Excellence in Compliance Testing

Certification Test Report

FCC ID: ZBGAWR2UHF

FCC Rule Part: FCC 47 CFR 15 Subpart H

ACS Report Number: 11-2110.W03.1A

The test report contains data that are not covered within the scope of accreditation

Manufacturer: **KTS WIRELESS**

Model: **AWR-US-U-100**

Test Begin Date: **November 30, 2011**

Test End Date: **February 29, 2012**

Report Issue Date: **March 7, 2012**

ACCREDITED TESTING

FOR THE SCOPE OF ACCREDITATION UNDER CERTIFICATE NUMBER AT-1533

This report must not be used by the client to claim product certification, approval, or endorsement by ACLASS, ANSI, or any agency of the Federal Government.

Project Manager:

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EMC Engineer
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Reviewed by:

Kirby Munroe
Director, Wireless Certifications
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This report contains 27 pages

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1 GENERAL

1.1 Purpose

The purpose of this report is to demonstrate compliance with Part 15 Subpart H of the FCC's Code of Federal Regulations.

1.2 Product description

The KTS Agility White Space Radio, AWR-US-U-100, is a White Space Fixed TVBD intentional radiator designed to operate on an unlicensed basis on available channels in the broadcast television frequency bands 470-599 MHz (TV channels 14-35) and 620-698 MHz (TV channels 39-51).

Technical Details

Operating Range:	470 MHz – 698 MHz
Number of Channels:	35
Channel Separation:	6 MHz
Modulation:	SOQPSK
Supported Data Rates:	3.125 Mbps
RF Connector:	Type N
Antenna Type/Gain:	Telex ALP-450 UHF Log Periodic Antenna, 4.6 dBd
Input Power:	12-24 VDC
FPGA Code:	v0xb
CPU Firmware:	113

The radio is restricted from operating on channels 36, 37 and 38. The firmware in the radio restricts the use of these channels and they are not available for tuning. Additionally, the database restricts the use of these channels and does not include them in any channel lists. The users is unable to tune the radio independently of closed loop operation between the radio and database.

Manufacturer Information:
KTS Wireless
1025 Greenwood Blvd. Suite 391
Lake Mary FL, 32746

Contact: Ed Gerhardt
Phone: 407 260 0564
FAX: 407 333 3620

Test Sample Serial Number(s): 2232

Test Sample Condition: Good

1.3 Test Methodology and Considerations

The AWR-US-U-100 was evaluated per the FCC KDB 416721 D01 White Space Test Procedures v01.

The radiated emissions evaluation was performed for the EUT set in the orientation of typical installation. The evaluation was performed at the lower, middle and high channels of the frequency of operation up to the 10th harmonic of the fundamental carrier. The RF conducted emissions evaluation was performed with the EUT output power adjusted to compensate for the antenna gain above 6 dBi.

Power line conducted emissions was performed on the EUT set to the lower, middle and high channels of the frequency range of operation. The results are reported for the configuration leading to the highest emissions.

The AWR-US-U-100 was programmed using the Spectrum Bridge TVBD Element Management System (EMS), Version 2.032. The programming tool configuration is provided below.

Table 1.3-1 TVBD Element Management System Configuration

TVBD Channel	Frequency (MHz)	Transmitter Control	
		Transmit Power (dBm)	RF Preset
14	473	21.5	6
33	587	21.5	6
35	599	21.5	6
39	623	21.5	6
51	695	21.0	6

Compliance to 602 MHz to 620 MHz band was investigated for the EUT tuned to 599 MHz and 623 MHz, respectively wich correspond to the channels closer to the 602 to 620 MHz band using the TVBD Element Management System programming tool.

The evaluation results for the unintentional radiated and power line conducted emissions are reported separately in a verification report.

2 TEST FACILITIES

2.1 Location

The radiated and conducted emissions test sites are located at the following address:

Advanced Compliance Solutions, Inc.
3998 FAU Blvd, Suite 310
Boca Raton, Florida 33431
Phone: (561) 961-5585
Fax: (561) 961-5587
www.acstestlab.com

FCC Test Firm Registration #: 587595

2.2 Laboratory Accreditations/Recognitions/Certifications

ACS is accredited to ISO/IEC 17025 by ANSI-ASQ National Accreditation Board under their ACLASS program and has been issued certificate number AT-1533 in recognition of this accreditation.

All test methods described within this report are covered under the ISO/IEC 17025 scope of accreditation, except for sections 7.3, 7.4.1, 7.4.2 and 7.4.4.

2.3 Radiated & Conducted Emissions Test Site Description

2.3.1 Semi-Anechoic Chamber Test Site

The EMC radiated test facility consists of an RF-shielded enclosure. The interior dimensions of the indoor semi-anechoic chamber are approximately 48 feet (14.6 m) long by 36 feet (10.8 m) wide by 24 feet (7.3 m) high and consist of rigid, 1/8 inch (0.32 cm) steel-clad, wood core modular panels with steel framing. In the shielded enclosure, the faces of the panels are galvanized and the chamber is self-supporting. 8-foot RF absorbing cones are installed on 4 walls and the ceiling. The steel-clad ground plane is covered with vinyl floor.

The turntable is driven by pneumatic motor, which is capable of supporting a 2000 lb. load. The turntable is flushed with the chamber floor which it is connected to, around its circumference, with a continuous metallic loaded spring. An EMCO Model 1050 Multi-device Controller controls the turntable position.

A pneumatic motor is used to control antenna polarizations and height relative to the ground. The height information is displayed on the control unit EMCO Model 1050.

The control room is an RF shielded enclosure attached to the semi-anechoic chamber with two bulkhead panels for connecting RF, and control cables. The dimension of the room is 7.3 m x 4.9 m x 3 m high and the entrance doors of both control and conducted rooms are 3 feet (0.91 m) by 7 feet (2.13 m).

A diagram of the Semi-Anechoic Chamber Test Site is shown in Figure 2.3.1-1 below:

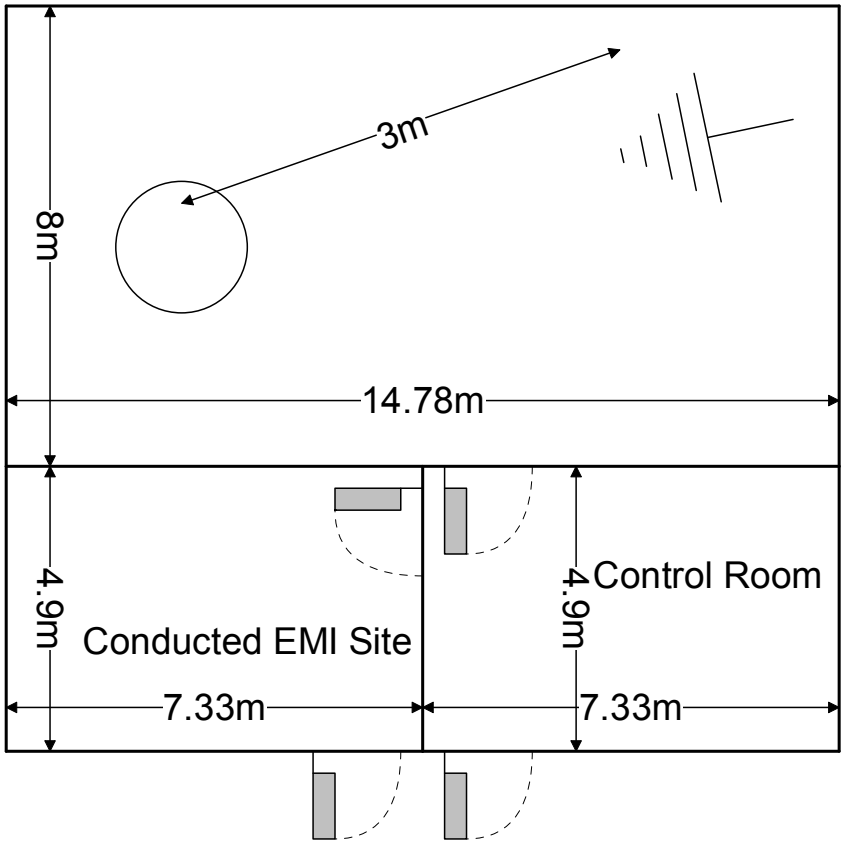


Figure 2.3.1-1: Semi-Anechoic Chamber Test Site

2.3.2 Conducted Emissions Test Site Description

The dimensions of the shielded conducted room are 7.3 x 4.9 x 3 m^3. As per ANSI C63.4 2003 requirements, the data were taken using two LISNs; a Solar Model 8028-50 50 Ω/50 µH and an EMCO Model 3825, which are installed as shown in Photograph 3. For 220 V, 50 Hz, a Polarad LISN (S/N 879341/048) is used in conjunction with a 1 kVA, 50 Hz/220 V EDGAR variable frequency generator, Model 1001B, to filter conducted noise from the generator.

A diagram of the room is shown below in figure 2.3.2-1:

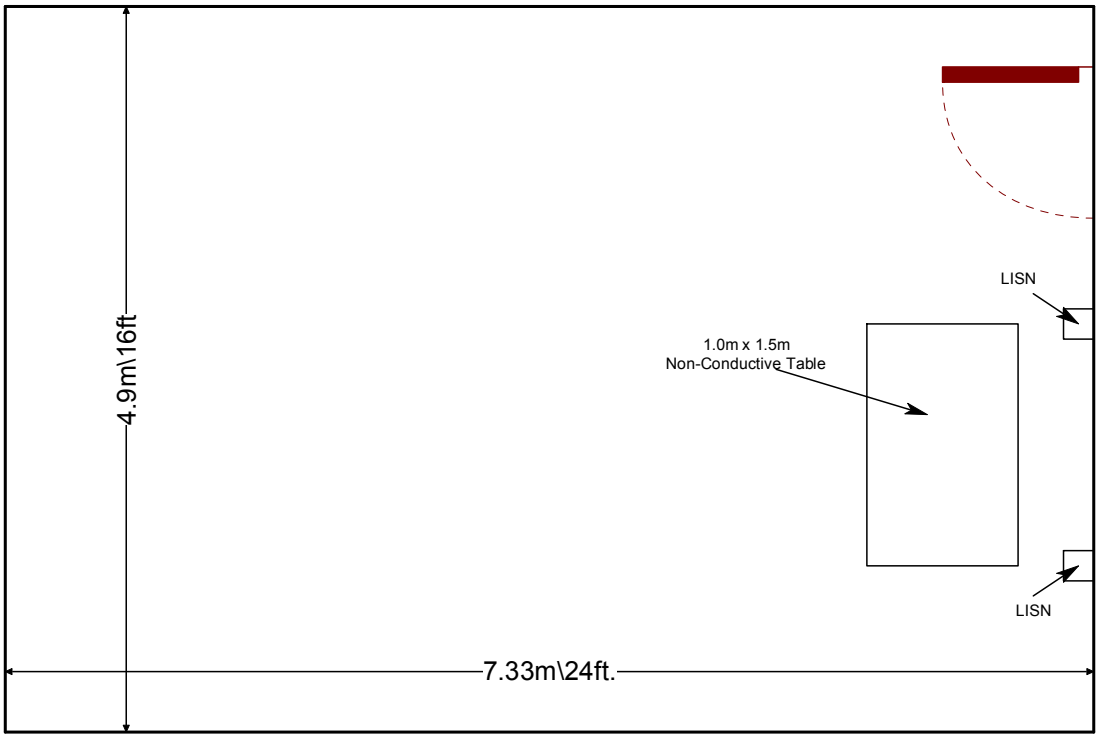


Figure 2.3.2-1: AC Mains Conducted EMI Site

3 APPLICABLE STANDARD REFERENCES

The following standards were used:

- ANSI C63.4-2009: Method of Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the 9KHz to 40GHz
- US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2012
- US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart H: Television Band Devices, 2012
- US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2012
- FCC KDB 416721 Certification Test Procedures for TV Band (White Space) Devices Authorized Under Subpart H of the Part 15 Rules, 2011.

4 LIST OF TEST EQUIPMENT

The calibration interval of test equipment is annually or the manufacturer's recommendations. Where the calibration interval deviates from the annual cycle based on the instrument manufacturer's recommendations, it shall be stated below.

Table 4-1: Test Equipment

AssetID	Manufacturer	Model #	Equipment Type	Serial #	Last Calibration Date	Calibration Due Date
523	Agilent	E7405	Spectrum Analyzers	MY45103293	1/5/2011	1/5/2013
524	Chase	CBL6111	Antennas	1138	1/7/2011	1/7/2013
2006	EMCO	3115	Antennas	2573	3/2/2011	3/2/2013
2011	Hewlett-Packard	HP 8447D	Amplifiers	2443A03952	1/3/2011	1/3/2012
2011	Hewlett-Packard	HP 8447D	Amplifiers	2443A03952	1/2/2012	1/2/2013
2037	ACS Boca	Chamber EMI Cable Set	Cable Set	2037	1/7/2011	1/7/2012
2037	ACS Boca	Chamber EMI Cable Set	Cable Set	2037	1/2/2012	1/2/2013
2044	QMI	N/A	Cables	2044	1/7/2011	1/7/2012
2044	QMI	N/A	Cables	2044	1/2/2012	1/2/2013
2075	Hewlett Packard	8495B	Attenuators	2626A11012	NCR	NCR
2076	Hewlett Packard	HP5061-5458	Cables	2076	2/2/2011	2/2/2012
2076	Hewlett Packard	HP5061-5458	Cables	2076	1/2/2012	1/2/2013
2091	Agilent Technologies, Inc.	8573A	Spectrum Analyzers	2407A03233	12/12/2011	12/12/2013
RE586	Agilent Technologies, Inc.	83017A	Amplifiers	3123A00168	9/23/2011	9/23/2012
2073	Mini Circuits	NHP-800	Filter	10247	2/3/2011	2/3/2012
2073	Mini Circuits	NHP-800	Filter	10247	1/19/2012	1/19/2013
2094	Mini Circuits	SHP-1000+	Filter	R UU27401137	2/21/2012	2/21/2013
2071	Trilithic, Inc.	4HC1400-1-KK	Filter	9643263	2/3/2011	2/3/2012
2071	Trilithic, Inc.	4HC1400-1-KK	Filter	9643263	1/19/2012	1/19/2013
2022	EMCO	LISN3825/2R	LISN	1095	8/19/2011	8/19/2013
2045	ACS Boca	Conducted Cable Set	Cable Set	2045	1/6/2011	1/6/2012
2045	ACS Boca	Conducted Cable Set	Cable Set	2045	1/2/2012	1/2/2013
2064	CIR Q-TEL	FHT/22-10K-13/50-3A/3A	Filter	9	1/15/2011	1/15/2012
2064	CIR Q-TEL	FHT/22-10K-13/50-3A/3A	Filter	9	12/30/2011	12/30/2012
2082	Teledyne Storm Products	90-010-048	Cables	2082	6/6/2011	6/6/2012

NCR=No Calibration Required

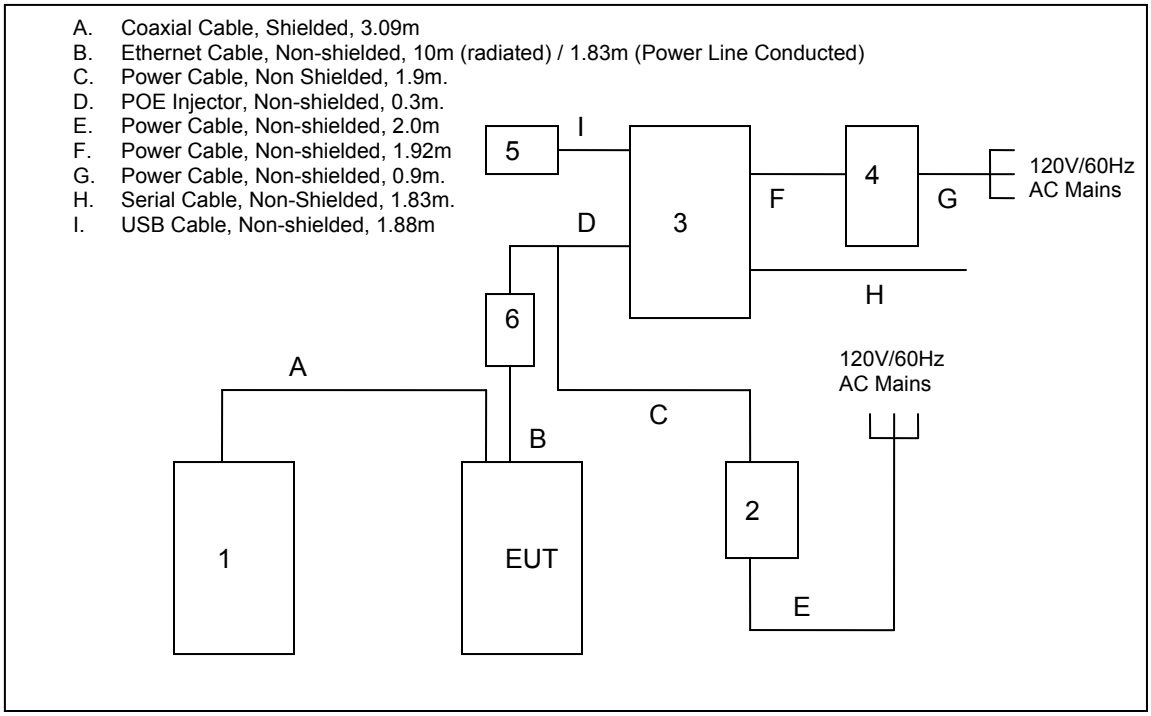
Note: Asset 2094 was acquired on February 21, 2012.

5 SUPPORT EQUIPMENT

Table 5-1: Support Equipment

Item	Equipment Type	Manufacturer	Model Number/Part Number	Serial Number
1	Antenna	Telex	ALP-450	1139
2	Switching Power Supply	APX Technologies Inc.	SPU63-108 / SP63P924FR	07331315
3	Laptop Computer	Dell	Latitude D820	N/A
4	Laptop Charger	Dell	HA65NS0-00	CN-0DF261-47890-72C-N2J3
5	Mouse	Dell	XL966	LZ9440C43W5
6	Ferrite	FAIR-RITE	0446164281	N/A

6 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM



Note: Only the EUT and the antenna were setup inside of the test chamber for the radiated emissions evaluation. The remaining supporting equipment is considered as remote interfacing devices per the customer and was setup outside of the test area.

7 SUMMARY OF TESTS

Along with the tabular data shown below, plots were taken of all signals deemed important enough to document.

7.1 Antenna Requirement – FCC: Section 15.203

The AWR-US-U-100 utilizes a Telex ALP-450 Log periodic UHF antenna. The AWR-US-U-100 uses a standard N type connector at the antenna port. The EUT is meant to be professionally installed per the customer.

7.2 Power Line Conducted Emissions – FCC: Section 15.207

7.2.1 Measurement Procedure

ANSI C63.4 sections 6 and 7 were the guiding documents for this evaluation. Conducted emissions were performed from 150 kHz to 30MHz with the spectrum analyzer's resolution bandwidth set to 9 kHz and the video bandwidth set to 30 kHz. The calculation for the conducted emissions is as follows:

Corrected Reading = Analyzer Reading + LISN Loss + Cable Loss
Margin = Applicable Limit - Corrected Reading

The EUT was evaluated in the transmit mode at the low, middle and high channels of the band of operation. Data corresponding to the configuration leading to the highest emissions are reported.

7.2.2 Measurement Results

Results of the test are shown below in and Table 7.2.2-1 and Figures 7.2.2-1 to 7.2.2-2.

Table 7.2.2-1: Power Line Conducted EMI Results

☒ Line 1 ☒ Line 2
☒ To Ground ☐ Floating
☐ Telecom Port _____
☒ dBµV ☐ dBµA

Plot Number: 11-2110CE25
Power Supply Description: 24 VDC

Frequency (MHz)	Uncorrected Reading		Total Correction Factor (dB)	Corrected Level		Limit		Margin (dB)	
	Quasi-Peak	Average		Quasi-Peak	Average	Quasi-Peak	Average	Quasi-Peak	Average
Line 1									
0.184663	56.266	50.596	1.30	57.56	51.89	64.27	54.27	6.7	2.4
0.245013	48.825	42.24	1.06	49.88	43.30	61.92	51.92	12.0	8.6
0.306763	43.258	36.651	0.76	44.02	37.41	60.06	50.06	16.0	12.6
17.6931	33.826	32.604	2.33	36.16	34.93	60.00	50.00	23.8	15.1
18.2433	35.622	34.401	2.35	37.97	36.75	60.00	50.00	22.0	13.3
18.3034	34.429	32.965	2.35	36.78	35.31	60.00	50.00	23.2	14.7
18.3641	33.919	32.108	2.35	36.27	34.46	60.00	50.00	23.7	15.5
18.4878	32.361	30.666	2.35	34.72	33.02	60.00	50.00	25.3	17.0
19.5864	32.429	29.192	2.39	34.82	31.58	60.00	50.00	25.2	18.4
20.3813	30.986	27.36	2.56	33.54	29.92	60.00	50.00	26.5	20.1
Line 2									
0.184363	56.231	48.125	1.31	57.54	49.43	64.29	54.29	6.7	4.9
0.246163	48.742	40.428	1.05	49.79	41.47	61.89	51.89	12.1	10.4
0.368463	37.647	30.014	0.66	38.31	30.68	58.54	48.54	20.2	17.9
17.6928	34.2	32.861	2.37	36.57	35.23	60.00	50.00	23.4	14.8
18.2431	35.977	34.888	2.38	38.36	37.27	60.00	50.00	21.6	12.7
18.3039	34.879	33.479	2.38	37.26	35.86	60.00	50.00	22.7	14.1
18.3657	34.436	32.604	2.39	36.82	34.99	60.00	50.00	23.2	15.0
19.1584	32.255	29.218	2.41	34.66	31.63	60.00	50.00	25.3	18.4
19.5856	32.818	29.458	2.42	35.24	31.88	60.00	50.00	24.8	18.1
19.7079	33.402	31.23	2.42	35.83	33.65	60.00	50.00	24.2	16.3

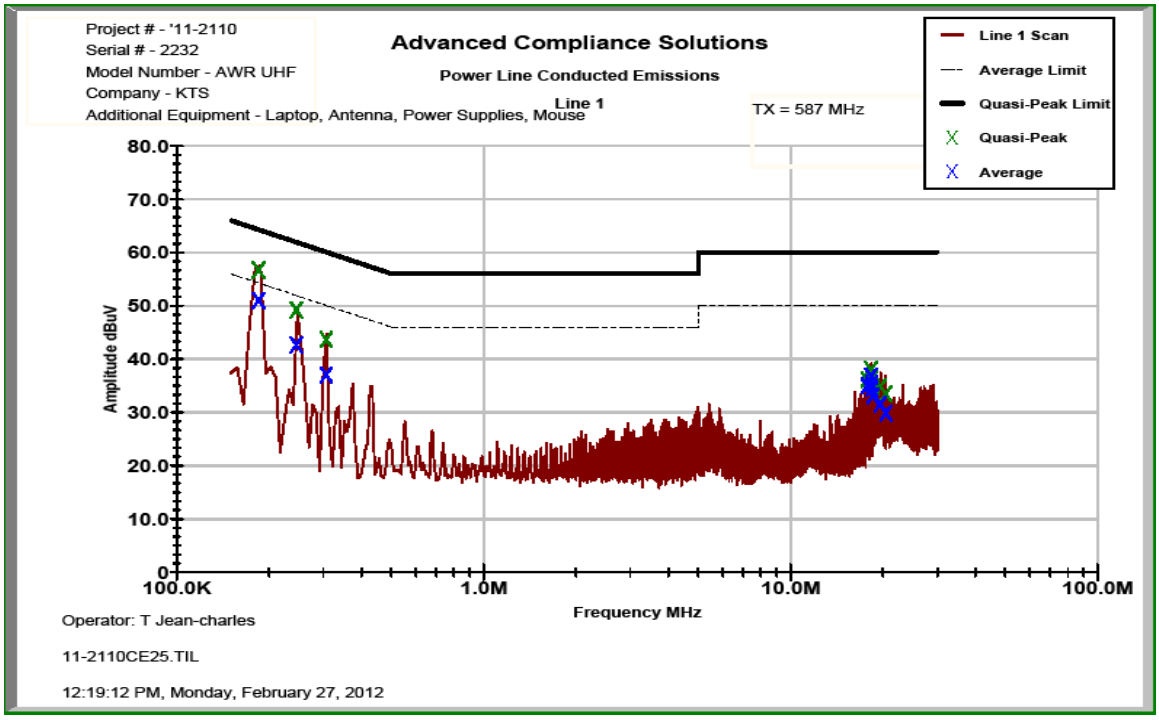


Figure 7.2.2-1: Line 1 Conducted EMI Results

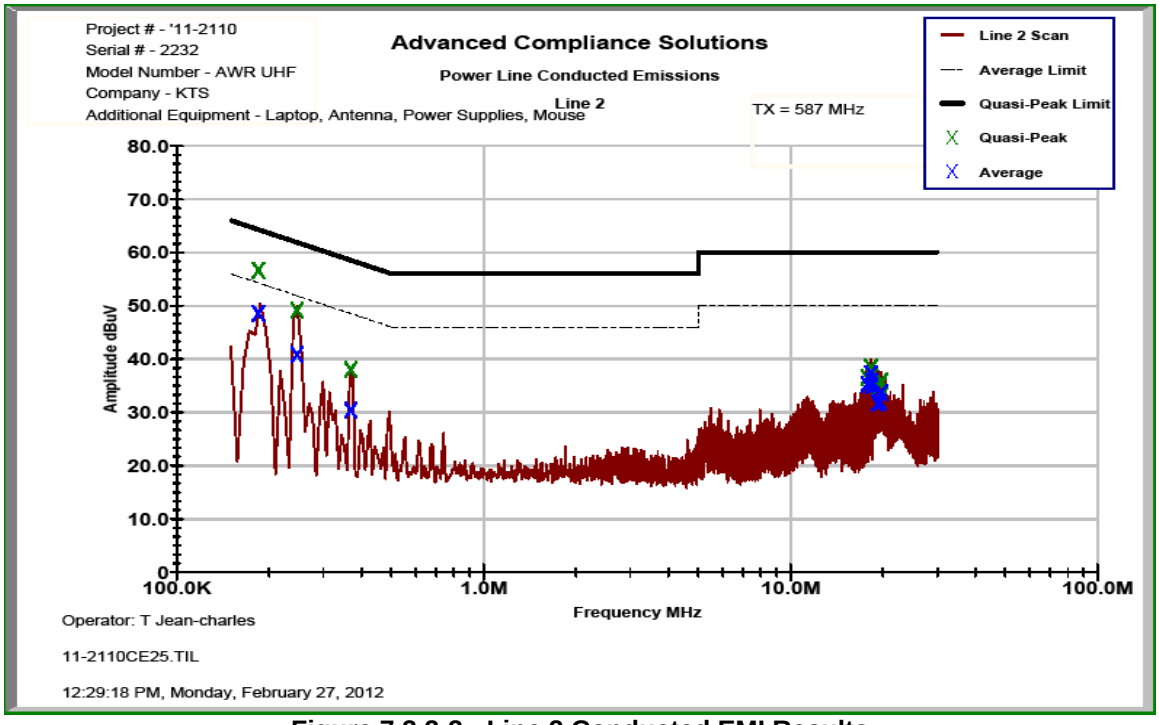


Figure 7.2.2-2: Line 2 Conducted EMI Results

7.3 Peak Output Power - FCC Section 15.709 (a)

7.3.1 Measurement Procedure (Conducted Method)

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. Offset values were input for cable and attenuation. The spectrum analyzer's averaging detector was selected and the span was set to 10 MHz. The resolution bandwidth and the video bandwidth were set to 100 kHz and 300 kHz, respectively. The sweep time was set to allow one millisecond per trace point integration time.

The power was measured by using the integrated band/channel power analyzer function over the 6 MHz channel bandwidth. The power spectral density was measured as the peak power per the 100 kHz bandwidth.

The 12.2 dBm power spectral density limit was adjusted to 11.45. dBm in order to account for the antenna gain over 6 dBi.

7.3.2 Measurement Results

Results are shown below in Table 7.3.2-1 to Table 7.3.2-2 and Figures 7.3.2-1 to Figure 7.3.2-3 below:

Table 7.3.2-1: RF Output Power

Frequency [MHz]	Level [dBm]
473	20.80
587	21.08
695	20.99

Table 7.3.2-2: Power Spectral Density

Frequency [MHz]	Level [dBm]
473	11.01
587	11.33
695	11.33

Note: The PSD limit for fixed TVBD was further corrected by taking into consideration the antenna gain over 6 dBi.

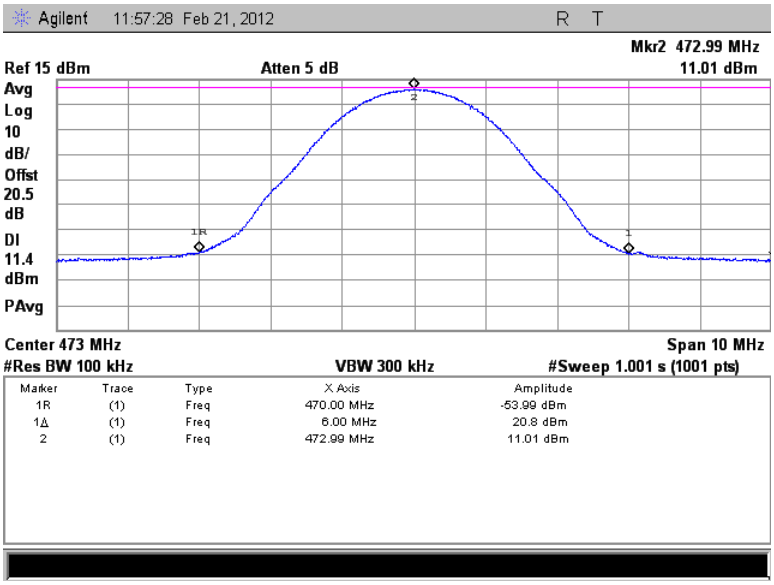


Figure 7.3.2-1: Channel Power and Power Spectral Density – Low Channel

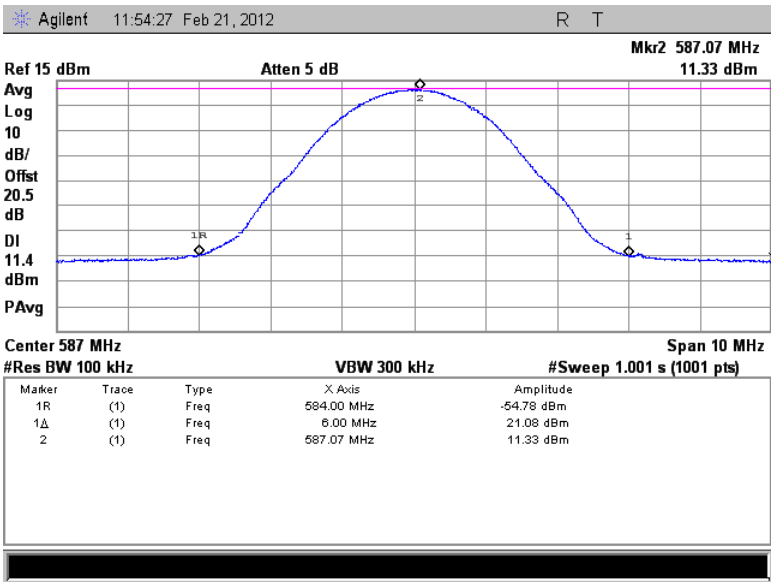


Figure 7.3.2-2: Channel Power and Power Spectral Density – Middle Channel

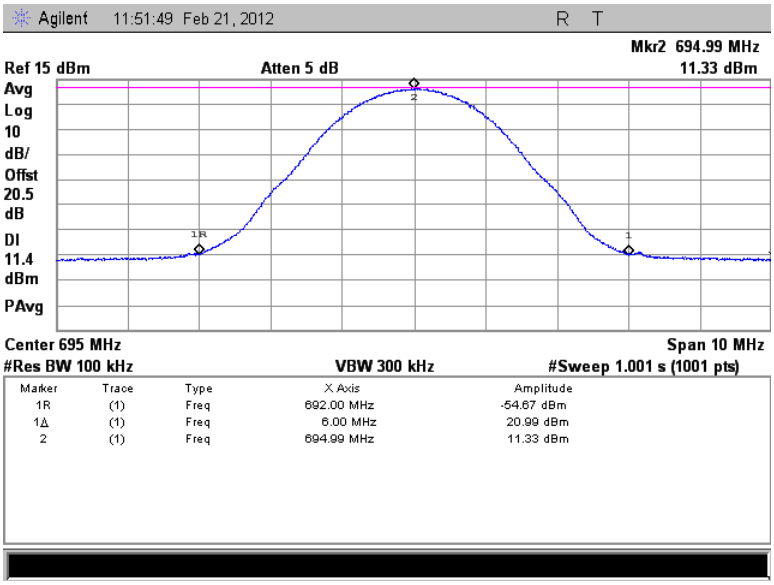


Figure 73.2-3: Channel Power and Power Spectral Density – High Channel

7.4 Adjacent Channel and Spurious Emissions - FCC 15.709 (c)

7.4.1 Band-Edge Compliance of RF Conducted Emissions

7.4.1.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The EUT was investigated at the lowest, middle, and highest channel available to determine band-edge compliance. For each measurement the spectrum analyzer's RBW was set 10 kHz and the sweep time allowed one millisecond per trace point integration time. The channel edge level was measured as the RMS power over 100 kHz bandwidth at the edge of the operating channel.

7.4.1.2 Measurement Results

Results are shown in the in Table 7.4.1.2-1 and figures 7.4.1.2-1 to 7.4.1.2-6 below.

Table 7.4.1.2-1: Channel Edge Results

Frequency (MHz)	Level (dBm)	TX Power (dBm)	Delta (dB)	Status
Low Channel = 473 MHz				
470	-55.58	20.80	76.38	PASS
476	-55.76	20.80	76.56	PASS
Middle Channel = 587 MHz				
584	-56.12	21.08	77.20	PASS
590	-56.38	21.08	77.46	PASS
High Channel = 695 MHz				
692	-55.98	20.99	76.97	PASS
698	-56.21	20.99	77.20	PASS

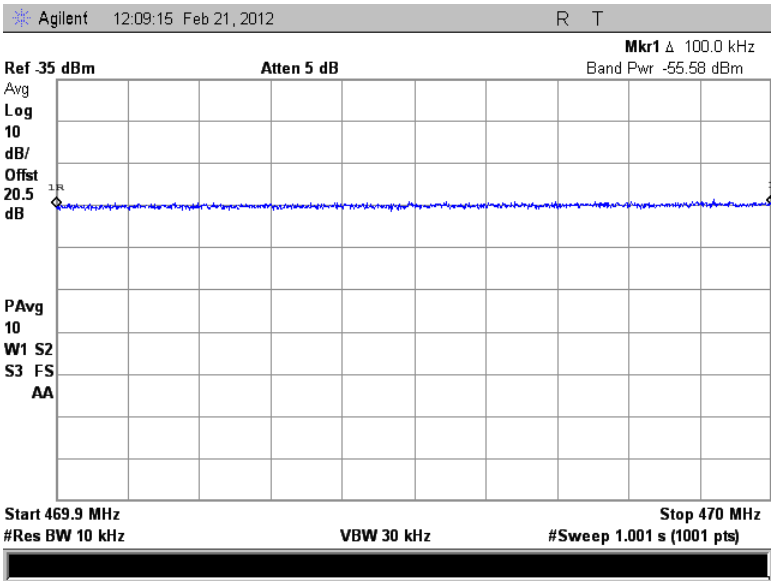


Figure 7.4.1.2-1: Lower Band-edge – Low Channel

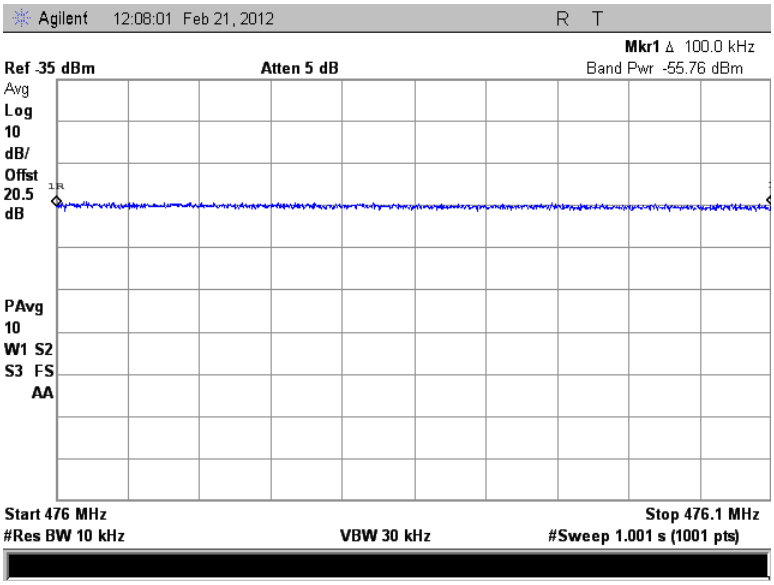


Figure 7.4.1.2-2: Upper Band-edge - Low Channel

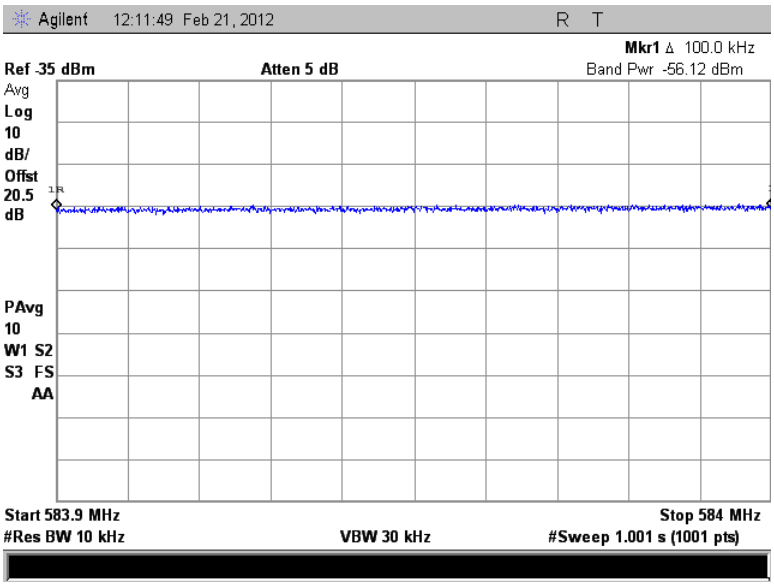


Figure 7.4.1.2-3: Lower Band-edge – Middle Channel

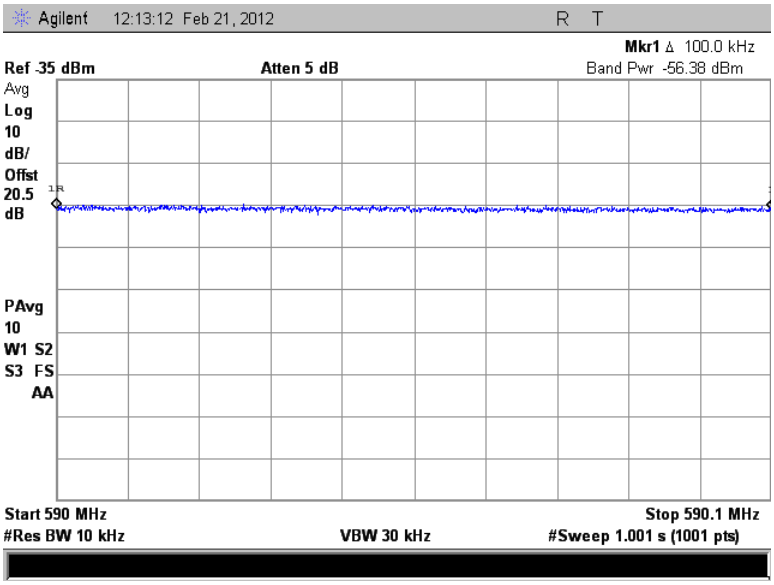


Figure 7.4.1.2-4: Upper Band-edge – Middle Channel

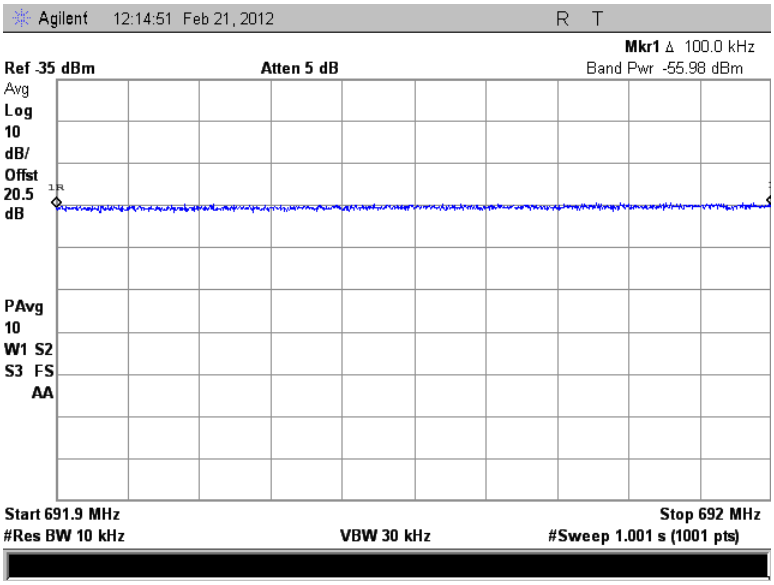


Figure 7.4.1.2-5: Lower Band-edge – High Channel

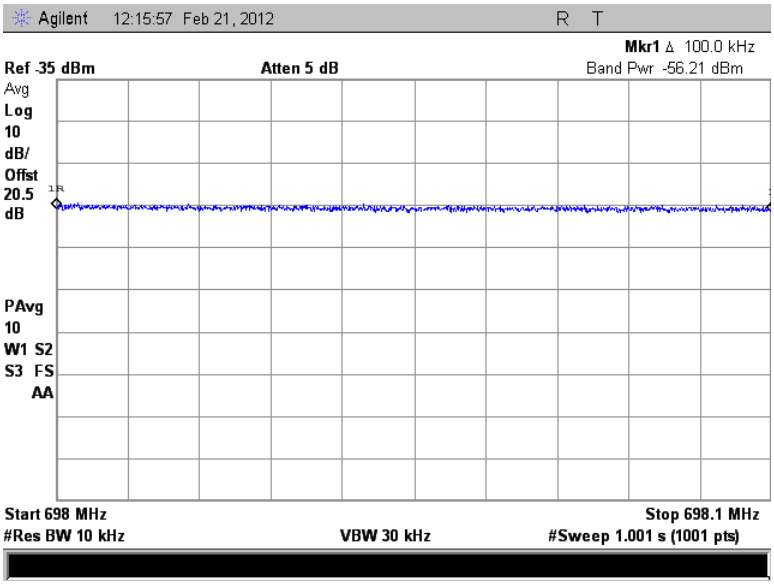


Figure 7.4.1.2-6: Upper Band-edge – High Channel

7.4.2 Adjacent Channel Compliance of RF Conducted Emissions

7.4.2.1 Measurement Procedure

The RF output port of the EUT was directly connected to the input of the spectrum analyzer. The EUT was investigated at the lowest, middle and highest channels available to determine compliance for the channels immediately adjacent to the channel of operation. For each measurement the spectrum analyzer's RBW was set to 100 kHz, and the VBW was set to 300 kHz. The power was average using a RMS detector using a sweep time corresponding to 1 ms per sweep points. The highest level in the 6 MHz span of the adjacent channel is recorded.

7.4.2.2 Measurement Results

Results are shown in the Table 7.4.2.2-1 and figures 7.4.2.2-1 to 7.4.2.2-6 below.

Table 7.4.2.2-1: Adjacent Channel Results

Frequency (MHz)	Level (dBm)	TX Power (dBm)	Delta (dB)	Status
Low Channel = 473 MHz				
469.87	-54.58	20.8	75.38	PASS
476.15	-54.22	20.8	75.02	PASS
Middle Channel = 587 MHz				
583.86	-55.55	21.08	76.63	PASS
590.16	-54.9	21.08	75.98	PASS
High Channel = 695 MHz				
691.86	-54.72	20.99	75.71	PASS
698.16	-54.23	20.99	75.22	PASS

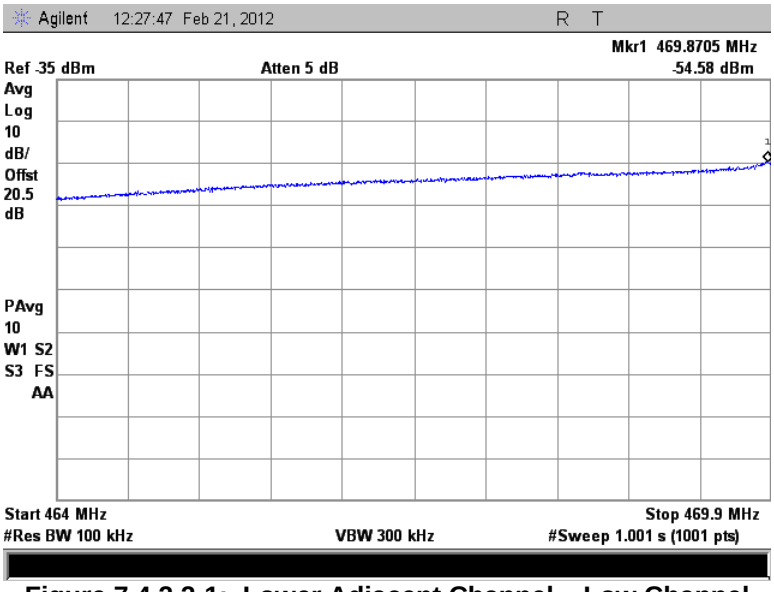


Figure 7.4.2.2-1: Lower Adjacent Channel – Low Channel

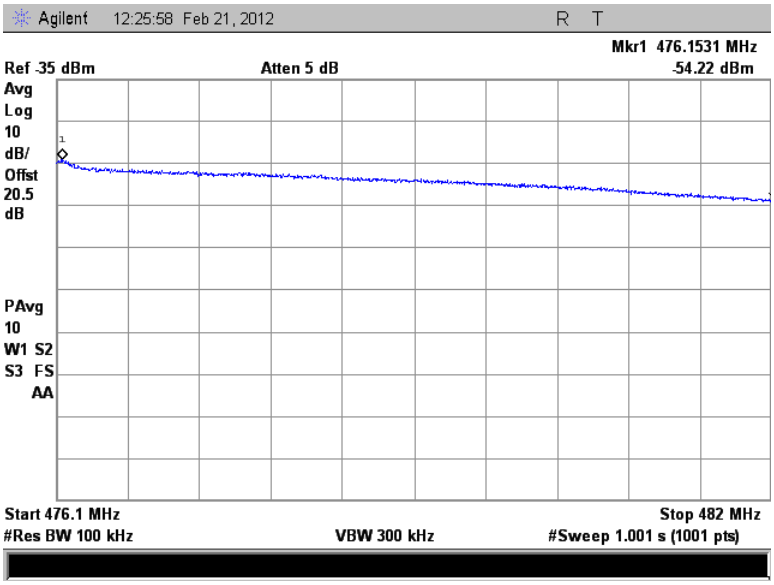


Figure 7.4.2.2-2: Upper Adjacent Channel – Low Channel

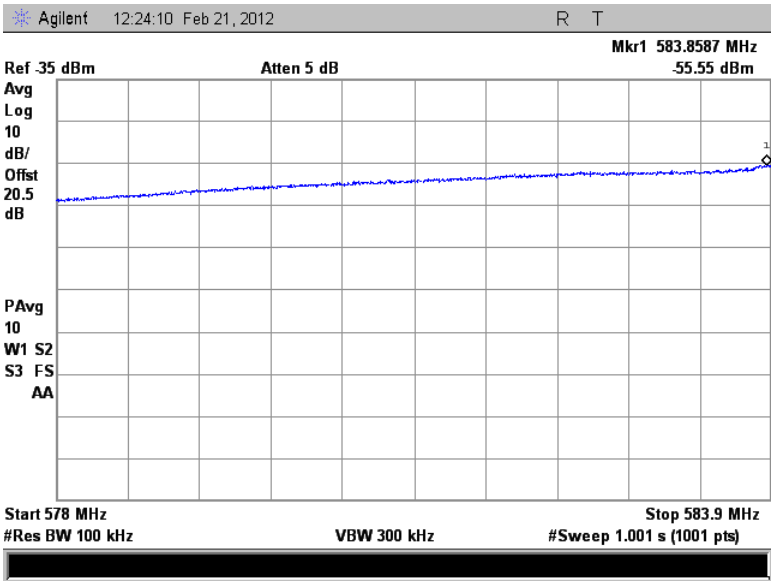


Figure 7.4.2.2-3: Lower Adjacent Channel – Middle Channel

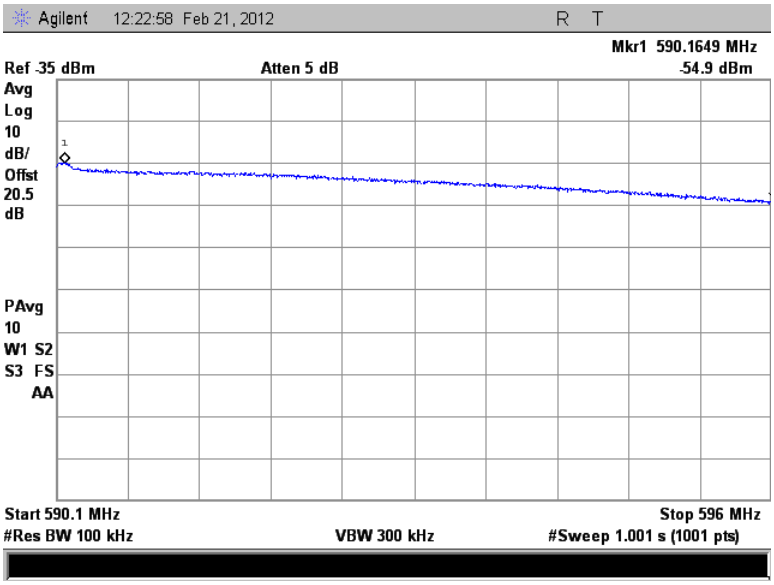


Figure 7.4.2.2-4: Upper Adjacent Channel – Middle Channel

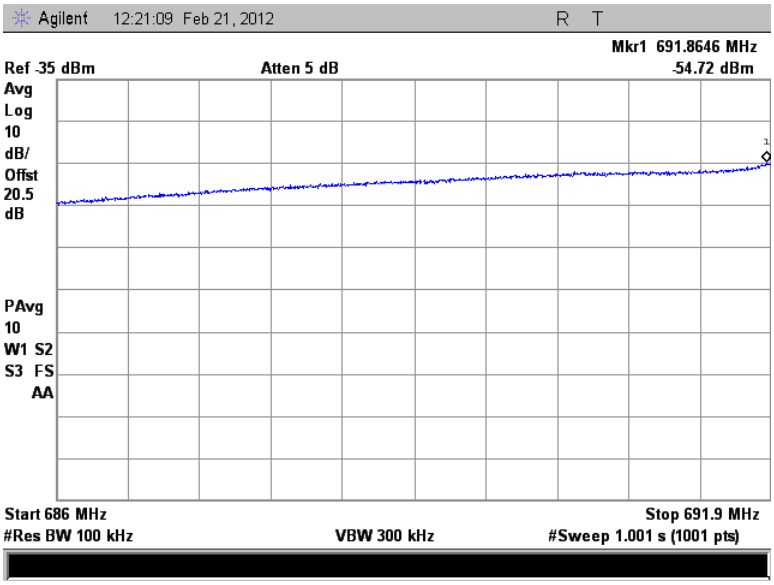


Figure 7.4.2.2-5: Lower Adjacent Channel – High Channel

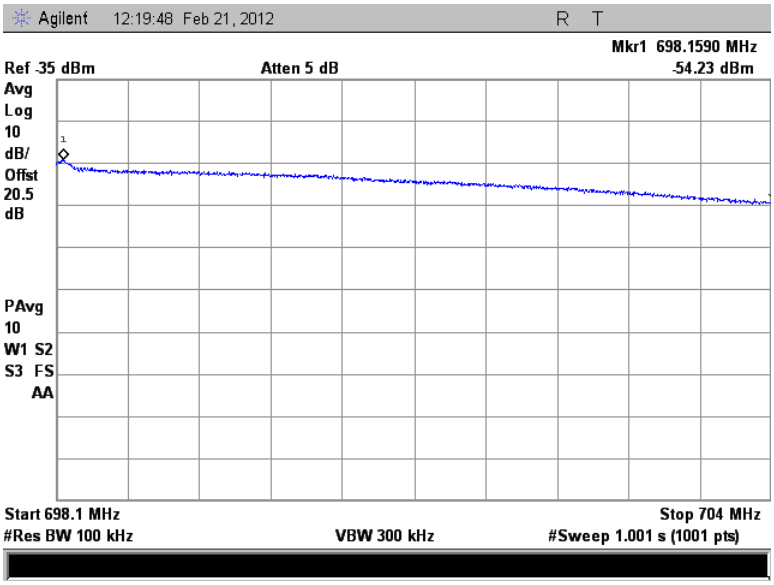


Figure 7.4.2.2-6: Upper Adjacent Channel – High Channel

7.4.3 Radiated Spurious Emissions - FCC Section 15.209

7.4.3.1 Measurement Procedure

Radiated emissions tests were made over the frequency range of 30MHz to 7GHz, 10 times the highest fundamental frequency.

The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. For frequencies below 1000 MHz, quasi-peak measurements were made using a resolution bandwidth RBW of 120 kHz and a video bandwidth VBW of 300 kHz. For frequencies above 1000 MHz, peak and average measurements made with RBW and VBW of 1 MHz and 3MHz respectively.

7.4.3.2 Measurement Results

Radiated spurious emissions found in the band of 30MHz to 7GHz are reported in the Table 7.4.3.2-1 below.

Table 7.4.3.2-1: Radiated Spurious Emissions Tabulated Data

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel (473 MHz)										
946	38.72	34.62	H	1.88	---------	36.50	--------	46.0	---------	9.50
946	40.20	36.27	V	1.88	---------	38.15	--------	46.0	---------	7.80
4730.05	49.33	41.55	V	-2.33	47.01	39.22	74.0	54.0	27.00	14.80
Middle Channel (587 MHz)										
1174.01	55.93	49.23	H	-16.90	39.03	32.33	74.0	54.0	35.00	21.70
1760.22	55.73	44.82	H	-12.88	42.84	31.93	74.0	54.0	31.20	22.10
5870.04	48.23	40.74	H	0.10	48.33	40.84	74.0	54.0	25.70	13.20
1174	60.85	57.51	V	-16.90	43.95	40.61	74.0	54.0	30.00	13.40
1760.3	58.86	48.73	V	-12.88	45.98	35.85	74.0	54.0	28.00	18.20
5869.99	51.08	46.09	V	0.10	51.18	46.19	74.0	54.0	22.80	7.80
High Channel (695 MHz)										
1390.05	57.92	54.62	H	-15.41	42.52	39.21	74.0	54.0	31.50	14.80
1390.03	64.07	61.95	V	-15.41	48.66	46.55	74.0	54.0	25.30	7.50
5560	49.09	41.59	V	-0.98	48.11	40.61	74.0	54.0	25.90	13.40

* Note: All emissions above 5870 MHz were attenuated below the permissible limit.

7.4.4 Radiated Spurious Emissions - FCC Section 15.709 (c)(4)

7.4.4.1 Measurement Procedure

Radiated emissions tests were made over the frequency range of 602 MHz to 620 MHz

The receive antenna was set at 1m from the EUT. The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. Quasi-peak measurements were made using a resolution bandwidth RBW of 120 kHz and a video bandwidth VBW of 300 kHz

7.4.4.2 Measurement Results

Radiated spurious emissions found in the band of 602 MHz to 620 MHz are reported in the Table 7.4.4.2-1 below.

Table 7.4.4.2-1: Radiated Spurious Emissions Tabulated Data _602 MHz – 620 MHz

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
TX = 599 MHz										
602.9	40.68	32.16	V	-4.09	---------	28.07	--------	115.5	---------	87.4
602.9	40.25	30.11	H	-4.09	---------	26.02	--------	115.5	---------	89.5
610.33	31.65	20.95	H	-3.33	---------	17.62	--------	30.0	---------	12.38
611.89	32.40	21.43	V	-3.30	---------	18.13	--------	30.0	---------	11.87
614.8	31.95	21.52	H	-3.23	---------	18.29	--------	95.0	---------	76.71
619.15	33.30	20.80	V	-3.13	---------	17.67	--------	115.8	---------	98.08
TX= 623 MHz										
606	44.05	33.81	V	-3.76	---------	30.05	--------	100.0	---------	70.0
606.5	37.10	29.62	H	-3.71	---------	25.91	--------	97.5	---------	71.6
611	39.35	31.92	V	-3.32	---------	28.60	--------	30.0	---------	1.40
613.1	46.65	30.65	H	-3.27	---------	27.38	--------	30.0	---------	2.62
619.8	44.25	37.30	H	-3.11	---------	34.19	--------	119.0	---------	84.81
619.9	48.35	42.02	V	-3.11	---------	38.91	--------	119.5	---------	80.59

Note: The EUT had to be tuned to 599 MHz and 623 MHz, respectively

7.4.5 Sample Calculation:

$R_C = R_U + CF_T$

Where:

CF_T	=	Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)
R_U	=	Uncorrected Reading
R_C	=	Corrected Level
AF	=	Antenna Factor
CA	=	Cable Attenuation
AG	=	Amplifier Gain
DC	=	Duty Cycle Correction Factor

Example Calculation: Peak
Corrected Level: 55.93 + -16.9 = 39.03dBuV/m
Margin: 74dBuV/m – 39.03dBuV/m = 35.0dB

Example Calculation: Average
Corrected Level: 49.23 + -16.9 - 0= 32.33dBuV
Margin: 54dBuV – 32.33dBuV = 21.7dB

8 CONCLUSION

In the opinion of ACS, Inc. the AWR-US-U-100, manufactured by KTS Wireless is determined to meet the requirements of FCC Part 15 subpart H as submitted. The results contained in this report are representative of the sample tested only. It is the manufacturer's responsibility to incorporate all changes that were made to the EUT, if any, to bring it into compliance during the evaluation, into production units.

END REPORT