



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

TEST REPORT

FOR

Fibaro Wall Plug

MODEL NUMBER: FGWPB-121

FCC ID: 2AA9MFGWPB121

IC: 20430-FGWPB121

REPORT NUMBER: 11892680

ISSUE DATE: October 17, 2017

Prepared for
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NVLAB LAB CODE: 100414-0

Revision History

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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-121

SERIAL NUMBER: Non-Serialized

DATE TESTED: September 20 – October 05, 2017

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 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, RSS-210 Issue 9, and ICES-003 Issue 6.

3. FACILITIES AND ACCREDITATION

IC Test Site(s) Reg. #: 2180A-1

The test sites and measurement facilities used to collect data are located at 333 Pfingsten 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	200-1000MHz	LogP 3m Horz	3.46dB
Radiated Emissions	200-1000MHz	LogP 3m Vert	4.98dB
Radiated Emissions	1-6GHz	Horn	5.02dB
Radiated Emissions	6-18GHz	Horn	5.34dB
Occupied Channel Bandwidth	30MHz-26GHz	Spectrum Analyzer	± 0.39 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT, FGWPB-121, 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

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	92.64

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,Z, it was determined that X-Axis orientation with USB cable was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation with USB cable.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
60W AC Light Bulb	-	-	-	-
USB cable with 10Ω resistor	-	-	-	-

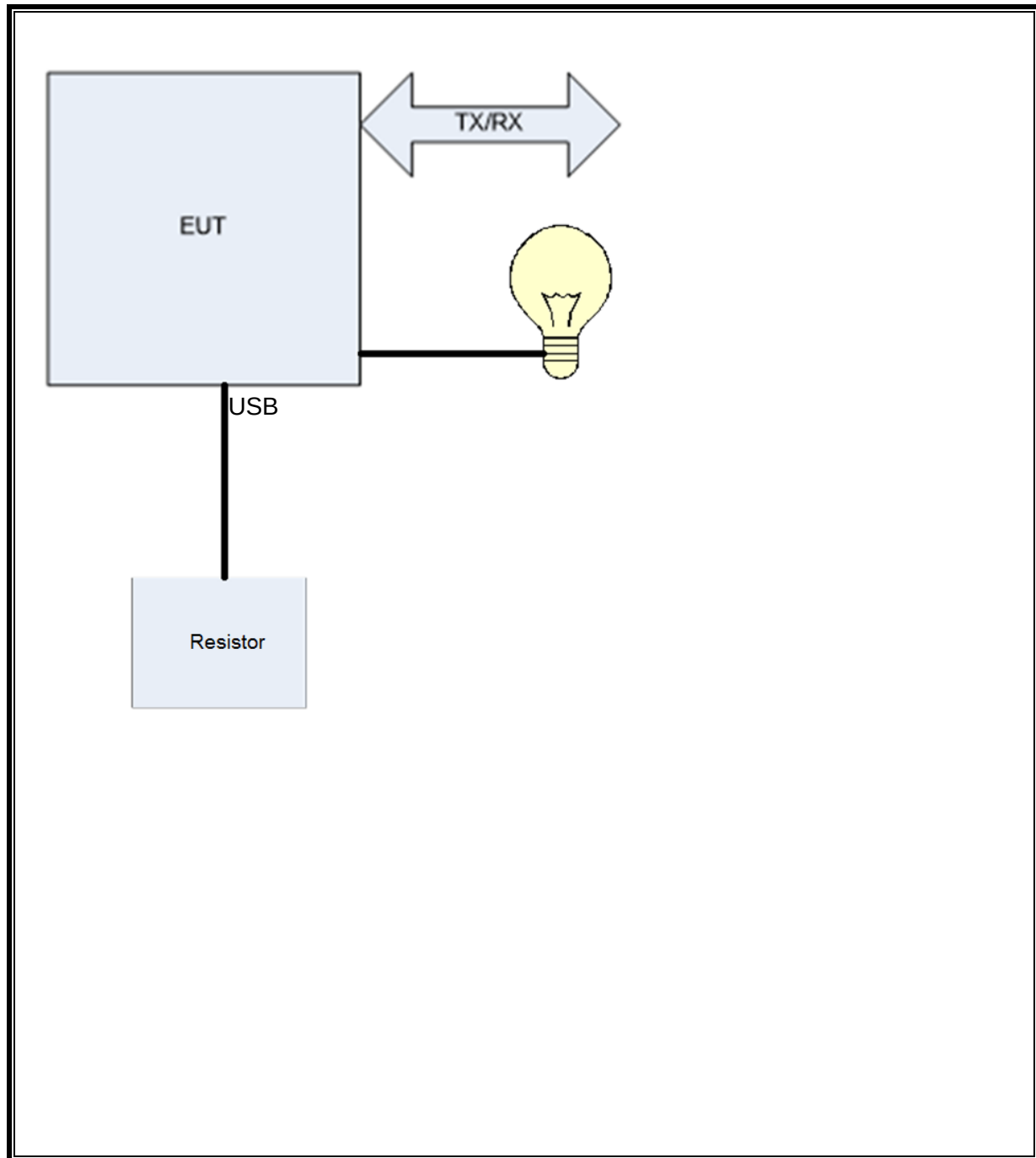
I/O CABLES

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
3	USB	-	DC	Wire	1	None

TEST SETUP

The EUT is programmed for continuous TX mode during transmitter tests, and RX mode 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		
Signal Analyzer	Agilent	N9030A	EMC4360	1/27/2017	1/31/2018
Test Receiver	Rhode & Schwarz	ESCI	EMC4328	12/2/2016	12/31/2017
Log-P Antenna	Chase	VBA6106A	EMC4078	2/15/2017	2/15/2018
Bicon Antenna	Chase	UPA6109	EMC4313	2/15/2017	2/15/2018
Antenna Array	UL	BOMS	EMC4276	1/27/2017	1/31/2018
Test Receiver	Rhode & Schwarz	ESU	EMC4323	12/24/2016	12/31/2017
Loop Antenna	EMCO	6502/1	EMC4026	9/12/2017	9/30/2018
EMI Test Receiver	Rohde & Schwarz	ESR	EMC4377	12/30/2016	12/31/2017
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	12/30/2016	12/31/2017
LISN - L2	Solar	8602-50-TS-50-	EMC4064	12/30/2016	12/31/2017

7. MEASUREMENT METHODS

ANSI C63.10:2013 for the following tests:

20dB and 99% Bandwidth
Radiated Spurious Emissions
Line Conducted Emissions

ANSI C63.4:2014 for the following tests:

Digital Radiated Emissions
Line Conducted Emissions

7.1. 20dB Bandwidth and 99% Bandwidth

LIMITS

For reporting purpose only

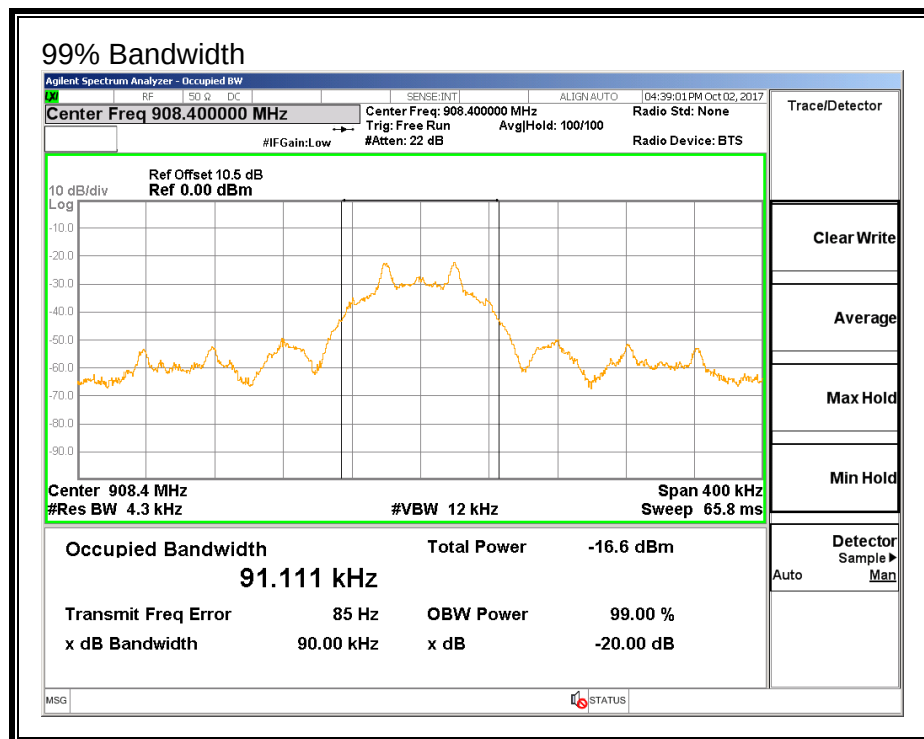
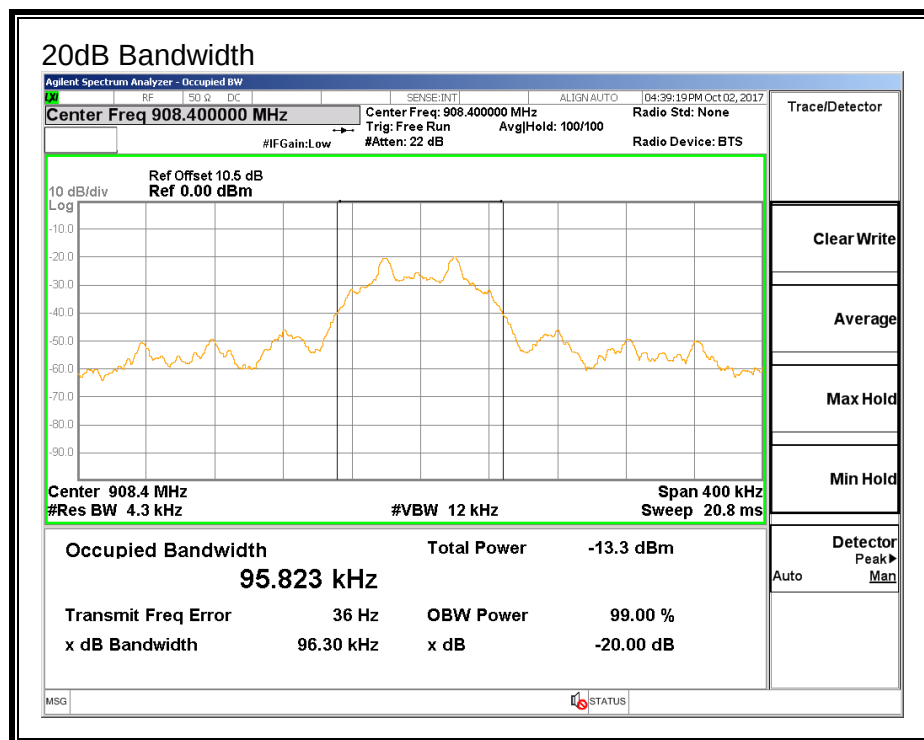
MEASUREMENT METHOD

ANSI C63.10:2013, section 7.8.7

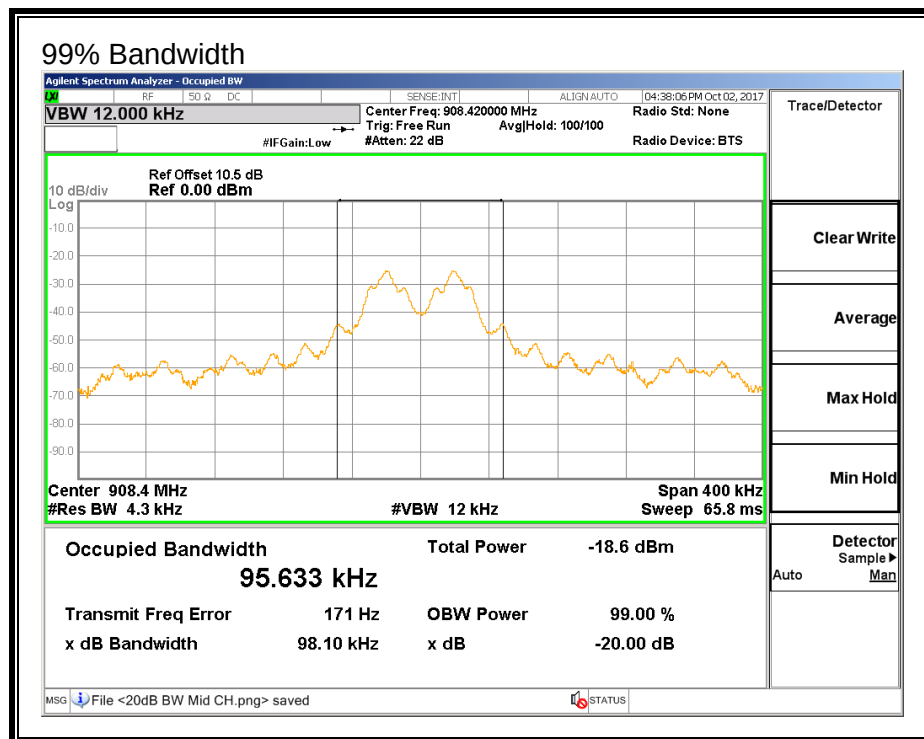
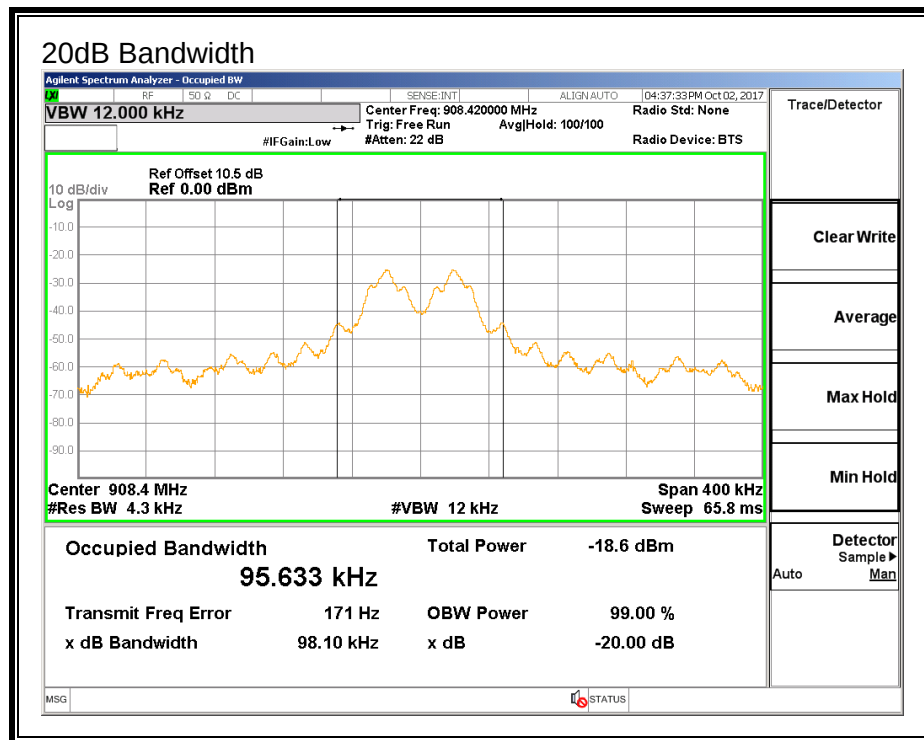
RESULTS

Channel	Frequency (MHz)	20dB Bandwidth (kHz)	99% Bandwidth (kHz)
Low	908.40	96.30	91.111
Mid	908.42	98.10	95.633
High	916.00	127.60	117.04

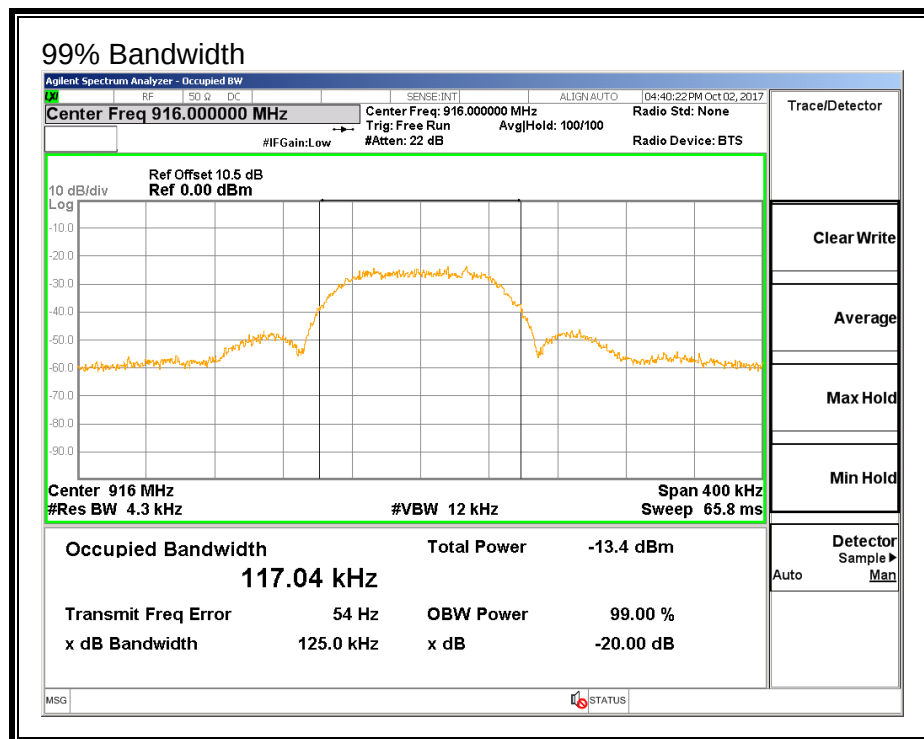
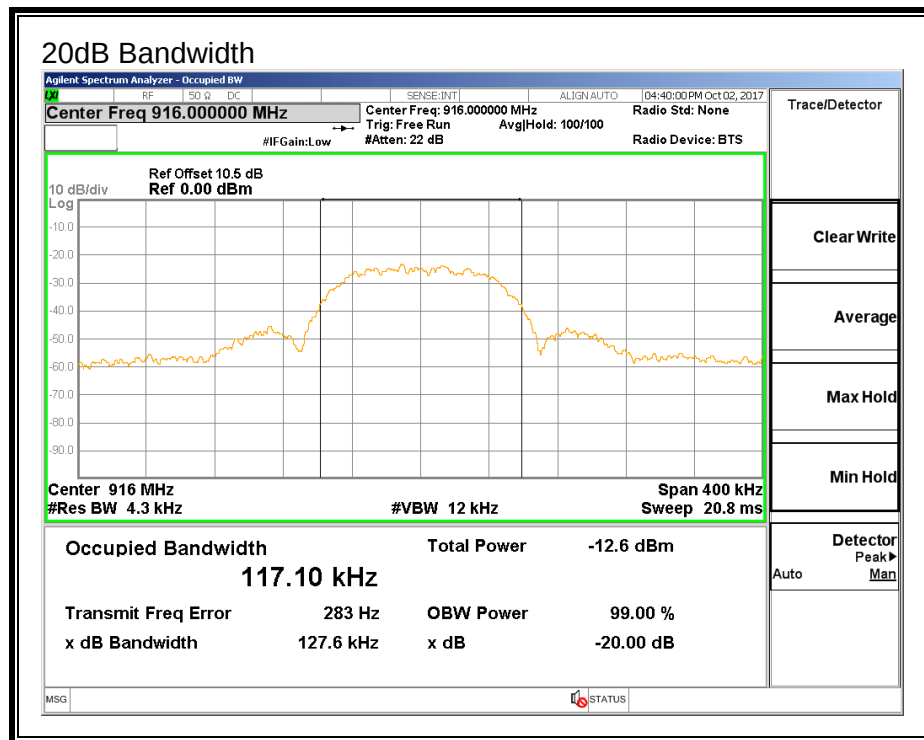
Low Channel



Middle Channel



High Channel



8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

FCC §15.205 and §15.209

IC RSS-210 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

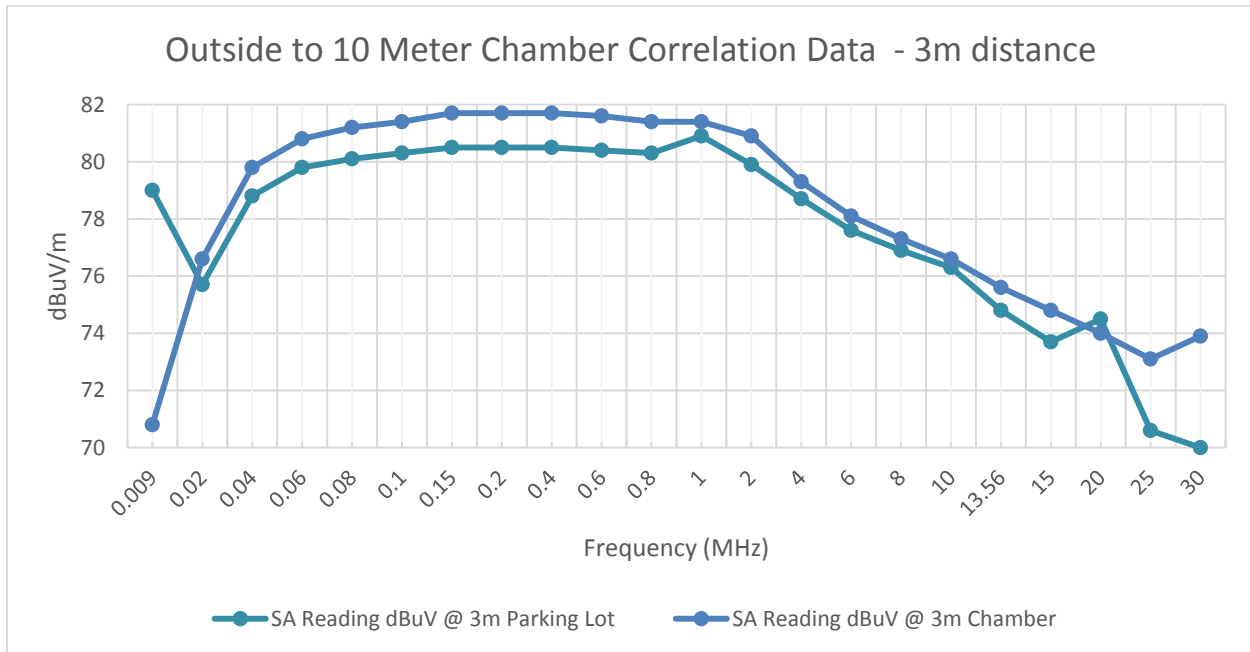
PROCEDURES

ANSI C63.10:2013, Section 11.12

8.2. RADIATED SPUROUS EMSSIONS

8.2.1. SPURIOUS EMISSIONS 9kHz-30MHz Open Field to 10 Meter Chamber Correlation Data

Correlation Data for measurements 9kHz-30MHz between Outside and 10m semi-anechoic chamber in at Underwriter Laboratories in Northbrook, IL.



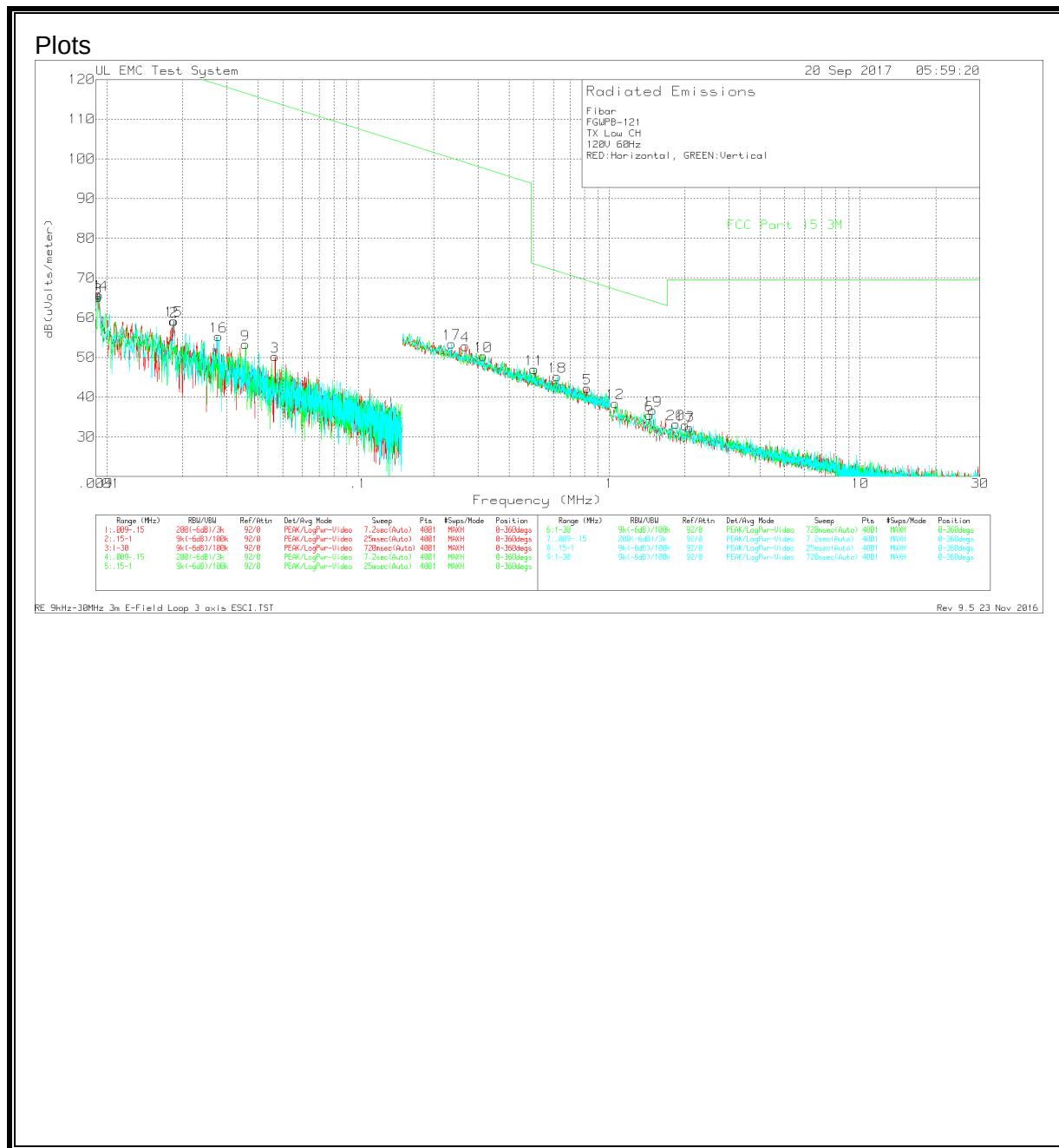
Correlation measurements were conducted using a signal source with an antenna outside in open area (parking lot). Immediately following the measurements the same setup was moved inside the 10 meter semi-anechoic chamber and the measurements were repeated. The above plot shows the difference in levels measured between outside and the 10 meter semi anechoic chamber.

8.2.2. Fundamental Frequency Radiated Emissions

Data

Manufacturer:Fibar												
Model#Door Window Sensor												
Mode:TX												
Voltage:Battery												
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												
908.42463	57.88	Pk	23.3	9.5	90.68	114	-23.32	94	-3.32	138	184	H
908.42463	59.84	Pk	23.3	9.5	92.64	114	-21.36	94	-1.36	62	124	V
Mid CH												
908.43831	59.49	Pk	23.3	9.5	92.29	114	-21.71	94	-1.71	80	123	V
908.43831	58.99	Pk	23.3	9.5	91.79	114	-22.21	94	-2.21	80	123	H
High CH												
915.97306	56.5	Pk	23.1	9.6	92.05	114	-21.95	94	-1.95	114	101	H
915.97306	57.23	Pk	23.1	9.6	89.93	114	-24.07	94	-4.07	318	118	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.												

8.2.3. Spurious Emissions 9kHz – 30MHz (single plot maybe used if eut set to hopping mode)



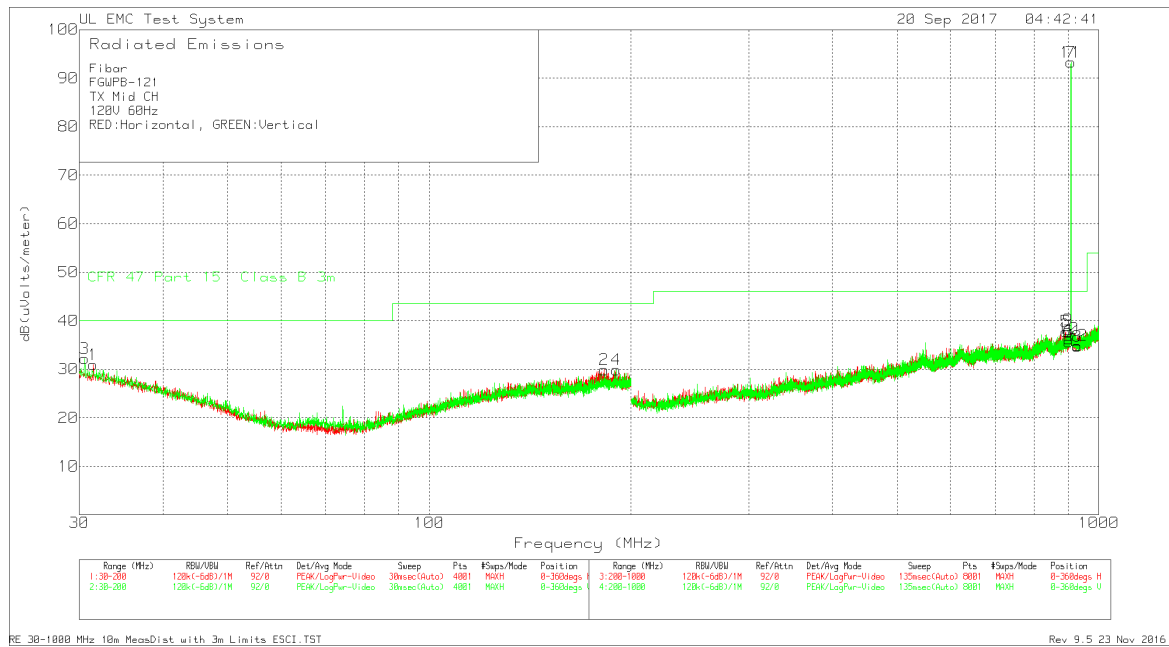
Data

Fibar										
FGWPB-121										
TX Low CH										
120V 60Hz										
Trace Markers										
Marker No.	Test Frequency (MHz)	Meter Reading (dBUV)	Detector	Antenna Factor (dBm)	Path (dB)	Corrected Reading dB(uVolts/ meter)	AV Limit dBUV/m	AV Margin (dB)	Azimuth [Degs]	Polarity
1	0.009175	43.69	Pk	22.2	0	65.89	128.33	-62.44	0-360	X
2	0.018485	41.88	Pk	17.2	0	59.08	122.25	-63.17	0-360	X
3	0.046695	37.26	Pk	12.9	0	50.16	114.21	-64.05	0-360	X
4	0.26779	41.51	Pk	11.3	0	52.81	99.05	-46.24	0-360	X
5	0.81669	30.74	Pk	11.4	0.1	42.24	69.36	-27.12	0-360	X
6	1.4495	23.9	Pk	11.4	0.1	35.4	64.38	-28.98	0-360	X
7	2.0875	20.7	Pk	11.5	0.1	32.3	69.54	-37.24	0-360	X
8	0.00921	42.87	Pk	22.2	0	65.07	128.3	-63.23	0-360	Y
9	0.0356	38.87	Pk	14.4	0	53.27	116.56	-63.29	0-360	Y
10	0.31529	39	Pk	11.3	0	50.3	97.63	-47.33	0-360	Y
11	0.50273	35.68	Pk	11.3	0	46.98	73.58	-26.6	0-360	Y
12	1.058	26.92	Pk	11.4	0.1	38.42	67.11	-28.69	0-360	Y
13	2.00775	21.24	Pk	11.5	0.1	32.84	69.54	-36.7	0-360	Y
14	0.00928	43.61	Pk	22.1	0	65.71	128.23	-62.52	0-360	Z
15	0.01838	41.98	Pk	17.2	0	59.18	122.3	-63.12	0-360	Z
16	0.027795	39.89	Pk	15.4	0	55.29	118.71	-63.42	0-360	Z
17	0.23563	42.13	Pk	11.3	0	53.43	100.16	-46.73	0-360	Z
18	0.6218	33.84	Pk	11.3	0	45.14	71.73	-26.59	0-360	Z
19	1.493	25.08	Pk	11.4	0.1	36.58	64.12	-27.54	0-360	Z
20	1.841	21.58	Pk	11.5	0.1	33.18	69.54	-36.36	0-360	Z
Pk - Peak detector										

8.2.4. SPURIOUS EMISSIONS 30 TO 1000 MHz



Middle Channel Plots

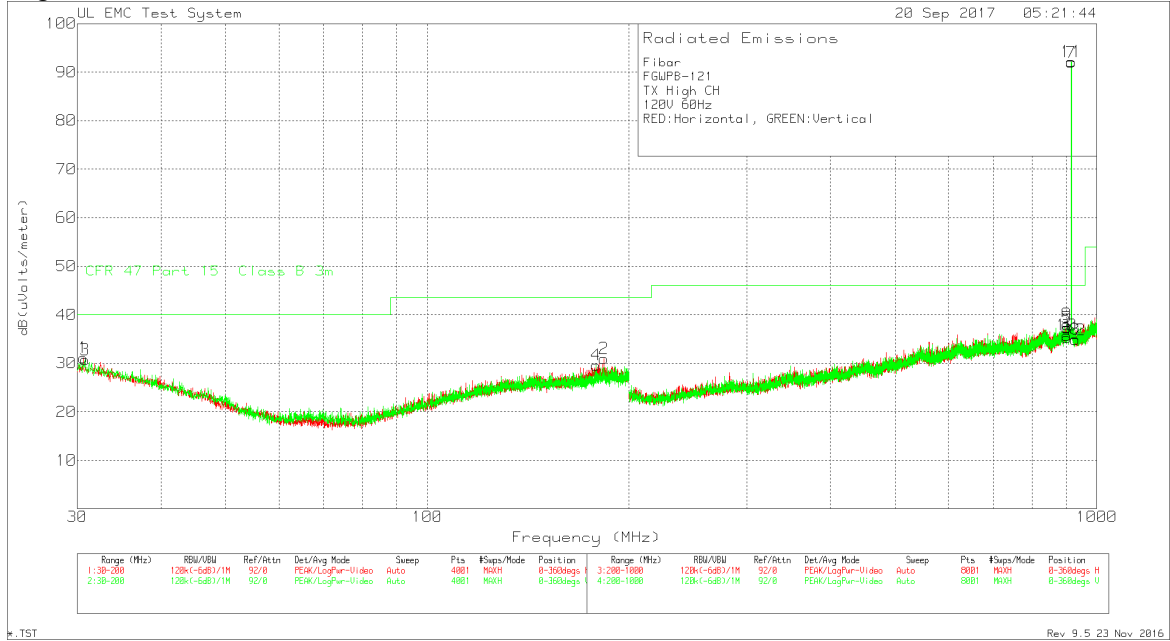


All visible emissions outside of the transmit frequency range are at least 6dB below the limit or under the noise floor, therefore no further measurement needed.
Measurements were made at 10m distance and extrapolated to 3m distance.

Middle Channel Data

Fibar															
FGWPB-121															
TX Mid CH															
120V 60Hz															
Trace Markers															
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Detector	Antenn Factor (dBm)	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	31.4875	32.69	Pk	17.8	-30	10.5	30.99	40	-9.01	0-360	248	H			
2	182.3625	32.81	Pk	15.8	-29.2	10.5	29.91	43.52	-13.61	0-360	248	H			
3	30.5525	33.58	Pk	18.1	-30	10.5	32.18	40	-7.82	0-360	398	V			
4	190.1825	32.4	Pk	16	-29	10.5	29.9	43.52	-13.62	0-360	102	V			
5	891.7	32.2	Pk	22.8	-27.7	10.5	37.8	46.02	-8.22	0-360	299	H			
6*	902	30.09	Pk	23.1	-28	10.5	35.69	46.02	-10.33	0-360	98	H			
8*	928	29.36	Pk	22.5	-27.6	10.5	34.76	46.02	-11.26	0-360	399	H			
9	899.5	32.39	Pk	23	-27.8	10.5	38.09	46.02	-7.93	0-360	302	V			
10*	902	30.71	Pk	23.1	-28	10.5	36.31	46.02	-9.71	0-360	199	V			
12*	928	29.52	Pk	22.5	-27.6	10.5	34.92	46.02	-11.1	0-360	399	V			
Pk - Peak detector															
* - Bandedge Marker															

High Channel Plots



Rev 9.5 23 Nov 2016

All visible emissions outside of the transmit frequency range are at least 6dB below the limit or under the noise floor, therefore no further measurement needed.
Measurements were made at 10m distance and extrapolated to 3m distance.

High Channel Data

Fibar											
FGWPB-121											
TX High CH											
120V 60Hz											
Trace Markers											
Marker No.	Test Frequency (MHz)	Meter Reading (dBuV)	Antenn Factor (dBm)	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	30.595	32.55 Pk	18.1	-30	10.5	31.15	40	-8.85	0-360	398 H	
2	183.5525	33.7 Pk	15.9	-29.1	10.5	31	43.52	-12.52	0-360	248 H	
3	30.8075	32.26 Pk	18	-30	10.5	30.76	40	-9.24	0-360	398 V	
4	178.495	32.94 Pk	15.5	-29.3	10.5	29.64	43.52	-13.88	0-360	102 V	
5	901.4	31.65 Pk	23.1	-27.9	10.5	37.35	46.02	-8.67	0-360	299 H	
6*	902	29.65 Pk	23.1	-28	10.5	35.25	46.02	-10.77	0-360	299 H	
8*	928	29.53 Pk	22.5	-27.6	10.5	34.93	46.02	-11.09	0-360	199 H	
9	901.2	32.45 Pk	23	-27.9	10.5	38.05	46.02	-7.97	0-360	198 V	
10*	902	30.2 Pk	23.1	-28	10.5	35.8	46.02	-10.22	0-360	198 V	
12*	928	29.45 Pk	22.5	-27.6	10.5	34.85	46.02	-11.17	0-360	399 V	
Pk - Peak detector											
* - Bandedge Marker											

8.2.5. SPURIOUS EMISSIONS 1GHz TO 10GHz

Low Channel Plots

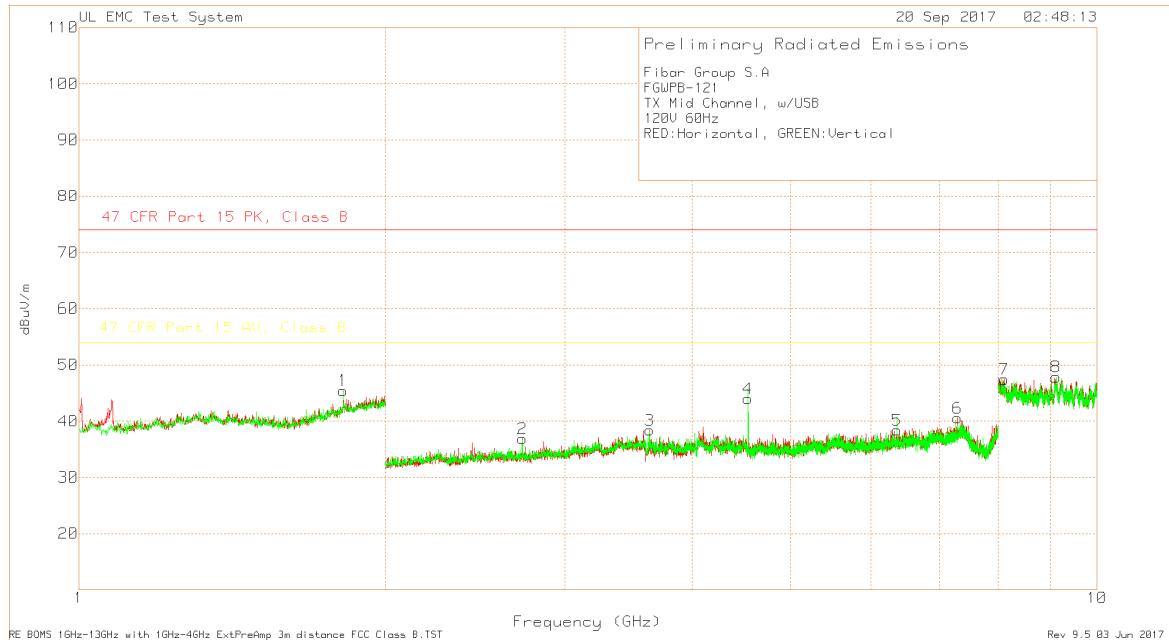


All visible emissions outside of the transmit frequency range are at least 6dB below the limit or under the noise floor, therefore no further measurement needed.

Low Channel Data

Fibar Group S.A.													
FGWPB-121													
TX Low Channel, w/USB													
120V 60Hz													
Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor (dB/m)	Gain/Loss (dB)	Corrected Reading dBuV/m	QP Limit (dBuV/m)	QP Margin (dB)	AV Limit (dBuV/m)	AV Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.817	67.38	Pk	30.5	-53.51	44.37	74	-29.63	54	-9.63	0-360	150	H
2	2.725	65.27	Pk	22.1	-50.86	36.51	74	-37.49	54	-17.49	0-360	200	H
3	3.634	63.93	Pk	23.3	-49.56	37.67	74	-36.33	54	-16.33	0-360	200	H
4	4.542	68	Pk	27.8	-51.81	43.99	74	-30.01	54	-10.01	0-360	200	H
5	6.359	56.97	Pk	29.2	-47.61	38.56	74	-35.44	54	-15.44	0-360	200	H
6	7.268	54.57	Pk	30.2	-46.02	38.75	74	-35.25	54	-15.25	0-360	152	H
7	8.123	58.27	Pk	36.2	-47.33	47.14	74	-26.86	54	-6.86	0-360	150	H
8	1.817	67.88	Pk	30.5	-53.51	44.87	74	-29.13	54	-9.13	0-360	200	V
9	2.725	65.89	Pk	22.1	-50.86	37.13	74	-36.87	54	-16.87	0-360	150	V
10	3.634	64.62	Pk	23.3	-49.56	38.36	74	-35.64	54	-15.64	0-360	200	V
11	4.542	70.26	Pk	27.8	-51.81	46.25	74	-27.75	54	-7.75	0-360	150	V
12	6.359	60	Pk	29.2	-47.61	41.59	74	-32.41	54	-12.41	0-360	200	V
13	7.268	57.61	Pk	30.2	-46.02	41.79	74	-32.21	54	-12.21	0-360	150	V
14	9.215	58.25	Pk	36.4	-47.12	47.53	74	-26.47	54	-6.47	0-360	200	V
Pk - Peak detector													

Middle Channel Plots

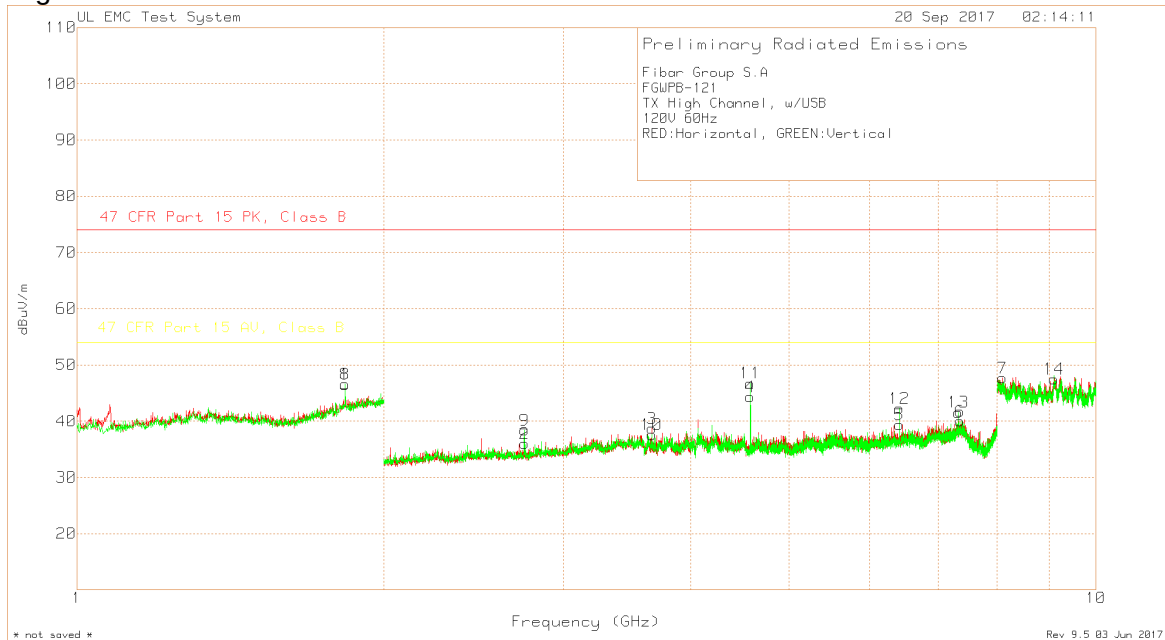


All visible emissions outside of the transmit frequency range are at least 6dB below the limit or under the noise floor, therefore no further measurement needed.

Middle Channel Data

Fibar Group S.A.													
FGWPB-121													
TX Mid Channel, w/USB													
120V 60Hz													
Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor (dB/m)	Gain/Loss (dB)	Corrected Reading dBuV/m	QP Limit (dBuV/m)	QP Margin (dB)	AV Limit (dBuV/m)	AV Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.817	68.47	Pk	30.5	-53.51	45.46	74	-28.54	54	-8.54	0-360	98	H
2	2.725	65.66	Pk	22.1	-50.86	36.9	74	-37.1	54	-17.1	0-360	200	H
3	3.634	64.64	Pk	23.3	-49.56	38.38	74	-35.62	54	-15.62	0-360	150	H
4	4.542	68.05	Pk	27.8	-51.81	44.04	74	-29.96	54	-9.96	0-360	200	H
5	6.359	56.81	Pk	29.2	-47.61	38.4	74	-35.6	54	-15.6	0-360	200	H
6	7.295	56.18	Pk	30.4	-46.05	40.53	74	-33.47	54	-13.47	0-360	200	H
7	8.108	58.42	Pk	36.2	-47.19	47.43	74	-26.57	54	-6.57	0-360	200	H
8	9.115	59.06	Pk	36.2	-47.41	47.85	74	-26.15	54	-6.15	0-360	150	V
Pk - Peak detector													

High Channel Plots



All visible emissions outside of the transmit frequency range are at least 6dB below the limit or under the noise floor, therefore no further measurement needed.

High Channel Data

Fibar Group S.A.													
FGWPB-121													
TX High Channel, w/USB													
120V 60Hz													
Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor (dB/m)	Gain/Loss (dB)	Corrected Reading dBuV/m	QP Limit (dBuV/m)	QP Margin (dB)	AV Limit (dBuV/m)	AV Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.832	69.19	Pk	30.7	-53.32	46.57	74	-27.43	54	-7.43	0-360	150	H
2	2.748	64.85	Pk	22.1	-50.92	36.03	74	-37.97	54	-17.97	0-360	150	H
3	3.665	64.93	Pk	23.4	-49.62	38.71	74	-35.29	54	-15.29	0-360	200	H
4	4.58	68.5	Pk	27.7	-51.85	44.35	74	-29.65	54	-9.65	0-360	200	H
5	6.412	57.78	Pk	29.2	-47.58	39.4	74	-34.6	54	-14.6	0-360	152	H
6	7.352	55.47	Pk	30.8	-46.28	39.99	74	-34.01	54	-14.01	0-360	200	H
7	8.1	58.48	Pk	36.2	-46.99	47.69	74	-26.31	54	-6.31	0-360	150	H
8	1.832	69.18	Pk	30.7	-53.32	46.56	74	-27.44	54	-7.44	0-360	200	V
9	2.748	67.23	Pk	22.1	-50.92	38.41	74	-35.59	54	-15.59	0-360	150	V
10	3.664	63.61	Pk	23.4	-49.4	37.61	74	-36.39	54	-16.39	0-360	200	V
11	4.58	70.92	Pk	27.7	-51.85	46.77	74	-27.23	54	-7.23	0-360	150	V
12	6.412	60.69	Pk	29.2	-47.58	42.31	74	-31.69	54	-11.69	0-360	150	V
13	7.329	56.95	Pk	30.7	-46.06	41.59	74	-32.41	54	-12.41	0-360	200	V
14	9.097	59.02	Pk	36.2	-47.71	47.51	74	-26.49	54	-6.49	0-360	200	V
Pk - Peak detector													

9. AC POWER LINE CONDUCTED EMISSIONS

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

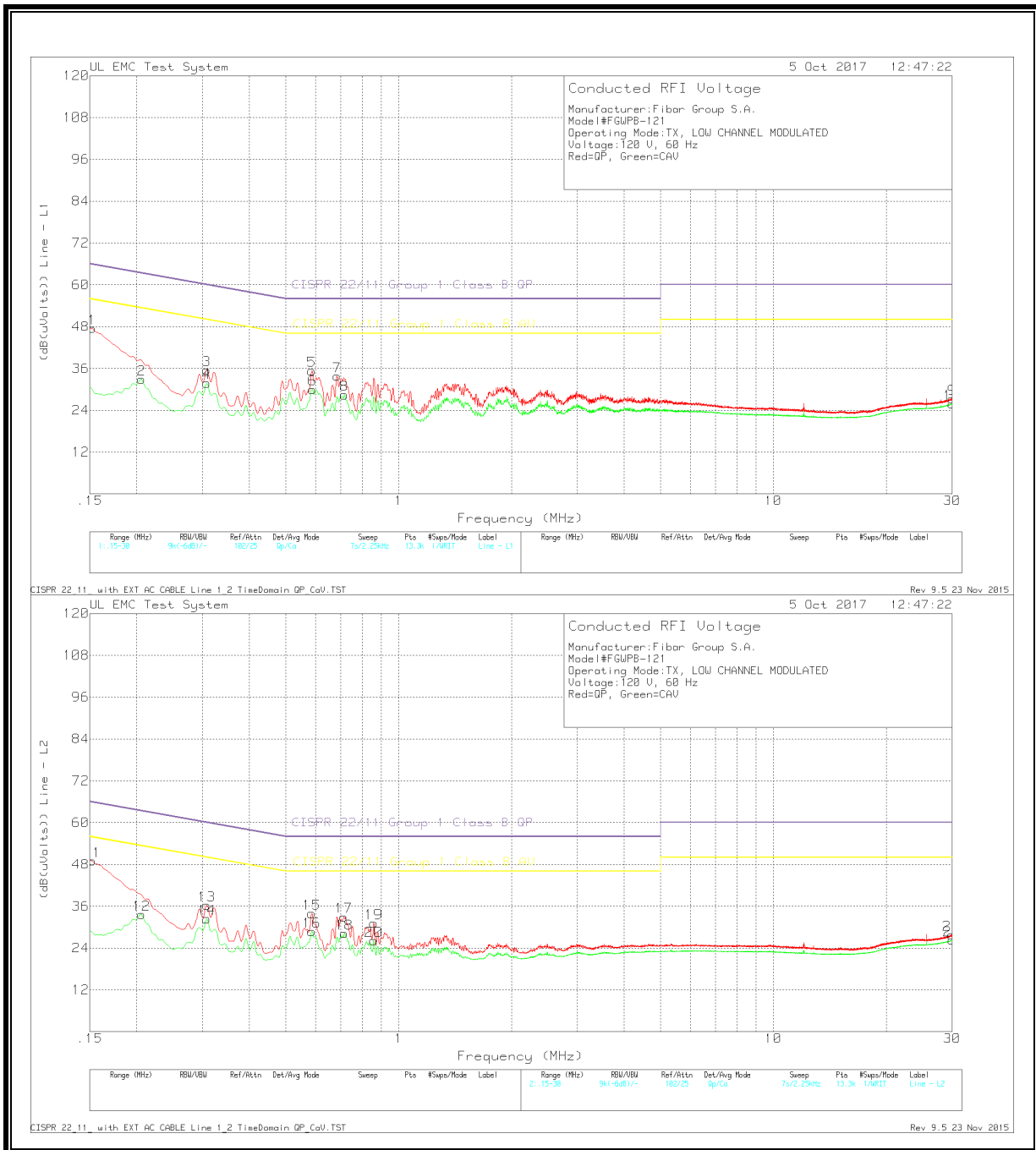
The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

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.

RESULTS

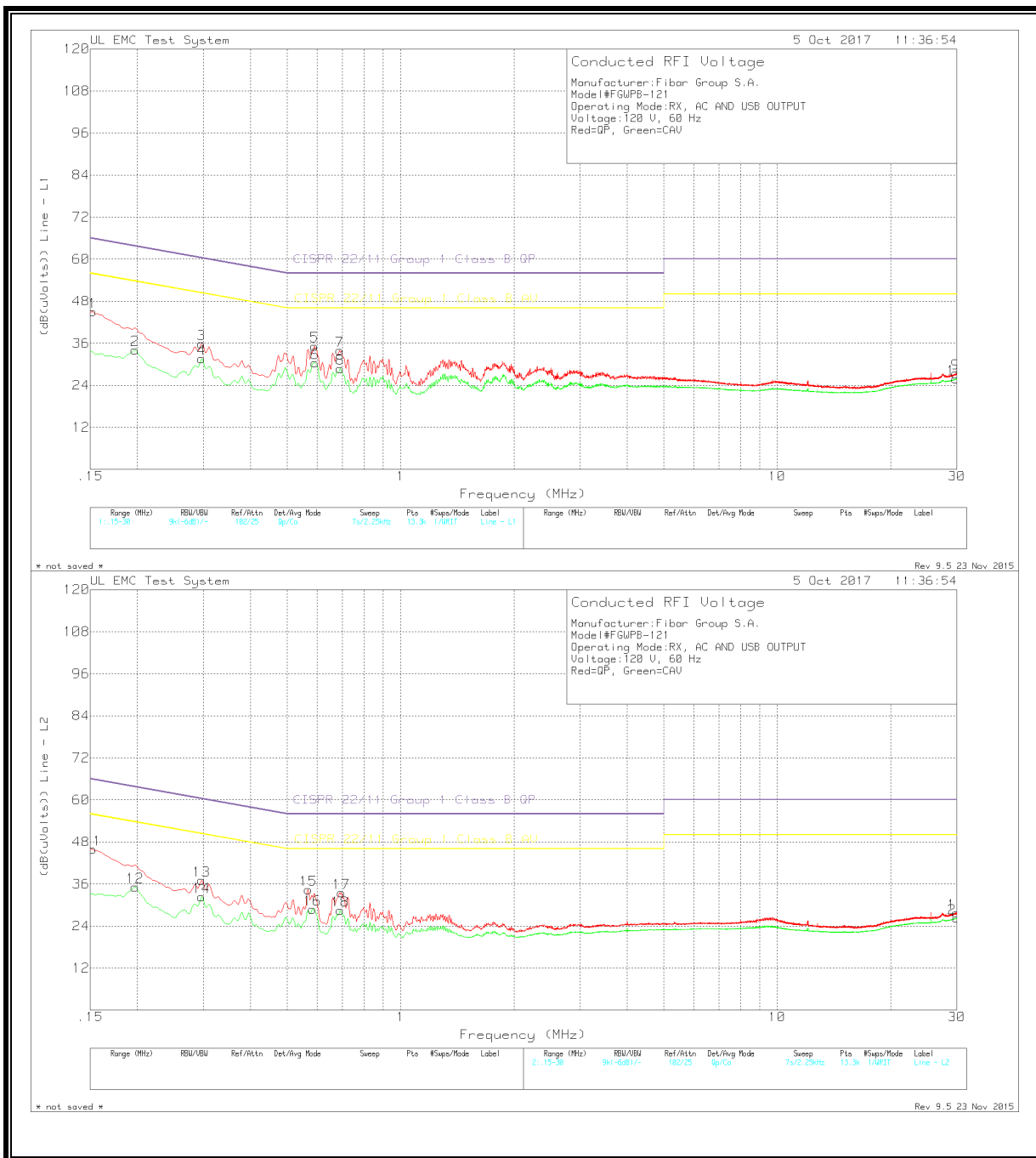
TX Mode RESULTS PLOT



TX MODE RESULTS Data

Manufacturer:Fibar Group S.A.										
Model#FGWPB-121										
Operating Mode:TX, LOW CHANNEL MODULATED										
Voltage:120 V, 60 Hz										
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	33.83	Qp	0.1	13.6	47.53	65.88	-18.35	-	-
2	0.20625	21.47	Ca	0	11.4	32.87	-	-	53.35	-20.48
3	0.3075	24.76	Qp	0	10.8	35.56	60.04	-24.48	-	-
4	0.3075	21.02	Ca	0	10.8	31.82	-	-	50.04	-18.22
5	0.5865	24.76	Qp	0	10.6	35.36	56	-20.64	-	-
6	0.58875	19.44	Ca	0	10.6	30.04	-	-	46	-15.96
7	0.6855	23.23	Qp	0	10.6	33.83	56	-22.17	-	-
8	0.717	17.83	Ca	0	10.6	28.43	-	-	46	-17.57
9	29.97375	14.11	Qp	-0.1	13.3	27.31	60	-32.69	-	-
10	29.9985	12.68	Ca	-0.1	13.3	25.88	-	-	50	-24.12
Range 2: Line - L2 .15 - 30MHz										
11	0.15225	34.71	Qp	0.1	14.2	49.01	65.88	-16.87	-	-
12	0.20625	21.77	Ca	0	11.9	33.67	-	-	53.35	-19.68
13	0.3075	24.93	Qp	0	11.4	36.33	60.04	-23.71	-	-
14	0.3075	21.01	Ca	0	11.4	32.41	-	-	50.04	-17.63
15	0.5865	22.8	Qp	0	11.1	33.9	56	-22.1	-	-
16	0.5865	17.64	Ca	0	11.1	28.74	-	-	46	-17.26
17	0.71475	21.89	Qp	0	11.1	32.99	56	-23.01	-	-
18	0.717	17.13	Ca	0	11.1	28.23	-	-	46	-17.77
19	0.85875	20.09	Qp	0	11.1	31.19	56	-24.81	-	-
20	0.85875	15.07	Ca	0	11.1	26.17	-	-	46	-19.83
21	29.913	14.23	Qp	-0.1	13.7	27.83	60	-32.17	-	-
22	29.96925	12.69	Ca	-0.1	13.7	26.29	-	-	50	-23.71
Qp - Quasi-Peak detector										
Ca - CISPR Average detection										

RX/Digital Mode RESULTS PLOT



RX/Digital MODE RESULTS Data

Manufacturer:Fibar Group S.A.										
Model#FGWPB-121										
Operating Mode:RX, AC AND USB OUTPUT										
Voltage:120 V, 60 Hz										
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	31.31	Qp	0.1	13.6	45.01	65.88	-20.87	-	-
2	0.19725	22.54	Ca	0.1	11.5	34.14	-	-	53.73	-19.59
3	0.29625	24.97	Qp	0	10.9	35.87	60.35	-24.48	-	-
4	0.29625	20.72	Ca	0	10.9	31.62	-	-	50.35	-18.73
5	0.591	24.6	Qp	0	10.6	35.2	56	-20.8	-	-
6	0.59325	19.86	Ca	0	10.6	30.46	-	-	46	-15.54
7	0.69	23.31	Qp	0	10.6	33.91	56	-22.09	-	-
8	0.69225	18.16	Ca	0	10.6	28.76	-	-	46	-17.24
9	29.814	14.21	Qp	-0.1	13.3	27.41	60	-32.59	-	-
10	29.85338	12.65	Ca	-0.1	13.3	25.85	-	-	50	-24.15
Range 2: Line - L2 .15 - 30MHz										
11	0.15225	31.58	Qp	0.1	14.2	45.88	65.88	-20	-	-
12	0.19725	23.07	Ca	0.1	12	35.17	-	-	53.73	-18.56
13	0.29625	25.6	Qp	0	11.4	37	60.35	-23.35	-	-
14	0.29625	20.98	Ca	0	11.4	32.38	-	-	50.35	-17.97
15	0.5685	23.31	Qp	0	11.1	34.41	56	-21.59	-	-
16	0.58425	17.66	Ca	0	11.1	28.76	-	-	46	-17.24
17	0.69675	22.43	Qp	0	11.1	33.53	56	-22.47	-	-
18	0.69225	17.41	Ca	0	11.1	28.51	-	-	46	-17.49
19	29.94675	14.17	Qp	-0.1	13.7	27.77	60	-32.23	-	-
20	29.967	12.7	Ca	-0.1	13.7	26.3	-	-	50	-23.7
Qp - Quasi-Peak detector										
Ca - CISPR Average detection										

9.1. RX/DIGITAL RADIATED EMISSIONS

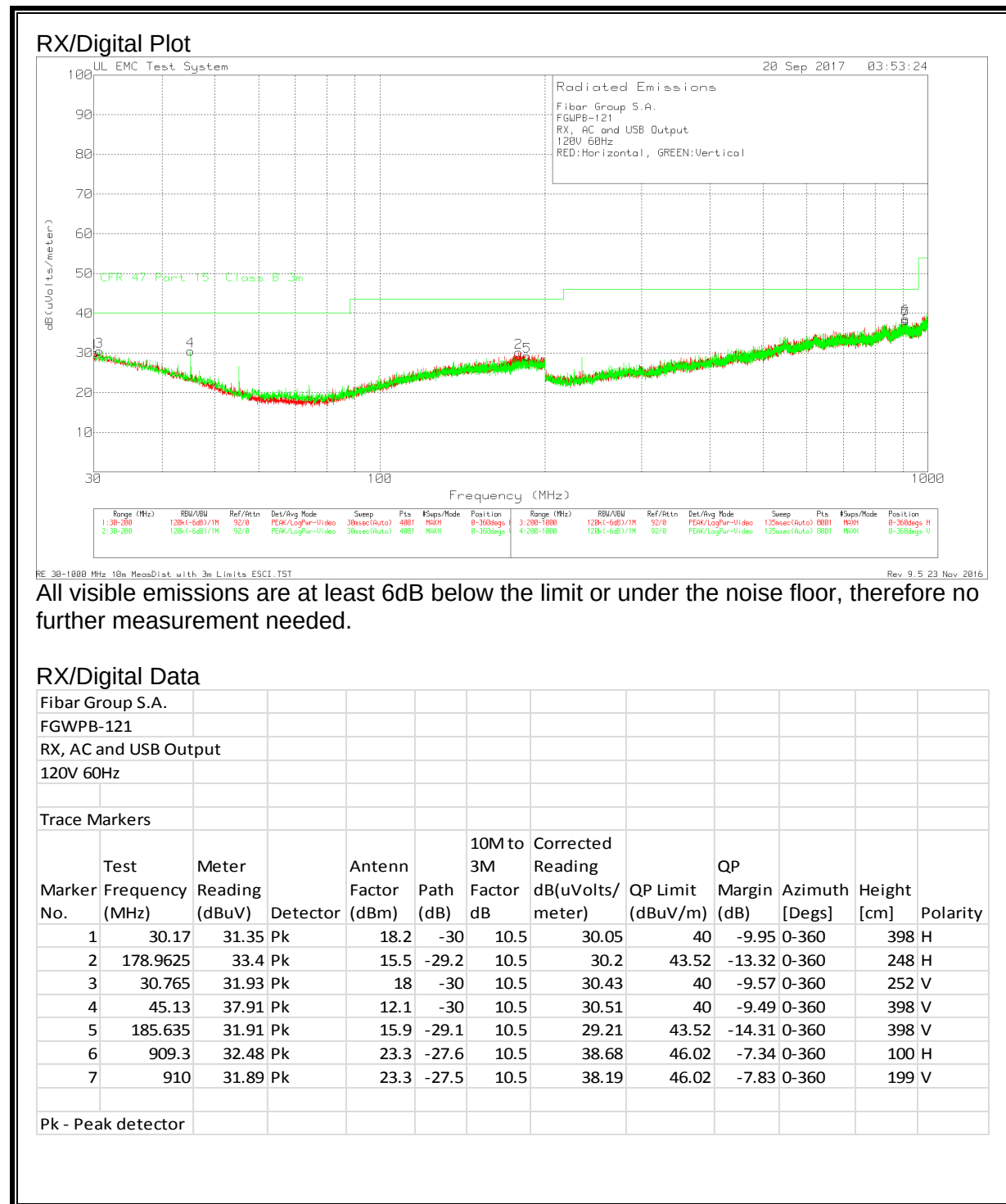
LIMIT

IC ICES-003
FCC 15.109

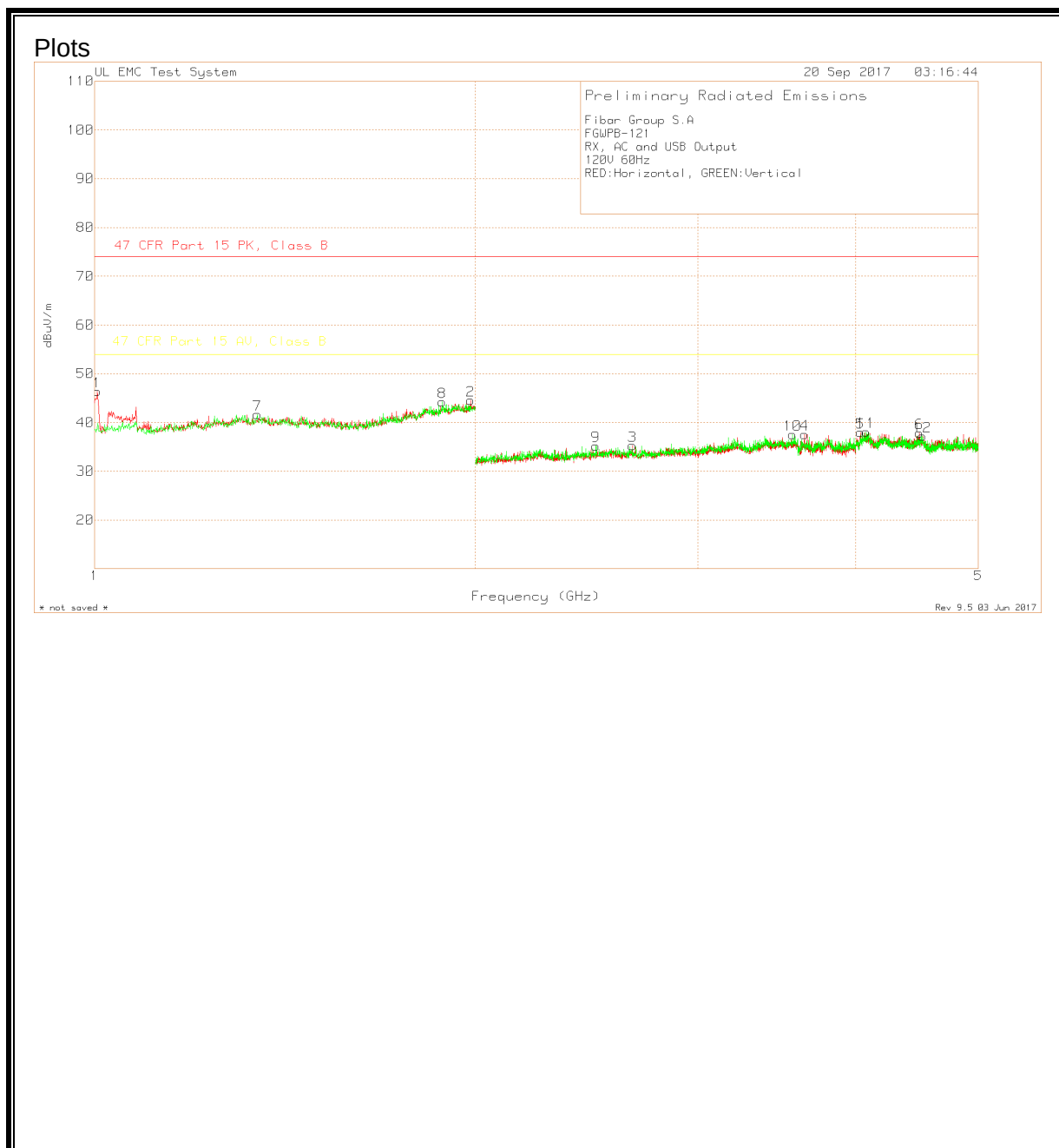
(a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency of emission (MHz)	Field strength (microvolts/meter)
30-88	90
88-216	150
216-960	210
Above 960	300

9.1.1. RX/DIGITAL RADIATED EMISSIONS 30 MHZ TO 1 GHZ



9.1.2. RX/DIGITAL RADIATED EMISSIONS 1 GHZ TO 5 GHZ



Data

Fibar Group S.A.													
FGWPB-121													
RX, AC and USB Output													
120V 60Hz													
Trace Markers													
Marker No.	Test Frequency (GHz)	Meter Reading (dBuV)	Detector	Antenna Factor (dB/m)	Gain/Loss (dB)	Corrected Reading dBuV/m	QP Limit (dBuV/m)	QP Margin (dB)	AV Limit (dBuV/m)	AV Margin (dB)	Azimuth [Degs]	Height [cm]	Polarity
1	1.005	74.83	Pk	27.3	-55.77	46.36	74	-27.64	54	-7.64	0-360	150	H
2	1.984	65.63	Pk	31.6	-52.66	44.57	74	-29.43	54	-9.43	0-360	100	H
3	2.663	64	Pk	22.2	-50.96	35.24	74	-38.76	54	-18.76	0-360	200	H
4	3.643	63.89	Pk	23.3	-49.61	37.58	74	-36.42	54	-16.42	0-360	150	H
5	4.035	61.18	Pk	28.5	-51.72	37.96	74	-36.04	54	-16.04	0-360	148	H
6	4.492	61.86	Pk	27.9	-51.88	37.88	74	-36.12	54	-16.12	0-360	148	H
7	1.345	67.67	Pk	29.1	-55.11	41.66	74	-32.34	54	-12.34	0-360	100	V
8	1.884	66.41	Pk	31.2	-53.37	44.24	74	-29.76	54	-9.76	0-360	100	V
9	2.492	64.35	Pk	22.1	-51.24	35.21	74	-38.79	54	-18.79	0-360	149	V
10	3.565	64.62	Pk	23.3	-50.38	37.54	74	-36.46	54	-16.46	0-360	149	V
11	4.075	61.33	Pk	28.4	-51.62	38.11	74	-35.89	54	-15.89	0-360	150	V
12	4.517	61.26	Pk	27.8	-51.84	37.22	74	-36.78	54	-16.78	0-360	99	V
Pk - Peak detector													
Text File: RE4.TXT													