



## Certification Test Report

**FCC ID: R7PER6R2S2  
IC: 5294A-ER6R2S2**

**FCC Rule Parts: 15.249  
ISED Canada Radio Standards Specification: RSS-210**

**Report Number: AT72169401-2C0**

**Manufacturer: Landis + Gyr Technology, Inc.  
Model: M125**

**Test Begin Date: May 10, 2021  
Test End Date: July 2, 2021**

**Report Issue Date: July 29, 2021**



FOR THE SCOPE OF ACCREDITATION UNDER Certificate Number: 2955.09

This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the Federal Government.

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**This report contains 23 pages**

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## 1 GENERAL

### 1.1 Purpose

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations and Innovation, Science and Economic Development Canada's Radio Standards Specification RSS-210 for certification.

### 1.2 Product description

The device is designed for gas meter reading. It has a 2-way radio operating in the 902-928 MHz LAN unlicensed frequency band. The main function of the radio is to measure, process, and send the data to the utility through Landis+Gyr's RF Mesh & Mesh IP networks.

#### Technical Information:

The model M125 provides 2 distinct modes of operation as outlined below.

Mode of Operation	Frequency Range (MHz)	Number of Channels	Channel Separation (kHz)	Data Rates Supported (kbps)
1	902.3 - 927.7	255	100	19.2
2	902.4 - 927.6	64	400	50

Modulation Format: FSK/GFSK

Antenna Type / Gain: Metal Planar inverted "F" type / 0 dBi

Voltage: 3.0 Vdc

#### Manufacturer Information:

Landis+Gyr Technology, Inc.  
30000 Mill Creek Ave., Suite 100  
Alpharetta, GA 30022

EUT Serial Numbers      Mode 1: E734Q203800087 (Radiated Emissions)  
                                  Mode 1: E734Q203800071 (RF Antenna Port Measurements)  
                                  Mode 2: E734Q203800079 (RF Antenna Port Measurements)

Test Sample Condition: The test samples were provided in good working order with no visible defects.

### **1.3 Test Methodology and Considerations**

All modes of operation, including all available data rates, were evaluated. The data presented in this report represents the worst case where applicable.

For radiated emissions, the EUT was evaluated in three orthogonal orientations. The worst-case orientation was X-position. See test setup photos for more information. The EUT was programmed to generate a continuously modulated signal on each channel evaluated.

The worst-case data rate and modes for the radiated emission measurements was 19.2kbps (Mesh) for all channels.

For measuring 20dB Bandwidth and 99% OBW tests, the EUT was connected to the measuring test equipment with a temporary antenna connector. The EUT was programmed to generate a continuously modulated signal on each channel evaluated.

The device is battery operated only, therefore AC power Line conducted emissions is not applicable.

For the purpose of evaluating the device under test, an external power supply was used to facilitate continuous test modes for 20dB Bandwidth and 99% OBW tests.

Software power setting during test:      All modes:      1CCC (Low Power in the software configuration)

## **2 TEST FACILITIES**

### **2.1 Location**

The radiated and conducted emissions test sites are located at the following addresses:

TÜV SÜD America, Inc.  
5945 Cabot Pkwy, Suite 100  
Alpharetta, GA 30005  
Phone: (678) 341-5900

### **2.2 Laboratory Accreditations/Recognitions/Certifications**

TÜV SÜD America, Inc. is accredited to ISO/IEC 17025 by the American Association for Laboratory Accreditation/A2LA accreditation program and has been issued certificate number 2955.09 in recognition of this accreditation.

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

The Semi-Anechoic Chamber Test Sites and Conducted Emissions Sites have been fully described, submitted to, and accepted by the FCC, ISED Canada and the Japanese Voluntary Control Council for Interference by information technology equipment.

FCC Designation Accreditation Number:	US1233
FCC Test Site Registration Number:	967699
ISED Canada Lab Code:	23932
VCCI Member Number:	1831
• VCCI Registration Number	A-0295

## 2.3 Radiated Emissions Test Site Description

### 2.3.1 Semi-Anechoic Chamber Test Site – Chamber A

The Semi-Anechoic Chamber Test Site consists of a 20' x 30' x 18' shielded enclosure. The chamber is lined with Toyo Ferrite Grid Absorber, model number FFG-1000. The ferrite tile grid is 101 x 101 x 19mm thick and weighs approximately 550 grams. These tiles are mounted on steel panels and installed directly on the inner walls of the chamber.

The turntable is 5' in diameter and is located 5'6" from the back wall of the chamber. The chamber is grounded via 1 - 8' copper ground rod, installed at the center of the back wall, it is bound to the ground plane using 3/4" stainless steel braided cable.

The turntable is all steel, flush mounted EMCO Model 1060 installed in an all steel frame. The table is remotely operated from inside the control room located 25' from the range. The turntable is electrically bonded to the surrounding ground plane via steel fingers installed on the edge of the turn table. The steel fingers make constant contact with the ground plane during operation.

Behind the turntable is a 3' x 6' x 4' deep shielded pit used for support equipment if necessary. The pit is equipped with 1 - 4" PVC chase from the turntable to the pit that allows for cabling to the EUT if necessary. The underside of the turntable can be accessed from the pit so cables can be supplied to the EUT from the pit.

The chamber rear wall is covered with a mixture of Siepel pyramidal absorber. The side walls of the chamber are partially covered with Siepel pyramidal absorber.

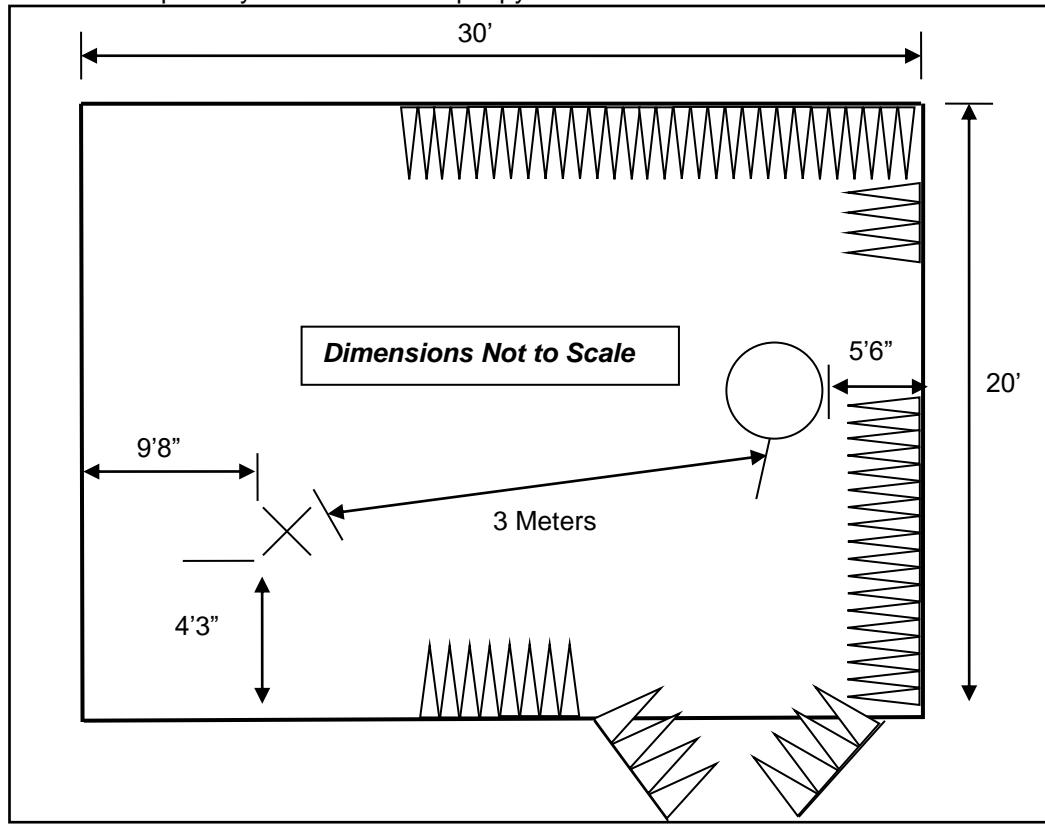


Figure 2.3.1-1: Semi-Anechoic Chamber Test Site – Chamber A

### 2.3.2 Semi-Anechoic Chamber Test Site – Chamber B

The Semi-Anechoic Chamber Test Site consists of a 20'W x 30'L x 20'H shielded enclosure. The chamber is lined with ETS-Lindgren Ferrite Absorber, model number FT-1500. The ferrite tile 600 mm x 600 mm (2.62 in x 23.62 in) panels and are mounted directly on the inner walls of the chamber shield.

The specular regions of the chamber are lined with additional ETS-Lindgren PS-600 hybrid absorber to extend its frequency range up to 18GHz and beyond.

The turntable is a 2m ETS-Lindgren Model 2170 and installed off the center axis is located 5'6" from the back wall of the chamber. The chamber is grounded via 1 - 8' copper ground rod, installed at the center of the back wall, it is bound to the shield using #8 solid copper wire.

The antenna mast is an EMCO 1060 and is remotely controlled from the control room for both antenna height and polarization.

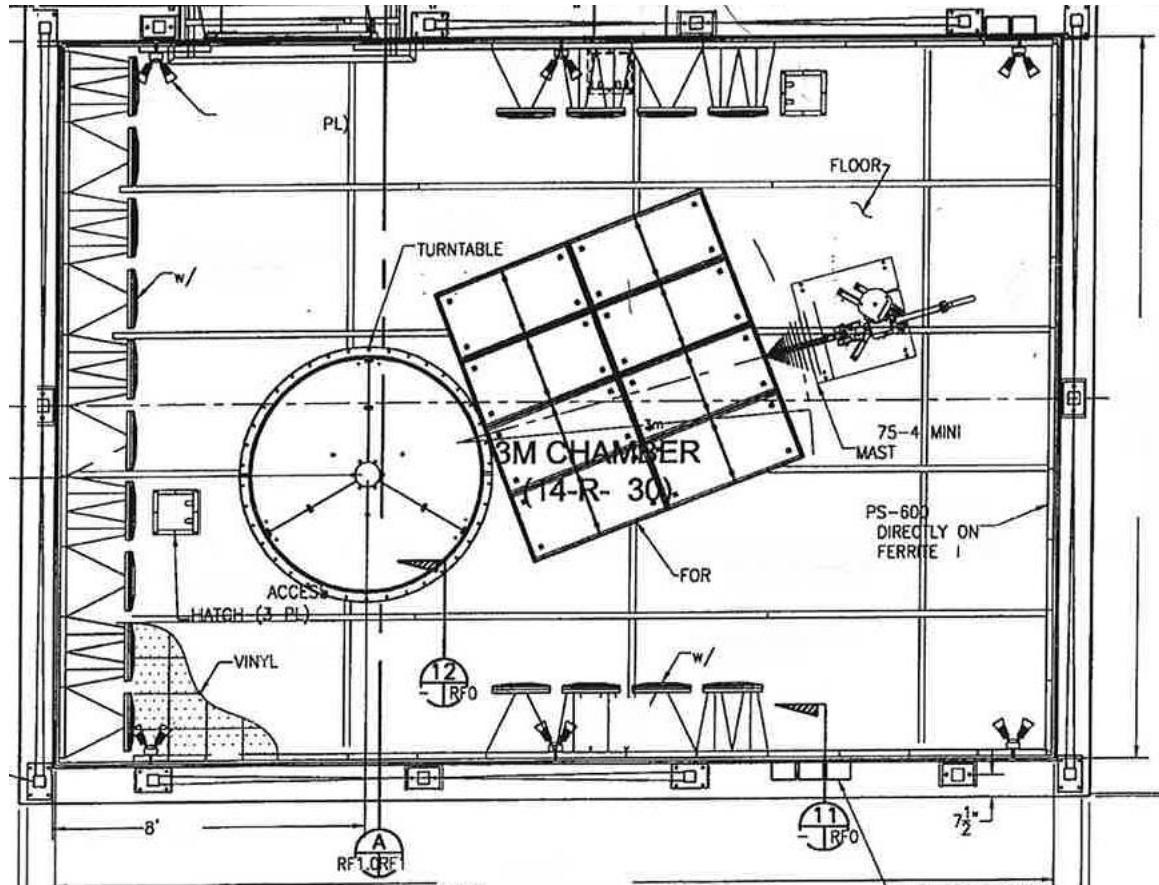


Figure 2.3.2-1: Semi-Anechoic Chamber Test Site – Chamber B

## 2.4 Conducted Emissions Test Site Description

### 2.4.1 Conducted Emissions Test Site

The AC mains conducted EMI site is located in the main EMC lab. It consists of a 12' x 10' horizontal coupling plane (HCP) as well as a 12'x8' vertical coupling plane (VCP). The HGP is constructed of 4' x 10' sheets of particle board sandwiched by galvanized steel sheets. These panels are bonded using 11AWG 1/8" x 2" by 10' galvanized sheet steel secured to the panels via screws. The VCP is constructed of three 4'x8' sheets of 11AWG solid aluminum.

The HCP and VCP are electrically bonded together using 1"x1" angled aluminum secured with screws.

The site is of sufficient size to test tabletop and floor standing equipment in accordance with section 6.1.4 of ANSI C63.10.

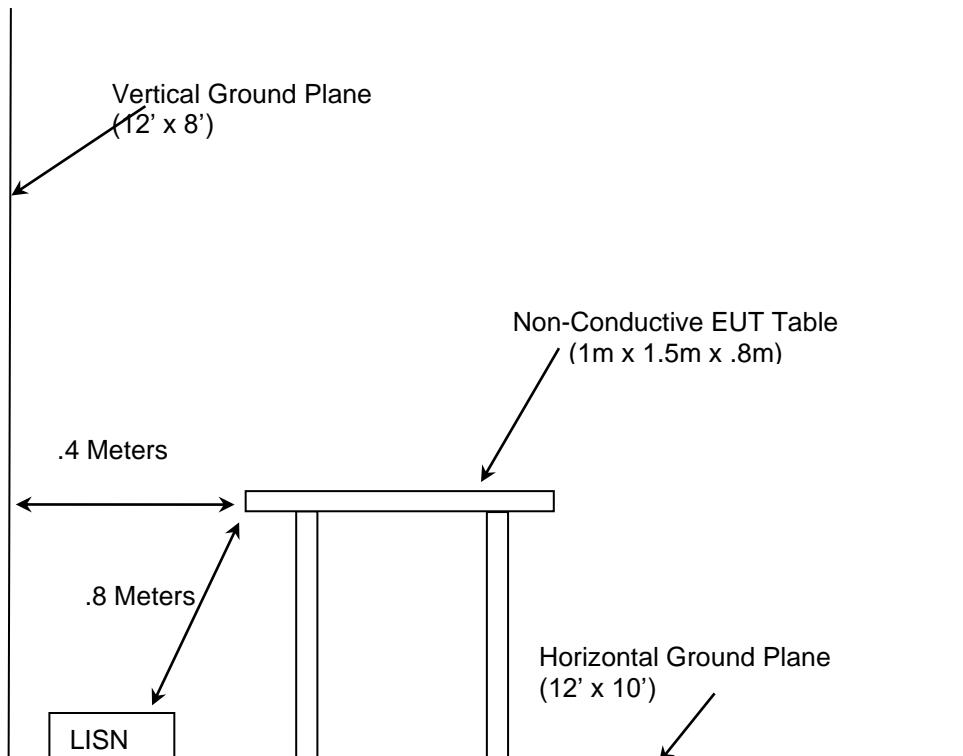


Figure 2.4.1-1: AC Mains Conducted EMI Site

### 3 APPLICABLE STANDARD REFERENCES

The following standards were used:

- ❖ ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.
- ❖ US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2021
- ❖ US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2021
- ❖ Innovation, Science and Economic Development Canada Radio Standards Specification: RSS-210 – License-Exempt Radio Apparatus: Category I Equipment, Issue 10, December 2019
- ❖ ISED Canada Radio Standards Specification: RSS-GEN – General Requirements for Compliance of Radio Apparatus, Issue 5, Amendment 1 (March 2019), Amendment 2 (February 2021)

### 4 LIST OF TEST EQUIPMENT

The calibration interval of test equipment is annually or the manufacturer's recommendations. Where the calibration interval deviates from the annual cycle based on the instrument manufacturer's recommendations, it shall be stated below.

**Table 4-1: Test Equipment**

Asset ID	Manufacturer	Model	Equipment Type	Serial Number	Last Calibration Date	Calibration Due Date
432	Microwave Circuits	H3G020G4	Highpass Filter	264066	06/09/2020	06/09/2021
432	Microwave Circuits	H3G020G4	Highpass Filter	264066	6/9/2021	6/9/2022
22	Hewlett Packard	8449B	High Frequency Pre-Amp	3008A00526	10/19/2020	10/19/2021
628	EMCO	6502	Active Loop Antenna 10kHz-30MHz	9407-2877	02/11/2019	05/11/2021
628	EMCO	6502	Active Loop Antenna 10kHz-30MHz	9407-2877	6/8/2021	6/8/2023
836	ETS Lindgren	SAC Cable Set	SAC Cable Set includes 620, 837, 838	N/A	05/11/2020	05/11/2021
836	ETS Lindgren	SAC Cable Set	SAC Cable Set includes 620, 837, 838	N/A	5/11/2021	5/11/2022
882	Rohde & Schwarz	ESW44	ESW44 EMI TEST RECEIVER	101961	07/28/2020	07/28/2021
857	ETS Lindgren	3117	Horn Antenna 1-18GHz	00153608	11/12/2019	11/12/2021
321	Hewlett Packard	HPC 8447D	Low Freq. Pre-Amp	1937AO2809	08/10/2020	08/10/2021
3161	Teseq; Huber+Suhner	CBL6112D;6804-17-A	Bilog Antenna; Attenuator	51323;01252019A	3/19/2021	3/19/2022
329	A.H.Systems	SAS-571	Horn Antenna	721	08/27/2019	08/27/2021
622	Rohde & Schwarz	FSV40 (v3.40)	FSV Signal Analyzer 10Hz to 40GHz	101338	08/24/2020	08/24/2021
827	Rohde & Schwarz	TS8997 Rack Cable Set	TS8997 Rack Cable Set	N/A	09/04/2020	09/04/2021
267	Hewlett Packard	N1911A	Power Meter	MY45100129	07/26/2019	07/26/2021

**NOTE: All test equipment was used only during active calibration cycles.**

## 5 SUPPORT EQUIPMENT

**Table 5-1: Support Equipment**

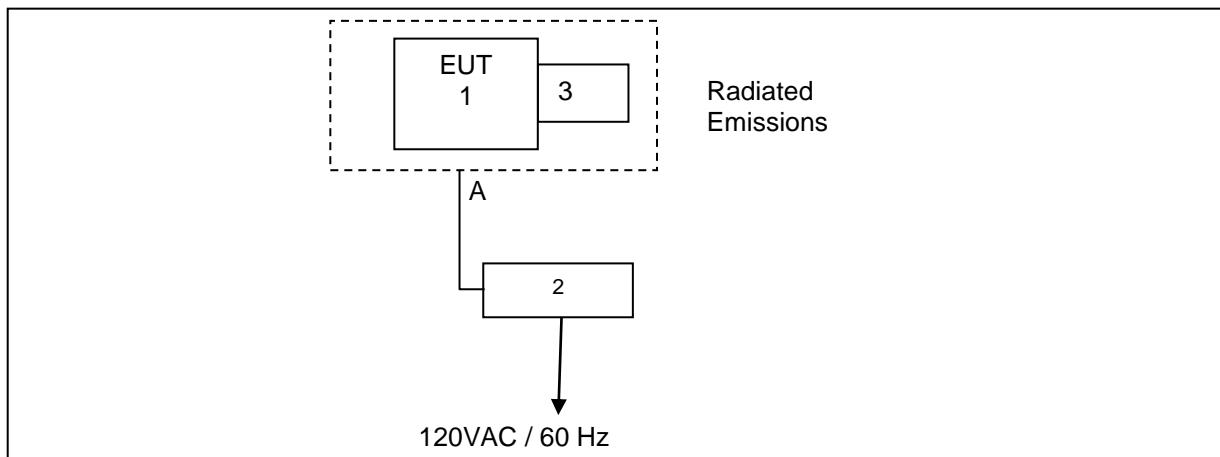
Item	Equipment Type	Manufacturer	Model Number	Serial Number
1	EUT	Landis + Gyr	M125	E734Q203800087 (1) E734Q203800071 (2) E734Q203800079 (3)
2	DC Power Supply	Hewlett Packard	6622A	3448A03980
3	Battery	N/A	N/A	N/A

- 1) Radiated Measurements
- 2) RF Antenna Port Measurements
- 3) RF Antenna Port Measurements

**Table 5-2: Cable Description**

Item	Cable Type	Length	Shield	Termination
A	DC Power Cable	2m	No	1 – 2

## 6 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM



**Figure 6-1: Test Setup Block Diagram**

## **7 SUMMARY OF TESTS**

Along with the tabular data shown below, plots were taken of all signals deemed important enough to document.

### **7.1 Antenna Requirement – FCC 15.203**

The EUT utilizes metal planar inverted “F” type antenna with 0 dBi gain which is mounted on the bottom side of the printed circuit board that serves as the ground plane, therefore satisfying the requirements of Section 15.203.

### **7.2 Power Line Conducted Emissions – FCC 15.207, ISED Canada: RSS-Gen 8.8**

#### **7.2.1 Measurement Procedure**

ANSI C63.10 section 6 was the guiding documents for this evaluation. Conducted emissions were performed from 150kHz to 30MHz with the spectrum analyzer's resolution bandwidth set to 9kHz and the video bandwidth set to 30kHz. The calculation for the conducted emissions is as follows:

**Corrected Reading = Analyzer Reading + LISN Loss + Cable Loss**

**Margin = Corrected Reading – Applicable Limit**

#### **7.2.2 Measurement Results**

**Note:** The EUT is a battery powered device with no provision for connection to the public utility mains, therefore AC Power Line Conducted Emissions is not applicable.

**7.3 20dB / 99% Bandwidth – FCC: Section 15.215, ISED Canada: RSS-Gen 4.6.1****7.3.1 Measurement Procedure**

The span of the spectrum analyzer display was set between two times and five times the occupied bandwidth (OBW) of the emission. The RBW of the spectrum analyzer was set to approximately 1 % to 5 % of the OBW. The trace was set to max hold with a peak detector active. The ndB down and delta function of the analyzer was utilized to determine the 20 dB bandwidth of the emission.

The occupied bandwidth measurement function of the spectrum analyzer was used to measure the 99% bandwidth. The span of the analyzer was set to capture all products of the modulation process, including the emission sidebands. The resolution bandwidth was set to 1% to 5% of the occupied bandwidth. The video bandwidth was set to 3 times the resolution bandwidth. A peak detector was used.

**7.3.2 Measurement Results**

Performed by: Divya Adusumilli

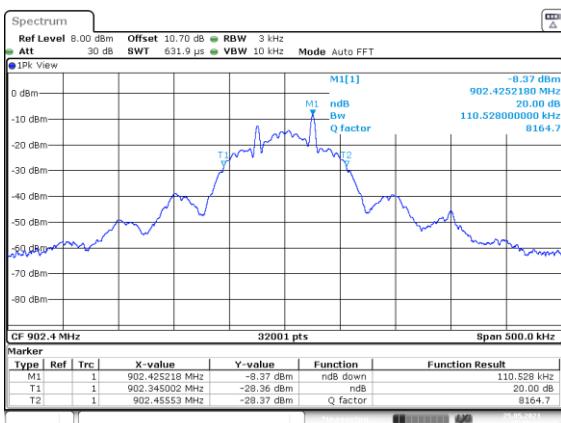
**Table 7.3.2-1: 20dB / 99% Bandwidth**

Frequency [MHz]	20dB Bandwidth [kHz]	99% Bandwidth [kHz]	Data Rate (kbps)	Mode(s)
902.3	42.462	45.411	19.2	1
902.4	110.528	112.543	50.0	2
915.0	42.083	45.749	19.2	1
915.2	110.872	111.731	50.0	2
927.7	42.064	42.683	19.2	1
927.6	110.840	111.824	50.0	2



Date: 25 MAY 2021 14:07:31

Figure 7.3.2-1: 20dB BW Low Channel – 19.2kbps



Date: 25 MAY 2021 15:45:04

Figure 7.3.2-2: 20 dB BW Low Channel – 50kbps



Date: 21 MAY 2021 15:44:31

Figure 7.3.2-3: 20dB BW Mid Channel – 19.2kbps



Date: 25 MAY 2021 15:46:51

Figure 7.3.2-4: 20dB BW Mid Channel – 50kbps

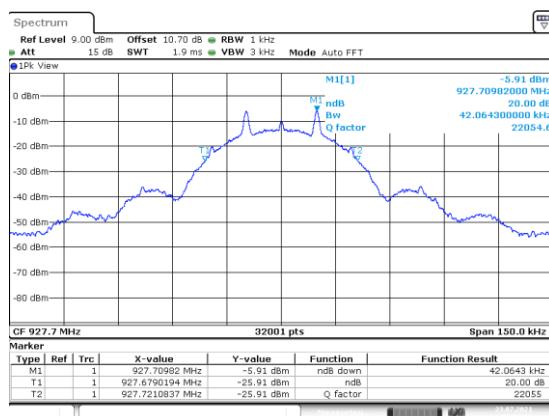
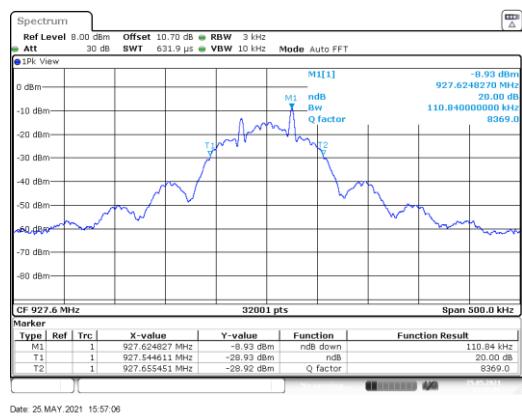
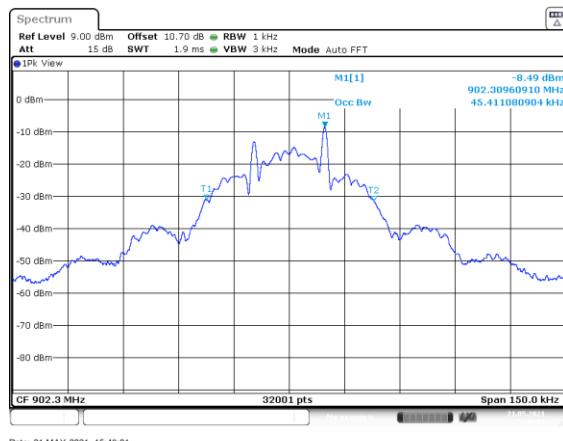


Figure 7.3.2-5: 20dB BW High Channel – 19.2kbps



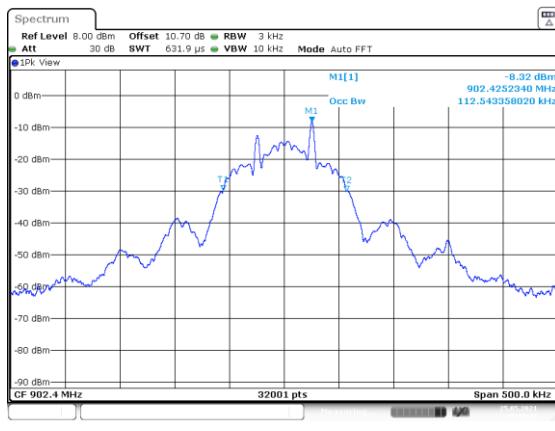
Date: 25 MAY 2021 15:57:06

Figure 7.3.2-6: 20dB BW High Channel – 50kbps



Date: 21 MAY 2021 15:48:01

Figure 7.3.2-7: 99% BW Low Channel – 19.2kbps



Date: 25 MAY 2021 15:43:44

Figure 7.3.2-8: 99% BW Low Channel – 50kbps



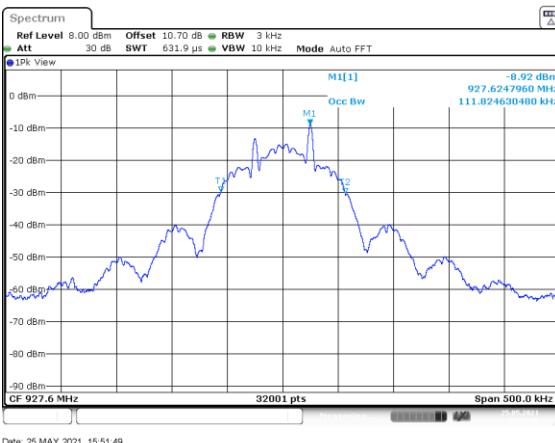
Date: 21 MAY 2021 15:29:21

Figure 7.3.2-9: 99% BW Mid Channel – 19.2kbps



Date: 25 MAY 2021 15:49:05

Figure 7.3.2-10: 99% BW Mid Channel – 50kbps



Date: 25 MAY 2021 15:51:49

Figure 7.3.2-11: 99% BW High Channel – 19.2kbps

Figure 7.3.2-12: 99% BW High Channel – 50kbps

## 7.4 Fundamental Field Strength – FCC: Section 15.249(a), ISED Canada: RSS-210 B.10

### 7.4.1 Measurement Procedure

The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. Quasi-peak measurements were made with RBW and VBW of 120 kHz and 300 kHz respectively.

### 7.4.2 Measurement Results

Performed By: Divya Adusumilli

**Table 7.4.2-1: Fundamental Field Strength**

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
902.3	-----	83.00	H	1.68	-----	84.68	-----	94.0	-----	9.3
902.3	-----	83.40	V	1.68	-----	85.08	-----	94.0	-----	8.9
915	-----	88.10	H	1.50	-----	89.60	-----	94.0	-----	4.4
915	-----	86.80	V	1.50	-----	88.30	-----	94.0	-----	5.7
927.7	-----	89.10	H	1.55	-----	90.65	-----	94.0	-----	3.3
927.7	-----	87.70	V	1.55	-----	89.25	-----	94.0	-----	4.7

**7.5 Radiated Spurious Emissions – FCC: Section 15.249(a)(d)(e), ISED Canada: RSS-210 B.10****7.5.1 Measurement Procedure**

Section 15.33(a)(4) specifies, if the intentional radiator contains a digital device, regardless of whether this digital device controls the functions of the intentional radiator or the digital device is used for additional control or function purposes other than to enable the operation of the intentional radiator, the frequency range shall be investigated up to frequency specified in 15.33(b)(1) for unintentional radiators. The upper frequency range for the digital device is 18GHz which greater than the 10<sup>th</sup> harmonic of the fundamental frequency. The upper frequency range measured was 18GHz.

Measurements below 30MHz were performed in a semi-anechoic chamber with a 3meter separation distance between the EUT and measurement antenna. The EUT was rotated 360° and the loop antenna rotated through three orthogonal axes. The magnetic loop receiving antenna was positioned with its lowest point 1 meter above the ground.

The spectrum analyzer's resolution and video bandwidth were set to 200 Hz and 1 kHz respectively for frequencies below 150 kHz and 9 kHz and 30 kHz respectively for frequencies above 150 kHz and below 30 MHz For measurements in the frequency bands 9-90 kHz and 110-490 kHz, a peak detector was used. When average measurements are specified, the peak emissions were also compared to a limit corresponding to 20 dB above the maximum permitted average limit according to Part 15.35. All other emissions were measured using a peak detector.

Measurements above 30 MHz were performed in a semi-anechoic chamber with a 3meter separation distance between the EUT and measurement antenna. The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. For frequencies below 1000 MHz, quasi-peak measurements were made using a resolution bandwidth (RBW) of 120 kHz and a video bandwidth (VBW) of 300 kHz. For frequencies above 1000 MHz, peak and average measurements were made using a resolution bandwidth (RBW) of 1 MHz and a video bandwidth (VBW) of 3 MHz. See Appendix A for more information.

For measurements of fundamental emissions where average measurements are specified, the spectrum analyzer's resolution bandwidth (RBW) was adjusted equal to or greater than the emission bandwidth (EBW).

**7.5.1.1 Distance Correction for Measurements Below 30 MHz – Part 15.31**

Radiated measurements were performed at a distance closer than 300 meters and 30m as required, according to Part 15. 209. Therefore a correction factor was applied to account for propagation loss at the specified distance. The propagation loss was determined by using the square of an inverse linear distance extrapolation factor (40dB/decade) according to 15.31. A sample calculation of the distance correction factor is shown below for limits expressed at a 300m measurement distance and a 30m measurement distance.

$$\begin{aligned}\text{Distance correction factor (300m Specified Test Distance)} &= 40 \cdot \log(\text{Test Distance}/300) \\ &= 40 \cdot \log(3/300) \\ &= -80 \text{ dB}\end{aligned}$$

$$\begin{aligned}\text{Distance correction factor (30m Specified Test Distance)} &= 40 \cdot \log(\text{Test Distance}/30) \\ &= 40 \cdot \log(3/30) \\ &= -40 \text{ dB}\end{aligned}$$

## 7.5.1.2 Measurement Results

Performed by: Divya Adusumilli

Table 7.5.1.2-1: Radiated Spurious Emissions

Frequency (MHz)	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg			pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Frequency 902.3 MHz - Low Channel										
120.351	-----	15.10	H	-8.69	-----	6.41	-----	43.5	-----	37.1
120.522	-----	28.40	V	-8.69	-----	19.71	-----	43.5	-----	23.8
133.821	-----	16.10	H	-9.11	-----	6.99	-----	43.5	-----	36.5
133.684	-----	34.60	V	-9.09	-----	25.51	-----	43.5	-----	18.0
261.2	-----	42.50	H	-6.78	-----	35.72	-----	46.0	-----	10.3
261.2	-----	38.00	V	-6.78	-----	31.22	-----	46.0	-----	14.8
269.67	-----	39.7	H	-7.38	-----	32.32	-----	46.0	-----	13.7
269.26	-----	33.3	V	-7.35	-----	25.95	-----	46.0	-----	20.0
3278.62	33.92	21.8	H	1.10	35.02	22.90	74.0	54.0	39.0	31.1
3278.54	33.7	22	V	1.10	34.80	23.10	74.0	54.0	39.2	30.9
8465.43	35.3	25	H	12.35	47.65	37.35	74.0	54.0	26.3	16.6
8464.3	35.2	24.8	V	12.35	47.55	37.15	74.0	54.0	26.4	16.8
9952.7	39.2	26.5	H	13.90	53.10	40.40	74.0	54.0	20.9	13.6
9953.08	38.3	25.3	V	13.90	52.20	39.20	74.0	54.0	21.8	14.8
Frequency 915 MHz - Mid Channel										
121.375	-----	13.5	H	-8.67	-----	4.83	-----	43.5	-----	38.7
121.466	-----	28.3	V	-8.67	-----	19.63	-----	43.5	-----	23.9
133.12	-----	23.7	H	-9.05	-----	14.65	-----	43.5	-----	28.8
132.69	-----	34	V	-9.02	-----	24.98	-----	43.5	-----	18.5
269.971	-----	41.7	H	-7.40	-----	34.30	-----	46.0	-----	11.7
269.185	-----	35.5	V	-7.34	-----	28.16	-----	46.0	-----	17.8
328.874	-----	32.2	H	-6.63	-----	25.57	-----	46.0	-----	20.4
328.73	-----	34.2	V	-6.64	-----	27.56	-----	46.0	-----	18.4
4285.75	38.76	33.5	H	4.30	43.06	37.80	74.0	54.0	30.9	16.2
4285.75	38.6	33.2	V	4.30	42.90	37.50	74.0	54.0	31.1	16.5
7728.45	39.1	22.8	H	11.76	50.86	34.56	74.0	54.0	23.1	19.4
7728.45	39.4	25	V	11.76	51.16	36.76	74.0	54.0	22.8	17.2
Frequency 927.7 MHz - High Channel										
121.31	-----	21.56	H	-8.67	-----	12.89	-----	43.5	-----	30.6
120.51	-----	28.80	V	-8.69	-----	20.11	-----	43.5	-----	23.4
135	-----	27.65	H	-9.20	-----	18.45	-----	43.5	-----	25.1
134.58	-----	33.80	V	-9.17	-----	24.63	-----	43.5	-----	18.9
262.1	-----	40.80	H	-6.85	-----	33.95	-----	46.0	-----	12.0
261.54	-----	38.7	V	-6.81	-----	31.89	-----	46.0	-----	14.1
268.32	-----	41.3	H	-7.28	-----	34.02	-----	46.0	-----	12.0
269.47	-----	41.9	V	-7.36	-----	34.54	-----	46.0	-----	11.5
328.1	-----	38.6	H	-6.66	-----	31.94	-----	46.0	-----	14.1
326.92	-----	40.3	V	-6.69	-----	33.61	-----	46.0	-----	12.4
3169.56	39.5	28.5	H	0.96	40.46	29.46	74.0	54.0	33.5	24.5
3169.56	39.2	27.5	V	0.96	40.16	28.46	74.0	54.0	33.8	25.5
9746.25	38.1	27.3	H	13.83	51.93	41.13	74.0	54.0	22.1	12.9
9746.25	38.5	27.3	V	13.83	52.33	41.13	74.0	54.0	21.7	12.9

**Sample Calculation:**

$$R_C = R_U + CF_T$$

Where:

$CF_T$  = Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)

$R_U$  = Uncorrected Reading

$R_C$  = Corrected Level

AF = Antenna Factor

CA = Cable Attenuation

AG = Amplifier Gain

DC = Duty Cycle Correction Factor

**Example Calculation: Peak**

Corrected Level:  $39.40 + 11.76 = 51.16$  dBuV

Margin:  $74$  dBuV –  $51.16$  dBuV =  $22.80$  dB

**Example Calculation: Quasi -Peak**

Corrected Level:  $42.50 + -6.78 = 35.72$  dBuV/m

Margin:  $46$  dBuV/m –  $35.72$  dBuV/m =  $10.3$  dB

## 8 ESTIMATION OF MEASUREMENT UNCERTAINTY

The expanded laboratory measurement uncertainty figures ( $U_{\text{Lab}}$ ) provided below correspond to an expansion factor (coverage factor)  $k = 1.96$  which provide confidence levels of 95%.

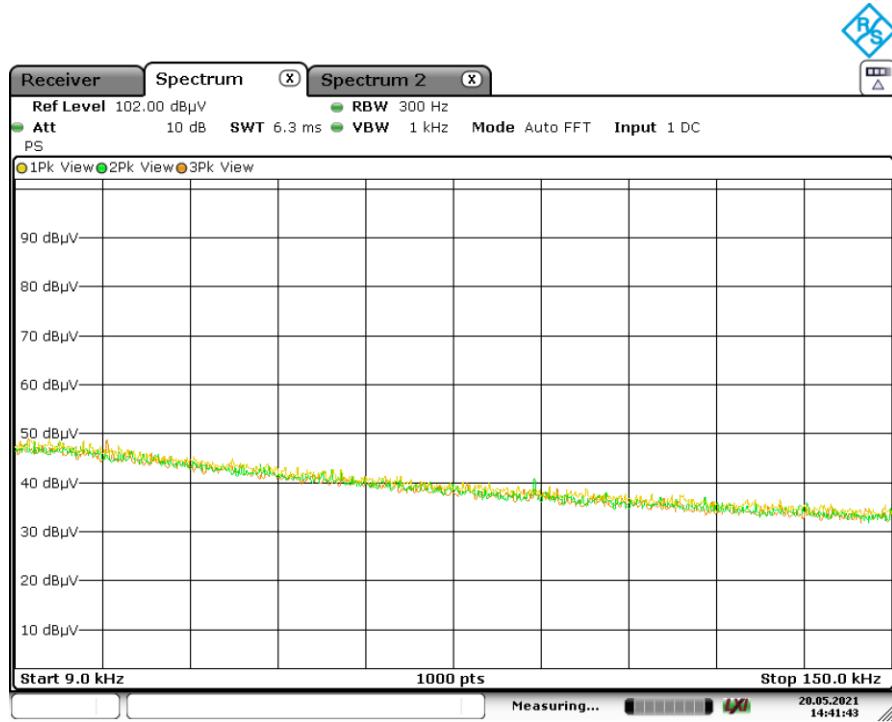
**Table 8-1: Estimation of Measurement Uncertainty**

Parameter	$U_{\text{lab}}$
Occupied Channel Bandwidth	$\pm 0.009 \%$
RF Conducted Output Power	$\pm 0.349 \text{ dB}$
Power Spectral Density	$\pm 0.372 \text{ dB}$
Antenna Port Conducted Emissions	$\pm 1.264 \text{ dB}$
Radiated Emissions $\leq 1 \text{ GHz}$	$\pm 5.814 \text{ dB}$
Radiated Emissions $> 1 \text{ GHz}$	$\pm 4.318 \text{ dB}$
Temperature	$\pm 0.860 \text{ }^{\circ}\text{C}$
Radio Frequency	$\pm 2.832 \times 10^{-8}$
AC Power Line Conducted Emissions	$\pm 3.360 \text{ dB}$

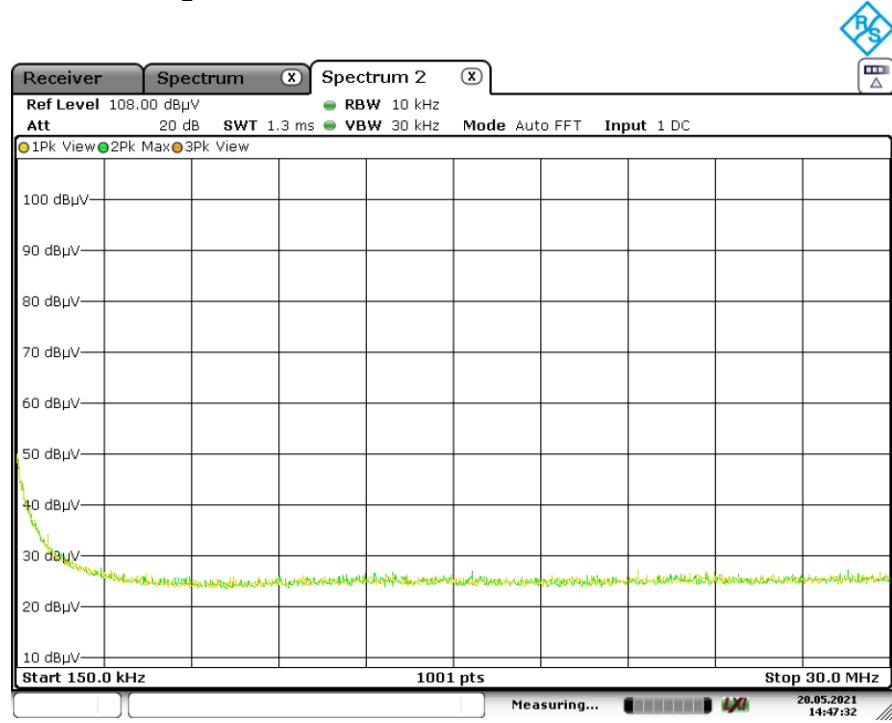
## 9 CONCLUSION

In the opinion of TUV SUD the Model M125, manufactured by Landis+Gyr meets the requirements of the FCC's Code of Federal Regulations Part 15 Subpart C and Innovation, Science and Economic Development Canada's Radio Standards Specification RSS-210 for the tests documented in this test report.

## **Appendix A: Plots**



Date: 20.MAY.2021 14:41:44

**Figure A-1: Radiated Emissions – 9kHz-150kHz**

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**Figure A-2: Radiated Emissions – 150kHz-30MHz**

Note: Emissions above the noise floor are ambient not associated with the EUT.

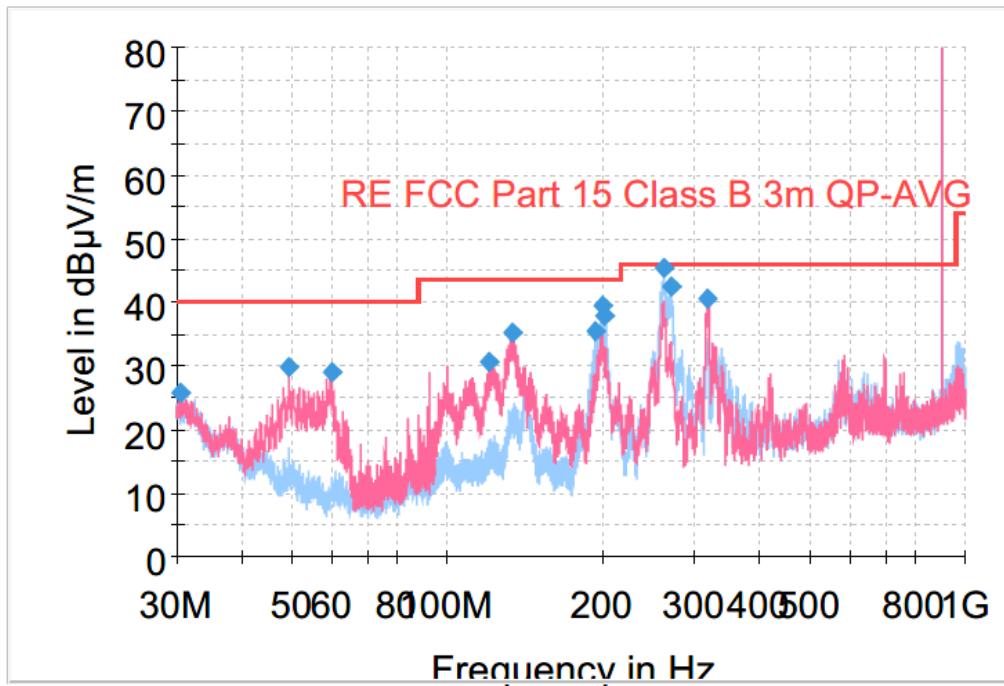


Figure A-3: Radiated Emissions – 30MHz-1GHz

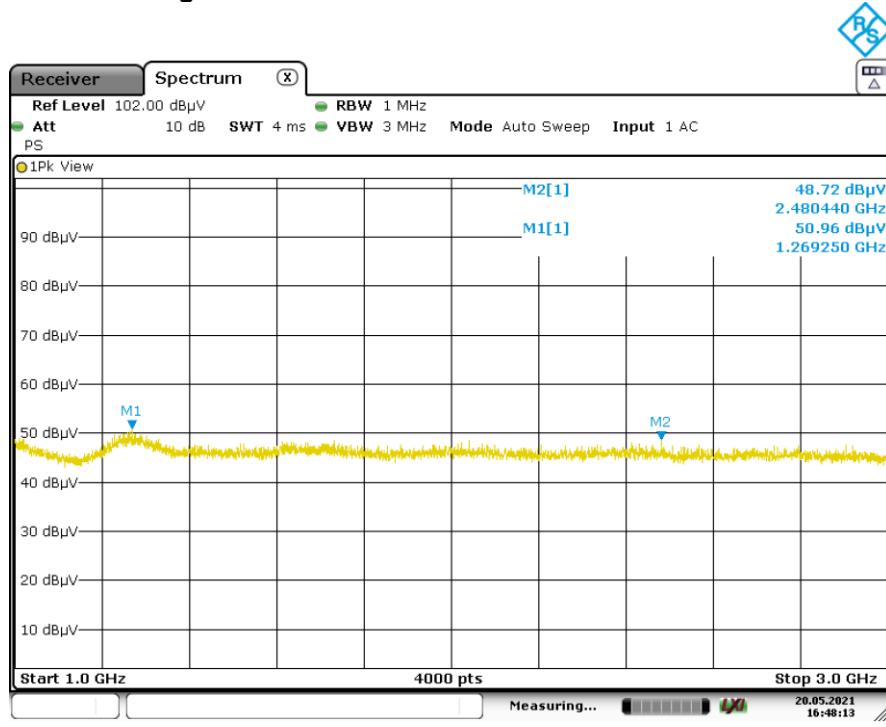
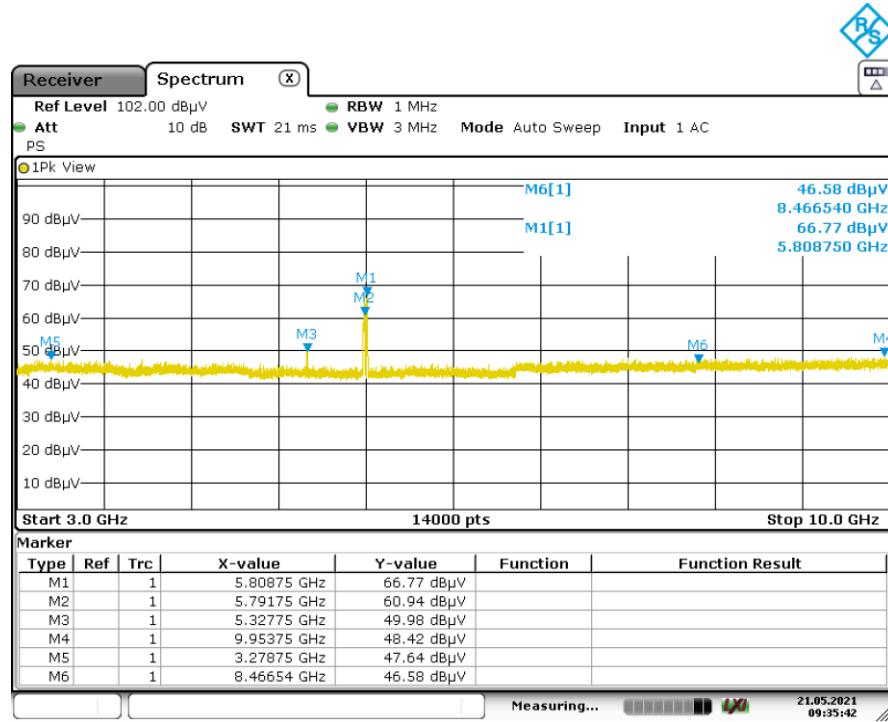


Figure A-4: Radiated Emissions – 1GHz-3GHz



**Figure A-5: Radiated Emissions – 3GHz-10GHz**

**Note: Emissions in and around 5GHz are ambient noise and not associated with the EUT.**

**END REPORT**