

RF Test Report

Report Number: 208729-2 **Revision Level:** 2

Client: Trackonomy Systems, Inc.
214 Devcon Dr. San Jose, CA 95112

Equipment Under Test: Multifunctional IoT Platform Sensor Device

Model: FBO-2005

FCC ID: 2AXA8-FBO-2005

IC ID: 27299-FBO2005

Applicable Standards: FCC Part 15 Subpart C, § 15.247
RSS-247, Issue 3, August 2023
RSS-GEN, Issue 5, February 2021, Amendment 2
ANSI C63.10:2013

Report issued on: 13 Jun 2024

Test Result: Compliant



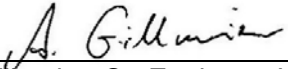
FOR THE SCOPE OF ACCREDITATION UNDER CERTIFICATE NUMBER: 1935.01

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Prepared by:


Alex Chang, Sr. EMC/RF Regulatory Lab Manager

Reviewed by:


Andreas Gillmeier, Sr. Engineer, Wireless

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1 Summary of Test Results

Test Description	Test Specification		Test Result
Bandwidth	15.247(a)(2)	RSS-247 5.2(a) RSS-Gen 6.7	Compliant
Output Power	15.247(b)(3)	RSS-247 5.4(d)	Compliant
Power Spectral Density	15.247(e)	RSS-247 5.2(b)	Compliant
Conducted Spurious Emissions / Band Edge	15.247(d)	RSS-247 5.5	Compliant
Emissions in Restricted Frequency Bands	15.247(d) 15.205, 15.209	RSS-247 5.5 RSS-Gen 8.9, 8.10	Compliant
Band Edge Emissions in Restricted Frequency Bands	15.247(d) 15.205, 15.209	RSS-247 5.5 RSS-Gen 8.9, 8.10	Compliant
AC Powerline Conducted Emissions	15.207	RSS-Gen 8.8	N/A

N/A EUT is battery operated device. Test not applicable.

1.1 Modifications Required for Compliance

None

2 General Information

2.1 Client Information

Company Name: Trackonomy Systems, Inc.
Address: 214 Devcon Dr.
City, State, Zip, Country: San Jose, CA 95132

2.2 Test Laboratory

Name: SGS North America, Inc.
Address: 12310 World Trade Drive, Suite 106/107
City, State, Zip, Country: San Diego, CA 92128
Accrediting Body: A2LA
Type of lab: Testing Laboratory
Certificate Number: 1935.01
Designation ID: US1346
CAB ID: US0236

2.3 General Information of EUT

Equipment Under Test: Multifunctional IoT Platform Sensor Device
Model: FBO-2005
Serial Numbers: *Sample 1* (Conducted Sample x 1)
 Sample 2 (Radiated Sample x 1)
FCC ID: 2AXA8-FBO-2005
IC: 27299-FBO2005
Frequency Range: 2402 – 2480 MHz
Antenna Manufacturer: Trackonomy Systems, Inc.
Data Modes: 2M
Antenna Model: FBO-2005-ANT
Antenna Type: Inverted F PCB Antenna
Antenna Gain*: 1.5 dBi (max.)
Rated Voltage: 3.0V_{DC} Battery powered device

Test Voltage: 4.1V_{DC} (via external power source for Radiated and Conducted Measurements)
Sample Received Date: March 15, 2024
Dates of testing: March 25 to June 12, 2024

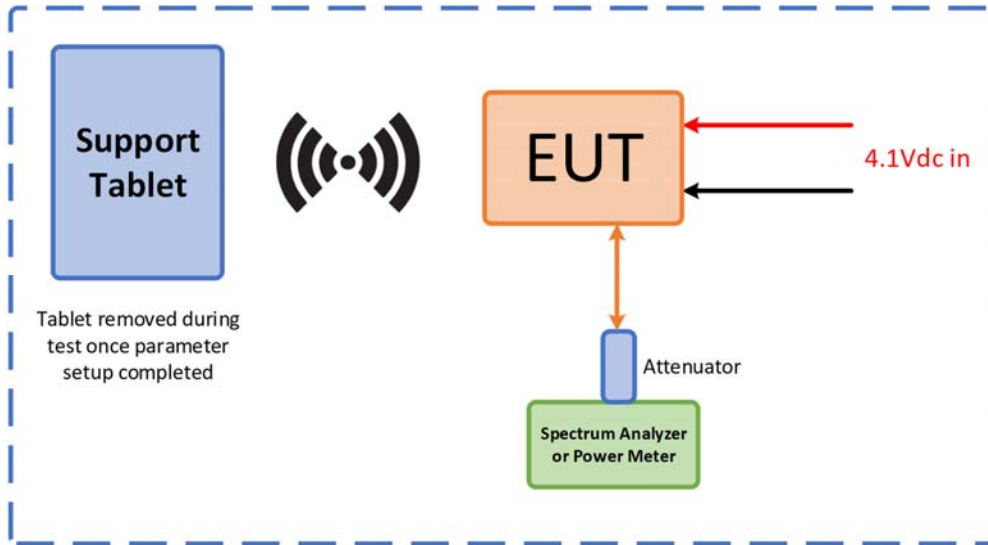
*Data was not measured by SGS laboratory and therefore SGS is not responsible for accuracy. Data obtained via customer, specification sheet, previous filing or other.

2.4 Operating Modes and Conditions

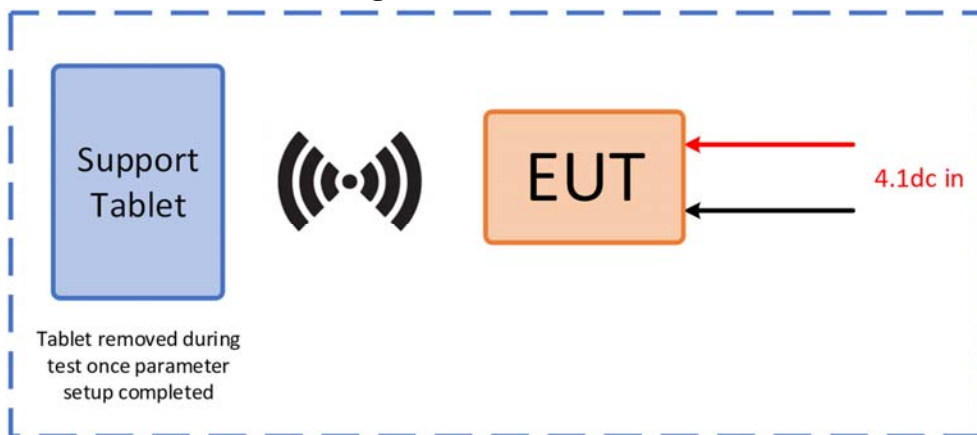
The EUT was running test mode via a support tablet which allowed the following:

- 1) Selecting low, middle and high BLE channels;
- 2) Selecting the modulation scheme as used in normal operation, but with >98% duty cycle;
- 3) Setting the power level. The maximum power setting of 8 was used for all tests.

2.5 EUT Connection Block Diagram – Conducted Measurements



2.6 EUT Connection Block Diagram – Radiated Measurements

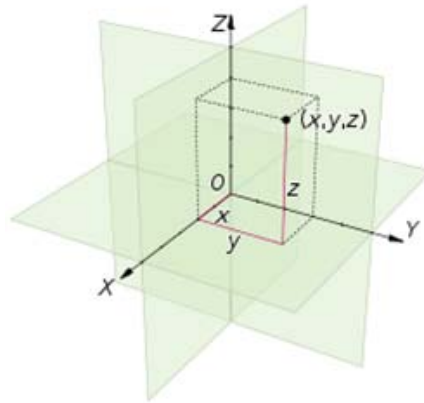


2.7 System Configurations

Manufacturer	Description	Model Number
Samsung	To set parameter on the EUT	SM-T387T

2.8 Worst-case Configuration

Based on the physical of the EUT possible usage or installation, EUT was evaluated X, Y, and Z to determine the worst-case of EUT orientation. For radiated measurements verification performed using "X" configuration as worst-case.



3 Bandwidth

3.1 Test Result

Test Description	Test Specification		Test Result
DTS Bandwidth (6dB)	15.247(a)(2)	RSS-247 5.2 (a)	Compliant
Occupied Bandwidth (99%)	2.1049	RSS-Gen 6.7	Reported

3.2 Test Methods

The DTS 6dB bandwidth measurements were performed using the procedure from ANSI C63.10 clause 11.8 and the 99% occupied bandwidth measurements were performed using the procedure from ANSI C63.10 clause 6.9.3. These procedures are referenced in KDB 558074 D01 15.247 Meas Guidance v05r02.

The BLE 2Mbps data mode was used for these tests.

Limit

The minimum 6dB bandwidth shall be at least 500 kHz.

3.3 Test Date and Test Engineer(s)

March 25, 2024 / AC

3.4 Test Site

SGS EMC Laboratory, San Diego, CA

Environmental Conditions

Temperature: 17 °C

Relative Humidity: 64 %

Atmospheric Pressure: 101.7 kPa

3.5 Test Equipment

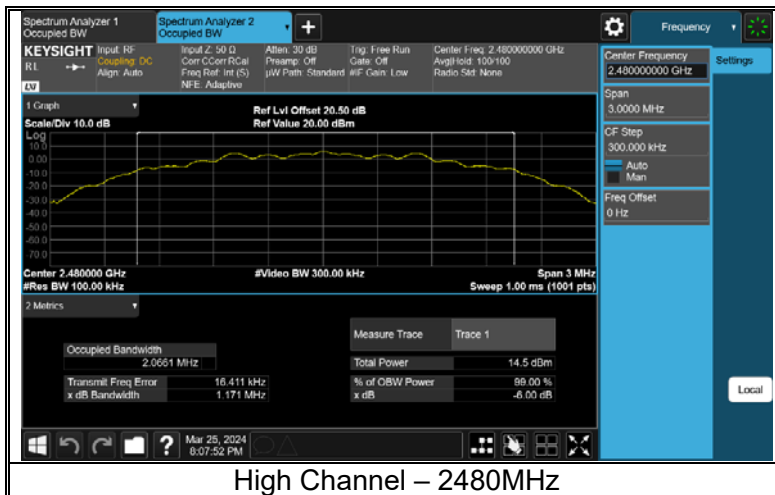
Asset	Manufacturer	Equipment	Model	Serial No.	Cal Date	Cal Due Date
2011	Keysight	EXG Vector Signal Generator 9kHz - 6GHz	N5172B	MY61252925	01/29/2023	01/29/2025
2003	Keysight	Signal Analyzer	N9030B	MY61330812	01/29/2024	01/29/2025
-	ENS Microwave, LLC	RF cable	S190-320-MNS-MNS	-	Verified	
-	Weinschel	20dB attenuator	3M-20	116459	Verified	
2018	Shenzhen Sky Toppower Tech.	DC Power Supply	STP3020	N/A	N.C.R.	
-	SGS Taiwan	Test Software	Radio	v.23	N/A	

3.6 Test Setup

Refer to Section 2.5 in this test report

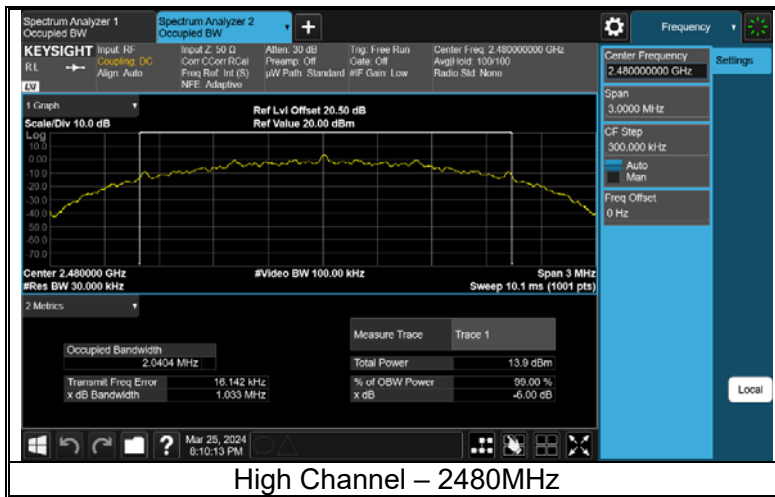
3.7 Test Data – DTS Bandwidth (6dB)

Test Mode	Frequency (MHz)	6dB Bandwidth	Verdict
		Test Result (MHz)	
2M	2402	1.171	Pass
	2440	1.17	Pass
	2480	1.171	Pass



3.8 Test Data – 99% Occupied Bandwidth

Test Mode	Frequency (MHz)	99% Occupied Bandwidth Test Result (MHz)	
		2M	2402
	2440	2.0382	Only for Report Use
	2480	2.0404	Only for Report Use



4 Output Power

4.1 Test Result

Test Description	Test Specification		Test Result
Fundamental Emission Output Power	15.247(b)(3)	RSS-247 S5.4 (d)	Compliant

4.2 Test Method

Fundamental maximum peak conducted output power measurements were performed using the method described in ANSI C63.10:2013 clause 11.9.1.3 and 11.9.2.3. This procedure is referenced in KDB 558074 D01 15.247 Meas Guidance v05r02.

The BLE 2Mbps data mode was used for this test.

Limit

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. For using antennas with greater than 6dBi of gain, the limit is reduced in dB by the amount the gain exceeds 6dBi (e.g. for a 7.4dBi antenna, the limit is reduced from 30dBm to 28.6dBm). Also, the e.i.r.p. shall not exceed 4 Watts (36 dBm) based on RSS-247 S5.4 (d).

4.3 Test Date and Test Engineer(s)

March 25 and June 12, 2024 / AC

4.4 Test Site

SGS EMC Laboratory, San Diego, CA

Environmental Conditions

Temperature: 17 °C
 Relative Humidity: 64 %
 Atmospheric Pressure: 101.7 kPa

4.5 Test Equipment

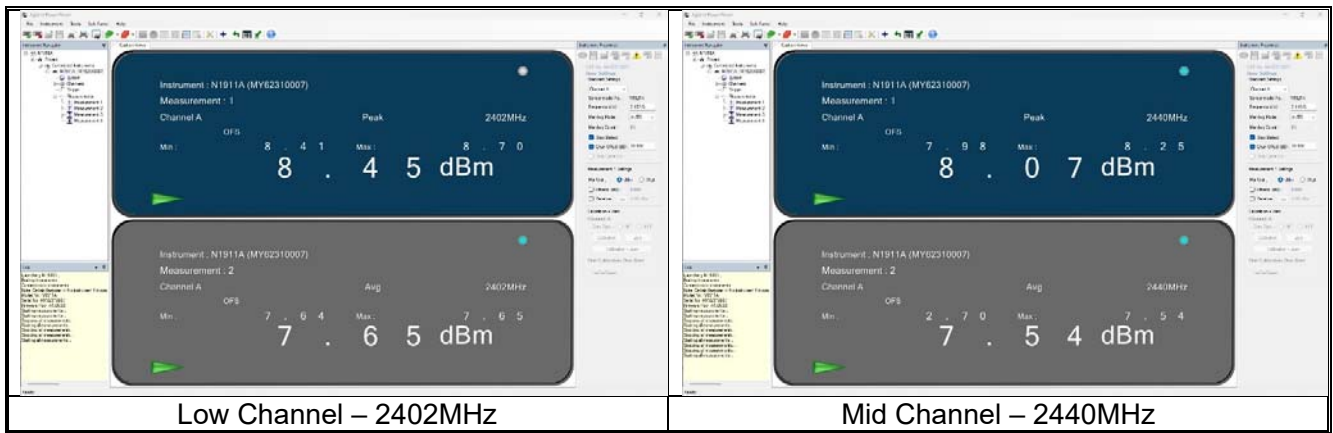
Asset	Manufacturer	Equipment	Model	Serial No.	Cal Date	Cal Due Date
2013	Keysight	Single Channel PK Power Meter	N1911A	MY62310007	01/29/2024	01/29/2025
2015	Keysight	Wideband Power Sensor	N1921A	MY62220017	01/29/2024	01/29/2025
2018	Shenzhen Sky Toppower Tech.	DC Power Supply	STP3020	N/A	N.C.R.	
-	Weinschel	20dB attenuator	3M-20	116459	Verified	
-	ENS Microwave, LLC	RF cable	S190-320-MNS-MNS	-	Verified	

4.6 Test Setup

Refer to Section 2.5 in this test report

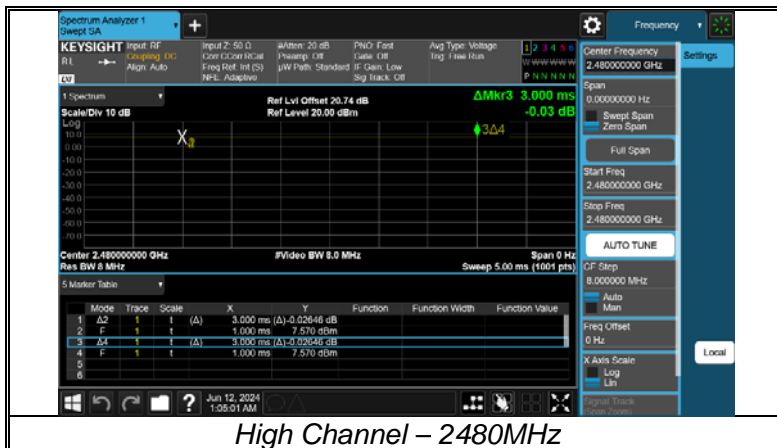
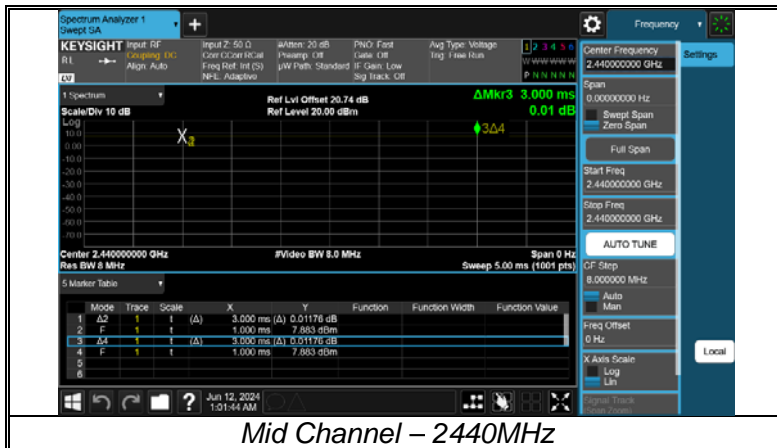
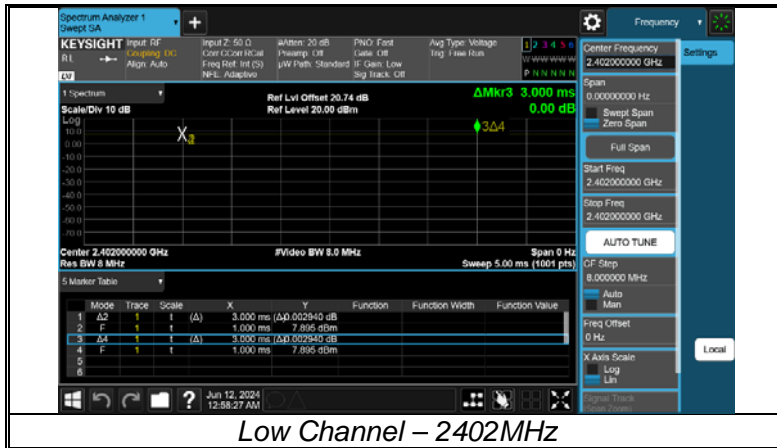
4.7 Test Data

Test Mode	Frequency (MHz)	Measured Peak Output Power (dBm)	Measured Avg Output Power (dBm)	Limits (dBm)	Verdict
2M	2402	8.70	7.65	30	PASS
	2440	8.25	7.54	30	PASS
	2480	8.07	7.37	30	PASS



Duty Cycle

Test Mode	Frequency (MHz)	T _{on} (ms)	T _{on} +T _{off} (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
2M	2402	3	3	100	0
	2440	3	3	100	0
	2480	3	3	100	0



5 Power Spectral Density

5.1 Test Result

Test Description	Test Specification		Test Result
Power Spectral Density	15.247(e)	RSS-247 S5.2 (b)	Compliant

5.2 Test Method

Peak power spectral density measurements were performed using the procedures from ANSI C63.10: 2013 clause 11.10. These procedures are referenced in KDB 558074 D01 15.247 Meas Guidance v05r02.

The BLE 2Mbps data mode was used for this test.

Limit

The maximum limit is 8 dBm / 3 kHz.

5.3 Test Date and Test Engineer(s)

March 25, 2024 / AC

5.4 Test Site

SGS EMC Laboratory, San Diego, CA

Environmental Conditions

Temperature: 17 °C
 Relative Humidity: 64 %
 Atmospheric Pressure: 101.7 kPa

5.5 Test Equipment

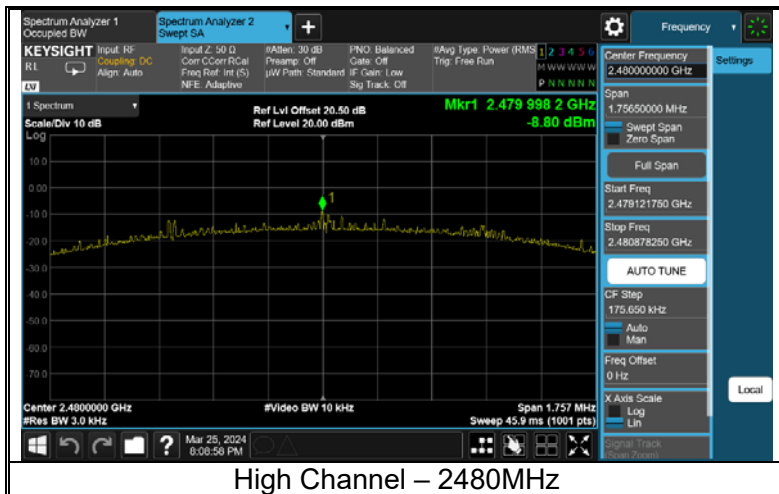
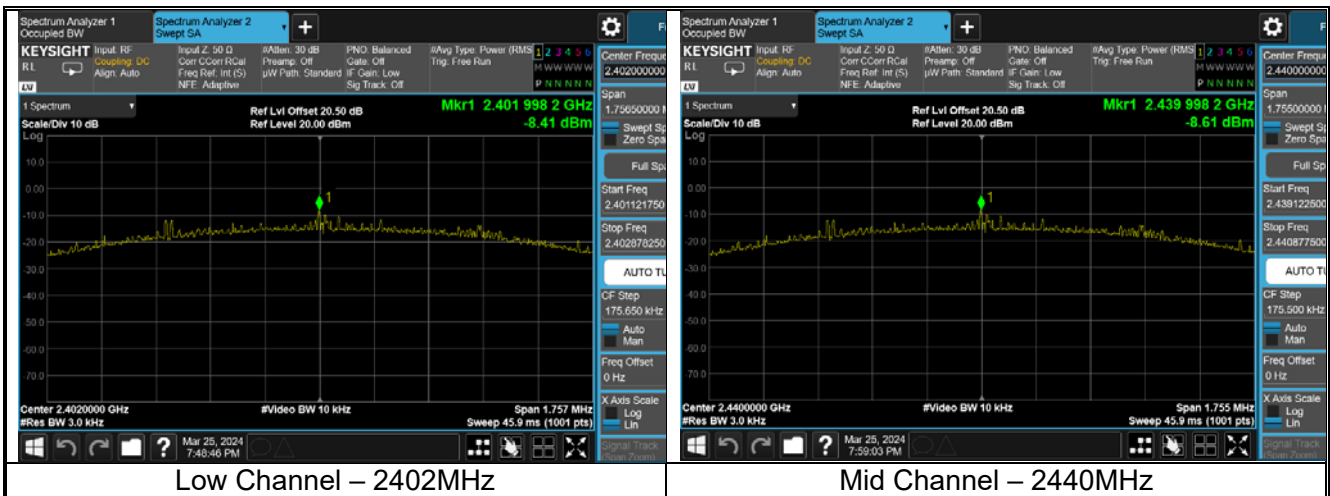
Asset	Manufacturer	Equipment	Model	Serial No.	Cal Date	Cal Due Date
2011	Keysight	EXG Vector Signal Generator 9kHz - 6GHz	N5172B	MY61252925	01/29/2023	01/29/2025
2003	Keysight	Signal Analyzer	N9030B	MY61330812	01/29/2024	01/29/2025
-	ENS Microwave, LLC	RF cable	S190-320-MNS-MNS	-	Verified	
-	Weinschel	20dB attenuator	3M-20	116459	Verified	
2018	Shenzhen Sky Toppower Tech.	DC Power Supply	STP3020	N/A	N.C.R.	
-	SGS Taiwan	Test Software	Radio	v.23	N/A	

5.6 Test Setup

Refer to Section 2.5 in this test report

5.7 Test Data

Test Mode	Frequency (MHz)	Maximum Power Spectral Density (dBm/3KHz)	Limits (dBm/3kHz)	Verdict
2M	2402	-8.41	≤8	PASS
	2440	-8.61	≤8	PASS
	2480	-8.80	≤8	PASS



6 Conducted Spurious Emissions / Band Edge

6.1 Test Result

Test Description	Test Specification		Test Result
Conducted Spurious and Band Edge Emissions	15.247(d)	RSS-247 S5.5	Compliant

6.2 Test Method

Conducted band edge and spurious band emissions in non-restricted frequency bands were measured using the method defined in ANSI C63.10 clause 11.11. and 11.12. This procedure is referenced in KDB 558074 D01 15.247 Meas Guidance v05r02.

The BLE 2Mbps data mode was used for this test.

Limit

Because the maximum peak conducted output power was used to determine compliance with the output power limits, the limit in any 100 kHz band outside of the authorized band is 20 dB below the maximum in-band peak level.

6.3 Test Date and Test Engineer(s)

March 25 and June 12, 2024 / AC

6.4 Test Site

SGS EMC Laboratory, San Diego, CA

Environmental Conditions

Temperature: 17 °C
 Relative Humidity: 64 %
 Atmospheric Pressure: 101.7 kPa

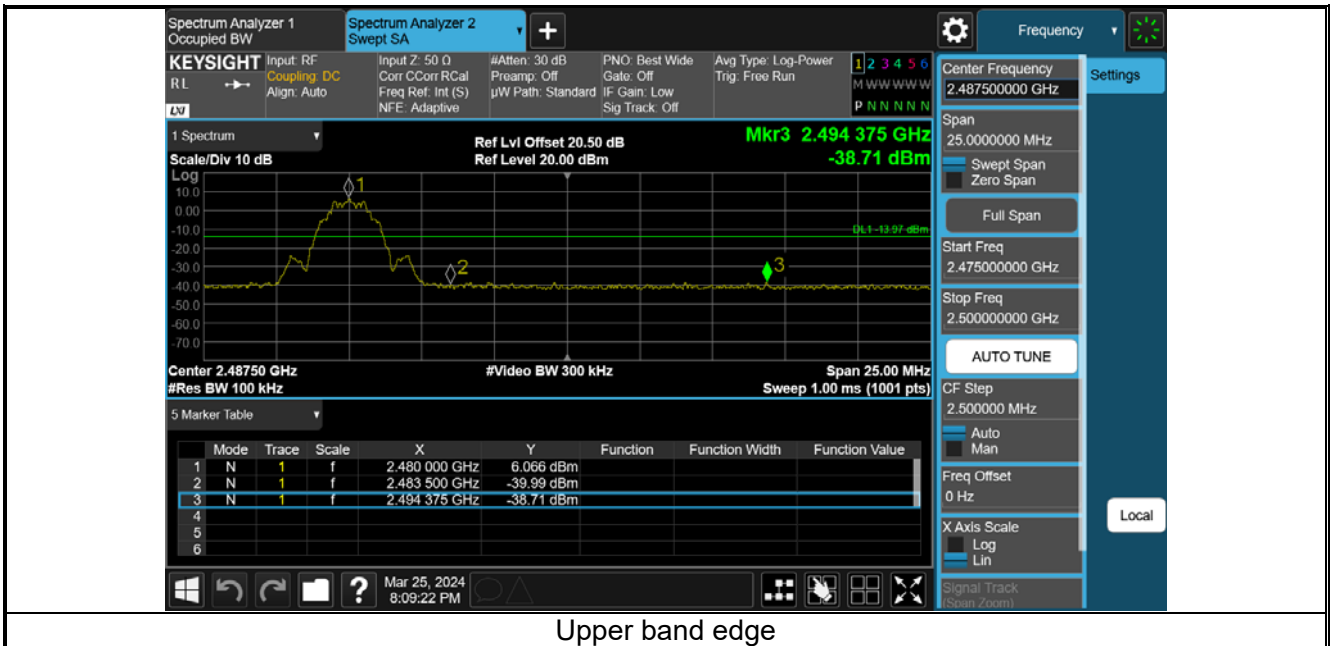
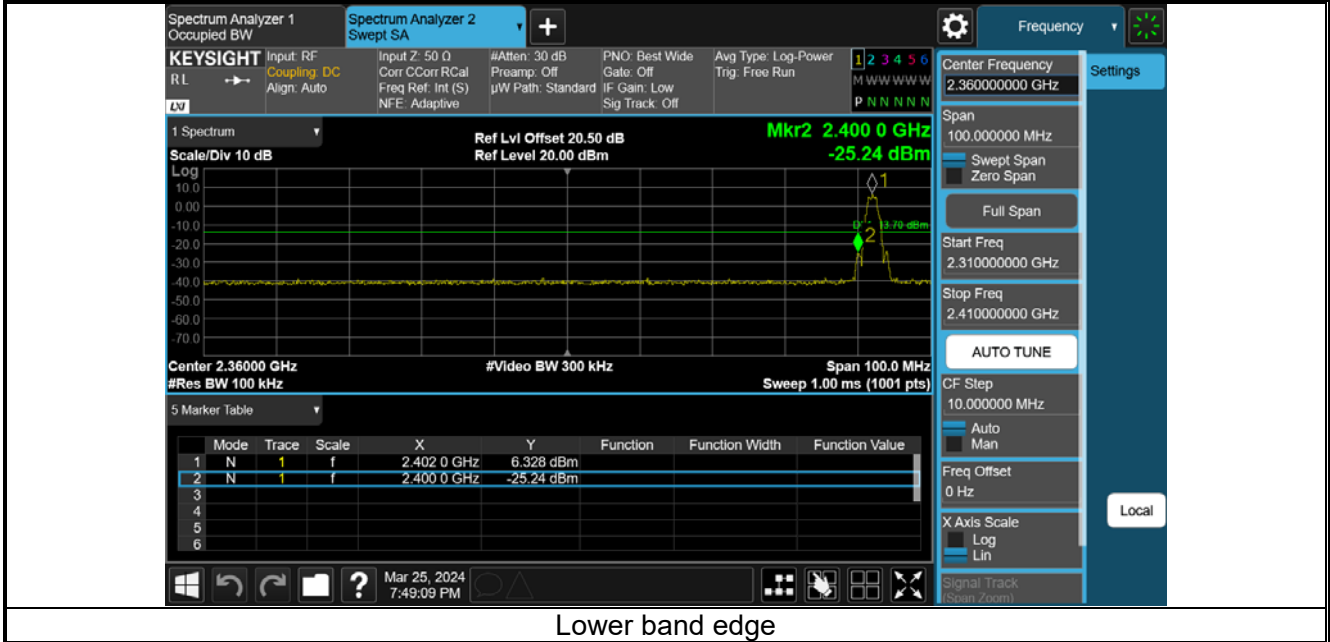
6.5 Test Equipment

Asset	Manufacturer	Equipment	Model	Serial No.	Cal Date	Cal Due Date
2011	Keysight	EXG Vector Signal Generator 9kHz - 6GHz	N5172B	MY61252925	01/29/2023	01/29/2025
2003	Keysight	Signal Analyzer	N9030B	MY61330812	01/29/2024	01/29/2025
-	ENS Microwave, LLC	RF cable	S190-320-MNS-MNS	-	Verified	
-	Weinschel	20dB attenuator	3M-20	116459	Verified	
2018	Shenzhen Sky Toppower Tech.	DC Power Supply	STP3020	N/A	N.C.R.	
-	SGS Taiwan	Test Software	Radio	v.23	N/A	

6.6 Test Setup

Refer to Section 2.5 in this test report

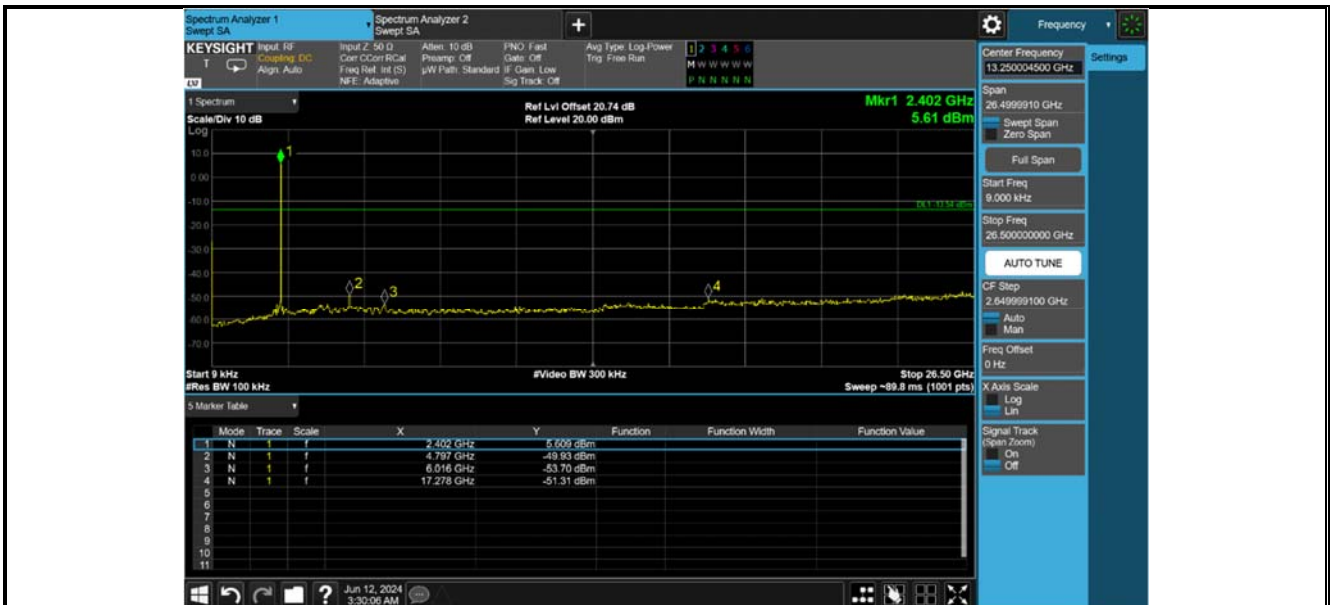
6.7 Test Data – DTS Band Edge



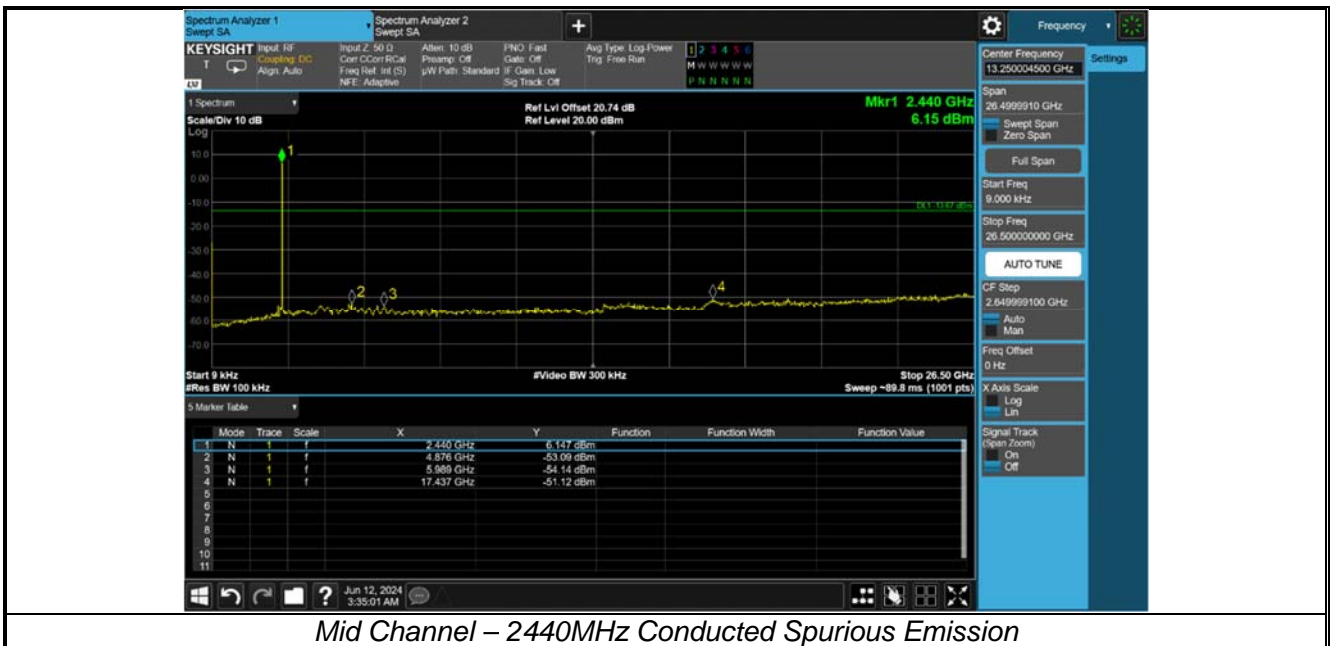
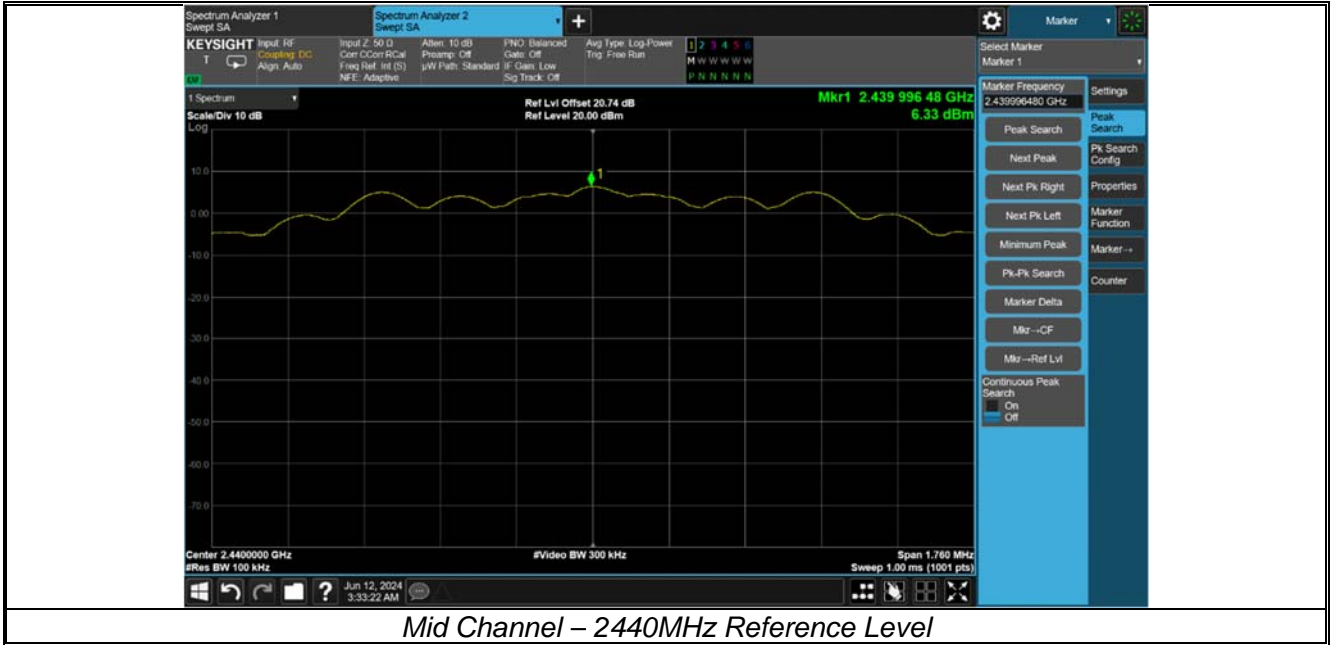
6.8 Test Data – DTS Conducted Spurious Emissions



Low Channel – 2402MHz Reference Level

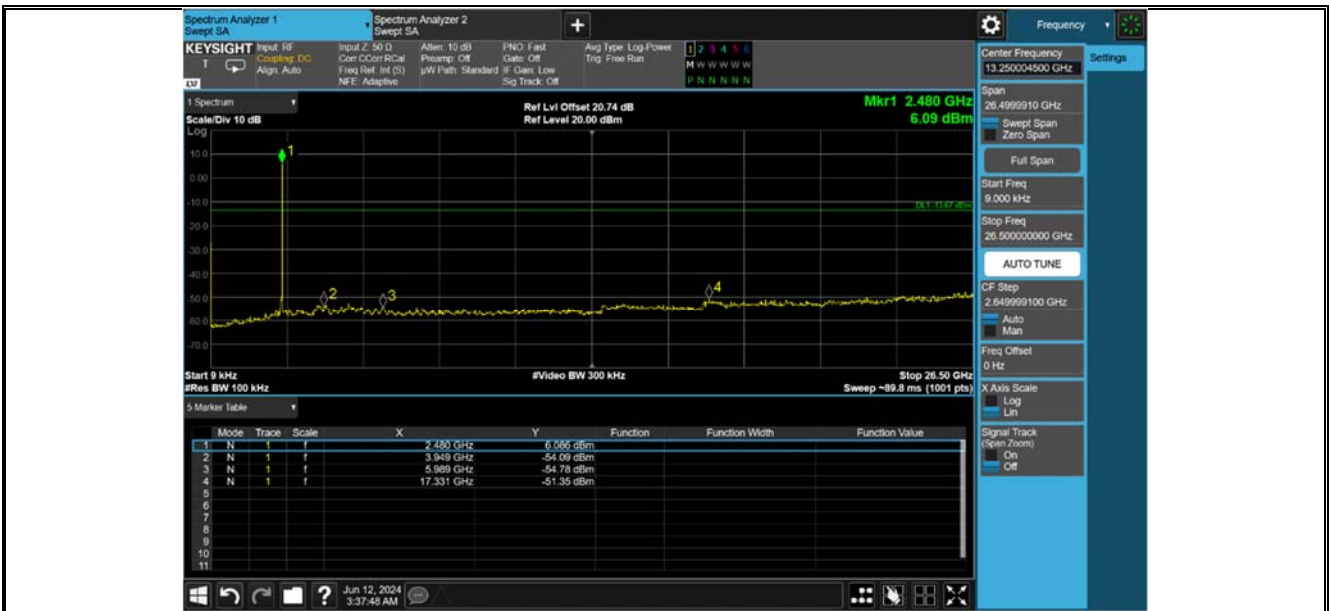


Low Channel – 2402MHz Conducted Spurious Emission





High Channel – 2480MHz Reference Level



High Channel – 2480MHz Conducted Spurious Emission

7 Radiated Spurious Emissions

7.1 Test Result

Test Description	Test Specification		Test Result
Emissions in Restricted Frequency Bands	15.247(d) 15.205, 15.209	RSS-247 S5.5 RSS-GEN S8.9, S8.10	Compliant

7.2 Test Method

Radiated emissions in restricted frequency bands were measured using methods defined in ANSI C63.10 clause 11.11 and 11.12. These procedures are referenced in KDB 558074 D01 15.247 Meas Guidance v05r02.

Limits within restricted bands of operation:

Frequency	Limits ⁽¹⁾		Peak Limits dBuV/m
	Microvolts/m	dBuV/m	
30 - 88 MHz	100	40 ⁽²⁾	--
88 - 216 MHz	150	43.5 ⁽²⁾	--
216 - 960 MHz	200	46 ⁽²⁾	--
960 - 1000 MHz	500	54 ⁽²⁾	--
1 - 40 GHz	500	54 ⁽³⁾	74

(1) These limits are applicable to emissions outside of the intentional transmit frequency band.

(2) Quasi-peak limit

(3) Average limit

7.3 Test Date and Test Engineer(s)

March 28 and June 06, 2024 / AC

7.4 Test Site

SGS EMC Laboratory, San Diego, CA

Environmental Conditions

Temperature: 17 °C

Relative Humidity: 64 %

Atmospheric Pressure: 101.7 kPa

7.5 Additional Observation

- The low frequency band started from 9kHz to 30MHz was pre-scanned and the results was 20dB lower than the limit per 15.31(o); therefore, no data was presented in this test report.
- The high frequency band beyond 18GHz was pre-scanned and the results was 20dB lower than the limit; therefore, no data was presented in this test report.

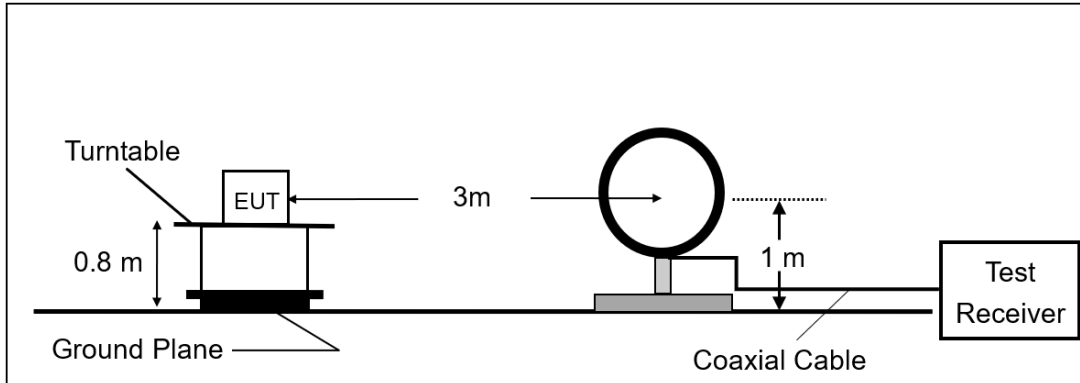
7.6 Test Equipment

Asset	Manufacturer	Equipment	Model	Serial No.	Cal Date	Cal Due Date
2034	ETS Lindgren	Biconilog Antenna 26M-6000MHz	3142E	00243882	06/29/2023	06/29/2025
2029	ETS Lindgren	Loop Antenna, H- Field	6512	00249642	08/31/2022	08/31/2024
2032	ETS Lindgren	DRG Horn Antenna 10G-40GHz	3116C	00251668	06/16/2022	06/16/2024
-	Micro-Tronics	2.97GHz High pass filter	HPM16182	G015	Verified	
-	ENS Microwave, LLC	RF cable	S190-320-MNS-MNS	-	Verified	
2017	Keysight	EMI Receiver	N9038B	MY59050132	10/24/2023	10/24/2024
2026	RF-Lambda	RF Microwave Systems Amplifier	RAMP00M45GA	00089204010	06/01/2023	06/01/2024
2033	ETS Lindgren	DRG Horn Antenna 1G-18GHz	3117	00251986	07/27/2022	07/27/2024
2018	Shenzhen Sky Toppower Tech.	DC Power Supply	STP3020	N/A	N.C.R.	
-	ETS Lindgren	Test Software	TILE!	V.7.8.1.7	N/A	

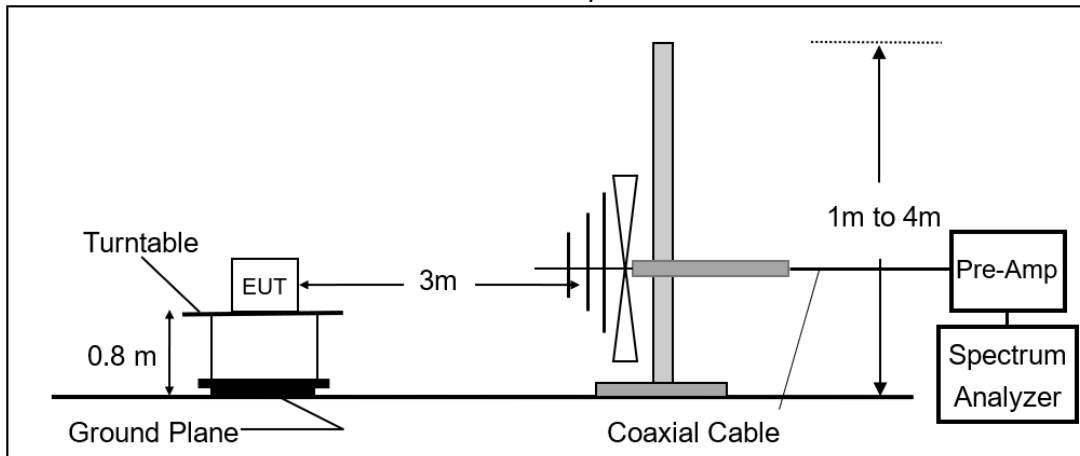
7.7 Test Setup

Refer to Section 2.6 in this test report of EUT setup.

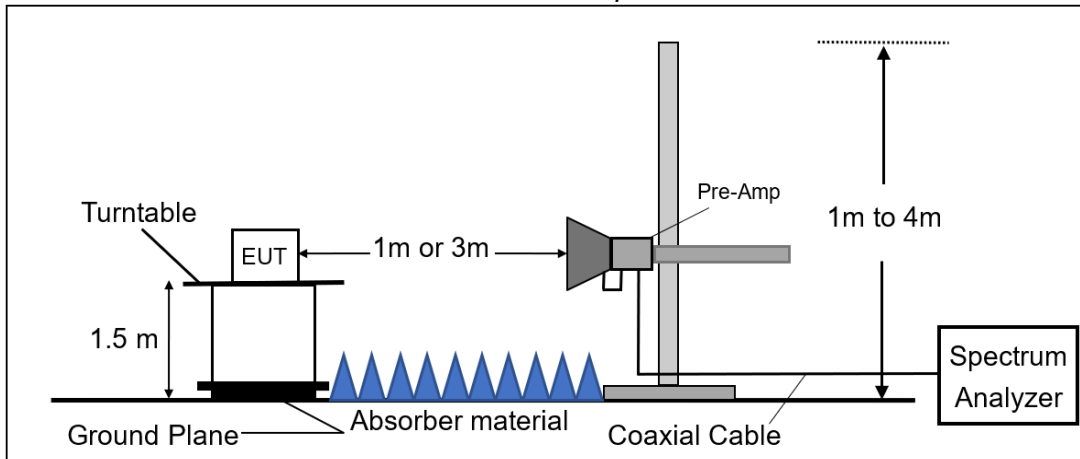
Radiated emission test setup for 9kHz to 30MHz



Radiated emission test setup for 30MHz to 1GHz



Radiated emission test setup for above 1GHz



7.8 *Field Strength Calculation*

The total correction factor is calculated by adding the Antenna Factor, Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any).

The basic equation with a sample calculation as follows:

$$\mathbf{TC = AF + CL - AG}$$

Where TC = Total Correction CL = Cable Loss
 AG = Amplifier Gain
 AF = Antenna Factor

The Final reading had been calculated internally by the test software by adding the Measurement Reading from the receiver and Total Correction factor.

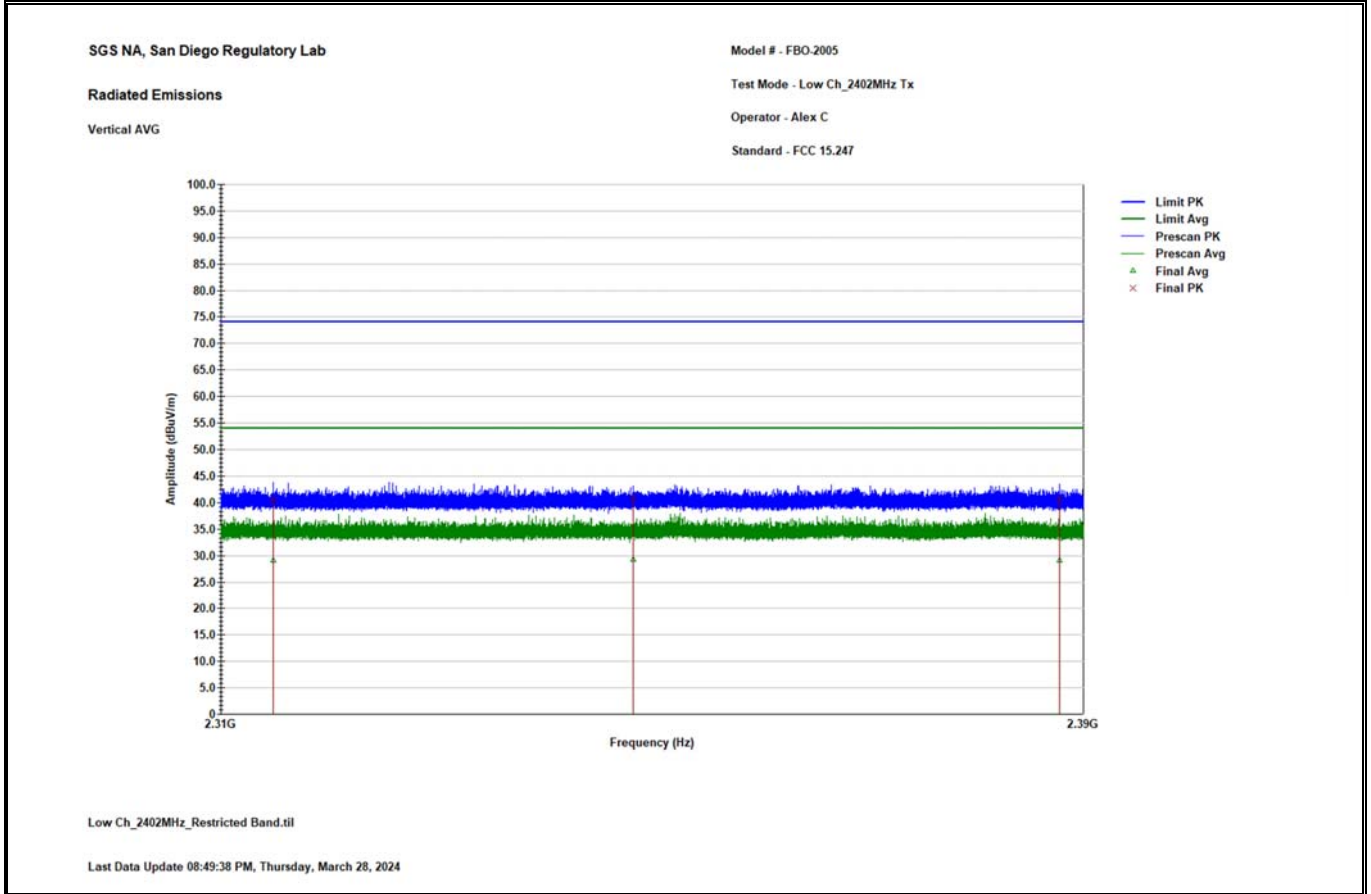
The basic equation with a sample calculation as follows:

$$\mathbf{Final = MR + TC}$$

Where TC = Total Correction MR = Measurement Reading

7.9 Test Data – Restricted Band

2310 – 2390MHz Restricted Band – Vertical polarity



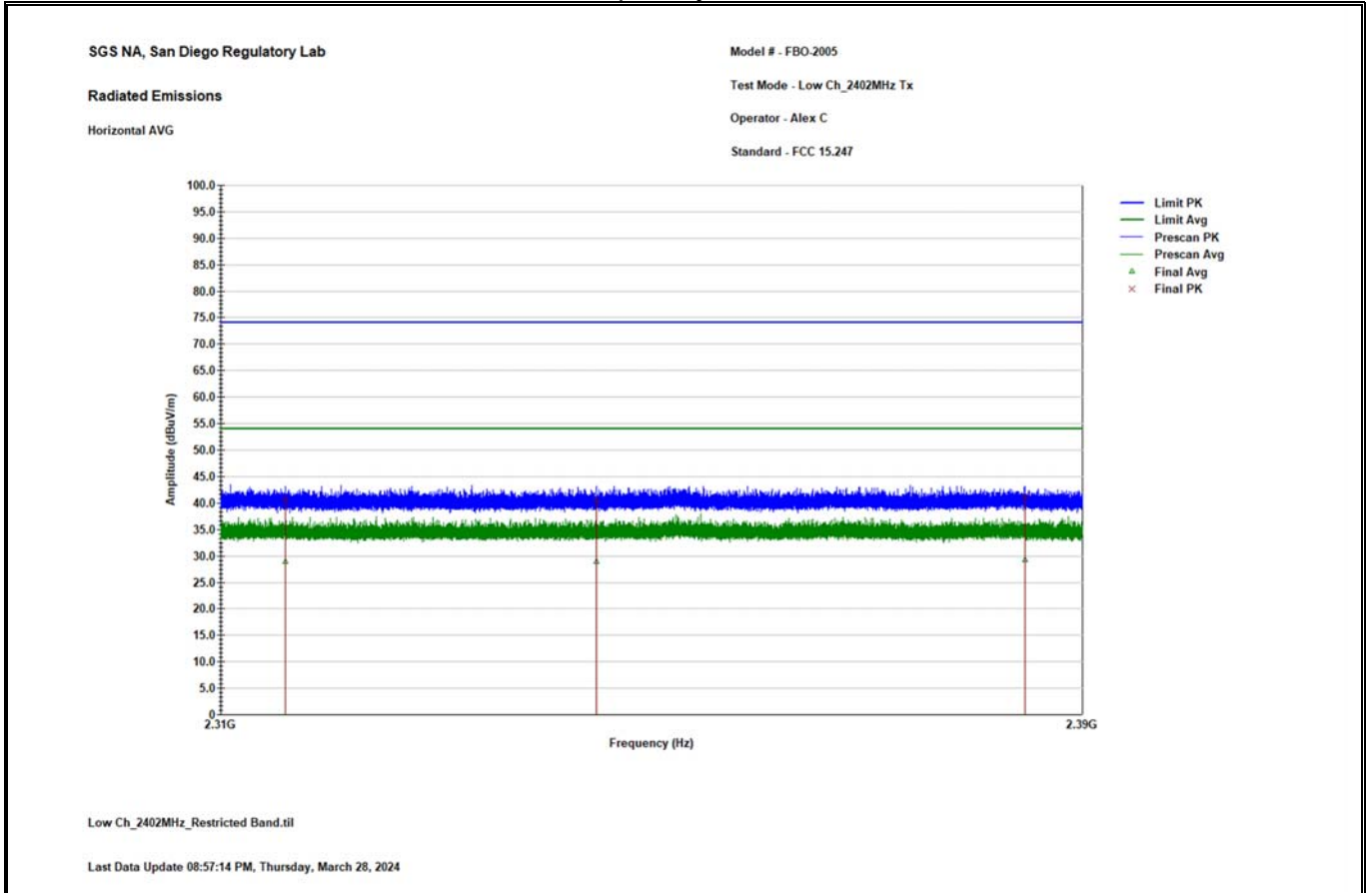
Peak Data

Freq. (MHz)	Final Pk (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2314.774	40.59	-0.92	-33.41	74	317	13
2347.936	40.95	-0.78	-33.05	74	150	248
2387.714	40.83	-0.6	-33.17	74	326	345

Average Data

Freq. (MHz)	Final Avg (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2314.774	29.12	-0.92	-24.88	54	317	13
2347.936	29.31	-0.78	-24.69	54	150	248
2387.714	29.17	-0.6	-24.83	54	326	345

2310 – 2390MHz Restricted Band – Horizontal polarity



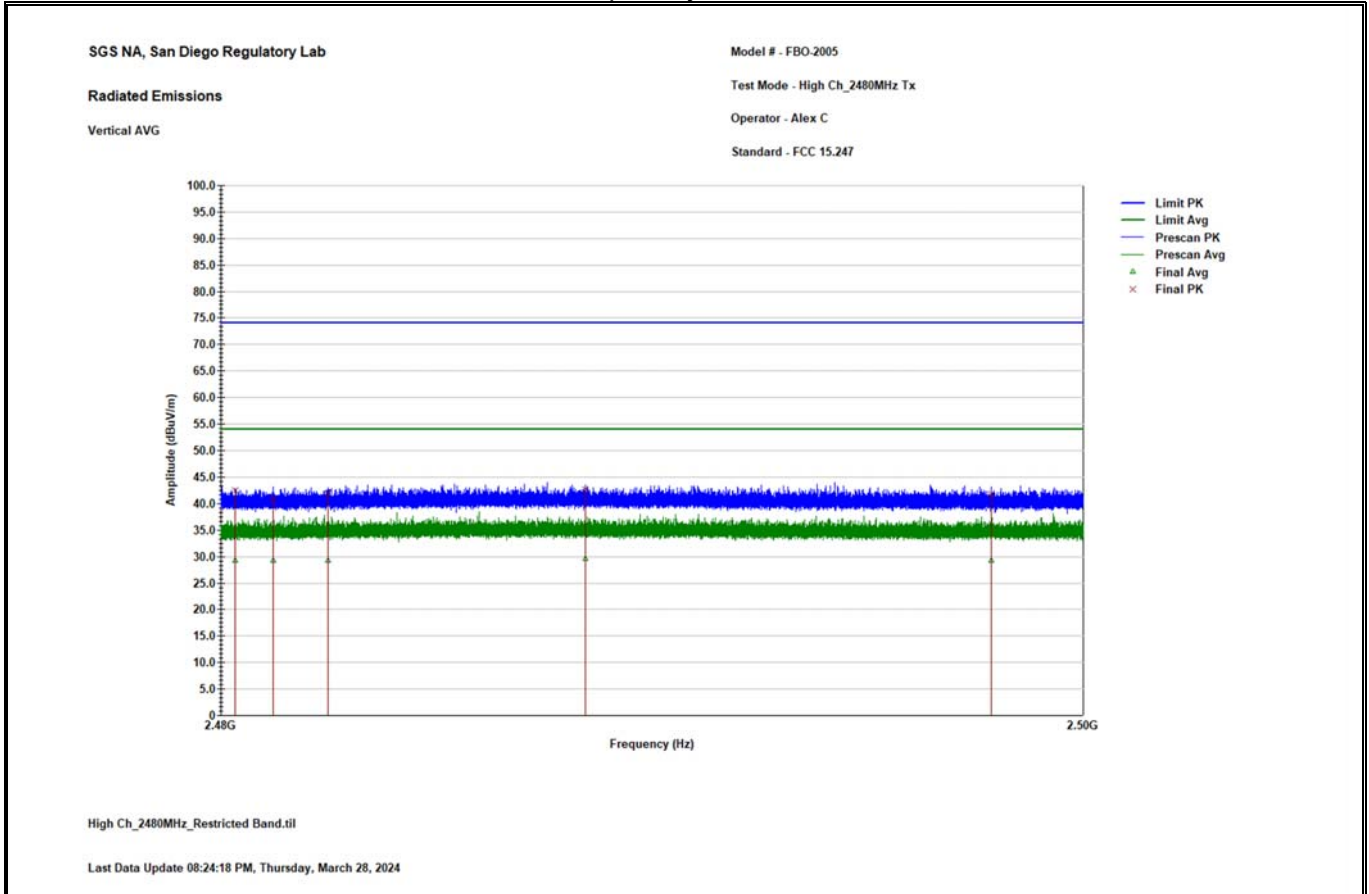
Peak Data

Freq. (MHz)	Final Pk (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2315.868	40.83	-0.92	-33.17	74	400	327
2344.5	40.74	-0.81	-33.26	74	150	380
2384.618	41.28	-0.63	-32.72	74	355	192

Average Data

Freq. (MHz)	Final Avg (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2315.868	29.07	-0.92	-24.93	54	400	327
2344.5	29.07	-0.81	-24.93	54	150	380
2384.618	29.28	-0.63	-24.72	54	355	192

2483.5 – 2500MHz Restricted Band – Vertical polarity



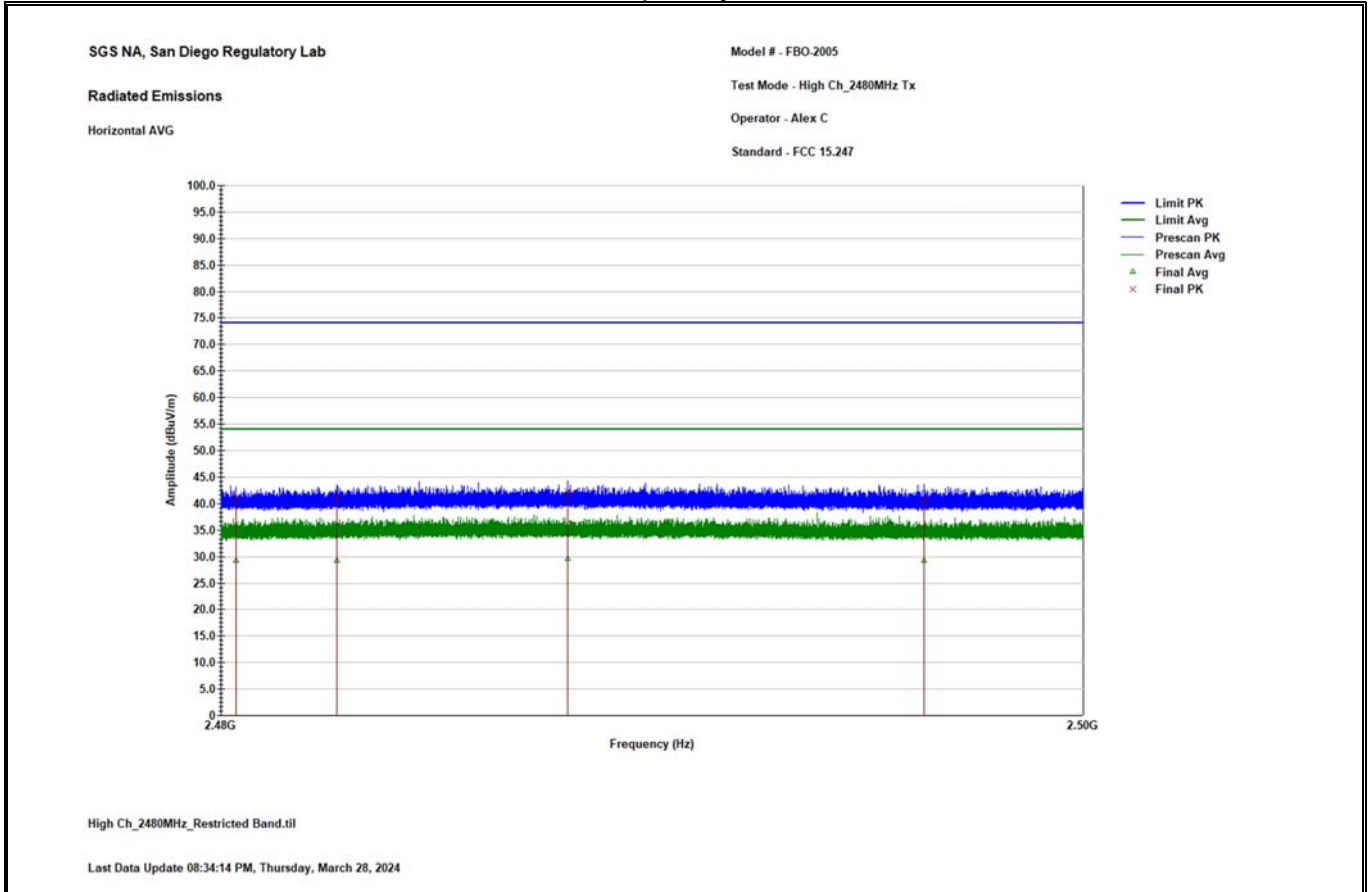
Peak Data

Freq. (MHz)	Final Pk (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2483.777	42.47	-0.11	-31.53	74	400	192
2484.493	40.91	-0.11	-33.09	74	400	302
2485.548	42.06	-0.1	-31.94	74	205	158
2490.466	42.66	-0.09	-31.34	74	172	132
2498.242	41.8	-0.06	-32.2	74	156	210

Average Data

Freq. (MHz)	Final Avg (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2483.777	29.3	-0.11	-24.7	54	400	192
2484.493	29.35	-0.11	-24.65	54	400	302
2485.548	29.38	-0.1	-24.62	54	205	158
2490.466	29.62	-0.09	-24.38	54	172	132
2498.242	29.35	-0.06	-24.65	54	156	210

2483.5 – 2500MHz Restricted Band – Horizontal polarity



Peak Data

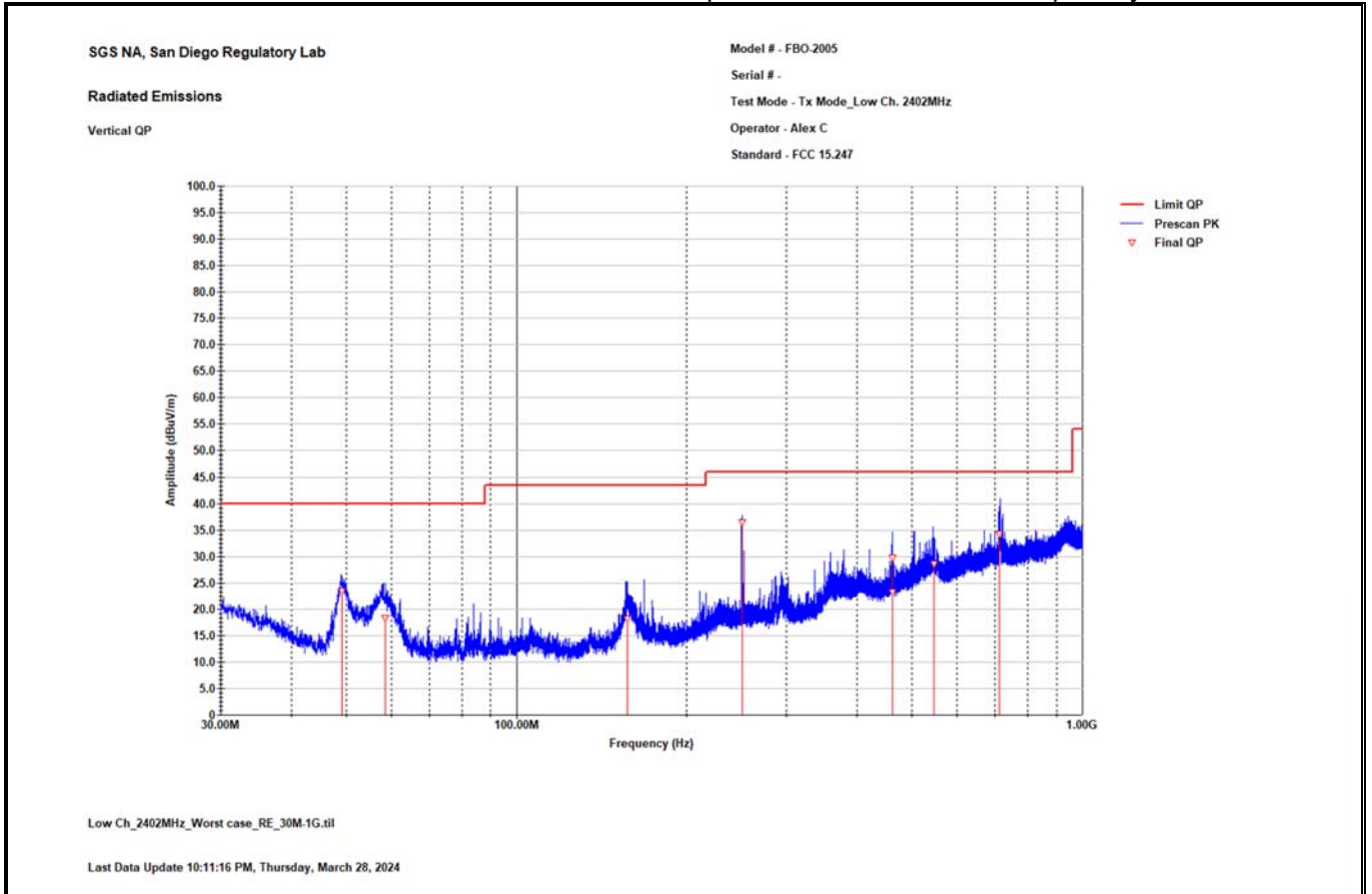
Freq. (MHz)	Final Pk (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2483.79	41.11	-0.11	-32.89	74	269	164
2485.704	41.31	-0.1	-32.69	74	351	29
2490.128	42.33	-0.09	-31.67	74	318	154
2496.947	40.81	-0.07	-33.19	74	150	369

Average Data

Freq. (MHz)	Final Avg (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2483.79	29.3	-0.11	-24.7	54	269	164
2485.704	29.39	-0.1	-24.61	54	351	29
2490.128	29.63	-0.09	-24.37	54	318	154
2496.947	29.27	-0.07	-24.73	54	150	369

7.10 Test Data – Radiated Spurious Emission

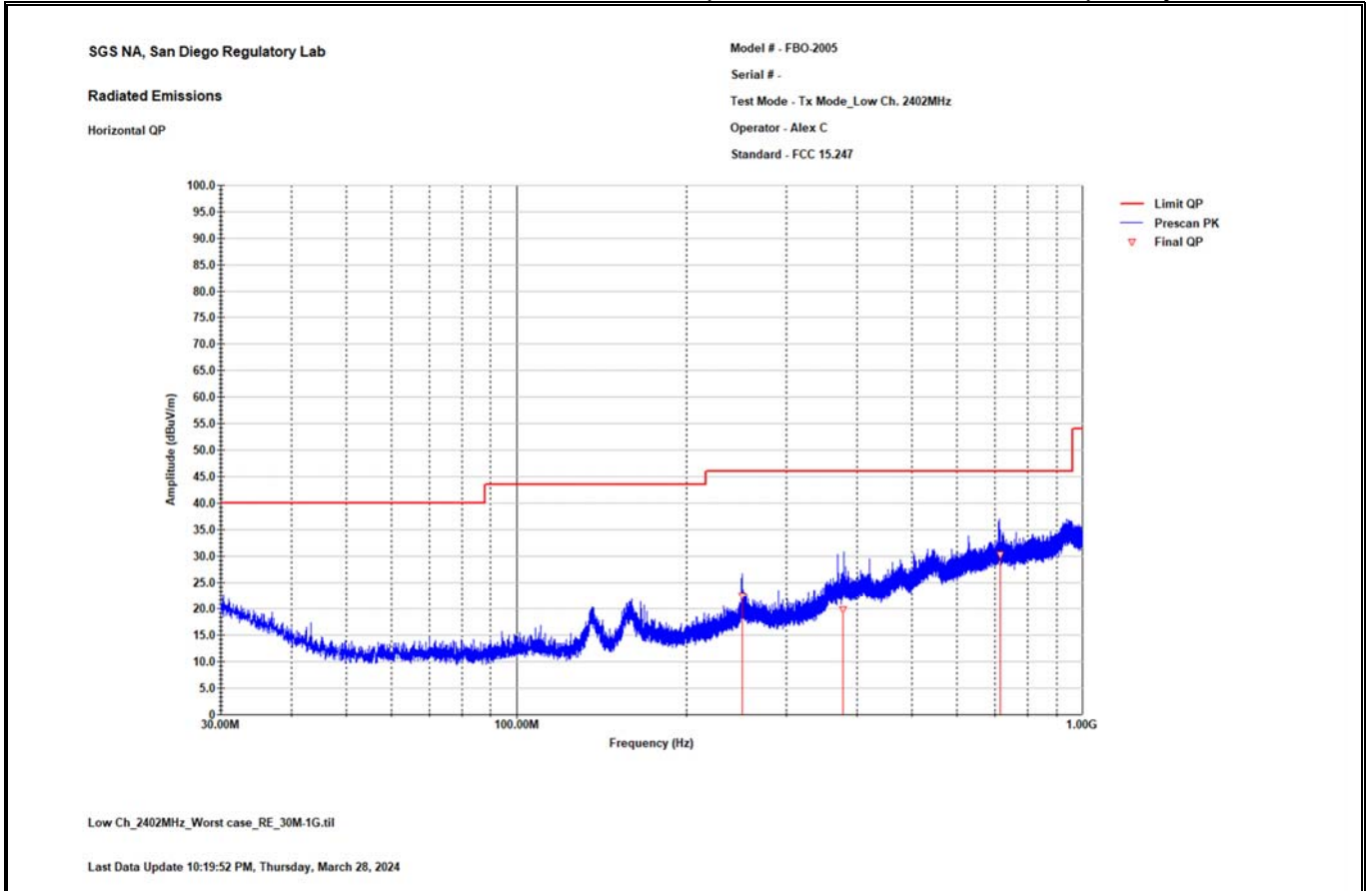
30MHz to 1GHz Worst-Case Low Channel Radiated Spurious Emission - Vertical polarity



Quasi-Peak Data

Freq. (MHz)	Final QP (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
49.169	23.46	12.65	-16.54	40	100	221
58.616	18.32	12.53	-21.68	40	138	338
156.744	18.08	16.8	-25.45	43.53	100	225
250.012	36.42	18.31	-9.58	46	100	370
461.006	29.85	24.71	-16.15	46	100	189
461.156	23.32	24.72	-22.68	46	202	175
546.43	28.63	28.61	-17.37	46	146	225
712.819	34.29	30.4	-11.71	46	100	210

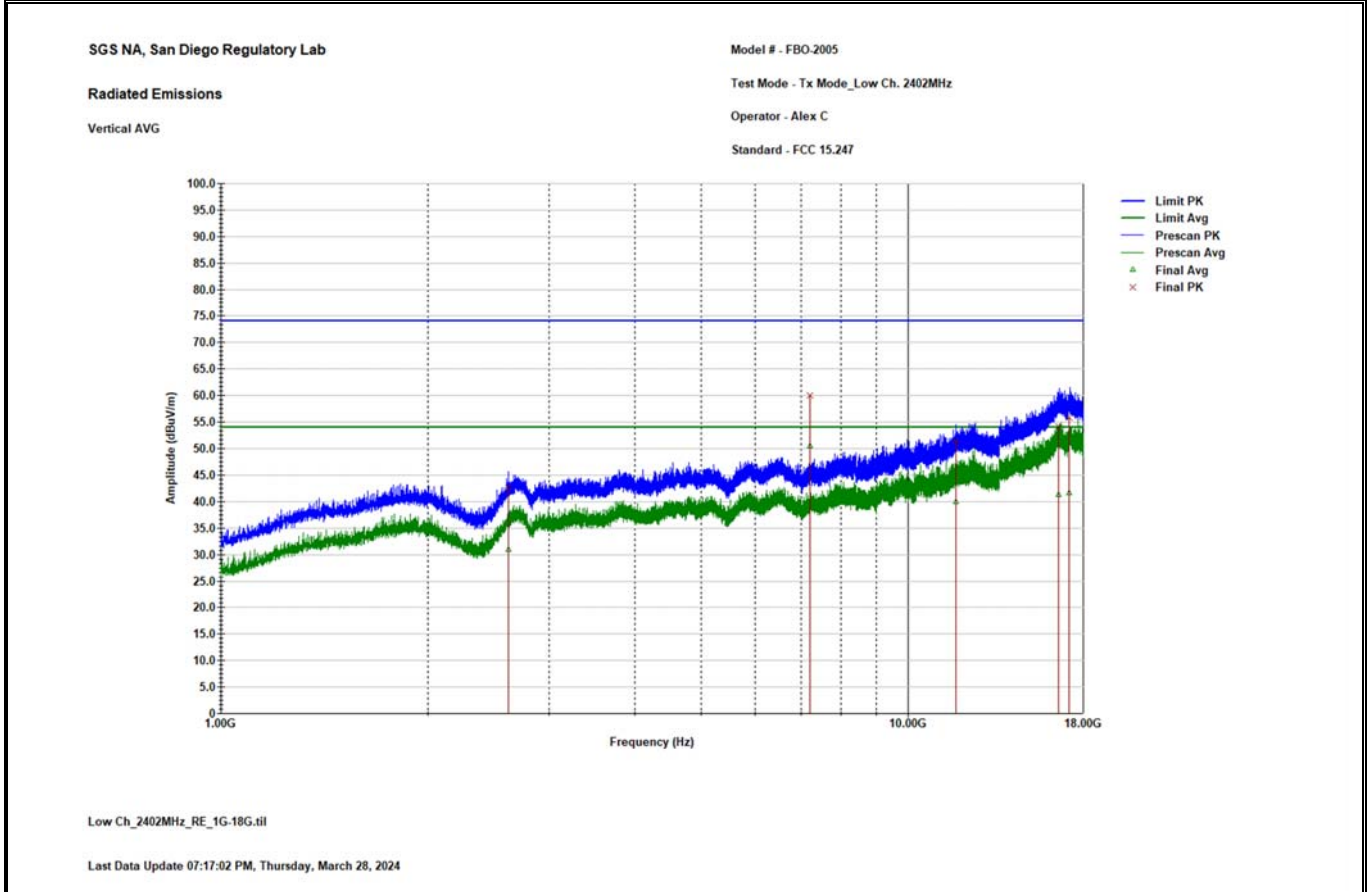
30MHz to 1GHz Worst-Case Low Channel Radiated Spurious Emission - Horizontal polarity



Quasi-Peak Data

Freq. (MHz)	Final QP (dBuV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBuV/m)	Ant. Height (cm)	Azimuth (deg.)
250.012	22.48	18.31	-23.52	46	122	142
377.501	19.81	22.65	-26.19	46	362	148
716.815	30.39	30.4	-15.61	46	100	21

1GHz to 18GHz Low Channel 2042MHz Radiated Spurious Emission – Vertical polarity



Peak Data

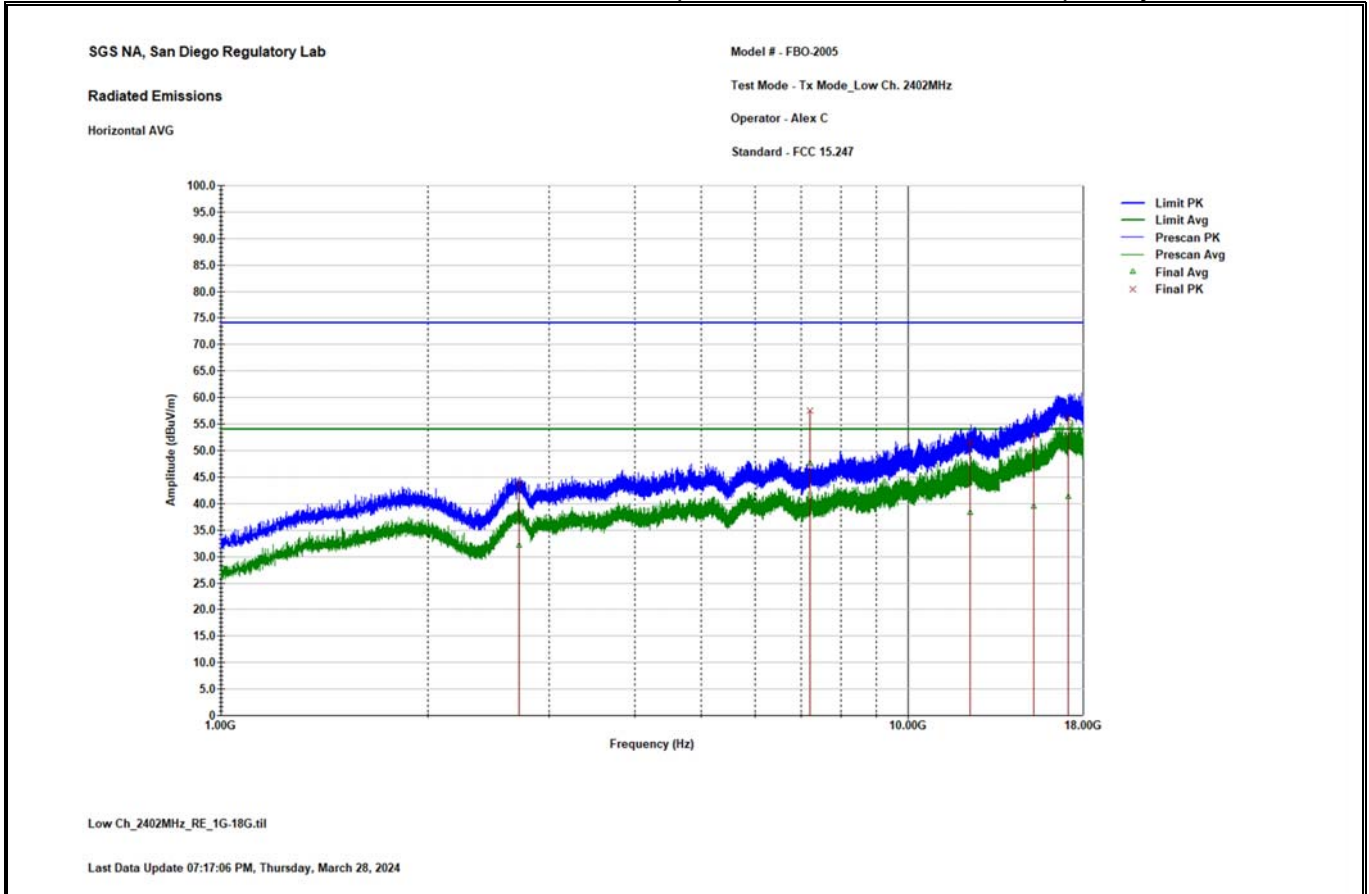
Freq. (MHz)	Final Pk (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2622	42.67	0.67	-31.33	74	261	314
7208	59.94	12.44	-14.06	74	155	144
11744	51.42	24.73	-22.58	74	388	122
16574	54.09	33.42	-19.91	74	280	65
17186	55.84	32.8	-18.16	74	379	-20

Average Data

Freq. (MHz)	Final Avg (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2622	30.93	0.67	-23.07	54	261	314
7208	50.57	12.44	-3.43	54	155	144
11744	39.97	24.73	-14.03	54	388	122
16574	41.34	33.42	-12.66	54	280	65
17186	41.68	32.8	-12.32	54	379	-20

Note: Measurement was performed with a 2.97GHz high pass filter. No significant emissions observed above 18GHz. measurement above 18GHz are noise floor figures.

1GHz to 18GHz Low Channel 2042MHz Radiated Spurious Emission – Horizontal polarity



Peak Data

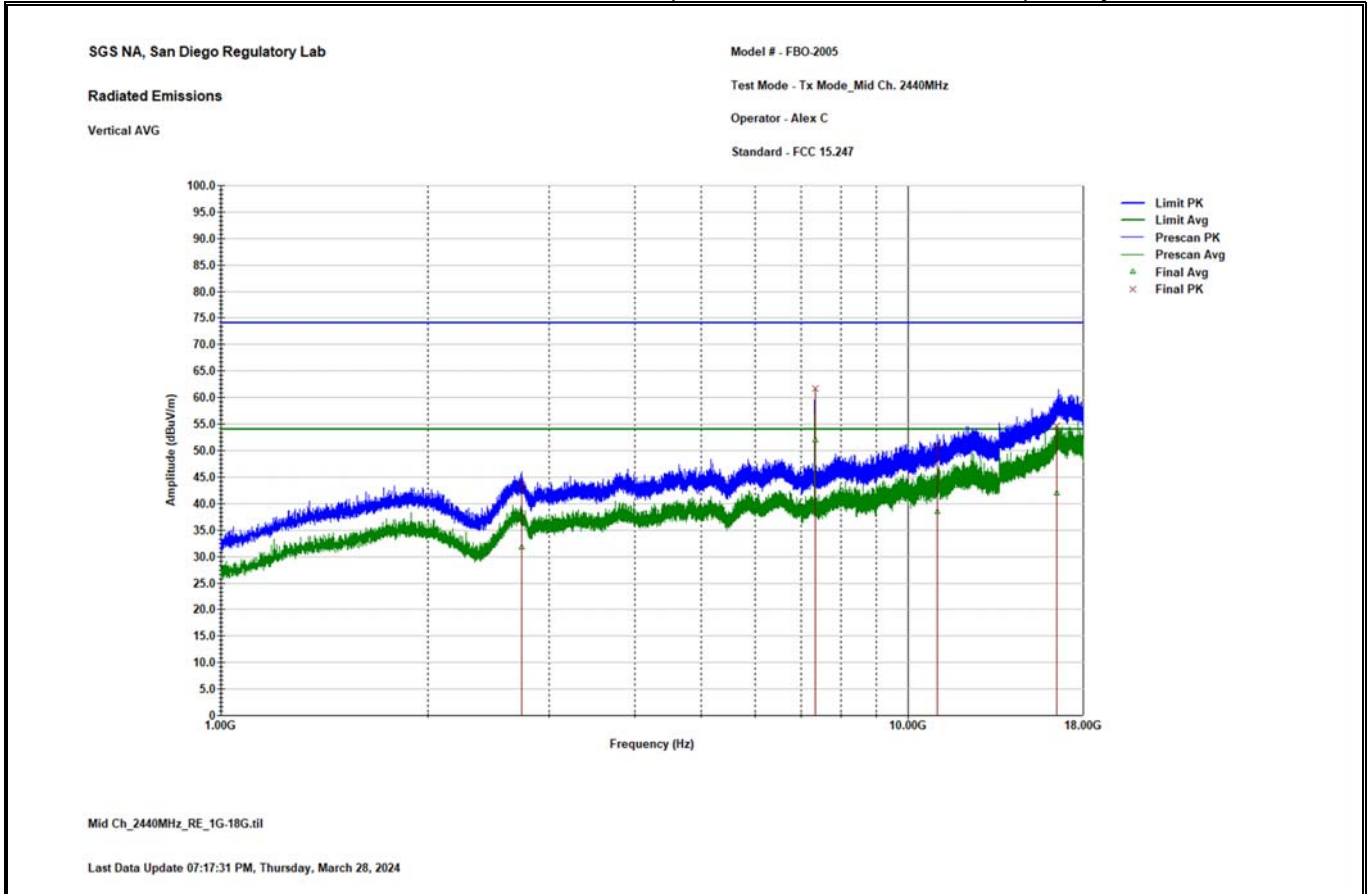
Freq. (MHz)	Final Pk (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2719	44.06	1.22	-29.94	74	276	134
7208	57.48	12.44	-16.52	74	400	216
12311	51.69	25.9	-22.31	74	302	255
15243	52.83	28.98	-21.17	74	271	0
17112	56.1	32.77	-17.9	74	332	361

Average Data

Freq. (MHz)	Final Avg (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2719	32.09	1.22	-21.91	54	276	134
7208	47.72	12.44	-6.28	54	400	216
12311	38.4	25.9	-15.6	54	302	255
15243	39.43	28.98	-14.57	54	271	0
17112	41.31	32.77	-12.69	54	332	361

Note: Measurement was performed with a 2.97GHz high pass filter. No significant emissions observed above 18GHz. measurement above 18GHz are noise floor figures.

1GHz to 18GHz Mid Channel 2440MHz Radiated Spurious Emission – Vertical polarity



Peak Data

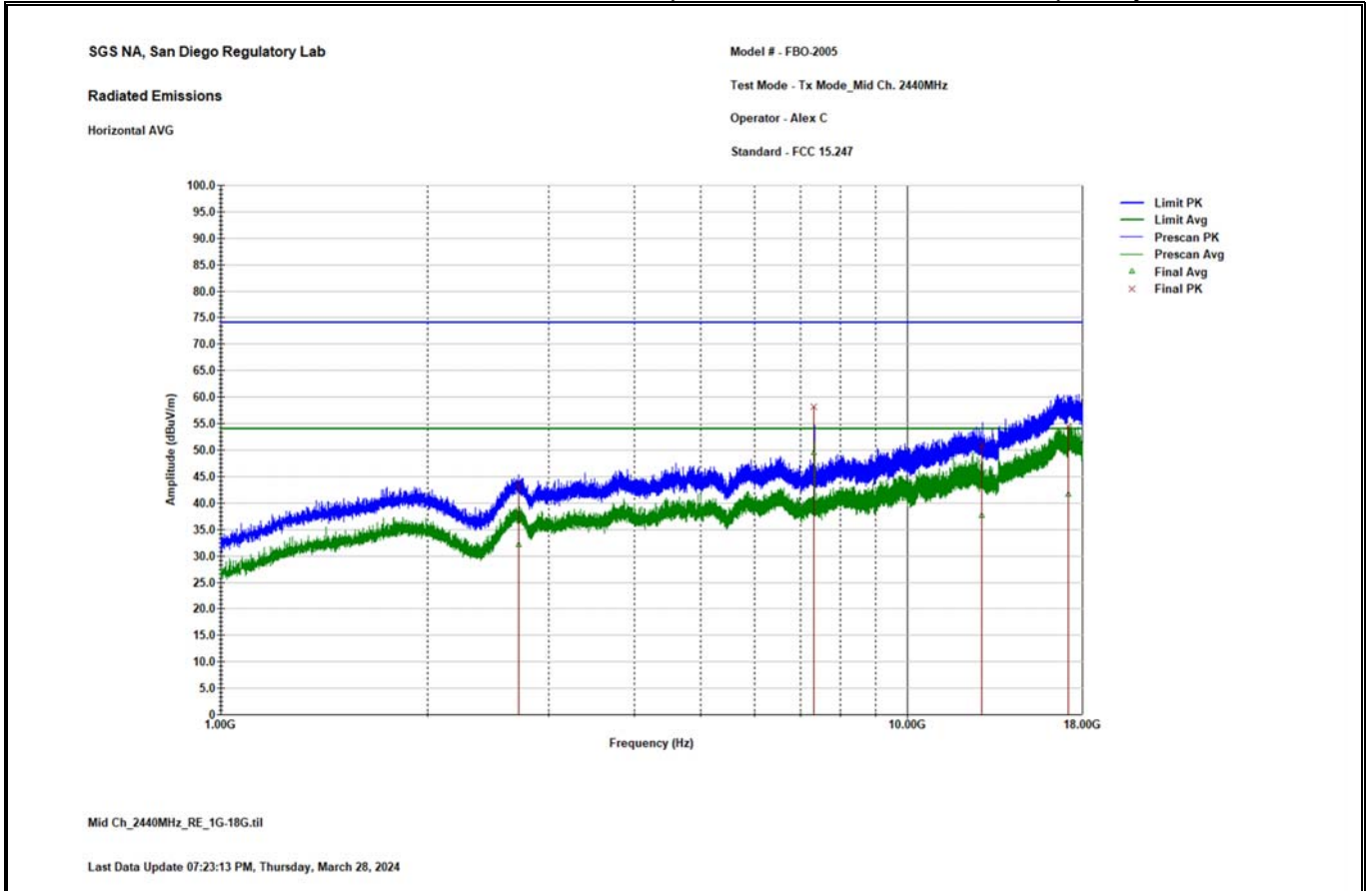
Freq. (MHz)	Final Pk (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2742	43.74	1.35	-30.24	74	164	21
7322	61.6	12.74	-12.38	74	341	121
11036	51.01	22.11	-22.97	74	366	347
16482	54.7	33.02	-19.28	74	195	344

Average Data

Freq. (MHz)	Final Avg (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2742	31.87	1.35	-22.11	54	164	21
7322	51.92	12.74	-2.06	54	341	121
11036	38.57	22.11	-15.41	54	366	347
16482	42.01	33.02	-11.97	54	195	344

Note: Measurement was performed with a 2.97GHz high pass filter. No significant emissions observed above 18GHz. measurement above 18GHz are noise floor figures.

1GHz to 18GHz Mid Channel 2440MHz Radiated Spurious Emission – Horizontal polarity



Peak Data

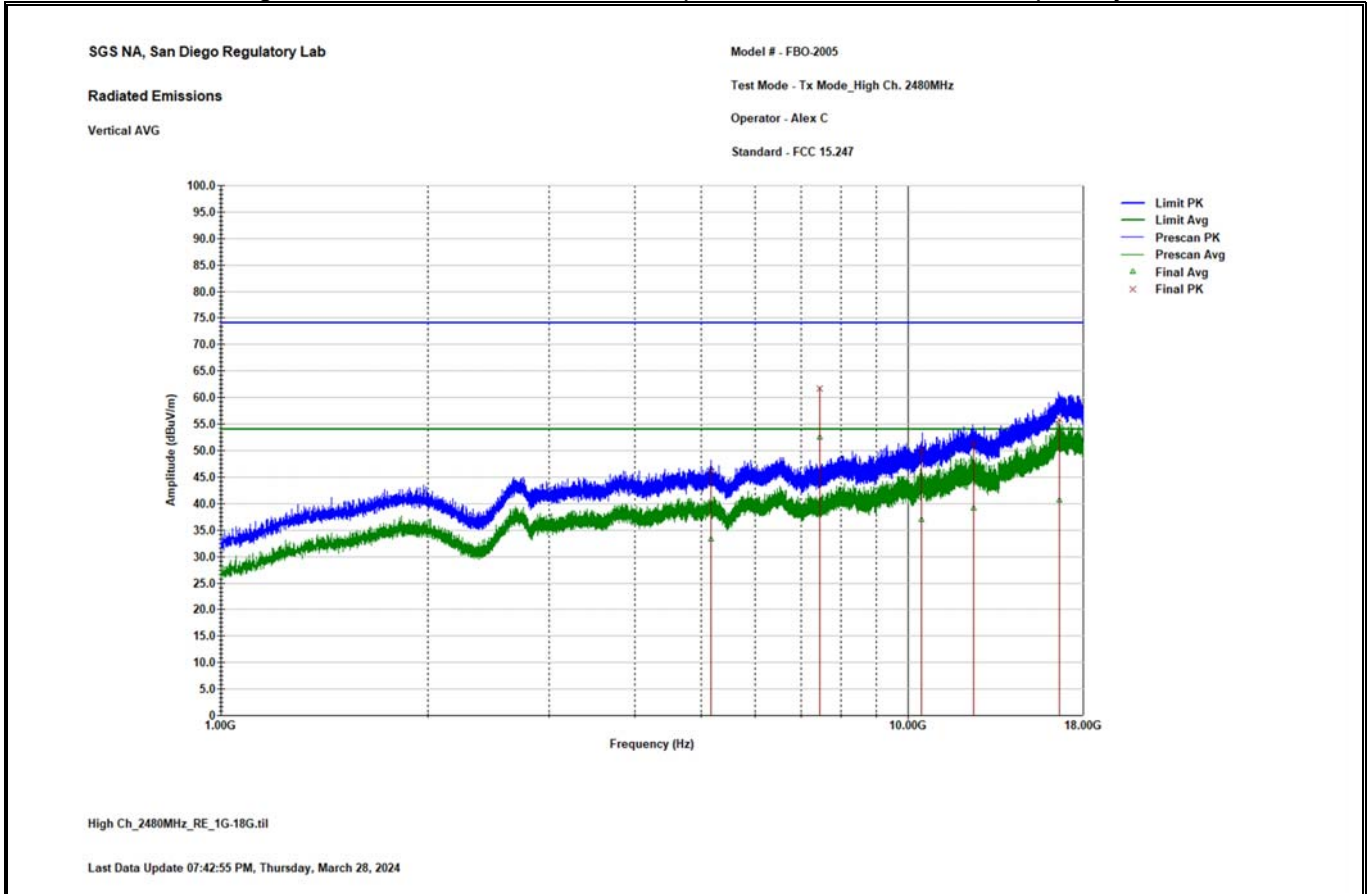
Freq. (MHz)	Final Pk (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2714	43.57	1.19	-30.43	74	400	60
7319	58.2	12.73	-15.8	74	363	212
12859	50.93	26.13	-23.07	74	201	47
17180	54.57	32.8	-19.43	74	150	370

Average Data

Freq. (MHz)	Final Avg (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
2714	32.12	1.19	-21.88	54	400	60
7319	49.43	12.73	-4.57	54	363	212
12859	37.6	26.13	-16.4	54	201	47
17180	41.69	32.8	-12.31	54	150	370

Note: Measurement was performed with a 2.97GHz high pass filter. No significant emissions observed above 18GHz. measurement above 18GHz are noise floor figures.

1GHz to 18GHz High Channel 2480MHz Radiated Spurious Emission – Vertical polarity



Peak Data

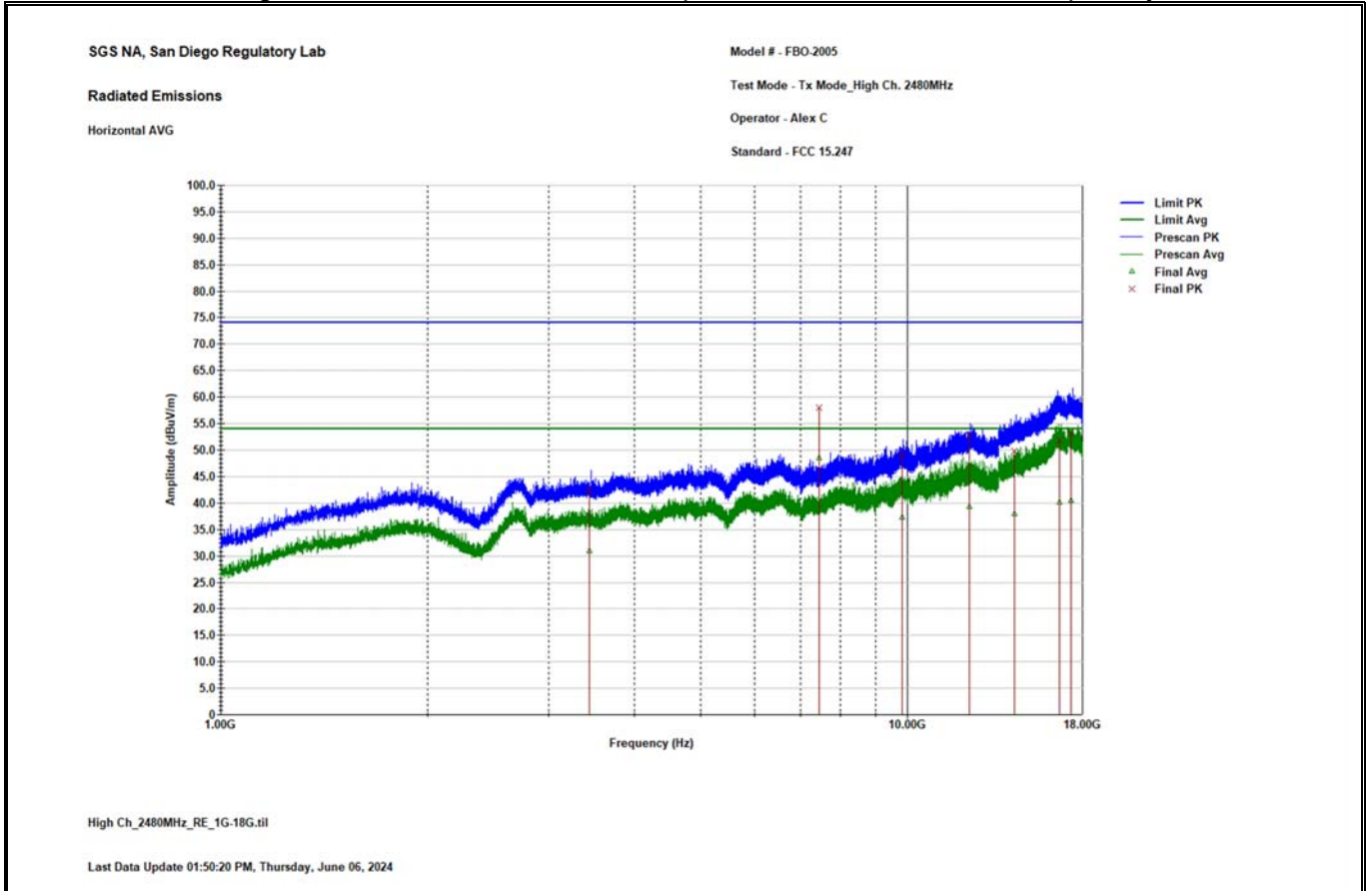
Freq. (MHz)	Final Pk (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
5175	46.15	7.32	-27.85	74	251	18
7442	61.59	13.17	-12.41	74	335	121
10466	50.14	20.51	-23.86	74	194	313
12473	51.34	25.99	-22.66	74	350	118
16608	55.86	33.56	-18.14	74	150	143

Average Data

Freq. (MHz)	Final Avg (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
5175	33.32	7.32	-20.68	54	251	18
7442	52.47	13.17	-1.53	54	335	121
10466	37.05	20.51	-16.95	54	194	313
12473	39.1	25.99	-14.9	54	350	118
16608	40.73	33.56	-13.27	54	150	143

Note: Measurement was performed with a 2.97GHz high pass filter. No significant emissions observed above 18GHz. measurement above 18GHz are noise floor figures.

1GHz to 18GHz High Channel 2480MHz Radiated Spurious Emission – Horizontal polarity



Peak Data

Freq. (MHz)	Final Pk (dBµV/m)	Total Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Ant. Height (cm)	Azimuth (deg.)
3445.505	42.44	2.72	-31.56	74	400	345
7441.556	57.96	13.17	-16.04	74	400	87
9832.339	49.1	19.11	-24.9	74	400	83
12333.52	52.85	25.9	-21.15	74	400	272
14336.87	49.83	27.14	-24.17	74	400	-12
16649.32	51.83	33.63	-22.17	74	400	266
17321.86	53.23	32.46	-20.77	74	400	33

Average Data

Freq. (MHz)	Final Avg (dB μ V/m)	Total Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Ant. Height (cm)	Azimuth (deg.)
3445.505	31.06	2.72	-22.94	54	400	345
7441.556	48.42	13.17	-5.58	54	400	87
9832.339	37.38	19.11	-16.62	54	400	83
12333.52	39.29	25.9	-14.71	54	400	272
14336.87	38.06	27.14	-15.94	54	400	-12
16649.32	40.23	33.63	-13.77	54	400	266
17321.86	40.51	32.46	-13.49	54	400	33

Note: Measurement was performed with a 2.97GHz high pass filter. No significant emissions observed above 18GHz. measurement above 18GHz are noise floor figures.

8 Measurement Uncertainty

The measurement uncertainty figures are calculated in accordance with TR 100 028-1 [2] and correspond to an expansion factor (coverage factor) $k = 2$ (which provides confidence levels of 95.45 % in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)).

Measurement uncertainty is not used to adjust the measurements to determine compliance.

Parameter	Expanded Uncertainty for Normal k factor equal to 2	
	Required	Laboratory Actual
Radio Frequency	$\pm 1 \times 10^{-5}$	$\pm 9.8 \times 10^{-8}$
total RF power, conducted	± 1.5 dB	± 1.2 dB
RF power density, conducted	± 3 dB	± 0.7 dB
spurious emissions, conducted	± 3 dB	± 2.1 dB
all emissions, radiated	± 6 dB	± 4.8 dB
temperature	$\pm 1^{\circ}\text{C}$	$\pm 0.5^{\circ}\text{C}$
humidity	± 5 %	± 3.5 %

9 Revision History

Revision Level	Description of changes	Page Affected	Revision Date
1	Initial release		30 May 2024
2	Report corrections were made and presented in <i>Italic</i> (none bold) on the pages that affected	5, 6, 7, 8, 11, 13, 14, 16, 18, 19, 20, 21, 22, 23, 24, 31-37	13 Jun 2024