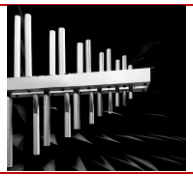
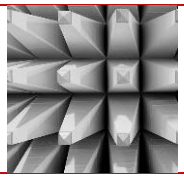




CETECOM™
CETECOM ICT Services
consulting - testing - certification

PARTIAL TEST REPORT

Test report no.: 1-0357/15-01-03

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-12076-01-00

Testing laboratory

CETECOM ICT Services GmbH
Untertuerkheimer Strasse 6 – 10
66117 Saarbruecken / Germany
Phone: + 49 681 5 98 - 0
Fax: + 49 681 5 98 - 9075
Internet: http://www.cetecom.com
e-mail: ict@cetecom.com

Accredited Testing Laboratory:
The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS)
The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-00

Applicant

Thrane & Thrane A/S
Lundtoftegaardsvej 93D
DK-2800 Kgs Lyngby / DENMARK
Phone:
Fax: +45 3955 8888
Contact: Morten Becker Saul
e-mail: morten.saul@cobham.com
Phone: +45 3955 8209

Manufacturer

Thrane & Thrane A/S
Lundtoftegaardsvej 93D
DK-2800 Kgs Lyngby / DENMARK

Test standard/s

CFR 47 Part 25	Satellite Communications
RSS-170	Mobile Earth Stations and Ancillary Terrestrial Component Equipment Operating in the Mobile-Satellite Service Bands

For further applied test standards please refer to section 3 of this test report.

Test Item

Kind of test item:	**Hybrid BGAN M2M Inmarsat terminal**
Model name:	**EXPLORER 540 / TT-3715A**
FCC ID:	**ROJ-3715A**
IC:	**6200B-3715A**
Frequency:	Tx: 1626.5 – 1660.5 MHz Rx: 1525.0 – 1559.0 MHz)
Antenna:	Integrated antenna
Power supply:	10.5 V DC to 32.0 V by power supply 44 V DC to 57 V DC via PoE+ Injector
Temperature range:	-40°C to +75°C

This test report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report authorized:

Geraldy Karsten
cn=Karsten Geraldy, o=CETECOM ICT Services GmbH, ou=GER-151201, email=karsten.geraldy@cetecom.com, c=DE
2016.01.22 13:24:03 +01'00'

Karsten Geraldy
Lab Manager
Radio Communications & EMC

Test performed:

B. Gerber
Benedikt Gerber
cn=Benedikt Gerber, o=CETECOM ICT Services GmbH, ou=Radio Communications & EMC, email=benedikt.gerber@cetecom.com, c=DE
2016.01.22 11:54:17 +01'00'

Benedikt Gerber
Testing Manager
Radio Communications & EMC

1 Table of contents

2 General information

2.1 Notes and disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. CETECOM ICT Services GmbH 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.
The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM ICT Services GmbH.
The testing service provided by CETECOM ICT Services GmbH has been rendered under the current "General Terms and Conditions for CETECOM ICT Services GmbH".
CETECOM ICT Services GmbH will not be liable for any loss or damage resulting from false, inaccurate, inappropriate or incomplete product information provided by the customer.
Under no circumstances does the CETECOM ICT Services GmbH test report include any endorsement or warranty regarding the functionality, quality or performance of any other product or service provided.
Under no circumstances does the CETECOM ICT Services GmbH test report include or imply any product or service warranties from CETECOM ICT Services GmbH, including, without limitation, any implied warranties of merchantability, fitness for purpose, or non-infringement, all of which are expressly disclaimed by CETECOM ICT Services GmbH.
All rights and remedies regarding vendor's products and services for which CETECOM ICT Services GmbH has prepared this test report shall be provided by the party offering such products or services and not by CETECOM ICT Services GmbH.
In no case this test report can be considered as a Letter of Approval.

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

2.2 Application details

Date of receipt of order:	2015-09-28
Date of receipt of test item:	2015-11-30
Start of test:	2015-12-01
End of test:	2015-12-03
Laboratory reference number:	042.15
Person(s) present during the test:	Mr. Bjarre Maaløe

3 Test standard/s

Test standard	Date	Test standard description
CFR 47 Part 25	2013-10	Satellite Communications
RSS-170	2011-03	Mobile Earth Stations and Ancillary Terrestrial Component Equipment Operating in the Mobile-Satellite Service Bands

4 Test location

CETECOM ICT Services GmbH
Untertuerkheimer Strasse 6 – 10
66117 Saarbruecken / Germany
Phone: + 49 681 5 98 - 0
Fax: + 49 681 5 98 - 9075

5 Test environment

Temperature:	T_{nom}	+23	°C during room temperature tests
	T_{min}	-/-	°C
	T_{max}	-/-	°C
	T_{hum}	-/-	°C / -/- rel. humidity
Relative humidity:		45 %	
Barometric pressure:		not relevant for this kind of testing	
Power supply:	V_{nom}	57	V DC via PoE+ injector
	V_{min}	-/-	V DC
	V_{max}	-/-	V DC

6 Test laboratory/ies sub-contracted

None

7 Additional information

The content of the following annexes is defined in the QA. It may be that not all of the listed annexes are necessary for this report, thus some values in between may be missing.

Test setup- and EUT-photos are included in test report: 1-0357/15-01-01_AnnexB
TT-3715 photos_Va

During the tests, the DUT is supplied by PoE+ power injector which is provided by the manufacturer:

Power supply manufacturer: Tycon Power Systems
Model: TP-DCDC-2448GD-HP

8 Test item

8.1 General Description

Kind of test item	Hybrid BGAN M2M Inmarsat terminal
Type identification	EXPLORER 540 / TT-3715A
Operating characteristics	BGAN, Rx/Tx, QPSK-pi/4, 16-QAM
S/N serial number	Cetecom #5 RF MB# 1298140045
HW hardware status	A01
SW software status	0.05 build 804
TX frequency range / CS [1)]	1626.5 – 1660.5 MHz // 1.25 kHz
RX frequency range	1525.0 – 1559.0 MHz
TX output power cond.	max. 34.3 dBm (measured value)
TX output power rad. (EIRP) [2)]	max. 45.6 dBm (measured value)
Kind of baseband signal	data
Data rate	33.6 – 604.8 kbps
Type of modulation	QPSK-pi/4, 16-QAM
Type of radio transmission	G7W, D7W
Antenna	integrated patch antenna
Power supply	44 to 57 V DC via PoE+ injector
Temperature range	-40 °C to +75 °C

[1)] channel spacing of modem / transceiver
[2)] for an antenna with an on-axis gain of 11.25 dBi (RHCP) within the transmit band
[3)] for operating conditions defined below

8.2 Operating conditions

Modulation Scheme	Modulation	Bitrate (kbps)	f_{low}	f_{mid}	f_{high}
R20T05Q	QPSK-pi/4	33.6	1626.6 MHz	1643.5 MHz	1660.4 MHz
R20T1Q	QPSK-pi/4	67.2	1626.6 MHz	1643.5 MHz	1660.4 MHz
R5T1X R20T1X	16QAM	134.4	1626.6 MHz	1643.5 MHz	1660.4 MHz
R5T2Q R20T2Q	QPSK-pi/4	134.4	1626.6 MHz	1643.5 MHz	1660.4 MHz
R5T2X R20T2X	16QAM	268.8	1626.6 MHz	1643.5 MHz	1660.4 MHz
R5T45Q R20T45Q	QPSK-pi/4	302.4	1626.6 MHz	1643.5 MHz	1660.4 MHz
R5T45X R20T45X	16QAM	604.8	1626.6 MHz	1643.5 MHz	1660.4 MHz
TX off	-/-	-/-	-/-	-/-	-/-

9 Description of test setup

Following diagrams show possible test setups. They can be considered as applicable in general. Depending on the tests performed and/or depending on the EUT configuration (e.g. amount of different components, setup, ...) the real test setup may vary slightly from the diagrams shown below.

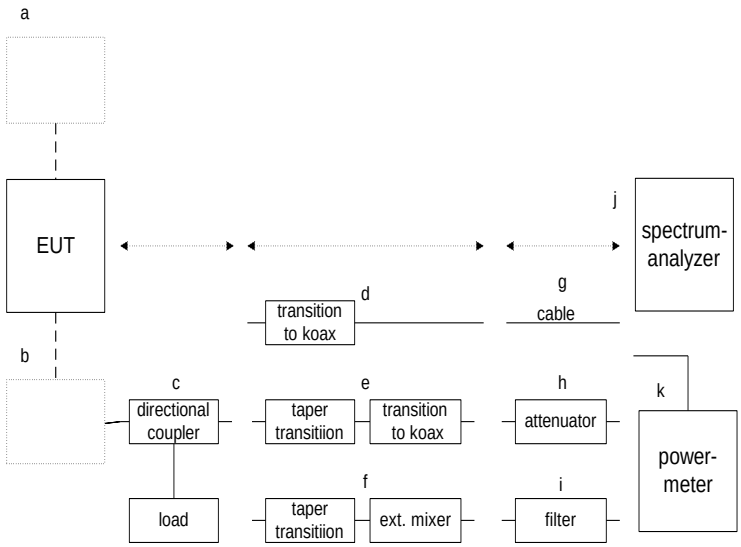
Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, RF generating and signaling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Lab/Item).

Agenda: Kind of Calibration

k	calibration / calibrated	EK	limited calibration
ne	not required (k, ev, izw, zw not required)	zw	cyclical maintenance (external cyclical maintenance)
ev	periodic self verification	izw	internal cyclical maintenance
Ve	long-term stability recognized	g	blocked for accredited testing
vlkl!	Attention: extended calibration interval		
NK!	Attention: not calibrated	*)	next calibration ordered / currently in progress

9.1 Conducted measurements



Setup 1.2 x...x

The setup code 1.2 x…x describes the used setup for conducted measurements.

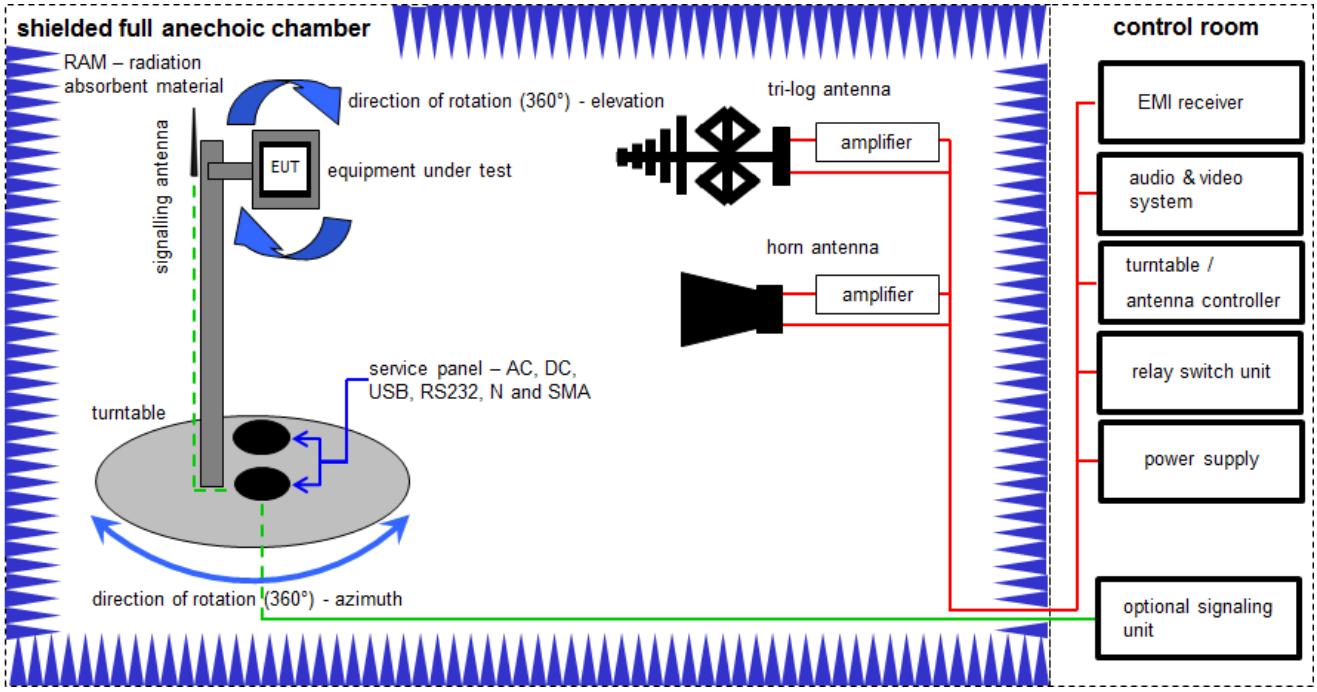
Example:

DUT -> transition to coax -> cable -> filter-> spectrum analyzer = 1.2 dgij

Equipment table:

No.	Lab / Item	Equipment	Type	Manufacturer	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	U005	High Power Attenuator 30 dB, DC to 18 GHz	9498A	HP	2702A04550	300002403	ev		
2	R001	Spectrum Analyzer 9kHz-50GHz portable spectrum analyzer	8565E	HP	3515A00283	300000916	Ve	12.02.2015	12.02.2017
3	217	HF-Cable	KPS1533-590-KPS	Insulated Wire		300002290	ev		
4	U019	Attenuator	375 BNM	Narda	43		ev		
5		Cobham Notch filter	XN 6534	BSC	2404102		ev		

9.2 Shielded fully anechoic chamber



Measurement distance: tri-log antenna and horn antenna 3 meter

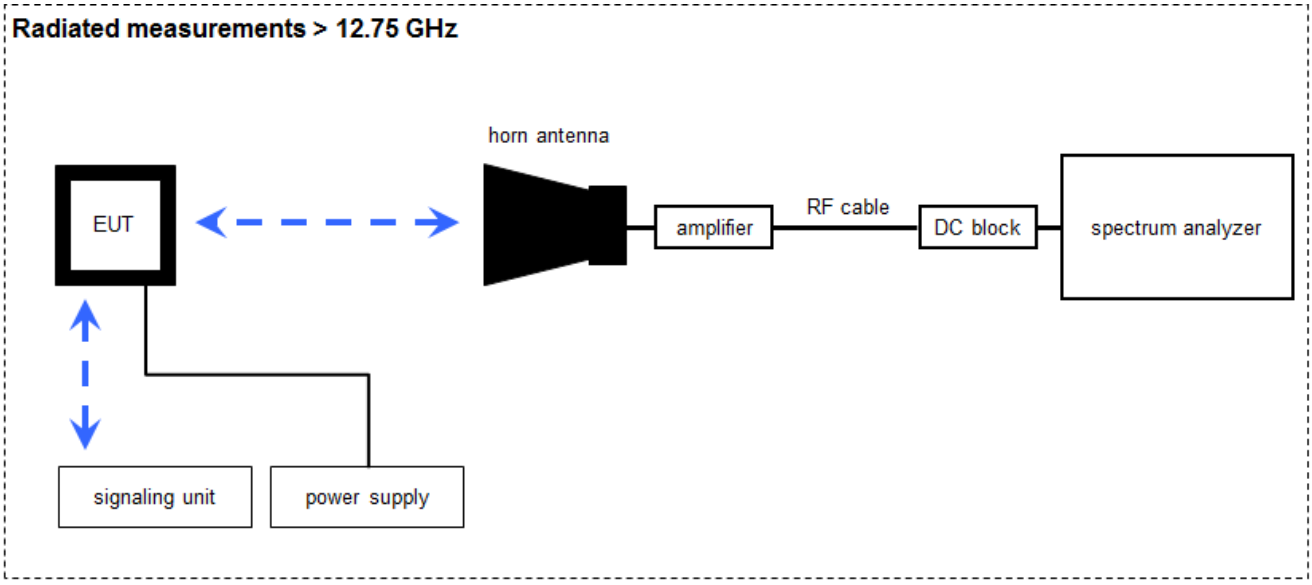
OP = AV + D - G + CA
(OP-radiated output power; AV-analyzer value; D-free field attenuation of measurement distance; G-antenna gain+amplifier gain; CA-loss signal path)

Example calculation:
OP [dBm] = -65.0 [dBm] + 50 [dB] - 20 [dBi] + 5 [dB] = -30 [dBm] (1 µW)

Equipment table:

No.	Lab / Item	Equipment	Type	Manufacturer	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP	2818A03450	300001040	Ve	20.01.2015	20.01.2018
2	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vlKl!	20.05.2015	20.05.2017
3	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev		
4	n. a.	Switch / Control Unit	3488A	HP	*	300000199	ne		
5	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
6	n. a.	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789	ne		
7	n. a.	MXE EMI Receiver 20 Hz to 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405	k	06.03.2015	06.03.2016
8	n. a.	4U RF Switch Platform	L4491A	Agilent Technologies	MY50000037	300004509	ne		

9.3 Radiated measurements > 12.75 GHz



OP = AV + D - G + CA
(OP-radiated output power; AV-analyzer value; D-free field attenuation of measurement distance; G-antenna gain+amplifier gain; CA-loss signal path)

Example calculation:
OP [dBm] = -59.0 [dBm] + 44.0 [dB] - 20.0 [dBi] + 5.0 [dB] = -30 [dBm] (1 µW)

Equipment table:

No.	Lab / Item	Equipment	Type	Manufacturer	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	R001	Spectrum Analyzer 9kHz-50GHz portable spectrum analyzer	8565E	HP	3515A00283	300000916	Ve	12.02.2015	12.02.2017
2	A039	Std. Gain Horn Antenna 11.90-18.00 GHz	1824-20	Flann	263	300002471	ne		
3	A021	Std. Gain Horn Antenna 26.4-40.1 GHz	2224-20	Flann	233	300001973	ne		
4	A019	Std. Gain Horn Antenna 17.6-26.7 GHz	2024-20	Flann	156	300001968	ne		
5	217	HF-Cable	KPS1533-590-KPS	Insulated Wire		300002290	ev		

10 Measurement results

10.1 Summary

The present test report:

☐	describes the first test
☐	describes an additional test
☐	is a verification of documents
☒	is a partial test report and is only valid with Cetecom the test report no.: 1-8390/14-01-05

☒	**No deviations from the technical specifications were ascertained**
☐	There were deviations from the technical specifications ascertained

TC identifier	Description	Verdict	Date	Remark
RF-Testing	CFR 47 Part 25 / RSS-170	see table	2016-01-22	-/-

Test Specification Clause	Test Case	Pass	Fail	N/A	N/P	Results
§2.1046 / §25.204/ RSS-170, 5.3.2	Measurements required: RF power output / Power limits	X				complies
§2.1051/ §25.202/ RSS-170, 5.4.3.1	Measurements required: Spurious emissions at antenna terminals / Emission limitations (conducted emissions)	X				complies
§2.1053/ §25.202/ RSS-170, 5.4.3.1	Measurements required: Field strength of spurious radiation / Emission limitations (radiated emissions)	X				complies

Note:
NA = Not applicable; NP = Not performed

10.2 Overview

I. RF power output / Power limits

Description / Limit:

§25.204 Power limits
(b) In bands shared coequally with terrestrial radiocommunication services, the equivalent isotropically radiated power transmitted in any direction towards the horizon by an earth station operating in frequency bands between 1 and 15 GHz shall not exceed the following limits except as provided for in paragraph (c) of this section:
+40 dBW in any 4 kHz band for $\theta \leq 0°$
+40 + 3 * θ dBW in any 4 kHz band for $0° < \theta \leq 5°$
θ = elevation angle above horizon

(c) For angles of elevation of the horizon greater than 5° there shall be no restriction as to the equivalent isotropically radiated power transmitted by an earth station towards the horizon.

Test setup(s):
Test setup 1.2cdk

Measurement results:

Modulation Scheme	Transmitter conducted output power [dBW]			Transmitter radiated output power / EIRP [dBW]		
	f_{low}	f_{mid}	f_{high}	f_{low}	f_{mid}	f_{high}
R20T05Q	3.8	3.8	3.8	15.1	15.0	15.0
R5T1X	4.3	4.3	4.3	15.6	15.5	15.5
R20T45X	3.8	3.8	3.8	15.1	15.0	15.0

Note: As the manufacturer declares that the RF Part is the same as in test report 1-8390/14-01-05 only spot checks are measured.

Operating conditions of DUT:
Carrier-on radio state (for more details see table above)

Verdict: **Passed**

II. Emissions limitations (conducted emissions)

Description / Limit:

§25.202 Frequencies, frequency tolerance and emission limitations
(f) Emission limitations. Except for SDARS terrestrial repeaters, the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the schedule set forth in paragraphs (f)(1) through (f)(4) of this section.
(1) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: 25 dB;
(2) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: 35 dB;
(3) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth:
An amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts;
(4) In any event, when an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in paragraphs (f) (1), (2) and (3) of this section.

Test setup: 1.2hgj

Measurement results:

Conducted Spurious Emissions [dBm]								
f_{low}			f_{mid}			f_{high}		
F [MHz]	Detector	Level [dBm]	F [MHz]	Detector	Level [dBm]	F [MHz]	Detector	Level [dBm]
			0.277	Pos-Peak	-99.0			
			5.95	Pos-Peak	-100.7			
			1611.78	Pos-Peak	-83.9			
			1526.84	Pos-Peak	-75.7			
			1681.13	Pos-Peak	-87.7			
			9870.83	Pos-Peak	-75.2			
Measurement uncertainty			± 1.5 dB					

Note: As the manufacturer declares that the RF Part is the same as in test report 1-8390/14-01-05, spurious measurements are only performed at mid frequency (fm).

Plots:
see also Annex B, plots 4 - 12

Verdict: **Passed**

III. Emissions limits (radiated emissions)

Description / Limit:

§25.202 Frequencies, frequency tolerance and emission limitations
(f) Emission limitations. Except for SDARS terrestrial repeaters, the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the schedule set forth in paragraphs (f)(1) through (f)(4) of this section.
(1) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: 25 dB;
(2) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: 35 dB;
(3) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth:
An amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts;
(4) In any event, when an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in paragraphs (f) (1), (2) and (3) of this section.

Test setup: 2.0 - 2.4

Measurement results:

Radiated Spurious Emissions [dBm]								
f_{low}			f_{mid}			f_{high}		
F [MHz]	Detector	Level [dBm]	F [MHz]	Detector	Level [dBm]	F [MHz]	Detector	Level [dBm]
			43.774	Pos-Peak	-65.495			
			249.996	Pos-Peak	-71.430			
			286.468	Pos-Peak	-73.185			
			569.417	Pos-Peak	-63.785			
			13145	Pos-Peak	-95.2			
			18075	Pos-Peak	-85.5			
Measurement uncertainty			± 3 dB					

n.f. = nothing found
v / h = vertical / horizontal

Note: As the manufacturer declares that the RF Part is the same as in test report 1-8390/14-01-05, spurious measurements are only performed at mid frequency (fm).

Plots:
see also Annex B, plots 1 - 3

Verdict: **Passed**

IV. Emissions limitations (conducted emissions)

Description / Limit:

§ 25.216 Limits on emissions from mobile earth stations for protection of aeronautical radionavigation-satellite service.
(h) Mobile earth stations manufactured more than six months after FEDERAL REGISTER publication of the rule changes adopted in FCC 03–283 with assigned uplink frequencies in the 1626.5–1660.5 MHz band shall suppress the power density of emissions in the 1605–1610 MHz band-segment to an extent determined by linear interpolation from -70 dBW/MHz at 1605 MHz to -46 dBW/MHz at 1610 MHz, averaged over any 2 millisecond active transmission interval. The e.i.r.p of discrete emissions of less than 700 Hz bandwidth from such stations shall not exceed a level determined by linear interpolation from -80 dBW at 1605 MHz to -56 dBW at 1610 MHz, averaged over any 2 millisecond active transmission interval.

(i) The e.i.r.p density of carrier-off state emissions from mobile earth stations manufactured more than six months after FEDERAL REGISTER publication of the rule changes adopted in FCC 03–283 with assigned uplink frequencies between 1 and 3 GHz shall not exceed -80 dBW/MHz in the 1559–1610 MHz band averaged over any two millisecond interval.

Test setup: 1.2gj

Measurement results:

Conducted Spurious Emissions [dBm]								
f_{low}			f_{mid}			f_{high}		
F [MHz]	Detector	Level [dBm]	F [MHz]	Detector	Level [dBm]	F [MHz]	Detector	Level [dBm]
no critical peaks found			no critical peaks found			no critical peaks found		
Measurement uncertainty			± 1.5 dB					

n.f. = nothing found

Note: As the manufacturer declares that the RF Part is the same as in test report 1-8390/14-01-05, spurious measurements are only performed at mid frequency (fm).

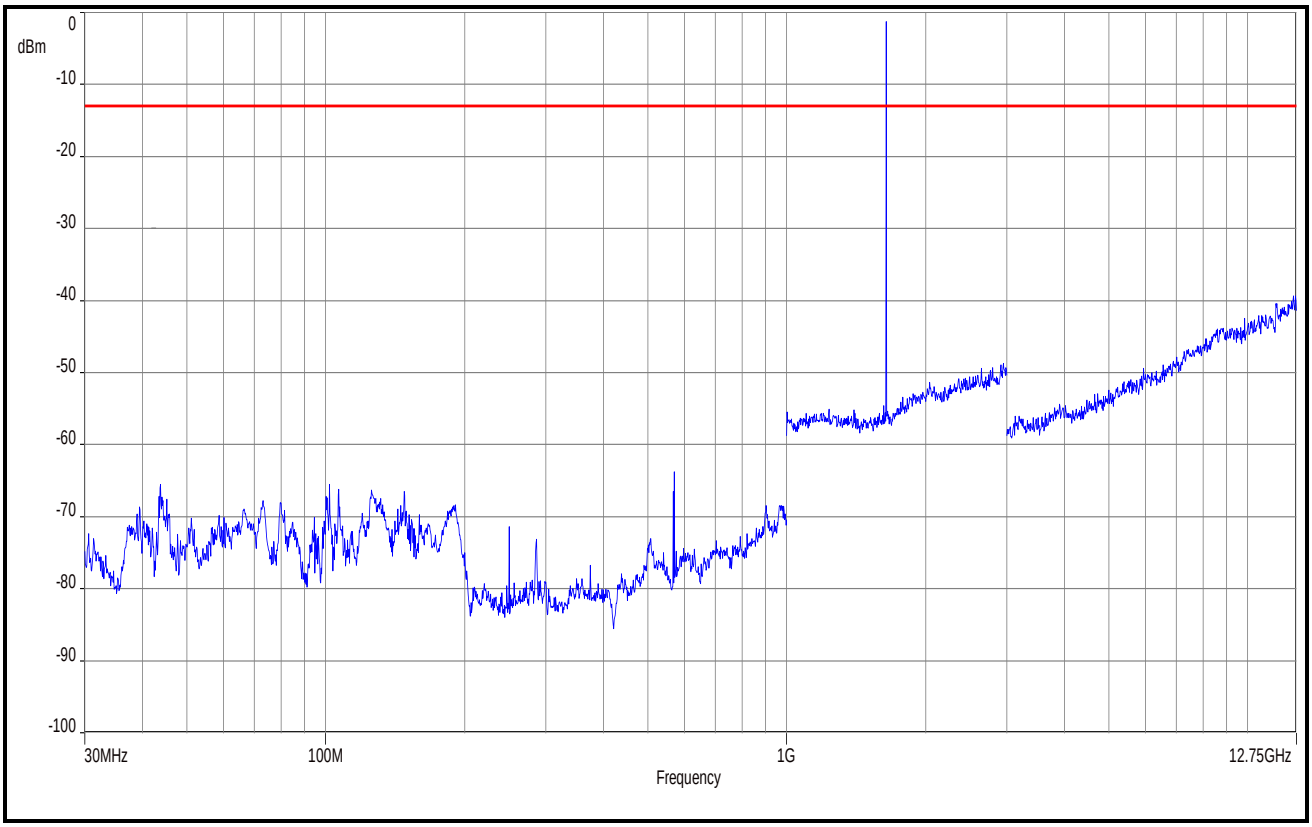
Plots:
see also Annex B, plot 13

Verdict: **Passed**

Annex A Measurement results

This annex consists of 14 pages including this page.

Plot No. 1 (13)



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
Emission limitations, modulated carrier in the middle of the band
Radiation coming out of DUT-cabinet(s): 30 MHz – 12.75 GHz

Limit:
Limit according to 25.202 f): -43.0+10log(Pmax)dBc/4kHz
This corresponds to -13.0 dBm.

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
R5T1X, fm, see section 8.2

Test setup:
see section 9.2:

Remark:
Plot shows wanted signal.

Test result: **Test passed**

Environment condition:

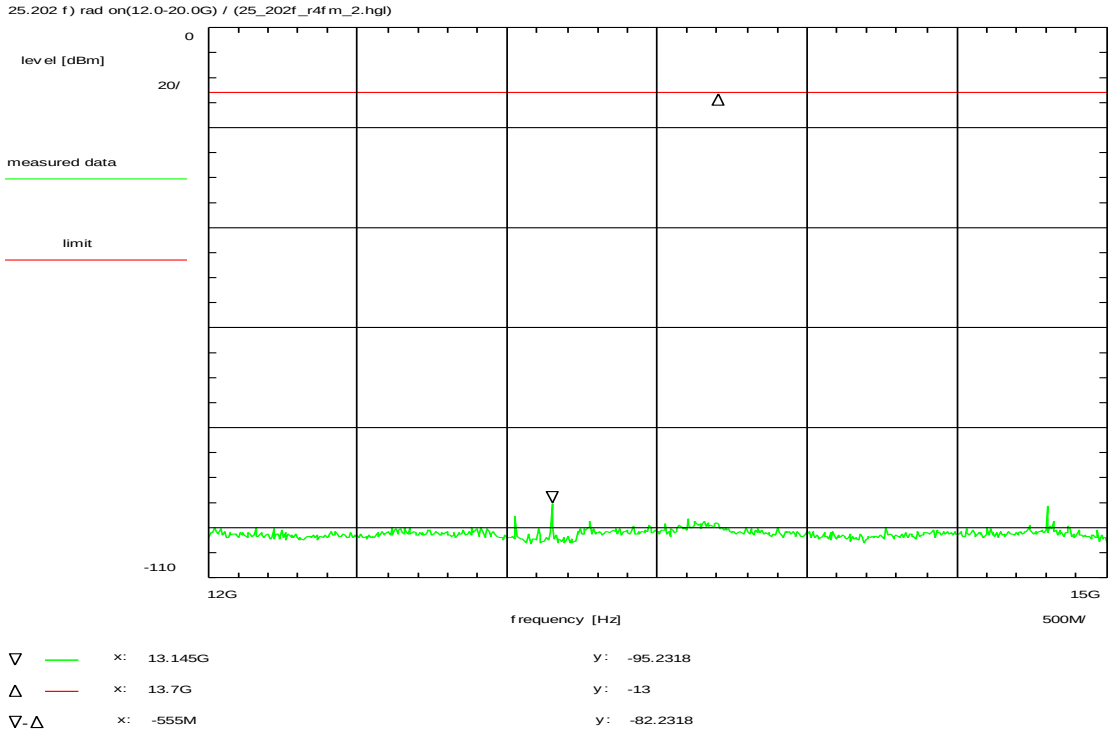
Date & Time:	01/Dec/2015	
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	30	MHz
Stop frequency:	12.75	GHz
Resolution-BW:	100	kHz
Video-BW:	300	kHz
Detector-Mode:		Pos Peak (Maximum-Hold)

Remarks:
Carrier-on state. Carrier in the middle of the band (fm).
Radiated measurement in 3 m test distance.

Plot No. 2 (13)



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
Emission limitations, modulated carrier in the middle of the band
Radiation coming out of DUT-cabinet(s): 12.0 GHz - 15.0 GHz

Limit:
Limit according to 25.202 f): -43.0+10log(Pmax)dBc/4kHz
This corresponds to -13.0 dBm.

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
R5T1X, fm, see section 8.2

Test setup:
see section 9.3:

Test equipment:
see annex A: A016, A039, B11b, C219, R001, U019

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 02/Dec/2015 08:26:40	
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

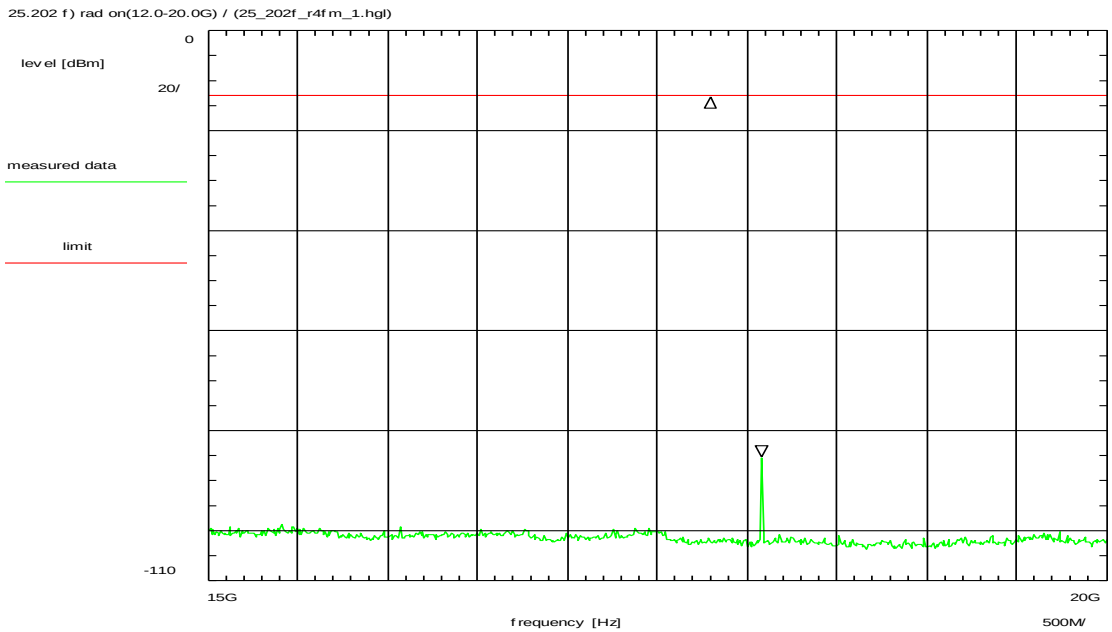
Start frequency:	12	GHz
Stop frequency:	15	GHz
Center frequency:	13.5	GHz
Frequency span:	3	GHz
Input attenuation:	10	dB
Resolution-BW:	100	kHz
Video-BW:	100	kHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+	0.0	dB
Coaxial cable (C219)	+	2.2	dB
DUT-Antenna (on-axis)	+	0.0	dBi
Test antenna (A039)	-	19.1	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
(B11b)	-	31.1	dB
(13.50GHz, 0.4m)	+	47.1	dB
TOTAL CORRECTION:	-	-14.9	dB

Remarks:
Carrier-on state. Carrier in the middle of the band (fm).
Radiated measurement in 1 m test distance.

Plot No. 3 (13)



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
Emission limitations, modulated carrier in the middle of the band
Radiation coming out of DUT-cabinet(s): 15.0 GHz - 20.0 GHz

Limit:
Limit according to 25.202 f): -43.0+10log(Pmax)dBc/4kHz
This corresponds to -13.0 dBm.

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
R5T1X, fm, see section 8.2

Test setup:
see section 9.3:

Test equipment:
see annex A: A016, A039, B11b, C219, R001, U019

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 02/Dec/2015 08:21:37	
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

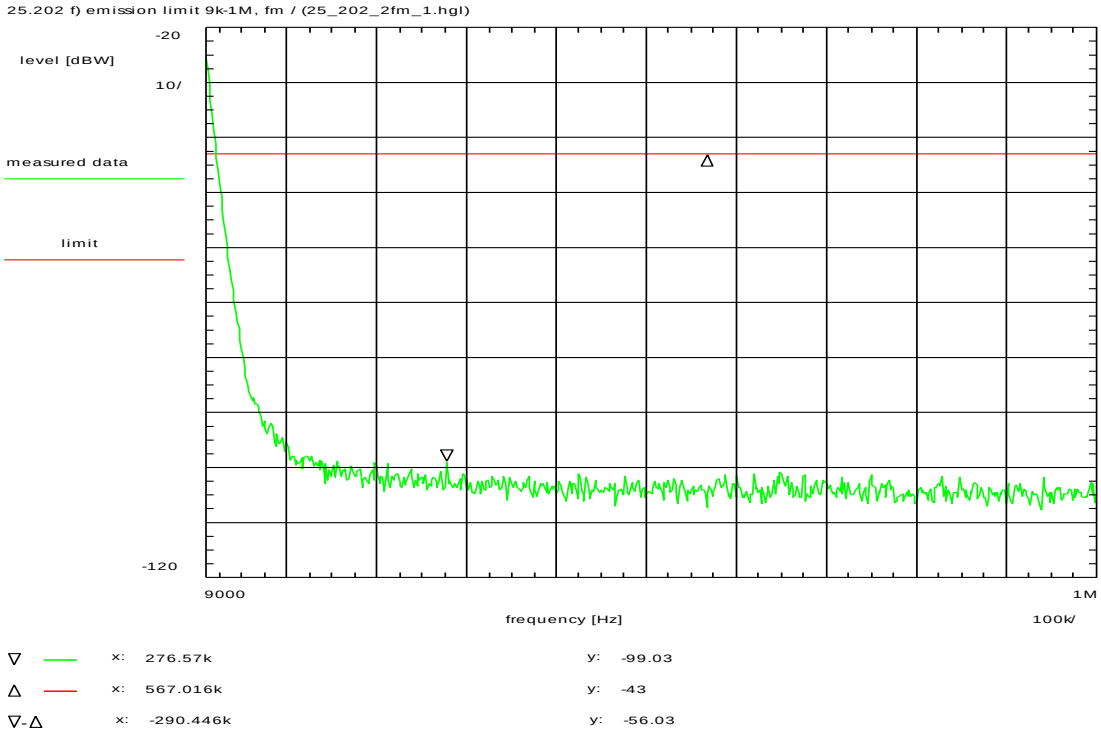
Start frequency:	15	GHz
Stop frequency:	20	GHz
Center frequency:	17.5	GHz
Frequency span:	5	GHz
Input attenuation:	10	dB
Resolution-BW:	100	kHz
Video-BW:	100	kHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+	0.0	dB
Coaxial cable (C219)	+	2.6	dB
DUT-Antenna (on-axis)	+	0.0	dBi
Test antenna (A016)	-	19.7	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	-	0.0	dB
(B11b)	-	31.1	dB
(17.50GHz, 0.3m)	+	46.8	dB
TOTAL CORRECTION:	-	-15.4	dB

Remarks:
Carrier-on state. Carrier in the middle of the band (fm).
Radiated measurement in 1 m test distance.

Plot No. 4 (13)



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 25.202 f):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
R5T1X, fm, see section 8.2

Test setup:
see section 9.1: 1.2 higj

Test equipment:
see annex A: C219, FCob, R001

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 02/Dec/2015 10:31:57	
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	9	kHz
Stop frequency:	1	MHz
Center frequency:	504.5	kHz
Frequency span:	991	kHz
Input attenuation:	10	dB
Resolution-BW:	10	kHz
Video-BW:	10	kHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

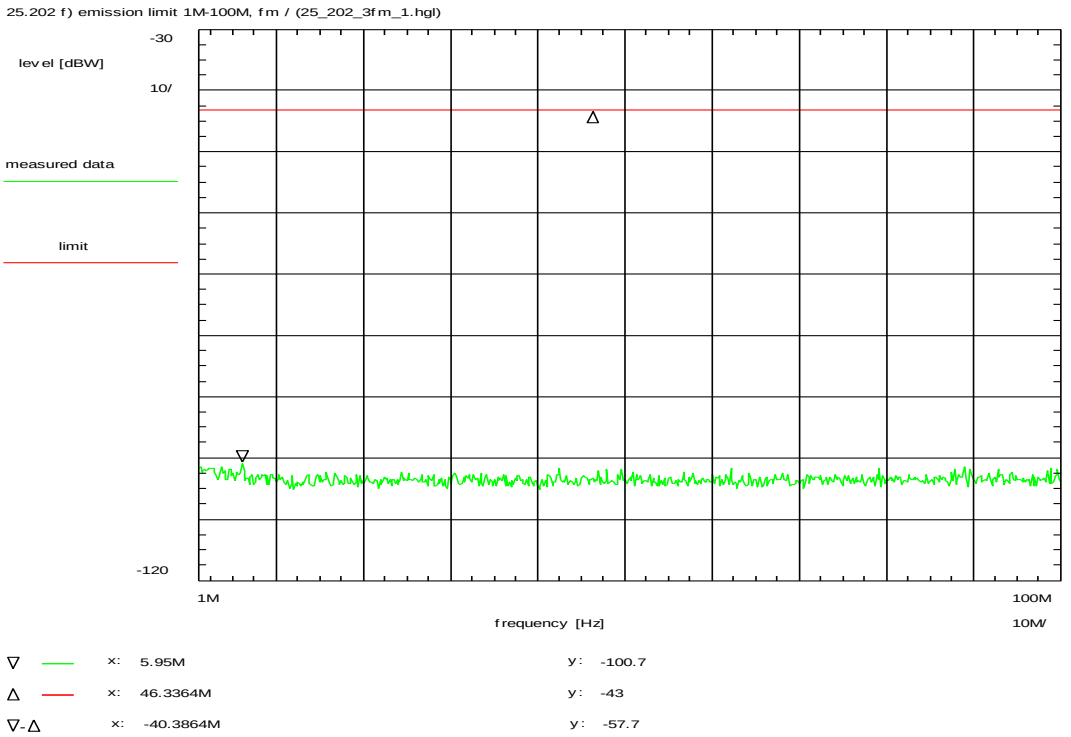
Correction (average):

Directional coupler	+	0.0	dB
Coaxial cable (C219)	+	0.1	dB
DUT-Antenna (on-axis)	+	11.2	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Attenuator	+	6.0	dB
Band stop filter (FCob)	+	0.0	dB
TOTAL CORRECTION:	+	13.3	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Rather left the plot shows the zero line of the spectrum analyzer.

Plot No. 5 (13)



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 25.202 f):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
R5T1X, fm, see section 8.2

Test setup:
see section 9.1: 1.2 higj

Test equipment:
see annex A: C219, FCob, R001

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 02/Dec/2015 10:29:57	
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

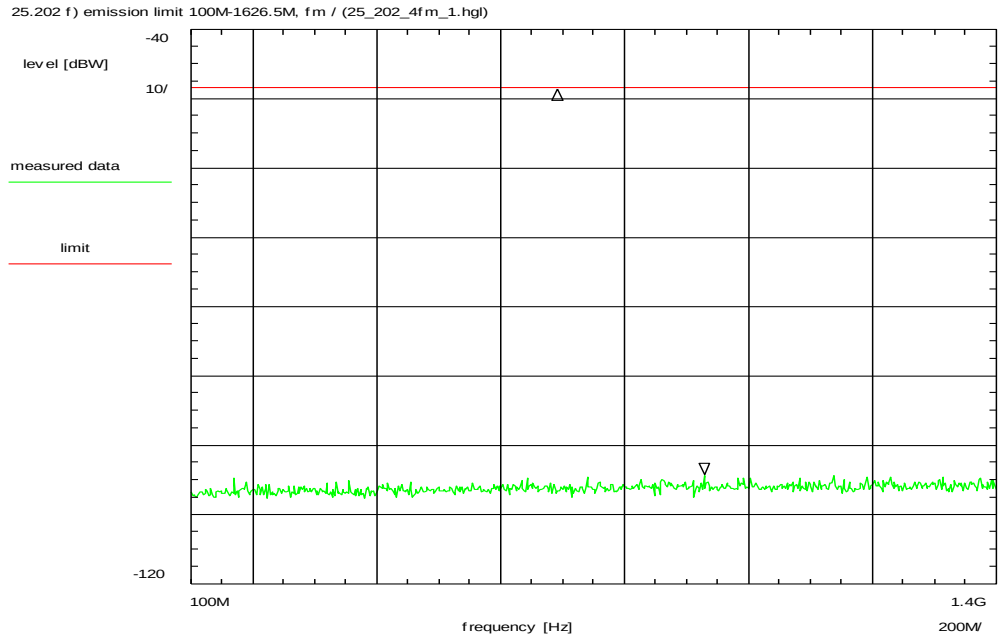
Start frequency:	1	MHz
Stop frequency:	100	MHz
Center frequency:	50.5	MHz
Frequency span:	99	MHz
Input attenuation:	10	dB
Resolution-BW:	10	kHz
Video-BW:	10	kHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+	0.0	dB
Coaxial cable (C219)	+	0.1	dB
DUT-Antenna (on-axis)	+	11.2	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Attenuator	+	6.0	dB
Band stop filter (FCob)	+	0.0	dB
TOTAL CORRECTION:	+	13.3	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 6 (13)



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 25.202 f):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
R5T1X, fm, see section 8.2

Test setup:
see section 9.1: 1.2 higj

Test equipment:
see annex A: C219, FCob, R001, U005

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 02/Dec/2015 09:52:21	
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

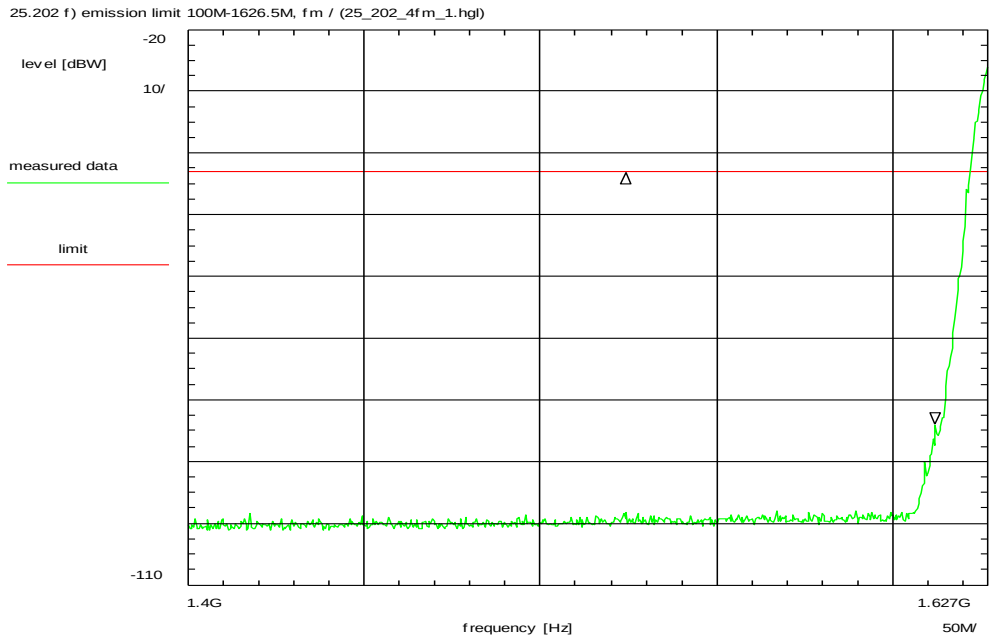
Start frequency:	100	MHz
Stop frequency:	1400	MHz
Center frequency:	750	MHz
Frequency span:	1300	MHz
Input attenuation:	10	dB
Resolution-BW:	10	kHz
Video-BW:	10	kHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+	0.0	dB
Coaxial cable (C219)	+	0.5	dB
DUT-Antenna (on-axis)	+	11.2	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Attenuator	+	6.0	dB
Band stop filter (FCob)	+	3.0	dB
TOTAL CORRECTION:	+	16.7	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 7 (13)



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 25.202 f):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
R5T1X, fm, see section 8.2

Test setup:
see section 9.1: 1.2 higj

Test equipment:
see annex A: C219, FCob, R001, U005

Remark:

Test result: **Test passed (see also next plot)**

Environment condition:

Date & Time:	Wed 02/Dec/2015 09:52:21	
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.4	GHz
Stop frequency:	1.6265	GHz
Center frequency:	1.51325	GHz
Frequency span:	226.5	MHz
Input attenuation:	10	dB
Resolution-BW:	10	kHz
Video-BW:	10	kHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

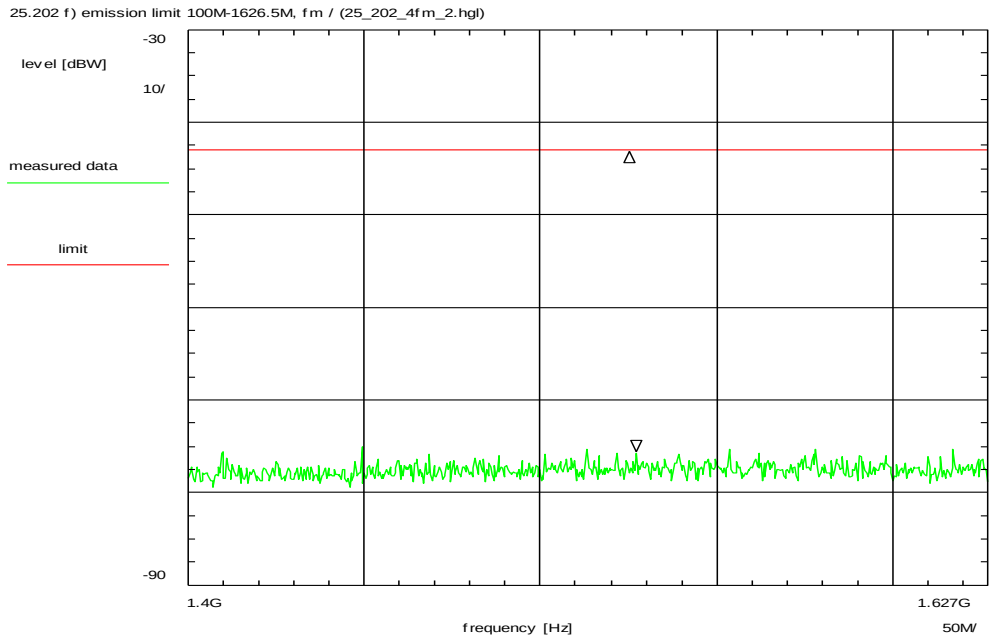
Correction (average):

Directional coupler	+	0.0	dB
Coaxial cable (C219)	+	0.7	dB
DUT-Antenna (on-axis)	+	11.2	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Attenuator	+	6.0	dB
Band stop filter (FCob)	+	3.0	dB
TOTAL CORRECTION:	+	16.9	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Rather right the plot shows the lower edge of the band stop filter. (see also next plot)

Plot No. 8 (13)



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 25.202 f):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
R5T1X, fm, see section 8.2

Test setup:
see section 9.1: 1.2 hgj

Test equipment:
see annex A: C219, R001, U005

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 02/Dec/2015 09:43:51	
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.4	GHz
Stop frequency:	1.6265	GHz
Center frequency:	1.51325	GHz
Frequency span:	226.5	MHz
Input attenuation:	10	dB
Resolution-BW:	10	kHz
Video-BW:	10	kHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

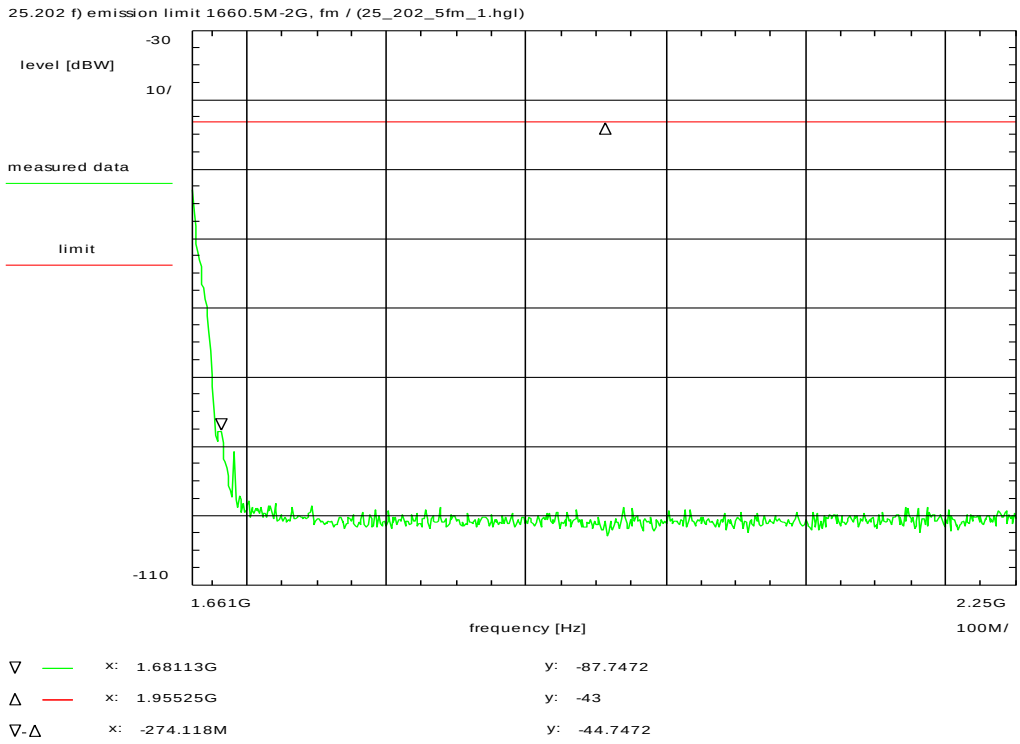
Correction (average):

Directional coupler	+	0.0	dB
Coaxial cable (C219)	+	0.7	dB
DUT-Antenna (on-axis)	+	11.2	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Attenuator (U005)	+	29.8	dB
(	+	0.0	dB
TOTAL CORRECTION:	+	37.7	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Retest without band stop filter.

Plot No. 9 (13)



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 25.202 f):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
R5T1X, fm, see section 8.2

Test setup:
see section 9.1: 1.2 higj

Test equipment:
see annex A: C219, FCob, R001

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 02/Dec/2015 09:56:20	
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.6605	GHz
Stop frequency:	2.25	GHz
Center frequency:	1.95525	GHz
Frequency span:	589.5	MHz
Input attenuation:	10	dB
Resolution-BW:	10	kHz
Video-BW:	10	kHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

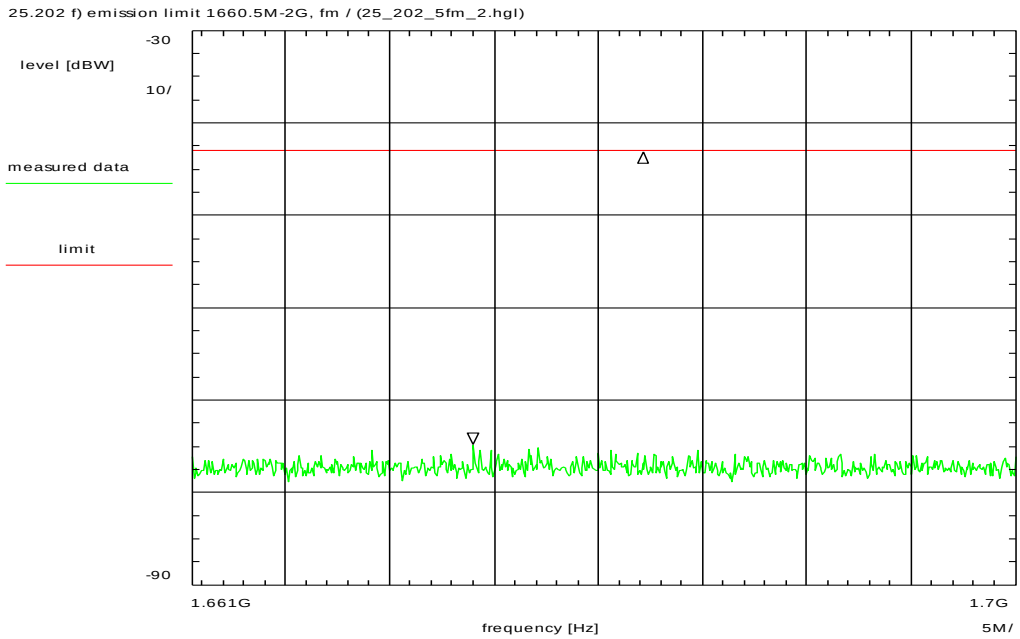
Correction (average):

Directional coupler	+	0.0	dB
Coaxial cable (C219)	+	0.8	dB
DUT-Antenna (on-axis)	+	11.2	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Attenuator	+	6.0	dB
Band stop filter (FCob)	+	1.8	dB
TOTAL CORRECTION:	+	15.8	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Rather left the plot shows the upper edge of the band stop filter.

Plot No. 10 (13)



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 25.202 f):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
R5T1X, fm, see section 8.2

Test setup:
see section 9.1: 1.2 hgj

Test equipment:
see annex A: C219, R001, U005

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 02/Dec/2015 09:42:12	
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.6605	GHz
Stop frequency:	1.7	GHz
Center frequency:	1.68025	GHz
Frequency span:	39.5	MHz
Input attenuation:	10	dB
Resolution-BW:	10	kHz
Video-BW:	10	kHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

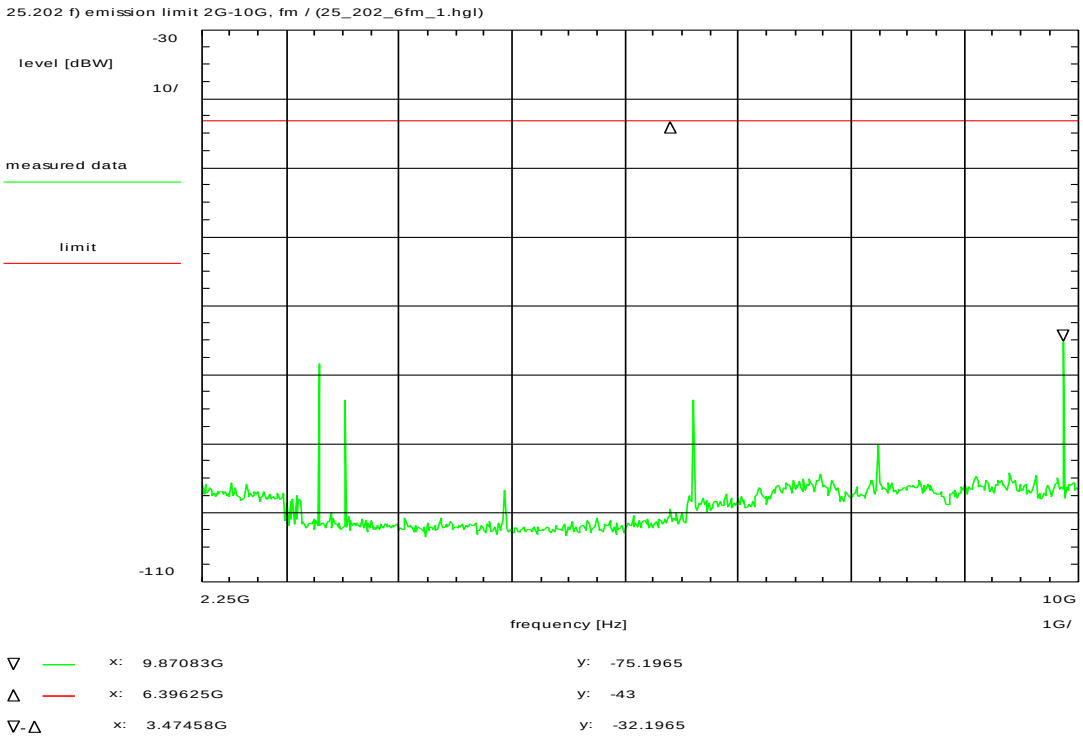
Correction (average):

Directional coupler	+	0.0	dB
Coaxial cable (C219)	+	0.7	dB
DUT-Antenna (on-axis)	+	11.2	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Attenuator (U005)	+	29.8	dB
(	+	0.0	dB
TOTAL CORRECTION:	+	37.7	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Retest without band stop filter.

Plot No. 11 (13)



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 25.202 f):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
R5T1X, fm, see section 8.2

Test setup:
see section 9.1: 1.2 higj

Test equipment:
see annex A: C219, F227, R001

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 02/Dec/2015 10:03:47	
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

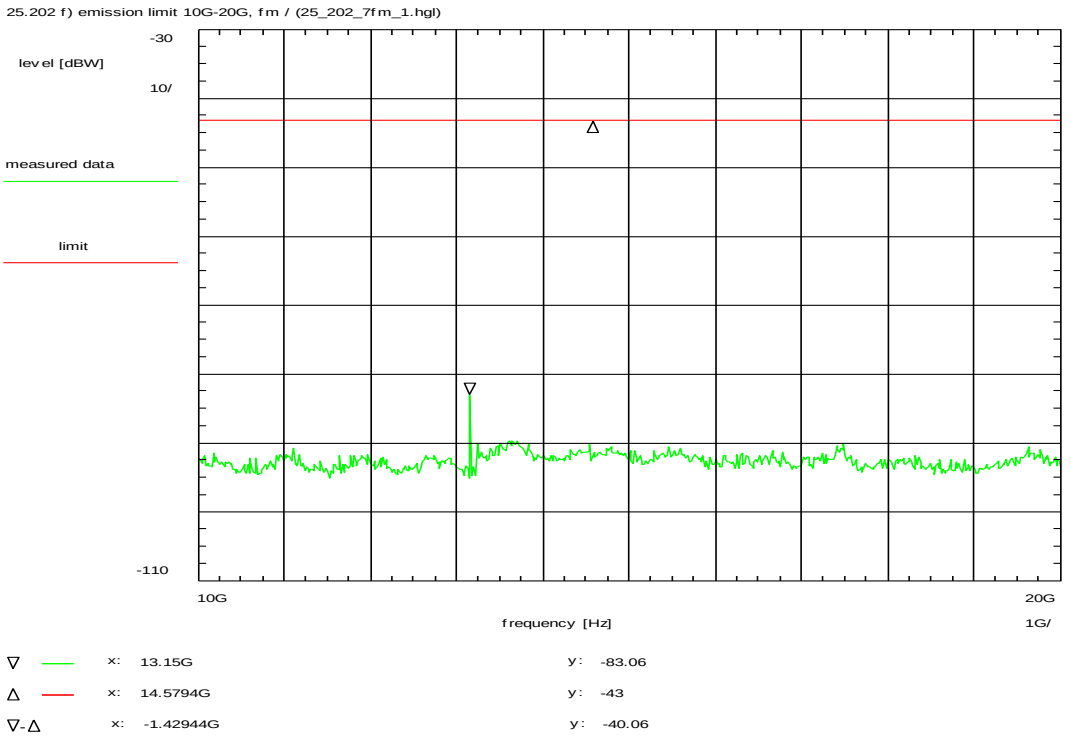
Start frequency:	2.25	GHz
Stop frequency:	10	GHz
Center frequency:	6.125	GHz
Frequency span:	7.75	GHz
Input attenuation:	10	dB
Resolution-BW:	10	kHz
Video-BW:	10	kHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+	0.0	dB
Coaxial cable (C219)	+	1.4	dB
DUT-Antenna (on-axis)	+	11.2	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Attenuator	+	6.0	dB
High pass filter (F227)	+	1.3	dB
TOTAL CORRECTION:	+	15.9	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 12 (13)



Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier in the middle of the band (fm)

Limit:
Limit according to 25.202 f):
50-100% of assigned bw: -25dBc/4kHz
100-250% of assigned bw: -35dBc/4kHz
> 250% of assigned bw: -43+10log(Pmax)dBc/4kHz = -43 dBW
The mean power of emissions shall be attenuated
below the mean output power of the transmitter
in accordance with the above schedule.

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
R5T1X, fm, see section 8.2

Test setup:
see section 9.1: 1.2 higj

Test equipment:
see annex A: C219, F227, R001

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 02/Dec/2015 10:12:21	
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

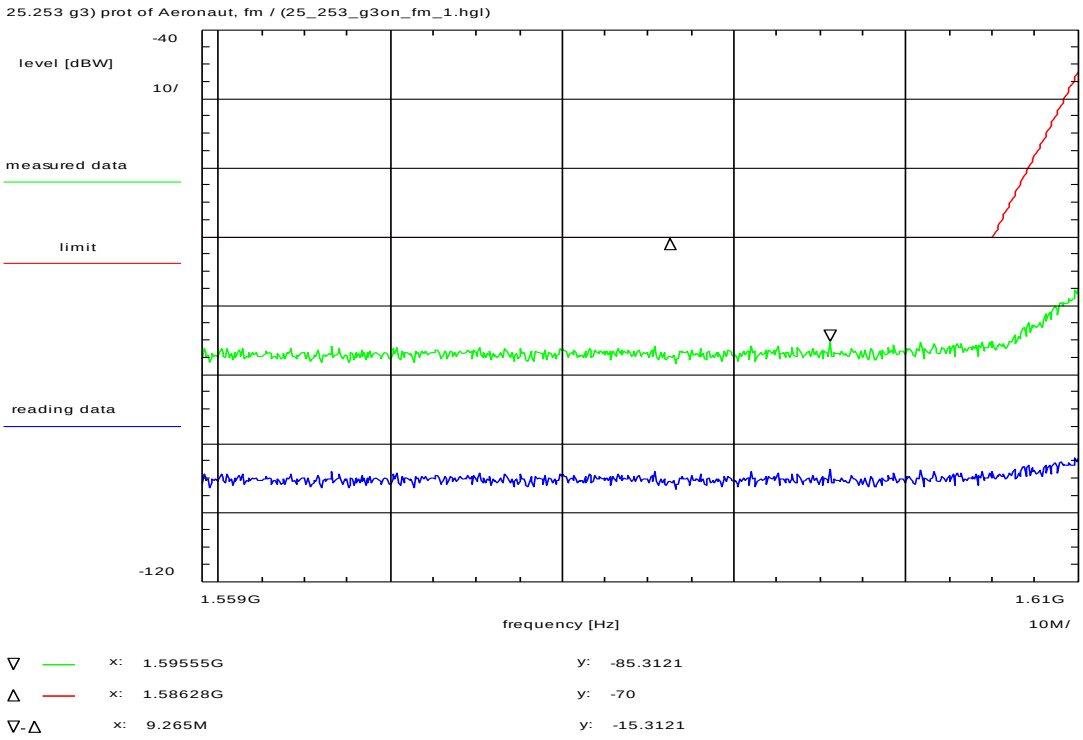
Start frequency:	10	GHz
Stop frequency:	20	GHz
Center frequency:	15	GHz
Frequency span:	10	GHz
Input attenuation:	10	dB
Resolution-BW:	10	kHz
Video-BW:	10	kHz
Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)

Correction (average):

Directional coupler	+	0.0	dB
Coaxial cable (C219)	+	2.3	dB
DUT-Antenna (on-axis)	+	11.2	dBi
Test antenna	+	0.0	dB
BW correction factor (10k -> 4k)	-	4.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Attenuator	+	6.0	dB
High pass filter (F227)	+	4.6	dB
TOTAL CORRECTION:	+	20.1	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
For EIRP calculation:
´worst-case´ = maximum antenna gain

Plot No. 13 (13)



Subclause: 25.253 g)3) Special requirements for ancillary terrestrial components operating in the 1626.5-1660.5 MHz / 1525-1559 MHz bands
Carrier-on state, modulated carrier in the middle of the band (fm)
Conducted measurement at the antenna-connector

Limit:
Limit according to 25.253 g)3):
1559.0 - 1605.0MHz: -70dBW/1MHz
1605.0 - 1610MHz: -70 to -46dBW/1MHz)linear interpolated)
The EIRP, averaged over any two-millisecond active transmission interval from the MESs in the carrier-on state shall not exceed the limits above.

Test results:
see plot (an explicit table was not generated)

Operating condition of DUT:
R5T1X, fm, see section 8.2

Test setup:
see section 9.1: 1.2 higj

Test equipment:
see annex A: C219, FCob, R001

Remark:

Test result: **Test passed**

Environment condition:

Date & Time:	Wed 02/Dec/2015 06:55:21	
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat	
Temperature:	22	°C
Humidity:	55	%
Voltage:	230	Vac

Setup of measurement equipment:

Start frequency:	1.559	GHz
Stop frequency:	1.61	GHz
Center frequency:	1.5845	GHz
Frequency span:	51	MHz
Input attenuation:	10	dB
Resolution-BW:	1	MHz
Video-BW:	1	MHz
Video-Average:	100	sweep(s) (>1)
Detector-Mode:	1	Sample (VidAvg / VidBW<300Hz)

Correction (average):

Directional coupler	+	0.0	dB
Coaxial cable (C219)	+	0.7	dB
DUT-Antenna (on-axis)	+	11.2	dBi
Test antenna	+	0.0	dB
BW correction factor	+	0.0	dB
Atten. between HPA and feedhorn	+	0.0	dB
Attenuation	+	6.0	dB
Band stop filter (FCob)	+	0.3	dB
TOTAL CORRECTION:	+	18.2	dB

Remarks:
Carrier-on state / Carrier in the middle of the band (fm)
Measurement with 1 MHz resolution/video filter and noise averaging.
For EIRP calculation:
´worst-case´ = maximum antenna gain

Annex B Document history

Version	Applied changes	Date of release
DRAFT	Initial release - DRAFT	2016-01-11
	minor changes based on manufacturer comments	2016-01-22

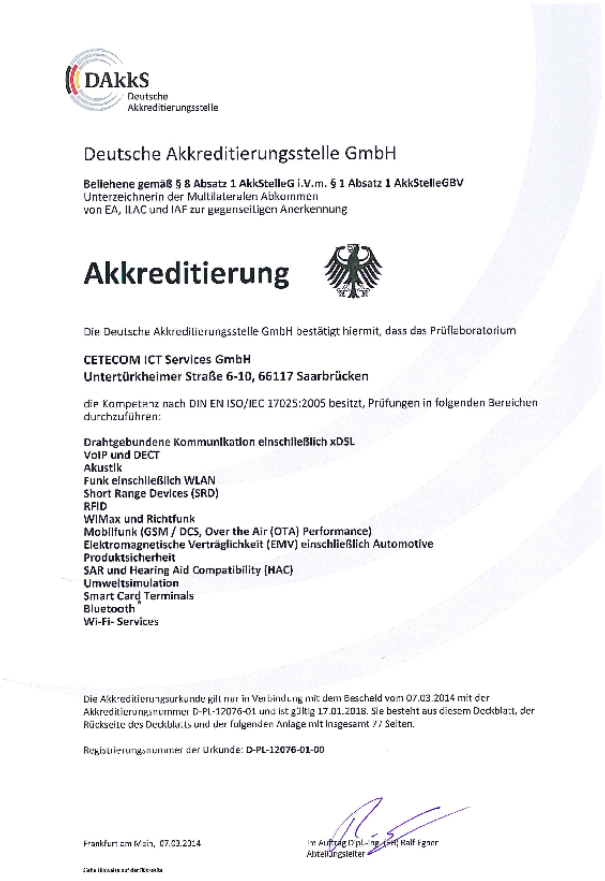
Annex C Further information

Glossary

AVG	-	Average
DUT	-	Device under test
EMC	-	Electromagnetic Compatibility
EN	-	European Standard
EUT	-	Equipment under test
ETSI	-	European Telecommunications Standard Institute
FCC	-	Federal Communication Commission
FCC ID	-	Company Identifier at FCC
HW	-	Hardware
IC	-	Industry Canada
Inv. No.	-	Inventory number
N/A	-	Not applicable
PP	-	Positive peak
QP	-	Quasi peak
S/N	-	Serial number
SW	-	Software

Annex D Accreditation Certificate

Front side of certificate



DAkkS
Deutsche Akkreditierungsstelle

Deutsche Akkreditierungsstelle GmbH

Beliehene gemäß § 8 Absatz 1 AkkStelleG i.V.m. § 1 Absatz 1 AkkStelleGBV
Unterzeichnerin der Multilateralen Abkommen
von EA, ILAC und IAF zur gegenseitigen Anerkennung

Akkreditierung

Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass das Prüflaboratorium

CETECOM ICT Services GmbH
Untertürkheimer Straße 6-10, 66117 Saarbrücken

die Kompetenz nach DIN EN ISO/IEC 17025:2005 besitzt, Prüfungen in folgenden Bereichen durchzuführen:

Drahtgebundene Kommunikation einschließlich xDSL
VoIP und DECT
Akustik
Funk einschließlich WLAN
Short Range Devices (SRD)
RFID
WiMax und Richtfunk
Mobilfunk (GSM / DCS, Over the Air (OTA) Performance)
Elektromagnetische Verträglichkeit (EMV) einschließlich Automotive
Produktsicherheit
SAR und Hearing Aid Compatibility (HAC)
Umweltsimulation
Smart Card Terminals
Bluetooth
Wi-Fi- Services

Die Akkreditierungsurkunde gilt nur in Verbindung mit dem Bescheid vom 07.03.2014 mit der Akkreditierungsnummer D-PL-12076-01 und ist gültig 17.01.2018. Sie besteht aus diesem Deckblatt, der Rückseite des Deckblatts und der folgenden Anlage mit insgesamt 77 Seiten.

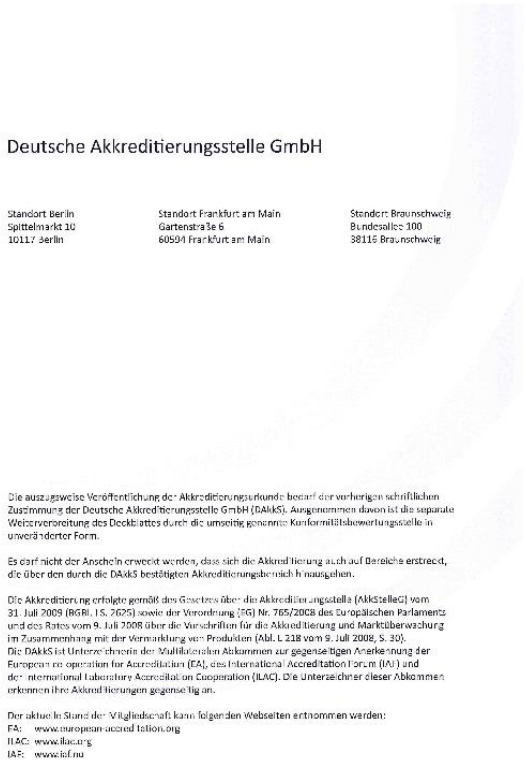
Registrierungsnummer der Urkunde: **D-PL-12076-01-00**

Frankfurt am Main, 07.03.2014

Im Auftrag Dipl.-Ing. (FH) Ralf Egner
Abteilungsleiter

Siehe Hinweise auf der Rückseite

Back side of certificate



Deutsche Akkreditierungsstelle GmbH

Standort Berlin
Spittelmarkt 10
10117 Berlin

Standort Frankfurt am Main
Gartenstraße 6
60594 Frankfurt am Main

Standort Braunschweig
Bundesallee 100
38116 Braunschweig

Die auszugsweise Veröffentlichung der Akkreditierungsurkunde bedarf der vorherigen schriftlichen Zustimmung der Deutsche Akkreditierungsstelle GmbH (DAkkS). Ausgenommen davon ist die separate Weiterverbreitung des Deckblattes durch die umseitig genannte Konformitätsbewertungsstelle in unveränderter Form.

Es darf nicht der Anschein erweckt werden, dass sich die Akkreditierung auch auf Bereiche erstreckt, die über den durch die DAkkS bestätigten Akkreditierungsbereich hinausgehen.

Die Akkreditierung erfolgte gemäß des Gesetzes über die Akkreditierungsstelle (AkkStelleG) vom 31. Juli 2009 (BGBl. I S. 2625) sowie der Verordnung (EG) Nr. 765/2008 des Europäischen Parlaments und des Rates vom 9. Juli 2008 über die Vorschriften für die Akkreditierung und Marktüberwachung im Zusammenhang mit der Vermarktung von Produkten (Abl. L 218 vom 9. Juli 2008, S. 30).
Die DAkkS ist Unterzeichnerin der Multilateralen Abkommen zur gegenseitigen Anerkennung der European co-operation for Accreditation (EA), des International Accreditation Forum (IAF) und der International Laboratory Accreditation Cooperation (ILAC). Die Unterzeichner dieser Abkommen erkennen ihre Akkreditierungen gegenseitig an.

Der aktuelle Stand der Mitgliedschaft kann folgenden Webseiten entnommen werden:
EA: www.european-accreditation.org
ILAC: www.ilac.org
IAF: www.iaf.nu

Note:

The current certificate including annex is published on our website (see link below) or may be received from CETECOM ICT Services on request.

http://www.cetecom.com/eu/de/cetecom-group/europa/deutschland-saarbruecken/akkreditierungen.html