Excellence in Compliance Testing

Certification Test Report

FCC ID: VEYXAPR1

FCC Rule Part: 15.247

ACS Report Number: 14-2006.W04.1B

Manufacturer: xG Technology, Inc
Model: xAP

Test Begin Date: **January 17, 2014**
Test End Date: **February 5, 2014**

Report Issue Date: February 10, 2014

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:

Thierry Jean-Charles
EMC Engineer
Advanced Compliance Solutions, Inc.

Reviewed by:

Kirby Munroe
Director, Wireless Certifications
Advanced Compliance Solutions, Inc.

This report contains 20 pages

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1 GENERAL

1.1 Purpose

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations for a Class II Permissive Change.

The purpose of the Class II Permissive Change is to add a new antenna type to the original application.

1.2 Product Description

The xG Technology Model xAP device is a carrier class base station device meant to be installed on outdoor sites like towers and buildings. The device is compact and light weight. A web page is used for configuration.

Technical Information:

Band of Operation:	904.2 MHz - 925.8 MHz
Number of Channels:	16
Modulation Format:	BPSK, QPSK, 16-QAM, 64-QAM
Antenna Type/Gain:	Panel Antenna, 11.3 dBi
Operating Voltage:	48 VDC through POE Injector

Manufacturer Information:
xG Technology, Inc
7771 West Oakland Park Blvd, Suite 231
Sunrise, FL 33351

Test Sample Serial Number(s): ACS#1

Test Sample Condition: The unit was in good operating condition with no physical damages.

1.3 Test Methodology and Considerations

During the original certification, the majority of the measurements were performed at the maximum RF output setting of the EUT. Additionally, the radiated emissions measurements were performed on the EUT cabinet with 50 Ohm terminations at the TX antenna ports. Only the measurement results affected by the new antenna gain are re-assessed in this document. Consequently, the xAP was evaluated for RF output power and conducted spurious emissions in the restricted bands. The other parameters recorded in the original report were tested in the worst case configurations.

The RF output power and spurious emissions measurements were collected with a test software power setting of 21 dBm. The RF conducted measurements were performed directly at each of the TX antenna ports through suitable attenuation. The maximum RF output power was calculated using the methodologies described in KDB Publication No. 662911 D01 Multiple Transmitter Output v02r01. The TX antennas are cross-polarized in the panel antenna. Therefore, the directional gain was determined to be equal to the gain at each antenna port = 11.3 dBi.

The xAP was also evaluated for unintentional radiated emissions with the panel antenna. The results are documented 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 #: 475089
Industry Canada Lab Code: 4175C

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. Unless otherwise specified, all test methods described within this report are covered under the ISO/IEC 17025 scope of accreditation.

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:

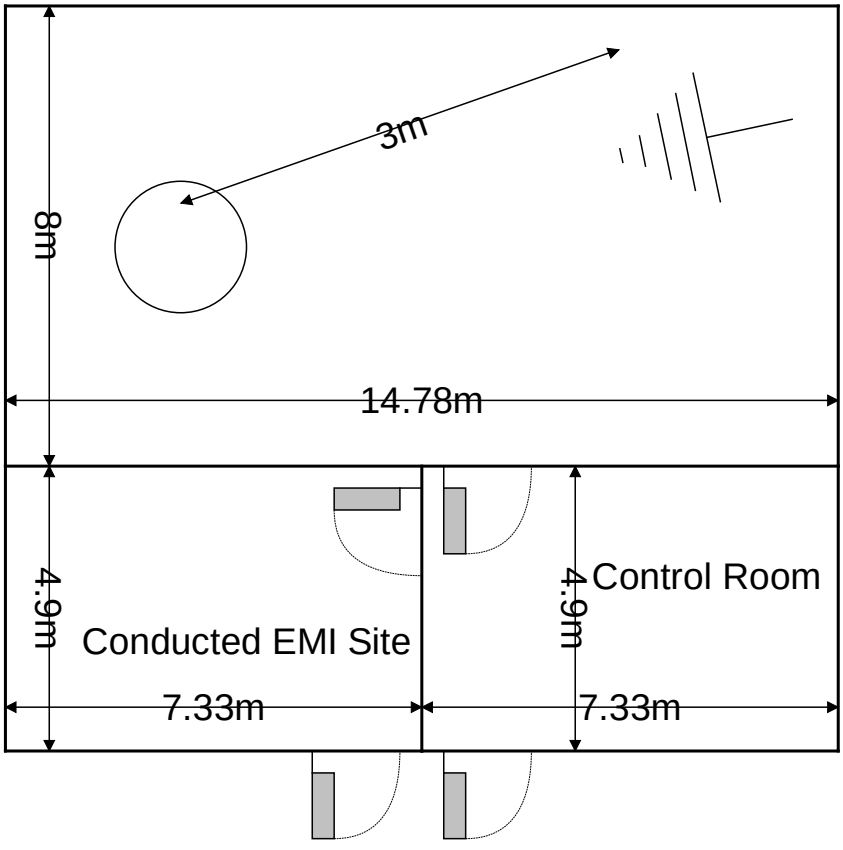

Figure 2.3.1-1: Semi-Anechoic Chamber Test Site

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:

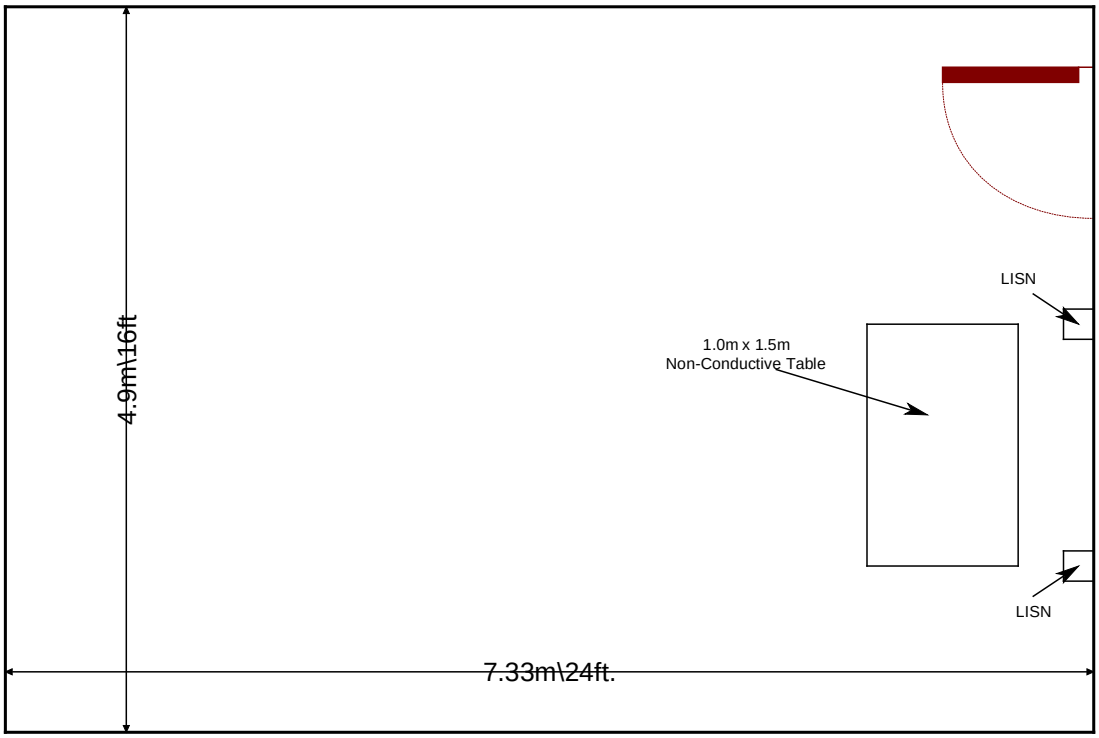

Figure 2.3.2-1: AC Mains Conducted EMI Site

3 APPLICABLE STANDARD REFERENCES

The following standards were used:

- ANSI C63.4-2003: Method of Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the 9KHz to 40GHz
- ANSI C63.10-2009: American National Standard for Testing Unlicensed Wireless Devices.
- US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2014
- US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2014
- KDB Publication No. 558074 D01 Meas Guidance v03r01 – Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under 15.247, April 9, 2013.
- KDB Publication No. 662911 D01 Multiple Transmitter Output v02r01 – Emissions Testing of Transmitters with Multiple Outputs in the Same Band (*e.g.,* MIMO, Smart Antenna, etc), October 31, 2013.
- KDB Publication No. 662911 D02 MIMO with Cross-Polarized Antennas v01 – Mimo with Cross-Polarized Antenna, October 25, 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
2069	Trilithic, Inc.	7NM867/122-X1-AA	Notch Filter	200315126	3/26/2013	3/26/2014
2071	Trilithic, Inc.	4HC1400-1-KK	Filter	9643263	1/1/2014	1/1/2015
2075	Hewlett Packard	8495B	Attenuators	2626A11012	1/2/2014	1/2/2015
2082	Teledyne Storm Products	90-010-048	Cables	2082	5/31/2013	5/31/2014
2086	Merrimac	FAN-6-10K	Attenuators	23148-83-1	12/31/2013	12/31/2014
2093	Merrimac	FAN-6-10K	Attenuators	23148-83-18	12/31/2013	12/31/2014
3002	Rohde & Schwarz	ESU40	Receiver	100346	11/5/2013	11/5/2014
RE561	Rhode & Schwarz	NRP-Z55	Sensors	100028	11/25/2013	11/25/2014

NCR=No Calibration Required

5 SUPPORT EQUIPMENT

Table 5-1: EUT and Support Equipment

Item #	Type Device	Manufacturer	Model/Part #	Serial #
1	POE Adaptor	Tycon Power Systems	TP-POE-HP-48	116011421D
2	4x Ferrites	FAIR-RITE	0443164251	N/A
3	2x Ferrites	FAIR-RITE	0443164251	N/A
4	Laptop	Dell	Latitude D620	CN-0TD761-12961-68G-3106
5	Power Supply	Dell	PA-1650-05D2	CN-0F7970-71615-54P-C958

Table 5-2: Cable Description

Cable #	Cable Type	Length	Shield	Termination
A	Ethernet	1.08 m	Yes	EUT to POE adapter
B	Power Cord	1.83 m	No	Power Supply to AC Mains
C	Ethernet	1.2 m	No	POE to Laptop
D	Dell Power Supply Cable	1.83 m	No	Laptop to Power Supply
E	Dell Power Supply Cord	0.90 m	No	Power Supply to AC Mains

6 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM

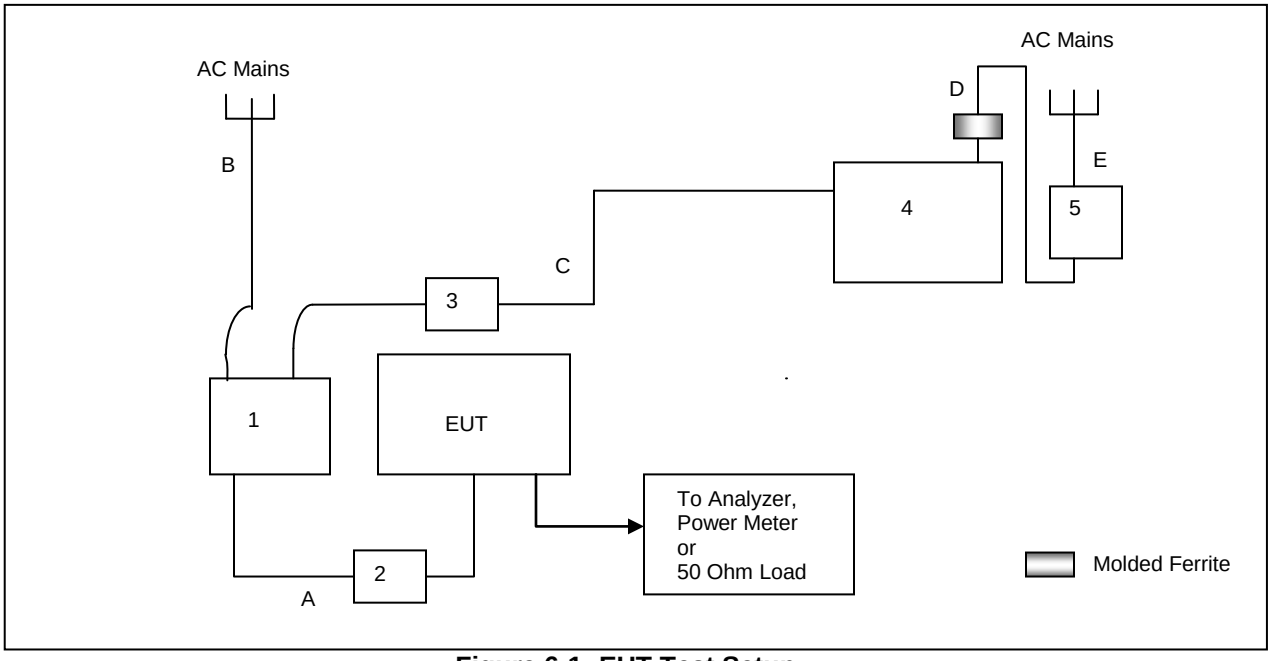

Figure 6-1: EUT Test Setup

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 EUT uses standard Type N connectors at the antenna ports. However, the unit is professionally installed by an xG Technology personnel or subcontractor. Thus the equipment meets the requirements of FCC Section 15.203 based on professional installation.

For the 4 RX x 2 TX panel antenna configuration, the directional gain is calculated per FCC KDB Publication No. 662911 D01 Multiple Transmitter Output v02r01.

Directional Gain = GANT + Array Gain
Array Gain = 10*log(NANT/NSS) dB

Where,
GANT = Antenna Gain
NANT = number of transmit antennas and
NSS = number of spatial streams. (Assume NSS = 1 unless you have specific information to the contrary.)

For the panel antenna configuration, the TX antennas are cross-polarized. Therefore, the directional gain is the individual gain of the antenna:
Directional Gain = 11.3 dBi

Considering that the unit is professionally installed, the output power is adjusted so that the maximum EIRP does not exceed 36 dBm.

7.2 Maximum Conducted Output Power - FCC Section 15.247(b)(3)

7.2.1 Measurement Procedure (Conducted Method)

The unit was configured to transmit at the maximum duty cycle. The Output Power was measured in accordance with the FCC KDB Publication No. 558074 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (47 CFR 15.247)" Section 9.2.3.1 Method AVGPM (Measurement using an RF average power meter). The RF output of the equipment under test was directly connected to the input of the power meter through suitable attenuation. The duty cycle correction was calculated as 10*log(1/0.49) = 3.1 dB.

The total output power was calculated in accordance with FCC KDB Publication No. 662911 "Emissions Testing of Transmitters with Multiple Outputs in the Same Band" in order to account for the two TX antenna paths by summing the output power across all transmitter outputs.

7.2.2 Measurement Results

Results are shown below.

RF Output Power for 11.3 dBi Antenna (Power Level 21)

Table 7.2.2-1: RF Output Power (BPSK)

Frequency [MHz]	TX Path 1 Level [dBm]	TX Path 2 Level [dBm]	Duty Cycle Correction %	Total Output Power [dBm]
904.2	17.83	17.75	49	23.90
915.72	17.77	17.92	49	23.95
925.8	17.88	18.23	49	24.17

Table 7.2.2-2: RF Output Power (QPSK)

Frequency [MHz]	TX Path 1 Level [dBm]	TX Path 2 Level [dBm]	Duty Cycle Correction %	Total Output Power [dBm]
904.2	18.64	17.54	49	24.23
915.72	17.9	17.94	49	24.03
925.8	17.89	18.14	49	24.13

Table 7.2.2-3: RF Output Power (16-QAM)

Frequency [MHz]	TX Path 1 Level [dBm]	TX Path 2 Level [dBm]	Duty Cycle Correction %	Total Output Power [dBm]
904.2	17.86	17.8	49	23.94
915.72	17.8	17.95	49	23.98
925.8	17.92	18.23	49	24.19

Table 7.2.2-4: RF Output Power (64-QAM)

Frequency [MHz]	TX Path 1 Level [dBm]	TX Path 2 Level [dBm]	Duty Cycle Correction %	Total Output Power [dBm]
904.2	17.73	17.66	49	23.80
915.72	17.92	18.02	49	24.08
925.8	17.75	18.1	49	24.04

7.2.3 Spurious Emissions - FCC Section 15.205

7.2.3.1 Conducted Spurious Emissions - FCC Section 15.205

7.2.3.1.1 Measurement Procedure

The conducted spurious emissions tests were made over the frequency range of 30 MHz to 10 GHz, 10 times the highest fundamental frequency. For emissions below 1000 MHz, Quasi-Peak measurements were made with RBW = 120 kHz and VBW = 300 kHz. Above 1000 MHz, Peak and average measurements were made with RBW of 1 MHz and VBW of 3MHz. The average measurements were performed per Section 12.2.5.2 of the FCC KDB Publication No. 558074 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (47 CFR 15.247)". The measurements were performed at each antenna ports and the total EIRP was calculated per the FCC KDB Publication No. 662911 "Emissions Testing of Transmitters with Multiple Outputs in the Same Band" in order to account for the two TX antenna paths. The results were converted from EIRP to E-Field per the FCC KDB Publication No. 558074 "Guidance for Performing Compliance Measurements on Digital Transmission Systems (47 CFR 15.247)".

7.2.3.1.2 Measurement Results

Emissions found in the restricted bands of the frequency range of evaluation are reported below.

11.3 dBi Panel Antenna Array (Cross-Polarized)

Table 7.2.3.1.2-1: RF Conducted Spurious Emissions Tabulated Data (BPSK)

Frequency (MHz)	Measured Power (dBm)				Total Corrected EIRP (dBm)		Corrected Levels (dBuV/m)		Limits (dBuV/m)		Margin (dBuV/m)	
	RF Port 1		RF Port 2									
	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg
TX = 904.2 MHz												
1010	-47.51	-64.22	-56.13	-70.95	-35.65	-48.99	59.61	46.27	74.00	54.00	14.39	7.73
2712.6	-52.21	-65.90	-52.50	-67.44	-38.04	-49.19	57.22	46.06	74.00	54.00	16.78	7.94
3616.8	-55.44	-68.42	-55.40	-68.30	-41.11	-50.95	54.15	44.31	74.00	54.00	19.85	9.69
4521	-56.87	-68.88	-56.76	-68.82	-42.50	-51.44	52.75	43.82	74.00	54.00	21.25	10.18
5425.2	-56.71	-69.30	-56.75	-69.35	-42.42	-51.92	52.84	43.34	74.00	54.00	21.16	10.66
8137.8	-51.66	-68.72	-50.68	-68.98	-36.83	-51.44	58.43	43.82	74.00	54.00	15.57	10.18
9042	-53.23	-69.18	-55.51	-69.44	-39.91	-51.90	55.35	43.36	74.00	54.00	18.65	10.64
TX = 915.72 MHz												
1030.4	-50.65	-65.36	-57.24	-72.20	-38.49	-50.14	56.77	45.11	74.00	54.00	17.23	8.89
2747.16	-54.11	-69.36	-52.34	-69.19	-38.83	-51.87	56.43	43.39	74.00	54.00	17.57	10.61
3662.88	-56.37	-68.53	-56.09	-69.45	-41.92	-51.56	53.34	43.70	74.00	54.00	20.66	10.30
4578.6	-56.78	-69.30	-56.40	-69.21	-42.28	-51.85	52.98	43.41	74.00	54.00	21.02	10.59
7325.76	-57.49	-69.75	-57.57	-69.70	-43.22	-52.32	52.04	42.94	74.00	54.00	21.96	11.06
8241.48	-51.77	-69.36	-49.84	-69.35	-36.39	-51.95	58.87	43.31	74.00	54.00	15.13	10.69
9157.2	-49.49	-69.38	-48.97	-68.50	-34.91	-51.51	60.35	43.75	74.00	54.00	13.65	10.25
TX = 925.8 MHz												
1049.8	-51.30	-61.47	-55.97	-67.52	-38.73	-46.11	56.53	49.15	74.00	54.00	17.47	4.85
2777.4	-51.33	-63.31	-50.52	-62.88	-36.60	-45.68	58.66	49.58	74.00	54.00	15.34	4.42
3703.2	-56.42	-68.42	-54.65	-68.45	-41.14	-51.03	54.12	44.23	74.00	54.00	19.88	9.77
4629	-56.03	-69.14	-55.36	-69.05	-41.37	-51.69	53.89	43.57	74.00	54.00	20.11	10.43
7406.4	-56.94	-69.42	-56.65	-69.44	-42.48	-52.02	52.78	43.24	74.00	54.00	21.22	10.76
8332.2	-54.90	-69.65	-56.53	-69.76	-41.33	-52.30	53.93	42.96	74.00	54.00	20.07	11.04

Notes:

- **All emissions above 9.157 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The total EIRP is calculated using the summation of the power output at each antenna port, the directional antenna gain of 11.3 dBi and the duty cycle factor of 10log(1/0.49).**

Table 7.2.3.1.2-2: RF Conducted Spurious Emissions Tabulated Data (QPSK)

Frequency (MHz)	Measured Power (dBm)				Total Corrected EIRP (dBm)		Corrected Levels (dBuV/m)		Limits (dBuV/m)		Margin (dBuV/m)	
	RF Port 1		RF Port 2									
	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg
TX = 904.2 MHz												
1015	-47.29	-64.19	-56.75	-71.50	-35.52	-49.05	59.73	46.21	74.00	54.00	14.27	7.79
2712.6	-54.00	-70.74	-54.70	-70.54	-40.03	-53.23	55.23	42.03	74.00	54.00	18.77	11.97
3616.8	-56.03	-69.03	-55.00	-68.93	-41.17	-51.57	54.08	43.69	74.00	54.00	19.92	10.31
8137.8	-54.02	-69.31	-53.97	-69.38	-39.68	-51.94	55.57	43.32	74.00	54.00	18.43	10.68
9042	-55.00	-69.06	-56.10	-69.06	-41.20	-51.65	54.05	43.61	74.00	54.00	19.95	10.39
TX = 915.72 MHz												
1026.28	-49.62	-65.91	-57.63	-72.11	-37.68	-50.58	57.58	44.68	74.00	54.00	16.42	9.32
2747.16	-49.43	-63.66	-50.06	-63.54	-35.42	-46.19	59.83	49.07	74.00	54.00	14.17	4.93
3662.88	-55.62	-68.52	-55.64	-68.46	-41.32	-51.08	53.94	44.18	74.00	54.00	20.06	9.82
4578.6	-55.95	-69.25	-56.37	-69.20	-41.84	-51.82	53.41	43.44	74.00	54.00	20.59	10.56
7325.76	-57.47	-69.73	-57.25	-69.67	-43.05	-52.29	52.21	42.97	74.00	54.00	21.79	11.03
8241.48	-49.68	-69.31	-47.99	-69.20	-34.44	-51.85	60.81	43.41	74.00	54.00	13.19	10.59
9157.2	-49.94	-69.34	-47.03	-68.27	-33.94	-51.36	61.32	43.89	74.00	54.00	12.68	10.11
TX = 925.8 MHz												
1031.9	-51.29	-61.38	-58.00	-71.92	-39.15	-46.61	56.11	48.64	74.00	54.00	17.89	5.36
2777.4	-55.48	-69.24	-53.17	-67.53	-39.86	-50.89	55.39	44.36	74.00	54.00	18.61	9.64
3703.2	-55.71	-68.40	-56.60	-68.41	-41.82	-51.00	53.44	44.26	74.00	54.00	20.56	9.74
4629	-57.03	-69.11	-56.43	-69.00	-42.41	-51.65	52.85	43.61	74.00	54.00	21.15	10.39
7406.4	-57.05	-69.39	-56.81	-69.36	-42.62	-51.97	52.64	43.29	74.00	54.00	21.36	10.71
8332.2	-55.25	-69.52	-54.34	-69.97	-40.46	-52.33	54.80	42.93	74.00	54.00	19.20	11.07

Notes:

- **All emissions above 9.157 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The total EIRP is calculated using the summation of the power output at each antenna port, the directional antenna gain of 11.3 dBi and the duty cycle factor of 10log(1/0.49).**

Table 7.2.3.1.2-3: RF Conducted Spurious Emissions Tabulated Data (16-QAM)

Frequency (MHz)	Measured Power (dBm)				Total Corrected EIRP (dBm)		Corrected Levels (dBuV/m)		Limits (dBuV/m)		Margin (dBuV/m)	
	RF Port 1		RF Port 2									
	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg
TX = 904.2 MHz												
1022.5	-48.69	-63.83	-56.04	-70.84	-36.66	-48.64	58.60	46.61	74.00	54.00	15.40	7.39
2712.6	-51.94	-65.01	-52.48	-67.13	-37.89	-48.53	57.37	46.72	74.00	54.00	16.63	7.28
3616.8	-56.02	-68.38	-55.08	-68.26	-41.21	-50.91	54.04	44.35	74.00	54.00	19.96	9.65
4521	-56.54	-68.84	-56.11	-68.76	-42.01	-51.39	53.25	43.87	74.00	54.00	20.75	10.13
5425.2	-56.41	-69.30	-56.20	-69.28	-41.99	-51.88	53.26	43.38	74.00	54.00	20.74	10.62
8137.8	-51.42	-68.60	-50.18	-68.68	-36.45	-51.23	58.81	44.03	74.00	54.00	15.19	9.97
9042	-53.14	-69.12	-54.77	-69.40	-39.57	-51.85	55.69	43.41	74.00	54.00	18.31	10.59
TX = 915.72 MHz												
1028.4	-50.06	-64.22	-58.02	-71.74	-38.12	-49.11	57.14	46.14	74.00	54.00	16.86	7.86
2747.16	-54.43	-67.67	-50.94	-66.80	-38.03	-49.80	57.22	45.45	74.00	54.00	16.78	8.55
3662.88	-56.10	-68.42	-56.07	-68.42	-41.77	-51.01	53.48	44.25	74.00	54.00	20.52	9.75
4578.6	-56.80	-69.17	-56.74	-69.16	-42.46	-51.76	52.80	43.50	74.00	54.00	21.20	10.50
7325.76	-57.44	-69.60	-56.89	-69.71	-42.85	-52.25	52.41	43.01	74.00	54.00	21.59	10.99
8241.48	-49.21	-69.07	-48.17	-69.24	-34.35	-51.75	60.91	43.51	74.00	54.00	13.09	10.49
9157.2	-52.48	-69.14	-48.03	-67.97	-35.40	-51.11	59.86	44.15	74.00	54.00	14.14	9.85
TX = 925.8 MHz												
1026.63	-49.83	-62.69	-55.47	-67.43	-37.48	-47.03	57.78	48.22	74.00	54.00	16.22	5.78
2777.4	-51.23	-63.26	-51.13	-62.79	-36.87	-45.61	58.39	49.65	74.00	54.00	15.61	4.35
3703.2	-55.90	-68.43	-55.68	-68.42	-41.48	-51.02	53.78	44.24	74.00	54.00	20.22	9.76
4629	-57.07	-69.20	-55.94	-69.01	-42.16	-51.70	53.10	43.56	74.00	54.00	20.90	10.44
7406.4	-56.43	-69.44	-56.97	-69.39	-42.38	-52.01	52.88	43.25	74.00	54.00	21.12	10.75
8332.2	-55.77	-69.61	-56.38	-69.68	-41.75	-52.24	53.50	43.02	74.00	54.00	20.50	10.98

Notes:

- **All emissions above 9.157 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The total EIRP is calculated using the summation of the power output at each antenna port, the directional antenna gain of 11.3 dBi and the duty cycle factor of 10log(1/0.49).**

Table 7.2.3.1.2-4: RF Conducted Spurious Emissions Tabulated Data (64-QAM)

Frequency (MHz)	Measured Power (dBm)				Total Corrected EIRP (dBm)		Corrected Levels (dBuV/m)		Limits (dBuV/m)		Margin (dBuV/m)	
	RF Port 1		RF Port 2									
	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg	Peak	QPk/Avg
TX = 904.2 MHz												
1018.16	-48.36	-63.98	-56.31	-71.23	-36.41	-48.83	58.84	46.43	74.00	54.00	15.16	7.57
2712.6	-51.50	-65.72	-51.55	-67.24	-37.21	-49.01	58.04	46.25	74.00	54.00	15.96	7.75
3616.8	-55.20	-68.41	-55.51	-68.25	-41.04	-50.92	54.22	44.34	74.00	54.00	19.78	9.66
4521	-56.72	-68.81	-56.95	-69.81	-42.52	-51.87	52.73	43.38	74.00	54.00	21.27	10.62
5425.2	-56.93	-69.29	-56.57	-69.33	-42.44	-51.90	52.82	43.36	74.00	54.00	21.18	10.64
8137.8	-51.84	-68.68	-50.47	-68.87	-36.79	-51.37	58.47	43.89	74.00	54.00	15.53	10.11
9042	-52.79	-69.11	-55.63	-69.47	-39.67	-51.88	55.59	43.38	74.00	54.00	18.41	10.62
TX = 915.72 MHz												
1038.5	-50.32	-64.38	-58.41	-72.04	-38.39	-49.29	56.86	45.96	74.00	54.00	17.14	8.04
2747.16	-54.25	-67.92	-51.50	-66.92	-38.35	-49.98	56.91	45.27	74.00	54.00	17.09	8.73
3662.88	-55.85	-68.40	-55.04	-68.30	-41.12	-50.94	54.14	44.32	74.00	54.00	19.86	9.68
4578.6	-57.23	-69.22	-55.56	-69.02	-42.00	-51.71	53.25	43.55	74.00	54.00	20.75	10.45
7325.76	-57.54	-69.66	-56.82	-69.52	-42.85	-52.18	52.40	43.08	74.00	54.00	21.60	10.92
8241.48	-50.32	-69.15	-47.02	-68.90	-34.05	-51.61	61.20	43.64	74.00	54.00	12.80	10.36
9157.2	-50.34	-69.17	-49.72	-68.32	-35.71	-51.32	59.55	43.94	74.00	54.00	14.45	10.06
TX = 925.8 MHz												
1002.4	-50.12	-63.11	-55.82	-67.47	-37.78	-47.36	57.47	47.90	74.00	54.00	16.53	6.10
2777.4	-50.98	-63.27	-50.08	-62.94	-36.20	-45.69	59.06	49.56	74.00	54.00	14.94	4.44
3703.2	-55.61	-68.43	-55.84	-68.41	-41.41	-51.01	53.84	44.25	74.00	54.00	20.16	9.75
4629	-57.33	-69.13	-56.51	-69.01	-42.59	-51.66	52.67	43.60	74.00	54.00	21.33	10.40
7406.4	-56.67	-69.41	-56.47	-69.43	-42.26	-52.01	53.00	43.25	74.00	54.00	21.00	10.75
8332.2	-55.14	-69.59	-55.36	-69.66	-40.94	-52.22	54.32	43.04	74.00	54.00	19.68	10.96

Notes:

- **All emissions above 9.157 GHz were attenuated below the limits and the noise floor of the measurement equipment.**
- **The total EIRP is calculated using the summation of the power output at each antenna port, the directional antenna gain of 11.3 dBi and the duty cycle factor of 10log(1/0.49).**

7.2.3.2 Sample Calculation:

E = EIRP – 20log D + 104.8 - DC (Average measurements only)

E = Electric Field Strength in dBµV/m
EIRP = Equivalent Isotropic Radiated Power in dBm
D = Specified Distance in meters.

Duty Cycle Correction Factor = 10*log(49/100) = -3.098 dB

Example Calculation: Peak
Summation of Output 10^(-47.51/10) + 10^(-56.13/10) = 2.018 * 10^(-5) mW
Corrected EIRP: 10*log(2.018 * 10^(-5)) dBm + 11.3 dBi = -35.65 dBm
Corrected Level: -35.65 dBm + 104.8 dB - 20*log(3) dB/m = 59.61 dBµV/m
Margin: 74 dBµV/m – 59.61 dBµV/m = 14.39 dB

Example Calculation: Average
Summation of Output 10^(-64.22/10) + 10^(-70.95/10) = 4.588 * 10^(-7) mW
Corrected EIRP: 10*log(4.588 * 10^(-7)) dBm + 11.3 dBi + 3.098 dB = -48.99 dBm
Corrected Level: -48.99 dBm + 104.8 dB - 20*log(3) dB/m = 46.27 dBµV/m
Margin: 54 dBµV/m – 46.27 dBµV/m = 7.73 dB

7.3 Duty Cycle

7.3.1 Measurement Procedure

The duty cycle was measured in accordance with the FCC KDB Publication No. 558074 “Guidance for Performing Compliance Measurements on Digital Transmission Systems (47 CFR 15.247)” Section 6.0 b). The unit was connected directly to the input of the spectrum analyzer via suitable attenuation. The RBW and VBW were set to 3 MHz and 10 MHz, respectively, and the number of sweep points across the minimum transmission duration (T) exceeded 100.

7.3.2 Measurement Results

The results area provided below:

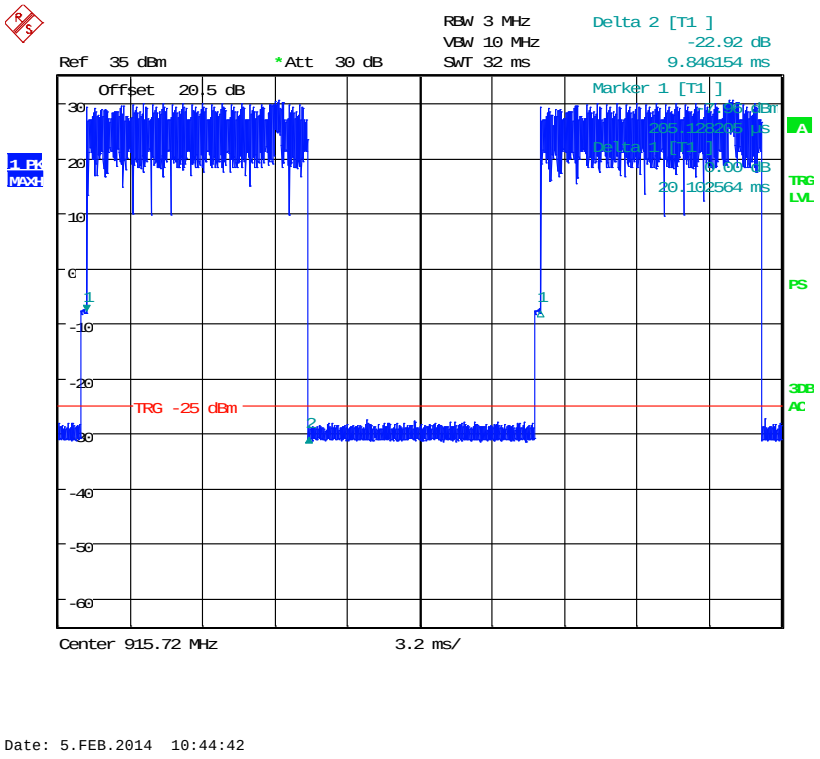

Figure 7.3.2-1: Duty Cycle

Note: The duty cycle is calculated to be (9.8462 / 20.1026) ≈ 0.49

8 CONCLUSION

In the opinion of ACS, Inc. the xAP, manufactured by xG Technology, Inc meets the requirements of FCC Part 15 subpart C for the tests reported in this document.

END REPORT