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DAkkS Deutsche Akkreditierungsstelle
D-PL-18175-01-05
D-PL-18175-01-06

Report No. 406069-01

FCC TEST REPORT / ISED TEST REPORT

Product	KleeYa
Name and address of the applicant	Stratec SE Gewerbestraße 37 D – 75217 Birkenfeld (Germany)
Name and address of the manufacturer	Stratec SE Gewerbestraße 37 D – 75217 Birkenfeld (Germany)
Model	KleeYa REF: 9290700001
Rating	100 – 240V
Trademark	STRATEC
Serial number	9070000033
Additional information	Radio Frequency Identification (RFID) -13.56MHz Radio device - 4 MHz
Tested according to	**FCC Part 15.225** Low Power Transmitter, Operation in the band 13.110 - 14.010 MHz **FCC Part 15.223** Operation in the band 1.705–10 MHz **Industry Canada RSS-210, Issue 10** Low Power Licence-Exempt Radiocommunications Devices
Order number	406069
Tested in period	2020-10-19 – 2020-10-23
Issue date	2021-11-06
Name and address of the testing laboratory	**Nemko GmbH & Co. KG** Reetzstraße 58 D-76327 Pfinztal Tel.: + 49 (0) 7240 – 63 - 0 Fax: + 49 (0) 7240 – 63 – 11 Bundesnetzagentur BNetzA-CAB-17/21-17	FCC No: 973501 IC OATS: 10921A

Prepared by [F. Hupbauer]	Approved by [Dipl.-Ing. P. Lukas]

Template version: B

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1 TEST INFORMATION

1.1 Test item

Name :	KleeYa
Model/version :	REF: 9290700001
FCC ID:	2AYDHKLEEYA
Serial number :	9070000033
Type of Power Supply :	Entire unit: 100 – 240V / 50 – 60Hz RFID Module: 24V DC

RFID

Frequency Range :	13.553-13.567 MHz
Number of Channels:	1
Operating Modes :	Transmitter
Type of Modulation :	ASK
User Frequency Adjustment :	None
Maximum field strength @ 3m:	42.52 dbµV/m
Antenna Connector :	Integral loop antenna
Number of antennas:	Module 1: 16 identical antennas Module 2: 2 identical antennas
Antenna Diversity Supported :	None

4 MHz Radio Module

Frequency Range :	4 MHz
Number of Channels:	1
Operating Modes :	Transmitter
User Frequency Adjustment :	None
Maximum field strength @ 3m:	46.52 dbµV/m
Antenna Connector :	Integral loop antenna
Number of antennas:	Module 3: 8 identical antennas
Antenna Diversity Supported :	None

Description of test item

The KleeYa system is a fully automated, non-patient contact immunoassay analyzer system for in-vitro diagnostic use. The main parts of the system are the pipettor, the measurement chamber with reagent dispensers (DDCA), the washer, the incubator, the reagent module with RFID, and the sample module with camera barcode reader.

The equipment is controlled by a touch panel PC on the front.

The device contains two different types of RFID modules for identifying samples and containers.

For communication with racks a 4 MHz capactive radio module is integrated.

Module 1 ARS Loading Bay: The device can be equipped with a maximum of eight racks. Each rack has two RFID antennas that can be switched.

Module 2 DDCA: The device is equipped with to modules to detected different containers. Each module has it own antenna.

Module 3 radio 4 MHz: Each of the eight racks has a integrated 4 MHz radio module for communication. Each module has it own antenna.

Class A digital device:

A digital device that is marketed for use in a commercial, industrial or business environment, exclusive of a device which is marketed for use by the general public or is intended to be used in the home.

1.2 Normal test condition

Temperature:	18 - 22 °C
Relative humidity:	45 - 55 %
Normal test voltage:	120V / 60Hz and 240V / 50Hz

The values are the limit registered during the test period.

1.3 Test Engineer(s)

Frederic Hupbauer

1.4 Description of modification for Modification Filing

Not applicable.

1.5 Family List Rational

Not Applicable.

1.6 Antenna Requirement

Is the antenna detachable?	☐ Yes	☒ No
If detachable, is the antenna connector non-standard?	☐ Yes	☐ No

Type of antenna connector: N/A

Ref. FCC §15.203

1.7 Worst-Case Configuration and Mode

The modules were set to continuus operation and the maximum output level was set in the software.
For every module the antenna with the higest output with and without tag was tested.
The radiated measurements are tested on three axes.
The worst-case-scenario is reported.

1.8 Comments

The radiated measurements are tested on three axis.

2 TEST REPORT SUMMARY

2.1 General

All measurements are traceable to national standards.

The tests were conducted for the purpose of demonstrating compliance with
FCC CFR 47 Part 15.225, Part 15 223, Industry Canada RSS-210, Issue 10 and RSS-GEN, Issue 5.

Tests were performed in accordance with ANSI C63.4-2014 and and ANSI C63.10-2013.

Radiated tests were performed in a semi-anechoic shielded room (f < 1 GHz) and a fully-anechoic shielded room (f > 1 GHz) at a measuring distance of 3m.

A description of the test facility is on file with the FCC and Industry Canada.

Test setup photo document: 406069-01TRFFCC Annex – Test set-up photos

☒ New Submission ☒ Production Unit

☐ Class II Permissive Change ☐ Pre-production Unit

DXT Equipment Code ☐ Family Listing

2.2 Test summary

Name of test	FCC Part 15 reference	RSS-210 Issue 9 & RSS-GEN Issue 5	Result
Supply Voltage Variations	15.31(e)	6.11 (RSS-GEN)	Complies
Antenna Requirement	15.203	6.8 (RSS-GEN)	N/A [1]
Power-line Conducted Emission	15.207(a)	8.8 (RSS-GEN)	Complies
Occupied Bandwidth	N/A	6.7 (RSS-GEN)	-
Fundamental Field strength	15.225(a) 15.223	B.6(a)	Complies
Band Emissions	15.225(b)(c)	B.6(b)(c)	Complies
Spurious Emissions (Radiated)	15.225 (d) 15.209 15.223	B.6(d) 6.13 (RSS-GEN) 8.9 (RSS-GEN)	Complies
Frequency stability	15.225(e)	B.6	Complies

[1] Integral loop antenna

RSS Gen issue 5 covers section 7 & 6

RSS 210 issue 10 covers section B.6

3 TEST RESULTS

3.1 Power Line Conducted Emissions

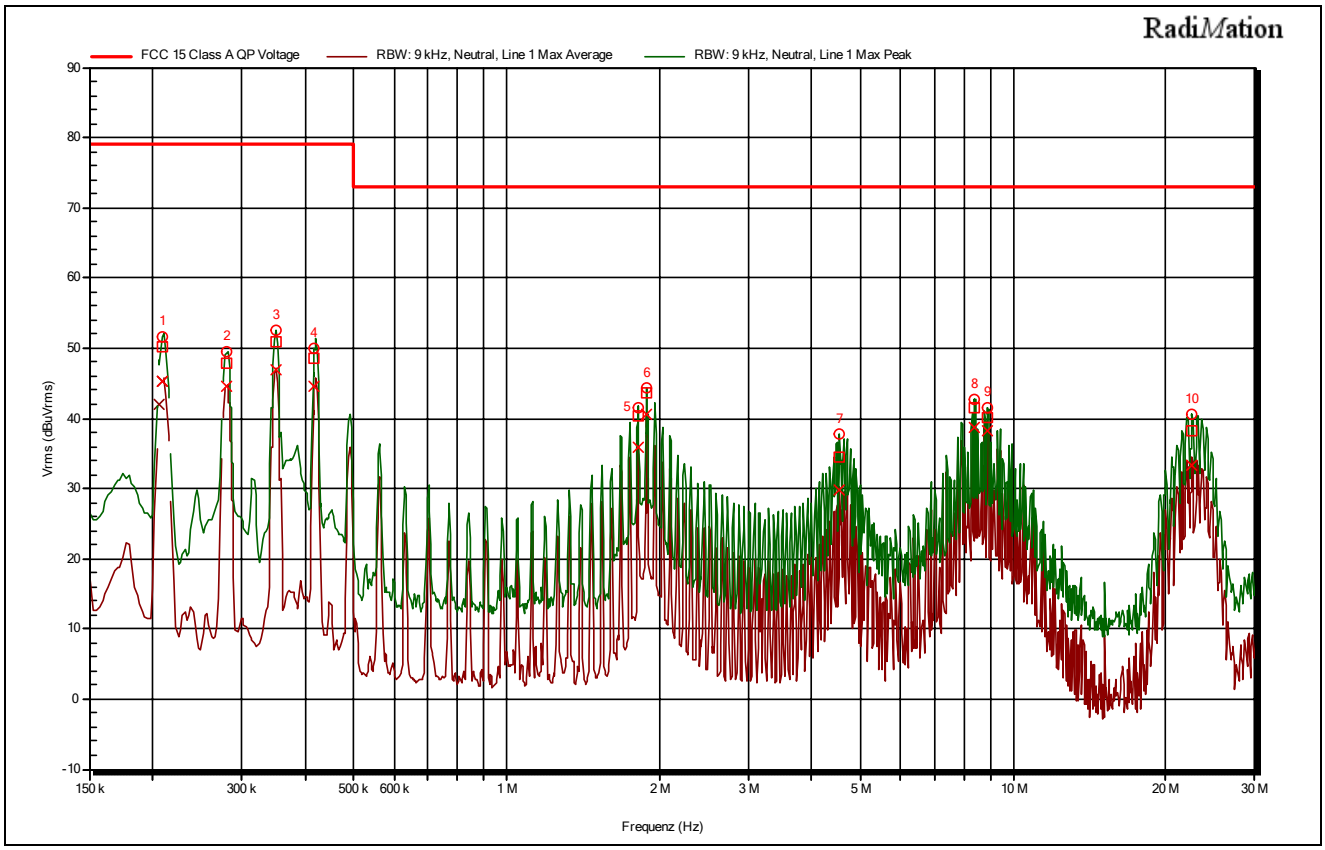
Para. No.: 15.207 (a)
Para. No.: 8.8

Test Performed By: F. Hupbauer	Date of Test: 2020-10-20

Measurement procedure: ANSI C63.4-2014 using 50 µH/50 ohms LISN.
Test Results: Complies.
Measurement Data: See attached graph.

Input voltage to EUT: 120V/60Hz and 240V/50Hz
Highest measured value (L1 and N):

Diagram 120V/60Hz



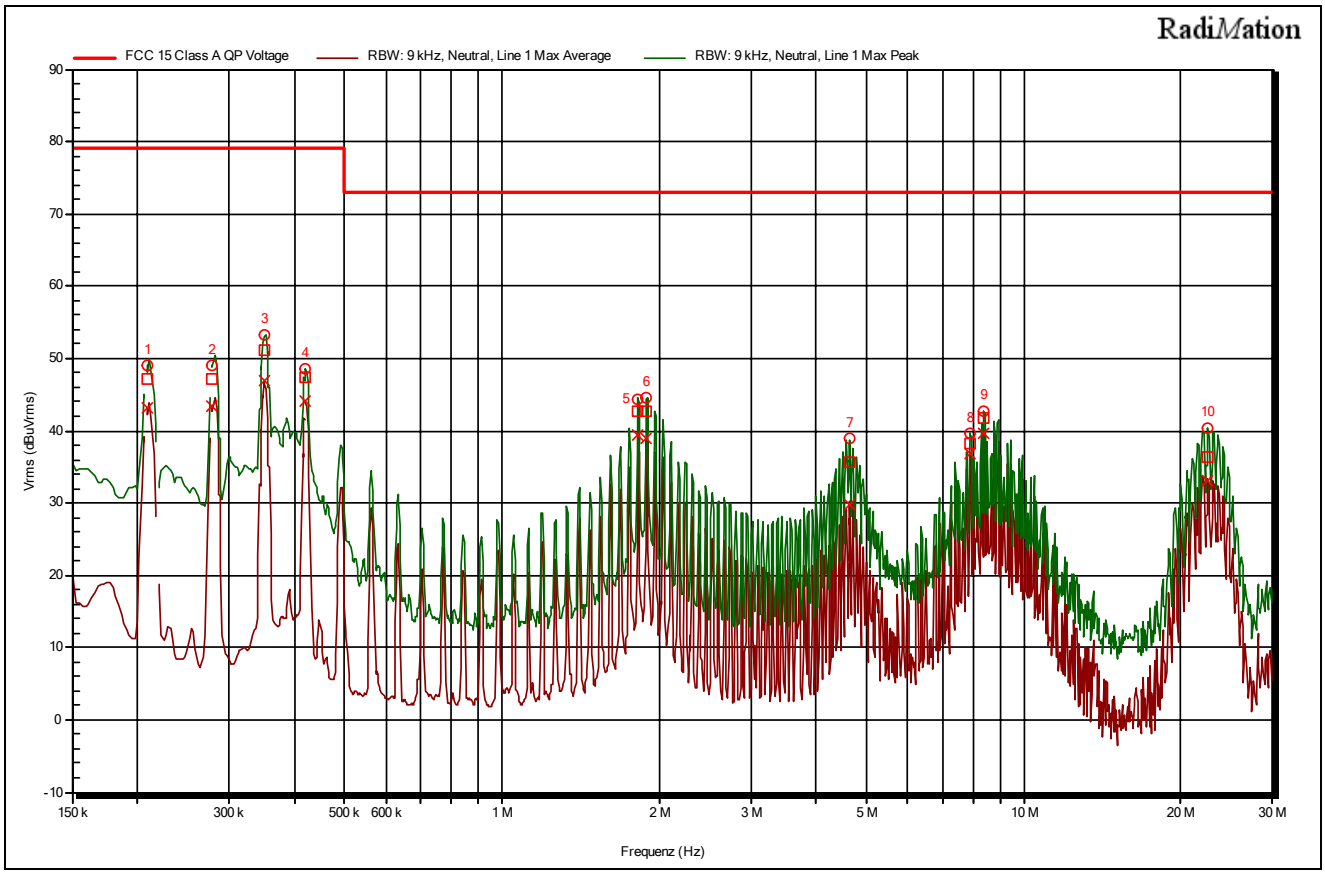
Final measurements QP with Quasi-Peak-Detector 120V/60Hz

Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	LISN
1	0,208500 MHz	50,23 dBuVrms	79,00 dBuVrms	-28,77 dB	Line 1
2	0,280500 MHz	47,96 dBuVrms	79,00 dBuVrms	-31,04 dB	Neutral
3	0,350250 MHz	50,82 dBuVrms	79,00 dBuVrms	-28,18 dB	Neutral
4	0,417750 MHz	48,50 dBuVrms	79,00 dBuVrms	-30,50 dB	Neutral
5	1,819500 MHz	40,25 dBuVrms	73,00 dBuVrms	-32,75 dB	Line 1
6	1,889250 MHz	43,65 dBuVrms	73,00 dBuVrms	-29,35 dB	Line 1
7	4,551000 MHz	34,58 dBuVrms	73,00 dBuVrms	-38,42 dB	Line 1
8	8,389500 MHz	41,62 dBuVrms	73,00 dBuVrms	-31,38 dB	Neutral
9	8,895750 MHz	40,09 dBuVrms	73,00 dBuVrms	-32,91 dB	Line 1
10	22,490250 MHz	38,34 dBuVrms	73,00 dBuVrms	-34,66 dB	Neutral

Final measurements AV with Average-Detector 120V/60Hz

Peak Number	Frequency	Average	Average Limit	Average Difference	LISN
1	0,208500 MHz	45,22 dBuVrms	66,00 dBuVrms	-20,78 dB	Line 1
2	0,280500 MHz	44,58 dBuVrms	66,00 dBuVrms	-21,42 dB	Neutral
3	0,350250 MHz	46,86 dBuVrms	66,00 dBuVrms	-19,14 dB	Neutral
4	0,417750 MHz	44,62 dBuVrms	66,00 dBuVrms	-21,38 dB	Neutral
5	1,819500 MHz	35,86 dBuVrms	60,00 dBuVrms	-24,14 dB	Line 1
6	1,889250 MHz	40,70 dBuVrms	60,00 dBuVrms	-19,30 dB	Line 1
7	4,551000 MHz	29,77 dBuVrms	60,00 dBuVrms	-30,23 dB	Line 1
8	8,389500 MHz	38,60 dBuVrms	60,00 dBuVrms	-21,40 dB	Neutral
9	8,895750 MHz	38,19 dBuVrms	60,00 dBuVrms	-21,81 dB	Line 1
10	22,490250 MHz	33,26 dBuVrms	60,00 dBuVrms	-26,74 dB	Neutral

Diagram 240V/50Hz



Final measurements QP with Quasi-Peak-Detector 240V/50Hz

Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	LISN
1	0,208500 MHz	47,06 dBuVrms	79,00 dBuVrms	-31,94 dB	Line 1
2	0,278250 MHz	47,14 dBuVrms	79,00 dBuVrms	-31,86 dB	Line 1
3	0,350250 MHz	51,23 dBuVrms	79,00 dBuVrms	-27,77 dB	Line 1
4	0,420000 MHz	47,47 dBuVrms	79,00 dBuVrms	-31,53 dB	Neutral
5	1,821750 MHz	42,80 dBuVrms	73,00 dBuVrms	-30,20 dB	Line 1
6	1,893750 MHz	42,72 dBuVrms	73,00 dBuVrms	-30,28 dB	Line 1
7	4,629750 MHz	35,77 dBuVrms	73,00 dBuVrms	-37,23 dB	Line 1
8	7,883250 MHz	38,26 dBuVrms	73,00 dBuVrms	-34,74 dB	Line 1
9	8,387250 MHz	41,75 dBuVrms	73,00 dBuVrms	-31,25 dB	Line 1
10	22,490250 MHz	36,33 dBuVrms	73,00 dBuVrms	-36,67 dB	Neutral

Final measurements AV with Average-Detector 240V/50Hz

Peak Number	Frequency	Average	Average Limit	Average Difference	LISN
1	0,208500 MHz	43,09 dBuVrms	66,00 dBuVrms	-22,91 dB	Line 1
2	0,278250 MHz	43,31 dBuVrms	66,00 dBuVrms	-22,69 dB	Line 1
3	0,350250 MHz	46,86 dBuVrms	66,00 dBuVrms	-19,14 dB	Line 1
4	0,420000 MHz	44,09 dBuVrms	66,00 dBuVrms	-21,91 dB	Neutral
5	1,821750 MHz	39,47 dBuVrms	60,00 dBuVrms	-20,53 dB	Line 1
6	1,893750 MHz	38,85 dBuVrms	60,00 dBuVrms	-21,15 dB	Line 1
7	4,629750 MHz	29,78 dBuVrms	60,00 dBuVrms	-30,22 dB	Line 1
8	7,883250 MHz	36,89 dBuVrms	60,00 dBuVrms	-23,11 dB	Line 1
9	8,387250 MHz	39,57 dBuVrms	60,00 dBuVrms	-20,43 dB	Line 1
10	22,490250 MHz	33,06 dBuVrms	60,00 dBuVrms	-26,94 dB	Neutral

3.2 Occupied Bandwidth

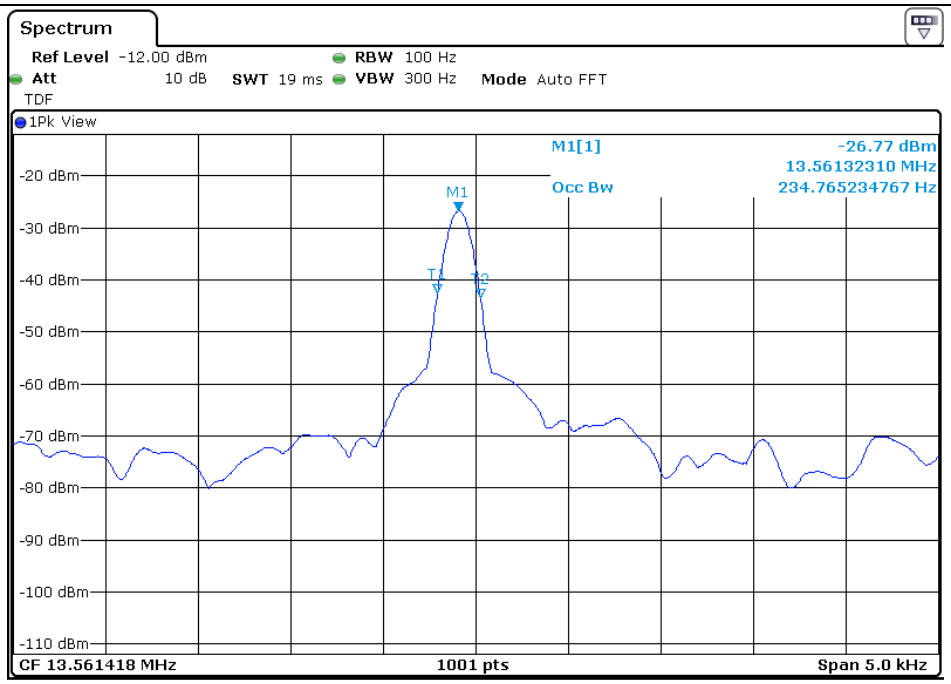
Para. No.: 15.223
Para. No.: 6.7 RSS-Gen

Test Performed By: F. Hupbauer	**Date of Test: 2020-10-19**

Test Results: Complies *)
Measurement Data:

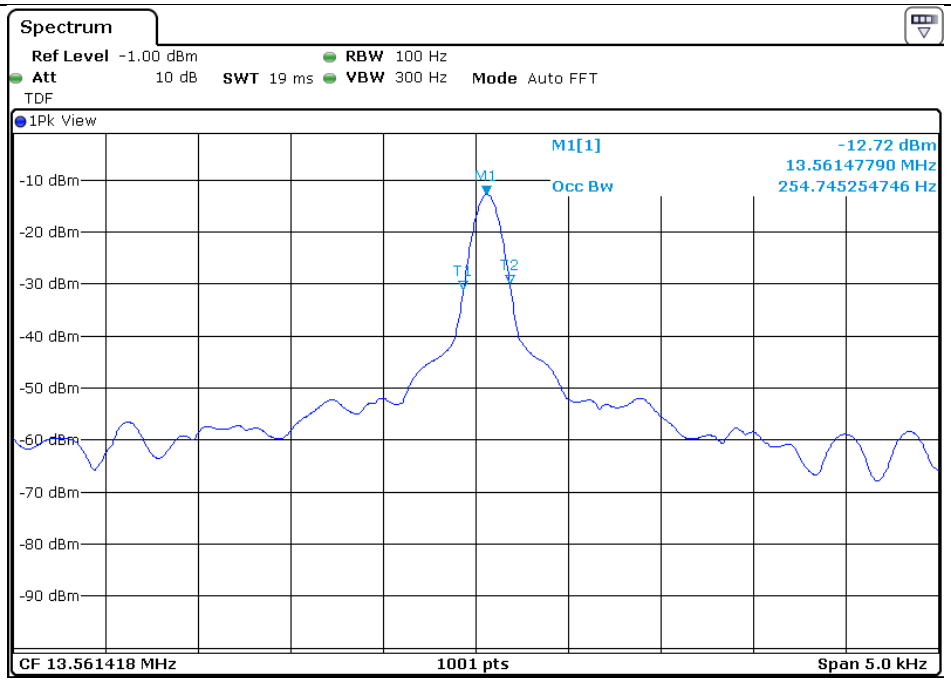
Module	**99% BW (Hz)**	**6 dB BW (Hz)**
Module 1 (13.56 MHz)	234.76	-
Module 2 (13.56 MHz)	254.74	-
Module 3 (4 MHz)	7630.3	150.0

Requirements:
For information only
*) Crucial to determine the maximum field strength of any emission within the band 1.705-10.0 MHz



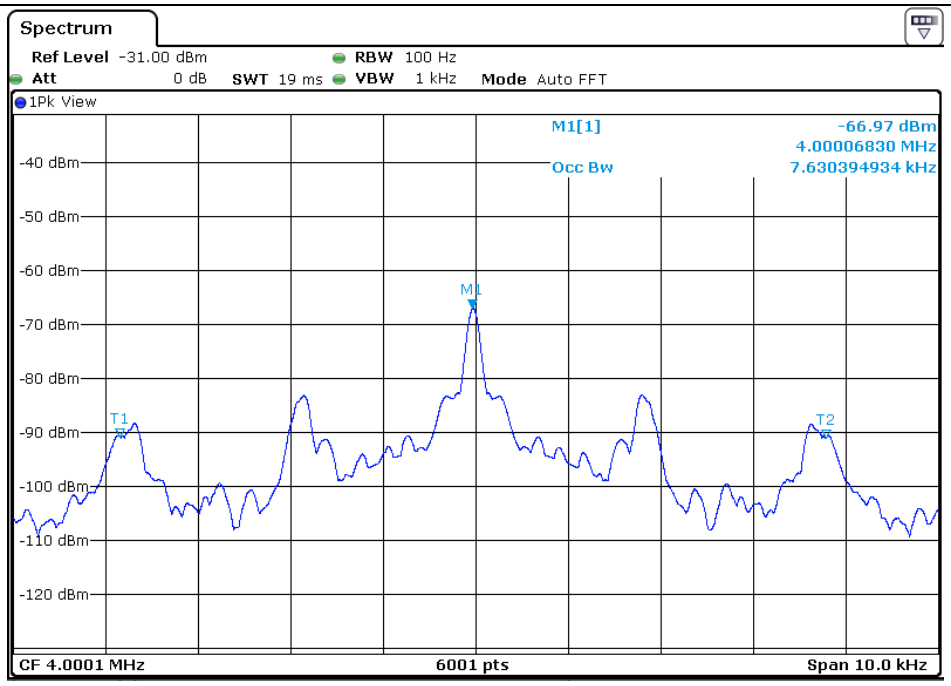
13.56 MHz – 99% OCC BW, Module 1

Plot-No.:406069-011



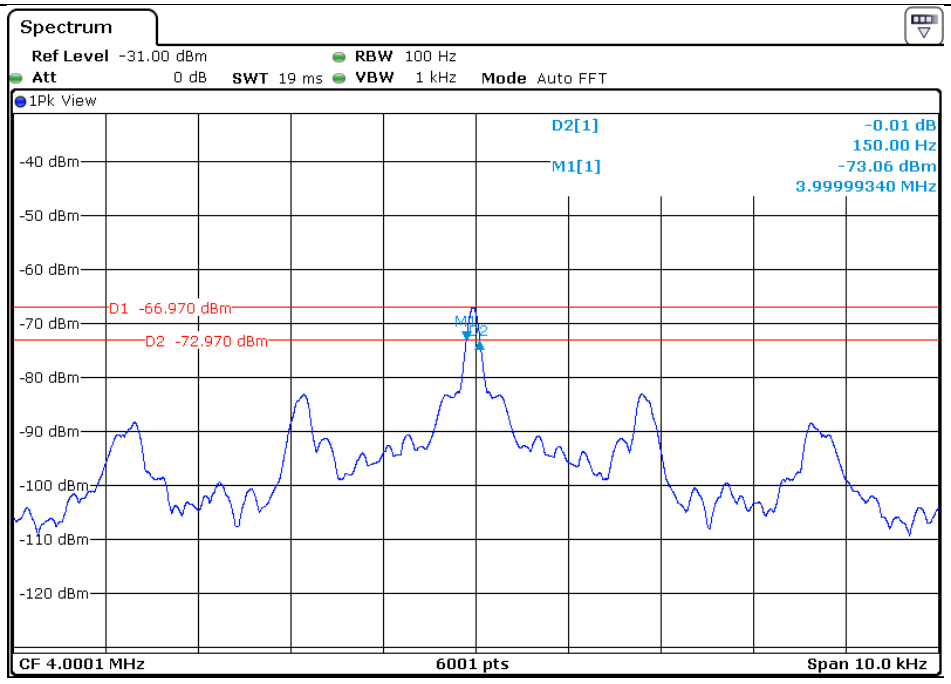
13.56 MHz – 99% OCC BW, Module 2

Plot-No.:406069-013



4 MHz – 99% OCC BW, Module 3

Plot-No.:406069-018



4 MHz – 6 dB BW, Module 3

Plot-No.:406069-019

3.3 Fundemental Field Strength

Para. No.: 15.225 (a), 15.223 / B.6 (a)

Test Performed By: F. Hupbauer	**Date of Test: 2020-10-19**

Test Results: Complies

Measurement data:
Maximum field strength

	RF channel (MHz)	Measured PK value (dBµV/m) @ 3m	Converted Limit @3m (dBµV/m)
Module 1 / 2	13.56	42.52	124.0
Module 3	4.0	46.52	63.5

The limit line given in the graph is corrected to 3 m distance.

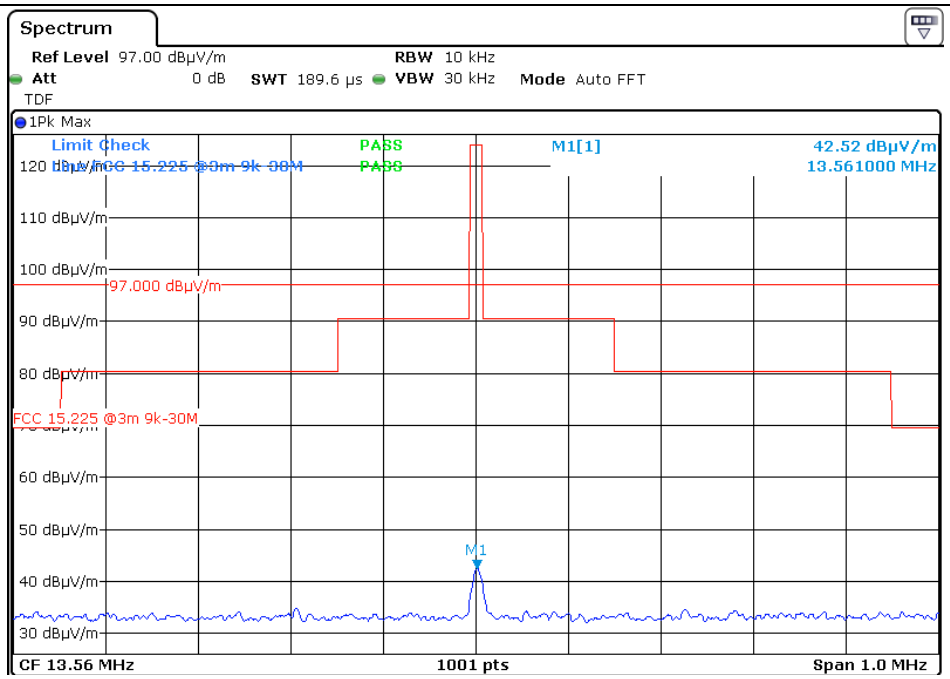
Radiated measurements are performed at 3 m distance.

Detachable antenna? ☐ Yes ☒ No
If detachable, is the antenna connector non-standard? ☐ Yes ☐ No
Integral loop antenna

Requirements:
The maximum field strength within band 13.553 – 13.567MHz at 30 meters shall be ≤ 84.0 dBµV/m (at 3 meters ≤ 124.0 dBµV/m)

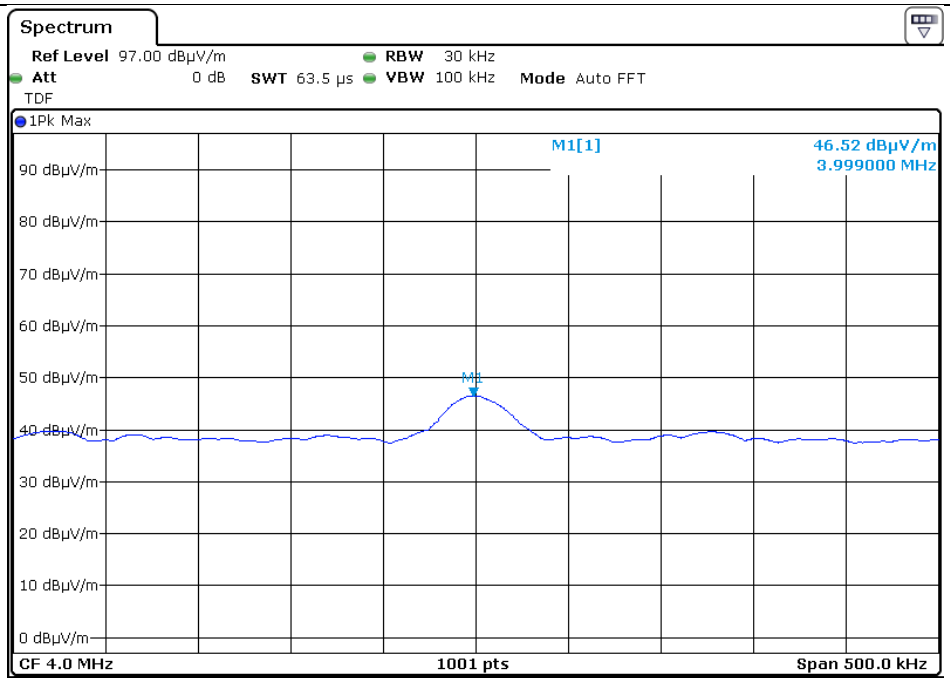
The field strength of any emission within the band 1.705-10.0 MHz shall not exceed 100 microvolts/meter at a distance of 30 meters. However, if the bandwidth of the emission is less than 10% of the center frequency, the field strength shall not exceed 15 microvolts/meter or (the bandwidth of the device in kHz) divided by (the center frequency of the device in MHz) microvolts/meter at a distance of 30 meters, whichever is the higher level.

(b) 334 microvolts/m (50.5 dBµV/m) at 30 m, within the bands 13.410-13.553 MHz and 13.567-13.710 MHz. (at 3 meters ≤ 90.5 dBµV/m)
(c) 106 microvolts/m (40.5 dBµV/m) at 30 m, within the bands 13.110-13.410 MHz and 13.710-14.010 MHz. (at 3 meters ≤ 80.5 dBµV/m)



Field strength at radial polarization – 13.56MHz

Plot-No.:406069-006



Field strength at radial polarization – 4 MHz

Plot-No.:406069-046

3.4 Spurious emissions (radiated)

Para. No.: 15.209 / 15.225 (b, c, d) / 15.223 / B.6(b, c, d)

Test Performed By: F. Hupbauer	**Date of Test: 2020-10-19**

Test Results: Complies
Measurement Data:

Radiated Emissions with loop antenna, 9kHz – 30MHz
measured at a distance of 3 m.
All modules are operating simultaneously at 13.56 MHz / 4 Mhz

Measured with Peak Detector:

Frequency	Dist. corr. factor	Measured Field strength, Peak @ 3m	Duty cycle corr. factor	Calculated Field strength, Peak @ 300m	Limit @ 300m	Margin
kHz	dB	dBµV/m	dB	dBµV/m	dBµV/m	dB
115.14	80	59.72	-	-20.28	26.38	46.66
325.1	80	43.72	-	-36.28	17.36	53.64

Frequency	Dist. corr. factor	Measured Field strength, Peak @ 3m	Duty cycle corr. factor	Calculated Field strength, Peak @ 30m	Limit @ 30m	Margin
MHz	dB	dBµV/m	dB	dBµV/m	dBµV/m	dB
1.66	40	42.97	-	2.97	23.19	20.22

The maximum is observed in radial polarization.
Antenna factor, amplifier gain and cable loss are included in spectrum analyzer “Transducer factor”.
The limit line given in the graph is corrected to 3 m distance using 40 dB/decade according to 15.31 (f) (2).

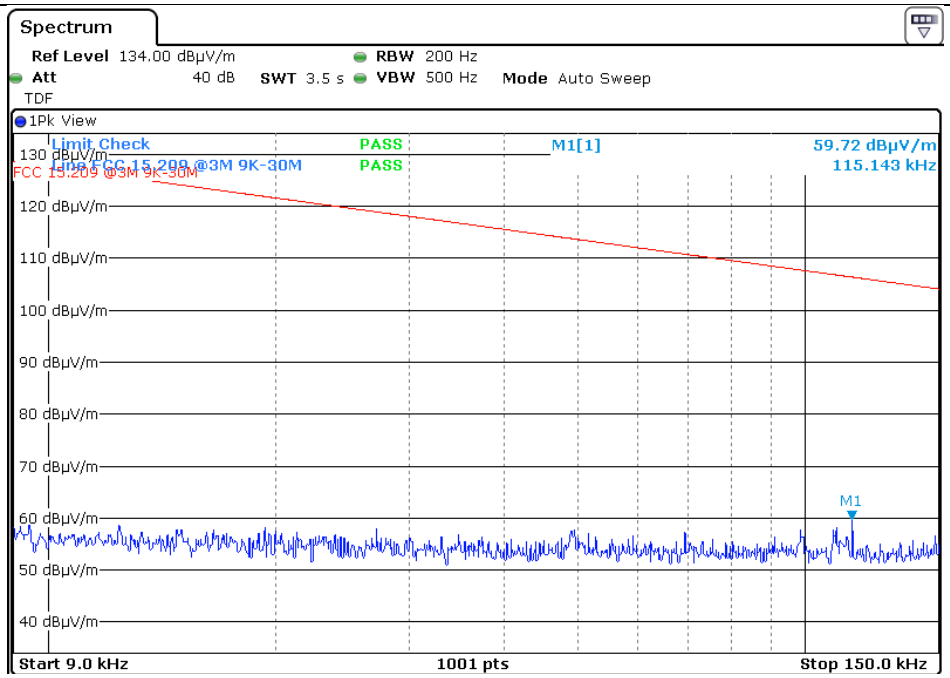
Requirement:
(d) The field strength of any emissions appearing outside of the 13.110 – 14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

Requirements/Limit according §15.209

FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 5, Clause 8.9 @ frequencies defined in clause 8.10	
	Radiated emission limit @3 meters	
Frequency (MHz)	**Quasi Peak (µV/m)**	**Quasi Peak (dBµV/m)**
30 – 88	100	40.0
88 – 216	150	43.5
216 – 960	200	46.0
Above 960	500	54.0

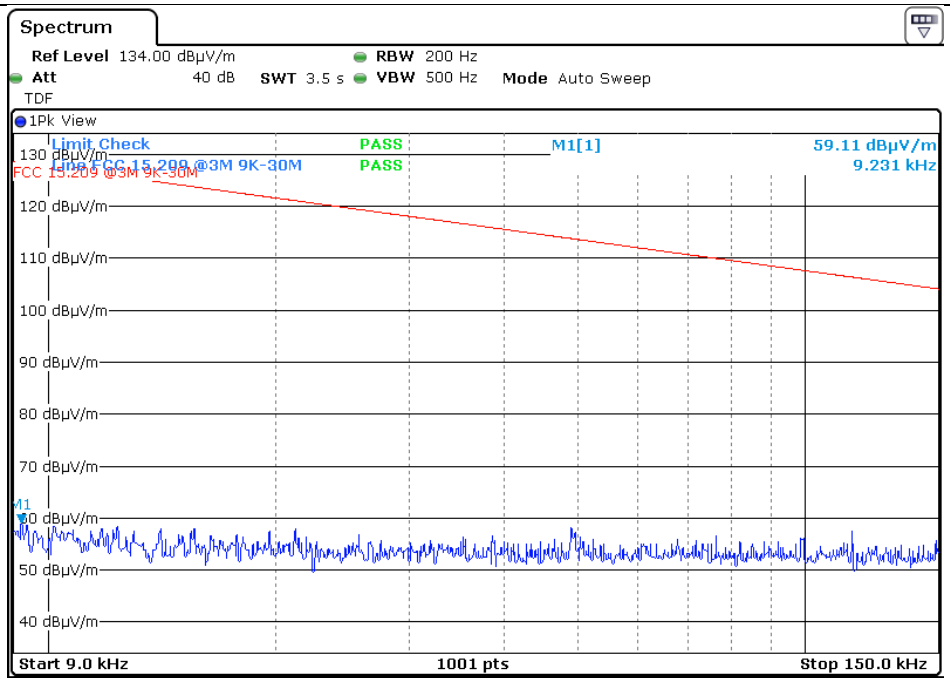
Radiated emissions 9kHz – 30 MHz.

Measuring distance 3 m, measured with Peak detector.



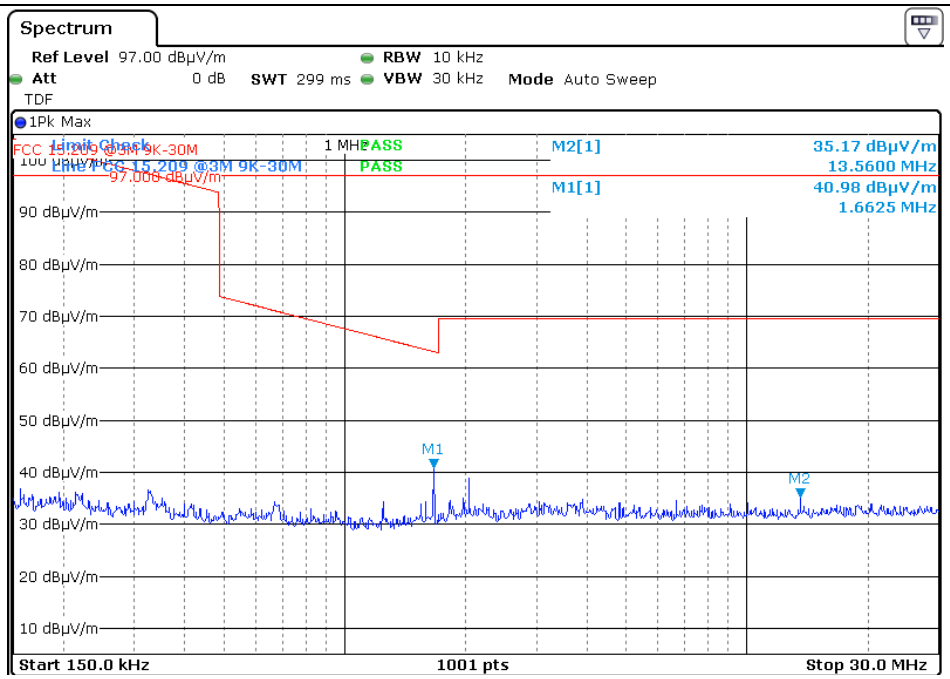
Radiated Emissions, 9 kHz – 150 kHz, longitudinal polarization

Plot-No.:406069-007



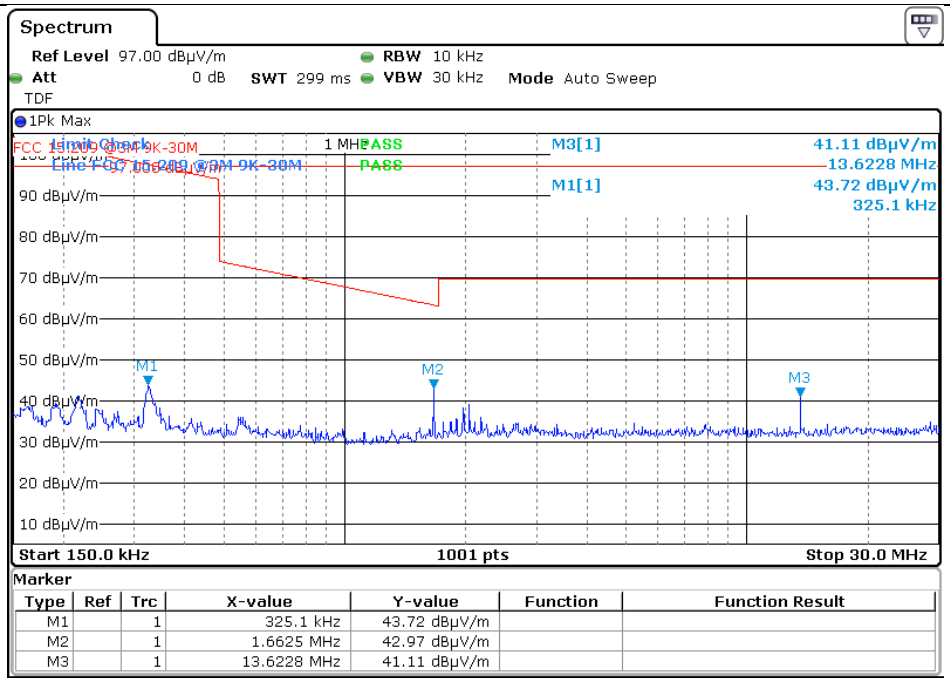
Radiated Emissions, 9 kHz – 150 kHz, radial polarization

Plot-No.:406069-008



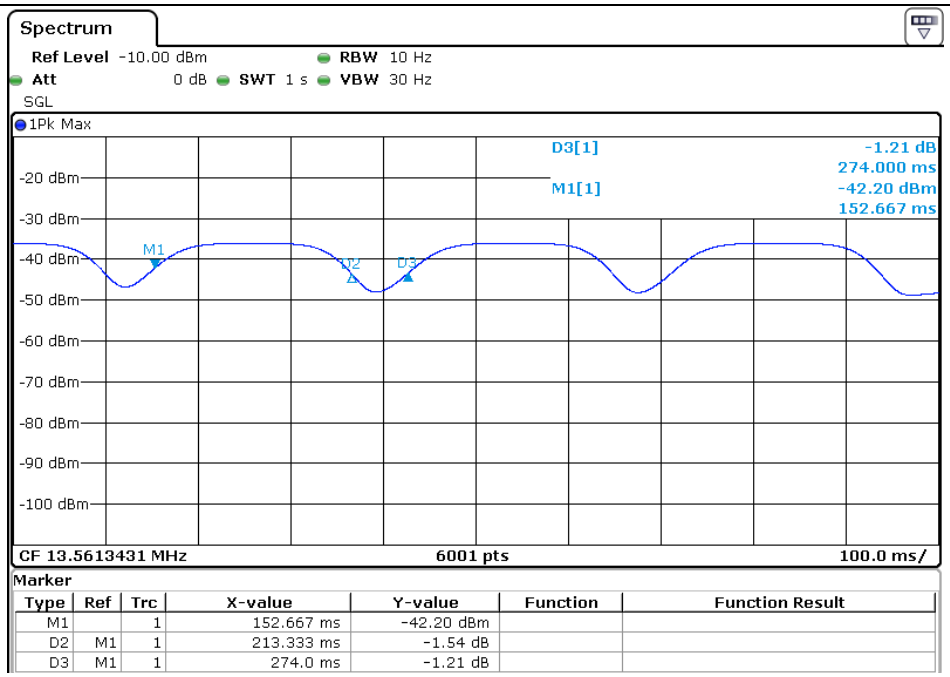
Radiated Emissions, 150 kHz – 30 MHz, longitudinal polarization

Plot-No.:406069-009



Radiated Emissions, 150 kHz – 30 MHz, radial polarization

Plot-No.:406069-010

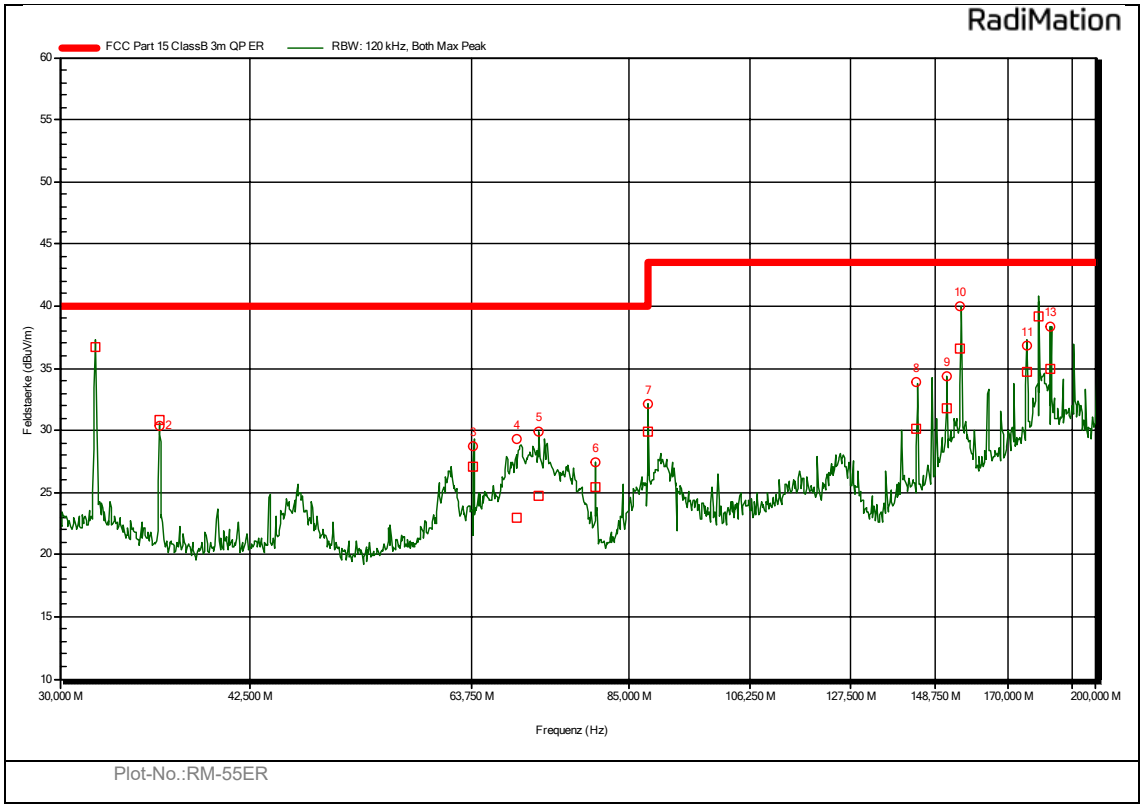


13.56 MHz – Duty Cycle

Plot-No.:406069-036

Radiated emissions 30 – 200 MHz.

Measuring distance 3 m. Detector: Quasi Peak



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Angle	Height	Polarization
1	32,010 MHz	36,74 dBuV/m	40,00 dBuV/m	-3,26 dB	334,0 Grad	1,00 m	Vertical
2	36,000 MHz	30,82 dBuV/m	40,00 dBuV/m	-9,18 dB	0,0 Grad	1,00 m	Vertical
3	63,990 MHz	27,03 dBuV/m	40,00 dBuV/m	-12,97 dB	270,0 Grad	1,00 m	Vertical
4	69,270 MHz	22,98 dBuV/m	40,00 dBuV/m	-17,02 dB	0,0 Grad	1,00 m	Vertical
5	72,030 MHz	24,78 dBuV/m	40,00 dBuV/m	-15,22 dB	292,0 Grad	1,00 m	Vertical
6	80,010 MHz	25,39 dBuV/m	40,00 dBuV/m	-14,61 dB	247,0 Grad	1,00 m	Vertical
7	87,990 MHz	29,88 dBuV/m	40,00 dBuV/m	-10,12 dB	315,0 Grad	4,00 m	Horizontal
8	144,000 MHz	30,16 dBuV/m	43,50 dBuV/m	-13,34 dB	292,0 Grad	2,50 m	Horizontal
9	152,010 MHz	31,75 dBuV/m	43,50 dBuV/m	-11,75 dB	292,0 Grad	2,50 m	Horizontal
10	156,000 MHz	36,53 dBuV/m	43,50 dBuV/m	-6,97 dB	292,0 Grad	1,00 m	Horizontal
11	176,010 MHz	34,67 dBuV/m	43,50 dBuV/m	-8,83 dB	292,0 Grad	1,00 m	Horizontal
12	180,000 MHz	39,15 dBuV/m	43,50 dBuV/m	-4,35 dB	31,0 Grad	1,00 m	Vertical
13	184,020 MHz	34,97 dBuV/m	43,50 dBuV/m	-8,53 dB	22,0 Grad	1,00 m	Horizontal

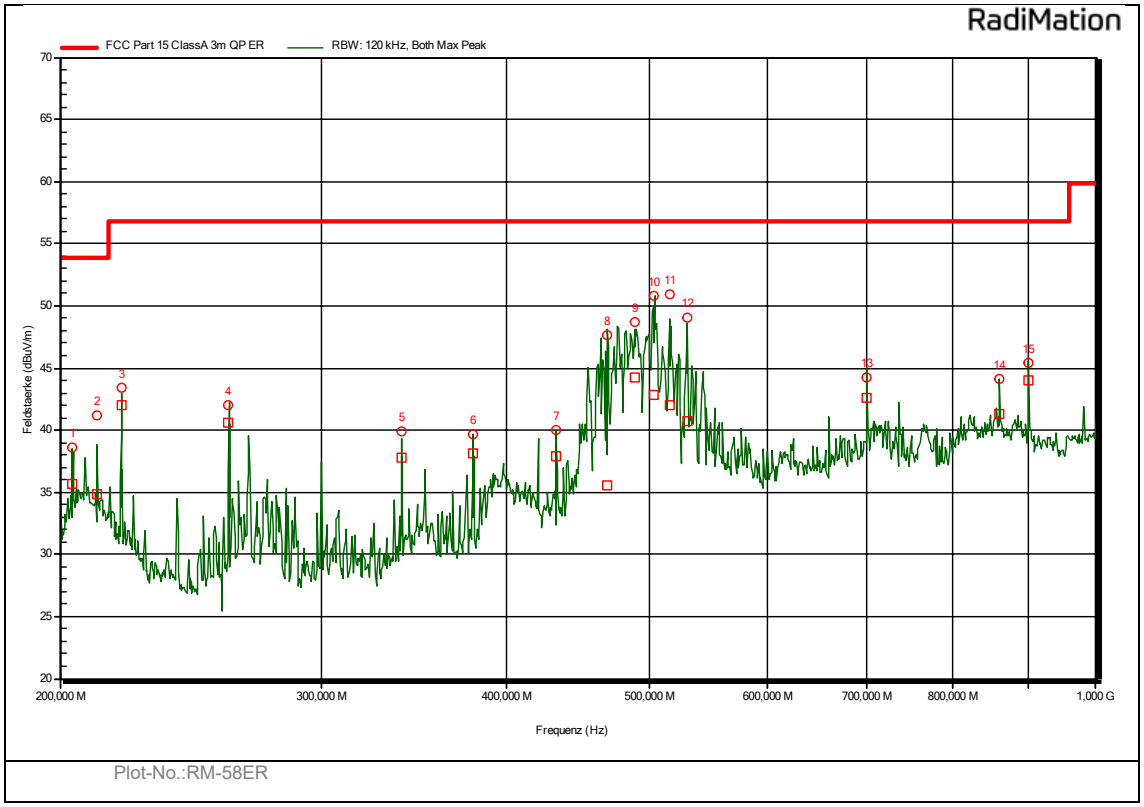
Radiated emissions 200 – 1000 MHz.

Measuring distance 3 m. Detector: Quasi Peak

Emissions which must be measured above the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator and which fall within the restricted bands shall comply with the general radiated emission limits in § 15.109 that are applicable to the incorporated digital device.

The emissions in the range 200-1000 MHz are not caused by the RFID modules but by the main device.

The EUT is a class A device.



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Angle	Height	Polarization
1	204,020 MHz	35,65 dBuV/m	53,90 dBuV/m	-18,25 dB	337,0 Grad	2,50 m	Vertical
2	212,000 MHz	34,89 dBuV/m	53,90 dBuV/m	-19,01 dB	0,0 Grad	2,50 m	Vertical
3	220,010 MHz	41,97 dBuV/m	56,80 dBuV/m	-14,83 dB	0,0 Grad	2,50 m	Vertical
4	260,000 MHz	40,64 dBuV/m	56,80 dBuV/m	-16,16 dB	0,0 Grad	2,50 m	Vertical
5	340,010 MHz	37,75 dBuV/m	56,80 dBuV/m	-19,05 dB	0,0 Grad	2,50 m	Vertical
6	380,000 MHz	38,17 dBuV/m	56,80 dBuV/m	-18,63 dB	0,0 Grad	2,50 m	Vertical
7	432,020 MHz	37,89 dBuV/m	56,80 dBuV/m	-18,91 dB	22,0 Grad	1,00 m	Vertical
8	468,020 MHz	35,54 dBuV/m	56,80 dBuV/m	-21,26 dB	0,0 Grad	1,00 m	Vertical
9	488,510 MHz	44,29 dBuV/m	56,80 dBuV/m	-12,51 dB	22,0 Grad	1,00 m	Vertical
10	503,240 MHz	42,88 dBuV/m	56,80 dBuV/m	-13,92 dB	0,0 Grad	1,00 m	Vertical
11	515,930 MHz	42,01 dBuV/m	56,80 dBuV/m	-14,79 dB	22,0 Grad	1,00 m	Vertical
12	529,460 MHz	40,67 dBuV/m	56,80 dBuV/m	-16,13 dB	22,0 Grad	1,00 m	Vertical
13	700,010 MHz	42,61 dBuV/m	56,80 dBuV/m	-14,19 dB	0,0 Grad	2,50 m	Vertical
14	860,000 MHz	41,28 dBuV/m	56,80 dBuV/m	-15,52 dB	0,0 Grad	1,00 m	Vertical
15	900,020 MHz	44,03 dBuV/m	56,80 dBuV/m	-12,77 dB	0,0 Grad	2,50 m	Vertical

3.5 Transmitter Frequency Stability

Para. No.: 15.225(e)/B.6

Test Performed By: F. Hupbauer	Date of Test: 2020-10-20 – 2020-10-23

Measurement Data:

Module 1

Temperature	Module supply voltage	Given Frequency (MHz)	Measured value (MHz)	Deviation (%)
+50 ° C	24Vdc	13.56	13.5612931	-0.00030675
+40 ° C	24Vdc	13.56	13.5612964	-0.00028242
+30 ° C	24Vdc	13.56	13.5613181	-0.00012241
+20 ° C	24Vdc	13.56	13.5613347	**0.00000**
+20 ° C	27.6Vdc	13.56	13.5613347	0.00000
+20 ° C	20.4Vdc	13.56	13.5613347	0.00000
+10 ° C	24Vdc	13.56	13.5613497	0.00011061
+0 ° C	24Vdc	13.56	13.5613814	0.00034436
-10 ° C	24Vdc	13.56	13.5613881	0.00039377
-20 ° C	24Vdc	13.56	13.5613814	0.00034436

Module 2

Temperature	Module supply voltage	Given Frequency (MHz)	Measured value (MHz)	Deviation (%)
+50 ° C	24Vdc	13.56	13.56144640	-0.00019614
+40 ° C	24Vdc	13.56	13.56144640	-0.00019614
+30 ° C	24Vdc	13.56	13.56145800	-0.00011061
+20 ° C	24Vdc	13.56	13.56147300	**0.00000**
+20 ° C	27.6Vdc	13.56	13.56147140	-0.00001180
+20 ° C	20.4Vdc	13.56	13.56147300	0.00000000
+10 ° C	24Vdc	13.56	13.56148470	0.00008627
+0 ° C	24Vdc	13.56	13.56148800	0.00011061
-10 ° C	24Vdc	13.56	13.56147970	0.00004940
-20 ° C	24Vdc	13.56	13.56144300	-0.00022121

Requirement:

(e) The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage and for a variation in the supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

4 Measurement Uncertainty

Measurement Uncertainty Values		
Test Item		**Uncertainty**
Output Power		±0.8 dB
Power Spectral Density		±0.8 dB
Out of Band Emissions, Conducted	**< 3.6 GHz**	±0.8 dB
	> 3.6 GHz	±1.2 dB
Spurious Emissions, Radiated	**< 200 MHz**	±4.77 dB
	200 MHz - 1 GHz	±5.02 dB
	1 GHz – 18 GHz	±4.94 dB
	> 18 GHz	±5.91 dB
Emission Bandwidth		±4 %
Power Line Conducted Emissions		±3.58 %
Spectrum Mask Measurements	**Frequency**	±5 %
	Amplitude	±1.0 dB
Frequency Error		±0.6 ppm
Temperature Uncertainty		±1 °C

All uncertainty values are expanded standard uncertainty to give a confidence level of 95%, based on coverage factor k=2

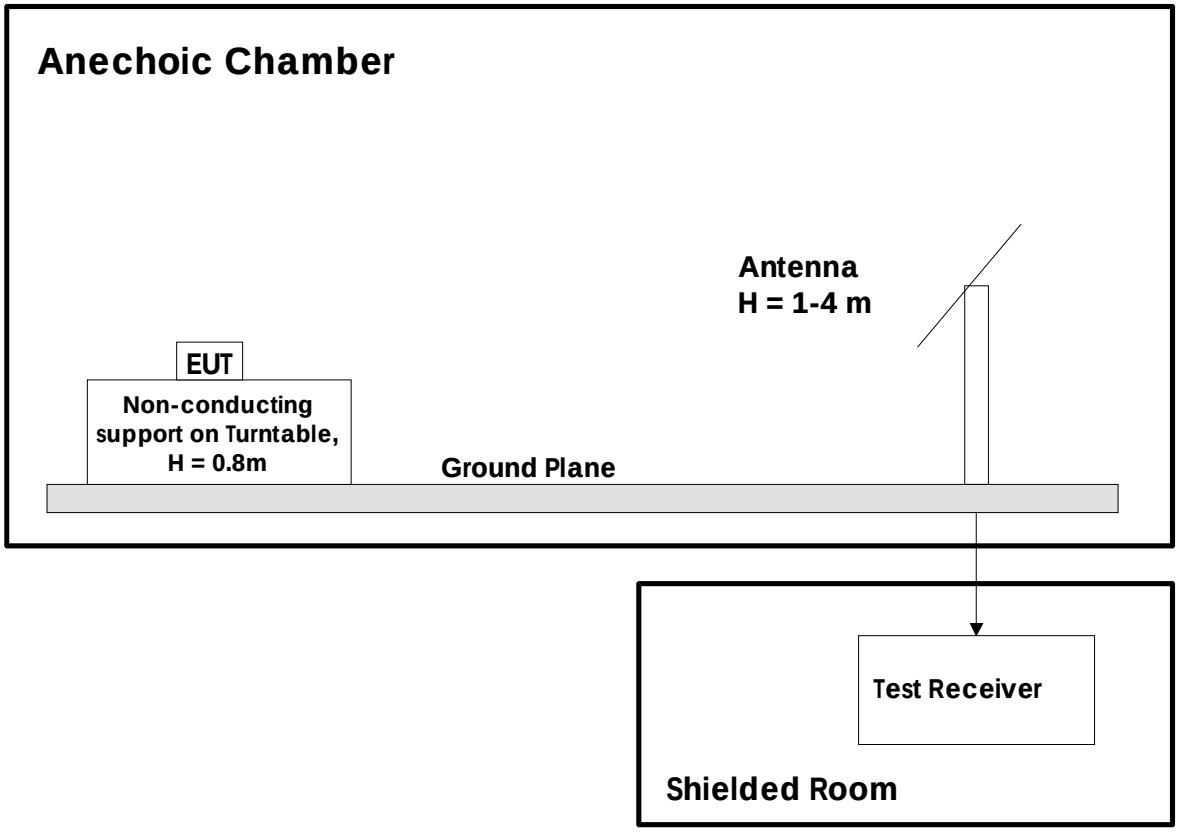
5 LIST OF TEST EQUIPMENT

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the Test Laboratory.

Inv.-Nr.	Instrument/ ancillary	Manufacturer	Type	Cal. Date	Cal. Due
1-0037	Artificial mains network, 3ph	Rohde & Schwarz	ESH2-Z5	2020-09	2021-09
1-0039	shielded loop antenna	Rohde & Schwarz	HFH2-Z2	2020-09	2021-09
1-0040	Biconical antenna	Rohde & Schwarz	HK116	2020-07	2023-07
1-0054	Pulse limiter	Rohde & Schwarz	ESH3-Z2	2020-09	2021-09
1-0055	LogPer antenna	Rohde & Schwarz	HL223	2020-07	2023-07
1-0072	Artificial mains network, 1ph	Rohde & Schwarz	ESH3-Z5	2020-09	2021-09
1-0080	Turntable	H. Deisel	DS 420	N / A	N / A
1-0200	Trilog antenna	Schwarzbeck	VULB 9163	2019-02	2022-02
1-0334	Climate chamber	WEISS-TECHNIK	1000SB/+10IU/40DU	2019-11	2020-11
1-0361	Semi anechoic chamber	Reinhold & Mahla	3m	2019-12	2022-12
1-0364	Antenna cable 2	Kabelwerk Eupen	CMS / RG 214-N/7	2019-09	2022-09
1-0604	EMI test receiver	Rohde & Schwarz	ESU8	2020-09	2021-09
1-0611	Spectrum analyzer	Rohde & Schwarz	FSV 40	2020-09	2021-09
1-0614	Log.-per. antenna	Schwarzbeck	STLP 9148	2019-08	2022-08
1-0615	Pre amplifier	Schwarzbeck	BBV-9718	2020-09	2021-09
1-0619	Coaxial cable (to SAC)	Huber+Suhner	SF106/2x11N-651/2m	2019-09	2022-09
1-0620	Antenna cable 3	Huber+Suhner	SF106/2x11N-651/3m	2019-09	2022-09
1-0624	EMI-Software Radimation	DARE	Radimation	N / A	N / A
1-0770	Horn antenna	Schwarzbeck	BBHA 9170	2018-06	2021-06
1-0772	Horn antenna	Schwarzbeck	BBHA 9120D	2018-03	2021-03
1-0781	Pre amplifier	Schwarzbeck	BBV 9721	2020-09	2021-09
1-0782	Antenna cable	Huber & Suhner	FB142A1060002020	2017-10	2020-10
1-0794	Coaxial cable	Rosenberger	FB142A0010002020	2017-10	2020-10
1-0795	Dual Rotary Attenuator	JFW Industries	50DR-125	2019-09	2022-09
1-0806	Controller	Innco	CO 3000	N / A	N / A
1-0807	Antenna mast	Innco	MA-400-XPET	N / A	N / A
1-0871	10 dB Attenuator	mini circiuts	BW-N10W5+	2019-09	2022-09
1-0915	Coaxial Directional Coupler	Mini Circuits	ZFDC-20-33-S+	2019-09	2022-09
1-0923	Coaxial cable	-	SMA	2019-09	2022-09
1-0924	Coaxial cable	-	SMA	2019-09	2022-09
1-0925	Coaxial cable	-	SMA	2019-09	2022-09
1-0926	Coaxial cable	HARBOUR	RG316 MIL	2019-09	2022-09
1-0927	Coaxial cable	HARBOUR	RG316 MIL	2019-09	2022-09
1-0994	3 dB Attenuator	mini circiuts	BW-N3W5+	2017-10	2020-10
1-0995	6 dB Attenuator	mini circiuts	UNAT-6+	2017-09	2021-09

6 BLOCK DIAGRAM

6.1 Test site radiated emission



Revision history

Version	Date	Comment	Sign
00	2021-11-06	First version	fh