

FCC - TEST REPORT

Report Number : **60.790.19.028.01R01** Date of Issue : January 21, 2020

Model : **PoE Network Extender**

Product Type : **Connect Hub Repeater**

Applicant : **Mobile Technologies Inc.**

Address : **1050 NE 67th Ave, Hillsboro, OR 97124**

Production Facility : **HONG KONG ANDROIDS TECHNOLOGY CO.LTD**

Address : **Yitao Technology Industrial Park, Baihua Yuan Rd., The Second Industrial Area, Guangming Sub-district Office, Guangming New District, Shenzhen, China**

Test Result : **Positive** **Negative**

Total pages including Appendices : 36

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch is a subcontractor to TÜV SÜD Product Service GmbH according to the principles outlined in ISO 17025.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch reports apply only to the specific samples tested under stated test conditions. Construction of the actual test samples has been documented. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. The manufacturer/importer is responsible to the Competent Authorities in Europe for any modifications made to the production units which result in non-compliance to the relevant regulations. TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval

1 Table of Contents

1 Table of Contents	2
2 Description of Equipment Under Test.....	3
3 Summary of Test Standards.....	4
4 Details about the Test Laboratory	5
4.1 Test Equipment Site List	6
4.2 Measurement System Uncertainty	7
5 Summary of Test Results	8
6 General Remarks	9
7 Test Setups	10
7.1 Radiated test setups 9kHz-30MHz.....	10
7.2 Radiated test setups Below 1GHz	10
7.3 Radiated test setups Above 1GHz	10
7.4 AC Power Line Conducted Emission test setups	11
7.5 Conducted RF test setups.....	11
8 Emission Test Results	12
8.1 Spurious Radiated Emission	12
8.2 Conducted Emission at AC Power line	16
8.3 6dB & 99% Bandwidth	17
8.4 Peak Output Power	20
8.5 Spurious Emissions at Antenna Terminals	23
8.6 100kHz Bandwidth of band edges	29
8.7 Power Spectral Density	32
8.8 Antenna Requirement	35
9 Appendix A - General Product Information.....	36

2 Description of Equipment Under Test

Description of the Equipment Under Test

Product:	Connect Hub Repeater
Model no.:	PoE Network Extender
FCC ID:	2AA2X-15000242
Rating:	POE 37-57V DC, 80 mA Max. (Typic 48V DC)
Frequency:	2405MHz-2480MHz (Tx and Rx)
Antenna gain:	2dBi
Number of operated channel:	16
Modulation:	O-QPSK

Auxiliary Software Used during Test:

DESCRIPTION	SOFTWARE NAME	VERSION	REMARK
/	/	/	Provided by applicant

Auxiliary Equipment and Software Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.	REMARK
Computer	Lenovo	X220(S/N 0A72168)	1
4 * 12V DC batteries	Bosch	/	1
Power Cable with RJ45 connector	/	/	2
Ferrite beads	Würth elektronik	74275813,74271132, 74271132, 74271111,74272132, 74275815	2 & 3

- Remark: 1. The auxiliary equipment/accessories was provided by our TUV SUD lab.
 2. The auxiliary equipment/accessories was provided by applicant.
 3. Ferrite beads were wound on Power Cable, see below picture.



3 Summary of Test Standards

Test Standards

FCC Part 15 Subpart C 10-1-19 Edition Federal Communications Commission, PART 15 — Radio Frequency Devices, Subpart C — Unintentional Radiators

All the tests were performed using the procedures from ANSI C63.4(2014) and ANSI C63.10 (2013).

4 Details about the Test Laboratory

Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
 Building 12&13 Zhiheng Wisdomland Business Park,
 Nantou Checkpoint Road 2,
 Shenzhen 518052, P.R.China
 FCC Registration Number: 502708

Emission Tests	
Test Item	Test Site
FCC Part 15 Subpart C	
FCC Title 47 Part 15.205, 15.209 & 15.247(d) Spurious Radiated Emission	Site 1
FCC Title 47 Part 15.207 Conduct Emission	NIL
FCC Title 47 Part 15.247(a)(1) 6dB & 99% Bandwidth	Site 1
FCC Title 47 Part 15.247(b) Peak Output Power	Site 1
FCC Title 47 Part 2.1051 & 15.247(d) Spurious Emissions at Antenna Terminals	Site 1
FCC Title 47 Part 15.247(d) 100kHz Bandwidth of band edges	Site 1
FCC Title 47 Part 15.247(e) Power Spectral Density	Site 1
FCC Title 47 Part 15.203 & 15.247(b) Antenna Requirement	Site 1

4.1 Test Equipment Site List

Radiated emission Test – Site 1

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2019-7-6
Signal Analyzer	Rohde & Schwarz	FSV40	101031	2019-7-6
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100398	2019-7-6
Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2019-6-28
Horn Antenna	Rohde & Schwarz	HF907	102294	2019-6-28
Wideband Horn Antenna	Q-PAR	QWH-SL-18-40-K-SG	12827	2019-7-12
Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2019-7-6
Pre-amplifier	Rohde & Schwarz	SCU 40A	100432	2019-7-6
Attenuator	Agilent	8491A	MY39264334	2019-7-6
3m Semi-anechoic chamber	TDK	9X6X6	----	2020-7-7
Test software	Rohde & Schwarz	EMC32	Version 9.15.00	N/A

Conducted Emission Test – Site 1

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
EMI Test Receiver	Rohde & Schwarz	ESR 3	101782	2019-7-6
LISN	Rohde & Schwarz	ENV4200	100249	2019-7-6
LISN	Rohde & Schwarz	ENV432	101318	2019-7-6
LISN	Rohde & Schwarz	ENV216	100326	2019-7-6
ISN	Rohde & Schwarz	ENY81	100177	2019-7-6
ISN	Rohde & Schwarz	ENY81-CA6	101664	2019-7-6
High Voltage Probe	Rohde & Schwarz	TK9420(VT9420)	9420-584	2019-6-30
RF Current Probe	Rohde & Schwarz	EZ-17	100816	2019-6-30
Attenuator	Shanghai Huaxiang	TS2-26-3	080928189	2019-7-6
Test software	Rohde & Schwarz	EMC32	Version9.15.00	N/A

20dB & 99% Bandwidth, Peak Output Power, Spurious Emissions at Antenna Terminals, 100kHz Bandwidth of band edges, Power Spectral Density – Site 1

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
Signal Analyzer	Rohde & Schwarz	FSV40	101030	2019-7-6
Vector Signal Generator	Rohde & Schwarz	SMU 200A	105324	2019-7-6
RF Switch Module	Rohde & Schwarz	OSP120/OSP-B157	101226/100851	2019-7-6

4.2 Measurement System Uncertainty

Measurement System Uncertainty Emissions

System Measurement Uncertainty	
Items	Extended Uncertainty
Uncertainty for Radiated Emission in 3m chamber 9kHz-30MHz	4.46dB
Uncertainty for Radiated Emission in 3m chamber 30MHz-1000MHz	Horizontal: 4.91dB; Vertical: 4.89dB;
Uncertainty for Radiated Emission in 3m chamber 1000MHz-25000MHz	Horizontal: 4.80dB; Vertical: 4.79dB;
Uncertainty for Conducted Emission at AC Power Line 150kHz-30MHz	3.21dB
Uncertainty for Conducted RF Power	2.13dB
Uncertainty for frequency test	0.6×10 ⁻⁷

5 Summary of Test Results

Emission Tests				
FCC Part 15 Subpart C				
Test Condition	Pages	Test Result		
		Pass	Fail	N/A
FCC Title 47 Part 15.205, 15.209 & 15.247(d) Spurious Radiated Emission	12-15	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.207 Conduct Emission	16-17	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.247(a)(2) 6dB & 99% Bandwidth	18-20	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.247(b) Peak Output Power	21-23	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 2.1051 & 15.247(d) Spurious Emissions at Antenna Terminals	24-29	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.247(d) 100kHz Bandwidth of band edges	30-32	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.247(e) Power Spectral Density	33-35	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
FCC Title 47 Part 15.203 & 15.247(b) Antenna Requirement	36	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6 General Remarks

Remarks

This submittal(s) (test report) is intended for **FCC ID: 2AA2X-15000242**, complies with Section 15.203, 15.205, 15.207, 15.209, 15.247 of the FCC Part 15, Subpart C rules for the DTS grant

The TX and RX range is 2405MHz-2480MHz.

SUMMARY:

- All tests according to the regulations cited on page 8 were

- Performed

- **Not** Performed

- The Equipment Under Test

- **Fulfills** the general approval requirements.

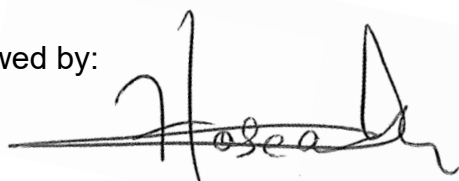
- **Does not** fulfill the general approval requirements.

Sample Received Date: August 23, 2019

Testing Start Date: September 2, 2019

Testing End Date: December 19, 2019

Reviewed by:



Hosea CHAN
EMC Project Engineer

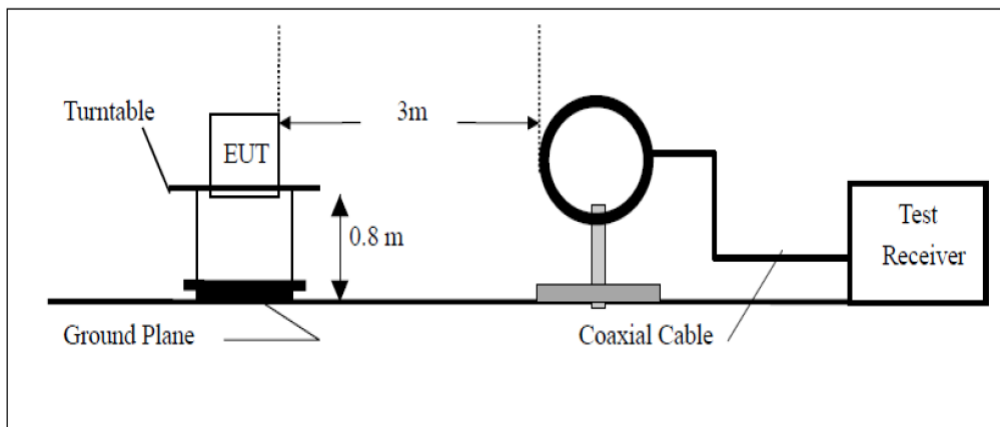
Prepared by:



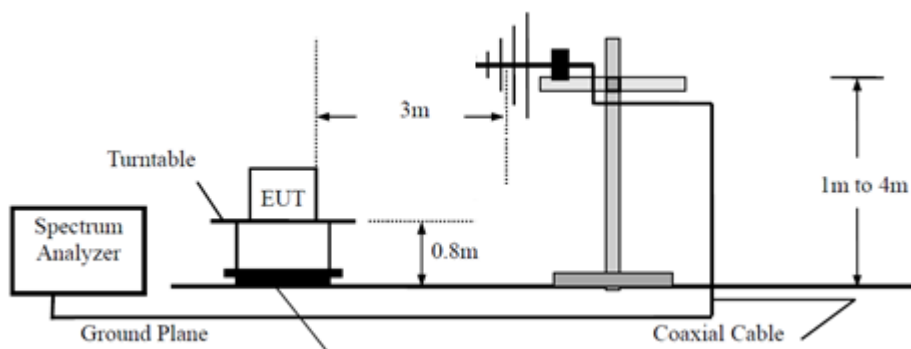
Eric LI
EMC Senior Project Engineer

7 Test Setups

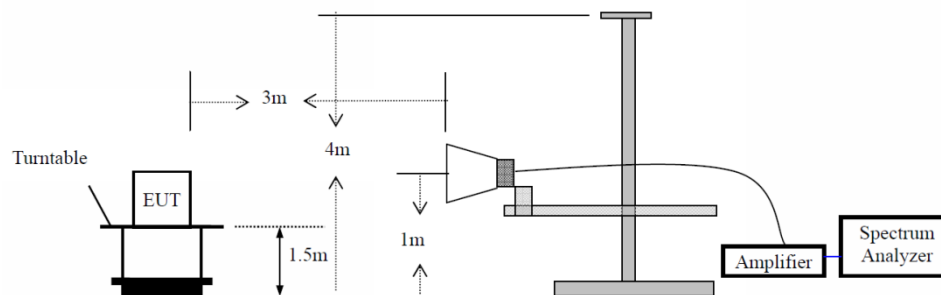
7.1 Radiated test setups 9kHz-30MHz



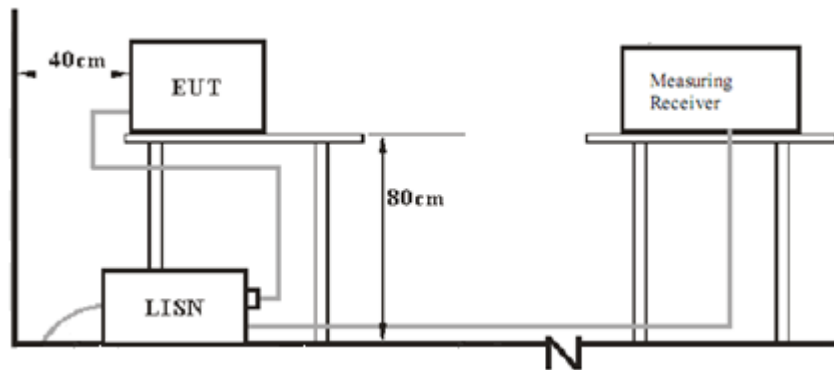
7.2 Radiated test setups Below 1GHz



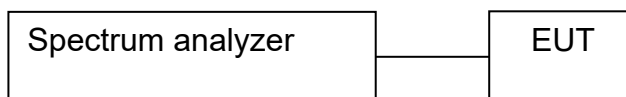
7.3 Radiated test setups Above 1GHz



7.4 AC Power Line Conducted Emission test setups



7.5 Conducted RF test setups



8 Emission Test Results

8.1 Spurious Radiated Emission

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode
 (Worst case lies on 2445MHz channel)
 Test Specification: FCC15.205, 15.209 & 15.247(d)
 Comment: 48V DC
 Remark: 9kHz to 1GHz

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector PK/QP/AV	Ant. Polarity H/V	Corr. (dB)
52.902778	24.59	40.00	15.41	Peak	H	-24.2
213.545556	32.67	43.50	10.83	Peak	H	-28.5
457.015556	28.48	46.00	17.52	Peak	H	-23.0
32.155556	30.14	40.00	9.86	Peak	V	-27.9
52.633333	30.63	40.00	9.37	Peak	V	-24.2
223.838333	31.85	46.00	14.15	Peak	V	-27.9

Remark:

- As the measured peak value not exceeded the Quasi peak limit, Quasi peak value no need to be measured.

Spurious Radiated Emission

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2405MHz)
 Test Specification: FCC15.205, 15.209 & 15.247(d)
 Comment: 48V DC
 Remark: 1GHz to 25GHz

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector PK/QP/AV	Ant. Polarity H/V	Corr. (dB)
1238.500000	30.70	54.00	-23.30	Peak	H	-12.0
1884.062500	28.68	54.00	-25.32	Peak	H	-9.7
2624.312500	30.45	54.00	-23.55	Peak	H	-4.8
4808.906250	37.70	54.00	-16.30	Peak	H	2.8
9480.468750	40.14	54.00	-13.86	Peak	H	9.1
17728.125000	49.36	54.00	-4.64	Peak	H	21.3
1251.062500	29.30	54.00	-24.70	Peak	V	-12.1
2154.437500	31.58	54.00	-22.42	Peak	V	-7.9
2660.875000	29.69	54.00	-24.31	Peak	V	-4.7
4808.906250	42.49	54.00	-11.51	Peak	V	2.8
7181.250000	37.08	54.00	-16.92	Peak	V	5.1
12887.812500	42.44	54.00	-11.56	Peak	V	12.9

Remark:

1.As the measured peak value not exceeded the average limit, average value no need to be measured.

Spurious Radiated Emission

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2445MHz)
 Test Specification: FCC15.205, 15.209 & 15.247(d)
 Comment: 48V DC
 Remark: 1GHz to 25GHz

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector PK/QP/AV	Ant. Polarity H/V	Corr. (dB)
1245.625000	29.79	54.00	-24.21	Peak	H	-12.1
1909.937500	27.44	54.00	-26.56	Peak	H	-9.6
2605.187500	29.02	54.00	-24.98	Peak	H	-4.9
4888.125000	37.26	54.00	-16.74	Peak	H	2.9
9395.156250	40.78	54.00	-13.22	Peak	H	8.7
13109.531250	42.16	54.00	-11.84	Peak	H	13.8
1248.312500	30.09	54.00	-23.91	Peak	V	-12.1
1991.750000	33.76	54.00	-20.24	Peak	V	-9.3
2555.750000	31.76	54.00	-22.24	Peak	V	-5.0
4890.937500	42.07	54.00	-11.93	Peak	V	2.9
7484.062500	38.39	54.00	-15.61	Peak	V	6.1
11791.875000	42.10	54.00	-11.90	Peak	V	9.9

Remark:
 1.As the measured peak value not exceeded the average limit, average value no need to be measured.

Spurious Radiated Emission

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2480MHz)
 Test Specification: FCC15.205, 15.209 & 15.247(d)
 Comment: 48V DC
 Remark: 1GHz to 25GHz

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector PK/QP/AV	Ant. Polarity H/V	Corr. (dB)
1250.562500	29.35	54.00	-24.65	Peak	H	-12.1
1994.437500	31.59	54.00	-22.41	Peak	H	-9.3
2662.375000	28.38	54.00	-25.62	Peak	H	-4.7
4960.781250	39.92	54.00	-14.08	Peak	H	3.3
7604.531250	37.42	54.00	-16.58	Peak	H	5.8
11889.843750	42.36	54.00	-11.64	Peak	H	10.5
1257.437500	30.26	54.00	-23.74	Peak	V	-12.0
1992.875000	27.64	54.00	-26.36	Peak	V	-9.3
2694.750000	28.30	54.00	-25.70	Peak	V	-4.5
4958.906250	41.49	54.00	-12.51	Peak	V	3.3
6938.437500	36.49	54.00	-17.51	Peak	V	4.9
12463.125000	40.08	54.00	-13.92	Peak	V	11.9

Remark:

- 1.As the measured peak value not exceeded the average limit, average value no need to be measured.

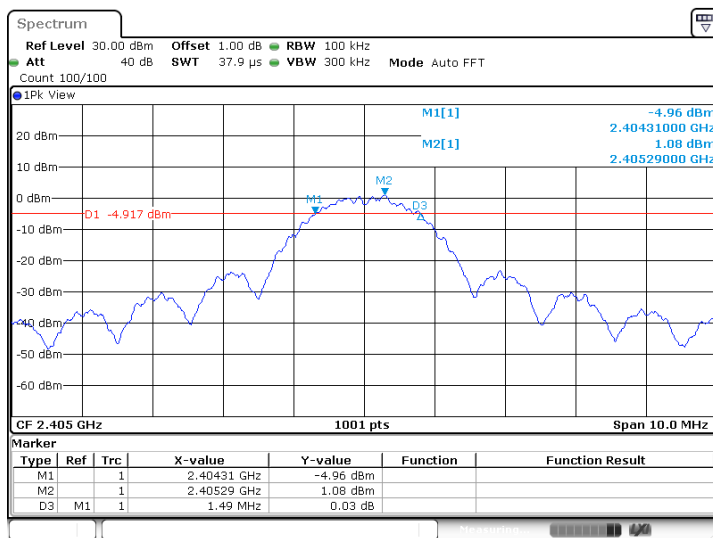
8.2 Conducted Emission at AC Power line

Conducted Emission testing is not applicable for this product because it is powered by DC power, and do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. See FCC 15.207(c).

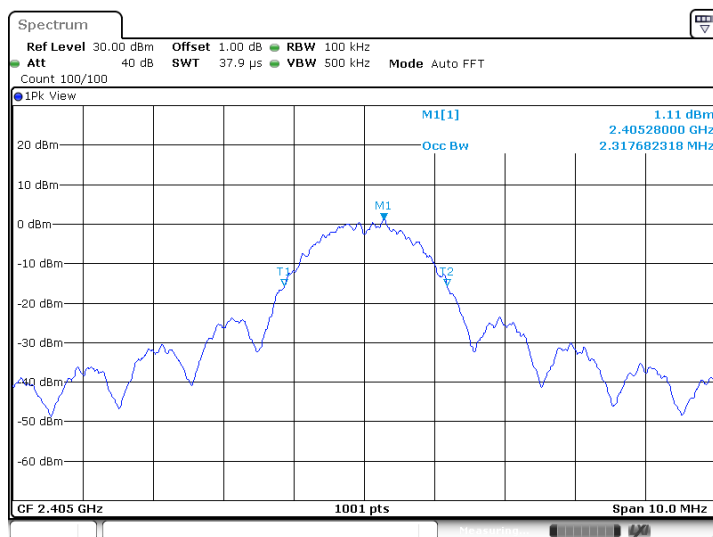
8.3 6dB & 99% Bandwidth

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2405MHz)
 Test Specification: FCC15.247(a)(2), 6dB Bandwidth & 99% Bandwidth
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 7.SEP.2019 15:03:17



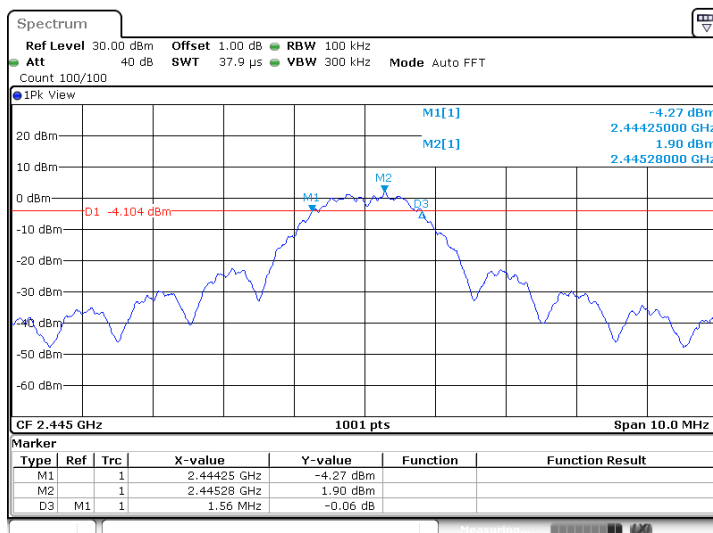
Date: 7.SEP.2019 15:03:28

Bandwidth	Measured Value	Limit
6dB bandwidth	1.490MHz	> 0.5MHz
99% OCB	2.318MHz	NA

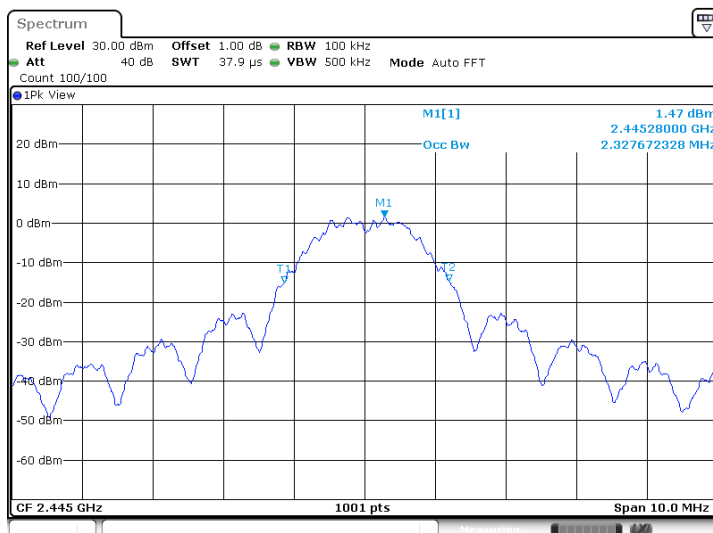
6dB & 99% Bandwidth

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2445MHz)
 Test Specification: FCC15.247(a)(2), 6dB Bandwidth & 99% Bandwidth
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 7.SEP.2019 15:07:43



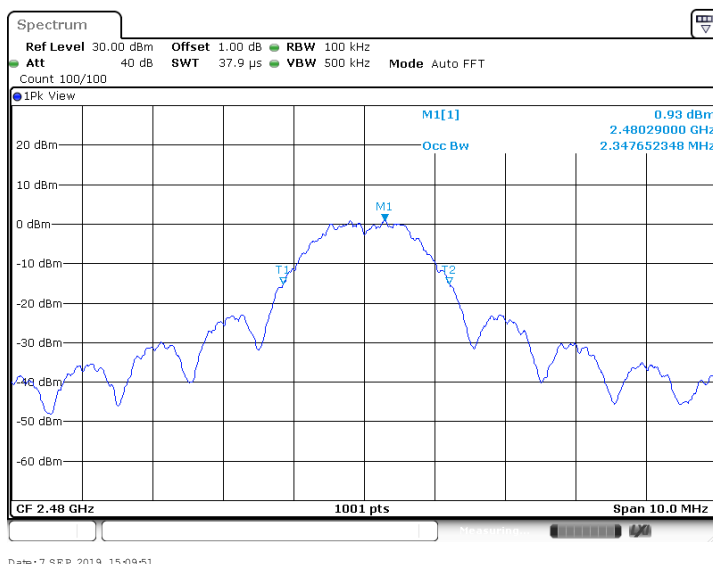
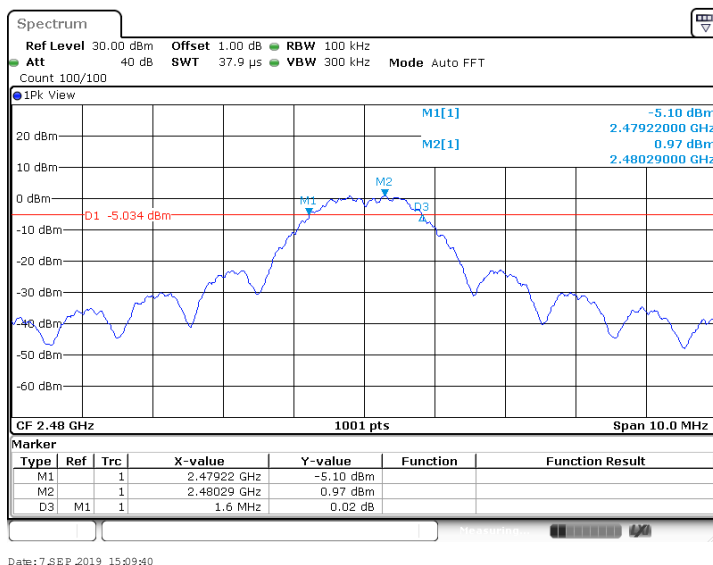
Date: 7.SEP.2019 15:07:54

Bandwidth	Measured Value	Limit
6dB bandwidth	1.560 MHz	> 0.5 MHz
99% OCB	2.328 MHz	NA

6dB & 99% Bandwidth

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2480MHz)
 Test Specification: FCC15.247(a)(2), 6dB Bandwidth & 99% Bandwidth
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

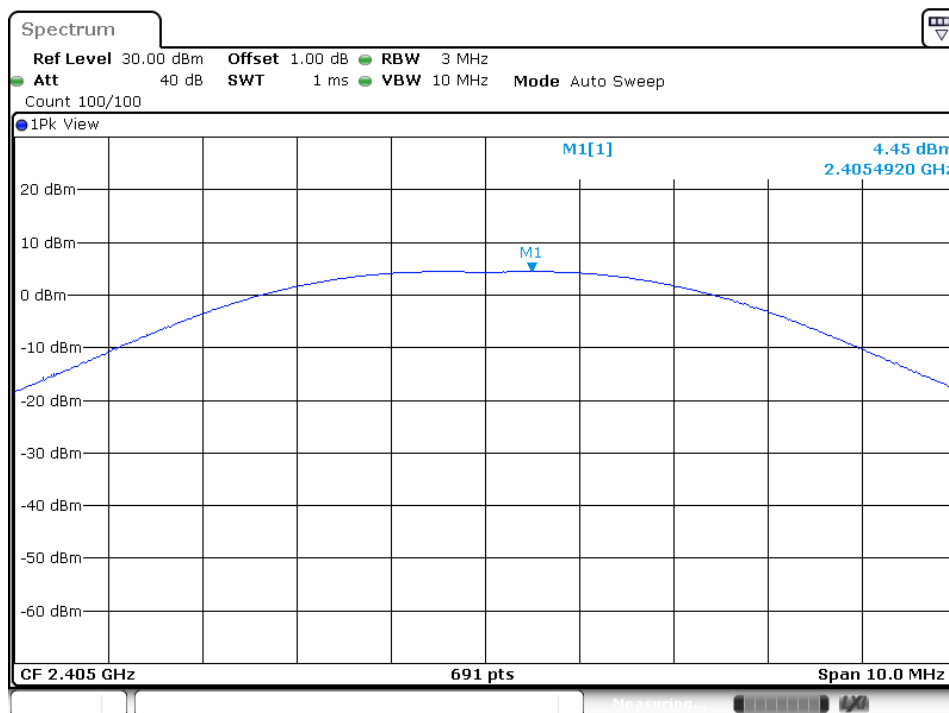


Bandwidth	Measured Value	Limit
6dB bandwidth	1.600 MHz	> 0.5 MHz
99% OCB	2.348 MHz	NA

8.4 Peak Output Power

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2405MHz)
 Test Specification: FCC15.247(b)
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



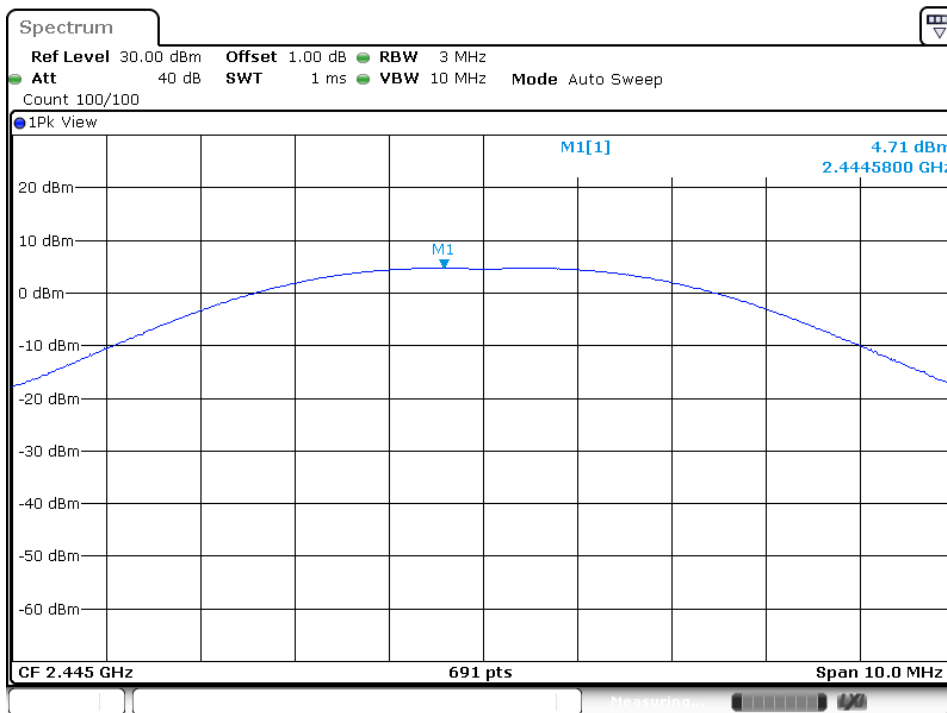
Date: 7 SEP 2019 15:03:35

Conducted Output Power	Limit
4.45 dBm	< 30dBm

Peak Output Power

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2445MHz)
 Test Specification: FCC15.247(b)
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



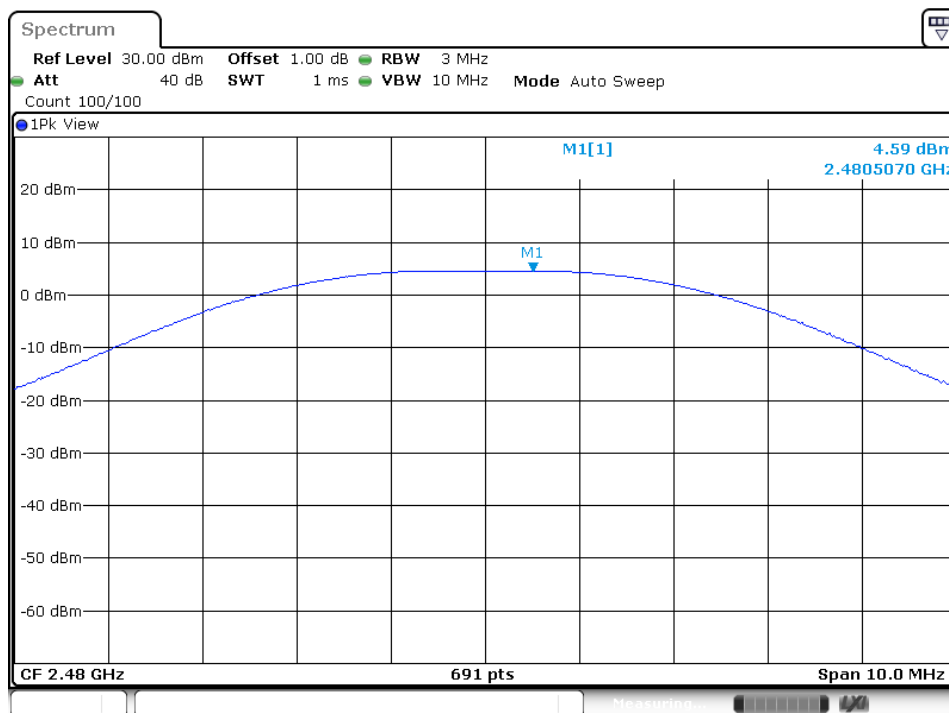
Date: 7_SEP_2019 15:08:01

Conducted Output Power	Limit
4.71 dBm	< 30dBm

Peak Output Power

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2480MHz)
 Test Specification: FCC15.247(b)
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 7_SEP_2019 15:09:58

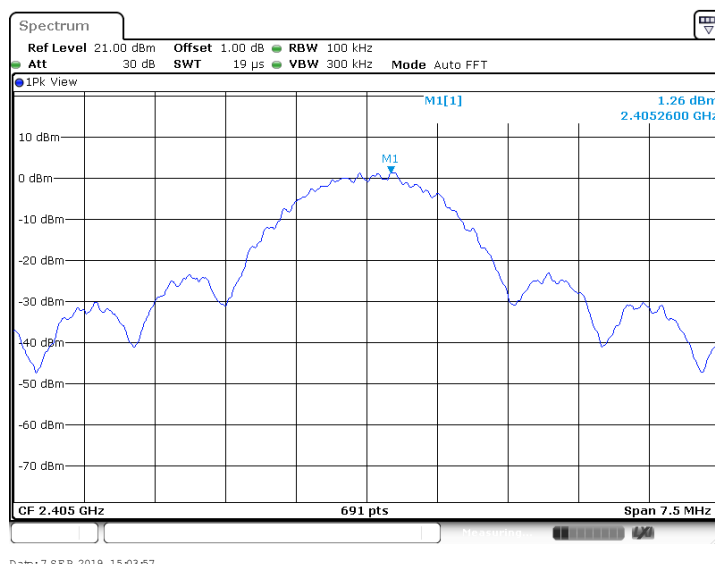
Conducted Output Power	Limit
4.59 dBm	< 30dBm

8.5 Spurious Emissions at Antenna Terminals

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2405MHz)
 Test Specification: FCC2.1051 & 15.247(d)
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Channel	FreqRange	RefLevel	Result	Limit	Verdict
2405	Reference	1.26	1.26	---	PASS
2405	30~1000	1.26	-68.18	<=-18.74	PASS
2405	1000~26500	1.26	-52.08	<=-19.36	PASS

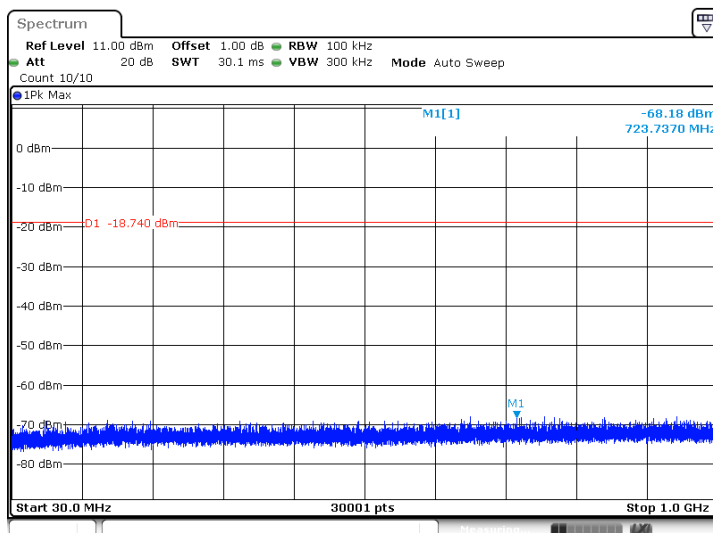


Date: 7 SEP 2019 15:03:57

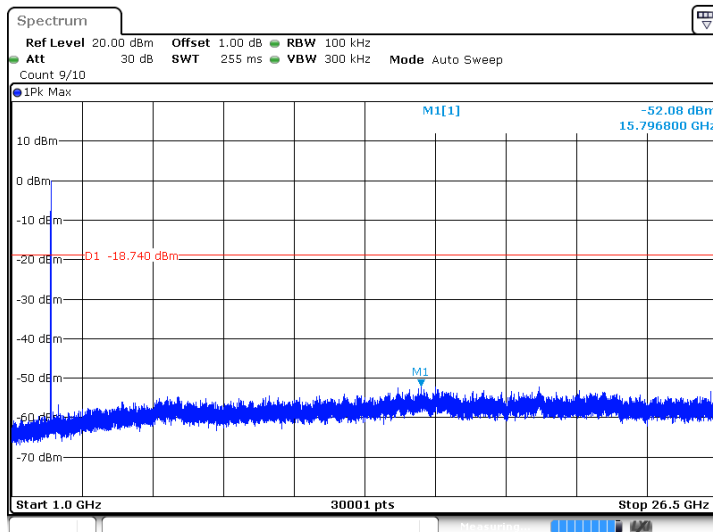
Spurious Emissions at Antenna Terminals

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2405MHz)
 Test Specification: FCC2.1051 & 15.247(d)
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 7.SEP.2019 15:04:06



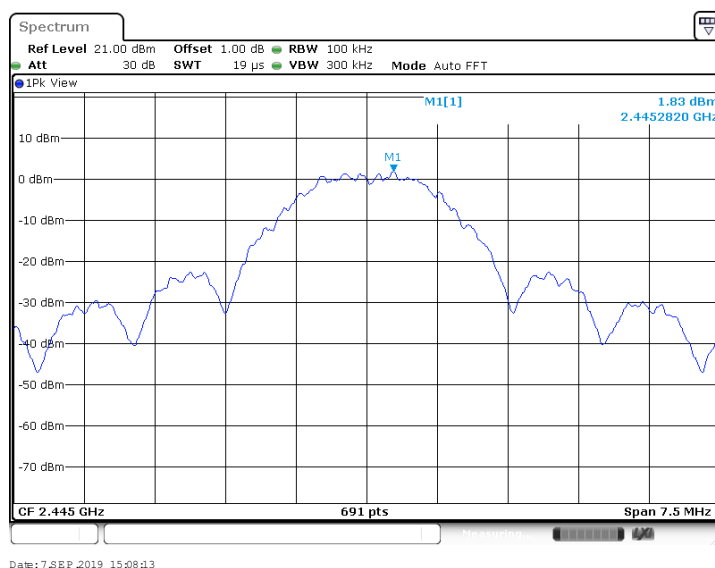
Date: 7.SEP.2019 15:04:18

Spurious Emissions at Antenna Terminals

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2445MHz)
 Test Specification: FCC2.1051 & 15.247(d)
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

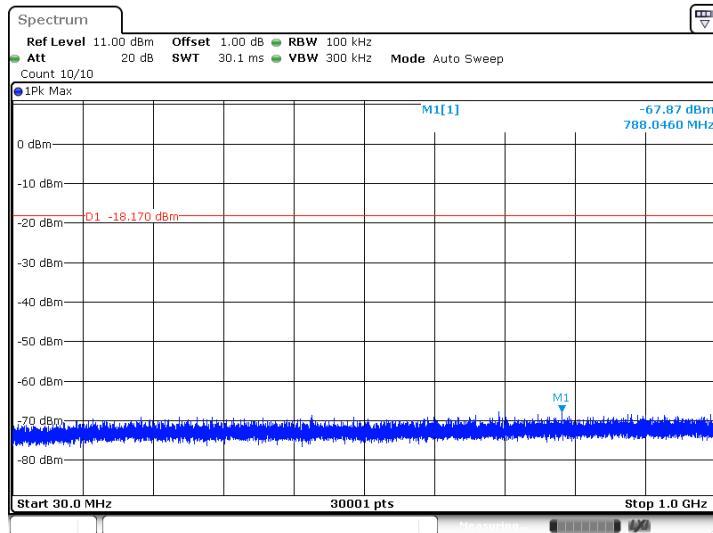
Channel	FreqRange	RefLevel	Result	Limit	Verdict
2445	Reference	1.83	1.83	---	PASS
2445	30~1000	1.83	-67.87	<=-18.17	PASS
2445	1000~26500	1.83	-52.20	<=-18.17	PASS



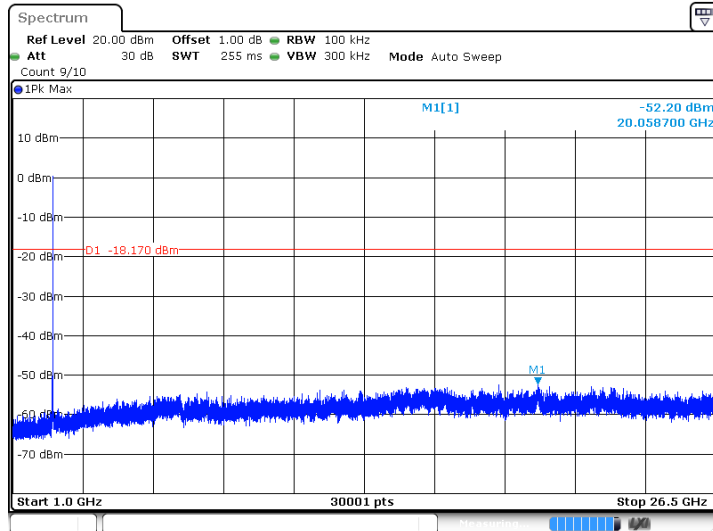
Spurious Emissions at Antenna Terminals

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2445MHz)
 Test Specification: FCC2.1051 & 15.247(d)
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 7.SEP.2019 15:08:23



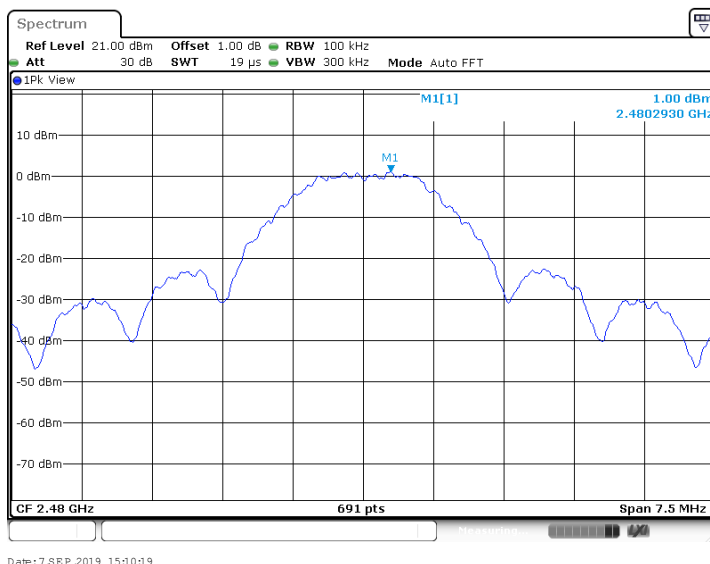
Date: 7.SEP.2019 15:08:34

Spurious Emissions at Antenna Terminals

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2480MHz)
 Test Specification: FCC2.1051 & 15.247(d)
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

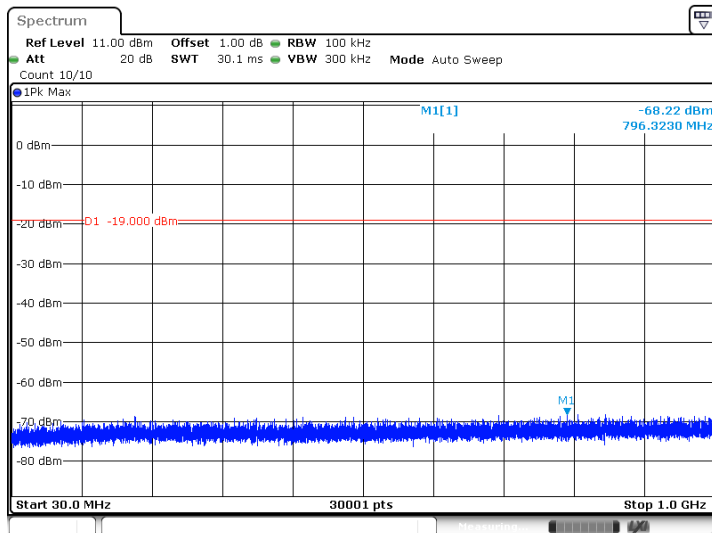
Channel	FreqRange	RefLevel	Result	Limit	Verdict
2480	Reference	1.00	1.00	---	PASS
2480	30~1000	1.00	-68.22	<=-19.00	PASS
2480	1000~26500	1.00	-52.05	<=-19.00	PASS



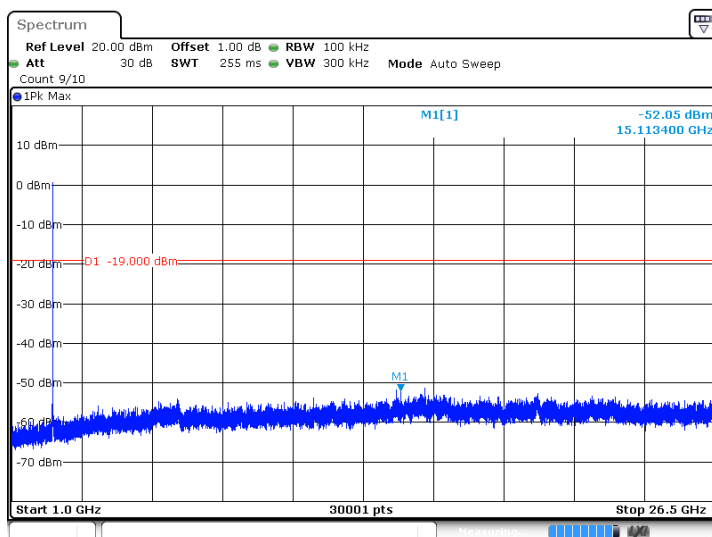
Spurious Emissions at Antenna Terminals

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2480MHz)
 Test Specification: FCC2.1051 & 15.247(d)
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 7 SEP 2019 15:02:29

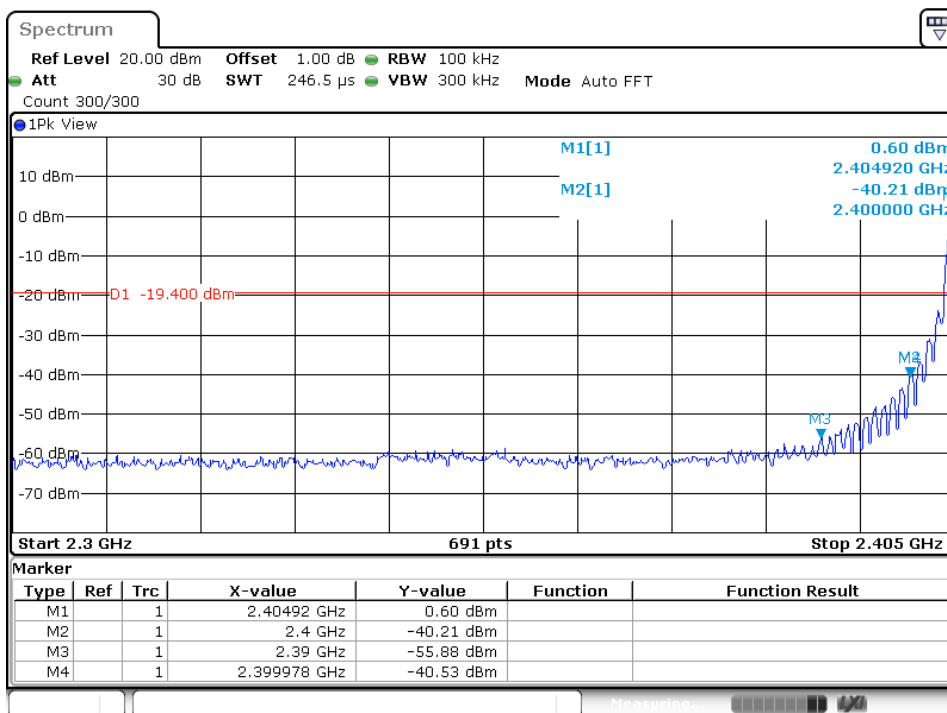


Date: 7 SEP 2019 15:04:40

8.6 100kHz Bandwidth of band edges

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2405MHz)
 Test Specification: FCC15.247(d), Conducted method
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



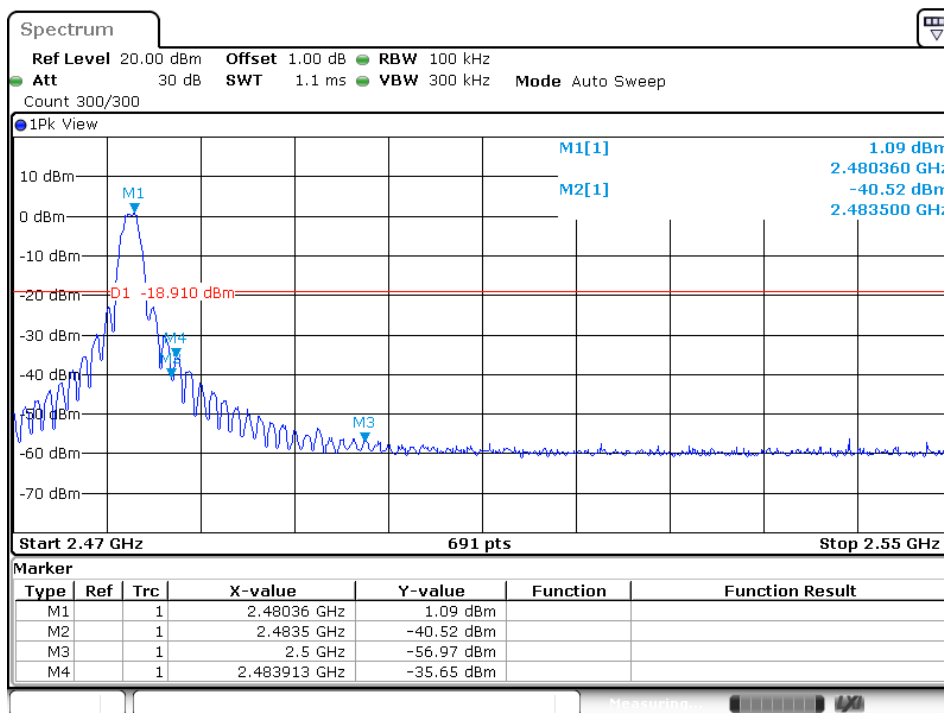
Date: 7 SEP 2019 15:03:51

Band edges	Limit
40.81 dB	> 20dB

100kHz Bandwidth of band edges

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2480MHz)
 Test Specification: FCC15.247(d), Conducted method
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 7 SEP 2019 15:10:13

Band edges	Limit
41.61 dB	> 20dB

100kHz Bandwidth of band edges

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2405MHz & 2480MHz)
 Test Specification: FCC15.247(d), Radiated method
 Comment: 48V DC

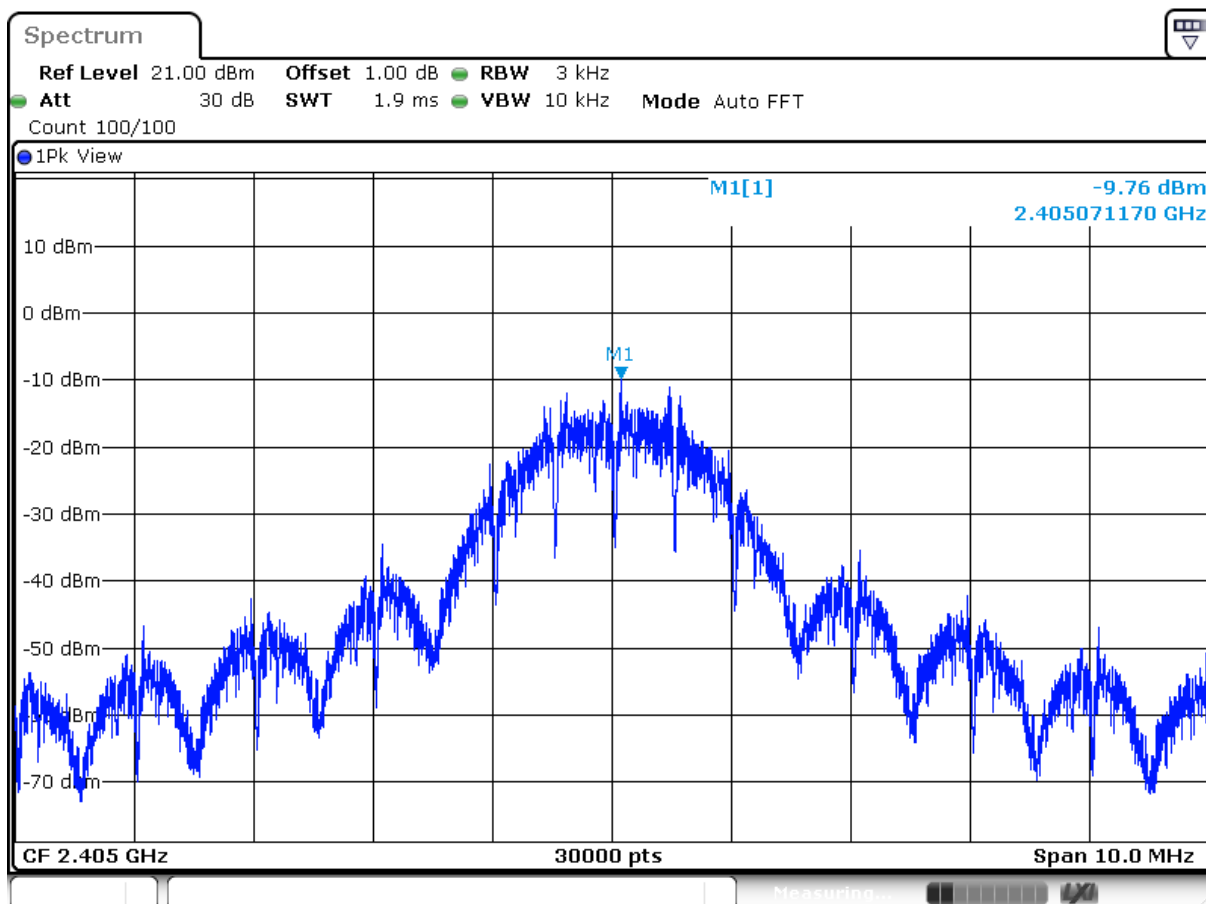
Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Channel	Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector PK /AV	Ant. Polarity H/V	Corr. (dB)
2405	2400.00	46.23	74.00	-27.77	Peak	H	-5.5
2405	2400.00	38.14	54.00	-15.86	Average	H	-5.5
2405	2400.00	47.36	74.00	-26.64	Peak	V	-5.5
2405	2400.00	36.27	54.00	-17.73	Average	V	-5.5
2480	2483.50	43.67	74.00	-30.33	Peak	H	-4.8
2480	2483.50	35.35	54.00	-18.65	Average	H	-4.8
2480	2483.50	44.14	74.00	-29.86	Peak	V	-4.8
2480	2483.50	32.66	54.00	-21.34	Average	V	-4.8

8.7 Power Spectral Density

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2405MHz)
 Test Specification: FCC15.247(e)
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



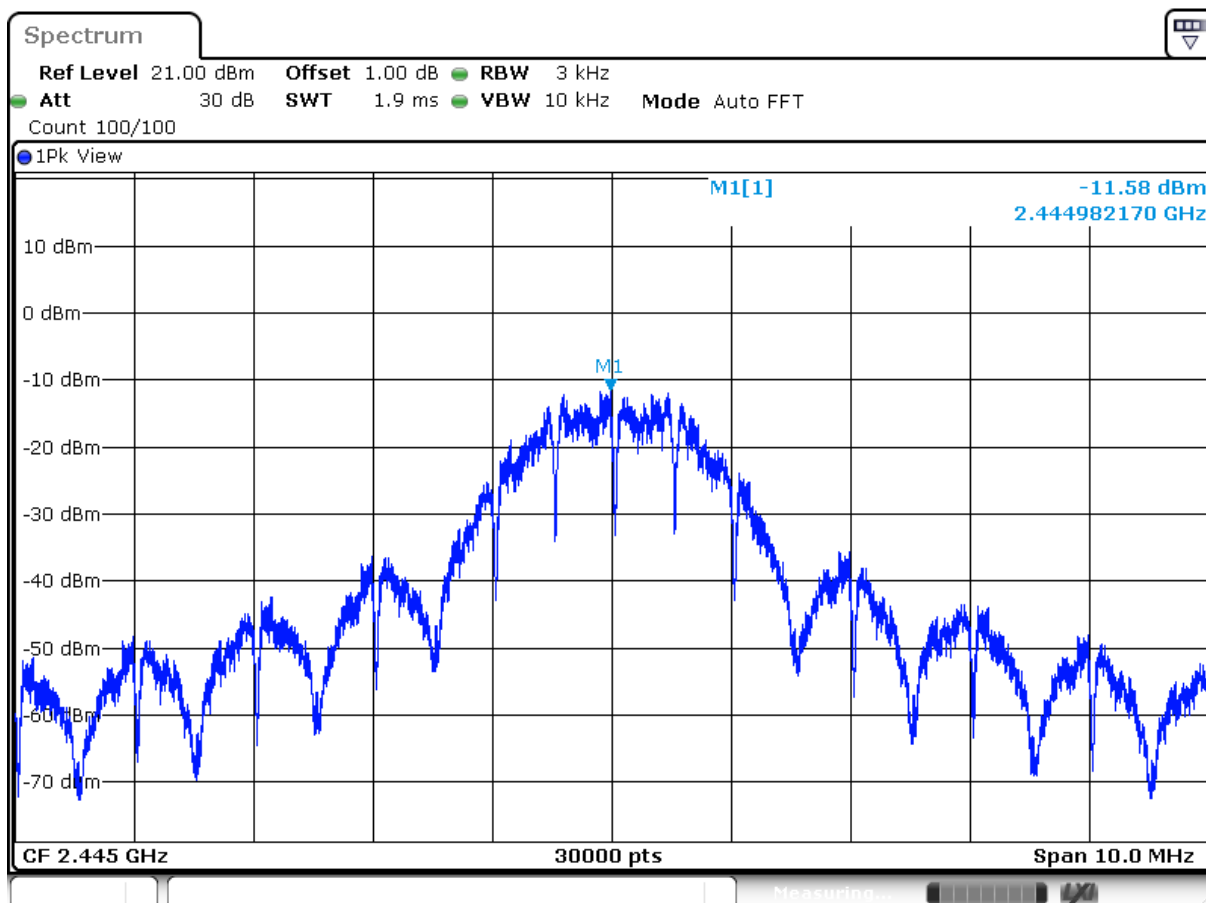
Date: 7.SEP.2019 15:03:41

PSD	Limit
-9.76 dBm	< 8 dBm

Power Spectral Density

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2445MHz)
 Test Specification: FCC15.247(e)
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



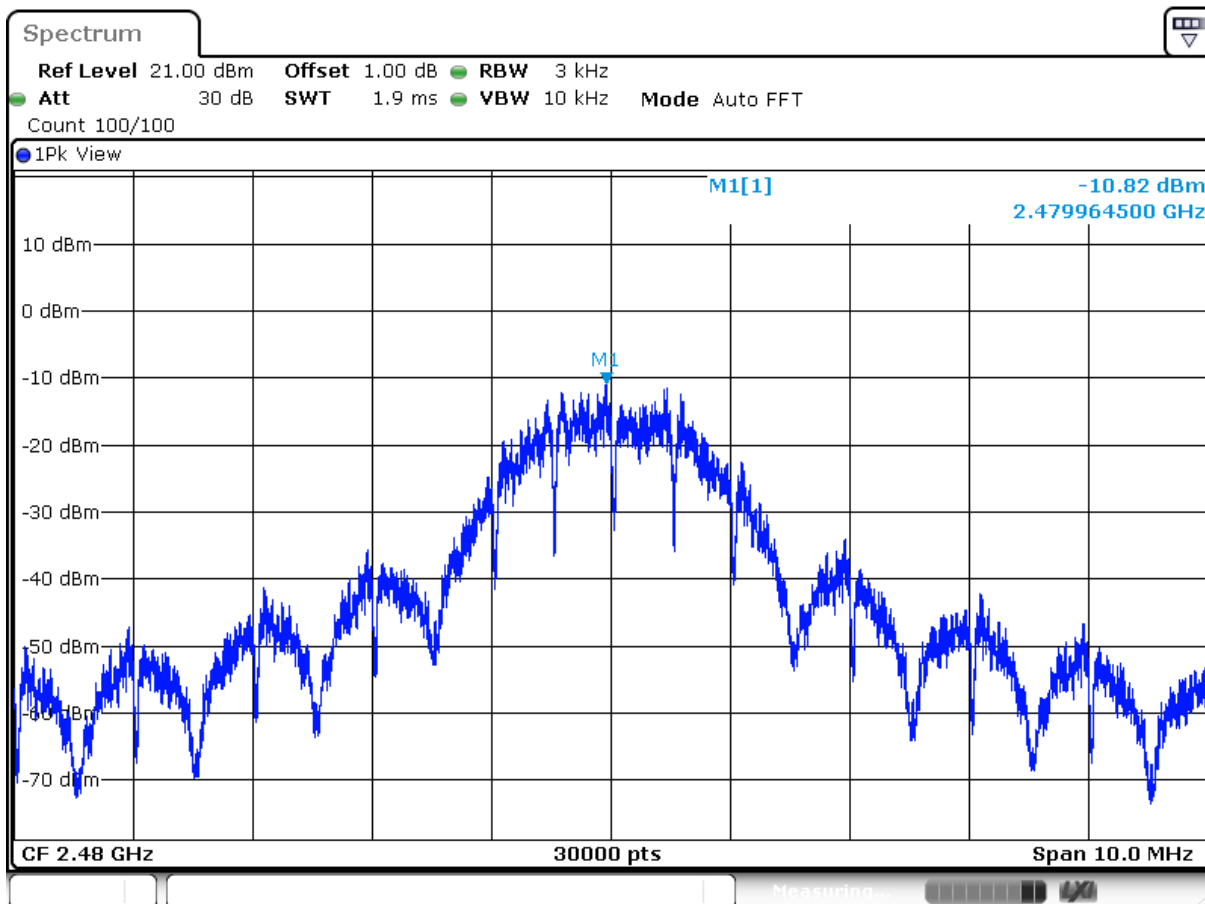
Date: 7 SEP 2019 15:08:07

PSD	Limit
-11.58 dBm	< 8 dBm

Power Spectral Density

EUT: PoE Network Extender
 Op Condition: Operated, TX Mode (2480MHz)
 Test Specification: FCC15.247(e)
 Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed



Date: 7 SEP 2019 15:10:04

PSD	Limit
-10.82 dBm	< 8 dBm

8.8 Antenna Requirement

EUT: PoE Network Extender
Op Condition: Operated, TX Mode
Test Specification: FCC15.203 & 15.247(b)
Comment: 48V DC

Test Result	
<input checked="" type="checkbox"/>	Passed
<input type="checkbox"/>	Not Passed

Limit

For intentional device, according to FCC Title 47 Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC Title 47 Part 15.247(b), if transmitting antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The antenna used in this product is an external whip antenna, and the maximum gain of this antenna is 2dBi.

9 Appendix A - General Product Information

Radiofrequency radiation exposure evaluation

This exposure evaluation is intended for **FCC ID: 2AA2X-15000242**.

According to FCC CFR 47 part1 1.1310, As specified in Table 1B of 47 CFR 1.1310 – Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

MPE calculation method:

$$Pd = (P \cdot G) / (4 \cdot \pi \cdot R^2), \text{ where}$$

Pd = power density in mW/cm²

P = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = calculation distance in cm

>> The antenna gain is 2dBi (=1.585 in linear scale).

Manufacturer specified the separation distance is: 20cm

The power of EUT measured (2405MHz) is: 4.45dBm = 2.786mW

The power of EUT measured (2445MHz) is: 4.71dBm = 2.958mW

The power of EUT measured (2480MHz) is: 4.59dBm = 2.877mW

>> The Pd calculated of 2405MHz is 0.00088mW/cm²

The Pd calculated of 2445MHz is 0.00093mW/cm²

The Pd calculated of 2480MHz is 0.00091mW/cm²

Which is smaller than the threshold of 1mW/cm².

Therefore, the device is exempt from stand-alone SAR test requirements.