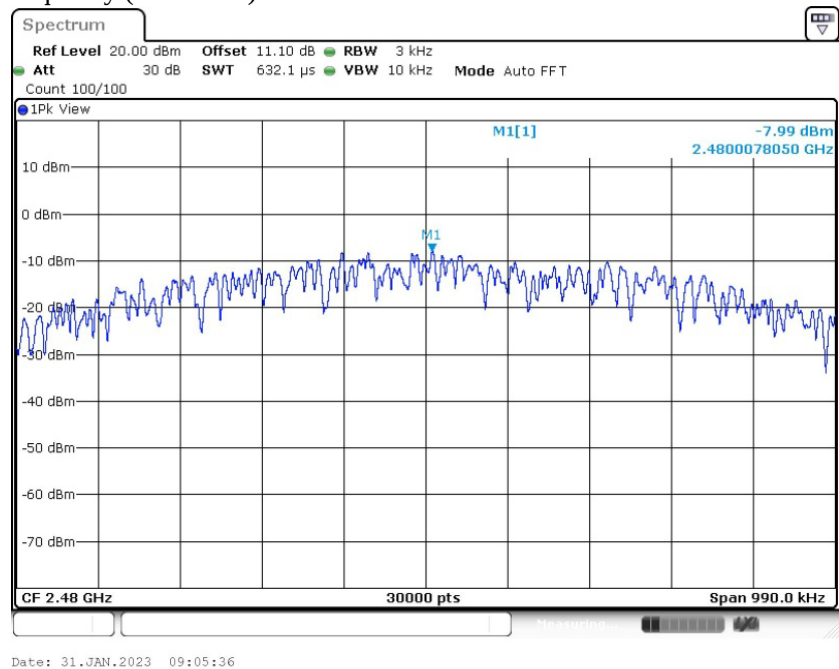
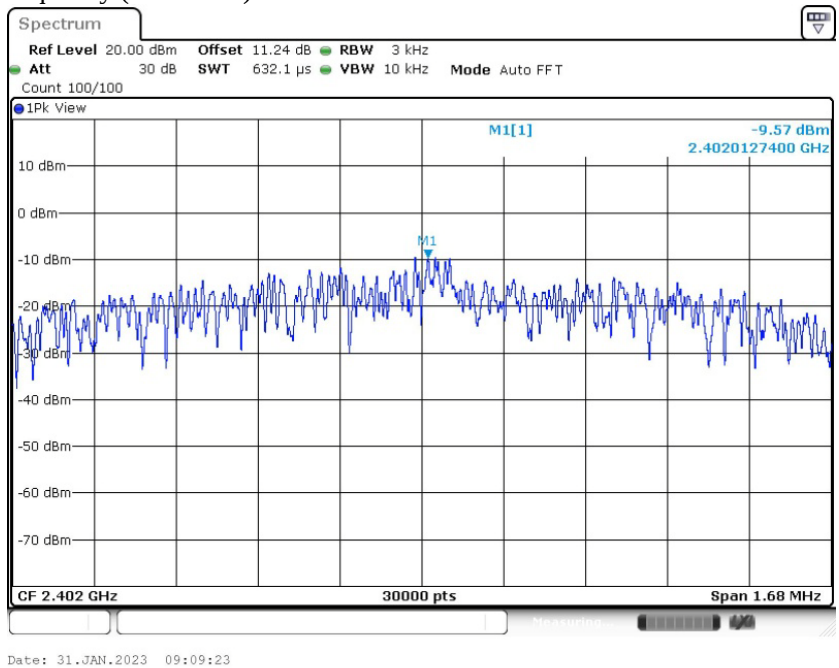


Highest Frequency (2480MHz)

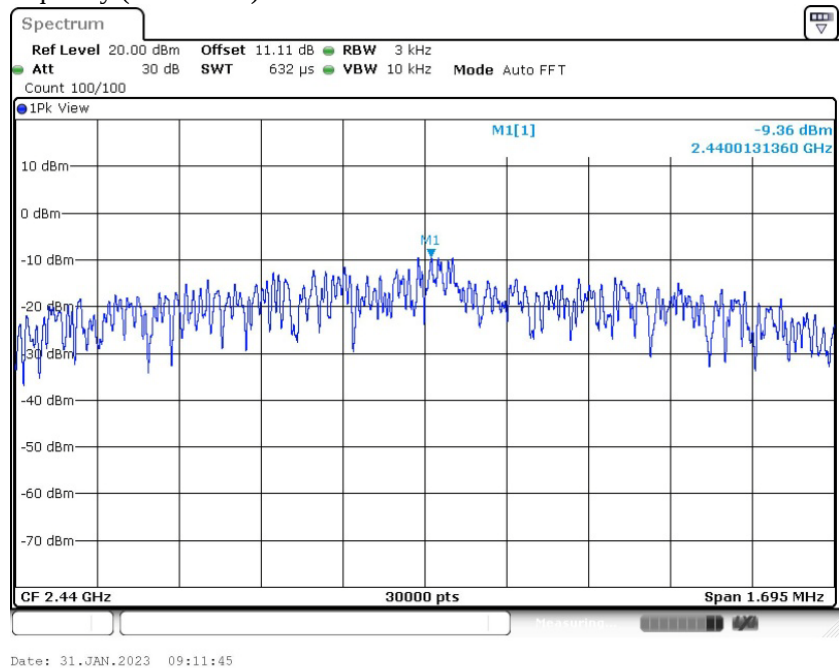


BLE_2M

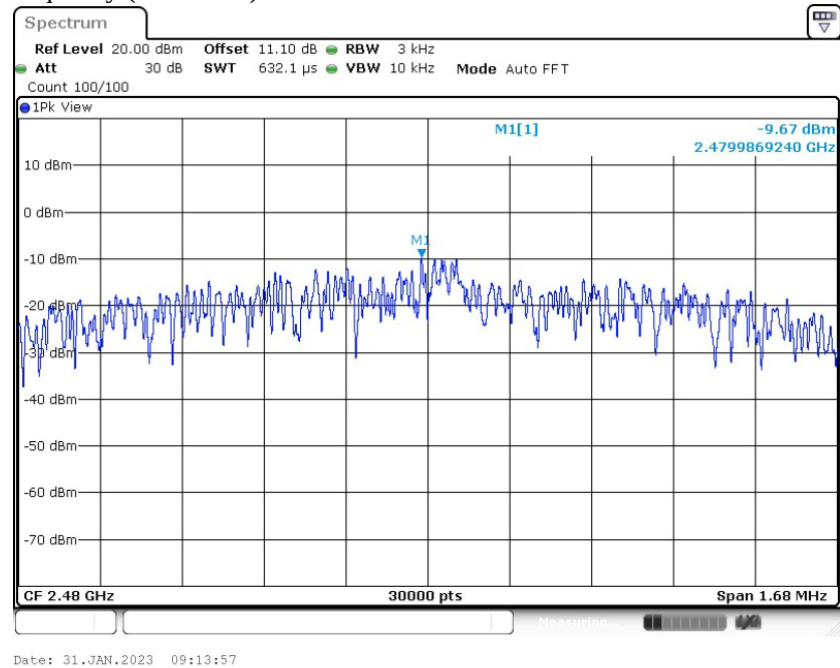
Lowest Frequency (2402MHz)



Middle Frequency (2440 MHz)



Highest Frequency (2480MHz)



10. CONDUCTED BAND EDGES AND SPURIOUS EMISSIONS

10.1 LIMITS

In any 100kHz 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 20dB below that in the 100kHz 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 30dB instead of 20dB.

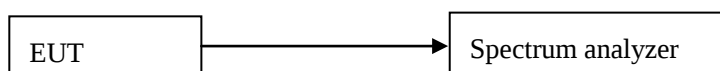
10.2 TEST PROCEDURES

Test procedures follow KDB 558074 D01 15.247 Measurement Guidance v05r02.

Remove the antenna from the EUT and then connect a low attenuation cable from the antenna port to the spectrum.

- 1) Remove the antenna from the EUT and then connect a low attenuation cable from the antenna port to the spectrum.
- 2) Set the spectrum analyzer: RBW =100kHz; VBW =300kHz, Frequency range = 30MHz to 26.5GHz; Sweep = auto; Detector Function = Peak. Trace = Max, hold.
- 3) Measure and record the results in the test report.
- 4) The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

10.3 TEST SETUP



----- The following blanks -----

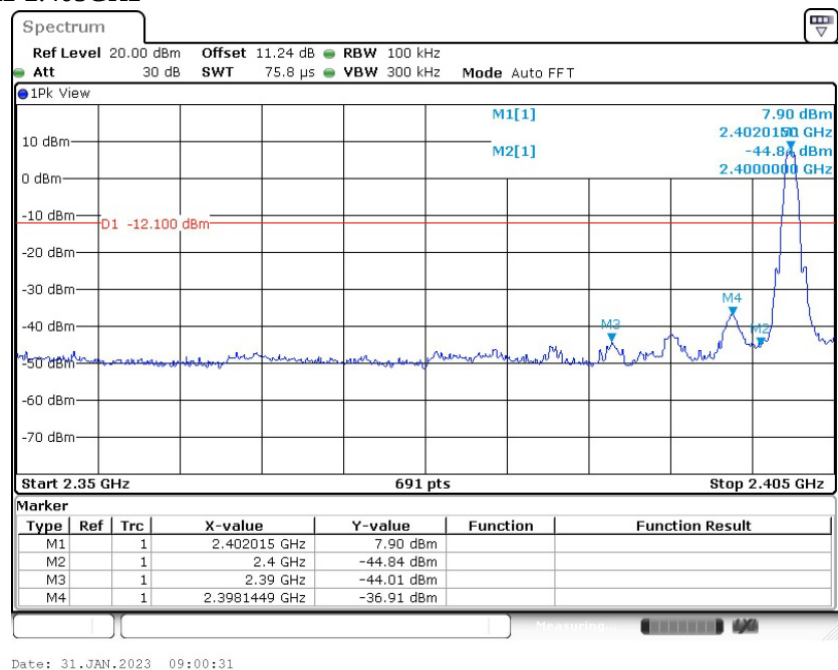
10.4 TEST RESULTS

Environment: 23.8°C/47%RH/101.0kPa
Tested By: Yang Zhaoyun

Voltage: DC 3V
Date: 2023-01-31

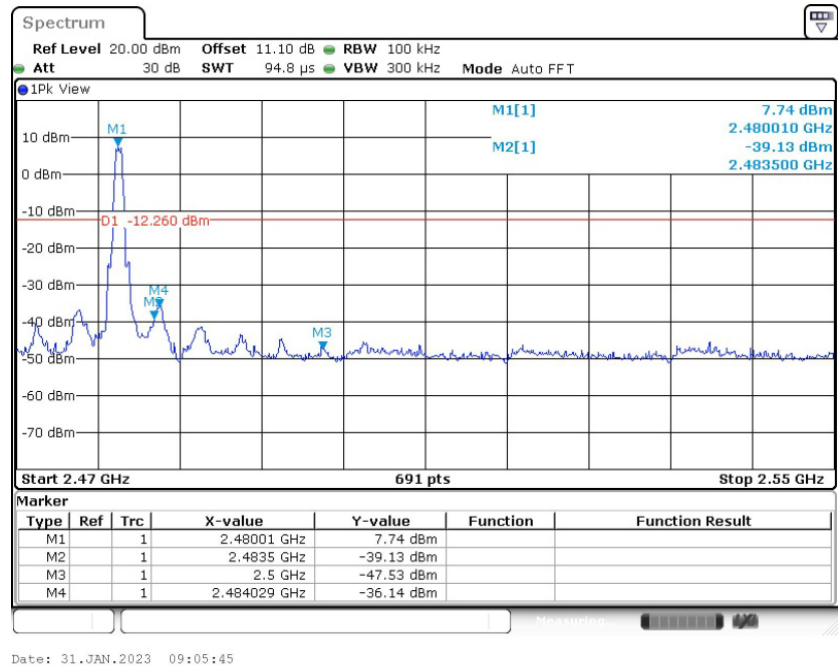
Band edge measurements
BLE_1M

Lowest Frequency (2402MHz)
2.35GHz-2.405GHz



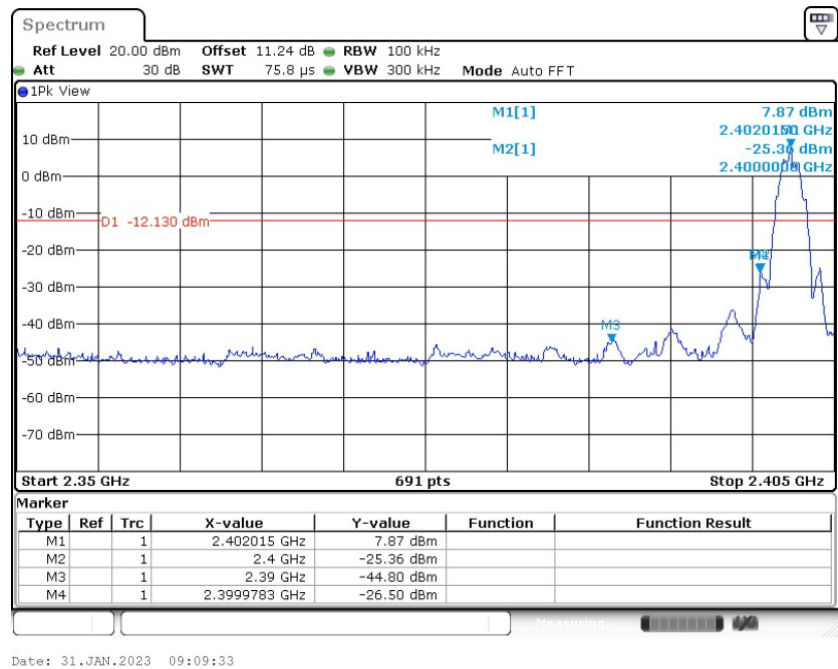
----- The following blanks -----

Highest Frequency (2480MHz)
2.47GHz-2.55GHz

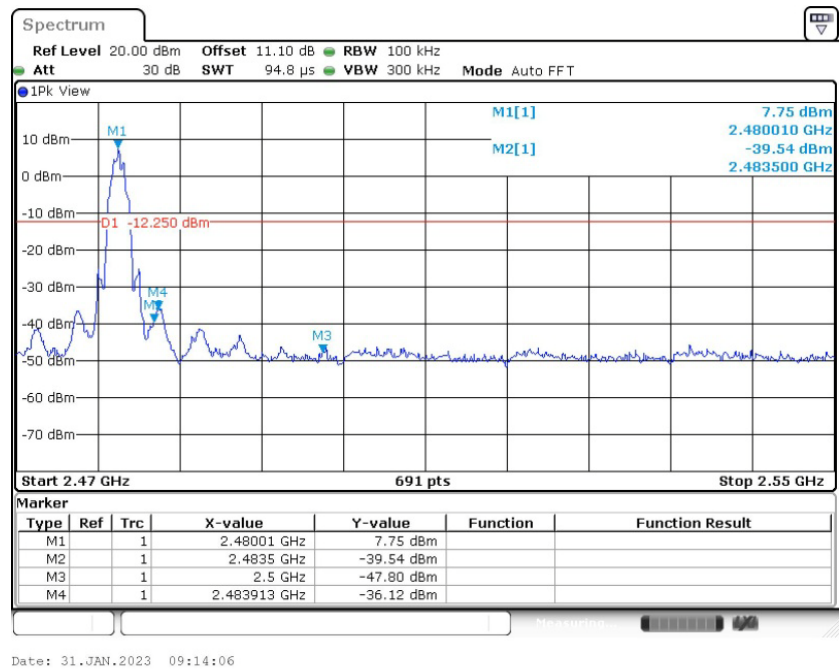


BLE_2M

Lowest Frequency (2402MHz)
2.35GHz-2.405GHz

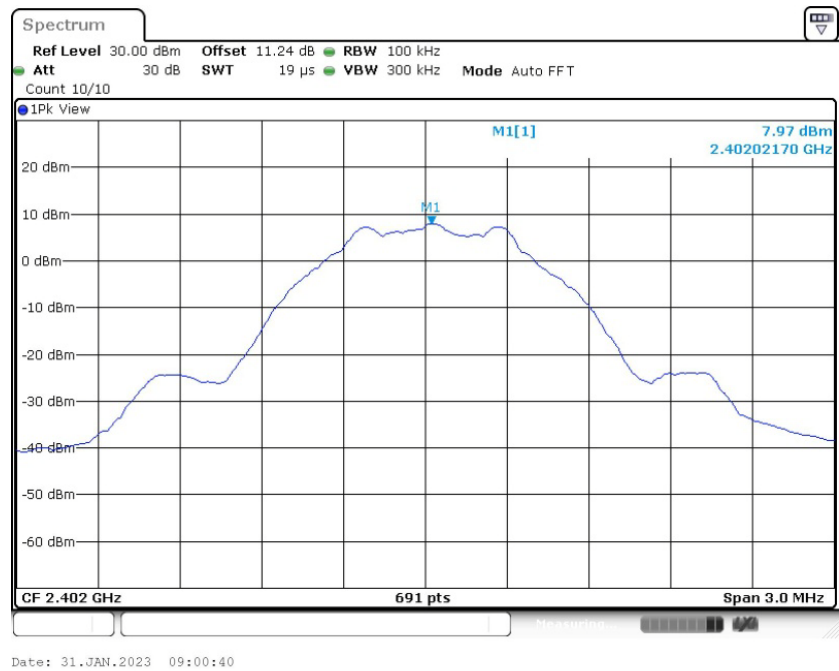


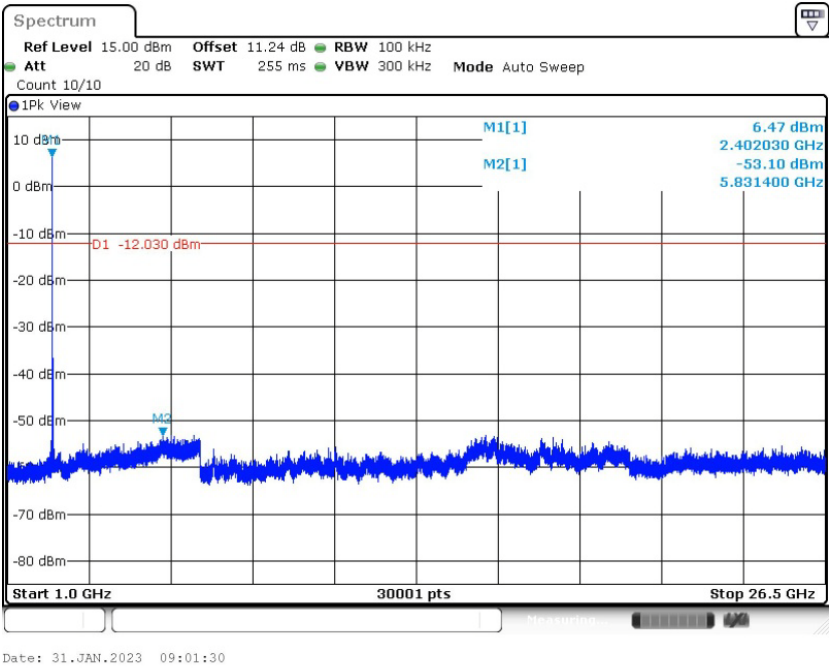
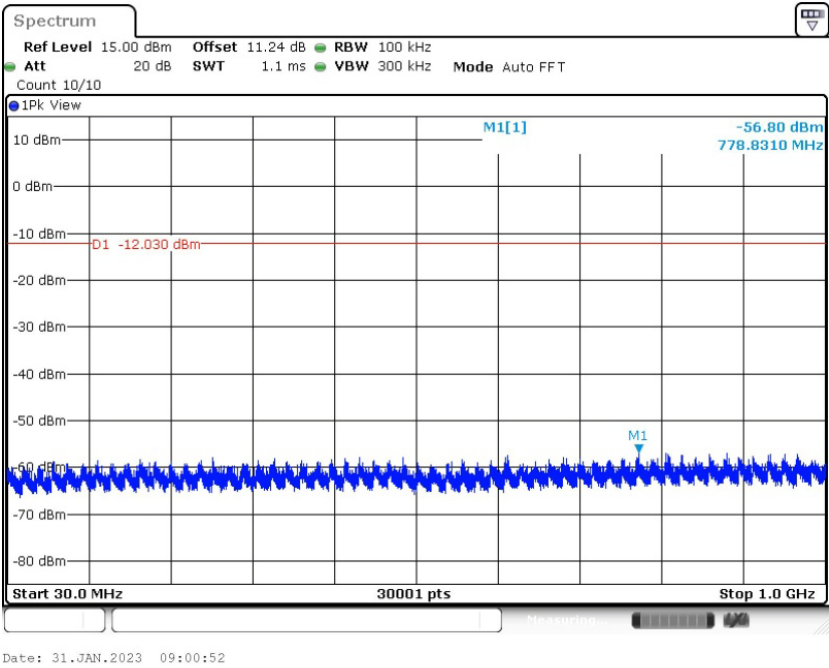
Highest Frequency (2480MHz)
2.47GHz-2.55GHz



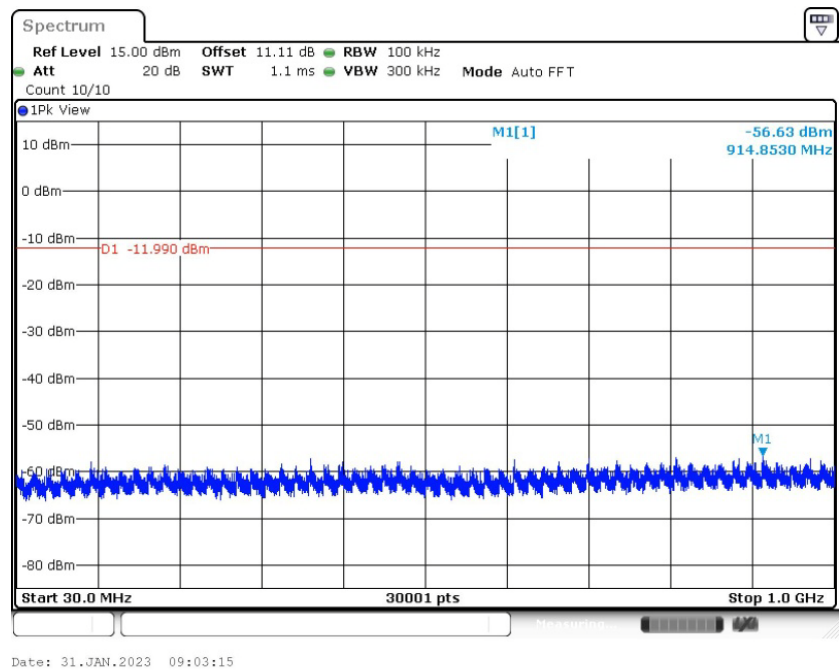
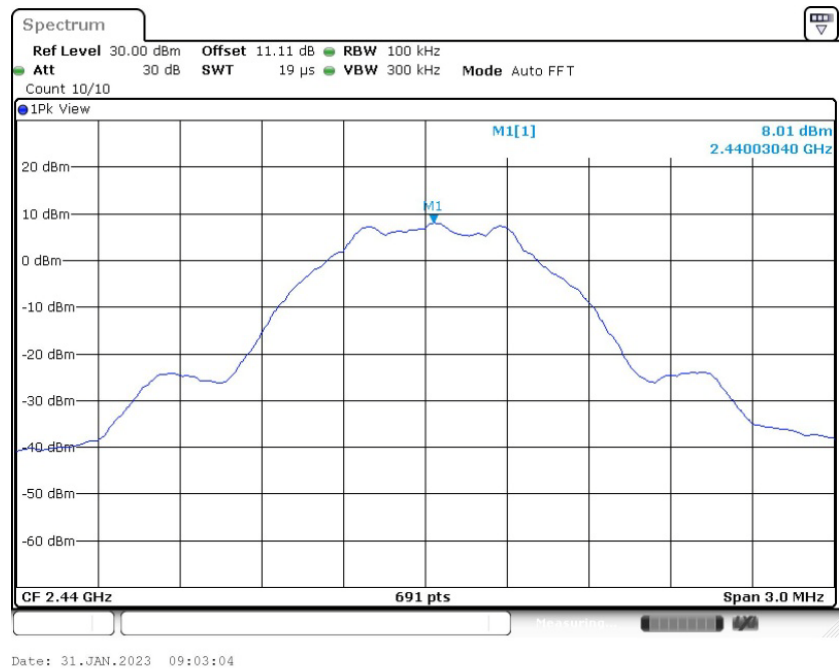
Conducted Spurious Emission
BLE_1M

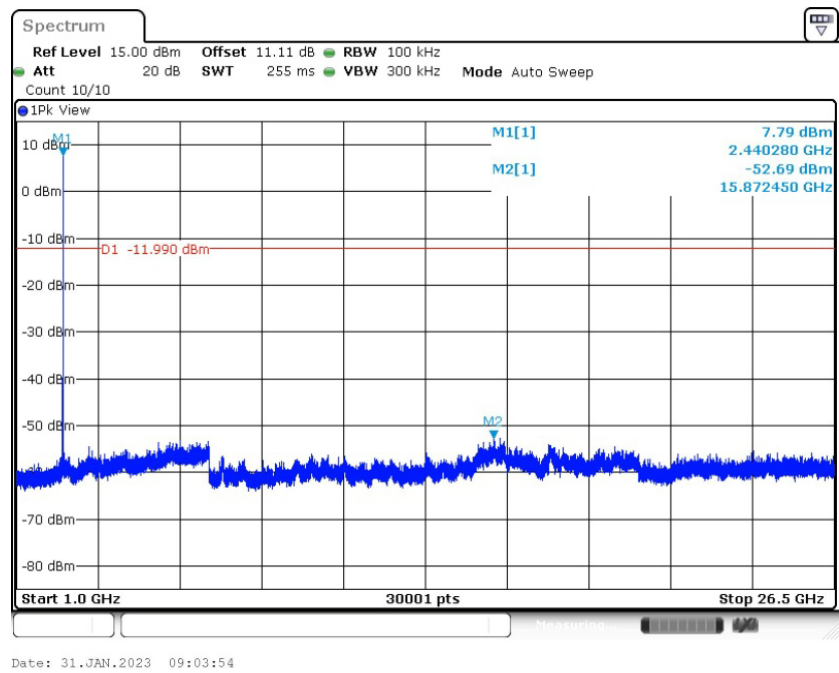
Lowest Frequency (2402MHz)



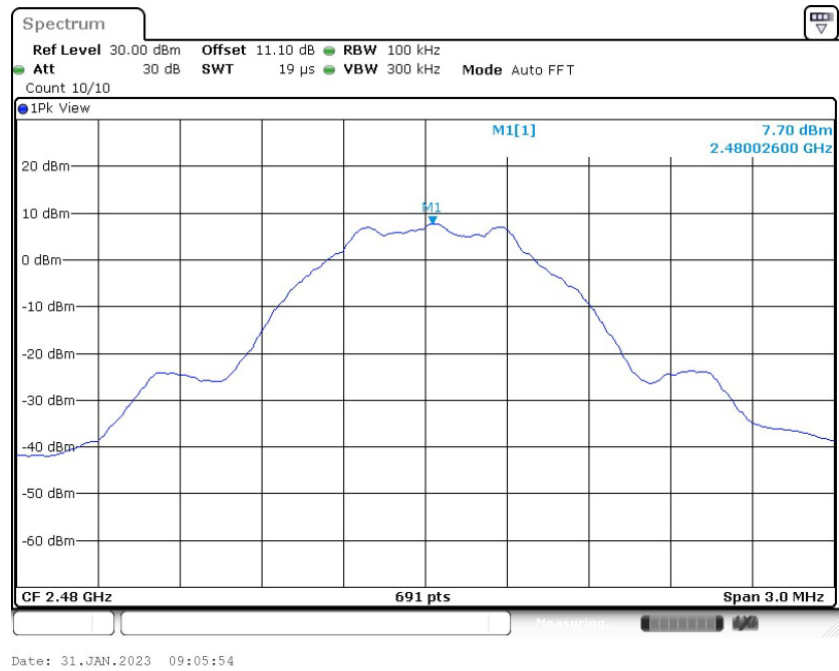


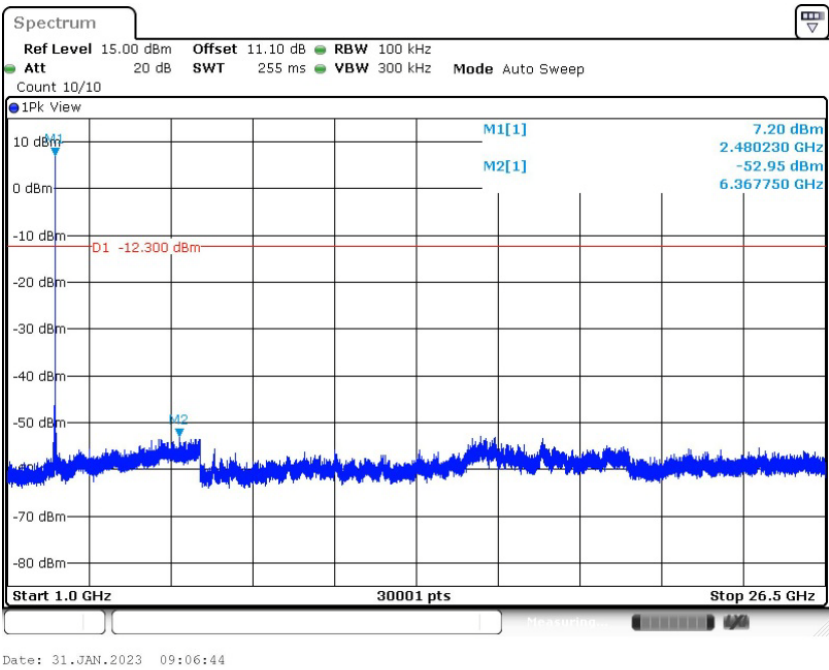
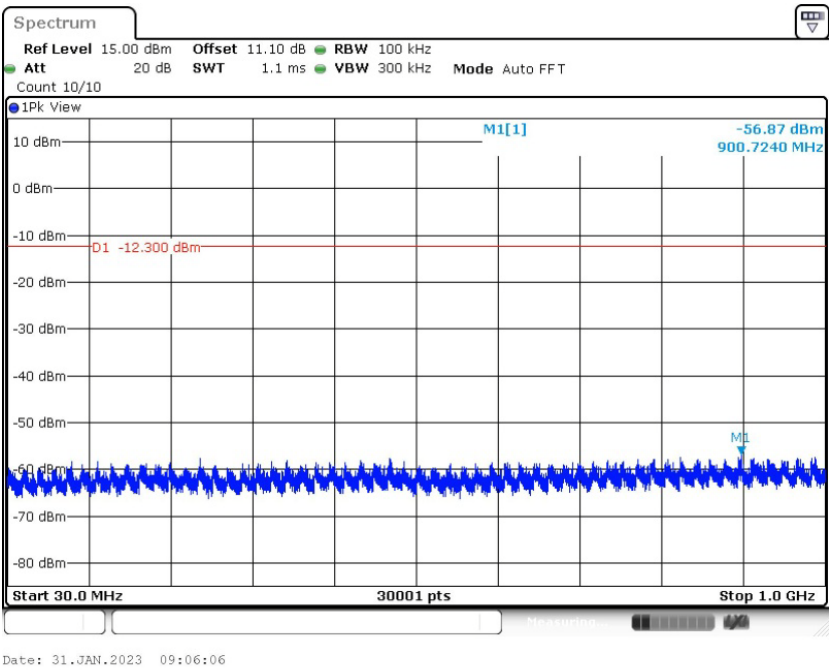
Middle Frequency (2440MHz)





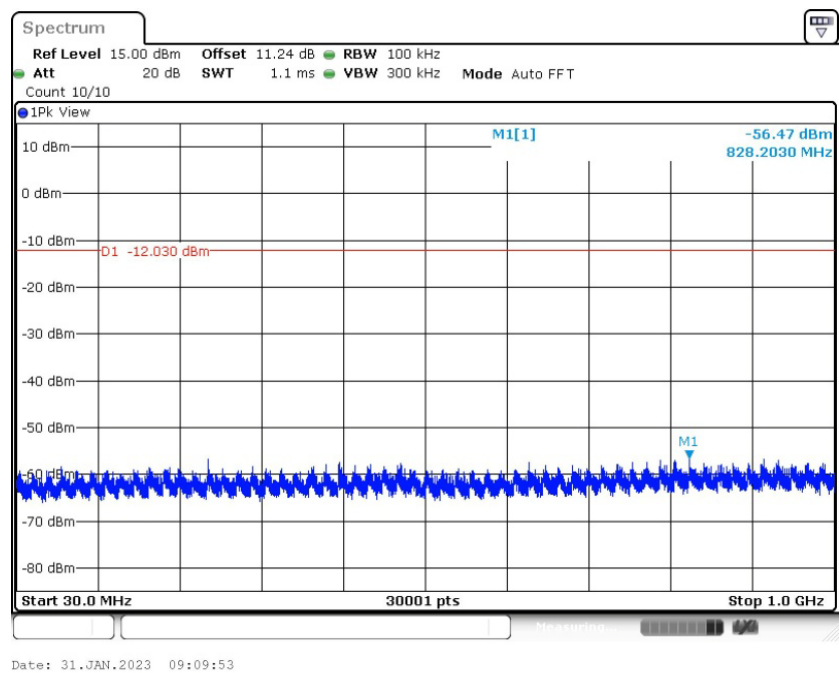
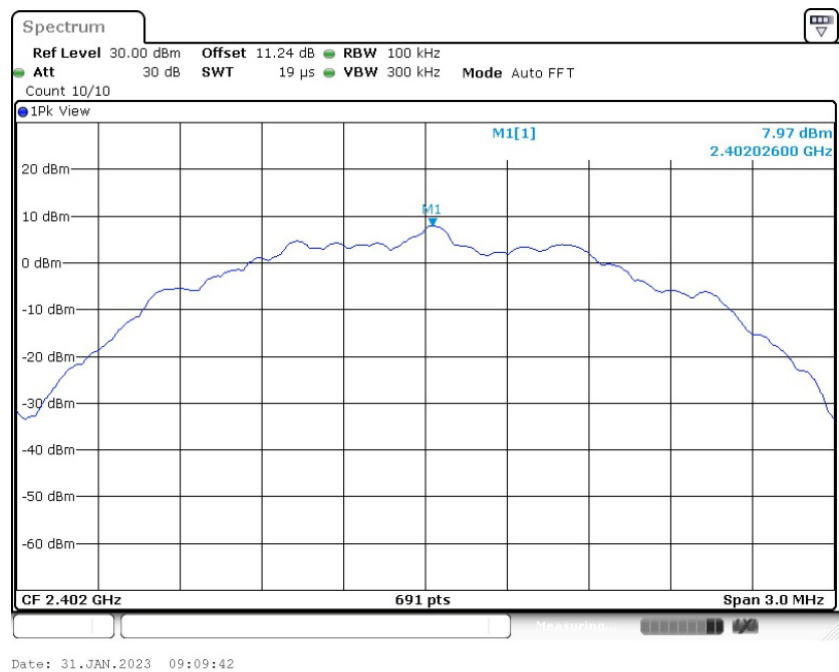
Highest Frequency (2480MHz)

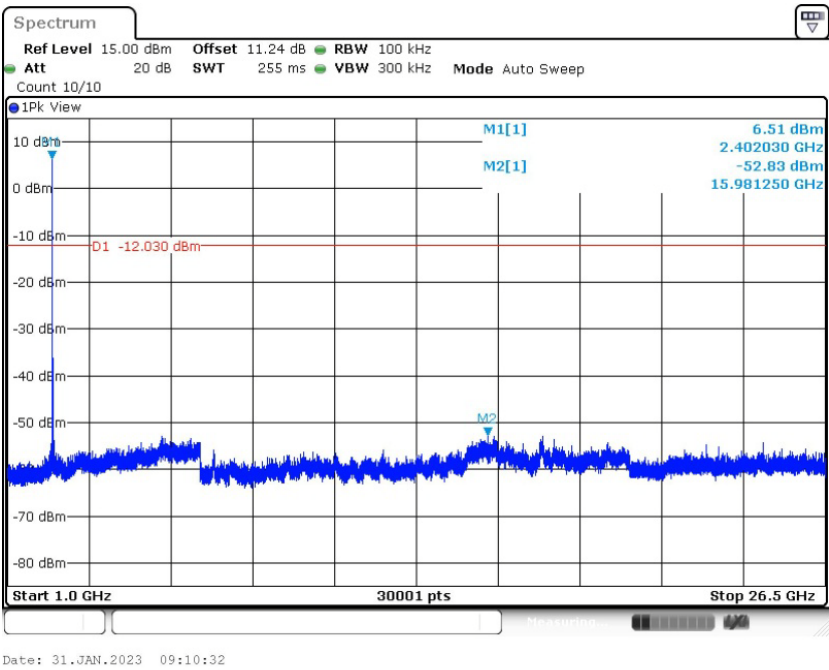




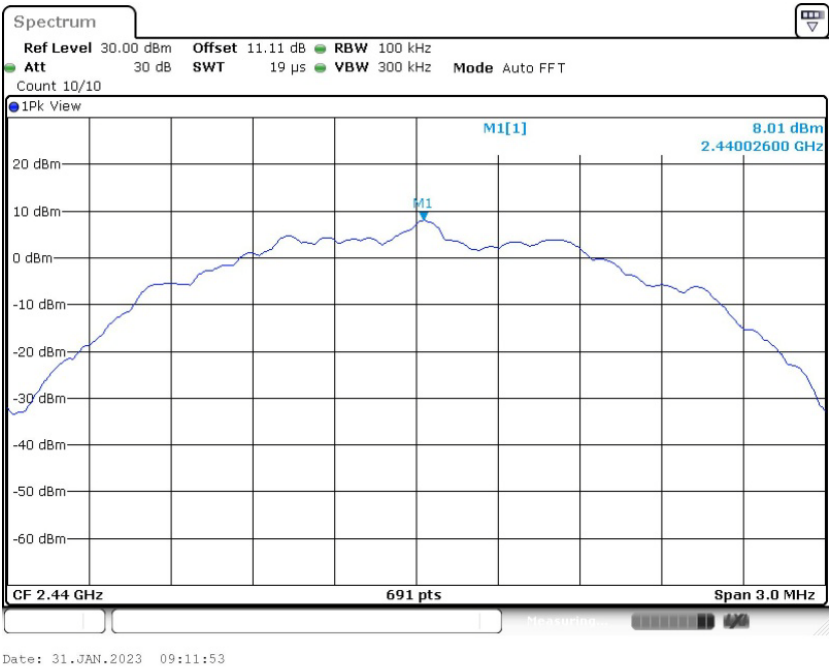
BLE_2M

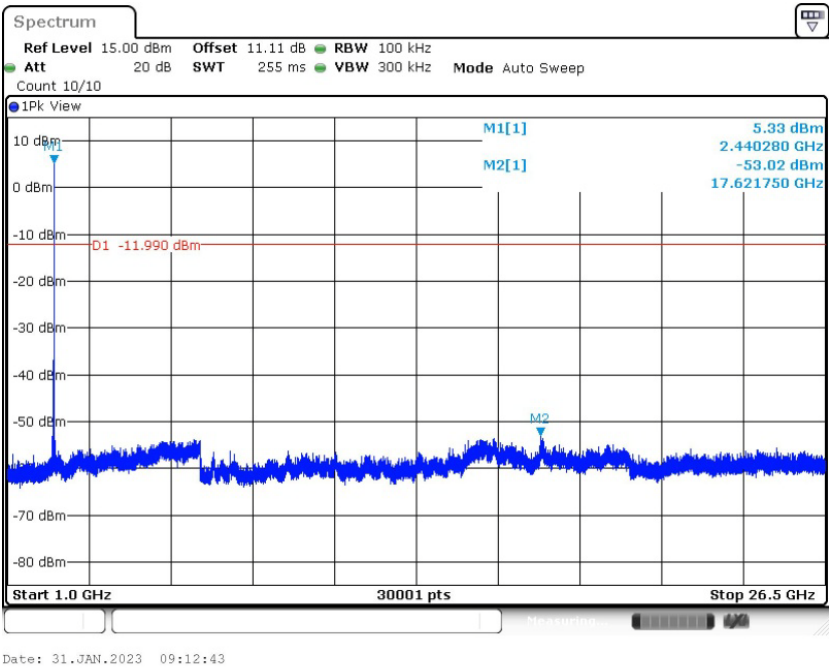
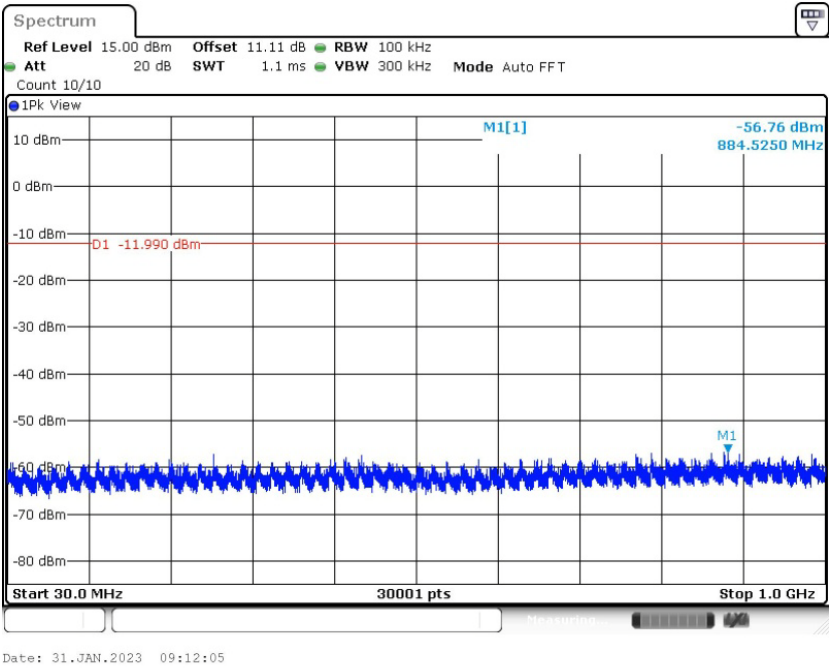
Lowest Frequency (2402MHz)



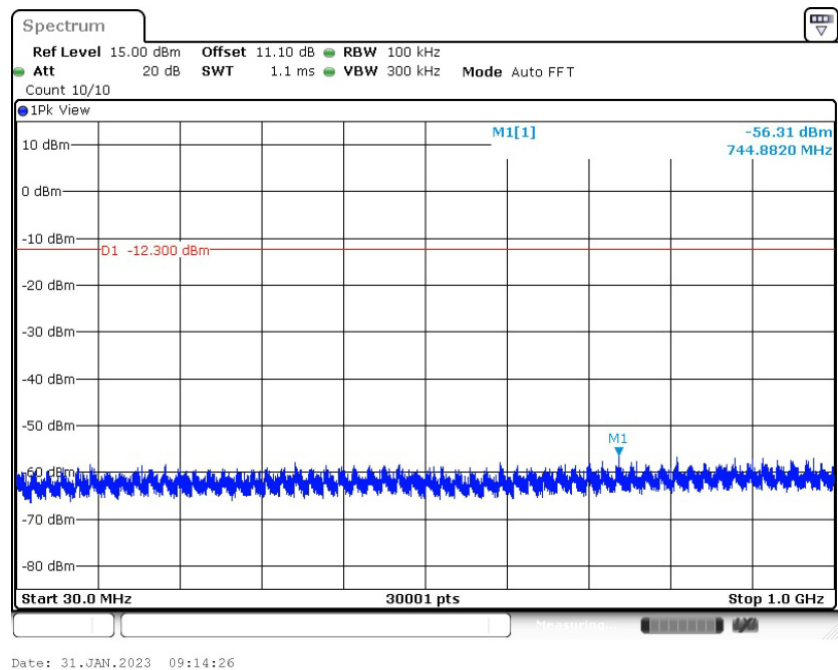
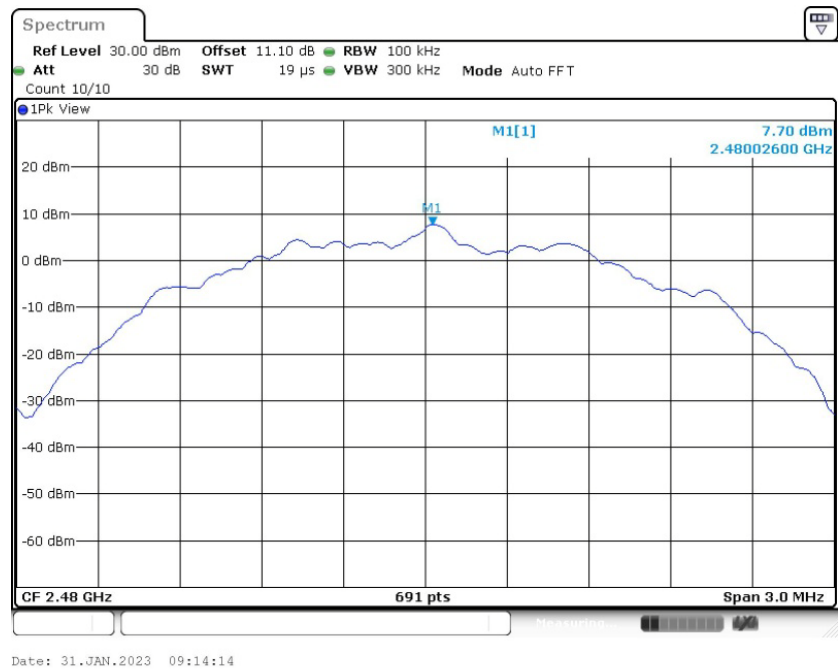


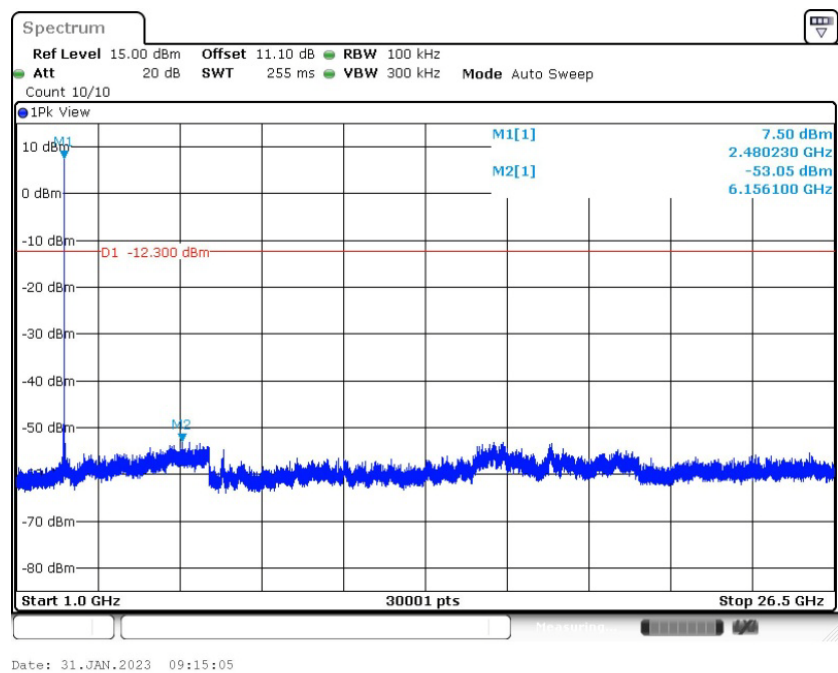
Middle Frequency (2440MHz)





Highest Frequency (2480MHz)





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11. RESTRICTED BANDS OF OPERATION

11.1 LIMITS

Section 15.247(d) 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) (see §15.205(c)).

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	
13.36 - 13.41			

Frequency (MHz)	Quasi-peak(μV/m)	Measurement distance(m)	Quasi-peak(dBμV/m)@distance 3m
0.009-0.490	2400/F(kHz)	300	128.5~93.8
0.490-1.705	24000/F(kHz)	30	73.8~63
1.705-30.0	30	30	69.5
30 ~ 88	100	3	40
88~216	150	3	43.5
216 ~ 960	200	3	46
Above 960	500	3	54

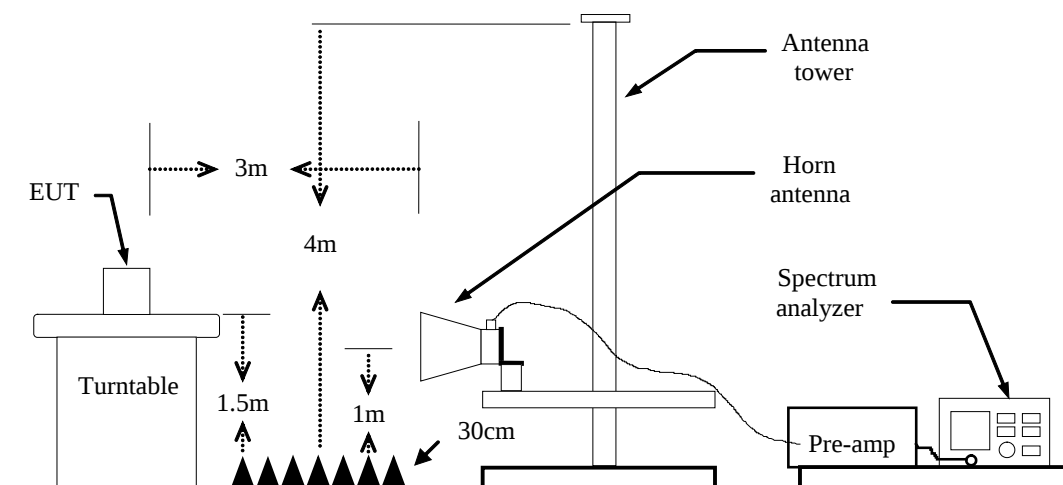
11.2 TEST PROCEDURES

Test procedures follow KDB 558074 D01 15.247 Meas Guidance v05r02.

- 1) The EUT is placed on a turntable, which is 1.5m above the ground plane.
- 2) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3) EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 4) Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - a) PEAK: RBW=1MHz / VBW=1MHz / Sweep=AUTO.
 - b) AVERAGE: RBW=1MHz / VBW=1/T / Sweep=AUTO.

If the EUT is configured to transmit with duty cycle $\geq 98\%$, set $VBW \leq RBW/100$ (i.e., 10kHz) but not less than 10 Hz. If the EUT duty cycle is $< 98\%$, set $VBW \geq 1/T$, Where T is defined in section 2.8.
- 5) Repeat the procedures until all the PEAK and AVERAGE versus polarization are measured.

11.3 TEST SETUP

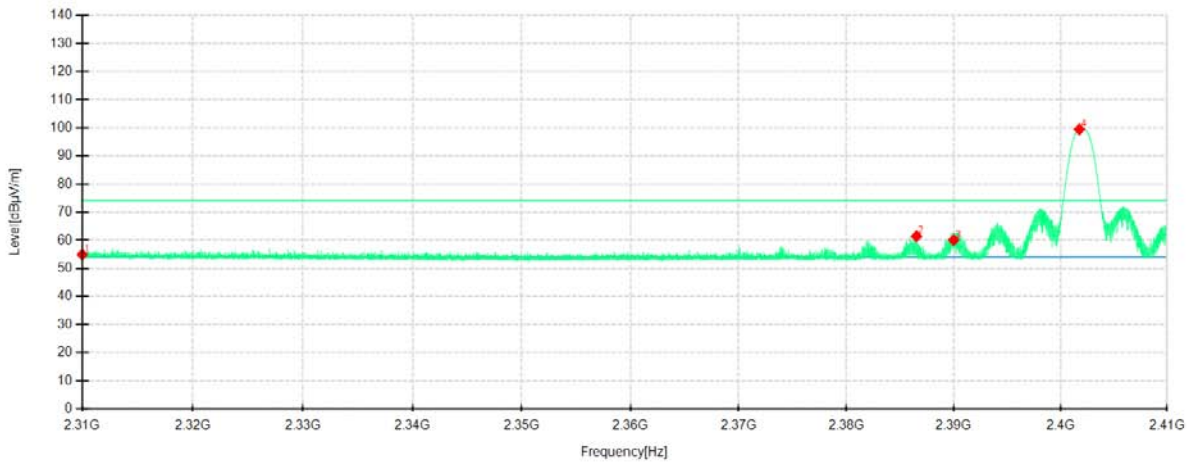


11.4 TEST RESULTS

Equipment:	Door and Window Sensor P2	Test Date	2023-02-02
Model No.:	DW-S02E	Test Engineer:	Huang Lifang
Test Voltage:	DC 3V	Environmental Conditions	25.0°C/60%RH/101.0kPa

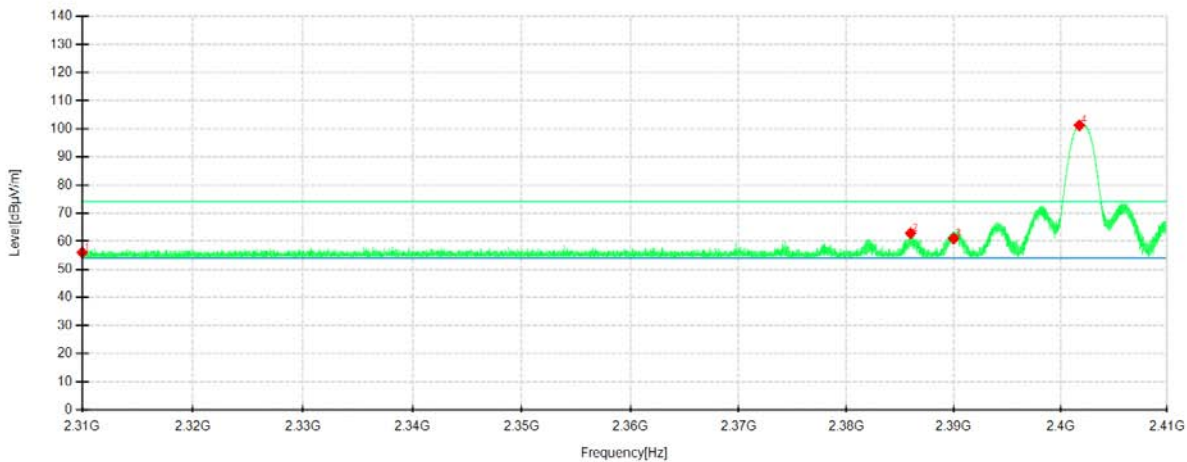
BLE 1M
Lowest Frequency
Frequency 2402MHz
Detector mode: Peak

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310	45.55	54.90	9.35	74.00	19.10	100	38	Horizontal	/
2	2386.5318	52.56	61.46	8.90	74.00	12.54	100	82	Horizontal	/
3	2390	51.19	60.12	8.93	74.00	13.88	100	93	Horizontal	/
4	2401.7661	90.43	99.46	9.03	74.00	-25.46	100	82	Horizontal	No limit
1	2310	46.00	55.93	9.93	74.00	18.07	100	73	Vertical	/
2	2385.9784	52.75	62.83	10.08	74.00	11.17	100	155	Vertical	/
3	2390	50.93	61.00	10.07	74.00	13.00	100	176	Vertical	/
4	2401.7661	91.24	101.24	10.00	74.00	-27.24	100	155	Vertical	No limit

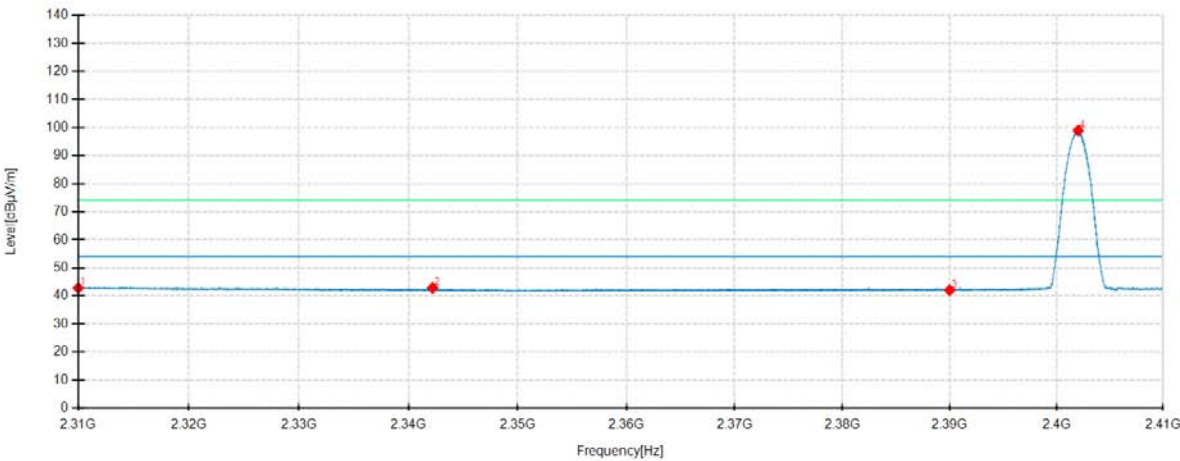
----- The following blanks -----

Lowest Frequency

Frequency 2402MHz

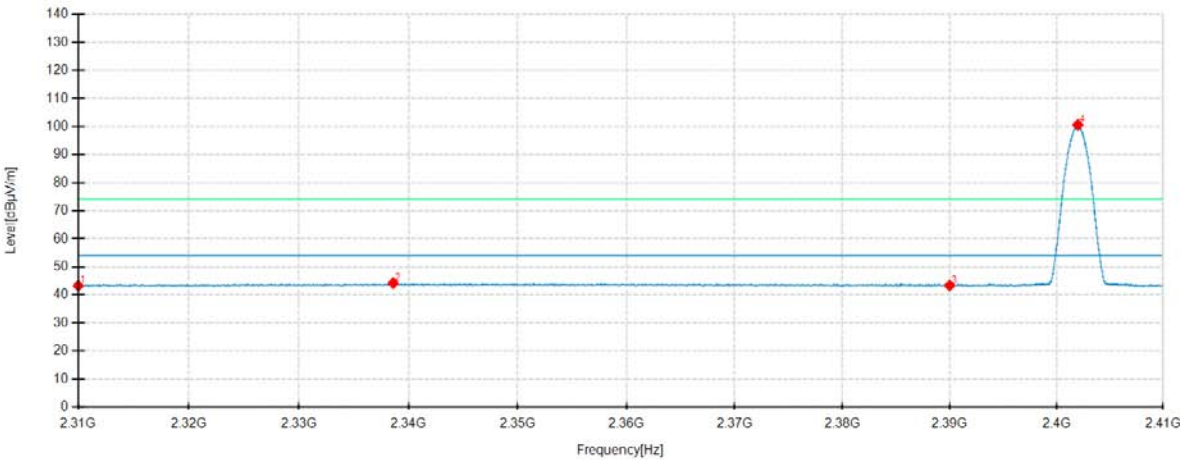
Detector mode: Average

Polarity: Horizontal



Detector mode: Average

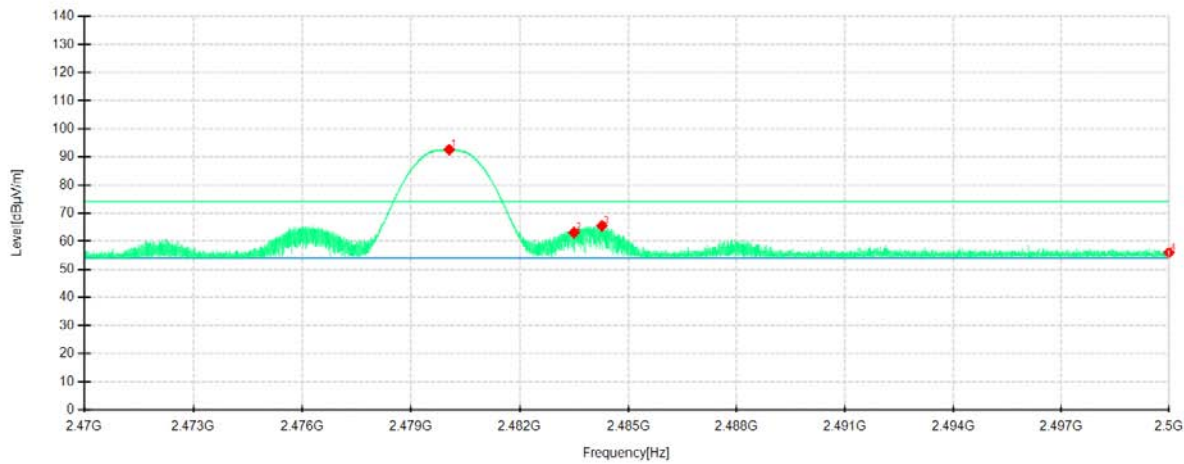
Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310	33.46	42.81	9.35	54.00	11.19	200	312	Horizontal	/
2	2342.2021	34.18	42.86	8.68	54.00	11.14	200	15	Horizontal	/
3	2390	33.13	42.06	8.93	54.00	11.94	100	232	Horizontal	/
4	2402.0328	89.92	98.96	9.04	54.00	-44.96	100	87	Horizontal	No limit
1	2310	33.36	43.29	9.93	54.00	10.71	100	25	Vertical	/
2	2338.6019	34.08	44.22	10.14	54.00	9.78	200	264	Vertical	/
3	2390	33.28	43.35	10.07	54.00	10.65	100	218	Vertical	/
4	2401.9995	90.59	100.58	9.99	54.00	-46.58	100	161	Vertical	No limit

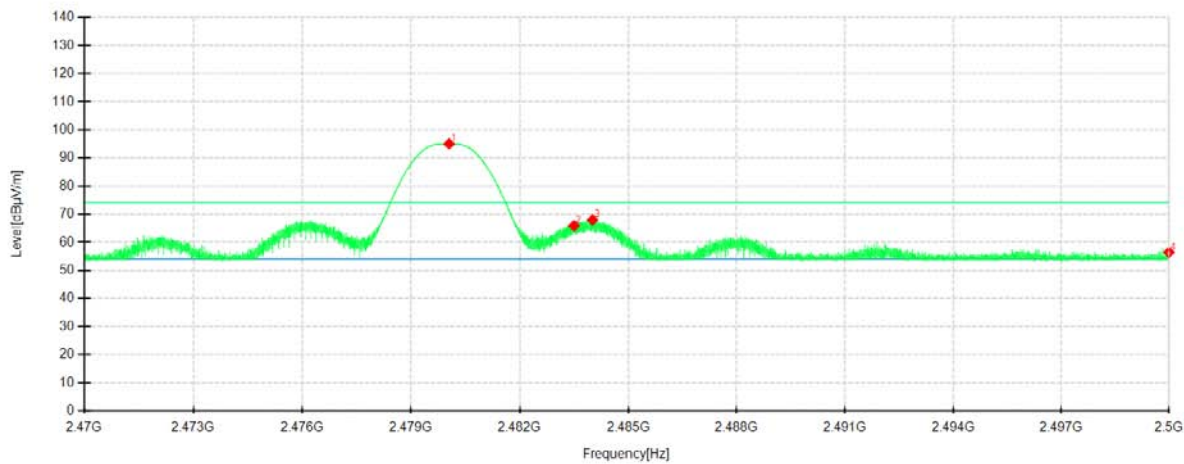
Highest Frequency
Frequency 2480MHz
Detector mode: Peak

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



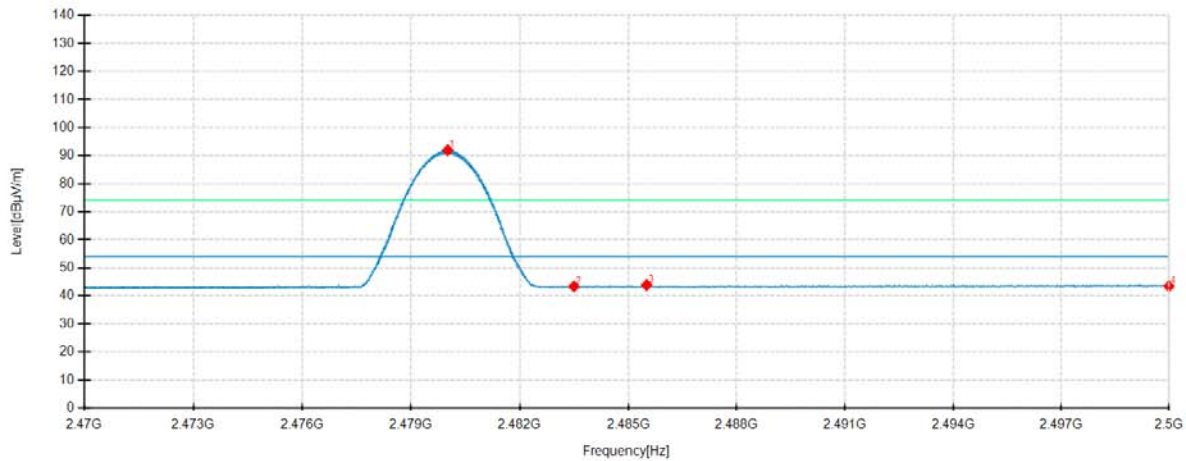
No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2480.0547	82.73	92.58	9.85	74.00	-18.58	100	45	Horizontal	No limit
2	2483.5	53.15	63.07	9.92	74.00	10.93	100	67	Horizontal	/
3	2484.273	55.52	65.45	9.93	74.00	8.55	100	34	Horizontal	/
4	2500	45.66	55.91	10.25	74.00	18.09	100	343	Horizontal	/
1	2480.0507	85.77	95.04	9.27	74.00	-21.04	100	220	Vertical	No limit
2	2483.5	56.58	65.86	9.28	74.00	8.14	100	220	Vertical	/
3	2484.0109	58.66	67.94	9.28	74.00	6.06	100	220	Vertical	/
4	2500	47.08	56.43	9.35	74.00	17.57	100	220	Vertical	/

Highest Frequency

Frequency 2480MHz

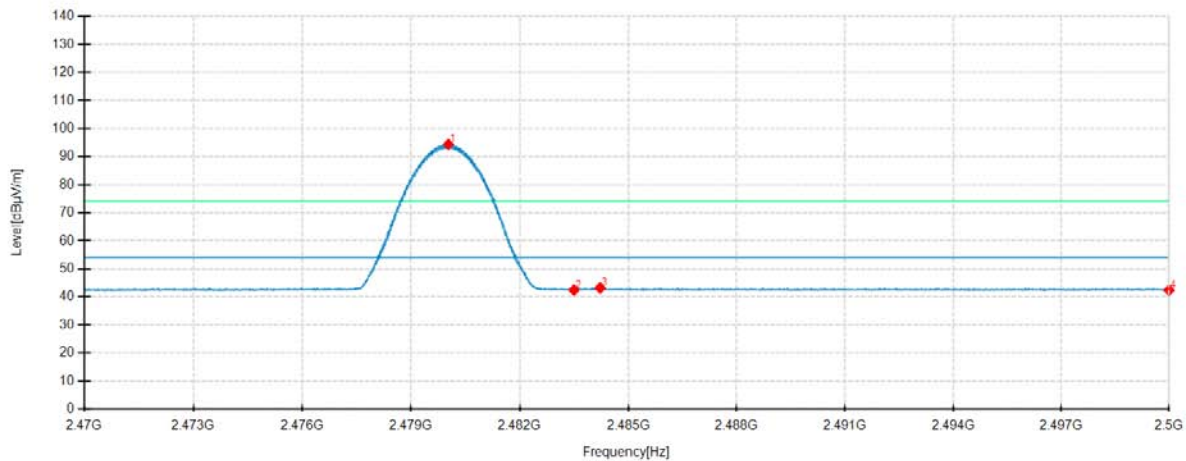
Detector mode: Average

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



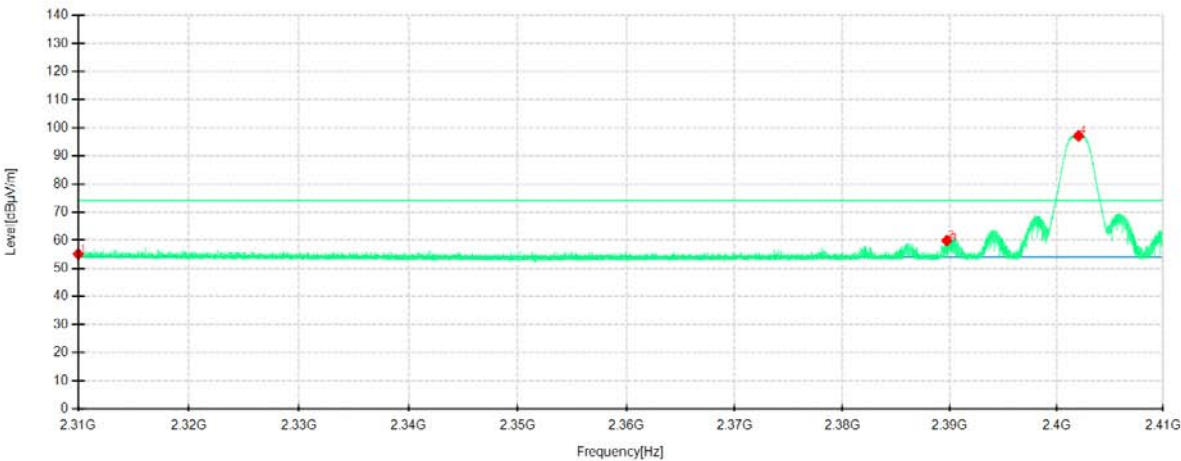
No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2480.0147	82.06	91.91	9.85	54.00	-37.91	100	49	Horizontal	No limit
2	2483.5	33.47	43.39	9.92	54.00	10.61	200	344	Horizontal	/
3	2485.507	33.91	43.87	9.96	54.00	10.13	100	261	Horizontal	/
4	2500	33.20	43.45	10.25	54.00	10.55	200	2	Horizontal	/
1	2480.0327	85.13	94.40	9.27	54.00	-40.40	100	226	Vertical	No limit
2	2483.5	33.17	42.45	9.28	54.00	11.55	200	291	Vertical	/
3	2484.2229	33.92	43.20	9.28	54.00	10.80	100	180	Vertical	/
4	2500	33.07	42.42	9.35	54.00	11.58	200	202	Vertical	/

Remark: Max field strength in 3m distance. No any other emission which falls in restricted bands can be detected and be reported.

Equipment:	Door and Window Sensor P2	Test Date	2023-02-02
Model No.:	DW-S02E	Test Engineer:	Huang Lifang
Test Voltage:	DC 3V	Environmental Conditions	25.0°C/60%RH/101.0kPa

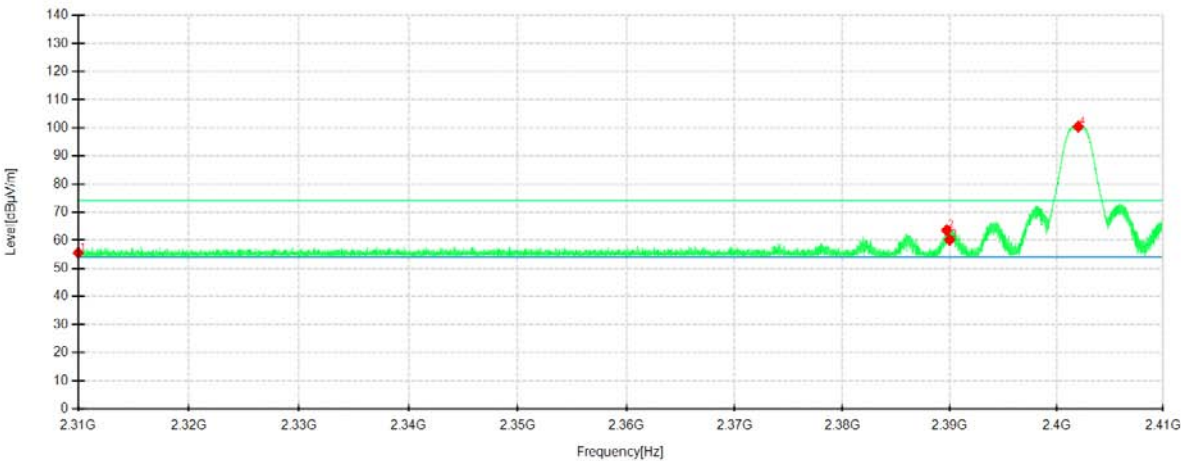
BLE 2M
Lowest Frequency
Frequency 2402MHz
Detector mode: Peak

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310	45.70	55.05	9.35	74.00	18.95	200	90	Horizontal	/
2	2389.732	51.00	59.93	8.93	74.00	14.07	100	70	Horizontal	/
3	2390	49.99	58.92	8.93	74.00	15.08	100	81	Horizontal	/
4	2402.0661	88.14	97.18	9.04	74.00	-23.18	100	70	Horizontal	No limit
1	2310	45.57	55.50	9.93	74.00	18.50	100	171	Vertical	/
2	2389.7186	53.49	63.56	10.07	74.00	10.44	100	249	Vertical	/
3	2390	50.11	60.18	10.07	74.00	13.82	200	211	Vertical	/
4	2402.0328	90.43	100.42	9.99	74.00	-26.42	100	238	Vertical	No limit

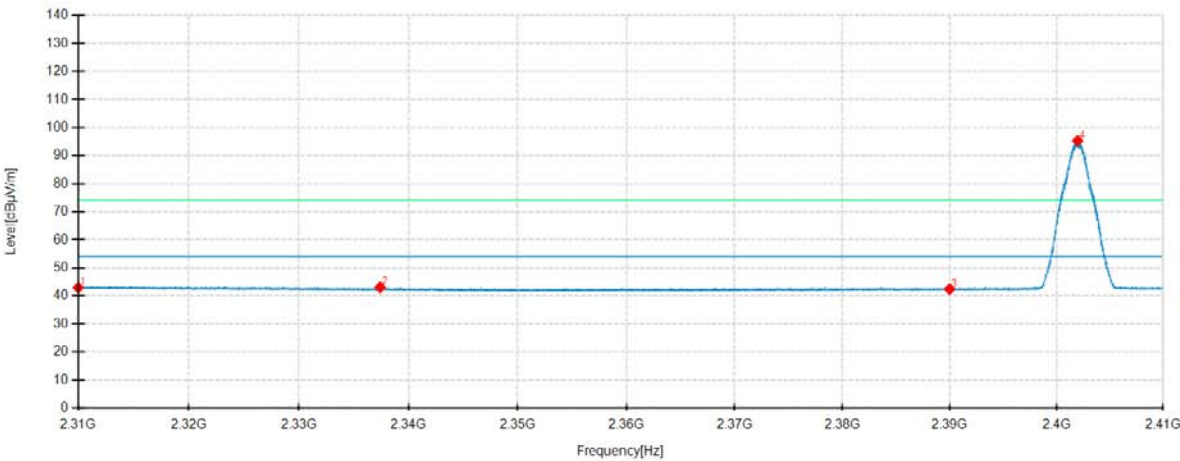
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Lowest Frequency

Frequency 2402MHz

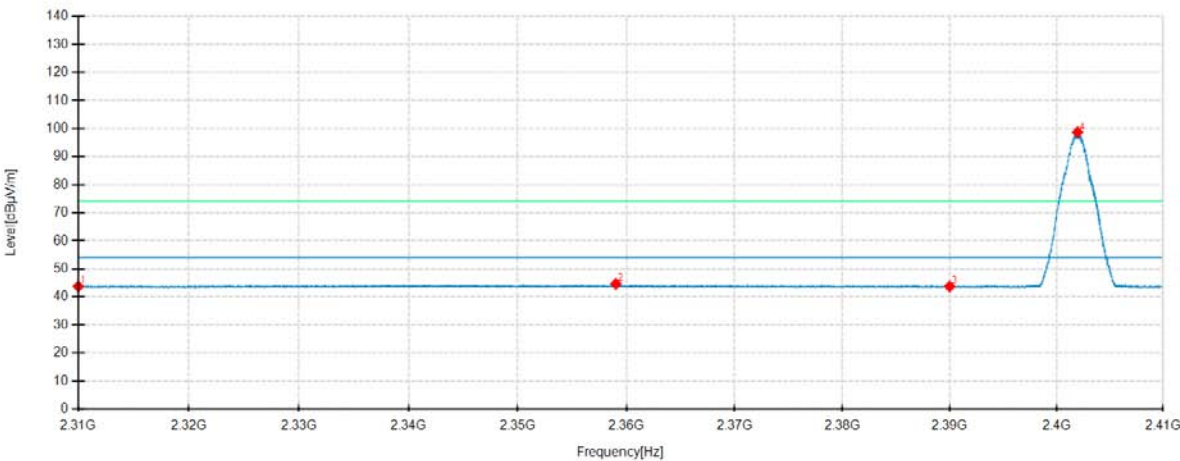
Detector mode: Average

Polarity: Horizontal



Detector mode: Average

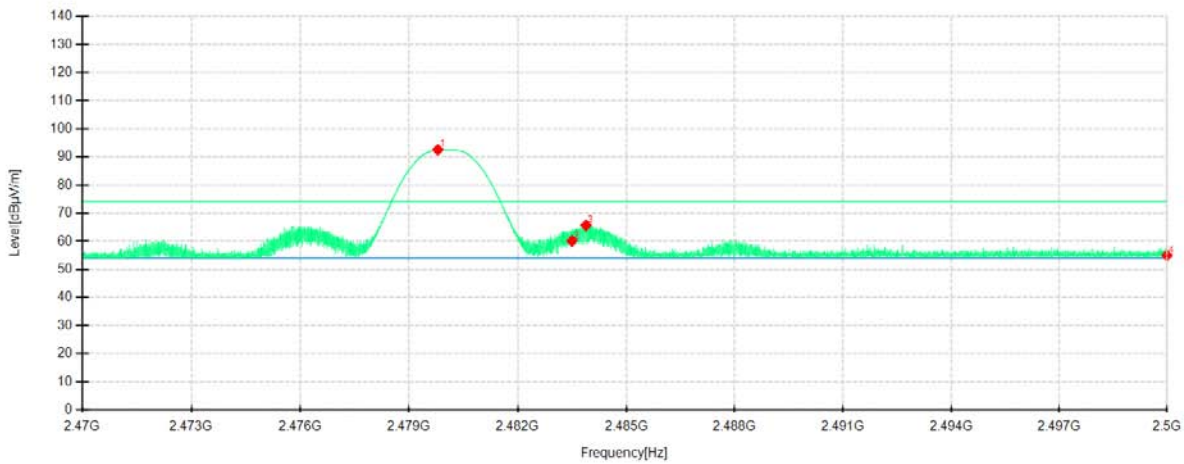
Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310	33.61	42.96	9.35	54.00	11.04	200	146	Horizontal	/
2	2337.4085	34.32	43.10	8.78	54.00	10.90	100	70	Horizontal	/
3	2390	33.50	42.43	8.93	54.00	11.57	200	46	Horizontal	/
4	2401.9795	86.32	95.36	9.04	54.00	-41.36	100	70	Horizontal	No limit
1	2310	33.81	43.74	9.93	54.00	10.26	100	104	Vertical	/
2	2359.0299	34.44	44.63	10.19	54.00	9.37	100	303	Vertical	/
3	2390	33.66	43.73	10.07	54.00	10.27	200	177	Vertical	/
4	2401.9728	88.70	98.69	9.99	54.00	-44.69	100	227	Vertical	No limit

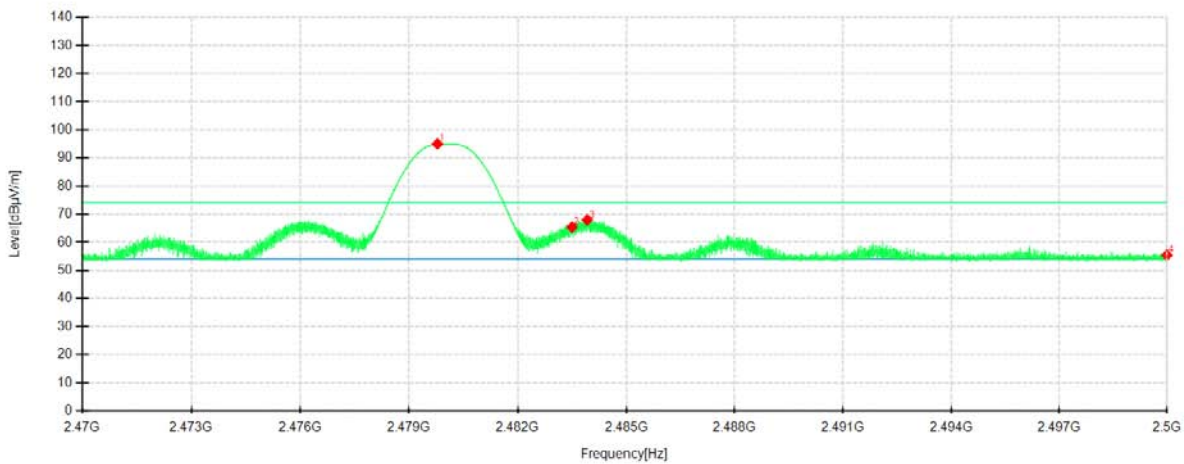
Highest Frequency
Frequency 2480MHz
Detector mode: Peak

Polarity: Horizontal



Detector mode: Peak

Polarity: Vertical



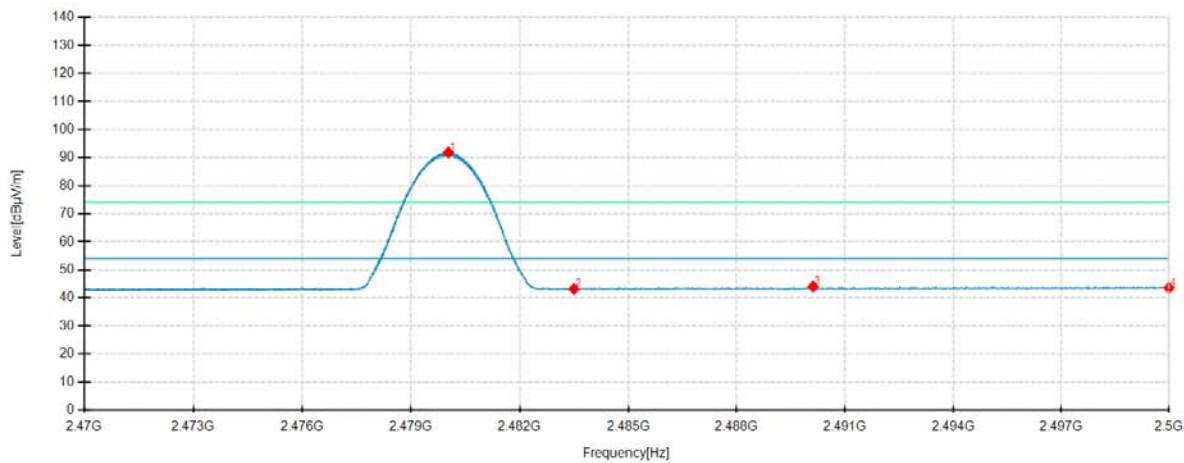
No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2479.7967	82.68	92.53	9.85	74.00	-18.53	100	47	Horizontal	No limit
2	2483.5	50.23	60.15	9.92	74.00	13.85	200	234	Horizontal	/
3	2483.8869	55.71	65.63	9.92	74.00	8.37	100	37	Horizontal	/
4	2500	44.68	54.93	10.25	74.00	19.07	200	266	Horizontal	/
1	2479.7847	85.74	95.01	9.27	74.00	-21.01	100	225	Vertical	No limit
2	2483.5	56.04	65.32	9.28	74.00	8.68	100	202	Vertical	/
3	2483.9209	58.64	67.92	9.28	74.00	6.08	100	236	Vertical	/
4	2500	46.03	55.38	9.35	74.00	18.62	100	225	Vertical	/

Highest Frequency

Frequency 2480MHz

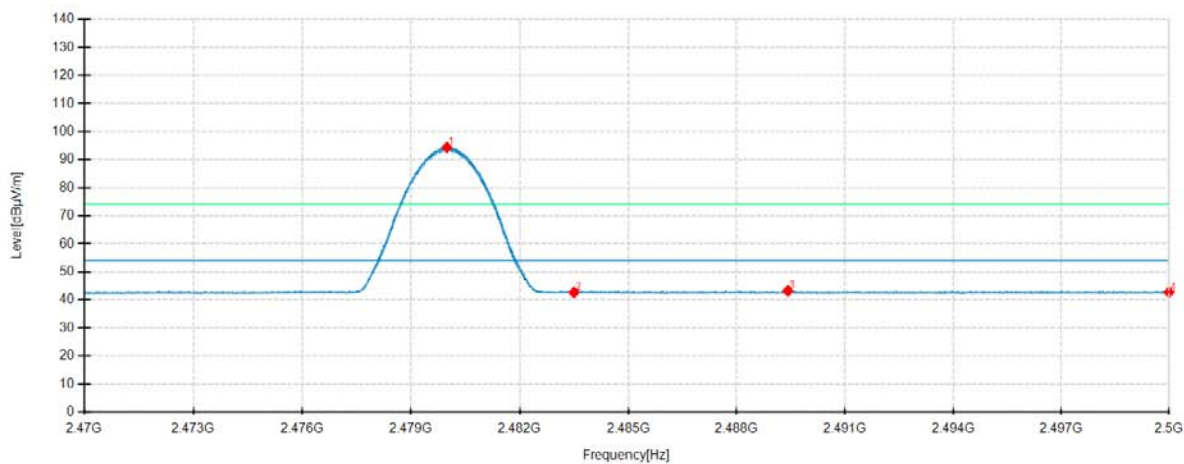
Detector mode: Average

Polarity: Horizontal



Detector mode: Average

Polarity: Vertical



No.	Frequency MHz	Reading dBμV/m	Level dBμV/m	Factor dB	Limit dBμV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2480.0327	81.97	91.82	9.85	54.00	-37.82	100	37	Horizontal	No limit
2	2483.5	33.29	43.21	9.92	54.00	10.79	100	37	Horizontal	/
3	2490.1173	34.02	44.07	10.05	54.00	9.93	100	37	Horizontal	/
4	2500	33.32	43.57	10.25	54.00	10.43	200	69	Horizontal	/
1	2479.9887	85.11	94.38	9.27	54.00	-40.38	100	226	Vertical	No limit
2	2483.5	33.40	42.68	9.28	54.00	11.32	100	315	Vertical	/
3	2489.4213	33.93	43.24	9.31	54.00	10.76	100	226	Vertical	/
4	2500	33.42	42.77	9.35	54.00	11.23	200	90	Vertical	/

Remark: Max field strength in 3m distance. No any other emission which falls in restricted bands can be detected and be reported.

APPENDIX A. PHOTOGRAPH OF THE TEST CONNECTION DIAGRAM

Please refer to the attached document E20230128179401-13-Test Photo.

APPENDIX B. PHOTOGRAPH OF THE EUT

Please refer to the attached document E20230128179401-14-EUT Photo.

----- **End of Report** -----