

Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC144493

1 of 94 Page:

FCC Radio Test Report FCC ID: 2ACXK-W86

Original Grant

TB-FCC144493 Report No.

Applicant Thread Technology Co., Ltd.

Equipment Under Test (EUT)

EUT Name : NoteBook

W86 Model No.

Series No. Please see the page of 4

Brand Name N/A

Receipt Date 2015-06-11

Test Date : 2015-06-12 to 2015-06-28

Issue Date 2015-06-30

FCC Part 15: 2014, Subpart C(15.247) **Standards**

Test Method ANSI C63.10:2013

Conclusions PASS

In the configuration tested, the EUT complied with the standards specified above,

The EUT technically complies with the FCC requirements

Test/Witness Engineer

Approved& Authorized

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TB-RF-074-1.0



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1. General Information about EUT

1.1 Client Information

Applicant: Thread Technology Co., Ltd.

Address : 4F, A Block, CYG, NO.2, Mid GaoXin Rd, NanShan District, Shenzhen,

China

Manufacturer: Thread Technology Co., Ltd.

Address : 4F, A Block, CYG, NO.2, Mid GaoXin Rd, NanShan District, Shenzhen,

China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	NoteBook			
Models No.	:	W86, M412, TH14-N4.128Y10, TH14-N8.256L, TH14-N8.256Y71P TH14-N8.256Y51 (W,M=0-9,A-Z or Blank for marketing differentiation)			
Model Difference	:		ical in the same PCB, layout and electrical is model name for commercial.		
		Operation Frequency: Bluetooth:2402~2480MHz Number of Channel:	Bluetooth:79 Channels see note (2)		
Product Description		Max Peak Output Power:	GFSK: 7.008 dBm		
Decemption		Antenna Gain:	3 dBi Embedded Antenna		
		Modulation Type:	GFSK 1Mbps(1 Mbps) π /4-DQPSK(2 Mbps) 8-DPSK(3 Mbps)		
Power Supply		DC Voltage supplied from	AC/DC adapter		
		DC power by Li-ion Battery			
Power Rating		DC 7.4V by 5200mAh/38.4 AC/DC Adapter:	48Wh Li-ion Battery.		
MUEL		Input: AC 100~240V, 50/60 Hz, 0.7A Output: DC 12V 2.0A			
Connecting I/O : Please refer to the User's Manual Port(S)			Manual		

Note:

(1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

(2) Channel List

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	27	2429	54	2456



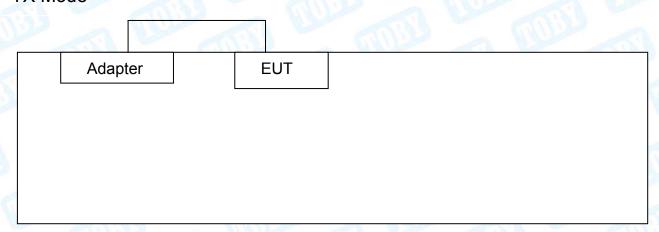
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		P. III. L.	- MIN.		
01	2403	28	2430	55	2457
02	2404	29	2431	56	2458
03	2405	30	2432	57	2459
04	2406	31	2433	58	2460
05	2407	32	2434	59	2461
06	2408	33	2435	60	2462
07	2409	34	2436	61	2463
08	2410	35	2437	62	2464
09	2411	36	2438	63	2465
10	2412	37	2439	64	2466
11	2413	38	2440	65	2467
12	2414	39	2441	66	2468
13	2415	40	2442	67	2469
14	2416	41	2443	68	2470
15	2417	42	2444	69	2471
16	2418	43	2445	70	2472
17	2419	44	2446	71	2473
18	2420	45	2447	72	2474
19	2421	46	2448	73	2475
20	2422	47	2449	74	2476
21	2423	48	2450	75	2477
22	2424	49	2451	76	2478
23	2425	50	2452	77	2479
24	2426	51	2453	78	2480
25	2427	52	2454		THE PARTY OF
26	2428	53	2455	1000	

(3) The Antenna information about the equipment is provided by the applicant.

1.3 Block Diagram Showing the Configuration of System Tested

TX Mode





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1.4 Description of Support Units

Equipment Information								
Name Model FCC ID/DOC Manufacturer Used "√"								
	MUD	O Win		mill's				
		Cable Information						
Number Shielded Type Ferrite Core Length Note								
Militar	3 V			MULL				

1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test					
Final Test Mode	Description				
Mode 1	AC Charging with TX GFSK Mode				

For Radiated Test				
Final Test Mode	Description			
Mode 1	AC Charging with TX GFSK Mode			
Mode 2	TX Mode(GFSK) Channel 00/39/78			
Mode 3	TX Mode(π /4-DQPSK) Channel 00/39/78			
Mode 4	TX Mode(8-DPSK) Channel 00/39/78			
Mode 5	Hopping Mode(GFSK)			
Mode 6 Hopping Mode(π /4-DQPSK)				
Mode 7 Hopping Mode(8-DPSK)				

Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate. We have pretested all the test mode above.

According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:

TX Mode: GFSK (1 Mbps)
TX Mode: 8-DPSK (3 Mbps)



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(2) The EUT is considered a portable unit; it was pre-tested on the positioned of each 3 axis, X-plane, Y-plane and Z-plane. The worst case was found positioned on X-plane as the normal use. Therefore only the test data of this X-plane was used for radiated emission measurement test.

1.6 Description of Test Software Setting

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of Bluetooth mode.

Test Software Version	DRTU-Diagnostics and Regulatory Testing Utility			
Frequency	2402 MHz	2441MHz	2480 MHz	
GFSK	DEF	DEF	DEF	
π /4-DQPSK	DEF	DEF	DEF	
8-DPSK	DEF	DEF	DEF	

1.7 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U _{Lab})
THE PARTY OF THE P	Level Accuracy:	
Conducted Emission	9kHz~150kHz	±3.42 dB
	150kHz to 30MHz	±3.42 dB
Dedicted Emission	Level Accuracy:	14 CO 4D
Radiated Emission	9kHz to 30 MHz	±4.60 dB
Dedicted Emission	Level Accuracy:	14 40 dB
Radiated Emission	30MHz to 1000 MHz	±4.40 dB
Radiated Emission	Level Accuracy:	14 20 dB
Radiated EIIIISSION	Above 1000MHz	±4.20 dB



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1.8 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

FCC List No.: (811562)

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number is 811562.

IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.

May 22, 2014 certificated by TUV Rheinland(China) Co., Ltd. with TUV certificate No.: UA 50282953 0001 and report No.: 17026822 002. The certificate is valid until the next scheduled audit or up to 18 months, at the discretion of TUV Rhineland.



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2. Test Summary

	F	CC Part 15 Subpart C(15.247)/ RSS	247 Issue 1		
Standard Section		Test House	ludama ant	D	
FCC	IC	Test Item	Judgment	Remark	
15.203		Antenna Requirement	PASS	N/A	
15.207	RSS-GEN 7.2.2	Conducted Emission	PASS	N/A	
15.205	RSS-Gen 7.2.3	Restricted Bands	PASS	N/A	
15.247(a)(1)	RSS 247 5.1 (2)	Hopping Channel Separation	PASS	N/A	
15.247(a)(1)	RSS 247 5.1 (4)	Dwell Time	PASS	N/A	
15.247(b)(1)	RSS 247 5.4 (2)	Peak Output Power	PASS	N/A	
15.247(b)(1)	RSS 247 5.1 (4)	Number of Hopping Frequency	PASS	N/A	
15.247(c)	RSS 247 5.5	Radiated Spurious Emission	PASS	N/A	
15.247(a)	RSS 247 5.1 (1)	99% Occupied Bandwidth & 20dB Bandwidth	PASS	99%OBW GFSK:898.0739kHz π /4-DQPSK: 1345.20kHz 8-DPSK:1353.40kHz	

Note: N/A is an abbreviation for Not Applicable.



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3. Test Equipment

AC Main C	onducted Emis	ssion			
Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
EMI Test Receiver	ROHDE& SCHWARZ	ESCI	100321	Aug. 08, 2014	Aug. 07, 2015
50ΩCoaxial Switch	Anritsu	MP59B	X10321	Aug. 08, 2014	Aug. 07, 2015
L.I.S.N	Rohde & Schwarz	ENV216	101131	Aug. 08, 2014	Aug. 07, 2015
L.I.S.N	SCHWARZBECK	NNBL 8226-2	8226-2/164	Aug. 08, 2014	Aug. 07, 2015
Radiation Description	Spurious Emiss Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	Agilent	E4407B	MY45106456	Sep. 01, 2014	Aug. 31, 2015
EMI Test Receiver	Rohde & Schwarz	ESCI	100010/007	Aug. 08, 2014	Aug.07, 2015
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Aug. 08, 2014	Aug.07, 2015
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 06, 2015	Mar.05, 2016
Pre-amplifier	Sonoma	310N	185903	Mar. 06, 2015	Mar.05, 2016
Pre-amplifier	HP	8447B	3008A00849	Mar. 06, 2015	Mar.05, 2016
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 06, 2015	Mar.05, 2016
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna C	onducted Emis	ssion			
Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Sep. 01, 2014	Aug. 31, 2015
EMI Test Receiver	Rohde & Schwarz	ESCI	100010/007	Aug. 08, 2014	Aug. 07, 2015



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4. Conducted Emission Test

4.1 Test Standard and Limit

4.1.1Test Standard FCC 15.207

4.1.2 Test Limit

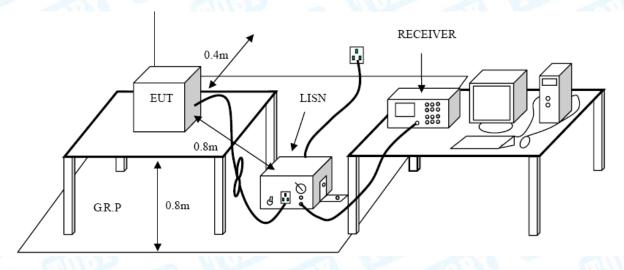
Conducted Emission Test Limit

Eroguanov	Maximum RF Line Voltage (dBμV)				
Frequency	Quasi-peak Level	Average Level			
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *			
500kHz~5MHz	56	46			
5MHz~30MHz	60	50			

Notes:

- (1) *Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2 Test Setup



4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.



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I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

4.4 EUT Operating Mode

Please refer to the description of test mode.

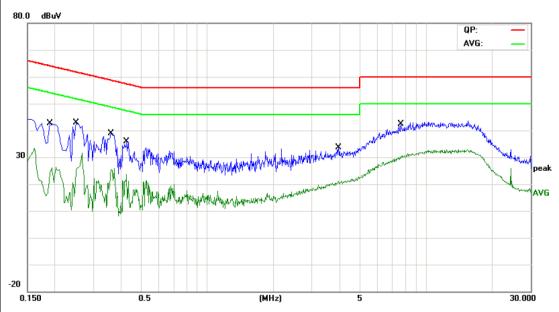
4.5 Test Data

Please see the next page.



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EUT:	NoteBook	Model Name :	W86				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	AC 120V/60 Hz						
Terminal:	Line						
Test Mode:	AC Charging with TX GFSK Mode 2402 MHz						
Remark:	Only worse case is reported						



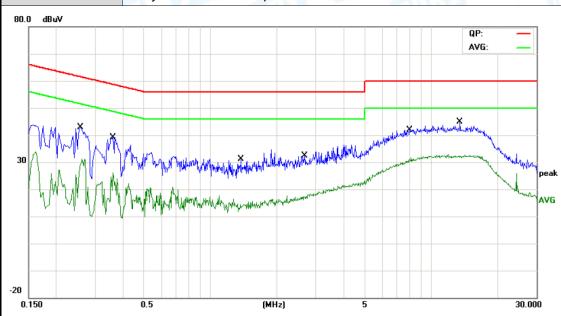
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBu∀	dB	dBu∀	dBu∨	dB	Detector
1	0.1900	29.32	10.00	39.32	64.03	-24.71	QP
2	0.1900	9.70	10.00	19.70	54.03	-34.33	AVG
3	0.2500	28.27	10.02	38.29	61.75	-23.46	QP
4	0.2500	12.26	10.02	22.28	51.75	-29.47	AVG
5	0.3620	26.31	10.02	36.33	58.68	-22.35	QP
6	0.3620	13.36	10.02	23.38	48.68	-25.30	AVG
7	0.4260	22.16	10.02	32.18	57.33	-25.15	QP
8	0.4260	9.47	10.02	19.49	47.33	-27.84	AVG
9	3.9740	16.62	9.99	26.61	56.00	-29.39	QP
10	3.9740	9.80	9.99	19.79	46.00	-26.21	AVG
11	7.6700	25.47	10.08	35.55	60.00	-24.45	QP
12 *	7.6700	18.92	10.08	29.00	50.00	-21.00	AVG



EUT: NoteBook Model Name : W86

EUT:	NoteBook	Model Name :	W86
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		33
Terminal:	Neutral		
Test Mode:	AC Charging with TX GFSK I	Mode 2402 MHz	O. C. C.

Remark: Only worse case is reported



No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	O∨er	
	MHz	dBu∨	dB	dBuV	dBu∨	dB	Detector
1	0.2580	30.44	10.10	40.54	61.49	-20.95	QP
2	0.2580	17.92	10.10	28.02	51.49	-23.47	AVG
3	0.3620	26.68	10.07	36.75	58.68	-21.93	QP
4	0.3620	13.48	10.07	23.55	48.68	-25.13	AVG
5	1.3740	11.48	10.12	21.60	56.00	-34.40	QP
6	1.3740	2.27	10.12	12.39	46.00	-33.61	AVG
7	2.6700	13.84	10.06	23.90	56.00	-32.10	QP
8	2.6700	6.16	10.06	16.22	46.00	-29.78	AVG
9	8.0140	25.50	10.09	35.59	60.00	-24.41	QP
10	8.0140	19.53	10.09	29.62	50.00	-20.38	AVG
11	13.4900	27.01	10.09	37.10	60.00	-22.90	QP
12 *	13.4900	21.30	10.09	31.39	50.00	-18.61	AVG



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EUT:	NoteBook	Model Name :	W86
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 240V/60 Hz		197
Terminal:	Line		
Test Mode:	AC Charging with TX	GFSK Mode 2402 MHz	LINE OF THE PARTY
Remark:	Only worse case is rep	ported	
80.0 dBuV			
			QP: — AVG: —

																QP: AVG:	_
	_																
30	/W/	*/ _{///} //\		Property of	M _M	WWW.	quadayaaa	hylydyd	Hay pho Market	ghtheapth Sussess	legi stragente Annonem	and property	glis might an	alder de la	en to sense	Marine Marine	and real sections.
	V W	JMr A. I	y"V"\	"III-II _I M	الهوا الم	hre hill by	Philippe About	Maranthody	Howald agrees								3 margan esta

No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
	MHz	dBu∨	dB	dBu∀	dBu∨	dB	Detector
1	0.2700	29.68	10.02	39.70	61.12	-21.42	QP
2	0.2700	20.62	10.02	30.64	51.12	-20.48	AVG
3	0.3618	28.88	10.02	38.90	58.69	-19.79	QP
4	0.3618	15.91	10.02	25.93	48.69	-22.76	AVG
5	0.6897	22.83	10.11	32.94	56.00	-23.06	QP
6	0.6897	10.24	10.11	20.35	46.00	-25.65	AVG
7	2.1819	23.49	10.05	33.54	56.00	-22.46	QP
8	2.1819	8.09	10.05	18.14	46.00	-27.86	AVG
9	11.5899	31.75	10.19	41.94	60.00	-18.06	QP
10	11.5899	21.47	10.19	31.66	50.00	-18.34	AVG
11 *	15.4977	32.34	10.25	42.59	60.00	-17.41	QP
12	15.4977	21.67	10.25	31.92	50.00	-18.08	AVG



EUT: NoteBook Model Name: W86

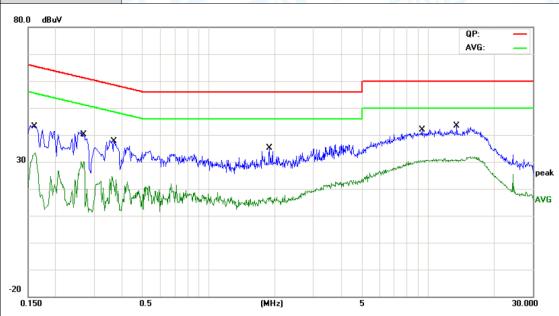
Temperature: 25 °C Relative Humidity: 55%

Test Voltage: AC 240V/60 Hz

Terminal: Neutral

Test Mode: AC Charging with TX GFSK Mode 2402 MHz

Remark: Only worse case is reported



No. N	∕lk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	O∨er	
		MHz	dBu∀	dB	dBu∀	dBu∨	dB	Detector
1		0.1621	32.67	10.12	42.79	65.35	-22.56	QP
2		0.1621	23.26	10.12	33.38	55.35	-21.97	AVG
3		0.2671	29.65	10.10	39.75	61.20	-21.45	QP
4		0.2671	19.90	10.10	30.00	51.20	-21.20	AVG
5		0.3672	25.77	10.06	35.83	58.56	-22.73	QP
6		0.3672	14.69	10.06	24.75	48.56	-23.81	AVG
7		1.8937	25.16	10.07	35.23	56.00	-20.77	QP
8		1.8937	6.83	10.07	16.90	46.00	-29.10	AVG
9		9.3856	31.68	10.14	41.82	60.00	-18.18	QP
10		9.3856	20.25	10.14	30.39	50.00	-19.61	AVG
11 3	* .	13.4899	33.33	10.09	43.42	60.00	-16.58	QP
12	,	13.4899	20.70	10.09	30.79	50.00	-19.21	AVG



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5. Radiated Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard FCC 15.209

5.1.2 Test Limit

Radiated Emission Limit (9 kHz~1000MHz)

Frequency (MHz	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Radiated Emission Limit (Above 1000MHz)

Frequency	(dBuV/m)(a	nt 3m)
(MHz)	Peak	Average
Above 1000	74	54

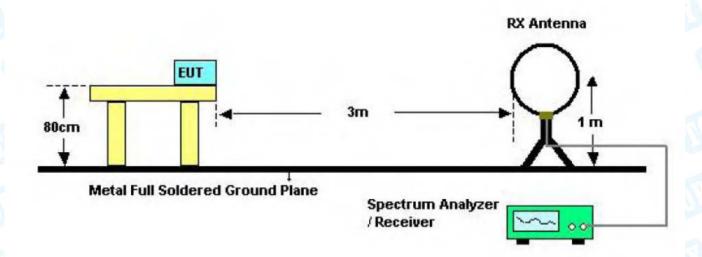
Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level (dBuV/m)=20log Emission Level (uV/m)

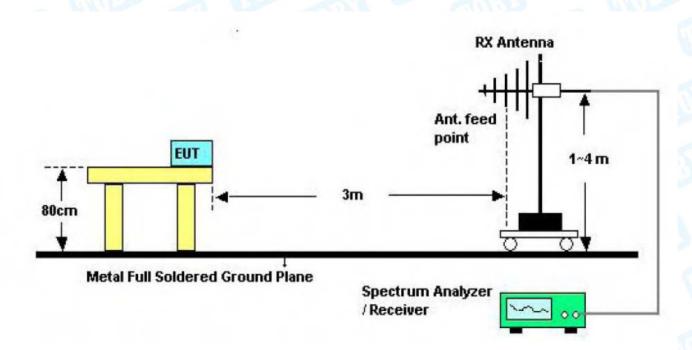


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5.2 Test Setup



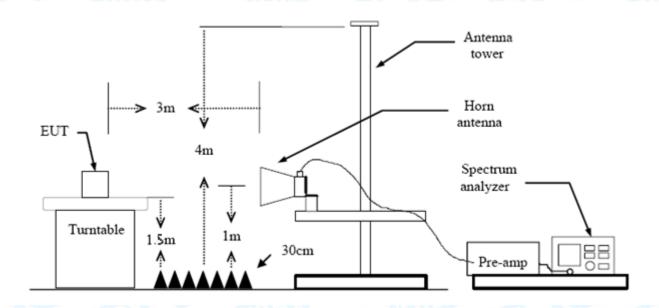
Bellow 30MHz Test Setup



Bellow 1000MHz Test Setup



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Above 1GHz Test Setup

5.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz. The EUT was placed on a rotating 0.8m high above the ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.



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5.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power in TX mode.

5.5 Test Data

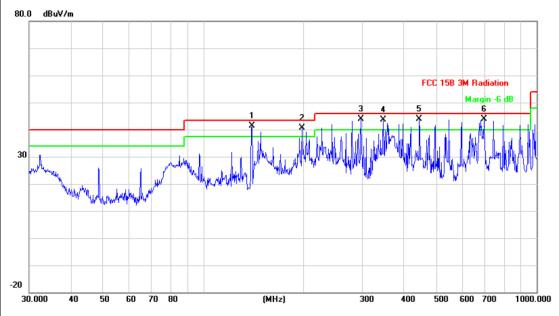
Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=1 KHz with Peak Detector for Average Values.

Test data please refer the following pages.



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EUT:	NoteBook	Model Name :	W86
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		
Test Mode:	TX GFSK Mode 2402MHz		CHILL
Remark:	Only worse case is reported		



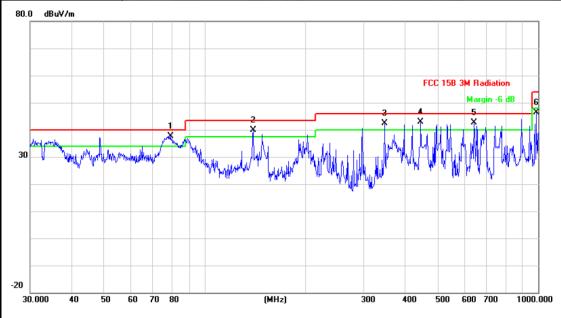
No	o. Mk	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	!	139.8507	63.38	-21.99	41.39	43.50	-2.11	peak
2	į	197.8926	61.14	-20.49	40.65	43.50	-2.85	peak
3	į.	297.2241	60.95	-17.14	43.81	46.00	-2.19	peak
4	!	346.8091	58.32	-14.81	43.51	46.00	-2.49	peak
5	!	444.8514	56.34	-12.55	43.79	46.00	-2.21	peak
6	*	694.4174	50.93	-7.01	43.92	46.00	-2.08	peak

^{*:}Maximum data x:Over limit !:over margin



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EUT:	NoteBook	Model Name :	W86
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		19
Ant. Pol.	Vertical		
Test Mode:	TX GFSK Mode 2402MHz		CALLES
Remark:	Only worse case is reported		
80.0 dBuV/m			



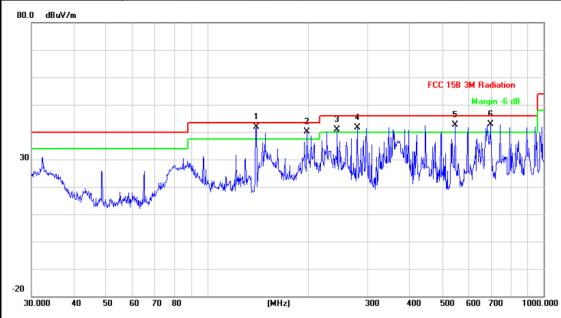
N	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	78.9651	60.96	-23.32	37.64	40.00	-2.36	peak
2	!	139.8507	61.88	-21.99	39.89	43.50	-3.61	peak
3	!	346.8091	57.26	-14.81	42.45	46.00	-3.55	peak
4	ļ	444.8514	55.42	-12.55	42.87	46.00	-3.13	peak
5	!	642.8613	51.25	-8.67	42.58	46.00	-3.42	peak
6		989.5354	50.84	-4.55	46.29	54.00	-7.71	peak

^{*:}Maximum data x:Over limit !:over margin



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NoteBook	Model Name :	W86			
25 ℃	Relative Humidity:	55%			
AC 120V/60 Hz					
Ant. Pol. Horizontal					
TX π /4-DQPSK Mode 2402MHz	20137	LIN .			
Only worse case is reported					
	25 °C AC 120V/60 Hz Horizontal ΤΧ π /4-DQPSK Mode 2402MHz	25 °C Relative Humidity: AC 120V/60 Hz Horizontal ΤΧ π /4-DQPSK Mode 2402MHz			



	No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
			MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
_	1	*	139.8505	63.88	-21.99	41.89	43.50	-1.61	peak
-2	2	ļ	197.8925	60.64	-20.49	40.15	43.50	-3.35	peak
-;	3	ļ	243.3771	59.21	-18.43	40.78	46.00	-5.22	peak
-	4	ļ	279.0436	59.08	-17.49	41.59	46.00	-4.41	peak
- (5	ļ	545.1825	52.76	-10.13	42.63	46.00	-3.37	peak
-	3	İ	694.4174	49.93	-7.01	42.92	46.00	-3.08	peak

^{*:}Maximum data x:Over limit !:over margin



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EUT:	NoteBook		Model Name :	W86					
Temperature:	25 ℃	201	Relative Humidity	: 55%					
Test Voltage: AC 120V/60 Hz									
Ant. Pol.	Vertical			33					
Test Mode:	TX π /4-D	QPSK Mode 2402	MHz						
Remark:	Only wors	Only worse case is reported							
80.0 dBuV/m									
30	Jen/minul/miy	Matheway of the state of the st	FCC 158	B 3M Radiation Margin -6 dB					
-20 <u> </u>	50 60 70 80	(MHz)	300 400 500	600 700 1000.000					
	Re	ading Correct	Measure-						
No. Mk.		evel Factor	ment Limit	Over					
	MHz d	BuV dB/m	dBuV/m dBuV/m	dB Detector					
1 * 48	B.5016 60	0.48 -23.76	36.72 40.00	-3.28 peak					
2 ! 13	9.8505 6	0.88 -21.99	38.89 43.50	-4.61 peak					
3 ! 29	7.2241 5	7.88 -17.14	40.74 46.00	-5.26 peak					
		4.92 -12.55	42.37 46.00	-3.63 peak					
		3.13 -11.68		-4.55 peak					
5 1 49	D 9343 D		4 40 40 111						
		8.08 -7.09	41.45 46.00 40.99 46.00	-5.01 peak					

Emission Level= Read Level+ Correct Factor

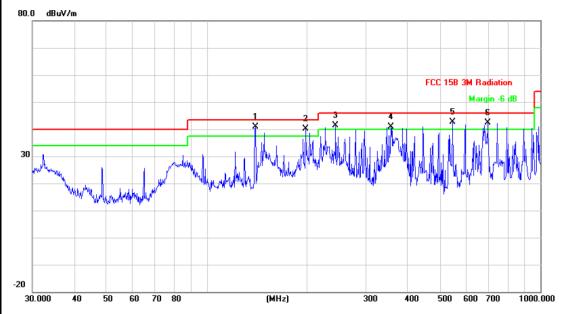
x:Over limit !:over margin

*:Maximum data



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NoteBook	Model Name :	W86
25 ℃	Relative Humidity:	55%
AC 120V/60 Hz		9
Horizontal		
TX 8-DPSK Mode 2402MHz		CHI CO
Only worse case is reported		
	25 °C AC 120V/60 Hz Horizontal TX 8-DPSK Mode 2402MHz	25 °C Relative Humidity: AC 120V/60 Hz Horizontal TX 8-DPSK Mode 2402MHz



	No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	O∨er	
			MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		*	139.8505	62.88	-21.99	40.89	43.50	-2.61	peak
2		ļ	197.8925	60.64	-20.49	40.15	43.50	-3.35	peak
3	,	ļ	243.3771	59.71	-18.43	41.28	46.00	-4.72	peak
4		İ	356.6757	55.36	-14.57	40.79	46.00	-5.21	peak
5	i	ļ	545.1825	52.76	-10.13	42.63	46.00	-3.37	peak
6	i	ļ	694.4174	49.43	-7.01	42.42	46.00	-3.58	peak

^{*:}Maximum data x:Over limit !:over margin



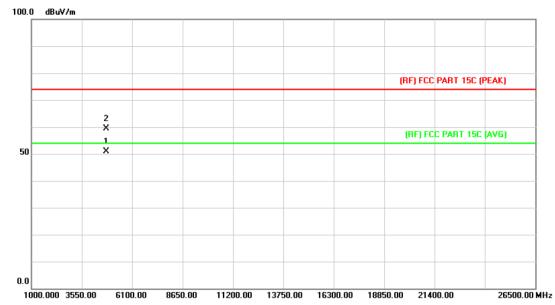
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EUT:		Note	Book	10/10	Model I	Name :	W86	9
Tempe	rature:	25 ℃			Relative	e Humidity:	55%	V)
Test Vo	ltage:	AC 12	20V/60 Hz		10		13	
Ant. Po	ol.	Vertic	al	WALL TO SHARE		I BUT		20
Test Mo	ode:	TX 8-	DPSK Mode 2	2402MHz			MILL	
Remark	k:	Only	worse case is	reported	C. Carrie			K
30	uV/m	n provincial de mayor	2 May My	3 4 X		FCC 15B	3M Radiation Margin - 6 dB	
-20 <u> </u>	40 50	60 70	80	(MHz)	300	400 500	600 700 10	000.000
No.	Mk. F	req.	_	Correct I	Measure- ment	Limit C	O∨er	
	V	ИHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB Dete	ector
1	! 30.	6374	50.57 -	14.35	36.22	40.00 -	·3.78 pe	eak
2	! 78.	9651	59.46 -	23.32	36.14	40.00 -	3.86 pe	eak
3	! 139	.8505	60.88 -	21.99	38.89	43.50 -	·4.61 pe	eak
4	! 203	.5226	58.36 -	20.24	38.12	43.50 -	·5.38 pe	eak
4				40.55	42.27	46.00 -		eak
5	* 444	.8514	54.92 -	12.55	42.37	40.00	5.05 pe	5an



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EUT:	NoteBook	Model Name :	W86			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120V/60 Hz		33			
Ant. Pol. Horizontal						
Test Mode:	Test Mode: TX GFSK Mode 2402MHz					
Remark:	No report for the emission which more than 10 dB below the					
prescribed limit.						

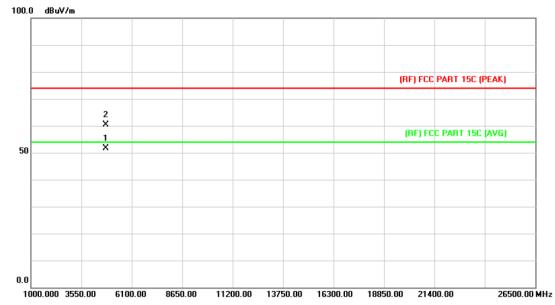


No	р. МI	k. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4803.934	37.45	13.44	50.89	54.00	-3.11	AVG
2		4804.204	46.06	13.44	59.50	74.00	-14.50	peak



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EUT:	NoteBook	Model Name :	W86		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	AC 120V/60 Hz		13		
Ant. Pol. Vertical					
Test Mode:	TX GFSK Mode 2402MHz		CHILL		
Remark:	No report for the emission which more than 10 dB below the prescribed limit.				

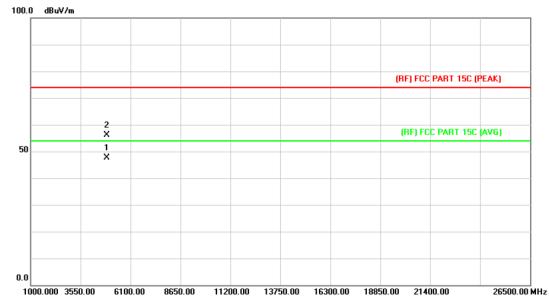


N	o. Mi	κ. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4803.883	38.14	13.44	51.58	54.00	-2.42	AVG
2		4804.009	46.90	13.44	60.34	74.00	-13.66	peak



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EUT:	NoteBook	Model Name :	W86	
Temperature:	25 ℃	25 ℃ Relative Humidity:		
Test Voltage:	AC 120V/60 Hz			
Ant. Pol.	Horizontal			
Test Mode:	TX GFSK Mode 2441MHz		O. M. C.	
Remark: No report for the emission which more than 10 dB below the prescribed limit.				

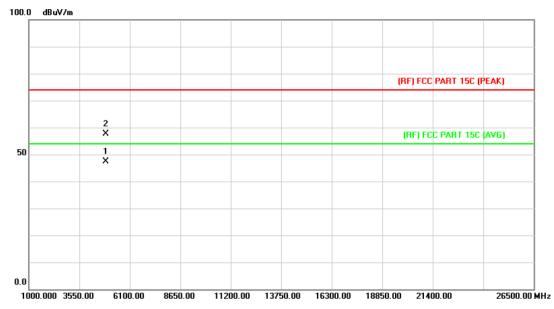


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4881.871	33.78	13.90	47.68	54.00	-6.32	AVG
2		4882.069	42.19	13.90	56.09	74.00	-17.91	peak



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EUT:	NoteBook	Model Name :	W86
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		13
Ant. Pol.	Vertical		
Test Mode:	TX GFSK Mode 2441MHz		CHIT:
Remark: No report for the emission which more than 10 dB below the prescribed limit.			

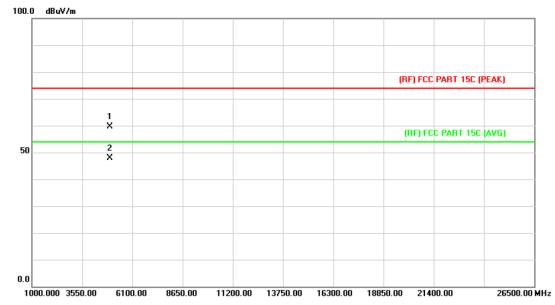


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4882.348	33.58	13.90	47.48	54.00	-6.52	AVG
2		4882.360	43.69	13.90	57.59	74.00	-16.41	peak



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EUT:	NoteBook	Model Name :	W86
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		13
Ant. Pol.	Horizontal		
Test Mode:	TX GFSK Mode 2480MHz	(M) 20	L. M. L.
Remark:	No report for the emission whi prescribed limit.	ch more than 10 dB bel	low the

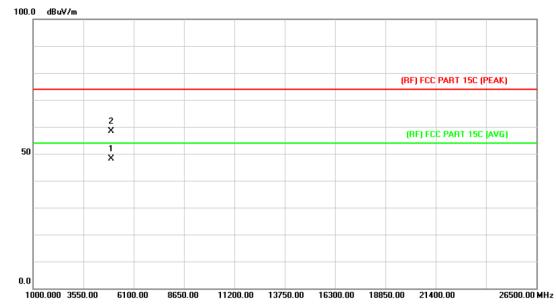


No	o. Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4959.850	45.26	14.36	59.62	74.00	-14.38	peak
2	*	4959.862	33.54	14.36	47.90	54.00	-6.10	AVG



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EUT:	NoteBook	Model Name :	W86					
Temperature:	25 ℃	Relative Humidity:	55%					
Test Voltage:	AC 120V/60 Hz		13.9					
Ant. Pol.	Vertical							
Test Mode:	TX GFSK Mode 2480MHz		LINE .					
Remark:	No report for the emission which more than 10 dB below the							
	prescribed iirilt.	prescribed limit.						

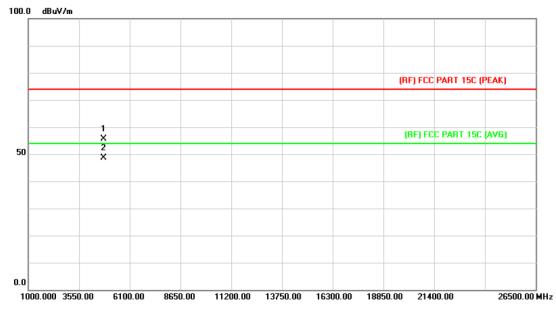


No	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4959.835	33.67	14.36	48.03	54.00	-5.97	AVG
2		4960.090	44.09	14.36	58.45	74.00	-15.55	peak



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EUT:	NoteBook	Model Name :	W86
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		13
Ant. Pol.	Horizontal		
Test Mode:	TX 8-DPSK Mode 2402MHz		MILL:
Remark:	h more than 10 dB belo	ow the	

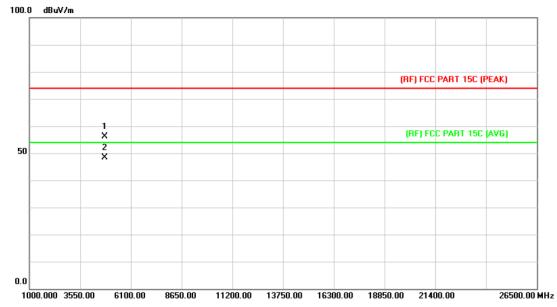


No	. Mk	Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4803.808	42.23	13.44	55.67	74.00	-18.33	peak
2	*	4803.808	35.20	13.44	48.64	54.00	-5.36	AVG



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EUT:	NoteBook	Model Name :	W86		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	AC 120V/60 Hz		13		
Ant. Pol.	Vertical				
Test Mode:	TX 8-DPSK Mode 2402MHz		DIO.		
Remark: No report for the emission which more than 10 dB below the prescribed limit.					
400.0 10.111					

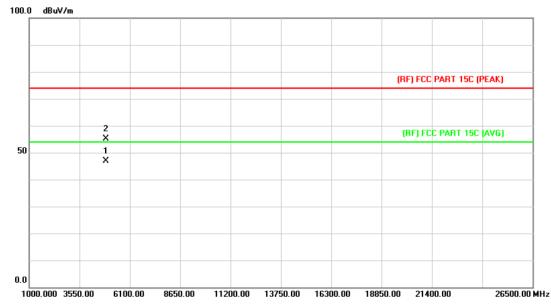


No	. Mk	. Freq.	_	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4804.135	42.74	13.44	56.18	74.00	-17.82	peak
2	*	4804.153	35.01	13.44	48.45	54.00	-5.55	AVG



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EUT:	NoteBook	Model Name :	W86			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120V/60 Hz					
Ant. Pol.	Horizontal					
Test Mode: TX 8-DPSK Mode 2441MHz						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.					

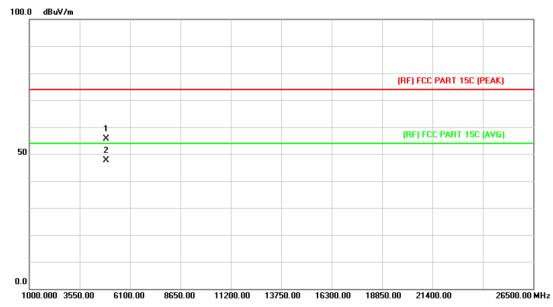


N	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4882.018	32.99	13.90	46.89	54.00	-7.11	AVG
2		4882.030	41.14	13.90	55.04	74.00	-18.96	peak



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EUT:	NoteBook	Model Name :	W86			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120V/60 Hz					
Ant. Pol.	Vertical					
Test Mode:	TX 8-DPSK Mode 2441MHz		L. C. L.			
Remark:	No report for the emission which more than 10 dB below the prescribed limit.					

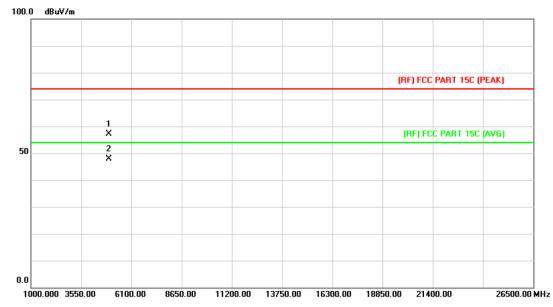


	۱o. ۱	Vlk.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1			4882.030	41.78	13.90	55.68	74.00	-18.32	peak
2	*	7	4882.084	33.66	13.90	47.56	54.00	-6.44	AVG



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NoteBook	Model Name :	W86						
25 ℃	Relative Humidity:	55%						
AC 120V/60 Hz	1	A. S.						
Horizontal								
TX 8-DPSK Mode 2480MHz	TX 8-DPSK Mode 2480MHz							
No report for the emission wh prescribed limit.	ich more than 10 dB be	elow the						
	25 °C AC 120V/60 Hz Horizontal TX 8-DPSK Mode 2480MHz No report for the emission wh	25 °C Relative Humidity: AC 120V/60 Hz Horizontal TX 8-DPSK Mode 2480MHz No report for the emission which more than 10 dB be						

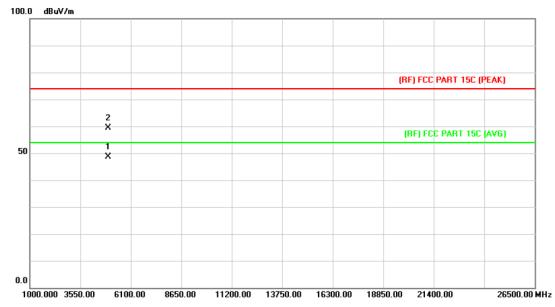


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4959.925	42.80	14.36	57.16	74.00	-16.84	peak
2	*	4959.943	33.50	14.36	47.86	54.00	-6.14	AVG



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EUT:	NoteBook	Model Name :	W86								
Temperature:	25 ℃	Relative Humidity:	55%								
Test Voltage:	AC 120V/60 Hz	C 120V/60 Hz									
Ant. Pol.	Vertical	Vertical									
Test Mode:	TX 8-DPSK Mode 2480MHz	(U) 33	LINE .								
Remark:	No report for the emission which more than 10 dB below the prescribed limit.										



No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4960.225	34.28	14.36	48.64	54.00	-5.36	AVG
2		4960.273	45.05	14.36	59.41	74.00	-14.59	peak



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6. Restricted Bands Requirement

6.1 Test Standard and Limit

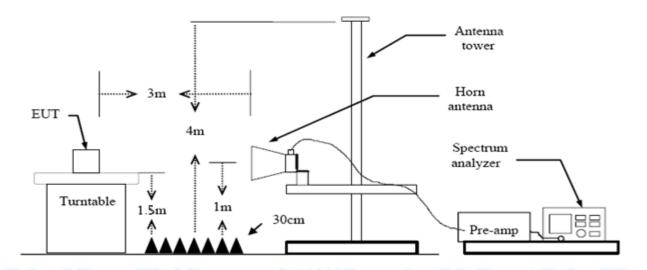
6.1.1 Test Standard FCC Part 15.209 FCC Part 15.205

6.1.2 Test Limit

Restricted Frequency	Class B (dE	BuV/m)(at 3m)	
Band (MHz)	Peak	Average	
2310 ~2390	74	54	
2483.5 ~2500	74	54	

Note: All restriction bands have been tested, only the worst case is reported.

6.2 Test Setup



6.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz. The EUT was placed on a rotating 0.8m high above the ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.



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(4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

6.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

6.5 Test Data

Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=1 KHz with Peak Detector for Average Values.

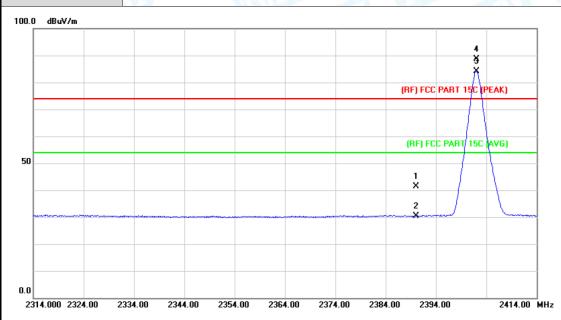
All restriction bands have been tested, only the worst case is reported.



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(1) Radiation Test

EUT:	NoteBook	Model Name :	W86
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Ant. Pol.	Horizontal		MILLER
Test Mode:	TX GFSK Mode 2402MHz	The state of the s	
Remark:	N/A	THU .	

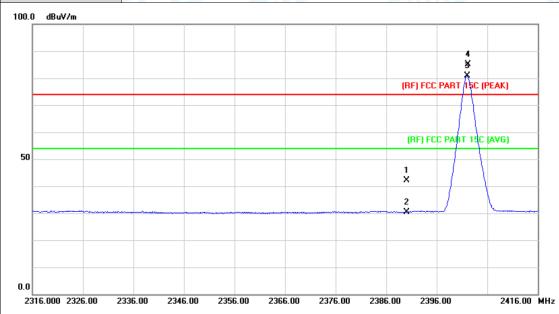


No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	40.54	0.77	41.31	74.00	-32.69	peak
2		2390.000	29.70	0.77	30.47	54.00	-23.53	AVG
3	*	2402.000	83.32	0.82	84.14	Fundamenta	l Frequeny	AVG
4	Χ	2402.100	87.71	0.82	88.53	Fundamenta	l Frequeny	peak



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EUT:	NoteBook	Model Name :	W86
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		33
Ant. Pol.	Vertical		
Test Mode:	TX GFSK Mode 2402MHz	(1)	LINE TO SERVICE
Remark:	N/A	Contract of the second	

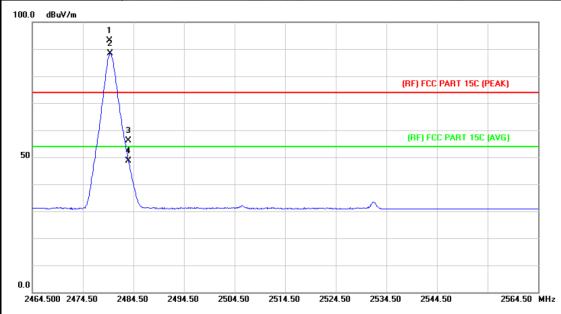


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	O∨er	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	41.44	0.77	42.21	74.00	-31.79	peak
2		2390.000	29.61	0.77	30.38	54.00	-23.62	AVG
3	*	2402.000	80.04	0.82	80.86	Fundamental	Frequeny	AVG
4	Х	2402.200	84.19	0.82	85.01	Fundamental	Frequeny	peak



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EUT:	NoteBook	Model Name :	W86
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		13.9
Ant. Pol.	Horizontal		
Test Mode:	TX GFSK Mode 2480 MHz		LITTLE TO
Remark:	N/A		



No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	Χ	2479.800	91.87	1.15	93.02	Fundamental Frequeny		peak
2	*	2479.900	87.26	1.15	88.41	Fundamental Frequeny		AVG
3		2483.500	54.85	1.17	56.02	74.00	-17.98	peak
4		2483.500	47.45	1.17	48.62	54.00	-5.38	AVG



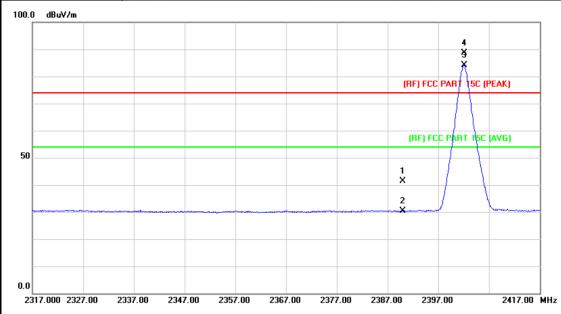
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EUT:			Note	Book				Мо	del N	ame :		W86		es i
Tem	peratu	re:	25 °	°C	16	811			lative		dity:	55%		
Test	Voltag	e:	AC	120V/6	0 Hz			(II)	16			1165		
Ant.	Pol.		Vert	ical		61	W	1		2	A.J.		465	31
Test	Mode:		TX	GFSK N	Node	2480 MI	Ηz	6	THE	13		. 6	MIL	
Rem	ark:		N/A	E III			a	N	3					6
100.0	dBuV/m													
		1 3												
		X												1
		/\								(RI	F) FCC P/	ART 15C (PE	AK)	-
		+/												-
			3								DED FOR I	PART 15C (A	WC	-
50		4							,	ar j r cc i	Ant tock	wuj	-	
			*											
		/												
									-	-				
-														-
-														-
0.0	64.500 247	74.50 2	2484.50	2494.50	250	4.50 251	4.50	2524	.50 2	534.50	2544.5	0	2564.50	_ MHz
	71.000 211										2011.0		2001.00	
Ν	o. Mk	. Fr	eq.	Read Lev	_	Corre Fact			ısure- ent	Lin	nit	Over		
		M	Hz	dBı	ıV	dB/m		dBı	uV/m	dBı	uV/m	dB	Dete	ector
1	Х	2479	.800	90.	43	1.15		91	1.58	Funda	amental	Frequeny	, pe	ak
2	*	2479	.900	85.	95	1.15		87	7.10	Funda	amental	Frequeny	, A	/G
3		2483	.500	53.	40	1.17		54	1.57	74	.00	-19.4	3 ре	ak
4		2483	.500	46.	49	1.17		47	7.66	54	.00.	-6.34	ı A	/G



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EUT:	NoteBook	Model Name :	W86
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		33
Ant. Pol.	Horizontal		
Test Mode:	TX 8-DPSK Mode 2402MHz		LITTLE OF
Remark:	N/A		

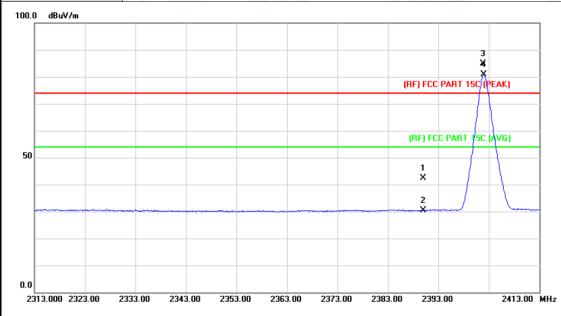


No	. Mk.	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	40.51	0.77	41.28	74.00	-32.72	peak
2		2390.000	29.67	0.77	30.44	54.00	-23.56	AVG
3	*	2402.100	83.27	0.82	84.09	Fundamental	Frequeny	AVG
4	Χ	2402.200	87.73	0.82	88.55	Fundamental	Frequeny	peak



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Ę	EUT:	NoteBook	Model Name :	W86
	Temperature:	25 ℃	Relative Humidity:	55%
	Test Voltage:	AC 120V/60 Hz		3.0
	Ant. Pol.	Vertical		
	Test Mode:	TX 8-DPSK Mode 2402MHz		CHILL STREET
	Remark:	N/A		



No	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∨	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	41.64	0.77	42.41	74.00	-31.59	peak
2		2390.000	29.67	0.77	30.44	54.00	-23.56	AVG
3	Х	2401.900	84.18	0.82	85.00	Fundamental	Frequeny	peak
4	*	2402.000	80.05	0.82	80.87	Fundamental	Frequeny	AVG



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EUT	:		N	lote	Book	(0	101	M	odel l	Nan	ne :		W86	1	
Tem	peratui	e:	2	25 °C		1	1			Re	elativ	еН	umid	ity:	55%	1111	
Test	t Voltag	e:	P	AC 1	20V/	60 F	Ηz			MOR	B			1	197		
Ant.	Pol.		H	Horiz	onta			- 60		العالم			/ //			45	
Test	Mode:		Т	X 8	-DPS	SK N	lode	248	вомн	z			3		- 111	1115	
Ren	nark:		N	N/A	141					\ \	1300			m	11		-
100.0	dBuV/m																
50			1 ½ ½ × × × × × × × × × × × × × × × × ×												ART 15C (PEA		
0.0	64.000 247	4.00	2484	.00	2494.	00	2504.	.00	2514.00	252	4.00	2534	1.00	2544.0	0	2564.00] мн:
	No. Mk	. i	Fred	٦.		adir e∨e	_		rrect actor		asure rent	e-	Lim	it	Over		
			MHz		С	lBu V		₫E	3/m	dE	3uV/m)	dBu∖	V/m	dB	Dete	cto
1	Х	247	79.9	00	9	1.02	2	1.	.15	9	2.17		Fundar	nenta	I Frequeny	ре	ak
2	*	248	30.0	00	8	6.48	3	1.	.15	8	7.63		Fundar	nenta	I Frequeny	A۱	/G
3		248	33.5	00	5	4.26	3	1.	.17	5	5.43		74.		-18.57	ре	ak
4			33.5			7.03			.17		8.20		54.		-5.80	A۱	
								•		'			-			, , ,	_



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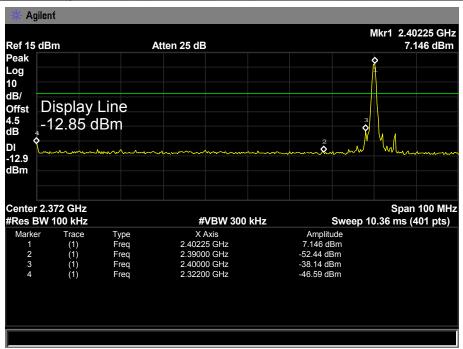
EUT:	Notel	Rook	To U	Model N	ama :	W86		
	25 °C					55%		
Temperature:								
Test Voltage:		20V/60 Hz				133	- N	
Ant. Pol.	Vertic		PHOT					
Test Mode:		-DPSK Mod	e 2480MHz			* 11,1	Ulas	
Remark:	N/A	Alter			100			
100.0 dBuV/m								
	1 3							
	χ							
	/\				(RF) FCC PA	ART 15C (PEA	K)	
50	3				(RF) FCC F	PART 15C (AV	G)	
30	¥							
0.0								
2464.000 2474.00	2484.00	2494.00 250	4.00 2514.00	2524.00 2	534.00 2544.0	0	2564.00 MHz	
		Reading	Correct	Measure-				
No. Mk.	Freq.	Level	Factor	m ent	Limit	O∨er		
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	
1 X 24	179.900	90.01	1.15	91.16	Fundamental	Frequeny	peak	
2 * 24	180.000	85.52	1.15	86.67	Fundamental	Frequeny	AVG	
3 24	183.500	52.77	1.17	53.94	74.00	-20.06	peak	

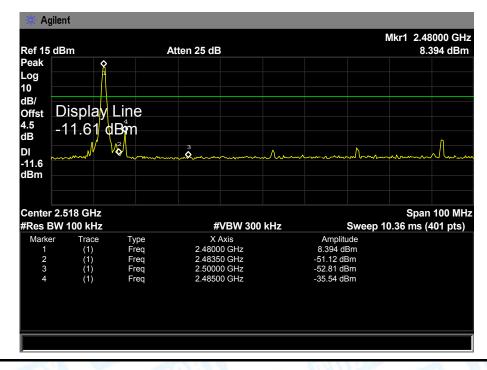




(2) Conducted Test

EUT:	NoteBook	Model Name :	W86		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	AC 120V/60 Hz				
Test Mode:	TX GFSK Mode 2402MHz / 2	480 MHz	CHILL STORY		
Remark:	N/A	The same of the sa			







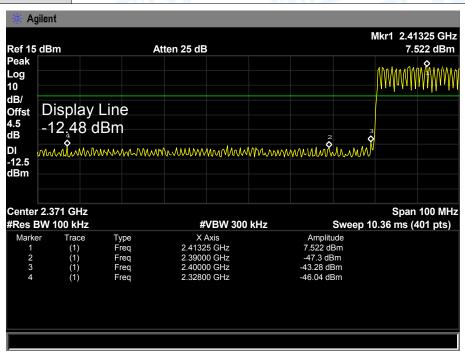
EUT: NoteBook Model Name: W86

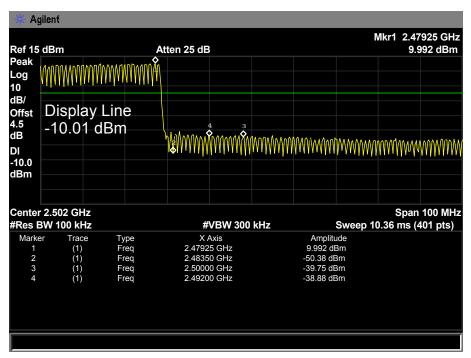
Temperature: 25 ℃ Relative Humidity: 55%

Test Voltage: AC 120V/60 Hz

Test Mode: GFSK Hopping Mode

Remark: N/A







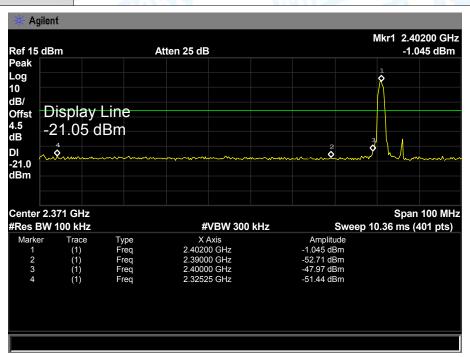
EUT: NoteBook Model Name: W86

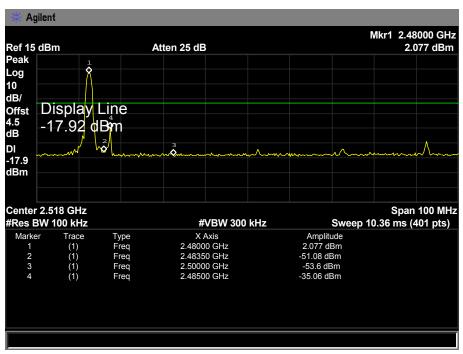
Temperature: 25 ℃ Relative Humidity: 55%

Test Voltage: AC 120V/60 Hz

Test Mode: TX 8-DPSK Mode 2402MHz / 2480 MHz

Remark: N/A







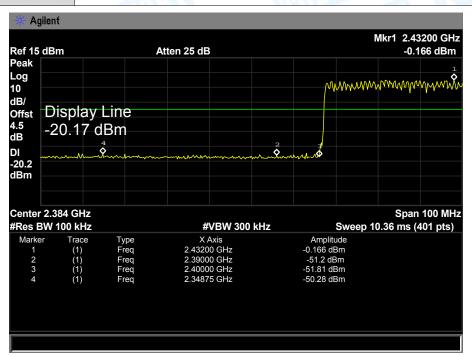
EUT: NoteBook Model Name: W86

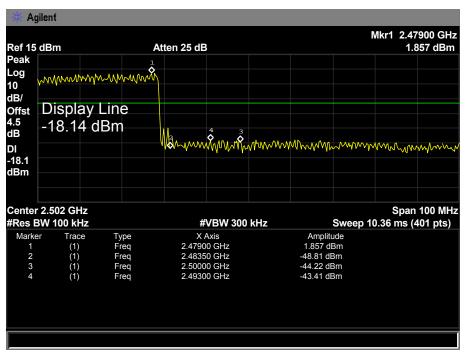
Temperature: 25 °C Relative Humidity: 55%

Test Voltage: AC 120V/60 Hz

Test Mode: 8-DPSK Hopping Mode

Remark: N/A







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7. Number of Hopping Channel

7.1 Test Standard and Limit

7.1.1 Test Standard FCC Part 15.247 (a)(1)

7.1.2 Test Limit

Section	Test Item	Limit
15.247	Number of Hopping Channel	>15

7.2 Test Setup



7.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting: RBW=100 KHz, VBW=100 KHz, Sweep time= Auto.

7.4 EUT Operating Condition

The EUT was set to the Hopping Mode by the Customer.

7.5 Test Data

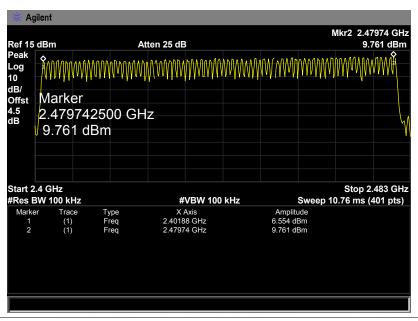


EUT:	NoteBook	Model Name :	W86
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		30

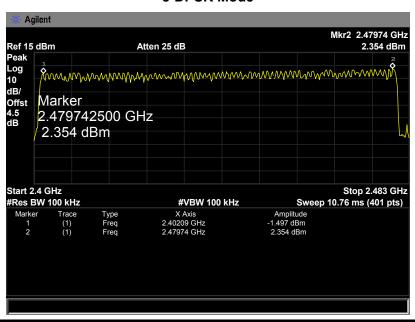
Test Mode: Hopping Mode (GFSK/ 8-DPSK)

Frequency Range	Quantity of Hopping Channel	Limit
2402MU=-2400MU=	79	\1 E
2402MHz~2480MHz	79	>15

GFSK Mode



8-DPSK Mode





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8. Average Time of Occupancy

8.1 Test Standard and Limit

8.1.1 Test Standard FCC Part 15.247 (a)(1)

8.1.2 Test Limit

Section	Test Item	Limit
15.247(a)(1)/ RSS-210	Average Time of	0.4.202
Annex 8(A8.1d)	Occupancy	0.4 sec

8.2 Test Setup



8.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting: RBW=1MHz, VBW=1MHz.
- (3) Use video trigger with the trigger level set to enable triggering only on full pulses.
- (4) Sweep Time is more than once pulse time.
- (5) Set the center frequency on any frequency would be measure and set the frequency span to zero.
- (6) Measure the maximum time duration of one single pulse.
- (7) Set the EUT for packet transmitting.
- (8) Measure the maximum time duration of one single pulse.

8.4 EUT Operating Condition

The EUT was set to the Hopping Mode by the Customer.

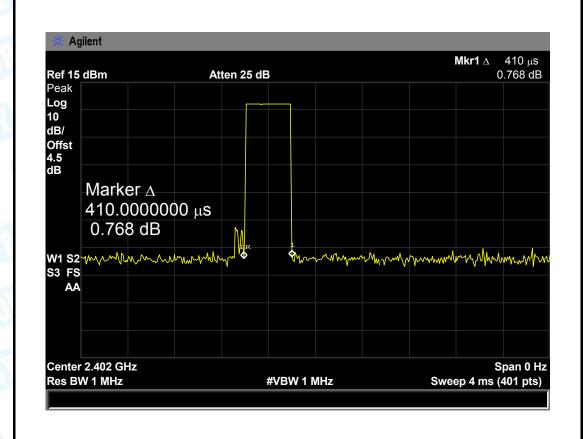


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8.5 Test Data

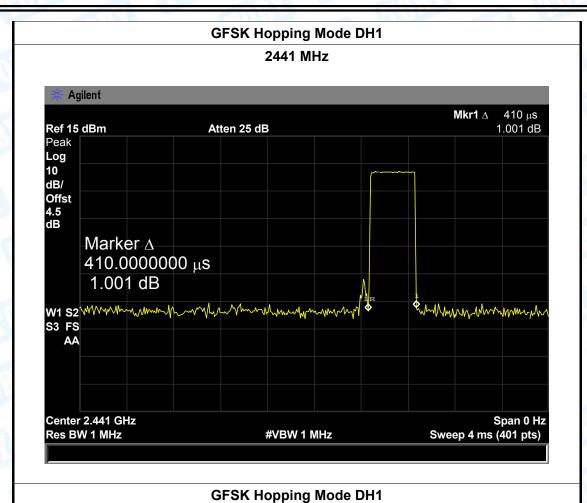
EUT:	NoteBook Model Name :				:	W86
Temperature		25 ℃		Relative Hum	55%	
Test Voltage:		AC 120V/	60 Hz		600	
Test Mode:		Hopping I	Mode (GFSK DH1)	CHILL ST		HALL
Channel	Pu	lse Time	Total of Dwell	Period Time	Limit	Result
(MHz)		(ms)	(ms)	(s)	(ms)	Result
2402		0.410	131.20			
2441		0.410	131.20	31.60	400	PASS
2480		0.410	131.20			

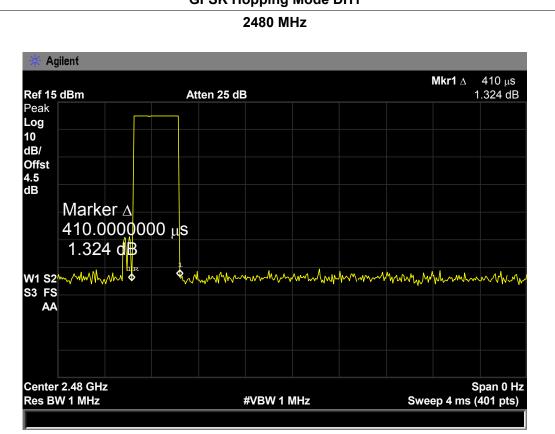
GFSK Hopping Mode DH1





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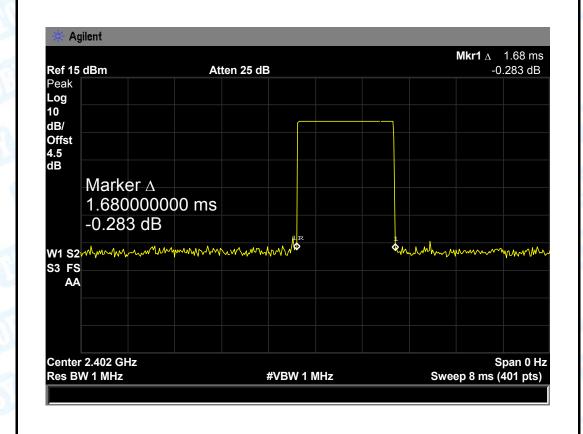




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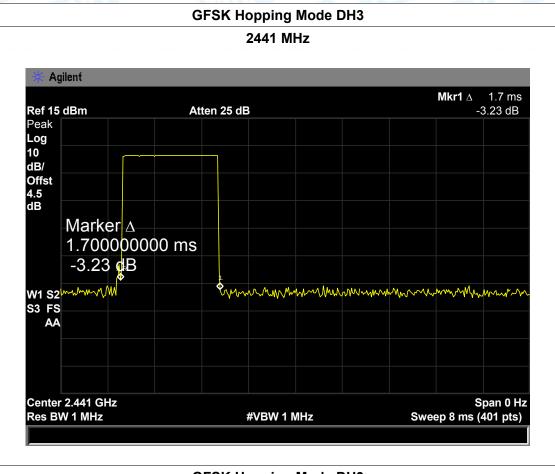
EUT:	NoteBook Model Name :		W86			
Temperature		25 ℃		Relative Humidity:		55%
Test Voltage:		AC 120V/	60 Hz	1		
Test Mode:		Hopping N	Mode (GFSK DH3)			
Channel	Pu	Ilse Time	Total of Dwell	Period Time	Limit	Result
(MHz)		(ms)	(ms)	(s)	(ms)	Result
2402		1.680	268.80	31.60	400	
2441		1.700	272.00			PASS
2480		1.680	268.80			
			GESK Honning Mc	nde DH3		•

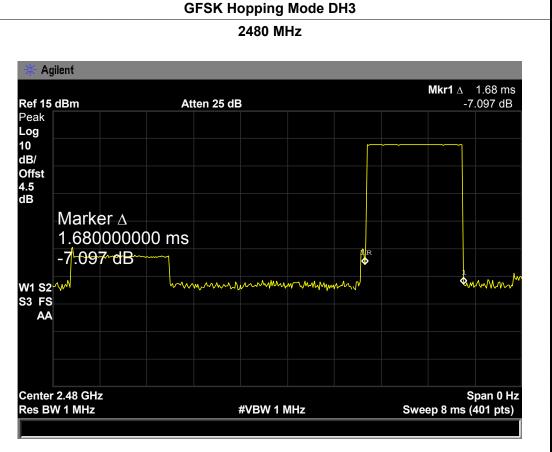
GFSK Hopping Mode DH3





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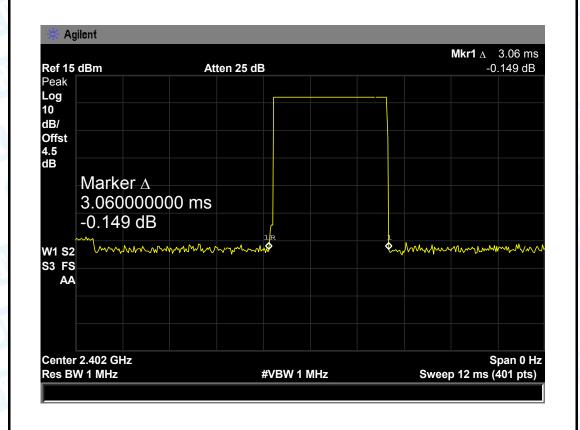




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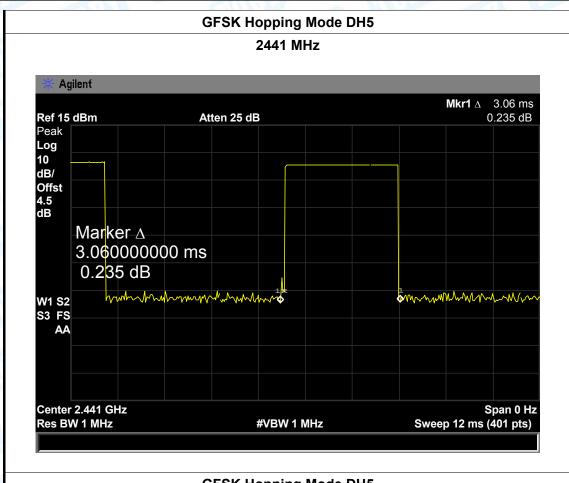
EUT:	UT: NoteBook		Model Name :		W86		
Temperature	:	25 ℃		Relative Hum	55%		
Test Voltage:		AC 120V/	60 Hz				
Test Mode:		Hopping N	Mode (GFSK DH5)		All In		
Channel	Pu	lse Time	Total of Dwell	Period Time	Limit	Result	
(MHz)		(ms)	(ms)	(s)	(ms)	Result	
2402		3.060	326.40				
2441		3.060	326.40	31.60	400	PASS	
2480		3.060	326.40				
GFSK Hopping Mode DH5							

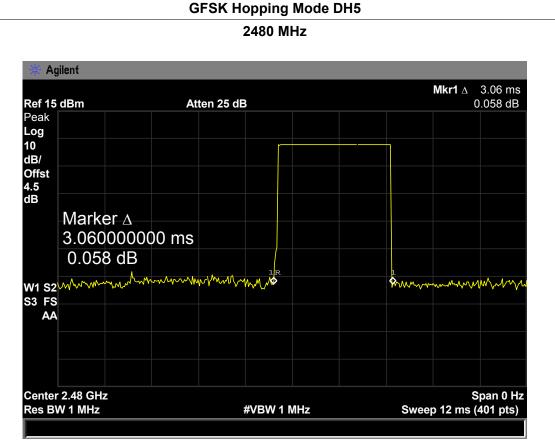
GFSK Hopping Mode DH5





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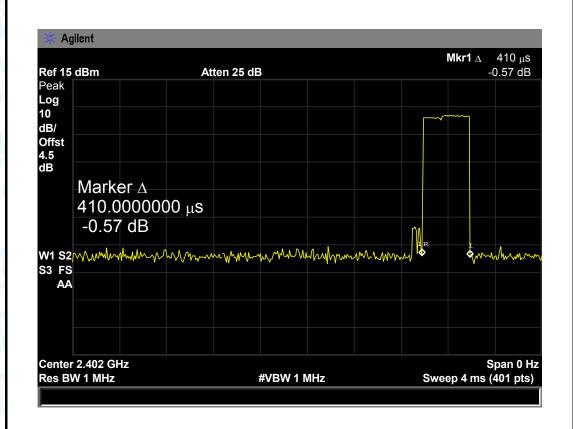




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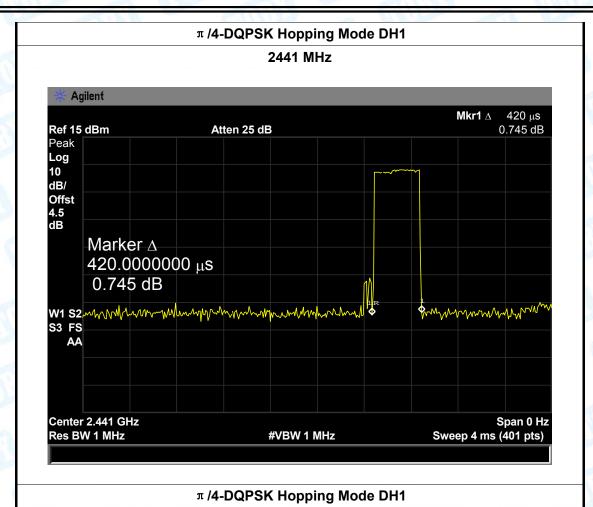
				1 20 10		
EUT: NoteBook				Model Name		W86
Temperature	:	25 ℃		Relative Hum	55%	
Test Voltage:		AC 120V/	60 Hz	1		
Test Mode:		Hopping N	Mode (π/4-DQPSK D	DH1)		
Channel	Pu	Ise Time	Total of Dwell	Period Time	Limit	Result
(MHz)		(ms)	(ms)	(s)	(ms)	Resuit
2402		0.410	131.20			
2441		0.420	134.40	31.60	400	PASS
2480		0.420	133.40			
	1	_	// DODCK Hanning	Mada DU4		

π /4-DQPSK Hopping Mode DH1





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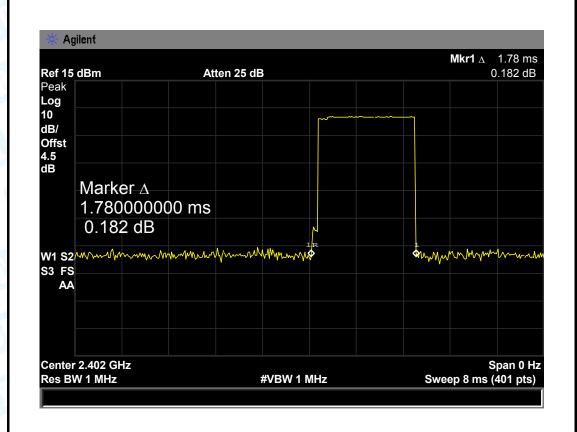
2480 MHz Agilent Mkr1 A 420 μs Ref 15 dBm Atten 25 dB 1.316 dB Peak Log 10 dB/ Offst 4.5 dB Marker A $420.0000000 \, \mu s$ 1.316 dB W1 S2 Why may have man how happened you &mulmmy manulmenty S3 FS AΑ Center 2.48 GHz Span 0 Hz Res BW 1 MHz #VBW 1 MHz Sweep 4 ms (401 pts)



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EUT: NoteBook		Model Name :	Model Name :			
Temperature		25 ℃		Relative Hum	55%	
Test Voltage:	Test Voltage: AC 120V/60 Hz					
Test Mode:		Hopping N	Mode (π/4-DQPSK	DH3)	Killin	
Channel	Pu	lse Time	Total of Dwell	Period Time	Limit	Decult
(MHz)		(ms)	(ms)	(s)	(ms)	Result
2402		1.780	284.80	31.60	400	
2441		1.780	284.80			PASS
2480		1.780	284.80			
	1	π	/4-DOPSK Honnin	a Mode DH3		T.

π /4-DQPSK Hopping Mode DH3





 π /4-DQPSK Hopping Mode DH3 2441 MHz Agilent **Mkr1** Δ 1.78 ms 2.852 dB Ref 15 dBm Atten 25 dB Peak Log 10 dB/ Offst 4.5 dB Marker ∆ 1.780000000 ms 2.852 dB W1 S2 Whommy All Many Rome Ludbors S3 FS AA Center 2.441 GHz Span 0 Hz Res BW 1 MHz #VBW 1 MHz Sweep 8 ms (401 pts) π /4-DQPSK Hopping Mode DH3 2480 MHz Agilent **Mkr1** \triangle 1.78 ms Ref 15 dBm Atten 25 dB -0.563 dB Peak Log 10 dB/ Offst 4.5 dB Marker ∆ 1.780000000 ms -0.563 dB Amazer which was a summer which are summer when the summer was a summer was a summer of the summer was a summer of the summer of W1 S2~~~ S3 FS AΑ

#VBW 1 MHz

Center 2.48 GHz

Res BW 1 MHz

Span 0 Hz

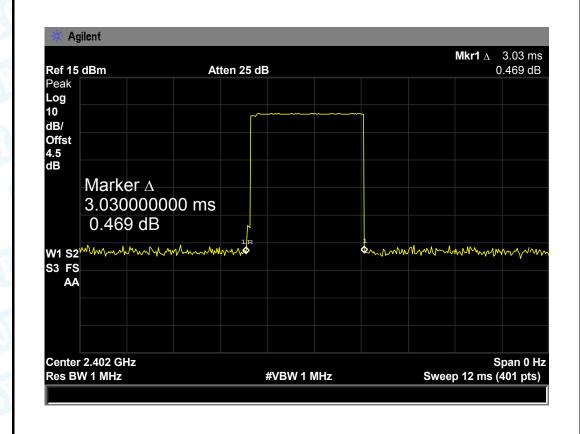
Sweep 8 ms (401 pts)



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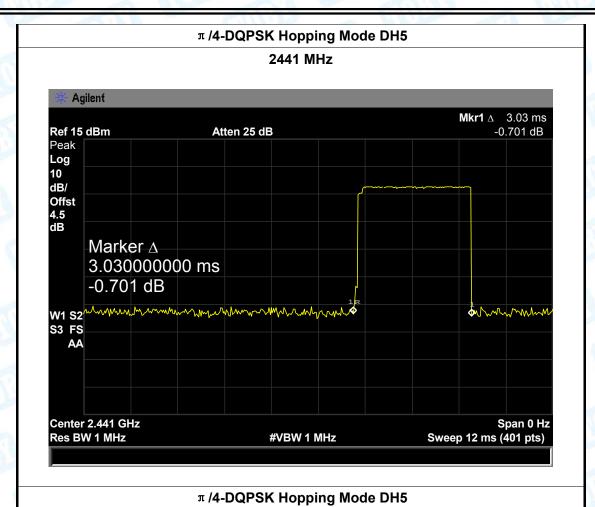
EUT: NoteBook		((1/1)	Model Name :		W86
Temperature:	25 ℃		Relative Hum	55%	
Test Voltage:	AC 120V	/60 Hz	0 Hz		
Test Mode:	Hopping	Mode (π/4-DQPSK	DH5)	All Inches	
Channel	Pulse Time	Total of Dwell	Period Time	Limit	Popult
(MHz)	(ms)	(ms)	(s)	(ms)	Result
2402	3.030	323.20		400 I	PASS
2441	3.030	323.20	31.60		
2480	3.060	326.40			
2400		//_DOPSK Hopping	Mode DH5		

π /4-DQPSK Hopping Mode DH5

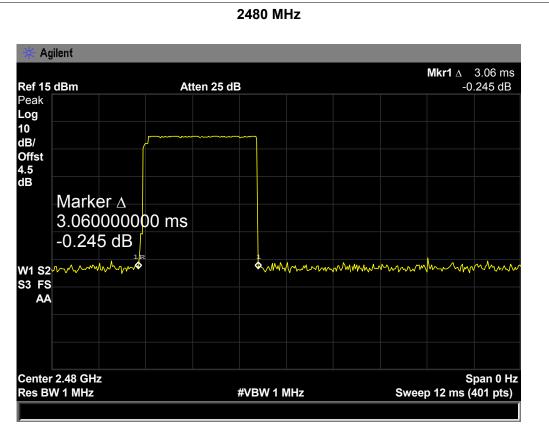




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TOBY

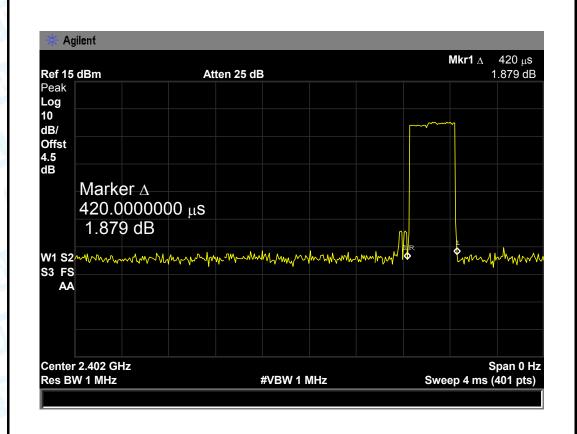




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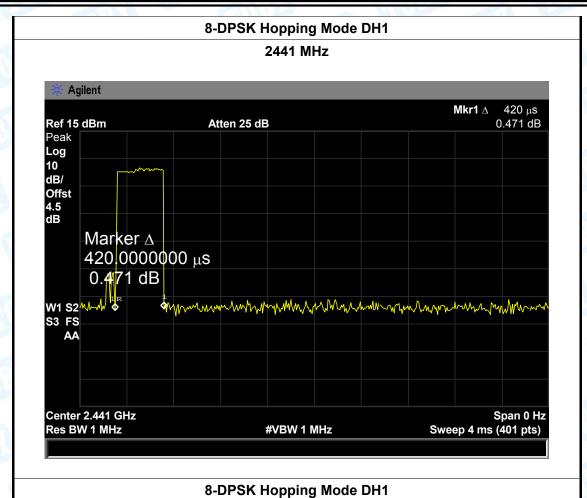
EUT:	NoteBook		Model Name :		W86	
Temperature:	1	25 ℃ Relative Humidity:			55%	
Test Voltage:	Test Voltage: AC 120V/60 Hz					
Test Mode:		Hopping N	Mode (8-DPSK DH	1)	Hilling	
Channel	Pu	Ise Time	Total of Dwell Peri	Period Time	Limit	Decult
(MHz)		(ms)	(ms)	(s)	(ms)	Result
2402		0.420	134.40	31.60	400	
2441		0.420	134.40			PASS
2480		0.420	134.40			
			0 DDSK Honning	Mode DU1		1

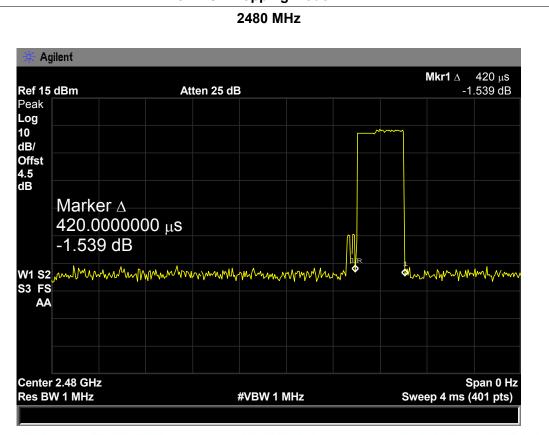
8-DPSK Hopping Mode DH1





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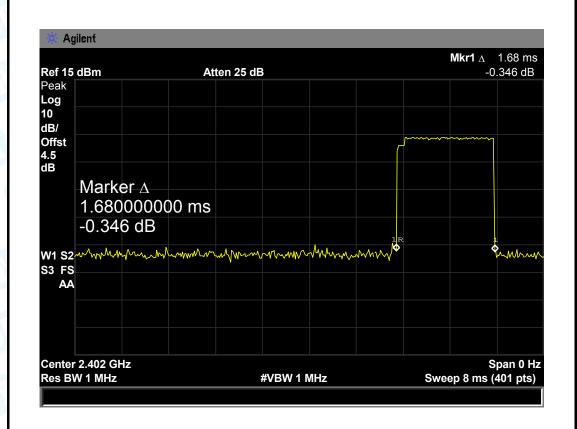






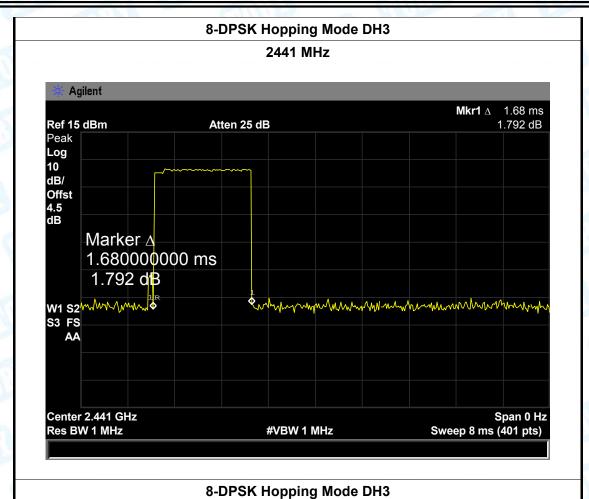
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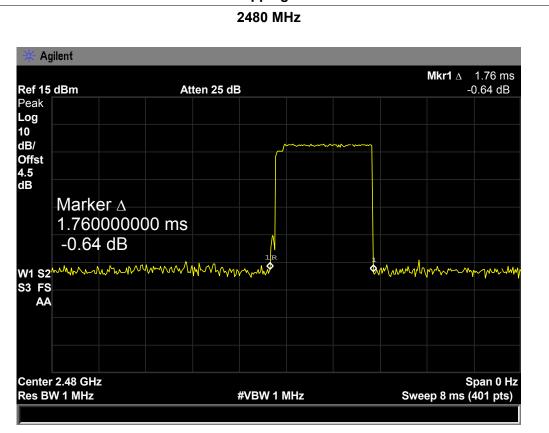
EUT:	EUT: NoteBook		Model Name		W86	
Temperature	rature: 25 °C			Relative Hum	idity:	55%
Test Voltage: AC 120V/60 Hz						
Test Mode:		Hopping N	Mode (8-DPSK DH3	5)	A B. C.	
Channel	Pu	Ise Time	Total of Dwell	Period Time	Limit	Result
(MHz)		(ms)	(ms)	(s)	(ms)	Result
2402		1.680	267.80	31.60	400	
2441		1.680	267.80			PASS
2480		1.760	281.60			
8-DPSK Hopping Mode DH3						





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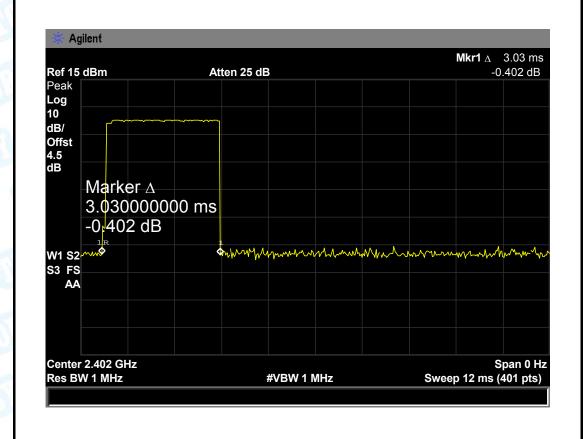




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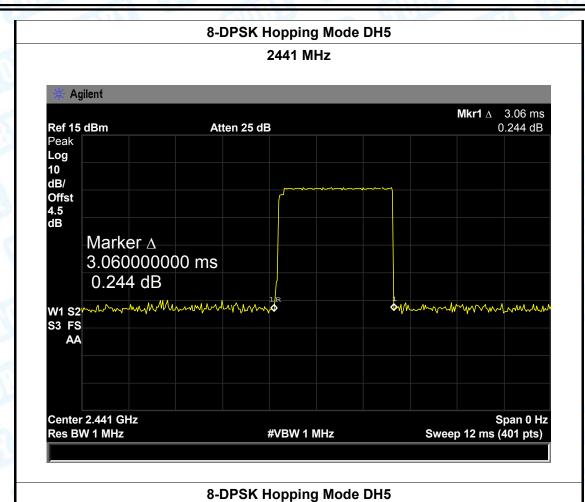
EUT:	EUT: NoteBook			Model Name	Model Name :	
Temperature		25 ℃		Relative Hum	55%	
Test Voltage:		AC 120V/	60 Hz			
Test Mode:		Hopping N	Mode (8-DPSK DH5	5)	All In	
Channel	Pu	lse Time	Total of Dwell	Period Time	Limit	Result
(MHz)		(ms)	(ms)	(s)	(ms)	Result
2402		3.030	323.20	31.60	400	
2441		3.060	326.40			PASS
2480		3.060	326.40			
	1		8-DPSK Hopping	Mode DH5		-

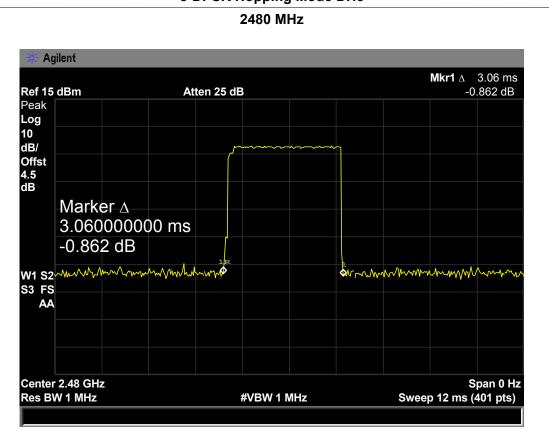
8-DPSK Hopping Mode DH5





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9. Channel Separation and Bandwidth Test

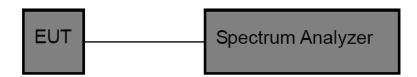
9.1 Test Standard and Limit

9.1.1 Test Standard FCC Part 15.247

9.1.2 Test Limit

Test Item	Limit	Frequency Range(MHz)
Bandwidth	<=1 MHz (20dB bandwidth)	2400~2483.5
Channel Separation	>25KHz or >two-thirds of the 20 dB bandwidth Which is greater	2400~2483.5

9.2 Test Setup



9.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:

Channel Separation: RBW=30 kHz, VBW=100 kHz.

Bandwidth: RBW=30 kHz, VBW=100 kHz.

- (3) The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.
 - (4) Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:30 kHz, and Video Bandwidth:100 kHz. Sweep Time set auto.

9.4 EUT Operating Condition

The EUT was set to the Hopping Mode for Channel Separation Test and continuously transmitting for the Bandwidth Test.

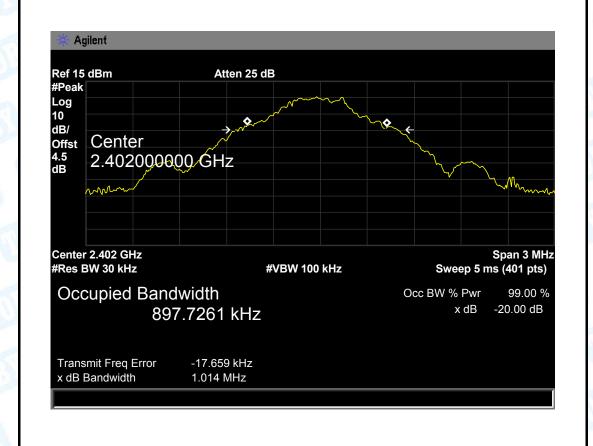


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9.5 Test Data

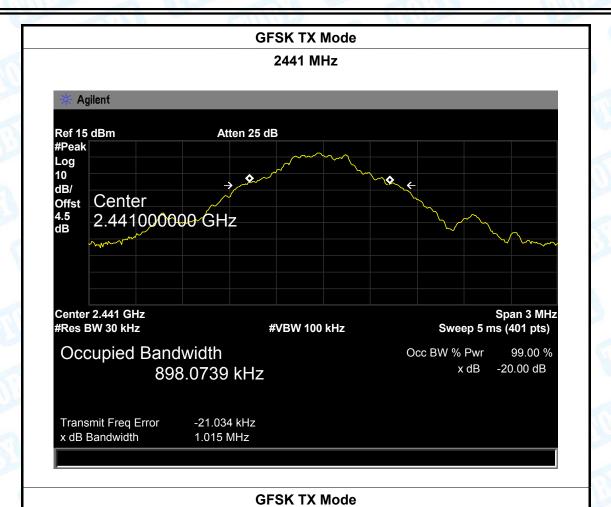
EUT:	NoteBook Model Name :		W86
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		
Test Mode:	TX Mode (GFSK)	CHILD STORY	3 110
Channel frequence	99% OBW	20dB Bandwidth	20dB Bandwidth
(MHz)	(kHz)	(kHz)	*2/3 (kHz)
2402	897.7261	1015.00	676.67
2441	898.0739	1014.00	676.00
2480	894.1047	1001.00	667.33
	GESK TX I	Mada	

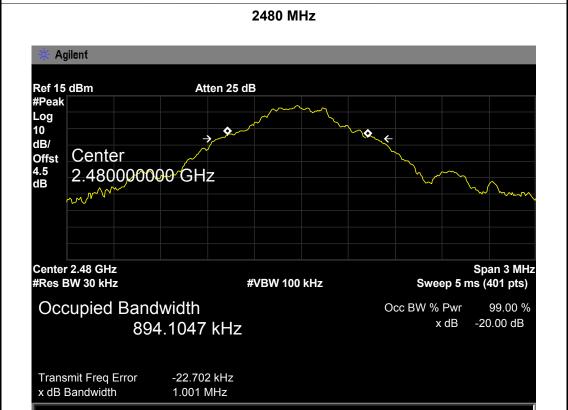
GFSK TX Mode





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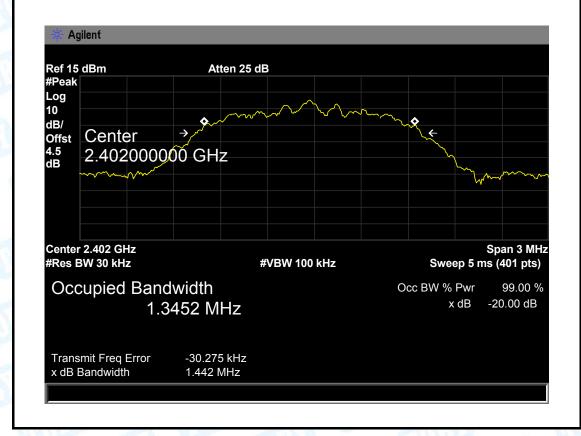




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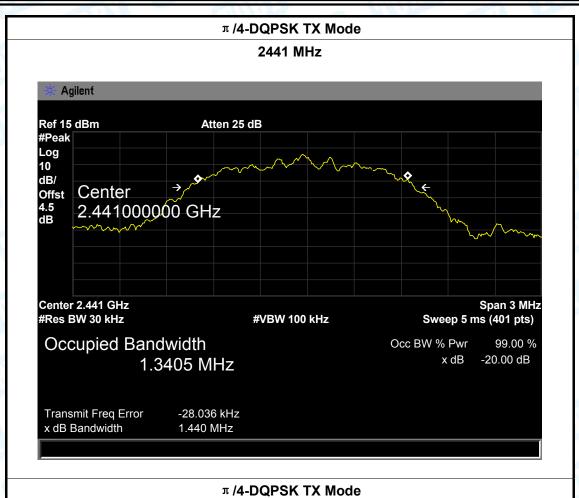
EUT:	NoteBook	Model Name :	W86
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		18.0
Test Mode:	TX Mode (π /4-DQPSK)		
Channel frequence	99% OBW	20dB Bandwidth	20dB
(MHz) (kHz)		(kHz)	Bandwidth
((Ki iz)	(1112)	Banawiaan
(12)	(KH2)	(K112)	*2/3 (kHz)
2402	1345.20	1442.00	
,	` ,	, ,	*2/3 (kHz)
2402	1345.20	1442.00	* 2/3 (kHz) 961.33

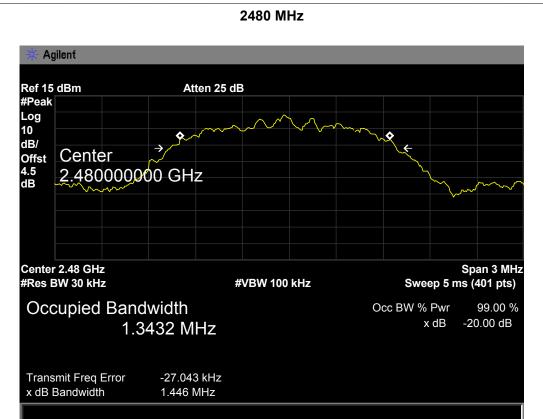
π /4-DQPSK TX Mode









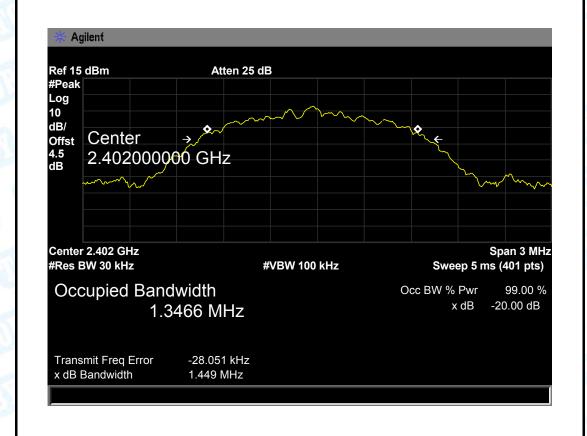




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EUT:	NoteBook Model Name :		W86
Temperature:	25 ℃	Relative Humidit	y : 55%
Test Voltage:	AC 120V/60 Hz	MR.	
Test Mode:	TX Mode (8-DPSK)		
Channel frequen	cy 99% OBW	20dB Bandwidth	20dB Bandwidth
(MHz)	(kHz)	(kHz)	*2/3 (kHz)
2402	1346.60	1449.00	966.00
2441	1351.50	1462.00	974.67
2480	1353.40	1460.00	973.33
		•	*

8-DPSK TX Mode 2402 MHz



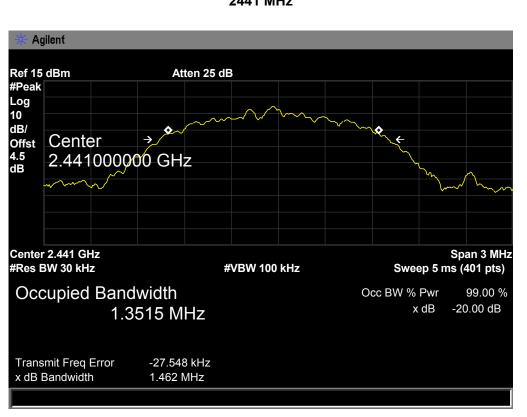




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8-DPSK TX Mode

2441 MHz



8-DPSK TX Mode 2480 MHz Agilent Ref 15 dBm Atten 25 dB #Peak Log 10 dB/ Center Offst 4.5 dB 2.480000<mark>0</mark>00 GHz Center 2.48 GHz Span 3 MHz #Res BW 30 kHz **#VBW 100 kHz** Sweep 5 ms (401 pts) Occupied Bandwidth Occ BW % Pwr 99.00 % -20.00 dB 1.3534 MHz Transmit Freq Error -28.290 kHz x dB Bandwidth 1.460 MHz



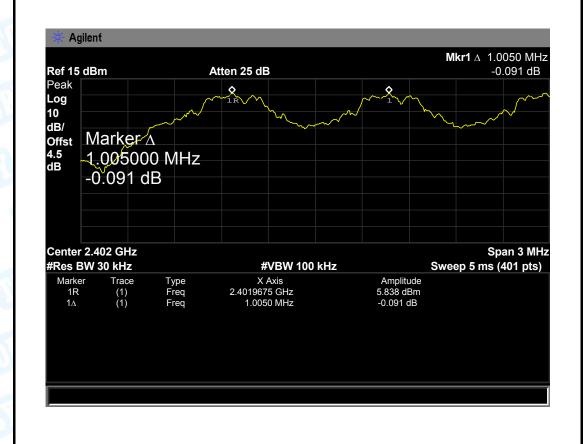
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EUT:	NoteBook	Model Name :	W86
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60 Hz		NIU-

Test Mode: Hopping Mode (GFSK)

Channel frequency	Separation Read Value	Separation Limit
(MHz)	(kHz)	(kHz)
2402	1005.00	676.67
2441	1005.00	676.00
2480	1005.00	667.33

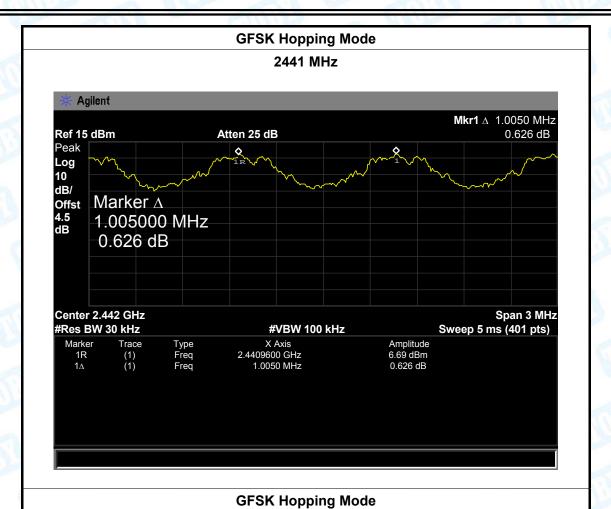
GFSK Hopping Mode







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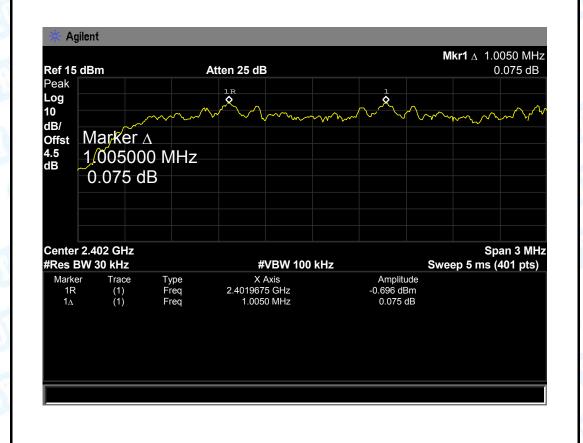




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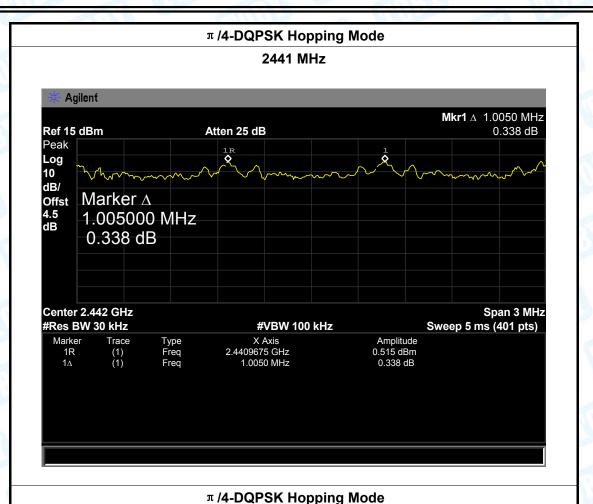
EUT:	NoteBook		Model Na	ıme :	W86		
Temperature:	25 ℃		Relative	Humidity:	55%		
Test Voltage:	AC 120V/	AC 120V/60 Hz			18.		
Test Mode:	Hopping I	Mode (π/4-DQPSK)		3 MM			
Channel frequ	iency	Separation Rea	d Value	Sepa	ration Limit		
(MHz)		(kHz)			(kHz)		
2402	2 1005.00		2402				961.33
2441 1005.00		960.00		960.00			
2480		1005.00			964.00		

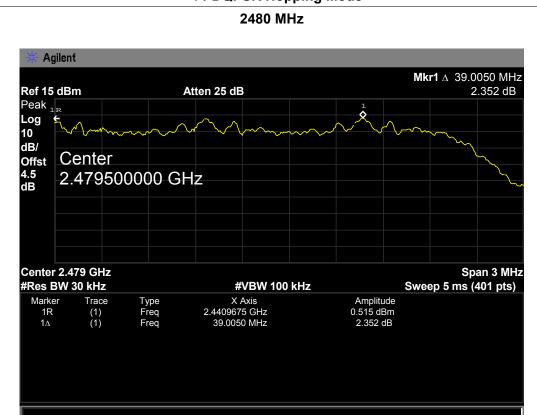
π /4-DQPSK Hopping Mode









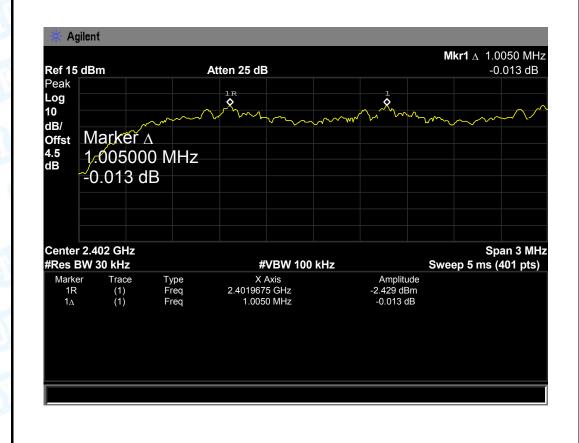


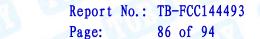


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EUT:	NoteBook	CIII.	Model Name :	W86	
Temperature:	25 ℃	Relative Humidity:		lity: 55%	
Test Voltage:	AC 120V/	60 Hz	100		
Test Mode:	Hopping N	Hopping Mode (8-DPSK)			
Channel frequ	Channel frequency Separation Read Value Separation Limi				
(MHz)		(kHz)		(kHz)	
2402		1005.00	966.00		
2441	1 1005.00		2441 1005.00		974.67
2480	2480 1005.00			973.33	
		8-DPSK Hoppin	g Mode		



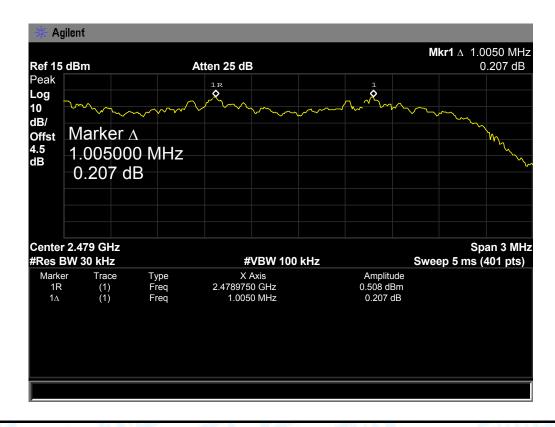






8-DPSK Hopping Mode 2441 MHz Agilent Mkr1 A 1.0050 MHz Ref 15 dBm Atten 25 dB -1.153 dB Peak Log 10 dB/ Offst 4.5 dB Marker ∧ 1.005000 MHz -1.153 dB Center 2.442 GHz Span 3 MHz #Res BW 30 kHz **#VBW 100 kHz** Sweep 5 ms (401 pts) Type Freq Freq X Axis 2.4409825 GHz 1.0050 MHz Amplitude Marker -1.906 dBm -1.153 dB (1) (1)

8-DPSK Hopping Mode





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10. Peak Output Power Test

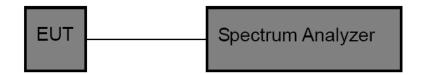
10.1 Test Standard and Limit

10.1.1 Test Standard FCC Part 15.247 (b) (1)

10.1.2 Test Limit

Test Item	Limit	Frequency Range(MHz)
Peak Output Power	Hopping Channels>75 Power<1W(30dBm)	2400~2483.5
	Other <125 mW(21dBm)	

10.2 Test Setup



10.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Spectrum Setting:

Peak Detector: RBW=1 MHz, VBW=3 MHz for bandwidth less than 1MHz. RBW=3 MHz, VBW=3 MHz for bandwidth more than 1MHz.

10.4 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.



Center 2.402 GHz #Res BW 3 MHz Report No.: TB-FCC144493

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10.5 Test Data

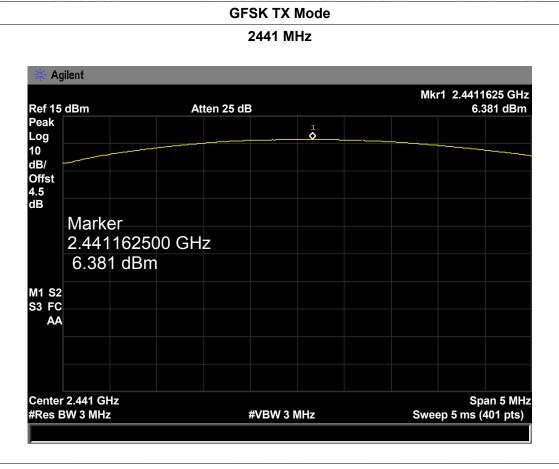
UT:		NoteBook		M	odel Name :		W86
emperatu	re:	25 ℃	- DAG	R	elative Humi	dity:	55%
est Voltag	je:	AC 120V/60) Hz	(40/2/201		I BILL
est Mode	:	TX Mode (C	GFSK)		Company of	100	
Channel f	requen	cy (MHz)	Test Resul	t (dBı	n)	Lin	nit (dBm)
	2402		7.00	3			
	2441		6.38	1			21
	2480		6.30	5			
			GFSK TX	Mod)		
* Agile	ent		2402 N	lHz			_
		A	_	lHz	_	Mkr1	2.4020625 GHz 7.008 dBm
Ref 15 d		A	2402 M	lHz		Mkr1	2.4020625 GHz 7.008 dBm
Ref 15 d Peak Log 10		A	_			Mkr1	
Ref 15 dl Peak Log 10 dB/		A	_			Mkr1	
Ref 15 dl Peak Log 10 dB/ Offst 4.5 dB	Bm		_			Mkr1	
Ref 15 dl Peak Log 10 dB/ Offst 4.5 dB	_{Bm}		atten 25 dB			Mkr1	
Ref 15 dl Peak Log 10 dB/ Offst 4.5 dB	_{Bm}	r 062500 GH	atten 25 dB			Mkr1	
Ref 15 dl Peak Log 10 dB/ Offst 4.5 dB	Marke	r 062500 GH	atten 25 dB			Mkr1	

#VBW 3 MHz

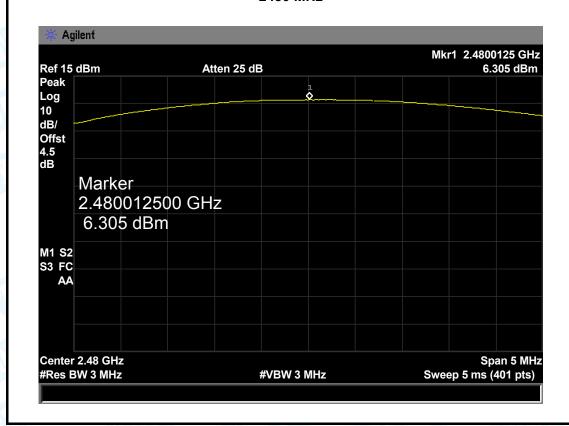
Span 5 MHz Sweep 5 ms (401 pts)



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GFSK TX Mode

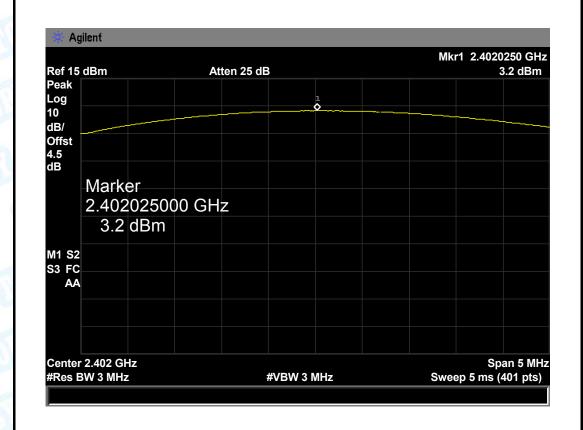




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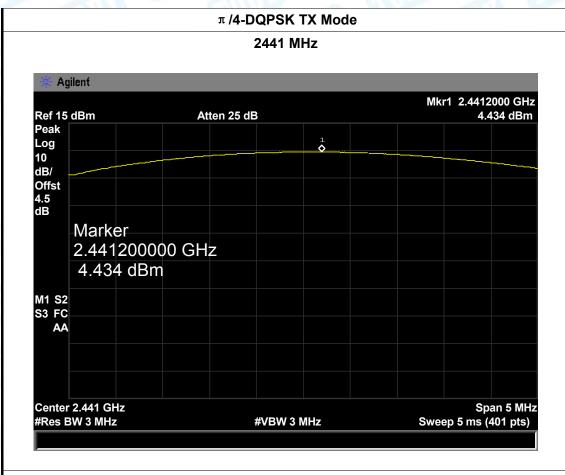
EUT:	NoteBook		Model Name :	W86
Temperature:	25 ℃		Relative Humidity:	55%
Test Voltage:	AC 120V/	AC 120V/60 Hz		33
Test Mode:	TX Mode	(π /4-DQPSK)		
Channel frequen	cy (MHz)	Test Result (d	dBm) Lin	nit (dBm)
2402		3.200		
2441		4.434		21
2480		6.520		
		# /4 DODSK TV	Mode	

π /4-DQPSK TX Mode

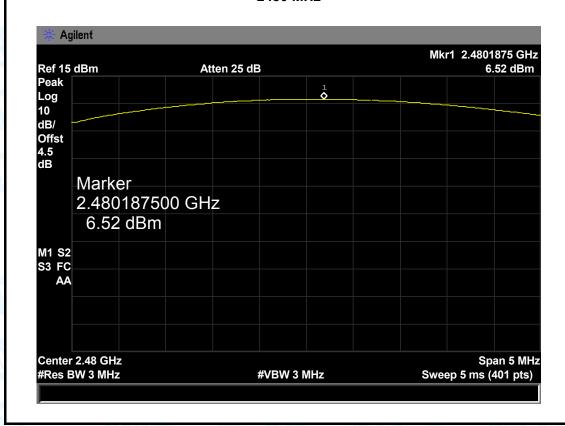




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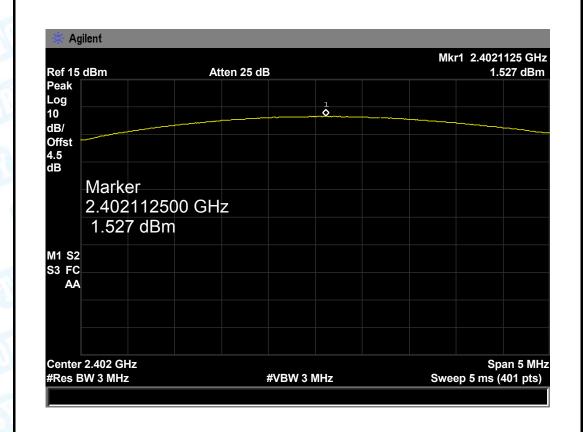




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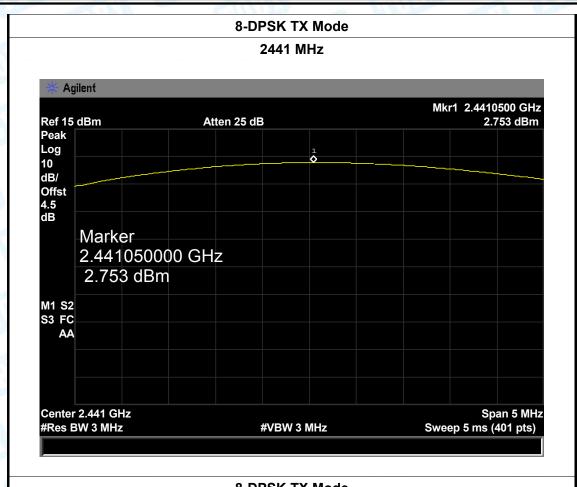
EUT:	NoteBook Model Name :		Model Name :	W86
Temperature:	25 ℃ Re		Relative Humidity:	55%
Test Voltage:	AC 120V/	AC 120V/60 Hz		
Test Mode:	TX Mode	(8-DPSK)		
Channel frequen	cy (MHz)	Test Result (d	dBm) Lir	nit (dBm)
2402		1.527		
2441		2.753		21
2480		4.763		
		8-DDCK TY I	Mode	

8-DPSK TX Mode

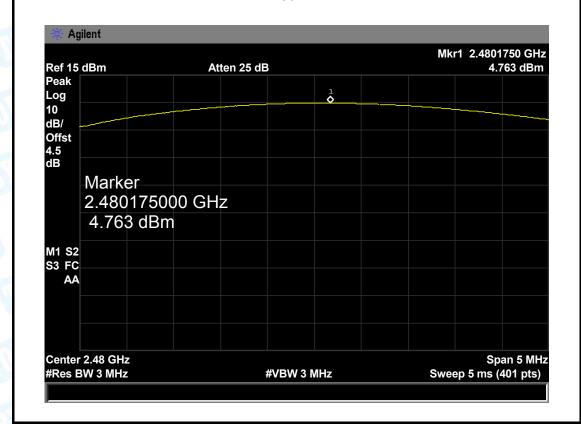




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11. Antenna Requirement

11.1 Standard Requirement

11.1.1 Standard FCC Part 15.203

11.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

11.2 Antenna Connected Construction

The directional gains of the antenna used for transmitting is 3.0 dBi, and the antenna connector is de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

Result

The EUT antenna is an Embedded Antenna. It complies with the standard requirement.

	Antenna Type
000	▼ Permanent attached antenna
33	□ Unique connector antenna
600	□ Professional installation antenna