

FCC PART 15C

TEST REPORT

For

Rosslare Enterprises Ltd

Flat 5,9/F., Wing Fat Industrial Bldg.12 Wang Tai Rd.Kowloon Bay, Kowloon, Hong Kong

FCC ID: GCD-MD12X

Report Type: Original Report	Product Name: OEM Proximity Reader Module
Report Number: RDG171206003-00	
Report Date: 2017-12-20 Jerry Zhang	
Reviewed By: EMC Manager <i>Jerry Zhang</i>	
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan).

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The **Rosslare Enterprises Ltd** 's product, model number: **MD12W (FCC ID: GCD-MD12X)** (the "EUT") in this report was a **OEM Proximity Reader Module** , which was measured approximately: 2.3cm (D) x 0.9 cm (H), rated input voltage: DC 5V.

Note: The series product, model MD12W, MD12C are electrically identical, we selected all model for fully testing, the details was explained in the attached letter.

**All measurement and test data in this report was gathered from production sample serial number: 171206003-1(MD12W), 171206003-2(MD12C), (Assigned by BACL,Dongguan). The EUT was received on 2017-12-06.*

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.

Related Submittal(s)/Grant(s)

N/A

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: 4.58 dB for Horizontal, 4.59 dB for Vertical 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical
Temperature	±1 °C
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)

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, 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. : 897218, the FCC Designation No. : CN1220.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062D.

SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207	AC Line Conducted Emission	Compliance
§15.209 §15.205	Radiated Emission Test	Compliance

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a test mode.

EUT Exercise Software

No software used in test.

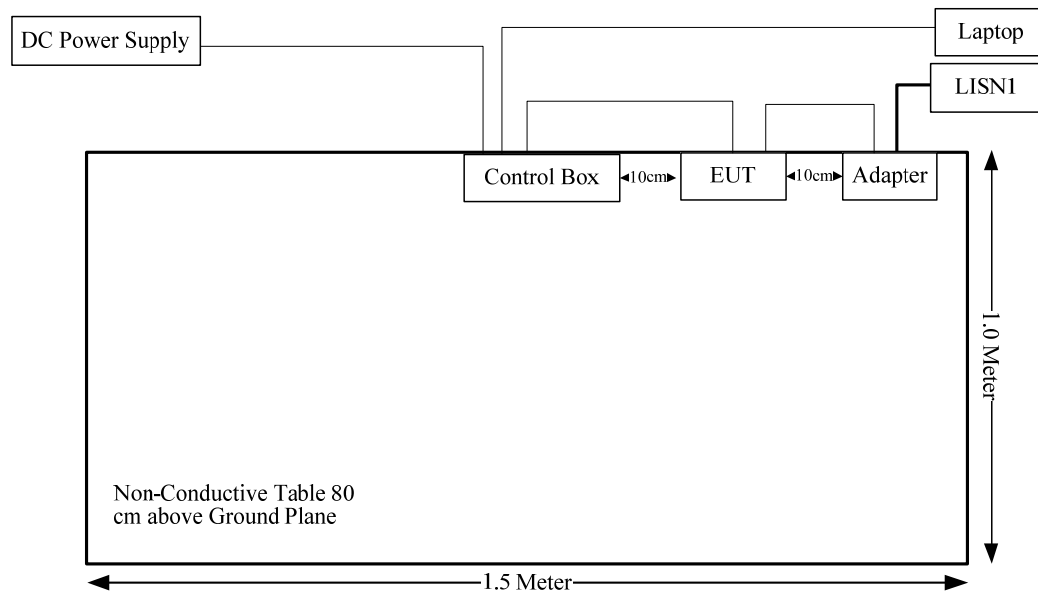
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
CFOMAX	Adapter	ACC07C02	V043660704256144
DELL	Laptop	PP11L	QDS-BRCM1017
Rosslare	Control box	N/A	N/A
Pro instrument	DC Power Supply	pps3300	N/A

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	Yes	No	0.5	Adapter	EUT
RJ45 Cable	Yes	No	10	Control Box	Laptop
Conductor Cable	Yes	No	0.3	Control Box	EUT

Block Diagram of Test Setup



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.

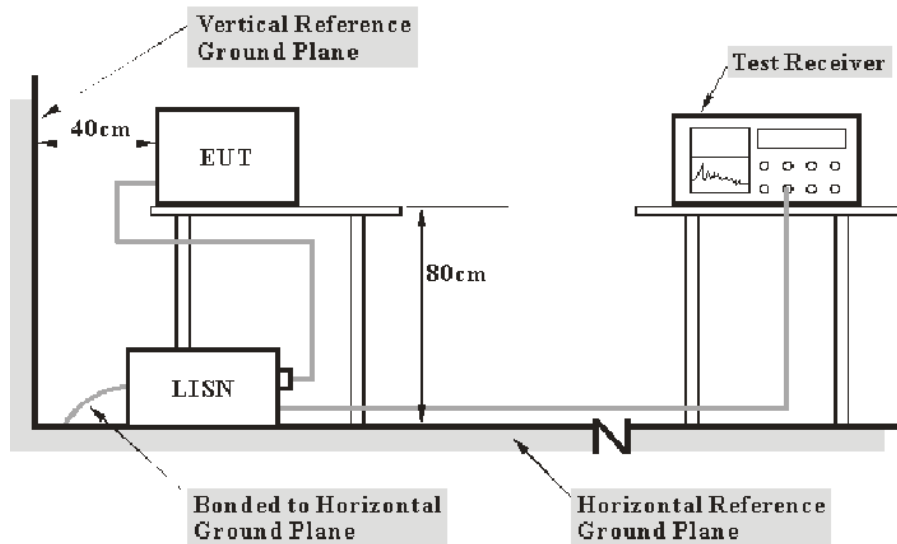
Antenna Connected Construction

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

Result: Compliance.

FCC §15.207 – AC LINE CONDUCTED EMISSION

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 external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The adapter was connected to the main LISN with an AC 120V/60Hz 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2017-12-08	2018-12-08
R&S	L.I.S.N	ESH2-Z5	892107/021	2017-09-01	2018-09-01
R&S	Two-line V-network	ENV 216	3560.6550.12	2017-12-08	2018-12-08
N/A	Coaxial Cable	2m	C0200/01	2017-09-05	2018-09-05
R&S	Test Software	EMC32	Version8.53.0	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 Procedure

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

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

According FCC publication number 174176, for a device with a permanent antenna operating at or below 30 MHz, the measurements done with a suitable dummy load, in lieu of the permanent antenna under the following conditions: (1) perform the AC line conducted tests with the permanent antenna to determine compliance with the Section 15.207 limits outside the transmitter's fundamental emission band; (2) retest with a dummy load in lieu of the permanent antenna to determine compliance with the Section 15.207 limits within the transmitter's fundamental emission band.

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:

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

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207.

Test Data

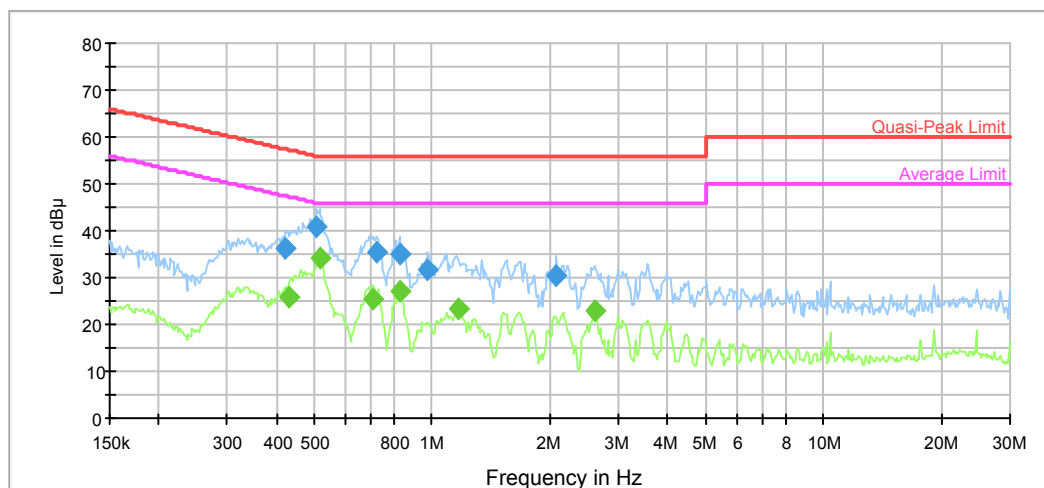
Environmental Conditions

Temperature:	25.1 °C
Relative Humidity:	35 %
ATM Pressure:	101.2 kPa

The testing was performed by Alex Xiao on 2017-12-13.

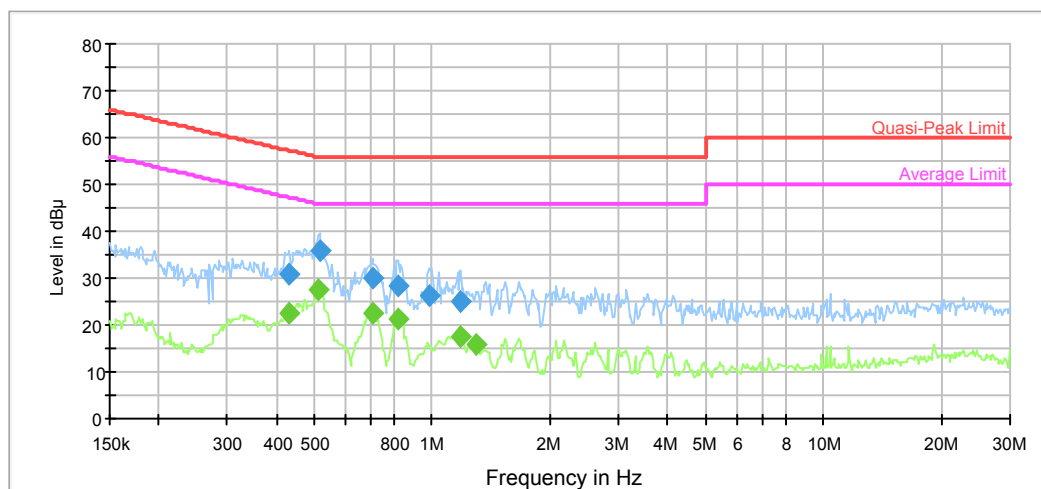
Test Mode: Transmitting(MD12C was the worst)

AC 120V, 60 Hz, Line:



Frequency (MHz)	Quasi Peak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.422630	36.3	9.000	L1	10.0	21.1	57.4	Compliance
0.507637	40.8	9.000	L1	9.9	15.2	56.0	Compliance
0.720803	35.4	9.000	L1	9.8	20.6	56.0	Compliance
0.825364	34.8	9.000	L1	9.8	21.2	56.0	Compliance
0.975701	31.6	9.000	L1	9.8	24.4	56.0	Compliance
2.080018	30.4	9.000	L1	9.7	25.6	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.429420	26.0	9.000	L1	9.9	21.3	47.3	Compliance
0.515791	34.1	9.000	L1	9.9	11.9	46.0	Compliance
0.709407	25.3	9.000	L1	9.8	20.7	46.0	Compliance
0.831967	26.9	9.000	L1	9.8	19.1	46.0	Compliance
1.162648	23.3	9.000	L1	9.8	22.7	46.0	Compliance
2.599932	23.0	9.000	L1	9.8	23.0	46.0	Compliance

AC120 V, 60 Hz, Neutral:

Frequency (MHz)	Quasi Peak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.429420	30.9	9.000	N	9.9	26.4	57.3	Compliance
0.515791	35.7	9.000	N	9.9	20.3	56.0	Compliance
0.703777	29.8	9.000	N	9.8	26.2	56.0	Compliance
0.818813	28.5	9.000	N	9.8	27.5	56.0	Compliance
0.983506	26.1	9.000	N	9.8	29.9	56.0	Compliance
1.181325	25.0	9.000	N	9.8	31.0	56.0	Compliance

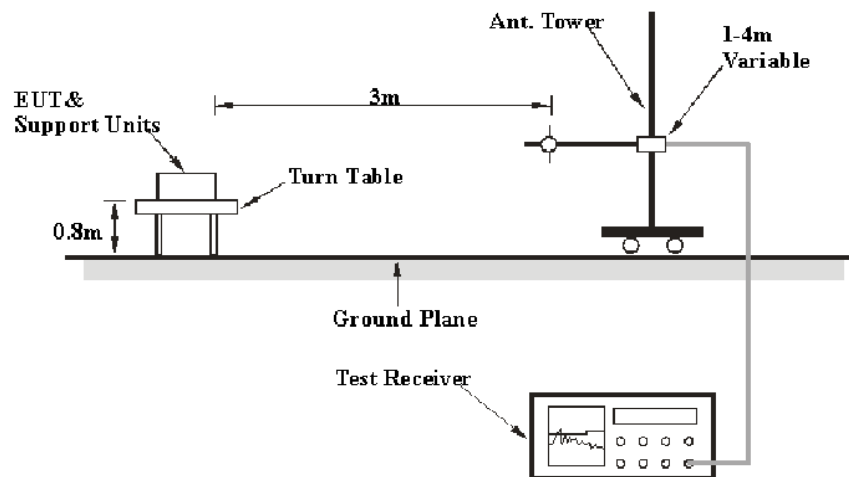
Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.429420	22.7	9.000	N	9.9	24.6	47.3	Compliance
0.511698	27.3	9.000	N	9.9	18.7	46.0	Compliance
0.703777	22.7	9.000	N	9.8	23.3	46.0	Compliance
0.818813	21.2	9.000	N	9.8	24.8	46.0	Compliance
1.181325	17.3	9.000	N	9.8	28.7	46.0	Compliance
1.289541	15.8	9.000	N	9.8	30.2	46.0	Compliance

FCC§15.205 & §15.209 - RADIATED EMISSIONS TEST

Applicable Standard

FCC Part 15.205, 15.209

EUT Setup



The radiated emission tests were performed in the 3-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	Detector
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

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:

$$\text{Corr. Ampl.} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

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:

$$\text{Margin} = \text{Limit} - \text{Corr. Ampl.}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2017-09-01	2018-09-01
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2020-11-10
HP	Amplifier	8447D	2727A05902	2017-09-05	2018-09-05
EMCO	Passive Loop	6512	9706-1206	2017-03-05	2020-03-05
Unknown	Coaxial Cable	4m	C0400/01	2016-09-05	2018-09-05
Unknown	Coaxial Cable	10m	C1000/01	2016-09-05	2018-09-05

* **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.

Test Data

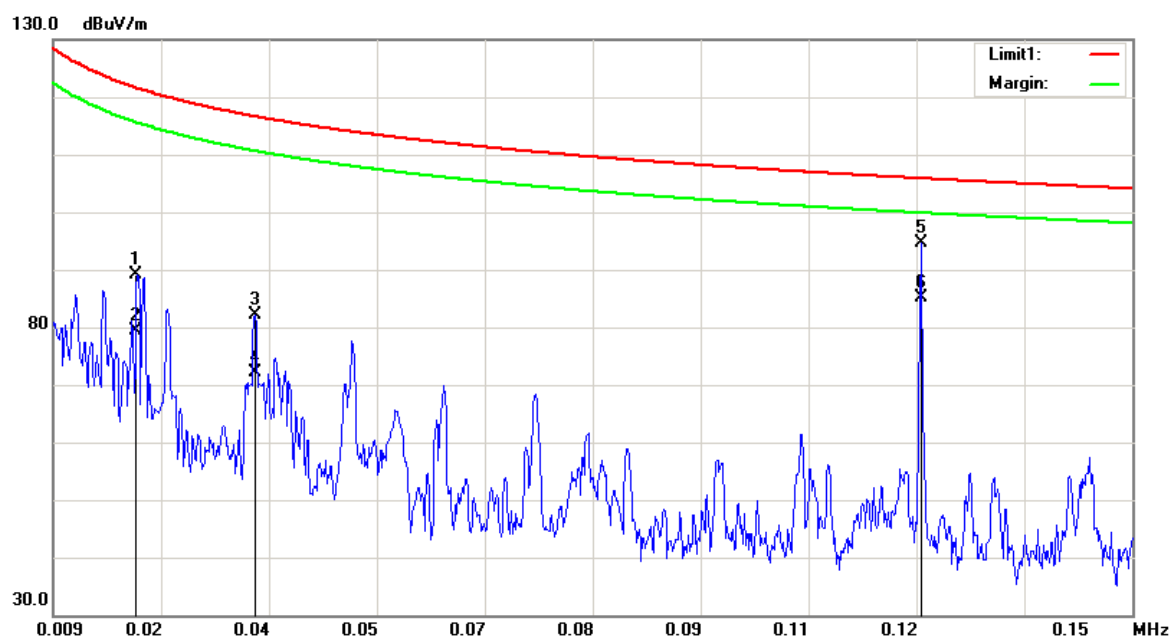
Environmental Conditions

Temperature:	26.3 °C
Relative Humidity:	29.8 %
ATM Pressure:	101.3 kPa

* The testing was performed by Blake Yang on 2017-12-14.

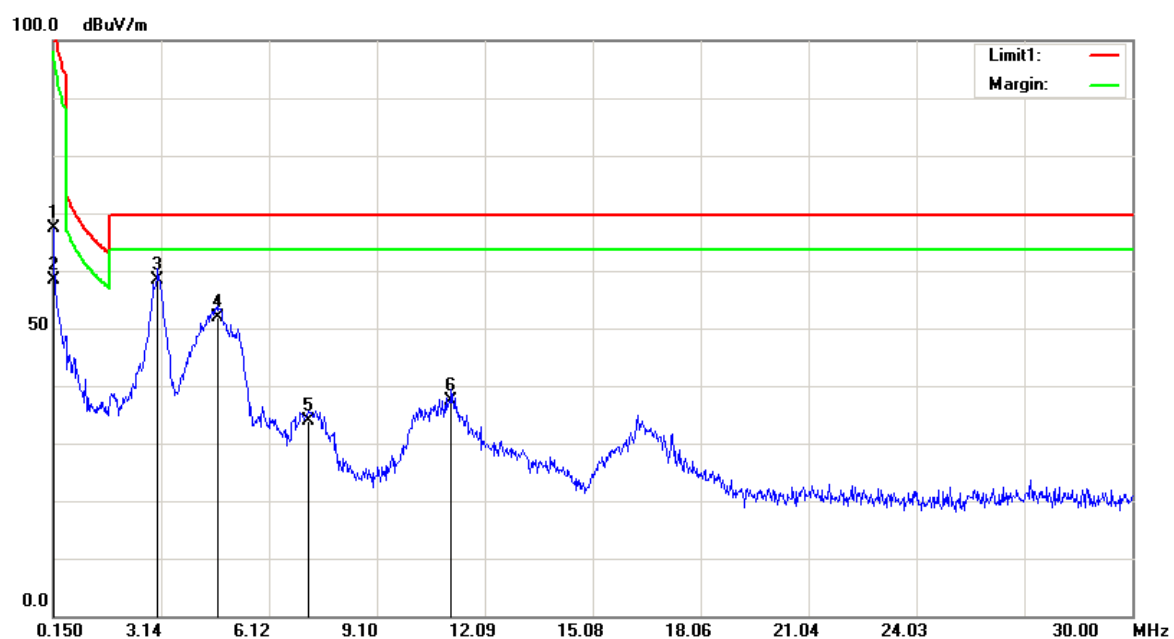
Test mode: Transmitting(MD12C was the worst)

1) 9 kHz~150 kHz:

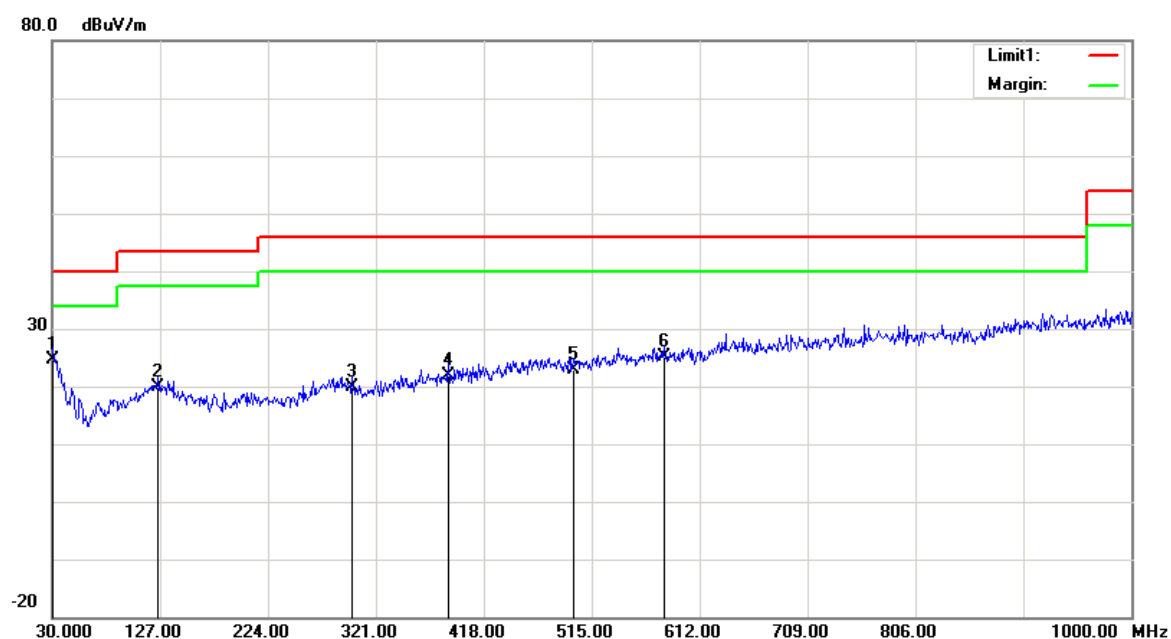


No.	Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	0.0200	6.10	peak	83.07	89.17	121.58	32.41
2	0.0200	-3.77	AVG	83.07	79.30	121.58	42.28
3	0.0354	4.94	peak	77.10	82.04	116.62	34.58
4	0.0354	-5.00	AVG	77.10	72.10	116.62	44.52
5	0.1223	29.70	peak	64.87	94.57	105.85	11.28
6	0.1223	20.33	AVG	64.87	85.20	105.85	20.65

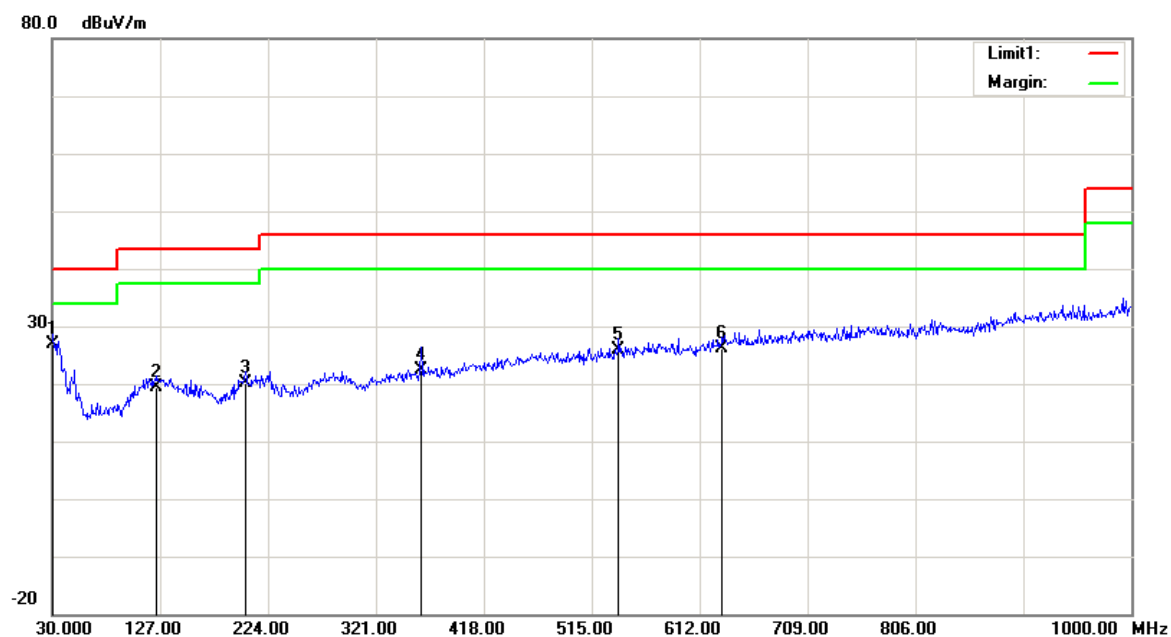
2) 150kHz ~30MHz:



No.	Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	0.1500	3.87	peak	63.60	67.47	104.08	36.61
2	0.1500	-5.30	AVG	63.60	58.30	104.08	45.78
3	3.0455	19.90	QP	38.50	58.40	69.54	11.14
4	4.7171	16.15	QP	35.65	51.80	69.54	17.74
5	7.2244	0.36	QP	33.44	33.80	69.54	35.74
6	11.1646	5.17	QP	32.13	37.30	69.54	32.24

Horizontal

No.	Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1	30.9700	24.35	QP	0.35	24.70	40.00	15.30
2	125.0600	24.63	QP	-4.83	19.80	43.50	23.70
3	299.6600	24.25	QP	-4.35	19.90	46.00	26.10
4	385.9900	24.48	QP	-2.58	21.90	46.00	24.10
5	498.5100	24.00	QP	-1.10	22.90	46.00	23.10
6	579.9900	24.47	QP	0.73	25.20	46.00	20.80

Vertical

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