P_{Mea} is the field strength recorded from the instrument.
The measurement results are obtained as described below:
Result= P_{Mea} + Cable Loss + Antenna Factor
Where:

P_{Mea} field strength recorded from the instrument

Measurement Results:

EUT1 & EUT2

Mode	ANT NO.	Channel NO.	Conclusion
GFSK	Core 0	CH 0	P
	Core 0	CH 39	P
	Core 0	CH 78	P
	Core 1	CH 0	P
	Core 1	CH 39	P
	Core 1	CH 78	P
π/4 DQPSK	Core 0	CH 0	P
	Core 0	CH 39	P
	Core 0	CH 78	P
	Core 1	CH 0	P
	Core 1	CH 39	P
	Core 1	CH 78	P
8DPSK	Core 0	CH 0	P
	Core 0	CH 39	P
	Core 0	CH 78	P
	Core 1	CH 0	P
	Core 1	CH 39	P
	Core 1	CH 78	P

Note：All combinations were tested，and only the worst results are shown in this report.

EUT2 Core1

Peak Measurement results

GFSK Ch 0

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2384.270	60.74	2.6	27.7	30.46	74.0	13.8	H	155	330
2389.100	60.31	2.6	27.7	30.02	74.0	13.9	V	155	154
4804.219	39.98	-37.8	32.0	45.73	74.0	34.0	V	155	110
7206.094	43.39	-36.9	35.7	44.63	74.0	30.6	H	155	154
9607.969	45.30	-35.8	37.8	43.28	74.0	28.7	V	155	22
12009.844	46.55	-34.7	39.1	42.20	74.0	27.5	V	155	352

GFSK Ch 39

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2371.500	38.75	-39.5	27.7	50.55	74.0	35.3	V	155	308
2502.375	38.93	-39.1	27.7	50.32	74.0	35.1	V	155	66
4882.031	39.31	-37.8	32.2	44.86	74.0	34.7	H	155	330
7322.813	42.58	-36.9	36.0	43.50	74.0	31.4	V	155	132
9764.063	45.60	-35.7	37.8	43.47	74.0	28.4	V	155	330
12204.844	46.96	-34.8	39.0	42.81	74.0	27.0	V	155	286

GFSK Ch 78

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2484.900	60.47	2.7	27.7	30.12	74.0	14.1	H	155	0
2486.113	60.47	2.7	27.7	30.11	74.0	14.2	H	155	88
4959.844	39.75	-37.9	32.4	45.24	74.0	34.3	V	155	330
7440.000	42.86	-36.6	36.3	43.19	74.0	31.1	H	155	220
9920.153	44.83	-35.6	37.8	42.63	74.0	29.2	H	155	264
12399.848	46.83	-34.3	38.9	42.30	74.0	27.2	V	155	242

π/4 DQPSK Ch 0

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2388.925	59.89	2.6	27.7	29.61	74.0	14.1	H	155	198
2389.678	59.60	2.6	27.7	29.32	74.0	14.4	V	155	22
484.219	40.53	0.0	0.0	40.53	74.0	33.5	H	155	220
7206.938	42.71	-36.9	35.7	43.95	74.0	31.3	V	155	22
9607.969	45.36	-35.8	37.8	43.34	74.0	28.6	H	155	22
12009.844	47.50	-34.7	39.1	43.15	74.0	26.5	H	155	88

π/4 DQPSK Ch 39

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2372.750	39.37	-39.4	27.7	51.13	74.0	34.6	H	155	44
2498.500	38.91	-38.9	27.7	50.14	74.0	35.1	V	155	242
4882.031	39.98	-37.8	32.2	45.54	74.0	34.0	V	155	308
7322.813	42.81	-36.9	36.0	43.73	74.0	31.2	H	155	44

9764.063	46.41	-35.7	37.8	44.29	74.0	27.6	H	155	330
12204.844	47.95	-34.8	39.0	43.80	74.0	26.0	V	155	220

π/4 DQPSK Ch 78

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2484.488	60.24	2.7	27.7	29.89	74.0	13.8	V	155	308
2487.544	60.38	2.7	27.7	30.01	74.0	13.6	V	155	308
4959.844	39.62	-37.9	32.4	45.12	74.0	34.4	V	155	176
7440.000	44.47	-36.6	36.3	44.81	74.0	29.5	V	155	44
9920.000	45.75	-35.6	37.8	43.55	74.0	28.3	V	155	22
12399.844	46.94	-34.3	38.9	42.41	74.0	27.1	V	155	242

8DPSK Ch 0

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2384.830	60.29	2.6	27.7	30.01	74.0	13.7	V	155	220
2386.913	59.97	2.6	27.7	29.69	74.0	14.0	H	155	154
4804.219	39.70	-37.8	32.0	45.45	74.0	34.3	H	155	154
7206.094	44.14	-36.9	35.7	45.38	74.0	29.9	H	155	176
9607.969	44.93	-35.8	37.8	42.91	74.0	29.1	H	155	242
12009.844	46.99	-34.7	39.1	42.64	74.0	27.0	V	155	220

8DPSK Ch 39

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2371.125	39.62	-39.5	27.7	51.43	74.0	34.4	H	155	110
2505.750	38.94	-39.2	27.7	50.45	74.0	35.1	V	155	198
4882.031	39.02	-37.8	32.2	44.58	74.0	35.0	V	155	66
7322.813	42.08	-36.9	36.0	43.00	74.0	31.9	V	155	110
9764.063	45.23	-35.7	37.8	43.10	74.0	28.8	H	155	22
12204.844	46.98	-34.8	39.0	42.83	74.0	27.0	V	155	22

8DPSK Ch 78

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2484.656	60.31	2.7	27.7	29.96	74.0	13.7	V	155	44

2491.788	60.91	2.7	27.7	30.50	74.0	13.1	H	155	198
4959.844	38.33	-37.9	32.4	43.82	74.0	35.7	H	155	44
7440.000	43.17	-36.6	36.3	43.51	74.0	30.8	V	155	220
9920.156	44.95	-35.6	37.8	42.75	74.0	29.1	V	155	176
12399.844	46.03	-34.3	38.9	41.50	74.0	28.0	V	155	264

Average Measurement results

GFSK Ch 0

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2388.475	45.97	2.6	27.7	15.68	54.0	8.0	V	155	326
2389.575	45.85	2.6	27.7	15.57	54.0	8.2	V	155	152
4803.750	28.76	-37.7	32.0	34.51	54.0	25.2	V	155	112
7206.250	31.64	-36.9	35.7	32.88	54.0	22.4	H	155	157
9608.125	34.09	-35.8	37.8	32.07	54.0	19.9	H	155	20
12010.000	36.27	-34.7	39.1	31.92	54.0	17.7	V	155	349

GFSK Ch 39

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2389.000	45.86	2.6	27.7	15.58	54.0	8.1	V	155	305
2484.825	46.08	2.7	27.7	15.73	54.0	7.9	V	155	70
4881.875	28.68	-37.8	32.2	34.24	54.0	25.3	H	155	332
7323.125	31.83	-36.9	36.0	32.75	54.0	22.2	V	155	131
9763.750	34.95	-35.7	37.8	32.82	54.0	19.0	H	155	326
12205.000	36.61	-34.8	39.0	32.46	54.0	17.4	H	155	284

GFSK Ch 78

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2483.925	46.05	2.6	27.7	15.71	54.0	8.0	V	155	4
2484.925	45.88	2.7	27.7	15.53	54.0	8.1	V	155	84
4960.000	33.34	-37.9	32.4	38.84	54.0	20.7	V	155	328
7440.000	32.59	-36.6	36.3	32.92	54.0	21.4	V	155	218
9920.000	35.58	-35.6	37.8	33.37	54.0	18.4	V	155	268
12400.000	36.31	-34.3	38.9	31.78	54.0	17.7	V	155	241

π/4 DQPSK Ch 0

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2384.650	46.11	2.6	27.7	15.83	54.0	7.9	V	155	199
2388.550	45.90	2.6	27.7	15.62	54.0	8.1	V	155	24
4803.750	28.99	-37.7	32.0	34.73	54.0	25.0	H	155	224
7206.250	31.73	-36.9	35.7	32.97	54.0	22.3	H	155	18
9608.125	34.25	-35.8	37.8	32.23	54.0	19.7	H	155	21
12010.000	36.33	-34.7	39.1	31.99	54.0	17.7	V	155	91

π/4 DQPSK Ch 39

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2387.550	46.02	2.6	27.7	15.74	54.0	8.0	V	155	40
2483.900	46.03	2.6	27.7	15.69	54.0	8.0	V	155	240
4881.875	28.88	-37.8	32.2	34.44	54.0	25.1	H	155	305
7323.125	31.68	-36.9	36.0	32.60	54.0	22.3	V	155	48
9763.750	34.89	-35.7	37.8	32.76	54.0	19.1	H	155	329
12205.000	36.63	-34.8	39.0	32.47	54.0	17.4	V	155	222

π/4 DQPSK Ch 78

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2483.850	46.02	2.6	27.7	15.68	54.0	8.0	V	155	310
2485.000	46.02	2.7	27.7	15.67	54.0	8.0	V	155	310
4960.000	29.06	-37.9	32.4	34.55	54.0	24.9	H	155	177
7440.000	32.80	-36.6	36.3	33.13	54.0	21.2	H	155	40
9920.000	34.71	-35.6	37.8	32.51	54.0	19.3	V	155	21
12400.000	36.39	-34.3	38.9	31.86	54.0	17.6	H	155	243

8DPSK Ch 0

Frequency (MHz)	Measurement Result (dBμV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBμV)	Limit (dBμV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2388.425	45.92	2.6	27.7	15.64	54.0	8.1	V	155	221
2389.700	45.90	2.6	27.7	15.62	54.0	8.1	V	155	153
4803.750	29.22	-37.7	32.0	34.96	54.0	24.8	V	155	156
7206.250	31.83	-36.9	35.7	33.08	54.0	22.2	V	155	177

9608.125	34.15	-35.8	37.8	32.13	54.0	19.8	V	155	243
12010.000	36.03	-34.7	39.1	31.68	54.0	18.0	V	155	216

8DPSK Ch 39

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2387.800	45.80	2.6	27.7	15.52	54.0	8.2	V	155	107
2487.850	45.98	2.7	27.7	15.61	54.0	8.0	V	155	194
4881.875	28.63	-37.8	32.2	34.19	54.0	25.4	V	155	69
7323.125	32.10	-36.9	36.0	33.02	54.0	21.9	V	155	106
9763.750	34.97	-35.7	37.8	32.84	54.0	19.0	H	155	19
12205.000	36.94	-34.8	39.0	32.79	54.0	17.1	H	155	18

8DPSK Ch 78

Frequency (MHz)	Measurement Result (dBµV/m)	Cable loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBµV)	Limit (dBµV/m)	Margin (dB)	Antenna Pol. (H/V)	Antenna Height (cm)	Turntable angle (deg)
2484.225	46.00	2.7	27.7	15.65	54.0	8.0	V	155	42
2485.300	46.00	2.7	27.7	15.65	54.0	8.0	V	155	199
4960.000	28.45	-37.9	32.4	33.94	54.0	25.6	H	155	46
7440.000	32.55	-36.6	36.3	32.88	54.0	21.5	H	155	224
9920.000	35.28	-35.6	37.8	33.08	54.0	18.7	H	155	180
12400.000	36.00	-34.3	38.9	31.47	54.0	18.0	H	155	261

Conclusion: Pass

B.7. Time of Occupancy (Dwell Time)

Method of Measurement: See ANSI C63.10-clause 7.8.4

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

- Span = zero span, centered on a hopping channel
- RBW = 1 MHz
- VBW ≥ RBW
- Sweep = as necessary to capture the entire dwell time per hopping channel
- Detector function = peak
- Trace = max hold

Measure a pulse time in time domain at middle frequency and then count the hopping number in 31.6s(which equals with 0.4 multiply 79) of middle frequency ,then multiply the pulse time and hopping number and record them.

Measurement Limit:

Standard	Limit (ms)
FCC 47 CFR Part 15.247(a) (1)(iii)	< 400

Measurement Result:

EUT3 Core0

For GFSK

Channel	Packet	Pulse time (ms)		Number of Transmissions		Dwell Time (ms)	Conclusion
39	DH1	Fig.64	0.38	Fig.65	320	121.6	P
	DH3	Fig.66	1.64	Fig.67	108	172.8	P
	DH5	Fig.68	2.89	Fig.69	66	190.74	P

For π/4 DQPSK

Channel	Packet	Pulse time (ms)		Number of Transmissions		Dwell Time (ms)	Conclusion
39	2DH1	Fig.70	0.39	Fig.71	318	124.02	P
	2DH3	Fig.72	1.64	Fig.73	115	188.6	P
	2DH5	Fig.74	2.89	Fig.75	76	219.64	P

For 8DPSK

Channel	Packet	Pulse time (ms)		Number of Transmissions		Dwell Time (ms)	Conclusion
39	3DH1	Fig.76	0.39	Fig.77	319	124.41	P
	3DH3	Fig.78	1.64	Fig.79	103	168.92	P
	3DH5	Fig.80	2.89	Fig.81	63	182.07	P

Conclusion: PASS

Test graphs as below:

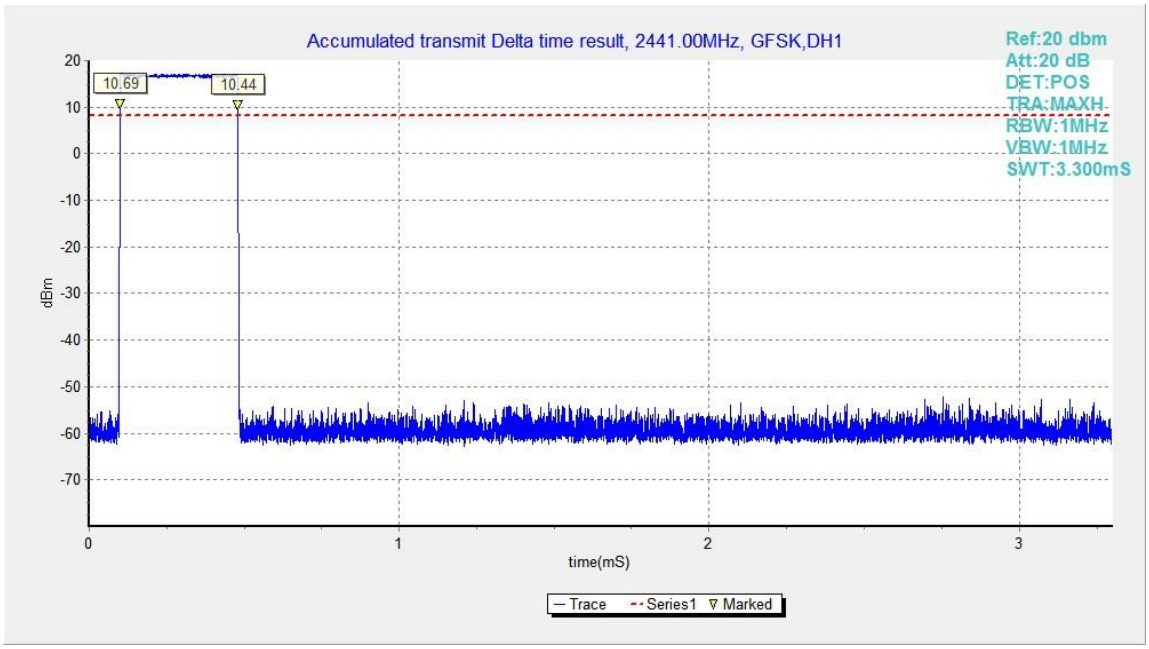


Fig.64. Time of occupancy (Dwell Time): Channel 39, Packet DH1

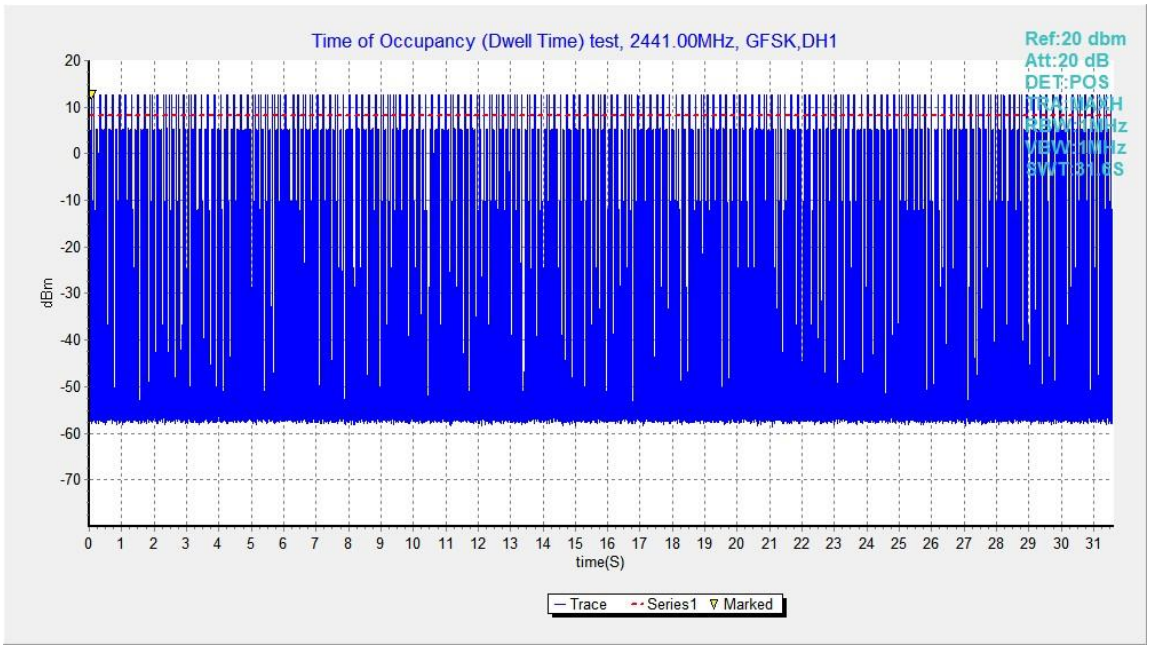


Fig.65. Number of Transmissions Measurement: Channel 39,Packet DH1

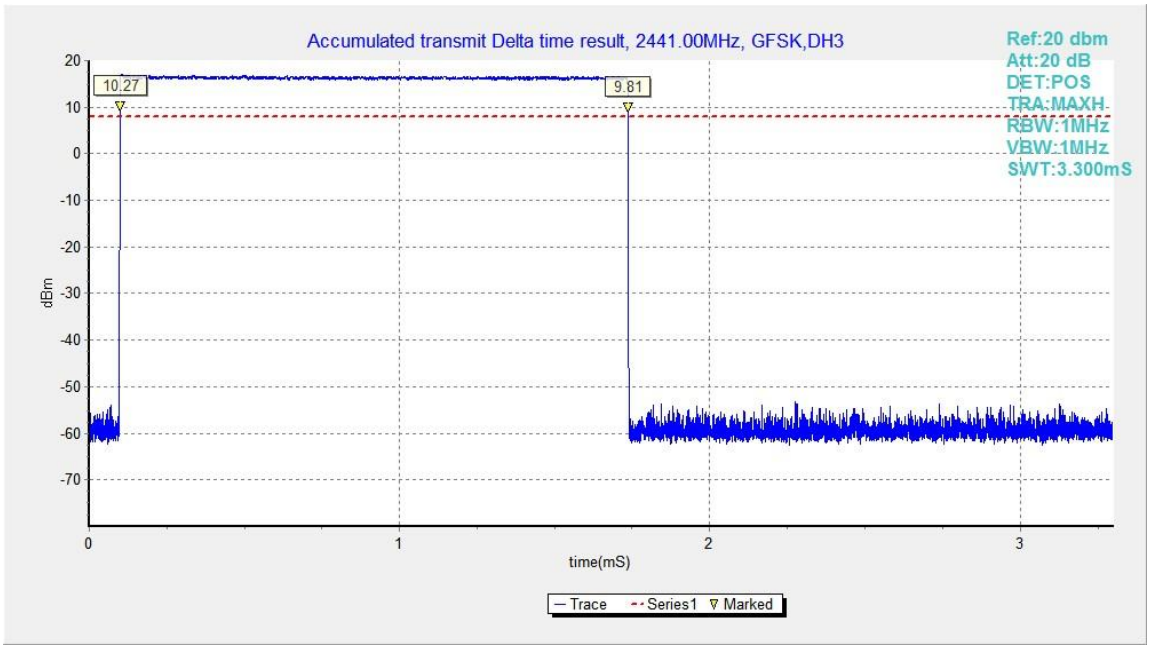


Fig.66. Time of occupancy (Dwell Time): Channel 39, Packet DH3

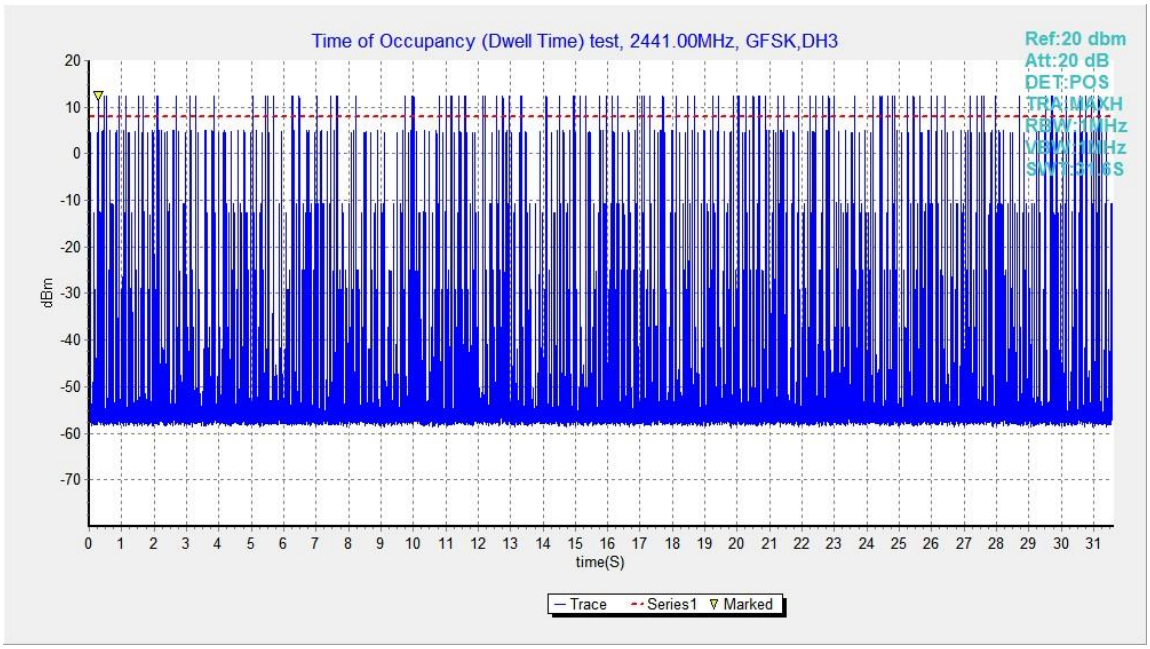


Fig.67. Number of Transmissions Measurement: Channel 39,Packet DH3

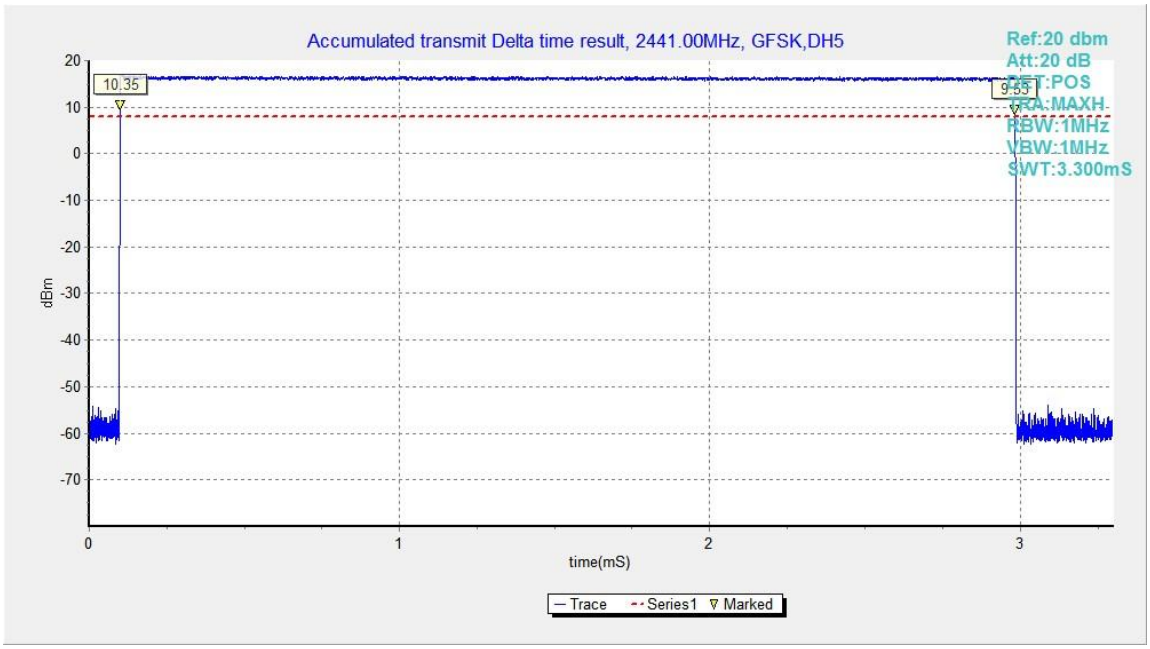


Fig.68. Time of occupancy (Dwell Time): Channel 39, Packet DH5

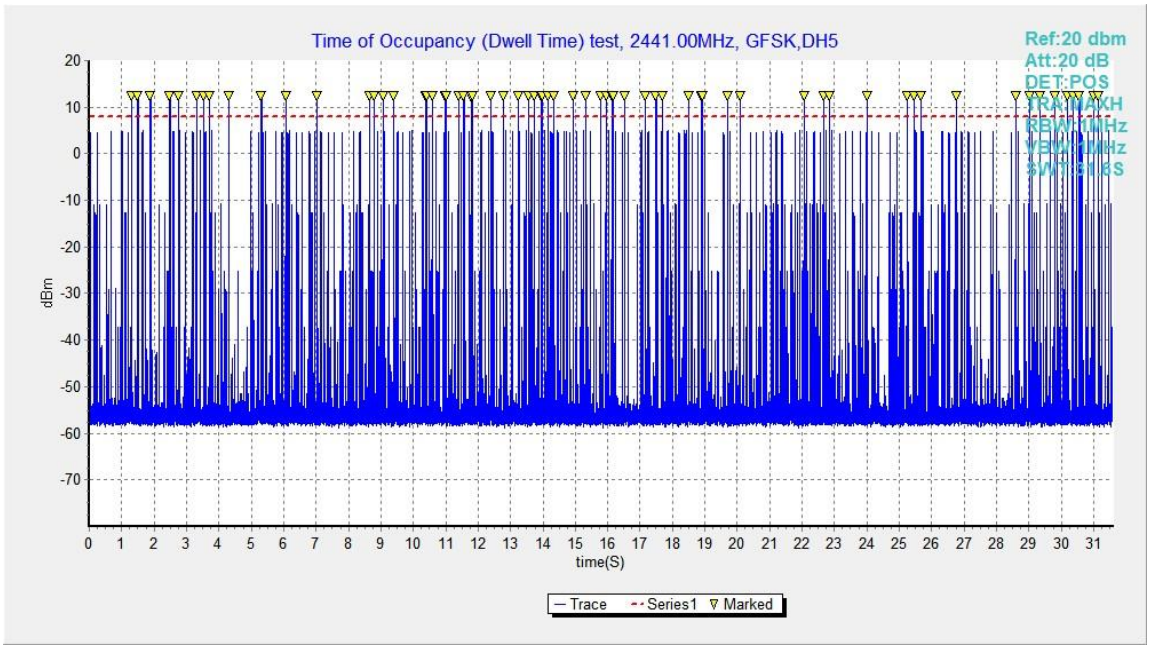


Fig.69. Number of Transmissions Measurement: Channel 39,Packet DH5

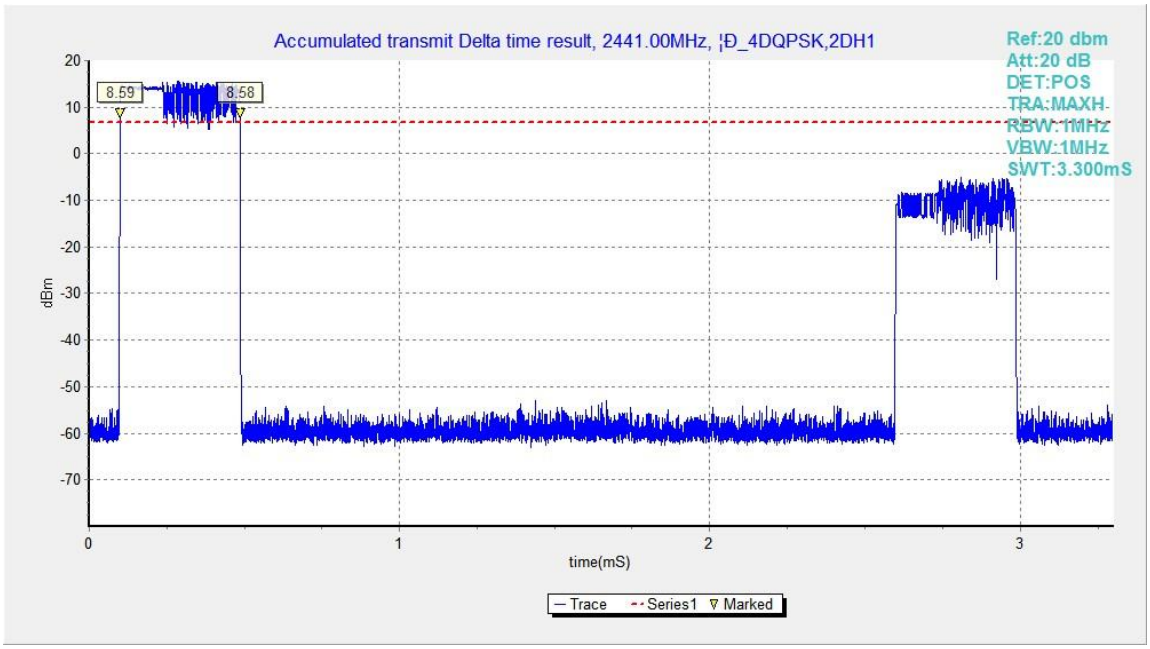


Fig.70. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH1

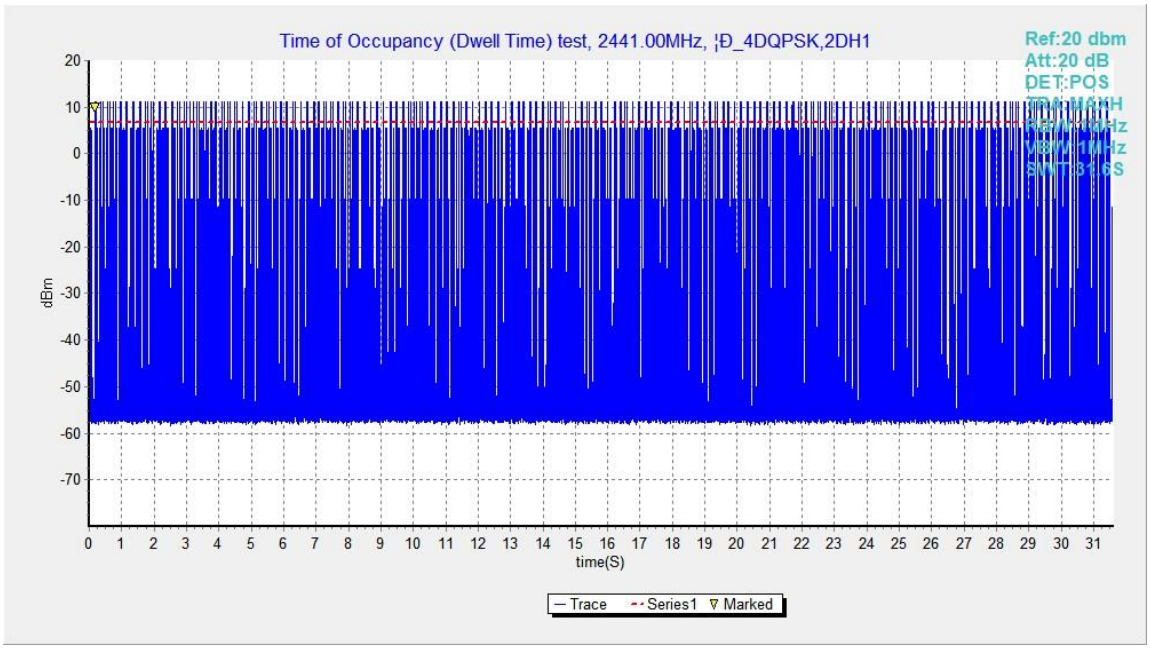


Fig.71. Number of Transmissions Measurement: Channel 39,Packet 2-DH1

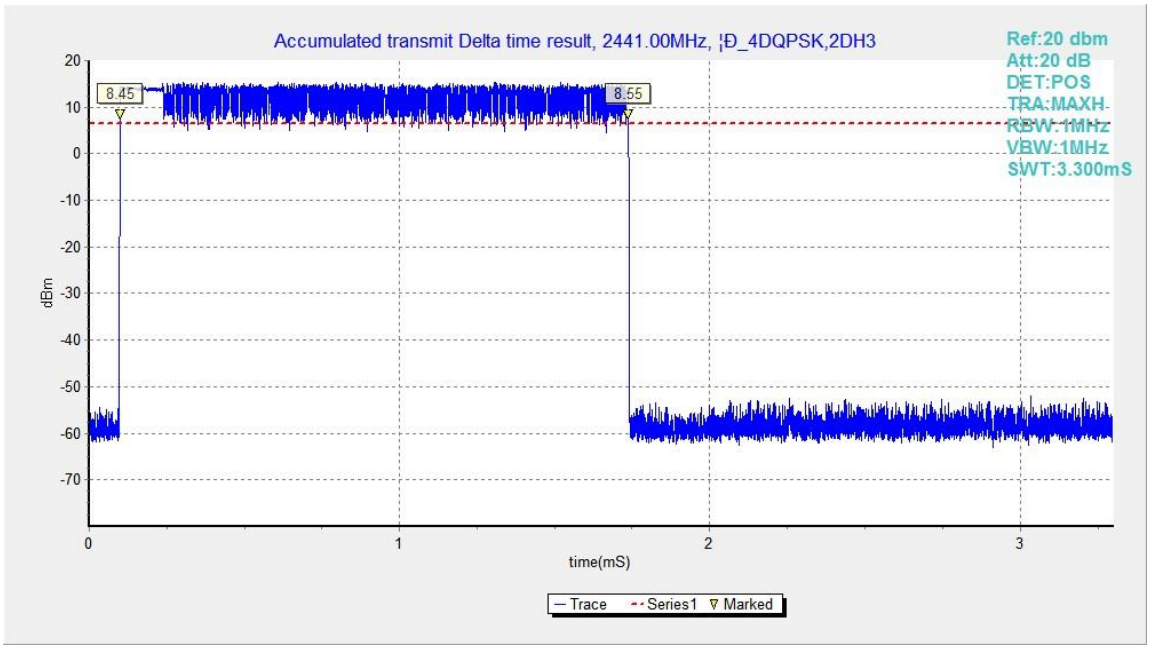


Fig.72. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH3

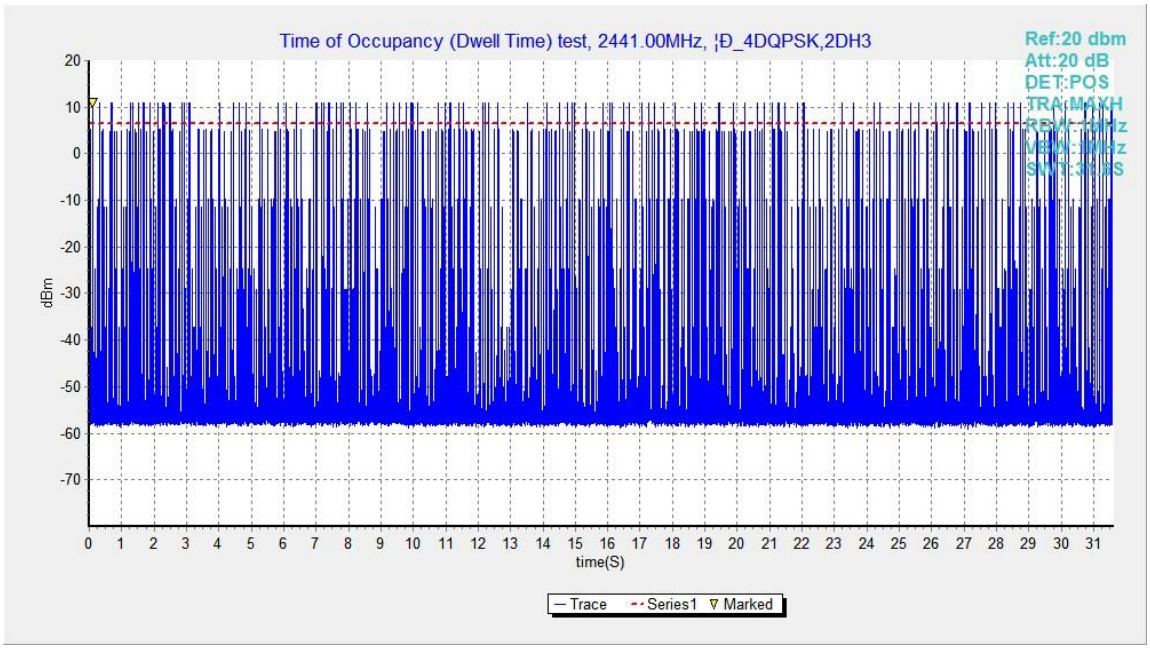


Fig.73. Number of Transmissions Measurement: Channel 39,Packet 2-DH3

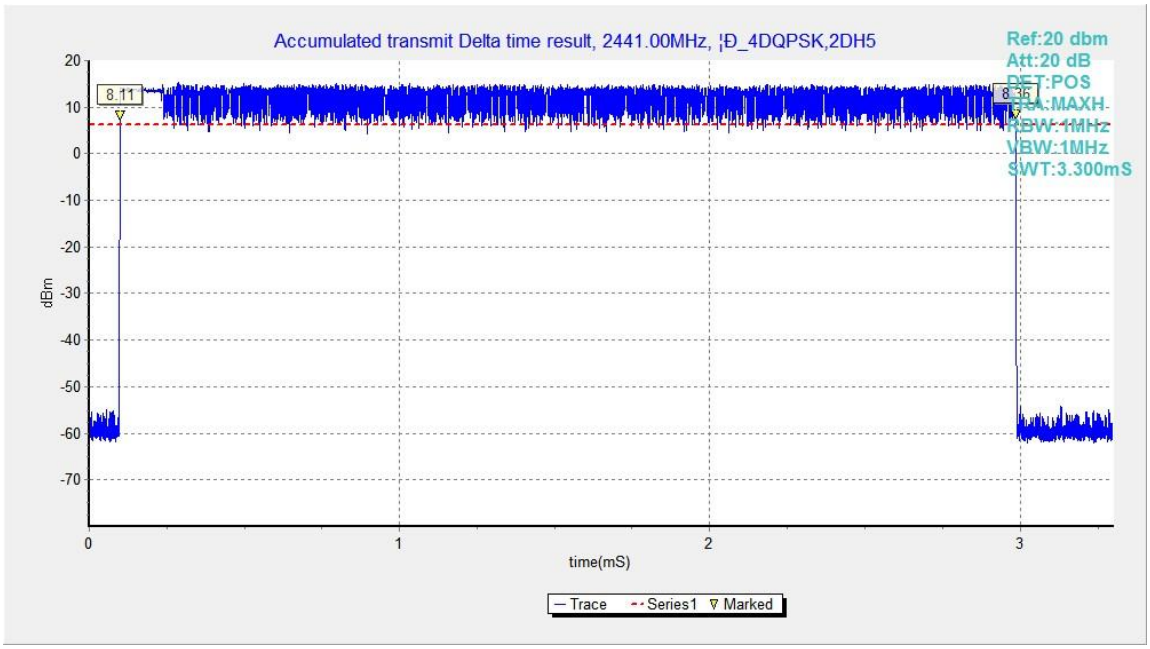


Fig.74. Time of occupancy (Dwell Time): Channel 39, Packet 2-DH5

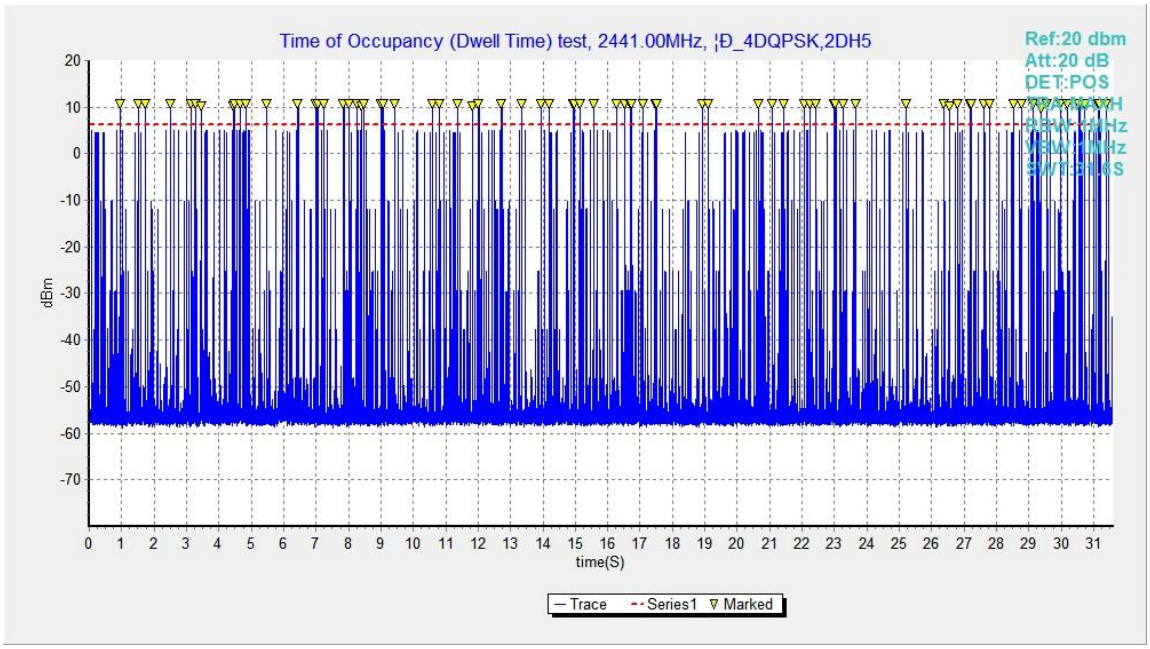


Fig.75. Number of Transmissions Measurement: Channel 39,Packet 2-DH5

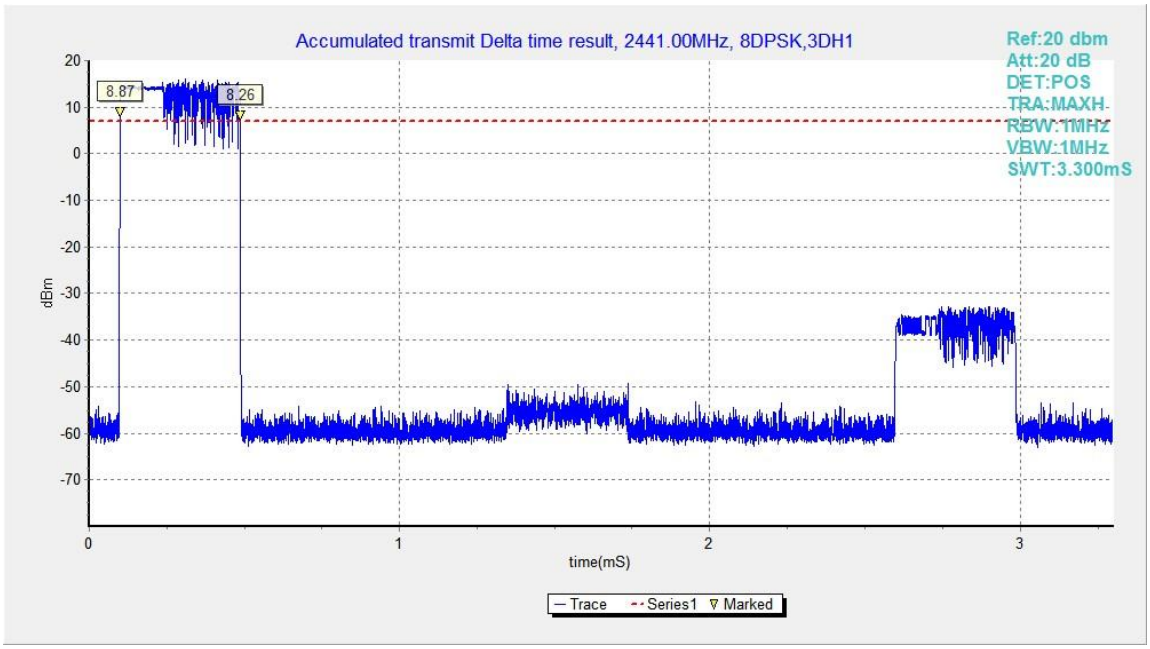


Fig.76. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH1

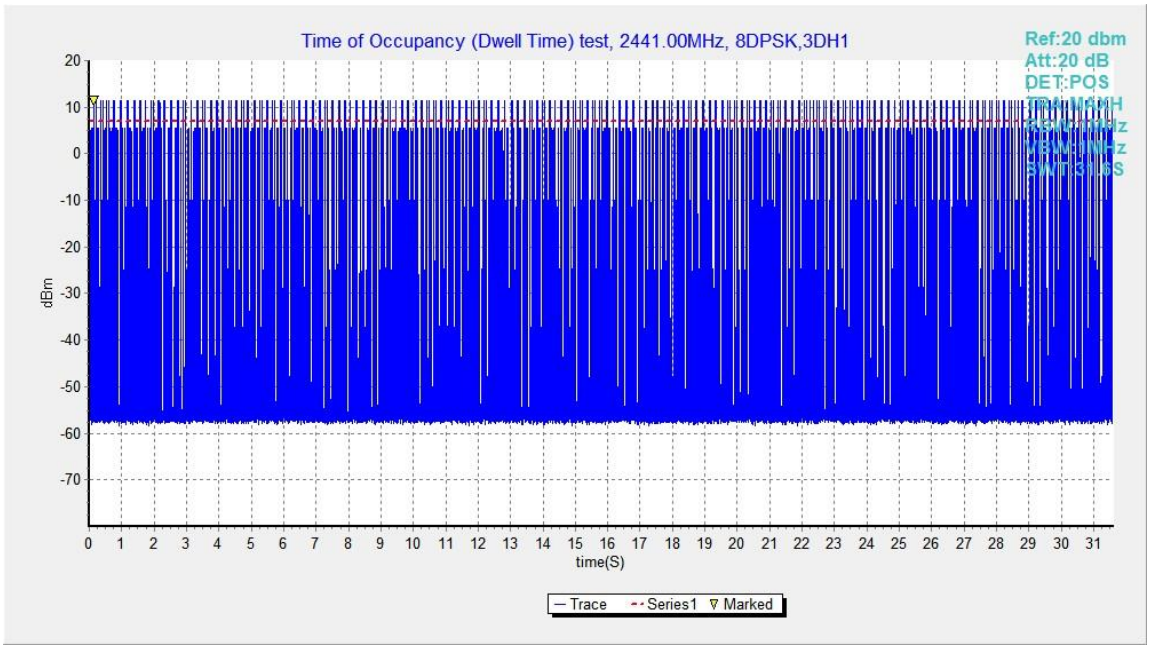


Fig.77. Number of Transmissions Measurement: Channel 39,Packet 3-DH1

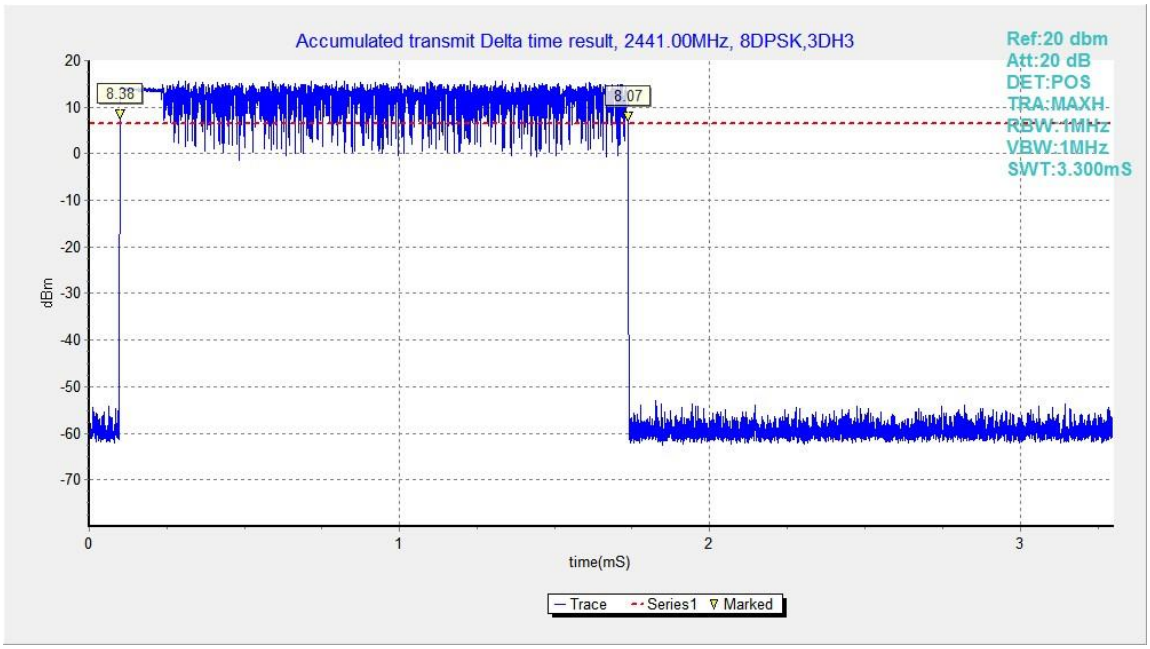


Fig.78. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH3

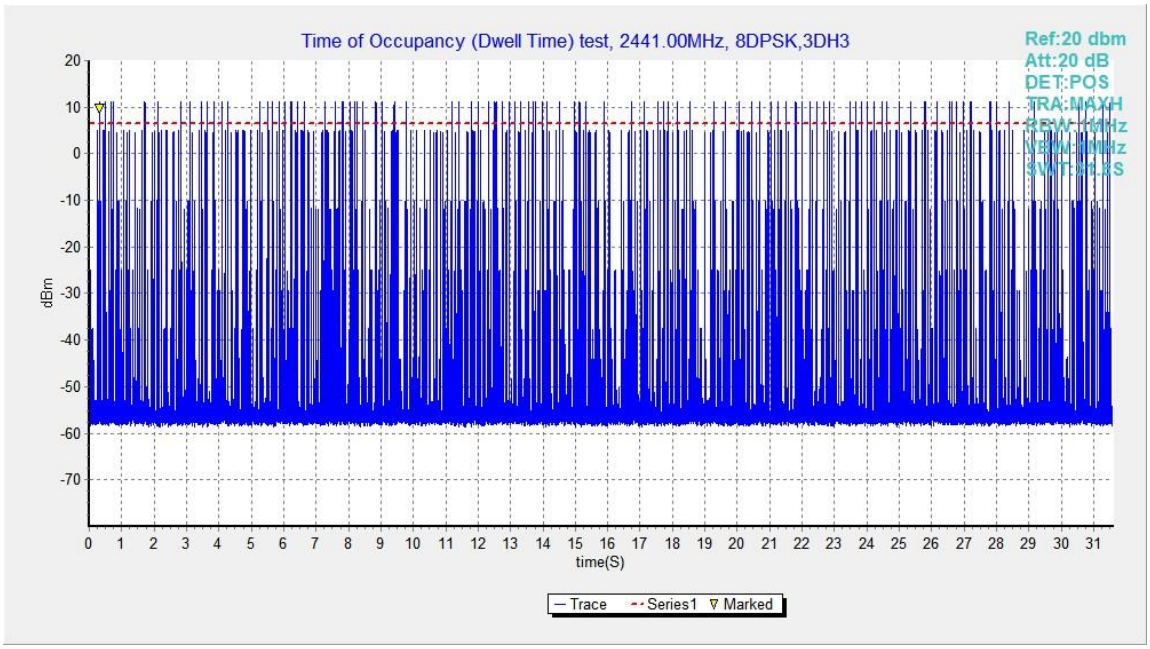


Fig.79. Number of Transmissions Measurement: Channel 39,Packet 3-DH3

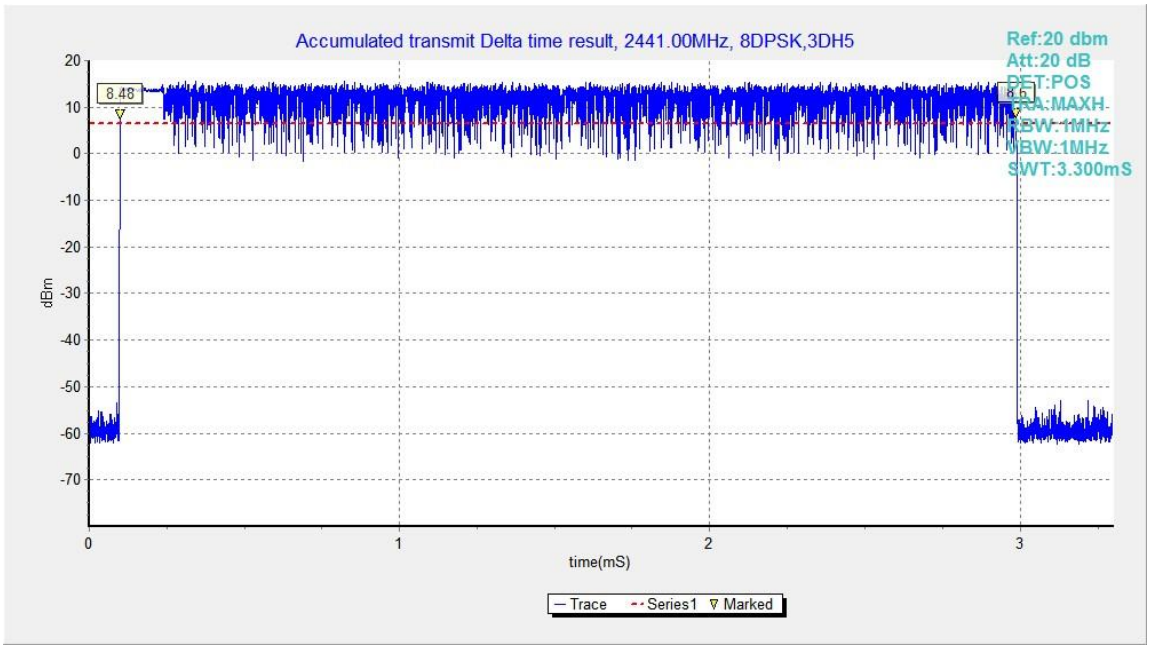


Fig.80. Time of occupancy (Dwell Time): Channel 39, Packet 3-DH5

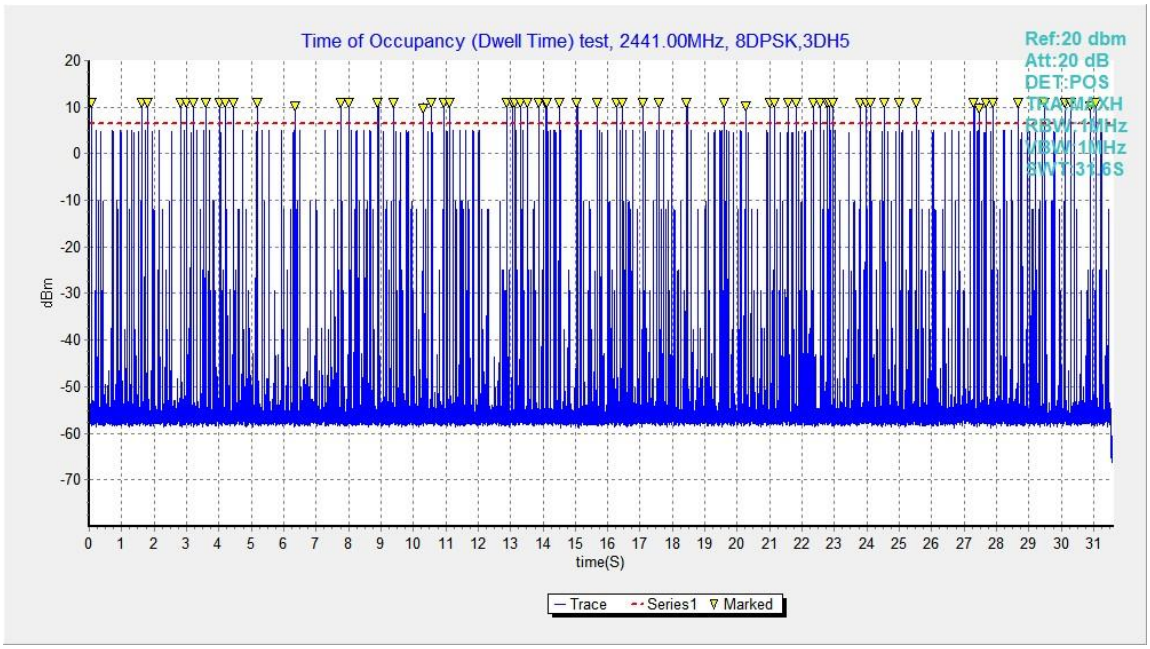


Fig.81. Number of Transmissions Measurement: Channel 39,Packet 3-DH5

B.8. 20dB Bandwidth

Method of Measurement: See ANSI C63.10-clause 6.9.2

Measurement Procedure - Unwanted Emissions

1. Set RBW = 30kHz.

2. Set VBW = 100 kHz.

3. Set span to 3MHz

4. Detector = peak.

5. Trace Mode = max hold.

6. Sweep = auto couple.

7. Allow the trace to stabilize (this may take some time, depending on the extent of the span).

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247(a)(1)	NA *

Use NdB Down function of the SA to measure the 20dB Bandwidth

* Comment: This test case is not required according to the latest FCC 47 CFR Part 15.247. But the test results are necessary for “carrier frequency separation” test case, in Annex A.8.

Measurement Results:

EUT3 Core0

For GFSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.82	885.00	NA
39	Fig.83	885.75	NA
78	Fig.84	917.25	NA

For π/4 DQPSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.85	1315.50	NA
39	Fig.86	1319.25	NA
78	Fig.87	1282.50	NA

For 8DPSK

Channel	20dB Bandwidth (kHz)		Conclusion
0	Fig.88	1298.25	NA
39	Fig.89	1280.25	NA
78	Fig.90	1299.75	NA

Conclusion: NA

Test graphs as below:

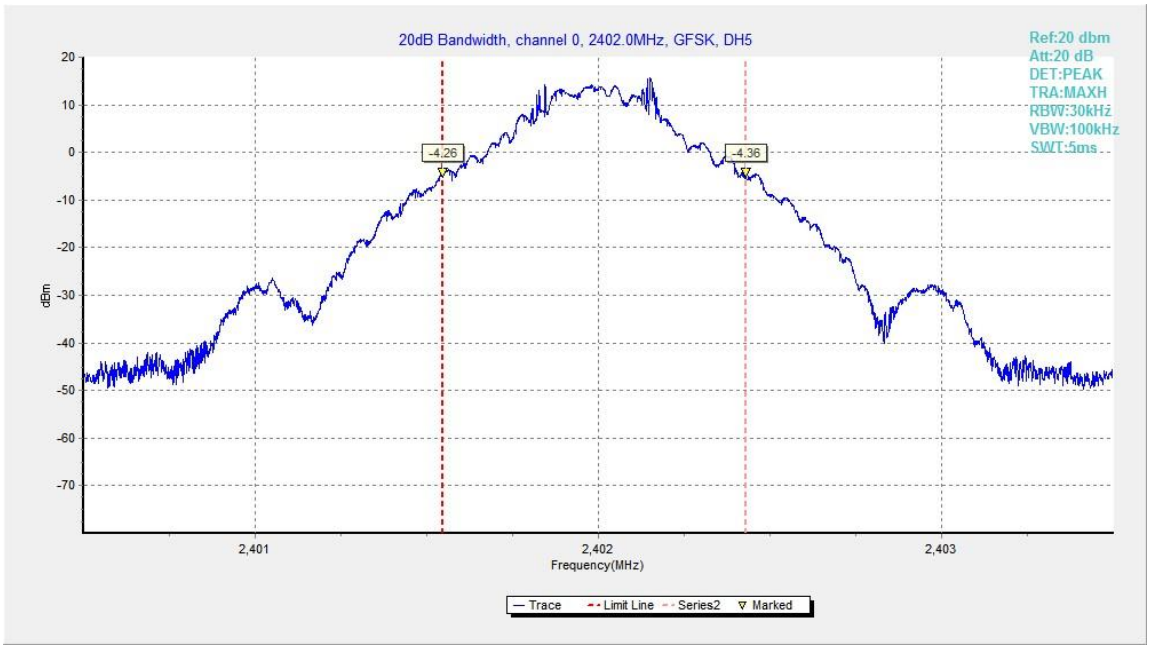


Fig.82. 20dB Bandwidth: GFSK, Channel 0

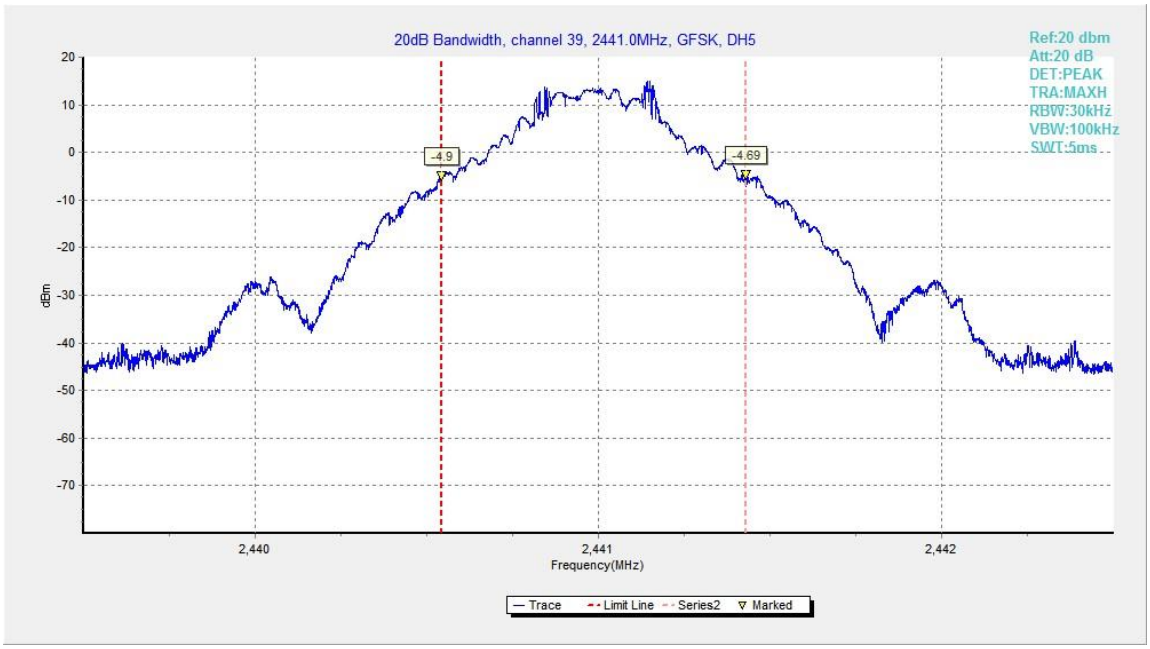


Fig.83. 20dB Bandwidth: GFSK, Channel 39

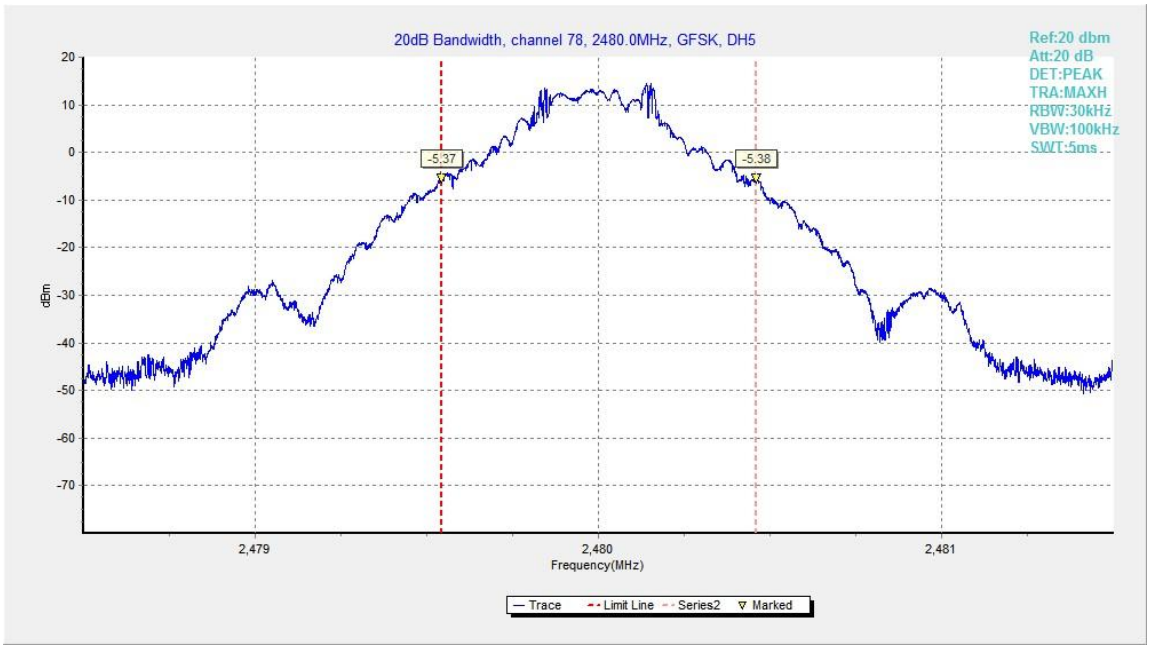


Fig.84. 20dB Bandwidth: GFSK, Channel 78

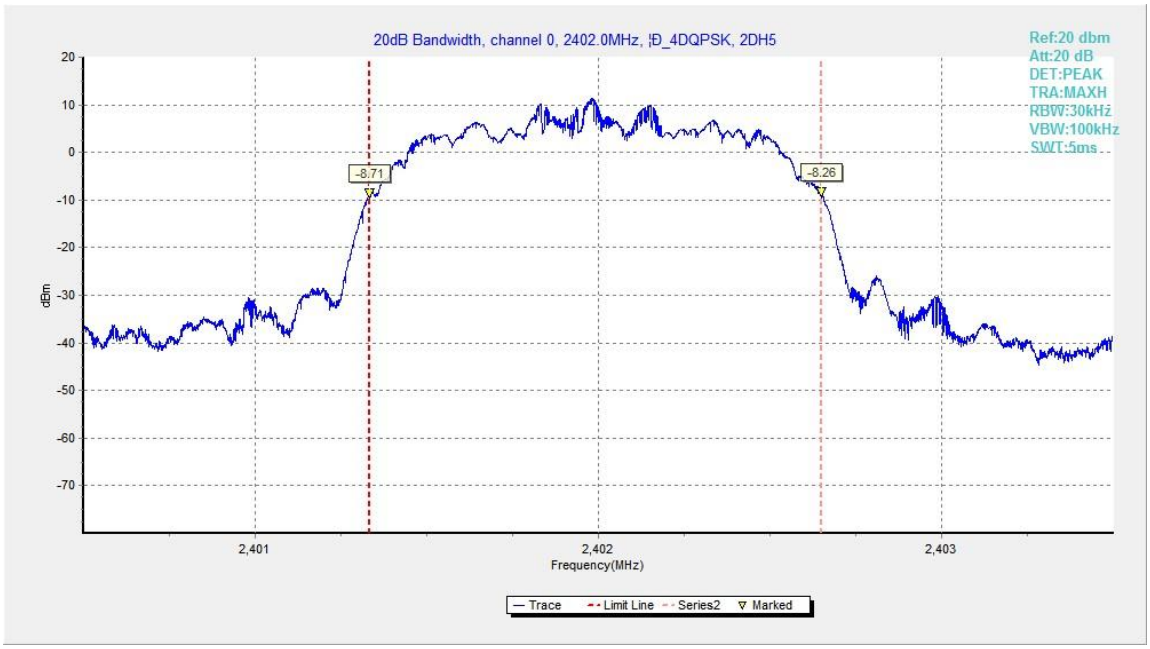


Fig.85. 20dB Bandwidth: π/4 DQPSK, Channel 0

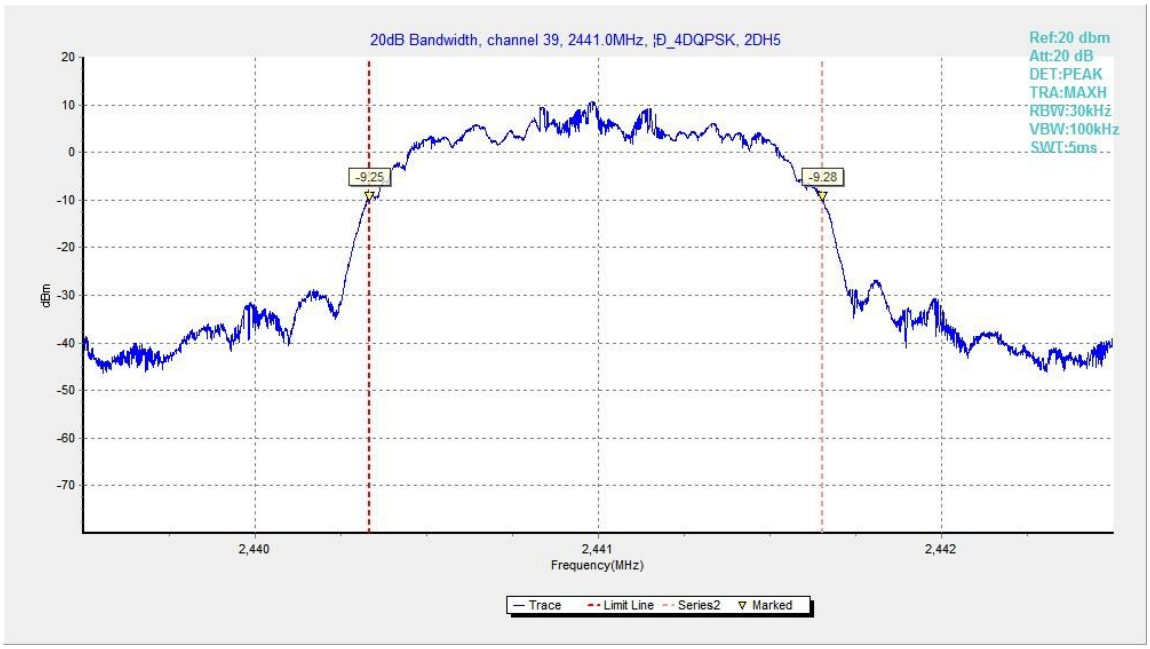


Fig.86. 20dB Bandwidth: π/4 DQPSK, Channel 39

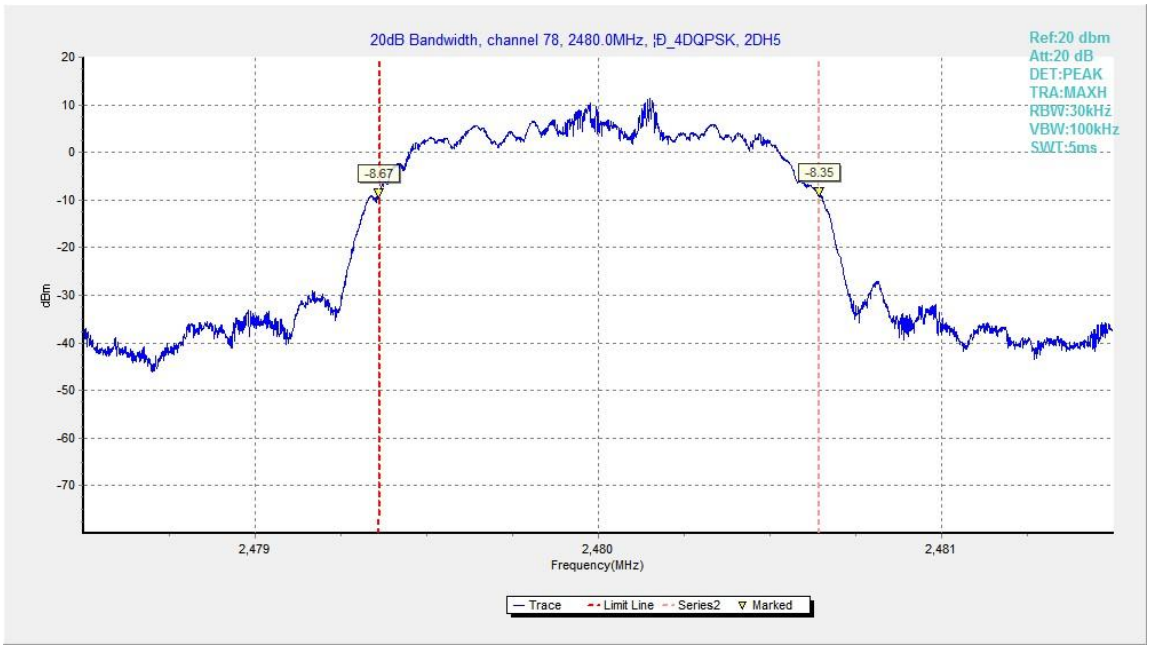


Fig.87. 20dB Bandwidth: π/4 DQPSK, Channel 78

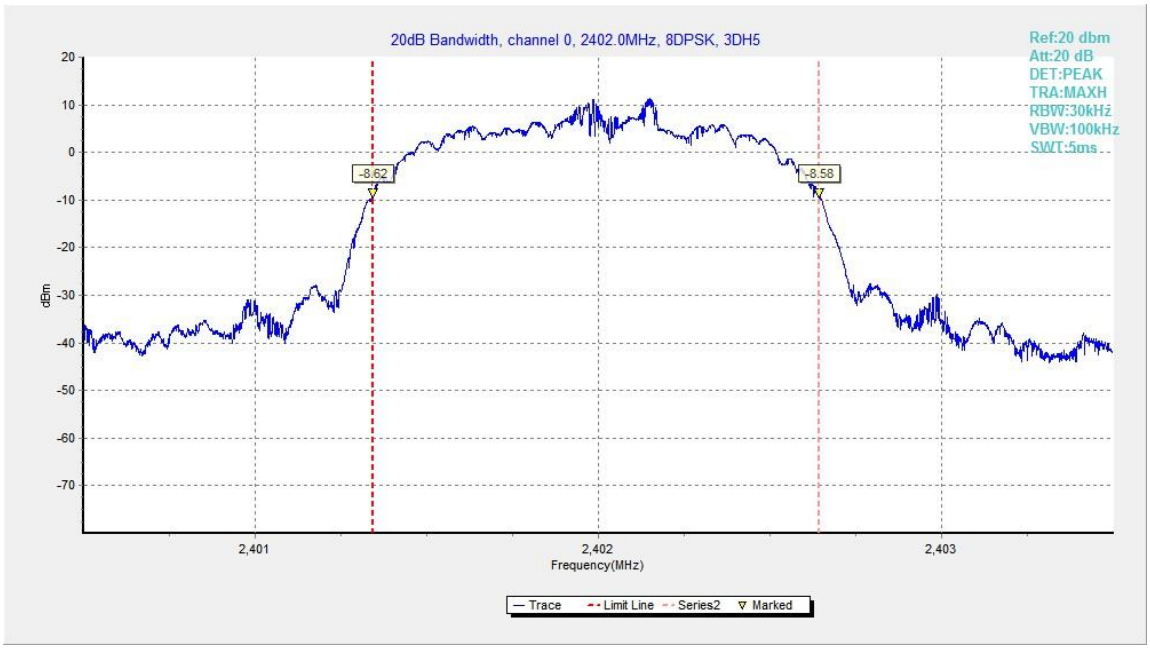


Fig.88. 20dB Bandwidth: 8DPSK, Channel 0

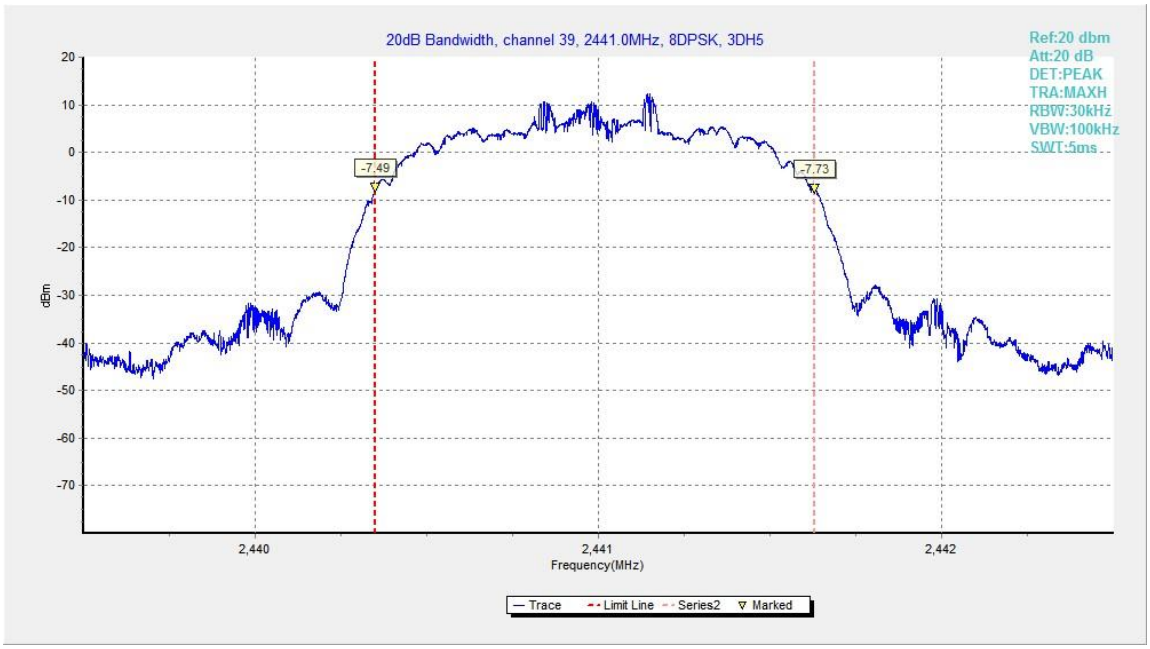


Fig.89. 20dB Bandwidth: 8DPSK, Channel 39

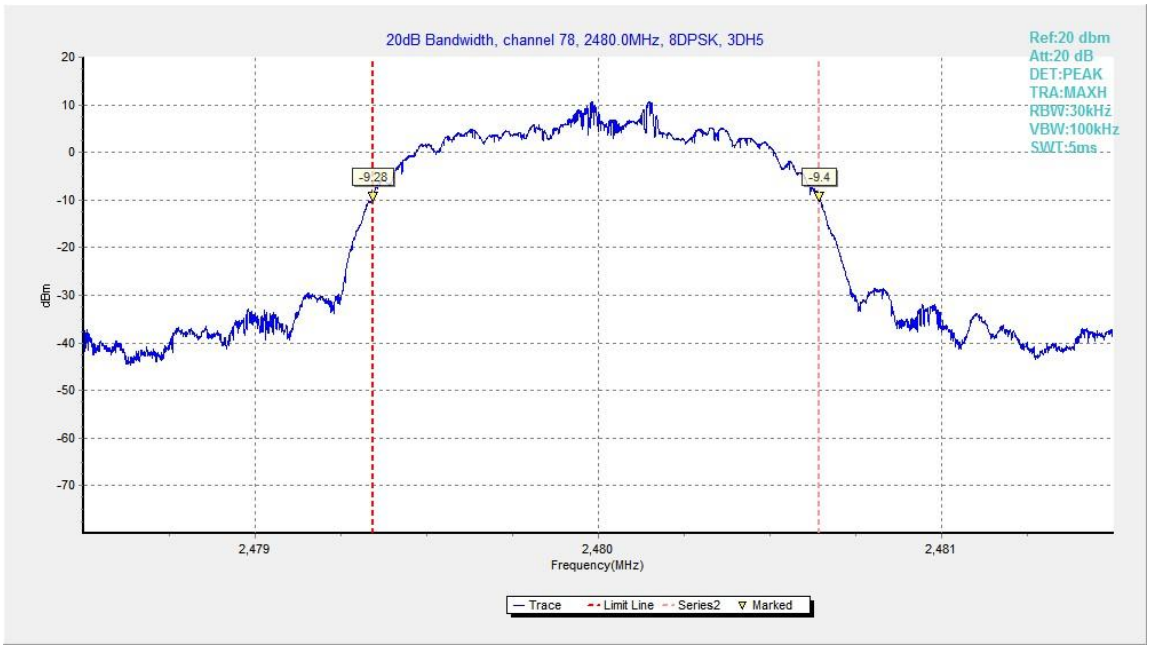


Fig.90. 20dB Bandwidth: 8DPSK, Channel 78

B.9. 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:

EUT3 Core0

For GFSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.91	1005.00	P

For π/4 DQPSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.92	1165.50	P

For 8DPSK

Channel	Carrier frequency separation (kHz)		Conclusion
39	Fig.93	1015.50	P

Conclusion: PASS

Test graphs as below:

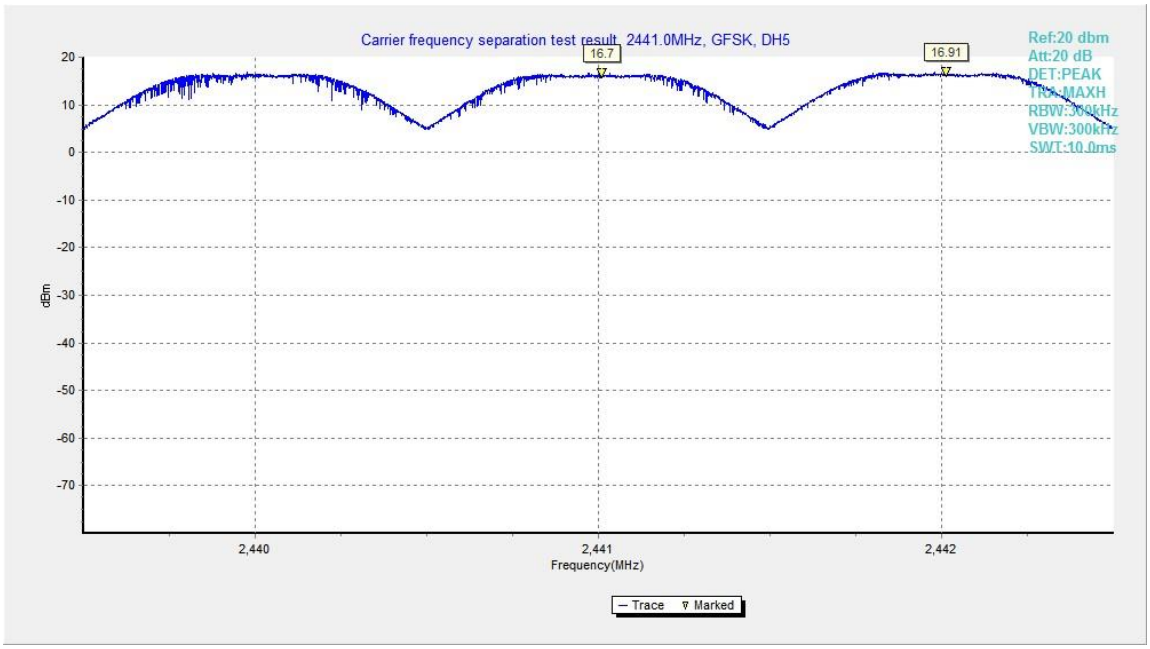


Fig.91. Carrier frequency separation measurement: GFSK, Channel 39

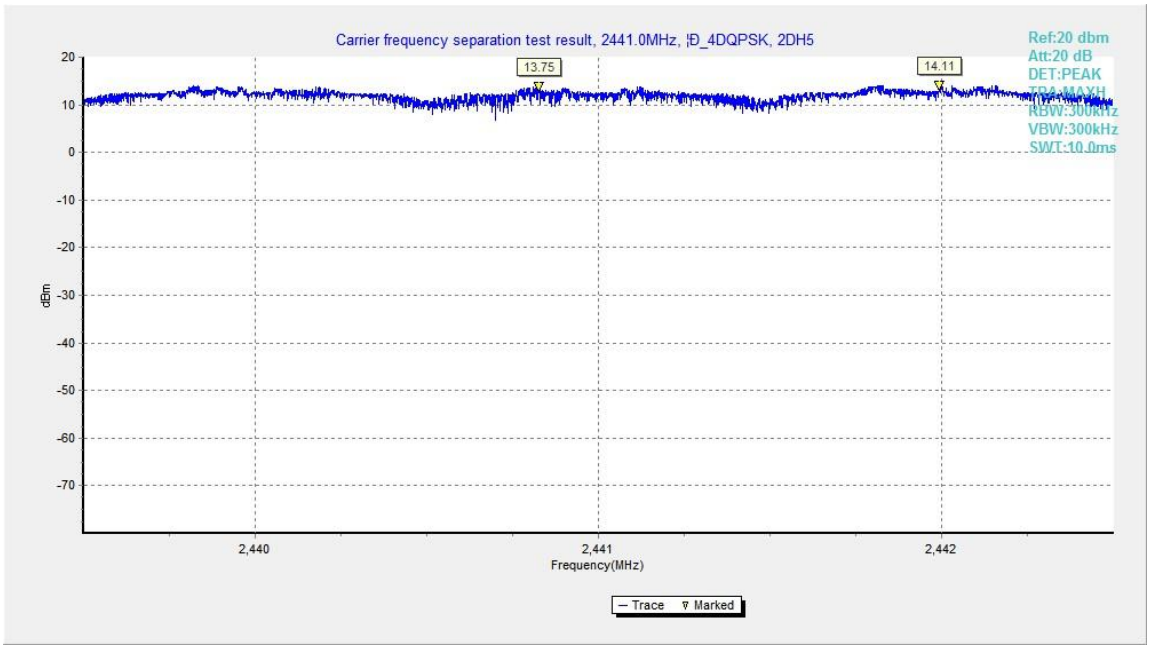


Fig.92. Carrier frequency separation measurement: π/4 DQPSK, Channel 39

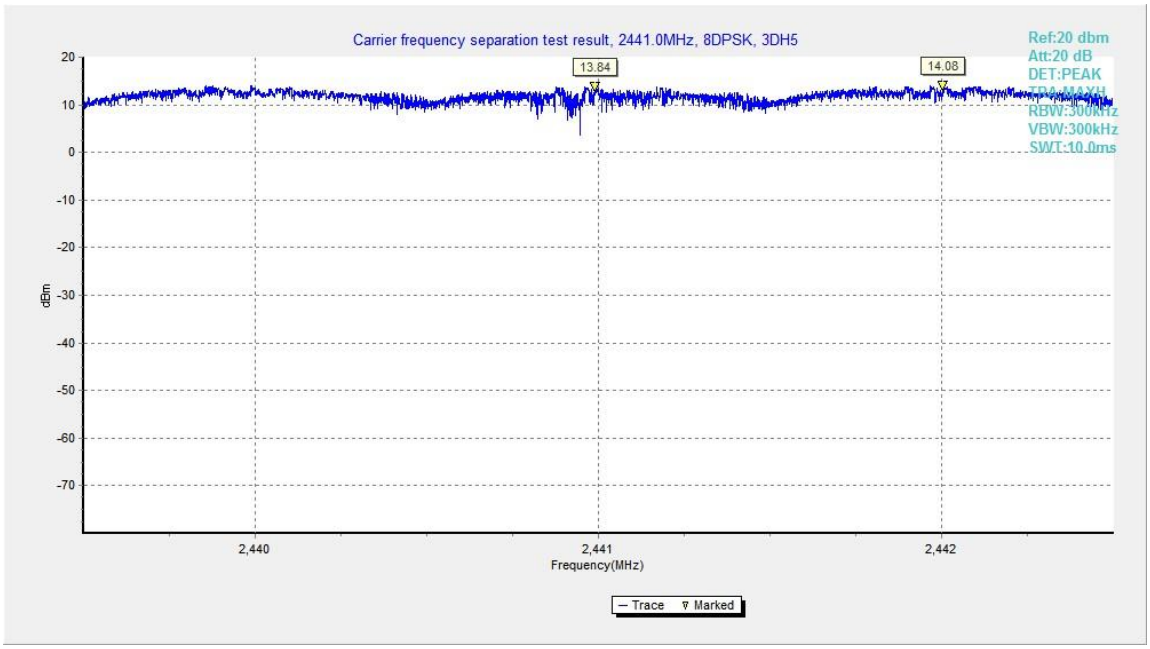


Fig.93. Carrier frequency separation measurement: 8DPSK, Channel 39

B.10. 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:

EUT3 Core0

For GFSK

Channel	Number of hopping channels		Conclusion
0~39	Fig.94	79	P
40~78	Fig.95		

Forπ/4 DQPSK

Channel	Number of hopping channels		Conclusion
0~39	Fig.96	79	P
40~78	Fig.97		

For 8DPSK

Channel	Number of hopping channels		Conclusion
0~39	Fig.98	79	P
40~78	Fig.99		

Conclusion: PASS

Test graphs as below:

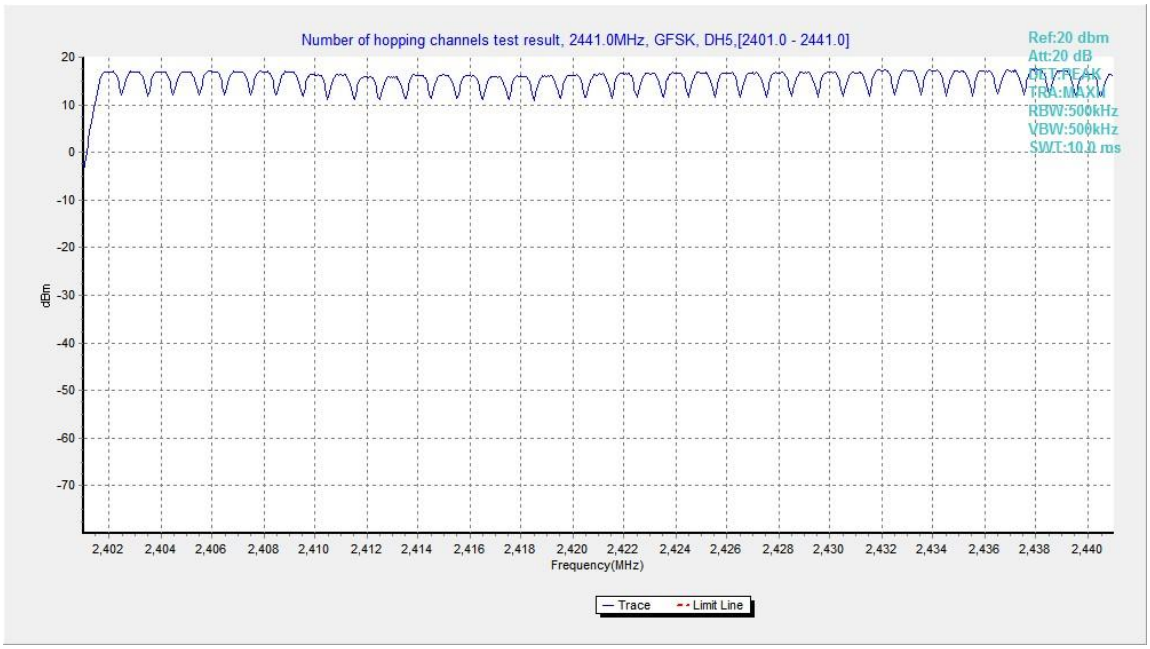


Fig.94. Number of hopping frequencies: GFSK, Channel 0 - 39

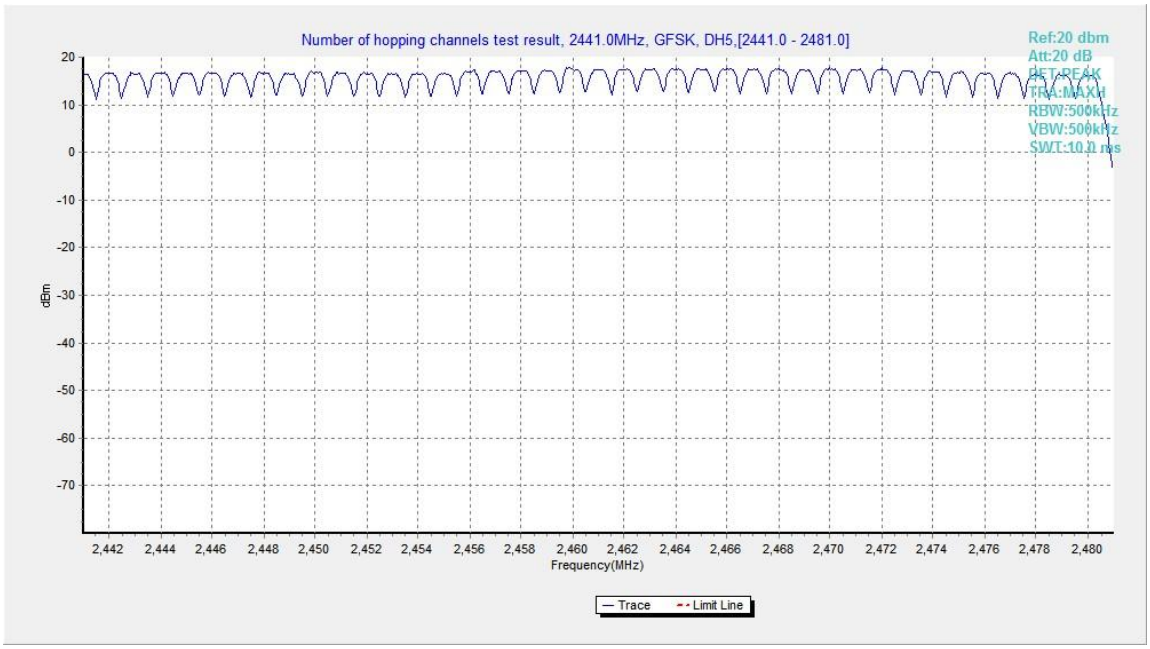


Fig.95. Number of hopping frequencies: GFSK, Channel 40 - 78

Fig.96. Number of hopping frequencies: π/4 DQPSK, Channel 0 - 39

Fig.97. Number of hopping frequencies: π/4 DQPSK, Channel 40 - 78

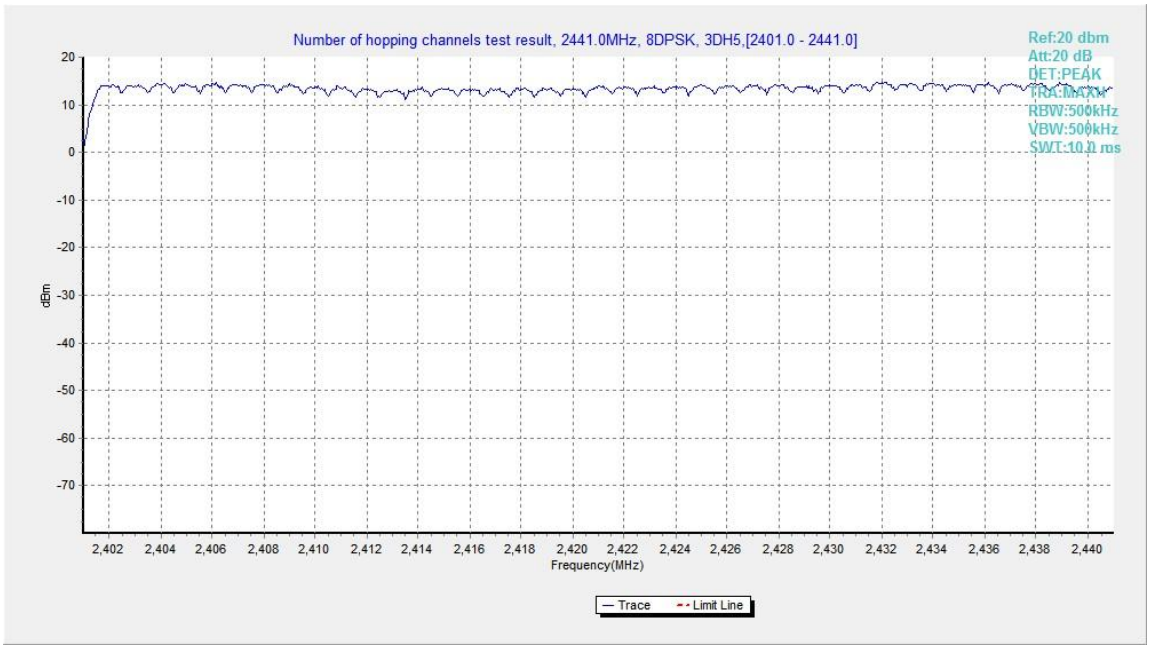


Fig.98. Number of hopping frequencies: 8DPSK, Channel 0 - 39

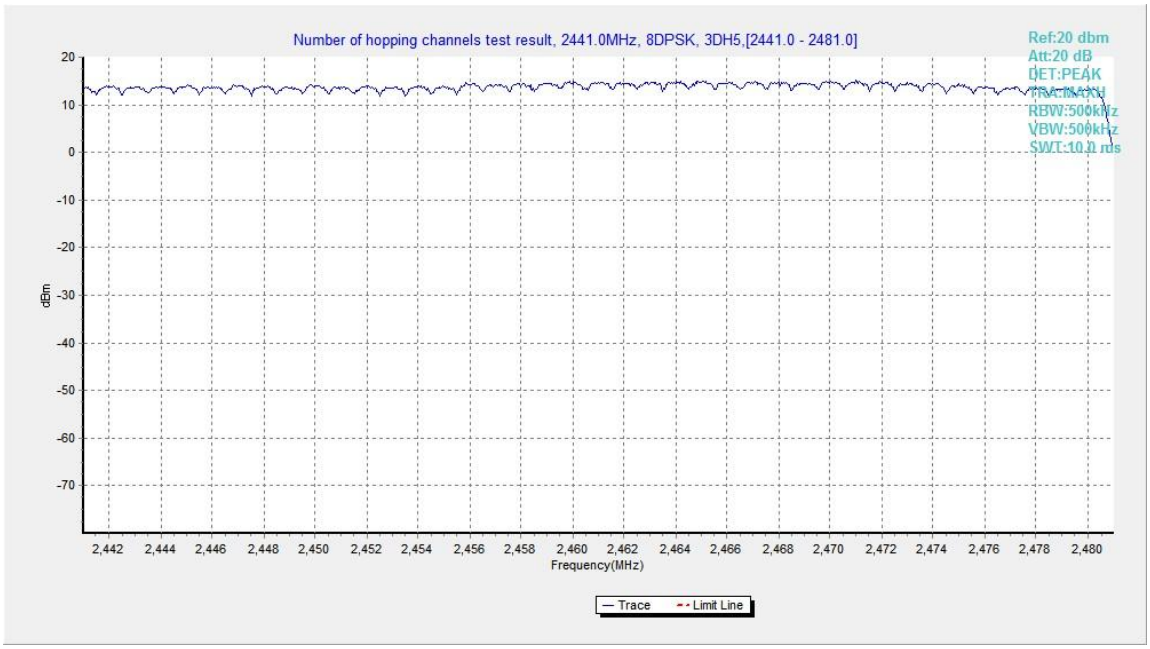


Fig.99. Number of hopping frequencies: 8DPSK, Channel 40 - 78

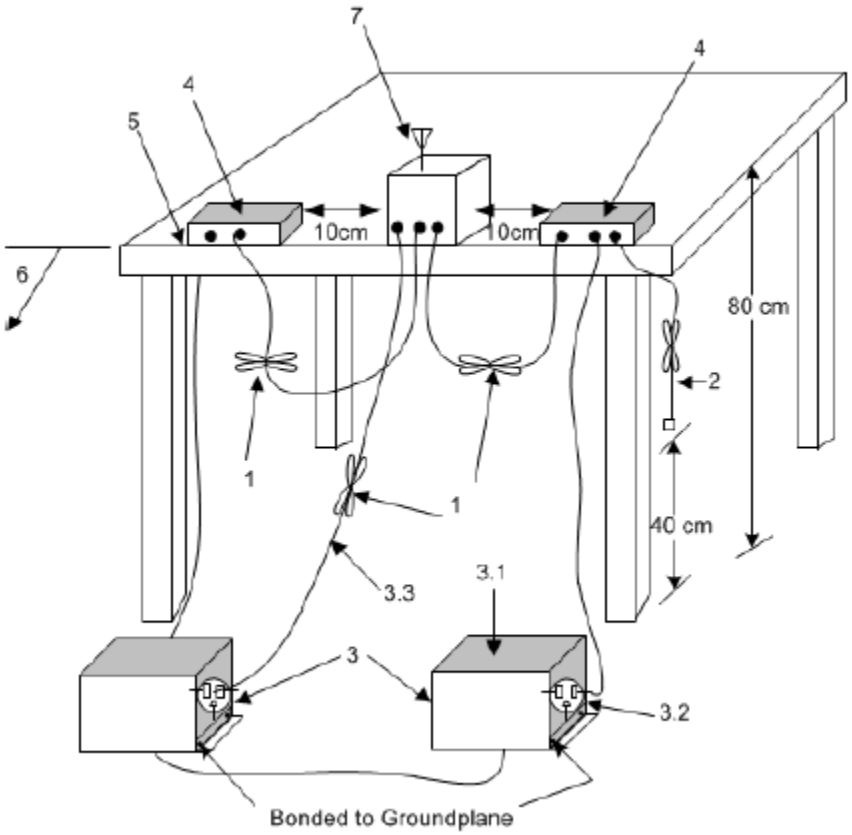
B.11. AC Powerline Conducted Emission

Method of Measurement: See ANSI C63.10-clause 6.2

Setup:

A stand-alone EUT shall be placed in the center along the back edge of the tabletop. For multiunit tabletop systems, the EUT shall be centered laterally (left to right facing the tabletop) on the tabletop and its rear shall be flush with the rear of the table.

Accessories that are part of an EUT system tested on a tabletop shall be placed in a test arrangement on one or both sides of the host with a 10 cm separation between the nearest points of the cabinets. The rear of the host and accessories shall be flush with the back of the supporting tabletop unless that would not be typical of normal use. If more than two accessories are present, then an equipment test arrangement shall be chosen that maintains 10 cm spacing between cabinets unless the equipment is normally located closer together.



Exploratory ac power-line conducted emission measurements

Exploratory measurements shall be used to identify the frequency of the emission that has the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable positions, and with a typical system equipment configuration and arrangement. For each mode of operation and for each ac power current-carrying conductor, cable manipulation shall be performed within the range of likely configurations. For this measurement or series of measurements, the frequency spectrum of interest shall be monitored looking for the emission that has the highest amplitude relative to the limit. Once that emission is found for each current-carrying conductor of each power cord associated with the EUT (but not the cords

associated with non-EUT equipment in the overall system), the one configuration and arrangement and mode of operation that produces the emission closest to the limit over all of the measured conductors shall be recorded.

Final ac power-line conducted emission measurements

Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that produced the emission with the highest amplitude relative to the limit is selected for the final measurement, while applying the appropriate modulating signal to the EUT. If the EUT is relocated from an exploratory test site to a final test site, the highest emissions shall be remaximized at the final test location before final ac power-line conducted emission measurements are performed. The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment in the system) is then performed for the full frequency range for which the EUT is being tested for compliance without further variation of the EUT arrangement, cable positions, or EUT mode of operation. If the EUT is composed of equipment units that have their own separate ac power connections (e.g., floor-standing equipment with independent power cords for each shelf that are able to connect directly to the ac power network), then each current-carrying conductor of one unit is measured while the other units are connected to a second (or more) LISN(s). All units shall be measured separately. If a power strip is provided by the manufacturer, to supply all of the units making up the EUT, only the conductors in the power cord of the power strip shall be measured.

Test Condition:

Voltage（V）	Frequency（Hz）
120	60

Measurement Result and limit:

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1+AE1+AE2+AE4	EUT1+Charger1
Set.2	EUT2+AE9+AE3+AE4	EUT2+Charger2

Note：All combinations were tested，and only the worst results are shown in this report.

EUT ID: EUT2(Set.2)

Bluetooth (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		bluetooth	Idle	
0.15 to 0.5	66 to 56	Fig.B.11.1	Fig.B.11.2	P
0.5 to 5	56			
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)	Result (dBμV)		Conclusion
		With charger		
		bluetooth	Idle	
0.15 to 0.5	56 to 46	Fig.B.11.1	Fig.B.11.2	P
0.5 to 5	46			
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.				

Conclusion: Pass

Test graphs as below:

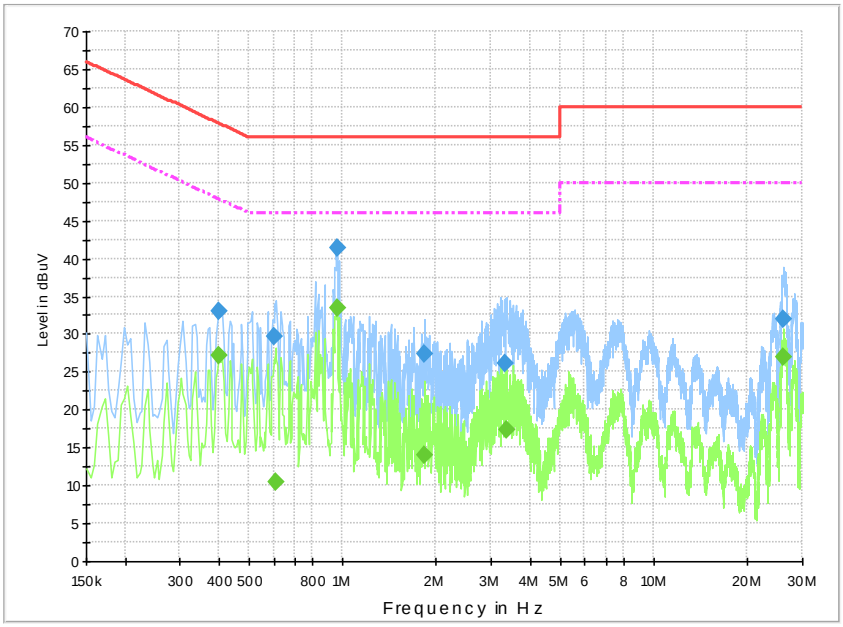


Fig.B.11.1 AC Powerline Conducted Emission- bluetooth

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.402000	32.9	1000.0	9.000	On	N	19.8	24.9	57.8
0.604500	29.7	1000.0	9.000	On	N	19.7	26.3	56.0
0.960000	41.4	1000.0	9.000	On	N	19.7	14.6	56.0
1.837500	27.3	1000.0	9.000	On	L1	19.7	28.7	56.0
3.318000	26.2	1000.0	9.000	On	L1	19.7	29.8	56.0
26.056500	31.9	1000.0	9.000	On	N	19.9	28.1	60.0

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.402000	27.1	1000.0	9.000	On	N	19.8	20.7	47.8
0.609000	10.5	1000.0	9.000	On	N	19.7	35.5	46.0
0.960000	33.5	1000.0	9.000	On	N	19.7	12.5	46.0
1.837500	14.0	1000.0	9.000	On	L1	19.7	32.0	46.0
3.349500	17.3	1000.0	9.000	On	L1	19.7	28.7	46.0
26.142000	27.0	1000.0	9.000	On	N	19.9	23.0	50.0

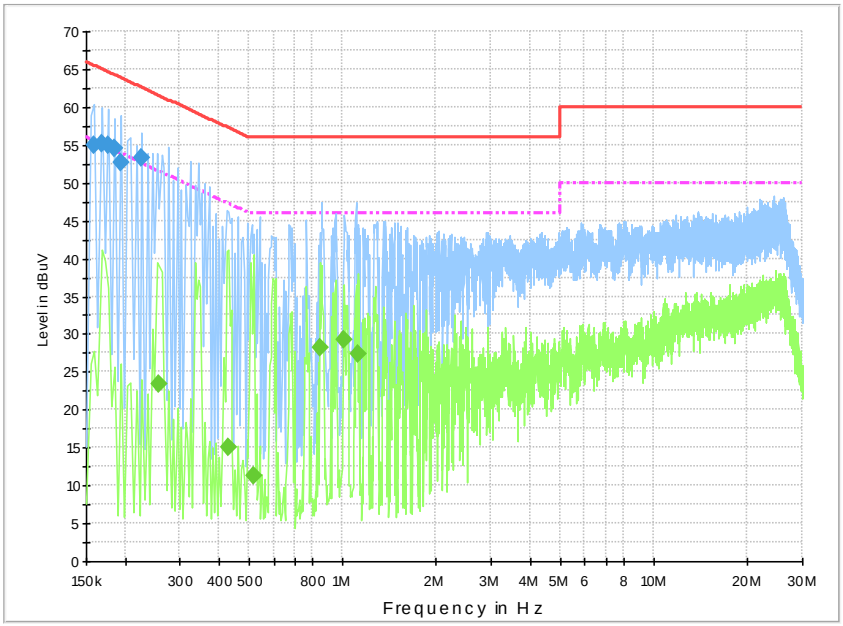


Fig.B.11.2 AC Powerline Conducted Emission-Idle

Note: The graphic result above is the maximum of the measurements for both phase line and neutral line.

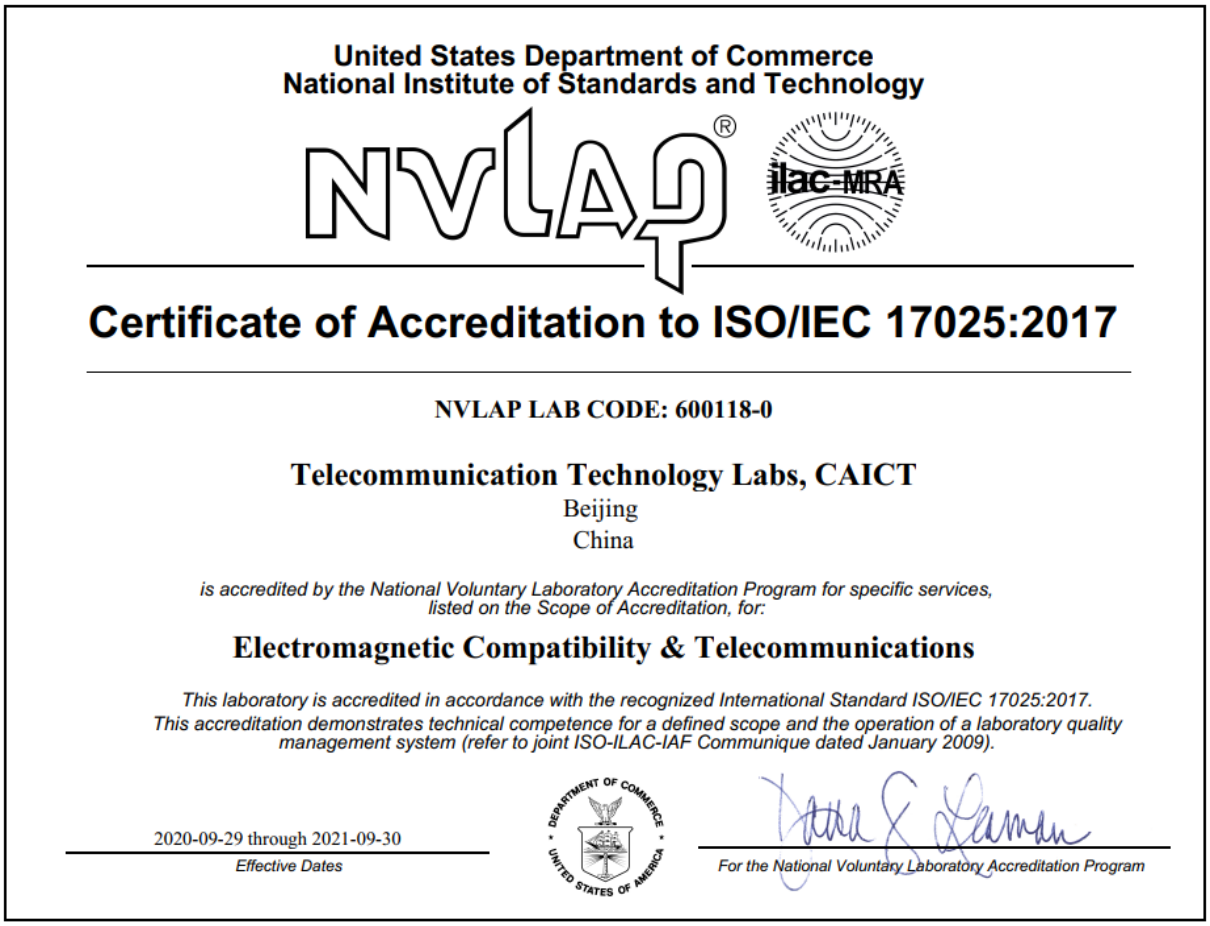
Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.159000	54.9	1000.0	9.000	On	L1	19.7	10.6	65.5
0.168000	55.2	1000.0	9.000	On	L1	19.7	9.8	65.1
0.177000	54.9	1000.0	9.000	On	L1	19.6	9.7	64.6
0.186000	54.6	1000.0	9.000	On	L1	19.7	9.7	64.2
0.195000	52.6	1000.0	9.000	On	L1	19.6	11.2	63.8
0.226500	53.2	1000.0	9.000	On	N	19.7	9.4	62.6

Final Result 2

Frequency (MHz)	Average (dBuV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.258000	23.4	1000.0	9.000	On	L1	19.7	28.1	51.5
0.429000	15.1	1000.0	9.000	On	N	19.8	32.2	47.3
0.519000	11.2	1000.0	9.000	On	L1	19.8	34.8	46.0
0.843000	28.1	1000.0	9.000	On	L1	19.7	17.9	46.0
1.014000	29.3	1000.0	9.000	On	N	19.6	16.7	46.0
1.126500	27.5	1000.0	9.000	On	N	19.7	18.5	46.0

ANNEX C: Accreditation Certificate



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Electromagnetic Compatibility & Telecommunications

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2020-09-29 through 2021-09-30
Effective Dates

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

For the National Voluntary Laboratory Accreditation Program

*****END OF REPORT*****