





FCC Test Report

FCC ID : IPH-A04580

Equipment : Marine Stereo

Model No. : A04580 Brand Name : FUSION

Applicant : Garmin International, Inc.

Address : 1200 E. 151st Street Olathe, KS 66062 United

States

Standard : 47 CFR FCC Part 15.247

Received Date : Dec. 18, 2024

Tested Date : Mar. 27 ~ Apr. 01, 2025

We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by: Approved by:

Along Cheஸ்// Assistant Manager 💢 Gary Chang / Mana

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- **Appendix F. Channel Separation**
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Release Record

Report No.	Version	Description	Issued Date
FR4D1802AD	Rev. 01	Initial issue	Jun. 04, 2025

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Summary of Test Results

FCC Rules	Test Items	Measured	Result	
15.207	AC Power Line Conducted Emission	Note ¹	N/A	
15.247(d)	Unwanted Emissions	[dBuV/m at 3m]: 344.06MHz	Pass	
15.209	Offwarted Effissions	43.54 (Margin -2.46dB) - QP	F a55	
15.247(d)	Band Edge	Meet the requirement of limit	Pass	
15.247(b)(1)	Conducted Output Power	Power [dBm]: 13.25	Pass	
15.247(a)(1)(iii)	Number of Hopping Channels	Meet the requirement of limit	Pass	
15.247(a)(1)	Hopping Channel Separation	Meet the requirement of limit	Pass	
15.247(a)(1)(iii)	Dwell Time	Meet the requirement of limit	Pass	
15.203	Antenna Requirement	Meet the requirement of limit	Pass	

N/A means Not Applicable.

Note¹: The EUT consumes DC power, so the test is not required.

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

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1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information							
Frequency Range (MHz) Bluetooth Ch. Frequency Channel Number Data							
2400-2483.5	BR	2402-2480	0-78 [79]	1 Mbps			
2400-2483.5	EDR	2402-2480	0-78 [79]	2 Mbps			
2400-2483.5	EDR	2402-2480	0-78 [79]	3 Mbps			

Note 1: RF output power specifies that Maximum Peak Conducted Output Power.

Note 2: Bluetooth BR uses a GFSK.

Note 3: Bluetooth EDR uses a combination of $\pi/4$ -DQPSK and 8DPSK.

1.1.2 Antenna Details

Brand	Model	Туре	Connector	Gain (dBi)
GARMIN	105-04581-00	Dipole	No	2.15

1.1.3 Power Supply Type of Equipment under Test (EUT)

Bower Cumply Type	42 / 24 VDC
Power Supply Type	12 / 24 VDC

1.1.4 Accessories

	Accessories					
No.	Equipment	Description				
1	Power + Speaker Cable	0.2m non-shielded without core Brand: FUSION / Model: 320-01021-01				
2 Audio Cable_1 0.2m shielded without core Brand: FUSION / Model:320-01022-02						
3	Audio Cable_2	0.2m shielded without core Brand: FUSION / Model: 320-01423-00				
4	NMEA2000 Cable	2m shielded without core Brand: FUSION / Model: 320-00387-00				

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1.1.5 Channel List

Frequency band (MHz)				2400~2483.5			
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		

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1.1.6 Test Tool and Duty Cycle

Test Tool	BT Test, V0.44 Bluetooth Simulator, Brand: R&S, Model: CMW270				
Modulation Mode	Duty Cycle Of Test Signal (%) Duty Factor (dB)				
DH5	71.33%	1.47			
2DH5	80.90%	0.92			
3DH5	77.00%	1.14			

1.1.7 Power Index of Test Tool

Modulation Mode	Test Frequency (MHz)			
Wodulation Wode	2402	2441	2480	
GFSK/1Mbps	Default	Default	Default	
π/4-DQPSK /2Mbps	Default	Default	Default	
8DPSK/3Mbps	Default	Default	Default	

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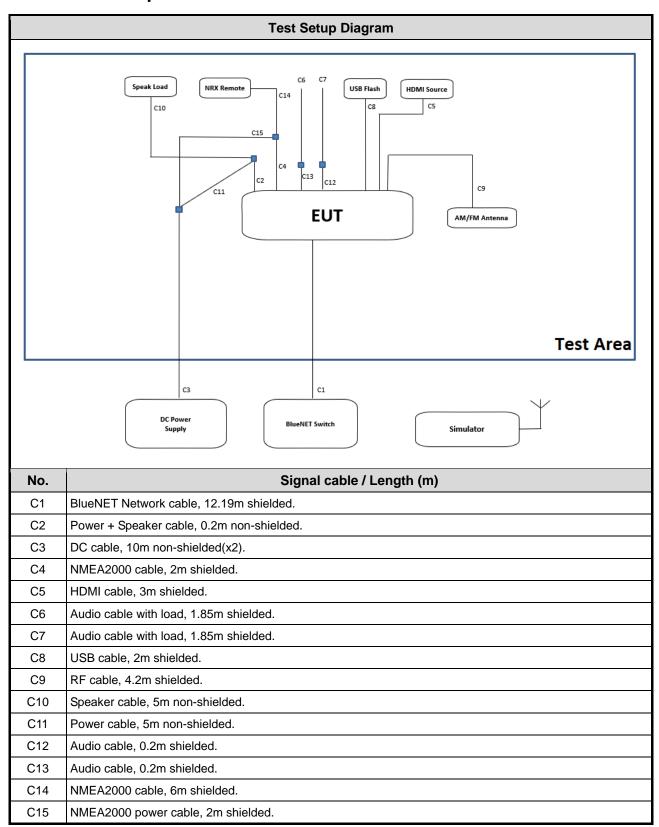
1.2 Local Support Equipment List

	Accessories							
No.	Equipment	Brand	Model	FCC ID	Remarks			
C2	Power + Speaker Cable	FUSION	320-01021-01		Provided by applicant.			
C12	Audio Cable	FUSION	320-01022-02		Provided by applicant.			
C13	Audio Cable	FUSION	320-01423-00		Provided by applicant.			
C4	NMEA2000 Cable	FUSION	320-00387-00		Provided by applicant.			
		Sı	upport Equipment L	_ist				
C1	BlueNET Network cable	GARMIN	320-01038-02		Provided by applicant.			
СЗ	DC Cable *2	ICC	DCC-10m-R DCC-10m-B					
C5	HDMI Cable	UNITEK	C1049GB		Provided by applicant.			
C6	Audio cable with load	FUSION	CA_AUD_1.85M		Provided by applicant.			
C7	Audio cable with load	FUSION	CA_AUD_1.85M		Provided by applicant.			
C8	USB extended cable	GARMIN	320-01674-00		Provided by applicant.			
C9	AM/FM Antenna	Techbrands	AR-3250		Provided by applicant.			
C10	Speaker cable	FUSION	CA_SPK_5M		Provided by applicant.			
C11	Power cable	FUSION	CA_PWR_5M		Provided by applicant.			
C14	NMEA2000 Cable	FUSION	320-00387-05		Provided by applicant.			
C15	NMEA2000 Cable	FUSION	320-00389-00		Provided by applicant.			
1	HDMI source	PX	HA2-130eS		Provided by applicant.			
2	USB Flash	SanDisk	SDDDC4-032G- G46		Provided by applicant.			
3	NRX Remote	FUSION	MS-NRX300		Provided by applicant.			
4	Speak load	FUSION	LD_4R100W-4C		Provided by applicant.			
5	BlueNet Switch	GARMIN	A04222		Provided by applicant.			
6	DC Power supply	GW INSTEK	GPC-6030D					

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1.3 Test Setup Chart



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1.4 The Equipment List

Test Item	Radiated Emission							
Test Site	966 chamber3 / (03Cl	H03-WS)						
Tested Date	Mar. 27, 2025							
Instrument	Brand Model No. Serial No. Calibration Date Calibratio							
Wireless connectivity tester	R&S	CMW270	100856	Nov. 14, 2024	Nov. 13, 2025			
Receiver	R&S	ESR3	101657	Mar. 11, 2025	Mar. 10, 2026			
Spectrum Analyzer	R&S	FSV40	101499	Mar. 27, 2025	Mar. 26, 2026			
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 05, 2024	Nov. 04, 2025			
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Jul. 02, 2024	Jul. 01, 2025			
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Dec. 20, 2024	Dec. 19, 2025			
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 18, 2024	Nov. 17, 2025			
Preamplifier	EMC	EMC02325	980187	Jun. 27, 2024	Jun. 26, 2025			
Preamplifier	EMC	EMC118A45SE	980897	Aug. 05, 2024	Aug. 04, 2025			
Preamplifier	EMC	EMC184045SE	980903	Jul. 30, 2024	Jul. 29, 2025			
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 02, 2024	Oct. 01, 2025			
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800 -001	Sep. 20, 2024	Sep. 19, 2025			
LF cable-3M	EMC	EMC8D-NM-NM-300 0	131103	Sep. 20, 2024	Sep. 19, 2025			
LF cable-13M	EMC	EMC8D-NM-NM-130 00	131104	Sep. 20, 2024	Sep. 19, 2025			
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Sep. 20, 2024	Sep. 19, 2025			
RF cable-8M	EMC	EMC104-SM-SM-80 00	181107	Sep. 20, 2024	Sep. 19, 2025			
Attenuator	Pasternack	PE7005-10	10-3	Sep. 20, 2024	Sep. 19, 2025			
HIGHPASS FILTER	WI	WHK3.1-18G-10SS	43	Sep. 20, 2024	Sep. 19, 2025			
Measurement Software	Sporton	SENSE-EMI	V5.11	NA	NA			
Measurement Software	Sporton	SENSE-15247_DTS	V5.11	NA	NA			
Note: Calibration Inter	val of instruments liste	d above is one year.			•			

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Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Apr. 01, 2025				
Instrument	Brand	Model No.	Serial No.	Calibration Date	Calibration Until
Wireless connectivity tester	R&S	CMW270	100856	Nov. 14, 2024	Nov. 13, 2025
Spectrum Analyzer	R&S	FSV40	101910	Apr. 18, 2024	Apr. 17, 2025
Power Meter	Anritsu	ML2495A	1241002	Nov. 26, 2024	Nov. 25, 2025
Power Sensor	Anritsu	MA2411B	1207366	Nov. 26, 2024	Nov. 25, 2025
Attenuator	Pasternack	PE7005-10	10-2	Oct. 04, 2024	Oct. 03, 2025
Measurement Software	Sporton	SENSE-15247_FS	V5.11	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

47 CFR FCC Part 15.247 ANSI C63.10-2013

1.6 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

1.7 Deviation from Test Standard and Measurement Procedure

None

1.8 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Measurement Uncertainty			
Parameters	Uncertainty		
Bandwidth	±34.130 Hz		
Conducted power	±0.808 dB		
Power density	±0.583 dB		
Conducted emission	±2.715 dB		
AC conducted emission	±2.92 dB		
Unwanted Emission ≤ 1GHz	±3.96 dB		
Unwanted Emission > 1GHz	±4.51 dB		
Time	±0.1%		

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2 Test Configuration

2.1 Testing Facility

Test Laboratory	International Certification Corporation
Test Site	CO01-WS, TH01-WS
Address of Test Site	No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)
Test Site	03CH03-WS
Address of Test Site	No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 333, Taiwan (R.O.C.)

FCC Designation No.: TW0009FCC site registration No.: 207696

➤ ISED#: 10807C

➤ CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate (Mbps)	Test Configuration
Conducted Emissions Radiated Emissions ≤ 1GHz	GFSK	2441	1Mbps	
Radiated Emissions > 1GHz	GFSK 8DPSK	2402, 2441, 2480 2402, 2441, 2480	1Mbps 3Mbps	
Conducted Output Power	GFSK л/4 DQPSK 8DPSK	2402, 2441, 2480 2402, 2441, 2480 2402, 2441, 2480	1Mbps 2Mbps 3Mbps	
Number of Hopping Channels	GFSK л/4 DQPSK 8DPSK	2402~2480 2402~2480 2402~2480	1Mbps 2Mbps 3Mbps	
Hopping Channel Separation 20dB and Occupied bandwidth	GFSK л/4 DQPSK 8DPSK	2402, 2441, 2480 2402, 2441, 2480 2402, 2441, 2480	1Mbps 2Mbps 3Mbps	
Dwell Time	GFSK л/4 DQPSK 8DPSK	2402 2402 2402	1Mbps 2Mbps 3Mbps	

NOTE:

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The EUT supports DC 12V and 24V, both options were assessed and DC 12V was found to be the worst case and was selected for the final test.



3 Transmitter Test Results

3.1 Unwanted Emissions into Restricted Frequency Bands

3.1.1 Limit of Unwanted Emissions into Restricted Frequency Bands

Restricted Band Emissions Limit					
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)		
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300		
0.490~1.705	24000/F(kHz)	33.8 - 23	30		
1.705~30.0	30	29	30		
30~88	100	40	3		
88~216	150	43.5	3		
216~960	200	46	3		
Above 960	500	54	3		

Note 1:

Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit **Note 2**:

Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

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3.1.2 Test Procedures

- Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
- 2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
- 3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

3.

- 1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
- 2. Radiated emission above 1GHz / Peak value RBW=1MHz, VBW=3MHz and Peak detector

Radiated emission above 1GHz / Average value for harmonics
The average value is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula for DH5 packet type which has worst duty factor:

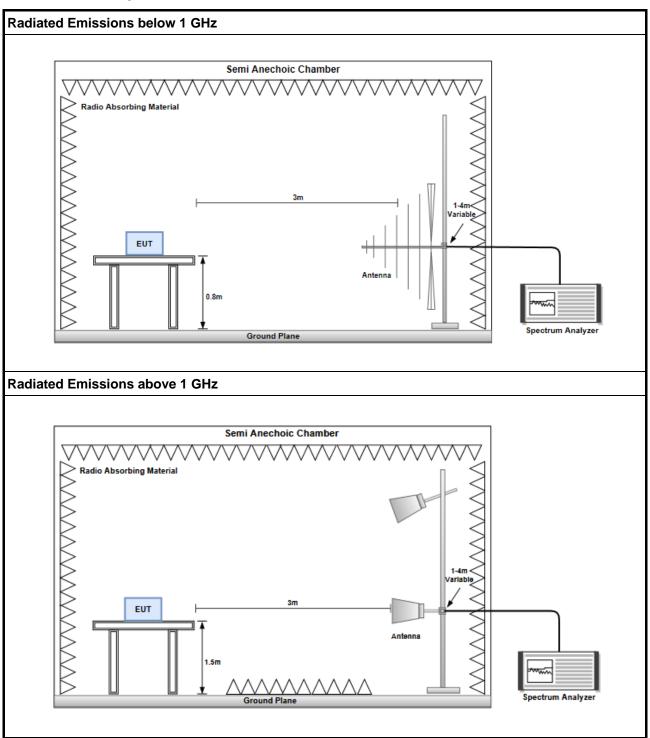
20log (Duty cycle) = 20log
$$\frac{1s / 1600 * 5}{100 \text{ ms}}$$
 = -30.1dB

4. Radiated emission above 1GHz / Average value for other emissions RBW=1MHz, VBW=1/T and Peak detector

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3.1.3 Test Setup



3.1.4 Test Results

Ambient Condition	24°C / 63%	Tested By	Sean Yu / Brad Wu
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Refer to Appendix A.

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3.2 Unwanted Emissions into Non-Restricted Frequency Bands

3.2.1 Limit of Unwanted Emissions into Non-Restricted Frequency Bands

Peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

3.2.2 Test Procedures

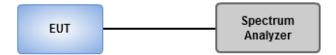
Reference level measurement

- 1. Set RBW=100kHz, VBW = 300kHz, Detector = Peak, Sweep time = Auto
- 2. Trace = max hold, Allow Trace to fully stabilize
- 3. Use the peak marker function to determine the maximum PSD level

Emission level measurement

- 1. Set RBW=100kHz, VBW = 300kHz, Detector = Peak, Sweep time = Auto
- 2. Trace = max hold, Allow Trace to fully stabilize
- 3. Scan Frequency range is up to 25GHz
- 4. Use the peak marker function to determine the maximum amplitude level

3.2.3 Test Setup



3.2.4 Test Results

Ambient Condition	22°C / 66%	Tested By	Akun Chung

Refer to Appendix B.

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3.3 Conducted Output Power

3.3.1 Limit of Conducted Output Power

1 Watt
For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band.
0.125 Watt For all other frequency hopping systems in the 2400–2483.5 MHz band.
0.125 Watt For Frequency hopping systems operating in the 2400–2483.5 MHz band have hopping channel carrier frequencies that are separated by two-thirds of the 20 dB bandwidth of the hopping channel.

3.3.2 Test Procedures

- A wideband power meter is used for power measurement. Bandwidth of power senor and meter is 50MHz
- 2 If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power

3.3.3 Test Setup



3.3.4 Test Results

Ambient Condition 22°C / 66% Tested By Akun Chung	Ambient Condition	22°C / 66%	Tested By	Akun Chung
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Refer to Appendix C.

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3.4 Number of Hopping Frequency

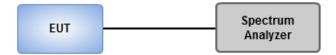
3.4.1 Limit of Number of Hopping Frequency

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels.

3.4.2 Test Procedures

- 1. Set RBW = 100kHz, VBW = 300kHz, Sweep time = Auto, Detector = Peak Trace max hold.
- 2 Allow trace to stabilize.

3.4.3 Test Setup



3.4.4 Test Results

Ambient Condition	22°C / 66%	Tested By	Akun Chung

Refer to Appendix D.

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3.5 20dB and Occupied Bandwidth

3.5.1 Test Procedures

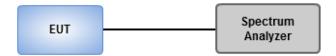
20dB Bandwidth

- 1. Set RBW=20kHz, VBW=100kHz, Sweep time = Auto, Detector=Peak, Trace max hold
- 2 Allow trace to stabilize
- 3 Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

Occupied Bandwidth

- 1. Set RBW=20kHz, VBW=100kHz, Sweep time = Auto, Detector=Sample, Trace max hold
- 2 Allow trace to stabilize
- 3. Use Occupied bandwidth function of spectrum analyzer to measuring 99% occupied bandwidth

3.5.2 Test Setup



3.5.3 Test Results

Refer to Appendix E.

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3.6 Channel Separation

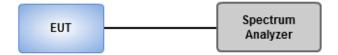
3.6.1 Limit of Channel Separation

- 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.
- 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.

3.6.2 Test Procedures

- 1. Set RBW=30kHz, VBW=100kHz, Sweep time = Auto, Detector=Peak Trace max hold
- 2 Allow trace to stabilize
- 3 Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The EUT shall show compliance with the appropriate regulatory limit

3.6.3 Test Setup



3.6.4 Test Results

Ambient Condition	22°C / 66%	Tested By	Akun Chung
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Refer to Appendix F.

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3.7 Number of Dwell Time

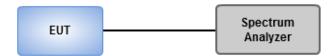
3.7.1 Limit of Dwell time

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.

3.7.2 Test Procedures

- 1. Set RBW=300 kHz, VBW=1 MHz, Sweep time=8 ms, Detector=Peak, Span=0 Hz, Trace max hold.
- 2 Enable gating and trigger function of spectrum analyzer to measure burst on time.
- 3. Set RBW=300 kHz, VBW=1 MHz, Sweep time=5 s / 2 s, Detector=Peak, Span=0 Hz, Trace max hold.
- 4. Enable gating and trigger function of spectrum analyzer to measure burst on number of transmission.
- 5 Set RBW=300 kHz, VBW=1 MHz, Sweep time=31.6 s / 8 s, Detector=Peak, Span=0 Hz,Trace max hold.
- 6 Enable gating and trigger function of spectrum analyzer to measure burst on number of transmission of entire time cycle.

3.7.3 Test Setup



3.7.4 Test Results

Ambient Condition 22	2°C / 66%	Tested By	Akun Chung
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Refer to Appendix G.

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4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

Linkou

Tel: 886-2-2601-1640 No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.)

Kwei Shan

Tel: 886-3-271-8666
No.3-1, Lane 6, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)
No.2-1, Lane 6, Wen San 3rd
St., Kwei Shan Dist., Tao Yuan
City 33381, Taiwan (R.O.C.)

Kwei Shan Site II

Tel: 886-3-271-8640 No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666 Fax: 886-3-318-0345

Email: ICC_Service@icertifi.com.tw

==END==

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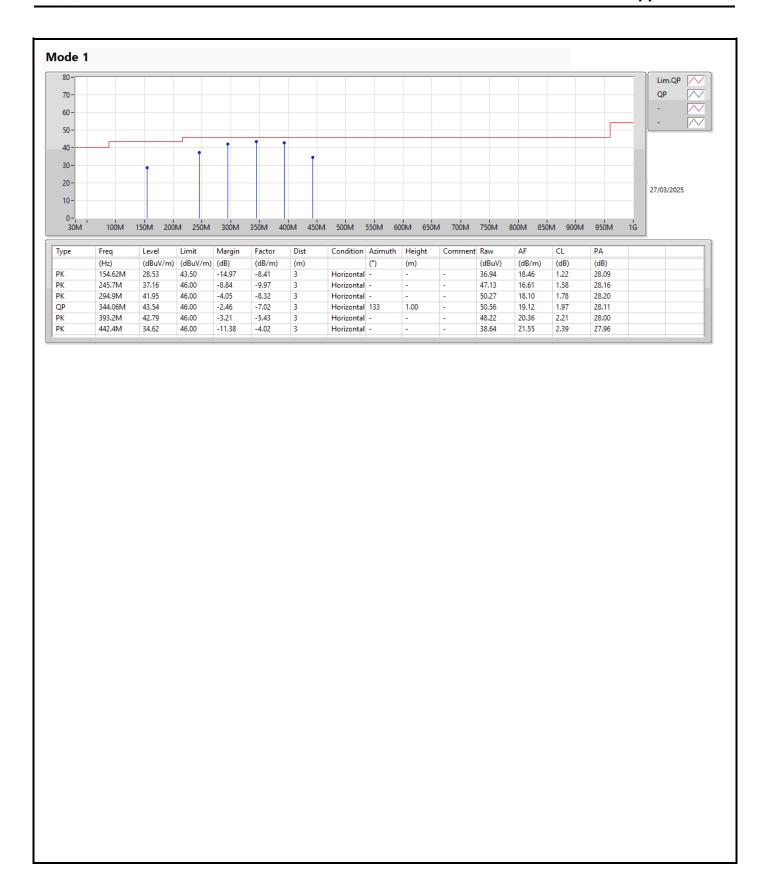
Appendix A.1

Summary

Mode	Result	Туре	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 1	Pass	QP	344.06M	43.54	46.00	-2.46	Horizontal

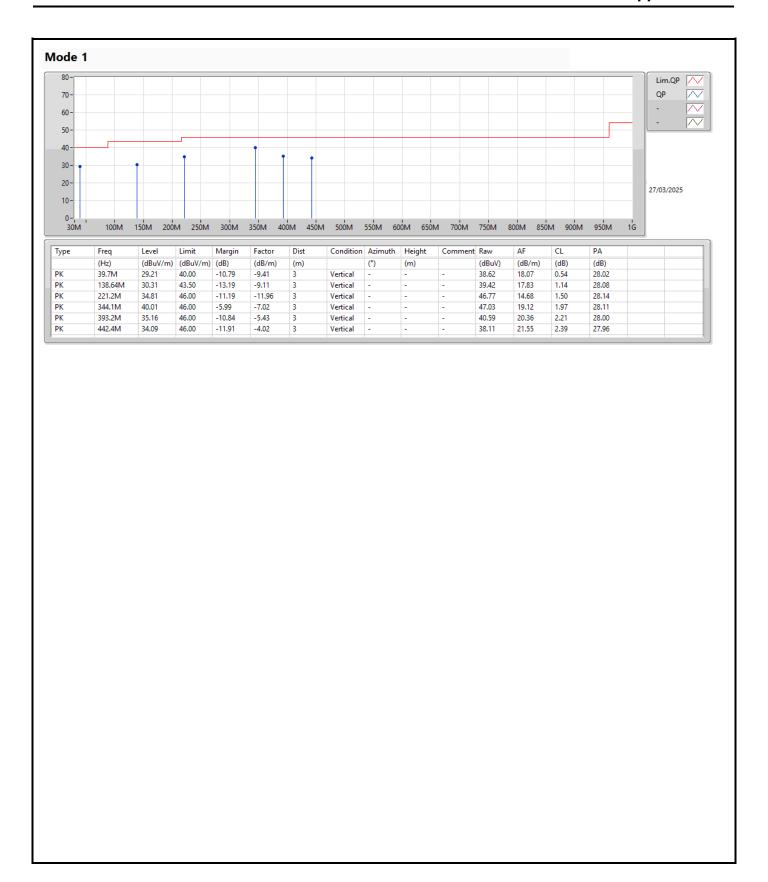
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Appendix A.1



Report No.: FR4D1802AD Page No. : 2 of 3

Appendix A.1



Report No.: FR4D1802AD Page No. : 3 of 3

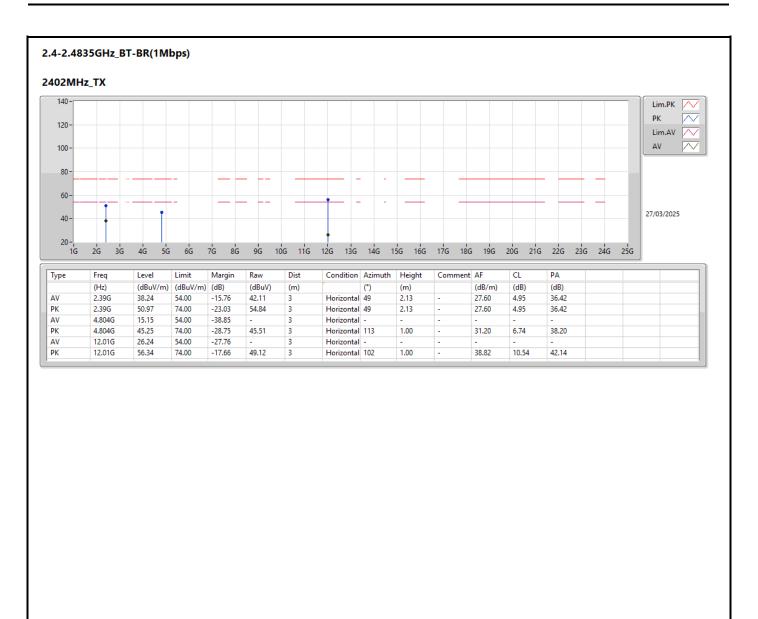


Appendix A.2

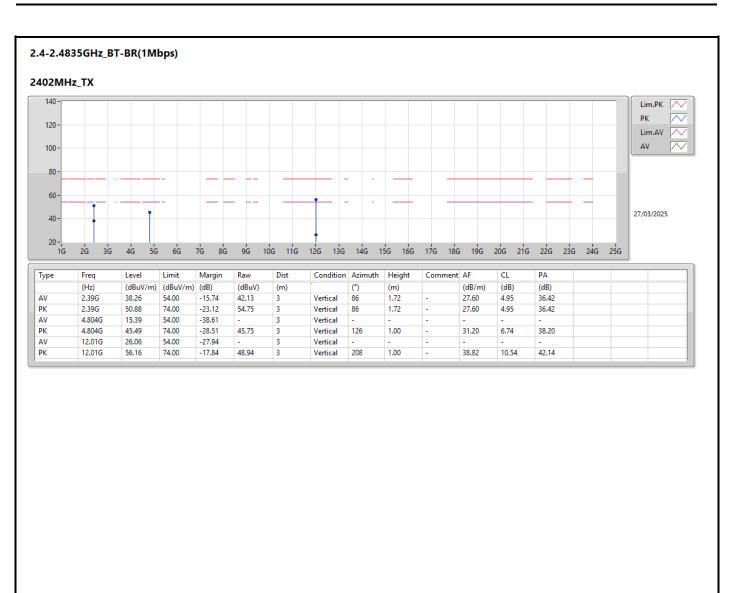
Summary

Mode	Result	Type	Freq	Level	Limit	Margin	Dist	Condition	Azimuth	Height	Comments
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(m)		(°)	(m)	
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-
BT-BR(1Mbps)	Pass	AV	2.4835G	39.88	54.00	-14.12	3	Vertical	89	1.58	-
BT-EDR(3Mbps)	Pass	AV	2.4835G	41.90	54.00	-12.10	3	Vertical	94	1.63	-

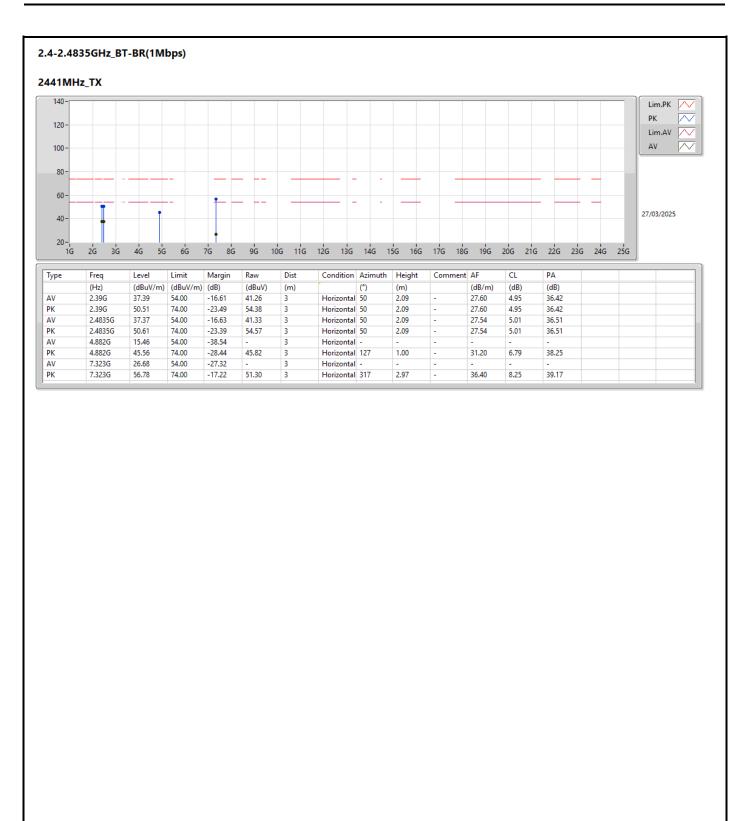
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Appendix A.2

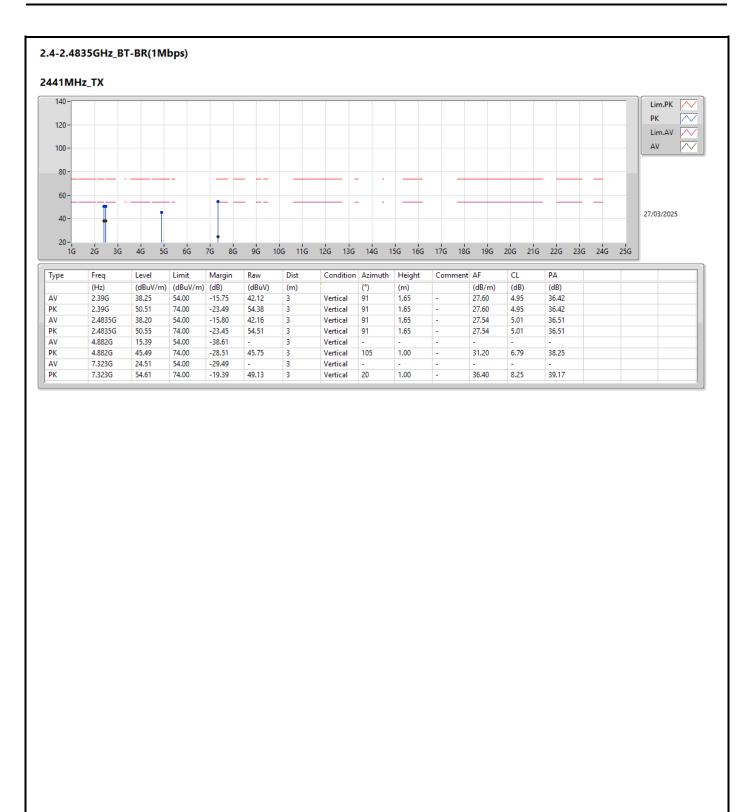


Appendix A.2



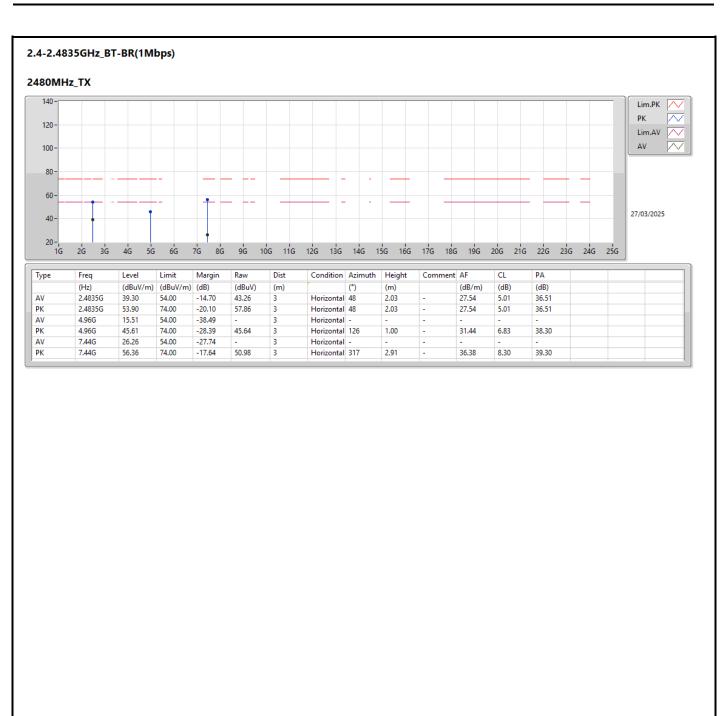
Report No.: FR4D1802AD Page No. : 4 of 13

Appendix A.2

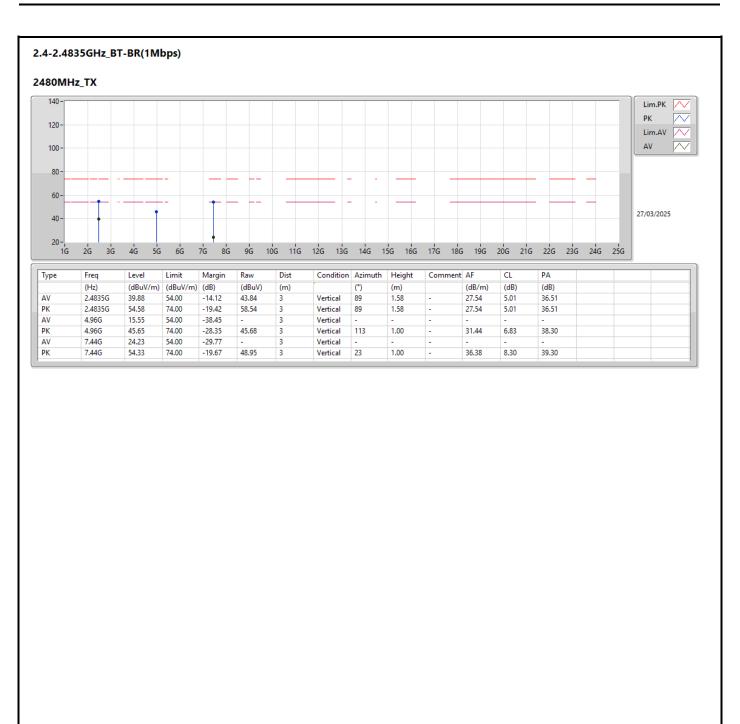


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Appendix A.2

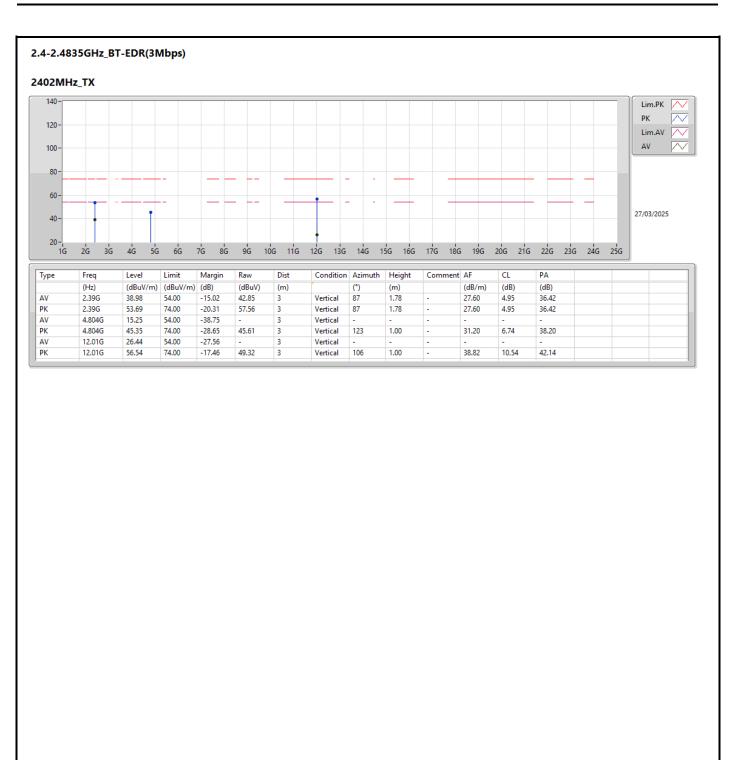


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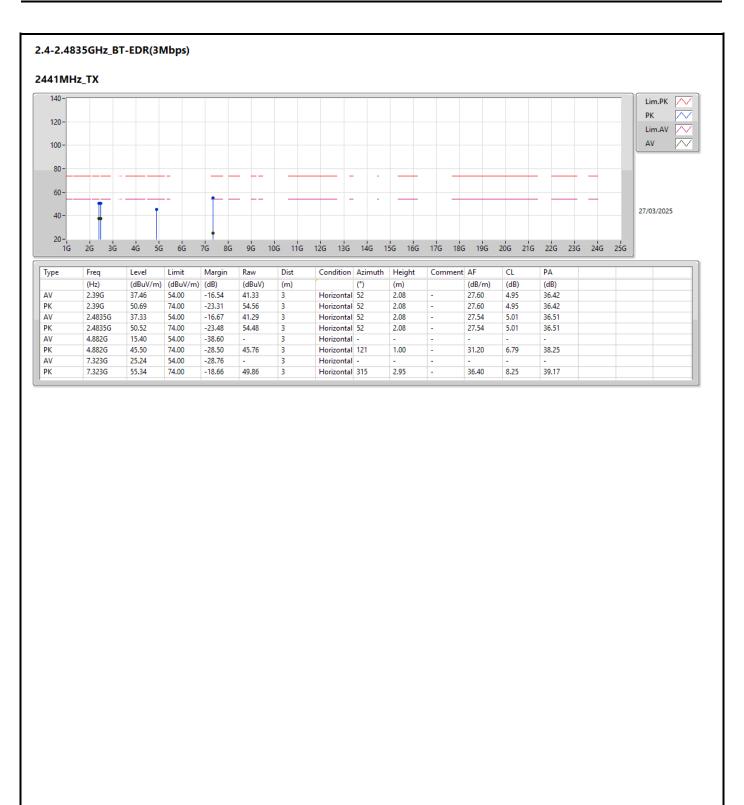
Appendix A.2



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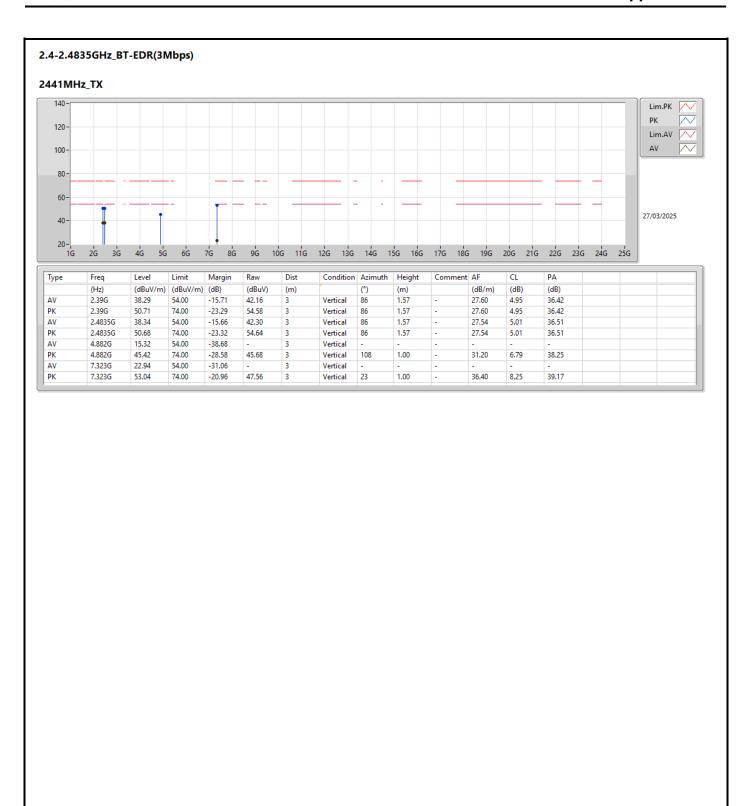


Appendix A.2

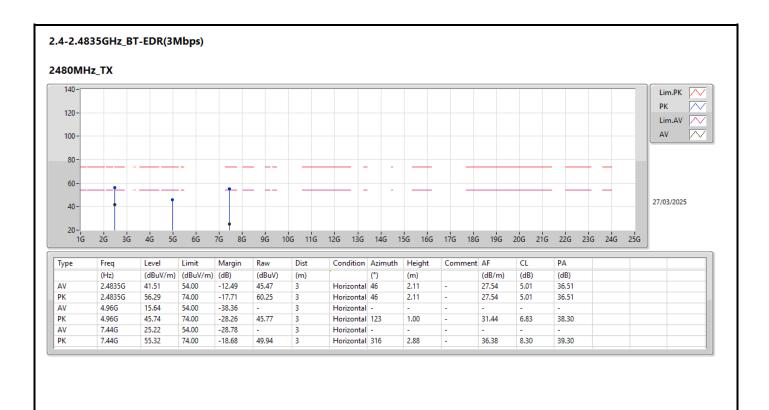


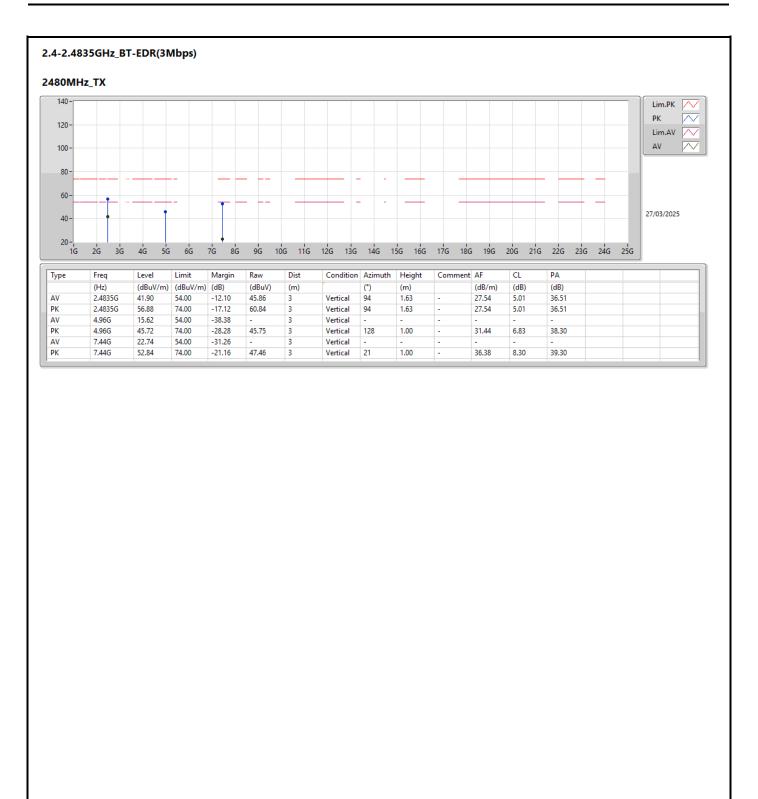
Report No.: FR4D1802AD Page No. : 10 of 13

Appendix A.2

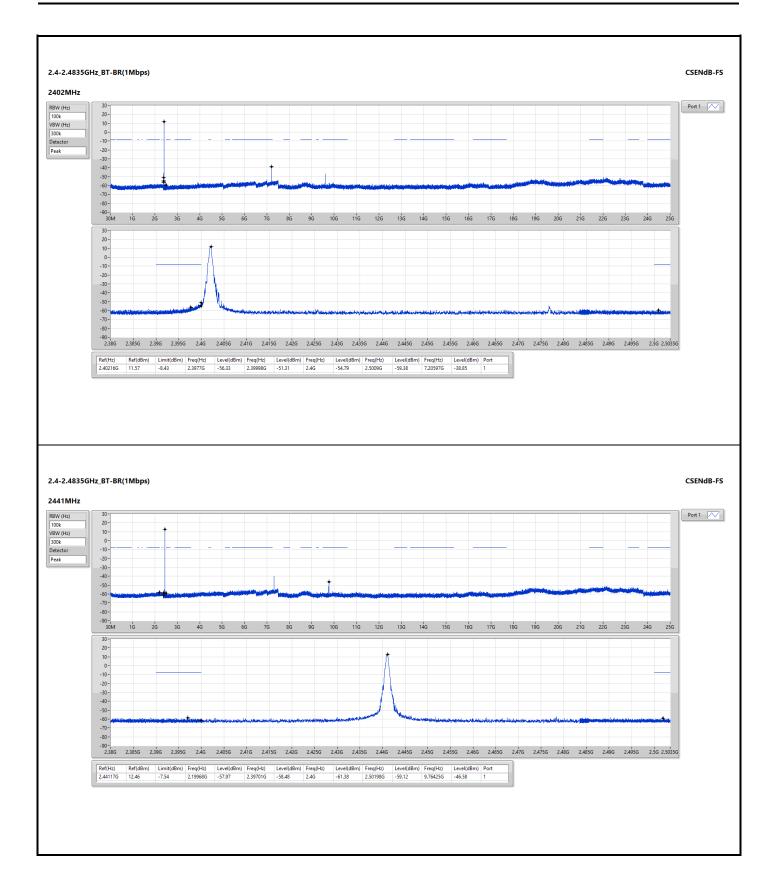


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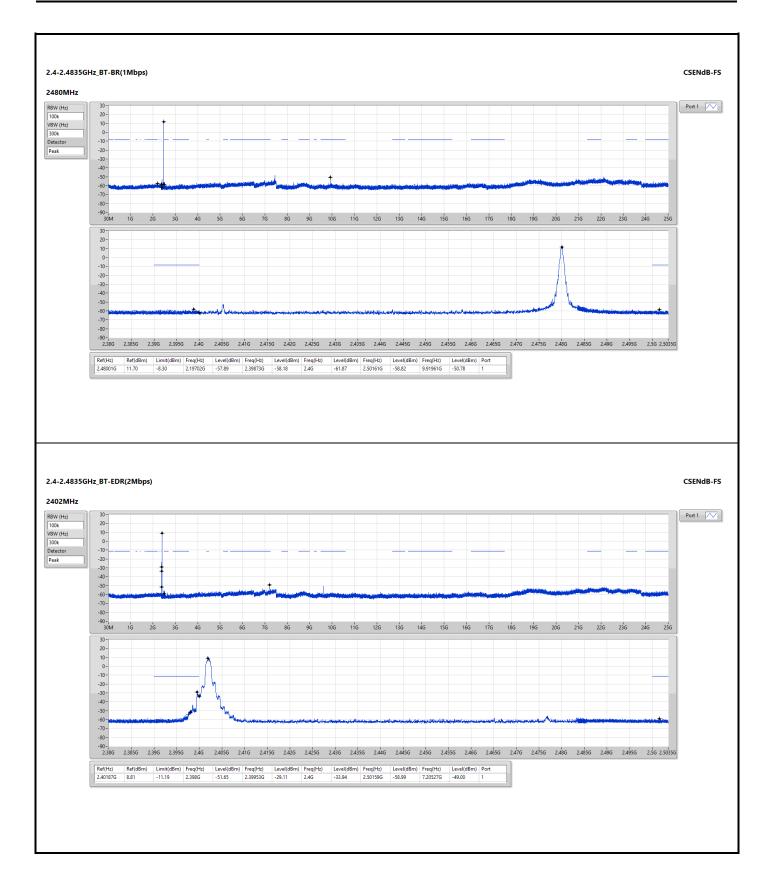




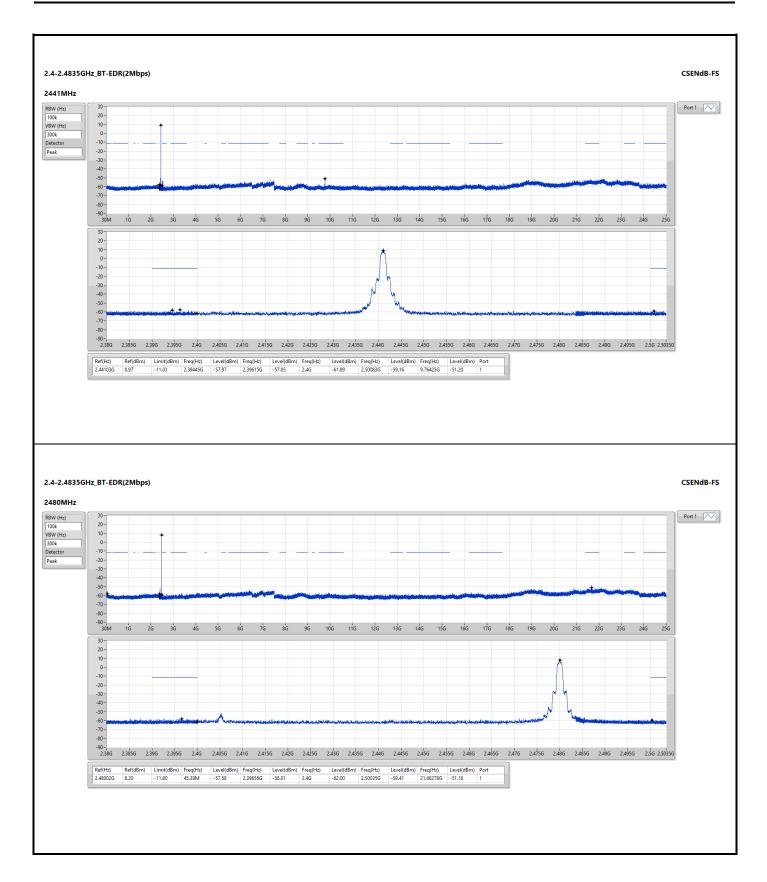




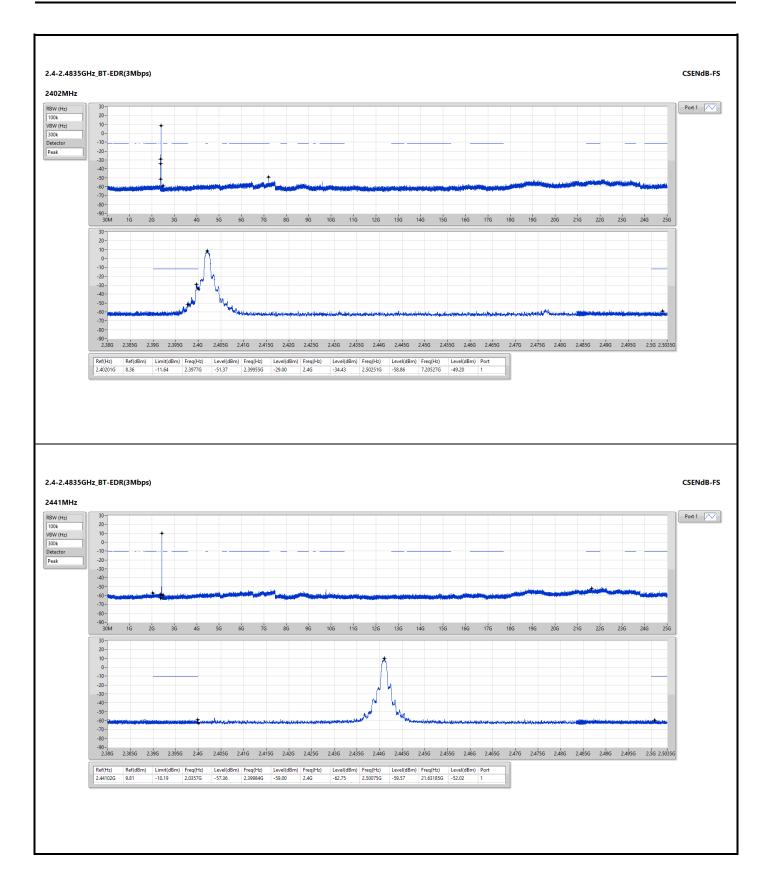




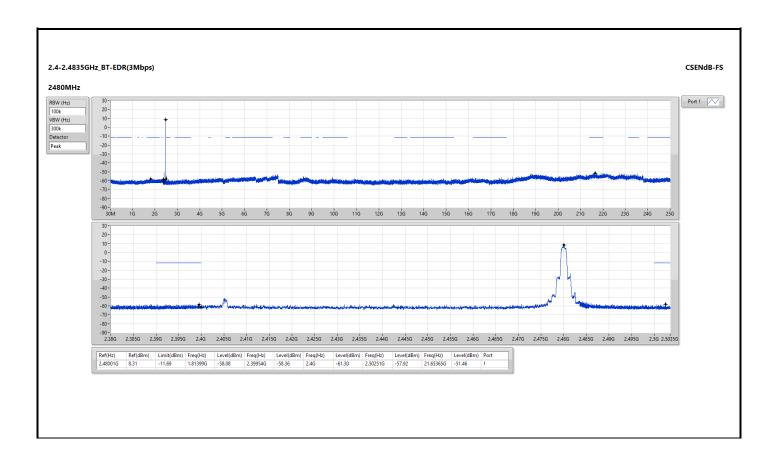




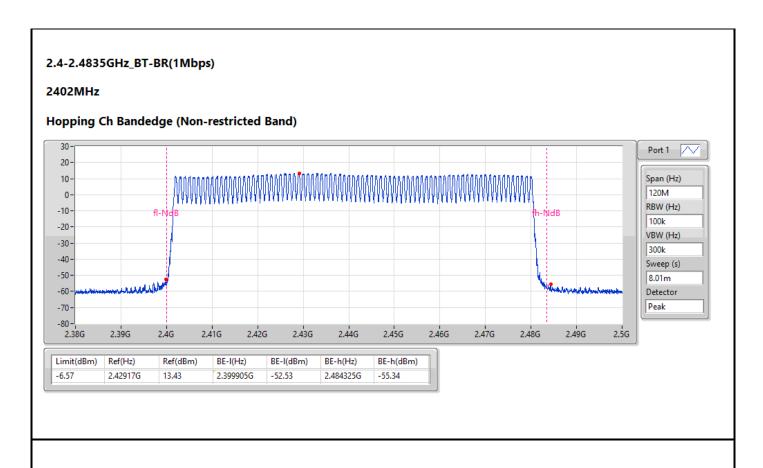








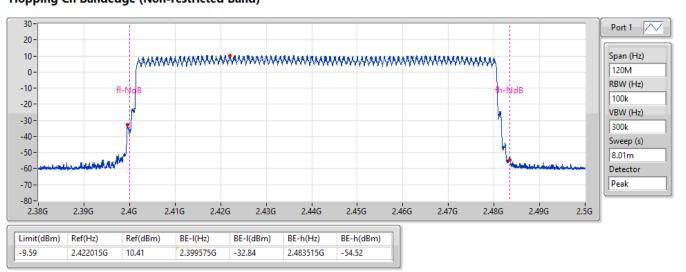




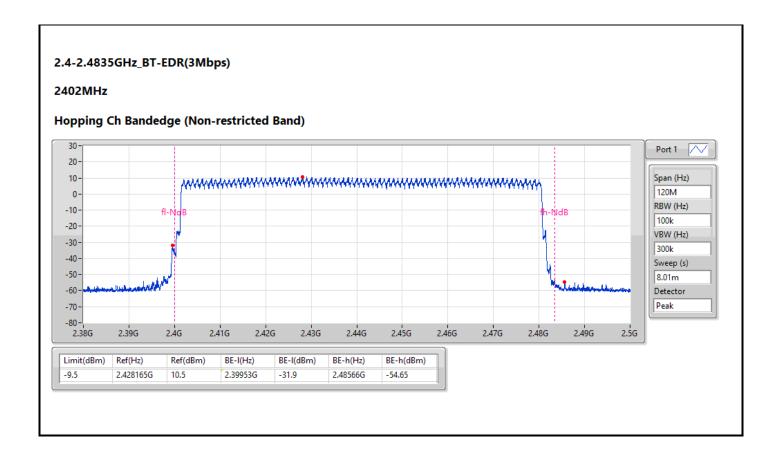
2.4-2.4835GHz_BT-EDR(2Mbps)

2402MHz

Hopping Ch Bandedge (Non-restricted Band)









Conducted Output Power(Peak)

Appendix C.1

Summary

Mode	Total Power	Total Power
	(dBm)	(W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	13.25	0.02113
BT-EDR(2Mbps)	12.16	0.01644
BT-EDR(3Mbps)	12.49	0.01774

Result

Mode	Result	Antenna Gain	Total Power	Power Limit	EIRP	EIRP Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)
BT-BR(1Mbps)	-	-	-	-	-	-
2402MHz	Pass	2.15	12.21	21.00	14.36	27.00
2441MHz	Pass	2.15	13.25	21.00	15.40	27.00
2480MHz	Pass	2.15	12.82	21.00	14.97	27.00
BT-EDR(2Mbps)	-	-	-	-	-	-
2402MHz	Pass	2.15	11.19	21.00	13.34	27.00
2441MHz	Pass	2.15	12.16	21.00	14.31	27.00
2480MHz	Pass	2.15	11.34	21.00	13.49	27.00
BT-EDR(3Mbps)	-	-	-	-	-	-
2402MHz	Pass	2.15	11.48	21.00	13.63	27.00
2441MHz	Pass	2.15	12.49	21.00	14.64	27.00
2480MHz	Pass	2.15	11.62	21.00	13.77	27.00

DG = Directional Gain; Port X = Port X output power



Conducted Output Power(Average)

Appendix C.2

Summary

Mode	Total Power	Total Power
	(dBm)	(W)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	13.14	0.02061
BT-EDR(2Mbps)	10.15	0.01035
BT-EDR(3Mbps)	10.17	0.01040

Result

Mode	Result	Antenna Gain	Total Power	Power Limit	EIRP	EIRP Limit
		(dBi)	(dBm)	(dBm)	(dBm)	(dBm)
BT-BR(1Mbps)	-	-	-	-	-	-
2402MHz	Pass	2.15	12.10	-	14.25	-
2441MHz	Pass	2.15	13.14	-	15.29	-
2480MHz	Pass	2.15	12.69	-	14.84	-
BT-EDR(2Mbps)	-	-	-	-	-	-
2402MHz	Pass	2.15	9.19	-	11.34	-
2441MHz	Pass	2.15	10.15	-	12.30	-
2480MHz	Pass	2.15	9.26	-	11.41	-
BT-EDR(3Mbps)	-	-	-	-	-	-
2402MHz	Pass	2.15	9.20	-	11.35	-
2441MHz	Pass	2.15	10.17	-	12.32	-
2480MHz	Pass	2.15	9.27	-	11.42	-

Note: Average power is for reference only



Number of Hopping Frequency

Appendix D

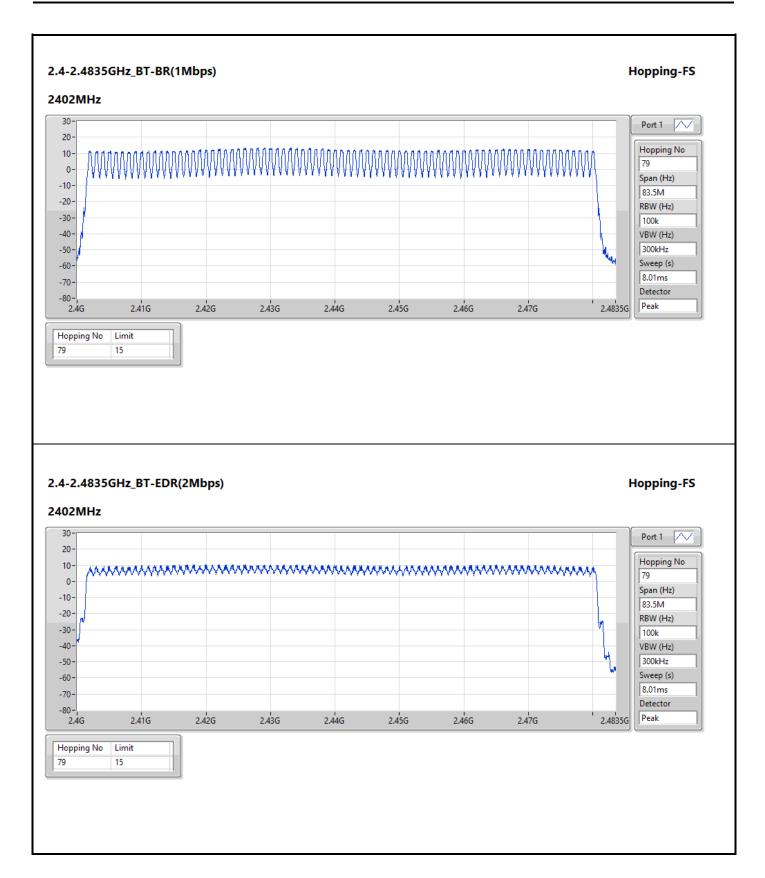
Summary

Mode	Max-Hop No
2.4-2.4835GHz	-
BT-BR(1Mbps)	79
BT-EDR(2Mbps)	79
BT-EDR(3Mbps)	79

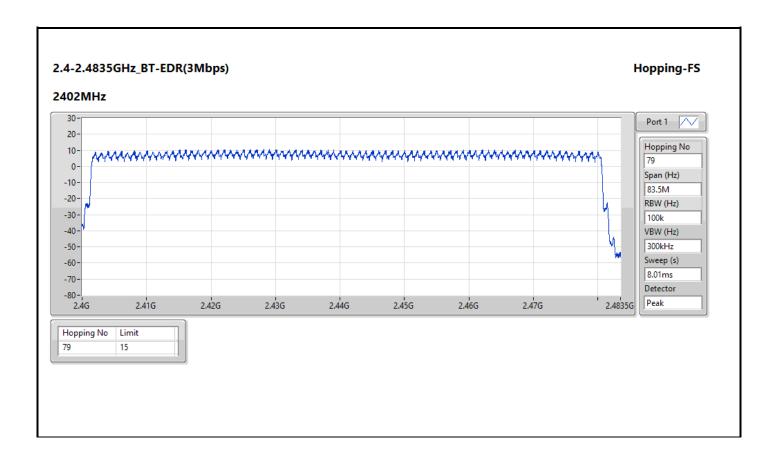
Result

Mode	Result	Hopping No	Limit
BT-BR(1Mbps)	•	-	-
2402MHz	Pass	79	15
BT-EDR(2Mbps)	-	-	-
2402MHz	Pass	79	15
BT-EDR(3Mbps)	-	-	-
2402MHz	Pass	79	15











20dB and Occupied Bandwidth

Appendix E

Summary

Mode	Max-N dB	Max-OBW	ITU-Code	Min-N dB	Min-OBW
	(Hz)	(Hz)		(Hz)	(Hz)
2.4-2.4835GHz	-	-	-	-	-
BT-BR(1Mbps)	921.25k	873.535k	874KF1D	918.5k	870.61k
BT-EDR(2Mbps)	1.342M	1.22M	1M22G1D	1.339M	1.199M
BT-EDR(3Mbps)	1.334M	1.225M	1M23G1D	1.331M	1.21M

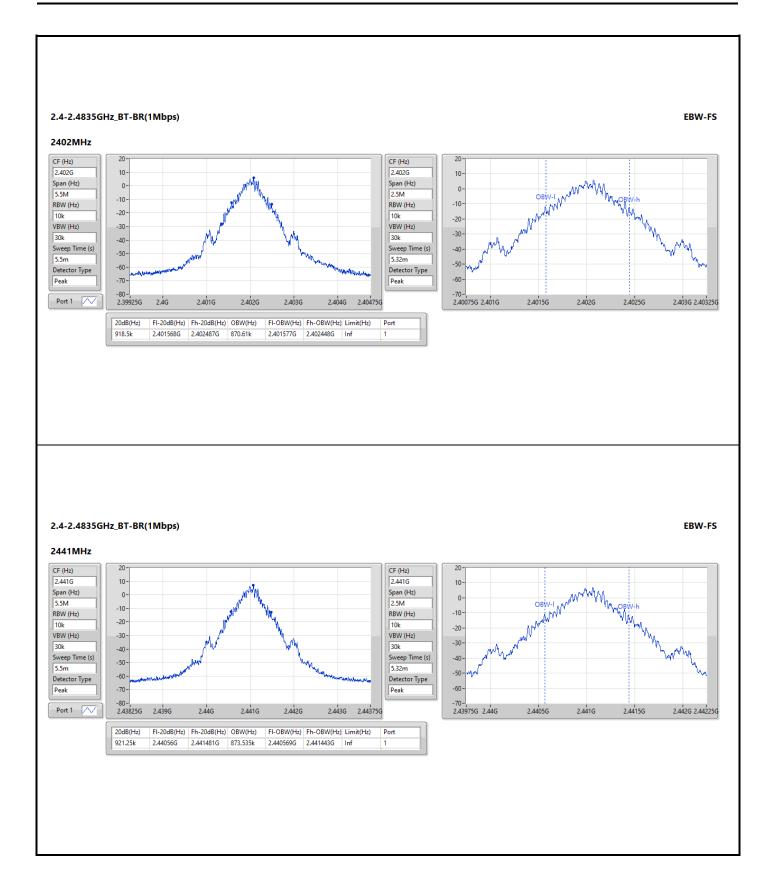
Max-N dB = Maximum 20dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth; Min-N dB = Minimum 20dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

Result

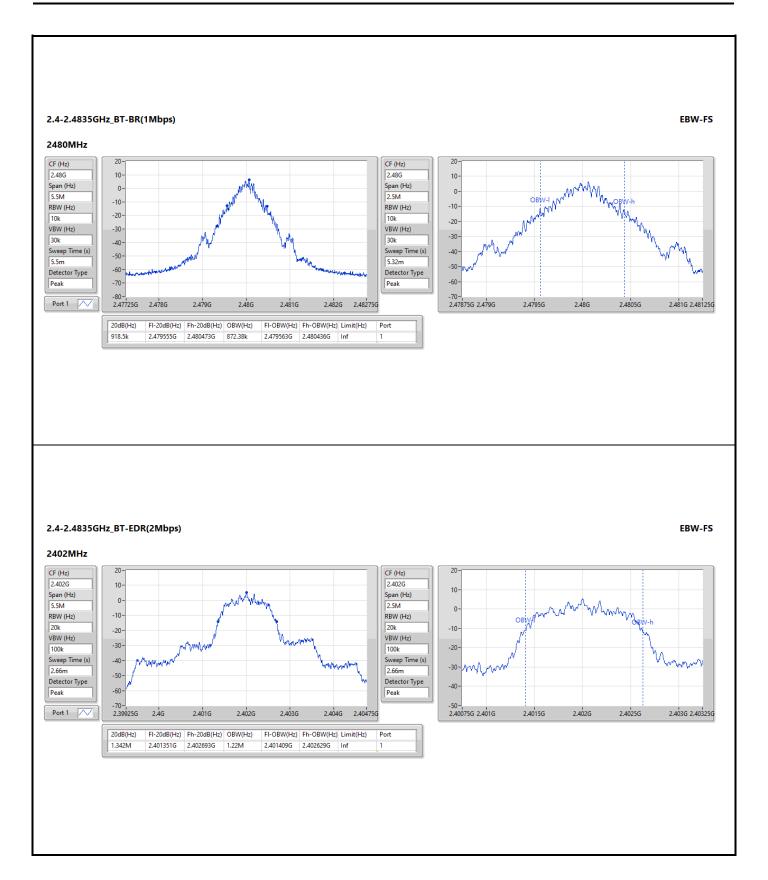
Mode	Result	Limit	Port 1-N dB	Port 1-OBW
		(Hz)	(Hz)	(Hz)
BT-BR(1Mbps)	-	-	-	-
2402MHz	Pass	Inf	918.5k	870.61k
2441MHz	Pass	Inf	921.25k	873.535k
2480MHz	Pass	Inf	918.5k	872.38k
BT-EDR(2Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.342M	1.22M
2441MHz	Pass	Inf	1.342M	1.208M
2480MHz	Pass	Inf	1.339M	1.199M
BT-EDR(3Mbps)	-	-	-	-
2402MHz	Pass	Inf	1.334M	1.225M
2441MHz	Pass	Inf	1.331M	1.217M
2480MHz	Pass	Inf	1.331M	1.21M

Port X-N dB = Port X 20dB down bandwidth; Port X-OBW = Port X 99% occupied bandwidth

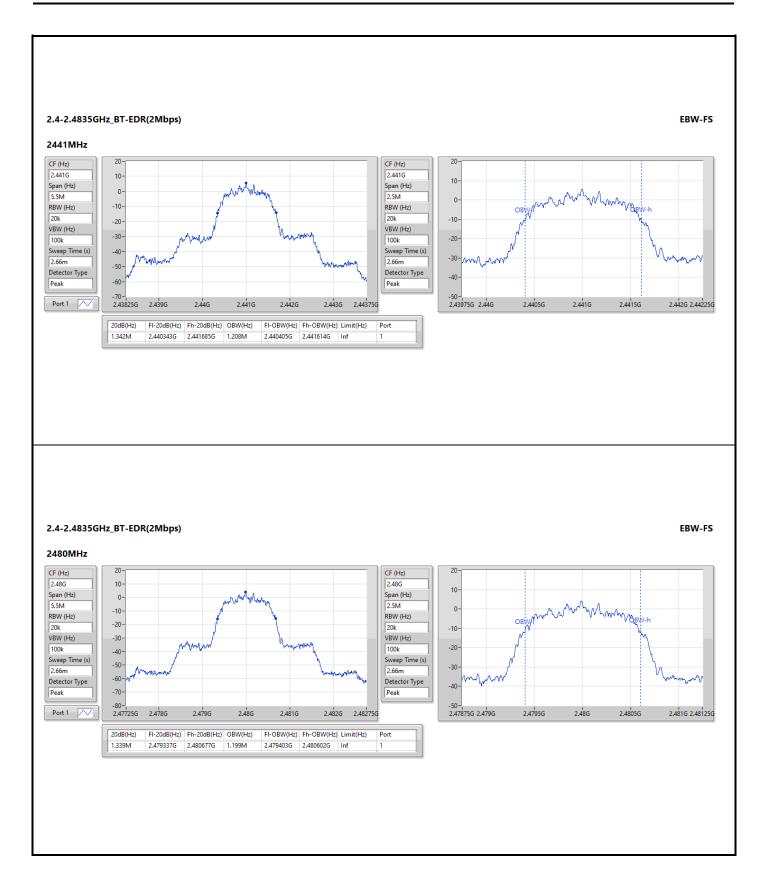




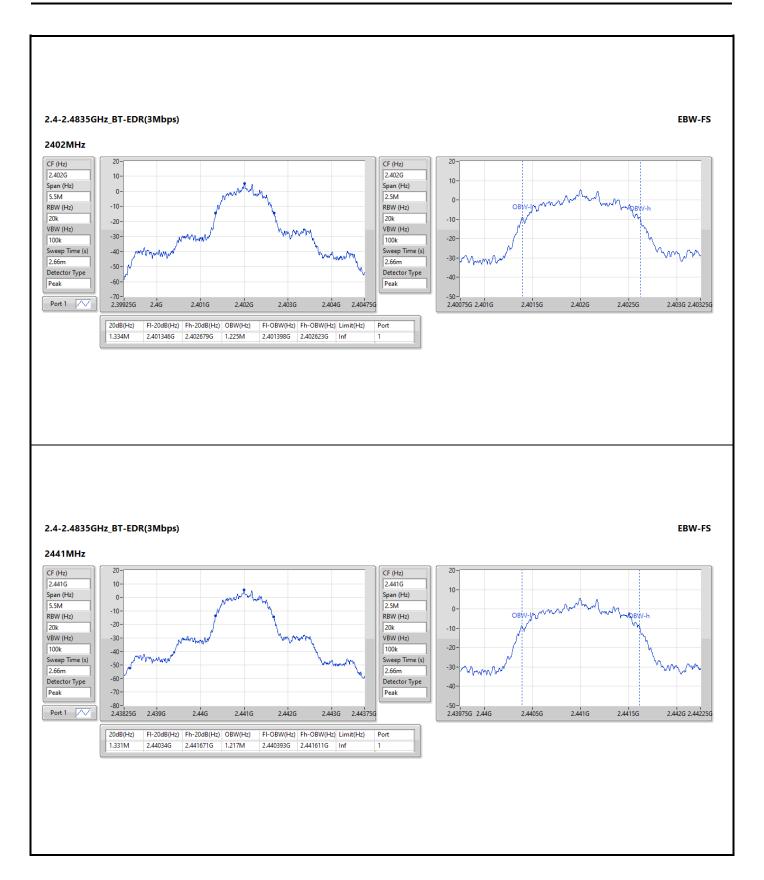




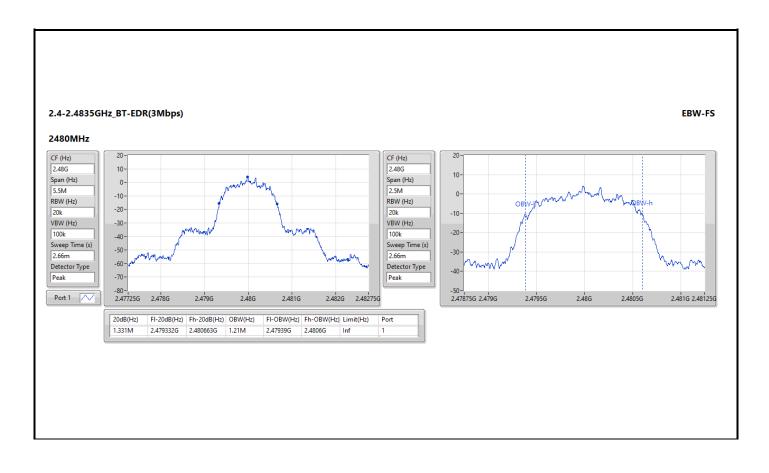














Channel Separation

Appendix F

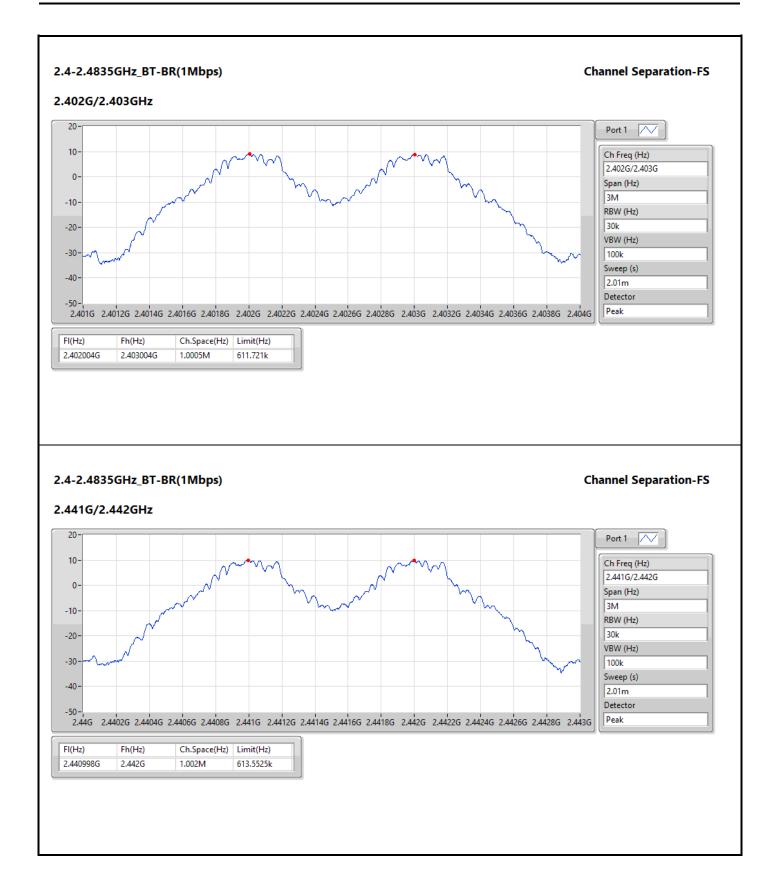
Summary

Mode	Max-Space	Min-Space
	(Hz)	(Hz)
2.4-2.4835GHz	-	-
BT-BR(1Mbps)	1.002M	1.0005M
BT-EDR(2Mbps)	1.002M	1.0005M
BT-EDR(3Mbps)	1.002M	1.002M

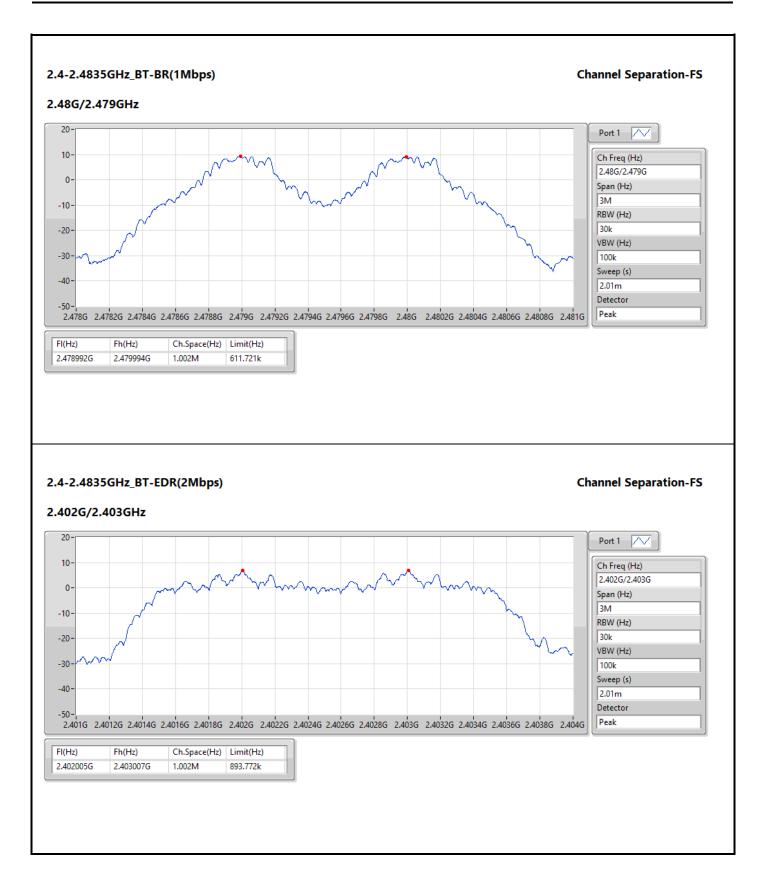
Result

Mode	Result	FI	Fh	Ch.Space	Limit
		(Hz)	(Hz)	(Hz)	(Hz)
BT-BR(1Mbps)	-	-	-	-	-
2402MHz	Pass	2.402004G	2.403004G	1.0005M	611.721k
2441MHz	Pass	2.440998G	2.442G	1.002M	613.5525k
2480MHz	Pass	2.478992G	2.479994G	1.002M	611.721k
BT-EDR(2Mbps)	-	-	-	-	-
2402MHz	Pass	2.402005G	2.403007G	1.002M	893.772k
2441MHz	Pass	2.440998G	2.442G	1.002M	893.772k
2480MHz	Pass	2.478992G	2.479992G	1.0005M	891.774k
BT-EDR(3Mbps)	-	-	-	-	-
2402MHz	Pass	2.402004G	2.403006G	1.002M	888.444k
2441MHz	Pass	2.440999G	2.442001G	1.002M	886.446k
2480MHz	Pass	2.478992G	2.479994G	1.002M	886.446k

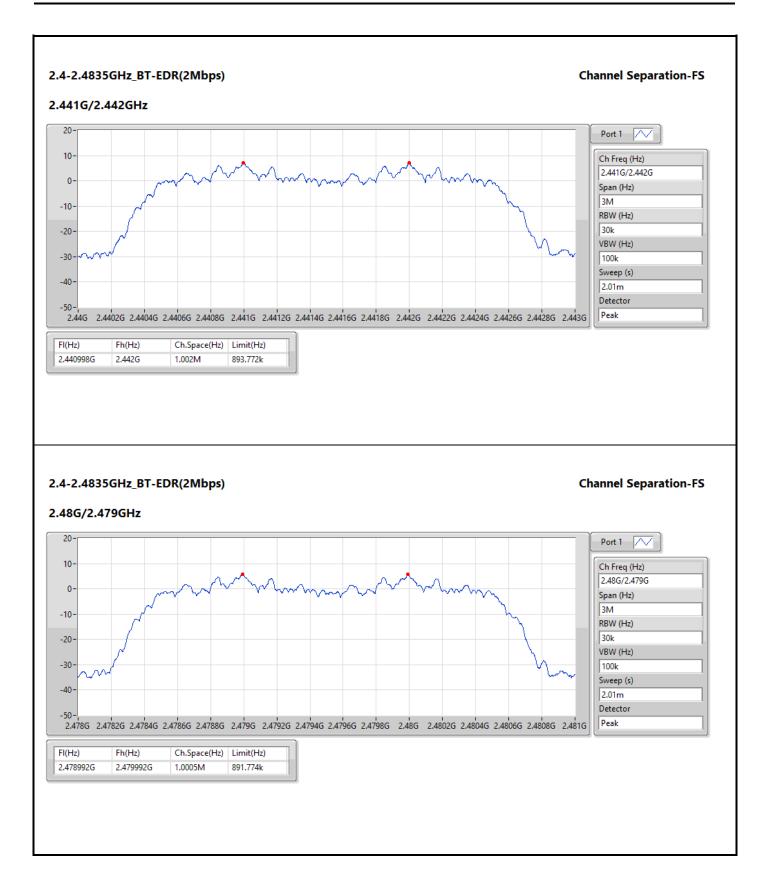




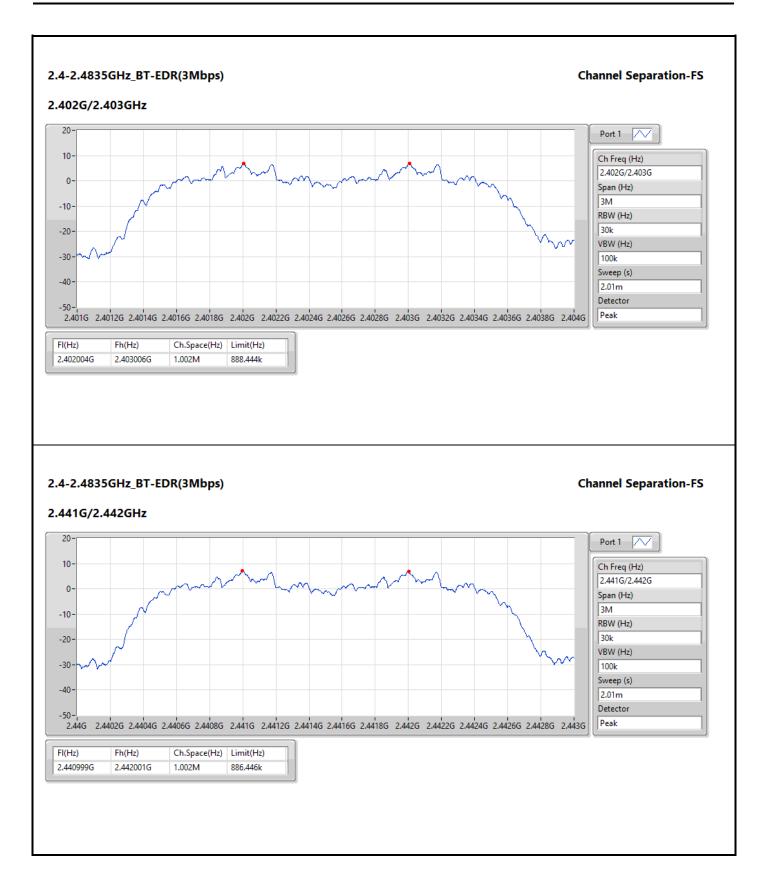




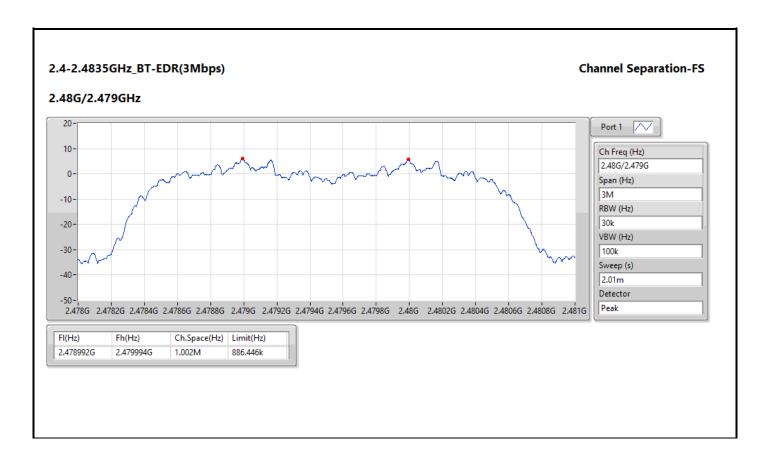














Number of Dwell Time

Appendix G

Summary

- Carrinally	
2.4-2.4835GHz	-
BT-BR-AFH(1Mbps)	289.2m_DH5-AFH
BT-BR-Non AFH(1Mbps)	310.60904m_DH5
BT-EDR-AFH(2Mbps)	312.687m_DH5-AFH
BT-EDR-Non AFH(2Mbps)	310.82392m_DH5
BT-EDR-AFH(3Mbps)	289.675m_DH5-AFH
BT-EDR-Non AFH(3Mbps)	311.28054m_DH5





Number of Dwell Time

Result/ Non AFH mode

Mode	Result	Period	Dwell	Limit	Tx On	Number of transmission
		(s)	(s)	(s)	(ms)	in a 5 s
BT-BR-Non AFH(1Mbps)	-	-	-	-	-	-
2402MHz_DH5	PASS	31.6	0.31061	0.4	2.89100	17
BT-EDR-Non AFH(2Mbps)	=	-	-	-	-	-
2402MHz_DH5	PASS	31.6	0.31082	0.4	2.89300	17
BT-EDR-Non AFH(3Mbps)	-	-	-	-	-	-
2402MHz_DH5	PASS	31.6	0.31128	0.4	2.89725	17

Note 1: Dwell time =Number of transmission in a 5 second x Tx On Time x 6.32

Note 2: DH5 was the worst mode.

Result/ AFH mode

Mode	Result	Period	Dwell	Limit	Tx On	Number of transmission
		(s)	(s)	(s)	(ms)	in a 2 s
BT-BR-AFH(1Mbps)	-	-	-	-	-	-
2402MHz_DH5	PASS	8	0.28920	0.4	2.89200	25
BT-EDR-AFH(2Mbps)	-	-	-	-	-	-
2402MHz_DH5	PASS	8	0.31269	0.4	2.89525	27
BT-EDR-AFH(3Mbps)	-	-	-	-	-	-
2402MHz_DH5	PASS	8	0.28968	0.4	2.89675	25

Note 1: Dwell time =Number of transmission in a 2 second x Tx On Time x 4

Note 2: DH5 was the worst mode.



