DEKRA Testing and Certification, S.A.U.
Parque Tecnológico de Andalucía,
c/ Severo Ochoa nº 2 · 29590 Campanillas · Málaga · España
C.I.F. A29 507 456

Test report No:
NIE: 68826REM.001

Test report

FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-20 Edition) & ICES-003 Issue 7 (October 2020)

(*) Identification of item tested	XGS-PON 10G ONT Home Gateway
(*) Trademark	Altice Labs
(*) Model and /or type reference	FiberGateway XSR150Dx
Other identification of the product	FCC ID: 2ACJF-FGW-XSR150DX HW version: PCB 1497 SW version: 2.3
(*) Features	1 x XGS-PON, 1 x FXS, 4 x Ethernet Gigabit, 1 SFP Slot (Optical or Electrical), Dual Band Wi-Fi 6 4T4R and 1 x USB 3.1 Type C Gen1.
Manufacturer	Altice Labs S.A. Rua Eng. Ferreira Pinto Basto 3810-106 Aveiro
Test method requested, standard	FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-20 Edition) & ICES-003 Issue 7 (October 2020)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Rafael López Martín EMC Consumer & RF Lab. Manager 2022.06.10 10:47:16 +02'00'
Date of issue	2022-06-10
Report template No	FDT08_24 (*) "Data provided by the client"

Index

Acronyms

Acronym ID	Acronym Description
Code	EMC Test Code
Freq Rng	Frequency Range
Line	Conducted Emissions - Tested Line
OM	Operation Mode
S/	Sample
V	Verdict

Competences and guarantees

DEKRA Testing and Certification S.A.U. is a testing laboratory accredited by the National Accreditation Body (ENAC -Entidad Nacional de Acreditación), to perform the tests indicated in the Certificate No. 51/LE 147.

In order to assure the traceability to other national and international laboratories, DEKRA Testing and Certification S.A.U. has a calibration and maintenance program for its measurement equipment.

DEKRA Testing and Certification S.A.U. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Testing and Certification S.A.U. at the time of performance of the test.

DEKRA Testing and Certification S.A.U. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the particular item under test established in this document.

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Testing and Certification S.A.U.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Testing and Certification S.A.U. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor k=2) was calculated according to the DEKRA Testing and Certification S.A.U. internal document PODT000.

The total uncertainty of the measurement system for the measured conducted disturbance characteristics of EUT from 150 kHz to 30 MHz is I = ± 3,9 dB for quasi-peak measurements, I = ± 3,2 dB for peak measurements (k = 2).

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 30 MHz to 1000 MHz is I = ± 4,9 dB for quasi-peak measurements, I = ± 4,6 dB for peak measurements (k= 2).

The total uncertainty of the measurement system for the measured radio disturbance characteristics of EUT from 1000 MHz to 26 GHz is I = ± 2,6 dB for peaks and average measurements (k = 2).

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested"

2. The sample consists of an Optical Terminal Equipment (ONT) unit for Passive Optical Networks (PON) termination in a FTTH (Fiber-To-The-Home) service delivery architecture. FiberGateway communicates with the OLT (Optical Line Terminal) for the PON side and with the customer's premises for the client side. This equipment supports triple-play services - high speed internet (HSI), voice (VoIP), video (IPTV) and Wi-Fi (Dual Band).

DEKRA Testing and Certification S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples undergoing test have been selected by: The client.

Id	Control Number	Description	Model	Serial Nº	Date of Reception
S/01	68826B_2.1	Switch Wifi6	XSR150DX	PTIN205A5BCF	2021-07-29
S/01	68826B_3.1	AC/DC adapter	---	---	2021-07-29

Notes referenced to samples during the project: None

Test sample description

Ports..... :	Port name and description	Cable					
		Specified max length [m]	Attached during test	Shielded	Coupled to patient(3)		
Supplementary information to the ports..... :							
Rated power supply ..... :	Voltage and Frequency			Reference poles			
				L1	L2	L3	N	PE
	X	AC:						
Rated Power ..... :							
Clock frequencies ..... :							
Other parameters..... :	…..						
Software version ..... :	2.3						
Hardware version..... :	PCB 1497						
Dimensions in cm (W x H x D) ..... :							
Mounting position..... :		Table top equipment					
		Wall/Ceiling mounted equipment					
		Floor standing equipment					
		Hand-held equipment					
		Other:					
Modules/parts ..... :	Module/parts of test item			Type		Manufacturer	
Accessories (not part of the test item) ..... :	Description			Type		Manufacturer	
Documents as provided by the applicant ..... :	Description			File name		Issue date	

(3) Only for Medical Equipment

Identification of the client

Altice Labs S.A.
Rua Eng. Ferreira Pinto Basto
3810-106 Aveiro

Testing period and place

Test Location	DEKRA Testing and Certification S.A.U.
Date (start)	2021-08-17
Date (finish)	2021-08-31

Document history

Report number	Date	Description
68826REM.001	2022-06-10	First release

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860mbar Max. = 1060mbar

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860mbar Max. = 1060mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 60 %
Air pressure	Min. = 860mbar Max. = 1060mbar

Remarks and comments

The tests have been performed by the technical personnel: Carlos Haro López.

Testing verdicts

Fail	F
Inconclusive	I
Not applicable	N/A
Not measured	N/M
Pass	P

List of equipment used during the test

Control No.	Equipment	Model	Manufacturer	Next Calibration
4523	EMI TEST RECEIVER 20Hz-26.5GHz	ESU26	ROHDE AND SCHWARZ	2023-03-15
4612	HORN ANTENNA 1-18GHz	BBHA 9120 D	SCHWARZBECK MESS- ELEKTRONIK	2024-07-13
4657	HORN ANTENNA 18-40GHz	BBHA 9170	SCHWARZBECK	2023-05-05
5641	HYBRID BILOG ANTENNA 30MHz-6GHz	3142E	EST LINDGREN	2024-09-15
7203	PREAMPLIFIER 30dB 500MHz-18GHz	AMF-3D-00501800-24-10P	NARDA	2022-01-14
8856	PRE-AMPLIFIER G>30dB 18-40GHz	BLMA 1840-4A	BONN ELEKTRONIK	2023-09-08
6064	SEMIANECHOIC CHAMBER III	SAC-3	FRANKONIA	---
6329	SHIELDED ROOM	---	FRANKONIA	---
6132	TEMPERATURE AND HUMIDITY PROBE	HWg-STE	HW GROUP	2022-04-05
6126	TEMPERATURE AND HUMIDITY PROBE	HWg-STE	HW GROUP	2022-04-05
4848	EMC/RF MEASUREMENT SOFTWARE	EMC32	ROHDE AND SCHWARZ	---

Summary

Test Specification.	Requirement – Test case	Verdict	Remark
FCC CFR 47, Part 15, Subpart B (10-1-20 Edition) & ICES-003 Issue 7 (October 2020)	RE Radiated emission. Electromagnetic field measure	P	---
FCC CFR 47, Part 15, Subpart B and C (10-1-20 Edition) & ICES-003 Issue 7 (October 2020)	CE Continuous conducted emission	P	---
Supplementary information and remarks: None			

Appendix A: Test results

Appendix A content

Description of the operation modes

The operation modes described in this paragraph constitute a functionality of the sample under test for itself.

The operation modes used by the samples to which the present report refers, are shown in the following table:

Id	Description
OM/01	EUT ON. WiFi in RX mode. Power supply: 115Vac
OM/02	EUT ON. Wifi 2.4 GHz and 5GHz connection established. Power Supply: 115Vac

Test standards version applied

The product standards and test standards applied for each test cases are shown in the following table:

Product Test Standard	Test standard	Requirement – Test case
FCC CFR 47, Part 15, Subpart B (10-1-20 Edition) & ICES-003 Issue 7 (October 2020)	ANSI C63.4 (2014)	RE Radiated emission.
FCC CFR 47, Part 15, Subpart B and C (10-1-20 Edition) & ICES-003 Issue 7(October 2020)	ANSI C63.4 (2014)	CE Continuous conducted emission

Test Cases Details

FCC CFR 47, Part 15, Subpart B
(10-1-20 Edition) & ICES-003 Issue 7 (October 2020)
RE Radiated emission. Electromagnetic field measure

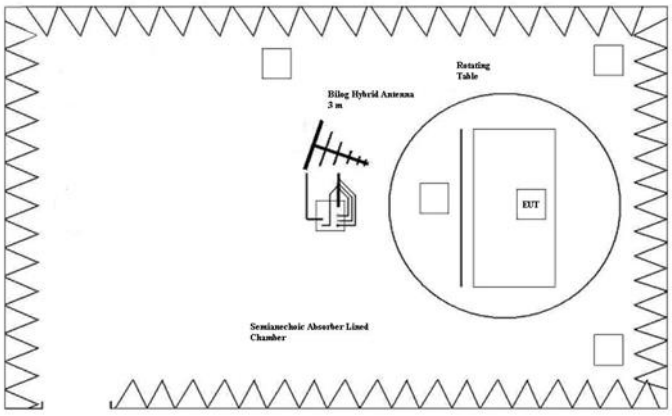
Limits of interference Class B

The applied limit for radiated emissions, 3 m distance, according to the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-1-20 Edition), Secs. 15.109 & ICES-003 Issue 7 (October 2020)

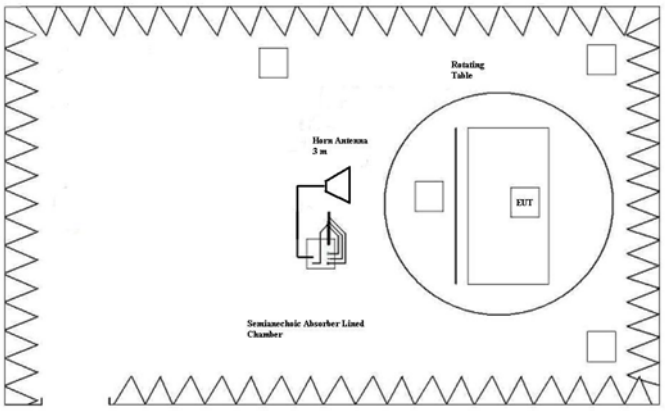
Frequency range (MHz)	FCC Part 15B		ICES-003 Issue 7		FCC Part 15B & ICES-003 Issue 7	
	QP Limit for 3 m		QP Limit for 3 m		PK Limit for 3 m	AVG Limit for 3 m
	(μV/m)	(dBμV/m)	(μV/m)	(dBμV/m)	(dBμV/m)	(dBμV/m)
30 to 88	100	40	100	40	---	---
88 to 216	150	43.5	150	43.5	---	---
216 to 230	200	46	200	46	---	---
230 to 960	200	46	224	47		
960 to 1000	500	54	500	54	---	---
Above 1000	---	---	---	---	74	54

Limits according to FCC Part 15B, equal to o more stringent than those of ICES-003 Issue 7.

Setup for measurements



Setup for measurements < 1GHz.



Setup for measurements > 1GHz.

Results

S/	OM	Code	Freq Rng (MHz)	V
01	OM/01	RE0101LR	[30, 1000]	P
01	OM/01	RE0101HR1	[1000, 17000]	P
01	OM/01	RE0101HR2	[17000, 26000]	P

Verdict

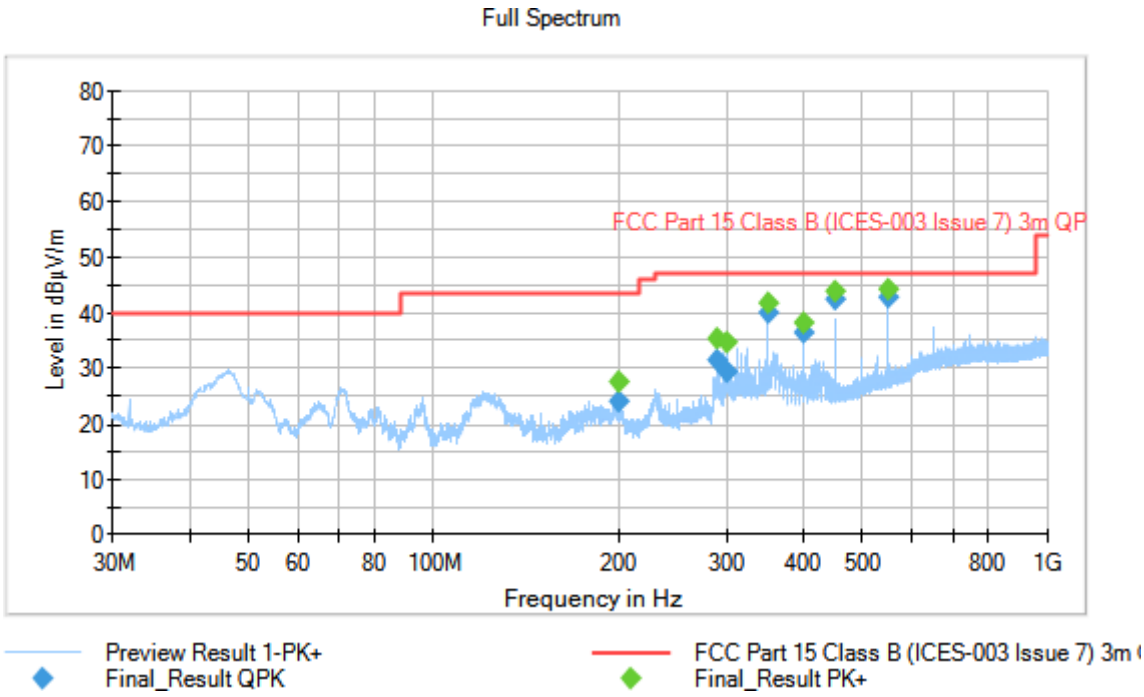
P

EMC Test Code = RE0101LR, Frequency Range MHz = [30, 1000]

Sample ID: S/01

Operation Mode: OM/01. EUT ON. WiFi in RX mode. Power supply: 115Vac.

Images:



Documents:

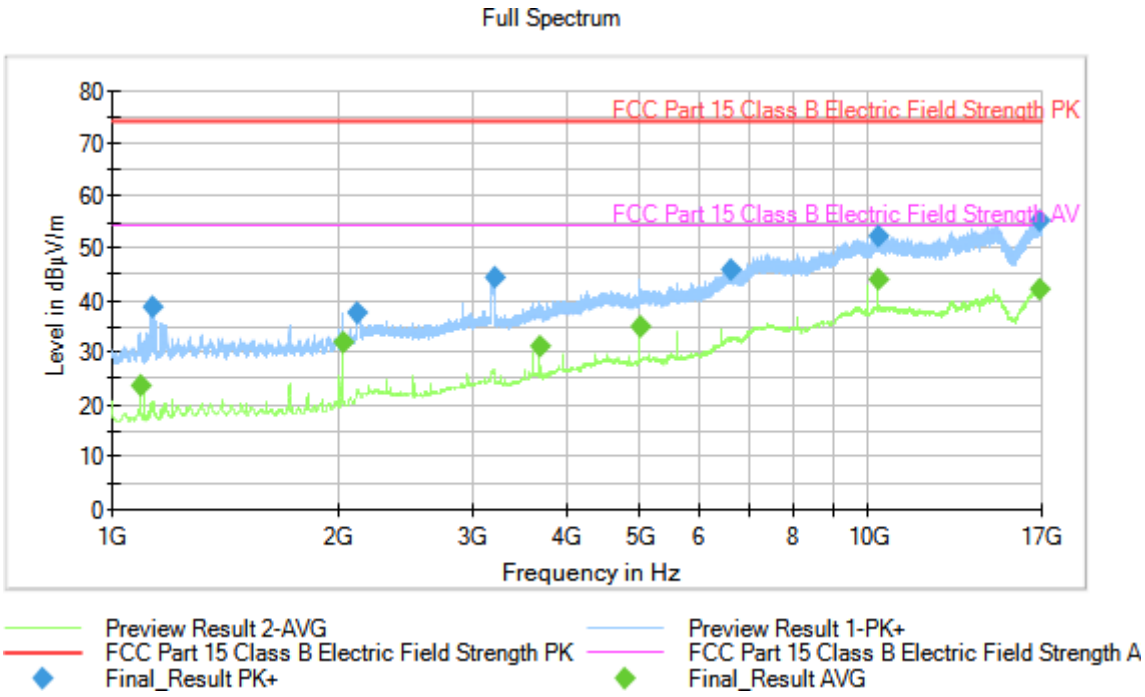
Frequency(MHz)	QuasiPeak(dBµV/m)	MaxPeak(dBµV/m)	Limit(dBµV/m)	Margin(dB)	Height(cm)	Pol	Azimuth(deg)
199.997000	24.10	---	43.52	19.42	157.0	H	90.0
199.997000	---	27.78	---	---	157.0	H	90.0
289.085000	31.55	---	47.00	15.45	124.0	H	-96.0
289.085000	---	35.37	---	---	124.0	H	-96.0
300.829000	29.50	---	47.00	17.50	128.0	H	-80.0
300.829000	---	34.73	---	---	128.0	H	-80.0
350.010000	40.05	---	47.00	6.95	138.0	H	-39.0
350.010000	---	41.73	---	---	138.0	H	-39.0
400.005000	---	38.07	---	---	118.0	V	42.0
400.005000	36.37	---	47.00	10.63	118.0	V	42.0
450.011000	42.60	---	47.00	4.40	118.0	V	52.0
450.011000	---	43.84	---	---	118.0	V	52.0
550.005000	42.79	---	47.00	4.21	136.0	H	89.0
550.005000	---	44.08	---	---	136.0	H	89.0

EMC Test Code = RE0101HR1, Frequency Range MHz = [1000, 17000]

Sample ID: S/01

Operation Mode: OM/01. EUT ON. WiFi in RX mode. Power supply: 115Vac.

Images:



Documents:

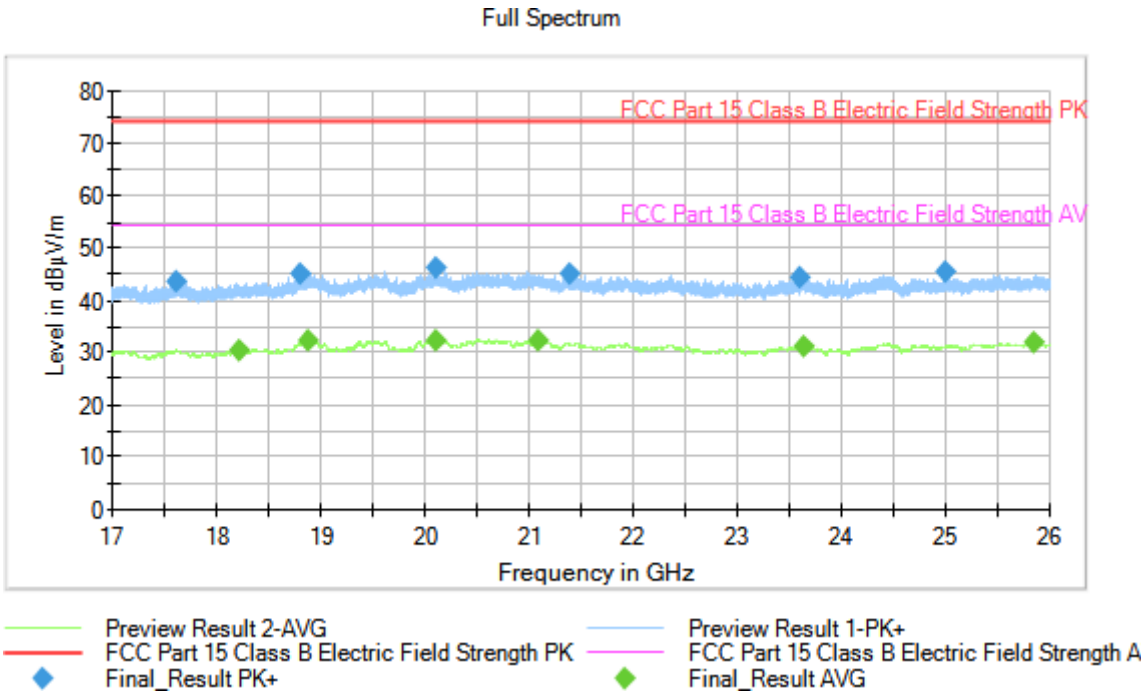
Frequency(MHz)	MaxPeak(dBµV/m)	Average(dBµV/m)	Limit(dBµV/m)	Margin(dB)
1088.800000	---	23.61	53.97	30.36
1126.800000	38.50	---	73.97	35.47
2022.400000	---	31.93	53.97	22.04
2111.200000	37.65	---	73.97	36.32
3197.600000	44.28	---	73.97	29.69
3686.800000	---	31.05	53.97	22.92
5000.000000	---	34.84	53.97	19.13
6570.000000	45.94	---	73.97	28.03
10312.800000	---	44.02	53.97	9.95
10312.800000	52.34	---	73.97	21.63
16931.600000	---	42.13	53.97	11.84
16935.600000	55.15	---	73.97	18.82

EMC Test Code = RE0101HR2, Frequency Range MHz = [17000, 26000]

Sample ID: S/01

Operation Mode: OM/01. EUT ON. WiFi in RX mode. Power supply: 115Vac.

Images:



Documents:

Frequency(MHz)	MaxPeak(dBµV/m)	Average(dBµV/m)	Limit(dBµV/m)	Margin(dB)
17609.600000	43.50	---	73.97	30.47
18204.800000	---	30.35	53.97	23.62
18797.200000	45.12	---	73.97	28.85
18874.800000	---	32.17	53.97	21.80
20100.800000	46.09	---	73.97	27.88
20110.000000	---	32.28	53.97	21.69
21086.400000	---	32.17	53.97	21.80
21380.000000	45.08	---	73.97	28.89
23592.800000	44.19	---	73.97	29.78
23627.600000	---	31.05	53.97	22.92
24990.400000	45.34	---	73.97	28.63
25853.600000	---	31.80	53.97	22.17

FCC CFR 47, Part 15, Subpart B and C
(10-1-20 Edition) & ICES-003 Issue 7 (October 2020)
RE Radiated emission. Electromagnetic field measure
CE Continuous conducted emission

Limits of interference Class B

The applied limit for continuous conducted emissions in power leads, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B and C (10-1-20 Edition), Secs. 15.107 and 15.207 & ICES-003 Issue 7 (October 2020), in the frequency range 0,15 to 30 MHz, for Class B equipment was:

Frequency range	Limit (dBµV)	
(MHz)	Quasi-Peak	Average
0,15 to 0,5	66 - 56	56 - 46
0,5 to 5	56	46
5 to 30	60	50

Results

S/	OM	Code	Freq Rng (MHz)	Line	V
01	OM/01	CE01010N	[0.15, 30]	N	P
01	OM/01	CE0101L1	[0.15, 30]	L1	P
01	OM/02	CE01020N	[0.15, 30]	N	P
01	OM/02	CE0102L1	[0.15, 30]	L1	P

Verdict

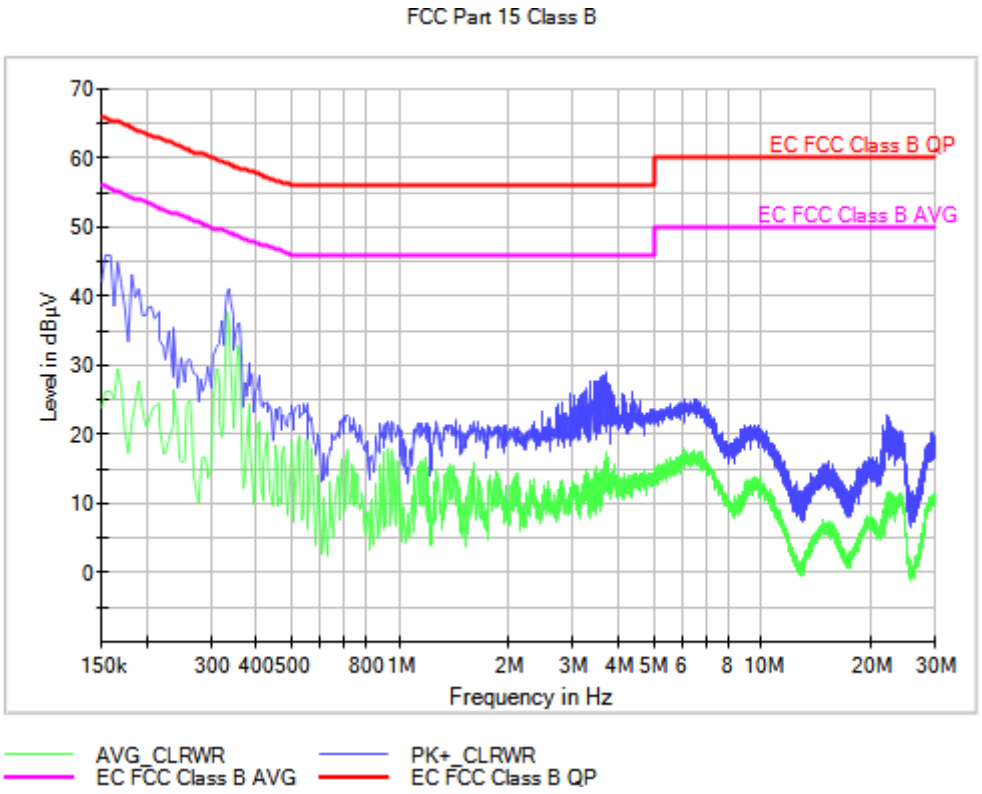
P

EMC Test Code = CE01010N, Frequency Range MHz = [0.15, 30], Conducted Emissions - Tested Line = N

Sample ID: S/01

Operation Mode: OM/01. EUT ON. WiFi in RX mode. Power supply: 115Vac.

Images:



Documents:

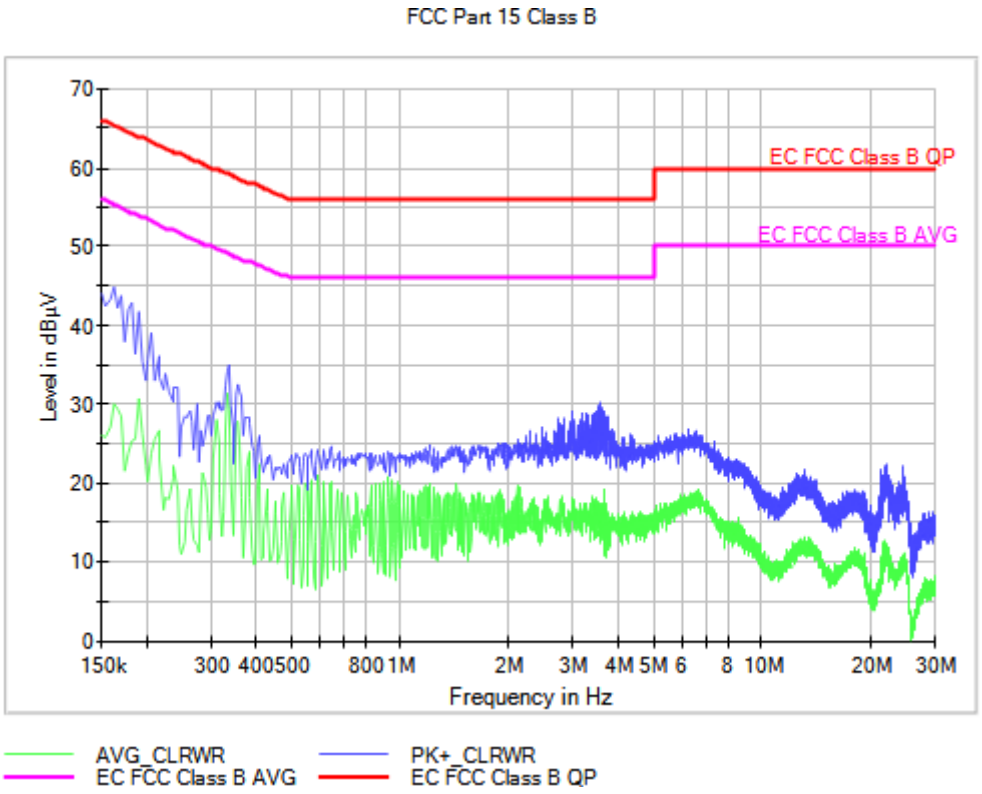
Frequency(MHz)	PK+_CLRWR(dBµV)	AVG_CLRWR(dBµV)
0.154000	46.0	26.3

EMC Test Code = CE0101L1, Frequency Range MHz = [0.15, 30], Conducted Emissions - Tested Line = L1

Sample ID: S/01

Operation Mode: OM/01. EUT ON. WiFi in RX mode. Power supply: 115Vac.

Images:



Documents:

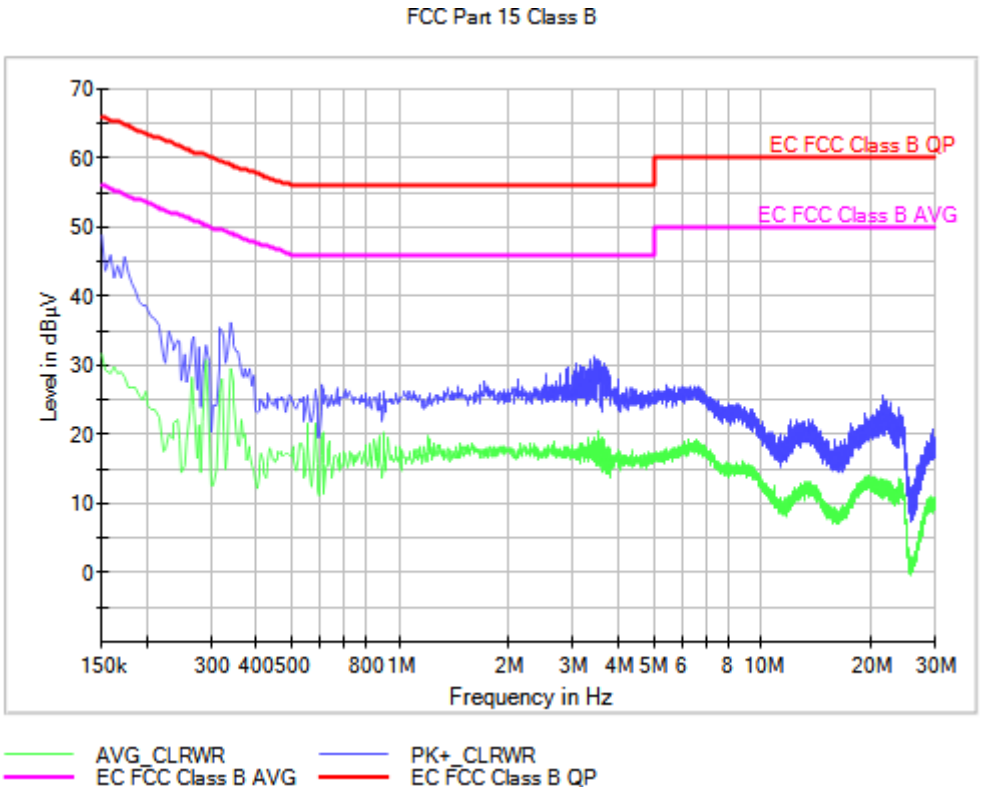
Frequency(MHz)	PK+_CLRWR(dBµV)	AVG_CLRWR(dBµV)
0.162000	45.0	30.2

EMC Test Code = CE0102L1, Frequency Range MHz = [0.15, 30], Conducted Emissions - Tested Line = L1

Sample ID: S/01

Operation Mode: OM/02. EUT ON. Wifi 2.4 Ghz and 5Ghz connection established. Power Supply: 115Vac.

Images:



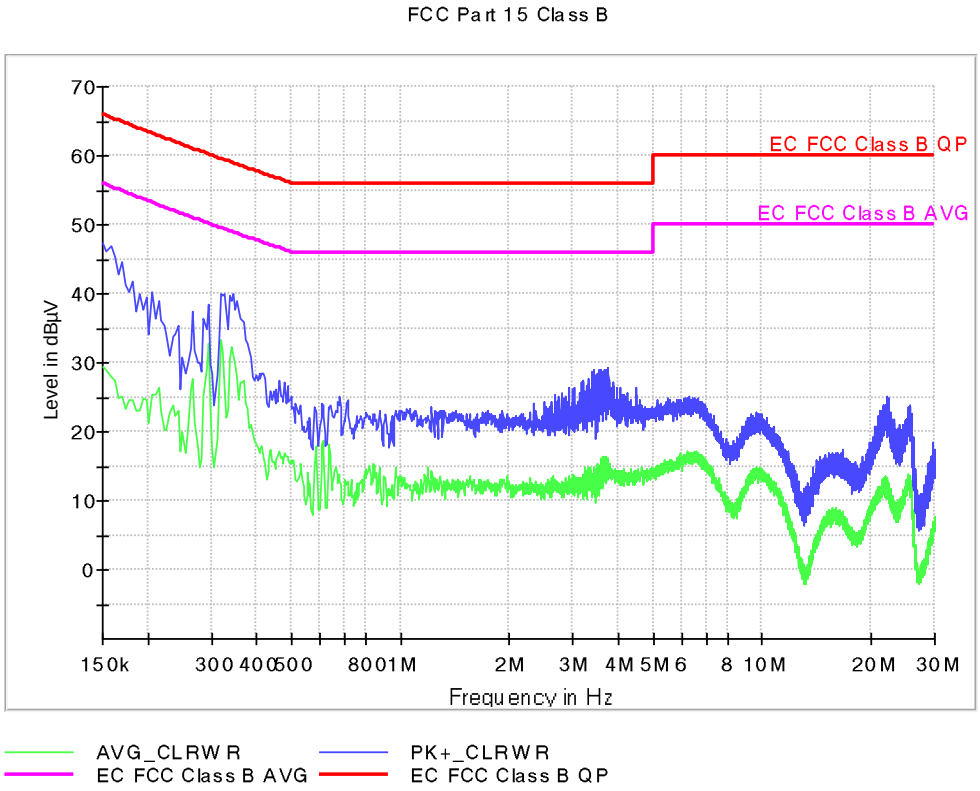
Documents:

Frequency(MHz)	PK+_CLRWR(dBµV)	AVG_CLRWR(dBµV)
0.150000	48.7	31.4

EMC Test Code = CE01020N, Frequency Range MHz = [0.15, 30], Conducted Emissions - Tested Line = N

Sample ID: S/01

Operation Mode: OM/02. EUT ON. Wifi 2.4 Ghz and 5Ghz connection established. Power Supply: 115Vac.



Documents:

Frequency (MHz)	PK+_CLRWR (dBµV)	AVG_CLRWR (dBµV)
0.150000	**47.5**	**29.4**