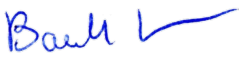
Report Reference ID:	395212TRFWL

Test specification:	Title 47-Telecommunication Chapter I - Federal Communications Commission **Part 90** – Private Land Mobile Radio Services **Subpart F** – Radiolocation Service

Applicant:	IDS GeoRadar Srl – Via A. Righi, 1-2 – 56121 Pisa (PI) – Italy
Apparatus:	X-band Interferometric Doppler Radar
Model:	ROCKSPOT
FCC ID:	UFW-ROCKSPOT

Testing laboratory:	**Nemko Spa** Via del Carroccio, 4 – 20853 Biassono (MB) – Italy

	Name, function and signature	**Date**
Tested by:	Tessa S.  (project handler)	2020-06-09
Reviewed by:	P. Barbieri  (verifier)	2020-06-09

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Section 1: Report summary

1.1 Test specification

Specifications	**Part 90** – Private Land Mobile Radio Services **Subpart F** – Radiolocation Service

1.2 Statement of compliance

Compliance	In the configuration tested the EUT was found compliant Yes ☒ No ☐ This report contains an assessment of apparatus against specifications based upon tests carried out on samples submitted at Nemko Spa. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 90 Subpart F. The tests were conducted in accordance with ANSI C63.26.

1.3 Exclusions

Exclusions	None

1.4 Registration number

Test site:	FCC ID number 682159

1.5 Test report revision history

Revision #	Details of changes made to test report
1	Original report issued

1.6 Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report. This test report has been completed in accordance with the requirements of ISO/IEC 17025. Nemko Spa authorizes the applicant to reproduce this report provided it is reproduced in its entirety and for use by the company's employees only. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Nemko Spa accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Section 2: Summary of test results

2.1 FCC Part 90, test results

Part	Methods	Test description	Verdict
§90.205(r) and §90.103(b)	ANSI C63.26	RF power output	Pass
§90.103(b)	ANSI C63.26	Occupied Bandwidth	Pass
§90.210(c)(3)	ANSI C63.26	Field strength of spurious radiation	Pass
§90.213	ANSI C63.26	Frequency stability	Pass

Notes:
Possible test case verdicts:
test case does not apply to the test object: N/A (Not applicable)
test object does meet the requirement: P (Pass)
test object does not meet the requirement: F (Fail)

Section 3: Equipment under test (EUT) and application details

3.1 Applicant details

Applicant	Name:	IDS GeoRadar Srl
	Address:	Via A. Righi 1-2
	City:	Pisa
	Province/State:	Pisa
	Post code:	56121
	Country:	Italy
Manufacturer	Name:	IDS GeoRadar Srl
	Address:	Via A. Righi 1-2
	City:	Pisa
	Province/State:	Pisa
	Post code:	56121
	Country:	Italy

3.2 Modular equipment

a) Single modular approval	Single modular approval Yes ☐ No ☒
b) Limited single modular approval	Limited single modular approval Yes ☐ No ☒

3.3 Product details

FCC ID	Grantee code:	UFW
	Product code:	-ROCKSPOT
Equipment class	TNB – Licensed Non-Broadcast Station Transmitter	
Equipment category	Category I Equipment	
Description of product as it is marketed	X-band Interferometric Doppler Radar	
	Model name:	ROCKSPOT
	Serial number:	090-19-000083
Product	The EUT is also classified as Terminal Equipment subject to IC CS-03 No ☒ Yes ☐	

3.4 Application purpose

Type of application	☒ Original certification ☐ Change in identification of presently authorized equipment Original FCC ID: Grant date: ☐ Class II permissive change or modification of presently authorized equipment

3.5 Certification details

Services requested Type of assessment	☒ New certification ☐ New family ☐ Re-assessment ☐ Existing family ☐ Multiple listing

3.6 Composite/related equipment

a) Composite equipment	The EUT is a composite device subject to an additional equipment authorization Yes ☐ No ☒
b) Related equipment	The EUT is part of a system that operates with, or is marketed with, another device that requires an equipment authorization Yes ☐ No ☒

3.7 Sample information

Receipt date:	2020-05-21
Nemko sample ID:	395212-1/2

3.8 EUT technical specifications

Operating band:	10.4 GHz – 10.5 GHz
Operating frequency:	Sub-band 1: 10.402 ÷10.446 GHz Sub-band 2: 10.448 ÷10.492 GHz Sub-band 3: 10.406 ÷10.488 GHz
Modulation type:	FMCW
Occupied bandwidth:	Sub-band 1: 46.45 MHz Sub-band 2: 46.66 MHz Sub-band 3: 83.73 MHz
Channel spacing:	--
Emission designator:	46M5F1D 46M7F1D 83M7F1D
RF Output	39.77 dBm @ 3 m
Antenna type:	Integrated Antenna; max gain: 9 dB
Power source:	115 VAC – 60 Hz and 24 VDC

3.9 Accessories and support equipment

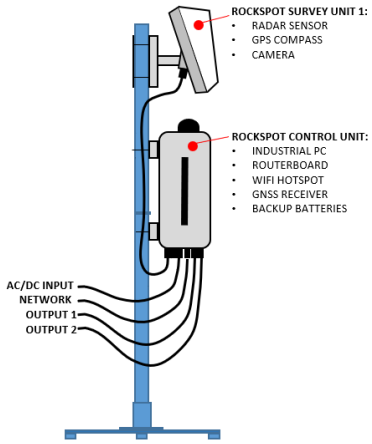
The following information identifies accessories used to exercise the EUT during testing:

The EUT is connected to a rockspot control unit which integrates a WiFi radio module non-disableable and not under test.

3.10 Operation of the EUT during testing

Details:	Transmitting at max gain with max RF power output (40 dBm EIRP).

3.11 EUT setup diagram



3.12 Software version

Details:	RaptorTest v3.3.11

Section 4: Engineering considerations

4.1 Modifications incorporated in the EUT

Modifications	Modifications performed to the EUT during this assessment None ☒ Yes ☐, performed by Client ☐ or Nemko ☐ Details:

4.2 Deviations from laboratory tests procedures

Deviations	Deviations from laboratory test procedures None ☒ Yes ☐ - details are listed below:

4.3 Technical judgment

Judgment	None

Section 5: Test conditions

5.1 Deviations from laboratory tests procedures

No deviations were made from laboratory test procedures.

5.2 Test conditions, power source and ambient temperatures

Normal temperature, humidity and air pressure test conditions	Unless different values are declared in the test case, following ambient conditions apply for the tests: Temperature: 18 ÷ 33 °C Relative humidity: 30 ÷ 60 % Air pressure: 980 ÷ 1060 hPa When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.
Power supply range:	The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages ±5 %, for which the equipment was designed.

Equipment	Manufacturer	Model	Serial N°
Thermo-hygrometer data loggers	Testo	175-H2	20012380/305
Thermo-hygrometer data loggers	Testo	175-H2	38203337/703
Barometer	Castle	GPB 3300	072015

5.3 Measurement uncertainty

The measurement uncertainty was calculated for each test and quantity listed in this test report, according to CISPR 16-4-2 and other specific test standard and is documented in Nemko Spa working manual WML1002.
The assessment of conformity for each test performed on the equipment is performed not taking into account the measurement uncertainty. The two following possible verdicts are stated in the report:

P (Pass) - The measured values of the equipment respect the specification limit at the points tested. The specific risk of false accept is up to 50% when the measured result is close to the limit.
F (Fail) - One or more measured values of the equipment do not respect the specification limit at the points tested. The specific risk of false reject is up to 50% when the measured result is close to the limit.

Hereafter Nemko's measurement uncertainties are reported:

EUT	Type	Test	Range	Measurement Uncertainty	Notes
Transmitter	Conducted	Frequency error	0.001 MHz ÷ 40 GHz	0.08 ppm	(1)
		Carrier power RF Output Power	0.009 MHz ÷ 30 MHz	1.1 dB	(1)
			30 MHz ÷ 18 GHz	1.5 dB	(1)
			18 MHz ÷ 40 GHz	3.0 dB	(1)
			40 MHz ÷ 140 GHz	5.0 dB	(1)
		Adjacent channel power	1 MHz ÷ 18 GHz	1.4 dB	(1)
		Conducted spurious emissions	0.009 MHz ÷ 18 GHz	3.0 dB	(1)
			18 GHz ÷ 40 GHz	4.2 dB	(1)
			40 GHz ÷ 220 GHz	6.0 dB	(1)
		Intermodulation attenuation	1 MHz ÷ 18 GHz	2.2 dB	(1)
		Attack time – frequency behaviour	1 MHz ÷ 18 GHz	2.0 ms	(1)
		Attack time – power behaviour	1 MHz ÷ 18 GHz	2.5 ms	(1)
		Release time – frequency behaviour	1 MHz ÷ 18 GHz	2.0 ms	(1)
		Release time – power behaviour	1 MHz ÷ 18 GHz	2.5 ms	(1)
		Transient behaviour of the transmitter– Transient frequency behaviour	1 MHz ÷ 18 GHz	0.2 kHz	(1)
		Transient behaviour of the transmitter – Power level slope	1 MHz ÷ 18 GHz	9%	(1)
		Frequency deviation - Maximum permissible frequency deviation	0.001 MHz ÷ 18 GHz	1.3%	(1)
		Frequency deviation - Response of the transmitter to modulation frequencies above 3 kHz	0.001 MHz ÷ 18 GHz	0.5 dB	(1)
		Dwell time	-	3%	(1)
		Hopping Frequency Separation	0.01 MHz ÷ 18 GHz	1%	(1)
		Occupied Channel Bandwidth	0.01 MHz ÷ 18 GHz	2%	(1)
		Modulation Bandwidth	0.01 MHz ÷ 18 GHz	2%	(1)
	Radiated	Radiated spurious emissions	0.009 MHz ÷ 26.5 GHz	6.0 dB	(1)
			26.5 GHz ÷ 66 GHz	8.0 dB	(1)
			66 GHz ÷ 220 GHz	10 dB	(1)
		Effective radiated power transmitter	10 kHz ÷ 26.5 GHz	6.0 dB	(1)
			26.5 GHz ÷ 66 GHz	8.0 dB	(1)
			66 GHz ÷ 220 GHz	10 dB	(1)
Receiver	Radiated	Radiated spurious emissions	0.009 MHz ÷ 26.5 GHz	6.0 dB	(1)
			26.5 GHz ÷ 66 GHz	8.0 dB	(1)
			66 GHz ÷ 220 GHz	10 dB	(1)
		Sensitivity measurement	1 MHz ÷ 18 GHz	6.0 dB	(1)
	Conducted	Conducted spurious emissions	0.009 MHz ÷ 18 GHz	3.0 dB	(1)
			18 GHz ÷ 40 GHz	4.2 dB	(1)
			40 GHz ÷ 220 GHz	6.0 dB	(1)

NOTES:
(1) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2, which for a normal distribution corresponds to a coverage probability of approximately 95 %

5.4 Test equipment

Equipment	Manufacturer	Model	Serial N°	Cal Date	Due Date
Trilog Broadband Antenna	Schwarzbeck	VULB 9162	9162-025	2018-07	2021-07
EMI receiver (20 Hz ÷ 8 GHz)	Rohde & Schwarz	ESU8	100202	2020-04	2021-04
EMI receiver (2 Hz ÷ 44 GHz)	Rohde & Schwarz	ESW44	101620	2019-08	2020-08
Controller	Maturo	FCU3.0	10041	NSC	--
Tilt antenna mast	Maturo	TAM4.0-E	10042	NSC	--
Turntable	Maturo	TT4.0-5T	2.527	NSC	--
Bilog Antenna 1 ÷ 18 GHz	Schwarzbeck Mess-Elektronik	STLP9148	STLP 9148-152	2018-09	2021-09
Double Ridge Horn Antenna 18 ÷ 40 GHz	RFSpin	DRH40	061106A40	2020-04	2023-04
Preamplifier 18 ÷ 40 GHz	Miteq	JS44-18004000-35-8P-R	1648665+1648789+1648791	2019-09	2020-09
Pyramidal Horn Antenna 40 ÷ 60 GHz	Sage	SAR-2507-19VF-R2	15715-01	NSC	--
Harmonic Mixer 40 ÷ 60 GHz	Radiometer Physics	RPG FS Z60	100988	2018-11	2023-11
Climatic chamber	MSL	EC500DA	15022	2019-11	2020-11
Semi-anechoic chamber	Nemko	10 m semi-anechoic chamber	530	2018-09	2021-09
Shielded room	Siemens	10 m control room	1947	NSC	--

Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use

Section 6: Test results

6.2 Clause 90.205 (r) and 90.103 (13) RF power output

§ 90.205

Applicants for licenses must request and use no more power than the actual power necessary for satisfactory operation. Except where otherwise specifically provided for, the maximum power that will be authorized to applicants whose license applications for new stations are filed after August 18, 1995 is as follows:

(r) *All other frequency bands.* Requested transmitter power will be considered and authorized on a case by case basis.

§ 90.103

(b) *Frequencies available.* The following table indicates frequencies available for assignment to stations in the Radiolocation Service, together with the class of station(s) to which they are normally assigned, and the specific assignment limitations, which are explained in paragraph (c) of this section:

RADIOLOCATION SERVICE FREQUENCY TABLE

Frequency or band	Class of station(s)	Limitation
Kilohertz		
70 to 90	Radiolocation land or mobile	1
90 to 110	Radiolocation land	2
110 to 130	Radiolocation land or mobile	1
1705 to 1715	.....do	4, 5, 6
1715 to 1750	.....do	5, 6
1750 to 1800	do	5, 6
3230 to 3400	.....do	6, 8
4438 to 4488	Radiolocation land	3
5250 to 5275	.....do	3
Megahertz		
13.45 to 13.55	.....do	3
16.10 to 16.20	.....do	3
24.45 to 24.65	.....do	3
26.20 to 26.42	.....do	3
41.015 to 41.665	.....do	3
43.35 to 44.00	.....do	3
420 to 450	Radiolocation land or mobile	21
2450 to 2500	.....do	9, 22, 23
2900 to 3100	.....do	10, 11
3100 to 3300	.....do	12
3300 to 3500	.....do	12, 13
3500 to 3550	.....do	12
3550 to 3650	.....do	30
5250 to 5350	.....do	12
5350 to 5460	.....do	10, 14
5460 to 5470	.....do	10, 15
5470 to 5600	.....do	10, 11
5600 to 5650	.....do	10, 16
8500 to 9000	.....do	12, 17
9000 to 9200	.....do	10, 14
9200 to 9300	.....do	12
9300 to 9500	.....do	10, 15, 18
9500 to 10,000	.....do	12
10,000 to 10,500	.....do	12, 13, 19
10,500 to 10,550	.....do	20, 22, 24
13,400 to 13,750	.....do	12
13,750 to 14,000	.....do	29
15,700 to 17,300	.....do	
24,050 to 24,250	.....do	12, 22, 24
33,400 to 36,000	.....do	12

(12) This frequency is shared with and is on a secondary basis to the Government Radiolocation Service.

(13) Operations in this band are limited to survey operations using transmitters with a peak power not to exceed 5 watts into the antenna.

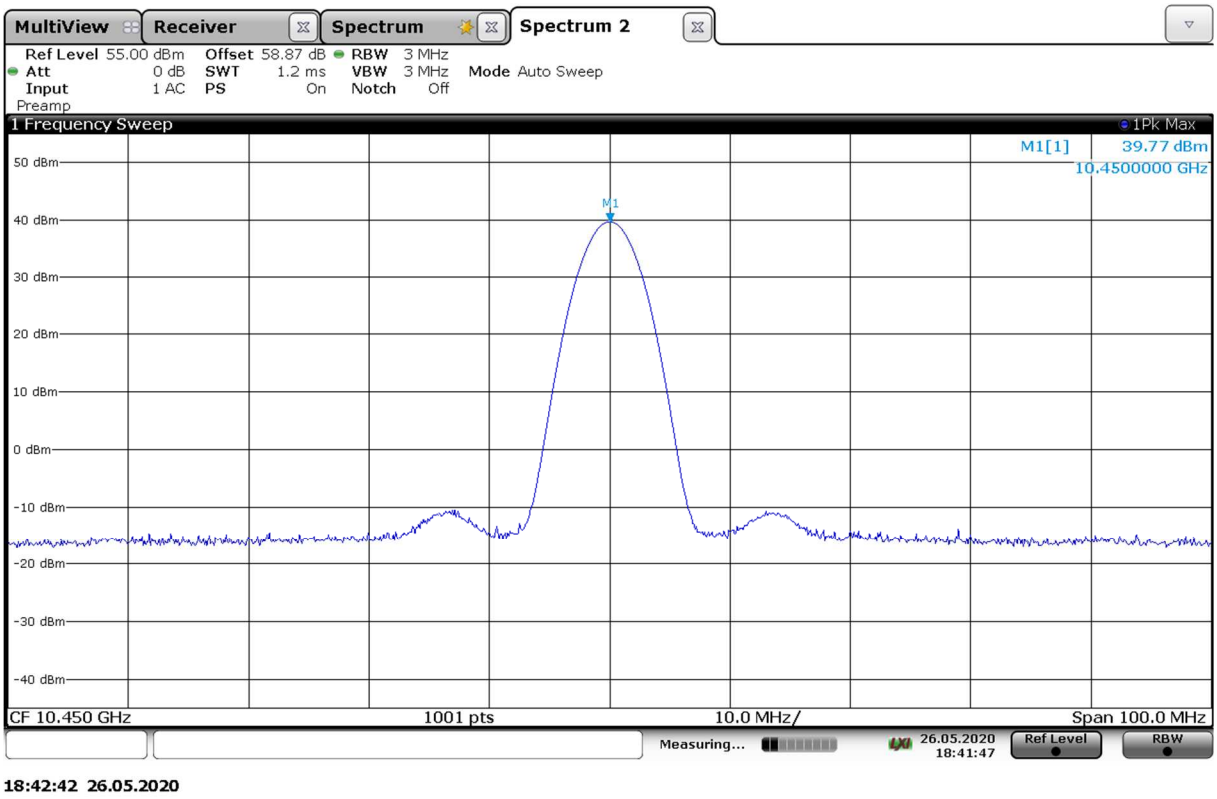
(19) Operations in this band are on a secondary basis to the Amateur Radio Service (part 97). Pulsed emissions are prohibited.

Test date: 2020-05-26
Test results: Pass

Special notes

Signal stimulation: CW
Radiated test with the EUT at 3 m of distance from the measuring antenna

Test data



RF output power = EIRP – Antenna gain= 39.77 dBm – 9 dB = 30.77 dBm = 1.193 W < 5 W

6.2 Clause 90.103 (b) Occupied Bandwidth

§ 90.103

(b) *Frequencies available.* The following table indicates frequencies available for assignment to stations in the Radiolocation Service, together with the class of station(s) to which they are normally assigned, and the specific assignment limitations, which are explained in paragraph (c) of this section:

RADIOLOCATION SERVICE FREQUENCY TABLE

Frequency or band	Class of station(s)	Limitation
Kilohertz		
70 to 90	Radiolocation land or mobile	1
90 to 110	Radiolocation land	2
110 to 130	Radiolocation land or mobile	1
1705 to 1715	.....do	4, 5, 6
1715 to 1750	.....do	5, 6
1750 to 1800	do	5, 6
3230 to 3400	.....do	6, 8
4438 to 4488	Radiolocation land	3
5250 to 5275	.....do	3
Megahertz		
13.45 to 13.55	.....do	3
16.10 to 16.20	.....do	3
24.45 to 24.65	.....do	3
26.20 to 26.42	.....do	3
41.015 to 41.665	.....do	3
43.35 to 44.00	.....do	3
420 to 450	Radiolocation land or mobile	21
2450 to 2500	.....do	9, 22, 23
2900 to 3100	.....do	10, 11
3100 to 3300	.....do	12
3300 to 3500	.....do	12, 13
3500 to 3550	.....do	12
3550 to 3650	.....do	30
5250 to 5350	.....do	12
5350 to 5460	.....do	10, 14
5460 to 5470	.....do	10, 15
5470 to 5600	.....do	10, 11
5600 to 5650	.....do	10, 16
8500 to 9000	.....do	12, 17
9000 to 9200	.....do	10, 14
9200 to 9300	.....do	12
9300 to 9500	.....do	10, 15, 18
9500 to 10,000	.....do	12
10,000 to 10,500	.....do	12, 13, 19
10,500 to 10,550	.....do	20, 22, 24
13,400 to 13,750	.....do	12
13,750 to 14,000	.....do	29
15,700 to 17,300	.....do	
24,050 to 24,250	.....do	12, 22, 24
33,400 to 36,000	.....do	12

(12) This frequency is shared with and is on a secondary basis to the Government Radiolocation Service.

(13) Operations in this band are limited to survey operations using transmitters with a peak power not to exceed 5 watts into the antenna.

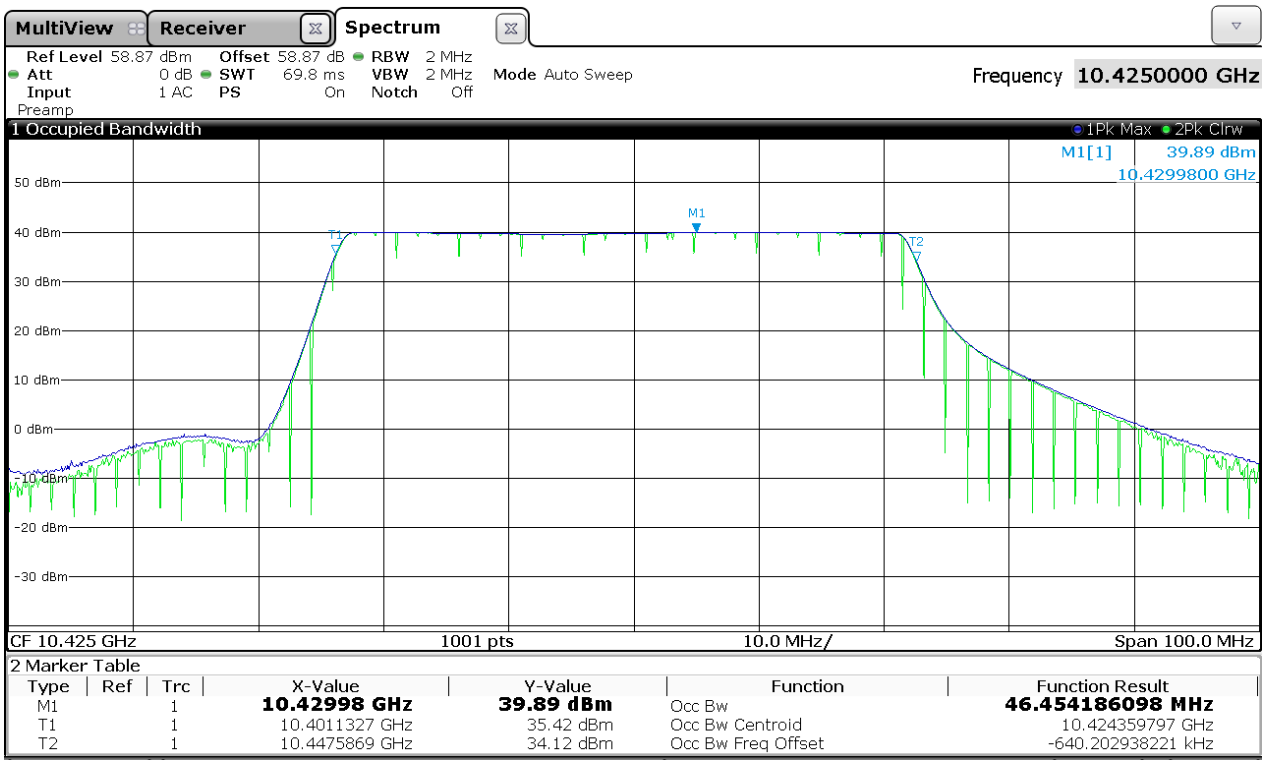
(19) Operations in this band are on a secondary basis to the Amateur Radio Service (part 97). Pulsed emissions are prohibited.

Test date: 2020-05-26
Test results: Pass

Special notes

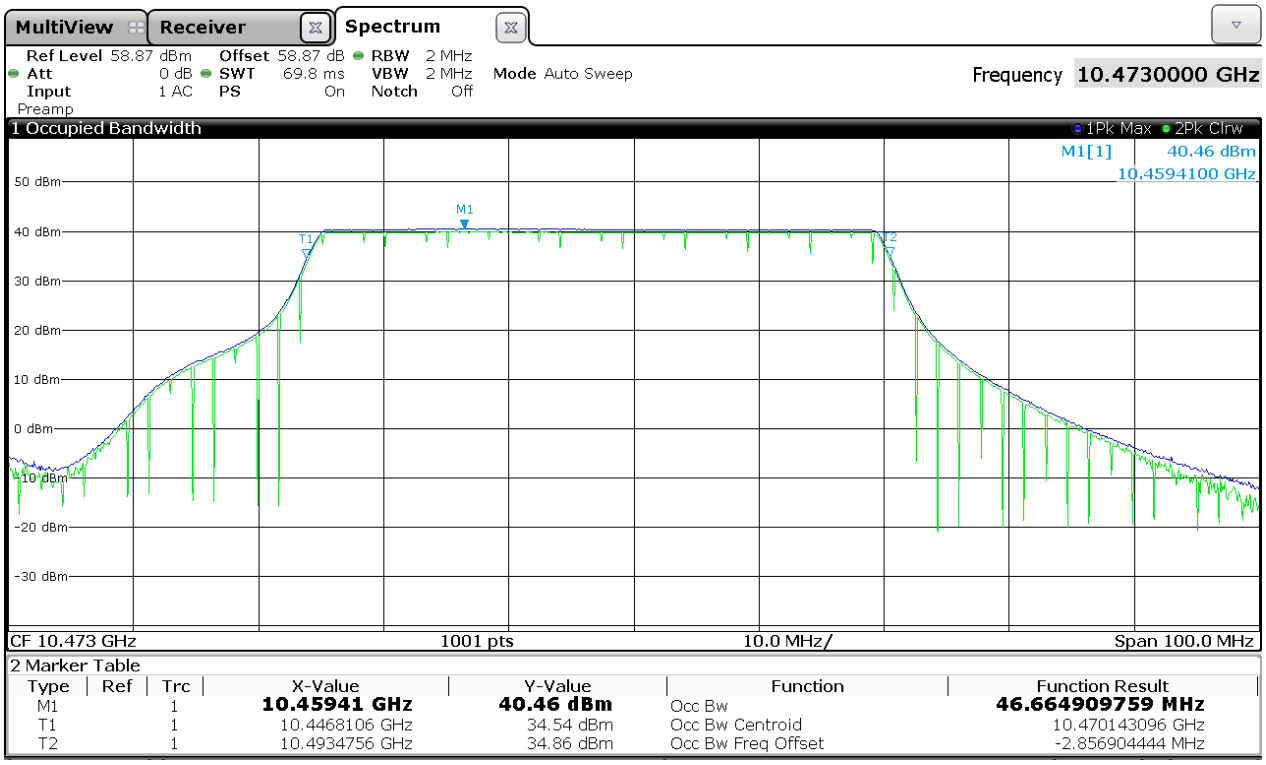
Signal stimulation: FMCW
This plots are representative of the EUT's normal operation. Under normal operation, the EUT re-transmits the swept CW signal in 3 sub-bands.

Test data



Sub-band 1

Test data



Sub-band 2

Sub-band 3

6.8 Clause 90.213 Frequency stability measurements

§ 90.213

(a) Unless noted elsewhere, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following table.

MINIMUM FREQUENCY STABILITY

[Parts per million (ppm)]

Frequency range (MHz)	Fixed and base stations	Mobile stations	
		Over 2 watts output power	2 watts or less output power
Below 25	[1 2 3]100	100	200
25-50	20	20	50
72-76	5		50
150-174	[5 11]5	[6]5	[4 6]50
216-220	1.0		1.0
220-222[12]	0.1	1.5	1.5
421-512	[7 11 14]2.5	[8]5	[8]5
806-809	[14]1.0	1.5	1.5
809-824	[14]1.5	2.5	2.5
851-854	1.0	1.5	1.5
854-869	1.5	2.5	2.5
896-901	[14]0.1	1.5	1.5
902-928	2.5	2.5	2.5
902-928[13]	2.5	2.5	2.5
929-930	1.5		
935-940	0.1	1.5	1.5
1427-1435	[9]300	300	300
Above 2450[10]			

[1]Fixed and base stations with over 200 watts transmitter power must have a frequency stability of 50 ppm except for equipment used in the Public Safety Pool where the frequency stability is 100 ppm.

[2]For single sideband operations below 25 MHz, the carrier frequency must be maintained within 50 Hz of the authorized carrier frequency.

[3]Travelers information station transmitters operating from 530-1700 kHz and transmitters exceeding 200 watts peak envelope power used for disaster communications and long distance circuit operations pursuant to §§90.242 and 90.264 must maintain the carrier frequency to within 20 Hz of the authorized frequency.

[4]Stations operating in the 154.45 to 154.49 MHz or the 173.2 to 173.4 MHz bands must have a frequency stability of 5 ppm.

[5]In the 150-174 MHz band, fixed and base stations with a 12.5 kHz channel bandwidth must have a frequency stability of 2.5 ppm. Fixed and base stations with a 6.25 kHz channel bandwidth must have a frequency stability of 1.0 ppm.

[6]In the 150-174 MHz band, mobile stations designed to operate with a 12.5 kHz channel bandwidth or designed to operate on a frequency specifically designated for itinerant use or designed for low-power operation of two watts or less, must have a frequency stability of 5.0 ppm. Mobile stations designed to operate with a 6.25 kHz channel bandwidth must have a frequency stability of 2.0 ppm.

[7]In the 421-512 MHz band, fixed and base stations with a 12.5 kHz channel bandwidth must have a frequency stability of 1.5 ppm. Fixed and base stations with a 6.25 kHz channel bandwidth must have a frequency stability of 0.5 ppm.

[8]In the 421-512 MHz band, mobile stations designed to operate with a 12.5 kHz channel bandwidth must have a frequency stability of 2.5 ppm. Mobile stations designed to operate with a 6.25 kHz channel bandwidth must have a frequency stability of 1.0 ppm.

[9]Fixed stations with output powers above 120 watts and necessary bandwidth less than 3 kHz must operate with a frequency stability of 100 ppm. Fixed stations with output powers less than 120 watts and using time-division multiplex, must operate with a frequency stability of 500 ppm.

[10]Except for DSRCS equipment in the 5850-5925 MHz band, frequency stability is to be specified in the station authorization. Frequency stability for DSRCS equipment in the 5850-5925 MHz band is specified in subpart M of this part.

[11]Paging transmitters operating on paging-only frequencies must operate with frequency stability of 5 ppm in the 150-174 MHz band and 2.5 ppm in the 421-512 MHz band.

[12]Mobile units may utilize synchronizing signals from associated base stations to achieve the specified carrier stability.

[13]Fixed non-multilateration transmitters with an authorized bandwidth that is more than 40 kHz from the band edge, intermittently operated hand-held readers, and mobile transponders are not subject to frequency tolerance restrictions.

[14]Control stations may operate with the frequency tolerance specified for associated mobile frequencies.

(b) For the purpose of determining the frequency stability limits, the power of a transmitter is considered to be the maximum rated output power as specified by the manufacturer.

Test date: 2020-05-27

Test results: Pass

Special notes
Signal stimulation: CW

Test conditions	Frequency, Hz	ppm
+50 °C, Nominal	10 427 450 000	19.3
+40 °C, Nominal	10 427 450 000	19.3
+30 °C, Nominal	10 427 551 000	9.6
+20 °C, +15 %	10 427 550 000	9.7
+20 °C, Nominal	10 427 651 000	Reference
+20 °C, –15 %	10 427 451 000	19.2
+10 °C, Nominal	10 427 651 000	0
0 °C, Nominal	10 427 951 000	28.8
–10 °C, Nominal	10 427 751 000	9.6
–20 °C, Nominal	10 427 852 000	19.3
–30 °C, Nominal	10 427 651 000	0

Clause 90.210 (c)(3) Field Strength of spurious radiation

§ 90.210

Except as indicated elsewhere in this part, transmitters used in the radio services governed by this part must comply with the emission masks outlined in this section. Unless otherwise stated, per paragraphs (d)(4), (e)(4), and (o) of this section, measurements of emission power can be expressed in either peak or average values provided that emission powers are expressed with the same parameters used to specify the unmodulated transmitter carrier power. For transmitters that do not produce a full power unmodulated carrier, reference to the unmodulated transmitter carrier power refers to the total power contained in the channel bandwidth. Unless indicated elsewhere in this part, the table in this section specifies the emission masks for equipment operating under this part.

APPLICABLE EMISSION MASKS

Frequency band (MHz)	Mask for equipment with audio low pass filter	Mask for equipment without audio low pass filter
Below 25[1]	A or B	A or C
25-50	B	C
72-76	B	C
150-174[2]	B, D, or E	C, D or E
150 paging only	B	C
220-222	F	F
421-512[2 5]	B, D, or E	C, D, or E
450 paging only	B	G
806-809/851-854[6]	B	H
809-824/854-869[35]	B, D	D, G.
896-901/935-940	I	J
902-928	K	K
929-930	B	G
4940-4990 MHz	L or M	L or M
5850-5925[4]		
All other bands	B	C

(c) *Emission Mask C.* For transmitters that are not equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier output power (P) as follows:

(1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 5 kHz, but not more than 10 kHz: At least 83 log (fd/5) dB;

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in kHz) of more than 10 kHz, but not more than 250 percent of the authorized bandwidth: At least 29 log (fd2/11) dB or 50 dB, whichever is the lesser attenuation;

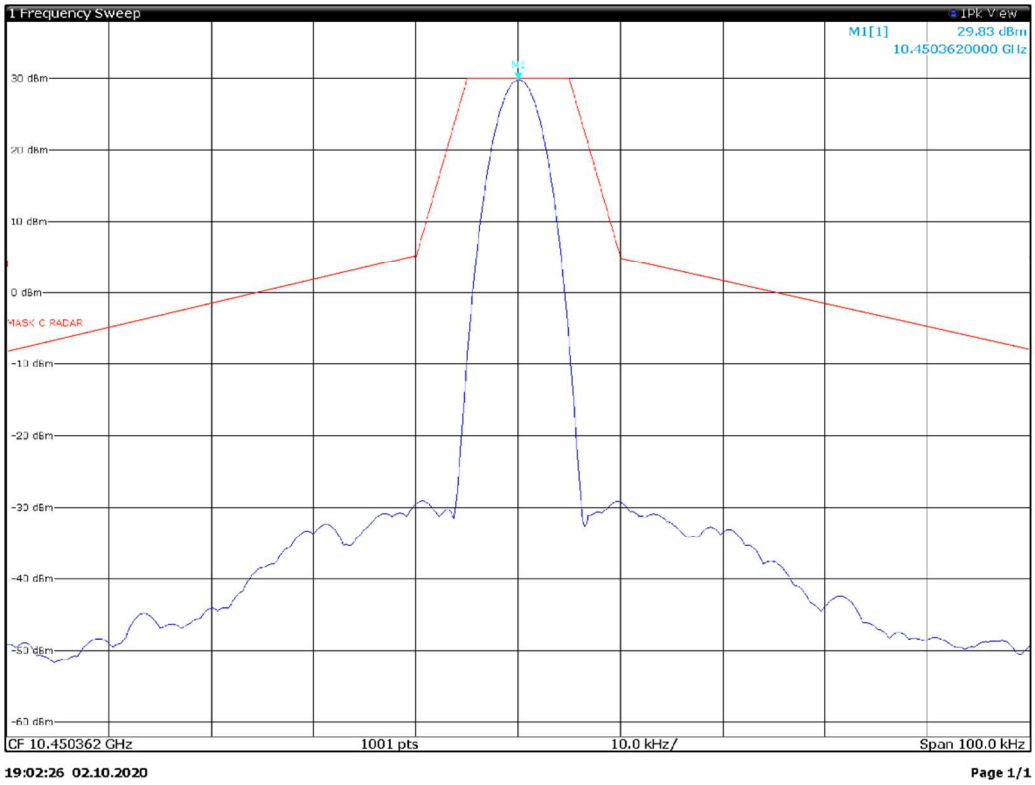
(3) On any frequency removed from the center of the authorized bandwidth by more than 250 percent of the authorized bandwidth: At least 43 + 10 log (P) dB.

- The spectrum was searched from 30 MHz to the 5th harmonic of the highest fundamental frequency.
- All measurements were performed at a distance of 3 m (30 MHz to 55 GHz)
- All measurements were performed:
  - within 30–1000 MHz range: using a quasi-peak detector with 120 kHz/300 kHz RBW/VBW,
  - above 1 GHz: using peak detector with 1 MHz/3 MHz RBW/VBW for peak results and using average detector with 1 MHz/10 Hz RBW/VBW for average results
    - Only the worst data presented in the test report.

Test date: From 2020-05-25 to 2020-06-04
Test results: Pass

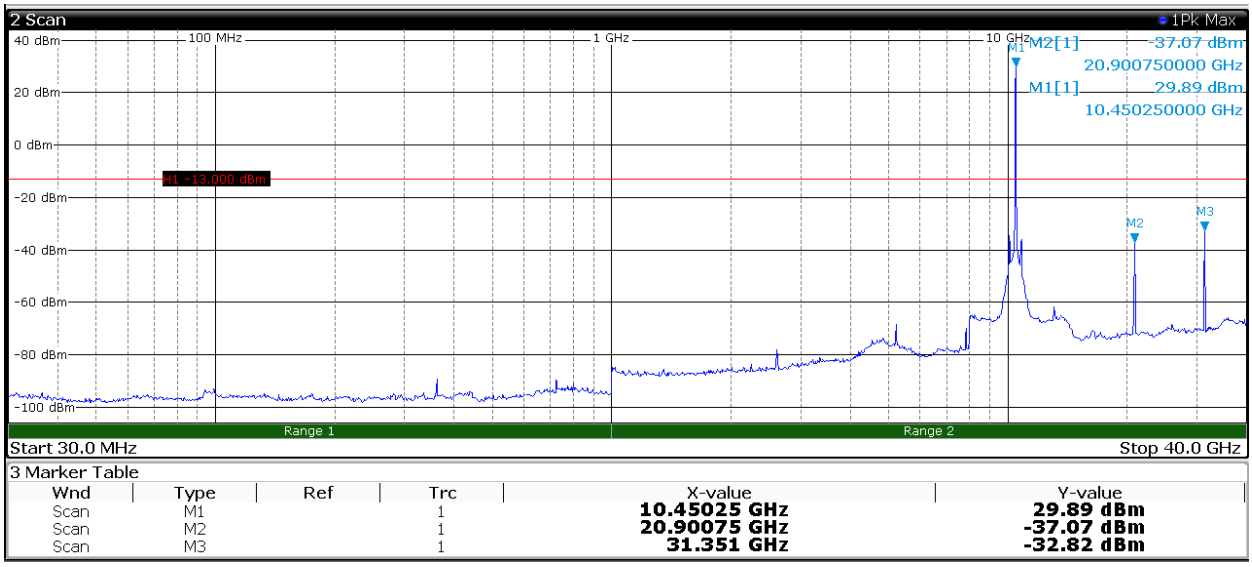
Test data

Emission mask C



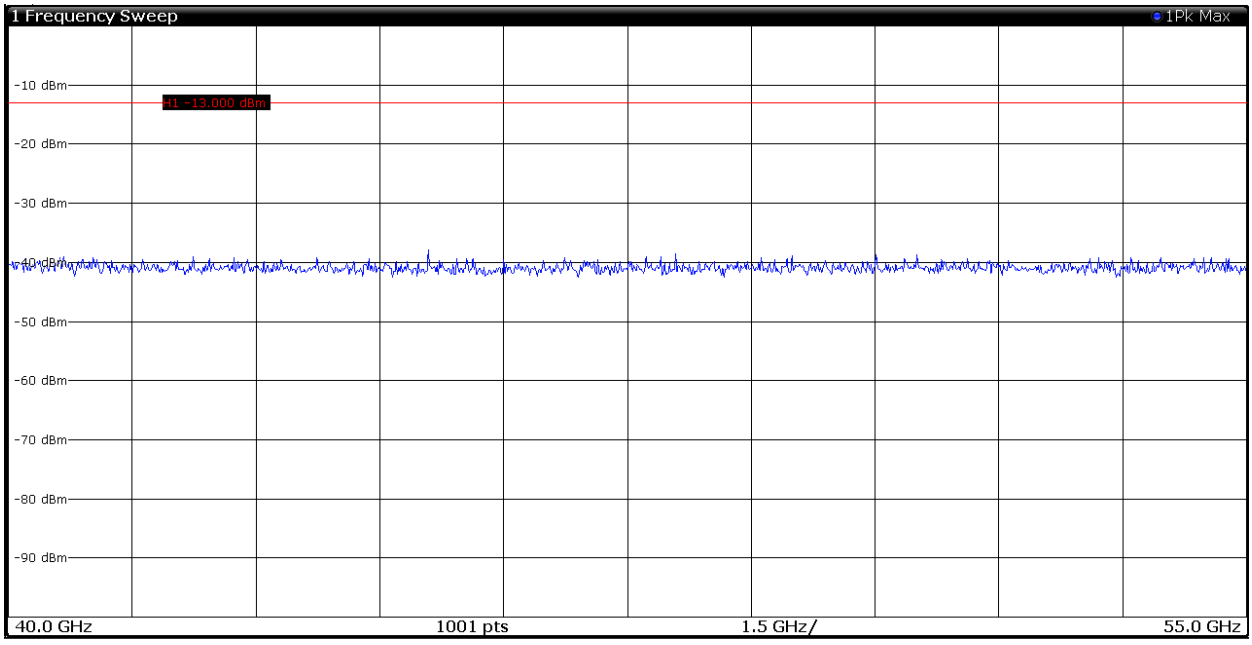
Test data

Spurious conducted emissions from 30 MHz to 55 GHz



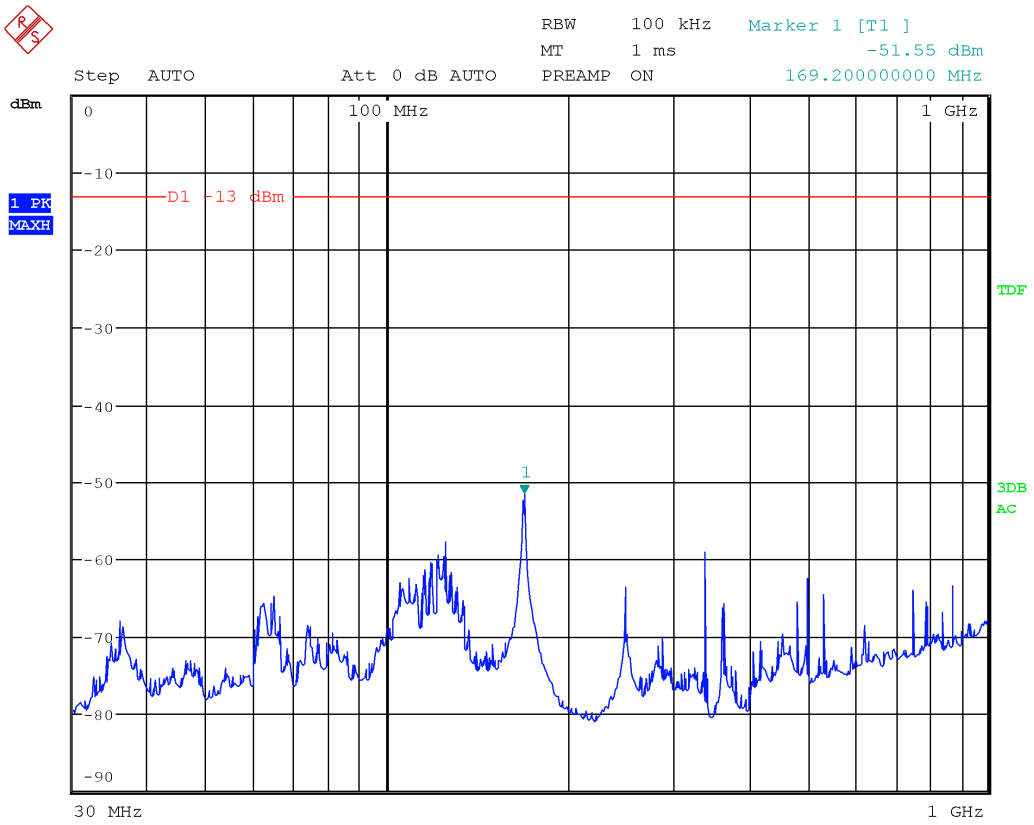
3 Marker Table

Wnd	Type	Ref	Trc	X-value	Y-value
Scan	M1		1	**10.45025 GHz**	**29.89 dBm**
Scan	M2		1	**20.90075 GHz**	**-37.07 dBm**
Scan	M3		1	**31.351 GHz**	**-32.82 dBm**

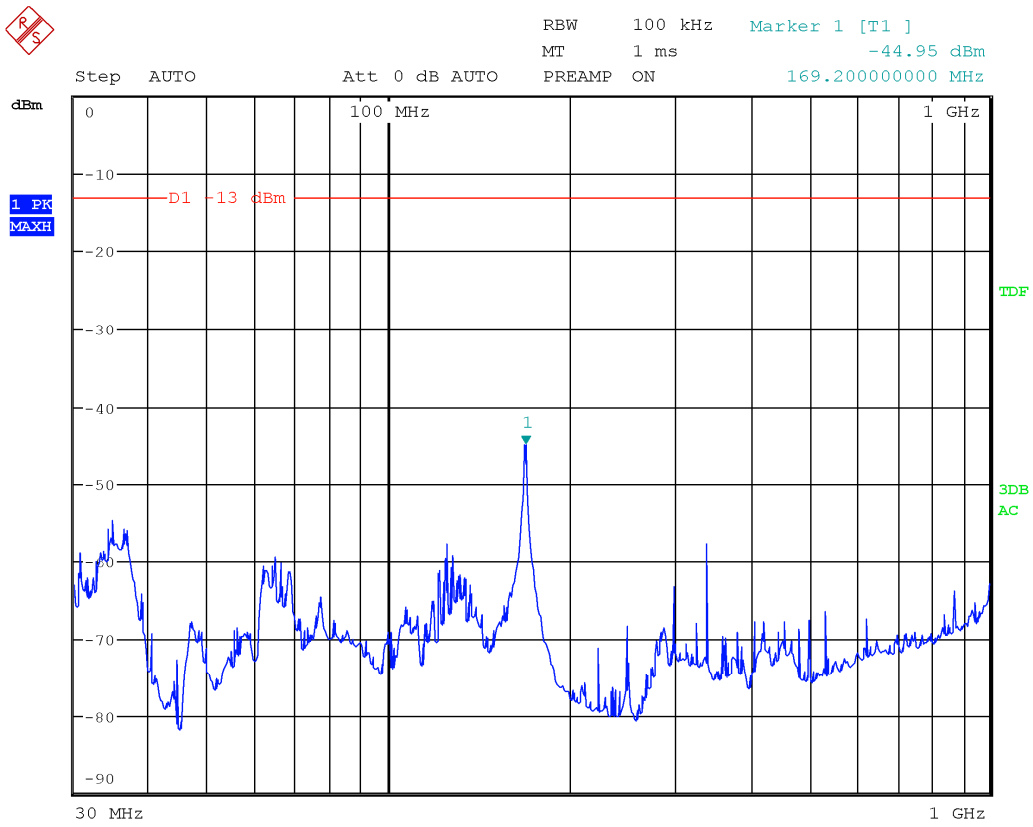


Test data

Spurious radiated emissions from 30 MHz to 1 GHz

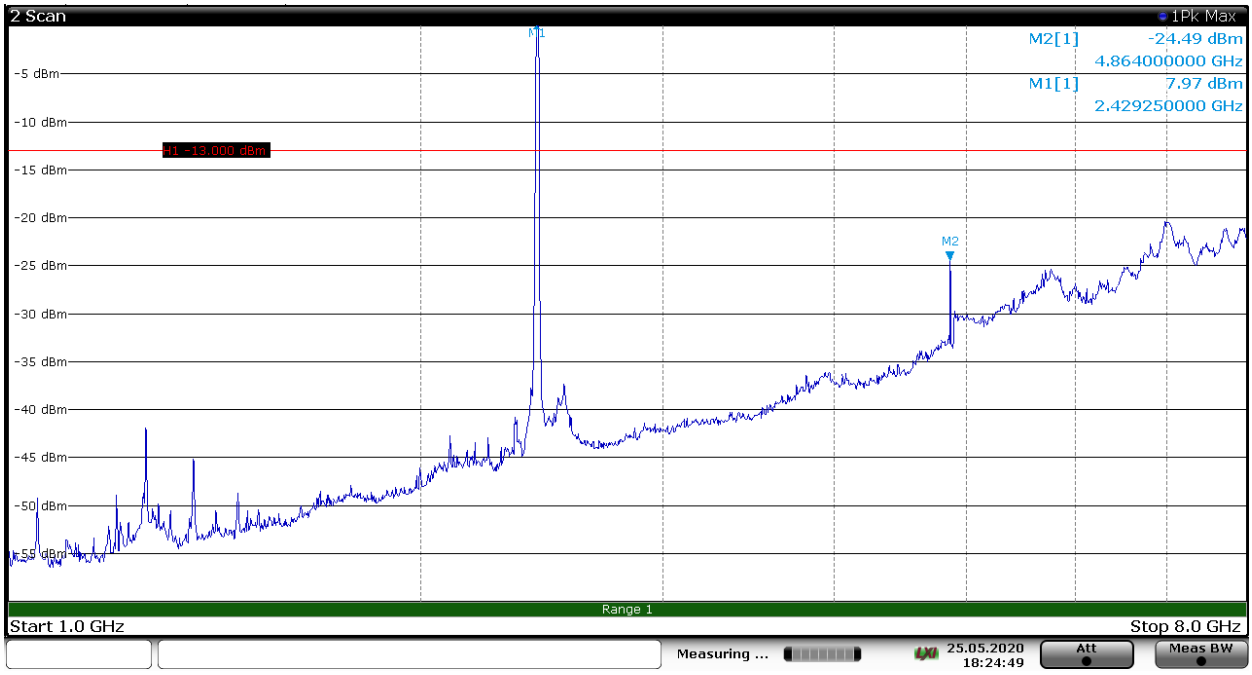


Horizontal polarization



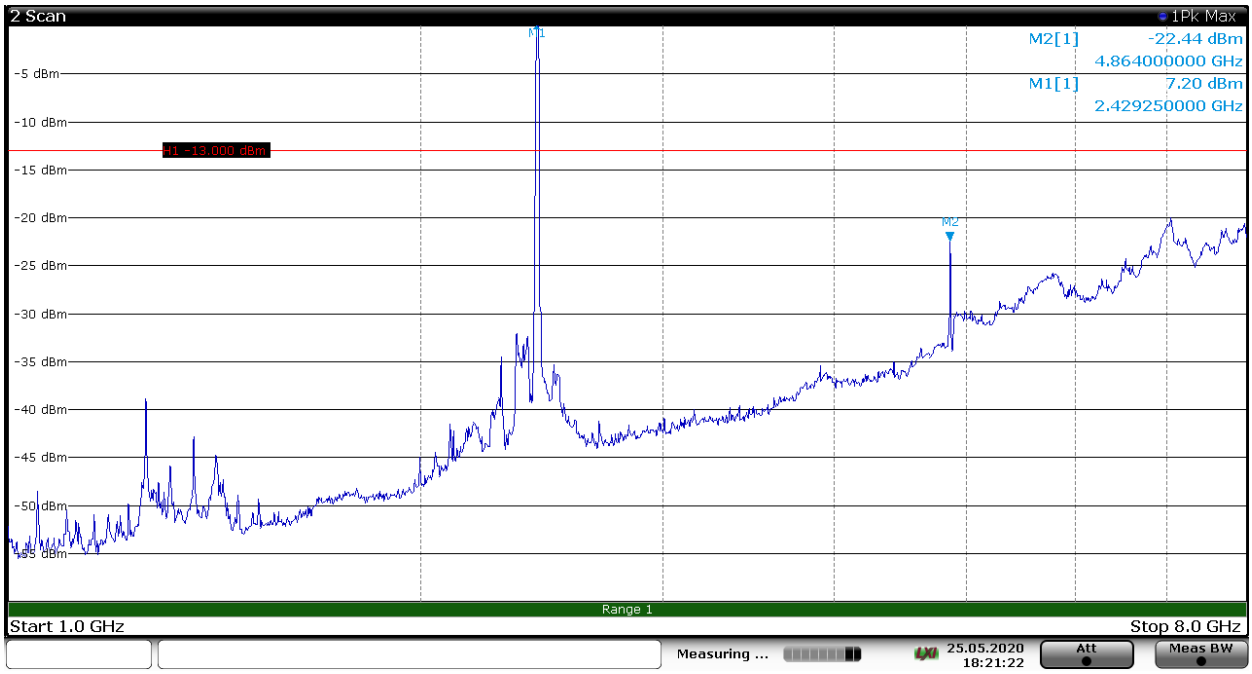
Vertical polarization

Spurious radiated emissions from 1 MHz to 8 GHz



18:24:49 25.05.2020 **Page 0/0**

Horizontal polarization

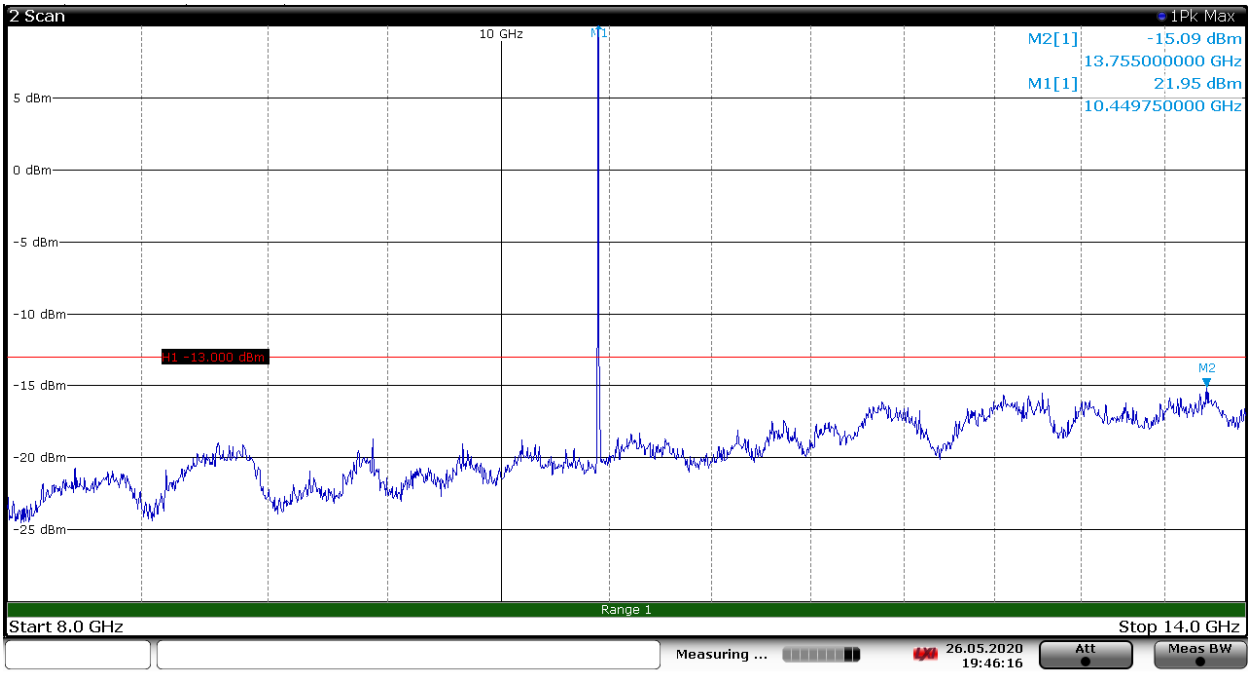


18:21:22 25.05.2020 **Page 0/0**

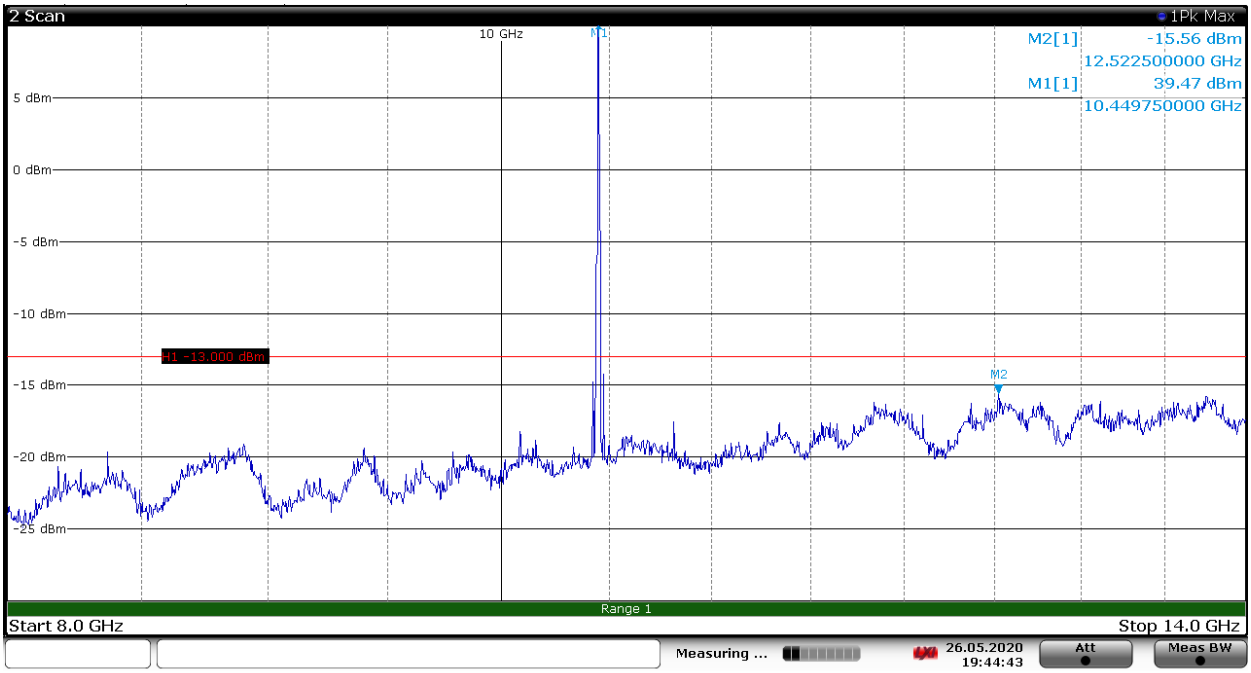
Vertical polarization

Note: Limit exceeded by WiFi carrier (§3.9)

Spurious radiated emissions from 8 GHz to 14 GHz



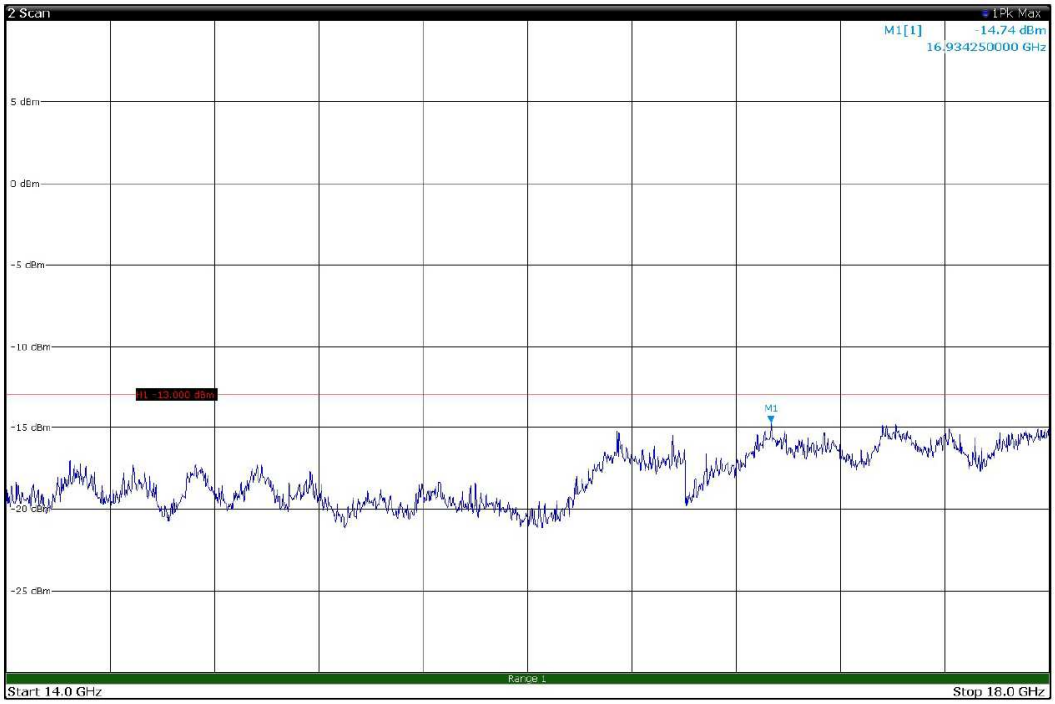
Horizontal polarization



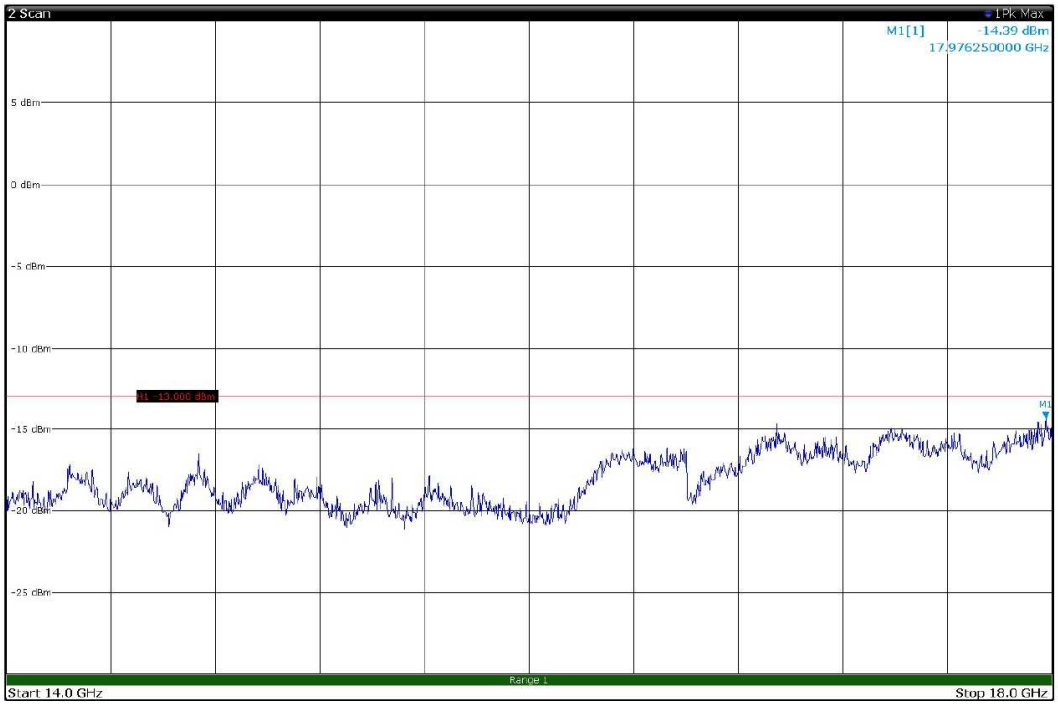
Vertical polarization

Note: Limit exceeded by radar carrier

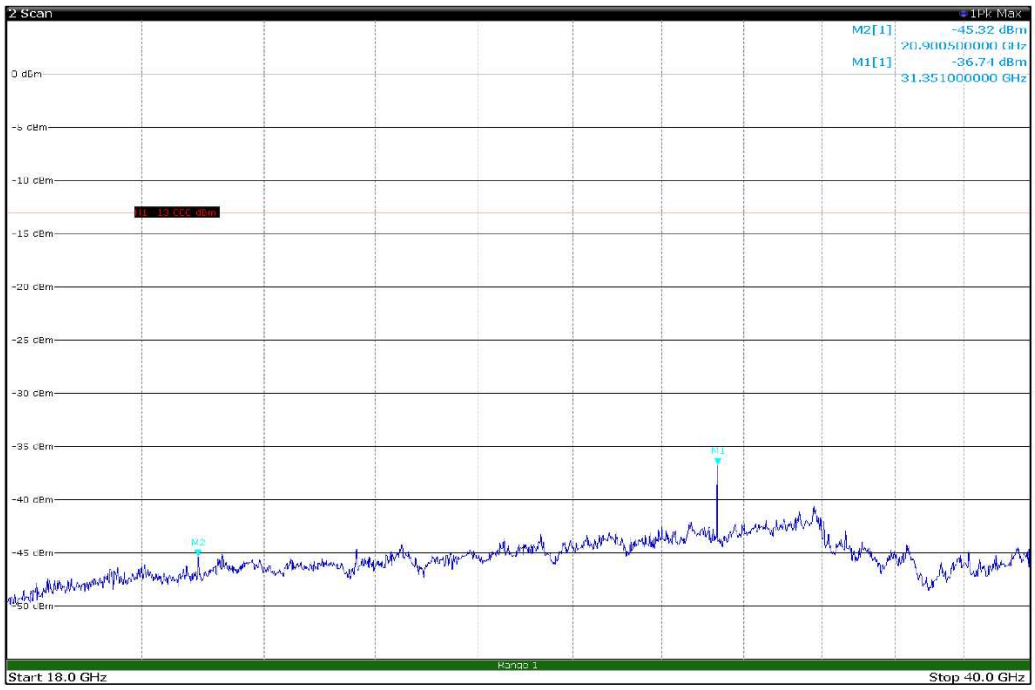
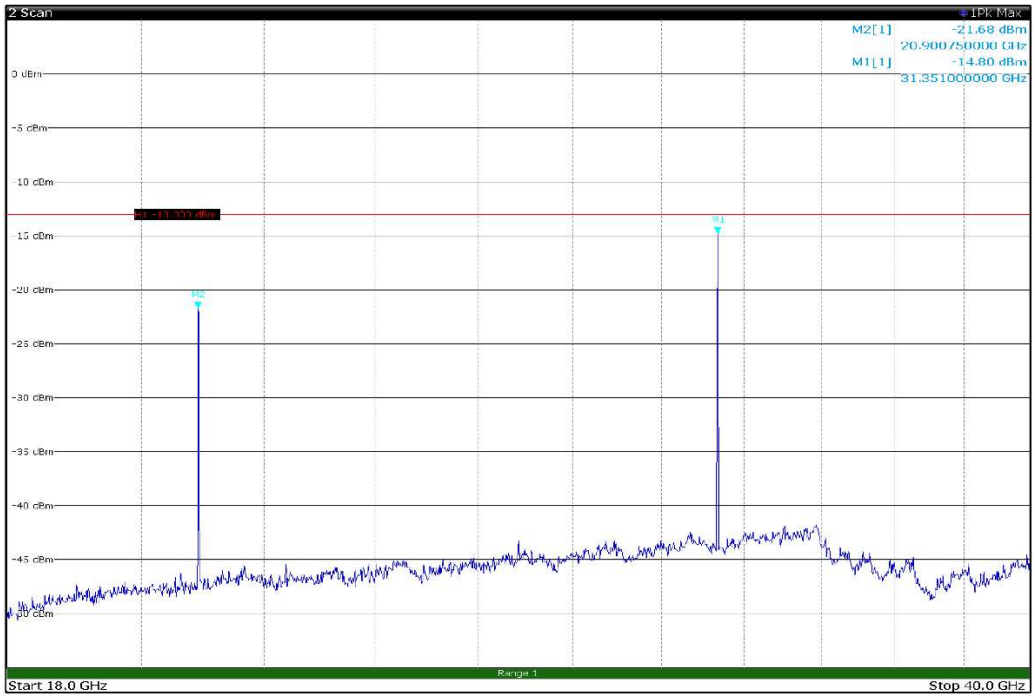
Spurious radiated emissions from 14 GHz to 18 GHz



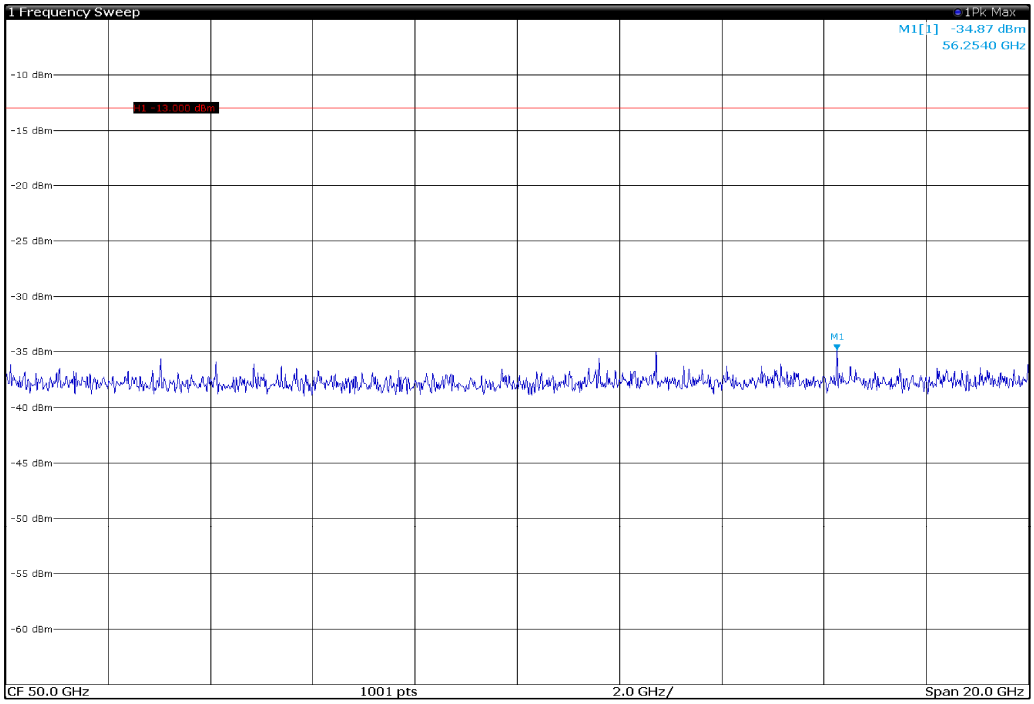
Horizontal polarization



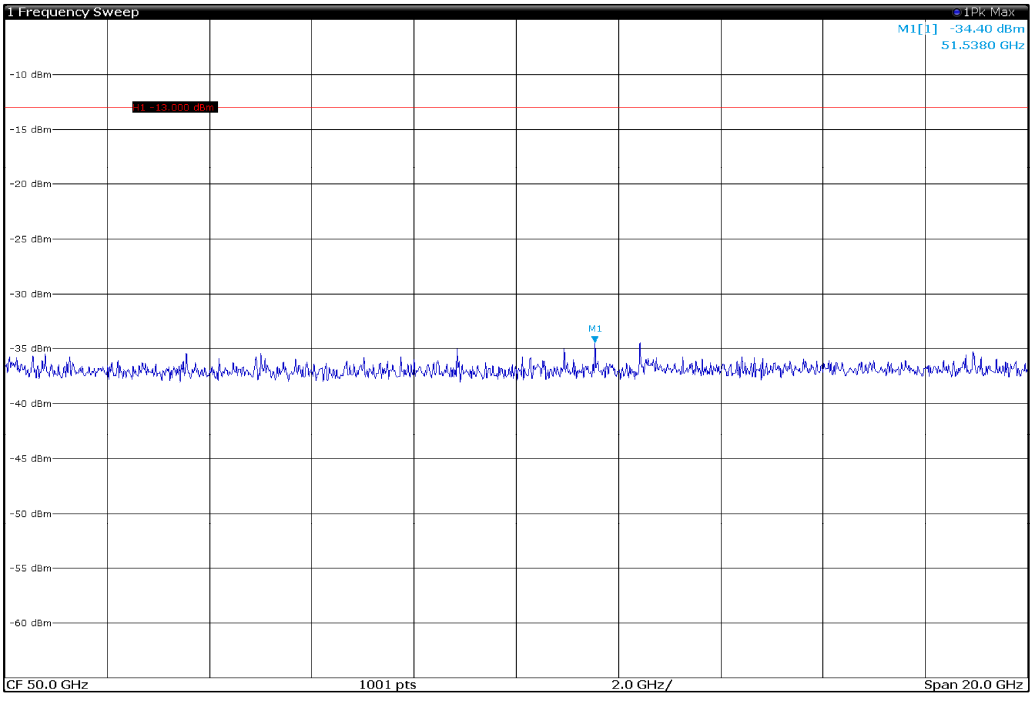
Vertical polarization

Spurious radiated emissions from 18 GHz to 40 GHz

Horizontal polarization

Vertical polarization

Spurious radiated emissions from 40 GHz to 55 GHz



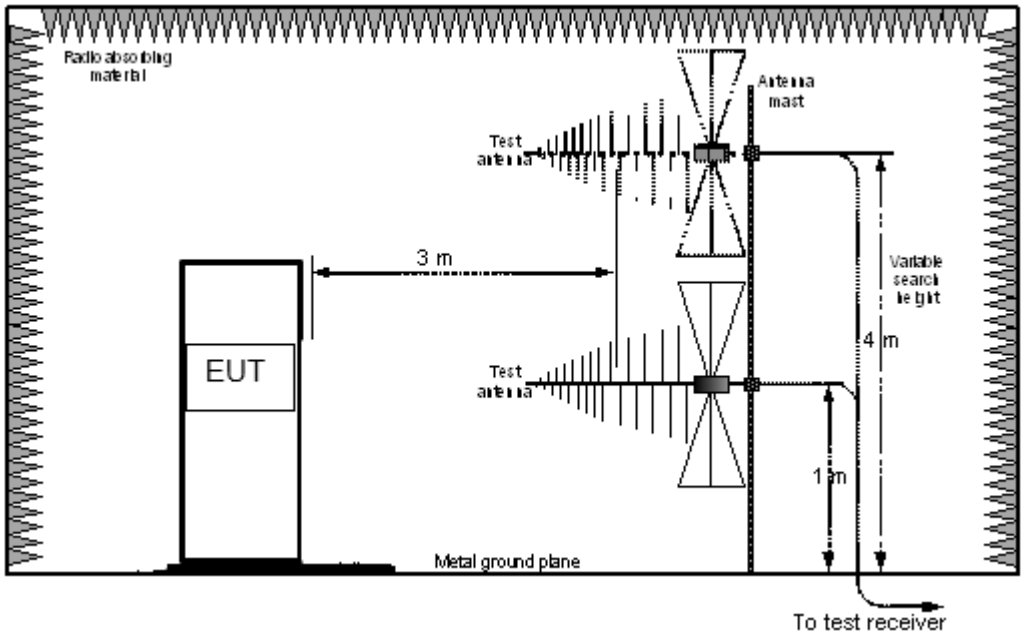
Horizontal polarization



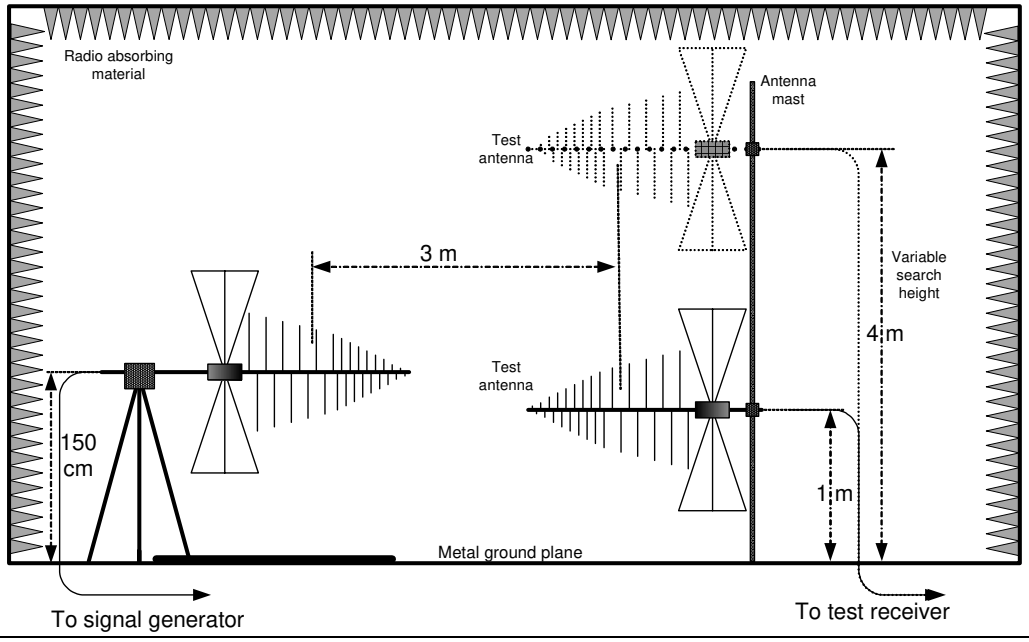
Vertical polarization

Appendix A: Block diagrams of test set-ups

Radiated emissions set-up

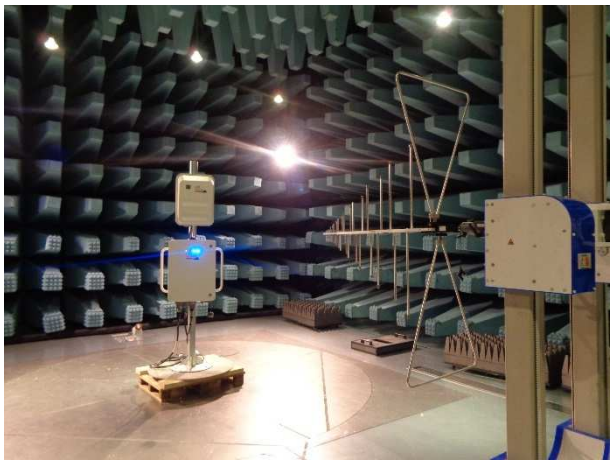


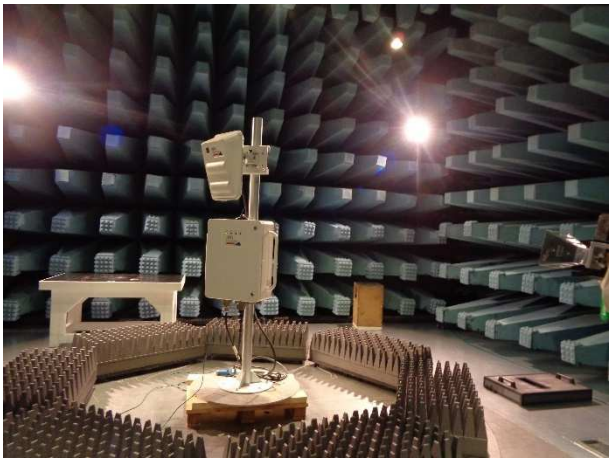
Substitution method set-up



Appendix B: Photos

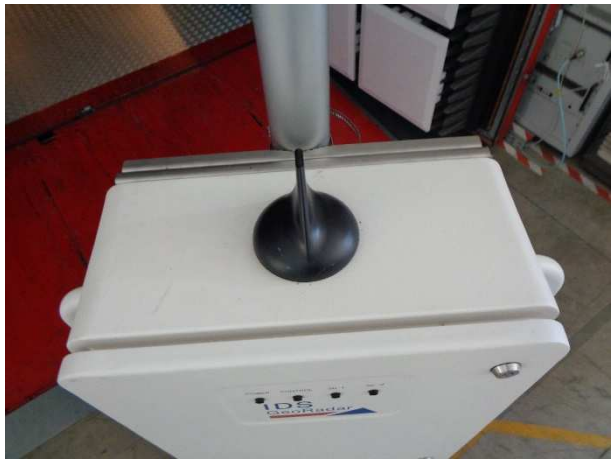
Set-up photos

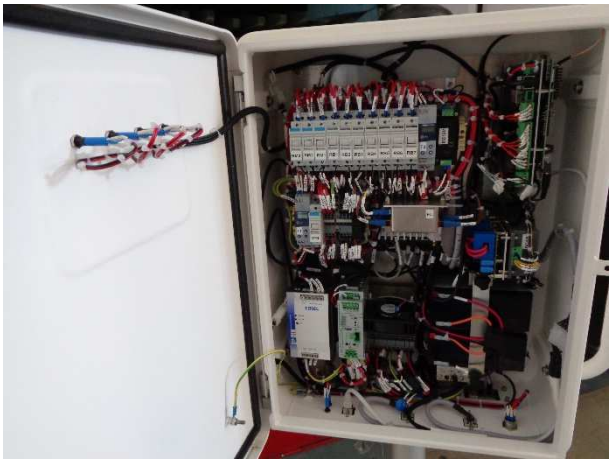




EUT photos


IDS
GeoRadar






NETWORK
ALARM 1
ALARM 2

End of report