

Figure 166 - Core 0 (A) 2402 MHz (CH0) 99% Bandwidth

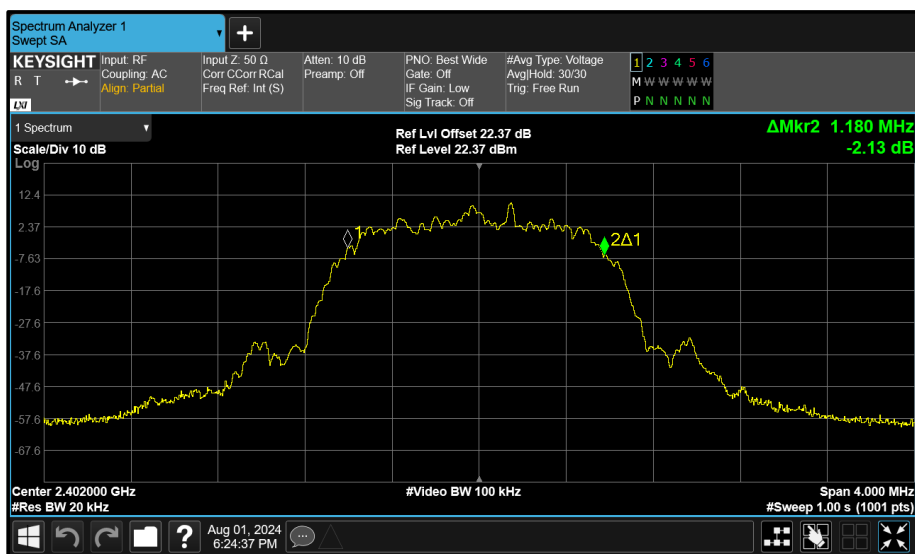


Figure 167 - Core 1 (B) 2402 MHz (CH0) 99% Bandwidth



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	FCC 15.247 (a)(1) RSS-247 5.1	Test Method(s):	C63.10 6.9.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	ePA 8-DPSK (3-DH5)	Duty Cycle (%):	-
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	20 dB Bandwidth (MHz)			
	A	B	C	D
2402	1.260	1.260	-	-
2441	1.325	1.325	-	-
2480	1.260	1.260	-	-

Table 83 - 20 dB Bandwidth Results

Test Frequency (MHz)	99% Bandwidth (MHz)				Limit (kHz)
	A	B	C	D	
2402	1.184	1.184	-	-	-
2441	1.184	1.188	-	-	-
2480	1.184	1.188	-	-	-

Table 84 - 99% Bandwidth Results

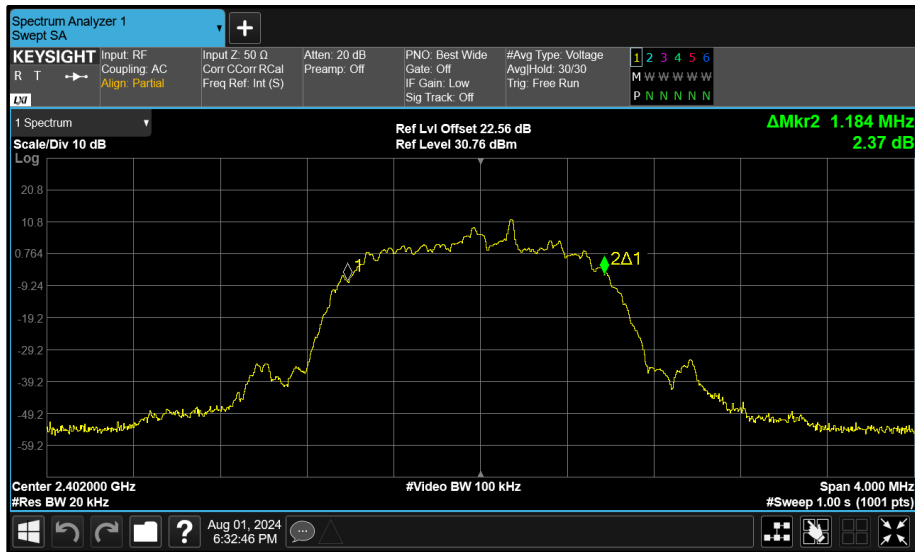


Figure 178 - Core 0 (A) 2402 MHz (CH0) 99% Bandwidth

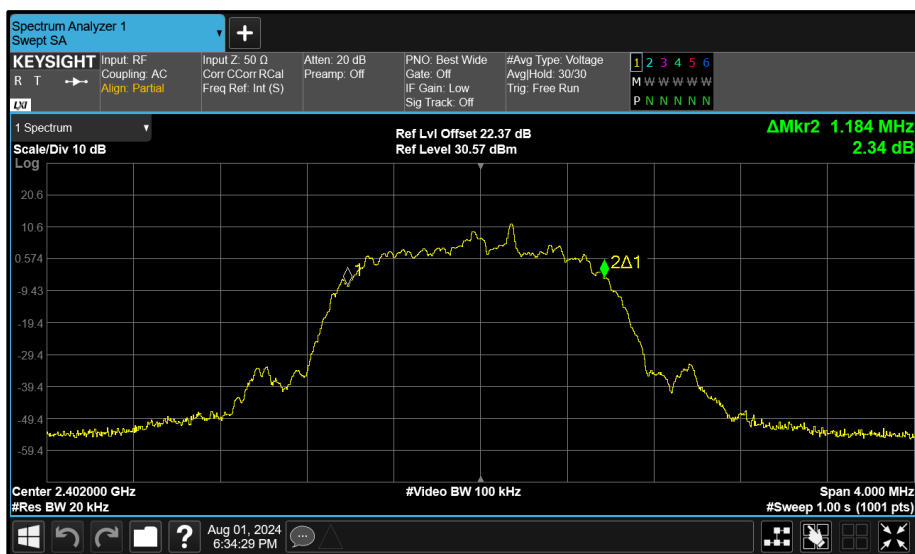


Figure 179 - Core 1 (B) 2402 MHz (CH0) 99% Bandwidth

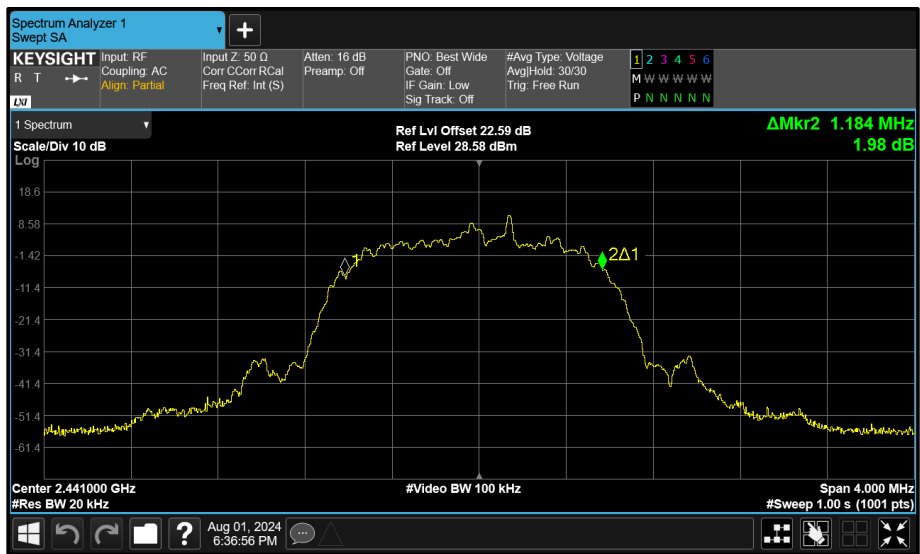


Figure 180 - Core 0 (A) 2441 MHz (CH39) 99% Bandwidth



Figure 181 - Core 1 (B) 2441 MHz (CH39) 99% Bandwidth



2.5.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 18.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Expiry Date
Hygrometer	Rotronic	I-1000	3068	12	07-Nov-2024
Digital Multimeter	Fluke	115	6145	12	06-Jun-2025
MXA Signal Analyser	Keysight Technologies	N9020B	6419	24	28-Feb-2025
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6517	12	22-Feb-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6526	12	22-Feb-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6527	12	05-Mar-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6528	12	22-Feb-2025
AC Programmable Power Supply	iTech	IT7324	6665	-	O/P Mon

Table 85

O/P Mon - Output Monitored using calibrated equipment



2.6 Maximum Conducted Output Power

2.6.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (b)
ISED RSS-247, Clause 5.4
ISED RSS-GEN, Clause 6.12

2.6.2 Equipment Under Test and Modification State

A3112, S/N: J6HWQT92RK - Modification State 0

2.6.3 Date of Test

15-July-2024 to 01-August-2024

2.6.4 Test Method

The test was performed in accordance with ANSI C63.10 clause 7.8.5 using a power meter.

MIMO output port summing was performed in accordance with KDB 662911 D01. For the CDD results, the Directional Gain was calculated in accordance with clause F)2)f)(ii) using the calculations from F)2)f)(i) with worst-case individual gain and an array gain of zero.

2.6.5 Environmental Conditions

Ambient Temperature	21.9 - 47.5 °C
Relative Humidity	47.5 - 56.5 %



2.6.6 Test Results

2.4 GHz Bluetooth BDR/EDR

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(1) RSS-247 5.4 b)	Test Method(s):	C63.10 7.8.5
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA GFSK (DH5)	Duty Cycle (%):	76.7
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	A (Core 0)	Peak Antenna Gain (dBi):	4.60

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	13.50	-	-	-	-	30.00	-16.50
2441	13.61	-	-	-	-	30.00	-16.39
2480	13.49	-	-	-	-	30.00	-16.51

Table 86 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
	A	B	C	D	Σ					
2402	13.50	-	-	-	-	30.00	-16.50	18.10	36.00	-17.90
2441	13.61	-	-	-	-	30.00	-16.39	18.21	36.00	-17.79
2480	13.49	-	-	-	-	30.00	-16.51	18.09	36.00	-17.91

Table 87 - ISED Maximum Conducted (peak) Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(1) RSS-247 5.4 b)	Test Method(s):	C63.10 7.8.5
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA GFSK (DH5)	Duty Cycle (%):	76.7
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Core 2)	Peak Antenna Gain (dBi):	4.30

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	-	-	12.60	-	-	30.00	-17.40
2441	-	-	12.36	-	-	30.00	-17.64
2480	-	-	12.26	-	-	30.00	-17.74

Table 88 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
	A	B	C	D	Σ					
2402	-	-	12.60	-	-	30.00	-17.40	16.90	36.00	-19.10
2441	-	-	12.36	-	-	30.00	-17.64	16.66	36.00	-19.34
2480	-	-	12.26	-	-	30.00	-17.74	16.56	36.00	-19.44

Table 89 - ISED Maximum Conducted (peak) Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(1) RSS-247 5.4 b)	Test Method(s):	C63.10 7.8.5
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA $\pi/4$ DQPSK (2-DH5)	Duty Cycle (%):	76.8
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	A (Core 0)	Peak Antenna Gain (dBi):	4.60

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	11.89	-	-	-	-	30.00	-18.11
2441	11.85	-	-	-	-	30.00	-18.15
2480	12.07	-	-	-	-	30.00	-17.93

Table 90 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
	A	B	C	D	Σ					
2402	11.89	-	-	-	-	30.00	-18.11	16.49	36.00	-19.51
2441	11.85	-	-	-	-	30.00	-18.15	16.45	36.00	-19.55
2480	12.07	-	-	-	-	30.00	-17.93	16.67	36.00	-19.33

Table 91 - ISED Maximum Conducted (peak) Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(1) RSS-247 5.4 b)	Test Method(s):	C63.10 7.8.5
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA 8-DPSK (3-DH5)	Duty Cycle (%):	77.0
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	A (Core 0)	Peak Antenna Gain (dBi):	4.60

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	12.42	-	-	-	-	30.00	-17.58
2441	12.44	-	-	-	-	30.00	-17.56
2480	12.51	-	-	-	-	30.00	-17.49

Table 92 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
	A	B	C	D	Σ					
2402	12.42	-	-	-	-	30.00	-17.58	17.02	36.00	-18.98
2441	12.44	-	-	-	-	30.00	-17.56	17.04	36.00	-18.96
2480	12.51	-	-	-	-	30.00	-17.49	17.11	36.00	-18.89

Table 93 - ISED Maximum Conducted (peak) Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(1) RSS-247 5.4 b)	Test Method(s):	C63.10 7.8.5
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA $\pi/4$ DQPSK (2-DH5)	Duty Cycle (%):	76.8
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Core 2)	Peak Antenna Gain (dBi):	4.30

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	-	-	11.79	-	-	30.00	-18.21
2441	-	-	11.86	-	-	30.00	-18.14
2480	-	-	11.75	-	-	30.00	-18.25

Table 94 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
	A	B	C	D	Σ					
2402	-	-	11.79	-	-	30.00	-18.21	16.09	36.00	-19.91
2441	-	-	11.86	-	-	30.00	-18.14	16.16	36.00	-19.84
2480	-	-	11.75	-	-	30.00	-18.25	16.05	36.00	-19.95

Table 95 - ISED Maximum Conducted (peak) Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(1) RSS-247 5.4 b)	Test Method(s):	C63.10 7.8.5
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA 8-DPSK (3-DH5)	Duty Cycle (%):	76.9
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Core 2)	Peak Antenna Gain (dBi):	4.30

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	-	-	12.18	-	-	30.00	-17.82
2441	-	-	12.19	-	-	30.00	-17.81
2480	-	-	12.08	-	-	30.00	-17.92

Table 96 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
	A	B	C	D	Σ					
2402	-	-	12.18	-	-	30.00	-17.82	16.48	36.00	-19.52
2441	-	-	12.19	-	-	30.00	-17.81	16.49	36.00	-19.51
2480	-	-	12.08	-	-	30.00	-17.92	16.38	36.00	-19.62

Table 97 - ISED Maximum Conducted (peak) Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(1) RSS-247 5.4 b)	Test Method(s):	C63.10 7.8.5
Additional Reference(s):	-		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (2-DH5)	Duty Cycle (%):	76.8
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	A (Core 0)	Peak Antenna Gain (dBi):	4.60

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	19.13	-	-	-	-	30.00	-10.87
2441	19.27	-	-	-	-	30.00	-10.73
2480	19.28	-	-	-	-	30.00	-10.72

Table 98 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
	A	B	C	D	Σ					
2402	19.13	-	-	-	-	30.00	-10.87	23.73	36.00	-12.27
2441	19.27	-	-	-	-	30.00	-10.73	23.87	36.00	-12.13
2480	19.28	-	-	-	-	30.00	-10.72	23.88	36.00	-12.12

Table 99 - ISED Maximum Conducted (peak) Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(1) RSS-247 5.4 b)	Test Method(s):	C63.10 7.8.5
Additional Reference(s):	-		

DUT Configuration			
Mode:	ePA 8-DPSK (3-DH5)	Duty Cycle (%):	76.9
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	A (Core 0)	Peak Antenna Gain (dBi):	4.60

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	19.74	-	-	-	-	30.00	-10.26
2441	19.88	-	-	-	-	30.00	-10.12
2480	19.87	-	-	-	-	30.00	-10.13

Table 100 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
	A	B	C	D	Σ					
2402	19.74	-	-	-	-	30.00	-10.26	24.34	36.00	-11.66
2441	19.88	-	-	-	-	30.00	-10.12	24.48	36.00	-11.52
2480	19.87	-	-	-	-	30.00	-10.13	24.47	36.00	-11.53

Table 101 - ISED Maximum Conducted (peak) Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(1) RSS-247 5.4 b)	Test Method(s):	C63.10 7.8.5
Additional Reference(s):	662911 D01 v02r01 F)2)d)(i), 662911 D01 v02r01 E)1)		

DUT Configuration			
Mode:	iPA GFSK (DH5)	Duty Cycle (%):	76.7
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	7.41

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	13.37	13.26	-	-	16.33	28.59	-12.26
2441	13.51	13.13	-	-	16.34	28.59	-12.25
2480	13.54	13.22	-	-	16.39	28.59	-12.19

Table 102 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
	A	B	C	D	Σ					
2402	13.37	13.26	-	-	16.33	30.00	-13.67	23.74	36.00	-12.26
2441	13.51	13.13	-	-	16.34	30.00	-13.66	23.75	36.00	-12.25
2480	13.54	13.22	-	-	16.39	30.00	-13.61	23.81	36.00	-12.19

Table 103 - ISED Maximum Conducted (peak) Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(1) RSS-247 5.4 b)	Test Method(s):	C63.10 7.8.5
Additional Reference(s):	662911 D01 v02r01 F)2)d)(i), 662911 D01 v02r01 E)1)		

DUT Configuration			
Mode:	iPA $\pi/4$ DQPSK (2-DH5)	Duty Cycle (%):	76.8
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	7.41

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	11.86	11.63	-	-	14.76	28.59	-13.83
2441	11.83	11.67	-	-	14.76	28.59	-13.83
2480	12.05	11.75	-	-	14.92	28.59	-13.67

Table 104 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
	A	B	C	D	Σ					
2402	11.86	11.63	-	-	14.76	30.00	-15.24	22.17	36.00	-13.83
2441	11.83	11.67	-	-	14.76	30.00	-15.24	22.17	36.00	-13.83
2480	12.05	11.75	-	-	14.92	30.00	-15.08	22.33	36.00	-13.67

Table 105 - ISED Maximum Conducted (peak) Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(1) RSS-247 5.4 b)	Test Method(s):	C63.10 7.8.5
Additional Reference(s):	662911 D01 v02r01 F)2)d)(i), 662911 D01 v02r01 E)1)		

DUT Configuration			
Mode:	iPA 8-DPSK (3-DH5)	Duty Cycle (%):	76.9
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	7.41

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	12.40	12.00	-	-	15.22	28.59	-13.37
2441	12.35	11.99	-	-	15.18	28.59	-13.41
2480	12.52	12.09	-	-	15.32	28.59	-13.27

Table 106 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
	A	B	C	D	Σ					
2402	12.40	12.00	-	-	15.22	30.00	-14.78	22.63	36.00	-13.37
2441	12.35	11.99	-	-	15.18	30.00	-14.82	22.59	36.00	-13.41
2480	12.52	12.09	-	-	15.32	30.00	-14.68	22.73	36.00	-13.27

Table 107 - ISED Maximum Conducted (peak) Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(1) RSS-247 5.4 b)	Test Method(s):	C63.10 7.8.5
Additional Reference(s):	662911 D01 v02r01 F)2)d)(i), 662911 D01 v02r01 E)1)		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (2-DH5)	Duty Cycle (%):	76.8
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	7.41

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	16.29	16.21	-	-	19.26	28.59	-9.33
2441	16.06	15.88	-	-	18.98	28.59	-9.61
2480	16.04	15.84	-	-	18.95	28.59	-9.64

Table 108 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
	A	B	C	D	Σ					
2402	16.29	16.21	-	-	19.26	30.00	-10.74	26.67	36.00	-9.33
2441	16.06	15.88	-	-	18.98	30.00	-11.02	26.39	36.00	-9.61
2480	16.04	15.84	-	-	18.95	30.00	-11.05	26.36	36.00	-9.64

Table 109 - ISED Maximum Conducted (peak) Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(1) RSS-247 5.4 b)	Test Method(s):	C63.10 7.8.5
Additional Reference(s):	662911 D01 v02r01 F)2)d)(i), 662911 D01 v02r01 E)1)		

DUT Configuration			
Mode:	ePA 8-DPSK (3-DH5)	Duty Cycle (%):	76.9
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	7.41

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	16.88	16.63	-	-	19.77	28.59	-8.82
2441	16.70	16.64	-	-	19.68	28.59	-8.91
2480	16.58	16.60	-	-	19.60	28.59	-8.99

Table 110 - FCC Maximum Conducted (peak) Output Power Results

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)	EIRP (dBm)	EIRP Limit (dBm)	EIRP Margin (dB)
	A	B	C	D	Σ					
2402	16.88	16.63	-	-	19.77	30.00	-10.23	27.18	36.00	-8.82
2441	16.70	16.64	-	-	19.68	30.00	-10.32	27.09	36.00	-8.91
2480	16.58	16.60	-	-	19.60	30.00	-10.40	27.01	36.00	-8.99

Table 111 - ISED Maximum Conducted (peak) Output Power Results

FCC 47 CFR Part 15, Limit Clause 15.247 (b)(3)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

ISED RSS-247, Limit Clause 5.4 (d)

For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W. The e.i.r.p. shall not exceed 4 W, except as provided in section 5.4(e) of the specification.



2.6.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 18.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Expiry Date
Hygrometer	Rotronic	I-1000	3068	12	07-Nov-2024
Digital Multimeter	Fluke	115	6145	12	06-Jun-2025
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6517	12	22-Feb-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6526	12	22-Feb-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6527	12	05-Mar-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6528	12	22-Feb-2025
USB Wideband Power Sensor	Boonton	RTP5008	6585	12	20-Feb-2025
USB Wideband Power Sensor	Boonton	RTP5008	6586	12	20-Feb-2025
USB Wideband Power Sensor	Boonton	RTP5008	6590	12	20-Feb-2025
AC Programmable Power Supply	iTech	IT7324	6665	-	O/P Mon

Table 112

O/P Mon - Output Monitored using calibrated equipment



2.7 Authorised Band Edges

2.7.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (d)
ISED RSS-247, Clause 5.5

2.7.2 Equipment Under Test and Modification State

A3112, S/N: K67X45QH3Q - Modification State 0
A3112, S/N: MNV254CLPF - Modification State 0

2.7.3 Date of Test

11-June-2024 to 16-June-2024

2.7.4 Test Method

The test was performed in accordance with ANSI C63.10, clause 6.10.4.

2.7.5 Environmental Conditions

Ambient Temperature	22.5 - 24.2 °C
Relative Humidity	37.0 - 49.3 %



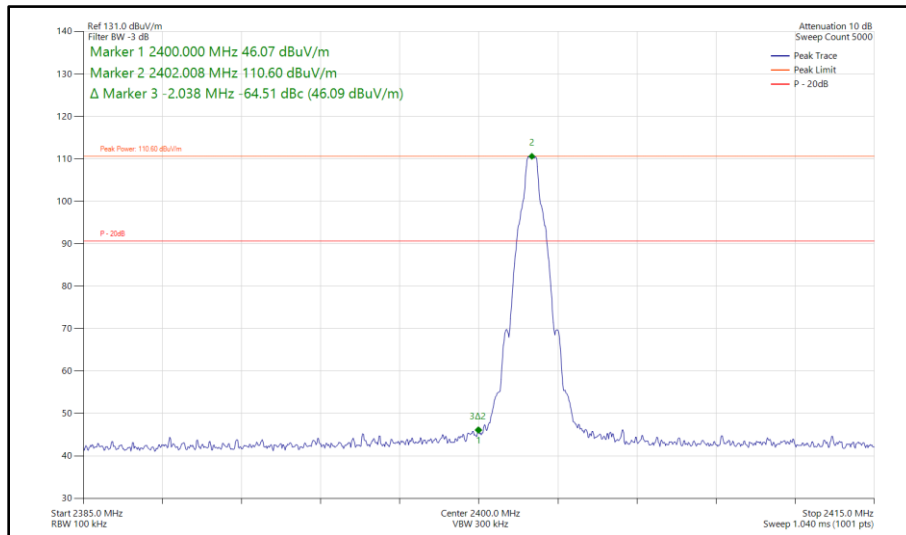
2.7.6 Test Results

2.4 GHz Bluetooth BDR/EDR

iPA - Core 0 (SISO)

Mode	Packet Type	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Static	DH5	2402	2400	-64.51
Static	2-DH5	2402	2400	-57.22
Static	3-DH5	2402	2400	-58.47
Hopping	DH5	Hopping	2400	-67.76
Hopping	2-DH5	Hopping	2400	-62.84
Hopping	3-DH5	Hopping	2400	-62.92

Table 113 - SISO Authorised Band Edge Results



**Figure 184 - Bluetooth DH5, SISO, Core 0 - 2402 MHz
 Band Edge Frequency 2400 MHz**

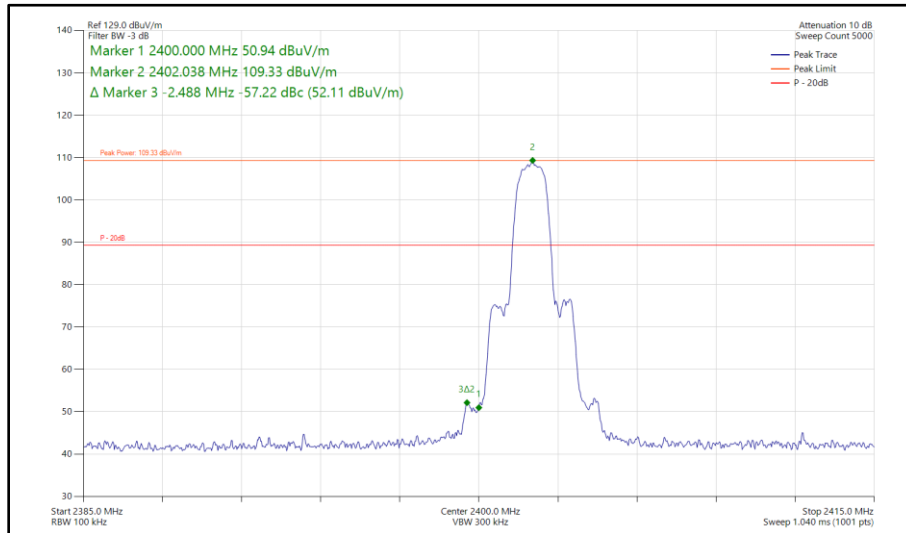


Figure 185 - Bluetooth 2-DH5, SISO, Core 0 - 2402 MHz
Band Edge Frequency 2400 MHz

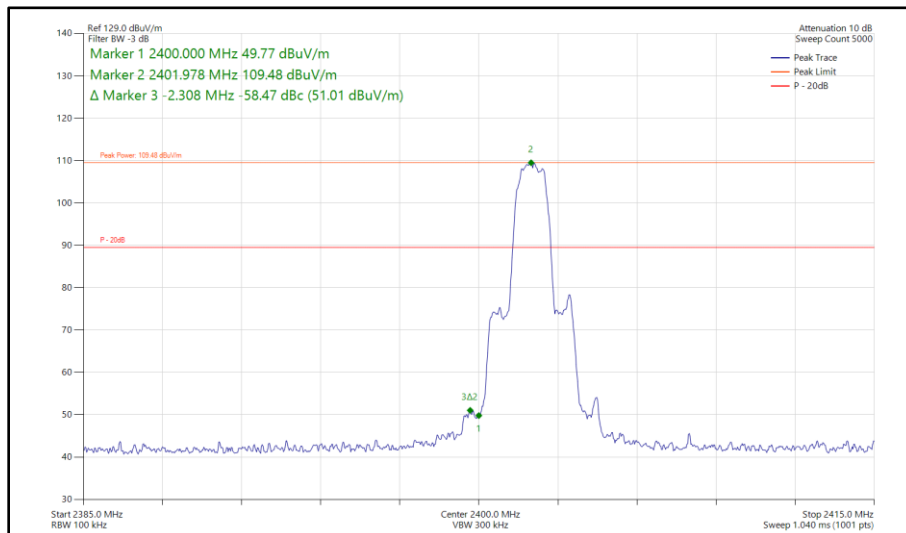


Figure 186 - Bluetooth 3-DH5, SISO, Core 0 - 2402 MHz
Band Edge Frequency 2400 MHz

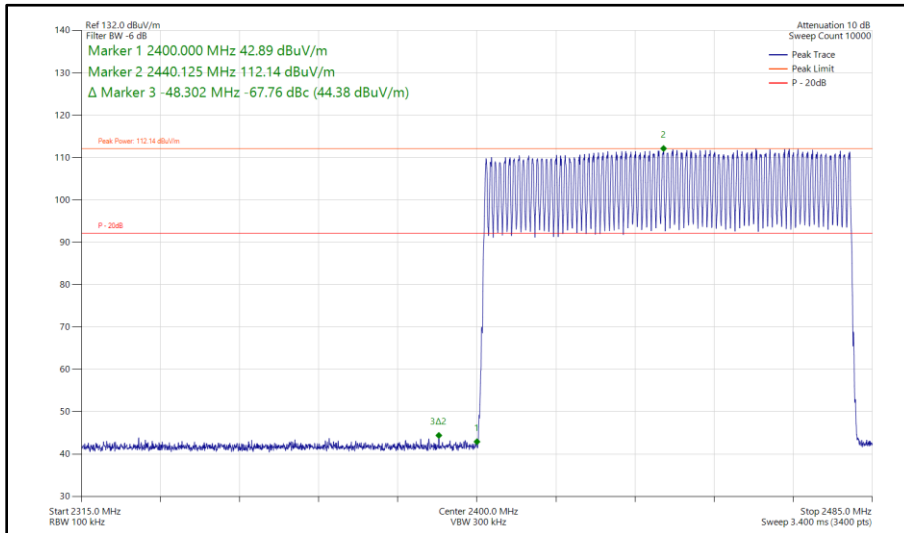


Figure 187 - Bluetooth DH5, SISO, Core 0 - Hopping
Band Edge Frequency 2400 MHz

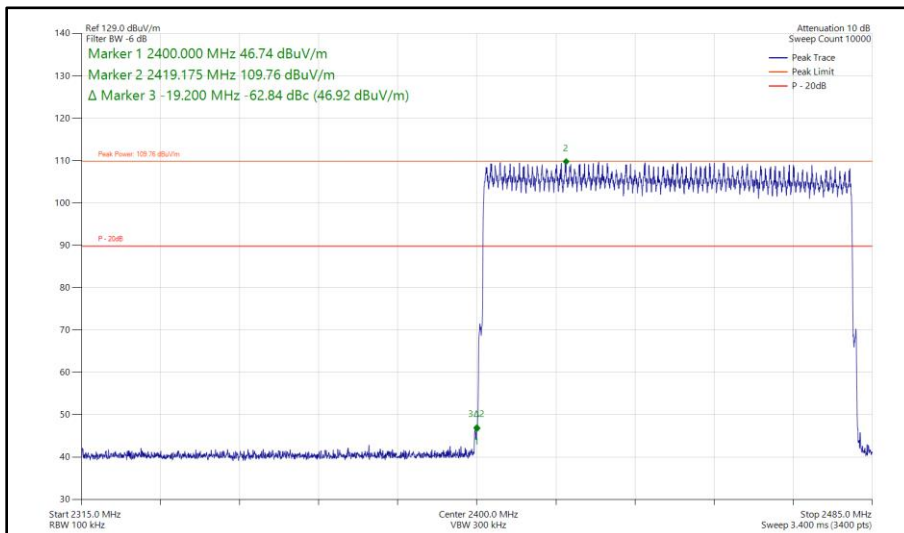


Figure 188 - Bluetooth 2-DH5, SISO, Core 0 - Hopping
Band Edge Frequency 2400 MHz

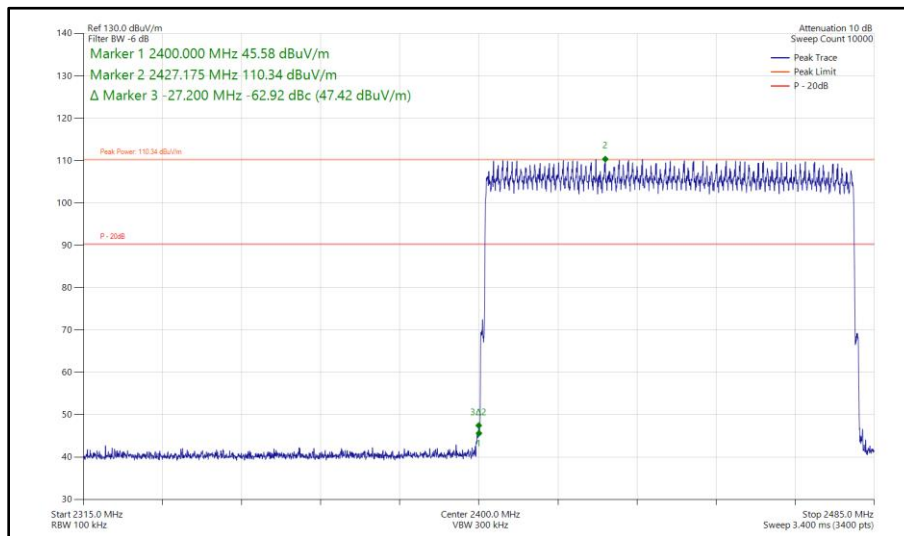


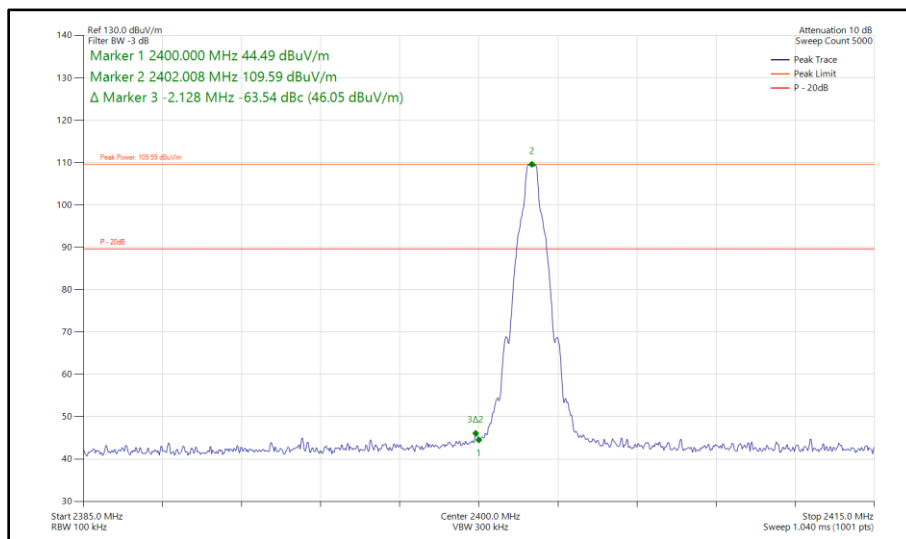
Figure 189 - Bluetooth 3-DH5, SISO, Core 0 - Hopping Band Edge Frequency 2400 MHz



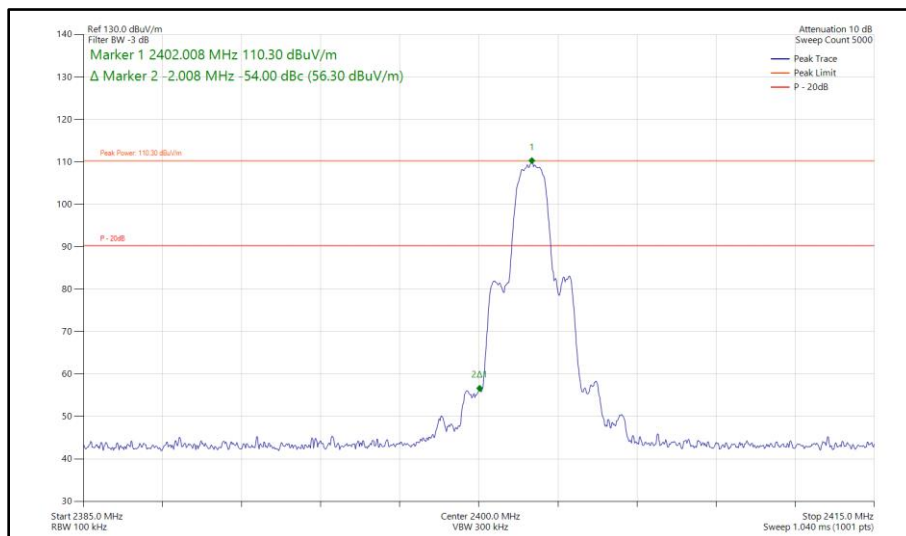
iPA - Core 1 (SISO)

Mode	Packet Type	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Static	DH5	2402	2400	-63.54
Static	2-DH5	2402	2400	-54.00
Static	3-DH5	2402	2400	-53.79
Hopping	DH5	Hopping	2400	-70.14
Hopping	2-DH5	Hopping	2400	-60.94
Hopping	3-DH5	Hopping	2400	-60.64

Table 114 - SISO Authorised Band Edge Results



**Figure 190 - Bluetooth DH5, SISO, Core 1 - 2402 MHz
 Band Edge Frequency 2400 MHz**



**Figure 191 - Bluetooth 2-DH5, SISO, Core 1 - 2402 MHz
 Band Edge Frequency 2400 MHz**

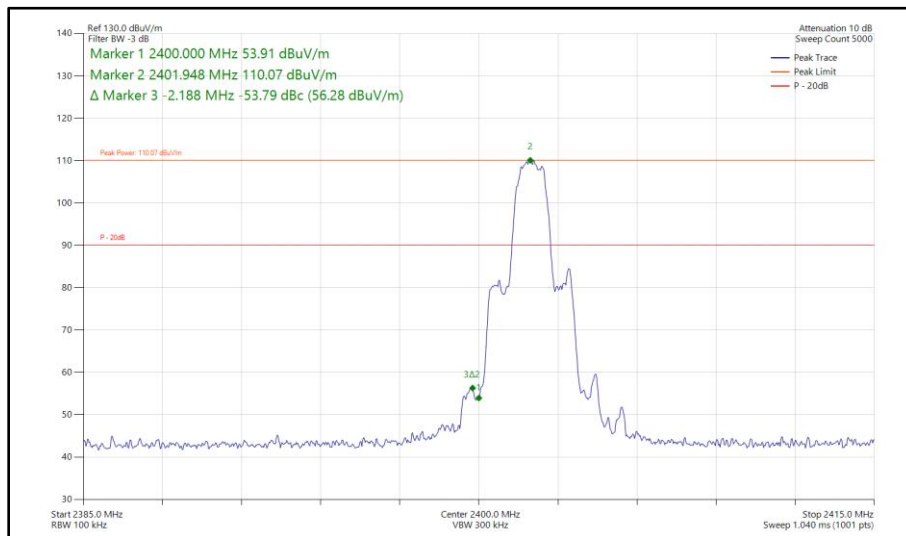


Figure 192 - Bluetooth 3-DH5, SISO, Core 1 - 2402 MHz
Band Edge Frequency 2400 MHz



Figure 193 - Bluetooth DH5, SISO, Core 1 - Hopping
Band Edge Frequency 2400 MHz

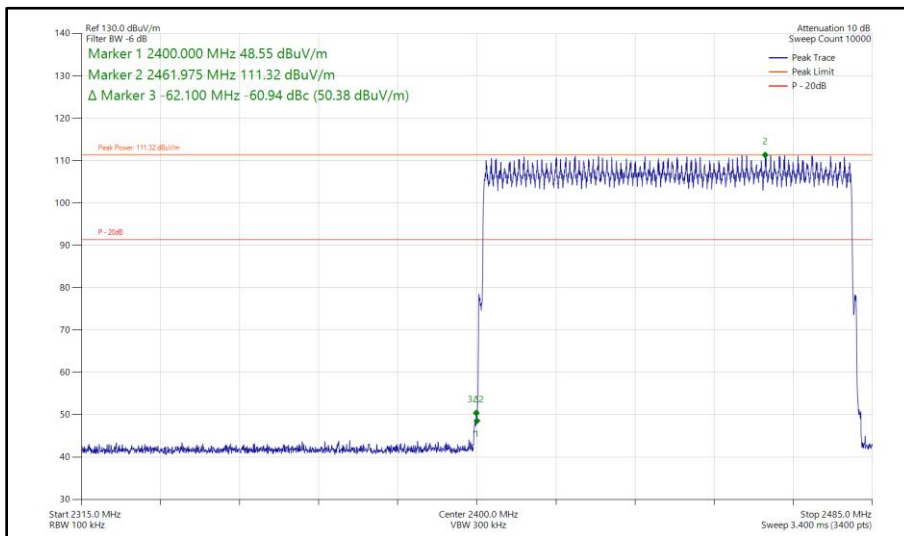


Figure 194 - Bluetooth 2-DH5, SISO, Core 1 - Hopping Band Edge Frequency 2400 MHz

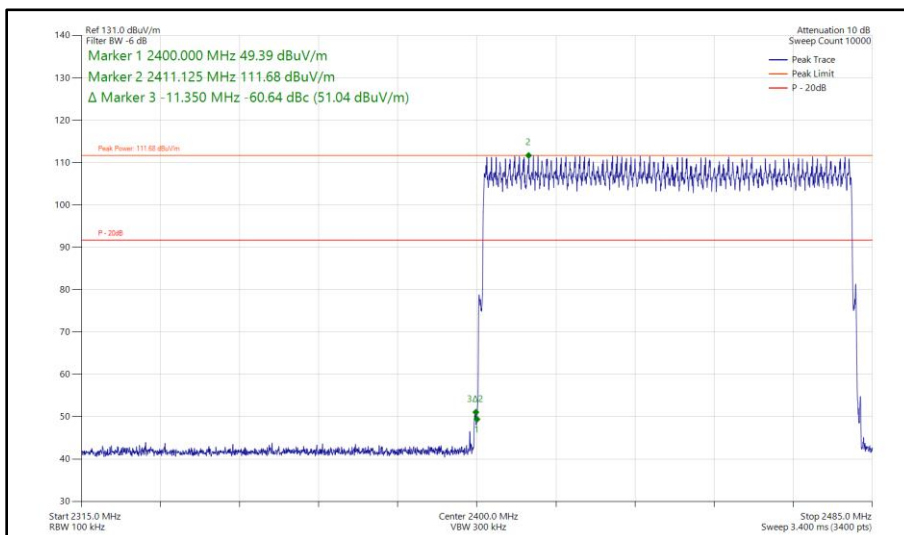


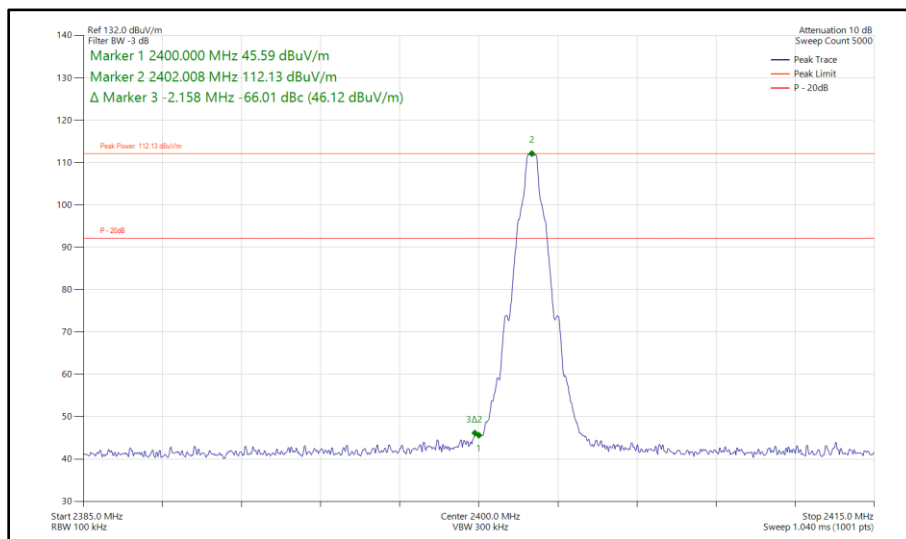
Figure 195 - Bluetooth 3-DH5, SISO, Core 1 - Hopping Band Edge Frequency 2400 MHz



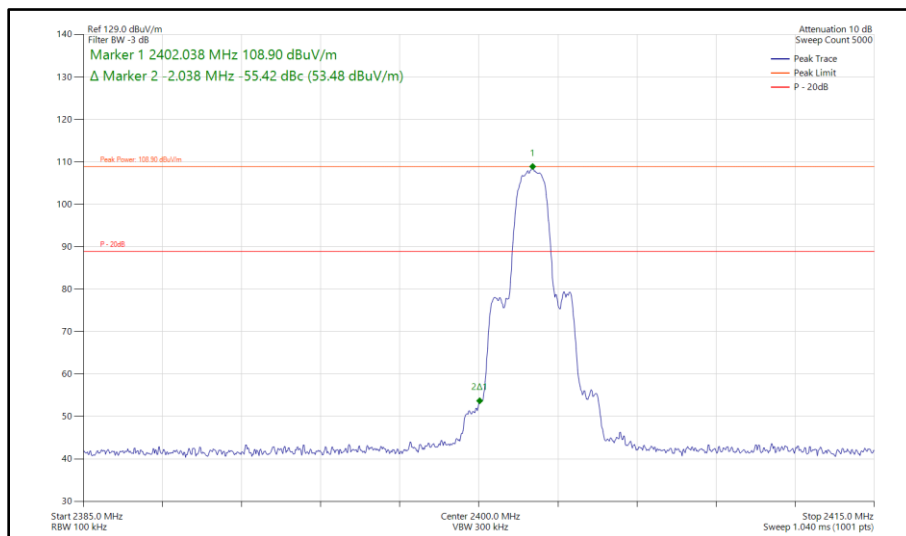
iPA - Core 2 (SISO)

Mode	Packet Type	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Static	DH5	2402	2400	-66.01
Static	2-DH5	2402	2400	-55.42
Static	3-DH5	2402	2400	-56.11
Hopping	DH5	Hopping	2400	-65.10
Hopping	2-DH5	Hopping	2400	-60.49
Hopping	3-DH5	Hopping	2400	-61.72

Table 115 - SISO Authorised Band Edge Results



**Figure 196 - Bluetooth DH5, SISO, Core 2 - 2402 MHz
 Band Edge Frequency 2400 MHz**



**Figure 197 - Bluetooth 2-DH5, SISO, Core 2 - 2402 MHz
 Band Edge Frequency 2400 MHz**

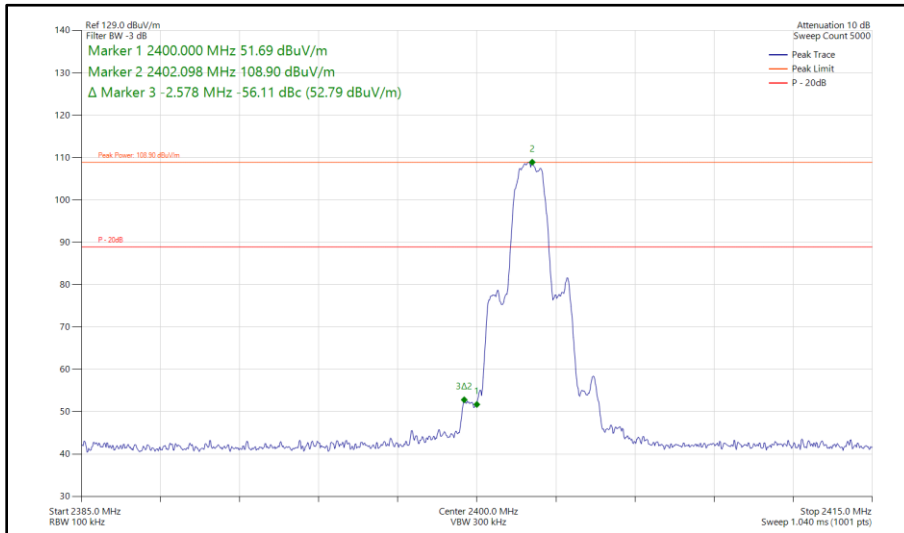


Figure 198 - Bluetooth 3-DH5, SISO, Core 2 - 2402 MHz
Band Edge Frequency 2400 MHz

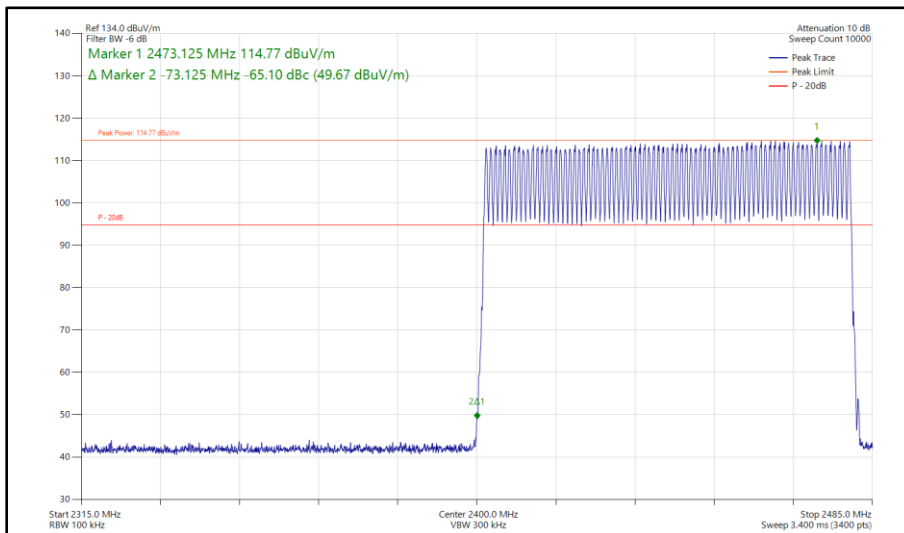


Figure 199 - Bluetooth DH5, SISO, Core 2 - Hopping
Band Edge Frequency 2400 MHz

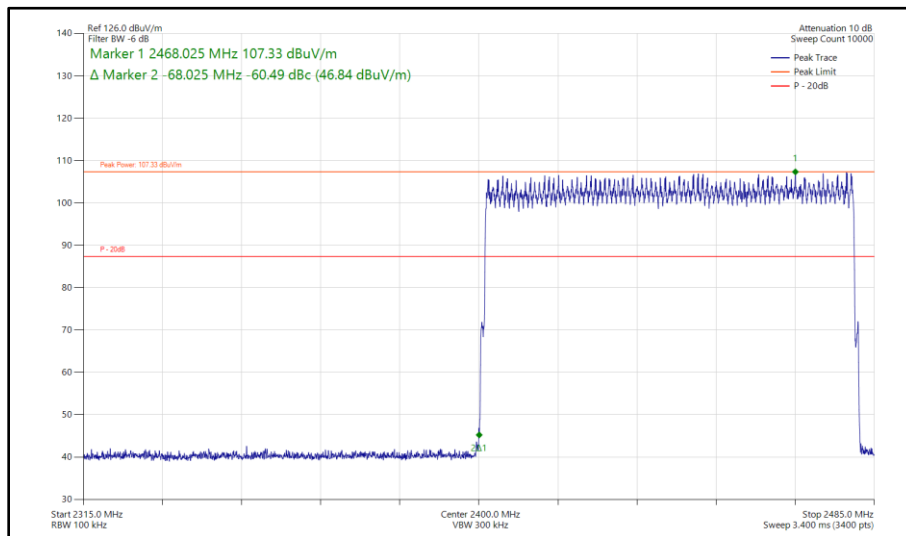


Figure 200 - Bluetooth 2-DH5, SISO, Core 2 - Hopping Band Edge Frequency 2400 MHz

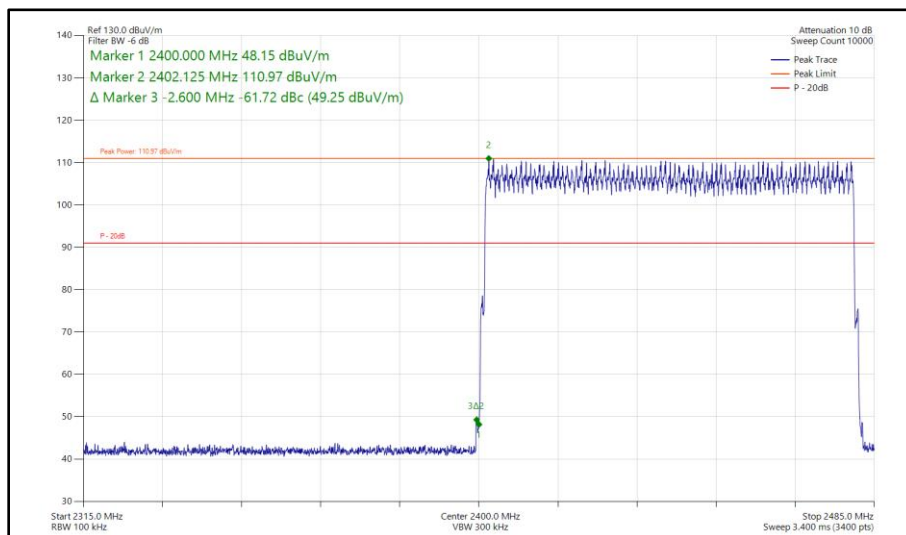


Figure 201 - Bluetooth 3-DH5, SISO, Core 2 - Hopping Band Edge Frequency 2400 MHz



iPA - Core 0 - Core 1 (MIMO)

Mode	Packet Type	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Static	DH5	2402	2400	-66.99
Static	2-DH5	2402	2400	-55.92
Static	3-DH5	2402	2400	-56.16
Hopping	DH5	Hopping	2400	-70.65
Hopping	2-DH5	Hopping	2400	-60.73
Hopping	3-DH5	Hopping	2400	-63.04

Table 116 - MIMO Authorised Band Edge Results

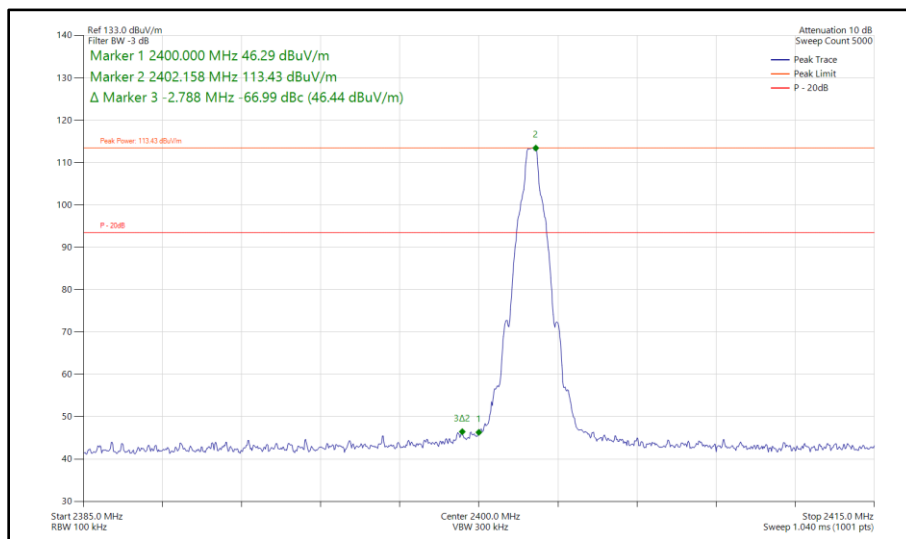


Figure 202 - Bluetooth DH5, MIMO, Core 0 - Core 1 - 2402 MHz
 Band Edge Frequency 2400 MHz

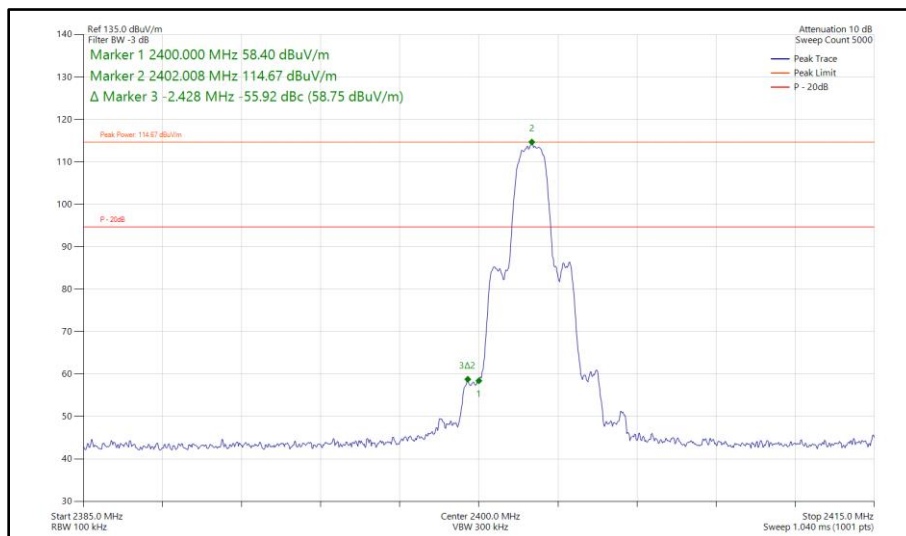


Figure 203 - Bluetooth 2-DH5, MIMO, Core 0 - Core 1 - 2402 MHz
 Band Edge Frequency 2400 MHz

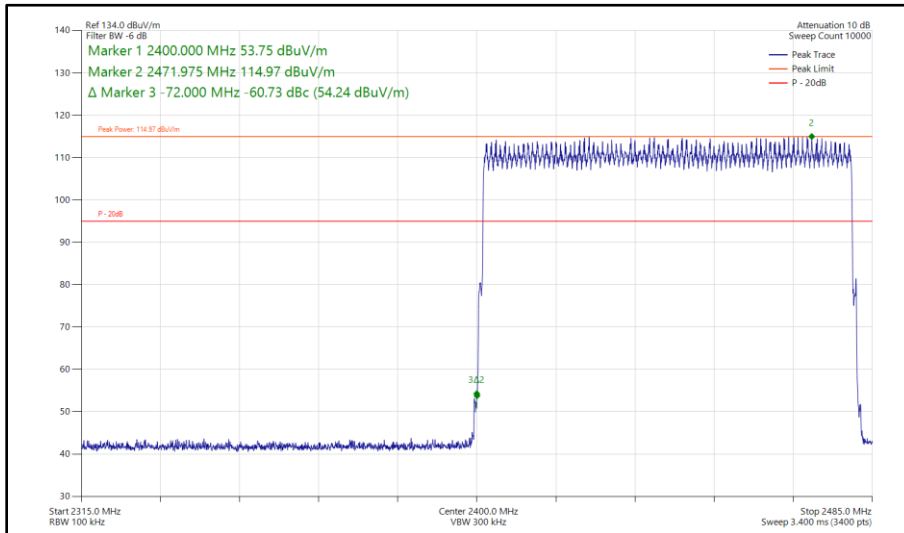


Figure 206 - Bluetooth 2-DH5, MIMO, Core 0 - Core 1 - Hopping Band Edge Frequency 2400 MHz

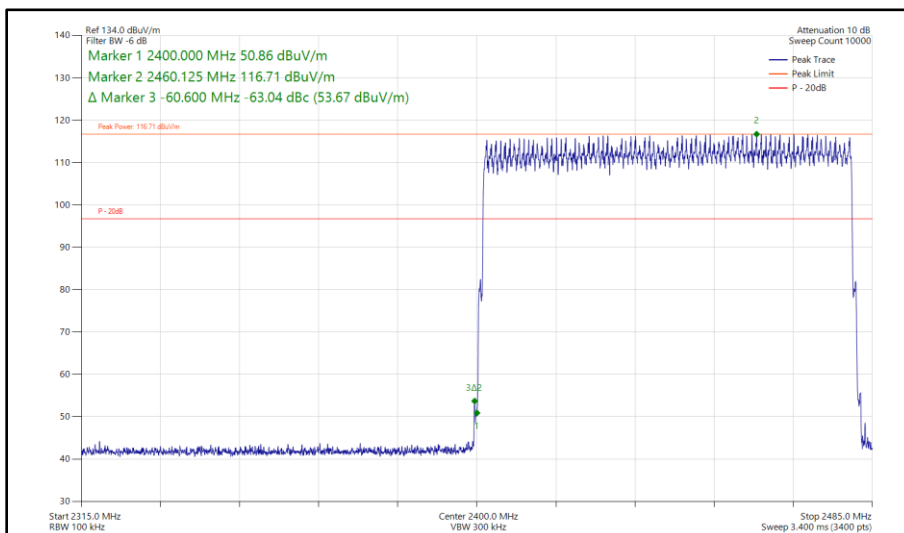


Figure 207 - Bluetooth 3-DH5, MIMO, Core 0 - Core 1 - Hopping Band Edge Frequency 2400 MHz



ePA - Core 0 (SISO)

Mode	Packet Type	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Static	2-DH5	2402	2400	-59.94
Static	3-DH5	2402	2400	-59.06
Hopping	2-DH5	Hopping	2400	-67.44
Hopping	3-DH5	Hopping	2400	-66.79

Table 117 - SISO Authorised Band Edge Results

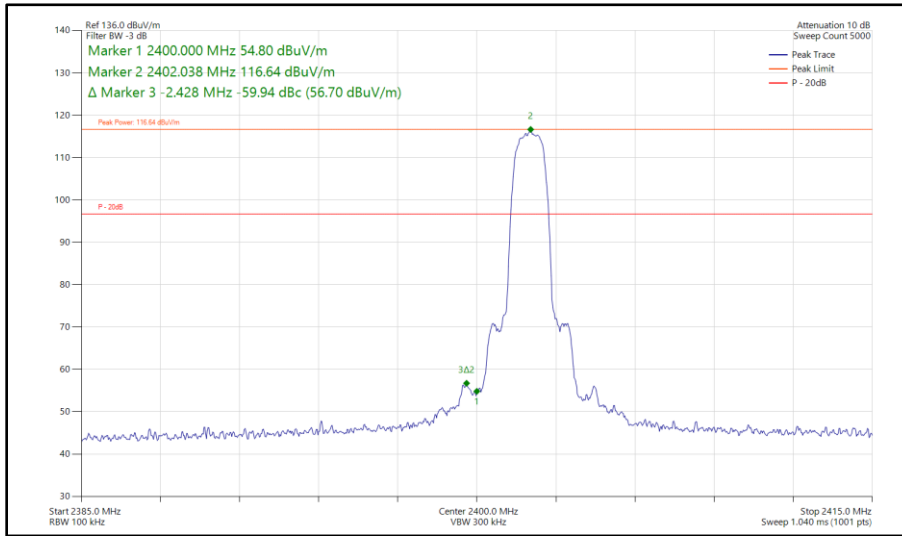


Figure 208 - Bluetooth 2-DH5, SISO, Core 0 - 2402 MHz
 Band Edge Frequency 2400 MHz

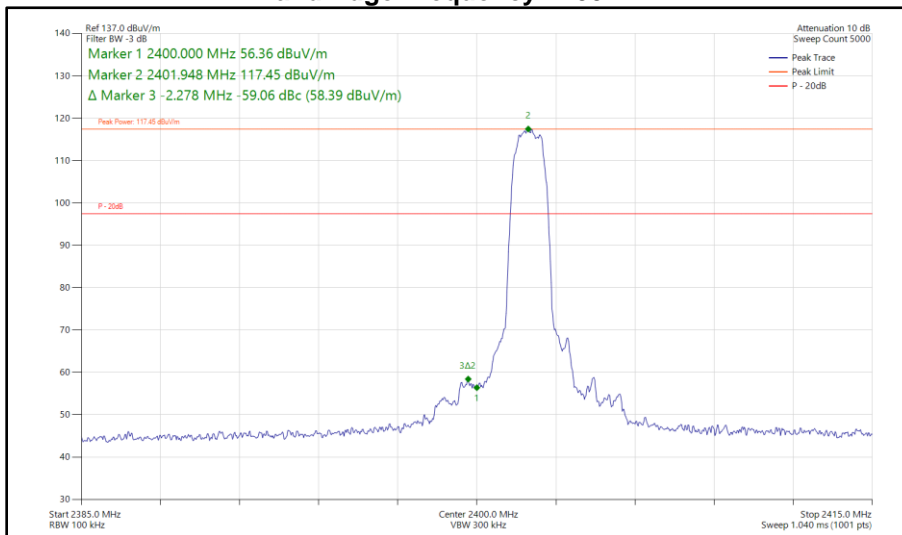


Figure 209 - Bluetooth 3-DH5, SISO, Core 0 - 2402 MHz
 Band Edge Frequency 2400 MHz

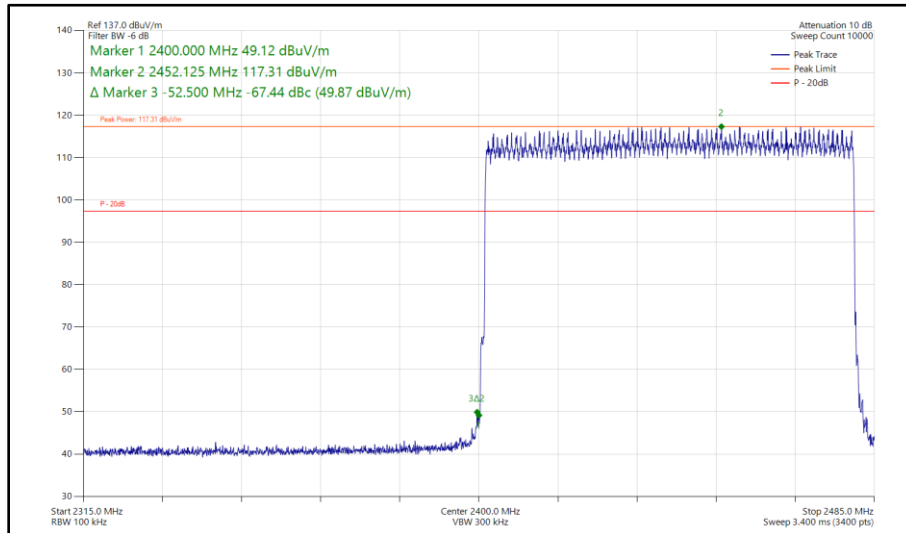


Figure 210 - Bluetooth 2-DH5, SISO, Core 0 - Hopping Band Edge Frequency 2400 MHz

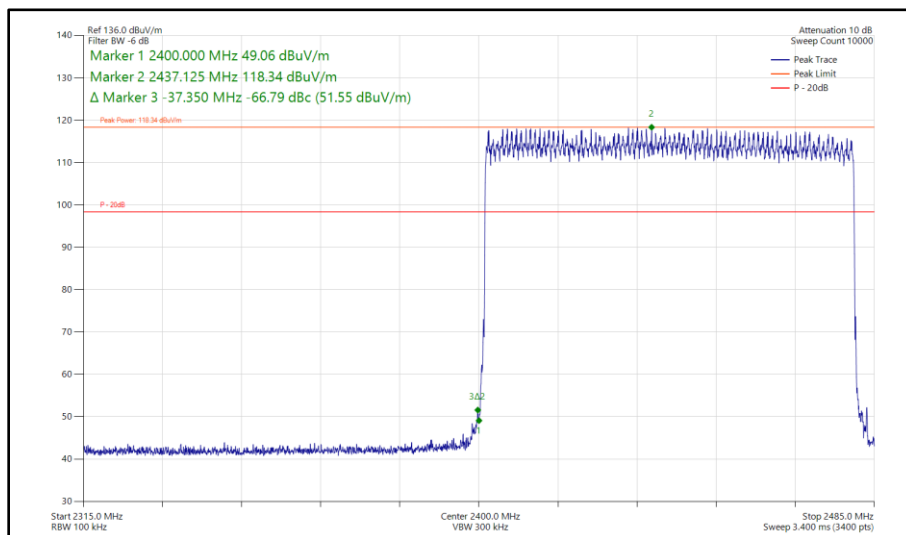


Figure 211 - Bluetooth 3-DH5, SISO, Core 0 - Hopping Band Edge Frequency 2400 MHz



ePA - Core 1 (SISO)

Mode	Packet Type	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Static	2-DH5	2402	2400	-61.79
Static	3-DH5	2402	2400	-61.03
Hopping	2-DH5	Hopping	2400	-66.22
Hopping	3-DH5	Hopping	2400	-68.49

Table 118 - SISO Authorised Band Edge Results

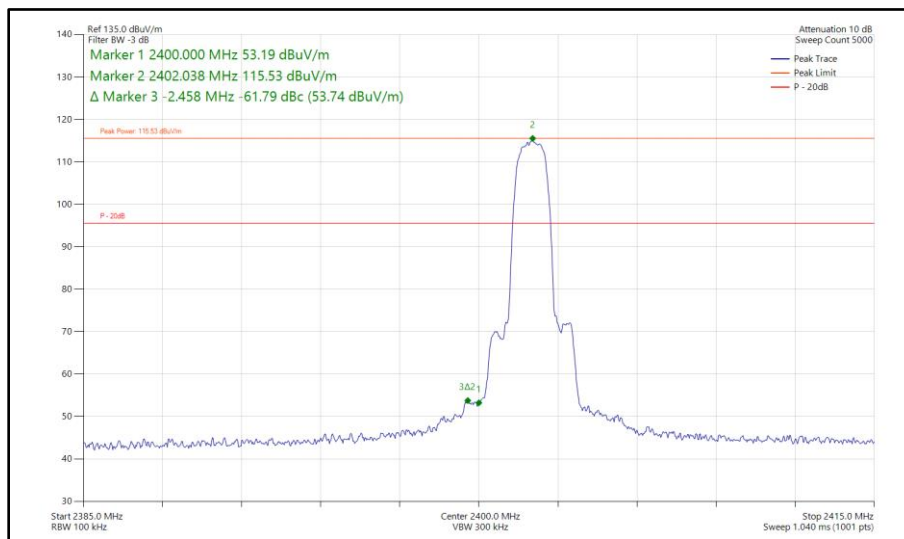


Figure 212 - Bluetooth 2-DH5, SISO, Core 1 - 2402 MHz
 Band Edge Frequency 2400 MHz

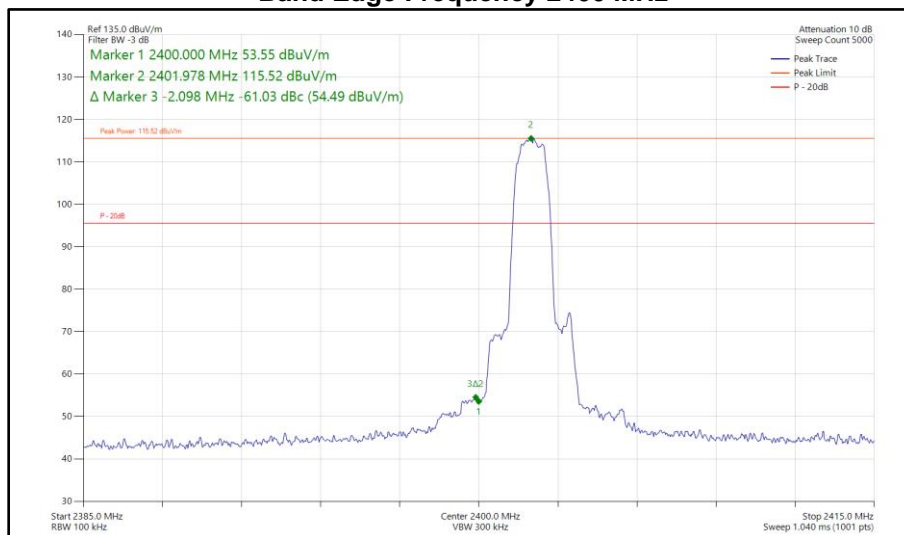


Figure 213 - Bluetooth 3-DH5, SISO, Core 1 - 2402 MHz
 Band Edge Frequency 2400 MHz

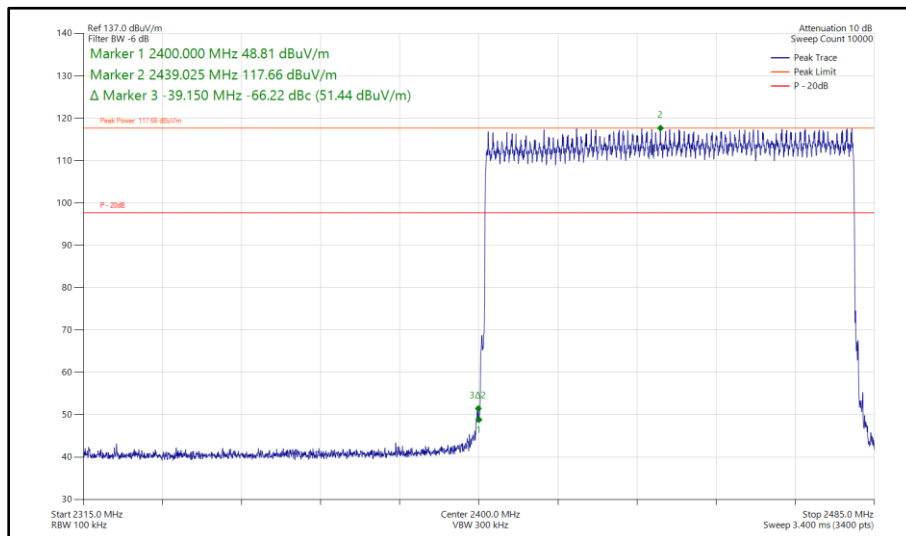


Figure 214 - Bluetooth 2-DH5, SISO, Core 1 - Hopping Band Edge Frequency 2400 MHz

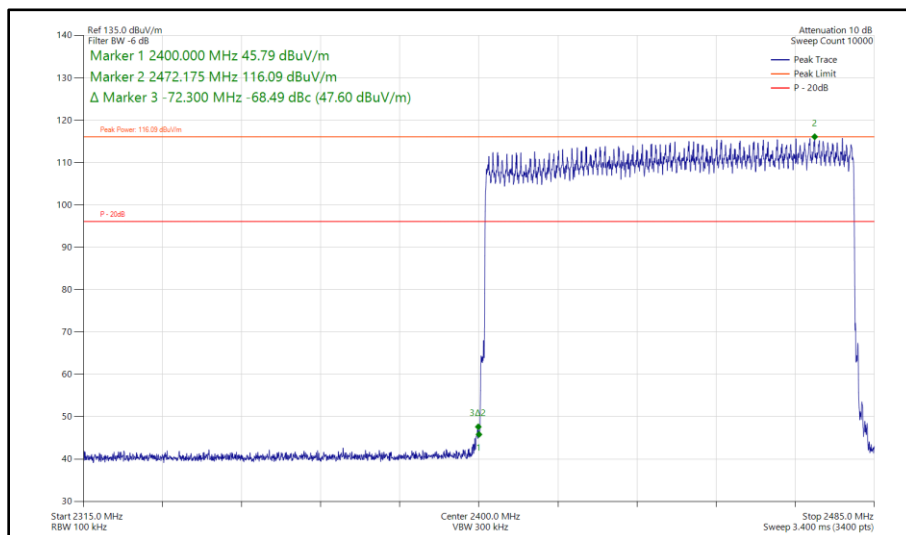


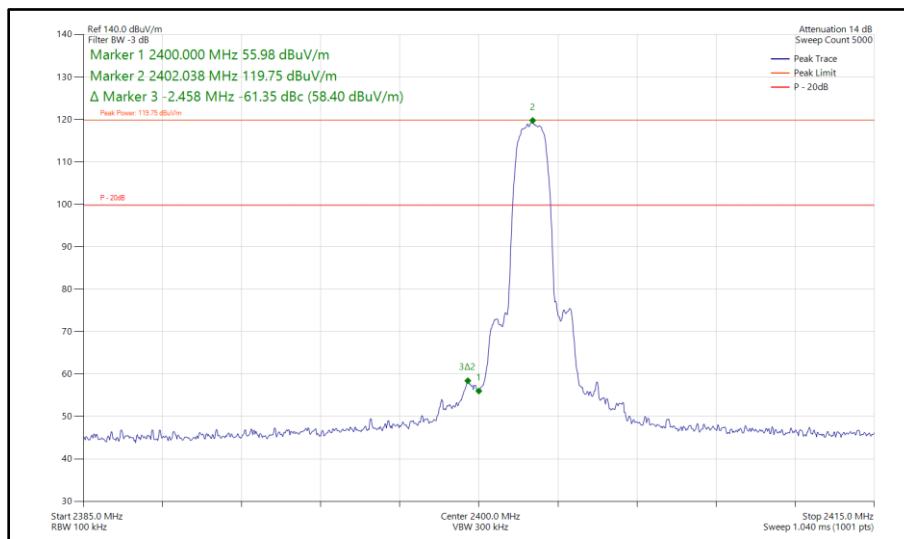
Figure 215 - Bluetooth 3-DH5, SISO, Core 1 - Hopping Band Edge Frequency 2400 MHz



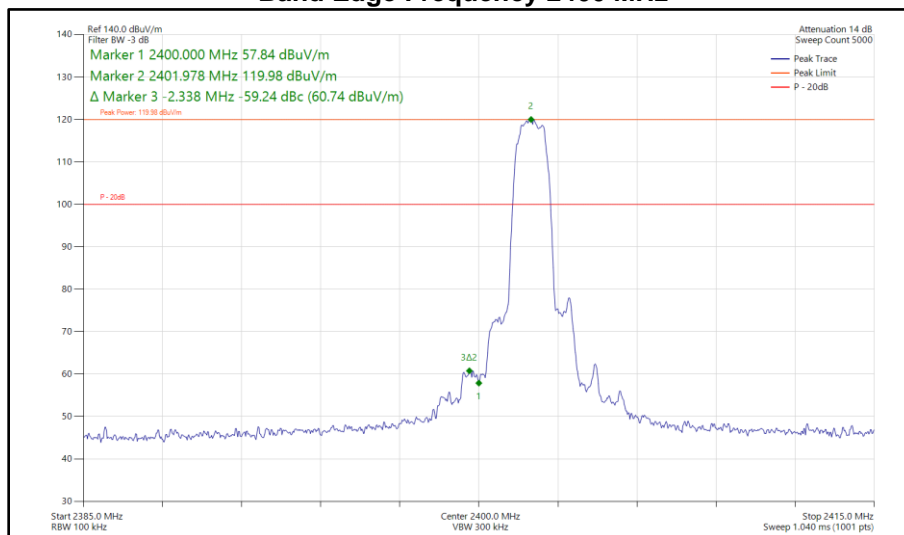
ePA - Core 0 - Core 1 (MIMO)

Mode	Packet Type	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Static	2-DH5	2402	2400	-61.35
Static	3-DH5	2402	2400	-59.24
Hopping	2-DH5	Hopping	2400	-68.76
Hopping	3-DH5	Hopping	2400	-68.20

Table 119 - MIMO Authorised Band Edge Results



**Figure 216 - Bluetooth 2-DH5, MIMO, Core 0 - Core 1 - 2402 MHz
 Band Edge Frequency 2400 MHz**



**Figure 217 - Bluetooth 3-DH5, MIMO, Core 0 - Core 1 - 2402 MHz
 Band Edge Frequency 2400 MHz**

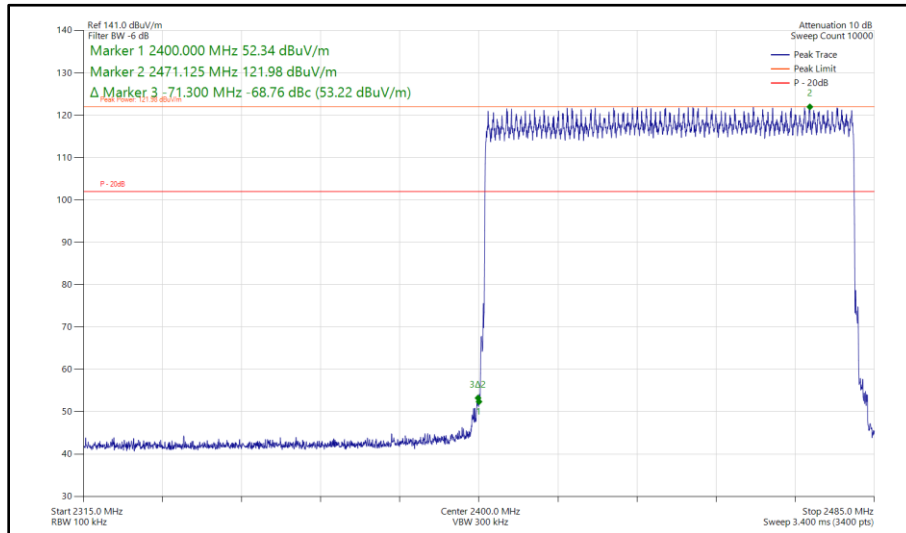


Figure 218 - Bluetooth 2-DH5, MIMO, Core 0 - Core 1 - Hopping Band Edge Frequency 2400 MHz

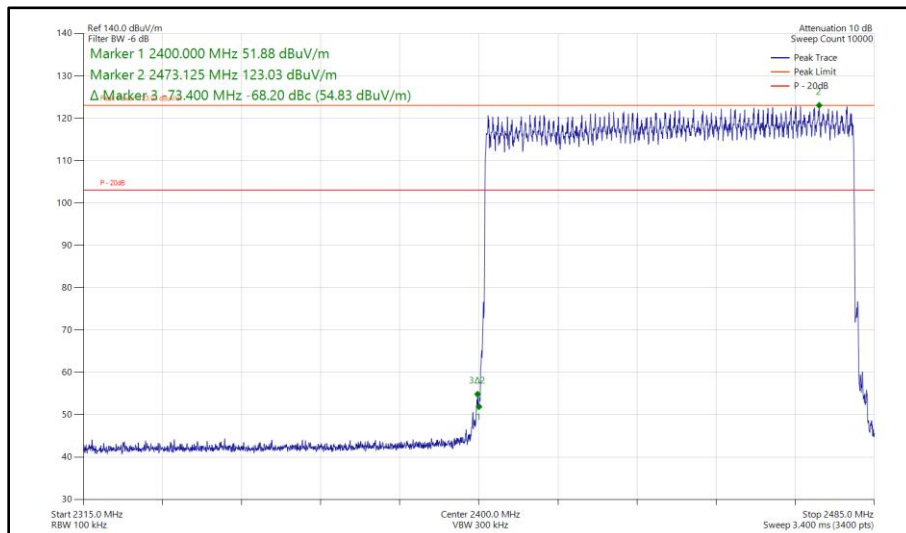


Figure 219 - Bluetooth 3-DH5, MIMO, Core 0 - Core 1 - Hopping Band Edge Frequency 2400 MHz



FCC 47 CFR Part 15, Limit Clause 15.247 (d)

20 dB below the fundamental measured in a 100 kHz bandwidth using a peak detector. If the transmitter complies with the conducted power limits, based on the use of RMS averaging over a time interval, the attenuation required shall be 30 dB below the fundamental instead of 20 dB.

ISED RSS-247, Limit Clause 5.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.



2.7.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 15 and RF Chamber 16.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Expiry Date
Emissions Software	TUV SUD	EmX V3.2.0	5125	-	Software
Humidity & Temperature Probe	Rotronic	HC2A-S	5142	-	TU
EMI Test Receiver	Rohde & Schwarz	ESW44	5911	12	11-Sep-2024
1500W (300V 12A) AC Power Supply	iTech	IT7324	5955	-	O/P Mon
1500W (300V 12A) AC Power Supply	iTech	IT7324	5957	-	O/P Mon
5m Semi-Anechoic Chamber (Dual-Axis), Chamber 15	Albatross Projects	RF Chamber 15	5963	36	28-Apr-2025
Compact Antenna Mast	Maturo Gmbh	CAM4.0-P	5964	-	TU
Mast & Turntable Controller	Maturo Gmbh	FCU3.0	5966	-	TU
Tilt Antenna Mast	Maturo Gmbh	BAM4.5-P	5967	-	TU
Turntable	Maturo Gmbh	TT1.5SI	5968	-	TU
3m Semi-Anechoic Chamber, Chamber16	Albatross Projects	RF Chamber 16	5972	36	24-May-2025
Mast & Turntable Controller	Maturo Gmbh	FCU3.0	5973	-	TU
Tilt Antenna Mast	Maturo Gmbh	BAM4.5-P	5974	-	TU
Turntable	Maturo Gmbh	TT1.5SI	5975	-	TU
Cable (SMA to SMA 1m)	Junkosha	MWX221-01000AMSAMS/A	6018	12	10-Jun-2025
Horn Antenna (1-10 GHz)	Schwarzbeck	BBHA9120B	6140	12	05-May-2025
Horn Antenna (1-10 GHz)	Schwarzbeck	BBHA9120B	6142	12	05-May-2025
Digital Multimeter	Fluke	115	6146	12	06-Jun-2025
Digital Multimeter	Fluke	115	6147	12	06-Jun-2025
Humidity & Temperature meter	R.S Components	1364	6148	12	21-Jul-2024
SAC Switch Unit	TUV SUD	TUV_SSU_001	6190	12	22-Dec-2024
EMI Test Receiver	Rohde & Schwarz	ESW44	6294	12	06-Jan-2025
Cable (SMA to SMA 8m)	Junkosha	MWX221-08000AMSAMS/B	6319	12	04-Feb-2025
Humidity and Temperature Meter	R.S Components	1364	6486	12	04-Jun-2025

Table 120

TU - Traceability Unscheduled
 O/P Mon - Output Monitored using calibrated equipment



2.8 Spurious Radiated Emissions

2.8.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.209 and 15.247 (d)
ISED RSS-247, Clause 3.3 and 5.5
ISED RSS-GEN, Clause 6.13 and 8.9

2.8.2 Equipment Under Test and Modification State

A3112, S/N: MNV254CLPF - Modification State 0
A3112, S/N: D2XW4JQFNK - Modification State 0

2.8.3 Date of Test

17-June-2024 to 08-July-2024

2.8.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 6.3, 6.5 and 6.6.

The EUT was placed on the non-conducting platform in a manner typical of a normal installation.

In the 30 MHz to 1 GHz range pre-scans were only performed on the mid channel (2441 MHz) only.

The plots shown are the characterisation of the EUT. The limits on the plots represent the most stringent case for restricted bands, (74/54 dBuV/m) when compared to 20 dBc outside restricted bands. The limits shown have been used as a threshold to determine where further measurements are necessary. Where results are within 10 dB of the limits shown on the plots, further investigation was carried out and reported in results tables.

Ports on the EUT were terminated with loads as described in ANSI C63.4 clause 6.2.4. For EUT's with multiple connectors of the same type, additional interconnecting cables were connected, and pre-scans performed to determine whether the level of the emissions were increased by >2 dB.

The following conversion can be applied to convert from dB μ V/m to μ V/m:
 $10^{(\text{Field Strength in dB}\mu\text{V/m}/20)}$.

Above 18 GHz, the measurement distance was reduced to 1 m. The limit line was increased by $20 \cdot \text{LOG}(3/1) = 9.54$ dB.

Where formal measurements have been necessary, the results have been presented in the emissions table.

Radiated spurious emissions tests have been conducted in DH5 (high power) mode as this represents worst case with respect to Power and PSD.

2.8.5 Example Test Setup Diagram

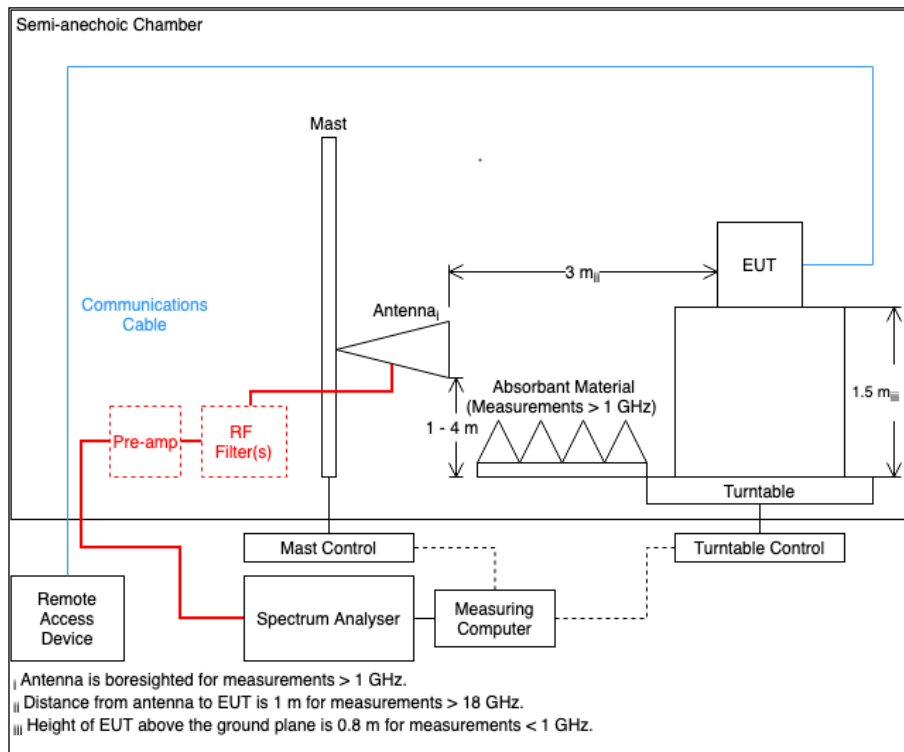


Figure 220

2.8.6 Environmental Conditions

Ambient Temperature 21.8 - 23.2 °C
 Relative Humidity 40.0 - 49.2 %



2.8.7 Test Results

2.4 GHz Bluetooth BDR/EDR

Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2372.632	36.48	54.00	-17.52	CISPR Avg	350	296	Vertical
4207.388	30.30	54.00	-23.70	CISPR Avg	349	356	Vertical

Table 121 - 2402 MHz (CH0), DH5, ePA, Core 0 - Core 1, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

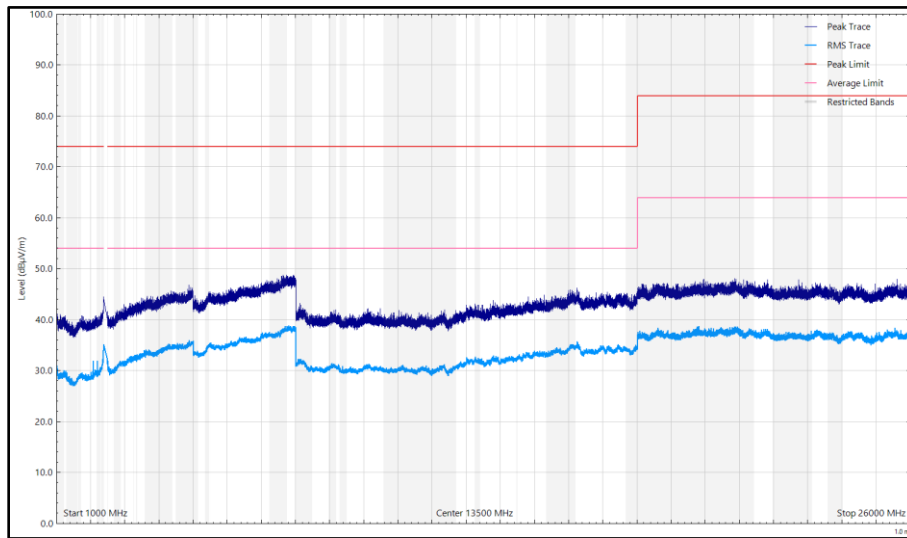


Figure 221 - 2402 MHz (CH0), DH5, ePA, Core 0 - Core 1, 1 GHz to 26 GHz, Horizontal

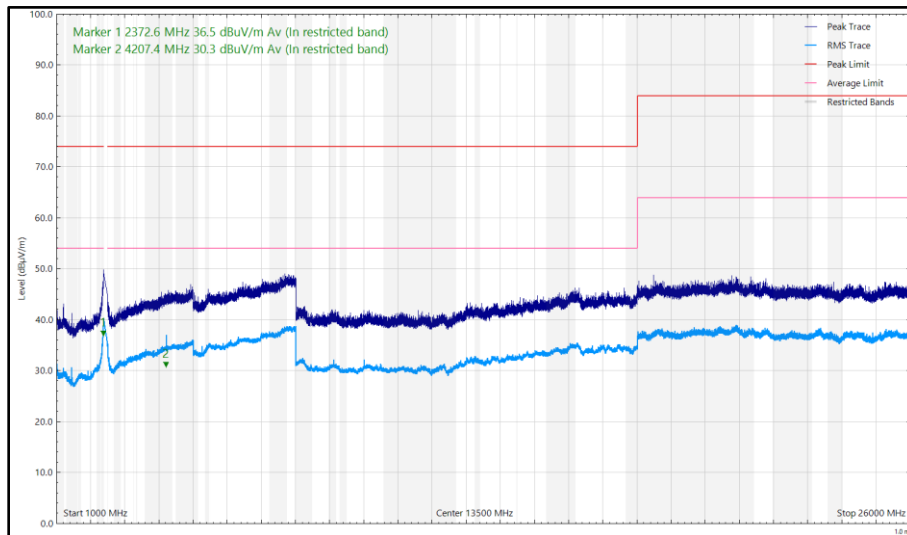


Figure 222 - 2402 MHz (CH0), DH5, ePA, Core 0 - Core 1, 1 GHz to 26 GHz, Vertical



Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
280.003	27.11	46.00	-18.89	Q-Peak	99	111	Horizontal
2388.279	34.60	54.00	-19.40	CISPR Avg	360	286	Vertical
2484.216	36.87	54.00	-17.13	CISPR Avg	10	344	Vertical

Table 122 - 2441 MHz (CH39), DH5, ePA, Core 0 - Core 1, 30 MHz to 26 GHz

No other emissions found within 10 dB of the limit.

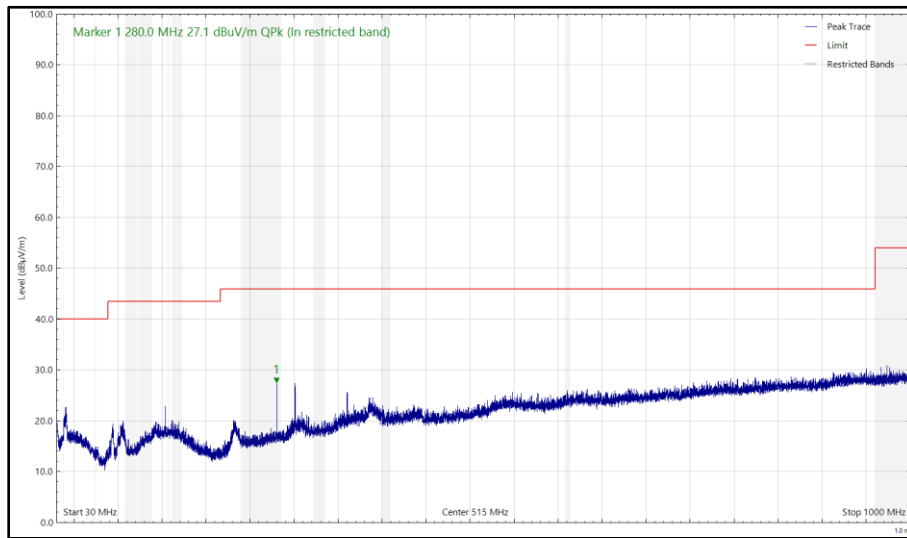


Figure 223 - 2441 MHz (CH39), DH5, ePA, Core 0 - Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

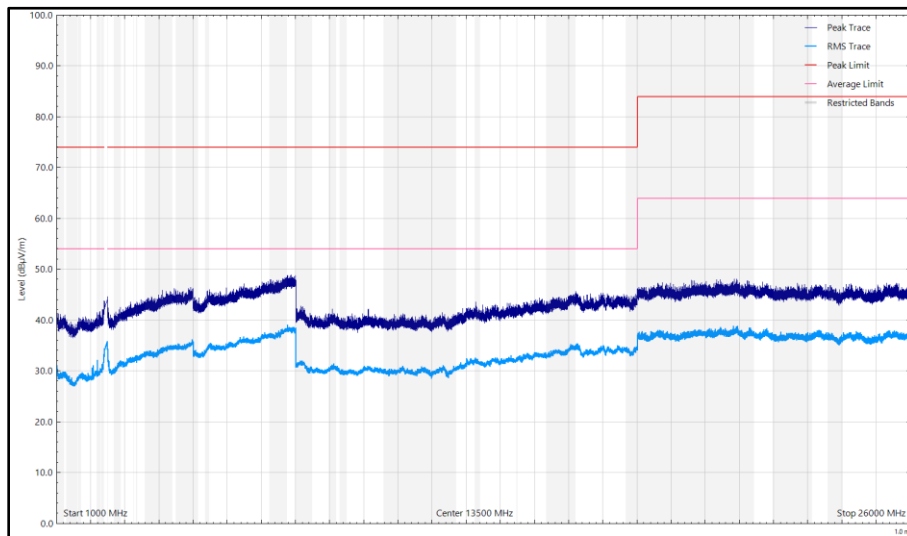


Figure 224 - 2441 MHz (CH39), DH5, ePA, Core 0 - Core 1, 1 GHz to 26 GHz, Horizontal

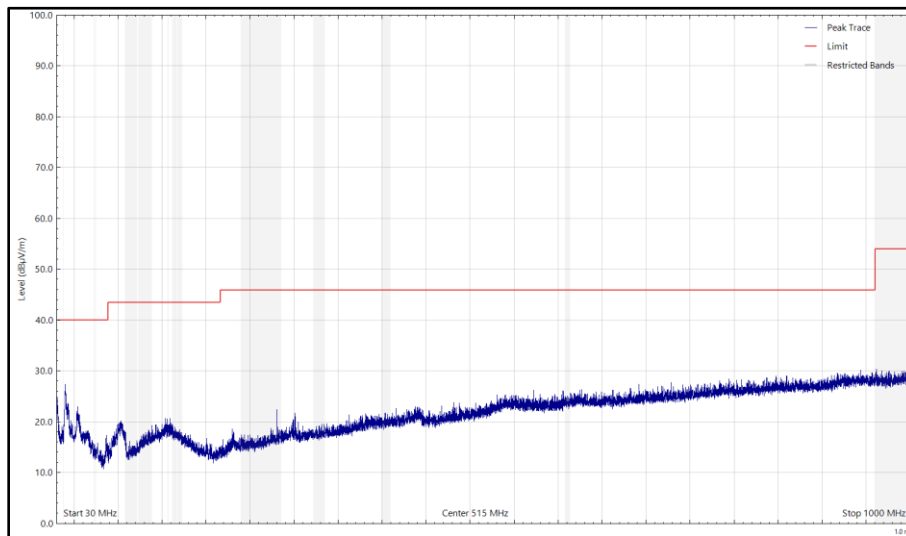


Figure 225 - 2441 MHz (CH39), DH5, ePA, Core 0 - Core 1, 30 MHz to 1 GHz, Vertical (Peak)

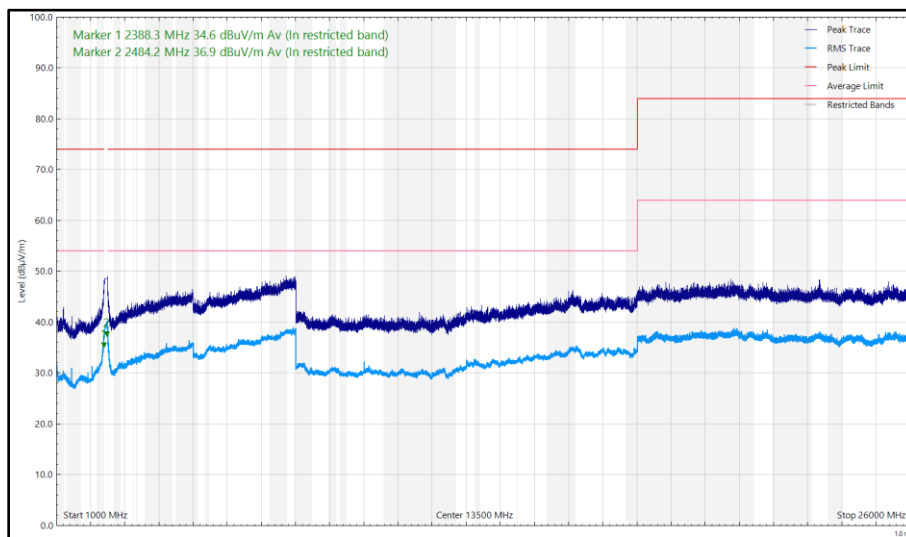


Figure 226 - 2441 MHz (CH39), DH5, ePA, Core 0 - Core 1, 1 GHz to 26 GHz, Vertical



Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2498.632	40.67	54.00	-13.33	CISPR Avg	359	340	Vertical
2499.038	38.54	54.00	-15.46	CISPR Avg	54	383	Horizontal
4211.458	30.26	54.00	-23.74	CISPR Avg	6	168	Vertical

Table 123 - 2480 MHz (CH78), DH5, ePA, Core 0 - Core 1, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

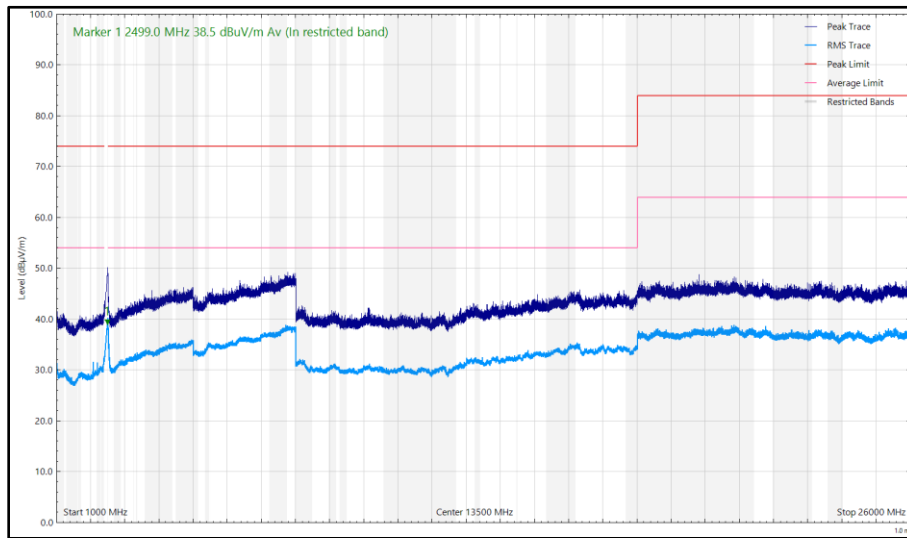


Figure 227 - 2480 MHz (CH78), DH5, ePA, Core 0 - Core 1, 1 GHz to 26 GHz, Horizontal

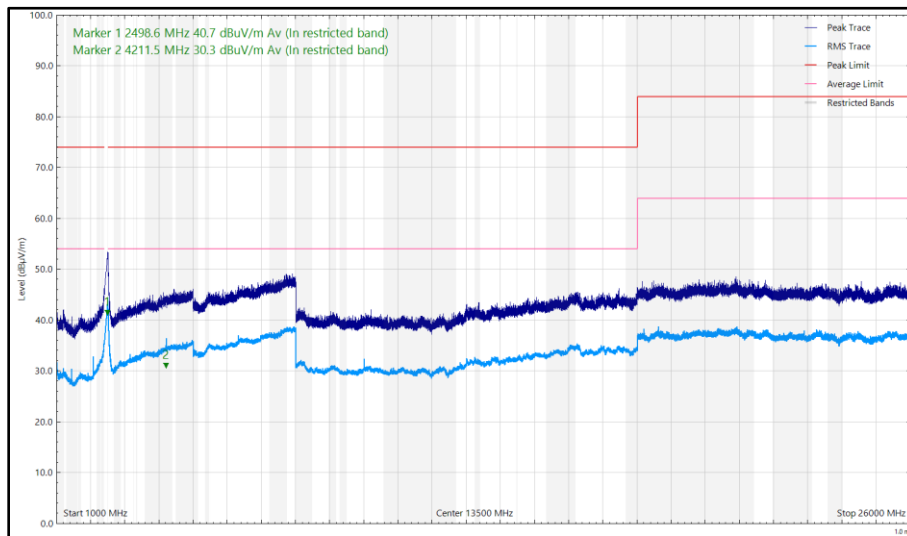


Figure 228 - 2480 MHz (CH78), DH5, ePA, Core 0 - Core 1, 1 GHz to 26 GHz, Vertical



Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4803.573	36.64	54.00	-17.36	CISPR Avg	360	270	Vertical

Table 124 - 2402 MHz (CH0), DH5, iPA, Core 0 - Core 1, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

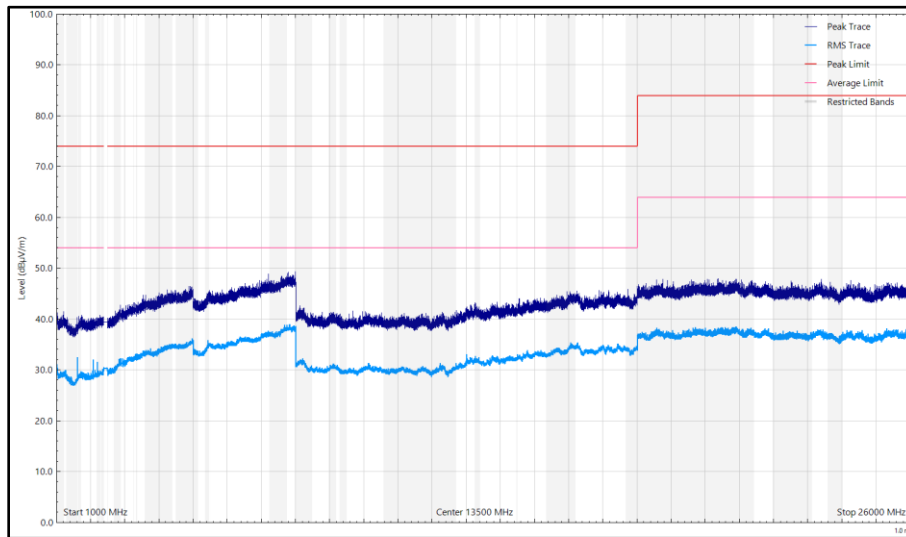


Figure 229 - 2402 MHz (CH0), DH5, iPA, Core 0 - Core 1, 1 GHz to 26 GHz, Horizontal

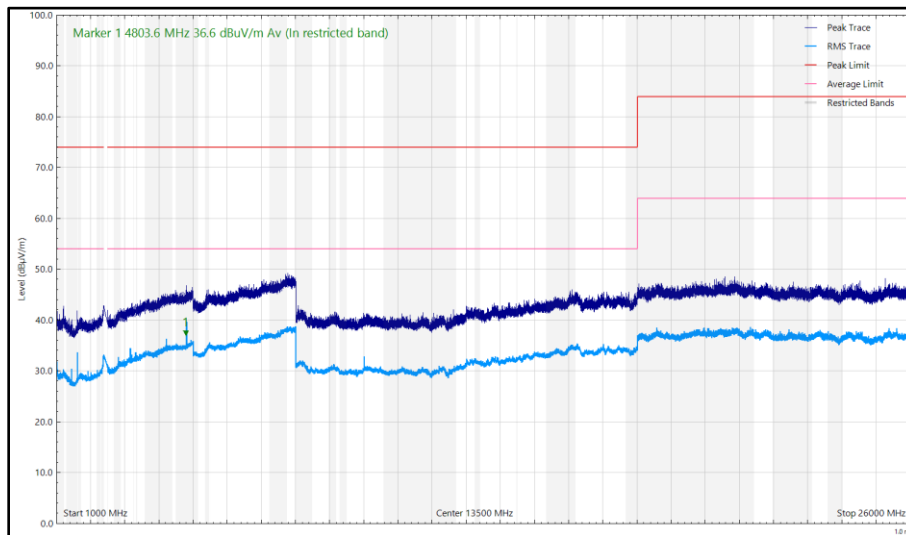


Figure 230 - 2402 MHz (CH0), DH5, iPA, Core 0 - Core 1, 1 GHz to 26 GHz, Vertical



Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
279.999	27.26	46.00	-18.74	Q-Peak	81	100	Horizontal
4881.833	38.20	54.00	-15.80	CISPR Avg	357	308	Vertical

Table 125 - 2441 MHz (CH39), DH5, iPA, Core 0 - Core 1, 30 MHz to 26 GHz

No other emissions found within 10 dB of the limit.

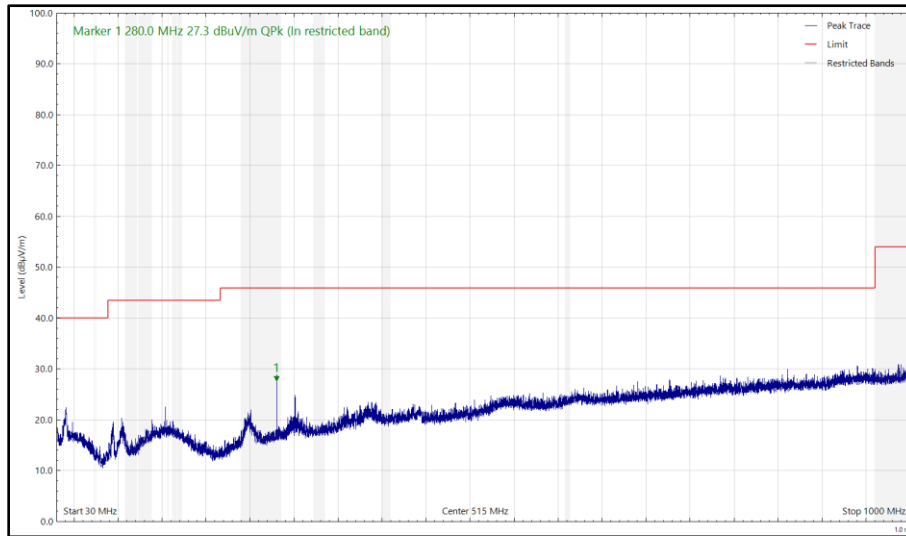


Figure 231 - 2441 MHz (CH39), DH5, iPA, Core 0 - Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

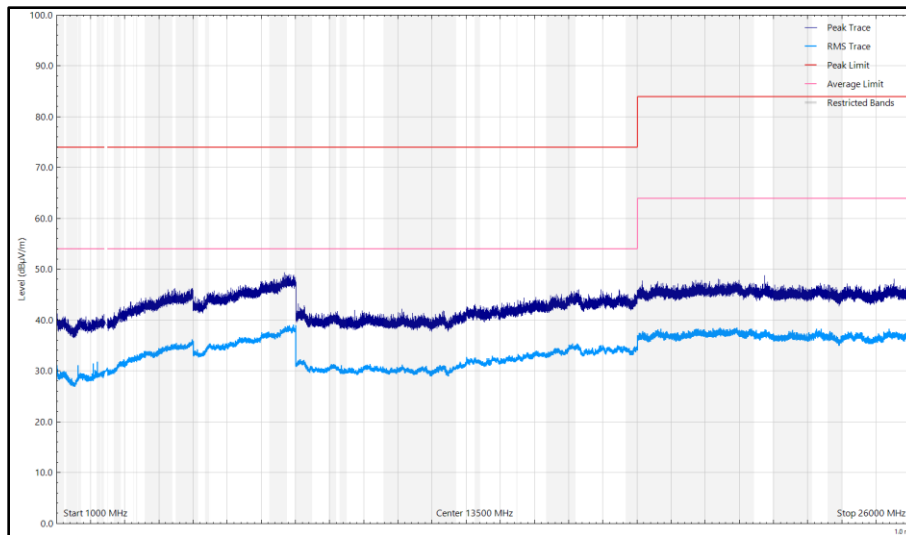


Figure 232 - 2441 MHz (CH39), DH5, iPA, Core 0 - Core 1, 1 GHz to 26 GHz, Horizontal

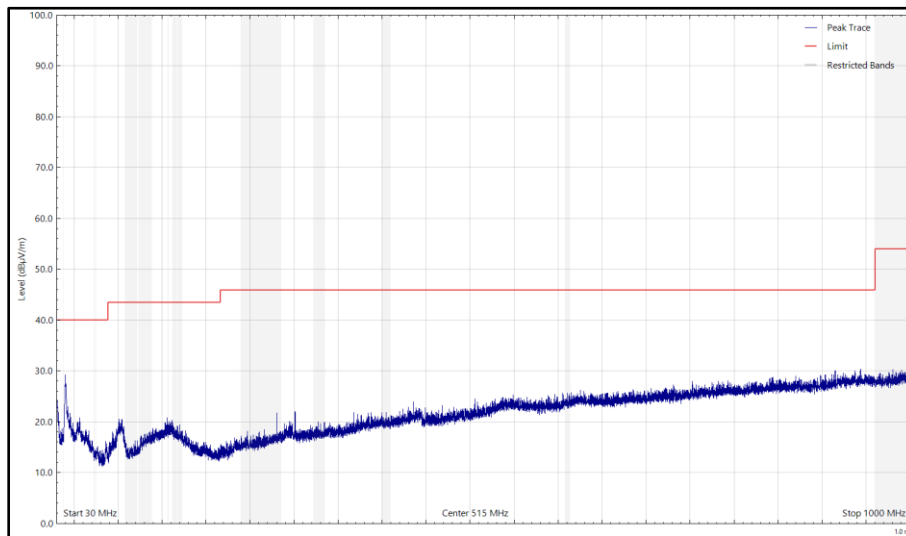


Figure 233 - 2441 MHz (CH39), DH5, iPA, Core 0 - Core 1, 30 MHz to 1 GHz, Vertical (Peak)

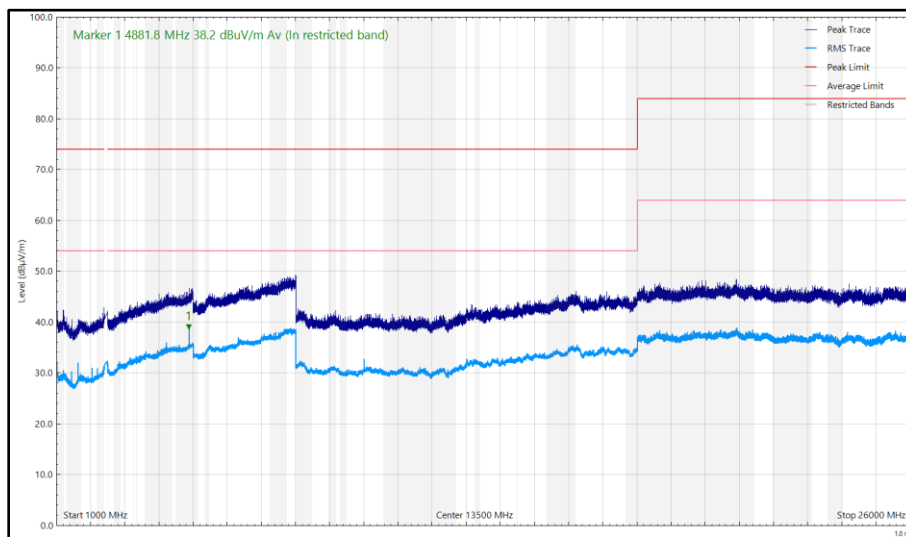


Figure 234 - 2441 MHz (CH39), DH5, iPA, Core 0 - Core 1, 1 GHz to 26 GHz, Vertical