



CERTIFICATION TEST REPORT

Report Number. : 12726913-E7V1

Applicant : Samsung Electronics Co., Ltd.
129 Samsung-Ro, Yeongtong-Gu,
Suwon-Si, Gyeonggi-Do, 16677, Korea

Model : SM-A705GM/DS

FCC ID : A3LSMA705GM

EUT Description : GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, ANT+,
NFC and MST

Test Standard(s) : FCC 47 CFR PART 15 SUBPART C

Date Of Issue:

April 05, 2019

Prepared by:

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NVLAP Lab code: 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	4/5/2019	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+,
NFC and MST

MODEL: SM-A705GM/DS

SERIAL NUMBER: Radiated: R38M208LZKY and R38M208M5YB

DATE TESTED: March 13 – April 04, 2019

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	Complies

UL Verification Services Inc. 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 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.

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2. TEST METHODOLOGY

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

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 (ISED:2324B-1)	☐ Chamber D (ISED:22541-1)	☐ Chamber I (ISED:2324A-5)
☐ Chamber B (ISED:2324B-2)	☐ Chamber E (ISED:22541-2)	☐ Chamber J (ISED:2324A-6)
☐ Chamber C (ISED:2324B-3)	☐ Chamber F (ISED:22541-3)	☒ Chamber K (ISED:2324A-1)
	☐ Chamber G (ISED:22541-4)	☐ Chamber L (ISED:2324A-3)
	☐ Chamber H (ISED: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

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

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)
 $36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$

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.
 $36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$

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%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

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

5.2. MAXIMUM FIELD STRENGTH

The testing was performed at 3 meters. The transmitter maximum E-field at 30 meter distance was 13.77 dBuV/m, which was converted from the 3 meter data.

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes the loop antenna.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was A705GM.001.

5.5. WORST-CASE CONFIGURATION AND MODE

The fundamental of the EUT was investigated under three orthogonal orientations X (Flatbed), Y (Landscape), and Z (Portrait). The Z (Portrait) orientation was determined to be the worst-case orientation.

Although these tests were performed other than open filed site, adequate comparison measurements were confirmed against 30 m open filed site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788

NOTE: The EUT pre-scanned in three NFC type A, B & F. The worst type is A, and data rate of 106kbps was recorded to this report.

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 PSA
2	USB	1	USB	Un-shielded	1	EUT to AC Mains

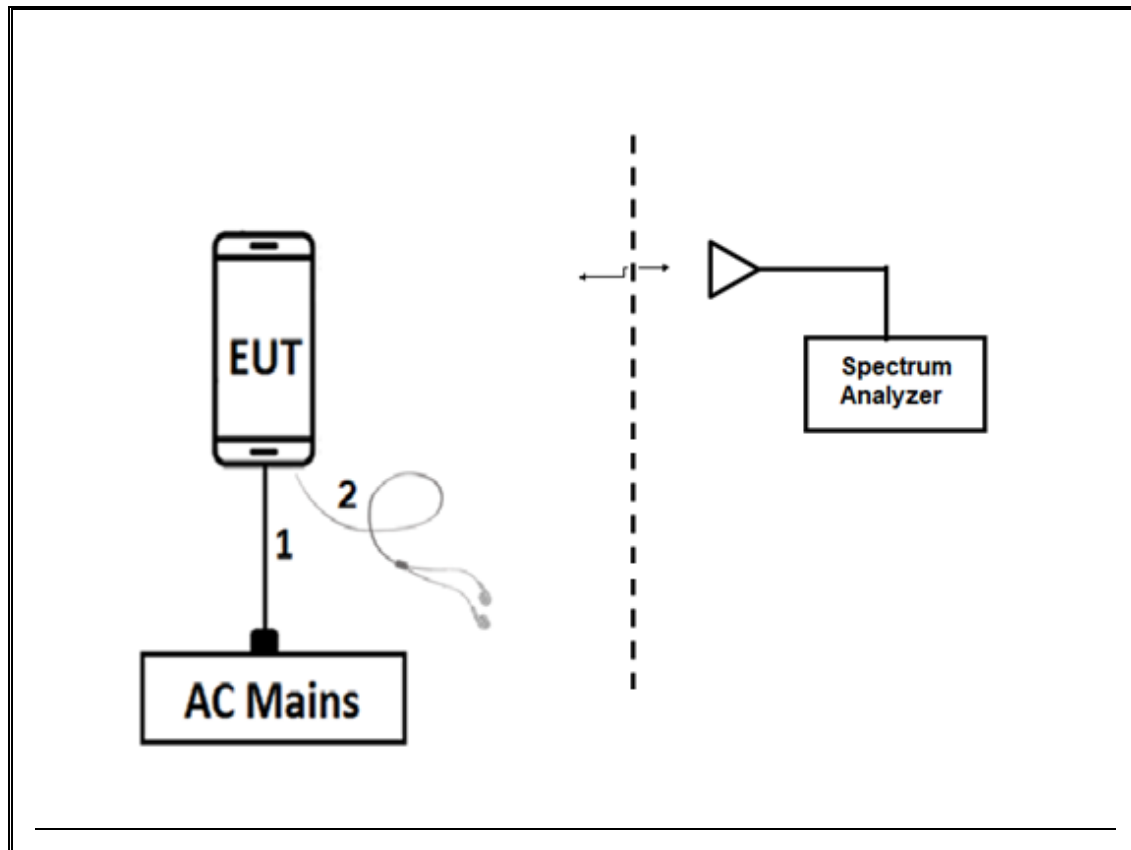
I/O CABLES (RADIATED AND CONDUCTED EMISSIONS)

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.

RADIATED AND AC LINE CONDUCTED EMISSIONS SETUP DIAGRAM



TEST SETUP

For radiated tests: EUT has support equipment. The test software exercises the radio.

6. 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
Antenna, Active Loop 9kHz-30MHz	ETS-Lindgren	6502	T757	09/25/2019	09/25/2018
Antenna, Passive Loop 30Hz – 1MHz	Electro-Metrics	EM-6871	PRE0179465	05/22/2019	05/22/2018
Antenna, Passive Loop 100kHz – 30MHz	Electro_Metrics	EM-6872	PRE0179467	05/23/2019	05/23/2018
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179375	05/08/2019	05/08/2018
Temp Chamber	Thermotron Industries	SE-600-10-10	T80	05/01/2019	11/01/2018
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T908	01/23/2020	01/23/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent (Keysight) Technologies	N9030A	T1450	01/24/2020	01/24/2019
Amplifier, 9kHz to 1GHz, 32 dB	Sonoma Instrument	310	175953	12/13/2019	12/13/2018
Hybrid Antenna, 30MHz to 3GHz	SunAR rf motion	JB3	PRE0184052	10/24/2019	10/24/2018
AC Line Conducted					
EMI Receiver	Rohde & Schwarz	ESR	T1436	02/14/2020	02/14/2019
LISN for Conducted Emissions CISPR-16	FCC INC.	FCC LISN 50/250	T1310	06/15/2019	06/15/2018
Test Software List					
Radiated Software	UL	UL EMC	Ver 9.5, June 22, 2018		
Antenna Port Software	UL	UL RF	Ver 9.3.2, Jan. 07, 2019		
AC Line Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015		

NOTES:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

7. OCCUPIED BANDWIDTH

LIMITS

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 10kHz. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

Note: Because the measured signal is CW or CW-like adjusting the RBW per C63.10 would not be practical since measured bandwidth will always follow the RBW and the result will be approximately twice the RBW

RESULTS

99% and 20dB BW

Type A (CE Mode)

Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
424	13.56	21.738	24.98
212	13.56	22.279	24.85
106	13.56	24.707	25.39

TYPE B

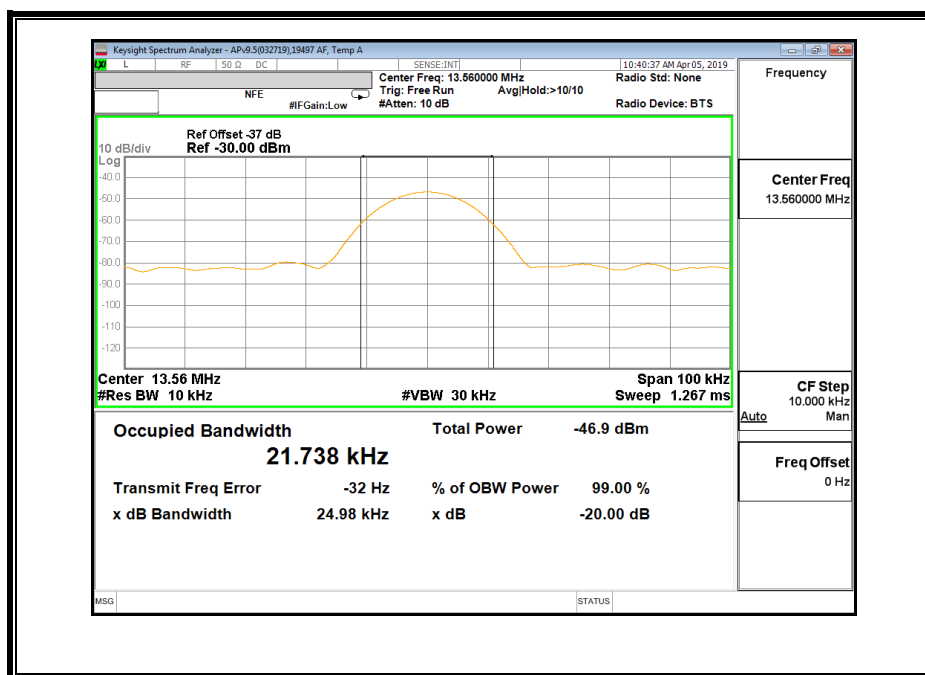
Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
424	13.56	21.712	25.06
212	13.56	22.129	25.03
106	13.56	24.458	24.95

TYPE F

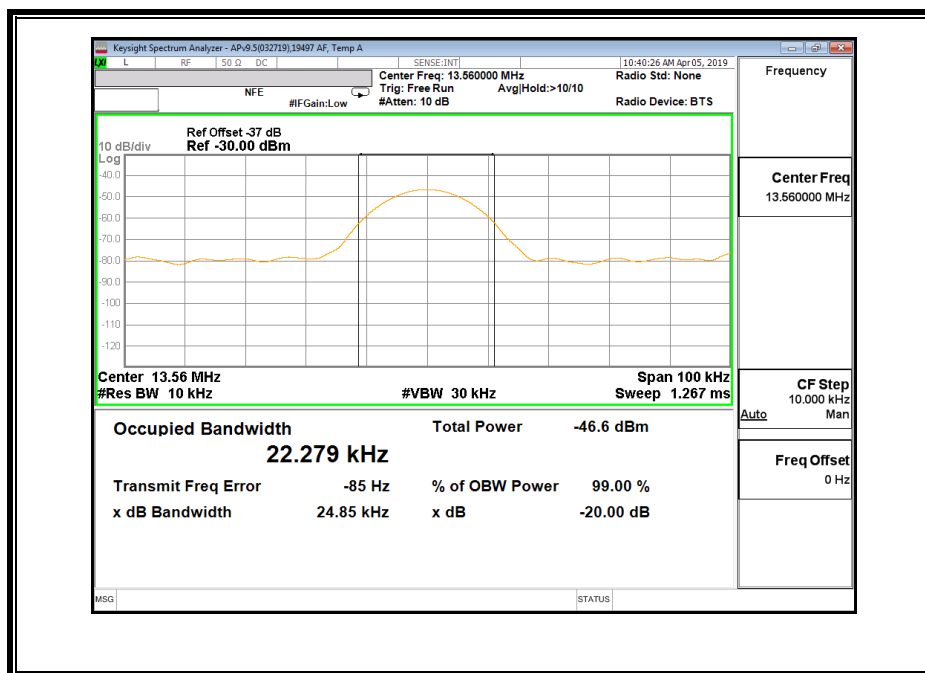
Mode Kbps	Frequency (MHz)	99% Bandwidth (KHz)	20dB Bandwidth (KHz)
424	13.56	21.160	24.95
212	13.56	21.225	24.96

7.1. Type A

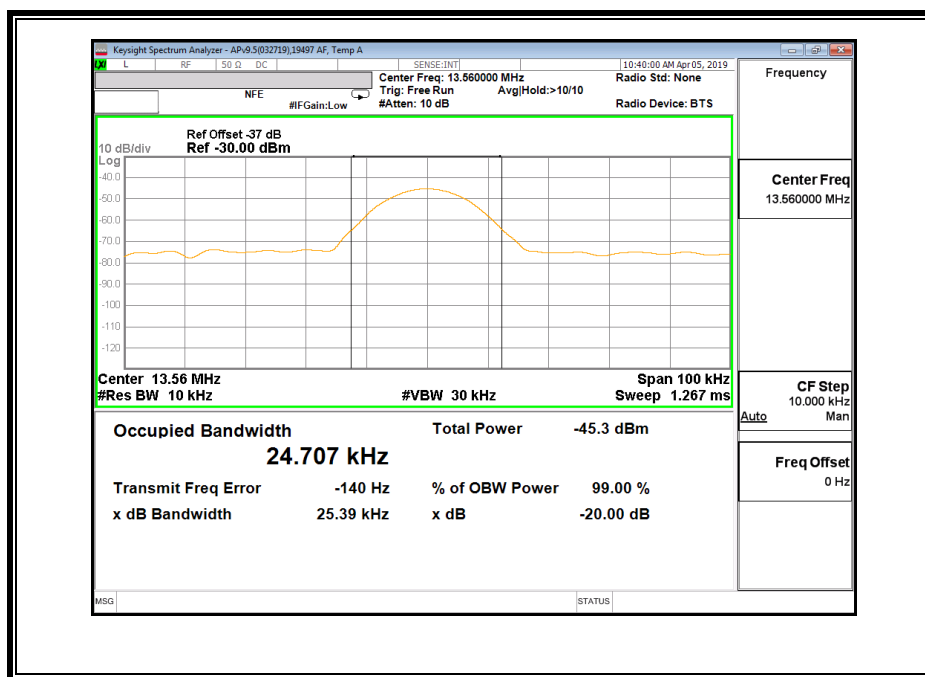
424Kbps



212Kbps

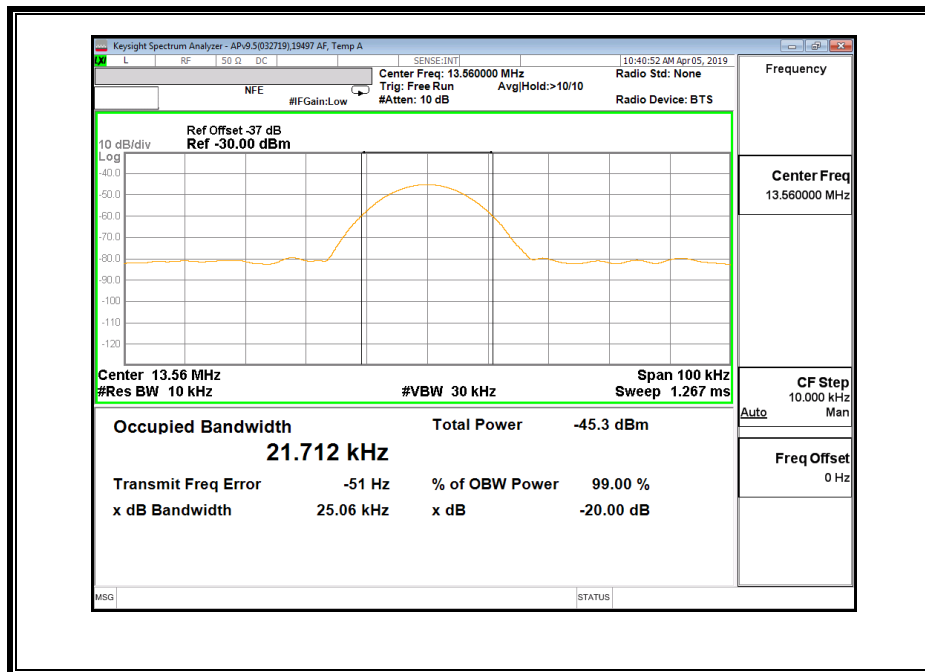


106Kbps

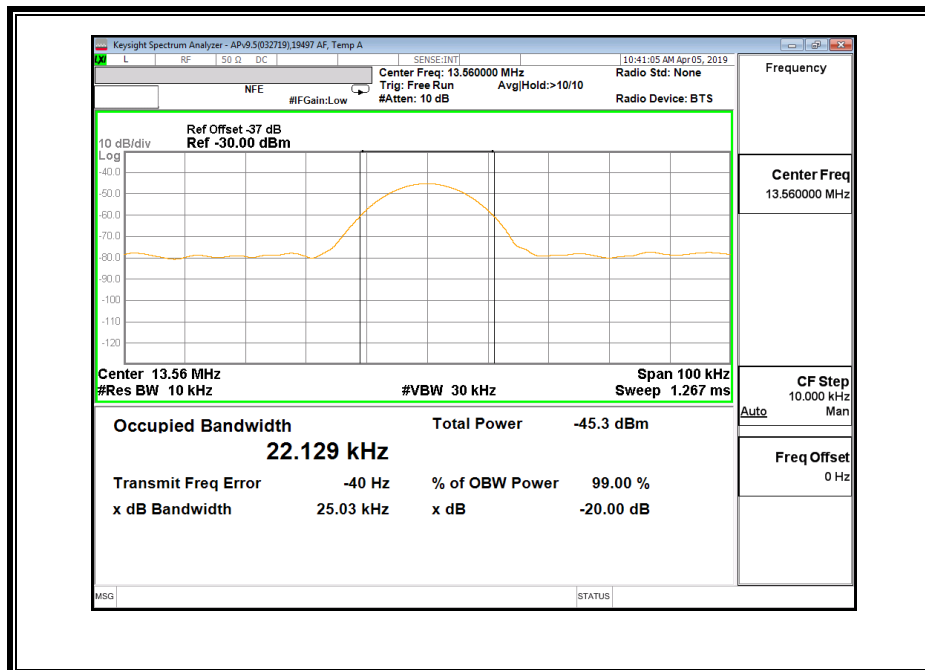


7.2. Type B

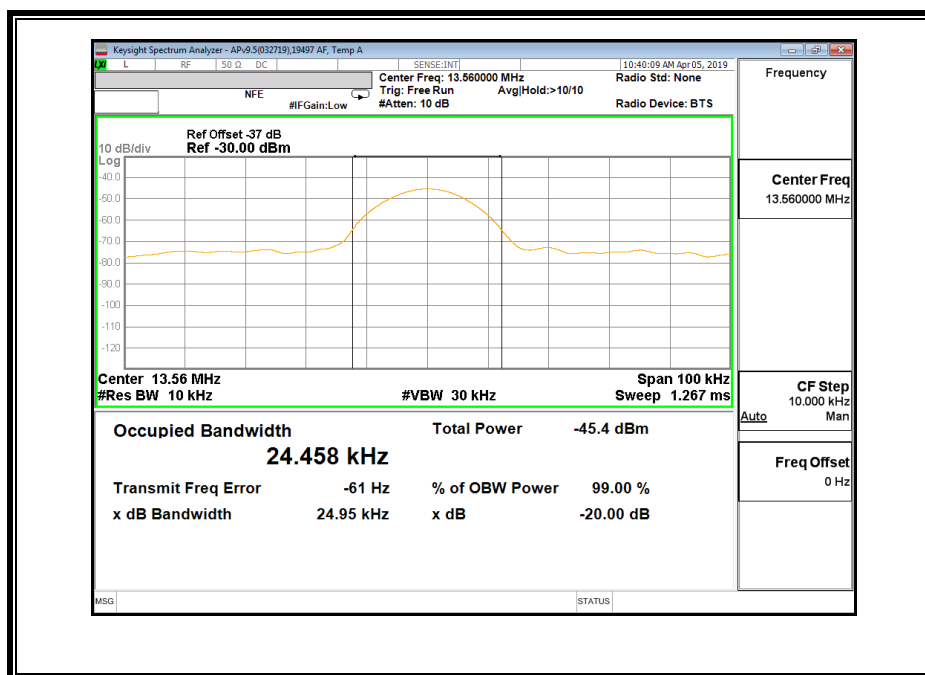
424Kbps



212Kbps

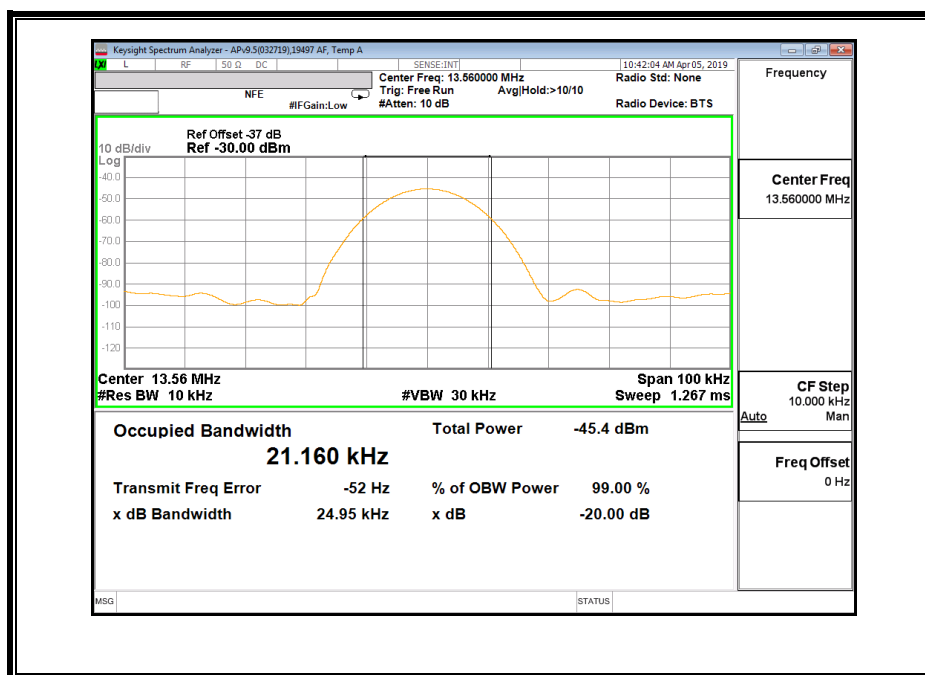


106Kbps

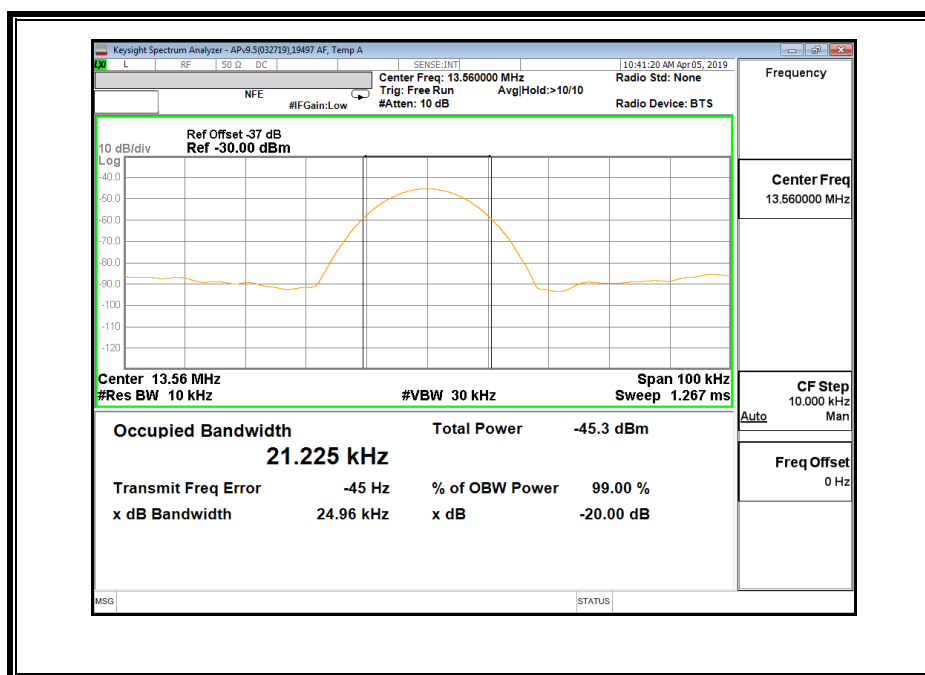


7.3. Type F

424Kbps



212Kbps



8. RADIATED EMISSION TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMIT

§15.225

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/ meter at 30 meters.

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110– 14.010 MHz and shall not exceed the general radiated emission limits in § 15.209 as follows:

§15.209 (a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Limits for radiated disturbance of an intentional radiator		
Frequency range (MHz)	Limits (µV/m)	Measurement Distance (m)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30 – 88	100**	3
88 - 216	150**	3
216 – 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g. §§ 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

Formula for converting the field strength from uV/m to dBuV/m is:

Limit (dBuV/m) = 20 log limit (uV/m)

In addition:

§15.209 (d) The emission limits shown the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emissions limits in these three bands are based on measurements employing an average detector.

§15.209 (d) The provisions in §§ 15.225, measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this part.

TEST PROCEDURE

ANSI C63.10, 2013

The EUT is an intentional radiator that incorporates a digital device, the highest fundamental frequency generated or used in the device is 13.56 MHz; therefore, the frequency range was investigated from 0.15 MHz to the 10th harmonic of the highest fundamental frequency, or 1000 MHz, whichever is greater.

2D antenna use - For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.

KDB 414788 OFS and Chamber Correlation Justification

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

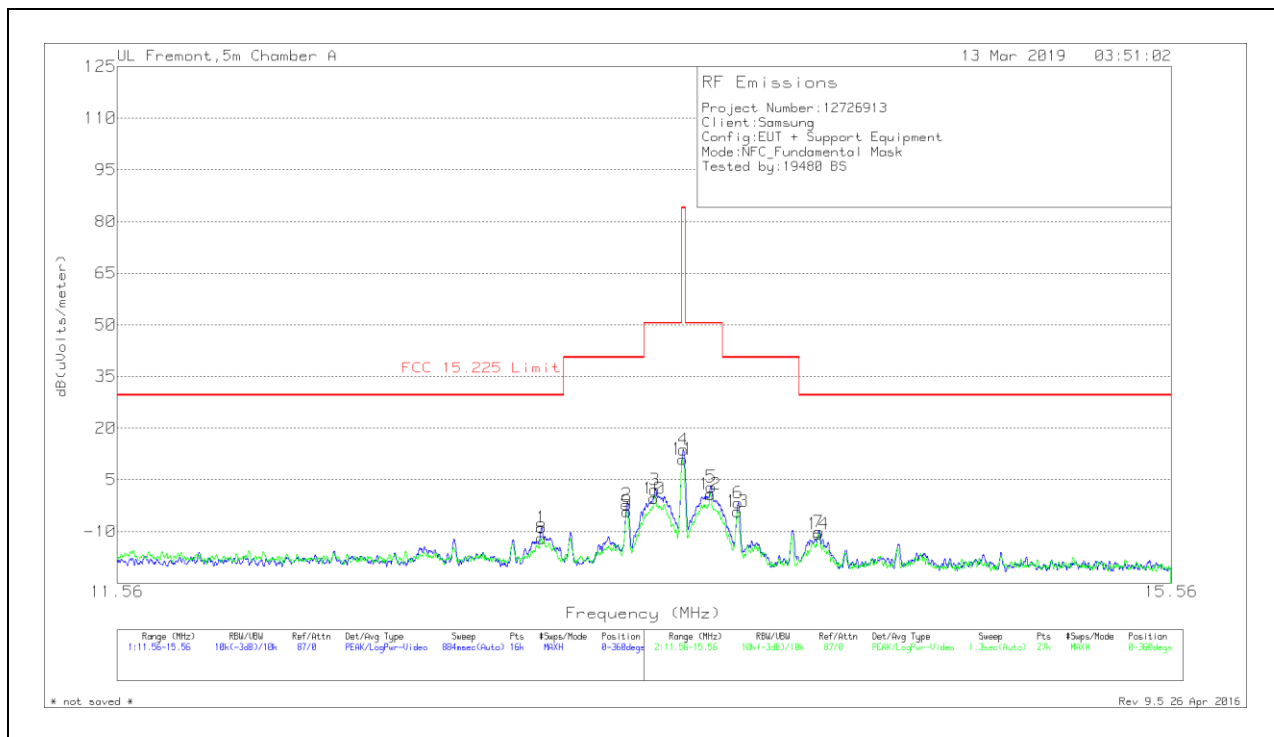
OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

RESULTS

8.2. FUNDAMENTAL AND SPURIOUS EMISSIONS (0.15 - 30 MHz)

TYPE A - 106Kbps (CE Mode)

FUNDAMENTAL EMISSION MASK - (11.56 – 15.56 MHz)



NOTE: All data rate Field Strength was investigated and Type A, 106k found to have the highest Field Strength results and represents as the worst case data rate.

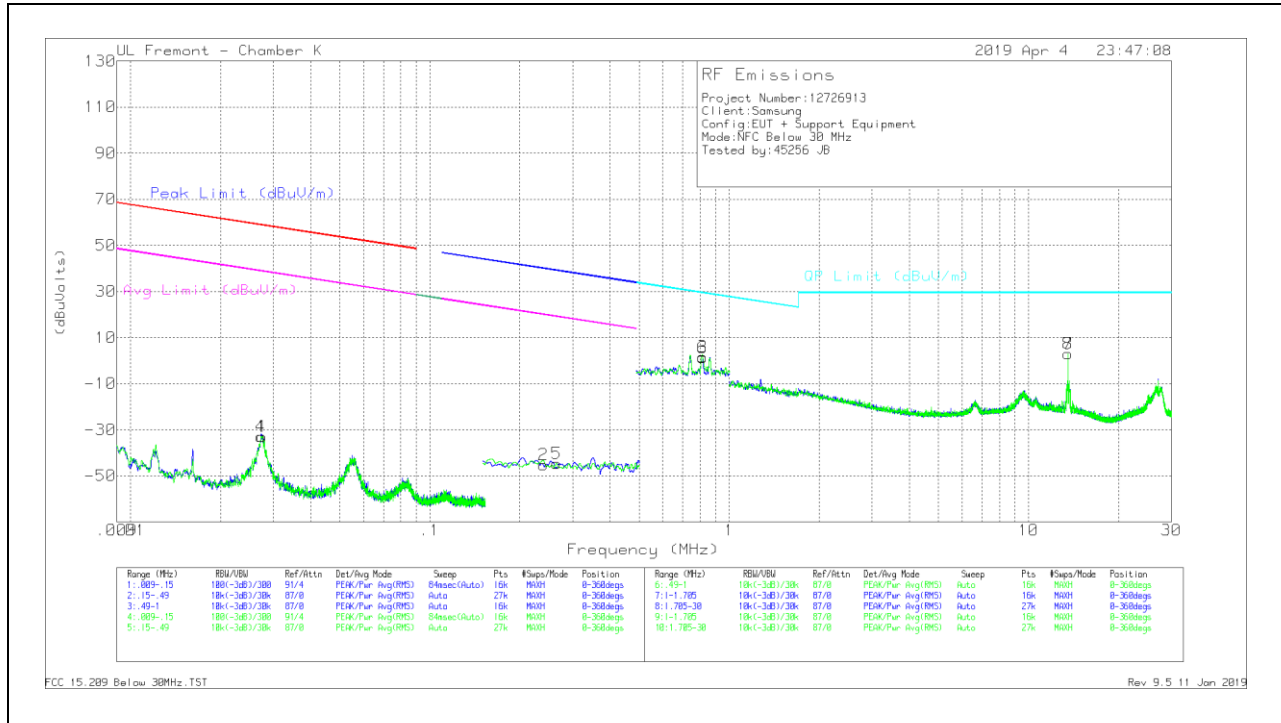
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (dBm)	Cables (dB)	Dist Corr 30m	Corrected Reading dB(μVolts/meter)	FCC 15.225 Limit	PK Margin (dB)	Azimuth (Degs)	Polarity
8	13.02823	16.82	Pk	10.7	.5	-40	-11.98	29.54	-41.52	0-360	Face-Off
1	13.02913	19.95	Pk	10.7	.5	-40	-8.85	29.54	-38.39	0-360	Face-On
2	13.345	26.57	Pk	10.7	.5	-40	-2.23	40.51	-42.74	0-360	Face-On
9	13.34658	24.58	Pk	10.7	.5	-40	-4.22	40.51	-44.73	0-360	Face-Off
10	13.44878	28.36	Pk	10.7	.5	-40	-.44	50.5	-50.94	0-360	Face-Off
3	13.45175	30.87	Pk	10.7	.5	-40	2.07	50.5	-48.43	0-360	Face-On
11	*13.55793	39.84	Pk	10.6	.5	-40	10.94	84	-73.06	0-360	Face-Off
4	*13.55963	42.67	Pk	10.6	.5	-40	13.77	84	-70.23	0-360	Face-On
12	13.6636	29.72	Pk	10.6	.5	-40	.82	50.5	-49.68	0-360	Face-Off
5	13.6675	31.81	Pk	10.6	.5	-40	2.91	50.5	-47.59	0-360	Face-On
13	13.7692	24.71	Pk	10.6	.5	-40	-4.19	40.51	-44.7	0-360	Face-Off
6	13.7715	27.18	Pk	10.6	.5	-40	-1.72	40.51	-42.23	0-360	Face-On
14	14.08643	18.14	Pk	10.6	.5	-40	-10.76	29.54	-40.3	0-360	Face-Off
7	14.0875	18.76	Pk	10.6	.5	-40	-10.14	29.54	-39.68	0-360	Face-On

* - Indicates fundamental frequency

Pk - Peak detector

SPURIOUS EMISSIONS (0.09 – 30MHz)



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (ACF)	Cables w/ PRE0186650	Dist Corr 300m	Corrected Reading (dBuVolts)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
1	.02748	21.14	Pk	56.2	-32.2	-80	-32.96	58.61	-91.67	38.61	-71.67	-	-	-	-	0-360
2	.2396	10.5	Pk	56.3	-32.1	-80	-45.3	-	-	-	-	-	-	-	-	0-360
4	.02729	21.02	Pk	56.2	-32.2	-80	-32.98	58.86	-91.84	38.86	-71.84	-	-	-	-	0-360
5	.26525	11.12	Pk	56.3	-32.1	-80	-44.68	-	-	-	-	39.14	-83.82	19.14	-43.82	0-360

Pk - Peak detector

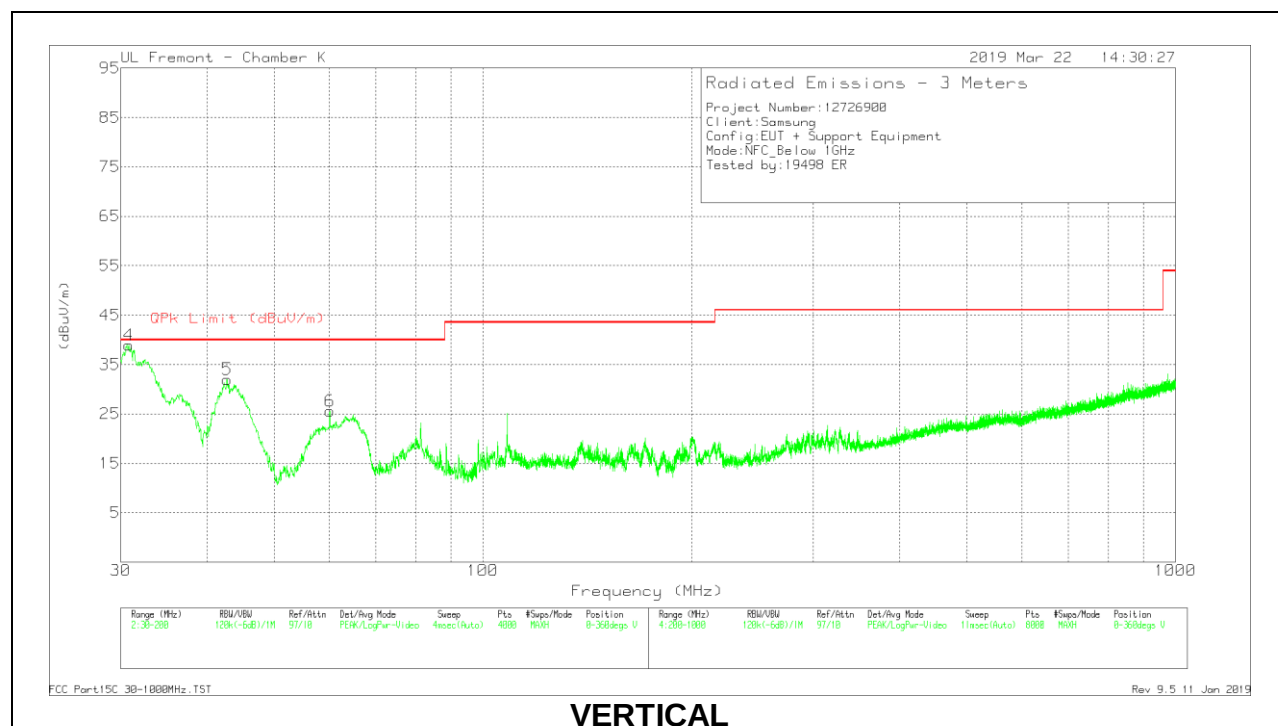
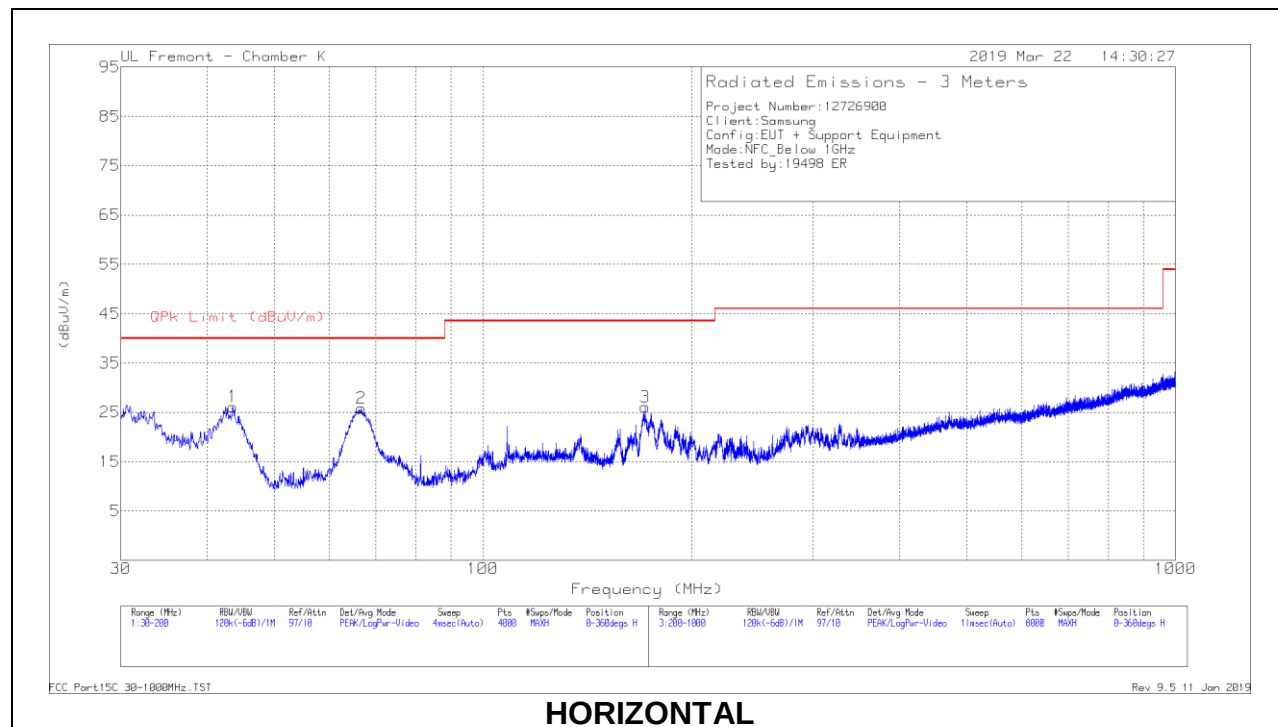
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	Loop Antenna (ACF)	Cables w/ PRE0186650	Dist Corr 30m (dB) 40Log	Corrected Reading (dBuVolts)	QP Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)
3	.81509	17.49	Pk	56.3	-32.1	-40	1.69	29.39	-27.7	0-360
6	.8151	17.27	Pk	56.3	-32.1	-40	1.47	29.39	-27.92	0-360
7	13.55998	40.52	Pk	34.3	-31.8	-40	3.02	29.5	-26.48	0-360
8	13.55998	40.4	Pk	34.3	-31.8	-40	2.9	29.5	-26.6	0-360

Pk - Peak detector

Note: Markers 7 and 8 are the 13.56MHz NFC Fundamental

8.3. TX SPURIOUS EMISSION 30 TO 1000 MHz

TYPE A - 106Kbps (CE Mode)



Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF PRE0184052 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	42.4945	45.65	Pk	17.8	-31.4	32.05	40	-7.95	94	330	H
	42.4725	40.24	Qp	17.8	-31.4	26.64	40	-13.36	94	330	H
4	30.8077	29.08	Pk	26	-31.6	23.48	40	-16.52	0-360	199	H
2	42.7904	50.14	Pk	17.5	-31.4	36.24	40	-3.76	198	146	V
	42.7554	45.7	Qp	17.6	-31.4	31.9	40	-8.1	198	146	V
3	30.5226	40.32	Pk	26.1	-31.6	34.82	40	-5.18	111	107	V
	30.6434	34.49	Qp	26.1	-31.6	28.99	40	-11.01	111	107	V
5	60.2678	40.14	Pk	13.4	-31.2	22.34	40	-17.66	0-360	100	V
6	81.3533	43.88	Pk	13.5	-31	26.38	40	-13.62	0-360	100	V

* - indicates frequency in CFR47 Pt 15 Restricted Band

Pk - Peak detector

Qp - Quasi-Peak detector

9. FREQUENCY STABILITY

LIMIT

§15.225 (e) The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency, over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

TEST PROCEDURE

ANSI C63.10-2013 Clause 6.8

RESULTS

ID:	19497 AF	Date:	4/4/2019
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No non-compliance noted.

TYPE A - 106Kbps (CE Mode)

106Kbps

Reference Frequency: EUT Channel 13.56 MHz @ 20°C Limit: ± 100 ppm = 1.356 kHz										
Power Supply	Envir. Temp	Frequency Deviation Measured with Time Elapse								
(Vdc)	(°C)	Startup (MHz)	Delta (ppm)	@ 2 mins (MHz)	Delta (ppm)	@ 5 mins (MHz)	Delta (ppm)	@ 10 mins (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	13.5597065	7.227	13.5597019	7.570	13.5596975	7.894	13.5596955	8.040	± 100
3.80	40	13.5597620	3.134	13.5597435	4.497	13.5597270	5.717	13.5597116	6.852	± 100
3.80	30	13.5597934	0.817	13.5597915	0.957	13.5597889	1.153	13.5597882	1.201	± 100
3.80	20	13.5598045	0.000	13.5597986	0.437	13.5597966	0.585	13.5597960	0.632	± 100
3.80	10	13.5598449	-2.978	13.5598354	-2.274	13.5598241	-1.441	13.5598188	-1.051	± 100
3.80	0	13.5598445	-2.952	13.5598482	-3.223	13.5598464	-3.086	13.5598451	-2.991	± 100
3.80	-10	13.5597920	0.923	13.5598373	-2.415	13.5598469	-3.126	13.5598449	-2.978	± 100
3.23	20	13.5597960	0.625	13.5597957	0.651	13.5597953	0.680	13.5597942	0.761	± 100
4.37	20	13.5597943	0.755	13.5597941	0.770	13.5597939	0.782	13.5597934	0.817	± 100

10. AC MAINS LINE CONDUCTED EMISSIONS

LIMITS

§15.207

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the band edges.

Frequency range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Notes:
1. The lower limit shall apply at the transition frequencies
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

TEST PROCEDURE

ANSI C63.10:2013

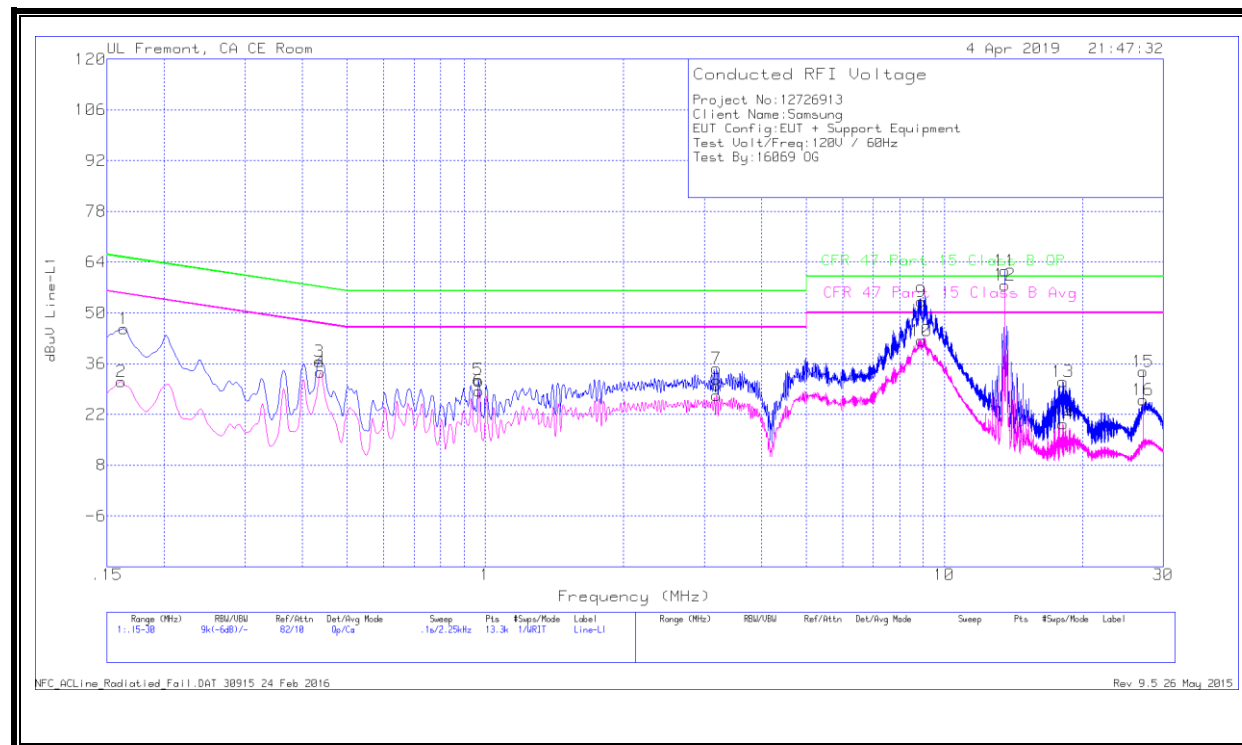
RESULTS

No non-compliance noted:

TYPE A - 106Kbps (CE Mode)

10.1.1. NORMAL OPERATION with ANTENNA

LINE 1 RESULTS



Worst Emission

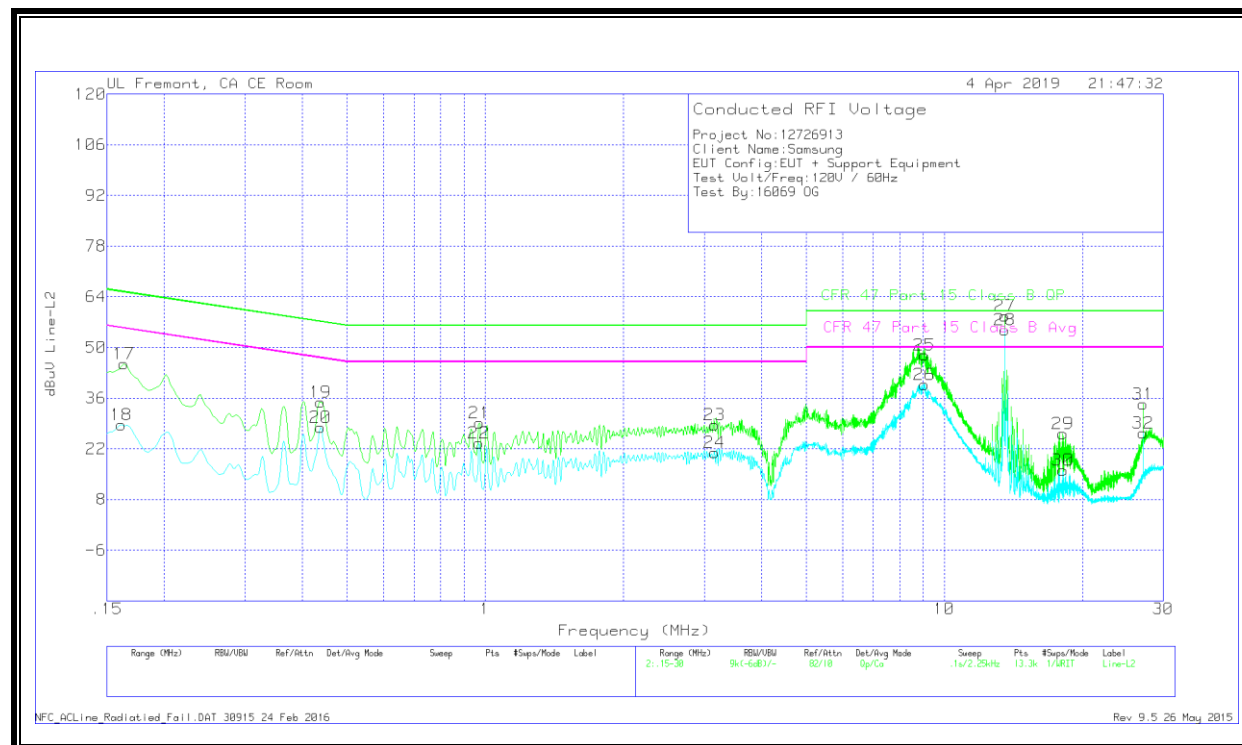
Range 1: Line-L1 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	LISN L1	LC Cables C1&C3	Limiter (dB)	Corrected Reading dBuV	CFR 47 Part 15 Class B QP	QP Margin (dB)	CFR 47 Part 15 Class B Avg	Av(CISPR) Margin (dB)
1	.1635	35.45	Qp	.1	0	10.1	45.65	65.28	-19.63	-	-
2	.16125	20.82	Ca	.1	0	10.1	31.02	-	-	55.4	-24.38
3	.43575	26.55	Qp	0	0	10.1	36.65	57.14	-20.49	-	-
4	.438	23.52	Ca	0	0	10.1	33.62	-	-	47.1	-13.48
5	.96675	21.43	Qp	0	.1	10.1	31.63	56	-24.37	-	-
6	.969	18.29	Ca	0	.1	10.1	28.49	-	-	46	-17.51
7	3.18975	24.55	Qp	0	.1	10.1	34.75	56	-21.25	-	-
8	3.192	16.97	Ca	0	.1	10.1	27.17	-	-	46	-18.83
9	8.90475	42.77	Qp	0	.2	10.2	53.17	60	-6.83	-	-
10	8.90925	32	Ca	0	.2	10.2	42.4	-	-	50	-7.6
11	13.56	51.07	Qp	.1	.2	10.2	61.57	60	1.57	-	-
12	13.56	47.23	Ca	.1	.2	10.2	57.73	-	-	50	7.73
13	18.1365	20.37	Qp	.1	.3	10.3	31.07	60	-28.93	-	-
14	18.1365	8.68	Ca	.1	.3	10.3	19.38	-	-	50	-30.62
15	27.12075	22.81	Qp	.1	.4	10.5	33.81	60	-26.19	-	-
16	27.12075	15.01	Ca	.1	.4	10.5	26.01	-	-	50	-23.99

Qp - Quasi-Peak detector

Ca - CISPR average detection

Note: Markers 11 and 12 are the 13.56MHz NFC Fundamental

LINE 2 RESULTS



Worst Emission

Range 2: Line-L2 .15 - 30MHz											
Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	USN 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)
17	.1635	35.27	Qp	.1	0	10.1	45.47	65.28	-19.81	-	-
18	.16125	18.48	Ca	.1	0	10.1	28.68	-	-	55.4	-26.72
19	.438	24.84	Qp	0	0	10.1	34.94	57.1	-22.16	-	-
20	.438	17.76	Ca	0	0	10.1	27.86	-	-	47.1	-19.24
21	.97125	19.01	Qp	0	.1	10.1	29.21	56	-26.79	-	-
22	.969	13.42	Ca	0	.1	10.1	23.62	-	-	46	-22.38
23	3.15825	18.45	Qp	0	.1	10.1	28.65	56	-27.35	-	-
24	3.15825	10.76	Ca	0	.1	10.1	20.96	-	-	46	-25.04
25	9.0645	37.56	Qp	0	.2	10.2	47.96	60	-12.04	-	-
26	9.0645	29.35	Ca	0	.2	10.2	39.75	-	-	50	-10.25
27	13.56	48.25	Qp	.1	.2	10.2	58.75	60	-1.25	-	-
28	13.56	44.31	Ca	.1	.2	10.2	54.81	-	-	50	4.81
29	18.1365	15.47	Qp	.1	.3	10.3	26.17	60	-33.83	-	-
30	18.1365	5.47	Ca	.1	.3	10.3	16.17	-	-	50	-33.83
31	27.12075	23.35	Qp	.1	.4	10.5	34.35	60	-25.65	-	-
32	27.12075	15.33	Ca	.1	.4	10.5	26.33	-	-	50	-23.67

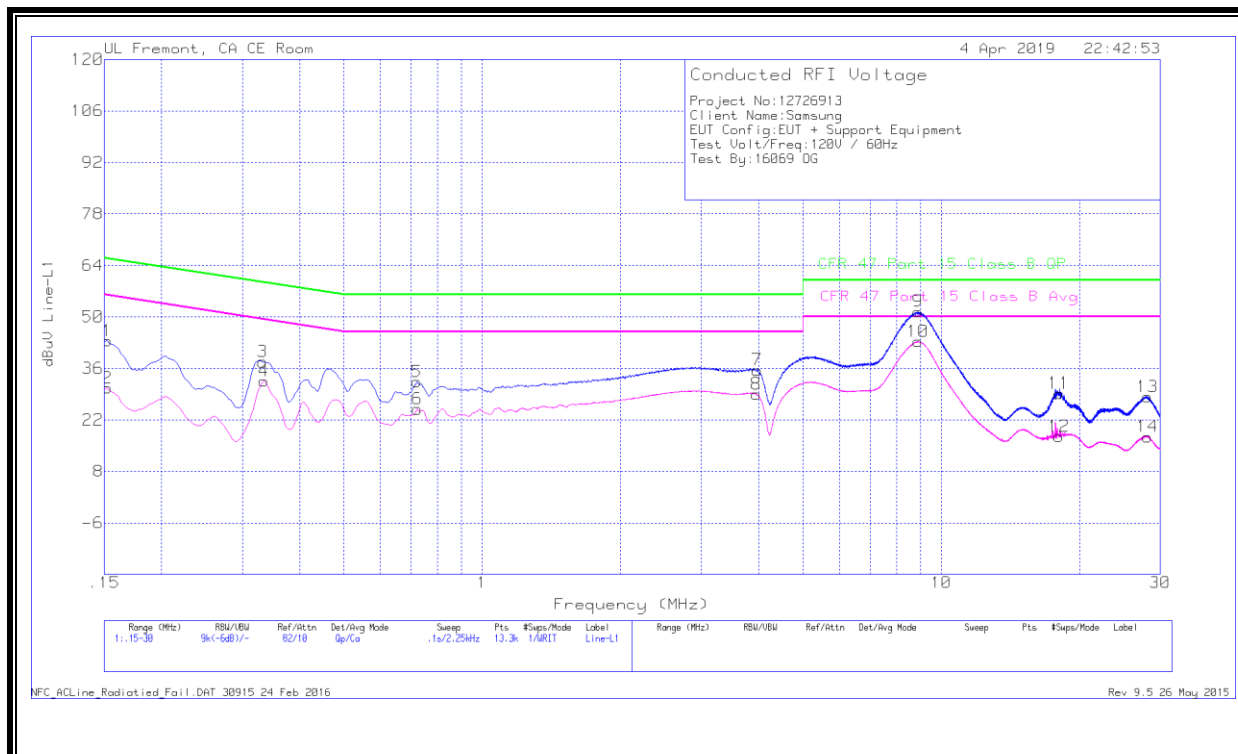
Qp - Quasi-Peak detector

Ca - CISPR average detection

Note: Markers 27 and 28 are the 13.56MHz NFC Fundamental

10.1.2. NORMAL OPERATION with ANTENNA TERMINATED

LINE 1 RESULTS



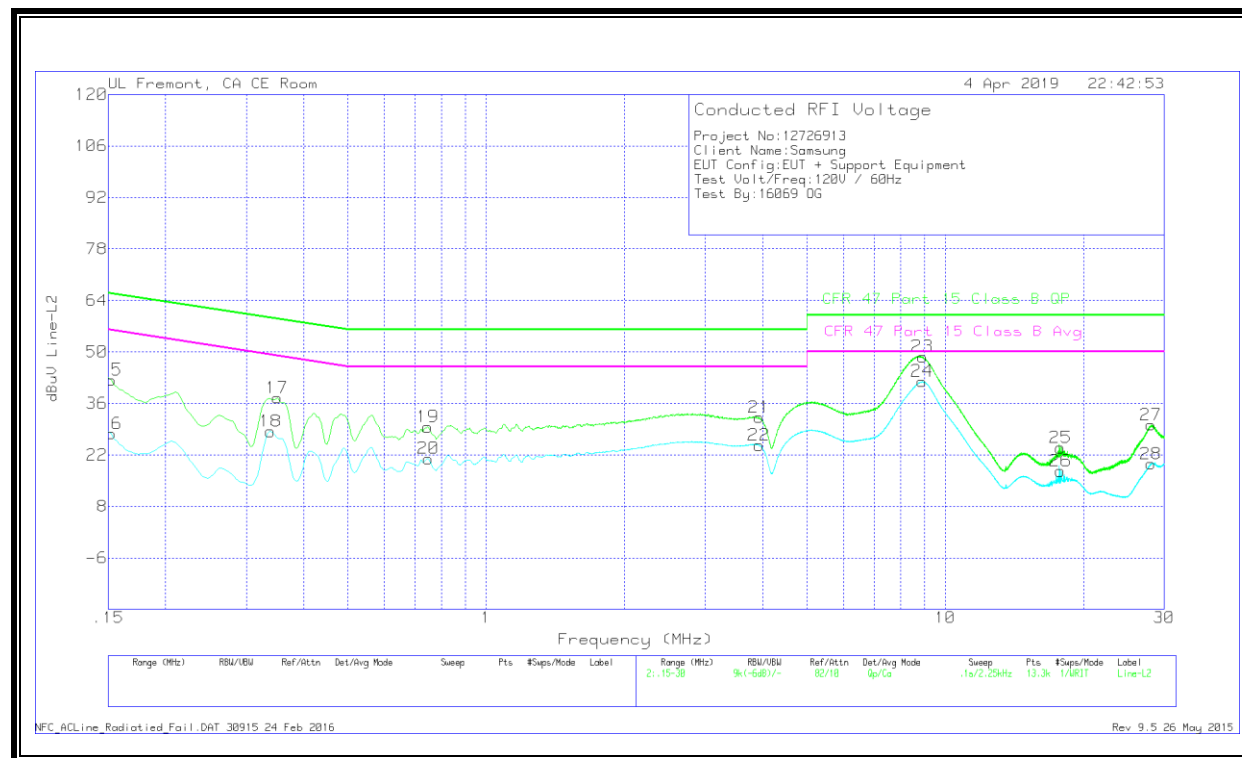
Worst Emission

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	.15225	33.3	Qp	.1	0	10.1	43.5	65.88	-22.38	-	-
2	.15225	20.44	Ca	.1	0	10.1	30.64	-	-	55.88	-25.24
3	.33225	27.69	Qp	0	0	10.1	37.79	59.39	-21.6	-	-
4	.3345	22.48	Ca	0	0	10.1	32.58	-	-	49.34	-16.76
5	.71925	22.28	Qp	0	0	10.1	32.38	56	-23.62	-	-
6	.7215	14.87	Ca	0	0	10.1	24.97	-	-	46	-21.03
7	3.975	25.36	Qp	0	.1	10.1	35.56	56	-20.44	-	-
8	3.9525	18.8	Ca	0	.1	10.1	29	-	-	46	-17
9	8.90025	41.06	Qp	0	.2	10.2	51.46	60	-8.54	-	-
10	8.90025	32.93	Ca	0	.2	10.2	43.33	-	-	50	-6.67
11	18.03975	18.49	Qp	.1	.3	10.3	29.19	60	-30.81	-	-
12	18.042	6.8	Ca	.1	.3	10.3	17.5	-	-	50	-32.5
13	28.14675	17.24	Qp	.1	.4	10.5	28.24	60	-31.76	-	-
14	28.16475	6.43	Ca	.1	.4	10.5	17.43	-	-	50	-32.57

Qp - Quasi-Peak detector

Ca - CISPR average detection

LINE 2 RESULTS



Worst Emission

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)
15	.15225	32.15	Qp	.1	0	10.1	42.35	65.88	-23.53	-	-
16	.15225	17.54	Ca	.1	0	10.1	27.74	-	-	55.88	-28.14
17	.35025	27.38	Qp	0	0	10.1	37.48	58.96	-21.48	-	-
18	.339	18.3	Ca	0	0	10.1	28.4	-	-	49.23	-20.83
19	.74625	19.49	Qp	0	0	10.1	29.59	56	-26.41	-	-
20	.74737	10.92	Ca	0	0	10.1	21.02	-	-	46	-24.98
21	3.93	22.02	Qp	0	.1	10.1	32.22	56	-23.78	-	-
22	3.92775	14.43	Ca	0	.1	10.1	24.63	-	-	46	-21.37
23	8.91825	38.33	Qp	0	.2	10.2	48.73	60	-11.27	-	-
24	8.90925	31.63	Ca	0	.2	10.2	42.03	-	-	50	-7.97
25	17.83725	13.23	Qp	.1	.3	10.3	23.93	60	-36.07	-	-
26	17.83725	6.93	Ca	.1	.3	10.3	17.63	-	-	50	-32.37
27	28.059	19.14	Qp	.1	.4	10.5	30.14	60	-29.86	-	-
28	28.06125	8.57	Ca	.1	.4	10.5	19.57	-	-	50	-30.43

Qp - Quasi-Peak detector

Ca - CISPR average detection