Amber Helm Development L.C.
92723 Michigan Hwy-152
Sister Lakes, Michigan 49047 USA
Tel: 888-847-8027

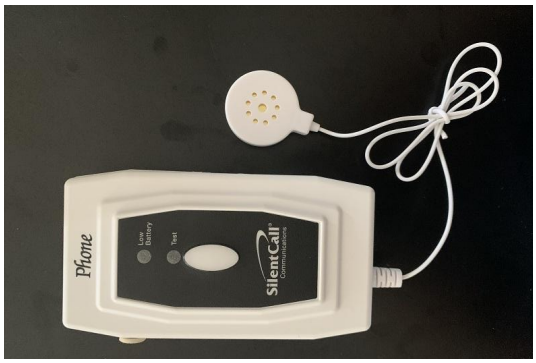
2002454TX
Issued: **December 15, 2020**

EMC Test Report

regarding

USA: CFR Title 47, Part 15.231 (Emissions)
Canada: IC RSS-210v10/GENv5 (Emissions)

for



CEL-MC

Category: Remote Control Transmitter

Judgments:
15.231 / RSS-210v10 Compliant
Testing Completed: December 15, 2020

NVLAP®
TESTING
NVLAP LAB CODE 200129-0

Prepared for:

Silent Call Communications

5095 Williams Lake Rd., Waterford Michigan 48329 USA
Phone: (800) 572-5227, Fax: (248) 673-7360
Contact: George Elwell, sales@silentcall.com

Data Recorded by: Gordon L. Helm
Gordon Helm, EMC-002401-NE

Reviewed by: Gordon L. Helm
Gordon Helm, EMC-002401-NE

Prepared by:
Dr. Joseph Brunett, EMC-002790-NE

Date of Issue: December 15, 2020

Revision History

Rev. No.	Date	Details	Revised By
r0	December 15, 2020	Initial Release.	J. Brunett

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1 Test Report Scope and Limitations

1.1 Laboratory Authorization

Test Facility description and attenuation characteristics are on file with the FCC Laboratory, Columbia, Maryland (FCC Reg. No: US5348 and US5356) and with ISED Canada, Ottawa, ON (File Ref. No: 3161A and 24249). Amber Helm Development L.C. holds accreditation under NVLAP Lab Code 200129-0.

1.2 Report Retention

For equipment verified to comply with the regulations herein, the manufacturer is obliged to retain this report with the product records for the life of the product, and no less than ten years. A copy of this Report will remain on file with this laboratory until January 2031.

1.3 Subcontracted Testing

This report does not contain data produced under subcontract.

1.4 Test Data

This test report contains data included within the laboratories scope of accreditation.

1.5 Limitation of Results

The test results contained in this report relate only to the item(s) tested. Any electrical or mechanical modification made to the test item subsequent to the test date shall invalidate the data presented in this report. Any electrical or mechanical modification made to the test item subsequent to this test date shall require reevaluation.

1.6 Copyright

1.7 Endorsements

This report shall not be used to claim product endorsement by any accrediting, regulatory, or governmental agency.

1.8 Test Location

The EUT was fully tested by **Amber Helm Development L.C.**, headquartered at 92723 Michigan Hwy-152, Sister Lakes, Michigan 49047 USA. Table 1 lists all sites employed herein. Specific test sites utilized are also listed in the test results sections of this report where needed.

Table 1: Test Site List.

Description	Location	Quality Num.
OATS (3m & 10m)	92723 Michigan Hwy-152, Sister Lakes, Michigan 49047 USA	OATSA

1.9 Traceability and Equipment Used

Pertinent test equipment used for measurements at this facility is listed in Table 2. The quality system employed at Amber Helm Development L.C. has been established to ensure all equipment has a clearly identifiable classification, calibration expiry date, and that all calibrations are traceable to the SI through NIST, other recognized national laboratories, accepted fundamental or natural physical constants, ratio type of calibration, or by comparison to consensus standards.

Table 2: Equipment List.

Description	Manufacturer/Model	SN	Quality Num.	Cal/Ver By / Date Due
EMI Receiver	HP / 85460A/85462A	3704A00422, 3807A00465	HP8546A	Std and Cal / Jul-2021
LISN	Solar / 8012-50-R-24-BNC	962138	LISN7	AHD / April-2021
BiconiLog Antenna	EMCO / 3142	1169	BILO3142	Lib.Labs / Aug-2022
(3m) LMR-400 Coax	AHD / LMR400	C090804	LMR400	AHD / Mar-2021
(LCI) DS Coax	AHD / RG58/U	920809	RG58U	AHD / Feb-2021
Double Ridged Horn	EMCO / 3115	2788	RH3115	Lib.Labs. / Feb-2021

2 Test Specifications and Procedures

2.1 Test Specification and General Procedures

The goal of Silent Call Communications is to demonstrate that the Equipment Under Test (EUT) complies with the Rules and/or Directives below. Detailed in this report are the results of testing the Silent Call Communications CEL-MC for compliance to:

Country/Region	**Rules or Directive**	**Referenced Section(s)**
United States	Code of Federal Regulations	CFR Title 47, Part 15.231
Canada	ISED Canada	IC RSS-210v10/GENv5

It has been determined that the equipment under test is subject to the rules and directives above at the date of this testing. In conjunction with these rules and directives, the following specifications and procedures are followed herein to demonstrate compliance (in whole or in part) with these regulations.

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 of Procedures for Compliance Testing of Unlicensed Wireless Devices"
TP0102RA	"AHD Internal Document TP0102 - Radiated Emissions Test Procedure"
ISED Canada	"The Measurement of Occupied Bandwidth"
ICES-003; Issue 7 (2020)	"Information Technology Equipment (ITE) - Limits and methods of measurement"

3 Configuration and Identification of the Equipment Under Test

3.1 Description and Declarations

The equipment under test is a remote control transmitter. The EUT is approximately 12.5 x 6.3 x 2.9 cm in dimension, and is depicted in Figure 1. It is powered by 3 VDC Alkaline batteries. In use, this device is a transceiver intended for assisting deft persons in a residential location to know of an incoming phone or cellular phone ringer by sound trigger, sending a remote control code to a body worn receiver with vibration alarm functionality. Table 3 outlines provider declared EUT specifications.

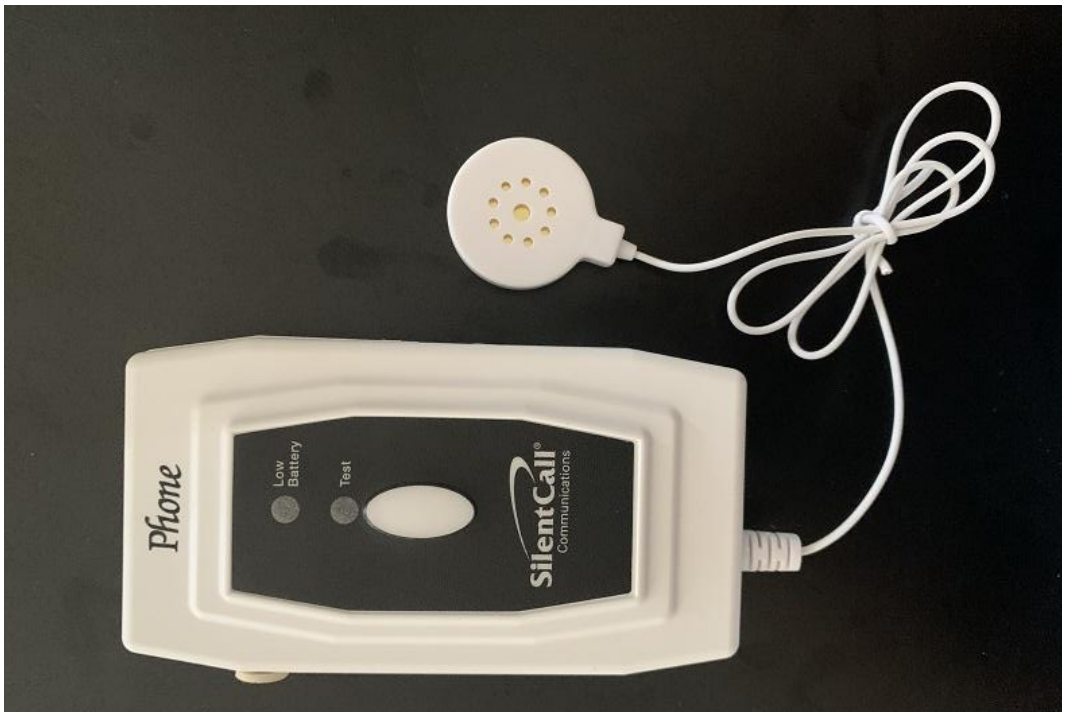


Figure 1: Photos of EUT.

Table 3: EUT Declarations.

General Declarations	
Equipment Type:	Remote Control Transmitter
Country of Origin:	Not Declared
Nominal Supply:	3 VDC
Oper. Temp Range:	Not Declared
Frequency Range:	418 MHz
Antenna Dimension:	Not Declared
Antenna Type:	Wire
Antenna Gain:	Integral
Number of Channels:	1
Channel Spacing:	Not Applicable
Alignment Range:	Not Declared
Type of Modulation:	OOK
United States	
FCC ID Number:	PPJSCXMIT13
Classification:	DSC
Canada	
IC Number:	4498A-SCXMIT13
Classification:	Remote Control Device

3.1.1 EUT Configuration

The EUT is configured for testing as depicted in Figure 2.

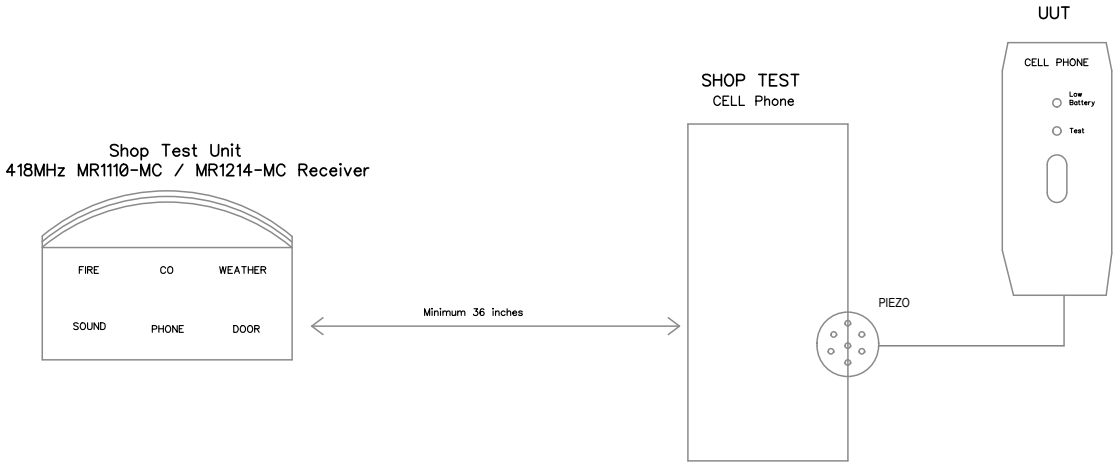


Figure 2: EUT Test Configuration Diagram.

3.1.2 Modes of Operation

The EUT is capable of two primary modes of operation. **Test Mode**: When the test button is depressed, a 418MHz RF signal is transmitted to program or test the MR1110-MC / MR1214-MC 418MHz receiver. The initial 418MHz RF signal is transmitted with 32 data words at 105ms between leading edge of each data word. If the test button remains depressed, transmissions will continue 2 seconds after initial burst with 8 data words, 105ms between leading edge of each data word. After the 8 data words are sent, transmission will cease for two seconds and repeat with

2 seconds off between each of the 8 transmitted data words. Transmissions will cease once test button is released. **Vibration Detection Mode**: Vibrations from an incoming call are detected by a piezo sensor placed on or under a Cell Phone. The vibration pulses detected will be processed by the CEL-MC transmitter. If vibration signal is valid, a 418MHz RF signal will be transmitted to alert a preprogrammed MR1110-MC / MR1214-MC receiver. When valid pulse is detected, 32 repeats of the data word are sent at 105ms between leading edge of each data word and vibration sensor is disabled for 2 seconds. If additional valid vibration input happens after that, 32 repeats of data word are sent. Cycle repeats until no further vibration input.

3.1.3 Variants

There is only a single variant of the EUT, as tested.

3.1.4 Test Samples

Three (3) samples of the EUT were provided, including one normal operating sample, one CW sample, and one sample for photos.

3.1.5 Functional Exerciser

Normal operating EUT functionality was verified by observation of transmitted signal.

3.1.6 Modifications Made

There were no modifications made to the EUT by this laboratory. However, the manufacturer adjusted resistor value R7 = 2.2 kOhms to bring the EUT into compliance with the fundamental emission limit.

3.1.7 Production Intent

The EUT appears to be a production ready sample.

3.1.8 Declared Exemptions and Additional Product Notes

None.

4 Emissions

4.1 General Test Procedures

4.1.1 Radiated Test Setup and Procedures

Radiated electromagnetic emissions from the EUT are first pre-scanned in our screen room. Spectrum and modulation characteristics of all emissions are recorded. Instrumentation, including spectrum analyzers and other test equipment as detailed in Section 1.8 are employed. After pre-scan, emission measurements are made on the test site of record. If the EUT connects to auxiliary equipment and is table or floor standing, the configurations prescribed in relevant test standards are followed. Alternatively, a layout closest to normal use (as declared by the provider) is employed if the resulting emissions appear to be worst-case in such a configuration. See Figure 3. All intentionally radiating elements that are not fixed-mounted in use are placed on the test table lying flat, on their side, and on their end (3-axes) and the resulting worst case emissions are recorded. If the EUT is fixed-mounted in use, measurements are made with the device oriented in the manner consistent with installation and then emissions are recorded. If the EUT exhibits spurious emissions due to internal receiver circuitry, such emissions are measured with an appropriate carrier signal applied.

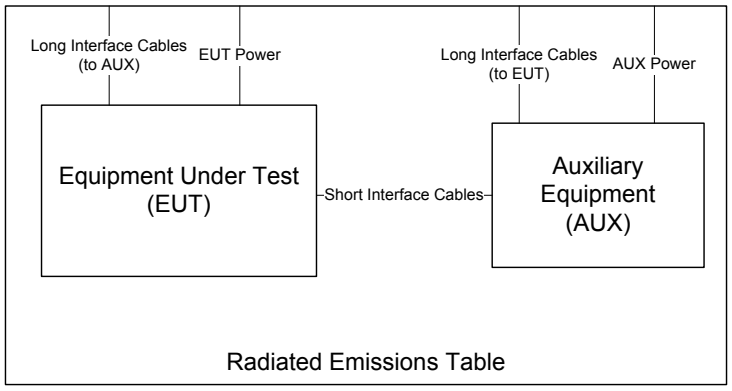


Figure 3: Radiated Emissions Diagram of the EUT.

For devices with intentional emissions below 30 MHz, a shielded loop antenna and/or E-field and H-Field broadband probes are used depending on the regulations. Shielded loops are placed at a 1 meter receive height at the desired measurement distance. For exposure in this band, the broadband probes employed are 10cm diameter single-axis shielded transducers and measurements are repeated and summed over three axes.

Emissions between 30 MHz and 1 GHz are measured using calibrated broadband antennas. For both horizontal and vertical polarizations, the test antenna is raised and lowered from 1 to 4 m in height until a maximum emission level is detected. The EUT is then rotated through 360^o in azimuth until the highest emission is detected. The test antenna is then raised and lowered one last time from 1 to 4 m and the worst case value is recorded. Emissions above 1 GHz are characterized using standard gain or broadband ridge-horn antennas on our OATS with a 4×5 m rectangle of ECCOSORB absorber covering the OATS ground screen and a 1.5m table height. Care is taken to ensure that test receiver resolution and video bandwidths meet the regulatory requirements, and that the emission bandwidth of the EUT is not reduced. Photographs of the test setup employed are depicted in Figure 4.

Where regulations allow for direct measurement of field strength, power values (dBm) measured on the test receiver / analyzer are converted to dBμV/m at the regulatory distance, using

$$E_{dist} = 107 + P_R + K_A - K_G + K_E - C_F$$

where P_R is the power recorded on spectrum analyzer, in dBm, K_A is the test antenna factor in dB/m, K_G is the combined pre-amplifier gain and cable loss in dB, K_E is duty correction factor (when applicable) in dB, and C_F is a distance conversion (employed only if limits are specified at alternate distance) in dB. This field strength value is then compared with the regulatory limit. If effective isotropic radiated power (EIRP) is computed, it is computed as

$$EIRP(dBm) = E_{3m}(dB\mu V/m) - 95.2.$$

When presenting data at each frequency, the highest measured emission under all possible EUT orientations (3-axes) is reported.

Figure 4: Radiated Emissions Test Setup Photograph(s).

4.1.2 Conducted Emissions Test Setup and Procedures

The EUT is not subject to measurement of power line conducted emissions as it is powered solely by its internal battery.

4.1.3 Power Supply Variation

Tests at extreme supply voltages are made if required by the procedures specified in the test standard, and results of this testing are detailed in this report.

In the case the EUT is designed for operation from a battery power source, the extreme test voltages are evaluated over the range specified in the test standard; no less than ±10% of the nominal battery voltage declared by the manufacturer. For all battery operated equipment, worst case intentional and spurious emissions are re-checked employing a new (fully charged) battery.

4.2 Intentional Emissions

4.2.1 Fundamental Emission Pulsed Operation

Test Setup & Procedure The test equipment and facilities were setup in accordance with the standards and procedures listed in Section 2.1. Environmental conditions were set at the appropriate temperature and thermal balance was checked with a thermocouple based probe. Duty cycle is reported for all relevant modes of operation. The test equipment employed includes RSFSV30001, LOGEMCO01.

Measurement Results The details and results of testing the EUT are summarized in Table 4. Plots showing the measurements made to obtain these values are provided in Figure 5.

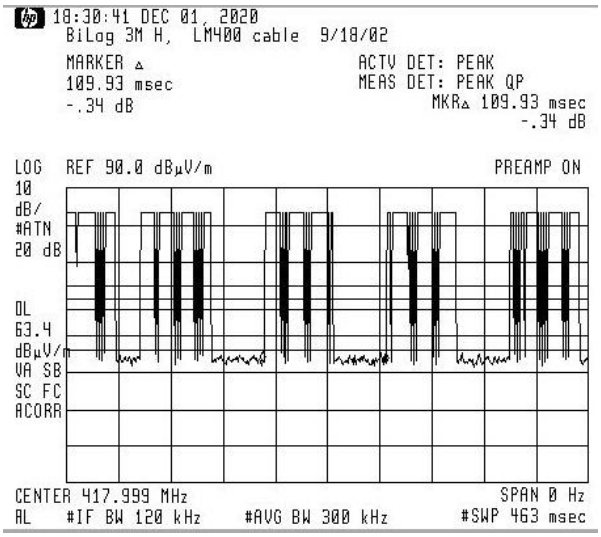
Table 4: Fundamental Emission Pulsed Operation.

Detector	Span	IF Bandwidth	Video Bandwidth
Pk	0	0.12 MHz	0.3 MHz

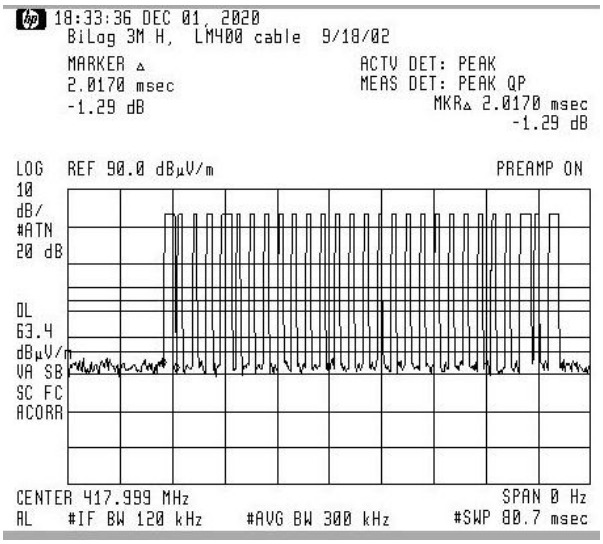
Test Date: 10/14/20
Test Engineer: G. Helm
EUT: Silent Call - Phone
EUT Mode: Normal Operating
Meas. Distance: 3m

										FCC/IC
			Overall Transmission			Internal Frame Characteristics			Computed Duty Cycle	
R0	Test Freq. (MHz)	EUT Test Mode*	Min. Repetition Rate (sec)	Max. No. of Frames	Total Transmission Length (sec)	Max. Frame Length (ms)	Min. Frame Period (ms)	Frame Encoding	(%)	(dB)
R6	418	Manual Activated, OOK	single	8	0.03	27.40	109.0	In the worse case, the EUT transmits a 27.4 ms OOK frame in a 109 ms window.	27.4	-11.2
#	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10

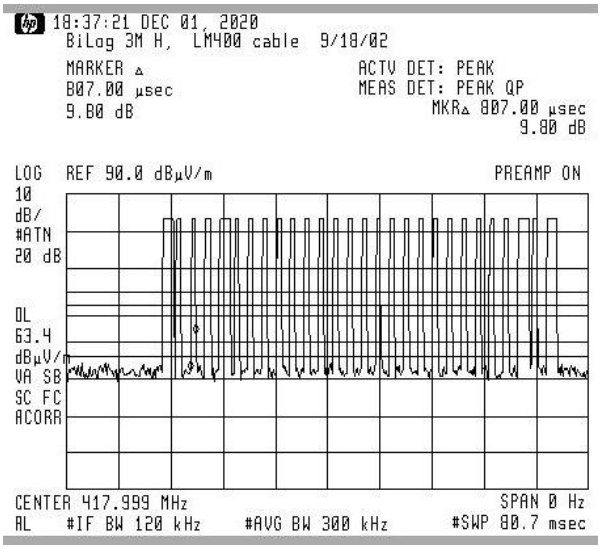
Example Calculation: (4.275 ms + 50.33 ms) / 100 ms = 54.6 % on-time.



Frame time 109,9mS



Long pulse 2.017mSx4=8.068mS



Short pulse 0.807mSx24=19.37mS +8.068mS=27.4mS

Figure 5: Fundamental Emission Pulsed Operation.

4.2.2 Fundamental Emission Bandwidth

Test Setup & Procedure The test equipment and facilities were setup in accordance with the standards and procedures listed in Section 2.1. Environmental conditions were set at the appropriate temperature and thermal balance was checked with a thermocouple based probe. Emission bandwidth (EBW) of the EUT is measured with the device placed in the test mode(s) with the shortest available frame length and minimum frame spacing. The 20 dB EBW is measured as the max-held peak-detected signal when the IF bandwidth is greater than or equal to 1% of the receiver span. For complex modulations other than ASK and FSK, the 99% emission bandwidth per IC test procedures has a different result, and is also reported. The test equipment employed includes RSFSV30001, LOGEMCO01.

Measurement Results The details and results of testing the EUT are summarized in Table 5. Plots showing the measurements made to obtain these values are provided in Figure 6.

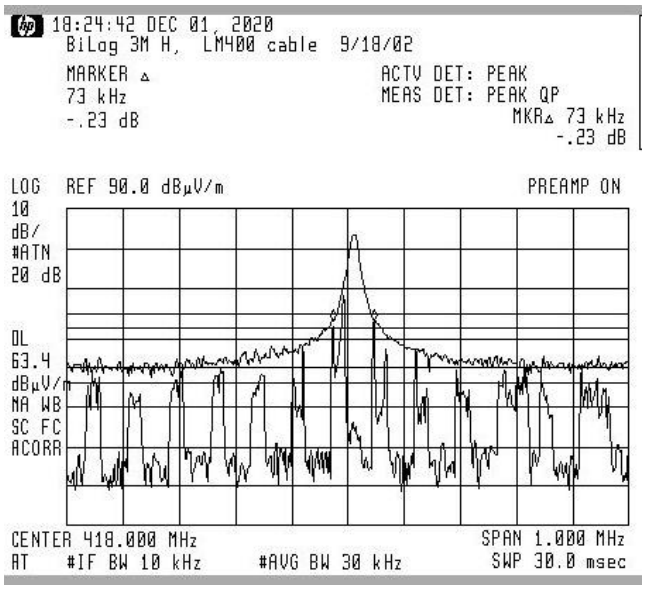
Table 5: Fundamental Emission Bandwidth.

Detector	IF Bandwidth	Video Bandwidth		
Pk	10 kHz	30 kHz	**Test Date:**	14-Oct-20
			Test Engineer:	G. Helm
			EUT:	Silent Call - Phone
			EUT Mode:	Normal Operating
			Meas. Distance:	3m

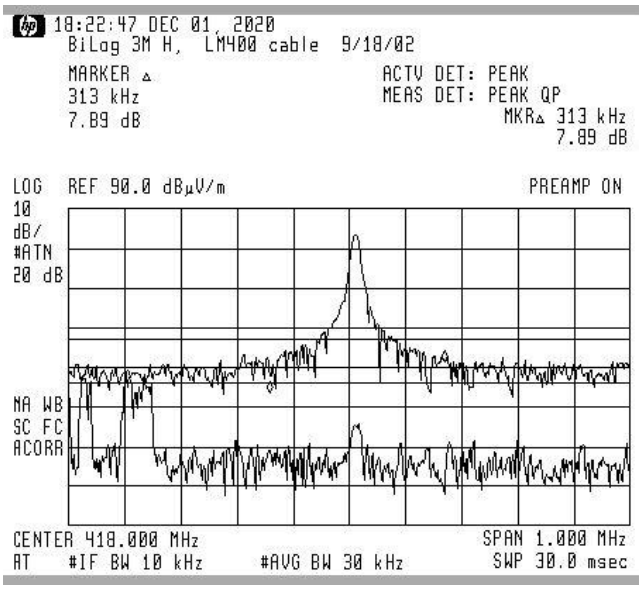
							FCC/IC
R0	Mode	Center Frequency (MHz)	20 dB EBW (MHz)	EBW Limit (MHz)	99% OBW (MHz)	Accum. 20dB OBW (MHz)	Min EBW Limit (MHz)
R1	OOK	418.00	0.075	1.045	0.313	0.075	1.045
#	C1	C2	C3	C4	C5	C7	C8

(ROW) (COLUMN) NOTE:

R0 C8 Per KDB 926416, for FCC 15.231 non-sweeping devices, total bandwidth is sum of the individual occupied 20 dB bandwidths. At most the manuf. uses 1 channels.



FCC -20dBC=73kHz



IC 99% = 313kHz

Figure 6: Fundamental Emission Bandwidth.

4.2.3 Fundamental Emission Field Strength

Test Setup & Procedure The test equipment and facilities were setup in accordance with the standards and procedures listed in Section 2.1. Environmental conditions were set at the appropriate temperature and thermal balance was checked with a thermocouple based probe. Fundamental emissions are measured at the regulatory distance on our OATS. The test equipment employed includes RSFSV30001, LOGEMCO01.

Measurement Results The details and results of testing the EUT are summarized in Table 6.

Table 6: Fundamental Emission Field Strength.

EUT Modes:	a1	CW	a5			
	a2	Normal	a6			
Test Date(s):	10/14/20	a3	a7			
Test Engineer:	G. Helm	a4	a8			

	Frequency		Site						EUT			Test Antenna				Cable	Receiver				Field Strength @ DR						EIRP		Details
	Start	Stop	Temp.	Table	MR	DR	N/F	CF				Pol.	Ant.	Dim.	Ka	Kg	Rx Power		Bandwidth		Pk			Qpk / Avg			Pk		
R0			(C)	Angle					Mode	Volt.	Dim		Height				Pk	Avg	RBW	VBW	Meas.	Limit		Calc.	Limit		Calc.		Pass
			Hum.						see													USA	CAN		USA	CAN			Fail
	MHz	MHz	%	deg	m			dB	table	(V)	cm	H/V	m	cm	dB/m	dB	dBm		MHz		dBuV/m						dBm		dB
R1	SETUP		OATSC						SiC			EMCOLOG				CAB001	HP8546A				NOTES: H-POL - FLAT, V-POL END Worst Case Orient								
R2	418.0	418.0	7 / 58	110.0	3.0	3.0		0.0	a1	3.0	4.0	H	1.0	100.0	21.8	-0.069			0.12	0.30	82.8	92.3	92.3	71.6	72.3	72.3	-12.3		**0.7**
#	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29

(ROW)	(COLUMN)	NOTE:
R0	C5	MR is Measurement Range, which is reduced from DR to achieve necessary SNR.
R0	C6	DR is the regulatory Desired Range measurement distance.
R0	C7	N/F is Near-Field / Far-Field distance computed for max of EUT Antenna Dimension (C10) computed above 1 GHz.
R0	C8	CF is computed using a 20 dB/decade Decay Rate.
R0	C17/18	When E-field or EIRP is reported directly from Spectrum Analyzer, Antenna Factors and Cable losses are included directly in SA settings and Pr is not reported.

4.3 Unintentional Emissions

4.3.1 Transmit Chain Spurious Emissions

Test Setup & Procedure The test equipment and facilities were setup in accordance with the standards and procedures listed in Section 2.1. Environmental conditions were set at the appropriate temperature and thermal balance was checked with a thermocouple based probe. Spurious radiated emissions measurements are performed to 10 times the highest fundamental operating frequency. The test equipment employed includes RSFSV30001, LOGEMCO01, HQR1TO18S01.

Measurement Results The details and results of testing the EUT are summarized in Table 7.

Table 7: Transmit Chain Spurious Emissions.

EUT Modes: a1 CW a5
a2 Normal a6
Test Date(s): 10/14/20 a3 a7
Test Engineer: G.Helm a4 a8

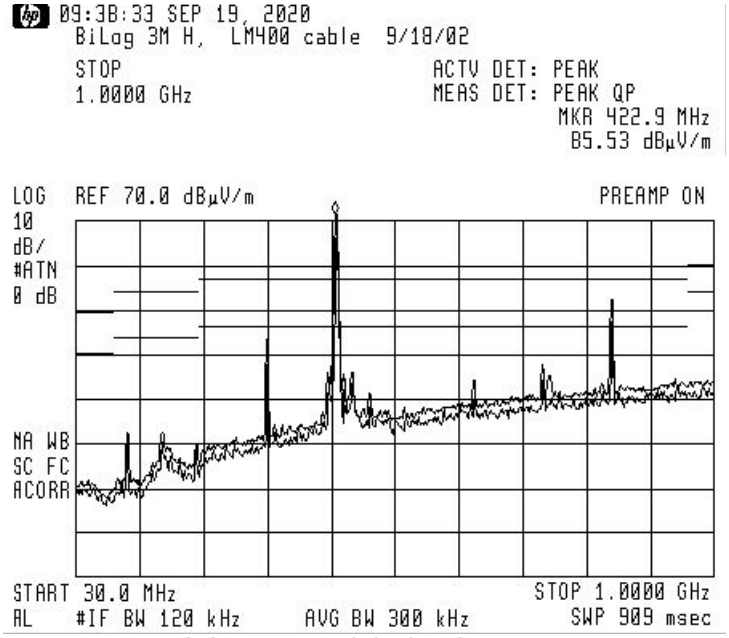
	Frequency		Site						EUT			Test Antenna				Cable	Receiver				Field Strength @ DR						EIRP		Details
	Start	Stop	Temp.	Table	MR	DR	N/F	CF									Rx Power		Bandwidth		Pk			Qpk / Avg					
R0			(C) Hum.	Angle					Mode see	Volt.	Dim	Pol.	Ant. Height	Dim.	Ka	Kg	Pk	Avg	RBW	VBW	Meas.	Limit USA	Limit CAN	Calc.	Limit USA	Limit CAN	Calc.		Pass Fail
	MHz	MHz	%	deg	m			dB	table	(V)	cm	H/V	m	cm	dB/m	dB	dBm		MHz		dBuV/m						dBm		dB
R1	SETUP		OATSC						SiC			BILOG				CAB001	HP8546A				NOTES: H-POL - FLAT, V-POL END Worst Case Orient								
R2	836.0	836.0	7 / 58	-	3.0	3.0		0.0	a1	3.0	8.0	H	1.0	100.0	29.8	-0.1			0.12	0.30	28.6	65.6	65.6	23.3	60.3	60.3	-66.6		37.0
R3	836.0	836.0	7 / 58	50.0	3.0	3.0		0.0	a1	3.0	8.0	V	1.0	100.0	29.8	-0.1			0.12	0.30	45.3	65.6	65.6	40.0	60.3	60.3	-49.9		20.3
R4	SETUP		OATSC						SiC			HP3115				CAB015	HP8546A				NOTES: max all orientations of EUT								
R5	1254.0	1254.0	7 / 58	all	3.0	3.0	0.2	0.0	a1	3.0	8.0	H/V	all	15.0	32.0	-2.8			1.00	3.00	33.1	74.0	74.0	21.7	54.0	54.0	-62.1		32.3
R6	1672.0	1672.0	7 / 58	all	3.0	3.0	0.3	0.0	a1	3.0	8.0	H/V	all	15.0	35.1	-3.3			1.00	3.00	37.2	74.0	74.0	23.1	54.0	54.0	-58.0		30.9
R7	2090.0	2090.0	7 / 58	all	3.0	3.0	0.3	0.0	a1	3.0	8.0	H/V	all	15.0	30.1	-3.8			1.00	3.00	37.2	74.0	74.0	25.2	54.0	54.0	-58.0		28.8
R8	2508.0	2508.0	7 / 58	all	3.0	3.0	0.4	0.0	a1	3.0	8.0	H/V	all	15.0	31.5	-4.3			1.00	3.00	37.7	74.0	74.0	26.6	54.0	54.0	-57.5		27.4
R9	2926.0	2926.0	7 / 58	all	3.0	3.0	0.4	0.0	a1	3.0	8.0	H/V	all	15.0	33.2	-4.8			1.00	3.00	46.0	74.0	74.0	41.0	54.0	54.0	-49.2		**13.0**
R10	3344.0	3344.0	7 / 58	all	3.0	3.0	0.5	0.0	a1	3.0	8.0	H/V	all	15.0	34.5	-5.3			1.00	3.00	42.0	74.0	74.0	32.2	54.0	54.0	-53.2		21.8
R11	3762.0	3762.0	7 / 58	all	3.0	3.0	0.6	0.0	a1	3.0	8.0	H/V	all	15.0	35.6	-5.7			1.00	3.00	41.0	74.0	74.0	29.6	54.0	54.0	-54.2		24.4
R12	4180.0	4180.0	7 / 58	all	3.0	3.0	0.6	0.0	a1	4.0	8.0	H/V	all	15.0	36.2	-6.2			1.00	3.00	41.1	74.0	74.0	29.8	54.0	54.0	-54.1		24.2
#	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23	C24	C25	C26	C27	C28	C29

(ROW)	(COLUMN)	NOTE:
R0	C5	MR is Measurement Range, which is reduced from DR to achieve necessary SNR.
R0	C6	DR is the regulatory Desired Range measurement distance.
R0	C7	N/F is Near-Field / Far-Field distance computed for max of EUT Antenna Dimension (C10) computed above 1 GHz.
R0	C8	CF is computed using a 20 dB/decade Decay Rate.
R0	C18/19	When E-field or EIRP is reported directly from Spectrum Analyzer, Antenna Factors and Cable losses are included directly in SA settings and Pr is not reported.

4.3.2 General Radiated Spurious

The results for the measurement of general spurious emissions (emissions arising from digital circuitry) at the nominal voltage and temperature are provided in Table 8. Radiation from digital components are measured up to 1000 MHz or to the highest frequency required by the applied standards, whichever is greater.

Table 8: Radiated Digital Spurious Emissions.



PRESCAN EMISSIONS

Frequency Range	Det	IF Bandwidth	Video Bandwidth
25 MHz ≤ f ≤ 1 000 MHz	Pk/QPk	120 kHz	300 kHz
f > 1 000 MHz	Pk	1 MHz	3 MHz

Test Date:	19-Sep-20
Test Engineer:	Gordon Helm
EUT:	Silent Call
EUT Mode:	Active
Meas. Distance:	3 meters

Digital Spurious Emissions FCC/IC

#	Freq. MHz	Ant. Used	Ant. Pol.	Table Azim. deg	Ant Height m	Ka dB/m	Kg dB	E3(Pk) dBµV/m	E3(QPk/Avg) dBµV/m	FCC/IC E3lim (Pk) dBµV/m	FCC/IC E3lim (Qpk/Avg) dBµV/m	Pass dB	Comments
1	320.0	BILO3142	H	10.0	1.0	17.4	-1.2	15.3		66.0	46.0	30.7	
2	313.0	BILO3142	H	140.0	1.0	17.3	-1.2	44.9		66.0	46.0	**1.1**	
3	313.0	BILO3142	V	270.0	1.0	17.3	-1.2	43.4		66.0	46.0	2.6	
4													
5													
6													
7	No other spurious emissions observed within 20 dB of the regulatory limit.												
8													

5 Measurement Uncertainty and Accreditation Documents

The maximum values of measurement uncertainty for the laboratory test equipment and facilities associated with each test are given in the table below. This uncertainty is computed for a 95.45% confidence level based on a coverage factor of $k = 2$.

Table 9: Measurement Uncertainty.

Measured Parameter	Measurement Uncertainty†
Radio Frequency	$\pm(f_{Mkr}/10^7 + RBW/10 + (SPN/(PTS-1))/2 + 1\,\text{Hz})$
Conducted Emm. Amplitude	$\pm 1.9\,\text{dB}$
Radiated Emm. Amplitude ($f < 30\,\text{MHz}$)	$\pm 3.1\,\text{dB}$
Radiated Emm. Amplitude ($30 - 200\,\text{MHz}$)	$\pm 4.0\,\text{dB}$
Radiated Emm. Amplitude ($200 - 1000\,\text{MHz}$)	$\pm 5.2\,\text{dB}$
Radiated Emm. Amplitude ($f > 1000\,\text{MHz}$)	$\pm 3.7\,\text{dB}$

†Ref: CISPR 16-4-2:2011+A1:2014


United States Department of Commerce
National Institute of Standards and Technology

NVLAP® ilac-MRA

Certificate of Accreditation to ISO/IEC 17025:2017

NVLAP LAB CODE: 200129-0

AHD (Amber Helm Development, L.C.)
Sister Lakes, MI

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

Electromagnetic Compatibility & Telecommunications

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated January 2009).

2020-06-23 through 2021-06-30
Effective Dates

For the National Voluntary Laboratory Accreditation Program

Figure 7: Accreditation Documents