Mode: TX/ BLE_1M
Middle Frequency (2440MHz)
Environment: 25.1℃/51%RH/101.0kPa/101.0kPa Voltage: DC 3.3V
Tested By: Zhang Zishan Date: 2022-10-11

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1121.4	68.10	42.81	-25.29	74.00	31.19	100	224	Horizontal
2	1681.8	64.95	42.02	-22.93	74.00	31.98	100	243	Horizontal
3	2562.6	63.44	45.00	-18.44	74.00	29.00	100	256	Horizontal
4	3201	58.41	42.16	-16.25	74.00	31.84	100	29	Horizontal
5	4879.5	57.28	44.16	-13.12	74.00	29.84	200	135	Horizontal
6	7320	53.44	50.33	-3.11	74.00	23.67	100	56	Horizontal
7	1116.4	56.57	31.22	-25.35	54.00	22.78	200	263	Horizontal
8	1676.6	52.67	29.69	-22.98	54.00	24.31	100	243	Horizontal
9	2586.2	52.68	34.37	-18.31	54.00	19.63	100	256	Horizontal
10	3198	48.69	32.39	-16.30	54.00	21.61	100	302	Horizontal
11	4881	47.92	34.78	-13.14	54.00	19.22	200	121	Horizontal
12	7321.5	45.45	42.31	-3.14	54.00	11.69	100	43	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1107.8	71.88	49.37	-22.51	74.00	24.63	200	280	Vertical
2	1466	69.80	47.41	-22.39	74.00	26.59	100	280	Vertical
3	1853.8	69.06	45.88	-23.18	74.00	28.12	200	240	Vertical
4	2692.6	64.22	46.88	-17.34	74.00	27.12	200	240	Vertical
5	4938	54.79	42.98	-11.81	74.00	31.02	200	210	Vertical
6	7291.5	53.07	50.50	-2.57	74.00	23.50	200	28	Vertical
7	1117.4	60.91	38.07	-22.84	54.00	15.93	200	293	Vertical
8	1451.2	53.15	31.24	-21.91	54.00	22.76	100	255	Vertical
9	1854.4	59.23	36.06	-23.17	54.00	17.94	200	240	Vertical
10	2718	54.68	37.16	-17.52	54.00	16.84	200	240	Vertical
11	4828.5	46.72	34.09	-12.63	54.00	19.91	200	300	Vertical
12	7321.5	44.61	41.47	-3.14	54.00	12.53	200	168	Vertical

Mode: TX/ BLE_1M
Highest Frequency (2480MHz)
Environment: 25.1℃/51%RH/101.0kPa/101.0kPa Voltage: DC 3.3V
Tested By: Zhang Zishan Date: 2022-10-11

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1116.2	68.77	43.42	-25.35	74.00	30.58	100	218	Horizontal
2	1197.8	67.15	43.18	-23.97	74.00	30.82	100	332	Horizontal
3	1998.4	63.67	42.50	-21.17	74.00	31.50	100	332	Horizontal
4	3865.5	59.09	42.55	-16.54	74.00	31.45	100	252	Horizontal
5	4959	55.72	43.91	-11.81	74.00	30.09	200	16	Horizontal
6	7330.5	53.39	50.09	-3.30	74.00	23.91	100	137	Horizontal
7	1118	57.79	32.47	-25.32	54.00	21.53	100	218	Horizontal
8	1185.2	53.46	29.23	-24.23	54.00	24.77	200	332	Horizontal
9	1975.8	51.71	30.51	-21.20	54.00	23.49	100	231	Horizontal
10	3918	45.35	29.62	-15.73	54.00	24.38	100	200	Horizontal
11	4962	48.63	36.77	-11.86	54.00	17.23	100	359	Horizontal
12	7441.5	44.00	40.44	-3.56	54.00	13.56	200	46	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1121.8	69.49	46.51	-22.98	74.00	27.49	200	290	Vertical
2	1460.4	68.39	46.19	-22.20	74.00	27.81	100	293	Vertical
3	1996	68.03	47.44	-20.59	74.00	26.56	200	277	Vertical
4	4269	59.82	44.81	-15.01	74.00	29.19	100	28	Vertical
5	4960.5	55.79	44.27	-11.52	74.00	29.73	200	315	Vertical
6	7531.5	52.18	50.13	-2.05	74.00	23.87	100	119	Vertical
7	1122	56.90	33.91	-22.99	54.00	20.09	200	303	Vertical
8	1459	51.57	29.41	-22.16	54.00	24.59	100	248	Vertical
9	1996	52.79	32.20	-20.59	54.00	21.80	200	181	Vertical
10	4269	47.44	32.43	-15.01	54.00	21.57	100	227	Vertical
11	4962	47.34	35.80	-11.54	54.00	18.20	100	318	Vertical
12	7441.5	44.78	41.38	-3.40	54.00	12.62	100	318	Vertical

Mode: TX/ BLE_2M
Lowest Frequency (2402MHz)
Environment: 25.1℃/51%RH/101.0kPa/101.0kPa Voltage: DC 3.3V
Tested By:Zhang Zishan Date: 2022-10-11

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1121	67.62	42.33	-25.29	74.00	31.67	100	219	Horizontal
2	1195.4	67.38	43.36	-24.02	74.00	30.64	200	344	Horizontal
3	1230.2	65.50	42.80	-22.70	74.00	31.20	100	268	Horizontal
4	2584.6	62.75	44.42	-18.33	74.00	29.58	100	219	Horizontal
5	3405	61.84	43.42	-18.42	74.00	30.58	100	247	Horizontal
6	5197.5	58.81	47.69	-11.12	74.00	26.31	100	223	Horizontal
7	1118.8	56.96	31.65	-25.31	54.00	22.35	100	306	Horizontal
8	1194.4	52.94	28.90	-24.04	54.00	25.10	100	293	Horizontal
9	1230	52.27	29.56	-22.71	54.00	24.44	100	268	Horizontal
10	2579	50.43	32.07	-18.36	54.00	21.93	100	231	Horizontal
11	3378	52.37	33.63	-18.74	54.00	20.37	100	247	Horizontal
12	5199	47.28	36.15	-11.13	54.00	17.85	100	223	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1117.6	68.26	45.42	-22.84	74.00	28.58	200	291	Vertical
2	1595.6	66.12	42.20	-23.92	74.00	31.80	100	159	Vertical
3	1994.6	65.98	45.34	-20.64	74.00	28.66	200	264	Vertical
4	4249.5	62.15	46.56	-15.59	74.00	27.44	100	16	Vertical
5	6379.5	56.06	48.48	-7.58	74.00	25.52	100	315	Vertical
6	7206	53.35	50.29	-3.06	74.00	23.71	100	328	Vertical
7	1120.4	57.58	34.64	-22.94	54.00	19.36	200	304	Vertical
8	1595.8	54.63	30.71	-23.92	54.00	23.29	100	159	Vertical
9	1955.2	52.80	30.94	-21.86	54.00	23.06	200	264	Vertical
10	4269	46.84	31.83	-15.01	54.00	22.17	100	16	Vertical
11	6382.5	45.42	37.84	-7.58	54.00	16.16	100	315	Vertical
12	7207.5	45.72	42.67	-3.05	54.00	11.33	100	328	Vertical

Mode: TX/ BLE_2M
Middle Frequency (2440MHz)
Environment: 25.1℃/51%RH/101.0kPa/101.0kPa Voltage: DC 3.3V
Tested By: Zhang Zishan Date: 2022-10-11

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1118.2	68.71	43.39	-25.32	74.00	30.61	100	300	Horizontal
2	1673.4	61.36	38.34	-23.02	74.00	35.66	200	332	Horizontal
3	2849	62.41	46.11	-16.30	74.00	27.89	200	138	Horizontal
4	4251	59.60	43.83	-15.77	74.00	30.17	100	239	Horizontal
5	5046	55.03	43.86	-11.17	74.00	30.14	200	320	Horizontal
6	7321.5	54.13	50.99	-3.14	74.00	23.01	100	57	Horizontal
7	1118.4	57.06	31.74	-25.32	54.00	22.26	100	214	Horizontal
8	1671.8	49.96	26.93	-23.03	54.00	27.07	100	277	Horizontal
9	2849.2	47.72	31.42	-16.30	54.00	22.58	200	151	Horizontal
10	4252.5	48.36	32.63	-15.73	54.00	21.37	100	239	Horizontal
11	4828.5	46.57	34.19	-12.38	54.00	19.81	100	321	Horizontal
12	7321.5	44.78	41.64	-3.14	54.00	12.36	100	44	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1063	71.13	48.32	-22.81	74.00	25.68	200	268	Vertical
2	1729.4	68.26	46.67	-21.59	74.00	27.33	200	46	Vertical
3	2661.4	61.40	43.69	-17.71	74.00	30.31	100	199	Vertical
4	3195	62.84	45.72	-17.12	74.00	28.28	100	341	Vertical
5	4663.5	56.17	43.82	-12.35	74.00	30.18	200	91	Vertical
6	6385.5	55.60	48.03	-7.57	74.00	25.97	100	314	Vertical
7	1064	60.76	37.96	-22.80	54.00	16.04	200	268	Vertical
8	1733.2	52.05	30.43	-21.62	54.00	23.57	100	332	Vertical
9	2594.8	50.61	32.24	-18.37	54.00	21.76	200	254	Vertical
10	3186	49.97	32.50	-17.47	54.00	21.50	100	212	Vertical
11	4650	44.65	32.67	-11.98	54.00	21.33	200	16	Vertical
12	6384	45.79	38.22	-7.57	54.00	15.78	100	314	Vertical

Mode: TX/ BLE_2M
Highest Frequency (2480MHz)
Environment: 25.1℃/51%RH/101.0kPa/101.0kPa Voltage: DC 3.3V
Tested By: Zhang Zishan Date: 2022-10-11

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1121.6	68.13	42.84	-25.29	74.00	31.16	100	225	Horizontal
2	1234.8	63.60	41.08	-22.52	74.00	32.92	100	288	Horizontal
3	1464.8	62.79	39.84	-22.95	74.00	34.16	200	291	Horizontal
4	1815	64.30	41.98	-22.32	74.00	32.02	100	238	Horizontal
5	2796.4	61.85	44.31	-17.54	74.00	29.69	200	247	Horizontal
6	4960.5	55.49	43.65	-11.84	74.00	30.35	200	135	Horizontal
7	1117	56.72	31.38	-25.34	54.00	22.62	100	302	Horizontal
8	1230.4	54.86	32.16	-22.70	54.00	21.84	100	302	Horizontal
9	1453.2	49.59	26.54	-23.05	54.00	27.46	100	238	Horizontal
10	1814.2	54.37	32.04	-22.33	54.00	21.96	100	238	Horizontal
11	2780	48.58	30.81	-17.77	54.00	23.19	100	274	Horizontal
12	4962	48.18	36.32	-11.86	54.00	17.68	200	135	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1121	68.12	45.17	-22.95	74.00	28.83	200	304	Vertical
2	1335.6	66.21	43.78	-22.43	74.00	30.22	200	279	Vertical
3	1993.4	65.66	44.99	-20.67	74.00	29.01	100	280	Vertical
4	4330.5	55.92	42.06	-13.86	74.00	31.94	100	318	Vertical
5	4951.5	54.60	43.21	-11.39	74.00	30.79	200	328	Vertical
6	7503	52.03	49.92	-2.11	74.00	24.08	100	360	Vertical
7	1114.6	56.74	34.00	-22.74	54.00	20.00	200	292	Vertical
8	1306.6	56.06	32.70	-23.36	54.00	21.30	100	252	Vertical
9	1992.8	52.14	31.45	-20.69	54.00	22.55	200	239	Vertical
10	4317	45.46	31.51	-13.95	54.00	22.49	100	16	Vertical
11	4962	46.36	34.82	-11.54	54.00	19.18	200	341	Vertical
12	7441.5	44.23	40.83	-3.40	54.00	13.17	100	318	Vertical

Remark:

1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
2 Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.
3 Average test would be performed if the peak result were greater than the average limit or as required by the applicant.
4 Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “ N/A ” remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

18GHz to 26.5GHz

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

Mode: TX/ BLE_1M
Lowest Frequency (2402MHz)
Environment: 24.8℃/54%RH/101.0kPa/101.0kPa Voltage: DC 3.3V
Tested By: Zhang Zishan Date: 2022-10-18

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18660.875	52.55	40.51	-12.04	83.54	43.03	150	329	Horizontal
2	19612.45	51.55	40.25	-11.30	83.54	43.29	150	216	Horizontal
3	21181.975	49.87	39.81	-10.06	83.54	43.73	150	280	Horizontal
4	21996.7	47.50	37.73	-9.77	83.54	45.81	150	200	Horizontal
5	22812.7	46.19	37.47	-8.72	83.54	46.07	150	56	Horizontal
6	24912.2	41.38	34.00	-7.38	83.54	49.54	150	297	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18475.15	52.94	40.79	-12.15	83.54	42.75	150	159	Vertical
2	19698.725	51.99	40.82	-11.17	83.54	42.72	150	159	Vertical
3	20974.15	50.90	40.89	-10.01	83.54	42.65	150	271	Vertical
4	21972.9	47.49	37.82	-9.67	83.54	45.72	150	79	Vertical
5	23171.825	43.82	35.20	-8.62	83.54	48.34	150	351	Vertical
6	24767.7	42.15	34.74	-7.41	83.54	48.80	150	191	Vertical

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

Mode: TX/ BLE_1M
Middle Frequency (2440MHz)
Environment: 24.8℃/54%RH/101.0kPa/101.0kPa Voltage: DC 3.3V
Tested By: Zhang Zishan Date: 2022-10-18

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18399.5	52.75	40.46	-12.29	83.54	43.08	150	39	Horizontal
2	19019.15	51.83	40.05	-11.78	83.54	43.49	150	136	Horizontal
3	19700	51.45	40.20	-11.25	83.54	43.34	150	87	Horizontal
4	20801.6	49.02	38.79	-10.23	83.54	44.75	150	313	Horizontal
5	21824.15	47.42	37.65	-9.77	83.54	45.89	150	104	Horizontal
6	23353.3	44.96	36.24	-8.72	83.54	47.30	150	87	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18459.425	53.00	40.84	-12.16	83.54	42.70	150	323	Vertical
2	19526.6	52.05	40.67	-11.38	83.54	42.87	150	16	Vertical
3	20489.225	50.10	39.70	-10.40	83.54	43.84	150	226	Vertical
4	21657.975	47.95	38.29	-9.66	83.54	45.25	150	339	Vertical
5	22597.65	46.83	37.81	-9.02	83.54	45.73	150	195	Vertical
6	24771.525	41.64	34.23	-7.41	83.54	49.31	150	114	Vertical

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

Mode: TX/ BLE_1M
Highest Frequency (2480MHz)
Environment: 24.8℃/54%RH/101.0kPa/101.0kPa Voltage: DC 3.3V
Tested By: Zhang Zishan Date: 2022-10-18

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18476.85	52.48	40.24	-12.24	83.54	43.30	150	7	Horizontal
2	19613.725	51.54	40.24	-11.30	83.54	43.30	150	71	Horizontal
3	21164.975	50.59	40.52	-10.07	83.54	43.02	150	0	Horizontal
4	22597.65	47.18	38.16	-9.02	83.54	45.38	150	22	Horizontal
5	24199.9	42.64	34.41	-8.23	83.54	49.13	150	7	Horizontal
6	25692.5	41.03	33.34	-7.69	83.54	50.20	150	168	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18460.7	52.53	40.37	-12.16	83.54	43.17	150	274	Vertical
2	19644.75	51.99	40.77	-11.22	83.54	42.77	150	306	Vertical
3	20467.125	50.47	40.04	-10.43	83.54	43.50	150	112	Vertical
4	21167.525	51.13	41.16	-9.97	83.54	42.38	150	95	Vertical
5	22597.65	46.95	37.93	-9.02	83.54	45.61	150	112	Vertical
6	23666.525	44.03	35.46	-8.57	83.54	48.08	150	144	Vertical

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

Mode: TX/ BLE_2M
Lowest Frequency (2402MHz)
Environment: 24.8℃/54%RH/101.0kPa/101.0kPa Voltage: DC 3.3V
Tested By: Zhang Zishan Date: 2022-10-18

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18502.35	52.03	39.81	-12.22	83.54	43.73	150	85	Horizontal
2	19607.775	51.60	40.29	-11.31	83.54	43.25	150	134	Horizontal
3	20210.425	51.09	40.24	-10.85	83.54	43.30	150	118	Horizontal
4	21191.75	49.60	39.54	-10.06	83.54	44.00	150	199	Horizontal
5	22598.5	46.91	37.89	-9.02	83.54	45.65	150	215	Horizontal
6	23928.75	42.91	34.41	-8.50	83.54	49.13	150	19	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18466.225	52.32	40.16	-12.16	83.54	43.38	150	360	Vertical
2	19244.825	52.11	40.50	-11.61	83.54	43.04	150	208	Vertical
3	19729.75	51.26	40.12	-11.14	83.54	43.42	150	243	Vertical
4	20879.375	49.95	39.92	-10.03	83.54	43.62	150	16	Vertical
5	21745.525	48.33	38.67	-9.66	83.54	44.87	150	360	Vertical
6	22966.975	44.92	36.27	-8.65	83.54	47.27	150	306	Vertical

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

Mode: TX/ BLE_2M
Middle Frequency (2440MHz)
Environment: 24.8℃/54%RH/101.0kPa/101.0kPa Voltage: DC 3.3V
Tested By: Zhang Zishan Date: 2022-10-18

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18997.9	51.62	39.82	-11.80	83.54	43.72	150	0	Horizontal
2	19802	51.42	40.24	-11.18	83.54	43.30	150	344	Horizontal
3	20504.525	50.00	39.51	-10.49	83.54	44.03	150	185	Horizontal
4	21353.675	48.89	38.94	-9.95	83.54	44.60	150	297	Horizontal
5	22598.5	46.82	37.80	-9.02	83.54	45.74	150	312	Horizontal
6	23546.675	43.46	34.75	-8.71	83.54	48.79	150	57	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18818.55	53.00	41.08	-11.92	83.54	42.46	150	32	Vertical
2	19572.925	51.98	40.67	-11.31	83.54	42.87	150	360	Vertical
3	20495.175	51.10	40.71	-10.39	83.54	42.83	150	256	Vertical
4	21133.1	50.05	40.07	-9.98	83.54	43.47	150	143	Vertical
5	22008.6	47.98	38.32	-9.66	83.54	45.22	150	351	Vertical
6	22801.65	46.05	37.32	-8.73	83.54	46.22	150	160	Vertical

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Mode: TX/ BLE_2M
Highest Frequency (2480MHz)
Environment: 24.8℃/54%RH/101.0kPa/101.0kPa Voltage: DC 3.3V
Tested By: Zhang Zishan Date: 2022-10-18

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18475.15	51.92	39.68	-12.24	83.54	43.86	150	25	Horizontal
2	19311.125	52.33	40.78	-11.55	83.54	42.76	150	169	Horizontal
3	20432.275	51.13	40.56	-10.57	83.54	42.98	150	89	Horizontal
4	21214.7	49.61	39.56	-10.05	83.54	43.98	150	137	Horizontal
5	22597.65	46.68	37.66	-9.02	83.54	45.88	150	9	Horizontal
6	23865.425	44.01	35.47	-8.54	83.54	48.07	150	345	Horizontal

Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	18444.975	52.16	39.98	-12.18	83.54	43.56	150	338	Vertical
2	19696.6	52.83	41.66	-11.17	83.54	41.88	150	16	Vertical
3	20552.125	50.78	40.45	-10.33	83.54	43.09	150	209	Vertical
4	21729.8	47.90	38.24	-9.66	83.54	45.30	150	193	Vertical
5	22968.675	44.62	35.97	-8.65	83.54	47.57	150	96	Vertical
6	24069.85	42.47	34.19	-8.28	83.54	49.35	150	80	Vertical

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8. 6dB BANDWIDTH

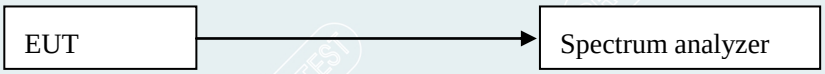
8.1 LIMITS

Systems using digital modulation techniques may operate in the 902–928MHz, 2400–2483.5MHz, and 5725–5850MHz bands. The minimum 6dB bandwidth shall be at least 500kHz.

8.2 TEST PROCEDURES

1) Remove the antenna from the EUT, and then connect a low loss RF cable from antenna port to the spectrum analyzer.
2) Set resolution bandwidth (RBW) = 100kHz.Set the video bandwidth (VBW) ≥ 3 x RBW. Detector = Peak. Trace mode = max hold. Sweep = auto couple. Allow the trace to stabilize, record 6dB bandwidth value.
3) Repeat above procedures until all frequencies measured were complete.

8.3 TEST SETUP



8.4 TEST RESULTS

Environment: 25.0℃/45%RH/101.0kPa Voltage: DC 3.3V
Tested By: Qin Tingting Date: 2022-10-10

BLE_1M

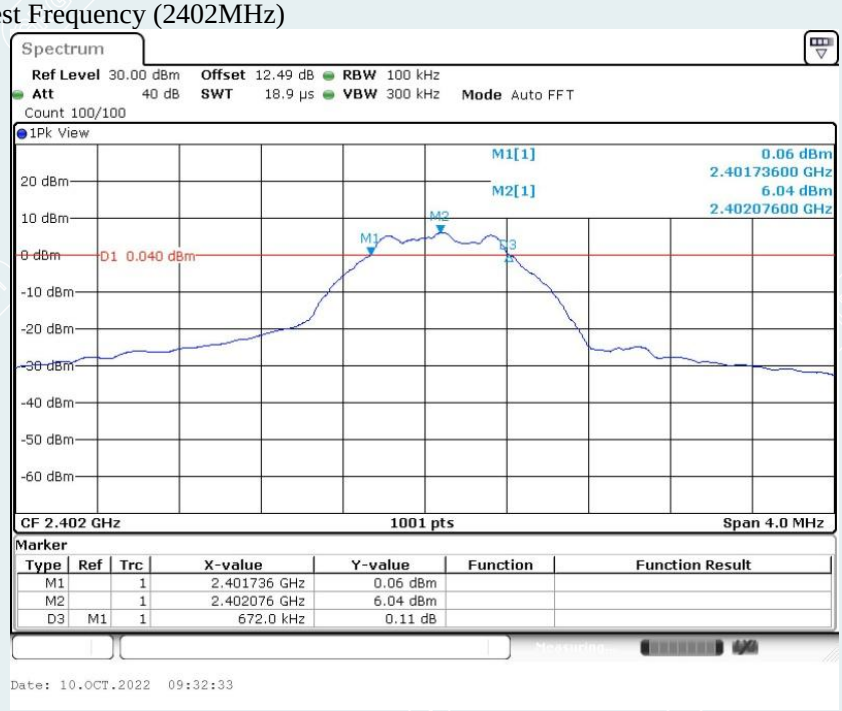
Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Lowest	2402	672	≥500	PASS
Middle	2440	676		PASS
Highest	2480	684		PASS

BLE_2M

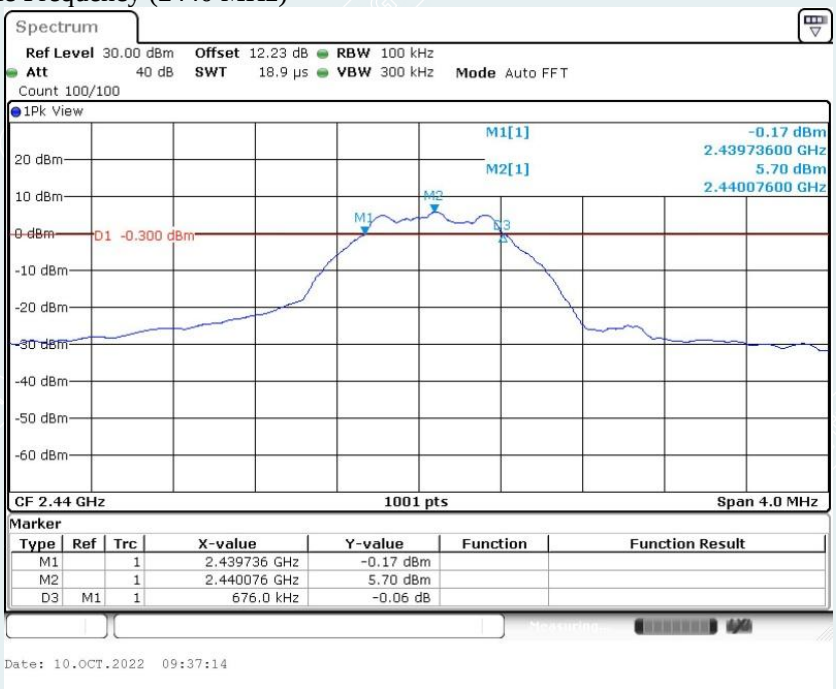
Channel	Frequency (MHz)	Bandwidth (kHz)	Limit (kHz)	Test Result
Lowest	2402	1180	≥500	PASS
Middle	2440	1184		PASS
Highest	2480	1184		PASS

BLE_1M

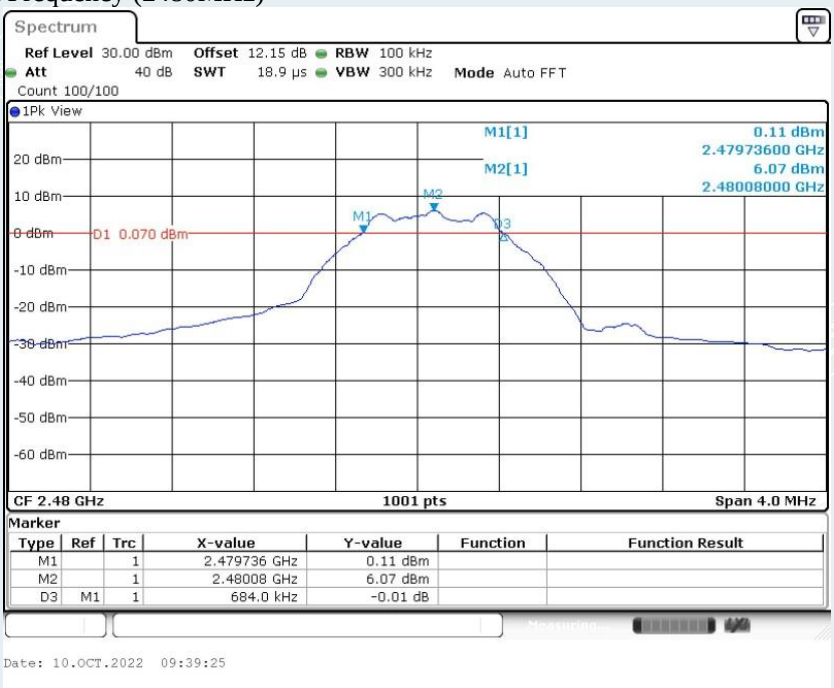
Lowest Frequency (2402MHz)



Middle Frequency (2440 MHz)

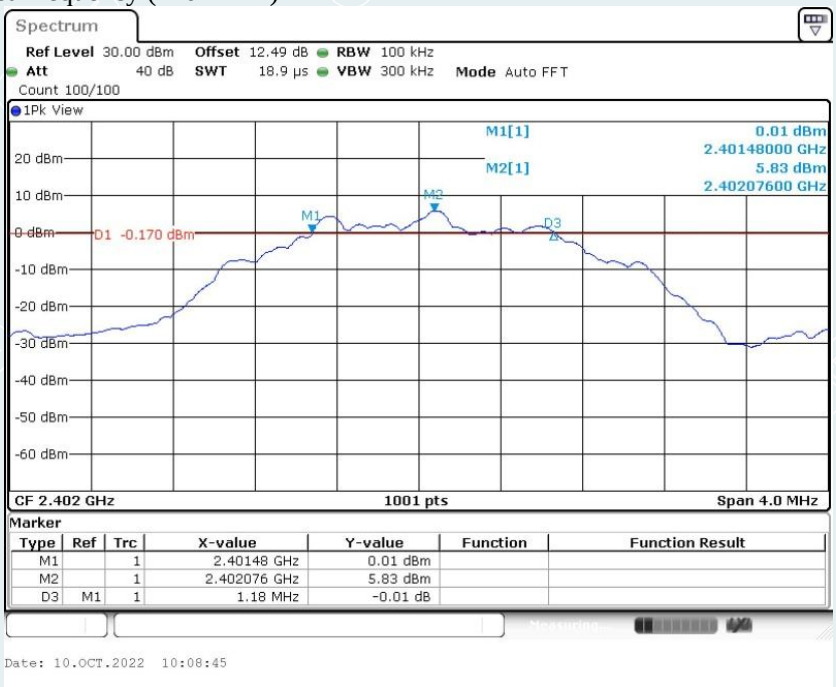


Highest Frequency (2480MHz)

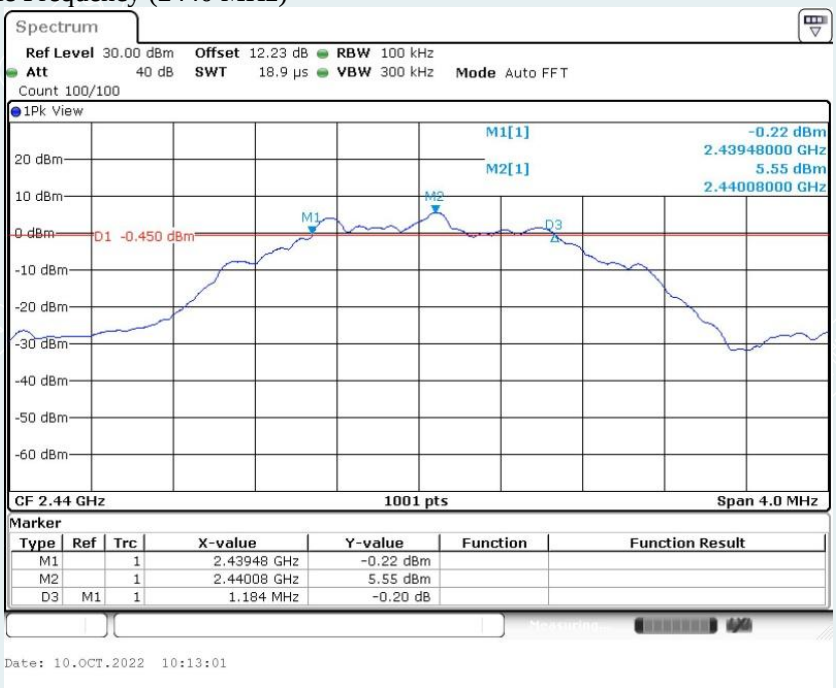


BLE_2M

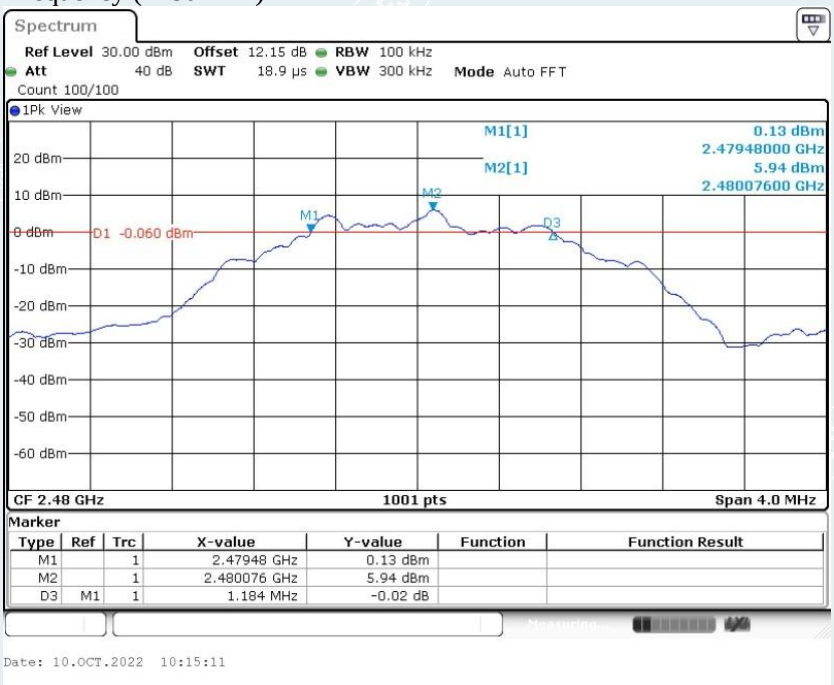
Lowest Frequency (2402MHz)



Middle Frequency (2440 MHz)



Highest Frequency (2480MHz)



9. MAXIMUM PEAK OUTPUT POWER

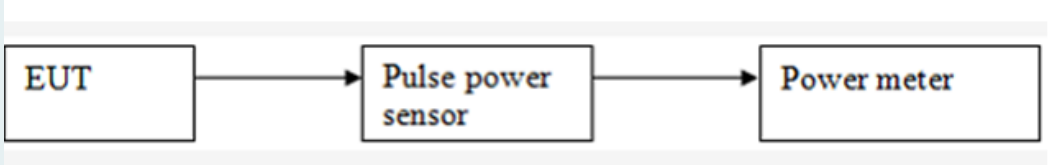
9.1 LIMITS

The maximum Peak output power measurement is 1W

9.2 TEST PROCEDURES

1) RF output of EUT was connected to the broadband peak RF power meter by RF cable. The path loss was compensated to the results for each measurement.
2) Set to the maximum power setting and enable the EUT transmit continuously.
3) Measure the conducted output power and record the results in the test report.

9.3 TEST SETUP



9.4 TEST RESULTS

Environment: 24.8℃/52%RH/101.0kPa Voltage: DC 3.3V
Tested By: Qin Tingting Date: 2022-10-13

BLE_1M

Channel	Frequency (MHz)	Measured Channel Power (dBm)	Limit	Peak/ Average	Result
Lowest	2402	0.47	1W (30dBm)	Peak	Pass
Middle	2440	0.45			Pass
Highest	2480	0.43			Pass

BLE_2M

Channel	Frequency (MHz)	Measured Channel Power (dBm)	Limit	Peak/ Average	Result
Lowest	2402	0.46	1W (30dBm)	Peak	Pass
Middle	2440	0.44			Pass
Highest	2480	0.42			Pass

10. POWER SPECTRAL DENSITY

10.1 LIMITS

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

10.2 TEST PROCEDURES

1) Remove the antenna from the EUT, and then connect a low loss RF cable from antenna port to the spectrum analyzer.
2) Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3) Set the analyzer span to 1.5 times the DTS bandwidth. Set the RBW to 3 kHz ≤ RBW ≤ 100 kHz. Set the VBW ≥ [3 × RBW]. Detector = peak. Sweep time = auto couple.Trace mode = max hold. Allow trace to fully stabilize. Use the peak marker function to determine the maximum amplitude level within the RBW. If measured value exceeds requirement, then reduce RBW (but no less than 3kHz) and repeat.
4) Repeat above procedures until all frequencies measured were complete.

10.3 TEST SETUP

10.4 TEST RESULTS

Environment: 24.8℃/52%RH/101.0kPa Voltage: DC 3.3V
Tested By: Qin Tingting Date: 2022-10-13

BLE_1M

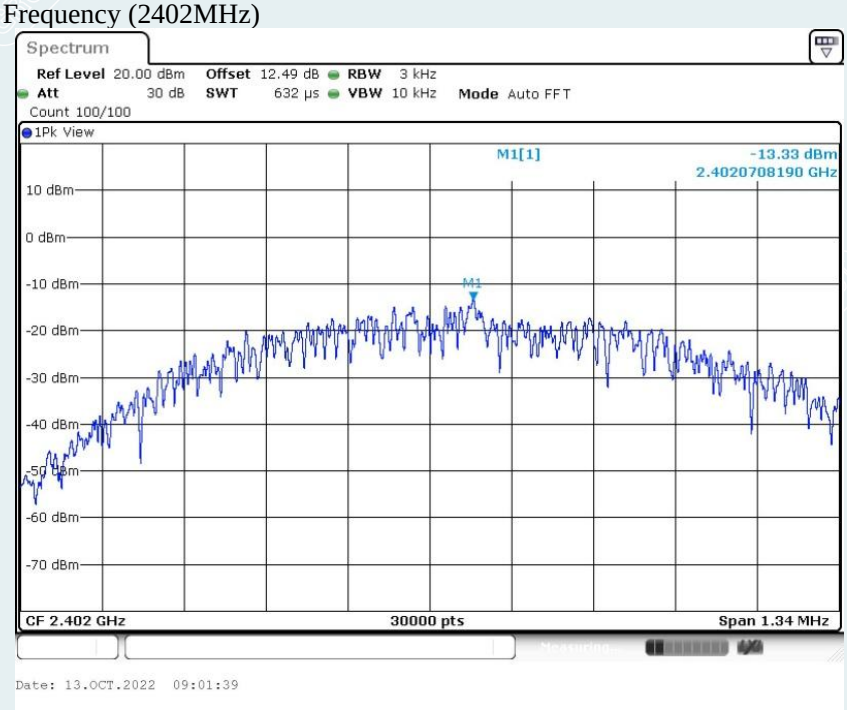
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Test Result
Lowest	2402	-13.33	8.00	PASS
Middle	2440	-13.60		PASS
Highest	2480	-13.72		PASS

BLE_2M

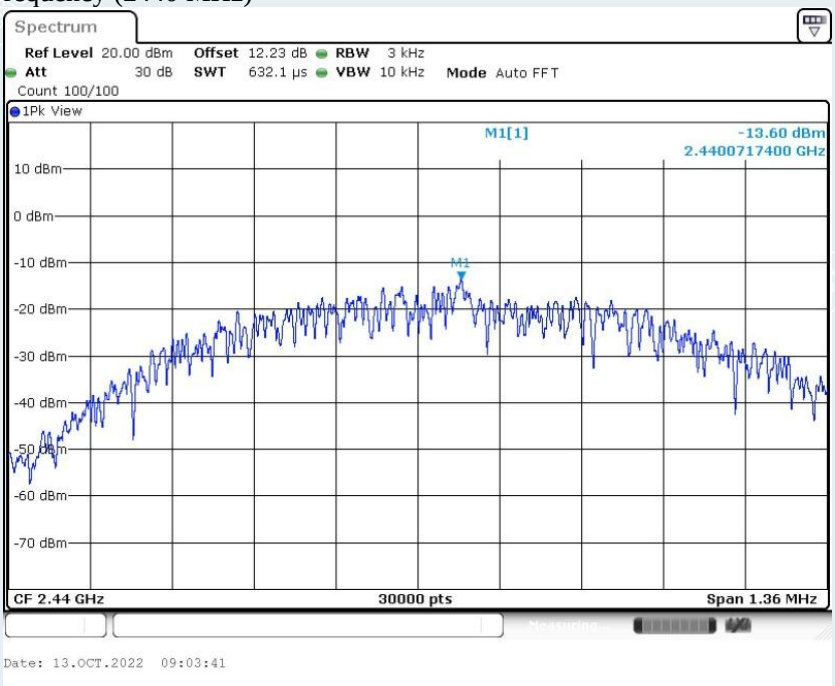
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Test Result
Lowest	2402	-13.76	8.00	PASS
Middle	2440	-14.01		PASS
Highest	2480	-14.07		PASS

BLE_1M

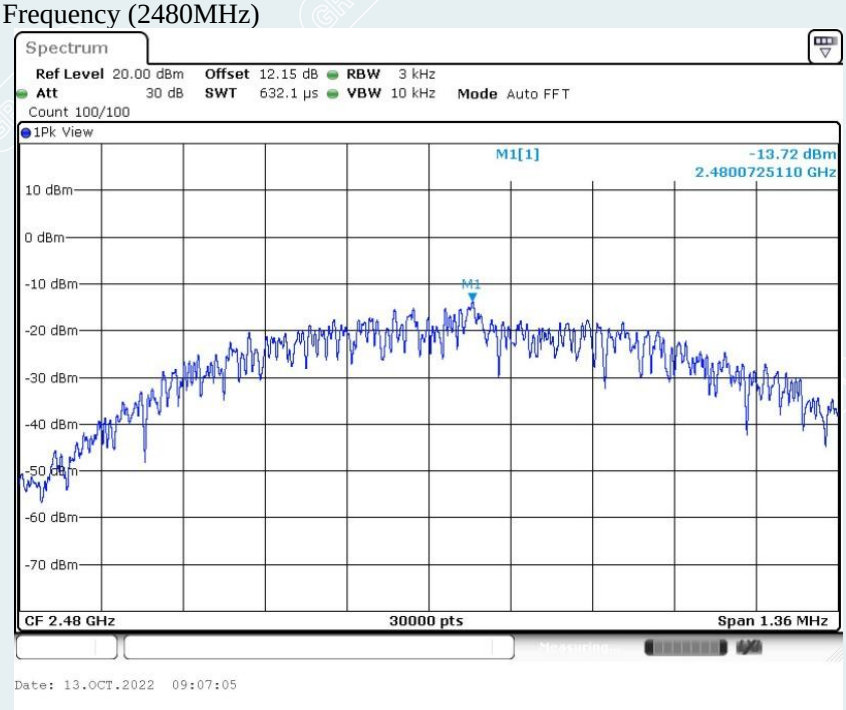
Lowest Frequency (2402MHz)



Middle Frequency (2440 MHz)

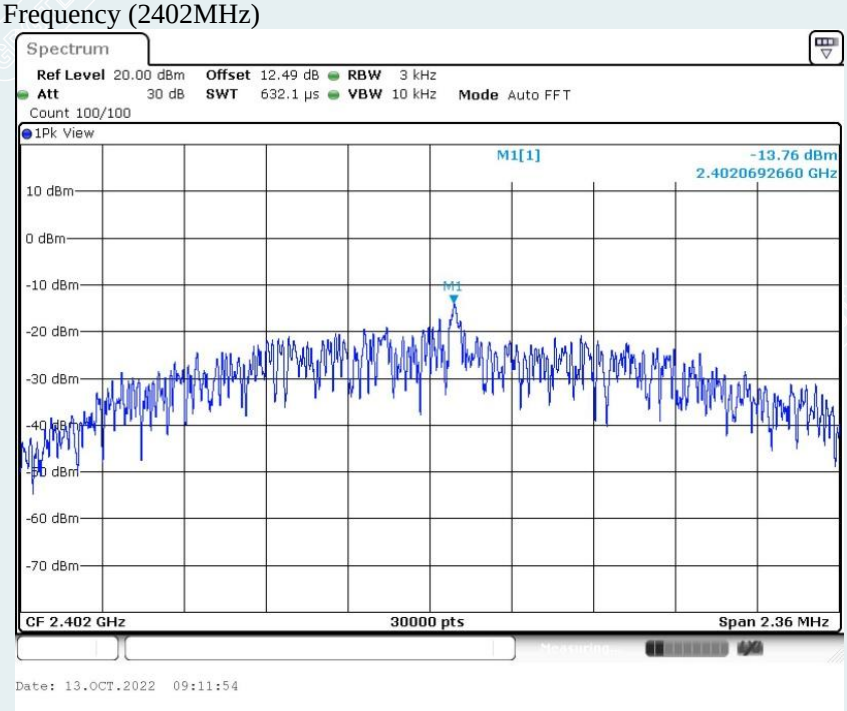


Highest Frequency (2480MHz)

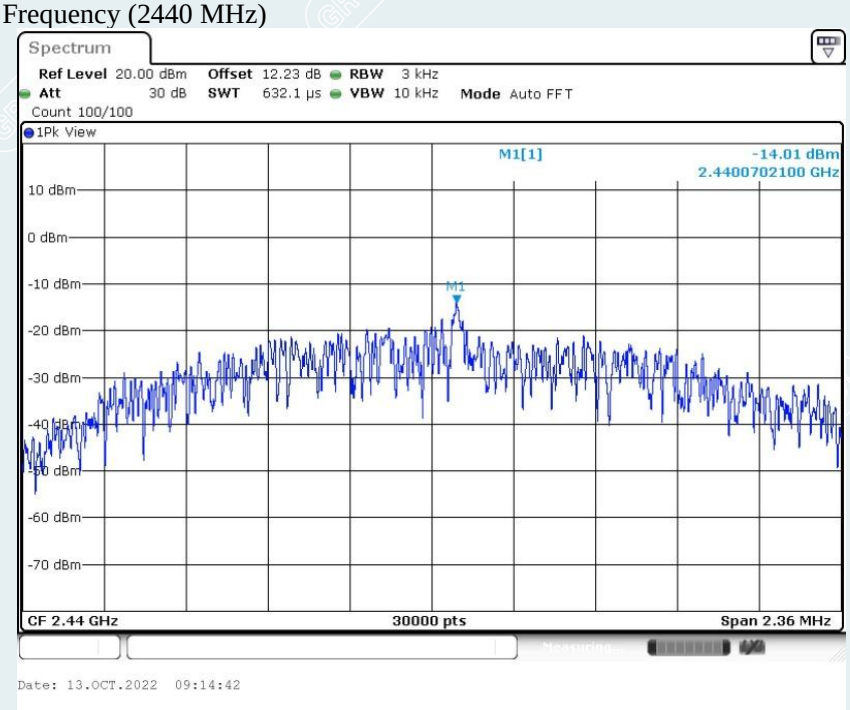


BLE_2M

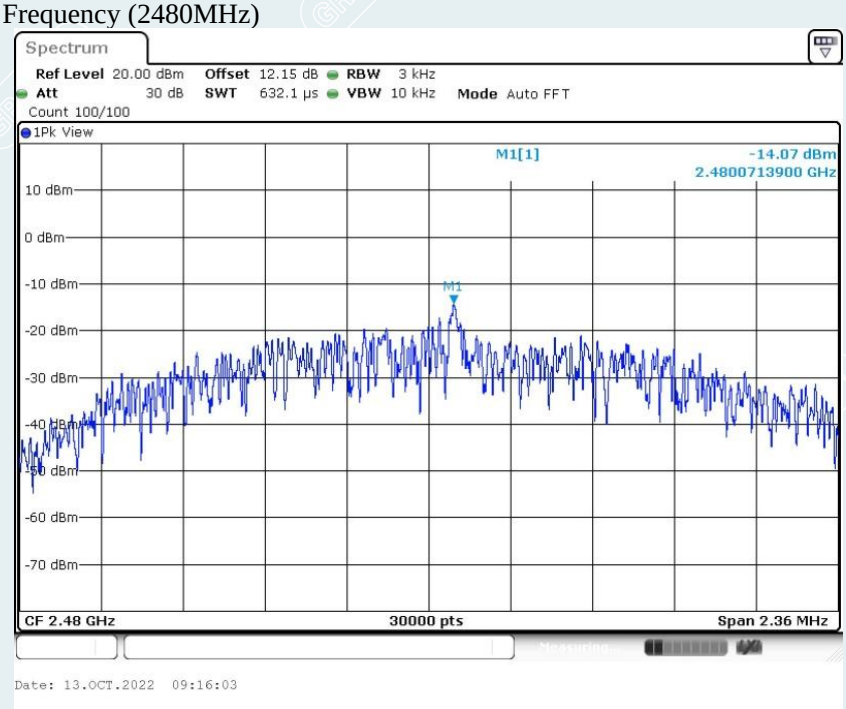
Lowest Frequency (2402MHz)



Middle Frequency (2440 MHz)



Highest Frequency (2480MHz)



11. CONDUCTED BAND EDGES AND SPURIOUS EMISSIONS

11.1 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.

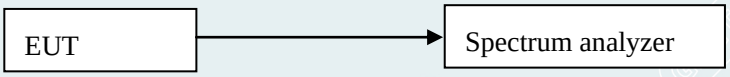
11.2 TEST PROCEDURES

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.

11.3 TEST SETUP



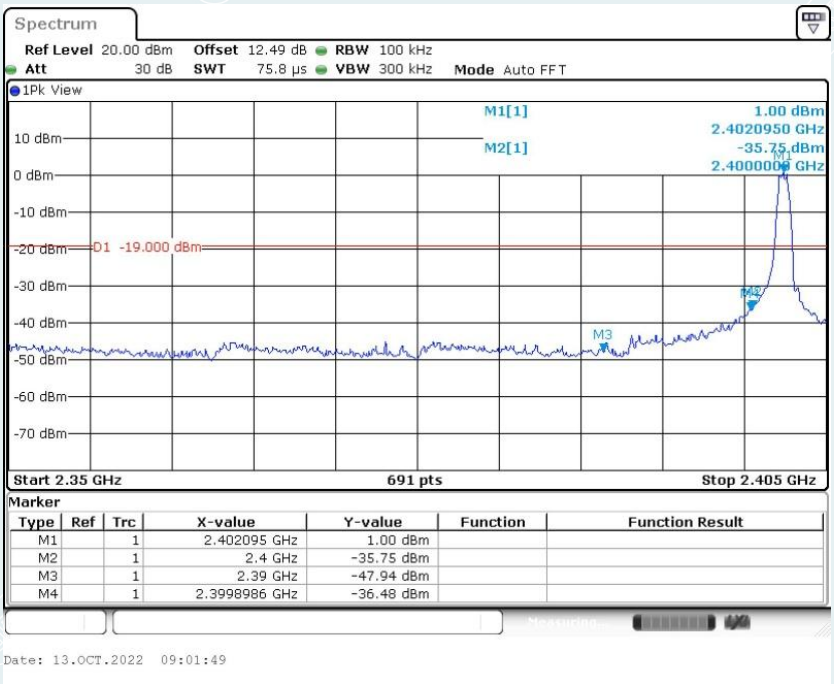
11.4 TEST RESULTS

Environment: 24.8℃/52%RH/101.0kPa Voltage: DC 3.3V
Tested By: Qin Tingting Date: 2022-10-13

Band edge measurements

BLE_1M

Lowest Frequency (2402MHz)
2.35GHz-2.405GHz



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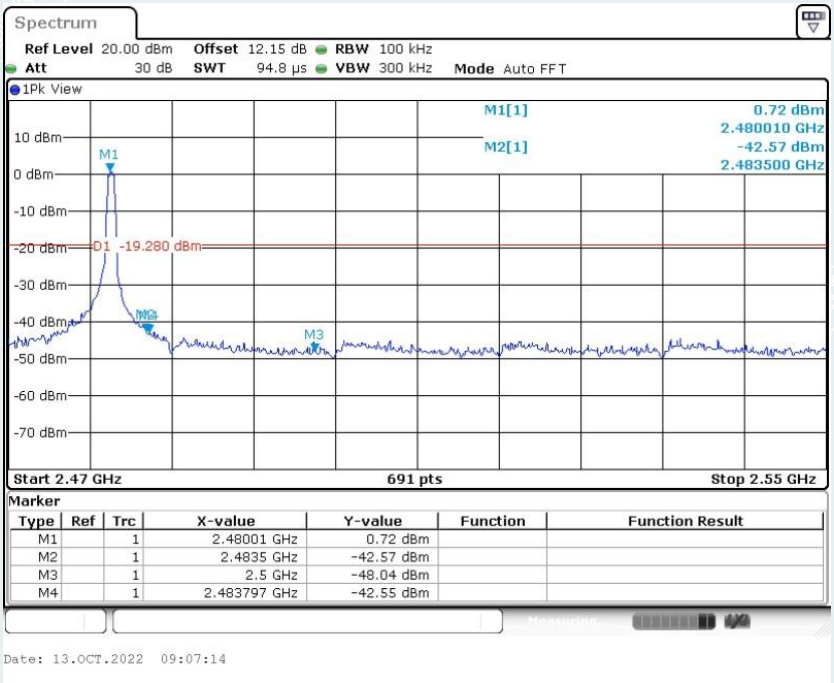
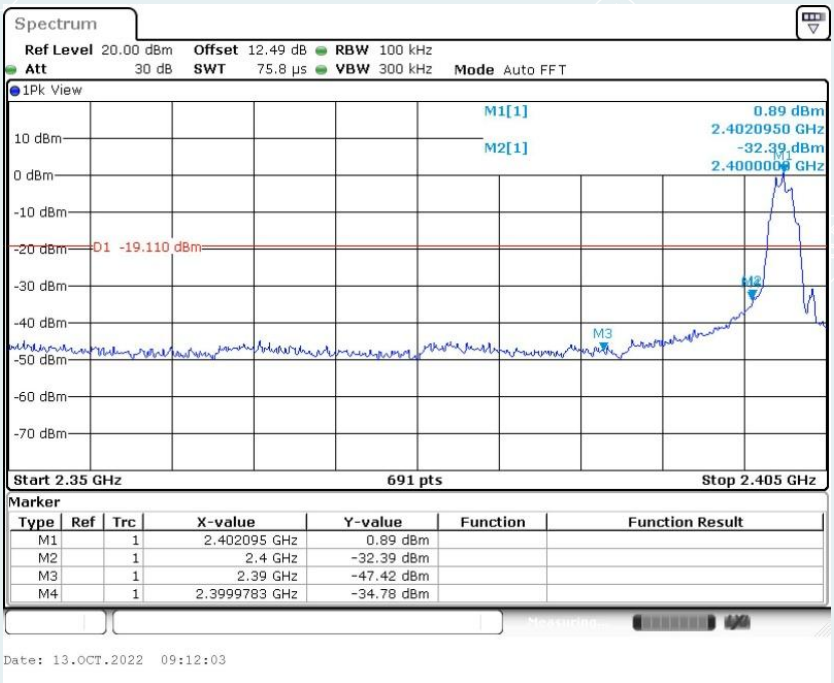
Highest Frequency (2480MHz)
2.47GHz-2.55GHz

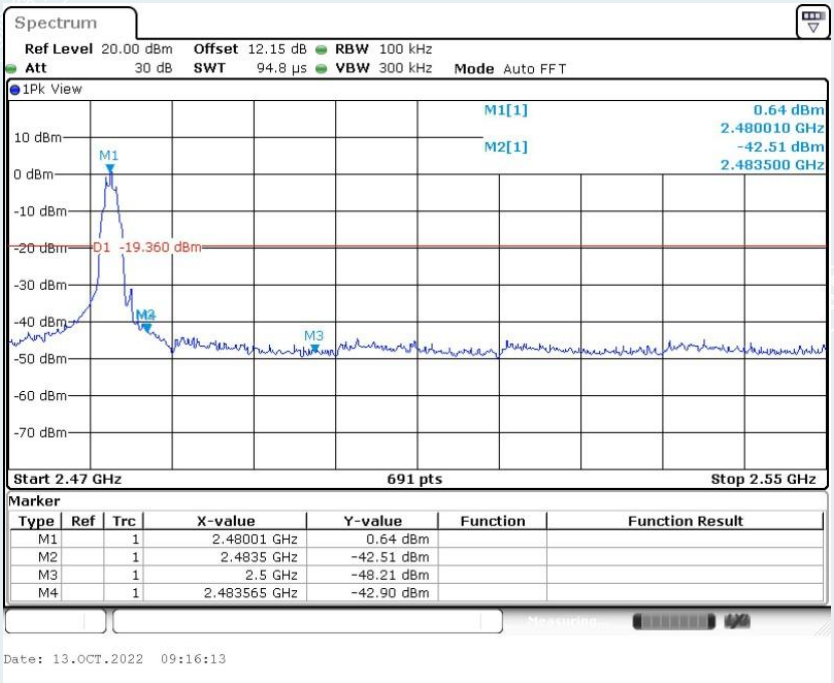


BLE_2M

Lowest Frequency (2402MHz)
2.35GHz-2.405GHz



Highest Frequency (2480MHz)
2.47GHz-2.55GHz



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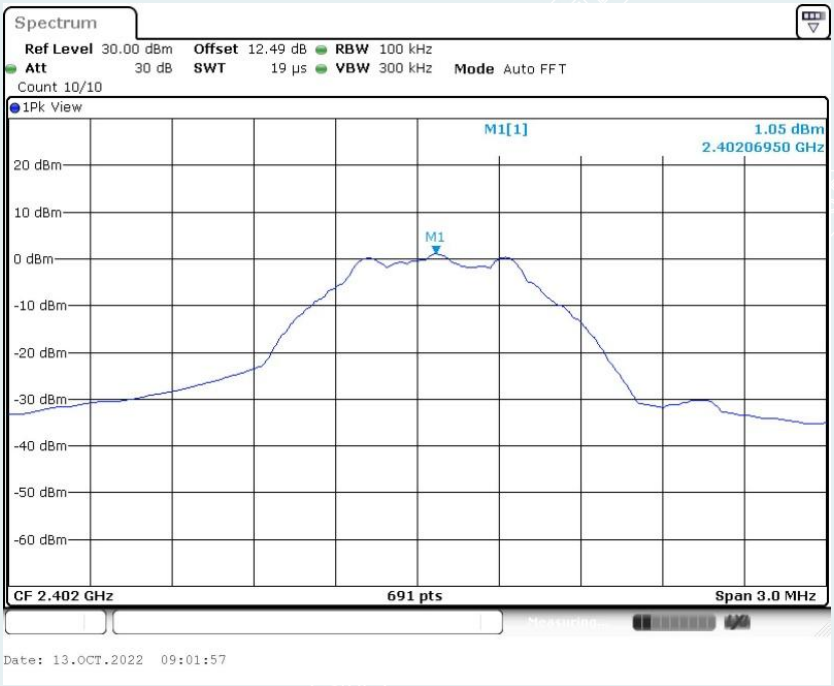
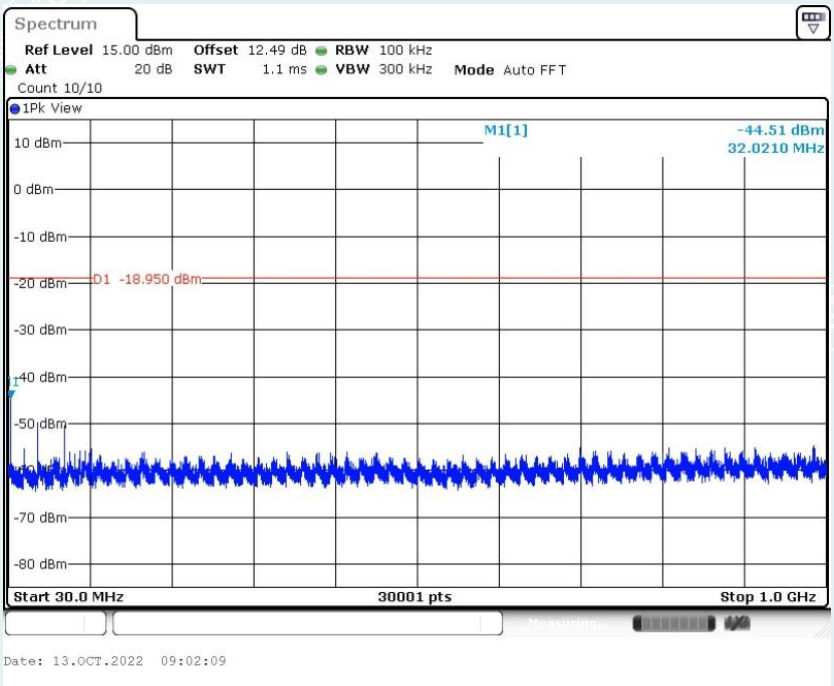
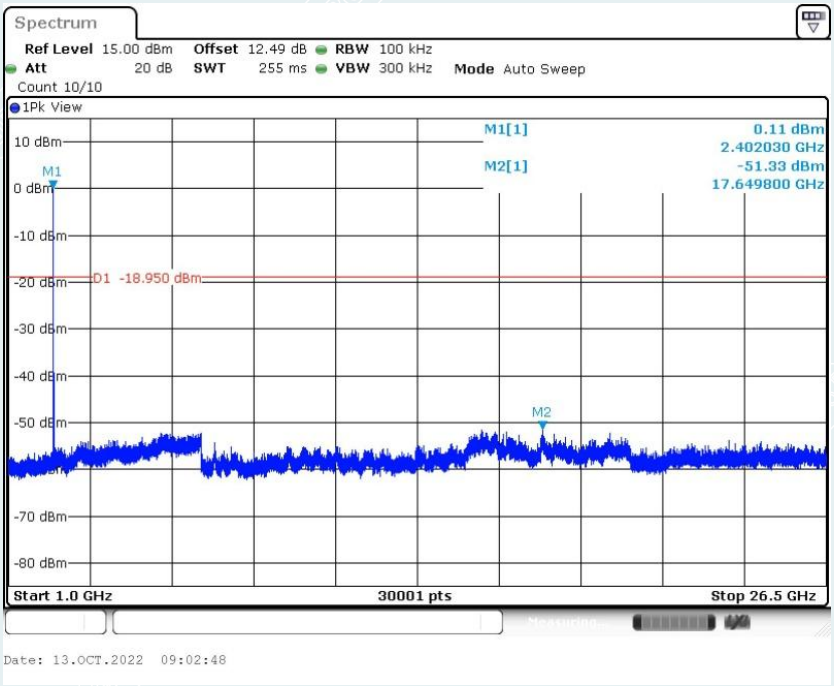
Conducted Spurious Emission
BLE_1M

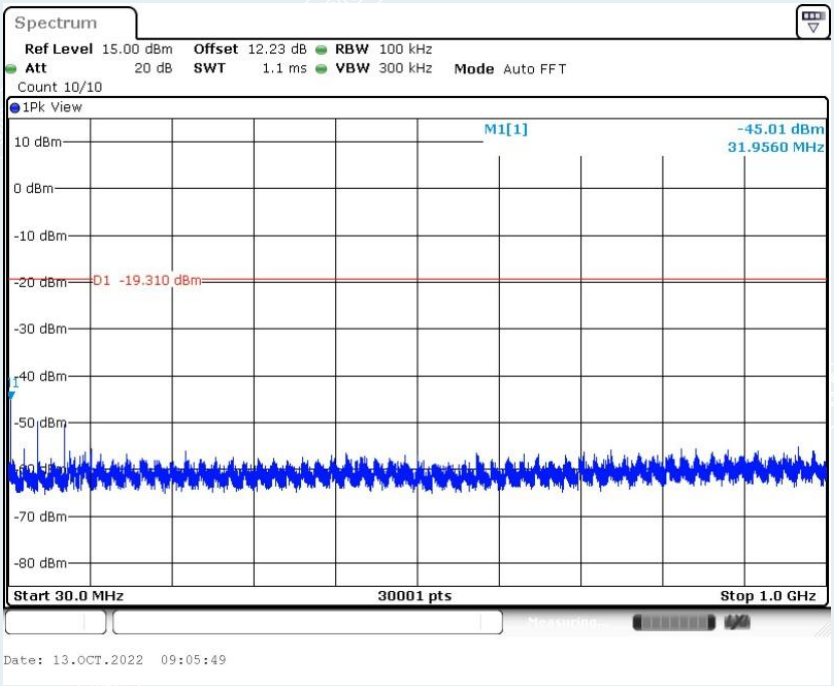
Lowest Frequency (2402MHz)

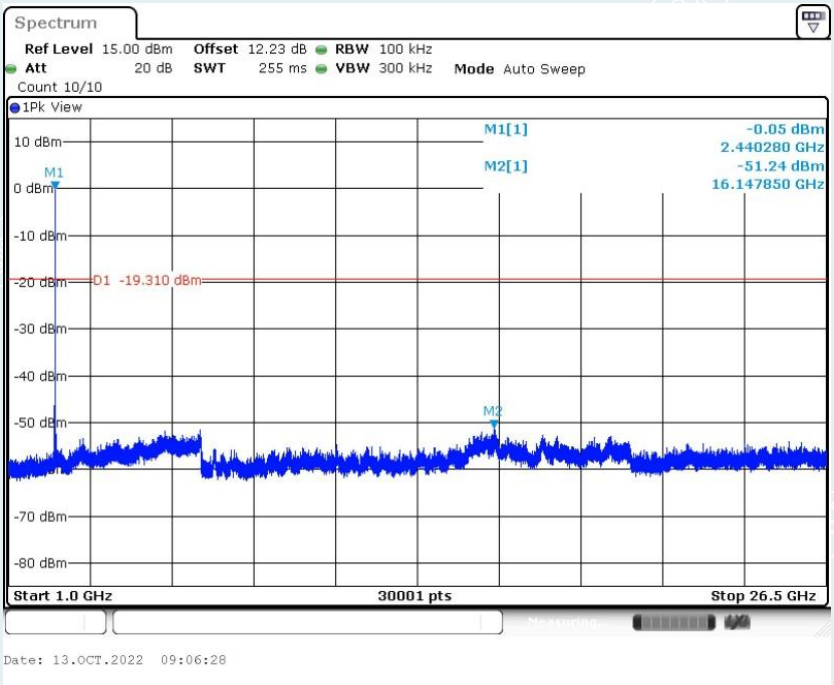




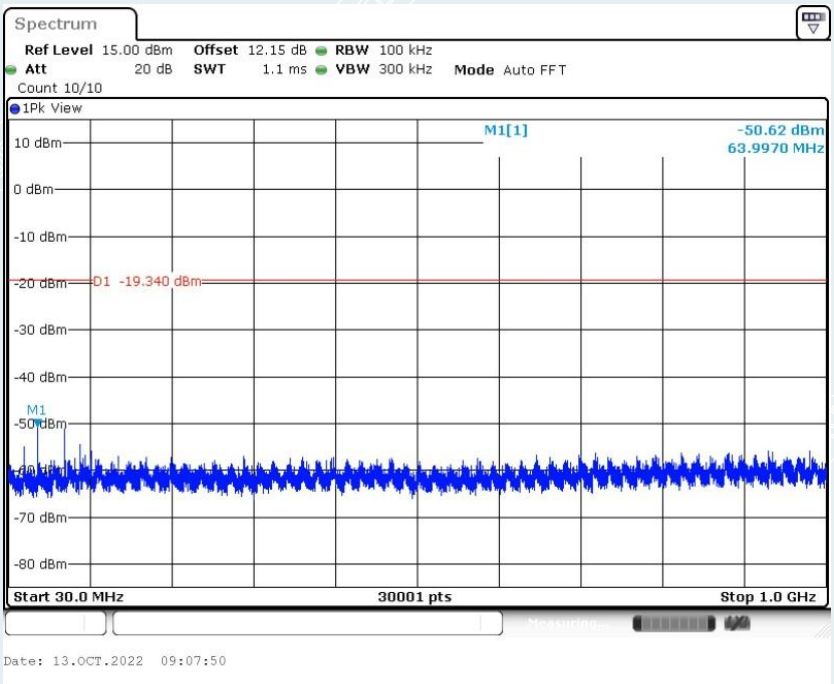


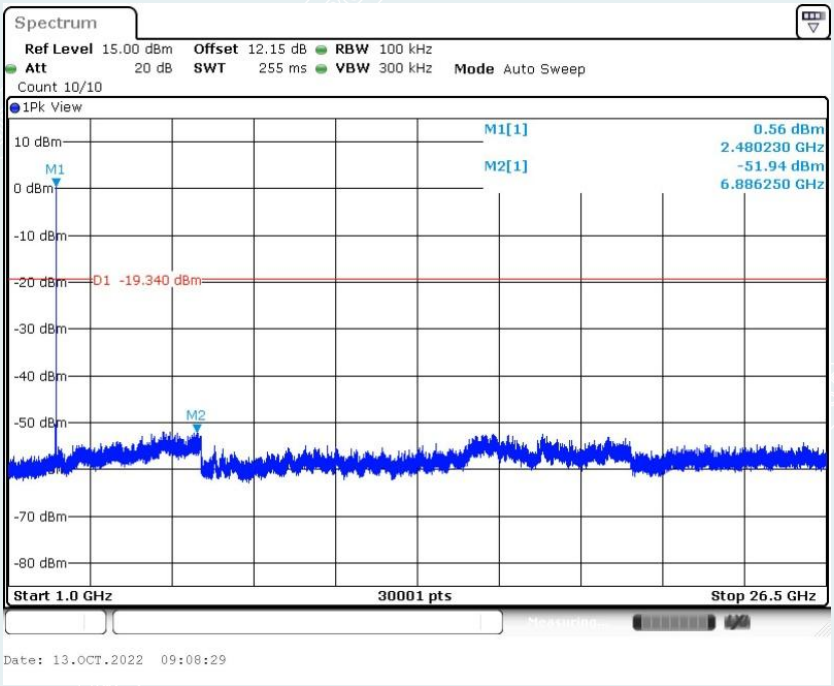
Middle Frequency (2440MHz)


Spectrum
Ref Level 15.00 dBm Offset 12.23 dB RBW 100 kHz
Att 20 dB SWT 1.1 ms VBW 300 kHz Mode Auto FFT
Count 10/10
1Pk View
M1[1] -45.01 dBm
31.9560 MHz
D1 -19.310 dBm
Start 30.0 MHz 30001 pts Stop 1.0 GHz
Date: 13.OCT.2022 09:05:49


Spectrum
Ref Level 15.00 dBm Offset 12.23 dB RBW 100 kHz
Att 20 dB SWT 255 ms VBW 300 kHz Mode Auto Sweep
Count 10/10
1Pk View
M1[1] -0.05 dBm
2.440280 GHz
M2[1] -51.24 dBm
16.147850 GHz
D1 -19.310 dBm
Start 1.0 GHz 30001 pts Stop 26.5 GHz
Date: 13.OCT.2022 09:06:28

Highest Frequency (2480MHz)





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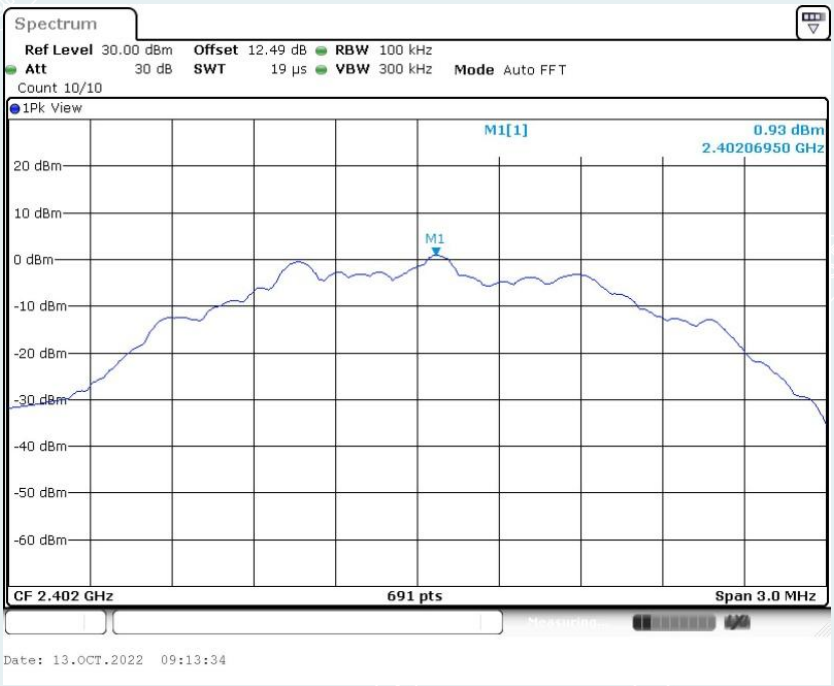
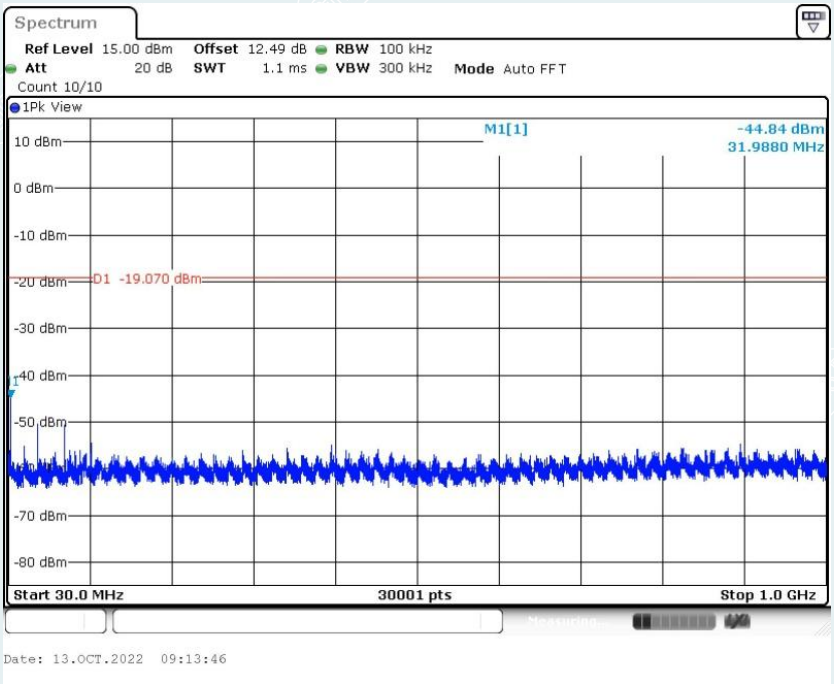
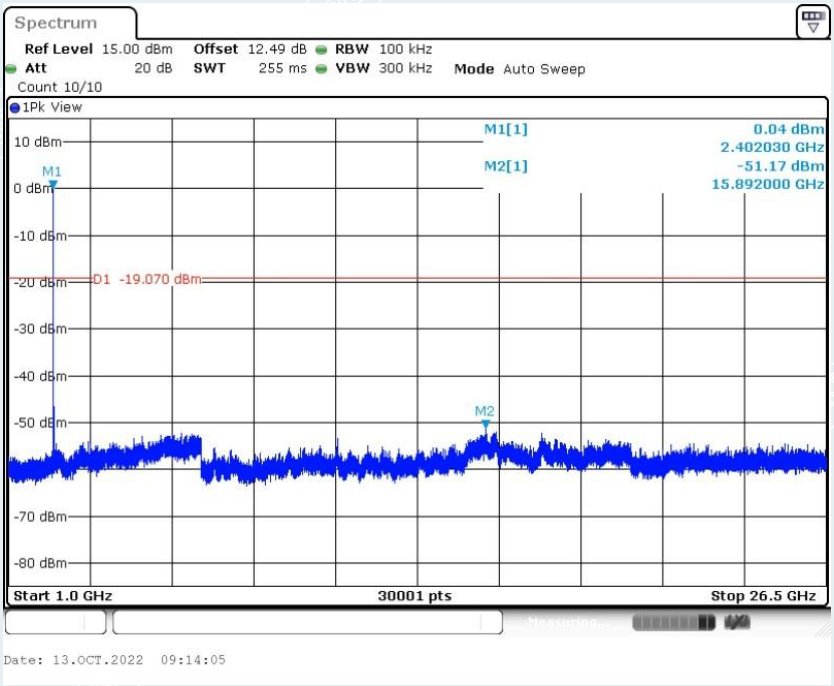
BLE_2M

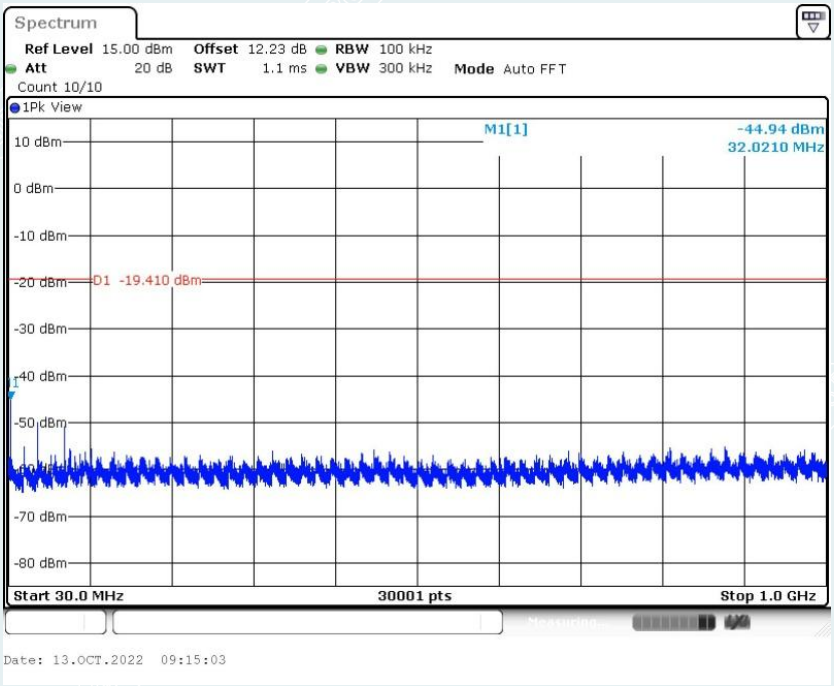
Lowest Frequency (2402MHz)

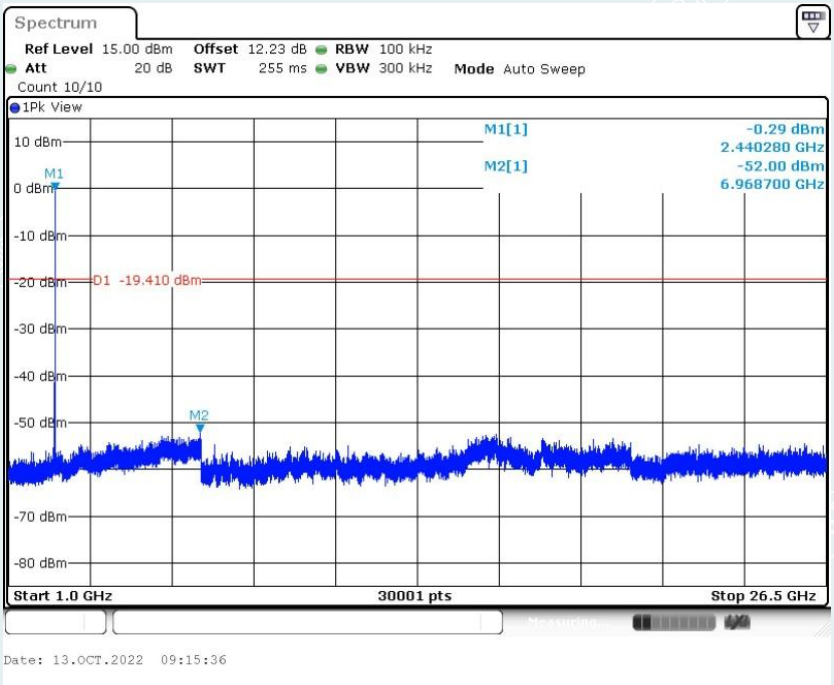




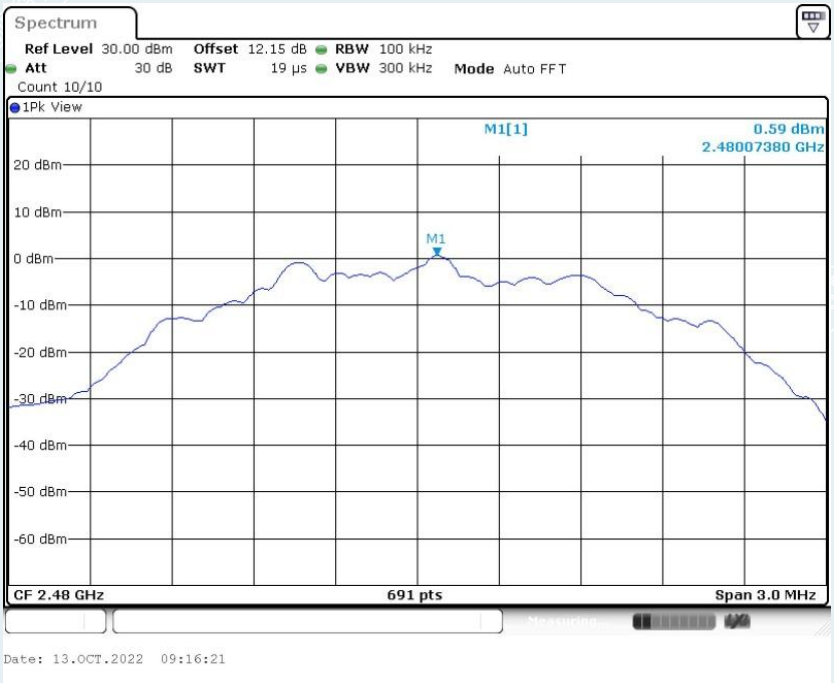


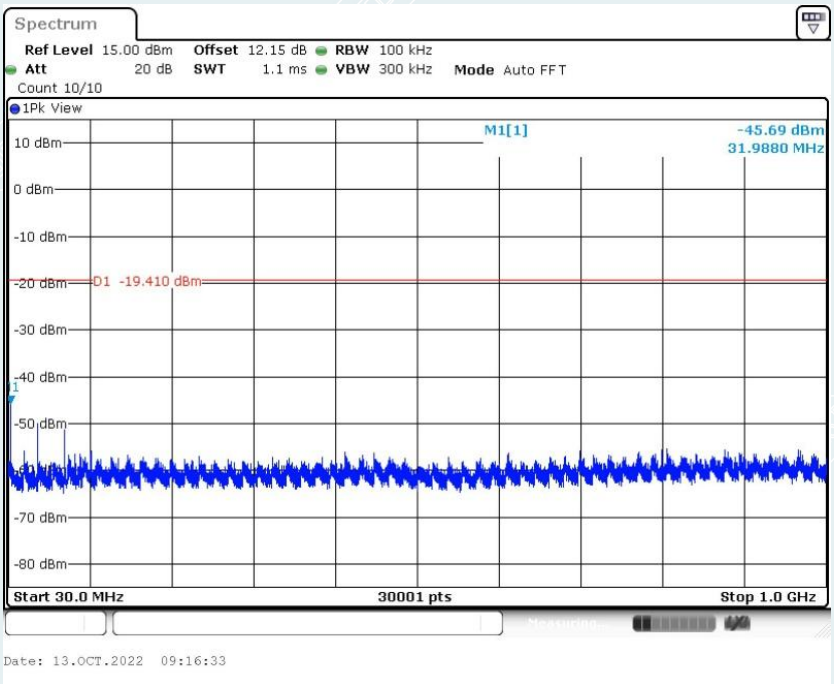
Middle Frequency (2440MHz)

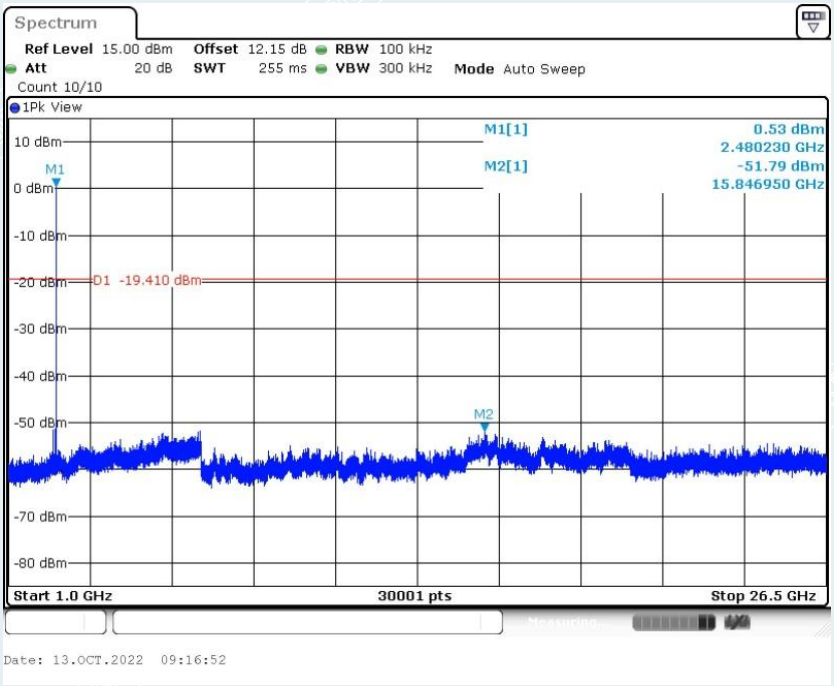

Spectrum
Ref Level 15.00 dBm Offset 12.23 dB RBW 100 kHz
Att 20 dB SWT 1.1 ms VBW 300 kHz Mode Auto FFT
Count 10/10
1Pk View
M1[1] -44.94 dBm
32.0210 MHz
D1 -19.410 dBm
Start 30.0 MHz 30001 pts Stop 1.0 GHz
Date: 13.OCT.2022 09:15:03


Spectrum
Ref Level 15.00 dBm Offset 12.23 dB RBW 100 kHz
Att 20 dB SWT 255 ms VBW 300 kHz Mode Auto Sweep
Count 10/10
1Pk View
M1[1] -0.29 dBm
2.440280 GHz
M2[1] -52.00 dBm
6.968700 GHz
D1 -19.410 dBm
Start 1.0 GHz 30001 pts Stop 26.5 GHz
Date: 13.OCT.2022 09:15:36

Highest Frequency (2480MHz)







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12. RESTRICTED BANDS OF OPERATION

12.1 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			

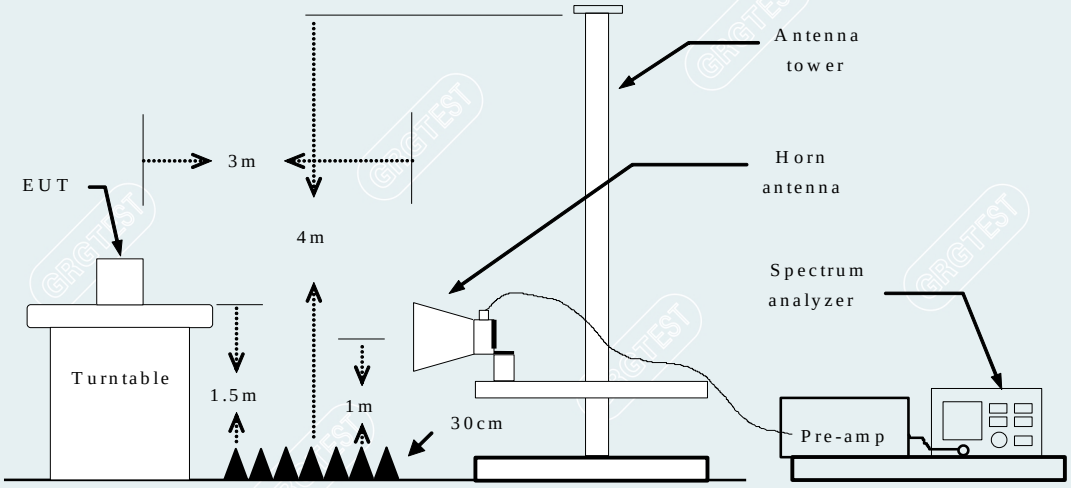
Frequency (MHz)	Quasi-peak(μV/m)	Measurement distance(m)	Quasi-peak(dBμV/m)@distance 3m
0.009-0.490	2400/F(kHz)	300	128.5~93.8
0.490-1.705	24000/F(kHz)	30	73.8~63
1.705-30.0	30	30	69.5
30 ~ 88	100	3	40
88~216	150	3	43.5
216 ~ 960	200	3	46
Above 960	500	3	54

12.2 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 ≥98%，set VBW≤RBW/100 (i.e.,10kHz) but not less than 10 Hz. If the EUT duty cycle is ＜98%，set VBW≥1/T, Where T is defined in section 2.9.
5) Repeat the procedures until all the PEAK and AVERAGE versus polarization are measured.

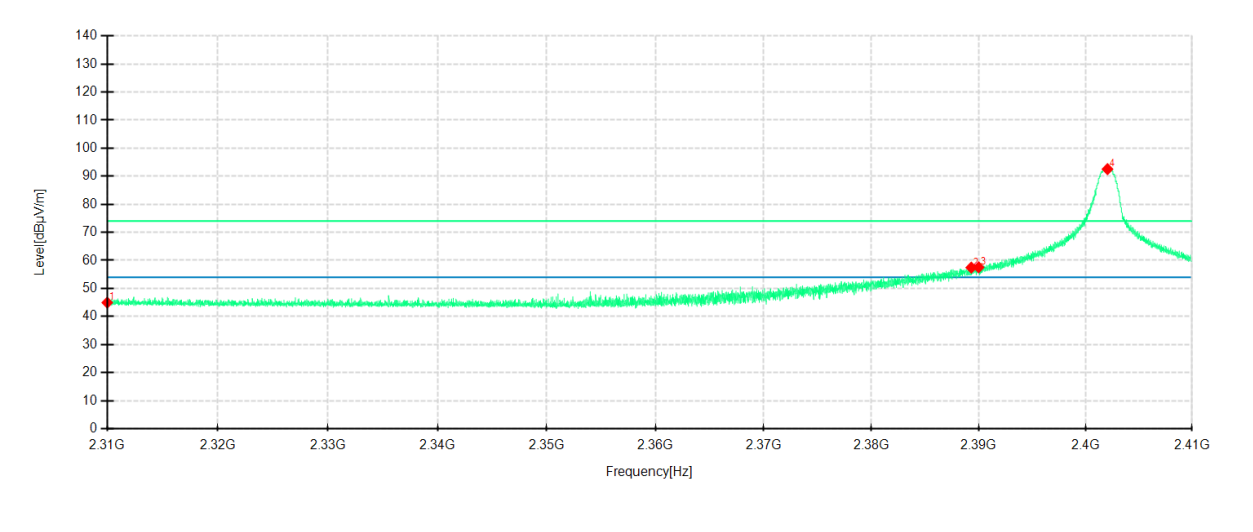
12.3 TEST SETUP



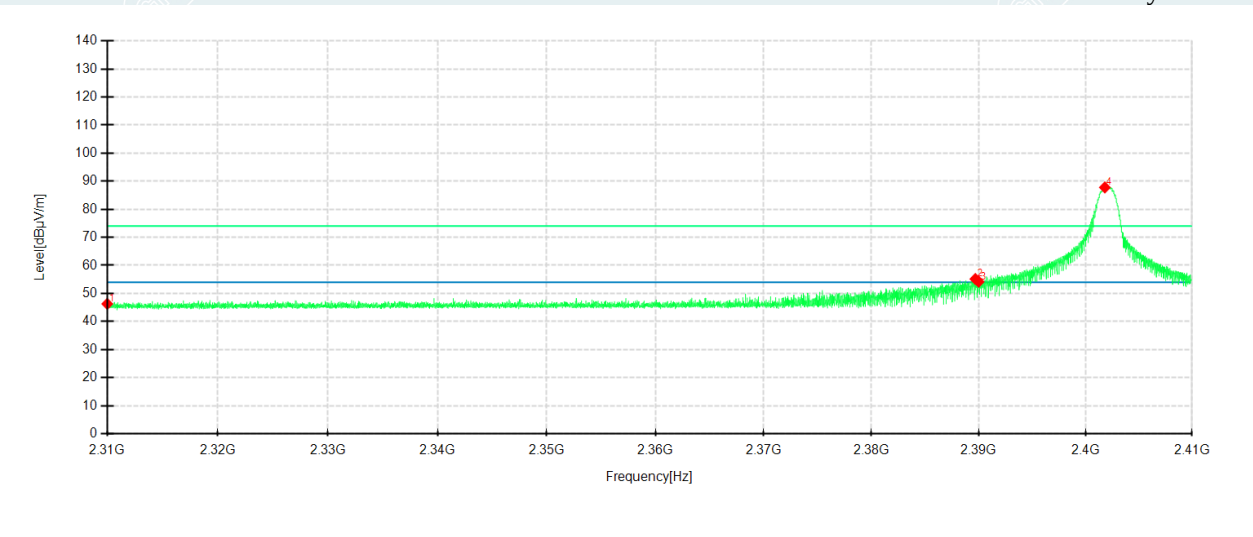
12.4 TEST RESULTS

Equipment:	Sino Wealth BLE Module	Test Date	2022-10-12
Model No.:	SH-BLEM18	Test Engineer:	Zhang Zishan
Test Voltage:	DC 3.3V	Environmental Conditions	24.6℃/52%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	45.24	44.95	-0.29	74.00	29.05	200	172	Horizontal	/
2	2389.3079	58.27	57.42	-0.85	74.00	16.58	100	189	Horizontal	/
3	2390	58.39	57.54	-0.85	74.00	16.46	100	189	Horizontal	/
4	2402.0592	93.28	92.53	-0.75	74.00	-18.53	100	189	Horizontal	No limit
1	2310	45.99	46.28	0.29	74.00	27.72	100	172	Vertical	/
2	2389.688	54.86	55.15	0.29	74.00	18.85	100	299	Vertical	/
3	2390	53.87	54.16	0.29	74.00	19.84	100	288	Vertical	/
4	2401.8092	87.58	87.78	0.20	74.00	-13.78	100	193	Vertical	No limit

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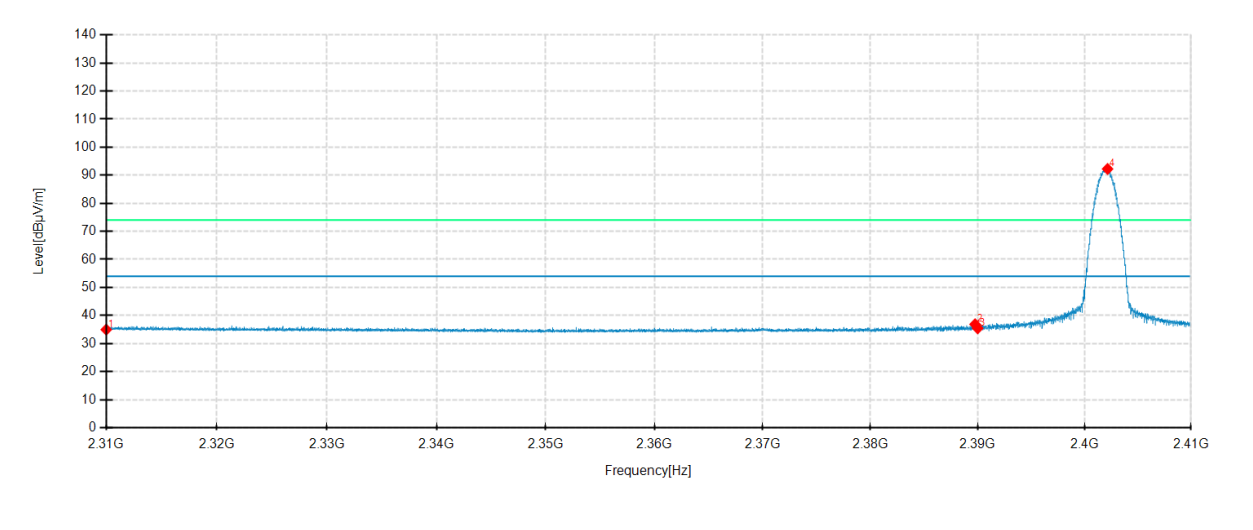
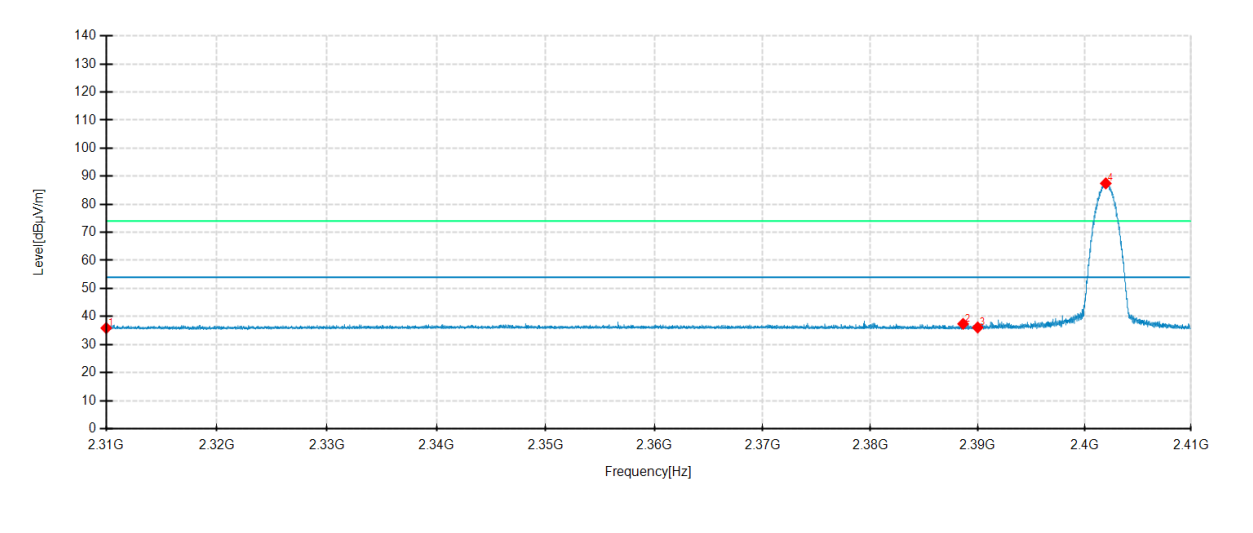
Lowest Frequency
Frequency 2402MHz
Detector mode: Average Polarity: Horizontal

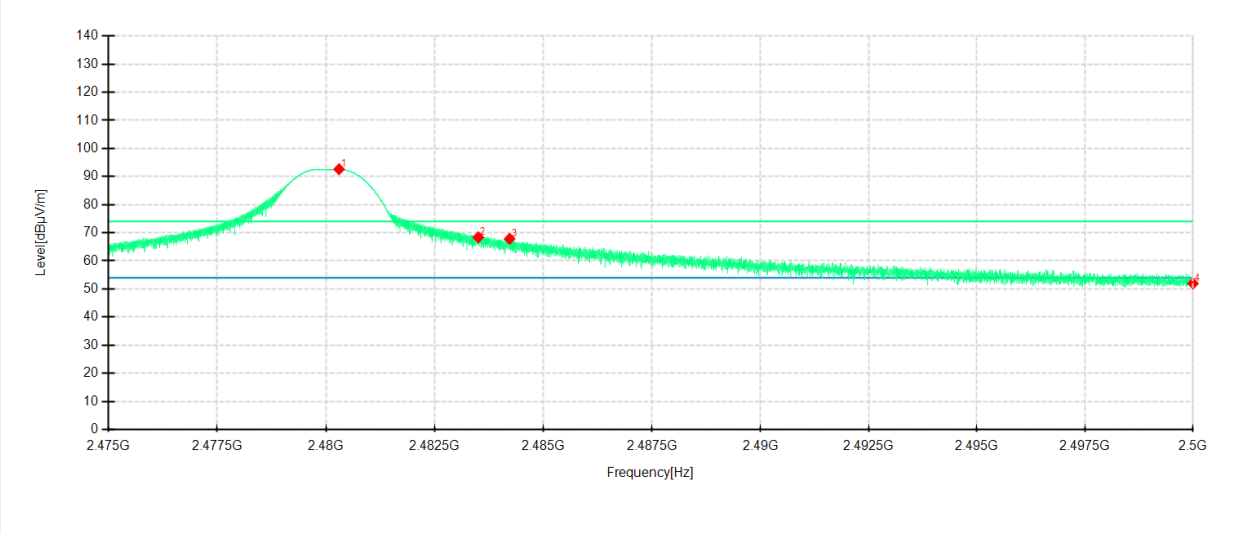


Detector mode: Average Polarity: Vertical

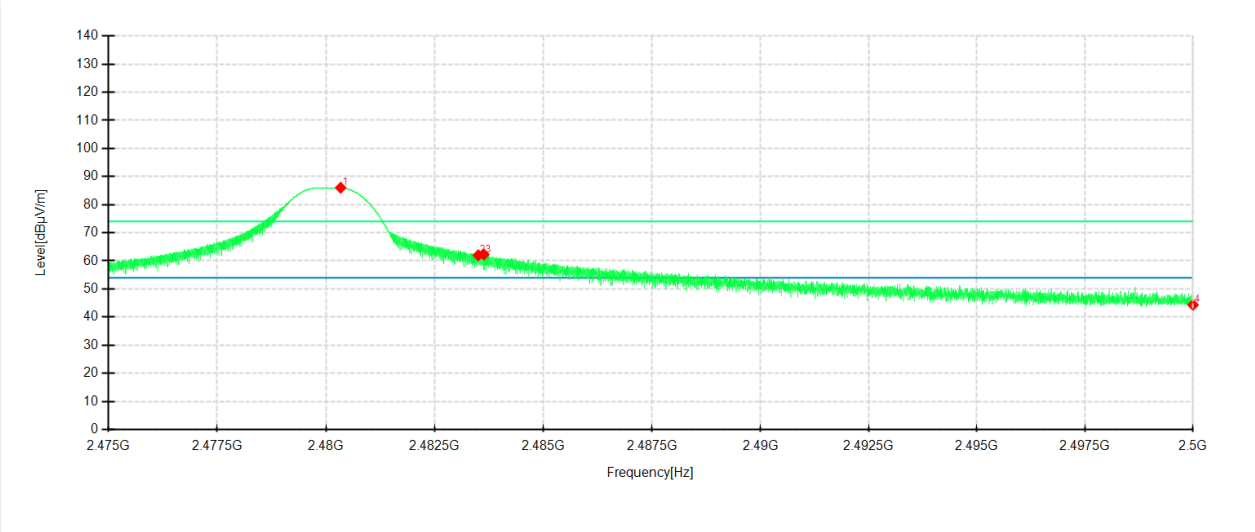


No.	Frequency MHz	Reading dBµV/m	Level dBµV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310	35.24	34.95	-0.29	54.00	19.05	100	192	Horizontal	/
2	2389.758	37.70	36.85	-0.85	54.00	17.15	100	172	Horizontal	/
3	2390	36.29	35.44	-0.85	54.00	18.56	100	359	Horizontal	/
4	2402.1592	92.99	92.24	-0.75	54.00	-38.24	100	350	Horizontal	No limit
1	2310	35.58	35.87	0.29	54.00	18.13	200	255	Vertical	/
2	2388.6379	37.07	37.37	0.30	54.00	16.63	100	187	Vertical	/
3	2390	35.79	36.08	0.29	54.00	17.92	100	187	Vertical	/
4	2401.9892	87.25	87.45	0.20	54.00	-33.45	100	187	Vertical	No limit

Highest Frequency
Frequency 2480MHz
Detector mode: Peak Polarity: Horizontal

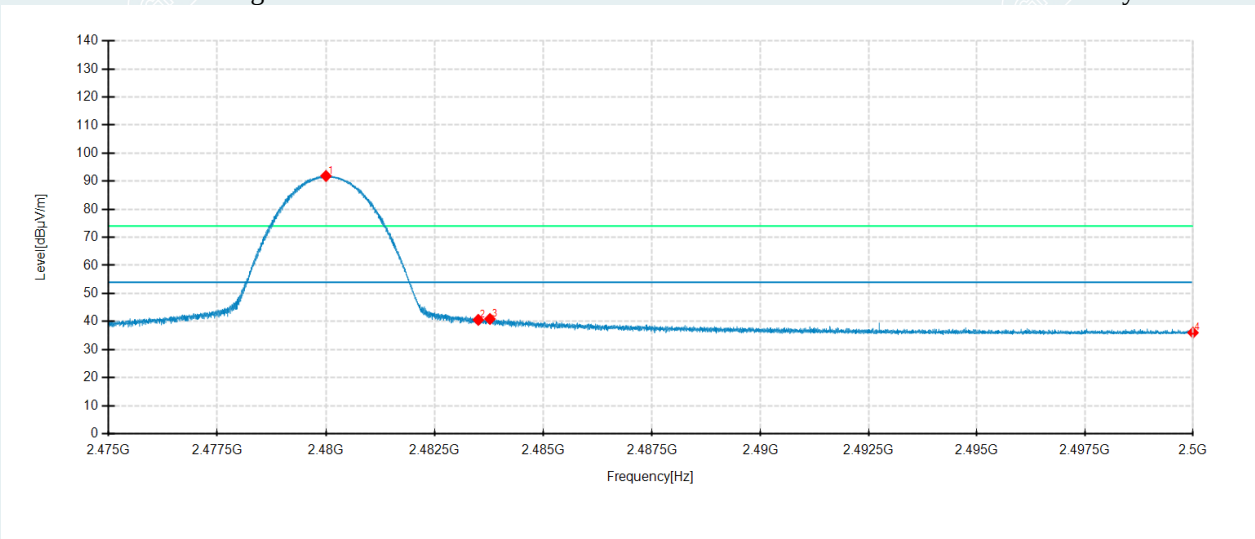


Detector mode: Peak Polarity: Vertical

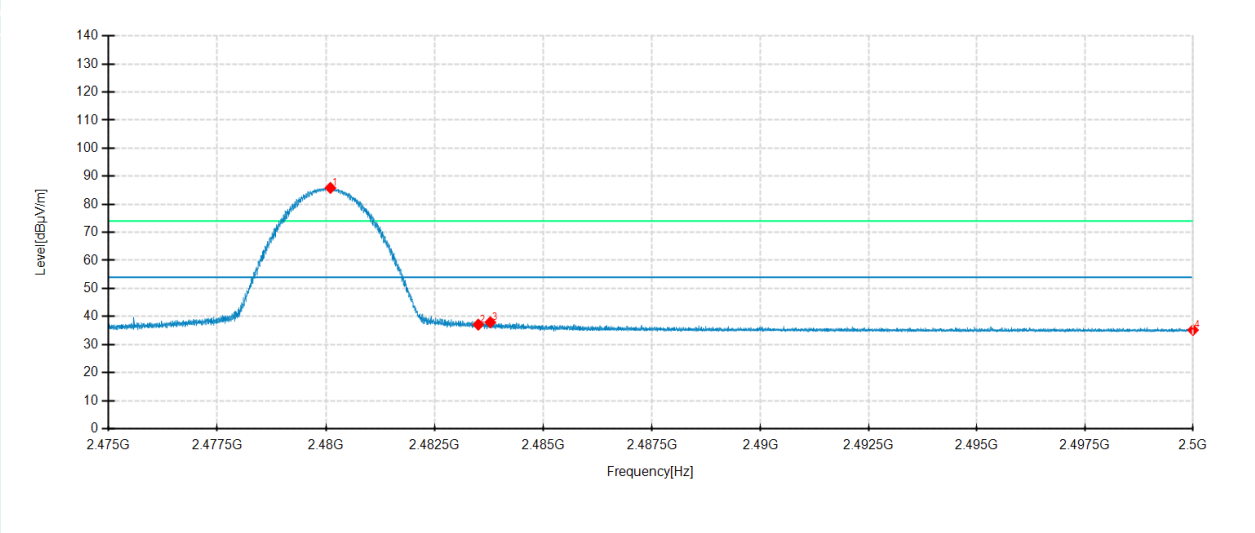


No.	Frequency MHz	Reading dBµV/m	Level dBµV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2480.298	92.42	92.61	0.19	74.00	-18.61	200	188	Horizontal	No limit
2	2483.5	68.13	68.39	0.26	74.00	5.61	200	188	Horizontal	/
3	2484.2209	67.55	67.83	0.28	74.00	6.17	200	188	Horizontal	/
4	2500	51.37	51.95	0.58	74.00	22.05	100	234	Horizontal	/
1	2480.3355	86.41	86.02	-0.39	74.00	-12.02	200	257	Vertical	No limit
2	2483.5	62.37	61.99	-0.38	74.00	12.01	200	257	Vertical	/
3	2483.6284	62.63	62.25	-0.38	74.00	11.75	200	268	Vertical	/
4	2500	44.65	44.33	-0.32	74.00	29.67	100	104	Vertical	/

Highest Frequency
Frequency 2480MHz
Detector mode: Average Polarity: Horizontal



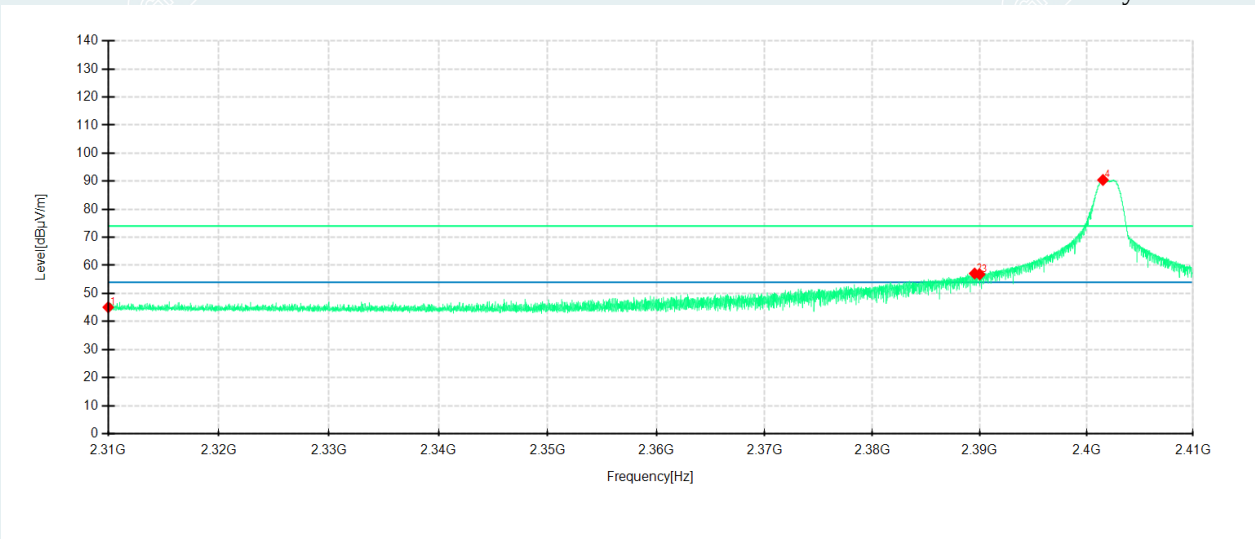
Detector mode: Average Polarity: Vertical



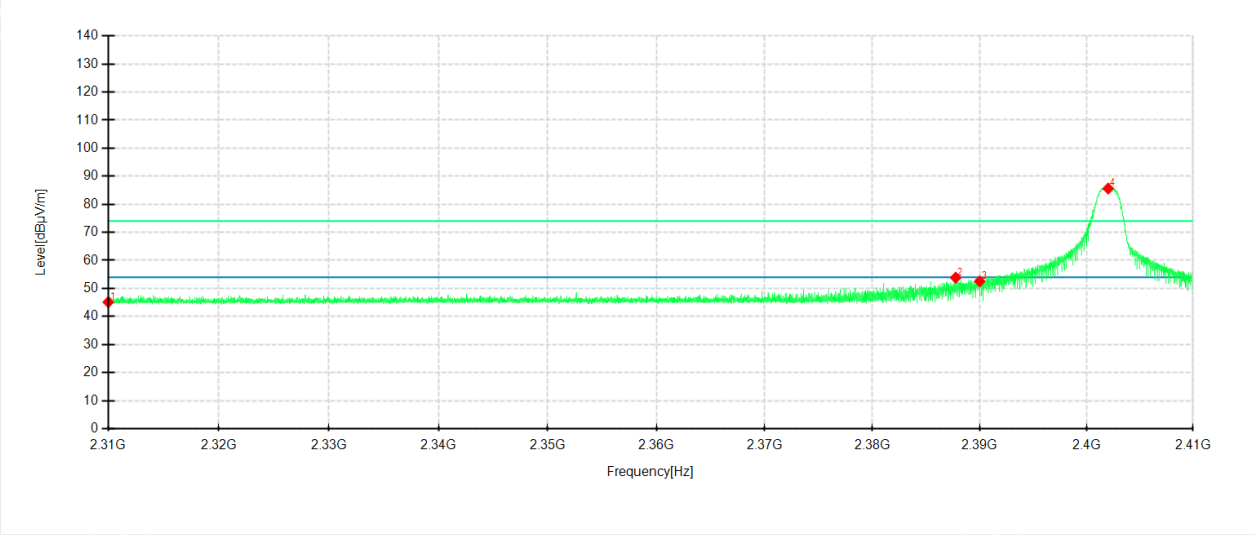
No.	Frequency MHz	Reading dBµV/m	Level dBµV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2479.998	91.69	91.88	0.19	54.00	-37.88	100	172	Horizontal	No limit
2	2483.5	40.31	40.57	0.26	54.00	13.43	100	172	Horizontal	/
3	2483.7684	40.63	40.89	0.26	54.00	13.11	200	92	Horizontal	/
4	2500	35.43	36.01	0.58	54.00	17.99	200	103	Horizontal	/
1	2480.1005	86.22	85.83	-0.39	54.00	-31.83	200	259	Vertical	No limit
2	2483.5	37.47	37.09	-0.38	54.00	16.91	200	248	Vertical	/
3	2483.7784	38.31	37.93	-0.38	54.00	16.07	200	270	Vertical	/
4	2500	35.48	35.16	-0.32	54.00	18.84	100	188	Vertical	/

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

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

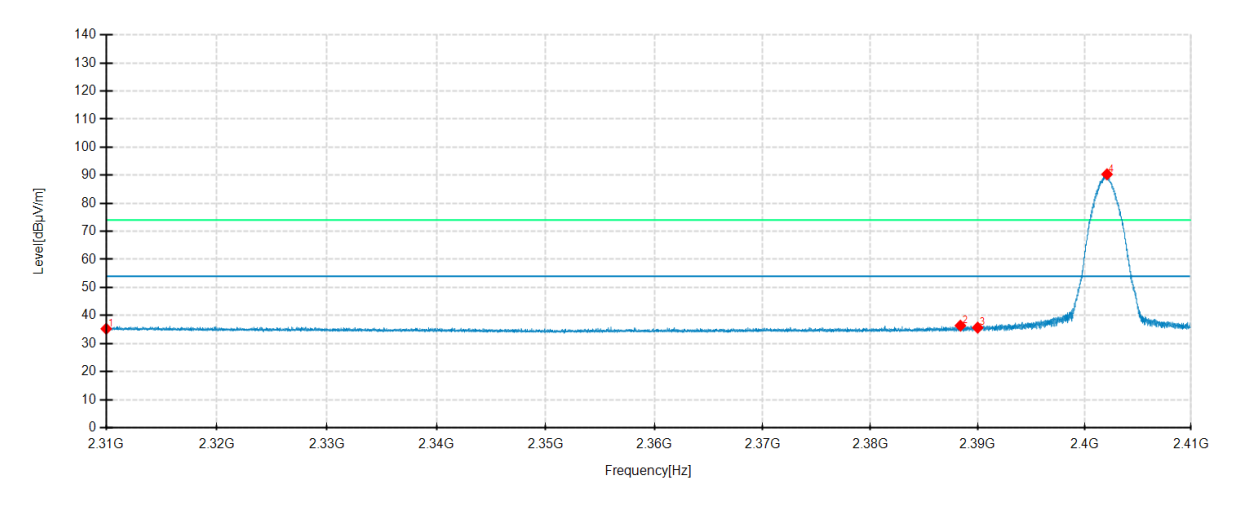


Detector mode: Peak Polarity: Vertical

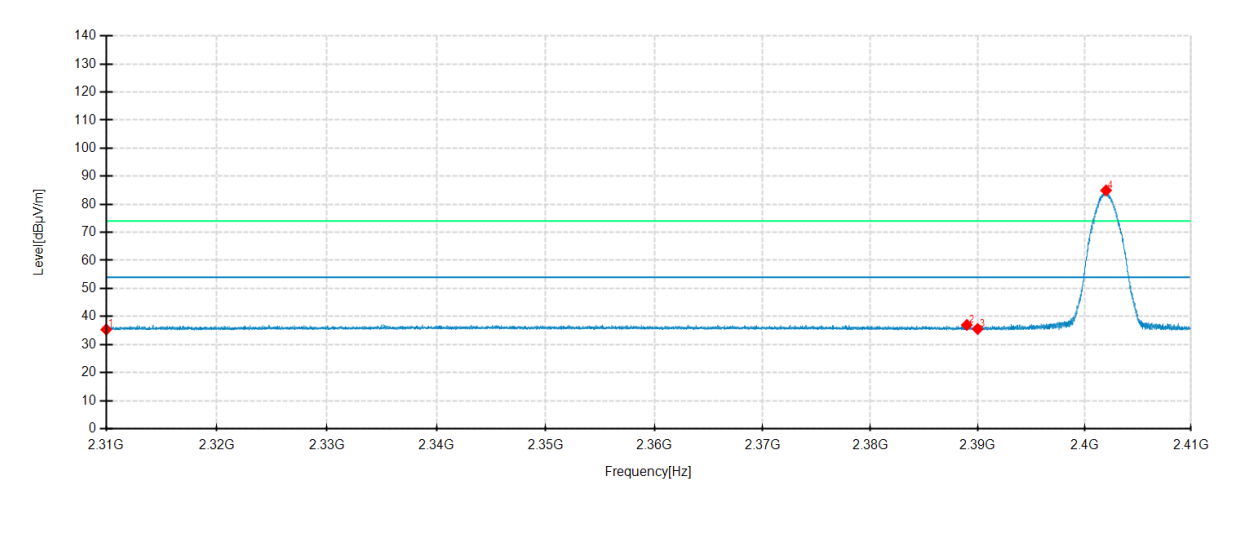


No.	Frequency MHz	Reading dBµV/m	Level dBµV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310	45.37	45.08	-0.29	74.00	28.92	100	174	Horizontal	/
2	2389.528	57.96	57.11	-0.85	74.00	16.89	200	115	Horizontal	/
3	2390	57.66	56.81	-0.85	74.00	17.19	100	174	Horizontal	/
4	2401.5392	91.21	90.45	-0.76	74.00	-16.45	100	319	Horizontal	No limit
1	2310	44.82	45.11	0.29	74.00	28.89	100	176	Vertical	/
2	2387.7578	53.54	53.84	0.30	74.00	20.16	200	255	Vertical	/
3	2390	52.24	52.53	0.29	74.00	21.47	100	186	Vertical	/
4	2402.0292	85.42	85.62	0.20	74.00	-11.62	200	255	Vertical	No limit

Lowest Frequency
Frequency 2402MHz
Detector mode: Average Polarity: Horizontal

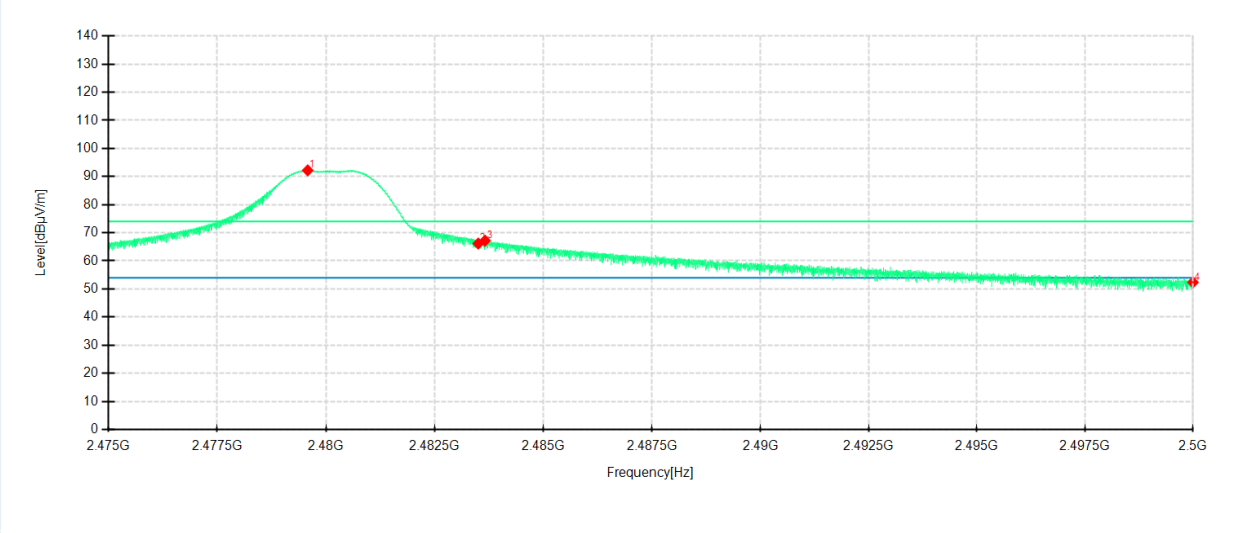


Detector mode: Average Polarity: Vertical

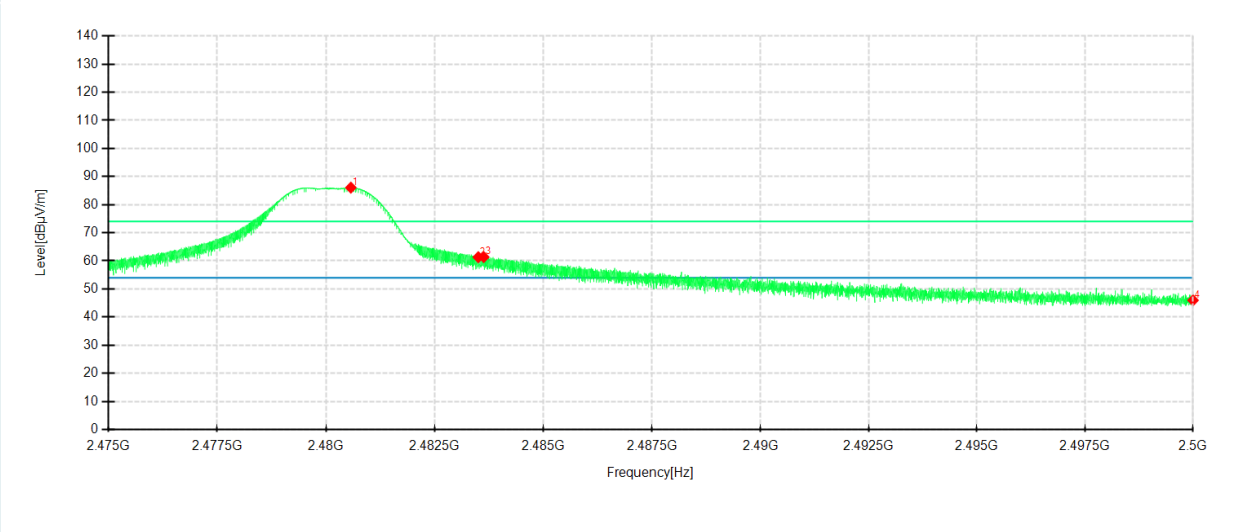


No.	Frequency MHz	Reading dBµV/m	Level dBµV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2310	35.54	35.25	-0.29	54.00	18.75	100	358	Horizontal	/
2	2388.3878	37.23	36.37	-0.86	54.00	17.63	100	172	Horizontal	/
3	2390	36.51	35.66	-0.85	54.00	18.34	100	330	Horizontal	/
4	2402.1092	91.09	90.34	-0.75	54.00	-36.34	100	319	Horizontal	No limit
1	2310	35.05	35.34	0.29	54.00	18.66	200	0	Vertical	/
2	2388.9879	36.67	36.97	0.30	54.00	17.03	200	0	Vertical	/
3	2390	35.26	35.55	0.29	54.00	18.45	100	0	Vertical	/
4	2402.0192	84.75	84.95	0.20	54.00	-30.95	200	0	Vertical	No limit

Highest Frequency
Frequency 2480MHz
Detector mode: Peak Polarity: Horizontal

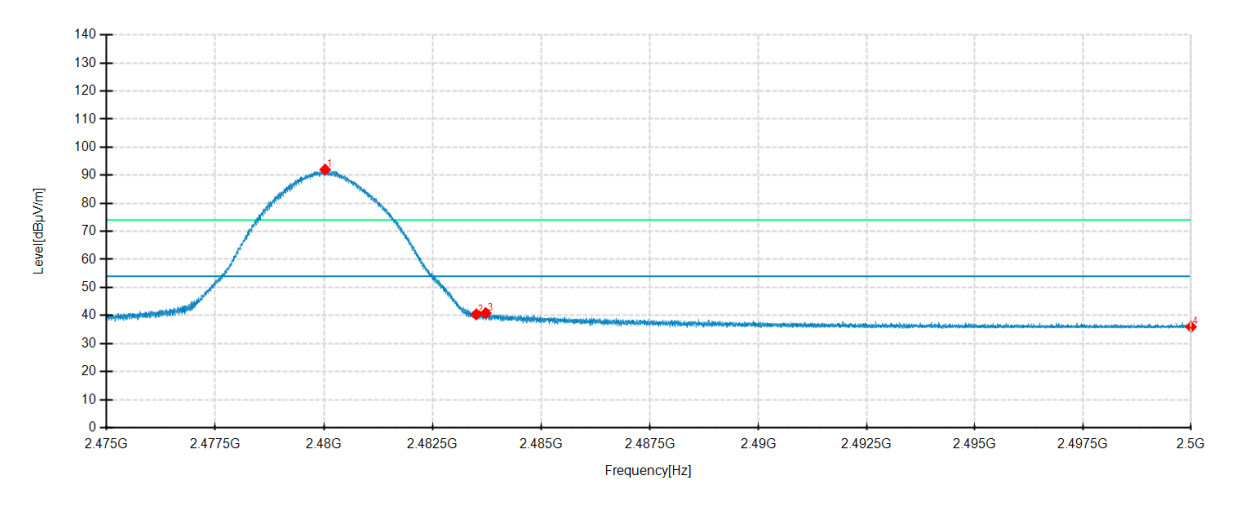


Detector mode: Peak Polarity: Vertical

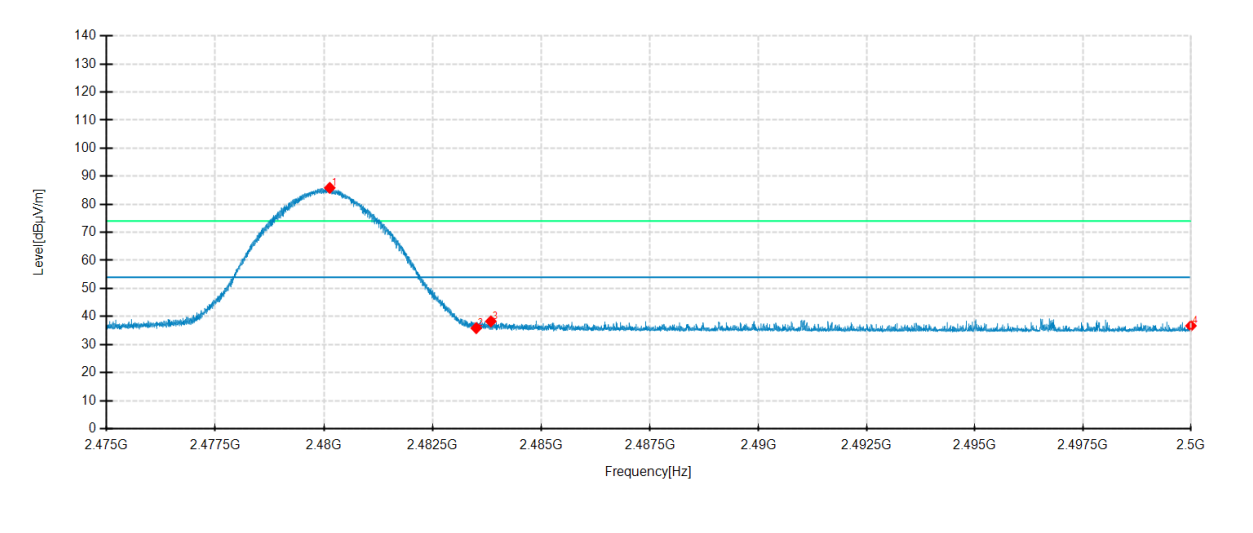


No.	Frequency MHz	Reading dBµV/m	Level dBµV/m	Factor dB	Limit dBuV/m	Margin dB	Height cm	Angle °	Pole	Remark
1	2479.578	92.02	92.20	0.18	74.00	-18.20	100	172	Horizontal	No limit
2	2483.5	65.90	66.16	0.26	74.00	7.84	200	116	Horizontal	/
3	2483.6559	66.92	67.18	0.26	74.00	6.82	100	172	Horizontal	/
4	2500	51.78	52.36	0.58	74.00	21.64	100	172	Horizontal	/
1	2480.5706	86.45	86.06	-0.39	74.00	-12.06	200	264	Vertical	No limit
2	2483.5	61.69	61.31	-0.38	74.00	12.69	200	245	Vertical	/
3	2483.6259	61.74	61.36	-0.38	74.00	12.64	200	254	Vertical	/
4	2500	46.30	45.98	-0.32	74.00	28.02	200	245	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	2480.0255	91.81	92.00	0.19	54.00	-38.00	100	173	Horizontal	No limit
2	2483.5	40.13	40.39	0.26	54.00	13.61	200	92	Horizontal	/
3	2483.7184	40.57	40.83	0.26	54.00	13.17	100	330	Horizontal	/
4	2500	35.36	35.94	0.58	54.00	18.06	100	173	Horizontal	/
1	2480.1305	86.24	85.85	-0.39	54.00	-31.85	200	256	Vertical	No limit
2	2483.5	36.23	35.85	-0.38	54.00	18.15	100	93	Vertical	/
3	2483.8359	38.63	38.26	-0.37	54.00	15.74	100	187	Vertical	/
4	2500	36.99	36.67	-0.32	54.00	17.33	100	187	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 E202209268928-5-Test Photo.

APPENDIX B. PHOTOGRAPH OF THE EUT

Please refer to the attached document E202209268928-6-EUT Photo.

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