



Canada

RF Test Report

As per

**RSS-210 Annex B.6,
Issue 10:2019**

&

FCC Part 15 Subpart 15.225:2019

**Low Power Licence Exempt Radio
Communication Devices
Intentional Radiators
on the**

IR4 Live Data Key

Issued by:

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Testing produced for

inVue

InVue Security Products, Inc

See Appendix A for full client &
EUT details.



**Registration #
6844A-3**



**Testing Laboratory
Certificate #2955.02**



**R-4023, G-506
C-4498, T-1246**



**Registration #
CA6844**

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

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Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Report Scope

This report addresses the EMC verification testing and test results of the **IR4 Live Data Key** unit from **InVue Security Products, Inc.** This unit is herein referred to as EUT (Equipment Under Test). The EUT was tested for compliance against the following standards:

RSS-210 Annex B.6, Issue 10:2019,
FCC Part 15 Subpart C 15.225:2019

Test procedures, results, justifications, and engineering considerations, if any, follow later in this report.

This report does not imply product endorsement by any government, accreditation agency, or TÜV SÜD Canada Inc.

Opinions or interpretations expressed in this report, if any, are outside the scope of TÜV SÜD Canada Inc accreditations. Any opinions expressed do not necessarily reflect the opinions of TÜV SÜD Canada Inc, unless otherwise stated.

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Summary

The results contained in this report relate only to the item(s) tested.

EUT Model:	IR4 Live Data Key
EUT passed all tests performed	Yes
Tests conducted by	Raymond Lee Au

For testing dates, see "Testing Environmental Conditions and Dates".

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Test Results Summary

Standard/Method	Description	Class/Limit	Result
FCC 15.203	Antenna Requirement	Unique	Pass ^a
FCC 15.225 (a), (b), (c) RSS-210 B.6 a. i, ii, iii.	Operation within the band 13.110-14.010 MHz (Field Strength)	Quasi-Peak Average	Pass
FCC 15.225 (d) FCC 15.209 RSS-210 B.6 a. iv RSS-GEN (Tables 5 & 6)	Transmitter Spurious Radiated Emissions	Quasi-Peak Average	Pass
FCC 15.225 (e) RSS-210 B.6 b. RSS-Gen 6.11	Operation within the band 13.110-14.010 MHz (Frequency Stability at Extreme Temperatures)	±0.01% -20°C – +50°C	Pass
FCC 15.225 (e) RSS-210 B.6 b. RSS-Gen 6.11	Operation within the band 13.110-14.010 MHz (Frequency Stability at Extreme Voltages)	±0.01% 85% – 115%	Pass
FCC 15.205 RSS-GEN (Table 7)	Restricted Bands for Intentional Operation	QuasiPeak Average	Pass ^a
FCC 15.207 RSS-GEN (Table 4)	Power Line Conducted Emissions	QuasiPeak Average	Pass
Overall Result			Pass

^a See *Notes, Justifications, or Deviations* section for more details.

If the product as tested or otherwise complies with the specification, the EUT is deemed to comply with the requirement and is deemed a 'PASS' grade. If not 'FAIL' grade will be issued. Note that 'PASS' / 'FAIL' grade is independent of any measurement uncertainties.

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Notes, Justifications, or Deviations

The following notes, justifications for tests not performed or deviations from the above listed specifications apply:

The EUT is an electronic key which exchanges security code to validate a key is authorized to access an InVue protection device.

This report deals with the characteristics of the EUT's NFC/RFID operating at 13.56 MHz only, as tested to FCC Part C 15.225.

For the antenna requirement specified in FCC 15.203, the NFC antenna is a wire coil soldered onto the PCB which is sealed within the unit's enclosure. It is not meant to be replicable by the user, nor is it accessible.

The EUT is rated to be operated between 0°C – 40°C. However, the 13.56 MHz transmission is tested between -20°C to +50°C.

For the Restricted Bands of operation, the NFC is designed to only operate between 13.110-14.010 MHz (at 13.56 MHz).

The EUT was tested positioned in the three orthogonal axis, and while positioned in its intended charger with the charger powered. Worst case results are presented in this report, and occurs with the EUT transmitting in the charger. See *Appendix B* for test photos.

The EUT's 13.56 MHz RF output is set to transmit continuously at 100% duty cycle at the maximum output power.

The EUT operates using an internal battery rechargeable through a USB port. It does not have the means to plug into mains directly. Power line conducted emissions is performed with the EUT transmitting on the charger, while the charger is powered using a representative support device (Lenovo model SC-61 mains to USB adapter).

SAR assessment is applied to the 13.56 MHz transmitter. An assessment distance of ≤ 5 mm is applied. The device meets the SAR Test exemption criteria and no test is required. See *RF Exposure* sections for more details.

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Sample Calculation(s)

Radiated Emission Test

E-Field Level = Received Signal + Antenna Factor + Cable Loss – Pre-Amp Gain

E-Field Level = 50dB μ V + 10dB/m + 2dB – 20dB

E-Field Level = 42dB μ V/m

Margin = Limit – E-Field Level

Margin = 50dB μ V/m – 42dB μ V/m

Margin = 8.0 dB (pass)

Power Line Conducted Emission Test

E-Field Level = Received Signal + Attenuation Factor + Cable Loss + LISN Factor

E-Field Level = 50dB μ V + 10dB + 2.5dB + 0.5dB

E-Field Level = 63dB μ V

Margin = Limit – E-Field Level

Margin = 73dB μ V – 63dB μ V

Margin = 10.0 dB (pass)

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Applicable Standards, Specifications and Methods

ANSI C63.4:2014 Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

ANSI C63.10:2013 American National Standard For Testing Unlicensed Wireless Devices

CFR 47 FCC 15 Code of Federal Regulations – Radio Frequency Devices, Subpart C:2019 Intentional Radiators

RSS-Gen Issue 5 General Requirements and Information for the Certification of 2019 Radio Apparatus

RSS 210:2019 Issue 10: Licence-Exempt Radio Apparatus: Category I Equipment

ISO 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Document Revision Status

Revision 000 February 4, 2021
 - Initial Release

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Definitions and Acronyms

The following definitions and acronyms are applicable in this report.
See also ANSI C63.14.

AE – Auxiliary Equipment. A digital accessory that feeds data into or receives data from another device (host) that in turn, controls its operation.

BW – Bandwidth. Unless otherwise stated, this refers to the 6 dB bandwidth.

EMC – Electro-Magnetic Compatibility. The ability of an equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment.

EMI – Electro-Magnetic Immunity. The ability to maintain a specified performance when the equipment is subjected to disturbance (unwanted) signals of specified levels.

EUT – Equipment Under Test. A device or system being evaluated for compliance that is representative of a product to be marketed.

ITE – Information Technology Equipment with a primary function(s) of entry, storage, display, retrieval, transmission, processing, switching, or control, of data.

LISN – Line Impedance Stabilization Network

NCR – No Calibration Required

RF – Radio Frequency

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Testing Facility

Testing for EMC on the EUT was carried out at TÜV SÜD Canada testing lab near Toronto, Ontario. The testing lab has calibrated 3m semi-anechoic chambers which allow measurements on a EUT that has a maximum width or length of up to 2m and a height of up to 3m. The testing lab also has a calibrated 10m Open Area Test Site (OATS). The chambers are equipped with a turntable that is capable of testing devices up to 5000lb in weight and are equipped with a mast that controls the polarization and height of the antenna. Control of the mast occurs in the control room adjoining the shielded chamber. This facility is capable of testing products that are rated for single phase or 3-phase AC input and DC capability is also available. Radiated emission measurements are performed using a BiLog antenna and a Horn antenna where applicable. Conducted emissions, unless otherwise stated, are performed using a LISN and using the vertical ground plane if applicable.

Calibrations and Accreditations

The 3m semi-anechoic chamber is registered with Federal Communications Commission (FCC, CA6844), Innovation, Science and Economic Development Canada (ISED, 6844A-3) and Voluntary Control Council for Interference (VCCI, R-14023, G-20072, C-14498, and T-20060). This chamber was calibrated for Normalized Site Attenuation (NSA) using test procedures outlined in ANSI C63.4 "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The chamber is lined with ferrite tiles and absorption cones to minimize any undesired reflections. The NSA data is kept on file at TÜV SÜD Canada. For radiated susceptibility testing, a 16 point field calibration has been performed on the chamber. The field uniformity data is kept on file at TÜV SÜD Canada. TÜV SÜD Canada Inc. is accredited to ISO 17025 by A2LA with Testing Certificate #2955.02. The laboratory's current scope of accreditation listing can be found as listed on the A2LA website. All measuring equipment is calibrated on an annual or biennial basis as listed for each respective test.

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Testing Environmental Conditions and Dates

Following environmental conditions were recorded in the facility during time of testing

Date	Test	Initials	Temperature (°C)	Humidity (%)	Pressure (kPa)
Jan. 13, 2021	Operation within the band 13.110-14.010 MHz (Field Strength)	RA	21.4	27.7	101.3
Jan. 13, 2021	Transmitter Spurious Radiated Emissions	RA	21.4	27.7	101.3
Jan. 13, 2021	20dB and 99% Occupied Bandwidth	RA	21.4	27.7	101.3
Jan. 14, 2021	Frequency Stability at Extreme Temperatures	RA	21.8 (Outside temperature chamber)	24.2	100.5
Jan. 27, 2021	Frequency Stability at Extreme Voltages	RA	20.6	16.6	98.1
Jan. 13, 2021	Power Line Conducted Emissions	RA	21.4	27.7	101.3

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Detailed Test Results Section

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Radiated Emission Field Strength

Purpose

The purpose of this test is to ensure that the RF energy unintentionally emitted from the EUT does not exceed the limits listed below as defined in the applicable test standard, as measured from a receiving antenna. This helps protect other devices which may be using the same spectrum allocations for similar or other purposes and also ensures the transmit range of the device is within the pre-determined suitable range. This also ensures public safety by not exceeding a level which has been deemed safe for human exposure.

Limits and Method

The method is as defined in ANSI C63.4.

The limits are defined in FCC Part 15.225 (a), (b), (c), and RSS-210 B.6.

The field strength of any emissions within the bands given in the table below shall not exceed the limits specified.

The testing is performed using a loop antenna.

Frequency Range (MHz)	Limit (uV/m) ¹ at 30m	Limit (dBuV/m) ¹ at 3m
< 13.110	Emission limits of FCC 15.209 apply. <i>See Transmitter Spurious Radiated Emissions section</i>	
13.110 – 13.410	106	80.5
13.410 – 13.553	334	90.5
13.553 – 13.567	15,848	124.0
13.567 – 13.710	334	90.5
13.710 – 14.010	106	80.5
> 14.010	Emission limits of FCC 15.209 apply. <i>See Transmitter Spurious Radiated Emissions section</i>	

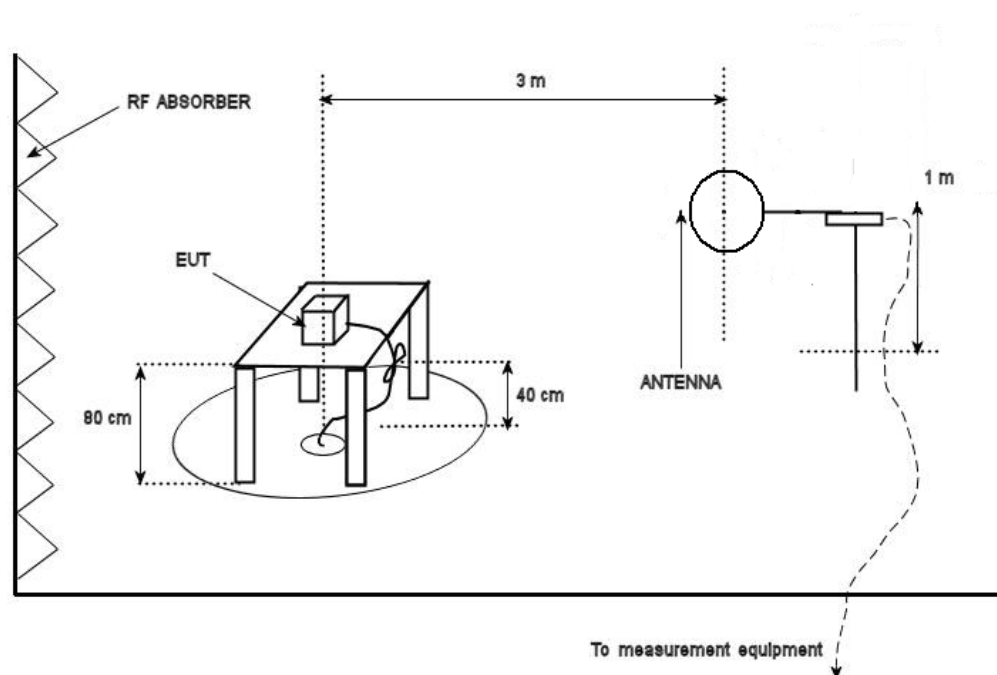
¹ Limit is with a Quasi-Peak detector with bandwidths as defined in CISPR-16-1-1

Based on ANSI C63.4 Section 4.2, if the Peak detector measurements do not exceed the Quasi-Peak limits, where defined, then the EUT is deemed to have passed the requirements.

In accordance with FCC Part 15, section 15.31(f)(2), testing was performed at a 3 meter test distance and an extrapolation factor of 40 dB/decade was applied. For example, an extrapolation of 30m to 3m is $20\text{Log}(\text{uV/m}) + 40\text{Log}(30\text{m}/3\text{m})$.

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Typical Radiated Emissions Setup



Measurement Uncertainty

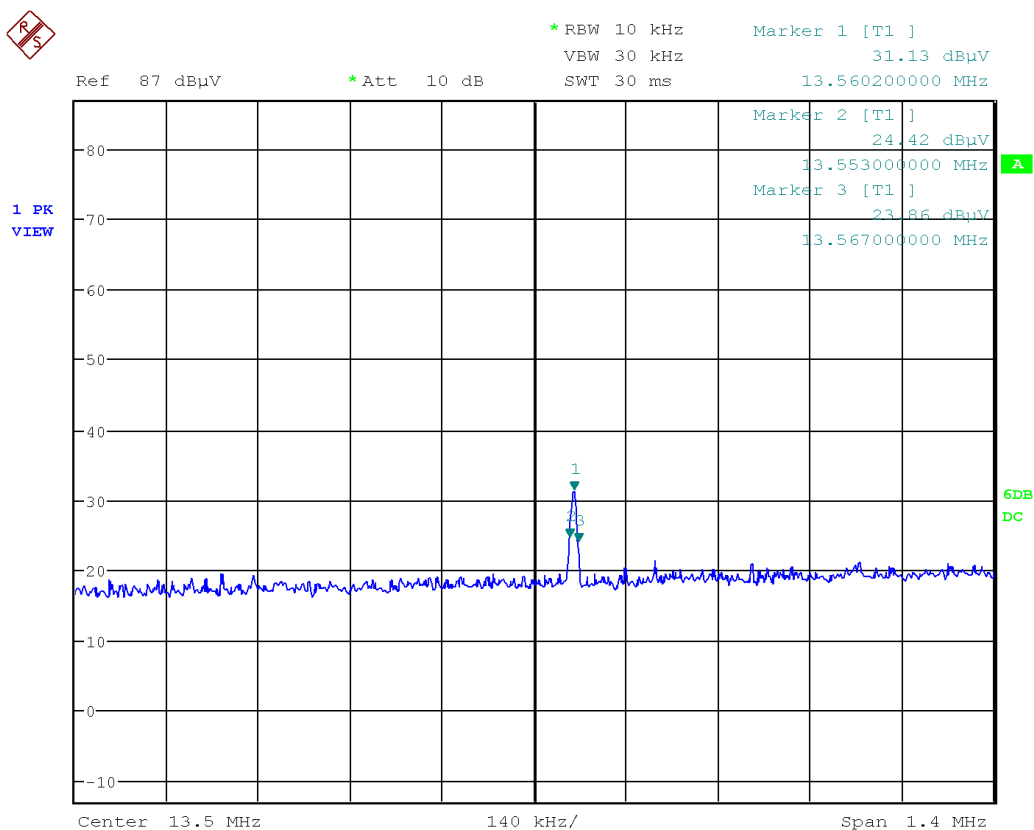
The expanded measurement uncertainty is calculated in accordance with CISPR 16-4-2 and is $\pm 4.25\text{dB}$ for 30MHz – 1GHz and $\pm 4.93\text{dB}$ for 1GHz – 18GHz with a 'k=2' coverage factor and a 95% confidence level.

Preliminary Graphs

The graphs shown below are maximized peak measurement graphs over a full 0-360° rotation. The loop was orientated at 0 degrees and 90 degrees and a maximized reading is shown. The marker shows the value before factors are applied. See the *Final Measurements* section following for factor corrected values.

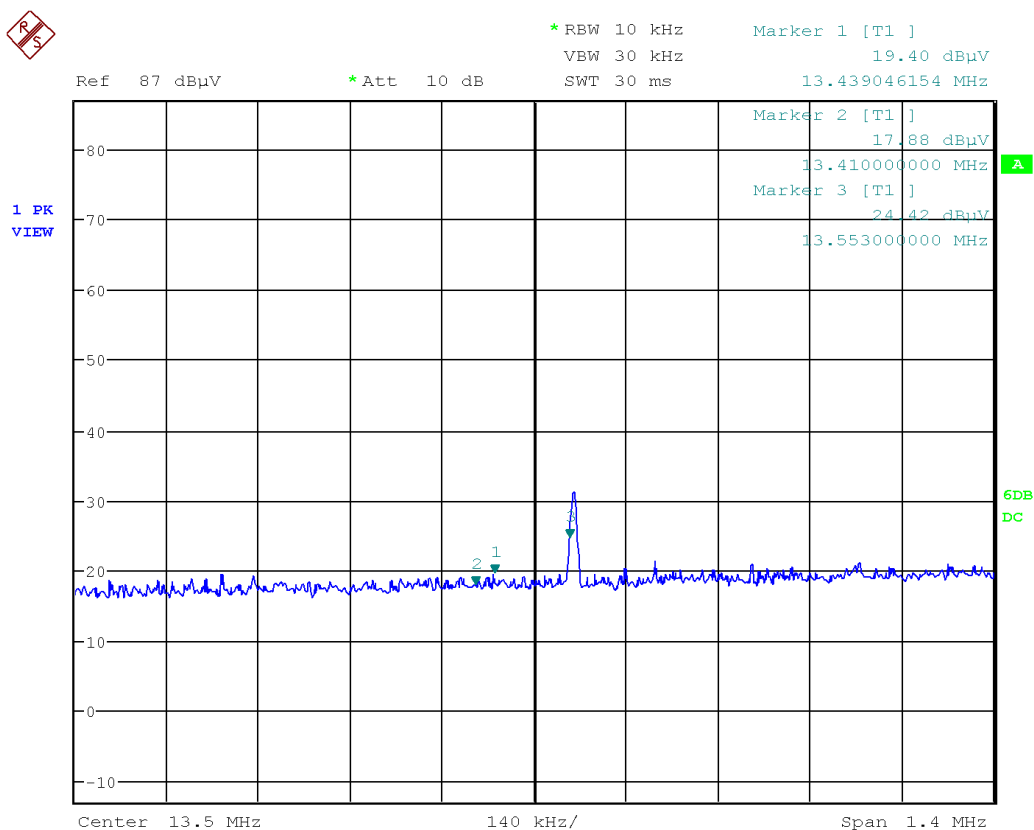
Client	InVue Security Products, Inc.	
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Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Peak Emission
 Max Fundamental Emission & Band Edges
 13.553-13.567 MHz
 3m test distance
 (Factors not incorporated. See *Final Measurements.*)



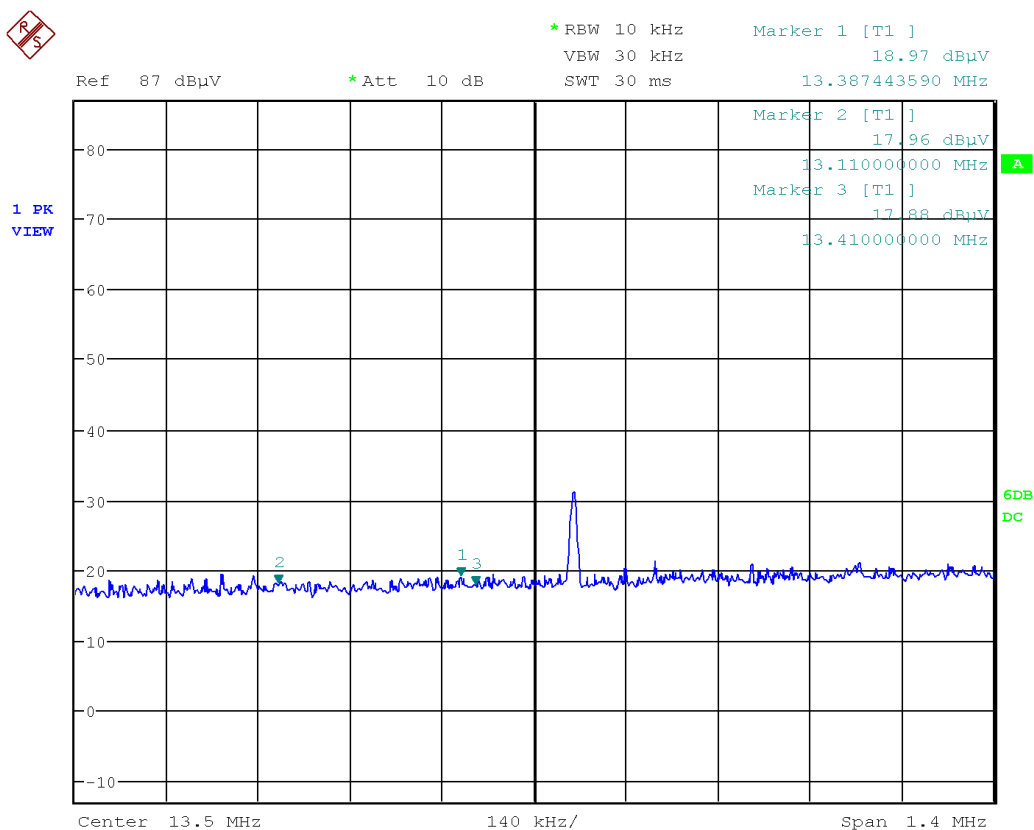
Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Peak Emission
 Band Edges
 13.410-13.553 MHz
 3m test distance
 (Factors not incorporated. See *Final Measurements.*)



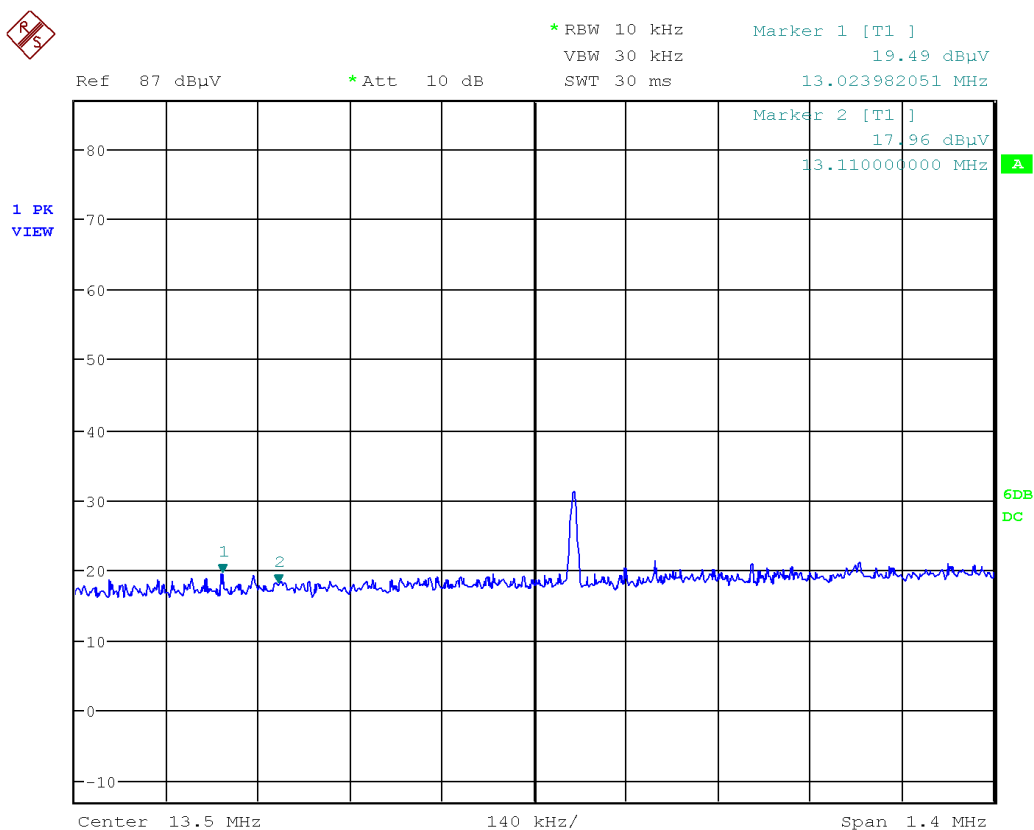
Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Peak Emission
 Band Edges
 13.110-13.410 MHz
 3m test distance
 (Factors not incorporated. See *Final Measurements.*)



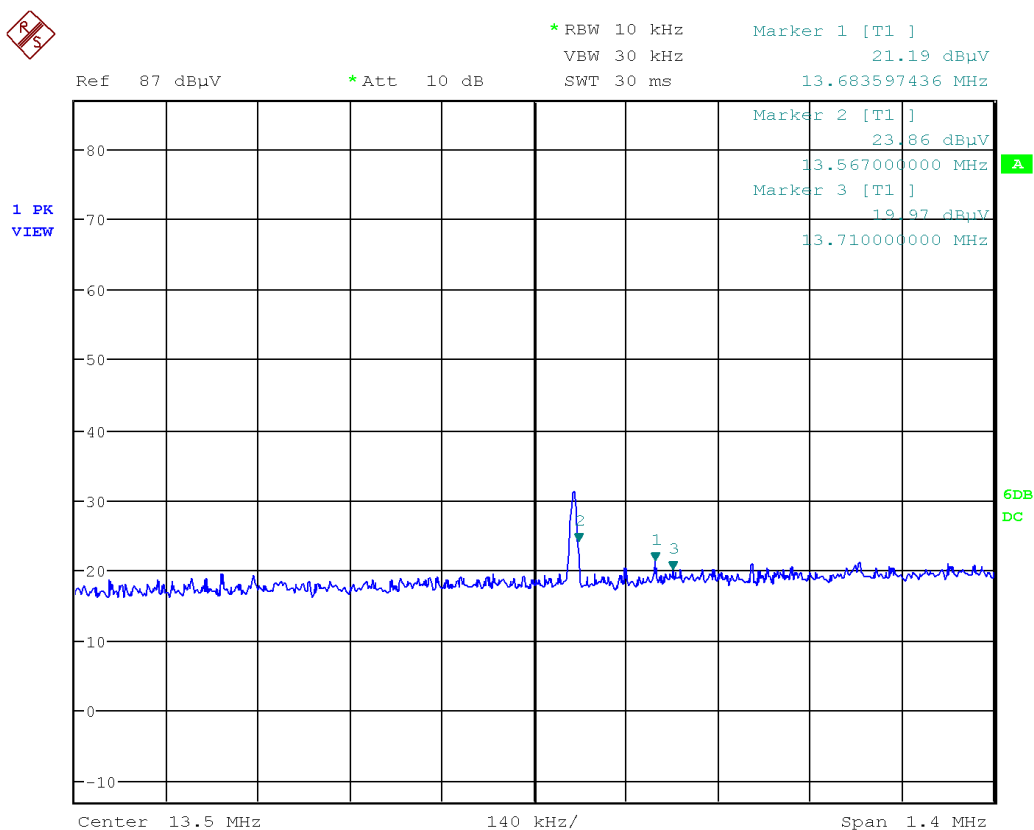
Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Peak Emission
 Band Edges
 < 13.110 MHz
 3m test distance
 (Factors not incorporated. See *Final Measurements.*)



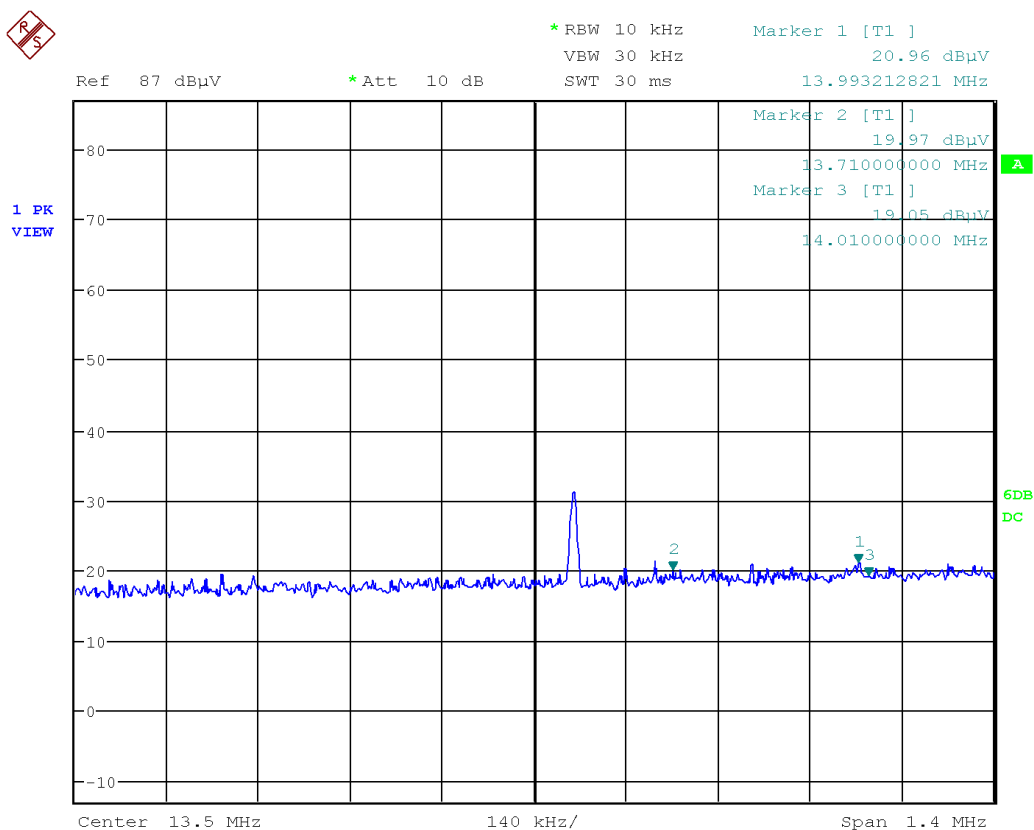
Client	InVue Security Products, Inc.	
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Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Peak Emission
 Band Edges
 13.567-13.710 MHz
 3m test distance
 (Factors not incorporated. See *Final Measurements.*)



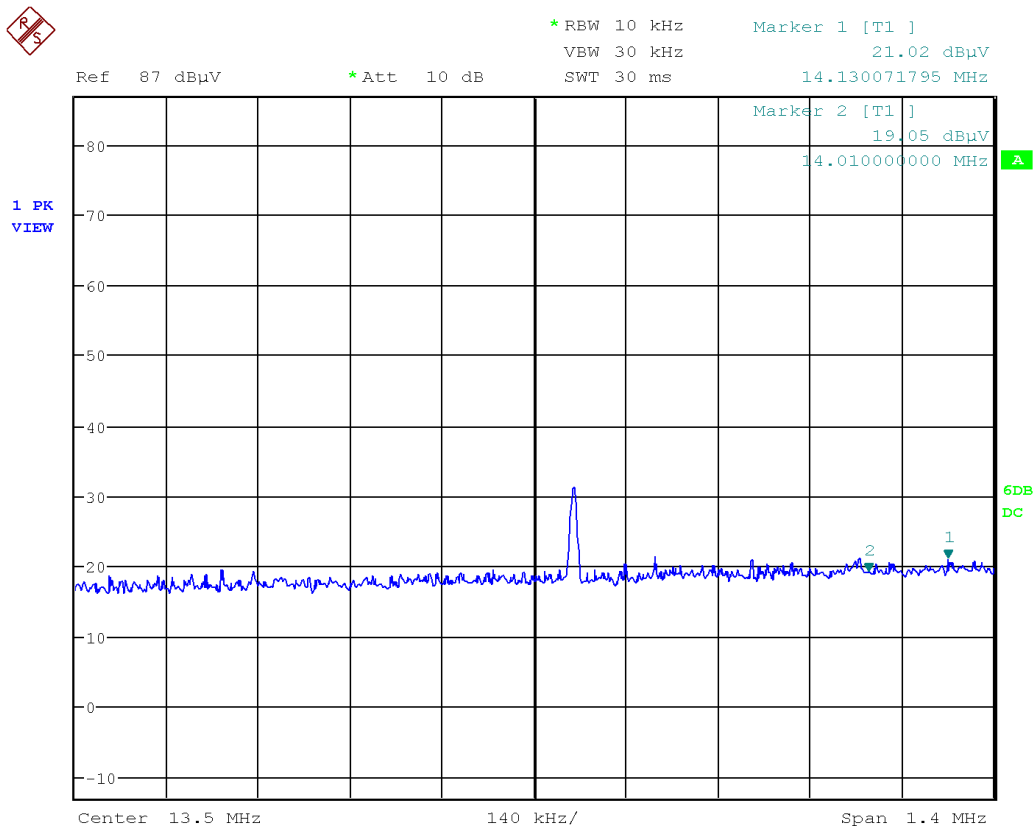
Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Peak Emission
 Band Edges
 13.710-14.010 MHz
 3m test distance
 (Factors not incorporated. See *Final Measurements.*)



Client	InVue Security Products, Inc.	 Canada
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Peak Emission
Band Edges
> 14.010 MHz
3m test distance
(Factors not incorporated. See *Final Measurements.*)



Client	InVue Security Products, Inc.	
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Final Measurements

Radiated Emissions Table - 15.225
Fundamental

Test Frequency (MHz)	Detection mode	Raw signal (dBμV)	Cable loss + Pre-selector (dB)	Current to voltage conversion factor (dB)	Antenna factor (dBS/m)	Pre-Amp Gain (dB)	Received signal (dBμV/m)	Emission limit (dBμV/m)	Margin (dB)	Result
13.560	Peak	31.13	0.4	51.5	-16.7	-33.7	32.55	123.9	91.35	Pass

Radiated Emissions Table - 15.225
Band Edges

Test Frequency (MHz)	Detection mode	Raw signal (dBμV)	Cable loss + Pre-selector (dB)	Current to voltage conversion factor (dB)	Antenna factor (dBS/m)	Pre-Amp Gain (dB)	Received signal (dBμV/m)	Emission limit (dBμV/m)	Margin (dB)	Result
13.024	Peak	19.41	0.4	51.5	-16.8	-33.7	20.76	69.5	48.74	Pass
13.110	Peak	17.96	0.4	51.5	-16.8	-33.7	19.36	69.5	50.14	Pass
13.387	Peak	18.97	0.4	51.5	-16.8	-33.7	20.37	80.5	60.13	Pass
13.410	Peak	17.88	0.4	51.5	-16.8	-33.7	19.28	80.5	61.22	Pass
13.439	Peak	19.4	0.4	51.5	-16.8	-33.7	20.8	90.47	69.67	Pass
13.553	Peak	24.42	0.4	51.5	-16.8	-33.7	25.83	90.47	64.64	Pass
13.567	Peak	23.86	0.4	51.5	-16.7	-33.7	25.34	90.47	65.13	Pass
13.684	Peak	21.19	0.4	51.5	-16.7	-33.7	22.67	90.47	67.8	Pass
13.710	Peak	19.97	0.4	51.5	-16.7	-33.7	21.45	80.5	59.05	Pass
13.993	Peak	20.96	0.4	51.5	-16.7	-33.7	22.44	80.5	58.06	Pass
14.010	Peak	19.05	0.4	51.5	-16.7	-33.7	20.53	69.5	48.97	Pass
14.130	Peak	21.01	0.4	51.5	-16.7	-33.7	22.49	69.5	47.01	Pass

Client	InVue Security Products, Inc.	
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Notes:

See *Transmitter Spurious Radiated Emissions* section in this report for spurious emissions test results outside of the FCC 15.225 bands.

See 'Appendix B – EUT and Test Setup Photos' for photos showing the test set-up.

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	ESU 40	Rohde & Schwarz	Jan. 15, 2020	Jan. 15, 2022	GEMC 233
Loop Antenna 150 kHz – 30 MHz	EM 6872	Electro-Metrics	Feb 15, 2019	Feb 15, 2021	GEMC 71
Pre-Amp	CPA9230	Chase	May 22, 2020	May 22, 2022	GEMC 301
RF Cable 10m	LMR-400- 10M-50Ω-MN- MN	LexTec	NCR	NCR	GEMC 274
RF Cable 2m	Sucoflex 104A	Huber+Suhner	NCR	NCR	GEMC 271

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Transmitter Spurious Radiated Emissions

Purpose

The purpose of this test is to ensure that the RF energy unintentionally emitted from the EUT does not exceed the limits listed below as defined in the applicable test standard, as measured from a receiving antenna. This helps protect broadcast radio services such as television, FM radio, pagers, cellular telephones, emergency services, and so on, from unwanted interference.

Limits and Method

The method is defined in ANSI C63.10.

The requirement is stated in FCC 15.225(d), and RSS-210 B.6 a. iv.

The limits are as defined in 47 CFR FCC Part 15.209 and RSS-Gen (Table 5 and Table 6).

The limits apply for emissions that fall outside the 13.110-14.010 MHz band.

These limits are as follows:

Frequency	Limit
0.009 MHz – 0.490 MHz	2400/F(kHz) uV/m at 300m ¹
0.490 MHz – 1.705 MHz	24000/F(kHz) uV/m at 30m ¹
1.705 MHz – 30 MHz	30 uV/m at 30m ¹
30 MHz – 88 MHz	100 uV/m (40.0 dBuV/m ¹) at 3m
88 MHz – 216 MHz	150 uV/m (43.5 dBuV/m ¹) at 3m
216 MHz – 960 MHz	200 uV/m (46.0 dBuV/m ¹) at 3m
Above 960 MHz	500 uV/m (54.0 dBuV/m ¹) at 3m
Above 1000 MHz	500 uV/m (54 dBuV/m ²) at 3m
Above 1000 MHz	500 uV/m (74 dBuV/m ³) at 3m

¹ Limit is with Quasi Peak detector with bandwidths as defined in CISPR-16-1-1

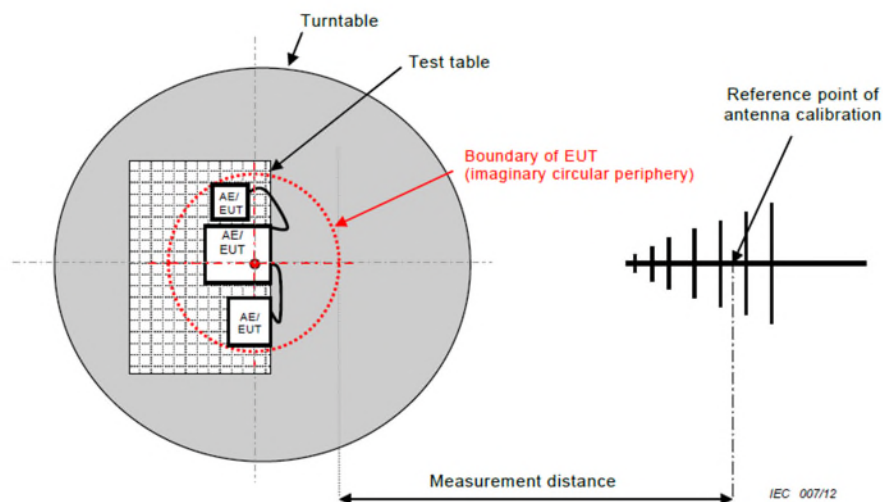
² Limit is with 1 MHz measurement bandwidth and using an Average detector

³ Limit is with 1 MHz measurement bandwidth and using a Peak detector

Based on ANSI C63.4 Section 4.2, if the Peak detector measurements do not exceed the Quasi-Peak limits, where defined, then the EUT is deemed to have passed the requirements.

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Typical Radiated Emissions Setup



Measurement Uncertainty

The expanded measurement uncertainty is calculated in accordance with CISPR 16-4-2 and is $\pm 4.25\text{dB}$ for 30MHz – 1GHz and $\pm 4.93\text{dB}$ for 1GHz – 18GHz with a 'k=2' coverage factor and a 95% confidence level.

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Preliminary Graphs

The graphs shown below are maximized peak measurement graphs measured with a resolution bandwidth greater than or equal to the final required detector over a full 0-360°. This peaking process is done as a worst case measurement and enables the detection of frequencies of concern for final measurement. For final measurements with the appropriate detector, where applicable, please refer to the tables under *Final Measurements*.

In accordance with FCC Part 15, Subpart A, Section 15.33, the device was scanned to at least the 10th harmonic.

Devices may be scanned at alternate test distances and in accordance with FCC Part 15, Subpart A, Section 15.31, an extrapolation factor of 20 dB/decade was used above 30 MHz and 40 dB/decade below 30 MHz.

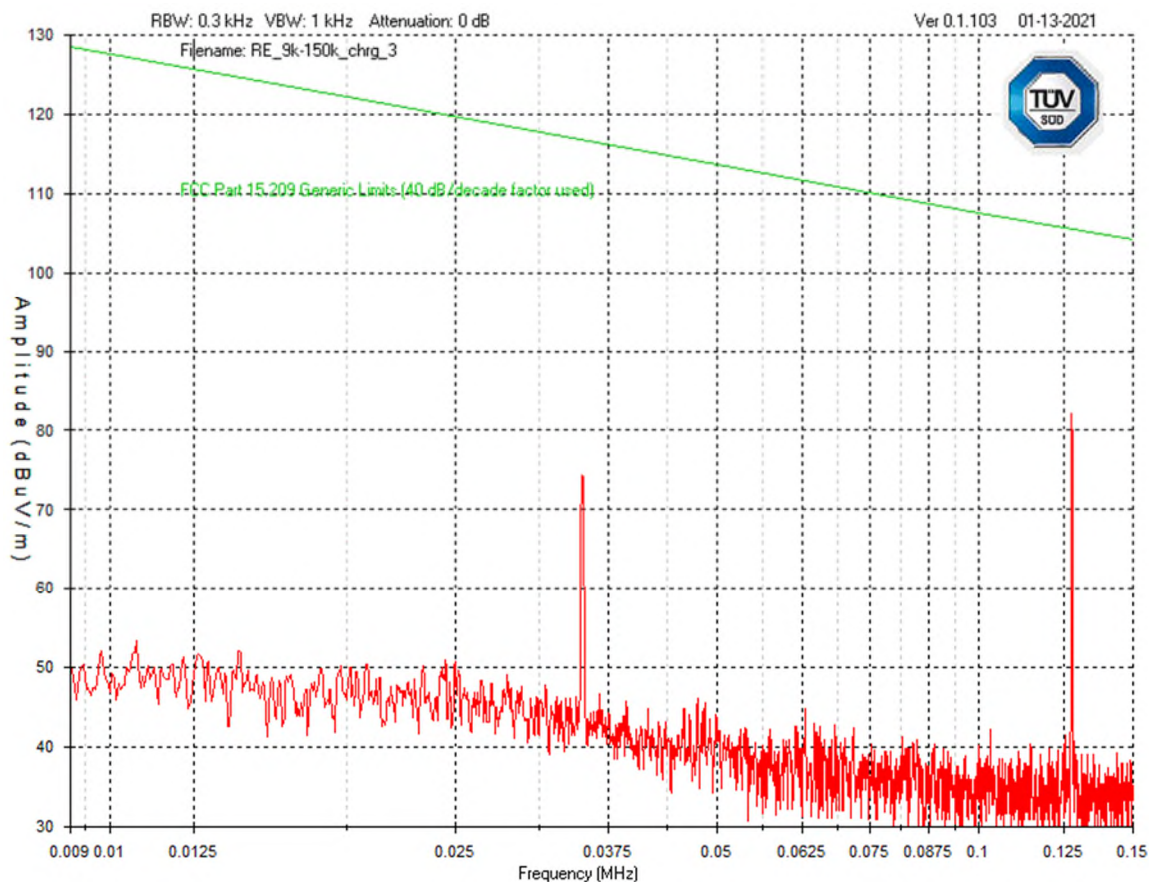
All transmitters in the EUT are on and transmitting continuous modulated data at the maximum power setting used by the manufacturer.

Plots and measurements are made at a 3 meter distance.

See *Radiated Emission Field Strength* section for measurements at the band-edges.

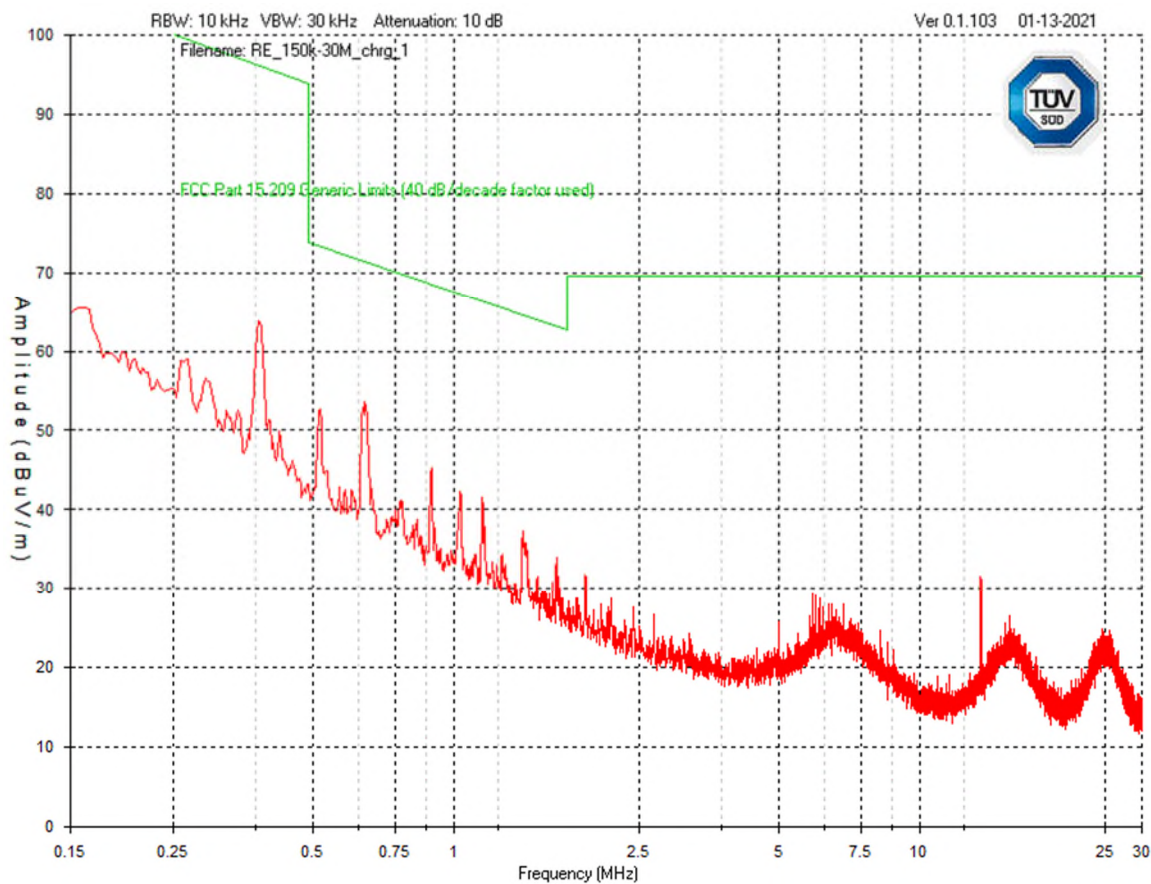
Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

9 kHz – 150 kHz
Peak Emission Graph



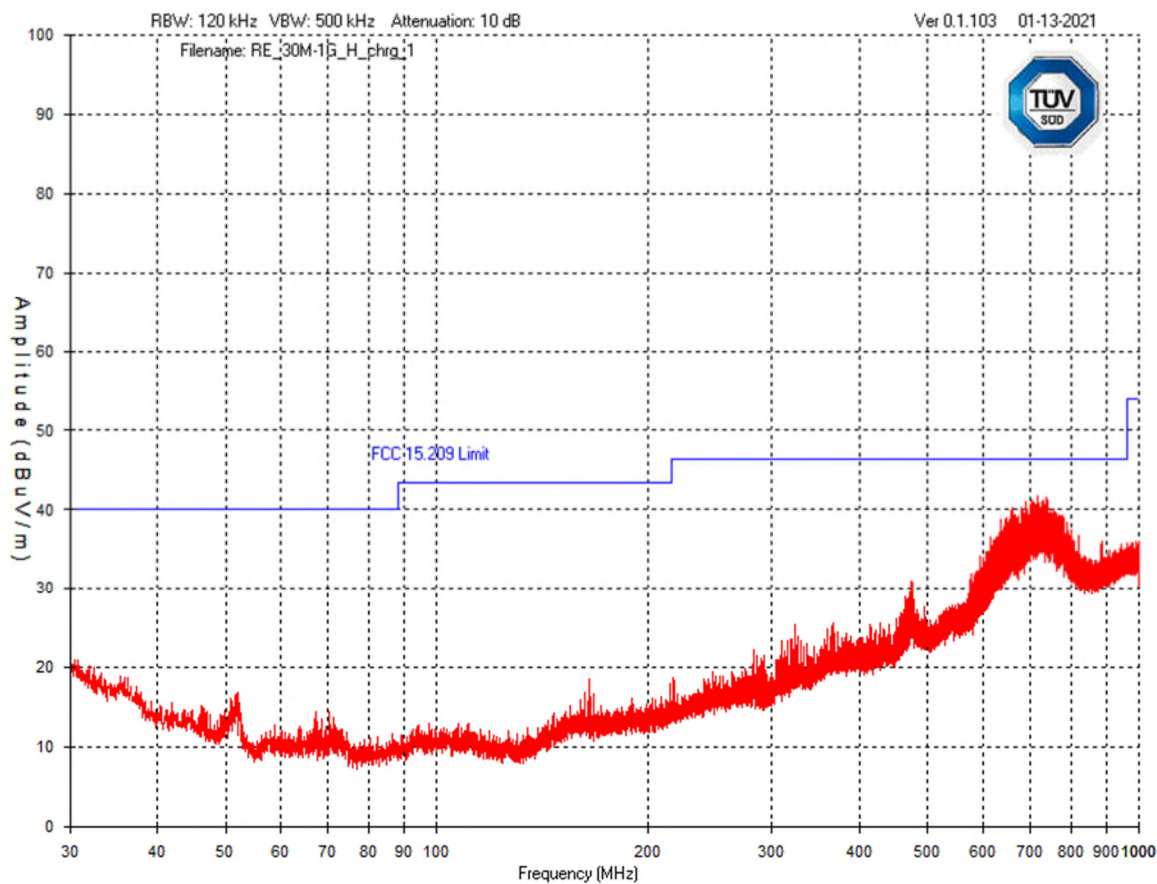
Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

150 kHz – 30 MHz
Peak Emission Graph



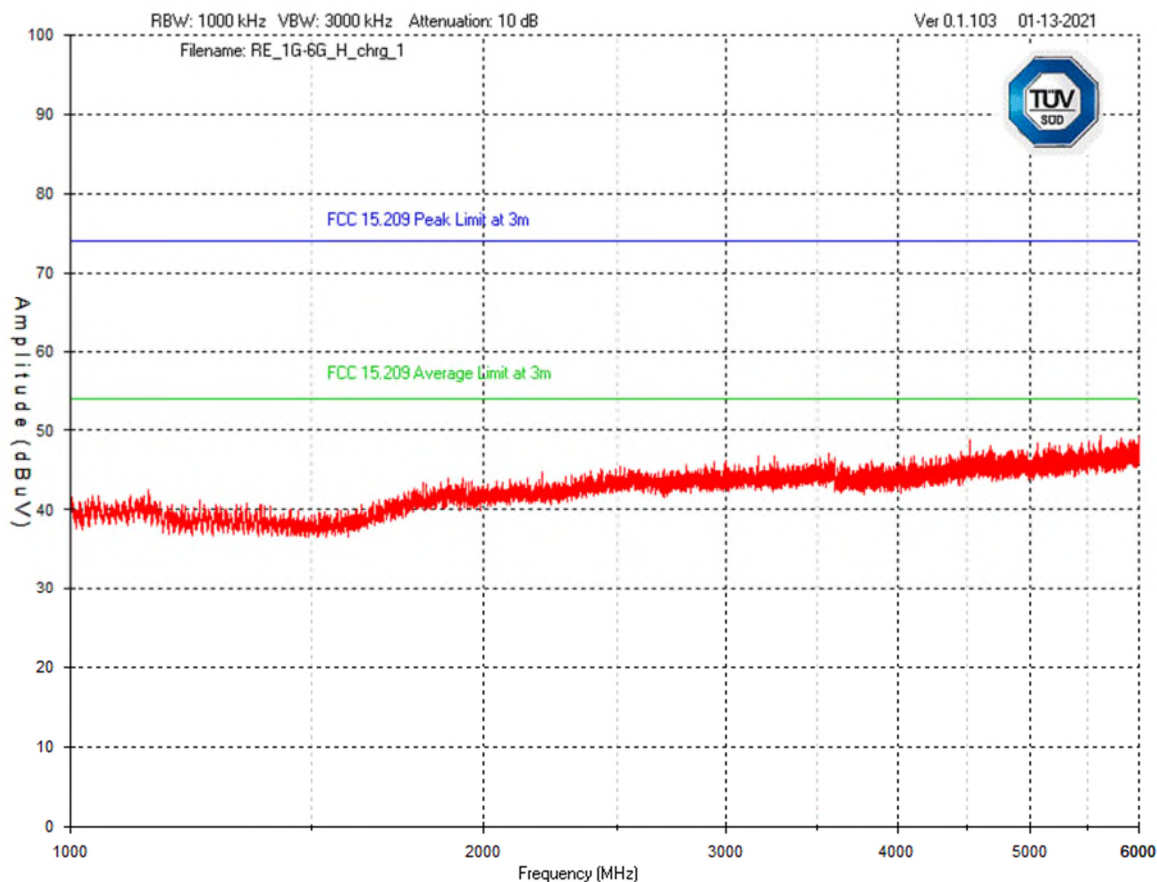
Client	InVue Security Products, Inc.	 Canada
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

30 MHz – 1 GHz
Horizontal - Peak Emission Graph



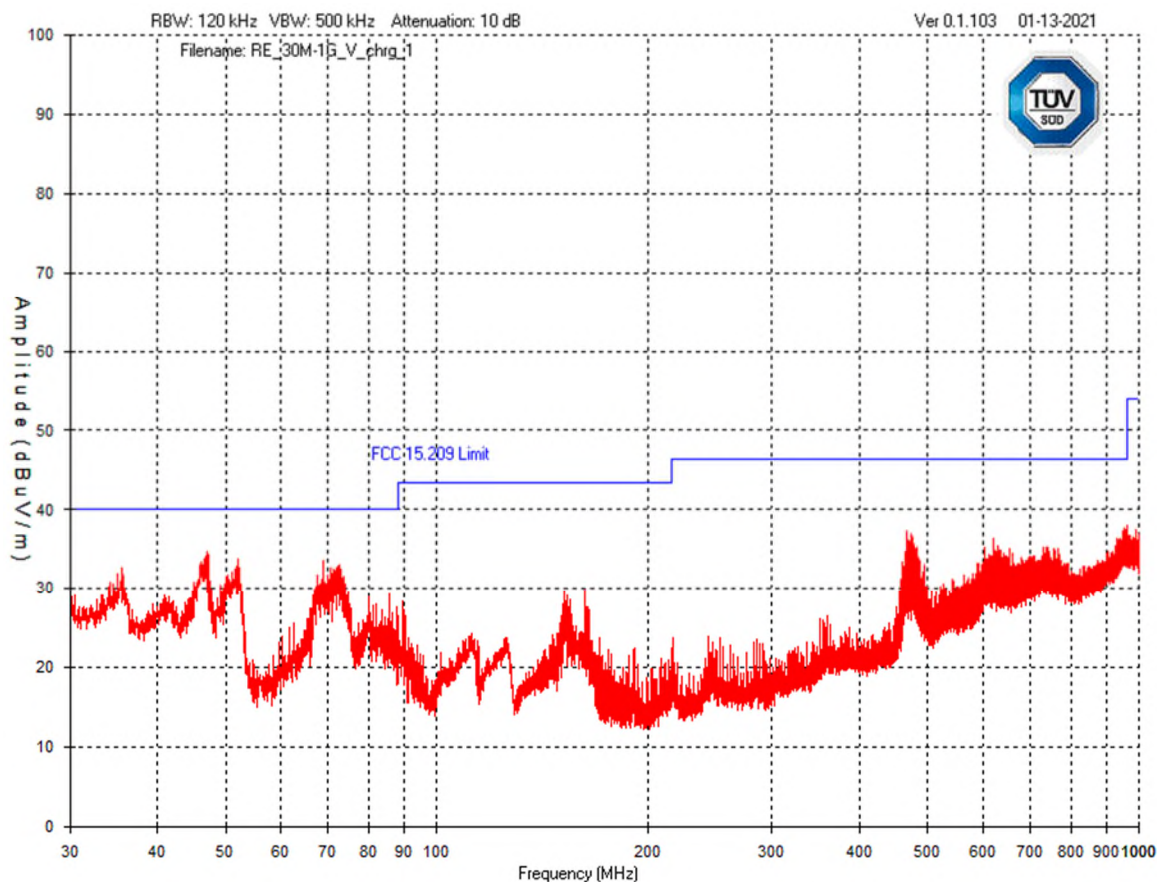
Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

1GHz – 6GHz Horizontal - Peak Emission Graph



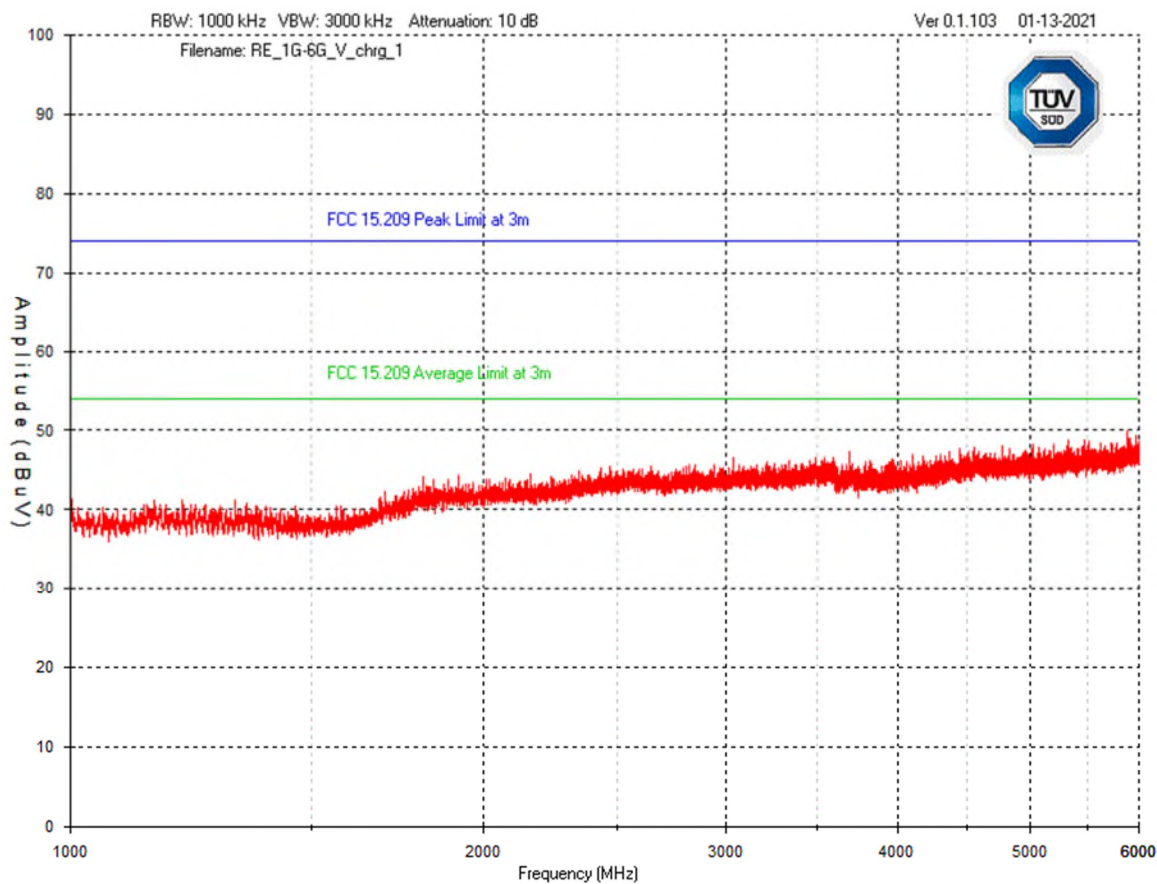
Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

30 MHz – 1 GHz
Vertical - Peak Emission Graph



Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

1 GHz – 6 GHz
Vertical - Peak Emission Graph



Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Final Measurements and Results

The measurements were maximized by rotating the turn table over a full 0-360° rotation and the antenna height was varied from 1 m to 4 m.

Spurious Radiated Emissions Table

Frequency (MHz)	Detector	Received Signal (dBμV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp (dB)	Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Test Result
Horizontal Antenna Polarization									
717.46	QP	37.5	28.1	4.1	-30.9	38.8	46.4	7.6	Pass
737.41	PEAK	40.2	28.1	4.1	-30.8	41.6	46.4	4.8	Pass
740.40	PEAK	39.7	28.2	4.1	-30.8	41.2	46.4	5.2	Pass
729.15	PEAK	39.7	28.2	4.1	-30.8	41.2	46.4	5.2	Pass
702.40	PEAK	40.3	27.9	4.0	-31.0	41.2	46.4	5.2	Pass
689.79	PEAK	40.7	27.6	3.9	-31.1	41.1	46.4	5.3	Pass
Vertical Antenna Polarization									
46.96	QP	49.3	15.4	0.7	-33.7	31.7	40.0	8.3	Pass
52.05	PEAK	52.5	14.3	0.7	-33.7	33.8	40.0	6.2	Pass
68.78	PEAK	53.9	12.5	0.8	-33.6	33.6	40.0	6.4	Pass
72.77	PEAK	53.5	12.3	0.8	-33.6	33.0	40.0	7.0	Pass
70.48	PEAK	53.1	12.5	0.8	-33.6	32.8	40.0	7.2	Pass
35.59	PEAK	45.5	20.3	0.6	-33.7	32.7	40.0	7.3	Pass

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	ESU 40	Rohde & Schwarz	Jan. 15, 2020	Jan. 15, 2022	GEMC 233
Loop Antenna 9 – 150 kHz	EM 6871	Electro-Metrics	Feb 15, 2019	Feb 15, 2021	GEMC 70
Loop Antenna 150 kHz – 30 MHz	EM 6872	Electro-Metrics	Feb 15, 2019	Feb 15, 2021	GEMC 71
BiLog Antenna 30 MHz – 1 GHz	3142-C	ETS-Lindgren	Nov. 25, 2020	Nov. 25, 2022	GEMC 8
Horn Antenna 1 – 6 GHz	3117	ETS-Lindgren	Feb. 17, 2020	Feb. 17, 2022	GEMC 340
Pre-Amp 9 kHz – 1 GHz	CPA9230	Chase	May 22, 2020	May 22, 2022	GEMC 301
Pre-Amp 1 – 6 GHz	HP 8449B	HP	Aug. 4, 2020	Aug. 4, 2022	GEMC 312
Attenuator 6 dB	6N5W-06	Inmet	NCR	NCR	GEMC 345
RF Cable 10m	LMR-400- 10M-50Ω-MN- MN	LexTec	NCR	NCR	GEMC 274
RF Cable 2m	Sucoflex 104A	Huber+Suhner	NCR	NCR	GEMC 271
Emissions Software	0.1.103	TUV SUD Canada, Inc.	NCR	NCR	GEMC 58

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Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Carrier Frequency Stability

Purpose

The purpose of this test is to ensure that the frequency tolerance of the carrier signal is maintained within the required limits during extreme temperature and voltage variations. This helps protect radio broadcasts and receivers with spectrum nearby to the equipment under test from unwanted interference. This also helps ensure proper reception of the intended signal by ensuring the transmit frequency is correct over the expected temperature and voltage range.

Limits and Method

The limits are as defined in FCC Part 15, Section 15.225 (e). The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency (i.e. 13.558644 – 13.561356 MHz) over a temperature variation of -20°C to $+50^{\circ}\text{C}$ at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20°C .

Results (Temperature Variation)

There is no deviation in the fundamental frequency during the tests which would cause it to be non-compliant with the requirements. The results are presented in the charts below.

The EUT is only rated to be used within 0°C to 40°C . However, the 13.56 MHz transmission is tested between -20°C to $+50^{\circ}\text{C}$.

Frequency Tolerance Table

Temperature	Fundamental Frequency Recorded After EUT is Turned On (MHz)			
	Immediately	+2 mins	+5 mins	+10 mins
+50 °C	13.559975962	13.559959936	13.559967949	13.559967949
+40 °C	13.559991987	13.559991987	13.559975962	13.559983974
+30 °C	13.560024038	13.560016026	13.560016026	13.560016026
+20 °C	13.559975962	13.559967949	13.559967949	13.559975962
+10 °C	13.560112179	13.560072115	13.560088141	13.560096154
0 °C	13.560136218	13.560120192	13.560112179	13.560112179
-10 °C	13.560168269	13.560136218	13.560136218	13.560136218
-20 °C	13.560152244	13.560152244	13.560160256	13.560160256

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Results (Voltage Variation)

There is no deviation in the fundamental frequency during the tests which would cause it to be non-compliant with the requirements. The results are presented in the chart below.

The 13.56 MHz transmitter is powered by the EUT's rechargeable battery. The battery has a nominal voltage of 3.7 Vdc. The battery is disconnected from the EUT and powered with a variable power supply. The voltage is varied between 3.145 Vdc – 4.255 Vdc.

Voltage Variation Table

Voltage (Vdc)	Fundamental Frequency (MHz)
3.145	13.560040064
3.7	13.560048077
4.255	13.560048077

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	ESL 6	Rohde & Schwarz	Feb. 25, 2019	Feb. 25, 2021	GEMC 160
Loop Antenna	EM 6872	Electro-Metrics	Feb 15, 2019	Feb 15, 2021	GEMC 71
Pre-Amp	CPA9230	Chase	May 22, 2020	May 22, 2022	GEMC 301
Temperature & Humidity Monitor	iTHX-SD	Omega	May 8, 2019	May 8, 2021	GEMC 282
Digital Multimeter	287	Fluke	Jul. 15, 2020	Jul. 15, 2021	CANE 00182

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Power Line Conducted Emissions

Purpose

The purpose of this test is to ensure that the RF energy unintentionally emitted from the EUT's power line does not exceed the limits listed below as defined in the applicable test standard, as measured from a LISN. This helps protect lower frequency radio services such as AM radio, shortwave radio, amateur radio operators, maritime radio, CB radio, and so on, from unwanted interference.

Limits and Method

The limits are defined in FCC 15.207 and RSS-Gen Table 4.
Method is as defined in ANSI C63.4.

Average Limits		Quasi-Peak Limits	
150 kHz – 500 kHz	56 to 46* dB μ V	150 kHz – 500 kHz	66 to 56* dB μ V
500 kHz – 5 MHz	46 dB μ V	500 kHz – 5 MHz	56 dB μ V
5 MHz – 30 MHz	50 dB μ V	5 MHz – 30 MHz	60 dB μ V

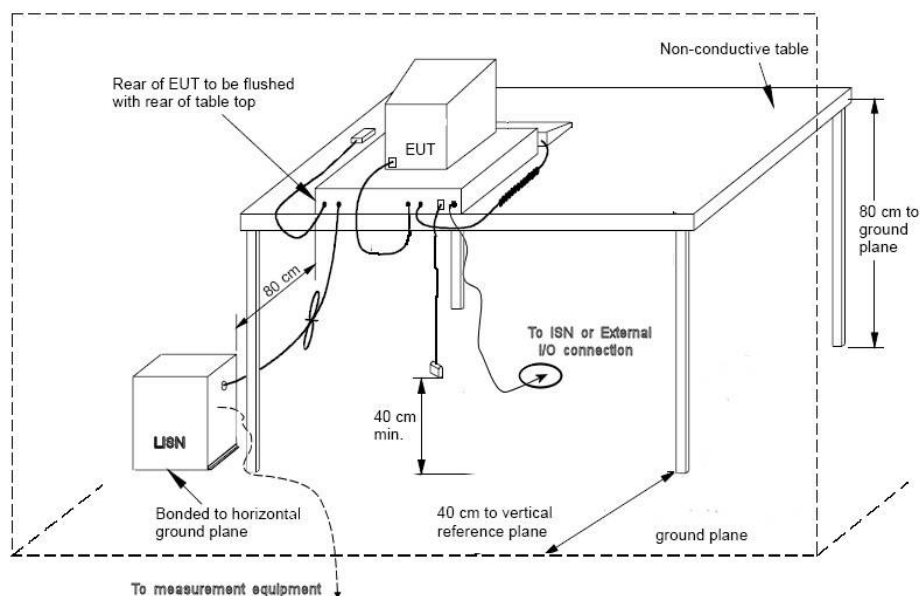
* Decreases linearly with the logarithm of the frequency

Both Quasi-Peak and Average limits are applicable and each is specified as being measured with a resolution bandwidth of 9 kHz. For Quasi-Peak, a video bandwidth at least three times greater than the resolution bandwidth is used.

Based on ANSI C63.4 Section 4.2, if the Peak or Quasi-Peak detector measurements do not exceed the Average limits, then the EUT is deemed to have passed the requirements.

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Typical Setup Diagram



Measurement Uncertainty

The expanded measurement uncertainty is calculated in accordance with CISPR 16-4-2 and is $\pm 2.73\text{dB}$ with a 'k=2' coverage factor and a 95% confidence level.

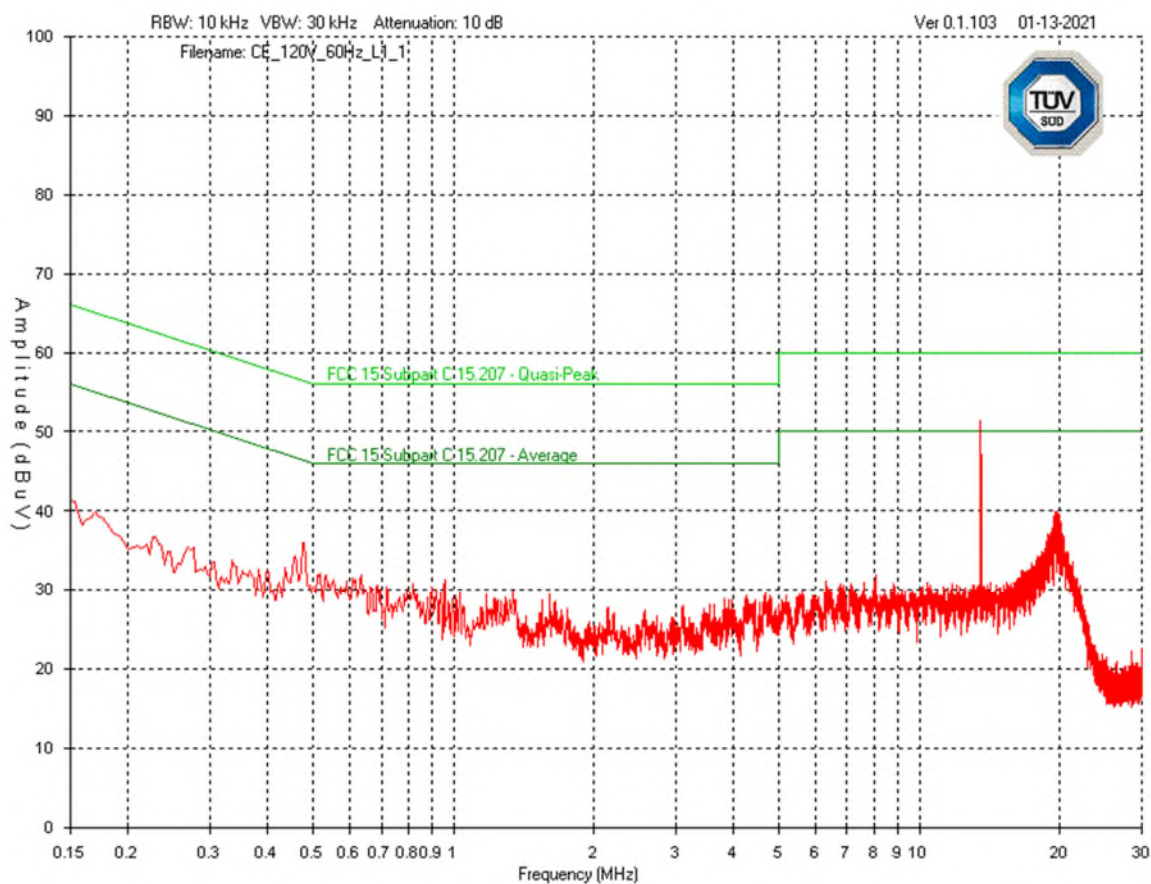
Preliminary Graphs

The graphs shown below are maximized peak measurement graphs measured with a resolution bandwidth greater than or equal to the final required detector. This peaking process is done as a worst case measurement and enables the detection of frequencies of concern for final measurement. For final measurements with the appropriate detector, where applicable, please refer to the tables under Final Measurements.

The EUT operates using an internal battery rechargeable through a USB port. It does not have the means to plug into mains directly. Power line conducted emissions is performed with the EUT transmitting on the charger, while the charger is powered using a representative support device (Lenovo model SC-61 mains to USB adapter).

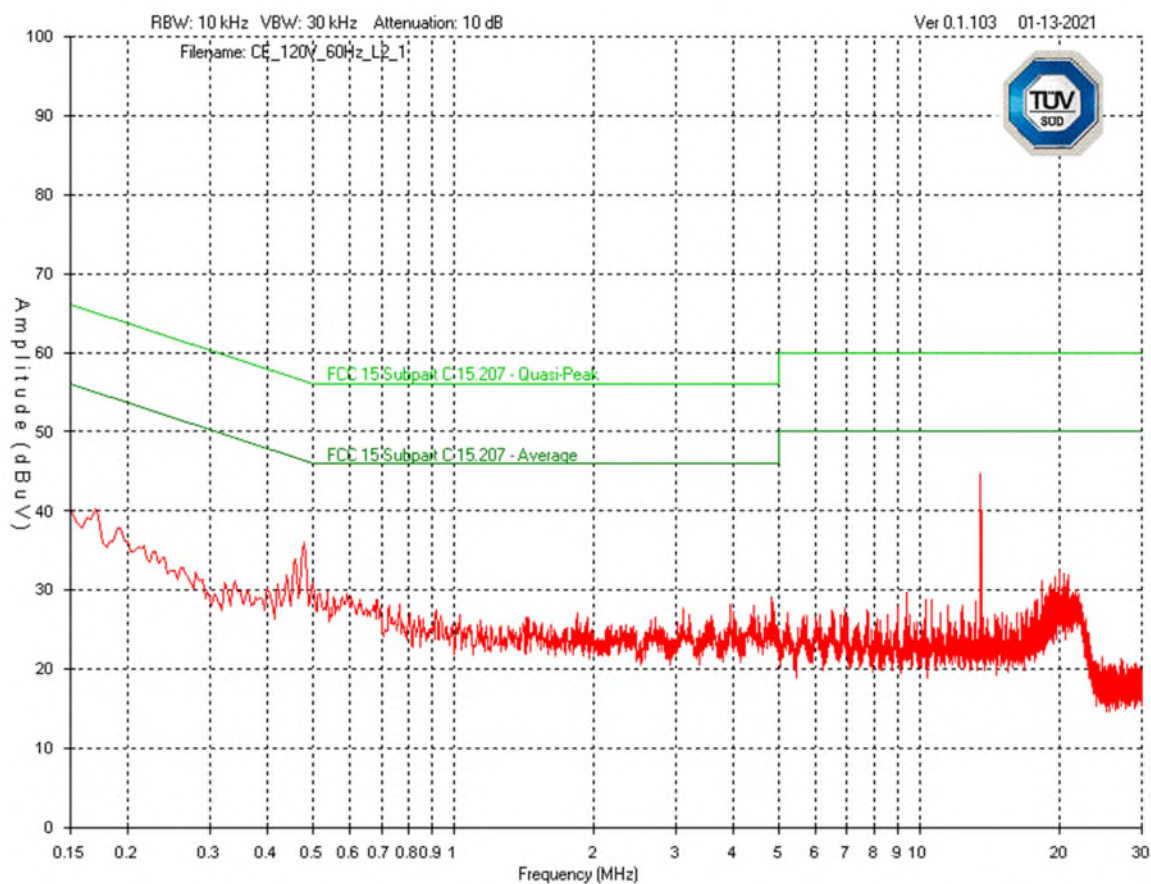
Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Line 1 (L1) – 120Vac 60Hz



Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Line 2 (L2) – 120Vac 60Hz



Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Final Measurements

Power Line Conducted Emissions Table
Mains: 120V, 60Hz

Frequency (MHz)	Detector	Received Signal (dBµV)	Atten Factor (dB)	Cable Factor (dB)	LISN Factor (dB)	Level (dBµV)	QP Limit (dBµV)	AVG Limit (dBµV)	QP Margin (dB)	AVG Margin (dB)	Test Result
Line											
13.559	QP	39.9	10	0.1	0.3	50.3	60.0	--	9.7	--	Pass
13.559	AVG	36.7	10	0.1	0.3	47.1	--	50.0	--	2.9	Pass
19.748	PEAK	29.1	10	0.1	0.8	40.0	60.0	50.0	20.0	10.0	Pass
0.475	PEAK	25.9	10	0.1	0.1	36.1	56.4	46.4	20.3	10.3	Pass
19.907	PEAK	28.8	10	0.1	0.8	39.7	60.0	50.0	20.3	10.3	Pass
19.423	PEAK	28.3	10	0.1	0.7	39.1	60.0	50.0	20.9	10.9	Pass
20.136	PEAK	27.7	10	0.1	0.8	38.6	60.0	50.0	21.4	11.4	Pass
Neutral											
13.559	QP	32.9	10	0.1	0.3	43.3	60.0	--	16.7	--	Pass
13.559	AVG	31.1	10	0.1	0.3	41.5	--	50.0	--	8.5	Pass
0.479	PEAK	25.8	10	0.1	0.1	36.0	56.4	46.4	20.4	10.4	Pass
0.170	PEAK	30.1	10	0.0	0.1	40.2	65.0	55.0	24.8	14.8	Pass
4.825	PEAK	19.0	10	0.1	0.1	29.2	56.0	46.0	26.8	16.8	Pass
19.990	PEAK	21.5	10	0.1	0.8	32.4	60.0	50.0	27.6	17.6	Pass
3.922	PEAK	18.0	10	0.1	0.1	28.2	56.0	46.0	27.8	17.8	Pass

Notes:

PEAK = Peak measurement

QP = Quasi-Peak measurement

AVG = Average measurement

See 'Appendix B – EUT and Test Setup Photos' for photos showing the test set-up.

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	ESL 6	Rohde & Schwarz	Feb. 25, 2019	Feb. 25, 2021	GEMC 160
LISN	FCC-LISN-50/250-16-2-01	FCC	Feb. 27, 2019	Feb. 27, 2021	GEMC 303
RF Cable 3m	LMR-400-3M-50Ω-MN-MN	LexTec	NCR	NCR	GEMC 276
Attenuator 10 dB	6N10W-10	Inmet	NCR	NCR	GEMC 350
Emissions Software	0.1.99	TUV SUD Canada, Inc.	NCR	NCR	GEMC 58

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Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

20dB and 99% Occupied Bandwidth

Purpose

The purpose of this test is to find the 20 dB and 99% occupied bandwidths of the 13.56 MHz emission. This is the bandwidth which is attenuated 20 dB from the peak of the intentional transmission, and the bandwidth which contains 99% transmitted power, respectively.

Limits and Method

The method is as defined in ANSI C63.10.

There are no applicable limits for the 13.56 MHz emission. Its results are for informational purposes only.

Results

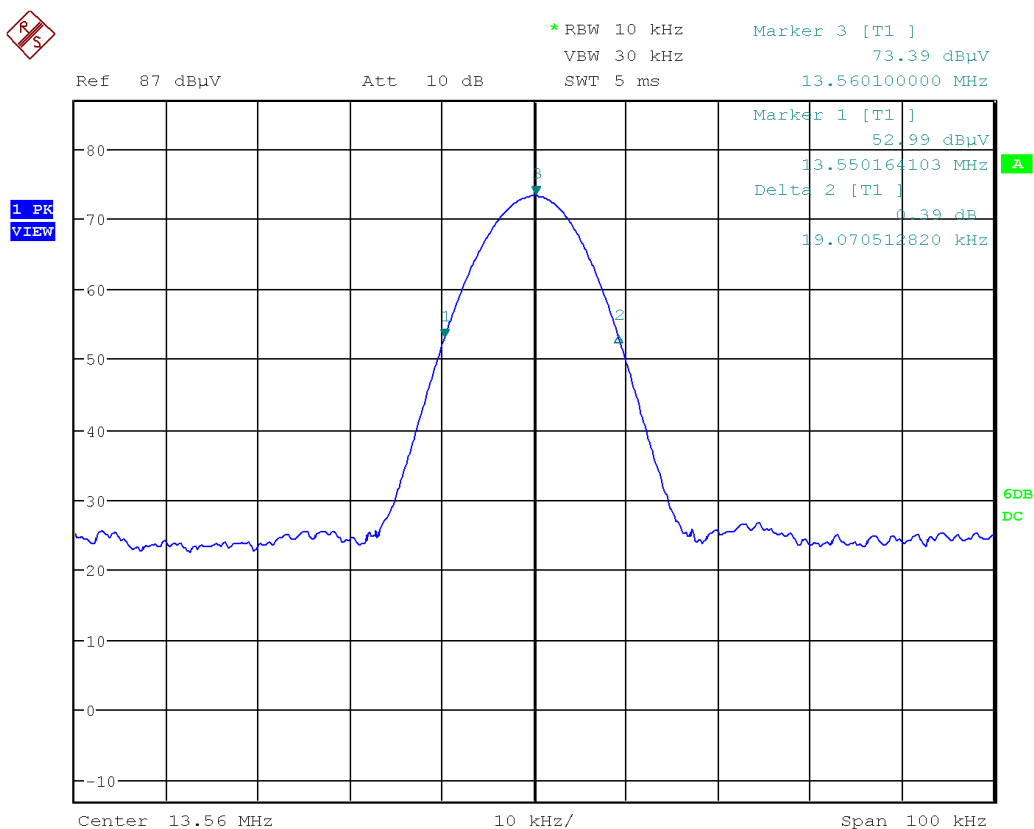
The 20 dB BW measured is: 19.1 kHz

The 99% BW measured is: 16.1 kHz

Client	InVue Security Products, Inc.	 Canada
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

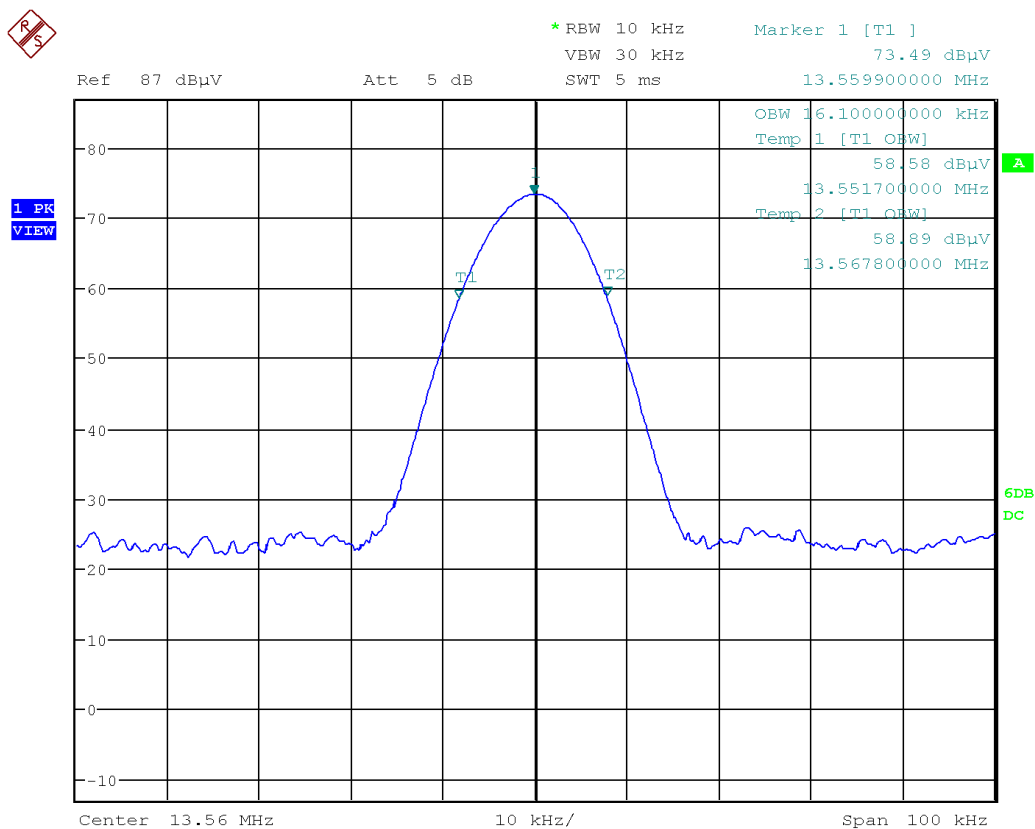
Graphs

20dB Bandwidth



Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

99% Bandwidth



See 'Appendix B – EUT and Test Setup Photos' for photos showing the test set-up.

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	ESU 40	Rohde & Schwarz	Jan. 15, 2020	Jan. 15, 2022	GEMC 233
Loop Antenna 150 kHz – 30 MHz	EM 6872	Electro-Metrics	Feb 15, 2019	Feb 15, 2021	GEMC 71
Pre-Amp	CPA9230	Chase	May 22, 2020	May 22, 2022	GEMC 301
RF Cable 10m	LMR-400- 10M-50Ω-MN- MN	LexTec	NCR	NCR	GEMC 274
RF Cable 2m	Sucoflex 104A	Huber+Suhner	NCR	NCR	GEMC 271

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

RF Exposure – FCC

The device is evaluated for portable applications where the radiating structure is within 20cm from the body of the user. SAR evaluation is applied.

General SAR test exclusion guidance for NFC:

As per FCC KDB 447498 Section 4.3.1 c) 2), the 1-g extremity SAR Test Exclusion Threshold for frequencies below 100 MHz at test separation distances ≤ 50 mm is determined by:

- A) The power threshold determined by the equation in Section 4.3.1 c) 1) at Distance = 50 mm, and Frequency = 100 MHz multiplied by 0.5.
- B) The power threshold in Section 4.3.1 c) 1) is determined by Power threshold in Section 4.3.1 b) multiplied by $[1 + \log(100/f(\text{MHz}))]$
Where $f(\text{MHz}) = 13.56$ MHz
- C) The power threshold in Section 4.3.1 b) for frequencies 100 MHz – 1500 MHz is:

$$[\text{Power allowed at numeric threshold for 50 mm in Section 4.3.1 a)} + [\text{Test separation distance} - 50\text{mm}] \times [f(\text{MHz})/150]$$
- D) Power allowed at a numeric threshold of 3.0 (for 1-g SAR) at 50 mm in Section 4.3.1 a)] is:

$$[(3.0)/((f(\text{GHz})^{0.5})] \times [\text{Test separation distance}]$$

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

SAR Calculations

The EUT transmits at 13.56 MHz frequency.

Therefore, solving the above in reverse sequence:

D)

$$[3.0/(0.1\text{GHz}^{0.5})] \times [50 \text{ mm}] = 474.3416 \text{ mW}$$

C)

$$474.3416 \text{ mW} + [(50 \text{ mm} - 50 \text{ mm}) \times (13.56 \text{ MHz}/150)] = 474.3416 \text{ mW}$$

B)

$$[474.3416 \text{ mW}] \times [1 + \log(100/13.56 \text{ MHz})] = 885.9470 \text{ mW}$$

A)

$$(885.9470 \text{ mW}) \times (0.5) = \mathbf{442.974 \text{ mW}}$$

The power threshold for 13.56 MHz SAR test exclusion is therefore **443.0 mW**.

The 13.56 MHz power level is -62.65 dBm = 0.000000543 mW << 443.0 mW

Results

SAR test exclusion applies for the 13.56 MHz transmitter.

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

RF Exposure – IC

The EUT is evaluated as a body-supported device where the separation distance between the user and the antenna/radiating element of the device will be less than or equal to 20 cm. SAR evaluation is applied.

General SAR test exclusion guidance:

As per RSS 102 Section 2.5.1, SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1 below:

Table 1 - SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤ 5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤ 300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Output power level shall be the higher of the maximum conducted, or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power.

SAR Calculations

The EUT transmits at 13.56 MHz.

The EUT will be evaluated using a separation distance of ≤ 5 mm.

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Maximum Output Power Level

The maximum output power of the NFC transmitter is -62.65 dBm, or 0.000000543 mW, e.i.r.p.

Results

For devices operating ≤ 300 MHz with a separation distance of ≤ 5 mm, the SAR evaluation exemption limit is 71 mW, as per Table 1.

As the EUT max e.i.r.p. is $\ll 71$ mW, the SAR Exclusion Threshold condition is met for the NFC transmitter.

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Appendix A – EUT Summary

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

General EUT Description

Client Details	
Organization / Address	InVue Security Products, Inc. 9201 Baybrook Lane Charlotte, NC 28277
Contact	Dan Hepka
Phone	(704) 752-6513 x1340
Email	DanHepka@invue.com
EUT (Equipment Under Test) Details	
EUT Name	IR4 Live Data Key
EUT Model	IR4 Key
EUT is powered using	Internal rechargeable LiPo battery charged using dedicated charger.
Input voltage (V)	Battery: 3.7 Vdc Charger: 4.75 – 5.25 Vdc
Frequency range(s)	NFC: 13.56 MHz
Transmits RF energy?	NFC transceiver
Basic EUT functionality description	Exchanges security code to validate a key is authorized to access an InVue protection device.
Modes of operation	NFC: 13.56 MHz (ISO 14443A)
Max clock frequency	120MHz
I/O connectors & cable description	None. Connects to charger through magnetic terminal.
Peripherals required to exercise EUT	- Lenovo model SC-61 mains to USB adapter. - InVue IR4 Four Port Charger
Dimensions of product (approx.)	L: 100mm, W: 40mm, H: 20.45mm

Note the EUT is considered to have been received the date of the commencement of the first test, unless otherwise stated.

For close-up pictures of the EUT, See Appendix B – EUT and Test Setup Photos'.

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	

Appendix B – EUT and Test Setup Photos

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



EUT – External view 1

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



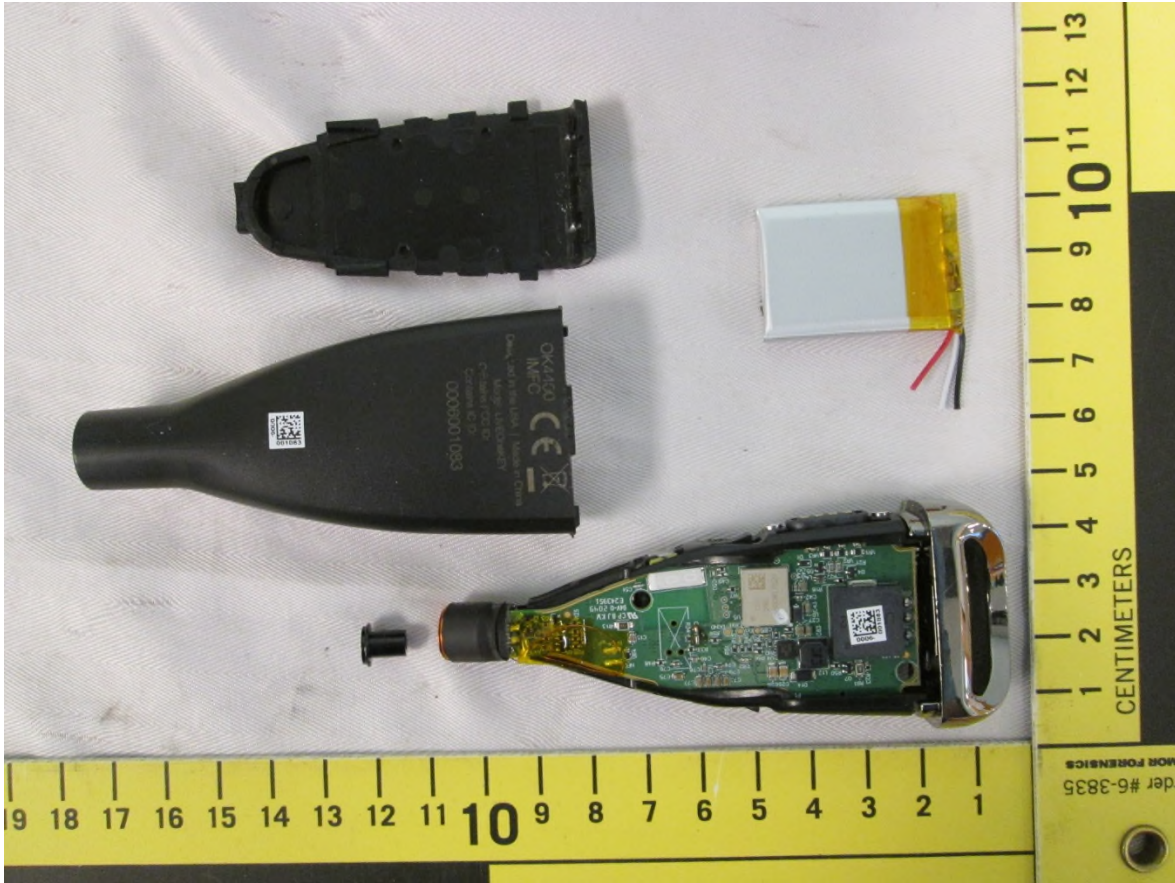
EUT – External view 2

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



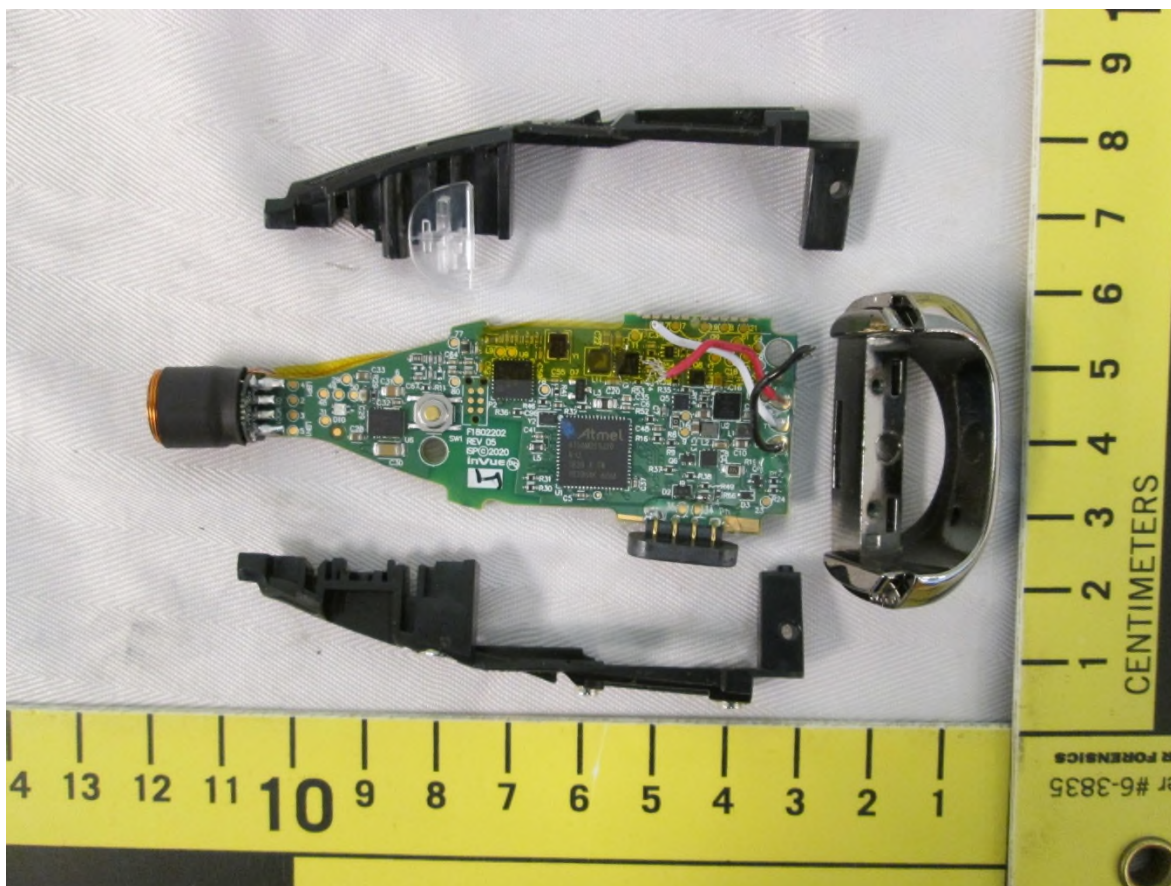
EUT – Internal view 1
Cover & battery removed

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



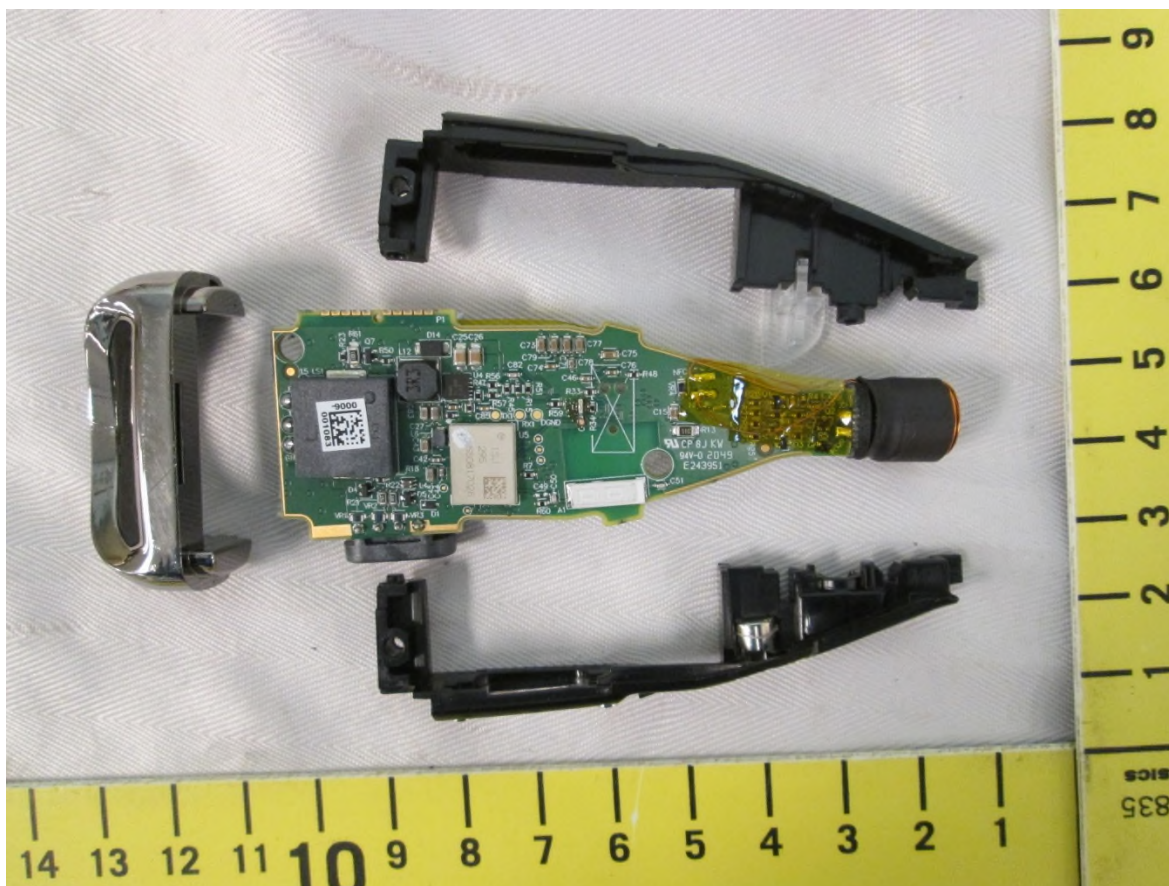
EUT – Internal view 2
Cover & battery removed, reverse side of all components.

Client	InVue Security Products, Inc.	 Canada
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



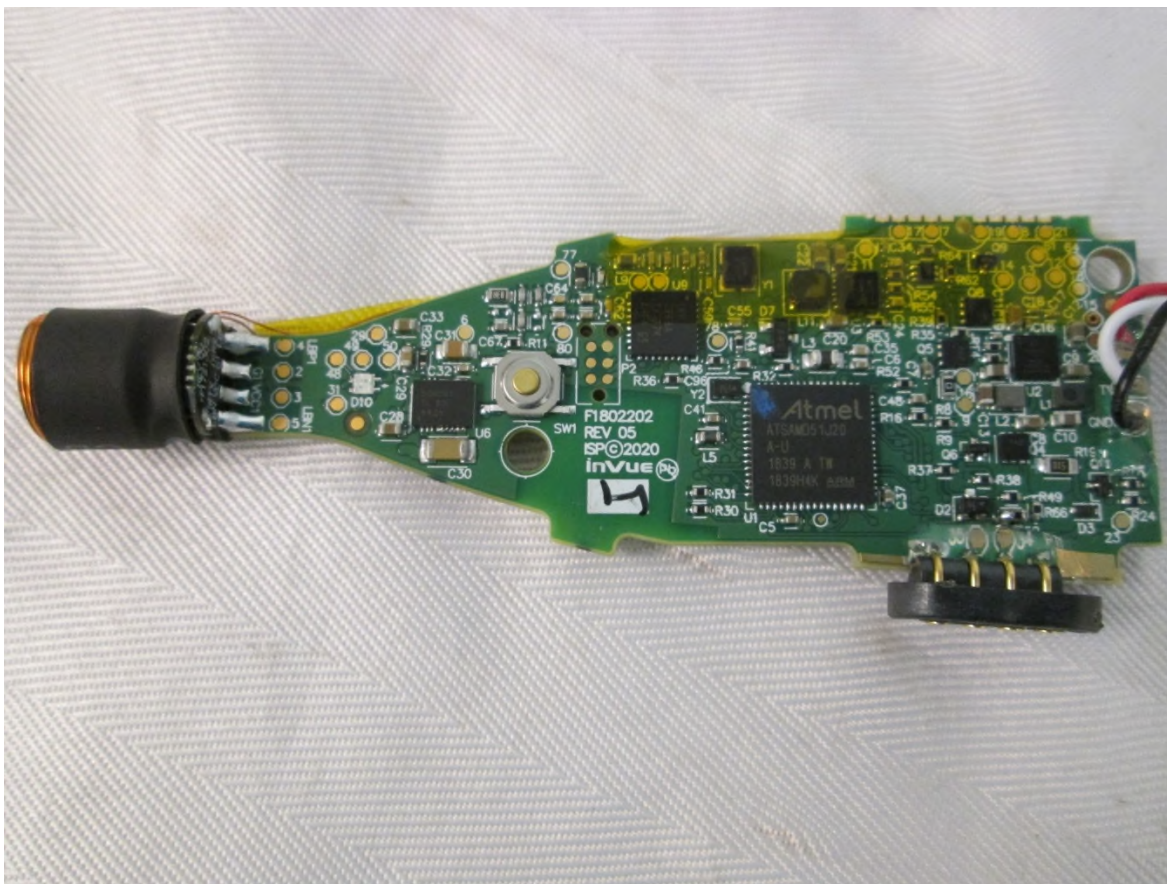
EUT – Internal view 3
PCB with surrounding enclosure components removed

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



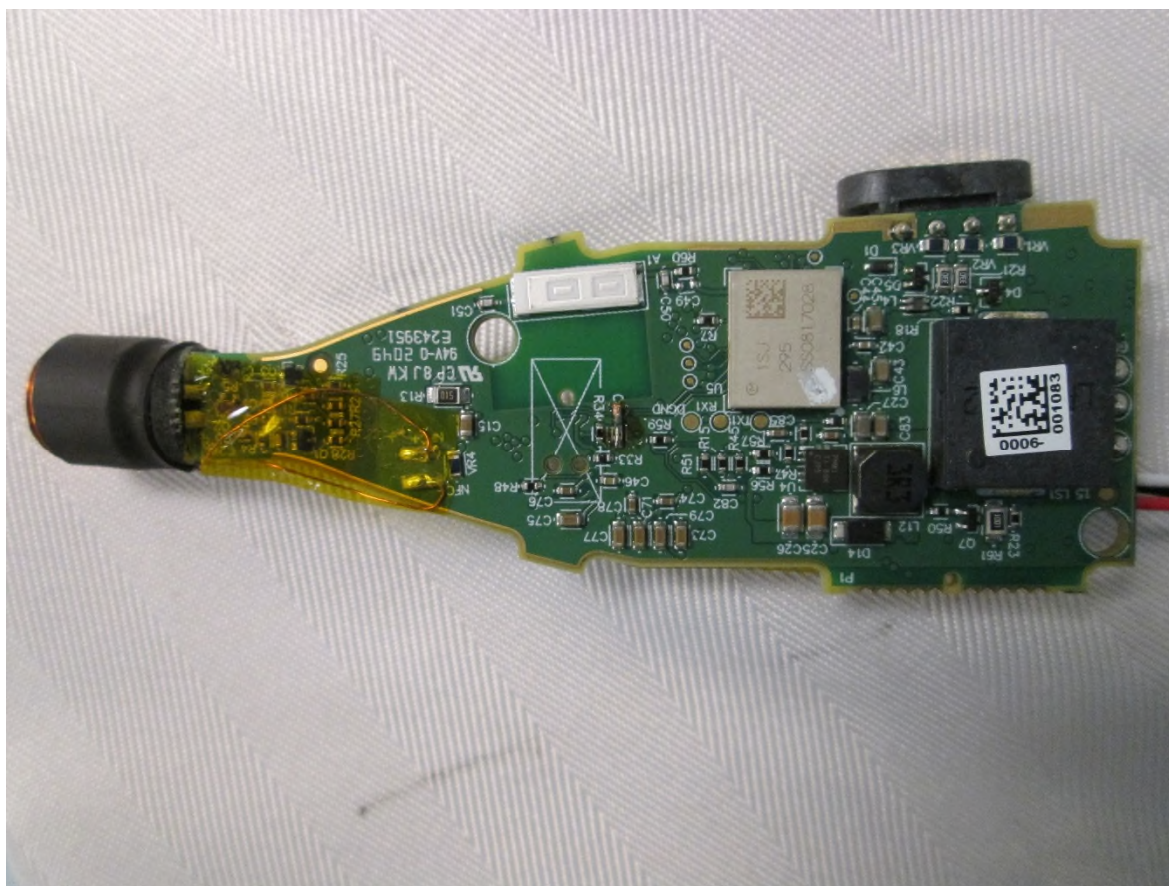
EUT – Internal view 4
PCB with surrounding enclosure components removed, reverse side of all components.

Client	InVue Security Products, Inc.	 Canada
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



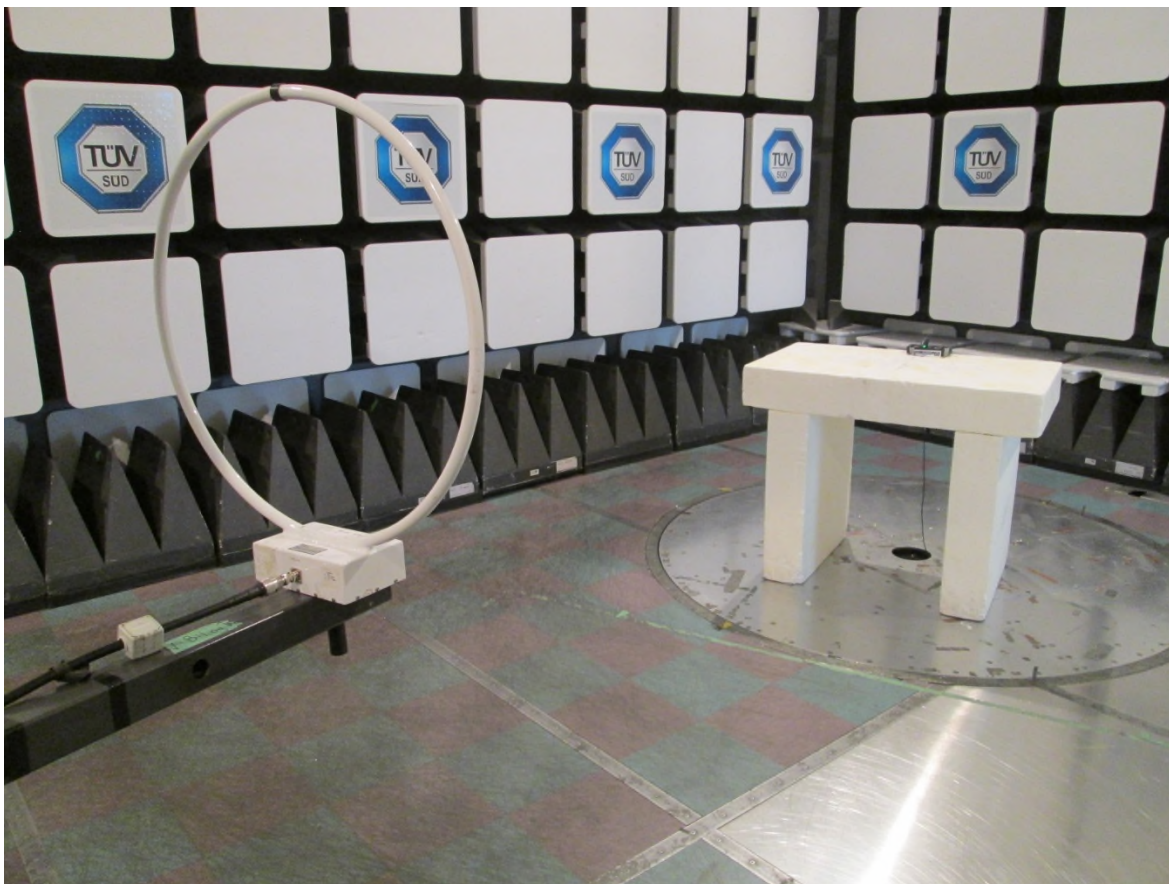
EUT – Internal view 5
PCB close-up, side 1

Client	InVue Security Products, Inc.	 Canada
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



EUT – Internal view 6
PCB close-up, side 2

Client	InVue Security Products, Inc.	 Canada
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



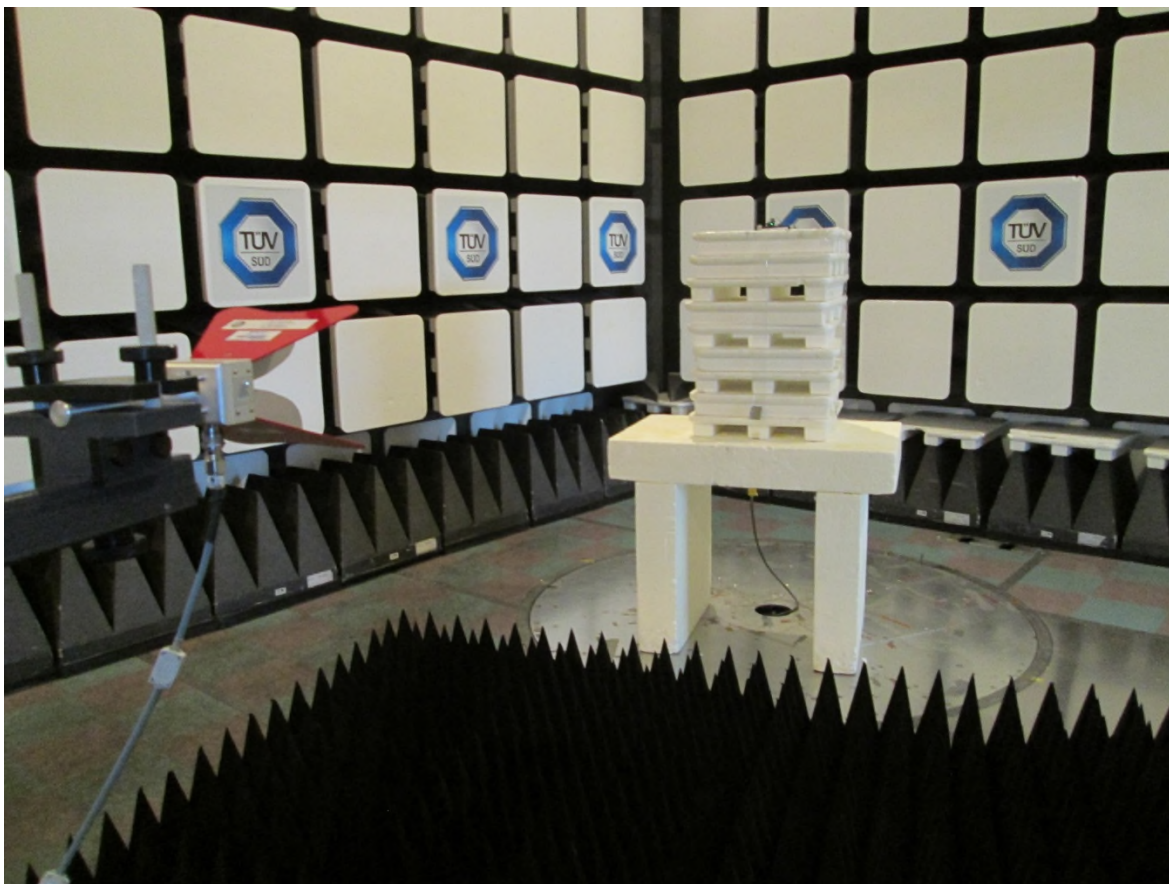
Test setup photo 1
Radiated measurements, 9 kHz – 30 MHz

Client	InVue Security Products, Inc.	 Canada
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



Test setup photo 2
Radiated measurements, 30 MHz – 1 GHz

Client	InVue Security Products, Inc.	 Canada
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



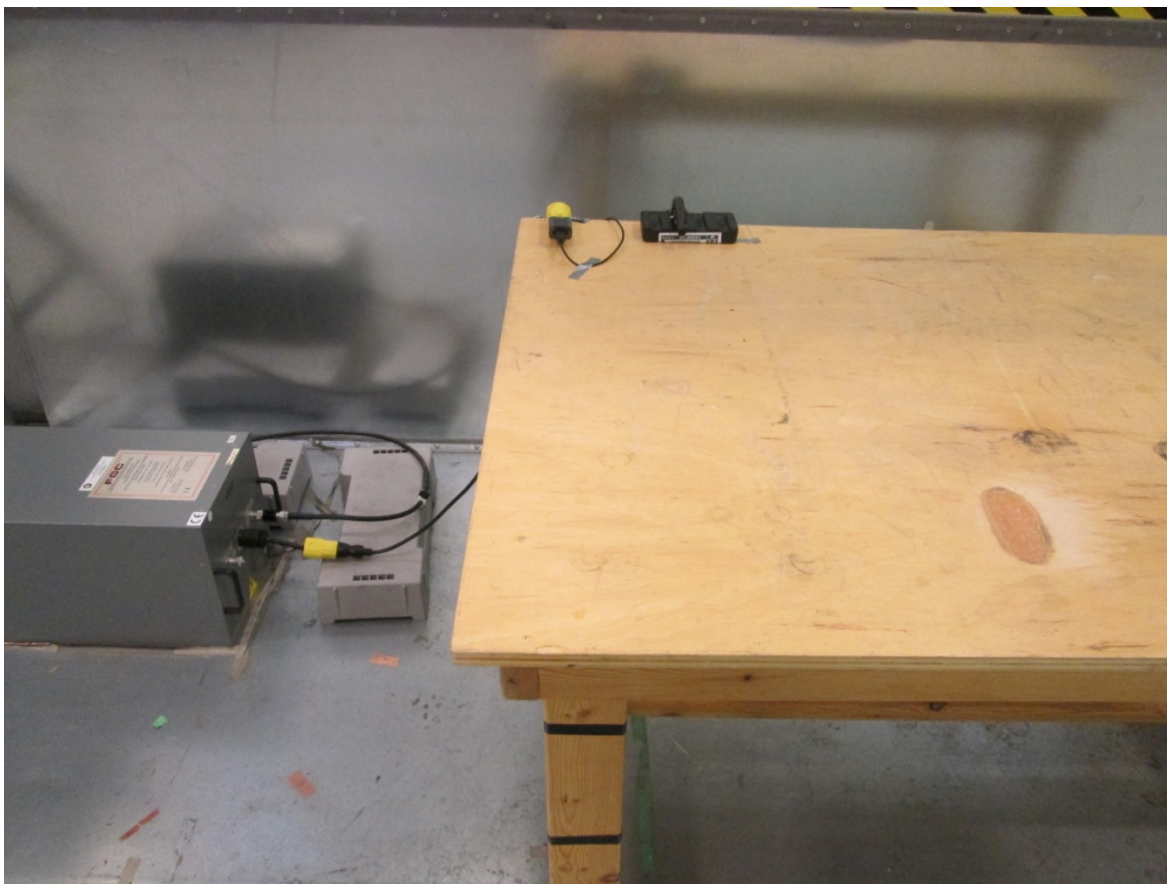
Test setup photo 3
Radiated measurements, > 1 GHz

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



Test setup photo 4
Radiated measurements, EUT close-up

Client	InVue Security Products, Inc.	
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



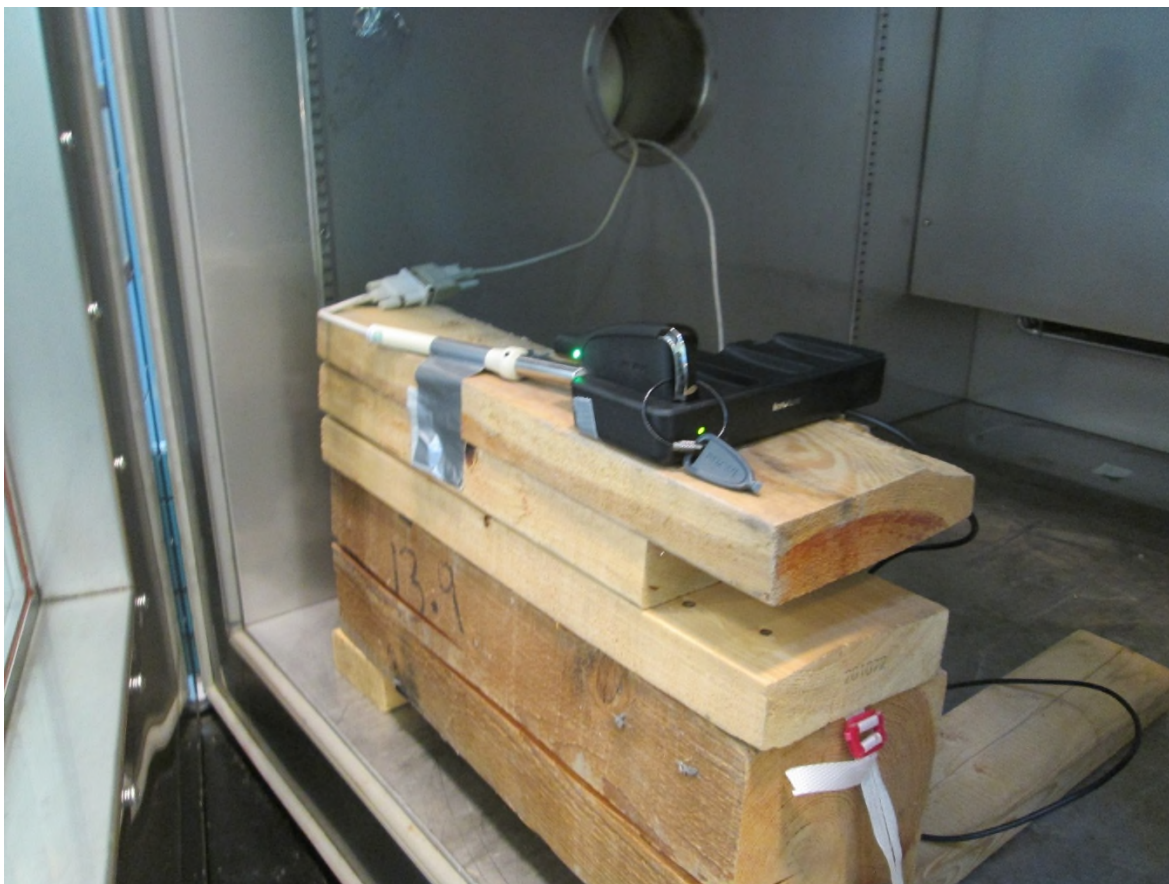
Test setup photo 5
Power line conducted emissions measurements

Client	InVue Security Products, Inc.	 Canada
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



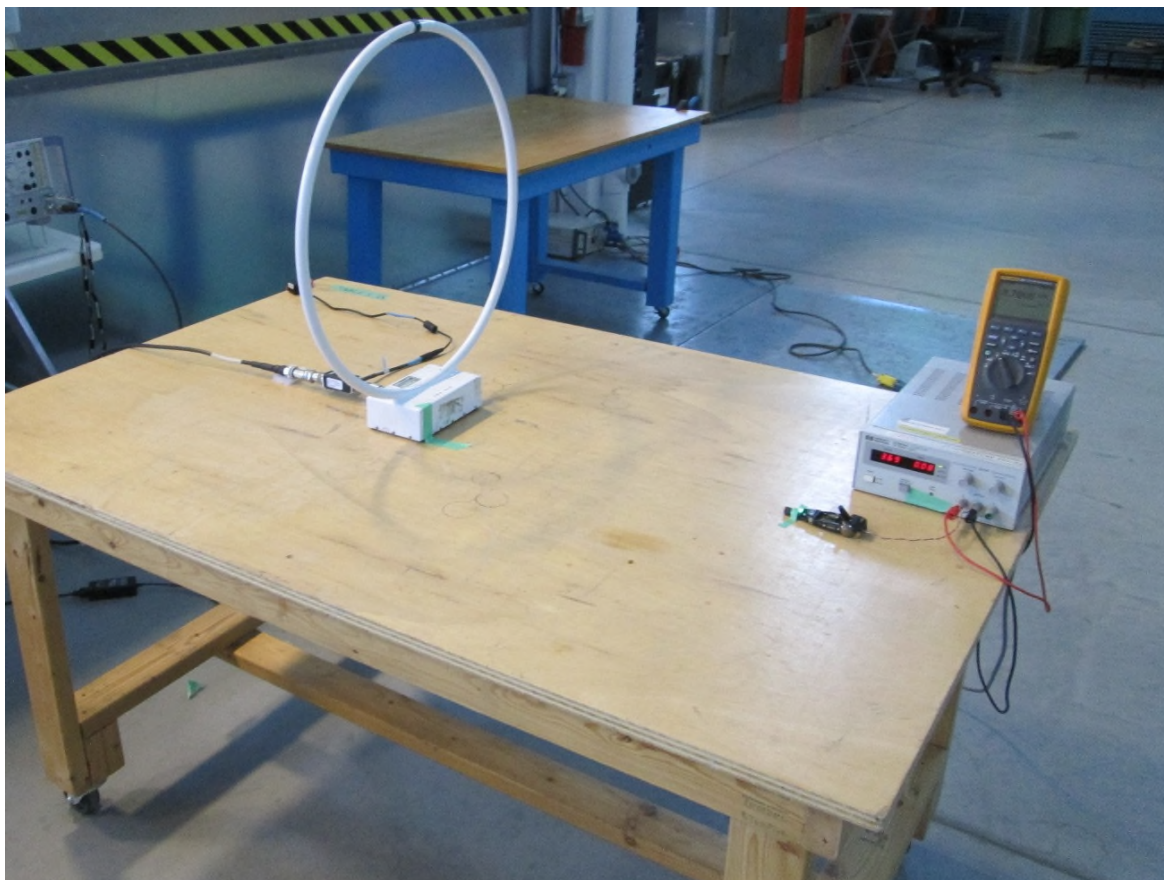
Test setup photo 6
Frequency Stability at Extreme Temperatures, view 1

Client	InVue Security Products, Inc.	 Canada
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



Test setup photo 7
Frequency Stability at Extreme Temperatures, view 2
Inside temperature chamber

Client	InVue Security Products, Inc.	 Canada
Product	IR4 Live Data Key	
Standard(s)	RSS 210 Annex B.6, Issue 10:2019 FCC Part 15 Subpart 15.225:2019	



Test setup photo 8
Frequency Stability at Extreme Voltages