

Modulation type: GFSK(LE Coded S=8)

Carrier frequency (MHz)	Channel No.	Power Density (dBm/3kHz)
2402	0	2.0
2440	19	1.8
2480	39	1.6



Modulation: Coded S=8 2402MHz



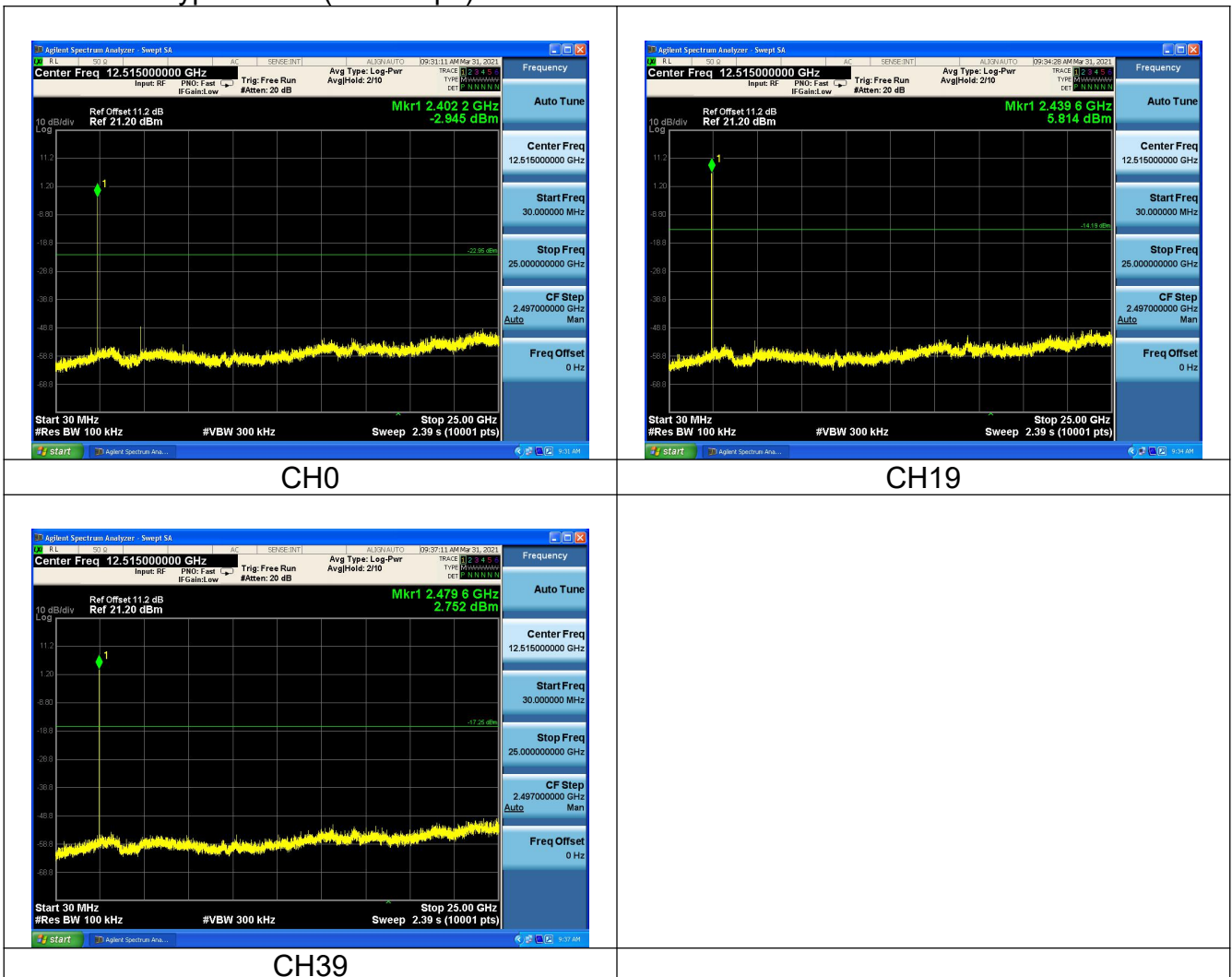
Modulation: Coded S=8 2440MHz



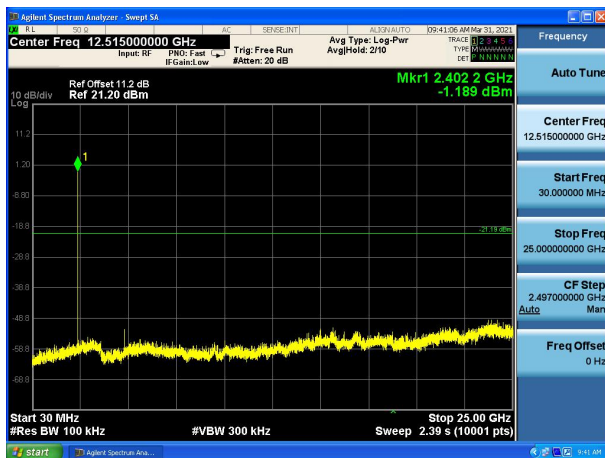
Modulation: Coded S=8 2480MHz

4 Conducted Out of band emission measurement

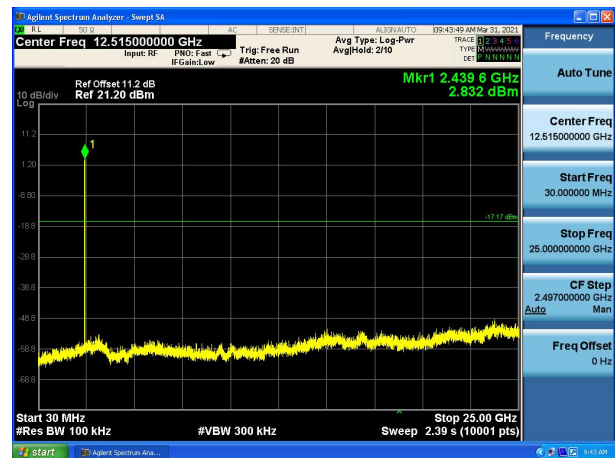
Modulation type: GFSK(LE 1Mbps)



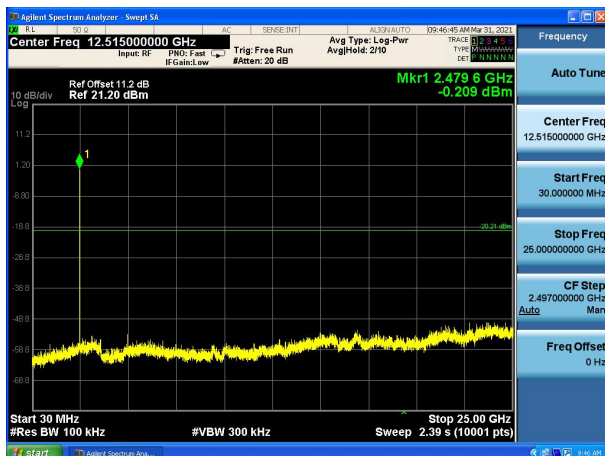
Modulation type: GFSK(LE 2Mbps)



CH0

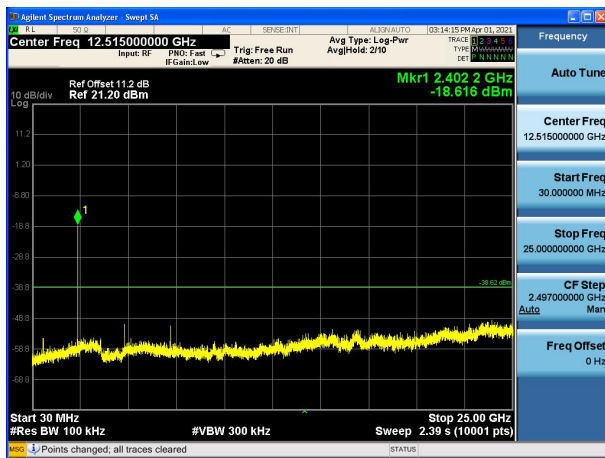


CH19

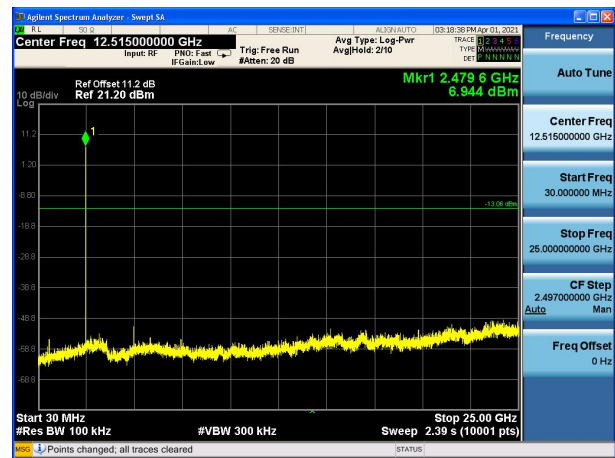


CH39

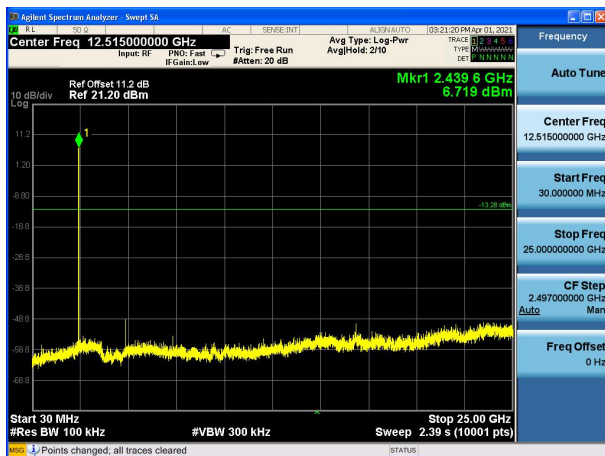
Modulation type: GFSK(LE Coded S=2)



CH0

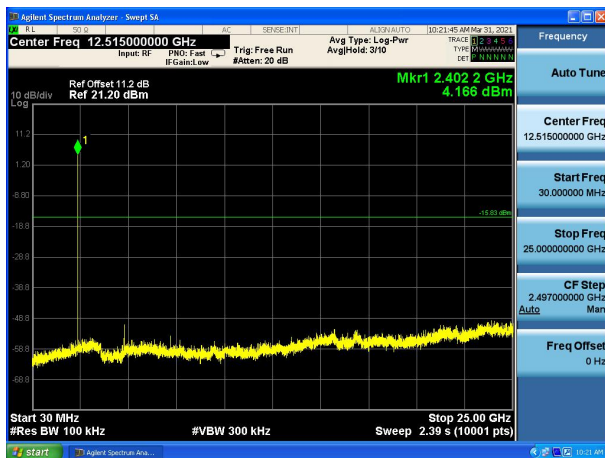


CH19

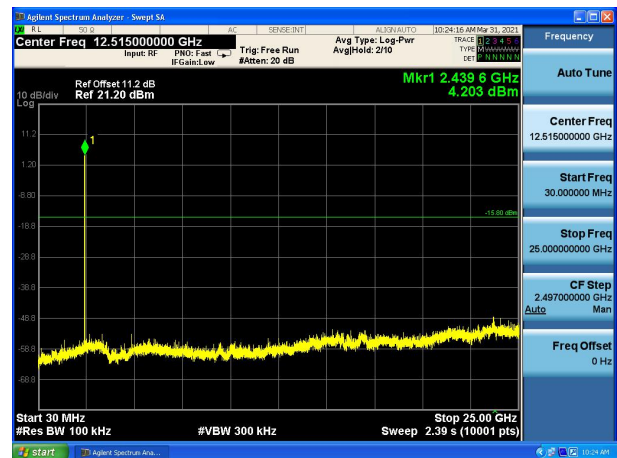


CH39

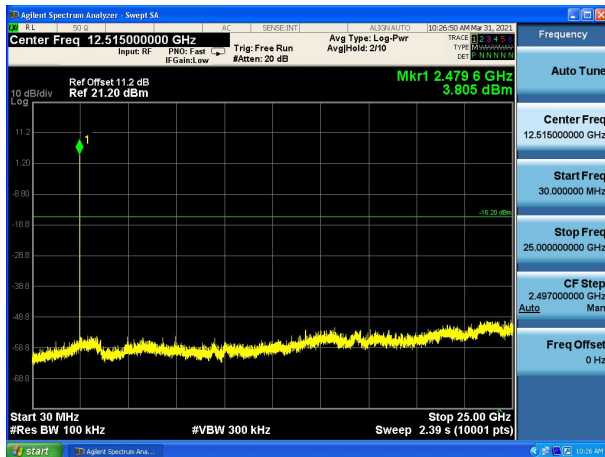
Modulation type: GFSK(LE Coded S=8)



CH0



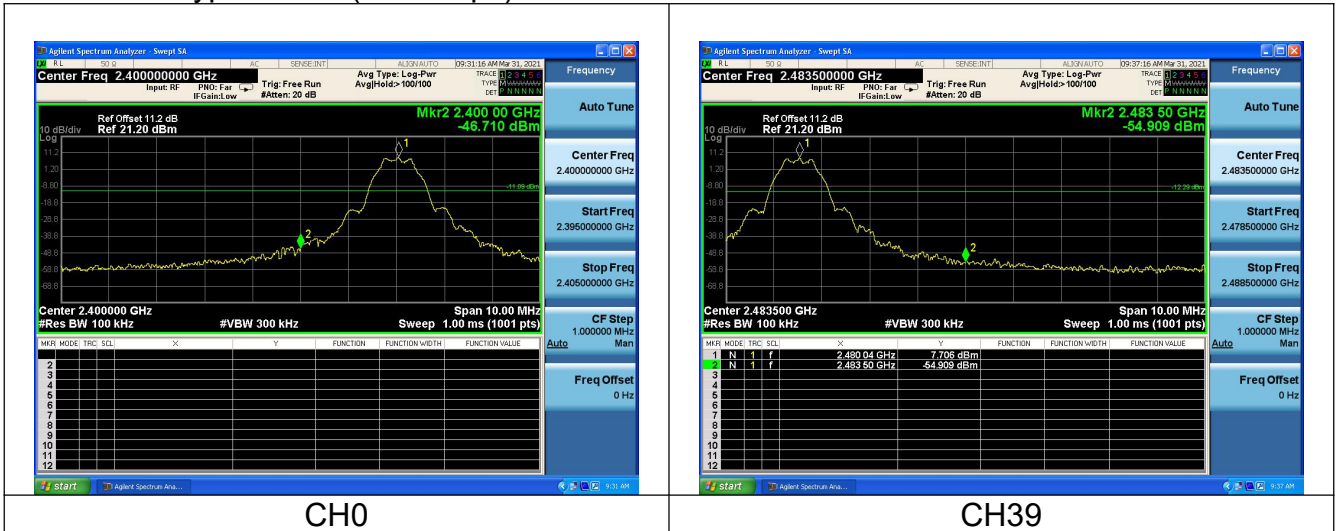
CH19



CH39

5 Band Edge measurement

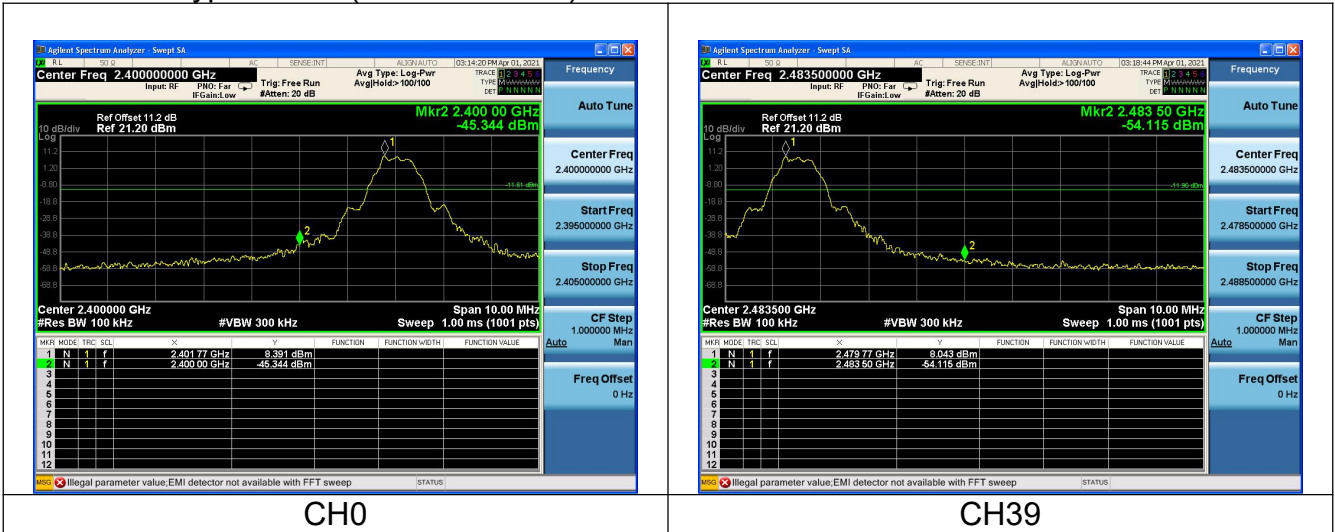
Modulation type: GFSK(LE 1Mbps)



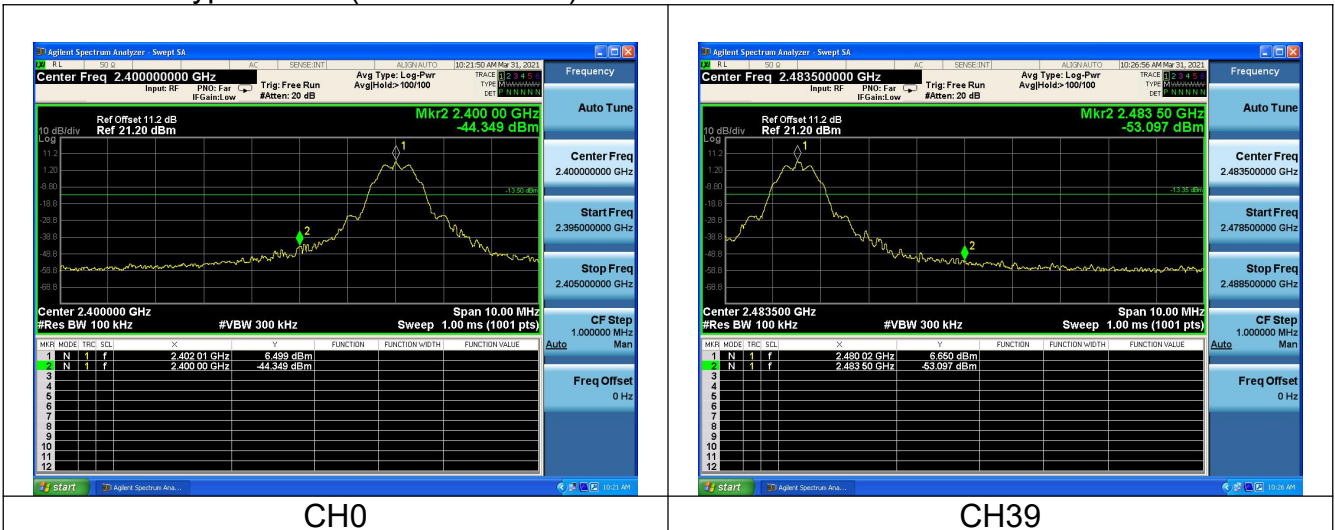
Modulation type: GFSK(LE 2Mbps)



Modulation type: GFSK(LE Coded S=2)



Modulation type: GFSK(LE Coded S=8)



APPENDIX B – TEST DATA OF RADIATED EMISSION

Radiated Emission Band Edge

The worst case: BLE Coded S=2

The measurement results are obtained as described below:

Measure Level = Reading Level + cable loss + antenna factor

Sample calculation: (82.74 dBuV/m) = (48.74 dBuV) + (8.90 dB) + (25.10 dB/m), the corresponding frequency is 2402MHz.

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB)
1	2402	102.78	68.78	N/A	N/A	8.90	25.10

Model: WEB-VA75IB24NM

Carrier frequency (MHz): 2402

Channel No.:0

Test Mode: GFSK (LE CODED S=2)

Polarity: Vertical

Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2402	103.25	69.25	N/A	N/A	8.90	25.10
2	2390	43.39	9.39	-30.61	74.00	8.90	25.10

Carrier frequency (MHz): 2402

Channel No.:0

Test Mode: GFSK (LE CODED S=2)

Polarity: Horizontal

Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2402	101.24	67.24	N/A	N/A	8.90	25.10
2	2390	42.52	8.52	-31.48	74.00	8.90	25.10

Carrier frequency (MHz): 2402

Channel No.:0

Test Mode: GFSK (LE CODED S=2)

Polarity: Vertical

Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2402	100.22	66.22	N/A	N/A	8.90	25.10
2	2390	34.80	0.80	-19.20	54.00	8.90	25.10

Carrier frequency (MHz): 2402

Channel No.:0

Test Mode: GFSK (LE CODED S=2)

Polarity: Horizontal

Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2402	98.06	64.06	N/A	N/A	8.90	25.10
2	2390	34.39	0.39	-19.61	54.00	8.90	25.10

Carrier frequency (MHz): 2480

Channel No.:39

Test Mode: GFSK (LE CODED S=2)

Polarity: Vertical

Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2480	98.06	64.06	N/A	N/A	8.90	25.10
2	2483.5	42.67	8.67	-31.33	74.00	8.90	25.10

Carrier frequency (MHz): 2480

Channel No.:39

Test Mode: GFSK (LE CODED S=2)

Polarity: Horizontal

Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2480	95.13	61.13	N/A	N/A	8.90	25.10
2	2483.5	41.09	7.09	-32.91	74.00	8.90	25.10

Carrier frequency (MHz): 2480

Channel No.:39

Test Mode: GFSK (LE CODED S=2)

Polarity: Vertical

Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2480	93.39	59.39	N/A	N/A	8.90	25.10
2	2483.5	33.86	-0.14	-20.14	54.00	8.90	25.10

Carrier frequency (MHz): 2480

Channel No.:39

Test Mode: GFSK (LE CODED S=2)

Polarity: Horizontal

Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2480	90.54	56.54	N/A	N/A	8.90	25.10
2	2483.5	32.02	-1.98	-21.98	54.00	8.90	25.10

Model: WEB-VA75MB24NM

Carrier frequency (MHz): 2402

Channel No.:0

Test Mode: GFSK (LE CODED S=2)

Polarity: Vertical

Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2402	94.07	60.07	N/A	N/A	8.90	25.10
2	2390	43.80	9.80	-30.20	74.00	8.90	25.10

Carrier frequency (MHz): 2402

Channel No.:0

Test Mode: GFSK (LE CODED S=2)

Polarity: Horizontal

Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2402	91.48	57.48	N/A	N/A	8.90	25.10
2	2390	42.92	8.92	-31.08	74.00	8.90	25.10

Carrier frequency (MHz): 2402

Channel No.:0

Test Mode: GFSK (LE CODED S=2)

Polarity: Vertical

Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2402	92.16	58.16	N/A	N/A	8.90	25.10
2	2390	34.01	0.01	-19.99	54.00	8.90	25.10

Carrier frequency (MHz): 2402

Channel No.:0

Test Mode: GFSK (LE CODED S=2)

Polarity: Horizontal

Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2402	89.98	55.98	N/A	N/A	8.90	25.10
2	2390	33.08	-0.92	-20.92	54.00	8.90	25.10

Carrier frequency (MHz): 2480

Channel No.:39

Test Mode: GFSK (LE CODED S=2)

Polarity: Vertical

Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2480	88.72	54.72	N/A	N/A	8.90	25.10
2	2483.5	43.36	9.36	-30.64	74.00	8.90	25.10

Carrier frequency (MHz): 2480

Channel No.:39

Test Mode: GFSK (LE CODED S=2)

Polarity: Horizontal

Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2480	85.73	51.73	N/A	N/A	8.90	25.10
2	2483.5	42.45	8.45	-31.55	74.00	8.90	25.10

Carrier frequency (MHz): 2480

Channel No.:39

Test Mode: GFSK (LE CODED S=2)

Polarity: Vertical

Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2480	86.73	52.73	N/A	N/A	8.90	25.10
2	2483.5	33.46	-0.54	-20.54	54.00	8.90	25.10

Carrier frequency (MHz): 2480
Channel No.:39
Test Mode: GFSK (LE CODED S=2)
Polarity: Horizontal
Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB/m)
1	2480	83.90	49.90	N/A	N/A	8.90	25.10
2	2483.5	33.06	-0.94	-20.94	54.00	8.90	25.10

Spurious Radiated Emission

Sample Calculations

Determining Spurious Emissions Levels

A “reference path loss” is established and the A_{Rpl} is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

The measurement results are obtained as described below:

Result= $P_{mea} + A_{Rpl}$

Sample calculation: $(30.54\text{dB}\mu\text{V/m}) = (-20.4\text{dB/m}) + (50.94\text{dB}\mu\text{V})$, the corresponding frequency is 32.533500MHz.

The worst case: BLE Coded S=2

Model: WEB-VA75IB24NM

For GFSK (LE Coded S=2)

Channel No.:0

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)
32.5395	8.63	-20.7	29.33	Vertical	40
58.0445	7.45	-18.6	26.05	Vertical	40
150.009	11.87	-22.3	34.17	Vertical	43.5
300.0195	27.03	-16.1	43.13	Vertical	46
420.0085	27.39	-12.4	39.79	Vertical	46
931.0385	19.47	-2.8	22.27	Vertical	46

Channel No.:19

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)
51.3055	7.46	-17.7	25.16	Vertical	40
57.711	7.05	-18.5	25.55	Vertical	40
150.009	11.88	-22.3	34.18	Vertical	43.5
300.0195	27.02	-16.1	43.12	Vertical	46
420.0085	27.4	-12.4	39.8	Vertical	46
921.193	19.15	-2.9	22.05	Vertical	46

Channel No.:39

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)
32.194	8.49	-20.8	29.29	Vertical	40
74.1465	9.27	-23.1	32.37	Vertical	40
150.009	11.87	-22.3	34.17	Vertical	43.5
300.0195	27.01	-16.1	43.11	Vertical	46
420.0085	27.4	-12.4	39.8	Vertical	46
856.5995	17.8	-3.9	21.7	Vertical	46

Model: WEB-VA75MB24NM

For GFSK (LE Coded S=2)

Channel No.:0

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)
32.5335	8.65	-20.7	29.35	Vertical	40
74.126	9.43	-23.1	32.53	Vertical	40
150.009	11.88	-22.3	34.18	Vertical	43.5
300.0195	27.03	-16.1	43.13	Vertical	46
420.0085	27.43	-12.4	39.83	Vertical	46
931.087	19.48	-2.8	22.28	Vertical	46

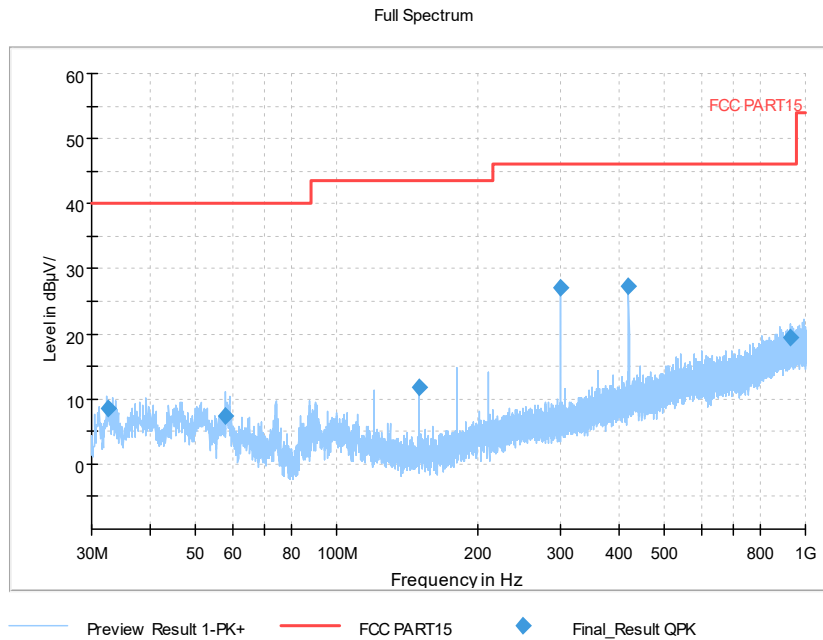
Channel No.:19

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)
39.589	7.72	-18.6	26.32	Vertical	40
74.115	8.96	-23.1	32.06	Vertical	40
150.009	11.89	-22.3	34.19	Vertical	43.5
300.0195	27.03	-16.1	43.13	Vertical	46
420.0085	27.47	-12.4	39.87	Vertical	46
943.7055	19.44	-2.7	22.14	Vertical	46

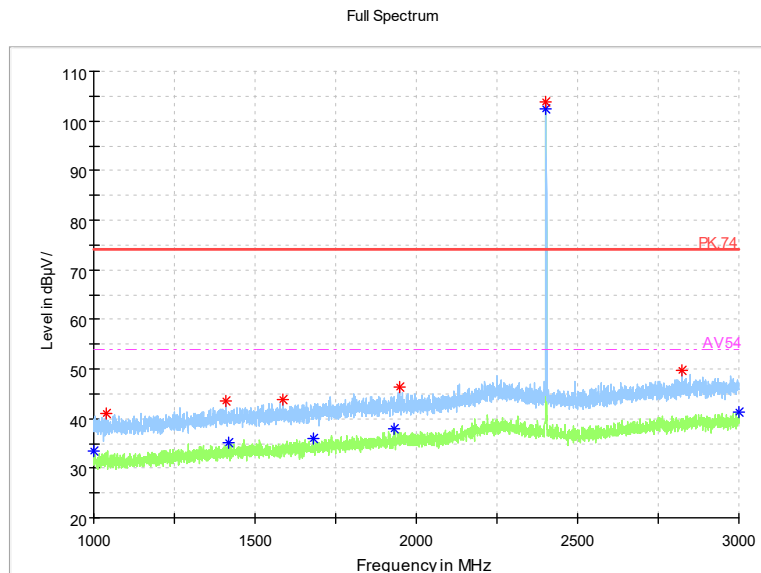
Channel No.:39

Frequency (MHz)	Result (dBuV/m)	ARpl (dB)	Pmea (dBuV/m)	Polarity	Limit (dBuV/m)
32.5335	8.59	-20.7	29.29	Vertical	40
74.1465	9.31	-23.1	32.41	Vertical	40
150.009	11.86	-22.3	34.16	Vertical	43.5
300.0195	27.03	-16.1	43.13	Vertical	46
420.017	27.32	-12.4	39.72	Vertical	46
929.2125	19.5	-2.8	22.3	Vertical	46

Model: WEB-VA75IB24NM
Channel No.:0

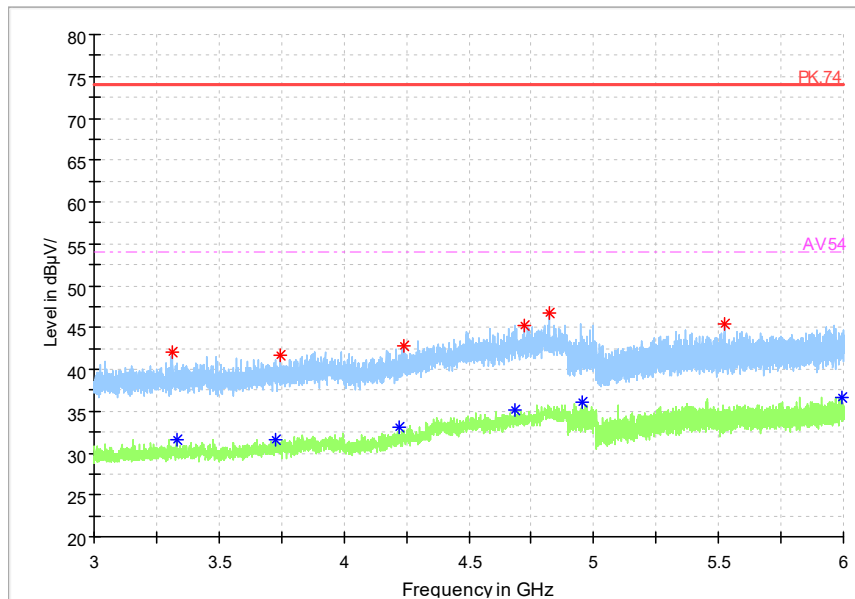


Frequency Range: 30MHz-1000 MHz
Detector: QP mode
Modulation type: GFSK (LE CODED S=2)



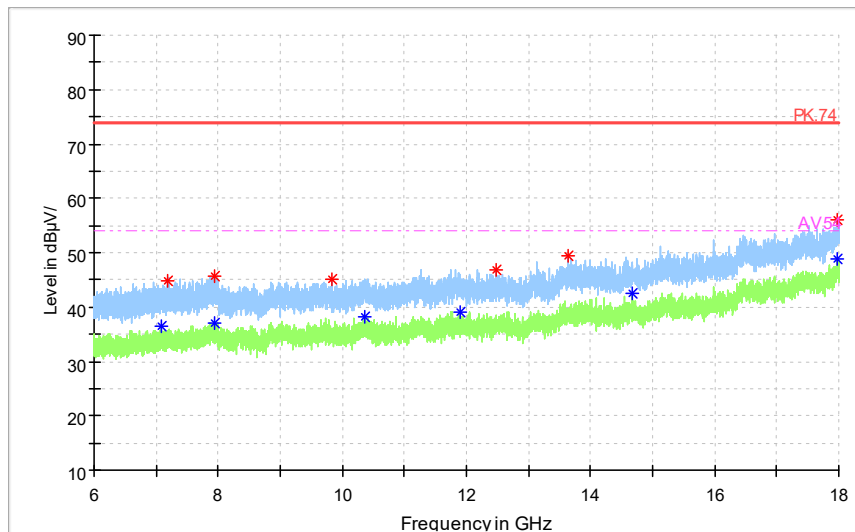
Frequency Range: 1GHz-3GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum



Frequency Range: 3GHz-6GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum



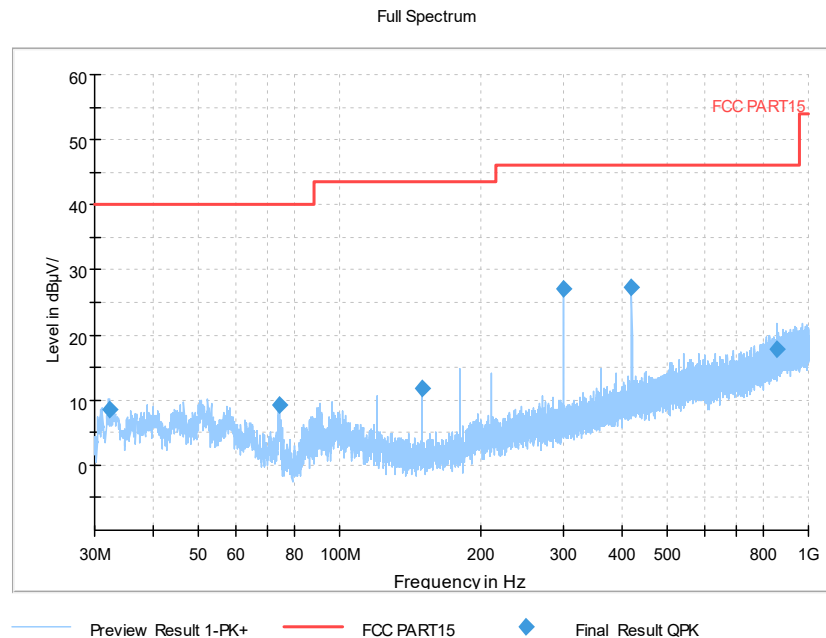
* Preview Result 2-AVG — Preview Result 1-PK+ * Critical_Freqs AVG
◆ Final_Result PK+ — PK.74 - - - AV54
◆ Final_Result AVG

Frequency Range: 6GHz-18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)



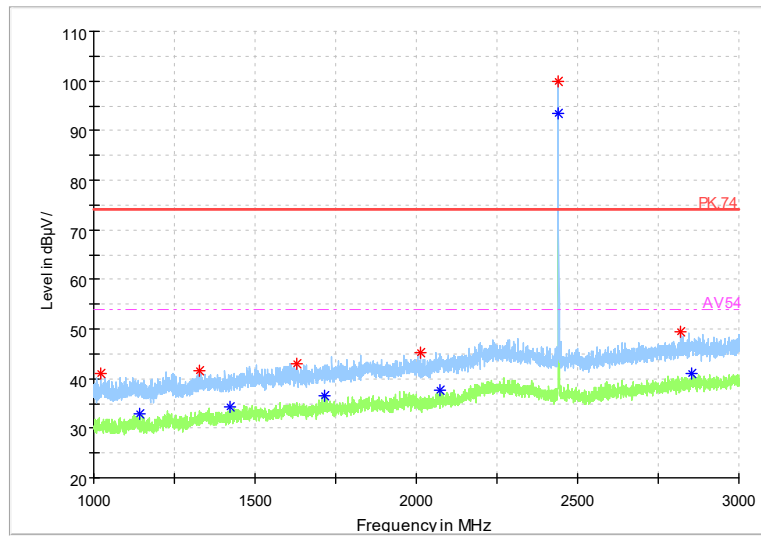
Frequency Range: 18GHz-25GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Channel No.:19



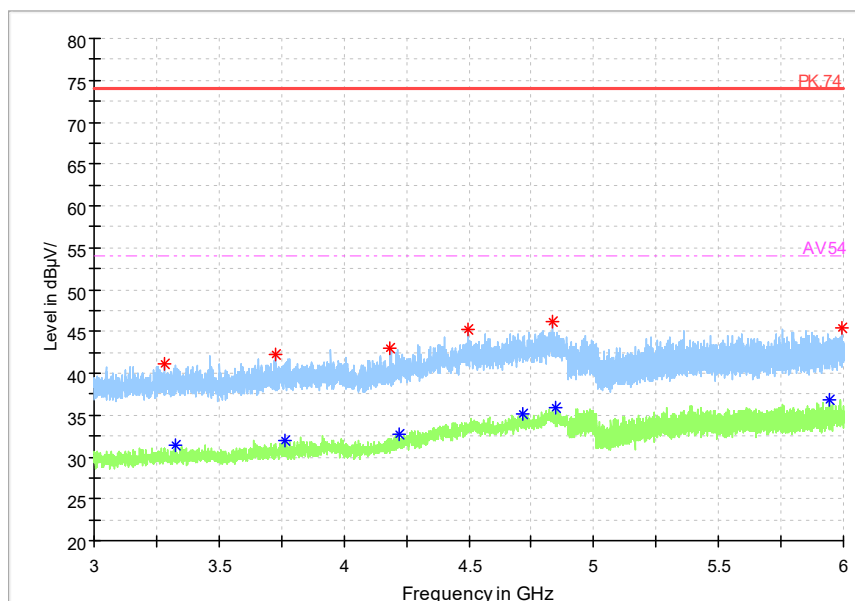
Frequency Range: 30MHz-1000 MHz
Detector: QP mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum



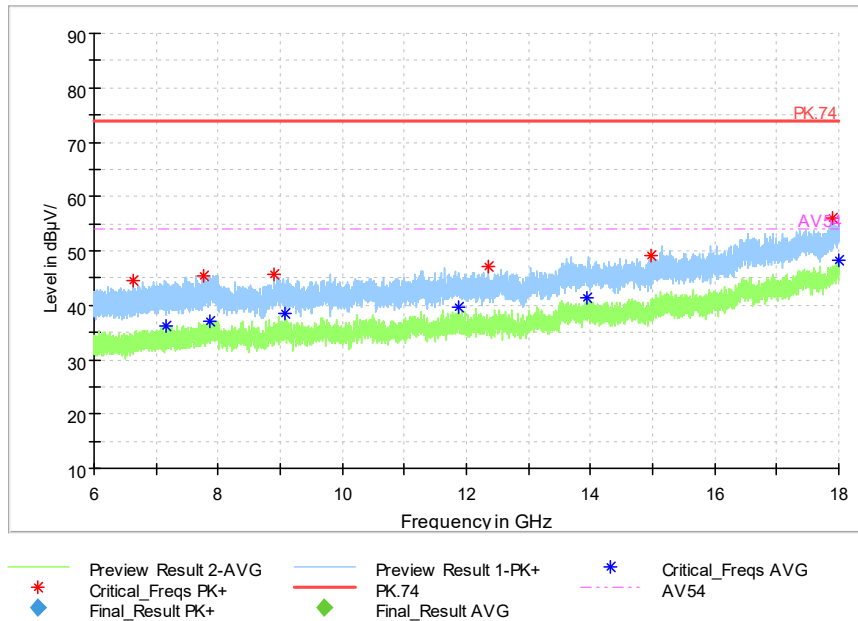
Frequency Range: 1GHz-3GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum



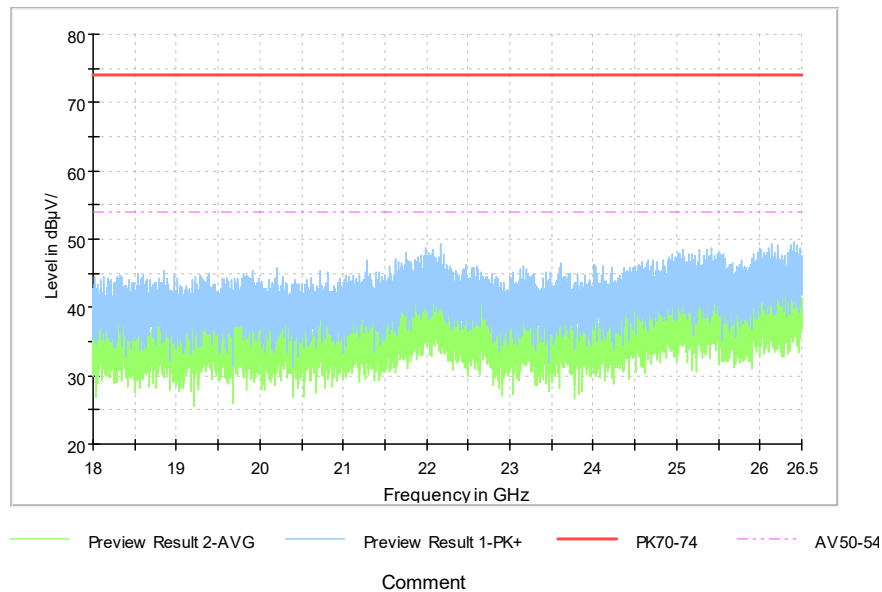
Frequency Range: 3GHz-6GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum



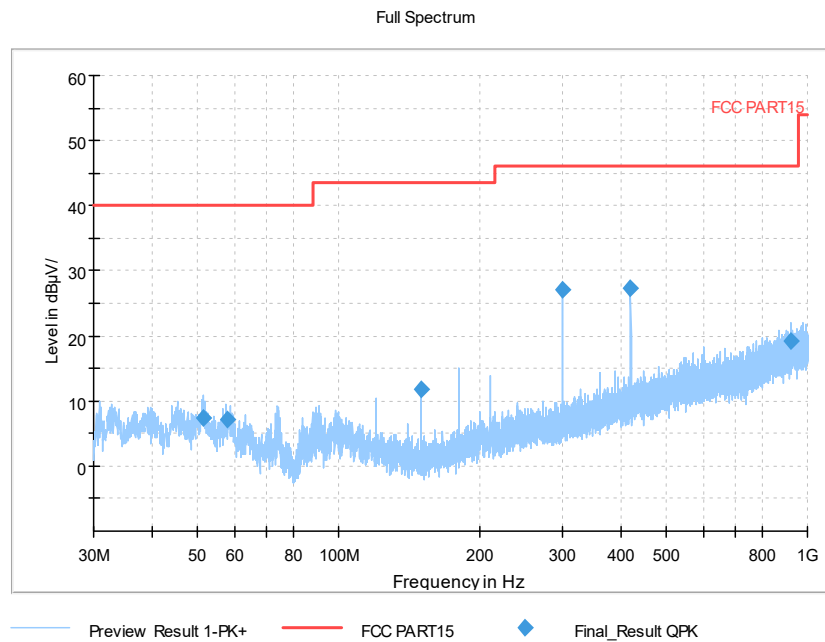
Frequency Range: 6GHz-18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum

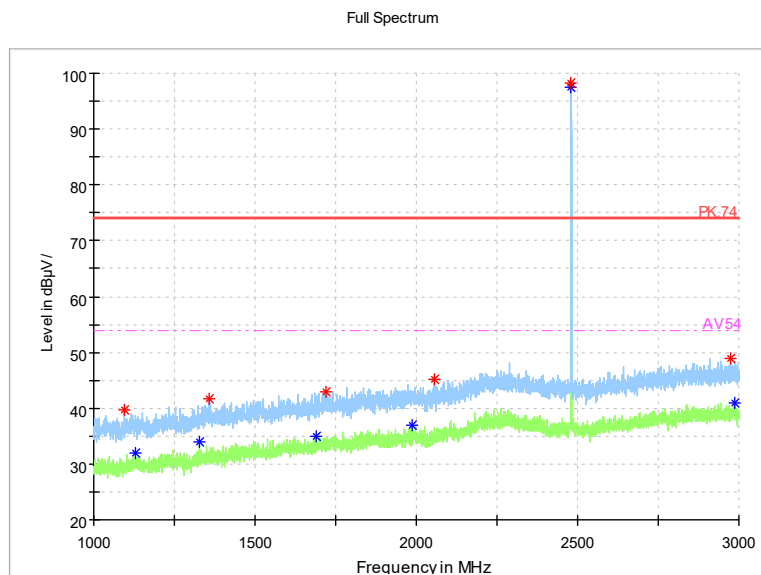


Frequency Range: 18GHz-25GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Channel No.:39

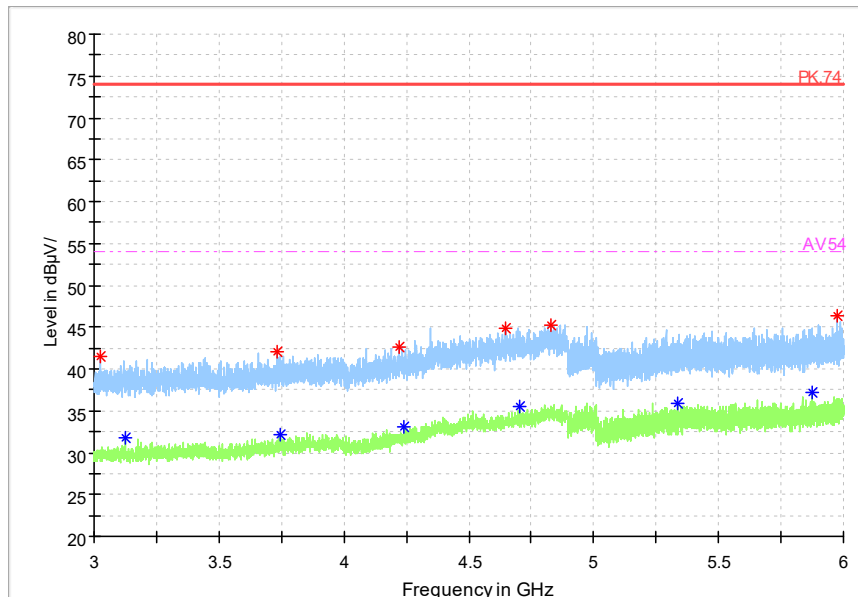


Frequency Range: 30MHz-1000 MHz
Detector: QP mode
Modulation type: GFSK (LE CODED S=2)



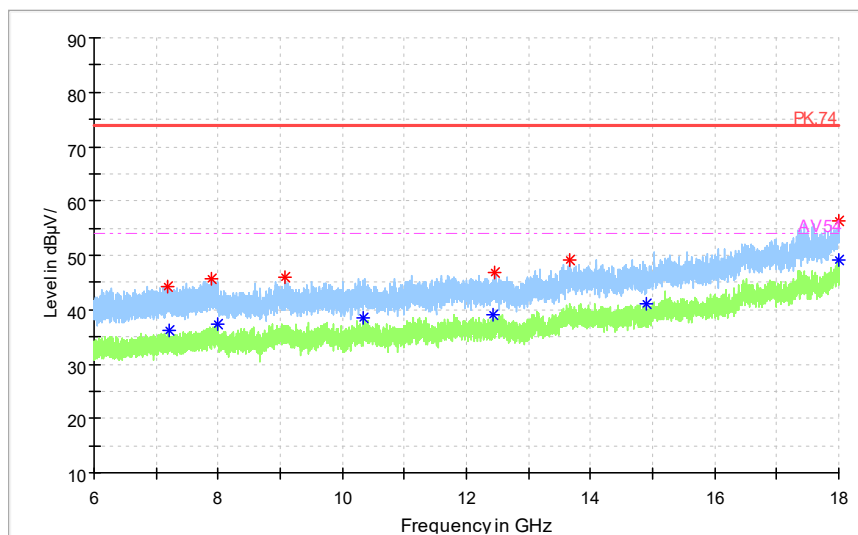
Frequency Range: 1GHz-3GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum



Frequency Range: 3GHz-6GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

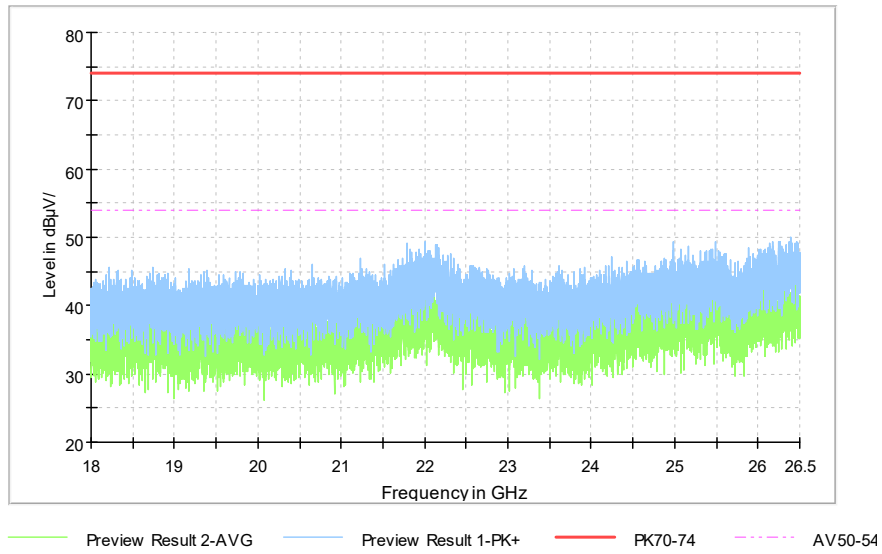
Full Spectrum



◆ Preview Result 2-AVG
◆ Critical_Freqs PK+
◆ Final_Result PK+
— Preview Result 1-PK+
— PK.74
◆ Final_Result AVG
* Critical_Freqs AVG
--- AV54

Frequency Range: 6GHz-18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

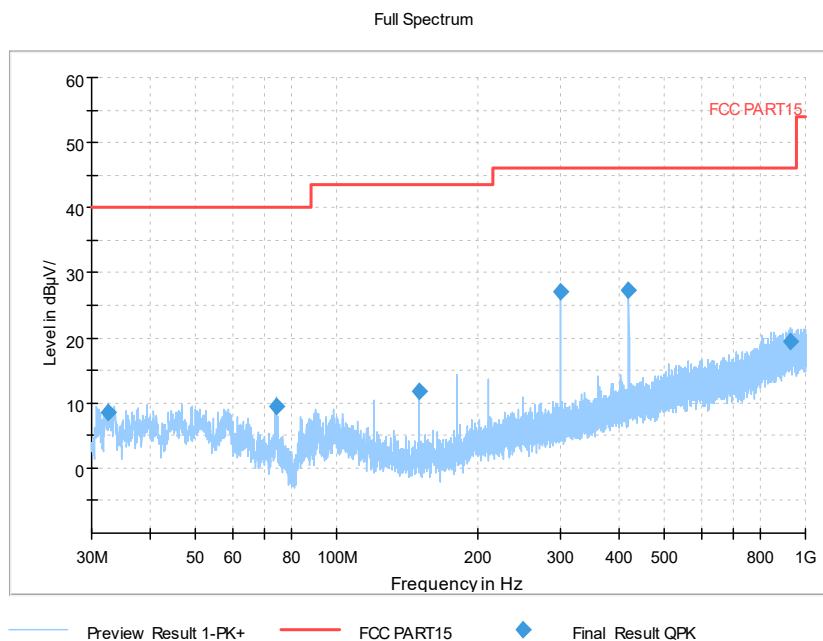
Full Spectrum



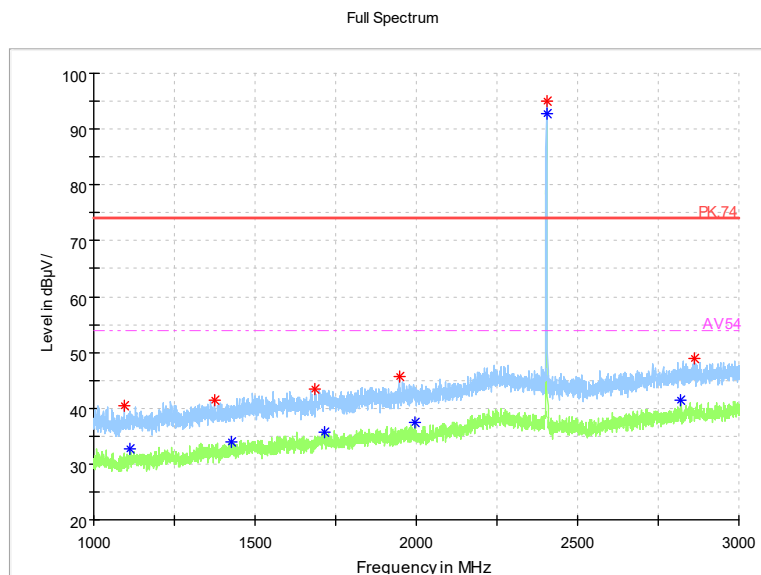
Comment

Frequency Range: 18GHz-25GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Model: WEB-VA75MB24NM
Channel No.:0

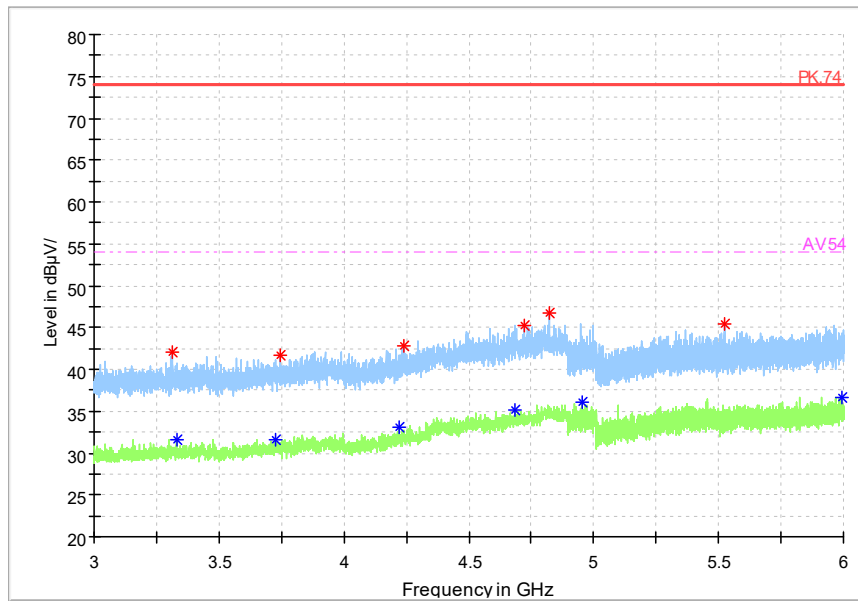


Frequency Range: 30MHz-1000MHz
Detector: QP mode
Modulation type: GFSK (LE CODED S=2)



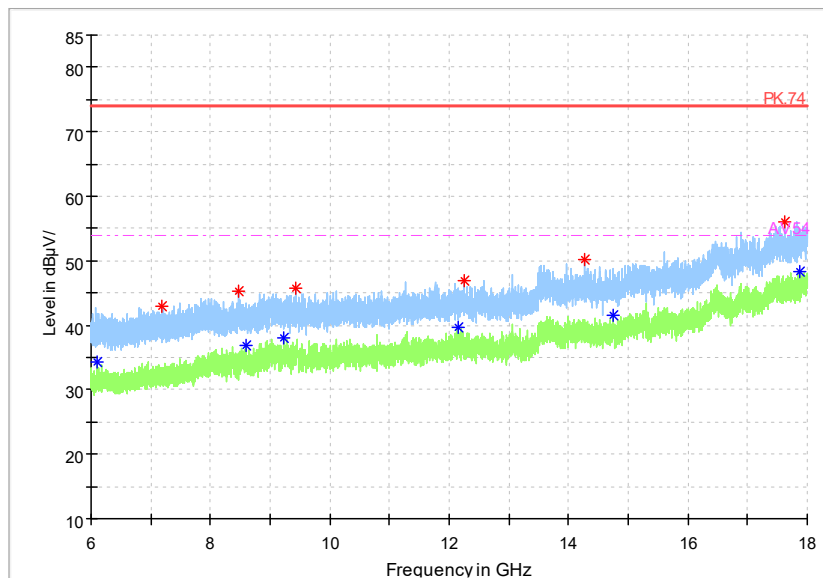
Frequency Range: 1GHz-3GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum



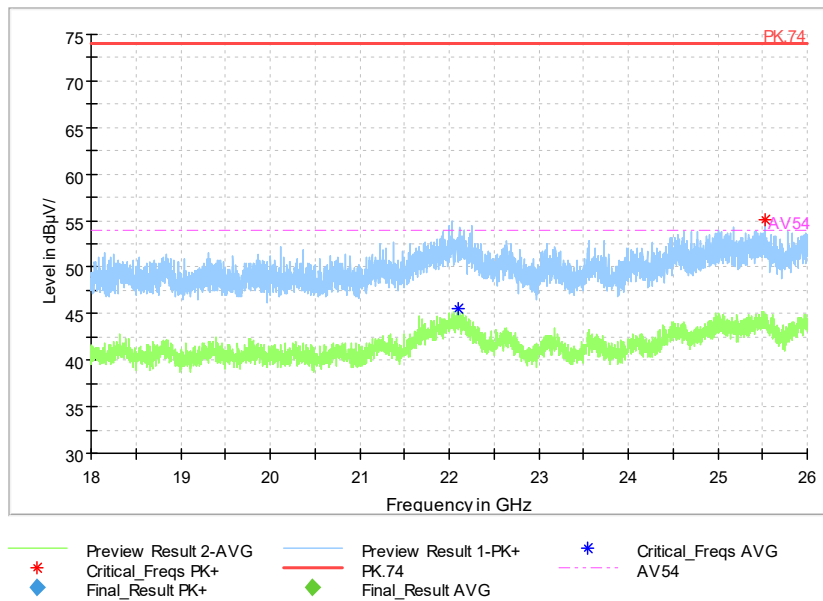
Frequency Range: 3GHz- 6GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum



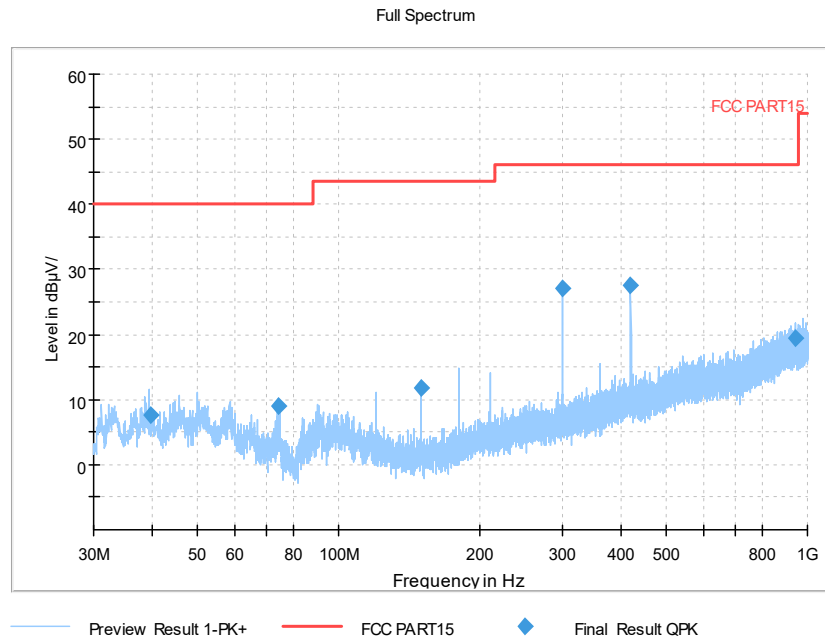
Frequency Range: 6GHz- 18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum

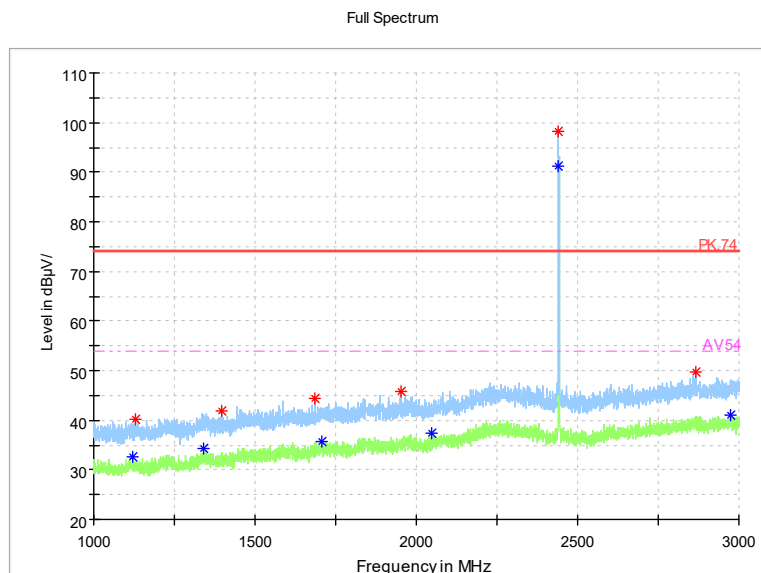


Frequency Range: 18GHz-25GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Channel No.:19

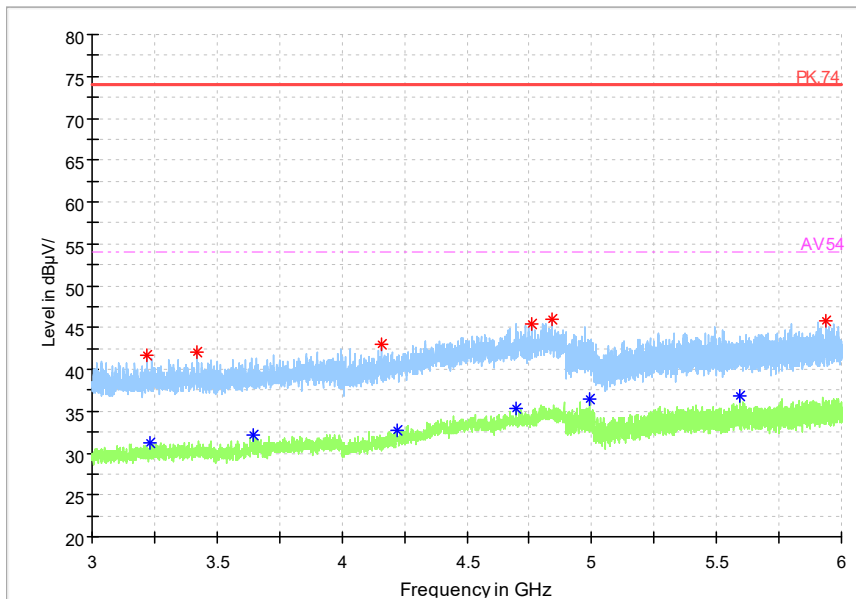


Frequency Range: 30MHz-1000MHz
Detector: QP mode
Modulation type: GFSK (LE CODED S=2)



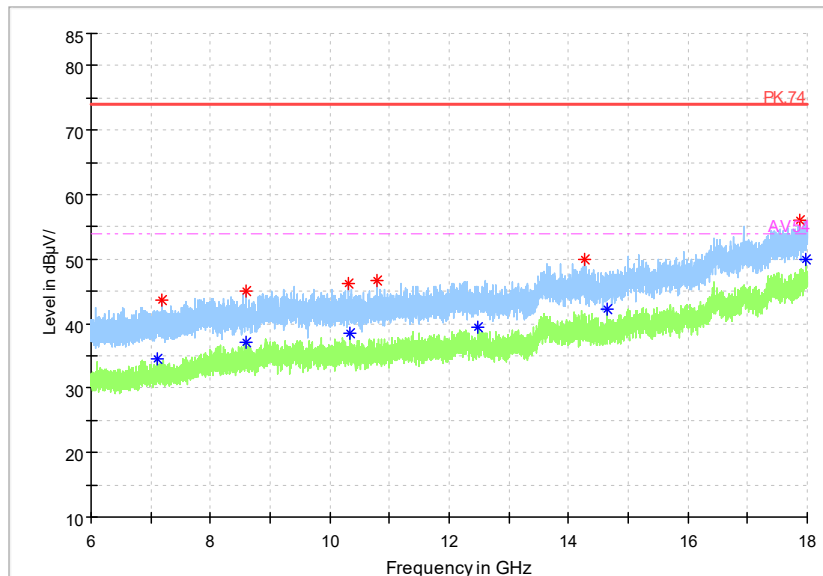
Frequency Range: 1GHz-3GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum



Frequency Range: 3GHz- 6GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum



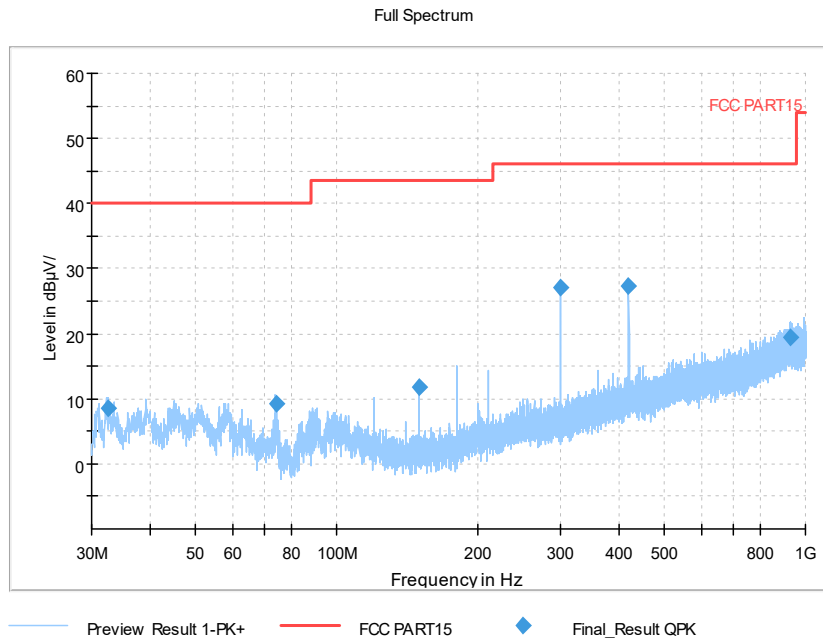
Frequency Range: 3GHz- 18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum

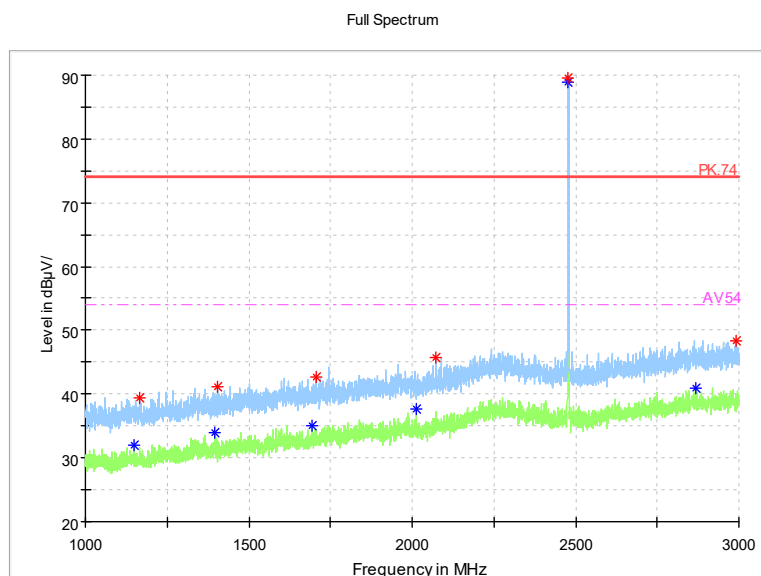


Frequency Range: 18GHz-25GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Channel No.:39

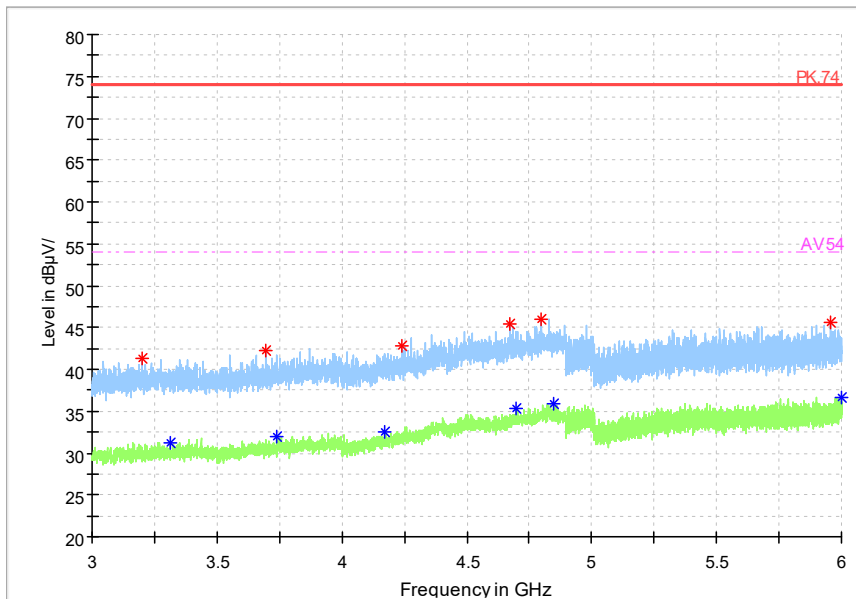


Frequency Range: 30MHz-1000MHz
Detector: QP mode
Modulation type: GFSK (LE CODED S=2)



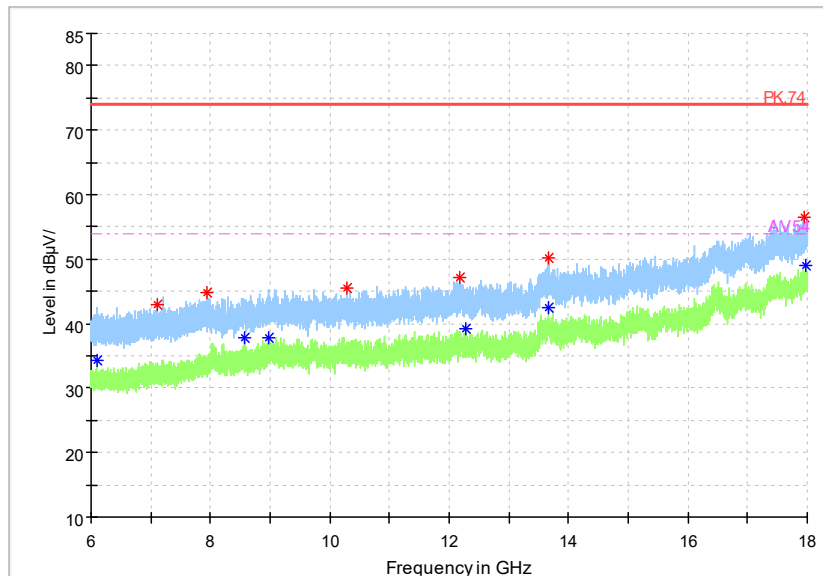
Frequency Range: 1GHz-3GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum



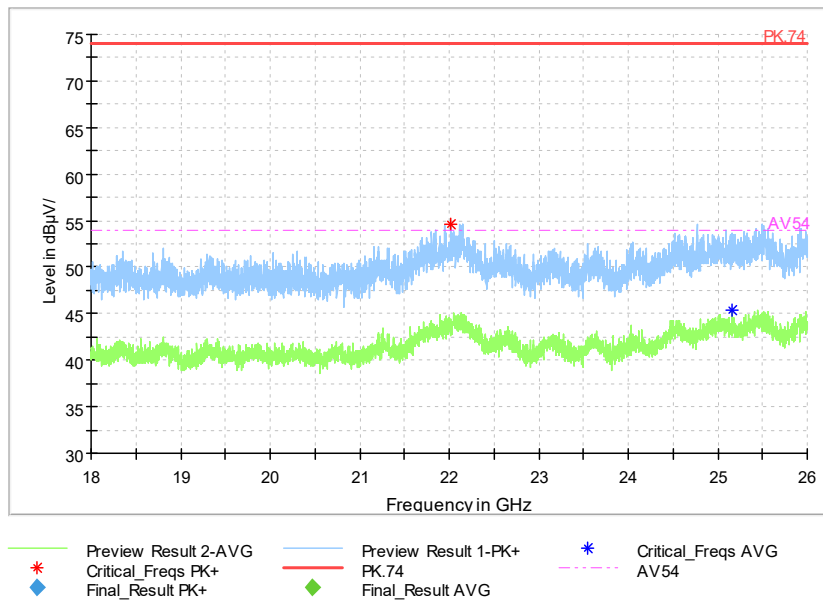
Frequency Range: 3GHz- 6GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum



Frequency Range: 3GHz- 18GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

Full Spectrum



Frequency Range: 18GHz-25GHz
Detector: Av mode and PK mode
Modulation type: GFSK (LE CODED S=2)

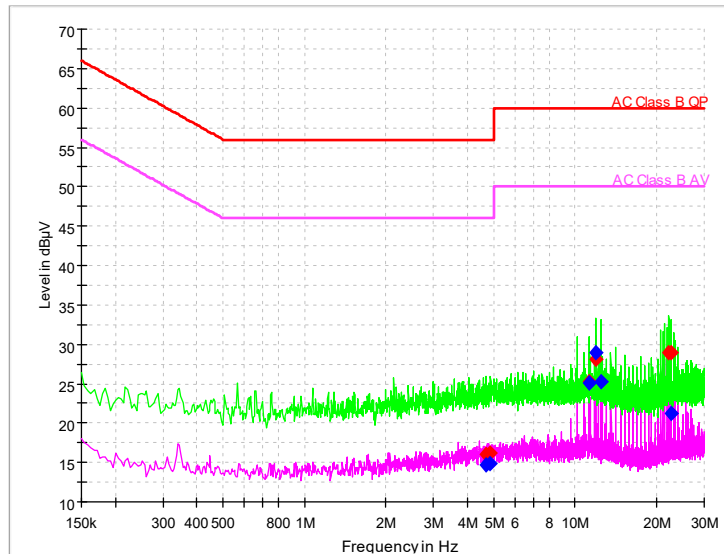
AC Power line Conducted Emission

A "reference path loss" Corr.(dB) is established and the $L_{\text{cable}} + \text{ATT} + \text{VDF}$ is the attenuation of "reference path loss", and including the cable loss, the attenuation of the attenuator, the voltage division factor of AMN.

The measurement results are obtained as described below:

$$P_{\text{result}} = P_{\text{mea}} + \text{Corr. (dB)}$$

Sample calculation: $(14.62 \text{ dB}\mu\text{V}) = (-15.2 \text{ dB}\mu\text{V}) + (29.9 \text{ dB})$, the corresponding frequency is 4.687200MHz.



L+N Line

MEASUREMENT RESULT:

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Line	Corr. (dB)	Pmea QuasiPeak (dBμV)	Pmea Average (dBμV)
4.687200	---	14.62	46.00	31.38	L1	29.9	---	-15.28
4.687200	16.07	---	56.00	39.93	L1	29.9	-13.83	---
4.874829	---	14.78	46.00	31.22	L1	29.9	---	-15.12
4.874829	16.12	---	56.00	39.88	L1	29.9	-13.78	---
11.305371	25.20	---	60.00	34.80	L1	30.0	-4.8	---
11.305371	---	25.14	50.00	24.86	L1	30.0	---	-4.86
11.872521	28.10	---	60.00	31.90	L1	30.0	-1.9	---
11.872521	---	28.96	50.00	21.04	L1	30.0	---	-1.04
12.439671	---	25.22	50.00	24.78	L1	30.0	---	-4.78
22.264586	28.92	---	60.00	31.08	N	30.5	-1.58	---
22.673957	28.86	---	60.00	31.14	L1	30.5	-1.64	---
22.678221	---	21.28	50.00	28.72	L1	30.5	---	-9.22

---End of Test Report---