ACCREDITED
TESTING LABORATORY
CERTIFICATE #4820.01

BACL
Bay Area Compliance Labs Corp.

FCC PART 15C

TEST REPORT

For

Rosslare Enterprises Ltd

Room 905,12 Wang Tai Road , Kowloon Bay, Kowloon, Hong Kong

FCC ID: GCD-AYK35

Report Type:	**Product Name:**
Original Report	Multi-Smart™ Readers

Report Number:	DG2210429-14679E-00B
Report Date:	2021-06-05
Reviewed By:	Ivan Cao Assistant Manager
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

EUT Name:	Multi-Smart™ Readers
EUT Model:	AY-K35
Operation Frequency:	13.56 MHz, 125 kHz
Modulation:	ASK,FSK(125 kHz) ASK(13.56 MHz)
Rated Input Voltage:	DC 12V from System
Serial Number:	DG2210429-14679E-RF-S_4JE
EUT Received Date:	2021-05-08
EUT Received Status:	Good

Objective

This Type approval report is prepared on behalf of ***Rosslare Enterprises Ltd*** in accordance with Part 2, Subpart J, and Part 15, Subparts A and C of the Federal Communications Commission's rules.

The objective is to determine the compliance of the EUT with FCC rules, sec 15.203, 15.205, 15.207, 15.209, 15.215 and 15.225.

Related Submittal(s)/Grant(s)

FCC Part 15C DTS submissions with FCC ID: GCD-AYK35

Test Methodology

All measurements detailed in this Test Report were performed in accordance with ANSI C63.10-2013 "American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices".

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

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
radiated Emissions	9kHz~30MHz: 4.12dB 30M~200MHz: 4.55 dB, 200M~1GHz: 5.92 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

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

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol "▲". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a test mode

The device operates in 125 kHz or 13.56 MHz for RFID detection, 125 kHz mode supports ASK and FSK modulation, 13.56 MHz mode only ASK modulation, the modulation and frequency was determined by which RFID card is contacted.

EUT Exercise Software

No software used in test.

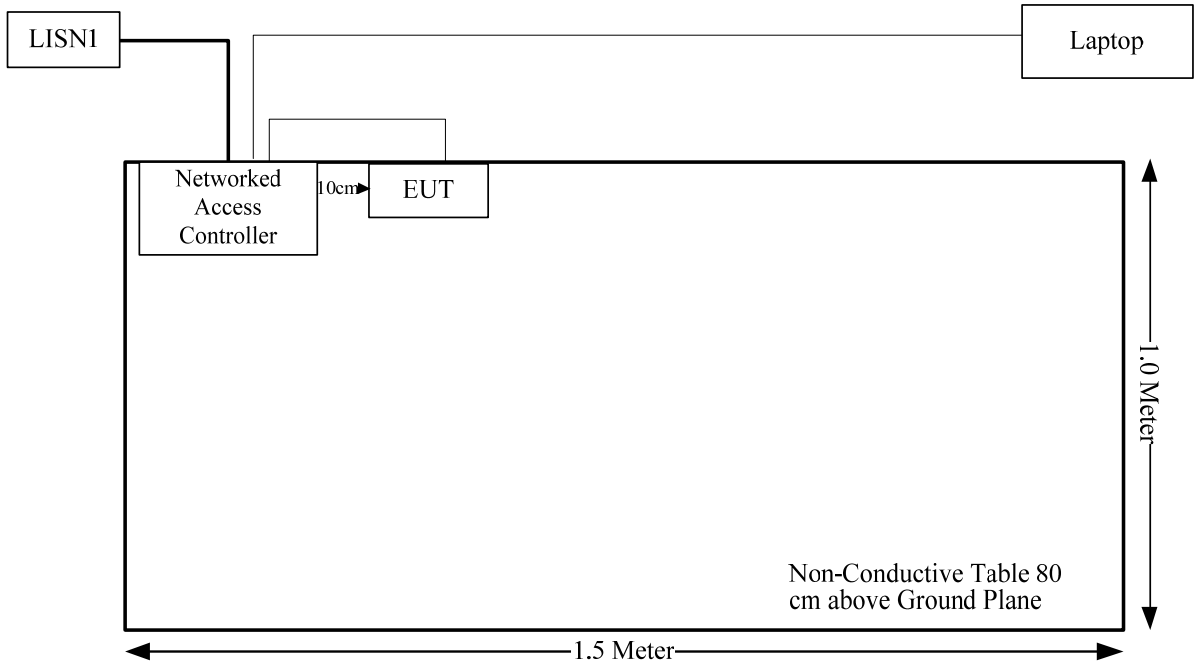
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Rosslare	Networked Access Controller	AC-225	AC225V05-01-12
Lenovo	Laptop	Thinkpad E450	PF-0MRADG

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RJ45 Cable	Yes	No	10	Networked Access Controller	Laptop
Signal Cable	Yes	Yes	1.2	Networked Access Controller	EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207	AC Line Conducted Emission	Compliance
§15.225 §15.209 §15.205	Radiated Emission Test	Compliance
§15.225(e)	Frequency Stability	Compliance
§15.215(c)	20 dB Emission Bandwidth	Compliance

FCC§15.203 - ANTENNA REQUIREMENT

Applicable Standard

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.

Antenna Connected Construction

The EUT has two integral antenna arrangement, one for 13.56MHz one for 125kHz, which were permanently attached and fulfill the requirement of this section. Please refer to the EUT photos.

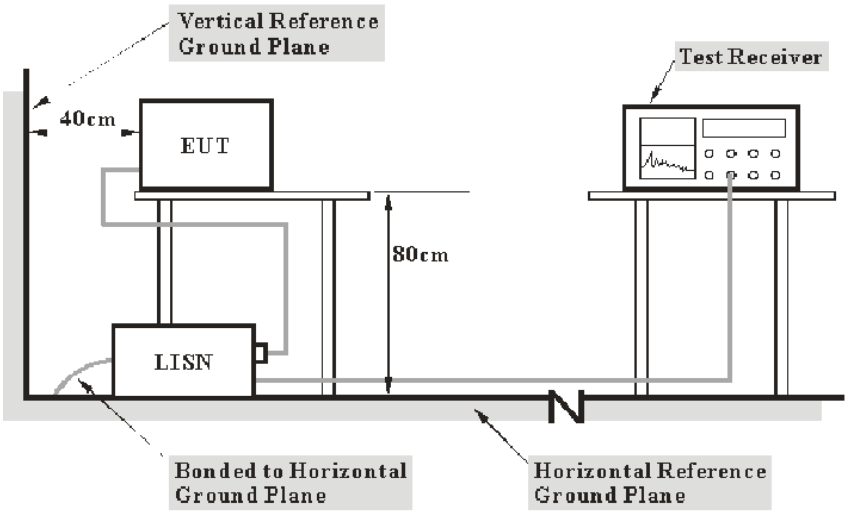
Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207(a)

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The system was connected to the main LISN with a 120 V/60 Hz AC power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the system was connected to the outlet of the first LISN.

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase ("hot") line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$V_C = V_R + A_C + VDF$

Herein,
V_C: corrected voltage amplitude
V_R: reading voltage amplitude
A_c: attenuation caused by cable loss
VDF: voltage division factor of AMN or ISN

The "**Margin**" column of the following data tables indicates the degree of compliance within 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:

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV 216	101614	2020-09-12	2021-09-12
R&S	EMI Test Receiver	ESCI	101121	2020-07-07	2021-07-07
MICRO-COAX	Coaxial Cable	C-NJNJ-50	C-0200-01	2020-09-05	2021-09-05
R&S	Test Software	EMC32	Version 9.10.00	N/A	N/A

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

Test Data

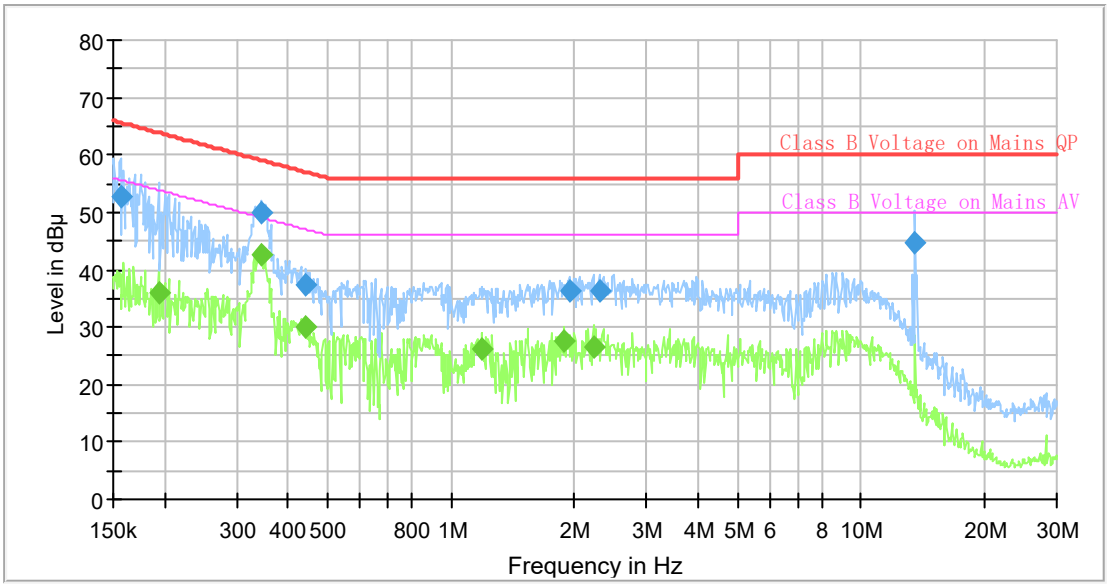
Environmental Conditions

Temperature:	25.3℃
Relative Humidity:	64%
ATM Pressure:	100.2kPa
Tester:	Walker Chen
Test Date:	2021-06-04

Test Result: Compliance

Test Mode: Transmitting(Worst is 13.56MHz operating)

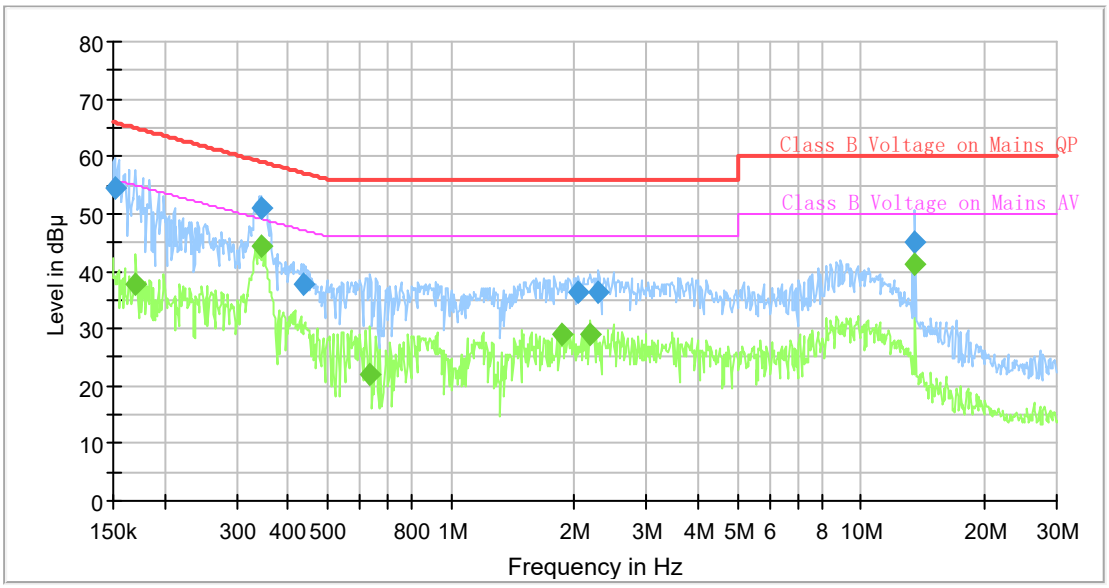
AC120V, 60 Hz, Line:



Final_Result

Frequency (MHz)	QuasiPeak (dB µ V)	Average (dB µ V)	Limit (dB µ V)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.156106	52.59	---	65.67	13.08	9.000	L1	9.6
0.193446	---	35.84	53.89	18.05	9.000	L1	9.6
0.343287	---	42.61	49.12	6.51	9.000	L1	9.6
0.343287	49.79	---	59.12	9.33	9.000	L1	9.6
0.442717	37.21	---	57.01	19.80	9.000	L1	9.6
0.442717	---	30.10	47.01	16.91	9.000	L1	9.6
1.188521	---	26.24	46.00	19.76	9.000	L1	9.7
1.889951	---	27.65	46.00	18.35	9.000	L1	9.7
1.947363	36.39	---	56.00	19.61	9.000	L1	9.7
2.228079	---	26.60	46.00	19.40	9.000	L1	9.7
2.295763	36.26	---	56.00	19.74	9.000	L1	9.7
13.553299	44.63	---	60.00	15.37	9.000	L1	10.1

AC120V, 60 Hz, Neutral:



Final_Result

Frequency (MHz)	QuasiPeak (dB µ V)	Average (dB µ V)	Limit (dB µ V)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.151504	54.46	---	65.92	11.46	9.000	N	9.6
0.169919	---	37.63	54.96	17.33	9.000	N	9.6
0.343287	---	44.27	49.12	4.85	9.000	N	9.6
0.343287	51.08	---	59.12	8.04	9.000	N	9.6
0.438323	37.74	---	57.09	19.35	9.000	N	9.6
0.633991	---	21.90	46.00	24.10	9.000	N	9.6
1.861883	---	28.85	46.00	17.15	9.000	N	9.6
2.046952	36.46	---	56.00	19.54	9.000	N	9.6
2.184069	---	29.08	46.00	16.92	9.000	N	9.6
2.284341	36.28	---	56.00	19.72	9.000	N	9.6
13.553299	---	41.16	50.00	8.84	9.000	N	9.8
13.553299	45.19	---	60.00	14.81	9.000	N	9.8

FCC§15.225, §15.205 & §15.209 - RADIATED EMISSIONS TEST

Applicable Standard

FCC Part 15.205, 15.209, 15.225

(a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

(b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

(d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

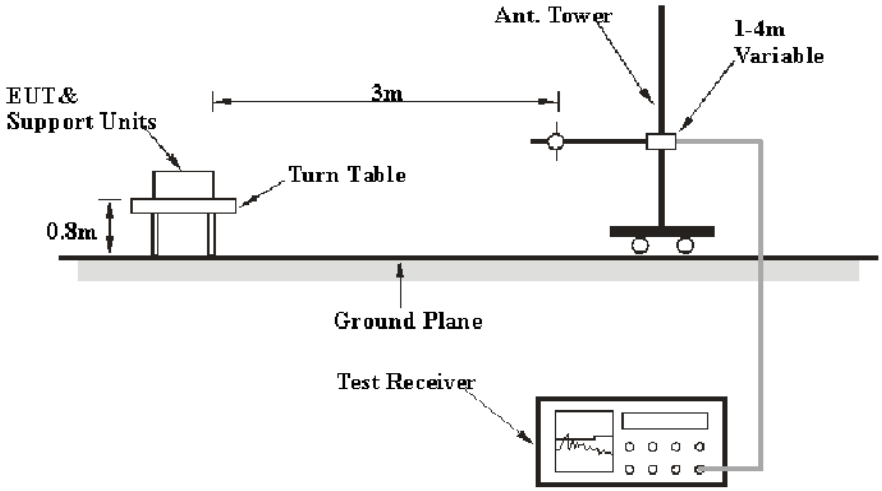
As per FCC Part 15.209

(a) Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permltted under other sections of this part, e.g., §§15.231 and 15.241.

EUT Setup



The radiated emission tests were performed in the 10-meter chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part Subpart C limits.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The system was investigated from 9 kHz to 1 GHz.

During the radiated emission test, the EMI test Receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	Measurement
9 kHz – 150 kHz	200 Hz	1 kHz	QP
150 kHz – 30 MHz	9 kHz	30 kHz	QP
30 MHz – 1000 MHz	120 kHz	300 kHz	QP

If the maximized peak measured value complies with the limit, then it is unnecessary to perform an QP/Average measurement

Corrected Amplitude & Margin Calculation

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

Corr. Ampl. = Meter Reading + Antenna Factor + Cable Loss - 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:

Margin = Limit - Corr. Ampl.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB3	A060611-2	2020-08-25	2023-08-25
R&S	EMI Test Receiver	ESCI	100224	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2020-09-24	2021-09-24
Sonoma	Amplifier	310N	185914	2020-10-13	2021-10-13
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A
EMCO	Passive Loop	6512	9706-1206	2020-03-05	2023-03-05

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

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.209&15.225.

Test Data

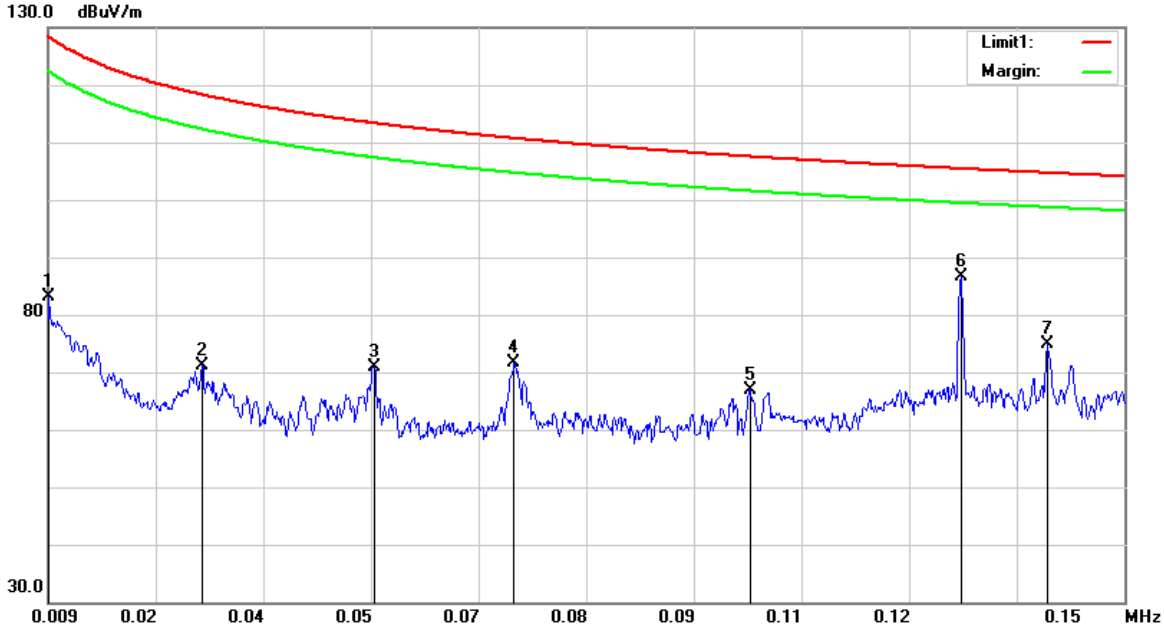
Environmental Conditions

Temperature:	29.1°C
Relative Humidity:	50 %
ATM Pressure:	100.5 kPa
Test Engineer:	Alex Hu
Test date:	2021-05-25

Test mode: Transmitting

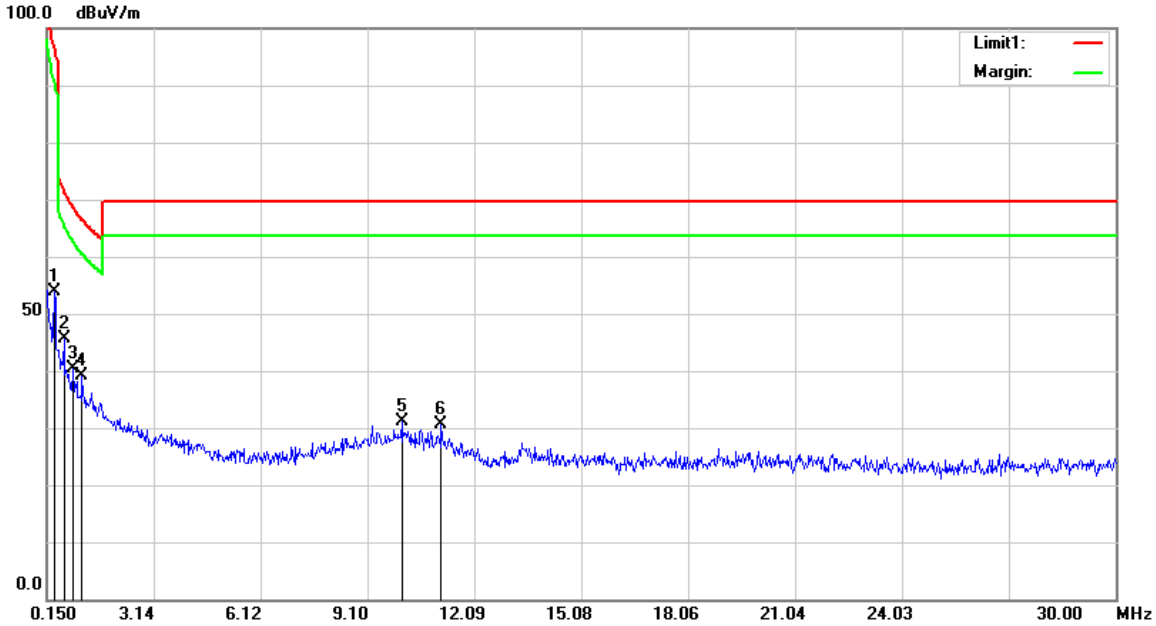
125kHz, ASK:

9 kHz~150kHz:



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
0.0091	-5.40	peak	88.61	83.21	128.42	45.21
0.0292	-6.16	peak	77.18	71.02	118.30	47.28
0.0517	-2.47	peak	73.34	70.87	113.33	42.46
0.0700	1.95	peak	69.72	71.67	110.70	39.03
0.1010	0.34	peak	66.66	67.00	107.52	40.52
0.1285	21.56	peak	65.10	86.66	105.42	18.76
0.1400	10.47	peak	64.44	74.91	104.68	29.77

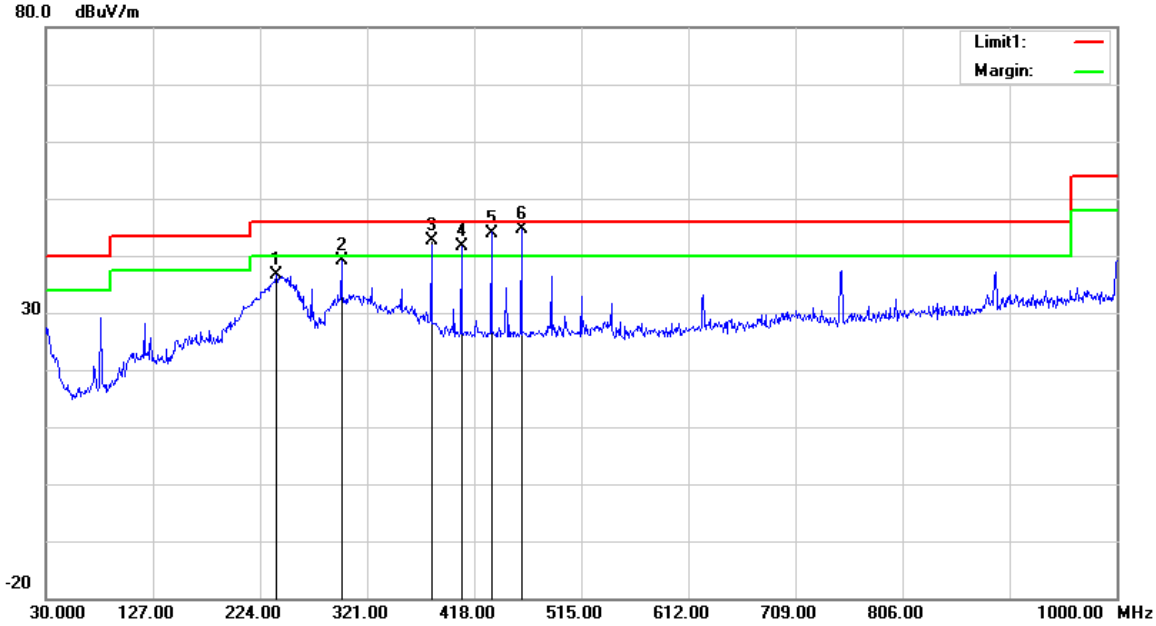
150kHz-30 MHz:



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
0.3590	23.97	peak	30.01	53.98	96.50	42.52
0.6276	19.94	peak	25.58	45.52	71.65	26.13
0.8963	17.71	peak	22.73	40.44	68.55	28.11
1.1351	18.20	peak	21.05	39.25	66.50	27.25
10.0602	21.67	peak	9.46	31.13	69.54	38.41
11.1647	21.18	peak	9.39	30.57	69.54	38.97

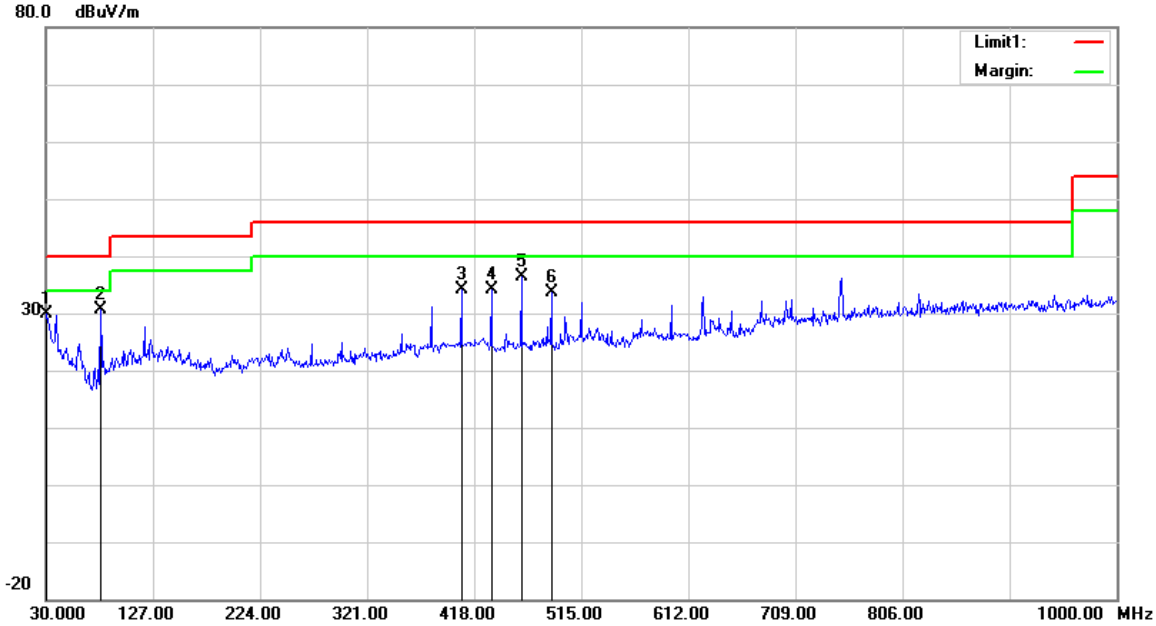
30 MHz-1GHz

Horizontal:



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
238.5500	42.63	peak	-6.08	36.55	46.00	9.45
297.7200	42.81	peak	-3.79	39.02	46.00	6.98
379.2000	45.24	QP	-2.51	42.73	46.00	3.27
406.3600	43.62	QP	-2.00	41.62	46.00	4.38
433.5200	45.27	QP	-1.35	43.92	46.00	2.08
460.6800	45.47	QP	-0.92	44.55	46.00	1.45

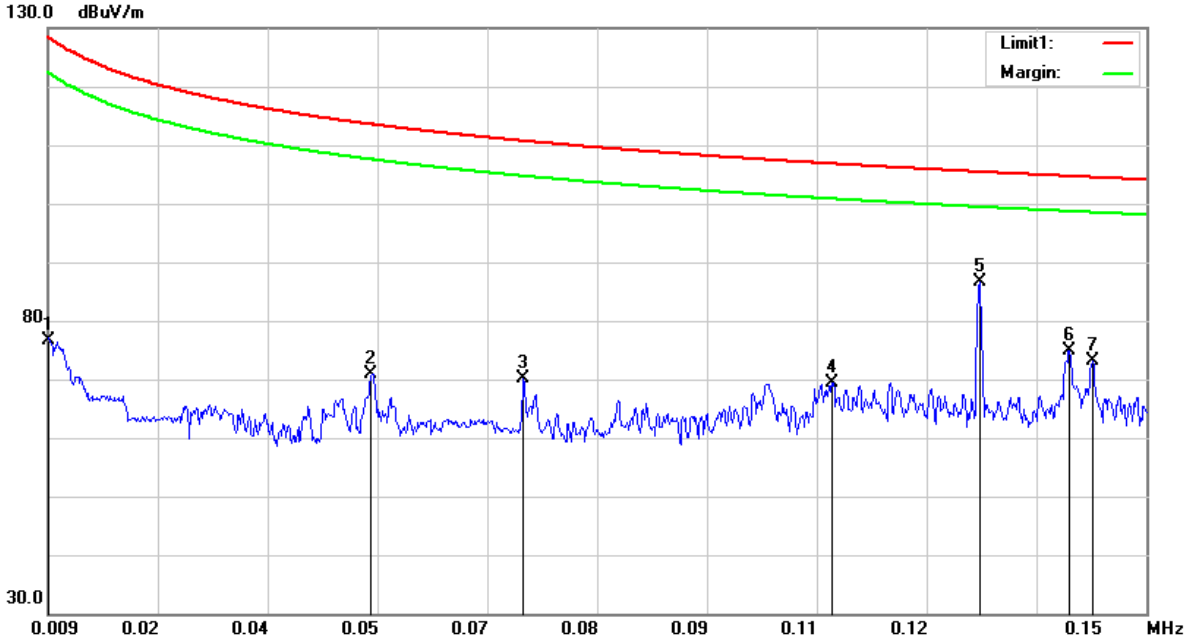
Vertical:



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
30.0000	28.49	peak	1.46	29.95	40.00	10.05
79.4700	42.01	peak	-11.40	30.61	40.00	9.39
406.3600	36.06	peak	-2.00	34.06	46.00	11.94
433.5200	35.50	peak	-1.35	34.15	46.00	11.85
460.6800	37.40	peak	-0.92	36.48	46.00	9.52
487.8400	33.97	peak	-0.44	33.53	46.00	12.47

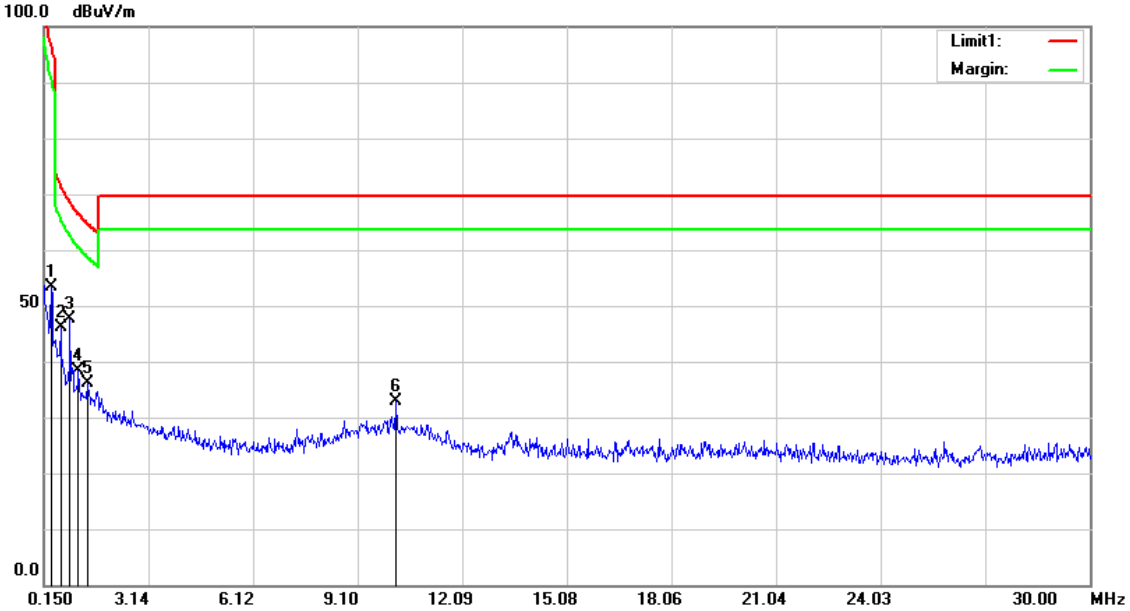
125kHz, FSK:

9 kHz~150kHz:



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
0.0091	-12.05	peak	88.61	76.56	128.42	51.86
0.0505	-2.71	peak	73.60	70.89	113.54	42.65
0.0700	0.39	peak	69.72	70.11	110.70	40.59
0.1097	3.27	peak	66.17	69.44	106.80	37.36
0.1285	21.50	peak	65.10	86.60	105.42	18.82
0.1401	10.56	peak	64.43	74.99	104.67	29.68
0.1431	8.84	peak	64.26	73.10	104.49	31.39

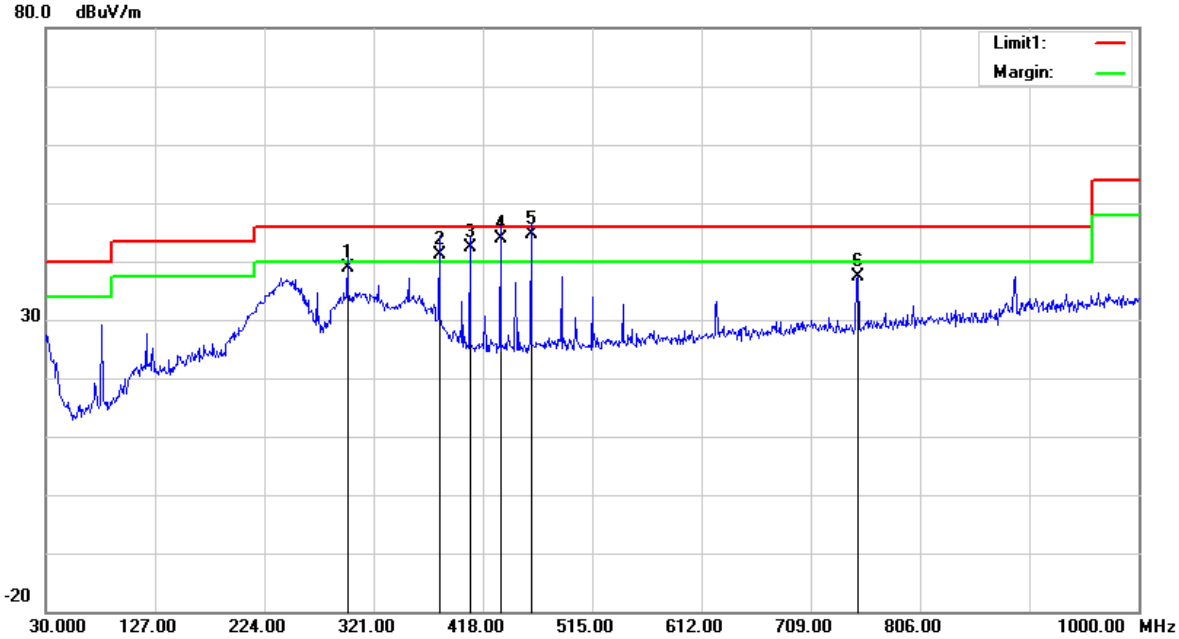
150kHz-30 MHz:



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
0.3590	23.49	peak	30.01	53.50	96.50	43.00
0.6276	20.46	peak	25.58	46.04	71.65	25.61
0.8963	25.00	peak	22.73	47.73	68.55	20.82
1.1351	17.36	peak	21.05	38.41	66.50	28.09
1.4037	16.63	peak	19.52	36.15	64.65	28.50
10.2094	23.45	peak	9.45	32.90	69.54	36.64

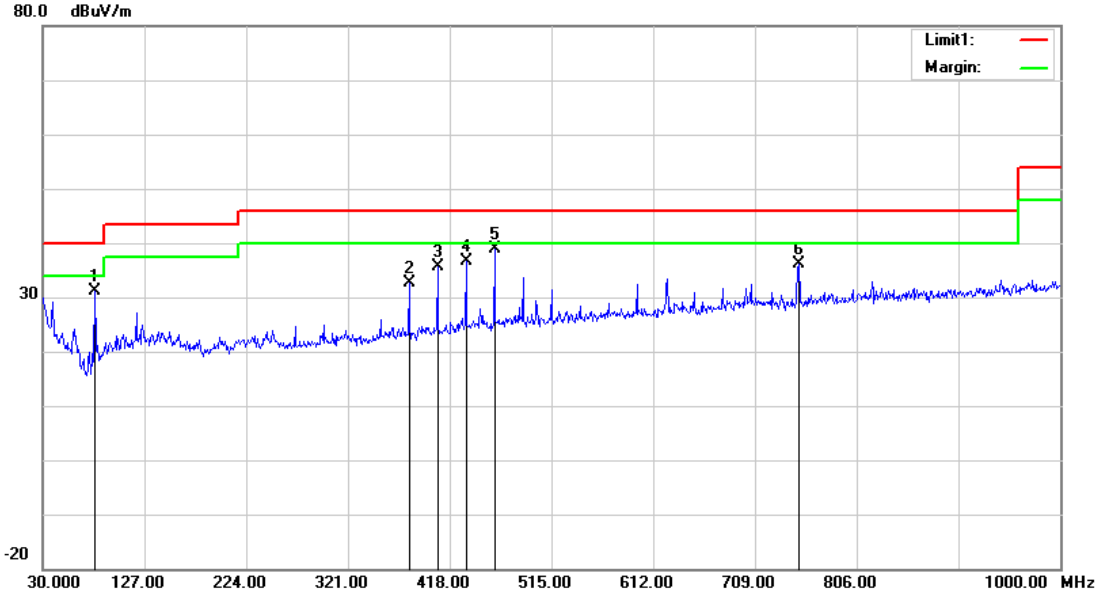
30 MHz-1GHz

Horizontal:



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
297.7200	42.70	QP	-3.79	38.91	46.00	7.09
379.2000	43.52	QP	-2.51	41.01	46.00	4.99
406.3600	44.38	QP	-2.00	42.38	46.00	3.62
433.5200	45.16	QP	-1.35	43.81	46.00	2.19
460.6800	45.67	QP	-0.92	44.75	46.00	1.25
750.7100	34.26	peak	3.17	37.43	46.00	8.57

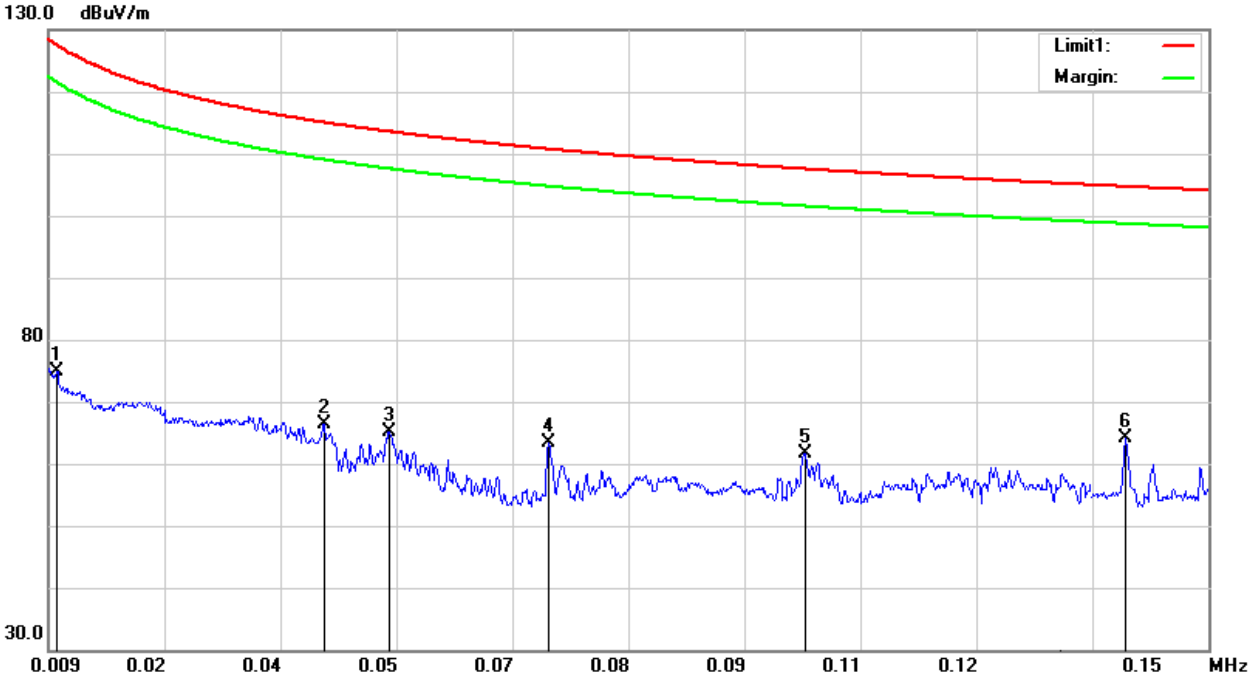
Vertical:



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
79.4700	42.51	peak	-11.40	31.11	40.00	8.89
379.2000	35.11	peak	-2.51	32.60	46.00	13.40
406.3600	37.56	peak	-2.00	35.56	46.00	10.44
433.5200	38.00	peak	-1.35	36.65	46.00	9.35
460.6800	39.90	peak	-0.92	38.98	46.00	7.02
750.7100	33.00	peak	3.17	36.17	46.00	9.83

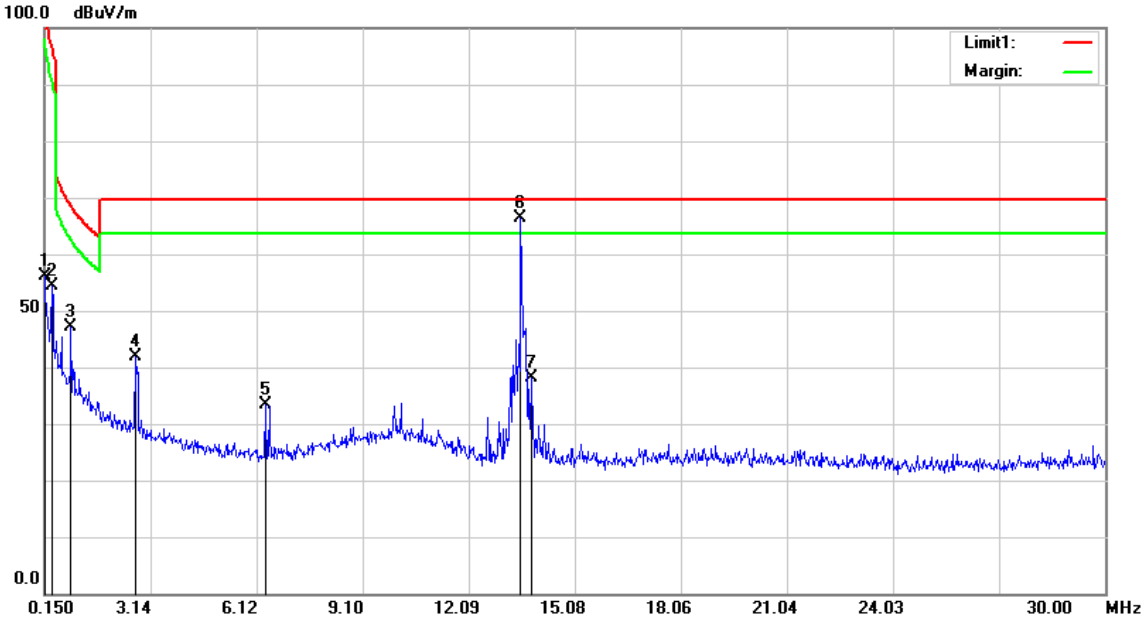
13.56 MHz:

9 kHz~150kHz:



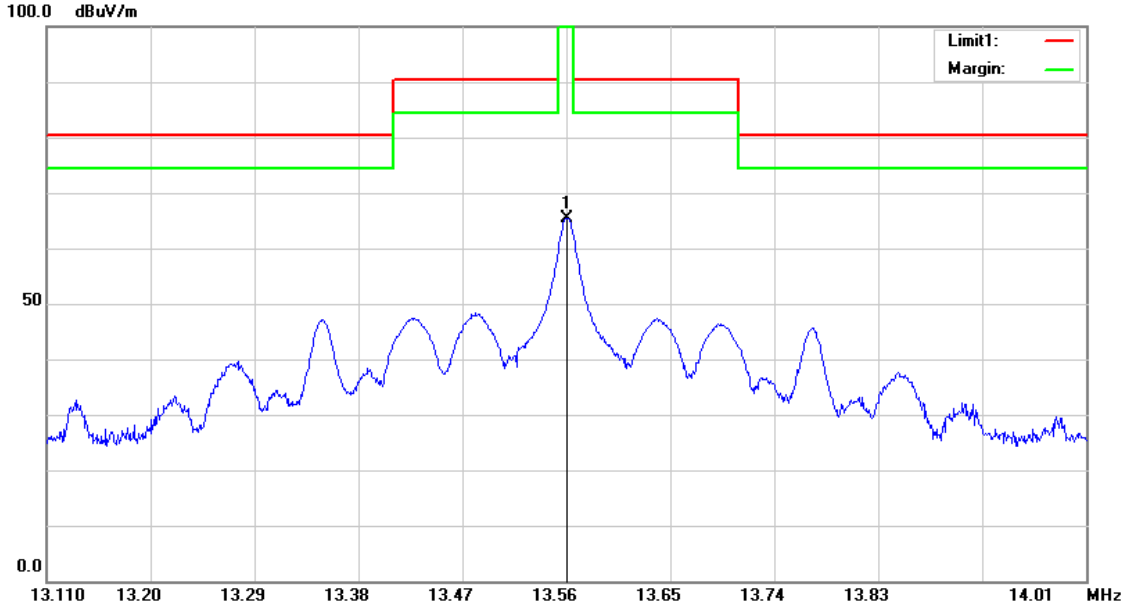
Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
0.0100	-13.73	peak	88.61	74.88	127.60	52.72
0.0425	-8.29	peak	74.68	66.39	115.04	48.65
0.0505	-8.53	peak	73.60	65.07	113.54	48.47
0.0698	-6.43	peak	69.76	63.33	110.73	47.40
0.1010	-5.06	peak	66.66	61.60	107.52	45.92
0.1400	-0.27	peak	64.44	64.17	104.68	40.51

150kHz-30 MHz:



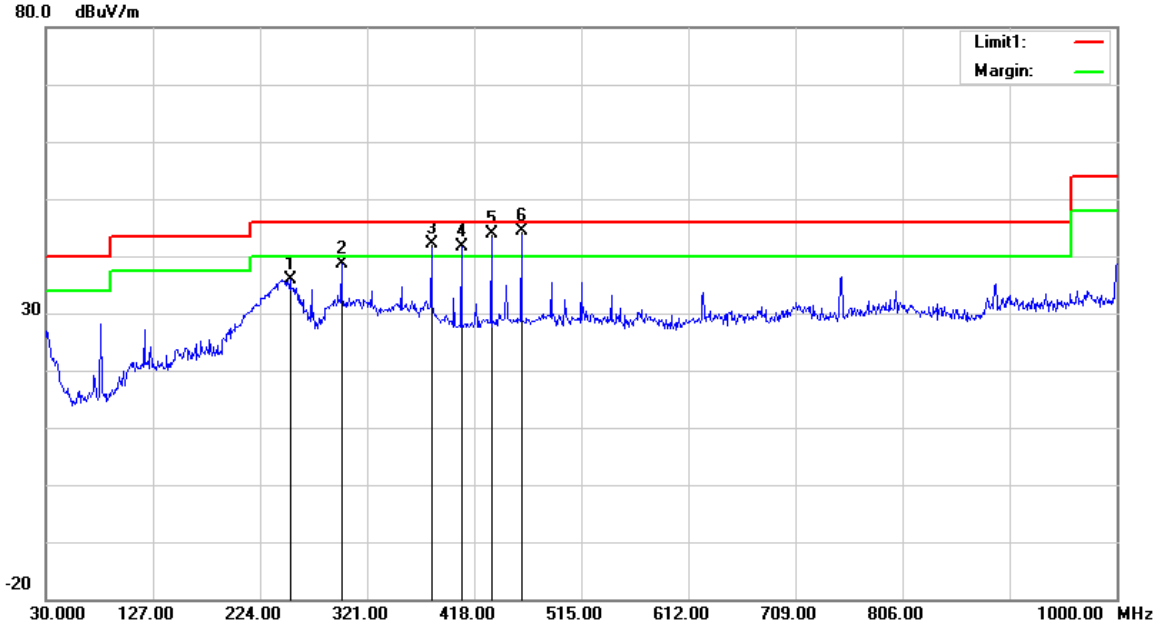
Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
0.1500	17.50	peak	38.53	56.03	104.08	48.05
0.3590	24.39	peak	30.01	54.40	96.50	42.10
0.8963	24.47	peak	22.73	47.20	68.55	21.35
2.7171	27.79	peak	14.09	41.88	69.54	27.66
6.3588	23.06	peak	10.32	33.38	69.54	36.16
13.8512	28.78	peak	9.29	38.07	69.54	31.47

Mask:



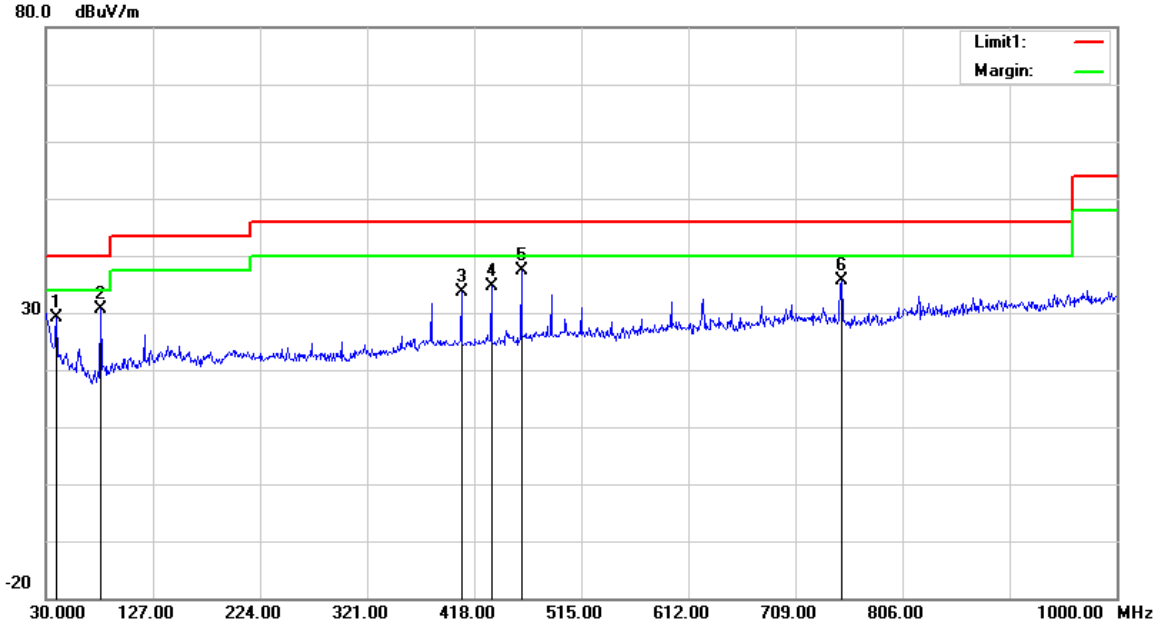
No.	Frequency	Reading	Detector	Corrected	Result	Limit	Margin
	(MHz)	(dBuV)		dB/m	(dBuV/m)	(dBuV/m)	(dB)
1	13.5610	56.11	peak	9.31	65.42	124.00	58.58

Horizontal:



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
251.1600	41.94	peak	-5.96	35.98	46.00	10.02
297.7200	42.31	peak	-3.79	38.52	46.00	7.48
379.2000	44.68	QP	-2.51	42.17	46.00	3.83
406.3600	43.55	QP	-2.00	41.55	46.00	4.45
433.5200	45.12	QP	-1.35	43.77	46.00	2.23
460.6800	45.33	QP	-0.92	44.41	46.00	1.59

Vertical:



Frequency (MHz)	Receiver Reading (dBµV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
39.7000	34.98	QP	-5.84	29.14	40.00	10.86
79.4700	42.01	peak	-11.40	30.61	40.00	9.39
406.3600	35.56	peak	-2.00	33.56	46.00	12.44
433.5200	36.00	peak	-1.35	34.65	46.00	11.35
460.6800	38.40	peak	-0.92	37.48	46.00	8.52
750.7100	32.50	peak	3.17	35.67	46.00	10.33

FCC§15.225(e) - FREQUENCY STABILITY

Applicable Standard

The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

Test Procedure

Frequency Stability vs. Temperature: The adapter under test was connected to an external AC power.

The EUT was placed inside the temperature chamber.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the Spectrum Analyzer.

Frequency Stability vs. Voltage: An external variable AC or DC power supply Source connected to the EUT or EUT adapter. Test the frequency output in the extremity voltage.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2020-09-24	2021-09-24
Sonoma	Amplifier	310N	185914	2020-10-13	2021-10-13
ESPEC	Constant temperature and humidity Tester	ESX-4CA	018 463	2021-03-10	2022-03-09
EMCO	Passive Loop	6512	9706-1206	2020-03-05	2023-03-05
UNI-T	Multimeter	UT39A	M130199938	2020-07-24	2021-07-24

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

Test Data

Environmental Conditions

Temperature:	29.1°C
Relative Humidity:	50 %
ATM Pressure:	100.5 kPa
Test Engineer:	Alex Hu
Test date:	2021-05-25

Test Mode: Transmitting

Test Result: Pass

f_o = 13.56 MHz				
Temperature	**Voltage**	**Measured frequency**	**Frequency Error**	**Limit**
℃	**V_{AC}**	**MHz**	**Hz**	**Hz**
-20	120	13.560637	637	±1356
-10		13.560594	594	±1356
0		13.560512	512	±1356
10		13.560567	567	±1356
20		13.560574	574	±1356
25		13.56066	660	±1356
30		13.560467	467	±1356
40		13.560391	391	±1356
50		13.560353	353	±1356
20	138	13.560526	526	±1356
20	102	13.560378	378	±1356

Note: Operation voltage range declared by manufacturer.

FCC §15.215(c) – 20 dB EMISSION BANDWIDTH

Applicable Standard

Per FCC §15.215 (c) Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §15.217 through § 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of - band operation.

Test Procedure

Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
EMCO	Passive Loop	6512	9706-1206	2020-03-05	2023-03-05
R&S	EMI Test Receiver	ESCI	100224	2020-09-12	2021-09-12
Unknown	Coaxial Cable	C-NJNJ-50	C-1000-01	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0400-02	2020-09-05	2021-09-05
Unknown	Coaxial Cable	C-NJNJ-50	C-0530-01	2020-09-24	2021-09-24
Sonoma	Amplifier	310N	185914	2020-10-13	2021-10-13

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

Test Data

Environmental Conditions

Temperature:	29.1°C
Relative Humidity:	50 %
ATM Pressure:	100.5 kPa
Test Engineer:	Alex Hu
Test date:	2021-05-25

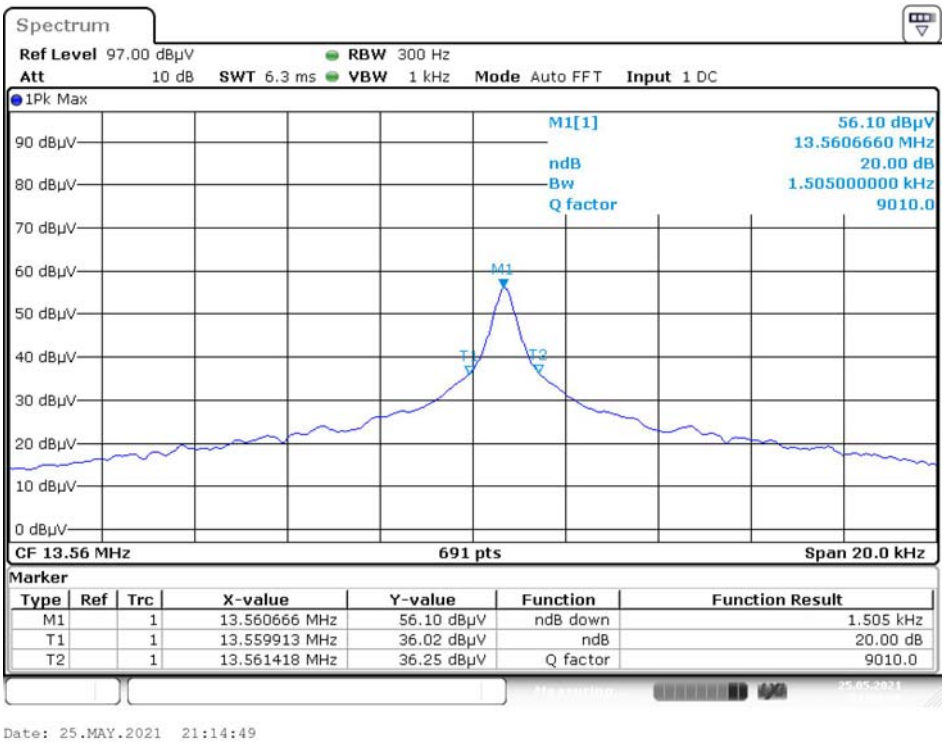
Test Result: Compliance.

Please refer to following tables and plots

Test Frequency (MHz)	20 dB Bandwidth (kHz)
13.56	1.505

Test Mode: Transmitting

20 dB Emission Bandwidth



******* END OF REPORT *******