

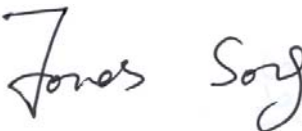
FCC RADIO TEST REPORT

Prepared For	Hanson Technology Limited
Product Name:	Android TV box
Trade Name:	Surbox
Model Name :	Surbox 918
FCC ID:	QXISURBOX918
Prepared By	DongGuan Precise Testing Service Co.,Ltd.
	Room 203-204, 2F, Xinye Building, No.67 Shijing,Guanzhang Road, Dongguan, China
Report No.	PTS2012102859F
Test Date:	Oct. 20 ~ Oct 31, 2012
Date of Report :	Oct 31, 2012

VERIFICATION OF COMPLIANCE

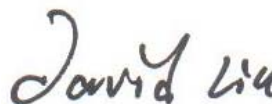
Applicant:	Hanson Technology Limited
Address	Room 1307, No.1698, Yi Shan Road, Shang hai
Manufacturer Name:	Hanson Technology Limited
Address:	Room 1307, No.1698, Yi Shan Road, Shang hai
Product Description:	Android TV box
Brand Name:	Surbox
Model Name:	Surbox 918
Model difference:	N/A
Test procedure	ANSI C63.4-2003, KDB558074
Standards	FCC Part15.247

Prepared by :



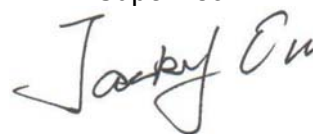
Assistant

Reviewer :



Supervisor

Approved & Authorized Signer :



Jacky Ou / Manager

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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

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	Android TV box	
Trade Name	Surbox	
Model Name	Surbox 918	
Serial Model	N/A	
Model Difference	N/A	
Product Description	The EUT is a Android TV box	
	Operation Frequency:	2412~2462 MHz
	Modulation Type:	CCK/OFDM/DBPSK/DAPSK
	Bit Rate of Transmitter	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6 Mbps
	Number Of Channel	11 CH, Please see Note 2.
	Antenna Designation:	Please see Note 3.
	Output Power(Conducted):	802.11b: 17.93 dBm (Max.) 802.11g: 15.86 dBm (Max.)
	Antenna Gain (dBi)	2.0dbi
	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.	
Adapter		
Battery	N/A	
Connecting I/O Port(s)	Please refer to the User's Manual	

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							
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		

3.

Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
A	N/A	N/A	FPCB antenna	N/A	2.0	N/A

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly 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	Link Mode

For Conducted Emission	
Final Test Mode	Description
Mode 3	Link Mode

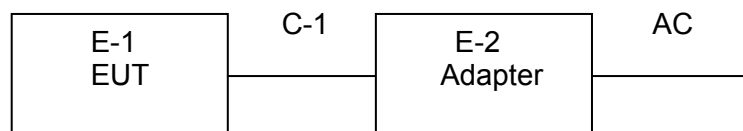
For Radiated Emission	
Final Test Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11

Note:

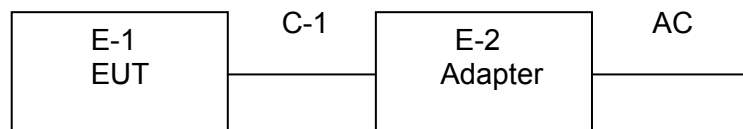
- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

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	Android TV box	N/S	Surbox 918	N/A	EUT
E-2	Adapter	N/A	GM-050200	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	0.8M	

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.	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	160400005	Jul. 06. 2013	1 year
2	Test Receiver	R&S	ESPI	101318	Jul. 06. 2013	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	Jul. 06. 2013	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	Jul. 06. 2013	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	Jul. 06. 2013	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	Jul. 06. 2013	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	Jul. 06. 2013	1 year
8	Amplifier	EM	EM-30180	060538	Jul. 06. 2013	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	Jul. 06. 2013	1 year
10	Power Meter	R&S	NRVS	100696	Jul. 06. 2013	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	Jul. 06. 2013	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	Jul. 06. 2013	1 year
2	LISN	R&S	ENV216	101313	Jul. 06. 2013	1 year
3	LISN	EMCO	3816/2	00042990	Jul. 06. 2013	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	Jul. 06. 2013	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	Jul. 06. 2013	1 year
6	Absorbing clamp	R&S	MOS-21	100423	Jul. 06. 2013	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

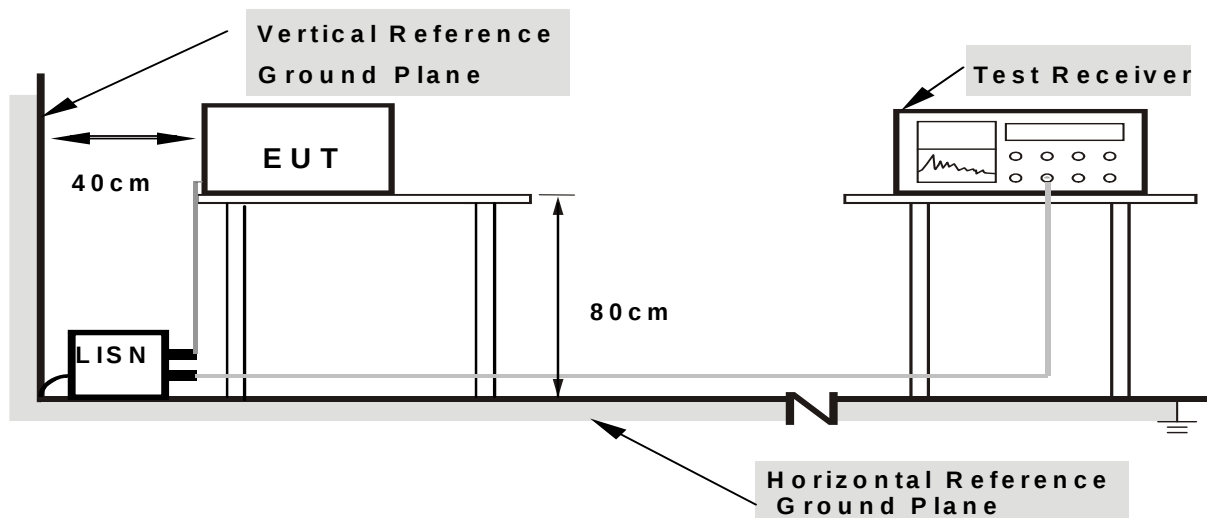
3.1.2 TEST PROCEDURE

- 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 cm 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

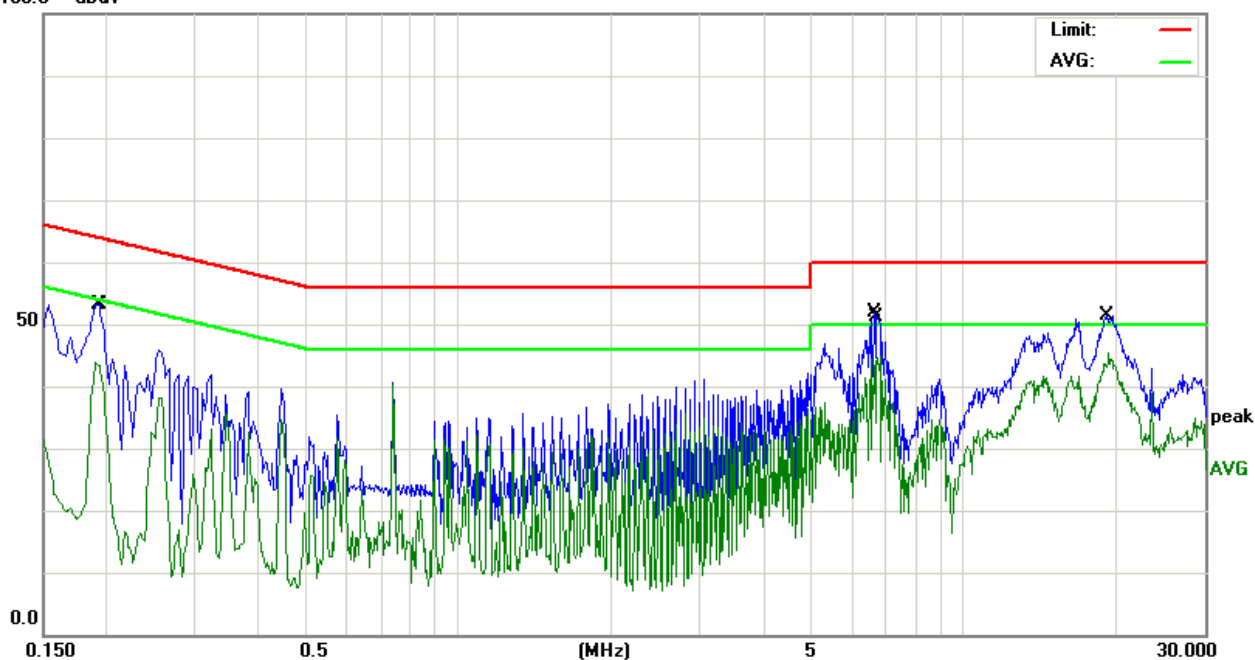
EUT :	Android TV box	Model Name. :	Surbox 918
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	120V/60Hz	Test Mode :	Mode 3

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.19	33.38	10.4	43.78	54.03	-10.25	AVG
0.194	42.64	10.41	53.05	63.86	-10.81	QP
6.638	41.25	10.67	51.92	60	-8.08	QP
6.83	34.14	10.68	44.82	50	-5.18	AVG
19.146	40.61	10.76	51.37	60	-8.63	QP
19.338	34.52	10.76	45.28	50	-4.72	AVG

Remark:

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

100.0 dBμV



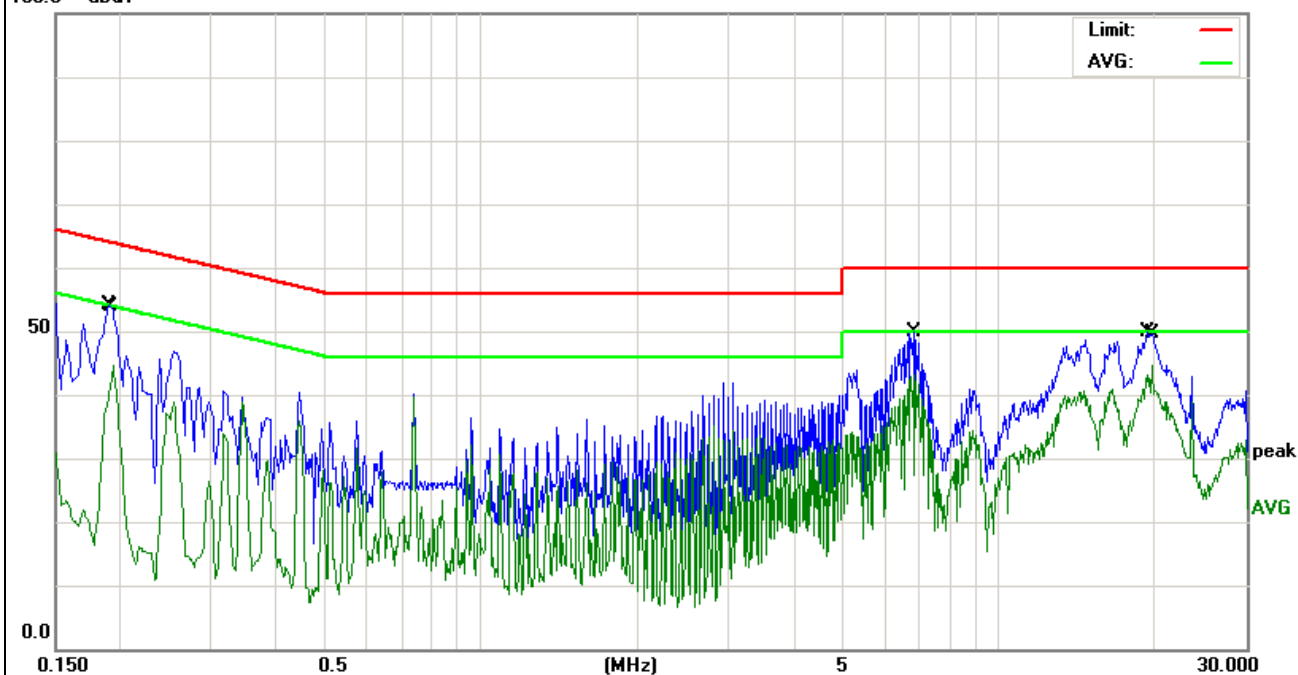
EUT :	Android TV box	Model Name. :	Surbox 918
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	120V/60Hz	Test Mode :	Mode 3

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.19	43.73	10.44	54.17	64.03	-9.86	QP
0.194	34.23	10.44	44.67	53.86	-9.19	AVG
6.826	39.16	10.68	49.84	60	-10.16	QP
6.826	32.54	10.68	43.22	50	-6.78	AVG
19.398	39.03	10.73	49.76	60	-10.24	QP
19.718	33.77	10.74	44.51	50	-5.49	AVG

Remark:

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

100.0 dBμV



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 (microvolt/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:

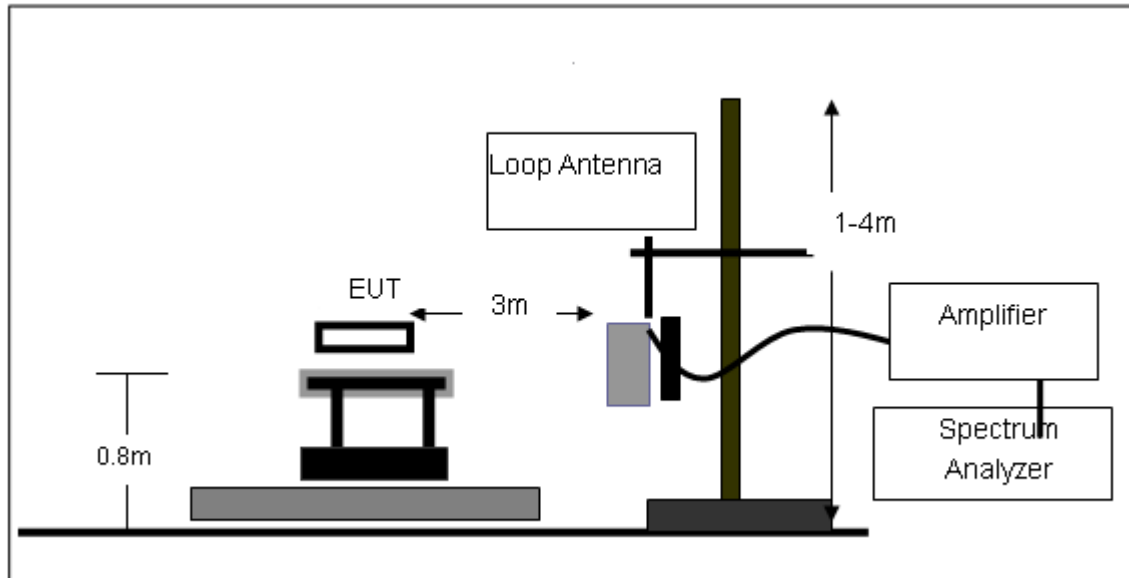
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

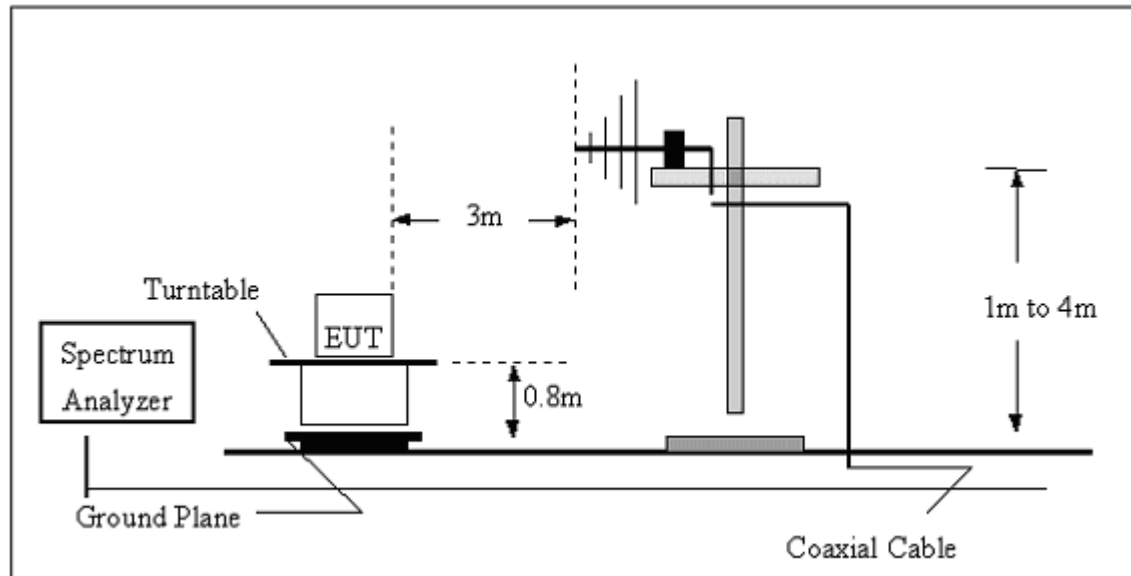
No deviation

3.2.4 TEST SETUP

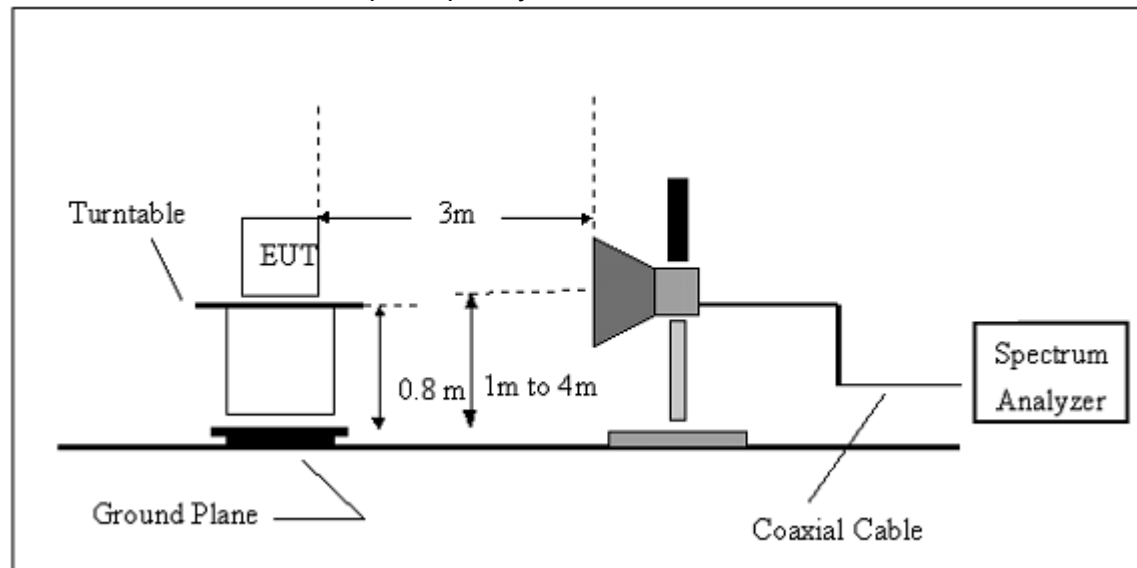
(A) Radiated Emission Test-Up Frequency Below 30MHz



(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 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

EUT:	Android TV box	Model Name. :	Surbox 918
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	120V/60Hz
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 = $20 \log (\text{specific distance/test distance})(\text{dB})$;

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

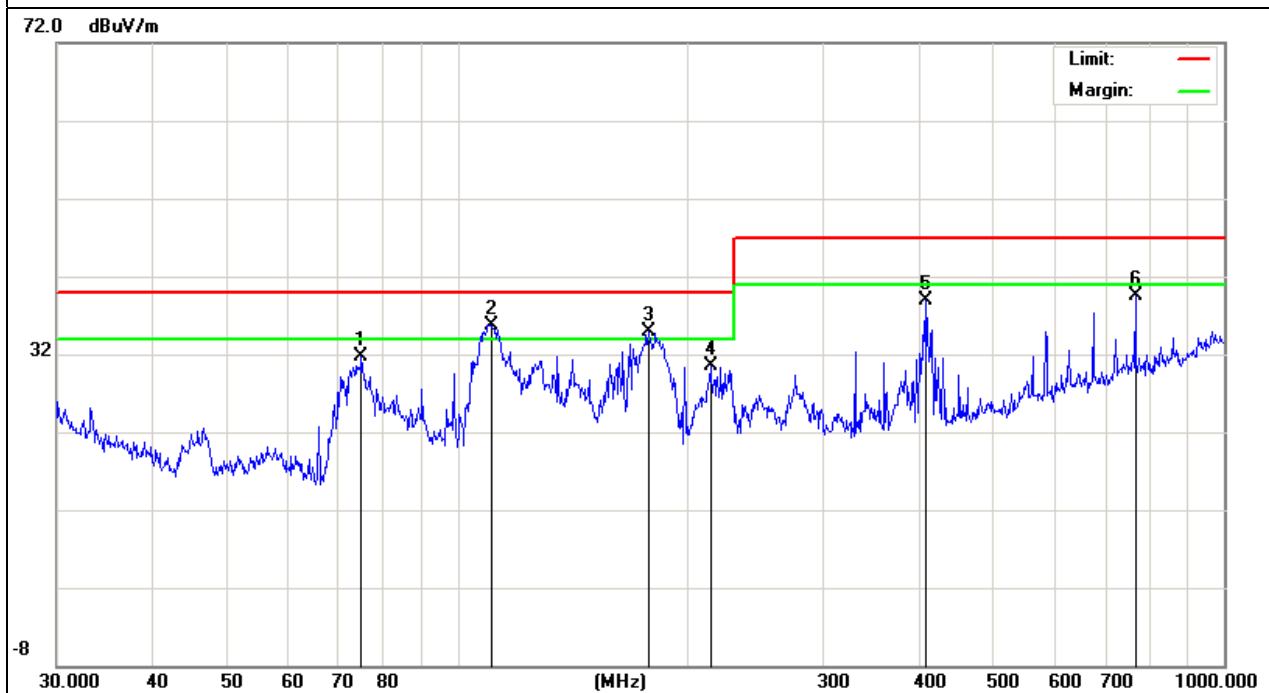
3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	TX	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
74.9191	25.01	6.74	31.75	40	-8.25	QP
110.5687	24.34	11.44	35.78	40	-4.22	QP
177.5091	25.17	9.68	34.85	40	-5.15	QP
213.7633	21.08	9.4	30.48	40	-9.52	QP
408.946	21.21	17.61	38.82	47	-8.18	QP
766.0571	15.28	24.22	39.5	47	-7.5	QP

Remark:

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

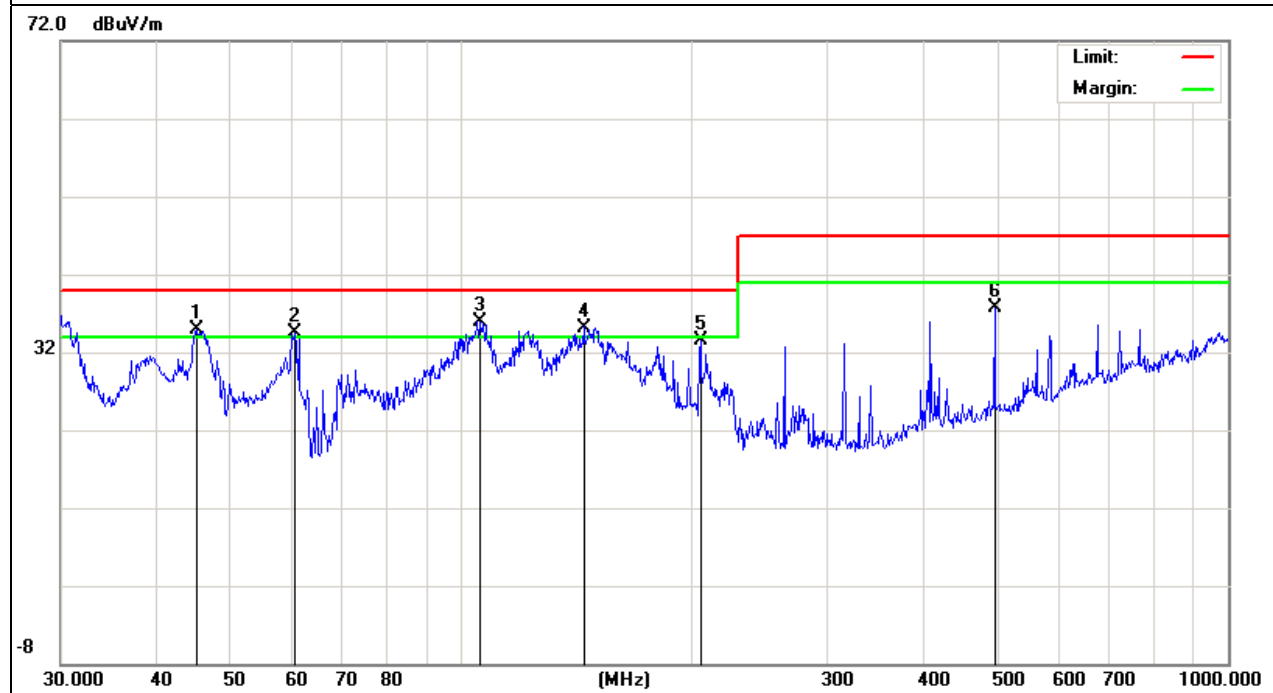


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	TX	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
45.0583	24.24	10.58	34.82	40	-5.18	QP
60.7043	29.4	5.18	34.58	40	-5.42	QP
105.6414	25.01	10.99	36	40	-4	QP
144.3348	23.28	11.92	35.2	40	-4.8	QP
204.955	24.68	8.89	33.57	40	-6.43	QP
495.9343	18.46	19.3	37.76	47	-9.24	QP

Remark:

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



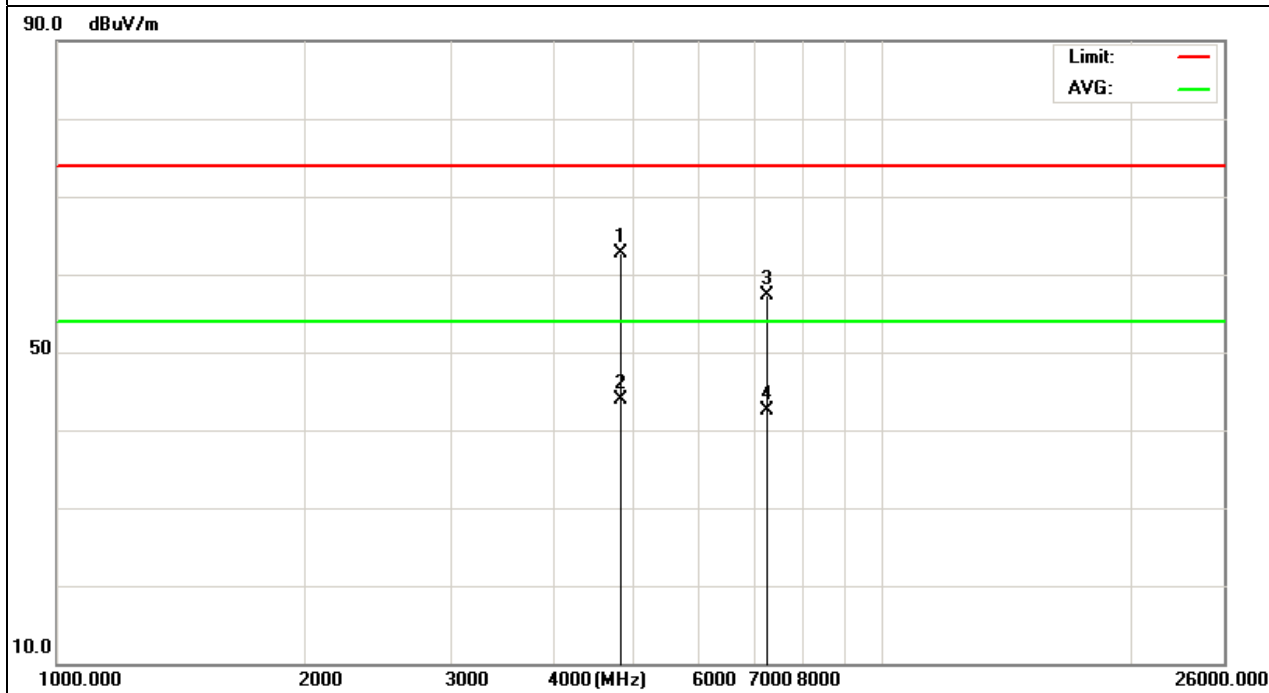
3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
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
4824.173	52.22	10.44	62.66	74	-11.34	peak
4824.173	33.4	10.44	43.84	54	-10.16	AVG
7236.276	45	12.39	57.39	74	-16.61	peak
7236.276	30.19	12.39	42.58	54	-11.42	AVG

Remark:

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

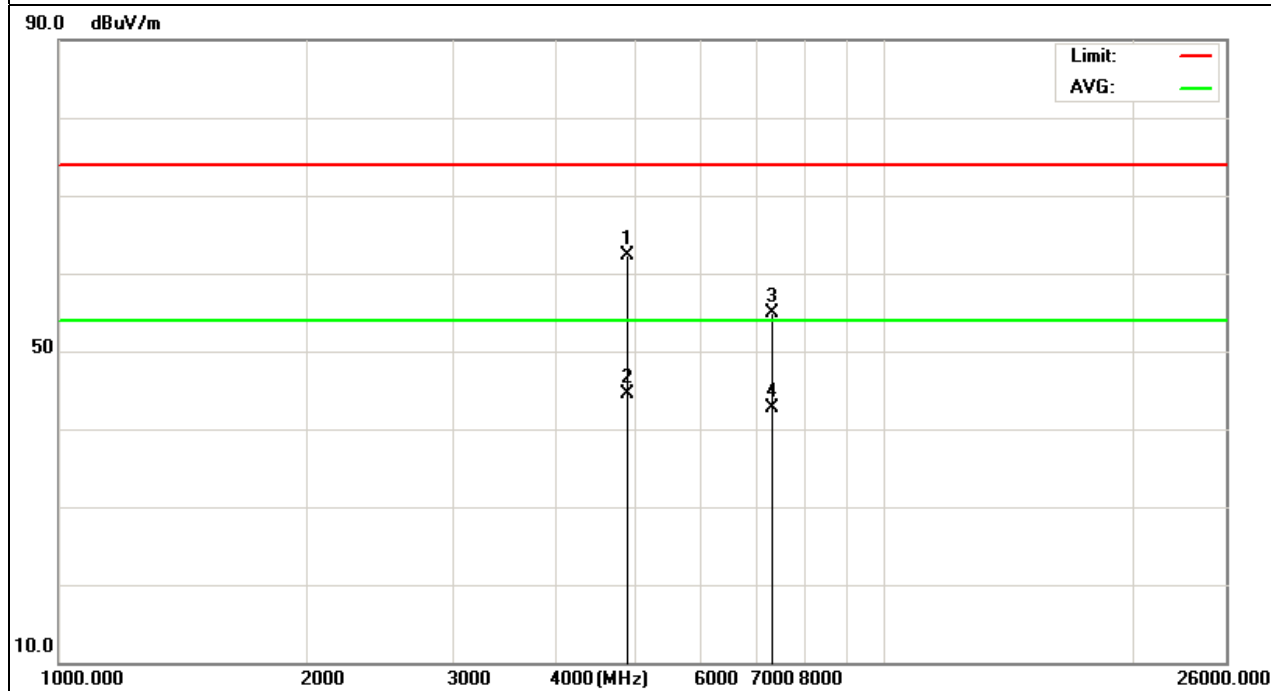


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH1 (802.11b Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874.197	51.95	10.4	62.35	74	-11.65	peak
4874.197	34.06	10.4	44.46	54	-9.54	AVG
7311.329	42.08	12.75	54.83	74	-19.17	peak
7311.329	29.87	12.75	42.62	54	-11.38	AVG

Remark:

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

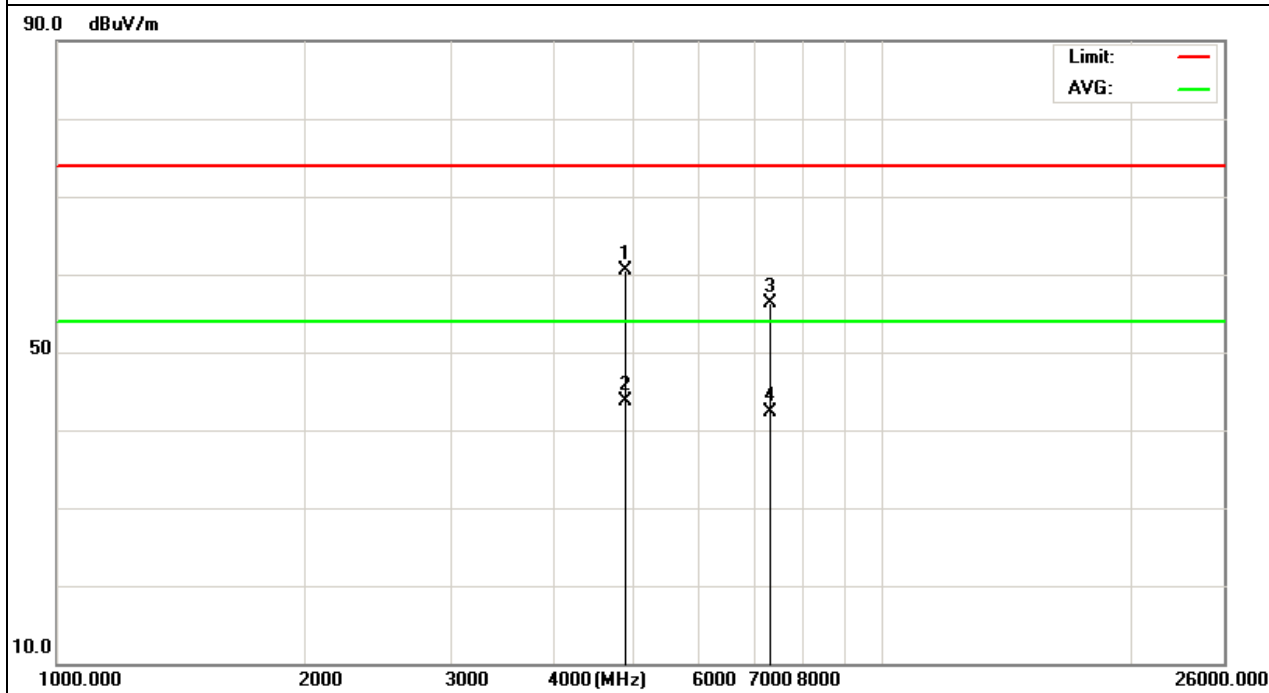


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH6 (802.11b Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874.373	50.07	10.4	60.47	74	-13.53	peak
4874.373	33.27	10.4	43.67	54	-10.33	AVG
7311.225	43.48	12.75	56.23	74	-17.77	peak
7311.225	29.53	12.75	42.28	54	-11.72	AVG

Remark:

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

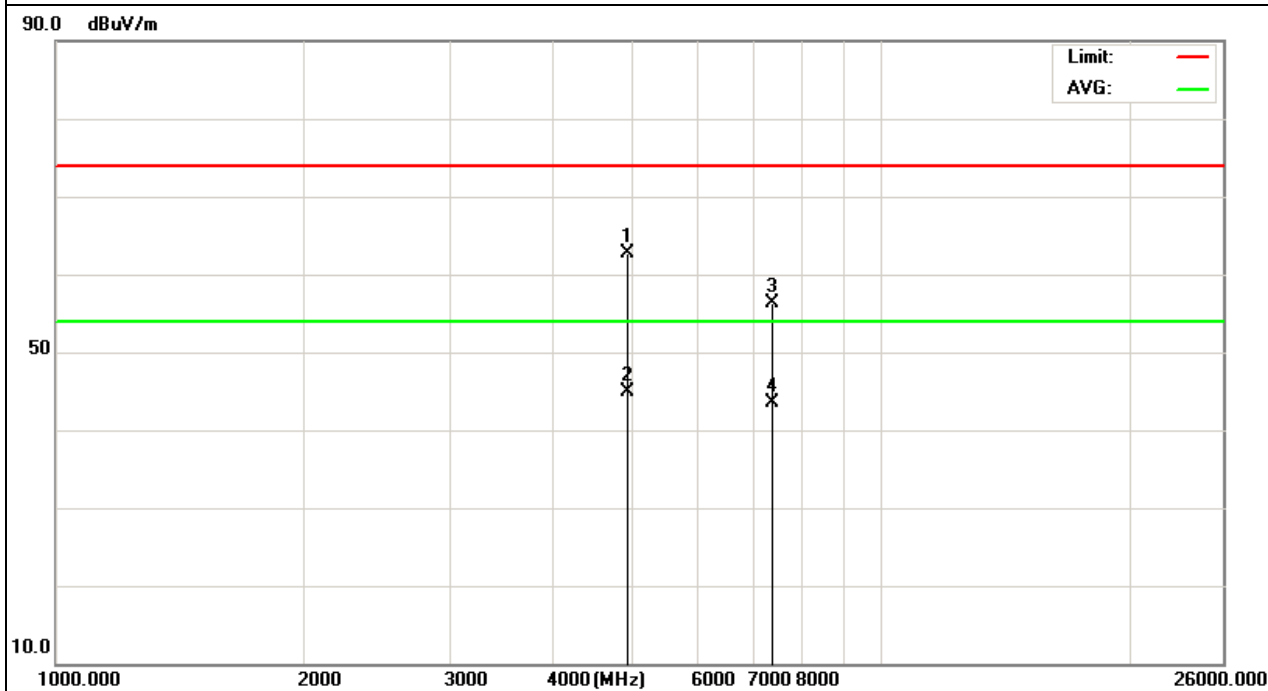


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH6 (802.11b Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924.121	52.38	10.39	62.77	74	-11.23	peak
4934.121	34.42	10.44	44.86	54	-9.14	AVG
7386.209	43.71	12.68	56.39	74	-17.61	peak
7386.209	30.8	12.68	43.48	54	-10.52	AVG

Remark:

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

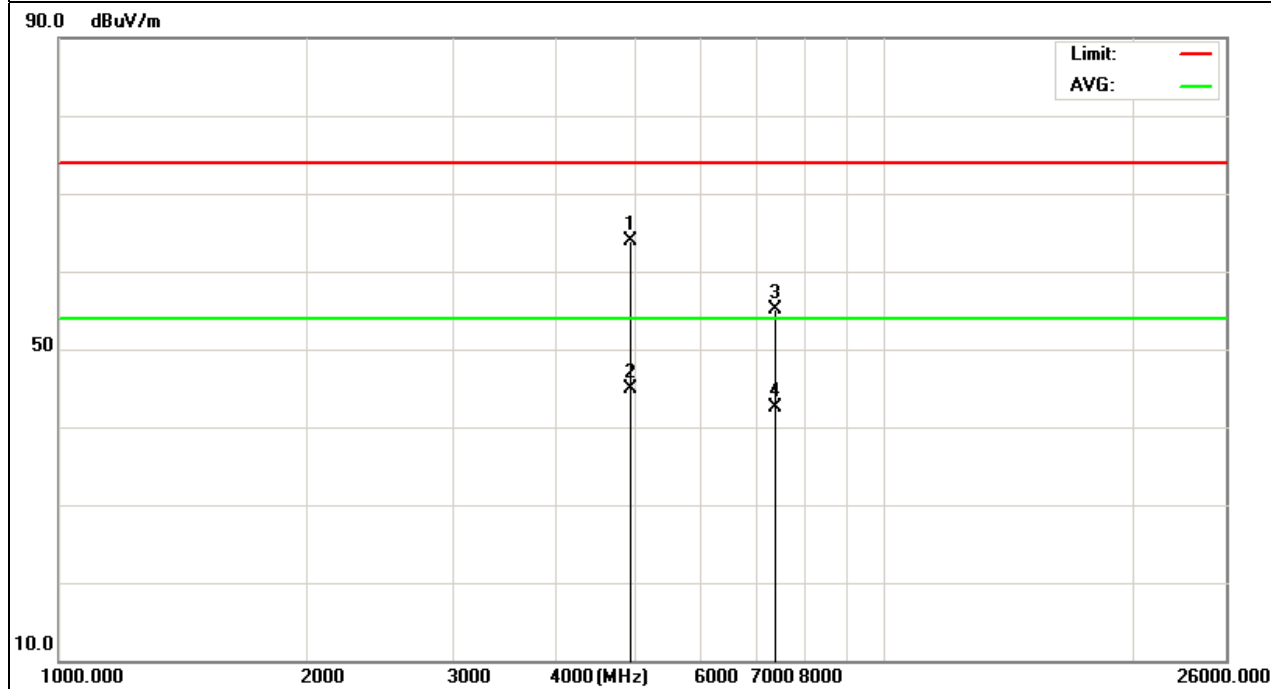


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH11 (802.11b Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924.374	53.43	10.39	63.82	74	-10.18	peak
4924.374	34.58	10.39	44.97	54	-9.03	AVG
7386.293	42.5	12.68	55.18	74	-18.82	peak
7386.293	29.87	12.68	42.55	54	-11.45	AVG

Remark:

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

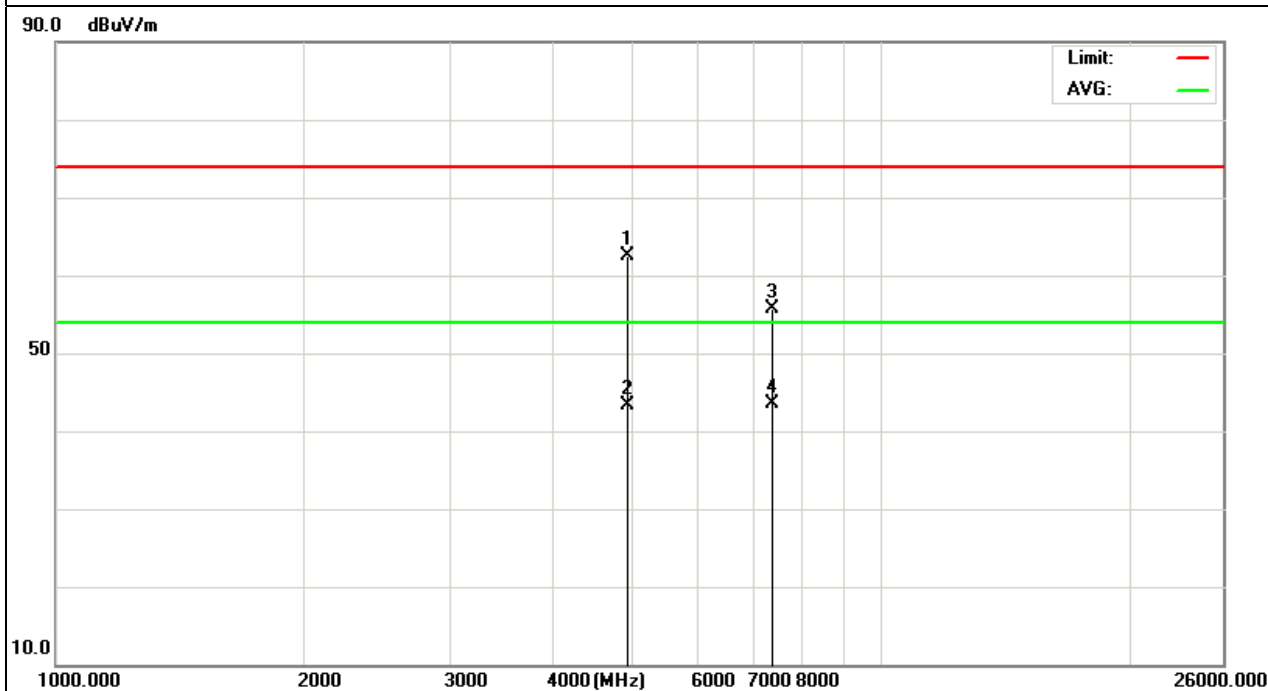


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH11 (802.11b Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924.374	52.07	10.39	62.46	74	-11.54	peak
4924.374	32.97	10.39	43.36	54	-10.64	AVG
7386.293	43.03	12.68	55.71	74	-18.29	peak
7386.293	30.79	12.68	43.47	54	-10.53	AVG

Remark:

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

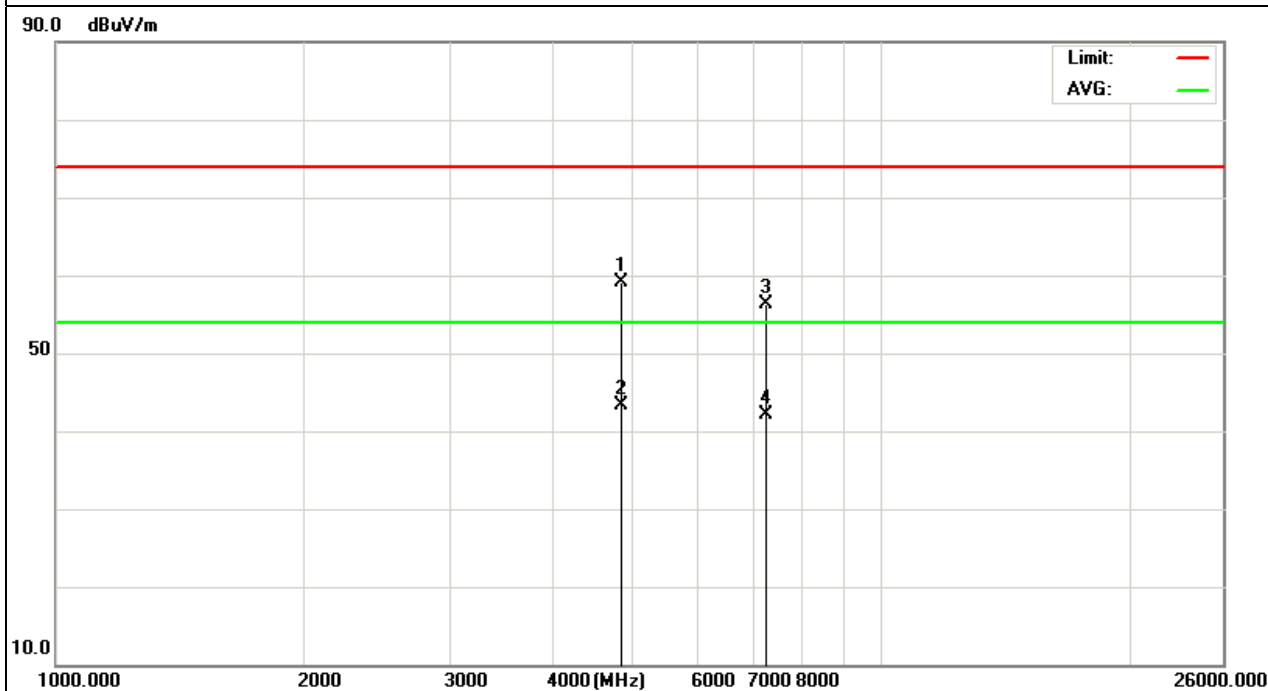


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH1 (802.11g Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824.442	48.68	10.44	59.12	74	-14.88	peak
4824.442	32.92	10.44	43.36	54	-10.64	AVG
7236.284	43.82	12.39	56.21	74	-17.79	peak
7236.284	29.71	12.39	42.1	54	-11.9	AVG

Remark:

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

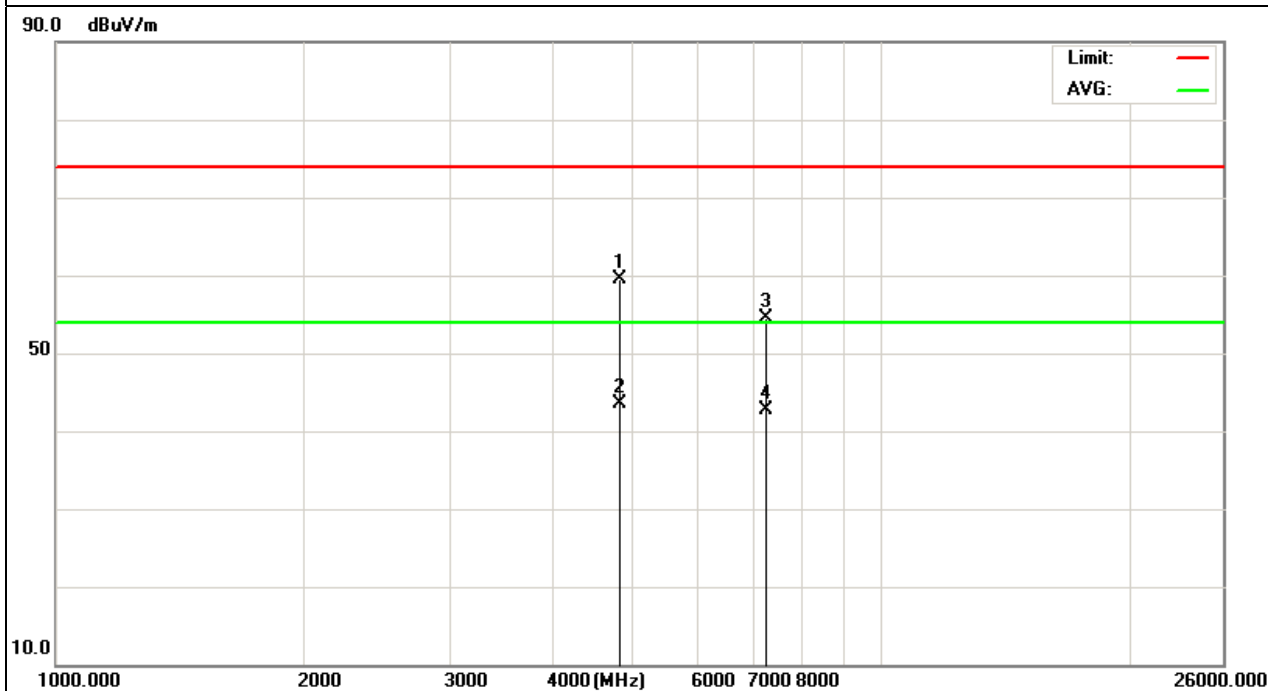


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH1 (802.11g Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824.192	49	10.44	59.44	74	-14.56	peak
4824.192	33.07	10.44	43.51	54	-10.49	AVG
7236.308	42.21	12.39	54.6	74	-19.4	peak
7236.308	30.35	12.39	42.74	54	-11.26	AVG

Remark:

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

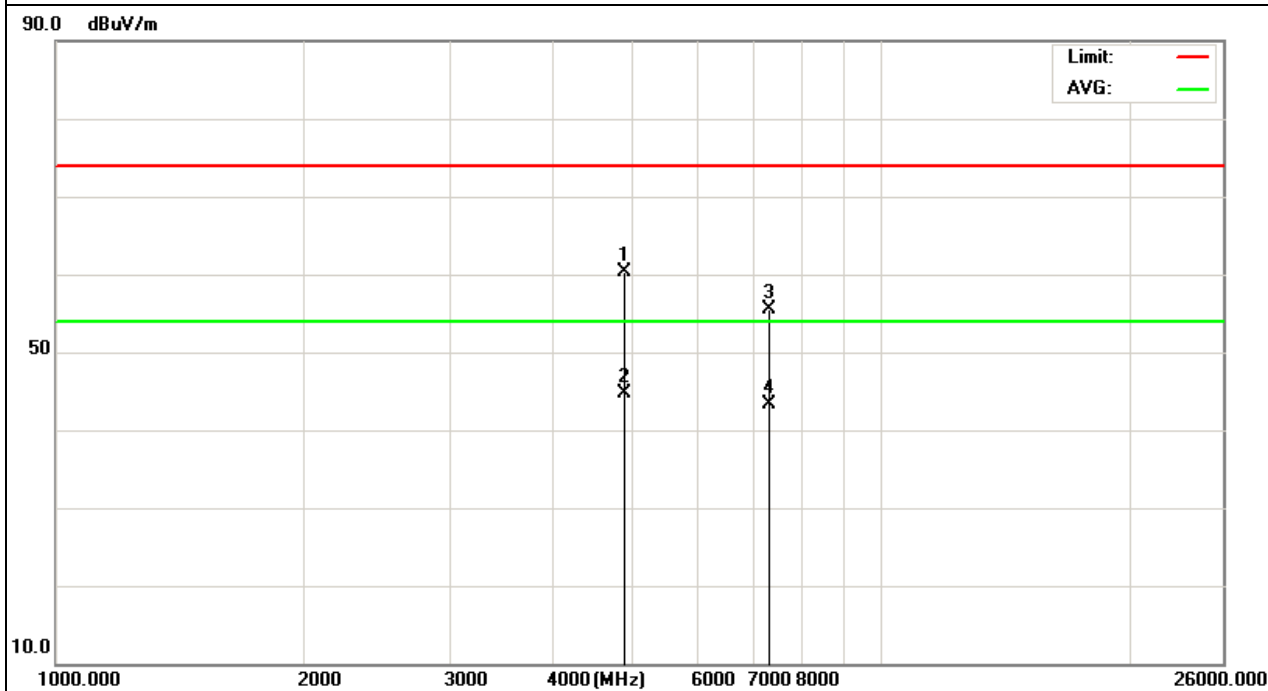


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH6 (802.11g Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874.364	49.93	10.4	60.33	74	-13.67	peak
4874.364	34.32	10.4	44.72	54	-9.28	AVG
7311.253	42.66	12.75	55.41	74	-18.59	peak
7311.253	30.6	12.75	43.35	54	-10.65	AVG

Remark:

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

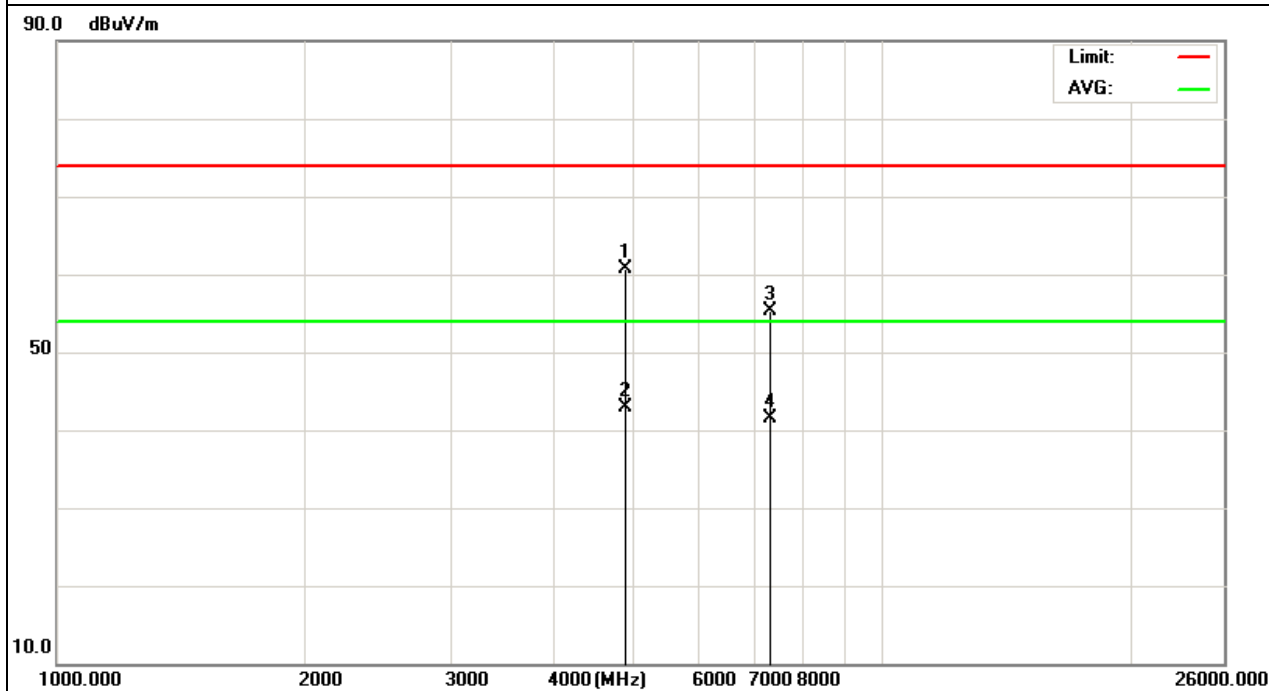


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH6 (802.11g Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874.225	50.26	10.4	60.66	74	-13.34	peak
4874.225	32.44	10.4	42.84	54	-11.16	AVG
7311.425	42.57	12.75	55.32	74	-18.68	peak
7311.425	28.74	12.75	41.49	54	-12.51	AVG

Remark:

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

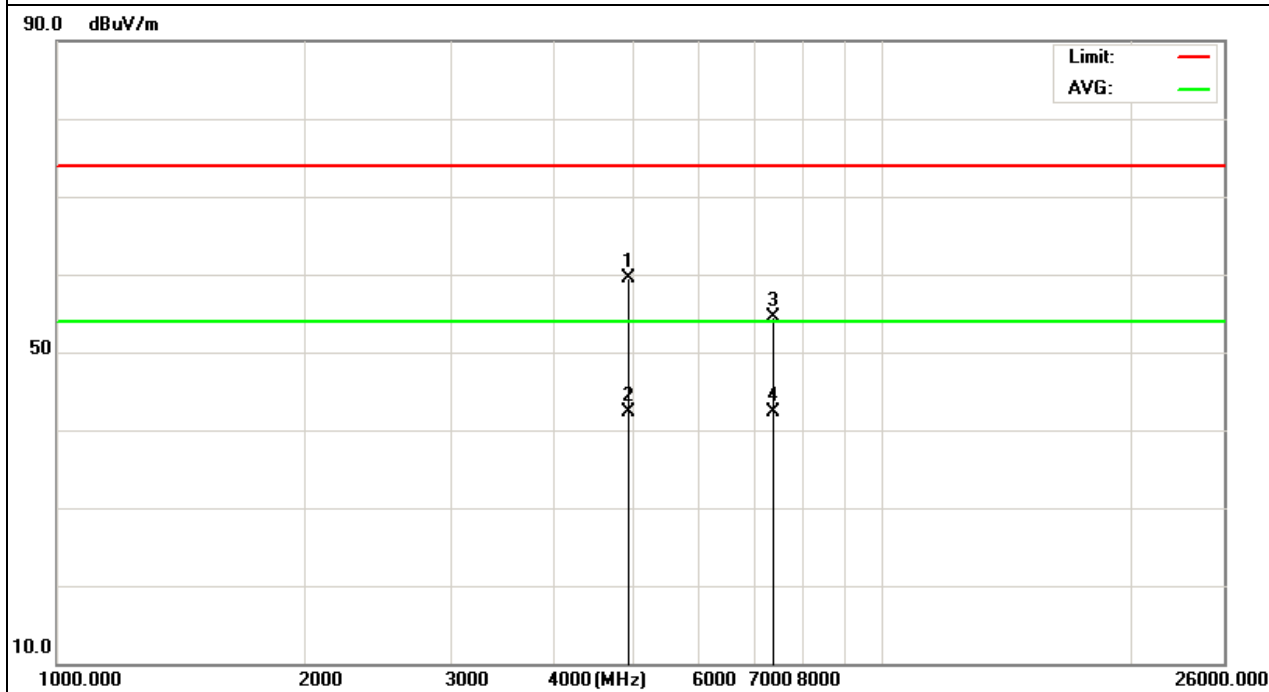


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH11 (802.11g Mode)	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924.481	49.1	10.39	59.49	74	-14.51	peak
4924.481	31.94	10.39	42.33	54	-11.67	AVG
7386.326	41.84	12.68	54.52	74	-19.48	peak
7386.326	29.63	12.68	42.31	54	-11.69	AVG

Remark:

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

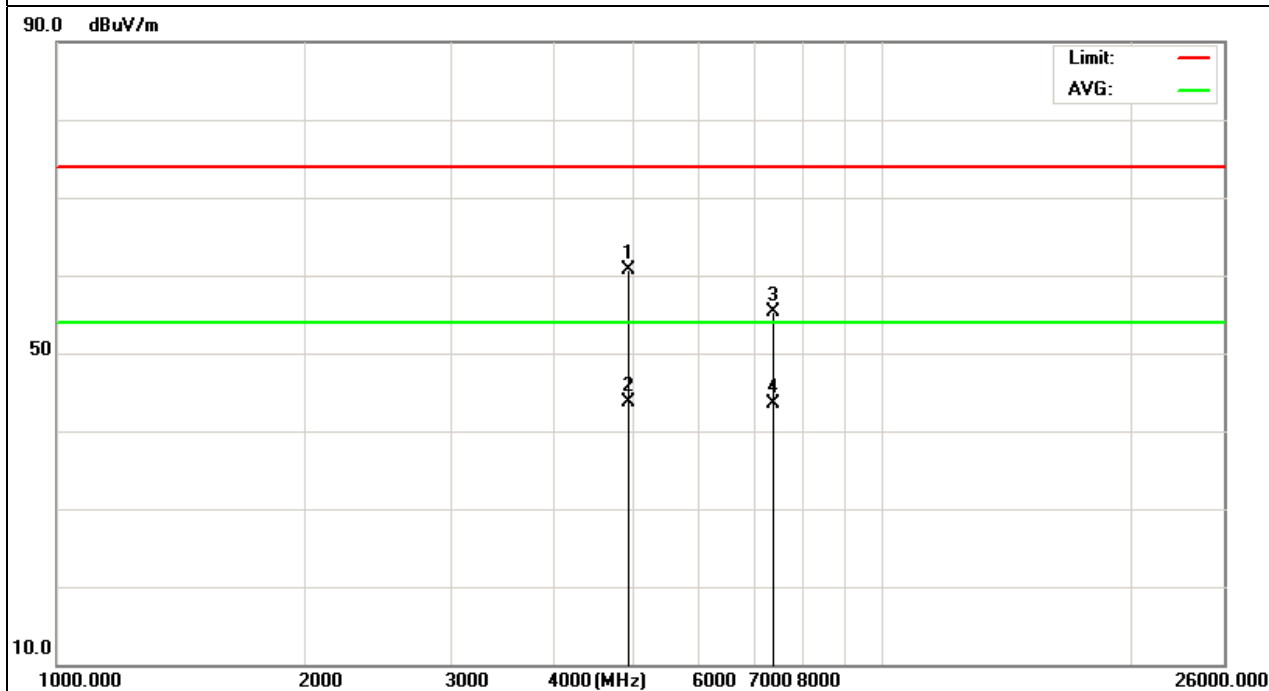


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH11(802.11g Mode)	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924.387	50.39	10.39	60.78	74	-13.22	peak
4924.387	33.23	10.39	43.62	54	-10.38	AVG
7386.109	42.68	12.68	55.36	74	-18.64	peak
7386.109	30.87	12.68	43.55	54	-10.45	AVG

Remark:

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



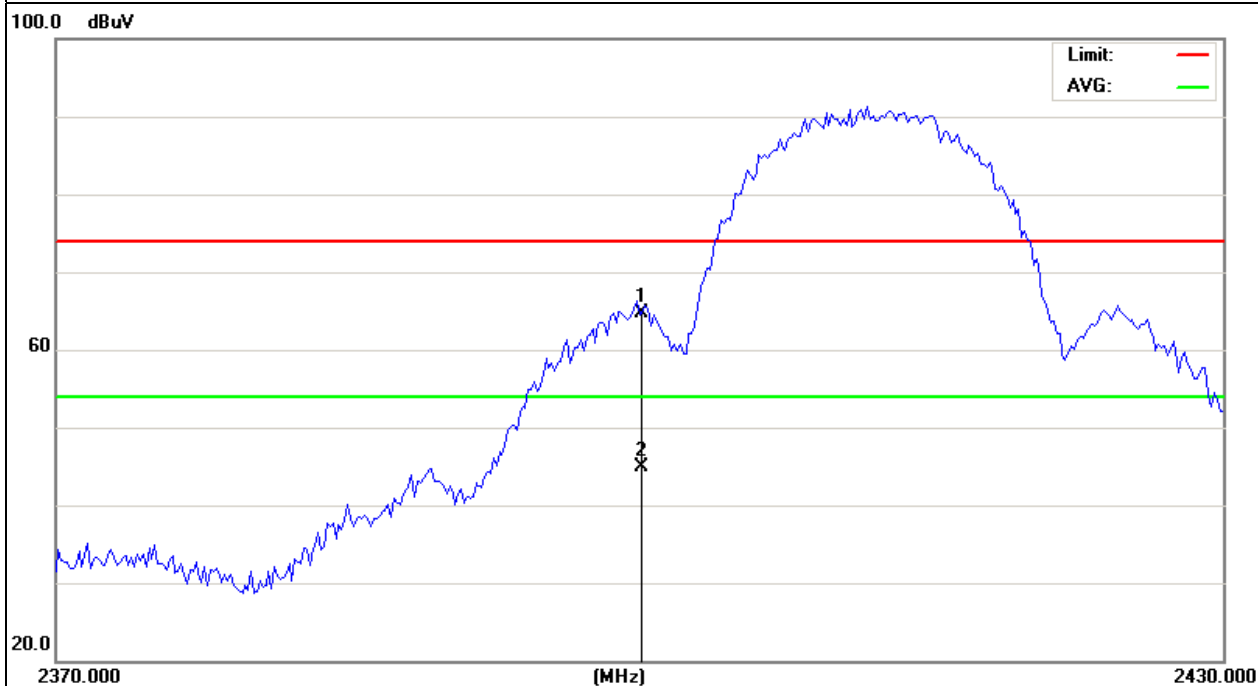
Band Edge Emission:

EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH1(802.11b Mode)	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400	77.67	-12.99	64.68	74	-9.32	peak
2400	57.88	-12.99	44.89	54	-9.11	AVG

Remark:

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

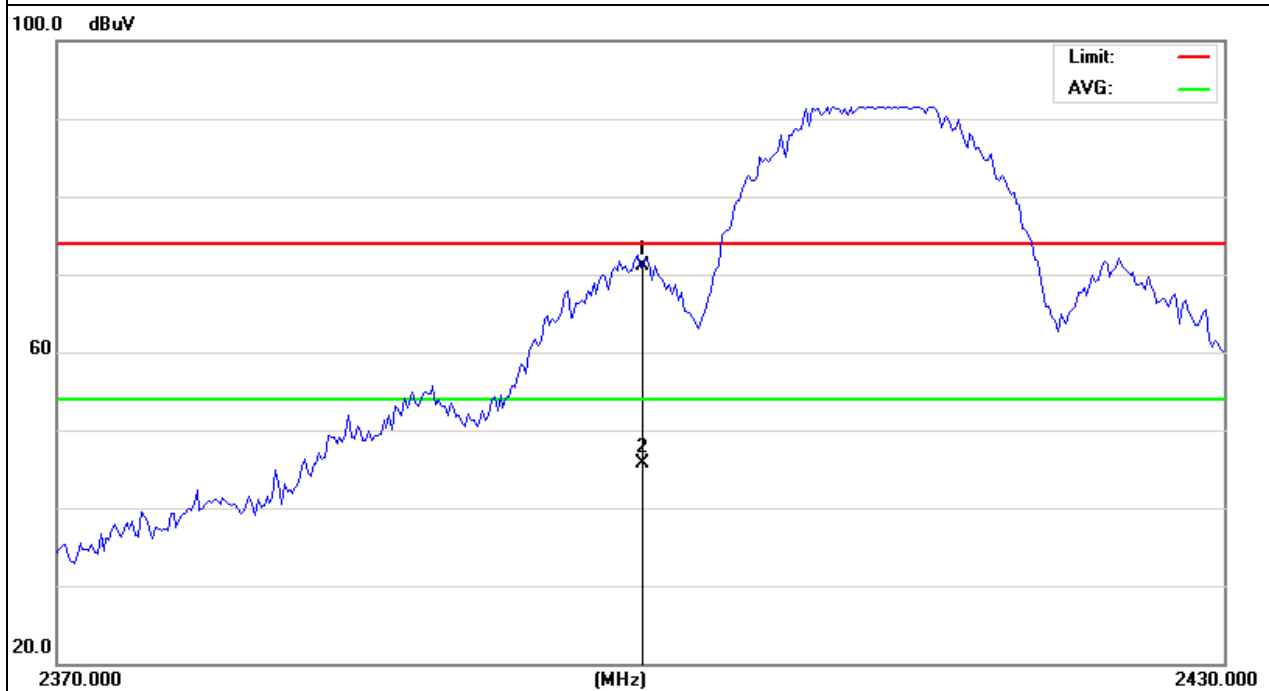


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH1(802.11b Mode)	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400	84.13	-12.99	71.14	74	-2.86	peak
2400	58.62	-12.99	45.63	54	-8.37	AVG

Remark:

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

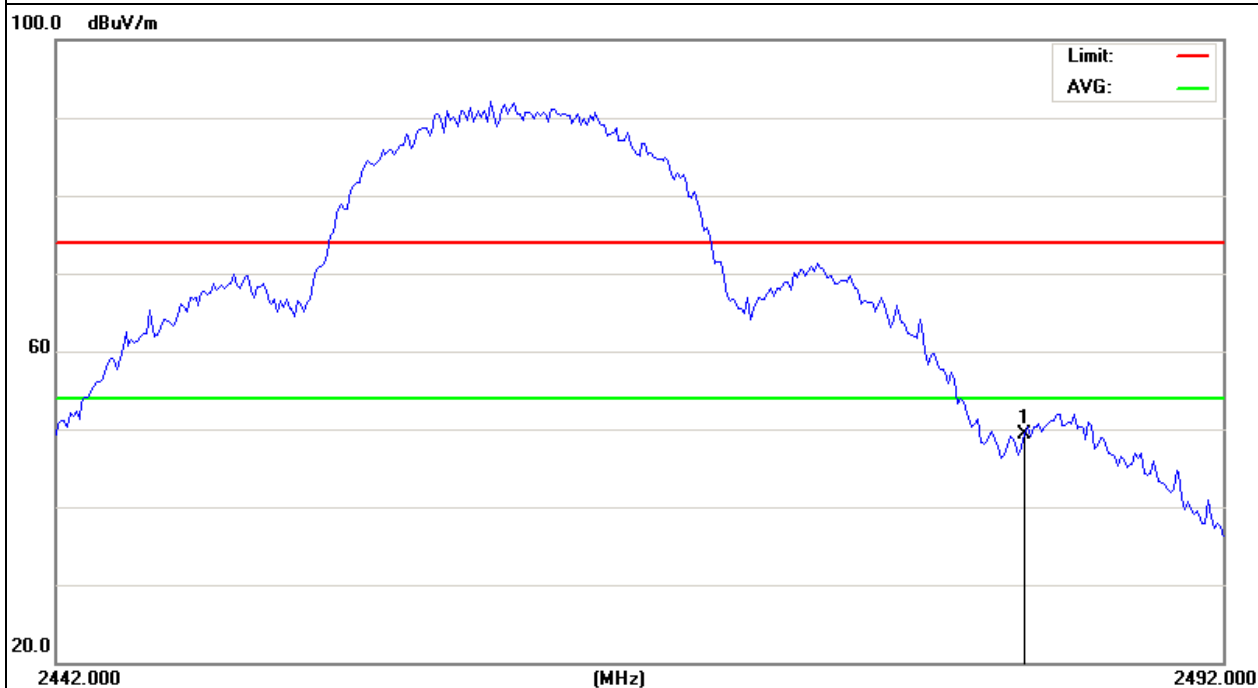


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH11(802.11b Mode)	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	62.05	-12.78	49.27	74	-24.73	peak

Remark:

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

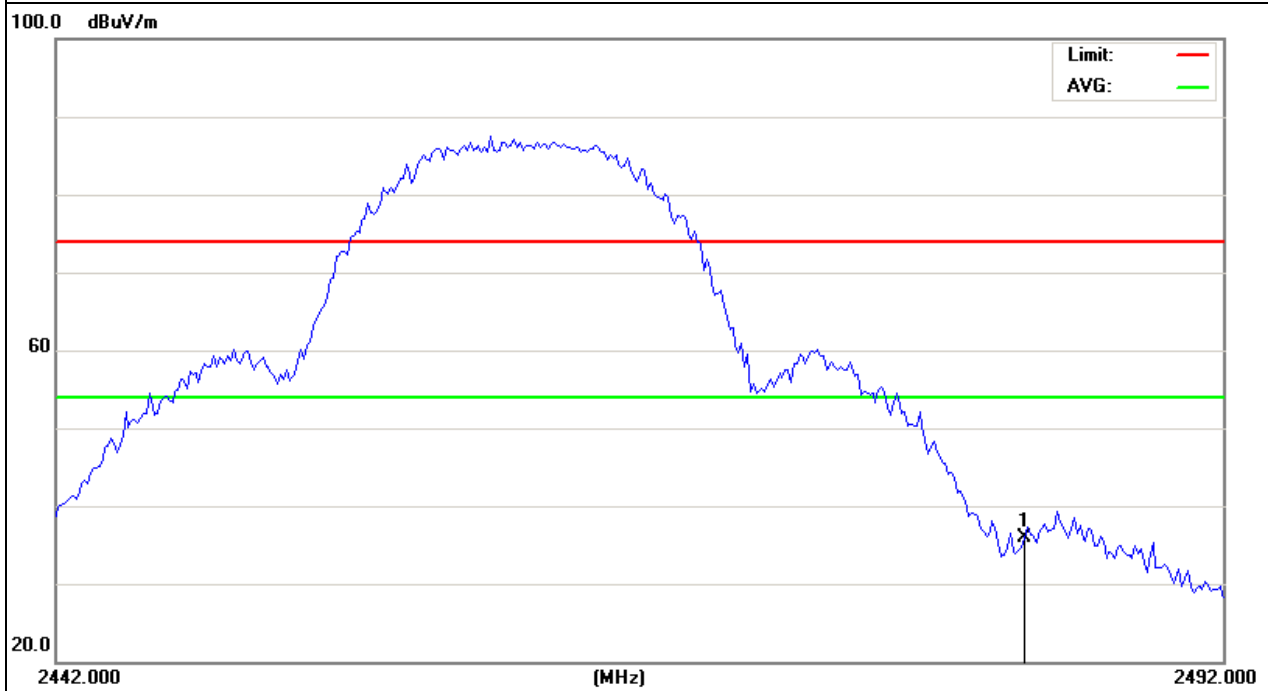


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH11(802.11b Mode)	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	48.7	-12.78	35.92	74	-38.08	peak

Remark:

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

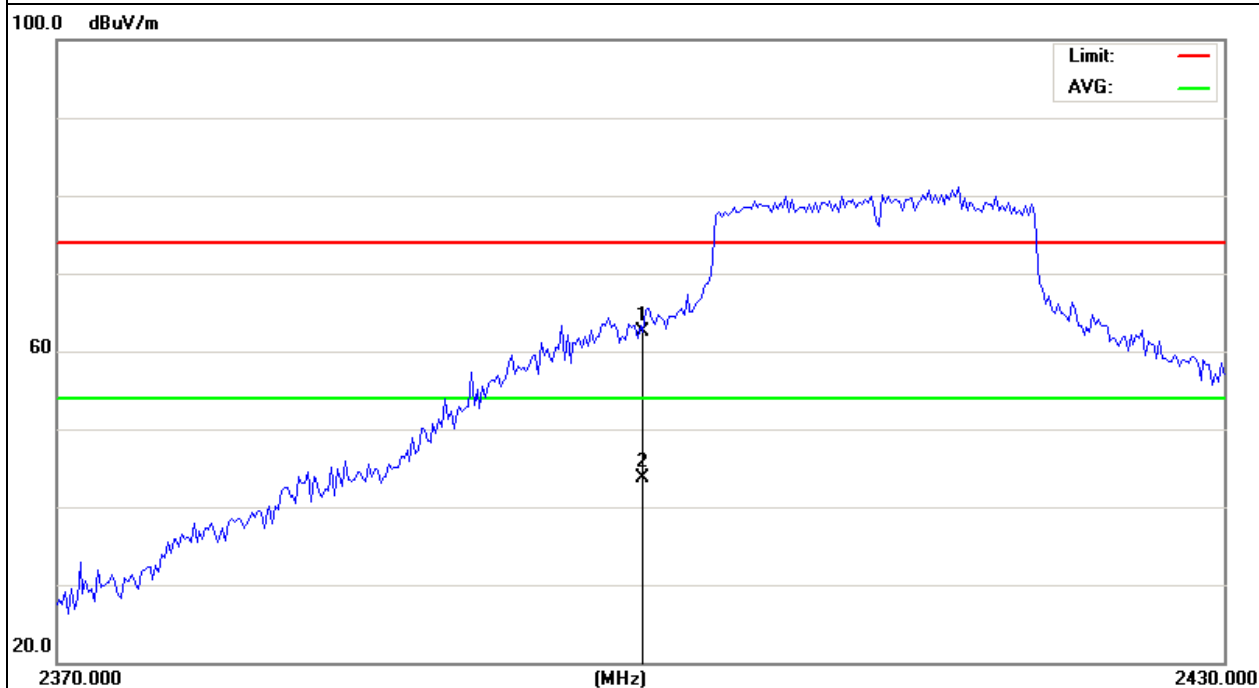


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH1(802.11g Mode)	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400	75.42	-12.99	62.43	74	-11.57	peak
2400	56.74	-12.99	43.75	54	-10.25	AVG

Remark:

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

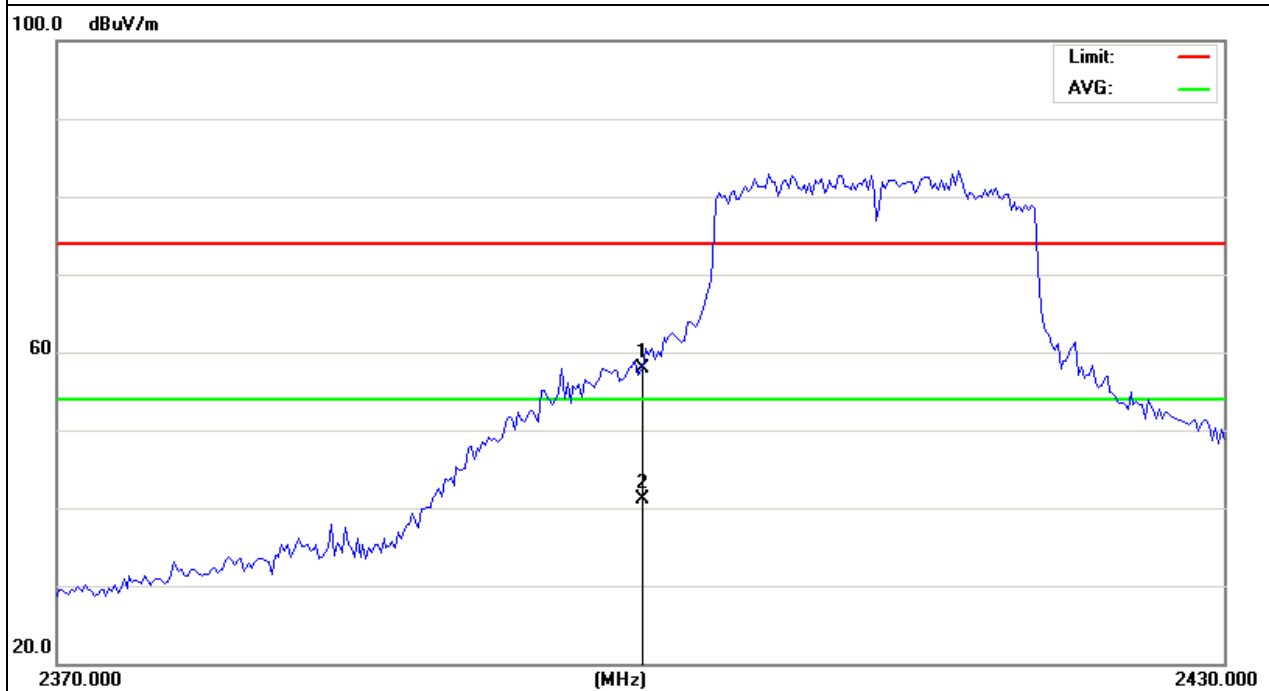


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH1(802.11gMode)	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2400	70.98	-12.99	57.99	74	-16.01	peak
2400	54.1	-12.99	41.11	54	-12.89	AVG

Remark:

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

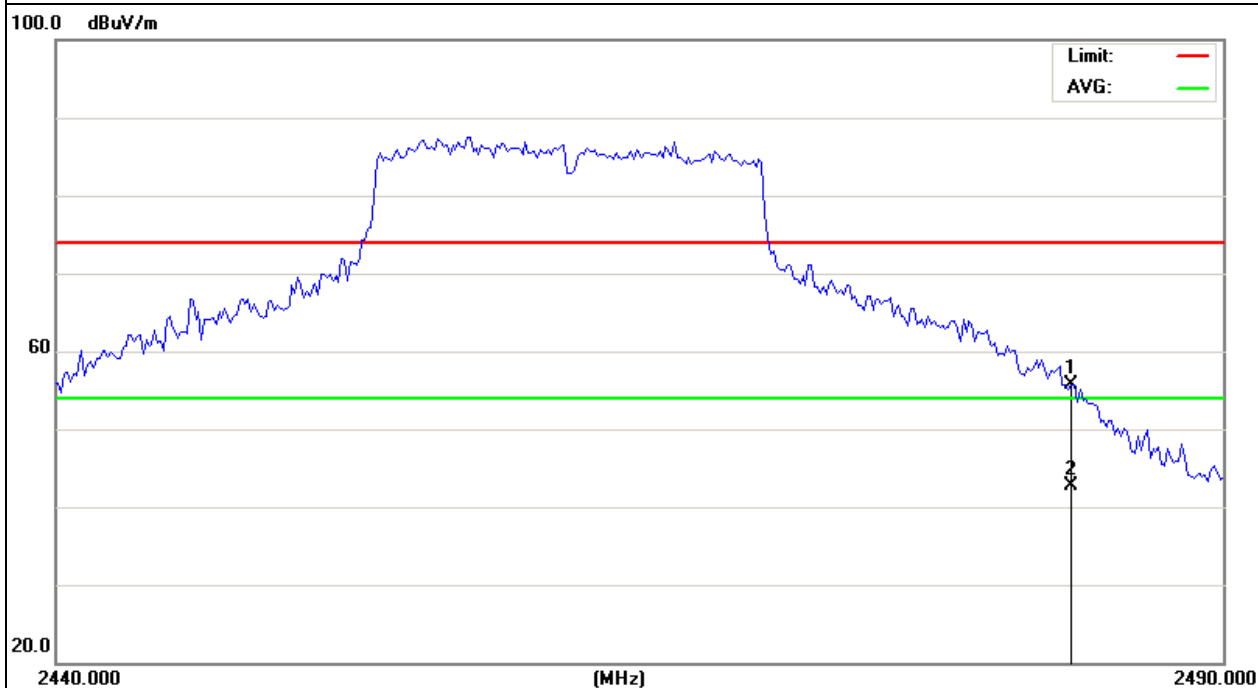


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH11(802.11g Mode)	Polarization :	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	68.56	-12.78	55.78	74	-18.22	peak
2483.5	55.43	-12.78	42.65	54	-11.35	AVG

Remark:

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

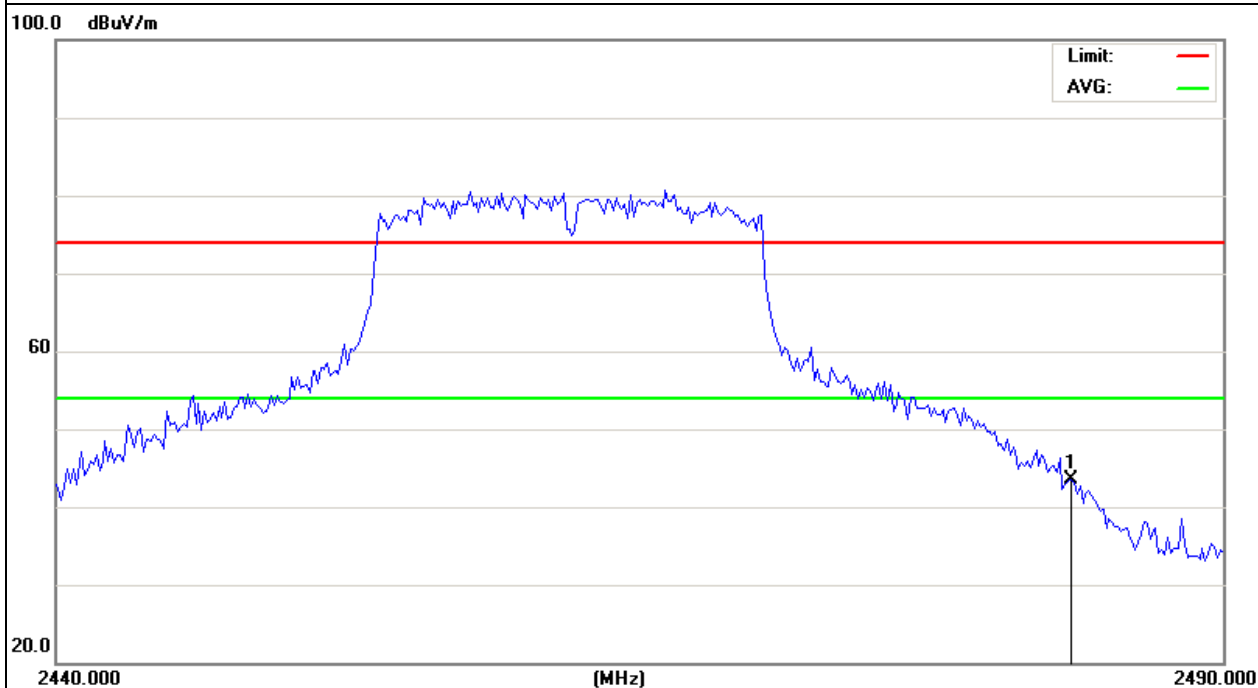


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	120V/60Hz
Test Mode :	CH11(802.11g Mode)	Polarization :	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	56.25	-12.78	43.47	74	-30.53	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

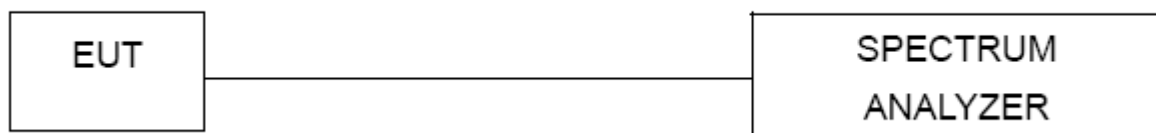
4.1.1 TEST PROCEDURE

1. The testing follows Measurement Procedure PKPSD of FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v01.
2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
3. Record the measurement data derived from spectrum analyzer.
4. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 KHz. Video bandwidth (VBW) $\geq$ 300 KHz In order to make an accurate measurement, set the span to 5-30% greater than Emission Bandwidth (EBW)
5. Detector = peak, Sweep time = auto couple, Trace mode = max hold, Allow trace to fully stabilize. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
6. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3\text{ kHz}/100\text{ kHz}) = -15.2\text{ dB}$.

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 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

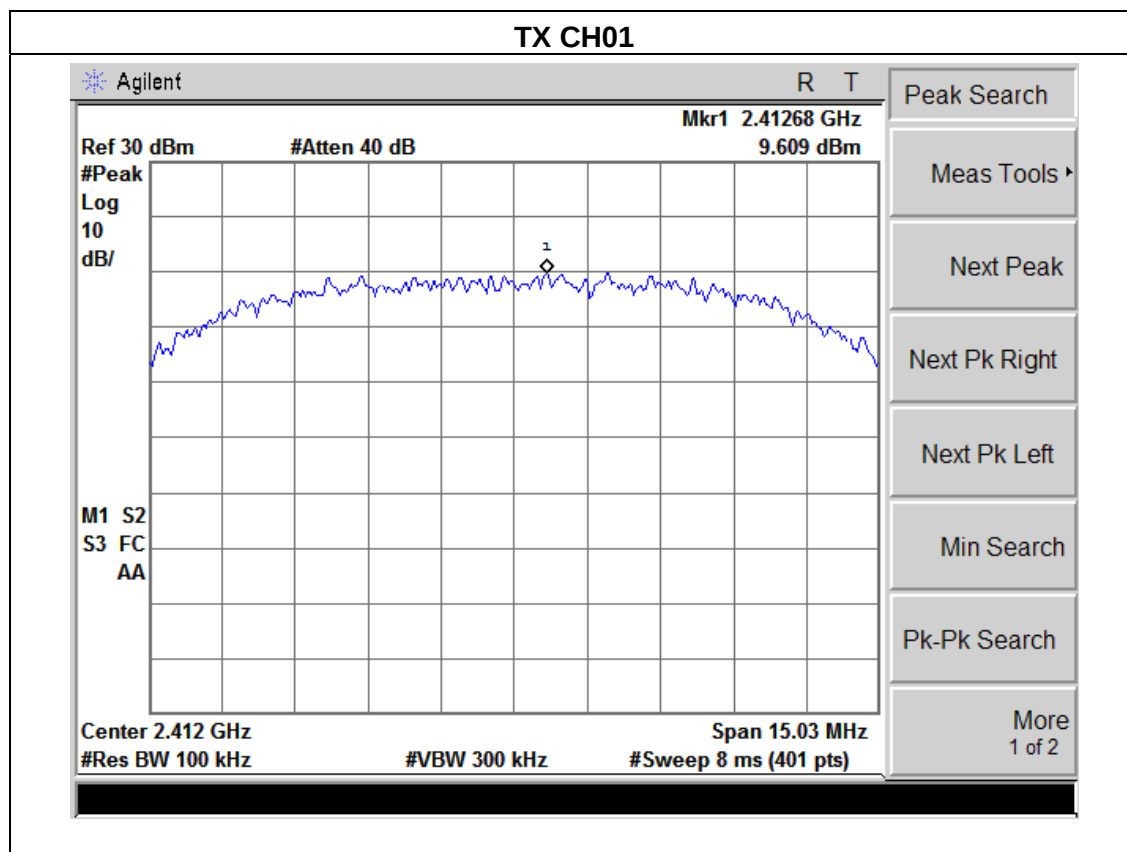
4.1.5 TEST RESULTS

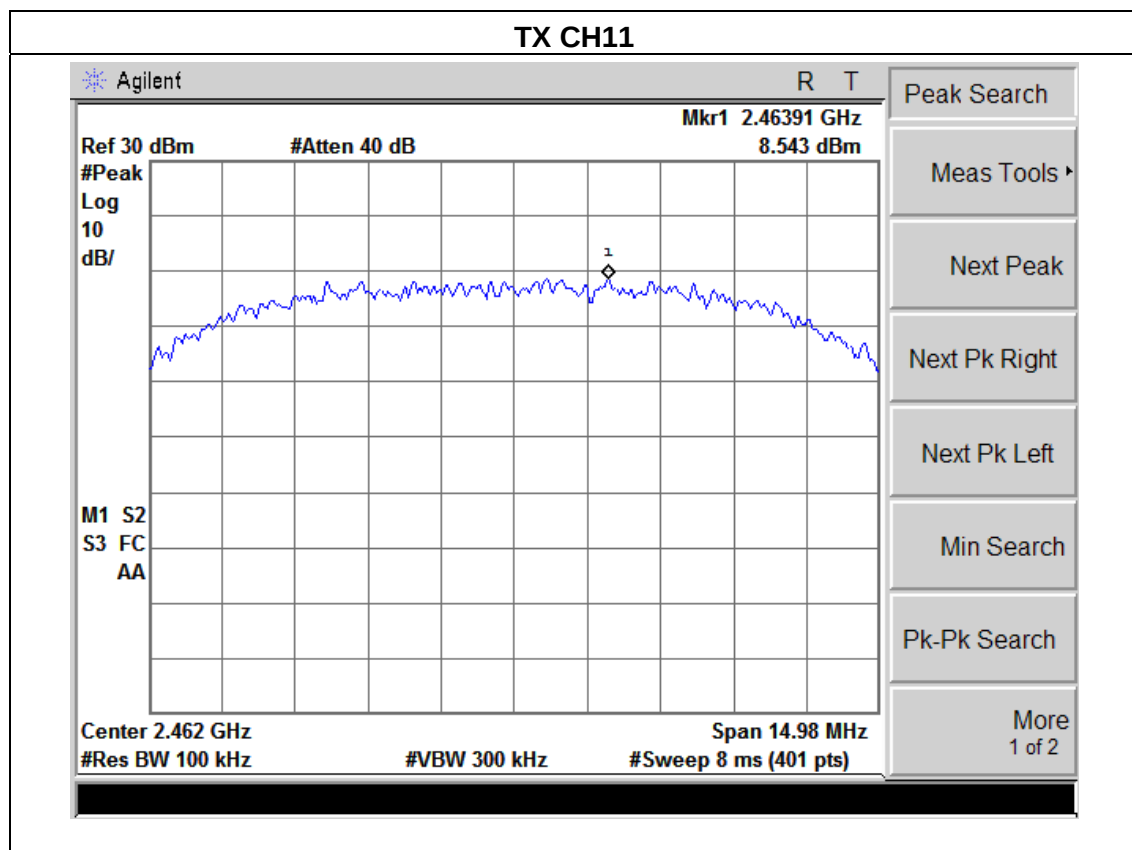
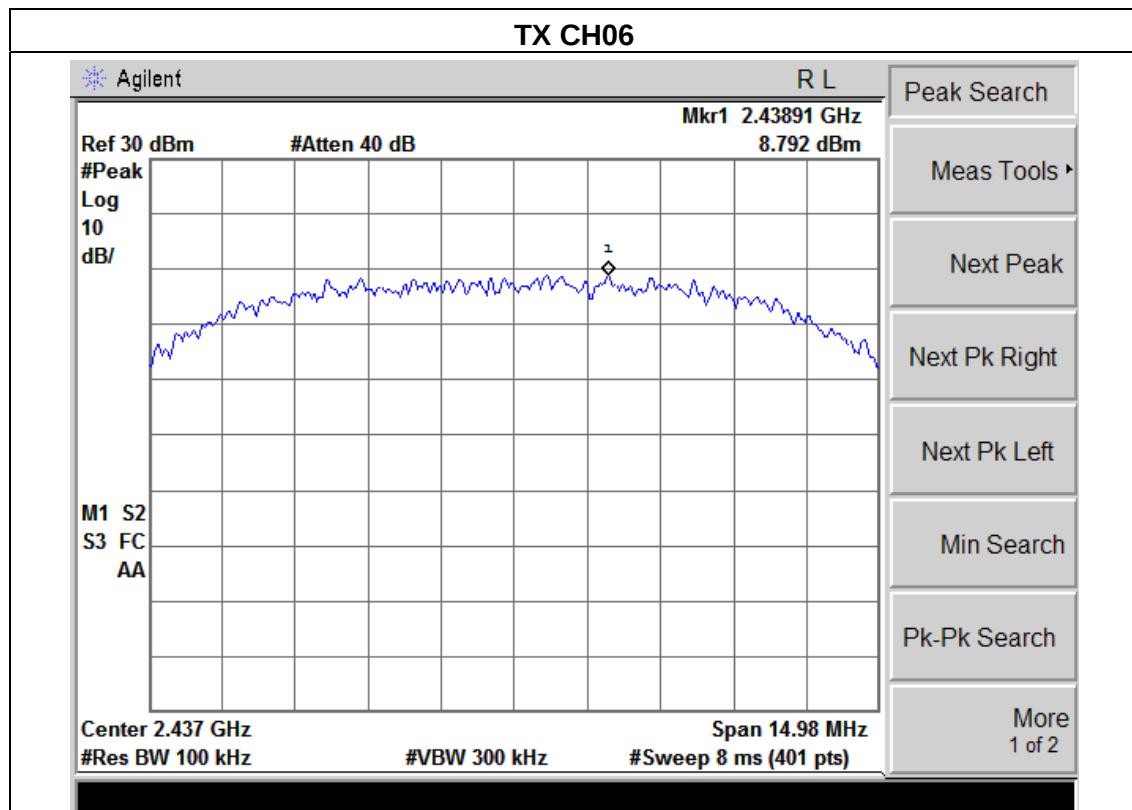
EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	120V/60Hz
Test Mode :	TX b Mode /CH01, CH06, CH11		

Frequency	Power Density (dBm)	PSD/ 3KHz (dBm)	Limit (dBm)	Result
2412 MHz	9.61	-5.59	8	PASS
2437 MHz	8.79	-6.41	8	PASS
2462 MHz	8.54	-6.66	8	PASS

Note:

BWCF = $10\log(3\text{ kHz}/100\text{ kHz}) = -15.2\text{ dB}$.



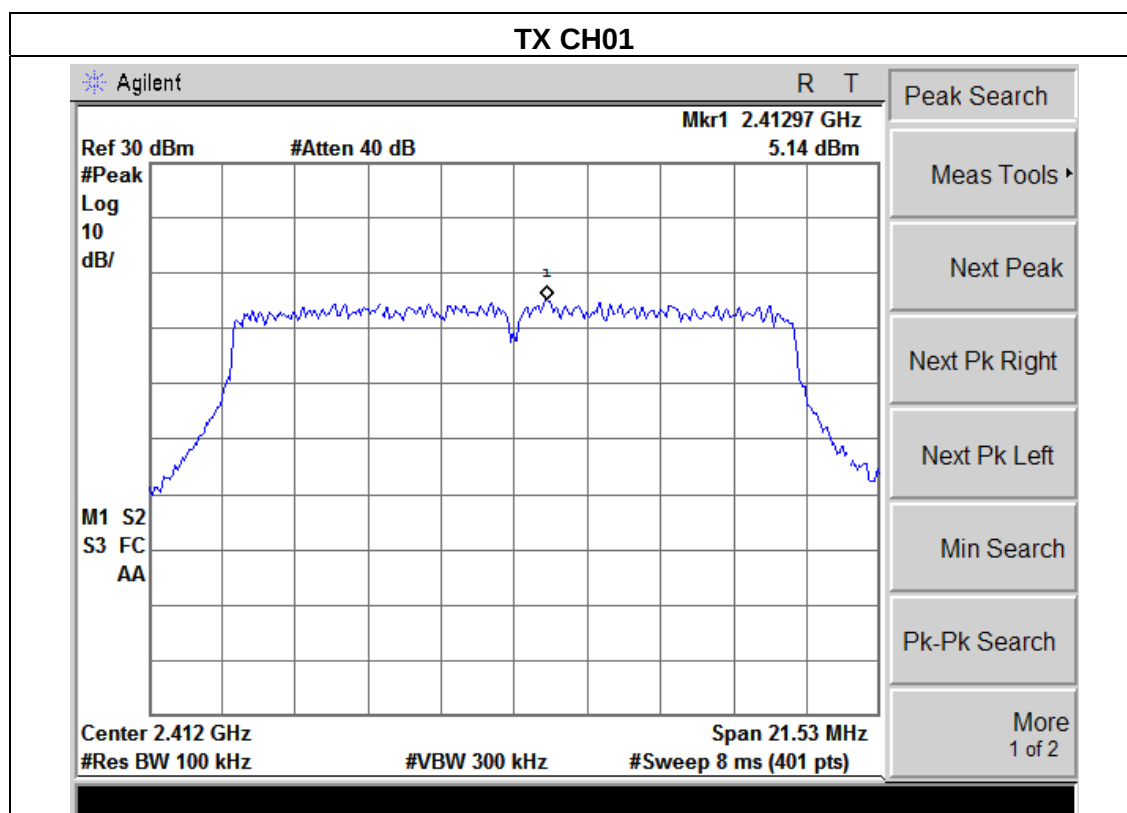


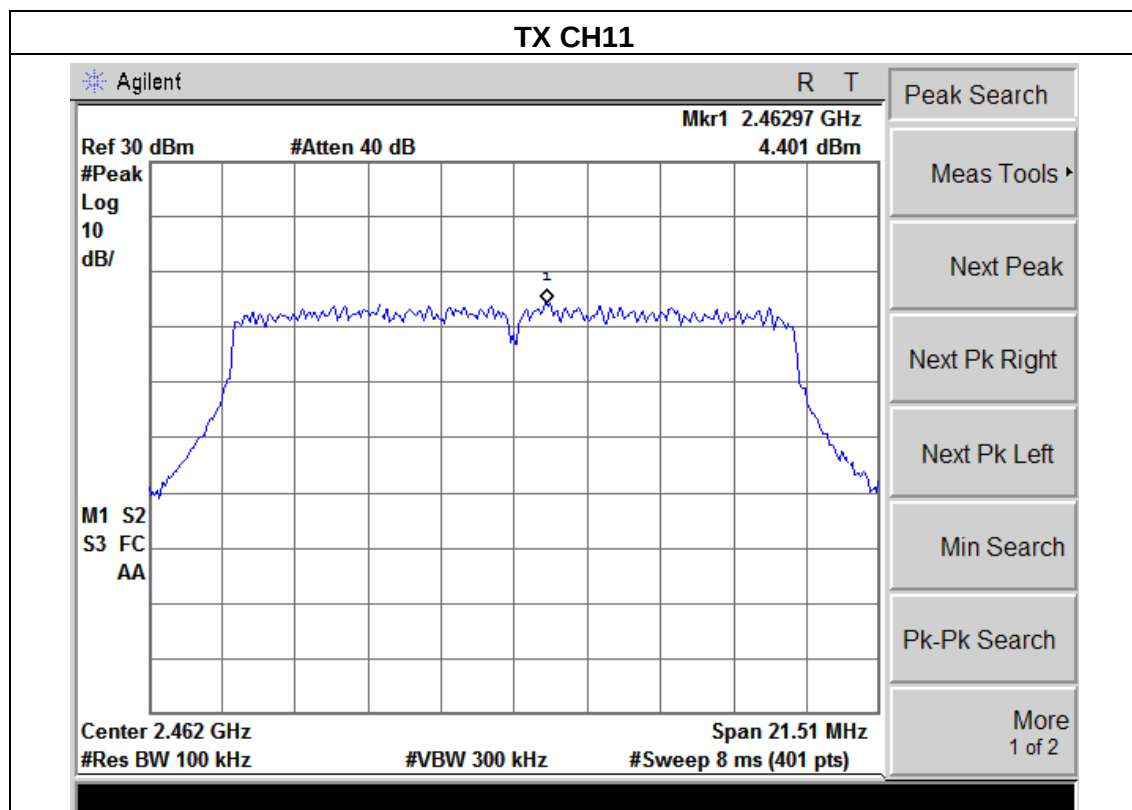
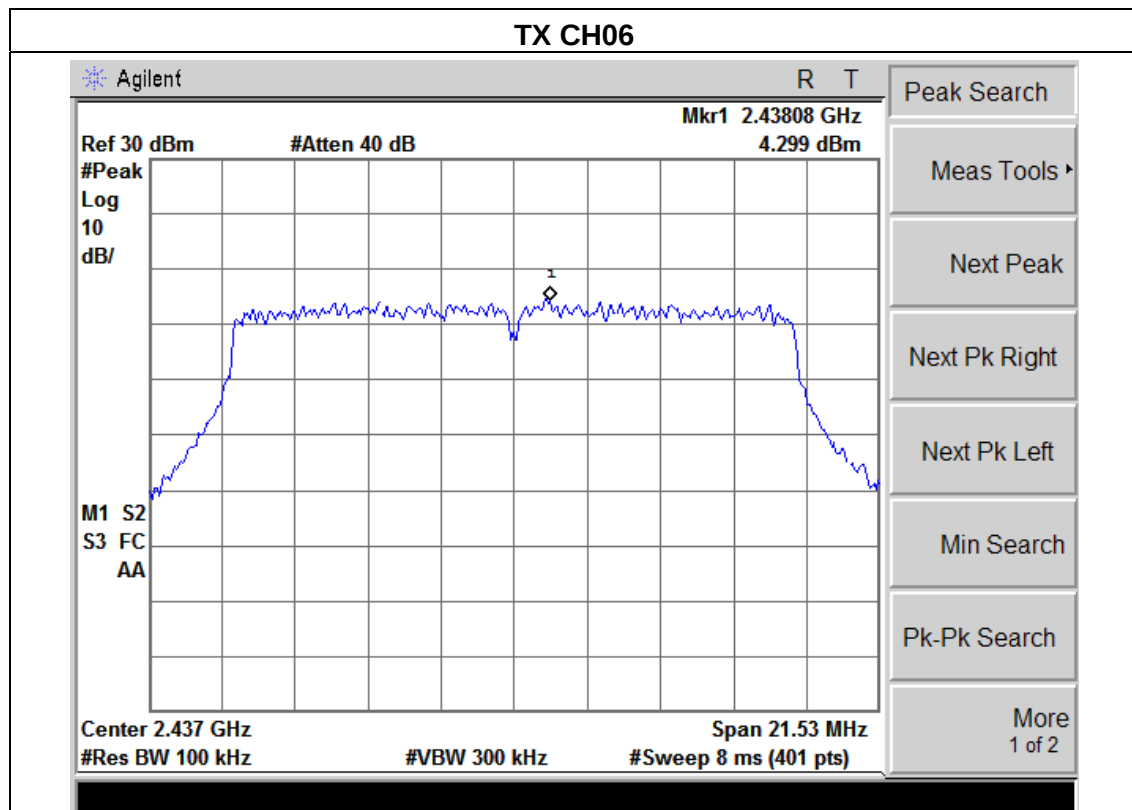
EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	120V/60Hz
Test Mode :	TX g Mode /CH01, CH06, CH11		

Frequency	Power Density (dBm)	PSD/ 3KHz (dBm)	Limit (dBm)	Result
2412 MHz	5.14	-10.06	8	PASS
2437 MHz	4.30	-10.90	8	PASS
2462 MHz	4.40	-10.80	8	PASS

Note:

BWCF = $10\log(3\text{ kHz}/100\text{ kHz}) = -15.2\text{ dB}$.





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

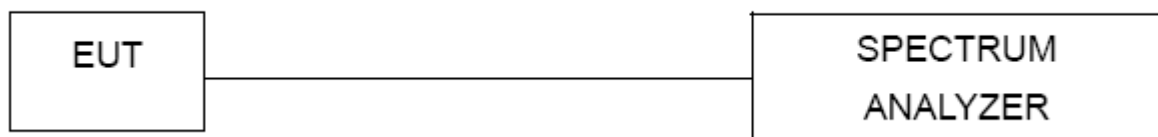
5.1.1 TEST PROCEDURE

- a.
1. The testing follows FCC KDB Publication No. 558074 D01 DTS Meas. Guidance v01.
 2. The RF output of EUT was connected to the spectrum analyzer by a low loss cable. The path loss was compensated to the results for each measurement.
 3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 1-5% of the emission bandwidth (EBW). Set the Video bandwidth (VBW) $\geq 3 * \text{RBW}$. In order to make an accurate measurement. The 6 dB bandwidth must be greater than 500 KHz.
 4. The marker-delta reading at this point is the 6 dB bandwidth of the emission.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



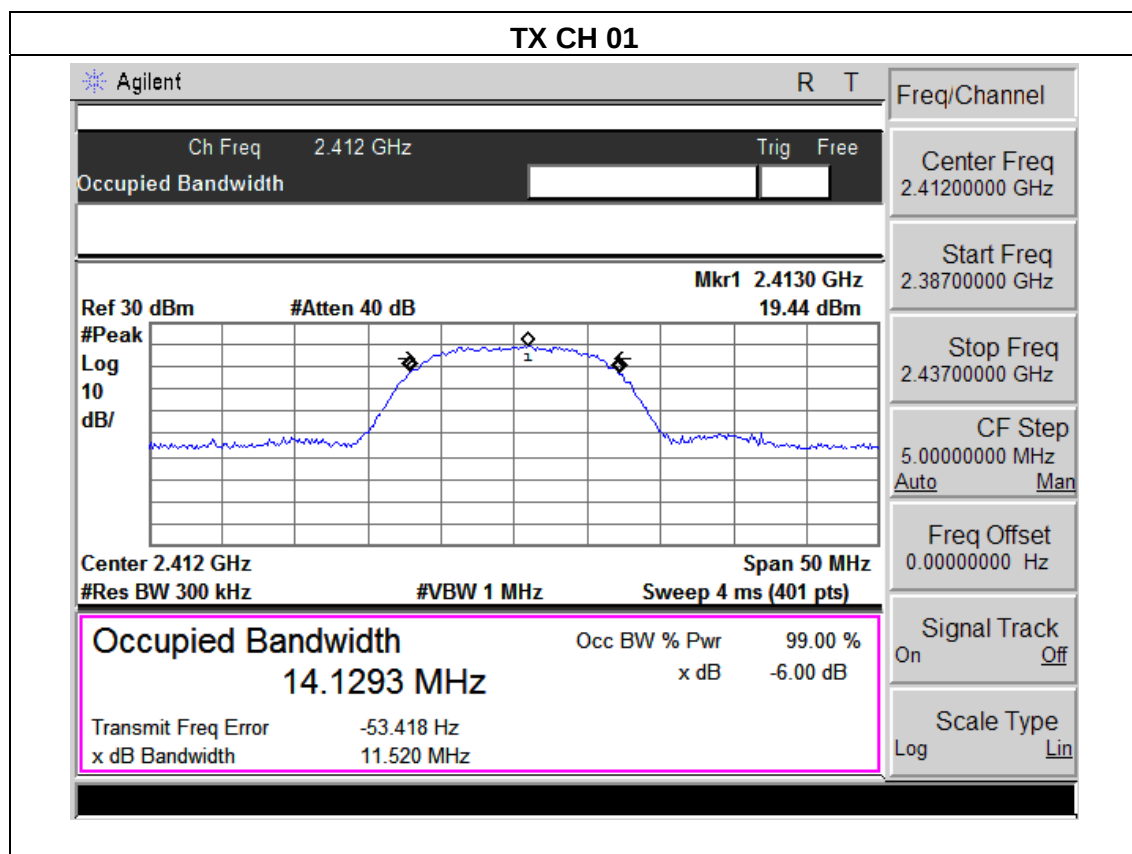
5.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

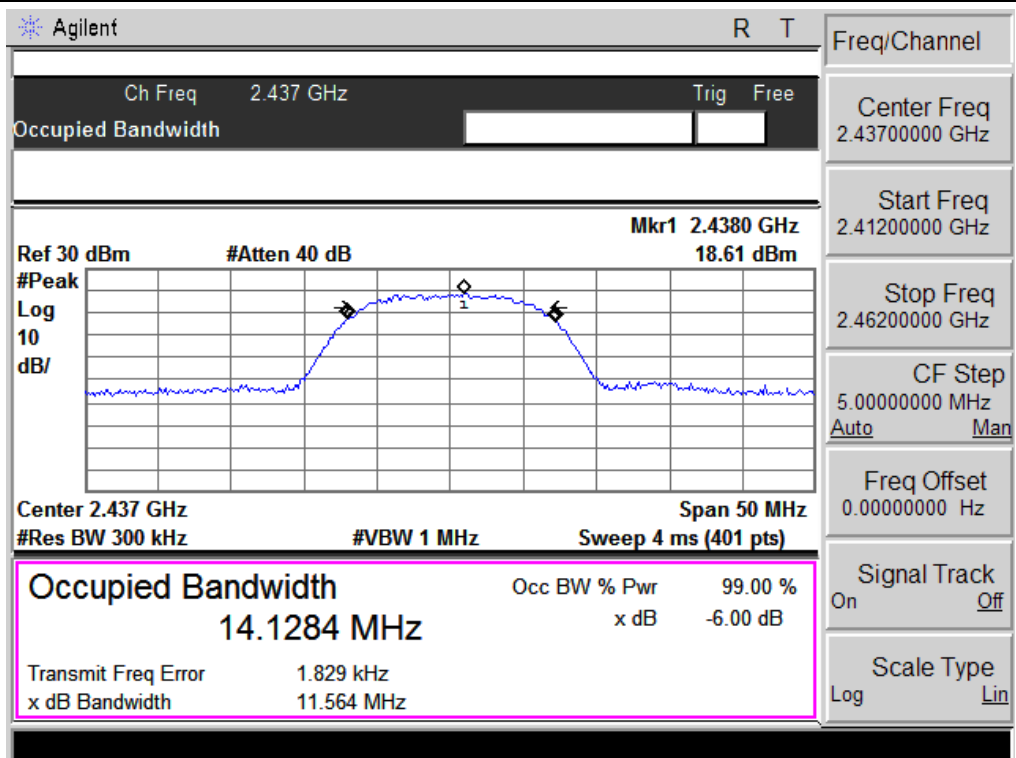
5.1.5 TEST RESULTS

EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	120V/60Hz
Test Mode :	TX b Mode /CH01, CH06, CH11		

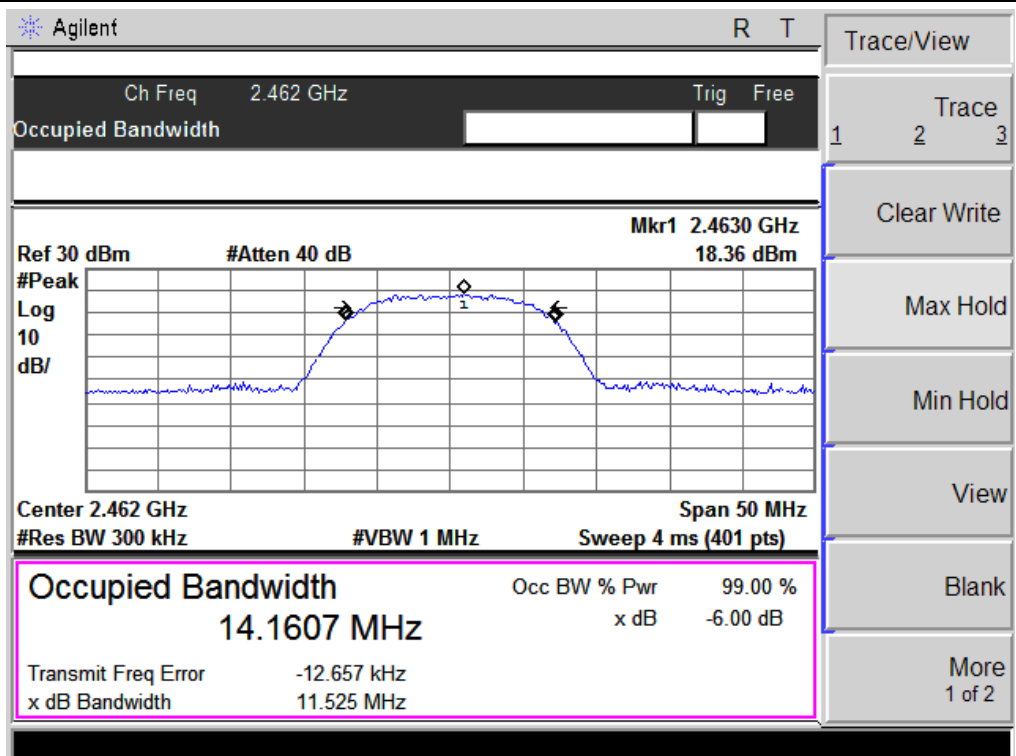
Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Channel Separation (MHz)	Result
2412 MHz	11.52	14.13	>=500KHz	PASS
2437 MHz	11.56	14.13	>=500KHz	PASS
2462 MHz	11.52	14.16	>=500KHz	PASS



TX CH 06

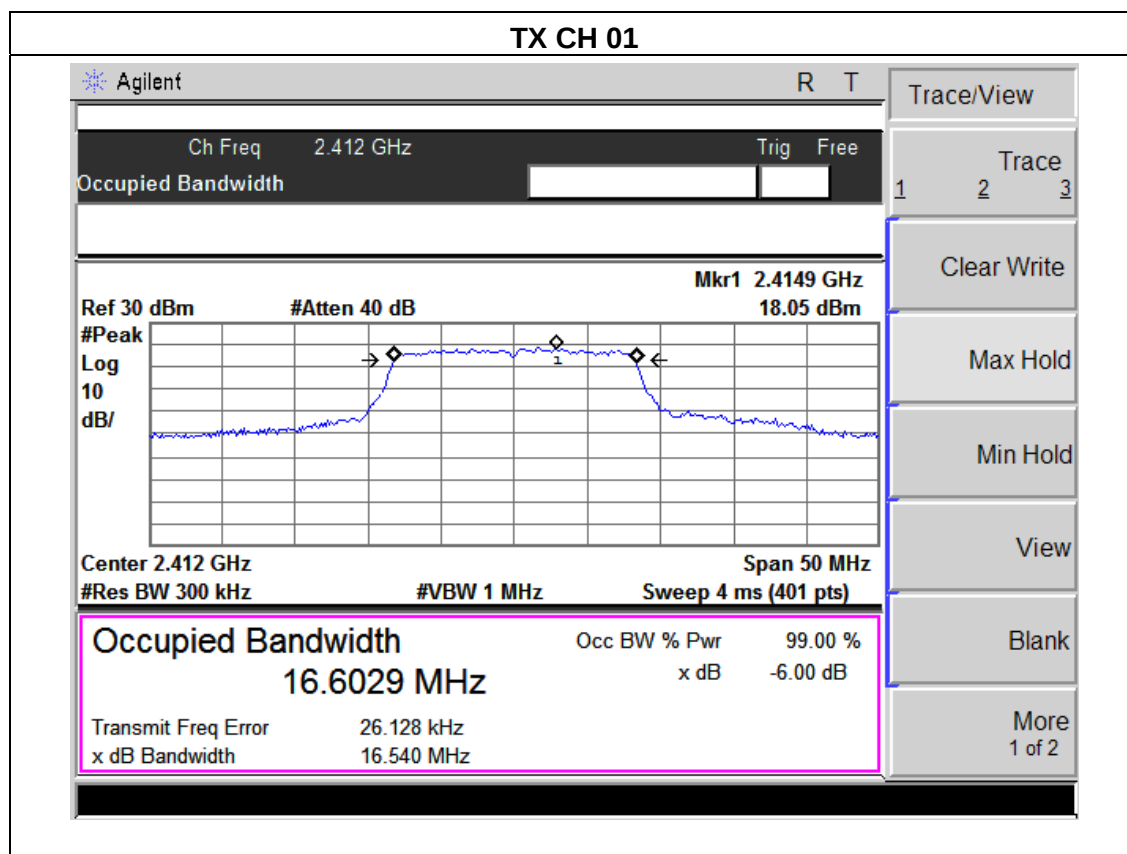


TX CH 11

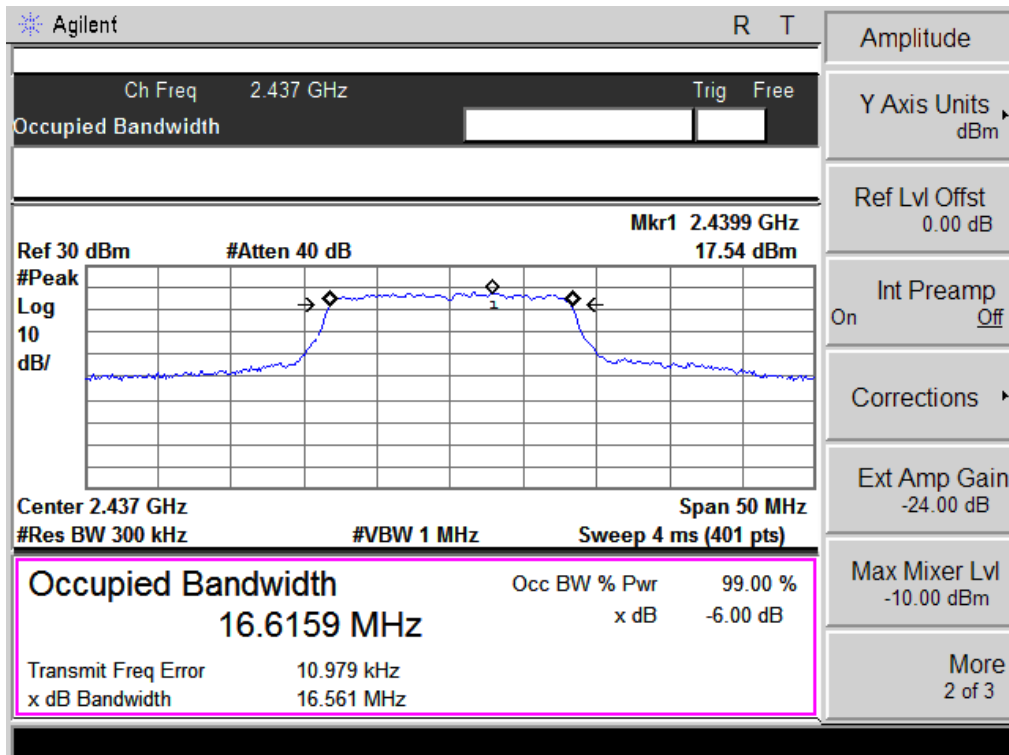


EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	120V/60Hz
Test Mode :	TX g Mode /CH01, CH06, CH11		

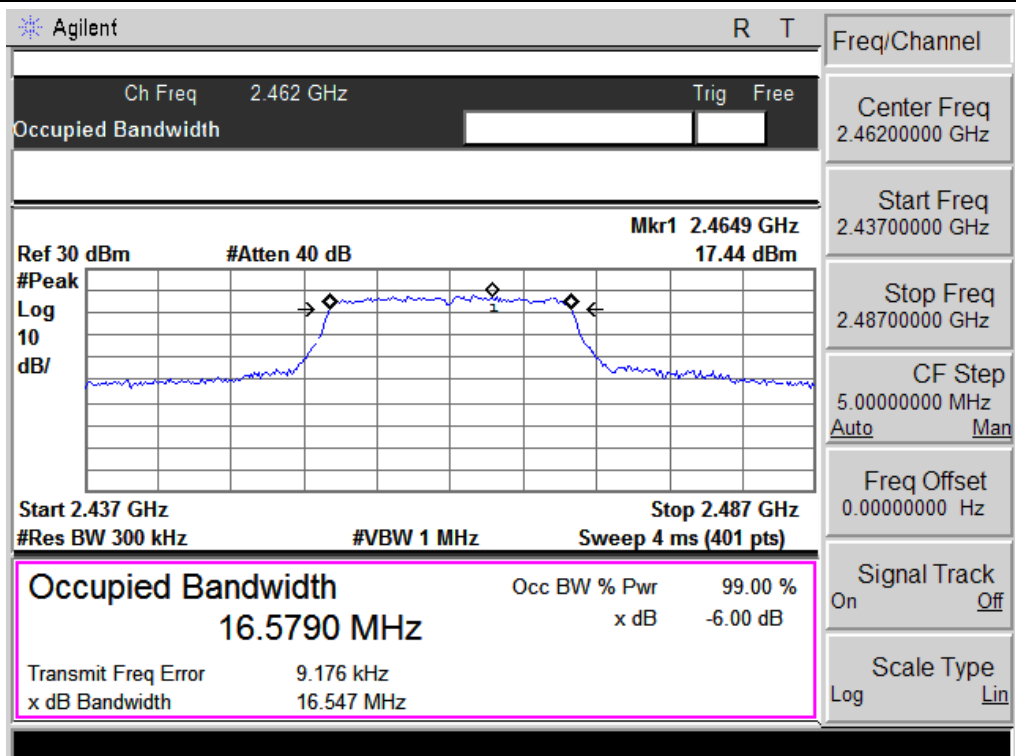
Frequency	6dB Bandwidth (MHz)	99% Occupied BW (MHz)	Channel Separation (MHz)	Result
2412 MHz	16.54	16.60	>=500KHz	PASS
2437 MHz	16.56	16.61	>=500KHz	PASS
2462 MHz	16.54	16.58	>=500KHz	PASS



TX CH 06



TX CH 11



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 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

EUT :	Android TV box	Model Name :	Surbox 918
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	120V/60Hz
Test Mode :	TX b/g Mode /CH01, CH06, CH11		

TX 802.11b Mode				
Test Channe	Frequency (MHz)	Peak output power. Antenna port (dBm)	Antenna Gain dBi	LIMIT dBm
CH01	2412	17.93	2.0	30
CH06	2437	17.74	2.0	30
CH11	2462	17.52	2.0	30
TX 802.11g Mode				
CH01	2412	15.86	2.0	30
CH06	2437	15.23	2.0	30
CH11	2462	15.25	2.0	30

7. ANTENNA REQUIREMENT

7.1 STANDARD REQUIREMENT

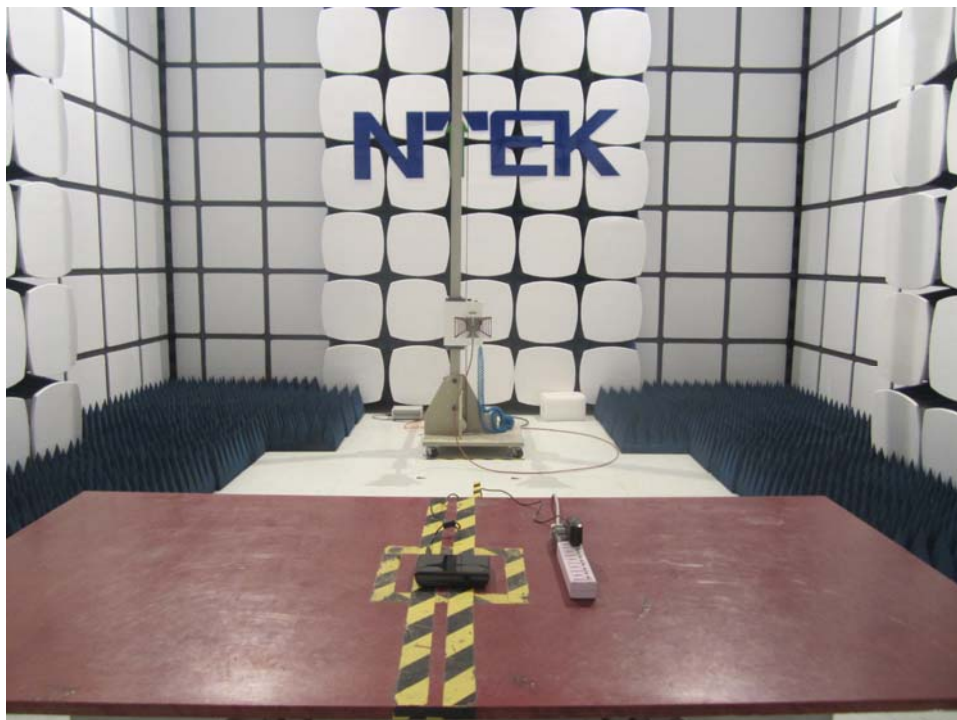
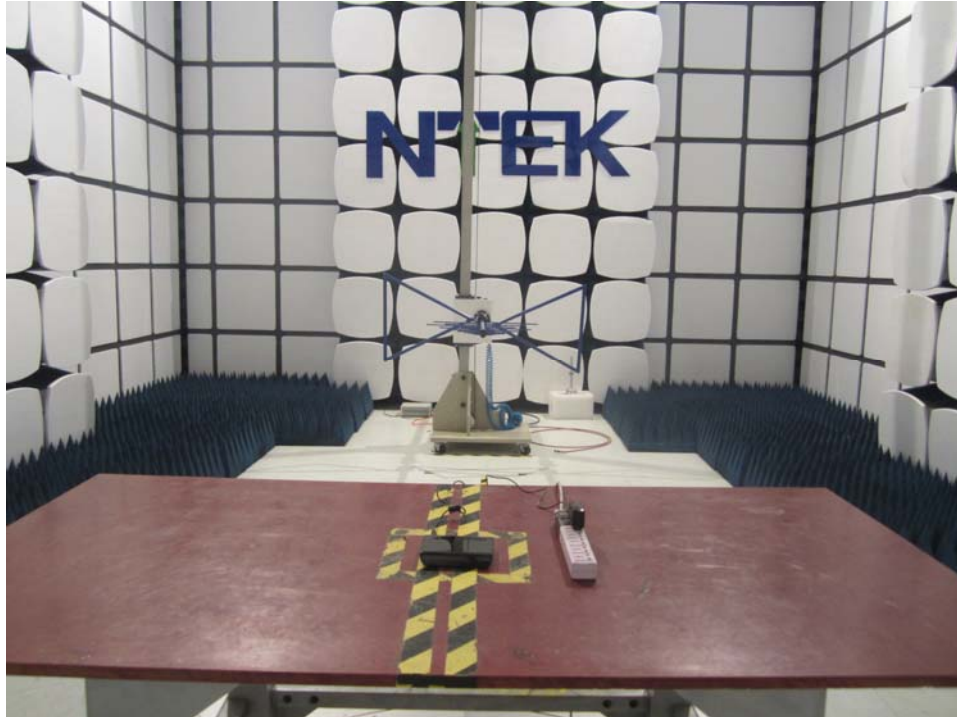
15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

7.2 EUT ANTENNA

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

8. EUT TEST PHOTO

Radiated Measurement Photos



Conducted Measurement Photos

