

# **RF TEST REPORT**

# Product Name: Multi functional Bluetooth speaker

Model Name: J2000-2, J2000-1

FCC ID: 2BEEO-J2000

Issued For : Dong guan City Huge Sun Lighting Co.,LTD Room 301, Building 1, No. 6, Sangyuan Yinyang Road, Dongcheng Street, Dongguan City, Guangdong Province

Issued By : Shenzhen LGT Test Service Co., Ltd. Room 205, Building 13, Zone B, Zhenxiong Industrial Park, No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China

Report Number:	LGT25C177RF01
Sample Received Date:	Mar. 25, 2025
Date of Test:	Mar. 25, 2025 ~ Apr. 14, 2025
Date of Issue:	Apr. 14, 2025

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# **TEST REPORT CERTIFICATION**

Applicant:	Dong guan City Huge Sun Lighting Co.,LTD
Address:	Room 301, Building 1, No. 6, Sangyuan Yinyang Road, Dongcheng Street, Dongguan City, Guangdong Province
Manufacturer:	Dong guan City Huge Sun Lighting Co.,LTD
Address:	Room 301, Building 1, No. 6, Sangyuan Yinyang Road, Dongcheng Street, Dongguan City, Guangdong Province
Product Name:	Multi functional Bluetooth speaker
Trademark:	N/A
Model Name:	J2000-2, J2000-1
Sample Status:	Normal

APPLICABLE STANDARDS		
STANDARD	TEST RESULTS	
FCC Part 15.247, Subpart C ANSI C63.10-2013	PASS	

Prepared by:

Zane Shan

Zane Shan Engineer

Approved by:

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Vita Li Technical Director



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# **Revision History**

Rev.	Issue Date	Revisions
00	Apr. 14, 2025	Initial Issue



# 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards: KDB 558074 D01 15.247 Meas Guidance v05r02.

FCC Part 15.247, Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247(a)(1)	Hopping Channel Separation	PASS	
15.247(a)(1)&(b)(1)	Output Power	PASS	
15.209	Radiated Spurious Emission	PASS	
15.247(d)	Conducted Spurious & Band Edge Emission	PASS	
15.247(a)(1)(iii)	Number of Hopping Frequency	PASS	
15.247(a)(1)(iii)	Dwell Time	PASS	
15.247(a)(1)	Bandwidth	PASS	
15.205	Restricted bands of operation	PASS	
Part 15.247(d)/part 15.209(a)	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1) 'N/A' denotes test is not applicable in this Test Report.

(2) All tests are according to ANSI C63.10-2013.



# 1.1 TEST FACTORY

Company Name:	Shenzhen LGT Test Service Co., Ltd.
Address:	Room 205, Building 13, Zone B, Zhenxiong Industrial Park, No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China
	A2LA Certificate No.: 6727.01
Accreditation Certificate:	FCC Registration No.: 746540
	CAB ID: CN0136

# 1.2 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 %.

No.	Item	Uncertainty
1	RF output power, conducted	$\pm$ 0.71dB
2	Unwanted Emissions, conducted	$\pm$ 0.63dB
3	All emissions, radiated 9K-30MHz	$\pm$ 2.16dB
4	All emissions, radiated 30M-1GHz	$\pm$ 4.40dB
5	All emissions, radiated 1G-6GHz	$\pm$ 5.49dB
6	All emissions, radiated>6G	±5.48dB
7	Conducted Emission (9KHz-150KHz)	±2.79dB
8	Conducted Emission (150KHz-30MHz)	±2.80dB

Note: The measurement uncertainty is not included in the test result.



# 2. GENERAL INFORMATION

# 2.1 GENERAL DESCRIPTION OF THE EUT

Product Name:	Multi functional Bluetooth speaker
Trademark:	N/A
Model Name:	J2000-2
Series Model:	J2000-1
Model Difference:	J2000-1 has one less stereo than J2000-2, the others are exactly the same.
Channel List:	Please refer to the Note 3.
Bluetooth:	Frequency:2402 – 2480 MHz Modulation: GFSK(1Mbps), π/4-DQPSK(2Mbps), 8DPSK(3Mbps)
Antenna Type:	PCB
Antenna Gain:	2.04dBi
Adapter:	Input: AC 100-240V 50/60Hz 0.6A Max Output: DC 12V 2A
Hardware Version:	N/A
Software Version:	N/A
Connecting I/O Port(s):	Please refer to the Note 1.

Note:

- 1. For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.
- 2. The antenna information refers to the manufacturer provide report, applicable only to the tested sample identified in the report. Due to the incorrect antenna information, a series of problems such as the accuracy of the test results will be borne by the customer.



3	
	E

	Channel List						
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)		
00	2402	27	2429	54	2456		
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				
26	2428	53	2455				



#### 2.2 DESCRIPTION OF THE TEST MODES

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 above was evaluated respectively.

Worst Mode	Description	Data Rate/Modulation
Mode 1	TX CH00	1Mbps/GFSK
Mode 2	TX CH39	1Mbps/GFSK
Mode 3	TX CH78	1Mbps/GFSK
Mode 4	TX CH00	2 Mbps/π/4-DQPSK
Mode 5	TX CH39	2 Mbps/π/4-DQPSK
Mode 6	TX CH78	2 Mbps/π/4-DQPSK
Mode 7	TX CH00	3 Mbps/8DPSK
Mode 8	TX CH39	3 Mbps/8DPSK
Mode 9	TX CH78	3 Mbps/8DPSK
Mode 10	Hopping	GFSK
Mode 11	Hopping	π/4-DQPSK
Mode 12	Hopping	8DPSK

Note:

(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.
(2) We tested for all available U.S. voltage and frequencies (For 120V, 50/60Hz and 240V, 50/60Hz) for which the device is capable of operation, and the worst case of 120V/ 60Hz is shown in the report.

(3) The battery is fully charged during the radiated and RF conducted test.

For AC Conducted Emission

Test Case		
AC Conducted Emission	Mode 13: Keeping BT TX	

#### 2.3 FREQUENCY HOPPING SYSTEM REQUIREMENTS

#### (1) Standard and Limit

According to FCC Part 15.247(a)(1), The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this section should the transmitter be presented with a continuous data (or information) stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its transmissions over the minimum number of hopping channels specified in this section.

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hop sets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

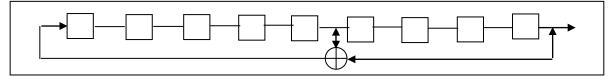
(2) The Pseudorandom sequence may be generated in a nin-stage shift register whose 5th and 9th



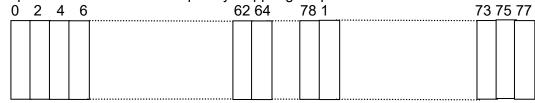
stage outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first one of 9 consecutive ones: i.e. the shift register is initialized with nine ones.

Numver of shift register stages:9

Length of pseudo-random sequence:2<sup>9</sup>-1=511bits Longest sequence of zeros: 8(non-inverted signal)



Liner Feedback Shift Register for Generator of the PRBS sequence An example of Pseudorandom Frequency Hoppong Sequence as follow:



Each frequency used equally on th average by each transmitter. The system receivers have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shift frequencies ini synchronization with the transmitted signals.

(3) Frequency Hopping System

This transmitter device is frequency hopping device and complies with FCC part 15.247 rule.

This device uses Bluetooth radio which operates in 2400-2483.5 MHz band. Bluetooth uses a radio technology called frequency-hopping spread spectrum, which chops up the data being sent and transmits chunks of it on up to 79 bands (1 MHz each; centred from 2402 to 2480 MHz) in the range 2,400-2,483.5MHz. The transmitter switches hop frequencies 1,600 times per second to assure a high degree of data security. All Bluetooth devices participating in a given piconet are synchronized to the frequency-hopping channel for the piconet. The frequency hopping sequence is determined by the master's device address and the phase of the hopping sequence (the frequency to hop at a specific time) is determined by the master's internal clock. Therefore, all slaves in a piconet must know the master's device address and must synchronize their clocks with the master's clock.

Adaptive Frequency Hopping (AFH) was introduced in the Bluetooth specification to provide an effective way for a Bluetooth radio to counteract normal interference. AFH identifies "bad" channels, where either other wireless device are interfering with the Bluetooth signal or the Bluetooth signal is interfering with another device. The AFH-enabled Bluetooth device will then communicate with other devices within its piconet to share details of any identified bad channels. The devices will then switch to alternative available "good" channels, away from the areas of interference, thus having no impact on the bandwidth used.

This device was tested with a bluetooth system receiver to check that the device maintained hopping synchronization, and the device complied with these requirements FCC Part 15.247 rule.



#### 2.4 TABLE OF PARAMETERS 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 FHSS.

Test software Version	Test program: Bluetooth			
	Mode Or Modulation type	Power setting		
	1M	Default		
FrequencyTool_v0.3.0	2M	Default		
-	3M	Default		

#### 2.5 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

#### Accessories Equipment

Description	Manufacturer	Model	S/N	Rating
Adapter	X.L.Y ELECTRONICS LIMITED	W24-120200UW	N/A	Input: 100-240V ~ 50/60Hz 0.6A Output: 12V, 2A

#### Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Laptop	Lenovo	HKF-16	N/A	N/A

Note:

- (1) For detachable type I/O cable should be specified the length in cm in <sup>r</sup>Length <sup>\_</sup> column.
- (2) "YES" is means "with core"; "NO" is means "without core".



# 2.6 EQUIPMENTS LIST

Conducted Emission					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
EMI Test Receiver	R&S	ESU8	100372	2025.03.06	2026.03.05
LISN	COM-POWER	LI-115	02032	2025.03.05	2026.03.04
LISN	SCHWARZBECK	NNLK 8122	00160	2025.03.05	2026.03.04
Transient Limiter	CYBERTEK	EM5010A	E225010004 9	2025.03.05	2026.03.04
Temperature & Humidity	JINGCHUANG	BT-3	N.A	2025.03.10	2026.03.09
Testing Software	EMC-I_V1.4.0.3_SKET				

Radiated Test equipment					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
EMI Test Receiver	R&S	ESU8	100372	2025.03.06	2026.03.05
Active loop Antenna	ETS	6502	00049544	2025.03.11	2028.03.10
Spectrum Analyzer	Keysight	N9010B	MY60242508	2025.03.05	2026.03.04
Trilog Broadband Antenna (30M-1G)	SCHWARZBECK	VULB 9168	2705	2024.05.17	2027.05.16
Horn Antenna(1-18G)	SCHWARZBECK	3115	10SL0060	2025.03.10	2028.03.09
Horn Antenna(18-40G)	SCHWARZBECK	BBHA 9170	685	2023.10.23	2026.10.22
Pre-amplifier(30M-1G)	EMtrace	RP01A	02019	2025.03.06	2026.03.05
Pre-amplifier(1-26.5G)	Agilent	8449B	3008A4722	2025.03.06	2026.03.05
Pre-amplifier(18-40G)	SCHWARZBECK	BBV 9721	9721-019	2024.10.21	2025.10.20
Temperature& Humidity test chamber	AISRY	LX-1000L	171200018	2024.08.05	2025.08.04
Antenna Tower	SAEMC	BK-4AT-BS -D	SK20210930 08	N.A	N.A
Temperature & Humidity	JINGCHUANG	BT-3	N.A	2025.03.10	2026.03.09
Testing Software	EMC-I_V1.4.0.3_SKET				

RF Conducted Test equipment					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
Signal Analyzer	Keysight	N9010B	MY60242508	2025.03.05	2026.03.04
Signal Analyzer	Keysight	N9020A	MY50530994	2025.03.05	2026.03.04
Power Sensor	R&S	NRP8S	149.0006K02 -104963-Ae	2025.03.06	2026.03.05
RF Automatic Test system	BALUN	SU319	LW-SZ24D00 01A01/02	2024.04.08	2025.04.07
MXG Vector Signal Generator	Keysight	N5182B	MY59100717	2025.03.05	2026.03.04
Temperature& Humidity test chamber	AISRY	LX-1000L	171200018	2024.08.05	2025.08.04
Attenuator	eastsheep	90db	N.A	2025.03.06	2026.03.05
Temperature & Humidity	JINGCHUANG	BT-3	N.A	2025.03.10	2026.03.09
Digital multimeter	MASTECH	MS8261	MBGBC8305 3	2025.03.05	2026.03.04
DC source	Jiuyuan	QJ6010E	N.A	2025.03.09	2026.03.08
Testing Software	BL410R_3.5.2.605				



# 3. EMC EMISSION TEST

#### 3.1 CONDUCTED EMISSION MEASUREMENT

#### 3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table.

	Conducted Emissionlimit (dBuV)		
FREQUENCY (MHz)	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	
0.50 -5.0	56.00	46.00	
5.0 -30.0	60.00	50.00	

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

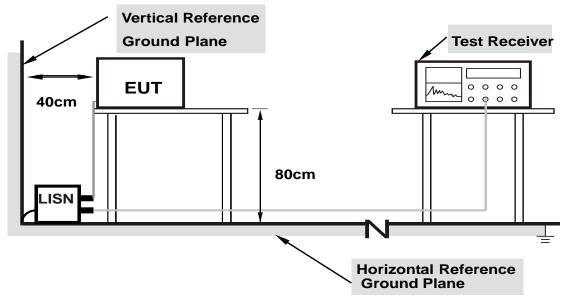
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz



#### 3.1.2 TEST PROCEDURE

- a. The EUT is 0.8 m from the horizontal ground plane and 0.4 m from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments are powered from additional LISN(s). The LISN provides 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. 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.
- c. 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.
- d. LISN is at least 80 cm from the nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item -EUT Test Photos.
- 3.1.3 TEST SETUP



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

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm

from other units and other metal planes support units.

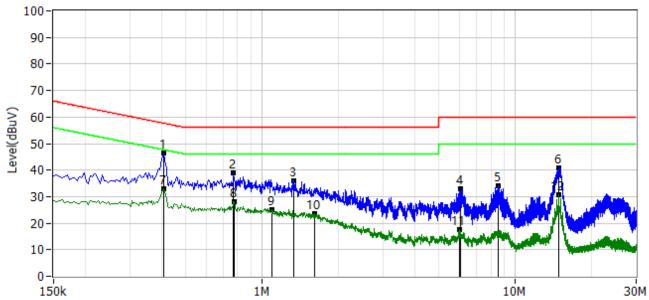
#### 3.1.4 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.



# 3.1.5 TEST RESULT

Project: LGT25C177	Test Engineer: LiuH
EUT: Multi functional Bluetooth speaker	Temperature: 23.6°C
M/N: J2000-2	Humidity: 57%RH
Test Voltage: AC 120V/60Hz	Test Data: 2025-03-27
Test Mode: TX DH5 2402	
Note:	

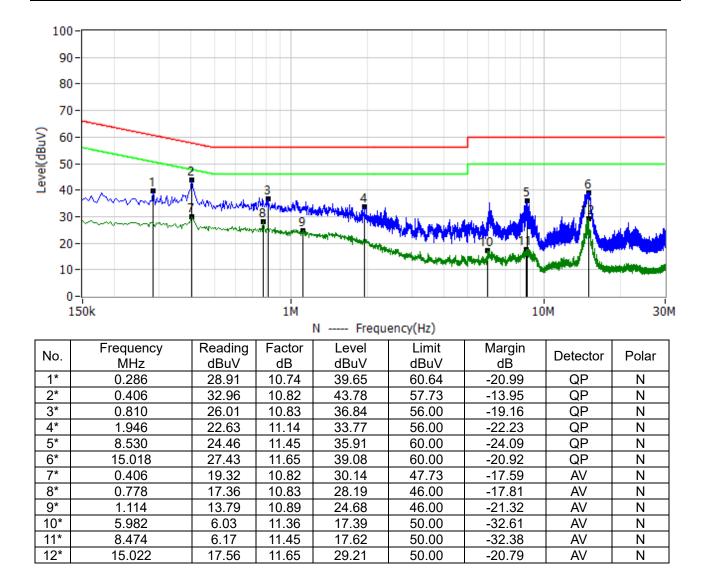


L1 ----- Frequency(Hz)

No.	Frequency MHz	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Margin dB	Detector	Polar
1*	0.410	35.50	10.86	46.36	57.65	-11.28	QP	L1
2*	0.770	28.19	10.87	39.06	56.00	-16.94	QP	L1
3*	1.334	24.97	11.07	36.04	56.00	-19.96	QP	L1
4*	6.086	21.75	11.37	33.12	60.00	-26.88	QP	L1
5*	8.578	22.65	11.45	34.10	60.00	-25.90	QP	L1
6*	14.826	29.08	11.71	40.79	60.00	-19.21	QP	L1
7*	0.410	22.25	10.86	33.11	47.65	-14.54	AV	L1
8*	0.778	17.40	10.87	28.27	46.00	-17.73	AV	L1
9*	1.090	14.03	10.91	24.94	46.00	-21.06	AV	L1
10*	1.618	12.62	11.14	23.76	46.00	-22.24	AV	L1
11*	6.002	6.10	11.37	17.47	50.00	-32.53	AV	L1
12*	14.814	19.16	11.71	30.87	50.00	-19.13	AV	L1



Project: LGT25C177	Test Engineer: LiuH
EUT: Multi functional Bluetooth speaker	Temperature: 23.6°C
M/N: J2000-2	Humidity: 57%RH
Test Voltage: AC 120V/60Hz	Test Data: 2025-03-27
Test Mode: TX DH5 2402	
Note:	





### 3.2 RADIATED EMISSION MEASUREMENT

#### 3.2.1 RADIATED EMISSION LIMITS

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the Restricted band specified on Part15.205 (a)&209(a) limit in the table and according to ANSI C63.10-2013 below has to be followed.

#### LIMITS OF RADIATED EMISSION MEASUREMENT (0.009MHz - 1000MHz)

Frequencies	Field Strength	Measurement Distance
(MHz)	(micorvolts/meter)	(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

#### LIMITS OF RADIATED EMISSION MEASUREMENT (1GHz-25 GHz)

FREQUENCY (MHz)	(dBuV/m) (at 3M)		
	PEAK	AVERAGE	
Above 1000	74	54	

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

#### LIMITS OF RESTRICTED FREQUENCY BANDS

FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (GHz)
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			



# For Radiated Emission

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/QP/AV
Start Frequency	9 KHz/150KHz (Peak/QP/AV)
Stop Frequency	150KHz/30MHz (Peak/QP/AV)
	200Hz (From 9kHz to 0.15MHz)/
RB / VB (emission in restricted band)	9KHz (From 0.15MHz to 30MHz);
	200Hz (From 9kHz to 0.15MHz)/
	9KHz (From 0.15MHz to 30MHz)

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/QP
Start Frequency	30 MHz (Peak/QP)
Stop Frequency	1000 MHz (Peak/QP)
RB / VB (emission in restricted band)	120 KHz / 300 KHz

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak
Start Frequency	1000 MHz (Peak/AV)
Stop Frequency	10th carrier hamonic (Peak/AV)
RB / VB (emission in restricted band)	1 MHz / 3 MHz(Peak)
	1 MHz/1/T MHz(AVG)

For Restricted band	
Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	Lower Band Edge: 2310 to 2410 MHz
	Upper Band Edge: 2476 to 2500 MHz
RB / VB	1 MHz / 3 MHz(Peak)
	1 MHz/1/T MHz(AVG)

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP



#### 3.2.2 TEST PROCEDURE

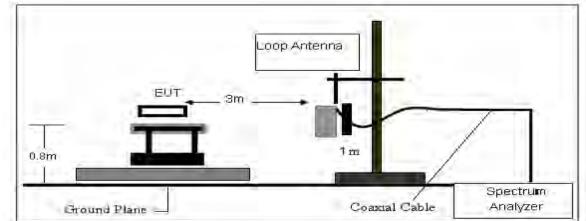
- a. The measuring distance at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 m (above 1GHz is 1.5 m) above the ground at a 3 m anechoic chamber test site. The table was rotated 360 degree to determine the position of the highest radiation.
- c. The height of the equipment shall be 0.8 m (above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. Horizontal and vertical polarization of the antenna are set to make the measurement.
- d. 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 QuasiPeak detector mode will be re-measured.
- e. If the Peak Mode measured value is compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and no additional QP Mode measurement was performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos. Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

3.2.3 DEVIATION FROM TEST STANDARD No deviation.

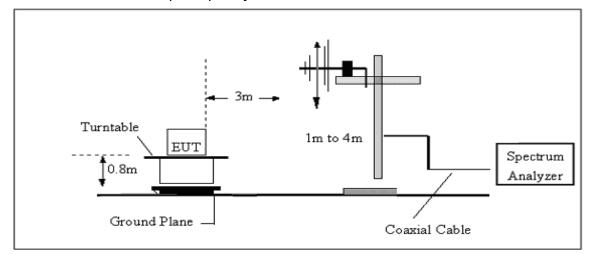


# 3.2.4 TESTSETUP

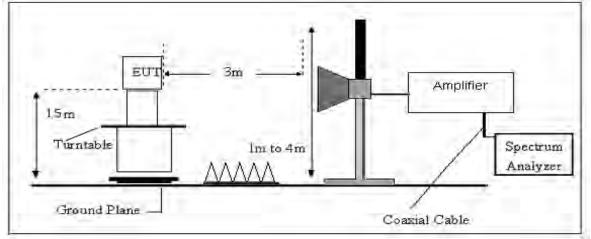


(A) Radiated Emission Test-Up Frequency Below 30MHz

(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



3.2.5 EUT OPERATING CONDITIONS Please refer to section 3.1.4 of this report.



# 3.2.6 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

For example

Frequency	FS	RA	AF	CL	AG	Factor
(MHz)	(dBµV/m)	(dBµV/m)	(dB)	(dB)	(dB)	(dB)
300	40	58.1	12.2	1.6	31.9	-18.1

Factor=AF+CL-AG



# 3.2.7 TEST RESULTS

#### Results of Radiated Emissions (9 KHz~30MHz)

No.	Frequency	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Remark
1*	-	-	-	-	-	-	-	See Note

Note:

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and the permissible value has no need to be reported.

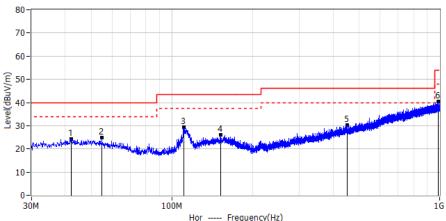
Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

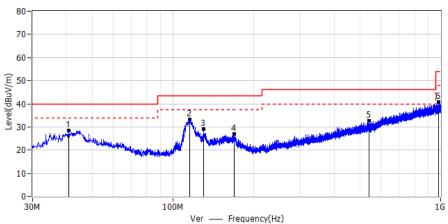


# Results of Radiated Emissions (30MHz~1000MHz)

Project: LGT25C177	Test Engineer: LiuH
EUT: Multi functional Bluetooth speaker	Temperature: 23°C
M/N: J2000-2	Humidity: 50%RH
Test Voltage: AC 120V/60Hz	Test Data: 2025-03-31
Test Mode: TX DH5 2402	
Note:	



	Hol Frequency(Hz)									
No.	Frequency	Reading	Factor	Level	Limit	Margin	Detector	Polar	Height	Degree
INO.	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Delector	FUIAI	(cm)	(deg)
1*	42.125	3.54	20.80	24.34	40.00	-15.66	QP	Hor	306	0
2*	54.856	4.31	20.42	24.73	40.00	-15.27	QP	Hor	208	189
3*	110.874	10.61	18.68	29.29	43.50	-14.21	QP	Hor	100	360
4*	151.978	4.32	21.61	25.93	43.50	-17.57	QP	Hor	120	166
5*	450.859	3.42	26.78	30.20	46.00	-15.80	QP	Hor	100	0
6*	990.785	5.56	35.03	40.59	54.00	-13.41	QP	Hor	100	0



No.	Frequency	Reading	Factor	Level	Limit	Margin	Detector	Polar	Height	Degree
NO.	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Delector	Folai	(cm)	(deg)
1*	41.034	7.91	20.65	28.56	40.00	-11.44	QP	Ver	100	47
2*	115.724	14.06	19.24	33.30	43.50	-10.20	QP	Ver	153	0
3*	130.274	8.28	20.86	29.14	43.50	-14.36	QP	Ver	222	360
4*	169.680	5.62	21.26	26.88	43.50	-16.62	QP	Ver	201	360
5*	538.886	4.84	27.89	32.73	46.00	-13.27	QP	Ver	100	360
6*	983.146	5.51	35.36	40.87	54.00	-13.13	QP	Ver	100	0



# Results of Radiated Emissions (Above 1000MHz)

Frequency	Reading	Corrected	Result	Limits	Margin	Detector	Delerity
(MHz)	(dBµV)	Factor (dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector	Polarity
L			Low Channe	l (2402 MHz)		1	
3264.69	56.19	-8.45	47.74	74.00	-26.26	PK	Vertical
3264.69	45.37	-8.45	36.92	54.00	-17.08	AV	Vertical
3264.66	56.34	-8.45	47.89	74.00	-26.11	PK	Horizontal
3264.66	46.68	-8.45	38.23	54.00	-15.77	AV	Horizontal
4804.57	54.20	-6.09	48.11	74.00	-25.89	PK	Vertical
4804.57	45.44	-6.09	39.35	54.00	-14.65	AV	Vertical
4804.36	55.31	-6.09	49.22	74.00	-24.78	PK	Horizontal
4804.36	44.57	-6.09	38.48	54.00	-15.52	AV	Horizontal
5359.77	57.44	-6.68	50.76	74.00	-23.24	PK	Vertical
5359.77	47.94	-6.68	41.26	54.00	-12.74	AV	Vertical
5359.82	57.42	-6.68	50.74	74.00	-23.26	PK	Horizontal
5359.82	48.39	-6.68	41.71	54.00	-12.29	AV	Horizontal
7205.85	61.02	-8.13	52.89	74.00	-21.11	PK	Vertical
7205.85	50.48	-8.13	42.35	54.00	-11.65	AV	Vertical
7205.86	60.76	-8.13	52.63	74.00	-21.37	PK	Horizontal
7205.86	50.08	-8.13	41.95	54.00	-12.05	AV	Horizontal
4		Ν	/liddle Chann	el (2441 MHz)			
3264.61	55.66	-8.45	47.21	74.00	-26.79	PK	Vertical
3264.61	46.55	-8.45	38.10	54.00	-15.90	AV	Vertical
3264.71	55.78	-8.45	47.33	74.00	-26.67	PK	Horizontal
3264.71	46.96	-8.45	38.51	54.00	-15.49	AV	Horizontal
4882.46	54.15	-6.09	48.06	74.00	-25.94	PK	Vertical
4882.46	44.77	-6.09	38.68	54.00	-15.32	AV	Vertical
4882.61	54.43	-6.09	48.34	74.00	-25.66	PK	Horizontal
4882.61	44.49	-6.09	38.40	54.00	-15.60	AV	Horizontal
5359.66	56.57	-6.68	49.89	74.00	-24.11	PK	Vertical
5359.66	47.25	-6.68	40.57	54.00	-13.43	AV	Vertical
5359.79	58.03	-6.68	51.35	74.00	-22.65	PK	Horizontal
5359.79	47.81	-6.68	41.13	54.00	-12.87	AV	Horizontal
7313.82	60.53	-8.13	52.40	74.00	-21.60	PK	Vertical
7313.82	50.61	-8.13	42.48	54.00	-11.52	AV	Vertical
7313.72	59.85	-8.13	51.72	74.00	-22.28	PK	Horizontal
7313.72	49.58	-8.13	41.45	54.00	-12.55	AV	Horizontal
I			High Channe	l (2480 MHz)			
3264.67	55.35	-8.45	46.90	74.00	-27.10	PK	Vertical



3264.67	46.29	-8.45	37.84	54.00	-16.16	AV	Vertical
3264.74	55.60	-8.45	47.15	74.00	-26.85	PK	Horizontal
3264.74	45.98	-8.45	37.53	54.00	-16.47	AV	Horizontal
4960.47	54.51	-6.09	48.42	74.00	-25.58	PK	Vertical
4960.47	45.43	-6.09	39.34	54.00	-14.66	AV	Vertical
4960.56	55.49	-6.09	49.40	74.00	-24.60	PK	Horizontal
4960.56	44.50	-6.09	38.41	54.00	-15.59	AV	Horizontal
5359.82	56.90	-6.68	50.22	74.00	-23.78	PK	Vertical
5359.82	46.99	-6.68	40.31	54.00	-13.69	AV	Vertical
5359.80	56.93	-6.68	50.25	74.00	-23.75	PK	Horizontal
5359.80	47.35	-6.68	40.67	54.00	-13.33	AV	Horizontal
7439.78	59.79	-8.13	51.66	74.00	-22.34	PK	Vertical
7439.78	50.37	-8.13	42.24	54.00	-11.76	AV	Vertical
7439.76	60.40	-8.13	52.27	74.00	-21.73	PK	Horizontal
7439.76	50.19	-8.13	42.06	54.00	-11.94	AV	Horizontal

#### Remark:

In frequency ranges 18~25GHz no any other harmonic emissions detected which are tested to compliance with the limit. No recording in the test report. No any other emissions level which are attenuated less than 20dB below the limit. No recording in the test report.



# 3.2.8 TEST RESULTS (BAND EDGE REQUIREMENTS)

Frequency	Reading	Corrected	Result	Limits	Margin	Detector	Polarity
(MHz)	(dBµV)	Factor (dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector	rolanty
			GF	SK			
2390.00	13.45	34.10	47.55	74.00	-26.45	PK	Vertical
2390.00	0.98	34.10	35.08	54.00	-18.92	AV	Vertical
2400.00	13.01	34.11	47.12	74.00	-26.88	PK	Vertical
2400.00	2.30	34.11	36.41	54.00	-17.59	AV	Vertical
2390.00	14.89	34.11	49.00	74.00	-25.00	PK	Horizontal
2390.00	2.52	34.11	36.63	54.00	-17.37	AV	Horizontal
2400.00	14.67	34.11	48.78	74.00	-25.22	PK	Horizontal
2400.00	2.93	34.11	37.04	54.00	-16.96	AV	Horizontal
2483.50	13.28	34.44	47.72	74.00	-26.28	PK	Vertical
2483.50	2.21	34.44	36.65	54.00	-17.35	AV	Vertical
2500.00	13.51	34.46	47.97	74.00	-26.03	PK	Vertical
2500.00	1.96	34.46	36.42	54.00	-17.58	AV	Vertical
2483.50	14.51	34.46	48.97	74.00	-25.03	PK	Horizontal
2483.50	2.37	34.46	36.83	54.00	-17.17	AV	Horizontal
2500.00	14.65	34.46	49.11	74.00	-24.89	PK	Horizontal
2500.00	2.28	34.46	36.74	54.00	-17.26	AV	Horizontal
			π/4-D0	QPSK			
2390.00	13.12	34.10	47.22	74.00	-26.78	PK	Vertical
2390.00	2.22	34.10	36.32	54.00	-17.68	AV	Vertical
2400.00	13.04	34.11	47.15	74.00	-26.85	PK	Vertical
2400.00	2.31	34.11	36.42	54.00	-17.58	AV	Vertical
2390.00	15.08	34.11	49.19	74.00	-24.81	PK	Horizontal
2390.00	1.62	34.11	35.73	54.00	-18.27	AV	Horizontal
2400.00	15.07	34.11	49.18	74.00	-24.82	PK	Horizontal
2400.00	2.78	34.11	36.89	54.00	-17.11	AV	Horizontal
2483.50	12.39	34.44	46.83	74.00	-27.17	PK	Vertical
2483.50	1.74	34.44	36.18	54.00	-17.82	AV	Vertical
2500.00	13.55	34.46	48.01	74.00	-25.99	PK	Vertical
2500.00	1.52	34.46	35.98	54.00	-18.02	AV	Vertical
2483.50	14.81	34.46	49.27	74.00	-24.73	PK	Horizontal
2483.50	3.37	34.46	37.83	54.00	-16.17	AV	Horizontal
2500.00	15.05	34.46	49.51	74.00	-24.49	PK	Horizontal
2500.00	1.65	34.46	36.11	54.00	-17.89	AV	Horizontal



			8DF	PSK			
2390.00	12.57	34.10	46.67	74.00	-27.33	PK	Vertical
2390.00	0.89	34.10	34.99	54.00	-19.01	AV	Vertical
2400.00	12.52	34.11	46.63	74.00	-27.37	PK	Vertical
2400.00	2.25	34.11	36.36	54.00	-17.64	AV	Vertical
2390.00	14.61	34.11	48.72	74.00	-25.28	PK	Horizontal
2390.00	2.66	34.11	36.77	54.00	-17.23	AV	Horizontal
2400.00	14.29	34.11	48.40	74.00	-25.60	PK	Horizontal
2400.00	2.94	34.11	37.05	54.00	-16.95	AV	Horizontal
2483.50	12.96	34.44	47.40	74.00	-26.60	PK	Vertical
2483.50	0.77	34.44	35.21	54.00	-18.79	AV	Vertical
2500.00	12.22	34.46	46.68	74.00	-27.32	PK	Vertical
2500.00	2.06	34.46	36.52	54.00	-17.48	AV	Vertical
2483.50	14.94	34.46	49.40	74.00	-24.60	PK	Horizontal
2483.50	2.70	34.46	37.16	54.00	-16.84	AV	Horizontal
2500.00	14.92	34.46	49.38	74.00	-24.62	PK	Horizontal
2500.00	2.37	34.46	36.83	54.00	-17.17	AV	Horizontal
Low measu	rement frequ	encies is rang	e from 2310	) to 2404 M⊢	lz, high mea	surement fre	equencies is
range from 2	2478 to 2500	MHz.					



# 4. CONDUCTED SPURIOUS & BAND EDGE EMISSION

#### 4.1 LIMIT

According to FCC section 15.247(d), in any 100kHz 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 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

#### 4.2 TEST PROCEDURE

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	30 MHz to 10th carrier harmonic
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

#### For Band edge

Spectrum Parameter	Setting
Detector	Peak
Start/Stan Fraguenau	Lower Band Edge: 2300 – 2407 MHz
Start/Stop Frequency	Upper Band Edge: 2475 – 2500 MHz
RB / VB (emission in restricted band)	100 KHz/300 KHz
Trace-Mode:	Max hold

#### For Hopping Band edge

Spectrum Parameter	Setting				
Detector	Peak				
Stort/Ston Fraguenov	Lower Band Edge: 2300– 2403 MHz				
Start/Stop Frequency	Upper Band Edge: 2479 – 2500 MHz				
RB / VB (emission in restricted band)	100 KHz/300 KHz				
Trace-Mode:	Max hold				





The EUT is connected to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 500hm; the path loss as the factor is calibrated to correct the reading. Tune the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, the span is set to be greater than RBW.

#### 4.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

#### 4.5 TEST RESULTS

For the measurement records, refer to the appendix I.

Note: Not recorded emission from 9 KHz to 30 MHz as emission level at least 20dBc lower than emission limit.



# 5. NUMBER OF HOPPING CHANNEL

## 5.1 LIMIT

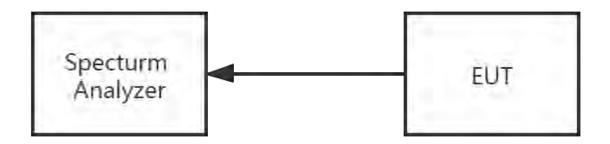
FCC Part 15.247, Subpart C				
Section	Test Item	Limit	FrequencyRange (MHz)	Result
15.247 (a)(1)(iii)	Number of Hopping Channel	≥15	2400-2483.5	PASS

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating FrequencyRange
RB	300KHz
VB	300KHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

#### 5.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Spectrum Setting: RBW= 300KHz, VBW=300KHz, Sweep time = Auto.

# 5.3 TEST SETUP



# 5.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

#### 5.5 TEST RESULTS



# 6. AVERAGE TIME OF OCCUPANCY

#### 6.1 LIMIT

FCC Part 15.247, Subpart C				
Section	Test Item	Limit	FrequencyRange (MHz)	Result
15.247 (a)(1)(iii)	Average Time of Occupancy	0.4sec	2400-2483.5	PASS

#### 6.2 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyzer.
- b. Set RBW =1MHz/VBW =3MHz.
- c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
- d. Sweep Time is more than once pulse time.
- Set the center frequency on any frequency would be measure and set the frequency span to e. zero span.
- f. Measure the maximum time duration of one single pulse.
- g. Set the EUT for DH5, DH3 and DH1 packet transmitting.
- $\check{h}$ . Measure the maximum time duration of one single pulse.
- i. DH5 Packet permit maximum 1600/ 79 / 6 = 3.37 hops per second in each channel (5 time slots RX, 1 time slot TX). So the number of pulses in the observation period of 31.6 seconds is 3.37 x 31.6 = 106.6.
- j. DH3 Packet permit maximum 1600 / 79 / 4 = 5.06 hops per second in each channel (3 time slots RX, 1 time slot TX). So the number of pulses in the observation period of 31.6 seconds is 5.06 x 31.6 = 160.
- k. DH1 Packet permit maximum 1600 / 79 / 2 = 10.12 hops per second in each channel (1 time slot RX, 1 time slot TX). So the number of pulses in the observation period of 31.6 seconds is 10.12 x 31.6 = 320.

6.3 TEST SETUP



#### 6.4 EUT OPERATION CONDITIONS Please refer to section 3.1.4 of this report.

#### 6.5 TEST RESULTS



# 7. HOPPING CHANNEL SEPARATION MEASUREMEN

#### 7.1 LIMIT

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Spectrum Parameter	Setting	
Attenuation	Auto	
Span Frequency	> 20 dB Bandwidth or Channel Separation	
RB	30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)	
VB	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)	
Detector	Peak	
Trace	Max Hold	
Sweep Time	Auto	

#### 7.2 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
- b. The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for 20 dB bandwidth measurement.
- c. The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for channel separation measurement.

7.3 TEST SETUP



#### 7.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

#### 7.5 TEST RESULTS



# 8. BANDWIDTH TEST

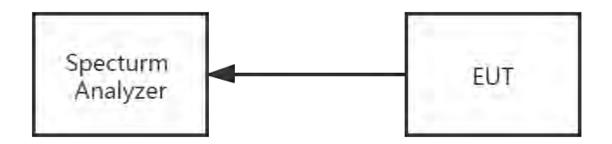
# 8.1 LIMIT

FCC Part15 15.247, Subpart C				
Section	Test Item	Limit	FrequencyRange (MHz)	Result
15.247 (a)(1)	Bandwidth	N/A	2400-2483.5	PASS

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)
VB	100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

#### 8.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Spectrum Setting: RBW= 30KHz, VBW=100KHz, Sweep time = Auto.
- 8.3 TEST SETUP



# 8.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

# 8.5 TEST RESULTS



# 9. OUTPUT POWER TEST

#### 9.1 LIMIT

FCC Part 15.247, Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
		1 W or 0.125W		
15.247 (a)(1)&(b)(1)	Output Power	if channel separation > 2/3 bandwidthprovided thesystems operatewith an output power no greater than125 mW(20.97dBm)	2400-2483.5	PASS

#### 9.2 TEST PROCEDURE

This is an RF-conducted test to evaluate maximum peak output power. Use a direct connection between the antenna port of the unlicensed wireless device and the spectrum analyzer, through suitable attenuation. The hopping shall be disabled for this test:

a) Use the following spectrum analyzer settings:

1) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.

2) RBW > 20 dB bandwidth of the emission being measured.

3) VBW ≥ RBW.

4) Sweep: Auto.

5) Detector function: Peak.

6) Trace: Max hold.

b) Allow trace to stabilize.

c) Use the marker-to-peak function to set the marker to the peak of the emission.

d) The indicated level is the peak output power, after any corrections for external attenuators and cables.

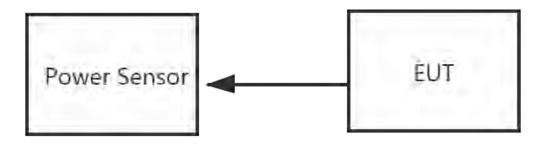
e) A plot of the test results and setup description shall be included in the test report.

NOTE—A peak responding power meter may be used, where the power meter and sensor system video bandwidth is greater than the occupied bandwidth of the unlicensed wireless device, rather than a spectrum analyzer.

PKPM1 Peak power meter method:

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DSS bandwidth and shall use a fast-responding diode detector.

9.3 TEST SETUP



9.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

#### 9.5 TEST RESULTS



# **10. ANTENNA REQUIREMENT**

#### 10.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: 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.

# 10.2 EUT ANTENNA

The EUT antenna is PCB Antenna. It comply with the standard requirement.



# **APPENDIX I - TEST RESULTS**

Annex A. Number of Hopping Frequency 1. Bluetooth For Classic\_Hopping 1.1 A.1-Number of Hopping Frequency 1-DH5

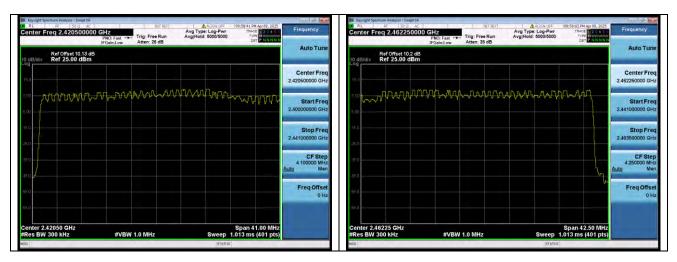
RBW (MHz)	Detector	Num of Hopping Freq	Limit (dB)	Verdict
0.3	Peak	79	15	Pass

Center 2.42050 GHz #Res BW 300 kHz	#VBW 1.0 MHz	Sweep 1.0	Span 41.00 MHz 013 ms (401 pts)		Center 2.46225 GHz #Res BW 300 kHz	#VBW 1.0 MHz	Span 42.50 Sweep 1.013 ms (401	MHz pts)
955.0				Freq Offset 0 Hz	-5610			Freq Offs
3870				CF Step 4.100000 MHz <u>Auto</u> Man	3890			CF Ste 4.250000 Mł <u>Auto</u> Ma
25.0				Stop Freq 2.441000000 GHz	-160			Stop Fre 2.483500000 GH
	MUMUMUM	mmmm	Juuluu	Start Freq 2.40000000 GHz	*∞ *∞	MUMMMM	huuuuuuuu	Start Fre 2.441000000 Ge
og (60				Center Freq 2.420500000 GHz	Log (5.0			Center Fr 2.462250000 G
Ref Offset 10.13 dE 0 dB/dlv Ref 25.00 dBm	IFGain:Low Atten: 26 dB	A MONTANA AND	DET PANNINN	Auto Tune	Ref Offset 10.2 dB	IFGain:Low Atten: 26 dB	DET 20	Auto Tur
RL 16 500 40 Center Freq 2.42050000	O GHZ PNO: Fast +++ Trig: Free Run	Avg Type: Log-Pwr Avg Hold: 5000/5000	09:53:49 PM Api 09, 2025 TRACE 2 2 4 5 1 Type M WWWWWW DET P 44 N N N N	Frequency	keyaght Spectrum enalyzer - Swept SA  R R S0 Ω 8L R S0 Ω 4C  Center Freq 2.462250000	PNO: Fast Trig: Free Run	Augino OFF 09:54:11 PM Acr 09 Avg Type: Log-Pwr TRace 10 Avg Hold: 6000/6000 ryfe	Frequency



#### 1.2 A.1-Number of Hopping Frequency 2-DH5

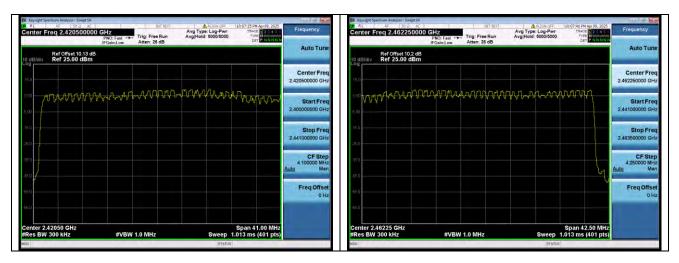
RBW (MHz)	Detector	Num of Hopping Freq	Limit (dB)	Verdict
0.3	Peak	79	15	Pass





#### 1.3 A.1-Number of Hopping Frequency 3-DH5

RBW (MHz)	Detector	Num of Hopping Freq	Limit (dB)	Verdict
0.3	Peak	79	15	Pass





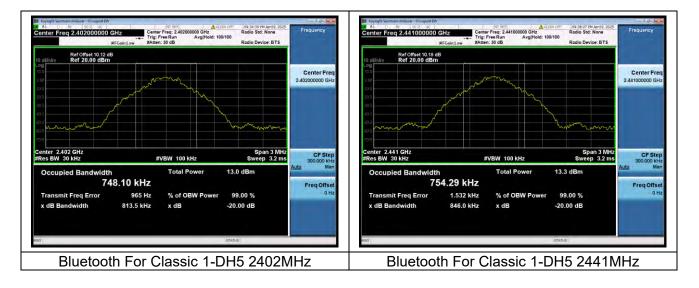
#### Annex A. Peak Output Power

EUT Frequency(MHz)	Mode	Detector	Level(dBm)	Limit(dBm)	Verdict
2402	1-DH5	Peak	6.66	21	Pass
2441	1-DH5	Peak	7.21	21	Pass
2480	1-DH5	Peak	9.1	21	Pass
2402	2-DH5	Peak	6.67	21	Pass
2441	2-DH5	Peak	6.16	21	Pass
2480	2-DH5	Peak	8.94	21	Pass
2402	3-DH5	Peak	6.69	21	Pass
2441	3-DH5	Peak	6.24	21	Pass
2480	3-DH5	Peak	8.96	21	Pass

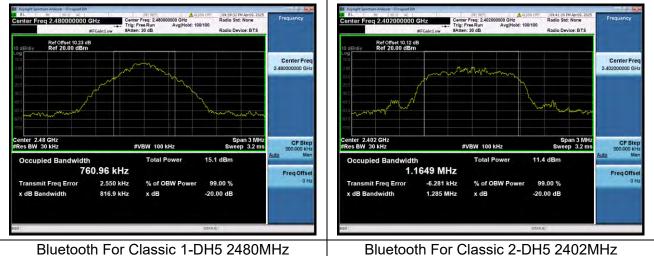


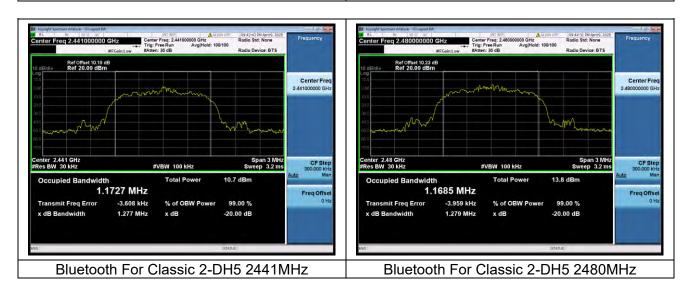
Annex A. 99%&20dB Bandwidth

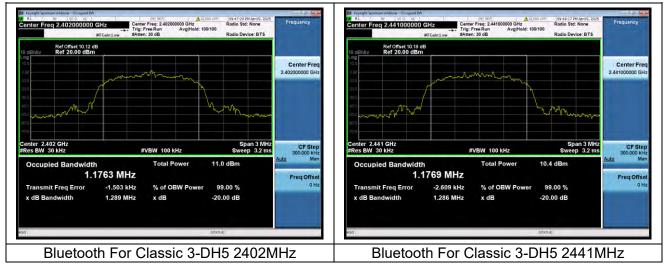
Center Frequency (MHz)	Mode	OBW Power (%)	XdB Down	RBW (MHz)	Detector	OBW (MHz)	XdB BandWidth (MHz)	Verdict
2402	1-DH5	99.00	20	0.03	Peak	0.7481	0.8135	Pass
2441	1-DH5	99.00	20	0.03	Peak	0.7543	0.861	Pass
2480	1-DH5	99.00	20	0.03	Peak	0.761	0.8169	Pass
2402	2-DH5	99.00	20	0.03	Peak	1.1649	1.285	Pass
2441	2-DH5	99.00	20	0.03	Peak	1.1727	1.277	Pass
2480	2-DH5	99.00	20	0.03	Peak	1.1685	1.279	Pass
2402	3-DH5	99.00	20	0.03	Peak	1.1763	1.289	Pass
2441	3-DH5	99.00	20	0.03	Peak	1.1769	1.286	Pass
2480	3-DH5	99.00	20	0.03	Peak	1.1729	1.275	Pass











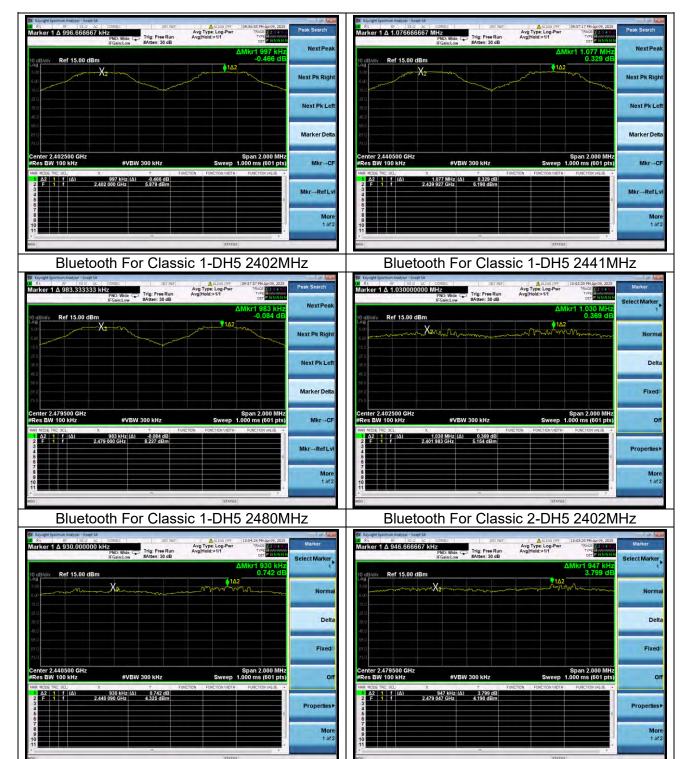




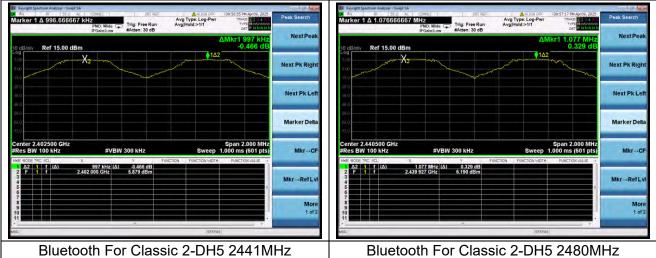


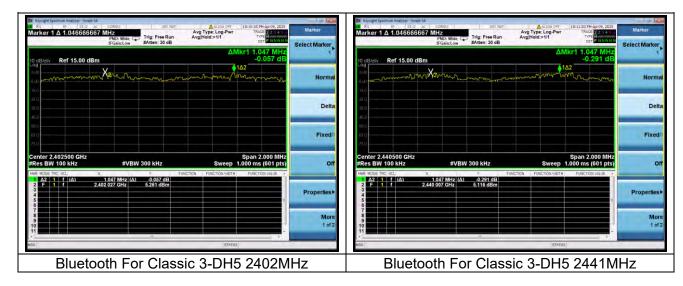
#### Annex A. Hopping Frequency Separation

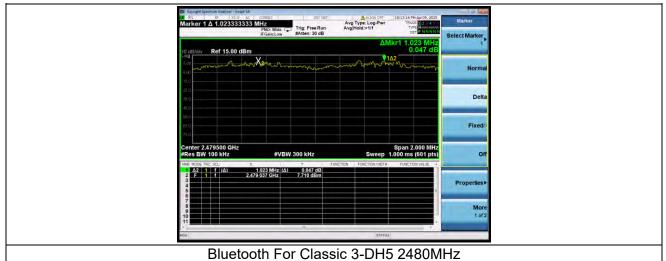
Center Frequency (MHz)	Mode	HFS (MHz)	Limit (MHz)	Verdict
2402	1-DH5	0.997	0.5423	Pass
2441	1-DH5	1.077	0.5740	Pass
2480	1-DH5	0.983	0.5446	Pass
2402	2-DH5	1.03	0.8567	Pass
2441	2-DH5	0.93	0.8513	Pass
2480	2-DH5	0.947	0.8527	Pass
2402	3-DH5	1.047	0.8593	Pass
2441	3-DH5	1.047	0.8573	Pass
2480	3-DH5	1.023	0.8500	Pass







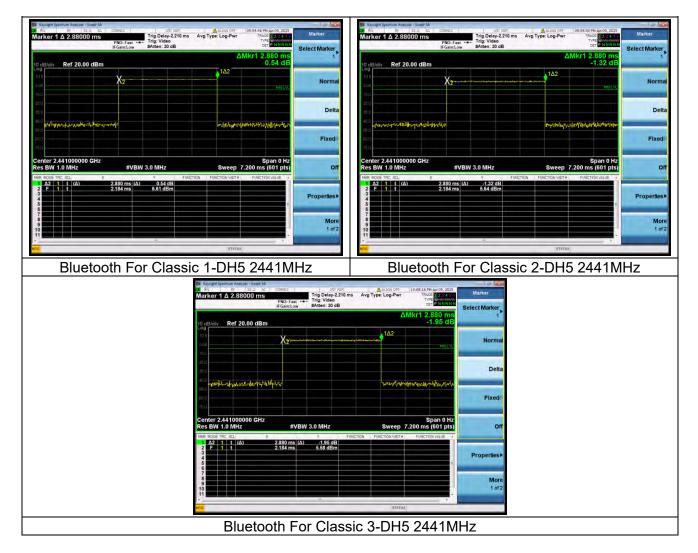






#### Annex A. Average Time of Occupancyc

Center Frequency (MHz)	Mode	Pulse Time (ms)	Dwell Time(s)	Limit (ms)	Verdict
2441	1-DH5	2.880	307.2	400	Pass
2441	2-DH5	2.880	307.2	400	Pass
2441	3-DH5	2.880	307.2	400	Pass





# Annex A. Conducted Spurious Emissions

# 1. Bluetooth For Classic

# 1.1 A.6-Conducted Spurious Emissions 1-DH5





#### 1.2 A.6-Conducted Spurious Emissions 1-DH5

	ncy(MHz)			Level(dBı	n)	
194	1.195			-22.537		
212	166.5			-37.816		
Net Freq 2.441000000 CH2 Avg PRO-Wide COPPEC INT PEF Net Freq 2.4410000000 CH2 Avg PRO-Wide CD Trig: Free Run IFGaincLow Avg	ALIGN 017 09:38:34 PM Apr09, 2025 Type: Log-Pwr TRACE 112 5 4 5 5 (Hold:>1/1 Trifle PLAN NT	ency Marker 2 1.94119500	AC CONVEC INT PEF 100000 GH2 PNO: Fast IFGain:Low #Atten: 30 dB	Avg Hold:>1/1		Search lext Peak
Bidiv Ref 20.00 dBm	Mkr1 2.441 000 GHz 6.590 dBm	10 dE/div Ref 20.00 d	Bm		1.941 2 GHz 22.537 dBm	
		ter Freq 10.0		Y I	Next	Pk Right
		art Freq 200 0000 GHz 300		2	Ne	xt Pk Left
		op Freq 60.0 5000 GHz -000	ang an		Mar	rker Delta
nter 2.441000 GHz es BW 100 kHz #VBW 300 kHz	Span 3.000 MHz Sweep 1.000 ms (601 pts) Auto	CF Step 0.000 kHz Man Start 0.030 GHz #Res BW 100 kHz	#VBW 300 kHz	S Sweep 284.0	top 3.000 GHz ms (4001 pts)	Mkr→CF
MODE THC SQL         X         Y         Function           N         1         f         2.441000 GHz         6.550 dBm	FUNCTION WIDTH FUNCTION VALUE	Iman         Iman <th< td=""><td>X Y FU 2,440 9 GHz 6,855 dBm 1,941 2 GHz -22.637 dBm</td><td>NCTION FUNCTION WIDTH</td><td>FUNCTION VALUE</td><td>RefLvi</td></th<>	X Y FU 2,440 9 GHz 6,855 dBm 1,941 2 GHz -22.637 dBm	NCTION FUNCTION WIDTH	FUNCTION VALUE	RefLvi
		7 8 9 10 11	<i>a</i> .			More 1 of 2
visitet Spectrum Analyzer «Sweet Sa	STATUS	MSG		STATUS		
ter 2 21.1665500000000 GHz PHO: Fast IF Gain:Low Arg	Auton Off 199.39:13 PM Apro9, 2025 Type: Log-Pwr TRACE Intel 4 So 4 So (Hold:>1/1 Trive Publish Mkr2 21.166 5 GHz Ne	earch ext Peak				
Eldiv Ref 20.00 dBm	-37.816 dBm					
	Station I	Pk Right				
	Mext	Pk Left				
	Mark	er Delta				
rt 3.00 GHz es BW 100 kHz #VBW 300 kHz	Stop 25.00 GHz Sweep 2.103 s (4001 pts)	/kr→CF				
BW 100 RH2 #VBW 300 RH2						
X         Y         FUNCTION           N         1         f         24,807 5 GHz         -35,343 dBm           N         1         f         21,166 5 GHz         -37,816 dBm	FUNCTION WIDTH FUNCTION VALUE					



#### 1.3 A.6-Conducted Spurious Emissions 1-DH5

.3 A.6-Conduct F	Frequency(MHz			vel(dBm)	
	2463.1725			27.551	
Keysight Spectrum Analyzer - Swept SA	16546.5		-	38.811	
RL RF SLOC AC CORREC nter Freq 2.480000000 GHz	Trig: Free Run #Atten: 30 dB	DET DECEMBER	Monte         R         State         AC         DOMRC         MT PRET           Marker 1 2.480250000000 GHz IFGenitow         PNC: Fast         Trig: Free Run #Atter: 30 dB	Avg Type: Log-Pwr Avg Type: Log-Pwr Avg/Hold:>1/1 Det Potestar	Peak Search
Eldiv Ref 20.00 dBm		r1 2.480 000 GHz Auto Tune 8.497 dBm	10 dB/div Ref 20.00 dBm	Mkr1 2.480 3 GHz 8.428 dBm	NextPeak
		Center Freq 2.480000000 GHz			Next Pk Right
		Start Freq 2.478600000 GHz	-360	¢2	Next Pk Left
		Stop Freq 2.481500000 GHz	46.0 600 		Marker Delta
enter 2.480000 GHz tes BW 100 kHz #VI		Span 3.000 MHz 5 1.000 ms (601 pts) Auto Man	Start 0.030 GHz #Res BW 100 kHz #VBW 300 kHz	Stop 3.000 GHz Sweep 284.0 ms (4001 pts)	Mkr→CF
MODE TRC SCL X N 1 1 2,480 000 GHz	Y FUNCTION FUNCTION WIDT 8,497 dBm	TH FUNCTION VALUE Freq Offset	MRR MODE TRC: SCL         X         Y           N         1         f         2.480 3 GHz         8.428 dBm           2         N         1         f         2.463 2 GHz         -27.551 dBm	FUNCTION FUNCTION WIDTH, FUNCTION VALUE	Mkr→RefLvi
		e .0 Hz	5 6 7		More
	<i>a.</i>		9 10 10 11 11 11 11 11 11 11 11 11 11 11		1 of 2
		rus	MSG	STATUS	
wysgift Spectrum Analyze - Swept SA	STAT				
RL RF SLO AC CORREC	INT PEF AvgType: Log-Pwr Trig: Free Run Avg[Hold:>1/1				
RL         PF         SH 2:         AC         COMPEC           arker 1 24.950500000000 GHz         PNO: Fast         PNO: Fast         PNO: Fast	Avg Type: Log-Pwi Trig: Free Run Avg[Hold:>1/1 #Atten: 30 dB				
RL RF Stor AC COMPEC rker 1 24.950500000000 GHz PRO: Fast IFGain:Low	Avg Type: Log-Pwi Trig: Free Run Avg[Hold:>1/1 #Atten: 30 dB	TRACE 012 0 4 5 TRACE 012 0 4 5 TYPE M DET P NNNIN			
RL RF SLO AC COMPAC rker 1 24.950500000000 GHz PNOC Fast IFGain:Low	Trig: Free Run Avg Type: Log-Pw AvgHold:>17 AvgHold:>17 Mt	USIO25 PA grov 202 Trace Desk Search Trace Desk Search Trace Desk Search Trace Desk Trace Desk Trace Desk Trace Desk Next Peak Next Pic Right			
RL RF 58.2 AC CONNEC arker 1 24.950500000000 GHz PNO: Fast IFGain:Low	Avg Type: Log-Pwi Trig: Free Run Avg[Hold:>1/1 #Atten: 30 dB	kr2 16,546 5 GH2 -38,811 dBm			
RL RF SIG AC CONNEC arker 1 24.950500000000 GHz PNO: Fast IFGain:Low	Trig: Free Run Avg Type: Log-Pw AvgHold:>17 AvgHold:>17 Mt	USIO25 PA grov 202 Trace Desk Search Trace Desk Search Trace Desk Search Trace Desk Trace Desk Trace Desk Trace Desk Next Peak Next Pic Right			
RF         312         AC         COVEC           er         124,95050000000000000000000000000000000000	Avg Type Log-Avg AvgType Log-AvgType Log-AvgType Log-AvgType Log-AvgType Log-AvgType Log-AvgTy	ISBOD SPA Grov, 202 The Conference of the Confe			
RE RE 382 AC CONSC Trker 1 24.950500000000 GHz PKC 482 HE/Sector HE/Secto	Avg Type: Log-Awg AvgType: Log-Awg AvgTy	UB-002 SPA gave, 322         Peak Search           Trade of the search         Next Peak           Total Search         Marker Delta           Stop 25.00 GHz         MkrCF           Part Consult         MkrCF			
RK         IP         Data & Counce         Counce           arrker 1 24.95050000000000000000000000000000000000	Avg Type. Log-Awg AvgType. Log-Awg AvgTy	ISBOOT PARTY 2007 Tree Party 2007 Next Pk Right Tree Party 2007 Next Pk Left Marker Delta			



#### 1.4 A.6-Conducted Spurious Emissions 2-DH5

0460 1705	Level(dBm)
<u>2463.1725</u> 16469.5	-31.717 -39.235
yught Spectrum Analyzer Swept SA	Kyuyit Spectrum Gelyzer Swept Sa
tter Freq 2.402000000 GHz Avg Type:Log-Pwr TRACE Trig: Free Run IFGaint.cvw #Atten: 30 dB Avg Hold>11 Trig: Free Run	Morker 1 2.401545000000 GHz     Poic Fact     Proc Fa
	Log uBlaiv Ref 20.00 dBm 1.260 dBm Log up to the second se
2.402000	
2.40550	141Freq 200 0000 GH2 400
Stc 2.403500	opp Freq and Anti-Anti-Anti-Anti-Anti-Anti-Anti-Anti-
Ker 2.402000 CH2         Span 3.000 MHz         Span 3.000 MHz         Source (1.00 ms (60 1 pts))           8 BW 100 KHz         \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$	CF Step Start 0.030 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 284.0 ms (4001 pts) Mkr→CF
N 1 f 2.402 155 GHz 6.030 dBm	1 Offset 3 N 1 1 2 2015 0H: 1 200 dBm 700000 700-00000 700-00000 700-00000 700-000000 700-000000 700-000000 700-000000 700-000000 700-0000000 700-0000000 700-0000000 700-00000000
- Tanai	
paget Spectrum Rank per Swapt M	
IFGeinLow #Atten: 30 dB Mkr2 16,499 50Hz Net	xt Peak
	rk Right
2 Next	Pk Left
Marke	er Deita
	Kr→CF
MODE FIRST SQL X Y PENCTON FORCTON WOTH FUNCTION VALUE N N 1 f 24.895 5 GHz - 34.295 dBm N 1 f 16.459 5 GHz - 39.235 dBm	RefLvi



#### 1.5 A.6-Conducted Spurious Emissions 2-DH5

Iter Freig 24.41000000 GHz Porting will get	Пециенс	ous Emissions 2-DH5 s <b>y(MHz)</b>	Lev	el(dBm)	
	2463.	915	-2	28.463	
	1639	98	-3	9.236	
prove Ref 20.00 dbm S.839 dbm Next Pk Right	and Section Realizer Server SA RF SS Cr. AC COPPEC INTREF ter Freq 2.4410000000 CH2 FYGSING ST FGSINC.vvid FGSINC.vvi	Avg Hold:>1/1 Tive Avg	Marker 1 2.440897500000 GHz	DET P NINK N N	
Start 0.000 CH2 Start	Plaiv Ref 20.00 dBm	5.654 dBm Center Freq	10 dBldiv Ref 20.00 dBm		Next Pk Right
Autor         Control         Control         Stop 3.000 GHz         Stop 3.000 GHz <t< td=""><td></td><td></td><td></td><td>-1/25-860 ∳2</td><td>Next Pk Left</td></t<>				-1/25-860 ∳2	Next Pk Left
NORE       RUL       X       Y       PARTION       PRACTON VALUE       Automation       Praction value	ter 2.441000 GHz	2,442500000 GHz	800 A	Stop 3.000 GHz	
synth Seemen Analyzer Speel Sa Are 121 G67000000000 GHz Front w 12 G6700000000 GHz Front w 12 G67000000000 GHz Front w 12 G6700000000 GHz Front w 12 G6700000000 GHz Front w 12 G6700000000 GHz Front w 12 G6700000000 GHz Front w 12 G67000000000 GHz Front w 12 G6700000000 GHz Front w 12 G6700000000 GHz Front w 12 G6700000000 GHz Front w 12 G67000000000 GHz Front w 12 G670000000000 GHz Front w 12 G670000000000 GHz Front w 12 G670000000000 GHz Front w 12 G670000000000 GHz Front w 12 G67000000000000 GHz Front w 12 G6700000000000 GHz Front w 12 G670000000000 GHz Front w 12 G6700000000000 GHz Front w 12 G6700000000000 GHz Front w 12 G6700000000000000 GHz Front w 12 G67000000000000000 GHz Front w 12 G6700000000000000000 GHz Front w 12 G670000000000000000000 GHz Front w 12 G67000000000000000000000000000000000000	NODE TRC SCL X Y FUNC	TON PUNCTION WIDTH FUNCTION VALUE ALLO Man	MKR MODE TRC SCL X Y FU		
Arg Freedung County Cou				ļ	
rker 1 21.66700000000 CHz PPGdeLow       Trig: FreeRun PCdel.ow       Avg Type: Log Per Avg Midd:>11       Trig: FreeRun PCdel.ow       Avg Midd:>11       Trig: FreeRun PCdel.ow       Next Peak         BDAIV       Ref 20.00 dBm       -39.236 dBm       Next Pic Kight       Next Peak         0       -39.236 dBm       -39.236 dBm       Next Pic Kight       Next Pic Kight         0       -39.236 dBm       -39.236 dBm       Next Pic Kight       Next Pic Kight         1       -39.236 dBm       -39.25 dBm       Next Pic Kight       Next Pic Kight         1       -39.236 dBm       -39.25 dBm       Next Pic Kight       Next Pic Kight         Next Pic Kight       -39.25 dB M       -39.25 dB M       Next Pic Kight         Next Pic Kight       -39.25 dB M       -39.25 dB M       Next Pic Kight         Next Pic Kight       -39.25 dB M       -39.25 dB M       Next Pic Kight         Next Pic Kight       -39.25 dB M       -39.25 dB M       MikrCF         Note The Side Area       -39.25 dB M       -39.25 dB M       MikrCF         N 1       1       -1       -39.25 dB M       -39.25 dB M       -39.25 dB M	sight Spectrum Analyzer - Swept SA	- 2 2	MSG	STATUS	
Next Pk Right Next Pk Len Marker Deta Marker Deta Marker Deta	PND: Fast D Ing: Free Run IFGain:Low #Atten: 30 dB	Avg Type: Log-Pwr Avg[Hold:>1/1 Type: Det Philini Mkr2 16.398 0 GH2 Next Peak			
Marker Deta		Next Pk Right			
Int 3.00 GH2 es BW 100 kH2 #VBW 300 kHZ Sweep 2.103 s (4001 pts) No 5 Tr2:51, x y Particle volta state of the state of th	فستستعد فالمحاصر فالمعاد والمحاصر والمناصر والمعالم				
N 1 1 7 21:670 OH2 35 290 dBm 1 1 1 532 00 dBm	SBW 100 kHz #VBW 300 kHz	Stop 25.00 GHz Sweep 2.103 s (4001 pts) Mkr⊸CF			
	N 1 7 21,657 0 GHz -35,250 dBm N 1 7 16,398 0 GHz -39,236 dBm				



#### 1.6 A.6-Conducted Spurious Emissions 2-DH5

	.6 A.6-Conducted Spurious Emissions 2-DH5 Frequency(MHz)			/el(dBm)		
2463.915			-28.148 -39.577			
16480.5						
RL RF 58.0 AC CORREC enter Freq 2.480000000 GHz PND: Wide Trig: Fr IFGeint.ow #Atten:	INT PEF         Auton off         08:44:38 PM Agro9, 2           Avg Type: Log-Pwr         TRACE 10 or TRACE 10 or 30 dB         Trace 10 or TRACE 10 or 30 dB         OFF	Frequency	RL RF SILG AC CORREC INT REF Marker 1 2.479507500000 GHz FRoind.ow Atten: 30 dB	ALIGN OFF 09:45:20 PM Apr.09, 2025 Avg Type: Log-Pwr Avg[Hold:>1/1 Type P to the P	Peak Search	
0 dB/div Ref 20.00 dBm	Mkr1 2.479 840 G 8.469 dE	Hz Auto Tune Sm	10 dB/div Ref 20.00 dBm	Mkr1 2.479 5 GHz 3.942 dBm	NextPeak	
		Center Freq 2.480000000 GHz	0.00		Next Pk Right	
		Start Freq 2.478500000 GHz	250	2 2	Next Pk Left	
500		Stop Freq 2.481500000 GHz		and the second	Marker Delta	
Center 2.480000 GHz Res BW 100 kHz #VBW 300 kH	Span 3.000 M Iz Sweep 1.000 ms (601 p	IHz CF Step 300.000 kHz Auto Man	Start 0.030 GHz #Res BW 100 kHz #VBW 300 kHz	Stop 3.000 GHz Sweep 284.0 ms (4001 pts)	Mkr→CF	
1         1         1         2.479 840 GHz         8.4691           3         -		Freq Offset 0 Hz	N         1         r         2.475         6.0Hz         3.942.dBm           3         N         1         r         2.463.9         6.Hz         -28.148.dBm           3         -         2.463.9         6.Hz         -28.148.dBm         -           6         -		Mkr—RefLvi More 1 of 2	
G Knyvight Spectrum Analyze - Swipt SA	STATUS		ss	STATUS		
RL         PF         Stig:         AC         COMPACE           Jarker 1 24.846000000000 GHz         Philip Fast         Trig:         F           Philip Genet.ow         FGenet.ow         Trig:         F           0 dB/dly         Ref 20.00 dBm         F         F	INT PET ALLON OFF 08-45-52 PM Apron. 2 ree Run 30 dB Mir/2 16.480 5 GI -38, 577 dE	Peak Search				
90 100 000	EA (F.	Next Pk Right				
25 0 20 0 26 0 <b>19 10 10 10 10 10 10 10 10 10 10 10 10 10 </b>	Manufacture and the second and the s	Next Pk Left				
500	Ston 25 00 G	Marker Delta				
Start 3.00 GHz Res BW 100 kHz #VBW 300 kH KR MODE TRIC SCL X Ŷ	FUNCTION FUNCTION WIDTH FUNCTION VALUE	Mkr→CF				
1 N 1 f 24,846 0 GHz -35,449 0 2 N 1 f 16,480 5 GHz -39,577 0	dBm dBm	Mkr→RefLvi				
		E				



#### 1.7 A.6-Conducted Spurious Emissions 3-DH5

16392.5 -38.653	Frequency 2463.9			Level(dBm)				
Add Same Same Same Same Same Same Same Same			-28.291 -38.653					
Number         Number<	A 10200000000000000000000000000000000000	A Alion OFF 08:47:27 PM Apr09, 2025 THACE DESCRIPTION gType: Log-Pwr THACE DESCRIPTION gThod:>1/1 reprint/	Marker 4.2 (02207600000 CH-	Koyuget Spentam Analyzer Sweet Ma     Kayuget Spentam Analyzer Sweet Ma     Kayuget Spentam Analyzer Sweet Marcel 2017     Kayuget Spentam Analyzer Sweet Marcel				
24000000000 senser 2.402000 GHz senser 2.40200 GHz		Mkr1 2.402 155 GHz Auto Tu		Mkr1 2,402 3 GHz 3,834 dBm				
The first fi				Next Pk Rig				
2400000 GHz REFUER 2402000 GHz REFUER 2402000 GHz REFUER 2402000 GHz Stop 3 000 Hz Stop 3 00 Hz Stop 2 0				¢ <sup>2</sup> Next Pk L				
Mixed No.       X       Y       Flacton Work       Flacton Work       Flacton Work       Flacton Work         0       1       2492195 GHz       5104 GBm       5104 GBm       Flacton Work       Flacton	au au au	Stop Fr 2.403500000 G		Marker De				
All and a statut       All and a statut <td< td=""><td></td><td></td><td></td><td></td></td<>								
1 Cruget System Makker Swept Si Avg Type: Log-Par J Caluet OF J Ca	N         T         Z.492 156 GHz         6 104 dBm         FUnction           3	FreqOff	1         N         1         f         2.402 3 GHz         3.834 dBm           2         N         1         f         2.463 9 GHz         -28.291 dBm           3         3         3         3         3         3	MkrRef				
Compart Systeman Hattyser Sweep State         And a rest 2 a 8735000000000 GHZ         The Free Run Hond 123 a g Automic 30 dB       The Free Run Automic 30 dB       The Free Run Automic 30 dB       Next Peak Search         O dElative Hond 123 a g Automic 30 dB       Storp 25.00 GHz       Next Peak         O dElative Hond 123 a g Automic 30 dB       Next Peak       Next Peak         O dElative Hond 123 a g Automic 30 dB       Next Peak       Next Peak         O dElative Hond 123 a g Automic 30 dB       Next Peak       Next Peak         O dElative Hond 123 a g Automic 30 dB       Next Peak       Next Peak         O dElative Hond 123 a g Automic 30 dB       Next Pk Left         Next Pk Left         Marker Dela         Next Pk Left         Next Pk Left <t< td=""><td>a'.</td><td>STATUS</td><td>11 (*</td><td></td></t<>	a'.	STATUS	11 (*					
If Galacies     If Galacies     Mkr2 16,392 5 CHz       dBJdiv     Ref 20.00 dBm     -38.653 dBm       -38.653 dBm     -38.653 dBm       -38.653 dBm     -38.653 dBm       -39.05 CHz     -39.05 CHz       -30.05 CHz     -39.05 CHz       -40 CHZ     -40 CHZ	Kaysight Spectrum Analyzer - Swept SA &L PF SILL AC CONVEC INT REF SILL AC CONVEC INT REF	A ALTON OCT DOMARCOR DA ANON 2020						
200       2       100	IFGain:Low #Atten: 30 dB	DET DEL COLONIA	ak					
Bio     Marker Deta       Start 3.00 GHz     #VBW 300 kHz       Start 3.00 GHz     Factors More Here       N     1     1       N     1       N     1       N     1       N     1       N     1		Next Pk Rig	the.					
Start         3.00 GHz         Stop         25.00 GHz           Res BW 100 kHz         #VBW 300 kHz         Sweep         2.103 c (400 f pts)           M N00FTR         Y         Function         Pancton worth         Function         Pancton worth           N         1         F         24.873 6 GHz         35.917 dBm         Pancton worth         Function wave		Anton Person Per	en .					
NRF MODE TRC: SCL X Y FUNCTION FUNCTION WOTH FUNCTION VALUE *  1 N 1 / 24.873 5 GHz -355 17 GHz 1 N 1 / 10.392 5 GHz -38 653 dBm			tia.					
1 N 1 f 24.873 6 0Hz 35.917 dBm 7 10 10 10 10 10 10 10 10 10 10 10 10 10			2F					
	XR         X         Y         Function           1         N         1         f         24.873 5 GHz         -35.917 dBm           2         N         1         f         16.392 5 GHz         -38.653 dBm           3							
	4	Mkr→Ref						



#### 1.8 A.6-Conducted Spurious Emissions 3-DH5

Frequence	8 A.6-Conducted Spurious Emissions 3-DH5 Frequency(MHz)			Level(dBm)			
2464.6575			-33.546				
16502.5			-38.774				
Regraded Spectrum Regramer - Samper Sale RL RF SB 02 AC COPPEC INT REF Center Freq 2.4441000000 GHz PRO: Wilde C IFGenLow #Atten: 30 dB	Auton Off 09:49:24 PM Apro9, 2025 Avg Type: Log-Pwr TRACE 12.04.5 Avg[Hold:>1/1 DTF PMURTH	Frequency	Regulation         Research         Second Computer         Computer <th>Z D: Fast Trig: Free Run #Atten: 30 dB</th> <th>Avg Type: Log-Pwr Avg Hold:&gt;1/1</th> <th>109:49:49 PM Apr 09, 2025 TRACE 1 2 D 4 5 0 TYPE M</th> <th>Peak Search</th>	Z D: Fast Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr Avg Hold:>1/1	109:49:49 PM Apr 09, 2025 TRACE 1 2 D 4 5 0 TYPE M	Peak Search
IFGaincLow #Atten: 30 db	Mkr1 2.441 155 GHz 5.574 dBm	Auto Tune	IQ dB/div Ref 20.00 dBm	tin:Low #Atten: 30 05	Mk	r1 2.440 9 GHz 5.383 dBm	Next Peak
		Center Freq 441000000 GHz	100 000				Next Pk Right
200 2511 200	24	Start Freq	10.0 25 0 30.0			-:443.480) } }	Next Pk Left
		Stop Freq		han a bar a san a sa			Marker Delta
Res BW 100 KHz #VBW 300 kHz	Span 3.000 MHz Sweep 1.000 ms (601 pts)		Start 0.030 GHz #Res BW 100 kHz	#VBW 300 kHz	Swaap 2	Stop 3.000 GHz 84.0 ms (4001 pts)	Mkr→CF
	CTION FUNCTION WIDTH FUNCTION VALUE -	Man	HAR MODE TRC SCL X N N 1 f 2.440 9 2 N 1 f 2.464 7	Y FU	NCTION FUNCTION WIDTH	FUNCTION VALUE	WIKT-+CP
2 3 4 5		Freq Offset 0 Hz	2 N T Y 2.464 / 3 5	GHZ -33.546 0BM			Mkr-Ref Lv
6 7 8 9			6 7 8 9				More
				a.			1 of 2
10 E. Keyvaght Spectrum Analyzer « Swept SA	STATUS		56		STATUS		
RL RF 58 2 AC COMPAC INT PAPE Marker 1 24.890000000000 GHz PND: Fast Trig: Free Run IFGeint.ow #Atten: 30 dB	Avg[Hold:>1/1 09F 09:50:07 PM Apro9, 2025 Avg Type: Log-Pwr TRACE 12.0 4 9 Avg[Hold:>1/1 TYPE PMININ	eak Search					
IFGain:Low #Atten: 30 dB	Mkr2 16.502 5 GHz -38.774 dBm	NextPeak					
		lext Pk Right					
10.0							
no	2	Next Pk Left					
10 // <sup>Makangan dan Secta Sector Anna Anna Anna Anna Anna Anna Anna Ann</sup>	الكم عتكر تغنيك وتعل	MarkerDelta					
tart 3.00 GHz Res BW 100 kHz #VBW 300 kHz	Stop 25.00 GHz Sweep 2.103 s (4001 pts)	Mkr→CF					
1 N 1 F 24.890 0 GHz -35.568 dBm 2 N 1 F 16.502 5 GHz -38.774 dBm 3		Mkr-Ref Lvi					
4	e						

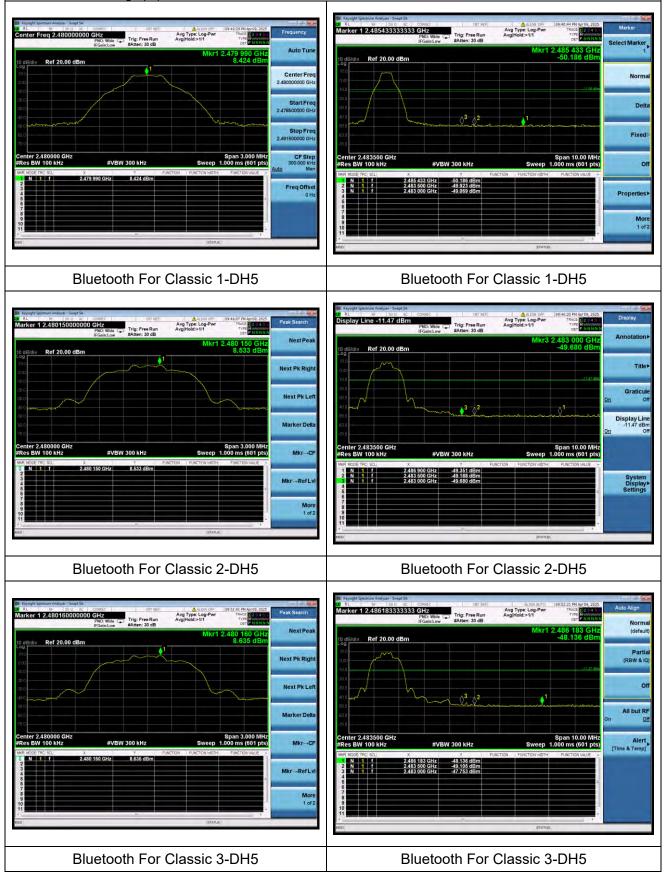


#### 1.9 A.6-Conducted Spurious Emissions 3-DH5

	cy(MHz)		el(dBm)			
2466.			-34.087			
165	30	-38.873				
Review Systeman adapter Swep Sa enter Freg 2.480000000 GHz PNO: Wide Trig: Free Run IFGainLow #Atten: 30 dB	Autor Off 19:50:47 PM Apr09, 2025 Avg Type: Log-Pwr TRACE 12:5 a c Avg Hold:>1/1 Trace 12:5 a c	A Reverse and the series of th	Average Type: Log-Pwr Avg Hold>1/1 Det P Average Type: Log-Pwr Avg Hold>1/1	Peak Search		
o dB/div Ref 20.00 dBm	Mkr1 2.480 160 GHz Auto Tune 8.420 dBm	10 dB/div Ref 20.00 dBm	Mkr1 2.480 3 GHz 7.761 dBm	NextPeak		
	Center Freq 2.480000000 GHz	000		Next Pk Right		
	Start Freq 2.47850000 GHz	100		Next Pk Lef		
20	Stop Freq 2.481500000 GHz		an a	MarkerDelta		
enter 2.480000 GHz Res BW 100 kHz #VBW 300 kHz	Span 3.000 MHz CF Step Sweep 1.000 ms (601 pts) Auto Man	Start 0.030 GHz #Res BW 100 kHz #VBW 300 kHz	Stop 3.000 GHz Sweep 284.0 ms (4001 pts)	Mkr-+CF		
1         1         7         2.480 160 GHz         8.420 dBm           3         4         5         5         5           4         5         5         5         5           5         5         5         5         5           6         5         5         5         5           6         5         5         5         5           6         5         5         5         5           6         5         5         5         5           6         5         5         5         5           6         5         5         5         5           6         5         5         5         5           6         5         5         5         5           6         5         5         5         5           7         5         5         5         5           8         5         5         5         5           8         5         5         5         5	Find Transformed Parcharvelue Freq Offset 0 Hz	1687 1005 TRC 5CL 7, 7 P N 1 1 2489 3 GHz - 7751 dBm 3 N 1 1 2489 1 GHz - 34097 dBm 5 N 1 1 2489 1 GHz - 34097 dBm	INCTION FUNCTION MOTH: FUNCTION VALUE +	Mkr—RefLv More 1 of 2		
	STATUS		STATUS			
Knyapht Spectrum Analyzer - Smipt Sa           Rk         pe         Sbox ac         rdispec         Init Rep           arker 1 24.741500000000 GHz	Avg Type: Log-Pwr TRACE   2015124 BM Apron, 2025 Avg Type: Log-Pwr TRACE   2016 B Apron, 2025 Avg Hold: 111					
HAIREI 724-74 ISUUUUUUUUU SIAZ PRO: Isaa Tig: Free Run IFGain:Low Atten: 30 dB	Avg Heid::>1/1 Mkr2 16.530 0 GHz -38.873 dBm					
	Next Pk Right					
	2 Next Pk Left					
	Marker Delta					
tart 3.00 GHz Res BW 100 kHz #VBW 300 kHz RR MODE TRC SCL X Y FUNC	Stop 25.00 GHz           Sweep 2.103 s (4001 pts)         Mkr-+CF           Tron         Function watch         Function watch					
1 N 1 7 24,741 5 GHz -34,952 dBm 2 N 1 7 16,530 0 GHz -38,873 dBm 3 4 5	Mkr→RefLvi					

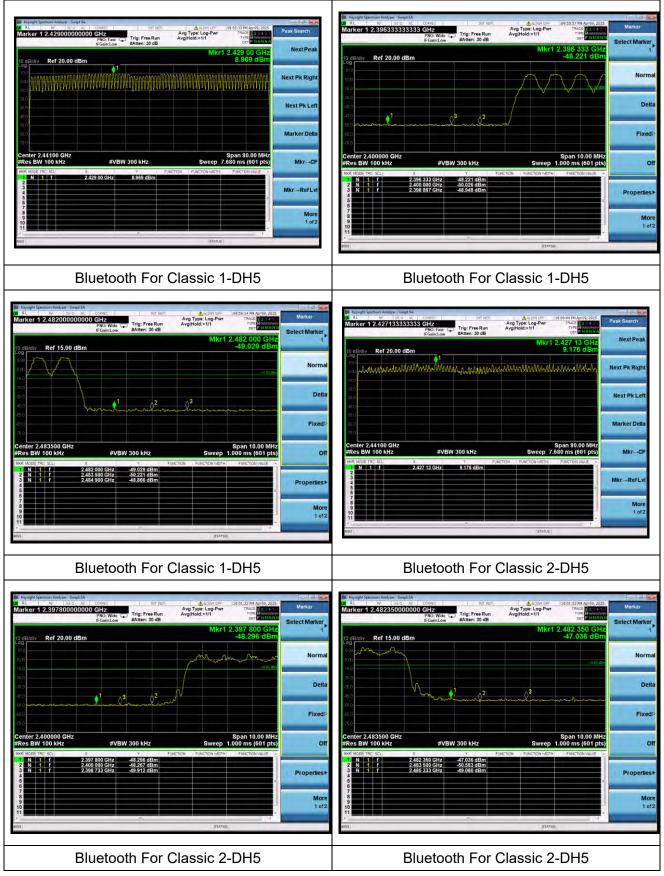


# Annex A. Bandedge(H)--CSE





# Annex A. Bandedge(hopping)--CSE

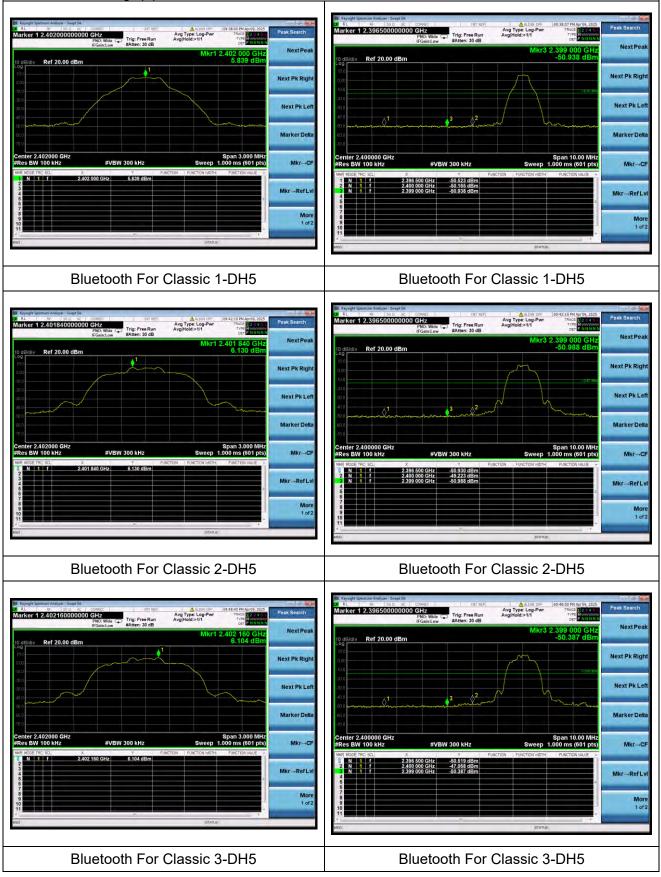








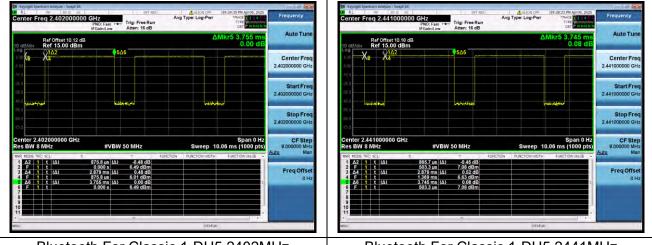
# Annex A. Bandedge(L)--CSE





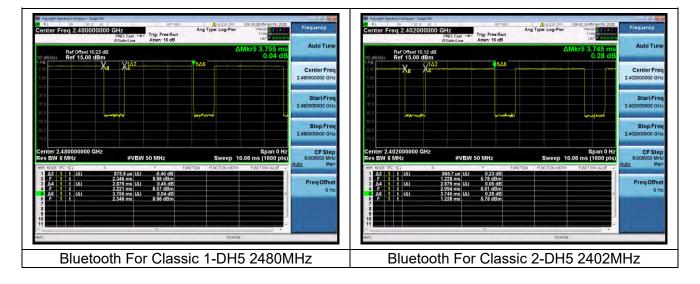
#### Annex A. Duty Cycle

Center Frequency(MHz)	Mode	Detector	Tx On (ms)	Tx Off (ms)	Period (ms)	Duty Cycle	Verdict
2402	1-DH5	Peak	2.879	0. 876	3.755	0.7668	Pass
2441	1-DH5	Peak	2.879	0.866	3.745	0.7688	Pass
2480	1-DH5	Peak	2.879	0. 876	3.755	0.7668	Pass
2402	2-DH5	Peak	2.879	0.866	3.745	0.7688	Pass
2441	2-DH5	Peak	2.879	0. 876	3.755	0.7668	Pass
2480	2-DH5	Peak	2.879	0. 876	3.755	0.7668	Pass
2402	3-DH5	Peak	2.879	0. 876	3.755	0.7668	Pass
2441	3-DH5	Peak	2.879	0.866	3.745	0.7688	Pass
2480	3-DH5	Peak	2.879	0.866	3.745	0.7688	Pass

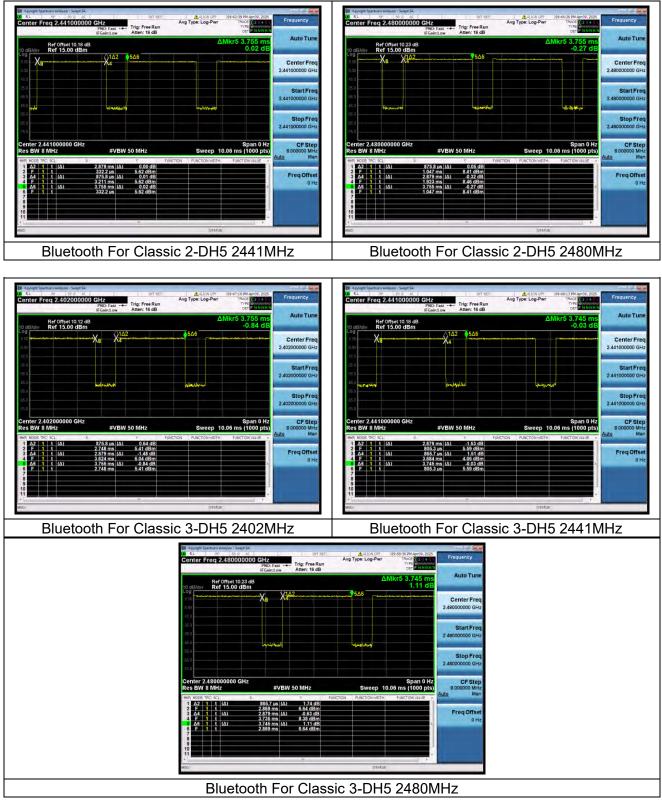


Bluetooth For Classic 1-DH5 2402MHz

Bluetooth For Classic 1-DH5 2441MHz









# **APPENDIX II - MEASUREMENT PHOTOS**

Note: Please see the attached RF\_Test Setup photos for FCC ID & IC 15C.

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