



FCC RADIO TEST REPORT

FCC ID: OS3OPU02

Product : OPU2

Trade Name : OPLINK

Model Name : OPU2120

Serial Model : N/A

Report No. : NTEK- 2013NT0323058F1

Prepared for

Zhuhai FTZ Oplink Communications, Inc.
#29, #30 Lianfeng Avenue, Free Trade Zone, Zhuhai City, Guangdong
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Prepared by

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TEST RESULT CERTIFICATION

Applicant's name : Zhuhai FTZ Oplink Communications, Inc.
Address : #29, #30 Lianfeng Avenue, Free Trade Zone, Zhuhai City,
Guangdong Province, China 519030
Manufacture's Name : Prime Foundation Inc.
Address : No.19 Baoying Nan Road, Guangzhou Free Trade Zone ,
Guangzhou,P.R. China510730

Product description

Product name..... : OPU2
Model and/or type reference : OPU2120
Serial Model : N/A

Standards : FCC Part15.247

Test procedure ANSI C63.4-2003

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test..... :

Date (s) of performance of tests..... : 10 Mar. 2013 ~22 Mar. 2013

Date of Issue..... : 22 Mar. 2013

Test Result..... : **Pass**

Testing Engineer : _____

Apple Huang

(Apple Huang)

Technical Manager : _____

Tom Zhang

(Tom Zhang)

Authorized Signatory : _____

Bovey Yang

(Bovey Yang)

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.247 (a)(2)	6dB Bandwidth	PASS	
15.247 (b)	Peak Output Power	PASS	
15.247 (c)	Radiated Spurious Emission	PASS	
15.247 (d)	Power Spectral Density	PASS	
15.205	Band Edge Emission	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report

1.1 TEST FACILITY

NTEK Testing Technology Co., Ltd

Add.:1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.

FCC Registration No.:238937; IC Registration No.:9270A-1

CNAS Registration No.:L5516

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95 %** .

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	OPU2	
Trade Name	OPLINK	
Model Name	OPU2120	
Serial Model	N/A	
Model Difference	N/A	
Product Description	The EUT is a OPU2	
	Operation Frequency:	802.11b/g/n20:2412~2462 MHz 802.11n40:2422~2452 MHz
	Modulation Type:	CCK/OFDM/DBPSK/DAPSK
	Bit Rate of Transmitter	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6Mbps 802.11n(20/40MHz):150/144.44/130/117/115.56/104/86.67/78/52/6.5 Mbps
	Number Of Channel	802.11b/g/n HT20: 11CH 802.11n HT40: 7CH
	Antenna Designation:	Please see Note 3.
	Output Power(Conducted):	802.11b: 12.68 dBm (Max.) 802.11g: 11.87 dBm (Max.) 802.11n20: 10.83 dBm (Max.) 802.11n40: 9.80 dBm (Max.)
	Antenna Gain (dBi)	2.5dbi
	Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.	
Channel List	Please refer to the Note 2.	
Ratings	DC 5V from adapter	
Adapter	Model: M-908 INPUT:100~240V, 50/60Hz OUTPUT:AC MODE 1.5A, BATTERY MODE 1.5A	
Battery	N/A	
Hard version	1.01&1.02	
Software version	N/A	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel List for 802.11b/g/n							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

Channel List for 802.11n(40MHz)							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
03	2422	06	2437	09	2452		
04	2427	07	2442				
05	2432	08	2447				

3.

Table for Filed Antenna

Ant .	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
A	N/A	N/A	External Antenna	N/A	2.5	N/A

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	802.11n20 CH1/ CH6/ CH11
Mode 4	802.11n40 CH3/ CH6/ CH9
Mode 5	Link Mode

For Conducted Emission	
Final Test Mode	Description
Mode 5	Link Mode

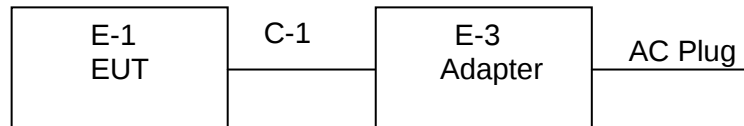
For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	802.11n20 CH1/ CH6/ CH11
Mode 4	802.11n40 CH3/ CH6/ CH9
Mode 5	Link Mode

Note:

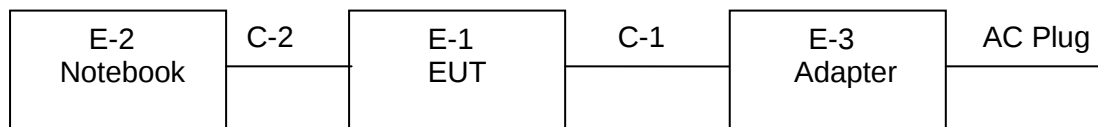
- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission Test



Radiated Spurious Emission Test



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	OPU2	OPLINK	OPU2120	N/A	EUT
E-2	Notebook	IBM	2366		
E-3	Adapter	N/A	M-908	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.0M	
C-2	NO	NO	1.0M	

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2012.07.06	2013.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2012.06.07	2013.06.06	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2012.07.06	2013.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2012.06.07	2013.06.06	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2012.06.07	2013.06.06	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	2012.07.06	2013.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2012.07.06	2013.07.05	1 year
8	Amplifier	EM	EM-30180	060538	2011.12.22	2012.12.21	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2012.06.08	2013.06.07	1 year
10	Power Meter	R&S	NRVS	100696	2012.07.06	2013.07.05	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	2012.07.06	2013.07.05	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2012.06.06	2013.06.05	1 year
2	LISN	R&S	ENV216	101313	2012.08.24	2013.08.23	1 year
3	LISN	EMCO	3816/2	00042990	2012.08.24	2013.08.23	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2012.06.07	2013.06.06	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2012.06.07	2013.06.06	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2012.06.08	2013.06.07	1 year

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

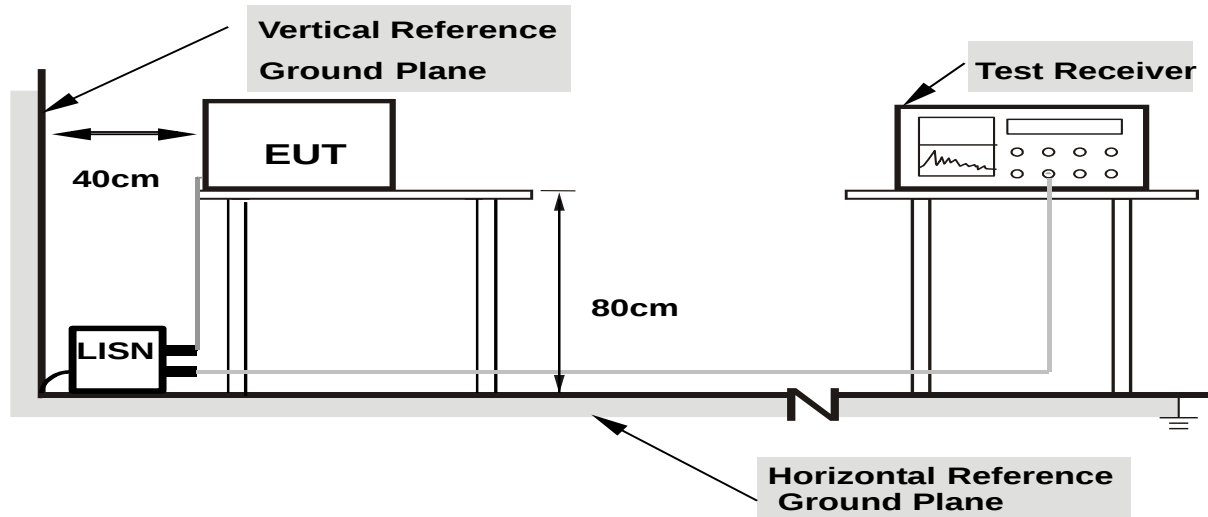
3.1.2 TEST PROCEDURE

- The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

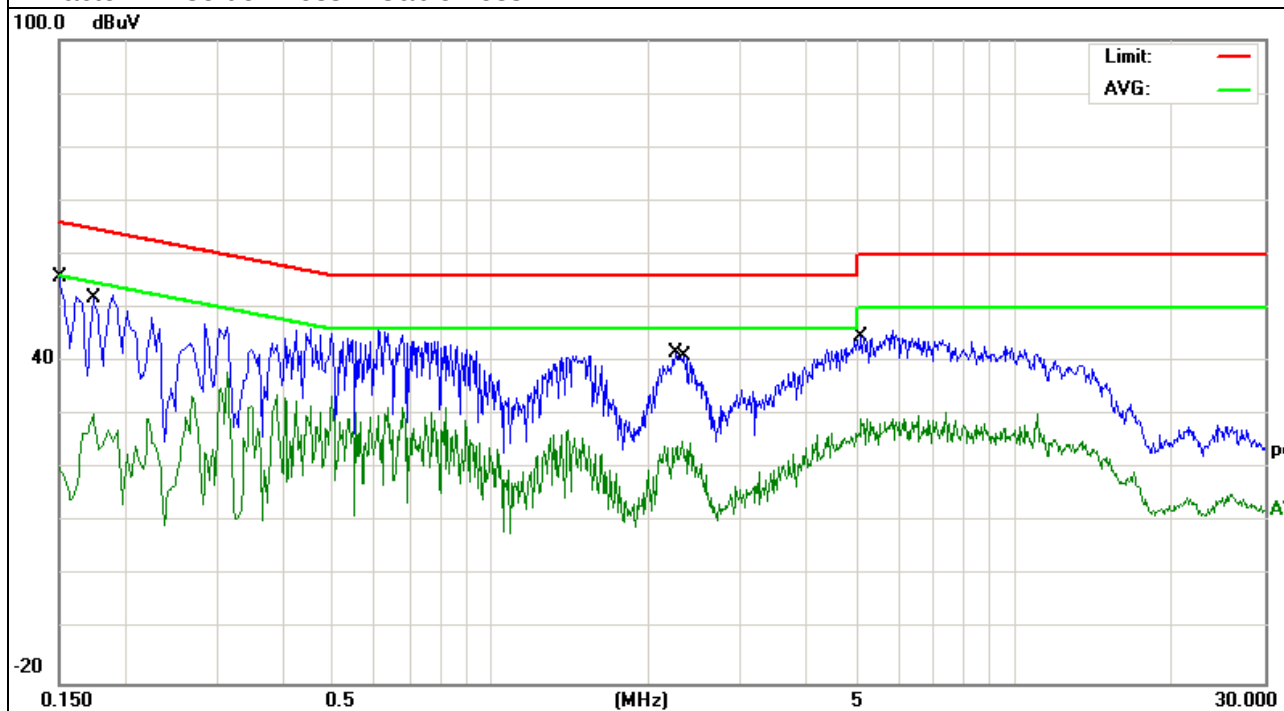
3.1.6 TEST RESULTS

EUT :	OPU2	Model Name. :	OPU2120
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5.0V from adapter AC120V/60Hz	Test Mode :	Mode 5

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.15	45.84	9.82	55.66	66	-10.34	QP
0.1739	20.31	9.8	30.11	54.77	-24.66	AVG
2.258	31.25	10.26	41.51	56	-14.49	QP
2.33	14.75	10.26	25.01	46	-20.99	AVG
5.0938	34.29	10.38	44.67	60	-15.33	QP
5.0938	19.09	10.38	29.47	50	-20.53	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

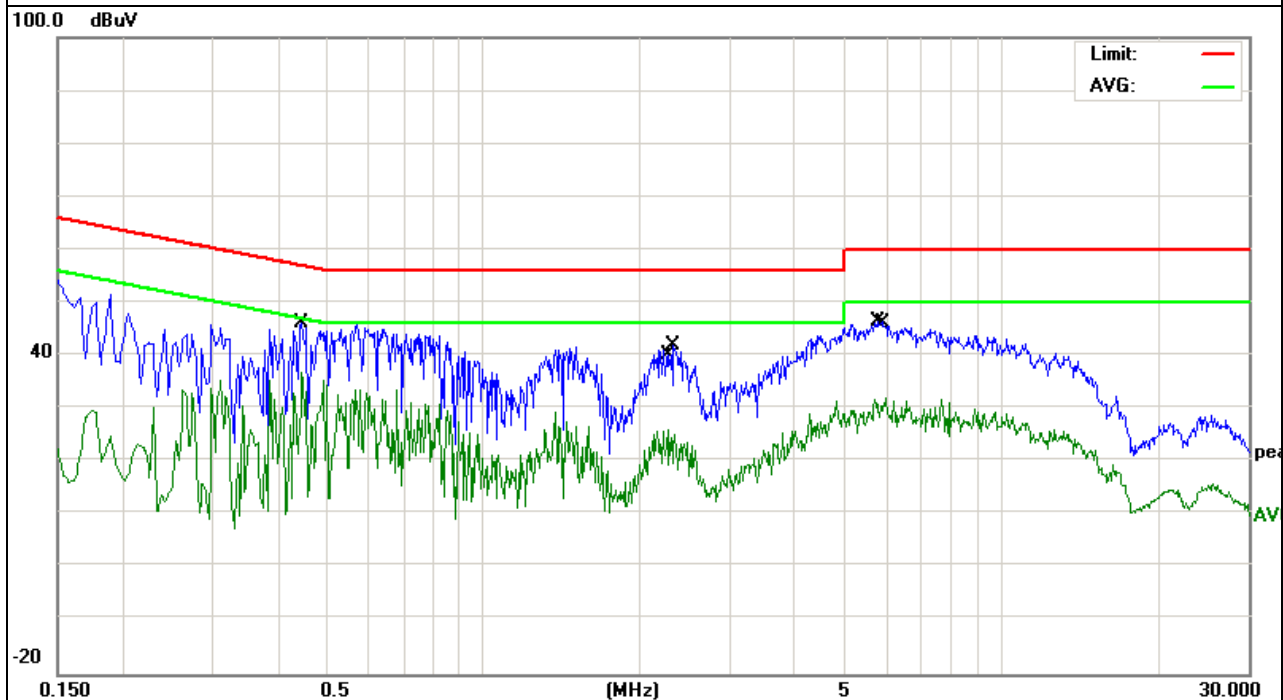


EUT :	OPU2	Model Name. :	OPU2120
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5.0V from adapter AC120V/60Hz	Test Mode :	Mode 5

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV)	Limits (dBμV)	Margin (dB)	Detector Type
0.446	35.96	10.12	46.08	56.95	-10.87	QP
0.446	26.73	10.12	36.85	46.95	-10.1	AVG
2.2659	15.7	10.26	25.96	46	-20.04	AVG
2.322	31.61	10.26	41.87	56	-14.13	QP
5.7458	35.96	10.4	46.36	60	-13.64	QP
5.9818	21.71	10.4	32.11	50	-17.89	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3M)		Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

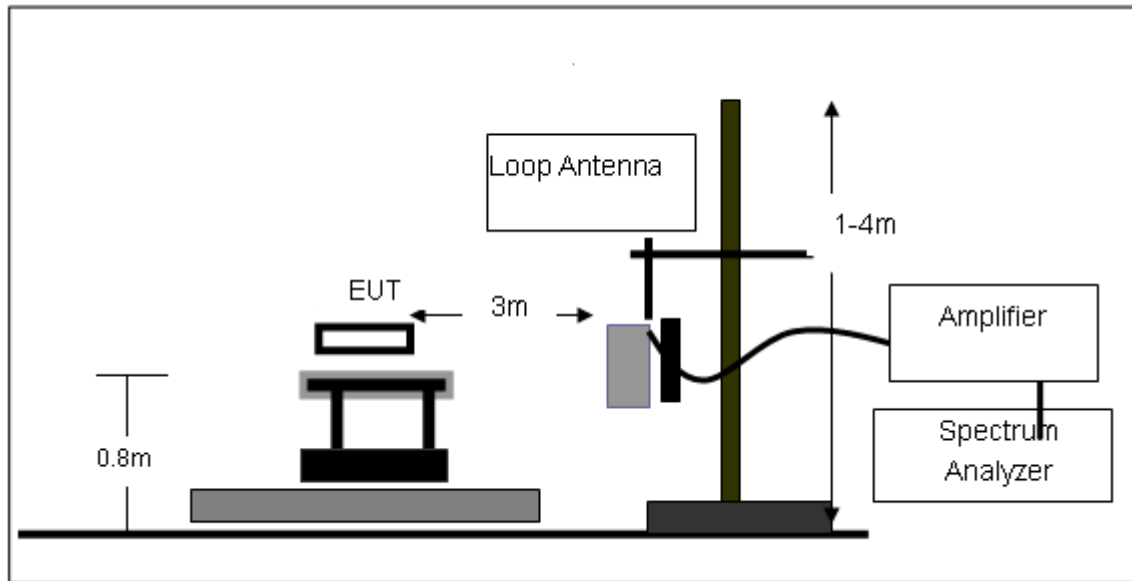
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

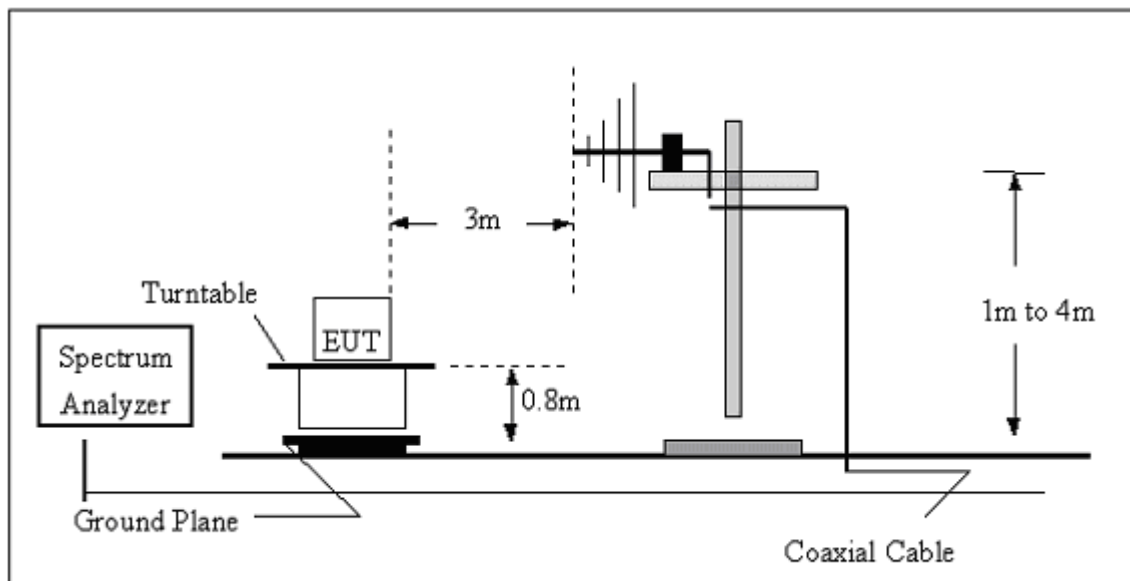
No deviation

3.2.4 TEST SETUP

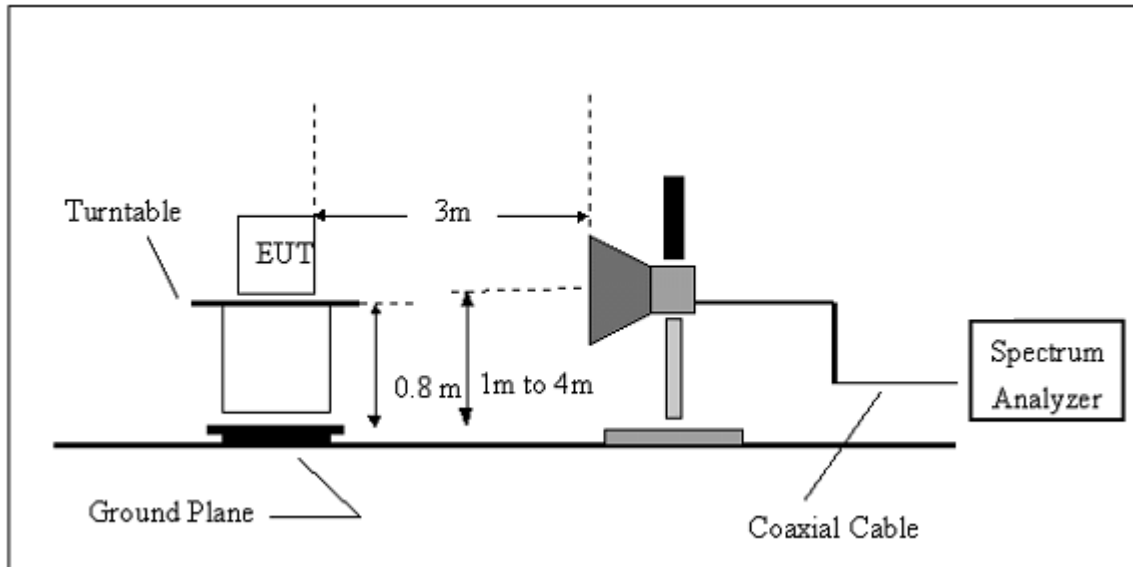
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz

**3.2.5 EUT OPERATING CONDITIONS**

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

EUT:	OPU2	Model Name. :	OPU2120
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance/test distance})(\text{dB})$;

Limit line = specific limits(dBuV) + distance extrapolation factor.

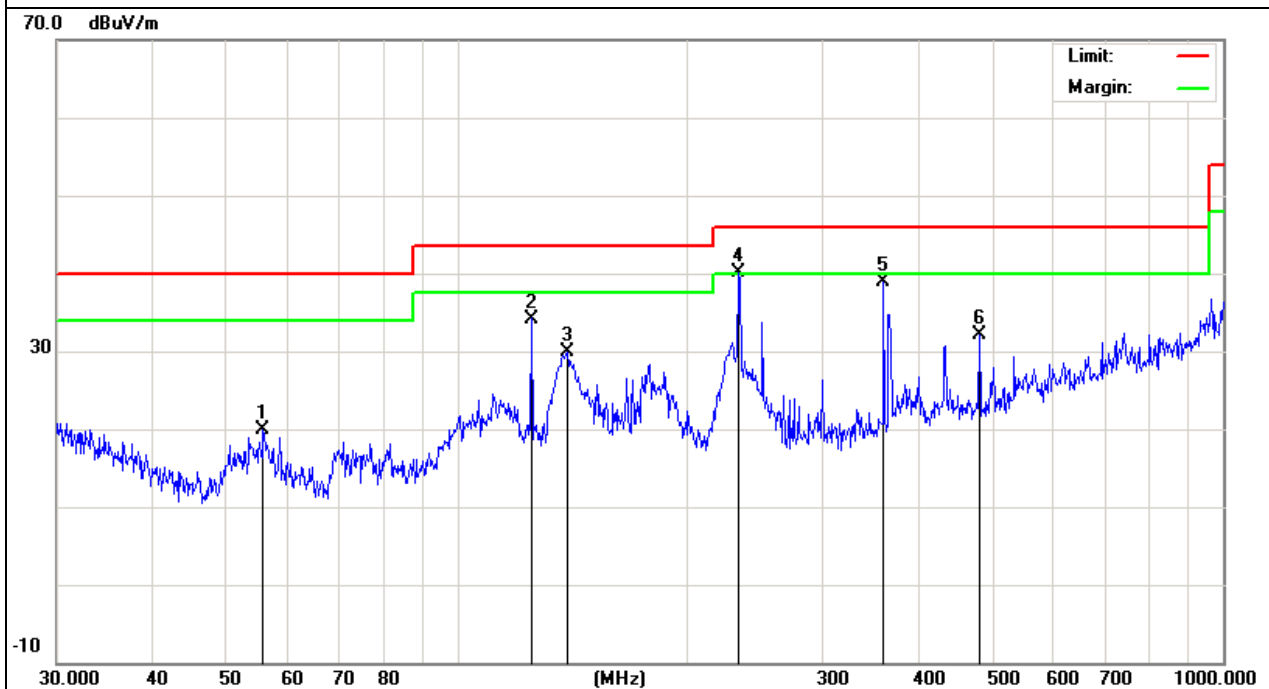
3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	TX	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
55.8046	13.82	6.04	19.86	40	-20.14	QP
125.0066	21.99	12.21	34.2	43.5	-9.3	QP
139.3611	17.7	12.18	29.88	43.5	-13.62	QP
232.5318	29.21	10.94	40.15	46	-5.85	QP
360.4476	22.51	16.46	38.97	46	-7.03	QP
480.5276	12.15	20.04	32.19	46	-13.81	QP

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

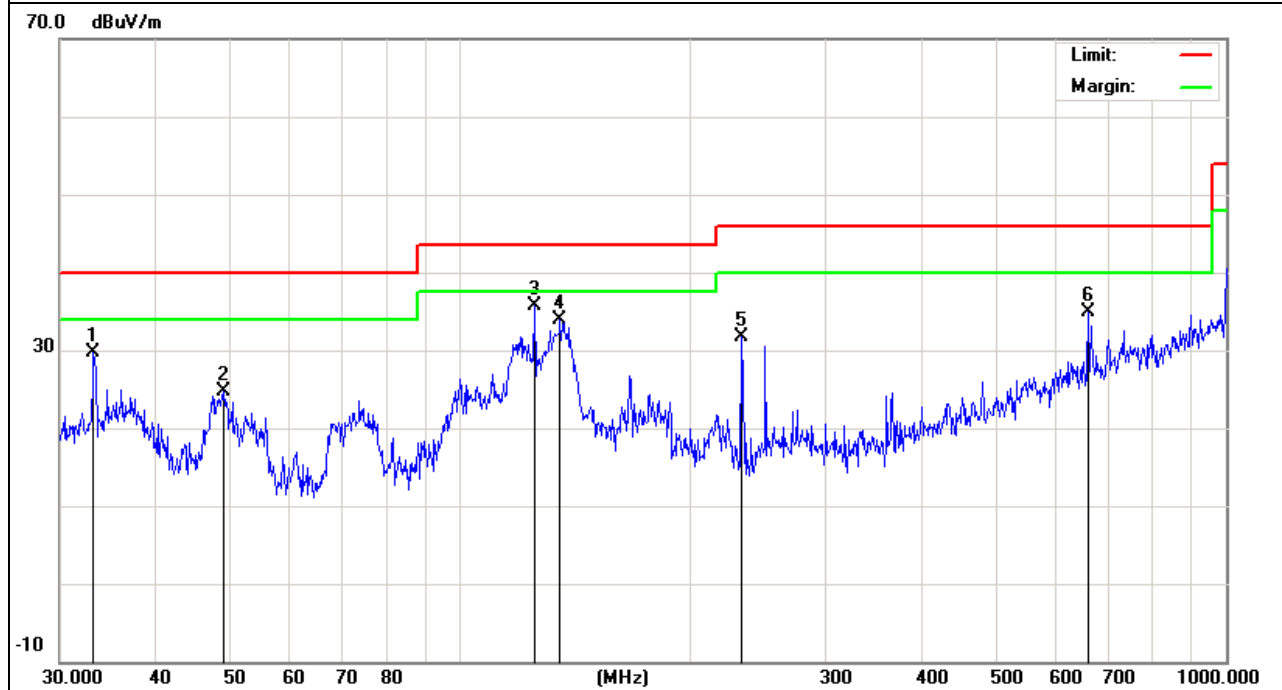


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	TX	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
33.2111	12.94	16.79	29.73	40	-10.27	QP
49.1865	16.07	8.62	24.69	40	-15.31	QP
125.0066	23.52	12.21	35.73	43.5	-7.77	QP
135.0319	21.72	12.25	33.97	43.5	-9.53	QP
233.3487	20.62	10.99	31.61	46	-14.39	QP
661.1504	11.16	23.67	34.83	46	-11.17	QP

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.



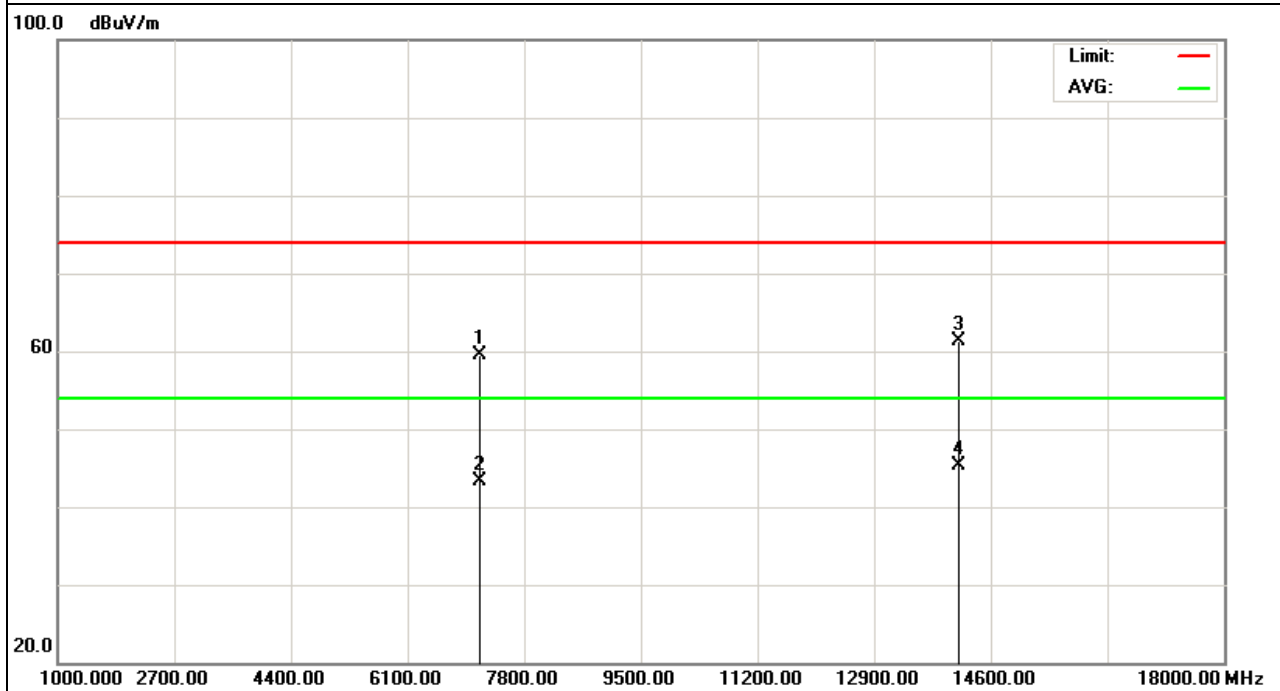
3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH1 (802.11b Mode)/2412	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
7162.5	59.7	-0.17	59.53	74	-14.47	peak
7162.5	43.42	-0.17	43.25	54	-10.75	AVG
14132.50	55.77	5.61	61.38	74	-12.62	peak
14132.5	39.74	5.61	45.35	54	-8.65	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

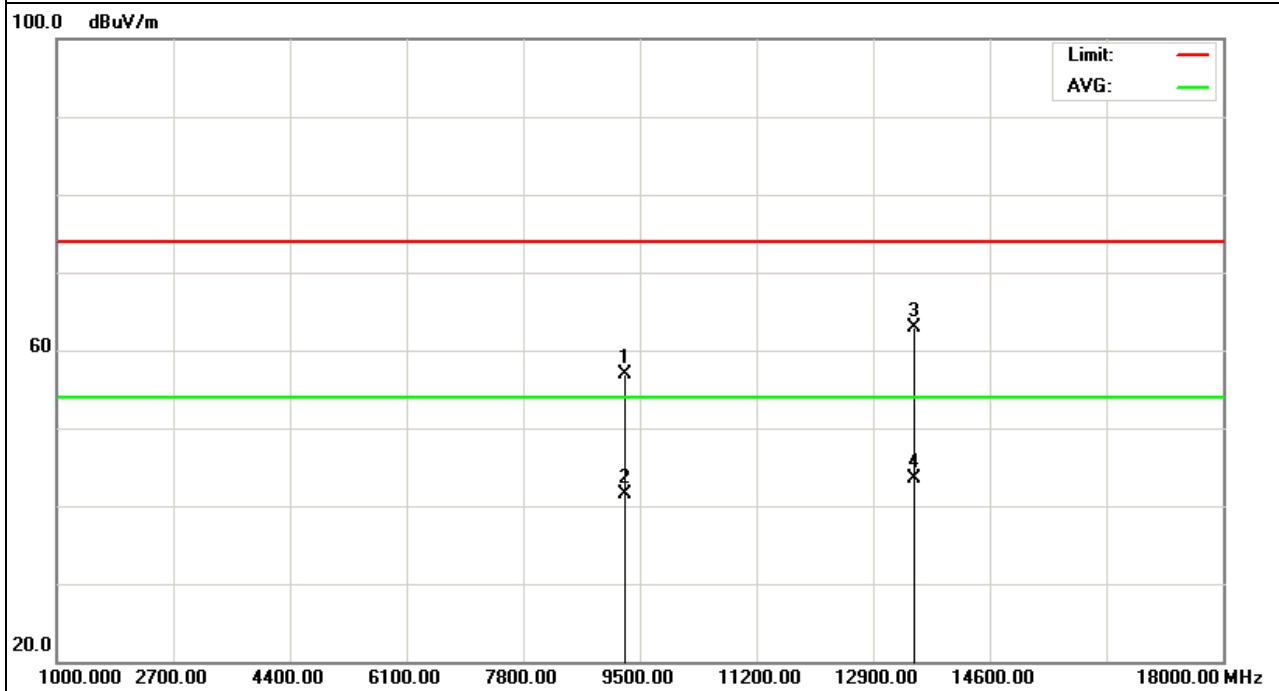


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH1 (802.11b Mode)/2412	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
9287.5	54.54	2.27	56.81	74	-17.19	peak
9287.5	39.21	2.27	41.48	54	-12.52	AVG
13495.00	55.76	7.1	62.86	74	-11.14	peak
13495	36.4	7.1	43.5	54	-10.5	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

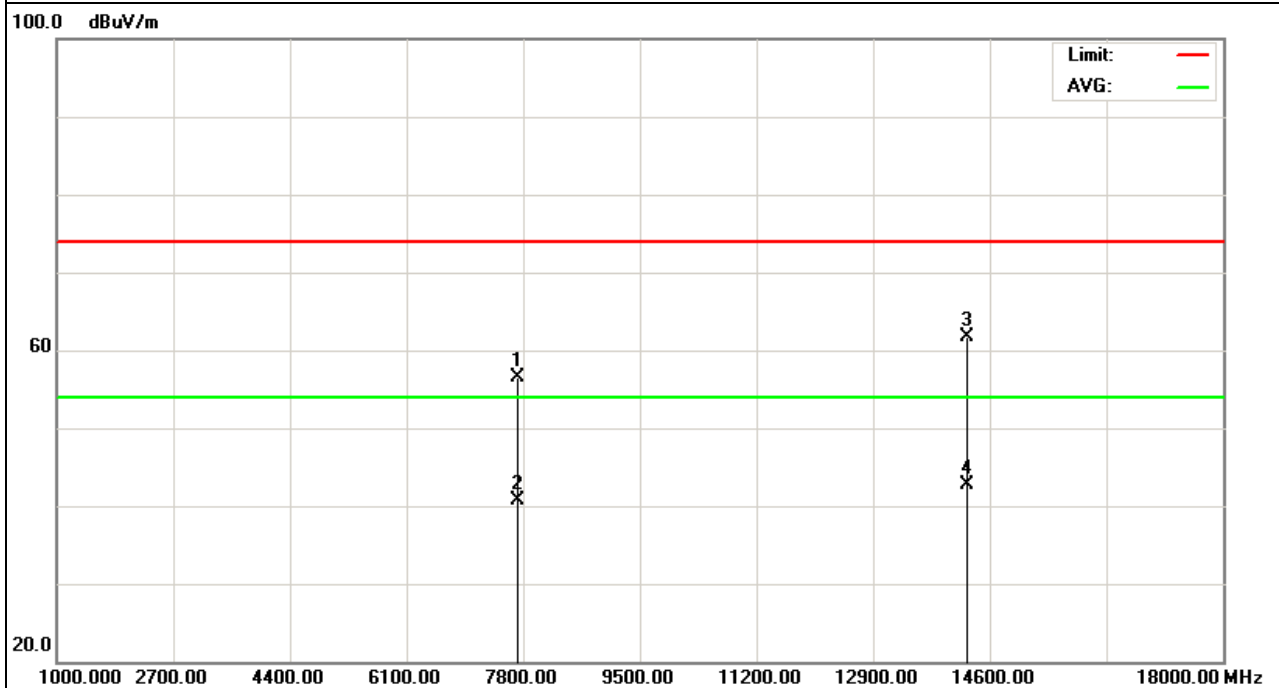


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH6 (802.11b Mode)/2437	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
7715	56.69	-0.14	56.55	74	-17.45	peak
7715	40.79	-0.14	40.65	54	-13.35	AVG
14260.00	55.22	6.5	61.72	74	-12.28	peak
14260	36.15	6.5	42.65	54	-11.35	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

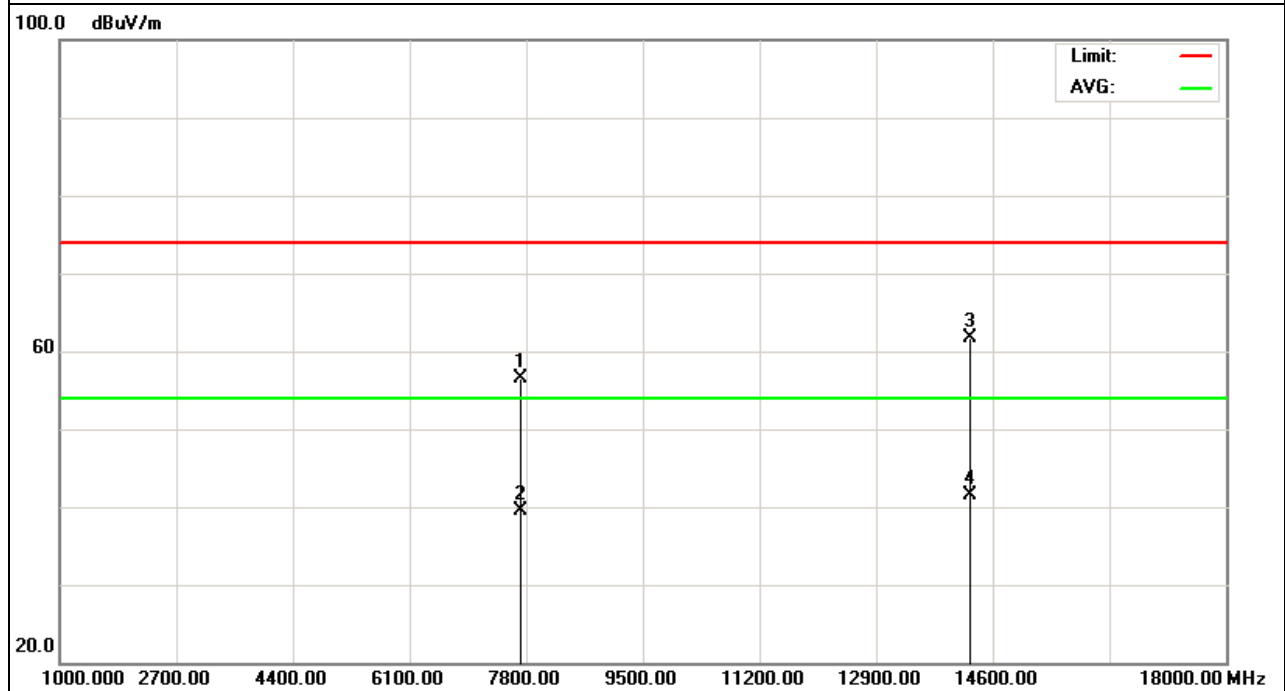


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH6 (802.11b Mode)/2437	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
7715	56.69	-0.14	56.55	74	-17.45	peak
7715	39.71	-0.14	39.57	54	-14.43	AVG
14260.00	55.22	6.5	61.72	74	-12.28	peak
14260	35.07	6.5	41.57	54	-12.43	AVG

Remark:

- Factor = Antenna Factor + Cable Loss – Pre-amplifier.
- No emission detected above 18GHz

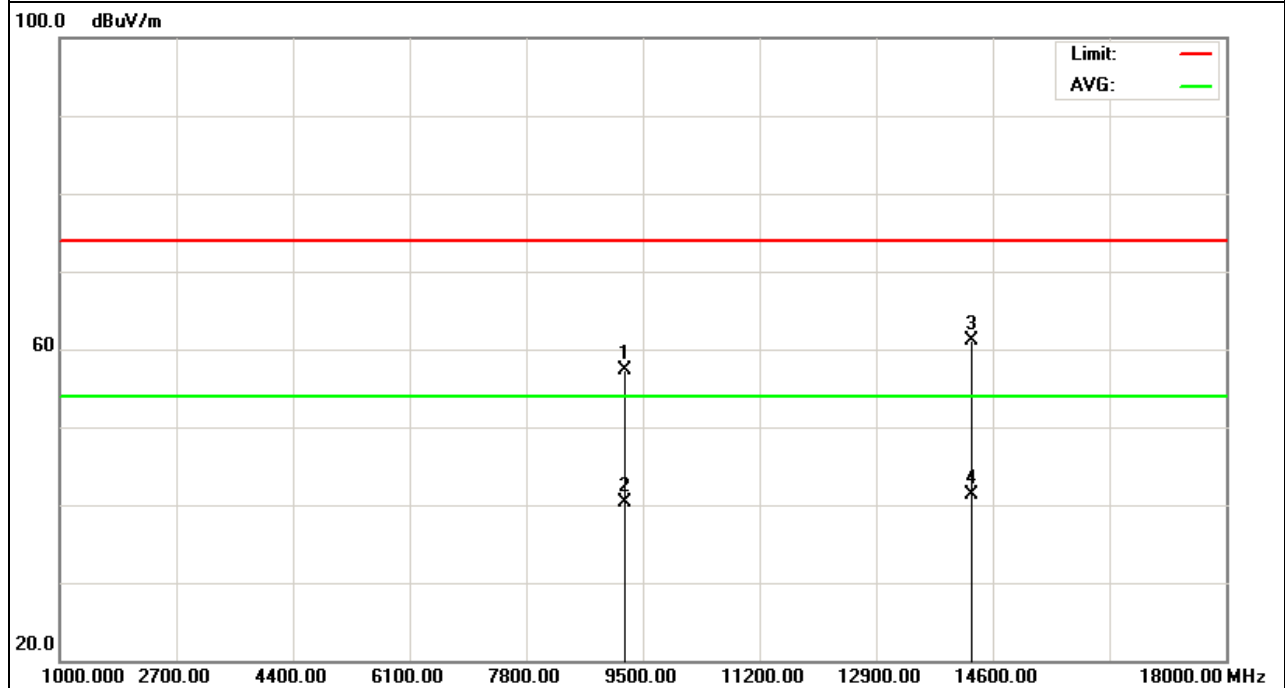


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH11 (802.11b Mode)/2462	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
9245	54.93	2.29	57.22	74	-16.78	peak
9245	38.04	2.29	40.33	54	-13.67	AVG
14302.50	54.73	6.34	61.07	74	-12.93	peak
14302.5	34.96	6.34	41.3	54	-12.7	AVG

Remark:

- Factor = Antenna Factor + Cable Loss – Pre-amplifier.
- No emission detected above 18GHz

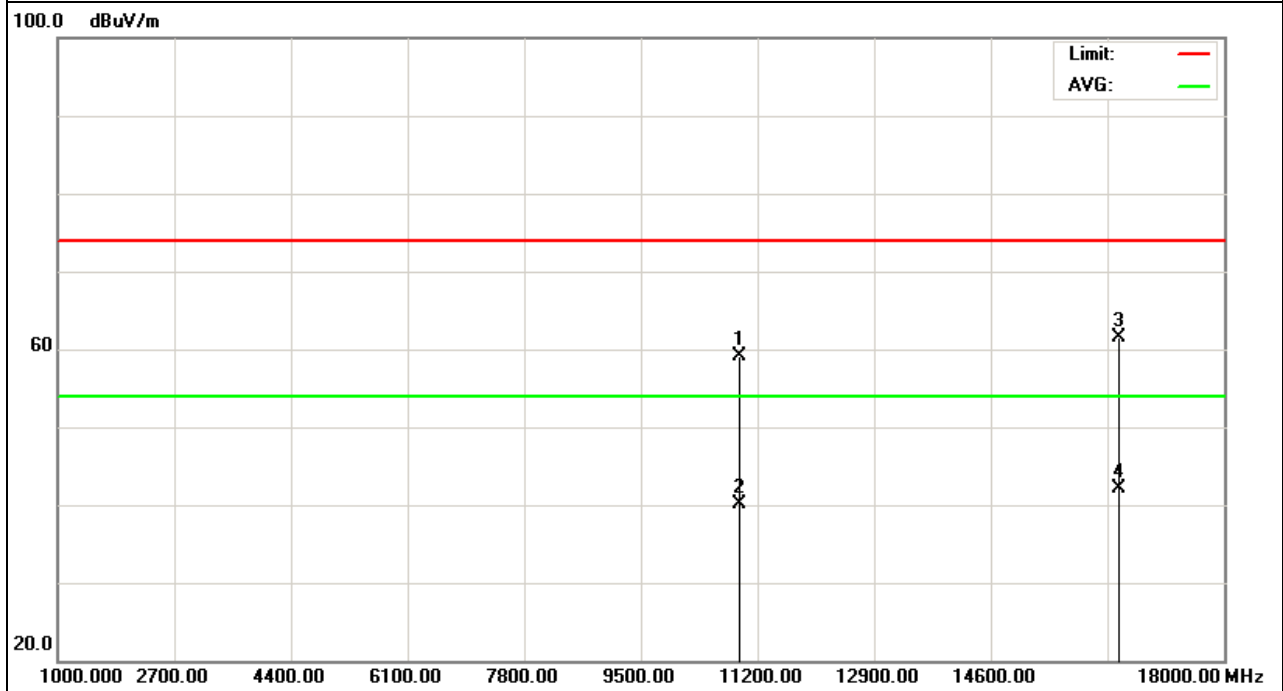


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH11 (802.11b Mode)/2462	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
10945	54.65	4.37	59.02	74	-14.98	peak
10945	35.73	4.37	40.1	54	-13.9	AVG
16470	52.77	8.79	61.56	74	-12.44	peak
16470	33.23	8.79	42.02	54	-11.98	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

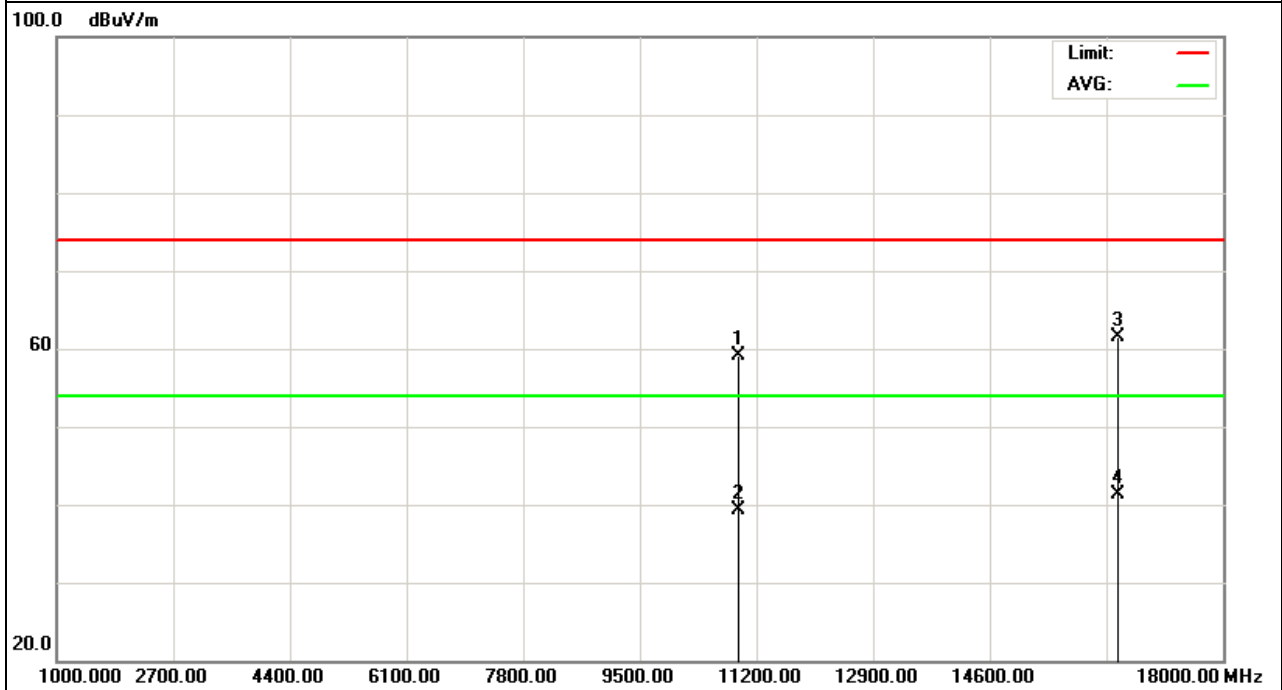


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH1 (802.11g Mode)/2412	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
10945.00	54.65	4.37	59.02	74	-14.98	peak
10945	35.02	4.37	39.39	54	-14.61	AVG
16470.00	52.77	8.79	61.56	74	-12.44	peak
16470	32.49	8.79	41.28	54	-12.72	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

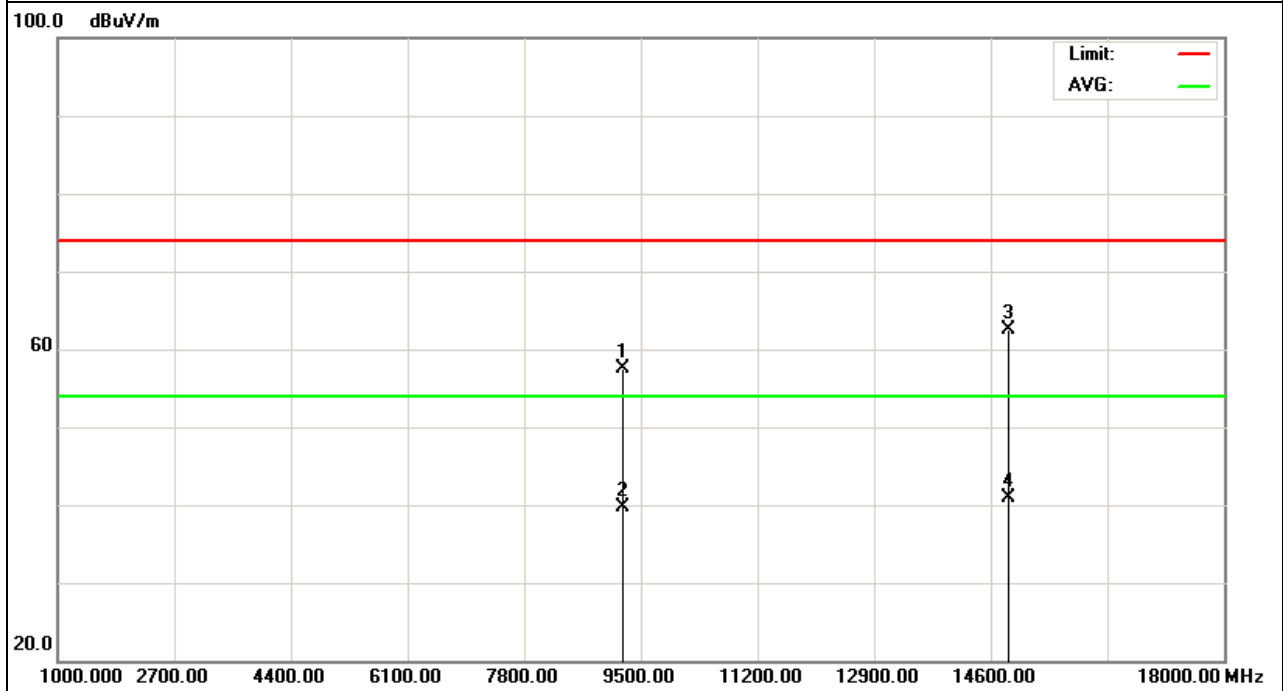


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH1 (802.11g Mode)/2412	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
9245	55.3	2.29	57.59	74	-16.41	peak
9245	37.39	2.29	39.68	54	-14.32	AVG
14855.00	56.39	6.04	62.43	74	-11.57	peak
14855	34.83	6.04	40.87	54	-13.13	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

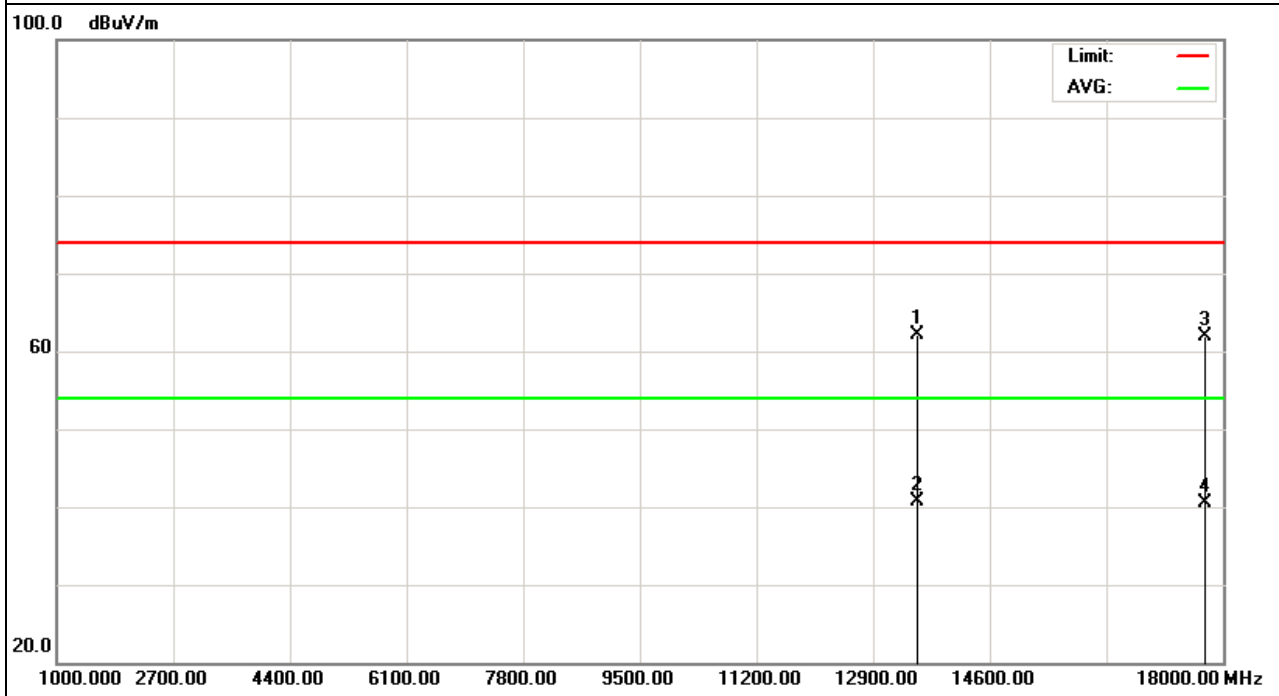


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH6 (802.11g Mode)/2437	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
13537.50	55.63	6.57	62.2	74	-11.8	peak
13537.5	34.09	6.57	40.66	54	-13.34	AVG
17745.00	48.59	13.26	61.85	74	-12.15	peak
17745	27.33	13.26	40.59	54	-13.41	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

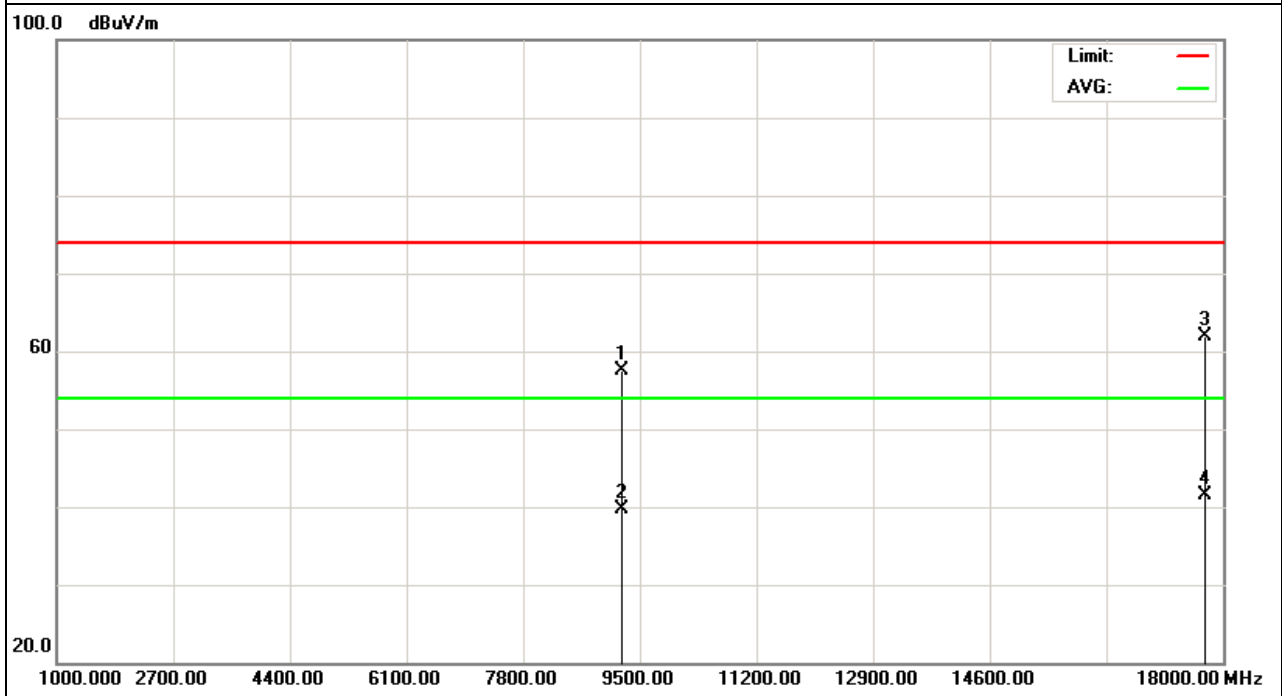


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH6 (802.11g Mode)/2437	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
9245	55.3	2.29	57.59	74	-16.41	peak
9245	37.39	2.29	39.68	54	-14.32	AVG
17745.00	48.59	13.26	61.85	74	-12.15	peak
17745	28.31	13.26	41.57	54	-12.43	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

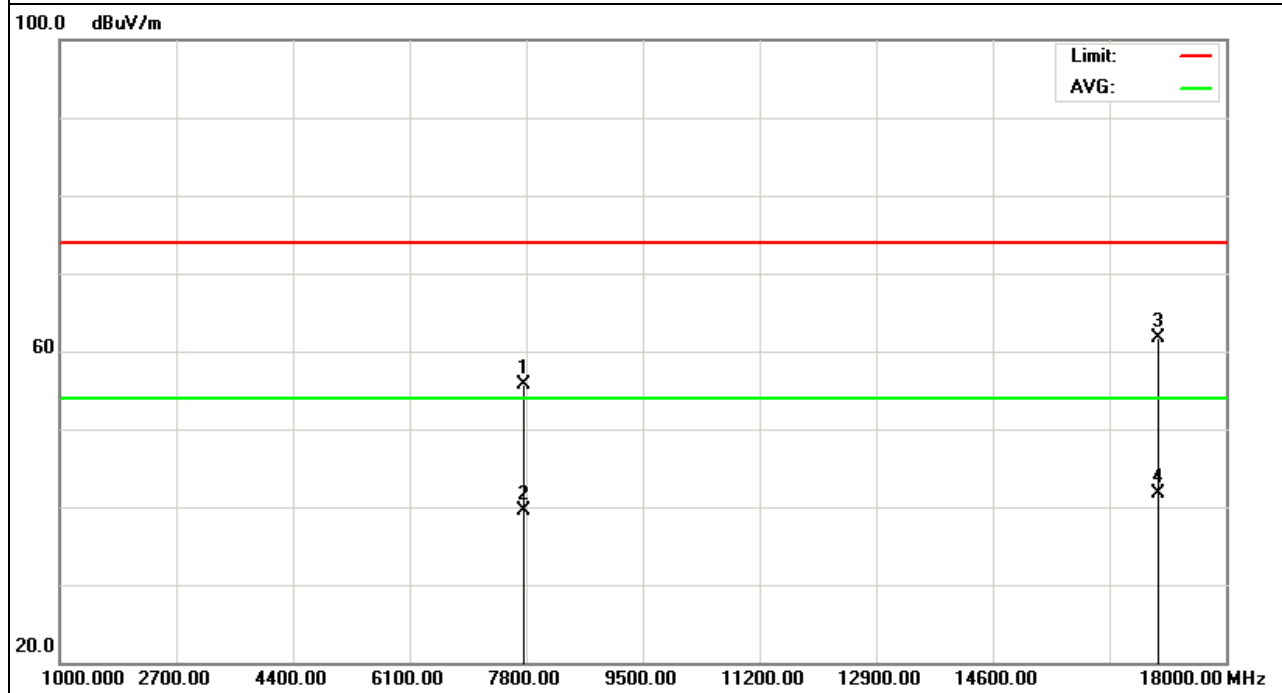


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH11 (802.11g Mode)/2462	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
7757.5	55.64	0.1	55.74	74	-18.26	peak
7757.5	39.48	0.1	39.58	54	-14.42	AVG
17022.50	49.47	12.3	61.77	74	-12.23	peak
17022.5	29.33	12.3	41.63	54	-12.37	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

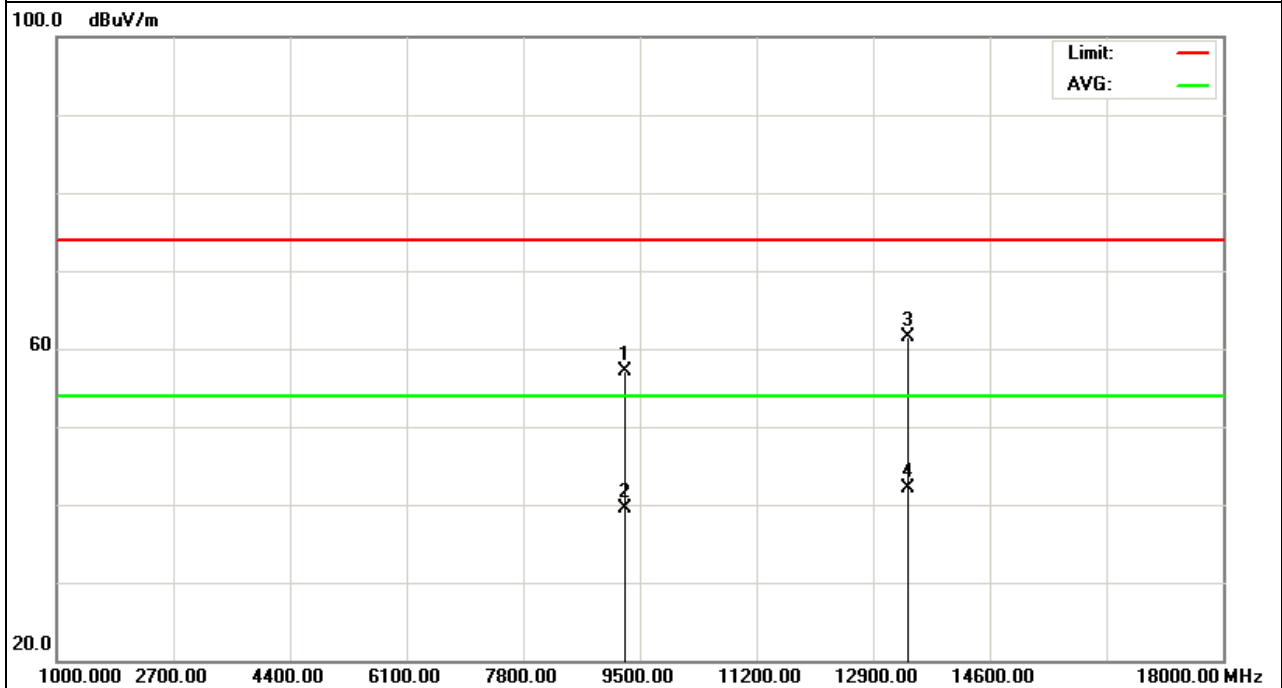


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH11(802.11g Mode)/2462	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
9287.5	54.78	2.27	57.05	74	-16.95	peak
9287.5	37.31	2.27	39.58	54	-14.42	AVG
13410.00	54.27	7.19	61.46	74	-12.54	peak
13410	34.93	7.19	42.12	54	-11.88	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

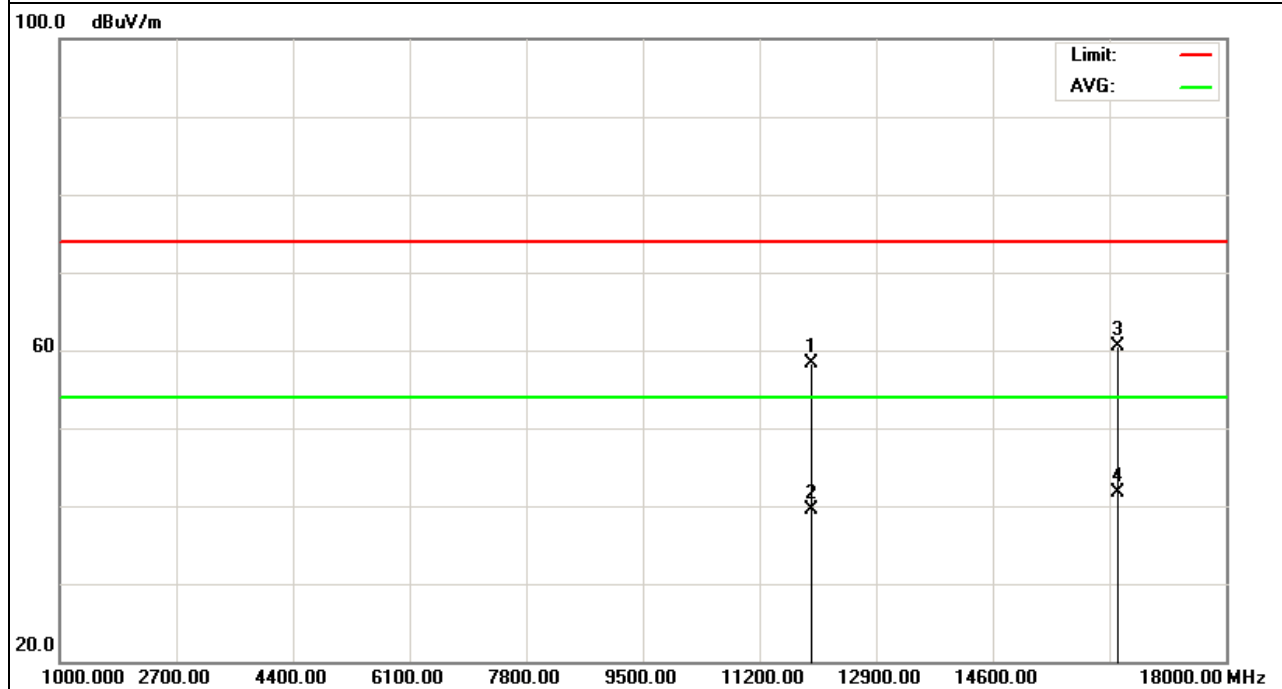


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH1(802.11n20 Mode)/2412	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
11965.00	52.08	6.32	58.4	74	-15.6	peak
11965	33.2	6.32	39.52	54	-14.48	AVG
16427.50	52.3	8.25	60.55	74	-13.45	peak
16427.5	33.44	8.25	41.69	54	-12.31	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

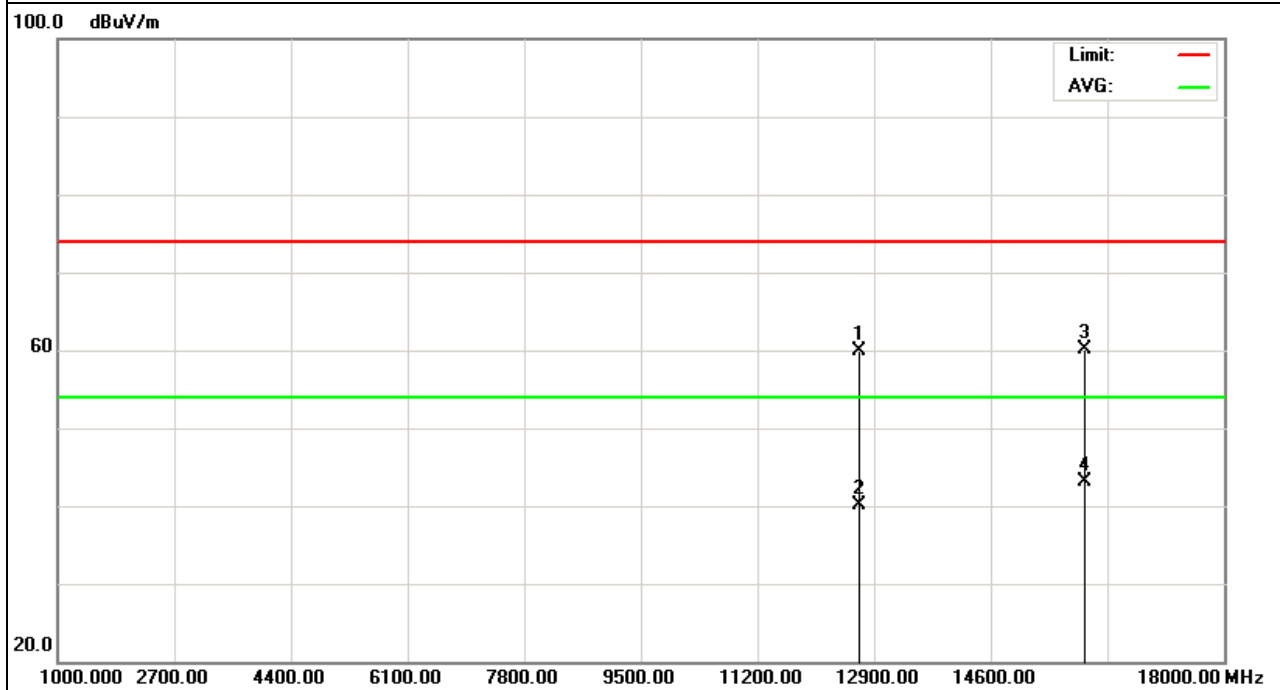


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH1(802.11n20 Mode)/2412	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
12687.50	53.46	6.51	59.97	74	-14.03	peak
12687.5	33.69	6.51	40.2	54	-13.8	AVG
15960.00	56.07	4.05	60.12	74	-13.88	peak
15960	39.05	4.05	43.1	54	-10.9	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

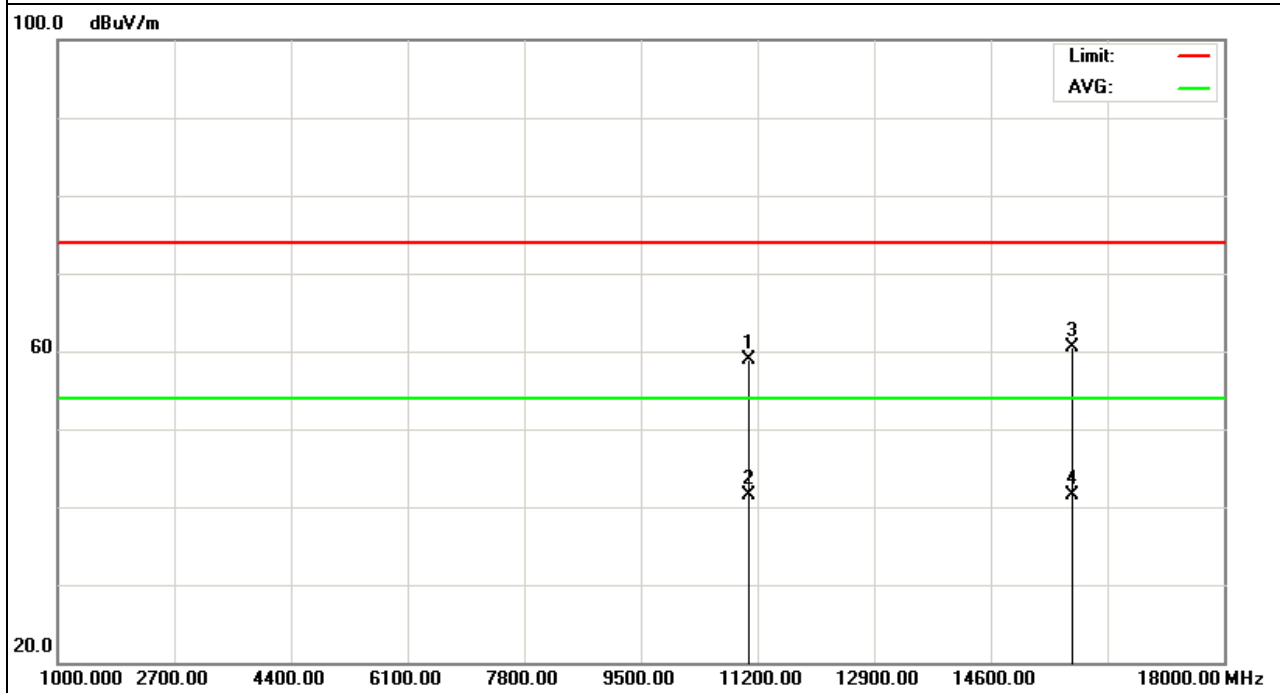


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH6(802.11n20 Mode)/2437	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
11072.50	55.3	3.56	58.86	74	-15.14	peak
11072.5	37.86	3.56	41.42	54	-12.58	AVG
15790.00	55.65	4.87	60.52	74	-13.48	peak
15790	36.55	4.87	41.42	54	-12.58	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

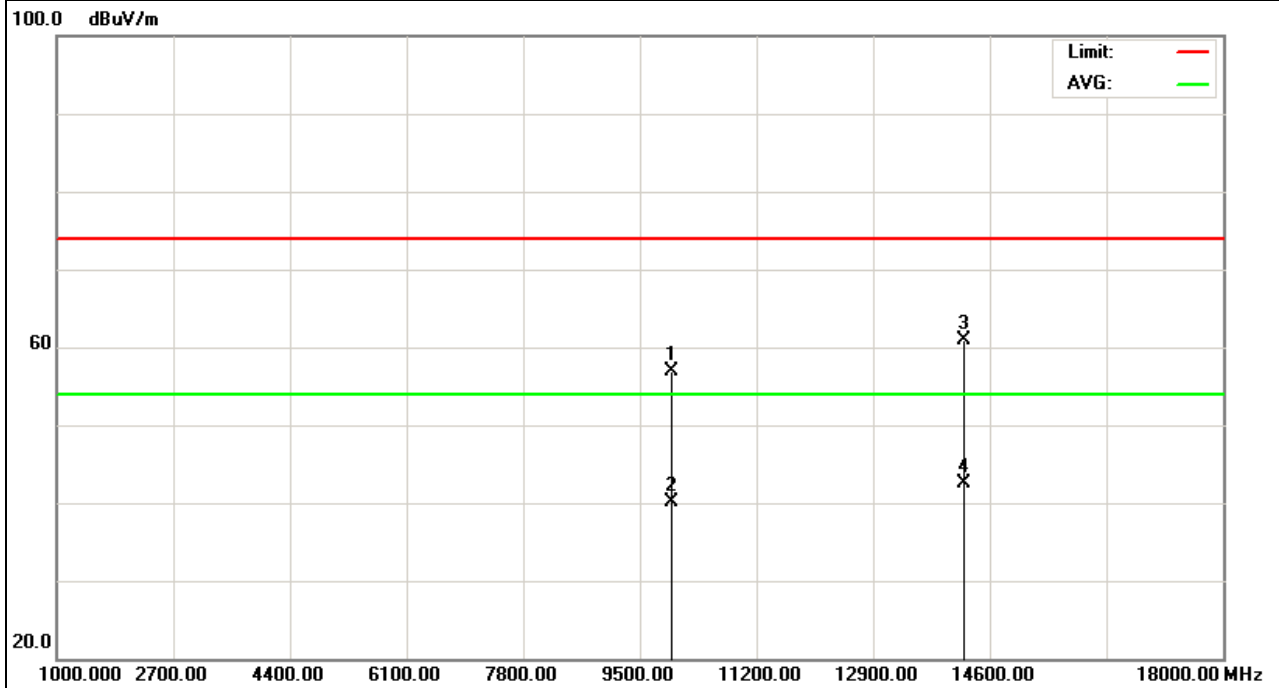


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH6(802.11n20 Mode)/2437	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
9967.5	55.55	1.33	56.88	74	-17.12	peak
9967.5	38.85	1.33	40.18	54	-13.82	AVG
14217.50	54.87	6.08	60.95	74	-13.05	peak
14217.5	36.45	6.08	42.53	54	-11.47	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

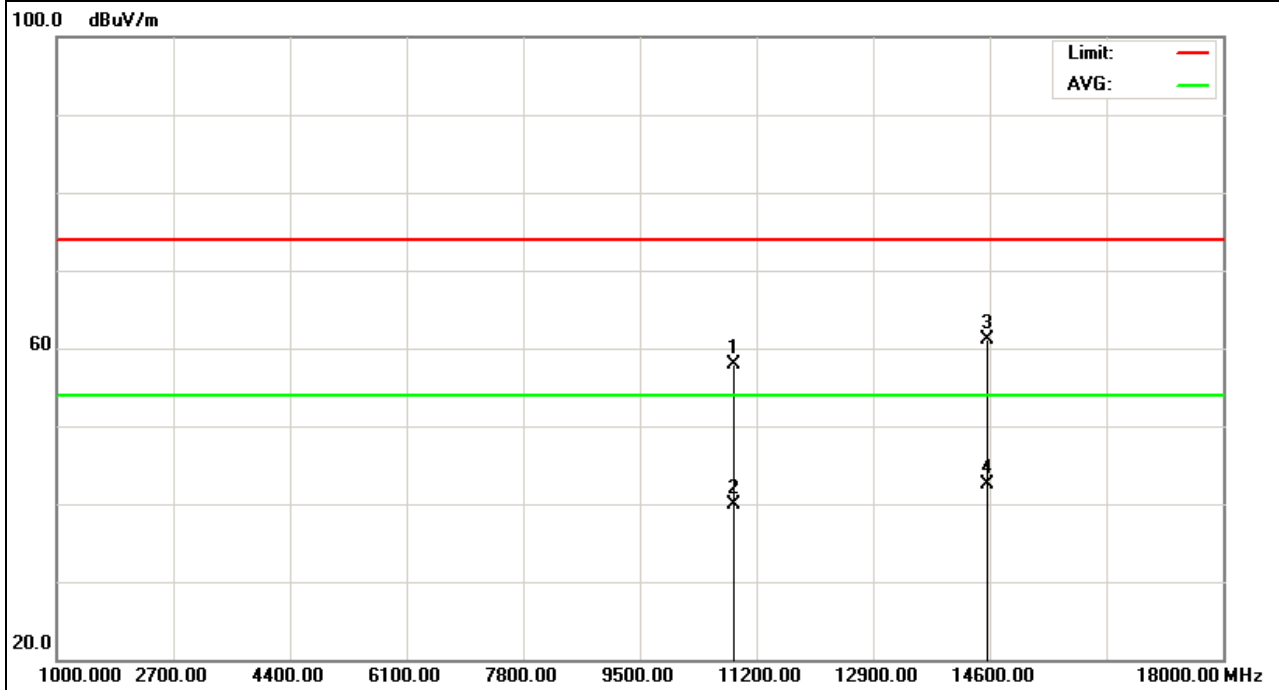


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH11(802.11n20 Mode)/2462	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
10860.00	54.5	3.31	57.81	74	-16.19	peak
10860	36.56	3.31	39.87	54	-14.13	AVG
14557.50	54.4	6.7	61.1	74	-12.9	peak
14557.5	35.81	6.7	42.51	54	-11.49	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

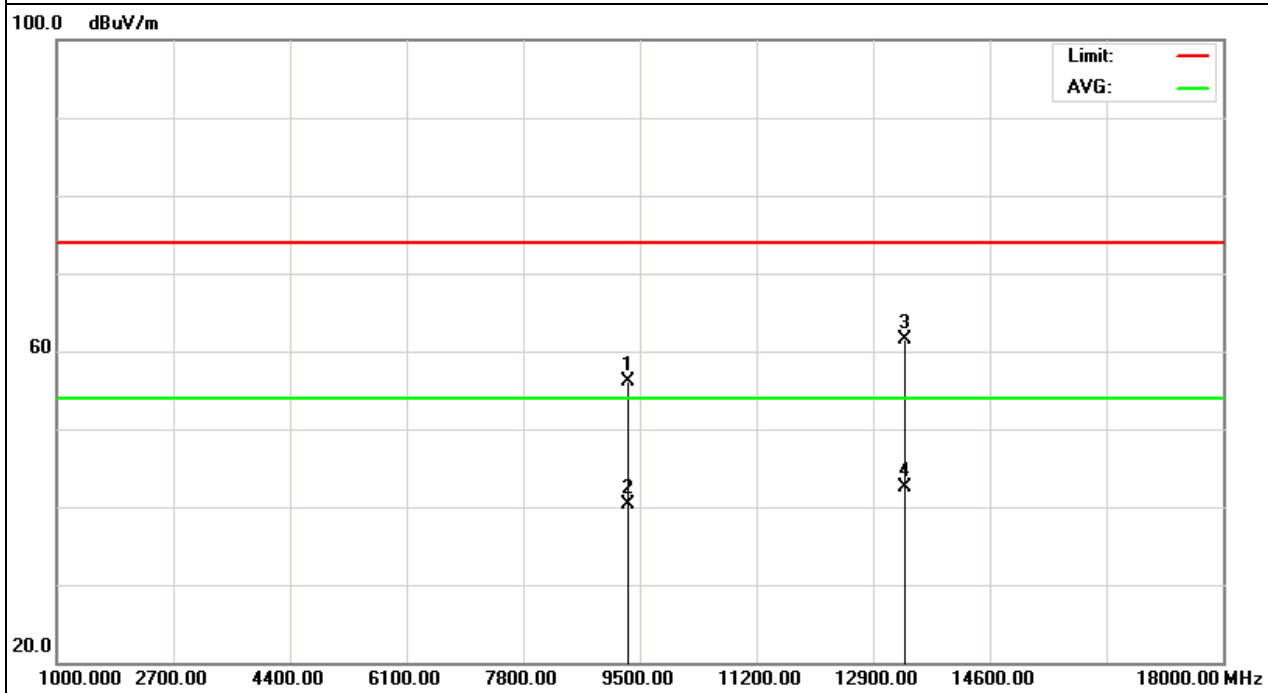


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH11(802.11n20 Mode)/2462	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
9330	54.79	1.4	56.19	74	-17.81	peak
9330	39	1.4	40.4	54	-13.6	AVG
13367.50	54.46	7.02	61.48	74	-12.52	peak
13367.5	35.48	7.02	42.5	54	-11.5	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

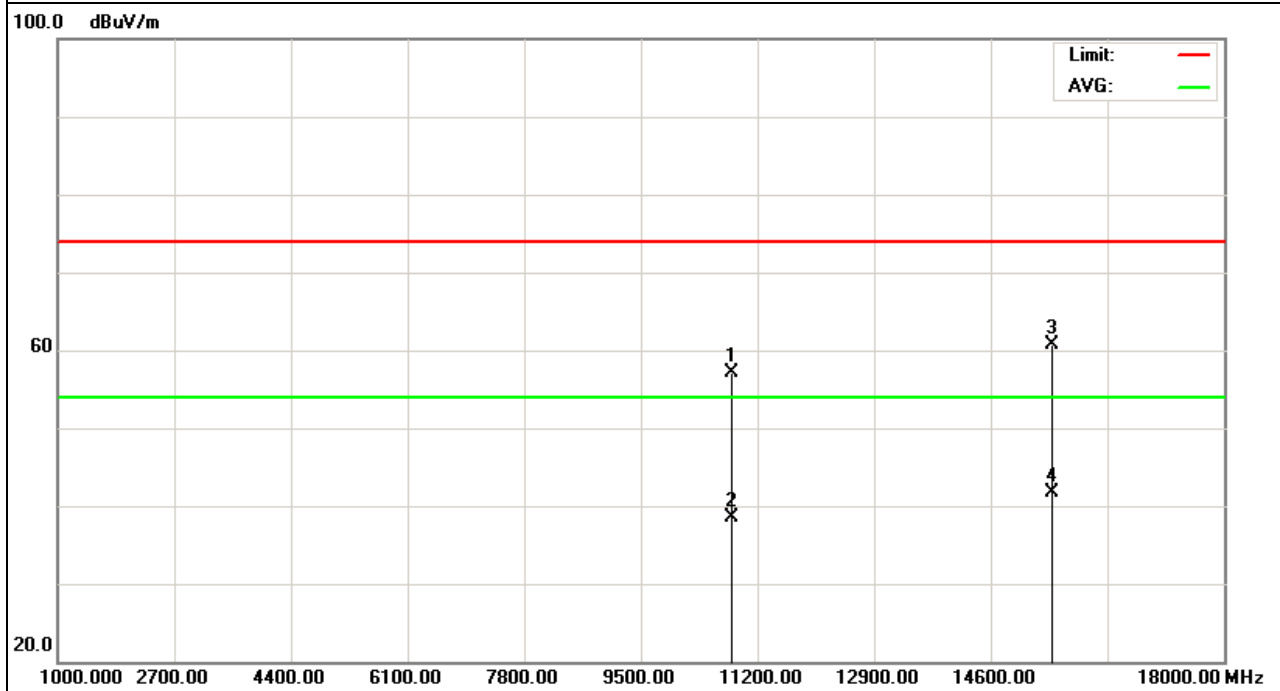


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH3(802.11n40 Mode)/2422	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
10817.50	54.07	3.13	57.2	74	-16.8	peak
10817.5	35.28	3.13	38.41	54	-15.59	AVG
15492.50	55.44	5.25	60.69	74	-13.31	peak
15492.5	36.37	5.25	41.62	54	-12.38	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

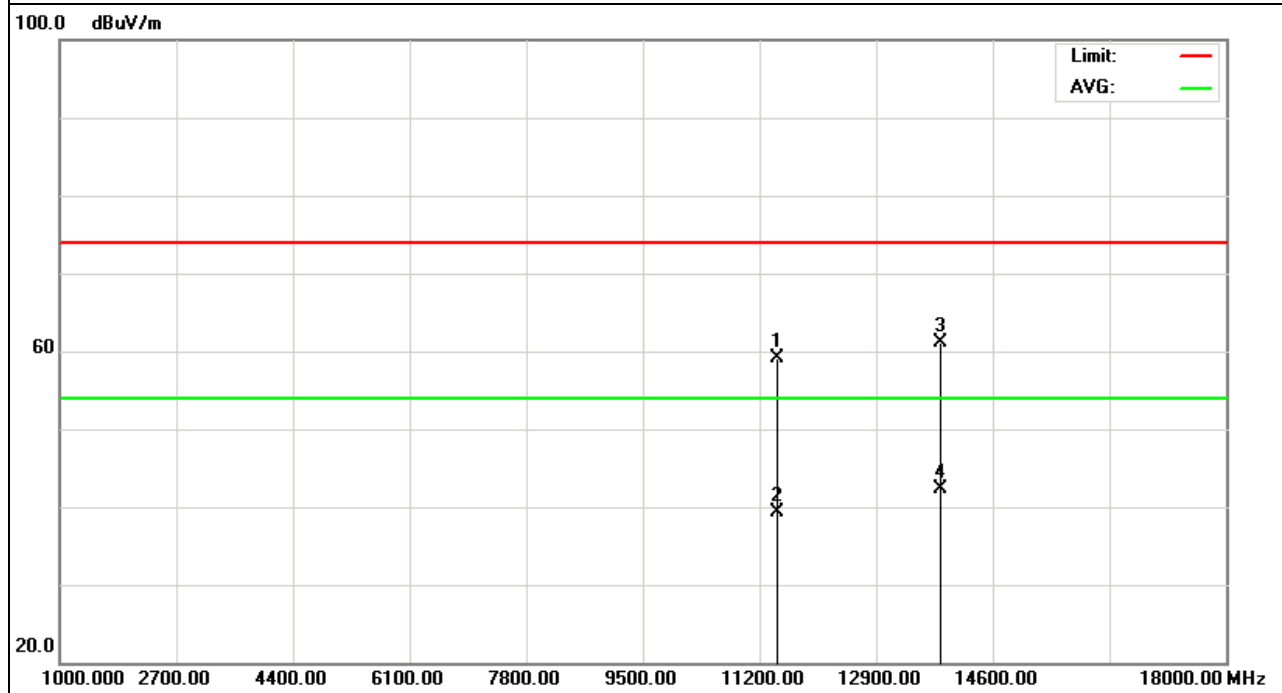


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH3(802.11n40 Mode)/2422	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
11455.00	56.16	2.9	59.06	74	-14.94	peak
11455	36.33	2.9	39.23	54	-14.77	AVG
13835.00	55.45	5.65	61.1	74	-12.9	peak
13835	36.75	5.65	42.4	54	-11.6	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

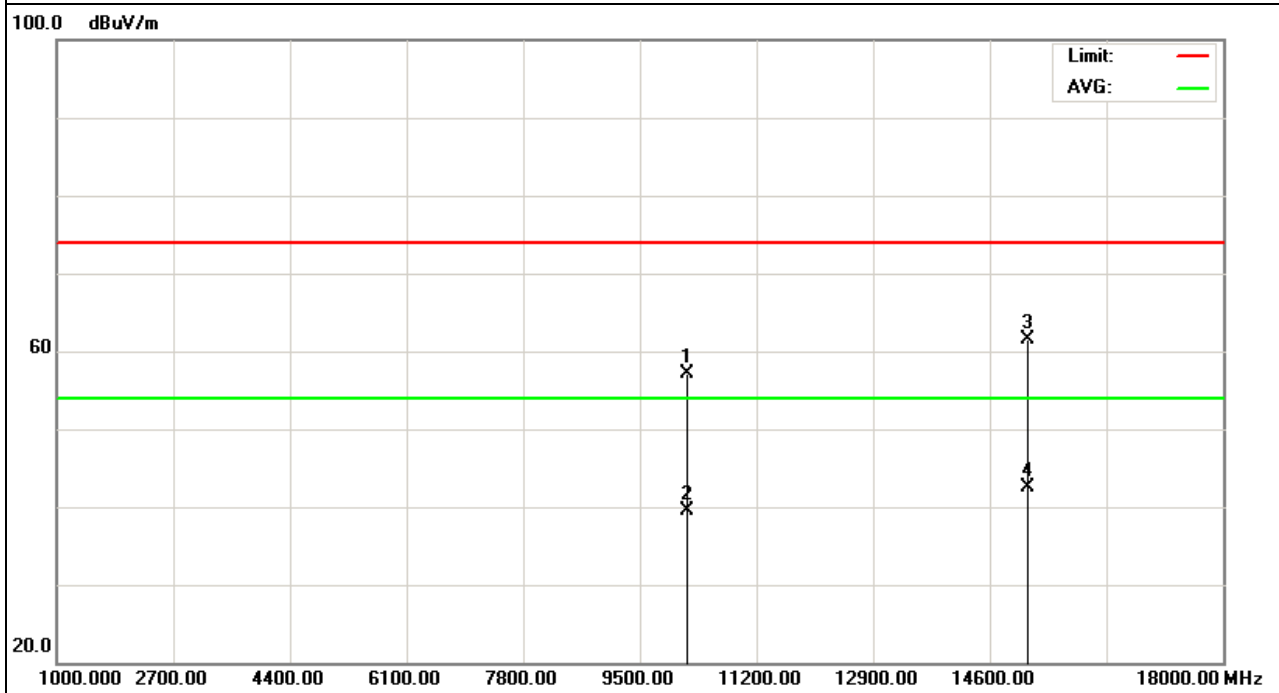


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH6(802.11n40 Mode)/2437	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
10180.00	55.55	1.52	57.07	74	-16.93	peak
10180	38.04	1.52	39.56	54	-14.44	AVG
15152.50	56.99	4.51	61.5	74	-12.5	peak
15152.5	38.07	4.51	42.58	54	-11.42	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

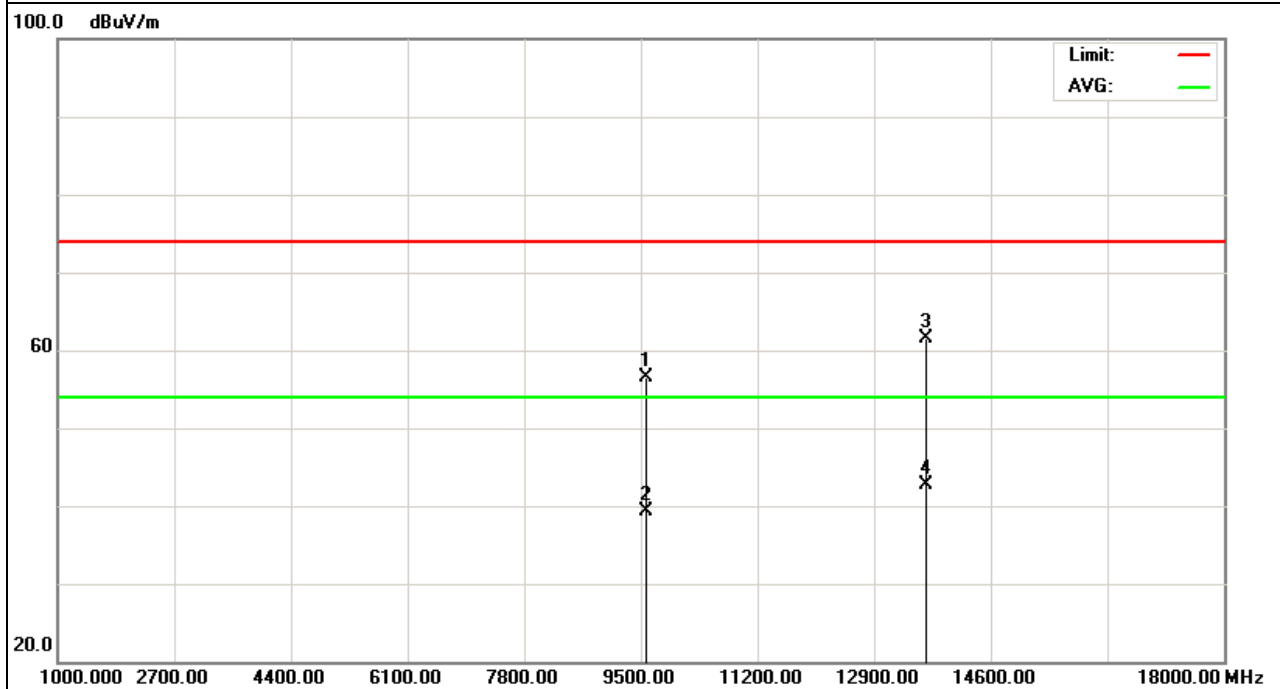


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH6(802.11n40 Mode)/2437	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
9585	54.32	2.17	56.49	74	-17.51	peak
9585	37.04	2.17	39.21	54	-14.79	AVG
13665.00	55.12	6.3	61.42	74	-12.58	peak
13665	36.37	6.3	42.67	54	-11.33	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

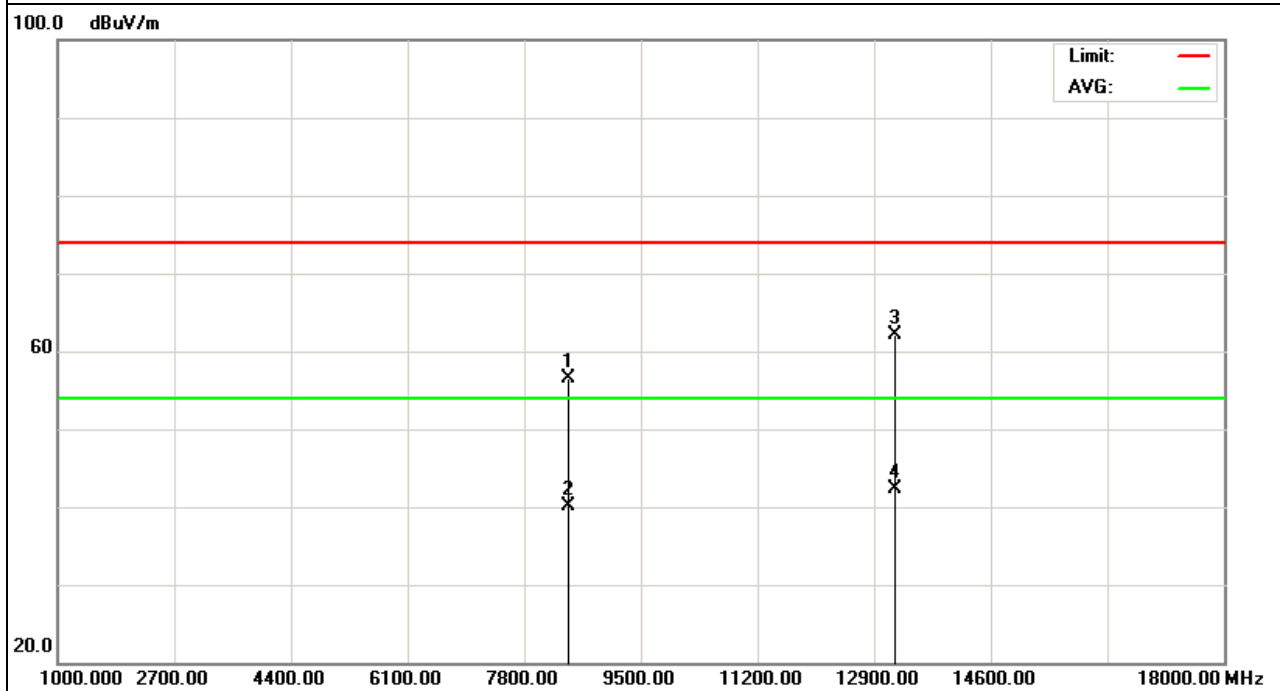


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH09(802.11n40 Mode)/2452	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
8437.5	55.75	0.84	56.59	74	-17.41	peak
8437.5	39.29	0.84	40.13	54	-13.87	AVG
13197.50	54.47	7.61	62.08	74	-11.92	peak
13197.5	34.69	7.61	42.3	54	-11.7	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

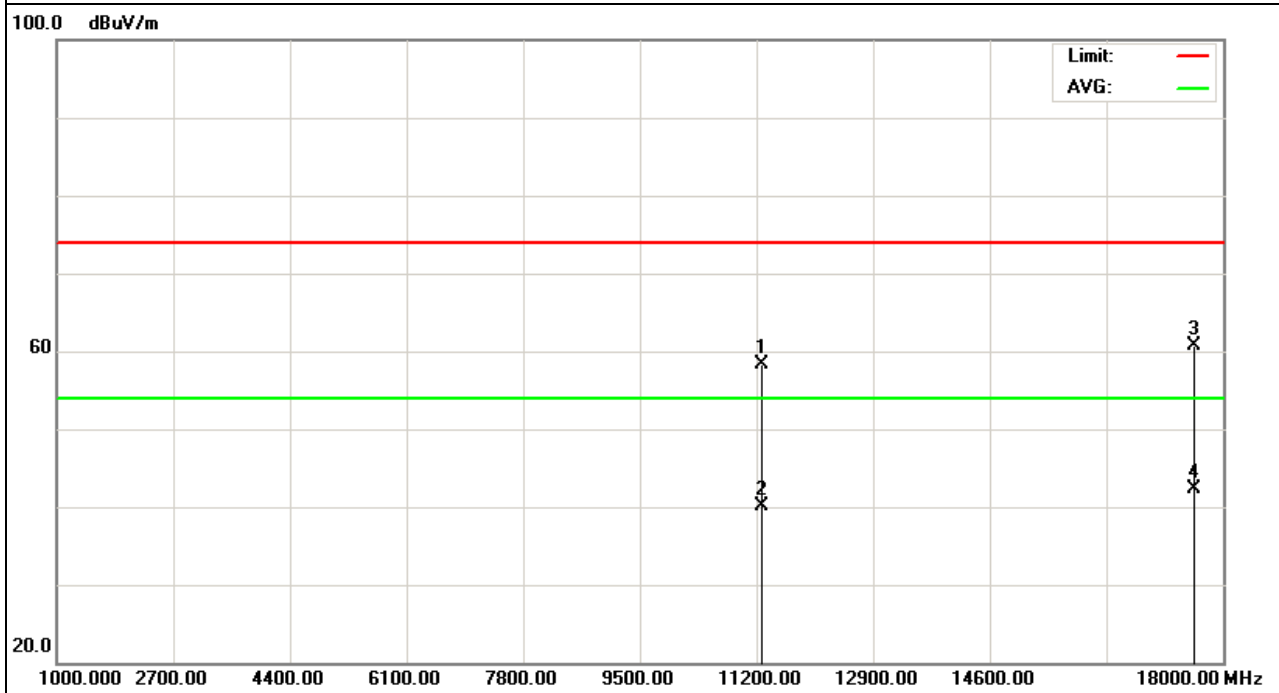


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH09(802.11n40 Mode)/2452	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
11285.00	55.12	3.22	58.34	74	-15.66	peak
11285	36.9	3.22	40.12	54	-13.88	AVG
17575.00	46.71	13.94	60.65	74	-13.35	peak
17575	28.39	13.94	42.33	54	-11.67	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

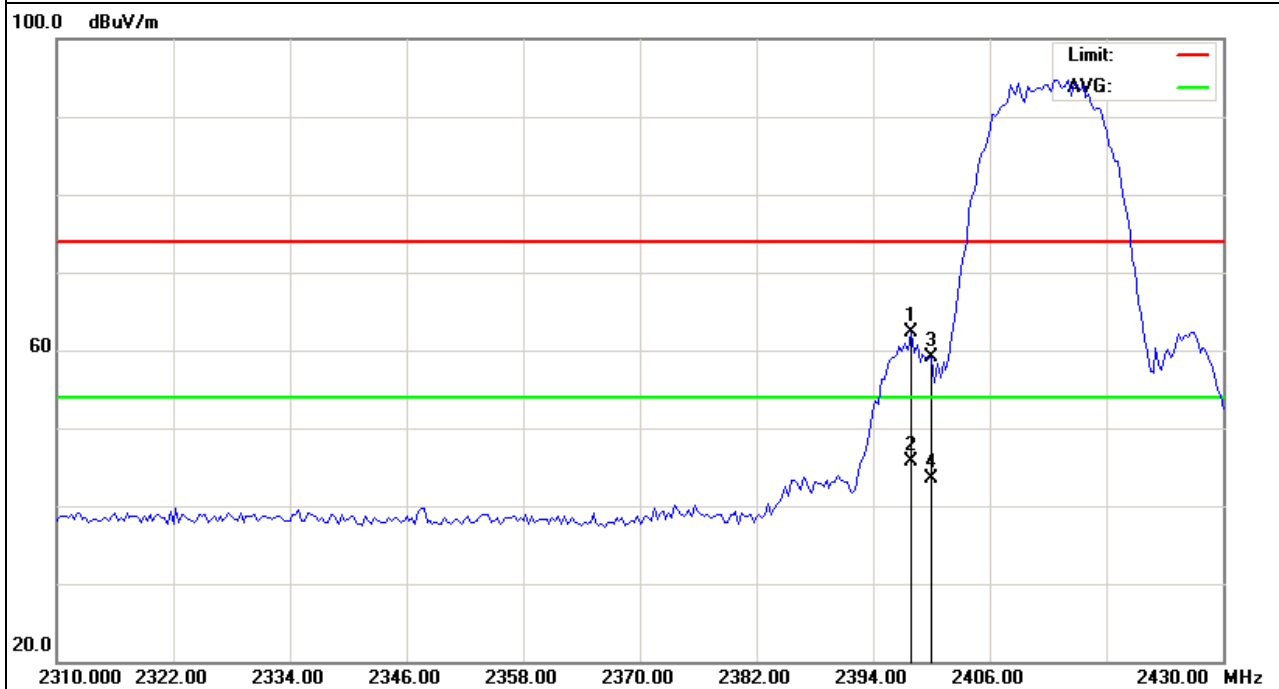


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH1(802.11b Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2397.9	75.21	-13	62.21	74	-11.79	peak
2397.9	58.68	-13	45.68	54	-8.32	AVG
2400	72.16	-12.99	59.17	74	-14.83	peak
2400	56.52	-12.99	43.53	54	-10.47	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

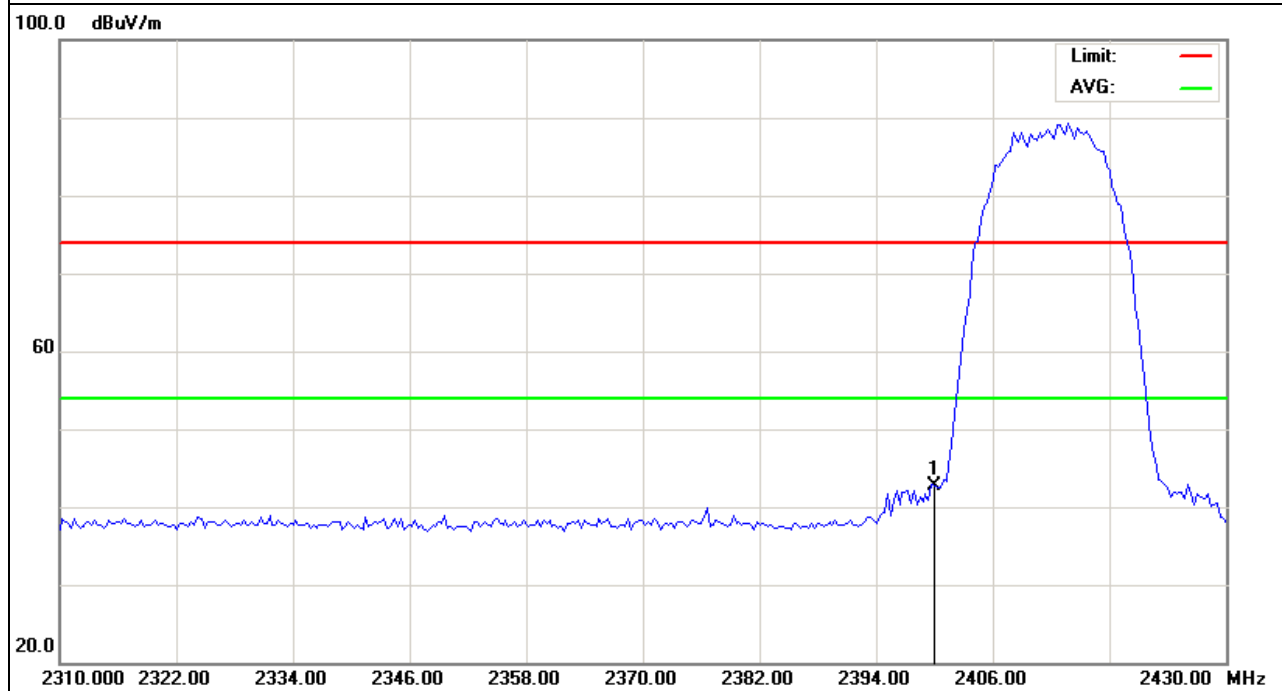


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH1(802.11b Mode)	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400	55.73	-12.99	42.74	74	-31.26	peak

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

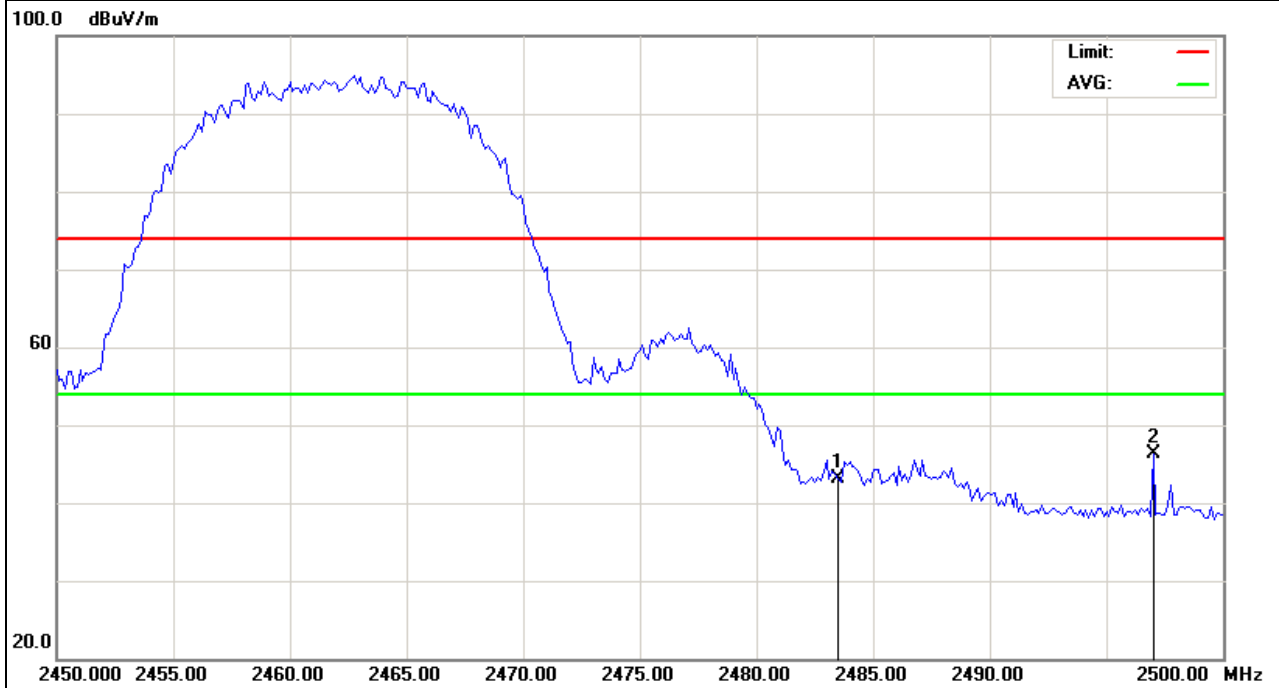


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH11(802.11b Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	55.88	-12.78	43.1	74	-30.9	peak
2497	59.05	-12.73	46.32	74	-27.68	peak

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

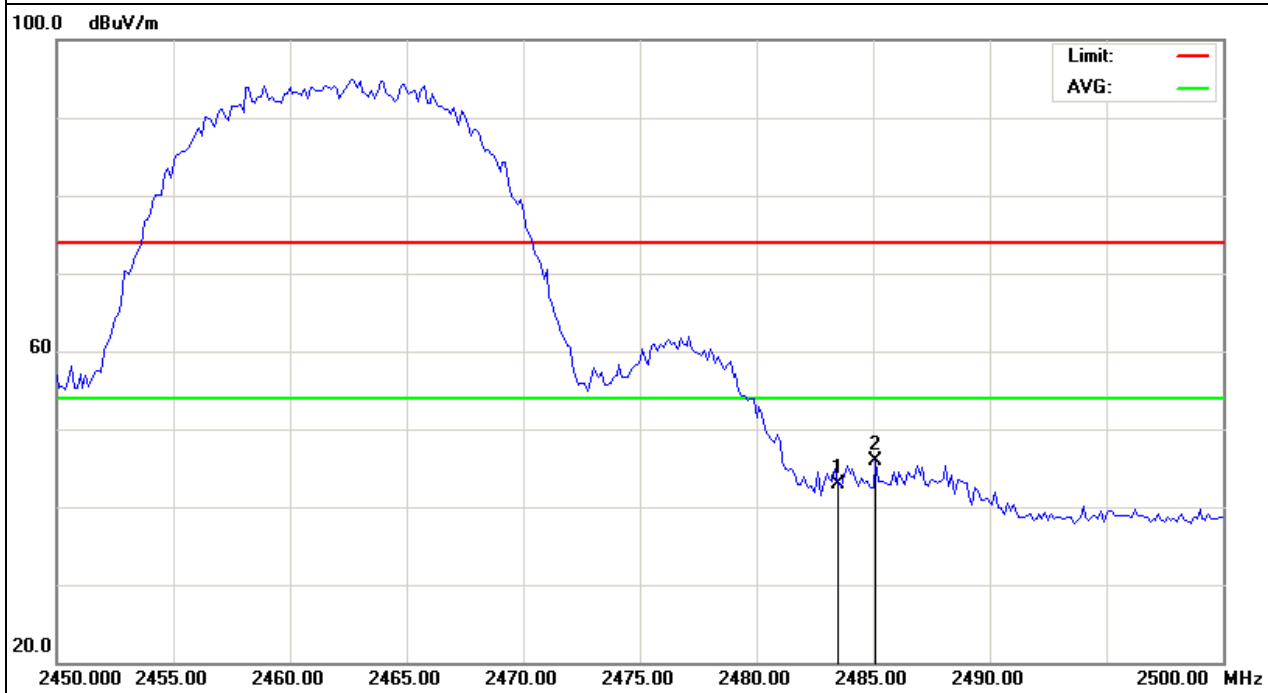


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH11(802.11b Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	55.69	-12.78	42.91	74	-31.09	peak
2485.125	58.69	-12.78	45.91	74	-28.09	peak

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

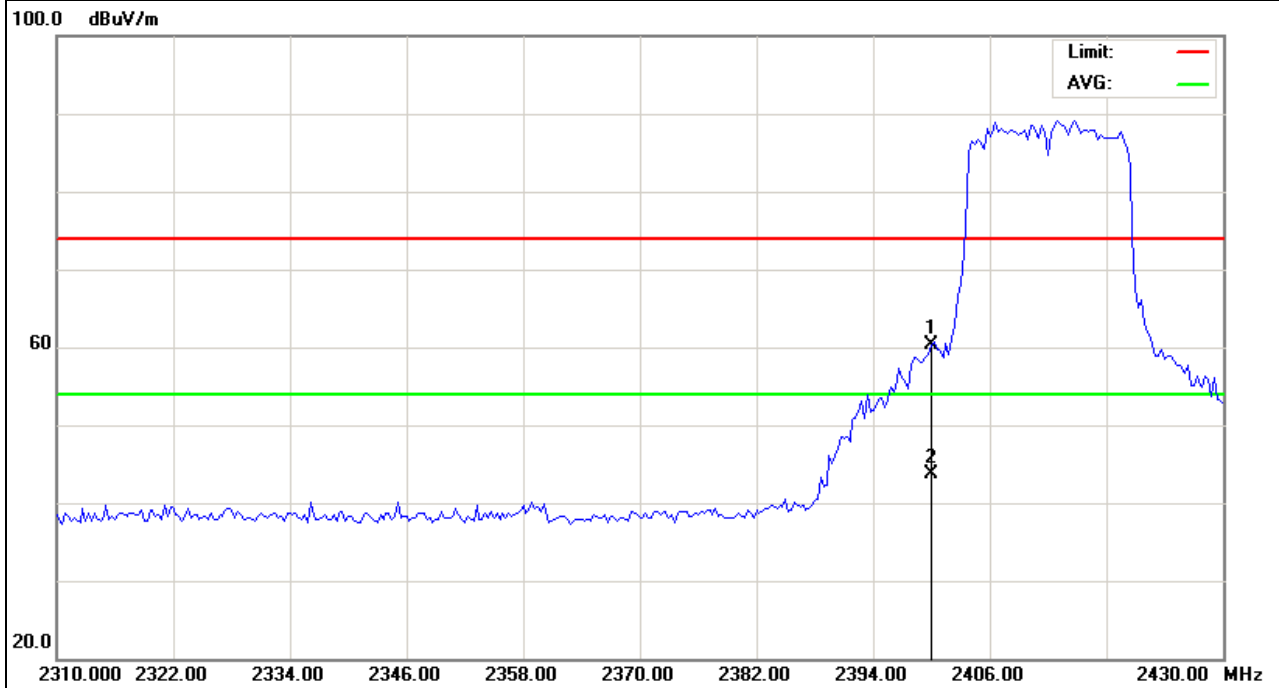


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH1(802.11g Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400	73.2	-12.99	60.21	74	-13.79	peak
2400	56.71	-12.99	43.72	54	-10.28	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

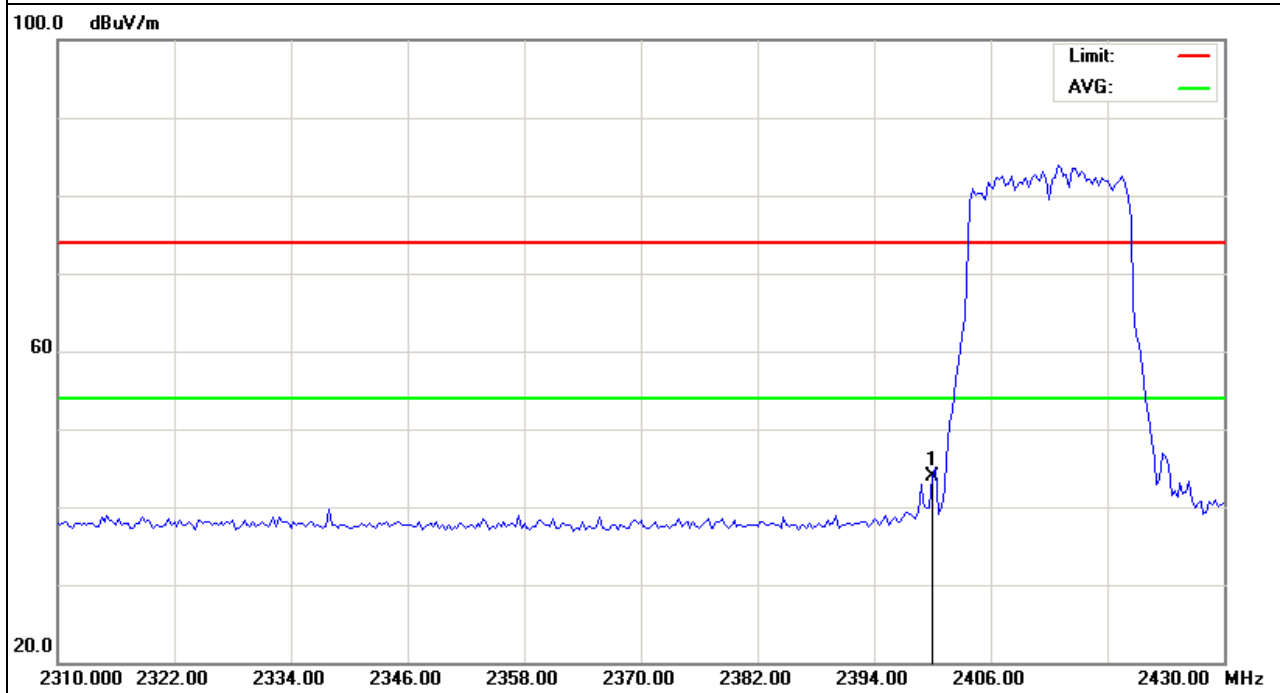


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH1(802.11gMode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400	56.98	-12.99	43.99	74	-30.01	peak

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

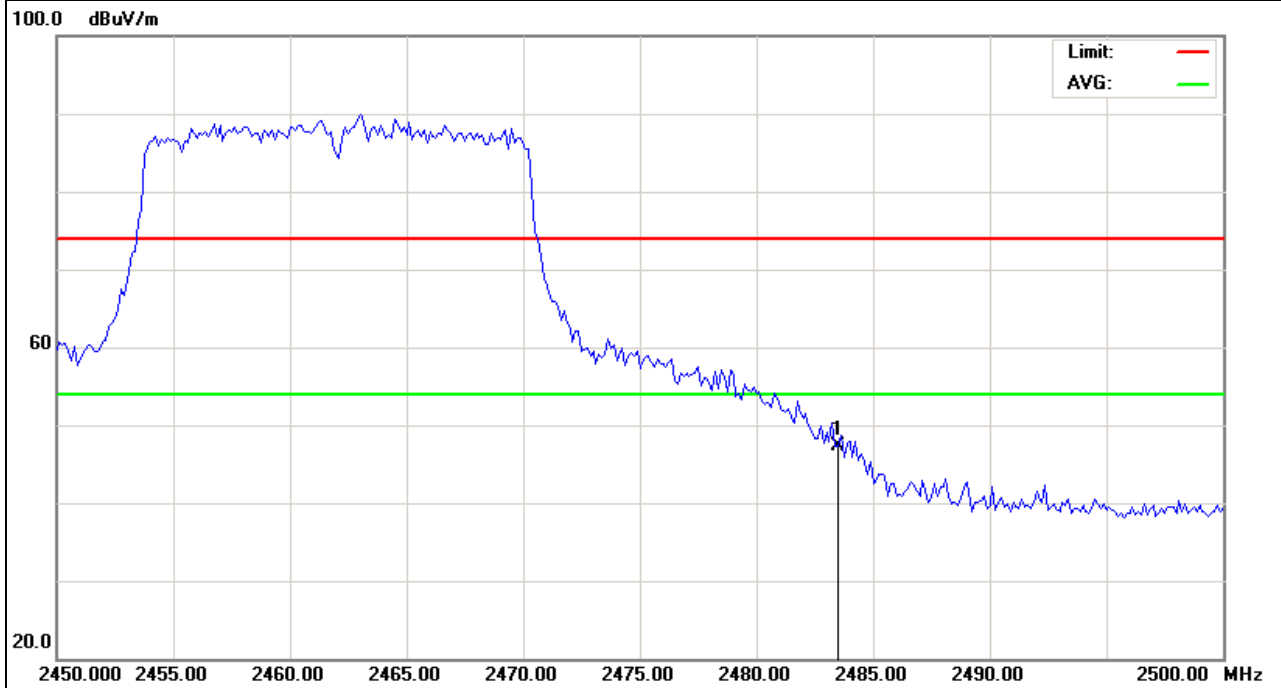


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH11(802.11g Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	60.15	-12.78	47.37	74	-26.63	peak

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

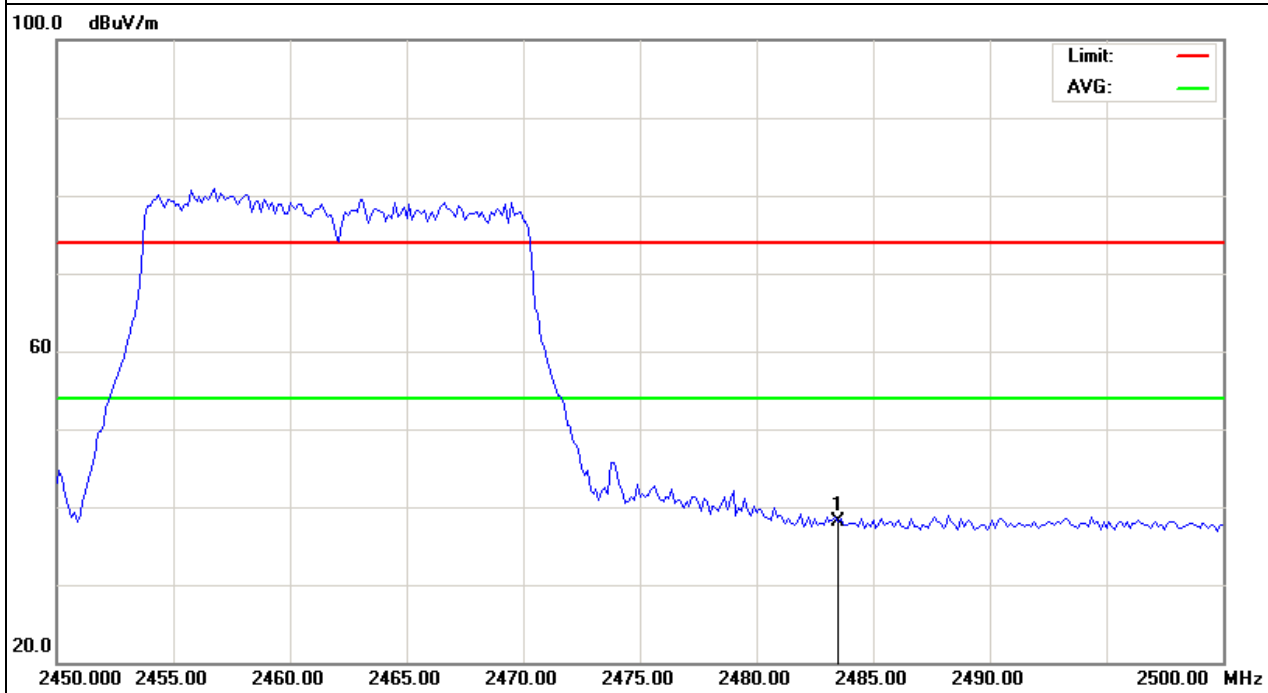


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH11(802.11g Mode)	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	50.95	-12.78	38.17	74	-35.83	peak

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

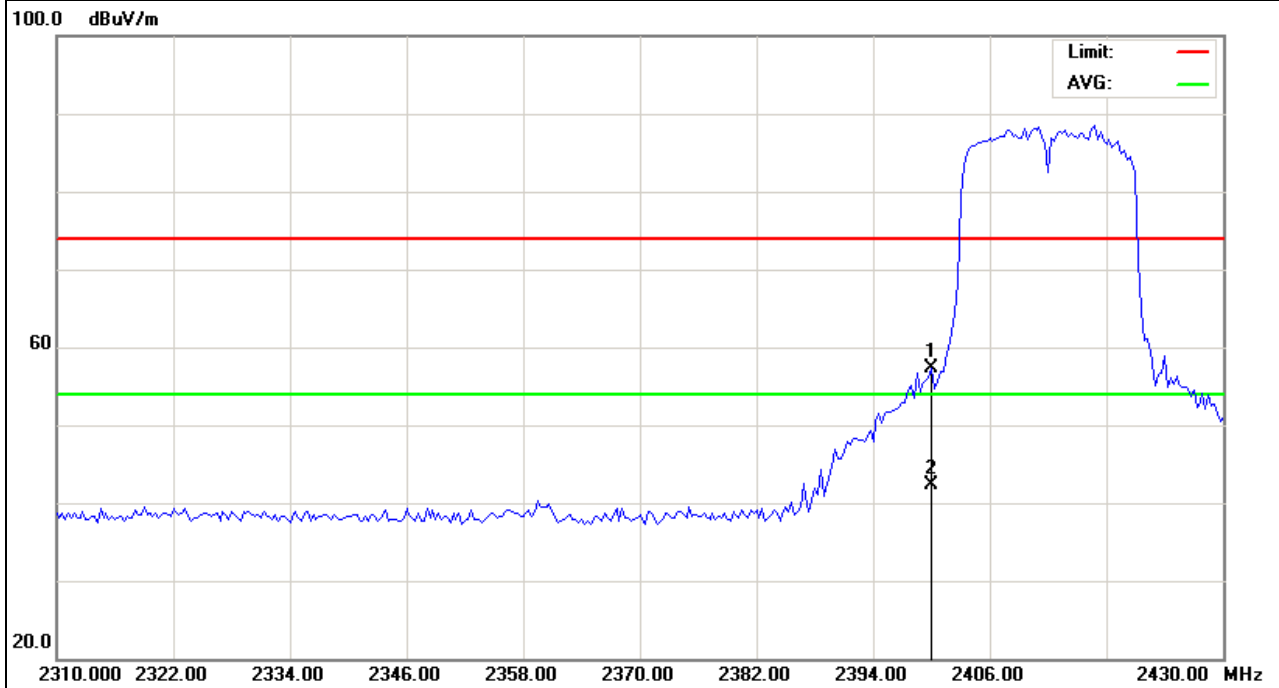


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH1(802.11N20 Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400	70.38	-12.99	57.39	74	-16.61	peak
2400	55.27	-12.99	42.28	54	-11.72	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

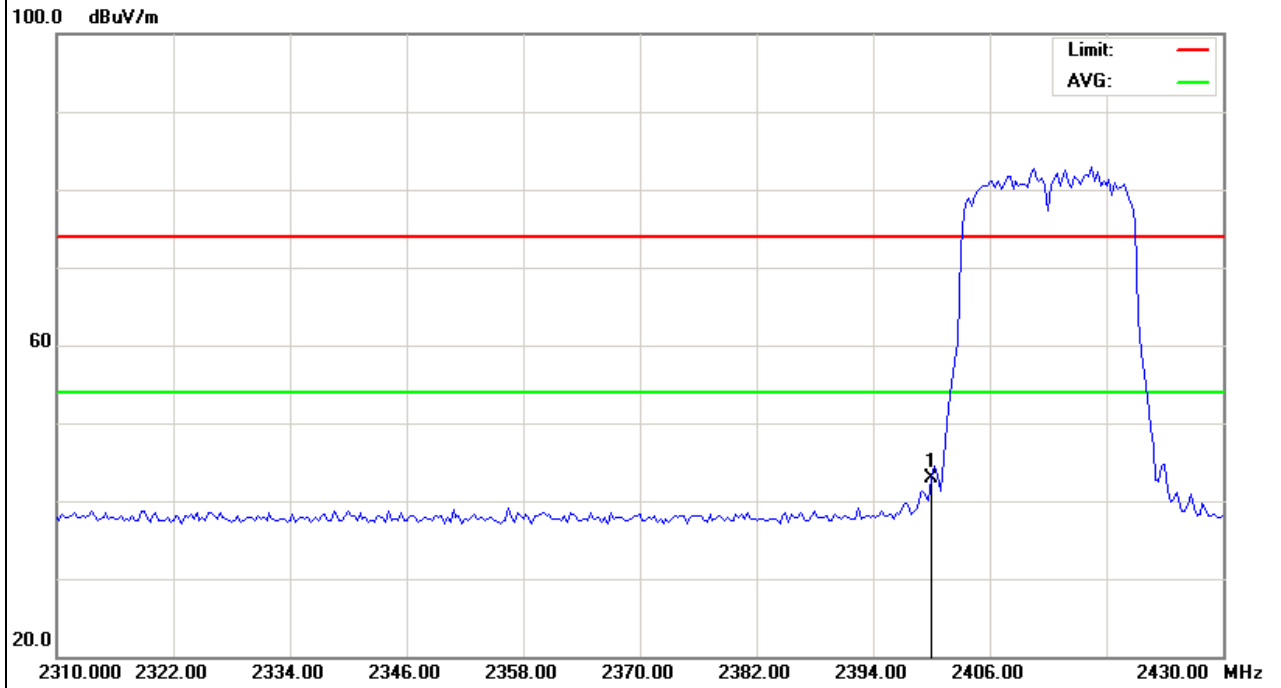


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH1(802.11N20 Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400	55.97	-12.99	42.98	74	-31.02	peak

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

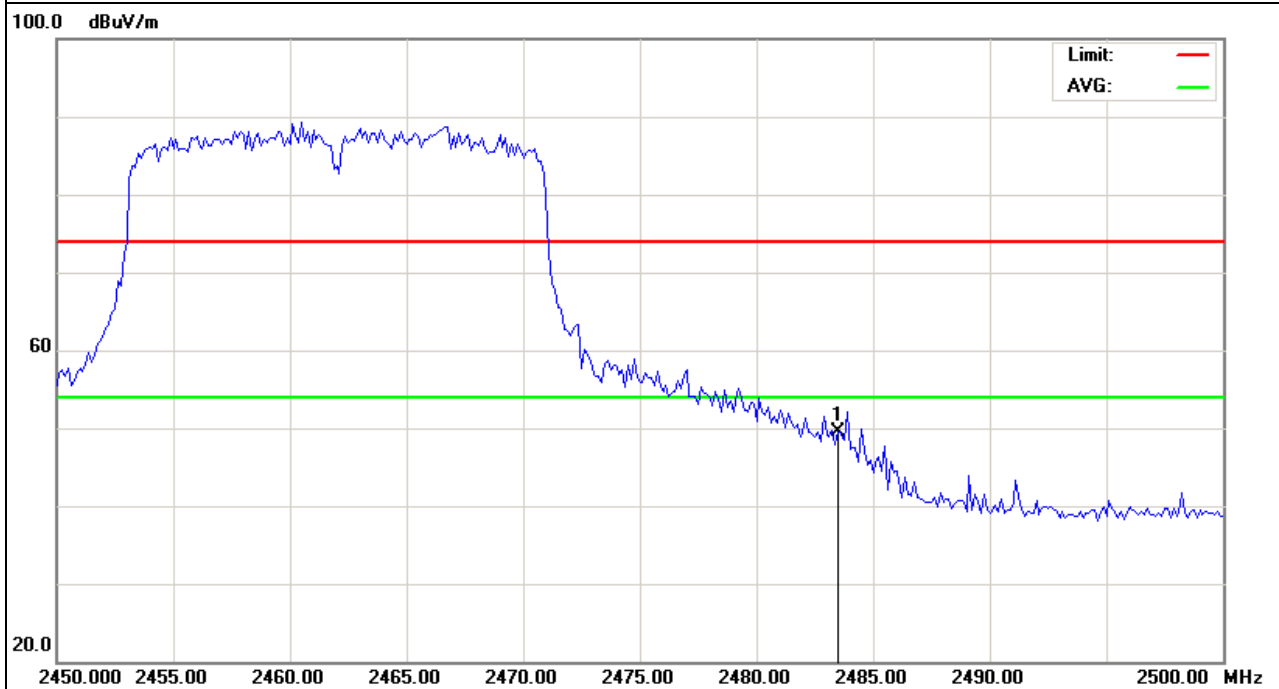


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH11(802.11N20 Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	62.19	-12.78	49.41	74	-24.59	peak

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

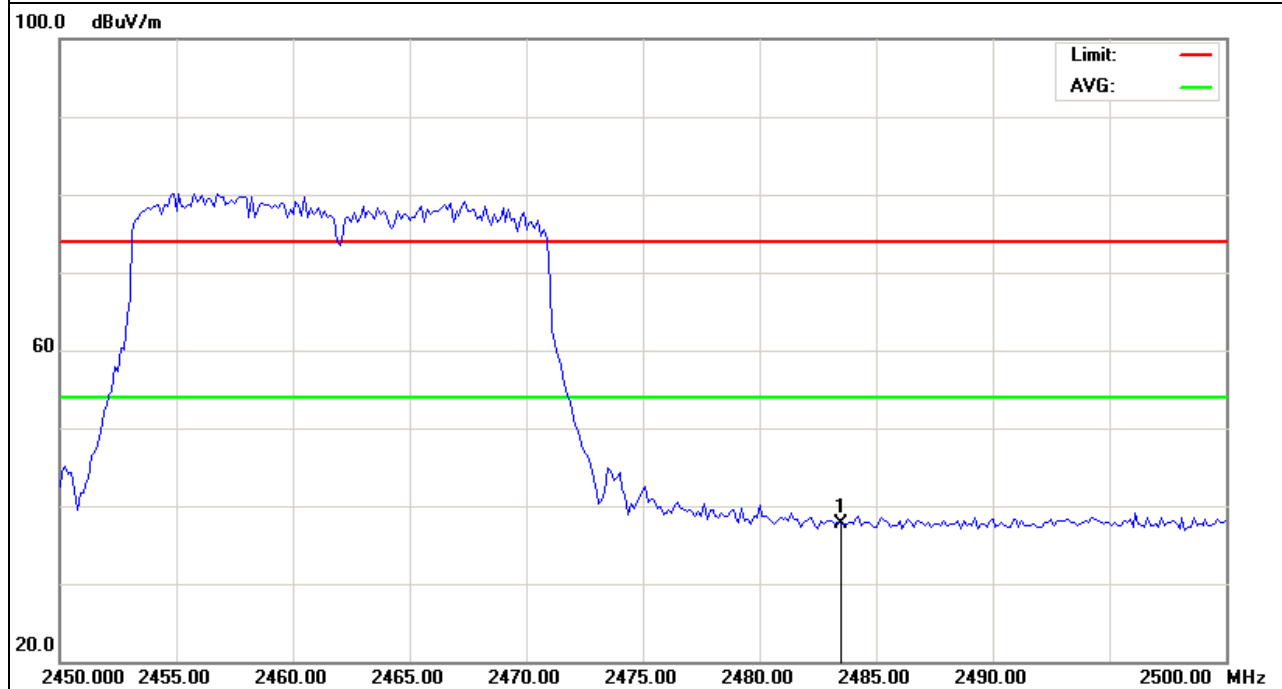


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH11(802.11N20 Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	50.43	-12.78	37.65	74	-36.35	peak

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

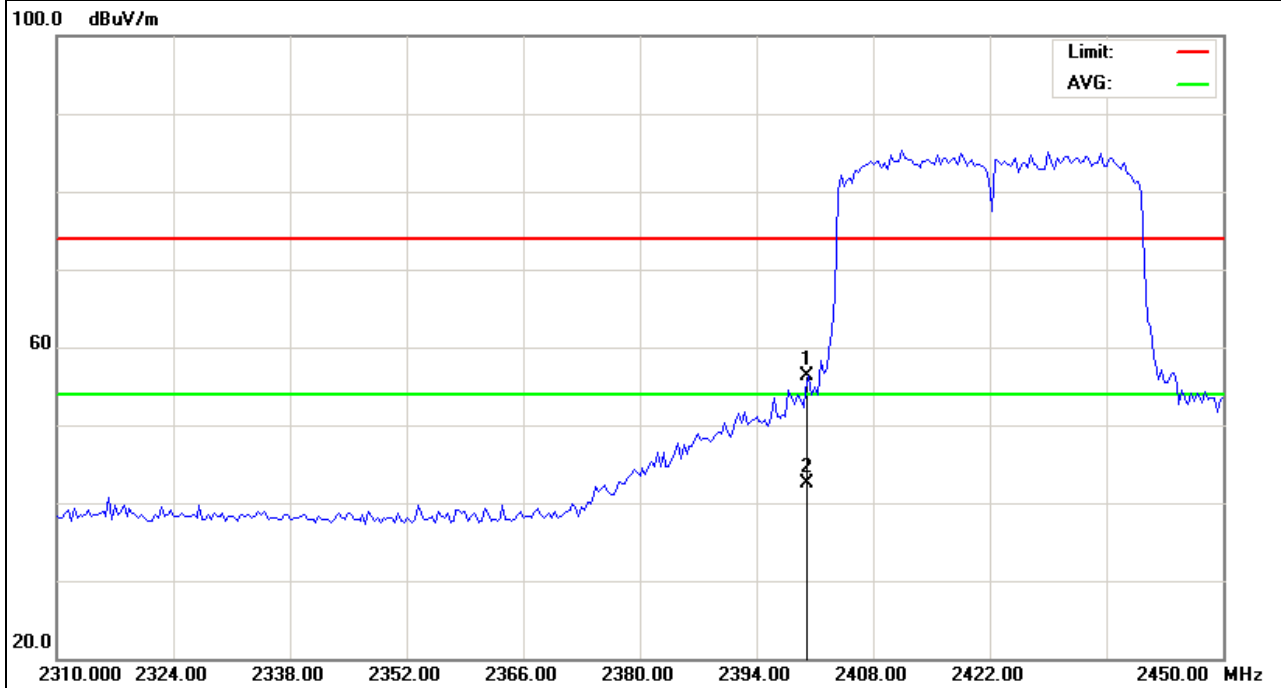


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH3(802.11N40 Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400	69.32	-12.99	56.33	74	-17.67	peak
2400	55.54	-12.99	42.55	54	-11.45	AVG

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

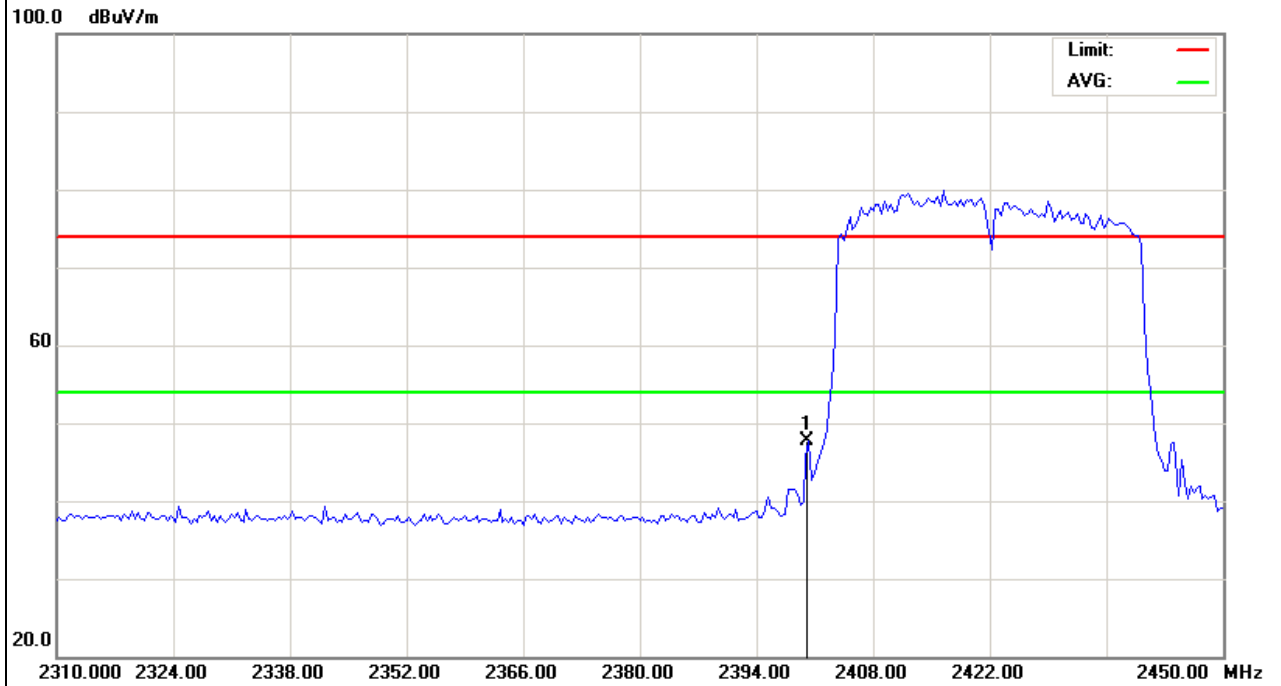


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH3(802.11N40 Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400	60.7	-12.99	47.71	74	-26.29	peak

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

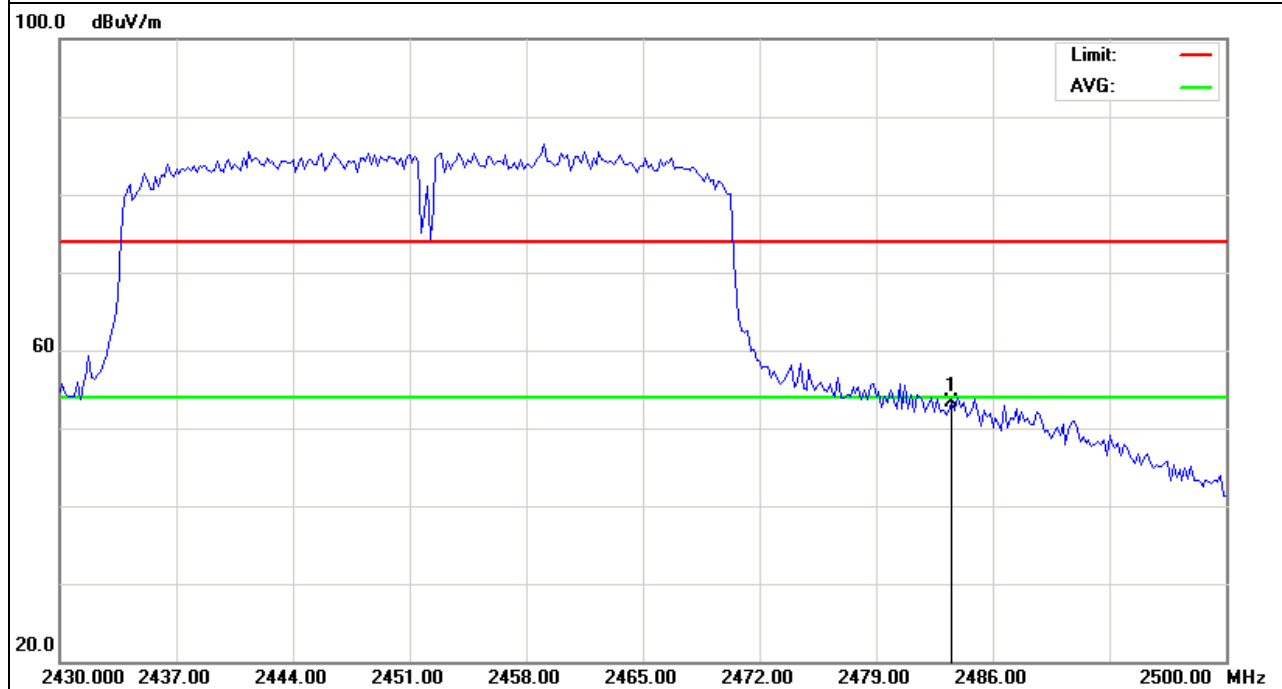


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH9(802.11N40 Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	66	-12.78	53.22	74	-20.78	peak

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.

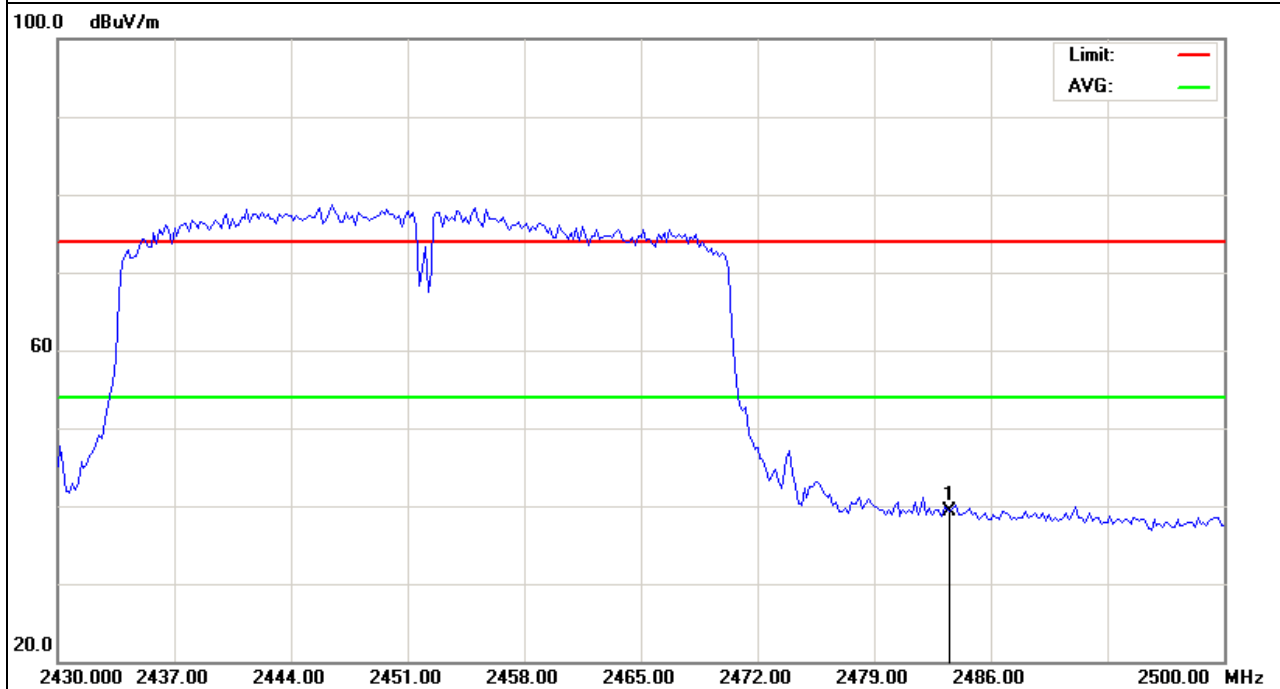


EUT :	OPU2	Model Name :	OPU2120
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	CH9(802.11N40 Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	51.99	-12.78	39.21	74	-34.79	peak

Remark:

Factor = Antenna Factor + Cable Loss – Pre-amplifier.



4. POWER SPECTRAL DENSITY TEST

4.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

4.1.1 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW ≥ 3 kHz.
4. Set the VBW $\geq 3 \times$ RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



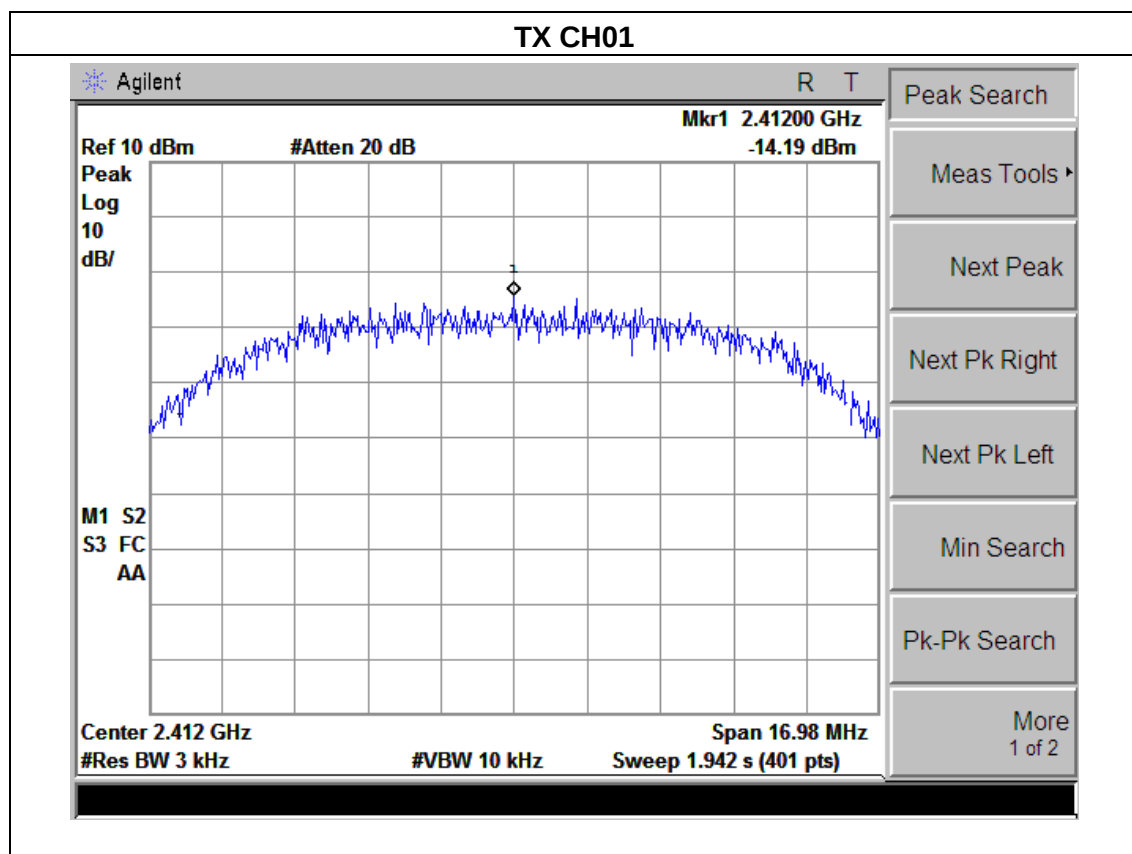
4.1.4 EUT OPERATION CONDITIONS

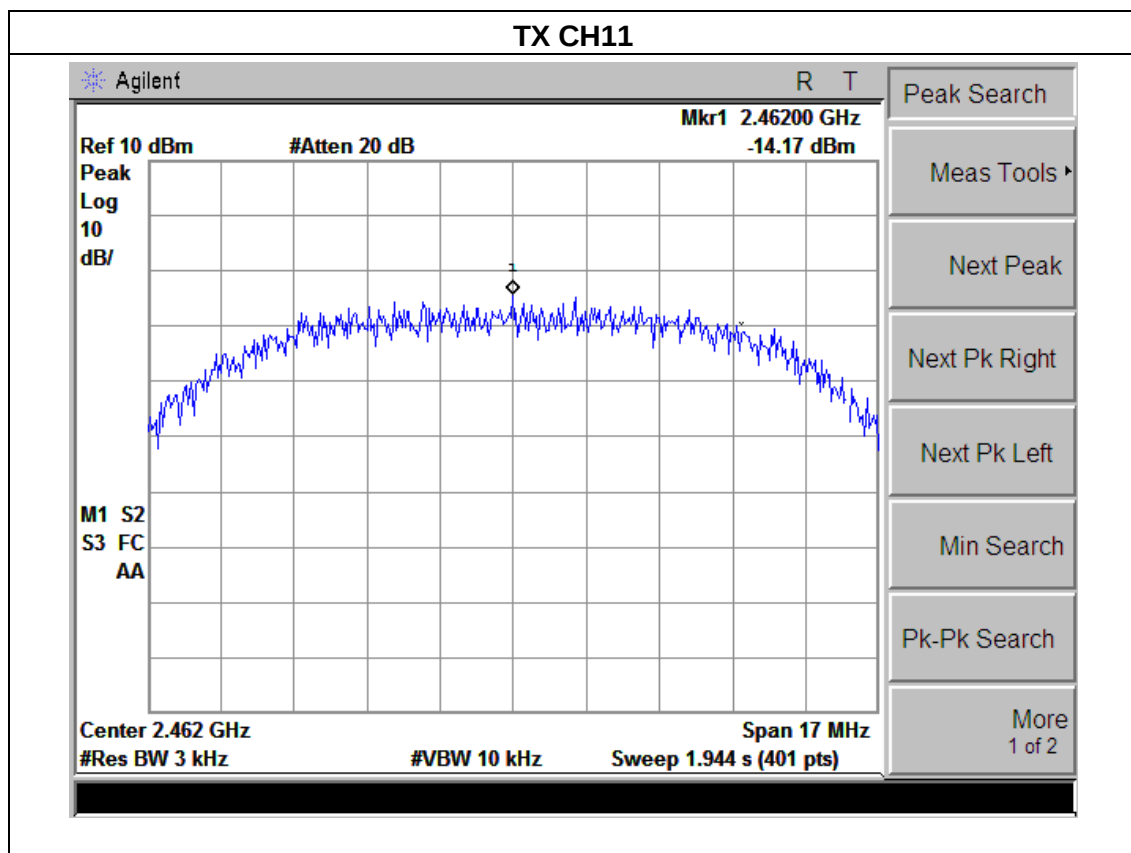
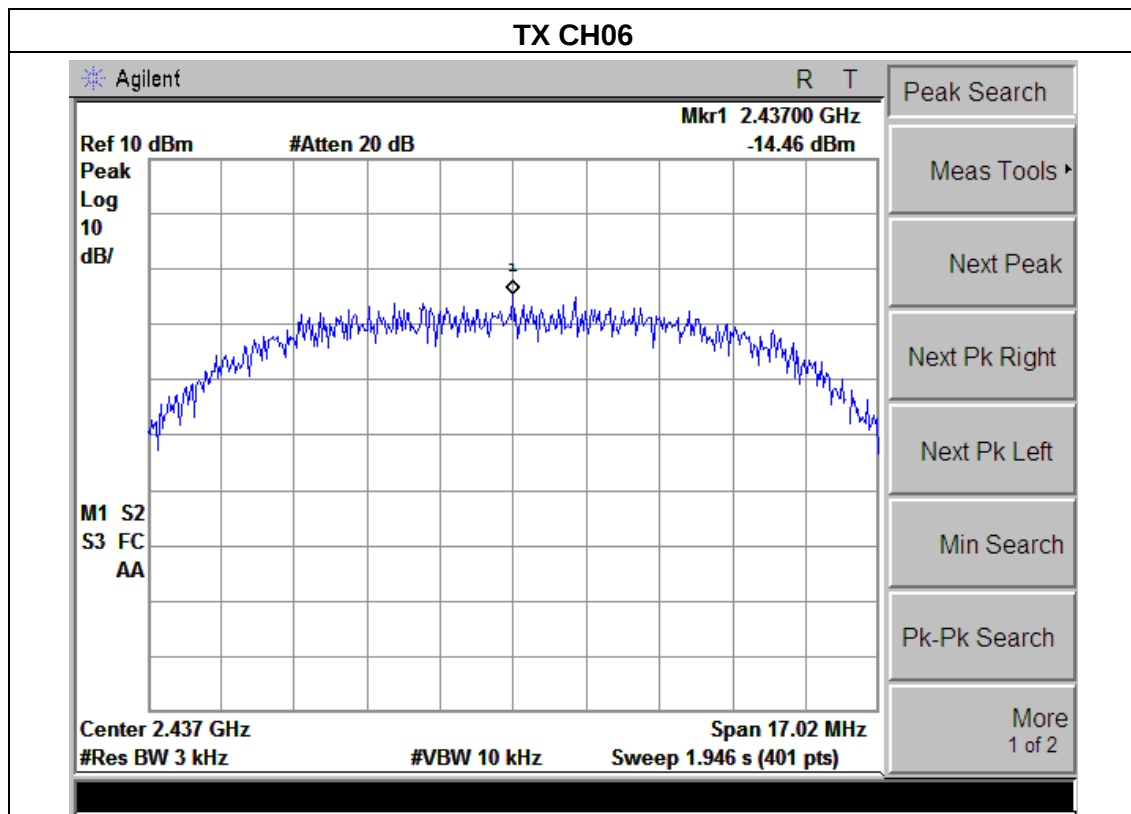
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

4.1.5 TEST RESULTS

EUT :	OPU2	Model Name :	OPU2120
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	TX b Mode /CH01, CH06, CH11		

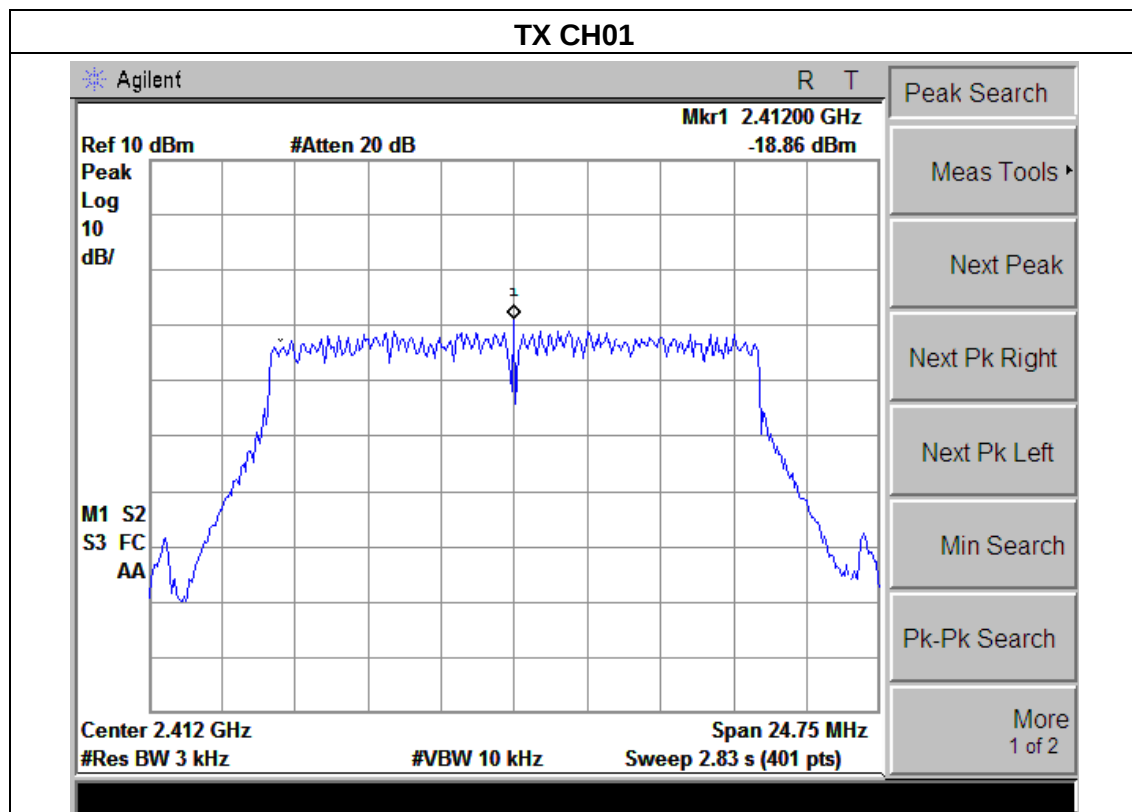
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-14.19	8	PASS
2437 MHz	-14.46	8	PASS
2462 MHz	-14.17	8	PASS

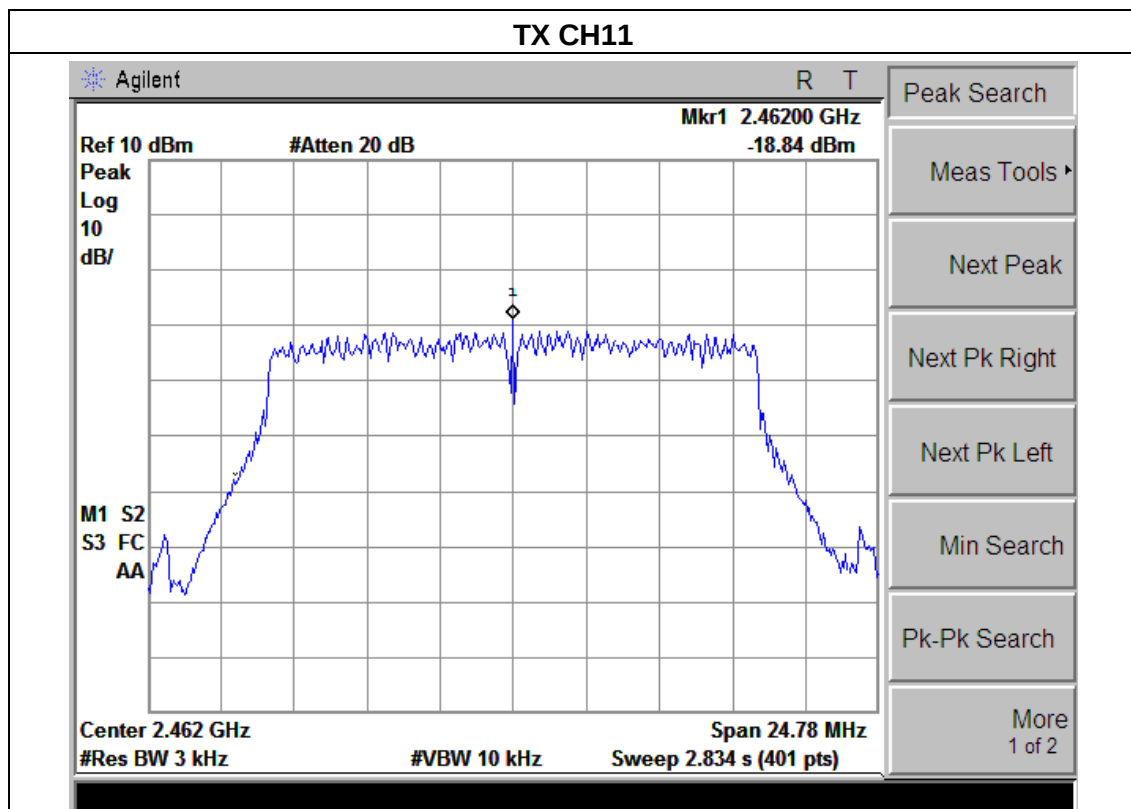
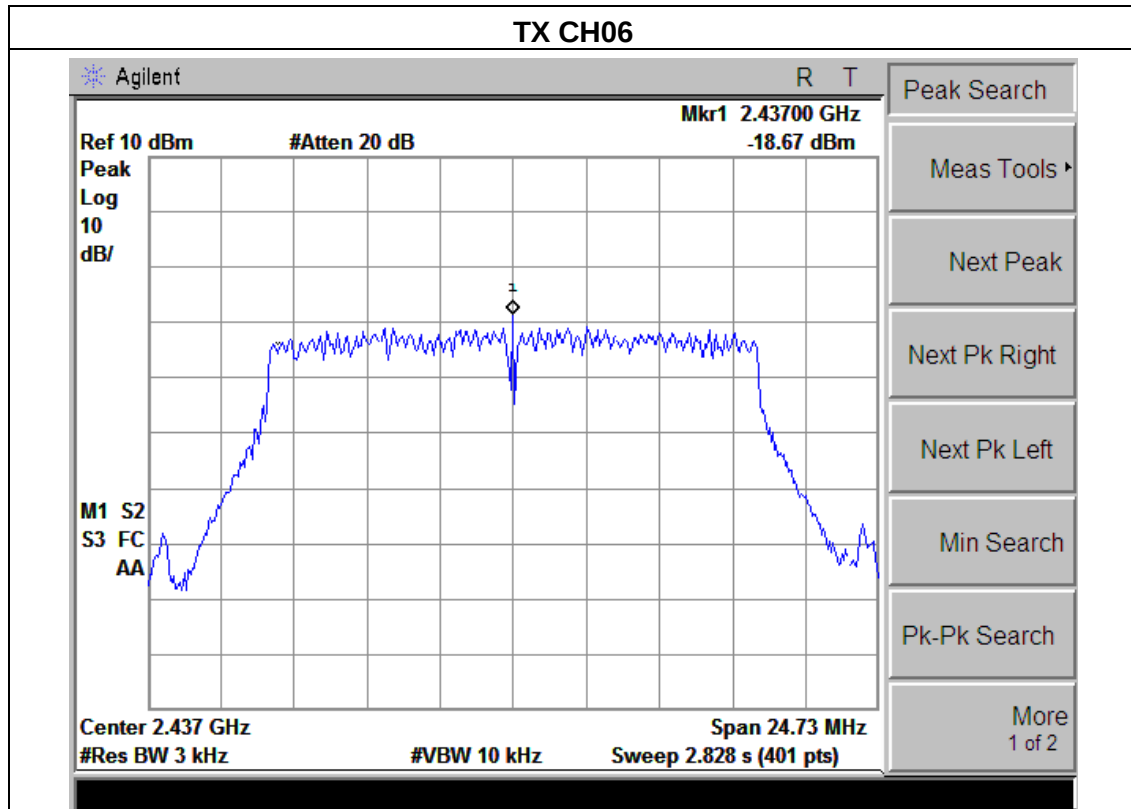




EUT :	OPU2	Model Name :	OPU2120
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	TX g Mode /CH01, CH06, CH11		

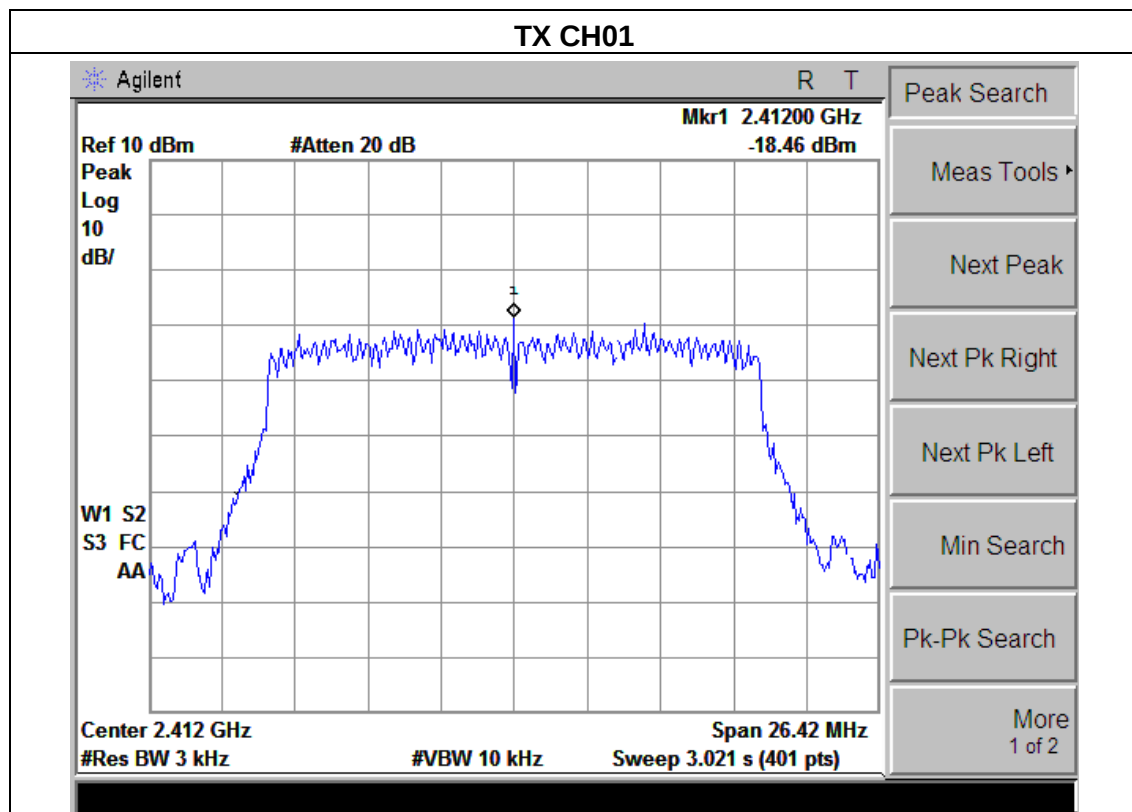
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-18.86	8	PASS
2437 MHz	-18.67	8	PASS
2462 MHz	-18.84	8	PASS

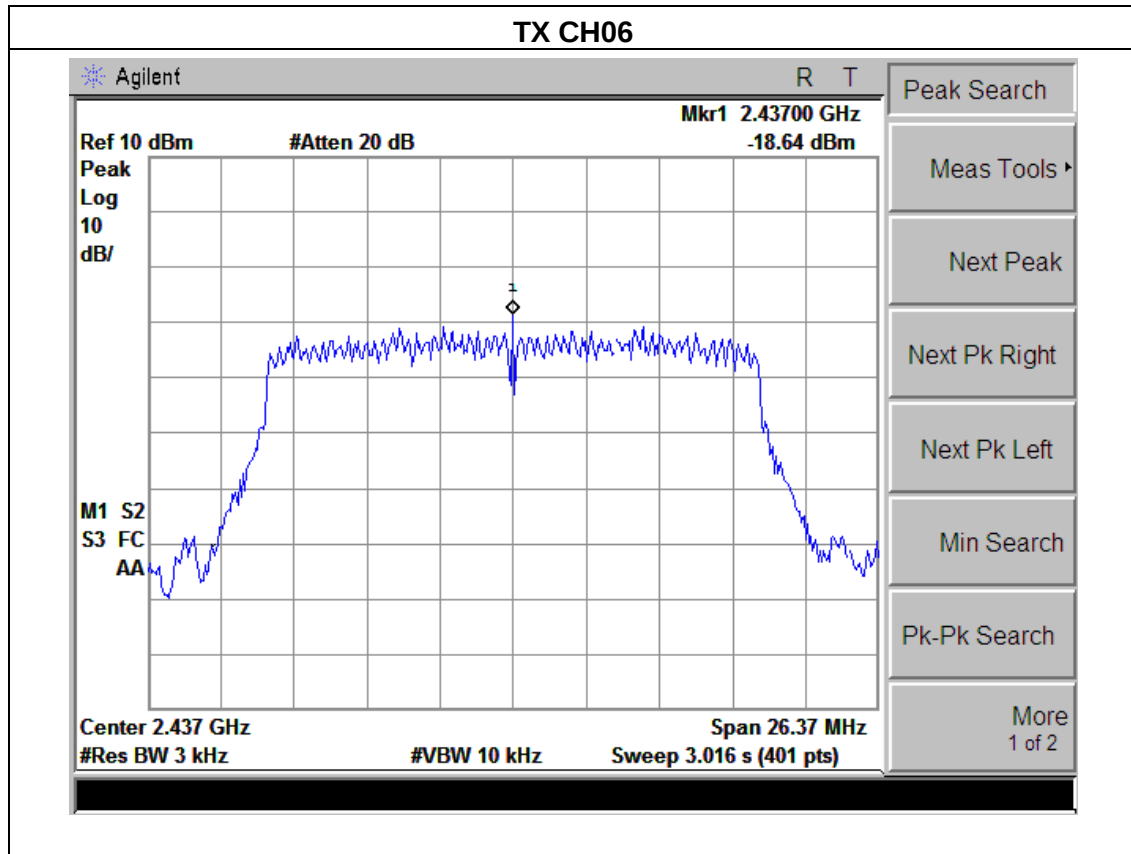




EUT :	OPU2	Model Name :	OPU2120
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	TX n20 Mode /CH01, CH06, CH11		

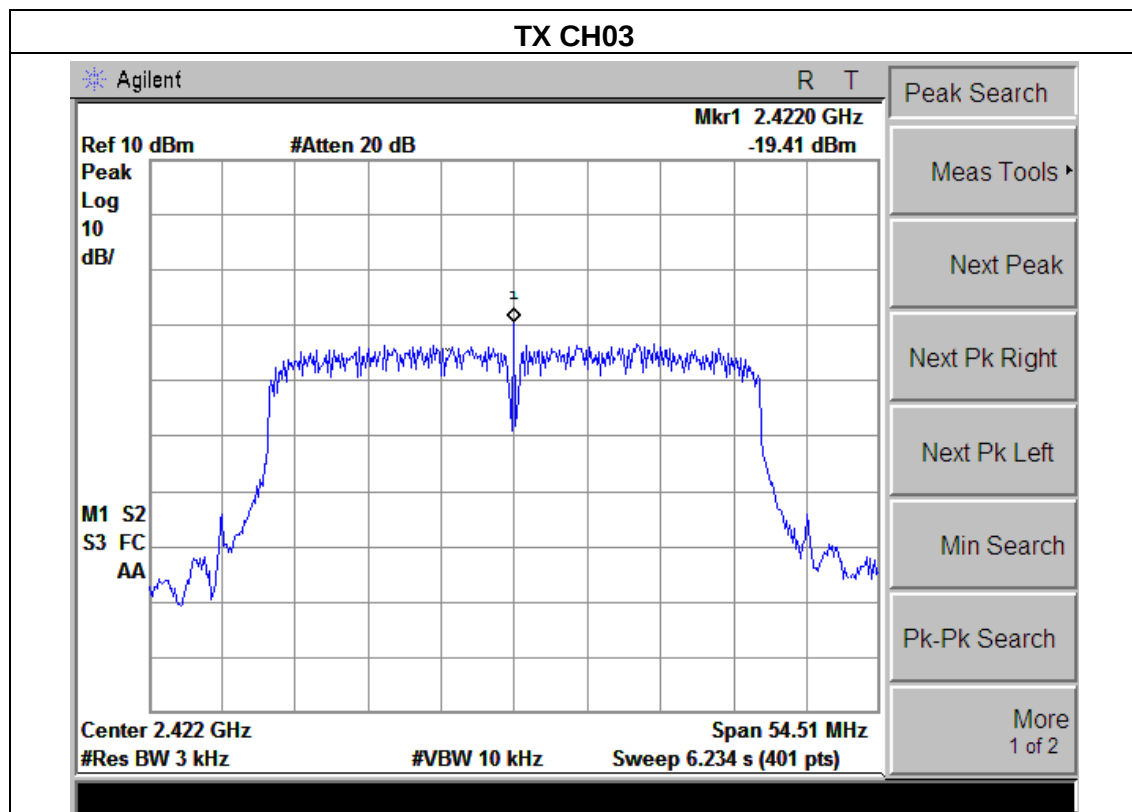
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-18.46	8	PASS
2437 MHz	-18.64	8	PASS
2462 MHz	-18.69	8	PASS

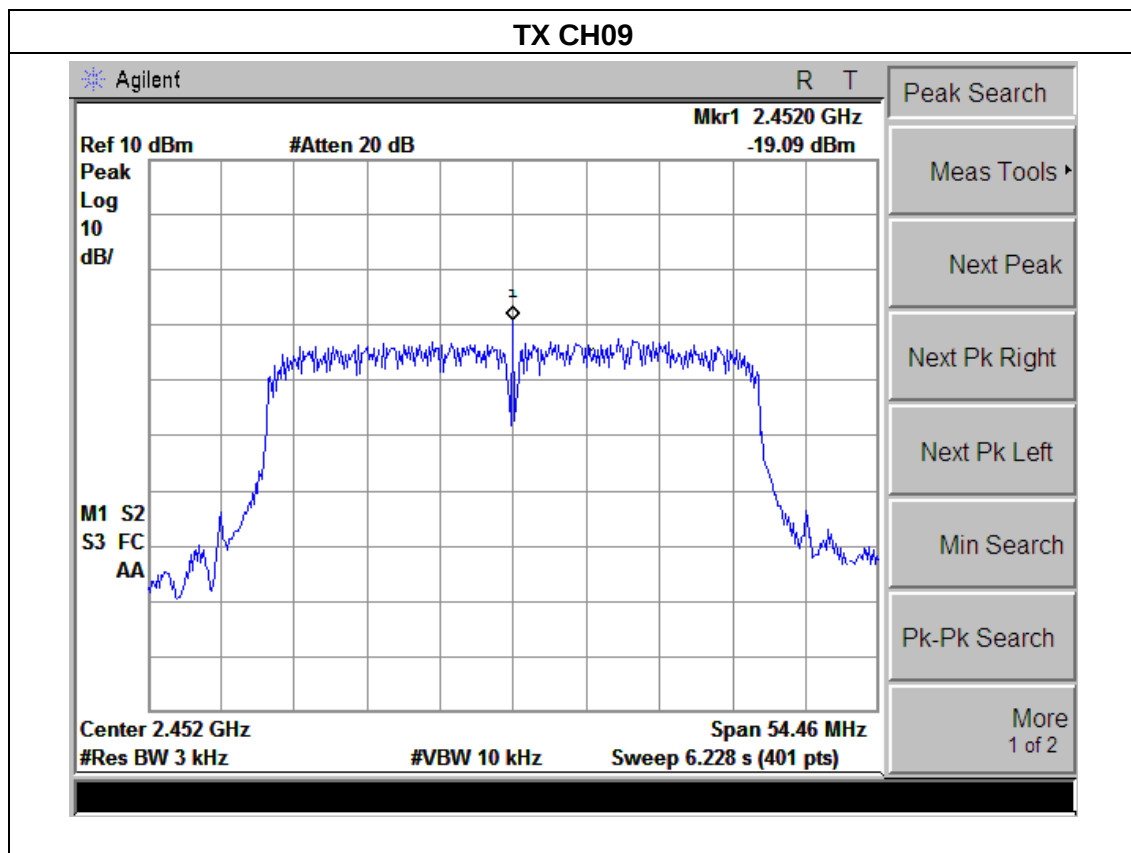
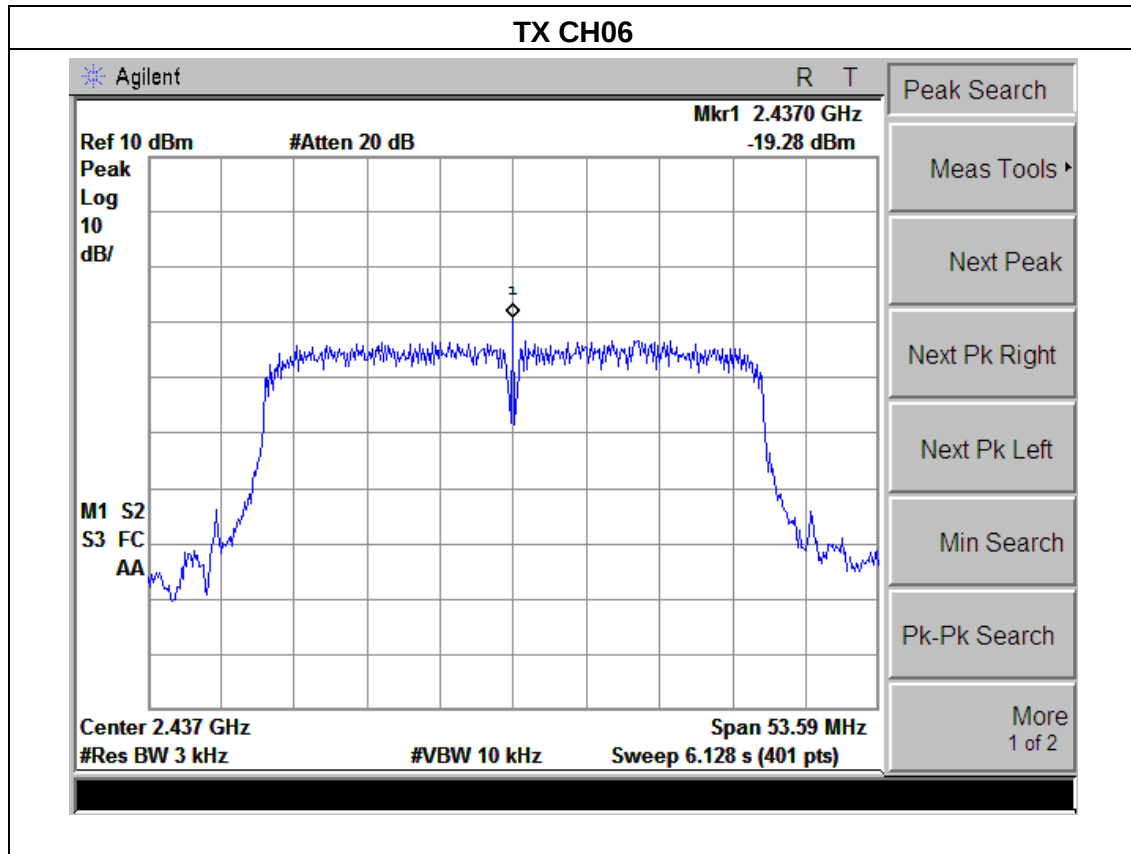




EUT :	OPU2	Model Name :	OPU2120
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	TX n40 Mode /CH03, CH06, CH09		

Frequency	Power Density (dBm)	Limit (dBm)	Result
2422 MHz	-19.41	8	PASS
2437 MHz	-19.28	8	PASS
2452 MHz	-19.09	8	PASS





5. BANDWIDTH TEST

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

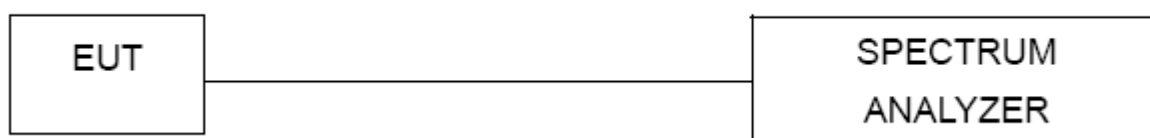
5.1.1 TEST PROCEDURE

1. Set resolution bandwidth (RBW) = 1-5% or DTS BW, not to exceed 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



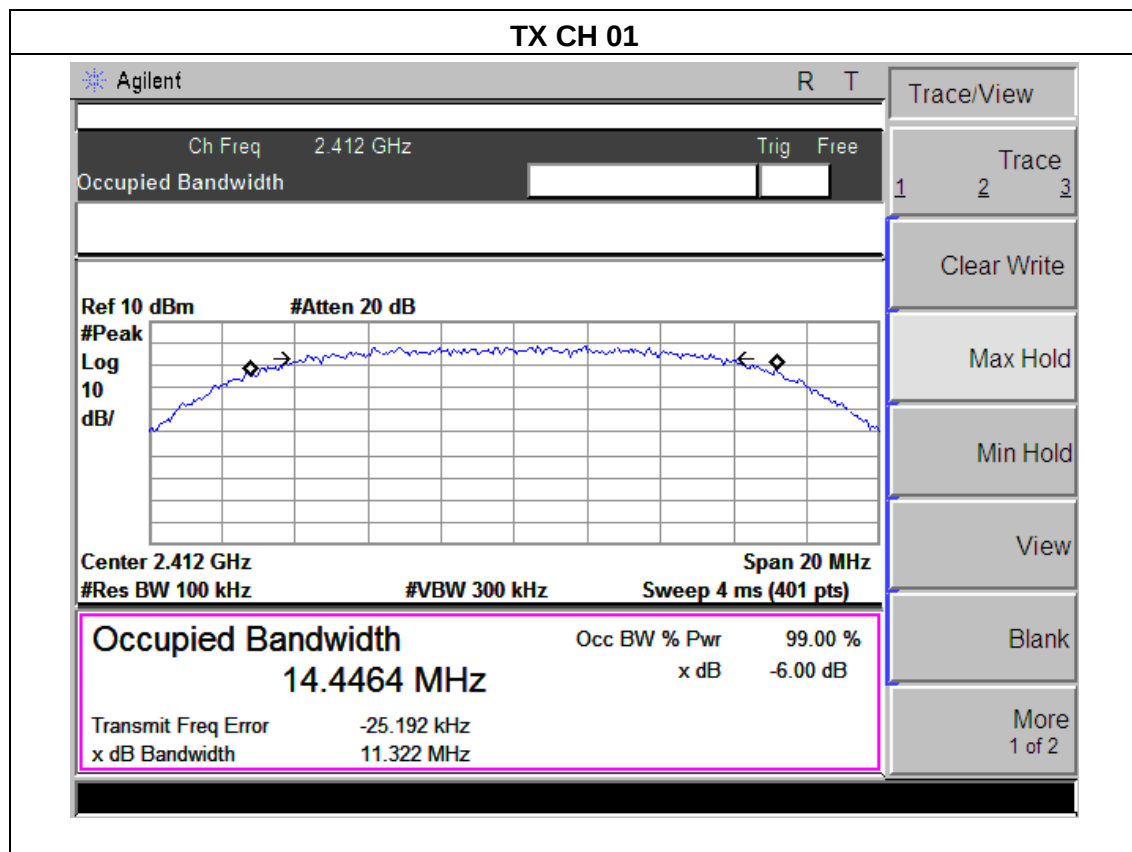
5.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

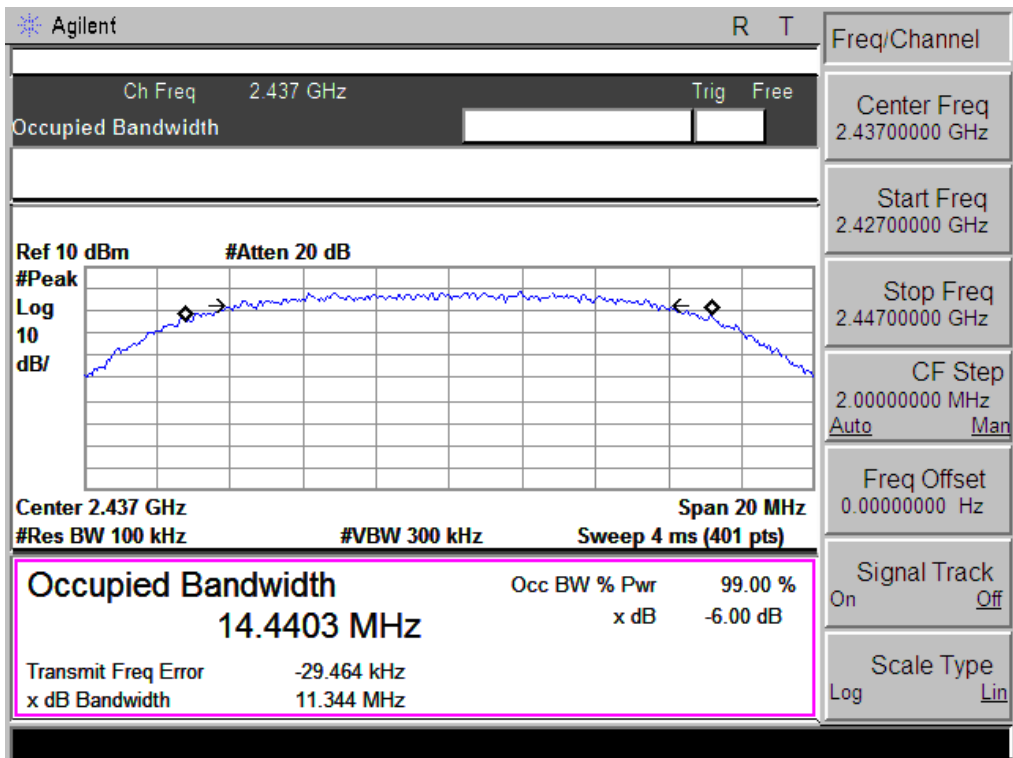
5.1.5 TEST RESULTS

EUT :	OPU2	Model Name :	OPU2120
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	TX b Mode /CH01, CH06, CH11		

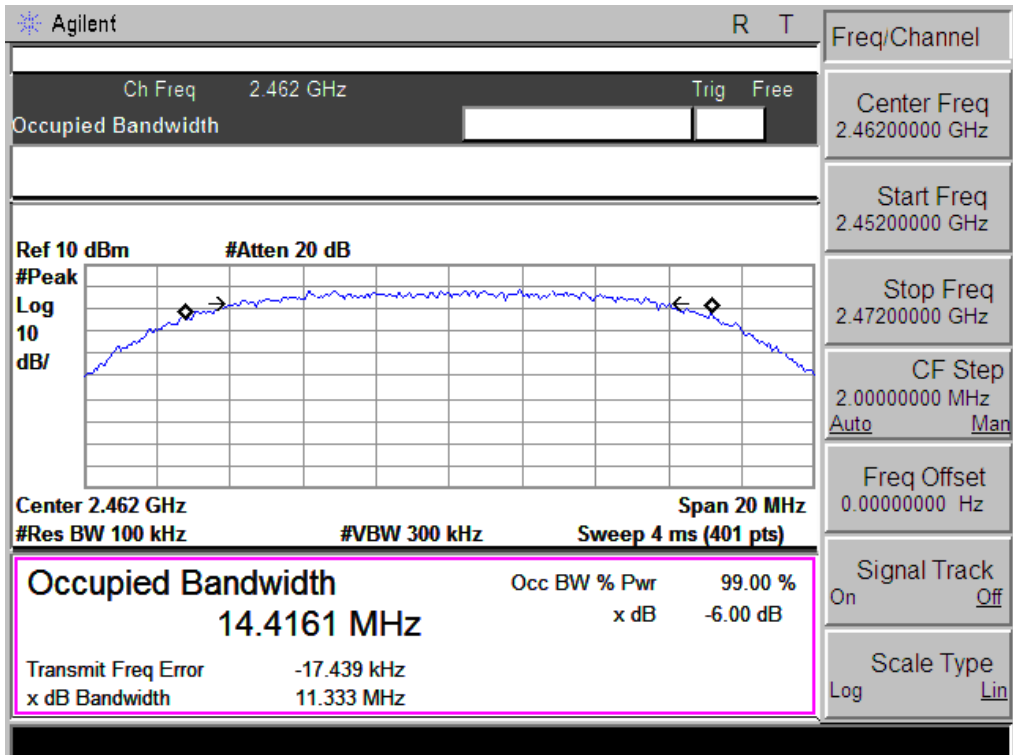
Frequency	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result
2412 MHz	11.32	>=500KHz	PASS
2437 MHz	11.34	>=500KHz	PASS
2462 MHz	11.33	>=500KHz	PASS



TX CH 06

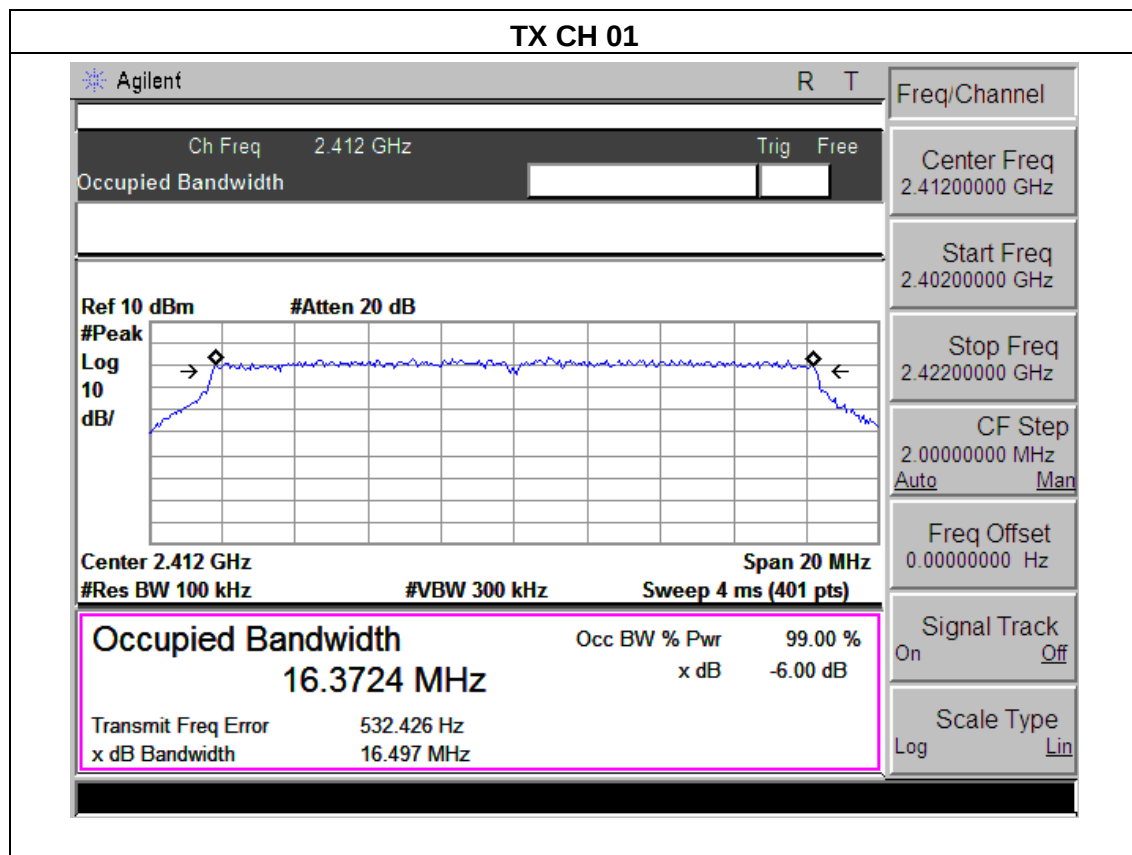


TX CH 11

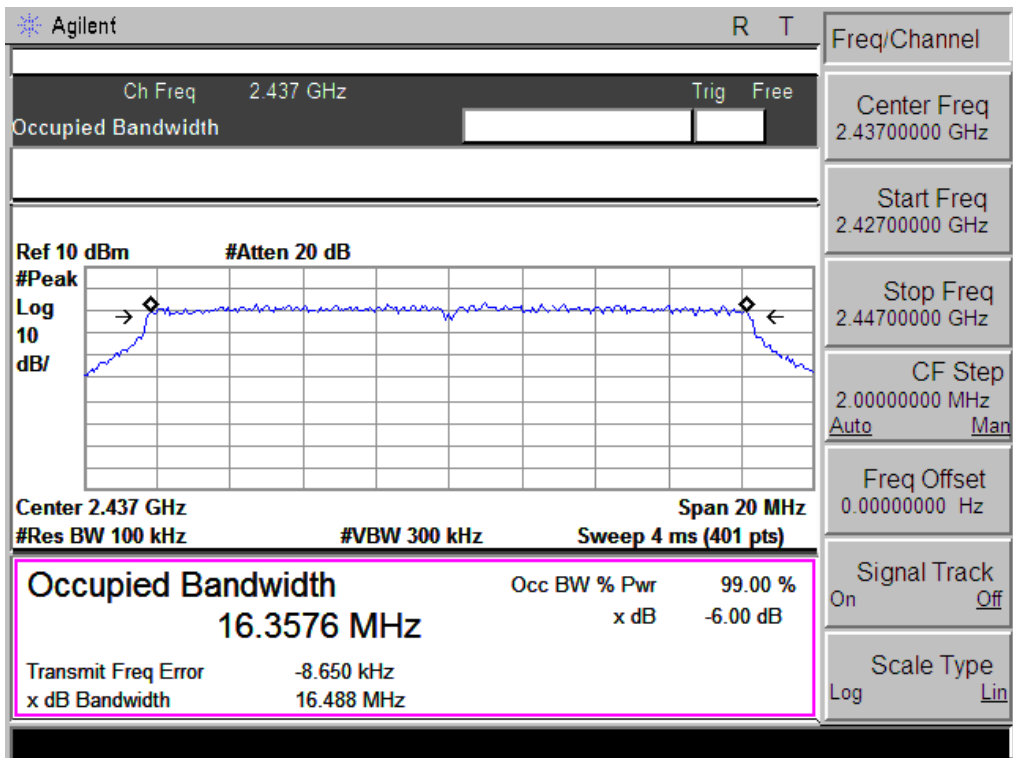


EUT :	OPU2	Model Name :	OPU2120
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	TX g Mode /CH01, CH06, CH11		

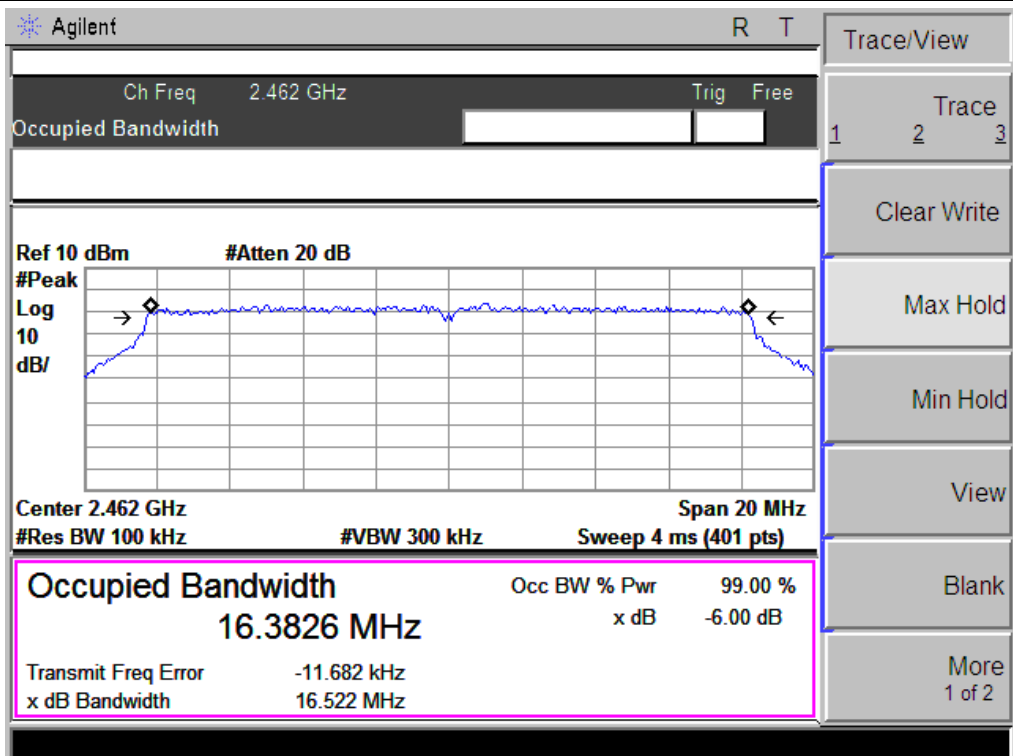
Frequency	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result
2412 MHz	16.50	>=500KHz	PASS
2437 MHz	16.49	>=500KHz	PASS
2462 MHz	16.52	>=500KHz	PASS



TX CH 06

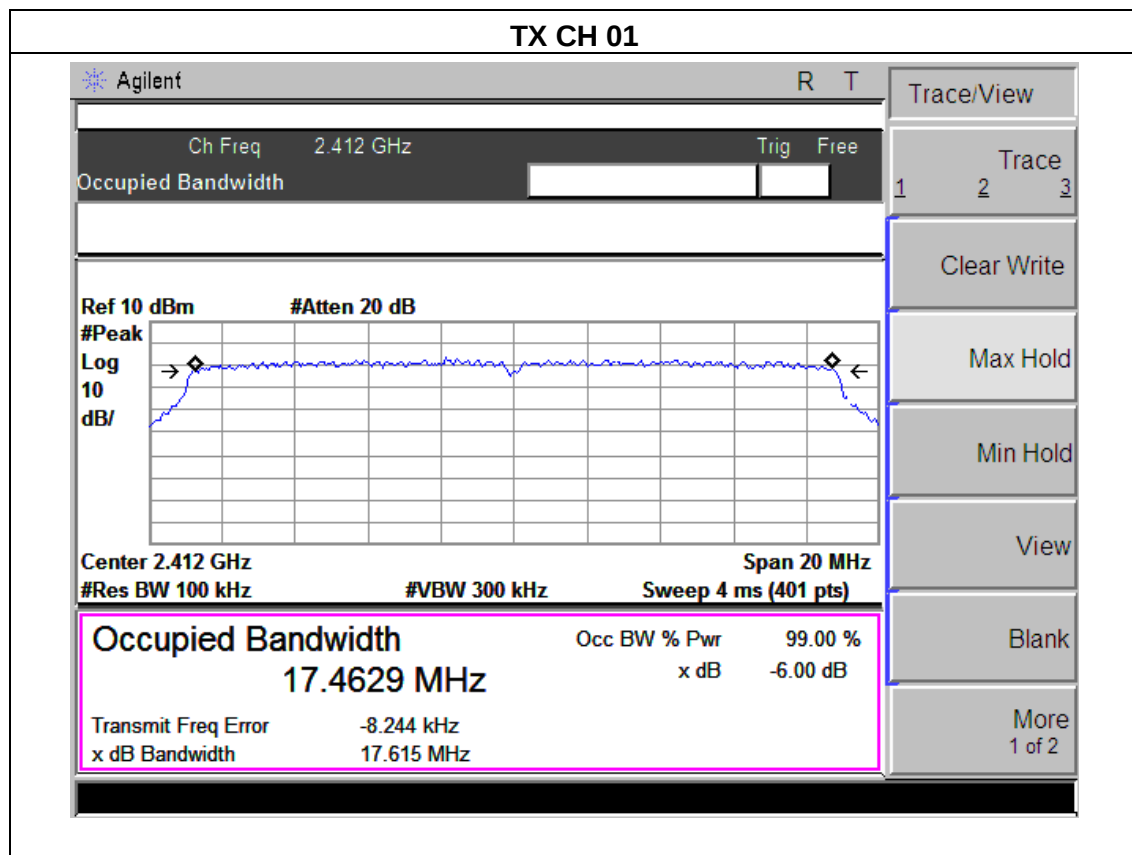


TX CH 11

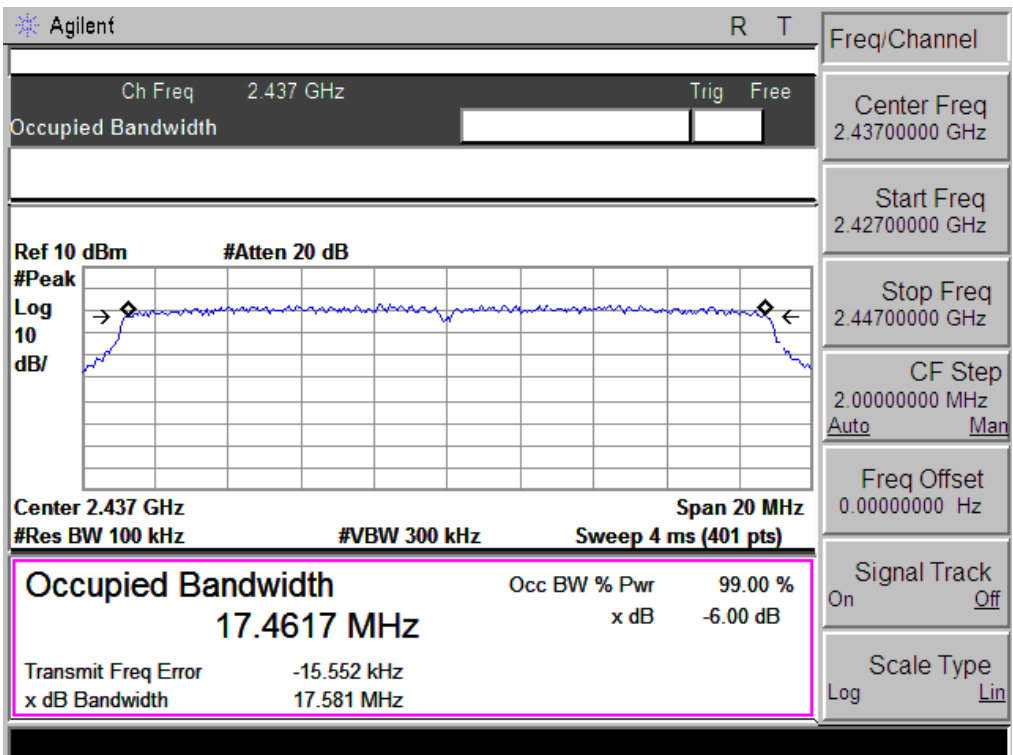


EUT :	OPU2	Model Name :	OPU2120
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	TX n20 Mode /CH01, CH06, CH11		

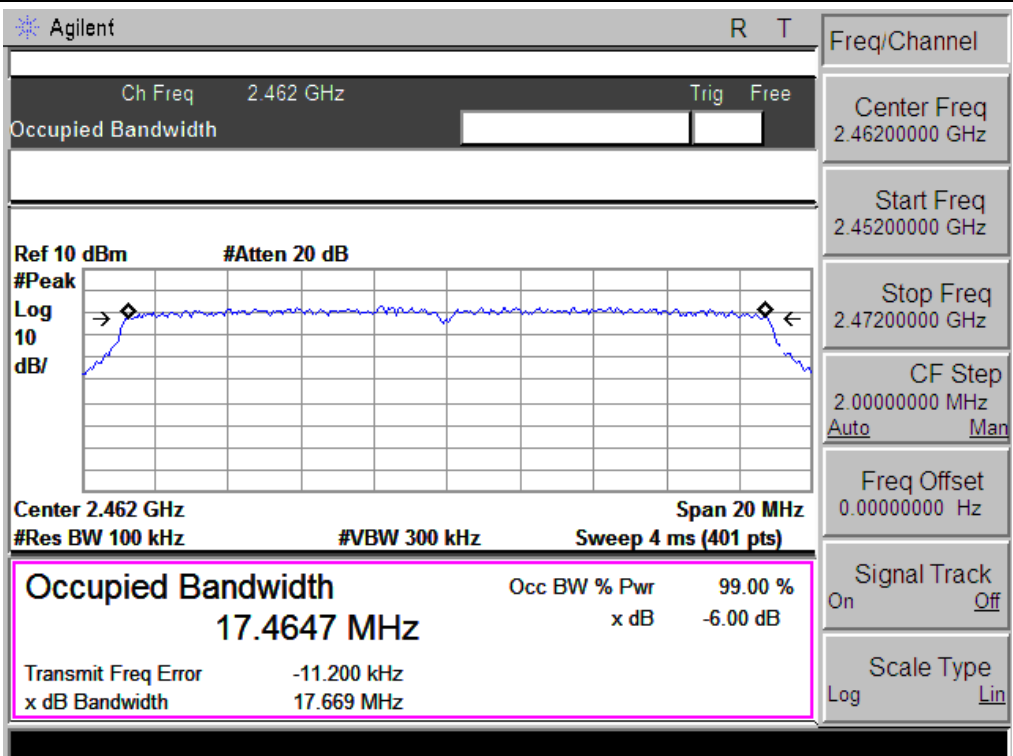
Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Channel Separation (MHz)	Result
2412 MHz	17.62	17.46	>=500KHz	PASS
2437 MHz	17.58	17.46	>=500KHz	PASS
2462 MHz	17.67	17.47	>=500KHz	PASS



TX CH 06

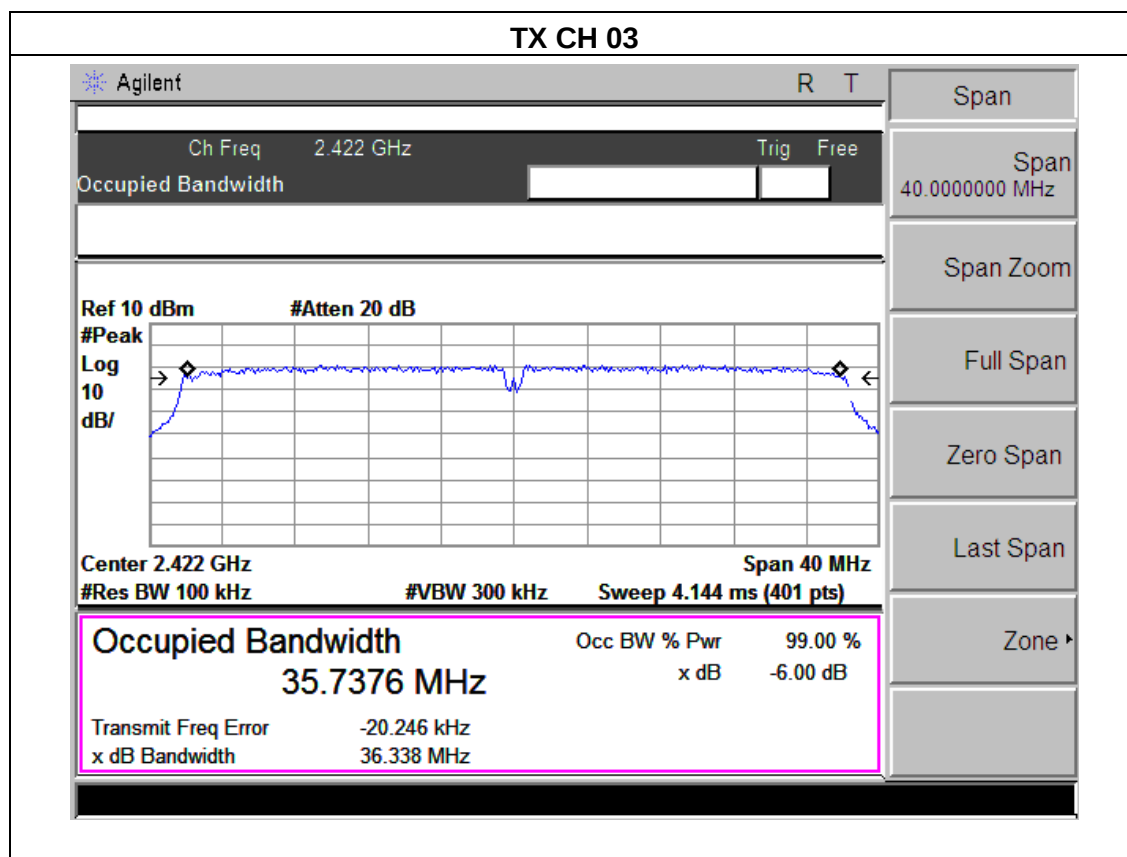


TX CH 11

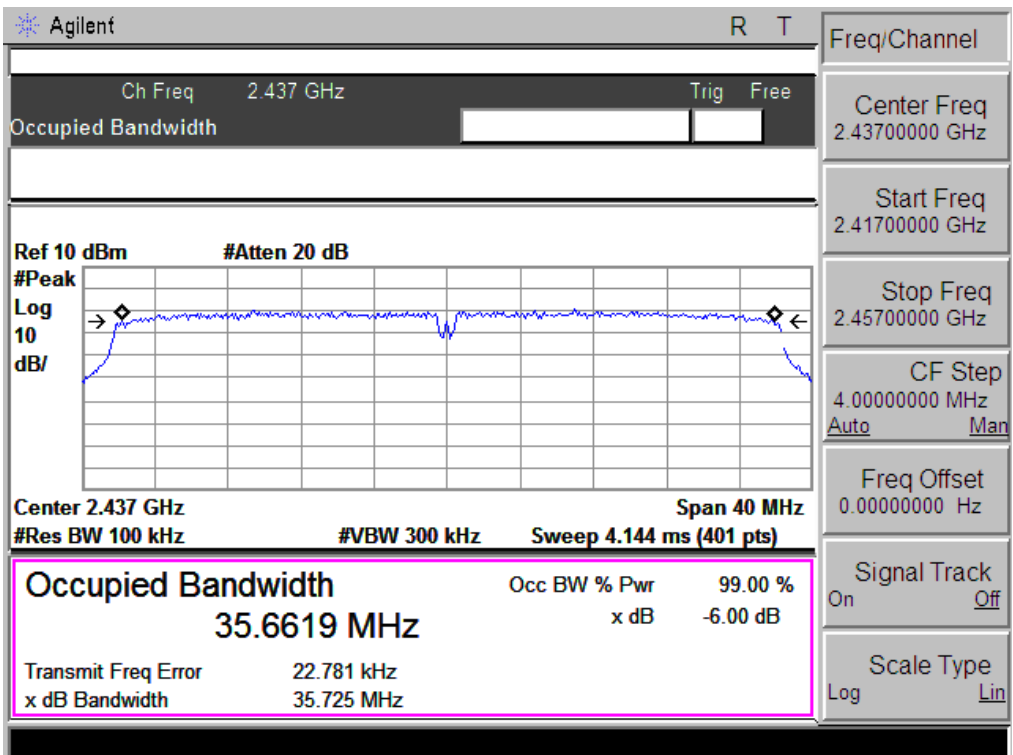


EUT :	OPU2	Model Name :	OPU2120
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	TX n40 Mode /CH03, CH06, CH09		

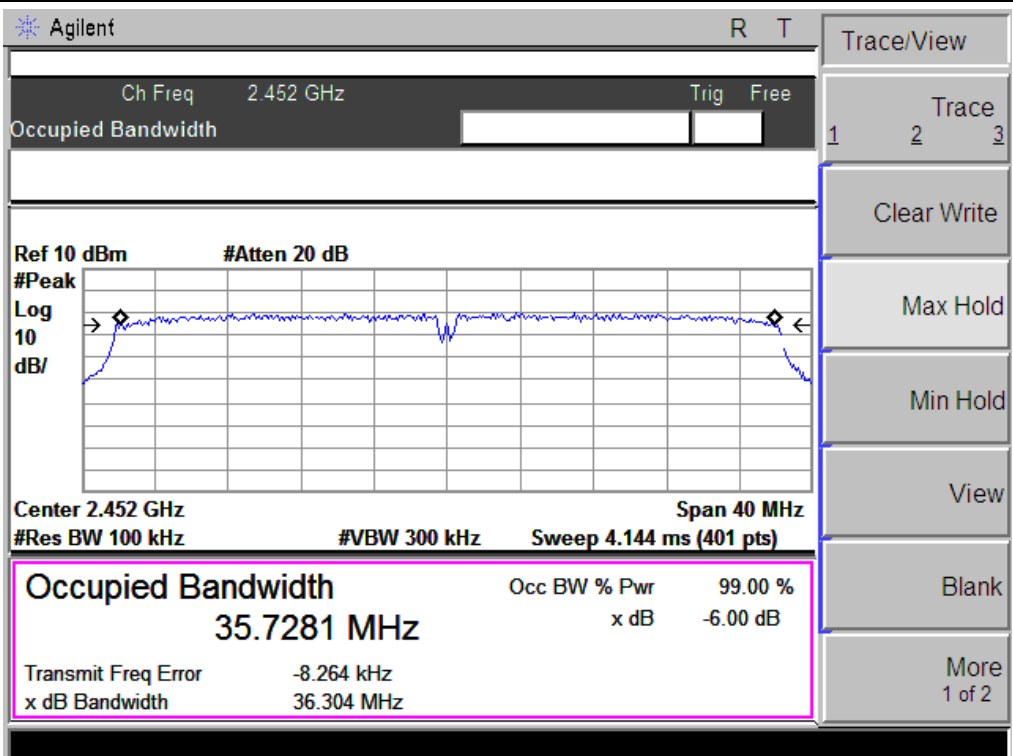
Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Channel Separation (MHz)	Result
2422 MHz	36.34	35.74	>=500KHz	PASS
2437 MHz	35.73	35.66	>=500KHz	PASS
2452 MHz	36.30	35.73	>=500KHz	PASS



TX CH 06



TX CH 09



6. PEAK OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

6.1.1 TEST PROCEDURE

- a. The EUT was directly connected to the Power meter

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

EUT :	OPU2	Model Name :	OPU2120
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5V from adapter
Test Mode :	TX b/g/n Mode /CH01, CH06, CH11		

TX 802.11b Mode				
Test Channe	Frequency	Maximum Peak Conducted Output Power	Maximum Conducted Output Power(AV)	LIMIT
	(MHz)	(dBm)	(dBm)	dBm
CH01	2412	13.65	12.68	30
CH06	2437	13.30	12.43	30
CH11	2462	13.58	12.52	30
TX 802.11g Mode				
CH01	2412	12.58	11.87	30
CH06	2437	12.73	11.40	30
CH11	2462	12.74	11.59	30
TX 802.11n20 Mode				
CH01	2412	11.64	10.83	30
CH06	2437	11.29	10.59	30
CH11	2462	11.43	10.30	30
TX 802.11n40 Mode				
CH03	2422	10.42	9.56	30
CH06	2437	10.36	9.80	30
CH09	2452	10.56	9.27	30

7. ANTENNA REQUIREMENT

7.1 STANDARD REQUIREMENT

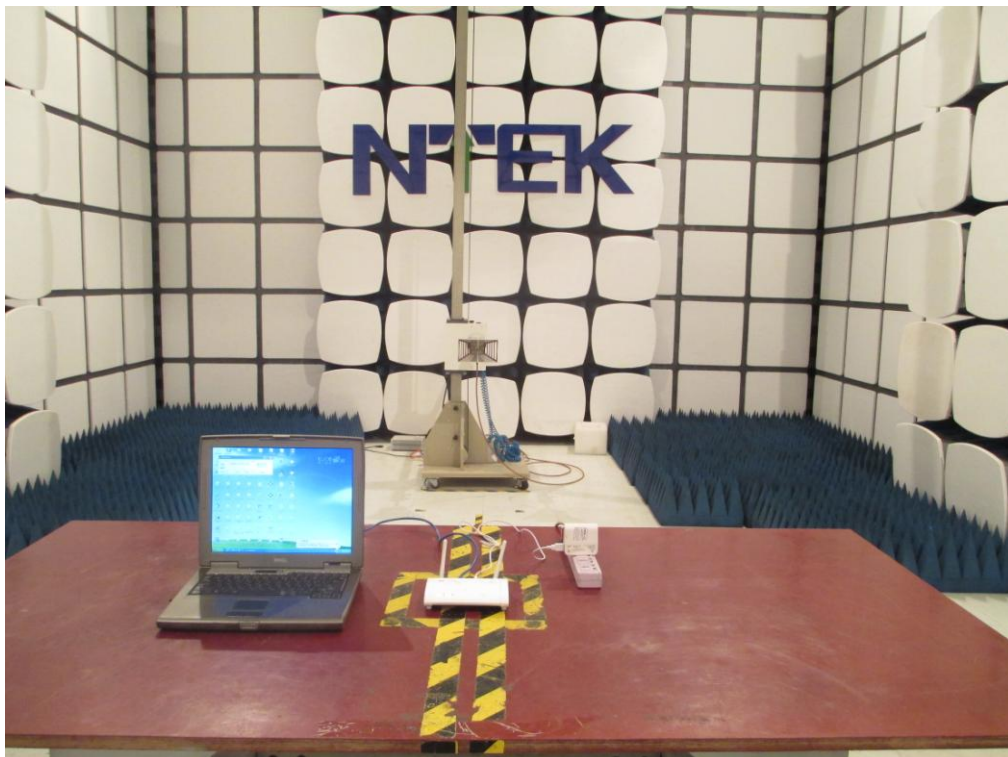
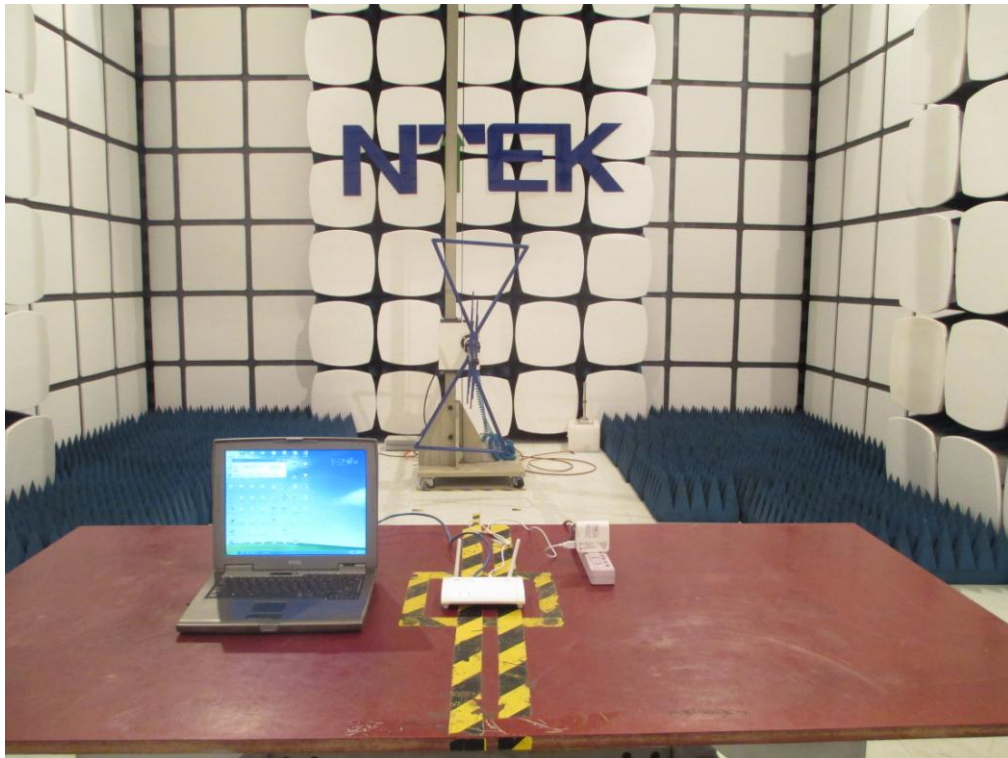
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

7.2 EUT ANTENNA

The EUT antenna is external antenna. It comply with the standard requirement.

8. EUT TEST PHOTO

Radiated Measurement Photos



Conducted Measurement Photos