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Test – Results

Order-No.:

T42936-00-00HU

Client	Checkpoint Systems, Inc.				
Manufacturer	Sidep Electronics (Shanghai) Co., Ltd.				
Product Description	Electronic Article Surveillance Detection System				
Type / Model Name	EVOLVE IR C10 INTERNAL MTG / EVOLVE IR C10 EXT/WALL MTG				
Testing commenced on	2017-07-10	Approval - Test are made according to Customer specific			
Testing concluded on	2017-07-11				
Serial - No.	Pre production sample				

Type of test	Limits		Test Results		
Emission / Immunity	Margin (dB)	exceeded by (dB)	ok	not ok	meet criteria
<u>FCC Part 15.223 / RSS 210</u>					
Field strength of the fundamental wave	9.88		☒	☐	-
Spurious emissions (magnetic field) 9 kHz – 30 MHz	> 25		☒	☐	-
Radiated emissions (electric field) 30 MHz – 1 GHz	15.8		☒	☐	-
			☐	☐	-
<u>EN 300 330 V2.1.1</u>					
Permitted range of the operation frequencies – Operating frequency ranges			☒	☐	-
			☐	☐	-
			☐	☐	-

Remarks:

- Electronic TR7240 Rev 04A
 - FCC ID: DO4TR7240R
 - IC ID: 3356B-TR7240R

- This test report covers only partly testing with EVOLVE IR C10 INTERNAL MTG. Because manufacturer declared that both systems are technically identical (used electronic and antenna loops). Also the ancillary equipment is identically. Only the plastic cover is different.

- For detailed information see the following pages and the technical documents from the manufacturer.

- The limits are met.

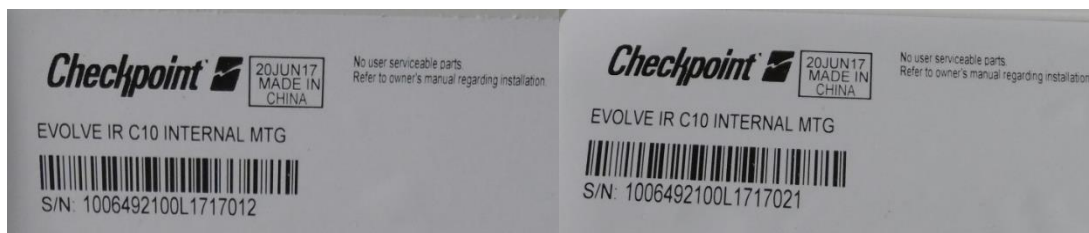
This test result consists of 15 page(s). The test result only corresponds to the tested sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

Date	Checked by	Tested by	Result
2017-10-18			☒ passed
			☐ not passed

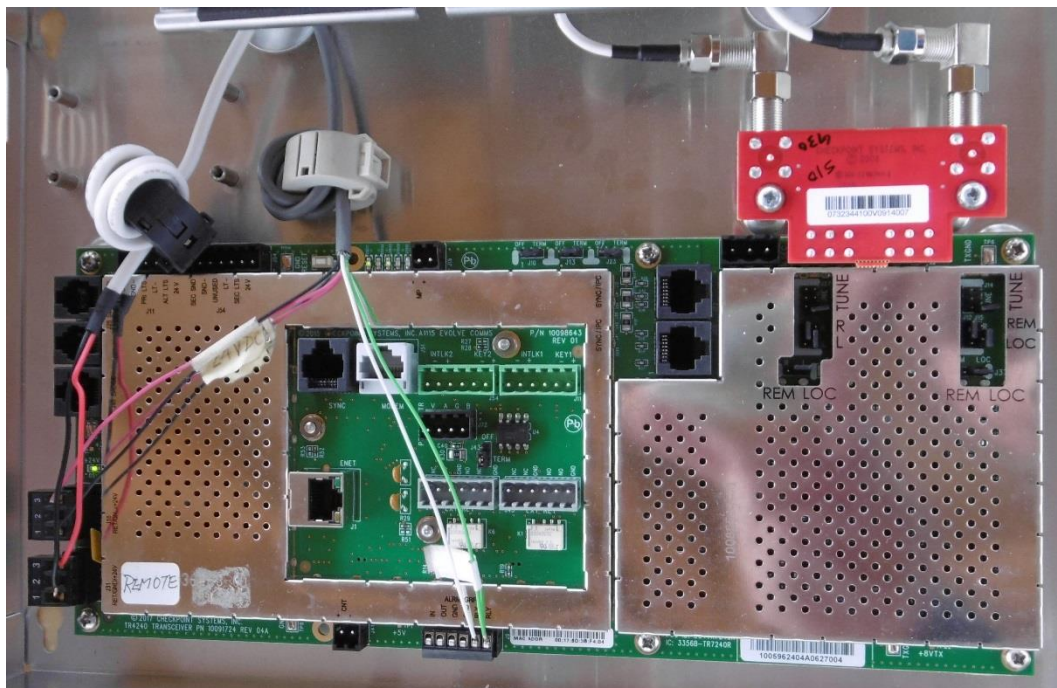
Photo documentation of the EuT

EVOLVE IR C10 INTERNAL MTG

Antenna:



Electronic:



Test setup:



Voice alarm:



Test conditions and results

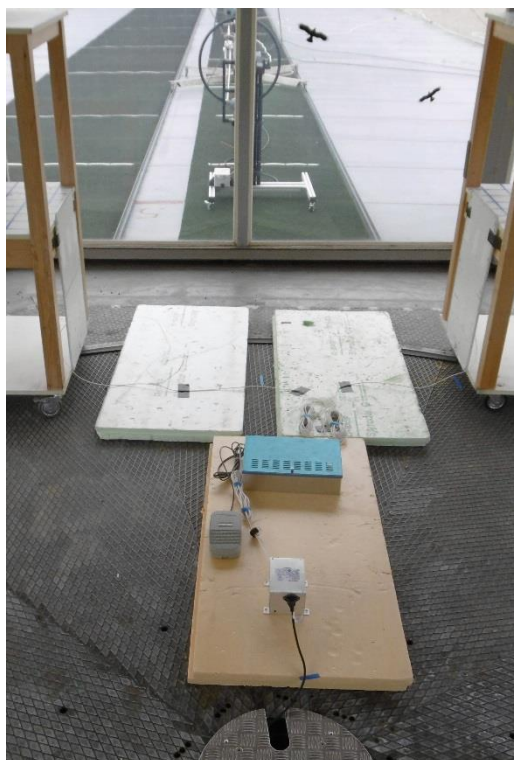
Field strength of the fundamental wave

Description of the test location

Test location: OATS1

Test distance: 3 metres

Test setup:



EVOLVE IR C10 INTERNAL MTG:

3m Distance measured:

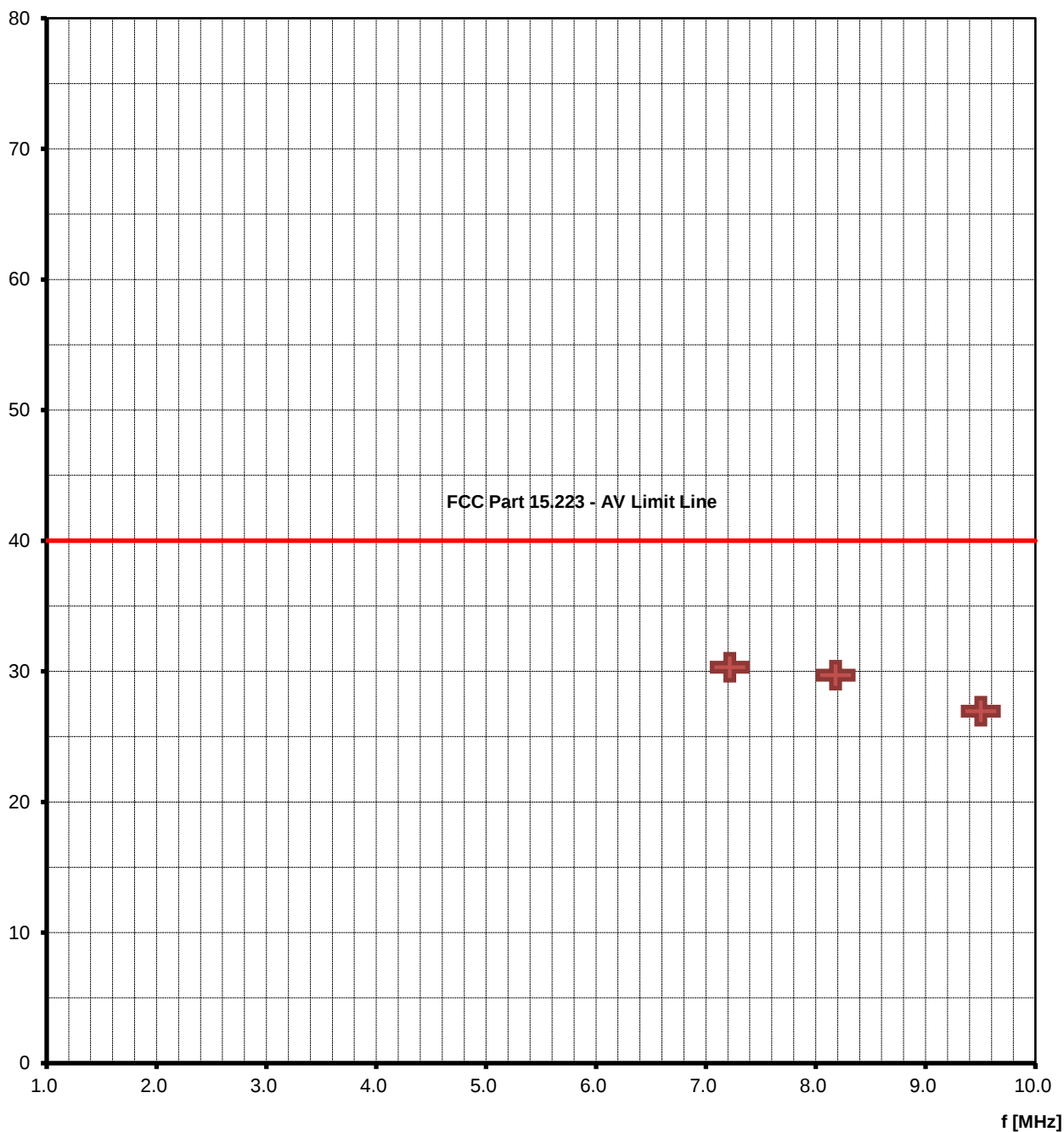
Frequency [MHz]	L: PK [dBμV]	L: AV [dBμV]	Correct. [dB]	L: PK [dBμV/m]	L: AV [dBμV/m]	PK Limit [dBμV/m]	AV Limit [dBμV/m]	Delta [dB]	TX1 & TX2:
8.2	79.77	49.82	20	99.77	69.82	100.0	80.0	-10.18	29
7.2 & 8.2	79.79	50.12	20	99.79	70.12	100.0	80.0	-9.88	29
9.5	77.22	46.31	20	97.22	66.31	100.0	80.0	-13.69	29

30m Distance calculated:

Frequency [MHz]	L: PK [dBμV/m]	Limit [dBμV/]	L: AV [dBμV/m]	Limit [dBμV/m]	Delta [dB]
8.2	59.77	60.0	29.82	40.0	-10.18
7.2 & 8.2	59.79	60.0	30.12	40.0	-9.88
9.5	57.22	60.0	26.31	40.0	-13.69

AV - Level dB μ V/m

dB μ V/m



Limit according to FCC Part 15 Subpart 15.223, 15.35(b)

Frequency (MHz)	Field strength of fundamental – Average Detector	
	($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)
1.705-10.0	100*	40*

Frequency (MHz)	Field strength of fundamental – Peak Detector	
	($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)
1.705-10.0	1000*	60*

* At a test distance of 30 metres

Limit according to RSS 210

Frequency (MHz)	Field strength of fundamental – Average Detector	
	($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)
1.705-10.0	100*	40*

Frequency (MHz)	Field strength of fundamental – Peak Detector	
	($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)
1.705-10.0	1000*	60*

* At a test distance of 30 metres

The requirements are **FULFILLED**.

Remarks:

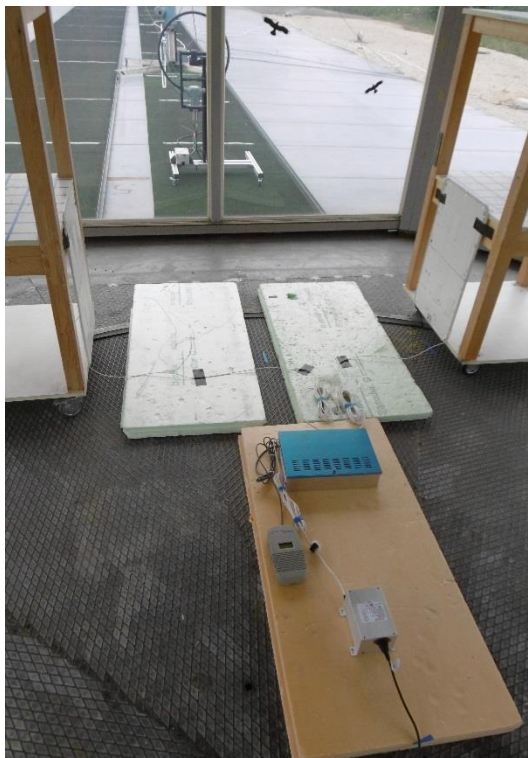
Spurious emissions (Magnetic field) 9 kHz – 30 MHz

Description of the test location

Test location: OATS1

Test distance: 10 metres

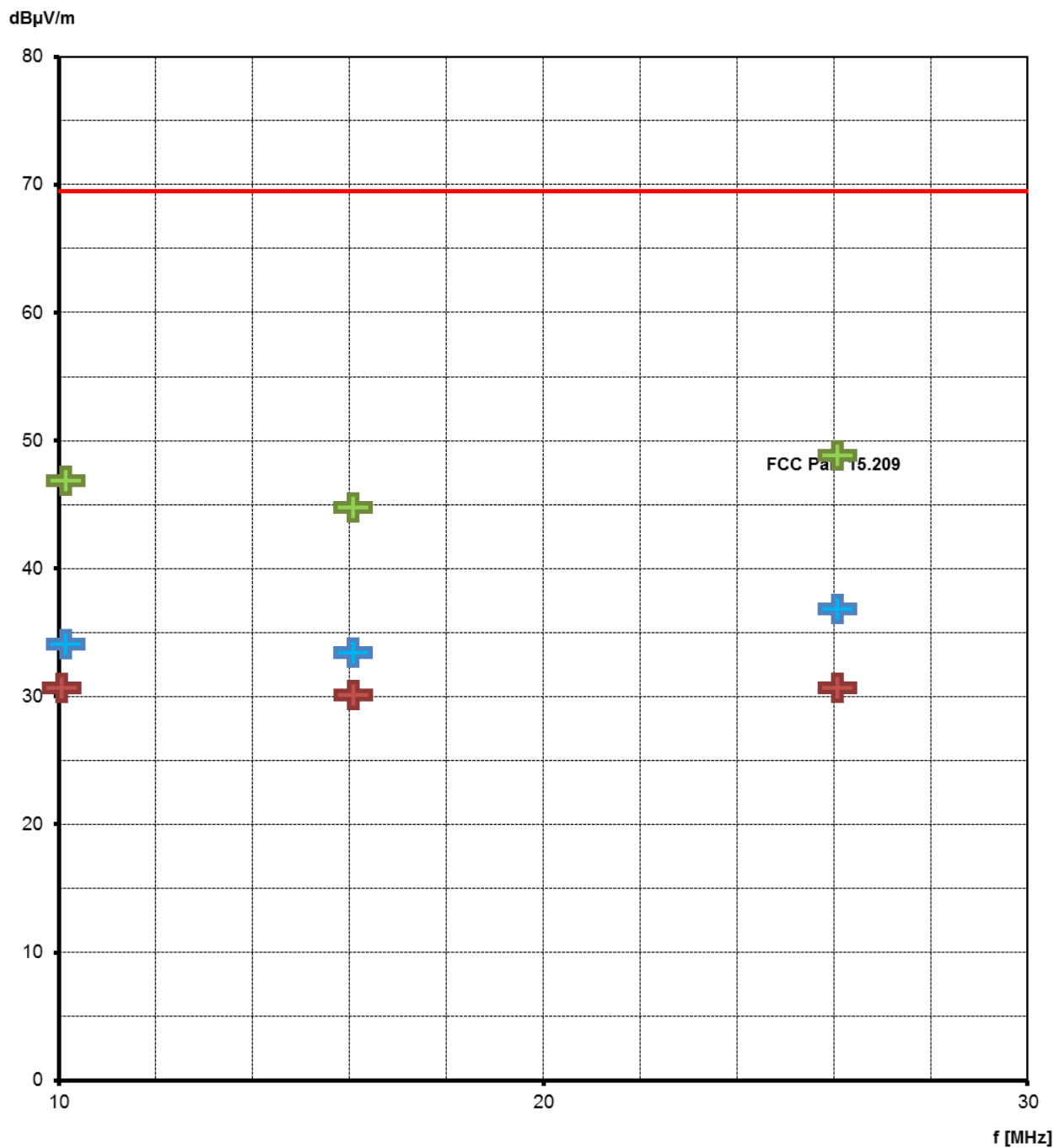
Test setup:



EVOLVE IR C10 INTERNAL MTG: Results at a measurement distance of 3m

Frequency [MHz]	L: PK [dBμV]	L: AV [dBμV]	L: QP [dBμV]	Correct. [dB]	L: PK [dBμV/m]	L: AV [dBμV/m]	L: QP [dBμV/m]	Limit [dBμV/m]
10	25.7	10.7	12.9	20.5	46.2	31.2	33.4	69.5
26.61	26.9	11.2	12.5	20.5	47.4	31.7	33.0	69.5
16.62	24.3	9.5	16.3	20.5	44.8	30.0	36.8	69.5

+ Pk - Level dB μ V/m
 + AV - Level dB μ V/m
 + QP - Level dB μ V/m



Limit according to FCC Part 15 Subpart 15.209(a):

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (metres)
	($\mu\text{V/m}$)	dB($\mu\text{V/m}$)	
0.009 - 0.490	2400/F(kHz)	--	300
0.490 - 1.705	24000/F (kHz)	--	30
1.705 - 30.0	30	29.5	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

Limit according to FCC Part 15 Subpart 15.223(a)

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (meters)
	($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)	
0.009-0.490	2400/F(kHz)	--	300
0.490-1.705	24000/F (kHz)	--	30
1.705-30.0	100	40	30

Limit according to RSS 210:

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (metres)
	($\mu\text{V/m}$)	dB($\mu\text{V/m}$)	
0.009 - 0.490	2400/F(kHz)	--	300
0.490 - 1.705	24000/F (kHz)	--	30
1.705 - 30.0	30	29.5	30
30 - 88	100	40	3
88 - 216	150	43.5	3
216 - 960	200	46	3
Above 960	500	54	3

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (meters)
	($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)	
0.009-0.490	2400/F(kHz)	--	300
0.490-1.705	24000/F (kHz)	--	30
1.705-30.0	100	40	30

The requirements are **FULFILLED**.

Remarks:

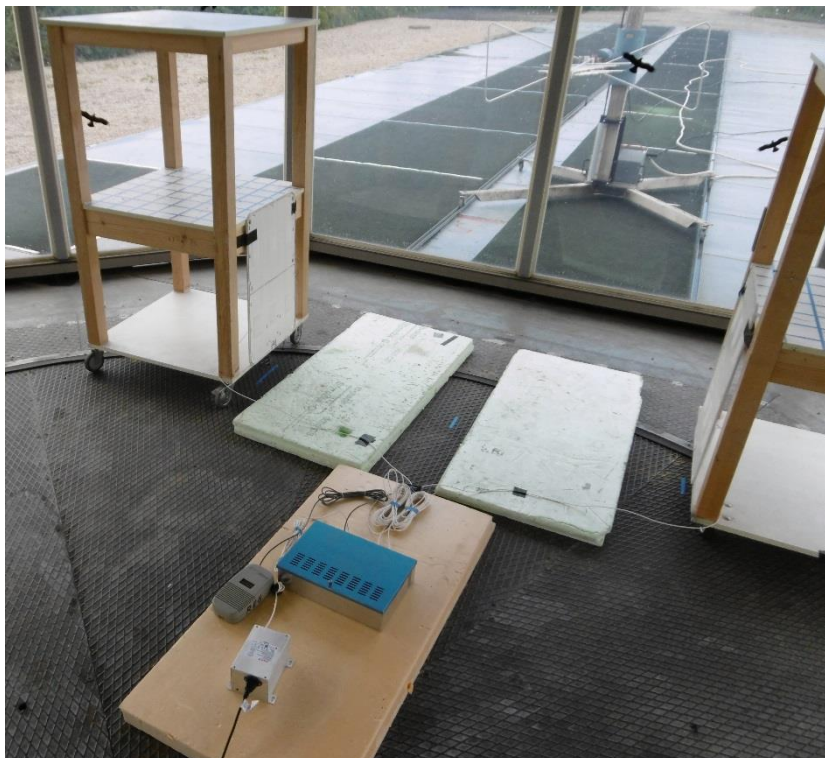
Radiated emissions (electric field) 30 MHz – 1 GHz

Description of the test location

Test location: OATS1

Test distance: 3 metres

Test setup:



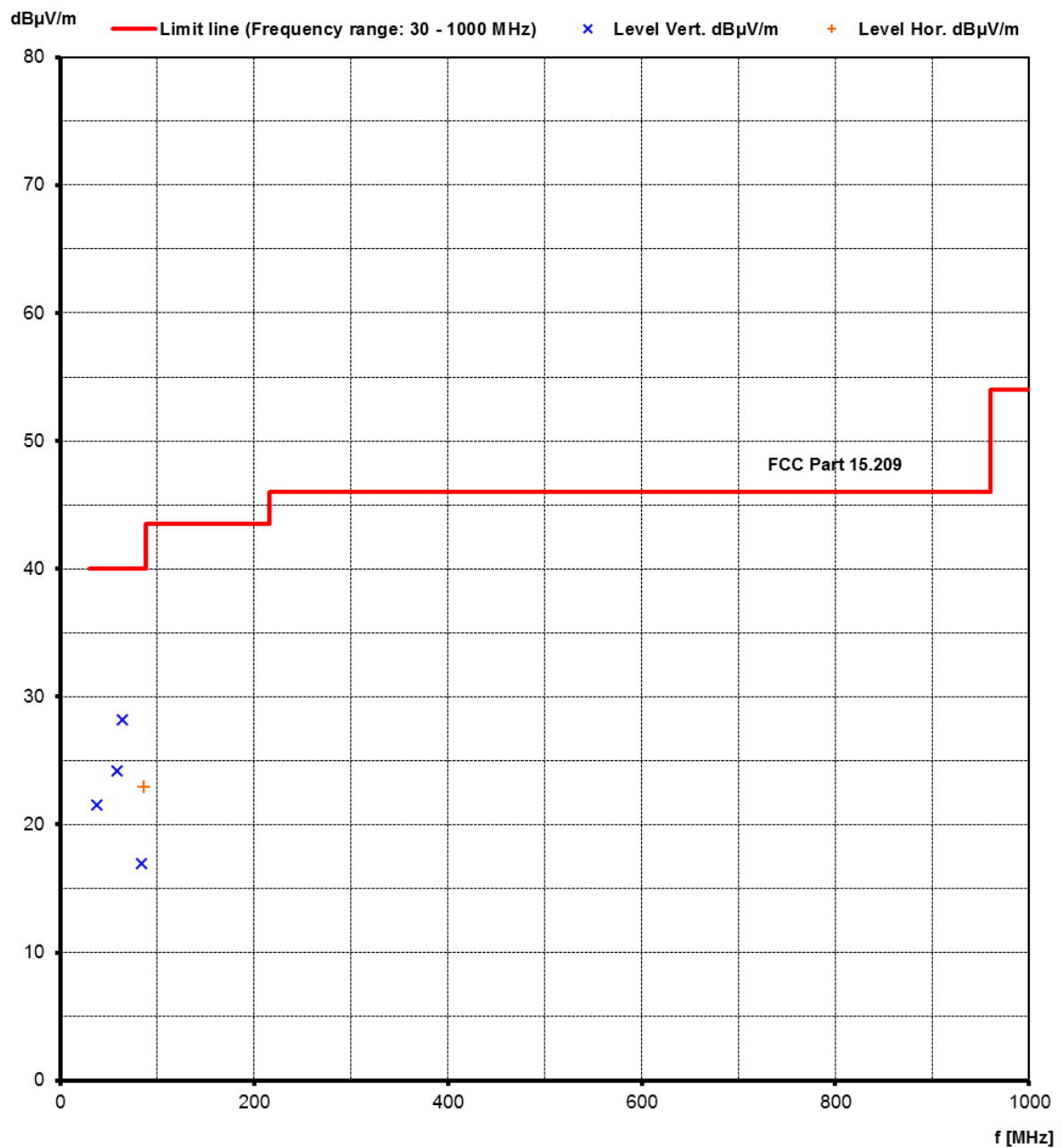
EVOLVE IR C10 INTERNAL MTG:

Operation

Mode: C10, PAB/SAB TX1, 2=29, GlobTek PSU, Pharma 7.2/8.2 MHz

Remarks: The limits are met! **Extract of the critical values!**

Frequency (MHz)	Reading Vert. (dBµV)	Reading Hor. (dBµV)	Correct. Vert. (dB)	Correct. Hor. (dB)	Level Vert. (dBµV/m)	Level Hor. (dBµV/m)	Limit (dBµV/m)	Dlimit (dB)
37.9977	7.2		14.4		21.6		40.0	-18.4
57.9084	9.4		14.8		24.2		40.0	-15.8
63.3772	13.7		14.5		28.2		40.0	-11.8
84.0637	6.8		10.2		17.0		40.0	-23.0
85.8043		12.8		10.1		22.9	40.0	-17.1



Limit according to FCC Part 15 Subpart 15.209(a)

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (meters)
	($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)	
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
960-1000	500	54	3

Limit according to RSS 210:

Frequency (MHz)	Field strength of spurious emissions		Measurement distance (meters)
	($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)	
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
960-1000	500	54	3

The requirements are **FULFILLED**.

Remarks:

Permitted range of the operation frequencies – Operating frequency ranges

Description of the test location

Test location: AREA4

EVOLVE IR C10 INTERNAL MTG:

Test result

Manufacturer declared permitted frequency band:

Lowest frequency: 7.4 MHz

Highest frequency: 8.8 MHz

Test conditions		Frequency (MHz)	
T_{nomF}	V_{nom}	f_L	7.534
		f_C	9.340
		f_H	8.437
Measurement uncertainty		+/- 10 Hz	

Where f_L Lower frequency of OBW
 f_H Upper frequency of OBW
 f_C Centre frequency of the operating frequency range (OFR) as $f_C = (f_H + f_L)/2$

Limit according to EN 300 330, Clause 4.3.2.3:

The operating frequency ranges for intentional emissions shall be entirely within the frequency bands in table 1.

EN 300 330, Clause 1, Table 1

State	Frequency Bands/frequencies	Applications
Transmit and Receive	119 kHz to 140 kHz	Inductive devices, Generic use
Transmit and Receive	7 400 kHz to 8 800 kHz	Inductive devices, Generic use
Transmit and Receive	11,810 MHz to 15,310 MHz (Centre frequency is 13,56 MHz)	RFID only

The requirements are **FULFILLED**.

Remarks:

Test protocol:

OBW

