

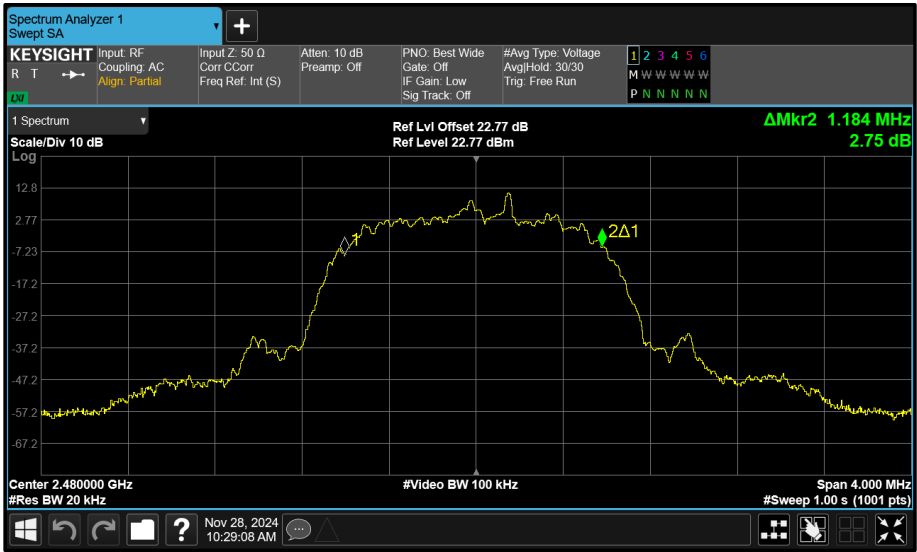


Figure 149 - Core 0 (A) 2480 MHz (CH78) 99% Bandwidth

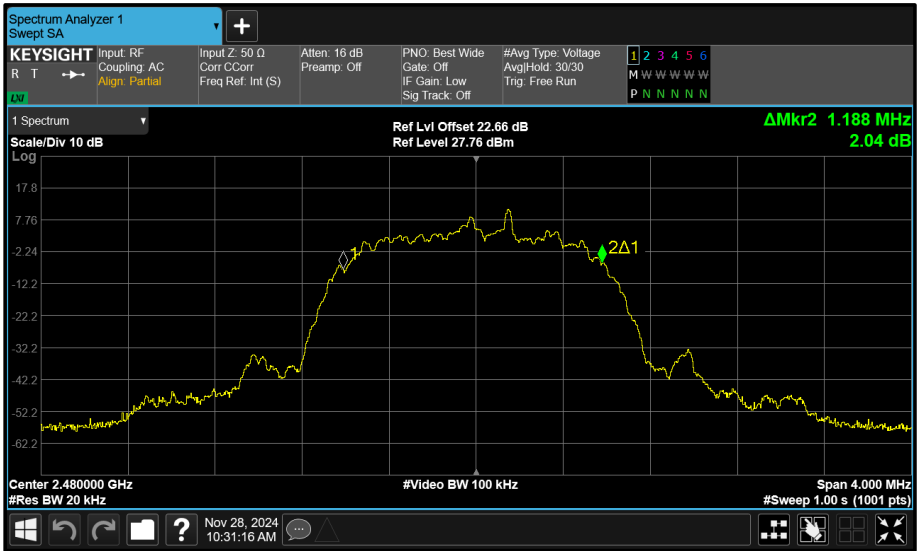


Figure 150 - Core 1 (B) 2480 MHz (CH78) 99% Bandwidth

FCC 47 CFR Part 15 and ISED RSS-247 Limit Clause

None specified.



2.5.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 18 and RF Laboratory 14.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Expiry Date
AC Programmable Power Supply	iTech	IT7324	5225	-	O/P Mon
MXA Signal Analyser	Keysight Technologies	N9020B	5529	24	13-Dec-2024
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6426	12	07-Feb-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6752	12	06-Feb-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6753	12	06-Feb-2025
Handheld Hygrometer	Fluke	971	6838	12	27-Aug-2025

Table 69

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

A3240, S/N: CR2LTQRPHQ - Modification State 0

2.6.3 Date of Test

18-November-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, with the Beamforming results Directional Gain being calculated in accordance with clause F)2)d)(i)

2.6.5 Environmental Conditions

Ambient Temperature	22.2 °C
Relative Humidity	49.7 %



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):	5.70

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	13.62	-	-	-	-	30.00	-16.38
2441	13.42	-	-	-	-	30.00	-16.58
2480	13.30	-	-	-	-	30.00	-16.70

Table 70 - 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	13.62	-	-	-	-	30.00	-16.38	19.32	36.00	-16.68
2441	13.42	-	-	-	-	30.00	-16.58	19.12	36.00	-16.88
2480	13.30	-	-	-	-	30.00	-16.70	19.00	36.00	-17.00

Table 71 - 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):	5.70

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	11.97	-	-	-	-	30.00	-18.03
2441	11.93	-	-	-	-	30.00	-18.07
2480	12.25	-	-	-	-	30.00	-17.75

Table 72 - 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	11.97	-	-	-	-	30.00	-18.03	17.67	36.00	-18.33
2441	11.93	-	-	-	-	30.00	-18.07	17.63	36.00	-18.37
2480	12.25	-	-	-	-	30.00	-17.75	17.95	36.00	-18.05

Table 73 - ISSED 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):	A (Core 0)	Peak Antenna Gain (dBi):	5.70

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	12.32	-	-	-	-	30.00	-17.68
2441	12.75	-	-	-	-	30.00	-17.25
2480	12.77	-	-	-	-	30.00	-17.23

Table 74 - 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	12.32	-	-	-	-	30.00	-17.68	18.02	36.00	-17.98
2441	12.75	-	-	-	-	30.00	-17.25	18.45	36.00	-17.55
2480	12.77	-	-	-	-	30.00	-17.23	18.47	36.00	-17.53

Table 75 - 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):	5.70

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	19.15	-	-	-	-	30.00	-10.85
2441	19.00	-	-	-	-	30.00	-11.00
2480	19.24	-	-	-	-	30.00	-10.76

Table 76 - 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	19.15	-	-	-	-	30.00	-10.85	24.85	36.00	-11.15
2441	19.00	-	-	-	-	30.00	-11.00	24.70	36.00	-11.30
2480	19.24	-	-	-	-	30.00	-10.76	24.94	36.00	-11.06

Table 77 - ISSED 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):	5.70

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	19.66	-	-	-	-	30.00	-10.34
2441	19.53	-	-	-	-	30.00	-10.47
2480	19.78	-	-	-	-	30.00	-10.22

Table 78 - 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	19.66	-	-	-	-	30.00	-10.34	25.36	36.00	-10.64
2441	19.53	-	-	-	-	30.00	-10.47	25.23	36.00	-10.77
2480	19.78	-	-	-	-	30.00	-10.22	25.48	36.00	-10.52

Table 79 - ISSED 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):	8.27

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	13.83	12.68	-	-	16.31	27.73	-11.42
2441	13.81	12.44	-	-	16.19	27.73	-11.54
2480	13.60	12.37	-	-	16.04	27.73	-11.69

Table 80 - 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	13.83	12.68	-	-	16.31	30.00	-13.69	24.58	36.00	-11.42
2441	13.81	12.44	-	-	16.19	30.00	-13.81	24.46	36.00	-11.54
2480	13.60	12.37	-	-	16.04	30.00	-13.96	24.31	36.00	-11.69

Table 81 - ISSED 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):	8.27

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	11.64	11.32	-	-	14.49	27.73	-13.24
2441	11.65	11.17	-	-	14.43	27.73	-13.30
2480	11.58	10.98	-	-	14.30	27.73	-13.43

Table 82 - 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	11.64	11.32	-	-	14.49	30.00	-15.51	22.76	36.00	-13.24
2441	11.65	11.17	-	-	14.43	30.00	-15.57	22.70	36.00	-13.30
2480	11.58	10.98	-	-	14.30	30.00	-15.70	22.57	36.00	-13.43

Table 83 - 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):	8.27

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	12.08	11.63	-	-	14.87	27.73	-12.86
2441	12.10	11.51	-	-	14.83	27.73	-12.90
2480	11.98	11.46	-	-	14.74	27.73	-12.99

Table 84 - 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	12.08	11.63	-	-	14.87	30.00	-15.13	23.14	36.00	-12.86
2441	12.10	11.51	-	-	14.83	30.00	-15.17	23.10	36.00	-12.90
2480	11.98	11.46	-	-	14.74	30.00	-15.26	23.01	36.00	-12.99

Table 85 - ISSED 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 (%):	77.1
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	8.27

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	16.15	15.80	-	-	18.99	27.73	-8.74
2441	15.90	15.68	-	-	18.80	27.73	-8.93
2480	15.97	15.45	-	-	18.73	27.73	-9.00

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	16.15	15.80	-	-	18.99	30.00	-11.01	27.26	36.00	-8.74
2441	15.90	15.68	-	-	18.80	30.00	-11.20	27.07	36.00	-8.93
2480	15.97	15.45	-	-	18.73	30.00	-11.27	27.00	36.00	-9.00

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):	662911 D01 v02r01 F)2)d)(i), 662911 D01 v02r01 E)1)		

DUT Configuration			
Mode:	ePA 8-DPSK (3-DH5)	Duty Cycle (%):	77.2
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	8.27

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	16.68	16.25	-	-	19.48	27.73	-8.25
2441	16.36	16.27	-	-	19.33	27.73	-8.40
2480	16.44	16.33	-	-	19.40	27.73	-8.33

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	16.68	16.25	-	-	19.48	30.00	-10.52	27.75	36.00	-8.25
2441	16.36	16.27	-	-	19.33	30.00	-10.67	27.60	36.00	-8.40
2480	16.44	16.33	-	-	19.40	30.00	-10.60	27.67	36.00	-8.33

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

FCC 47 CFR Part 15, Limit Clause 15.247 (b)(1)

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: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

ISED RSS-247, Limit Clause 5.4 (b)

For FHSs operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1.0 W if the hopset uses 75 or more hopping channel; the maximum peak conducted output power shall not exceed 0.125 W if the hopset uses less than 75 hopping channel. 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
AC Programmable Power Supply	iTech	IT7324	5225	-	O/P Mon
USB Power Sensor	Boonton	RTP5008	5820	12	07-Feb-2025
USB Power Sensor	Boonton	RTP5008	5821	12	07-Feb-2025
Signal Conditioning Unit	TUV SUD	SPECTRUM_SCU001	6426	12	07-Feb-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6752	12	06-Feb-2025
SCU Cable Assembly	TUV SUD	SPECTRUM_SCU_CA	6753	12	06-Feb-2025
Handheld Hygrometer	Fluke	971	6838	12	27-Aug-2025

Table 90

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

A3240, S/N: H2XGP4VW6W - Modification State 0

2.7.3 Date of Test

01-October-2024 to 02-October-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	22.6 °C
Relative Humidity	46.7 %

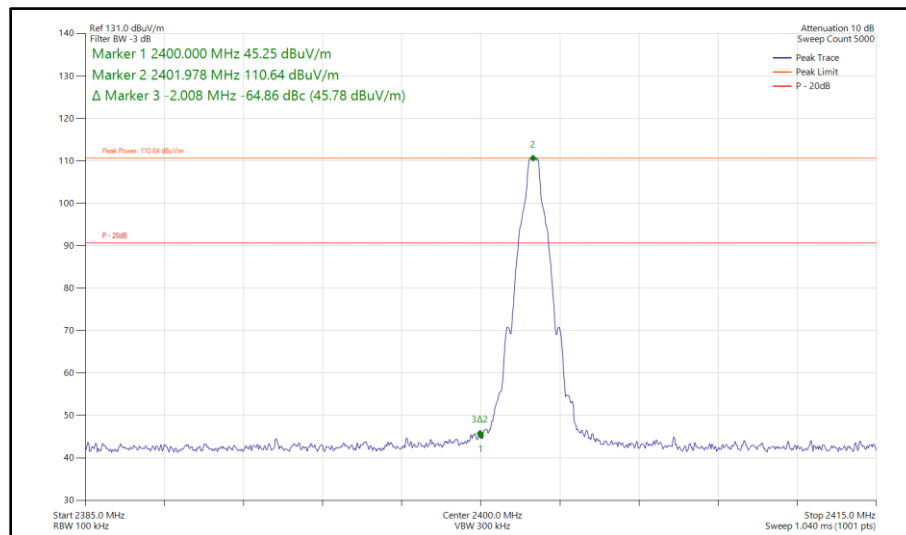
2.7.6 Test Results

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	-64.86
Static	2-DH5	2402	2400	-61.69
Static	3-DH5	2402	2400	-61.90
Hopping	DH5	Hopping	2400	-68.38
Hopping	2-DH5	Hopping	2400	-64.37
Hopping	3-DH5	Hopping	2400	-63.64

Table 91 - SISO Authorised Band Edge Results



**Figure 151 - Bluetooth DH5, SISO, Core 0 - 2402 MHz
Band Edge Frequency 2400 MHz**

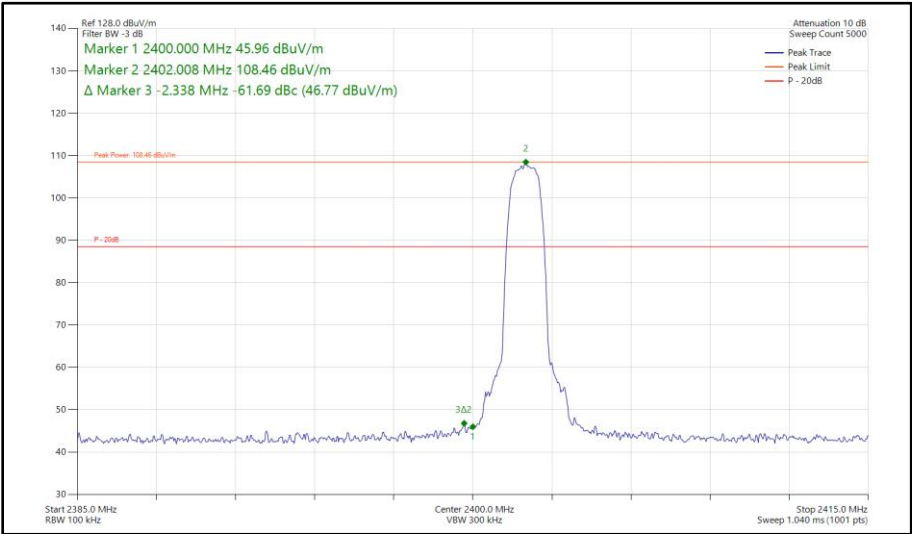


Figure 152 - Bluetooth 2-DH5, SISO, Core 0 - 2402 MHz
Band Edge Frequency 2400 MHz

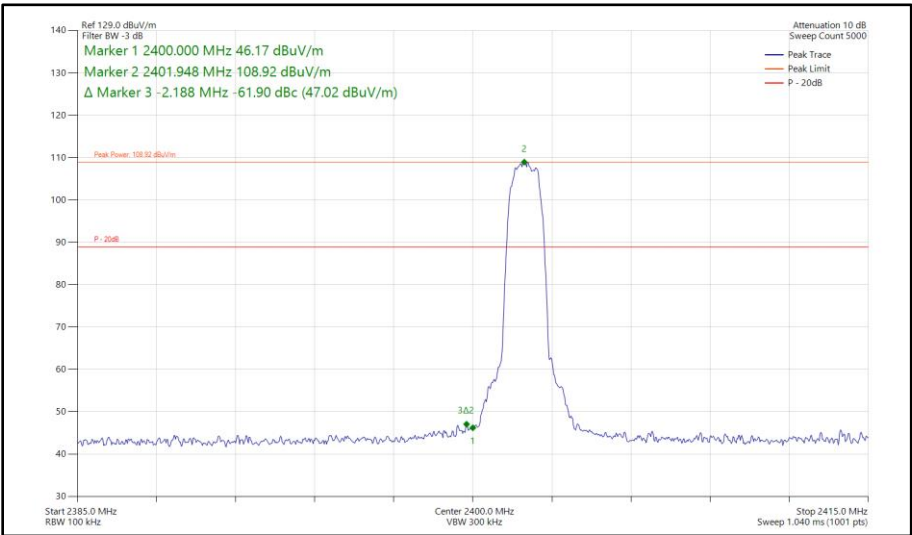


Figure 153 - Bluetooth 3-DH5, SISO, Core 0 - 2402 MHz
Band Edge Frequency 2400 MHz

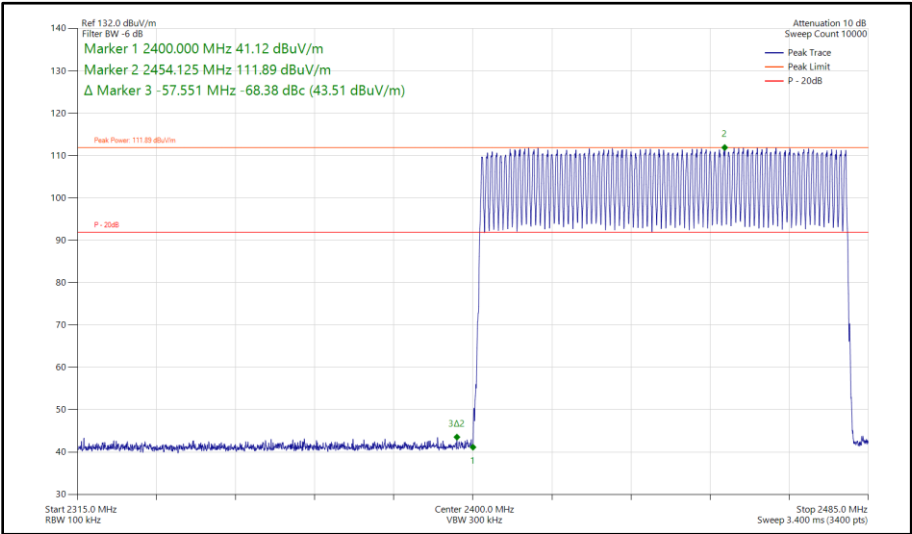


Figure 154 - Bluetooth DH5, SISO, Core 0 - Hopping
Band Edge Frequency 2400 MHz

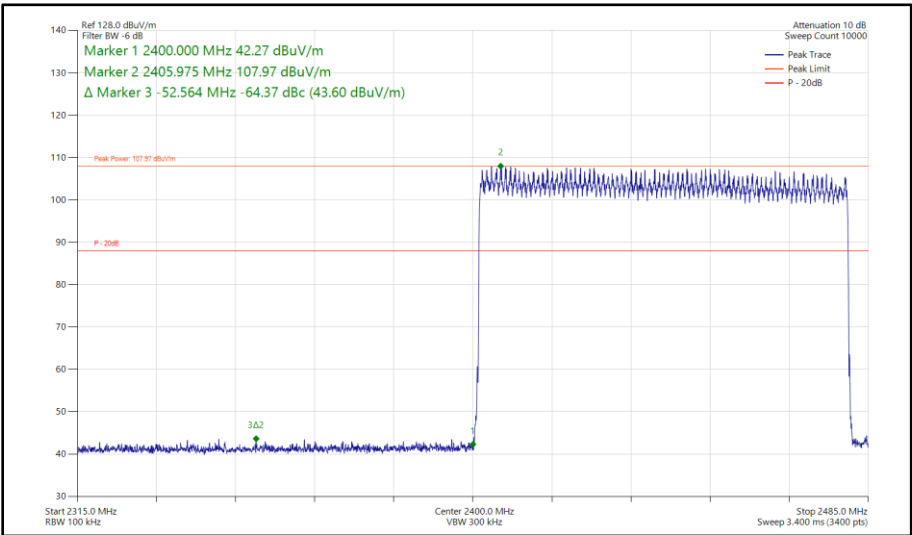


Figure 155 - Bluetooth 2-DH5, SISO, Core 0 - Hopping
Band Edge Frequency 2400 MHz



iPA - Core 1 (SISO)

Mode	Packet Type	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Static	DH5	2402	2400	-64.49
Static	2-DH5	2402	2400	-59.85
Static	3-DH5	2402	2400	-59.16
Hopping	DH5	Hopping	2400	-68.74
Hopping	2-DH5	Hopping	2400	-64.34
Hopping	3-DH5	Hopping	2400	-64.80

Table 92 - SISO Authorised Band Edge Results

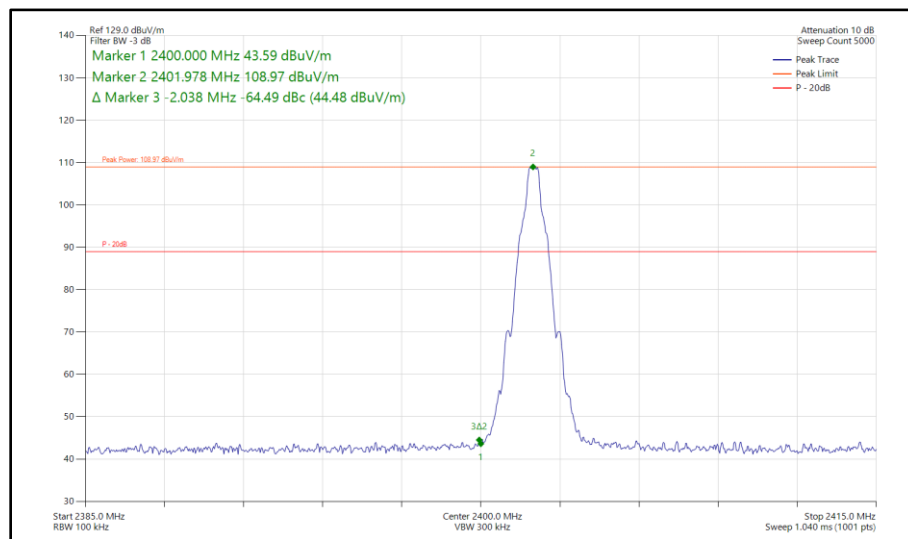


Figure 157 - Bluetooth DH5, SISO, Core 1 - 2402 MHz
Band Edge Frequency 2400 MHz

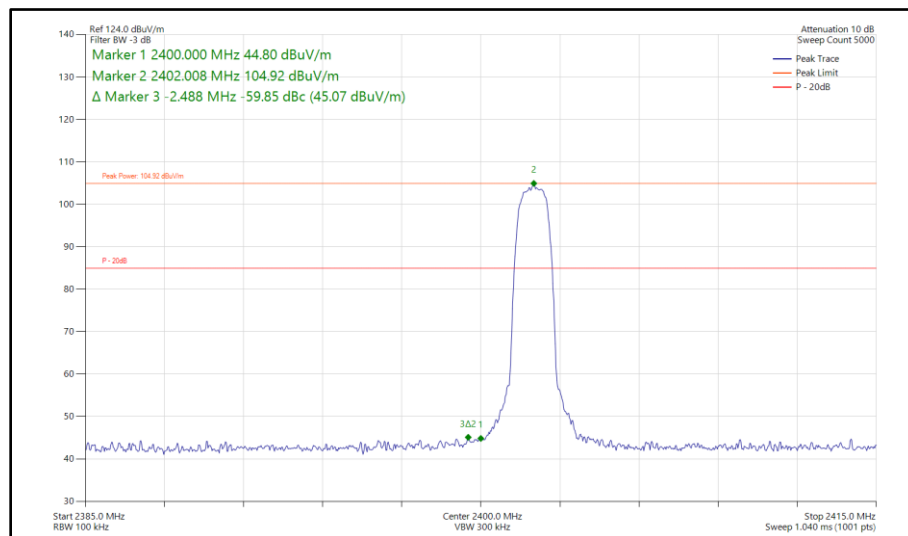


Figure 158 - Bluetooth 2-DH5, SISO, Core 1 - 2402 MHz
Band Edge Frequency 2400 MHz

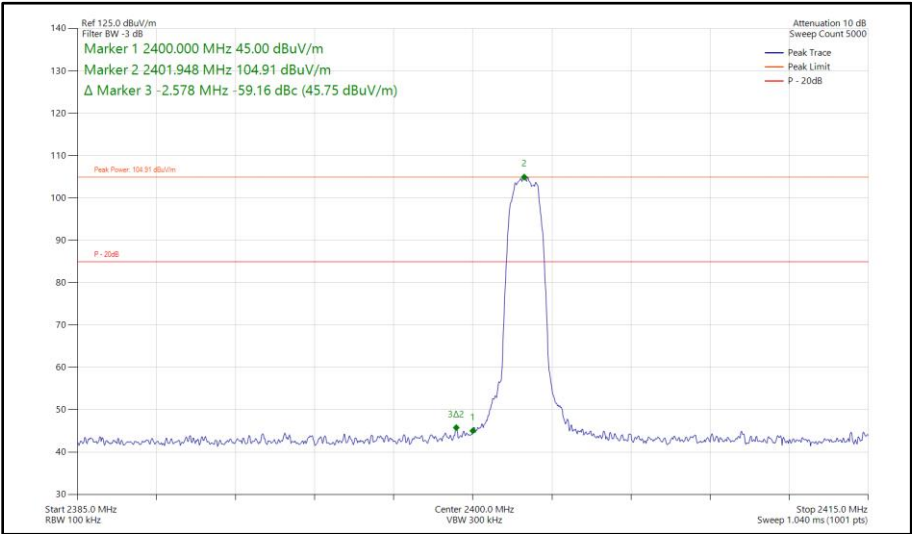


Figure 159 - Bluetooth 3-DH5, SISO, Core 1 - 2402 MHz
Band Edge Frequency 2400 MHz

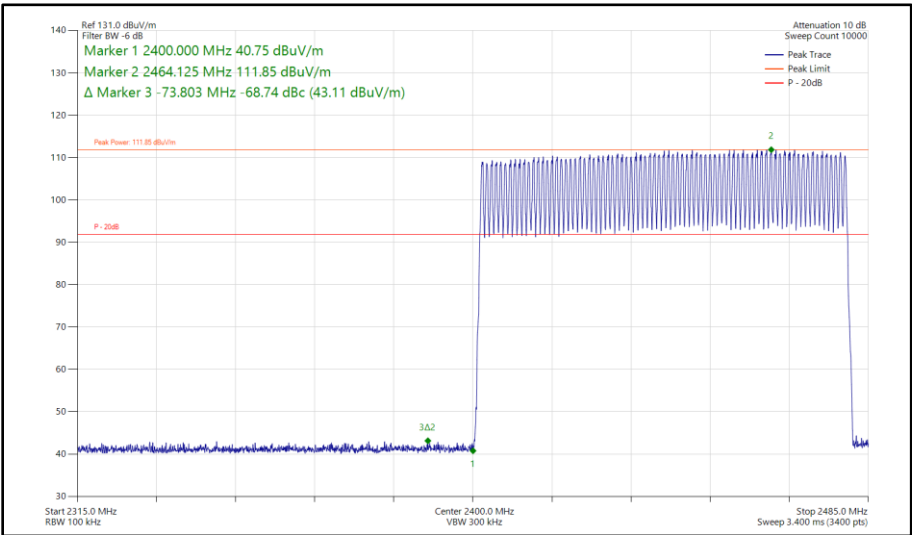


Figure 160 - Bluetooth DH5, SISO, Core 1 - Hopping
Band Edge Frequency 2400 MHz

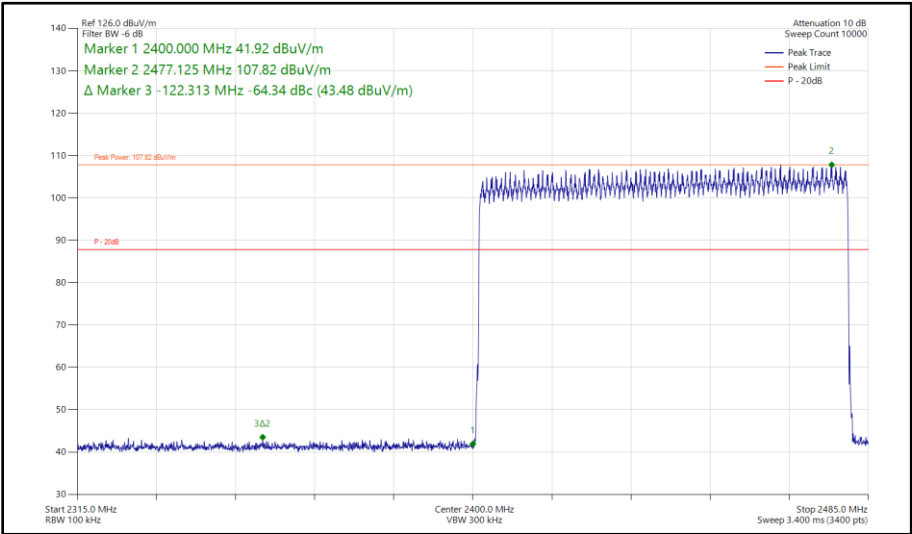


Figure 161 - Bluetooth 2-DH5, SISO, Core 1 - Hopping
Band Edge Frequency 2400 MHz

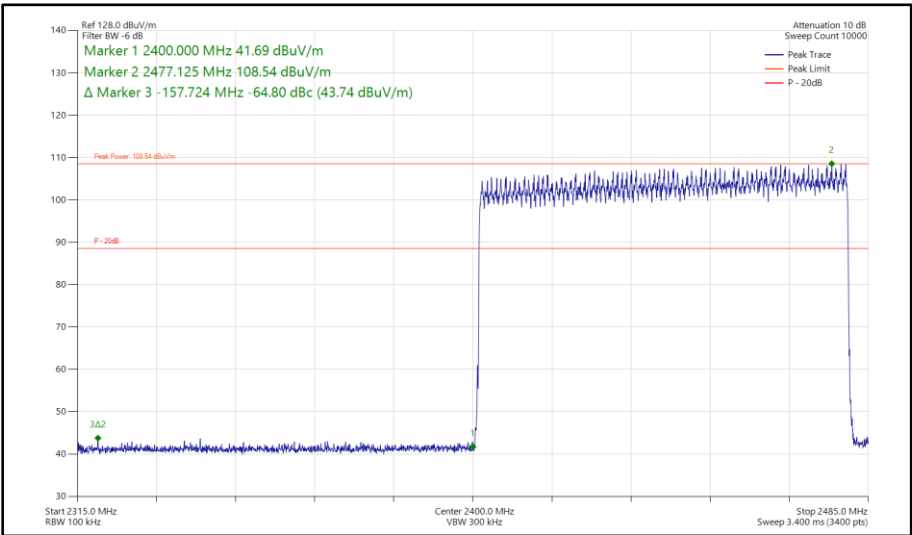


Figure 162 - Bluetooth 3-DH5, SISO, Core 1 - Hopping
Band Edge Frequency 2400 MHz

iPA - Core 0 - Core 1 (MIMO)

Mode	Packet Type	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Static	DH5	2402	2400	-67.93
Static	2-DH5	2402	2400	-63.60
Static	3-DH5	2402	2400	-64.69
Hopping	DH5	Hopping	2400	-61.77
Hopping	2-DH5	Hopping	2400	-68.62
Hopping	3-DH5	Hopping	2400	-69.44

Table 93 - MIMO Authorised Band Edge Results

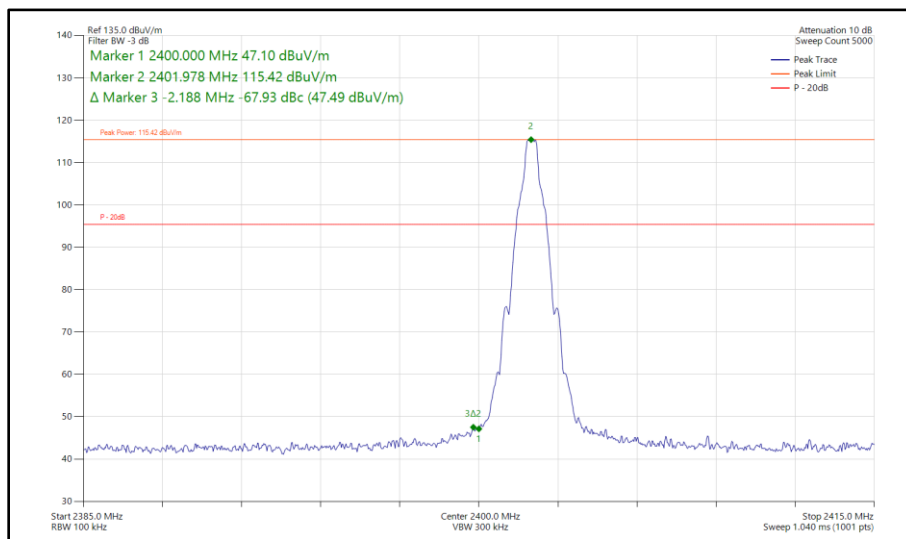


Figure 163 - Bluetooth DH5, MIMO, Core 0 - Core 1 - 2402 MHz
Band Edge Frequency 2400 MHz

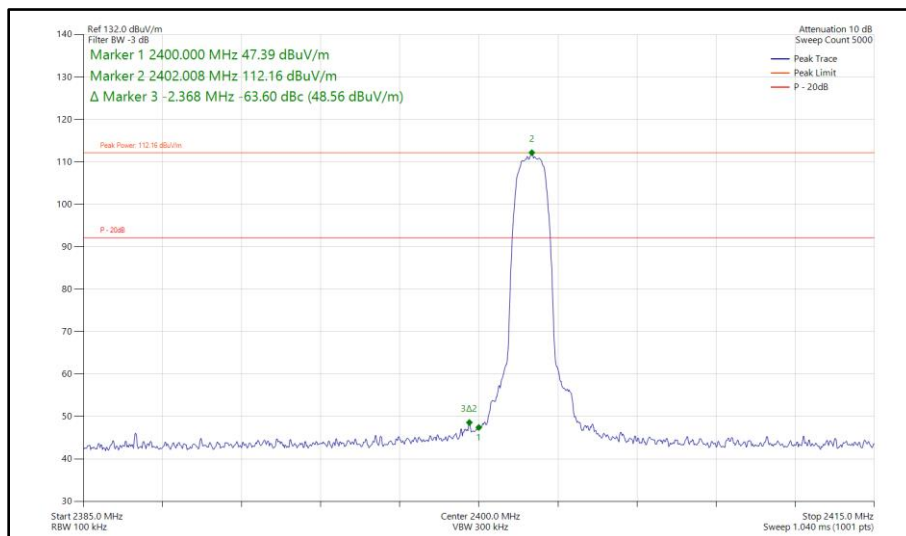


Figure 164 - Bluetooth 2-DH5, MIMO, Core 0 - Core 1 - 2402 MHz
Band Edge Frequency 2400 MHz

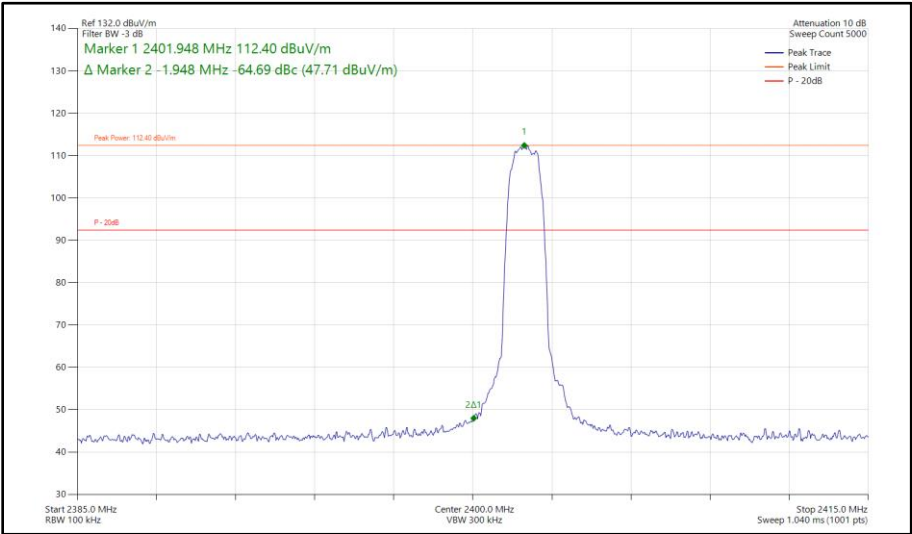


Figure 165 - Bluetooth 3-DH5, MIMO, Core 0 - Core 1 - 2402 MHz
Band Edge Frequency 2400 MHz

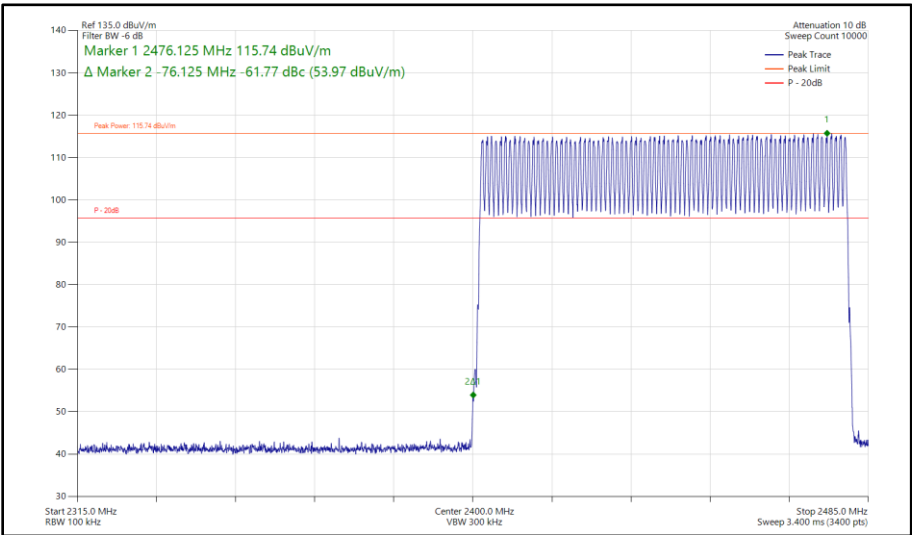


Figure 166 - Bluetooth DH5, MIMO, Core 0 - Core 1 - Hopping
Band Edge Frequency 2400 MHz

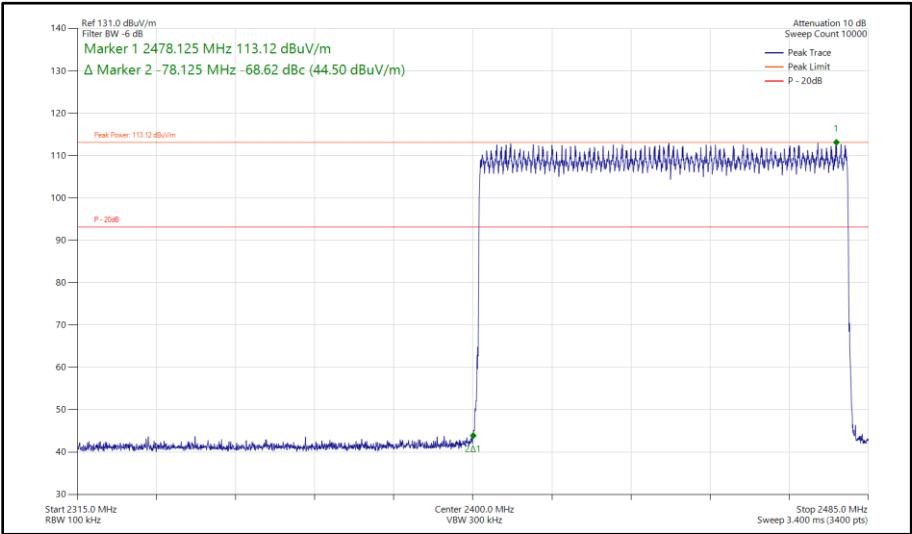


Figure 167 - Bluetooth 2-DH5, MIMO, Core 0 - Core 1 - Hopping Band Edge Frequency 2400 MHz

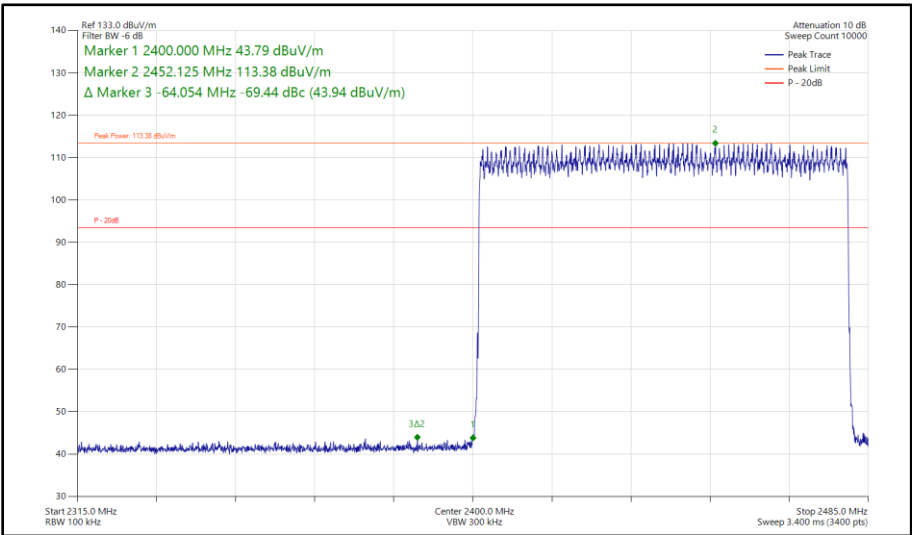


Figure 168 - Bluetooth 3-DH5, MIMO, Core 0 - Core 1 - Hopping Band Edge Frequency 2400 MHz

ePA - Core 0 (SISO)

Mode	Packet Type	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Static	2-DH5	2402	2400	-56.45
Static	3-DH5	2402	2400	-54.43
Hopping	2-DH5	Hopping	2400	-64.47
Hopping	3-DH5	Hopping	2400	-63.49

Table 94 - SISO Authorised Band Edge Results

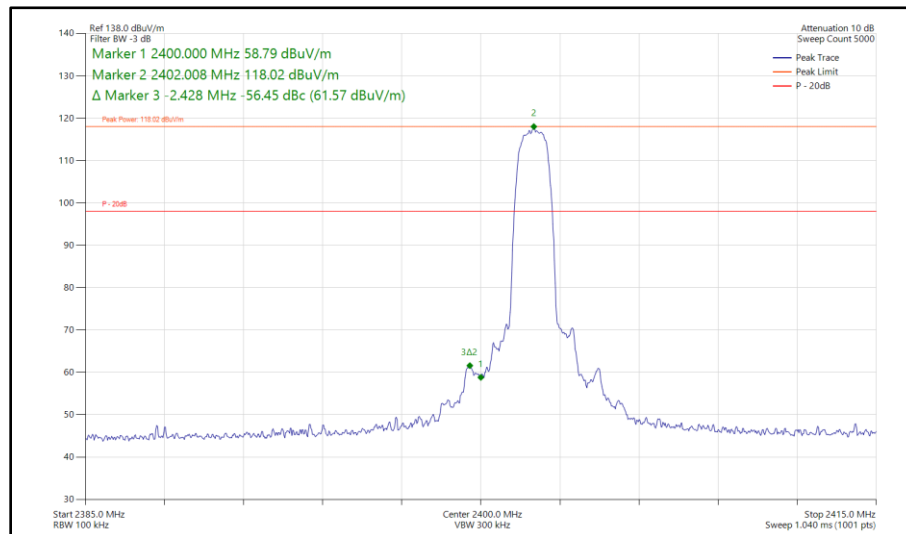


Figure 169 - Bluetooth 2-DH5, SISO, Core 0 - 2402 MHz
Band Edge Frequency 2400 MHz

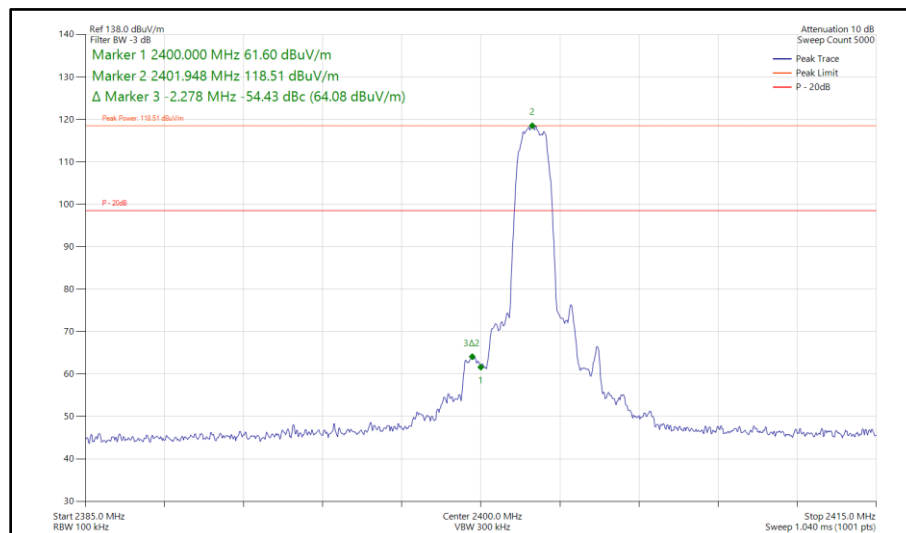


Figure 170 - Bluetooth 3-DH5, SISO, Core 0 - 2402 MHz
Band Edge Frequency 2400 MHz

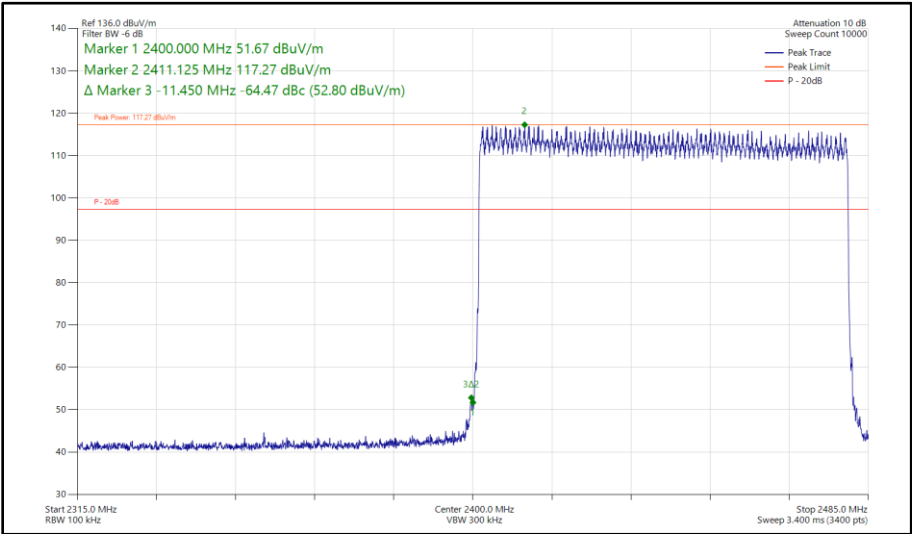


Figure 171 - Bluetooth 2-DH5, SISO, Core 0 - Hopping
Band Edge Frequency 2400 MHz

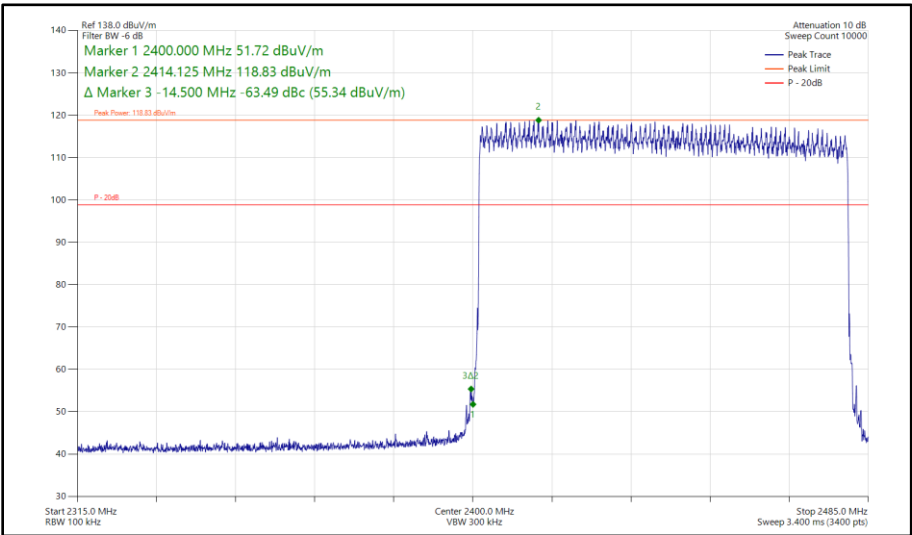


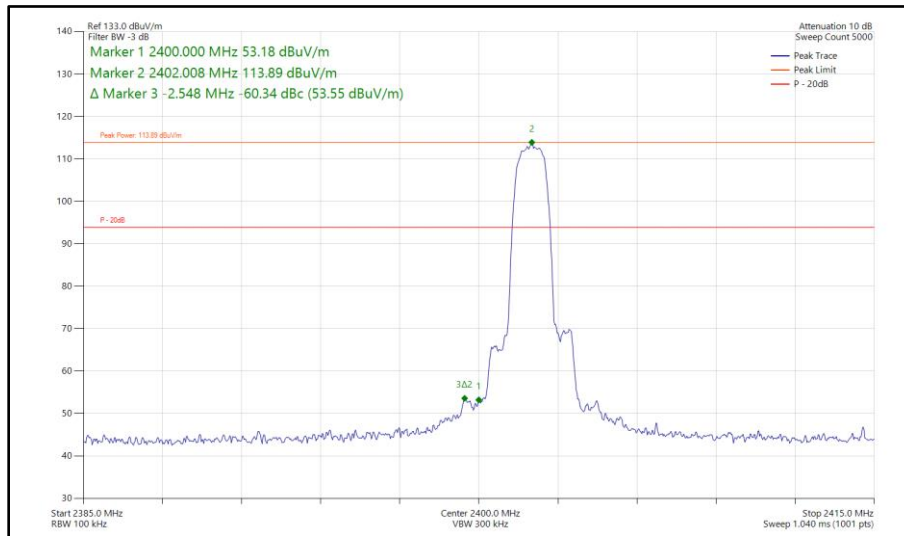
Figure 172 - Bluetooth 3-DH5, SISO, Core 0 - Hopping
Band Edge Frequency 2400 MHz



ePA - Core 1 (SISO)

Mode	Packet Type	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Static	2-DH5	2402	2400	-60.34
Static	3-DH5	2402	2400	-59.83
Hopping	2-DH5	Hopping	2400	-69.78
Hopping	3-DH5	Hopping	2400	-68.58

Table 95 - SISO Authorised Band Edge Results



**Figure 173 - Bluetooth 2-DH5, SISO, Core 1 - 2402 MHz
Band Edge Frequency 2400 MHz**

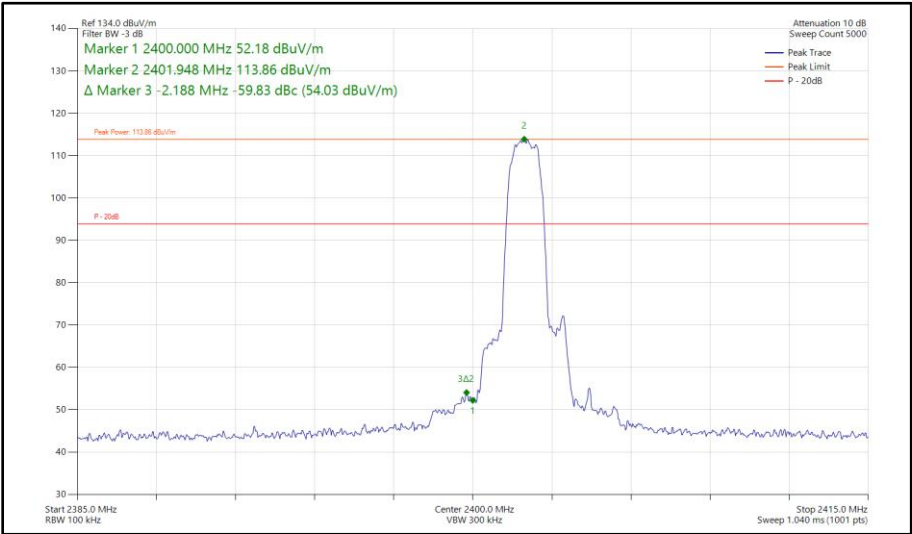


Figure 174 - Bluetooth 3-DH5, SISO, Core 1 - 2402 MHz
Band Edge Frequency 2400 MHz

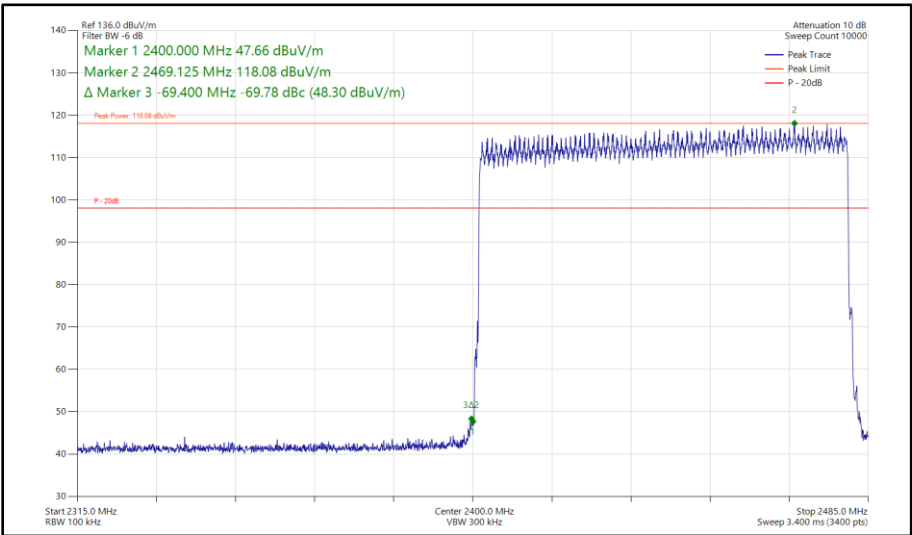
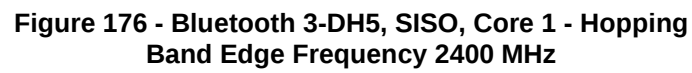


Figure 175 - Bluetooth 2-DH5, SISO, Core 1 - Hopping
Band Edge Frequency 2400 MHz

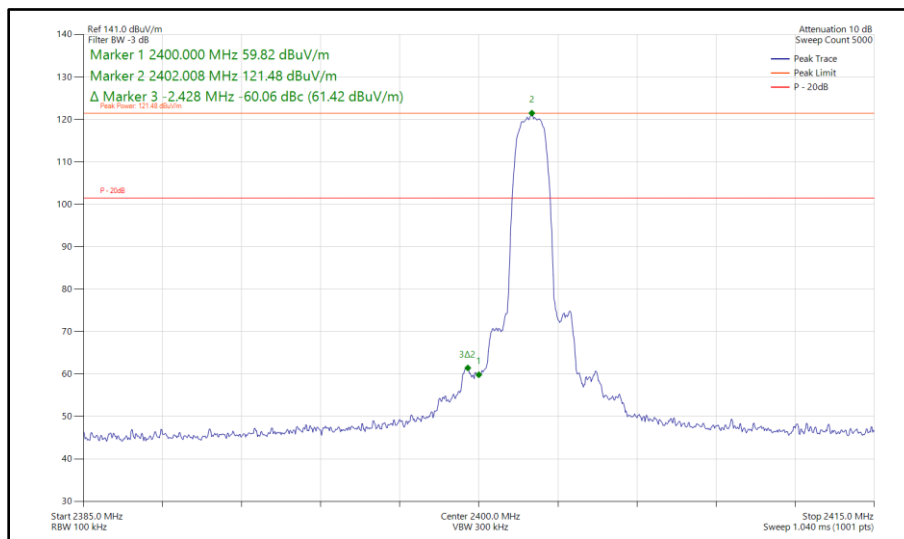




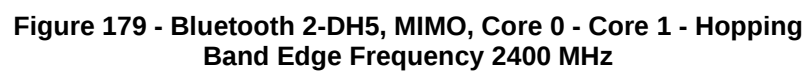
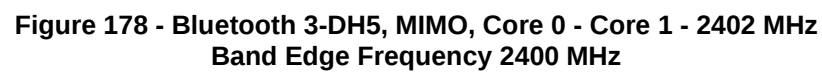
ePA - Core 0 - Core 1 (MIMO)

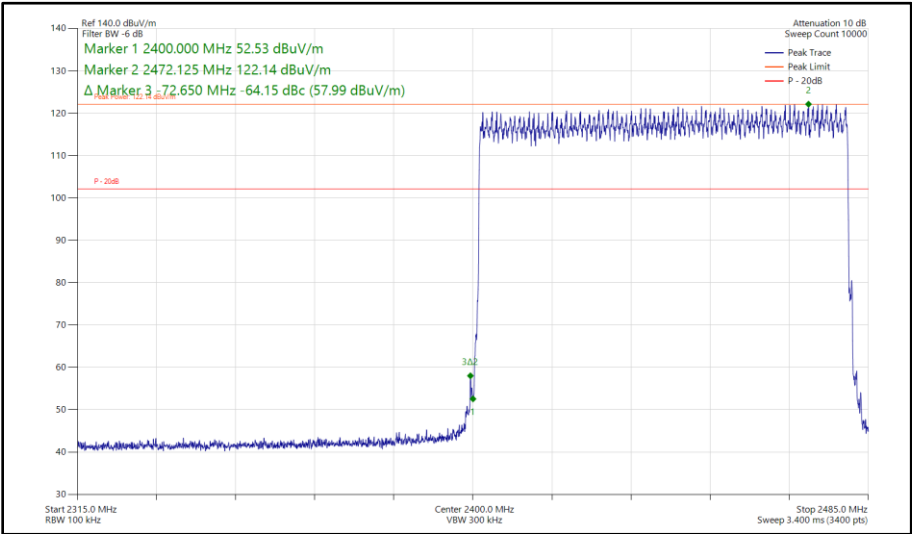
Mode	Packet Type	TX Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
Static	2-DH5	2402	2400	-60.06
Static	3-DH5	2402	2400	-57.52
Hopping	2-DH5	Hopping	2400	-66.62
Hopping	3-DH5	Hopping	2400	-64.15

Table 96 - MIMO Authorised Band Edge Results



**Figure 177 - Bluetooth 2-DH5, MIMO, Core 0 - Core 1 - 2402 MHz
Band Edge Frequency 2400 MHz**





**Figure 180 - 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 17.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Expiry Date
Emissions Software	TUV SUD	EmX V3.4.2	5125	-	Software
EMI Test Receiver	Rohde & Schwarz	ESW44	6294	12	06-Jan-2025
USB Spectrum Analyser	Signal Hound	SA124B	6298	-	TU
Digital Multimeter	Fluke	115	6345	12	24-Jul-2025
Humidity and Temperature Meter	R.S Components	1364	6346	12	06-Mar-2025
Horn Antenna (1–10.5 GHz)	Schwarzbeck	BBHA 9120 B	6457	12	05-May-2025
AC Power Supply	iTech	IT7324	6657	-	O/P Mon
3m Semi-Anechoic Chamber	Albatross Projects	RF Chamber 17	6658	36	28-Jan-2026
Mast and Turntable Controller	Maturo Gmbh	FCU3.0	6659	-	TU
Tilt Antenna Mast	Maturo Gmbh	BAM4.5-P	6660	-	TU
Turntable	Maturo Gmbh	TT1.5SI	6661	-	TU
8m Cable	Junkosha	MWX221-08000AMSAMS/B	6748	12	01-Feb-2025

Table 97

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

A3240, S/N: H2XGP4VW6W - Modification State 0
A3240, S/N: K4L392N93P - Modification State 0

2.8.3 Date of Test

09-October-2024 to 12-November-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 20 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 dBμV/m to μV/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.

2.8.5 Example Test Setup Diagram

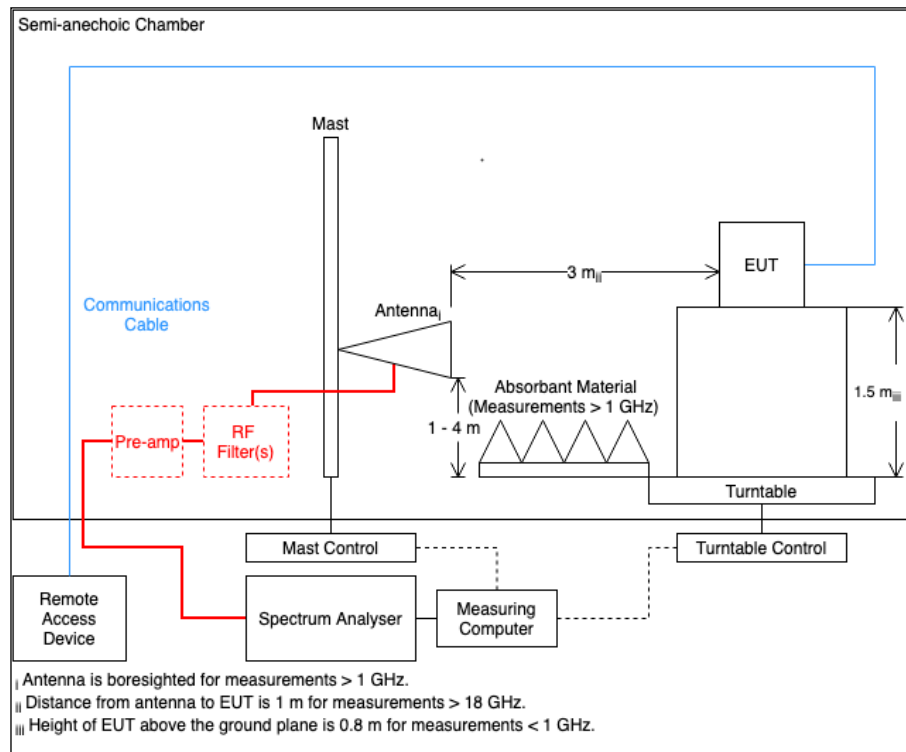


Figure 181

2.8.6 Environmental Conditions

Ambient Temperature	21.9 - 23.2 °C
Relative Humidity	43.5 %

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
2373.271	34.59	54.00	-19.41	CISPR Avg	10	284	Vertical

Table 98 - 2402 MHz (CH0), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

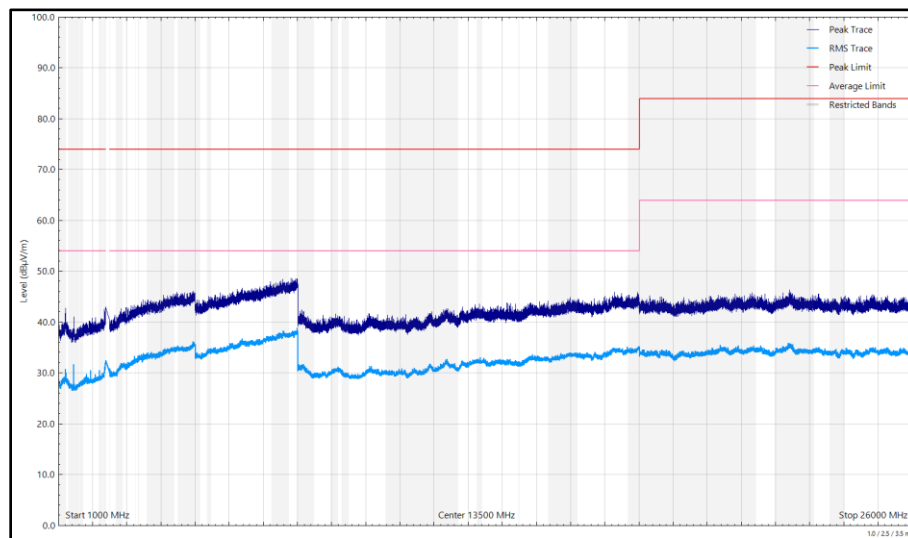


Figure 182 - 2402 MHz (CH0), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal

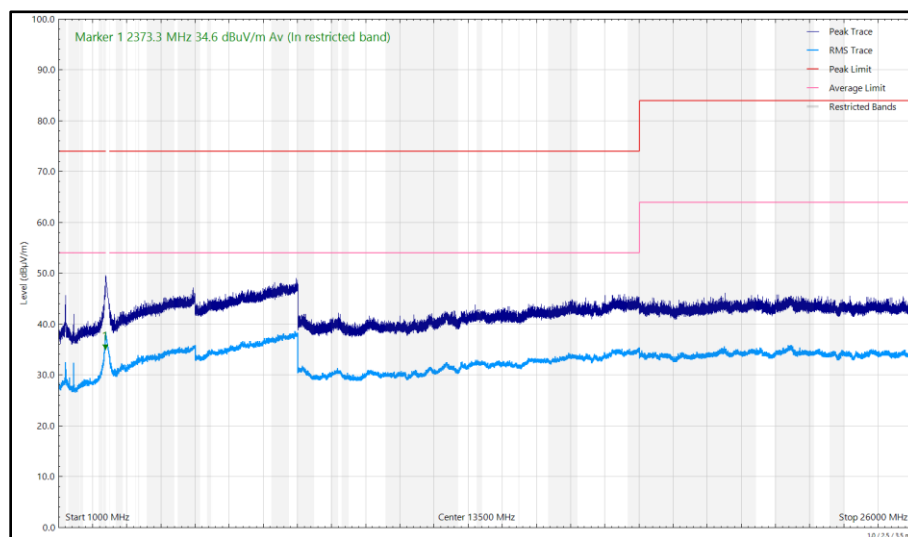


Figure 183 - 2402 MHz (CH0), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
30.561	22.82	40.00	-17.18	Q-Peak	359	399	Vertical
31.718	33.02	40.00	-6.98	Q-Peak	233	104	Vertical
68.679	30.54	40.00	-9.46	Q-Peak	138	100	Vertical
102.530	35.06	43.50	-8.44	Q-Peak	358	268	Horizontal
112.308	34.25	43.50	-9.25	Q-Peak	217	282	Horizontal
113.223	32.05	43.50	-11.45	Q-Peak	290	202	Vertical

Table 99 - 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 26 GHz

No other emissions found within 10 dB of the limit.

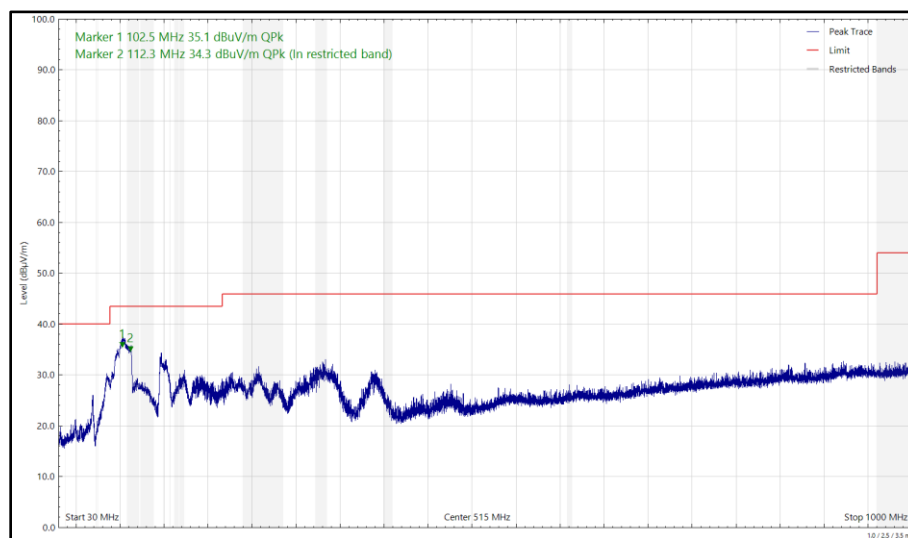


Figure 184 - 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

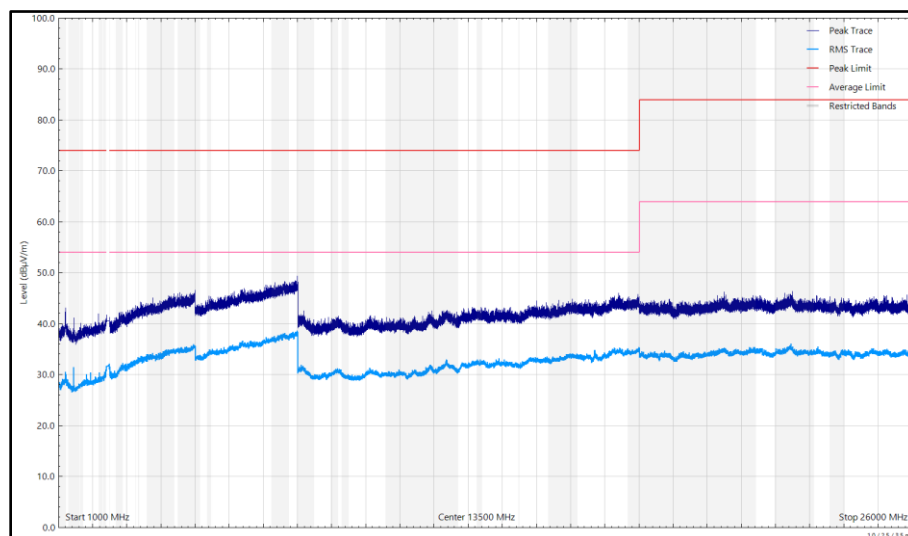


Figure 185 - 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal

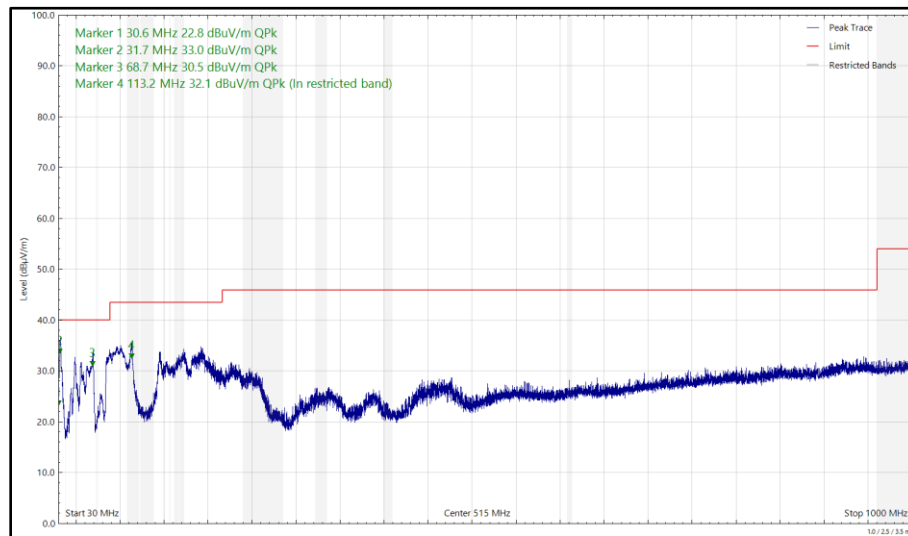


Figure 186 - 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

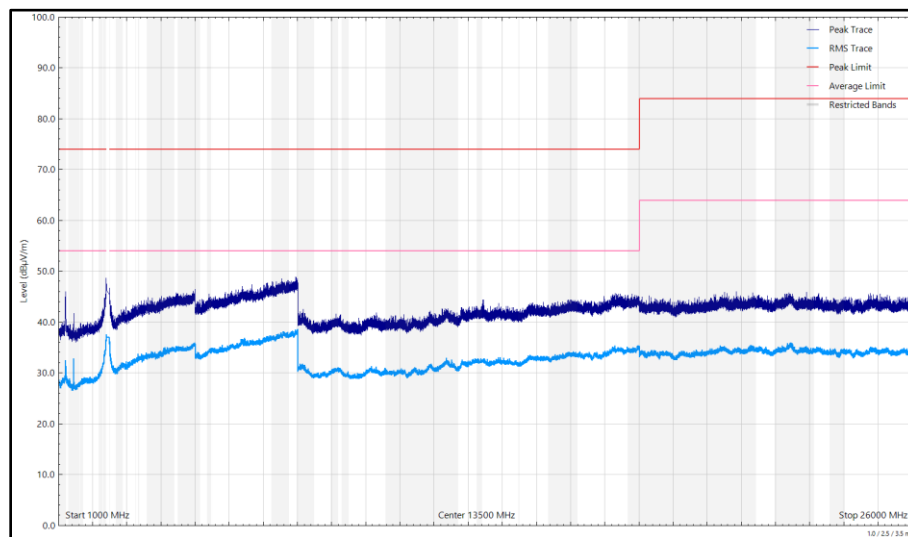


Figure 187 - 2441 MHz (CH39), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
2499.610	37.24	54.00	-16.76	CISPR Avg	355	298	Vertical

Table 100 - 2480 MHz (CH78), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

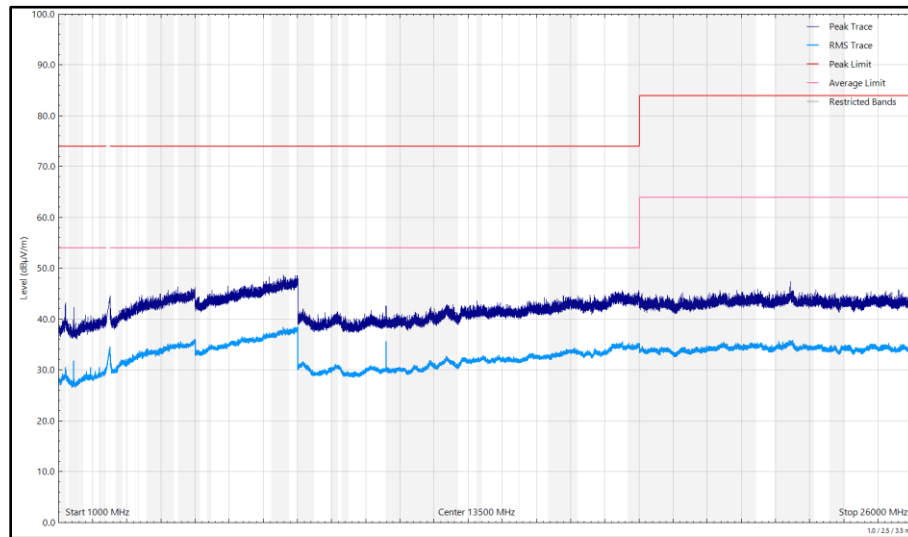


Figure 188 - 2480 MHz (CH78), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal

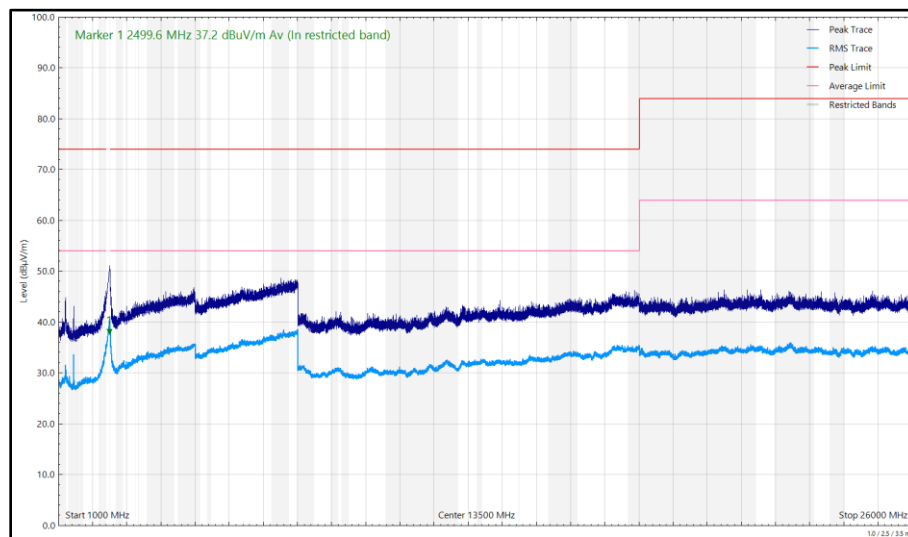


Figure 189 - 2480 MHz (CH78), 2-DH5, ePA, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4003.313	39.06	54.00	-14.94	CISPR Avg	4	398	Vertical
4804.302	37.15	54.00	-16.85	CISPR Avg	0	287	Vertical

Table 101 - 2402 MHz (CH0), DH5, iPA, Core 0 + Core 1, 1 GHz to 26 GHz

No other emissions found within 10 dB of the limit.

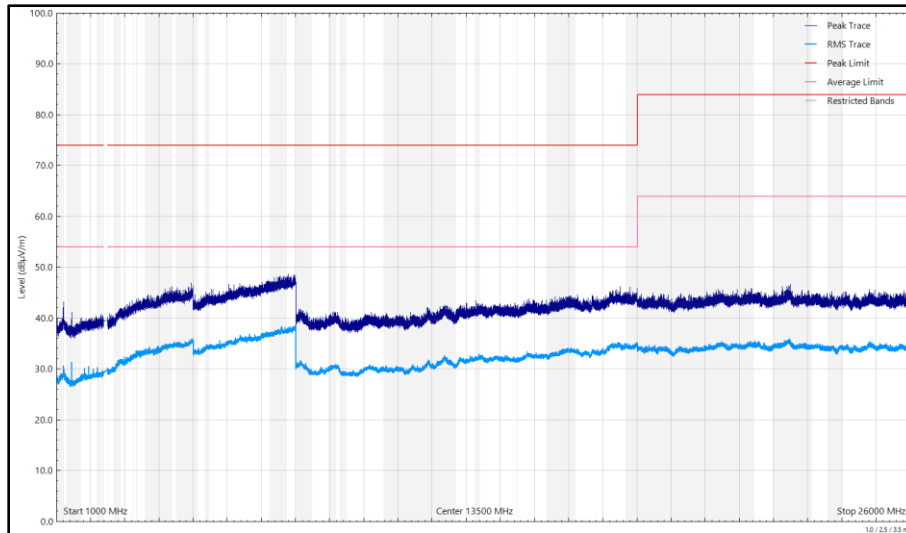


Figure 190 - 2402 MHz (CH0), DH5, iPA, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal

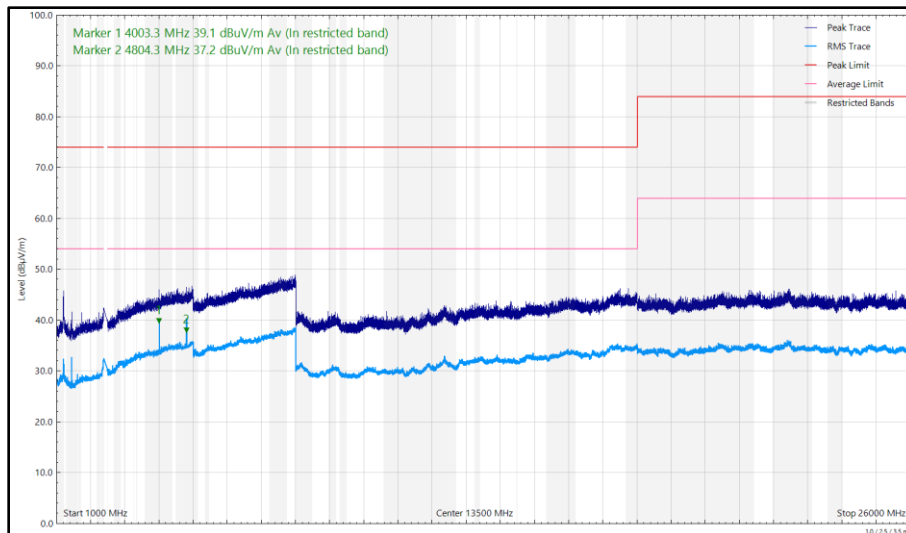


Figure 191 - 2402 MHz (CH0), DH5, iPA, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
31.865	33.18	40.00	-6.82	Q-Peak	208	101	Vertical
103.404	35.40	43.50	-8.10	Q-Peak	5	279	Horizontal
112.320	34.17	43.50	-9.33	Q-Peak	222	276	Horizontal
112.553	33.27	43.50	-10.23	Q-Peak	297	259	Vertical
4068.523	34.29	54.00	-19.71	CISPR Avg	360	392	Vertical
4882.243	36.39	54.00	-17.61	CISPR Avg	358	308	Vertical

Table 102 - 2441 MHz (CH39), DH5, iPA, Core 0 + Core 1, 30 MHz to 26 GHz

No other emissions found within 10 dB of the limit.

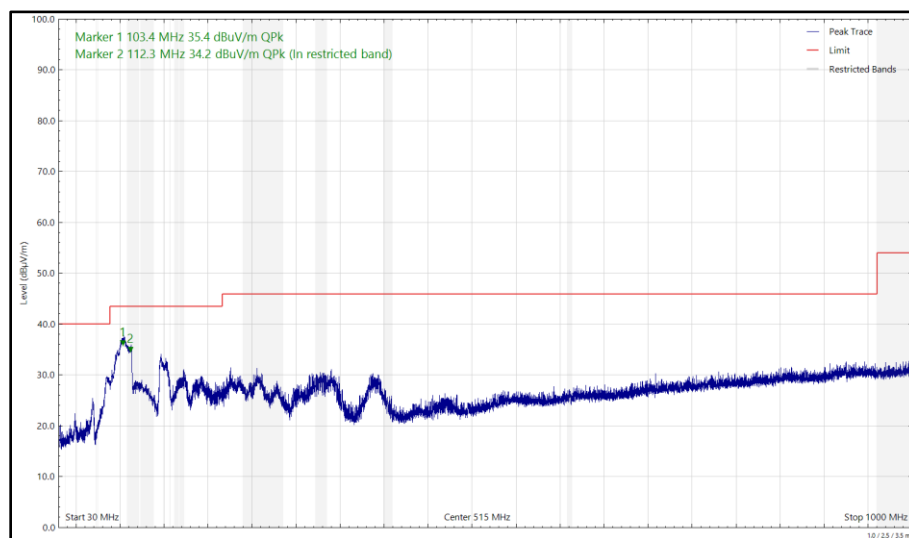


Figure 192 - 2441 MHz (CH39), DH5, iPA, Core 0 + Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

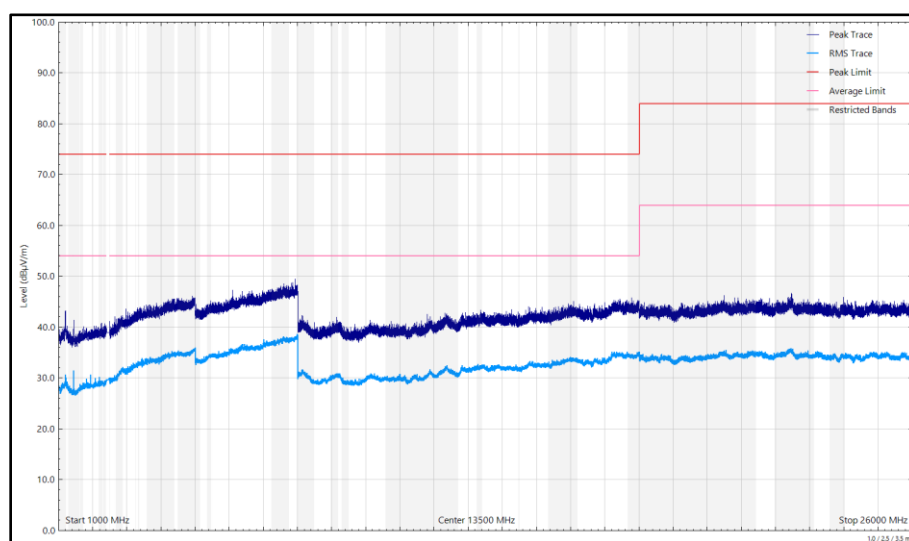


Figure 193 - 2441 MHz (CH39), DH5, iPA, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal

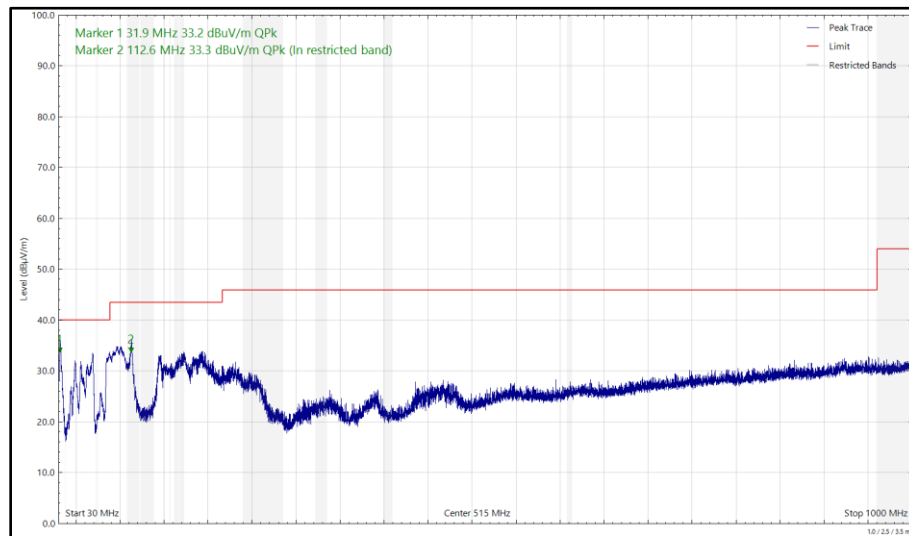


Figure 194 - 2441 MHz (CH39), DH5, iPA, Core 0 + Core 1, 30 MHz to 1 GHz, Vertical (Peak)

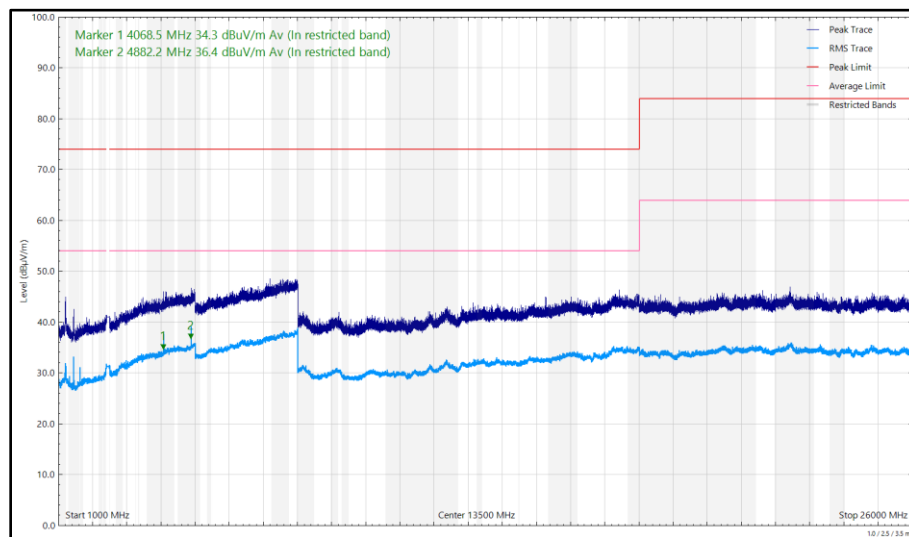


Figure 195 - 2441 MHz (CH39), DH5, iPA, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical



Frequency (MHz)	Level (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
*							

Table 103 - 2480 MHz (CH78), DH5, iPA, Core 0 + Core 1, 1 GHz to 26 GHz

*No emissions found within 10 dB of the limit.

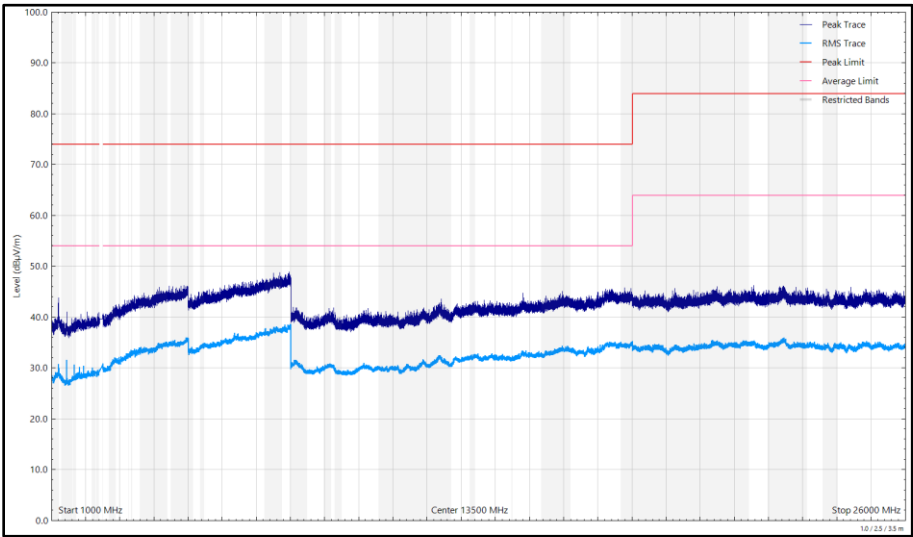


Figure 196 - 2480 MHz (CH78), DH5, iPA, Core 0 + Core 1, 1 GHz to 26 GHz, Horizontal

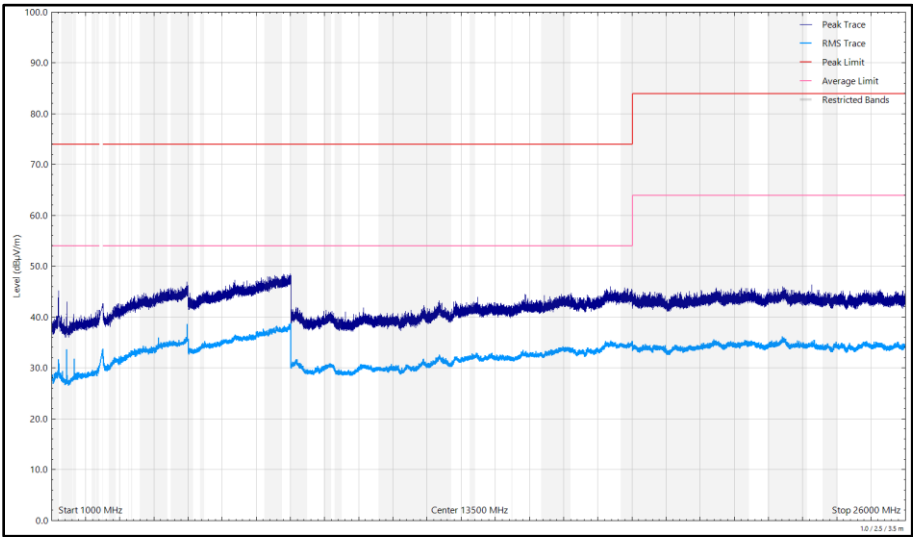


Figure 197 - 2480 MHz (CH78), DH5, iPA, Core 0 + Core 1, 1 GHz to 26 GHz, Vertical



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

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in 15.209(a)

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.

In addition, radiated emissions which fall in the restricted bands, as defined in RSS-GEN, clause 8.10, must also comply with the radiated emission limits specified in RSS-GEN clause 8.9.



2.8.8 Test Location and Test Equipment Used

This test was carried out in RF Chamber 14, RF Chamber 16 and RF Chamber 17.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Expiry Date
Cable (18 GHz)	Rosenberger	LU7-071-1000	5102	12	21-Nov-2024
Emissions Software	TUV SUD	EmX V3.4.2	5125	-	Software
Antenna (DRG, 1 GHz to 10.5 GHz)	Schwarzbeck	BBHA9120B	5215	12	14-Jul-2025
Cable 2.92m	Junkosha	MWX241-01000KMS	5413	12	23-May-2025
EMI Test Receiver	Rohde & Schwarz	ESW44	5911	12	19-Sep-2025
EMI Test Receiver	Rohde & Schwarz	ESW44	5912	12	07-Aug-2025
TRILOG Super Broadband Test Antenna	Schwarzbeck	VULB 9168	5943	24	24-May-2026
1500W (300V 12A) AC Power Supply	iTech	IT7324	5955	-	TU
1500W (300V 12A) AC Power Supply	iTech	IT7324	5957	-	TU
5m Semi-Anechoic Chamber (Dual-Axis)	Albatross Projects	RF Chamber 14	5958	36	26-Apr-2025
Compact Antenna Mast	Maturo Gmbh	CAM4.0-P	5959	-	TU
Mast & Turntable Controller	Maturo Gmbh	FCU3.0	5960	-	TU
Tilt Antenna Mast	Maturo Gmbh	BAM4.5-P	5961	-	TU
Turntable	Maturo Gmbh	TT1.5SI	5962	-	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 (N to N 8m)	Junkosha	MWX221-08000NMSNMS/A	6006	12	20-May-2025
Cable (N to N 3m)	Junkosha	MWX221-03000NMSNMS/A	6025	12	20-May-2025
Digital Multimeter	Fluke	115	6146	12	06-Jun-2025
Digital Multimeter	Fluke	115	6147	12	06-Jun-2025
8GHz Highpass Filter	Wainwright	WHKX 7150 8000 18000 50SS	6194	12	23-Apr-2025
Pre-Amp 8 - 18 GHz	Wright Technologies	APS06 0061	6200	12	03-Jun-2025
Attenuator 4dB	Pasternack	PE7074-4	6201	24	24-May-2026
Attenuator 4dB	Pasternack	PE7074-4	6204	24	20-Jun-2026
Cable (SMA to SMA 20cm)	TUV SUD	MH-FH 8-18	6215	12	23-Apr-2025
EMI Test Receiver	Rohde & Schwarz	ESW44	6294	12	06-Jan-2025
USB Spectrum Analyser	Signal Hound	SA124B	6296	-	TU
USB Spectrum Analyser	Signal Hound	SA124B	6298	-	TU



Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Expiry Date
Cable (K Type 2m)	Junkosha	MWX241-02000KMSKMS/B	6324	12	04-Feb-2025
Digital Multimeter	Fluke	115	6345	12	24-Jul-2025
Humidity and Temperature Meter	R.S Components	1364	6346	12	06-Mar-2025
SAC Switch Unit	TUV SUD	TUV_SSU_004 PLC	6349	12	07-May-2025
USB Spectrum Analyser	Signal Hound	SA124B	6383	-	TU
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9168	6456	24	10-Feb-2025
Horn Antenna (1–10.5 GHz)	Schwarzbeck	BBHA 9120 B	6457	12	05-May-2025
DRG Horn Antenna (8-18 GHz)	Schwarzbeck	HWRD750	6458	12	05-May-2025
AC Power Supply	iTech	IT7324	6657	-	TU
3m Semi-Anechoic Chamber	Albatross Projects	RF Chamber 17	6658	36	28-Jan-2026
Mast and Turntable Controller	Maturo Gmbh	FCU3.0	6659	-	TU
Tilt Antenna Mast	Maturo Gmbh	BAM4.5-P	6660	-	TU
Turntable	Maturo Gmbh	TT1.5SI	6661	-	TU
8m Cable	Junkosha	MWX221-08000AMSAMS/B	6748	12	01-Feb-2025
Preamplifier	Hewlett Packard	HP8449B	6762	12	28-Feb-2025
Double Ridge Active Horn Antenna (18-40 GHz)	Com-Power	AHA-840	6771	24	17-Jan-2025
8M SMA Cable	Junkosha	MWX221-08000AMSAMS/B	6833	12	14-Aug-2025
8M SMA Cable	Junkosha	MWX221-08000AMSAMS/B	6834	12	14-Aug-2025
Handheld Hygrometer	Fluke	971	6838	12	27-Aug-2025
Cable Assembly	SpecTech	PE300-60	6857	-	TU
Cable Assembly	SpecTech	PE300-60	6858	-	TU
Cable Assembly	SpecTech	PE300-60	6859	-	TU
Cable Assembly	SpecTech	PE300-60	6860	-	TU
Cable Assembly	SpecTech	PE300-60	6866	-	TU
Cable Assembly	SpecTech	PE300-60	6867	-	TU

Table 104

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



3 Measurement Uncertainty

For a 95% confidence level, the measurement uncertainties for defined systems are:

Test Name	Measurement Uncertainty
Restricted Band Edges	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Frequency Hopping Systems - Average Time of Occupancy	-
Frequency Hopping Systems - Channel Separation	± 42.30 kHz
Frequency Hopping Systems - Number of Hopping Channels	-
Frequency Hopping Systems - 99% & 20 dB Bandwidth	± 45.99 kHz
Maximum Conducted Output Power	± 1.38 dB
Authorised Band Edges	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Spurious Radiated Emissions	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB

Table 105

Measurement Uncertainty Decision Rule – Accuracy Method

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115:2021, Clause 4.4.3 (Procedure 2). The measurement results are directly compared with the test limit to determine conformance with the requirements of the standard.

Risk: The uncertainty of measurement about the measured result is negligible with regard to the final pass/fail decision. The measurement result can be directly compared with the test limit to determine conformance with the requirement (compare IEC Guide 115). The level of risk to falsely accept and falsely reject items is further described in ILAC-G8.