Report Number:	R15103618-E11
Issue Date:	2024-03-01
FCC ID:	PY7-46195Y

Electromagnetic Compatibility Test Report

For

Sony Corporation
1-7-1 Konan Minato-ku
Tokyo, 108-0075, Japan

TEST REPORT DETAILS

Tests Performed By:	UL LLC 12 LABORATORY DR. RESEARCH TRIANGLE PARK, NC 27709, U.S.A.
Tests Performed For:	Sony Corporation 1-7-1 Konan Minato-ku Tokyo, 108-0075, Japan
Issue Date:	2024-03-01
FCC ID:	PY7-46195Y
Sample Serial Number:	QV7700G0LA, QV77008ELY
Applicable Standards:	FCC 47 CFR PART 15 SUBPART B:2024
Date Test Item Received:	2022-12-29
Testing Start Date:	2024-02-07
Date Testing Complete:	2024-02-27
Overall Results:	Compliant

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by a2La, NIST, or any agency of the U.S. government.

REPORT DIRECTORY

REPORT REVISION HISTORY

Revision Date	Revision Version	Description	Revised By	Revision Reviewed By
2024-03-01	V1	Initial Issue	B. Kiewra	M. Antola

1.0 TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4:2014.

1.1 Deviations from standard test methods

None

1.2 Device Modifications Necessary for Compliance

None

1.3 TEST RESULTS SUMMARY

This product is considered Class B

Requirement – Test	Result (Compliant / Non-Compliant)
CONDUCTED EMISSIONS	Compliant
RADIATED EMISSIONS	Compliant

Approved & Released For

UL LLC. By:

Michael Antola
Staff Engineer
Consumer Technology Division
UL LLC.

Prepared By:

Brian Kiewra
Project Engineer
Consumer Technology Division
UL LLC.

2.0 DECISION RULES AND MEASUREMENT UNCERTAINTY

2.1 Metrological Traceability

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards

2.2 Decision Rules

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement).

2.3 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U_{lab}
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3dB
Worst Case Radiated Disturbance, All ranges	6dB

Uncertainty figures are valid to a confidence level of 95%.

2.4 Sample Calculation

RADIATED EMISSIONS
Where relevant, the following sample calculation is provided:
Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS
Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.

36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 dBuV

3.0 GENERAL - Product Description

3.1 Equipment Description

LTE/5G Portable Data Transmitter with BT, DTS/UNII a/b/g/n/ac/ax and GPS

3.2 Device Configuration During Test

3.2.1 Equipment Used During Test:

Use	Product Type	Manufacturer	Model	Comments
EUT	Portable Data Transmitter	Sony	-	FCC ID: PY7-46195Y
AE	Power Supply	Sony	XQZ-UC1	None
SIM	Laptop	Lenovo	T14 Gen3	Used to simulate a camera for test purposes.
Note: **EUT** - Equipment Under Test, **AE** - Auxiliary/Associated Equipment, or **SIM** - Simulator (Not Subjected to Test)				

3.2.2 Input/Output Ports:

Port #	Name	Type*	Cable Max. >3m (Y/N)	Cable Shielded (Y/N)	Comments
0	Enclosure	N/E	—	—	None
1	USB-C	DC	N	N	Connected to power supply
2	Cat5e, STP	I/O	N	N	Connected to Support Laptop
3	HDMI	I/O	N	N	Connected to Support Laptop
4	USB-C	I/O	N	N	Connected to Support Laptop
*Note: AC = AC Power Port DC = DC Power Port N/E = Non-Electrical I/O = Signal Input or Output Port (Not Involved in Process Control) TP = Telecommunication Ports					

3.2.3 EUT Highest Frequencies:

Frequency (MHz)	Description
5825	Highest Tx Frequency

3.2.4 Power Interface:

Mode # /Rated	Voltage (V)	Current (A)	Power (W)	Frequency (DC/AC-Hz)	Phases (#)	Comments
Rated	100-240	-	-	50/60	Single	None
1	120Vac	-	-	60Hz	Single	Power Supply

3.2.5 Subassemblies

Description	Manufacturer	Model
None		

3.2.6 Manufacturer's Description of Model Differences

None

3.2.7 Software and Firmware

The software installed during testing was 0.183.

3.3 Block Diagram

Refer to R15103618-EP11 for block diagram.

3.4 EUT Configurations

Configuration #	Description
1	Configured as tabletop equipment

3.5 EUT Operation Modes

Mode of Operation#	Description
1	Operating as intended with data transfer over ENET
2	Operating as intended with data transfer over HDMI
3A	Operating as intended with data transfer over USB 3.1
3B	Operating as intended with data transfer over USB 2.0
4	Operating as intended with data transfer over USB 3.1 and with WWAN receiving on low, mid, and high channels in LTE B5 for radiated testing.

3.6 Rationale for EUT Configurations

Configuration #	Description
1	EUT was investigated in three orientations, X, Y, and Z in worst-case data transfer mode (USB 3.1). It was determined that worst-case orientation for radiated testing was X.

3.7 Rationale for EUT Mode of Operation

Mode of Operation #	Description
1,2,3A,3B,4	These are all the modes that support data transfer. Through pretesting data transfer over USB 3.1 and LTE band 5 were chosen to represent a worst-case scenario for radiated testing.

4.0 APPLICABLE EMISSIONS LIMITS AND TEST RESULTS

4.1 Test Conditions and Results - MAINS TERMINAL - CONDUCTED EMISSIONS

Test Engineer	22797/85502	
Test Date	2024-02-27	
Laboratory Parameters	Required prior to the test	During the test
Ambient Temperature	10 to 40 °C	25.8°C
Humidity	10 % to 90 %	41.2%
	Frequency range on each side of line	Measurement Point
Fully configured sample scanned over the following frequency range	150kHz to 30MHz	Mains

Limits - Class B

Frequency (MHz)	Limit (dBµV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Supplementary information: All testing done with EUT SN: QV7700G0LA

Conducted Emissions EUT Configuration Settings

Power Interface #	EUT Configurations #	EUT Mode of Operation#
1	1	1,2,3A,3B

Supplementary information: Testing performed on EUT SN: QV7700G0LA

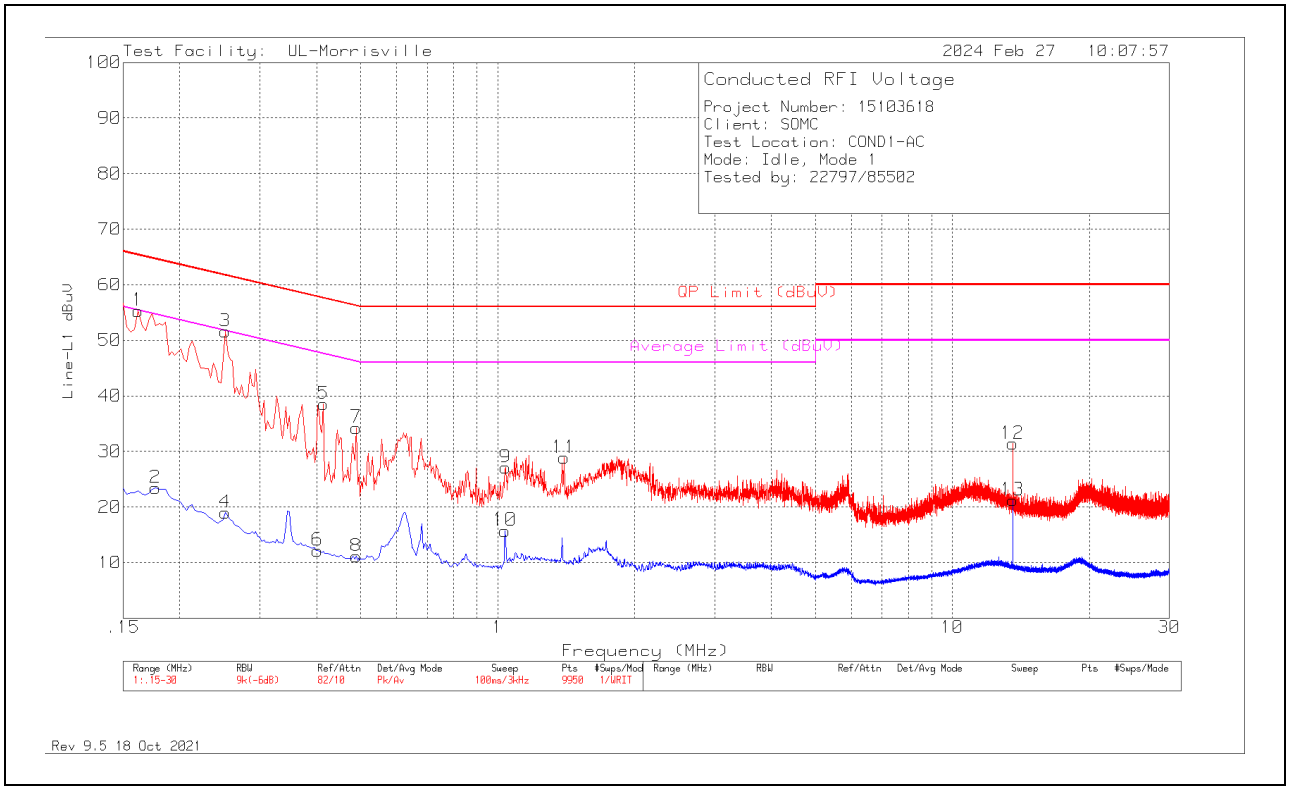
Refer to R15103618-EP11 for setup photos.

Conducted Emissions Test Equipment

Test Equipment Used - Line-Conducted Emissions – Voltage (Morrisville – Conducted 1)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
CBL087	Coax cable, RG223, N-male to BNC-male, 20-ft.	Pasternack	PE3W06143-240	2023-04-04	2024-04-04
179892	Environmental Meter	Fisher Scientific	15-077-963	2023-07-26	2024-06-31
80391	LISN, 50-ohm/50-uH, 250uH 2-conductor, 25A	Fischer Custom Com.	FCC-LISN-50/250-25-2-01	2023-07-31	2024-07-31
75141	EMI Test Receiver 9kHz-7GHz	Rohde & Schwarz	ESCI 7	2023-08-01	2024-08-01
52859	Transient Limiter, 0.009-100MHz	Electro-Metrics	EM-7600	2023-04-04	2024-04-04
PS215	AC Power Source	Elgar	CW2501M	NA	NA
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		

Conducted Emissions Graph – ENET Data Transfer Line 1

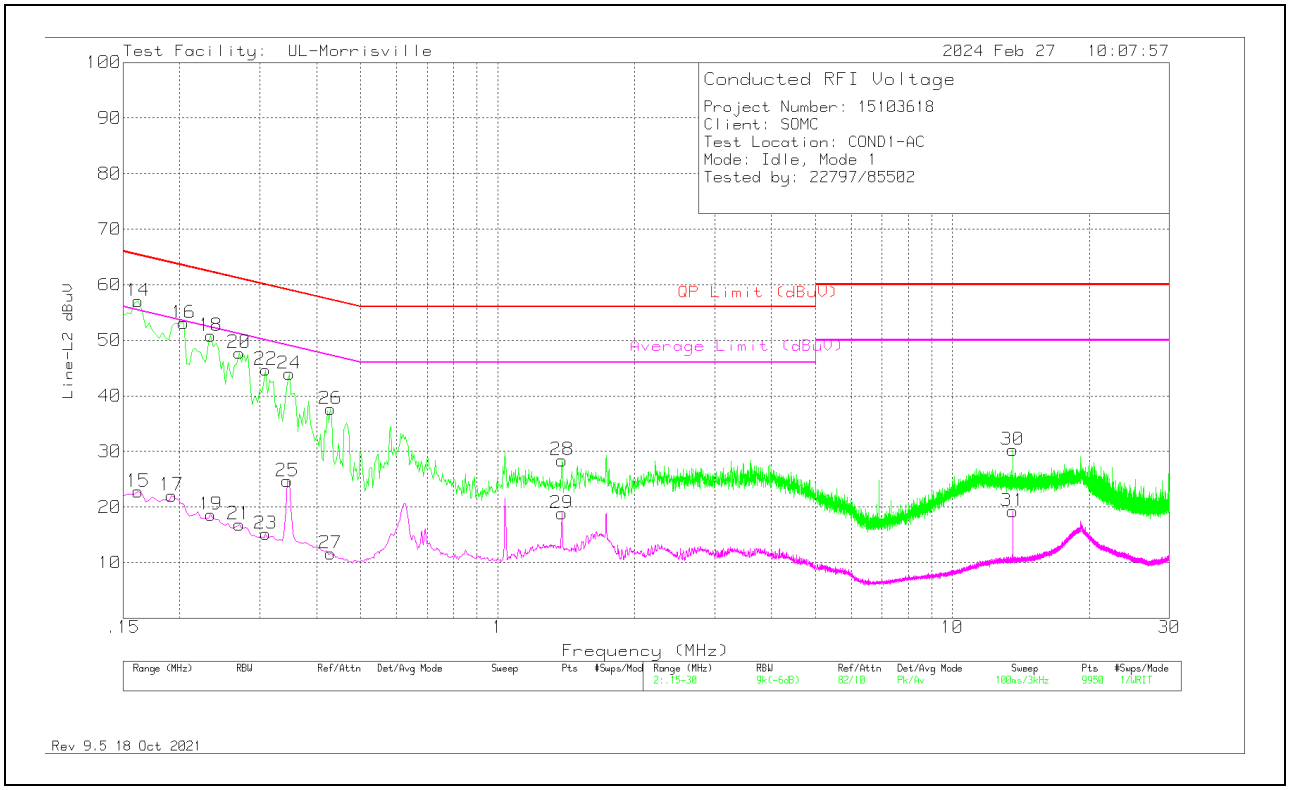


Conducted Emissions Data Points – ENET Data Transfer Line 1

Range 1: Line-L1 .15 - 30MHz										
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN VDF (dB)**	**Cbl/Limiter (dB)**	**Corrected Reading dBuV**	**QP Limit (dBuV)**	**Margin (dB)**	**Average Limit (dBuV)**	**Margin (dB)**
1	.162	45.21	Pk	.3	9.8	55.31	65.36	-10.05	-	-
2	.177	13.33	Av	.3	9.8	23.43	-	-	54.63	-31.2
3	.252	41.57	Pk	.2	9.8	51.57	61.69	-10.12	-	-
4	.252	9	Av	.2	9.8	19	-	-	51.69	-32.69
6	.402	2.29	Av	.1	9.8	12.19	-	-	47.81	-35.62
5	.414	28.63	Pk	.1	9.8	38.53	57.57	-19.04	-	-
7	.489	24.34	Pk	.1	9.8	34.24	56.18	-21.94	-	-
8	.489	1.2	Av	.1	9.8	11.1	-	-	46.18	-35.08
10	1.038	5.82	Av	.1	9.8	15.72	-	-	46	-30.28
9	1.041	17.18	Pk	.1	9.8	27.08	56	-28.92	-	-
11	1.398	18.95	Pk	.1	9.8	28.85	56	-27.15	-	-
12	13.56	21.18	Pk	.2	10	31.38	60	-28.62	-	-
13	13.563	11.02	Av	.2	10	21.22	-	-	50	-28.78

Pk - Peak detector
Av - Average detection

Conducted Emissions Graph – ENET Data Transfer Line 2

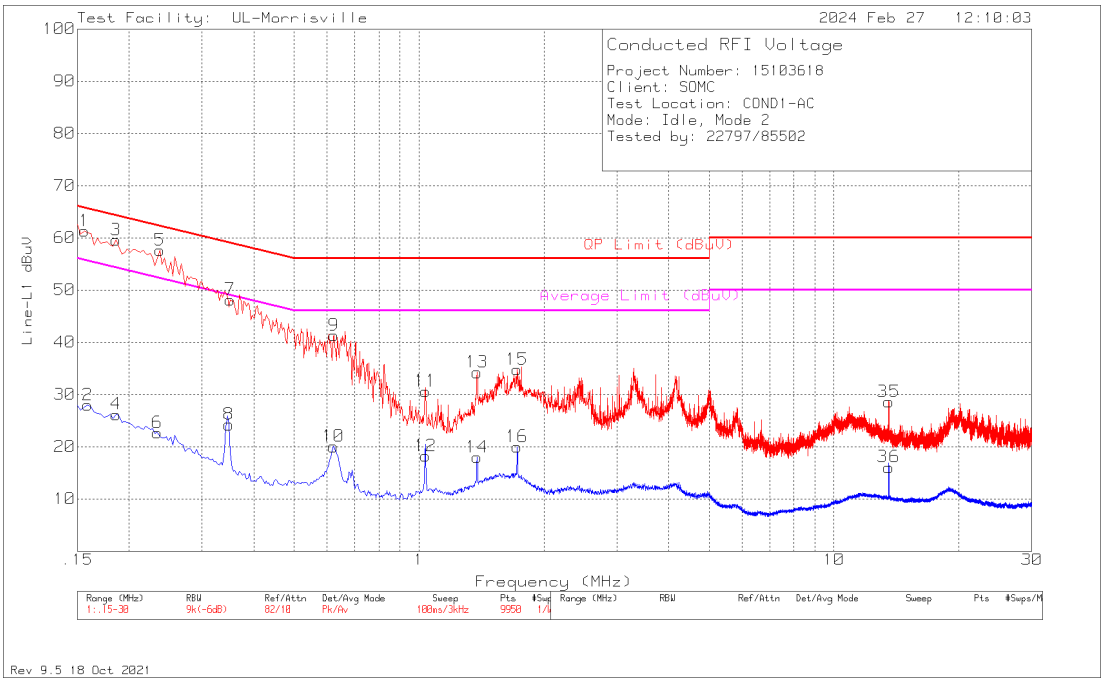


Conducted Emissions Data Points – ENET Data Transfer Line 2

Range 2: Line-L2 .15 - 30MHz										
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN VDF (dB)**	**Cbl/Limiter (dB)**	**Corrected Reading dBuV**	**QP Limit (dBuV)**	**Margin (dB)**	**Average Limit (dBuV)**	**Margin (dB)**
14	.162	46.95	Pk	.3	9.8	57.05	65.36	-8.31	-	-
15	.162	12.66	Av	.3	9.8	22.76	-	-	55.36	-32.6
17	.192	12.05	Av	.2	9.8	22.05	-	-	53.95	-31.9
16	.204	43.09	Pk	.2	9.8	53.09	63.45	-10.36	-	-
18	.234	40.79	Pk	.2	9.8	50.79	62.31	-11.52	-	-
19	.234	8.62	Av	.2	9.8	18.62	-	-	52.31	-33.69
20	.27	37.74	Pk	.2	9.8	47.74	61.12	-13.38	-	-
21	.27	6.89	Av	.2	9.8	16.89	-	-	51.12	-34.23
22	.309	34.79	Pk	.1	9.8	44.69	60	-15.31	-	-
23	.309	5.27	Av	.1	9.8	15.17	-	-	50	-34.83
25	.345	14.76	Av	.1	9.8	24.66	-	-	49.08	-24.42
24	.348	34.06	Pk	.1	9.8	43.96	59.01	-15.05	-	-
26	.429	27.73	Pk	.1	9.8	37.63	57.27	-19.64	-	-
27	.429	1.74	Av	.1	9.8	11.64	-	-	47.27	-35.63
29	1.383	8.94	Av	.1	9.8	18.84	-	-	46	-27.16
28	1.386	18.5	Pk	.1	9.8	28.4	56	-27.6	-	-
30	13.56	20.07	Pk	.2	10	30.27	60	-29.73	-	-
31	13.56	9.05	Av	.2	10	19.25	-	-	50	-30.75

Pk - Peak detector
Av - Average detection

Conducted Emissions Graph – HDMI Data Transfer Line 1

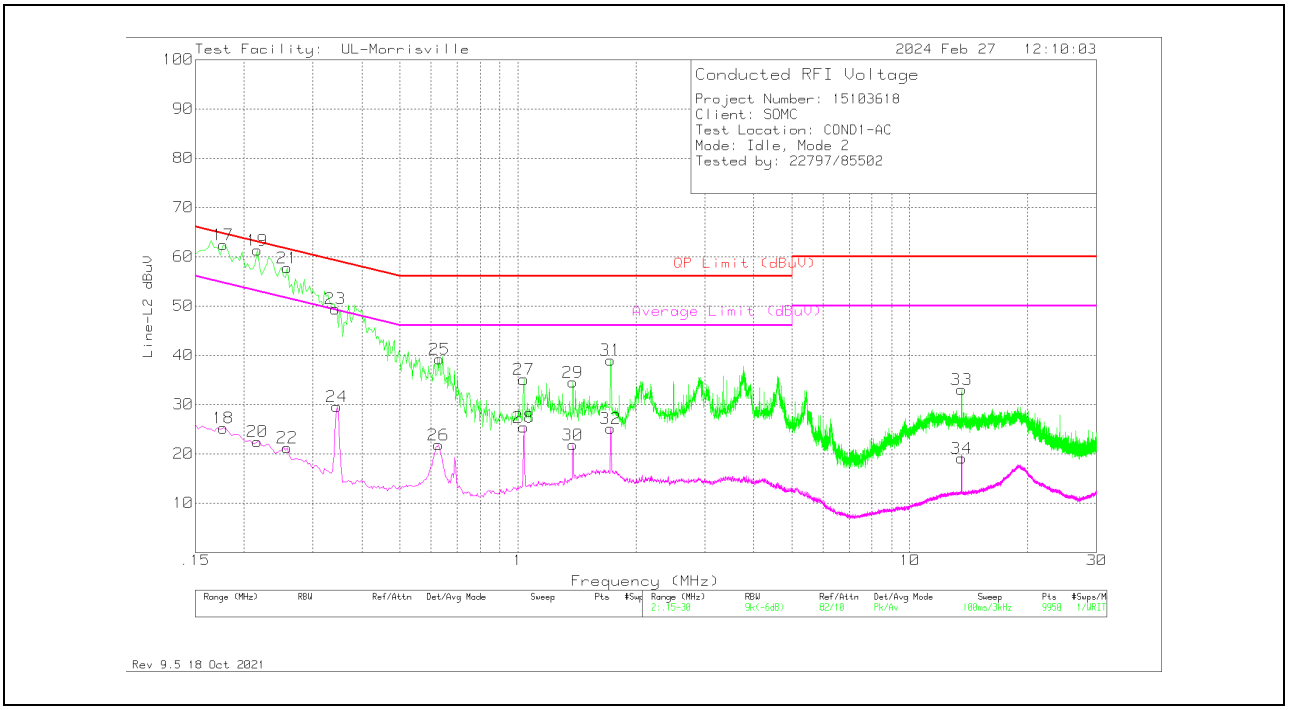


Conducted Emissions Data Points – HDMI Data Transfer Line 1

Range 1: Line-L1 .15 - 30MHz										
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN VDF (dB)**	**Cbl/Limiter (dB)**	**Corrected Reading dBuV**	**QP Limit (dBuV)**	**Margin (dB)**	**Average Limit (dBuV)**	**Margin (dB)**
1	.15869	43.35	Qp	.3	9.8	53.45	65.53	-12.08	-	-
	.15869	16.9	Ca	.3	9.8	27	-	-	55.53	-28.53
2	.159	17.89	Av	.3	9.8	27.99	-	-	55.52	-27.53
3	.186	40.66	Qp	.2	9.8	50.66	64.21	-13.55	-	-
	.186	16.03	Ca	.2	9.8	26.03	-	-	54.21	-28.18
4	.186	16.2	Av	.2	9.8	26.2	-	-	54.21	-28.01
6	.234	12.71	Av	.2	9.8	22.71	-	-	52.31	-29.6
5	.22321	38.6	Qp	.2	9.8	48.6	62.7	-14.1	-	-
	.22321	12.92	Ca	.2	9.8	22.92	-	-	52.7	-29.78
8	.348	14.33	Av	.1	9.8	24.23	-	-	49.01	-24.78
7	.351	38.25	Pk	.1	9.8	48.15	58.94	-10.79	-	-
10	.621	10.14	Av	.1	9.8	20.04	-	-	46	-25.96
9	.624	31.38	Pk	.1	9.8	41.28	56	-14.72	-	-
11	1.038	20.73	Pk	.1	9.8	30.63	56	-25.37	-	-
12	1.038	8.32	Av	.1	9.8	18.22	-	-	46	-27.78
13	1.38	24.33	Pk	.1	9.8	34.23	56	-21.77	-	-
14	1.38	8.1	Av	.1	9.8	18	-	-	46	-28
15	1.725	24.89	Pk	.1	9.8	34.79	56	-21.21	-	-
16	1.725	10.11	Av	.1	9.8	20.01	-	-	46	-25.99
35	13.563	18.36	Pk	.2	10	28.56	60	-31.44	-	-
36	13.563	5.88	Av	.2	10	16.08	-	-	50	-33.92

Pk - Peak detector
Av - Average detection
Qp - Quasi-Peak detector

Conducted Emissions Graph – HDMI Data Transfer Line 2

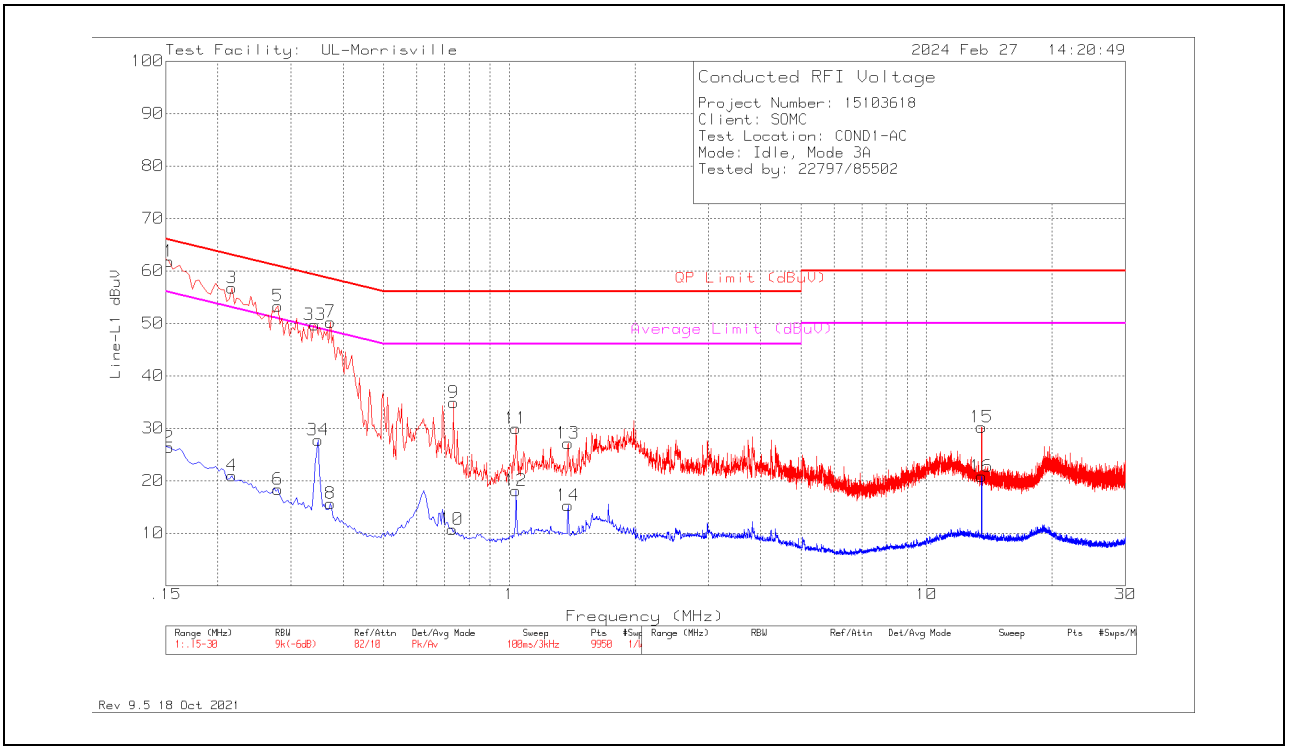


Conducted Emissions Data Points – HDMI Data Transfer Line 2

Range 2: Line-L2 .15 - 30MHz										
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN VDF (dB)**	**Cbl/Limiter (dB)**	**Corrected Reading dBuV**	**QP Limit (dBuV)**	**Margin (dB)**	**Average Limit (dBuV)**	**Margin (dB)**
17	.16685	43.12	Qp	.3	9.8	53.22	65.12	-11.9	-	-
	.16685	16.95	Ca	.3	9.8	27.05	-	-	55.12	-28.07
18	.177	15.12	Av	.3	9.8	25.22	-	-	54.63	-29.41
19	.2002	41	Qp	.2	9.8	51	63.6	-12.6	-	-
	.2002	15.41	Ca	.2	9.8	25.41	-	-	53.6	-28.19
20	.216	12.5	Av	.2	9.8	22.5	-	-	52.97	-30.47
21	.24536	38.11	Qp	.2	9.8	48.11	61.91	-13.8	-	-
	.24536	11.84	Ca	.2	9.8	21.84	-	-	51.91	-30.07
22	.258	11.25	Av	.2	9.8	21.25	-	-	51.5	-30.25
23	.342	39.51	Pk	.1	9.8	49.41	59.15	-9.74	-	-
24	.345	19.67	Av	.1	9.8	29.57	-	-	49.08	-19.51
26	.627	11.91	Av	.1	9.8	21.81	-	-	46	-24.19
25	.63	29.32	Pk	.1	9.8	39.22	56	-16.78	-	-
27	1.035	25.19	Pk	.1	9.8	35.09	56	-20.91	-	-
28	1.035	15.48	Av	.1	9.8	25.38	-	-	46	-20.62
29	1.38	24.63	Pk	.1	9.8	34.53	56	-21.47	-	-
30	1.38	11.95	Av	.1	9.8	21.85	-	-	46	-24.15
31	1.725	29.12	Pk	.1	9.8	39.02	56	-16.98	-	-
32	1.725	15.27	Av	.1	9.8	25.17	-	-	46	-20.83
33	13.563	22.8	Pk	.2	10	33	60	-27	-	-
34	13.563	8.89	Av	.2	10	19.09	-	-	50	-30.91

Pk - Peak detector
Av - Average detection
Qp - Quasi-Peak detector
Ca - CISPR average detection

Conducted Emissions Graph – USB 2.0 Data Transfer Line 1

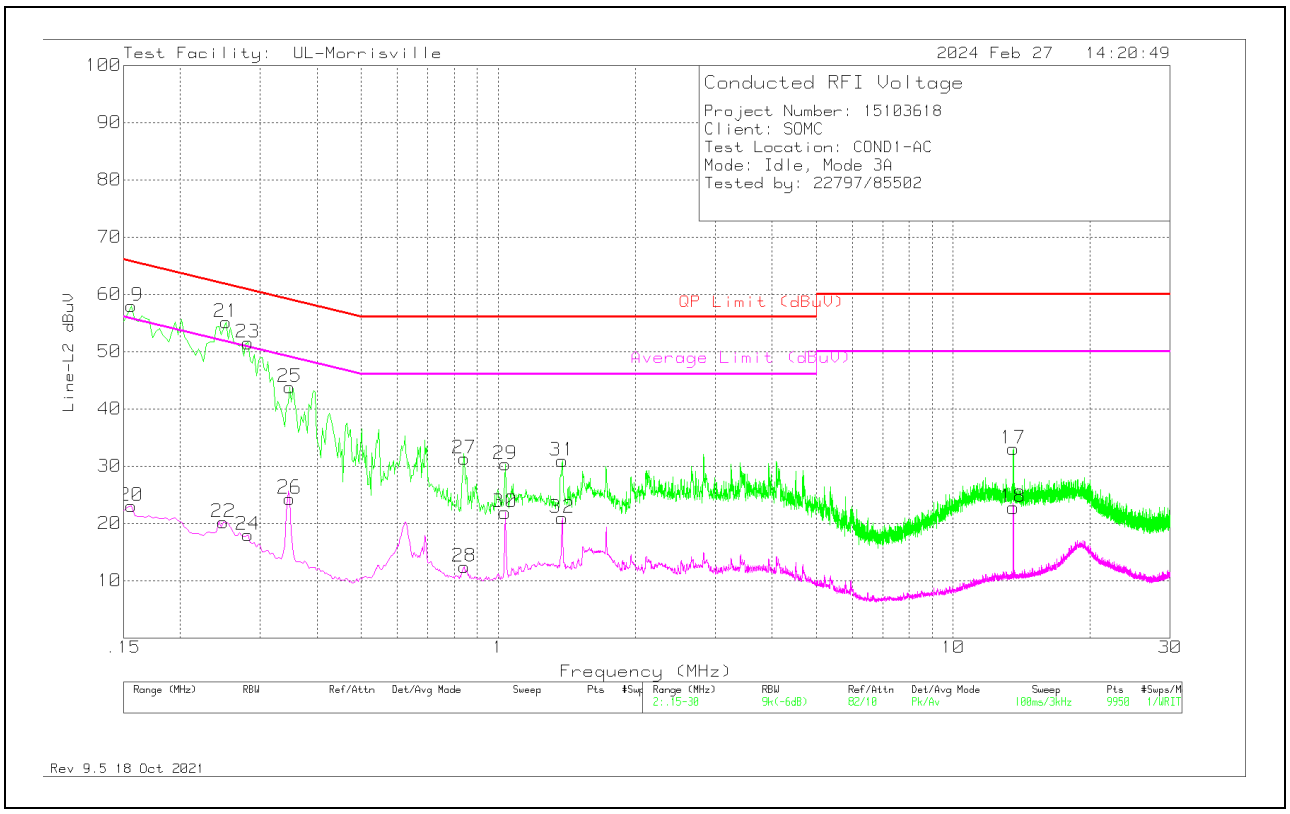


Conducted Emissions Data Points – USB 2.0 Data Transfer Line 1

Range 1: Line-L1 .15 - 30MHz										
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN VDF (dB)**	**Cbl/Limiter (dB)**	**Corrected Reading dBuV**	**QP Limit (dBuV)**	**Margin (dB)**	**Average Limit (dBuV)**	**Margin (dB)**
1	.15076	42.25	Qp	.3	9.8	52.35	65.96	-13.61	-	-
	.15076	17.53	Ca	.3	9.8	27.63	-	-	55.96	-28.33
2	.153	16.26	Av	.3	9.8	26.36	-	-	55.84	-29.48
3	.216	46.75	Pk	.2	9.8	56.75	62.97	-6.22	-	-
4	.216	10.96	Av	.2	9.8	20.96	-	-	52.97	-32.01
5	.279	43.3	Pk	.2	9.8	53.3	60.85	-7.55	-	-
6	.279	8.35	Av	.2	9.8	18.35	-	-	50.85	-32.5
33	.342	39.78	Pk	.1	9.8	49.68	59.15	-9.47	-	-
34	.348	17.86	Av	.1	9.8	27.76	-	-	49.01	-21.25
7	.372	40.35	Pk	.1	9.8	50.25	58.46	-8.21	-	-
8	.372	5.74	Av	.1	9.8	15.64	-	-	48.46	-32.82
10	.729	.82	Av	.1	9.8	10.72	-	-	46	-35.28
9	.735	25.01	Pk	.1	9.8	34.91	56	-21.09	-	-
11	1.038	20.06	Pk	.1	9.8	29.96	56	-26.04	-	-
12	1.038	8.2	Av	.1	9.8	18.1	-	-	46	-27.9
13	1.383	17.26	Pk	.1	9.8	27.16	56	-28.84	-	-
14	1.383	5.35	Av	.1	9.8	15.25	-	-	46	-30.75
15	13.56	19.97	Pk	.2	10	30.17	60	-29.83	-	-
16	13.56	10.61	Av	.2	10	20.81	-	-	50	-29.19

Pk - Peak detector
Av - Average detection
Qp - Quasi-Peak detector
Ca - CISPR average detection

Conducted Emissions Graph – USB 2.0 Data Transfer Line 2

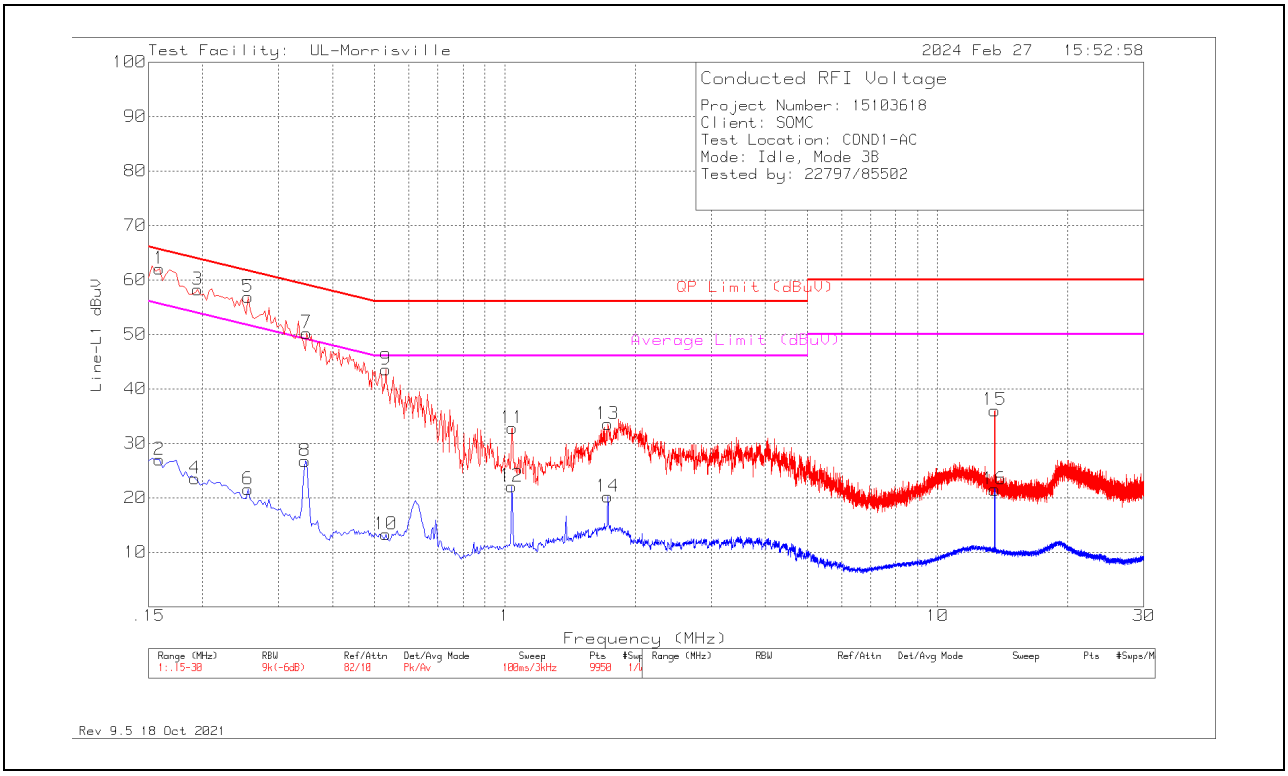


Conducted Emissions Data Points – USB 2.0 Data Transfer Line 2

Range 2: Line-L2 .15 - 30MHz										
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN VDF (dB)	Cbl/Limiter (dB)	Corrected Reading dBuV	QP Limit (dBuV)	Margin (dB)	Average Limit (dBuV)	Margin (dB)
19	.156	47.84	Pk	.3	9.8	57.94	65.67	-7.73	-	-
20	.156	12.91	Av	.3	9.8	23.01	-	-	55.67	-32.66
22	.249	10.24	Av	.2	9.8	20.24	-	-	51.79	-31.55
21	.252	45.1	Pk	.2	9.8	55.1	61.69	-6.59	-	-
23	.282	41.51	Pk	.2	9.8	51.51	60.76	-9.25	-	-
24	.282	8.03	Av	.2	9.8	18.03	-	-	50.76	-32.73
25	.348	33.92	Pk	.1	9.8	43.82	59.01	-15.19	-	-
26	.348	14.43	Av	.1	9.8	24.33	-	-	49.01	-24.68
27	.843	21.39	Pk	.1	9.8	31.29	56	-24.71	-	-
28	.843	2.55	Av	.1	9.8	12.45	-	-	46	-33.55
30	1.035	11.99	Av	.1	9.8	21.89	-	-	46	-24.11
29	1.038	20.4	Pk	.1	9.8	30.3	56	-25.7	-	-
31	1.383	21.01	Pk	.1	9.8	30.91	56	-25.09	-	-
32	1.383	11.08	Av	.1	9.8	20.98	-	-	46	-25.02
17	13.563	22.81	Pk	.2	10	33.01	60	-26.99	-	-
18	13.563	12.55	Av	.2	10	22.75	-	-	50	-27.25

Pk - Peak detector
Av - Average detection

Conducted Emissions Graph – USB 3.1 Data Transfer Line 1

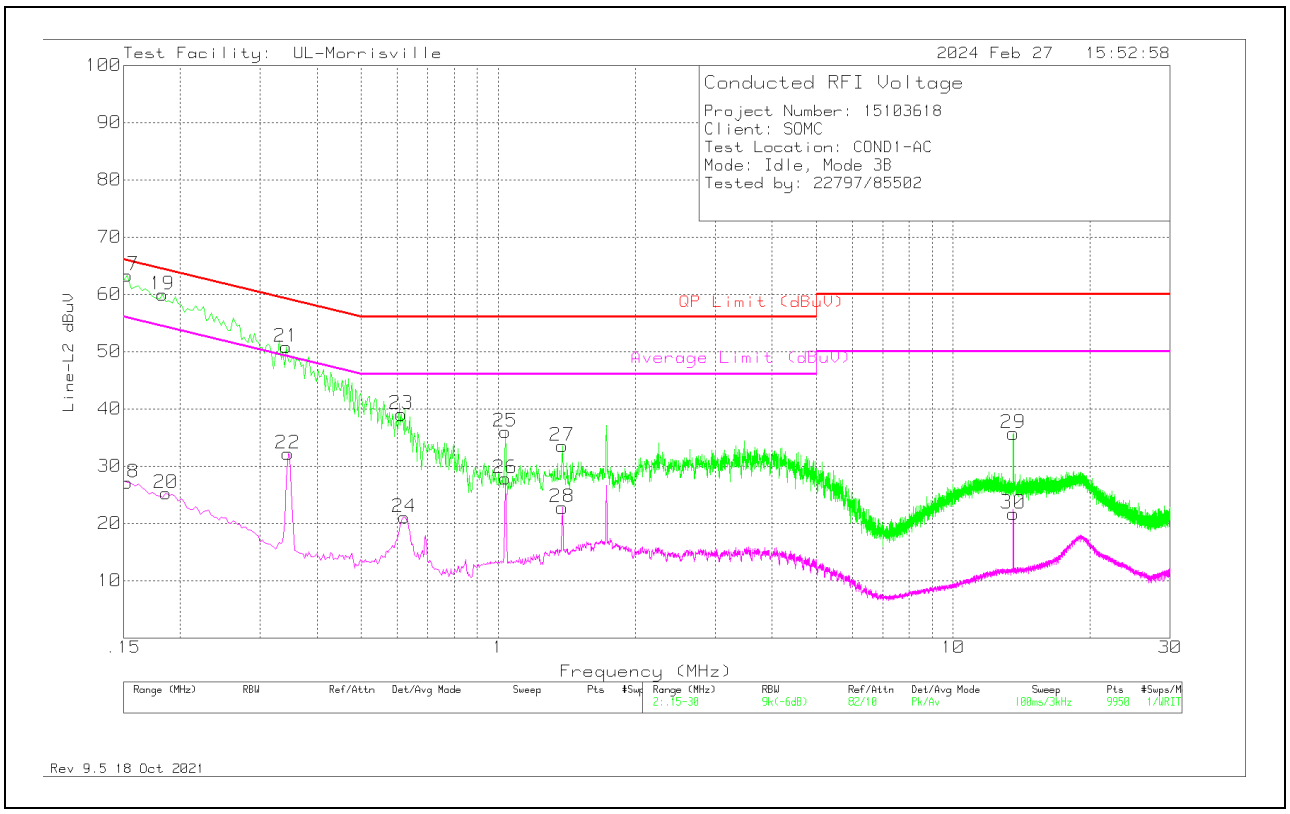


Conducted Emissions Data Points – USB 3.1 Data Transfer Line 1

Range 1: Line-L1 .15 - 30MHz										
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN VDF (dB)**	**Cbl/Limiter (dB)**	**Corrected Reading dBuV**	**QP Limit (dBuV)**	**Margin (dB)**	**Average Limit (dBuV)**	**Margin (dB)**
1	.15797	31.36	Qp	.3	9.8	41.46	65.57	-24.11	-	-
	.15797	10.44	Ca	.3	9.8	20.54	-	-	55.57	-35.03
2	.159	16.94	Av	.3	9.8	27.04	-	-	55.52	-28.48
4	.192	13.5	Av	.2	9.8	23.5	-	-	53.95	-30.45
3	.21062	35.68	Qp	.2	9.8	45.68	63.18	-17.5	-	-
	.21062	12.47	Ca	.2	9.8	22.47	-	-	53.18	-30.71
5	.255	21.96	Qp	.2	9.8	31.96	61.59	-29.63	-	-
	.255	6.08	Ca	.2	9.8	16.08	-	-	51.59	-35.51
6	.255	11.53	Av	.2	9.8	21.53	-	-	51.59	-30.06
8	.345	16.88	Av	.1	9.8	26.78	-	-	49.08	-22.3
7	.348	40.35	Pk	.1	9.8	50.25	59.01	-8.76	-	-
9	.531	33.69	Pk	.1	9.8	43.59	56	-12.41	-	-
10	.531	3.42	Av	.1	9.8	13.32	-	-	46	-32.68
12	1.038	12.21	Av	.1	9.8	22.11	-	-	46	-23.89
11	1.041	22.9	Pk	.1	9.8	32.8	56	-23.2	-	-
14	1.728	10.31	Av	.1	9.8	20.21	-	-	46	-25.79
13	1.731	23.61	Pk	.1	9.8	33.51	56	-22.49	-	-
15	13.563	25.87	Pk	.2	10	36.07	60	-23.93	-	-
16	13.563	11.32	Av	.2	10	21.52	-	-	50	-28.48

Pk - Peak detector
Av - Average detection
Qp - Quasi-Peak detector
Ca - CISPR average detection

Conducted Emissions Graph – USB 3.1 Data Transfer Line 2



Conducted Emissions Data Points – USB 3.1 Data Transfer Line 2

Range 2: Line-L2 .15 - 30MHz										
Marker	**Frequency (MHz)**	**Meter Reading (dBuV)**	**Det**	**LISN VDF (dB)**	**Cbl/Limiter (dB)**	**Corrected Reading dBuV**	**QP Limit (dBuV)**	**Margin (dB)**	**Average Limit (dBuV)**	**Margin (dB)**
17	.15071	31.64	Qp	.3	9.8	41.74	65.96	-24.22	-	-
	.15071	11.45	Ca	.3	9.8	21.55	-	-	55.96	-34.41
18	.153	17.06	Av	.3	9.8	27.16	-	-	55.84	-28.68
19	.1834	27.77	Qp	.2	9.8	37.77	64.33	-26.56	-	-
	.1834	10.9	Ca	.2	9.8	20.9	-	-	54.33	-33.43
20	.186	15.27	Av	.2	9.8	25.27	-	-	54.21	-28.94
21	.342	40.95	Pk	.1	9.8	50.85	59.15	-8.3	-	-
22	.345	22.29	Av	.1	9.8	32.19	-	-	49.08	-16.89
23	.612	29.14	Pk	.1	9.8	39.04	56	-16.96	-	-
24	.621	11.2	Av	.1	9.8	21.1	-	-	46	-24.9
25	1.038	26.13	Pk	.1	9.8	36.03	56	-19.97	-	-
26	1.038	17.96	Av	.1	9.8	27.86	-	-	46	-18.14
27	1.383	23.67	Pk	.1	9.8	33.57	56	-22.43	-	-
28	1.383	12.85	Av	.1	9.8	22.75	-	-	46	-23.25
29	13.563	25.51	Pk	.2	10	35.71	60	-24.29	-	-
30	13.563	11.55	Av	.2	10	21.75	-	-	50	-28.25

Pk - Peak detector
Av - Average detection
Qp - Quasi-Peak detector
Ca - CISPR average detection

4.2 Test Conditions and Results - RADIATED EMISSIONS

Test Engineer	19289	
Test Date	2024-02-07 to 2024-02-09	
Laboratory Parameters	Required prior to the test	During the test
Ambient Temperature	10 to 40 °C	21.0 - 21.9°C
Humidity	10 % to 90 %	20.3 - 23.9%
	Frequency range	Measurement Point
Fully configured sample scanned over the following frequency range	30-40000MHz	3m

Limits - Class B		
Frequency (MHz)	Limit (dBµV/m)	
30-88	40	NA
88-216	43.5	NA
216-960	46	NA
Above 960	54	NA
	Peak	Average
Above 1 GHz	74	54
Supplementary information: None.		

Radiated Emissions EUT Configuration Settings

Power Interface #	EUT Configurations #	EUT Mode of Operation#
1	1	3B,4
Supplementary information**:** All testing done with EUT SN: QV7700G0LA and QV77008ELY		

Refer to R15103618-EP11 for setup photos.

Radiated Emissions Test Equipment

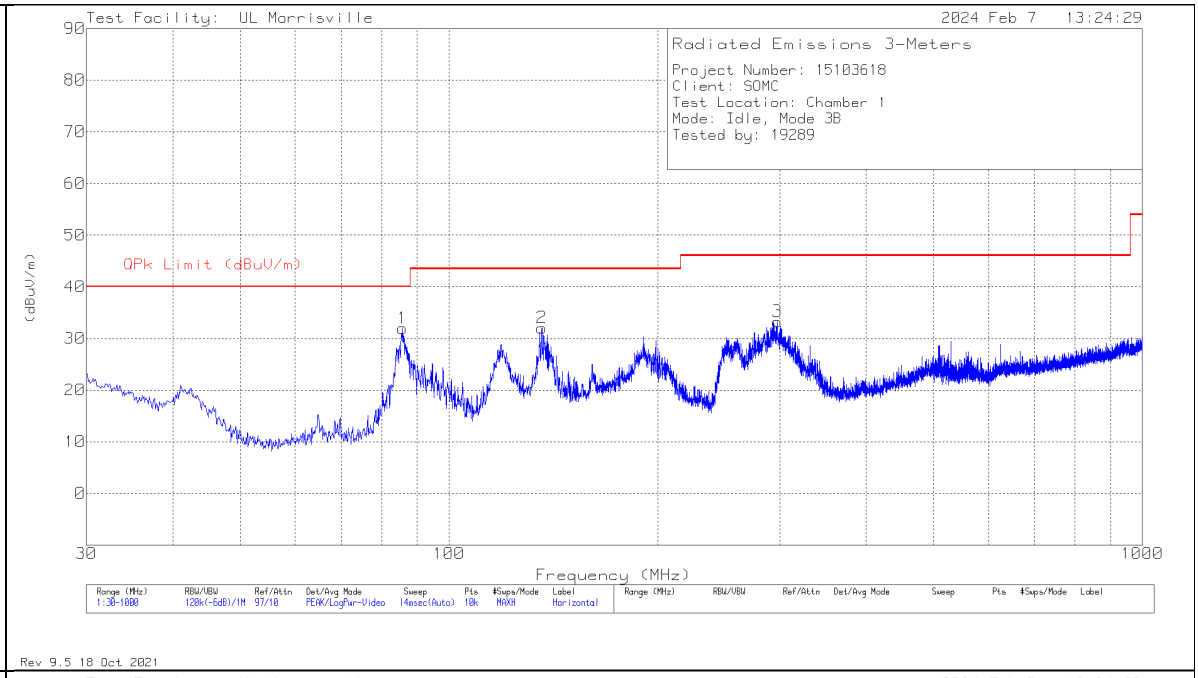
Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville – Chamber 1)

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
30-1000 MHz					
90629	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2024-01-30	2026-01-30
1-18 GHz					
206211	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2023-04-06	2024-04-06
18-40 GHz					
204704	Horn Antenna, 18-26.5GHz	Com-Power	AH-826	2023-07-20	2025-07-20
204705	Horn Antenna, 26-40GHz	Com-Power	AH-640	2023-07-20	2025-07-20
Gain-Loss Chains					
91976	Gain-loss string: 25-1000MHz	Various	Various	2023-05-16	2024-05-16
91979	Gain-loss string: 1-18GHz	Various	Various	2023-05-16	2024-05-16
135999	Gain-loss string: 18-40GHz	Various	Various	2023-05-16	2024-05-16
Receiver & Software					
81018	Spectrum Analyzer	Agilent	E4446A	2023-08-01	2024-08-01
90416	Spectrum Analyzer	Keysight	N9030A	2023-06-09	2024-06-30
SOFTEMI	EMI Software	UL	Version 9.5 (18 Oct 2021)		
Additional Equipment used					
241205	Environmental Meter	Fisher Scientific	15-077-963	2023-09-05	2025-09-05
213025	Wideband Radio Communications Tester	Rohde and Schwarz	CMW500	2023-12-18	2024-12-18

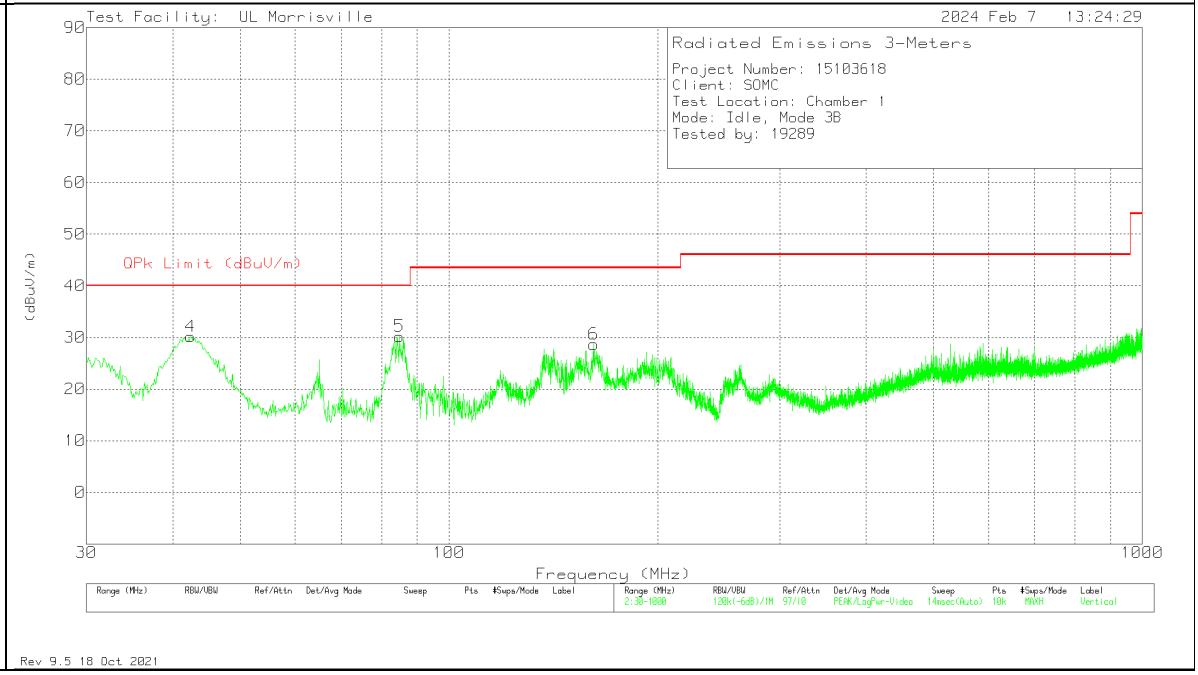
RADIATED EMISSIONS 30 TO 1000 MHz

Radiated Emissions Graph

HORIZONTAL



VERTICAL



Radiated Emissions Data Points

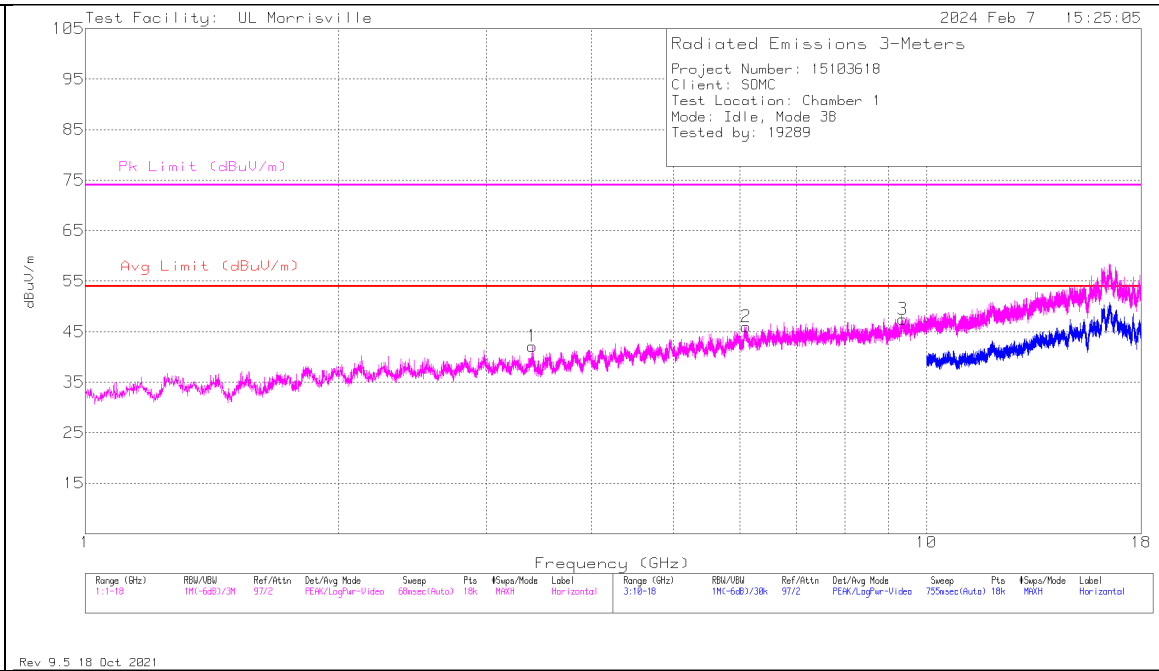
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	90629 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	42.416	43.66	Pk	18	-31.5	30.16	40	-9.84	0-360	100	V
5	84.902	47.81	Pk	13.5	-31.1	30.21	40	-9.79	0-360	100	V
1	85.775	49.46	Pk	13.5	-31	31.96	40	-8.04	0-360	300	H
2	136.215	42.86	Pk	19.7	-30.5	32.06	43.52	-11.46	0-360	200	H
6	161.92	40.48	Pk	18.5	-30.3	28.68	43.52	-14.84	0-360	100	V
3	297.817	43.07	Pk	19.6	-29.4	33.27	46.02	-12.75	0-360	101	H

Pk - Peak detector

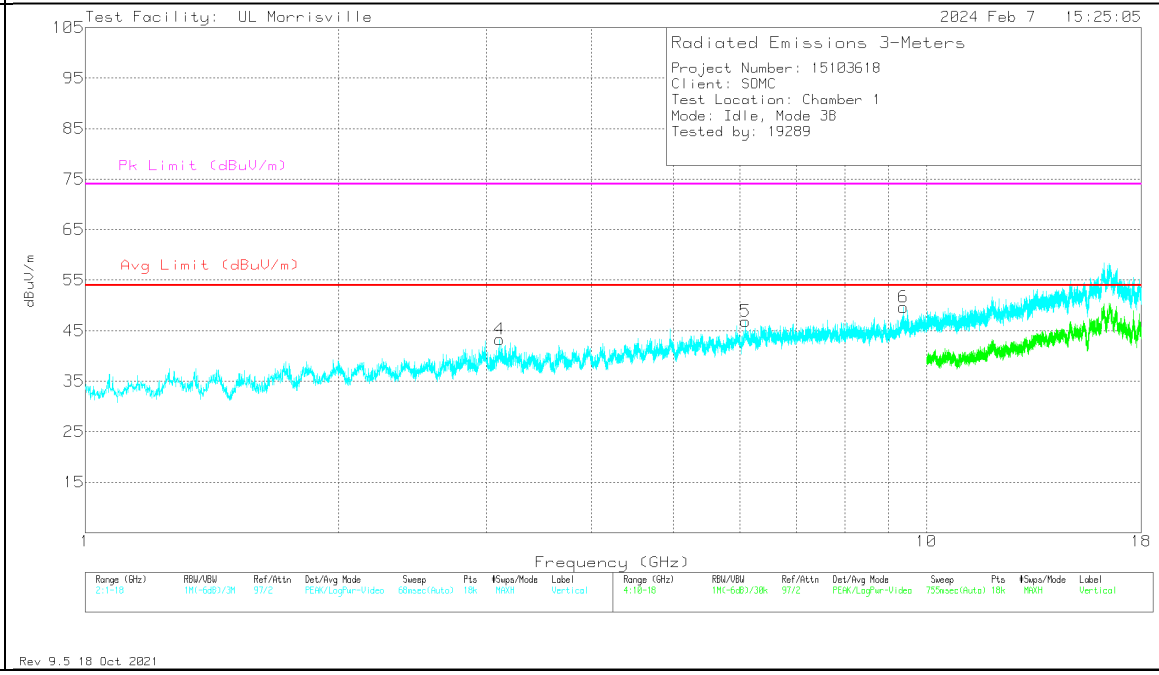
RADIATED EMISSIONS 1000 TO 18,000 MHz

Radiated Emissions Graph

HORIZONTAL



VERTICAL



Radiated Emissions Data Points

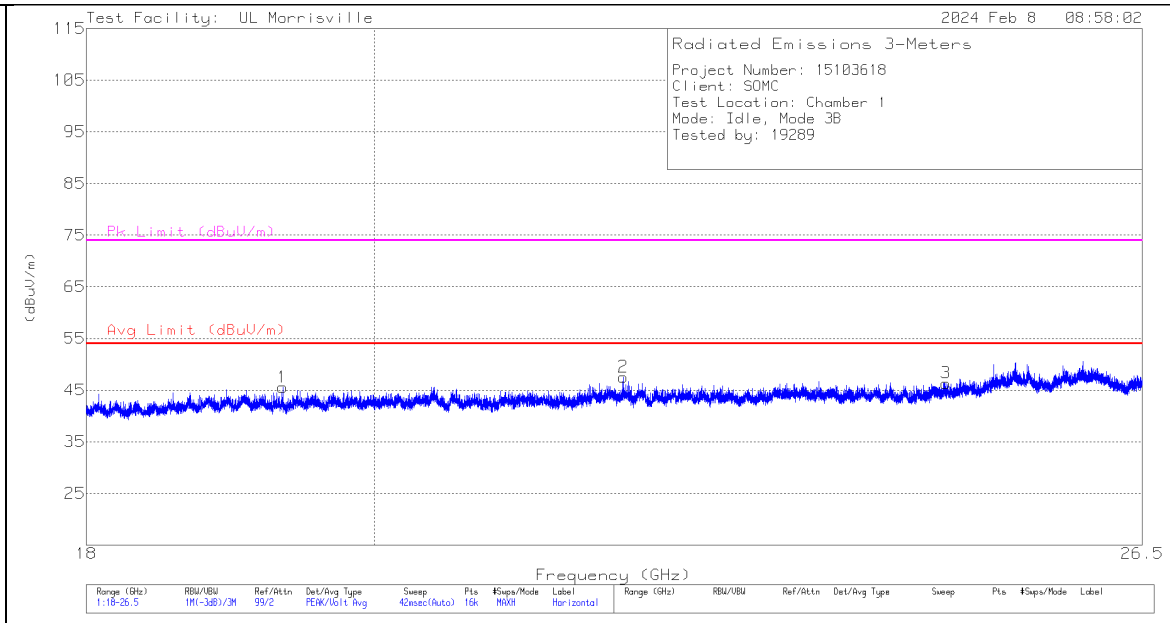
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading dBuV/m	Avg Limit (dBuV/m)	Margin (dB)	Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
4	3.108	43.69	Pk	33	-33.4	43.29	54	-10.71	74	-30.71	0-360	200	V
1	3.39889	42.34	Pk	32.7	-32.9	42.14	54	-11.86	74	-31.86	0-360	200	H
5	6.09528	40.46	Pk	35.3	-28.9	46.86	54	-7.14	74	-27.14	0-360	200	V
2	6.10283	39.59	Pk	35.3	-28.9	45.99	54	-8.01	74	-28.01	0-360	100	H
3	9.37155	36.78	Pk	36.4	-25.7	47.48	54	-6.52	74	-26.52	0-360	200	H
6	9.384	39.35	Pk	36.4	-26.1	49.65	-	-	74	-24.35	150	270	V
	9.384	27.45	Av	36.4	-26.1	37.75	54	-16.25	-	-	150	270	V

Pk - Peak detector
Av - Average detection

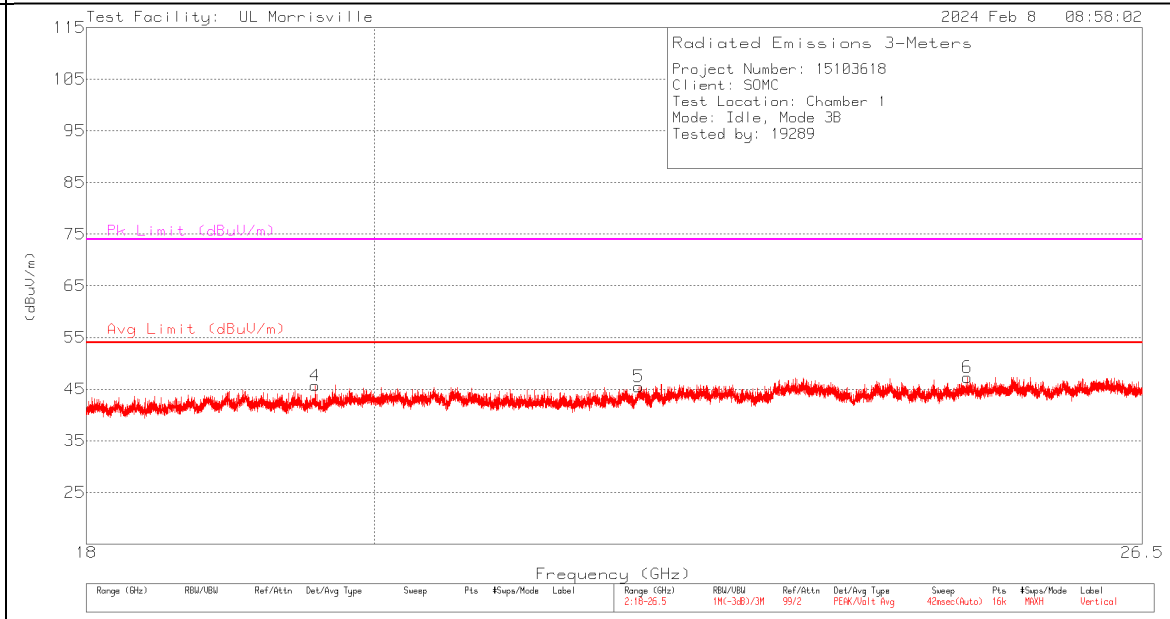
RADIATED EMISSIONS 18,000 TO 26,000 MHz

Radiated Emissions Graph

HORIZONTAL



VERTICAL



Radiated Emissions Data Points

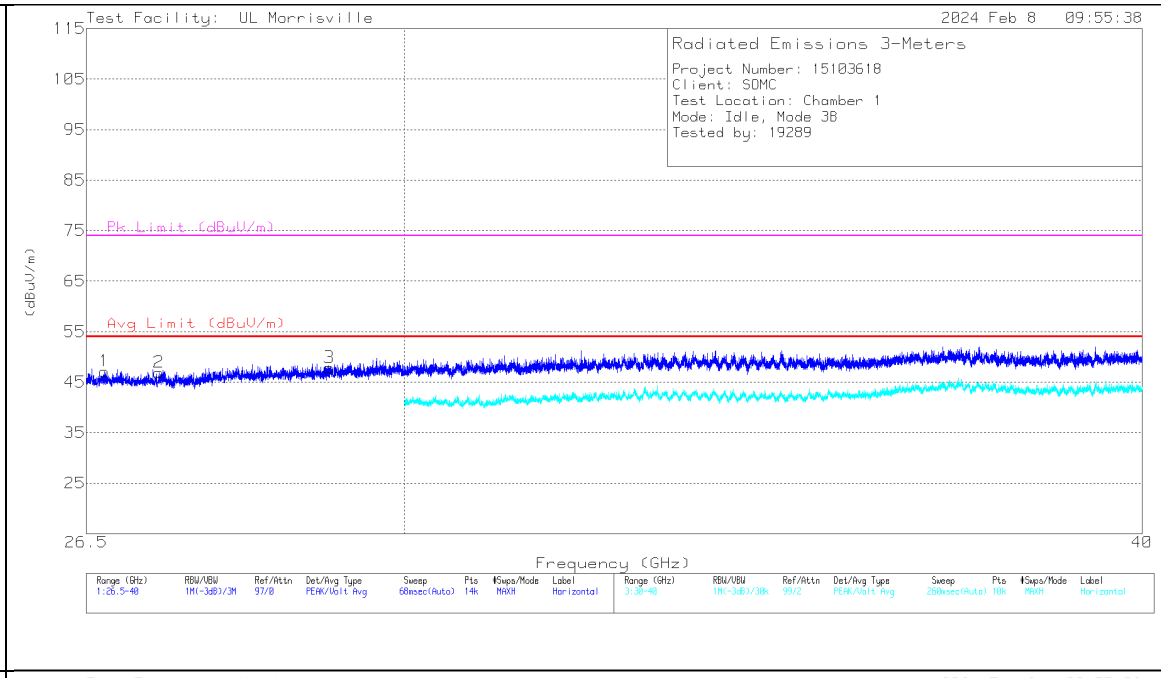
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	204704 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	19.34275	50.36	Pk	33.3	-38.1	45.56	54	-8.44	74	-28.44	0-360	200	H
4	19.57539	50.46	Pk	33.2	-38	45.66	54	-8.34	74	-28.34	0-360	150	V
2	21.91192	51.15	Pk	34.2	-37.8	47.55	54	-6.45	74	-26.45	0-360	150	H
5	22.03674	49.07	Pk	34.2	-37.8	45.47	54	-8.53	74	-28.53	0-360	300	V
3	24.66221	48.35	Pk	35	-37	46.35	54	-7.65	74	-27.65	0-360	101	H
6	24.85343	48.88	Pk	35.2	-36.8	47.28	54	-6.72	74	-26.72	0-360	200	V

Pk - Peak detector

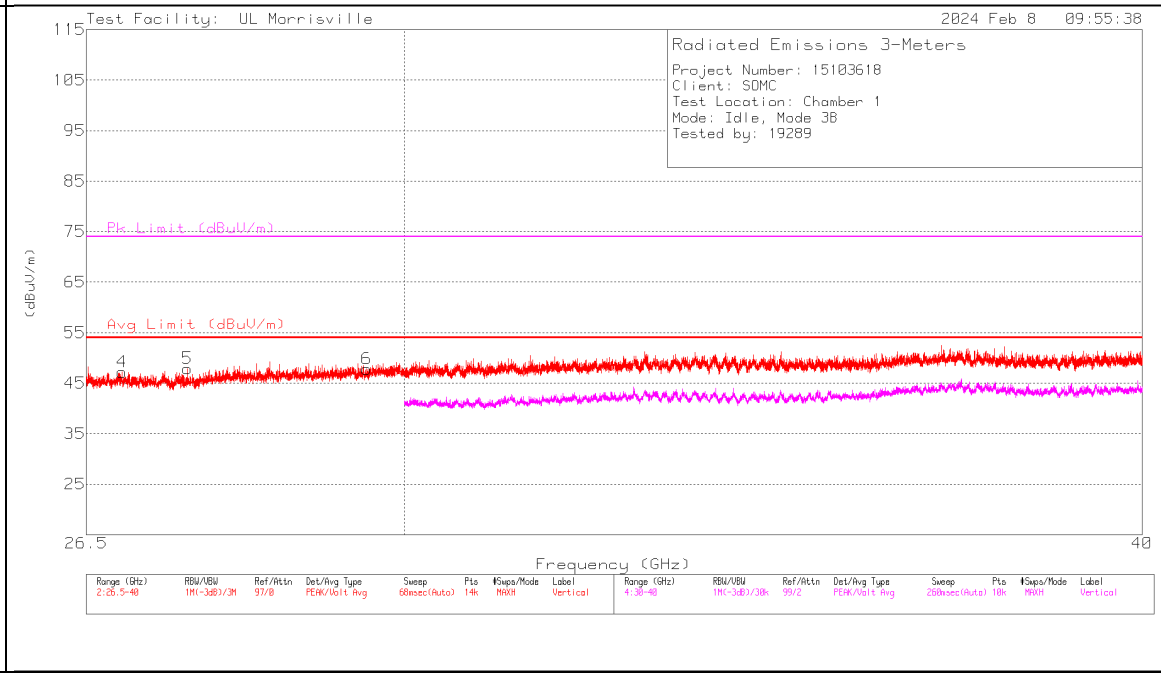
RADIATED EMISSIONS 26,000 TO 40,000 MHz

Radiated Emissions Graph

HORIZONTAL



VERTICAL



Radiated Emissions Data Points

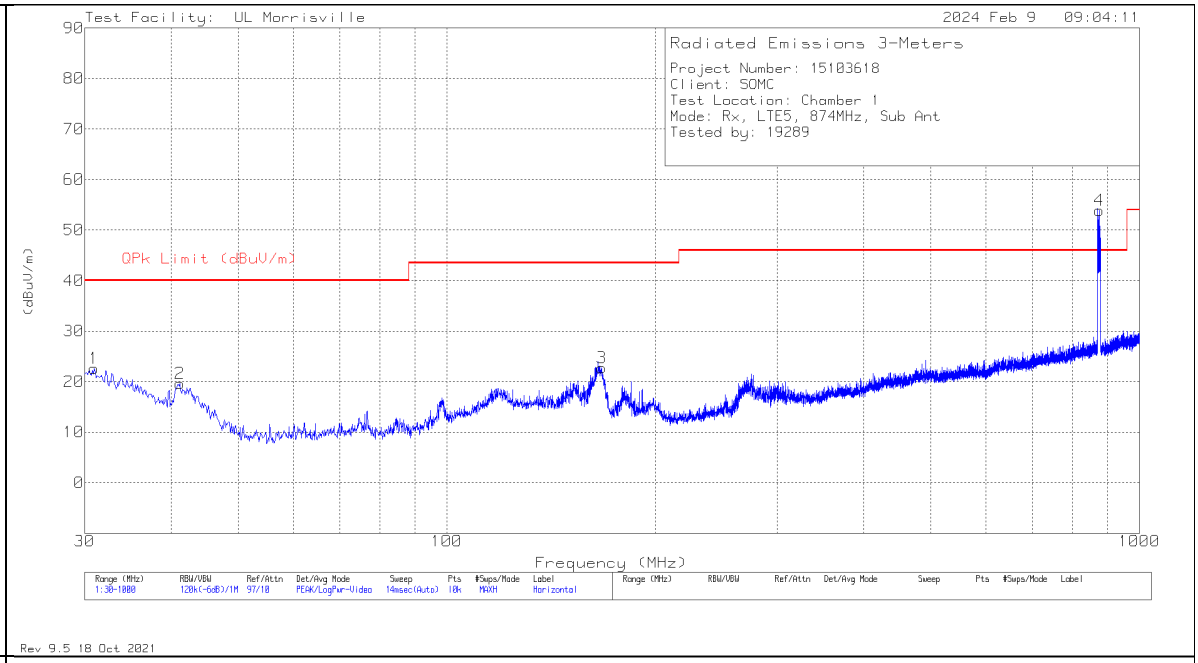
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	204705 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	26.68609	46.98	Pk	36.2	-36	47.18	54	-6.82	74	-26.82	0-360	149	H
4	26.87122	47	Pk	36.1	-35.9	47.2	54	-6.8	74	-26.8	0-360	101	V
2	27.26077	46.83	Pk	36	-35.9	46.93	54	-7.07	74	-27.07	0-360	200	H
5	27.56642	47.58	Pk	35.9	-35.6	47.88	54	-6.12	74	-26.12	0-360	250	V
3	29.13328	45.78	Pk	36.4	-34.3	47.88	54	-6.12	74	-26.12	0-360	250	H
6	29.56139	45.62	Pk	36.3	-34.1	47.82	54	-6.18	74	-26.18	0-360	101	V

Pk - Peak detector

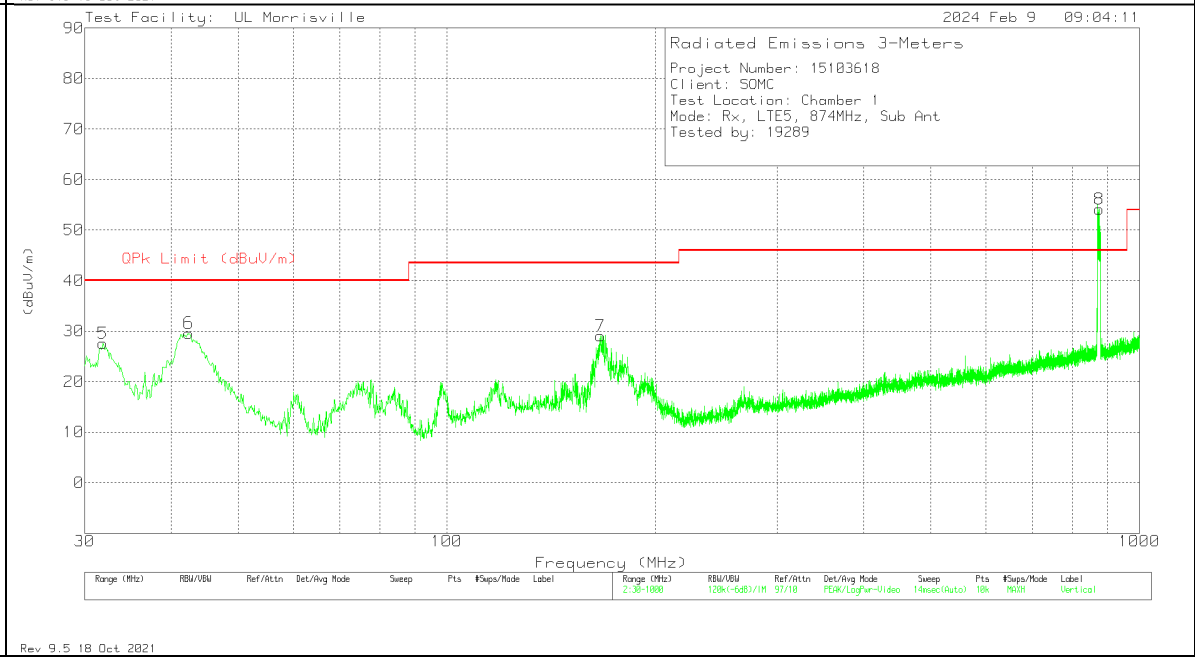
RADIATED EMISSIONS 30 TO 1000 MHz – LTE B5 Rx 874.0MHz

Radiated Emissions Graph

HORIZONTAL



VERTICAL



Radiated Emissions Data Points

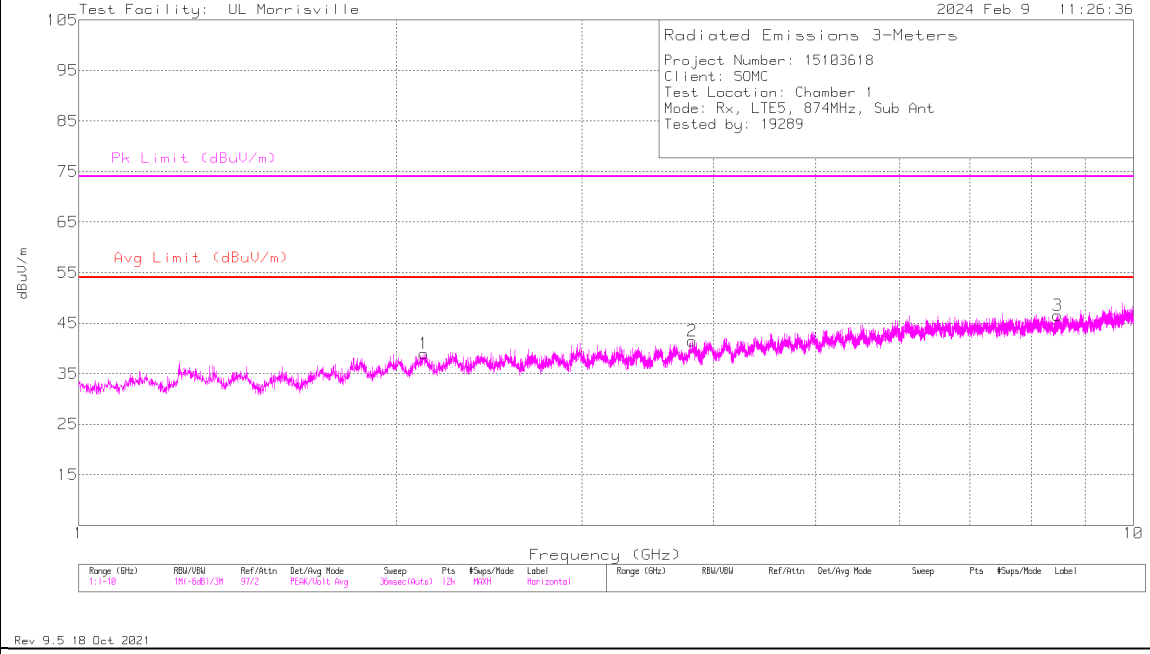
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	90629 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.97	28.1	Pk	26.2	-31.7	22.6	40	-17.4	0-360	100	H
5	31.843	33.6	Pk	25.6	-31.6	27.6	40	-12.4	0-360	100	V
2	41.155	32.01	Pk	19	-31.4	19.61	40	-20.39	0-360	399	H
6	42.416	43.13	Pk	18	-31.5	29.63	40	-10.37	0-360	100	V
7	166.673	41.12	Pk	18.3	-30.3	29.12	43.52	-14.4	0-360	100	V
3	167.449	34.72	Pk	18.2	-30.2	22.72	43.52	-20.8	0-360	300	H
4^{DL}	874.288	52.64	Pk	28	-26.7	53.94	-	-	0-360	300	H
8^{DL}	874.482	52.94	Pk	28	-26.8	54.14	-	-	0-360	100	V

Pk - Peak detector
DL – Callbox downlink frequencies

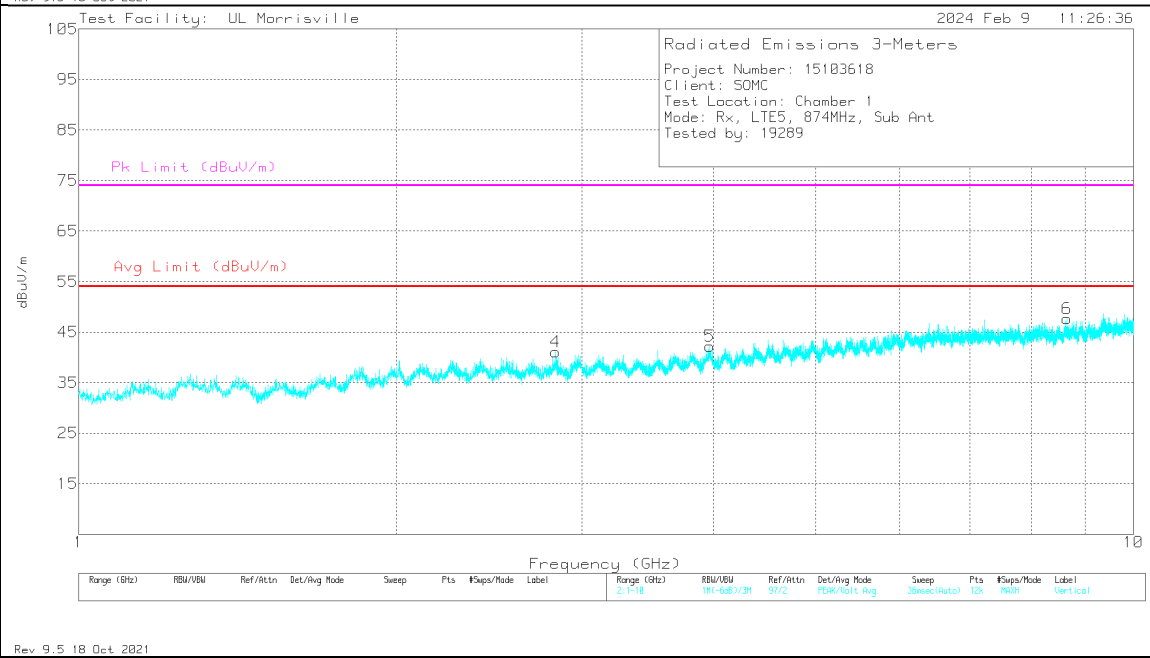
RADIATED EMISSIONS 1000 TO 10,000 MHz – LTE B5 Rx 874.0MHz

Radiated Emissions Graph

HORIZONTAL



VERTICAL



Radiated Emissions Data Points

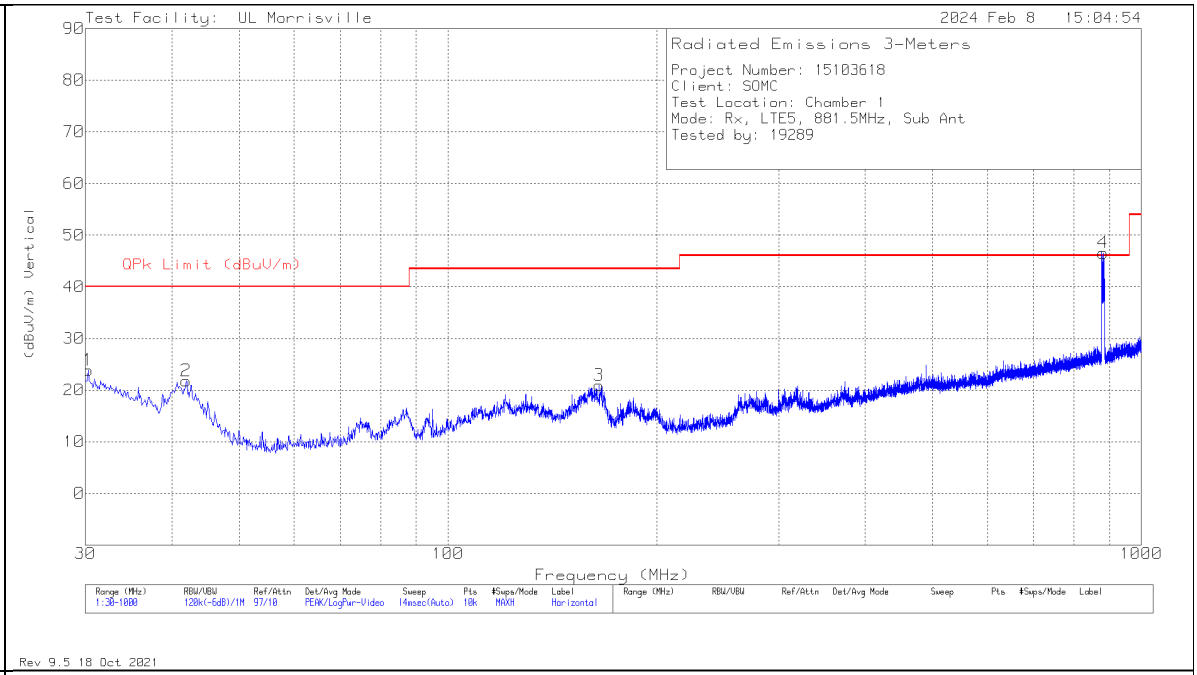
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading dBuV/m	Avg Limit (dBuV/m)	Margin (dB)	Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.12575	41.59	Pk	31.6	-34.2	38.99	54	-15.01	74	-35.01	0-360	101	H
4	2.83225	42.34	Pk	32.4	-33.6	41.14	54	-12.86	74	-32.86	0-360	101	V
2	3.8155	40.52	Pk	33.4	-32.4	41.52	54	-12.48	74	-32.48	0-360	101	H
5	3.964	40.47	Pk	33.4	-31.7	42.17	54	-11.83	74	-31.83	0-360	200	V
3	8.47525	37.35	Pk	35.8	-26.6	46.55	54	-7.45	74	-27.45	0-360	101	H
6	8.65375	38.56	Pk	35.8	-26.7	47.66	54	-6.34	74	-26.34	0-360	200	V

Pk - Peak detector

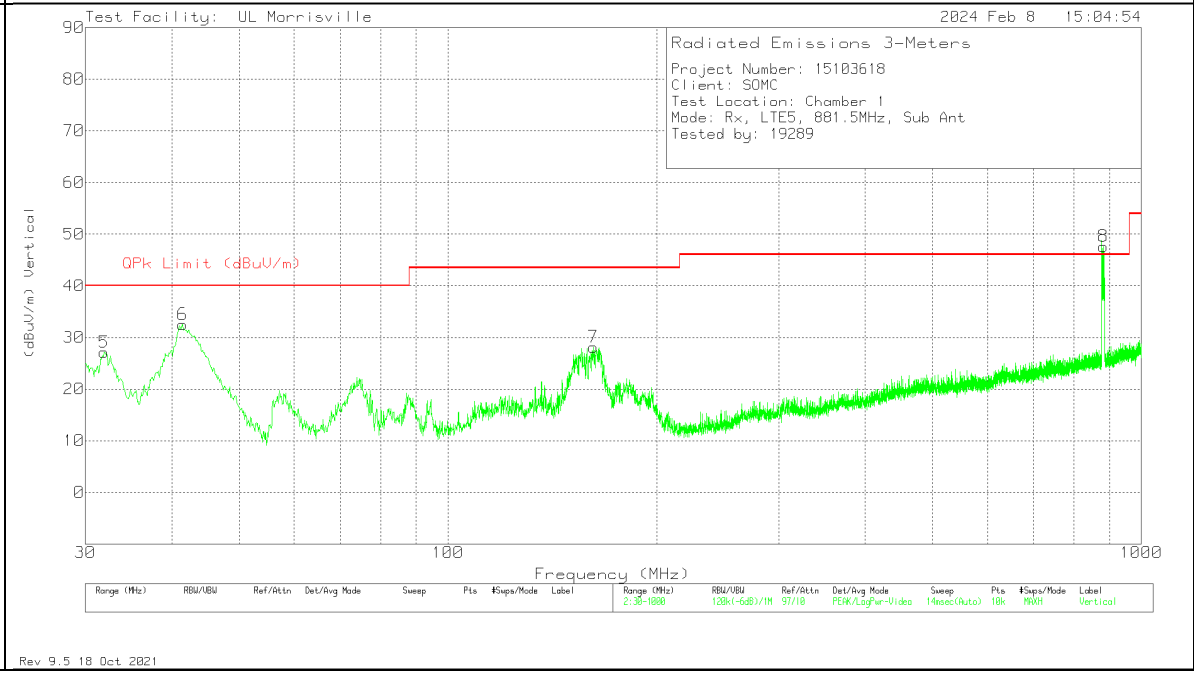
RADIATED EMISSIONS 30 TO 1000 MHz – LTE B5 Rx 881.5MHz

Radiated Emissions Graph

HORIZONTAL



VERTICAL



Radiated Emissions Data Points

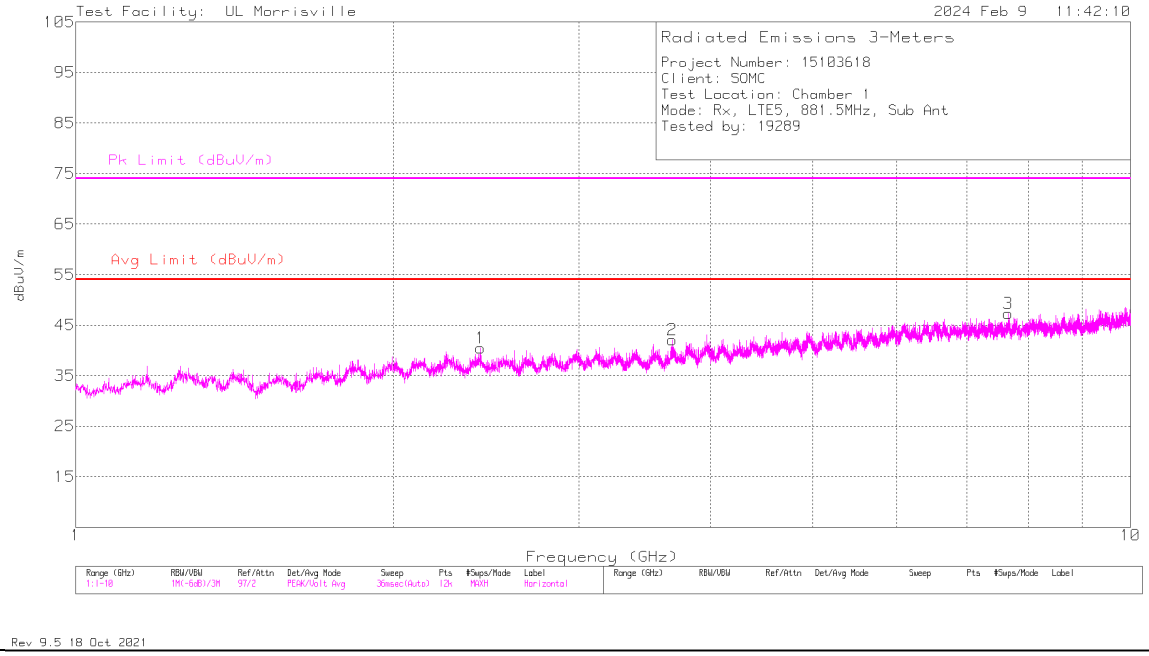
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	90629 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.291	28.99	Pk	26.7	-31.8	23.89	40	-16.11	0-360	399	H
5	31.94	33.22	Pk	25.5	-31.6	27.12	40	-12.88	0-360	100	V
6	41.446	45.2	Pk	18.8	-31.5	32.5	40	-7.5	0-360	100	V
2	41.931	34.92	Pk	18.4	-31.5	21.82	40	-18.18	0-360	399	H
7	162.114	39.93	Pk	18.5	-30.3	28.13	43.52	-15.39	0-360	100	V
3	165.218	32.85	Pk	18.3	-30.2	20.95	43.52	-22.57	0-360	300	H
4^{DL}	881.272	44.77	Pk	28.2	-26.4	46.57	-	-	0-360	300	H
8^{DL}	881.66	45.94	Pk	28.2	-26.5	47.64	-	-	0-360	100	V

Pk - Peak detector
DL – Callbox downlink frequencies

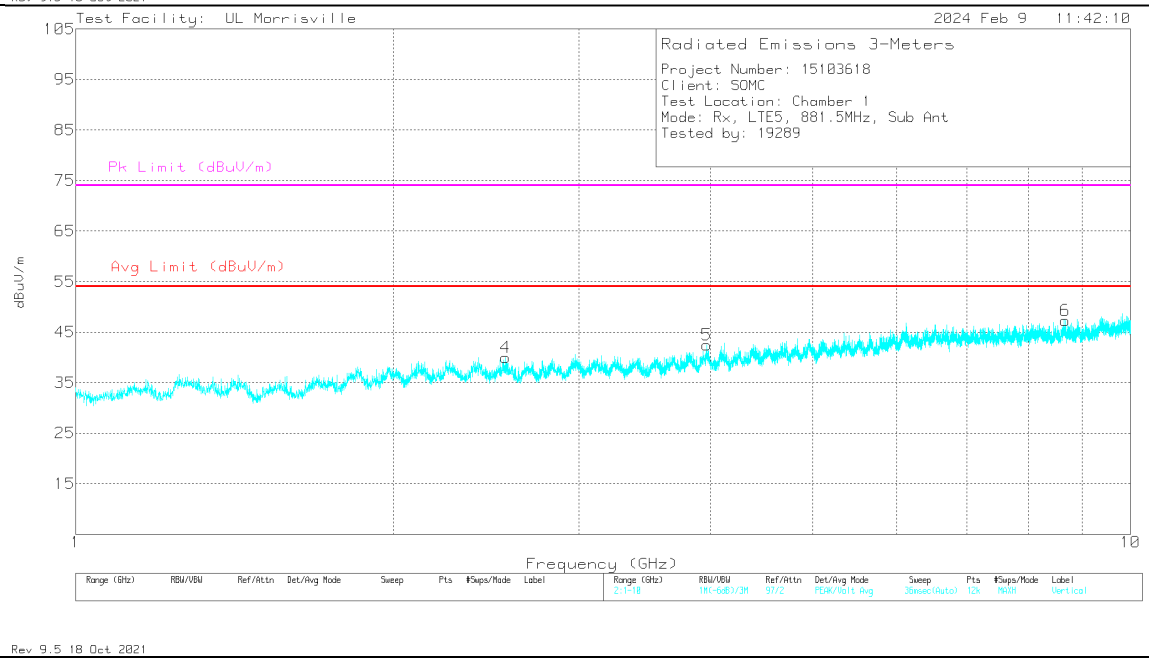
RADIATED EMISSIONS 1000 TO 10,000 MHz – LTE B5 Rx 881.5MHz

Radiated Emissions Graph

HORIZONTAL



VERTICAL



Radiated Emissions Data Points

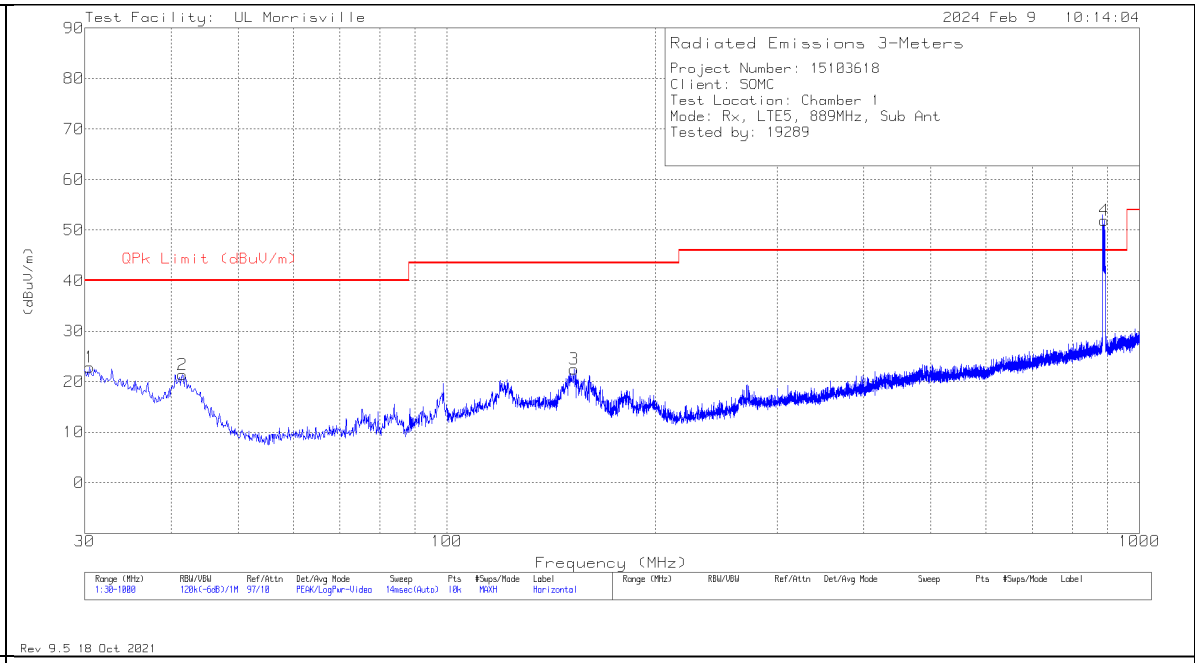
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading dBuV/m	Avg Limit (dBuV/m)	Margin (dB)	Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.41975	42.35	Pk	32.1	-34	40.45	54	-13.55	74	-33.55	0-360	101	H
4	2.55625	41.56	Pk	32.3	-33.9	39.96	54	-14.04	74	-34.04	0-360	200	V
2	3.676	41.23	Pk	33.2	-32.4	42.03	54	-11.97	74	-31.97	0-360	200	H
5	3.96325	40.76	Pk	33.4	-31.7	42.46	54	-11.54	74	-31.54	0-360	101	V
3	7.66225	38.5	Pk	35.8	-27	47.3	54	-6.7	74	-26.7	0-360	101	H
6	8.67025	38	Pk	35.8	-26.5	47.3	54	-6.7	74	-26.7	0-360	200	V

Pk - Peak detector

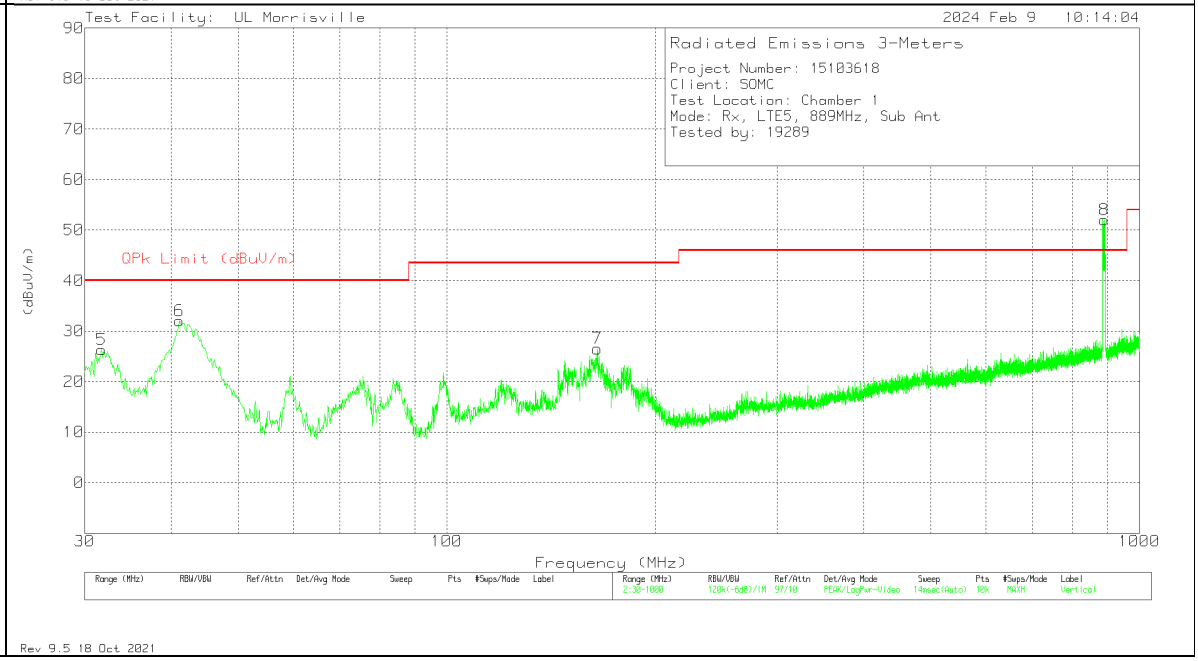
RADIATED EMISSIONS 30 TO 1000 MHz – LTE B5 Rx 889.0MHz

Radiated Emissions Graph

HORIZONTAL



VERTICAL



Radiated Emissions Data Points

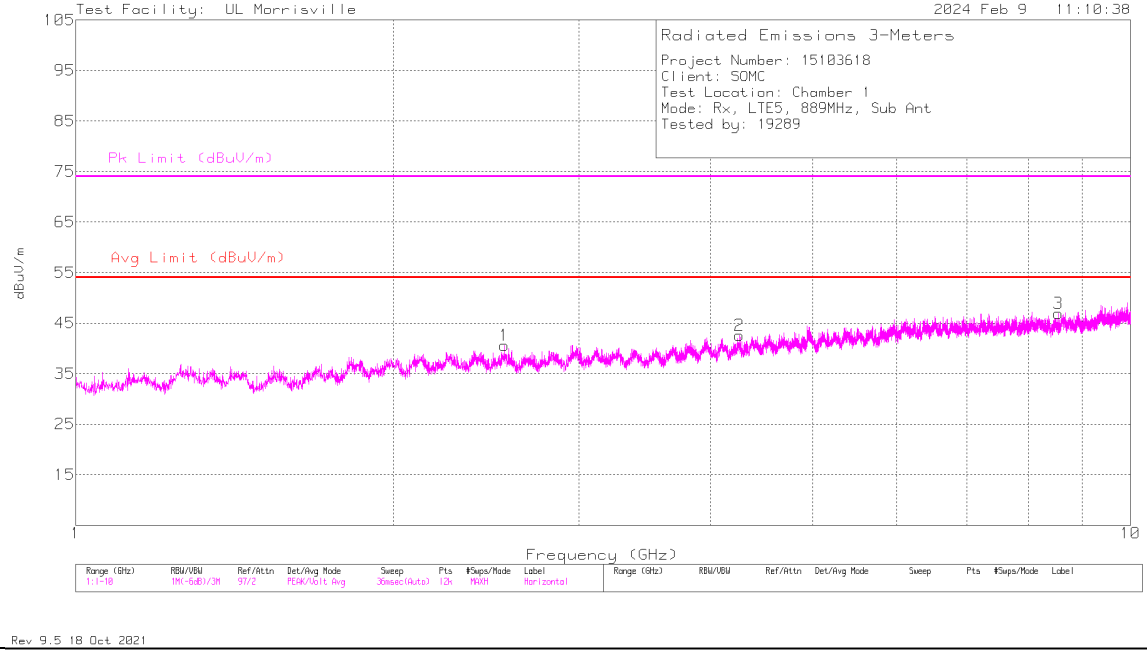
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	90629 (dB/m)	Gain/Loss (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.485	28.13	Pk	26.5	-31.8	22.83	40	-17.17	0-360	400	H
5	31.746	32.34	Pk	25.6	-31.6	26.34	40	-13.66	0-360	100	V
6	41.058	44.31	Pk	19.1	-31.4	32.01	40	-7.99	0-360	100	V
2	41.543	34.19	Pk	18.7	-31.5	21.39	40	-18.61	0-360	199	H
3	152.608	34.25	Pk	18.7	-30.5	22.45	43.52	-21.07	0-360	199	H
7	164.927	38.33	Pk	18.4	-30.2	26.53	43.52	-16.99	0-360	100	V
8[DL]	888.935	50.29	Pk	28.2	-26.5	51.99	-	-	0-360	100	V
4 [DL]	889.42	50.15	Pk	28.2	-26.4	51.95	-	-	0-360	299	H

Pk - Peak detector
DL – Callbox downlink frequencies

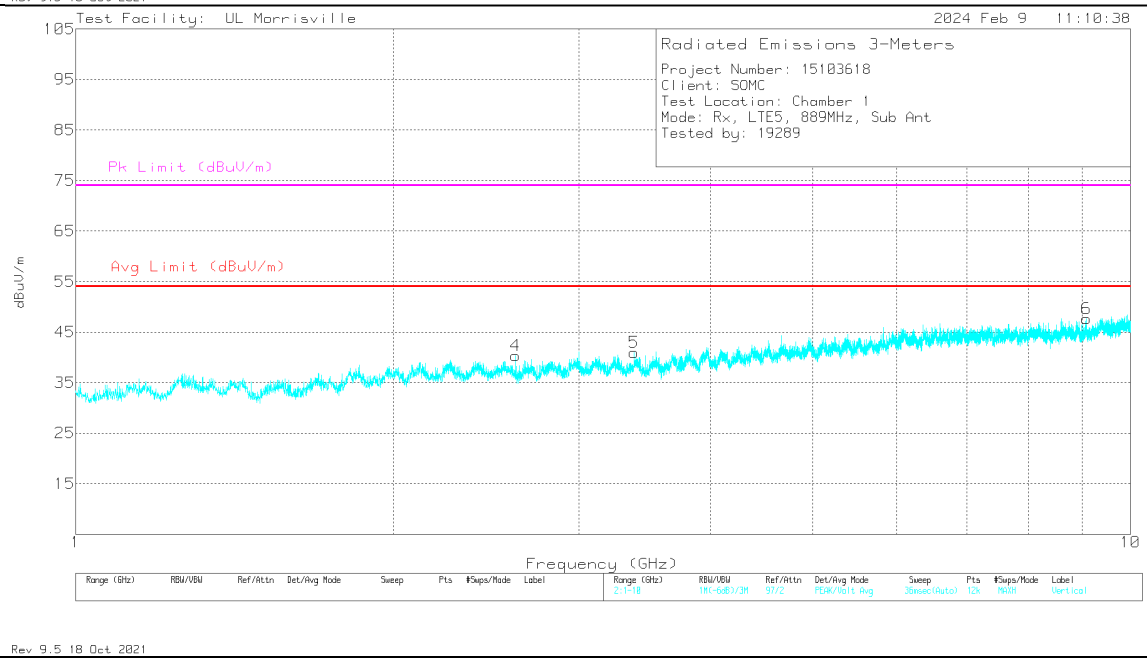
RADIATED EMISSIONS 1000 TO 10,000 MHz – LTE B5 Rx 889.0MHz

Radiated Emissions Graph

HORIZONTAL



VERTICAL



Radiated Emissions Data Points

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	206211 (dB/m)	Gain/Loss (dB)	Corrected Reading dBuV/m	Avg Limit (dBuV/m)	Margin (dB)	Pk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2.5495	42.16	Pk	32.3	-33.9	40.56	54	-13.44	74	-33.44	0-360	200	H
4	2.614	42.09	Pk	32.2	-33.9	40.39	54	-13.61	74	-33.61	0-360	200	V
5	3.3835	41.3	Pk	32.7	-33	41	54	-13	74	-33	0-360	200	V
2	4.25725	40.83	Pk	33.4	-31.7	42.53	54	-11.47	74	-31.47	0-360	200	H
3	8.54875	38.07	Pk	35.8	-26.9	46.97	54	-7.03	74	-27.03	0-360	200	H
6	9.082	37.69	Pk	36	-26	47.69	54	-6.31	74	-26.31	0-360	101	V

Pk - Peak detector

Appendix A

Facilities, Accreditations and Authorizations

UL LLC is accredited by A2LA, certification # 0751.06, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	Building: 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	825374
☒	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A		27265	

END OF TEST REPORT