Fig.104. 20dB Bandwidth: 8DPSK, Channel 0
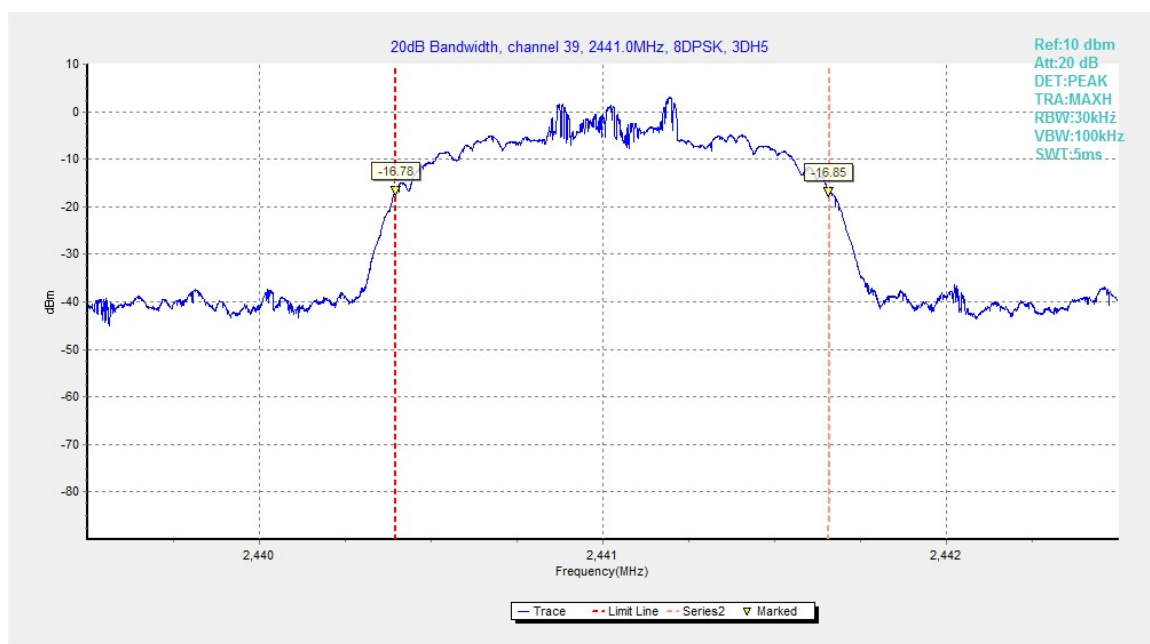

Fig.105. 20dB Bandwidth: 8DPSK, Channel 39
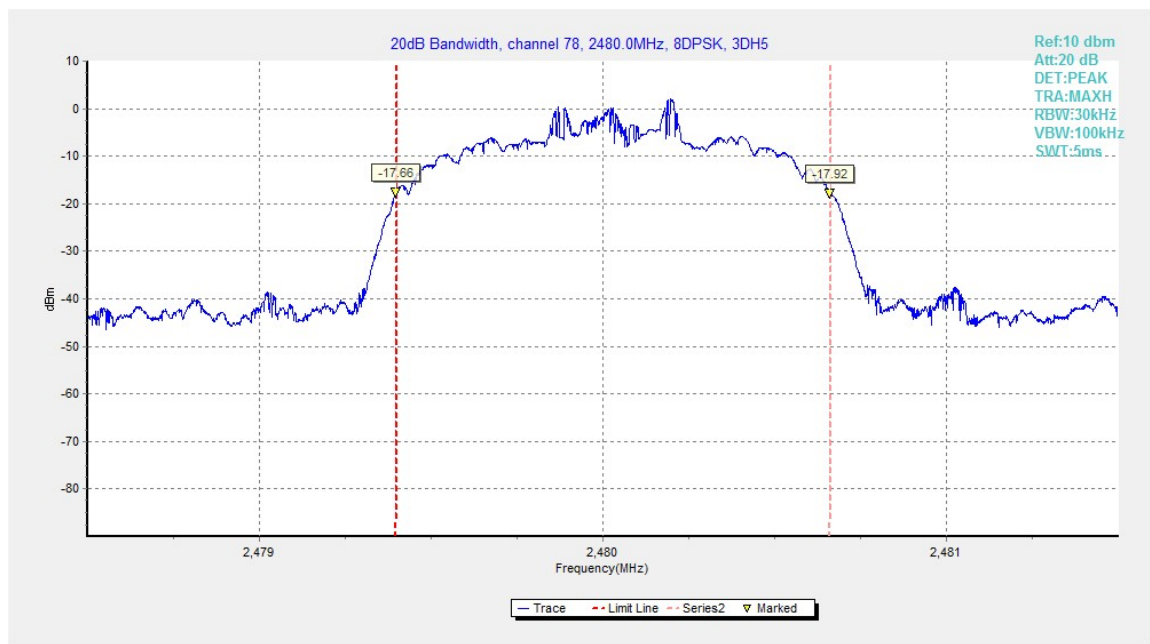
Fig.106. 20dB Bandwidth: 8DPSK, Channel 78

A.8. Carrier Frequency Separation

Method of Measurement: See ANSI C63.10-clause 7.8.2

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

- Span = 3MHz

- RBW=300kHz

- VBW=300kHz

- Sweep = auto

- Detector function = peak

- Trace = max hold

- Allow the trace to stabilize

Search the peak marks of the middle frequency and adjacent channel, then record the separation between them.
 ＊ Comment: This limit should be over 25 kHz or (2/3) * 20dB bandwidth, whichever is greater.

Measurement Limit:

Standard	Limit(kHz)
FCC 47 CFR Part 15.247(a)(1)	over 25 kHz or (2/3) * 20dB bandwidth

Measurement Result:
For GFSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.107	999.00	P

For π/4 DQPSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.108	1314.00	P

For 8DPSK

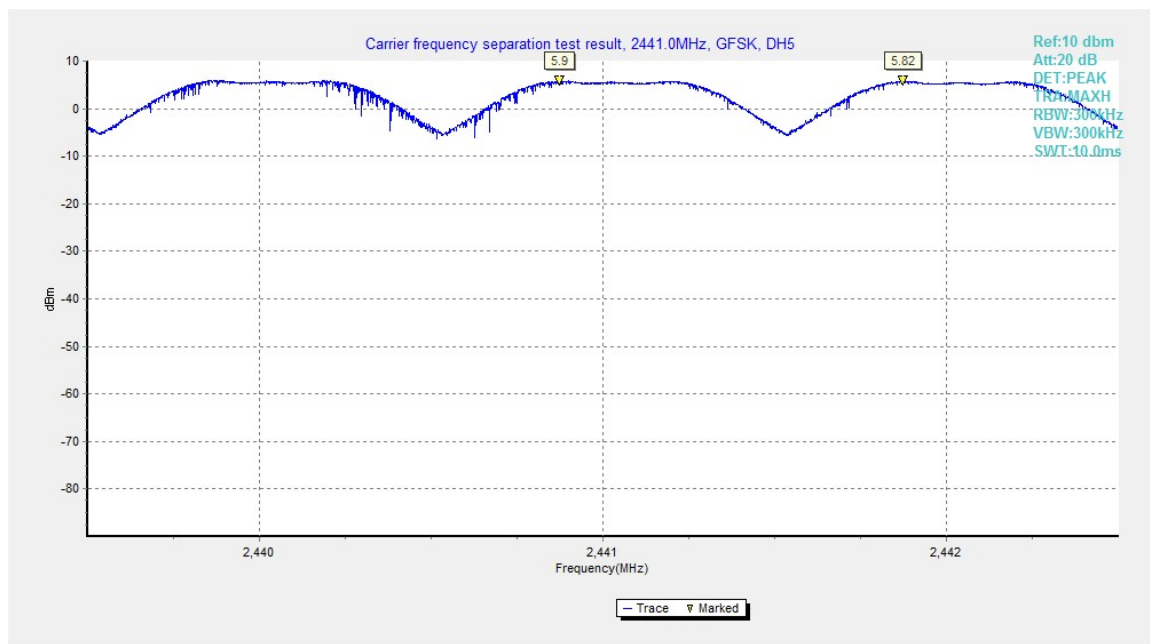| Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.109	965.00	P

Conclusion: PASS
Test graphs as below:

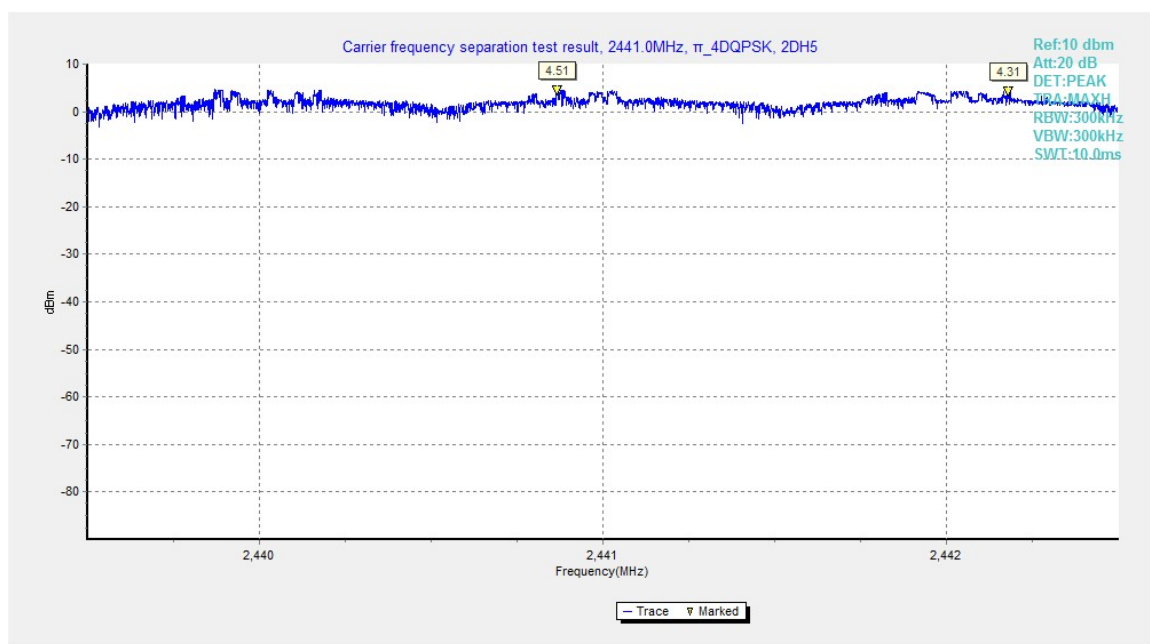Fig.107. Carrier frequency separation measurement: GFSK, Channel 39

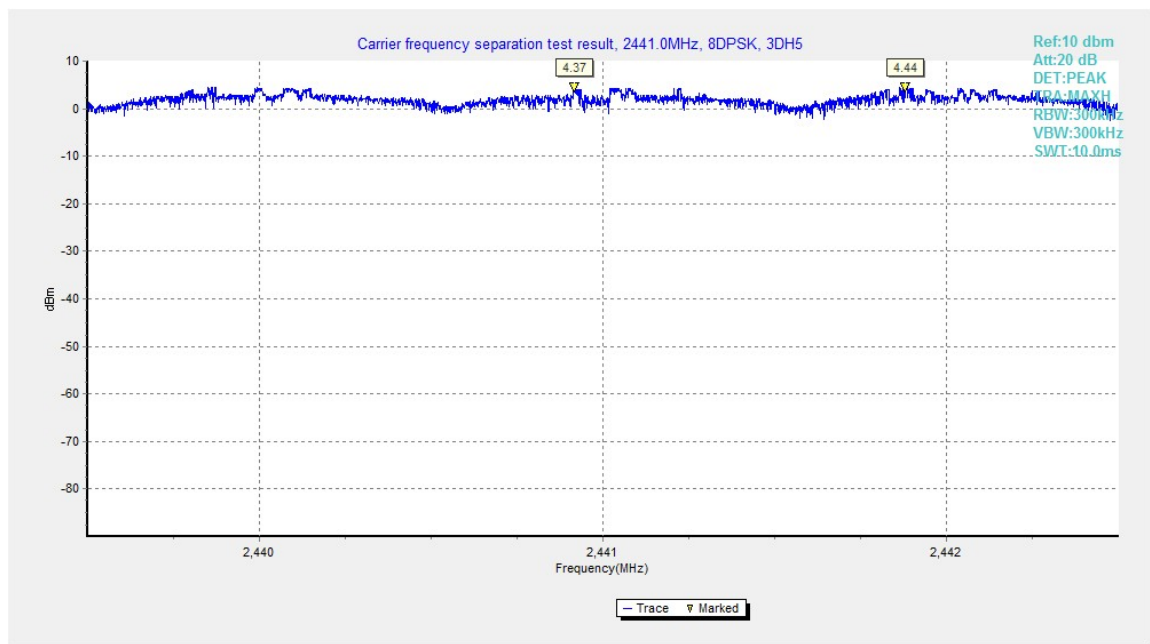Fig.108. Carrier frequency separation measurement: π/4 DQPSK, Channel 39

Fig.109. Carrier frequency separation measurement: 8DPSK, Channel 39

A.9. Number of Hopping Channels

Method of Measurement: See ANSI C63.10-clause 7.8.3

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

- Span = the frequency band of operation

- RBW = 500kHz

- VBW = 500kHz

- Sweep = auto

- Detector function = peak

- Trace = max hold

- Allow the trace to stabilize

It might prove necessary to break the span up into subranges to show clearly all of the hopping frequencies. Compliance of an EUT with the appropriate regulatory limit shall be determined for the number of hopping channels. A plot of the data shall be included in the test report.

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247(a) (1)(iii)	At least 15 non-overlapping channels

Measurement Result:

For GFSK

Channel	Number of hopping channels		Conclusion
0~39	Fig.110	79	P
40~78	Fig.111		

Forπ/4 DQPSK

Channel	Number of hopping channels		Conclusion
0~39	Fig.112	79	P
40~78	Fig.113		

For 8DPSK

Channel	Number of hopping channels		Conclusion
0~39	Fig.114	79	P
40~78	Fig.115		

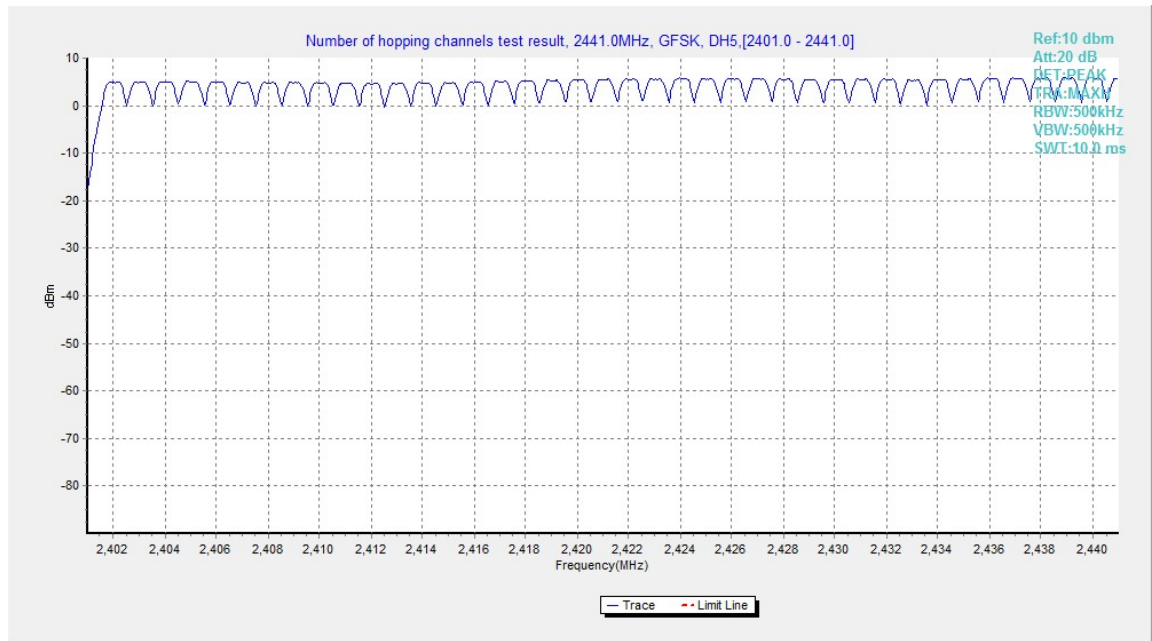**Conclusion: PASS**

Test graphs as below:

Fig.110. Number of hopping frequencies: GFSK, Channel 0 - 39
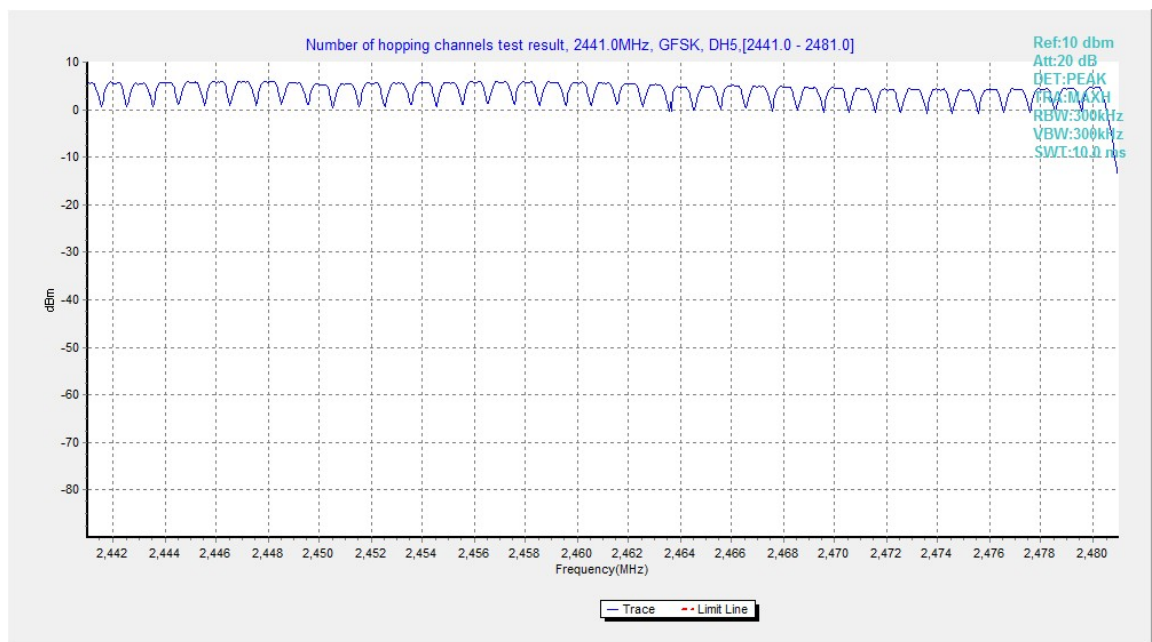

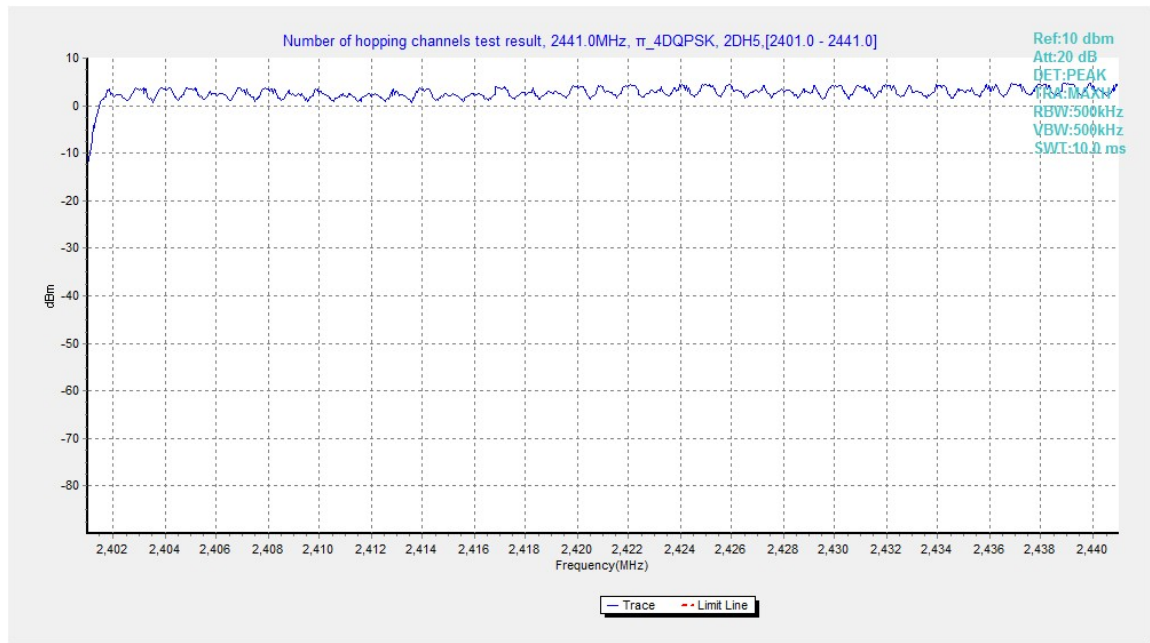Fig.111. Number of hopping frequencies: GFSK, Channel 40 - 78

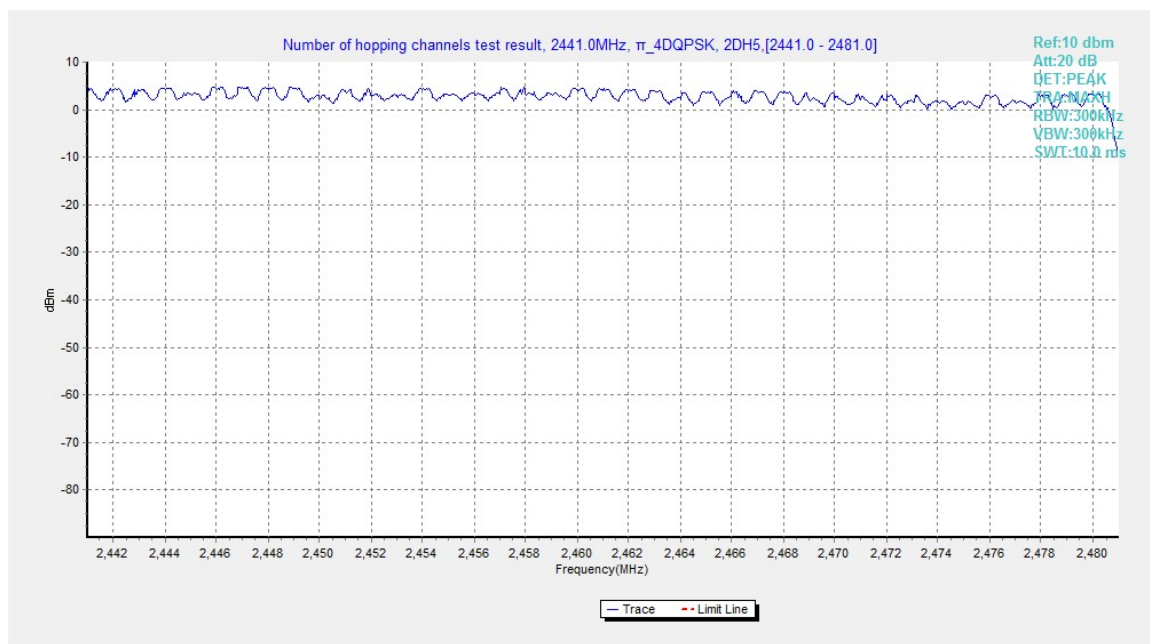Fig.112. Number of hopping frequencies: π/4 DQPSK, Channel 0 - 39

Fig.113. Number of hopping frequencies: π/4 DQPSK, Channel 40 - 78
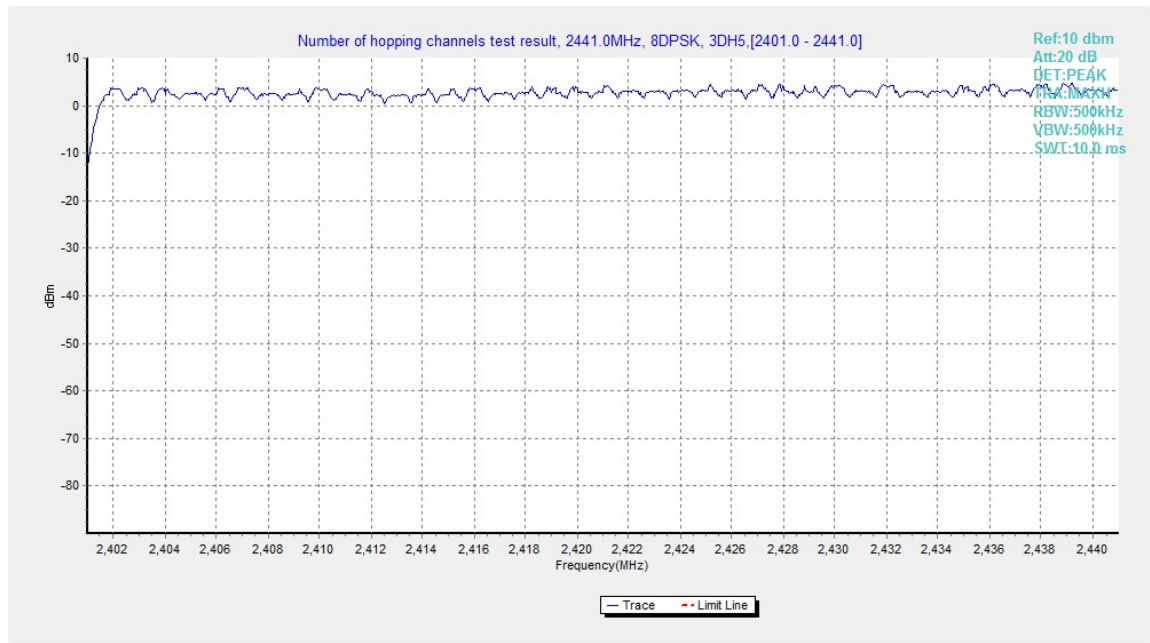
Fig.114. Number of hopping frequencies: 8DPSK, Channel 0 - 39
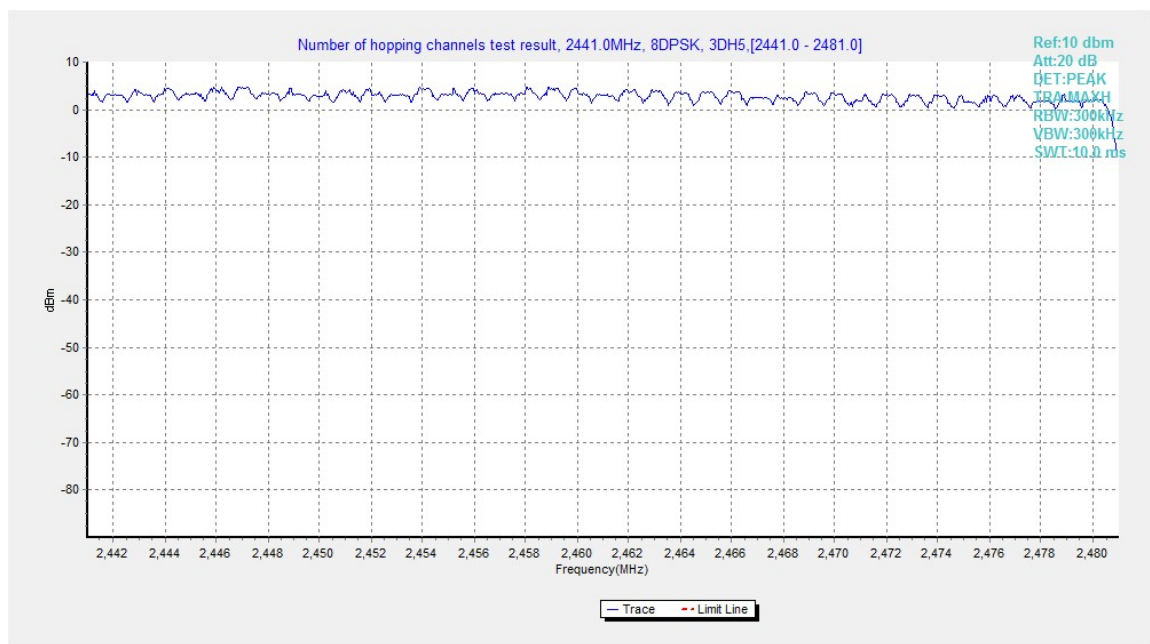

Fig.115. Number of hopping frequencies: 8DPSK, Channel 40 - 78

A.10. AC Powerline Conducted Emission

Test Condition

Voltage（V）	Frequency（Hz）
120	60

Measurement Result and limit:

Bluetooth (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBµV)	Conclusion
0.15 to 0.5	66 to 56	
0.5 to 5	56	P
5 to 30	60	
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.		

Bluetooth (Average Limit)

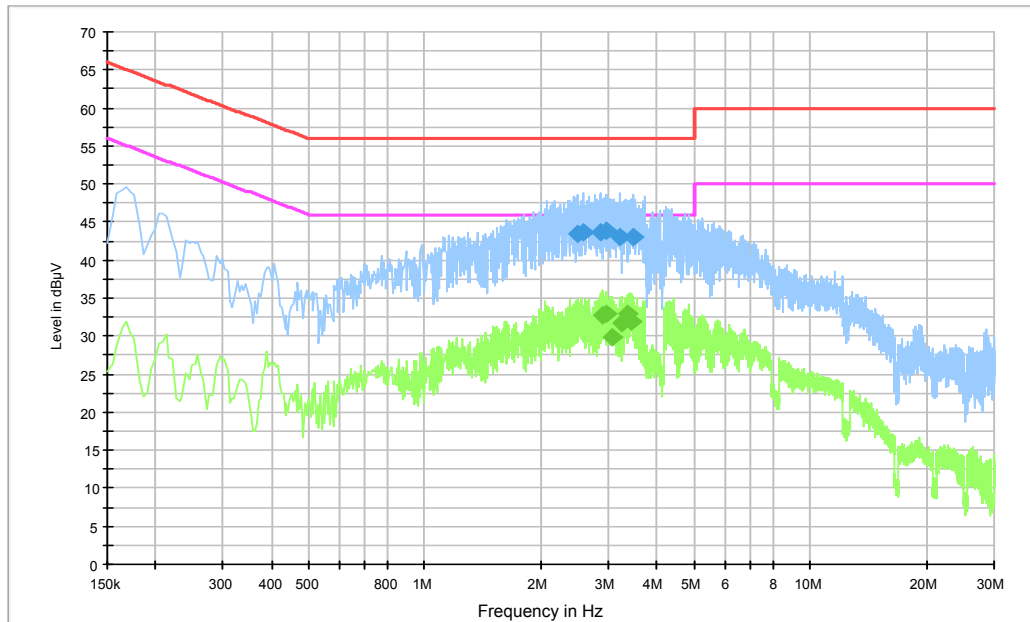| Frequency range (MHz)	Average Limit (dBµV)	Conclusion
0.15 to 0.5	56 to 46	
0.5 to 5	46	P
5 to 30	50	
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.		

The measurement is made according to ANSI C63.10

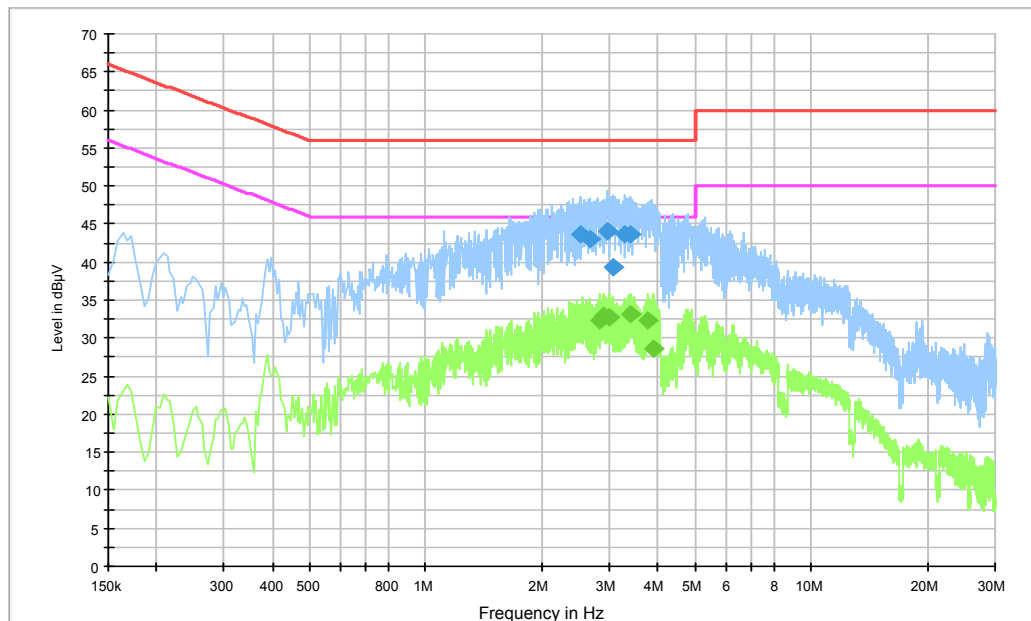**Conclusion: PASS**

Test graphs as below:

Traffic:

Final Result 1

Frequency	QuasiPeak	PE	Line	Corr.	Margin	Limit
(MHz)	(dBµV)			(dB)	(dB)	(dBµV)
2.499000	43.5	GND	L1	10.4	12.5	56.0
2.580000	43.6	GND	L1	10.4	12.4	56.0
2.859000	43.6	GND	L1	10.4	12.4	56.0
2.958000	43.9	GND	L1	10.4	12.1	56.0
3.210000	43.0	GND	L1	10.4	13.0	56.0
3.489000	43.1	GND	L1	10.4	12.9	56.0

Final Result 2

Frequency	Average	PE	Line	Corr.	Margin	Limit
(MHz)	(dBµV)			(dB)	(dB)	(dBµV)
2.890500	32.7	GND	L1	10.4	13.3	46.0
2.958000	33.0	GND	L1	10.4	13.0	46.0
3.066000	29.9	GND	L1	10.4	16.1	46.0
3.241500	31.8	GND	L1	10.4	14.2	46.0
3.358500	32.9	GND	L1	10.4	13.1	46.0
3.417000	31.9	GND	L1	10.4	14.1	46.0

Idle:

Final Result 1

Frequency	QuasiPeak	PE	Line	Corr.	Margin	Limit
(MHz)	(dBµV)			(dB)	(dB)	(dBµV)
2.526000	43.7	GND	L1	10.4	12.3	56.0
2.661000	43.1	GND	L1	10.4	12.9	56.0
2.962500	44.0	GND	L1	10.4	12.0	56.0
3.052500	39.3	GND	N	10.5	16.7	56.0
3.268500	43.6	GND	L1	10.4	12.4	56.0
3.385500	43.7	GND	L1	10.4	12.3	56.0

Final Result 2

Frequency	Average	PE	Line	Corr.	Margin	Limit
(MHz)	(dBµV)			(dB)	(dB)	(dBµV)
2.818500	32.4	GND	L1	10.4	13.6	46.0
2.877000	32.9	GND	L1	10.4	13.1	46.0
3.003000	32.8	GND	L1	10.4	13.2	46.0
3.385500	33.2	GND	L1	10.4	12.8	46.0
3.777000	32.4	GND	L1	10.4	13.6	46.0
3.885000	28.6	GND	L1	10.4	17.4	46.0

END OF REPORT