



2.3 Maximum Conducted Output Power

2.3.1 Specification Reference

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

2.3.2 Equipment Under Test and Modification State

A2780, S/N: NW3J007K67 - Modification State 0

2.3.3 Date of Test

19-October-2022 to 28-October-2022

2.3.4 Test Method

The test was performed in accordance with ANSI C63.10 2013, clause 11.9.1.3 Method PKPM1 for FCC testing and ANSI C63.10 2020, clause 11.9.1.2 for ISED testing.

MIMO output port summing was performed in accordance with KDB 662911 D01.

2.3.5 Environmental Conditions

Ambient Temperature	22.7 - 23.5 °C
Relative Humidity	52.3 - 56.9 %



2.3.6 Test Results

2.4 GHz Bluetooth - DTS

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (4-DH5)	Duty Cycle (%):	78.1
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	6.13

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2404	-	17.64	-	-	-	29.87	-12.23
2441	-	17.65	-	-	-	29.87	-12.22
2476	-	17.94	-	-	-	29.87	-11.93

Table 59 - 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					
2404	-	17.64	-	-	-	30.00	-12.36	23.77	36.00	-12.23
2441	-	17.65	-	-	-	30.00	-12.35	23.78	36.00	-12.22
2476	-	17.94	-	-	-	30.00	-12.06	24.07	36.00	-11.93

Table 60 - 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)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (8-DH5)	Duty Cycle (%):	78.2
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	6.13

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2404	-	18.14	-	-	-	29.87	-11.73
2441	-	17.73	-	-	-	29.87	-12.14
2476	-	17.70	-	-	-	29.87	-12.17

Table 61 - 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					
2404	-	18.14	-	-	-	30.00	-11.86	24.27	36.00	-11.73
2441	-	17.73	-	-	-	30.00	-12.27	23.86	36.00	-12.14
2476	-	17.70	-	-	-	30.00	-12.30	23.83	36.00	-12.17

Table 62 - 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)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	662911 D01 v02r01 F)2)d)(i), 662911 D01 v02r01 E)1)		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (4-DH5)	Duty Cycle (%):	78.1
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	8.41

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2404	17.65	17.39	-	-	20.51	27.59	-7.08
2441	17.05	17.67	-	-	20.35	27.59	-7.24
2476	17.25	17.85	-	-	20.53	27.59	-7.06

Table 63 - 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					
2404	17.65	17.39	-	-	20.51	30.00	-9.49	28.92	36.00	-7.08
2441	17.05	17.67	-	-	20.35	30.00	-9.65	28.76	36.00	-7.24
2476	17.25	17.85	-	-	20.53	30.00	-9.47	28.94	36.00	-7.06

Table 64 - 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)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	662911 D01 v02r01 F)2)d)(i), 662911 D01 v02r01 E)1)		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (8-DH5)	Duty Cycle (%):	78.2
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	8.41

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2404	17.08	17.16	-	-	20.10	27.59	-7.49
2441	17.14	17.74	-	-	20.44	27.59	-7.15
2476	16.82	17.80	-	-	20.31	27.59	-7.28

Table 65 - 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					
2404	17.08	17.16	-	-	20.10	30.00	-9.90	28.51	36.00	-7.49
2441	17.14	17.74	-	-	20.44	30.00	-9.56	28.85	36.00	-7.15
2476	16.82	17.80	-	-	20.31	30.00	-9.69	28.72	36.00	-7.28

Table 66 - 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)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA $\pi/4$ DQPSK (4-DH5)	Duty Cycle (%):	78.1
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	6.13

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2404	-	9.16	-	-	-	29.87	-20.71
2441	-	9.12	-	-	-	29.87	-20.75
2476	-	8.85	-	-	-	29.87	-21.02

Table 67 - 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					
2404	-	9.16	-	-	-	30.00	-20.84	15.29	36.00	-20.71
2441	-	9.12	-	-	-	30.00	-20.88	15.25	36.00	-20.75
2476	-	8.85	-	-	-	30.00	-21.15	14.98	36.00	-21.02

Table 68 - 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)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA $\pi/4$ DQPSK (8-DH5)	Duty Cycle (%):	78.2
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	6.13

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2404	-	9.05	-	-	-	29.87	-20.82
2441	-	9.19	-	-	-	29.87	-20.68
2476	-	9.06	-	-	-	29.87	-20.81

Table 69 - 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					
2404	-	9.05	-	-	-	30.00	-20.95	15.18	36.00	-20.82
2441	-	9.19	-	-	-	30.00	-20.81	15.32	36.00	-20.68
2476	-	9.06	-	-	-	30.00	-20.94	15.19	36.00	-20.81

Table 70 - 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)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA $\pi/4$ DQPSK (4-DH5)	Duty Cycle (%):	78.1
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Core 2)	Peak Antenna Gain (dBi):	6.02

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2404	-	-	8.84	-	-	29.98	-21.14
2441	-	-	8.81	-	-	29.98	-21.17
2476	-	-	8.73	-	-	29.98	-21.25

Table 71 - 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					
2404	-	-	8.84	-	-	30.00	-21.16	14.86	36.00	-21.14
2441	-	-	8.81	-	-	30.00	-21.19	14.83	36.00	-21.17
2476	-	-	8.73	-	-	30.00	-21.27	14.75	36.00	-21.25

Table 72 - ISCED Maximum Conducted (peak) Output Power Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (b)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA $\pi/4$ DQPSK (8-DH5)	Duty Cycle (%):	78.2
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Core 2)	Peak Antenna Gain (dBi):	6.02

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2404	-	-	8.71	-	-	29.98	-21.27
2441	-	-	8.93	-	-	29.98	-21.05
2476	-	-	9.26	-	-	29.98	-20.72

Table 73 - 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					
2404	-	-	8.71	-	-	30.00	-21.29	14.73	36.00	-21.27
2441	-	-	8.93	-	-	30.00	-21.07	14.95	36.00	-21.05
2476	-	-	9.26	-	-	30.00	-20.74	15.28	36.00	-20.72

Table 74 - 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)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	662911 D01 v02r01 F)2)d)(i), 662911 D01 v02r01 E)1)		

DUT Configuration			
Mode:	iPA $\pi/4$ DQPSK (4-DH5)	Duty Cycle (%):	78.1
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	8.41

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2404	8.26	8.92	-	-	11.56	27.59	-16.03
2441	8.34	8.94	-	-	11.60	27.59	-15.99
2476	9.01	9.20	-	-	12.04	27.59	-15.55

Table 75 - 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					
2404	8.26	8.92	-	-	11.56	30.00	-18.44	19.97	36.00	-16.03
2441	8.34	8.94	-	-	11.60	30.00	-18.40	20.01	36.00	-15.99
2476	9.01	9.20	-	-	12.04	30.00	-17.96	20.45	36.00	-15.55

Table 76 - 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)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	662911 D01 v02r01 F)2)d)(i), 662911 D01 v02r01 E)1)		

DUT Configuration			
Mode:	iPA $\pi/4$ DQPSK (8-DH5)	Duty Cycle (%):	78.2
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	8.41

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2404	8.48	9.05	-	-	11.75	27.59	-15.84
2441	8.88	9.16	-	-	11.98	27.59	-15.61
2476	8.45	9.00	-	-	11.63	27.59	-15.96

Table 77 - 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					
2404	8.48	9.05	-	-	11.75	30.00	-18.25	20.16	36.00	-15.84
2441	8.88	9.16	-	-	11.98	30.00	-18.02	20.39	36.00	-15.61
2476	8.45	9.00	-	-	11.63	30.00	-18.37	20.04	36.00	-15.96

Table 78 - 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)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA GFSK (LE1M)	Duty Cycle (%):	60.4
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	6.13

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	-	7.67	-	-	-	29.87	-22.20
2440	-	8.21	-	-	-	29.87	-21.66
2480	-	8.07	-	-	-	29.87	-21.80

Table 79 - 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	-	7.67	-	-	-	30.00	-22.33	13.80	36.00	-22.20
2440	-	8.21	-	-	-	30.00	-21.79	14.34	36.00	-21.66
2480	-	8.07	-	-	-	30.00	-21.93	14.20	36.00	-21.80

Table 80 - 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)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA GFSK (LE2M)	Duty Cycle (%):	31.3
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	6.13

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	-	8.24	-	-	-	29.87	-21.63
2440	-	8.28	-	-	-	29.87	-21.59
2480	-	8.06	-	-	-	29.87	-21.81

Table 81 - 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	-	8.24	-	-	-	30.00	-21.76	14.37	36.00	-21.63
2440	-	8.28	-	-	-	30.00	-21.72	14.41	36.00	-21.59
2480	-	8.06	-	-	-	30.00	-21.94	14.19	36.00	-21.81

Table 82 - 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)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA GFSK (LE1M)	Duty Cycle (%):	60.4
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Core 2)	Peak Antenna Gain (dBi):	6.02

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	-	-	6.89	-	-	29.98	-23.09
2440	-	-	7.62	-	-	29.98	-22.36
2480	-	-	7.63	-	-	29.98	-22.35

Table 83 - 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	-	-	6.89	-	-	30.00	-23.11	12.91	36.00	-23.09
2440	-	-	7.62	-	-	30.00	-22.38	13.64	36.00	-22.36
2480	-	-	7.63	-	-	30.00	-22.37	13.65	36.00	-22.35

Table 84 - 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)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA GFSK (LE2M)	Duty Cycle (%):	31.2
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Core 2)	Peak Antenna Gain (dBi):	6.02

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	-	-	7.36	-	-	29.98	-22.62
2440	-	-	7.71	-	-	29.98	-22.27
2480	-	-	7.67	-	-	29.98	-22.31

Table 85 - 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	-	-	7.36	-	-	30.00	-22.64	13.38	36.00	-22.62
2440	-	-	7.71	-	-	30.00	-22.29	13.73	36.00	-22.27
2480	-	-	7.67	-	-	30.00	-22.33	13.69	36.00	-22.31

Table 86 - 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)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	662911 D01 v02r01 F)2)d)(i), 662911 D01 v02r01 E)1)		

DUT Configuration			
Mode:	iPA GFSK (LE1M)	Duty Cycle (%):	60.4
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	8.41

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	6.80	7.84	-	-	10.36	27.59	-17.23
2440	7.53	8.23	-	-	10.89	27.59	-16.70
2480	6.71	7.54	-	-	10.11	27.59	-17.48

Table 87 - 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	6.80	7.84	-	-	10.36	30.00	-19.64	18.77	36.00	-17.23
2440	7.53	8.23	-	-	10.89	30.00	-19.11	19.30	36.00	-16.70
2480	6.71	7.54	-	-	10.11	30.00	-19.89	18.52	36.00	-17.48

Table 88 - 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)(3) RSS-247 5.4 d)	Test Method(s):	Refer to Test Method
Additional Reference(s):	662911 D01 v02r01 F)2)d(i), 662911 D01 v02r01 E)1)		

DUT Configuration			
Mode:	iPA GFSK (LE2M)	Duty Cycle (%):	31.2
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	8.41

Test Frequency (MHz)	Maximum Conducted Output Power (dBm)					Limit (dBm)	Margin (dB)
	A	B	C	D	Σ		
2402	6.80	7.59	-	-	10.21	27.59	-17.38
2440	7.50	8.08	-	-	10.80	27.59	-16.79
2480	6.82	7.37	-	-	10.07	27.59	-17.52

Table 89 - 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	6.80	7.59	-	-	10.21	30.00	-19.79	18.62	36.00	-17.38
2440	7.50	8.08	-	-	10.80	30.00	-19.20	19.21	36.00	-16.79
2480	6.82	7.37	-	-	10.07	30.00	-19.93	18.48	36.00	-17.52

Table 90 - 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.



2.3.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Multimeter	Fluke	79 Series III	611	12	21-Dec-2022
Hygrometer	Rotronic	I-1000	3220	12	05-Nov-2022
AC Programmable Power Supply	iTech	IT7324	5226	-	O/P Mon
Signal Conditioning Unit	TUV SUD	SPECTRUM SCU002	5759	12	05-Jul-2023
USB Power Sensor	Boonton	RTP5008	5830	12	07-Jul-2023
USB Power Sensor	Boonton	RTP5008	5832	12	07-Jul-2023
USB Power Sensor	Boonton	RTP5008	5833	12	07-Jul-2023

Table 91

O/P Mon – Output Monitored using calibrated equipment



2.4 Spurious Radiated Emissions

2.4.1 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

2.4.2 Equipment Under Test and Modification State

A2780, S/N: FWC3JLYYHC - Modification State 0

2.4.3 Date of Test

18-September-2022 to 07-October-2022

2.4.4 Test Method

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

For frequencies > 1 GHz, plots for average measurements were taken in accordance with ANSI C63.10, clause 11.12.2.5.2.

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

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.

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

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.

At a measurement distance of 1 meter 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.

2.4.5 Test Setup Diagram

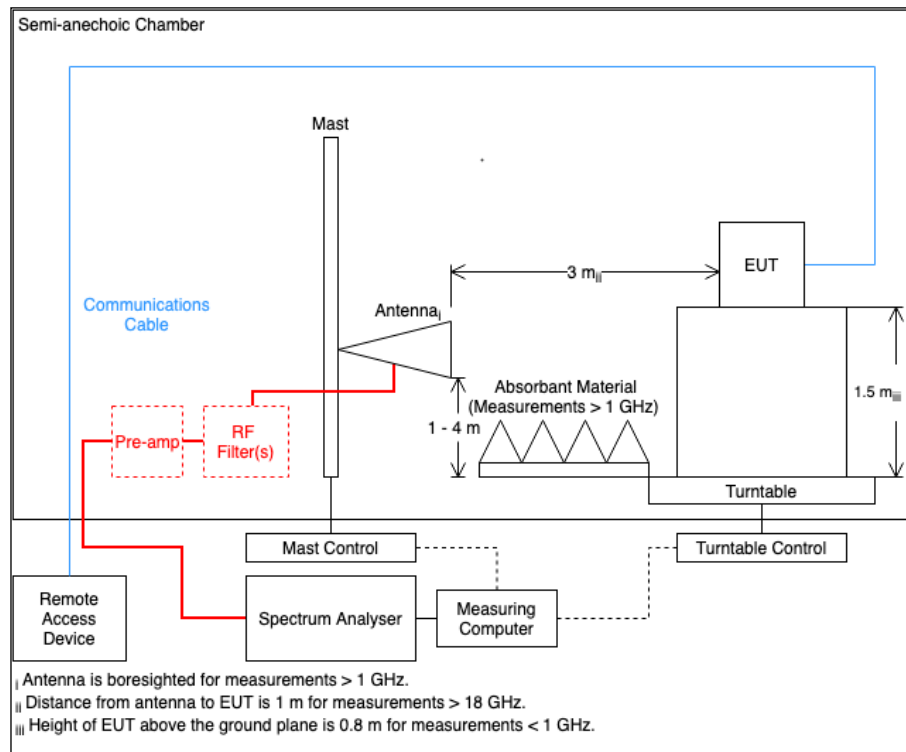


Figure 165

2.4.6 Environmental Conditions

Ambient Temperature	22.1 - 23.2 °C
Relative Humidity	39.5 - 52.7 %



2.4.7 Test Results

2.4 GHz Bluetooth - DTS

Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
279.991	28.78	46.00	-17.22	Q-Peak	92	105	Horizontal

Table 92 - 2440 MHz (CH17), LE1M, iPA, Core 0, 30 MHz to 26 GHz

No other emissions found within 6 dB of the limit.

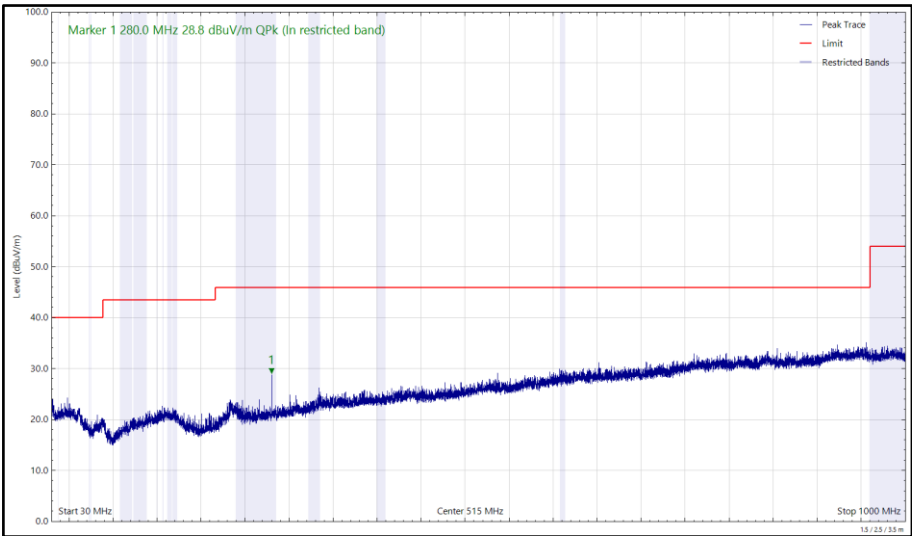


Figure 166 - 2440 MHz (CH17), LE1M, iPA, Core 0, 30 MHz to 1 GHz, Horizontal (Peak)

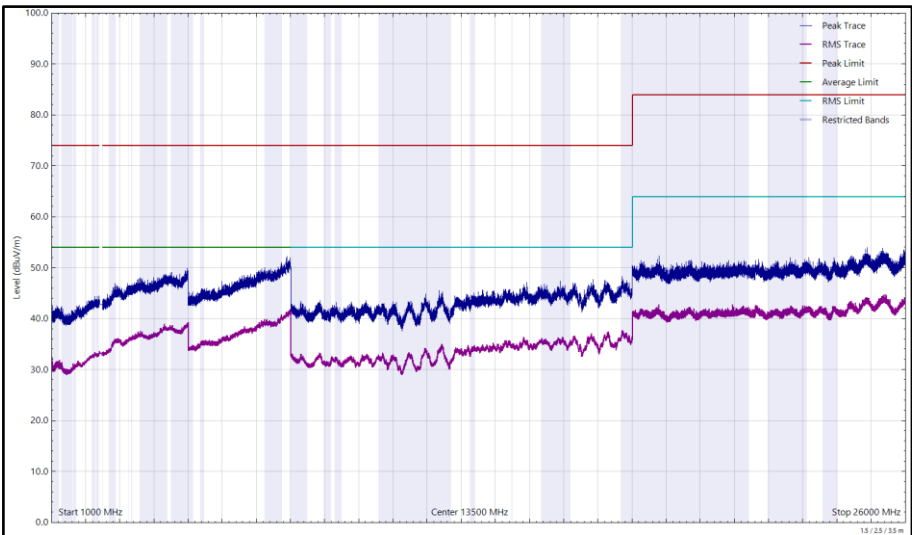


Figure 167 - 2440 MHz (CH17), LE1M, iPA, Core 0, 1 GHz to 26 GHz, Horizontal

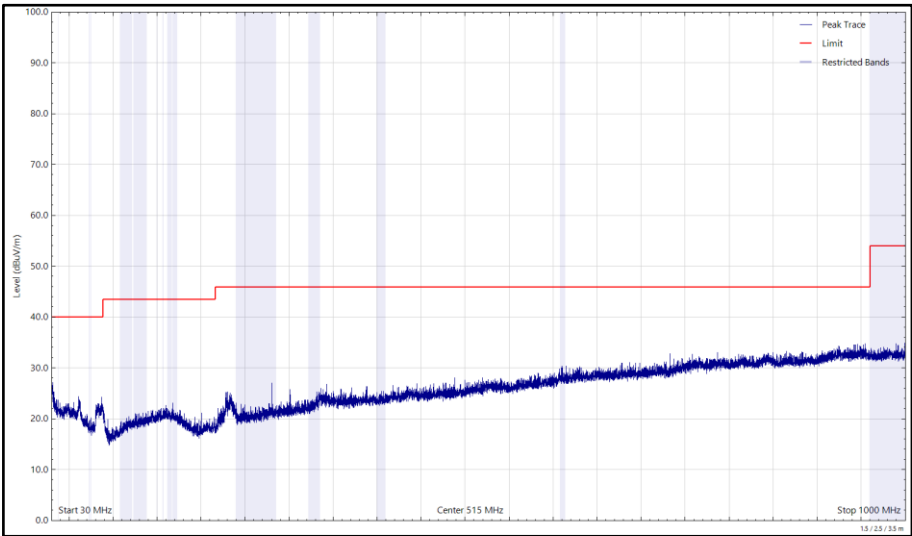


Figure 168 - 2440 MHz (CH17), LE1M, iPA, Core 0, 30 MHz to 1 GHz, Vertical (Peak)

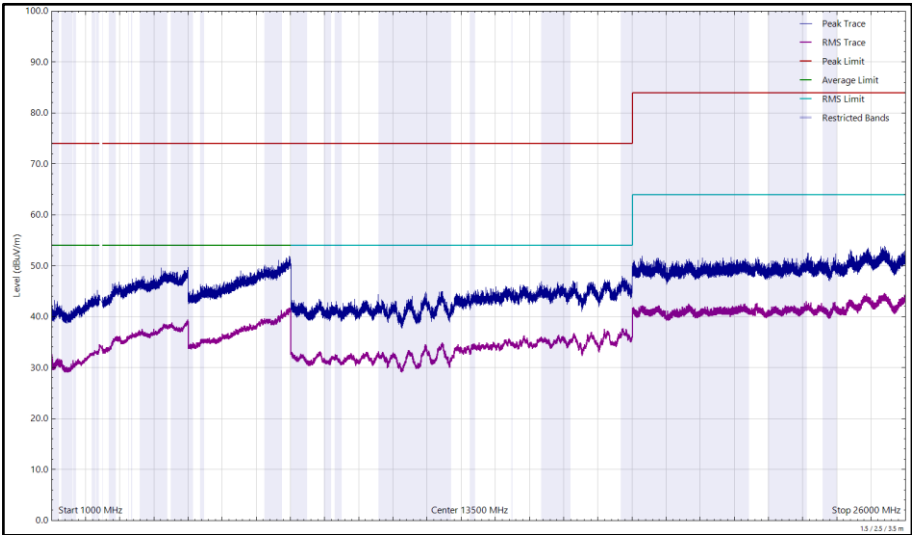


Figure 169 - 2440 MHz (CH17), LE1M, iPA, Core 0, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
280.007	28.75	46.00	-17.25	Q-Peak	114	102	Horizontal

Table 93 - 2440 MHz (CH17), LE1M, iPA, Core 1, 30 MHz to 26 GHz

No other emissions found within 6 dB of the limit.

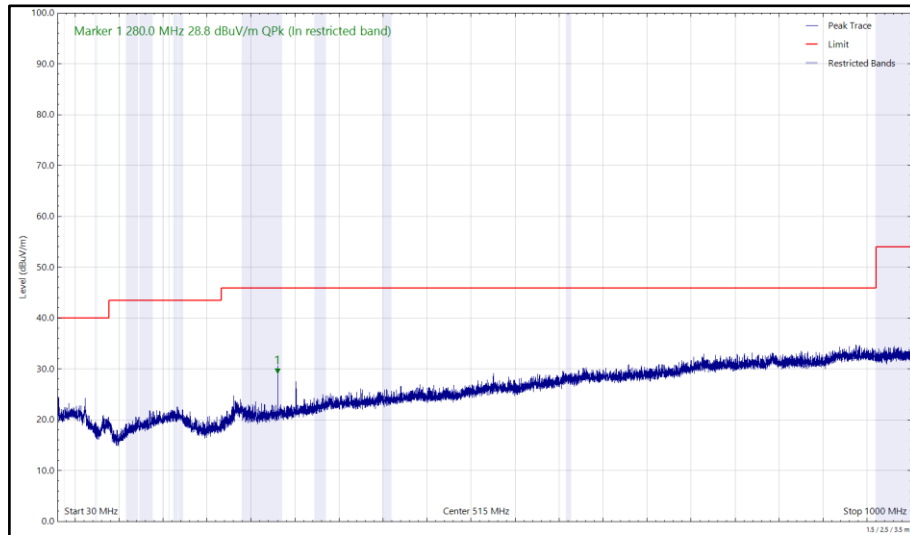


Figure 170 - 2440 MHz (CH17), LE1M, iPA, Core 1, 30 MHz to 1 GHz, Horizontal (Peak)

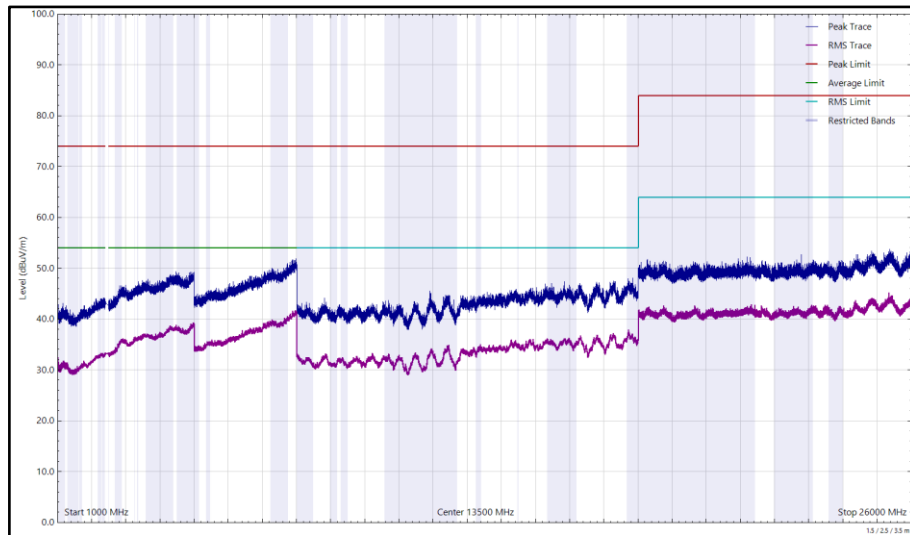


Figure 171 - 2440 MHz (CH17), LE1M, iPA, Core 1, 1 GHz to 26 GHz, Horizontal

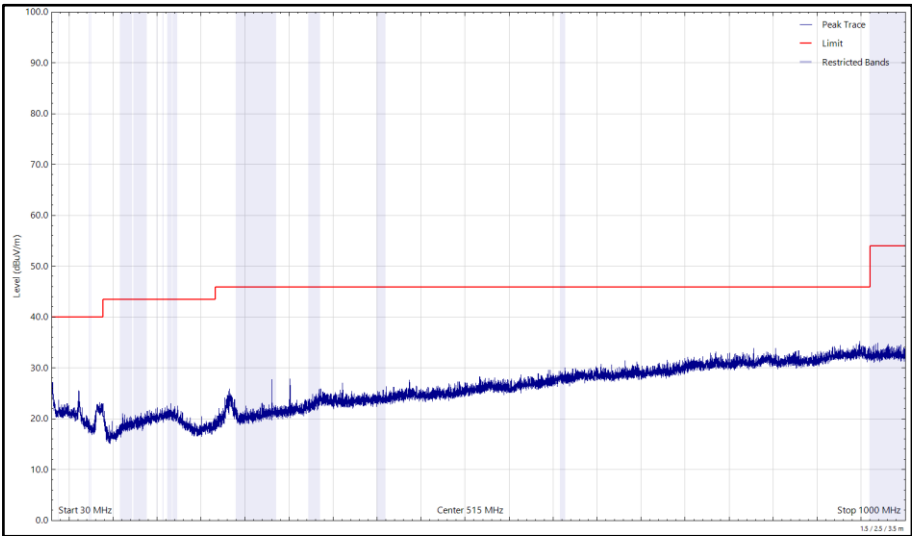


Figure 172 - 2440 MHz (CH17), LE1M, iPA, Core 1, 30 MHz to 1 GHz, Vertical (Peak)

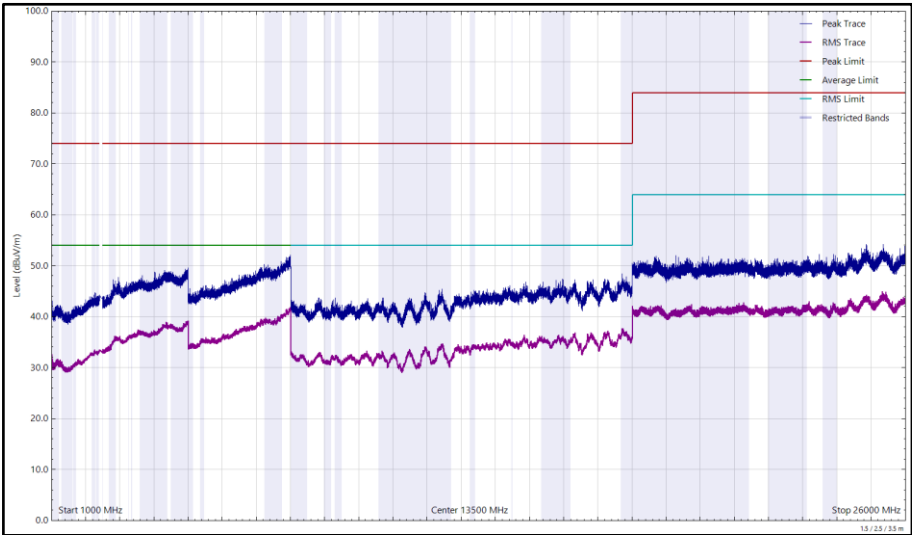


Figure 173 - 2440 MHz (CH17), LE1M, iPA, Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
279.994	28.87	46.00	-17.13	Q-Peak	97	103	Horizontal
4879.999	43.45	54.00	-10.55	RMS	0	338	Vertical

Table 94 - 2440 MHz (CH17), LE1M, iPA, Core 2, 30 MHz to 26 GHz

No other emissions found within 6 dB of the limit.

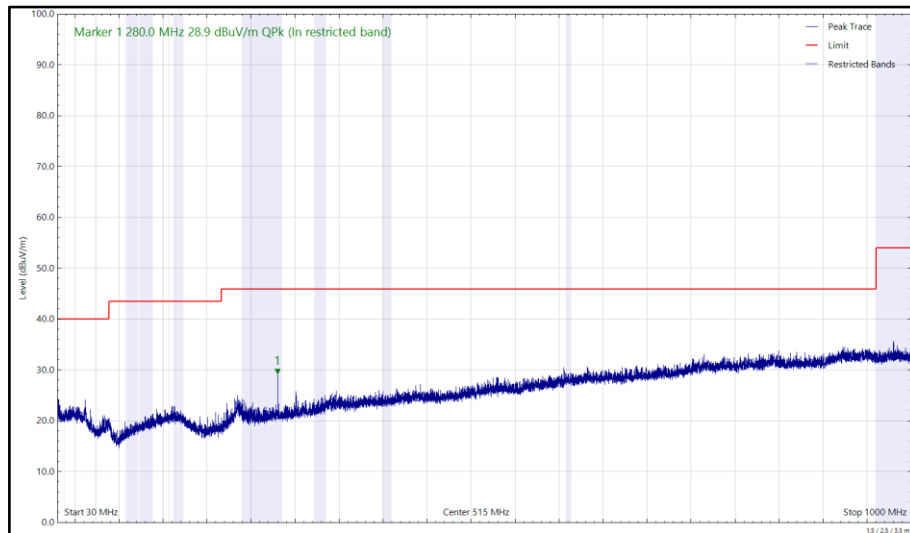


Figure 174 - 2440 MHz (CH17), LE1M, iPA, Core 2, 30 MHz to 1 GHz, Horizontal (Peak)

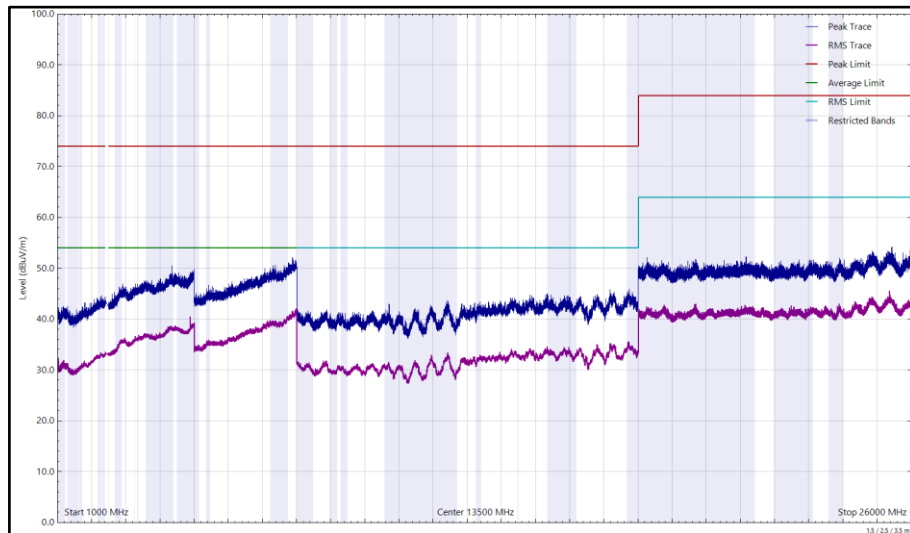


Figure 175 - 2440 MHz (CH17), LE1M, iPA, Core 2, 1 GHz to 26 GHz, Horizontal

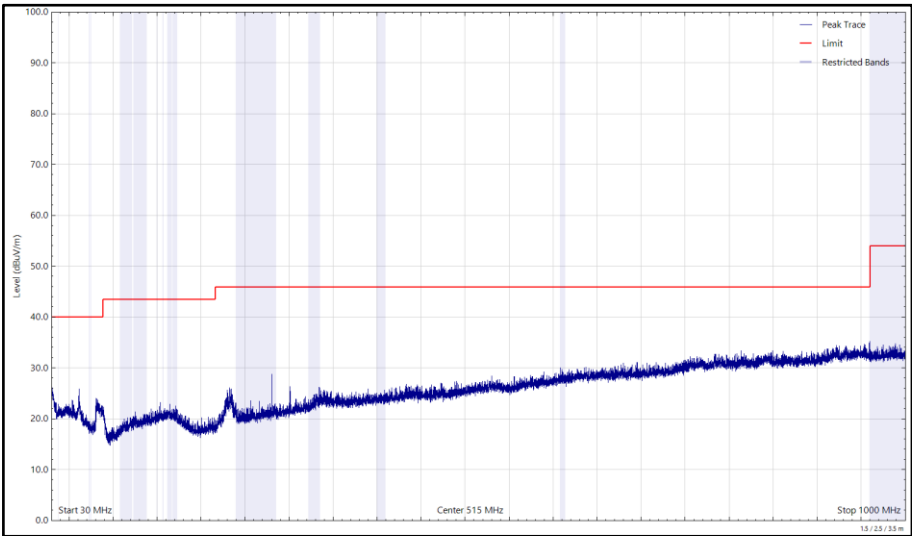


Figure 176 - 2440 MHz (CH17), LE1M, iPA, Core 2, 30 MHz to 1 GHz, Vertical (Peak)

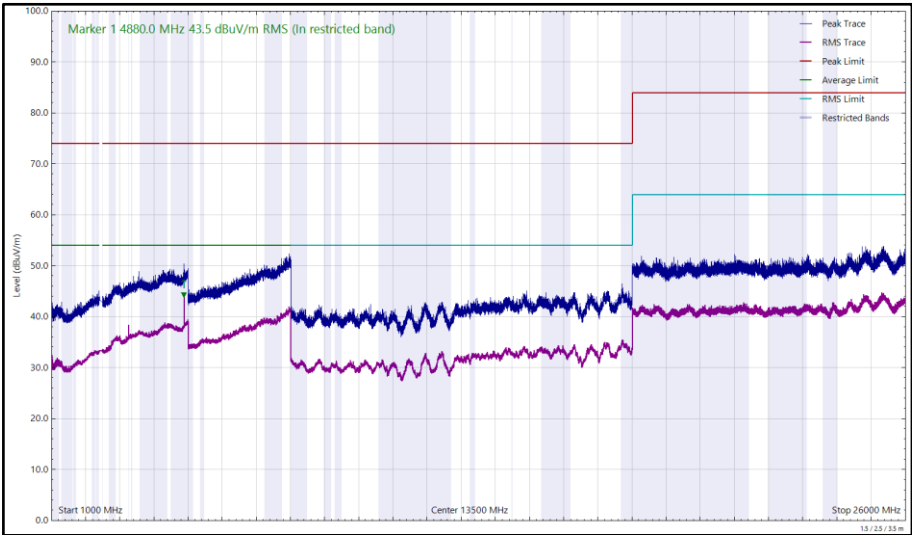


Figure 177 - 2440 MHz (CH17), LE1M, iPA, Core 2, 1 GHz to 26 GHz, Vertical



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

Table 95 - 2402 MHz (CH37), LE1M, iPA, Core 0, 1 GHz to 26 GHz

*No emissions found within 6 dB of the limit.

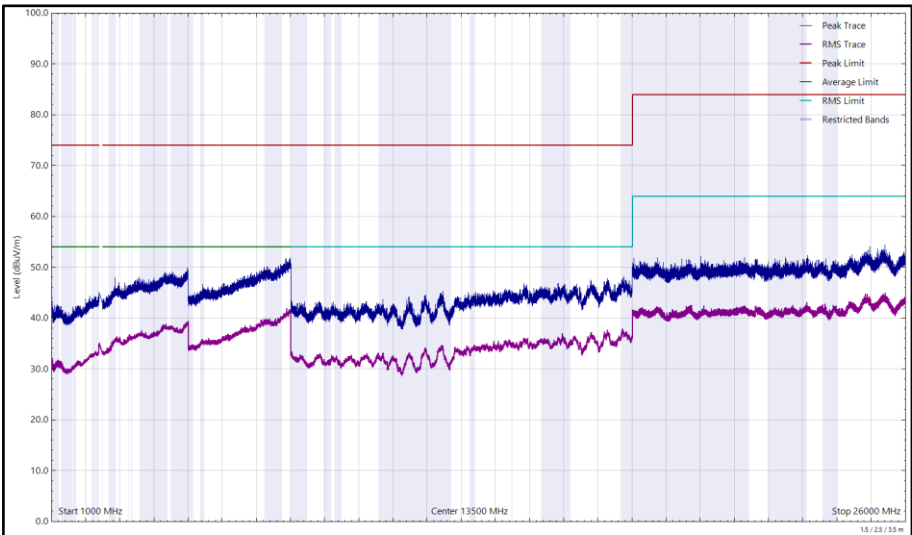


Figure 178 - 2402 MHz (CH37), LE1M, iPA, Core 0, 1 GHz to 26 GHz, Horizontal

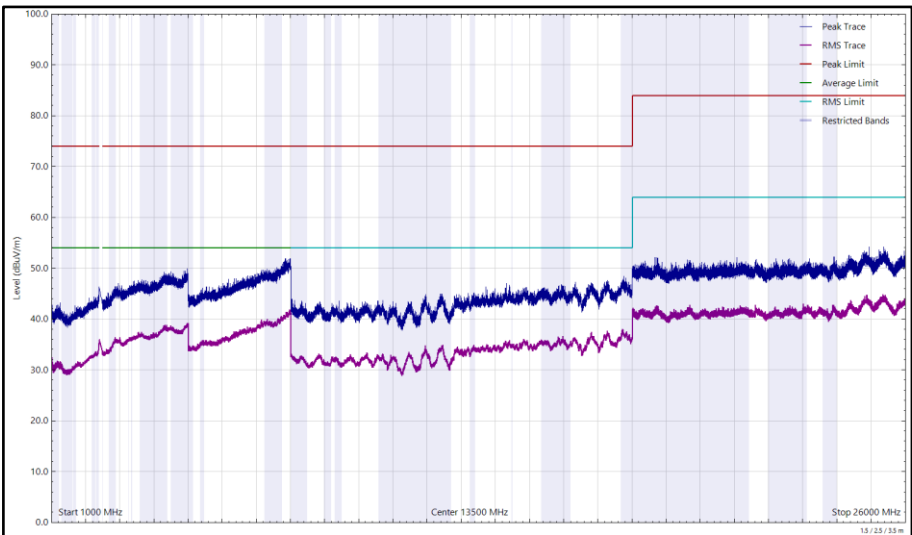


Figure 179 - 2402 MHz (CH37), LE1M, iPA, Core 0, 1 GHz to 26 GHz, Vertical



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

Table 96 - 2480 MHz (CH39), LE1M, iPA, Core 0, 1 GHz to 26 GHz

*No emissions found within 6 dB of the limit.

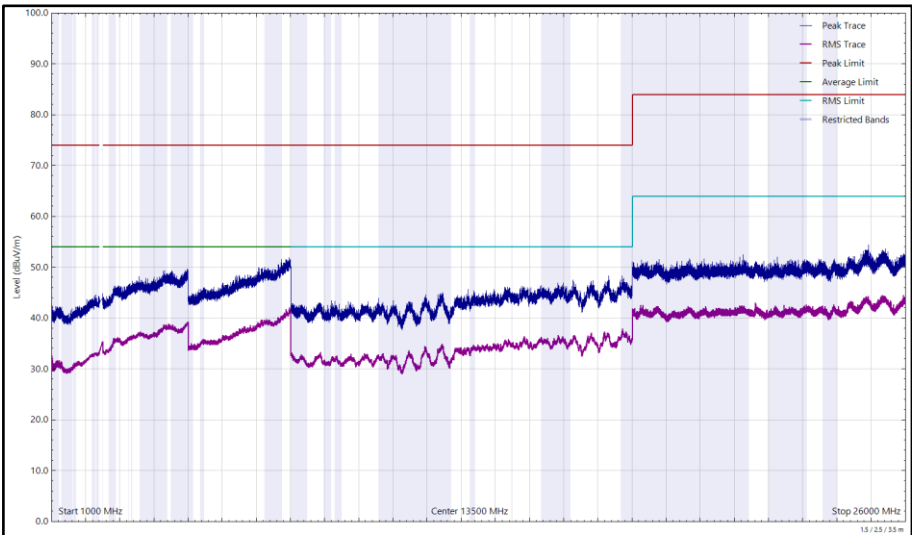


Figure 180 - 2480 MHz (CH39), LE1M, iPA, Core 0, 1 GHz to 26 GHz, Horizontal

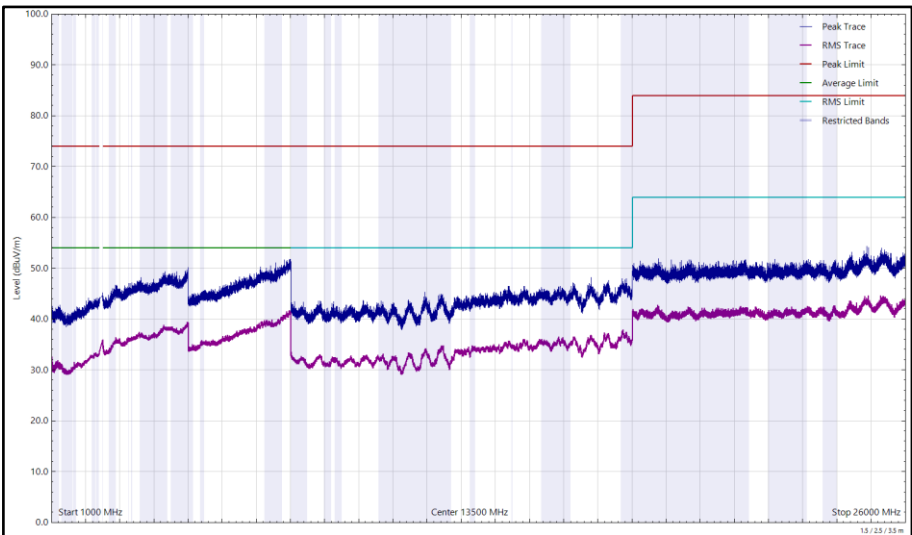


Figure 181 - 2480 MHz (CH39), LE1M, iPA, Core 0, 1 GHz to 26 GHz, Vertical



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

Table 97 - 2402 MHz (CH37), LE1M, iPA, Core 1, 1 GHz to 26 GHz

*No emissions found within 6 dB of the limit.

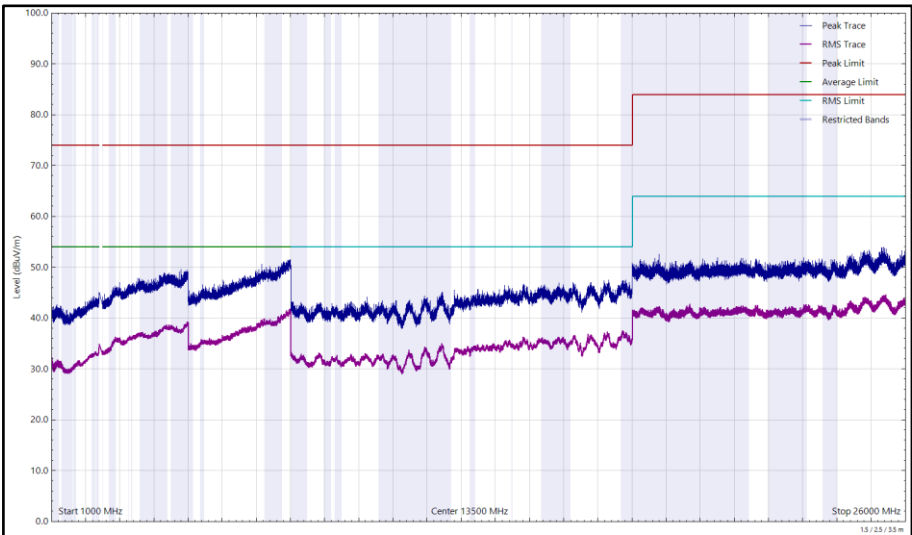


Figure 182 - 2402 MHz (CH37), LE1M, iPA, Core 1, 1 GHz to 26 GHz, Horizontal

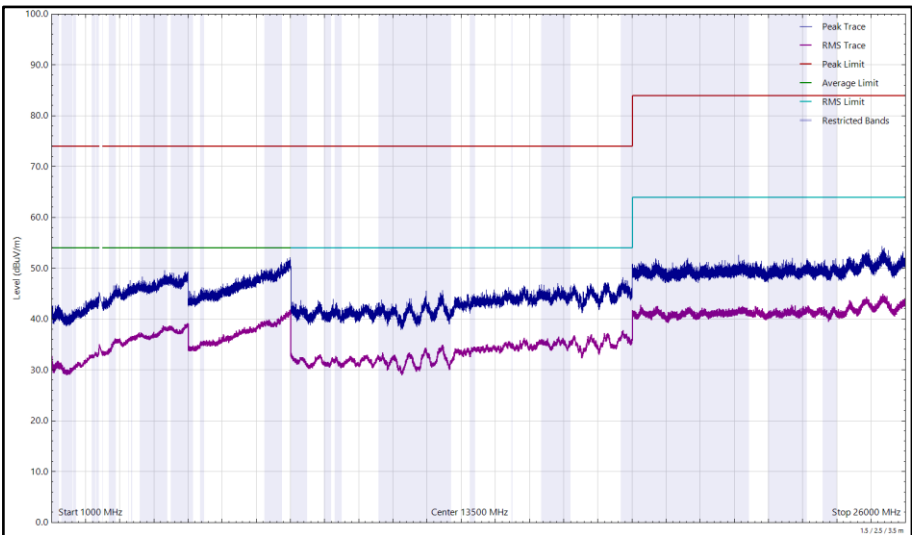


Figure 183 - 2402 MHz (CH37), LE1M, iPA, Core 1, 1 GHz to 26 GHz, Vertical



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

Table 98 - 2480 MHz (CH39), LE1M, iPA, Core 1, 1 GHz to 26 GHz

*No emissions found within 6 dB of the limit.

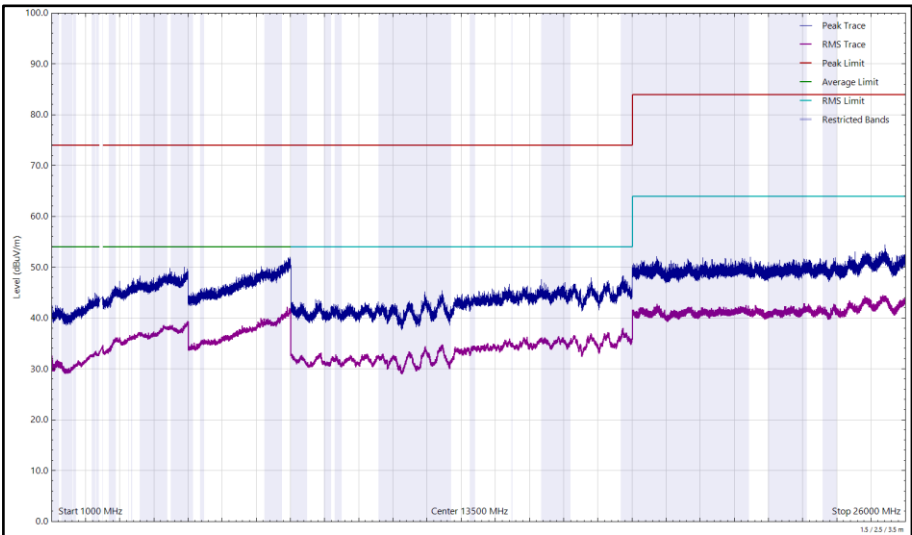


Figure 184 - 2480 MHz (CH39), LE1M, iPA, Core 1, 1 GHz to 26 GHz, Horizontal

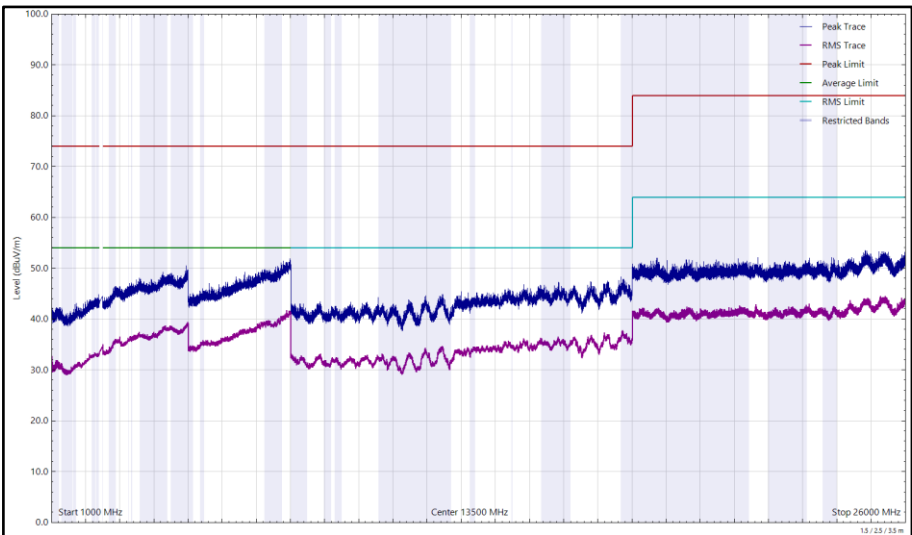


Figure 185 - 2480 MHz (CH39), LE1M, iPA, Core 1, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4803.976	42.14	54.00	-11.86	RMS	360	311	Vertical

Table 99 - 2402 MHz (CH37), LE1M, iPA, Core 2, 1 GHz to 26 GHz

No other emissions found within 6 dB of the limit.

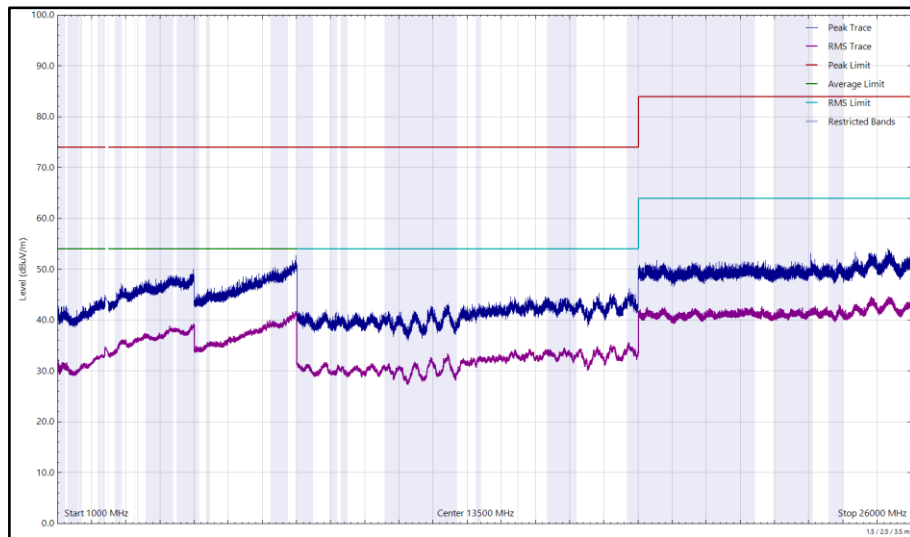


Figure 186 - 2402 MHz (CH37), LE1M, iPA, Core 2, 1 GHz to 26 GHz, Horizontal

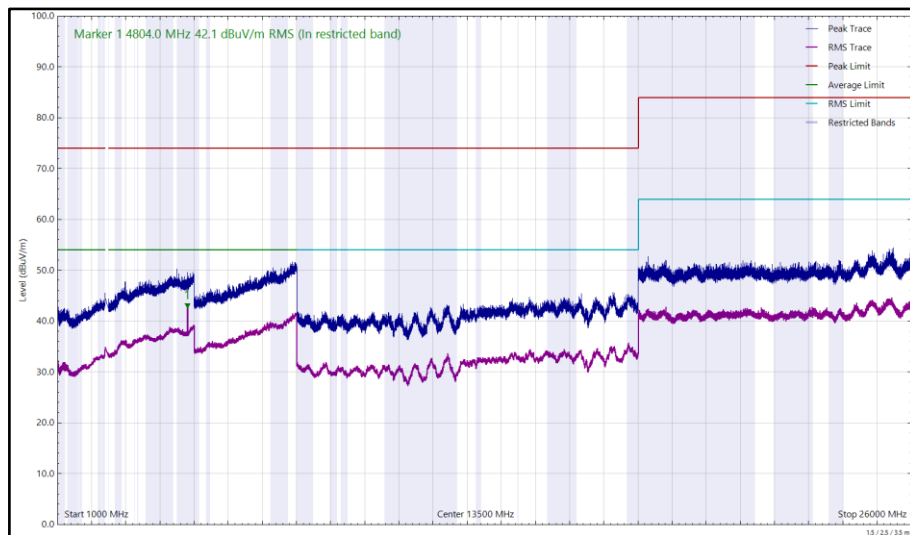


Figure 187 - 2402 MHz (CH37), LE1M, iPA, Core 2, 1 GHz to 26 GHz, Vertical

Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Angle (°)	Height (cm)	Polarisation
4960.037	46.28	54.00	-7.72	RMS	0	340	Vertical

Table 100 - 2480 MHz (CH39), LE1M, iPA, Core 2, 1 GHz to 26 GHz

No other emissions found within 6 dB of the limit.

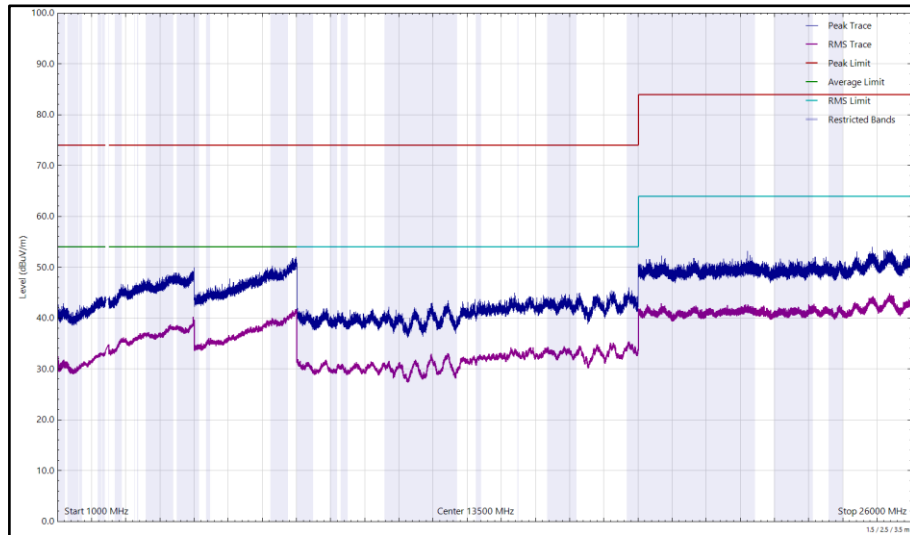


Figure 188 - 2480 MHz (CH39), LE1M, iPA, Core 2, 1 GHz to 26 GHz, Horizontal

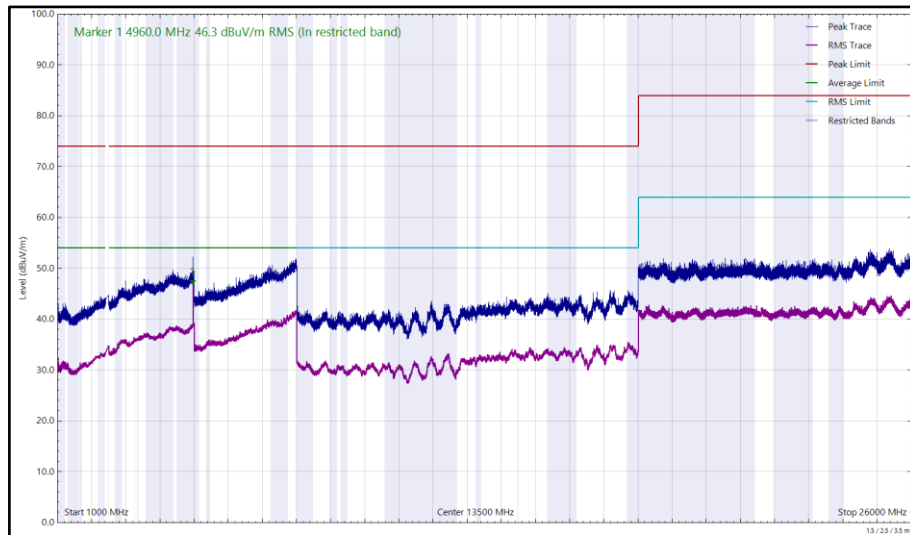


Figure 189 - 2480 MHz (CH39), LE1M, iPA, Core 2, 1 GHz to 26 GHz, Vertical



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.

2.4.8 Test Location and Test Equipment Used

This test was carried out in RF Chamber 16.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Emissions Software	TUV SUD	EmX V3.1.4	5125	-	Software
Cable (18GHz)	Junkosha	MWX221-04000NMSNMS/B	5262	12	04-Aug-2023
Cable (18 GHz)	Junkosha	MWX221-04000NMSNMS/B	5263	12	24-Jan-2023
Test Receiver	Rohde & Schwarz	ESW44	5914	12	21-Feb-2023
Cable (K Type 2m)	Junkosha	MWX241-02000KMSKMS/B	5935	12	14-May-2023
DRG Horn Antenna (7.5-18GHz)	Schwarzbeck	HWRD750	5940	12	29-May-2023
TRILOG Super Broadband Test Antenna	Schwarzbeck	VULB 9168	5944	24	03-Feb-2024
1500W (300V 12A) AC Power Supply	iTech	IT7324	5957	-	O/P Mon
3m Semi-Anechoic Chamber	Schaffner	RF Chamber 16	5972	36	24-May-2025
Mast & Turntable Controller	Maturo GmbH	FCU3.0	5973	-	TU



Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
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	06-Jun-2023
Cable (SMA to SMA 3m)	Junkosha	MWX221-03000AMSAMS/A	6021	12	06-Jun-2023
Cable (N to N 3m)	Junkosha	MWX221-03000NMSNMS/A	6025	12	05-Jun-2023
Cable (SMA to SMA 6m)	Junkosha	MWX221-06000AMSAMS/B	6026	12	07-Jun-2023
Cable (N to N 6m)	Junkosha	MWX221-06000NMSNMS/B	6027	12	05-Jun-2023
Horn Antenna (1-10 GHz)	Schwarzbeck	BBHA9120B	6142	12	26-Jun-2023
Digital Multimeter	Fluke	115	6146	12	16-Jun-2023
Humidity & Temperature meter	R.S Components	1364	6148	12	17-Jun-2023
Double Ridge Active Horn Antenna (18-40 GHz)	Com-Power	AHA-840	6188	24	02-Jun-2024
SAC Switch Unit	TUV SUD	SSU002	6190	12	08-Aug-2023
8GHz Highpass Filter	Wainwright	WHKX 7150 8000 18000 50SS	6196	12	15-Jul-2023
Pre Amp 8 - 18 GHz	Wright Technologies	APS06 0061	6200	12	19-Jul-2023
Attenuator 4dB	Pasternack	PE7074-4	6203	24	16-Jul-2024
Cable (SMA to SMA 20cm)	TUV SUD	MH-FH 8-18	6220	12	10-Aug-2023

Table 101

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



2.5 Authorised Band Edges

2.5.1 Specification Reference

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

2.5.2 Equipment Under Test and Modification State

A2780, S/N: FWC3JLYYHC - Modification State 0

2.5.3 Date of Test

09-August-2022 to 11-August-2022

2.5.4 Test Method

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

2.5.5 Environmental Conditions

Ambient Temperature	21.7 - 23.0 °C
Relative Humidity	42.4 - 52.1 %



2.5.6 Test Results

2.4 GHz Bluetooth - DTS

iPA - LE1M

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
GFSK	DH1	1	2402	2400.0	-65.45

Table 102 - Authorised Band Edge Results

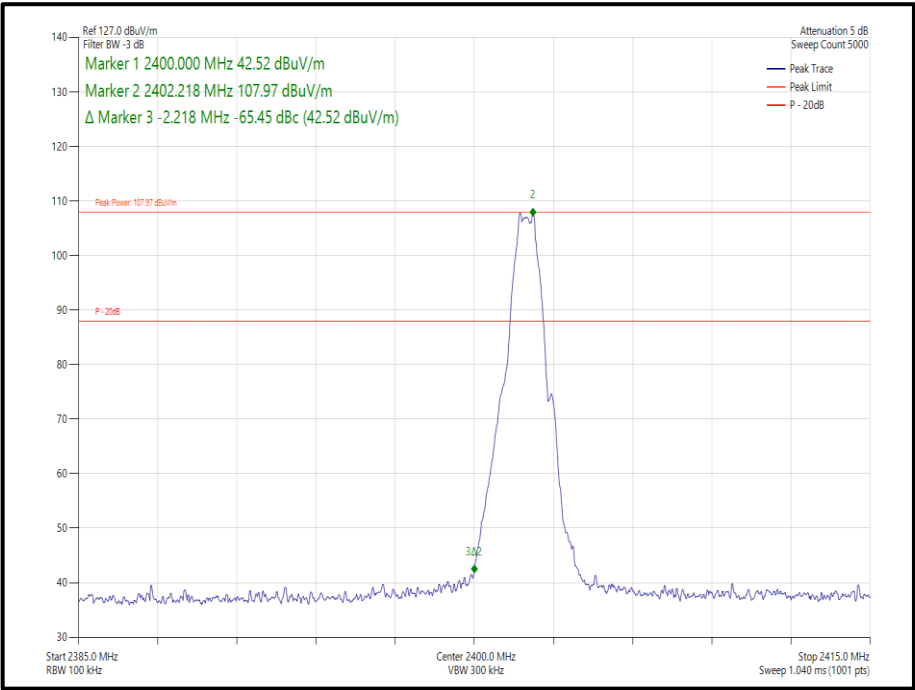


Figure 190 Core 1 - GFSK/DH1 - 2402 MHz – Band Edge Frequency 2400.0 MHz



iPA - LE1M

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
GFSK	DH1	2	2402	2400.0	-63.97

Table 103 - Authorised Band Edge Results

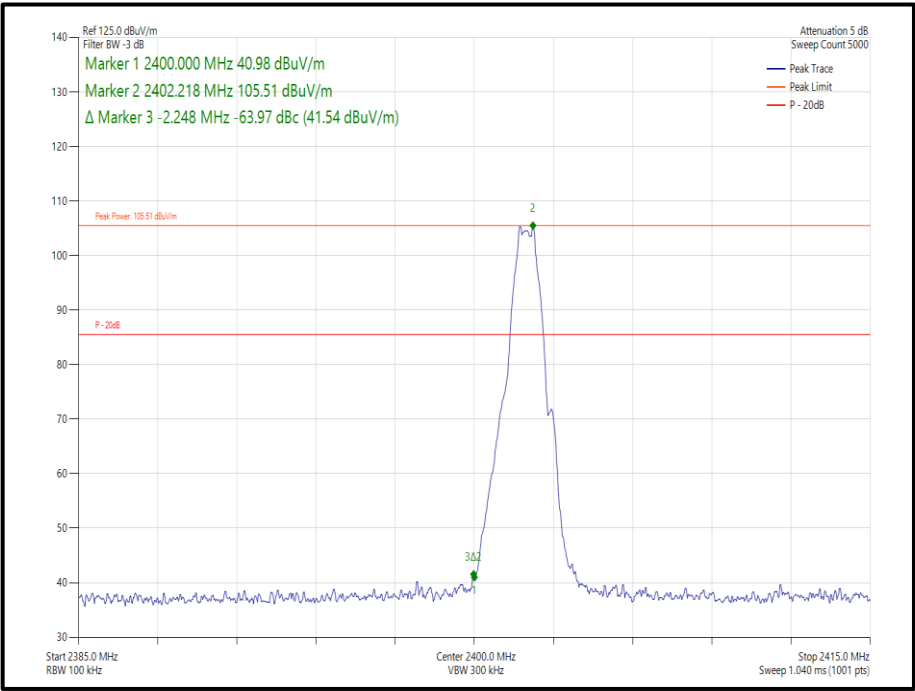


Figure 191 Core 2 - GFSK/DH1 - 2402 MHz – Band Edge Frequency 2400.0 MHz



iPA - LE1M

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
GFSK	DH1	0-1	2402	2400.0	-66.60

Table 104 - Authorised Band Edge Results

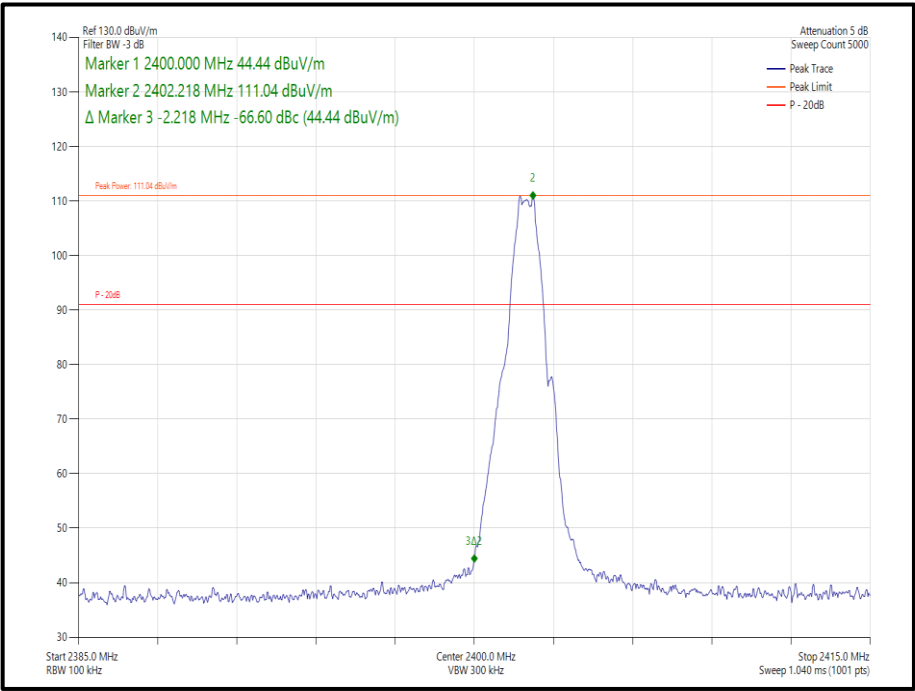


Figure 192 Core 0-1 - GFSK/DH1 - 2402 MHz – Band Edge Frequency 2400.0 MHz



iPA – LE2M

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
GFSK	DH1	1	2402	2400.0	-37.79

Table 105 - Authorised Band Edge Results

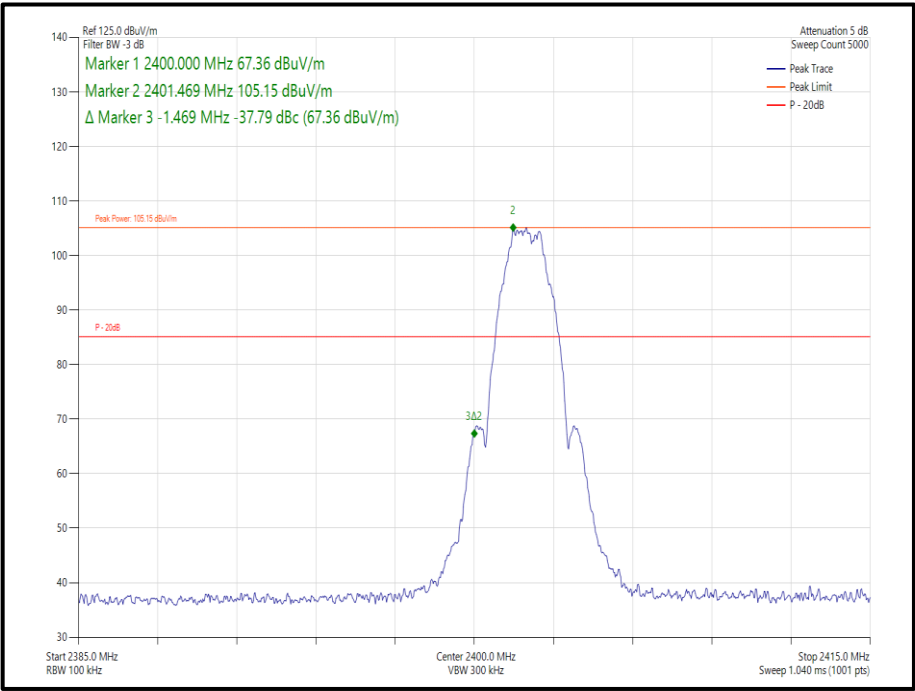


Figure 193 Core 1 - GFSK/DH1 - 2402 MHz – Band Edge Frequency 2400.0 MHz



iPA – LE2M

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
GFSK	DH1	2	2402	2400.0	-38.21

Table 106 - Authorised Band Edge Results

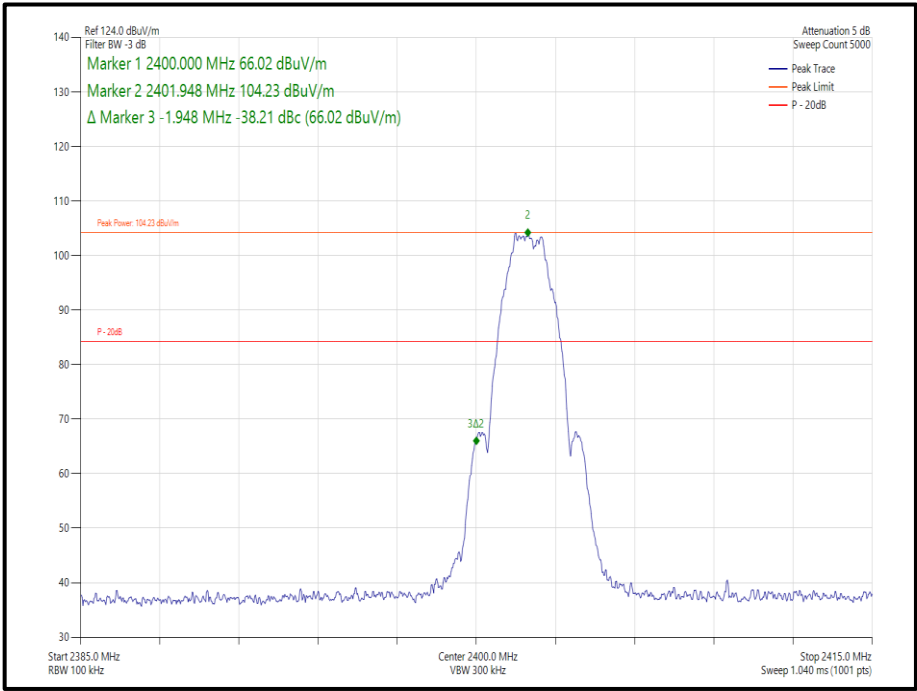


Figure 194 Core 2 - GFSK/DH1 - 2402 MHz – Band Edge Frequency 2400.0 MHz

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
GFSK	DH1	0-1	2402	2400.0	-37.24

Ref 128.0 dBuV/m
Filter BW -3 dB

Marker 1 2400.000 MHz 71.01 dBuV/m
Marker 2 2401.948 MHz 108.46 dBuV/m
Δ Marker 3 -1.978 MHz -37.24 dBc (71.22 dBuV/m)

Peak Power: 108.46 dBuV/m
P - 20dB

Attenuation 5 dB
Sweep Count 5000

Peak Trace
Peak Limit
P - 20dB

Start 2385.0 MHz
Center 2400.0 MHz
Stop 2415.0 MHz
RBW 100 kHz
VBW 300 kHz
Sweep 1.040 ms (1001 pts)

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ePA - HDR4

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
$\pi/4$ DQPSK	4-DH5	1	2404	2400.0	-64.57

Table 108 - Authorised Band Edge Results

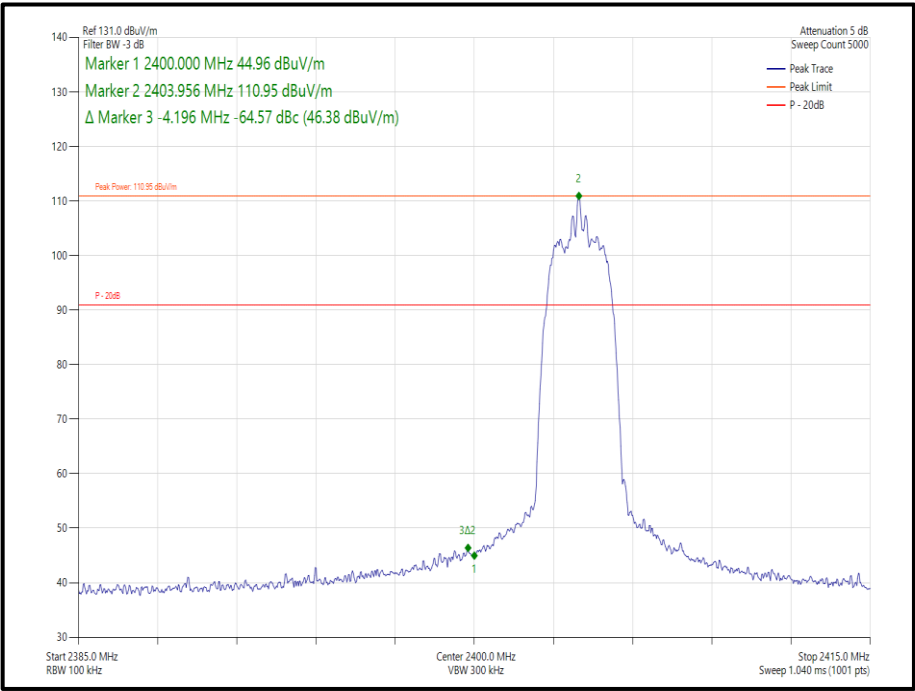


Figure 196 Core 1 - $\pi/4$ DQPSK/4-DH5 - 2404 MHz – Band Edge Frequency 2400.0 MHz



iPA - HDR4

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
$\pi/4$ DQPSK	4-DH5	1	2404	2400.0	-51.81

Table 109 - Authorised Band Edge Results

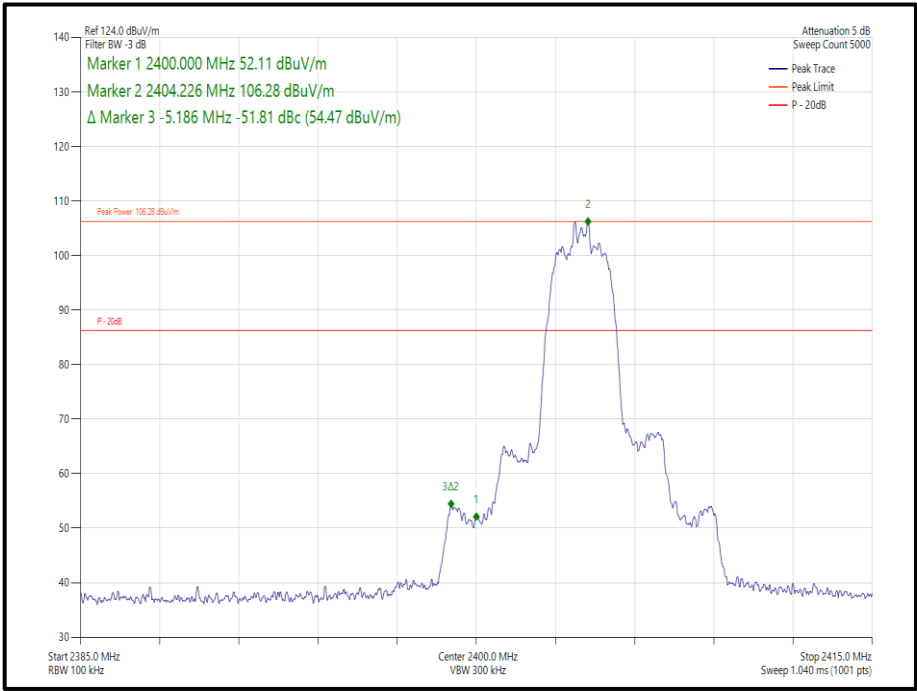


Figure 197 Core 1 - $\pi/4$ DQPSK/4-DH5 - 2404 MHz – Band Edge Frequency 2400.0 MHz



iPA - HDR4

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
$\pi/4$ DQPSK	4-DH5	2	2404	2400.0	-62.38

Table 110 - Authorised Band Edge Results

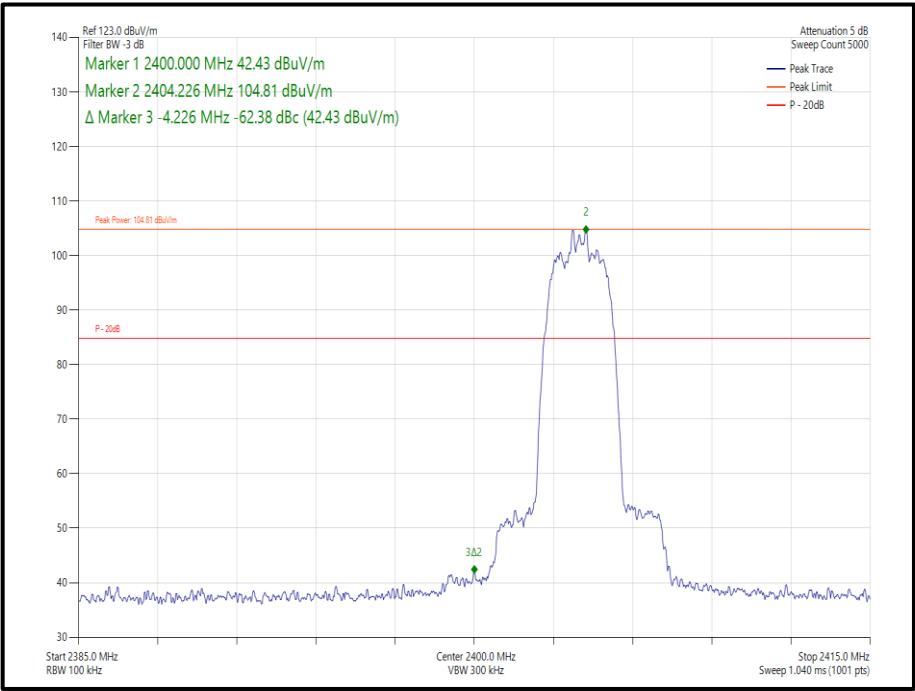


Figure 198 Core 2 - $\pi/4$ DQPSK/4-DH5 - 2404 MHz – Band Edge Frequency 2400.0 MHz



ePA - HDR4

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
$\pi/4$ DQPSK	4-DH5	0-1	2404	2400.0	-67.73

Table 111 - Authorised Band Edge Results

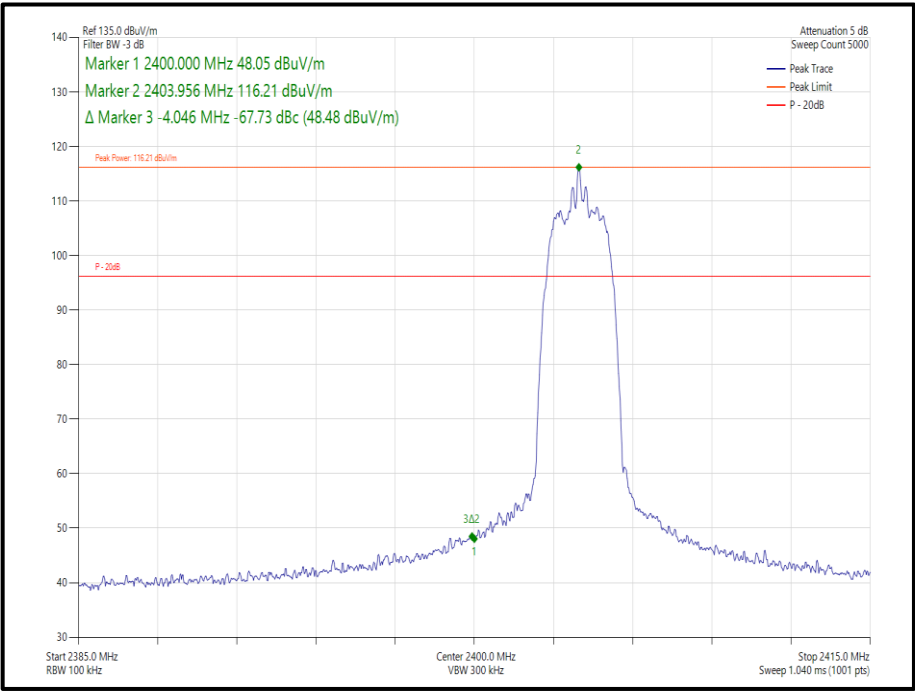


Figure 199 Core 0-1 - $\pi/4$ DQPSK/4-DH5 - 2404 MHz – Band Edge Frequency 2400.0 MHz



iPA - HDR4

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
$\pi/4$ DQPSK	4-DH5	0-1	2404	2400.0	-55.98

Table 112 - Authorised Band Edge Results

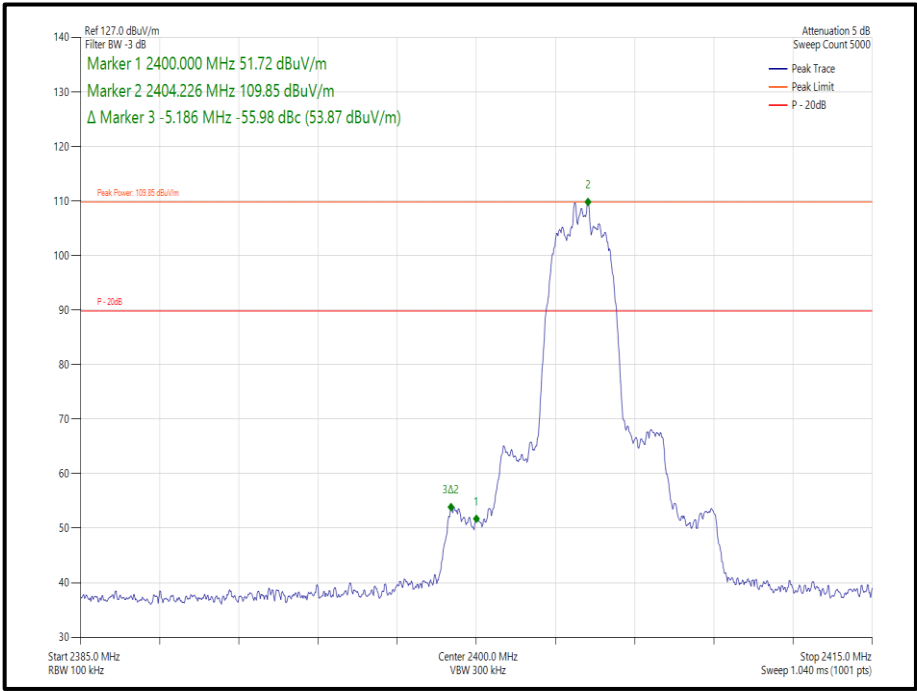


Figure 200 Core 0-1 - $\pi/4$ DQPSK/4-DH5 - 2404 MHz – Band Edge Frequency 2400.0 MHz



ePA - HDR4

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
$\pi/4$ DQPSK	4-DH5	1	2404	2400.0	-64.57

Table 113 - Authorised Band Edge Results

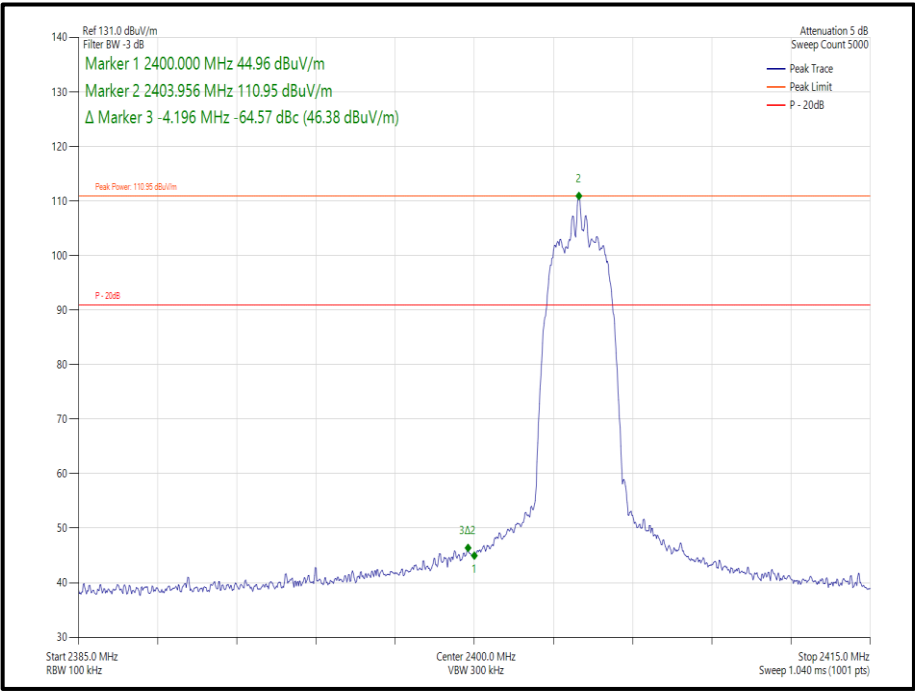


Figure 201 Core 1 - $\pi/4$ DQPSK/4-DH5 - 2404 MHz – Band Edge Frequency 2400.0 MHz



iPA – HDR8

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
$\pi/4$ DQPSK	8-DH5	1	2404	2400.0	-41.60

Table 114 - Authorised Band Edge Results

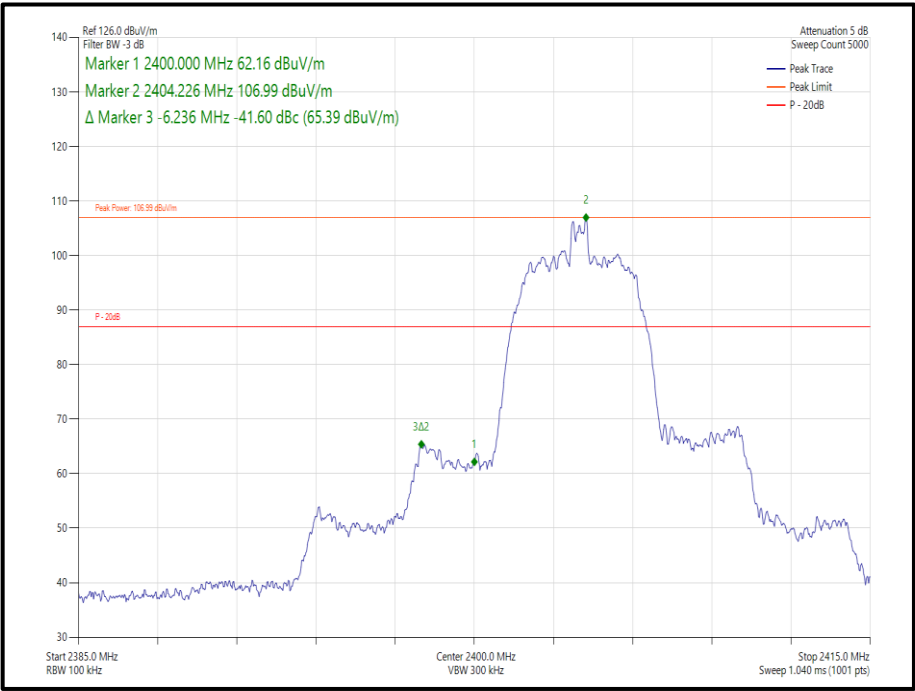


Figure 202 Core 1 - $\pi/4$ DQPSK/8-DH5 - 2404 MHz – Band Edge Frequency 2400.0 MHz



iPA – HDR8

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
$\pi/4$ DQPSK	8-DH5	2	2404	2400.0	-51.30

Table 115 - Authorised Band Edge Results

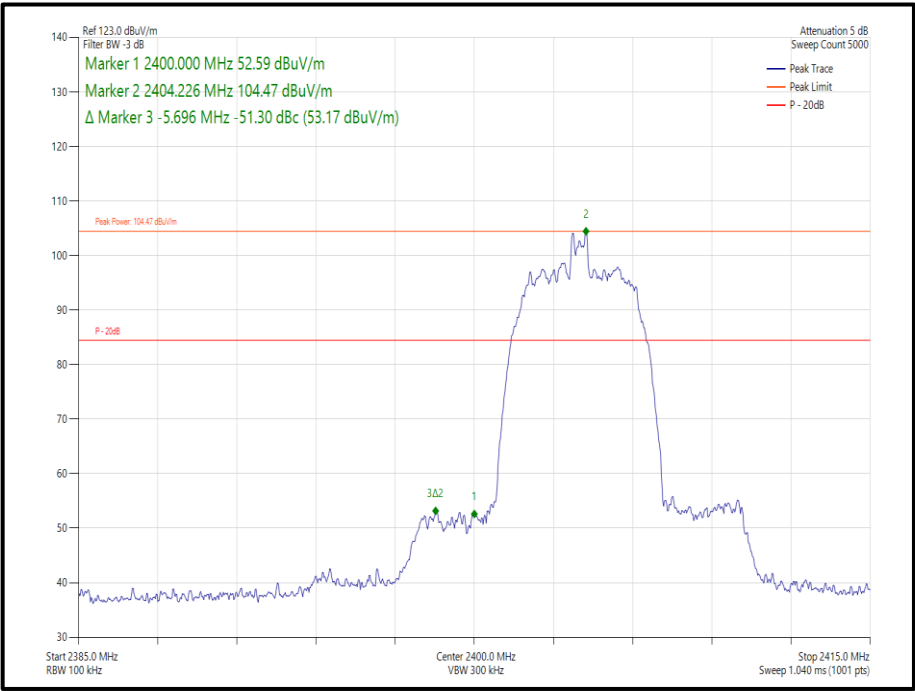


Figure 203 Core 2 - $\pi/4$ DQPSK/8-DH5 - 2404 MHz – Band Edge Frequency 2400.0 MHz



ePA – HDR8

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
$\pi/4$ DQPSK	8-DH5	0-1	2404	2400.0	-60.58

Table 116 - Authorised Band Edge Results

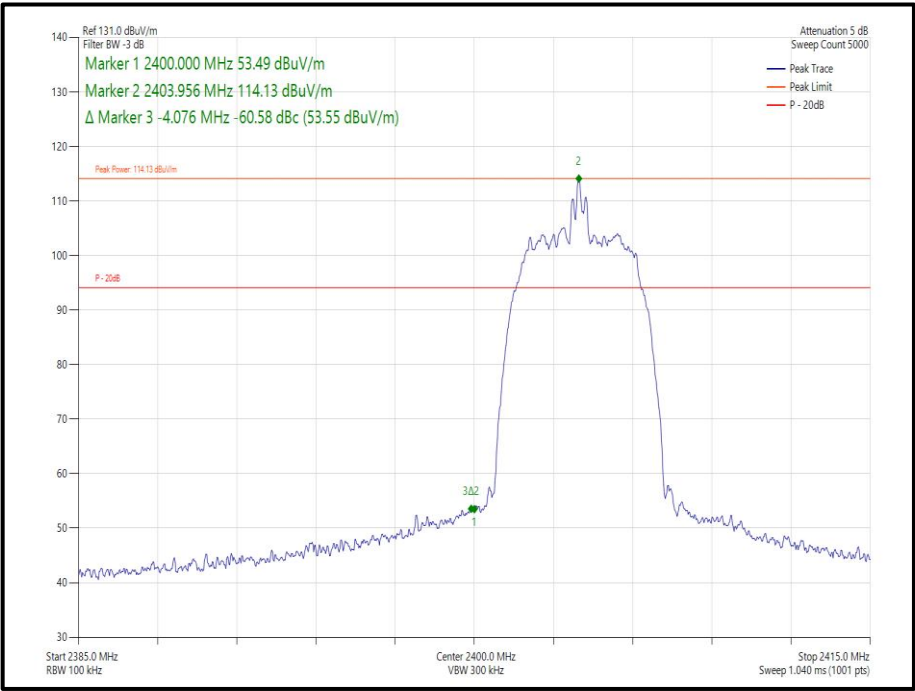


Figure 204 Core 0-1 - $\pi/4$ DQPSK/8-DH5 - 2404 MHz – Band Edge Frequency 2400.0 MHz

iPA – HDR8

Modulation	Packet Type	Core	Tx Frequency (MHz)	Band Edge Frequency (MHz)	Level (dBc)
$\pi/4$ DQPSK	8-DH5	0-1	2404	2400.0	-45.73

Table 117 - Authorised Band Edge Results

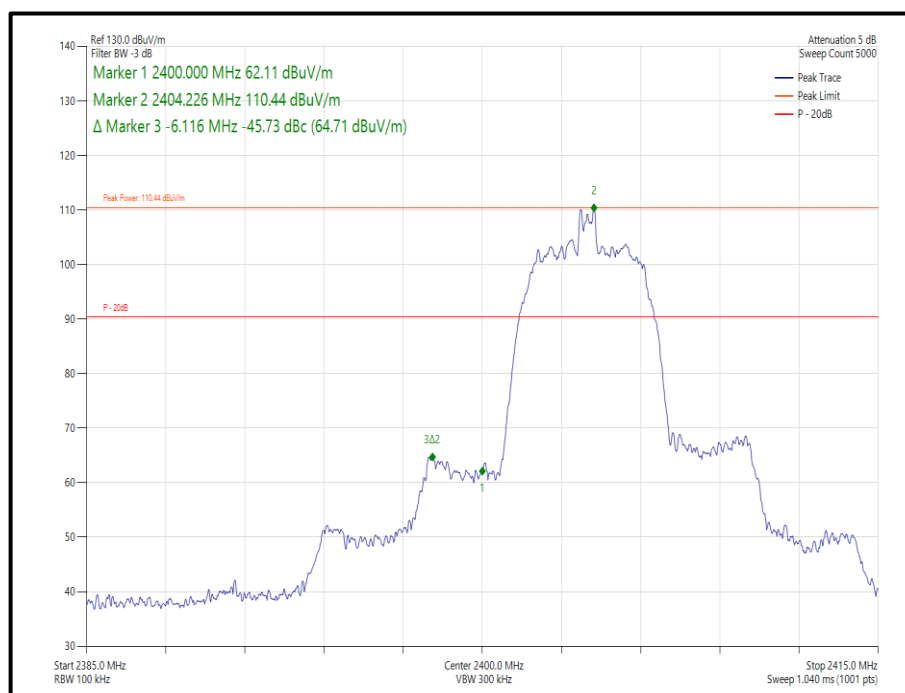


Figure 205 Core 0-1 - $\pi/4$ DQPSK/8-DH5 - 2404 MHz – Band Edge Frequency 2400.0 MHz

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.



2.5.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 16.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Test Receiver	Rohde & Schwarz	ESW44	5914	12	21-Feb-2023
1500W (300V 12A) AC Power Supply	iTech	IT7324	5957	-	O/P Mon
3m Semi-Anechoic Chamber	Schaffner	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	5996	12	06-Jun-2023
Cable (N to N 1m)	Junkosha	MWX221-01000NMSNMS/B	5999	12	05-Jun-2023
Cable (N to N 7m)	Junkosha	MWX221-07000NMSNMS/B	6005	12	05-Jun-2023
Cable (N to N 8m)	Junkosha	MWX221-08000NMSNMS/A	6006	12	05-Jun-2023
Horn Antenna (1-10 GHz)	Schwarzbeck	BBHA9120B	6140	12	21-Jun-2023
Digital Multimeter	Fluke	115	6146	12	16-Jun-2023
Humidity & Temperature meter	R.S Components	1364	6148	12	17-Jun-2023
SAC Switch Unit	TUV SUD	SSU003	6191	12	15-Jul-2023

Table 118

TU – Traceability Unscheduled

O/P Mon – Output Monitored using calibrated equipment



2.6 Power Spectral Density

2.6.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.247 (e)
ISED RSS-247, Clause 5.2
ISED RSS-GEN, Clause 5.2 and 6.12

2.6.2 Equipment Under Test and Modification State

A2780, S/N: NW3J007K67 - Modification State 0

2.6.3 Date of Test

19-October-2022 to 28-October-2022

2.6.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 11.10.2.

MIMO output port summing was performed in accordance with KDB 662911 D01 E)2)b).

2.6.5 Environmental Conditions

Ambient Temperature	22.7 - 23.5 °C
Relative Humidity	52.3 - 56.9 %



2.6.6 Test Results

2.4 GHz Bluetooth - DTS

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (4-DH5)	Duty Cycle (%):	78.1
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2404	3.0	-	-2.32	-	-	-	8.00	-10.32
2441	3.0	-	-1.73	-	-	-	8.00	-9.73
2476	3.0	-	-1.19	-	-	-	8.00	-9.19

Table 119 - Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (8-DH5)	Duty Cycle (%):	78.2
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2404	3.0	-	-1.26	-	-	-	8.00	-9.26
2441	3.0	-	-1.72	-	-	-	8.00	-9.72
2476	3.0	-	-1.71	-	-	-	8.00	-9.71

Table 120 - Maximum Power Spectral Density Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	662911 D01 v02r01 E)2)b)		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (4-DH5)	Duty Cycle (%):	78.1
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2404	3.0	-1.55	-1.75	-	-	1.36	8.00	-6.64
2441	3.0	-2.75	-1.75	-	-	0.79	8.00	-7.21
2476	3.0	-2.22	-1.33	-	-	1.26	8.00	-6.74

Table 121 - Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	662911 D01 v02r01 E)2)b)		

DUT Configuration			
Mode:	ePA $\pi/4$ DQPSK (8-DH5)	Duty Cycle (%):	78.2
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2404	3.0	-2.36	-2.03	-	-	0.82	8.00	-7.18
2441	3.0	-3.29	-2.03	-	-	0.40	8.00	-7.60
2476	3.0	-3.62	-1.53	-	-	0.56	8.00	-7.44

Table 122 - Maximum Power Spectral Density Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA $\pi/4$ DQPSK (4-DH5)	Duty Cycle (%):	78.1
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2404	3.0	-	-10.19	-	-	-	8.00	-18.19
2441	3.0	-	-9.99	-	-	-	8.00	-17.99
2476	3.0	-	-10.72	-	-	-	8.00	-18.72

Table 123 - Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA $\pi/4$ DQPSK (8-DH5)	Duty Cycle (%):	78.2
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2404	3.0	-	-10.58	-	-	-	8.00	-18.58
2441	3.0	-	-10.08	-	-	-	8.00	-18.08
2476	3.0	-	-10.14	-	-	-	8.00	-18.14

Table 124 - Maximum Power Spectral Density Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA $\pi/4$ DQPSK (4-DH5)	Duty Cycle (%):	78.1
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Core 2)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2404	3.0	-	-	-10.79	-	-	8.00	-18.79
2441	3.0	-	-	-10.71	-	-	8.00	-18.71
2476	3.0	-	-	-10.36	-	-	8.00	-18.36

Table 125 - Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA $\pi/4$ DQPSK (8-DH5)	Duty Cycle (%):	78.2
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Core 2)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2404	3.0	-	-	-10.51	-	-	8.00	-18.51
2441	3.0	-	-	-10.56	-	-	8.00	-18.56
2476	3.0	-	-	-9.93	-	-	8.00	-17.93

Table 126 - Maximum Power Spectral Density Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	662911 D01 v02r01 E)2)b)		

DUT Configuration			
Mode:	iPA $\pi/4$ DQPSK (4-DH5)	Duty Cycle (%):	78.1
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2404	3.0	-10.87	-10.44	-	-	-7.64	8.00	-15.64
2441	3.0	-10.67	-10.47	-	-	-7.56	8.00	-15.56
2476	3.0	-10.14	-10.07	-	-	-7.09	8.00	-15.09

Table 127 - Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	662911 D01 v02r01 E)2)b)		

DUT Configuration			
Mode:	iPA $\pi/4$ DQPSK (8-DH5)	Duty Cycle (%):	78.2
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2404	3.0	-10.17	-9.78	-	-	-6.96	8.00	-14.96
2441	3.0	-10.43	-9.67	-	-	-7.02	8.00	-15.02
2476	3.0	-10.49	-10.19	-	-	-7.32	8.00	-15.32

Table 128 - Maximum Power Spectral Density Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA GFSK (LE1M)	Duty Cycle (%):	60.4
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2402	3.0	-	-8.71	-	-	-	8.00	-16.71
2440	3.0	-	-8.25	-	-	-	8.00	-16.25
2480	3.0	-	-8.12	-	-	-	8.00	-16.12

Table 129 - Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA GFSK (LE2M)	Duty Cycle (%):	31.3
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	B (Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2402	3.0	-	-10.18	-	-	-	8.00	-18.18
2440	3.0	-	-10.33	-	-	-	8.00	-18.33
2480	3.0	-	-10.15	-	-	-	8.00	-18.15

Table 130 - Maximum Power Spectral Density Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA GFSK (LE1M)	Duty Cycle (%):	60.4
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Core 2)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2402	3.0	-	-	-8.76	-	-	8.00	-16.76
2440	3.0	-	-	-8.34	-	-	8.00	-16.34
2480	3.0	-	-	-8.17	-	-	8.00	-16.17

Table 131 - Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	-		

DUT Configuration			
Mode:	iPA GFSK (LE2M)	Duty Cycle (%):	31.2
Antenna Configuration:	SISO	DCCF (dB):	-
Active Port(s):	C (Core 2)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2402	3.0	-	-	-10.46	-	-	8.00	-18.46
2440	3.0	-	-	-10.45	-	-	8.00	-18.45
2480	3.0	-	-	-10.28	-	-	8.00	-18.28

Table 132 - Maximum Power Spectral Density Results



Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	662911 D01 v02r01 E)2)b)		

DUT Configuration			
Mode:	iPA GFSK (LE1M)	Duty Cycle (%):	60.4
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2402	3.0	-8.85	-8.48	-	-	-5.65	8.00	-13.65
2440	3.0	-8.28	-8.23	-	-	-5.24	8.00	-13.24
2480	3.0	-8.54	-8.54	-	-	-5.53	8.00	-13.53

Table 133 - Maximum Power Spectral Density Results

Test Configuration			
Frequency Range:	2400-2483.5 MHz	Band:	2.4 GHz
Limit Clause(s):	15.247 (e) RSS-247 5.2 b)	Test Method(s):	C63.10 11.10.2
Additional Reference(s):	662911 D01 v02r01 E)2)b)		

DUT Configuration			
Mode:	iPA GFSK (LE2M)	Duty Cycle (%):	31.2
Antenna Configuration:	Beamforming	DCCF (dB):	-
Active Port(s):	A+B (Core 0 + Core 1)	Peak Antenna Gain (dBi):	-

Test Frequency (MHz)	RBW (kHz)	PSD (dBm/RBW)					Limit (dBm/3 kHz)	Margin (dB)
		A	B	C	D	Σ		
2402	3.0	-10.95	-10.65	-	-	-7.79	8.00	-15.79
2440	3.0	-10.45	-10.22	-	-	-7.32	8.00	-15.32
2480	3.0	-10.52	-10.54	-	-	-7.52	8.00	-15.52

Table 134 - Maximum Power Spectral Density Results



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

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

ISED RSS-247, Limit Clause 5.2(b)

The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission

2.6.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

Instrument	Manufacturer	Type No	TE No	Calibration Period (months)	Calibration Expires
Multimeter	Fluke	79 Series III	611	12	21-Dec-2022
Hygrometer	Rotronic	I-1000	3220	12	05-Nov-2022
Frequency Standard	Spectracom	SecureSync 1200-0408-0601	4393	6	01-Feb-2023
AC Programmable Power Supply	iTech	IT7324	5226	-	O/P Mon
MXA Signal Analyser	Keysight Technologies	N9020B	5529	24	13-Sep-2024
Signal Conditioning Unit	TUV SUD	SPECTRUM SCU002	5759	12	05-Jul-2023

Table 135

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
Emission Bandwidth	± 42.87 kHz
Maximum Conducted Output Power	± 1.38 dB
Spurious Radiated Emissions	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Authorised Band Edges	30 MHz to 1 GHz: ± 5.2 dB 1 GHz to 40 GHz: ± 6.3 dB
Power Spectral Density	± 1.49 dB

Table 136

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.