



FCC CFR47 PART 15 SUBPART C
ISED CANADA RSS-210 ISSUE 10

TEST REPORT

FOR

WIRELESS INTERIOR MOTION DETECTOR

MODEL NUMBER: TW-PIR345

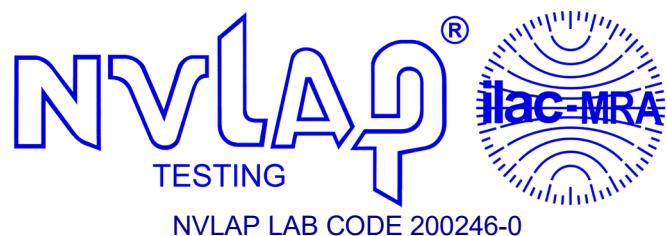
FCC ID: 2AUTX-TWCPIR345
IC: 25828-TWCPIR345

REPORT NUMBER: R13488665-E2

ISSUE DATE: 2021-01-27

Prepared for
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Revision History

Rev.	Issue Date	Revisions	Revised By
1	2021-01-14	Initial Issue	M. Antola
2	2021-01-21	Editorial revisions and separated photos.	Brian T. Kiewra
3	2021-01-27	Updated duty cycle plot	M. Antola

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Tane Services Inc., DBA Tane Alarm Products
906 Jericho Turnpike
New Hyde Park, NY, 11040-4604, USA

EUT DESCRIPTION: Wireless Interior Motion Detector

MODEL: TW-PIR345

SERIAL NUMBER: 0006018 (Production); 0000463, 0000012 (Continuous Tx)

SAMPLE RECEIVE DATE: 2020-11-13, 2020-12-29, 2021-01-08

DATE TESTED: 2020-12-16 to 2021-01-08

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	Compliant
ISED CANADA RSS-210 Issue 10, Annex A	Compliant
ISED CANADA RSS-GEN Issue 5 + A1	Compliant

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. government.

Approved & Released For
UL LLC By:



Prepared By:



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2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 5 + A1, and RSS-210 Issue 10.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 12 Laboratory Drive, Research Triangle Park, North Carolina, USA and 2800 Suite Perimeter Park Dr., Suite B, Morrisville, North Carolina, USA. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

12 Laboratory Dr.		2800 Perimeter Park Dr.	
<input type="checkbox"/>	Chamber A (ISED:2180C-1)	<input type="checkbox"/>	Chamber North (ISED:2180C-3)
<input checked="" type="checkbox"/>	Chamber C (ISED:2180C-2)	<input checked="" type="checkbox"/>	Chamber South (ISED:2180C-4)

UL LLC (RTP) is accredited by NVLAP, Laboratory Code 200246-0, CABID: US0067.

4. DECISION RULES AND MEASUREMENT UNCERTAINTY

4.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

4.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U _{Lab}
Worst Case Radiated Disturbance Loop, 9kHz to 30 MHz	2.84 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Occupied Bandwidth	1.22%

Uncertainty figures are valid to a confidence level of 95%.

4.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable} \\ &\quad \text{Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Final Voltage (dBuV)} &= \text{Measured Voltage (dBuV)} + \text{Cable Loss (dB)} + \text{Limiter Factor} \\ &\quad (\text{dB}) + \text{LISN Insertion Loss.} \\ 36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} &= 46.6 \text{ dBuV} \end{aligned}$$

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a wireless interior motion detector, operating at 345MHz.

5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an integrated loop on-board antenna, with a maximum gain of -18 dBi.

5.3. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was PIR-2.0.hex, Rev. 2.0.

5.4. WORST-CASE CONFIGURATION AND MODE

The fundamental of the EUT was investigated in three orthogonal orientations X,Y,Z, it was determined that X orientation was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X orientation.

5.5. MODIFICATIONS

No modifications were made during testing.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

None

I/O CABLES

None

TEST SETUP

The EUT is stand-alone, battery operated device. Test software exercised the radio.

SETUP DIAGRAM FOR TESTS

Refer to exhibit R13488665-EP1 for setup diagram.

6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment Used - Wireless Conducted Measurement Equipment

Equipment ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	Conducted Room 1				
T177 (PRE0079253)	Spectrum Analyzer	Agilent Technologies	E4446A	2020-04-30	2021-04-30
HI0091	Environmental Meter	Fisher Scientific	15-077-963	2020-06-26	2021-06-26
SOFTEMI	Antenna Port Software	UL	Version 2020.9.1	NA	NA

Test Equipment Used - Radiated Disturbance Emissions Test Equipment (Morrisville - South Chamber)

Equip. ID	Description	Manufacturer	Model Number	Last Cal.	Next Cal.
	0.009-30MHz				
AT0079	Active Loop Antenna	ETS-Lindgren	6502	2020-08-20	2021-08-20
	30-1000 MHz				
AT0075	Hybrid Broadband Antenna	Sunol Sciences Corp.	JB3	2020-10-27	2021-10-27
	1-18 GHz				
AT0067	Double-Ridged Waveguide Horn Antenna, 1 to 18 GHz	ETS Lindgren	3117	2020-04-28	2021-04-28
	Gain-Loss Chains				
S-SAC01	Gain-loss string: 0.009-30MHz	Various	Various	2020-07-10	2021-07-10
S-SAC02	Gain-loss string: 25-1000MHz	Various	Various	2020-07-10	2021-07-10
S-SAC03	Gain-loss string: 1-18GHz	Various	Various	2020-07-06	2021-07-06
	Receiver & Software				
SA0025	Spectrum Analyzer	Agilent	N9030A	2020-03-17	2021-03-17
SOFTEMI	EMI Software	UL	Version 9.5 (2020-08-18)		
	Additional Equipment used				
s/n 200037635	Environmental Meter	Fisher Scientific	06-662-4	2020-01-22	2022-01-22
ATA176 (in S-SAC)	10dB, DC-18GHz, 5W	Mini-Circuits	BW-N10W5	2020-08-29	2021-08-29

7. ANTENNA PORT TEST RESULTS

7.1. 20 dB AND 99% BW

LIMITS

FCC §15.231 (c)

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

IC A1.3

For the purpose of Section A1.1, the 99% Bandwidth shall be no wider than 0.25% of the center frequency for devices operating between 70-900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency.

TEST PROCEDURE

ANSI C63.10

The transmitter output is connected to the spectrum analyzer.

99% & 20dB Bandwidth: The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

No non-compliance noted:

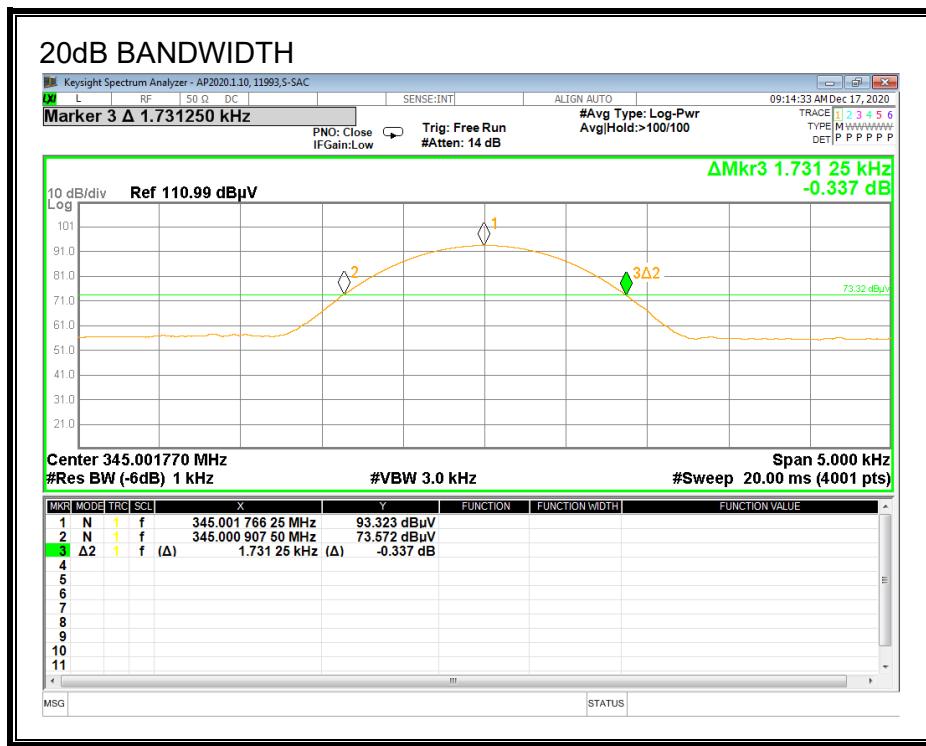
20dB Bandwidth

Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
345	1.731	862.5	-860.769

99% Bandwidth

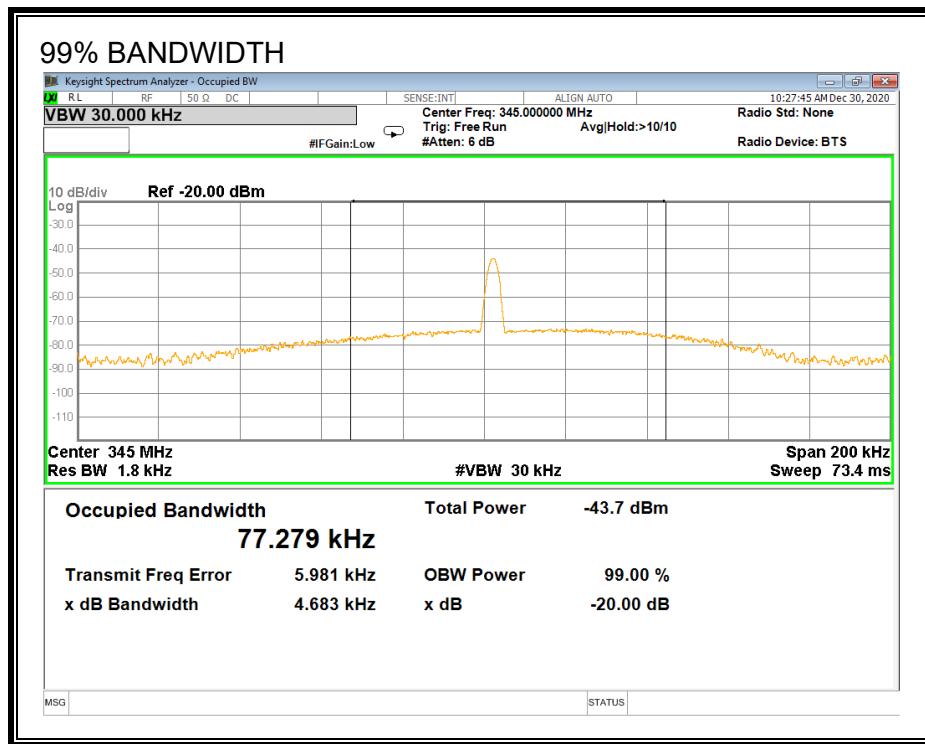
Frequency (MHz)	99% Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
345	77.279	862.5	-785.221

20dB BANDWIDTH



Note: Because the measured signal is CW or CW-like adjusting the RBW per C63.10 would not be practical since the measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.

99% BANDWIDTH



Note: Because the measured signal is CW or CW-like adjusting the RBW per C63.10 would not be practical since the measured bandwidth will always follow the RBW and the result will be approximately twice the RBW.

7.2. DUTY CYCLE

LIMITS

FCC §15.35 (c)

The measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer or radiated field strength. The RBW/VBW are set to 300 kHz. The sweep time is coupled and the span is set to 0 Hz. The number of pulses is measured and calculated in a 100 ms scan.

CALCULATION

Average Reading = Peak Reading (dBuV/m) + 20log (Duty Cycle), Where Duty Cycle is $(\# \text{ of long pulses} * \text{long pulse width}) + (\# \text{ of short pulses} * \text{short pulse width}) / 100$ or T

RESULTS

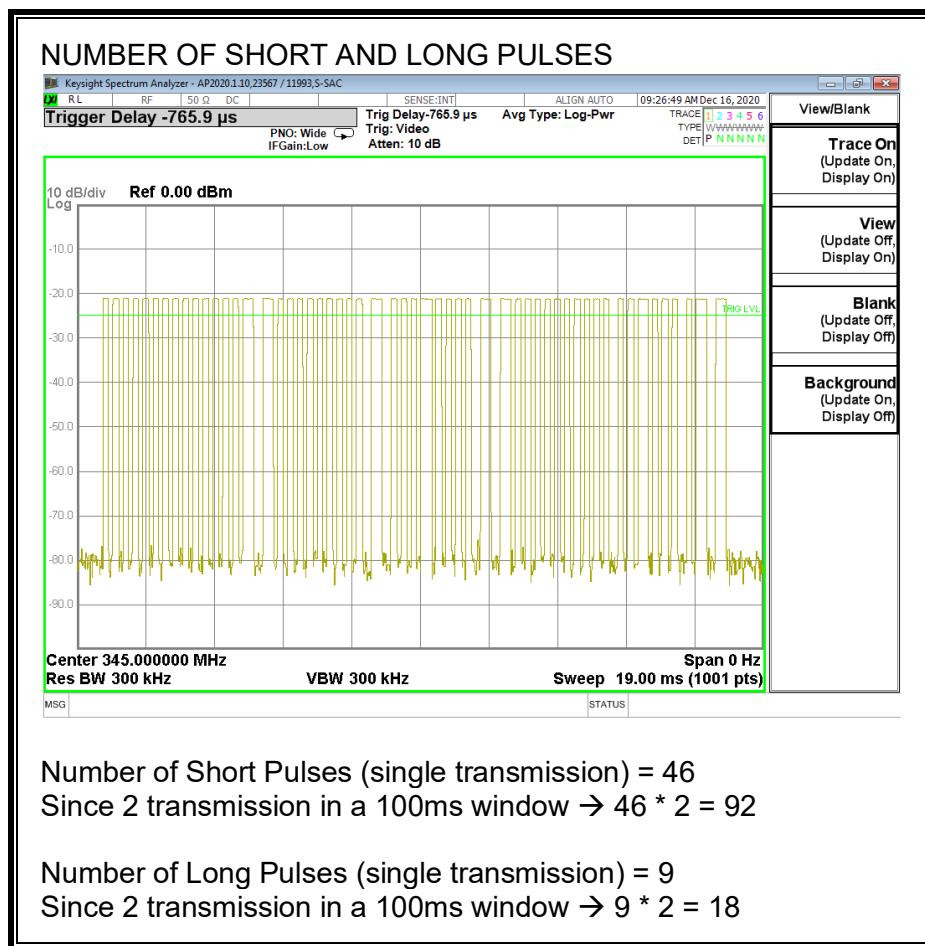
No non-compliance noted:

One Period (ms)	Long Pulse Width (ms)	# of Long Pulses	Short Width (ms)	# of Short Pulses	Duty Cycle	20*Log Duty Cycle (dB)
100	0.273	18	0.133	92	0.172	-15.31

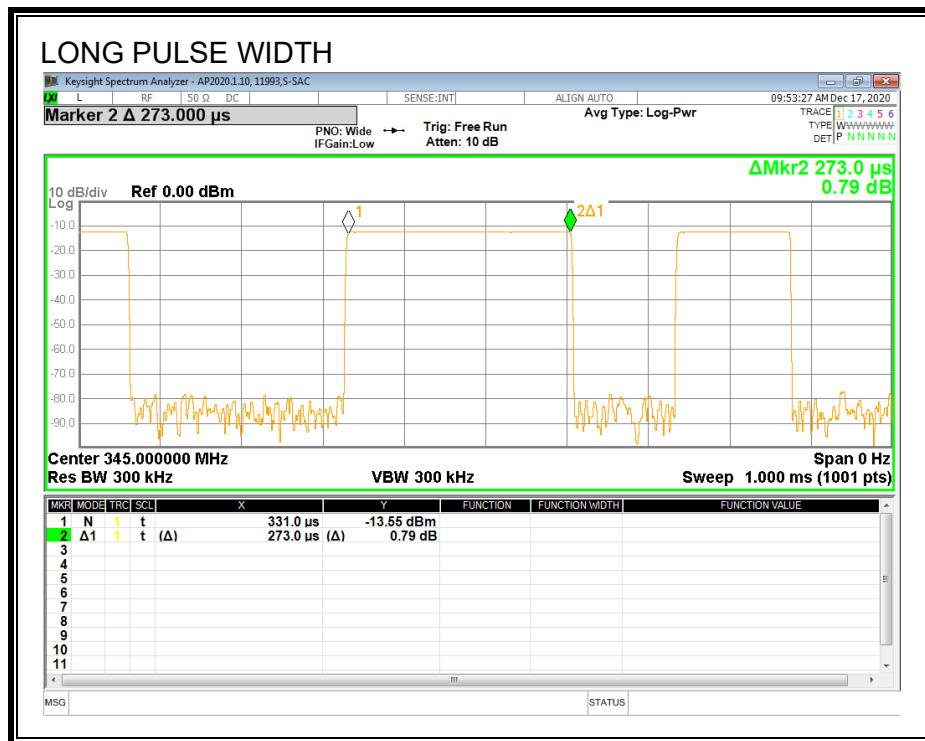
TRANSMISSION IN A 100MS WINDOW



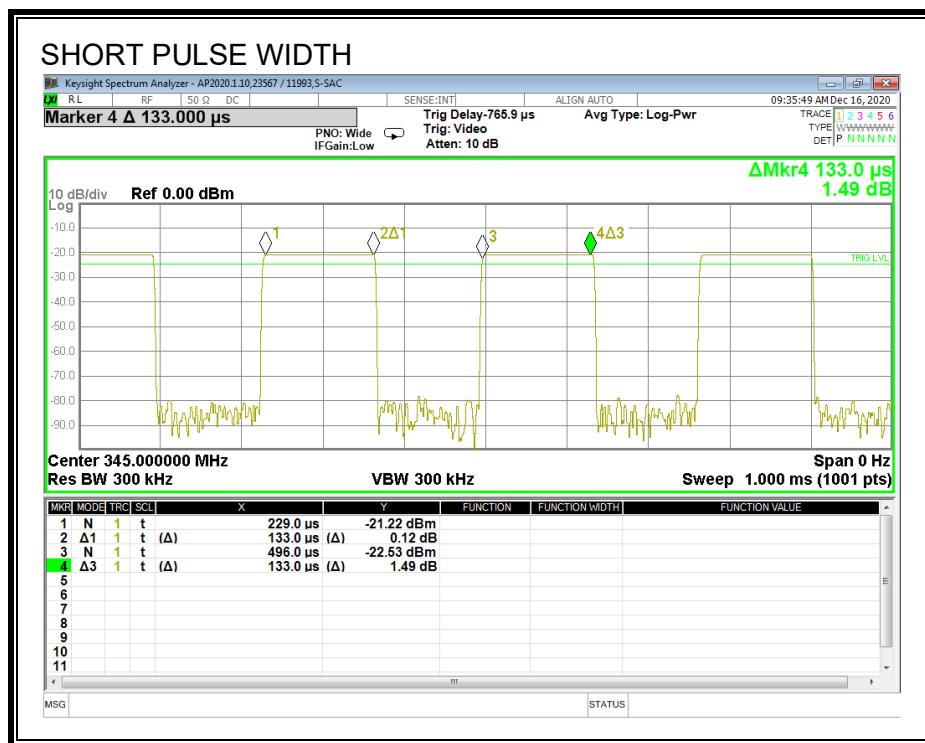
NUMBER OF PULSES



LONG PULSE WIDTH



SHORT PULSE WIDTH



7.3. TRANSMISSION TIME

LIMITS

FCC §15.231 (a) (2)
RSS-210 A1.1 (b)

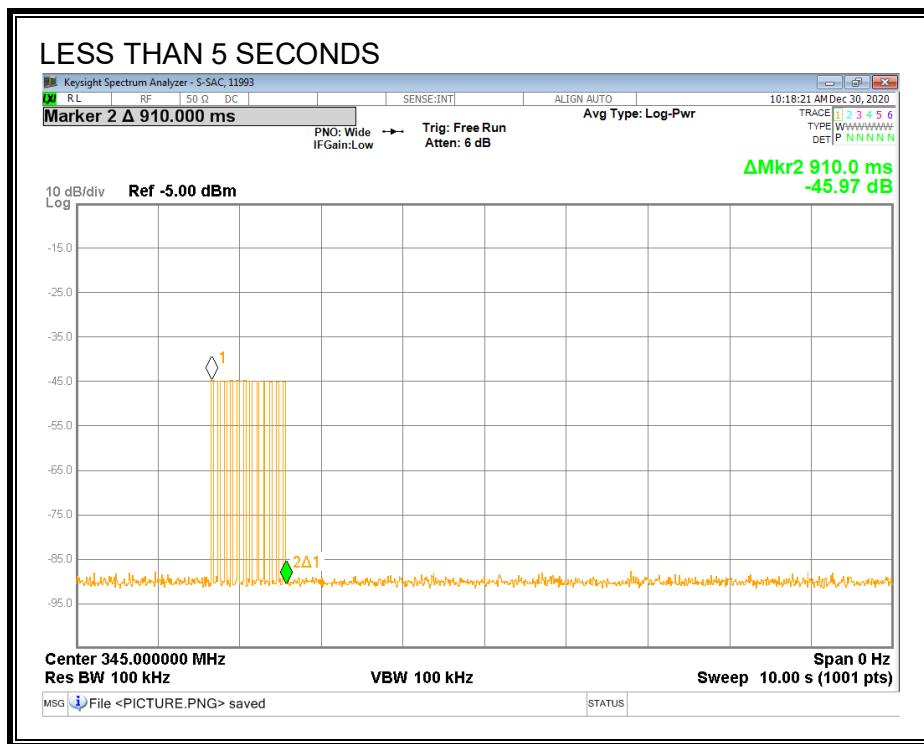
A transmitter activated automatically shall cease transmission within 5 seconds after activation.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer or radiated field strength. The RBW is set to 100 kHz and the VBW is set to 100 kHz. The sweep time is set to 10 seconds and the span is set to 0 Hz.

RESULTS

No non-compliance noted:



7.4. SUPERVISION TRANSMISSIONS

LIMITS

FCC §15.231 (a) (3)

Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour

Results

Tester:	11993
Date:	2020-12-30

1. According to manufacturer manual, the interval of supervisory signal transmission is once every 70 minutes.
2. Total transmission time:

Short Pulse Width (ms)	Number of Short Pulse	Long Pulse Width (ms)	Number of Long Pulse	One Pulse Stream (ms)	Total Pulse Streams per hour	Total Transmission Time per hour (ms)
0.133	92	0.27	18	17.150	1.00	17.15

8. RADIATED EMISSION TEST RESULTS

8.1. TX RADIATED SPURIOUS EMISSION

LIMITS

FCC §15.231 (b)

IC A1.2

In addition to the provisions of § 15.205, the field strength of emissions from Intentional radiators operated under this section shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental Frequency (microvolts/meter)	Field Strength of Spurious Emissions (microvolts/meter)
40.66 - 40.70	2,250	225
70 - 130	1,250	125
130 - 174	1,250 to 3,750 ¹	125 to 375 ¹
174 - 260	3,750	375
260 - 470	3,750 to 12,500 ¹	375 to 1,250 ¹
Above 470	12,500	1,250

¹ Linear interpolation

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
10.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	(²)
13.36 - 13.41	322 - 335.4		

1 Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

2 Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 88	100 **	3
88 216	150 **	3
216 960	200 **	3
Above 960	500	3

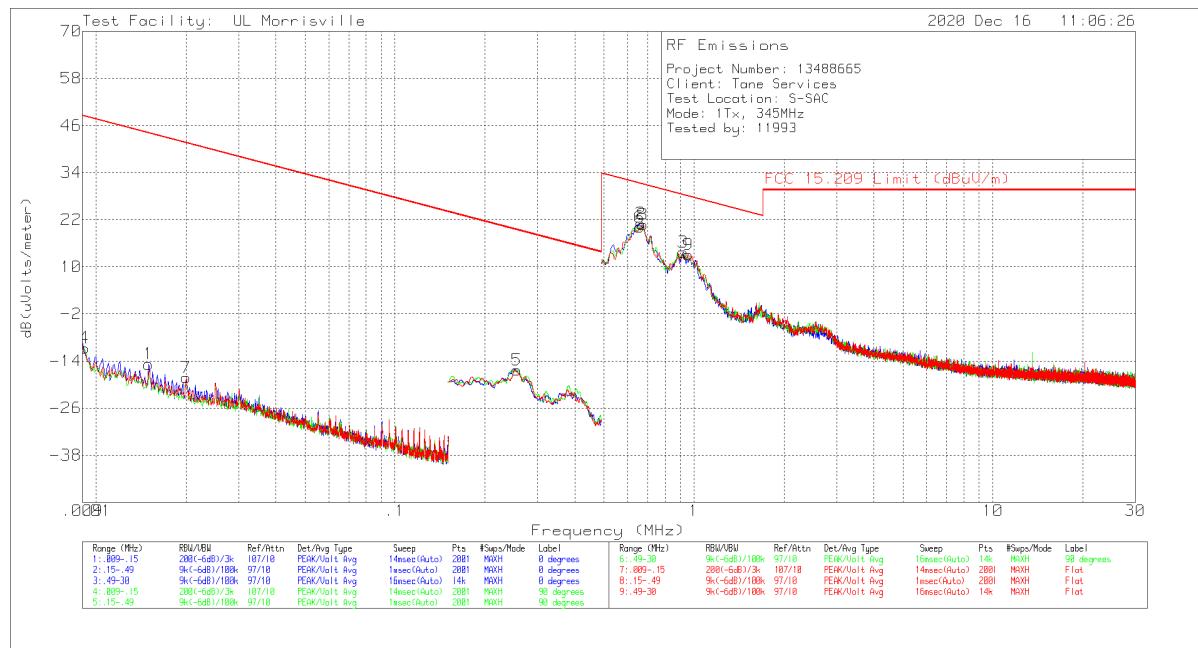
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54 72 MHz, 76 88 MHz, 174 216 MHz or 470 806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

Note: The limits in CFR 47, Part 15, Subpart C, paragraph 15.209(a), are identical to those in RSS-Gen section 8.9, Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as report in the table) using free space impedance of 377 Ohms. For example, the measurement at frequency 14.96 kHz resulted in a level of -14.79 dBuV/m, which is equivalent to $-14.79 - 51.5 = -66.29$ dBuA/m, which has the same margin, -58.89 dB to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limit.

RESULTS

TX SPURIOUS EMISSION (BELOW 30 MHz)



FCC 15.209 Below 30MHz.TST

Rev. 9.5 18 Aug 2020

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AT0079 (dB/m)	Cbl (dB)	Dist. Corr. Factor (dB)	Corrected Reading dB(uVolts/meter)	FCC 15.209 AV/QP Limit (dBuVolts/meter)	FCC 15.209 PK Limit (dBuVolts/meter)	Margin (dB)	Azimuth (Degs)	Antenna Face
1	.01496	49.31	Pk	15.8	.1	-80	-14.79	44.1	64.1	-58.89	0-360	On
2	.66391	50.03	Pk	10.8	.2	-40	21.03	31.16	-	-10.13	0-360	On
3	.92003	42.56	Pk	10.9	.2	-40	13.66	28.33	-	-14.67	0-360	On
4	.00914	50.42	Pk	18.8	.1	-80	-10.68	48.38	68.38	-59.06	0-360	Off
5	.25591	52.91	Pk	10.7	.1	-80	-16.29	19.44	39.44	-35.73	0-360	Off
6	.65653	49.11	Pk	10.8	.2	-40	20.11	31.26	-	-11.15	0-360	Off
7	.02001	47.94	Pk	13.7	.1	-80	-18.26	41.58	61.58	-59.84	0-360	Flat
8	.6755	49.74	Pk	10.8	.2	-40	20.74	31.01	-	-10.27	0-360	Flat
9	.95798	41.88	Pk	11	.2	-40	13.08	27.98	-	-14.9	0-360	Flat

Pk - Peak detector

FUNDAMENTAL EMISSION (30 – 1000 MHz)

Project Number: 13488665

Client: Tane Services

Test Location: S-SAC

Mode: Fc Measurements

Tested by: 11993

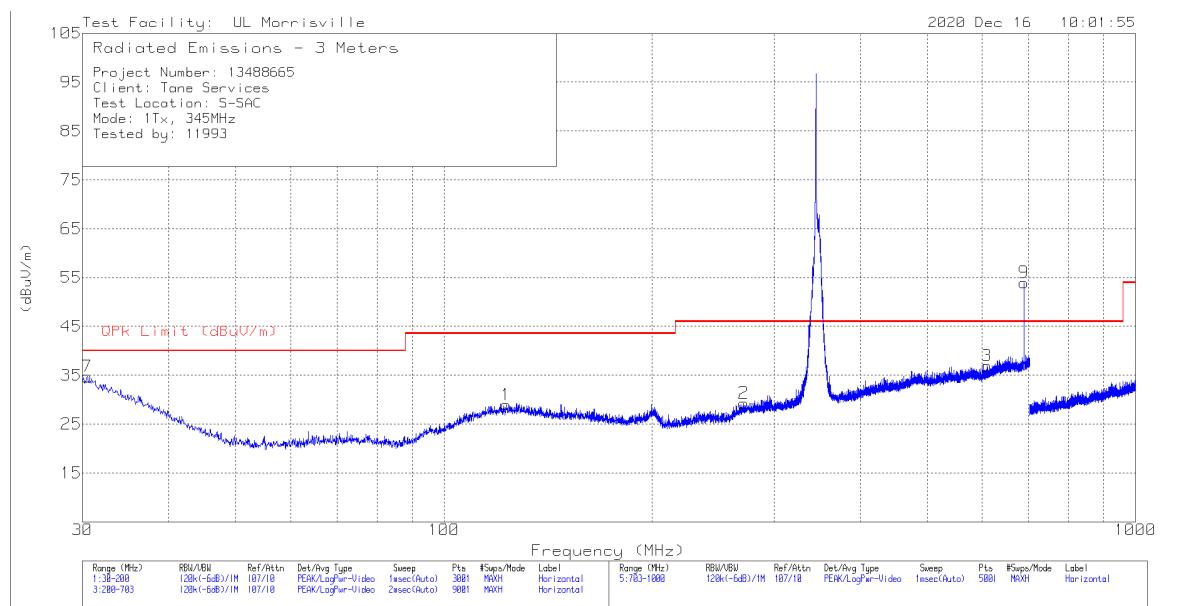
Date: 2021-01-08

SN: 0000012

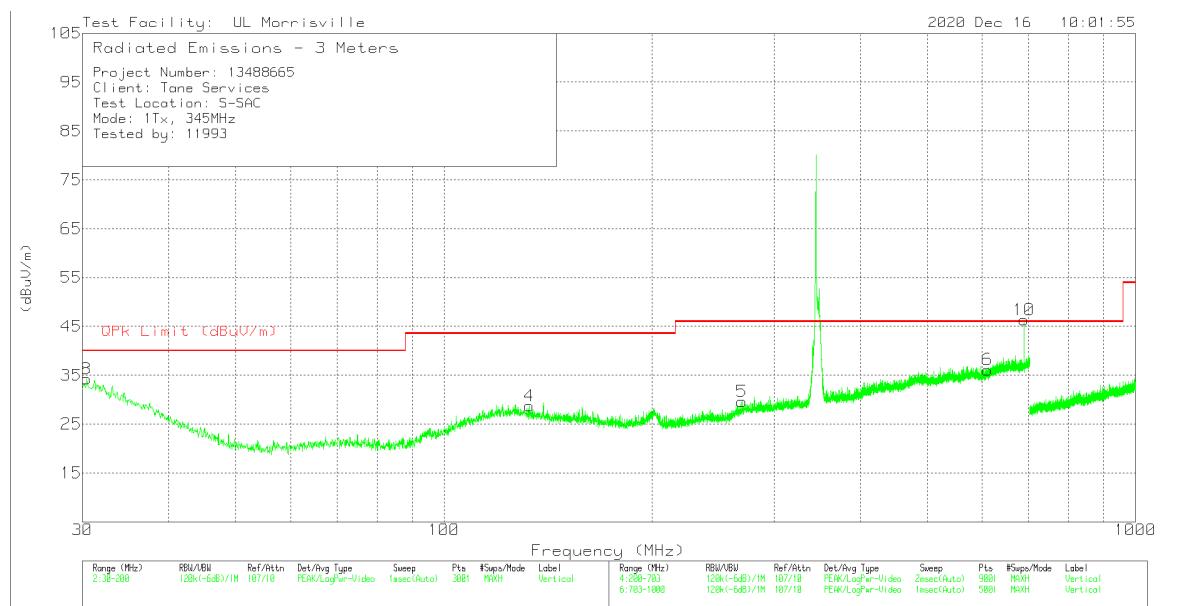
Frequency (MHz)	Meter Reading (dBuV)	Det	AT0075 AF (dB/m)	Amp/Cbl (dB)	Pad (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Pk Limit (dBuV/m)	Margin (dB)	Avg Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
345.0031	73.19	Pk	20.3	-28.2	10.1	0	75.39	97.26	-21.87	-	-	6	122	V
345.0031	73.19	Pk	20.3	-28.2	10.1	- 15.31	60.08	-	-	77.26	-17.18	6	122	V
345.0036	89.87	Pk	20.3	-28.2	10.1	0	92.07	97.26	-5.19	-	-	291	101	H
345.0036	89.87	Pk	20.3	-28.2	10.1	- 15.31	76.76	-	-	77.26	-.5	291	101	H

Pk - Peak detector

HARMONICS AND TX SPURIOUS EMISSION (30 – 1000 MHz)



FCC15.231_B1G_RSE_10dBpad_600MHzHPF.TST Rev 9.5 18 Aug 2020



FCC15.231_B1G_RSE_10dBpad_600MHzHPF.TST Rev 9.5 18 Aug 2020

Marker	Frequency (MHz)	Meter Reading (dBuV)	Detector	AT007 5 AF (dB/m)	Amp/Cb (dB)	Pad (dB)	Filter (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 122.9905	28.94	Pk	20.1	-30.1	10	0	28.94	43.52	-14.58	0-360	300	H
4	* 132.7939	29.13	Pk	19.7	-30.1	10	0	28.73	43.52	-14.79	0-360	101	V
2	* 271.3703	28.8	Pk	19.2	-28.8	10.1	0	29.3	46.02	-16.72	0-360	200	H
3	* 610.5047	28.82	Pk	24.9	-27	10.2	0	36.92	46.02	-9.1	0-360	399	H
5	* 269.6936	29.09	Pk	19.2	-28.8	10.1	0	29.59	46.02	-16.43	0-360	201	V
6	* 610.7842	28.02	Pk	24.9	-27	10.2	0	36.12	46.02	-9.9	0-360	201	V
8	30.6842	23.93	Qp	26.6	-31.5	9.9	0	28.93	57.26	-28.33	271	331	V
7	30.7361	23.95	Qp	26.6	-31.5	9.9	0	28.95	57.26	-28.31	46	145	H
9	690	46.02	Qp	26.1	-27	10.2	0	55.32	57.26	-1.94	316	131	H
10	690.0082	39.67	Qp	26.1	-27	10.2	0	48.97	57.26	-8.29	46	141	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band

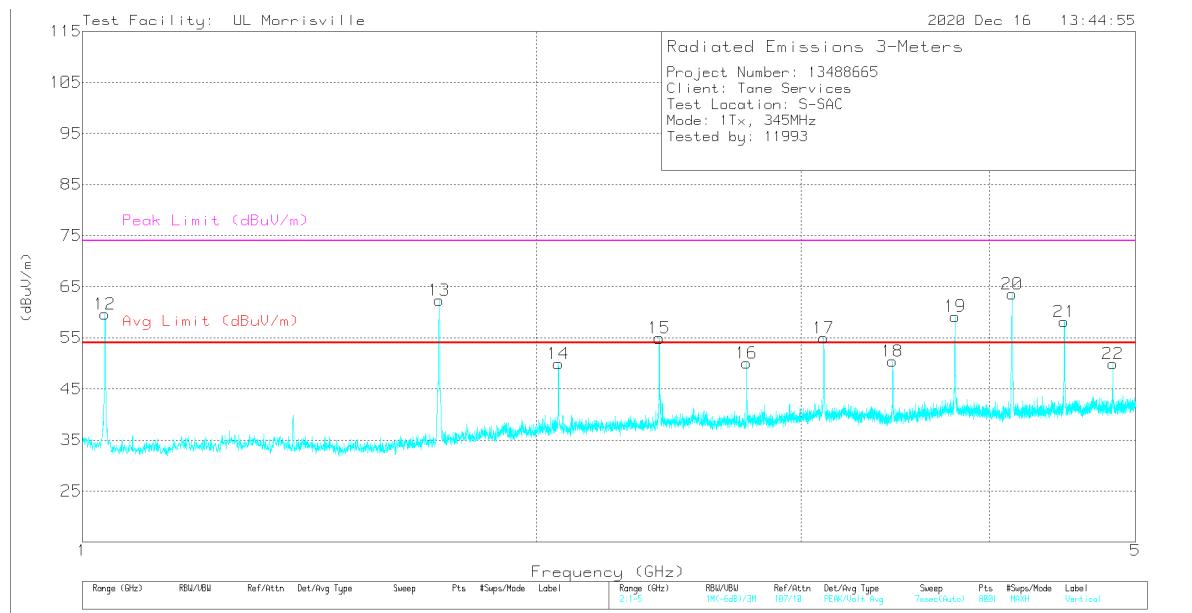
Pk - Peak detector

Qp - Quasi-Peak detector

HARMONICS AND TX SPURIOUS EMISSIONS ABOVE 1GHz



FCC15.231_1-5GHz_RSE_1GHFF.TST Rev 9.5 18 Aug 2020



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Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AT0067 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	Filter (dB)	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 1.03492	73.91	Pk	27.7	-35.6	1.6	0	67.61	-	-	74	-6.39	204	141	H
	* 1.03492	73.91	Pk	27.7	-35.6	1.6	-15.31	52.3	54	-1.7	-	-	204	141	H
5	* 2.75992	54.35	Pk	32.4	-33.9	.5	0	53.35	-	-	74	-20.65	13	360	H
	* 2.75992	54.35	Pk	32.4	-33.9	.5	-15.31	38.04	54	-15.96	-	-	13	360	H
8	* 3.79497	60.38	Pk	33.3	-32.8	.4	0	61.28	-	-	74	-12.72	128	116	H
	* 3.79497	60.38	Pk	33.3	-32.8	.4	-15.31	45.97	54	-8.03	-	-	128	116	H
9	* 4.13987	64.83	Pk	33.4	-32.4	.4	0	66.23	-	-	74	-7.77	84	106	H
	* 4.13987	64.83	Pk	33.4	-32.4	.4	-15.31	50.92	54	-3.08	-	-	84	106	H
11	* 4.83005	51.53	Pk	34	-31.4	.3	0	54.43	-	-	74	-19.57	87	111	H
	* 4.83005	51.53	Pk	34	-31.4	.3	-15.31	39.12	54	-14.88	-	-	87	111	H
12	* 1.03496	69.7	Pk	27.7	-35.6	1.6	0	63.4	-	-	74	-10.6	131	327	V
	* 1.03496	69.7	Pk	27.7	-35.6	1.6	-15.31	48.09	54	-5.91	-	-	131	327	V
16	* 2.76	51.8	Pk	32.4	-33.9	.5	0	50.8	-	-	74	-23.2	171	364	V
	* 2.76	51.8	Pk	32.4	-33.9	.5	-15.31	35.49	54	-18.51	-	-	171	364	V
19	* 3.795	58.73	Pk	33.3	-32.8	.4	0	59.63	-	-	74	-14.37	98	363	V
	* 3.795	58.73	Pk	33.3	-32.8	.4	-15.31	44.32	54	-9.68	-	-	98	363	V
20	* 4.13996	63.24	Pk	33.4	-32.4	.4	0	64.64	-	-	74	-9.36	126	377	V
	* 4.13996	63.24	Pk	33.4	-32.4	.4	-15.31	49.33	54	-4.67	-	-	126	377	V
22	* 4.83007	48.51	Pk	34	-31.4	.3	0	51.41	-	-	74	-22.59	119	372	V
	* 4.83007	48.51	Pk	34	-31.4	.3	-15.31	36.1	54	-17.9	-	-	119	372	V
13	1.725	68.72	Pk	29.6	-34.8	.4	0	63.92	-	-	77.26	-13.34	223	345	V
	1.725	68.72	Pk	29.6	-34.8	.4	-15.31	48.61	57.26	-8.65	-	-	223	345	V
2	1.72502	71.06	Pk	29.6	-34.8	.4	0	66.26	-	-	77.26	-11	156	343	H
	1.72502	71.06	Pk	29.6	-34.8	.4	-15.31	50.95	57.26	-6.31	-	-	156	343	H
3	2.06993	58.08	Pk	31.8	-34.6	.4	0	55.68	-	-	77.26	-21.58	81	128	H
	2.06993	58.08	Pk	31.8	-34.6	.4	-15.31	40.37	57.26	-16.89	-	-	81	128	H
14	2.06994	54.24	Pk	31.8	-34.6	.4	0	51.84	-	-	77.26	-25.42	132	356	V
	2.06994	54.24	Pk	31.8	-34.6	.4	-15.31	36.53	57.26	-20.73	-	-	132	356	V
15	2.41495	57.75	Pk	32.2	-34.3	.4	0	56.05	-	-	77.26	-21.21	108	393	V
	2.41495	57.75	Pk	32.2	-34.3	.4	-15.31	40.74	57.26	-16.52	-	-	108	393	V
4	2.41498	59.36	Pk	32.2	-34.3	.4	0	57.66	-	-	77.26	-19.6	35	274	H
	2.41498	59.36	Pk	32.2	-34.3	.4	-15.31	42.35	57.26	-14.91	-	-	35	274	H
6	3.105	60.61	Pk	33.1	-33.6	.5	0	60.61	-	-	77.26	-16.65	74	135	H
	3.105	60.61	Pk	33.1	-33.6	.5	-15.31	45.3	57.26	-11.96	-	-	74	135	H
17	3.10501	56.86	Pk	33.1	-33.6	.5	0	56.86	-	-	77.26	-20.4	120	341	V
	3.10501	56.86	Pk	33.1	-33.6	.5	-15.31	41.55	57.26	-15.71	-	-	120	341	V
18	3.44984	53.67	Pk	32.8	-33.4	.5	0	53.57	-	-	77.26	-23.69	127	386	V
	3.44984	53.67	Pk	32.8	-33.4	.5	-15.31	38.26	57.26	-19	-	-	127	386	V
7	3.44995	55.78	Pk	32.8	-33.4	.5	0	55.68	-	-	77.26	-21.58	83	118	H
	3.44995	55.78	Pk	32.8	-33.4	.5	-15.31	40.37	57.26	-16.89	-	-	83	118	H
10	4.48507	59.59	Pk	33.9	-32.4	.3	0	61.39	-	-	77.26	-15.87	86	101	H
	4.48507	59.59	Pk	33.9	-32.4	.3	-15.31	46.08	57.26	-11.18	-	-	86	101	H
21	4.48516	57.64	Pk	33.9	-32.4	.3	0	59.44	-	-	77.26	-17.82	114	335	V
	4.48516	57.64	Pk	33.9	-32.4	.3	-15.31	44.13	57.26	-13.13	-	-	114	335	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
 Pk - Peak detector

9. SETUP PHOTOS

Refer to exhibit R13488665-EP1 for setup photos.

END OF TEST REPORT