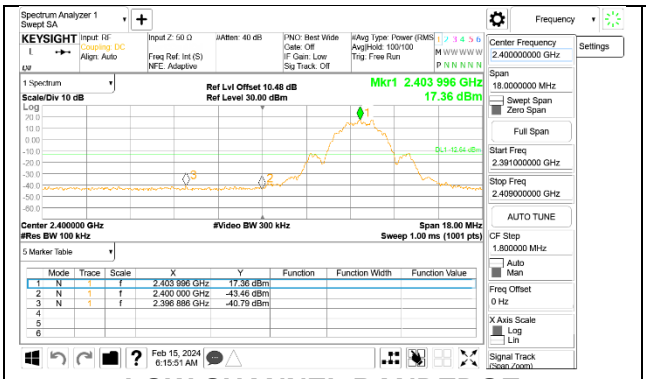
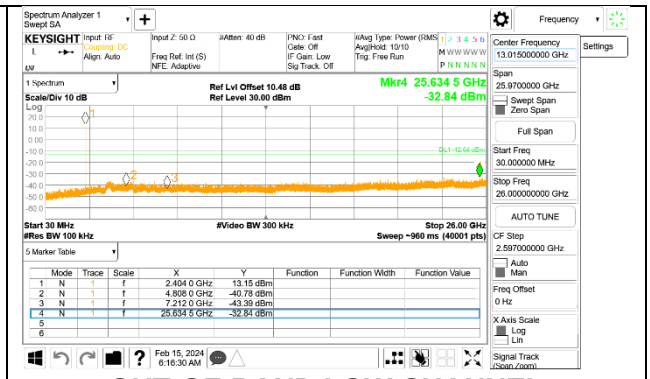
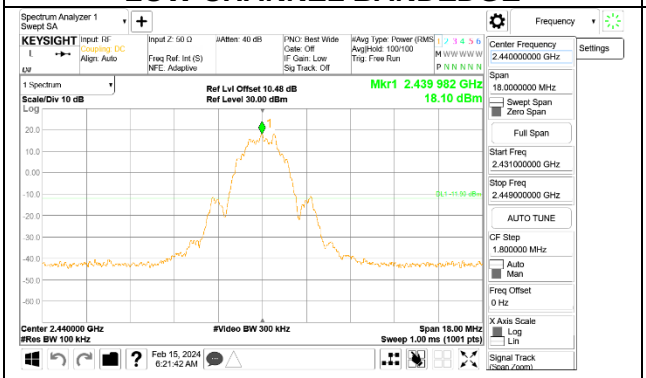
Tx1



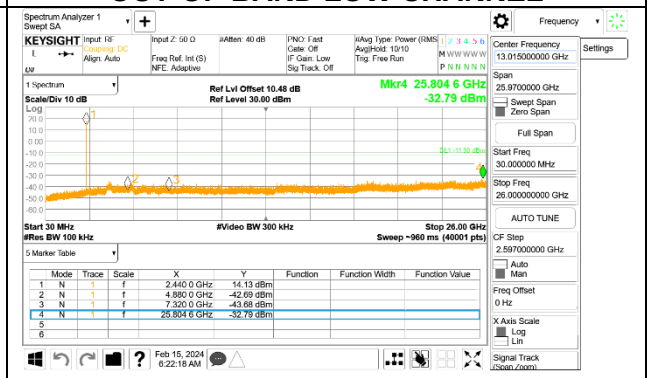
LOW CHANNEL BANDEDGE



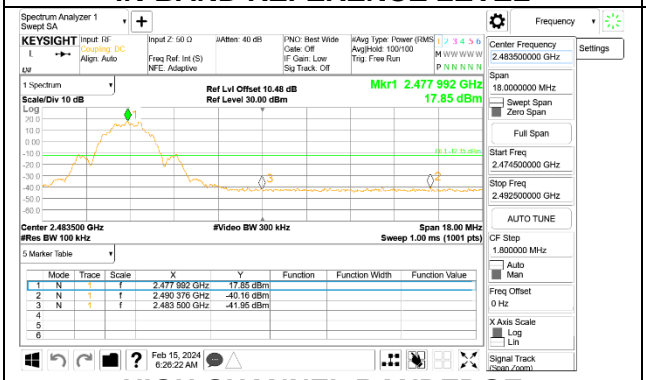
OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE

OUT-OF-BAND HIGH CHANNEL

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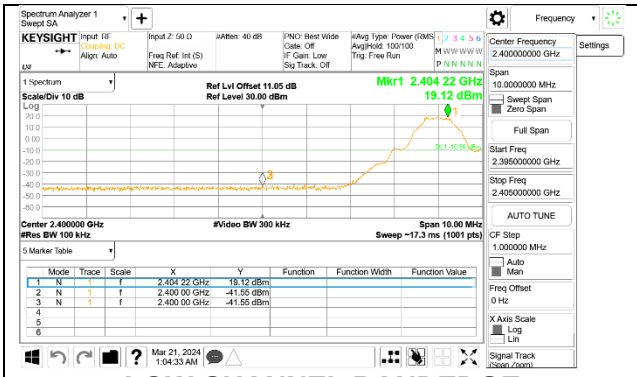
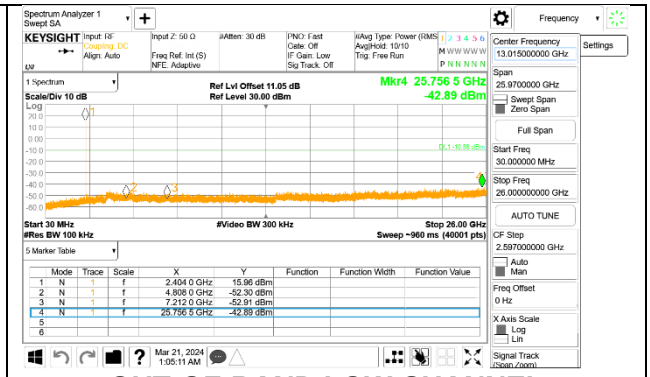
9.4.5. BLE 1Mbps GFSK, MODE 0 (CHANNEL SOUNDING)

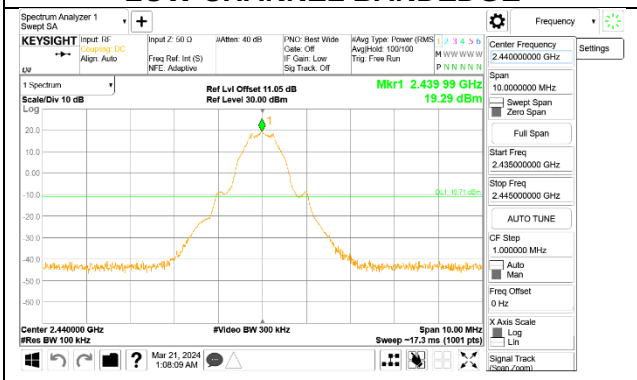
Tx0



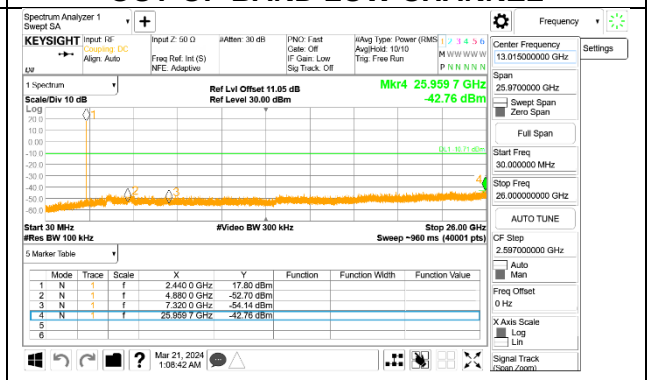
LOW CHANNEL BANDEDGE



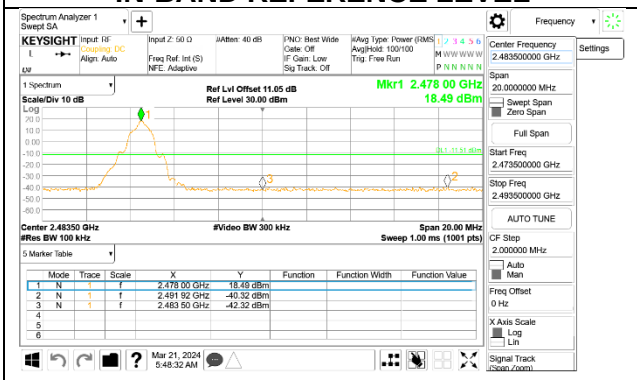
OUT-OF-BAND LOW CHANNEL



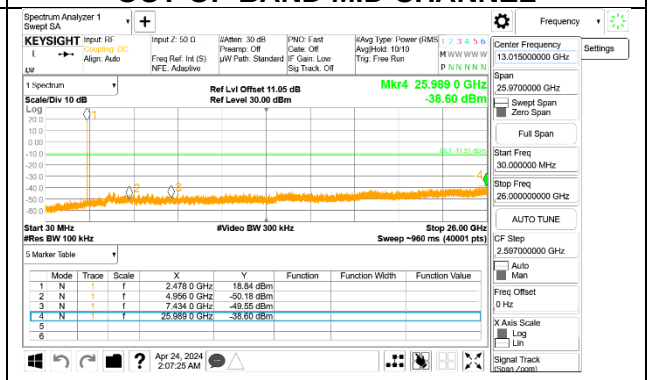
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



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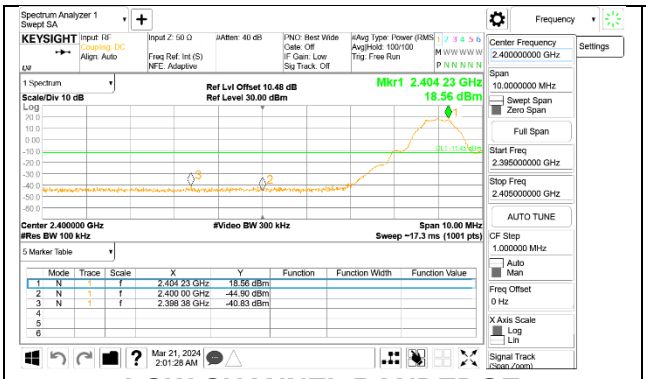
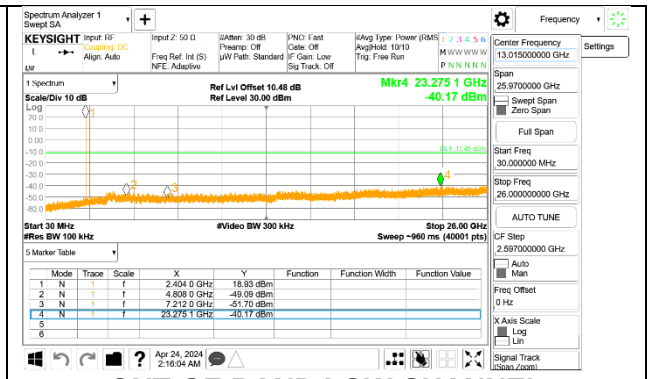
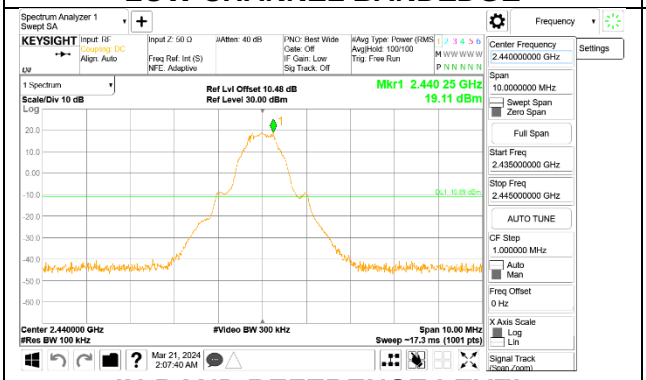
Tx1



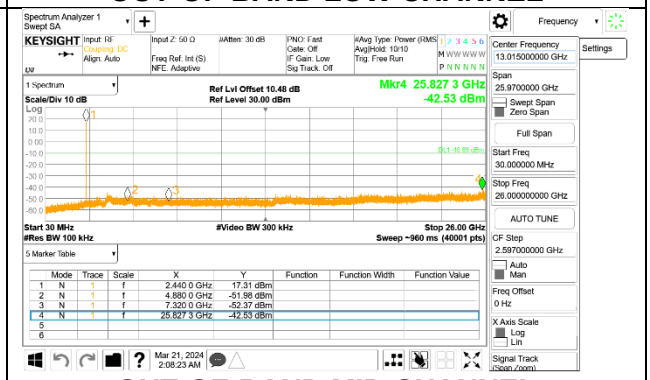
LOW CHANNEL BANDEDGE



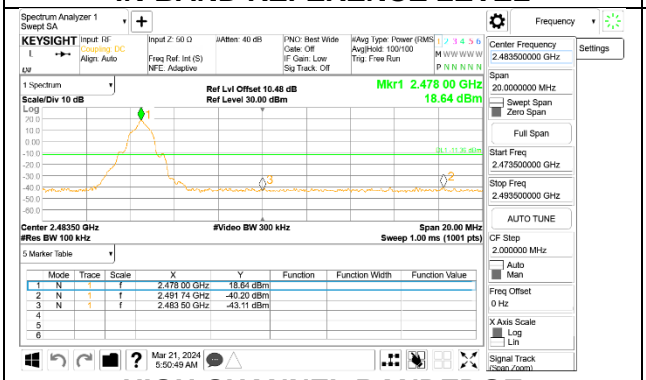
OUT-OF-BAND LOW CHANNEL



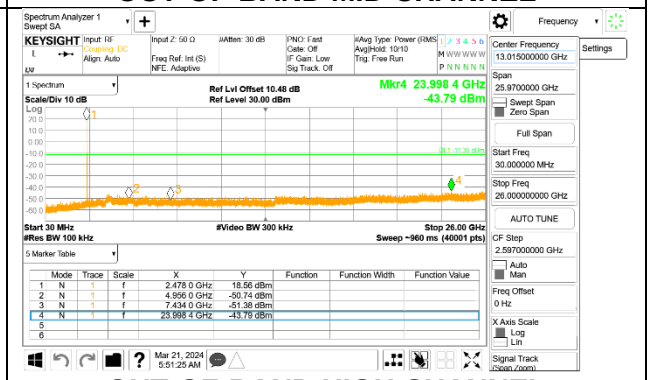
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



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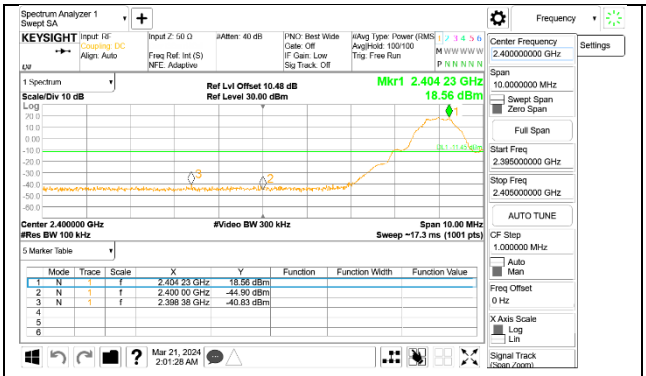
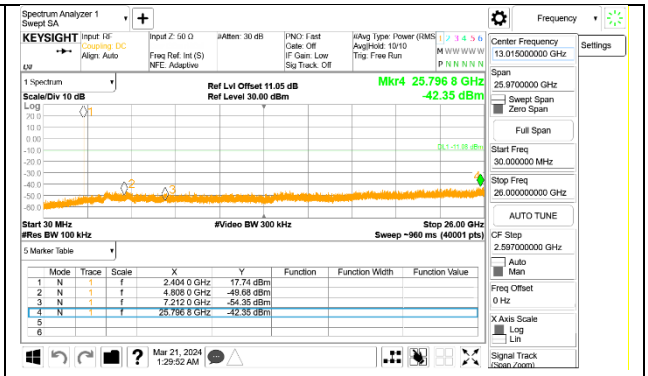
9.4.6. BLE 2Mbps GFSK, MODE 0 (CHANNEL SOUNDING)

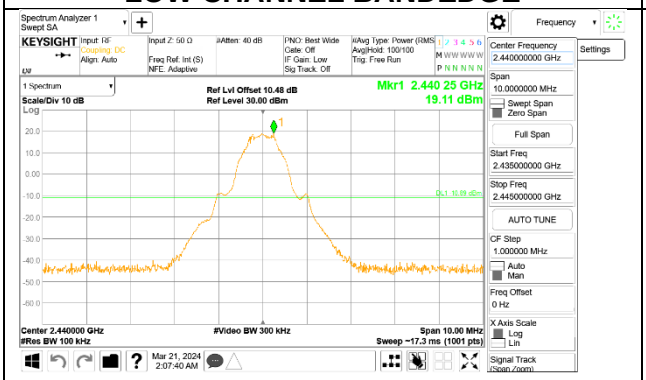
Tx0



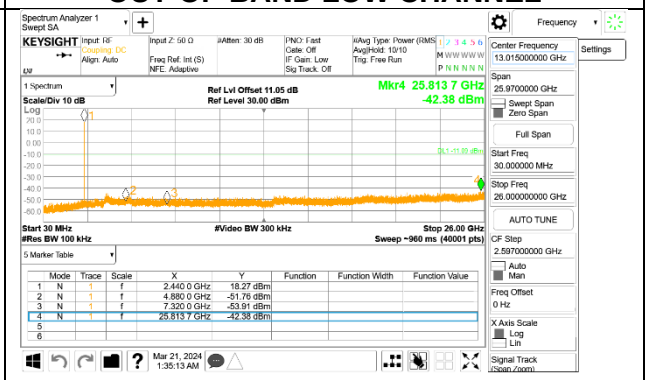
LOW CHANNEL BANDEDGE



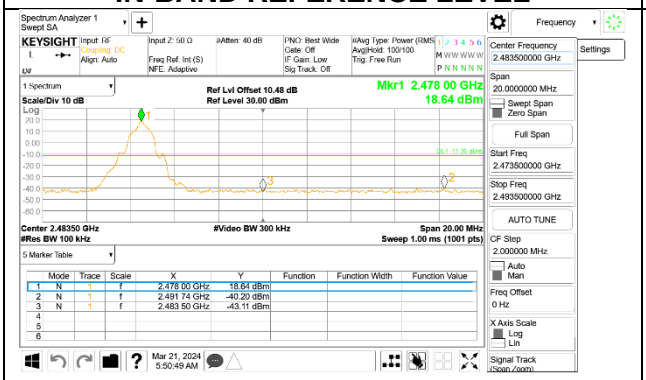
OUT-OF-BAND LOW CHANNEL



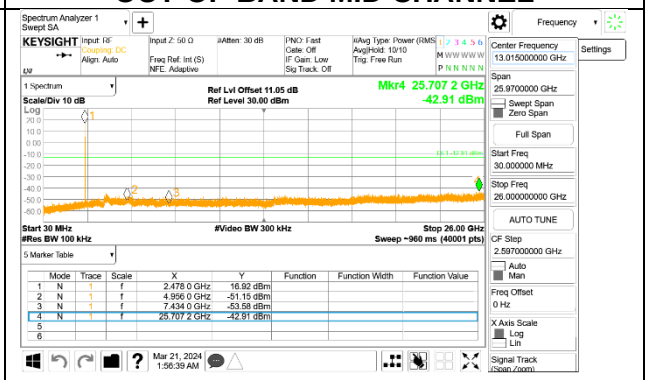
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

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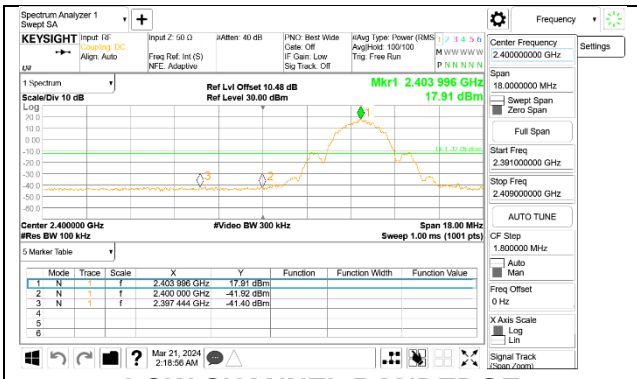
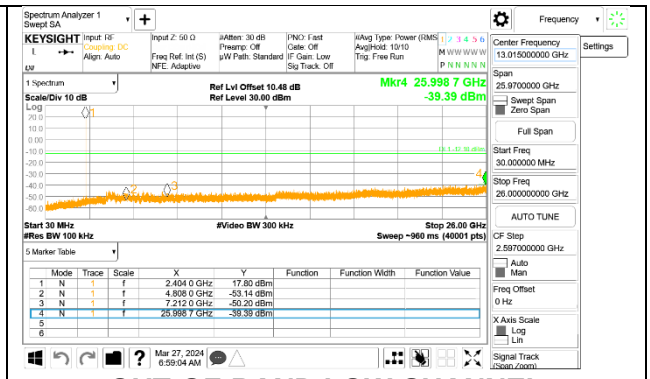
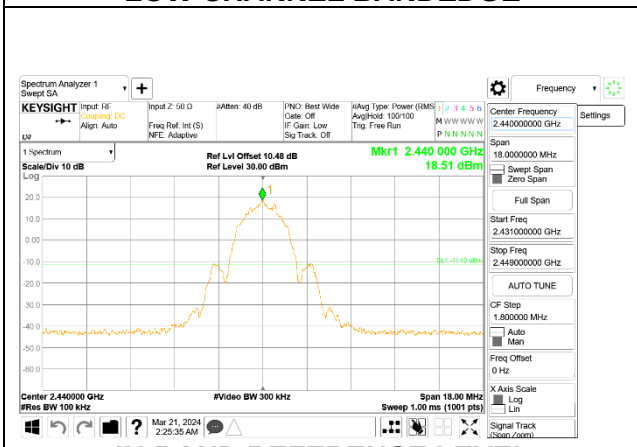
Tx1



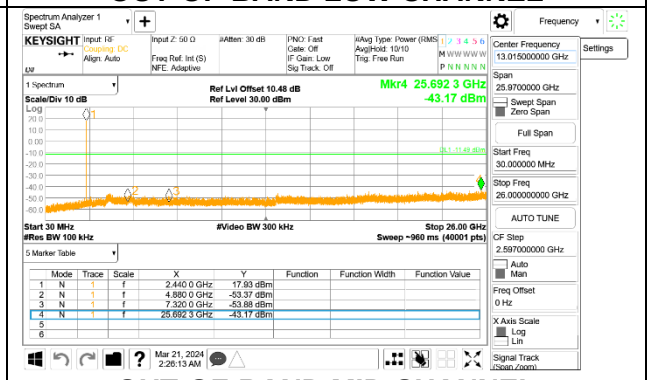
LOW CHANNEL BANDEDGE



OUT-OF-BAND LOW CHANNEL



IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL

HIGH CHANNEL BANDEDGE

OUT-OF-BAND HIGH CHANNEL

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10. RADIATED TEST RESULTS

10.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
0.009-0.490	2400/F(kHz) @ 300 m	-
0.490-1.705	24000/F(kHz) @ 30 m	-
1.705 - 30	30 @ 30m	-
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane for measurement below 1GHz; 1.5 m above the ground plane for measurement above 1GHz. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.10. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements in the 30-1000MHz range, 9kHz for peak and/or quasi-peak detection measurements in the 0.15-30MHz range and 200Hz for peak and/or quasi-peak detection measurements in the 9 to 150kHz range. Peak detection is used unless otherwise noted as quasi-peak or average (9-90kHz and 110-490kHz).

For pre-scans above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 30 kHz for peak measurements.

For final measurements above 1 GHz the resolution bandwidth is set to 1 MHz; the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

The spectrum from 1 GHz to 18 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each applicable band. Below 1GHz and above 18GHz emissions, the channel with the highest output power was tested.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

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For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only. Blue color trace on plots: Parallel orientation. Green color trace on plots: Perpendicular orientation.

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

KDB 414788 Open Field Site (OFS) and Chamber Correlation Justification
OFS and chamber correlation testing had been performed and chamber measured test result is the worst-case test result.

NOTE: The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table), using the free space impedance of 377 Ohms. For example, the measurement at frequency X kHz resulted in a level of Y dBuV/m, which is equivalent to Y – 51.5 = Z dBuA/m, which has the same margin, W dB, to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.

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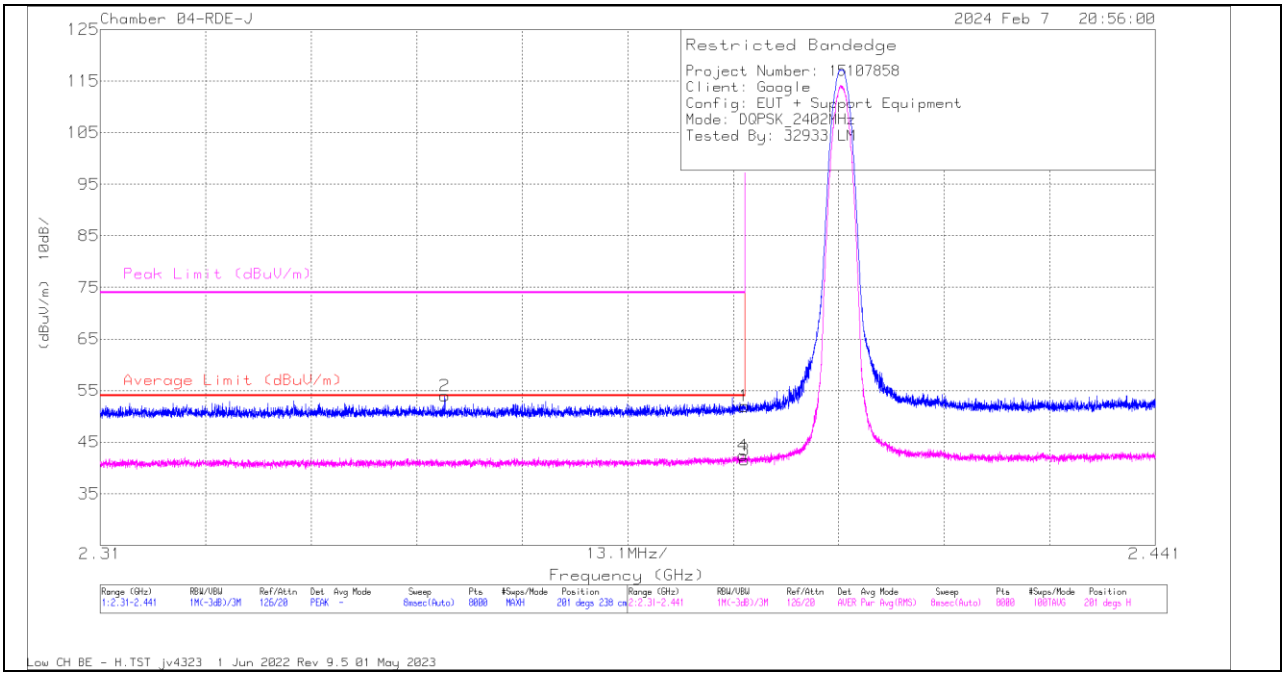
10.2. TRANSMITTER ABOVE 1 GHz

10.2.1. BT DQPSK TXBF

2Tx

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.39	57.07	Pk	32	-37.1	0	51.97	-	-	74	-22.03	201	238	H
2	* ** 2.352777	59.17	Pk	31.9	-37.1	0	53.97	-	-	74	-20.03	201	238	H
3	* ** 2.39	45.51	RMS	32	-37.1	1.15	41.54	54	-12.46	-	-	201	238	H
4	* ** 2.389789	46.35	RMS	32	-37.1	1.15	42.38	54	-11.62	-	-	201	238	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
RMS - RMS detection

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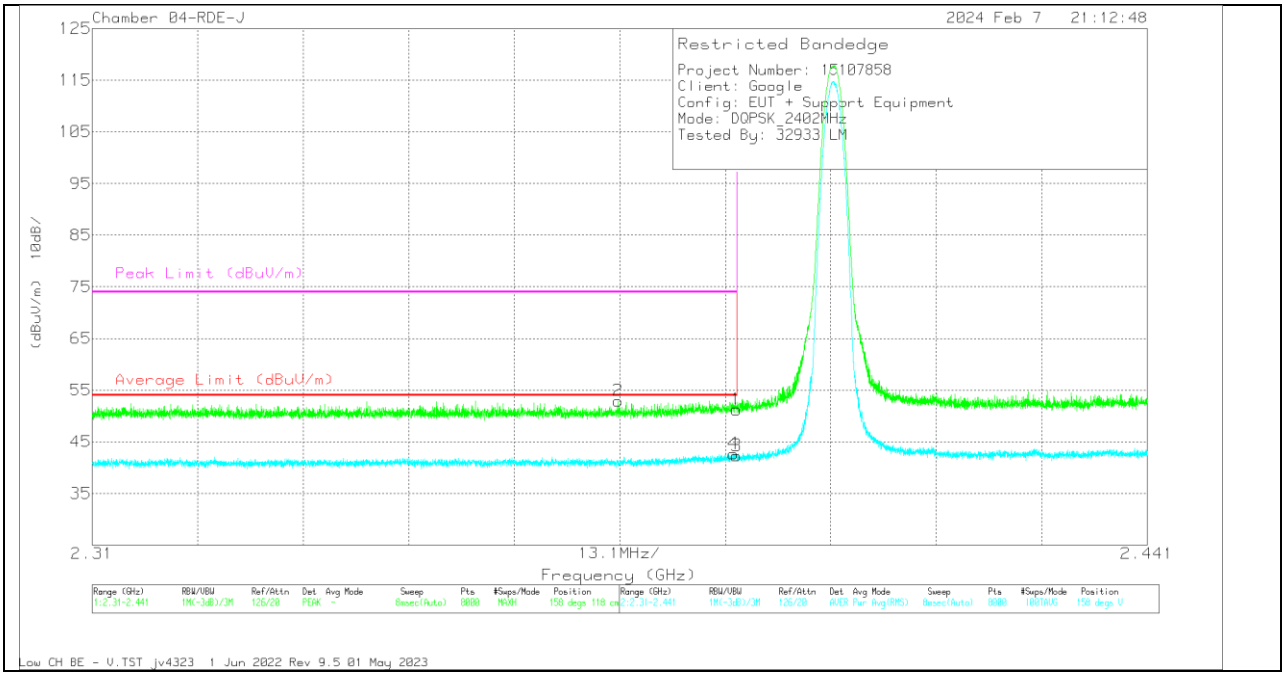
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.39	56.35	Pk	32	-37.1	0	51.25	-	-	74	-22.75	158	118	V
2	* ** 2.375295	58.14	Pk	32	-37.2	0	52.94	-	-	74	-21.06	158	118	V
3	* ** 2.39	46.26	RMS	32	-37.1	1.15	42.29	54	-11.71	-	-	158	118	V
4	* ** 2.389609	46.66	RMS	32	-37.1	1.15	42.69	54	-11.31	-	-	158	118	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
RMS - RMS detection

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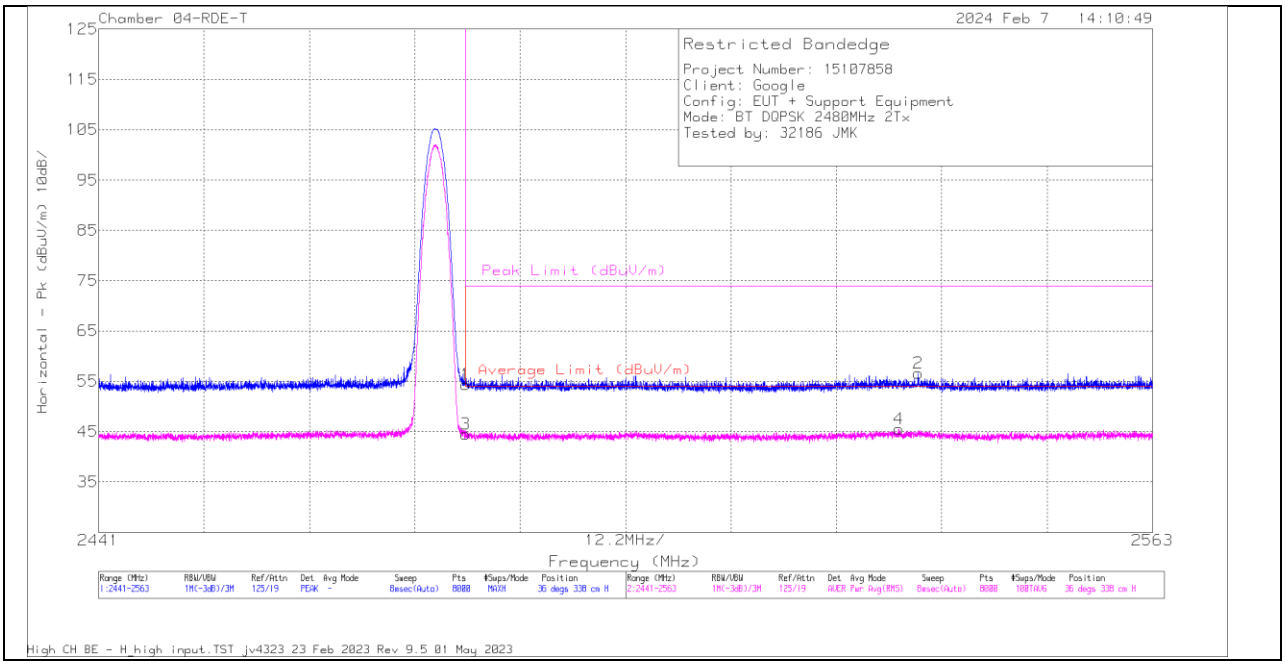
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80430 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2483.5	47.39	Pk	33.4	0	-26.38	54.41	-	-	74	-19.59	36	338	H
2	** 2535.883	49.11	Pk	33.2	0	-25.66	56.65	-	-	74	-17.35	36	338	H
3	* ** 2483.5	36.39	RMS	33.4	1.15	-26.38	44.54	54	-9.46	-	-	36	338	H
4	** 2533.656	36.93	RMS	33.2	1.15	-25.75	45.51	54	-8.49	-	-	36	338	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
RMS - RMS detection

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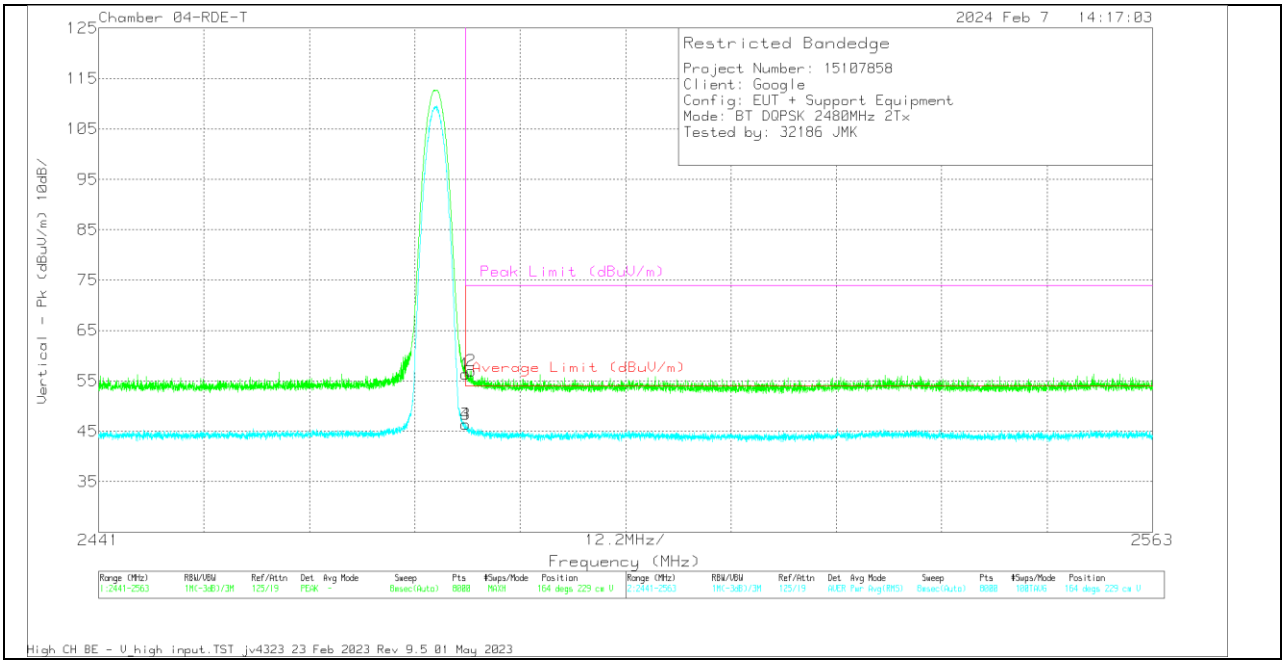
VERTICAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80430 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2483.5	49.3	Pk	33.4	0	-26.38	56.32	-	-	74	-17.68	164	229	V
2	* ** 2484.117	49.99	Pk	33.4	0	-26.39	57	-	-	74	-17	164	229	V
3	* ** 2483.5	38.19	RMS	33.4	1.15	-26.38	46.34	54	-7.66	-	-	164	229	V
4	* ** 2483.507	38.2	RMS	33.4	1.15	-26.38	46.35	54	-7.65	-	-	164	229	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
RMS - RMS detection

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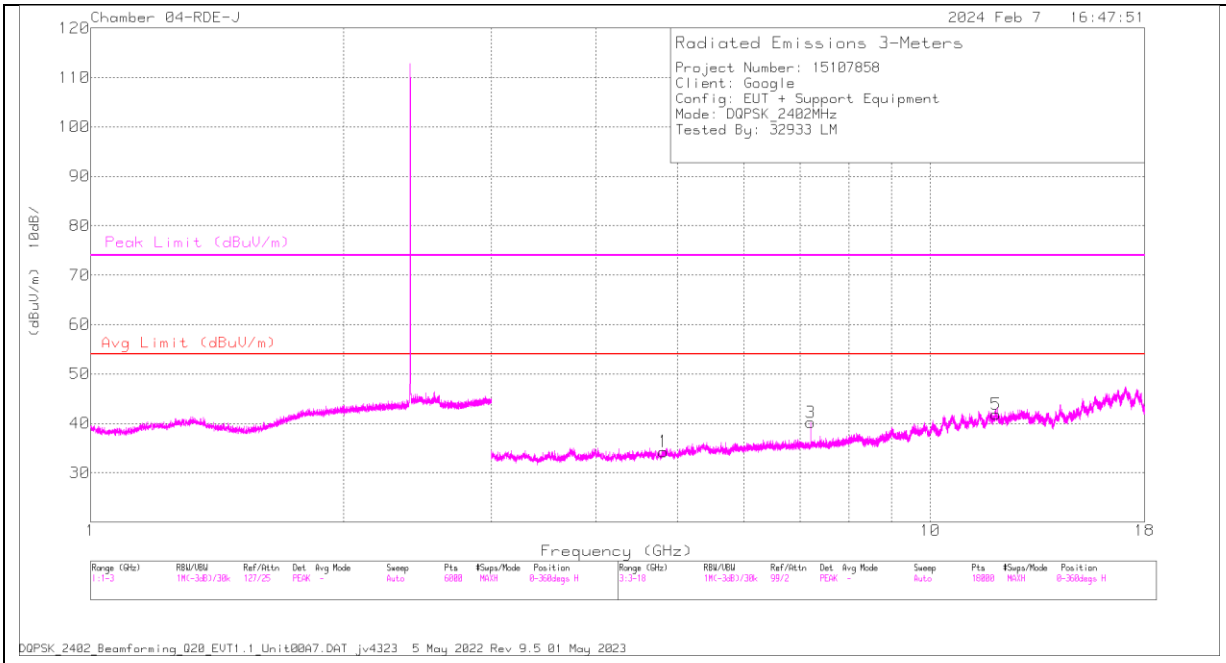
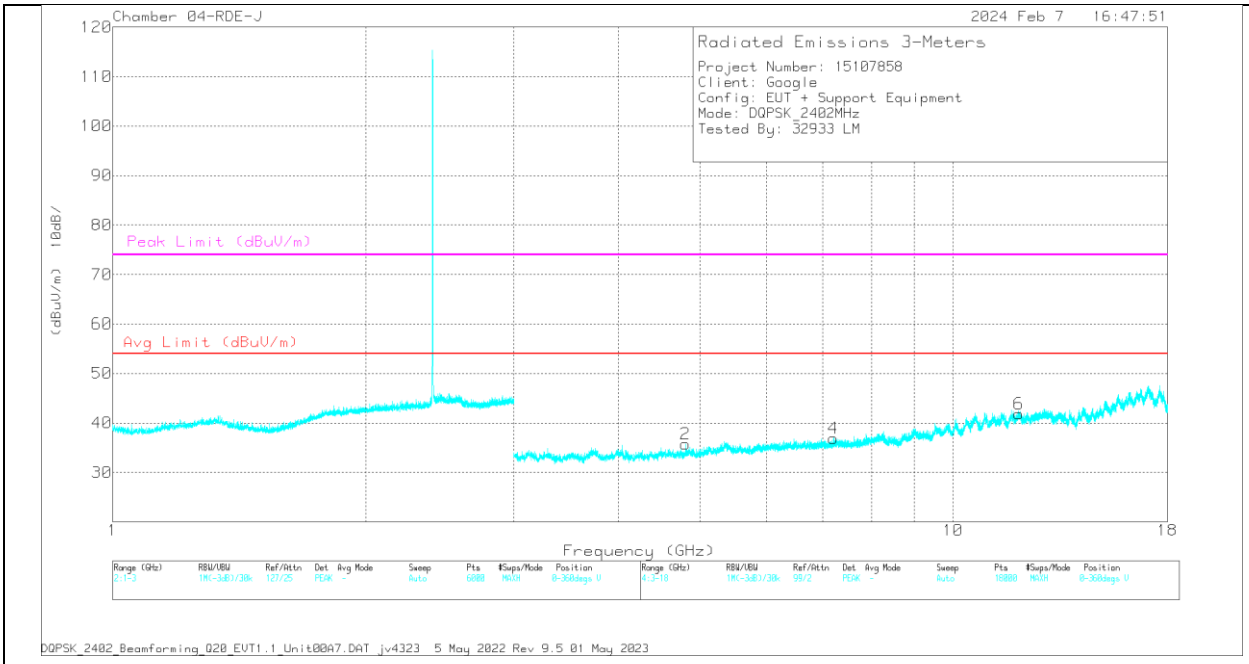
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

UL VERIFICATION SERVICES INC.
47173 Benicia Street, Fremont, CA 94538, USA TEL:(510) 319-4000 FAX:(510) 661-0888

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 4.810063	55.96	PK2	34	-45	0	44.96	-	-	74	-29.04	42	191	H
	* ** 4.812055	44.14	MAv1	34	-45.1	1.15	34.17	54	-19.83	-	-	42	191	H
2	* ** 4.806947	55.92	PK2	34	-45	0	44.92	-	-	74	-29.08	131	221	V
	* ** 4.808725	44.22	MAv1	34	-45	1.15	34.35	54	-19.65	-	-	131	221	V
3	7.206525	56.05	PK2	35.8	-42.5	0	49.35	-	-	-	-	251	134	H
4	7.200828	52.7	PK2	35.8	-42.4	0	46.1	-	-	-	-	341	377	V
5	* ** 11.979653	52.47	PK2	38.7	-39.1	0	52.07	-	-	74	-21.93	125	115	H
	* ** 11.977973	41.13	MAv1	38.7	-39.3	1.15	41.66	54	-12.34	-	-	125	115	H
6	* ** 11.976335	53.14	PK2	38.7	-39	0	52.84	-	-	74	-21.16	121	188	V
	* ** 11.976278	40.97	MAv1	38.7	-39	1.15	41.8	54	-12.2	-	-	121	188	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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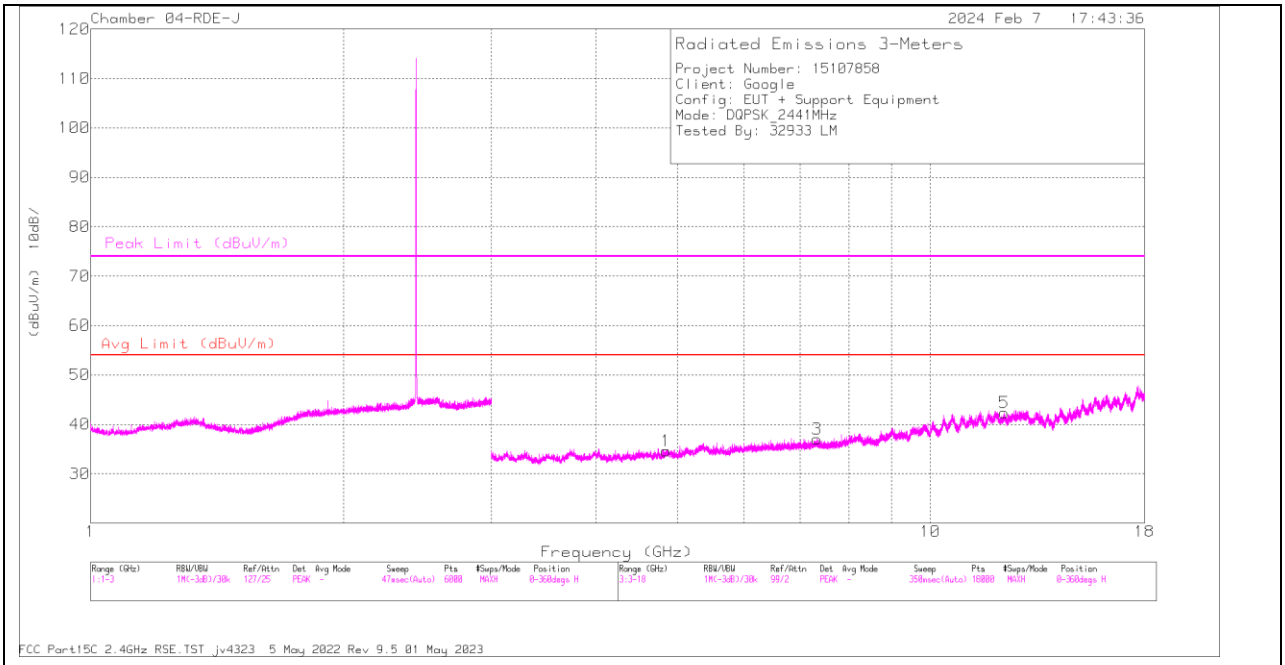
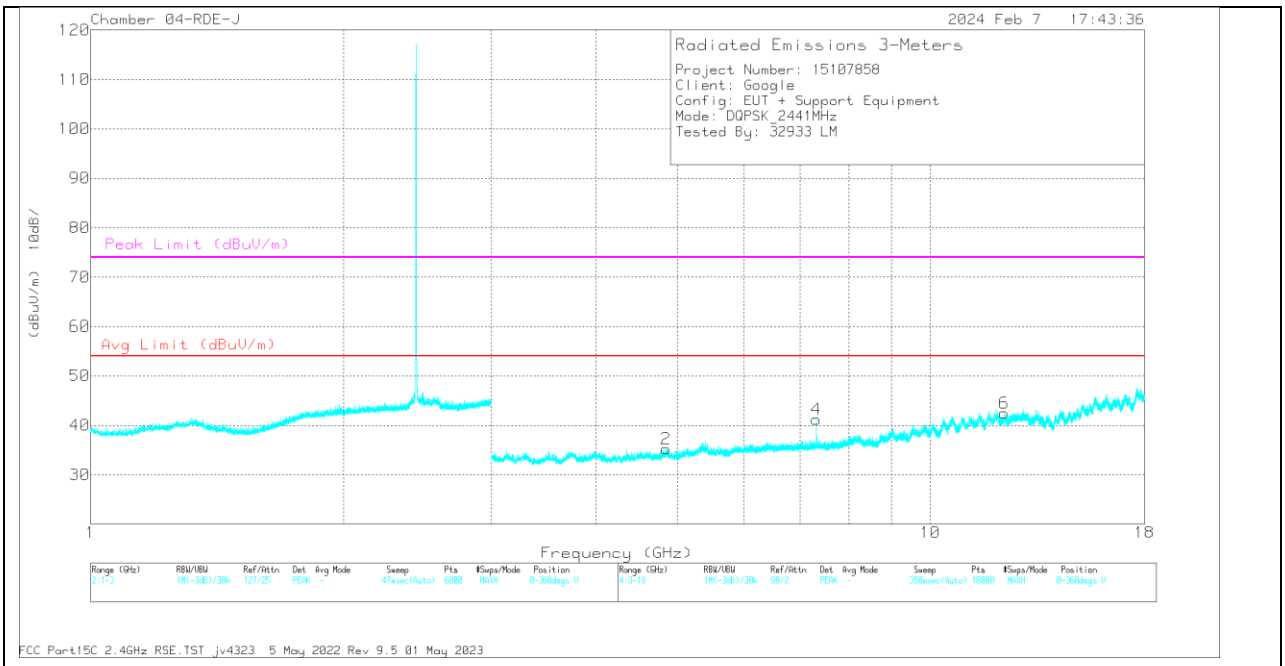
MID CHANNEL RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 4.849705	55.3	PK2	34	-44.6	0	44.7	-	-	74	-29.3	354	372	H
	* ** 4.849864	43.72	MAv1	34	-44.6	1.15	34.25	54	-19.75	-	-	354	372	H
2	* ** 4.846016	56.15	PK2	34	-44.6	0	45.55	-	-	74	-28.45	256	276	V
	* ** 4.842497	43.89	MAv1	34	-44.6	1.15	34.42	54	-19.58	-	-	256	276	V
3	* ** 7.322815	55.44	PK2	35.8	-42.3	0	48.94	-	-	74	-25.06	167	114	H
	* ** 7.32293	44.06	MAv1	35.8	-42.3	1.15	38.69	54	-15.31	-	-	167	114	H
4	* ** 7.323267	59.37	PK2	35.8	-42.3	0	52.87	-	-	74	-21.13	193	394	V
	* ** 7.323307	51.3	MAv1	35.8	-42.3	1.15	45.93	54	-8.07	-	-	193	394	V
5	* ** 12.246466	52.72	PK2	38.8	-39	0	52.52	-	-	74	-21.48	251	184	H
	* ** 12.248293	40.7	MAv1	38.8	-39	1.15	41.63	54	-12.37	-	-	251	184	H
6	* ** 12.252992	52.38	PK2	38.8	-38.9	0	52.28	-	-	74	-21.72	56	389	V
	* ** 12.255287	40.68	MAv1	38.8	-38.8	1.15	41.81	54	-12.19	-	-	56	389	V

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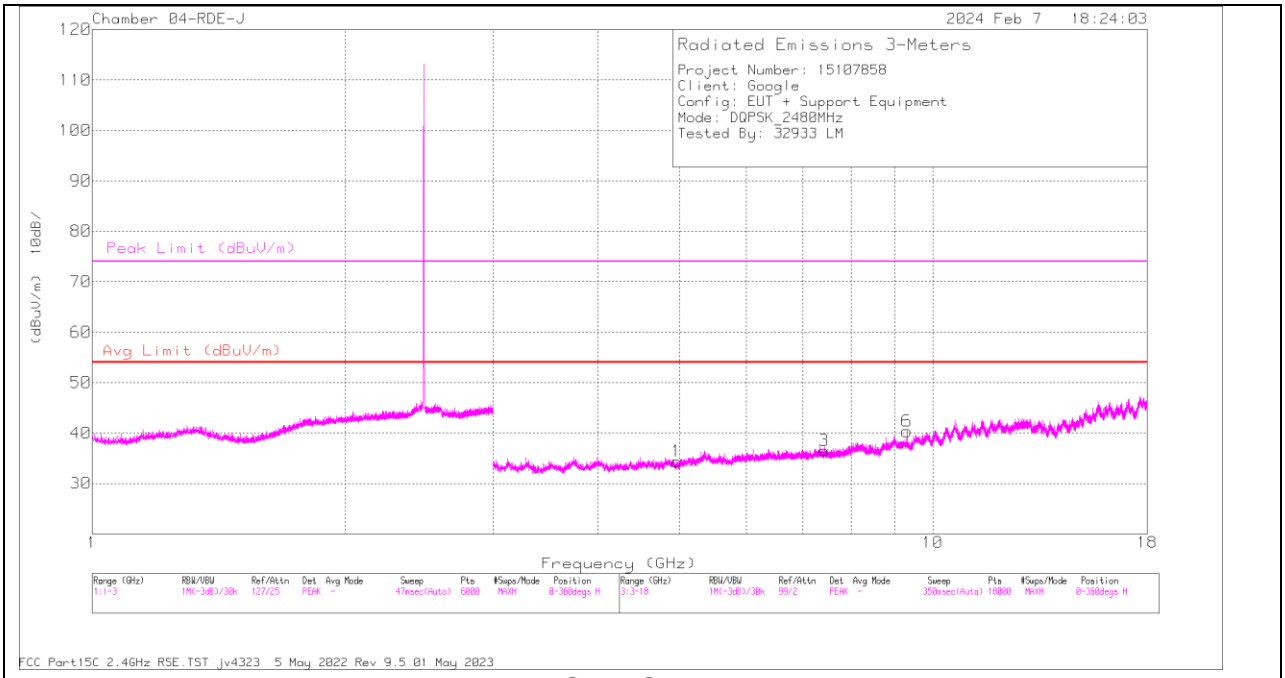
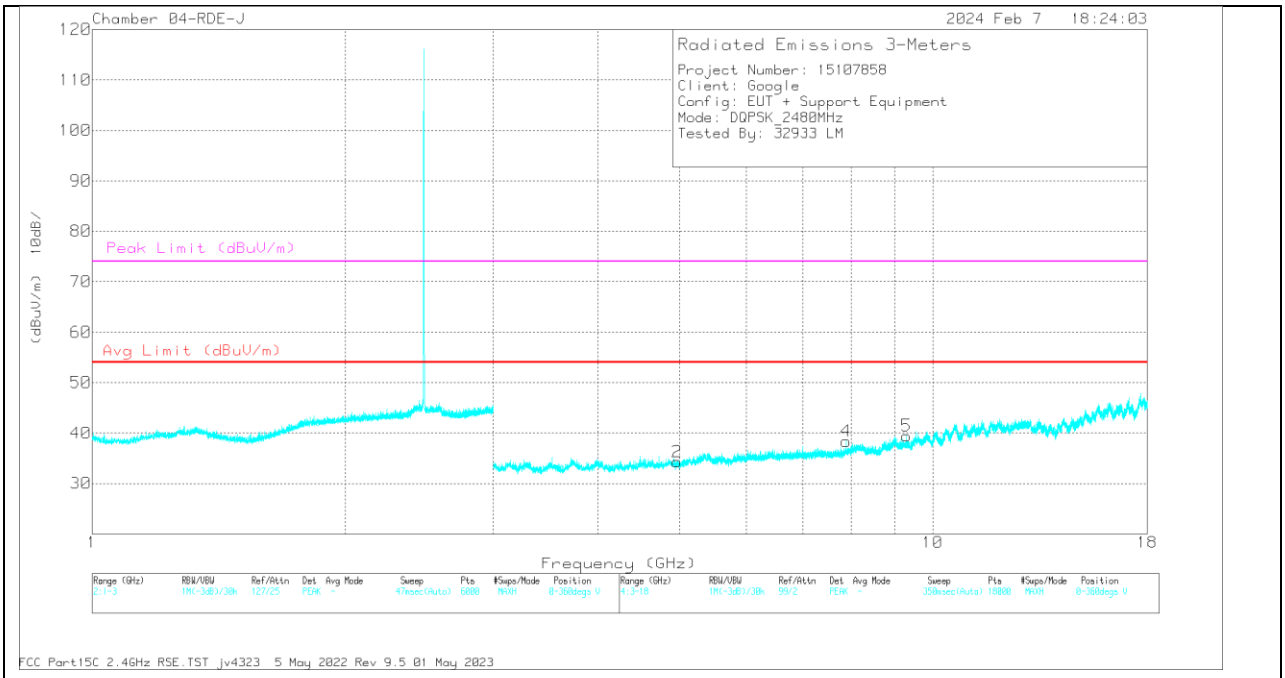
HIGH CHANNEL RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 4.96505	54.69	PK2	34.1	-44.7	0	44.09	-	-	74	-29.91	211	257	H
	* ** 4.961823	43.15	MAv1	34.1	-44.7	1.15	33.68	54	-20.32	-	-	211	257	H
2	* ** 4.965166	54.8	PK2	34.1	-44.7	0	44.2	-	-	74	-29.8	57	251	V
	* ** 4.966845	43.24	MAv1	34.1	-44.6	1.15	33.87	54	-20.13	-	-	57	251	V
3	* ** 7.431436	52.83	PK2	35.8	-42.2	0	46.43	-	-	74	-27.57	16	342	H
	* ** 7.42886	41.02	MAv1	35.8	-42.2	1.15	35.75	54	-18.25	-	-	16	342	H
4	7.892491	52.3	PK2	35.9	-41.3	0	46.9	-	-	-	-	341	204	V
5	* ** 9.316066	52.55	PK2	36.3	-40.3	0	48.55	-	-	74	-25.45	32	221	H
	* ** 9.313661	41.47	MAv1	36.3	-40.4	1.15	38.5	54	-15.5	-	-	32	221	H
6	* ** 9.309035	53.77	PK2	36.3	-40.3	0	49.77	-	-	74	-24.23	262	269	V
	* ** 9.30906	41.63	MAv1	36.3	-40.3	1.15	38.76	54	-15.24	-	-	262	269	V

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PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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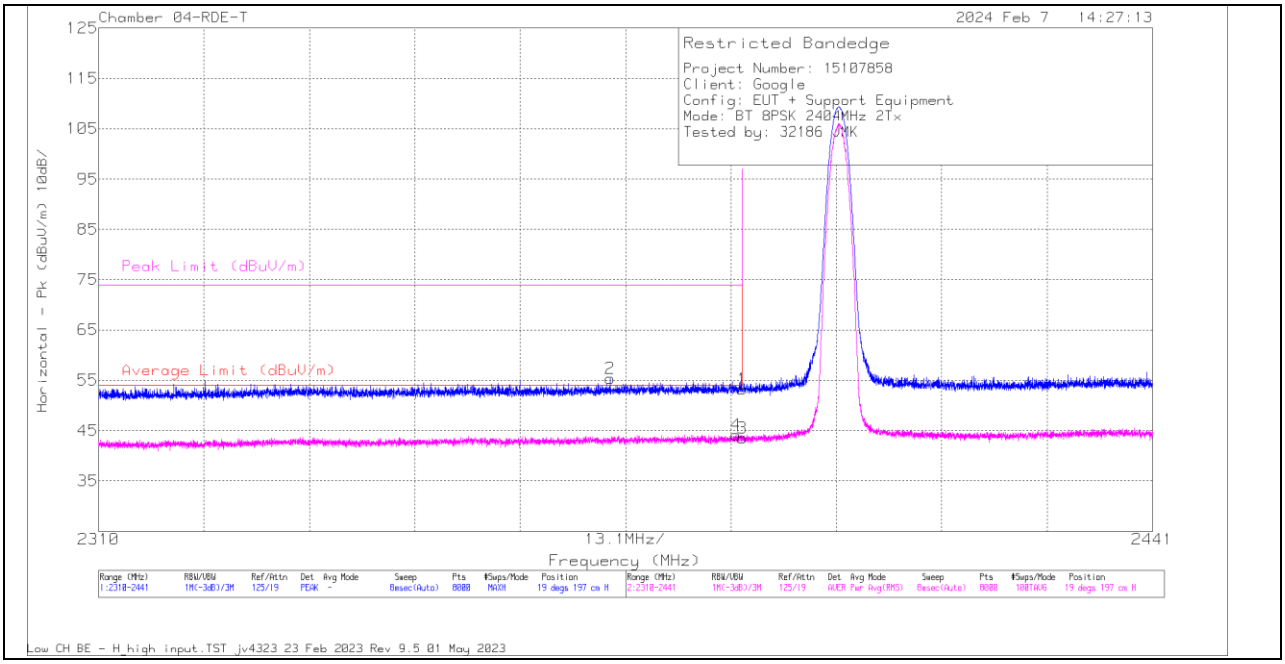
10.2.2. BT 8PSK TXBF

2Tx

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80430 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2390	46.3	Pk	33.3	0	-26.4	53.2	-	-	74	-20.8	19	197	H
2	* ** 2373.592	48.41	Pk	33.2	0	-26.29	55.32	-	-	74	-18.68	19	197	H
3	* ** 2390	35.54	RMS	33.3	1.15	-26.4	43.57	54	-10.43	-	-	19	197	H
4	* ** 2389.232	36.15	RMS	33.3	1.15	-26.41	44.17	54	-9.83	-	-	19	197	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
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Pk - Peak detector
RMS - RMS detection

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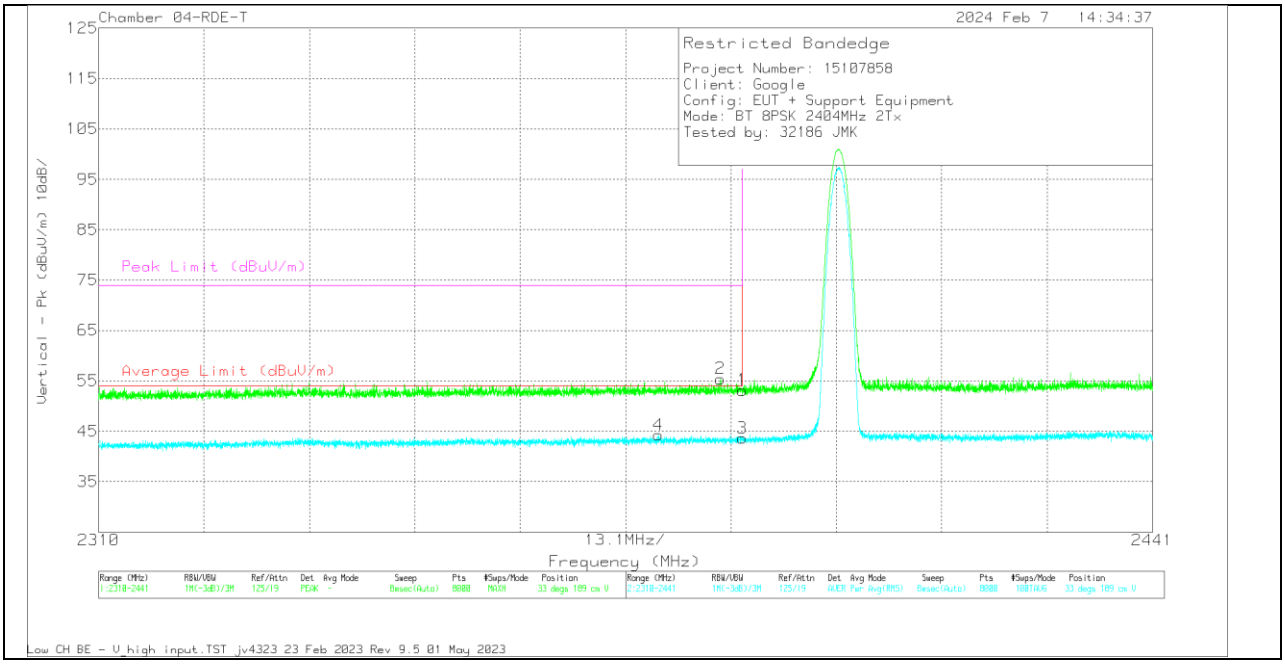
VERTICAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80430 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2390	46.28	Pk	33.3	0	-26.4	53.18	-	-	74	-20.82	33	189	V
2	* ** 2387.316	48.53	Pk	33.3	0	-26.4	55.43	-	-	74	-18.57	33	189	V
3	* ** 2390	35.58	RMS	33.3	1.15	-26.4	43.61	54	-10.39	-	-	33	189	V
4	* ** 2379.553	36.09	RMS	33.2	1.15	-26.18	44.24	54	-9.76	-	-	33	189	V

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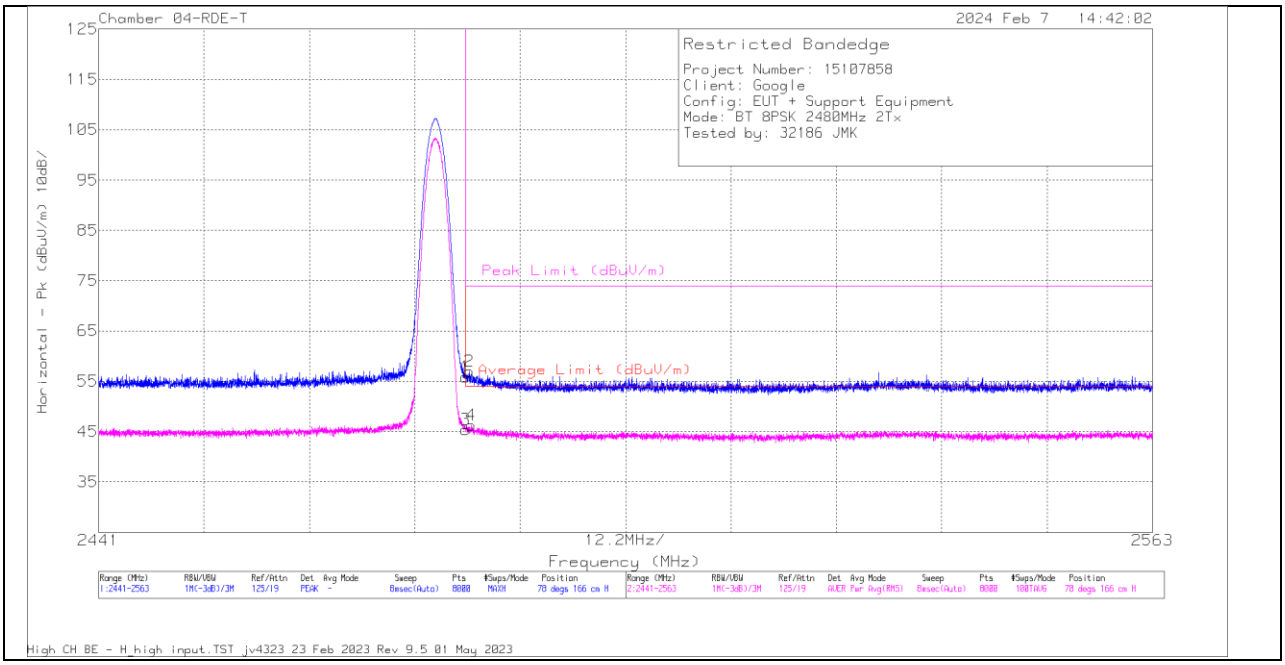
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80430 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2483.5	48.84	Pk	33.4	0	-26.38	55.86	-	-	74	-18.14	78	166	H
2	* ** 2483.873	49.94	Pk	33.4	0	-26.4	56.94	-	-	74	-17.06	78	166	H
3	* ** 2483.5	37.21	RMS	33.4	1.15	-26.38	45.36	54	-8.64	-	-	78	166	H
4	* ** 2484.148	38.12	RMS	33.4	1.15	-26.39	46.26	54	-7.74	-	-	78	166	H

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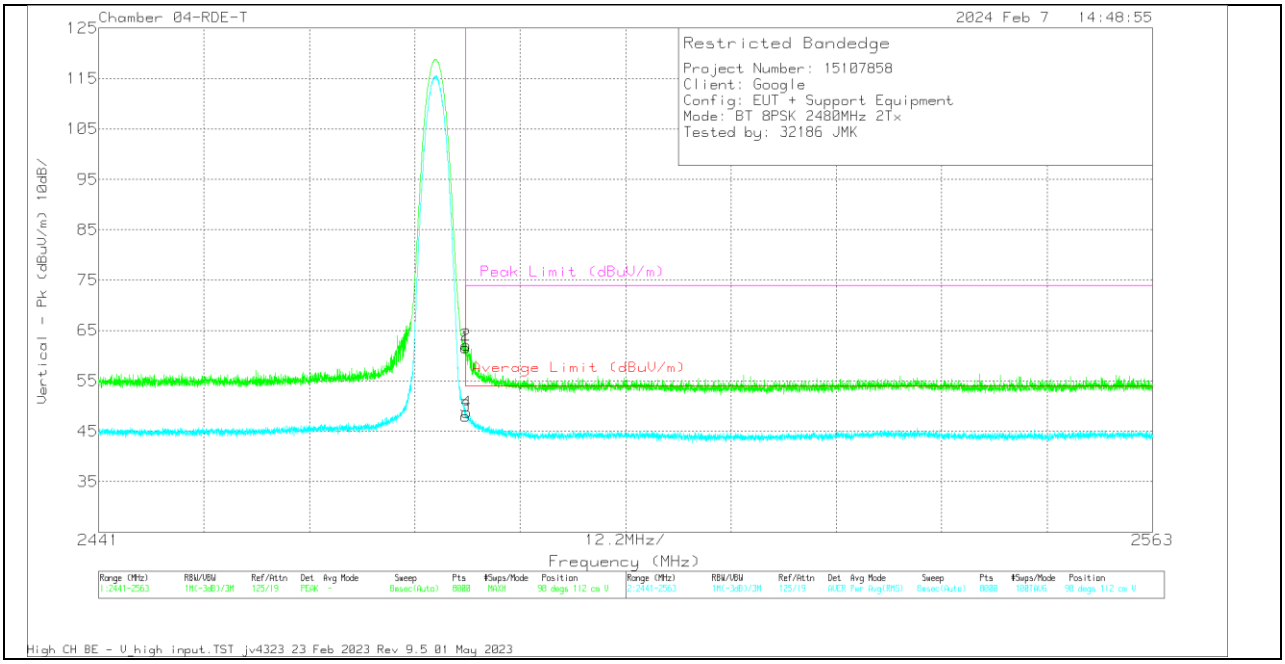
VERTICAL RESULT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	80430 ACF (dB/m)	DCCF (dB)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2483.5	54.63	Pk	33.4	0	-26.38	61.65	-	-	74	-12.35	98	112	V
2	* ** 2483.523	55.1	Pk	33.4	0	-26.38	62.12	-	-	74	-11.88	98	112	V
3	* ** 2483.5	39.85	RMS	33.4	1.15	-26.38	48	54	-6	-	-	98	112	V
4	* ** 2483.599	40.63	RMS	33.4	1.15	-26.39	48.77	54	-5.23	-	-	98	112	V

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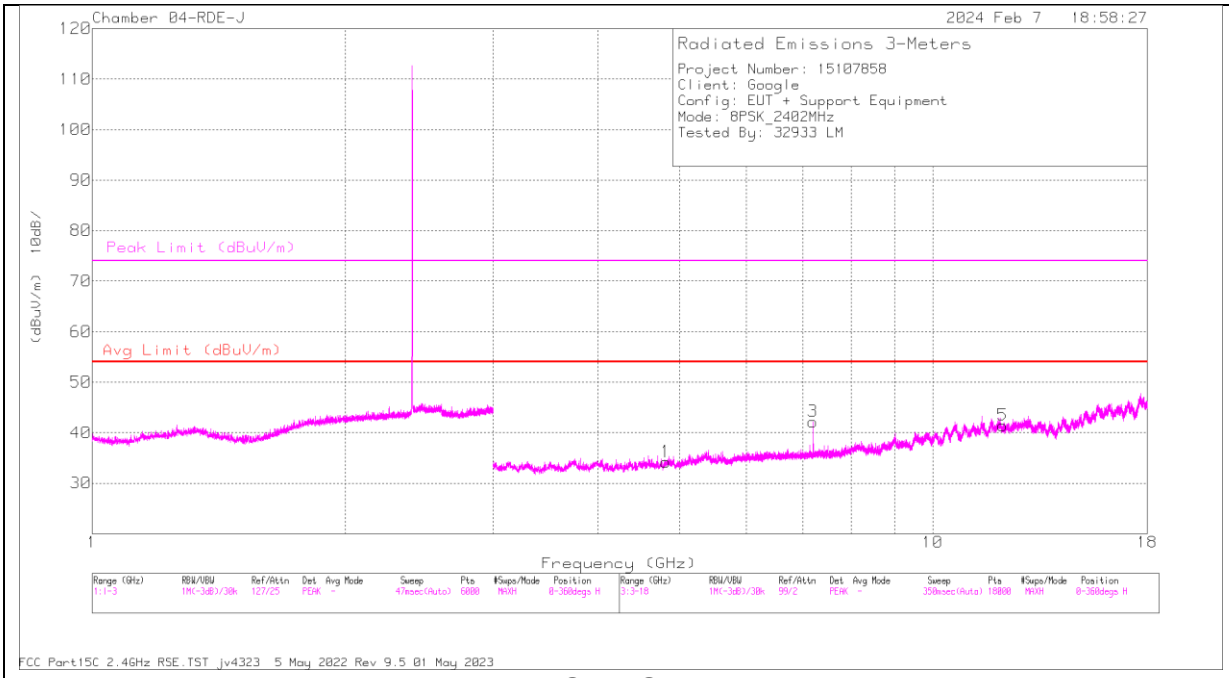
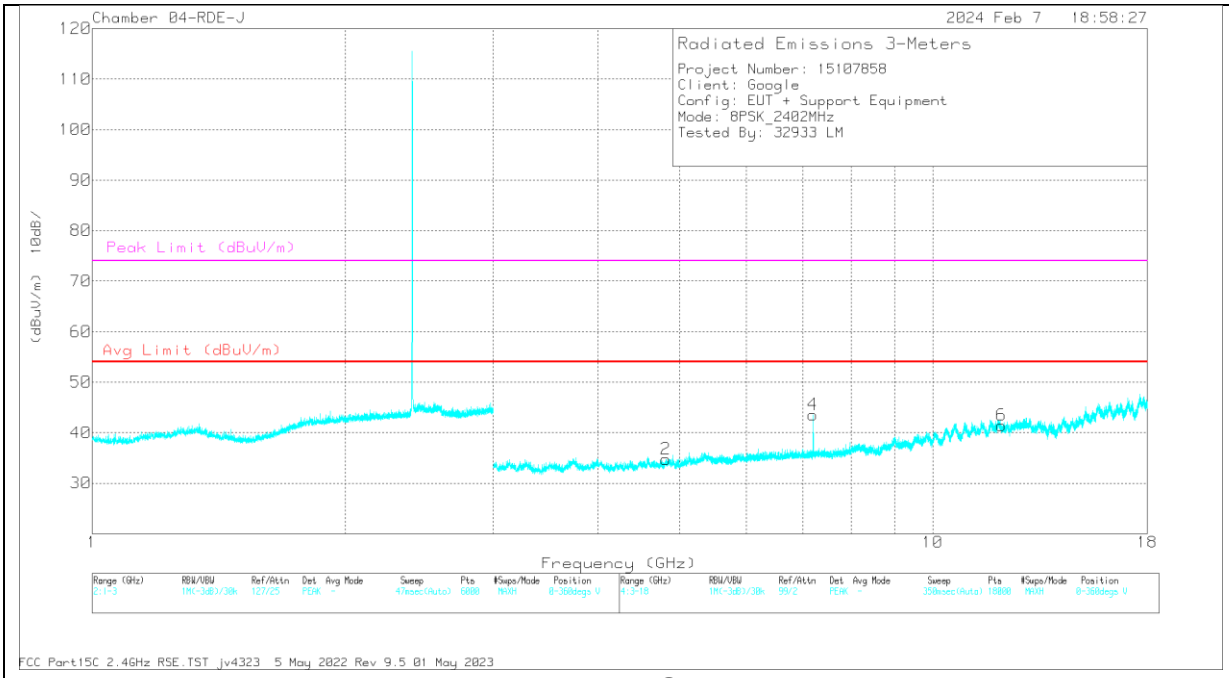
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



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1	* ** 4.812931	55.39	PK2	34	-45	0	44.39	-	-	74	-29.61	222	143	H
	* ** 4.811295	44	MAv1	34	-45.1	1.15	34.03	54	-19.97	-	-	222	143	H
2	* ** 4.81587	55.6	PK2	34	-45	0	44.6	-	-	74	-29.4	53	182	V
	* ** 4.814704	44	MAv1	34	-45	1.15	34.13	54	-19.87	-	-	53	182	V
3	7.204599	53.63	PK2	35.8	-42.5	0	46.93	-	-	-	-	215	199	V
4	7.20583	57.45	PK2	35.8	-42.5	0	50.75	-	-	-	-	168	108	H
5	* ** 12.109681	52.48	PK2	38.8	-39.9	0	51.38	-	-	74	-22.62	219	348	H
	* ** 12.107956	41.12	MAv1	38.8	-39.8	1.15	41.25	54	-12.75	-	-	219	348	H
6	* ** 12.07153	52.53	PK2	38.7	-39.5	0	51.73	-	-	74	-22.27	288	290	V
	* ** 12.069654	41.02	MAv1	38.7	-39.5	1.15	41.35	54	-12.65	-	-	288	290	V

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MAv1 - KDB558074 Option 1 Maximum RMS Average

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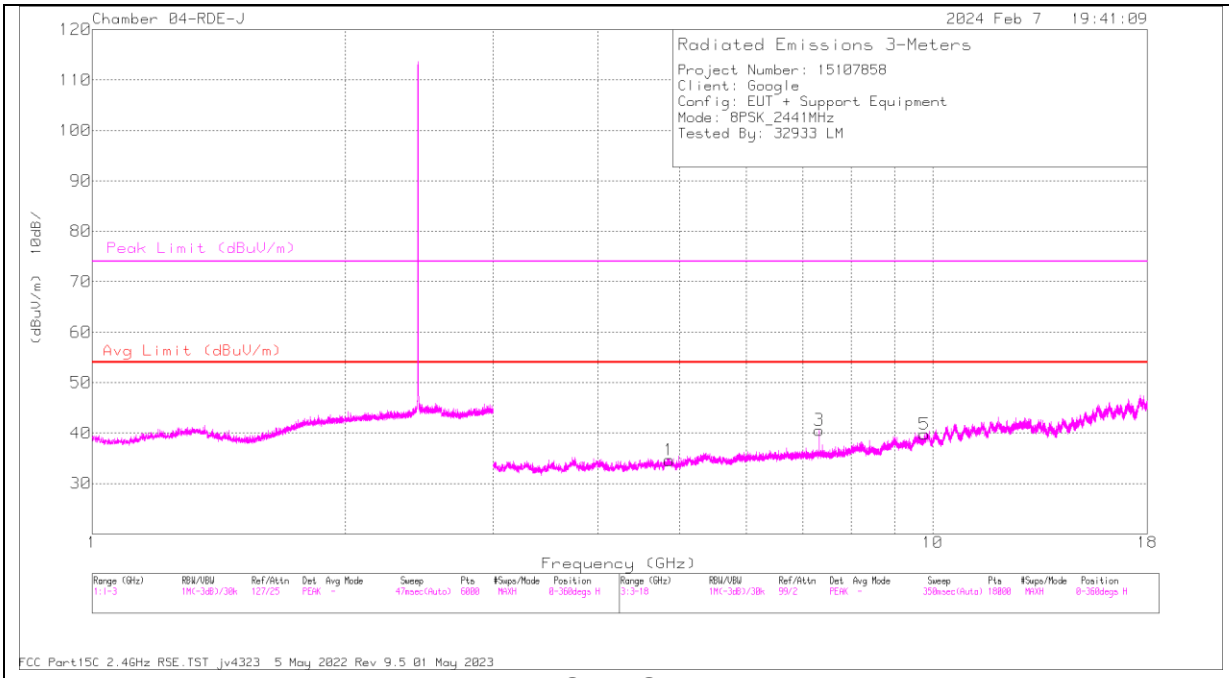
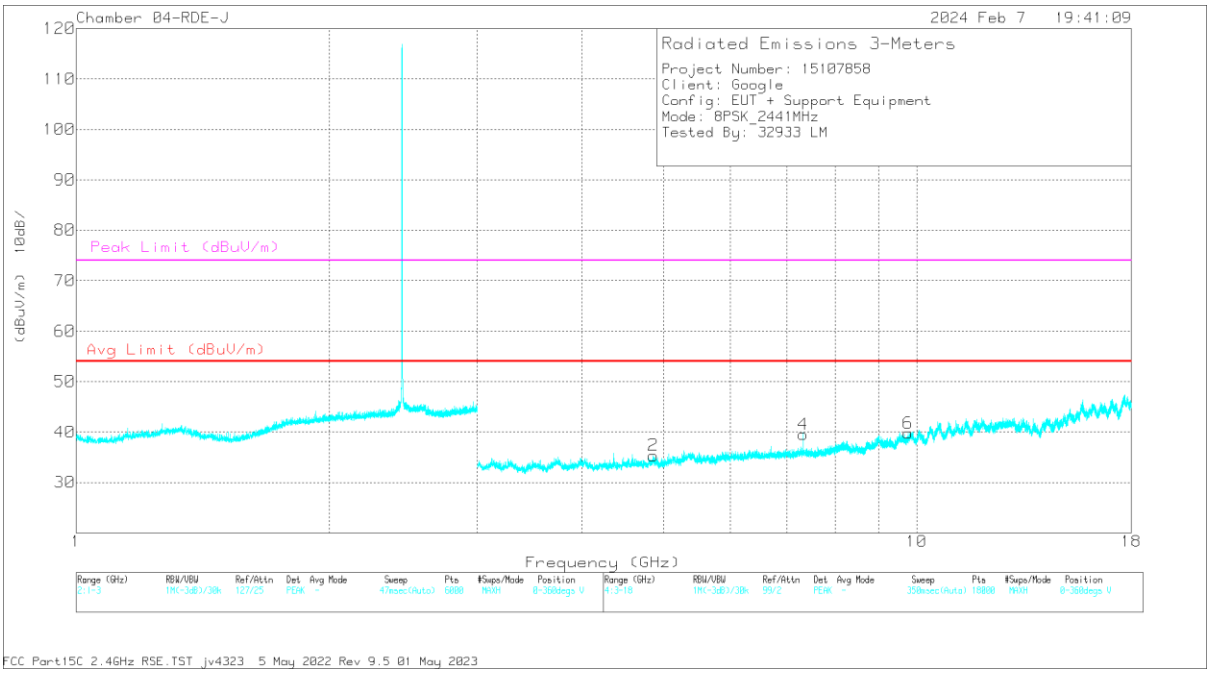
MID CHANNEL RESULTS



HORIZONTAL



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1	* ** 4.858656	55.64	PK2	34	-44.6	0	45.04	-	-	74	-28.96	21	388	H
	* ** 4.859763	43.74	MAv1	34	-44.5	1.15	34.37	54	-19.63	-	-	21	388	H
2	* ** 4.857507	55.23	PK2	34	-44.5	0	44.73	-	-	74	-29.27	327	181	V
	* ** 4.85716	43.85	MAv1	34	-44.4	1.15	34.58	54	-19.42	-	-	327	181	V
3	* ** 7.322845	57.44	PK2	35.8	-42.3	0	50.94	-	-	74	-23.06	151	104	H
	* ** 7.323257	47.18	MAv1	35.8	-42.3	1.15	41.81	54	-12.19	-	-	151	104	H
4	* ** 7.322963	57.91	PK2	35.8	-42.3	0	51.41	-	-	74	-22.59	211	104	V
	* ** 7.323197	48.59	MAv1	35.8	-42.3	1.15	43.22	54	-10.78	-	-	211	104	V
5	9.77793	53.42	PK2	36.8	-40.6	0	49.62	-	-	-	-	39	171	H
6	9.771435	54.04	PK2	36.8	-40.7	0	50.14	-	-	-	-	315	211	V

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PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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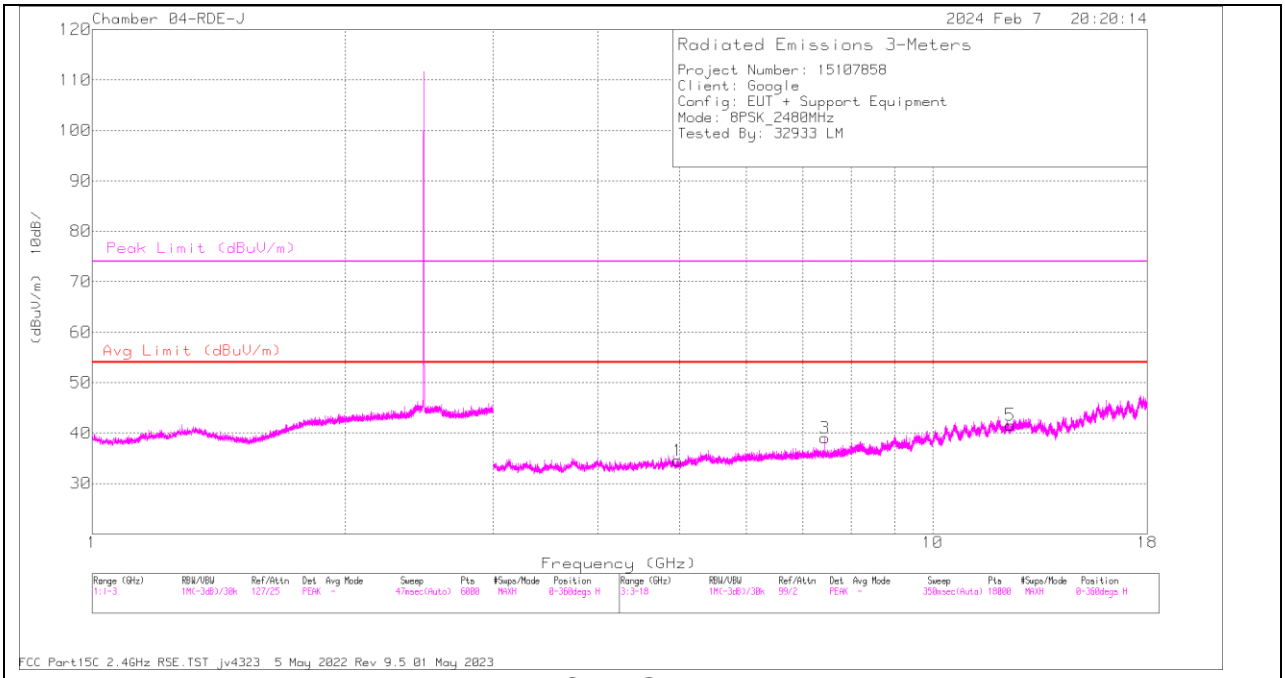
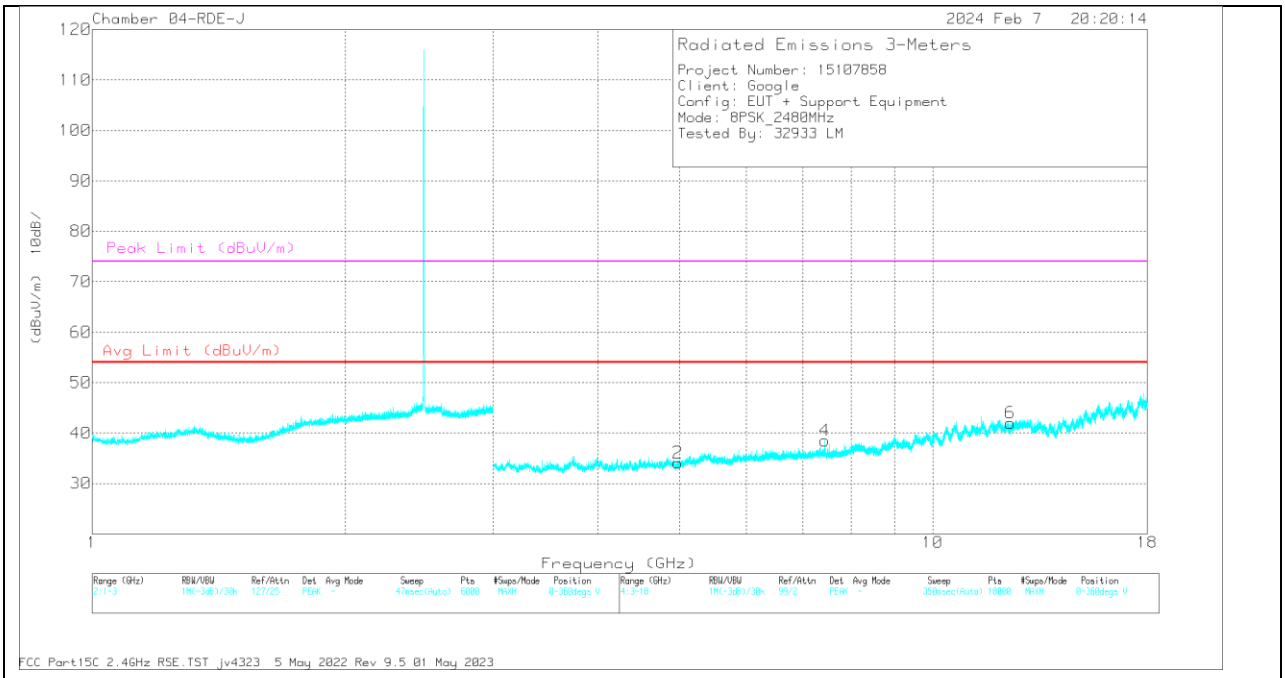
HIGH CHANNEL RESULTS



HORIZONTAL



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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 4.973174	55.35	PK2	34.1	-44.7	0	44.75	-	-	74	-29.25	248	363	H
	* ** 4.974429	43.2	MAv1	34.1	-44.6	1.15	33.83	54	-20.17	-	-	248	363	H
2	* ** 4.975611	55.39	PK2	34.1	-44.6	0	44.89	-	-	74	-29.11	22	127	V
	* ** 4.972527	43.48	MAv1	34.1	-44.7	1.15	34.01	54	-19.99	-	-	22	127	V
3	* ** 7.440012	63.49	PK2	35.8	-42.2	0	57.09	-	-	74	-16.91	278	112	H
	* ** 7.440092	52.76	MAv1	35.8	-42.2	1.15	47.49	54	-6.51	-	-	278	112	H
4	* ** 7.440024	56.1	PK2	35.8	-42.2	0	49.7	-	-	74	-24.3	286	209	V
	* ** 7.439848	44.98	MAv1	35.8	-42.2	1.15	39.71	54	-14.29	-	-	286	209	V
5	* ** 12.368431	51.48	PK2	38.9	-39.2	0	51.18	-	-	74	-22.82	273	267	H
	* ** 12.367232	39.74	MAv1	38.9	-39.3	1.15	40.47	54	-13.53	-	-	273	267	H
6	* ** 12.361864	51.13	PK2	38.9	-39.2	0	50.83	-	-	74	-23.17	267	239	V
	* ** 12.359903	39.8	MAv1	38.9	-39.4	1.15	40.43	54	-13.57	-	-	267	239	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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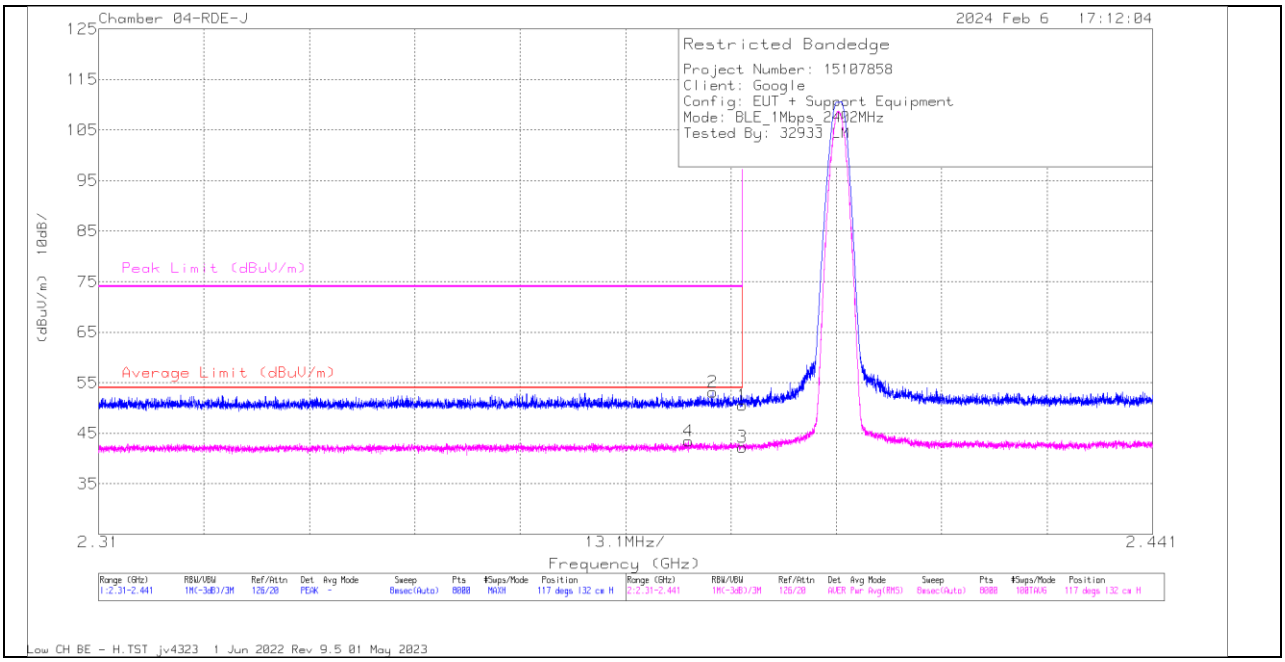
10.2.3. BLE TXBF 1Mbps

2Tx

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.39	55.61	Pk	32	-37.1	0	50.51	-	-	74	-23.49	117	132	H
2	* ** 2.386333	58.28	Pk	32	-37.1	0	53.18	-	-	74	-20.82	117	132	H
3	* ** 2.39	45.19	RMS	32	-37.1	2.20	42.28	54	-11.72	-	-	117	132	H
4	* ** 2.38332	46.41	RMS	32	-37.1	2.20	43.5	54	-10.5	-	-	117	132	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
RMS - RMS detection

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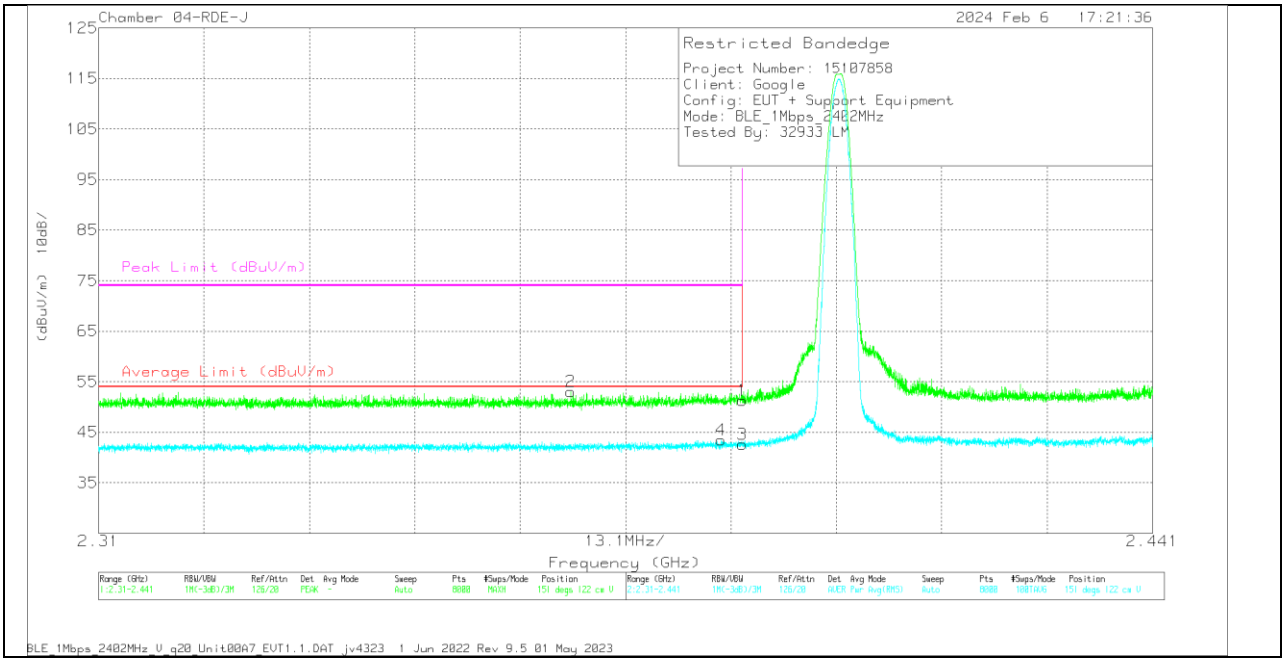
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.39	56.41	Pk	32	-37.1	0	51.31	-	-	74	-22.69	151	122	V
2	* ** 2.368695	58.34	Pk	31.9	-37.2	0	53.04	-	-	74	-20.96	151	122	V
3	* ** 2.39	45.54	RMS	32	-37.1	2.20	42.63	54	-11.37	-	-	151	122	V
4	* ** 2.387398	46.51	RMS	32	-37.2	2.20	43.5	54	-10.5	-	-	151	122	V

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** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
RMS - RMS detection

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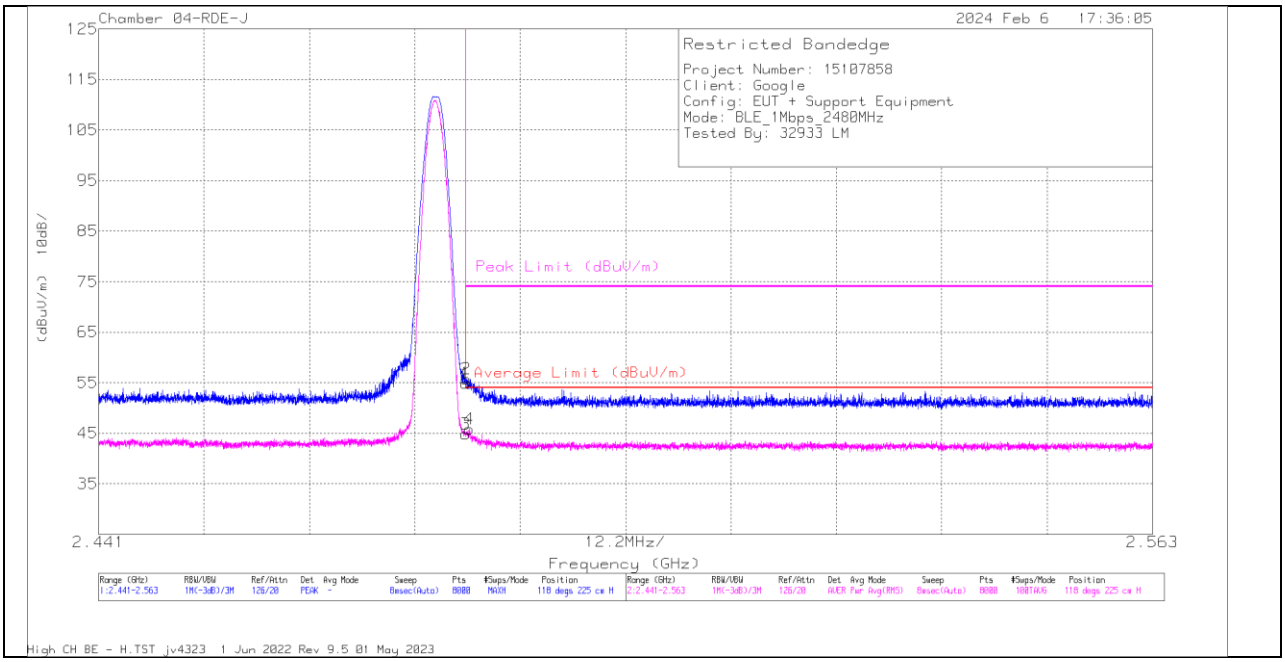
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.4835	59.69	Pk	32.2	-37	0	54.89	-	-	74	-19.11	118	225	H
2	* ** 2.483568	60.56	Pk	32.2	-37	0	55.76	-	-	74	-18.24	118	225	H
3	* ** 2.4835	47.45	RMS	32.2	-37	2.20	44.84	54	-9.16	-	-	118	225	H
4	* ** 2.483873	48.31	RMS	32.3	-37	2.20	45.8	54	-8.2	-	-	118	225	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
RMS - RMS detection

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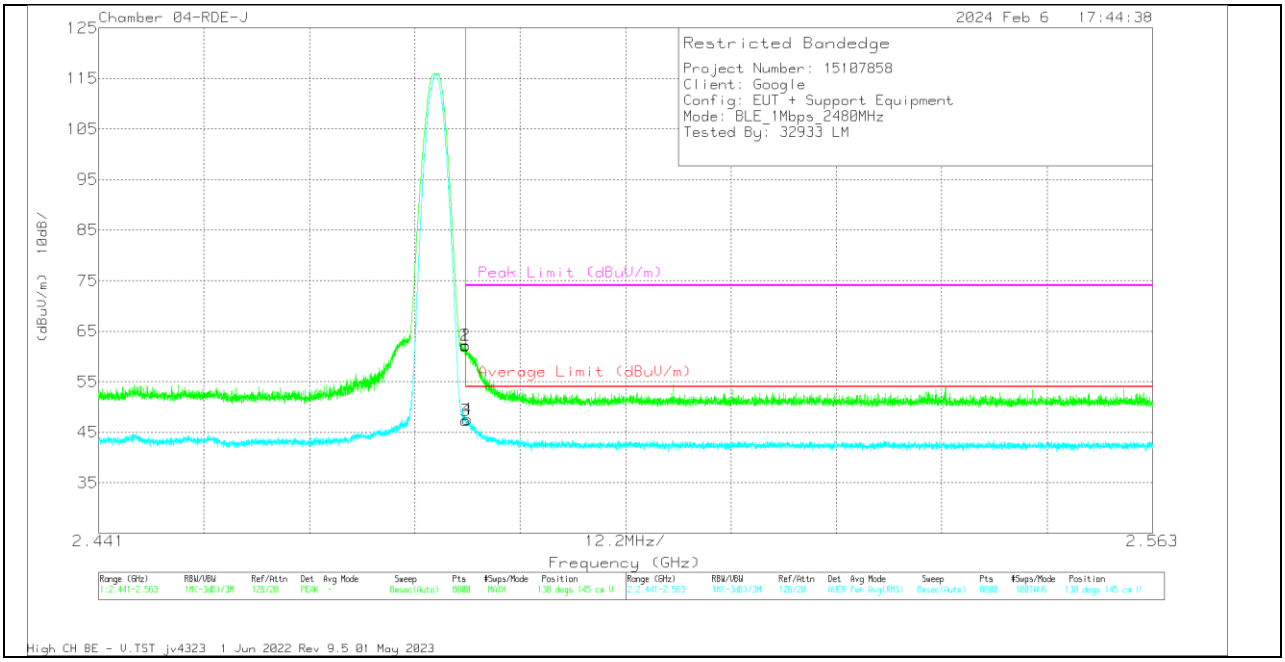
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.4835	66.92	Pk	32.2	-37	0	62.12	-	-	74	-11.88	130	145	V
2	* ** 2.483507	67	Pk	32.2	-37	0	62.2	-	-	74	-11.8	130	145	V
3	* ** 2.4835	49.94	RMS	32.2	-37	2.20	47.33	54	-6.67	-	-	130	145	V
4	* ** 2.483721	50.06	RMS	32.3	-37	2.20	47.55	54	-6.45	-	-	130	145	V

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** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
RMS - RMS detection

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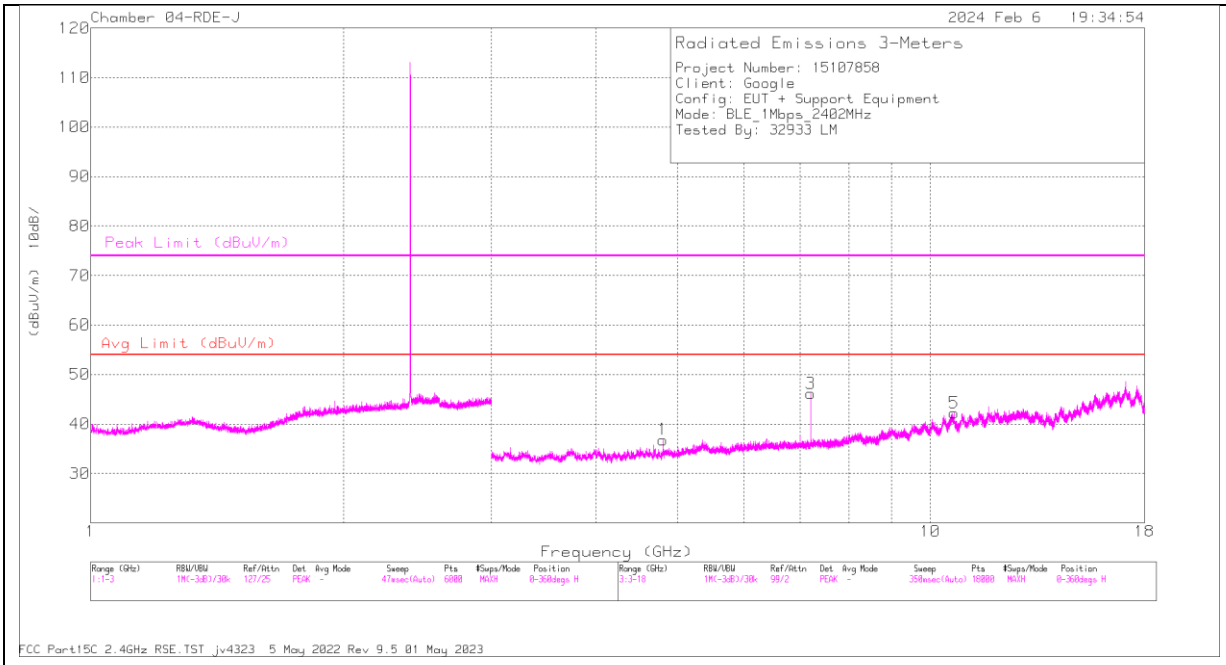
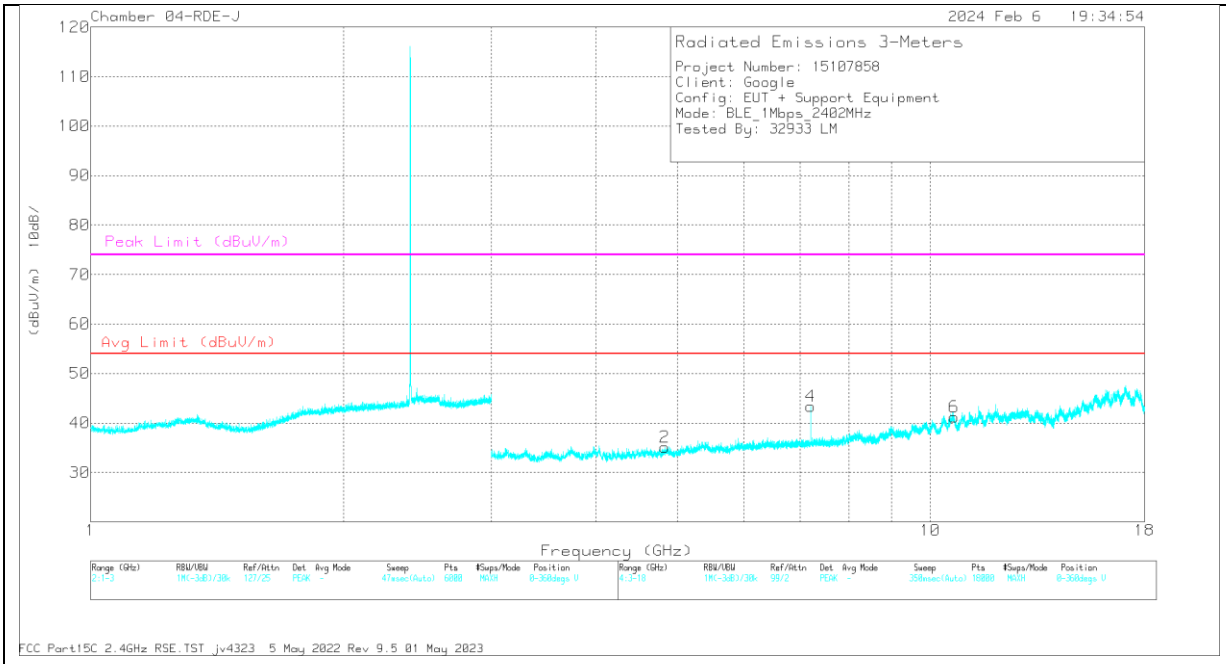
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 4.803431	57.98	PK2	34	-45.1	0	46.88	-	-	74	-27.12	249	336	H
	* ** 4.804118	47.59	MAv1	34	-45	2.20	38.78	54	-15.22	-	-	249	336	H
2	* ** 4.825097	55.81	PK2	34	-44.9	0	44.91	-	-	74	-29.09	287	325	V
	* ** 4.824602	43.9	MAv1	34	-44.9	2.20	35.19	54	-18.81	-	-	287	325	V
3	7.205244	59.44	PK2	35.8	-42.6	0	52.64	-	-	-	-	237	109	H
4	7.206815	60.43	PK2	35.8	-42.5	0	53.73	-	-	-	-	202	298	V
5	* ** 10.677027	53.13	PK2	37.6	-38.6	0	52.13	-	-	74	-21.87	266	397	H
	* ** 10.67136	41.03	MAv1	37.6	-38.6	2.20	42.22	54	-11.78	-	-	266	397	H
6	* ** 10.674434	52.57	PK2	37.6	-38.7	0	51.47	-	-	74	-22.53	275	123	V
	* ** 10.674741	40.84	MAv1	37.6	-38.7	2.20	41.93	54	-12.07	-	-	275	123	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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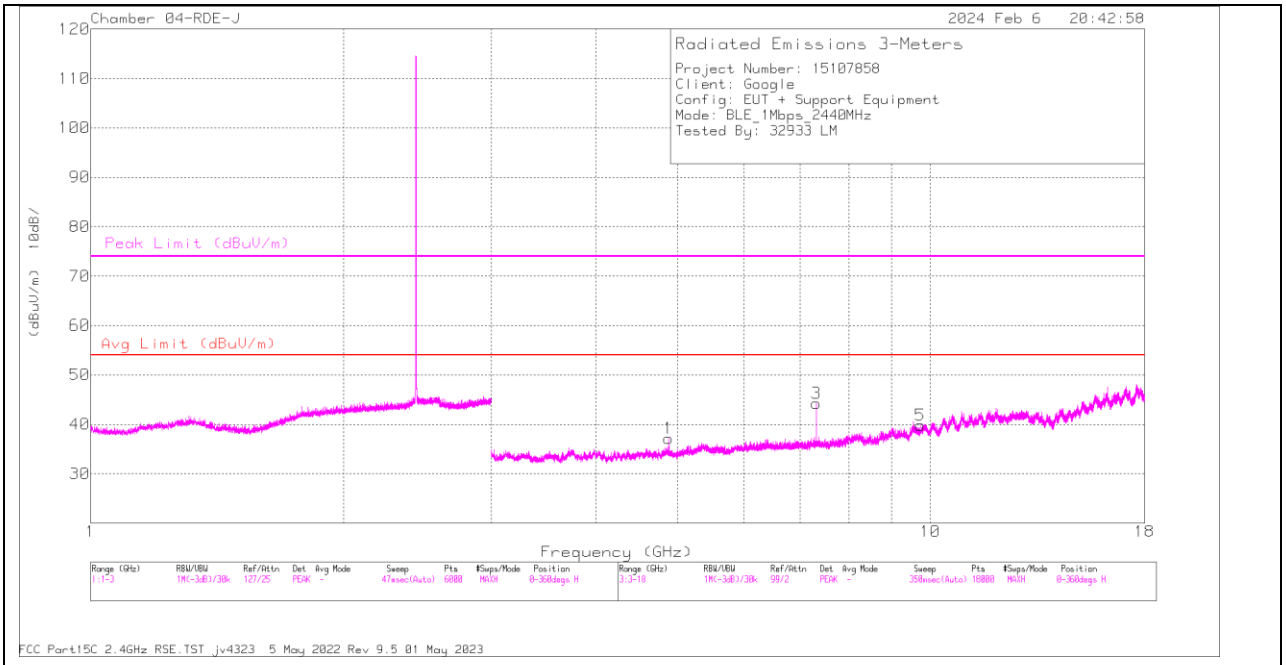
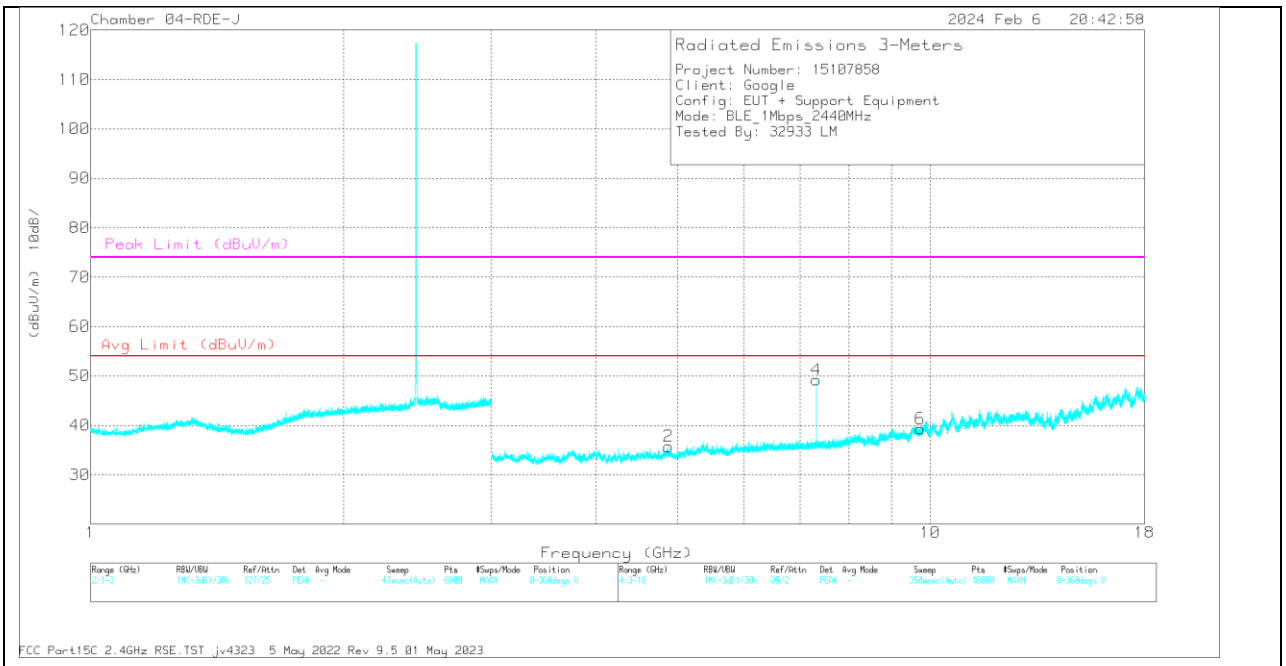
MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 4.880259	56.64	PK2	34	-44.6	0	46.04	-	-	74	-27.96	240	392	H
	* ** 4.880161	46.3	MAv1	34	-44.6	2.20	37.89	54	-16.11	-	-	240	392	H
3	* ** 7.320653	59.1	PK2	35.8	-42.4	0	52.5	-	-	74	-21.5	197	103	H
	* ** 7.319315	50.55	MAv1	35.8	-42.4	2.20	46.14	54	-7.86	-	-	197	103	H
2	* ** 4.87802	55.24	PK2	34	-44.4	0	44.84	-	-	74	-29.16	183	345	V
	* ** 4.879761	43.72	MAv1	34	-44.6	2.20	35.31	54	-18.69	-	-	183	345	V
4	* ** 7.320596	56.61	PK2	35.8	-42.4	0	50.01	-	-	74	-23.99	69	235	V
	* ** 7.319334	45.2	MAv1	35.8	-42.4	2.20	40.79	54	-13.21	-	-	69	235	V
5	9.730635	53.72	PK2	36.8	-41	0	49.52	-	-	-	-	134	216	H
	9.732884	42.1	MAv1	36.8	-41.1	2.20	39.99	-	-	-	-	134	216	H
6	9.739345	53.96	PK2	36.8	-41.2	0	49.56	-	-	-	-	234	227	V
	9.741622	42.19	MAv1	36.8	-41.2	2.20	39.98	-	-	-	-	234	227	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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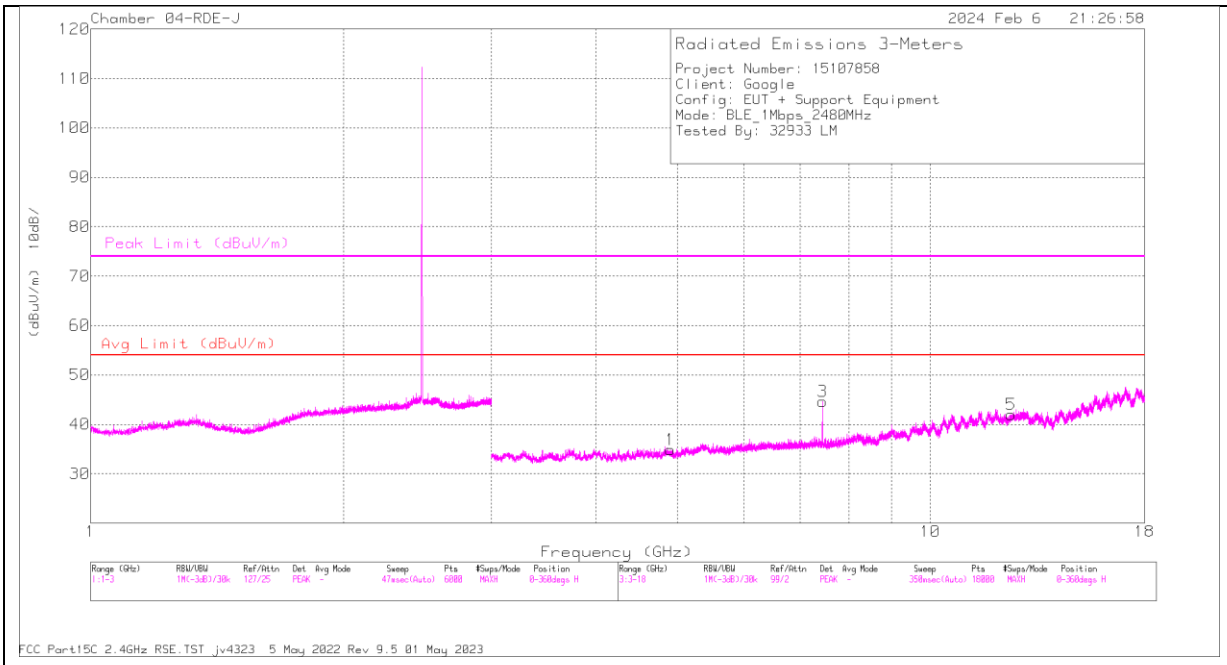
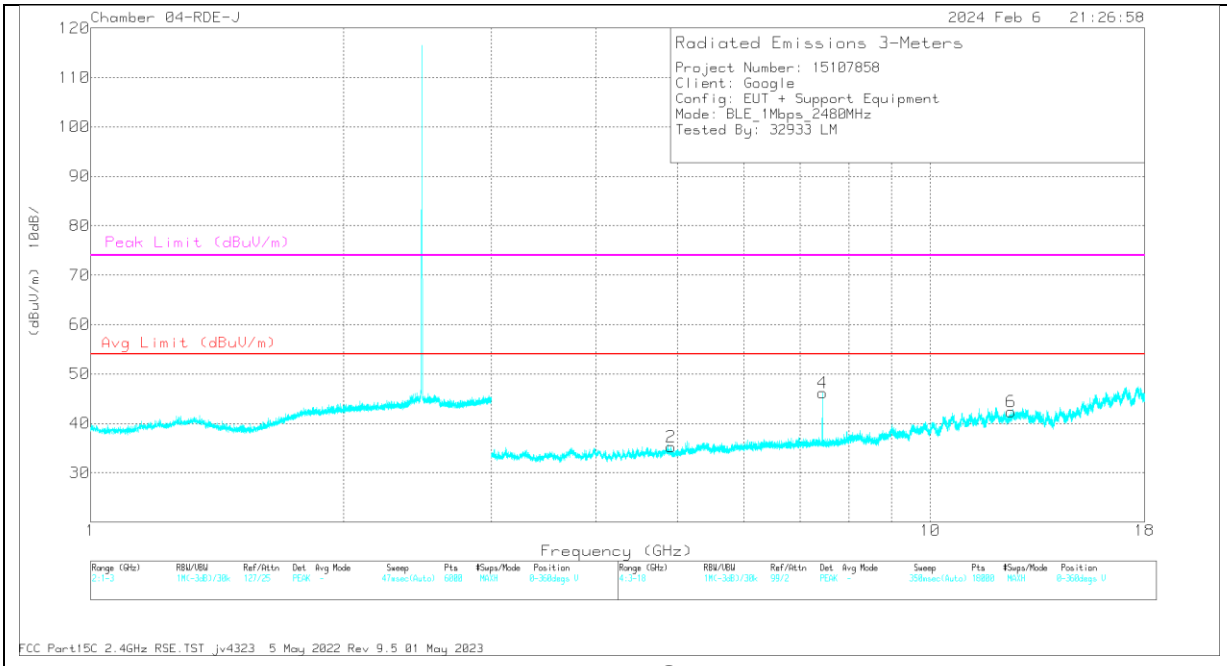
HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 4.903303	55	PK2	34.1	-44.4	0	44.7	-	-	74	-29.3	231	202	H
	* ** 4.901437	43.47	MAv1	34.1	-44.4	2.20	35.36	54	-18.64	-	-	231	202	H
2	* ** 4.909867	55.2	PK2	34.1	-44.4	0	44.9	-	-	74	-29.1	332	190	V
	* ** 4.908479	43.42	MAv1	34.1	-44.5	2.20	35.21	54	-18.79	-	-	332	190	V
3	* ** 7.439551	55.73	PK2	35.8	-42.2	0	49.33	-	-	74	-24.67	268	125	H
	* ** 7.439433	46.26	MAv1	35.8	-42.1	2.20	42.15	54	-11.85	-	-	268	125	H
4	* ** 7.439193	59.75	PK2	35.8	-42.1	0	53.45	-	-	74	-20.55	265	254	V
	* ** 7.439328	52.27	MAv1	35.8	-42.1	2.20	48.16	54	-5.84	-	-	265	254	V
5	* ** 12.476171	52.91	PK2	38.9	-39.2	0	52.61	-	-	74	-21.39	238	166	H
	* ** 12.475815	40.46	MAv1	38.9	-39.2	2.20	42.35	54	-11.65	-	-	238	166	H
6	* ** 12.485193	52.36	PK2	38.9	-39.3	0	51.96	-	-	74	-22.04	13	130	V
	* ** 12.486481	40.54	MAv1	38.9	-39.2	2.20	42.43	54	-11.57	-	-	13	130	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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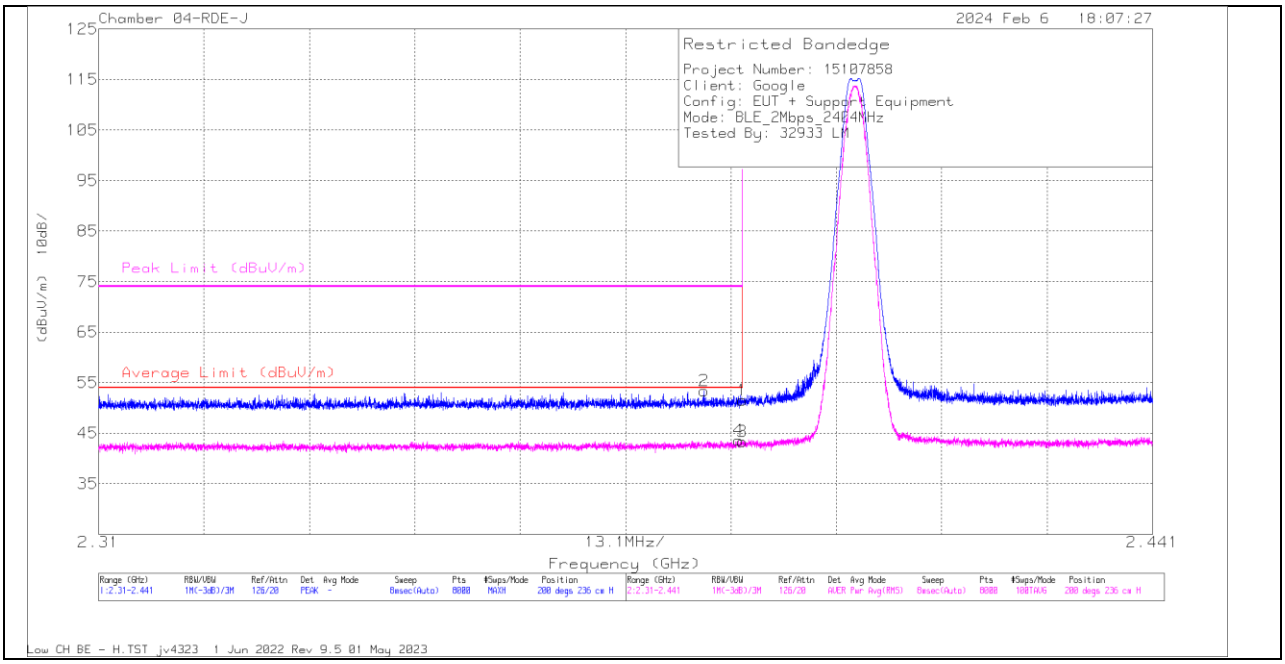
10.2.4. BLE TXBF 2Mbps

2Tx

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.39	56.6	Pk	32	-37.1	0	51.5	-	-	74	-22.5	200	236	H
2	* ** 2.385236	58.43	Pk	32	-37	0	53.43	-	-	74	-20.57	200	236	H
3	* ** 2.39	46.01	RMS	32	-37.1	2.46	43.37	54	-10.63	-	-	200	236	H
4	* ** 2.389527	46.18	RMS	32	-37.1	2.46	43.54	54	-10.46	-	-	200	236	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
RMS - RMS detection

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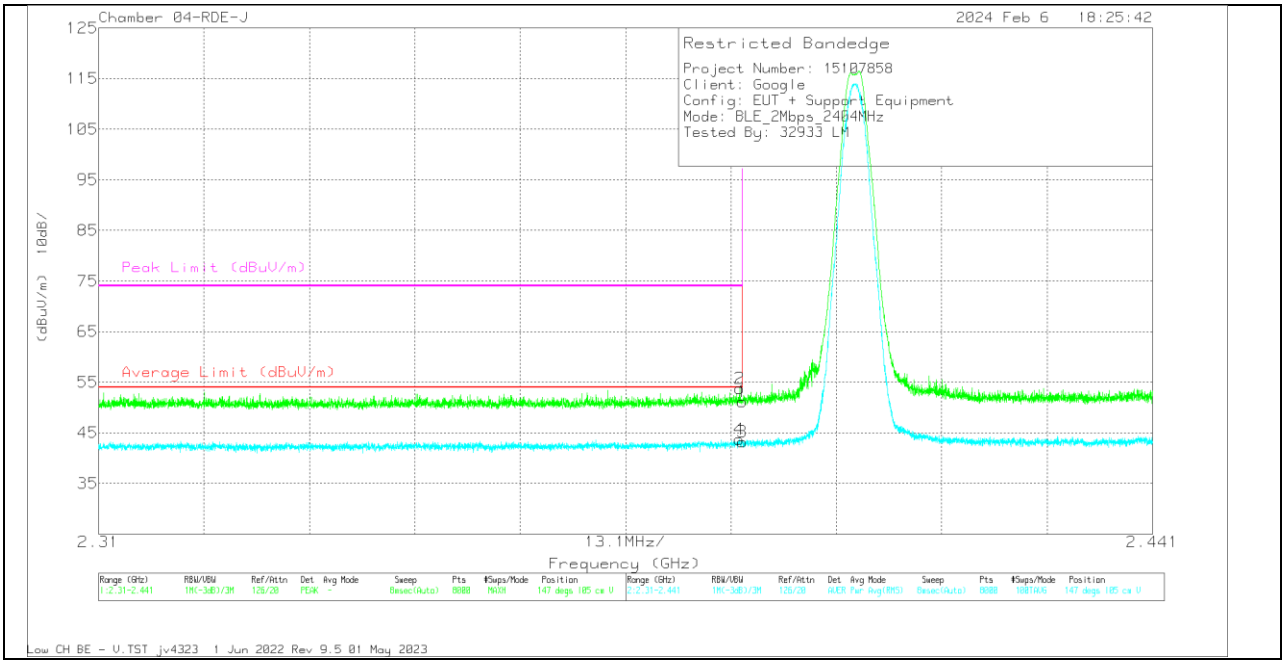
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.39	56.3	Pk	32	-37.1	0	51.2	-	-	74	-22.8	147	105	V
2	* ** 2.389707	58.82	Pk	32	-37.1	0	53.72	-	-	74	-20.28	147	105	V
3	* ** 2.39	45.8	RMS	32	-37.1	2.46	43.16	54	-10.84	-	-	147	105	V
4	* ** 2.389658	46.36	RMS	32	-37.1	2.46	43.72	54	-10.28	-	-	147	105	V

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Pk - Peak detector
RMS - RMS detection

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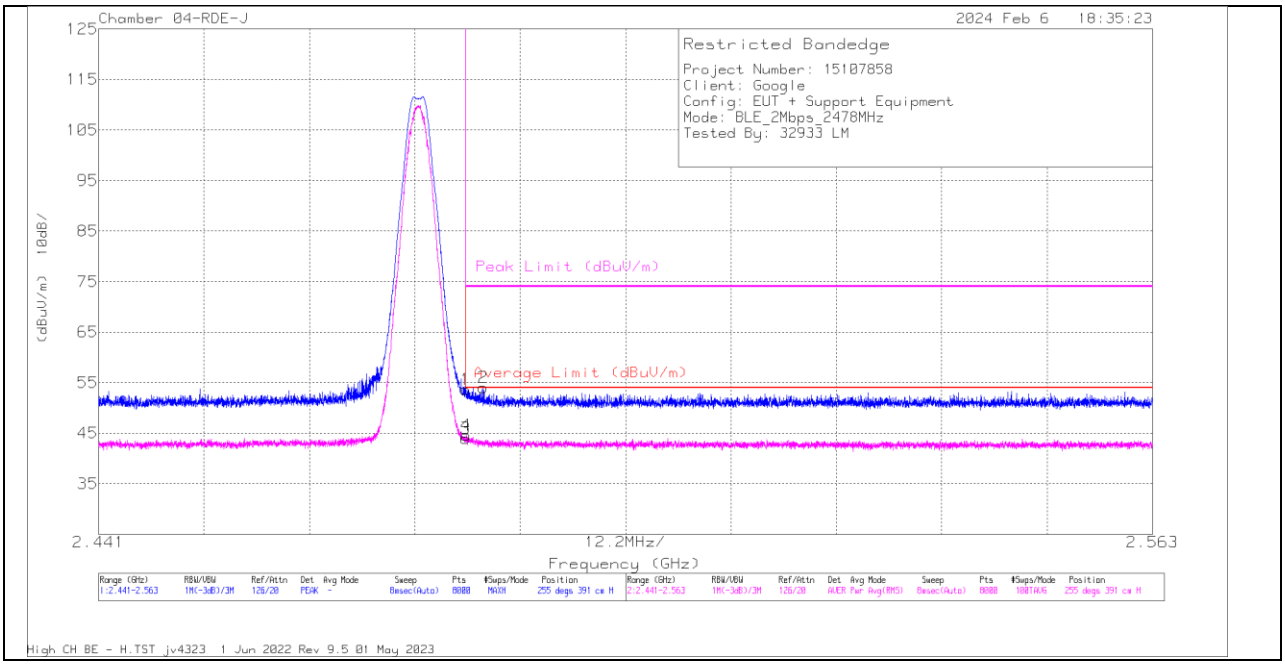
BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.4835	58.42	Pk	32.2	-37	0	53.62	-	-	74	-20.38	255	391	H
2	* ** 2.485536	58.75	Pk	32.3	-37	0	54.05	-	-	74	-19.95	255	391	H
3	* ** 2.4835	46.28	RMS	32.2	-37	2.46	43.94	54	-10.06	-	-	255	391	H
4	* ** 2.483568	46.9	RMS	32.2	-37	2.46	44.56	54	-9.44	-	-	255	391	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
Pk - Peak detector
RMS - RMS detection

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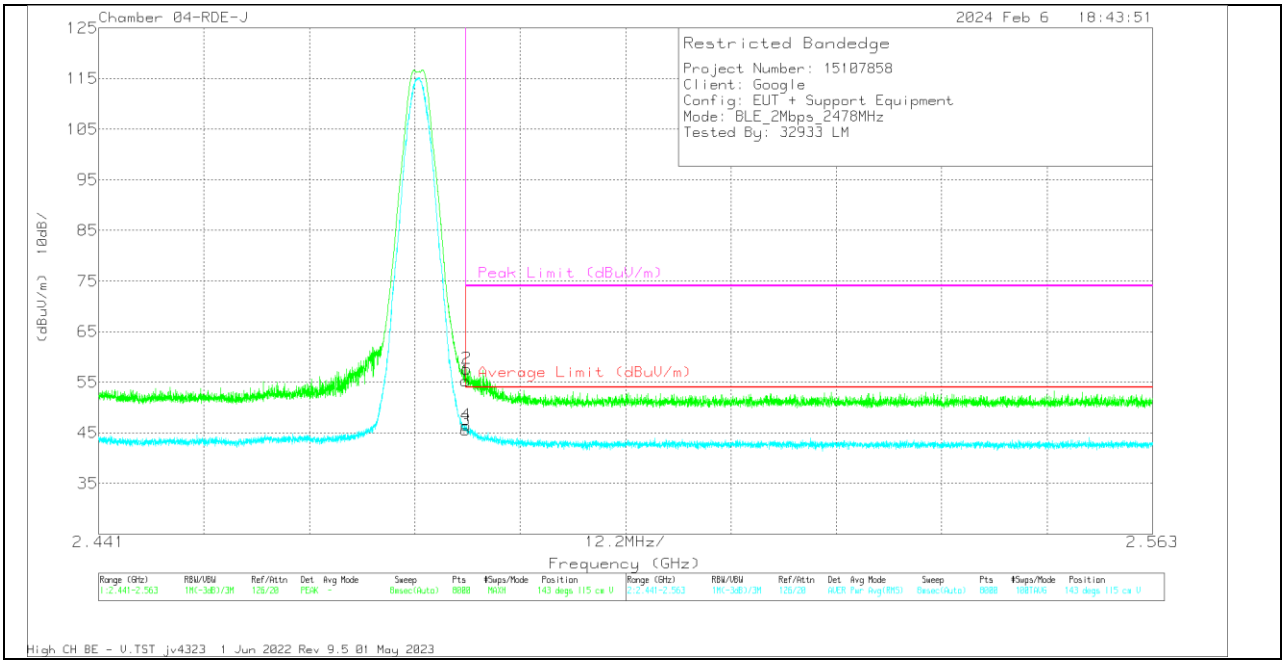
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.4835	60.06	Pk	32.2	-37	0	55.26	-	-	74	-18.74	143	115	V
2	* ** 2.483614	62.38	Pk	32.3	-37	0	57.68	-	-	74	-16.32	143	115	V
3	* ** 2.4835	47.97	RMS	32.2	-37	2.46	45.63	54	-8.37	-	-	143	115	V
4	* ** 2.483523	48.84	RMS	32.2	-37	2.46	46.5	54	-7.5	-	-	143	115	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
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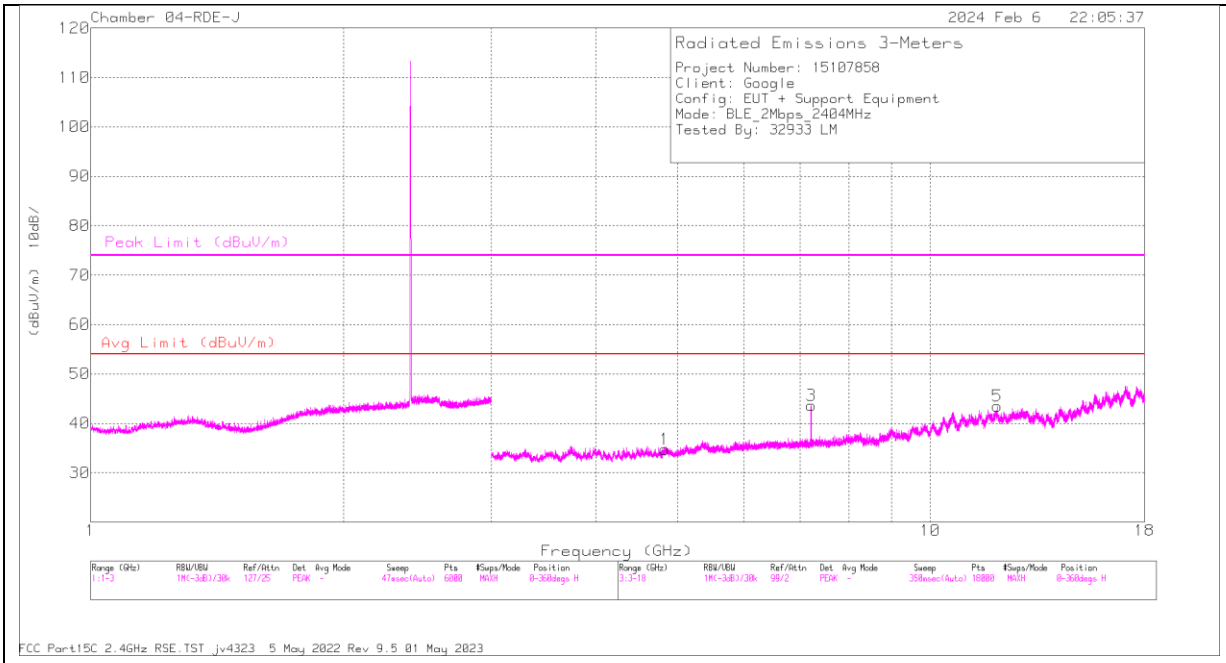
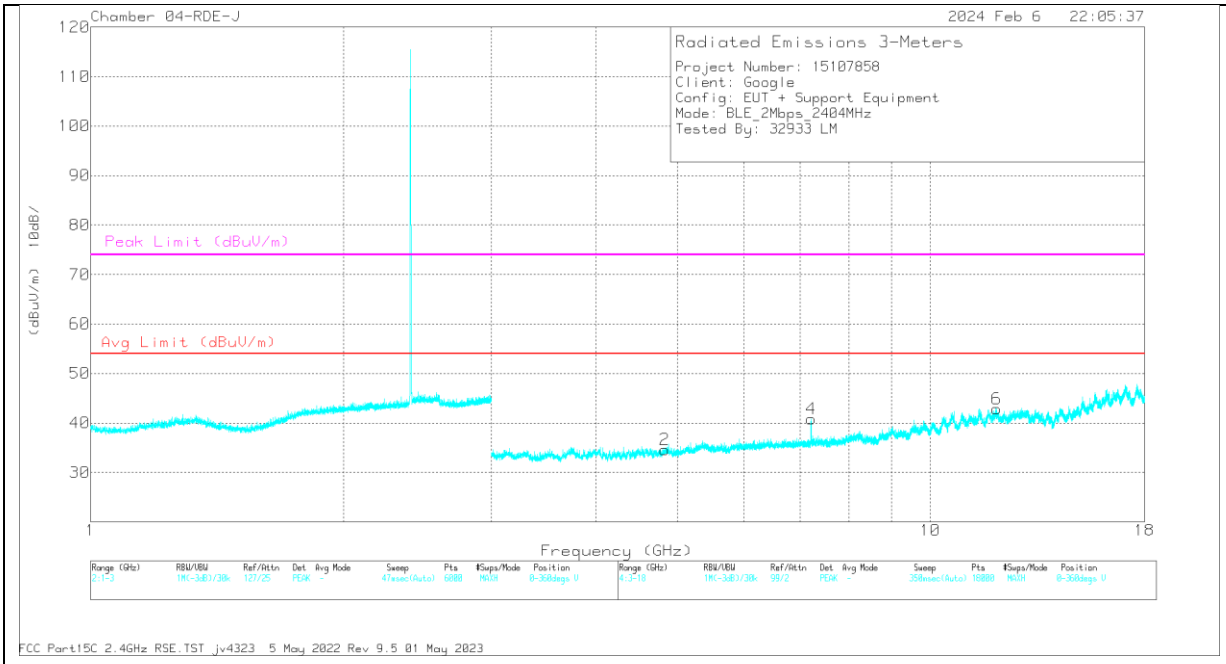
HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 4.825263	55.95	PK2	34	-44.9	0	45.05	-	-	74	-28.95	267	153	H
	* ** 4.826495	44.09	MAv1	34	-44.9	2.46	35.65	54	-18.35	-	-	267	153	H
2	* ** 4.83205	55.85	PK2	34	-44.7	0	45.15	-	-	74	-28.85	111	247	V
	* ** 4.829656	43.97	MAv1	34	-44.9	2.46	35.53	54	-18.47	-	-	111	247	V
3	7.213244	56.46	PK2	35.8	-42.4	0	49.86	-	-	-	-	269	217	V
4	7.213256	59.39	PK2	35.8	-42.4	0	52.79	-	-	-	-	195	101	H
5	* ** 12.015287	52.67	PK2	38.7	-38.7	0	52.67	-	-	74	-21.33	139	240	H
	* ** 12.013718	41.29	MAv1	38.7	-38.7	2.46	43.75	54	-10.25	-	-	139	240	H
6	* ** 11.999644	52.36	PK2	38.7	-38.9	0	52.16	-	-	74	-21.84	205	144	V
	* ** 12.000773	41.18	MAv1	38.7	-39	2.46	43.34	54	-10.66	-	-	205	144	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
** - indicates frequency in Taiwan NCC LP0002 Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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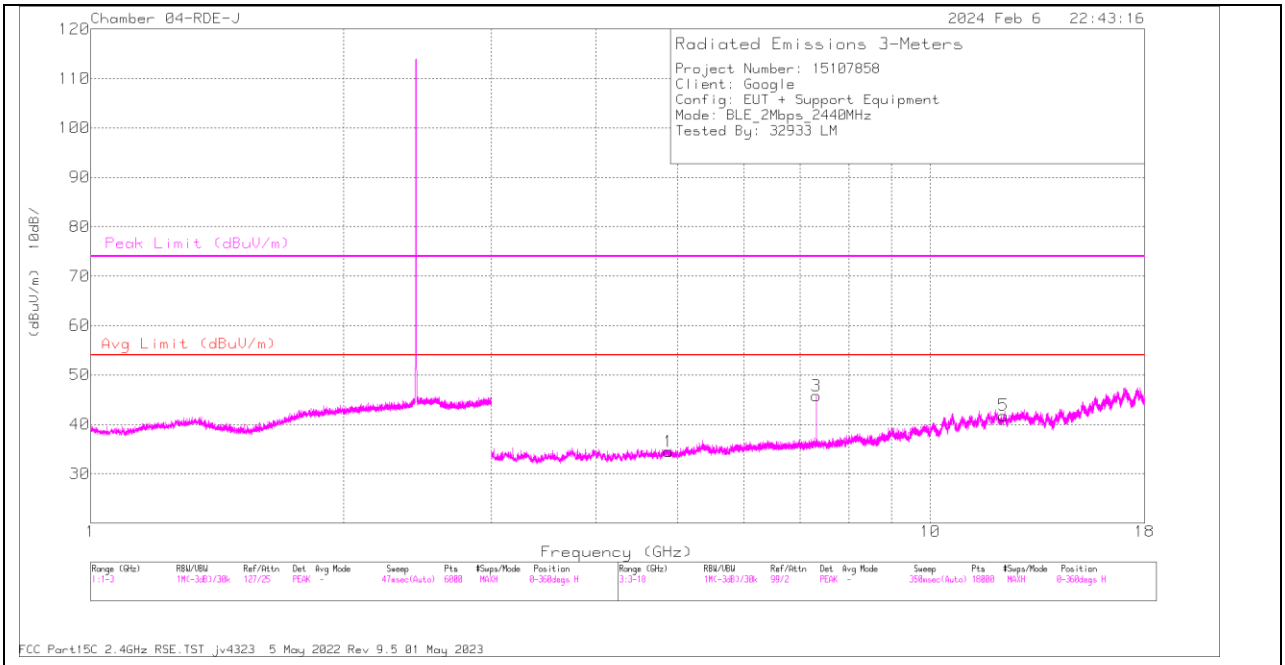
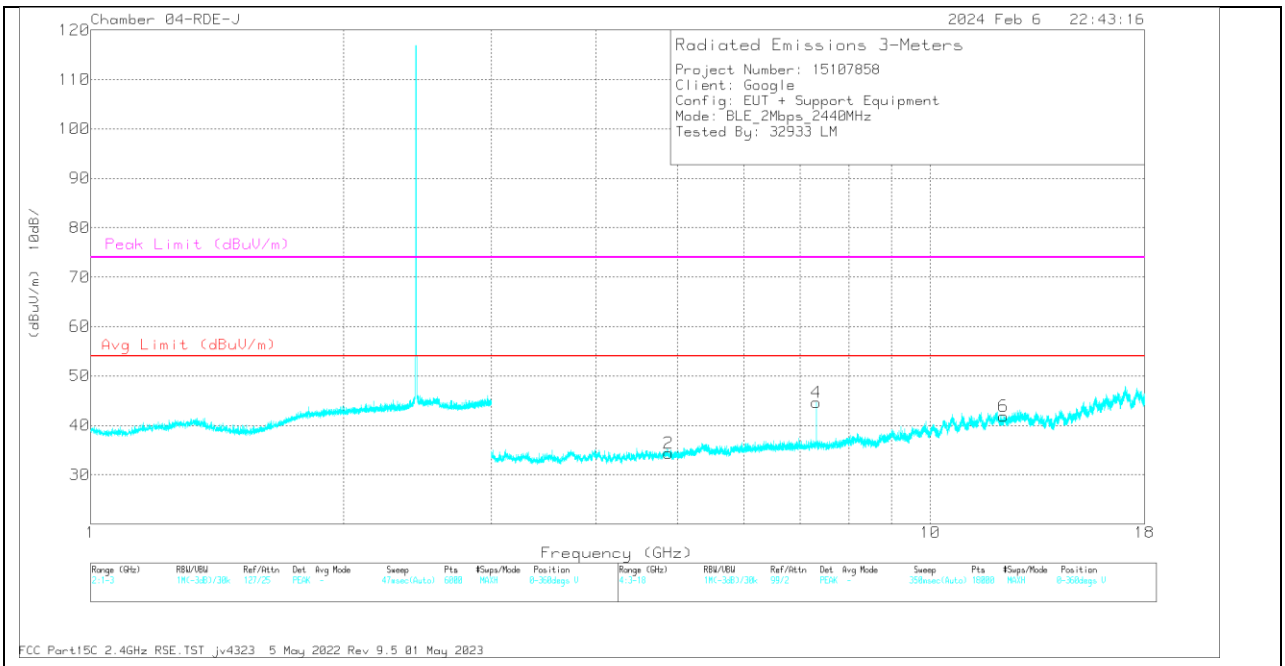
MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 4.879221	55.3	PK2	34	-44.6	0	44.7	-	-	74	-29.3	222	326	H
	* ** 4.878104	43.65	MAv1	34	-44.4	2.46	35.71	54	-18.29	-	-	222	326	H
2	* ** 4.88235	55.12	PK2	34	-44.5	0	44.62	-	-	74	-29.38	8	398	V
	* ** 4.880344	43.89	MAv1	34	-44.6	2.46	35.75	54	-18.25	-	-	8	398	V
3	* ** 7.321302	59.44	PK2	35.8	-42.4	0	52.84	-	-	74	-21.16	197	128	H
	* ** 7.321244	50.72	MAv1	35.8	-42.4	2.46	46.58	54	-7.42	-	-	197	128	H
4	* ** 7.318449	59.66	PK2	35.8	-42.3	0	53.16	-	-	74	-20.84	274	213	V
	* ** 7.318694	51.01	MAv1	35.8	-42.4	2.46	46.87	54	-7.13	-	-	274	213	V
5	* ** 12.234782	52.88	PK2	38.8	-39.2	0	52.48	-	-	74	-21.52	225	167	H
	* ** 12.23344	40.76	MAv1	38.8	-39.2	2.46	42.82	54	-11.18	-	-	225	167	H
6	* ** 12.230052	51.76	PK2	38.8	-39.3	0	51.26	-	-	74	-22.74	76	316	V
	* ** 12.230113	40.54	MAv1	38.8	-39.3	2.46	42.5	54	-11.5	-	-	76	316	V

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MAv1 - KDB558074 Option 1 Maximum RMS Average

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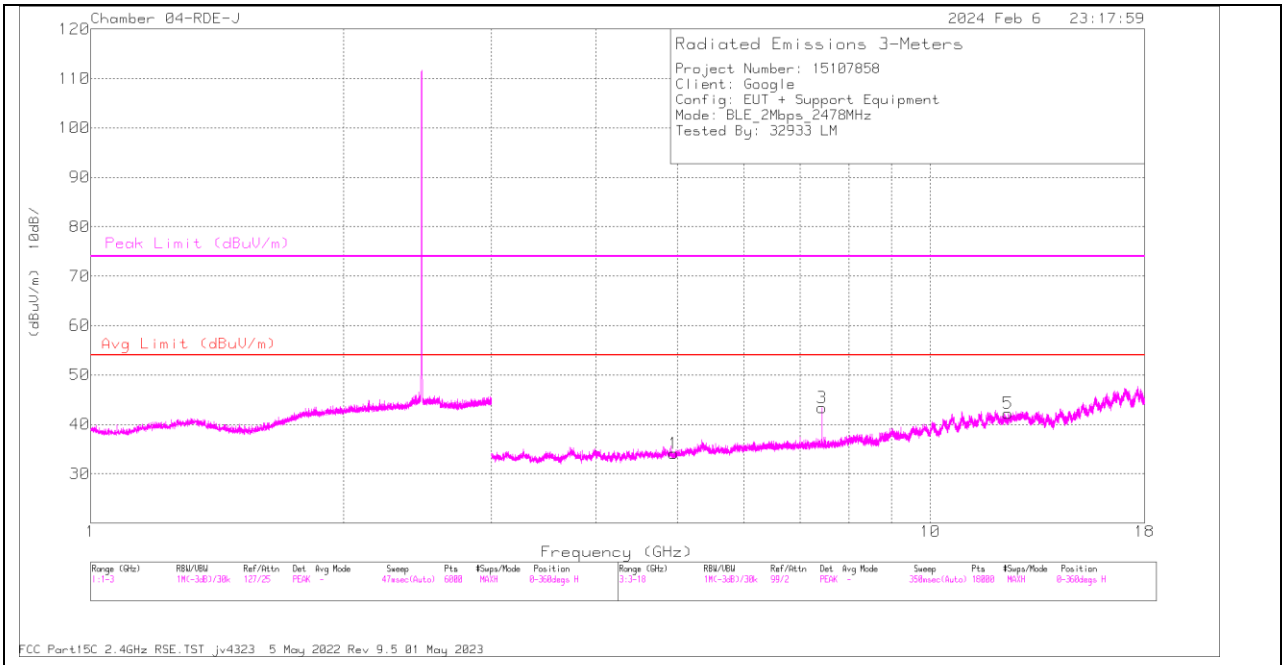
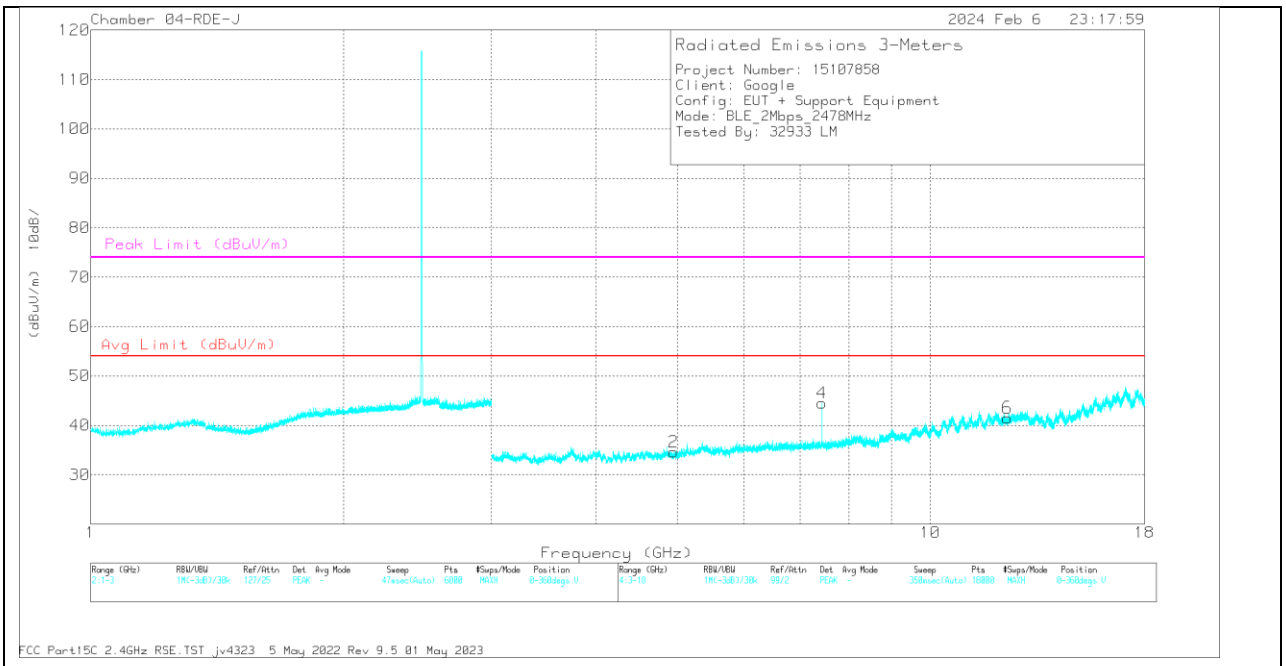
HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 4.939021	54.93	PK2	34.1	-44.6	0	44.43	-	-	74	-29.57	4	273	H
	* ** 4.942306	43.14	MAv1	34.1	-44.8	2.46	34.9	54	-19.1	-	-	4	273	H
2	* ** 4.948941	54.98	PK2	34.1	-44.6	0	44.48	-	-	74	-29.52	16	343	V
	* ** 4.949593	43.1	MAv1	34.1	-44.7	2.46	34.96	54	-19.04	-	-	16	343	V
3	* ** 7.432766	55.96	PK2	35.8	-42.2	0	49.56	-	-	74	-24.44	248	128	H
	* ** 7.432653	46.29	MAv1	35.8	-42.2	2.46	42.35	54	-11.65	-	-	248	128	H
4	* ** 7.435462	59.73	PK2	35.8	-42.2	0	53.33	-	-	74	-20.67	266	252	V
	* ** 7.435334	51.66	MAv1	35.8	-42.2	2.46	47.72	54	-6.28	-	-	266	252	V
5	* ** 12.371112	51.39	PK2	38.9	-39.2	0	51.09	-	-	74	-22.91	217	164	H
	* ** 12.371463	39.86	MAv1	38.9	-39.2	2.46	42.02	54	-11.98	-	-	217	164	H
6	* ** 12.366707	51.51	PK2	38.9	-39.3	0	51.11	-	-	74	-22.89	344	280	V
	* ** 12.365458	39.97	MAv1	38.9	-39.2	2.46	42.13	54	-11.87	-	-	344	280	V

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PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

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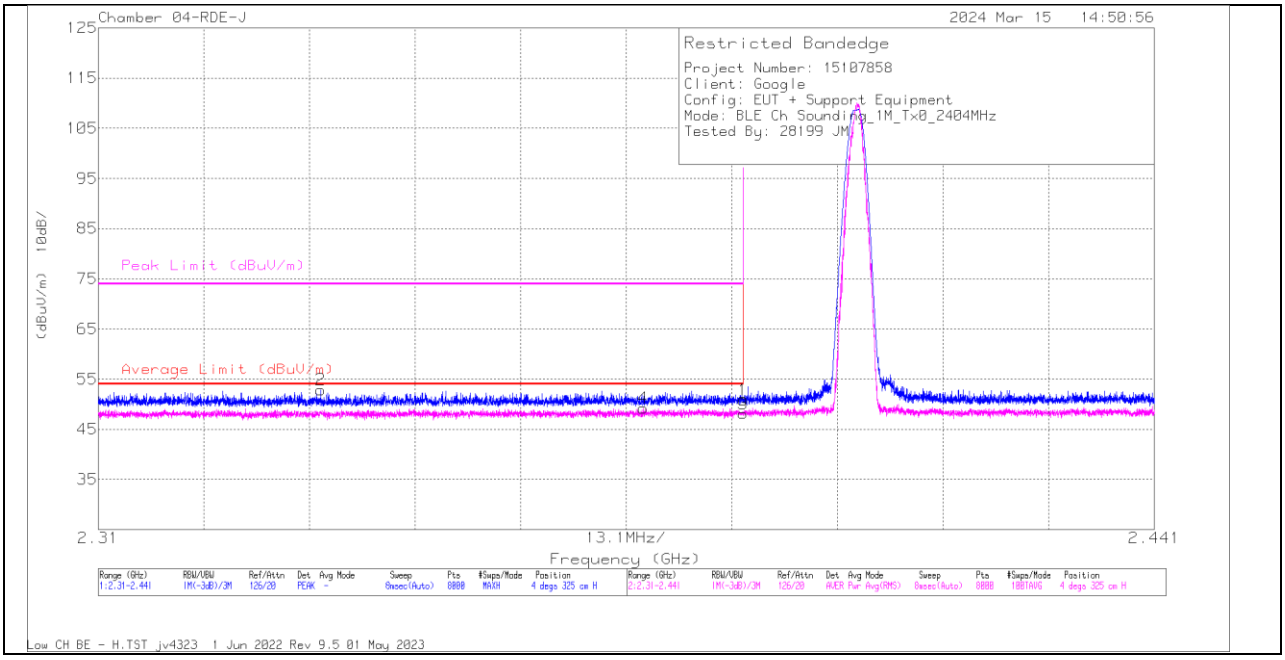
10.2.5. BLE 1Mbps GFSK, MODE 0 (CHANNEL SOUNDING)

Tx0

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.39	55.95	Pk	32	-37.1	0	50.85	-	-	74	-23.15	4	325	H
2	* ** 2.337595	58.14	Pk	31.9	-37.2	0	52.84	-	-	74	-21.16	4	325	H
3	* ** 2.39	45.05	RMS	32	-37.1	8.22	48.17	54	-5.83	-	-	4	325	H
4	* ** 2.377621	46.14	RMS	32	-37.1	8.22	49.26	54	-4.74	-	-	4	325	H

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
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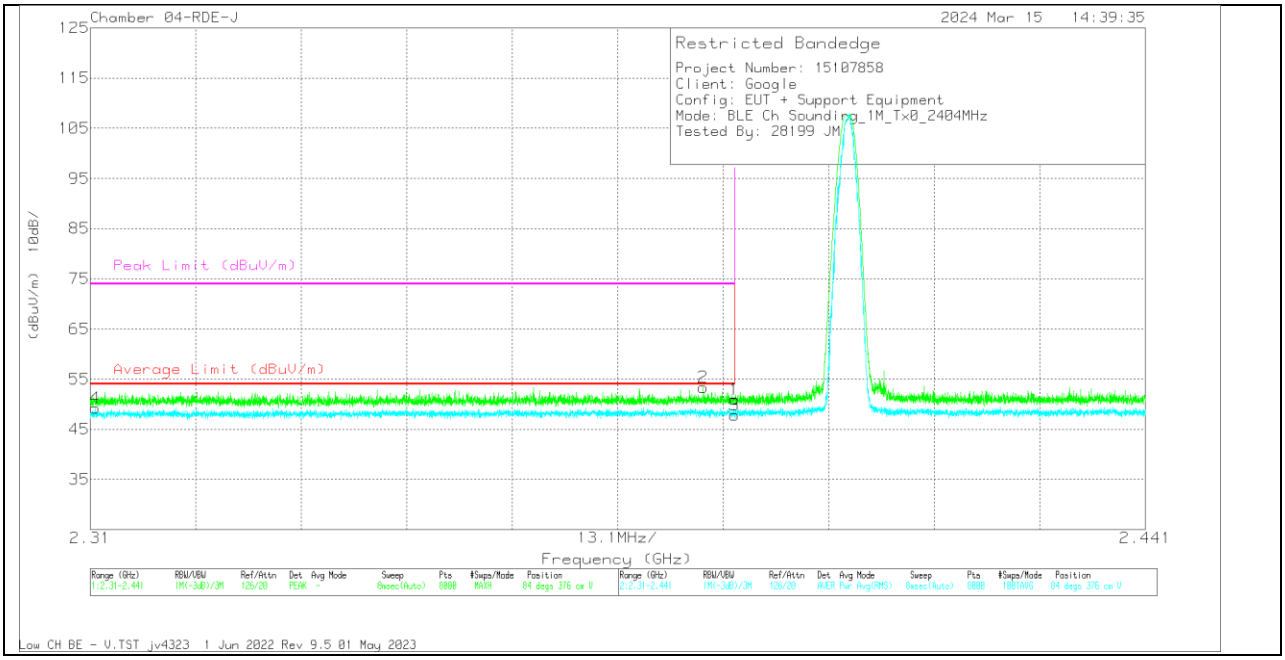
VERTICAL RESULT



Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	222741 ACF 3m (dB/m)	Cbl/Amp (dB)	DCCF (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* ** 2.39	56.14	Pk	32	-37.1	0	51.04	-	-	74	-22.96	84	376	V
2	* ** 2.386088	58.49	Pk	32	-37.1	0	53.39	-	-	74	-20.61	84	376	V
3	* ** 2.39	44.77	RMS	32	-37.1	8.22	47.89	54	-6.11	-	-	84	376	V
4	* ** 2.310639	46.45	RMS	31.8	-37.2	8.22	49.27	54	-4.73	-	-	84	376	V

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