RADIO REPORT

FCC 47 CFR Part 15C
ISED Canada RSS-310

License exempt radio equipment

Report Reference No	G0M-2102-9617-TFC209LP-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	DAkkS - Registration number : D-PL-12092-01-03 (ISED) ISED Testing Laboratory site: 3470A DAkkS - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	SKAN Deutschland GmbH
Address	Nickrischer Straße 2 02827 Görlitz/Hagenwerder GERMANY
Test Specification	47 CFR Part 15C RSS-310, Issue 5, 2020-01 RSS-Gen, Issue 5, Amendment 2, 2021-02
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Glove Tester
Model(s)	WirelessGT 2
Additional Model(s)	None
Brand Name(s)	SKAN wGT
Hardware Version(s)	WirelessGT Evo 2
Software Version(s)	v2.0.0
FCC ID	2AXZXSKANWGT2XD
IC	26652-SKANWGT02
Test Result	**PASSED**

Possible test case verdicts:		
Required by standard but not tested	N/T	
Not required by standard	N/R	
Not applicable to EUT	N/A	
Test object does meet the requirement	P(PASS)	
Test object does not meet the requirement	F(FAIL)	
Testing:		
Test Lab Temperature	20 °C - 30 °C	
Test Lab Humidity	25 % - 55 %	
Date of receipt of test item	2021-03-10	
Report:		
Compiled by	Florian Voigt	
Tested by (+ signature) (Responsible for Test)	Florian Voigt	F. Voigt .....
Approved by (+ signature) (Deputy Head of Lab)	Toralf Jahn	T. J .....
Date of Issue	2021-11-08	
Total number of pages	29	
General Remarks:		
The test results presented in this report relate only to the object tested. **The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.** This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.		
Additional Comments:		
Transmitter is not active when EUT is connected to its dedicated AC/DC adapter. Tests were conducted without an AC/DC adapter.		

ADDITIONAL VARIANTS

Additional Variants (not tested and not evaluated variants)		
Not-tested Variant	**Description**	
1	Product Type Description	Glove Tester
	Model name	SKAN Evolution 2
	Brand name	SKAN wGT
	Hardware Version	WirelessGT Evo 2
	Software Version	v2.0.0
2	Product Type Description	Glove Tester
	Model name	SKAN Evo 2
	Brand name	SKAN wGT
	Hardware Version	WirelessGT Evo 2
	Software Version	v2.0.0
3	Product Type Description	Glove Tester
	Model name	SKAN Globe
	Brand name	SKAN wGT
	Hardware Version	WirelessGT Evo 2
	Software Version	v2.0.0
Comment: Those named additional variants above have not been tested. Those additional variants of the series have been declared by the manufacturer. The test report explicitly states that those variants were neither tested nor assessed nor evaluated.		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2021-11-08	Initial Release	

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
EUT	Equipment Under Test
FCC	Federal Communications Commission
ISED	Innovation, Science and Economic Development Canada
RBW	Resolution bandwidth
RMS	Root mean square
VBW	Video bandwidth
V_{NOM}	Nominal supply voltage

REPORT INDEX

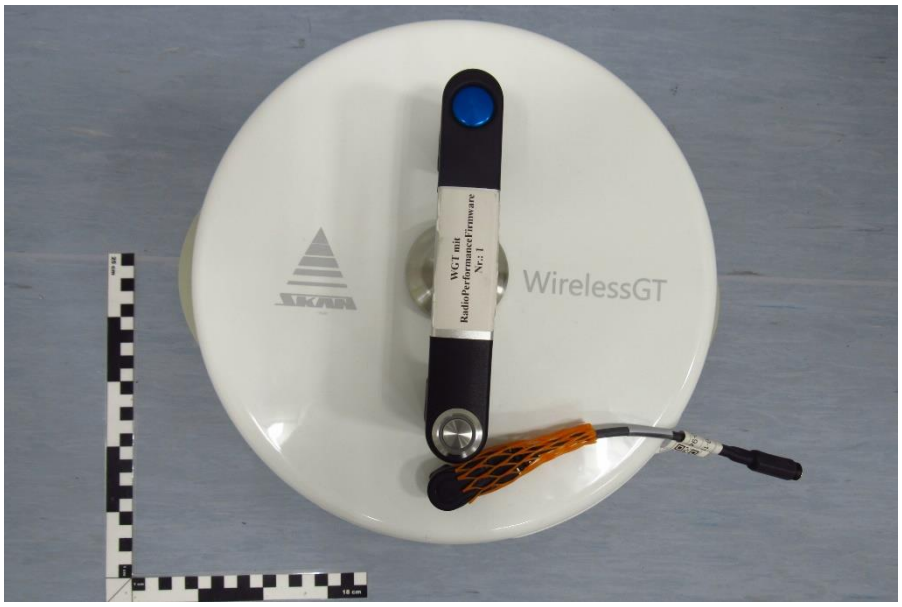
1 Equipment (Test Item) Under Test 7
1.1 Photos – Equipment External 8
1.2 Photos – Equipment Internal 13
1.3 Photos – Test Setup 19
1.4 Support Equipment 20
1.5 Test Modes 21
1.6 Test Frequencies 22
1.7 Sample emission level calculation 23
2 Result Summary 24
3 Test Conditions and Results 25
3.1 Test Conditions and Results - Radiated spurious emissions 25

1 Equipment (Test Item) Under Test

Description	Glove Tester	
Model	WirelessGT 2	
Additional Model(s)	None	
Brand Name(s)	SKAN wGT	
Serial Number(s)	30029475.011	
Test Sample Id	33685	
Hardware Version(s)	WirelessGT Evo 2	
Software Version(s)	v2.0.0	
PMN	Wireless Glove Tester	
HVIN	WirelessGT 2	
FVIN	26710700	
HMN	n/a	
FCC ID	2AXZXSKANWGT2XD	
IC	26652-SKANWGT02	
Equipment type	End Product	
Radio type	Transceiver	
Assigned frequency bands	9-490 kHz	
Radio technology	RFID	
Modulation	ASK	
Number of antenna ports	1	
Antenna	Type	Integrated coil
	Model	ANT-033
	Manufacturer	ELATEC
	Gain	N/A
Supply Voltage	V_{NOM}	15 VDC
Operating Temperature	T_{NOM}	20 °C
AC/DC-Adaptor	Model	GST90A24-P1M
	Vendor	Mean Well
	Input	90 ~ 264VAC 127 ~ 370VDC
	Output	24 VDC
Manufacturer	SKAN Deutschland GmbH Nickrischer Straße 2 02827 Görlitz/Hagenwerder GERMANY	

1.1 Photos – Equipment External

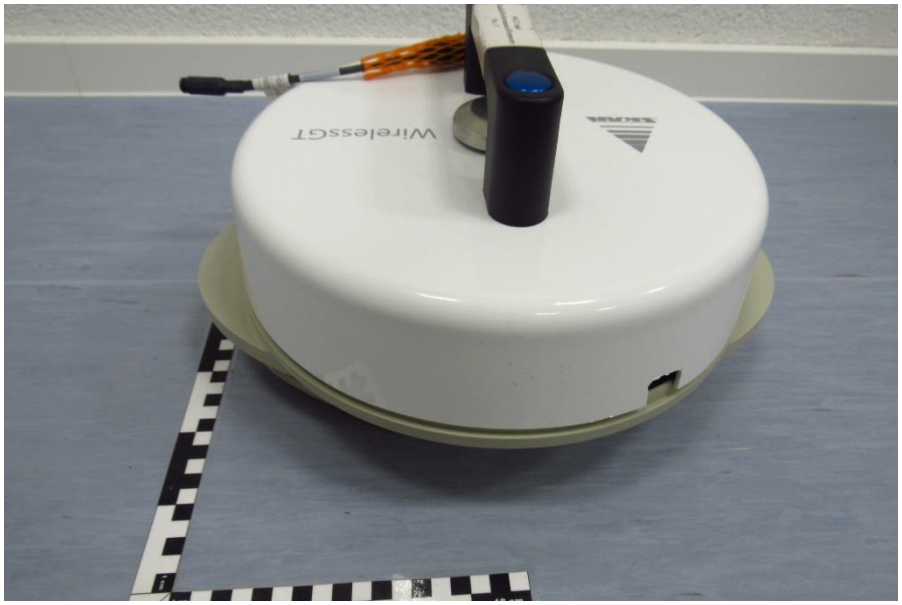
EUT WITH ACDC-ADAPTOR IN PERSPECTIVE

Top side view


Side view A

Side view B

Side view C

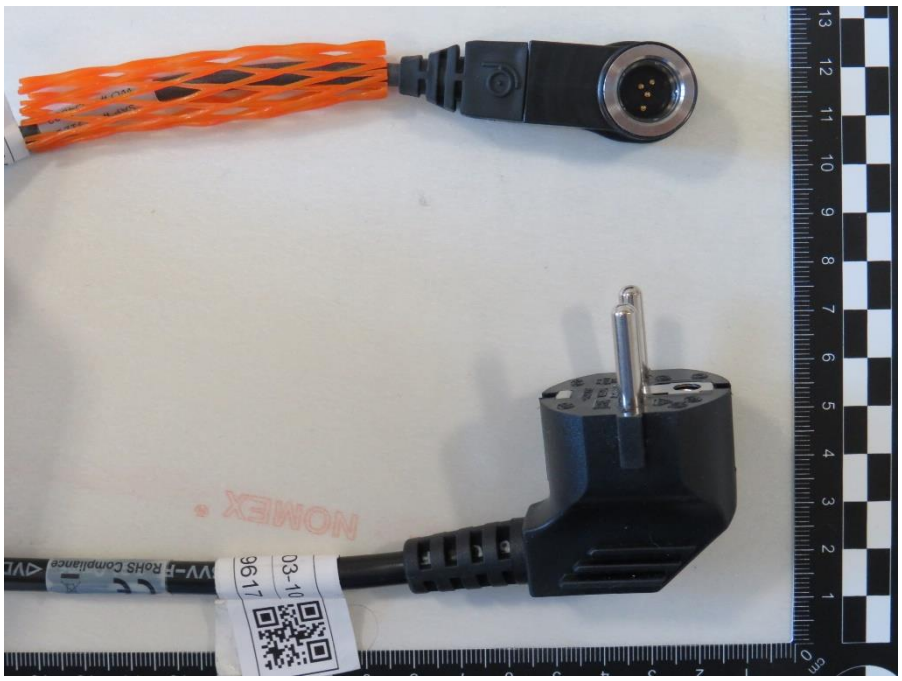


Side view D

Bottom side view

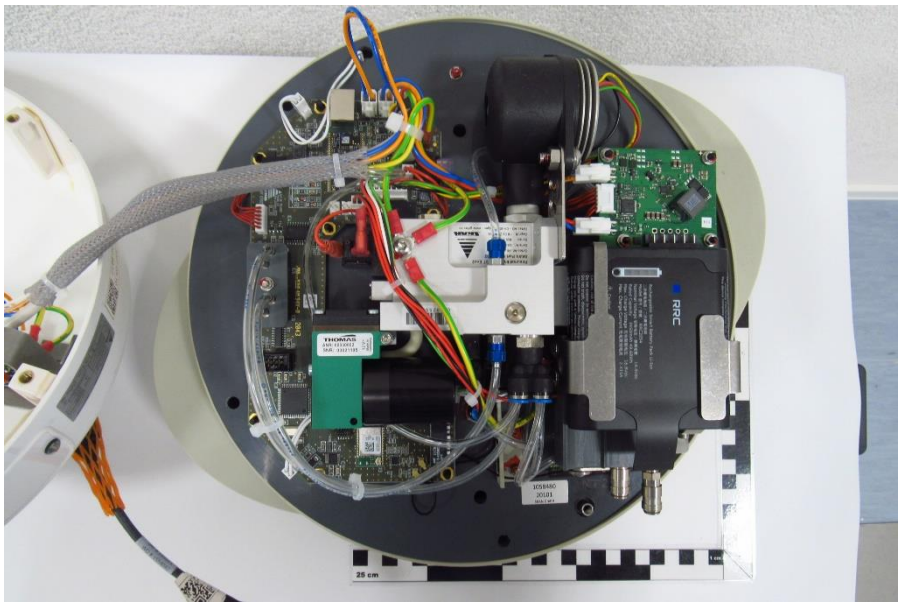
EUT LABEL

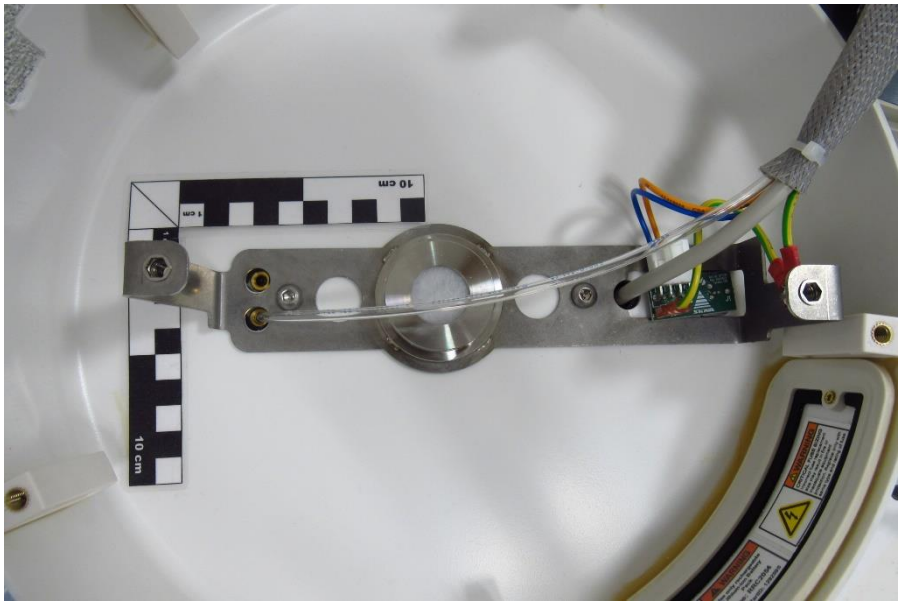
ACDC-ADAPTOR CONNECTORS

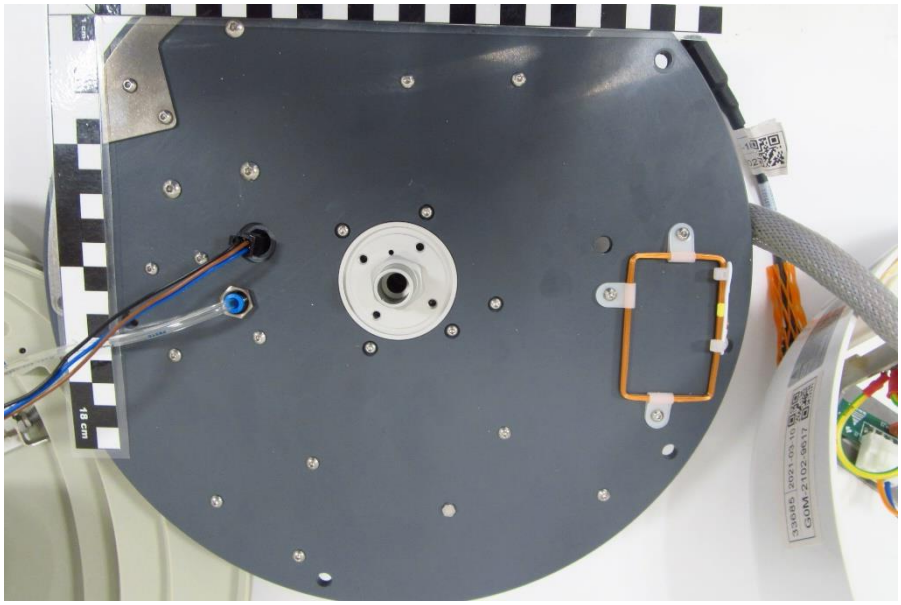


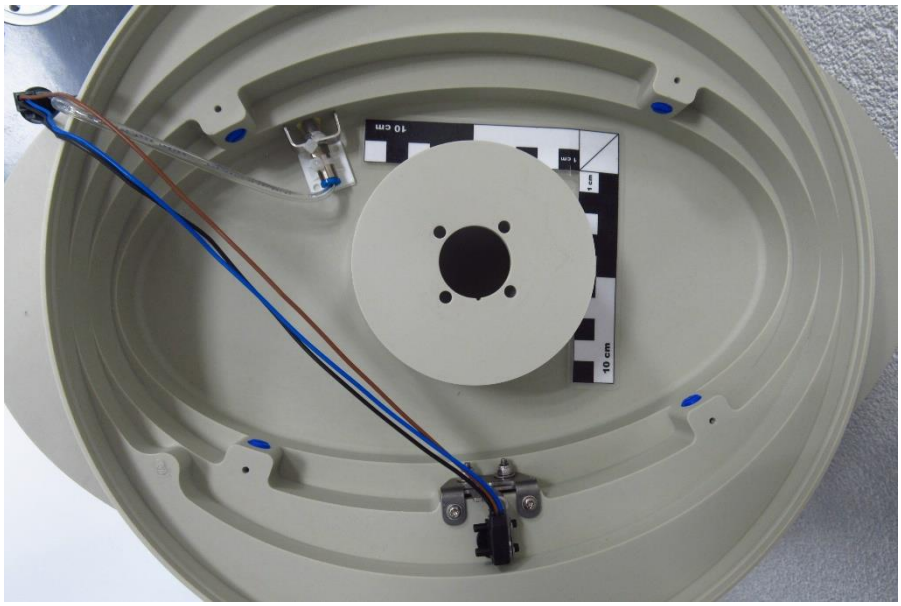
ACDC-ADAPTOR LABEL

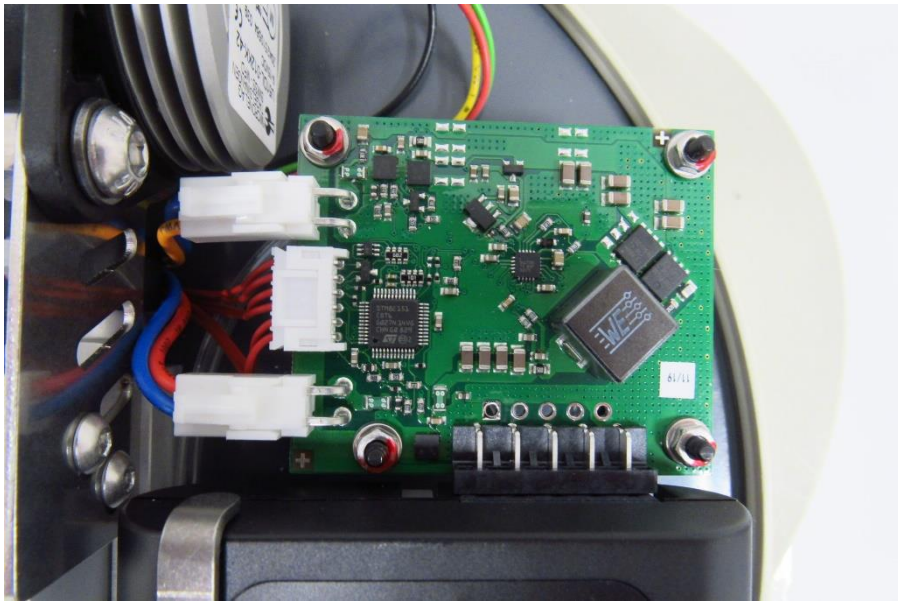
1.2 Photos – Equipment Internal

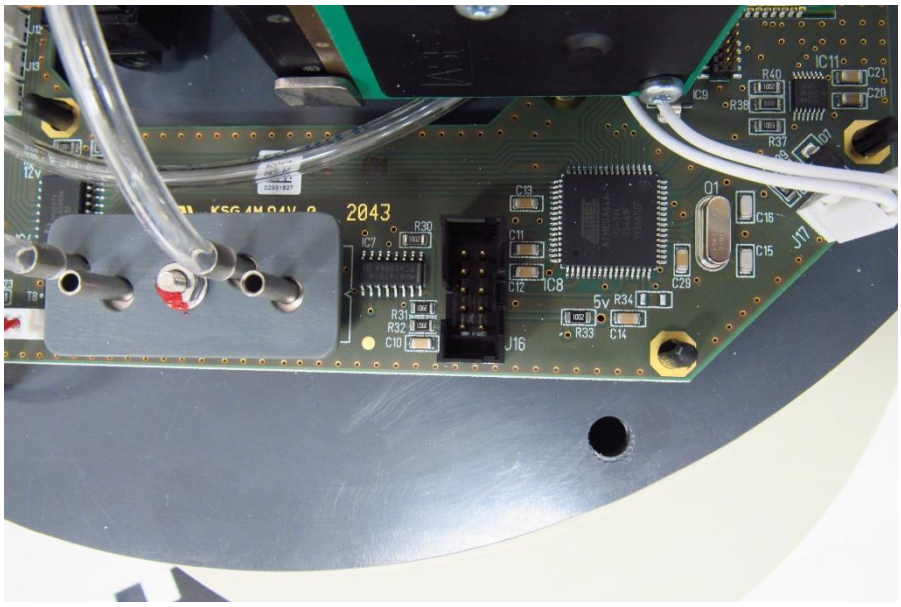
Interior view A


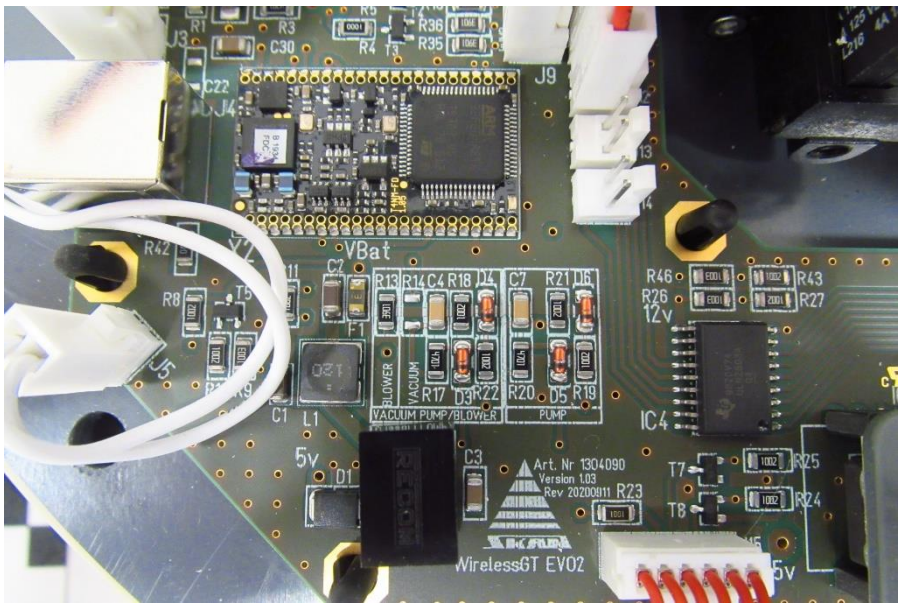
Interior view B


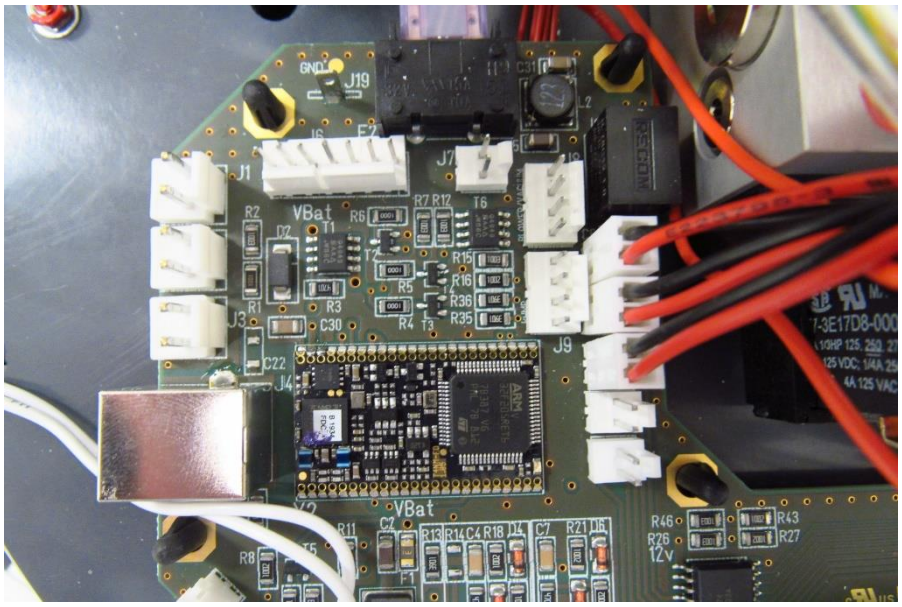
Interior view C


Interior view D


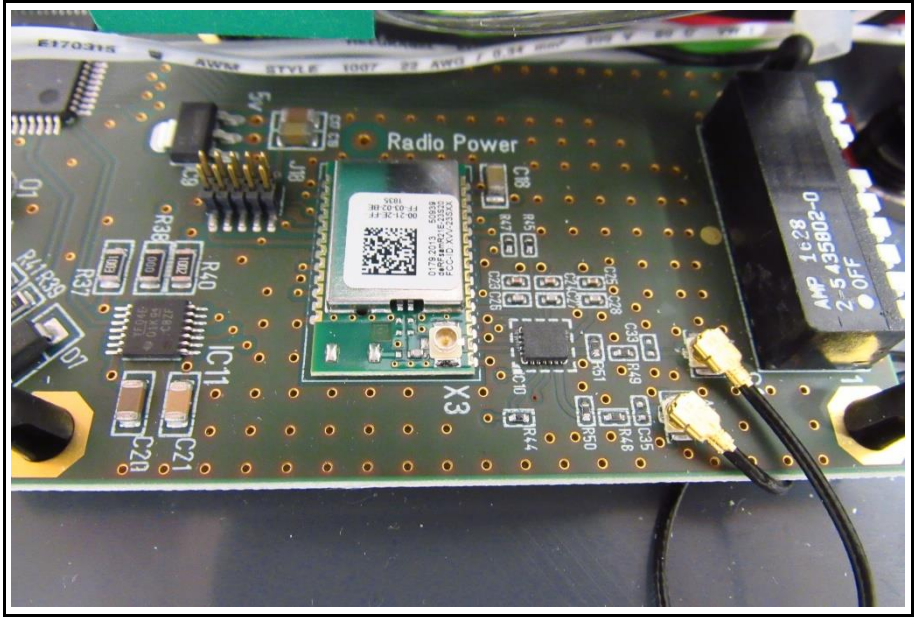
PCB top view A


PCB top view B


PCB top view C


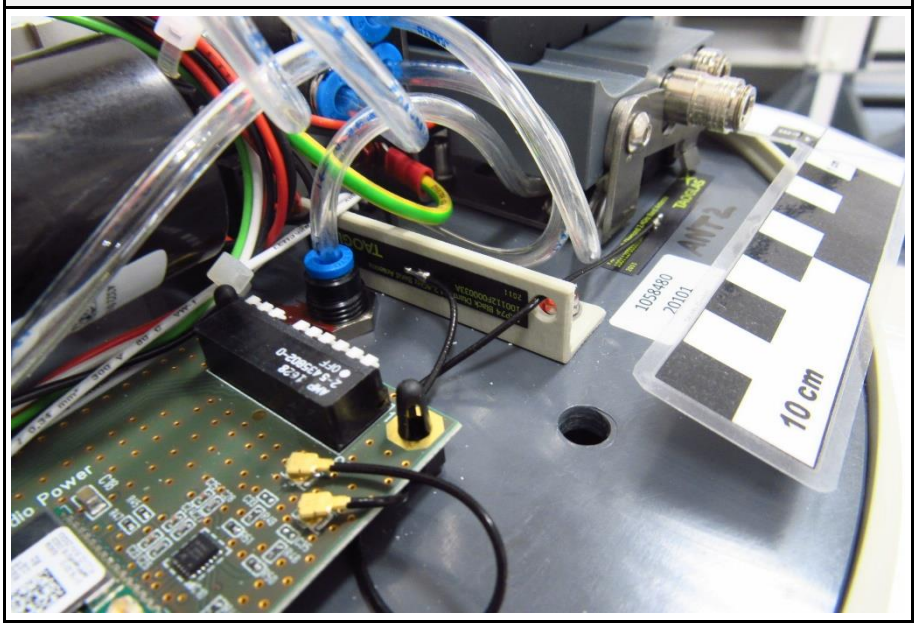
PCB top view D


PCB view radio part

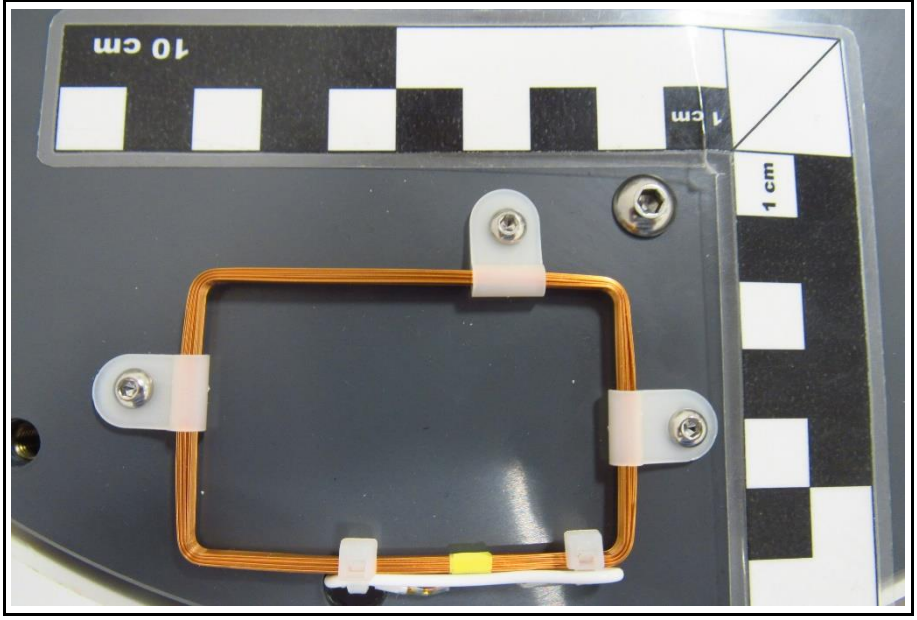


ZB Antenna view A

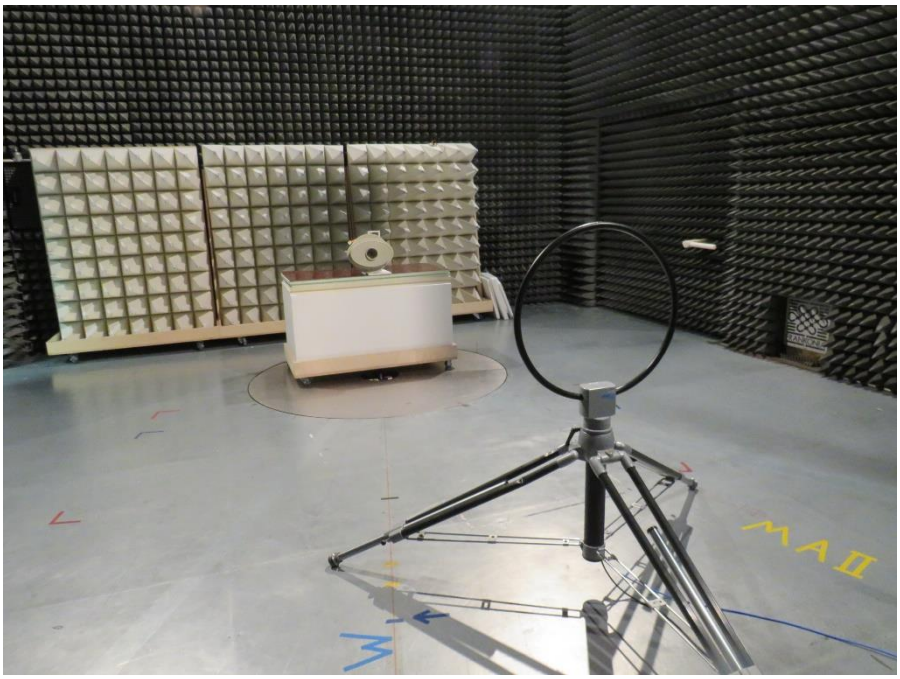
ZB Antenna view B

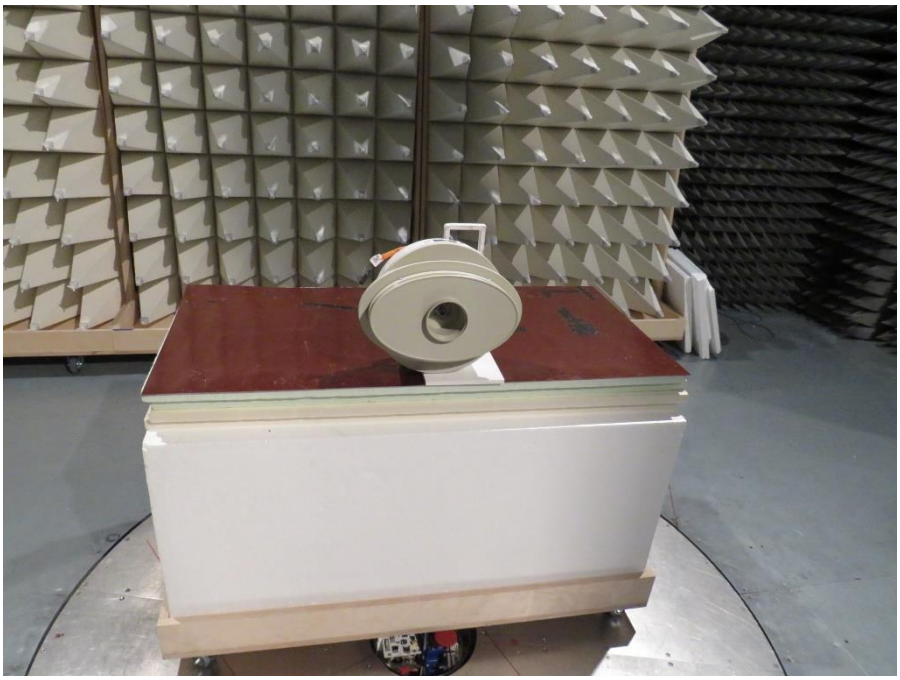


RFID antenna view



1.3 Photos – Test Setup

Setup view


Setup EUT view


1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
None				
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment:				

1.5 Test Modes

Mode	Description
Transmit	Mode = Transmit Modulation = ASK Duty cycle = 0.068 %
Comment:	

1.6 Test Frequencies

Designator	Mode	Channel	Frequency [kHz]
F1	Tx	1	125

1.7 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dBµV. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

Reading on Analyzer (dBµV) + A.F. (dB) = Net field strength (dBµV/m)

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dBµV/m). The FCC limits are given in units of µV/m. The following formula is used to convert the units of µV/m to dBµV/m:

Limit (dBµV/m) = 20*log (µV/m)

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

Reading + AF	= Net Reading	:	Net reading	- FCC limit	= Margin
+21.5 dBµV	+ 26 dB = 47.5 dBµV/m	:	47.5 dBµV/m	- 57.0 dBµV/m	= -9.5 dB

2 Result Summary

FCC 47 CFR Part 15C, ISED RSS-310				
Product Standard Reference	**Requirement**	**Reference Method**	**Result**	**Remarks**
ISED RSS-Gen 6.7 Issue 5 A2	Occupied Bandwidth	ANSI C63.10-2013	N/R	Information only, certification-exempt equipment
FCC 15.35(c) ISED RSS-Gen 6.10 Issue 5 A2	Duty Cycle	ANSI C63.10-2013	N/R	Information only
FCC 15.209 ISED RSS-310 10.6 Issue 5 ISED RSS-Gen 6.13 Issue 5 A2	Radiated spurious emissions	ANSI C63.10-2013	PASS	
ISED RSS-310 5 Issue 5 ISED RSS-Gen 7.1 Issue 5 A2	Receiver radiated spurious emissions	ANSI C63.10-2013	N/R	Colocated transmitter
Comment:				

Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

3 Test Conditions and Results

3.1 Test Conditions and Results - Radiated spurious emissions

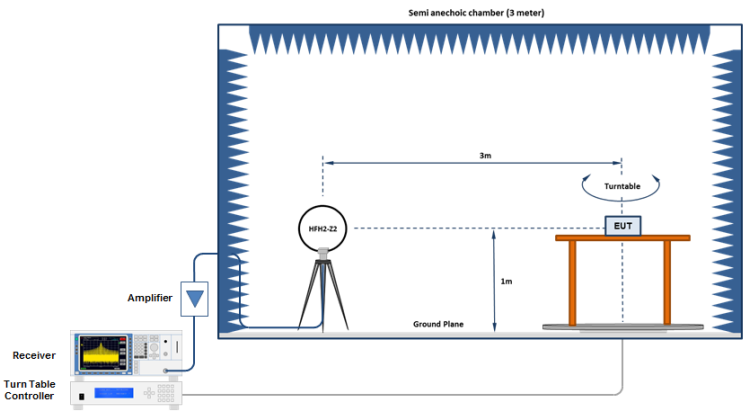
3.1.1 Information

Test Information	
Reference	FCC 15.209 / ISED RSS-310 10.6
Measurement Method	ANSI C63.10
Measurement Uncertainty	± 5.95 dB
Operator	Florian Voigt
Date	2021-07-01

3.1.2 Limits

Limits				
Frequency range [MHz]	Detector	Limit [µV/m]	Limit [dBµV/m]	Limit Distance [m]
0.009 - 0.090	Average	2400/F	48.5 – 28.5	300
0.090 - 0.110	Quasi-Peak	2400/F	28.5 - 26.8	300
0.110 - 0.490	Average	2400/F	26.8 - 13.8	300
0.490 - 1.705	Quasi-Peak	24000/F	33.8 - 23.0	30
1.705 - 30	Quasi-Peak	30	29.5	30
30 - 88	Quasi-Peak	100	40	3
88 - 216	Quasi-Peak	150	43.5	3
216 - 960	Quasi-Peak	200	46	3
960 - 1000	Quasi-Peak	500	54	3
>1000	Average	500	54	3
Note: F [kHz]				

3.1.3 Setup

Test Setup


3.1.4 Equipment

Test Equipment < 30 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2021-02	2024-02
EMI Test Receiver	R&S	ESR7	EF00943	2020-07	2021-07
Loop Antenna	R&S	HFH2-Z2	EF00184	2021-01	2024-01

3.1.5 Procedure

Test Procedure
1. EUT set to test mode 2. Span it set according to measurement range 3. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector 4. Markers are set to maximum emission levels

3.1.6 Results

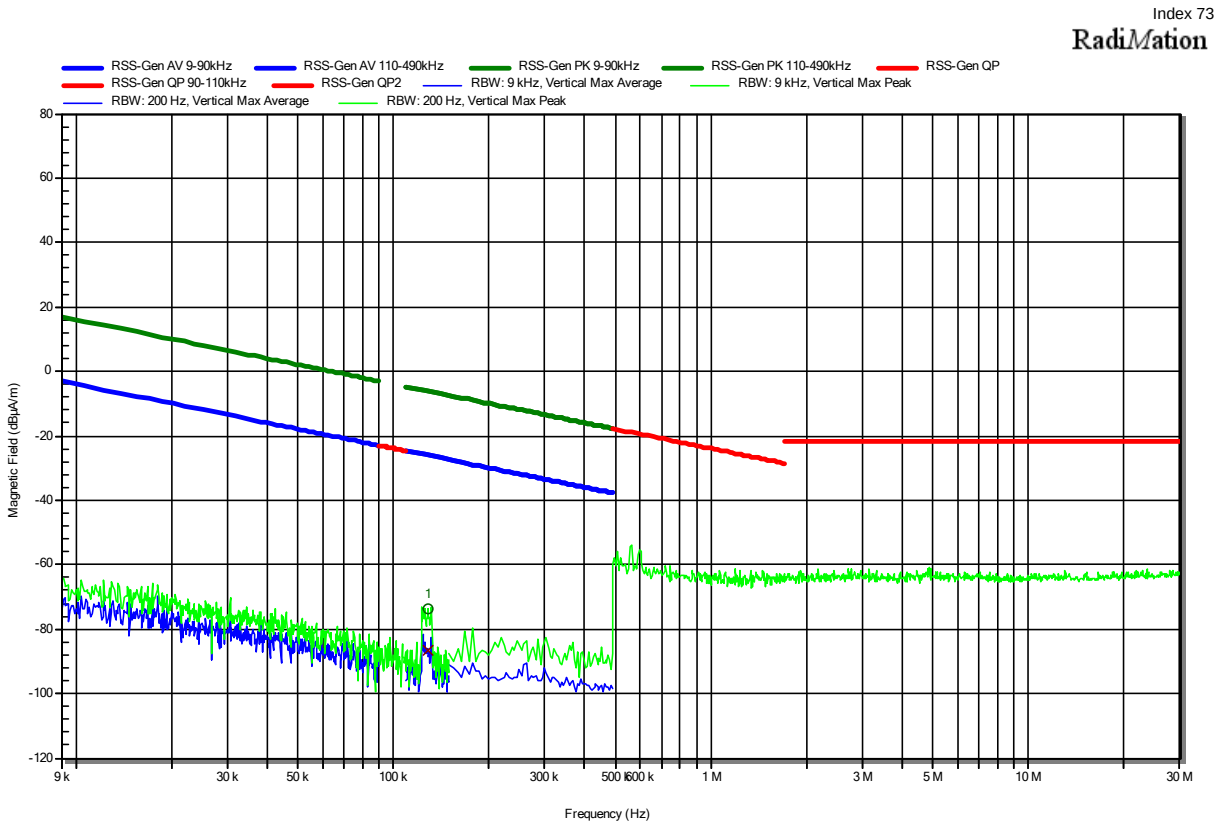
Test Results – 47 CFR § 15.209							
Channel [kHz]	Emission [kHz]	Level [dBµV/m]	Detector	Pol.	Limit [dBµV/m]	Limit distance [m]*	Margin [dB]
125	596.663	07.40	pk	N/A	32.10	30	-24.72
125	596.663	03.60	qpk	N/A	32.10	30	-28.45

Test Results – RSS-310							
Channel [kHz]	Emission [kHz]	Level [dBµA/m]	Detector	Pol.	Limit [dBµA/m]	Limit distance [m]*	Margin [dB]
125	128.3	-73.7	pk	N/A	-6.1	300	-67.59
125	128.3	-86.7	avg	N/A	-26.1	300	-60.66

ANNEX A Radiated spurious emissions

Radiated Spurious Emissions according to RSS-310 Issue 5

Project Number:	G0M-2102-9617
Applicant:	SKAN Deutschland GmbH
Model Description:	Glove Tester
Model:	WirelessGT-2
Test Sample ID:	33685
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 15.0 VDC
Antenna:	Rohde & Schwarz HFH 2-Z2, Vertical
Measurement distance:	3 m
Mode:	Tx; RFID, 125kHz
Test Date:	2021-07-01
Note:	

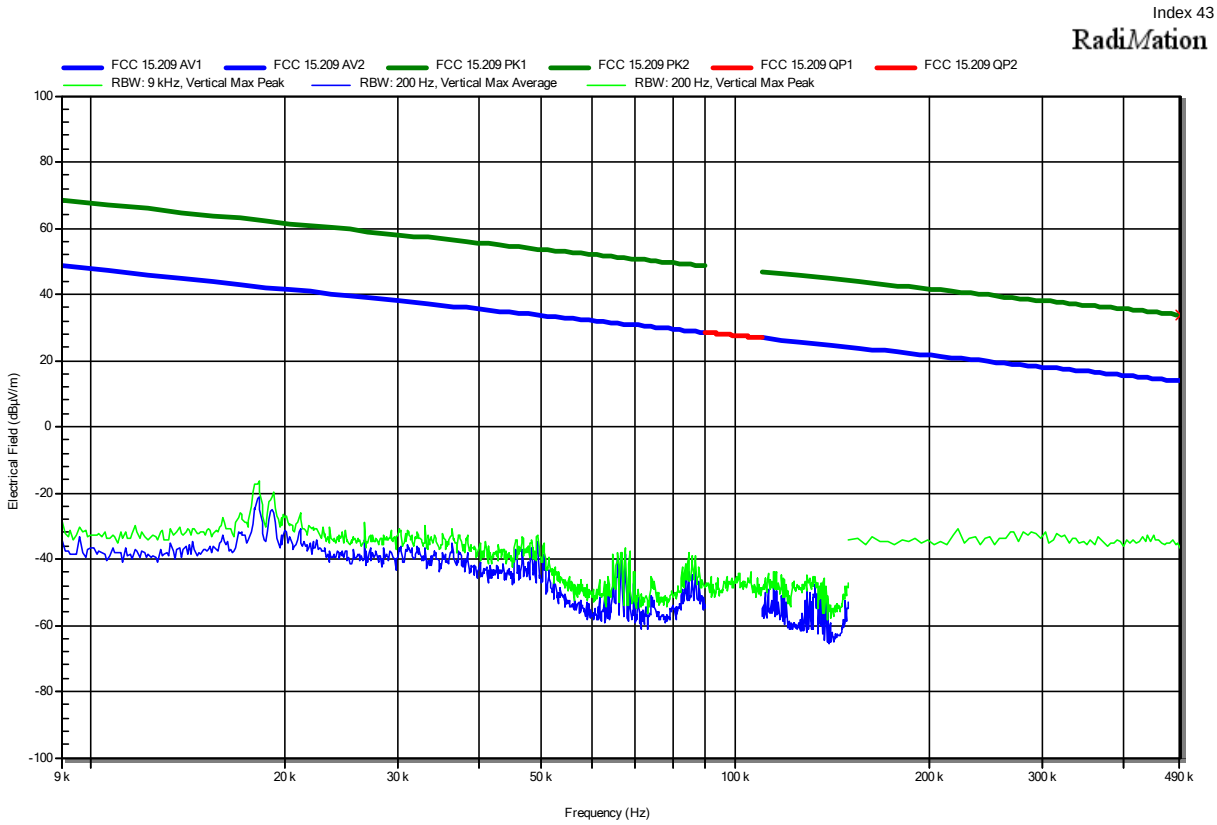


Frequency	Peak	Peak Limit	Peak Difference	Peak Status
128.3 kHz	-73.7 dBµA/m	-6.1 dBµA/m	-67.59 dB	Pass

Frequency	Average	Average Limit	Average Difference	Average Status
128.3 kHz	-86.7 dBµA/m	-26.1 dBµA/m	-60.66 dB	Pass

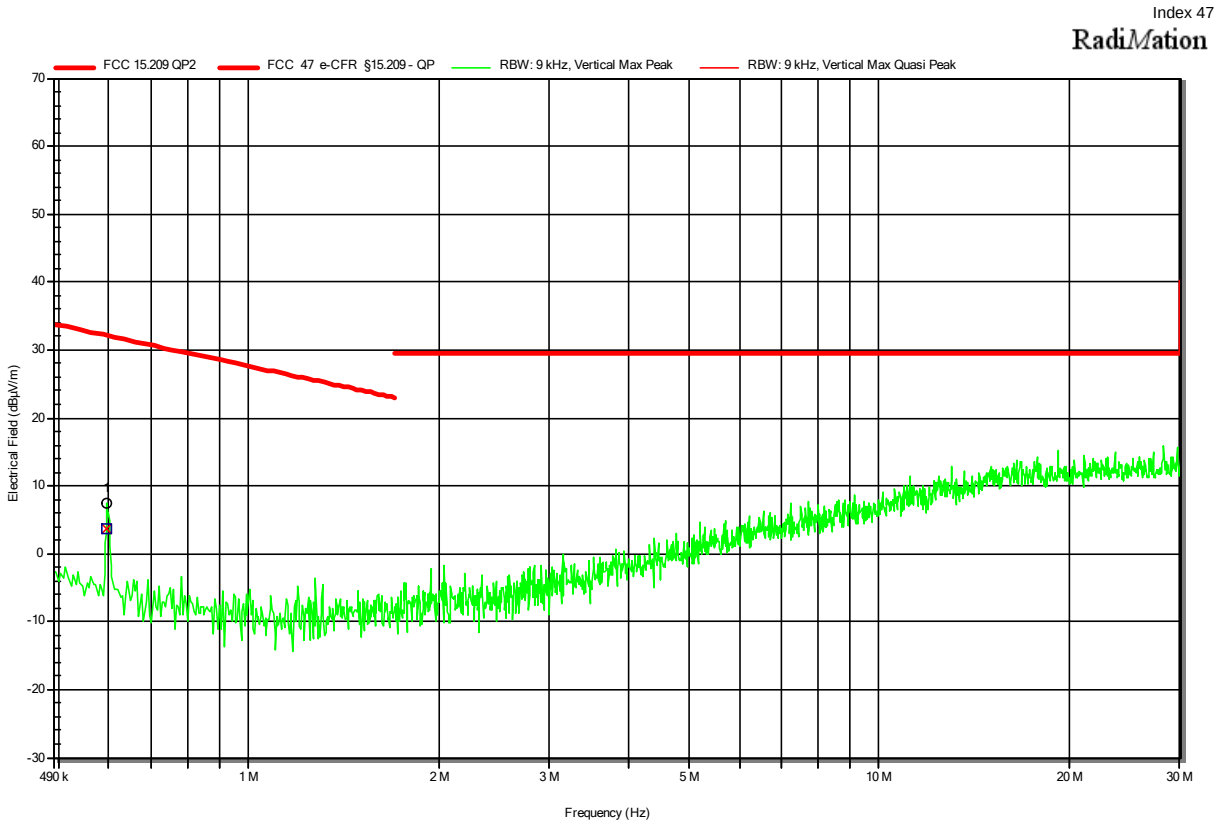
Radiated Spurious Emissions according to 47 CFR § 15.209

Project Number:	G0M-2102-9617
Applicant:	SKAN Deutschland GmbH
Model Description:	Glove Tester
Model:	WirelessGT-2
Test Sample ID:	33685
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 15.0 VDC
Antenna:	Rohde & Schwarz HFH 2-Z2, Vertical
Measurement distance:	3 m
Mode:	Tx; RFID 125kHz
Test Date:	2021-06-30
Note:	



Radiated Spurious Emissions according to 47 CFR § 15.209

Project Number:	G0M-2102-9617
Applicant:	SKAN Deutschland GmbH
Model Description:	Glove Tester
Model:	WirelessGT-2
Test Sample ID:	33685
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 22 °Celsius, Vnom: 15.0 VDC
Antenna:	Rohde & Schwarz HFH 2-Z2, Vertical
Measurement distance:	3 m
Mode:	Tx; RFID 125kHz
Test Date:	2021-06-30
Note:	



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
596.663 kHz	7.4 dBµV/m	32.1 dBµV/m	-24.72 dB	Pass

Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
596.663 kHz	3.6 dBµV/m	32.1 dBµV/m	-28.45 dB	Pass

=== End of test report ===