

RADIO TEST REPORT

Product	:	Gaming Headset
Model Name	:	AW725H
FCC ID	:	2AYYS-AW725H
Test Regulation	:	FCC 47 CFR Part 15 Subpart C (Section 15.247)
Received Date	:	2024/3/4
Test Date	:	2024/3/20 ~ 2024/3/26
Issued Date	:	2024/4/15
Applicant	:	Luxshare Precision Industry Co., Ltd. Floor 2,Block A,Sanyo New Industrial Area, West Haoyi Community,Shajing Subdistrict Office, Bao an District Shenzhen, P. R. China
Issued By	:	Underwriters Laboratories Taiwan Co., Ltd. Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan



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REVISION HISTORY

Original Test Report No.: 4791133446-US-R0-V0

Revision	Test report No. 4791133446-US-R0-V0	Date	Page revised	Contents
Original	4791133446-US-R0-V0	2024/4/15	-	Initial issue



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1. Attestation of Test APPLICANT: MANUFACTURER:	t Results Luxshare Precision Industry Co., Ltd. Floor 2,Block A,Sanyo New Industrial Area, West Haoyi Community,Shajing Subdistrict Office, Bao an District Shenzhen, P. R. China Luxshare Precision Industry Co., Ltd. 2nd floor,A building,Sanyo New Industrial Area,West of Maoyi,Shajing Street,Ban'an District,Shenzhen City,Guangdong
	Province,China
EUT DESCRIPTION:	Gaming Headset
BRAND:	ALIENWARE
MODEL:	AW725H
SAMPLE STAGE:	Engineering Verification Test sample
DATE of TESTED:	2024/3/20 ~ 2024/3/26
	APPLICABLE STANDARDS

STANDARD

Test Results PASS

FCC 47 CFR PART 15 Subpart C (Section 15.247)

Underwriters Laboratories Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Underwriters Laboratories Taiwan Co., Ltd. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Underwriters Laboratories Taiwan Co., Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Underwriters Laboratories Taiwan Co., Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Prepared By:

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Sally Lu Project Handler Date : 2024/4/15

Approved and Authorized By:

Eric Lee Date : 2024/4/15 Senior Laboratory Engineer



2. Summary of Test Results

Summary of Test Results					
FCC Clause	FCC Clause Test Items				
15.247(a)(1) (iii)	Number of Hopping Frequency Used	PASS			
15.247(a)(1) (iii)	Dwell Time on Each Channel	PASS			
15.247(a)(1)	 Hopping Channel Separation Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System 	PASS			
15.247(b)	Conducted Output Power	PASS			
15.247(d)	Antenna Port Emission	PASS			
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS			
15.207	AC Power Conducted Emission	PASS			
15.203	Antenna Requirement	PASS			



3. Test Methodology and Reference Procedures

The tests documented in this report were performed in accordance with 47 CFR FCC Part 2, KDB558074 D01 Meas Guidance v05r02, KDB414788 D01 Radiated Test Site v01r01, ANSI C63.10-2013.

4. Facilities and Accreditation

Test Location	Underwriters Laboratories Taiwan Co., Ltd.			
Address	Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan			
Accreditation Certificate	Underwriters Laboratories Taiwan Co., Ltd. is accredited by TAF, Laboratory Code 3398.			



5. Measurement Uncertainty

For statement of conformity, Simple acceptance (Section 3.1.4 of IEC Guide 115) was applied as decision rule for measurement in this test report.

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor k=2.

Determining compliance based on the results of the compliance measurement, not considering measurement instrumentation uncertainty.

Measurement	Frequency	Uncertainty
Conducted disturbance at mains terminals ports	150kHz ~ 30MHz	3.1 dB
RF Conducted	9 kHz - 40GHz	2.3 dB
Radiated disturbance below 30MHz	9 kHz - 30 MHz	3.2 dB
Radiated disturbance below 1 GHz	30MHz ~ 1GHz	6.1 dB
Radiated disturbance above 1 GHz	1GHz ~ 40GHz	5.1 dB



6. Equipment under Test

6.1. Description of EUT

Product	Gaming Headset	
Brand Name	LIENWARE	
Model Name	AW725H	
Normal Valta as	5Vdc from host	
Normal Voltage	3.7Vdc from battery	

Operating Frequency	2402MHz ~ 2480MHz
Modulation	GFSK, $\pi/4$ -DQPSK and 8DPSK
Transfer Rate	Up to 3 Mbps
Maximum Output Power	8.46 dBm
Somulo ID	Conducted Test: 7008639
Sample ID	Radiated Test: 7008639



Note:

1. The EUT contains following accessory devices:

Product	Brand	Model	Description	
FT573439P Battery	Hangzhou Future Power	FT573439P	3.7Vdc, 750mAh	
Charging cable	LUXSHARE	X65PK	Length: 1.5 m	
Inline cable	LUXSHARE	LX001	Length: 1.5 m	
USB-C adapter	DELL	LX001	-	
USB Dongle	ALIENWARE	UD2202u	NCC ID: CCAQ22LP0250T6	

- 2. The EUT is marketed in either black or white. Since the hardware design is the same, only the black color is represented.
- 3. The above EUT information is declared by manufacturer and for more detailed features description, please refer the manufacturer's or user's manual, the laboratory shall not be held responsible.



6.2. Channel List

79 channels are provided for BT-BR/EDR mode:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461	-	-



6.3. Test Condition

Test Item	Test Site No.	Environmental Condition	Input Power	Test Date	Tested by
Antenna Port Conducted Measurement	SR4	23~26°C/ 64~67%RH	5Vdc & 3.7Vdc	2024/03/25~ 2024/03/26	Rex Chen
Radiated Spurious Emission	966-2	22~26°C/ 62~68%RH	5Vdc & 3.7Vdc	2024/03/20~ 2024/03/21	Rex Chen
AC power Line Conducted Emission	SR1	24~26°C/ 62~67%RH	5Vdc & 3.7Vdc	2024/03/20~ 2024/03/21	Rex Chen

FCC Test Firm Registration Number: 498077 IC Company Number: 23421

Sample Calculation:

Antenna Port Conducted Measurement:

 Where relevant, the follow sample calculation is provided: Result Value (dBm) = Reading Value (dBm) + Attenuator Factor (dB) + Cable Loss (dB).
 Example: Result Value (10dBm) = Reading Value (-2dBm) + Attenuator Factor (10dB) + Cable Loss(2dB).

*Test plot only shown the "Result Value".

Radiated Spurious Emission:

 Where relevant, the follow sample calculation is provided: Result Value (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m). Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Preamp Factor (dB). Example: Result Value (34.5dBuV/m) = Reading Value (40.1dBuV) + Antenna Factor (18.7dB/m) + Cable Loss (4.2dB) - Preamp Factor (28.5dB).

AC power Line Conducted Emission:

 Where relevant, the follow sample calculation is provided: Result Value (dBuV) = Reading Value (dBuV) + Correction Factor (dB). Correction Factor (dB) = Insertion loss(dB) + Cable loss(dB). Example: Result Value (53.7dBuV) = Reading Value (35.1dBuV) + Insertion loss(18.1dB) + Cable loss(0.5dB).



6.4. Description of Available Antennas

Ant. No.	Transmitter Circuit	Brand Name	Model Name	Ant. Type	Frequency Band (MHz)	Maximum Gain (dBi)
0	Chain 0	Luxshare	Headset_PCB	PIFA	2400~2483	-1.8

Note: The above antenna information was provided from customer and for more detailed features description, please refer the manufacturer's specification or user's manual, the laboratory shall not be held responsible.



6.5. Test Mode Applicability and Tested Channel Detail

- The fundamental of the EUT was investigated in three orthogonal axes X-Y/Y-Z/X-Z, it was determined that X-Y plane was worst-case. Therefore, all final radiated testing was performed with the EUT in X-Y plane.
- The Packet Type for DH1, DH3, and DH5 have all been pre-tested, the fundamental worst case of the Packet Type was found in the DH5. Therefore, only DH5 Packet Type is recorded in the report. (Except Dwell Time).
- The modulation and bandwidth are similar for $\pi/4$ -DQPSK mode and 8DPSK mode, therefore investigated 8DPSK mode to representative mode in test report.
- For Antenna Port Conducted Measurement, this item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.
- For below 1 GHz radiated emission and AC power line conducted emission have performed all modes of operation were investigated and the worst-case emissions are reported.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Since the DUT is a Bluetooth device, the AFH mode and non-AFH mode follow the Bluetooth timing protocol, and the same timing level has the same time interval, but the non-AFH mode has worse results, therefore only the test data of this type were recorded in this report.

Test Item	Modulation Type	Available Channel	Test Channel	Packet Type
Radiated Emissions (Above 1GHz)	GFSK	0 to 78	0,39,78	DH5
	8DPSK	0 to 78	0,39,78	3DH5
Radiated Emissions (Below 1GHz)	GFSK	0 to 78	78	DH5
AC Power Line Conducted Emission	GFSK	0 to 78	78	DH5
Antenna Port Conducted	GFSK	0 to 78	0,39,78	DH1*,DH3*,DH5
Measurement	8DPSK	0 to 78	0,39,78	3DH1*,3DH3*, 3DH5

* Only for Dwell Time on Each Channel test



6.6. Duty cycle

Mode	On Time (ms)	On+Off Time (ms)	Duty Cycle	Duty Factor (dB)	VBW Set (above 1GHz)
GFSK(DH5)	2.885	3.750	0.7693	1.14	510Hz
8DPSK(3DH5)	2.870	3.755	0.7643	1.17	510Hz

GFSK(DH5)									8D	PSK	$(3\overline{D}]$	H5)				
Spectrum						□	Spectrun									E
Ref Level 20.00 dBm	RBW 1	MHz				(.	Ref Level	20.00 dB	m	e RB	W 1 MHz					('
■ Att 30 dB (SWT 10 ms . VBW 1	MHz					🕳 Att	30 d	ib 👄 SWT 10	ms 🖶 VB	W 1 MHz					
GFSK(DH5) @1Pk View							8DPSK(3DH5) 🛛 1Pk Vie	8W							
			M1[1]			.88 dBm						M	1[1]			-2.86 dBm
10 dBm						10.00 µs	10 dBm									180.00 µs
20 000			M2[1]			.75 dBm 9500 ms	10 0.011					M	2[1]			-3.70 dBm 3.05000 ms
o de <u>Ma</u>	M3	3			3.3	9300 1115	M∐Bm			12 M	3			-		3.03000 ms
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-10 dBm							-10 dBm-					· · ·				
				11 1												
-20 dBm							-20 dBm		-					+ +	_	
				11 1												
-30 dBm							-30 dBm		+					+ +		
				11 1												
-40 dBm							-40 dBm							+ +	-	
	M2			11 1												
-sq dbm	in the			an a			-\$0 dBm		1 1	White Kin y				المعقبية	-	
NOT YOU	add landshow			Malidated ada			M.			Malil Mar.			· ·	add approved		
-60'dBm							-60 dBm-			1						
				1 1												
-70 dBm							-70 dBm-									
CF 2.402 GHz		2001 pts			1	1.0 ms/	CF 2.482 0	Hz			2001	pts				1.0 ms/
Marker							Marker									
Type Ref Trc		value	Function	Fund	tion Result		Type Re		X-value		Y-value	Func	tion	Fu	inction Resu	lt
M1 1 M2 1		-2.88 dBm 51.75 dBm					M1	1		0.0 µs 05 ms	-2.86 dBr -3.70 dBr					
M2 1 M3 1		-2.87 dBm					M2 M3	1		05 ms 35 ms	-3.70 dBr					
	1120 113	Elor abili					1/10		3.3		2.07 001					



7. Test Equipment

	Test Equipment List										
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Expired date						
Radiated Spurious Emission											
Spectrum Analyzer	Keysight	N9010A	MY56070827	2023/4/7	2024/4/6						
EMI Test Receiver	Rohde & Schwarz	ESR7	101754	2023/11/22	2024/11/21						
Loop Antenna	ETS lindgren	6502	00213440	2023/12/13	2024/12/12						
Trilog- Broadband Antenna with 5dB Attenuator	Schwarzbeck & EMCI	VULB 9168 & N-6-05	774 & AT- N0538	2024/1/5	2025/1/4						
Horn Antenna (1-18 GHz)	Schwarzbeck	BBHA 9120 D	01690	2023/12/8	2024/12/7						
Horn Antenna (18-40 GHz)	Schwarzbeck	BBHA 9170	781	2023/12/27	2024/12/26						
Preamplifier (30-1000 MHz)	EMCI	EMC330E	980405	2023/6/7	2024/6/6						
Preamplifier (1-18 GHz)	EMCI	EMC051835BE	980406	2024/1/23	2025/1/22						
Preamplifier (18-40GHz)	EMCI	EMC184040SEE	980426	2023/5/9	2024/5/8						
Cables (9k-18 GHz)	Hanyitek	K1K50-UP0264- K1K50-2500	170214-4 & 170425-2	2023/11/29	2024/11/28						
Cables (18-40GHz)	Hanyitek	K1K50-UP0264- K1K50-2500	170214-1 & 170214-2	2023/11/29	2024/11/28						



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	Test Equipment List										
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Expired date						
Antenna Port Conducted Measurement											
Signal Analyzer	Rohde & Schwarz	FSVA3044	101281	2024/3/18	2025/3/17						
Signal Analyzer	Rohde & Schwarz	FSV40	101490	2023/9/13	2024/9/12						
Attenuator	EMCI	EMC- 40ATK2W10	17002	2023/11/15	2024/11/14						
USB Power Sensor	Anritsu	MA24408A	12031	2023/7/12	2024/7/11						
Temperature &Humidity Test Chamber	GIANT FORCE	GTH-150- 40- CP-AR	MAA1701- 010	2024/3/6	2025/3/5						
	AC pow	er Line Conduct	ted Emission								
EMI Test Receiver	Rohde & Schwarz	ESR7	101753	2023/10/23	2024/10/22						
Two-Line V- Network	Rohde & Schwarz	ENV216	102136	2023/5/24	2024/5/23						
Impuls- Begrenzer Pulse Limiter	Rohde & Schwarz	ESH3-Z2	102219-Qt	2023/9/7	2024/9/6						
Cables	TITAN	CFD200	T0732ACFD 20020A300-2	2023/5/23	2024/5/22						

UL Software							
Description	Name	Version					
Radiated measurement	e3	6.191211 (V6)					
Conducted measurement	RF-Conducted-FCC 15247	ver 1.0					
AC power Line Conducted Emission	EZ_EMC	UL-3A1.2					



8. Description of Test Setup

Normal Mode

Support Equipment

ID	Equipment	Brand Name	Model Name	S/N	Remark
А	Laptop	DELL	Latitude E5470	CXSKWF2	Provide by Lab

I/O Cables

ID	Equipment	Brand Name	Model Name	Length (m)	Remark
1	Charging cable	LUXSHARE	HW7RR	1.5	Provide by Client
2	Inline cable	LUXSHARE	LX001	1.5	Provide by Client

Charging Mode

Support Equipment

ID	Equipment	Brand Name	Model Name	S/N	Remark
А	Laptop	DELL	Latitude E5470	CXSKWF2	Provide by Lab
В	Adapter	HTC	TCP900-US	79H00130-01M	Provide by Lab

I/O Cables

	ID	Equipment	Brand Name	Model Name	Length (m)	Remark	
ſ	1	Charging cable	LUXSHARE	HW7RR	1.5	Provide by Client	
Ī	2	Inline cable	LUXSHARE	LX001	1.5	Provide by Client	

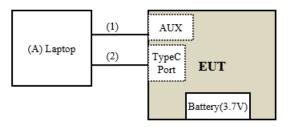


Test Setup

Controlled using a bespoke application (Airoha Tool Kit - V3.8.0.6) on a test Notebook. The application was used to enable a continuous transmission mode and to select the test channels, data rates, modulation schemes and power setting as required.

Setup Diagram for Test

Normal Mode



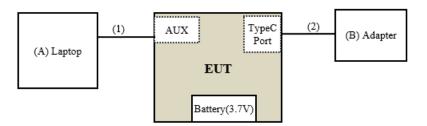
Under Table

Remote Site



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Charging Mode



Under Table

Remote Site



9. Test Results

9.1. Channel Bandwidth

Requirements

For frequency hopping system operating in the 2400-2483.5MHz, If the 20dB bandwidth of hopping channel is greater than 25kHz, two-thirds 20dBbandwidth of hopping channel shall be a minimum limit for the hopping channel separation.

Test procedure

- a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
- d. Repeat above procedures until all frequencies measured were complete.

Test Setup



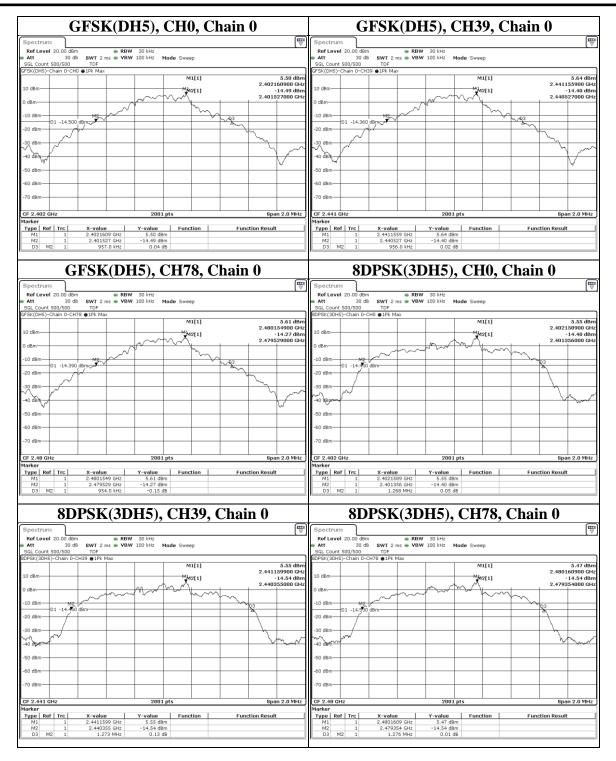
The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.



<u>Test Data</u>

Mode	СН	Freq (MHz)	20dB BW (MHz)	Limit (MHz)	Result
GFSK(DH5)	0	2402	0.957	N/A	Pass
GFSK(DH5)	39	2441	0.956	N/A	Pass
GFSK(DH5)	78	2480	0.954	N/A	Pass
8DPSK(3DH5)	0	2402	1.268	N/A	Pass
8DPSK(3DH5)	39	2441	1.273	N/A	Pass
8DPSK(3DH5)	78	2480	1.276	N/A	Pass







9.2. Conducted Output Power

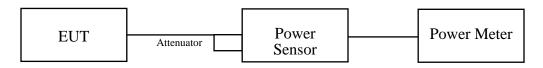
Requirements

The Maximum Output Power Measurement is 125mW.

Test Procedure

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Test Setup



The loss between RF output port of the EUT and the input port of the Power Meter has been taken into consideration.



<u>Test Data</u>

Peak Power

BT GFSK

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail	
0	2402	6.902	8.39	20.97	PASS	
39	2441	6.887	8.38	20.97	PASS	
78	2480	7.015	8.46	20.97	PASS	

BT 8DPSK

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
0	2402	6.887	8.38	20.97	PASS
39	2441	6.902	8.39	20.97	PASS
78	2480	6.966	8.43	20.97	PASS

Average Power (Reference Only)

BT GFSK

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)		
0	2402	6.776	8.31		
39	2441	6.776	8.31		
78	2480	6.871	8.37		

BT 8DPSK

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)		
0	2402	6.761	8.30		
39	2441	6.761	8.30		
78	2480	6.839	8.35		



9.3. Hopping Channel Separation

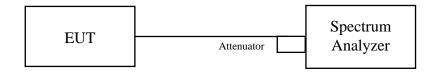
Requirements

At least 25kHz or two-third of 20dB hopping channel bandwidth (whichever is greater).

Test procedure

- a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
- c. By using the MaxHold function record the separation of two adjacent channels.
- d. Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.

Test Setup



The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

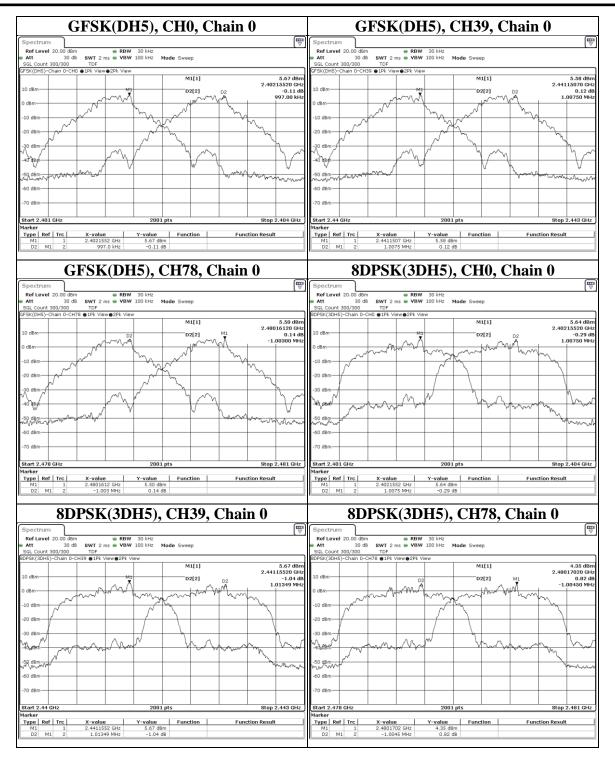


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Test Data

Mode	СН	Freq (MHz)	Channel Separation (MHz)	> Limit (MHz)
GFSK(DH5)	0	2402	0.997	0.638
GFSK(DH5)	39	2441	1.008	0.637
GFSK(DH5)	78	2480	1.003	0.636
8DPSK(3DH5)	0	2402	1.008	0.845
8DPSK(3DH5)	39	2441	1.014	0.849
8DPSK(3DH5)	78	2480	1.004	0.851







9.4. Number of Hopping Frequency Used

Requirements

At least 15 channels frequencies, and should be equally spaced.

Test procedure

- a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- c. Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
- d. Set the SA on View mode and then plot the result on SA screen.
- e. Repeat above procedures until all frequencies measured were complete.

Test Setup



The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.



<u>Test Data</u>

There are 79 hopping frequencies in the hopping mode. On the plots, it shows that the hopping frequencies are equally spaced.

GFSF	K(DH5), I	FHS <mark>S, C</mark>	Chain	0			8 D	PSK	$(3\overline{D})$	H5),	FH	SS, (Chai	n 0		
Spectrum						Spectrur	n								1	₽
Ref Level 20.00 dBm	👄 RBW 100 kHz				(-		20.00 dBn		RBW							
Att 30 dB SWT 8 SGL Count 1000/1000 TDF	ms 👄 VBW 300 kHz	Mode Sweep				Att SGL Count	30 df 1000/1000	SWT 8 r TDF	ns 👄 VBW	300 kHz 1	Mode Swee	ip.				
GFSK(DH5)-Chain 0-FHSS ●1Pk Vi	ew							HSS @1Pk \	/iew							_
10 dBm	M1	M1[1]		2.43	8.19 dBm 361560 GHz	10 dBm		M1			м	1[1]		2.43	8.15 d 221610 (
. DALAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	NAMATAANNA ATAANA	NAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	ANALAANA A	NAMANANAN NA MANANANAN NA MANANANAN NA MANANANAN	AN AMANA	a kilikini wa	autubl	annallu	ulikuu	lether	landar	İnul Man	hidledon	lahenies	lutist	
-10 cim 11 11 11 11 11 11 11 11 11 11 11 11 11	A A A MAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA			hhili	W.W	-10 dBm-	, laid dho	l du a dui linn	n ed friddel	uni ka iliku	a dala ang dala da	փինդին է հա	d la duba tan i	والملالة أمالك	, ny papin	
-20 dBm-	10 H 110 I	is sum le		11.1.1		-20 dBm										
-30 dBm						-80 dBm									<u> </u>	Ļ
40 dBm						40 dBm—										1
-50 dBm					-	-50 dBm										بها
-60 dBm						-60 dBm										
-70 dBm						-70 dBm									-	
Start 2.4 GHz	800	1 pts		Stop 2	.4835 GHz	Start 2.4	SHz			8001	pts			Stop 2	2.4835 G	Hz



9.5. Dwell Time on Each Channel

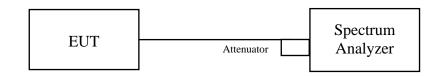
Requirements

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.

Test procedure

- a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
- c. Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
- d. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
- e. Repeat above procedures until all different time-slot modes have been completed.
- f. Measure the maximum time duration of one single pulse.
 - A Period Time = (channel number)*0.4
 For normal mode:
 DH1 Time Slot: Reading * (1600/2)*31.6/(channel number)
 DH3 Time Slot: Reading * (1600/4)*31.6/(channel number)
 DH5 Time Slot: Reading * (1600/6)*31.6/(channel number)
 For AFH mode:
 DH1 Time Slot: Reading * (800/2)*31.6/(channel number)
 DH3 Time Slot: Reading * (800/4)*31.6/(channel number)
 DH5 Time Slot: Reading * (800/4)*31.6/(channel number)

Test Setup



The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.

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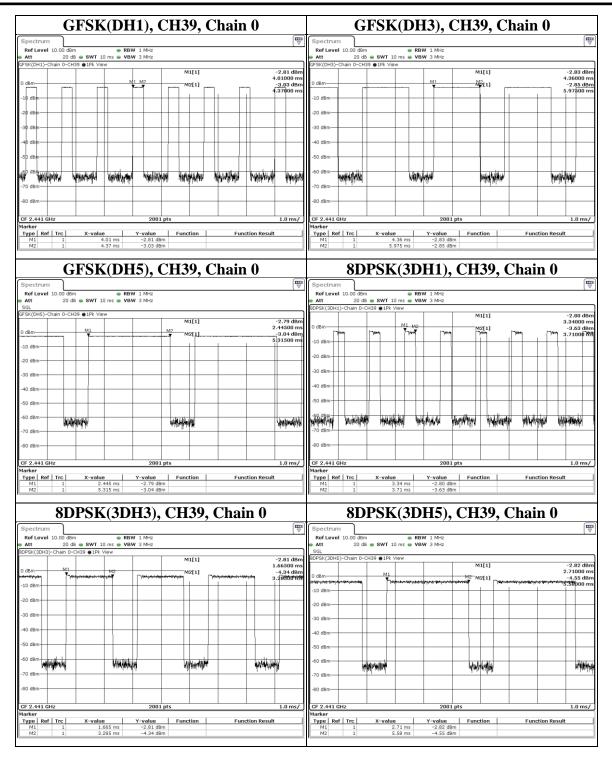
Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, TaiwanTelephone:+886-2-7737-3000Facsimile (FAX):+886-3-583-7948Doc No: Form-ULID-004737 (DCS:17-EM-F0876) / 6.1



<u>Test Data</u>

Mode	Freq (MHz)	Length of transmission time (ms)	Dwell Time (ms)	Limit (ms)	Result
GFSK(DH1)	2441	0.360	115.200	400	PASS
GFSK(DH3)	2441	1.615	258.400	400	PASS
GFSK(DH5)	2441	2.870	306.133	400	PASS
8DPSK(3DH1)	2441	0.370	118.400	400	PASS
8DPSK(3DH3)	2441	1.620	259.200	400	PASS
8DPSK(3DH5)	2441	2.870	306.133	400	PASS







9.6. Conducted Out of Band Emission

Requirements

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 a radiated 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, as permitted under paragraph (b) (3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209 (a) is not required.

Test procedure

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100 kHz and 300 kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

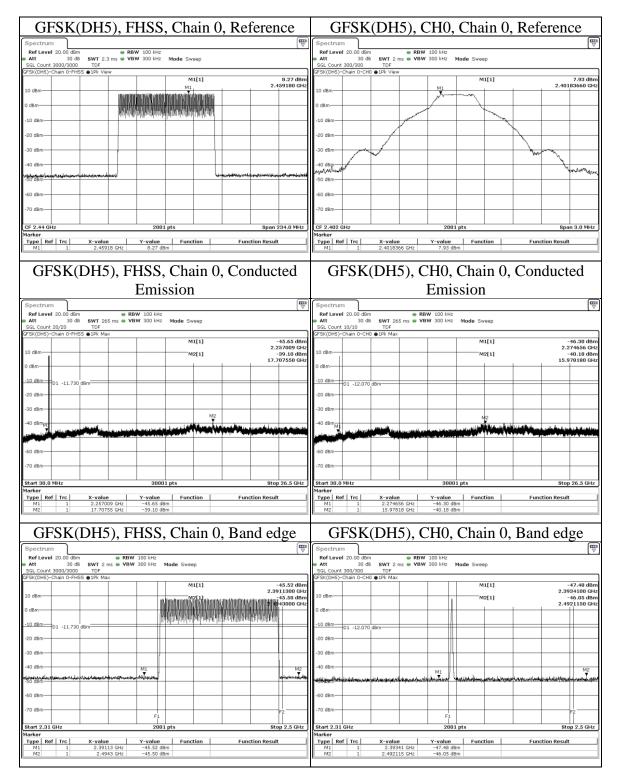
Test Setup



The loss between RF output port of the EUT and the input port of the Spectrum Analyzer has been taken into consideration.



<u>Test Data</u>



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GESK(DH5) CH39 Chain () Reference	GFSK(DH5), CH78, Chain 0, Reference
	Spectrum
RefLevel 20.00 dBm	Ref Level 20.00 dBm
■ Att 30 dB SWT 2 ms ● VBW 300 kHz Mode Sweep SGL Count 300/300 TDF GFSK(DH5)-Chain 0-CH39 ● 1Pk View	Att 30 dB SWT 2 ms ● VBW 300 kHz Mode Sweep SGL Count 300/300 TDF SGLSOUNT 300/300 TDF SGFSK(DHS)-Chain G-CH79 ● 1Pk View
M1[1] 7.94 dBm M1 2.44117090 GHz	M1[1] 7.94 dBm 2.47983060 GHz
10 dBm	10 dBm
0 dBm	D dBm
-10 dBm	-10 dBm
-20 dBm	-20 dBm
-30 dBm	-30 dBm
-40 dBm	-10 dBm
-50 dBm	-50 dBm-
-60 dBm	-60 dBm-
-70 dBm	-70 dBm-
CF 2.441 GHz 2001 pts Span 3.0 MHz	CF 2.48 GHz 2001 pts Span 3.0 MHz
Marker	Marker
Type Ref Trc X-value Y-value Function M1 1 2.4411709 GHz 7.94 d8m Function Function Result	Type Ref Trc X-value Y-value Function Function Result M1 1 2.4798306 GHz 7.94 dBm Function Function Function
GFSK(DH5), CH39, Chain 0, Conducted	GFSK(DH5), CH78, Chain 0, Conducted
Emission	Emission
Spectrum V Ref Level 20.00 dBm • RBW 100 kHz	Ref Level 20.00 dBm RBW 100 kHz
Att 30 dB SWT 265 ms VBW 300 kHz Mode Sweep SGL Count 10/10 TDF	Att 30 dB SWT 265 ms VBW 300 kHz Mode Sweep SGL Count 10/10 TDF
GFSK(DH5)-Chain 0-CH39 @1Pk Max M1[1] -46.69 dBm	GFSK(DH5)-Chain 0-CH78 @1Pk Max
10 dBm M2[1]39.31 dBm	10 dBm M2[1]40.53 dBm
0 dBm	0 dBm 6.936023 GHz
-10 dBm D1 -12.060 dBm	-10 dBm 01 -12.060 dBm
-20 dBm	-20 dBm
-30 dBm M2	-30 dBm
	-40 dBm
-60 dBm	-60 dBm-
-70 dBm	-70 dBm
Start 30.0 MHz 30001 pts Stop 26.5 GHz	Start 30.0 MHz 30001 pts Stop 26.5 GHz
Marker	Marker
Type Ref Trc X-value Y-value Function Function Result M1 1 2.241127 GHz -46.69 dBm - <th>Type Ref Trc X-value Y-value Function Function Result M1 1 2.302008 GHz -47.21 dBm -47.21 dBm -47.23 dBm M2 1 6.936023 GHz -40.23 dBm -47.21 dBm -47.21 dBm</th>	Type Ref Trc X-value Y-value Function Function Result M1 1 2.302008 GHz -47.21 dBm -47.21 dBm -47.23 dBm M2 1 6.936023 GHz -40.23 dBm -47.21 dBm -47.21 dBm
M2 1 17.1049 GH2 -39.31 UDIII	1 0.930023 GH2 -40.35 0BII
GFSK(DH5), CH39, Chain 0, Band edge	GFSK(DH5), CH78, Chain 0, Band edge
Spectrum	
RefLevel 20.00 dBm 🛛 🖶 RBW 100 kHz	Ref Level 20.00 dBm
Att 30 dB SWT 2 ms VBW 300 kHz Mode Sweep SGL Count 300/300 TDF	Att 30 dB SWT 2 ms VBW 300 kHz Mode Sweep SGL Count 300/300 TDF
GFSK(DH5)-Chain 0-CH39 @1Pk Max M1[1] -46.85 dBm	GFSK(DH5)-Chain 0-CH78 @1Pk Max M1[1] -47.11 dBm
10 dBm 2.3993000 GHz 10 dBm 46.11 dBm	10 dBm 2.3908450 GHz 746.72 dBm 746.72 dBm
0 dBm	
-10 dBm-01 -12.060 dBm-	-10 dBm
-20 dBm	-10 dBm 01 -12.060 dBm
-30 dBm	-30 dBm
-40 dBm ML M2	-40 dBm
work the well in the and a proper should be a straight and the straight for a straight be a straight and a straight a str	description in faith and the second and the
-60 dBm	-60 dBm
-70 dBm F2	-70 dBm
F1	F1
Start 2.31 GHz 2001 pts Stop 2.5 GHz Marker	Start 2.31 GHz 2001 pts Stop 2.5 GHz Marker
Type Ref Trc X-value Y-value Function Function Result M1 1 2.3993 GHz ~46.85 dBm	Type Ref Trc X-value Y-value Function Function Result M1 1 2.390845 GHz -47.11 dBm -
M2 1 2.491735 GHz -46.11 dBm	M2 1 2.49537 GHz -46.72 dBm



8DPSK(3DH5), FHSS, Chain 0, Reference	
Spectrum □□□□ RefLevel 20.00 dBm ● RBW 100 kHz	Spectrum Ref Level 20.00 dBm ● RBW 100 kHz
Att 30 dB SWT 2.3 ms VBW 300 kHz Mode Sweep SGL Count 3000/3000 TDF	Att 30 dB SWT 2 ms VBW 300 kHz Mode Sweep SGL Count 300/300 TDF
8225 dBm M1[1] 8.25 dBm 0 110100 gHz	80PSK(3DH5)-Chain 0-CH0 @1Pk View M1[1] 8.08 dBm A1[1] 0.1001(310.01)
10 dBm M1 2.449190 GHz	10 dBm M1 2.40216190 GHz
	D dBm
-10 dBm	-10 dBm
-20 dBm	-20 dBm
-30 dBm	-30 dBm
-40 dBm	40 dBm
ling hide many here we have here the second star and the second st	-50 dBm
-60 dBm	-60 dBm
-70 dBm	-70 dBm
CF 2.441 GHz 2001 pts Span 234.0 MHz Marker	CF 2.402 GHz 2001 pts Span 3.0 MHz Marker
Type Ref Trc X-value Y-value Function Function Result M1 1 2.44919 GHz 8.25 dBm	Type Ref Trc X-value Y-value Function Function Result M1 1 2:4021619 GHz 8:08 dBm
8DPSK(3DH5), FHSS, Chain 0, Conducted	8DPSK(3DH5), CH0, Chain 0, Conducted
Emission	Emission
Spectrum 🕅	
RefLevel 20.00 dBm	RefLevel 20.00 dBm
SGL Count 20/20 TDF 8DPSK(3DH5)-Chain 0-FHSS 1Pk Max	SGL Count 10/10 TDF BDPSK(3DH5)-Chain 0-CH0 @1Pk Max
M1[1]46.61 dBm 2255245 GH2 10 dBm	M1[1] -46.64 dBm 1.951722 GHz 10 dBm
10 dBm M2[1] -39.19 dBm 0 dBm 16.016120 GHz	
-10 dBm01 -11.750 dBm	-10 dBm D1 -11.920 dBm
-20 dBm-	-20 dBm
-30 dBm N2	-30 dBm M2
-60 dBm-	-60 dBm-
-70 dBm	-70 dBm
Start 30.0 MHz 30001 pts Stop 26.5 GHz	Start 30.0 MHz 30001 pts Stop 26.5 GHz
Marker Type Ref Trc X-value Y-value Function Function Result M1 1 2.255245 GHz -46.61 dBm	Type Ref Trc X-value Y-value Function Function Result M1 1 1.951722 GHz ~46.64 dBm
M2 1 16.01612 GHz -39.19 dBm	M2 1 15.91729 GHz -39.85 dBm
8DPSK(3DH5), FHSS, Chain 0, Band edge	8DPSK(3DH5), CH0, Chain 0, Band edge
Spectrum 🕅	Spectrum
RefLevel 20.00 dBm ■ RBW 100 kHz ■ Att 30 dB SWT 2 ms VBW 300 kHz Mode Sweep	Ref Level 20.00 dBm RBW 100 kHz Att 30 dB SWT 2 ms VBW 300 kHz Mode Sweep
SGL Count 3000/3000 TDF 8DPSK(3DH5)-Chain 0-FHSS @1Pk Max	SGL Count 300/300 TDF 8DPSK(3DHS)-Chain 0-CH0 @1Pk Max
10 dBm M1[1] -46.11 dBm 2.391700 dHz	M1[1] -46.91 dBm 2.392400 GH2 10 dBm M1[1] -269.400 GH2
10 dBm45.47 dBm	
-10 dBm 01 -11.750 dBm	-10 dBm-01 -11.920 dBm-
-30 dBm	-30 dBm
-40 dBm M2 M2 M2 M2 M2 M2 M3 M2 M3 M2 M3 M4	+0 dBm
50 dBm	
-60 dBm-	-60 dBm-
-70 dBm - F1 - F2 - F1 - F1 - F2 - F1 - F1 - F2 - F1 - F1	-70 dBm F1 F2
Start 2.31 GHz 2001 pts Stop 2.5 GHz	
Marker Type Ref Trc X-value Y-value Function Function Result	Marker Type Ref Trc X-value Y-value Function Function Result
M1 1 2.3917 GHz -46.11 dBm M2 1 2.48917 GHz -45.47 dBm	M1 1 2.39284 GHz -46.91 dBm M2 1 2.489835 GHz -46.59 dBm



	8DPSK(3DH5), CH78, Chain 0, Reference			
Spectrum				
RefLevel 20.00 dBm	RefLevel 20.00 dBm			
SGL Count 300/300 TDF 8DPSK(3DH5)-Chain 0-CH39 ●1Pk View	SGL Count 300/300 TDF BDPSK(3DH5)-Chain 0-CH78 @1Pk View			
M1[1] 8.17 dB M1 2.44115290 GF	0.40015500.001			
10 dBm	10 dBm			
O dBm	0 dBm			
-10 dBm	-10 dBm			
-20 dBm	-20 dBm			
-30 dBm	V Winner Manual Manual Manual			
-40 dBm	-40 dBm			
-50 dBm-	-50 dBm-			
-60 dBm	-60 dBm-			
-70 dBm-	-70 dBm			
CF 2.441 GHz 2001 pts Span 3.0 MH:				
Marker Type Ref Trc X-value Y-value Function Function Result	Marker Type Ref Trc X-value Y-value Function Function Result			
M1 1 2.4411529 GHz 8.17 dBm Punction Punction Result	M1 1 2.4801559 GHz 8.17 dBm			
8DPSK(3DH5) CH39 Chain 0 Conducted	8DPSK(3DH5), CH78, Chain 0, Conducted			
Emission	Emission			
Ref Level 20.00 dBm RBW 100 kHz	Ref Level 20.00 dBm			
Att 30 dB SWT 265 ms SVBW 300 kHz Mode Sweep	■ Att 30 dB SWT 265 ms ■ VBW 300 kHz Mode Sweep			
SGL Count 10/10 TDF BDPSK(3DH5)-Chain 0-CH39 @1Pk Max	SGL Count 10/10 TDF BDPSK(3DH5)-Chain 0-CH78 Pk Max			
M1[1] -46.94 dB	M1[1] -47.10 dBm			
10 dBm	10 dBm			
0 dBm	Z 0 dBm			
o dom				
-10 dBm D1 -11.830 dBm	-10 dBm 01 -11.830 dBm			
-20 dBm	-20 dBm			
-30 dBm	- 30 dBm M2			
	-40 dBm			
-60 dBm-	-60 dBm			
-70 dBm	-70 dBm			
Start 30.0 MHz 30001 pts Stop 26.5 GH	Start 30.0 MHz 30001 pts Stop 26.5 GHz			
Marker Type Ref Trc X-value Y-value Function Function Result	Marker Type Ref Trc X-value Function Function Result			
M1 1 952.038 MHz -46.94 dBm M2 1 15.94288 GHz -39.01 dBm	M1 1 2.298479 GHz -47.10 dBm M2 1 19.76691 GHz -39.79 dBm			
M2 1 10.94200 dH2 09.01 dbH	ME 1 19/70091 Gire 39/79 GDII			
PDP(V(2DU5) CU20 Chain 0 Dand adag	PDRV(2DU5) CU79 Chain 0 Dand adag			
8DPSK(3DH5), CH39, Chain 0, Band edge	8DPSK(3DH5), CH78, Chain 0, Band edge			
Spectrum	a Spectrum			
RefLevel 20.00 dBm	Ref Level 20.00 dBm			
SGL Count 300/300 TDF	SGL Count 300/300 TDF			
8DPSK(3DH5)-Chain 0-CH39 PIPk Max	8DPSK(3DH5)-Chain 0-CH78 1Pk Max			
M1[1] -47.25 dB 2.3967350 G	2.3997750 GHz			
10 dBm M2[1] -46.82 dB 2.4983850 GF	10 dBm M2[1]46.54 dBm24908800 GHz			
0 dBm	0 dBm			
-10 dBm	-10 dBm			
-10 dBm01 -11.830 dBm	-10 dBm-01 -11.830 dBm			
-20 dBm	-20 dBm			
-30 dBm-	-30 dBm-			
40 dbm				
-40 dBm	40 dBm M1 M2			
า้อาก กลุ่มหนึ่งและแรงสารแกงแห่งและและและสารและไปแห่งเห็ญสารและเอาอาจไหนเสียงเห็น "ไปการแรงและกระเลาไปการสารแล	a najaasatini hana ahaan karana aa maraa dadaa ahayi waxaa daha ahaa ahaa ahaa ahaa ahaa ahaa			
-60 dBm-	-60 dBm-			
	-70 dBm - F1 - F2			
-70 dBmF1F2F2				
F1				
Start 2.31 GHz 2001 pts Start 2.5 GHz Marker Type [Ref Trc X-value Y-value Function Function Result	Start 2.3. GHz 2001 pts Stop 2.5 GHz Marker Juppel Ref Trc X-value Y-value Function Result			
F1 F2 Start 2.31 GHz 2001 pts Marker Stop 2.5 GHz	Start 2.31 GHz 2001 pts Stop 2.5 GHz Marker 3000 pts 3000 pts 3000 pts			

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9.7. Radiated Spurious Emission

Requirements

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequency (MHz)	Field strength (microvolts/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

NOTE:

- 1. The lower limit shall apply at the transition frequencies.
- 2. Emission level $(dBuV/m) = 20 \log Emission level (uV/m)$.
- 3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



Test Procedures

[For $9 \text{ kHz} \sim 30 \text{ MHz}$]

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. For measurement below 30MHz, 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. If the emission level of the EUT measured by the peak detector is lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

[For above 30 MHz]

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. For measurement below 1GHz, 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. If the emission level of the EUT measured by the peak detector is lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
- f. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

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Note:

- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
- 3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.

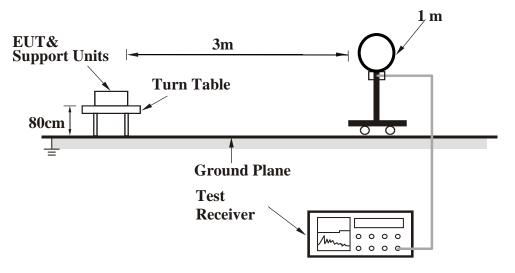
Configuration	Average			
Configuration	RBW	VBW		
Bluetooth	1MHz	Refer to section 6.6 for duty cycle.		

- 4. All modes of operation were investigated (includes all external accessories) and the worst-case emissions are reported, the other emission levels were low against the limit.
- 5. Test data of Result value (dBuV/m) = Reading value (dBuV/m) + Correction Factor (dB/m).
- 6. Test data of Margin(dB) = Result value (dBuV/m) Limit value (dBuV/m).
- 7. Test data of Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) Preamp Factor (dB).
- 8. Test data of Notation "@" = Fundamental Frequency
- 9. Test data of Notation " * " = The peak result under 20 dB above and complies with AVG limit, AVG result is deemed to comply with AVG limit.

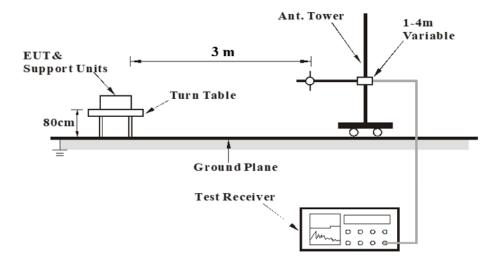


Test Setup

<Frequency Range 9 kHz ~ 30 MHz>



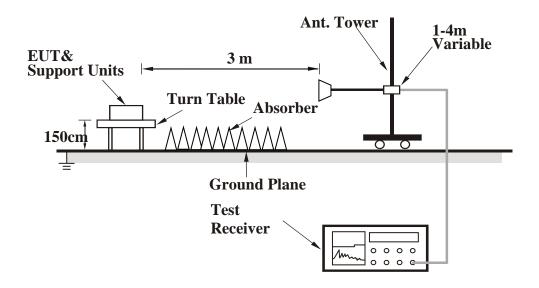
<Frequency Range 30 MHz ~ 1 GHz >





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<Frequency Range above 1 GHz>



For the actual test configuration, please refer to the Setup Configurations.



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: 2024/4/15
: 2AYYS-AW725H

Test Data

Above 1 GHz

Mode	GFSK			Char	nnel 0			
Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
Polarization	Notation	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Remark
		2327.86	28.33	12.75	41.08	54	-12.92	AVG
		2332.42	39.86	12.74	52.6	74	-21.4	PK
Horizontal	@	2402	90.64	12.43	103.07	N/A	N/A	PK
	@	2402	90.49	12.43	102.92	N/A	N/A	AVG
	*	4804	36.06	2.88	38.94	74	-35.06	PK
		2315.89	28.24	12.8	41.04	54	-12.96	AVG
		2321.02	41.68	12.78	54.46	74	-19.54	PK
Vertical	@	2402	91.25	12.43	103.68	N/A	N/A	PK
	@	2402	91	12.43	103.43	N/A	N/A	AVG
	*	4804	36.42	2.88	39.3	74	-34.7	PK



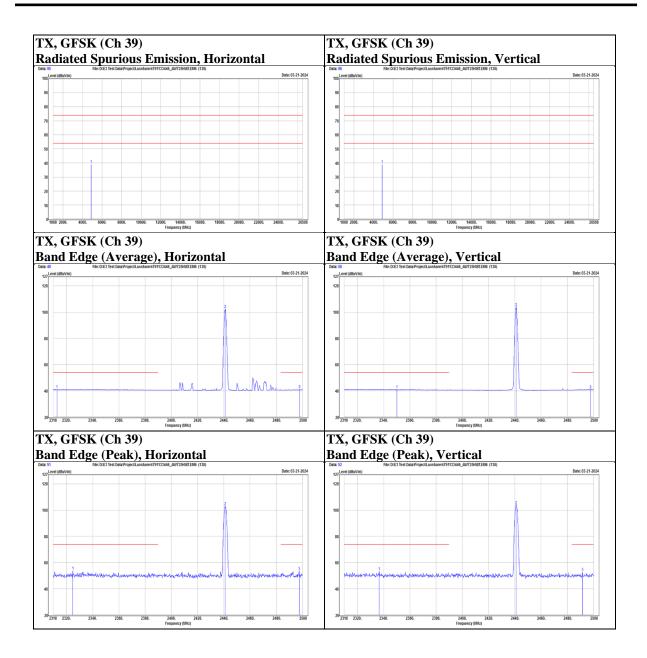
K, GFSK (Ch 0) adiated Spurious Emission, Horizontal	TX, GFSK (Ch 0) Rediated Spurious Emission, Vertical
IS File: D:E3 Test Data/Project/Luxshare/4791133446_AW725H/BT.EM6 (130)	Radiated Spurious Emission, Vertical
Level (dBUV/m) Date: 01	03-21-2624 00_LEVel (dBUV/m) Date: 03-21-26
	90
	80
	70
	60 60
	30
	28
1010 2010. 4000. 6010. 8000. 10000. 12000. 14010. 16000. 18000. 20000. 22000. 24010.	2550 0 1010 2000. 4000. 6010. 8000. 10000. 12000. 14010. 16000. 12000. 20000. 22000. 24010. 2655
Frequency (MHz)	Frequency (Mitz)
X, GFSK (Ch 0)	TX, GFSK (Ch 0)
nd Edge (Average), Horizontal	Band Edge (Average), Vertical
15 File: DCE3 Test Data ProjectLuxsMare4731133446_AW725HBTEM6 (130) Level (dBuVim) Date: 02	Data: 46 File: D:E3 Test Data ProjectLuxshare/4791133446_AV/725HBTEIM6 (130) 03-21-2024 127 Level (080/lm) Date: 03-21-202
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2310 2320. 2340. 2360. 2380. 2400. 2420. 2440. 2460. 2480.	20 2310 2320. 2340. 2350. 2380. 2440. 2420. 2440. 2460. 2480. 259
Frequency (NHz)	Frequency (MHz)
K, GFSK (Ch 0)	TX, GFSK (Ch 0)
Ind Edge (Peak), Horizontal	Band Edge (Peak), Vertical
	Udat 4 Pre: 0:E3 lest Udat Project Luishare (911,3440_AW/2018) Leillo (136) 03.21.2024 122_Level (dBu//m) Date: 03.27.20
	120
	100
	60
and the second s	m



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Mode	GFSK	GFSK Channel 39						
Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
Folalizatioli	Notation	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Kennark
		2312.85	28.24	12.81	41.05	54	-12.95	AVG
		2325.01	40.95	12.76	53.71	74	-20.29	PK
	@	2441	90.58	12.18	102.76	N/A	N/A	PK
Horizontal	@	2441	90.19	12.18	102.37	N/A	N/A	AVG
		2497.53	40.74	12.5	53.24	74	-20.76	PK
		2497.72	28.52	12.5	41.02	54	-12.98	AVG
	*	4882	36	3.06	39.06	74	-34.94	PK
		2336.6	40.43	12.72	53.15	74	-20.85	PK
		2350.09	28.4	12.65	41.05	54	-12.95	AVG
	@	2441	91.4	12.18	103.58	N/A	N/A	PK
Vertical	@	2441	91.28	12.18	103.46	N/A	N/A	AVG
		2491.64	40.18	12.44	52.62	74	-21.38	PK
		2497.72	28.51	12.5	41.01	54	-12.99	AVG
	*	4882	36.03	3.06	39.09	74	-34.91	РК



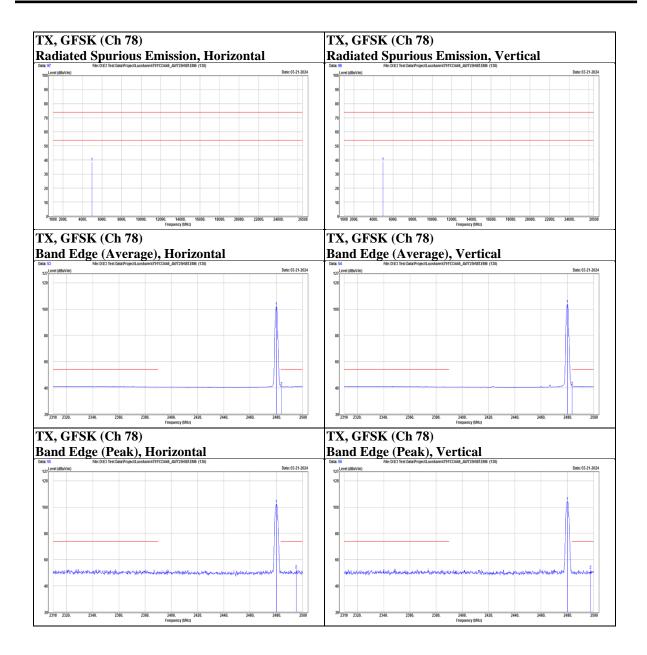




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Mode	GFSK	GFSK Channel 78						
Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
Folarization	Notation	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Kennark
	@	2480	90.01	12.35	102.36	N/A	N/A	PK
	@	2480	89.72	12.35	102.07	N/A	N/A	AVG
Horizontal		2483.85	28.87	12.38	41.25	54	-12.75	AVG
		2495.25	40.02	12.47	52.49	74	-21.51	PK
	*	4960	35.26	3.2	38.46	74	-35.54	PK
	@	2480	91.87	12.35	104.22	N/A	N/A	PK
	@	2480	91.35	12.35	103.7	N/A	N/A	AVG
Vertical		2483.66	29.11	12.38	41.49	54	-12.51	AVG
		2497.72	39.65	12.5	52.15	74	-21.85	PK
	*	4960	35.68	3.2	38.88	74	-35.12	PK







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FCC ID	: 2AYYS-AW725H

Mode	8DPSK			Char	inel 0			
Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
Folalization	Notation	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Kennark
		2318.55	40.14	12.79	52.93	74	-21.07	PK
		2322.35	28.33	12.78	41.11	54	-12.89	AVG
Horizontal	@	2402	89.65	12.43	102.08	N/A	N/A	PK
	@	2402	86.07	12.43	98.5	N/A	N/A	AVG
	*	4804	36.03	2.88	38.91	74	-35.09	PK
		2332.99	28.4	12.73	41.13	54	-12.87	AVG
		2382.2	40.15	12.52	52.67	74	-21.33	PK
Vertical	@	2402	89.83	12.43	102.26	N/A	N/A	PK
	@	2402	87.8	12.43	100.23	N/A	N/A	AVG
	*	4804	35.76	2.88	38.64	74	-35.36	PK



X, 8DPSK (Ch 0) adiated Spurious Emission, Horizontal	TX, 8DPSK (Ch 0) Radiated Spurious Emission, Vertical Date 10 Rev D Tate Data Data Service (13)
99 File: DrE3 Test Delta Projecti Luxshare/4791133446_AV/725HBTEAM6 (130) Level (dBUVim) Date: 03.21-	Data: 100 File: DrE3 Test Data ProjectLaxshare4791133446_AV77246FE816 (150) 2624 trol_tvoid (dBuVim) Date: 03-21-2624
	90
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K, 8DPSK (Ch 0)	TX, 8DPSK (Ch 0) Band Edge (Asumon) Vertical
And Edge (Average), Horizontal	Band Edge (Average), Vertical
Level (dBu//m) Date: 03-21-	2024 127 Level (dBuVim) Date: 03.21.2024
	120
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K, 8DPSK (Ch 0)	TX, 8DPSK (Ch 0)
and Edge (Peak), Horizontal	Band Edge (Peak), Vertical
59 File: Dr.S. Test Data Project Luxshare/4791133446, AW725HBT.EM6 (130) Level (dBuV/m) Date: 03.21-	Data: 60 File: D:E3 Test DataiProjectLuxsharei4791133446_AV/725HBT.EM6 (130)
	2024 122,Level (dBuV/m) Dote: 03.21.2024
and many all and the second	t workers were were were the second stand the second s
2310 2320. 2340. 2360. 2388. 2460. 2420. 2440. 2460. 2480. 2	200 201 2310 2320. 2340. 2350. 2380. 2400. 2420. 2440. 2460. 2480. 259

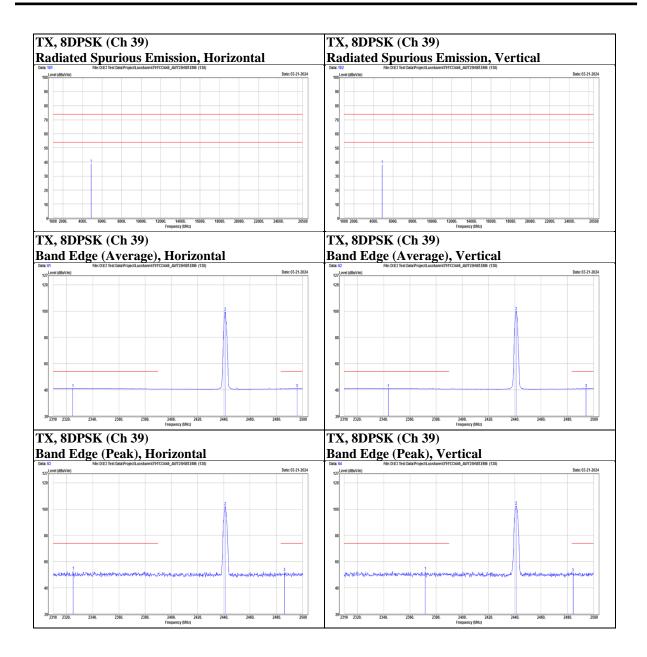
Underwriters Laboratories Taiwan Co., Ltd.Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, TaiwanTelephone:+886-2-7737-3000Facsimile (FAX):+886-3-583-7948Doc No: Form-ULID-004737 (DCS:17-EM-F0876) / 6.1



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Mode	8DPSK	DPSK Channel 39							
Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark	
rolalization	Notation	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Kennark	
		2325.01	28.28	12.76	41.04	54	-12.96	AVG	
		2325.2	40.26	12.77	53.03	74	-20.97	PK	
	@	2441	89.77	12.18	101.95	N/A	N/A	PK	
Horizontal	@	2441	87.15	12.18	99.33	N/A	N/A	AVG	
		2486.32	39.44	12.41	51.85	74	-22.15	PK	
		2495.82	28.56	12.47	41.03	54	-12.97	AVG	
	*	4882	35.75	3.06	38.81	74	-35.19	PK	
		2343.63	28.37	12.69	41.06	54	-12.94	AVG	
		2371.75	40.19	12.56	52.75	74	-21.25	PK	
	@	2441	90.24	12.18	102.42	N/A	N/A	PK	
Vertical	@	2441	87.84	12.18	100.02	N/A	N/A	AVG	
		2484.42	39.21	12.39	51.6	74	-22.4	PK	
		2494.3	28.58	12.47	41.05	54	-12.95	AVG	
	*	4882	35.07	3.06	38.13	74	-35.87	РК	







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Mode	8DPSK	Channel 78								
Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark		
Folarization	Notation	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Kennark		
	@	2480	88.99	12.35	101.34	N/A	N/A	PK		
	@	2480	86.37	12.35	98.72	N/A	N/A	AVG		
Horizontal		2483.66	29.04	12.38	41.42	54	-12.58	AVG		
		2484.42	39.93	12.39	52.32	74	-21.68	PK		
	*	4960	36.71	3.2	39.91	74	-34.09	PK		
	@	2480	90.66	12.35	103.01	N/A	N/A	PK		
	@	2480	88.15	12.35	100.5	N/A	N/A	AVG		
Vertical		2483.66	29.25	12.38	41.63	54	-12.37	AVG		
		2493.73	40.15	12.46	52.61	74	-21.39	PK		
	*	4960	35.95	3.2	39.15	74	-34.85	PK		



X, 8DPSK (Ch 78) diated Spurious Emission, Horizon		TX, 8DPSK (Ch 78) Radiated Spurious Emission, Vertical Date 164 FEEDED Heldbard-Phylicital AMT29610206 (130)				
13 File: D:E3 Test Data/ProjectLuxshare/4791133446_AW7725HBTEM6 (130) evel (dBuVim)	Date: 03-21-2024	ta: 104 100Level (dBuV/m)	File: D:E3 Test Data/Project/Luxshare/4791133446_AW725HBT	LENI6 (130)	Date: 03-21-202	
		100				
		90				
		80				
		70				
		60				
		50				
		40	1			
		30				
		20				
		10				
1010 2000. 4000. 6000. 8000. 10000. 12000. 14000. 16000. 18000. 20000.	22000. 24000. 26500	0 1000 2000. 4000.	6010. 8000. 10000. 12000. 14000.	16000. 18000. 20000. 22000.	24010. 26500	
Frequency (MHz)			Frequency (MHz	2)		
K, 8DPSK (Ch 78)	Т	'X, 8DPS	SK (Ch 78)			
nd Edge (Average), Horizontal			ge (Average), Vert	tical		
File: D/E3 Test Data/Project/Luxshare/4791133446_AW725H/BT.EM6 (130)	Da	sta: 66	File: D:E3 Test DataIProjectiLuxsharei4791133446_AW725HBT	LEM6 (130)		
evel (dBt/Vim)	Date: 03-21-2024	127 Level (dBuV/m)			Date: 03-21-2024	
		120				
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		60				
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		20				
2310 2320. 2340. 2380. 2380. 2440. 2420. 2440. 246 Frequency (MHz)	50. 2480. 2500	20 2310 2320.	2340. 2360. 2380. 2400. Frequency (MHz	2420. 2440. 2460. z)	2480. 2500	
K, 8DPSK (Ch 78)	Т	X 8DP	SK (Ch 78)			
nd Edge (Peak), Horizontal			ge (Peak), Vertical			
File: D/E3 Tast DataDrojactil wysharol/701133466_AW/7254/RTEM6_(130)	Da	ita: 69	File: D:E3 Test Data/Project/Luxshare/4791133446_AW/725HBT			
evel (dBuVim)	Date: 03-21-2024	127 Level (dBuV/m)			Date: 03-21-202	
		120				
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		80				
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		60				
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		40				
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Below 1 GHz

Mode	GFSK Channel 78							
Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
Folalization	Notation	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Kennark
		115.36	51.76	-14.47	37.29	43.5	-6.21	РК
		131.85	46.91	-13.58	33.33	43.5	-10.17	РК
Horizontal		232.73	42.18	-13.41	28.77	46	-17.23	PK
Horizontai		269.59	44.75	-11.5	33.25	46	-12.75	РК
		296.75	42.34	-10.61	31.73	46	-14.27	РК
		329.73	39.73	-9.4	30.33	46	-15.67	PK
		113.42	54.71	-14.55	40.16	43.5	-3.34	PK
		130.88	51.82	-13.44	38.38	43.5	-5.12	PK
Vantiaal		166.77	43.44	-11.77	31.67	43.5	-11.83	PK
Vertical		186.17	39.73	-13.79	25.94	43.5	-17.56	PK
		328.76	42.74	-9.44	33.3	46	-12.7	PK
		459.71	37.5	-5.69	31.81	46	-14.19	PK

diated Spurious Emission, Horizontal File:DE3 Test Data ProjectLasshared?17132444_AW72548TEB45 (128) ord (DBAVIN)		Radiated Spurious Emission, Vertical	
Signa State Sta	-		
	Date: 03-21-2024	Data: 124 File: D:E3 Test Data/Project/Luxshare/4791133446_WV725HBTEIN6 (130) en Level (dBuV/im)	Date: 03-21-2024



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Charging Mode

Below 1 GHz

Mode	Chargin	ng Mode Channel N/A						
Polarization	Notation	Frequency	Reading	Correct	Result	Limit	Margin	Remark
Folarization	@	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Kennark
		110.51	52.08	-14.81	37.27	43.5	-6.23	PK
		133.79	46.65	-13.23	33.42	43.5	-10.08	PK
Horizontal		169.68	40.96	-11.94	29.02	43.5	-14.48	PK
Horizoittai		232.73	43.41	-13.41	30	46	-16	PK
		268.62	43.22	-11.53	31.69	46	-14.31	PK
		295.78	42.59	-10.61	31.98	46	-14.02	PK
		112.45	54.42	-14.55	39.87	43.5	-3.63	PK
		132.82	53.14	-13.44	39.7	43.5	-3.8	PK
Vertical		168.71	45.4	-11.78	33.62	43.5	-9.88	PK
vertical		320.03	43.88	-9.84	34.04	46	-11.96	PK
		459.71	38.09	-5.69	32.4	46	-13.6	PK
		536.34	34.92	-4.33	30.59	46	-15.41	РК

X, Charging Mode (N/A)		TX, Charging Mode (N/A)	
diated Spurious Emission, Hori	izontal	Radiated Spurious Emission, Vertical	
129 File: D:E3 Test Data/ProjectLuxshare/4791133446_AW725H/BT.EM6 (130) Level (dBuV/m)	Date: 03-21-2024	Data: 130 File: D:E3 Test Data/ProjectLuxshare/4791133446_AW725HBTEM6 (130) ge_Level (dBuVim)	Date: 03-21-20
		00	
		70	
		60	
	-668	50	-6d8
		40 1 2	
		30 5 6	
		20	
		10	



9 kHz ~ 30 MHz Data:

For 9 kHz to 30 MHz radiated emission have performed all modes of operation were investigated. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

No non-compliance noted: KDB 414788 D01 OATS and Chamber Correlation Justification

- Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

- OATs and chamber correlation testing had been performed and chamber measured test results is the worst case test result.

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



9.8. AC Power Line Conducted Emission

Requirements

	Conducted limit (dBµV)				
Frequency (MHz)	Quasi-peak	Average			
0.15 - 0.5	66 - 56	56 - 46			
0.50 - 5.0	56	46			
5.0 - 30	60	50			

Note:

1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

Test Procedures

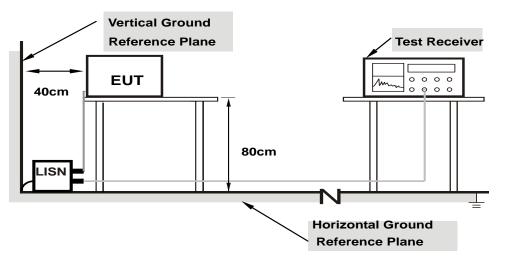
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit 20dB) was not recorded.

NOTE:

- 1. The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.
- 2. All modes of operation were investigated (includes all external accessories) and the worst-case emissions are reported, the other emission levels were low against the limit.
- 3. Test data of Result value (dBuV) = Reading value (dBuV) + Correction Factor (dB).
- 4. Test data of Margin(dB) = Result value (dBuV) Limit value (dBuV).
- 5. Test data of Correction Factor (dB) = Insertion loss(dB) + Cable loss(dB).



Test Setup



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the Setup Configurations.

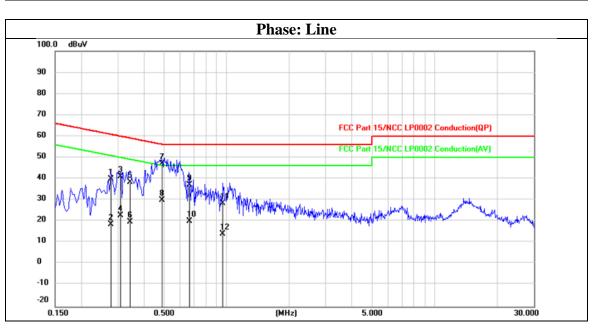


<u>Test Data</u>

Mode

DH5_TX2480

Channel 78



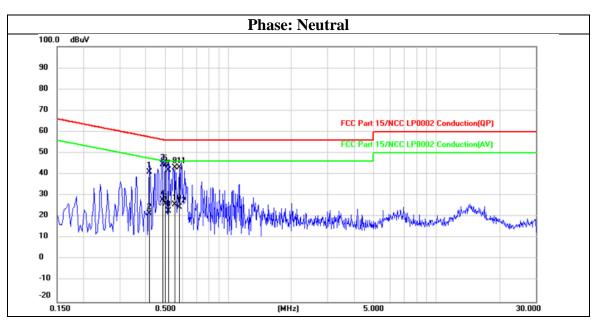
No.	Frequency	Reading	Correct	Result	Limit	Margin	Domonia
	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	Remark
1	0.2800	29.78	9.95	39.73	60.82	-21.09	QP
2	0.2800	8.64	9.95	18.59	50.82	-32.23	AVG
3	0.3104	31.19	9.95	41.14	59.96	-18.82	QP
4	0.3104	12.86	9.95	22.81	49.96	-27.15	AVG
5	0.3427	28.52	9.95	38.47	59.14	-20.67	QP
6	0.3427	9.92	9.95	19.87	49.14	-29.27	AVG
7	0.4912	37.16	9.95	47.11	56.15	-9.04	QP
8	0.4912	20.14	9.95	30.09	46.15	-16.06	AVG
9	0.6662	27.05	9.96	37.01	56.00	-18.99	QP
10	0.6662	9.99	9.96	19.95	46.00	-26.05	AVG
11	0.9654	18.51	9.98	28.49	56.00	-27.51	QP
12	0.9654	4.08	9.98	14.06	46.00	-31.94	AVG



```
Mode DH5_TX2480
```

Channel

78



No.	Frequency	Reading	Correct	Result	Limit	Margin	Derrogerle
	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	Remark
1	0.4171	31.15	9.95	41.10	57.51	-16.41	QP
2	0.4171	11.49	9.95	21.44	47.51	-26.07	AVG
3	0.4821	34.85	9.95	44.80	56.30	-11.50	QP
4	0.4821	17.78	9.95	27.73	46.30	-18.57	AVG
5	0.4967	34.55	9.95	44.50	56.06	-11.56	QP
6	0.4967	16.12	9.95	26.07	46.06	-19.99	AVG
7	0.5144	32.07	9.95	42.02	56.00	-13.98	QP
8	0.5144	12.90	9.95	22.85	46.00	-23.15	AVG
9	0.5530	33.27	9.95	43.22	56.00	-12.78	QP
10	0.5530	15.68	9.95	25.63	46.00	-20.37	AVG
11	0.5814	33.12	9.95	43.07	56.00	-12.93	QP
12	0.5814	14.47	9.95	24.42	46.00	-21.58	AVG

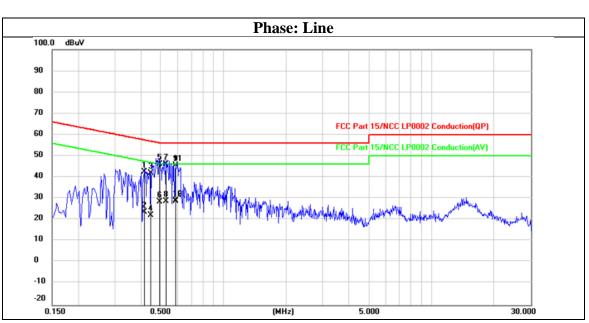


Charging Mode

Mode

Charging Mode

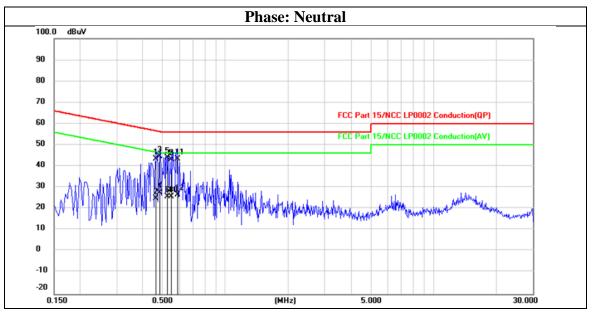
Channel N/A



No.	Frequency	Reading	Correct	Result	Limit	Margin	Dement
	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	Remark
1	0.4189	32.74	9.95	42.69	57.47	-14.78	QP
2	0.4189	13.77	9.95	23.72	47.47	-23.75	AVG
3	0.4463	32.15	9.95	42.10	56.94	-14.84	QP
4	0.4463	12.29	9.95	22.24	46.94	-24.70	AVG
5	0.4974	36.20	9.95	46.15	56.04	-9.89	QP
6	0.4974	18.53	9.95	28.48	46.04	-17.56	AVG
7	0.5274	36.27	9.95	46.22	56.00	-9.78	QP
8	0.5274	18.88	9.95	28.83	46.00	-17.17	AVG
9	0.5868	35.46	9.96	45.42	56.00	-10.58	QP
10	0.5868	18.80	9.96	28.76	46.00	-17.24	AVG
11	0.5904	35.51	9.96	45.47	56.00	-10.53	QP
12	0.5904	19.24	9.96	29.20	46.00	-16.80	AVG



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  Mode
  Charging Mode
  Channel
  N/A
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No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dB)	Remark
1	0.4646	33.53	9.95	43.48	56.61	-13.13	QP
2	0.4646	14.97	9.95	24.92	46.61	-21.69	AVG
3	0.4824	34.69	9.95	44.64	56.30	-11.66	QP
4	0.4824	17.64	9.95	27.59	46.30	-18.71	AVG
5	0.5259	34.22	9.95	44.17	56.00	-11.83	QP
6	0.5259	15.81	9.95	25.76	46.00	-20.24	AVG
7	0.5493	33.26	9.95	43.21	56.00	-12.79	QP
8	0.5493	15.80	9.95	25.75	46.00	-20.25	AVG
9	0.5520	33.31	9.95	43.26	56.00	-12.74	QP
10	0.5520	15.68	9.95	25.63	46.00	-20.37	AVG
11	0.5910	33.53	9.95	43.48	56.00	-12.52	QP
12	0.5910	16.68	9.95	26.63	46.00	-19.37	AVG

END OF REPORT