



**FCC 47 CFR PART 15 SUBPART C
FCC 47 Part 15 Subpart B
INDUSTRY CANADA RSS-210 Issue 9 Annex B.10
INDUSTRY CANADA RSS-GEN Issue 4
INDUSTRY CANADA ICES-003 Issue 6**

DoC TEST REPORT

FOR

Fibaro Wall Plug

MODEL NUMBER: FGWPB-111

**FCC ID: 2AA9MFGWPB121
IC: 20430-FGWPB121**

REPORT NUMBER: 11892680B

ISSUE DATE: March 23, 2018

Prepared for
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NVLAB LAB CODE: 100414-0

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--		Initial Issue	

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Fibar Group S.A.
Ul. Lotnicza 1
Poznań, Poland 60-421

EUT DESCRIPTION: Fibaro Wall Plug

MODEL: FGWPB-111

SERIAL NUMBER: Non-Serialized

DATE TESTED: February 2 – March 23, 2018

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	Pass
CFR 47 Part 15 Subpart B	Pass
INDUSTRY CANADA RSS-210 Issue 9 Annex B.10	Pass
INDUSTRY CANADA RSS-GEN Issue 4	Pass
INDUSTRY CANADA ICES-003 Issue 6	Pass

UL LLC 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 LLC 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 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 NVLAP, NIST, or any agency of the U.S. Government.

Approved & Released For
UL LLC by:

Tested By:



Bart Mucha
Staff Engineer
UL LLC



Vincent Sabalvaro
EMC Project ENGINEER
UL LLC

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10:2013, ANSI C63.4:2014, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 4, and RSS-247 Issue 2.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 333 Pfungsten Road, Northbrook, IL 60062 USA.

UL NBK is accredited by NVLAP, Laboratory Code 100414-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/>

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

Sample Calculations

Radiated Field Strength and Conducted Emissions data contained within this report is calculated on the following basis:

Field Strength (dBuV/m) = Meter Reading (dBuV) + AF (dB/m) - Gain (dB) + Cable Loss (dB)

Conducted Voltage (dBuV) = Meter Reading (dBuV) + Cable Loss (dB) + LISN IL (dB)

Conducted Current (dBuA) = Meter Reading (dBuV) + Cable Loss (dB) - Transducer Factor (dBohms)

4.3. MEASUREMENT UNCERTAINTY

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

Test	Range	Equipment	Uncertainty k=2
Radiated Emissions	30-200MHz	Bicon 10m Horz	4.27dB
Radiated Emissions	30-200MHz	Bicon 10m Vert	4.28dB
Radiated Emissions	200-1000MHz	LogP 10m Horz	3.33dB
Radiated Emissions	200-1000MHz	LogP 10m Vert	3.39dB
Radiated Emissions	1-6GHz	Horn	5.02dB
Radiated Emissions	6-18GHz	Horn	5.34dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT, FGWPB-111, is a 908.4MHz, 908.42MHz, and 916MHz transceiver. The transmitter utilizes Z-wave technologies to communicate with other devices for home automation. The device is manufactured by Fibar Group S.A. The previous model FGWPB-121 was certified under FCC ID: 2AA9MFGWPB121 and IC ID: 20430-FGWPB121. The report is for Class II Permissive Change – Removal of USB power circuitry.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum conducted output power as follows:

Frequency Range (MHz)	Mode	Output Peak E-Field Strength (dBuV/m)
908.4 -916	TX	91.66

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio is equipped with an embedded, impedance matched quarter-wave antenna. Antenna was designed as a trace on PCB.

5.4. WORST-CASE CONFIGURATION AND MODE

Radiated emission and power line conducted emission were performed with the EUT set to transmit at the channel with highest acceptable output power as worst-case scenario, which was determined during preliminary testing.

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

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
60W AC Light Bulb	-	-	-	-

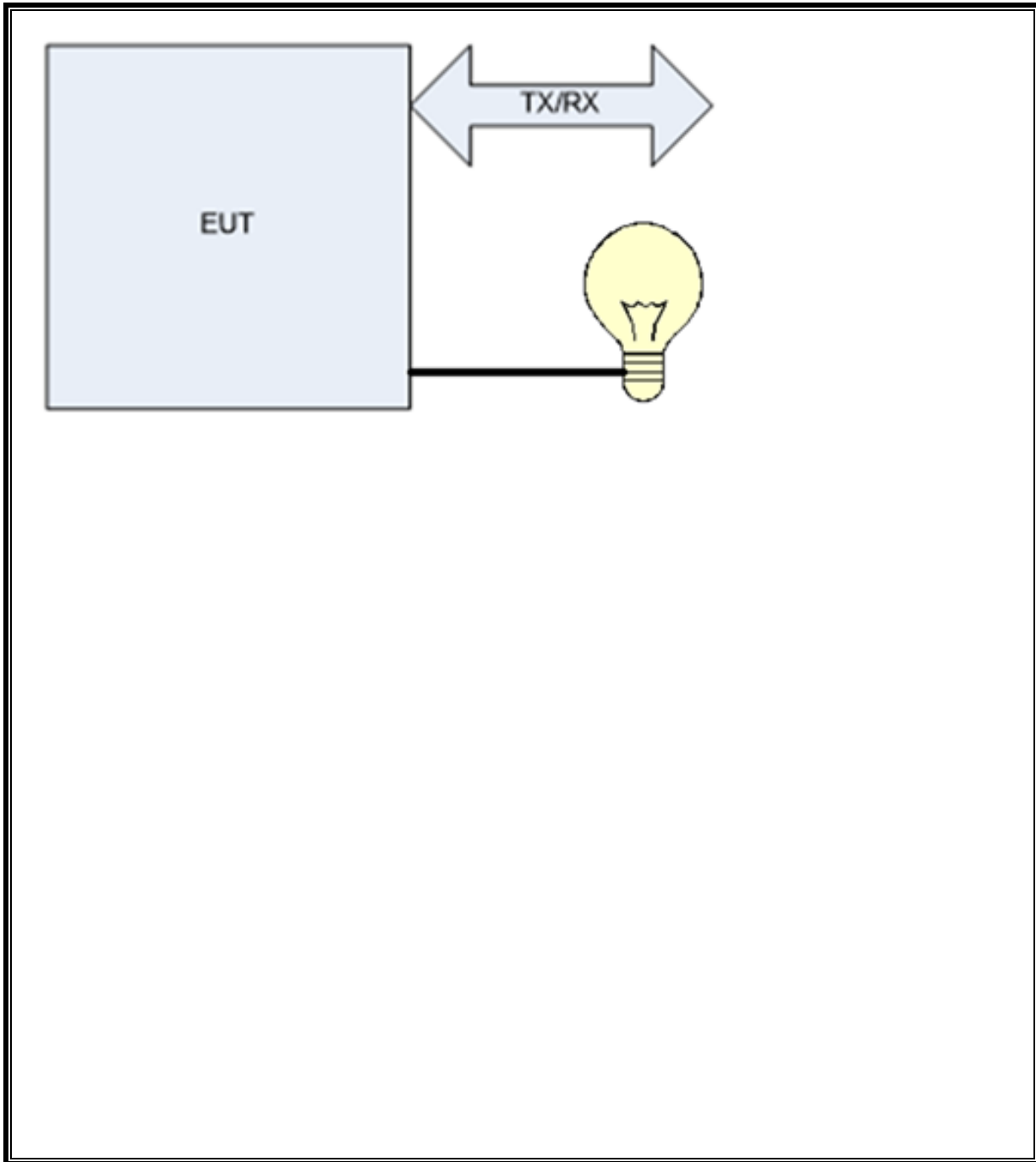
I/O CABLES

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
0	Enclosure	-	Non-Electrical	-	-	None
1	Mains	-	AC	Wire	-	Plugs directly into outlet
2	AC Outlet	-	AC	Wire	1	None

TEST SETUP

The EUT is programmed for continuous TX mode during transmitter tests and RX mode with AC output active during receiver tests.

SETUP DIAGRAM FOR TESTS



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	T No.	Cal Date	Cal Due
Radiated Software	UL	UL EMC	Ver 9.5, July 22, 2014		
Conducted Software	UL	UL EMC	Ver 9.5, May 17 2012		
Test Receiver	Rhode & Schwarz	ESCI	EMC4328	12/21/2017	12/31/2018
Log-P Antenna	Chase	VBA6106A	EMC4078	2/14/2018	2/28/2019
Bicon Antenna	Chase	UPA6109	EMC4313	2/13/2017	2/28/2019
Antenna Array	UL	BOMS	EMC4276	1/10/2018	1/31/2019
Test Receiver	Rhode & Schwarz	ESU	EMC4323	12/20/2017	12/31/2018
EMI Test Receiver	Rohde & Schwarz	ESR	EMC4377	12/23/2017	12/31/2018
Transient Limiter	Electro-Metrics	EM7600-2	EMC4224	N/A	N/A
HighPass Filter	Solar Electronics	2803-150	EMC4327	N/A	N/A
Attenuator	HP	8494B	2831A0083	N/A	N/A
LISN - L1	Solar	8602-50-TS-50-	EMC4066	12/29/2017	12/31/2018
LISN - L2	Solar	8602-50-TS-50-	EMC4064	12/29/2017	12/31/2018

7. MEASUREMENT METHODS

ANSI C63.10:2013 for the following tests:

Radiated Spurious Emissions
Line Conducted Emissions

ANSI C63.4:2014 for the following tests:

Digital Radiated Emissions
Line Conducted Emissions

8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-247 Clause B.10

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
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

PROCEDURES

ANSI C63.10:2013, Section 11.12
ANSI C63.4:2014

Only low and high channels were investigated since the middle channel is very near to the low channel frequency in relation to the operating frequency range of the transmitter. The Low channel results should be sufficient evidence to indicate no degradation of the original results. In addition to 47 CFR 15.31(m) only requires operating frequency ranges between 1 MHz and 10MHz to test two channels (1 near top and 1 near bottom).

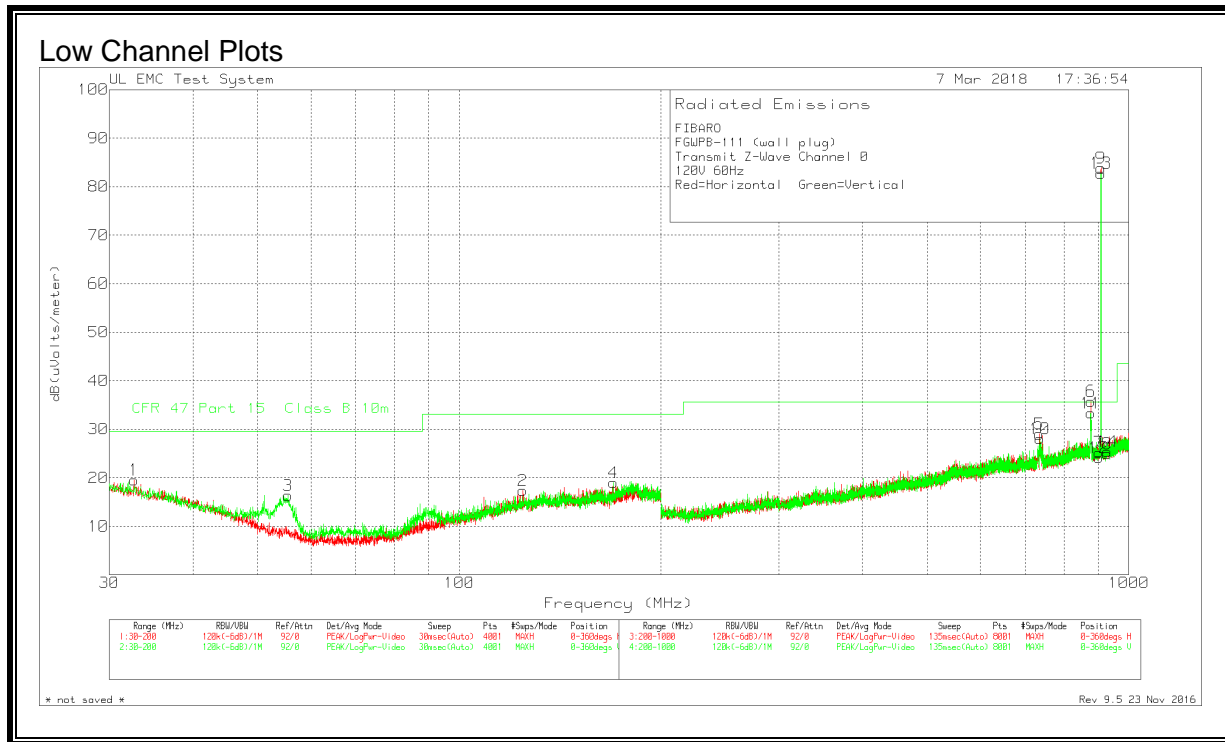
8.2. RADIATED SPUROUS EMSSIONS

8.2.1. FUNDAMENTAL FREQUENCY RADIATED EMISSIONS

Data

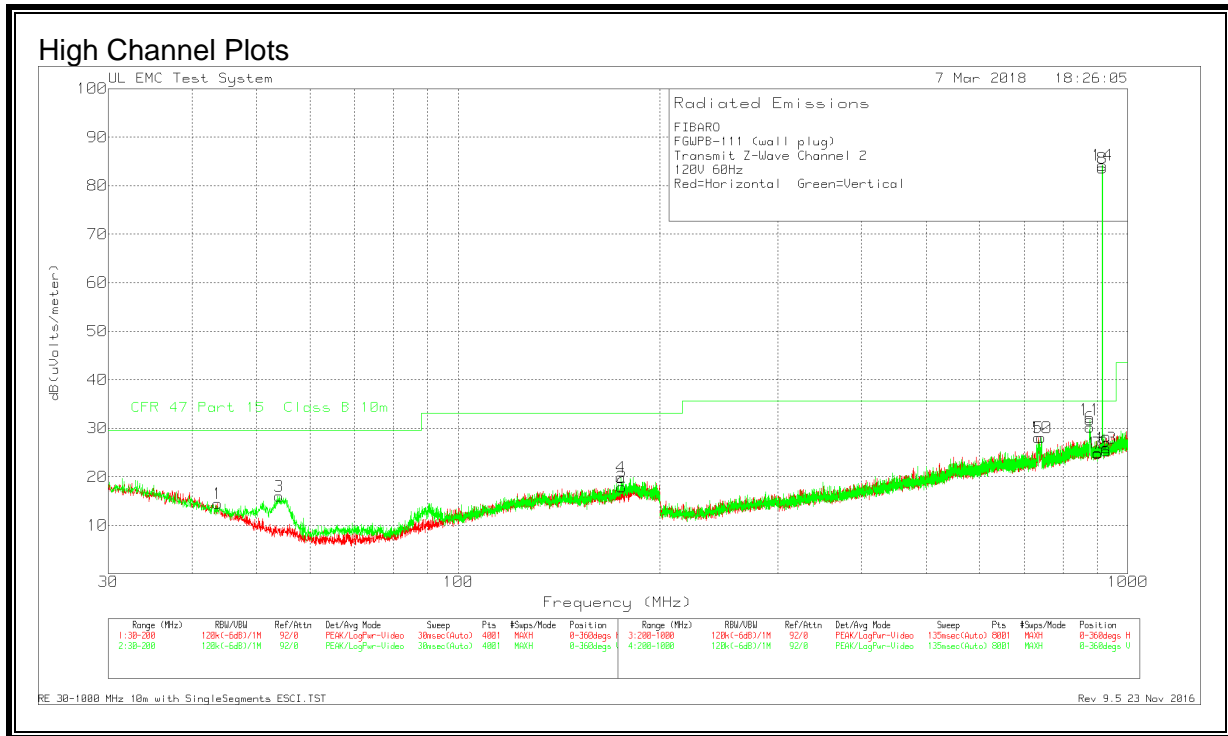
Manufacturer:Fibar												
Model# Wall Plug												
Mode:TX												
Voltage: 120V 60Hz												
Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna Factor dBm	Path dB	Corrected Reading dB(uVolts/meter)	PK Limit dBuV/m	PK Margin (dB)	QP Limit dBuV/m	QP Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
Low CH												
908.4206	57.14	Pk	23.3	9.5	89.94	114	-24.06	94	-4.06	250	171	H
908.4206	58.86	Pk	23.3	9.5	91.66	114	-22.34	94	-2.34	175	112	V
High CH												
916.03	55.72	Pk	23.1	9.6	88.42	114	-25.58	94	-5.58	228	100	H
916.03	56.67	Pk	23.1	9.6	89.37	114	-24.63	94	-4.63	68	114	V
Pk - Peak detector												
Qp - Quasi-Peak detector												
*Measurements taken with Peak detector are under the Quasi-Peak limit. Therefore, Quasi-Peak measurements are not necessary.												

8.2.2. TRANSMITTER SPURIOUS EMISSIONS 30 TO 1000 MHz



Low Channel Data

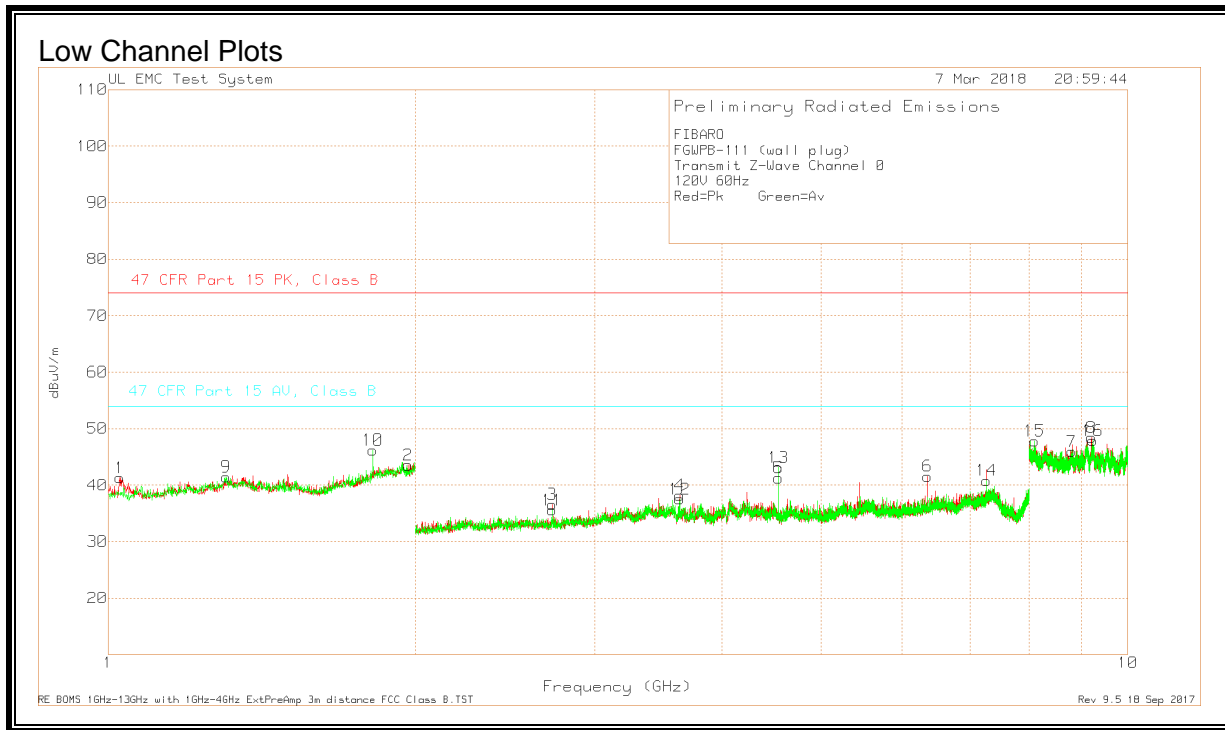
Trace Markers											
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna (dB/m)	Path (dB)	Corrected Reading dB(uVolts/meter)	QP Limit (dBuV/m)	QP Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	32.6775	32.78	Pk	16.9	-30.1	19.58	29.55	-9.97	0-360	398	H
2	124.4775	32.96	Pk	14.3	-29.9	17.36	33.07	-15.71	0-360	101	H
3	55.4575	38.94	Pk	7.5	-30.1	16.34	29.55	-13.21	0-360	251	V
4	169.9525	33.02	Pk	15.4	-29.4	19.02	33.07	-14.05	0-360	101	V
5	734.8	35.53	Pk	20.9	-27.4	29.03	35.57	-6.54	0-360	399	H
6	877.5	40.59	Pk	23	-27.8	35.79	35.57	0.22	0-360	199	H
7	902	30.23	Pk	23	-28	25.23	35.57	-10.34	0-360	199	H
8	928	29.27	Pk	23.3	-27.6	24.97	35.57	-10.6	0-360	101	H
10	736.7	34.64	Pk	20.9	-27.5	28.04	35.57	-7.53	0-360	199	V
11	878	38.11	Pk	23	-27.8	33.31	35.57	-2.26	0-360	399	V
12	902	29.19	Pk	23	-28	24.19	35.57	-11.38	0-360	299	V
14	928	29.73	Pk	23.3	-27.6	25.43	35.57	-10.14	0-360	299	V
Pk - Peak detector											
Radiated Emission Data											
	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna (dB/m)	Path (dB)	Corrected Reading dB(uVolts/meter)	QP Limit (dBuV/m)	QP Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	877.1	34.61	Qp	23	-27.8	29.81	35.57	-5.76	335	230	H
	877.1	36.47	Qp	23	-27.8	31.67	35.57	-3.9	1	399	V
Qp - Quasi-Peak detector											



High Channel Data

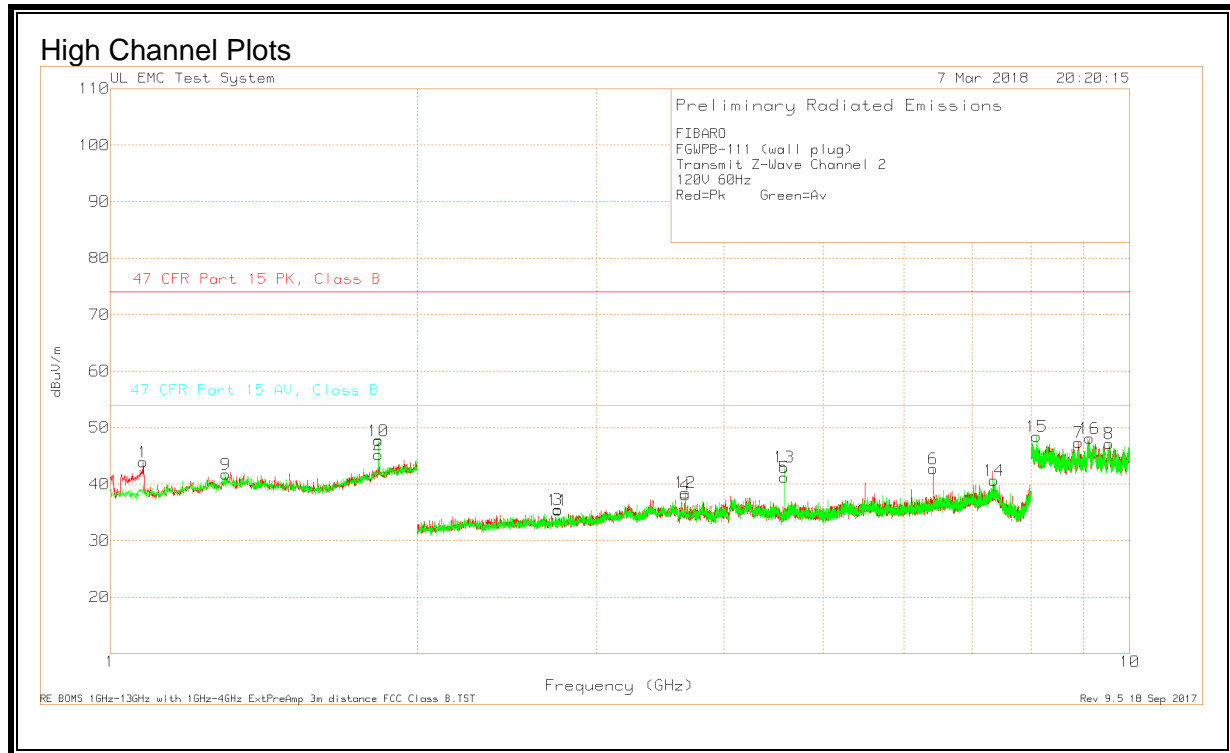
Trace Markers											
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna (dB/m)	Path (dB)	Corrected Reading dB(uVolts/meter)	QP Limit (dBuV/m)	QP Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	43.685	32.02	Pk	12.4	-29.9	14.52	29.55	-15.03	0-360	102	H
2	175.4775	31.48	Pk	15.6	-29.2	17.88	33.07	-15.19	0-360	251	H
3	54.0125	38.51	Pk	7.9	-30.4	16.01	29.55	-13.54	0-360	102	V
4	174.925	33.75	Pk	15.6	-29.5	19.85	33.07	-13.22	0-360	102	V
5	734.8	34.6	Pk	20.9	-27.4	28.1	35.57	-7.47	0-360	399	H
6	877.6	35	Pk	23	-27.8	30.2	35.57	-5.37	0-360	299	H
7	902	29.85	Pk	23	-28	24.85	35.57	-10.72	0-360	299	H
9	928	29.61	Pk	23.3	-27.6	25.31	35.57	-10.26	0-360	399	H
10	743	34.55	Pk	21	-27.5	28.05	35.57	-7.52	0-360	399	V
11	877.5	36.57	Pk	23	-27.8	31.77	35.57	-3.8	0-360	102	V
12	902	29.89	Pk	23	-28	24.89	35.57	-10.68	0-360	299	V
13	928	30.23	Pk	23.3	-27.6	25.93	35.57	-9.64	0-360	299	V
Pk - Peak detector											
Radiated Emission Data											
	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna (dB/m)	Path (dB)	Corrected Reading dB(uVolts/meter)	QP Limit (dBuV/m)	QP Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
	878.18	32.01	Qp	23	-27.8	27.21	35.57	-8.36	307	231	H
	877.2	34.52	Qp	23	-27.8	29.72	35.57	-5.85	51	383	V
Qp - Quasi-Peak detector											

8.2.3. TRANSMITTER SPURIOUS EMISSIONS 1GHz TO 10GHz



Low Channel Data

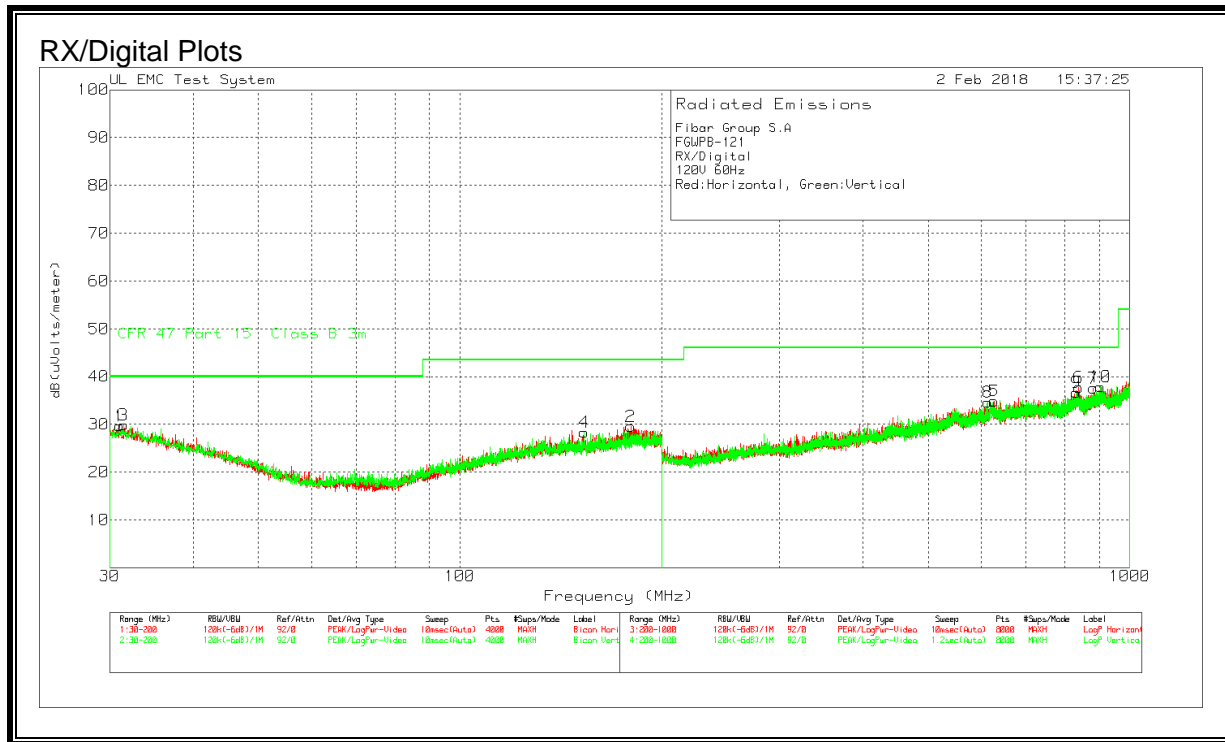
Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor (dB/m)	Path (dB)	Corrected Reading dBuV/m	PK Limit dBuV/m	PK Margin (dB)	AV Limit dBuV/m	AV Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.026	70.33	Pk	27.1	-56.12	41.31	74	-32.69	54	-12.69	0-360	150	H
2	1.968	64.82	Pk	31.6	-52.88	43.54	74	-30.46	54	-10.46	0-360	150	H
3	2.725	65.36	Pk	22.1	-50.86	36.6	74	-37.4	54	-17.4	0-360	150	H
4	3.634	64.48	Pk	23.3	-49.56	38.22	74	-35.78	54	-15.78	0-360	150	H
5	4.542	65.28	Pk	27.8	-51.81	41.27	74	-32.73	54	-12.73	0-360	100	H
6	6.359	60	Pk	29.2	-47.61	41.59	74	-32.41	54	-12.41	0-360	150	H
7	8.805	58.11	Pk	36.2	-48.34	45.97	74	-28.03	54	-8.03	0-360	150	H
8	9.2105	59.17	Pk	36.4	-47.16	48.41	74	-25.59	54	-5.59	0-360	100	H
9	1.305	67.54	Pk	29.4	-55.47	41.47	74	-32.53	54	-12.53	0-360	100	V
10	1.817	69.23	Pk	30.5	-53.51	46.22	74	-27.78	54	-7.78	0-360	100	V
11	2.726	64.46	Pk	22.1	-51	35.56	74	-38.44	54	-18.44	0-360	100	V
12	3.634	63.79	Pk	23.3	-49.56	37.53	74	-36.47	54	-16.47	0-360	100	V
13	4.542	67.12	Pk	27.8	-51.81	43.11	74	-30.89	54	-10.89	0-360	100	V
14	7.268	56.65	Pk	30.2	-46.02	40.83	74	-33.17	54	-13.17	0-360	100	V
15	8.096	58.51	Pk	36.2	-46.87	47.84	74	-26.16	54	-6.16	0-360	100	V
16	9.2365	58.71	Pk	36.4	-47.21	47.9	74	-26.1	54	-6.1	0-360	100	V
Pk - Peak detector													
Radiated Emission Data													
Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor (dB/m)	Path (dB)	Corrected Reading dBuV/m	PK Limit dBuV/m	PK Margin (dB)	AV Limit dBuV/m	AV Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	
8.1051	62.09	Pk	36.2	-47.07	51.22	74	-22.78	54	-2.78	360	100	V	
8.1056	48.72	Av	36.2	-47.07	37.85	74	-36.15	54	-16.15	360	100	V	
9.1277	62.53	Pk	36.3	-47.53	51.3	74	-22.7	54	-2.7	223	168	V	
9.1265	49.53	Av	36.3	-47.46	38.37	74	-35.63	54	-15.63	223	168	V	
Pk - Peak detector													
Av - Average detection													



High Channel Data

Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor (dB/m)	Path (dB)	Corrected Reading dBuV/m	PK Limit dBuV/m	PK Margin (dB)	AV Limit dBuV/m	AV Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.077	72.83	Pk	27.2	-56.13	43.9	74	-30.1	54	-10.1	0-360	150	H
2	1.832	67.81	Pk	30.7	-53.32	45.19	74	-28.81	54	-8.81	0-360	100	H
3	2.748	64.3	Pk	22.1	-50.92	35.48	74	-38.52	54	-18.52	0-360	150	H
4	3.664	64.07	Pk	23.4	-49.4	38.07	74	-35.93	54	-15.93	0-360	150	H
5	4.58	65.37	Pk	27.7	-51.85	41.22	74	-32.78	54	-12.78	0-360	150	H
6	6.412	61.08	Pk	29.2	-47.58	42.7	74	-31.3	54	-11.3	0-360	100	H
7	8.9065	60.1	Pk	36.1	-48.85	47.35	74	-26.65	54	-6.65	0-360	100	H
8	9.5385	58.35	Pk	36.4	-47.57	47.18	74	-26.82	54	-6.82	0-360	100	H
9	1.298	67.95	Pk	29.4	-55.61	41.74	74	-32.26	54	-12.26	0-360	100	V
10	1.832	70.33	Pk	30.7	-53.32	47.71	74	-26.29	54	-6.29	0-360	100	V
11	2.748	64.18	Pk	22.1	-50.92	35.36	74	-38.64	54	-18.64	0-360	100	V
12	3.664	64.47	Pk	23.4	-49.4	38.47	74	-35.53	54	-15.53	0-360	100	V
13	4.58	67.14	Pk	27.7	-51.85	42.99	74	-31.01	54	-11.01	0-360	100	V
14	7.357	56.06	Pk	30.9	-46.3	40.66	74	-33.34	54	-13.34	0-360	100	V
15	8.1045	59.3	Pk	36.2	-47.04	48.46	74	-25.54	54	-5.54	0-360	100	V
16	9.128	59.31	Pk	36.3	-47.53	48.08	74	-25.92	54	-5.92	0-360	150	V
Pk - Peak detector													
Radiated Emission Data													
Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor (dB/m)	Path (dB)	Corrected Reading dBuV/m	PK Limit dBuV/m	PK Margin (dB)	AV Limit dBuV/m	AV Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity	
8.1051	62.09	Pk	36.2	-47.07	51.22	74	-22.78	54	-2.78	360	100	V	
8.1056	48.72	Av	36.2	-47.07	37.85	74	-36.15	54	-16.15	360	100	V	
9.1277	62.53	Pk	36.3	-47.53	51.3	74	-22.7	54	-2.7	223	168	V	
9.1265	49.53	Av	36.3	-47.46	38.37	74	-35.63	54	-15.63	223	168	V	
Pk - Peak detector													
Av - Average detection													

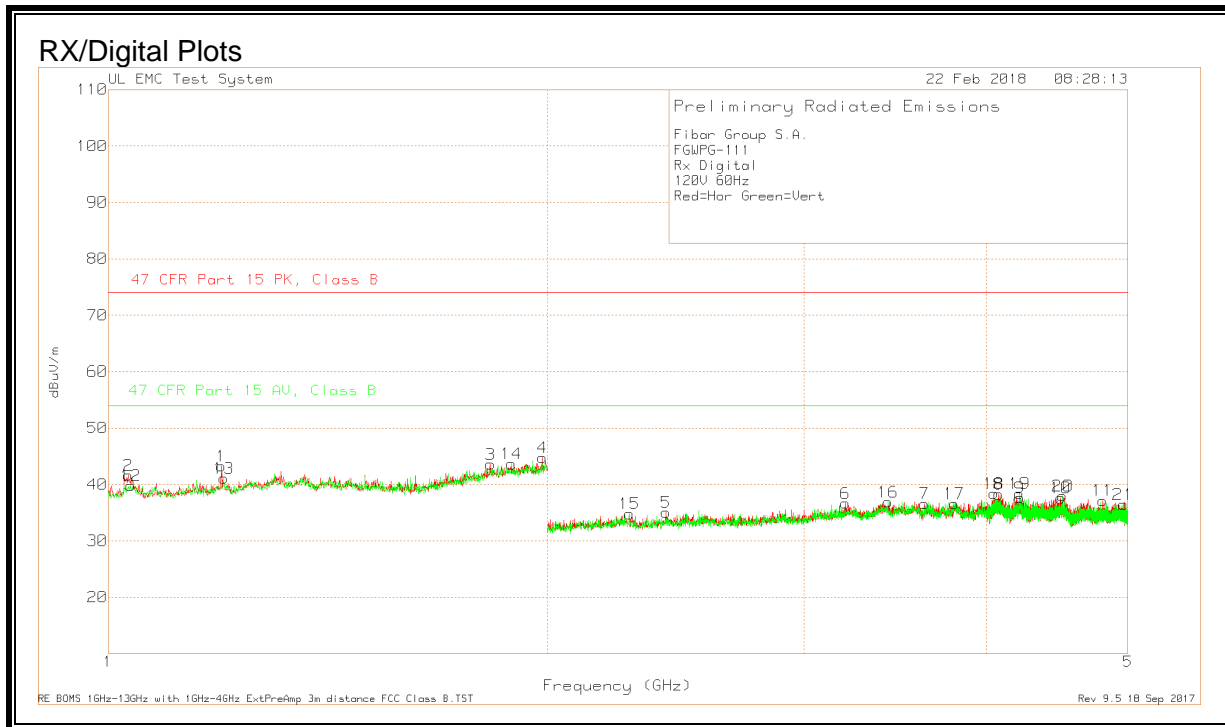
8.2.1. RX/DIGITAL SPURIOUS EMISSIONS 30 TO 1000 MHz



RX/Digital Data

Trace Markers												
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenna (dB/m)	Path (dB)	10M to 3M Factor dB	Corrected Reading dB(uVolts/meter)	QP Limit (dBuV/m)	QP Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	31.0203	31.49	Pk	17.9	-30.2	10.5	29.69	40	-10.31	0-360	248	H
2	179.8513	32.78	Pk	15.6	-29.3	10.5	29.58	43.52	-13.94	0-360	248	H
3	31.4454	31.86	Pk	17.8	-30.3	10.5	29.86	40	-10.14	0-360	252	V
4	153.3244	32.57	Pk	15	-29.7	10.5	28.37	43.52	-15.15	0-360	252	V
5	626.6555	30.91	Pk	20.6	-27.1	10.5	34.91	46.02	-11.11	0-360	399	H
6	838.783	32.22	Pk	22.7	-27.7	10.5	37.72	46.02	-8.3	0-360	199	H
7	881.8886	32.38	Pk	22.5	-27.8	10.5	37.58	46.02	-8.44	0-360	399	H
8	613.3537	31.35	Pk	20.1	-27.3	10.5	34.65	46.02	-11.37	0-360	299	V
9	831.4821	31.27	Pk	22.7	-27.8	10.5	36.67	46.02	-9.35	0-360	102	V
10	904.5916	31.98	Pk	23.2	-27.8	10.5	37.88	46.02	-8.14	0-360	102	V
Pk - Peak detector												

8.2.2. RX/DIGITAL SPURIOUS EMISSIONS 1GHZ TO 10GHz



RX/Digital Data

Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor (dB/m)	Path (dB)	Corrected Reading dBuV/m	PK Limit dBuV/m	PK Margin (dB)	AV Limit dBuV/m	AV Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.195	70.74	Pk	28.3	-55.76	43.28	74	-30.72	54	-10.72	0-360	151	H
2	1.032	70.58	Pk	27.1	-56.07	41.61	74	-32.39	54	-12.39	0-360	151	H
3	1.828	66.18	Pk	30.6	-53.22	43.56	74	-30.44	54	-10.44	0-360	100	H
4	1.984	65.82	Pk	31.6	-52.66	44.76	74	-29.24	54	-9.24	0-360	151	H
5	2.411	64.26	Pk	21.8	-51	35.06	74	-38.94	54	-18.94	0-360	98	H
6	3.2	63.44	Pk	23.2	-50	36.64	74	-37.36	54	-17.36	0-360	151	H
7	3.628	63.02	Pk	23.3	-49.7	36.62	74	-37.38	54	-17.38	0-360	98	H
8	4.078	61.45	Pk	28.4	-51.6	38.25	74	-35.75	54	-15.75	0-360	148	H
9	4.2153	60.89	Pk	28.3	-51.56	37.63	74	-36.37	54	-16.37	0-360	100	H
10	4.4978	61.58	Pk	27.9	-51.87	37.61	74	-36.39	54	-16.39	0-360	100	H
11	4.8053	60.95	Pk	27.7	-51.49	37.16	74	-36.84	54	-16.84	0-360	100	H
12	1.036	68.8	Pk	27	-55.99	39.81	74	-34.19	54	-14.19	0-360	151	V
13	1.2	68.7	Pk	28.3	-55.93	41.07	74	-32.93	54	-12.93	0-360	97	V
14	1.889	65.64	Pk	31.2	-53.19	43.65	74	-30.35	54	-10.35	0-360	97	V
15	2.276	64.32	Pk	21.7	-51.22	34.8	74	-39.2	54	-19.2	0-360	98	V
16	3.424	63.99	Pk	23.5	-50.58	36.91	74	-37.09	54	-17.09	0-360	98	V
17	3.802	62.57	Pk	24.1	-50.07	36.6	74	-37.4	54	-17.4	0-360	150	V
18	4.047	61.63	Pk	28.5	-51.73	38.4	74	-35.6	54	-15.6	0-360	151	V
19	4.2145	61.67	Pk	28.3	-51.56	38.41	74	-35.59	54	-15.59	0-360	98	V
20	4.5118	62.03	Pk	27.8	-51.86	37.97	74	-36.03	54	-16.03	0-360	98	V
21	4.9628	58.6	Pk	27.8	-49.97	36.43	74	-37.57	54	-17.57	0-360	151	V
Pk - Peak detector													

9. AC POWER LINE CONDUCTED EMISSIONS

9.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.207 (a)

RSS-Gen 8.8

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.

TEST PROCEDURE

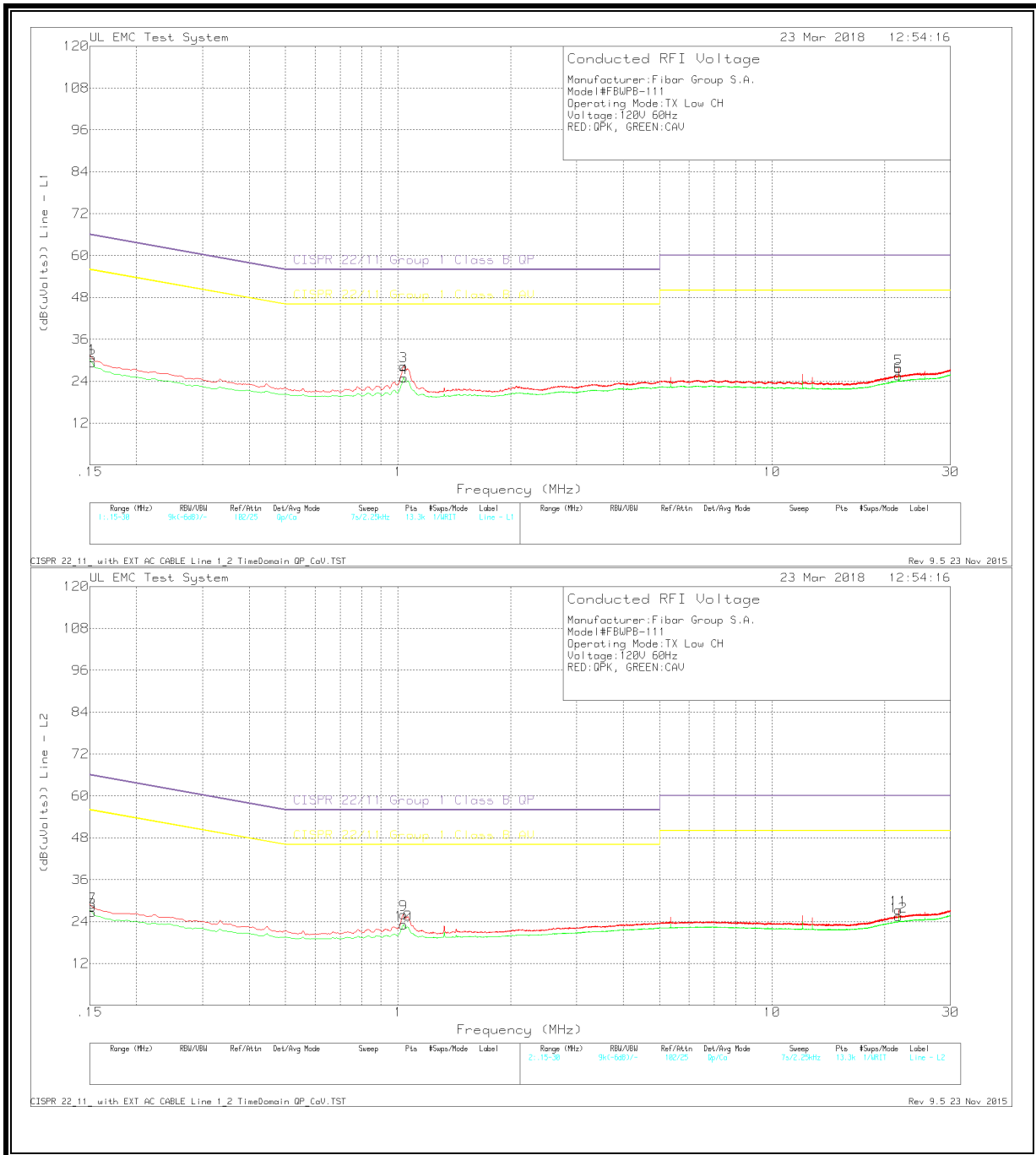
ANSI C63.10:2013, Section 6.2
ANSI C63.4:2014

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

Line conducted data is recorded for both NEUTRAL and HOT lines.

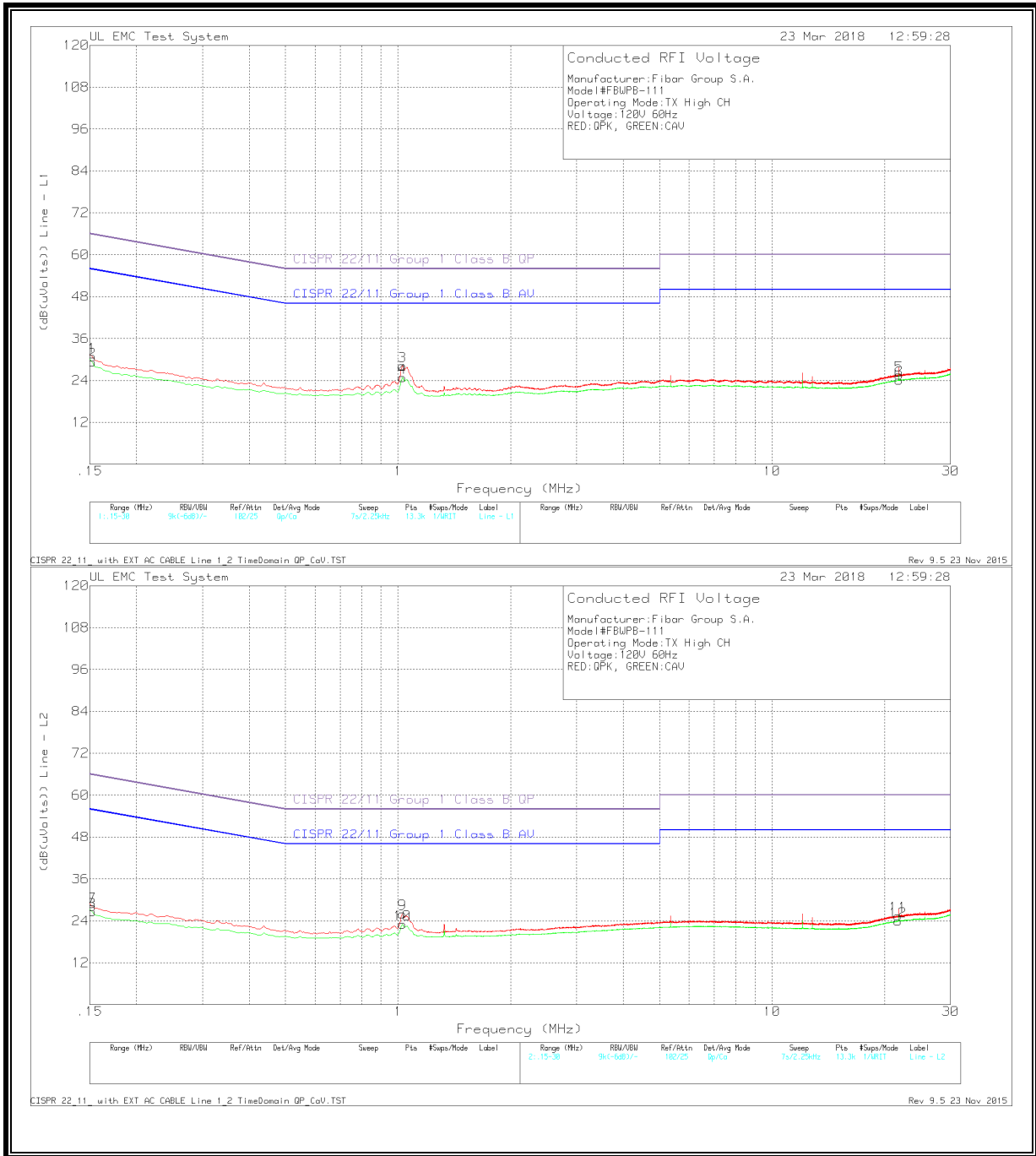
9.1.1. CONDUCTED EMSSIONS RESULTS TX Low CH – GRAPH



TX Low CH – DATA

Manufacturer: Fibar Group S.A.										
Model# FBWPB-111										
Operating Mode: TX Low CH										
Voltage: 120V 60Hz										
Trace Markers										
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	LISN Factor dBm	Path dB	Corrected Reading (dB(uVolts))	QP Limit (dBuV)	QP Margin (dB)	AV Limit (dBuV)	AV Margin (dB)
Range 1: Line - L1 .15 - 30MHz										
1	0.15225	16.86	Qp	0.1	13.7	30.66	65.88	-35.22	-	-
2	0.15225	15.4	Ca	0.1	13.7	29.2	-	-	55.88	-26.68
3	1.03425	17.71	Qp	0	10.6	28.31	56	-27.69	-	-
4	1.0365	14.35	Ca	0	10.6	24.95	-	-	46	-21.05
5	21.78825	15.26	Qp	-0.1	12.4	27.56	60	-32.44	-	-
6	21.78825	13.25	Ca	-0.1	12.4	25.55	-	-	50	-24.45
Range 2: Line - L2 .15 - 30MHz										
7	0.15225	14.57	Qp	0.1	13.6	28.27	65.88	-37.61	-	-
8	0.15225	12.92	Ca	0.1	13.6	26.62	-	-	55.88	-29.26
9	1.03312	15.45	Qp	0	10.6	26.05	56	-29.95	-	-
10	1.03425	12.52	Ca	0	10.6	23.12	-	-	46	-22.88
11	21.78825	14.98	Qp	0	12.4	27.38	60	-32.62	-	-
12	21.78825	13.08	Ca	0	12.4	25.48	-	-	50	-24.52
Qp - Quasi-Peak detector										
Ca - CISPR Average detection										

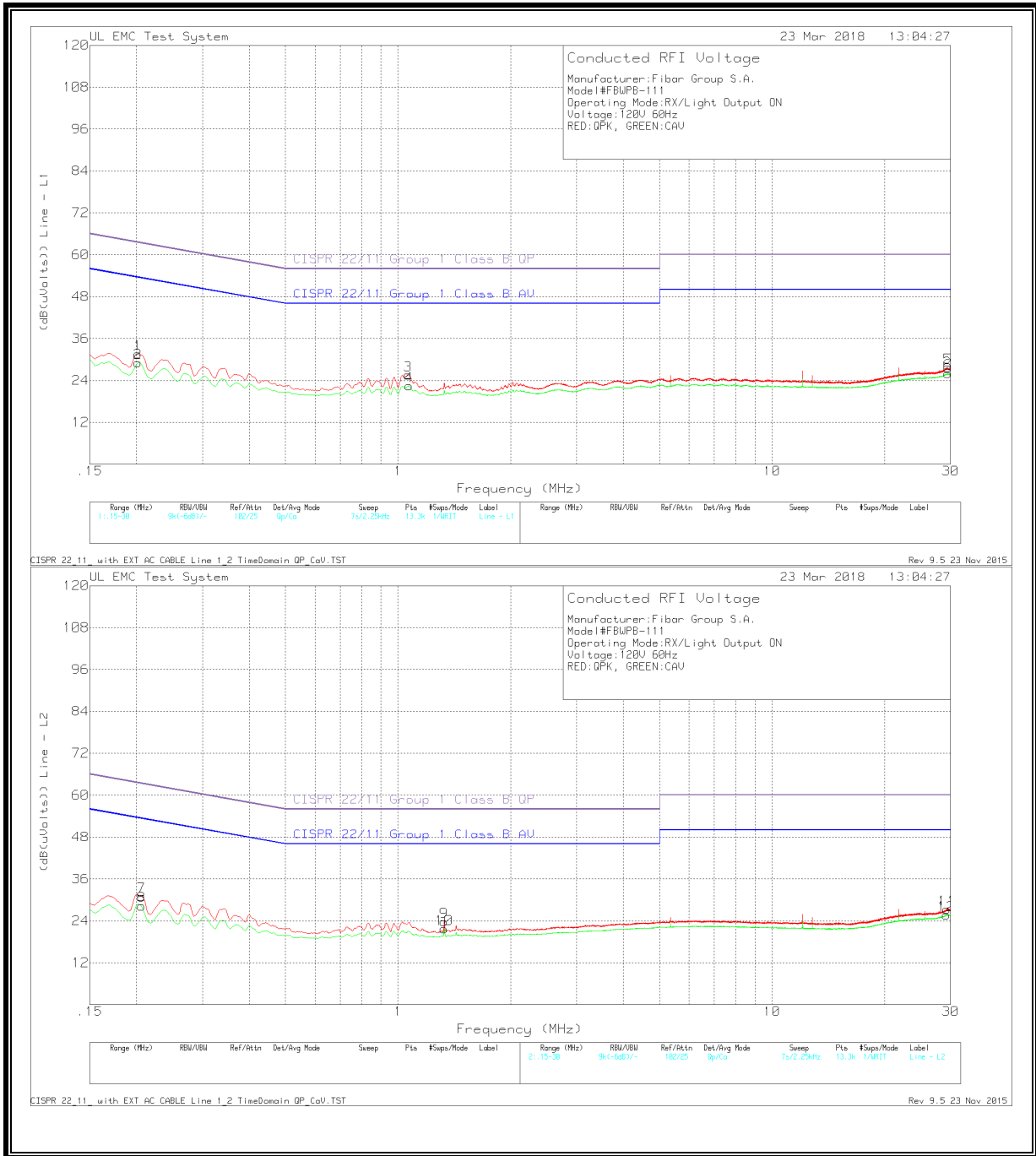
TX High CH – GRAPH



TX High CH – DATA

Manufacturer: Fibar Group S.A.										
Model#FBWPB-111										
Operating Mode: TX High CH										
Voltage: 120V 60Hz										
Trace Markers										
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	LISN Factor dBm	Path dB	Corrected Reading (dB(uVolts))	QP Limit (dBuV)	QP Margin (dB)	AV Limit (dBuV)	AV Margin (dB)
Range 1: Line - L1 .15 - 30MHz										
1	0.15225	17	Qp	0.1	13.7	30.8	65.88	-35.08	-	-
2	0.15225	15.5	Ca	0.1	13.7	29.3	-	-	55.88	-26.58
3	1.0275	17.57	Qp	0	10.6	28.17	56	-27.83	-	-
4	1.0275	14.2	Ca	0	10.6	24.8	-	-	46	-21.2
5	21.83325	13.2	Qp	-0.1	12.4	25.5	60	-34.5	-	-
6	21.83438	11.73	Ca	-0.1	12.4	24.03	-	-	50	-25.97
Range 2: Line - L2 .15 - 30MHz										
7	0.15225	14.41	Qp	0.1	13.6	28.11	65.88	-37.77	-	-
8	0.15225	12.88	Ca	0.1	13.6	26.58	-	-	55.88	-29.3
9	1.0275	15.44	Qp	0	10.6	26.04	56	-29.96	-	-
10	1.0275	12.4	Ca	0	10.6	23	-	-	46	-23
11	21.714	13.05	Qp	0	12.4	25.45	60	-34.55	-	-
12	21.714	11.53	Ca	0	12.4	23.93	-	-	50	-26.07
Qp - Quasi-Peak detector										
Ca - CISPR Average detection										

RX/Digital – GRAPH



RX/DIGITAL – DATA

Manufacturer: Fibar Group S.A.										
Model# FBWPB-111										
Operating Mode: RX/Light Output ON										
Voltage: 120V 60Hz										
Trace Markers										
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	LISN Factor dBm	Path dB	Corrected Reading (dB(uVolts))	QP Limit (dBuV)	QP Margin (dB)	AV Limit (dBuV)	AV Margin (dB)
Range 1: Line - L1 .15 - 30MHz										
1	0.20175	20.19	Qp	0	11.4	31.59	63.54	-31.95	-	-
2	0.20175	17.67	Ca	0	11.4	29.07	-	-	53.54	-24.47
3	1.0635	14.91	Qp	0	10.6	25.51	56	-30.49	-	-
4	1.07025	11.87	Ca	0	10.6	22.47	-	-	46	-23.53
5	29.4675	14.5	Qp	-0.1	13.3	27.7	60	-32.3	-	-
6	29.4675	12.84	Ca	-0.1	13.3	26.04	-	-	50	-23.96
Range 2: Line - L2 .15 - 30MHz										
7	0.20625	19.62	Qp	0	11.4	31.02	63.35	-32.33	-	-
8	0.20625	16.88	Ca	0	11.4	28.28	-	-	53.35	-25.07
9	1.329	13.13	Qp	0	10.6	23.73	56	-32.27	-	-
10	1.329	11.06	Ca	0	10.6	21.66	-	-	46	-24.34
11	29.28525	14.27	Qp	-0.1	13.1	27.27	60	-32.73	-	-
12	29.2515	12.65	Ca	-0.1	13.1	25.65	-	-	50	-24.35
Qp - Quasi-Peak detector										
Ca - CISPR Average detection										