Measurement of RF Emissions from the Model No. WW RF Tag/Sensor Transmitter

For	Accutech Security, LLC 10125 S 52nd Street Franklin, WI 53132
P.O. Number	P028222
Date Tested	September 28, 2018
Test Personnel	Tylar Jozefczyk
Test Specification	FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Section 15.231 Industry Canada RSS-GEN Industry Canada RSS-210

Test Report By:

Tylar Jozefczyk
EMC Engineer

Requested By: Mark J Kieckhefer
Accutech Security, LLC

Approved By:

Raymond J. Klouda
Registered Professional
Engineer of Illinois - 44894

Elite Electronic Engineering Inc.
1516 CENTRE CIRCLE
DOWNERS GROVE, IL 60515
TEL: 630 - 495 - 9770
FAX: 630 - 495 - 9785
www.elitetest.com

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REVISION HISTORY

Revision	Date	Description
—	18 Oct 2018	Initial release

Measurement of RF Emissions from the Model No. WW RF Tag/Sensor Transmitter

1. INTRODUCTION

1.1. Scope of Tests

This report represents the results of the series of radio interference measurements performed on the Accutech Security, LLC Model No. WW RF Tag/Sensor transmitter, (hereinafter referred to as the EUT). The EUT is a wearable tag worn by a resident or patient to monitor if the resident or patient is removed from an activation field. The EUT is considered “Safety of Life.” The EUT was manufactured and submitted for testing by Accutech Security, LLC, located in Franklin, WI.

1.2. Purpose

The test series was performed to determine if the EUT meets the radiated RF emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Sections 15.209 and 15.231 for Intentional Radiators. The test series was also performed to determine if the EUT meets the radiated RF emission requirements of the Industry Canada Radio Standards Specification, RSS-210, Annex A for transmitters. Testing was performed in accordance with ANSI C63.4-2014.

1.3. Deviations, Additions and Exclusions

There were no deviations, additions to, or exclusions from the test specification during this test series.

1.4. EMC Laboratory Identification

This series of tests was performed by Elite Electronic Engineering Incorporated of Downers Grove, Illinois. The laboratory is accredited by The American Association for Laboratory Accreditation (A2LA). A2LA Certificate Number: 1786.01.

1.5. Laboratory Conditions

The temperature at the time of the test was 22.4^{o}C and the relative humidity was 35%.

2. APPLICABLE DOCUMENTS

The following documents of the exact issue designated form part of this document to the extent specified herein:

- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 15, Subpart C
- ANSI C63.4-2014, "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz"
- Industry Canada Radio Standards Specification, RSS-Gen, “General Requirements for Compliance of Radio Apparatus”, Issue 5, April 2018
- Industry Canada Radio Standards Specification, RSS-210, “License-Exempt Radio Apparatus: Category I Equipment”, Issue 9, November 2017

3. EUT SETUP AND OPERATION

3.1. General Description

The EUT is an Accutech Security, LLC RF Tag/Sensor, Model No. WW. A block diagram of the EUT setup is shown as Figure 1.

3.1.1.Power Input

The EUT was powered by 3VDC from a cell battery.

3.1.2.Peripheral Equipment

The following peripheral equipment was submitted with the EUT:

Item	Description
TAD Activator/Deactivator	Used to activate the Tag. (Powered by a 9V battery.)

3.1.3.Grounding

The EUT was ungrounded during the tests.

3.2. Operational Mode

For all tests, the EUT was placed on an 80cm high non-conductive stand for tests under 1GHz and 1.5 meters for tests above 1GHz. The EUT was energized. The unit was programmed to operate in one of the following modes:

Mode	Description
Tx	EUT was set to transmit continuously at 418MHz.

3.3. EUT Modifications

No modifications were required for compliance to the FCC 15.231 requirements.

4. TEST FACILITY AND TEST INSTRUMENTATION

4.1. Shielded Enclosure

All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. With the exception of the floor, the reflective surfaces of the shielded chamber are lined with ferrite tiles on the walls and ceiling. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4-2014 for site attenuation.

4.2. Test Instrumentation

The test instrumentation and auxiliary equipment used during the tests are listed in Table 9-1.

Conducted and radiated emission measurements were performed with a spectrum analyzer. This receiver allows measurements with the bandwidths and detector functions specified by the FCC. The receiver bandwidth was 120kHz for the 30MHz to 1000MHz radiated emissions data and 1MHz for the 1000MHz to 5000MHz radiated emissions data.

4.3. Calibration Traceability

Test equipment is maintained and calibrated on a regular basis with a calibration interval not greater than two years. All calibrations are traceable to the National Institute of Standards and Technology (NIST).

4.4. Measurement Uncertainty

All measurements are an estimate of their true value. The measurement uncertainty characterizes, with a specified confidence level, the spread of values which may be possible for a given measurement system.

Values of Expanded Measurement Uncertainty (95% Confidence) are presented below:

Measurement Type	Expanded Measurement Uncertainty
Conducted disturbance (mains port) (150 kHz – 30 MHz)	2.7
Radiated disturbance (electric field strength on an open area test site or alternative test site) (30 MHz – 1000 MHz)	4.3
Radiated disturbance (electric field strength on an open area test site or alternative test site) (1 GHz – 6 GHz)	3.1
Radiated disturbance (electric field strength on an open area test site or alternative test site) (6 GHz – 18 GHz)	3.2

5. TEST PROCEDURES

5.1. Powerline Conducted Emissions

5.1.1.Requirements

Since the EUT was powered by internal batteries and has no connections for AC power charging, no conducted emissions tests are required.

5.2. Periodic Operation Measurements

5.2.1.Requirements

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released. A transmitter activated automatically shall cease transmission within 5 seconds after activation. Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.

5.2.2.Procedures

The spectrum analyzer was set up to display the time domain trace. The EUT was set to transmit normally. The spectrum analyzer was used to record the amount of time that the EUT remained active following activation.

5.2.3.Results

This transmitter is designed to activate when in an alarm condition and transmit continuously when in this state. The operation ceases once the alarm condition has ended. A plot of the operation is shown on data page 16. The plot shows that when the EUT is activated in an alarm condition, the EUT will cease operation when the condition has ended.

5.3. 20dB Bandwidth

5.3.1.Requirement

Per 15.231(c), the 20dB down bandwidth for devices operating above 70MHz and below 900MHz shall be no wider than 0.25% of the center frequency. Per RSS-210 (A.1.3), the 99% bandwidth shall be less than or equal to 0.25% of the center frequency for devices operating between 70MHz and 900MHz.

5.3.2.Procedures

The EUT was set up inside the test chamber. The EUT was allowed to transmit continuously. The EUT was set to the Tx mode. The resolution bandwidth (RBW) was set to 100kHz and the span was set to greater than the RBW.

The 'Max-Hold' function was engaged. The analyzer was allowed to scan until the envelope of the transmitter bandwidth was defined. The analyzer's display was plotted using a 'screen dump' utility.

5.3.3.Results

The plots on pages 17 and 18 show that the 20dB emission bandwidth was 247.8kHz, which is less than the maximum allowable 20dB bandwidth requirement of 1.045MHz. The 99% bandwidth was measured to be 211.8 kHz.

5.4. Duty Cycle Factor Measurements

5.4.1.Requirements

Unless otherwise specified, when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, 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.

5.4.2.Procedures

1) The EUT was placed on the non-conductive stand and set to transmit continuously.
2) A double ridged waveguide antenna was positioned at a 3 meter distance from the EUT. The output of the antenna was connected to the input of a spectrum analyzer.
3) The center frequency of the spectrum analyzer was set to the transmit frequency of the EUT.
4) The frequency span of the spectrum analyzer was set to 0Hz so that the time domain trace of the transmitted pulse of the EUT was displayed on the spectrum analyzer.
5) The sweep time of the spectrum analyzer was adjusted so that the beginning and end of a single pulse could be seen on the display of the spectrum analyzer.
6) The single sweep function of the spectrum analyzer was used multiple times to determine the maximum pulse width of the EUT.
7) The maximum pulse width display of the spectrum analyzer was recorded and then plotted using a 'screen dump' utility.
8) The sweep time of the spectrum analyzer was then adjusted to 100msec.
9) The single sweep function of the spectrum analyzer was used multiple times to determine the maximum number of transmitted pulses that occurred in a 100msec time period.
10) The maximum number of pulses transmitted in a 100msec time period was recorded and then plotted using a ‘screen dump’ utility.
11) The duty cycle correction was calculated using the following equation:

Duty Cycle Correction Factor (dB) = D.C. (dB)
D.C. (dB) = 20 x log [((pulse width (msec)) x (#pulses in a 100msecperiod)) / 100msec]

5.4.3.Results

Duty cycle plots are shown on pages 19 through 22. The EUT transmits a 5ms pulse 8 times (as well as a 2.5ms half pulse) and a 1ms pulse 8 times in a 100msec period. This results in a duty cycle correction factor of -5.93dB.

5.5. Radiated Spurious Emissions Measurements

5.5.1.Requirements

FCC 15.231(b) has the following radiated emission limits:

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

[1] = Linear interpolations

RSS-210 (A.1.2) has the following radiated emission limits:

Fundamental Frequency (MHz) – Excluding Restricted Frequency Bands Specified in RSS-Gen	Field Strength of Fundamental (microvolts/meter)
70-130	1,250
130-174	1,250 to 3,750[1]
174-260[1]	3,750
260-470[1]	3,750 to 12,500[1]
Above 470	12,500

[1] = Linear interpolation with frequency, f, in MHz:
For 130-174 MHz: Field Strength (μV/m) = (56.82 × f) − 6136
For 260-470 MHz: Field Strength (μV/m) = (41.67 × f) − 7083

All measurements are specified at a distance of 3 meters.

5.5.2.Procedures

All tests were performed in a 32ft. x 20ft. x 18ft. hybrid ferrite-tile/anechoic absorber lined test chamber. The walls and ceiling of the shielded chamber are lined with ferrite tiles. Anechoic absorber material is installed over the ferrite tile. The floor of the chamber is used as the ground plane. The chamber complies with ANSI C63.4-2014 for site attenuation.

The shielded enclosure prevents emissions from other sources, such as radio and TV stations from interfering with the measurements. All powerlines and signal lines entering the enclosure pass through filters on the enclosure wall. The powerline filters prevent extraneous signals from entering the enclosure on these leads.

A preliminary radiated emissions test was performed to determine the emission characteristics of the EUT. For the preliminary test, a broadband measuring antenna was positioned at a 3 meter distance from the EUT. The entire frequency range from 30MHz to 5GHz was investigated using a peak detector function. The data was then processed by the computer to calculate equivalent field intensity.

The final open field emission tests were then manually performed over the frequency range of 30MHz to 5GHz. Between 30MHz and 1000MHz, a dipole antenna was used. A broadband double ridged waveguide antenna was used for all frequencies above 1GHz. All significant broadband and narrowband signals were measured and recorded. The peak detected levels were converted to average levels using a duty cycle factor which was computed from the pulse train.

To ensure that maximum or worst case, emission levels were measured, the following steps were taken:

1) The EUT was rotated so that all of its sides were exposed to the receiving antenna.
2) Since the measuring antenna is linearly polarized, both horizontal and vertical field components were measured.
3) The measuring antenna was raised and lowered from 1 to 4 meters for each antenna polarization to maximize the readings.

If the emission is pulsed, the reading can be adjusted by a “duty cycle correction factor” derived from 20*log(on time/100msec). These readings must be no greater than the limits specified in 15.209(a).

5.5.3.Results

Preliminary radiated emissions plots are shown on pages 23 through 26. Final radiated emissions data are presented on data page 27. As can be seen from the data, all emissions measured from the EUT were within the specification limits. The emissions level closest to the limit (worst case) occurred at 4180MHz. The emissions level at this frequency was 2.6dB within the limit. Photographs of the test configuration which yielded the highest (or worst case) radiated emission levels are shown in Figures 2 and 3.

6. OTHER TEST CONDITIONS

6.1. Test Personnel and Witnesses

All tests were performed by qualified personnel from Elite Electronic Engineering Incorporated.

6.2. Disposition of the EUT

The EUT and all associated equipment were returned to Accutech Security, LLC upon completion of the tests.

7. CONCLUSIONS

It was determined that the Accutech Security, LLC RF Tag/Sensor, Model No. WW did fully meet the conducted and radiated emission requirements of the FCC "Code of Federal Regulations" Title 47, Part 15, Subpart C, Sections 15.209 and 15.231 for Intentional Radiators, when tested per ANSI C63.4-2014.

It was also determined that the Accutech Security, LLC RF Tag/Sensor, Model No. WW did fully meet the radiated RF emission requirements of the Industry Canada Radio Standards Specification, RSS-210 Annex A, for transmitters, when tested per ANSI C63.4-2014.

8. CERTIFICATION

Elite Electronic Engineering Incorporated certifies that the information contained in this report was obtained under conditions which meet or exceed those specified in the test specifications.

The data presented in this test report pertains to the EUT at the test date. Any electrical or mechanical modification made to the EUT subsequent to the specified test date will serve to invalidate the data and void this certification.

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

9. EQUIPMENT LIST

Table 9-1 Equipment List

Eq ID	Equipment Description	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Date	Due Date
CDX8	COMPUTER	ELITE	WORKSTATION			N/A	
NTA3	BILOG ANTENNA	TESEQ	6112D	32853	25-1000MHz	10/3/2018	10/3/2019
NWQ0	DOUBLE RIDGED WAVEGUIDE ANTENNA	ETS LINDGREN	3117	66657	1GHZ-18GHZ	5/31/2018	5/31/2020
PHA0	MAGNETIC FIELD PROBE	ELECTRO-METRICS	EM-6882	134	22-230MHZ	NOTE 1	
RBG2	EMI ANALYZER	ROHDE & SCHWARZ	ESW44	101591	2HZ-44GHZ	2/23/2018	2/23/2019
WKA1	SOFTWARE, UNIVERSAL RCV EMI	ELITE	UNIV_RCV_EMI	1	---	I/O	

I/O: Initial Only
N/A: Not Applicable
Note 1: For the purpose of this test, the equipment was calibrated over the specified frequency range, pulse rate, or modulation prior to the test or monitored by a calibrated instrument.

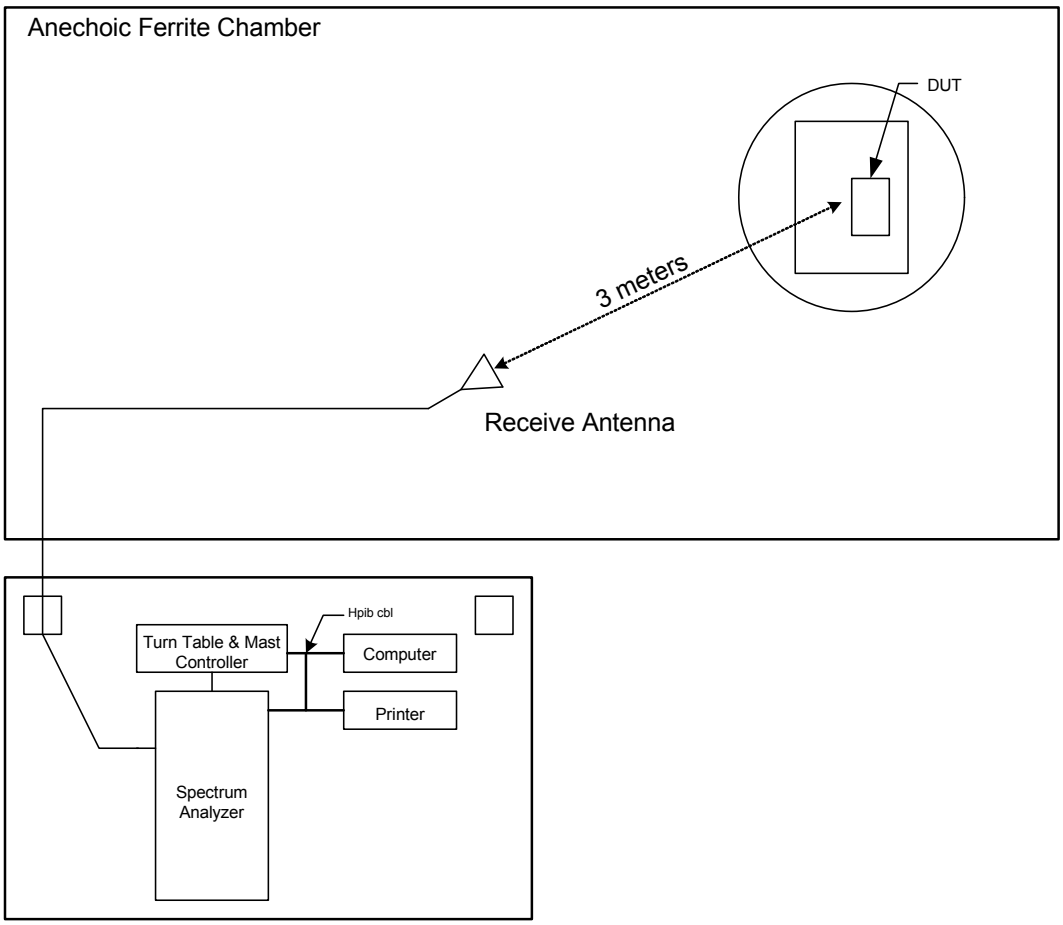


FIGURE 1 BLOCKDIAGRAM OF TEST SETUP

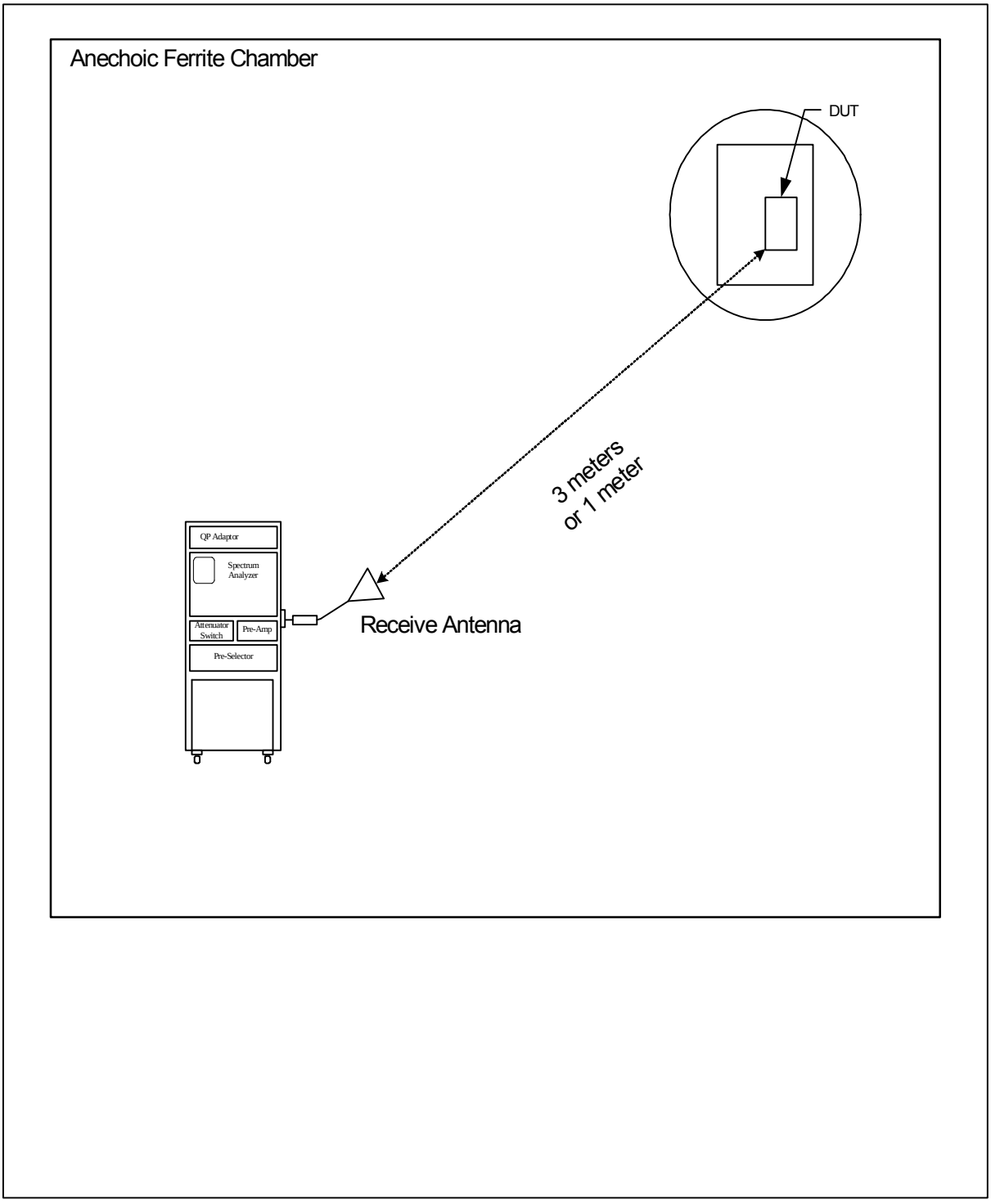
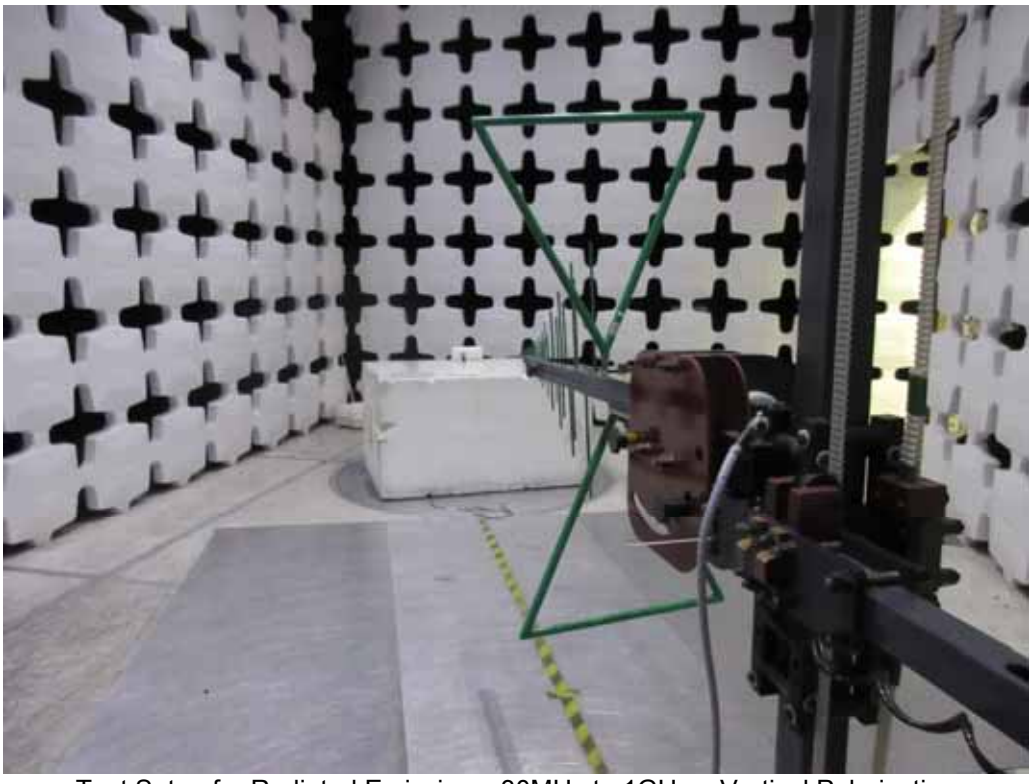

Anechoic Ferrite Chamber
DUT
3 meters
or 1 meter
QP Adaptor
Spectrum
Analyzer
Attenuator
Switch
Pre-Amp
Pre-Selector
Receive Antenna

Figure 2

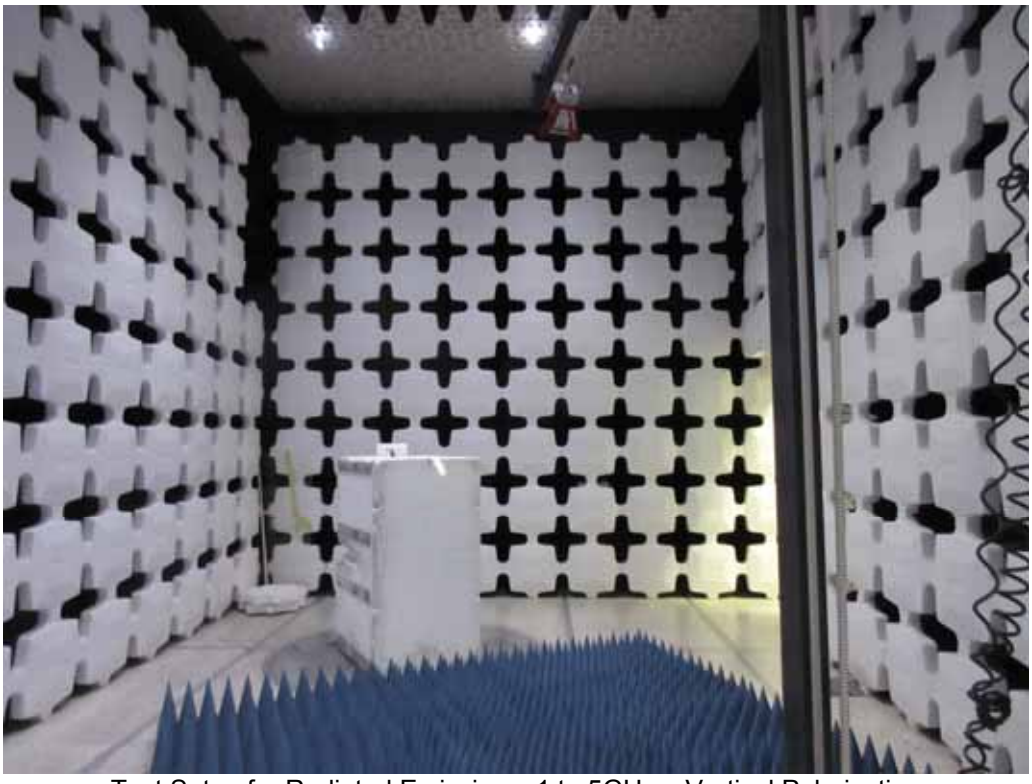
Test Setup for Radiated Emissions, 30MHz to 1GHz – Horizontal Polarization



Test Setup for Radiated Emissions, 30MHz to 1GHz – Vertical Polarization

Figure 3

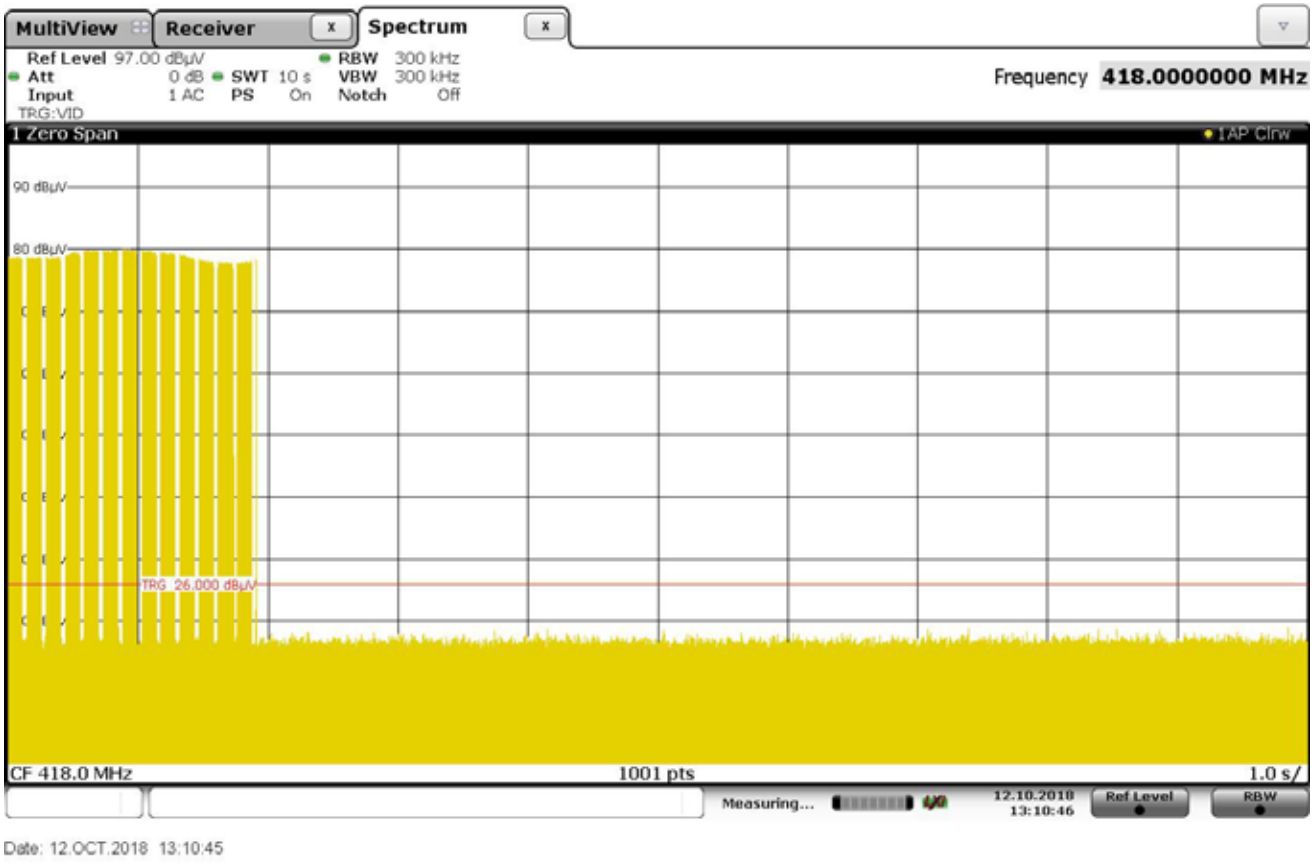
Test Setup for Radiated Emissions, 1 to 5GHz – Horizontal Polarization



Test Setup for Radiated Emissions, 1 to 5GHz – Vertical Polarization

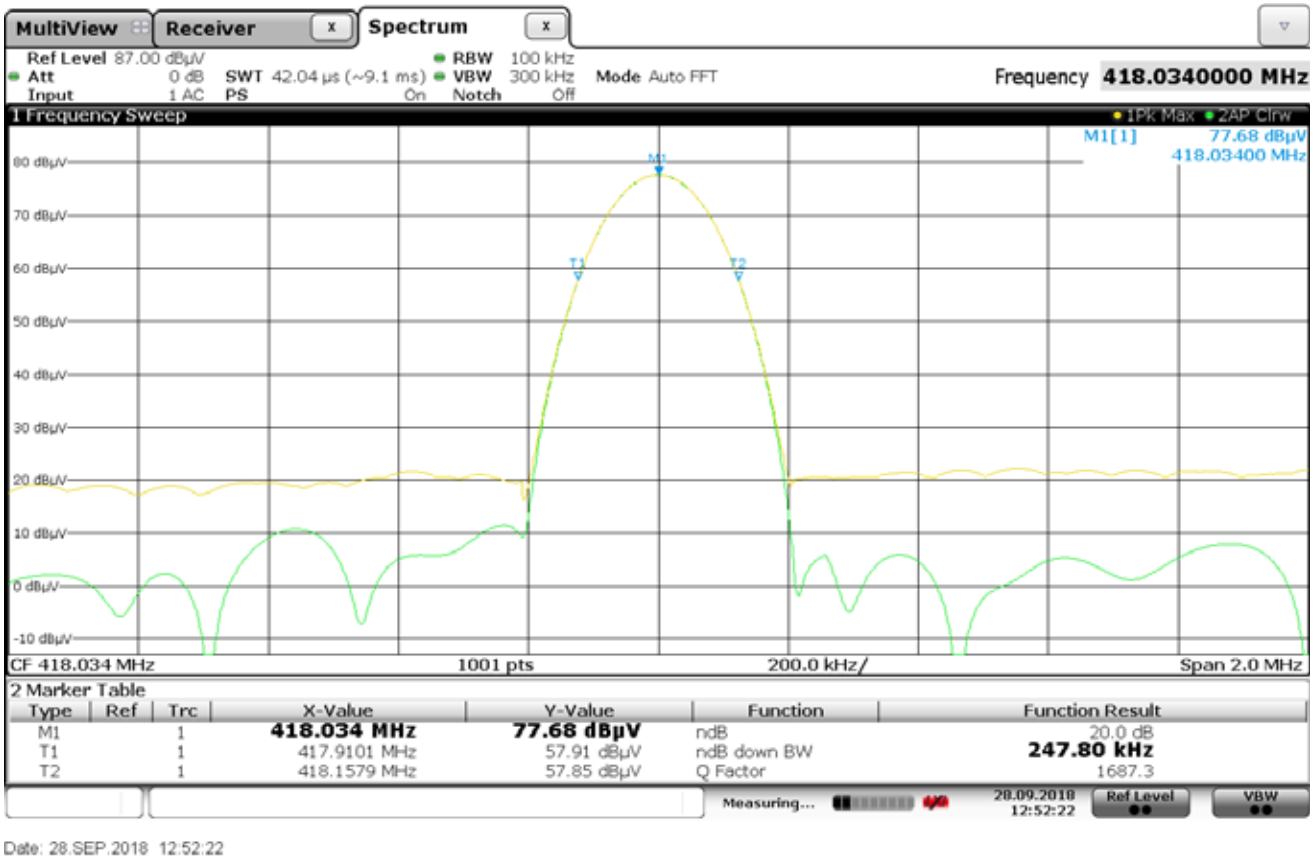
DATA PAGE	
MANUFACTURER	Accutech Security, LLC
EUT	RF Tag/Sensor
MODEL NO.	WW
TEST	FCC §15.231, RSS-210 Periodic Operation Measurement
MODE	Tx
DATE TESTED	September 28, 2018
TEST PERFORMED BY	Tylar Jozefczyk
NOTES	EUT set into an alarm condition, and then removed from the alarm condition. Shows that EUT will stop operation once the alarm condition has ended.

PERIODIC OPERATION



DATA PAGE	
MANUFACTURER	Accutech Security, LLC
EUT	RF Tag/Sensor
MODEL NO.	WW
TEST	FCC §15.231, RSS-210 20dB Bandwidth
MODE	Tx
DATE TESTED	September 28, 2018
TEST PERFORMED BY	Tylar Jozefczyk
NOTES	20dB BW = 247.8kHz

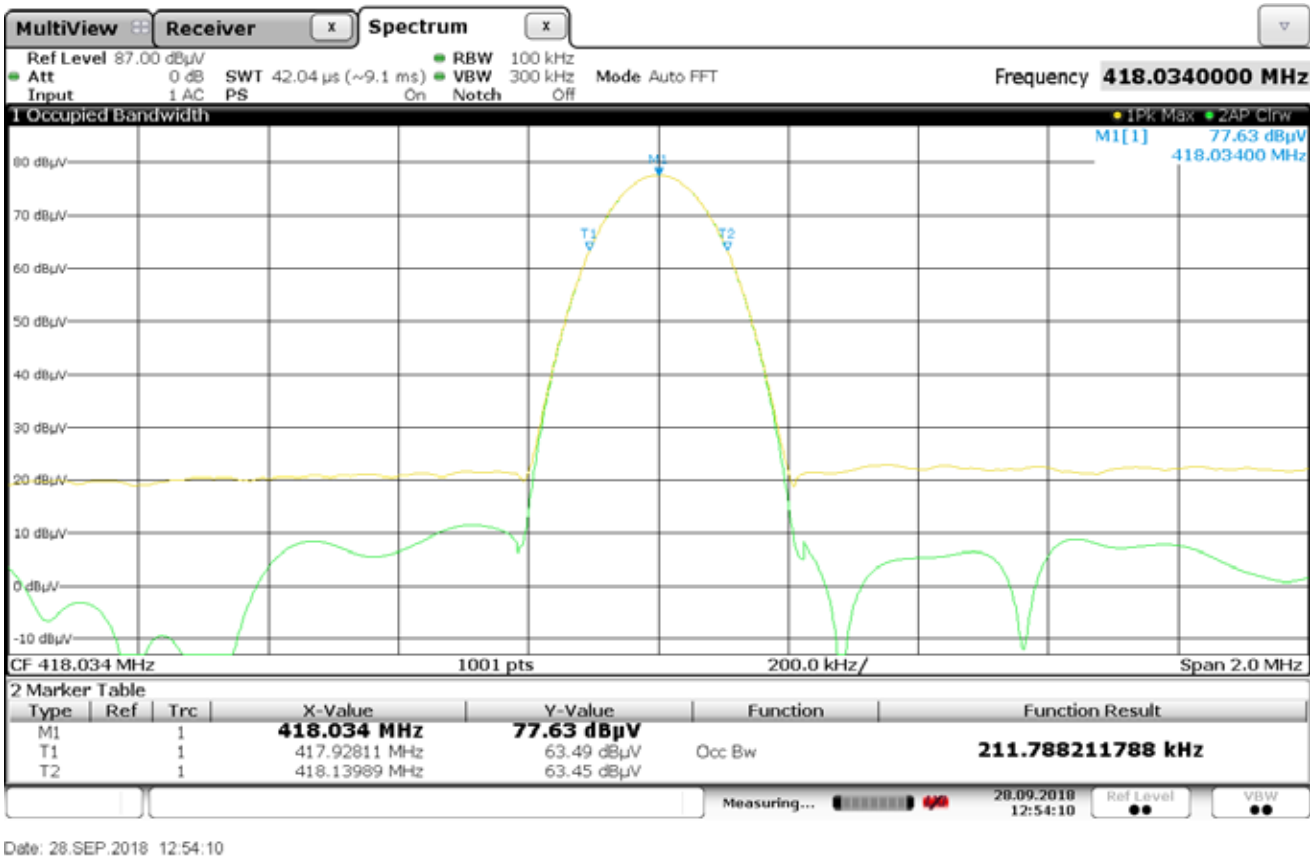
20DB BANDWIDTH



Date: 28.SEP.2018 12:52:22

DATA PAGE	
MANUFACTURER	Accutech Security, LLC
EUT	RF Tag/Sensor
MODEL NO.	WW
TEST	FCC §15.231, RSS-210 99% Bandwidth
MODE	Tx
DATE TESTED	September 28, 2018
TEST PERFORMED BY	Tylar Jozefczyk
NOTES	99% BW = 211.788kHz

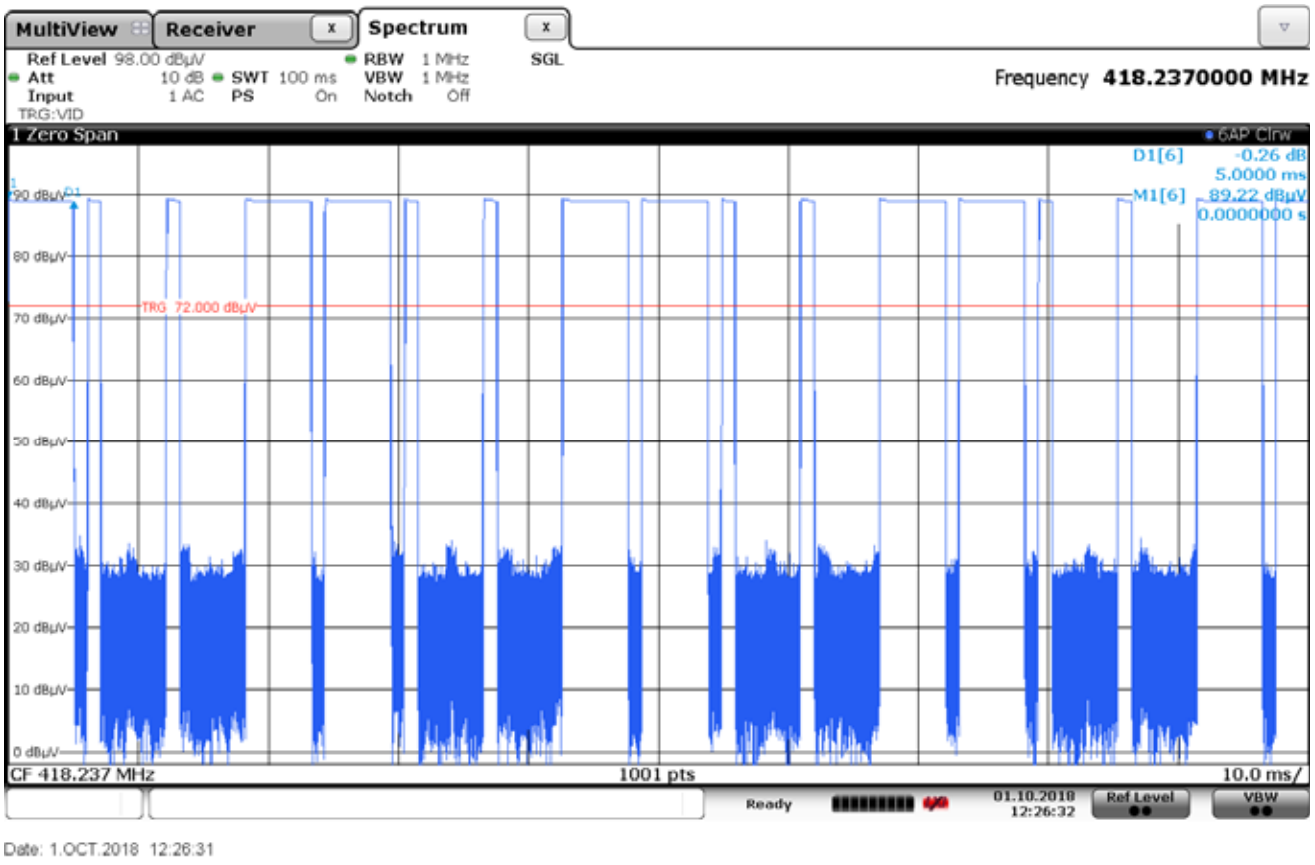
99% BANDWIDTH



Date: 28.SEP.2018 12:54:10

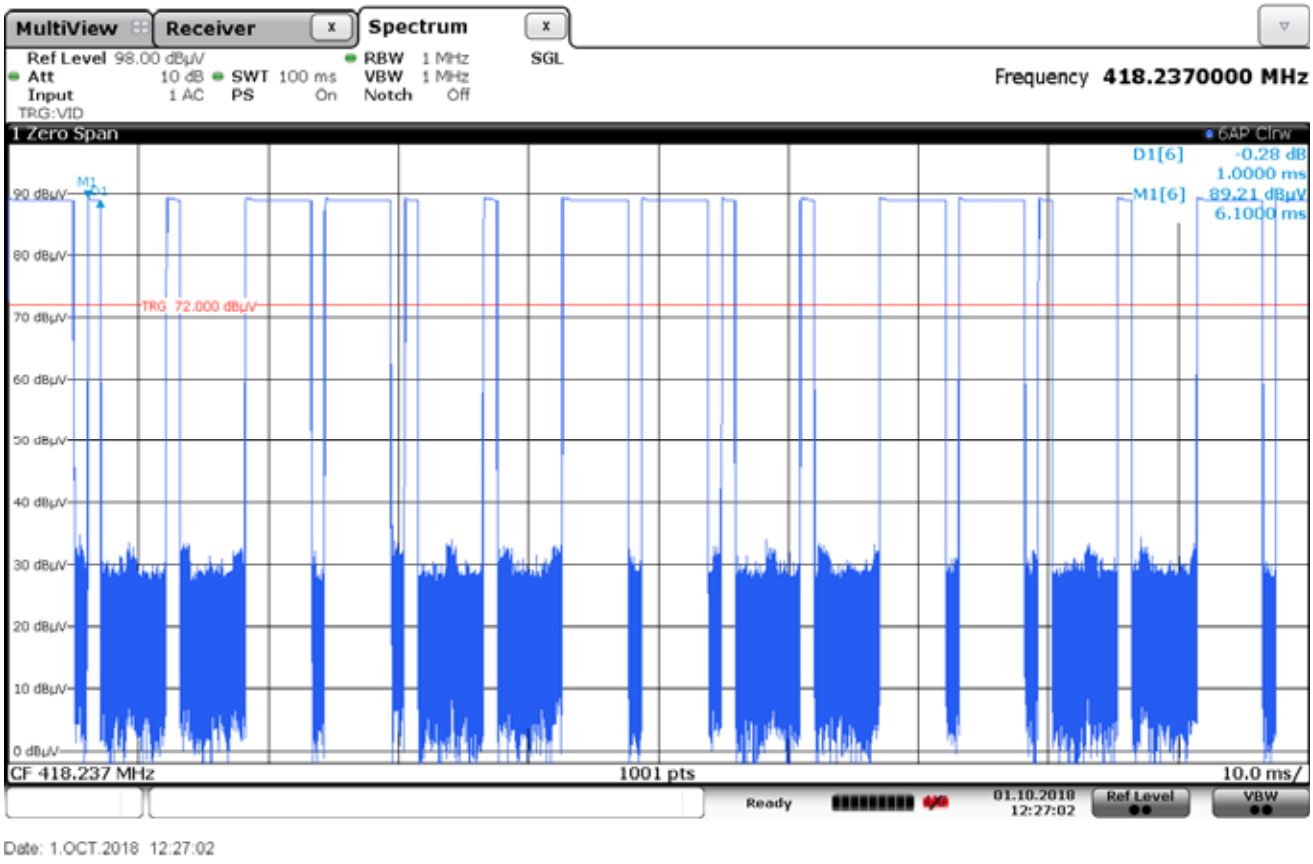
DATA PAGE	
MANUFACTURER	Accutech Security, LLC
EUT	RF Tag/Sensor
MODEL NO.	WW
TEST	FCC §15.231, RSS-210 Duty Cycle
MODE	Tx
DATE TESTED	September 28, 2018
TEST PERFORMED BY	Tylar Jozefczyk
NOTES	Wide Pulse = 5ms

DUTY CYCLE – WIDE PULSE



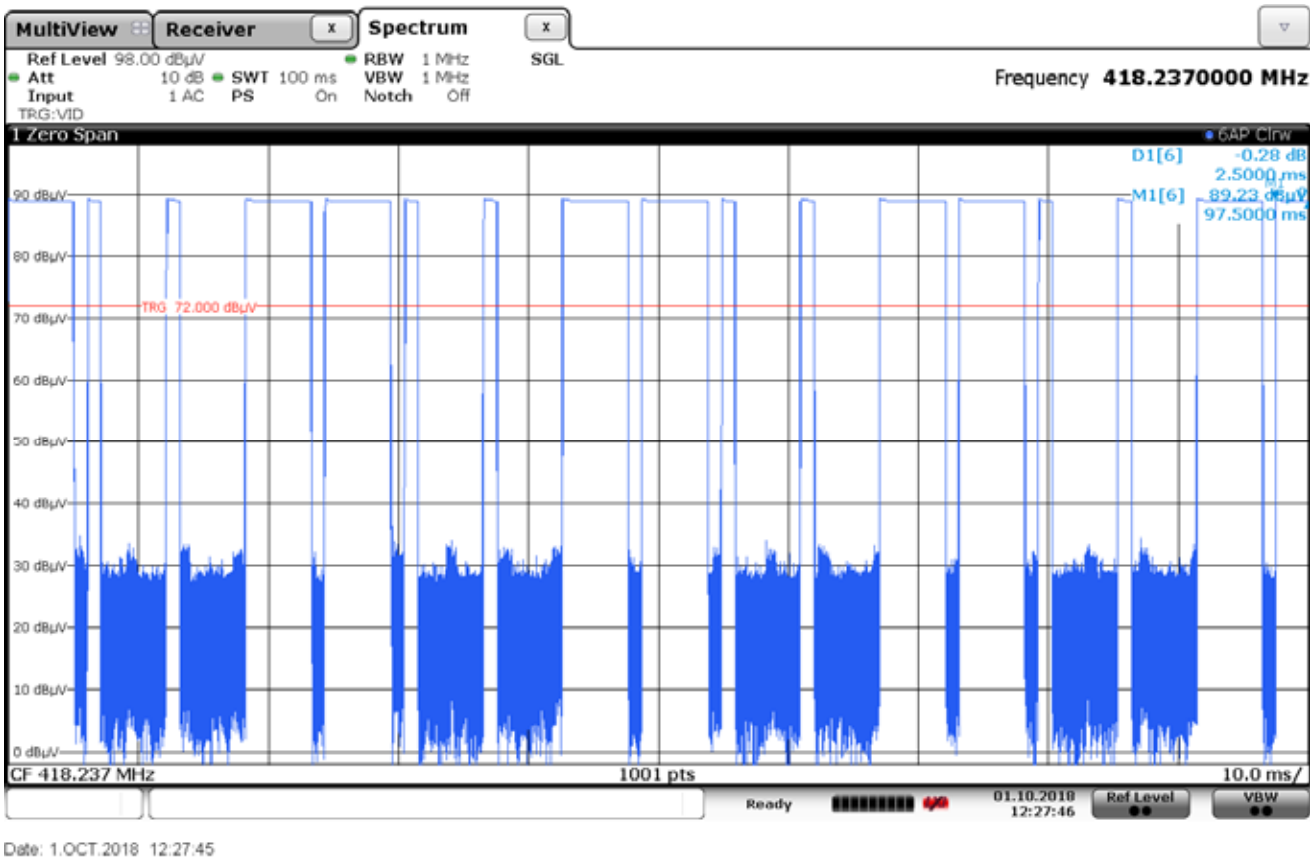
DATA PAGE	
MANUFACTURER	Accutech Security, LLC
EUT	RF Tag/Sensor
MODEL NO.	WW
TEST	FCC §15.231, RSS-210 Duty Cycle
MODE	Tx
DATE TESTED	September 28, 2018
TEST PERFORMED BY	Tylar Jozefczyk
NOTES	Narrow Pulse = 1ms

DUTY CYCLE – NARROW PULSE



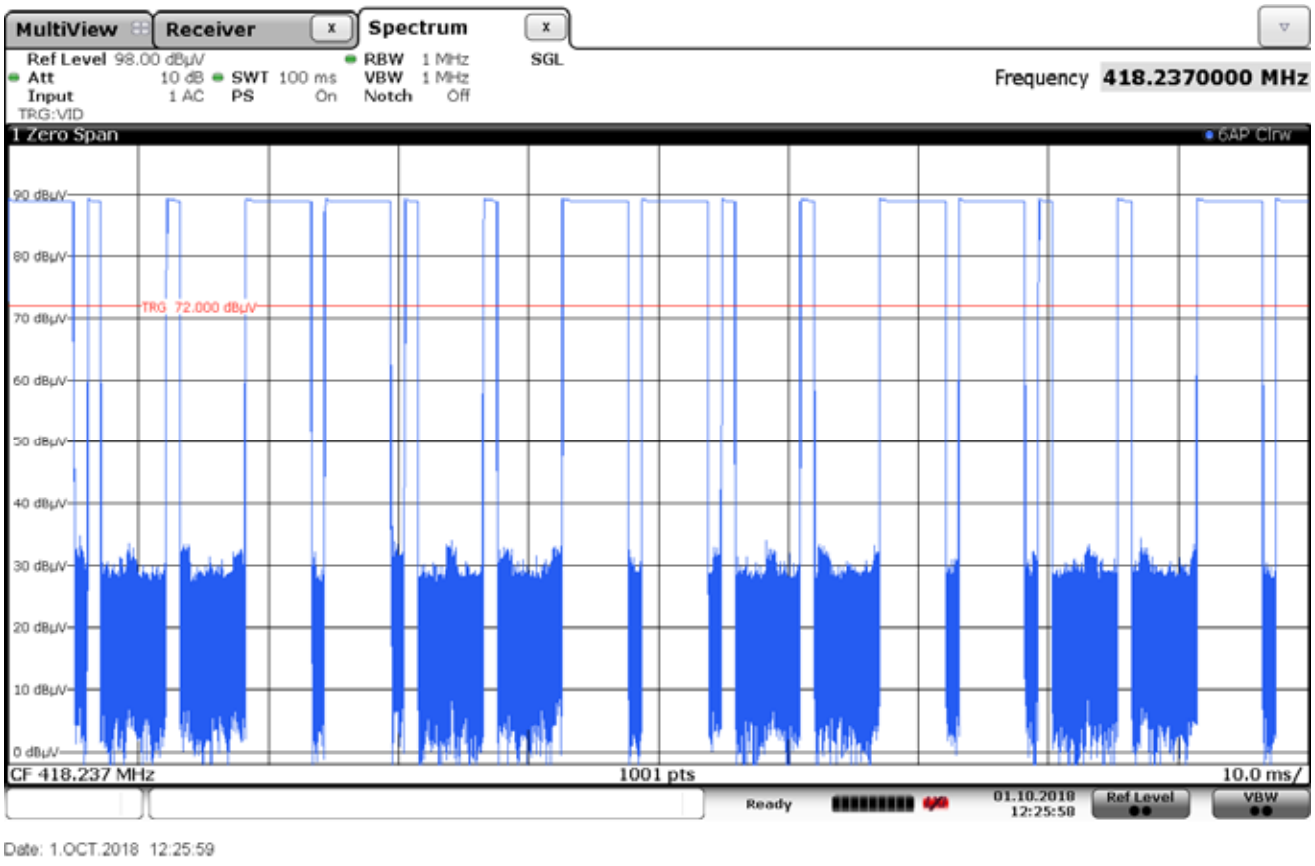
DATA PAGE	
MANUFACTURER	Accutech Security, LLC
EUT	RF Tag/Sensor
MODEL NO.	WW
TEST	FCC §15.231, RSS-210 Duty Cycle
MODE	Tx
DATE TESTED	September 28, 2018
TEST PERFORMED BY	Tylar Jozefczyk
NOTES	Last Wide Pulse = 2.5ms

DUTY CYCLE – PULSE



DATA PAGE	
MANUFACTURER	Accutech Security, LLC
EUT	RF Tag/Sensor
MODEL NO.	WW
TEST	FCC §15.231, RSS-210 Duty Cycle
MODE	Tx
DATE TESTED	September 28, 2018
TEST PERFORMED BY	Tylar Jozefczyk
NOTES	Duty Cycle Calculation: 8 × 5ms = 40ms 1 × 2.5ms = 2.5ms 8 × 1ms = 8ms 40 + 2.5 + 8 = 50.5ms D.C = 20log(50.5/100) = **-5.93dB**

DUTY CYCLE



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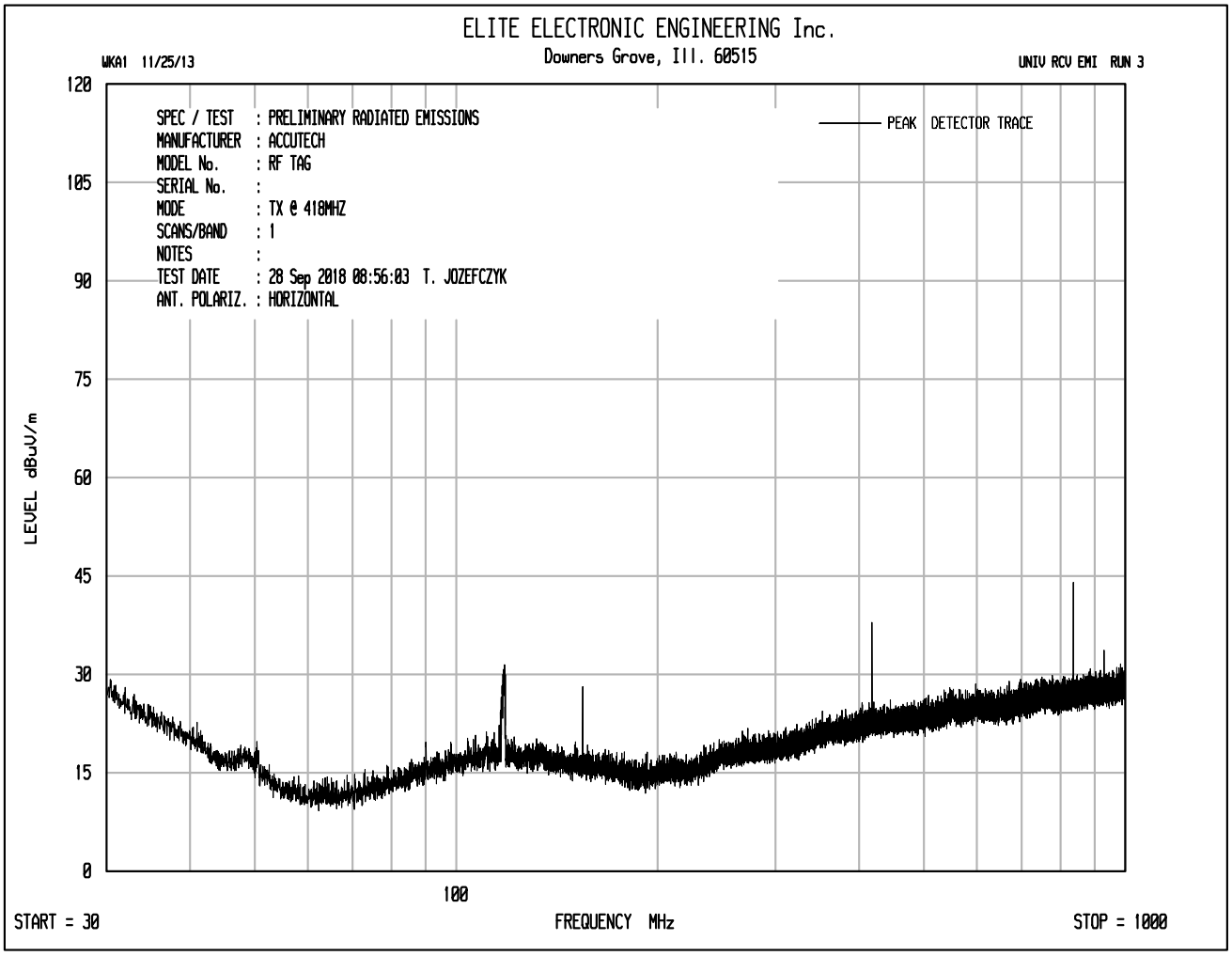
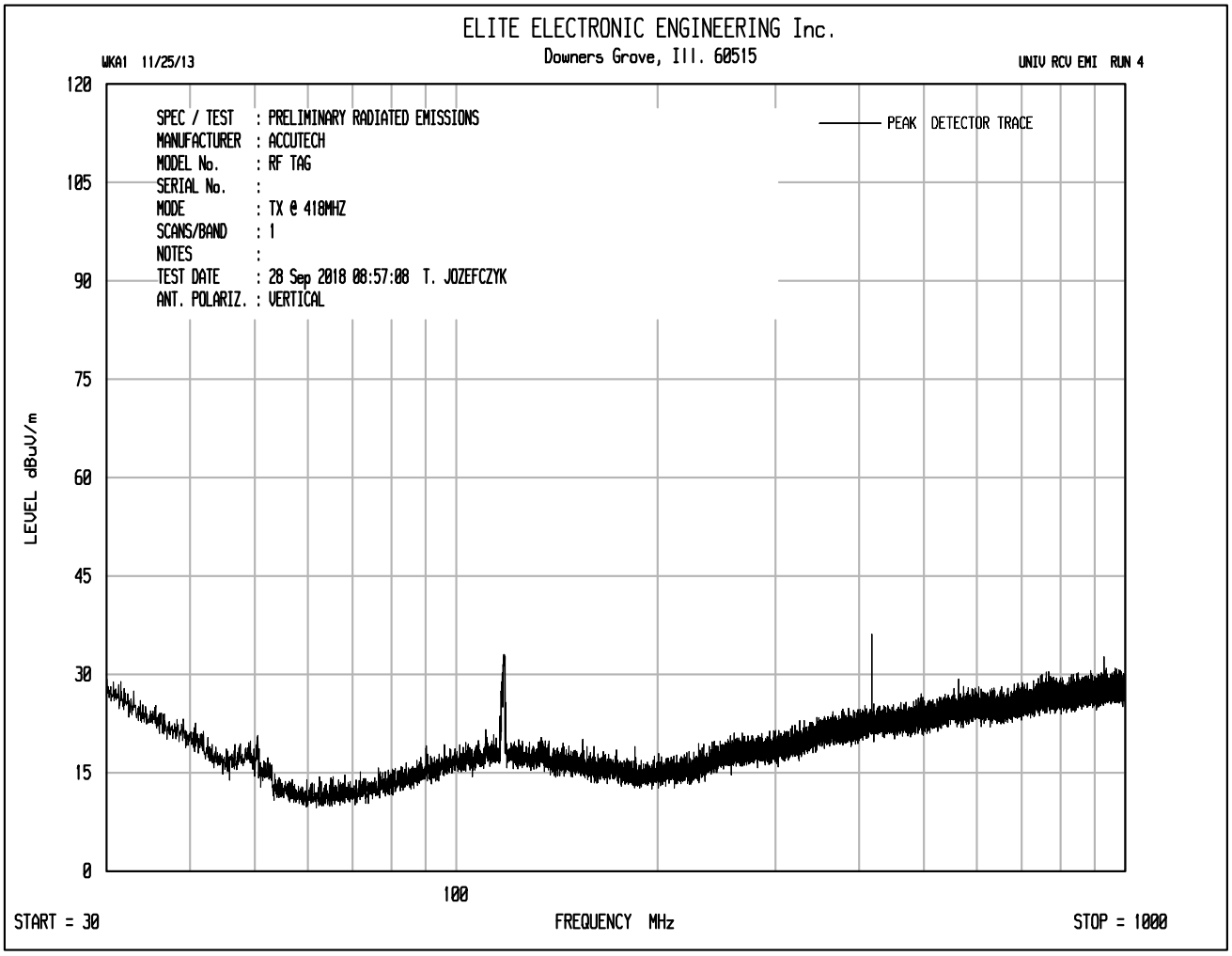
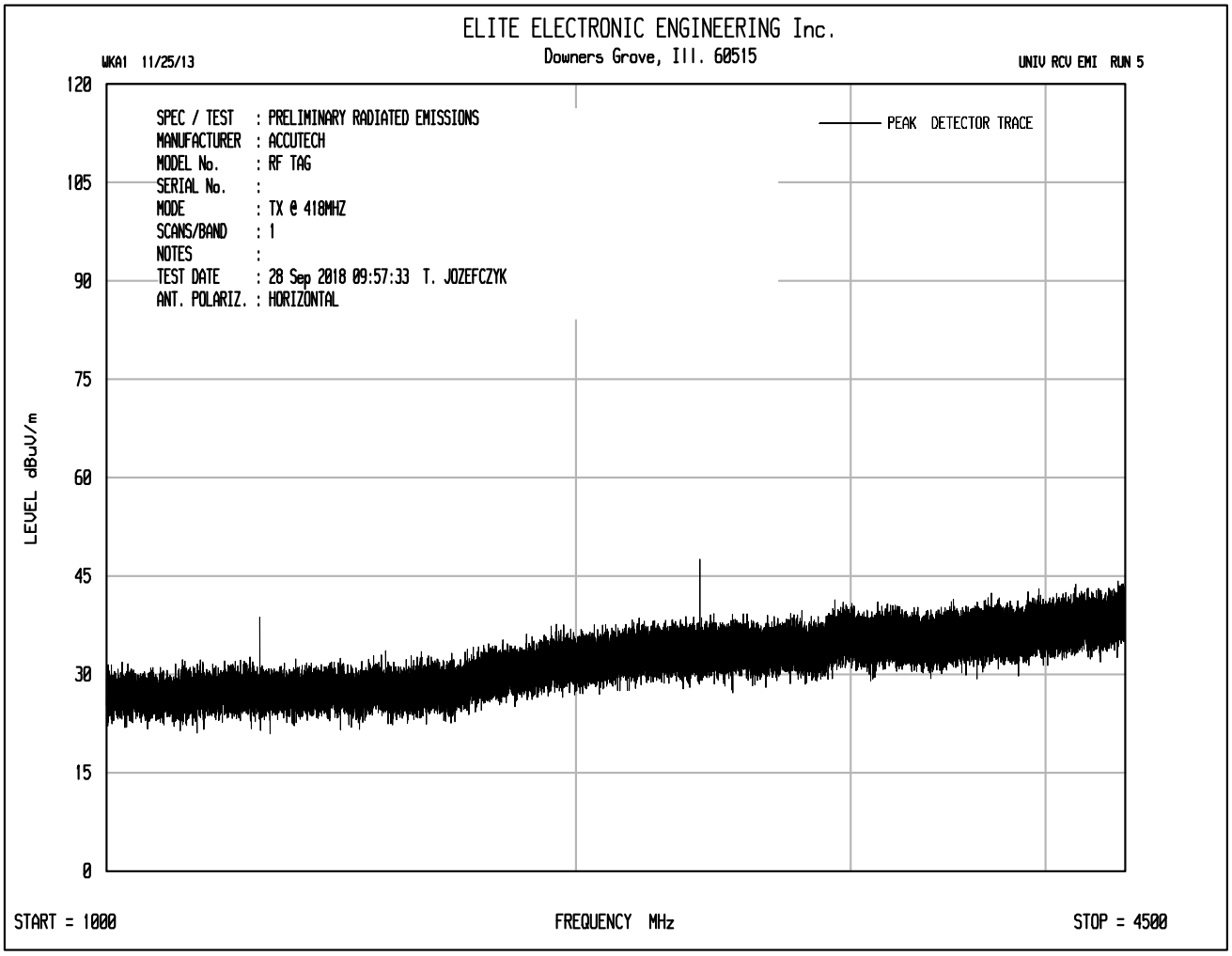

ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 3
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : ACCUTECH
MODEL No. : RF TAG
SERIAL No. :
MODE : TX @ 418MHZ
SCANS/BAND : 1
NOTES :
TEST DATE : 28 Sep 2018 08:56:03 T. JOZEFCZYK
ANT. POLARIZ. : HORIZONTAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
100
START = 30
FREQUENCY MHz
STOP = 1000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 4
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : ACCUTECH
MODEL No. : RF TAG
SERIAL No. :
MODE : TX @ 418MHZ
SCANS/BAND : 1
NOTES :
TEST DATE : 28 Sep 2018 08:57:08 T. JOZEFCZYK
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
100
START = 30
FREQUENCY MHz
STOP = 1000


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 5
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : ACCUTECH
MODEL No. : RF TAG
SERIAL No. :
MODE : TX @ 418MHZ
SCANS/BAND : 1
NOTES :
TEST DATE : 28 Sep 2018 09:57:33 T. JOZEFCZYK
ANT. POLARIZ. : HORIZONTAL
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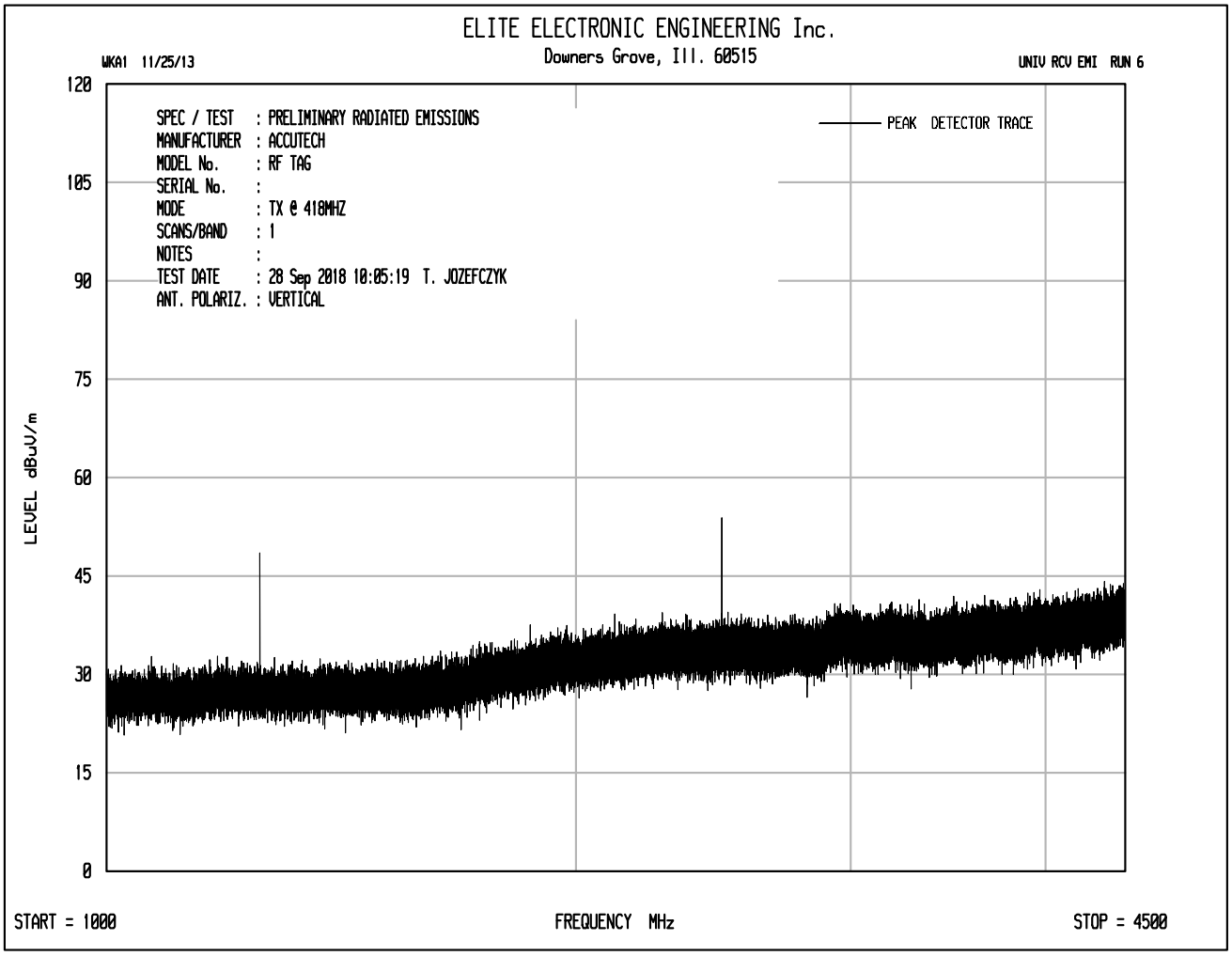
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 4500


ELITE ELECTRONIC ENGINEERING Inc.
Downers Grove, Ill. 60515
WKA1 11/25/13
UNIV RCV EMI RUN 6
SPEC / TEST : PRELIMINARY RADIATED EMISSIONS
MANUFACTURER : ACCUTECH
MODEL No. : RF TAG
SERIAL No. :
MODE : TX @ 418MHZ
SCANS/BAND : 1
NOTES :
TEST DATE : 28 Sep 2018 10:05:19 T. JOZEFCZYK
ANT. POLARIZ. : VERTICAL
PEAK DETECTOR TRACE
LEVEL dBuV/m
120
105
90
75
60
45
30
15
0
START = 1000
FREQUENCY MHz
STOP = 4500

DATA PAGE	
MANUFACTURER	Accutech Security, LLC
EUT	RF Tag/Sensor
MODEL NO.	WW
TEST	FCC §15.231, RSS-210 Radiated Spurious Emissions - Harmonics
MODE	Tx – 418MHz
DATE TESTED	September 28, 2018
TEST PERFORMED BY	Tylar Jozefczyk
NOTES	

RADIATED SPURIOUS EMISSIONS

Freq. (MHz)	Ant. Pol.	Meter Reading (dBµV)	Ambient	CBL Fac. (dB)	Ant. Fac. (dB)	Pre Amp (dB)	Duty Cycle	Total (dBµV/m)	Total (µV/m)	Limit (µV/m)	Margin (dB)
418.000	H	41.6		2.0	22.2	0.0	-5.9	59.9	987.4	10333.3	-20.4
418.000	V	35.6		2.0	22.2	0.0	-5.9	53.9	494.9	10333.3	-26.4
836.000	H	22.0		2.8	25.8	0.0	-5.9	44.7	172.6	1033.3	-15.5
836.000	V	27.0		2.8	25.8	0.0	-5.9	49.7	306.9	1033.3	-10.5
1254.000	H	15.0		3.1	29.8	0.0	-5.9	42.0	125.7	1033.3	-18.3
1254.000	V	20.7		3.1	29.8	0.0	-5.9	47.7	242.0	1033.3	-12.6
1672.000	H	12.6	Ambient	3.2	29.7	0.0	-5.9	39.6	95.6	500.0	-14.4
1672.000	V	12.8	Ambient	3.2	29.7	0.0	-5.9	39.7	96.9	500.0	-14.3
2090.000	H	12.0	Ambient	3.3	33.0	0.0	-5.9	42.4	132.0	1033.3	-17.9
2090.000	V	12.3	Ambient	3.3	33.0	0.0	-5.9	42.7	136.2	1033.3	-17.6
2508.000	H	12.6	Ambient	3.4	33.7	0.0	-5.9	43.8	155.4	1033.3	-16.5
2508.000	V	12.5	Ambient	3.4	33.7	0.0	-5.9	43.7	153.6	1033.3	-16.6
2926.000	H	13.4	Ambient	4.0	33.8	0.0	-5.9	45.3	183.2	1033.3	-15.0
2926.000	V	13.2	Ambient	4.0	33.8	0.0	-5.9	45.1	179.5	1033.3	-15.2
3344.000	H	14.1	Ambient	4.6	33.5	0.0	-5.9	46.2	204.9	1033.3	-14.1
3344.000	V	13.9	Ambient	4.6	33.5	0.0	-5.9	46.0	200.0	1033.3	-14.3
3762.000	H	14.9	Ambient	4.8	34.5	0.0	-5.9	48.2	257.3	500.0	-5.8
3762.000	V	14.3	Ambient	4.8	34.5	0.0	-5.9	47.7	241.5	500.0	-6.3
4180.000	H	17.3	Ambient	4.8	35.2	0.0	-5.9	51.3	369.1	500.0	-2.6
4180.000	V	16.7	Ambient	4.8	35.2	0.0	-5.9	50.7	344.4	500.0	-3.2
117.840	H	15.7		1.2	18.2	0.0		35.2	57.2	150.0	-8.4
118.140	V	15.9		1.2	18.2	0.0		35.3	58.4	150.0	-8.2
154.670	H	15.7		1.4	16.3	0.0		33.4	46.8	1033.3	-26.9
154.500	V	17.5		1.4	16.4	0.0		35.3	57.9	1033.3	-25.0