FCC TEST REPORT

For

SHENZHEN BAICHUAN SECURITY TECHNOLOGY CO., LTD

WIFI Network Video recorder
Model No.: SRNVR-460H, SRNVR-460N

Test Report Number : ESTSZ140901213F

Shenzhen Exact Standard Testing Technology Co., Ltd.
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1 - GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	SHENZHEN BAICHUAN SECURITY TECHNOLOGY CO., LTD
Address of applicant:	2F, Building B, Jingmeiwei Industrial Park, Hi-tech Industrial Area, Guanlan Town, Baoan District, Shenzhen City, China
Manufacturer:	SHENZHEN BAICHUAN SECURITY TECHNOLOGY CO., LTD
Address of manufacturer:	2F, Building B, Jingmeiwei Industrial Park, Hi-tech Industrial Area, Guanlan Town, Baoan District, Shenzhen City, China

General Description of E.U.T

EUT Description:	WIFI Network Video recorder
Trade Name:	Swann
Model No.:	SRNVR-460H, SRNVR-460H
	Note: The two samples are same except the model number and appearance of the equipment, so all the test performed on the "SRNVR-460H".
Rating:	AC 100-240V, 50/60Hz
Test Power Supply:	AC 120V, 60Hz
Frequency:	2412~2462 MHz (11 channels, 5MHz step size)

1.2 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with

FCC Rules and Regulations Part 15 Subpart C 15.207, 15.209 and 15.247: 2009

The objective of the manufacturer is to demonstrate compliance with the described above standards.

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Shenzhen Exact Standard Testing Technology Co., Ltd.

Date of Test : Oct. 08~31, 2014

Prepared by : (Testing Engineer: David He)

Reviewer : (Project Manager: Charles Liu)

Approved & Authorized Signer : (Manager: Ronnie Liu)

1.3 Test Methodology

The tests were performed according to following standards:
FCC Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.
ANSI C63.4-2009
ANSI C63.10-2009: American National Standard for Testing Unlicensed Wireless Devices.
KDB Publication No. 558074 Guidance on Measurements for Digital Transmission Systems

The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

The maximum emission levels emanating from the device are compared to the FCC Part 15 Subpart C limits for radiation emissions and the measurement results contained in this test report show that EUT is to be technically compliant with FCC requirements.

Global United Technology Service Co., Ltd at 2nd Floor, Block No.2, Laodong Industrial Zone,Xixiang Road, Baoan District, Shenzhen, China

1.4 Test Facility

All measurement required was performed at laboratory of Global United Technology Service Co., Ltd at 2nd Floor, Block No.2, Laodong Industrial Zone,Xixiang Road, Baoan District, Shenzhen, China

The test facility is recognized, certified, or accredited by the following organizations:

FCC – Registration No.: 600491
Global United Technology Service Co., Ltd has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 600491.

The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

1.6 Test Equipment List and Details

Equipment	Manufacturer	Model#	Serial #	Data of Cal.	Due Data
3m Semi-Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS201	Mar. 30 2014	Mar. 30 2015
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS202	N/A	N/A
Spectrum Analyzer	Agilent	E4440A	GTS533	Dec. 06, 2013	Dec. 05, 2014
EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Mar. 30 2014	Mar. 30 2015
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Coaxial Cable	GTS	N/A	GTS400	Apr. 01 2014	Apr. 01 2015
Coaxial Cable	GTS	N/A	GTS401	Apr. 01 2014	Apr. 01 2015
Coaxial Cable	GTS	N/A	GTS402	Apr. 01 2014	Apr. 01 2015
Coaxial Cable	GTS	N/A	GTS407	Apr. 01 2014	Apr. 01 2015
Coaxial Cable	GTS	N/A	GTS408	Apr. 01 2014	Apr. 01 2015
BiConiLog Antenna (26-3000MHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS204	Feb. 26 2014	Feb. 26 2015
Pre-amplifier(0.1-3000MHz)	HP	8347A	GTS210	Aug. 03 2014	Aug. 03 2015
Double-ridged horn (1-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS205	Feb. 26 2014	Feb. 26 2015
Pre-amplifier(1-18GHz)	Rohde & Schwarz	8349B	GTS224	Mar. 30 2014	Mar. 30 2015
Humidity/ Temperature Indicator	Shanghai	ZJ1-2B	GTS250	Oct. 28 2013	Oct. 28 2014
Barometer	ChangChun	DYM3	GTS251	Feb. 26 2014	Feb. 26 2015
Shielding Room	ZhongYu Electron	7.0(L)*3.0(W)*3.0(H)	GTS206	Apr. 10 2014	Apr. 10 2015
EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS208	Sept. 14 2014	Sept. 14 2015
10dB Pulse Limiter	Rohde & Schwarz	N/A	GTS209	Sept. 14 2014	Sept. 14 2015
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS207	Apr. 14 2014	Apr. 14 2015
Coaxial Cable	GTS	N/A	GTS406	Apr. 01 2014	Apr. 01 2015
Loop Antenna	ETS-Lindgren	6502	00082431	Apr. 14 2014	Apr. 14 2015
Double-ridged horn (15-26.5GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA-9170	GTS211	Apr. 01 2014	Apr. 01 2015

2 TEST CONFIGURATION

2.1 Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software offered by manufacture, can let the EUT being normal operation.

2.3 Special Accessories

As shown in section 2.5, interface cable used for compliance testing is shielded as normally supplied by **SHENZHEN BAICHUAN SECURITY TECHNOLOGY CO., LTD** and its respective support equipment manufacturers.

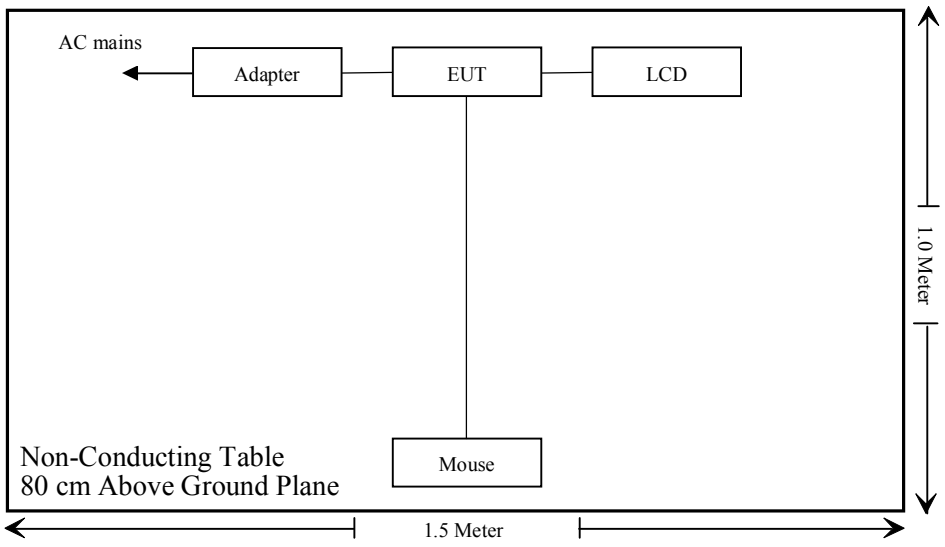
2.4 Equipment Modifications

The EUT tested was not modified by EST.

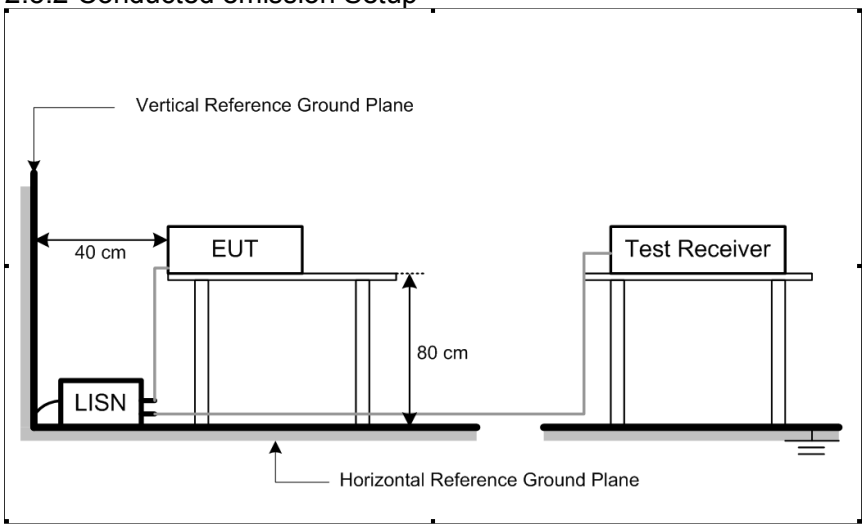
2.5 Basic Test Setup Block Diagram

2.5.1 Setup on the tabletop

Adapter:	Model: DWB1301000W1A AC 100-240V, 50/60Hz; DC Cable: 1.5 meters, without core
LCD:	Model: TFT24660 A G AC 100-240V, 50/60Hz
Mouse:	Model: MODGUO USB Cable: 1.2 meters, without core

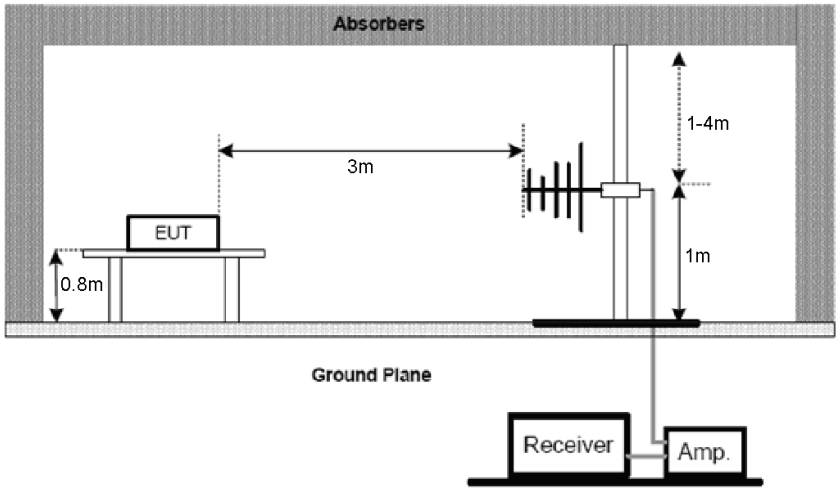


2.5.2 Conducted emission Setup

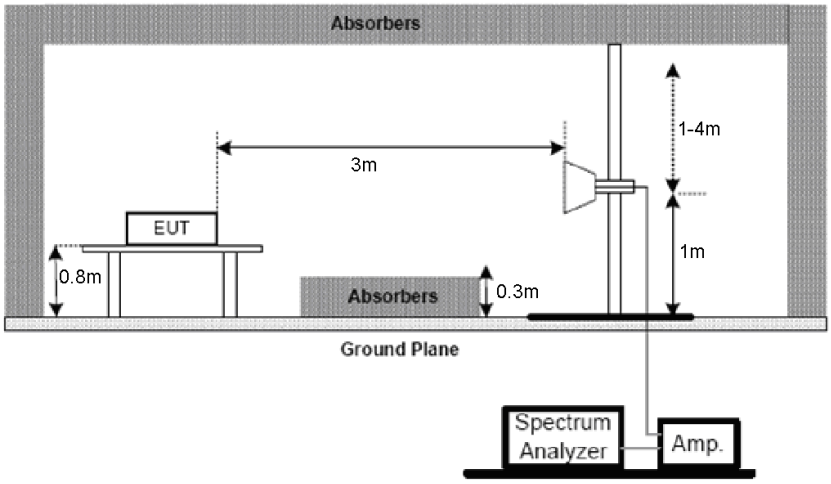


2.5.3 Radiated Emission Setup

1GHz below



1GHz above



2.6 Pre-Scanned RF Power

Preliminary tests were performed in different data rate as following table and the highest power data rates were chosen for full test in the following tables.

802.11B mode				
Data Rata(MHz)	1M bps	2M bps	5.5M bps	11M bps
Peak Power(dBm)	9.11	9.08	9.24	9.63

802.11G mode								
Data Rata(MHz)	6M bps	9M bps	12M bps	18M bps	24M bps	36M bps	48M bps	54M bps
Peak Power(dBm)	8.69	8.73	7.72	8.77	8.75	8.80	8.89	9.01

802.11N HT20 mode								
Data Rata(MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power(dBm)	6.98	6.95	7.03	7.14	7.12	7.20	7.21	7.28

802.11N HT40 mode								
Data Rata(MHz)	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
Peak Power(dBm)	6.61	6.59	6.75	6.79	6.90	6.94	6.92	7.01

2.7 Test mode

Test Item	Mode	Data Rate	Channel
AC Power Conducted Emission	Normal Link	11 Mbps	1
Maximum Peak Conducted Output Power Power Spectral Density 6dB Bandwidth Spurious RF conducted emission	11b/DSSS	11 Mbps	1/6/11
	11g/OFDM	54 Mbps	1/6/11
	11n(20MHz)/OFDM	65Mbps	1/6/11
	11n(40MHz)/OFDM	135Mbps	3/6/9
Radiated Emission 30MHz~1GHz Radiated Emission 1GHz~10th Harmonic	11b/DSSS	11 Mbps	1/6/11
	11g/OFDM	54 Mbps	1/6/11
	11n(20MHz)/OFDM	65Mbps	1/6/11
	11n(40MHz)/OFDM	135Mbps	3/6/9
Band Edge Compliance of RF Emission	11b/DSSS	11 Mbps	1/6/11
	11g/OFDM	54 Mbps	1/6/11
	11n(20MHz)/OFDM	65Mbps	1/6/11
	11n(40MHz)/OFDM	135Mbps	3/6/9

3 - DISTURBANCE VOLTAGE AT THE MAINS TERMINALS

3.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ±2.4 dB.

3.2 Limit of Disturbance Voltage at The Mains Terminals (FCC PART 15.207)

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150～0.500	66~56	56~46
0.500～5.000	56	46
5.000～30.00	60	50

Note: (1)The tighter limit shall apply at the edge between two frequency bands.
(2) Decreases with the logarithm of the frequency.

3.3 EUT Setup

The setup of EUT is according with ANSI C63.4-2009 measurement procedure. The specification used was the FCC Rules and Regulations Part 15.207 limits.

The EUT was placed center and the back edge of the test table.

The spacing between the peripherals was 10 cm.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

3.4 Instrument Setup

The test receiver was set with the following configurations:

Test Receiver Setting:

Frequency Range……..150 KHz to 30 MHz
Detector……..Peak & Quasi-Peak & Average
Sweep Speed……Auto
IF Band Width……..…..9 KHz

3.5 Test Procedure

During the conducted emission test, the EUT power cord was connected to the auxiliary outlet of the first Artificial Mains.

Maximizing procedure was performed on the highest emissions to ensure EUT compliance using all installation combination.

All data was recorded in the peak detection mode. Quasi-peak and Average readings were only performed when an emission was found to be marginal (within -10 dBμV of specification limits). Quasi-peak readings are distinguished with a "**QP**". Average readings are distinguished with a "**AV**".

3.6 Test Situation

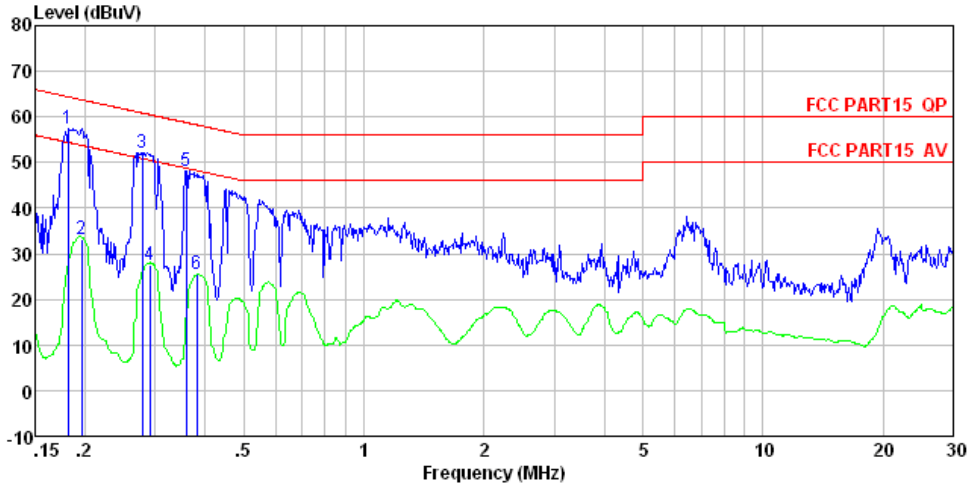
Temperature (℃)	22
Humidity (%RH)	58
Barometric Pressure (mbar)	1001
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operating Mode	TX + Operation Mode

Remark: (1) When PK reading is less than relevant limit 20dB, the QP reading and AV reading will not be recorded.
(2) Where QP reading is less than relevant AV limit, the AV reading will not be measured
(3) When AV reading is less than relevant limit 20dB, the AV reading will not be recorded.

3.7 Test Result

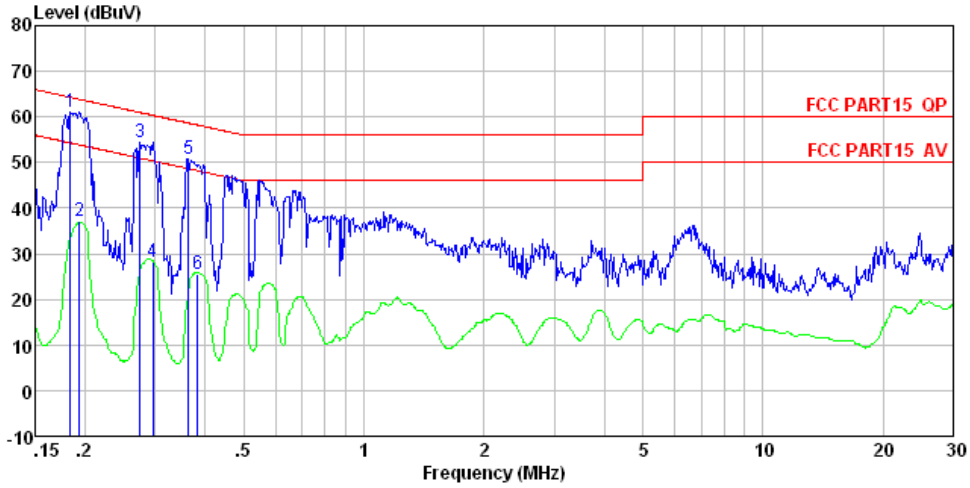
Pass

Details see the following pages.



Condition : FCC PART15 QP LISN-2013 LINE
EUT : WIFI Network Video Recorder
Model : SRNVR-460H
Test Mode : TX + Operation Mode
Power Rating : AC 120V/60Hz
Test Engineer: David

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.182	57.29	0.14	0.13	57.56	64.42	-6.86	QP
2	0.197	33.03	0.14	0.13	33.30	53.76	-20.46	Average
3	0.279	52.05	0.11	0.10	52.26	60.85	-8.59	QP
4	0.291	27.38	0.11	0.10	27.59	50.50	-22.91	Average
5	0.360	47.87	0.11	0.10	48.08	58.74	-10.66	QP
6	0.381	25.36	0.11	0.10	25.57	48.25	-22.68	Average



Condition : FCC PART15 QP LISN-2013 NEUTRAL
EUT : WIFI Network Video Recorder
Model : SRNVR-460H
Test Mode : TX + Operation Mode
Power Rating : AC 120V/60Hz
Test Engineer: David

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.182	60.85	0.07	0.13	61.05	64.33	-3.28	QP
2	0.193	36.85	0.07	0.13	37.05	53.89	-16.84	Average
3	0.274	54.22	0.06	0.10	54.38	60.98	-6.60	QP
4	0.296	28.15	0.06	0.10	28.31	50.37	-22.06	Average
5	0.363	50.64	0.06	0.10	50.80	58.65	-7.85	QP
6	0.383	25.45	0.06	0.10	25.61	48.21	-22.60	Average

4 - FCC Part 15.247 Requirements

Testing was performed in accordance with CFR 47 Part 15.247 and FCC KDB No. 558074 DTS D01 Meas. Guidance v03r01.
This test measures the levels emanating from the EUT, thus evaluating the potential for the EUT to cause radio frequency interference to other electronic devices.

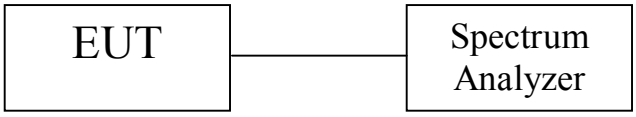
4.1 Output Power Requirements

The maximum output power requirement is the maximum equivalent isotropic radiated power delivering at the transmitting antenna under specified conditions of measurements in the presence of modulation.
The maximum output power and harmonics shall not exceed CFR47 Part 15.247 (b3, b4).
The maximum transmitted power is + 30 dBm or 1 Watt.

4.1.1 Test Method

The conducted method was used to measure the channel power output according to ANSI C63.4:2009 and FCC KDB No. 558074 DTS D01 Meas. Guidance v03r01. The measurement was performed with modulation per CFR47 Part 15.247 (b3).
This test was conducted on 3 channels of Sample. The worst mode result indicated below.

Test Setup



4.1.2 Test Results

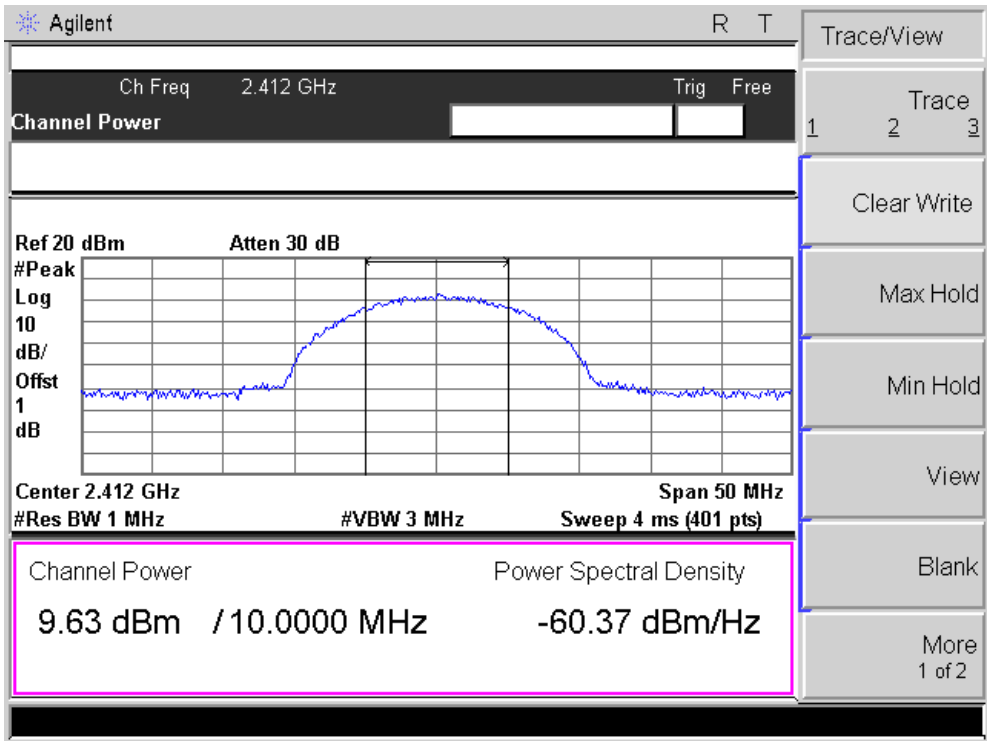
Please refer the following pages.

Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11B Mode CH01 / CH06 / CH11
Testing Engineer	David

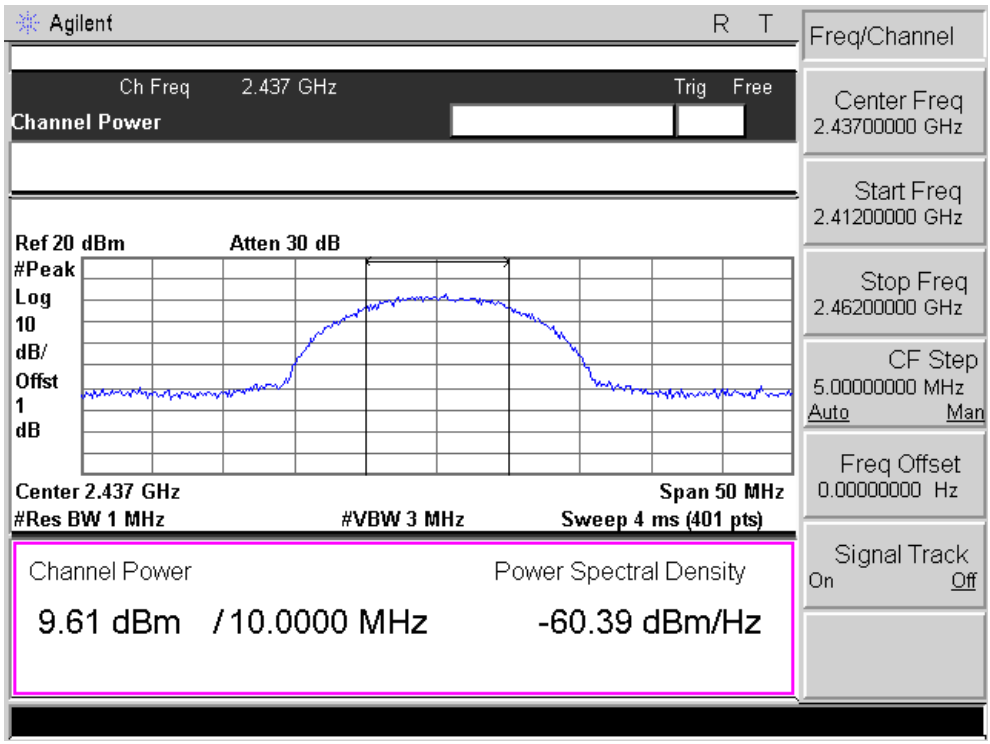
Output Power			
Operating Channel (MHz)	Limit (dBm)	Output Level (dBm)	Result
2412	30	9.63	Pass
2437	30	9.61	Pass
2462	30	9.03	Pass

Result: Pass

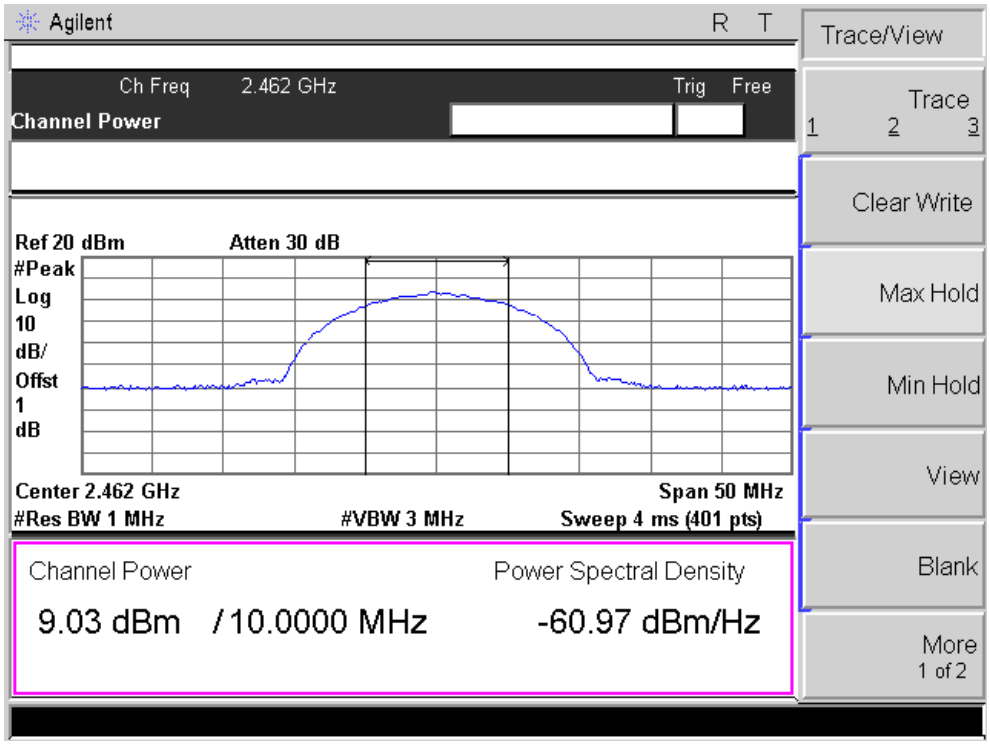
Mode: CH01



Mode: CH06



Mode: CH11

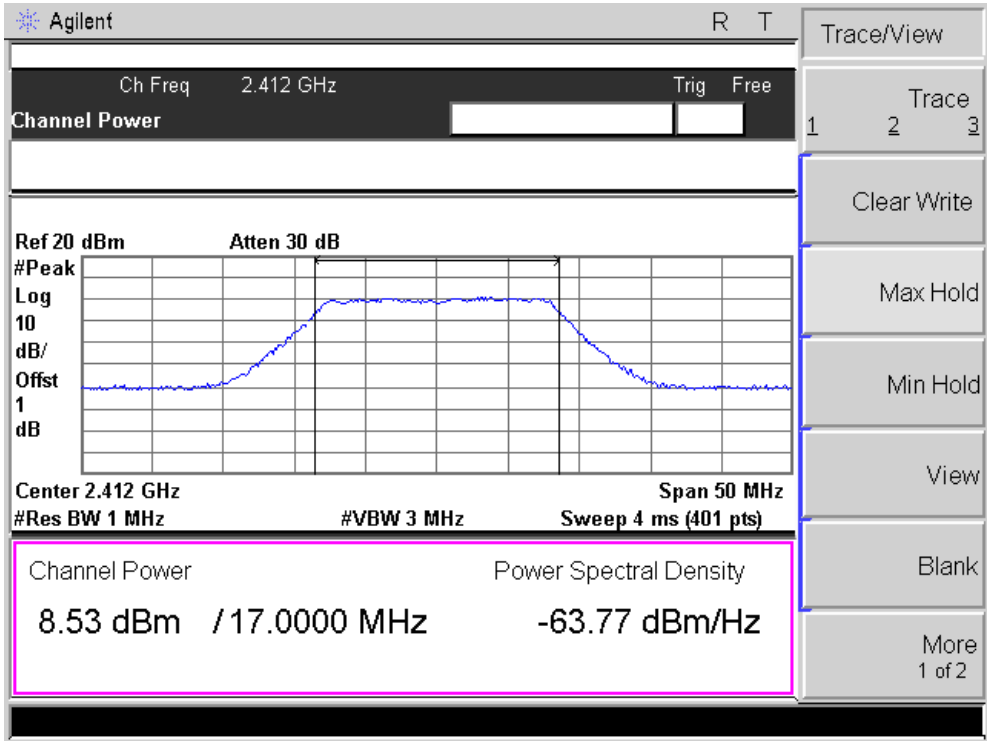


Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11G Mode CH01 / CH06 / CH11
Testing Engineer	David

Output Power			
Operating Channel (MHz)	Limit (dBm)	Output Level (dBm)	Result
2412	30	8.53	Pass
2437	30	9.03	Pass
2462	30	8.67	Pass

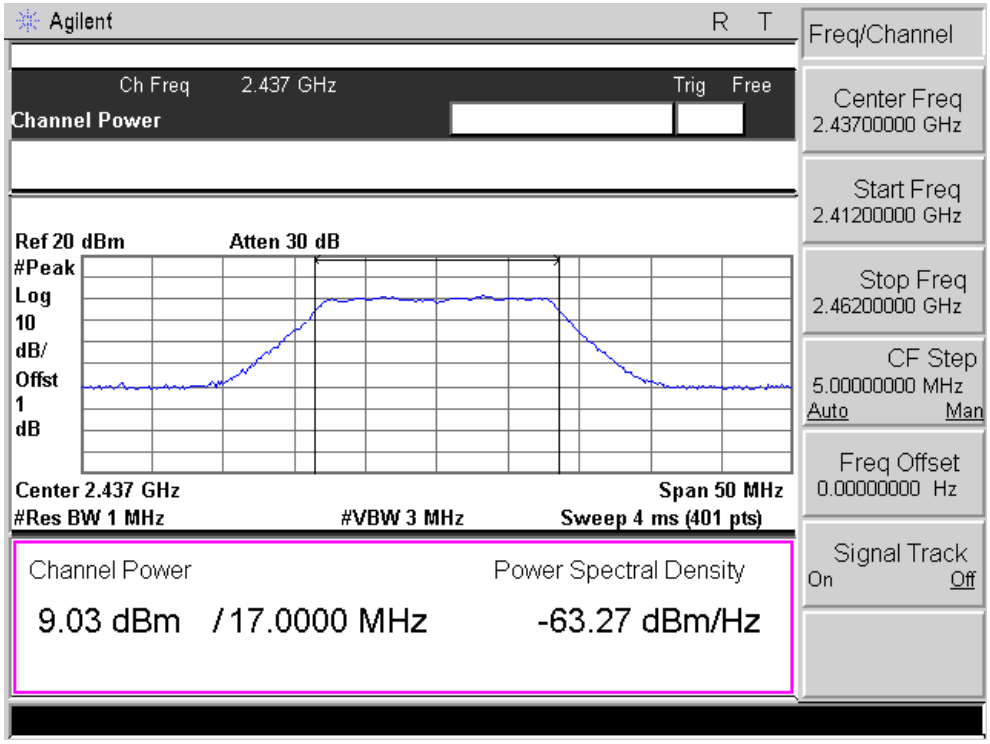
Result: Pass

Mode: CH01

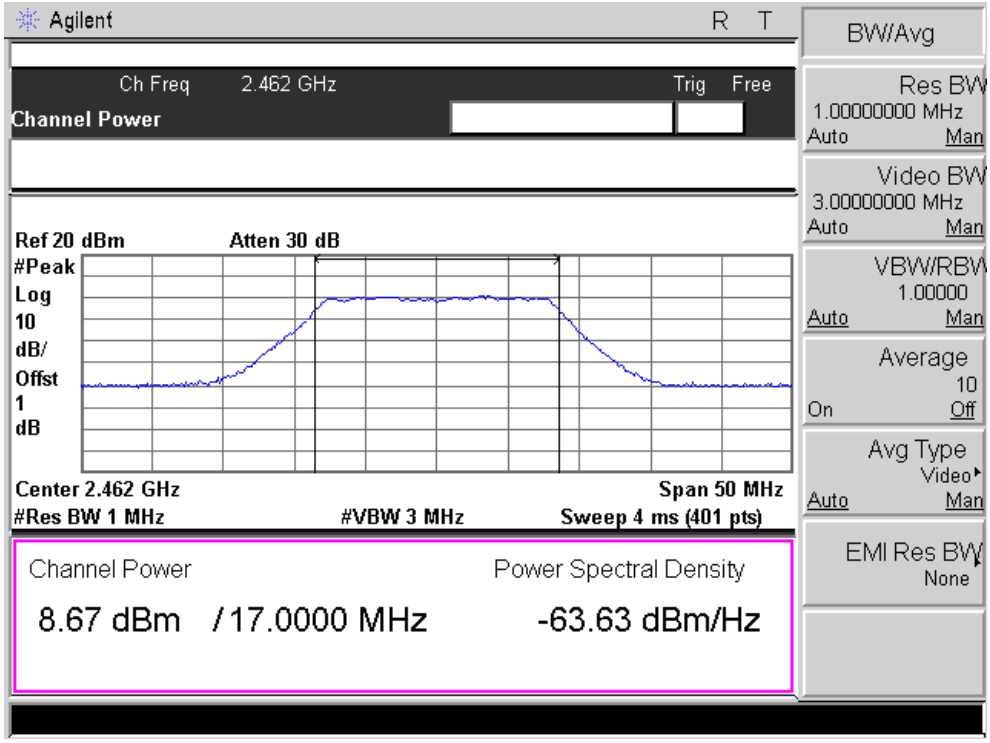


FCC ID: 2ABN7-460NVR

Mode: CH06



Mode: CH11



Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11N20 Mode CH01 / CH06 / CH11
Testing Engineer	David

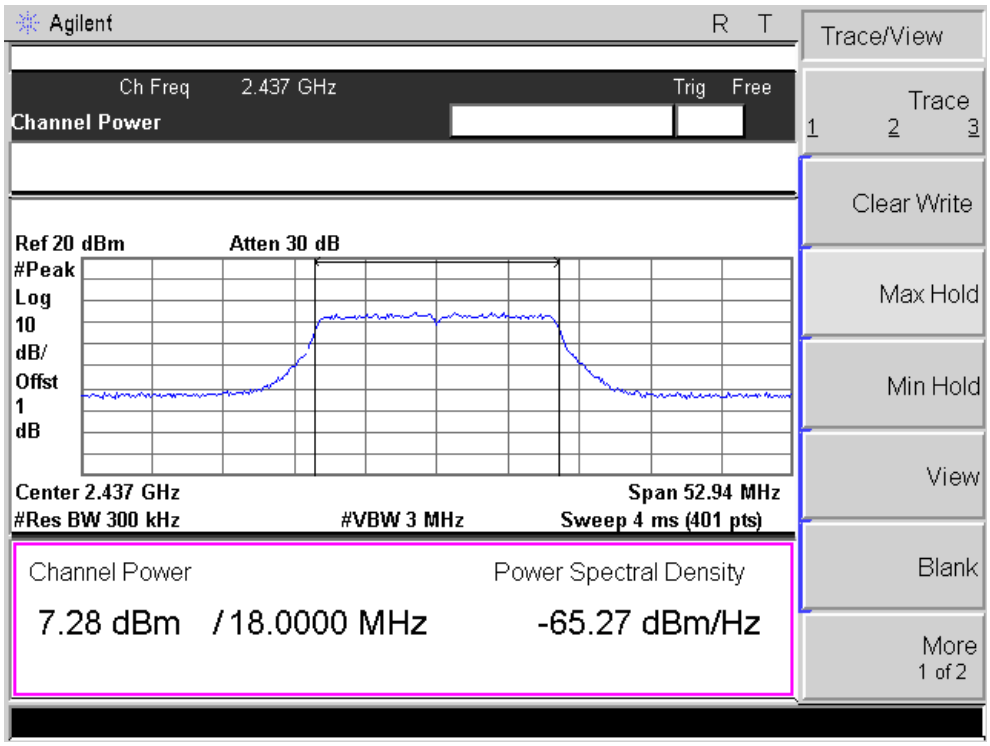
Output Power			
Operating Channel (MHz)	Limit (dBm)	Output Level (dBm)	Result
2412	30	7.02	Pass
2437	30	7.28	Pass
2462	30	7.22	Pass

Result: Pass

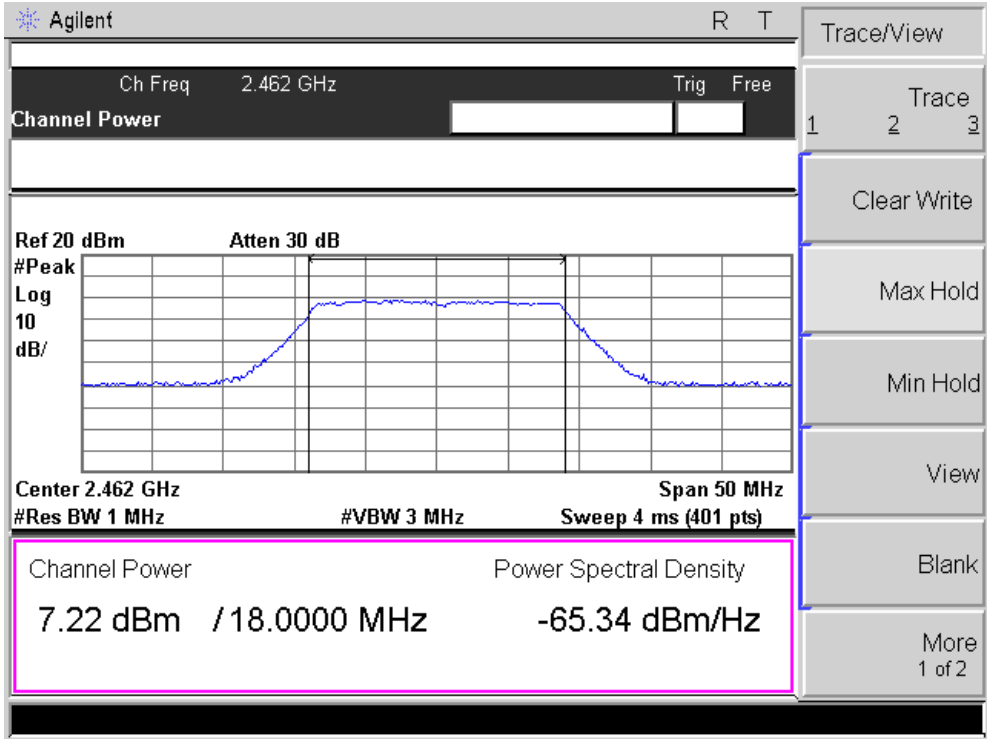
Mode: CH01

FCC ID: 2ABN7-460NVR

Mode: CH06



Mode: CH11

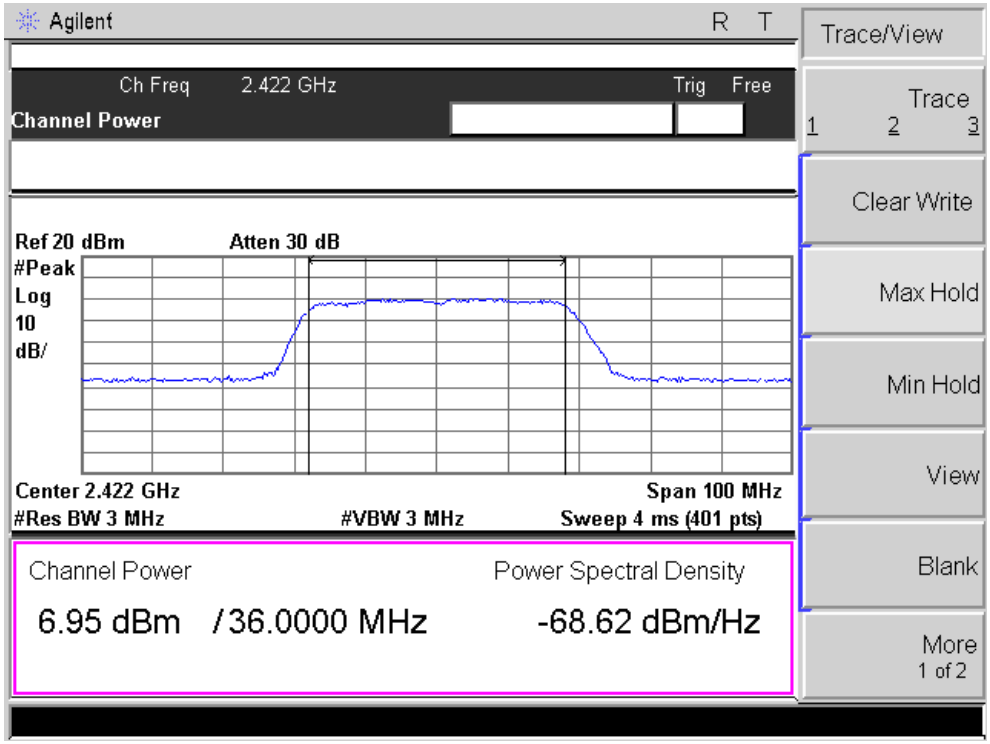


Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11N40 Mode CH03 / CH06 / CH09
Testing Engineer	David

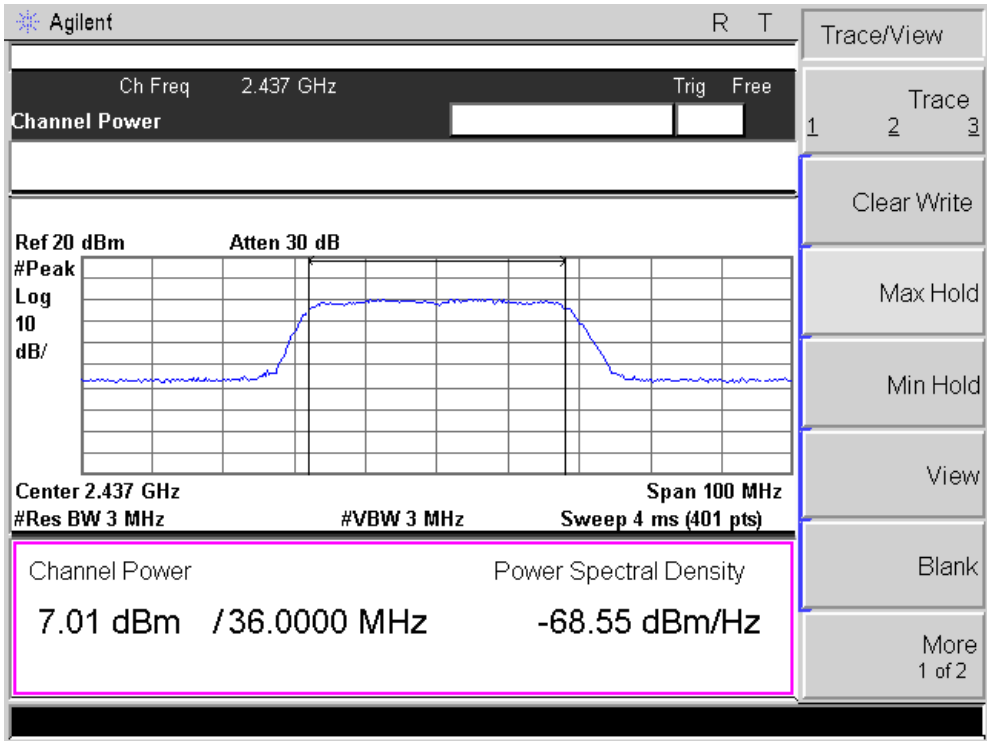
Output Power			
Operating Channel (MHz)	Limit (dBm)	Output Level (dBm)	Result
2422	30	6.95	Pass
2437	30	7.01	Pass
2452	30	6.86	Pass

Result: Pass

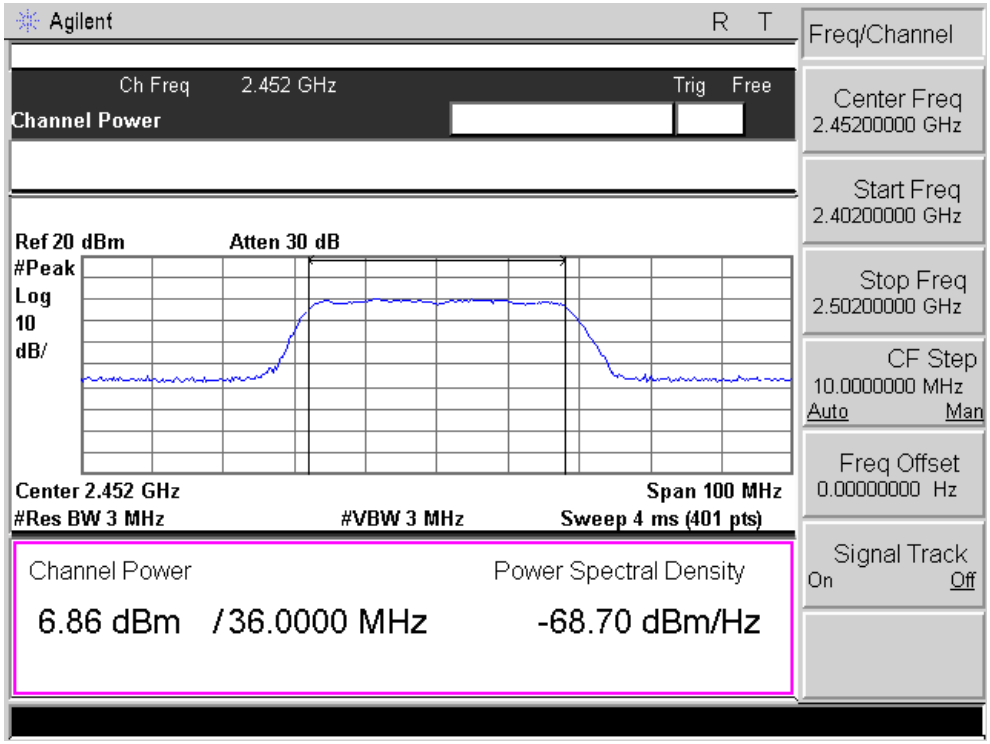
Mode: CH03



Mode: CH06



Mode: CH09



4.2 6dB Bandwidth Requirements

The occupied bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency.

The 99% bandwidth is the bandwidth in which 99% of the transmitted power occupied.

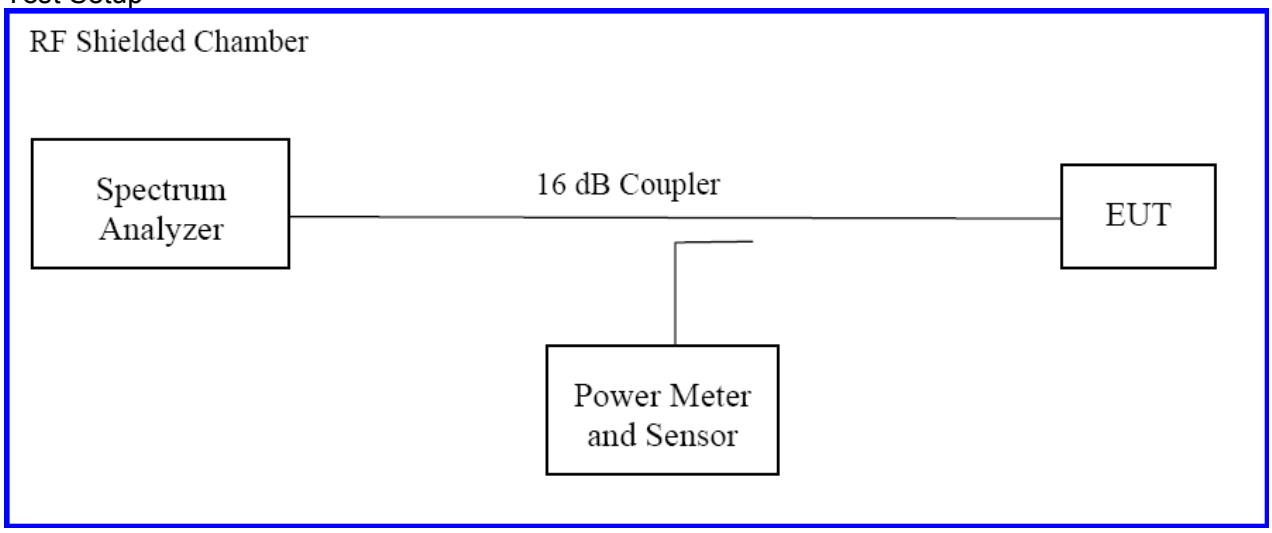
The 6 dB bandwidth is defined the bandwidth of 6 dBr from highest transmitted level of the fundamental frequency.

The bandwidth shall be at least 500 kHz via Section CFR47 15.247(a2).

4.2.1 Test Method

The conducted method was used to measure the channel power output according to ANSI C63.4:2009 and FCC KDB No. 558074 DTS D01 Meas. Guidance v03r01(Section 8.1, Option 1 method). The measurement was performed with modulation per CFR47 Part 15.247 (a2).
This test was conducted on 3 channels of Sample. The worst mode result indicated below.

Test Setup

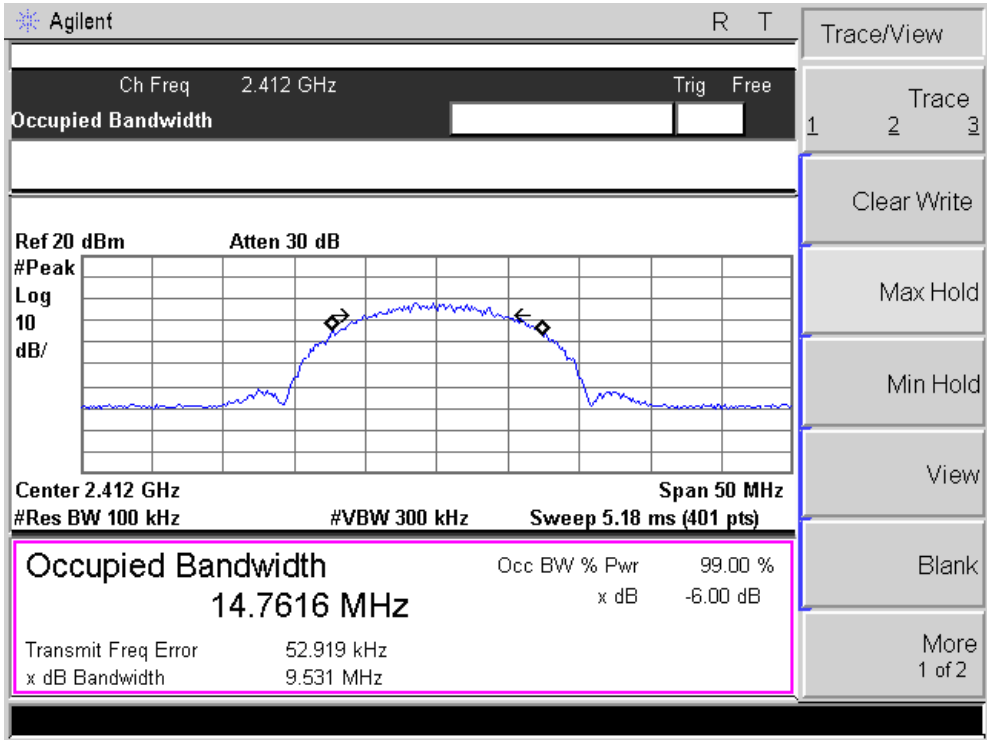


4.2.2 Test Results

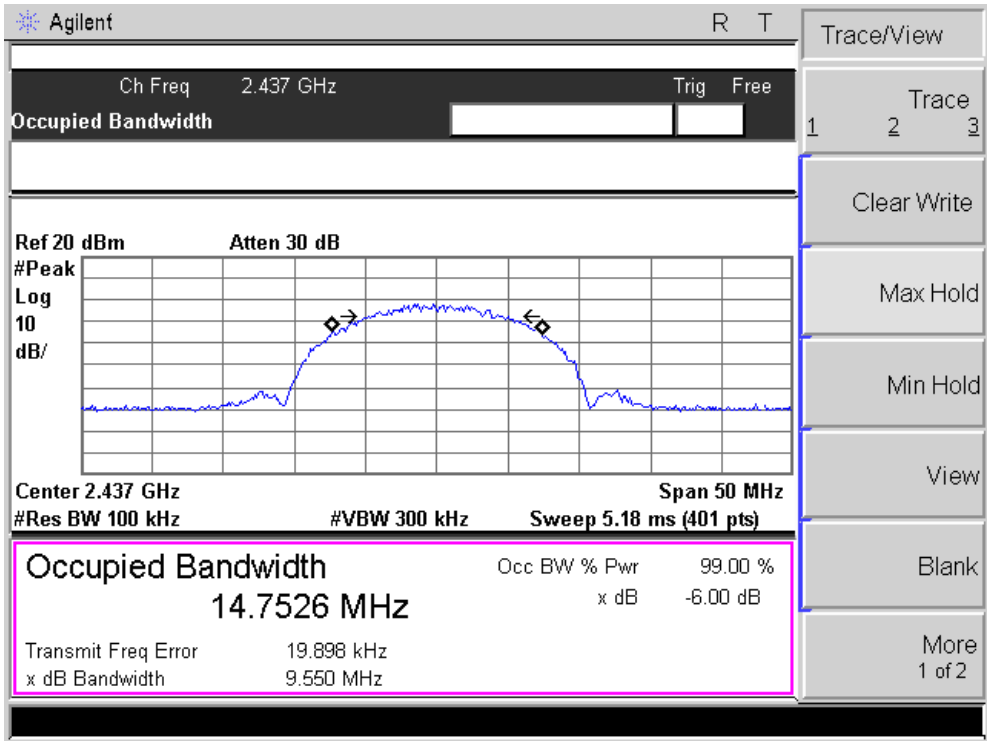
Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11B Mode CH01 / CH06 / CH11
Testing Engineer	David

6dB Bandwidth(MHz)			
Operating Channel (MHz)	Limit	Bandwidth (MHz)	Result
2412	> 500kHz	9.531	**PASS**
2437	> 500kHz	9.550	**PASS**
2462	> 500kHz	9.558	**PASS**

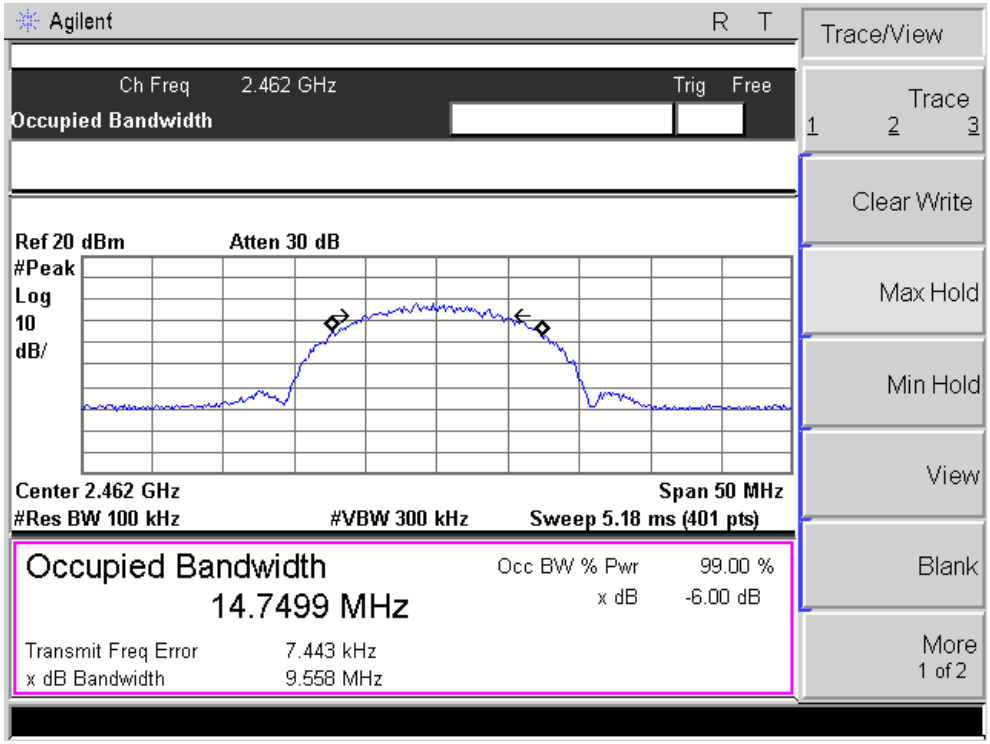
Mode: CH01



Mode: CH06



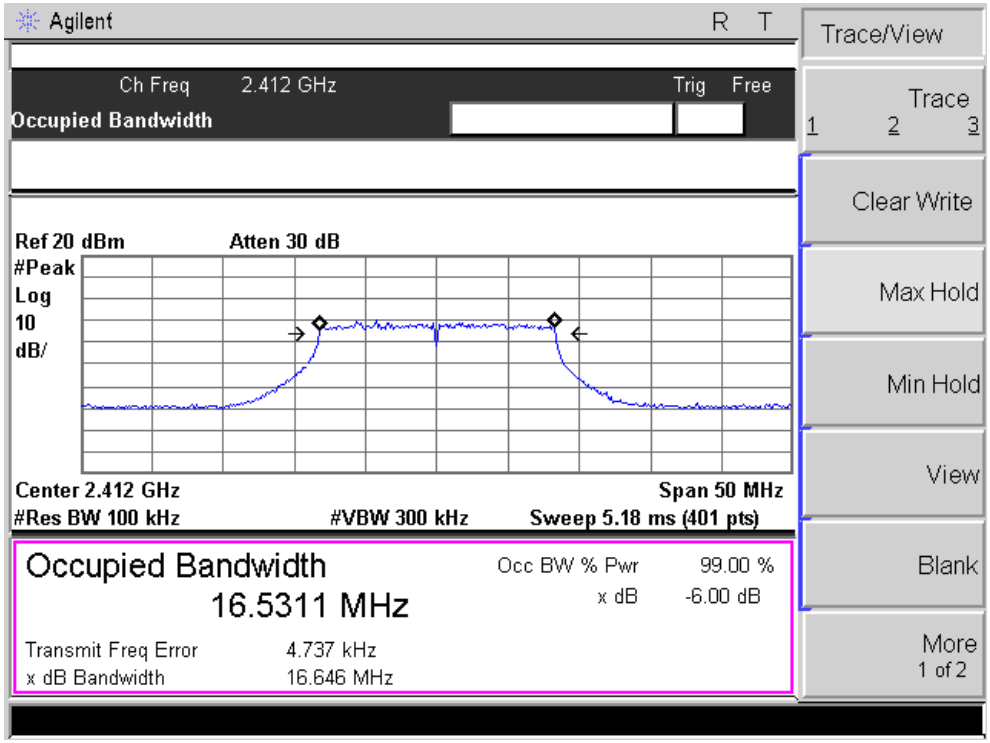
Mode: CH11



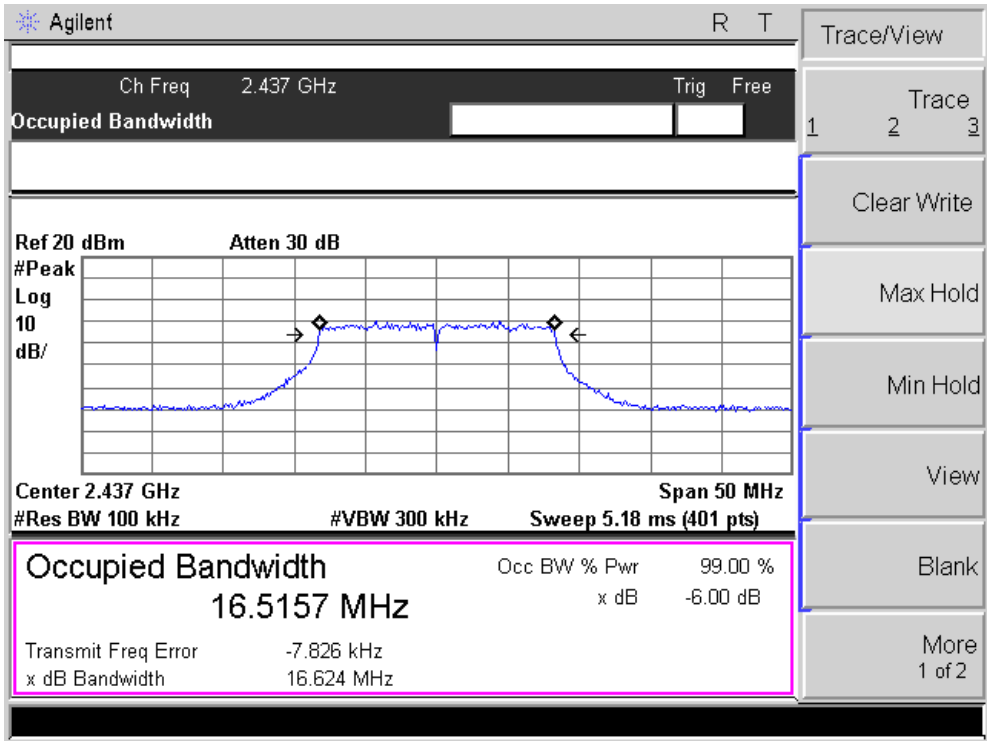
Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11G Mode CH01 / CH06 / CH11
Testing Engineer	David

6dB Bandwidth(MHz)			
Operating Channel (MHz)	Limit	Bandwidth (MHz)	Result
2412	> 500kHz	16.646	**PASS**
2437	> 500kHz	16.624	**PASS**
2462	> 500kHz	16.633	**PASS**

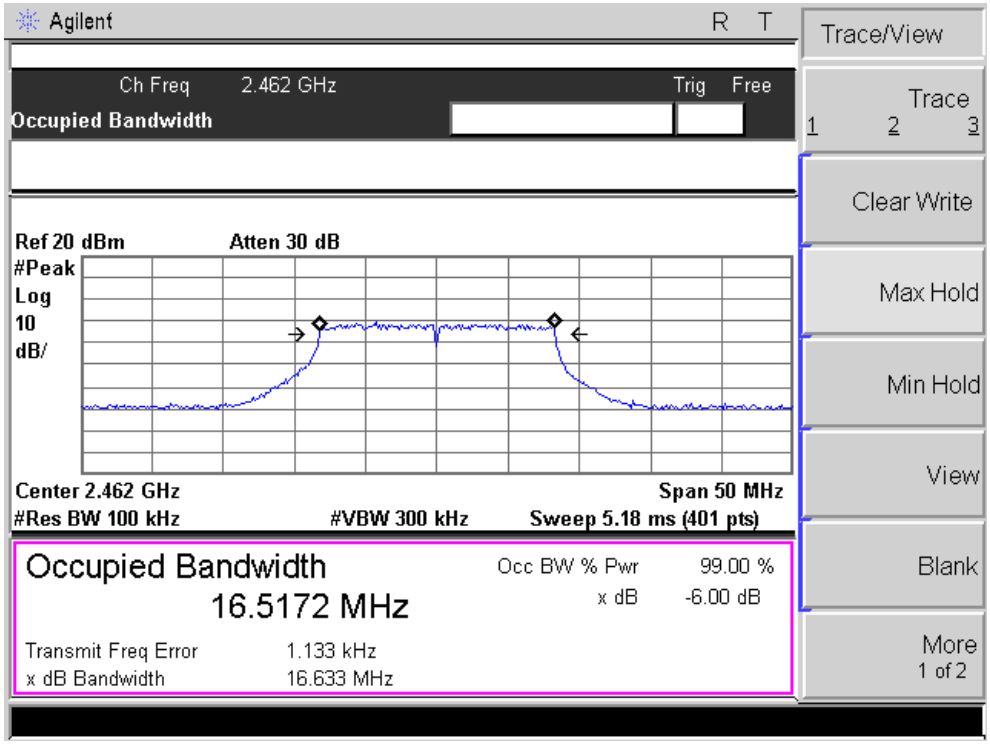
Mode: CH01



Mode: CH06



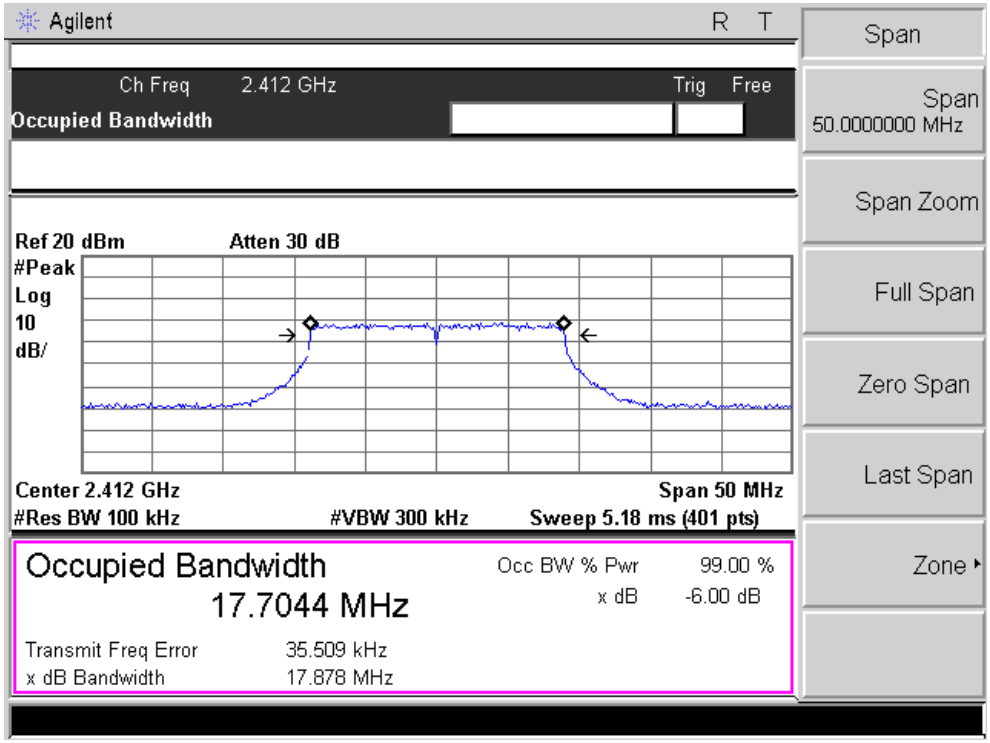
Mode: CH11



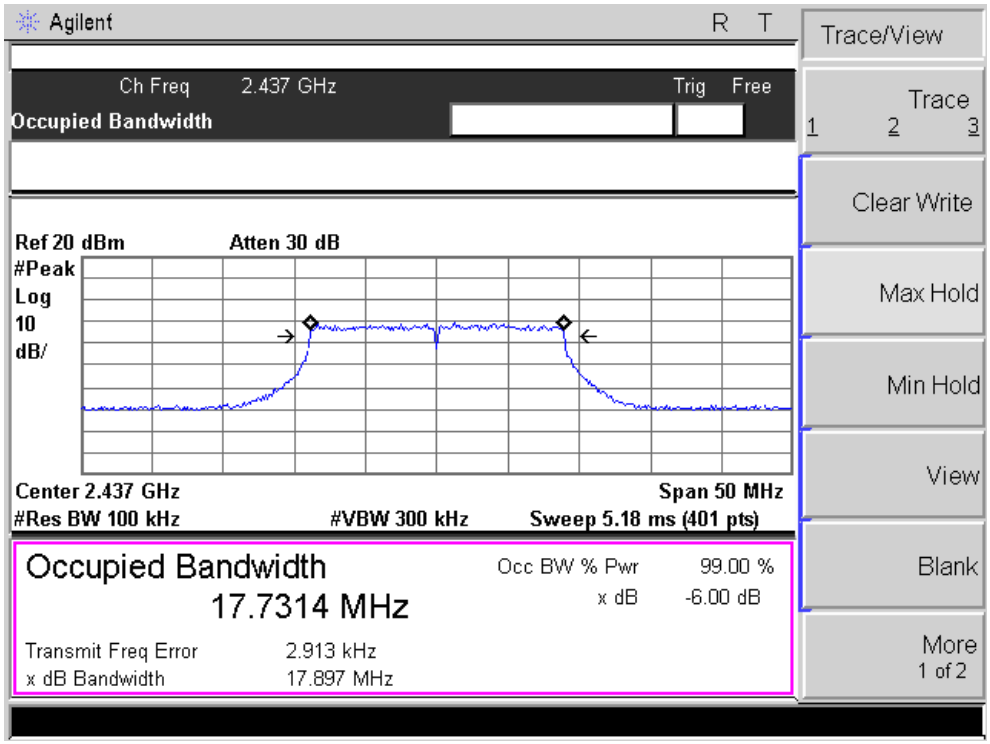
Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11N20 Mode CH01 / CH06 / CH11
Testing Engineer	David

6dB Bandwidth(MHz)			
Operating Channel (MHz)	Limit	Bandwidth (MHz)	Result
2412	> 500kHz	17.878	**PASS**
2437	> 500kHz	17.897	**PASS**
2462	> 500kHz	17.867	**PASS**

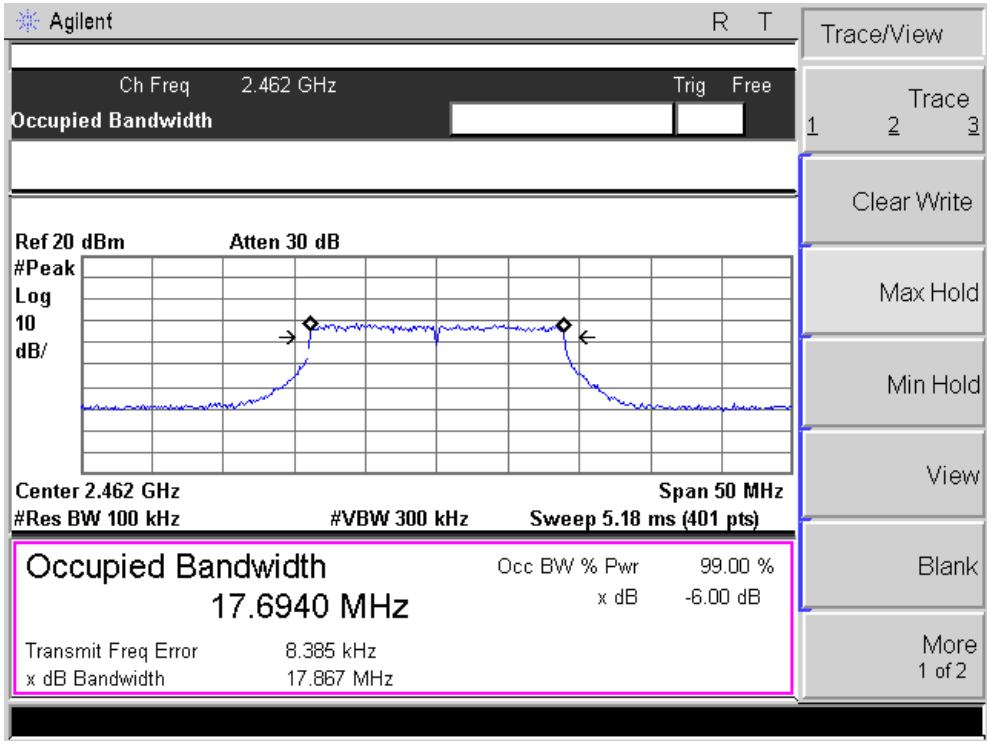
Mode: CH01



Mode: CH06



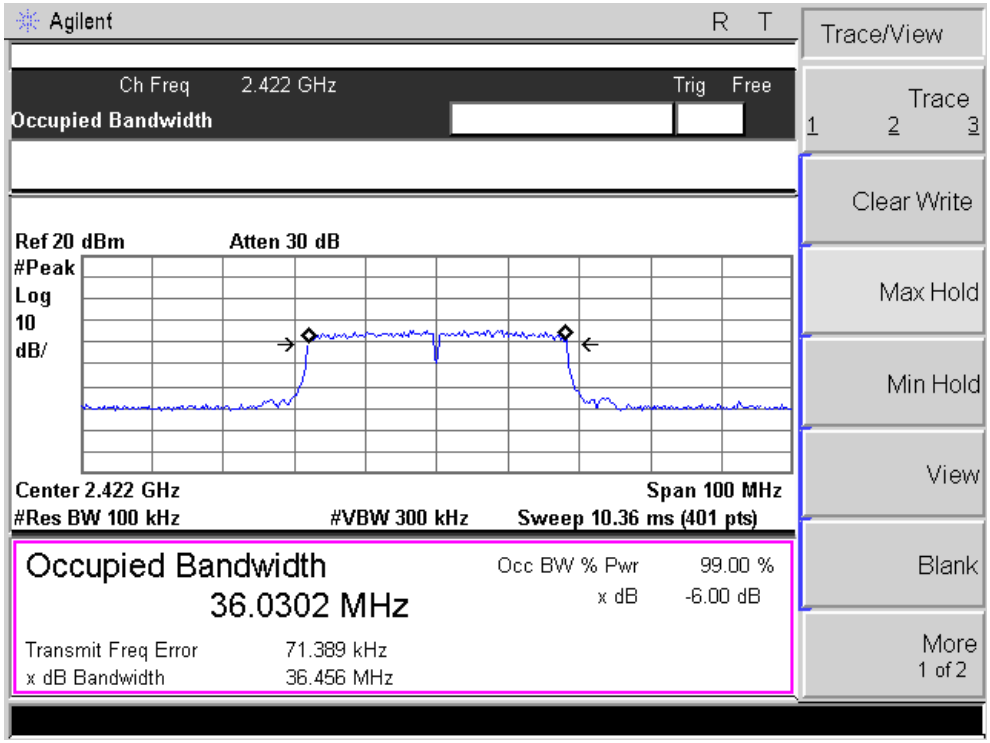
Mode: CH11



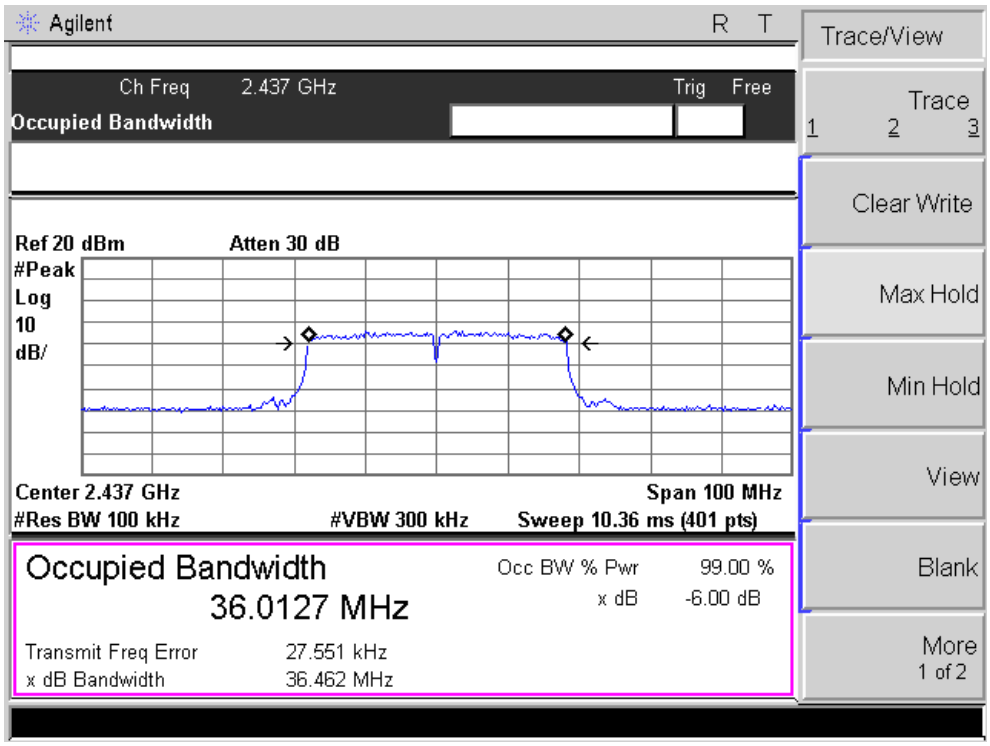
Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11N40 Mode CH03 / CH06 / CH09
Testing Engineer	David

6dB Bandwidth(MHz)			
Operating Channel (MHz)	Limit	Bandwidth (MHz)	Result
2422	> 500kHz	36.456	**PASS**
2437	> 500kHz	36.462	**PASS**
2452	> 500kHz	36.530	**PASS**

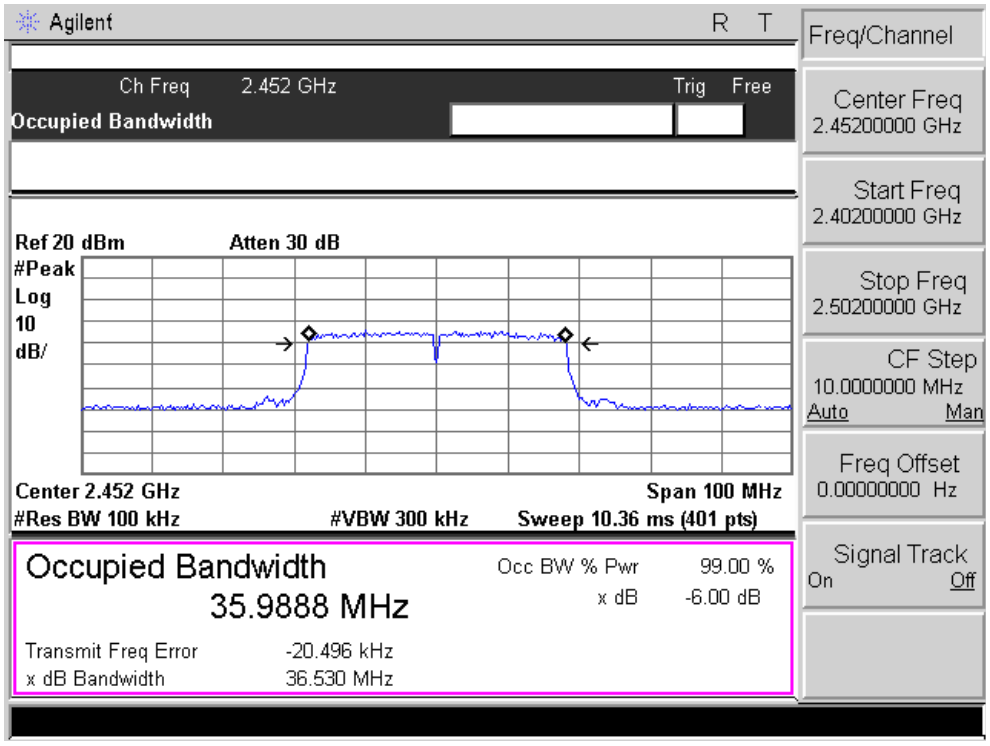
Mode: CH01



Mode: CH06



Mode: CH11

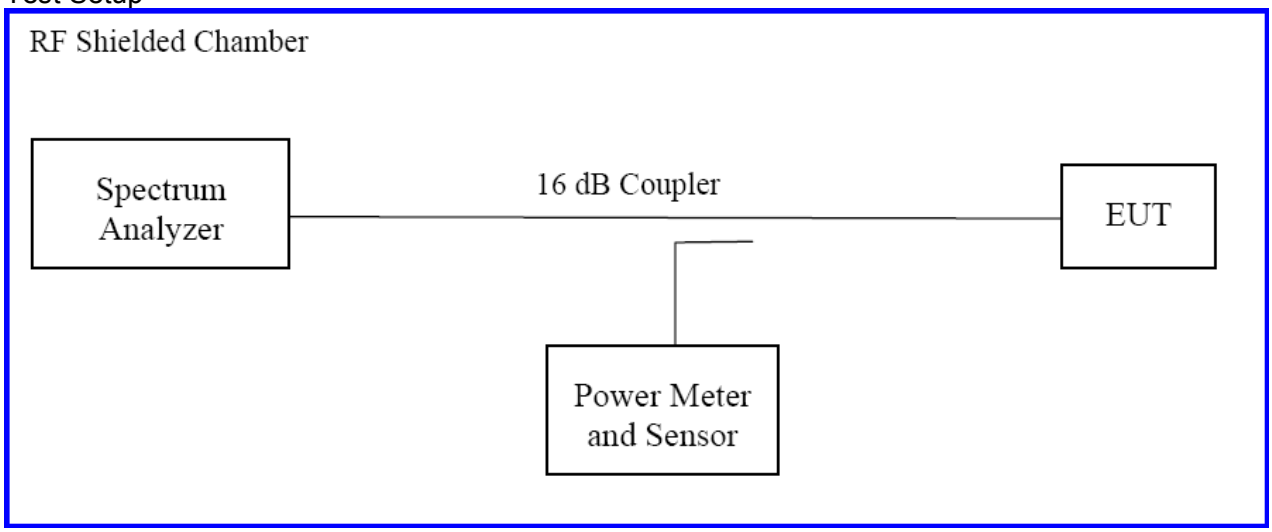


4.3 Band Edge Requirements

The setup was identical to RF output power measurement. Intentional radiators operating under the alternative provisions to the general emission limits, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If the frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.
Any frequency outside the band of 2400 MHz to 2483.5 MHz, the power output level must be below 20 dB from the in-band transmitting signal: CFR 47 Part 15.215, 15.247(d).

4.3.1 Test Method

The conducted method was used to measure the channel power output according to ANSI C63.4:2009 and FCC KDB No. 558074 DTS D01 Meas. Guidance v03r01(Section 13.2, Marker-delta method). The measurement was performed with modulation per CFR47 Part 15.215, 15.247 (d). This test was conducted on 2 channels of Sample. The worst mode result indicated below.
Test Setup



4.3.2 Test Results

Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11B Mode CH01 / CH11
Testing Engineer	David

Result: Pass

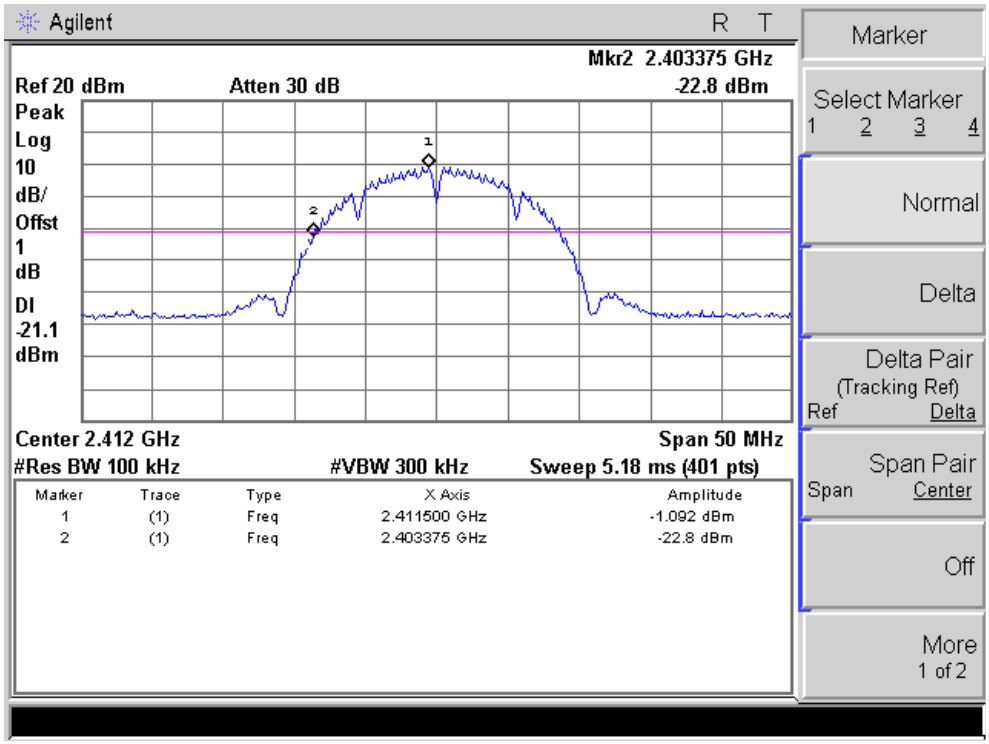
Out of Band Edge Results (below 2390MHz)						
Frequency (MHz)	Band Edge Level (dBuV/m)		Limit (dBuV/m)		Direction (H/V)	Result
	PK	AV	PK	AV		
2385.50	48.29	39.68	74	54	H	Pass
2385.34	48.10	39.75	74	54	V	Pass

Out of Band Edge Results (above 2483.5MHz)						
Frequency (MHz)	Band Edge Level (dBuV/m)		Limit (dBuV/m)		Direction (H/V)	Result
	PK	AV	PK	AV		
2496.12	46.48	37.25	74	54	H	Pass
2496.15	46.33	36.91	74	54	V	Pass

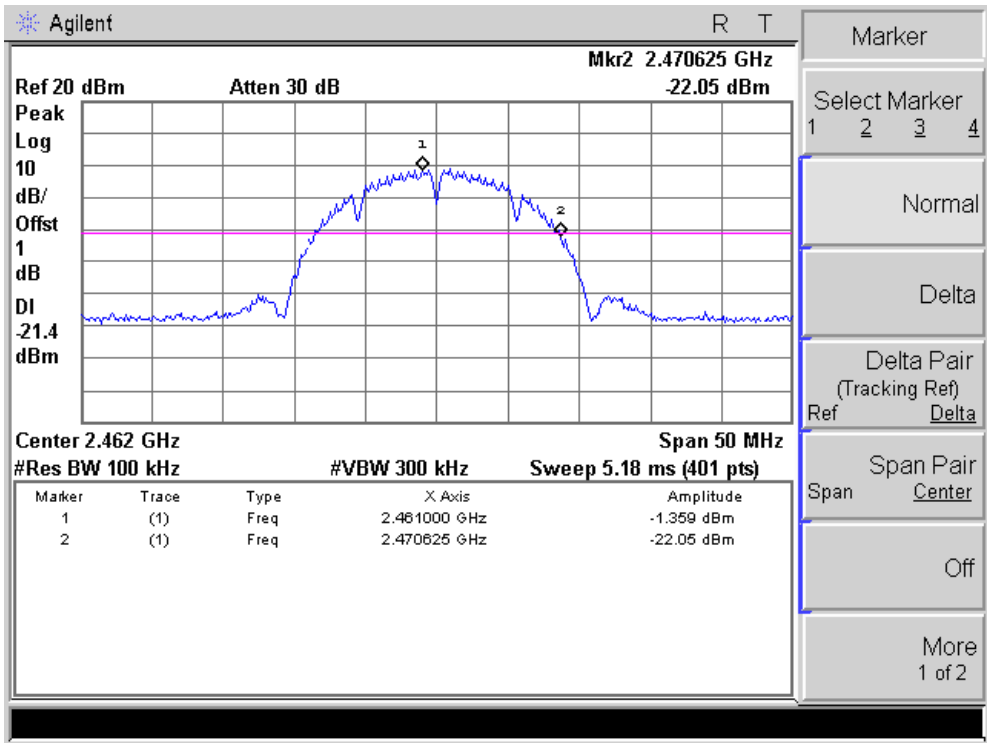
Emissions attenuated more than 20 dB below the permissible value are not reported.

Band Edge Results			
Operating Channel (MHz)	Frequency (MHz)	20dB Level (dBm)	Result
2412	2403.375	-22.80	Pass
2462	2470.625	-22.05	Pass

Mode: CH01



Mode: CH11



Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11G Mode CH01 / CH11
Testing Engineer	David

Result: Pass

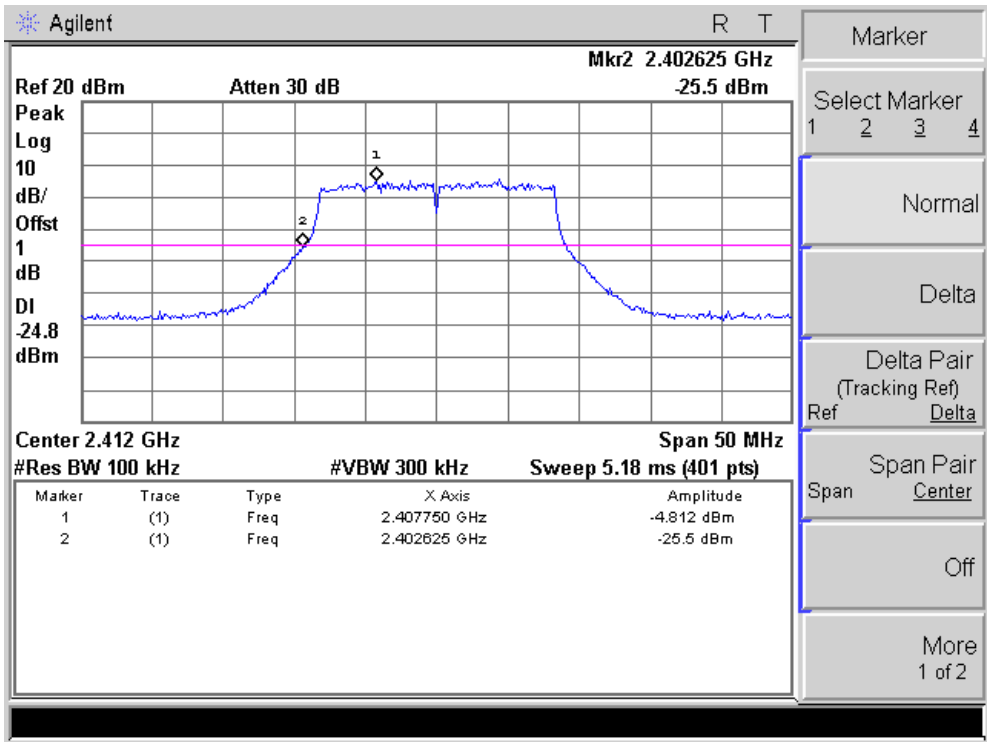
Out of Band Edge Results (below 2390MHz)						
Frequency (MHz)	Band Edge Level (dBuV/m)		Limit (dBuV/m)		Direction (H/V)	Result
	PK	AV	PK	AV		
2379.51	47.39	38.05	74	54	H	Pass
2379.50	48.11	37.97	74	54	V	Pass

Out of Band Edge Results (above 2483.5MHz)						
Frequency (MHz)	Band Edge Level (dBuV/m)		Limit (dBuV/m)		Direction (H/V)	Result
	PK	AV	PK	AV		
2498.11	48.31	39.12	74	54	H	Pass
2498.02	48.56	39.47	74	54	V	Pass

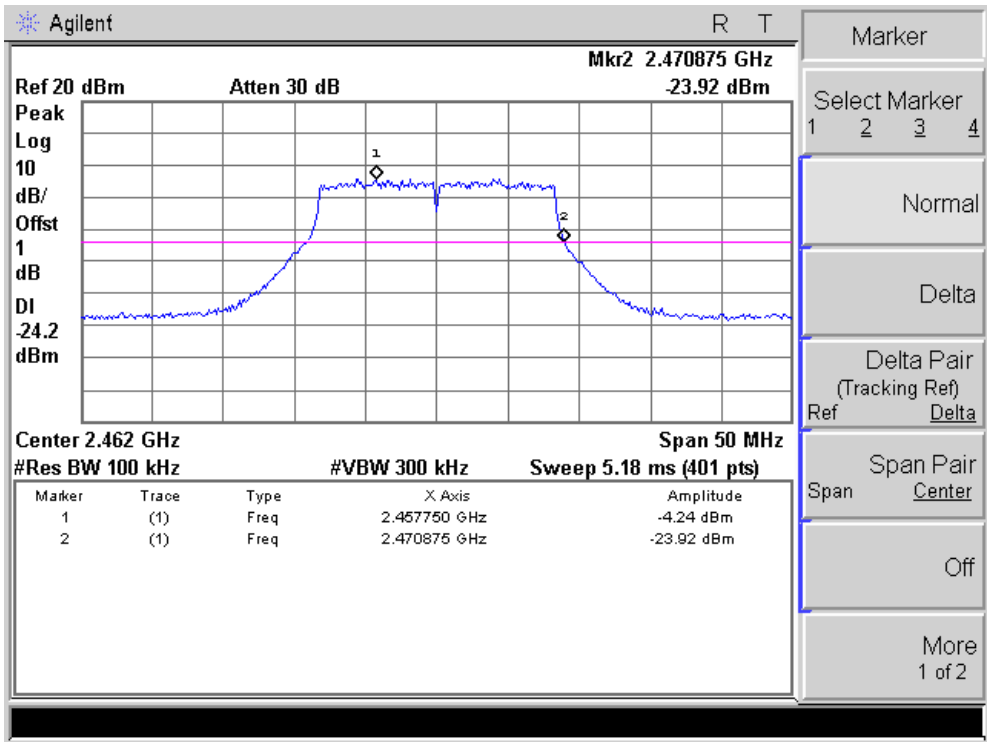
Emissions attenuated more than 20 dB below the permissible value are not reported.

Band Edge Results			
Operating Channel (MHz)	Frequency (MHz)	20dB Level (dBm)	Result
2412	2402.625	-25.50	Pass
2462	2470.875	-23.92	Pass

Mode: CH01



Mode: CH11



Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11N20 Mode CH01 / CH11
Testing Engineer	David

Result: Pass

Out of Band Edge Results (below 2390MHz)						
Frequency (MHz)	Band Edge Level (dBuV/m)		Limit (dBuV/m)		Direction (H/V)	Result
	PK	AV	PK	AV		
2373.43	48.83	39.36	74	54	H	Pass
2373.26	49.00	39.54	74	54	V	Pass

Out of Band Edge Results (above 2483.5MHz)						
Frequency (MHz)	Band Edge Level (dBuV/m)		Limit (dBuV/m)		Direction (H/V)	Result
	PK	AV	PK	AV		
2486.10	51.27	42.38	74	54	H	Pass
2486.08	51.13	41.09	74	54	V	Pass

Emissions attenuated more than 20 dB below the permissible value are not reported.

Band Edge Results			
Operating Channel (MHz)	Frequency (MHz)	20dB Level (dBm)	Result
2412	2402.375	-25.30	Pass
2462	2471.750	-25.46	Pass

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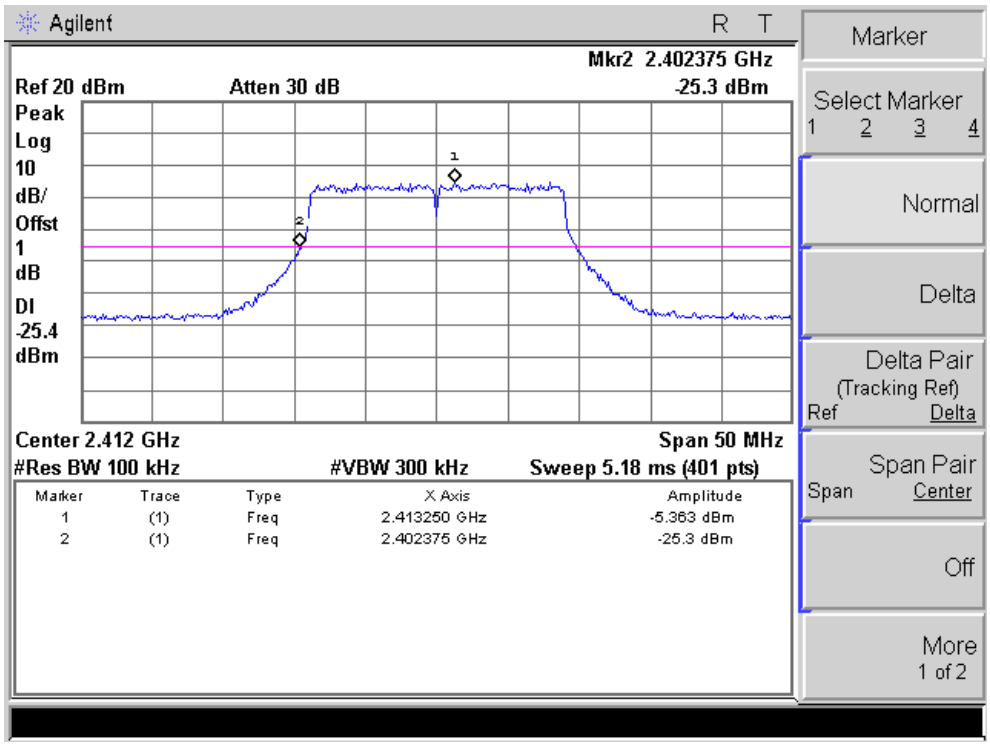
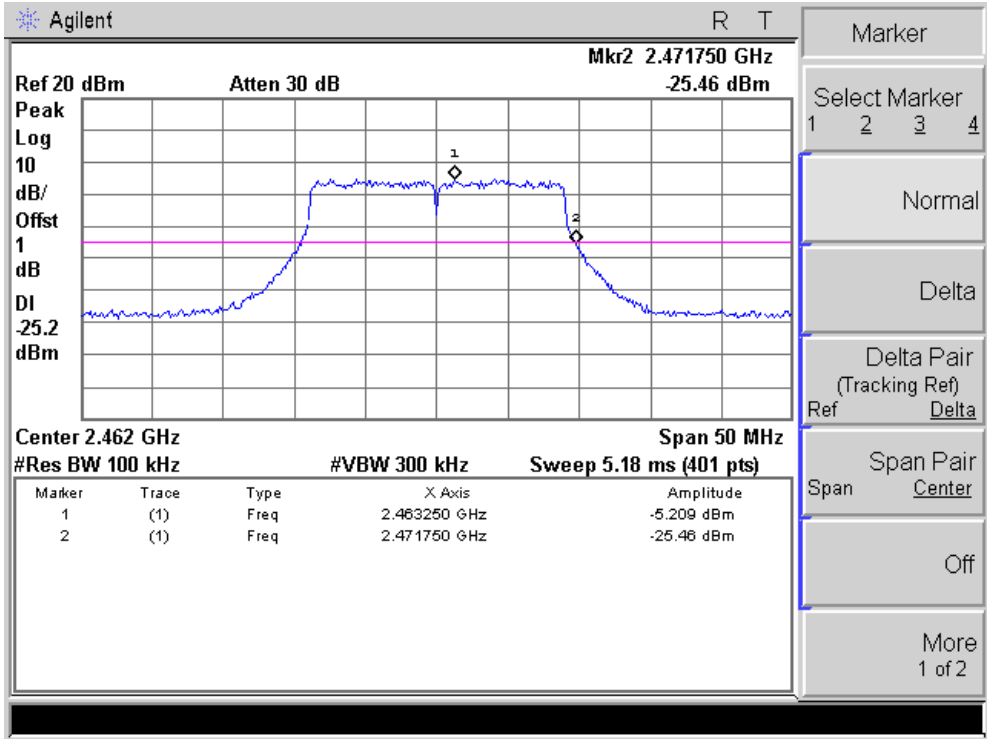
Mode: CH01



Mode: CH11



Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11N40 Mode CH03 / CH09
Testing Engineer	David

Result: Pass

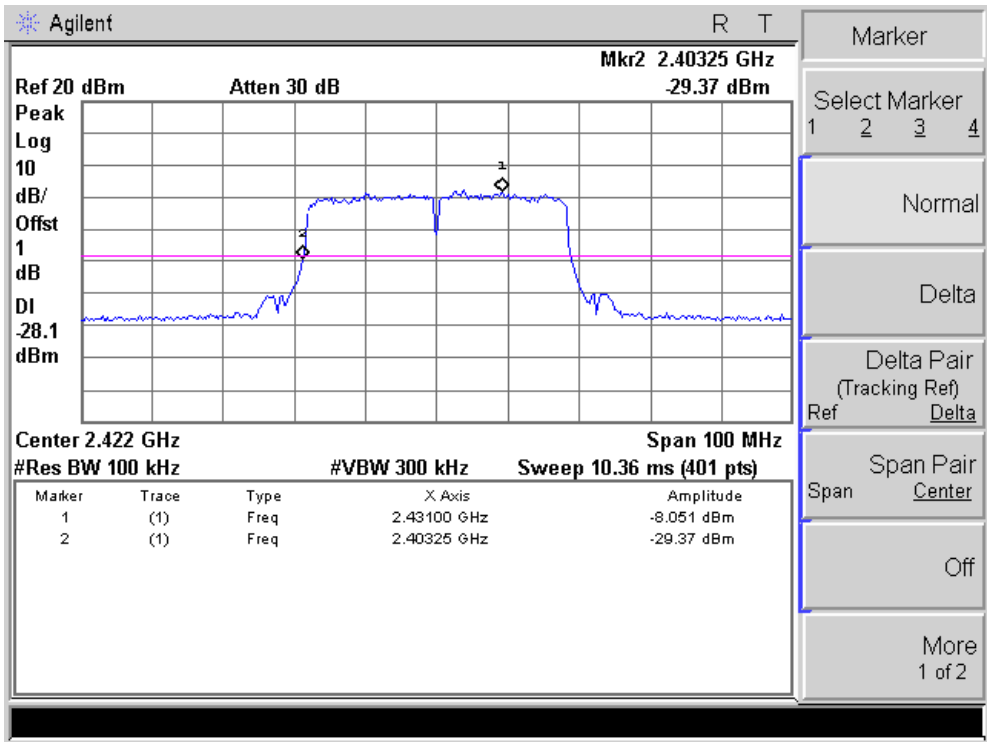
Out of Band Edge Results (below 2390MHz)						
Frequency (MHz)	Band Edge Level (dBuV/m)		Limit (dBuV/m)		Direction (H/V)	Result
	PK	AV	PK	AV		
2380.49	47.77	35.85	74	54	H	Pass
2380.53	47.59	35.37	74	54	V	Pass

Out of Band Edge Results (above 2483.5MHz)						
Frequency (MHz)	Band Edge Level (dBuV/m)		Limit (dBuV/m)		Direction (H/V)	Result
	PK	AV	PK	AV		
2489.11	47.32	35.23	74	54	H	Pass
2489.15	47.06	35.44	74	54	V	Pass

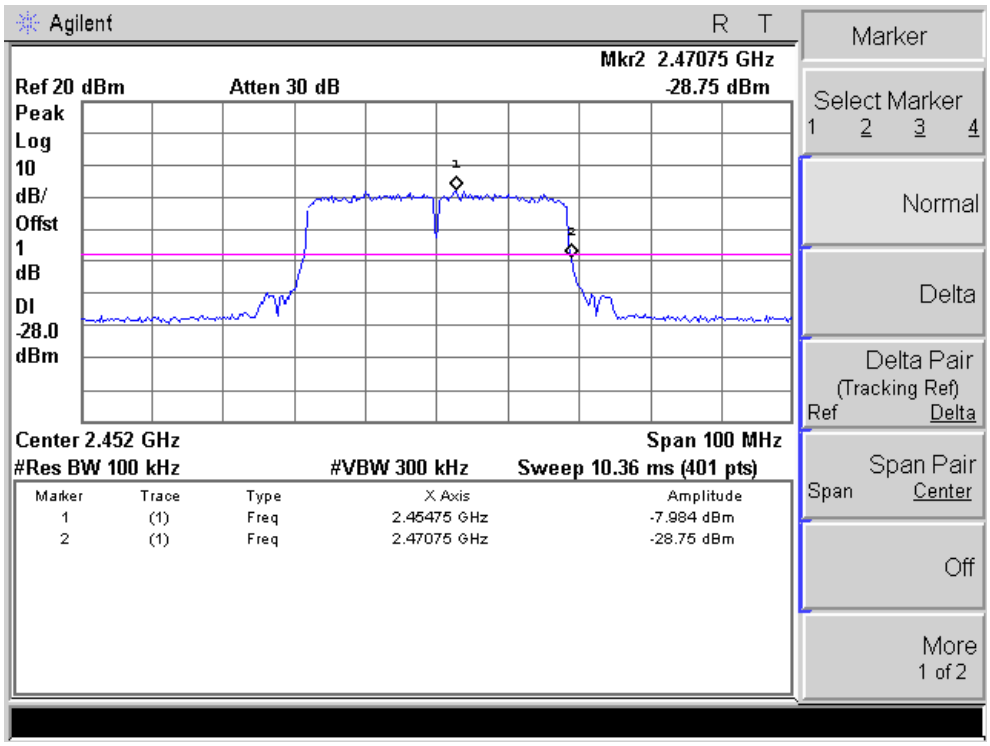
Emissions attenuated more than 20 dB below the permissible value are not reported.

Band Edge Results			
Operating Channel (MHz)	Frequency (MHz)	20dB Level (dBm)	Result
2422	2403.250	-29.37	Pass
2452	2470.750	-28.75	Pass

Mode: CH03



Mode: CH09



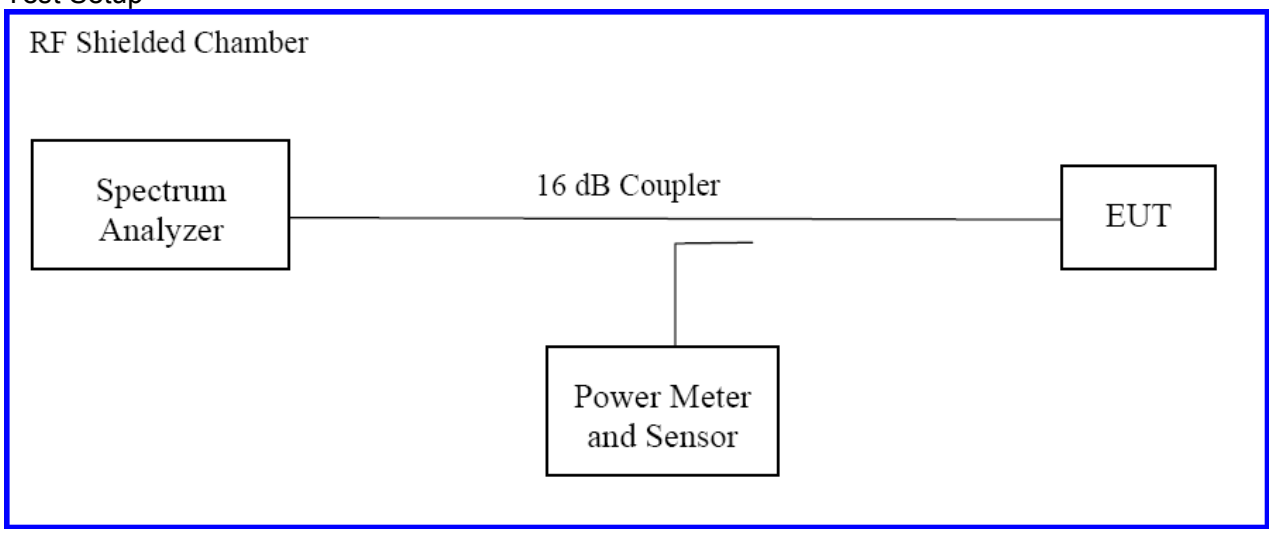
4.4 Peak Power Spectral Density Requirements

According to the CFR47 Part 15.247 (e), the spectral power density output of the antenna port shall be less than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

4.4.1 Test Method

The conducted method was used to measure the channel power output according to ANSI C63.4:2009 and FCC KDB No. 558074 DTS D01 Meas. Guidance v03r01(Section 10.2, PKPSD method). The measurement was performed with modulation per CFR47 Part 15.247 (e).
This test was conducted on 3 channels of Sample. The worst mode result indicated below.

Test Setup



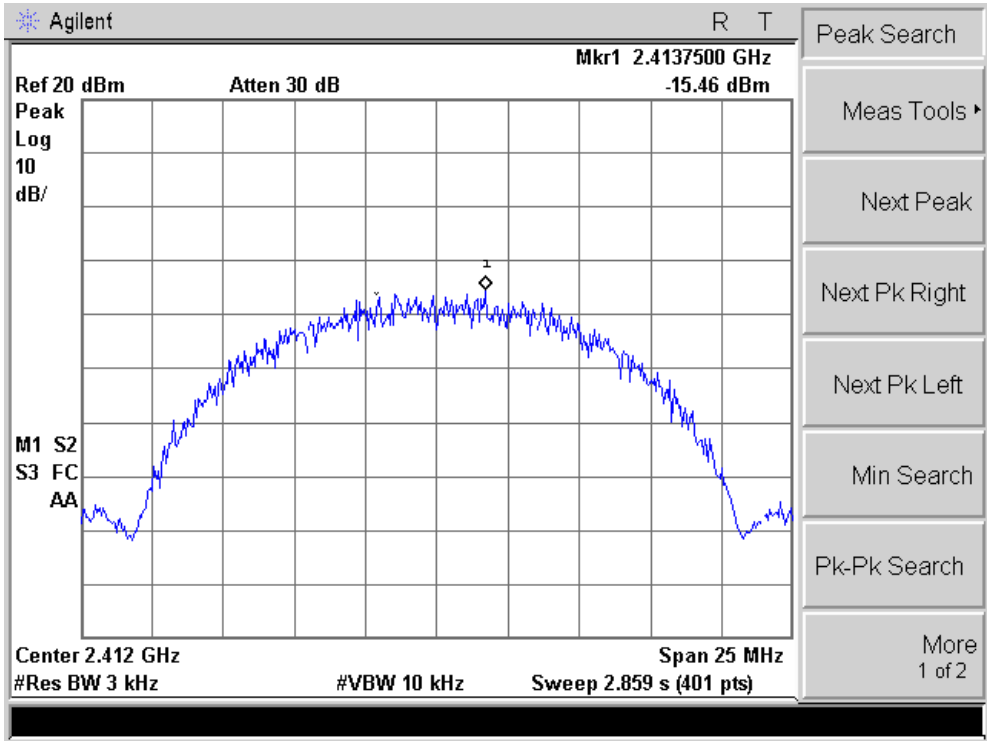
4.4.2 Test Results

Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11B Mode CH01 / CH06 / CH11
Testing Engineer	David

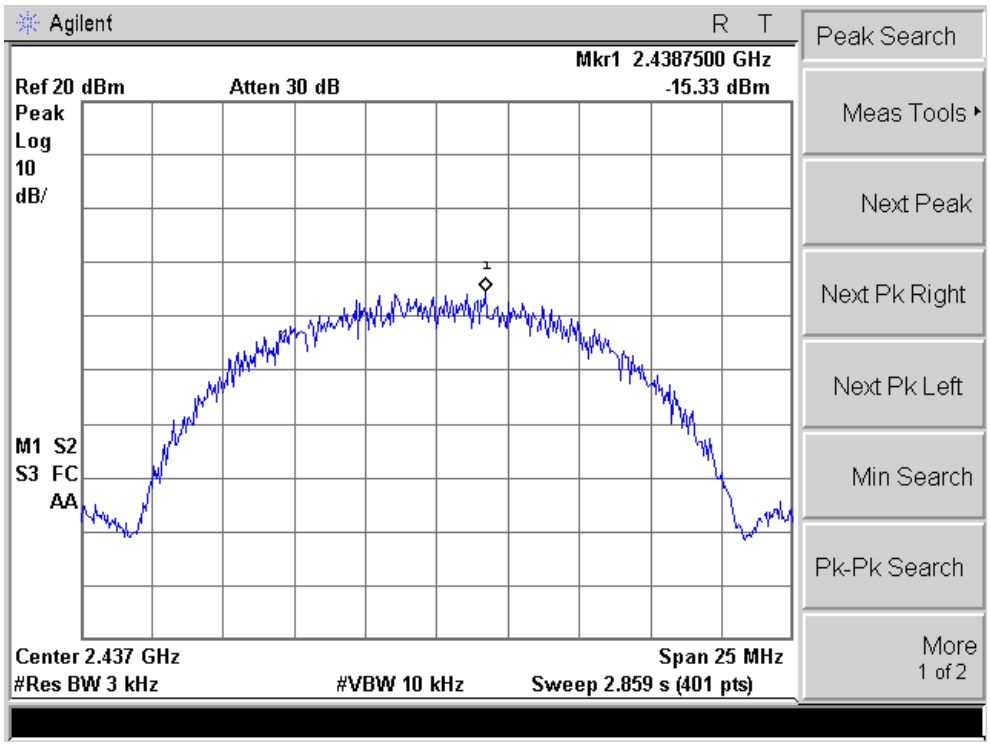
Output Power			
Operating Channel (MHz)	Limit (dBm)	PPSD (dBm)	Result
2412	8	-15.46	PASS
2437	8	-15.33	PASS
2462	8	-15.80	PASS

Result: Pass

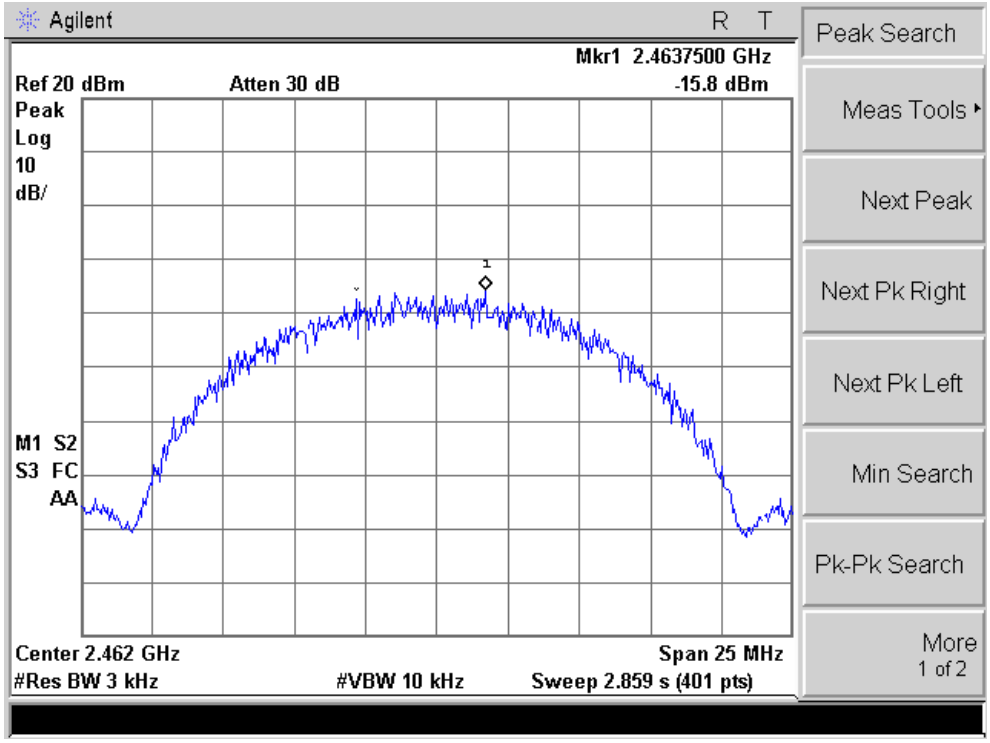
Mode: CH01



Mode: CH06



Mode: CH11

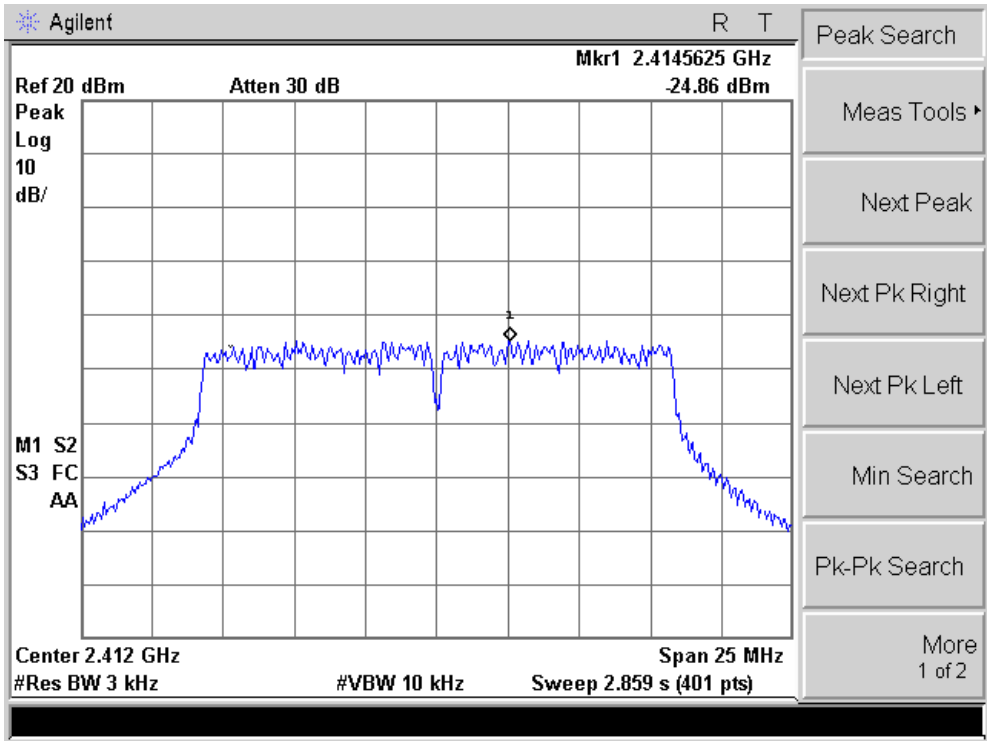


Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11G Mode CH01 / CH06 / CH11
Testing Engineer	David

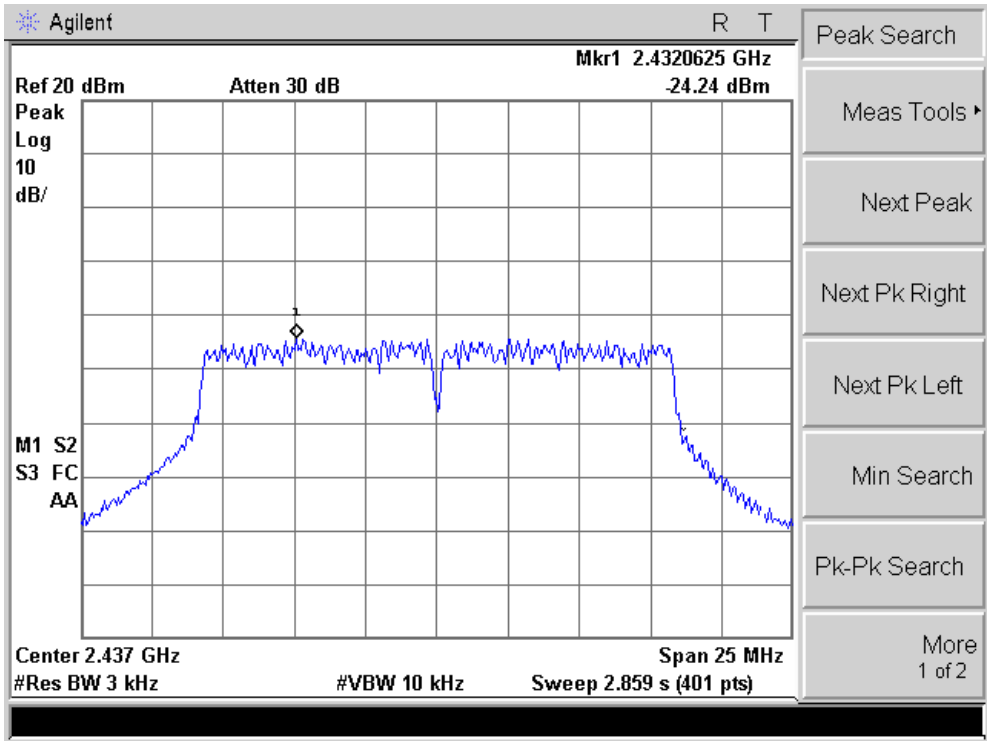
Output Power			
Operating Channel (MHz)	Limit (dBm)	PPSD (dBm)	Result
2412	8	-24.86	PASS
2437	8	-24.24	PASS
2462	8	-24.92	PASS

Result: Pass

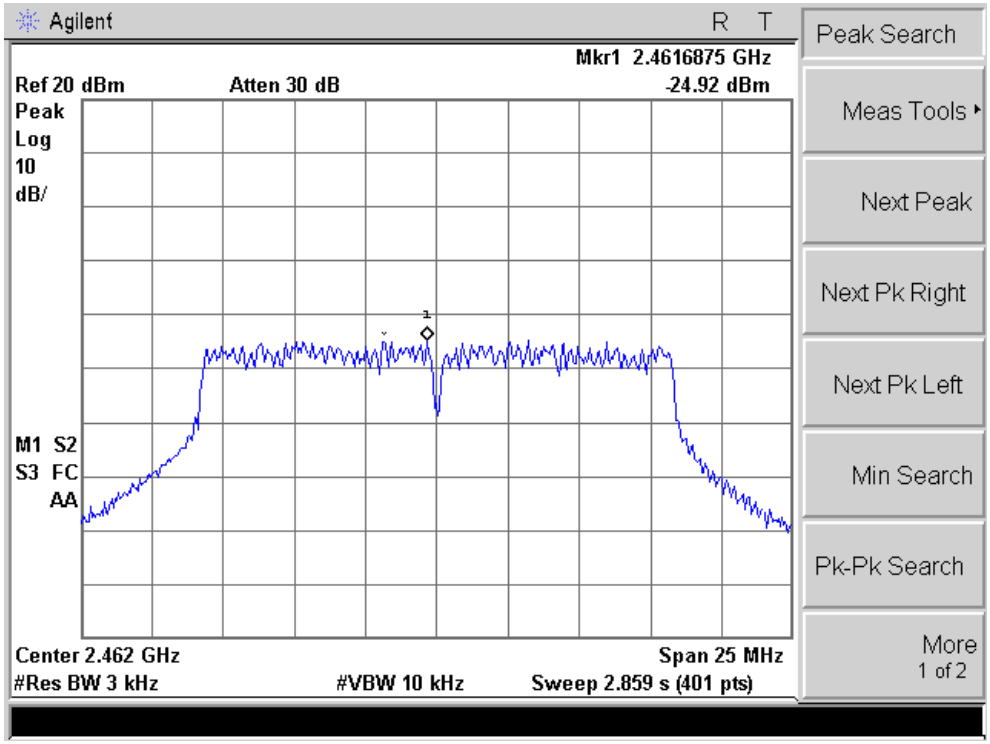
Mode: CH01



Mode: CH06



Mode: CH11

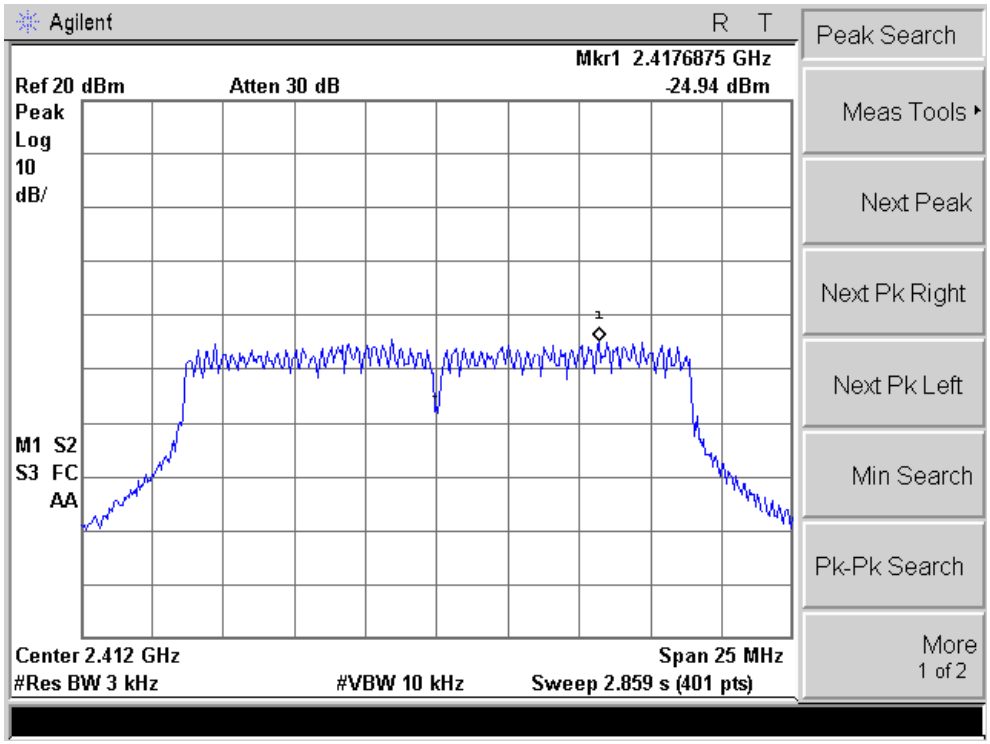


Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11N20 Mode CH01 / CH06 / CH11
Testing Engineer	David

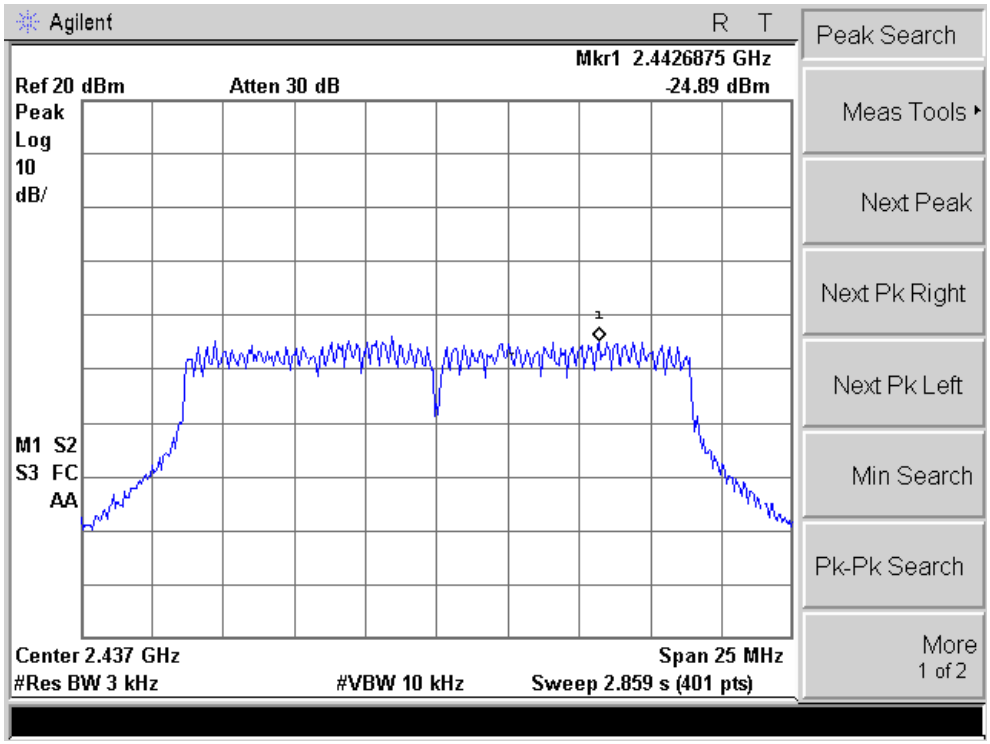
Output Power			
Operating Channel (MHz)	Limit (dBm)	PPSD (dBm)	Result
2412	8	-24.94	PASS
2437	8	-24.89	PASS
2462	8	-24.76	PASS

Result: Pass

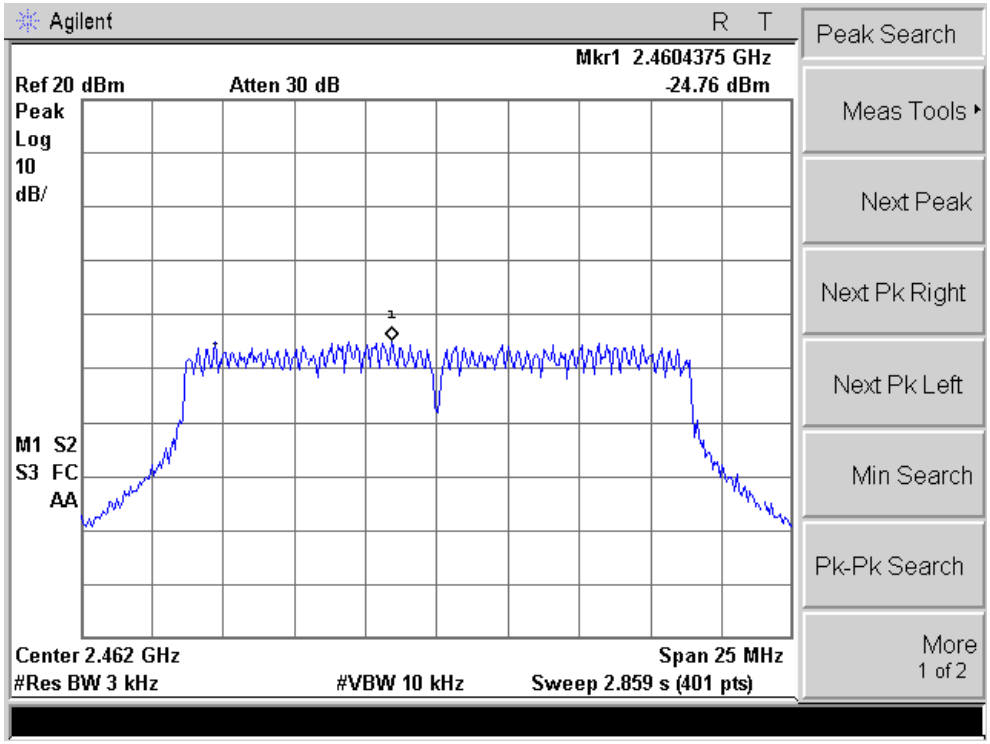
Mode: CH01



Mode: CH06



Mode: CH11

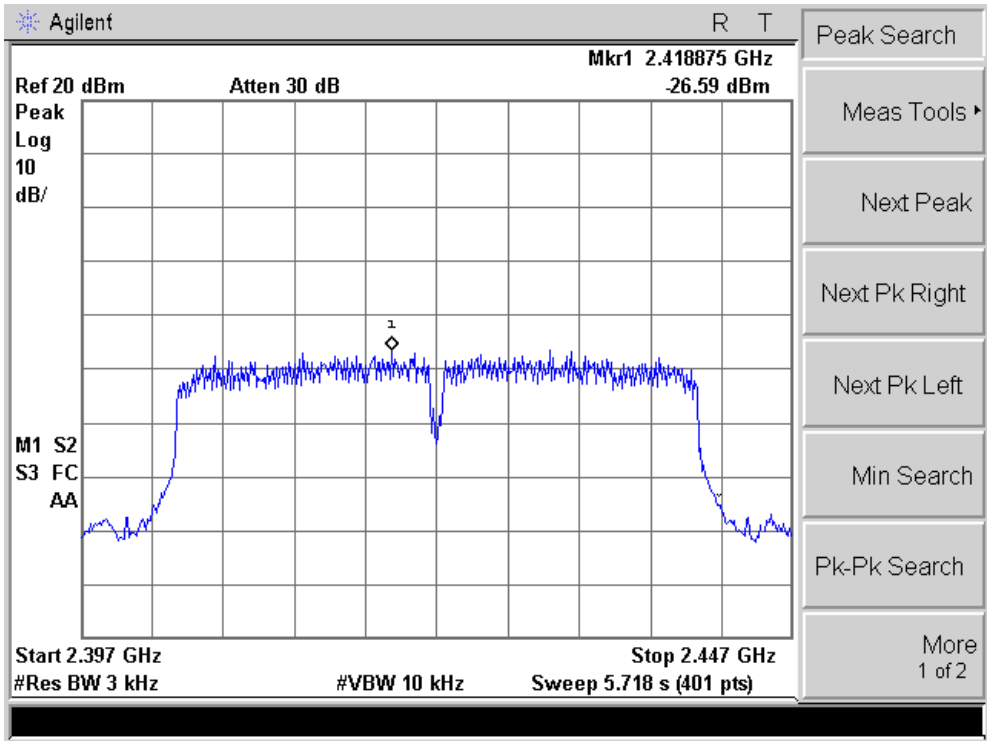


Barometric Pressure (mbar)	1000.8
Temperature	23° C
Relative Humidity	54 %
EUT	WIFI Network Video recorder
M/N	SRNVR-460H
Operation Condition	TX 11N40 Mode CH03 / CH06 / CH09
Testing Engineer	David

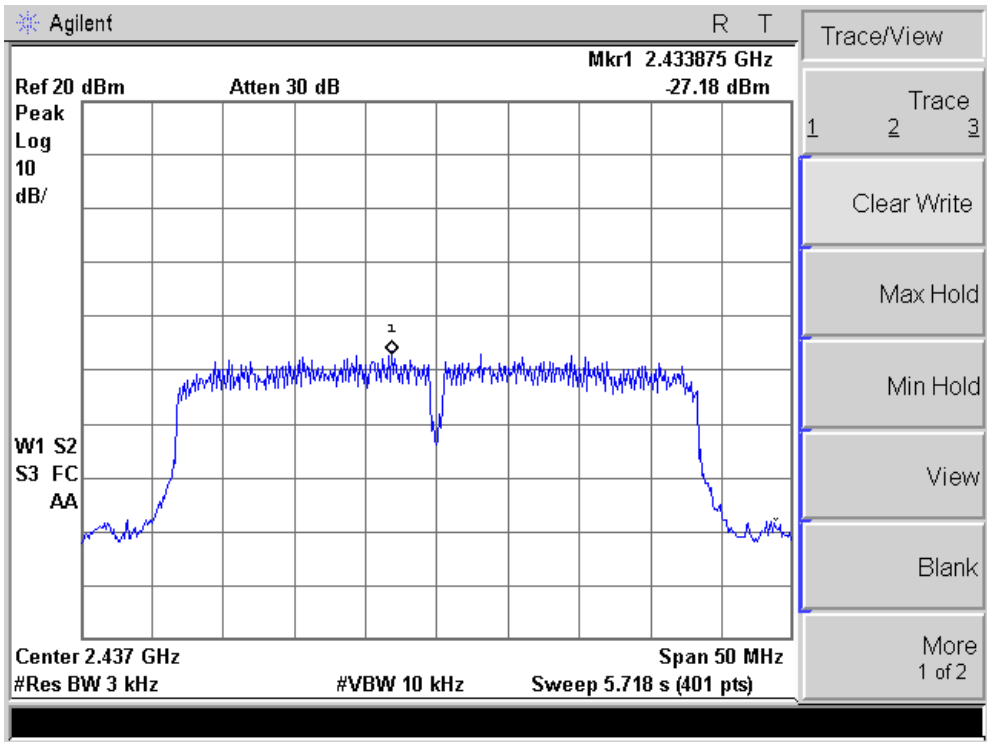
Output Power			
Operating Channel (MHz)	Limit (dBm)	PPSD (dBm)	Result
2422	8	-26.59	PASS
2437	8	-27.18	PASS
2452	8	-26.93	PASS

Result: Pass

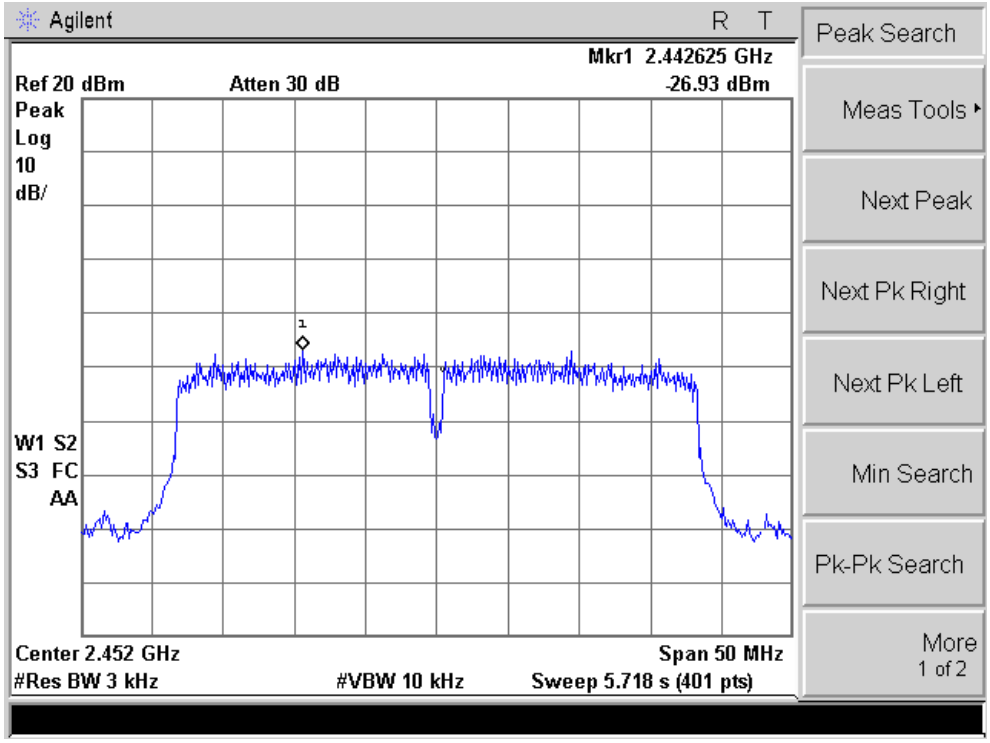
Mode: CH03



Mode: CH06



Mode: CH09



4.5 Maximum Permissible Exposure Requirements

4.5.1 Test Methodology

In this document, we try to prove the safety of radiation harmfulness to the human body for our product. The limit for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 is followed. The Gain of the antenna used in this product is measured in a Semi-Anechoic Chamber, and also the maximum total power input to the antenna is measured. Through the Friis transmission formula and the maximum gain of the antenna, we can calculate the distance, away from the product, where the limit of MPE is reached.

Although the Friis transmission formula is a far field assumption, the calculated result of that is an over-prediction for near field power density. We will take that as the worst case to specify the safety range.

4.5.2 RF Exposure Limit

According to FCC 1.1310 table 1: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (minutes)
300-1500	-	-	F/300	6
1500-100,000	-	-	5	6
300-1500	-	-	F/1500	6
1500-100,000	-	-	1.0	30

F = Frequency in MHz

4.5.3 EUT Operation Condition

The software provided by Manufacturer enabled the EUT to transmit data at lowest, middle and highest channel individually.

4.5.4 Classification

The antenna of the product, under normal use condition, is at least 20cm away from the body of the user. Warning statement to the user for keeping at least 20cm or more separation distance with the antenna should be included in users manual. So, this device is classified as a Mobile Device.

4.5.5 Test Results

4.5.5.1 Antenna Gain

The transmitting antenna was externally connected. The antenna had the highest gain of **2 dBi** or **1.59** (numeric).

4.5.5.2 Sample Calculation

The Friis transmission formula: Pd = (Pout*G) / (4*π*R2)

Where;

Pd = power density in mW/cm2
Pout = output power to antenna in mW
G = gain of antenna in linear scale
π ≈ 3.1416
R = distance between observation point and center of the radiator in cm

4.5.5.3 Output Power into Antenna & RF Exposure value at distance 20cm:

Calculations for this report are based on highest power measurement.
Limit for MPE (from FCC part 1.1310 table1) is **1.0 mW/cm^2.**

The highest measured channel output power is **+9.63 dBm or 9.19 mW.**
Using the Friss transmission formula, the EIRP is Pout*G, and R is 20cm.
Pd = (36.06*1.59) / (1600π) = **0.0029 mW/cm^2**.

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

4.6 Transmitter Spurious Emissions

Transmitter spurious emissions are emissions outside the frequency range of the equipment when the equipment is in transmit mode; per requirement of CFR47 15.205, 15.209, 15.247(d) and FCC KDB No. 558074 DTS D01 Meas. Guidance v03r01(Section 12.2.7).

4.6.1 Test Methodology

4.6.1.1 Preliminary Test

A test program that controls instrumentation and data logging was used to automate the preliminary RF emission test procedure. The frequency range of interest was divided into sub-ranges to yield a frequency resolution of approximately 120 kHz and provide a reading at each frequency for no more than 12° of turntable rotation. For each frequency sub-range the turntable was rotated 360° while peak emission data was recorded and plotted over the frequency range of interest in horizontal and vertical antenna polarization's. Preliminary emission profile testing was performed inside the anechoic chamber. The EUT was placed on a 1.0m x 1.5m non-conductive table 80cm above the floor. The EUT was positioned as shown in the setup photographs. The receiving antenna was placed at a distance of 3m at a fixed height of 1m. Measurement equipment was located outside of the chamber. A video camera was placed inside the chamber to view the EUT.

4.6.1.2 Final Test

For each frequency measured, the peak emission was maximized by manipulating the receiving antenna from 1 to 4 meters above the ground plane and placing it at the position that produced the maximum signal strength reading. The turntable was then rotated through 360° while observing the peak signal and placing the EUT at the position that produced maximum radiation. The six highest emissions relative to the limit were measured unless such emissions were more than 20 dB below the limit. If less than six emissions are within 20 dB of the limit, than the noise level of the receiver is measured at frequencies where emissions are expected. Multiples of all oscillator and microprocessor frequencies were also checked.
Final testing was performed on an NSA compliant test site. The EUT was placed on a 1.0m x 1.5m nonconductive table 80cm above the ground plane. The placement of EUT and cables were the same as for preliminary testing and is shown in the setup photographs.

The final scans performed on the worst axis for three operating channels; 2412 MHz, 2437 MHz, and 2462 MHz for 802.11B mode.

The worst axis for each antennas type was scanned.

4.6.2 Transmitter Spurious Emission Limit

The spurious emissions of the transmitter shall not exceed the values in CFR47 Part 15.205, 15.209:

Measurement Frequency (MHz)	Field strength (microvolts/meter)	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

All harmonics and spurious emission which are outside of the restricted band shall be 20 dB below the in-band emission.

4.6.3 Test Results
The final measurement data was taken under the worst case operating modes, configurations, and/or cable positions. It also reflects the results including any modifications and/or special accessories listed in Sections 1.4 and 1.5.

As originally tested, the EUT was found to be compliant to the requirements of the test standard(s).

Data (From 9KHz ~ 30MHz):
Mode: TX

Frequency (MHz)	Read Level (dBuV)	Total Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Remark	Over Limit (dB)	Direction (H/V)	Result
-	-	-	-	-	-	-	-	-
Note: **Below 30MHz, the measurements were more than 20dB below the limit and not reported.**								

Data (From 30MHz ~ 1GHz):
Mode: TX

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark	Direction (H/V)
83.23	45.71	11.72	1.06	31.75	26.74	40.00	-13.26	QP	H
239.99	52.65	14.09	2.07	32.16	36.65	46.00	-9.35	QP	H
336.04	52.16	15.99	2.55	32.07	38.63	46.00	-7.37	QP	H
43.35	49.76	15.56	0.70	32.02	34.00	40.00	-6.00	QP	V
53.69	46.79	15.07	0.81	31.95	30.72	40.00	-9.28	QP	V
432.55	46.88	17.53	3.01	31.78	35.64	46.00	-10.36	QP	V

Emissions attenuated more than 20 dB below the permissible value are not reported.

Data (Above 1GHz to the tenth Harmonic, Average):
Mode: 802.11 B

CH Low(2412MHz)

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark	Direction (H/V)
2100	35.68	27.43	3.27	31.90	34.48	54.00	-19.52	Average	H
2390	37.04	27.76	3.33	30.10	38.03	54.00	-15.97	Average	H
2400	38.35	27.76	3.37	30.10	39.38	54.00	-14.62	Average	H
4824	37.40	31.77	5.31	24.09	50.39	54.00	-3.61	Average	H
2100	39.46	27.43	3.27	31.90	38.26	54.00	-15.74	Average	V
2390	39.38	27.76	3.33	30.10	40.37	54.00	-13.63	Average	V
2400	40.22	27.76	3.37	30.10	41.25	54.00	-12.75	Average	V
4824	36.56	31.77	5.31	24.09	49.55	54.00	-4.45	Average	V
Note: The 3^{th}-10^{th} harmonic and other values more than 20dB below limit are not reported.									

CH Middle(2437MHz)

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark	Direction (H/V)
4874	36.41	31.85	5.40	24.01	49.65	54.00	-4.35	Average	H
4874	36.12	31.85	5.40	24.01	49.36	54.00	-4.64	Average	V
Note: The 3^{th}-10^{th} harmonic and other values more than 20dB below limit are not reported.									

CH High(2462MHz)

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark	Direction (H/V)
2483.5	39.65	27.87	3.49	29.93	41.08	54.00	-12.92	Average	H
2500	40.37	27.92	3.52	30.68	41.13	54.00	-12.87	Average	H
4924	36.98	31.90	5.46	23.96	50.38	54.00	-3.62	Average	H
2483.5	40.32	27.87	3.49	29.93	41.75	54.00	-12.25	Average	V
2500	40.29	27.92	3.52	30.68	41.05	54.00	-12.95	Average	V
4924	36.35	31.90	5.46	23.96	49.75	54.00	-4.25	Average	V
Note: The 3^{th}-10^{th} harmonic and other values more than 20dB below limit are not reported.									

Note: 1, Emissions attenuated more than 20 dB below the permissible value are not reported.
2, The final scans only performed on the worst mode (802.11 B).

Data (Above 1GHz to the tenth Harmonic, Peak):
Mode: 802.11 B

CH Low(2412MHz)

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark	Direction (H/V)
2100	45.29	27.43	3.27	31.90	44.09	74.00	-29.91	Peak	H
2390	46.31	27.76	3.33	30.10	47.30	74.00	-26.70	Peak	H
2400	48.79	27.76	3.37	30.10	49.82	74.00	-24.18	Peak	H
4824	40.77	31.77	5.31	24.09	53.76	74.00	-20.24	Peak	H
2100	46.19	27.43	3.27	31.90	44.99	74.00	-29.01	Peak	V
2390	46.87	27.76	3.33	30.10	47.86	74.00	-26.14	Peak	V
2400	47.52	27.76	3.37	30.10	48.55	74.00	-25.45	Peak	V
4824	40.30	31.77	5.31	24.09	53.29	74.00	-20.71	Peak	V
Note: The 3^{th}-10^{th} harmonic and other values more than 20dB below limit are not reported.									

CH Middle(2437MHz)

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark	Direction (H/V)
4874	41.21	31.85	5.40	24.01	54.45	74.00	-19.55	Peak	H
4874	40.78	31.85	5.40	24.01	54.02	74.00	-19.98	Peak	V
Note: The 3^{th}-10^{th} harmonic and other values more than 20dB below limit are not reported.									

CH High(2462MHz)

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark	Direction (H/V)
2483.5	47.70	27.87	3.49	29.93	49.13	74.00	-24.87	Peak	H
2500	47.93	27.92	3.52	30.68	48.69	74.00	-25.31	Peak	H
4924	41.38	31.90	5.46	23.96	54.78	74.00	-19.22	Peak	H
2483.5	48.47	27.87	3.49	29.93	49.90	74.00	-24.10	Peak	V
2500	48.25	27.92	3.52	30.68	49.01	74.00	-24.99	Peak	V
4924	41.00	31.90	5.46	23.96	54.40	74.00	-19.60	Peak	V
Note: The 3^{th}-10^{th} harmonic and other values more than 20dB below limit are not reported.									

Note: 1, Emissions attenuated more than 20 dB below the permissible value are not reported.
2, The final scans only performed on the worst mode (802.11 B).

4.7 Antenna Requirements

FCC section 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of Part 15C. The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited.

4.7.1 Antenna Connected Construction
Antenna used a reversed SMA connector, it is a non-standard connector.

4.7.2 Antenna Gain
Antenna gain is 3dBi.

4.7.3 Result
The antenna is compliance with the FCC rules.