

Verification Test Report

21-1-0103301T08a



Deutsche
Akkreditierungsstelle
D-PL-12047-01-01
D-PL-12047-01-03
D-PL-12047-01-04

Number of pages:	18	Date of Report:	2021-Dec-13
Testing company:	CETECOM GmbH Im Teelbruch 116 45219 Essen Germany Tel. + 49 (0) 20 54 / 95 19-0 Fax: + 49 (0) 20 54 / 95 19-150	Applicant:	Leica Geosystems AG
Product:	UAV 3D measurement device		
Model:	BLK2FLY		
FCC ID:	RFD-BLK2FLY	IC:	3177A-BLK2FLY
Testing has been carried out in accordance with:	Title 47 CFR, Chapter I FCC Regulations, Subchapter B Part 22 Subpart H, Part 24 Subpart E, Part 27 Subpart C RSS-132, Issue 3; RSS-133, Issue 6; RSS-130, Issue 2, RSS-139, Issue 3 Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".		
Tested Technology:	UTRA FDD (W-CDMA)		
Test Results:	<input checked="" type="checkbox"/> The EUT complies with the requirements in respect of selected parameters subject to the test. The test results relate only to devices specified in this document		
Signatures:	<div style="display: flex; justify-content: space-between;"><div style="width: 45%;"><p>Dipl.-Ing. Ninovic Perez Test Lab Manager Authorization of test report</p></div><div style="width: 45%; text-align: right;"><p>M.Sc. Patrick Marzotko Test manager Responsible of test report</p></div></div>		

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1 General information

1.1 Disclaimer and Notes

The test results of this test report relate exclusively to the test item specified in this test report as specified in chapter 2.7. CETECOM does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.

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Also we refer on special conditions which the applicant should fulfill according §2.927 to §2.948, special focus regarding modification of the equipment and availability of sample equipment for market surveillance tests.

1.2 Attestation

I declare that all measurements were performed by me or under my supervision and that all measurements have been performed and are correct to my best knowledge and belief to Industry Canada standards. All of the above requirements are met in accordance with enumerated standards.

1.3 Summary of Test Results

Test case in W-CDMA2	Reference Clause FCC	Reference Clause ISED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	--	*1)	NP
Conducted RF output power	§2.1046(a)	RSS-133:4.1/6.4 + SRSP-510:5.1.2	--	*1)	NP
Radiated RF output power	§24.232(c), §2.1046(a)	RSS-133:6.4 + SRSP-510:5.1.2	--	*1)	NP
Occupied Channel Bandwidth 99%	§24.238(b), §2.1049(h)	RSS-Gen, Issue 5:§6.6	--	*1)	NP
26dB Emission bandwidth	§24.238(b), §2.1049(h)	RSS-Gen, Issue 5:§6.6	--	*1)	NP
Radiated Band Edge	§24.238(a)(b), §2.1053(a), §2.1057(a)	RSS-133, Issue 6: §6.5.1(i)(ii)	14	--	PASSED
Conducted RF Band Edge	§24.238(a)(b), §2.1051	RSS-133, Issue 6: §6.5.1(i)(ii)	--	*1)	NP
Peak to Average ratio (PAPR)	§2.1046(a)	RSS-133:4.1/6.4 + SRSP-510:5.1.2	--	*1)	NP
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	--	*1)	NP
Spurious emissions at antenna terminals	§24.238(a)(b), §2.1051	RSS-133, Issue 6: §6.5.1(i)(ii)	--	*1)	NP
Radiated spurious emissions	§24.238(a)(b), §2.1053(a)	RSS-133, Issue 6: §6.5.1(i)(ii)	12	--	PASSED
Frequency stability, temperature variation	§24.235, §2.1055(a)(1)	RSS-133: 6.3	--	*1)	NP
Frequency stability, voltage variation	§15.207(a)	RSS-Gen, Issue 5:§8.8	--	*1)	NP
Test case in W-CDMA4	Reference Clause FCC	Reference Clause ISED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	--	*1)	NP
Conducted RF output power	§27.50(d)(4), §2.1046	RSS-139, Issue 3:§6.5	--	*1)	NP
Radiated RF output power	§27.50(d)(4), §2.1046(a)	RSS-139, Issue 3: 6.5 + SRSP-513	--	*1)	NP
Occupied Channel Bandwidth 99%	§27.53(h)(3), §2.202(a)	RSS-Gen, Issue 5:§6.6	--	*1)	NP
26dB Emission bandwidth	§27.53(h)(3), §2.202(a)	RSS-Gen, Issue 5:§6.6	--	*1)	NP
Radiated Band Edge	§27.53(h), §2.1053(a) §2.1057(a)	RSS-139, Issue 3: 6.6 (i)(ii)	14	--	PASSED
Conducted RF Band Edge	§27.53(h), §2.1051	RSS-139, Issue 3: §6.6 (i)(ii)	--	*1)	NP
Peak to Average ratio (PAPR)	§27.50(d)(4), §2.1046	RSS-139, Issue 3:§6.5	--	*1)	NP
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	--	*1)	NP
Spurious emissions at antenna terminals	§27.53(h), §2.1051	RSS-139, Issue 3: §6.6 (i)(ii)	--	*1)	NP
Radiated spurious emissions	§27.53(h), §2.1053(a)	RSS-139, Issue 3: §6.6 (i)(ii)	12	--	PASSED
Frequency stability, temperature variation	§27.54, §2.1055(a)(1)	RSS-139, Issue 3:§6.4	--	*1)	NP
Frequency stability, voltage variation	§15.207(a)	RSS-Gen, Issue 5:§8.8	--	*1)	NP

Test case in W-CDMA5	Reference Clause FCC	Reference Clause ISED	Page	Remark	Result
AC-Power Lines Conducted Emissions	§15.207(a)	RSS-Gen, Issue 5:§8.8	--	*1)	NP
Conducted RF output power	§22.913(a)(5), §2.1046	RSS-132:5.4 + SRSP 503:5.1.3	--	*1)	NP
Radiated RF output power	§22.913, §2.1046(a)	RSS-132: 5.4 + SRSP 503:5.1.3	--	*1)	NP
Occupied Channel Bandwidth 99%	§22.917(b), §2.1049(h)	RSS-Gen, Issue 5:§6.6	--	*1)	NP
26dB Emission bandwidth	§22.917(b), §2.1049(h)	RSS-Gen, Issue 5:§6.6	--	*1)	NP
Radiated Band Edge	§22.917(a)(b), §2.1053(a), §2.1057(a)	RSS-132, Issue 3: §5.5(i)(ii)	14	--	PASSED
Conducted RF Band Edge	§22.917(a)(b), §2.1051	RSS-132, Issue 3: §5.5(i)(ii)	--	*1)	NP
Peak to Average ratio (PAPR)	§22.913(a)(5), §2.1046	RSS-132:5.4 + SRSP 503:5.1.3	--	*1)	NP
Radiated field strength emissions below 30 MHz	§15.205, §15.209	RSS-Gen: Issue 5: §8.9 Table 6	--	*1)	NP
Spurious emissions at antenna terminals	§22.917(a)(b), §2.1051	RSS-132, Issue 3: §5.5(i)(ii)	--	*1)	NP
Radiated spurious emissions	§22.917(a)(b), §2.1053(a)	RSS-132, Issue 3: §5.5(i)(ii)	12	--	PASSED
Frequency stability, temperature variation	§22.355, §2.1055(a)(1)	RSS-132: 5.3	--	*1)	NP
Frequency stability, voltage variation	§22.355, §2.1055(a)(1)	RSS-132: 5.3	--	*1)	NP

PASSED

The EUT complies with the essential requirements in the standard.

FAILED

The EUT does not comply with the essential requirements in the standard.

NP

The test was not performed by the CETECOM Laboratory.

*1) Please refer to modular test report "FG791919A Rev. 01" dated 2017-10-12 with FCC ID N7NEM75L

*The calculation of the measurement uncertainty shows compliance with the "maximum measurement uncertainties" of the tested standard and therefore for result evaluation the stated uncertainties will not be additionally added to the measured results.

1.4 Summary of Test Methods

Test case	Test method
AC-Power Lines Conducted Emissions	ANSI C63.4-2014, §7, ANSI C63.10-2013 § 6.2
Conducted RF output power	ANSI C63.26:2015, §5.2, KDB 971168 D01 v03r01
Radiated RF output power	ANSI C63.26:2015, §5.2.7, KDB 971168 D01 v03r01
Occupied Channel Bandwidth 99%	ANSI C63.26:2015, §5.4.4, KDB 971168 D01 v03r01
26dB Emission bandwidth	ANSI C63.26:2015, §5.4.3, KDB 971168 D01 v03r01
Modulation characteristics	ANSI C63.26:2015, §5.3
Radiated Band Edge	ANSI C63.26:2015, §5.5, KDB 971168 D01 v03r01
Conducted RF Band Edge	ANSI C63.26:2015, §5.7, KDB 971168 D01 v03r01
Peak to Average ratio (PAPR)	ANSI C63.26:2015, §5.2.6 Result calculated with measured conducted RF-power value and stated/measured antenna gain for band of interest
Radiated field strength emissions below 30 MHz	ANSI C63.4-2014 §5.3, §8.2.1, §8.3.1.1+§8.3.2.1
Spurious emissions at antenna terminals	ANSI C63.26:2015, §5.7, KDB 971168 D01 v03r01
Radiated spurious emissions	ANSI C63.26:2015, §5.5, KDB 971168 D01 v03r01, ANSI C63.26.1:2018
Frequency stability, temperature variation	ANSI C63.26:2015, §5.6, KDB 971168 D01 v03r01
Frequency stability, voltage variation	ANSI C63.26:2015, §5.6, KDB 971168 D01 v03r01

2 Administrative Data

2.1 Identification of the Testing Laboratory

Company name:	CETECOM GmbH
Address:	Im Teelbruch 116 45219 Essen - Kettwig Germany
Responsible for testing laboratory:	Dipl.-Ing. Ninovic Perez
Accreditation scope:	DAkkS Webpage: FCC ISED
IC Lab company No. / CAB ID:	3462D / DE0005
Test location:	CETECOM GmbH; Im Teelbruch 116; 45219 Essen - Kettwig

2.2 General limits for environmental conditions

Temperature:	22±2 °C
Relative. humidity:	45±15% rH

2.3 Test Laboratories sub-contracted

Company name:	--
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2.4 Organizational Items

Responsible test manager:	M.Sc. Patrick Marzotko
Receipt of EUT:	2021-Aug-20
Date(s) of test:	2021-Sep-01 – 2021-Sep-02
Version of template:	21.1101

2.5 Applicant's details

Applicant's name:	Leica Geosystems AG
Address:	Heinrich-Wild-Straße 9435 Heerbrugg Switzerland
Contact Person:	Paul Hämmerle
Contact Person's Email:	paul.haemmerle@leica-geosystems.com

2.6 Manufacturer's details

Manufacturer's name:	Leica Geosystems AG
Address:	Heinrich-Wild-Straße 9435 Heerbrugg Schweiz

2.7 EUT: Type, S/N etc. and short descriptions used in this test report

Short description*)	PMT Sample No.	Product	Model	Type	S/N	HW status	SW status
EUT 01	21-1-01033S04_C01	UAV 3D measurement device	BLK2FLY	n/a	000133	Rev. D	00.13.0

*) EUT short description is used to simplify the identification of the EUT in this test report.

2.8 Auxiliary Equipment (AE): Type, S/N etc. and short descriptions

Short description*)	PMT Sample No.	Auxiliary Equipment	Type	S/N	HW status	SW status
AE 01	21-1-01033S05_C01	Battery Pack	U80619R01	000012	N/A	N/A

*) AE short description is used to simplify the identification of the auxiliary equipment in this test report.

2.9 Connected cables

Short description*)	PMT Sample No.	Cable type	Connectors	Length
-	-	-	-	-

*) CAB short description is used to simplify the identification of the connected cables in this test report.

2.10 Software

Short description*)	PMT Sample No.	Software	Type	S/N	HW status	SW status
-	-	-	-	-	-	-

*) SW short description is used to simplify the identification of the used software in this test report.

2.11 EUT set-ups

set-up no.*)	Combination of EUT and AE	Description
1	EUT 01 + AE 01	Used for Radiated measurements

*) EUT set-up no. is used to simplify the identification of the EUT set-up in this test report.

2.12 EUT operation modes

EUT operating mode no.*)	Operating modes	Additional information
Operating mode 1	W-CDMA FDD II TX	UE allocated channel 9262 (fc = 1852.4 MHz)
Operating mode 2	W-CDMA FDD IV TX	UE allocated channel 1413 (fc = 1732.6 MHz)
Operating mode 3	W-CDMA FDD V TX	UE allocated channel 4233 (fc = 846.6 MHz)

*) EUT operating mode no. is used to simplify the test report.

3 Equipment under test (EUT)

3.1 General Data of Main EUT as Declared by Applicant

Product name	BLK2FLY	
Kind of product	UAV 3D measurement device	
Firmware	<input type="checkbox"/> for normal use	<input type="checkbox"/> Special version for test execution
	<input type="checkbox"/> AC Mains	-
	<input type="checkbox"/> DC Mains	-
	<input checked="" type="checkbox"/> Battery (Internal 14.8 V)	Lithium Ion Battery
EUT sample type	Pre-Production	
Weight	2.6 kg	
Size [LxWxH]	60 x 60 cm	
Interfaces/Ports	USB C	
For further details refer Applicants Declaration & following technical documents		
	➤ IXIT_RADIO_MOCO_ORD-2012-5545_20210722	
For further details regarding radio parameters, please refer to document ETSI TS 134 108		

3.2 Detailed Technical data of Main EUT as Declared by Applicant

TX Frequency range	<input checked="" type="checkbox"/> UMTS-FDD band 2	1850 - 1910 MHz (Uplink), 1930 - 1990 MHz (Downlink)
	<input checked="" type="checkbox"/> UMTS-FDD band 4	1710 - 1755 MHz (Uplink), 2110 - 2155 MHz (Downlink)
	<input checked="" type="checkbox"/> UMTS-FDD band 5	824 - 849 MHz (Uplink), 869 - 894 MHz (Downlink)
Number of channels	<input checked="" type="checkbox"/> UMTS-FDD band 2	UARFCN range 9262 - 9538
	<input checked="" type="checkbox"/> UMTS-FDD band 4	UARFCN range 1312 - 1513
	<input checked="" type="checkbox"/> UMTS-FDD band 5	UARFCN range 4132 - 4233
Type of modulation		
Emission designator	Nominal CBW	See initial certification of the module:
		FCC ID: N7NEM75S
Antenna Type	Dipole	
Antenna gain	Please check document "SZ17845_Technical_Data_Sheet_LTE_MAIN_09Dec2020"	
FCC label attached	No	
Test firmware / software and storage location	EUT 01	
For further details refer Applicants Declaration & following technical documents		
Description of Reference Document (supplied by applicant)	Version	Total Pages
IXIT_RADIO_MOCO_ORD-2012-5545_20210722	09	6

3.3 Worst case identification

UMTS mode	Channel
UMTS FDD II	9262
UMTS FDD IV	1413
UMTS FDD V	4233

3.4 Modifications on Test sample

Additions/deviations or exclusions	--
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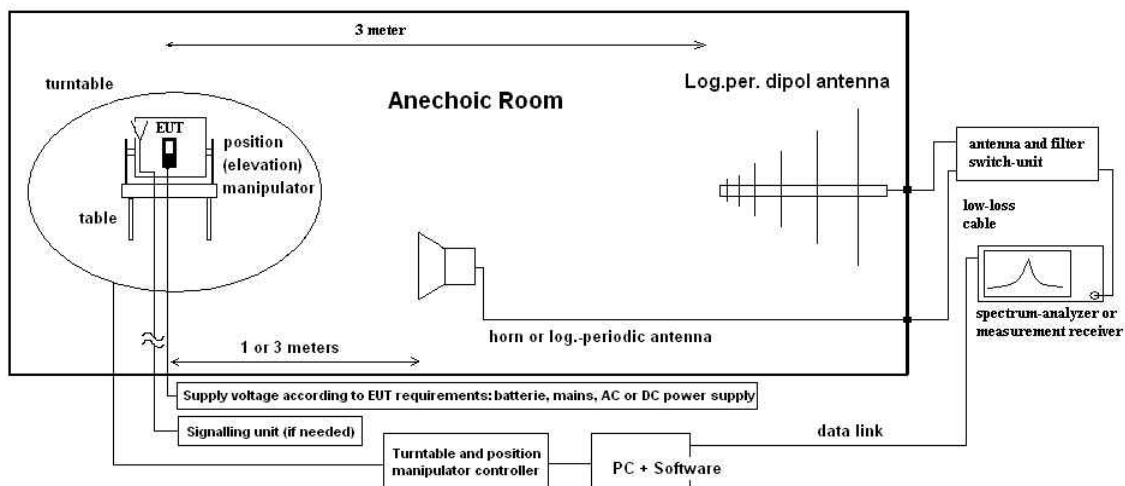
4 Measurements

4.1 Radiated spurious emissions

4.1.1 Description of the general test setup and methodology, see below example:

Evaluating the emissions have to be done first by an exploratory emissions measurement and a final measurement for most critical frequencies. The tests are performed in a CISPR 16-1-4:2010 compliant fully anechoic room (FAR) recognized by the regulatory commission. The measurement distance was set to 3 meter for frequencies up to 18 GHz and 2 meter above 18 GHz. A logarithmic periodic antenna is used for the frequency range 30 MHz to 1 GHz. Horn antennas are used for frequency range 1 GHz to 40 GHz. The EUT is aligned within 3 dB beam width of the measurement antenna with three orthogonal axis measurements on the EUT.

Schematic:



Testing method:

The measurement is made according to relevant reference clauses:
(See Tables *Summary of Test Results* and *Summary of Test Methods* on page 5)

Exploratory, preliminary measurements

The EUT and its associated accessories are placed on a non-conductive position manipulator (tipping device) of 1.50 m height which is placed on the turntable. By rotating the turntable (range 0° to 360°, step 45°) and the EUT itself on 3-orthogonal axis (the emission spectrum and its characteristics was recorded with an EMI-receiver, broadband antenna and software).

The measurements are performed in horizontal and vertical polarization of the measurement antennas. The results are documented in a diagram. Critical frequencies (low margin to limit) are saved within a table for further investigations. If various operating modes are supported, further investigations are made to find the worst-case of them. Also the interconnection cables and equipment position were varied in order to maximize the emissions.

Final measurement on critical frequencies

Based on the exploratory measurements, the most critical frequencies are re-measured by main-taining the EUT's worst-case operation mode, cable position, etc.

First a frequency zoom around the critical frequency is done to locate the frequency more precisely. After this step, for all identified critical frequencies, the maximum peak was determined.

Following parameters were varied: the turntable angle continuously in the range 0 to 360 degree, the EUT itself over 3-orthogonal axis and the height for EUT with large dimensions.

On the determined worst-case position, a final measurement with necessary bandwidth and detector according standard has been carried out.

The readings on the spectrum analyzer are corrected with conversion value between field strength and E(I)RP, so the readings shown are equivalent to ERP/EIRP values. Critical measurements near the limit are re-measured with a substitution method accord. ANSI/TIA/EIA 603 C/D

Formula:

$$P_{EIRP} = P_{MEAS} + C_L + FSL - G_{PreA} - G_{ANT} \quad (1)$$

P_{MEAS} = measured power at instrument

M = Margin

L_T = Limit

FSL = Free Space loss = Function(frequency, measurement distance)

$$M = L_T - P_{EIRP}$$

C_L = cable loss

G_{PreA} = Gain of pre-amplifier (if used)

G_{ANT} = Gain of antenna in [dBi]

All units are dB-units, positive margin means value is below limit.

4.1.2 Measurement Location

Test site	120904 - FAC1 - Radiated Emissions
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4.1.3 Limit

Frequency Range [MHz]	Limit [dBm]	Detector [MaxHold]	RBW / VBW [MHz]
30 - 8500	-13	Peak	1 / 3
30 - 17500	-13	Peak	1 / 3
30 - 19100	-13	Peak	1 / 3

4.1.4 Result

Diagram	Band	Mode	30 MHz to 1000 MHz	1 GHz to 2.8 GHz	2.8 to 5 th Harmonics	Stop Freq [MHz]	Result
8.02	2	UMTS_FDD_Band_II_CH_9262	--	--	No peaks found	9500	Passed
8.04	4	UMTS_FDD_Band_IV_CH_1413	--	--	No peaks found	9000	Passed
8.05	5	UMTS_FDD_Band_V_CH_4233	--	--	No peaks found	4500	Passed

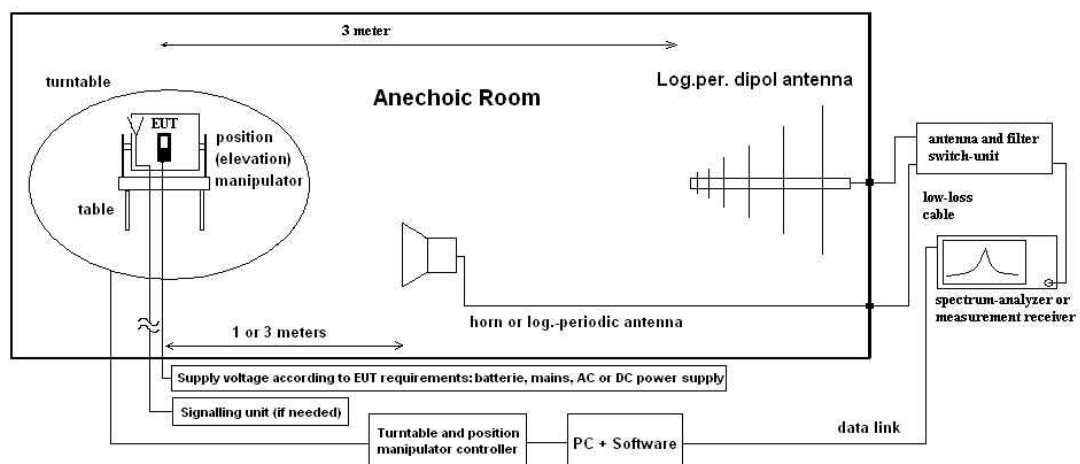
Remark: for more information and graphical plot see annex A1 **CETECOM_TR21-1-0103301T08a-A1**

4.2 Radiated Band Edge

4.2.1 Description of the general test setup and methodology, see below example:

Evaluating the emissions have to be done first by an exploratory emissions measurement and a final measurement for most critical frequencies. The tests are performed in a CISPR 16-1-4:2010 compliant fully anechoic room (FAR) recognized by the regulatory commission. The measurement distance was set to 3 meter for frequencies up to 18 GHz and 2 meter above 18 GHz. A logarithmic periodic antenna is used for the frequency range 30 MHz to 1 GHz. Horn antennas are used for frequency range 1 GHz to 40 GHz. The EUT is aligned within 3 dB beam width of the measurement antenna with three orthogonal axis measurements on the EUT

Schematic:



Testing method:

The measurement is made according to relevant reference clauses:
(See Tables *Summary of Test Results* and *Summary of Test Methods* on page 5)

See chapter Radiated Spurious Emission for Test method.

4.2.2 Measurement Location

Test site	120904 - FAC1 - Radiated Emissions
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4.2.3 Limit

Frequency Range [MHz]	Limit [dBm]	Detector [MaxHold]	RBW / VBW [kHz]
Below 824 and above 849	-13	Peak	3 / 3
Below 1710 and above 1755	-13	Peak	3 / 3
Below 1850 and above 1910	-13	Peak	3 / 3

4.2.4 Result

Diagram	Band	Mode	Edge [Low / High]	Value [dBm]	Result
9.201	2	UMTS_FDD_Band_II_CH_9262	Low	-27.58	Passed
9.202	2	UMTS_FDD_Band_II_CH_9538	High	-29.47	Passed
9.401	4	UMTS_FDD_Band_IV_CH_1312	Low	-28.40	Passed
9.402	4	UMTS_FDD_Band_IV_CH_1513	High	-29.25	Passed
9.501	5	UMTS_FDD_Band_V_CH_4132	Low	-28.74	Passed
9.502	5	UMTS_FDD_Band_V_CH_4233	High	-30.17	Passed

Remark: for more information and graphical plot see annex A1 **CETECOM_TR21-1-0103301T08a-A1**

4.3 Results from external laboratory

None	-
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4.4 Opinions and interpretations

None	-
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4.5 List of abbreviations

None	-
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5 Equipment lists

ID	Description	Manufacturer	SerNo	CheckType	Last Check	Interval	Next Check
	120904 - FAC1 - Radiated Emissions			chk	chk: 06-11-2021	chk: 12M	chk: June 2022
20341	Digital Multimeter Fluke 112	Fluke Deutschland GmbH	81650455	cal	cal: 05-25-2020	cal: 24M	cal: May 2022
20489	EMI Test Receiver ESU40	Rohde & Schwarz Messgerätebau GmbH	100030	cal	cal: 05-19-2021	cal: 12M	cal: May 2022
20254	High Pass Filter 5HC 2600/12750-1.5KK	Trilithic	23042	chk	cal: 07-14-2014 chk: 06-11-2021	chk: 12M	chk: June 2022
20868	High Pass Filter AFH-07000	AtlanTecRF	16071300004	chk	chk: 06-11-2021	chk: 12M	chk: June 2022
20291	High Pass Filter WHJ 2200-4EE	Wainwright Instruments GmbH	14	chk	cal: 07-14-2014 chk: 06-11-2021	chk: 12M	chk: June 2022
20020	Horn Antenna 3115 (Subst 1)	EMCO Elektronik GmbH	9107-3699	calchk	cal: 08-17-2021 chk: 04-20-2013	cal: 36M chk: 12M	cal: August 2024
20302	Horn Antenna BBHA9170 (Meas 1)	Schwarzbeck Mess-Elektronik OHG	155	calchk	cal: 04-15-2020 chk: 04-15-2020	cal: 36M chk: 12M	
20549	Log. Per. Antenna HL025	Rohde & Schwarz Messgerätebau GmbH	1000060	calchk	cal: 08-18-2021	cal: 36M chk: 12M	cal: August 2024
20720	Measurement Software EMC32 [FAC]	Rohde & Schwarz Messgerätebau GmbH	V10.xx	cnn			
20512	Notch Filter WRCA 800/960-02/40-6EEK (GSM 850)	Wainwright Instruments GmbH	24	chk	cal: 07-14-2014 chk: 06-11-2021	chk: 12M	chk: June 2022
20290	Notch Filter WRCA 901,9/903,1SS	Wainwright Instruments GmbH	3RR	chk	cal: 07-14-2014 chk: 06-11-2021	chk: 12M	chk: June 2022
20122	Notch Filter WRCB 1747/1748	Wainwright Instruments GmbH	12	chk	cal: 07-14-2014 chk: 06-11-2021	chk: 12M	chk: June 2022

ID	Description	Manufacturer	SerNo	CheckType	Last Check	Interval	Next Check
20121	Notch Filter WRCB 1879,5/1880,5EE	Wainwright Instruments GmbH	15	chk	cal: 07-14-2014 chk: 06-11-2021	chk: 12M	chk: June 2022
20448	Notch Filter WRCT 1850.0/2170.0-5/40-10SSK	Wainwright Instruments GmbH	5	chk	cal: 07-14-2014 chk: 06-11-2021	chk: 12M	chk: June 2022
20066	Notch Filter WRCT 1900/2200-5/40-10EEK	Wainwright Instruments GmbH	5	chk	cal: 07-14-2007 chk: 06-11-2021	chk: 12M	chk: June 2022
20449	Notch Filter WRCT 824.0/894.0-5/40-8SSK	Wainwright Instruments GmbH	1	chk	cal: 07-14-2014 chk: 06-11-2021	chk: 12M	chk: June 2022
20611	Power Supply E3632A	Agilent Technologies Deutschland GmbH	KR 75305854	cpu			
20338	Pre-Amplifier 100MHz - 26GHz JS4-00102600-38-5P	Miteq Inc.	838697	chk	cal: 07-14-2014 chk: 06-11-2021	chk: 12M	chk: June 2022
20484	Pre-Amplifier 2,5GHz - 18GHz AMF-5D-02501800-25-10P	Miteq Inc.	1244554	chk	cal: 07-14-2014 chk: 06-11-2021	chk: 12M	chk: June 2022
20287	Pre-Amplifier 25MHz - 4GHz AMF-2D-100M4G-35-10P	Miteq Inc.	379418	chk	cal: 07-14-2014 chk: 06-11-2021	chk: 12M	chk: June 2022
20670	Radio Communication Tester CMU200	Rohde & Schwarz Messgerätebau GmbH	106833	cal	cal: 06-16-2020	cal: 24M	cal: June 2022
20690	Spectrum Analyzer FSU	Rohde & Schwarz Messgerätebau GmbH	100302/026	cal	cal: 05-20-2021	cal: 24M	cal: May 2023
20439	Ultrabroadband-Antenna HL562	Rohde & Schwarz Messgerätebau GmbH	100248	calchk	cal: 03-10-2017	cal: 72M chk: 12M	cal: March 2023

5.1 Legend

Note / remarks	Interval of calibration & Verification
12M	12 months
24M	24 months
36M	36 months
10Y	10 Years

Abbreviation Check Type	Description
cnn	Calibration and verification not necessary
cal	Calibration
calchk	Calibration plus intermediate Verification
chk	Verification
cpu	Verification before usage

6 Measurement Uncertainty valid for conducted/radiated measurements

The reported uncertainties are calculated based on the standard uncertainty multiplied with the appropriate coverage factor *k*, such that a confidence level of approximately 95% is achieved. For uncertainty determination, each component used in the concrete measurement set-up was taken in account and its contribution to the overall uncertainty according its statistical distribution calculated.

RF-Measurement	Reference	Frequency range	Calculated uncertainty based on a confidence level of 95%						Remarks
Conducted emissions (U _{CISPR})	-	9 kHz - 150 kHz	4.0 dB						-
		150 kHz - 30 MHz	3.6 dB						
Power Output radiated	-	30 MHz - 4 GHz	3.17 dB						Substitution method
Power Output conducted	-	Set-up No.	Cel-C1	Cel-C2	BT1	W1	W2	--	-
		9 kHz - 12.75 GHz	N/A	0.60	0.7	0.25	N/A	--	-
		12.75 GHz - 26.5 GHz	N/A	0.82	--	N/A	N/A	--	-
Conducted emissions on RF-port	-	9 kHz - 2.8 GHz	0.70	N/A	0.70	N/A	0.69	--	N/A - not applicable
		2.8 GHz - 12.75 GHz	1.48	N/A	1.51	N/A	1.43	--	
		12.75 GHz - 18 GHz	1.81	N/A	1.83	N/A	1.77	--	
		18 GHz - 26.5 GHz	1.83	N/A	1.85	N/A	1.79	--	
Occupied bandwidth	-	9 kHz - 4 GHz	0.1272 ppm (Delta Marker)						Frequency error
			1.0 dB						Power
Emission bandwidth	-	9 kHz - 4 GHz	0.1272 ppm (Delta Marker)						Frequency error
			See above: 0.70 dB						Power
Frequency stability	-	9 kHz - 20 GHz	0.0636 ppm						-
Radiated emissions Enclosure	-	150 kHz - 30 MHz	5.01 dB						Magnetic field strength
		30 MHz - 1 GHz	5.83 dB						Electrical Field strength
		1 GHz - 18 GHz	4.91 dB						
		18 GHz - 26.5 GHz	5.06 dB						

7 Versions of test reports (change history)

Version	Applied changes	Date of release
--	Initial release	2022-Jan-18
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End Of Test Report