

EMC & RF Test Report

As per

RSS-210 Issue 9 & FCC Part 15 Subpart 15.249

Unlicensed Intentional Radiators

on the

Kit FLEX Magnetic Frame, model: KITFLEXGC



Issued by:

TÜV SÜD Canada Inc.
2972 Joseph-A-Bombardier
Laval, QC, H7P 6E3
Canada
Ph: (450) 687-4976

Abderrahmane
Ferhat, Eng.
Project Engineer

A handwritten signature in black ink, appearing to read 'Abderrahmane Ferhat', is written over a horizontal line.

Testing produced for
PROXIPI INC
See Appendix A for full client &
EUT details.





Client	PROXIPI INC	
Product	Kit FLEX Magnetic Frame, model: KITFLEXGC	
Standard(s)	RSS-210 Issue 9 FCC Part 15 Subpart 15.249	

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Client	PROXIPI INC	
Product	Kit FLEX Magnetic Frame, model: KITFLEXGC	
Standard(s)	RSS-210 Issue 9 FCC Part 15 Subpart 15.249	

Report Scope

This report addresses the EMC verification testing and test results of the **Kit FLEX Magnetic Frame, model: KITFLEXGC**, and is herein referred to as EUT (Equipment Under Test). The EUT was tested for compliance against the following standards:


RSS-210 Issue 9:2016

FCC Part 15 Subpart C 15.249:2016

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.


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Summary

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

EUT:	Kit FLEX Magnetic Frame, model: KITFLEXGC
FCC Certification #, FCC ID:	2AIUY- KITFLEX
Industry Canada Certification #, IC:	21748- KITFLEX
EUT passed all tests performed	Yes
Tests conducted by	Abderrahmane Ferhat


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

Client	PROXIPI INC	
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Test Results Summary

Standard/Method	Description	Class/Limit	Result
FCC 15.203	Antenna Requirement	Unique	Pass See Justification
FCC 15.205 RSS-GEN (Table 6)	Restricted Bands for Intentional Operation	QuasiPeak Average	Pass See Justification
FCC 15.209 FCC 15.249 RSS-GEN (Table 4)	Spurious Radiated Emissions	QuasiPeak Average	Pass
	Fundamental	< 50mV/m	
	Harmonics	< 500uV/m	
	Occupied bandwidth	—	
FCC 15.247(i) RSS-102	RF Exposure	—	Pass
SPR-002, Issue #1	Supplementary Procedure for Assessing Compliance with RSS-102 Nerve Stimulation Exposure Limits	90 A/m 83 V/m	Pass
Overall Result			Pass

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. A 'PASS' / 'FAIL' grade within measurement uncertainty is marked with a '*'.

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Notes, Justifications, or Deviations

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

For the Antenna requirement specified in FCC 15.203, the unit uses a loop antenna for 125kHz, and a wire antenna for 915MHz.

For the Restricted Bands of operation, the EUT is designed to only operate at 915 MHz and 125 kHz.

For the scope of this test report, the EUT was mounted in three orthogonal axis to maximize emissions. Worst case results are presented.


Sample Calculation(s)

Radiated Emission Test

Margin = Limit – (Received Signal + Antenna Factor + Cable Loss – Pre-Amp Gain)


Margin = 50.5dBµV/m – (50dBµV + 10dB + 2.5dB – 20dB)

Margin = 8.0 dB (pass)

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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 Subpart C:2016	Code of Federal Regulations – Radio Frequency Devices, Intentional Radiators
CISPR 22:2008	Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement
FCC KDB 558074: 2016	FCC KDB 558074 Digital Transmission Systems, measurements and procedures
ICES-003 Issue 6 2016	Digital Apparatus - Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard
RSS-GEN Issue 4 2014	General Requirements and Information for the Certification of Radio Apparatus
RSS-210 Issue 9 :2016	Issue 9: Licence-Exempt Radio Apparatus: Category I Equipment
ISO 17025:2005	General Requirements for the Competence of Testing and Calibration Laboratories

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Document Revision Status

Revision 0 July 21, 2017. Initial Release
Revision 1 January 16, 2018 Added product name and SPR-002 measurement.

Client	PROXIPI INC	
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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


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Testing Facility

Testing for EMC on the EUT was carried out at TÜV SÜD Canada testing lab in Laval, near Montréal, Québec, Canada. The testing lab has a calibrated 3m semi-anechoic chamber which allows measurements on an EUT that has a maximum width or length of up to 2m and a height of up to 3m. The chamber is equipped with a turntable that is capable of testing devices up to 3300lb in weight. This facility is capable of testing products that are rated for 120Vac and 240Vac single phase, or devices that are rated for a 208Vac 3 phase input. DC capability is also available for testing. The chamber is 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. 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. For ESD testing, the HCP is 1.6m x 0.8m and the VCP is 0.5m x 0.5m. The reference ground plane, when applicable, is 1.6m x 1.6m.

Calibrations and Accreditations


The 3m semi-anechoic chamber is registered with Federal Communications Commission (FCC, 382292) and Industry Canada (IC, 6844B-1). 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 bi-annual basis as listed for each respective test.

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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)
27-Oct-2016 to 31-Oct-2016	Radiated Emissions	AF	20 – 24	40 – 51	98.0 – 102.0
18-Sep-2017	SPR-002 Measurement	AF	20 – 24	40 – 51	98.0 – 102.0

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Detailed Test Results Section

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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 as defined in Section 12.2 of FCC KDB 558074 and ANSI C63.10.

The limits, as defined in 15.249(a) for intentional radiated emissions are:


Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902-928 MHz	50	500 uV/m at 3m ⁽¹⁾
2400-2483.5 MHz	50	500 uV/m at 3m ⁽²⁾
5725-5875 MHz	50	500 uV/m at 3m ⁽²⁾
24.0-24.25 GHz	250	2500 uV/m at 3m ⁽²⁾

The limits, as defined in 15.249(d) for unintentional radiated emissions, apply for those emissions that fall in the restricted bands, as defined in Section 15.205(a). These emissions must comply with the radiated emission limits specified in Section 15.209(a).

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) at 3m ⁽¹⁾
88 MHz – 216 MHz	150 uV/m (43.5 dBuV/m) at 3m ⁽¹⁾
216 MHz – 960 MHz	200 uV/m (46.0 dBuV/m) at 3m ⁽¹⁾
Above 960 MHz	500 uV/m (54.0 dBuV/m) at 3m ⁽¹⁾
Above 1000 MHz	500 uV/m (54 dBuV/m) at 3m ⁽²⁾

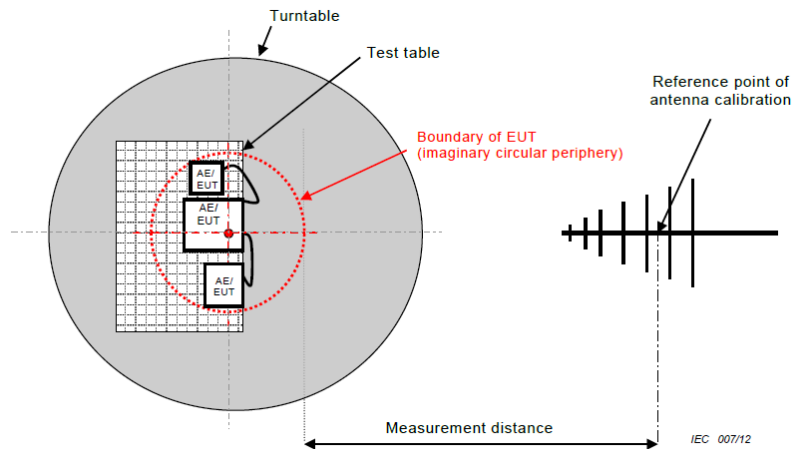
¹Limit is with Quasi Peak detector with bandwidths as defined in CISPR-16-1-1

²Limit is with 1 MHz measurement bandwidth and using an Average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

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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.

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 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.

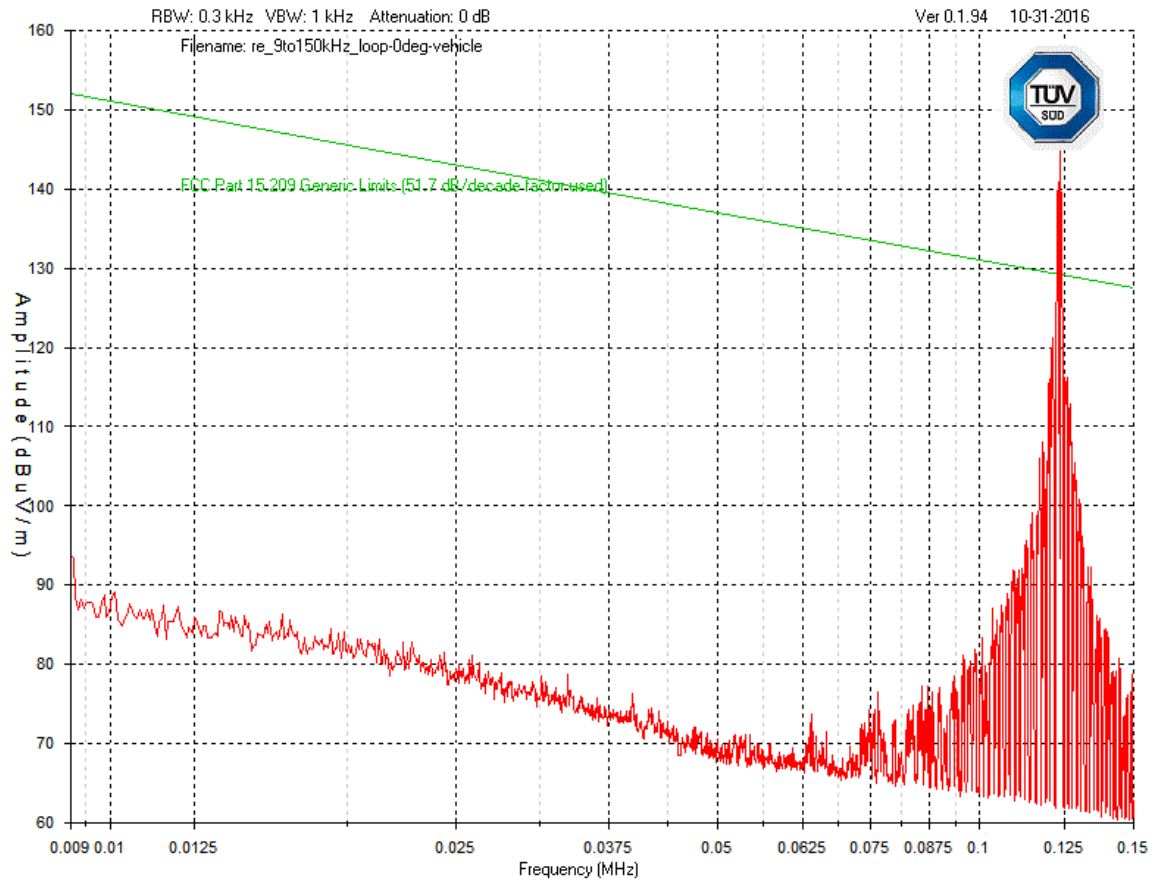
In accordance with FCC Part 15, Subpart A, Section 15.33, the device was scanned to the 10th harmonic.


Devices scanned 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. For example for 1 meter measurements, an extrapolation factor 9.5 dB from 20 Log (1m / 3m) is applied.

Each of the three orthogonal axis were checked. However, the worst case graphs are presented here.

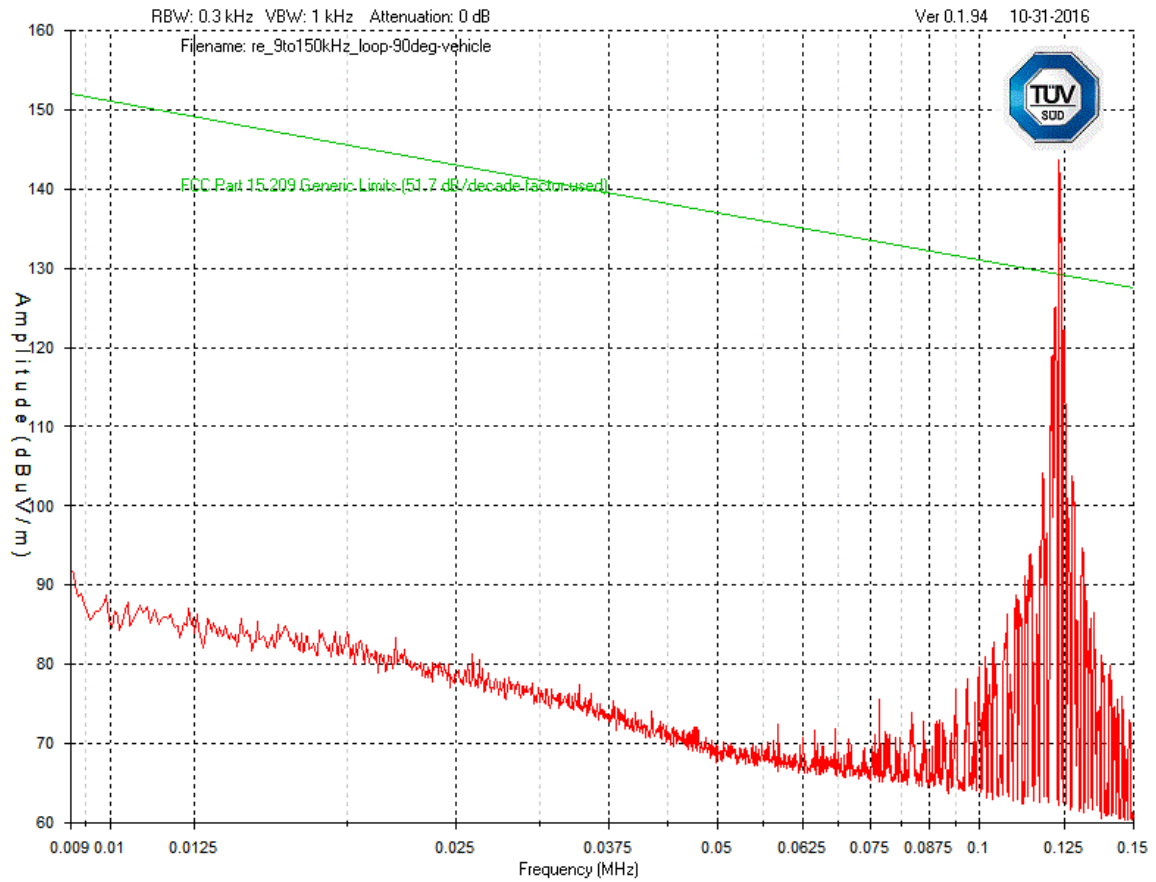
Client	PROXIPI INC	
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9 kHz – 150 kHz
Peak Emission Graph – Loop @ 0 degree



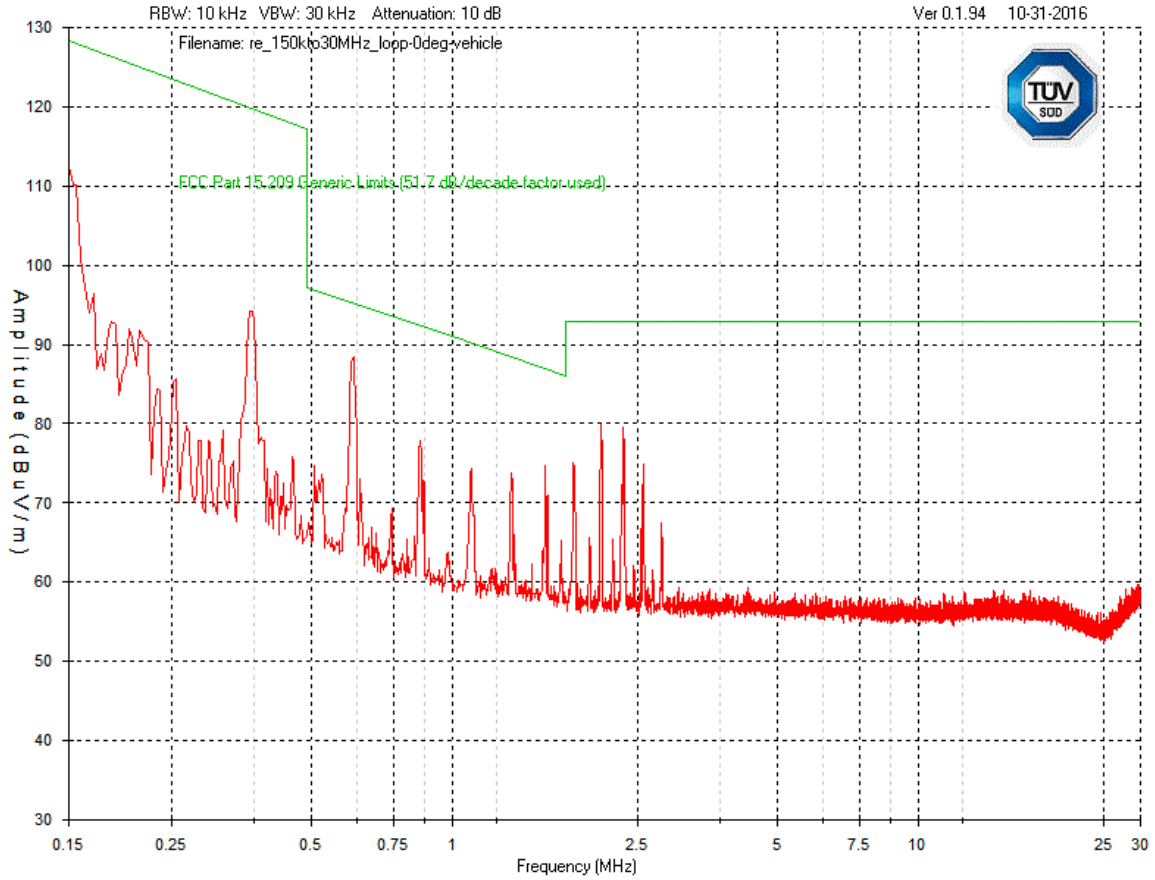
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9 kHz – 150 kHz
Peak Emission Graph – Loop @ 90 degree



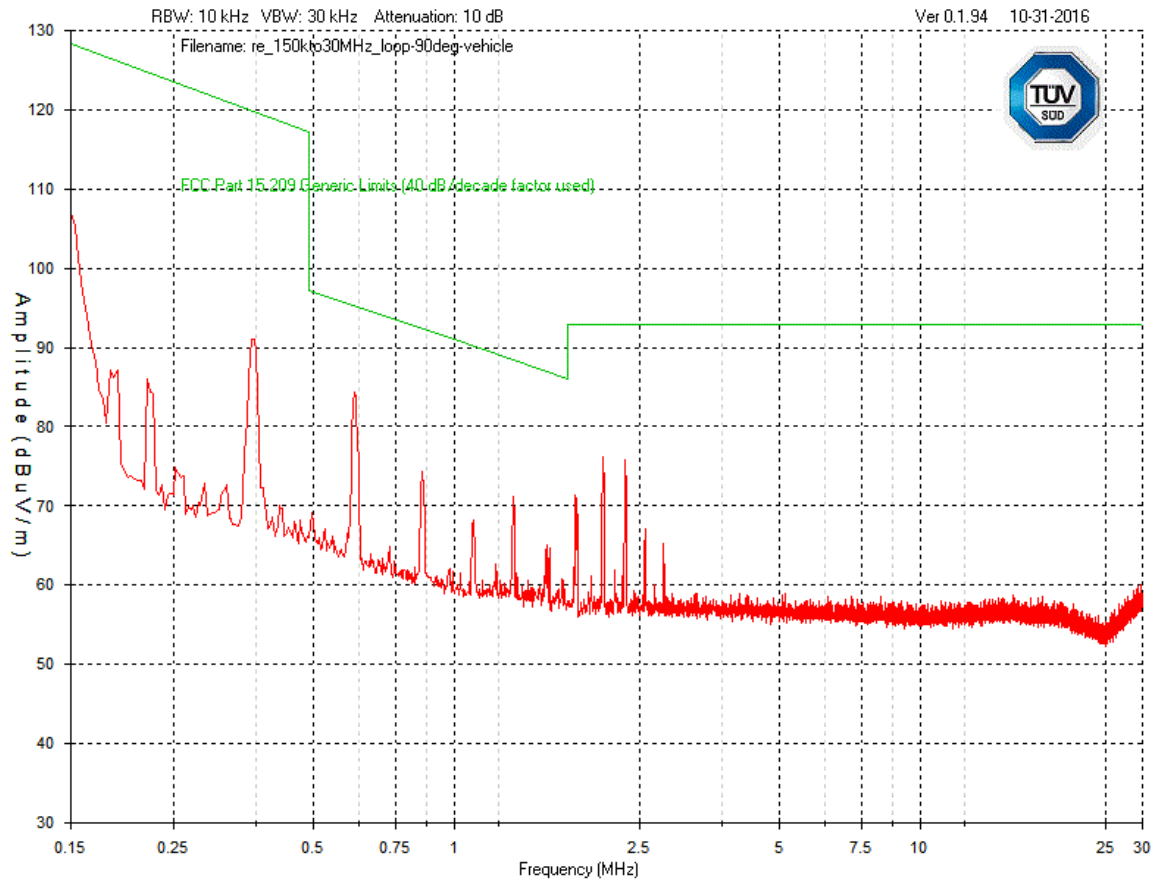
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150 kHz – 30 MHz
Peak Emission Graph – Loop @ 0 degree



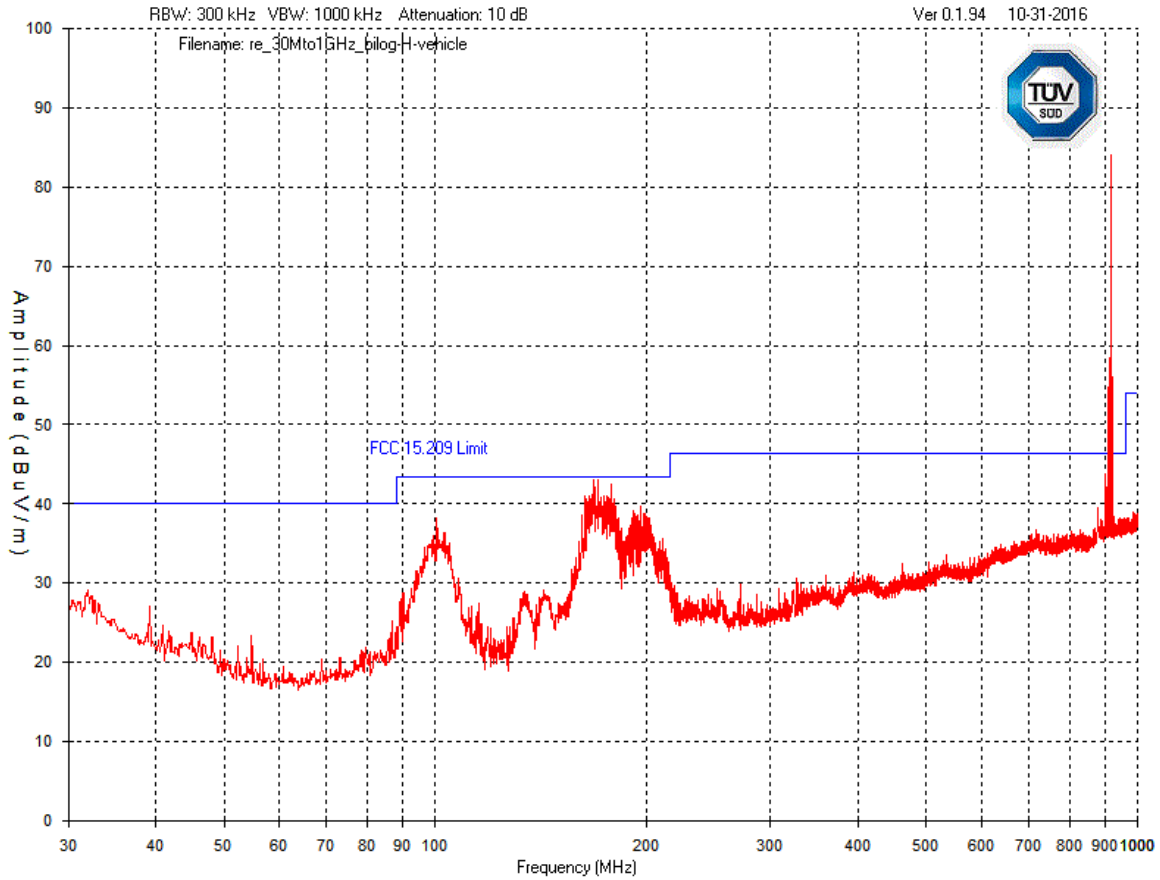
Client	PROXIPI INC	
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150 kHz – 30 MHz
Peak Emission Graph – Loop @ 90 degree



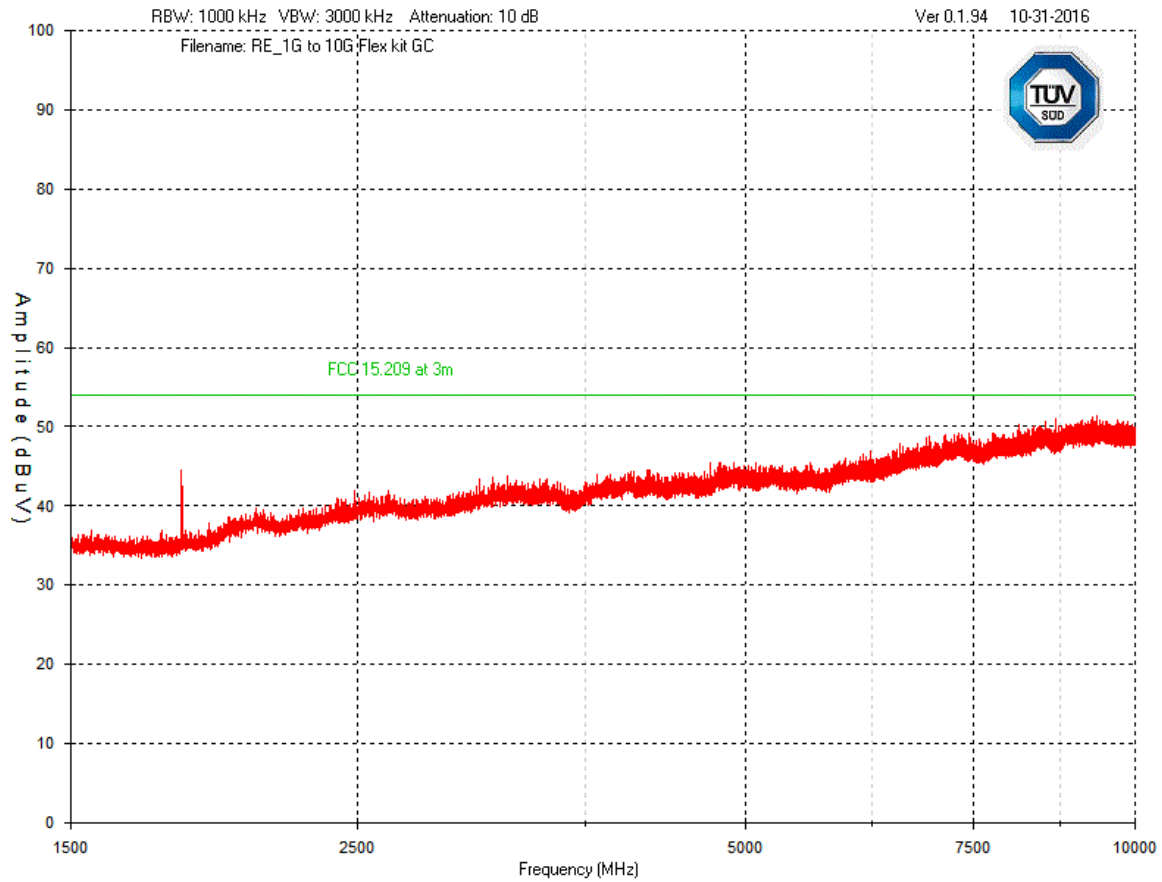
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**30 MHz – 1 GHz
Horizontal - Peak Emission Graph**



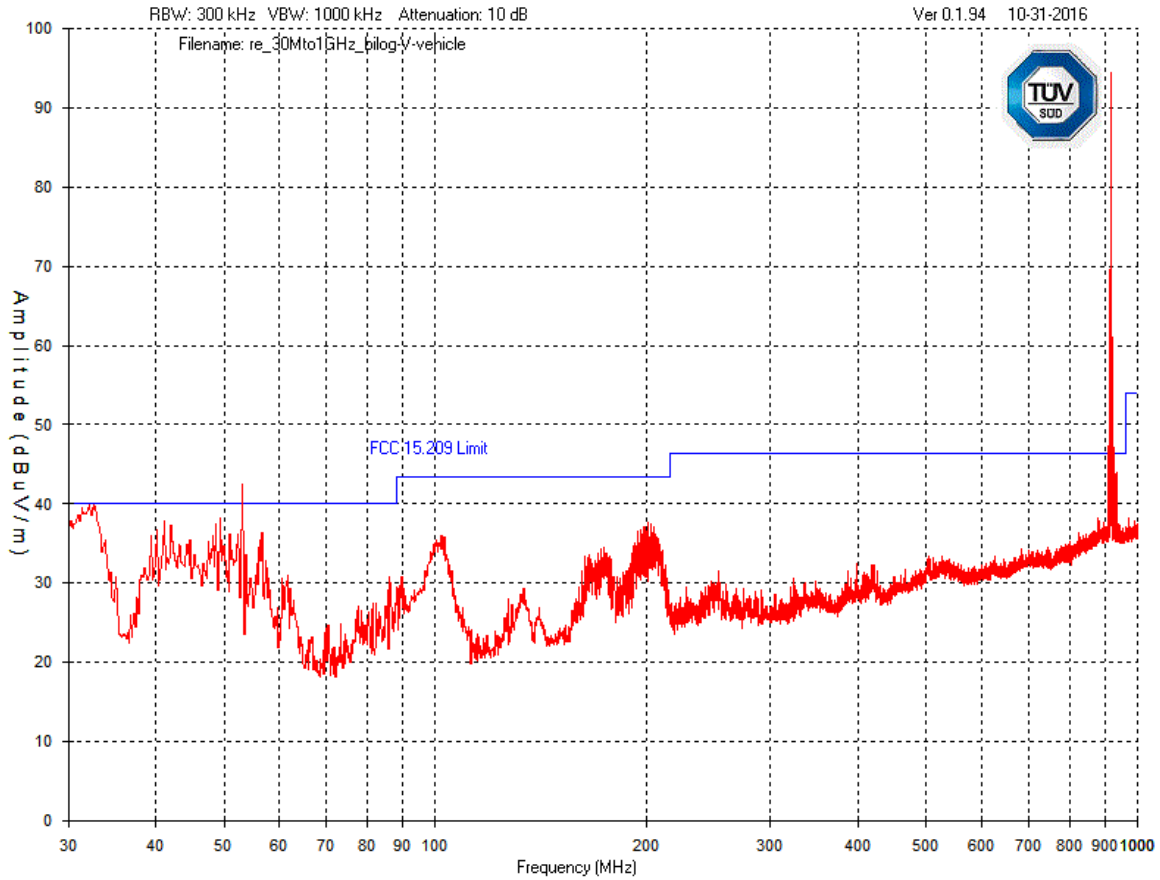
Client	PROXIPI INC	
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**1 GHz – 10 GHz
Horizontal - Peak Emission Graph**



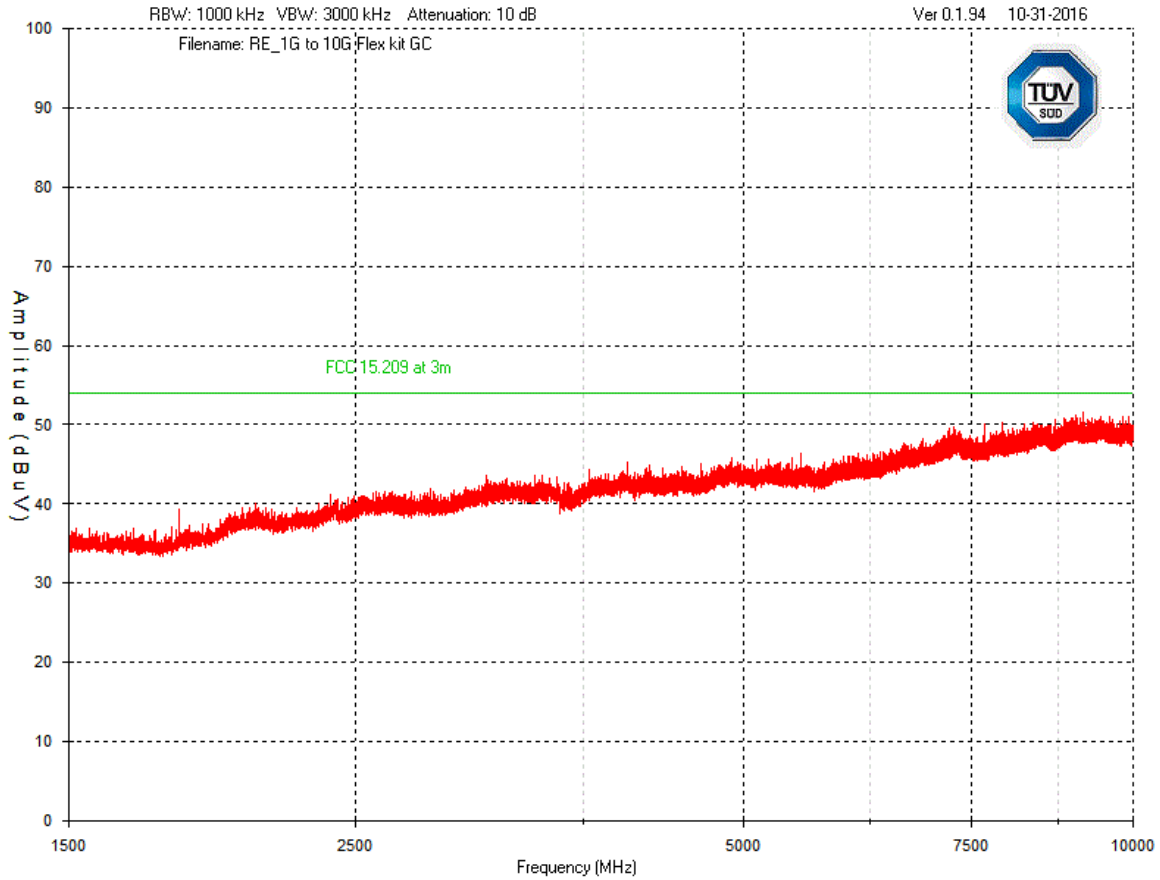
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30 MHz – 1 GHz
Vertical - Peak Emission Graph



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**1 GHz – 10 GHz
Vertical - Peak Emission Graph**



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Final Measurements and Results

The EUT passed requirements.

In accordance with 15.249(d), only frequencies exceeding the 15.209 limit that occur within the bands listed in 15.205 need to be verified with a final detector. Emissions outside the restricted bands were measured for informational purposes.

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.

Emissions at 915MHz:

Fundamental Emission Reading Table – Vertical

Frequency (MHz)	Det. mode	Raw (dBuV)	Ant. (dB/m)	Att. (dB)	Cab. (dB)	Amp (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/Fail
915	Q.P	89.1	23.7	3	2.8	-28.4	90.2	94	3.8	Pass

Fundamental Emission Reading Table – Horizontal

Frequency (MHz)	Det. mode	Raw (dBuV)	Ant. (dB/m)	Att. (dB)	Cab. (dB)	Amp (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/Fail
915	Q.P	84.3	24	3	2.8	-28.4	85.7	94	8.3	Pass

Emissions at 125kHz:

In accordance with FCC 15.209 (d), radiated emissions limits in the band 110kHz to 490kHz are based on measurements employing an average detector.


In accordance with FCC 15.31 (f) (2), at frequencies below 30MHz, when performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor.

The maximum Peak measurements taken at 2 distances in Open Area Test Site (OATS) are as follow:

Max @ 3 m	79.5
Max @ 10 m	50.7

The extrapolation factor is:

$$\text{Extrapolation Factor} = (E1-E2)/\text{Log}(d1/d2) = (149.1-120.3)/\text{Log}(3/10) = \mathbf{-55.1 \text{ dB/Dec.}}$$

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FCC limit for 125 kHz is specified to be $2400/f(\text{kHz})$ at 300m which equals to 19.2uV/m or $20*\text{Log}(19.2) = 25.7\text{dBuV/m}$.

From 300m to 3m there are 2 decades, hence the limit at 3m will be:

Average Limit @3m = Limit @300m + $\text{Log}(3/300)*$ Extrapolation Factor = $25.7+2*55.1$.

Average Limit @3m = 135.9 dBuV/m.


Peak Limit @3m is considered to be 20dB more = 155.9dBuV/m.

Fundamental Emission Reading Table – Loop @ 0 degree

Frequency (MHz)	Det. mode	Raw (dBuV)	Cab. (dB)	I to U Factor (dB)	Ant. (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/Fail
0.125	PEAK	89.4	0	51.5	8.2	149.1	155.9	6.8	Pass
0.125	AVG	65.8	0	51.5	8.2	125.5	135.9	10.4	Pass

Fundamental Emission Reading Table – Loop @ 90 degree

Frequency (MHz)	Det. mode	Raw (dBuV)	Cab. (dB)	I to U Factor (dB)	Ant. (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/Fail
0.125	PEAK	85.8	0	51.5	8.2	145.5	155.9	10.4	Pass
0.125	AVG	60.1	0	51.5	8.2	119.8	135.9	16.1	Pass

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Band Edge Emission Reading Table – Vertical

Frequency (MHz)	Det. mode	Raw (dBuV)	Ant. (dB/m)	Att. (dB)	Cab. (dB)	Amp (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/Fail
902	PEAK	35.8	23.7	3	2.8	-28.4	36.9	46.4	9.5	Pass
928	PEAK	42.6	23.7	3	2.8	-28.4	43.7	46.4	2.7	Pass

Band Edge Emission Reading Table – Horizontal


Frequency (MHz)	Det. mode	Raw (dBuV)	Ant. (dB/m)	Att. (dB)	Cab. (dB)	Amp (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/Fail
902	PEAK	34.4	23.7	3	2.8	-28.4	35.5	46.4	10.9	Pass
928	PEAK	35.4	23.7	3	2.8	-28.4	36.5	46.4	9.9	Pass

Harmonic Emission Reading Table – Vertical

Frequency (MHz)	Det. mode	Raw (dBuV)	Ant. (dB/m)	Cab. (dB)	Amp (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/Fail
1830	PEAK	46.1	25.2	4.1	-33.1	42.3	54	11.7	Pass
2745	PEAK	42.5	28.9	5.3	-33.1	43.6	54	10.4	Pass
3660	PEAK	40.4	30.2	6.6	-32.9	44.3	54	9.7	Pass

Harmonic Emission Reading Table – Horizontal

Frequency (MHz)	Det. mode	Raw (dBuV)	Ant. (dB/m)	Cab. (dB)	Amp (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pass/Fail
1830	PEAK	45.2	25.2	4.1	-33.1	41.4	54	12.6	Pass
2745	PEAK	42.5	28.9	5.3	-33.1	43.6	54	10.4	Pass
3660	PEAK	40.4	30.2	6.6	-32.9	44.3	54	9.7	Pass

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Occupied Bandwidth

Purpose

The purpose of this test is to measure the bandwidth occupied.

Limits

No limit applies for 15.249, however the device must be within 902 to 928 MHz for 915MHz channel.

Method


For the 20 dB or occupied BW, FCC KDB 558074, Section 2.0 references ANSI C63.10 for occupied bandwidth. ANSI C63.10 Section 6.9.1 was used for occupied bandwidth.

Results

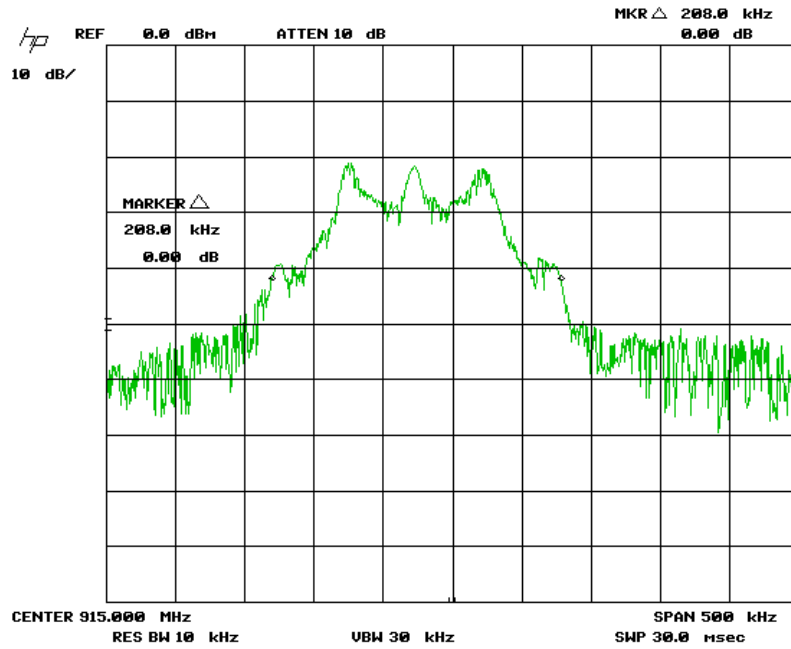
For information purposes, the 99% occupied BW was measured to be: 208 kHz for 915MHz channel and 10.7 kHz for 125 kHz channel.

Graph(s)

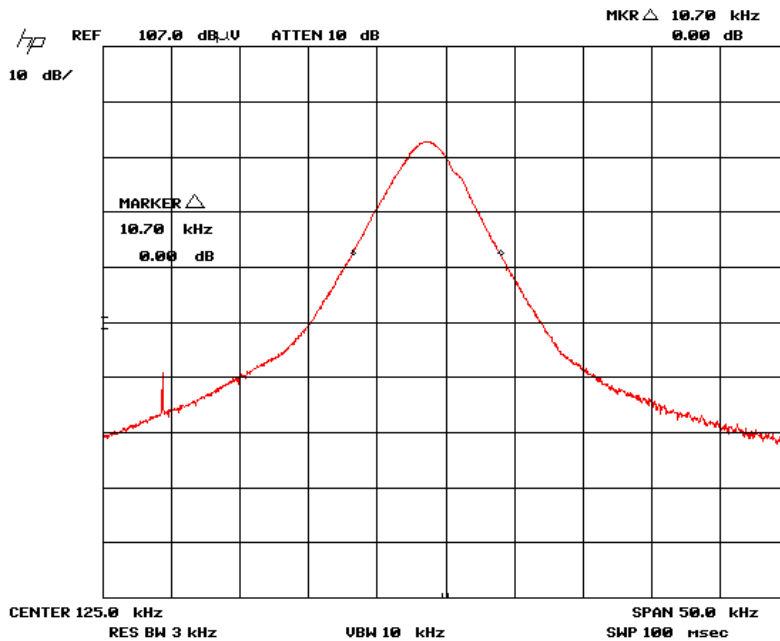
The graphs shown in next page show the max hold on the spectrum analyzer and the highest resolution bandwidth that is sufficiently low to exhibit the occupied bandwidth during operation of the EUT. This measurement is a peak measurement. Max hold is performed for a duration of not less than 1 minute.


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Occupied Bandwidth of 915MHz channel



Occupied Bandwidth of 125kHz channel




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Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration / Verification Date	Next Calibration / Verification Date	Asset #
Spectrum Analyzer Display	8566B	HP	1-28-15	1-28-17	4168
Spectrum Analyzer	8566B	HP	1-28-15	1-28-17	4169
Quasi Peak Adapter	85650A	HP	1-28-15	1-28-17	4170
Spectrum Analyzer	FSL6	Rohde & Schwarz	1-28-2016	1-28-2018	4095
Attenuator 10 dB	4779-10	narda	NCR	NCR	4096
BiLog Antenna	3142-C	ETS	9-8-15	9-8-17	8
Horn Antenna	ATH1G18G	AR	4-23-15	4-23-17	4003
Biconical Antenna	EM-6913	Electro-Metrics	4-28-15	4-28-17	4060
Log Periodic Antenna	LPA-25	Electro-Metrics	4-14-15	4-14-17	4087
Attenuator 3 dB	FP-50-3	Trilithic	NCR	NCR	4028
LNA pre-amp	LNA-1450	RF Bay Inc.	7-22-15	7-22-17	4089
1-26.5GHz preamp	8449B	Agilent	9-9-15	9-9-17	6351
RF Cable 10m	LMR-400-10M-50OHM-MN-MN	LexTec	NCR	NCR	4025
RF Cable 7m	LMR-400-7M-50OHM-MN-MN	LexTec	NCR	NCR	4026
Emission software	0.1.93	Global EMC	NCR	NCR	58

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Client	PROXIPI INC	
Product	Kit FLEX Magnetic Frame, model: KITFLEXGC	
Standard(s)	RSS-210 Issue 9 FCC Part 15 Subpart 15.249	

RF Exposure

Purpose

The purpose of this test is to ensure that the RF energy intentionally transmitted, in terms of power density emitted from the EUT at a stated operating distance does not exceed the limits listed below as defined in the applicable test standard, as calculated based upon readings obtained during testing. This helps protect human exposure to excessive RF fields.

Limits and Method

The limits, as defined in RSS-102, Section 2.5.1 Table 1 and in FCC 15.247(i) and FCC 1.1310 Table 1 (B), limits for general public exposure were applied. The limit for the frequency range of 300 MHz to 1.5 GHz and less than 0.3 MHz were applied. The distance used for calculations was 5mm.

Results

The EUT passed the requirements.

Calculations @915 MHz:

This device has a maximum measured field strength at 3 meters of:
95.4dBuV/m (EIRP = 0.2dBm = **1mW**).

As per RSS-102, Section 2.5.1, the limit for 915MHz obtained by linear interpolation at $\geq 50\text{mm}$ is 152.6 mW. This device is under limit for 50 mm, so it is for 20cm distance too.

As per FCC §1.1310 Table 1(B), the limit for MPE for General Population/Uncontrolled Exposure in the frequency range of 300 MHz to 1.5 GHz is:

$$f/1500 \text{ mW/cm}^2 = 915/1500 = 0.61\text{mW/cm}^2$$


The power density formula is given by:

$$P_d = (P_{\text{out}} * G) / (4 * \pi * R^2) = \text{EIRP} / (4 * \pi * R^2)$$

Where: P_d = Power density in mW/cm^2 , R = Separation distance in cm

Therefore for minimum of 20cm distance:

$$P_d = 1\text{mW} / (4 * 3.14 * 20^2) = 1 / 5026 \text{ mW/cm}^2 \\ = \mathbf{0.0002 \text{ mW/cm}^2} \text{ which is less than } 0.61\text{mW/cm}^2.$$

Client	PROXIPI INC	
Product	Kit FLEX Magnetic Frame, model: KITFLEXGC	
Standard(s)	RSS-210 Issue 9 FCC Part 15 Subpart 15.249	

Calculations @125 kHz

This device has a maximum measured field strength at 3 meters of:
125.5 dBuV/m ($EIRP_{dBm} = 125.5 - 95.2 = 30.3dBm$).

As per RSS-102, Section 4, Table 4, the RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment) for 3kHz to 10MHz are 83 (V/m)rms and 90(A/m) instantaneous, and the limit for 100kHz to 10MHz is $0.73/f$ (A/m)rms averaged over a 6 minute period.

Knowing the $EIRP_{dBm}$, the Electric field is calculated using the following formula:

$$E_{dBuV/m} = EIRP_{dBmW} + 104.77 - 20 * \text{Log}(D), \text{ D distance in meter.}$$

For a 20cm distance:

3kHz to 10MHz:

$$E_{dBuV/m} = 30.3 + 104.77 - 20 * \text{Log}(0.2) = 30.3 + 104.77 + 13.98 = 149.05 \text{ dBuV/m}$$

$$E_{(V/m)} = 10^{(149.05/20)} \times 10^{-6} = 28.5 \text{ V/m} = \mathbf{28.5 (V/m)}$$
 which is below 83(V/m).


$$H_{(A/m)} = E_{(V/m)} / 377 = \mathbf{0.08 (A/m)}$$
 which is less than 90 (A/m).

100kHz to 10MHz:

$$\text{The limit is } 0.73/f(\text{MHz}) = 0.73/0.125 = 5.84(\text{A/m})$$

The calculated magnetic field is 0.08 (A/m) which is less than 5.84 (A/m).

As per FCC §1.1310 Table 1(B), the limit for MPE is not applicable for frequencies below 0.3MHz.

Client	PROXIPI INC	
Product	Kit FLEX Magnetic Frame, model: KITFLEXGC	
Standard(s)	RSS-210 Issue 9 FCC Part 15 Subpart 15.249	

SPR-002: Supplementary Procedure for Assessing Compliance with RSS-102 Nerve Stimulation Exposure Limits

Purpose

The purpose of this test is to demonstrate compliance with nerve stimulation reference levels on a radio apparatus that operates between 3 kHz and 10 MHz


Limit(s) and Method

The limits, as defined in SPR-002 Table 2, Whole Body / Torso / Head limits for general public exposure was applied. The method used is the Direct Measurement as detailed in SPR-002 section: 6.6.1.1. The distance used for measurements was 20 cm, as this is the minimum distance an operator will be from the EUT during normal operation, as stated by the manufacturer.

Results

The EUT passed the requirements.


	Measured	Field Limit	Results
Magnetic Field (A/m r.m.s.)	54 A/m (67.97 μ T)	90	Pass
Electric Field (V/m r.m.s.)	75	83	Pass

Client	PROXIPI INC	
Product	Kit FLEX Magnetic Frame, model: KITFLEXGC	
Standard(s)	RSS-210 Issue 9 FCC Part 15 Subpart 15.249	


Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Exposure Level Tester	ELT-400	Narda	2017-07-27	2018-07-27	L-0044(*)
Magnetic Field Probe	100cm	Narda	2017-07-27	2018-07-27	L-0049(*)
Field probe	FL 7006	AR	2017-04-19	2019-04-19	4030
Field Mon.	FM7004	AR	NCR	NCR	4031

(*) Serial Number.
SPR-002_Nerve Stimulation Exposure_Rev 0

Client	PROXIPI INC	
Product	Kit FLEX Magnetic Frame, model: KITFLEXGC	
Standard(s)	RSS-210 Issue 9 FCC Part 15 Subpart 15.249	

Appendix A – EUT Summary

Client	PROXIPI INC	
Product	Kit FLEX Magnetic Frame, model: KITFLEXGC	
Standard(s)	RSS-210 Issue 9 FCC Part 15 Subpart 15.249	

For further details for filing purposes, refer to filing package.

General EUT Description

Client	
Organization / Address	PROXIPI INC, 5782 BOUL THIMENS, SAINT LAURENT, QC, H4R 2K9, Canada
Contact	Gilles Vaquin
Phone	514 333.0077 ext. 223
Email	gilles.vaquin@proxipi.com
EUT Details	
EUT Name	Kit FLEX Magnetic Frame, model: KITFLEXGC
FCC ID	2AIUY-KITFLEX
Industry Canada #	21748-KITFLEX
Equipment Category	
Basic EUT Functionality	The Kit FLEX Magnetic Frame, model: KITFLEXGC is used to avoid a collision between machines or pedestrian
Input Voltage and Frequency	Battery: 7Vdc
Rated Input Current	1 A
Connectors available on EUT	Connector to Electronic unit
Peripherals Required for Test	Electronic unit
Release type	
Intentional Radiator Frequency	125 kHz, 915 MHz
EUT Configuration	Wireless configured to transmit continuously.

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