



FCC LISTED, REGISTRATION
NUMBER: 2764.01

ISED LISTED REGISTRATION
NUMBER: 23595-1

Test report No:
2579ERM.001

Test report

**FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-18 Edition)
&
ICES-003 ISSUE 6 – Update April (2017)**

Identification of item tested	GPS Tracker
Trademark	Automile
Model and /or type reference	Automile Tracker Mini
Other identification of the product	FCC ID: 2AUAJATMV1 Contains FCC ID: XPY1DIQN3NN
Features	Bluetooth, GPS/Glonass, LTE Band 12, 4, 2
Manufacturer	AUTOMILE AB, Sergels Torg 12, Floor 7, 11157 Stockholm, SWEDEN.
Test method requested, standard	FCC Rules and Regulations CFR 47, Part 15, Subpart B (10-1-18 Edition) ICES-003 ISSUE 6 – Update April (2017)
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Domingo Galvez EMC&RF Lab Manager
Date of issue	08-08-2019
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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 particular item under test established in this document.

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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
Conducted emission	0,009 - 30	2.69	dB
Radiated emission	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

GPS based asset tracker with internal battery and 5VDC power input via USB-C.

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
2579.001	Automile Tracker mini	---	IMEI:356935082279784	07/08/2019

Following accessories were used with Sample S/01 to perform the testing

Control Nº	Description	Model	Serial Nº	Date of reception
2579.010	USB to Type C Cable	---	---	07/08/2019

Sample S/01 was used in following testing: Radiated Emission

Test sample description

Ports.....:	Port name and description	Cable			
		Specified length [m]	Attached during test	Shielded	
	<i>Data not provided</i>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supplementary information to the ports.....:	<i>Data not provided</i>				
Rated power supply	Voltage and Frequency	Reference poles			
		L1	L2	L3	N PE
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rated Power	<i>Data not provided</i>				
Clock frequencies	<i>Data not provided</i>				
Other parameters.....:	<i>Data not provided</i>				
Software version	1				
Hardware version.....:	B1				
Dimensions in cm (L x W x D):	<i>Data not provided</i>				
Mounting position.....:	<input type="checkbox"/>	Table top equipment			
	<input type="checkbox"/>	Wall/Ceiling mounted equipment			
	<input type="checkbox"/>	Floor standing equipment			
	<input type="checkbox"/>	Hand-held equipment			
	<input type="checkbox"/>	Other:			
Modules/parts	Module/parts of test item		Type	Manufacturer	
	<i>Data not provided</i>				
Accessories (not part of the test item)	Description		Type	Manufacturer	
	<i>Data not provided</i>				
Documents as provided by the applicant.....:	Description		File name	Issue date	
	<i>Data not provided</i>				

Copy of marking plate:

Automile Tracker Mini

Model: Tracker Mini PROTOTYPE



Identification of the client

HALTIAN LTD
Yrtipellontie 1D, 90230 Oulu, FINLAND.

Testing period and place

Test Location	DEKRA Certification, Inc
Date (start)	07-09-2019
Date (finish)	07-10-2019

Document history

Report number	Date	Description
2579ERM.001	07-17-2019	First release

Environmental conditions

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

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

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

Temperature	Min. = 15 °C Max. = 35 °C
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 °C Max. = 35 °C
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: Nasir Khan and Divya Adusumilli

Testing verdicts

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

Summary

Emission Test			
Report Section	Requirement – Test case	Verdict	Remark
A.1.	Radiated emission electromagnetic field test (30 MHz – 1000 MHz)	P	N/A
A.1.	Radiated emission electromagnetic field test (1 GHz – 18 GHz)	P	Refer 1
-.	Radiated emission electromagnetic field test (18 GHz – 40 GHz)	N/A	Refer 1
-.	Conducted emission test (150 kHz to 30 MHz)	N/A	N/A

Supplementary information and remarks:

1) As per standard 47 CFR §15.33 due to the highest frequency generated or used in the device is above 1000MHz the upper frequency of measurement range is up to 5th harmonic of the highest frequency or 40GHz, whichever is lower.

List of equipment used during the test

CONTROL NUMBER	DESCRIPTION	MANUFACTURER	MODEL	LAST CALIBRATION	NEXT CALIBRATION
0981	Preamplifier	BONN ELEKTRONIK	BLMA 0118-2A	2018/10	2020/10
1012	EMI Test Receiver	ROHDE & SCHWARZ	ESR26	2018/09	2020/09
1039	Signal Analyzer	ROHDE & SCHWARZ	FSV40	2018/10	2020/10
1058	Horn Antenna	ETS LINDGREN	3115	2017/03	2020/03
1065	Biconilog Antenna	ETS LINDGREN	3142E	2017/03	2020/03

Appendix A: Test results

Appendix A Content

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DESCRIPTION OF THE OPERATION MODES

The operation modes described in this paragraph constitute a functionality of the sample under test for itself. Every operation mode takes failure criteria for the immunity test that they were applying to it and a monitoring to guarantee performance of the same ones.

The operation modes used by the samples to which the present report refers, are shown in the following table:

OPERATION MODE	DESCRIPTION
OM#01*	EUT ON. Powered by internal battery 5 Vdc <ul style="list-style-type: none">• LTE Idle mode (No cellular Tx)• Bluetooth Idle (No Tx)• GPS/Glonass Rx ON

*Worst configurations detected

A.1.RADIATED EMISSION. ELECTROMAGNETIC FIELD TEST

LIMITS:	Product standard:	FCC CFR 47, Part 15, Subpart B (10-1-18 Edition), Secs. 15.109 & ICES-003 Issue 6 – Update April (2017)
	Test standard:	FCC CFR 47, Part 15, Subpart B (10-1-18 Edition), Secs. 15.109 & ICES-003 Issue 6 – Update April (2017); ANSI C63.4 (2014)

Limits of interference Class B

The applied limit for radiated emissions, 3 m distance, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B (10-01-18 Edition), Secs. 15.109 & ICES-003 Issue 6 – Update April (2017) in the frequency range 30 MHz to 40 GHz for class B equipment.

Frequency range (MHz)	QP Limit for 3 m	
	(μ V/m)	(dB μ V/m)
30 to 88	100	40
88 to 216	150	43.5
216 to 960	200	46
Above 960	500	54

Frequency range (MHz)	AVG Limit for 3 m		PK Limit for 3 m (1)
	(μ V/m)	(dB μ V/m)	(dB μ V/m)
Above 1000	500	54	74

(1) Frequencies above 1 GHz, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test, as per §15.35(b)

TEST SETUP

All radiated tests were performed in a semi-anechoic chamber. The measurement antenna is situated at a distance of 3 m for the frequency range 30-1000 MHz (Bilog antenna) and frequency range 1-18 GHz (Double ridge horn antenna).

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 360° 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, cable loss and pre-amplifiers gain.

TEST SETUP (Cont.)

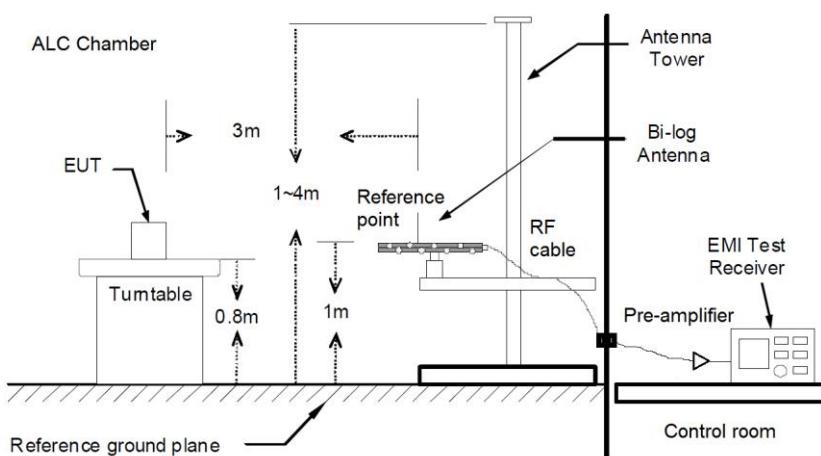


Fig 1: Generic setup for measurements from 30 to 1000MHz

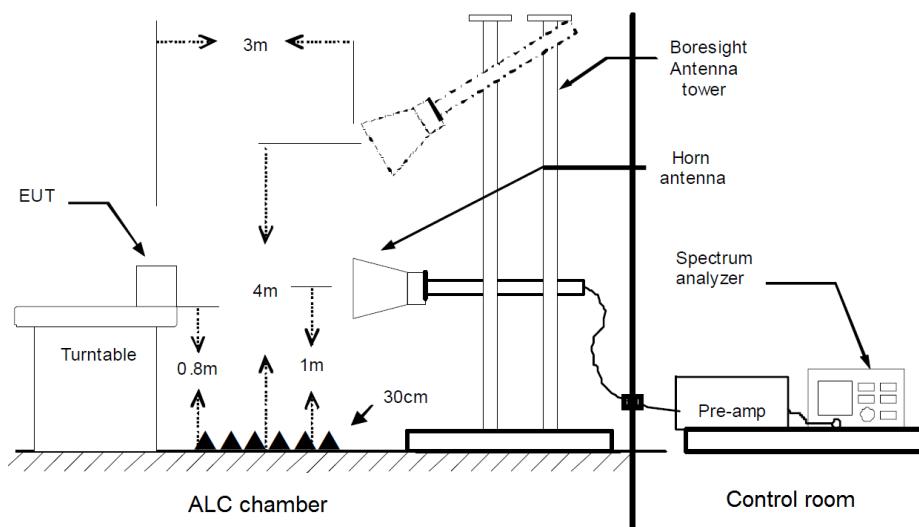


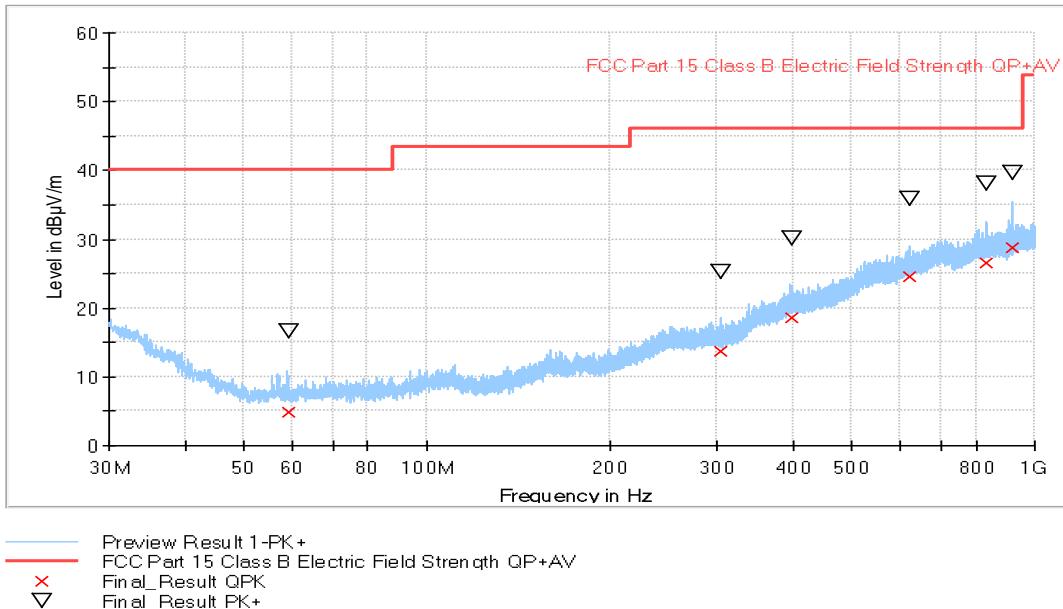
Fig 2: Generic setup for measurements from 1 to 18GHz (Analyzer outside the chamber)

TESTED SAMPLES:	S/01
TESTED OPERATION MODES:	OM#01
TEST RESULTS:	CRmmnnxx: CR, Radiation Condition; mm: Sample number; nn: Operation mode.,xx:Range,

CRmmnnxx	Description	Result
CR0101LR	Range: 30 MHz - 1000 MHz Horizontal Polarization	P
CR0101LR	Range: 30 MHz - 1000 MHz Vertical Polarization	P
CR0101HR	Range: 1-18 GHz Horizontal Polarization	P
CR0101HR	Range: 1-18 GHz Vertical Polarization	P

Radiated Emission. CR0101LR

Project: 02579ERM001
Company: HALTIAN
Sample: S/01
Operation mode: OM#01
Description: EUT ON. Standalone. Battery Powered. Both polarizations.

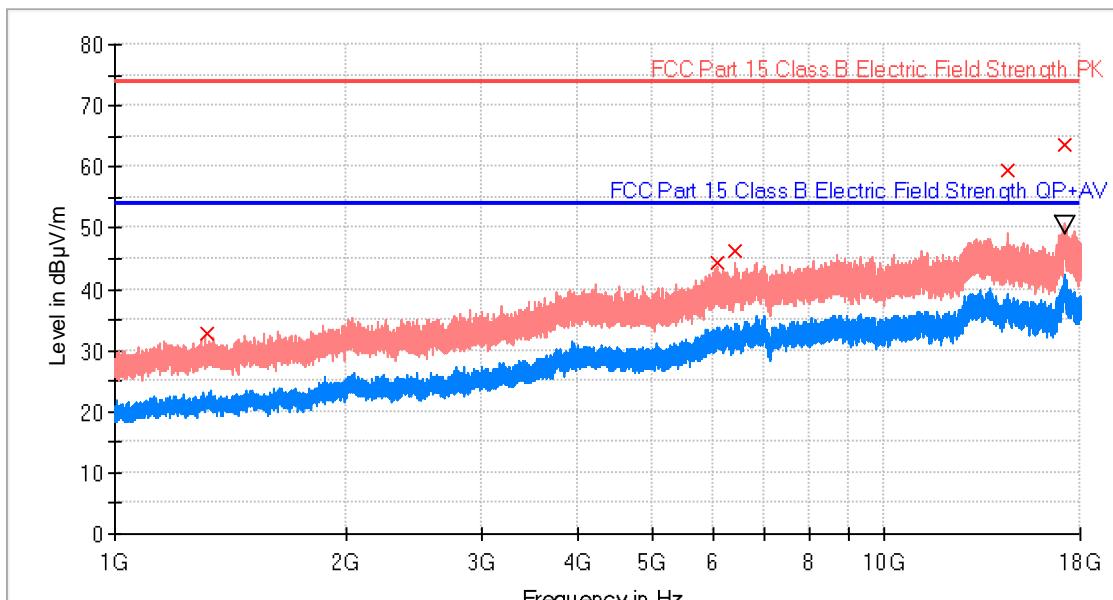


Final_Result

Frequency (MHz)	QuasiPeak (dB μ V/m)	MaxPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
59.279200	4.95	---	40.00	35.05	266.0	V	-21.0
59.279200	---	16.53	---	---	266.0	V	-21.0
304.622650	---	25.18	---	---	286.0	V	60.0
304.622650	13.78	---	46.00	32.22	286.0	V	60.0
398.180600	---	30.05	---	---	325.0	V	65.0
398.180600	18.51	---	46.00	27.49	325.0	V	65.0
623.912800	---	35.81	---	---	248.0	H	-10.0
623.912800	24.51	---	46.00	21.49	248.0	H	-10.0
830.111350	26.47	---	46.00	19.53	267.0	V	-36.0
830.111350	---	38.05	---	---	267.0	V	-36.0
915.307350	---	39.62	---	---	150.0	V	47.0
915.307350	28.74	---	46.00	17.26	150.0	V	47.0

Radiated Emission. CR0101HR1

Project: 02579ERM001
Company: HALTIAN
Sample: S/01
Operation mode: OM#01
Description: EUT ON. IDLE. Battery Powered. Both polarizations.



- Preview Result 2-AVG
- Preview Result 1-PK+
- FCC Part 15 Class B Electric Field Strength PK
- FCC Part 15 Class B Electric Field Strength QP+AV
- ✗ Final_Result PK+
- ▽ Final_Result AVG

Final_Result

Frequency (MHz)	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
1318.260000	32.66	---	73.90	41.24	233.0	V	180.0
6079.842857	44.20	---	73.90	29.70	150.0	V	-16.0
6409.981143	46.12	---	73.90	27.78	152.0	H	-164.0
14455.594571	59.50	---	73.90	14.40	231.0	V	11.0
17173.570715	63.70	---	73.90	10.20	226.0	V	97.0
17215.462286	---	50.30	53.90	3.60	100.0	V	55.0