DEKRA Certification, Inc.
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ACCREDITED
Test Lab
Cert 2764.01

FCC LISTED, REGISTRATION NUMBER: 2764.01

ISED LISTED REGISTRATION NUMBER: 23595-1

Test report No:
3447ERM.005A1

Test report

USA FCC Part 15.249, 15.209
CANADA RSS-210, RSS-Gen
Radio Frequency Devices. Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, and 5725 - 5850 MHz.

Identification of item tested	EV Charging Station
Trademark	EVBox
Model and /or type reference	EVBox Iqon
Other identification of the product	Charging station with RF Technologies: RFID, LTE, WiFi, Bluetooth , RFComm (902-928MHz)
Features	N/A
Manufacturer	EVBox BV Kabelweg 47, 1014 BA, Amsterdam, The Netherlands
Test method requested, standard	USA FCC Part 15.249 10-1-19 Edition: Operation within the bands 902 - 928 MHz, 2400 -2483.5 MHz, 5725 - 5875 MHz, and 24.0 – 24.25 GHz. USA FCC Part 15.209 10-1-19 Edition: Radiated emission limits; general requirements. CANADA RSS-210 Issue 10 (Dec 2019). CANADA RSS-Gen Issue 5 (April 2018). ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Domingo Galvez EMC&RF Lab Manager Digitally signed by Domingo Galvez DN: cn=Domingo Galvez, o=DEKRA Certification Inc., ou=Regulatory Lab, email=dgalvez@dekra.com, c=US Date: 2021.11.01 17:59:59 -04'00'
Date of issue	10-30-2021
Report template No	FDT08_23 (*) "Data provided by the client"

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Competences and guarantees

DEKRA Certification Inc. is a testing laboratory accredited by A2LA (The American Association for Laboratory Accreditation), to perform the tests indicated in the Certificate 2764.01

DEKRA Certification Inc. is a testing laboratory competent to carry out the tests described in this report.

In order to assure the traceability to other national and international laboratories, DEKRA Certification Inc. has a calibration and maintenance program for its measurement equipment.

DEKRA Certification Inc. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Certification at the time of performance of the test.

DEKRA Certification Inc. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Test Report apply only to the item under test established in this document.

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Certification Inc.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Certification Inc. and the Accreditation Bodies.

Uncertainty

Uncertainty (factor k=2) was calculated according to the DEKRA Certification internal document PODT000.

Frequency (MHz)	U(k=2)	Units
30-180	3.82	dB
180-1000	2.61	dB
1000-18000	2.92	dB
18000-40000	2.15	dB

Data provided by the client

Wi-Fi / BLE module.

DEKRA declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Usage of samples

Samples undergoing test have been selected by: The client.

Sample S/01 is composed of the following elements:

Control Nº	Description	Model	Serial Nº	Date of reception
3447/03	Radiated Sample	EVBox Iqon	EVB-P20390006	28/09/2020

Sample S/01 is composed of the following accessories

Control Nº	Description	Model	Serial Nº	Date of reception
3447/02	Loadbox	Phillips1000W	1001	-

1. Sample S/01 has undergone following test(s):

   All tests indicated in appendix A.

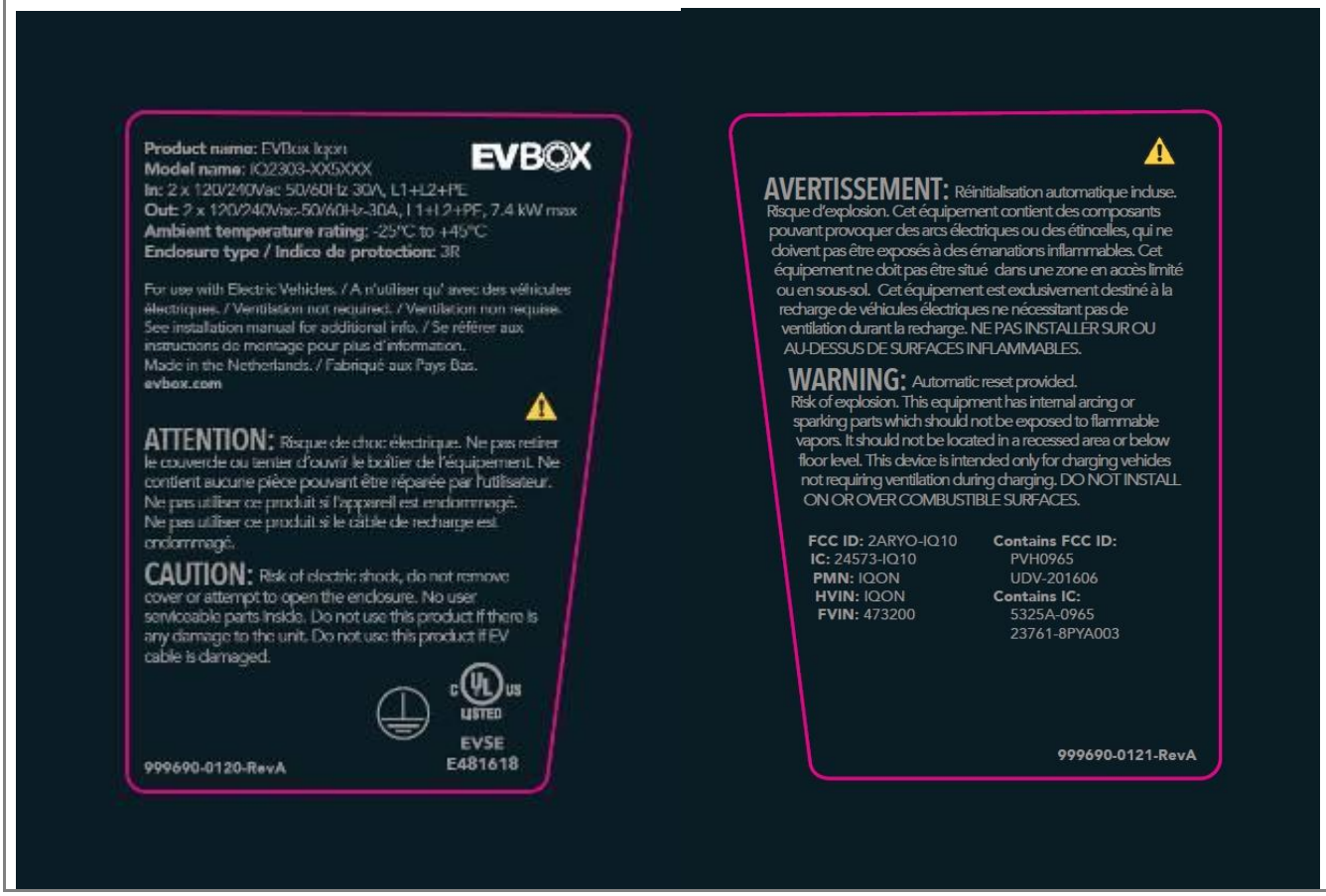
   .

Test sample description

Ports..... :	Port name and description		Cable				
			Specified length [m]	Attached during test	Shielded		
	No Data Provided			☒	☐		
				☐	☐		
Supplementary information to the ports..... :	No data provided						
Rated power supply .....:	Voltage and Frequency		Reference poles				
			L1	L2	L3	N	PE
	☒	AC: 120 / 240 Vac 50/60Hz (External power supply)	☒	☒	☐	☐	☒
Rated Power .....:	2x7.2 kW						
Clock frequencies .....:	Main MCU (PIC18F67K40) (Chargerbox): 16 MHz CCID MCU (PIC32MM0016GPL28) (Chargerbox): Internal oscillator RFComm MCU (PIC32MM0064GPM028) (Chargerbox): 27.12 MHz Main MCU (PIC32MZ2048EFG064) (Chargepoint): 24 MHz BT+WiFi module (ODIN-W262): 26 MHz and 24 MHz 4G module (SIM7500A): 19.2 MHz RFID MCU (CLRC663): 27.12 MHz						
Other parameters.....:	No data Provided						
Software version .....:	G4 P0419 BQ419 v13						
Hardware version.....:	190321						
Dimensions in cm (L x W x D) ....:	420 mm x 1843 mm x 290 mm						
Mounting position.....:	☐	Table top equipment					
	☐	Wall/Ceiling mounted equipment					
	☒	Floor standing equipment					
	☐	Hand-held equipment					
	☐	Other:					
Modules/parts .....:	Module/parts of test item		Type	Manufacturer			
	No Data Provided		*S5*	*UM*			
Accessories (not part of the test item) .....:	Description		Type	Manufacturer			
	No data Provided						
Documents as provided by the	Description		File name	Issue date			

applicant.....:	*Equipment declaration Data*	FDT30_14 Declaration Equipment Data_NA	

Copy of marking plate:



Identification of the client

EVBox BV
Kabelweg 47, 1014 BA, Amsterdam, The Netherlands

Testing period and place

Test Location	DEKRA Certification Inc.
Date (start)	2020-11-01
Date (finish)	2020-12-06

Document history

Report number	Date	Description
3447ERM.005	09-17-2021	First release
3447ERM.005A1	10-30-2021	Second release

Modifications to the reference test report

It was introduced the following modifications in respect to the test report number 3447ERM.005 related with the same samples, in the next clauses and sub-clauses:

Clauses/ Sub-Clauses	Modification	Justification
Antenna Gain	Updated test report to reflect correct antenna gain informaton	Typo error

This modification test report cancels and replaces the test report 3447ERM.005

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the semianechoic chamber, the following limits were not exceeded during the test.

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 75 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

In the chamber for conducted measurements, the following limits were not exceeded during the test:

Temperature	Min. = 15 ºC Max. = 35 ºC
Relative humidity	Min. = 30 % Max. = 60 %
Air pressure	Min. = 860 mbar Max. = 1060 mbar

Remarks and comments

The tests have been performed by the technical personnel: Lourdes and Nasir Khan.

Testing verdicts

Not applicable :	N/A
Pass :	P
Fail :	F
Not measured :	N/M

Summary

FCC PART 15.249 PARAGRAPH / RSS-249 (Proprietary Protocol)					
Report Section	**FCC Spec Clause**	**RSS Spec Clause**	**Test Description**	**Verdict**	**Remark**
A.1	§ 2.1049	RSS-Gen 6.7	99% Occupied Bandwidth	P	N/A
A.2	§ 15.249 (a)	RSS-210 B.10 (a)	Field Strength of fundamental	P	N/A
A.3	§ 15.249 (d)	RSS-210 B.10 (b)	Emission limitations radiated (Transmitter)	P	N/A
Supplementary information and remarks: None.					

List of equipment used during the test

Conducted Measurements

Test system Rohde & Schwarz TS 8997:

CONTROL NUMBER	DESCRIPTION	LAST CALIBRATION	NEXT CALIBRATION
1039	Signal analyzer Rohde & Schwarz FSV40	2020/09	2022/09
1040	Switch unit Rohde & Schwarz with power detector OSP120 / OSP-B157	2017/03	2020/03
1041	RF generator Rohde & Schwarz SMB100A	2020/07	2022/07
1042	RF generator Rohde & Schwarz SMBV100A	2020/03	2022/03

Radiated Measurements

CONTROL NUMBER	DESCRIPTION	LAST CALIBRATION	NEXT CALIBRATION
1179	Semi anechoic Absorber Lined Chamber Frankonia SAC 3 plus “L”	N/A	N/A
1064	BiconicalLog antenna ETS LINDGREN 3142E	2020/08	2023/08
1057	Double-ridge Waveguide Horn antenna 1-18 GHz	2020/06	2023/06
1056	Double-ridge Waveguide Horn antenna 18-40 GHz	2020/01	2023/01
1014	Spectrum analyzer Rohde & Schwarz FSV40	2021/05	2023/05
1015, 1017, 1019, 1020	Rohde & Schwarz EMC32 software	N/A	N/A

Appendix A: Test results

Appendix A Content

PRODUCT INFORMATION

The following information is provided by the client

Information	**Description**
Modulation	FHSS
Adaptive	Adaptive Equipment operating in Non-Adaptive mode
Operation mode	
- Operating Frequency Range	902-928 MHz
- Nominal Channel Bandwidth	2 MHz
- RF Output Power	0 dBm
Extreme operating conditions	
- Temperature range	-25 ºC to +45 ºC
Antenna type	Integral Antenna
Antenna gain	1 dBi
Nominal Voltage	
- Supply Voltage	230 Vac
- Type of power source	AC Voltage
Equipment type	Proprietary protocol 2.4GHz
Geo-location capability	No

DESCRIPTION OF TEST CONDITIONS

TEST CONDITIONS	DESCRIPTION
TC#01	Power supply (V): $V_{nominal}$ = 230 Vac Test Frequencies for Conducted/ Radiated tests: Lowest channel: 902.5 MHz Middle channel: 915.0 MHz Highest channel: 927.5 MHz

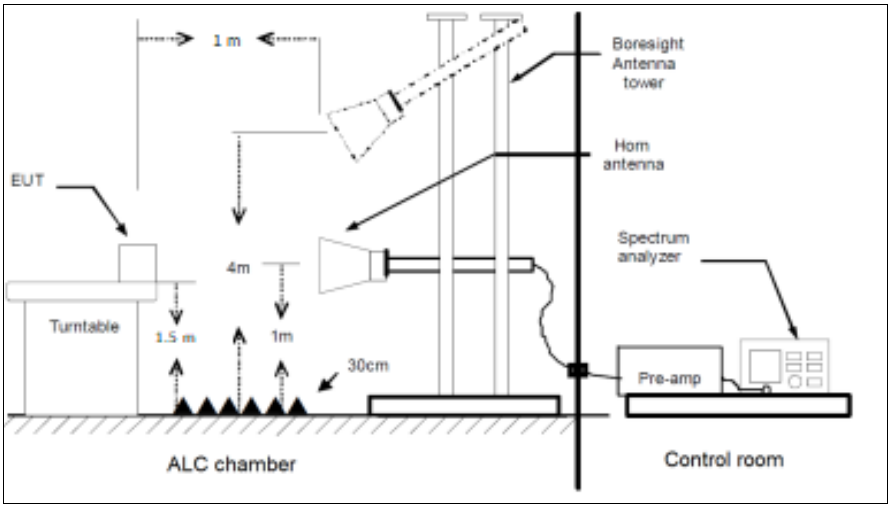
TEST A.1: 99% OCCUPIED BANDWIDTH

LIMITS:	Product standard:	§ 2.1049 and RSS-Gen
	Test standard:	§ 2.1049 and RSS-Gen 6.7

LIMITS

The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs

TEST SETUP	



TESTED SAMPLES:	S/01
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS:	PASS

	Lowest frequency 902.5 MHz	Middle frequency 915 MHz	Highest frequency 927.5 MHz
99% bandwidth (MHz)	46.31	46.02	46.02
Measurement uncertainty (kHz)	<± 8.33		

TEST A.2: FUNDAMENTAL FIELD STRENGTH

LIMITS:	Product standard:	Part 15 Subpart C §15.249 and RSS-210
	Test standard:	Part 15 Subpart C §15.249(a) and RSS-210 B.10(a)

LIMITS

The field strength of emissions in this band shall not exceed 2500 millivolts/meter. The field strength of emissions from intentional radiators shall comply with the following

Frequency Range (MHz)	Field strength of fundamental (mV/m)	Field strength (dBµV/m)	Measurement distance (m)
902 - 928	50	93.98	3
2400 – 2483.5	50	93.98	3
5725 - 5875	50	93.98	3
24000-24250	250	107.96	3

For frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

RSS-210. The field strength of fundamental and harmonic emissions, measured at 3 m, shall not exceed 50 mV/m and 0.5 mV/m respectively. Attenuation below the general field strength limits specified in RSS-Gen is not required

TEST SETUP	

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 1m for the frequency range 1-18 GHz (1 GHz-18 GHz Double ridge horn antenna).

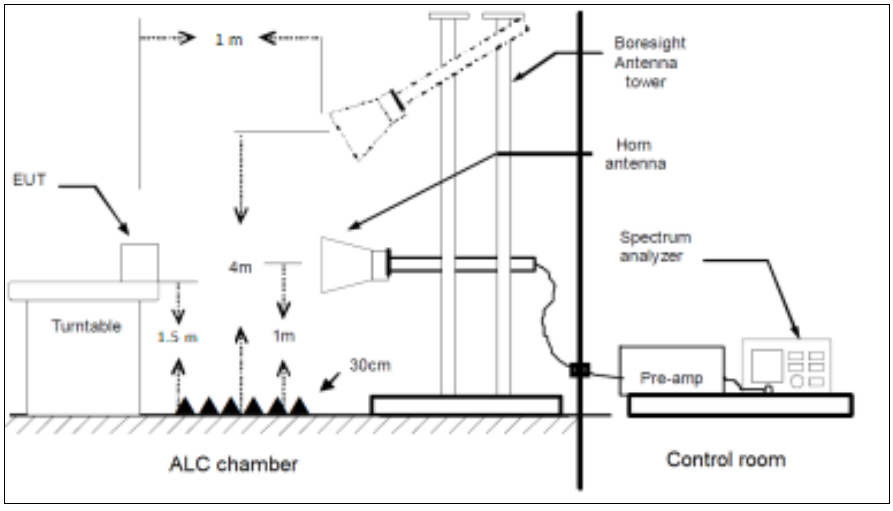
For radiated emissions in the range 1-18 GHz that is performed at a distance closer than the specified distance, an inverse proportionality factor of 20 dB per decade is used to normalize the measured data for determining compliance.

The equipment under test was set up on a non-conductive platform above the ground plane and the situation and orientation was varied to find the maximum radiated emission. It was also rotated 360º and the antenna height was varied from 1 to 4 meters to find the maximum radiated emission.

Measurements were made in both horizontal and vertical planes of polarization.

The field strength is calculated by adding correction factor to the measured level from the spectrum analyzer. This correction factor includes antenna factor and cable loss.

Radiated measurements setup f > 1 GHz



TESTED SAMPLES:	S/02
TESTED CONDITIONS MODES:	TC#01
TEST RESULTS:	PASS

Channel Low:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
902.490	93.01	94.00	0.99	1000	120	100.0	V	353.0

Channel Mid:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
915.000	93.16	94.00	0.84	1000	120	100.0	V	352.0

Channel High:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
927.510	91.90	94.00	2.10	1000	120	104.0	V	24.0

Emissions 30 MHz – 1 GHz

Channel Low:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
39.600	31.70	40.00	8.30	1000	120	103.0	V	348.0
87.600	33.92	40.00	6.08	1000	120	135.0	V	338.0
220.890	42.67	46.02	3.35	1000	120	108.0	H	9.0

Channel Mid:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
39.420	32.72	40.00	7.28	1000	120	103.0	V	337.0
88.290	35.37	40.00	4.63	1000	120	129.0	V	319.0
222.150	42.11	46.02	3.91	1000	120	100.0	H	0.0

Channel High:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
39.270	32.18	40.00	41.82	1000	120	100.0	V	316.0

87.900	34.66	40.00	39.34	1000	120	122.0	V	4.0
221.160	41.90	46.02	4.12	1000	120	100.0	H	6.0

Emissions 1-10 GHz

Channel Low PK:

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
2099.250	42.25	74.00	31.75	1000	1000	114.0	V	180.0
3610.000	44.57	74.00	29.43	1000	1000	113.0	V	35.0
5415.000	48.82	74.00	25.18	1000	1000	105.0	H	55.0
7112.250	45.58	74.00	28.42	1000	1000	144.0	H	319.0
9556.500	48.36	74.00	25.64	1000	1000	112.0	V	206.0

Channel Mid PK:

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
2425.000	72.40	74.00	1.60	1000	1000	258.0	V	112.0
6405.000	48.57	74.00	25.43	1000	1000	204.0	H	43.0
7208.500	45.57	74.00	28.43	1000	1000	178.0	V	218.0

Channel High PK:

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
5565.000	52.30	74.00	21.70	1000	1000	198.0	H	47.0

Channel Low AV:

Frequency (MHz)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
2427.750	45.20	54.00	8.80	1000	1000	365.0	V	272.0
5565.000	52.71	54.00	1.29	1000	1000	159.0	H	1.0
6317.500	36.44	54.00	17.56	1000	1000	346.0	V	49.0
7220.000	35.88	54.00	18.12	1000	1000	148.0	H	34.0
8122.500	36.00	54.00	18.00	1000	1000	127.0	H	37.0
9927.500	36.96	54.00	17.04	1000	1000	108.0	H	50.0

Channel Mid AV:

Frequency (MHz)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
5490.000	48.36	54.00	5.64	1000	1000	192.0	H	300.0
6405.000	37.67	54.00	16.33	1000	1000	202.0	V	7.0

Channel High AV:

Frequency (MHz)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
4957.750	28.95	54.00	25.05	1000	1000	211.0	V	301.0
5565.000	49.66	54.00	4.34	1000	1000	197.0	H	46.0
6492.500	40.17	54.00	13.83	1000	1000	109.0	V	3.0
7442.000	32.55	54.00	21.45	1000	1000	362.0	H	0.0