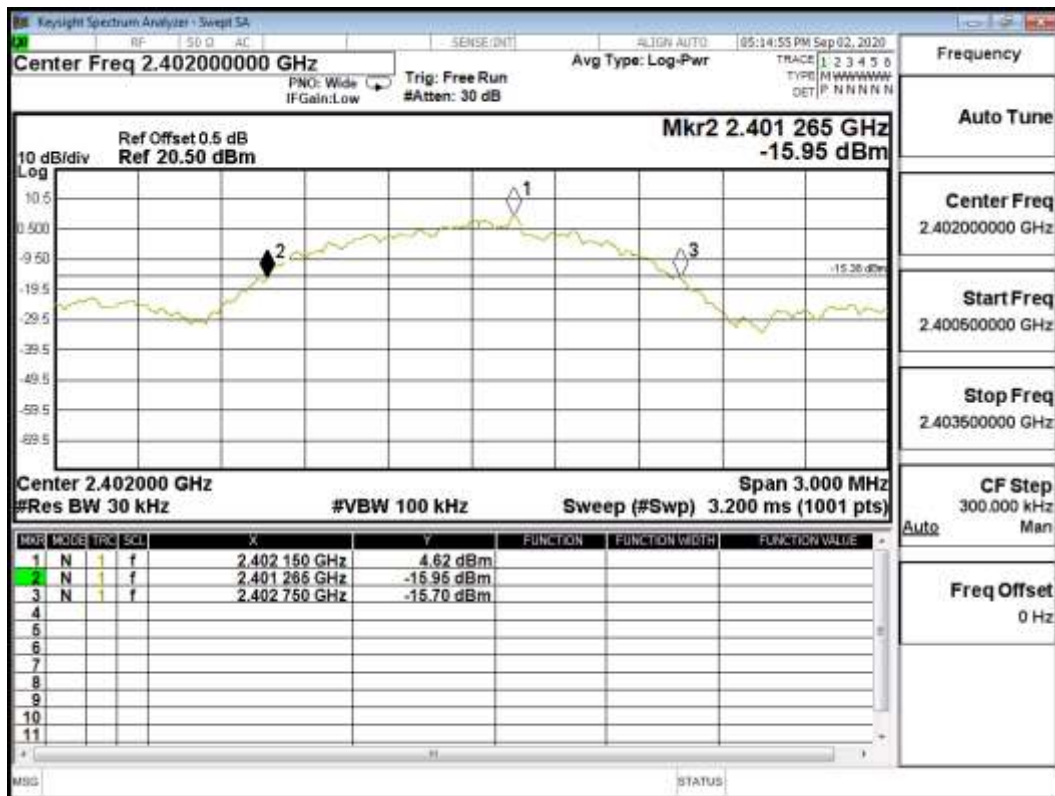




Figure Channel 39:

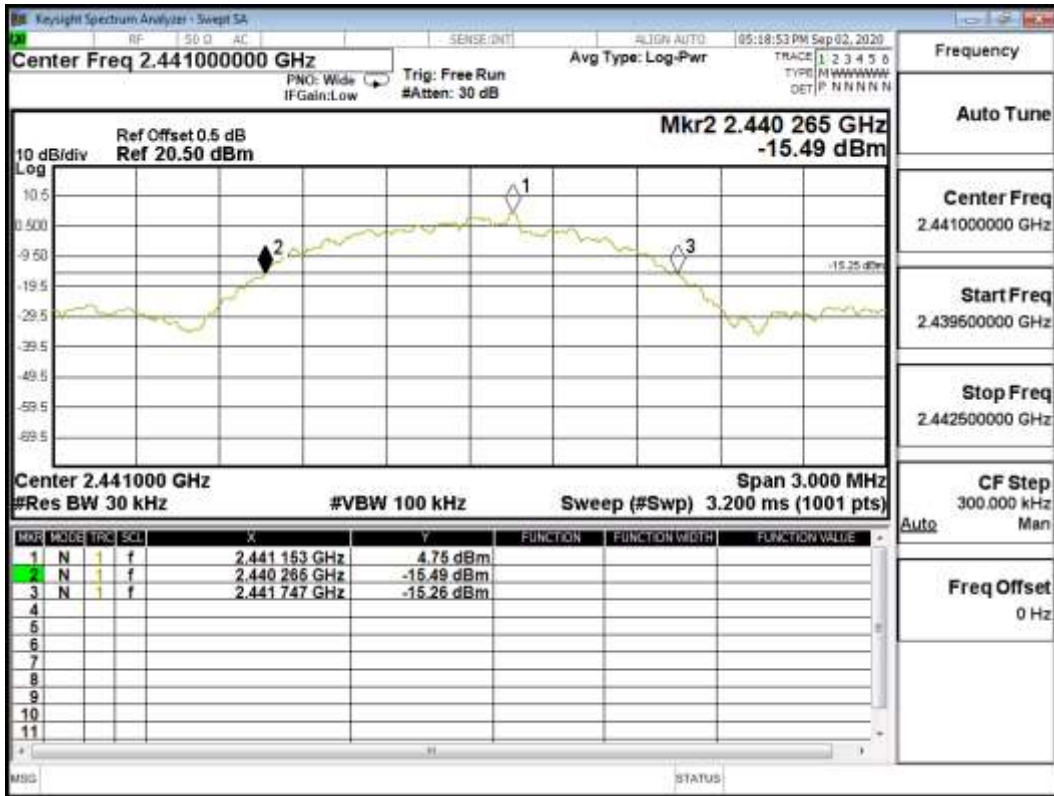
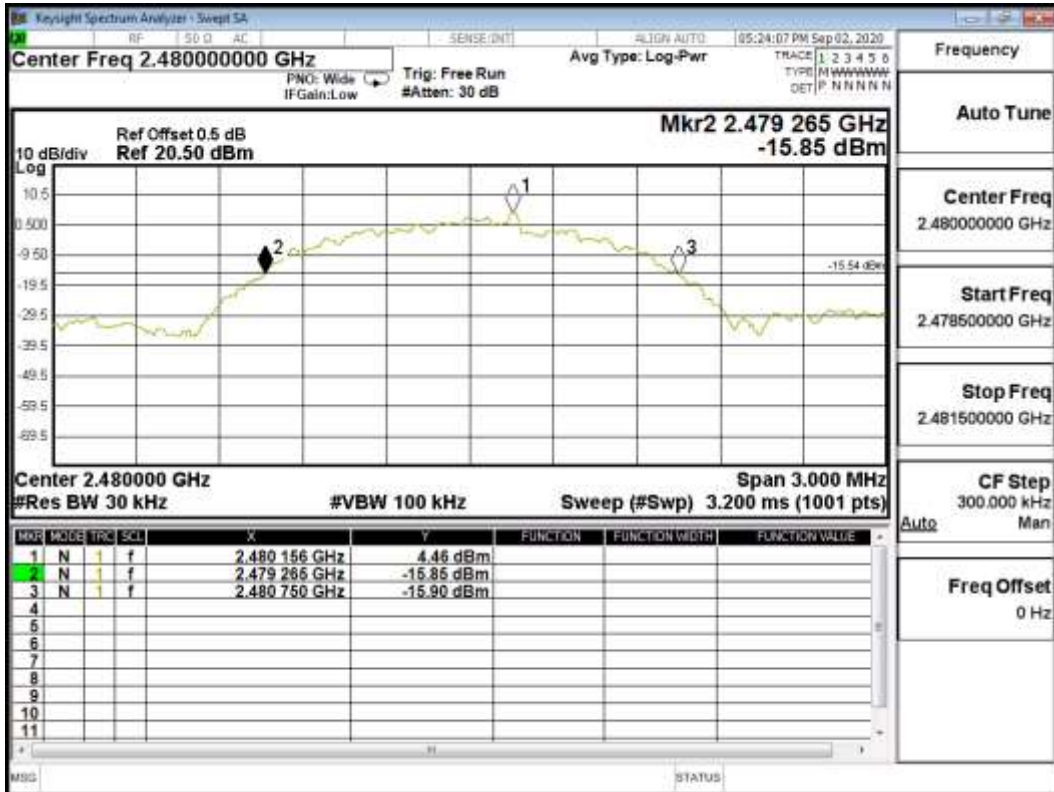
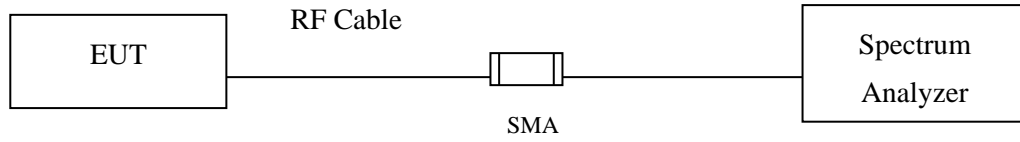


Figure Channel 78:



## 11. Duty Cycle

### 11.1. Test Setup

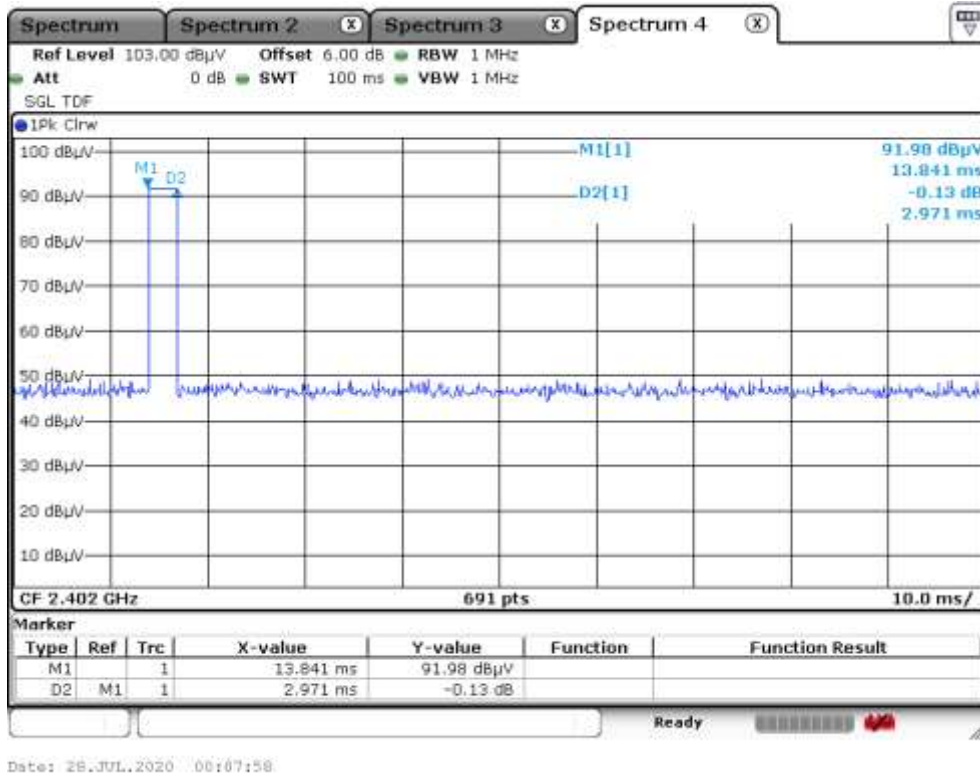


### 11.2. Test Procedure

The EUT was setup according to ANSI C63.10 2013; tested according to ANSI C63.10 2013 for compliance to FCC 47CFR 15.247 requirements.

### 11.3. Test Result of Duty Cycle

Product : Notebook  
 Test Item : Duty Cycle  
 Test Mode : Mode 1: Transmit - 1Mbps



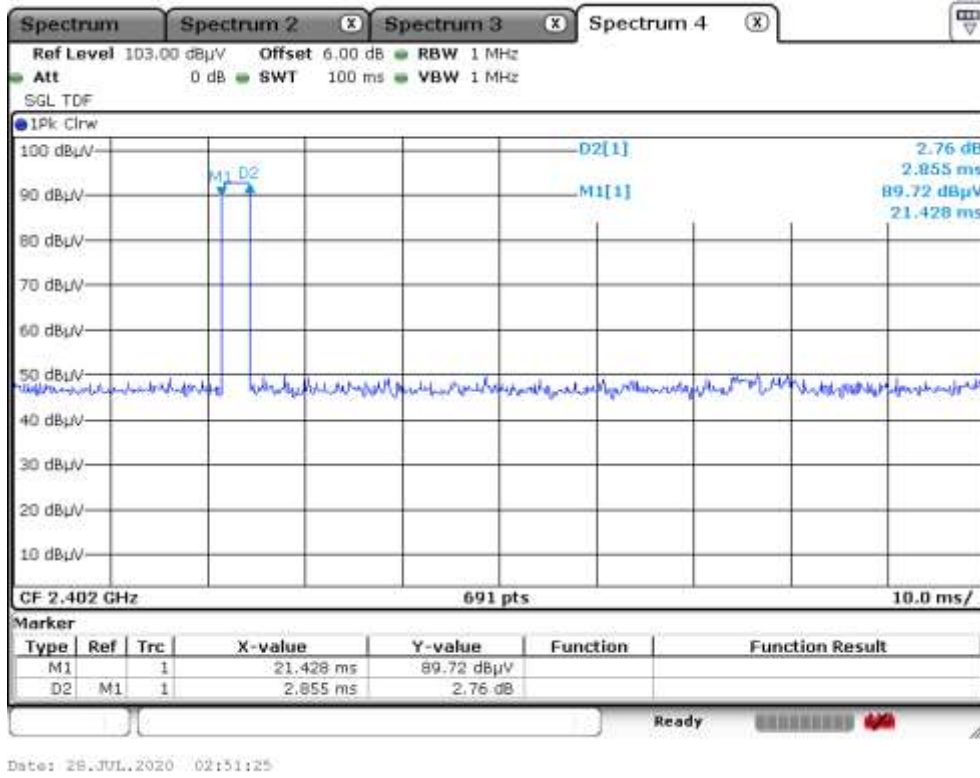
Time on of 100ms= 2.971ms

Duty Cycle=2.971ms / 100ms= 0.02971

Duty Cycle correction factor= 20 LOG 0.02971= -30.542 dB

<b>Duty Cycle correction factor</b>	<b>-30.542</b>	<b>dB</b>
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Product : Notebook  
 Test Item : Duty Cycle  
 Test Mode : Mode 2: Transmit - 3Mbps



Time on of 100ms=2.855ms

Duty Cycle=2.855ms / 100ms= 0.02855

Duty Cycle correction factor= 20 LOG 0.02855= -30.888 dB

<b>Duty Cycle correction factor</b>	<b>-30.888</b>	<b>dB</b>
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**12. EMI Reduction Method During Compliance Testing**

No modification was made during testing.