



FCC PART 15.247
RSS-GEN ISSUE 5, MARCH 2019 AMENDMENT 1
RSS-247, ISSUE 2, FEBRUARY 2017

TEST REPORT
For
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FCC ID: EW780-1960-01
IC: 1135B-80196001

Report Type: Class II Permissive Change	Product Type: Video Baby Monitor
Report Number: SZ1210315-06701EBA1	
Report Date: 2021-03-22	
Reviewed By: RF Engineer	<i>Jimmy Xiao</i>
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TABLE OF CONTENTS

GENERAL INFORMATION	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	3
OBJECTIVE	3
TEST METHODOLOGY	4
MEASUREMENT UNCERTAINTY.....	4
TEST FACILITY	4
SYSTEM TEST CONFIGURATION	5
DESCRIPTION OF TEST CONFIGURATION	5
EUT EXERCISE SOFTWARE	5
SPECIAL ACCESSORIES.....	5
EQUIPMENT MODIFICATIONS	6
SUPPORT EQUIPMENT LIST AND DETAILS	6
EXTERNAL I/O CABLE.....	6
BLOCK DIAGRAM OF TEST SETUP	6
SUMMARY OF TEST RESULTS	7
TEST EQUIPMENT LIST	8
FCC§15.247 (i), §1.1307 (b) (1) &§2.1093 - RF EXPOSURE INFORMATION	9
APPLICABLE STANDARD	9
TEST RESULT	9
RSS-102 – RF EXPOSURE	10
APPLICABLE STANDARD	10
FCC §15.203 & RSS-Gen §6.8– ANTENNA REQUIREMENT	11
APPLICABLE STANDARD	11
ANTENNA CONNECTOR CONSTRUCTION	11
FCC §15.205, §15.209 & §15.247(d) & RSS-247 § 5.5– RADIATED EMISSIONS	12
APPLICABLE STANDARD	12
EUT SETUP.....	12
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP	13
TEST PROCEDURE	13
CORRECTED AMPLITUDE & MARGIN CALCULATION	13
TEST DATA	14

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Video Baby Monitor
Tested Model	VM3254 PU
Multiple Models	VM3254-2 PU, VM3254-ab PU, VM3256 PU, VM3256-2 PU, VM3256-ab PU, VM819 PU, VM819-2 PU, VM819-ab PU, VM3262 PU, VM3262-2 PU, VM3262-ab PU, VM923 PU, VM923-2 PU, VM923-ab PU (a=any alphanumeric character or blank is presenting number of baby unit; b = any alphanumeric character or blank is presenting color of enclosure.)
Model Differences	Refer to the DOS letter
HVIN	35-201481PU
Frequency Range	2405~2475MHz
Maximum conducted Peak output power	15.93dBm
Modulation Technique	GFSK
Antenna Specification*	0dBi (It is provided by the applicant)
Voltage Range	DC 3.6V from battery or DC 5.0V from adapter
Date of Test	2021-03-18 to 2021-03-19
Sample serial number	SZ1210315-06701E-RFA1-S1 (Assigned by BAACL, Shenzhen)
Received date	2021-03-15
Sample/EUT Status	Good condition
Adapter information	Model:VT05EUS05100 Input: 100-240V~, 50/60Hz, 150mA Output: DC 5.0V, 1000mA

Objective

This test report is in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commissions rules and RSS-GEN Issue 5, March 2019 Amendment 1 and RSS-247, Issue 2, February 2017 of the Innovation, Science and Economic Development Canada rules

This is a CIIPC application of the device; the differences between the original device and the current one are as follows:

- (1) Change the antenna.

Based on above difference listed, the modifications will impact the test item of “Radiated Emissions”, so in this report, we will updated this item and related photos, the other test data and photos please refer to the original report.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices and RSS-GEN Issue 5, March 2019 Amendment 1 and RSS-247, Issue 2, February 2017.

For Radiated Emissions testing, please refer to DA 00-705 Released March 30, 2000, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF Output Power with Power meter		±0.73dB
RF conducted test with spectrum		±1.6dB
AC Power Lines Conducted Emissions		±1.95dB
Emissions, Radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB
Temperature		±1 °C
Humidity		±6%
Supply voltages		±0.4%

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0023.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode.

32 channels are provided:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2405	17	2439
2	2407	18	2441
3	2409	19	2444
4	2411	20	2446
5	2413	21	2450
6	2415	22	2452
7	2418	23	2454
8	2420	24	2456
9	2422	25	2458.5
10	2424	26	2460.5
11	2426	27	2462.5
12	2428	28	2467
13	2430	29	2469
14	2433	30	2471
15	2435	31	2473
16	2437	32	2475

EUT was tested with Channel 1, 17 and 32.

The frequency range of the system is operating from 2405MHz to 2475MHz. There are totally 32 non-overlapping channels, and 16 active channels out of the 32 channels at same time. There are 16 active channels out of the 32 channels. The 16 active channels are selected in pseudo random manner by default. The remaining 16 channels are spare channels which will be exchanged with active channels one at a time when any one of the active channels jamming with noise. Once an active channel has noise jamming during frequency hopping, it will be marked as dirty channel and exchanged with a spare channel after a dwell time. The spare channel is selected randomly so that at any time the active channels are always equally used in a pseudo random manner. The dirty channel become part of spare channels and can be used in active channels again after all the other spare channels have been used.

EUT Exercise Software

“ComTestSerial.exe”* software was made to the EUT tested. The software was provided by the applicant.

Special Accessories

No special accessory.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

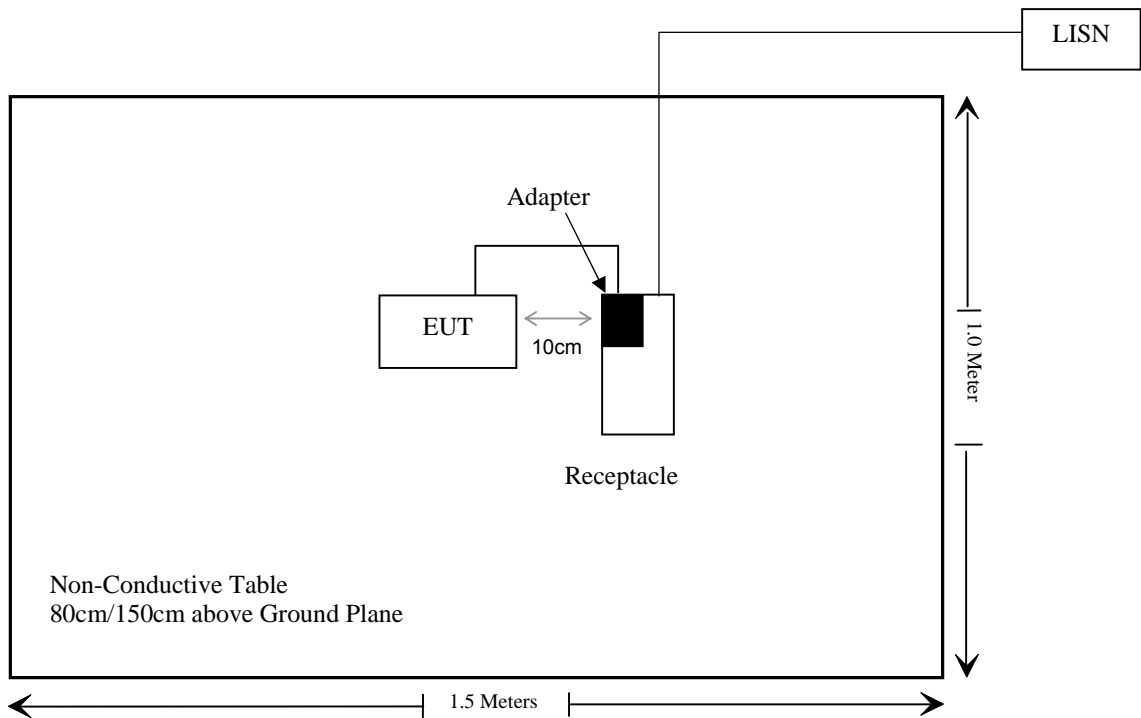
Manufacturer	Description	Model	Serial Number
/	/	/	/

External I/O Cable

Cable Description	Length (m)	From Port	To
Un-Shielding Un-detachable DC Cable	1.5	Adapter	EUT

Block Diagram of Test Setup

For conducted emission:



SUMMARY OF TEST RESULTS

FCC Rules	RSS-247/RSS-Gen Rules	Description of Test	Result
FCC§15.247 (i), §1.1307 (b) (1) & §2.1093	RSS-102	RF Exposure (SAR)	Compliance
§15.203	RSS-Gen §6.8	Antenna Requirement	Compliance
§15.207(a)	RSS-Gen §8.8	AC Line Conducted Emissions	Compliance*
§15.205, §15.209 & §15.247(d)	RSS-247 § 5.5	Radiated Emissions	Compliance
§15.247(a)(1)	RSS- Gen§6.7, RSS-247 § 5.1 (a)	99% OCCUPIED BANDWIDTH & 20 dB Emission Bandwidth	Compliance*
§15.247(a)(1)	RSS-247 § 5.1 (b)	Channel Separation Test	Compliance*
§15.247(a)(1)(iii)	RSS-247 § 5.1 (d)	Time of Occupancy (Dwell Time)	Compliance*
§15.247(a)(1)(iii)	RSS-247 § 5.1 (d)	Quantity of hopping channel Test	Compliance*
§15.247(b)(1)	RSS-247 § 5.1(b) & § 5.4(b)	Peak Output Power Measurement	Compliance*
§15.247(d)	RSS-247 § 5.5	Band edges	Compliance*

Compliance*: Please refer to the original report RSZ201106001B with FCC ID: EW780-1960-01; IC: 1135B-80196001, issued by Bay Area Compliance Laboratories Corp. (Shenzhen).

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test					
R&S	EMI Test Receiver	ESR3	102455	2020/08/04	2021/08/03
Sonoma instrument	Pre-amplifier	310 N	186238	2020/08/04	2021/08/03
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2020/12/22	2023/12/21
Unknown	Cable 2	RF Cable 2	F-03-EM197	2020/11/29	2021/11/28
Unknown	Cable	Chamber Cable 4	EC-007	2020/11/29	2021/11/28
Rohde & Schwarz	Auto test software	EMC 32	V9.10	NCR	NCR
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	102259	2020/08/04	2021/08/03
COM-POWER	Pre-amplifier	PA-122	181919	2020/11/29	2021/11/28
Quinstar	Amplifier	QLW-18405536-J0	15964001002	2020/11/29	2021/11/28
Sunol Sciences	Horn Antenna	DRH-118	A052604	2020/12/22	2023/12/21
Insulted Wire Inc.	RF Cable	SPS-2503-3150	02222010	2020/11/29	2021/11/28
Unknown	RF Cable	W1101-EQ1 OUT	F-19-EM005	2020/11/29	2021/11/28
SNSD	Band Reject filter	BSF2402-2480MN-0898-001	2.4G filter	2020/04/20	2021/04/20
Ducommun Technologies	Horn antenna	ARH-4223-02	1007726-02 1304	2020/12/06	2023/12/05

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC§15.247 (i), §1.1307 (b) (1) &§2.1093 - RF EXPOSURE INFORMATION

Applicable Standard

FCC§1.1307(b) and §2.1093.

Test Result

Pass

Please refer to the SAR report: SZ1210315-06701E-20BA1.

RSS-102 – RF EXPOSURE

Applicable Standard

According to RSS-102, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

Result: Pass

Please refer to SAR Report Number: SZ1210315-06701E-20AA1.

FCC §15.203 & RSS-Gen §6.8– ANTENNA REQUIREMENT

Applicable Standard

According to FCC § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Antenna Connector Construction

The EUT has one internal antenna arrangement, which was permanently attached and the antenna gain is 0dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Type	Antenna Gain (dBi)	Impedance (Ω)
FPC	0	50

Result: Compliance

FCC §15.205, §15.209 & §15.247(d) & RSS-247 § 5.5– RADIATED EMISSIONS

Applicable Standard

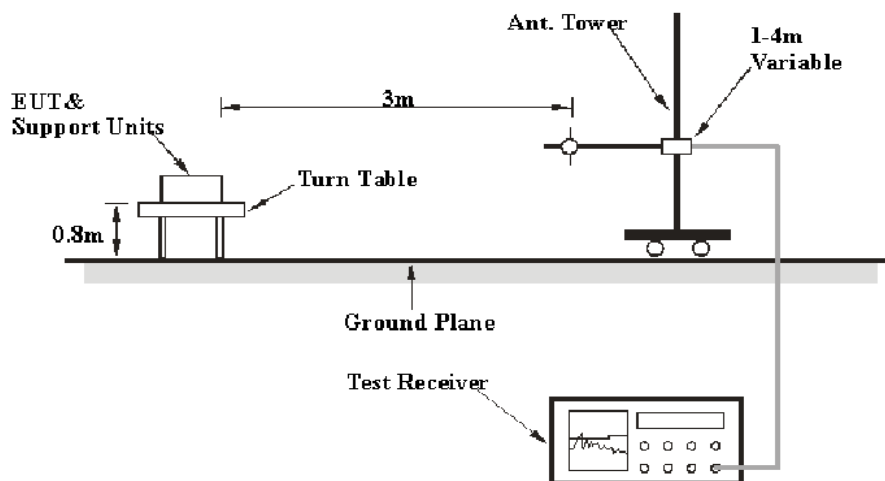
FCC §15.205; §15.209; §15.247(d)

According to RSS-247 §5.5

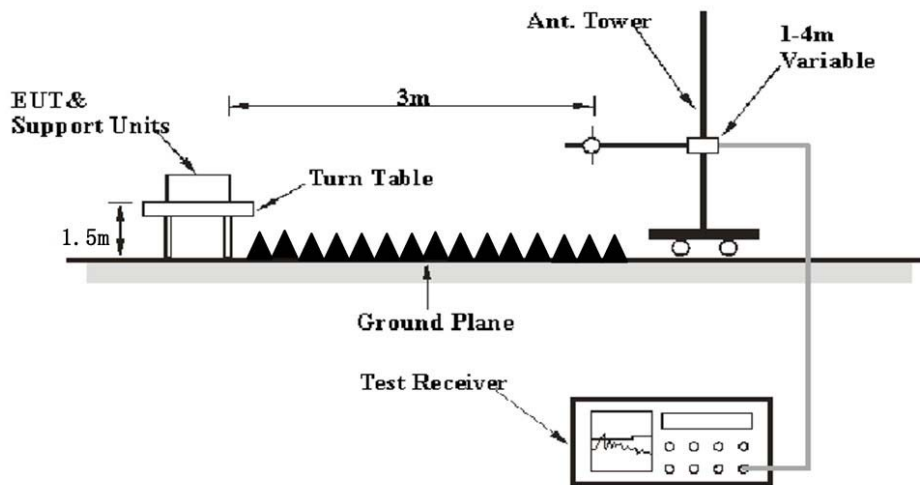
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

EUT Setup

Below 1 GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209 and FCC 15.247 & RSS-247/RSS-Gen limits.

EMI Test Receiver & Spectrum Analyzer Setup

During the radiated emission test, according to the DA 00-705 Released March 30, 2000, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1 MHz	10 Hz	/	Average

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All final data was recorded in Quasi-peak detection mode for frequency range of 30 MHz -1 GHz and peak and Average detection modes for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

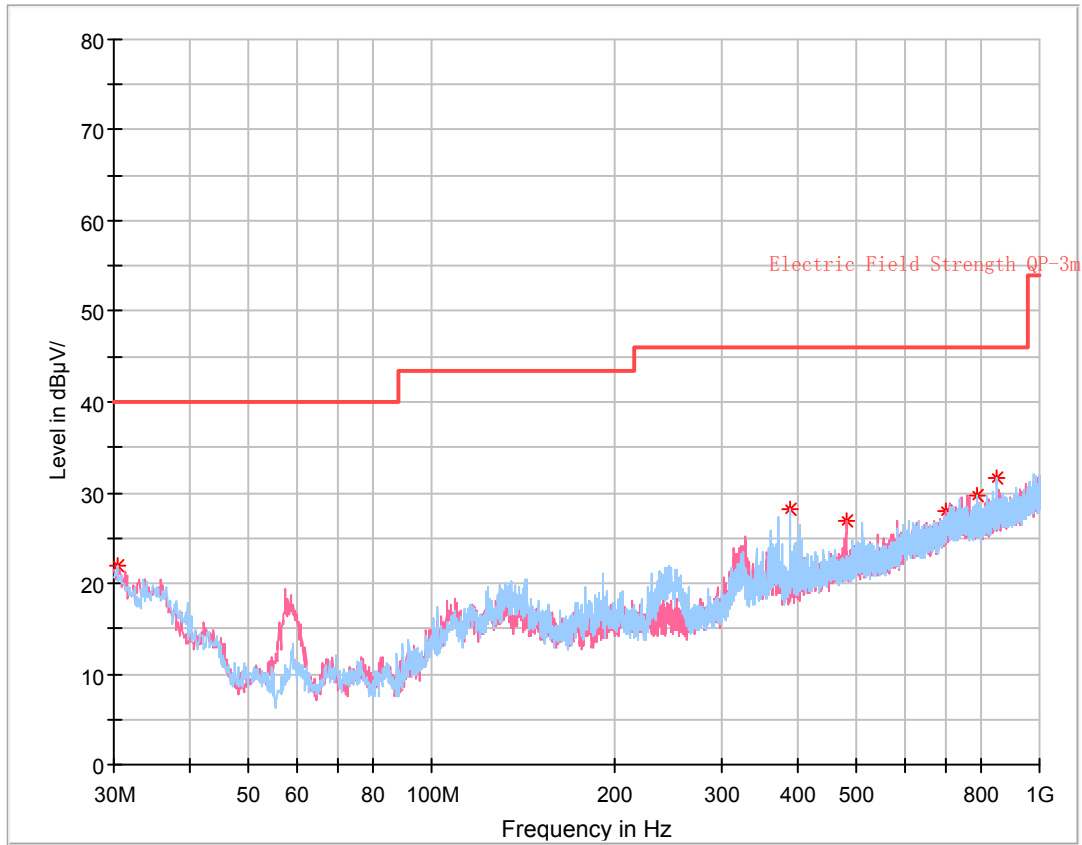
Test Data**Environmental Conditions**

Temperature:	24~25.4 °C
Relative Humidity:	52~54 %
ATM Pressure:	101.0~101.1 kPa

The testing was performed by Kilroy Deng on 2021-03-18 for below 1GHz and by Troy Wang on 2021-03-19 for above 1GHz.

EUT operation mode: Transmitting

30 MHz~1 GHz: (the worst case at Low channel)



Critical_Freqs

Frequency (MHz)	MaxPeak (dB µ V/m)	Limit (dB µ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.363750	22.00	40.00	18.00	100.0	H	0.0	-3.8
388.293750	28.22	46.00	17.78	300.0	H	166.0	-7.7
479.958750	26.97	46.00	19.03	100.0	V	128.0	-5.3
701.603750	27.99	46.00	18.01	100.0	V	291.0	-1.5
792.056250	29.77	46.00	16.23	200.0	H	183.0	-0.5
851.105000	31.67	46.00	14.33	100.0	H	268.0	0.2

1 GHz - 25 GHz:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
	Reading (dB μ V)	PK/QP/Ave.		Height (m)	Polar (H/V)				
Low Channel (2405 MHz)									
2383.72	28.38	PK	121	1.6	H	31.87	60.25	74	13.75
2383.72	13.46	Ave.	121	1.6	H	31.87	45.33	54	8.67
2484.25	28.47	PK	302	1.9	H	32.13	60.60	74	13.40
2484.25	13.55	Ave.	302	1.9	H	32.13	45.68	54	8.32
4810.00	53.56	PK	262	1.4	H	6.28	59.84	74	14.16
4810.00	37.80	Ave.	262	1.4	H	6.28	44.08	54	9.92
Middle Channel (2439 MHz)									
4878.00	51.04	PK	41	1.6	H	6.76	57.80	74	16.20
4878.00	36.41	Ave.	41	1.6	H	6.76	43.17	54	10.83
High Channel (2475 MHz)									
2388.46	28.16	PK	299	1.3	H	31.87	60.03	74	13.97
2388.46	13.42	Ave.	299	1.3	H	31.87	45.29	54	8.71
2483.68	28.62	PK	224	1.2	H	32.13	60.75	74	13.25
2483.68	13.27	Ave.	224	1.2	H	32.13	45.40	54	8.60
4950.00	49.51	PK	283	2.4	H	6.80	56.31	74	17.69
4950.00	35.38	Ave.	283	2.4	H	6.80	42.18	54	11.82

Note:

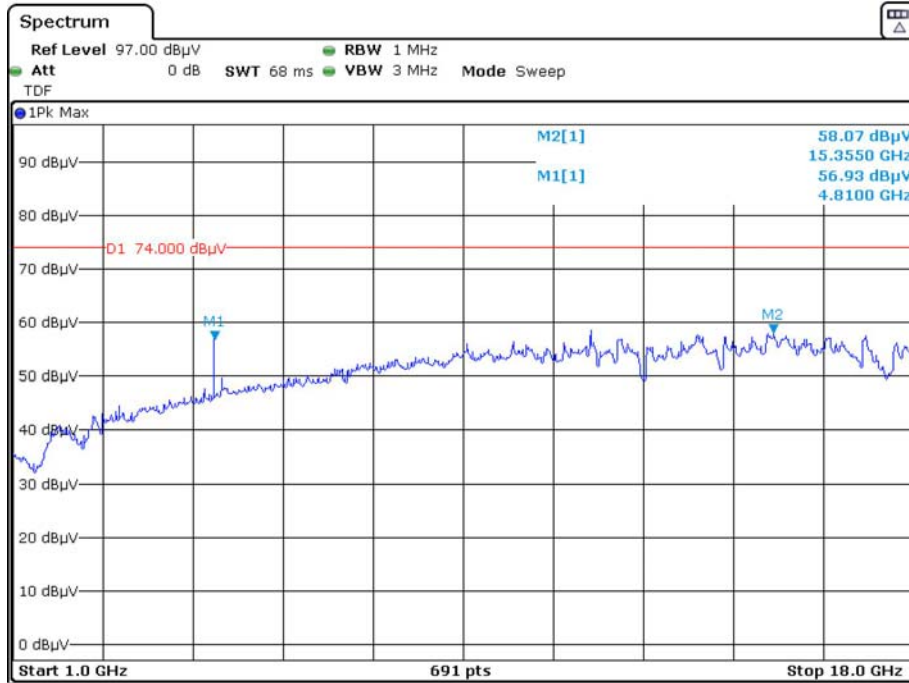
Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor

Corrected Amplitude = Corrected Factor + Reading

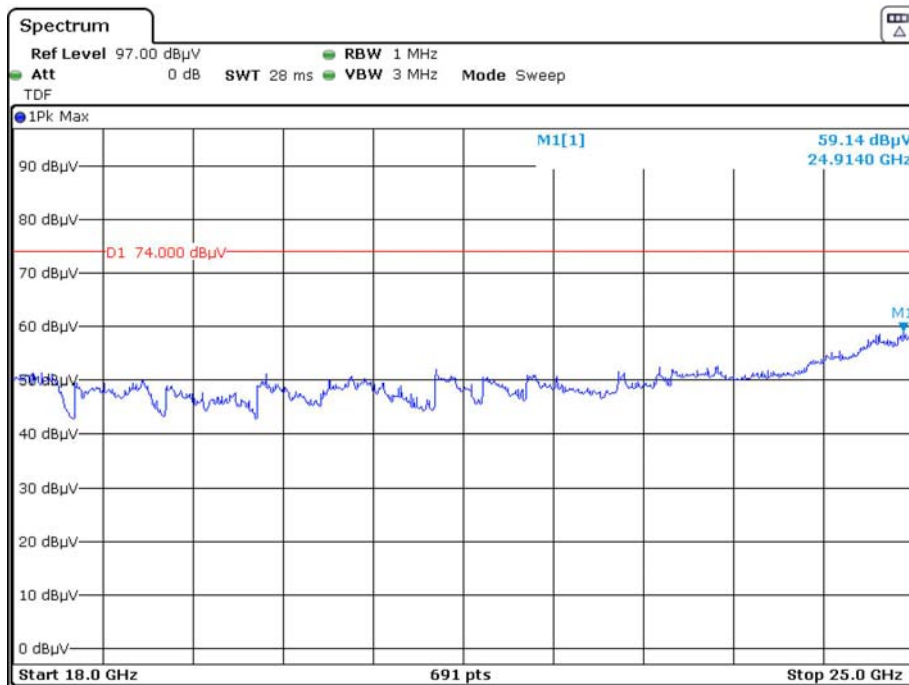
Margin = Limit - Corrected. Amplitude

The other spurious emission which is 20dB to the limit was not recorded.

**Pre-scan with low channel Peak
Horizontal**

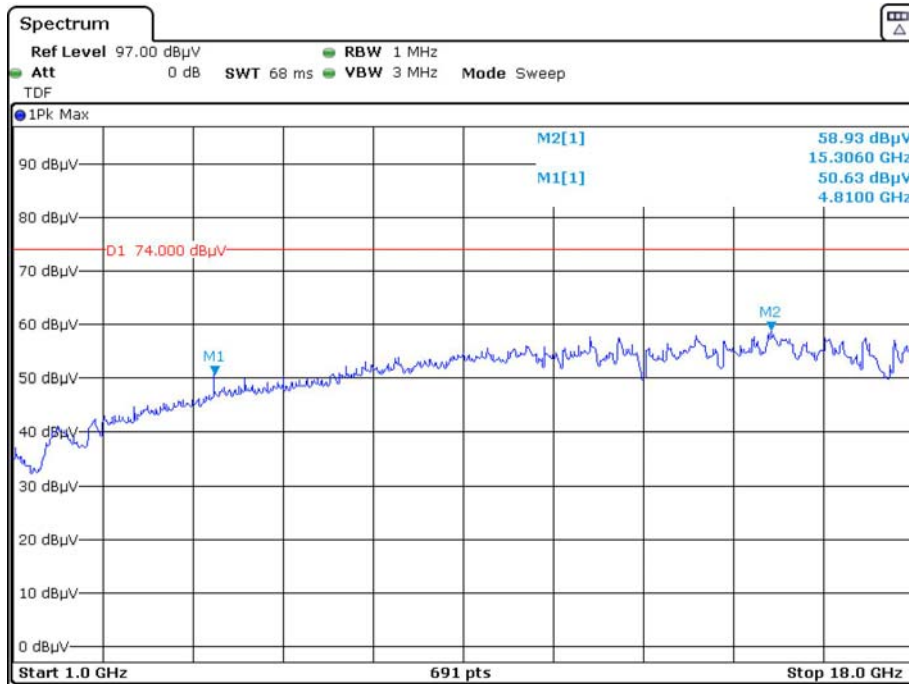


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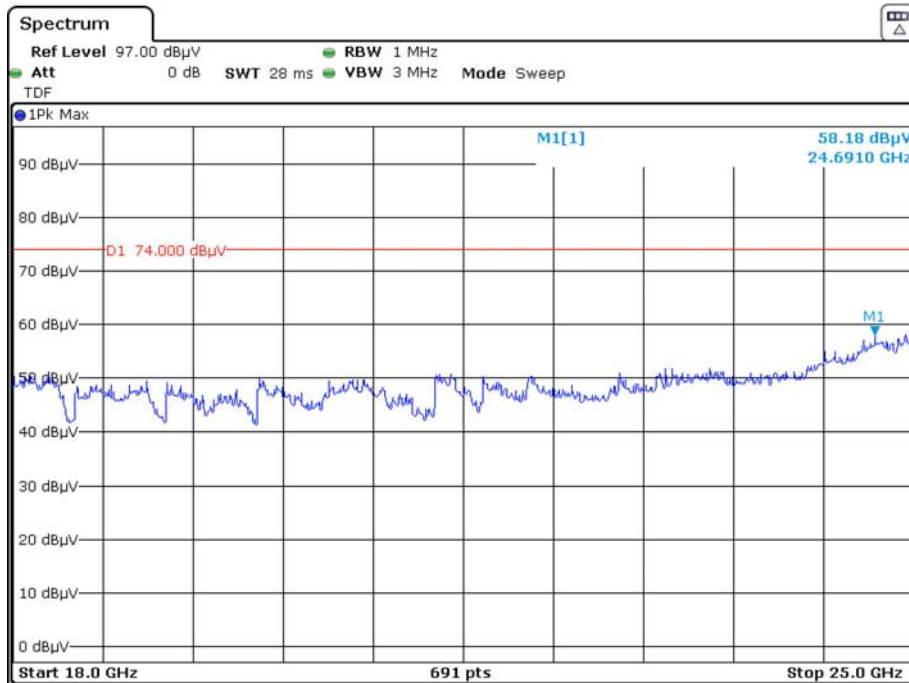


Date: 19.MAR.2021 19:50:42

Vertical

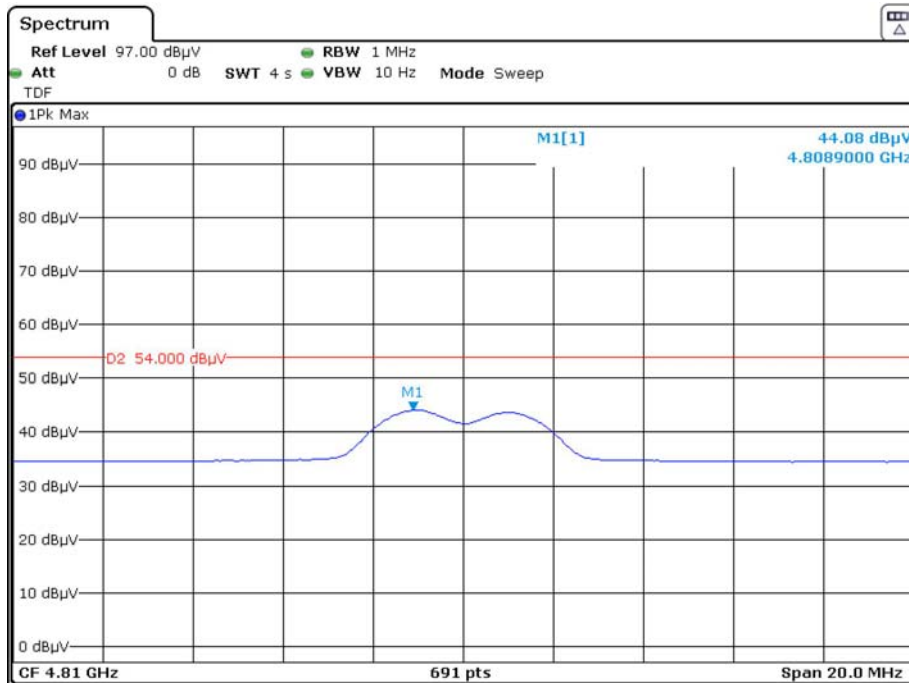


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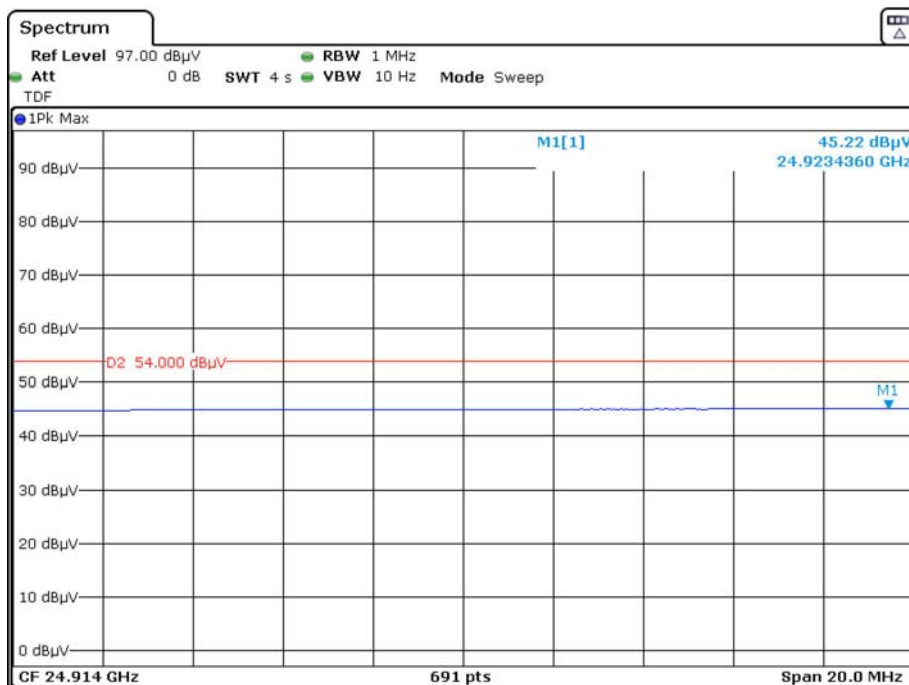


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Average Horizontal

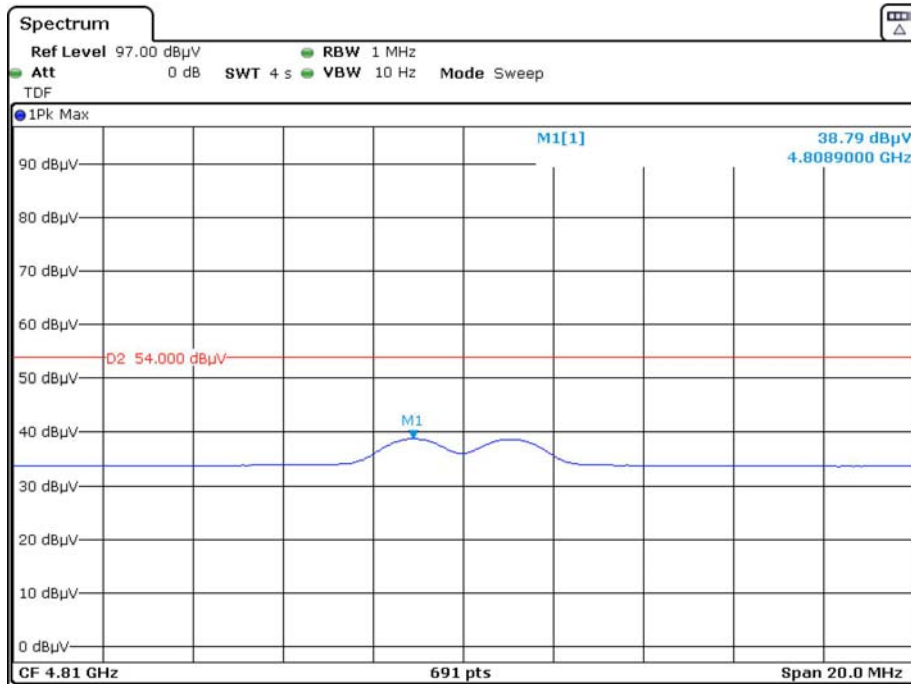


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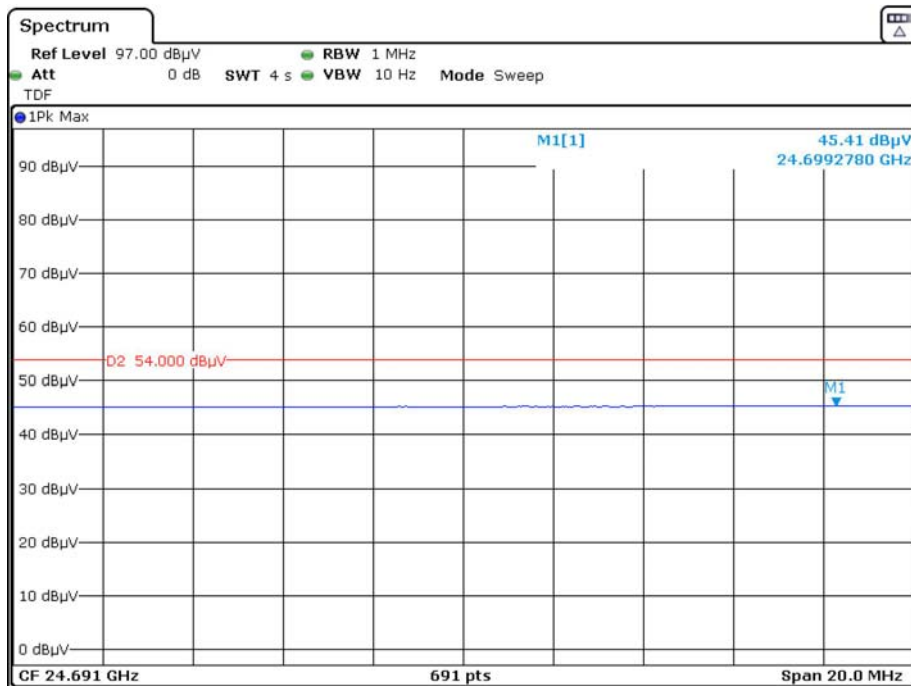


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Vertical



Date: 19.MAR.2021 19:17:12



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