TÜV AUSTRIA SERVICES GMBH

Office:
Deutschstrasse 10
1230 Vienna/Austria
T: +43 5 0454-0
F: +43 5 0454-6505
E: ticwien@tuv.at
W: www.tuv.at

Business Area
Industry & Energy Austria

Technik

TÜV ®

TEST REPORT

of the accredited test laboratory

TÜV Nr.: 2022-IN-AT-TICL-E-EX-000102-FG-001

Applicant:	Certification Company BV Veluwezoom 42 1327 AH Almere The Netherlands
Tested Product:	Radar System
Product Name:	MAX Bird Radar System
Model:	RRS-MAX/A3
FCC-ID:	2A5YR-MAXA3F9250
IC-ID:	N/A
Manufacturer:	Robin Radar Systems B.V. Laan van Waalhaven 355 2497 GM The Hague – The Netherlands

Output power / field strength:	44 W conducted 36 dBi Antenna Gain	**power supply:**	120 / 230V AC 60 Hz
Frequency range:	9100-9300 MHz	**Channel separation:**	N/A

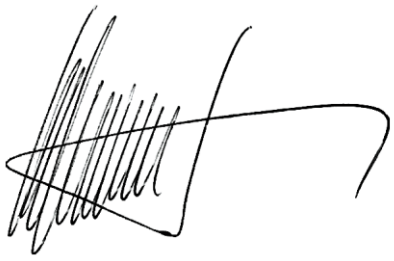
Standard: FCC: 47 CFR Part 87 (eCFR 14.03.2022)
FCC: 47 CFR Part 90 (eCFR 14.03.2022)
ANSI C63.26-2015

TÜV AUSTRIA SERVICES GMBH
Test laboratory for EMC

Ing. Michael Emminger

examined by / Testing Laboratory TÜV AUSTRIA SERVICES GMBH

31.03.2022



Ing. Wilhelm Seier

approved by / Testing Laboratory TÜV AUSTRIA SERVICES GMBH

Contents

	Designation	PAGE
1.	Applicant	3
2.	Description of EUT	4
3.	Standards / Final result	5
4.	Test results	
	List of measurements according to 47 CFR Part 2 applied together with 47 CFR Part 87 and 47 CFR Part 90 respectively	
4.1	Test object data	6
4.2	RF power output	7
4.3	99% Occupied Bandwidth	8-10
4.4	40 dB Authorized Bandwidth	11-13
4.5	Emission Mask	14-16
4.6	Spurious emissions at antenna terminals	17
4.7	Field strength of spurious radiation	18-32
4.8	Frequency stability	33-35
4.9	Radiofrequency radiation exposure limits	36

Appendix	Designation	PAGES
1	Test equipment used	5
2	Photodocumentation	17

1. Applicant

Company:	Certification Company BV
Department:	Regulatory Compliance Expert
Address:	Veluwezoom 42 1327 AH Almere The Netherlands
Contact person:	Mr. David Rubio Borrajo

EUT received on:	03.03.2022
Tests were performed on:	14.03. till 16.03.2022

2. Description of EUT

EUT:	Radar System
Product Name:	MAX Bird Radar System
Model:	RRS-MAX/A3
Serial Number:	371#014
Manufacturer:	Robin Radar Systems B.V. Laan van Waalhaven 355 2497 GM The Hague – The Netherlands
Description:	Certification Company BV provided the following configuration for the measurements: Full functioning production model
Operating mode:	The measurements were carried out at the following running states: Transmitter continuously operating with or without rotation
Technical data EUT:	Rated voltage: 120/230V Rated current: 16A Rated frequency: 60Hz Mains voltage during the tests: 230V 60Hz
Climatic conditions in the emc laboratory:	Relative humidity: 22% Temperature: 23°C

3. Standards / Final result

Name	Title	Deviation	Result
Title 47 CFR Part 87 eCFR 14.03.2022	AVIATION SERVICES	none	OK
Title 47 CFR Part 90 eCFR 14.03.2022	PRIVATE LAND MOBILE RADIO SERVICES	none	OK
ANSI C63.26-2015	American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services	none	OK

Result: Opinions and interpretation of testing laboratory
OK: EUT passed
NOK: EUT failed

4.1 TEST OBJECT DATA

General EUT Description

This fixed transceiver is a rotating radar working on frequencies between 9100 and 9300 MHz to detect birds in the sky.
For operating frequencies between 9100 and 9200 MHz Part 87 compliance was tested. For operation at 9248.5 MHz center frequency compliance against Part 90 requirements was checked.

Part 87 class of station: RLS (surveillance radar)

2.1033 (c) Technical description

2.1033 (4) Type of emission: FMCW with 66 MHz sweep range – ITU emission designator: 73M0F0N

2.1033 (5) Frequency range: Three center operating frequencies are available: 9131.5 MHz, 9163.5 MHz and 9248,5 MHz

2.1033 (6) Power range and Controls: The maximum declared output power is 44 Watts in total. Three transmit modules with 8 RF stages each, are producing a sum of this power. There is no power control or regulation accessible to the user.

2.1033 (7) Maximum output power rating: 44 Watts conducted power with 36 dBi antenna gain.

2.1033 (8) DC Voltage and Current to the final stages: 8 VDC
maximum current consumption: Module 1: 3,3 A
Module 2: 6,9 A
Module 3: 4,2 A

Tests were performed on: March 14th till 16th 2022.

4.2 RF POWER OUTPUT § 2.1046

Conducted measurement is not possible, as there is no coaxial or waveguide connector output at the final stages. The final stages outputs are directly mounted on the antenna panel, therefore only radiated measurement was performed.

Declared conducted output power by the manufacturer: 44 Watts.

Declared antenna gain: 36 dBi.

Radiated measurement at three meter measurement distance

Test conditions	Transmitter EIRP (dBm)		
	9131.5 MHz	9163.5 MHz	9248.5 MHz
T_{nom} (23)°C	70,7	70,6	70,9
Measurement uncertainty	± 0,75 dB		

Remark: as the antenna is quite big for the used frequency, measurements at three meter distance are in the near field region and therefore measurement is informal only.

LIMIT SUBCLAUSE 87.131

Frequency, emission, and maximum power will be determined by appropriate standards during the certification process.

LIMIT SUBCLAUSE 90.205 (r)

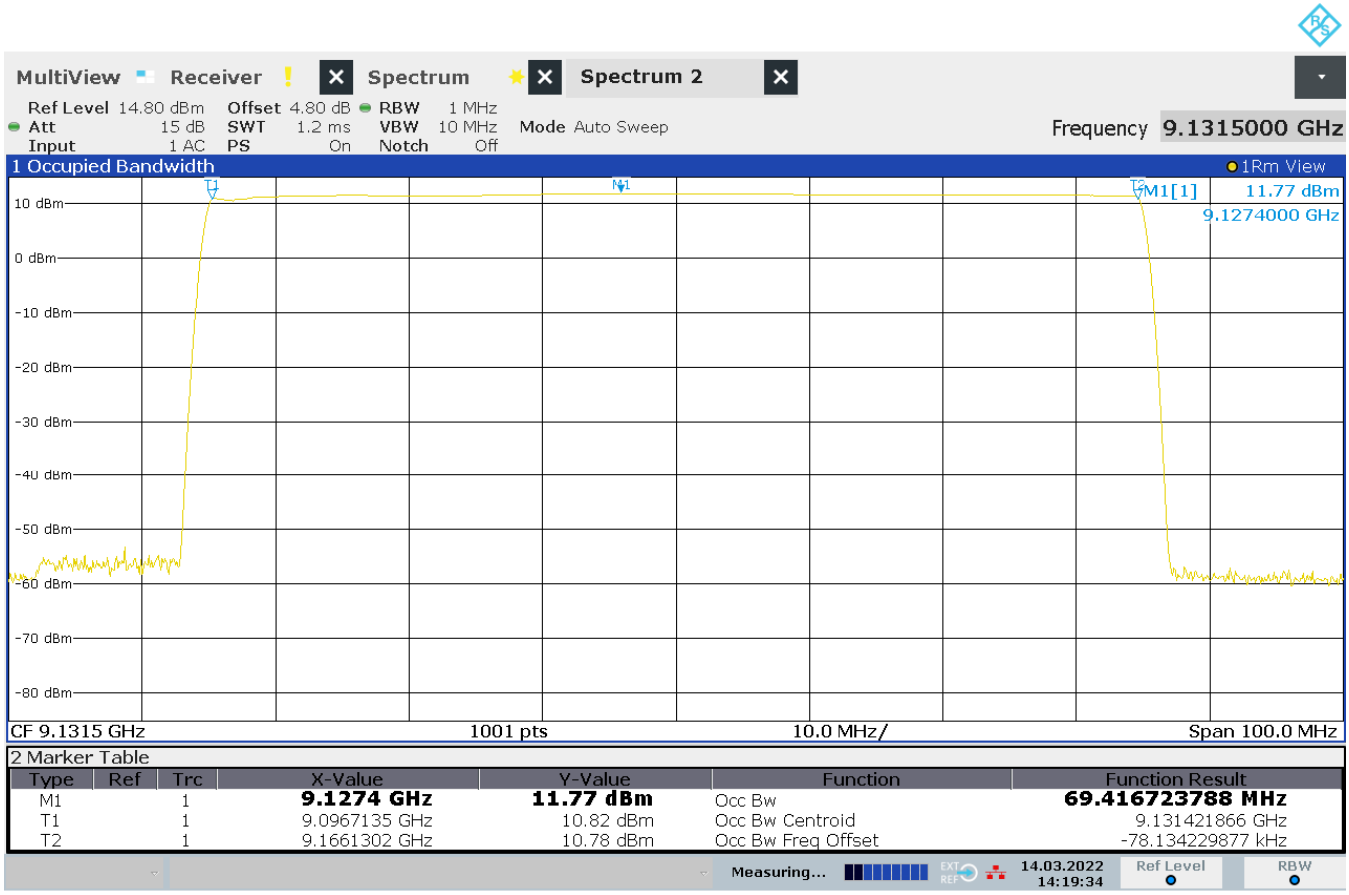
Requested transmitter power will be considered and authorized on a case by case basis.

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

4.3 99% OCCUPIED BANDWIDTH § 2.1049

Radiated Measurement

Center Frequency: 9131.5 MHz



14:19:35 14.03.2022

99% Bandwidth: 69,417 MHz

LIMIT **§ 87.135 Bandwidth of emission.**

(a) Occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to 0.5 percent of the total mean power of a given emission.

(b) The authorized bandwidth is the maximum occupied bandwidth authorized to be used by a station.

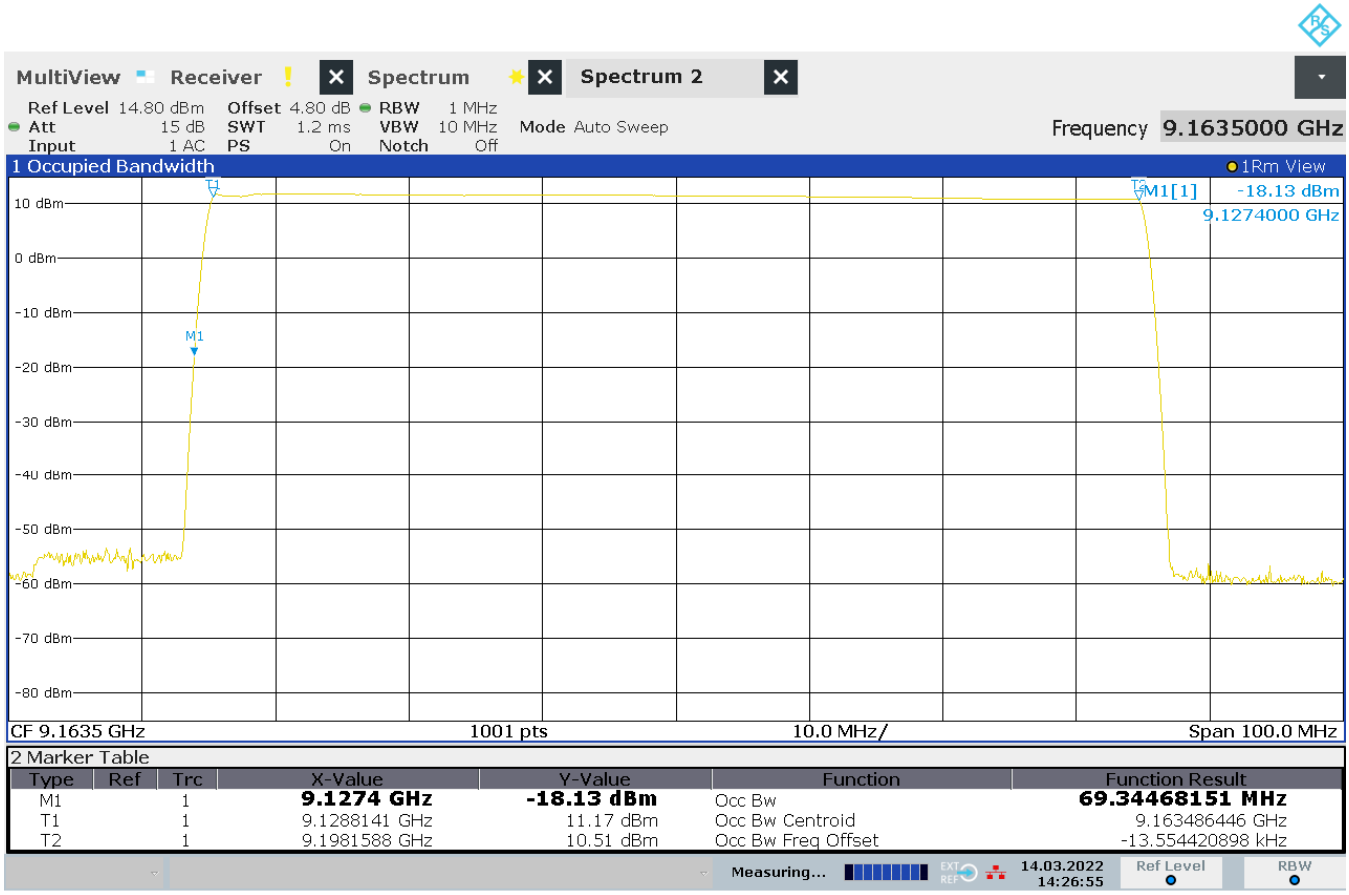
(c) The necessary bandwidth for a given class of emission is the width of the frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions.

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

99% OCCUPIED BANDWIDTH § 2.1049

Radiated Measurement

Center Frequency: 9163.5 MHz



14:26:56 14.03.2022

99% Bandwidth: 69,345 MHz

LIMIT **§ 87.135 Bandwidth of emission.**

(a) Occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to 0.5 percent of the total mean power of a given emission.

(b) The authorized bandwidth is the maximum occupied bandwidth authorized to be used by a station.

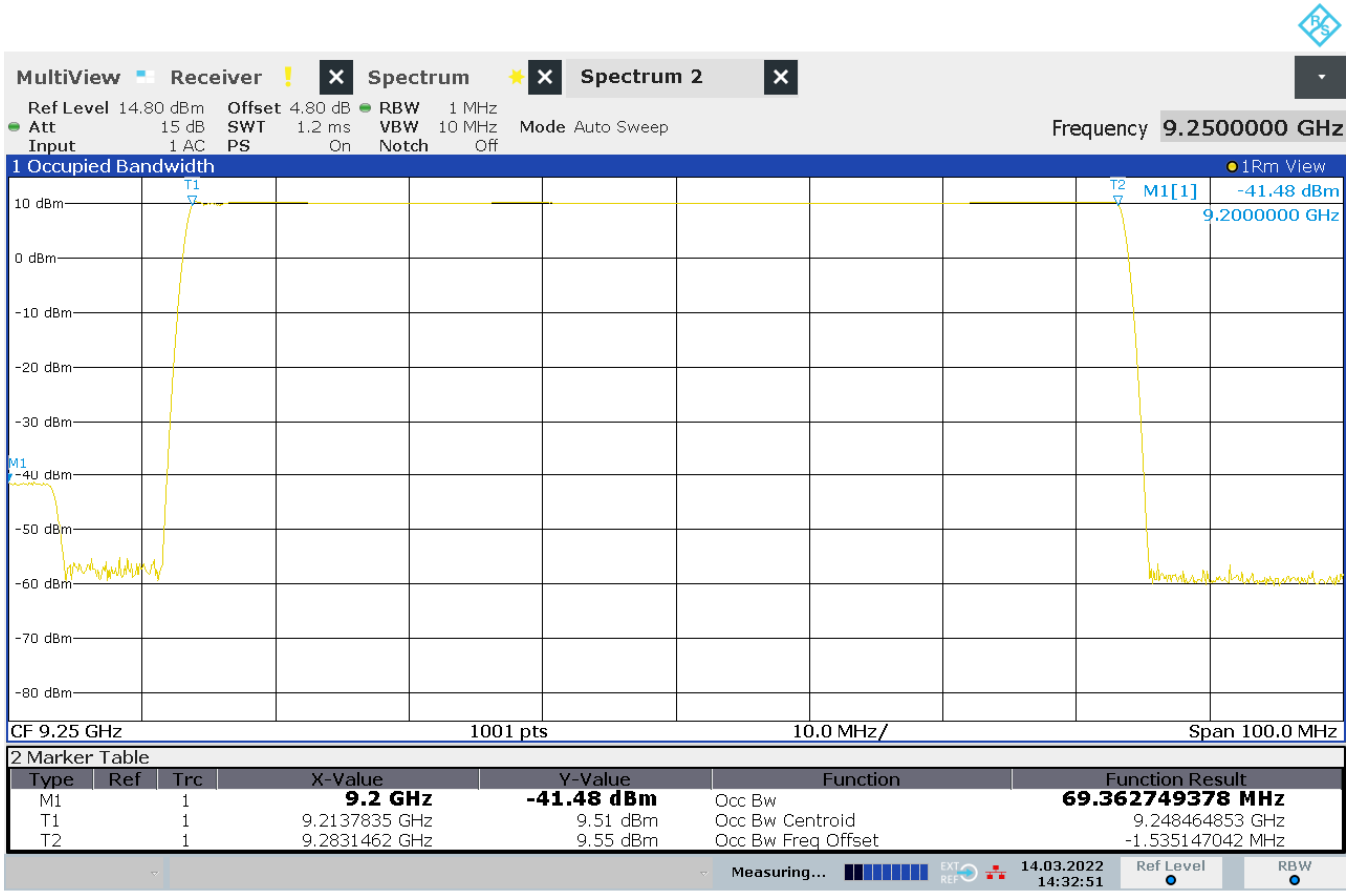
(c) The necessary bandwidth for a given class of emission is the width of the frequency band which is just sufficient to ensure the transmission of information at the rate and with the quality required under specified conditions.

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

99% OCCUPIED BANDWIDTH § 2.1049

Radiated Measurement

Center Frequency: 9248.5 MHz



14:32:52 14.03.2022

99% Bandwidth: 69,363 MHz

LIMIT **SUBCLAUSE 90.209(b)(5)**

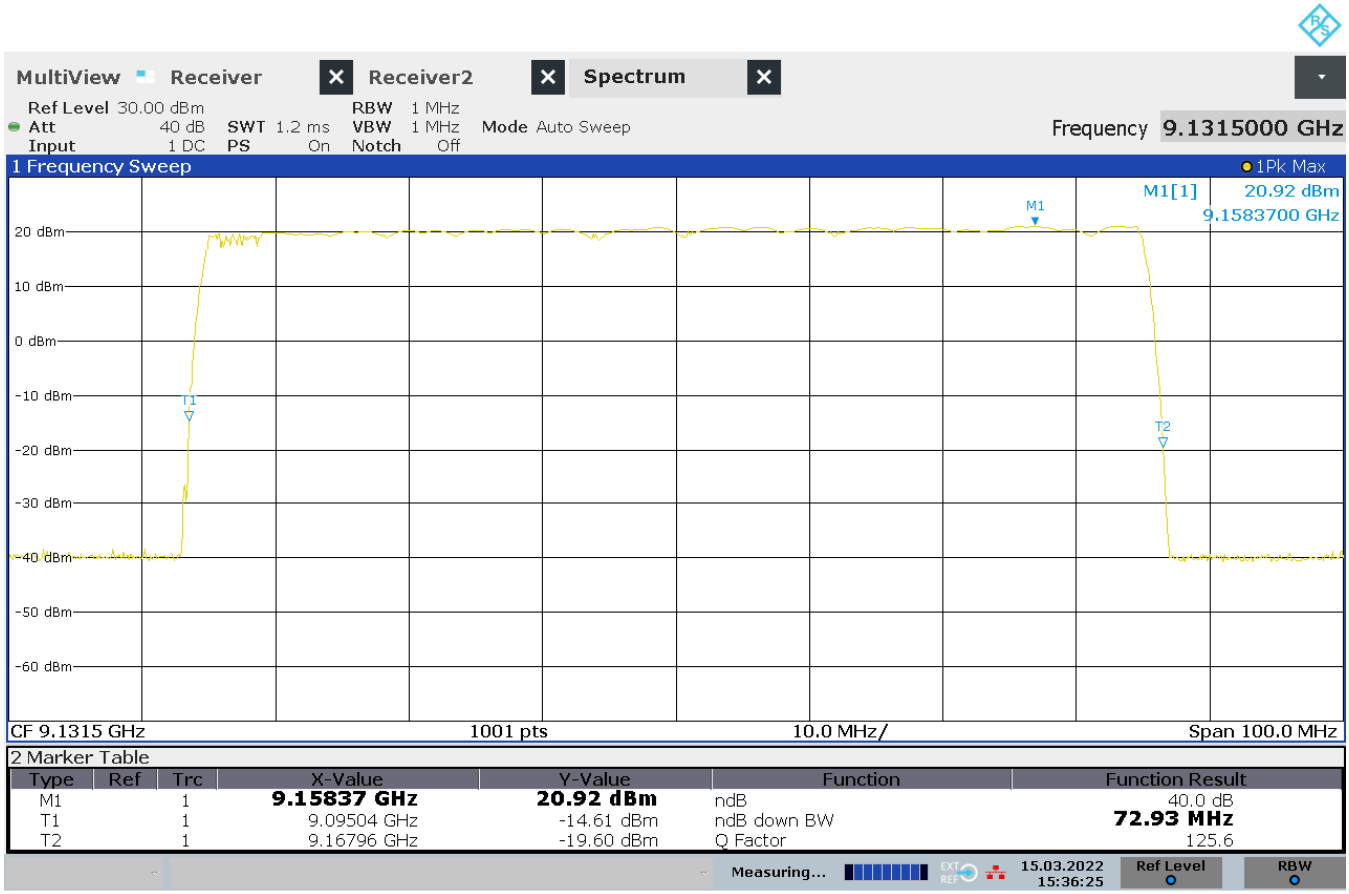
Bandwidths for radiolocation stations in the frequency range above 2500 MHz will be reviewed and authorized on a case-by-case basis.

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

4.4 40 dB Authorized Bandwidth § ITU-R M.1177-4

Radiated Measurement

Center Frequency: 9131.5 MHz



40 dB Bandwidth: 72,93 MHz rounded up to 73 MHz

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

40 dB Authorized Bandwidth **§ ITU-R M.1177-4**

Radiated Measurement

Center Frequency: 9163.5 MHz

15:19:20 15.03.2022

40 dB Bandwidth: 72,73 MHz rounded up to 73 MHz

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

40 dB Authorized Bandwidth **§ ITU-R M.1177-4**

Radiated Measurement

Center Frequency: 9248.5 MHz

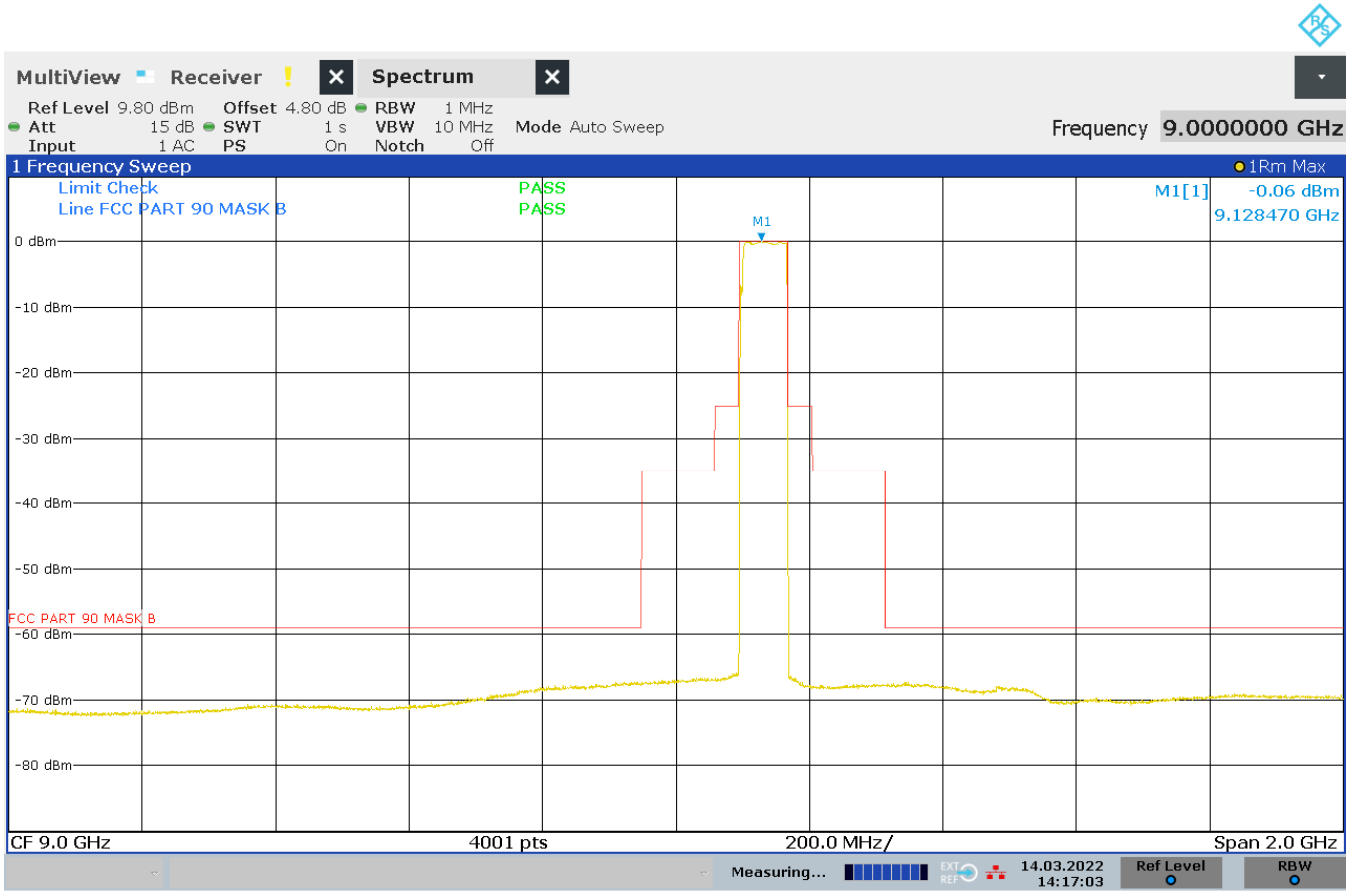
40 dB Bandwidth: 72,93 MHz rounded up to 73 MHz

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

4.5 EMISSION MASK § 87.139

Radiated Measurement

Center Frequency: 9131.5 MHz



14:17:04 14.03.2022

LIMIT **SUBCLAUSE 87.139**

Except for ELTs and when using single sideband (R3E, H3E, J3E), or frequency modulation (F9) or digital modulation (F9Y) for telemetry or telecommand in the 1435-1525 MHz, 2345-2395 MHz, or 5091-5150 MHz band or digital modulation (G7D) for differential GPS, the mean power of any emissions must be attenuated below the mean power of the transmitter (pY) as follows:
(1) When the frequency is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth the attenuation must be at least 25 dB;
(2) When the frequency is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth the attenuation must be at least 35 dB.
(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least 43 + 10 log10 pY dB. -> With a Power of 44 W this equation results in 59.43 dB.

Authorized Bandwidth (40 dB Bandwidth): 73 MHz

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

EMISSION MASK **§ 87.139**

Radiated Measurement

Center Frequency: 9163.5 MHz

14:25:27 14.03.2022

LIMIT **SUBCLAUSE 87.139**

Except for ELTs and when using single sideband (R3E, H3E, J3E), or frequency modulation (F9) or digital modulation (F9Y) for telemetry or telecommand in the 1435-1525 MHz, 2345-2395 MHz, or 5091-5150 MHz band or digital modulation (G7D) for differential GPS, the mean power of any emissions must be attenuated below the mean power of the transmitter (pY) as follows:
(1) When the frequency is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth the attenuation must be at least 25 dB;
(2) When the frequency is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth the attenuation must be at least 35 dB.
(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least 43 + 10 log10 pY dB. -> With a Power of 44 W this equation results in 59.43 dB.

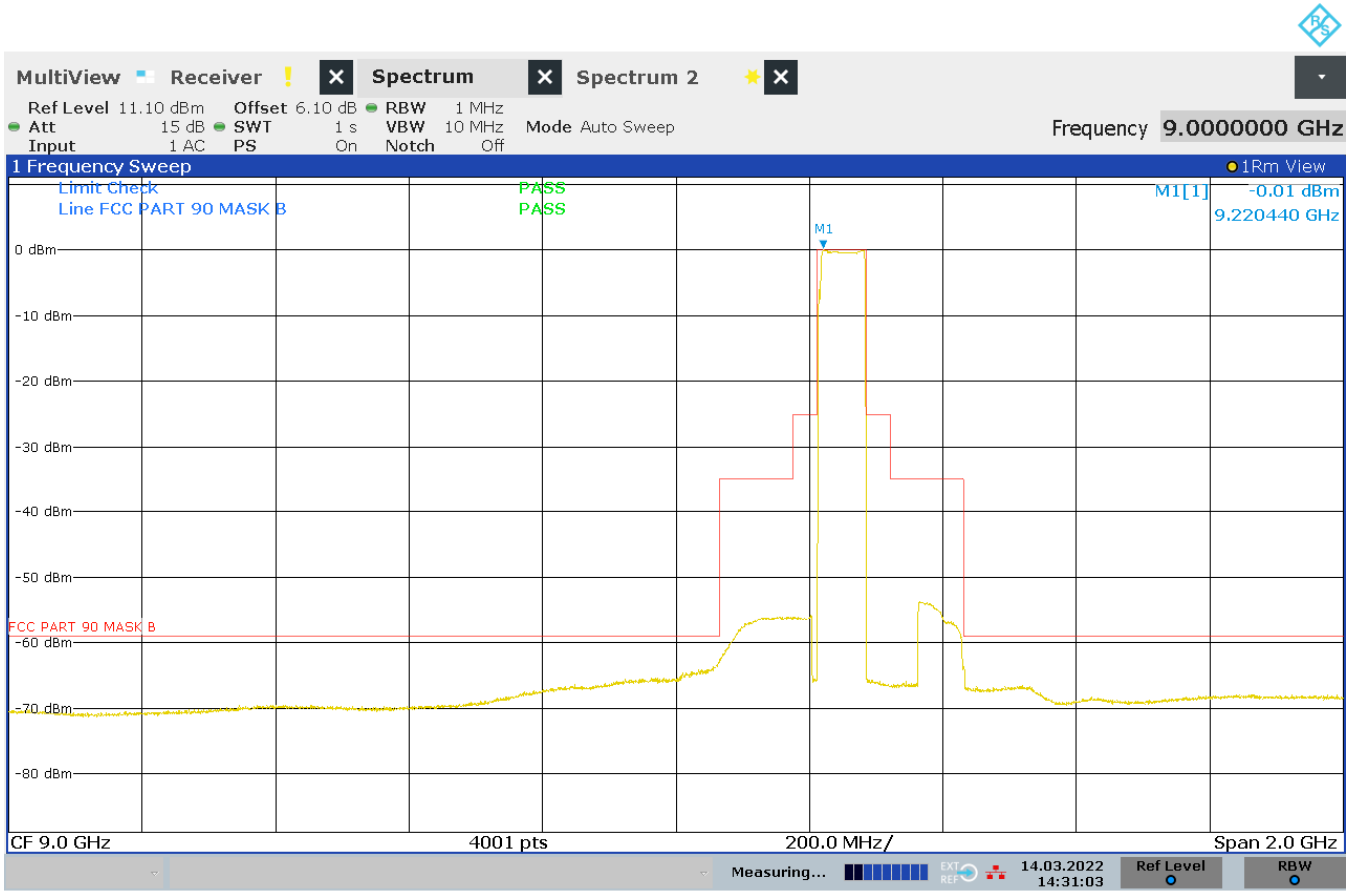
Authorized Bandwidth (40 dB Bandwidth): 73 MHz

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

EMISSION MASK § 90.210(b)

Radiated Measurement

Center Frequency: 9248.5 MHz



14:31:04 14.03.2022

LIMIT SUBCLAUSE 90.210(b)

Emission Mask B. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

(1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.

(2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB.

(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB. -> With a Power of 44 W this equation results in 59.43 dB.

Authorized Bandwidth (40 dB Bandwidth): 73 MHz

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

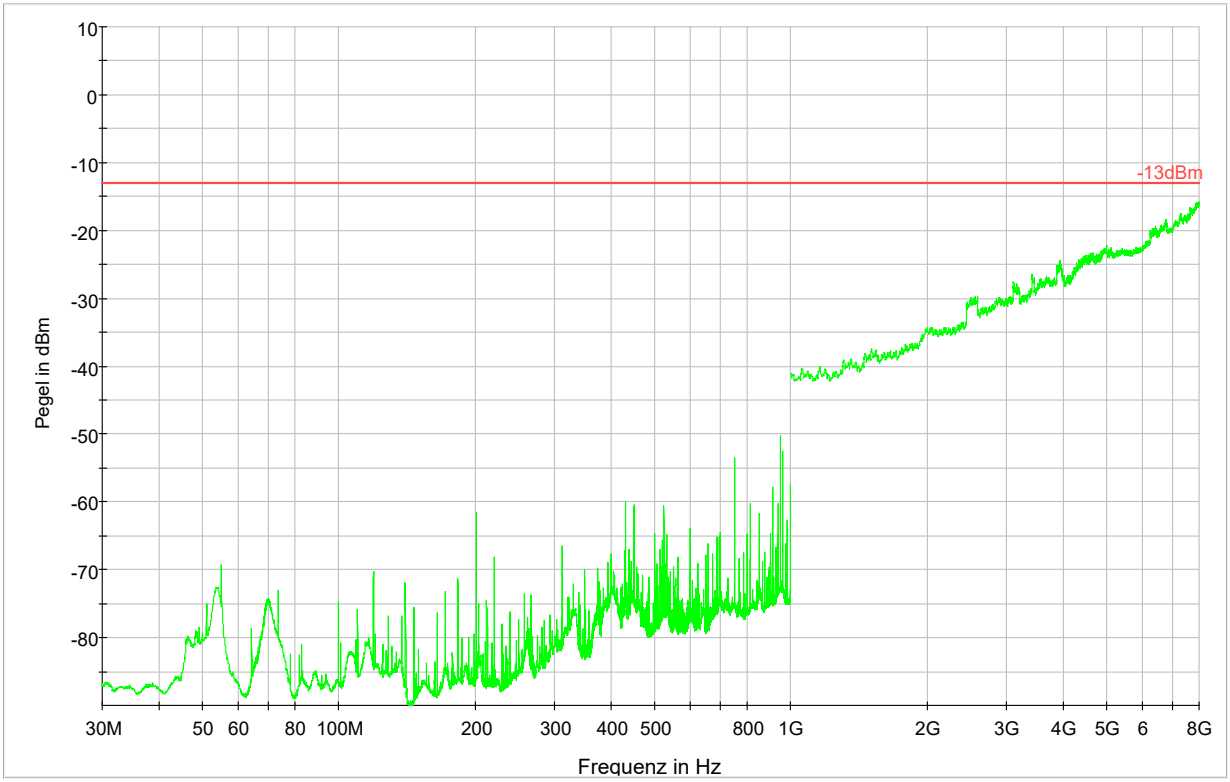
4.6 SPURIOUS EMISSIONS AT ANTENNA TERMINALS § 2.1051

Conducted measurement is not possible, as there is no coaxial or waveguide connector output at the final stages. The final stages outputs are directly mounted on the antenna panel, therefore only radiated measurement was performed.

4.7 FIELD STRENGTH OF SPURIOUS RADIATION § 2.1053

Frequency Range: 30 MHz – 8 GHz

Center Frequency: 9131.5 MHz



RMS_MAXH(1):Radar 9131.5 rotierend 30M-1GHz [Radar 9131.5 rotierend 30M-1GHz.Result:4]
RMS_MAXH(1):Radar 9131.5 rotierend 1-18GHz_ [Radar 9131.5 rotierend 1-18GHz_.Result:4]
PK+_CLRWR [Ergebnistabelle.Result:1]
PK+_MAXH [Ergebnistabelle.Result:2]
-13dBm [..\EMI radiated\]
RMS_CLRWR [Ergebnistabelle.Result:3]
RMS_MAXH [Ergebnistabelle.Result:4]

LIMIT **SUBCLAUSE 87.139**

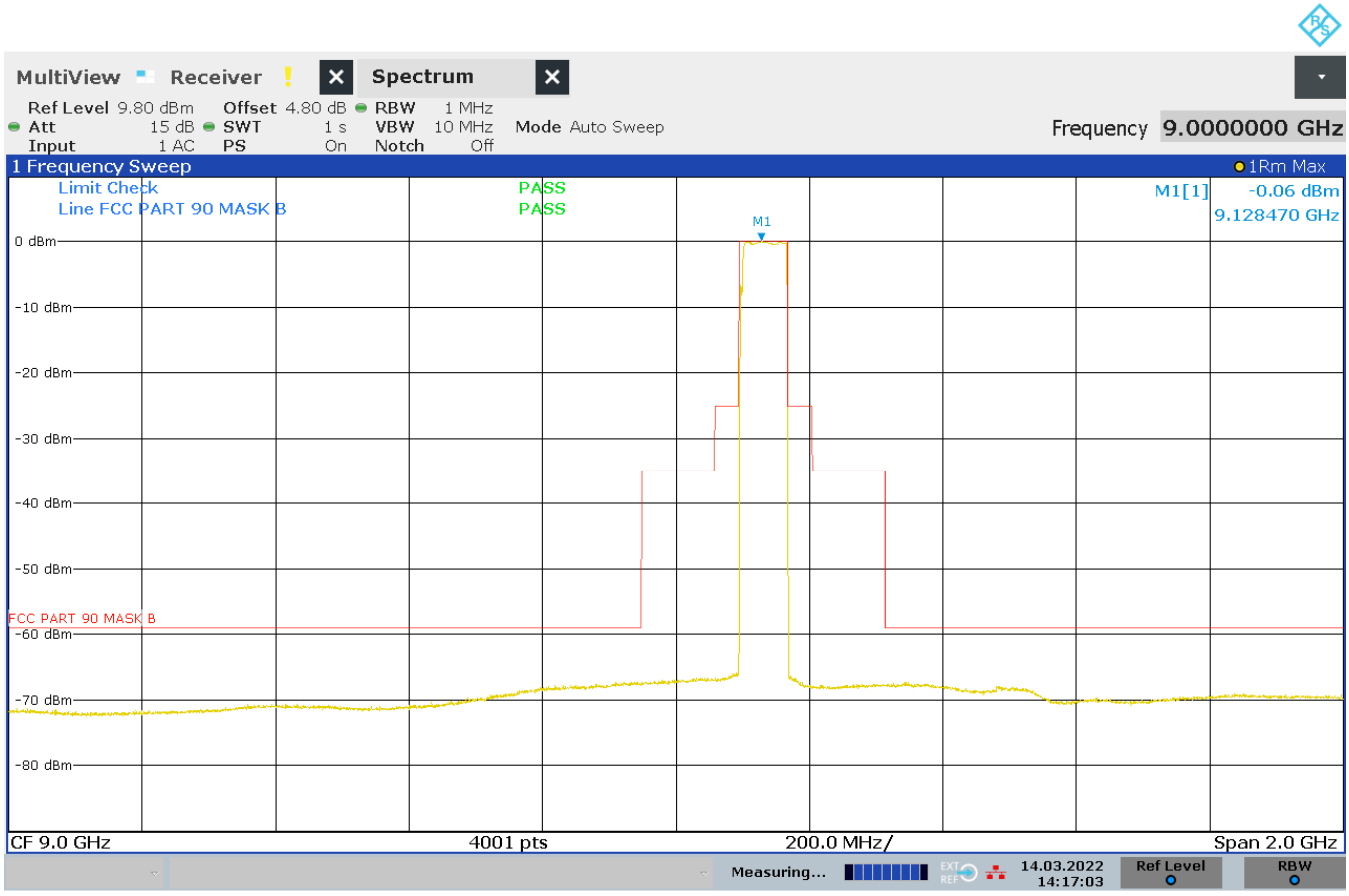
Except for ELTs and when using single sideband (R3E, H3E, J3E), or frequency modulation (F9) or digital modulation (F9Y) for telemetry or telecommand in the 1435-1525 MHz, 2345-2395 MHz, or 5091-5150 MHz band or digital modulation (G7D) for differential GPS, the mean power of any emissions must be attenuated below the mean power of the transmitter (pY) as follows:
(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least 43 + 10 log10 pY dB. -> With a Power of 44 W this equation results in 59.43 dB.

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-112; EMV-200/1; EMV-400

FIELD STRENGTH OF SPURIOUS RADIATION § 2.1053

Frequency Range: 8 – 10 GHz

Center Frequency: 9131.5 MHz



14:17:04 14.03.2022

LIMIT SUBCLAUSE 87.139

Except for ELTs and when using single sideband (R3E, H3E, J3E), or frequency modulation (F9) or digital modulation (F9Y) for telemetry or telecommand in the 1435-1525 MHz, 2345-2395 MHz, or 5091-5150 MHz band or digital modulation (G7D) for differential GPS, the mean power of any emissions must be attenuated below the mean power of the transmitter (pY) as follows:
(1) When the frequency is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth the attenuation must be at least 25 dB;
(2) When the frequency is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth the attenuation must be at least 35 dB.
(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least 43 + 10 log10 pY dB. -> With a Power of 44 W this equation results in 59.43 dB.

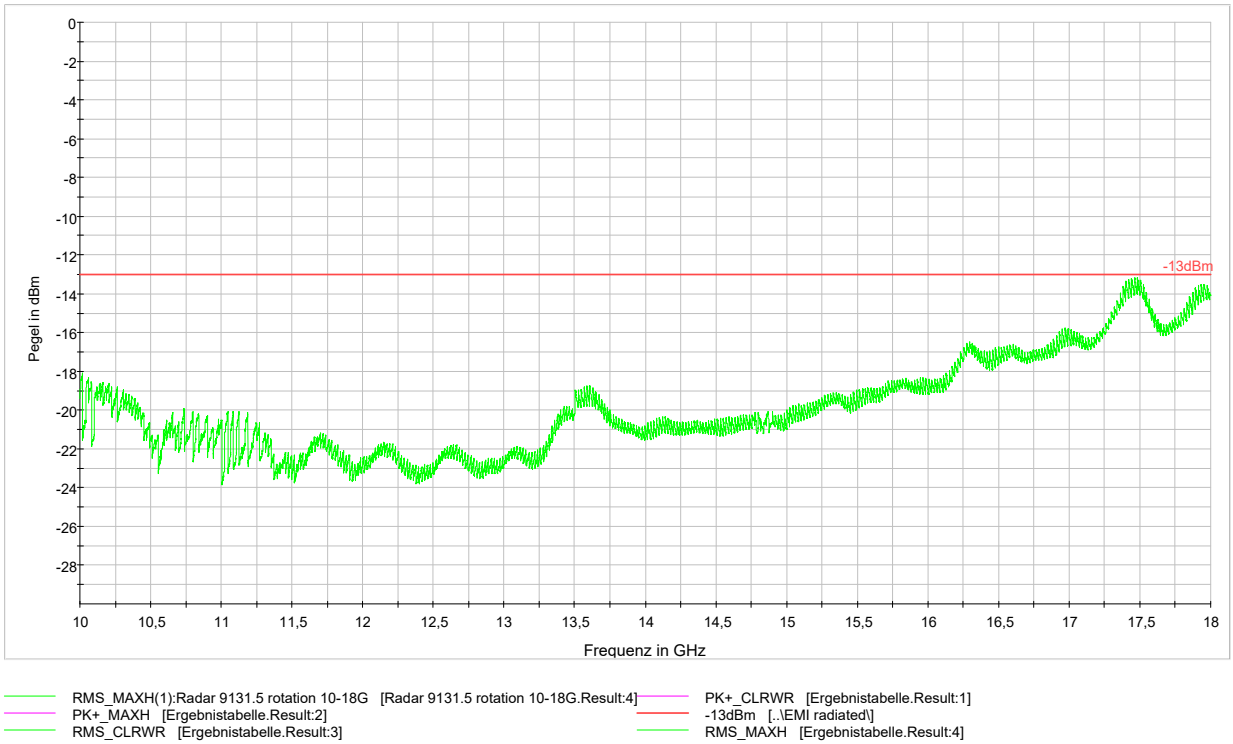
Authorized Bandwidth (40 dB Bandwidth): 73 MHz

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

FIELD STRENGTH OF SPURIOUS RADIATION § 2.1053

Frequency Range: 10 – 18 GHz

Center Frequency: 9131.5 MHz



LIMIT SUBCLAUSE 87.139

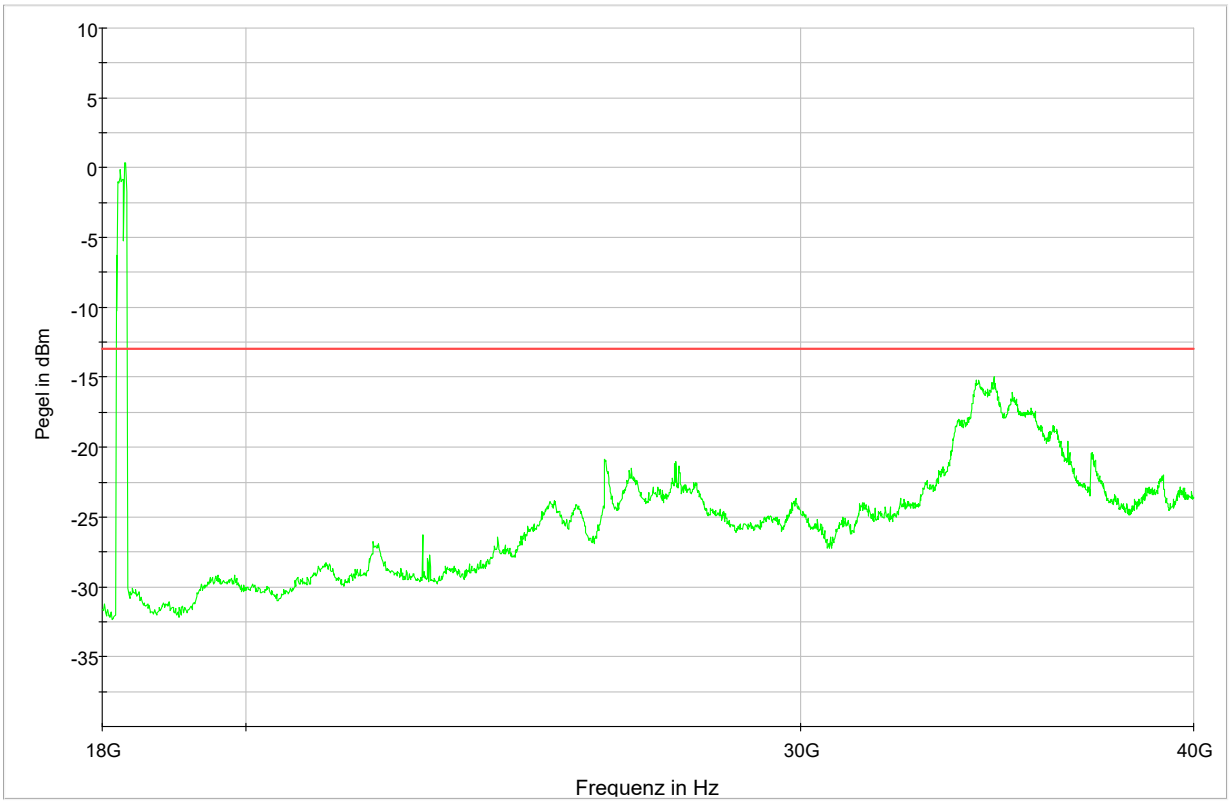
Except for ELTs and when using single sideband (R3E, H3E, J3E), or frequency modulation (F9) or digital modulation (F9Y) for telemetry or telecommand in the 1435-1525 MHz, 2345-2395 MHz, or 5091-5150 MHz band or digital modulation (G7D) for differential GPS, the mean power of any emissions must be attenuated below the mean power of the transmitter (pY) as follows:
(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least 43 + 10 log10 pY dB. -> With a Power of 44 W this equation results in 59.43 dB.

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

FIELD STRENGTH OF SPURIOUS RADIATION **§ 2.1053**

Frequency Range: 18 – 40 GHz

Center Frequency: 9131.5 MHz



RMS_MAXH(1):Radar 9131.5_18-40 GHz [Radar 9131.5_18-40 GHz.Result:4]
-13dBm [..\EMI radiated\]
PK+_CLRWR [Ergebnistabelle.Result:1]
PK+_MAXH [Ergebnistabelle.Result:2]
RMS_CLRWR [Ergebnistabelle.Result:3]
RMS_MAXH [Ergebnistabelle.Result:4]

LIMIT **SUBCLAUSE 87.139**

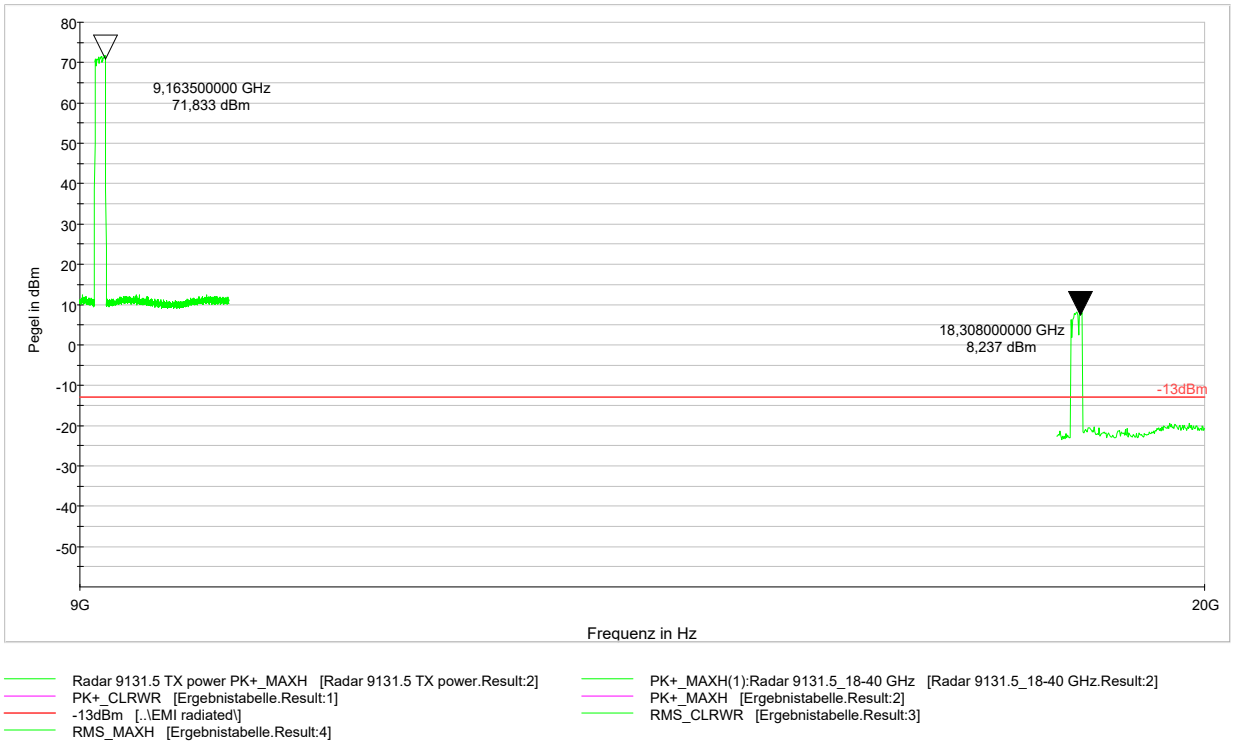
Except for ELTs and when using single sideband (R3E, H3E, J3E), or frequency modulation (F9) or digital modulation (F9Y) for telemetry or telecommand in the 1435-1525 MHz, 2345-2395 MHz, or 5091-5150 MHz band or digital modulation (G7D) for differential GPS, the mean power of any emissions must be attenuated below the mean power of the transmitter (pY) as follows:
(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least 43 + 10 log10 pY dB. -> With a Power of 44 W this equation results in 59.43 dB.

Test Equipment used: EMV-100; EMV-102; EMV-200/1; NT-126

FIELD STRENGTH OF SPURIOUS RADIATION § 2.1053

Frequency Range: Detail for 1st harmonic

Center Frequency: 9131.5 MHz



LIMIT SUBCLAUSE 87.139

Except for ELTs and when using single sideband (R3E, H3E, J3E), or frequency modulation (F9) or digital modulation (F9Y) for telemetry or telecommand in the 1435-1525 MHz, 2345-2395 MHz, or 5091-5150 MHz band or digital modulation (G7D) for differential GPS, the mean power of any emissions must be attenuated below the mean power of the transmitter (pY) as follows:
(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least 43 + 10 log10 pY dB. -> With a Power of 44 W this equation results in 59.43 dB.

EIRP measured:
fundamental 71,833 dBm
1st harmonic 8,237 dBm
attenuation: 63,596 dBm

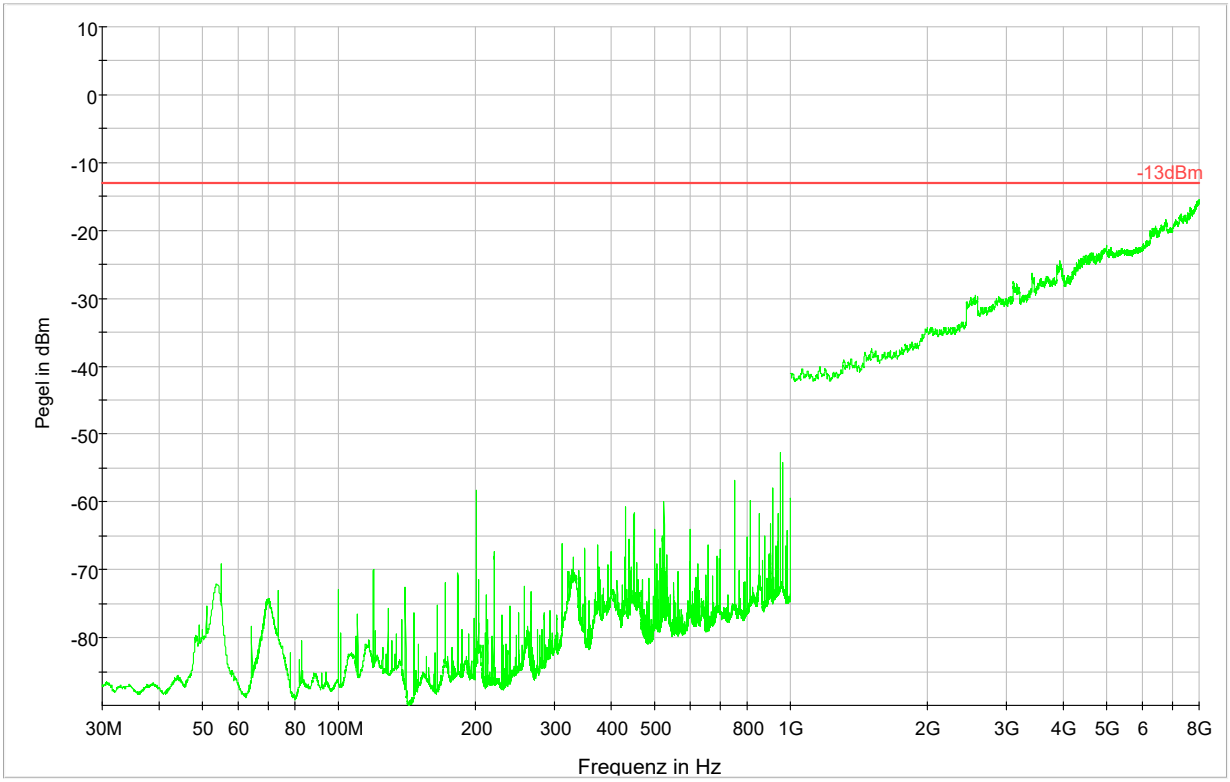
Remark: at all other frequencies ecxept the first harmonic, the more stringent limit of -13dBm EIRP was checked.

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1; NT-126

FIELD STRENGTH OF SPURIOUS RADIATION **§ 2.1053**

Frequency Range: 30 MHz – 8 GHz

Center Frequency: 9163.5 MHz



RMS_MAXH(1):Radar 9163.5 rotierend 30M-1GHz [Radar 9163.5 rotierend 30M-1GHz.Result:4]
RMS_MAXH(1):Radar 9163.5 rotierend 1-18GHz [Radar 9163.5 rotierend 1-18GHz.Result:4]
PK+_CLRWR [Ergebnistabelle.Result:1]
PK+_MAXH [Ergebnistabelle.Result:2]
-13dBm [..\EMI radiated\]
RMS_CLRWR [Ergebnistabelle.Result:3]
RMS_MAXH [Ergebnistabelle.Result:4]

LIMIT **SUBCLAUSE 87.139**

Except for ELTs and when using single sideband (R3E, H3E, J3E), or frequency modulation (F9) or digital modulation (F9Y) for telemetry or telecommand in the 1435-1525 MHz, 2345-2395 MHz, or 5091-5150 MHz band or digital modulation (G7D) for differential GPS, the mean power of any emissions must be attenuated below the mean power of the transmitter (pY) as follows:
(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least 43 + 10 log10 pY dB. -> With a Power of 44 W this equation results in 59.43 dB.

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-112; EMV-200/1; EMV-400

FIELD STRENGTH OF SPURIOUS RADIATION § 2.1053

Frequency Range: 8 – 10 GHz

Center Frequency: 9163.5 MHz

14:25:27 14.03.2022

LIMIT SUBCLAUSE 87.139

Except for ELTs and when using single sideband (R3E, H3E, J3E), or frequency modulation (F9) or digital modulation (F9Y) for telemetry or telecommand in the 1435-1525 MHz, 2345-2395 MHz, or 5091-5150 MHz band or digital modulation (G7D) for differential GPS, the mean power of any emissions must be attenuated below the mean power of the transmitter (pY) as follows:
(1) When the frequency is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth the attenuation must be at least 25 dB;
(2) When the frequency is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth the attenuation must be at least 35 dB.
(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least 43 + 10 log10 pY dB. -> With a Power of 44 W this equation results in 59.43 dB.

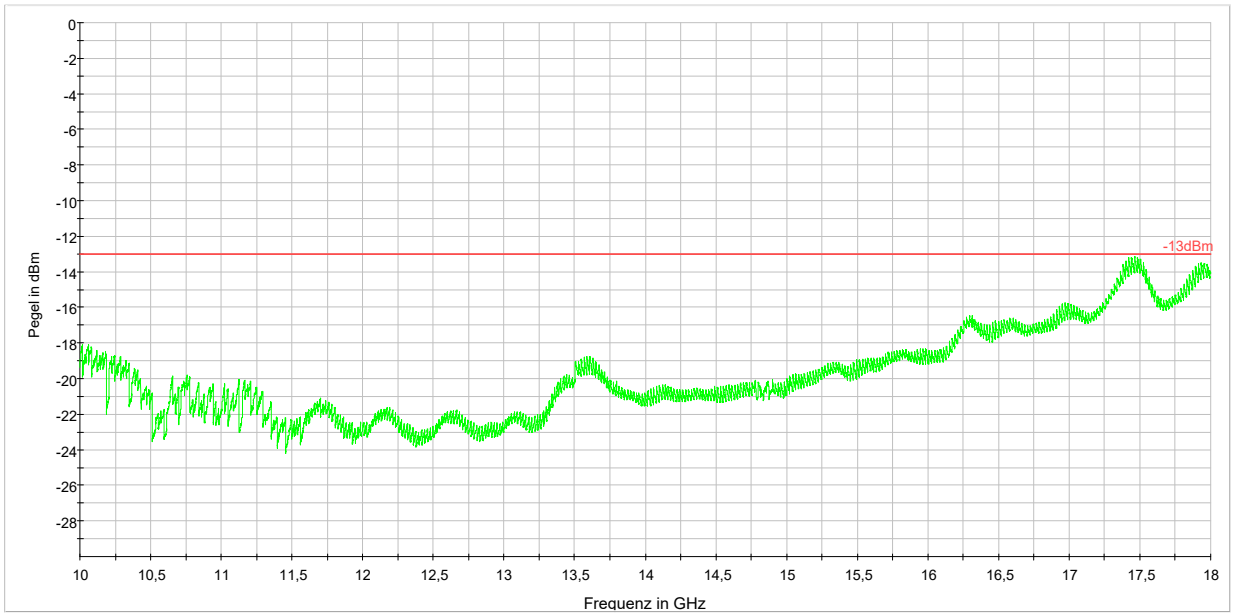
Authorized Bandwidth (40 dB Bandwidth): 73 MHz

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

FIELD STRENGTH OF SPURIOUS RADIATION **§ 2.1053**

Frequency Range: 10 – 18 GHz

Center Frequency: 9163.5 MHz



RMS_MAXH(1):Radar 9163.5 stillstand plus rotation 10-18G [Radar 9163.5 stillstand plus rotation 10-18G.Result:4]
PK+_CLRWR [Ergebnistabelle.Result:1]
PK+_MAXH [Ergebnistabelle.Result:2]
-13dBm [..\EMI radiated\]
RMS_CLRWR [Ergebnistabelle.Result:3]
RMS_MAXH [Ergebnistabelle.Result:4]

LIMIT **SUBCLAUSE 87.139**

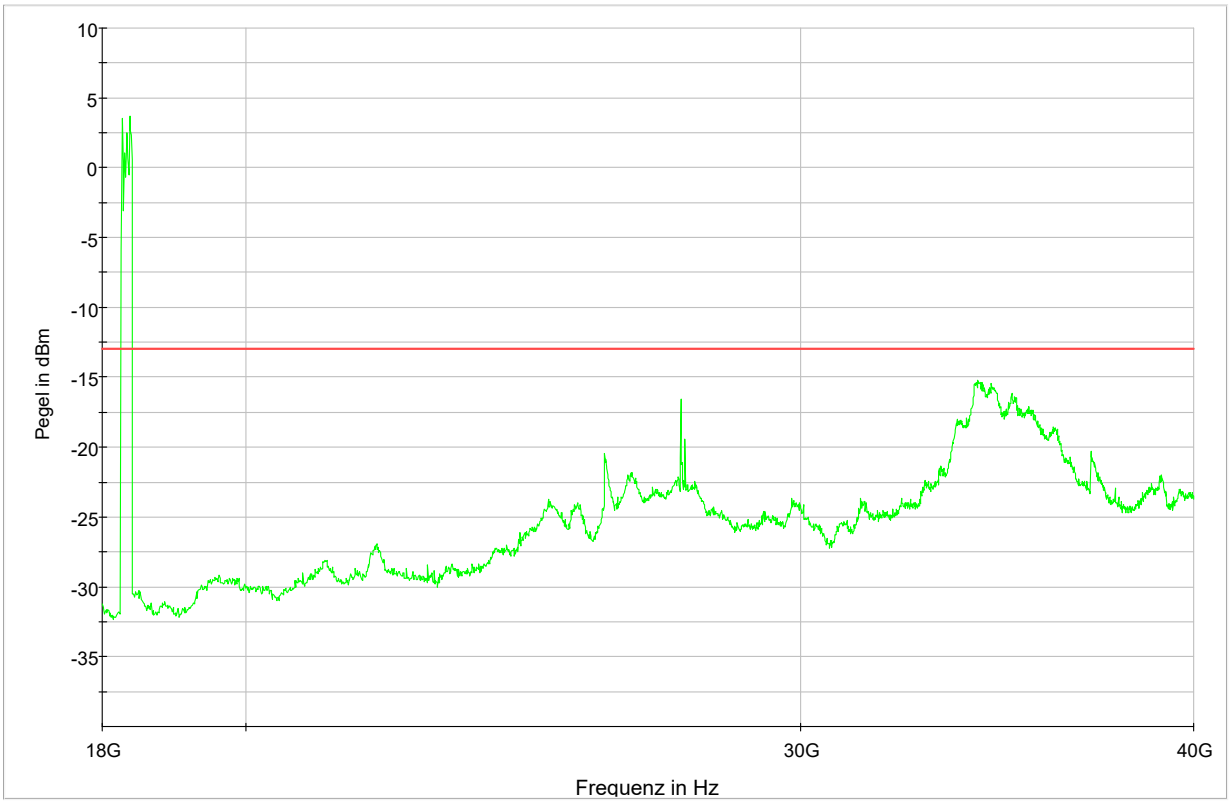
Except for ELTs and when using single sideband (R3E, H3E, J3E), or frequency modulation (F9) or digital modulation (F9Y) for telemetry or telecommand in the 1435-1525 MHz, 2345-2395 MHz, or 5091-5150 MHz band or digital modulation (G7D) for differential GPS, the mean power of any emissions must be attenuated below the mean power of the transmitter (pY) as follows:
(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least 43 + 10 log10 pY dB. -> With a Power of 44 W this equation results in 59.43 dB.

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

FIELD STRENGTH OF SPURIOUS RADIATION **§ 2.1053**

Frequency Range: 18 – 40 GHz

Center Frequency: 9163.5 MHz



RMS_MAXH(1):Radar 9163.5_18-40 GHz [Radar 9163.5_18-40 GHz.Result:4]
-13dBm [..\EMI radiated\]
PK+_CLRWR [Ergebnistabelle.Result:1]
PK+_MAXH [Ergebnistabelle.Result:2]
RMS_CLRWR [Ergebnistabelle.Result:3]
RMS_MAXH [Ergebnistabelle.Result:4]

LIMIT **SUBCLAUSE 87.139**

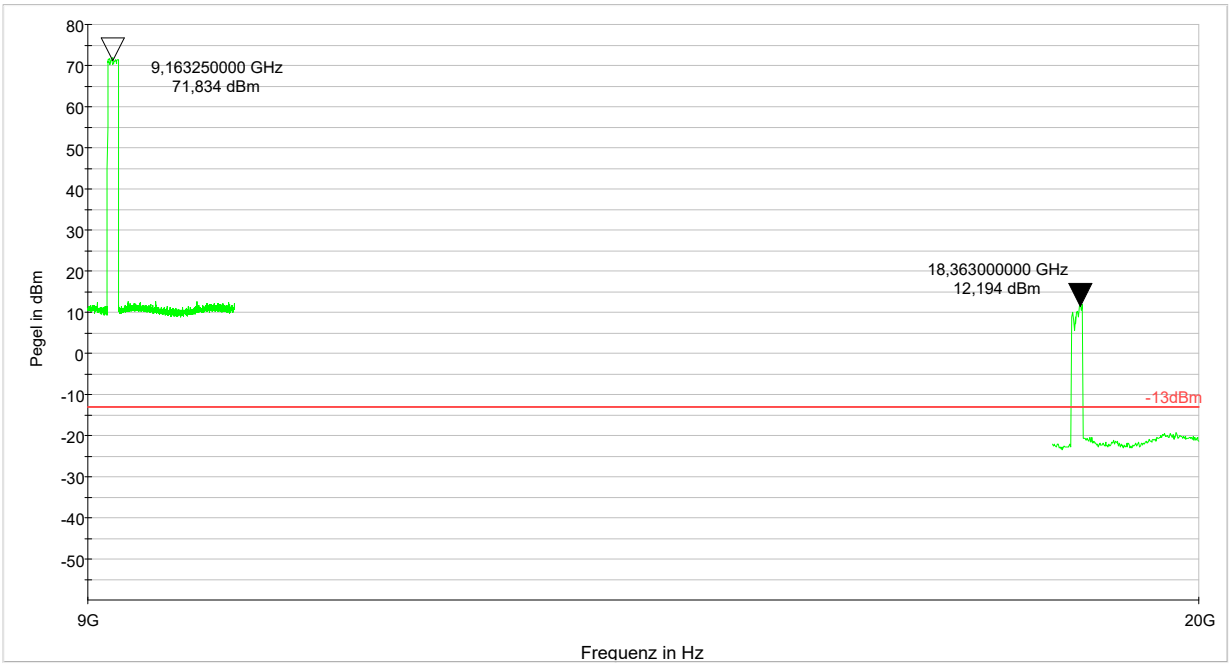
Except for ELTs and when using single sideband (R3E, H3E, J3E), or frequency modulation (F9) or digital modulation (F9Y) for telemetry or telecommand in the 1435-1525 MHz, 2345-2395 MHz, or 5091-5150 MHz band or digital modulation (G7D) for differential GPS, the mean power of any emissions must be attenuated below the mean power of the transmitter (pY) as follows:
(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least 43 + 10 log10 pY dB. -> With a Power of 44 W this equation results in 59.43 dB.

Test Equipment used: EMV-100; EMV-102; EMV-200/1; NT-126

FIELD STRENGTH OF SPURIOUS RADIATION § 2.1053

Frequency Range: Detail for 1st harmonic

Center Frequency: 9163.5 MHz



LIMIT SUBCLAUSE 87.139

Except for ELTs and when using single sideband (R3E, H3E, J3E), or frequency modulation (F9) or digital modulation (F9Y) for telemetry or telecommand in the 1435-1525 MHz, 2345-2395 MHz, or 5091-5150 MHz band or digital modulation (G7D) for differential GPS, the mean power of any emissions must be attenuated below the mean power of the transmitter (pY) as follows:
(3) When the frequency is removed from the assigned frequency by more than 250 percent of the authorized bandwidth the attenuation for aircraft station transmitters must be at least 40 dB; and the attenuation for aeronautical station transmitters must be at least 43 + 10 log10 pY dB. -> With a Power of 44 W this equation results in 59.43 dB.

EIRP measured:
fundamental 71,834 dBm
1st harmonic 12,194 dBm
attenuation: 59,64 dBm

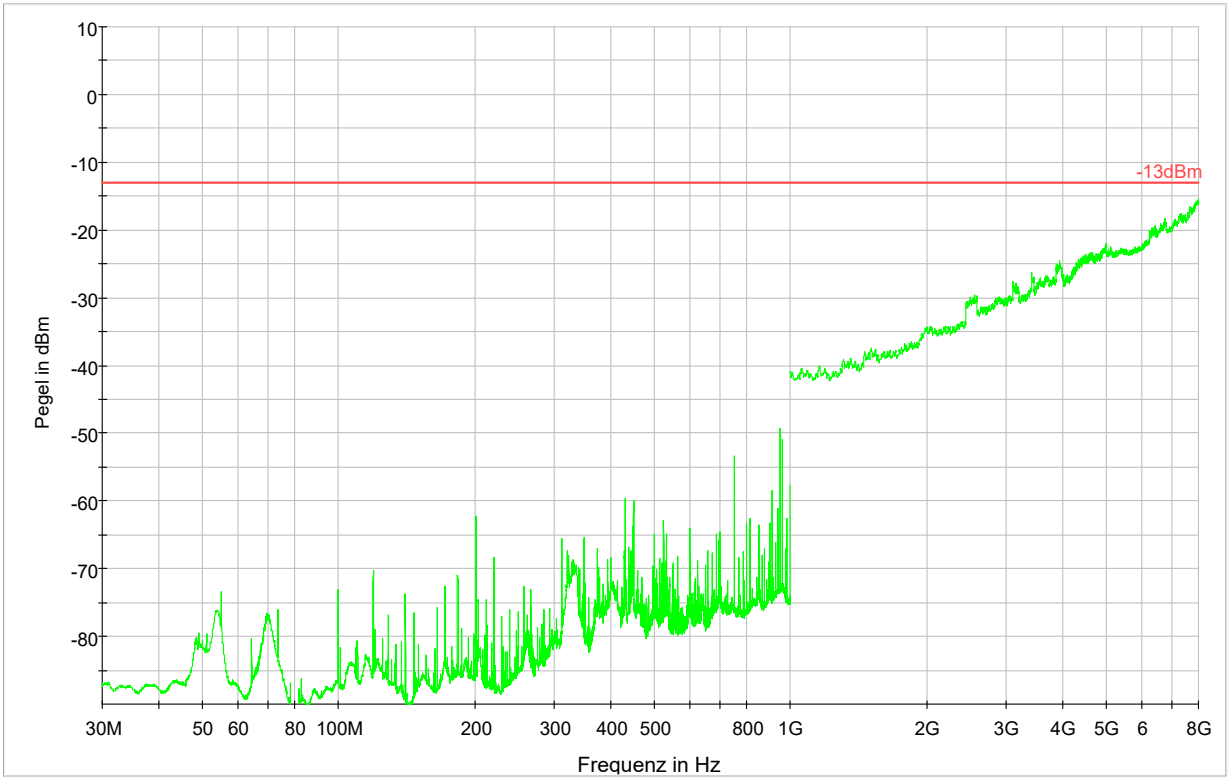
Remark: at all other frequencies ecxept the first harmonic, the more stringent limit of -13dBm EIRP was checked.

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1; NT-126

FIELD STRENGTH OF SPURIOUS RADIATION **§ 2.1053**

Frequency Range: 30 MHz – 8 GHz

Center Frequency: 9248.5 MHz



RMS_MAXH(1):Radar 9248.5 rotierend 30M-1GHz [Radar 9248.5 rotierend 30M-1GHz.Result:4]
RMS_MAXH(1):Radar 9248.5 rotierend 1-18GHz [Radar 9248.5 rotierend 1-18GHz.Result:4]
PK+_CLRWR [Ergebnistabelle.Result:1]
PK+_MAXH [Ergebnistabelle.Result:2]
-13dBm [..\EMI radiated\]
RMS_CLRWR [Ergebnistabelle.Result:3]
RMS_MAXH [Ergebnistabelle.Result:4]

LIMIT **SUBCLAUSE 90.210(b)**

Emission Mask B. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

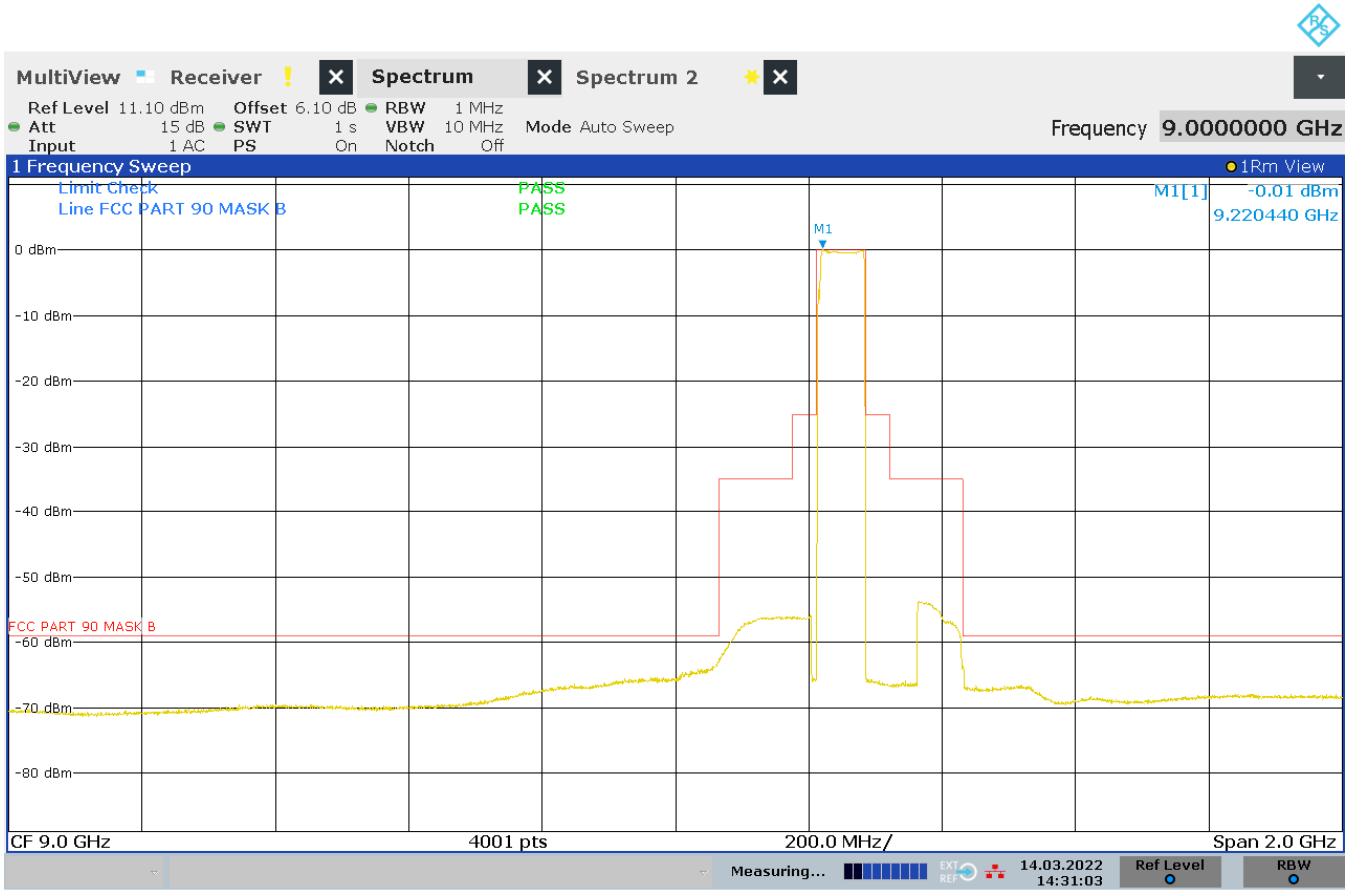
(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB. -> With a Power of 44 W this equation results in 59.43 dB.

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-112; EMV-200/1; EMV-400

FIELD STRENGTH OF SPURIOUS RADIATION § 2.1053

Frequency Range: 8 – 10 GHz

Center Frequency: 9248.5 MHz



14:31:04 14.03.2022

LIMIT SUBCLAUSE 90.210(b)

Emission Mask B. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

(1) On any frequency removed from the assigned frequency by more than 50 percent, but not more than 100 percent of the authorized bandwidth: At least 25 dB.

(2) On any frequency removed from the assigned frequency by more than 100 percent, but not more than 250 percent of the authorized bandwidth: At least 35 dB.

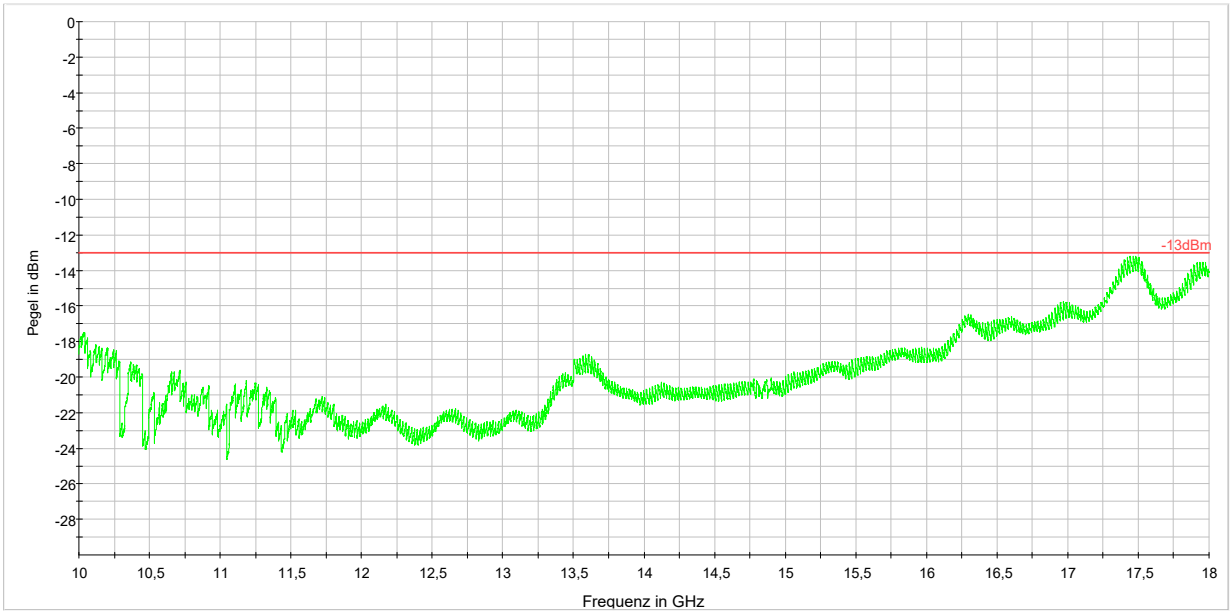
(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB. -> With a Power of 44 W this equation results in 59.43 dB.

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

FIELD STRENGTH OF SPURIOUS RADIATION **§ 2.1053**

Frequency Range: 10 – 18 GHz

Center Frequency: 9248.5 MHz



LIMIT **SUBCLAUSE 90.210(b)**

Emission Mask B. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

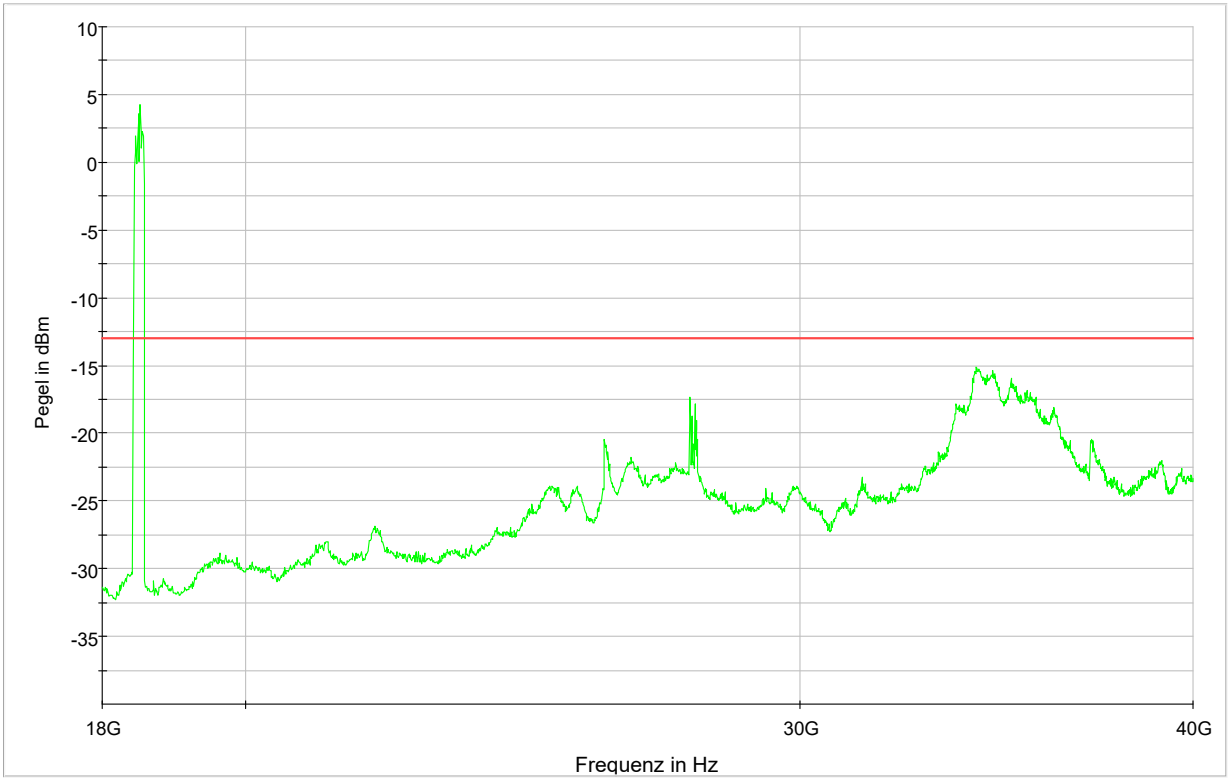
(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB. -> With a Power of 44 W this equation results in 59.43 dB.

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1

FIELD STRENGTH OF SPURIOUS RADIATION **§ 2.1053**

Frequency Range: 18 – 40 GHz

Center Frequency: 9248.5 MHz



RMS_MAXH(1):Radar 9248.5_18-40 GHz_ [Radar 9248.5_18-40 GHz_.Result:4]
-13dBm [..\EMI radiated\]
PK+_CLRWR [Ergebnistabelle.Result:1]
PK+_MAXH [Ergebnistabelle.Result:2]
RMS_CLRWR [Ergebnistabelle.Result:3]
RMS_MAXH [Ergebnistabelle.Result:4]

LIMIT **SUBCLAUSE 90.210(b)**

Emission Mask B. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

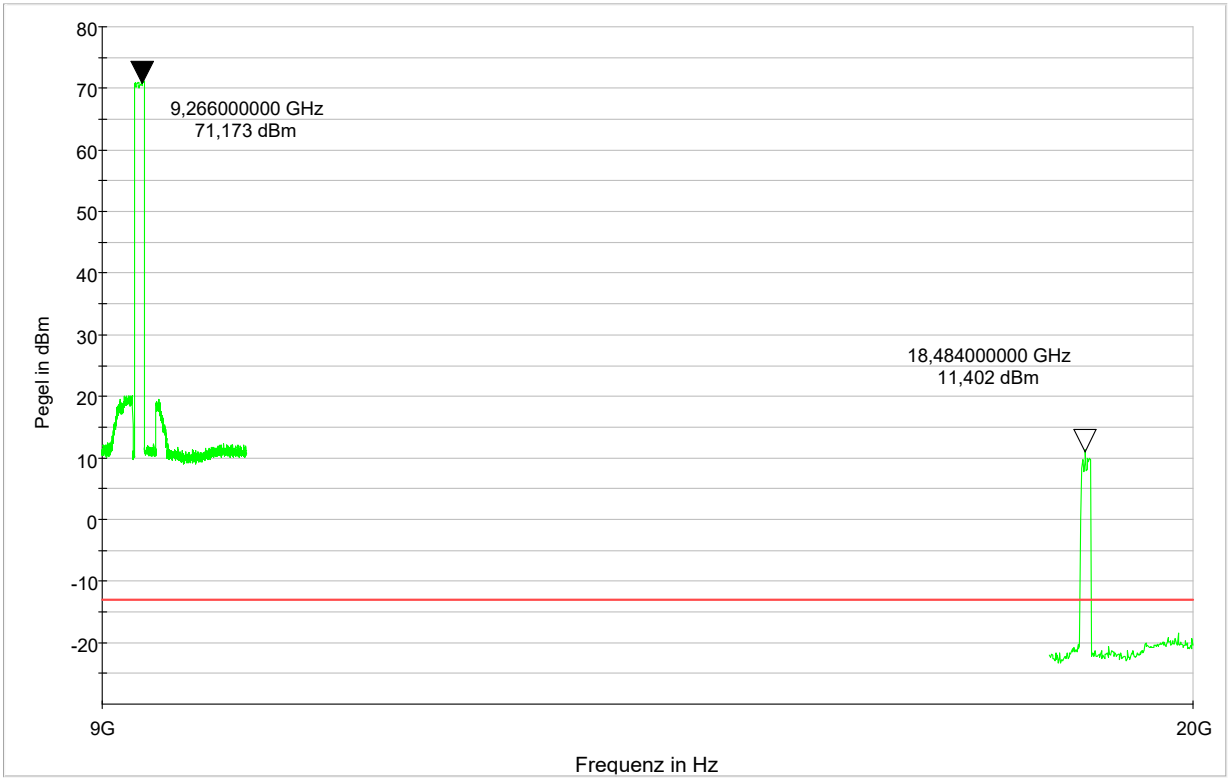
(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB. -> With a Power of 44 W this equation results in 59.43 dB.

Test Equipment used: EMV-100; EMV-102; EMV-200/1; NT-126

FIELD STRENGTH OF SPURIOUS RADIATION **§ 2.1053**

Frequency Range: Detail for 1st harmonic

Center Frequency: 9248.5 MHz



PK+_MAXH(1):Radar 9248.5_18-40 GHz_ [Radar 9248.5_18-40 GHz_.Result:2]
PK+_MAXH(1):Radar 9248.5 RF power [Radar 9248.5 RF power.Result:2]
-13dBm [..\EMI radiated\]
PK+_CLRWR [Ergebnistabelle.Result:1]
PK+_MAXH [Ergebnistabelle.Result:2]
RMS_CLRWR [Ergebnistabelle.Result:3]
RMS_MAXH [Ergebnistabelle.Result:4]

LIMIT **SUBCLAUSE 90.210(b)**

Emission Mask B. For transmitters that are equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

(3) On any frequency removed from the assigned frequency by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB. -> With a Power of 44 W this equation results in 59.43 dB.

EIRP measured:
fundamental 71,173 dBm
1st harmonic 11,402 dBm
attenuation: 59,771 dBm

Remark: at all other frequencies ecxept the first harmonic, the more stringent limit of -13dBm EIRP was checked.

Test Equipment used: EMV-100; EMV-102; EMV-110; EMV-200/1; NT-126

4.8 FREQUENCY STABILITY § 2.1055

Center Frequency: 9131.5 MHz

Temperature [°C]	Lower -40 dB Point [MHz]	Upper -40 dB Point [MHz]	Calculated center frequency [MHz]
-30	9095,444	9167,476	9131,46
-20	9095,444	9167,506	9131,475
-10	9095,444	9167,516	9131,48
0	9095,414	9167,506	9131,46
10	9095,394	9167,486	9131,44
20	9095,294	9167,476	9131,385
30	9095,374	9167,456	9131,415
40	9095,374	9167,446	9131,41
50	9095,334	9167,436	9131,385

LIMIT **SUBCLAUSE 87.133**

Where specific frequencies are not assigned to radar stations, the bandwidth occupied by the emissions of such stations must be maintained within the band allocated to the service and the indicated tolerance does not apply.

Band allocated to the radar service: 9000-9200 MHz

Test Equipment used: EMV-205; EMV-600

FREQUENCY STABILITY **§ 2.1055**

Center Frequency: 9163.5 MHz

Temperature [°C]	Lower -40 dB Point [MHz]	Upper -40 dB Point [MHz]	Calculated center frequency [MHz]
-30	9127,484	9199,476	9163,48
-20	9127,504	9199,496	9163,5
-10	9127,474	9199,506	9163,49
0	9127,434	9199,496	9163,465
10	9127,394	9199,476	9163,435
20	9127,324	9199,466	9163,395
30	9127,434	9199,446	9163,44
40	9127,434	9199,436	9163,435
50	9127,454	9199,426	9163,44

LIMIT **SUBCLAUSE 87.133**

Where specific frequencies are not assigned to radar stations, the bandwidth occupied by the emissions of such stations must be maintained within the band allocated to the service and the indicated tolerance does not apply.

Band allocated to the radar service: 9000-9200 MHz

Test Equipment used: EMV-205; EMV-600

FREQUENCY STABILITY **§ 2.1055**

Center Frequency: 9248.5 MHz

Temperature [°C]	Lower -40 dB Point [MHz]	Upper -40 dB Point [MHz]	Calculated center frequency [MHz]
-30	9212,554	9284,476	9248,515
-20	9212,524	9284,496	9248,51
-10	9212,534	9284,506	9248,52
0	9212,524	9284,496	9248,51
10	9212,504	9284,486	9248,495
20	9212,384	9284,466	9248,425
30	9212,484	9284,456	9248,47
40	9212,476	9284,446	9248,461
50	9212,454	9284,436	9248,445

LIMIT **SUBCLAUSE 90.213**

Above 2450 MHz: Frequency stability for DSRCS equipment in the 5895-5925 MHz band is specified in subpart M of this part. For all other equipment, frequency stability is to be specified in the station authorization.

Radiolocation Service frequency band: 9200-9300 MHz, This frequency is shared with and is on a secondary basis to the Government Radiolocation Service.

Test Equipment used: EMV-205; EMV-600

4.9 RADIOFREQUENCY RADIATION EXPOSURE LIMITS § 1.1310

	Spatial averaged MPE over 0 – 2 meters height [mW/cm²]		
Distance to the axis of rotation [cm]	Operating center Frequency: 9131.5 MHz	Operating center Frequency: 9163.5 MHz	Operating center Frequency: 9248.5 MHz
85	0,2837	0,3389	0,3892
200	0,1116	0,1103	0,1084
300	0,06466	0,06018	0,05672

Measurements performed according to OET Bulletin 65.

During the measurement the radar transmitter was operated with the antenna rotating at the standard rate of 60 rpm. 85cm is the shortest safe distance while the radar is rotating.

The accuracy of the average measurement during rotation was checked by comparison of the maximum value of the power density with the radar not rotating weighed by a time averaging factor (using a spectrum analyser power average over 1 second in time, which is equal to one rotation cycle) and the measured value of the average power density during rotation. Both the average value calculated from the measured maximum weighed by the time averaging factor, as well as the direct measured average value were found to be equal.

LIMIT **SUBCLAUSE 1.1310 (e)(1)(ii)**

Limit for General Population/Uncontrolled Exposure in the frequency range 1500 – 100000 MHz is 1.0 mW/m².

Overall frequency band of the radar system: 9100-9300 MHz

Test Equipment used: EMV-100; EMV-200/1; NT-240a-e

Appendix 1
Test equipment used

☐	Anechoic Chamber with 3m measurement distance	NT-100	☐	Power quality analyzer Fluke 1760 (complete set)	NT-160 - NT-173
☐	Stripline according to ISO 11452-5	NT-108	☐	Spectrumanalyzer – FSP7 9 kHz – 7 GHz	NT-200
☐	MA4000 - Antenna mast 1 - 4 m height	NT-110/1	☐	ESCI - Test receiver 9 kHz - 7 GHz	NT-203/1
☐	DS - Turntable 0 - 400 ° Azimuth	NT-111/1	☐	ESR – Test receiver 20 Hz – 26,5 GHz	NT-207/1
☐	CO3000 Controller Mast+Turntable	NT-112/1	☐	Digital Radio Tester CMW500	NT-208/1
☐	HUF-Z3 - Log. Per. Antenna 200 - 1000 MHz	NT-121	☐	Noise-gen., ITU-R 559-2 20 Hz – 20 kHz	NT-209
☐	FMZB1513 - Loop Antenna 9 kHz - 30 MHz	NT-122/1	☐	CMTA - Radiocommunication analyzer ; 0,1 - 1000 MHz	NT-210
☐	HFH-Z6 - Rod Antenna 9 kHz - 30 MHz	NT-123	☐	3271 - Spectrum analyzer 100 Hz - 26,5 GHz	NT-211
☐	3121C - Dipole Antenna 28 - 1000 MHz	NT-124	☐	Digital Radio Tester Aeroflex 3920	NT-212/1
☐	3115 - Horn Antenna 1 - 18 GHz (immunity)	NT-125	☐	Mixer M28HW 26,5 GHz - 40 GHz	NT-214
☐	3116 - Horn Antenna 18 - 40 GHz	NT-126	☐	RubiSource T&M Timing reference	NT-216
☐	SAS-200/543 - Bicon. Antenna 20 MHz - 300 MHz	NT-127	☐	Radiocommunicationanalyzer SWR 1180 MD	NT-217
☐	AT-1080 - Log. Per. Antenna 80 - 1000 MHz	NT-128	☐	Mixer M19HWD 40 GHz – 60 GHz	NT-218
☐	HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-129	☐	Mixer M12HWD 60 GHz – 90 GHz	NT-219
☐	HK-116 - bicon. Antenna 20 MHz - 300 MHz	NT-130	☐	DSO9104 Digital scope	NT-220/1
☐	3146 - Log. Per. Antenna 200 – 1000 MHz	NT-131	☐	TPS 2014 Digital scope	NT-222
☐	VULB 9163 Trilog Antenna 30 – 3000 MHz	NT-131/1	☐	Artificial Ear according to IEC 60318	NT-224
☐	Loop Antenna H-Field	NT-132	☐	1 kHz Sound calibrator	NT-225
☐	Horn Antenna 500 MHz - 2900 MHz	NT-133	☐	SRM-3006 Spectrumanalyzer	NT-233/1a
☐	Horn Antenna 500 MHz - 6000 MHz	NT-133/1	☐	E-field probe SRM 75 MHz – 3 GHz	NT-234
☐	Log. per. Antenna 800 MHz - 2500 MHz	NT-134	☐	Field Meter NBM-500 incl. E- and H-Field probes	NT-240a-e
☐	Log. per. Antenna 800 MHz - 2500 MHz	NT-135	☐	Magnetometer HP-01	NT-241/1
☐	BiConiLog Antenna 26 MHz – 2000 MHz	NT-137	☐	EFA-3 H-field- / E-field probe	NT-243
☐	Conical Dipol Antenna PCD8250	NT-138	☐	EHP-50F H-field- / E-field probe	NT-243/1
☐	HF 906 - Horn Antenna 1 - 18 GHz (emission)	NT-139	☐	Field Meter EMR-200 100 kHz – 3 GHz	NT-244
☐	HZ-1 Antenna tripod	NT-150	☐	E-field probe 100 kHz – 3 GHz	NT-245
☐	BN 1500 Antenna tripod	NT-151	☐	H-field probe 300 kHz – 30 MHz	NT-246
☐	Ant. tripod for EN61000-4-3 Model TP1000A	NT-156			

Division:
Industry & Energy

Test report number:
2022-IN-AT-TICL-E-EX-000102-FG-001

Date: 31.03.2022

Appendix 1 (continued)
Test equipment used

☐	E-field probe 3 MHz – 18 GHz	NT-247
☐	H-field probe 27 MHz – 1 GHz	NT-248
☐	ELT-400 1 Hz – 400 kHz	NT-249
☐	MDS 21 - Absorbing clamp 30 - 1000 MHz	NT-250
☐	FCC-203I EM Injection clamp	NT-251
☐	FCC-203I-DCN Ferrite decoupling network	NT-252
☐	PR50 Current Probe	NT-253
☐	i310s Current Probe	NT-254/1
☐	Fluke 87 V True RMS Multimeter	NT-260
☐	Model 2000 Digital Multimeter	NT-261
☐	Fluke 87 V Digital Multimeter	NT-262/1
☐	ESH2-Z5-U1 Artificial mains network 4x25A	NT-300
☐	ESH3-Z5-U1 Artificial mains network 2x10A	NT-301
☐	ESH3-Z6-U1 Artificial mains network 1x100A	NT-302
☐	ESH3-Z6-U1 Artificial mains network 1x100A	NT-302a
☐	EZ10 T-Artificial Network	NT-305
☐	SMG - Signal generator 0,1 - 1000 MHz	NT-310
☐	SMA100A - Signal generator 9 kHz - 6 GHz	NT-310/1
☐	RefRad Reference generator	NT-312
☐	SMP 02 Signal generator 10 MHz - 20 GHz	NT-313
☐	40 MHz Arbitrary Generator TGA1241	NT-315
☐	Artificial mains network NSLK 8127-PLC	NT-316
☐	PSURGE 4.1 Surge generator	NT-324
☐	IMU4000 Immunity test system	NT-325/1
☐	VCS 500-M6 Surge-Generator	NT-326
☐	Oscillatory Wave Simulator incl. Coupling networks	NT-328a+b+c
☐	BTA-250 - RF-Amplifier 9 kHz - 220 MHz / 250 W	NT-330
☐	Prana N-MT 500 - RF-Amplifier 80 - 1000 MHz / 500 W	NT-332/1
☐	BBA150 RF-Amplifier 1 GHz - 6 GHz	NT-333/1
☐	APA01 – RF-Amplifier 0,5 GHz – 2,5 GHz	NT-334
☐	Preamplifier 1 GHz - 4 GHz	NT-335
☐	Preamplifier for GPS MKU 152 A	NT-336
☐	Preamplifier 1 GHz – 18 GHz	NT-337/1
☐	DC Block 10 MHz – 18 GHz Model 8048	NT-338
☐	2-97201 Electronic load	NT-341
☐	TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-344
☐	TSX3510P - Power supply 0-30 V / 0 - 10 A	NT-345
☐	VDS 200 Mobil-impuls-generator	NT-350
☐	LD 200 Mobil-impuls-generator	NT-351
☐	MPG 200 Mobil-Impuls-Generators	NT-352
☐	EFT 200 Mobil-impuls-generator	NT-353
☐	AN 200 S1 Artificial Network	NT-354
☐	FP-EFT 32M 3 ph. Coupling filter (Burst)	NT-400/1
☐	PHE 4500 - Mains impedance network	NT-401
☐	IP 6.2 Coupling filter for data lines (Surge)	NT-403
☐	TK 9421 High Power Volt. Probe 150 kHz - 30 MHz	NT-409
☐	ESH2-Z3 - Probe 9 kHz - 30 MHz	NT-410
☐	IP 4 - Capacitive clamp (Burst)	NT-411
☐	Highpass-Filter 100 MHz – 3 GHz	NT-412
☐	Highpass-Filter 600 MHz – 4 GHz	NT-413
☐	Highpass-Filter 1250 MHz – 4 GHz	NT-414
☐	Highpass-Filter 1800 MHz – 16 GHz	NT-415

Division:
Industry & Energy

Test report number:
2022-IN-AT-TICL-E-EX-000102-FG-001

Date: 31.03.2022

Appendix 1 (continued)
Test equipment used

☐	RF-Attenuator 10 dB DC – 18 GHz / 50 W	NT-417/1
☐	RF-Attenuator 6 dB DC – 18 GHz / 50 W	NT-418
☐	RF-Attenuator 3 dB DC – 18 GHz / 50 W	NT-419
☐	RF-Attenuator 20 dB DC - 1000 MHz / 25 W	NT-421
☐	RF-Attenuator 30 dB DC - 1000 MHz / 1 W	NT-423
☐	RF-Attenuator 30 dB	NT-424
☐	RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-425
☐	RF-Attenuator 6 dB DC - 1000 MHz / 1 W	NT-426
☐	RF-Attenuator 6 dB	NT-428
☐	RF-Attenuator 0 dB - 81 dB	NT-429
☐	WRU 27 - Band blocking 27 MHz	NT-430
☐	WHJ450C9 AA - High pass 450 MHz	NT-431
☐	WHJ250C9 AA - High pass 250 MHz	NT-432
☐	RF-Load 150 W	NT-433
☐	Impedance transducer 1:4 ; 1:9 ; 1:16	NT-435
☐	RF-Attenuator DC – 18 GHz 6 dB	NT-436
☐	RF-Attenuator DC – 18 GHz 6 dB	NT-437
☐	RF-Attenuator DC – 18 GHz 10 dB	NT-438
☐	RF-Attenuator DC – 18 GHz 20 dB	NT-439
☐	I+P 7780 Directional coupler 100 - 2000 MHz	NT-440
☐	ESH3-Z2 - Pulse limiter 9 kHz - 30 MHz	NT-441
☐	Power Divider 6 dB/1 W/50 Ohm	NT-443
☐	Directional coupler 0,1 MHz – 70 MHz	NT-444
☐	Directional coupler 0,1 MHz – 70 MHz	NT-445
☐	Tube imitations according to EN 55015	NT-450
☐	FCC-801-M3-16A Coupling decoupling network	NT-458
☐	FCC-801-M2-50A Coupling decoupling network	NT-459
☐	FCC-801-M5-25 Coupling decoupling network	NT-460
☐	FCC-801-AF10 Coupling decoupling network	NT-461
☐	FCC-801-S25 Coupling decoupling network	NT-462
☐	FCC-801-T4 Coupling decoupling network	NT-463
☐	FCC-801-C1 Coupling decoupling network	NT-464
☐	SW 9605 - Current probe 150 kHz – 30 MHz	NT-465/1
☐	95242-1 – Current probe 1 MHz – 400 MHz	NT-468
☐	94106-1L-1 – Current probe 100 kHz – 450 MHz	NT-471
☐	WHKX12-2700-3000-18000 3 GHz Highpass filter	NT-472
☐	WHKX10-3870-4500-18000 4,5 GHz Highpass filter	NT-473
☐	GA 1240 Power amplifier according to EN 61000-4-16	NT-480
☐	Coupling networks according to EN 61000-4-16	NT-481 - NT-483
☐	Van der Hoofden Test Head	NT-484
☐	WRCJV12-5820-5850-5950-5980 5,9 GHz Band Reject Filter	NT-490
☐	WHKX10-5670-6300-18000 6 GHz Highpass filter	NT-491
☐	WHK12-935-1000-7000 1 GHz Highpass filter	NT-492
☐	EMC Video/Audiosystem	NT-511/1
☐	ES-K1 Version 1.71 SP2 Test software	NT-520
☐	EMC32 Version 10.60.20 Test software	NT-520/1
☐	SRM-TS Version 1.3 software for SRM-3000	NT-522
☐	SRM-TS Version 1.3.1 software for SRM-3006	NT-522/1
☐	Spitzenberger und Spies Test software V4.1	NT-525
☐	Vertical coupling plane (ESD)	NT-531
☐	Test cable #4 for EN 61000-4-6	NT-553
☐	Test cable #3 for conducted emission	NT-554
☐	Test cable #5+#6 ESD-cable (2x470k)	NT-555 + NT-556
☐	Test cable #8 Sucoflex 104EA	NT-559
☐	Test cable #9 (for outdoor measurements)	NT-580
☐	Test cable #10 (for outdoor measurements)	NT-581
☐	Test cable #13 Sucoflex 104PE	NT-584
☐	Test cable #21 for SRM-3000	NT-592
☐	Shield chamber	NT-600
☐	Climatic chamber	M-1200

Appendix 1 (continued)
Test equipment used

Division:
Industry & Energy

Test report number:
2022-IN-AT-TICL-E-EX-000102-FG-001

Date: 31.03.2022

☐	Anechoic Chamber 3 m / 5 m measuring distance	EMV-100
☐	Turntabel 6 m diameter	EMV-101
☐	Antenna mast + controller	EMV-102+ EMV-103
☐	EMC Video/Audiosystem	EMV-104
☐	EMC Software EMC32 Version 10.60.20	EMV-105
☐	Hornantenna 1 – 18 GHz HF 907	EMV-110
☐	Antennapre.amp. 1 – 18 GHz BBV 9718 D	EMV-111/1
☐	Trilog Antenna 30-3000 MHz VULB9163	EMV-112
☐	Monopol 9 kHz – 30 MHz VAMP 9243	EMV-113
☐	Antennapre.amp 18 – 40 GHz BBV 9721	EMV-114
☐	Hornantenna 200 – 2000 MHz AH-220	EMV-115
☐	DC Artificial Network PVDC 8300	EMV-150
☐	AC Artificial Network NNLK 8121 RC	EMV-151
☐	AC Artificial Network NNLK 140	EMV- 153a-d
☐	EMI Receiver ESW44	EMV-200/1
☐	Signalgenerator 9 kHz – 40 GHz N5173B	EMV-201
☐	GPS Frequency normal B-88	EMV-202
☐	DC Power supply N5745A	EMV-203
☐	Spektrum Analyzator FSV40	EMV-205
☐	Thd Multimeter Model 2015	EMV-206
☐	Poweramplifier PAS15000	EMV- 207/abc
☐	Inrush Current Source	EMV- 208/abc
☐	Arb.-generator Sycore	EMV-209
☐	Harmonics/Flicker analyzer ARS 16/3	EMV-210
☐	Power Supply Regatron AC	EMV-214
☐	Power Supply Regatron DC	EMV-215
☐	Harmonics/Flicker analyser Zimmer	EMV-216
☐	Flicker Impedanz Newtons4th 753	EMV-218
☐	Comemso	EMV-219
☐	HF- Ampflifier 9 kHz-225 MHz BBL200	EMV-300/1
☐	HF- Amplifier 80 -1000 MHz BBA150	EMV-301
☐	HF- Amplifier 0,8 - 6 GHz BBA150	EMV-302
☐	High Power Ant. 20-200 MHz HPBA-2510	EMV-303/1
☐	High Power Ant. 20-200 MHz S12018-21	EMV-303/2
☐	Log.per Antenna 80-2700 MHz STLP 9128 E special	EMV-304
☐	Log.per Antenna 0,7 – 9 GHz STLP9149	EMV-305
☐	HF- Ampflifier 9 kHz-250 MHz BBA150 (low noise)	EMV-306
☐	ISO11451-2 TLS 10 kHz – 30 MHz	EMV-307
☐	Load Dump Generator LD 200N	EMV-350
☐	Ultra Compact Symulator UCS 200N100	EMV-351
☐	Automotive Power fail module PFM 200N100.1	EMV-352
☐	Voltage Drop Symulator VDS 200Q100	EMV-353
☐	Arb. Generator AutoWave	EMV-354
☐	Ultra Compact Symulator UCS 500N7	EMV-355
☐	Coupling decoupling network CNI 503B7 / 32 A	EMV-356
☐	Coupling decoupling network CNI 503B7 / 63 A	EMV-357
☐	Telecom Surge Generator TSurge 7	EMV-358
☐	Coupling decoupling network CNI 508N2	EMV-359
☐	Coupling decoupling network CNV 504N2.2	EMV-360
☐	Immunity generator NSG4060/NSG4060-1	EMV-361
☐	Coupling network CDND M316-2	EMV-362
☐	Coupling network CT419-5	EMV-363
☐	ESD Generator NSG 437	EMV-364
☐	Pulse Limiter VTSD 9561-F BNC	EMV-405
☐	Transient emission BSM200N40+BS200N100	EMV- 450+451
☐	Cap. Coupling Clamp HFK	EMV-455
☐	Mag. Field System MS100N+MC26100+MC2630	EMV- 456-458

Appendix 1 (continued)
Test equipment used

☐	Coupling network CDN M2-100A	EMV-459
☐	Coupling network CDN M3-32A	EMV-460
☐	Coupling network CDN M5-100A	EMV-461
☐	Current Clamp CIP 9136A	EMV-462
☐	DC Artificial Network HV-AN 150	EMV-464+465
☐	Coupling Clamp EM 101	EMV-466
☐	Decoupling Clamp FTC 101	EMV-467
☐	Power attenuator 10 dB / 250 Watt	EMV-469/2
☐	HV AMN NNHV 8123 800A	EMV-472
☐	HV AMN NNHV 8123 800A	EMV-473