CERTIFICATION TEST REPORT

Report Number. : 12440598-E3V1

Applicant	:	Samsung Electronics Co., Ltd. 129 Samsung-Ro, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 16677, Korea
Models	:	SM-A750GN/DS and SM-A750GN
FCC ID	:	A3LSMA750GN
EUT Description	:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, ANT+ and NFC
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C

Date Of Issue:
August 17, 2018

Prepared by:
UL Verification Services Inc.
47173 Benicia Street
Fremont, CA 94538 U.S.A.
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FAX: (510) 661-0888

NVLAP Lab code: 200065-0

REPORT REVISION HISTORY

Rev.	Issue Date	Revisions	Revised By
8/17/18	V1	Initial Issue	

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	Samsung Electronics Co., Ltd. 129 Samsung-Ro, Yeongtong-Gu, Suwon-Si, Gyeonggi-Do, 16677, Korea
EUT DESCRIPTION:	GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, ANT+ and NFC
MODELS:	SM-A750GN/DS and SM-A750GN
SERIAL NUMBER:	Conducted: R38K70KQF9N, R38K70KQGDH Radiated: R38K70KQFNY, R38K70KQFAH, R38K70KQF8A
DATE TESTED:	AUGUST 6 – 15, 2018

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Complies

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. 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 NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released For
UL Verification Services Inc. By:

Dan Coronia
CONSUMER TECHNOLOGY DIVISION
Operations Leader
UL Verification Services Inc.

Reviewed By:

Steven Tran
CONSUMER TECHNOLOGY DIVISION
Project Engineer
UL Verification Services Inc

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, KDB 558074 D01 v4, and ANSI C63.10-2013.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street	47658 Kato Rd.
☐ Chamber A (IC:2324B-1)	☐ Chamber D (IC:22541-1)	☐ Chamber I (IC: 2324A-5)
☐ Chamber B (IC:2324B-2)	☐ Chamber E (IC:22541-2)	☐ Chamber J (IC: 2324A-6)
☒ Chamber C (IC:2324B-3)	☐ Chamber F (IC:22541-3)	☐ Chamber K (IC: 2324A-1)
	☐ Chamber G (IC:22541-4)	☒ Chamber L (IC: 2324A-3)
	☐ Chamber H (IC:22541-5)	

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0

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4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

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

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Worst Case Conducted Disturbance, 9KHz to 0.15 MHz	3.84 dB
Worst Case Conducted Disturbance, 0.15 to 30 MHz	3.65 dB
Worst Case Radiated Disturbance, 9KHz to 30 MHz	3.15 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	5.36 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.32 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.45 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.24 dB

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

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5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, ANT+ and NFC.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

Frequency Range (MHz)	Mode	Output Power (dBm)	Output Power (mW)
2402 - 2480	BLE	5.52	3.56

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an internal antenna, with a maximum gain of -1.71 dBi.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was A750GN.001

5.5. WORST-CASE CONFIGURATION AND MODE

Radiated emissions below 1GHz, above 18GHz, and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Band edge and radiated emissions between 1GHz and 18GHz were performed with the EUT set to transmit at the highest power on low, middle and high channels.

The fundamental of the EUT was investigated in three orthogonal orientations X,Y and Z it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
AC Adapter	Samsung	EP-TA50EWE	DW3J719AS/A-E	N/A
Earphone	Samsung	N/A	N/A	N/A

I/O CABLES (CONDUCTED TEST)

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	Antenna	1	RF	Shielded	0.2	To spectrum Analyzer
2	USB	1	USB	Un-shielded	1	EUT to AC Mains

I/O CABLES (RADIATED AND CONDUCTED EMISSIONS)

I/O Cable List						
Cable No	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	USB	1	USB	Shielded	1	N/A
2	earphone	1	3.5mm	Un-shielded	1	N/A

TEST SETUP

The EUT is a stand alone. Test software exercised the radio card.

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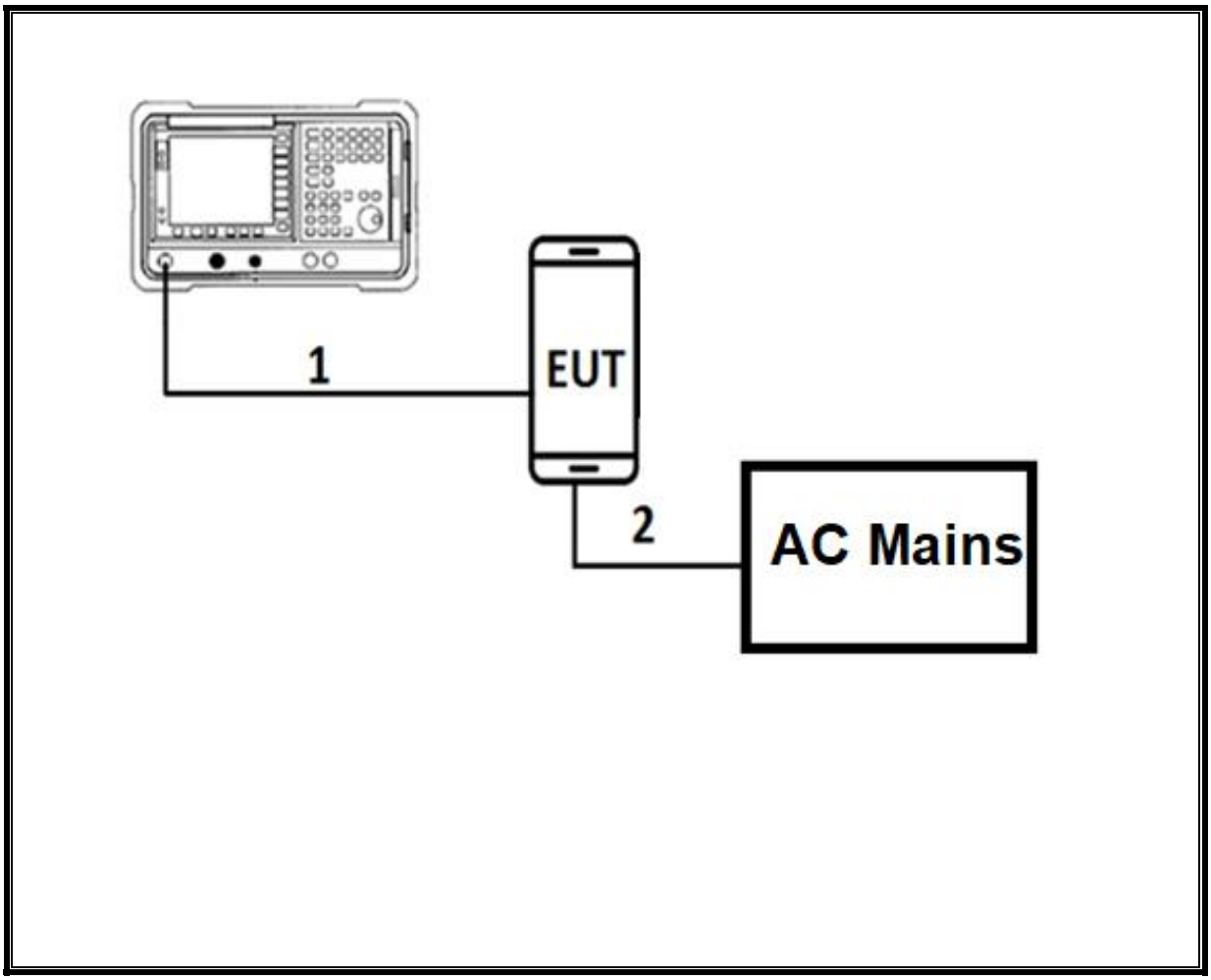
CONDCUTED TEST SETUP DIAGRAM



TEST SETUP

For conducted tests: the EUT was Stand alone. The test software exercises the radio.

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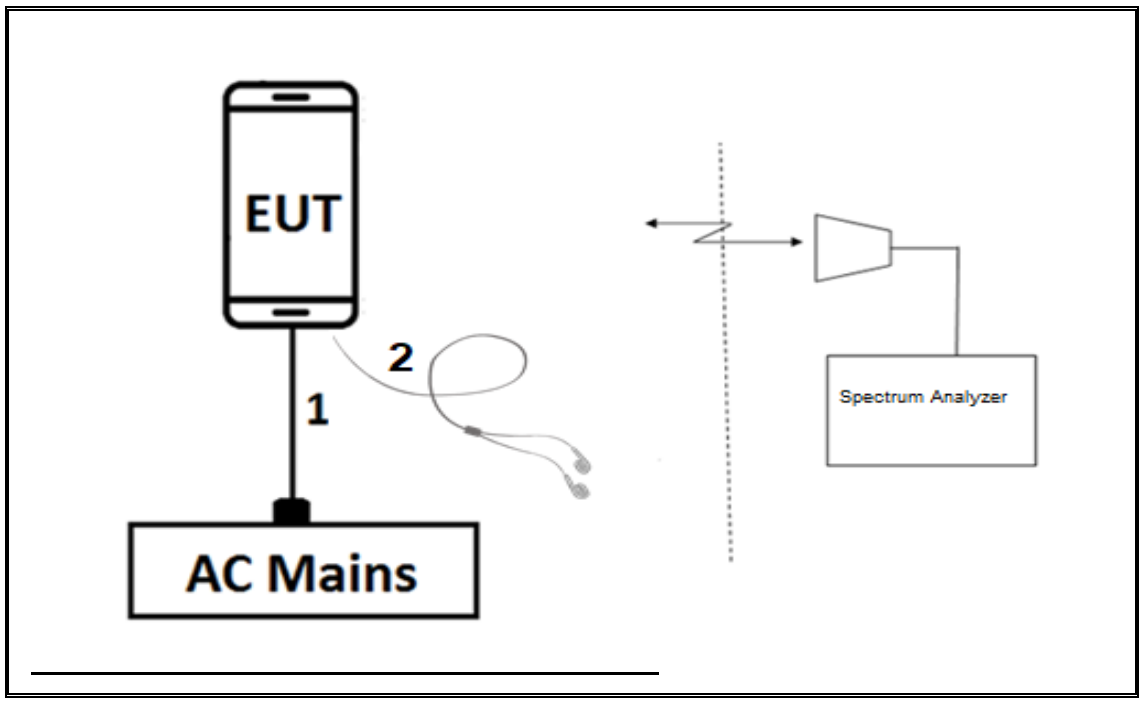
RADIATED AND AC LINE CONDUCTED EMISSIONS SETUP DIAGRAM



TEST SETUP

For radiated tests: EUT is Stand alone. The test software exercises the radio.

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6. MEASUREMENT METHOD

On Time and Duty Cycle: KDB 558074 D01 v04, Section 6.

6 dB BW: KDB 558074 D01 v04, Section 8.1.

Output Power: KDB 558074 D01 v04, Section 9.1.3.

Power Spectral Density: KDB 558074 D01 v04, Section 10.2.

Out-of-band emissions in non-restricted bands: KDB 558074 D01 v04, Section 11.0.

Out-of-band emissions in restricted bands: KDB 558074 D01 v04, Section 12.1.

Band-edge: KDB 558074 D01 v04, Section 12.1.

AC Power Line Conducted Emissions: ANSI C63.10-2013, Section 6.2.

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7. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST					
Description	**Manufacturer**	**Model**	**ID Num**	**Cal Due**	**Last Cal**
Amplifier, 10KHz to 1GHz, 32dB	Agilent (Keysight) Technologies	8447D	T10	02/14/2019	02/14/2018
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB3	T407	05/10/2019	05/10/2018
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T4294	04/30/2019	04/30/2018
RF Amplifier, 1-18GHz	MITEQ	AFS42-00101800-25-S-42	T1568	06/21/2019	06/21/2018
Amplifier 1-8GHz 30dB gain	L3 Narda	AMF-4D-01000800-30-29P	167495	06/22/2019	06/22/2018
Power Meter, P-series single channel	Agilent (Keysight) Technologies	N1911A	T1269	04/05/2019	04/05/2018
Power Sensor, P-series, 50MHz to 18GHz, Wideband	Agilent (Keysight) Technologies	N1921A	T1225	04/10/2019	04/10/2018
EMI Reciever	Rohde & Schwarz	ESR	T1436	02/21/2019	02/21/2018
L.I.S.N.	FCC INC.	FCC LISN 50/250	T1310	06/15/2019	06/15/2018
L.I.S.N.	FCC INC.	FCC LISN 50/250	T24	03/06/2019	03/06/2018
Antenna, Active Loop 9kHz-30MHz	Com-Power Corp.	AL-130R	T1866	10/10/2018	10/10/2017
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179522	05/11/2019	05/11/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T200	11/18/2018	11/18/2017
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1454	01/08/2019	01/08/2018
18 - 26.5 GHz Horn Antenna	Seavey Division	MWH-1826/B	T89	01/18/2019	01/18/2018
Pre-Amp 1-26.5 GHz	Agilent	8449B	T404	03/09/2019	023/09/2018
Thermometer - Digital	Control Company	14-650-118	PRE0177862	02/22/2019	02/22/2018
Thermometer - Digital	Control Company	14-650-118	PRE0177861	02/26/2019	02/26/2018

Test Software List			
Description	**Manufacturer**	**Model**	**Version**
Radiated Software	UL	UL EMC	Rev 9.5, Jun 22, 2018
Antenna Port Software	UL	UL RF	Ver 8.5, Jul 12, 2018

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8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

PROCEDURE

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
2.4GHz Band						
BLE	0.383	0.627	0.611	61.12%	2.14	2.609

DUTY CYCLE PLOTS

DUTY CYCLE BLE

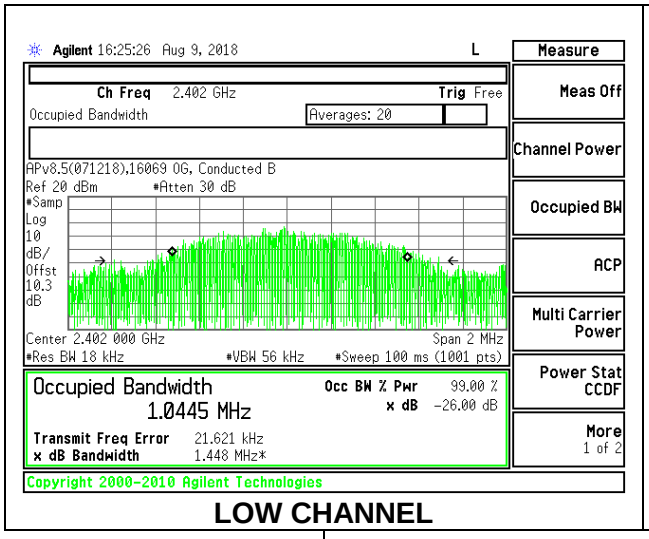
8.2. 99% BANDWIDTH

LIMITS

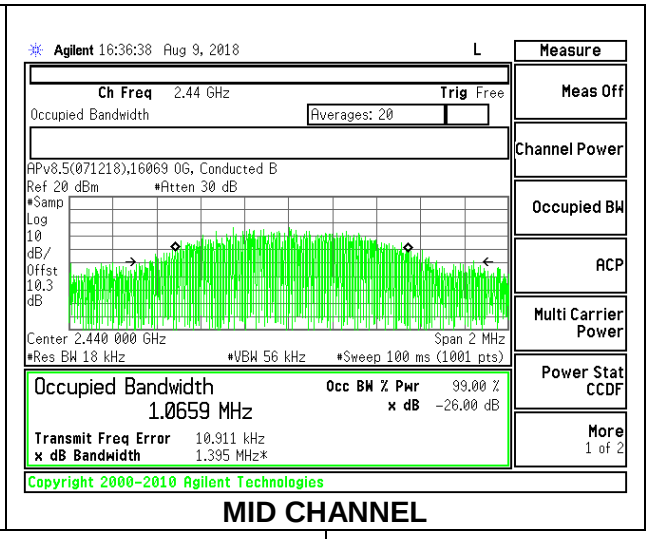
None; for reporting purposes only.

RESULTS

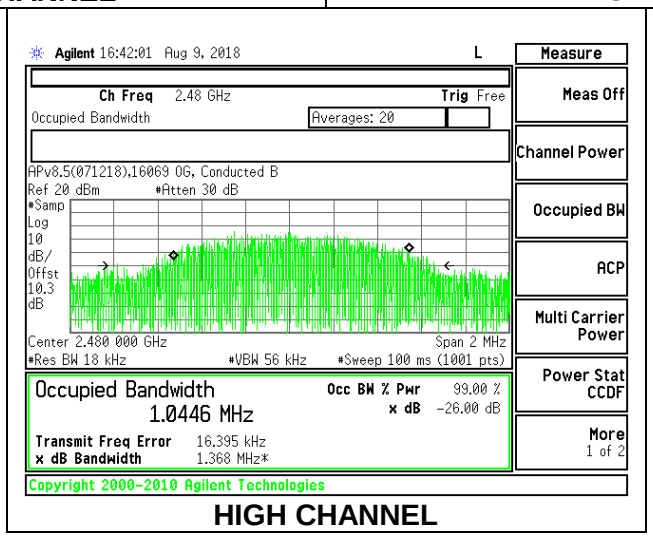
Channel	Frequency (MHz)	99% Bandwidth (MHz)
Low	2402	1.0445
Middle	2440	1.0660
High	2480	1.0450



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

8.3. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)

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

RESULTS

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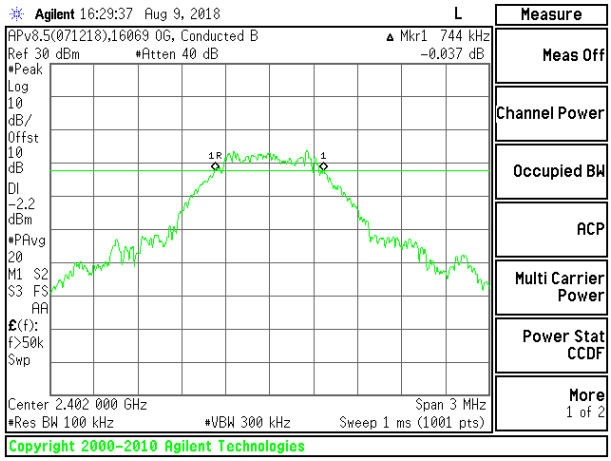
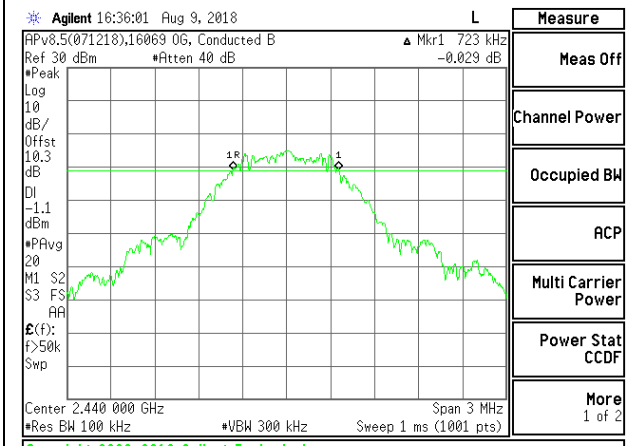
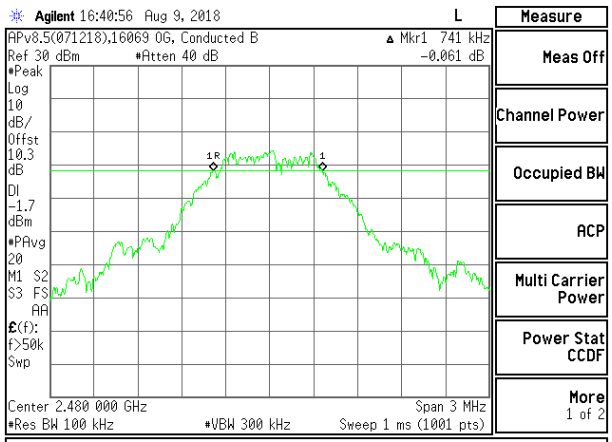
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)
Low	2402	0.7440	0.5
Middle	2440	0.7230	0.5
High	2480	0.7410	0.5



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

8.4. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

The maximum antenna gain is less than or equal to 6 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a power meter. The cable assembly insertion loss was entered as an offset in the power meter to allow for a gated peak reading of power.

RESULTS

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Tested By:	16069 OG
Date:	8/9/2018

Channel	Frequency (MHz)	Peak Power Reading (dBm)	Limit (dBm)	Margin (dB)
Low	2402	4.94	30	-25.06
Middle	2440	5.52	30	-24.48
High	2480	5.02	30	-24.98

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8.5. AVERAGE POWER

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter. The cable assembly insertion loss was entered as an offset in the power meter to allow for a gated average reading of power.

RESULTS

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Tested By:	16069 OG
Date:	8/9/2018

Channel	Frequency (MHz)	AV power (dBm)
Low	2402	4.19
Middle	2440	4.85
High	2480	4.39

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8.6. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

RESULTS

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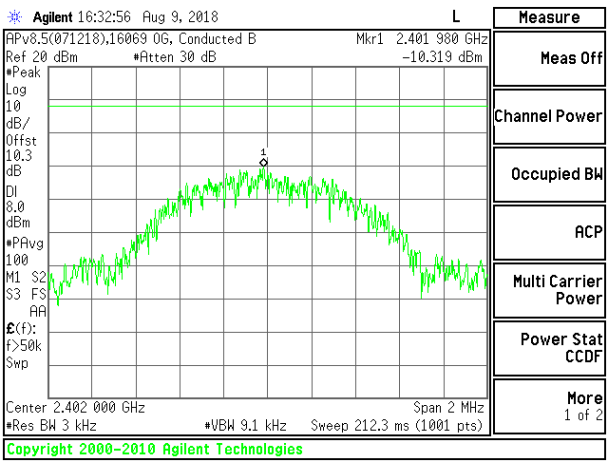
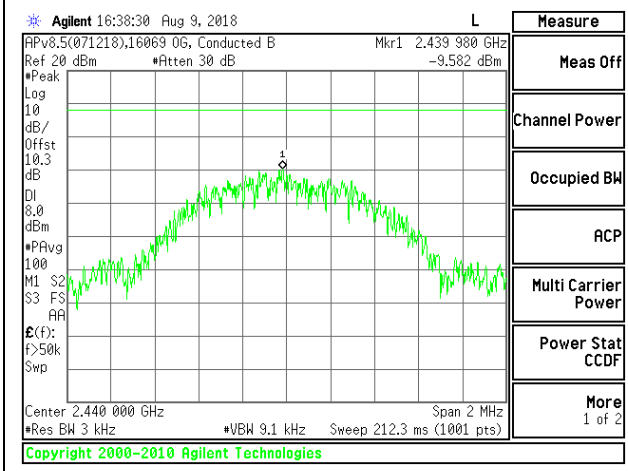
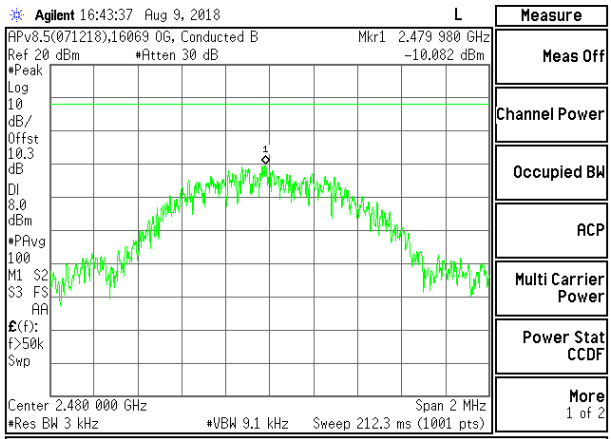
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Margin (dB)
Low	2402	-10.32	8	-18.32
Middle	2440	-9.58	8	-18.08
High	2480	-10.08	8	-18.08



LOW CHANNEL



MID CHANNEL



HIGH CHANNEL

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8.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

Output power was measured based on the use of a peak measurement, therefore the required attenuation is 20 dB.

RESULTS

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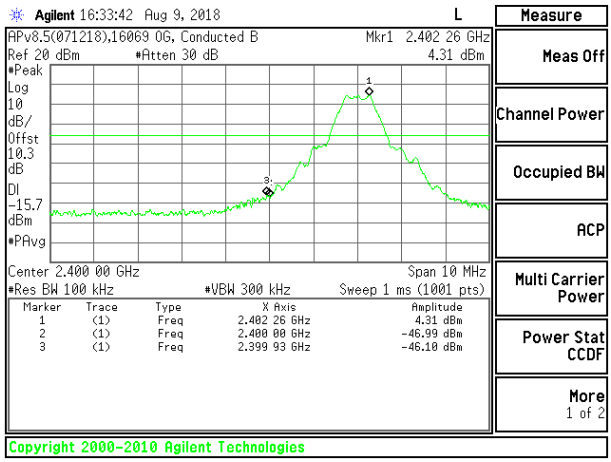
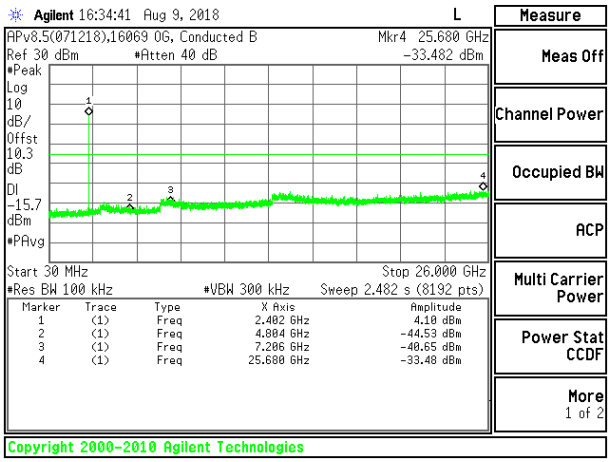
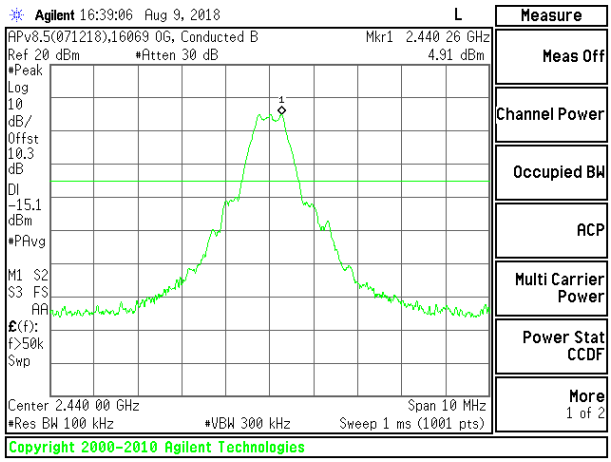


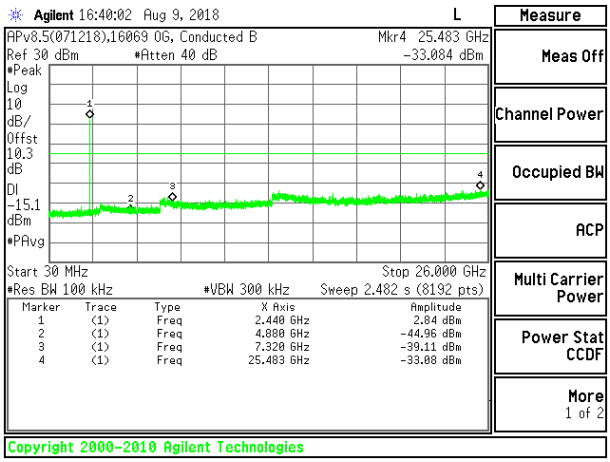
LOW CHANNEL BANDEDGE



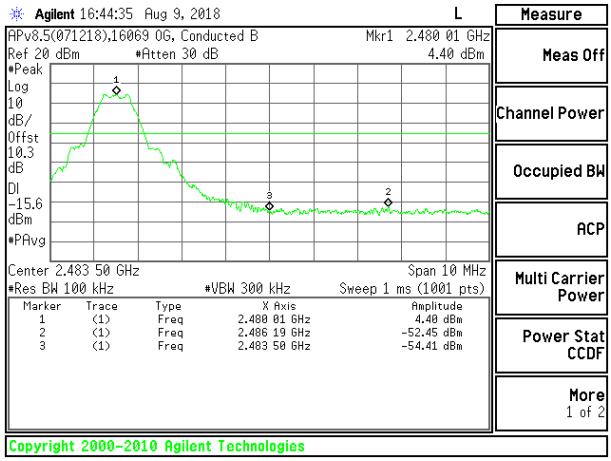
OUT-OF-BAND LOW CHANNEL



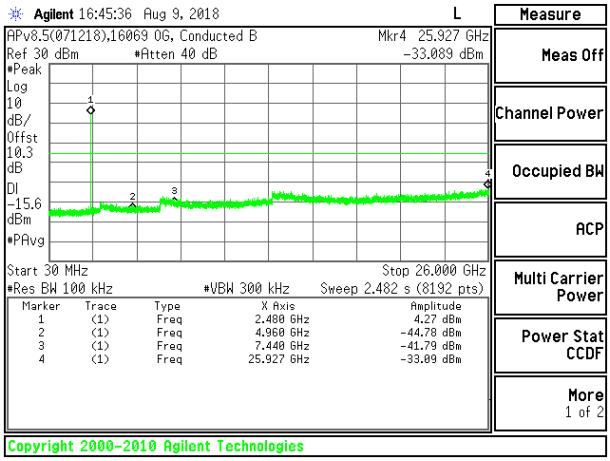
IN-BAND REFERENCE LEVEL



OUT-OF-BAND MID CHANNEL



HIGH CHANNEL BANDEDGE



OUT-OF-BAND HIGH CHANNEL

9. RADIATED TEST RESULTS

9.1. 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. Peak detection is used unless otherwise noted as quasi-peak.

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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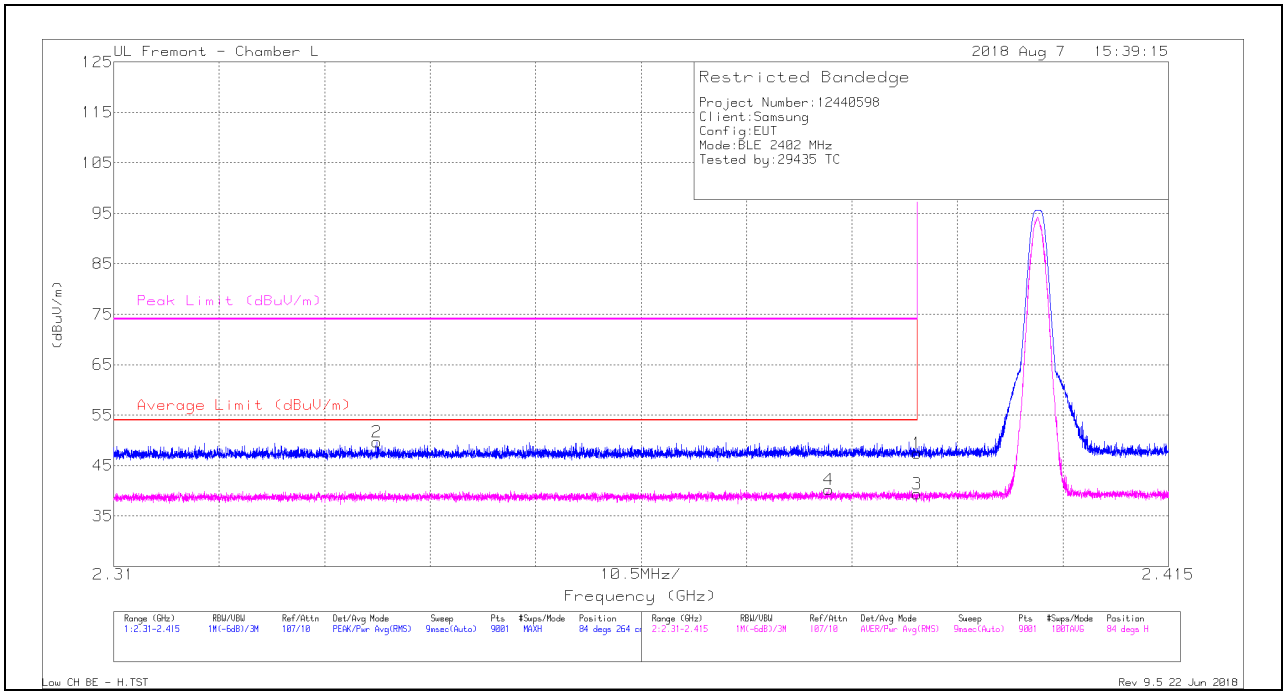
9.2. TRANSMITTER ABOVE 1 GHz

BANDEDGE (LOW CHANNEL)

HORIZONTAL RESULT

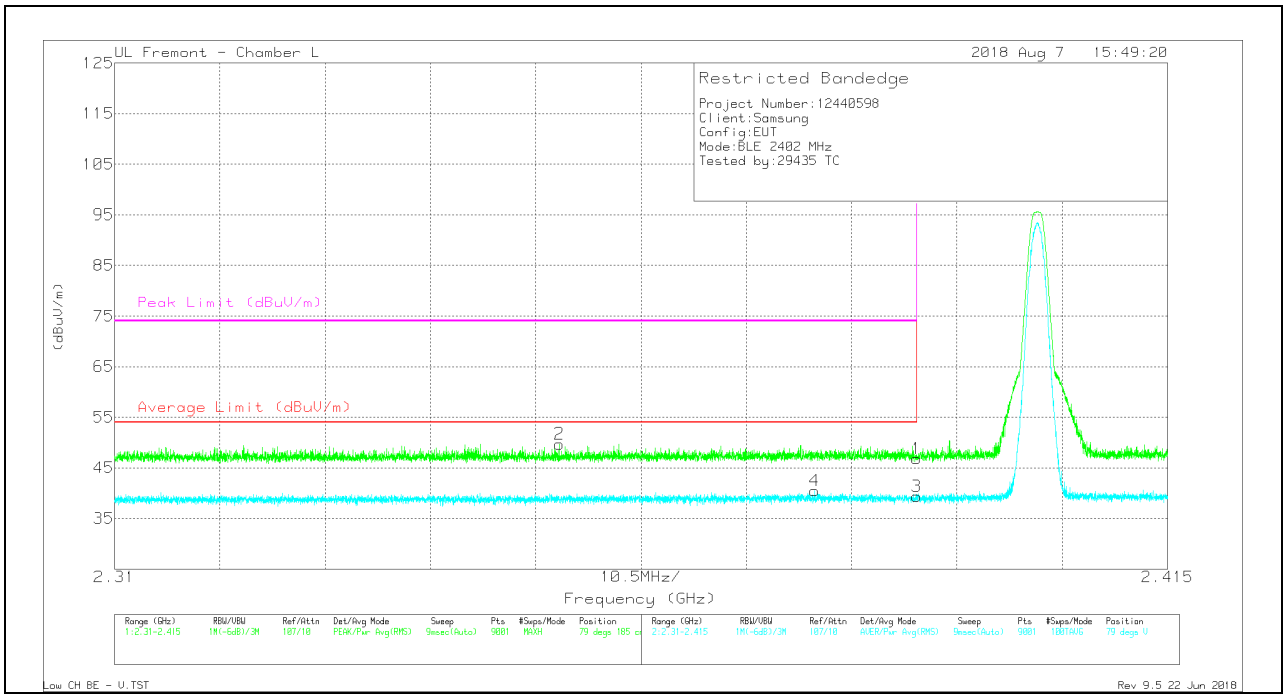


Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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	38.59	Pk	31.8	-22.9	0	47.49	-	-	74	-26.51	84	264	H
2	* 2.336	41.16	Pk	31.5	-23	0	49.66	-	-	74	-24.34	84	264	H
3	* 2.39	28.29	RMS	31.8	-22.9	2.14	39.33	54	-14.67	-	-	84	264	H
4	* 2.381	29.35	RMS	31.7	-22.9	2.14	40.29	54	-13.71	-	-	84	264	H

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

VERTICAL RESULT



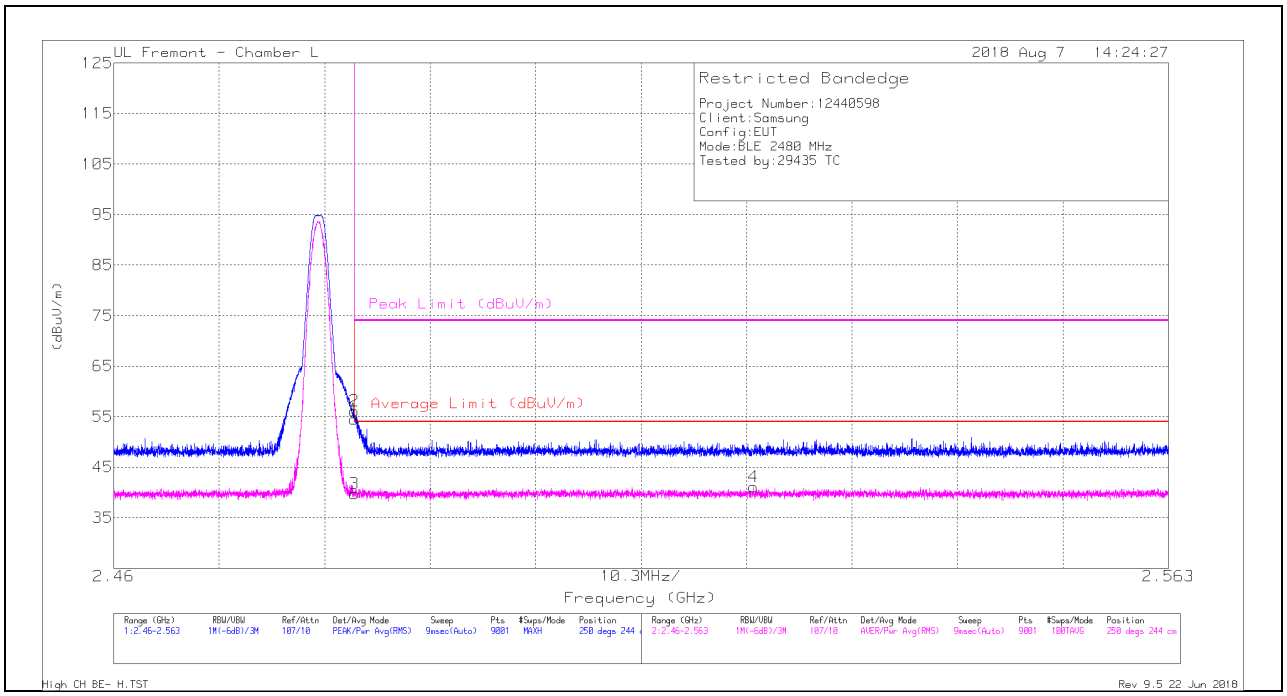
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (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	37.91	Pk	31.8	-22.9	0	46.81	-	-	74	-27.19	79	185	V
2	* 2.354	41.03	Pk	31.6	-22.9	0	49.73	-	-	74	-24.27	79	185	V
3	* 2.39	28.33	RMS	31.8	-22.9	2.14	39.37	54	-14.63	-	-	79	185	V
4	* 2.38	29.58	RMS	31.7	-22.9	2.14	40.52	54	-13.48	-	-	79	185	V

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

BANDEDGE (HIGH CHANNEL)

HORIZONTAL RESULT



Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	44.92	Pk	32.3	-22.7	0	54.52	-	-	74	-19.48	250	244	H
2	* 2.484	46.49	Pk	32.3	-22.7	0	56.09	-	-	74	-17.91	250	244	H
3	* 2.484	28.03	RMS	32.3	-22.7	2.14	39.77	54	-14.23	-	-	250	244	H
4	2.522	29.34	RMS	32.3	-22.7	2.14	41.08	54	-12.92	-	-	250	244	H

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

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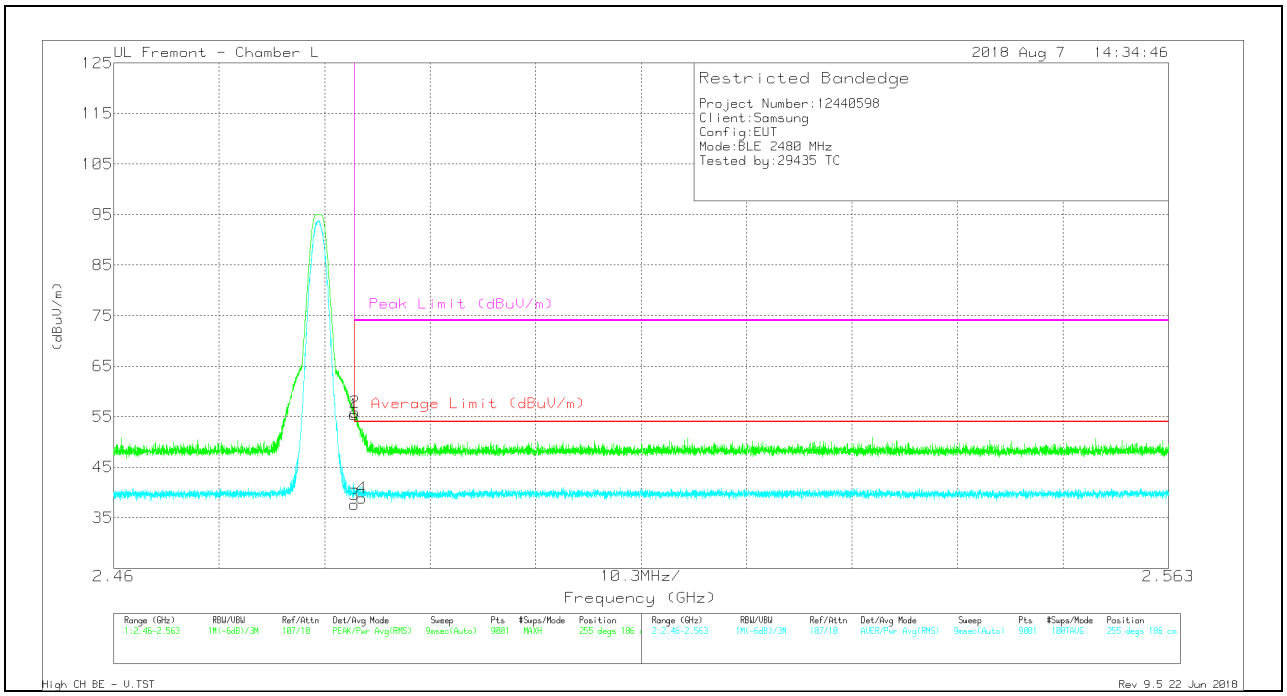
VERTICAL RESULT



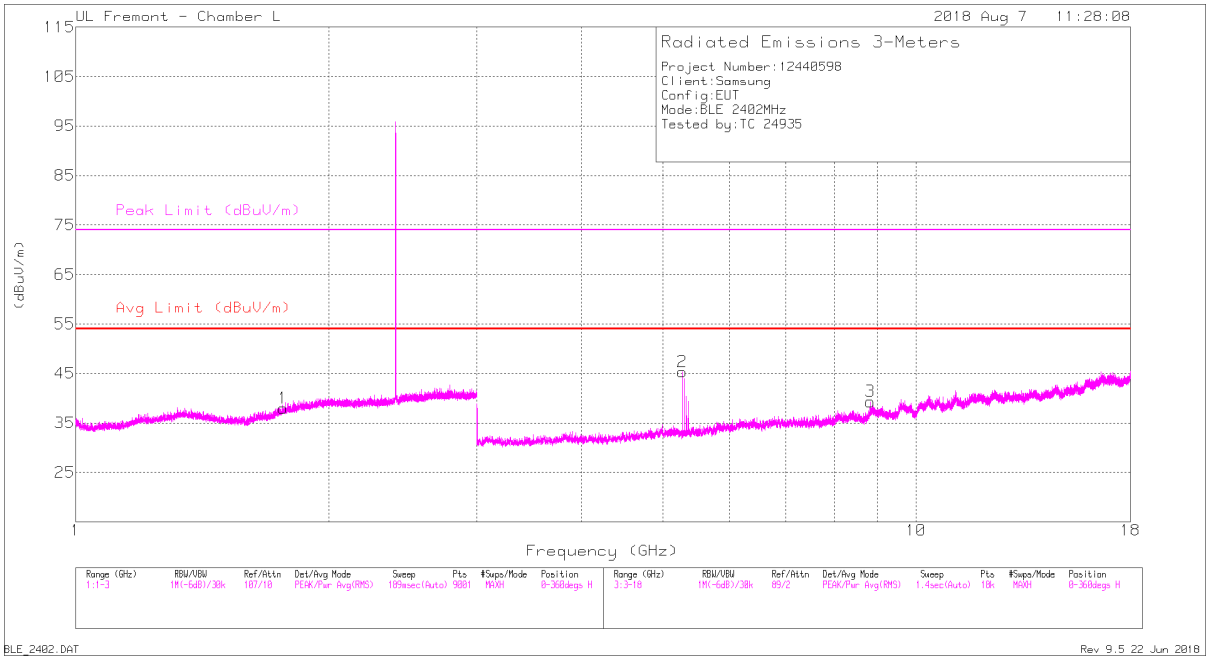
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Average Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 2.484	45.78	Pk	32.3	-22.7	0	55.38	-	-	74	-18.62	255	186	V
2	* 2.484	46.28	Pk	32.3	-22.7	0	55.88	-	-	74	-18.12	255	186	V
3	* 2.484	28	RMS	32.3	-22.7	2.14	39.74	54	-14.26	-	-	255	186	V
4	* 2.484	29.31	RMS	32.3	-22.7	2.14	41.05	54	-12.95	-	-	255	186	V

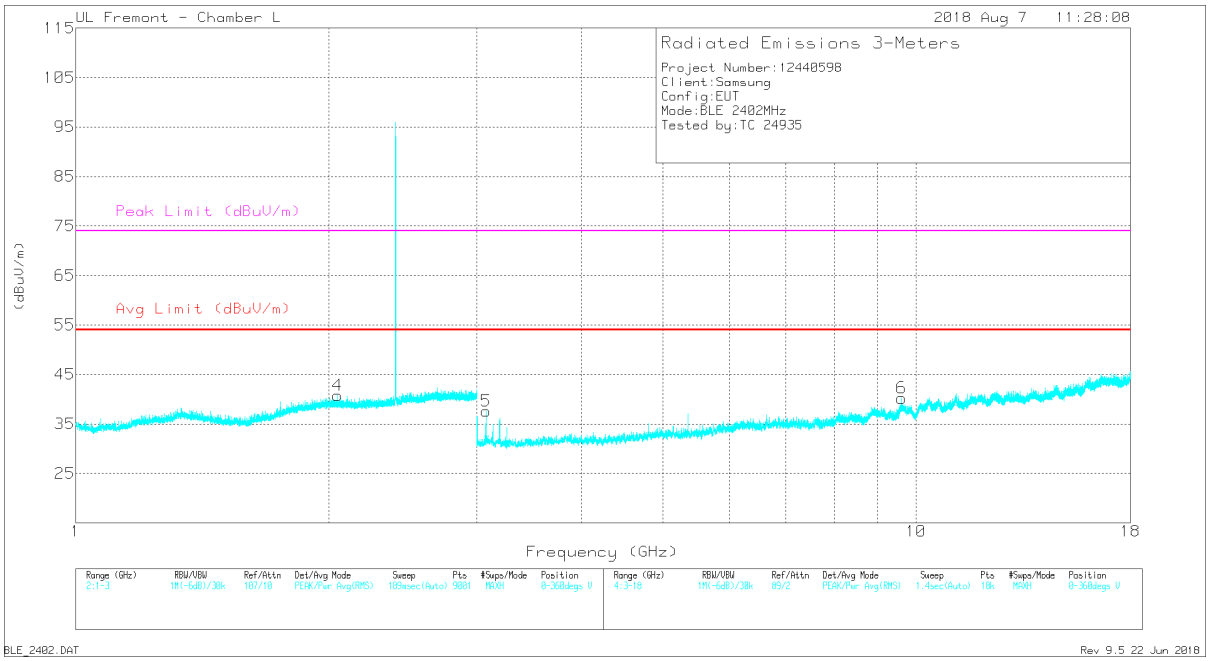
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector
RMS - RMS detection

HARMONICS AND SPURIOUS EMISSIONS

LOW CHANNEL RESULTS



HORIZONTAL



VERTICAL

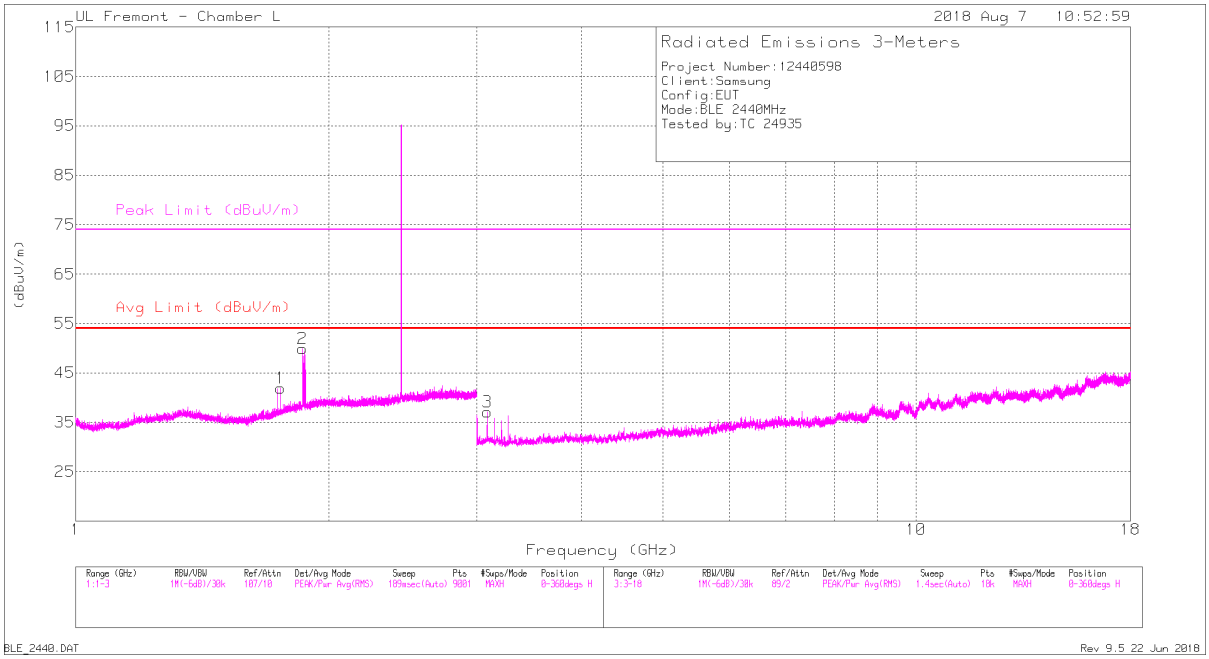
RADIATED EMISSIONS

Radiated Emissions

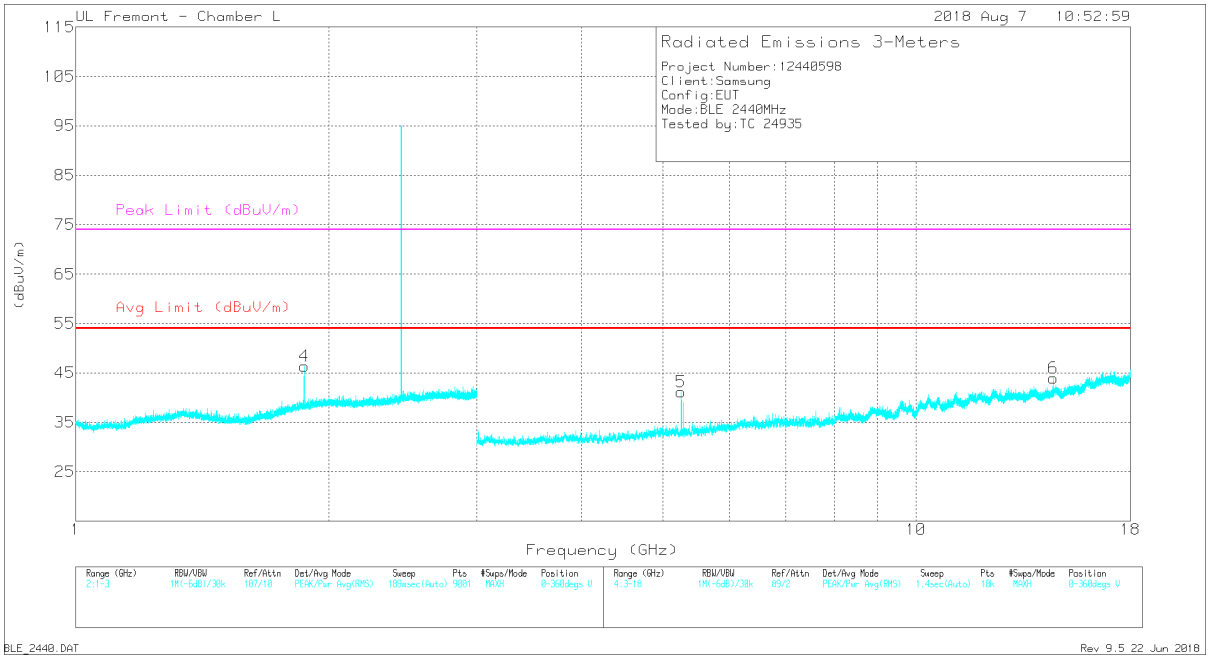
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.767	38.33	PK2	29.9	-23.9	0	44.33	-	-	74	-29.67	261	128	H
4	2.051	37.28	PK2	31.5	-23.4	0	45.38	-	-	74	-28.62	314	171	V
2	5.269	33.19	PK2	34.4	-28.4	0	39.19	-	-	74	-34.81	138	157	H
3	8.822	29.7	PK2	36.1	-22.5	0	43.3	-	-	74	-30.7	50	209	H
5	3.079	36.49	PK2	33.2	-31.2	0	38.49	-	-	74	-35.51	13	126	V
6	9.612	27.73	PK2	37	-20.9	0	43.83	-	-	74	-30.17	113	275	V

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

MID CHANNEL RESULTS



HORIZONTAL



VERTICAL

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RADIATED EMISSIONS

Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	1.754	39.66	PK2	29.8	-24	0	45.46	-	-	74	-28.54	31	161	H
2	1.861	38.41	PK2	30.9	-23.7	0	45.61	-	-	74	-28.39	99	141	H
4	1.869	37.88	PK2	30.9	-23.7	0	45.08	-	-	74	-28.92	274	207	V
3	3.089	35.35	PK2	33.4	-31.1	0	37.65	-	-	74	-36.35	90	133	H
5	5.257	33.61	PK2	34.4	-28.4	0	39.61	-	-	74	-34.39	165	240	V
6	14.581	29.24	PK2	39.5	-20.8	0	47.94	-	-	74	-26.06	246	236	V

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

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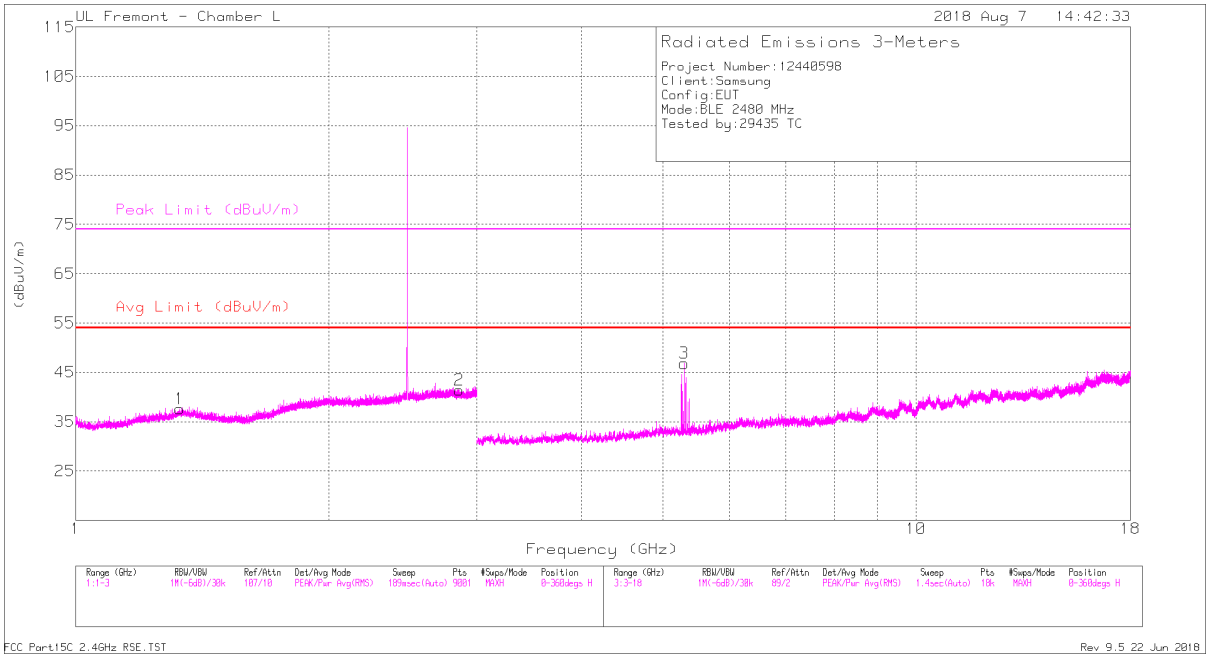
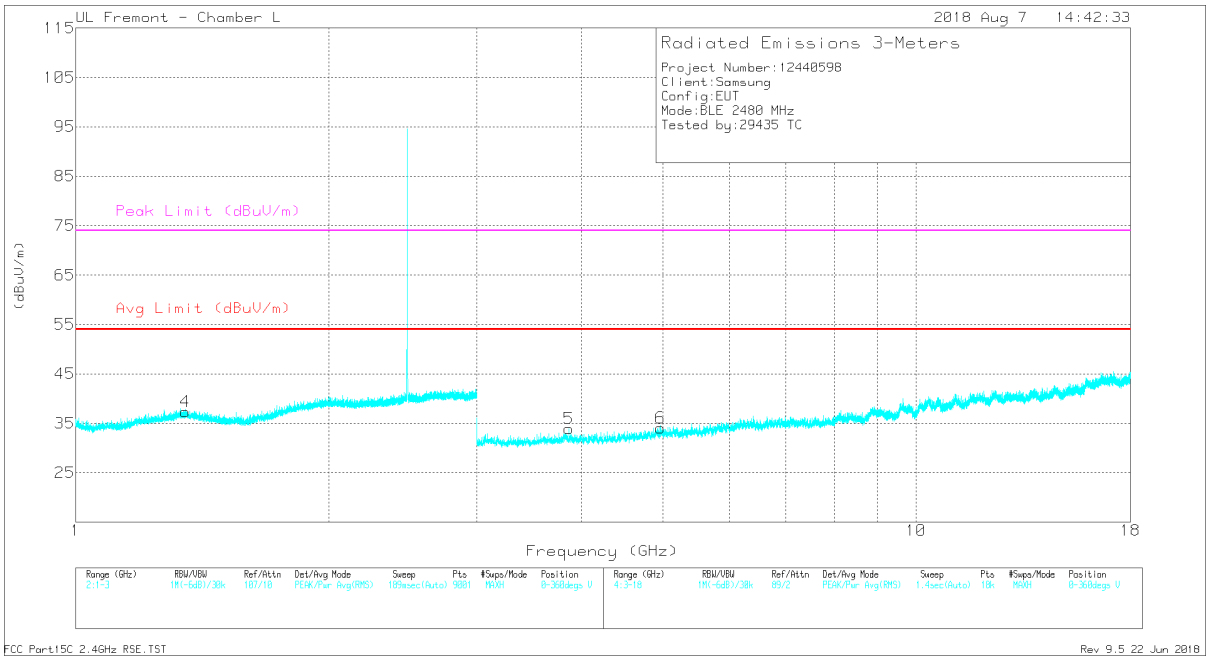
HIGH CHANNEL RESULTS



HORIZONTAL



VERTICAL

RADIATED EMISSIONS

Radiated Emissions

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF EMC4294 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.328	40.42	PK2	29.3	-24.8	0	44.92	-	-	74	-29.08	109	338	H
	* 1.331	30.37	MAv1	29.4	-24.8	2.14	37.11	54	-16.89	-	-	109	338	H
2	* 2.863	36.83	PK2	32.4	-22.2	0	47.03	-	-	74	-26.97	122	312	H
	* 2.859	28.59	MAv1	32.4	-22.2	2.14	40.93	54	-13.07	-	-	122	312	H
4	* 1.349	39.65	PK2	29.6	-24.8	0	44.45	-	-	74	-29.55	39	148	V
	* 1.352	30.25	MAv1	29.5	-24.8	2.14	37.09	54	-16.91	-	-	39	148	V
3	5.298	35.09	PK2	34.5	-28.7	0	40.89	-	-	-	-	258	123	H
5	* 3.864	35.56	PK2	33.7	-29.9	0	39.36	-	-	74	-34.64	70	377	V
	* 3.866	26.29	MAv1	33.7	-29.9	2.14	32.23	54	-21.77	-	-	70	377	V
6	* 4.966	34.3	PK2	34.3	-27.8	0	40.8	-	-	74	-33.2	283	177	V
	* 4.969	24.92	MAv1	34.3	-27.7	2.14	33.66	54	-20.34	-	-	283	177	V

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

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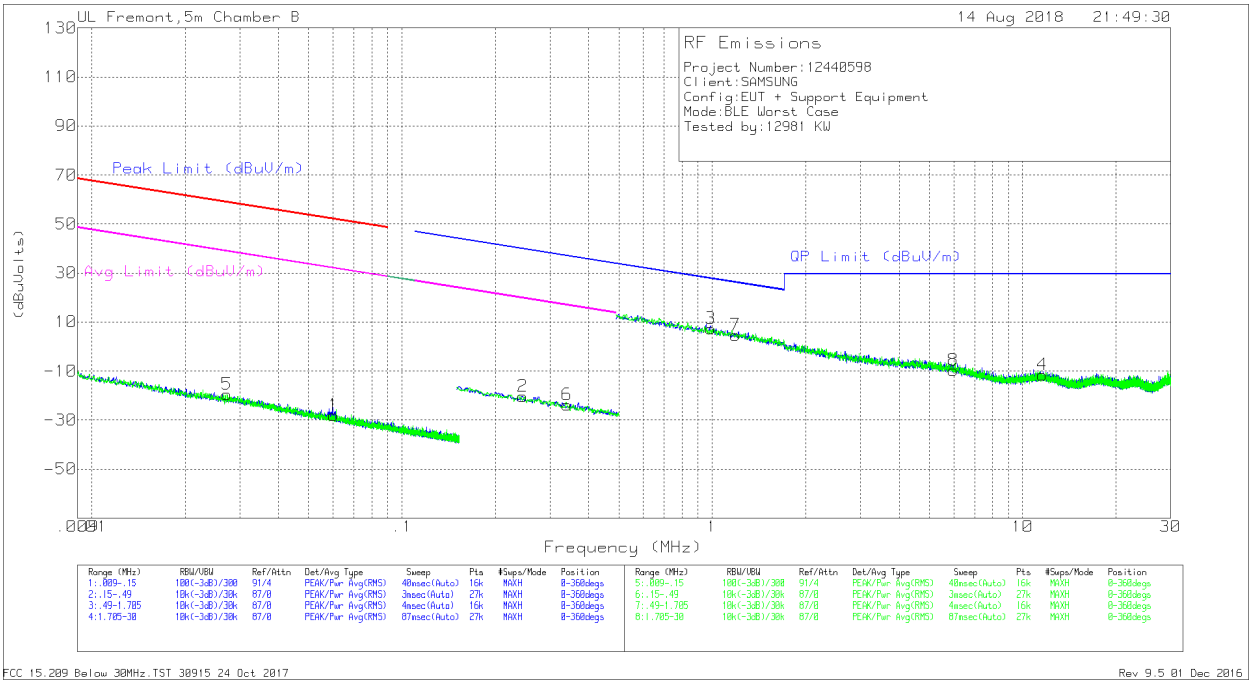
9.3. Worst Case Below 30 MHz

SPURIOUS EMISSIONS 9 kHz TO 30 MHz (WORST-CASE CONFIGURATION)

HORIZONTAL AND VERTICAL PLOT



NOTE: KDB 414788 OATS and Chamber Correlation Justification

- Based 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.
- OATs and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

Below 30 MHz Data

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
5	.02734	43.73	Pk	15.3	1.4	-80	-19.57	58.85	-78.42	38.85	-58.42	0-360
1	.06022	36.02	Pk	14.5	1.4	-80	-28.08	51.99	-80.07	31.99	-60.07	0-360
2	.24517	44.25	Pk	13.9	1.5	-80	-20.35	39.83	-60.18	19.83	-40.18	0-360
6	.3404	40.93	Pk	13.8	1.5	-80	-23.77	36.97	-60.74	16.97	-40.74	0-360

Pk - Peak detector

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dB/m)	Cbl (dB)	Dist Corr (dB) 40Log	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
3	.98864	31.56	Pk	14.3	1.5	-40	7.36	27.72	-20.36	0-360
7	1.18844	28.73	Pk	14.3	1.5	-40	4.53	26.13	-21.6	0-360
8	5.98713	14.29	Pk	14.4	1.5	-40	-9.81	29.5	-39.31	0-360
4	11.58554	12.11	Pk	14.7	1.6	-40	-11.59	29.5	-41.09	0-360

Pk - Peak detector

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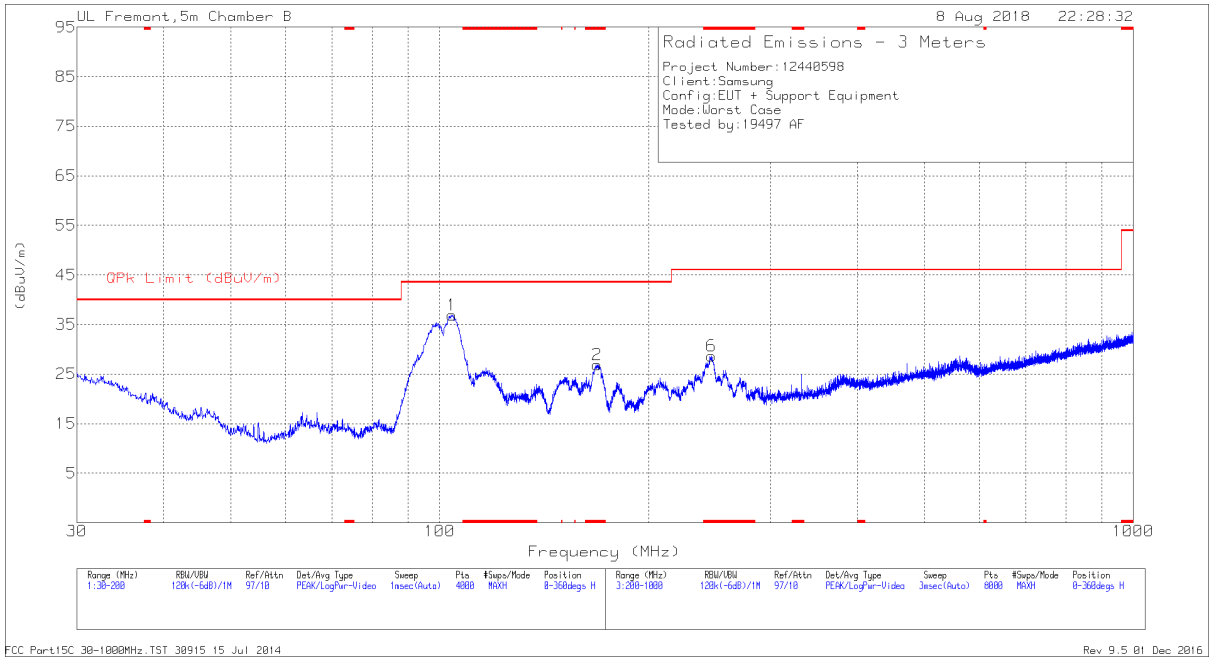
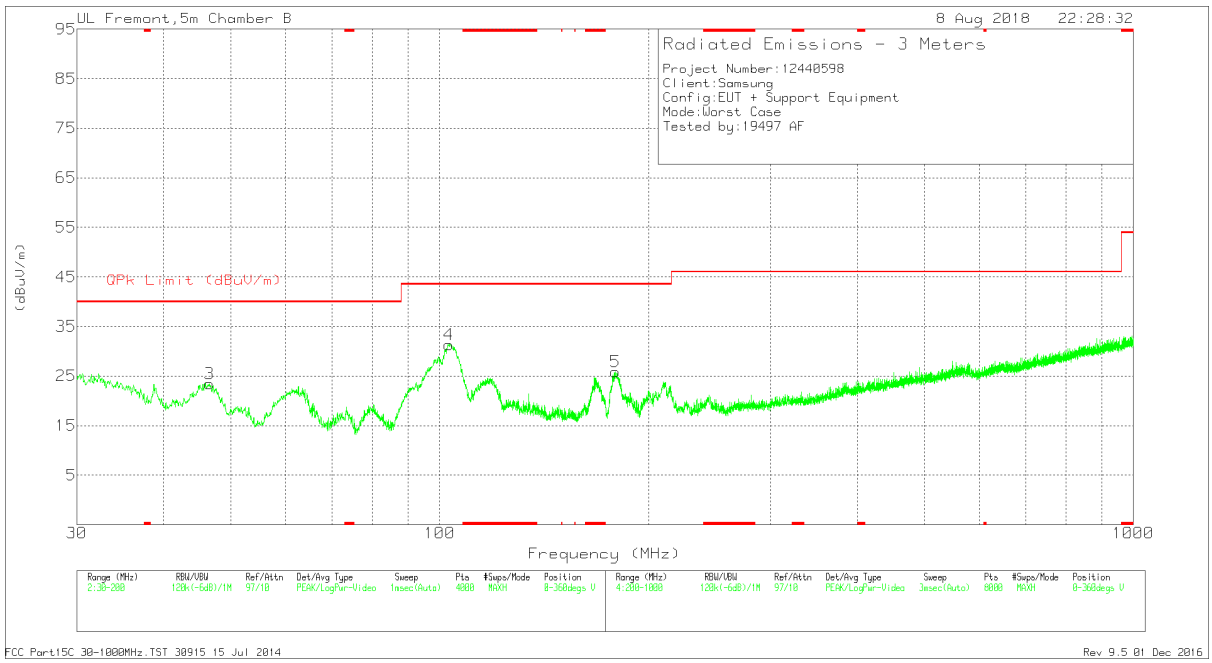
9.4. Worst Case Below 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION)



HORIZONTAL



VERTICAL

Below 1GHz Data

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T407 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
2	* 168.7559	38.27	Pk	15.8	-27.2	26.87	43.52	-16.65	0-360	200	H
6	* 246.406	39.47	Pk	15.6	-26.4	28.67	46.02	-17.35	0-360	100	H
3	46.5793	38.49	Pk	13.5	-28.6	23.39	40	-16.61	0-360	100	V
4	103.0339	44.02	Pk	15.2	-27.9	31.32	43.52	-12.2	0-360	100	V
1	104.2455	49.28	Pk	15.5	-27.9	36.88	43.52	-6.64	0-360	300	H
5	179.1711	37.64	Pk	15.3	-27.1	25.84	43.52	-17.68	0-360	100	V

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

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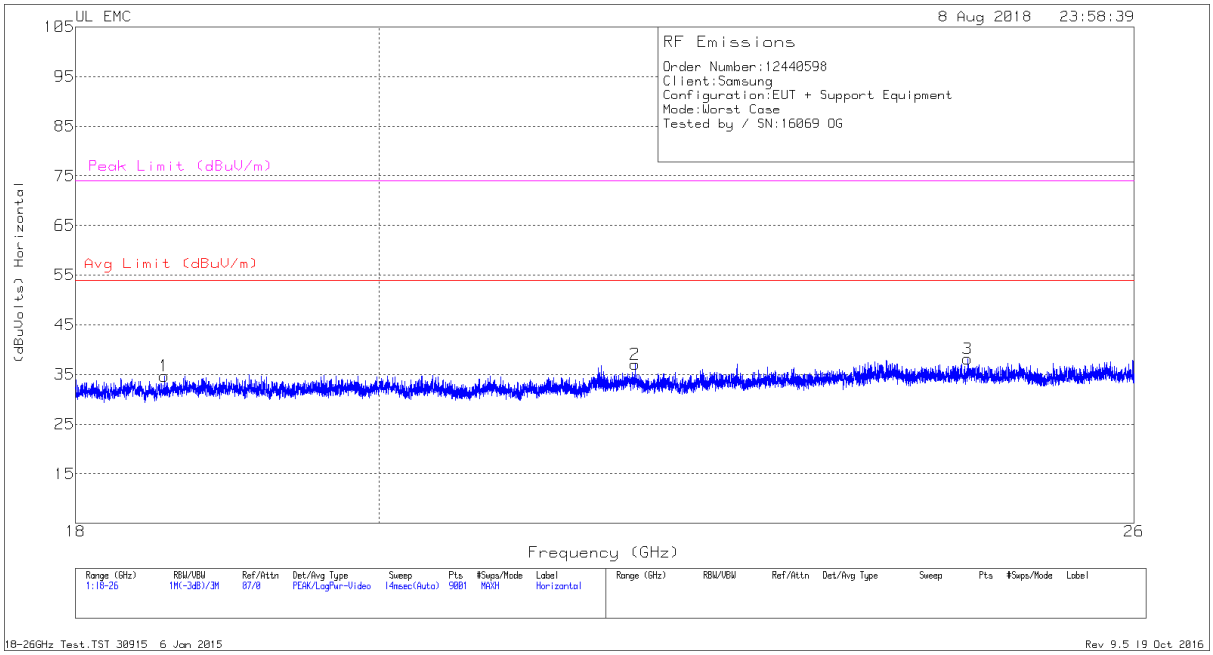
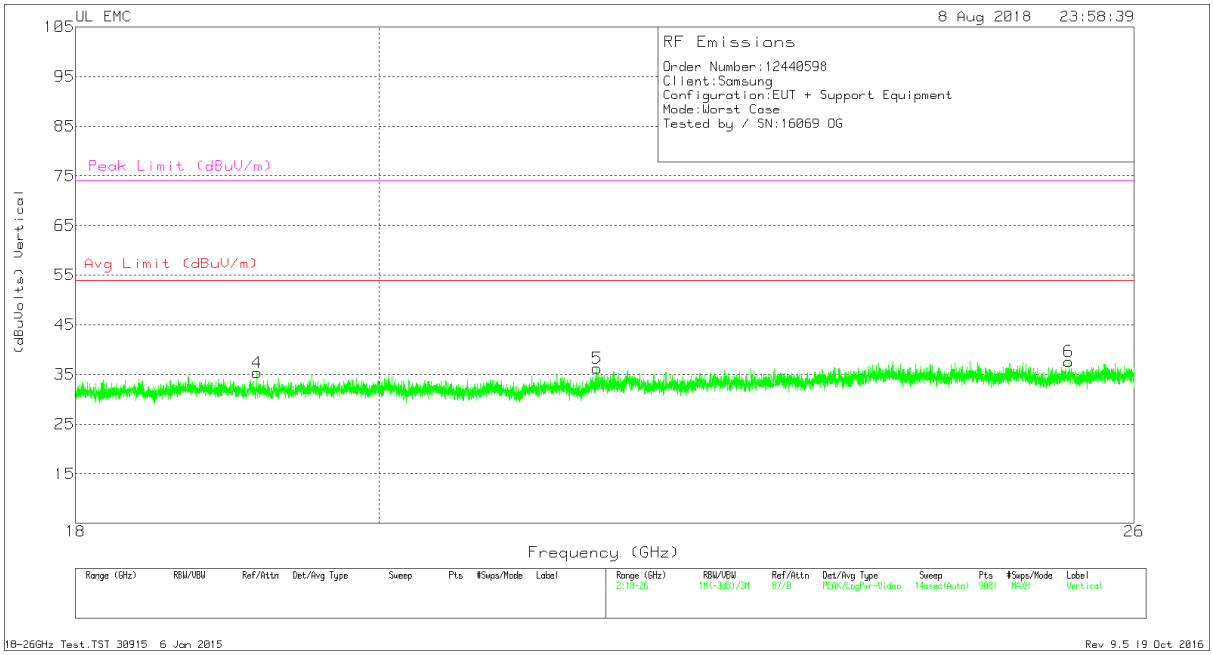
9.5. Worst Case 18-26 GHz

SPURIOUS EMISSIONS 18-26 GHz (WORST-CASE CONFIGURATION)



HORIZONTAL



VERTICAL

18 – 26GHz DATA

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	T89 AF (dB/m)	Amp/Cbl (dB)	Dist Corr (dB)	Corrected Reading (dBuVolts)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)
1	18.564	37.06	Pk	32.5	-25.4	-9.5	34.66	54	-19.34	74	-39.34
2	21.861	37.84	Pk	33.3	-24.6	-9.5	37.04	54	-16.96	74	-36.96
3	24.537	38.04	Pk	34	-24.4	-9.5	38.14	54	-15.86	74	-35.86
4	19.17	37.28	Pk	32.3	-24.7	-9.5	35.38	54	-18.62	74	-38.62
5	21.573	37.82	Pk	33.1	-25.2	-9.5	36.22	54	-17.78	74	-37.78
6	25.415	37.6	Pk	33.8	-24.3	-9.5	37.6	54	-16.4	74	-36.4

Pk - Peak detector

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10. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

RESULTS

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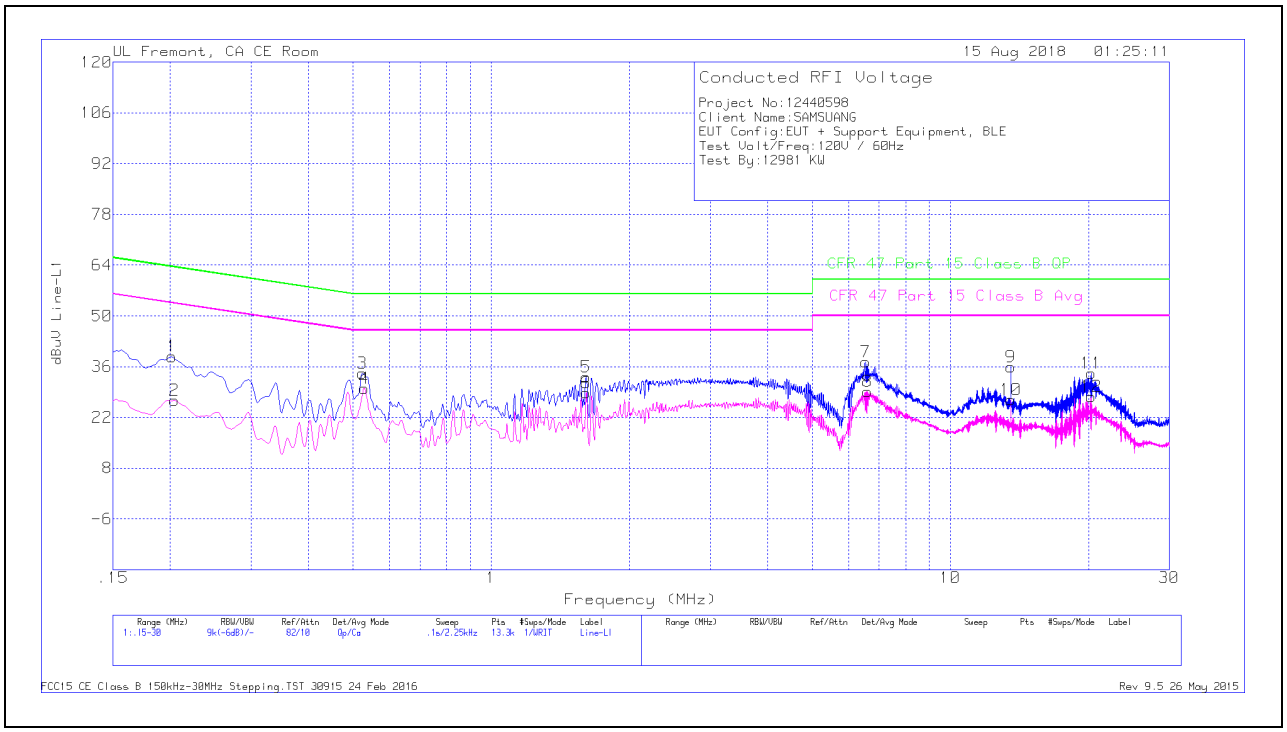
10.1.1. AC Power Line Norm

LINE 1 RESULTS

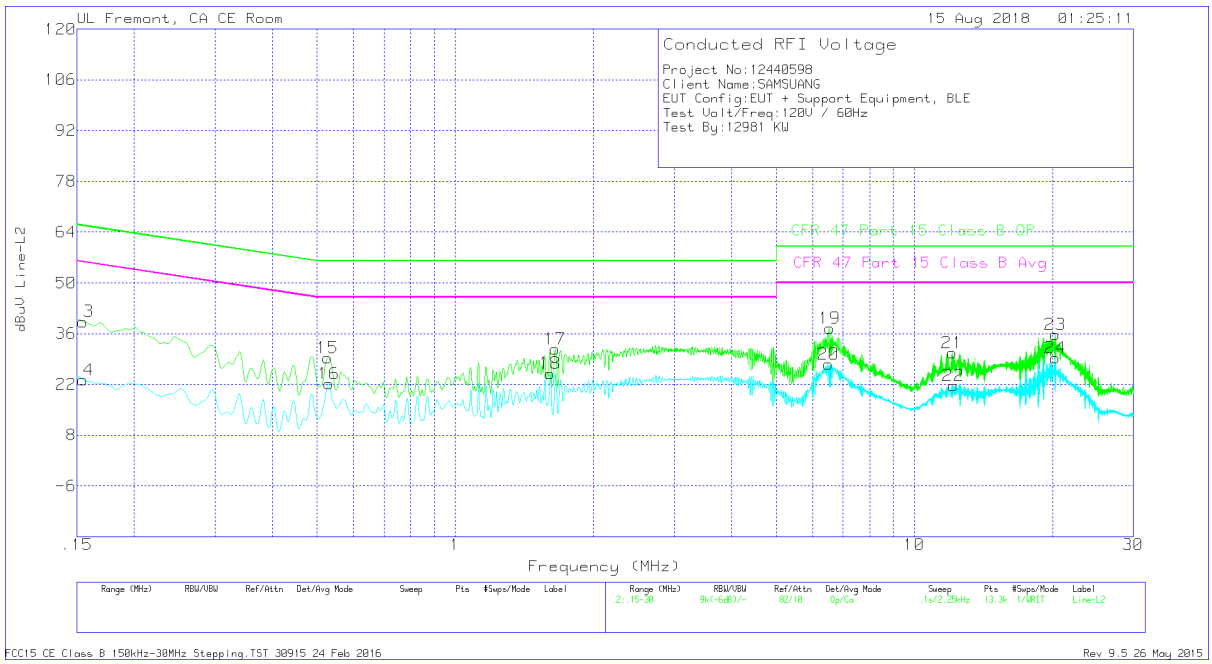


Trace Markers

Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables C1&C3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
1	.20175	28.69	Qp	0	0	10.1	38.79	63.54	-24.75	-	-
2	.204	16.63	Ca	0	0	10.1	26.73	-	-	53.45	-26.72
3	.5235	24.14	Qp	0	0	10.1	34.24	56	-21.76	-	-
4	.52912	19.92	Ca	0	0	10.1	30.02	-	-	46	-15.98
5	1.60913	22.9	Qp	0	.1	10.1	33.1	56	-22.9	-	-
6	1.61025	18.59	Ca	0	.1	10.1	28.79	-	-	46	-17.21
7	6.54	26.95	Qp	0	.2	10.2	37.35	60	-22.65	-	-
8	6.5985	18.8	Ca	0	.2	10.2	29.2	-	-	50	-20.8
9	13.56	25.37	Qp	.1	.2	10.2	35.87	60	-24.13	-	-
10	13.56	16.33	Ca	.1	.2	10.2	26.83	-	-	50	-23.17
11	20.256	23.41	Qp	.1	.3	10.3	34.11	60	-25.89	-	-
12	20.2605	16.97	Ca	.1	.3	10.3	27.67	-	-	50	-22.33

Qp - Quasi-Peak detector
Ca - CISPR average detection

LINE 2 RESULTS



Trace Markers

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L2	LC Cables C2&C3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
13	.1545	29.11	Qp	.1	0	10.1	39.31	65.75	-26.44	-	-
14	.1545	13.04	Ca	.1	0	10.1	23.24	-	-	55.75	-32.51
15	.528	19.21	Qp	0	0	10.1	29.31	56	-26.69	-	-
16	.53025	12.1	Ca	0	0	10.1	22.2	-	-	46	-23.8
17	1.65075	21.56	Qp	0	.1	10.1	31.76	56	-24.24	-	-
18	1.61025	14.85	Ca	0	.1	10.1	25.05	-	-	46	-20.95
19	6.54225	27.11	Qp	0	.2	10.2	37.51	60	-22.49	-	-
20	6.4995	17.24	Ca	0	.2	10.2	27.64	-	-	50	-22.36
21	12.11325	20.27	Qp	.1	.2	10.2	30.77	60	-29.23	-	-
22	12.156	11.23	Ca	.1	.2	10.2	21.73	-	-	50	-28.27
23	20.265	25.04	Qp	.1	.3	10.3	35.74	60	-24.26	-	-
24	20.26725	18.61	Ca	.1	.3	10.3	29.31	-	-	50	-20.69

Qp - Quasi-Peak detector
Ca - CISPR average detection