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Laboratory 'RSC'

This test report consists of 78 pages

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Accredited testing laboratory

DAR-Registration number: DAT-P-176/94-D1



Test report no.: 4-2170-02-04/06 SM-2500 SAT module



Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 2 (78)

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Enclosure

- Annex 1: Measurement and test setups schematic diagrams
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1 General Information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in subclause 1.5. 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.

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Tester:

Date	Name	Signature
30.10.2006	Andrea Kirsch	Andrea Kirsl
30.10.2006	Karsten Geraldy	Genaldy Kusstm

Technical responsibility for area of testing:

Date	Name	Signature
30.10.2006	Karsten Geraldy	Genaldy Kurstin







1.2 Test laboratory

CETECOM ICT Services GmbH Untertürkheimer Straße 6 - 10

D-66117 Saarbrücken

Germany

Telephone: + 49 681 5 98 - 0 Fax: + 49 681 5 98 - 90 75 e-mail: info@ict.cetecom.de http://www.cetecom-ict.de

State of accreditation: The Test laboratory is accredited according to DIN EN ISO/IEC 17025.

DAR-Registration number: DAT-P-176/94-D1

Accredited Bluetooth® Test Facility (BQTF)

BLUETOOTH is a trademark owned by Bluetooth SIG, Inc. and licensed to CETECOM

Test location, where different from CETECOM ICT Services GmbH:

Name : - not applicable Street : - not applicable Town : - not applicable Country : - not applicable Telephone and Telefax : - not applicable -

1.3 Applicant's details

Name : Asia Pacific Satellite Industries Co., Ltd.
Department : Att. Mr. Hyoung-Won Ahn, General Manager
Street : 9FL, IT Castle 2-Dong, #550-1, Gasan-Dong

Town : GeumCheon-Gu, Seoul

Country : Korea

Telephone and Telefax: +82 2 2026 7780 / +82 2 2026 7772

Contact person's name: Mr. Hyoung-Won Ahn, General Manager Telephone and Telefax: +82 2 2026 7780 / +82 2 2026 7772

1.4 Details of application

Date of receipt of order : 11.07.2006 Date of receipt of test item : 31.07.2006

Date(s) of test : 31.07. - 11.08.2006

Laboratory reference number : 018.06 Test report version : 2

Person(s) who have been present during the test: Mr. Pyo-Jin (Gerald) Kim, Mr. Kyung-Yong Kim, Mr. Y.S. Lee, Mr. Won-Jae Jung

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1.5 Test item

1.5.1 General description

Type of test item : Thuraya Satellite Module

Operating characteristics: GEM mode

Type identification : **SM-2500 SAT module** Serial number(s) : see following table

List of components:

_	or components:	i				1	
No.	Equipment	Manufacturer	Type name		Serial number	Note	tested
			(version, part	number)		no.	(Y/N)
			(version, part	I		110.	(1/11)
1	Thuraya Satellite Module	Asia Pacific Satellite Industries Co.Ltd	SM-2500		IMEI: 35601300-010151-2		yes
							, , , ,

Note:

- 1) The item can optionally be equipped with this additional component.
- 2) The item can optionally be equipped with this component instead of no. xxx
- 3) Because of conceptional and mechanical equality the no. xxx was/were representatively tested.
- 4) This component corresponds with the no. xxx but it's not fully provided.
- 5) The item can be combined with this component. The test of this component is documented in test report no.xxxxx/xxxxx/xx.
- 6) This component was sufficiently taken into account, see test report no. xxxxx/xxxxx/xx.
- 7) This component is not part of the test item it was representatively used to establish the operation and test modes.
- 8) This component is integrated repeatedly in the item because of redundancy the redundant components were not tested because of equality to the primary parts.
- 9) This component is not relevant relating to the requirements of the test specification as well as baseband equipment the EMC conformity and eventually the approval for connection to public telecommunication networks are only expected.

Antenna system(s):

Antenna	Reflector	Concept	Manufacturer	Type	Transmit	Receive	Polarization
size	shape				gain dBi	gain dBi	
(mm)					(midband)	(midband)	
-/-	-/-	any	any	-/-	max. 6.0dBic	max. 6.0dBic	LHCP

Technical descriptions and documents:

No.	Document(s)

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Technical Data

Transmitter frequency range(s) : 1626.5 - 1660.5 MHz Channel spacing : 31.25 kHz¹⁾

Receiver frequency range(s) : 1525.0 - 1559.0 MHz

Transmitter power max. peak : 3.2 W typical : 3.2 W Radiated power (EIRP) max. peak : 11 dBW^2 typical : 11 dBW^2 Intermediate frequency(ies) : 246 MHz Level (range) : -20 dBm Frequency stability : Uncorrected: $<\pm 5 \text{ ppm}$, Corrected: $<\pm 0.006 \text{ ppm}$

Kind of baseband signal : voice / circuit data / packet data / fax

Kind of modulation (s) : $\pi/4$ - CQPSK

Occupied bandwidth (99% / 20dB-bandwidth) : approx. 34.4 kHz (see annex 3, plot no. 3, 8 and 13) 3)

Assigned bandwidth : approx. 86.25 kHz (see annex 3, plot no. 4, 5, 9, 10, 14 and 15) 3) Data rate(s) / FEC : Tx: 2.4 / 4.8 / 9.6 / 14.4kbps / Convolution (1/2, 1/3, 1/4, 1/5) 4)

Power supply : typ. 10 Vdc ⁴⁾
Kind of transmission acc. to FCC §2.201 + §2.202 : 35k0G1W ⁴⁾
FCC ID : TZ5SM-2500

Additional information

SM-2500 is the Satellite Module for Thuraya satellite mobile communication service based on GMR-1 and GMPRS-1. It supports various services such as voice, circuit data, packet data and fax etc. It serves the various interfaces, UART, LCD, SIM, keypad, digital and analogue audio interfaces....etc.

The manufacturer declared that the Module can be connected to any suitable antenna with 6 dBi max, antenna gain.

1.5.2 Operating conditions

Operating condition 1: 1643.5 MHz / CH 544 (=fm, 1626.53125 MHz / Ch 1 =fu, 1660.46875 MHz / CH 1087 =fo)

Pi/4-CQPSK, 23.4 ksps (voice), approx 3.2 W

Operating condition 2: Idle-Mode (carrier off)

1.6 Test specifications

1) FCC 47 CFR (February 1, 2006), Part 15: Radio frequency devices

§15.207 Conducted limits

§15.209 Radiated emission limits, general requirement

2) FCC 47 CFR (October 1, 2005), Part 2: Frequency allocations and radio treaty matters

§2.1046 Measurements required: RF power output

§2.1049 Measurements required: Occupied bandwidth

§2.1051 Measurements required: Spurious emissions at antenna terminals

§2.1053 Measurements required: Field strength of spurious radiation

§2.1055 Measurements required: Frequency stability

3) FCC 47 CFR (October 1, 2005), Part 25: Satellite communications

§25.202 Frequencies, frequency tolerance and emission limitations

§25.216 Limits on emissions from mobile earth stations for protection of aeronautical radionavigation-satellite services

¹⁾ channel spacing of Mobile

²⁾ for an antenna with an on-axis gain of max. +6.0 dBi

³⁾ for operating conditions defined below

⁴⁾ manufacturer's declaration

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2 Technical test

2.1 Summary of test results

X	No deviations from the technical specification(s) were ascertained in the course of the tests performed. The deviations as specified in subclause 2.5 and annex 3 were ascertained in the course of the tests performed.
This test report:	documents a first test documents a repeat examination documents a verification of documents is only valid in association with test report no.:/

Single test results are listed under subclause 2.5 and annex 3 of this report.

The test item was **not** tested to connect it with the public telecommunication network.

2.2 Test environment

The environment conditions are documented specially for each test in 2.5.2 and annex 3.

2.3 Measurement and test setup, measurement uncertainties

The measurement and test setup is in accordance to the specification and schematically shown in annex 1. The reference to each test is shown in 2.5.2 and annex 3. The measurement uncertainties are within the ranges, which are required in the test specifications. A closer inspection and precise consideration of the real measurement uncertainty and its documentation within this test report will be made only if any measured data is closer to the corresponding limit than the maximum uncertainty which is given in the specification. In this case special tests were performed by use of comparable methods and/or measuring equipment in order to prove the given test results are correct. The results of these additional tests will be reported only then if it is very critical to show that the limit is met or not.

2.4 Test equipment utilized

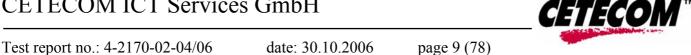
See annex 2

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2.5 Test results

2.5.1 T	Cest result overview
	in addition to test report no.:
1	in accordance to the technical description not in accordance to the technical description
Part 2: Fi Section 2 Section 2	ance test: Output power and spectrum of transmission: requency allocations and radio treaty matters; general rules and regulations 2.1046 Measurements required: RF power output 2.1049 Measurements required: Occupied bandwidth in accordance to the technical description not in accordance to the technical description
Part 15: 1 Section 1	CFR (February 1, 2006) Radio frequency devices 15.207 Conducted limits pass fail already tested (see test report no. xxx) not applicable
Part 15:]	CFR (February 1, 2006) Radio frequency devices 15.209 Radiated emission limits, general requirements pass fail already tested (see test report no. xxx) not applicable
Part 2: Fi Section 2 Part 25: Section 2	CFR (October 1, 2005) requency allocations and radio treaty matters; general rules and regulations 2.1055 Measurements required: Frequency stability Satellite communications 25.202(d) Frequency tolerance of Earth stations pass fail already tested (see test report no. xxx) not applicable



FCC 47 CFR (October 1, 2005) Part 2: Frequency allocations and radio treaty matters; general rules and regulations Section 2.1051 Measurements required: Spurious emissions at antenna terminals Part 25: Satellite communications Section 25.202(f) Emission limitations pass fail already tested (see test report no. xxx) not applicable FCC 47 CFR (October 1, 2005) Part 2: Frequency allocations and radio treaty matters; general rules and regulations Section 2.1053 Measurements required: Field strength of spurious radiation Part 25: Satellite communications Section 25.202(f) Emission limitations pass fail already tested (see test report no. xxx) not applicable FCC 47 CFR (October 1, 2005) Part 25: Satellite communications Section 25.216 Limits on emissions from mobile earth stations for protection of aeronautical radionavigation-satellite services pass fail already tested (see test report no. xxx) not applicable

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2.5.2 Test documentation

Contents:

- Correspondance of the test item and its technical description
- Function test, RF power output and occupied bandwidth
- Radio frequency devices, Conducted limits
- Radio frequency devices, Radiated emission limits, general requirements
- Frequency tolerance of Earth stations
- Conducted spurious emission limitations
- Radiated spurious emission limitations
- Limits on emissions from mobile earth stations for protection of aeronautical radionavigation-satellite services

- [X] -/-
- [X] §2.1046 and §2.1049
- [X] §15.207
- [X] §15.209
- [X] §2.1055 and §25.202(d)
- [X] $\S 2.1051$ and $\S 25.202(f)$
- [X] §2.1053 and §25.202(f)
- [X] §25.216





Reference document: FCC 47 CFR (October 1, 2005)

Part 25 - Satellite Communications

Section: -/- Correspondence of the test item and its technical description

Remark and establishing:

The test item and its technical description (see subclause 1.5.1) was compared by spot checking.

Result of test: In accordance to the technical description [X]

No accordance to the technical description []

Reference document: FCC 47 CFR (October 1, 2005)

Part 25 - Satellite Communications

Section: -/- Function tests

2.1046 Measurements required: RF power output2.1049 Measurements required: Occupied bandwidth

Environment conditions: see also plots given below

ı	date	temperature in °C	rel. humidity in %	voltage in V	laboratory / test system
	31.07.2006	26	55	10	Laboratory 'RSC-Sat'

Power measurement by spectrum analyzer, 1 MHz bandwidth, max-hold mode

state	frequency	reading		of corre	ction		result					remark	
	(range)	level		atte	nuation /	loss							
			direct cable att. power re				referred	referred to output HPA ant. EIRP					
			coupl.				splitt.		(-30)	(10^)	gain		
	MHz	dBm	dB dB dB dB dB				dBm	dBW	W	dBi	dBW		
mod	1.6435	24.1	-/-	0.2	0.7	10.0	-/-	35.0	5.0	3.2	6.0	11.0	CH 544
mod	1.62659375	24.0	-/-	0.2	0.7	10.0	-/-	34.9	4.9	3.1	6.0	10.9	CH 3
mod	1.66046875	24.0	-/-	0.2	0.7	10.0	-/-	34.9	4.9	3.1	6.0	10.9	CH 1087

 \underline{cw} = continuous wave \underline{mod} = modulated

Occupied Bandwidth:

measured value: 34.4 kHz, see also annex 3, plot 3, 8 and 13

Operating conditions of DUT:

see subclause 1.5.2: Operating condition 1 (deviations see table above)

Test setup(s):

see annex 1, test setup 1.2hk and 1.2hgj

<u>Test equipment:</u>

see annex 2, subclause 4: C217, R001, U214

Data of correction:

see annex 4

Photo documentation:

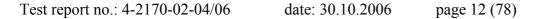
see annex 5

Remark and establishing:

see annex 3, part 1 plot 1 - 15

Result of test: In accordance to the technical description [X]

No accordance to the technical description []





Reference document: FCC 47 CFR (February 1,2006)

Part 15 - Radio frequency devices

Section: 15.207 Conducted limits (150 kHz - 30 MHz)

Result of test: see annex 3, plot 12

Reference document: FCC 47 CFR (February 1,2006)

Part 15 - Radio frequency devices

Section: 15.209 Radiated emission limits, general requirements

Environment conditions: see following plots

date	temperature in °C	rel. humidity in %	voltage in V	laboratory / test system		
02.08.2006	25	50	10	Anechoic chamber 'F'		
03.08.2006	25	50	10	Anechoic chamber 'C'		
03.08.2006	25	50	10	Laboratory 'RSC-Sat'		

Test results:

	frequency	ncy reading angle data of correction and							t	res	ult	limit	result	plot			
no.	(range)	level		attenuation / loss				gain	i	pol.				value	above		
				free field cable		ant.	ampl.		v h					limit			
	GHz	dBm	0	m	dB	dB	dB	dB	dB	dB	X	X	$dB\mu V/m$	$dB\mu V/m$	$dB\mu V/m$	dB	No.
1	.009 - 30											X					16
2	30 - 4000										X						20, 21, 24, 25
3	30 - 4000											X					22, 23
4	4G - 12G				•						X						26, 27
5	12G - 20G				·						X	X					28

[[]X] Data of correction is considered in the reading level. These correction values are reported in the quality assurance documentation of the test system - because of clearness these correction data are not included in this test report.

[X] The spurious emissions which are shown in the plots given above were detected.

[] No spurious emissions were detected.

The table above contains the most important emissions only. Further information are shown in the given plots.

The measurement value is out of spec. The difference to the limit value is in the range of measurement uncertainty, however.

Operating conditions of DUT:

see subclause 1.5.2: Operating condition 2, Idle Mode

Test setup(s):

see annex 1, test setup 2.2 and 2.3

Test equipment:

see annex 2, subclause 1, 2 and 3: 1001 - 1013, 3001 - 3010, A037, C217, R001, U214

Data of correction:

see annex 4

Photo documentation:

see annex 5

Remark and establishing:

If the table above is not completely filled out the missing values can be found in the given plots. The necessary calculations are done there.

Result of test: pass [X] fail []





Reference document: FCC 47 CFR (October 1, 2005)

Part 25 - Satellite Communications

Section: 25.202(d) Frequency tolerance of Earth stations

2.1055 Measurements required: Frequency stability

Conducted measurements within the band

Environment conditions:

date	temperature in °C	rel. humidity in %	voltage in V dc	laboratory / test system
03.08.2006	-30 to +50	-/-	10	Laboratory 'RSC-Sat'

Test results:

no.	temperature	soll	left	right	is	deviation	deviation	remark
	°C	[MHz]	[MHz]	[MHz]	[MHz]	[Hz]	ppm	
1	-30	1643.5	1643.484407	1643.513333	1643.49887	-1130	-0.69	
2	-20	1643.5	1643.485689	1643.514455	1643.500072	72.0	0.04	
3	-10	1643.5	1643.48633	1643.515176	1643.500753	753	0.46	
4	0	1643.5	1643.48617	1643.515096	1643.500633	633	0.39	
5	+10	1643.5	1643.48609	1643.514936	1643.500513	513	0.31	
6	+20	1643.5	1643.485529	1643.514535	1643.500032	32.0	0.02	
7	+30	1643.5	1643.484968	1643.513974	1643.499471	-529	-0.32	
8	+40	1643.5	1643.484728	1643.513574	1643.499151	-849	-0.52	
9	+50	1643.5	1643.484888	1643.513734	1643.499311	-689	-0.42	

Operating conditions of DUT:

see subclause 1.5.2: Operating condition 1, fm

Test setup(s):

see annex 1, test setup 1.2cdhgj

Test equipment:

see annex 2, subclause 3: C217, R001, U214

Data of correction:

Photo documentation:

see annex 4

Limit information:

reference frequency $\pm 0.001 \% (10 \text{ ppm})$

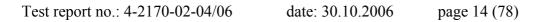
Remark and establishing:

Tests were performed with Spectrum analyzer HP 8565E.

After reaching the temperature given in the table above tests were paused for at least 15 minutes for temperature compensation of the DUT.

The manufacturer declared a frequency stability of $\leq \pm 5$ ppm uncorrected and $\leq \pm 0.006$ ppm corrected.

Result of test: pass [X] fail []





Reference document: FCC 47 CFR (February 1,2006)

Part 25 - Satellite Communications

Section: 25.202(f) Emission limitations

2.1053 Measurements required: Field strength of spurious radiation

Radiated measurements

Environment conditions:

date	temperature in °C	rel. humidity in %	voltage in V	laboratory / test system
02.08.2006	25	50	10	Anechoic chamber 'F'
02.08.2006	25	50	10	Anechoic chamber 'C'

Test results:

	frequency	reading	angle			data d	of corre	ection			an	t	re	sult	limit	result	plot
no.	(range)	level				tion / los	S		gain	i	pol			(-6dB)	value	above	
				free	field	cable		ant.	ampl.		V	h		10m		limit	
	MHz	$dB\mu V/$	0	m	dB	dB	dΒ	dB	dB	dB	X	X	$dB\mu V/m$	$dB\mu V/m$	$dB\mu V/m$	dB	no.
		m															
1	25 - 4000										X	X					17
2	4G -12.5G										X	X					18
3	12G - 20G										X	X					19
4																	
5																	
6																	

[[]X] Data of correction is considered in the reading level. These correction values are reported in the quality assurance documentation of the test system - because of clearness these correction data are not included in this test report.

- [X] The spurious emissions which are shown in the plots given above were detected.
- [] No spurious emissions were detected.
- [] The table above contains the most important emissions only. Further information are shown in the given plots.
- [] The measurement value is out of spec. The difference to the limit value is in the range of measurement uncertainty, however.

Operating conditions of DUT:

see subclause 1.5.2: Operating condition 1

Special quality of measurement:

Test setup(s):

see annex 1, test setup 2.1

Test equipment:

see annex 2, subclause 1, 2 and 3: 3001 - 3010, A037, C217, R001, U214

Data of correction:

Photo documentation:

see annex 5

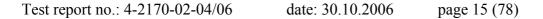
Remark and establishing:

If the table above is not completely filled out the missing values can be found in the given plots.

The necessary calculations are done there.

The radiated measurements were performed with a dummy load connected to the DUT and a measuring system including turntable and antenna lift to cover all three antenna planes.

Result of test: pass [X] fail []



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Reference document: FCC 47 CFR (October 1, 2005)

Part 25 - Satellite Communications

Section: 25.202(f) Emission limitations

2.1051 Measurements required: Spurious emissions at antenna terminals

Conducted measurements

Result of test: see annex 3, plot 29 - 54

Reference document: FCC 47 CFR (October 1, 2005)

Part 25 - Satellite Communications

Section: 25.216 Limits on emissions from mobile earth stations for protection of

aeronautical radionavigation-satellite services

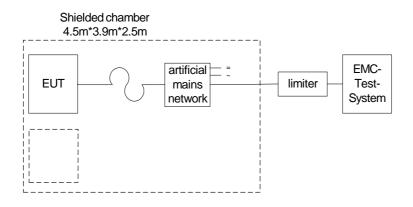
Result of test: see annex 3, plot 55

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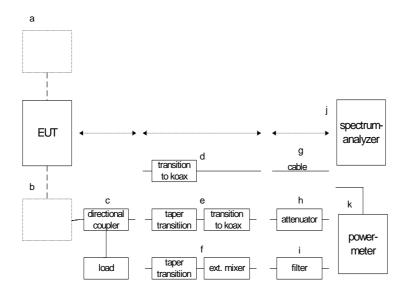


Annex 1: Measurement and test setups - schematic diagrams

1. Conducted measurements



Setup 1.1

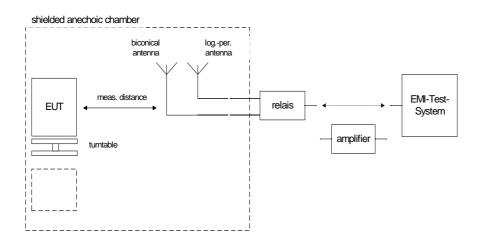


Setup 1.2 x...x

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2. Radiation measurements



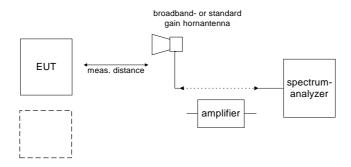
Setup 2.1

Shielded anechoic chamber antenna 2 antenna 1 amplifier 1 spectrumanalyzer b

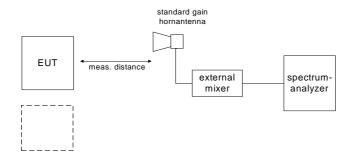
Setup 2.2



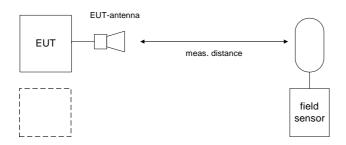
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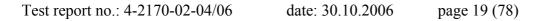
Setup 2.3



Setup 2.4



Setup 2.5





3. Measuring the EIRP of Spurious/Harmonic Emissions using Substitution Method

The following steps describe the procedure used to measure the radiated emissions from the mobile station. The site is constructed in accordance with ANSI C63.4:2003 requirements and is recognized by the FCC to be in compliance for a 3 and a 10 meter site. The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1660.5 MHz. This was rounded up to 20 GHz. The spectrum was scanned with the mobile station transmitting a carrier in the middle of the transmit band.

The final open field emission (here 10m semi-anechoic chamber listed by FCC) test procedure is as follows:

- a) The test item was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna.
- b) The antenna output was terminated in a 50 ohm load.
- c) A double ridged waveguide antenna was placed on an adjustable height antenna mast 3 meters from the test item for emission measurements.
- d) Detected emissions were maximized at each frequency by rotating the test item and adjusting the receive antenna height and polarization. The maximum meter reading was recorded. The radiated emission measurements of the harmonics of the transmit frequency through the 10th harmonic were measured with peak detector and 1 MHz bandwidth. If the harmonic could not be detected above the noise floor, the ambient level was recorded.
- e) Now each detected emissions were substituted by the Substitution method, in accordance with the TIA/EIA 603.

All measurements were done in horizontal and vertical polarization plane, the plot(s) show the worst case of both.

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Annex 2: Measuring equipment used (statement of inventory)

1. EMC-Testcenter (006)

Item No.	X Measuring- equipment	Manufacturer	Type	Serialnumber	Identnumber	#	Cal/Verif cycle
1001	Controler	Rohde & Schwarz	PSM 7	883086/026	300002208	1	12 Mon.
1002	Spectrum monitor	Rohde & Schwarz	EZM	883086/026	300002208	1	12 Mon.
1003	Test receiver	Rohde & Schwarz	ESH3	881515/002	300002490	1	12 Mon.
1004	Relais matrix	Rohde & Schwarz	PSU	882943/029	300001484	1	12 Mon.
1005	Artificial mains network	Rohde & Schwarz	ESH2 Z5	882394/007	300001481	1	12 Mon.
1006	Artificial mains network	Rohde & Schwarz	ESH3 Z5	861189/014	300001458	1	12 Mon.
1007	Artificial mains network	Rohde & Schwarz	ESH3 Z5	892475/017	300002209	1	12 Mon.
1008	Artificial mains network	Rohde & Schwarz	ESH3 Z5	894981/019	300001077	1	12 Mon.
1009	Artificial mains network	Rohde & Schwarz	ESH3 Z6	836501652	300002210	1	12 Mon.
1010	Artificial mains network	Rohde & Schwarz	ESH3 Z6	861406/005	300001518	1	12 Mon.
1011	Artificial mains network	Rohde & Schwarz	ESH3 Z6	893689/012	300001504	1	12 Mon.
1012	Power supply	Hewlett Packard	6032A	2818A-03449	300002120	1	12 Mon.
1013	Loop antenna	Rohde & Schwarz	HMO20	832211/003	300002243	1	12 Mon.

2. Anechoic chamber 'C'

Item	X Measuring-	Manufacturer	Type	Serialnumber	Identnumber	#	Cal/Verif
No.	equipment						cycle
3001	Spectrum Analyzer	Hewlett Packard	8566B	2747A05306	300001000	1	12 Mon.
3002	Spec. Analyzer Display	Hewlett Packard	85662A	2816A16541	300002297	1	12 Mon.
3003	Quasi-Peak-Adapter	Hewlett Packard	85650A	2811A01131	300000999	1	12 Mon.
3004	RF-Preselector	Hewlett Packard	85685A	2833A00768	400000081	1	12 Mon.
3005	Relais matrix	Hewlett Packard	3488A	2719A15012	300001143	1	12 Mon.
3006	Power supply	Hewlett Packard	6032A	2818A03450	300001040	1	12 Mon.
3007	Amplifier	Parzich GMBH	js42-00502650-28-5a	928979	300003143	1	12 Mon.
3008	Biconical antenna	Emco	3104	3758	300001602	1	12 Mon.
3009	Logper. antenna	Emco	3146	2130	300001603	1	12 Mon.
3010	Double ridged guide ant.	Emco	3115	3088	300001032	1	12 Mon.

3. Laboratory 'RSC-Sat'

Item	X Measuring-	Manufacturer	Type	Serialnumber	Identnumber	#	Cal/Verif
No.	equipment						cycle
A037	Horn Ant. 1-26.5GHz	EMCO	3115	8812-3089	300000307	1	12 Mon.
C217	1.5 m 50 Ω / K	Insulated Wire Inc.	KPS-1533-590	101995	300002290	1	12 Mon.
R001	Spectrum analyzer	Hewlett Packard	HP 8565E	3515A00283	300000916	1	12 Mon.
U019	Attenuator	Narda	375 BNM	43		1	12 Mon.
11b	Microw. Sys. Amplif. 0.5-26.5GHz	Hewlett-Packard	83017A	3123A00105	300002267	1	24 Mon.
U214	Attenuator 10dB, N-con.	Spinner	BN 745379	7/93	400000047	1	24 Mon.
WHPF	Highpass filter	TRILITHIC	5HC2600/12750-1.5-KK	_/_	300000104	1	24 Mon.
WStu	Stub Tuner (triple)	MICROLAB/FXR	S3-15N	-/-	300002831	1	24 Mon.

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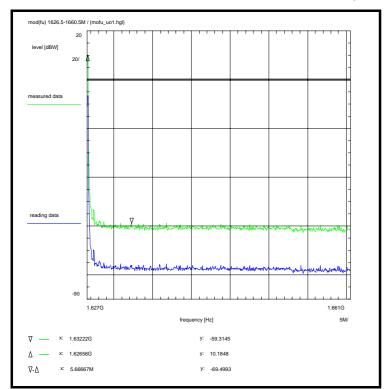
Annex 3: Measurement results

Annex 3 consists of 58 pages including this page.

Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 22 (78)

CETECOM

Annex 3: Measurement result no. 1 (57)



Test results: see plot (an explicit table was not generated) Operating condition of DUT: operating condition 1, see section 1.5.2 CH 1 Test setup: see annex 1: 1.2hgj Test equipment: see annex 2: C217, R001, U214 Data of correction: see annex 4 Remark: Test result: measurement for orientation	he band (fu)
operating condition 1, see section 1.5.2 CH 1 Test setup: see annex 1: 1.2hgj Test equipment: see annex 2: C217, R001, U214 Data of correction: see annex 4 Remark:	
see annex 1: 1.2hgj Test equipment: see annex 2: C217, R001, U214 Data of correction: see annex 4 Remark:	
see annex 2: C217, R001, U214 Data of correction: see annex 4 Remark:	
see annex 4 Remark:	
Test result: measurement for orientation	

Date & Time:			
Date & Tille.	Thu 03/Aug/200	5 13:42	2:31
Location:	CETECOM ICT:	Service	es GmbH, Laboratory RSC-Sat
Temperature:	25	°C	•
Humidity:	50	%	
Voltage:	10	Vdc	
Setup of measurement equ	ipment:		
Start frequency:	1.6265	GHz	
Stop frequency:	1.6605	GHz	
Center frequency:	1.6435	GHz	
Frequency span:	34	MHz	
Input attenuation:	40	dB	
Resolution-BW:	30	kHz	
Video-BW:	30	kHz	
Video-Average:	1	swee	ep(s) (>1)
Detector-Mode:	2	Pos I	Peak (Maximum-Hold)
Correction (average):			
Directional coupler	+	0.0	
Coaxial cable (C217)	+	0.7	dB
DUT-Antenna (on-axis)	+	6.0	dBi
Test antenna	+	0.0	dB
BW correction factor	+	0.0	
Atten. between HPA and fe	edhorn +	0.0	
Attenuation (U214)	+		
TOTAL CORRECTION:	+	16.7	dB
Limit:			
no limits defined			
This test serves to verify th			
for orientation regarding to			
expected within the band, f actual power with the rated			

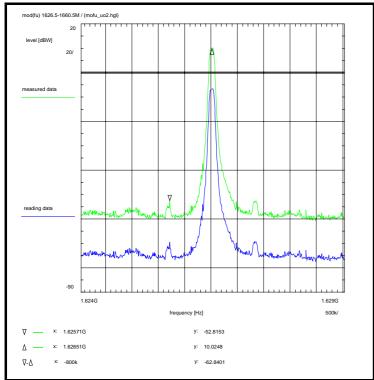
Remarks:
Test of general function of the EUT and measurement for orientation

as close to the lower edge of the operating frequency band.

Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 23 (78)



Annex 3: Measurement result no. 2 (57)



Information on	the m	eas	sure	ement:
Environment condition:				
	u 03/Aug/			
Location: CI	ETECOM	ICT S		es GmbH, Laboratory RSC-Sat
Temperature:		25	°C	
Humidity:		50	%	
Voltage:		10	Vdc	
Setup of measurement equip	ment:			
Start frequency:	1.624031	25	GHz	
Stop frequency:	1.629031	25	GHz	
Center frequency:	1.626531	25	GHz	
Frequency span:		5	MHz	
Input attenuation:		40	dB	
Resolution-BW:		30	kHz	
Video-BW:		30	kHz	
Video-Average:		1	swee	p(s) (>1)
Detector-Mode:		2	Pos I	Peak (Maximum-Hold)
Correction (average):				
Directional coupler		+	0.0	dB
Coaxial cable (C217)		+	0.7	dB
DUT-Antenna (on-axis)		+	6.0	dBi
Test antenna		+	0.0	dB
BW correction factor		+	0.0	dB
Atten. between HPA and feed	lhorn	+	0.0	dB
Attenuation (U214)		+	10.0	dB
TOTAL CORRECTION:		+	16.7	dB
Limit:				
no limits defined				
This test serves to verify the	general fur	nctio	n of th	e EUT and
for orientation regarding to the				
expected within the band, furt				
actual power with the rated va	alue at mo	dulat	ted car	rrier adjusted

. .

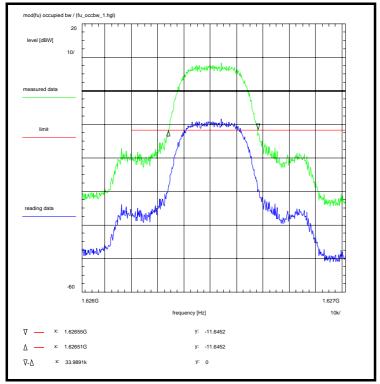
Remarks:
Test of general function of the EUT and measurement for crientation

as close to the lower edge of the operating frequency band.

Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 24 (78)



Annex 3: Measurement result no. 3 (57)



Subclause: -/-	Function test Modulated rf-carrier at the lower edge of the band (fu) Determination of the 'occupied bandwidth'
Test results: see plot (an explicit table v	was not generated)
Operating condition of DU operating condition 1, see CH 1	<u>T:</u> section 1.5.2
Test setup: see annex 1: 1.2hgj	
Test equipment: see annex 2: C217, R001,	, U214
Data of correction: see annex 4	
Remark:	
Test result:	Determination of the 'occupied bandwidth'

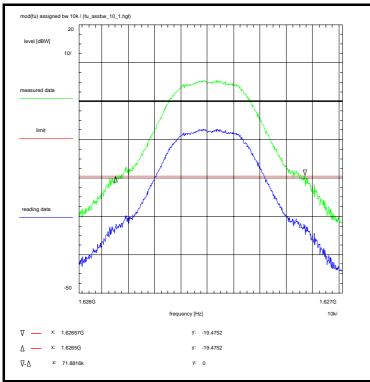
Information on the measurement: Environment condition: Thu 03/Aua/2006 13:57:42 Date & Time: Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat 25 °C 50 % Temperature: Humidity: Voltage: 10 Vdc <u>Setup of measurement equipment:</u> Start frequency: 1.62648125 GHz 1.62658125 1.62653125 GHz GHz Stop frequency: Center frequency: Frequency span: dB kHz Input attenuation: 40 Resolution-BW: Video-BW: kHz Video-Average: Detector-Mode: sweep(s) (>1) Pos Peak (Maximum-Hold) Correction (average): Directional coupler + 0.0 dB Coaxial cable (C217) DUT-Antenna (on-axis) 6.0 dBi Test antenna 0.0 dB BW correction factor Atten. between HPA and feedhorn 0.0 dB Attenuation (U214) 10.0 dB TOTAL CORRECTION: The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to $0.5\,\%$ of the total mean power radiated by a given emission. This occupied bandwidth corresponds to the 20 dB-bandwidth.

Remarks:

Determination of the 'occupied bandwidth' at fu: The measured value is about 34 kHz (delta marker) Measurement with 3 kHz resolution filter and Max-Hold. Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 25 (78)

CETECOM

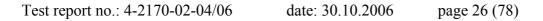
Annex 3: Measurement result no. 4 (57)



Subclause: -/- Function test Modulated rf-carrier at the lower edge of the band (fu) Determination of the 'assigned bandwidth'
Test results: see plot (an explicit table was not generated)
Operating condition of DUT: operating condition 1, see section 1.5.2 CH 1
Test setup: see annex 1: 1.2hgj
Test equipment: see annex 2: C217, R001, U214
<u>Data of correction:</u> see annex 4
Remark:
Test result: Determination of the 'assigned bandwidth'

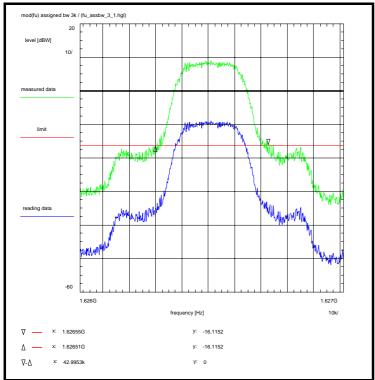
Environment condition:				
Date & Time:	Thu 03/A			
Location:	CETECO	M ICT :		es GmbH, Laboratory RSC-Sat
Temperature:		25	°C	
Humidity:		45	%	
Voltage:		10	Vdc	
Setup of measurement eq	uipment:			
Start frequency:	1.6264	18125	GHz	
Stop frequency:	1.6265	8125	GHz	
Center frequency:	1.6265	3125		
Frequency span:		100		
Input attenuation:		40	dB	
Resolution-BW:		10	kHz	
Video-BW:		10	kHz	
Video-Average:		1	swee	ep(s) (>1)
Detector-Mode:		2	Pos I	Peak (Maximum-Hold)
Correction (average):				
Directional coupler		+	0.0	dB
Coaxial cable (C217)		+		
DUT-Antenna (on-axis)		+		
Test antenna		+	0.0	
BW correction factor (10k		-	4.0	
Atten. between HPA and f	eedhorn	+	0.0	dB
Attenuation (U214)		+	10.0	dB
TOTAL CORRECTION:		+	12.7	dB
Limit:				
no limits defined				
The limit line in the plot of	-25dBc/4k	Hz is u	seful fo	or orientation
and corresponds to the re-	striction for	'Emiss	sion lin	nitations ´

Remarks:
Determination of the 'assigned bandwidth' at fu:
The measured value is about 72 kHz (delta marker) Measurement with 10 kHz resolution filter and Max-Hold.



CETECOM

Annex 3: Measurement result no. 5 (57)



Subclause: -/-	Function test Modulated rf-carrier at the lower edge of the band (fu) Determination of the 'assigned bandwidth'
Test results: see plot (an explicit table v	vas not generated)
Operating condition of DU operating condition 1, see CH 1	
Test setup: see annex 1: 1.2hgj	
Test equipment: see annex 2: C217, R001,	U214
<u>Data of correction:</u> see annex 4	
Remark:	
<u>Test result:</u>	Determination of the 'assigned bandwidth'

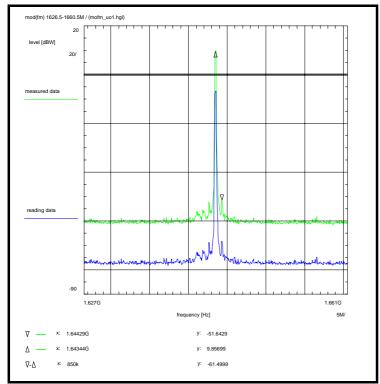
Environment condition:				
	Thu 03/Aug/2006 14:12:24			
	CETECON			es GmbH, Laboratory RSC-Sat
Temperature:		25		
Humidity:		45		
Voltage:		10	Vdc	
Setup of measurement equ	ipment:			
Start frequency:	1.6264	8125	GHz	
Stop frequency:	1.6265			
Center frequency:	1.6265	3125	GHz	
Frequency span:		100	kHz	
Input attenuation:		40	dB	
Resolution-BW:		3		
Video-BW:		3		
Video-Average:		1		ep(s) (>1)
Detector-Mode:		2	Pos I	Peak (Maximum-Hold)
Correction (average):				
Directional coupler		+	0.0	dB
Coaxial cable (C217)		+	0.7	dB
DUT-Antenna (on-axis)		+	6.0	dBi
Test antenna		+		
BW correction factor (3k ->	4k)	+	1.2	dB
Atten. between HPA and fe	edhorn			
Attenuation (U214)			10.0	dB
TOTAL CORRECTION:		+	17.9	dB
Limit: no limits defined The limit line in the plot of - and corresponds to the res (see 25.202 f)).				

Remarks:
Determination of the 'assigned bandwidth' at fu:
The measured value is about 43 kHz (delta marker) Measurement with 3 kHz resolution filter and Max-Hold.

date: 30.10.2006 Test report no.: 4-2170-02-04/06 page 27 (78)

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Annex 3: Measurement result no. 6 (57)



Subclause: -/-Function test Modulated rf-carrier in the middle of the band (fm) Measurement within the band <u>Test results:</u> see plot (an explicit table was not generated) Operating condition of DUT: operating condition 1, see section 1.5.2 CH 544 Test setup: see annex 1: 1.2hgj Test equipment: see annex 2: C217, R001, U214 Data of correction: see annex 4 Remark: Test result: measurement for orientation

Information on t	he meas	sure	ement:			
Environment condition:						
Date & Time: We	Wed 02/Aug/2006 15:35:32					
Location: CE	CETECOM ICT Services GmbH, Laboratory RSC-Sat					
Temperature:	25	°C				
Humidity:	45	%				
Voltage:	10	Vdc				
Setup of measurement equipm	nent:					
Start frequency:	1.6265	GHz				
Stop frequency:	1.6605	GHz				
Center frequency:	1.6435	GHz				
Frequency span:	34	MHz				
Input attenuation:	40	dB				
Resolution-BW:	30	kHz				
Video-BW:	30	kHz				
Video-Average:	1	swee	p(s) (>1)			
Detector-Mode:	2	Pos I	Peak (Maximum-Hold)			
Correction (average):						
Directional coupler	+	0.0	dB			
Coaxial cable (C217)	+	0.7	dB			
DUT-Antenna (on-axis)	+	6.0	dBi			
Test antenna	+	0.0	dB			
BW correction factor	+	0.0	dB			
Atten. between HPA and feedl	norn +	0.0	dB			
Attenuation (U214)	+	10.0	dB			
TOTAL CORRECTION:	+	16.7	dB			
Limit:						
no limits defined						
This test serves to verify the g	eneral functio	n of th	e EUT and			
for orientation regarding to the						
expected within the band, furth						
actual power with the rated val	lue at modula	ted cai	rrier			

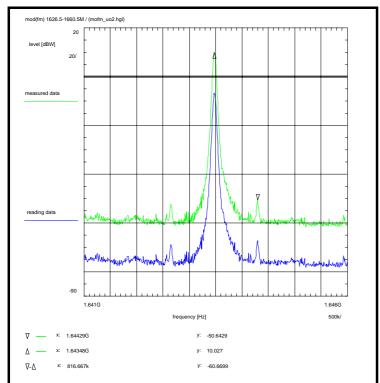
Remarks:
Test of general function of the EUT and measurement for

adjusted in the middle of the band (EIRP).

Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 28 (78)

CETECOM

Annex 3: Measurement result no. 7 (57)



<u>-</u>	
Subclause: -/-	Function test Modulated rf-carrier in the middle of the band (fm) Measurement within the band
Test results: see plot (an explicit table	e was not generated)
Operating condition of D operating condition 1, se CH 544	<u>UT:</u> e section 1.5.2
Test setup: see annex 1: 1.2hgj	
Test equipment: see annex 2: C217, R00	1, U214
Data of correction: see annex 4	
Remark:	
Test result:	measurement for orientation

Environment condition:					
	- · · · · · · · · · · · · · · · · · · ·				
	CETECOM ICT Services GmbH, Laboratory RSC-Sat				
Temperature:	25	°C			
Humidity:	45	%			
Voltage:	10	Vdc			
Setup of measurement equipm	ent:				
Start frequency:	1.641	GHz			
Stop frequency:	1.646	GHz			
Center frequency:	1.6435	GHz			
Frequency span:	5	MHz			
Input attenuation:	40	dB			
Resolution-BW:	30	kHz			
Video-BW:	30	kHz			
Video-Average:	1	swee	ep(s) (>1)		
Detector-Mode:	2	Pos I	Peak (Maximum-Hold)		
Correction (average):					
Directional coupler	+	0.0	dB		
Coaxial cable (C217)	+	0.7	dB		
DUT-Antenna (on-axis)	+	6.0	dBi		
Test antenna	+	0.0	dB		
BW correction factor	+	0.0	dB		
Atten. between HPA and feedh	iorn +	0.0	dB		
Attenuation (U214)	+	10.0	dB		
TOTAL CORRECTION:	+	16.7	dB		
Limit:					
no limits defined					
This test serves to verify the ge	eneral functio	n of th	e EUT and		
for orientation regarding to the					

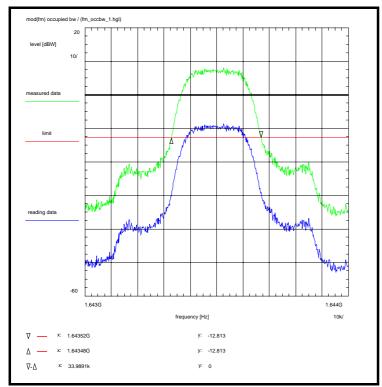
Remarks:
Test of general function of the EUT and measurement for orientation

adjusted in the middle of the band (EIRP).

Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 29 (78)

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Annex 3: Measurement result no. 8 (57)



Subclause: -/
Function test
Modulated rf-carrier in the middle of the band (fm)
Determination of the 'occupied bandwidth'

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

Operating condition of DUT:
operating condition 1, see section 1.5.2
CH 544

Test setup:
see annex 1: 1.2hgj

Test equipment:
see annex 2: C217, R001, U214

Data of correction:
see annex 4

Remark:

Determination of the 'occupied bandwidth'

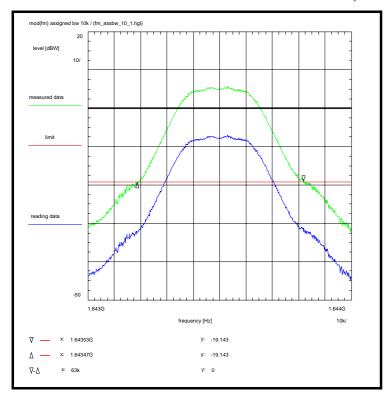
Information on the measurement: Environment condition: Wed 02/Aug/2006 15:53:25 Date & Time: Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat 25 °C 45 % Temperature: Humidity: Voltage: 10 Vdc <u>Setup of measurement equipment:</u> Start frequency: 1.64345 GHz GHz GHz Stop frequency: 1.64355 1.6435 Center frequency: Frequency span: 100 dB kHz Input attenuation: 40 Resolution-BW: Video-BW: Video-Average: Detector-Mode: sweep(s) (>1) Pos Peak (Maximum-Hold) Correction (average): + 0.0 dB Directional coupler Coaxial cable (C217) DUT-Antenna (on-axis) 6.0 dBi Test antenna 0.0 dB BW correction factor Atten, between HPA and feedhorn 0.0 dB Attenuation (U214) 10.0 dB TOTAL CORRECTION: The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to $0.5\,\%$ of the total mean power radiated by a given emission. This occupied bandwidth corresponds to the 20 dB-bandwidth.

Remarks:

Determination of the 'occupied bandwidth' at fm: The measured value is about 34 kHz (delta marker). Measurement with 3 kHz resolution filter and Max-Hold. Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 30 (78)

CETECOM

Annex 3: Measurement result no. 9 (57)



Voltage: 10 Vdc <u>Setup of measurement equipment:</u> Start frequency: 1.64345 GHz GHz GHz Stop frequency: 1.64355 1.6435 Center frequency: Frequency span: 100 40 10 dB kHz Input attenuation: Resolution-BW: Video-BW: Video-Average: Detector-Mode: sweep(s) (>1) Pos Peak (Maximum-Hold) Correction (average): + 0.0 dB Directional coupler Coaxial cable (C217) DUT-Antenna (on-axis) + 6.0 dBi Test antenna 0.0 dB BW correction factor (10k -> 4k) Atten. between HPA and feedhorn + 0.0 dB Attenuation (U214) 10.0 dB TOTAL CORRECTION: Limit: no limits defined The limit line in the plot of -25dBc/4kHz is useful for orientation and corresponds to the restriction for Emission limitations

Information on the measurement:

Wed 02/Aug/2006 16:16:30

25 °C 45 %

CETECOM ICT Services GmbH, Laboratory RSC-Sat

Environment condition:

Date & Time:

Temperature: Humidity:

Location:

Subclause: -/-Function test

Modulated rf-carrier in the middle of the band (fm)

Determination of the 'assigned bandwidth

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see section 1.5.2 CH 544

Test setup: see annex 1: 1.2hgj

Test equipment: see annex 2: C217, R001, U214

Data of correction:

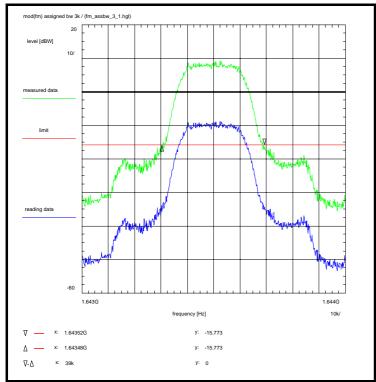
see annex 4 Remark:

Test result: Determination of the 'assigned bandwidth'

Determination of the 'assigned bandwidth' at fm: The measured value is about 63 kHz (delta marker) Measurement with 10 kHz resolution filter and Max-Hold. Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 31 (78)

CETECOM

Annex 3: Measurement result no. 10 (57)



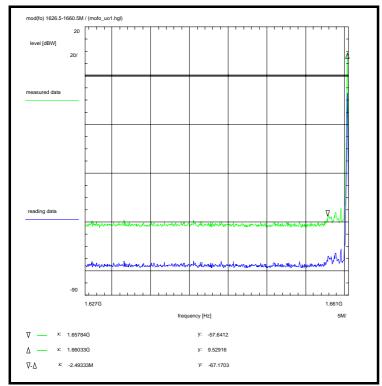
V-Δ × 39k	<i>y</i> . 0
Subclause: -/-	Function test Modulated rf-carrier in the middle of the band (fm) Determination of the 'assigned bandwidth'
Test results: see plot (an explicit table	e was not generated)
Operating condition of Doperating condition 1, see CH 544	
Test setup: see annex 1: 1.2hgj	
Test equipment: see annex 2: C217, R00)1, U214
<u>Data of correction:</u> see annex 4	
Remark:	
Test result:	Determination of the 'assigned bandwidth'

Environment condition: Date & Time:	Mod 02/A	/200	4 14.7	4.12			
Location:			006 16:24:13 Γ Services GmbH, Laboratory RSC-Sat				
Temperature:	CETECO	25	°C	es Gilibri, Laboratory RSC-Sai			
Humidity:		25 45	-				
Voltage:			Vdc				
voltage.		10	vuc				
Setup of measurement ed	uipment:						
Start frequency:		4345	GHz				
Stop frequency:	1.6	4355	GHz				
Center frequency:	1	.6435	GHz				
Frequency span:		100	kHz				
Input attenuation:		40	dB				
Resolution-BW:		3	kHz				
Video-BW:		3	kHz				
Video-Average:		1	swee	ep(s) (>1)			
Detector-Mode:		2	Pos I	Peak (Maximum-Hold)			
Correction (average):							
Directional coupler		+	0.0	dB			
Coaxial cable (C217)		+		dB			
DUT-Antenna (on-axis)		+		dBi			
Test antenna		+					
BW correction factor (3k -	> 4k)	+	1.2	dB			
Atten. between HPA and		+	0.0	dB			
Attenuation (U214)		+	10.0	dB			
TOTAL CORRECTION:		+	17.9	dB			
Limit:							
no limits defined							
The limit line in the plot of	-25dBc/4k	Hz is us	seful fo	or orientation			
and corresponds to the re	striction for	Emiss	sion lin	nitations´			

Remarks:
Determination of the 'assigned bandwidth' at fm:
The measured value is about 39 kHz (delta marker) Measurement with 3 kHz resolution filter and Max-Hold. Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 32 (78)

CETECOM

Annex 3: Measurement result no. 11 (57)



Subclause: -/- Function test Modulated rf-carrier at the upper edge of the band (fo) Measurement within the band

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

Operating condition of DUT: operating condition 1, see section 1.5.2 CH 1087

Test setup: see annex 1: 1.2hgj

Test equipment: see annex 2: C217, R001, U214

Data of correction: see annex 4

Remark:

Test result: measurement for orientation

	GHz GHz GHz MHz dB kHz kHz
25 50 10 1.6265 1.6605 1.6435 34 40 30 30 1	°C % Vdc GHz GHz GHz GHz Hz GHz SHz GHz GHz GHz Hz Hz Hz
1.6265 1.6605 1.6435 34 40 30 30 1	% Vdc GHz GHz GHz MHz dB kHz kHz sweep(s) (>1)
1.6265 1.6605 1.6435 34 40 30 30	Vdc GHz GHz GHz MHz dB kHz kHz sweep(s) (>1)
1.6265 1.6605 1.6435 34 40 30 30	GHz GHz GHz MHz dB kHz kHz sweep(s) (>1)
1.6265 1.6605 1.6435 34 40 30 30	GHz GHz MHz dB kHz kHz sweep(s) (>1)
1.6605 1.6435 34 40 30 30 1	GHz GHz MHz dB kHz kHz sweep(s) (>1)
1.6435 34 40 30 30 1	GHz MHz dB kHz kHz sweep(s) (>1)
34 40 30 30 1	MHz dB kHz kHz sweep(s) (>1)
40 30 30 1	dB kHz kHz sweep(s) (>1)
30 30 1	kHz kHz sweep(s) (>1)
30 1	kHz sweep(s) (>1)
1	sweep(s) (>1)
2	Pos Peak (Maximum-Hold)
+	0.0 dB
+	0.7 dB
+	6.0 dBi
+	0.0 dB
+	0.0 dB
1 +	0.0 dB
+	10.0 dB
+	16.7 dB
ral functio	on of the EUT and
urious em	issions which are
	n + + +

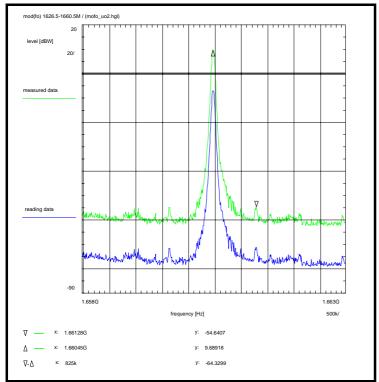
Remarks:
Test of general function of the EUT and measurement for crientation

as close to the upper edge of the operating frequency band.

Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 33 (78)

CETECOM

Annex 3: Measurement result no. 12 (57)



Subclause: -/
Function test
Modulated rf-carrier at the upper edge of the band (fo)
Measurement within the band

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

Operating condition of DUT:
operating condition 1, see section 1.5.2
CH 1087

Test setup:
see annex 1: 1.2hgj

Test equipment:
see annex 2: C217, R001, U214

Data of correction:
see annex 4

Remark:

Test result: measurement for orientation

Environment condition:				
Date & Time:	Thu 03/Aug/2006 10:10:00			
Location:	CETECO			es GmbH, Laboratory RSC-Sat
Temperature:		25		
Humidity:		50	%	
Voltage:		10	Vdc	
Setup of measurement eq				
Start frequency:		96875	GHz	
Stop frequency:		96875		
Center frequency:	1.660	46875		
Frequency span:		5	MHz	
Input attenuation:		40		
Resolution-BW:		30		
Video-BW:		30	kHz	
Video-Average:		1	swee	ep(s) (>1)
Detector-Mode:		2	Pos I	Peak (Maximum-Hold)
Correction (average):				
Directional coupler		+	0.0	dB
Coaxial cable (C217)		+	0.7	dB
DUT-Antenna (on-axis)		+	6.0	dBi
Test antenna		+	0.0	dB
BW correction factor		+	0.0	dB
Atten. between HPA and f	eedhorn	+	0.0	dB
Attenuation (U214)		+		
TOTAL CORRECTION:		+	16.7	dB
Limit:				
no limits defined				
This test serves to verify the for orientation regarding to				

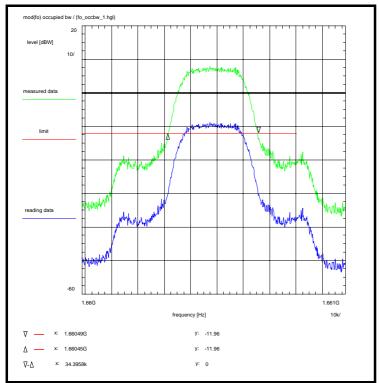
Remarks:
Test of general function of the EUT and measurement for

as close to the upper edge of the operating frequency band.

Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 34 (78)

CETECOM

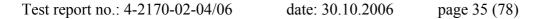
Annex 3: Measurement result no. 13 (57)



Subclause: -/-	Function test Modulated rf-carrier at the upper edge of the band (fo) Determination of the 'occupied bandwidth'
Test results: see plot (an explicit table	was not generated)
Operating condition of DL operating condition 1, see CH 1087	
Test setup: see annex 1: 1.2hgj	
Test equipment: see annex 2: C217, R001	I, U214
Data of correction: see annex 4	
Remark:	
<u>Test result:</u>	Determination of the 'occupied bandwidth'

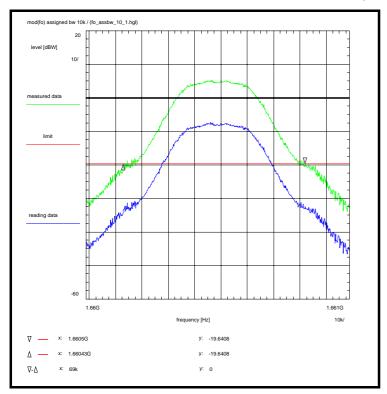
Environment condition:				
Date & Time:	Thu 03/Aug/2006 10:25:54			
Location:	CETECOM ICT Services GmbH, Laboratory RSC-S			es GmbH, Laboratory RSC-Sat
Temperature:		25		
Humidity:		50		
Voltage:		10	Vdc	
Setup of measurement ed	uipment:			
Start frequency:	1.6604	1875	GHz	
Stop frequency:	1.6605	1875	GHz	
Center frequency:	1.6604	6875	GHz	
Frequency span:		100	kHz	
Input attenuation:		40	dB	
Resolution-BW:		3	kHz	
Video-BW:		3	kHz	
Video-Average:		1	swee	p(s) (>1)
Detector-Mode:		2		Peak (Maximum-Hold)
Correction (average):				
Directional coupler		+	0.0	dB
Coaxial cable (C217)		+	0.7	dB
DUT-Antenna (on-axis)		+	6.0	dBi
Test antenna		+	0.0	dB
BW correction factor		+	0.0	dB
Atten. between HPA and	eedhorn	+	0.0	dB
Attenuation (U214)		+	10.0	dB
TOTAL CORRECTION:		+	16.7	dB
Limit:				
The occupied bandwidth,	that is the f	reauen	cv bar	dwidth such that, below
				mean powers radiated are
				ted by a given emission.

Remarks:
Determination of the 'occupied bandwidth' at fo: The measured value is about 34.4 kHz (delta marker) Measurement with 3 kHz resolution filter and Max-Hold.



CETECOM

Annex 3: Measurement result no. 14 (57)



riamianty.	•	50	70	
Voltage:		10	Vdc	
Setup of measurement equ	inment.			
Start frequency:	1.660418	75	GHz	
Stop frequency:	1.660518		GHz	
Center frequency:	1.660468		GHz	
Frequency span:		00	kHz	
Input attenuation:		40	dB	
Resolution-BW:		10	kHz	
Video-BW:		10	kHz	
Video-Average:		1	swee	p(s) (>1)
Detector-Mode:		2	Pos F	Peak (Maximum-Hold)
Correction (average):				
Directional coupler		+	0.0	dB
Coaxial cable (C217)		+	0.7	dB
DUT-Antenna (on-axis)		+	6.0	dBi
Test antenna		+	0.0	dB
BW correction factor (10k -		-	4.0	dB
Atten. between HPA and fe	edhorn	+	0.0	dB
Attenuation (U214)		+	10.0	
TOTAL CORRECTION:		+	12.7	dB
Limit:				
no limits defined				
The limit line in the plot of -:	25dBc/4kHz	is us	eful fo	or orientation
and corresponds to the rest				
(see 25.202 f)).				

Information on the measurement:

Thu 03/Aug/2006 10:30:28

25 °C 50 %

CETECOM ICT Services GmbH, Laboratory RSC-Sat

Environment condition:

Date & Time:

Temperature: Humidity:

Location:

Subclause: -/Function test
Modulated rf-carrier at the upper edge of the band (fo)
Determination of the 'assigned bandwidth'

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

Operating condition of DUT:
operating condition 1, see section 1.5.2
CH 1087

Test setup:
see annex 1: 1.2hgj

Test equipment:
see annex 2: C217, R001, U214

Data of correction:
see annex 4

Remark:

Determination of the 'assigned bandwidth'

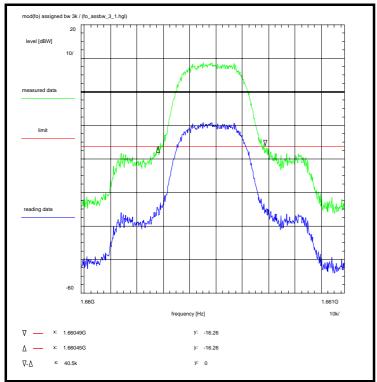
Remarks:

Determination of the 'assigned bandwidth' at fo: The measured value is about 69 kHz (delta marker) Measurement with 10 kHz resolution filter and Max-Hold.

date: 30.10.2006 page 36 (78) Test report no.: 4-2170-02-04/06

CETECOM

Annex 3: Measurement result no. 15 (57)



reading data		1.661G	Resolution-BW: Video-BW: Video-Average: Detector-Mode: Correction (average): Directional coupler Coaxial cable (C217) DUT-Antenna (on-axis) Test antenna BW correction factor (3k -> 4k) Atten. between HPA and feedhorn Attenuation (U214) TOTAL CORRECTION:	+ + + + + + +	US KHZ KHZ Sweep(s) (>1) Pos Peak (Maximum-Hold) 0.0 dB 0.7 dB 6.0 dBi 0.0 dB 1.2 dB 0.0 dB 1.7 dB
1.000	frequency [Hz]	10k/	Limit:		
V x: 1.66049G Λ x: 1.66045G	y: -16.26 y: -16.26		The limit line in the plot of -25dBc/4kl- and corresponds to the restriction for (see 25.202 f)).		
∇-Δ ×: 40.5k	у: о		(566 23.202 1)).		
Subclause: -/- Function test Modulated rf-carrier at the upper edge of the band (fo) Determination of the 'assigned bandwidth'					
Test results: see plot (an explicit table was not generated)					

Operating condition of DUT: operating condition 1, see section 1.5.2 CH 1087 Test setup: see annex 1: 1.2hgj Test equipment: see annex 2: C217, R001, U214 Data of correction: see annex 4 Remark: Test result: Determination of the 'assigned bandwidth'

Determination of the 'assigned bandwidth' at fo: The measured value is about 40.5 kHz (delta marker) Measurement with 3 kHz resolution filter and Max-Hold.

Information on the measurement:

Setup of measurement equipment:
Start frequency: 1.66041875 GHz

Thu 03/Aug/2006 10:37:29

1.66051875 GHz 1.66046875 GHz

25 °C 50 %

10 Vdc

CETECOM ICT Services GmbH, Laboratory RSC-Sat

Environment condition:

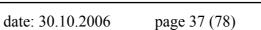
Date & Time:

Temperature: Humidity: Voltage:

Stop frequency: Center frequency: Frequency span:

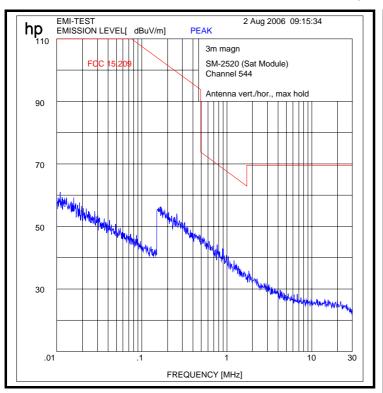
Location:

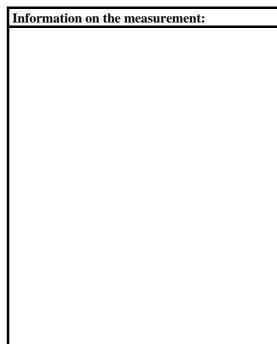
Test report no.: 4-2170-02-04/06

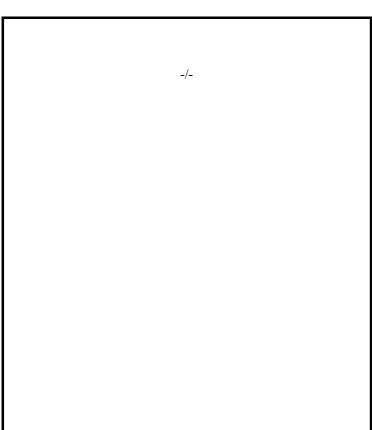




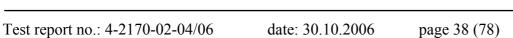
Annex 3: Measurement result no. 16 (57)





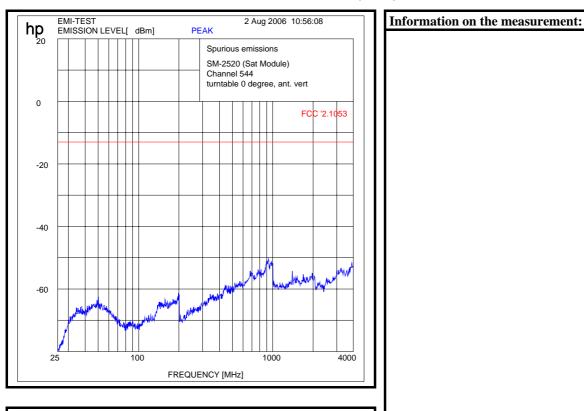


.01 .1 1 10 30 FREQUENCY [MHz]	
TREGOLINOT [WI12]	
-/-	





Annex 3: Measurement result no. 17 (57)

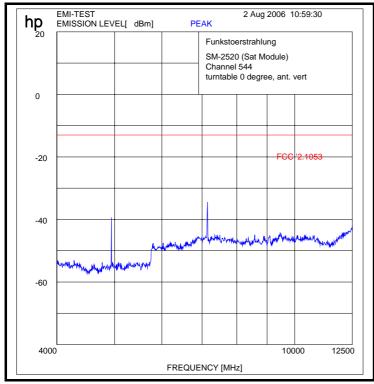


-/-

Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 39 (78)



Annex 3: Measurement result no. 18 (57)



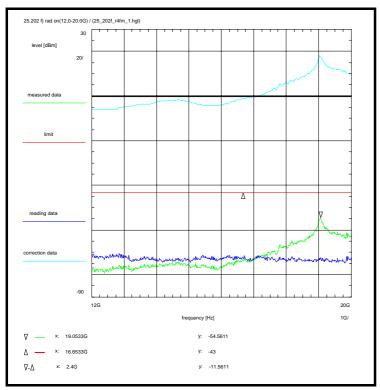
Information on the measurement:						
EMI-TEST 2 Aug 2006 10:59:30 1. FCC CFR 47,Part 15J WITHOUT PRESELECTOR 1.7 FCC 72:1053 4-12 GHz						
Peaks above -30 dB of Limit Line #1 peak criteria = 6 dB						
PEAK# FREQ (MHz) (dBm) DELTA 1 4937.6 -39.4 -26.4 2 7147.9 -34.5 -21.5						

-/-

Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 40 (78)

CETECOM

Annex 3: Measurement result no. 19 (57)



Environment condition:			
	2/Aug/200		
			es GmbH, Laboratory RSC-Sa
Temperature:	25		
Humidity:	45		
Voltage:	10	Vdc	
Setup of measurement equipmen	<u>:</u>		
Start frequency:	12	GHz	
Stop frequency:	20	GHz	
Center frequency:	16	GHz	
Frequency span:	8	GHz	
Input attenuation:	0	dB	
Resolution-BW:	100	kHz	
Video-BW:	100	kHz	
Video-Average:	1	swee	ep(s) (>1)
Detector-Mode:	2	Pos I	Peak (Maximum-Hold)
Correction (average):			
Directional coupler (WHPF)	+	0.8	dB
Coaxial cable (C217)	+	2.3	dB
DUT-Antenna	+	0.0	dBi
Test antenna (A037)	-	12.7	dB
BW correction factor (100k -> 4k)	-	14.0	dB
Atten. between HPA and feedhorn	١ -	0.0	dB
Freefield attenuation (16.00GHz,		56.5	dB
Amplifier (11b)	-		
TOTAL CORRECTION:	-	6	dB
Limit:			
Limit acc. to 25.202 f):-(43.0+10lo	g(Pmax))	dBc/4k	Hz
This corresponds to -43.0 dBm.			

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 - 20.0 GHz <u>Test results:</u> see plot (an explicit table was not generated) Operating condition of DUT: operating condition 1, see section 1.5.2 CH 544 Test setup: see annex 1: 2.3 Test equipment: see annex 2: 11b, A037, C217, R001, U019, WHPF Data of correction: see annex 4 Remark:

Test result:

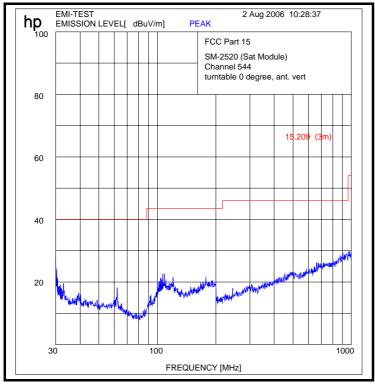
Test passed

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

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Annex 3: Measurement result no. 20 (57)



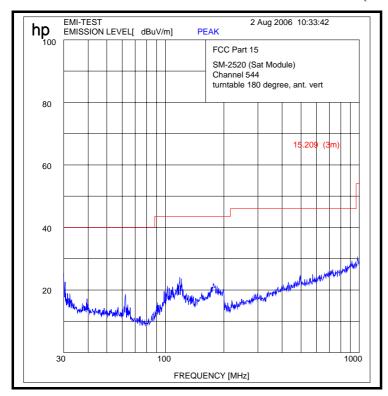
Inform	ation on	the mea	asurement:				
======							
EMI-TES		2 Aug 2006	10:28:37				
	1. FCC CFR 47,Part 15J WITHOUT PRESELECTOR 1.18 FCC Part 15 30 MHz - 1 GHz						
	ove -30 dB of Li eria = 6 dB	mit Line #1					
PEAK#	FREQ (MHz)	(dBuV/m)	DELTA				
1 62	17 18.2	-21.8					
2 108							
3 177	.82 21.7	-21.8					

-/-

Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 42 (78)



Annex 3: Measurement result no. 21 (57)



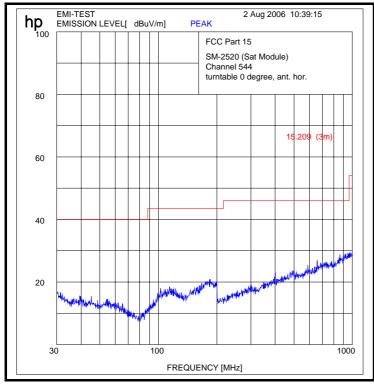
Iı	ıfo	rn	atio	n on 1	the mea	asurement:	
	EMI-	TES	T		2 Aug 2006	5 10:33:42	
					WITHOUT P IHz - 1 GHz	PRESELECTOR	
			oove -30 iteria = 0		nit Line #1		
	PEA 1		FREQ		(dBuV/m) -21.4	DELTA	
	2	11	8.85	24.1	-19.4		
	3	17	6.57	22	-21.5		

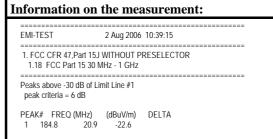
-/-

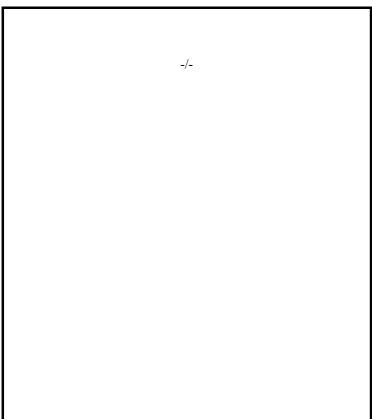
date: 30.10.2006 Test report no.: 4-2170-02-04/06 page 43 (78)



Annex 3: Measurement result no. 22 (57)



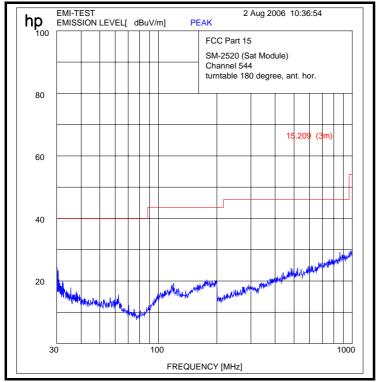




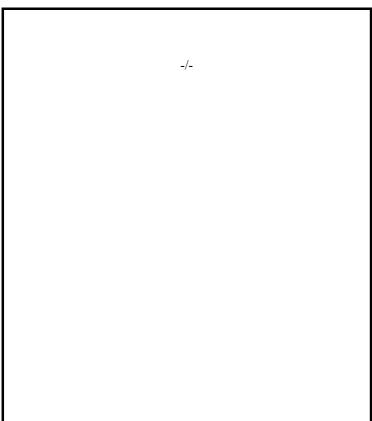
Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 44 (78)



Annex 3: Measurement result no. 23 (57)



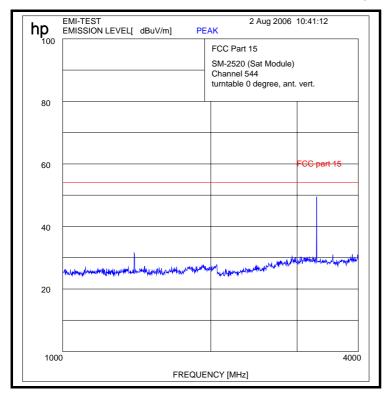
Information on	the mea	asurem	ent:		
EMI-TEST	2 Aug 2006	10:36:54			
1. FCC CFR 47,Part 15. 1.18 FCC Part 15 30	J WITHOUT P				
Peaks above -30 dB of L peak criteria = 6 dB			=======	====	
PEAK# FREQ (MHz) 1 30.53 23.3 2 177.82 20.2	-16.7	DELTA			

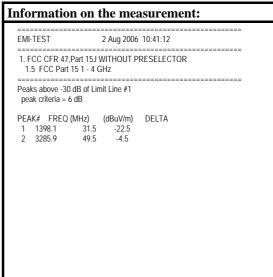


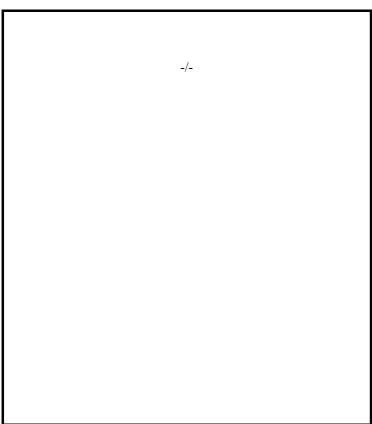
date: 30.10.2006 Test report no.: 4-2170-02-04/06 page 45 (78)



Annex 3: Measurement result no. 24 (57)



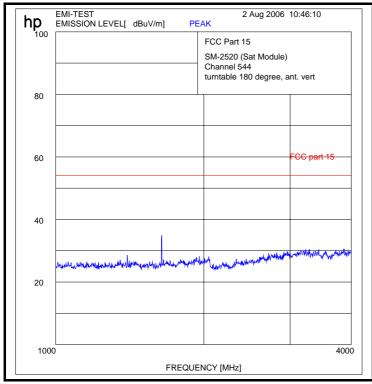


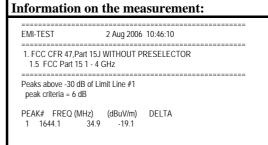


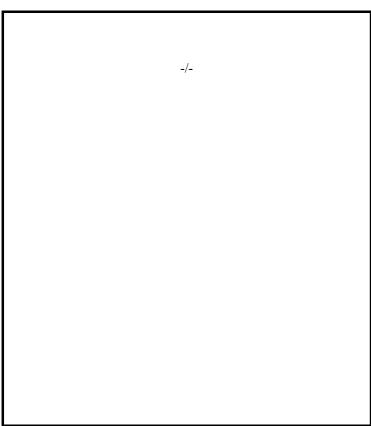
date: 30.10.2006 page 46 (78) Test report no.: 4-2170-02-04/06



Annex 3: Measurement result no. 25 (57)



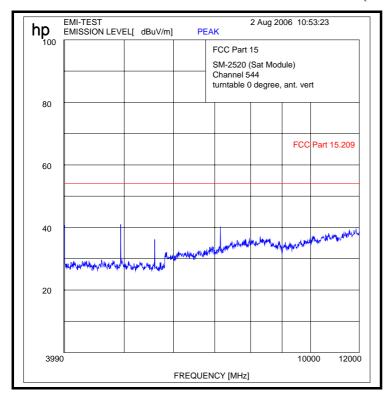




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Annex 3: Measurement result no. 26 (57)



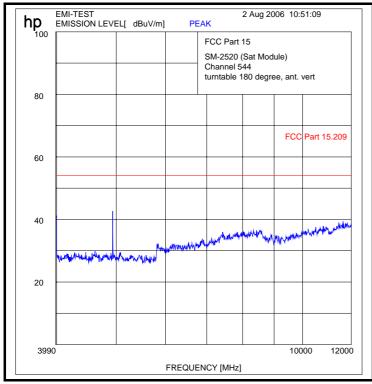
•						
Inforn	nation	on the	e mea	surem	ent:	
EMI-TES	ST	2 A	ug 2006	10:53:23		
1. FCC 1.4 F	CFR 47,Par CC Part 15	t 15J WITI 4 - 12 GH2	Hout Pi z	RESELECTO	OR	
Peaks al	bove -30 dB iteria = 6 dB	of Limit Li				=====
1 493 2 559	FREQ (MF 33.7 99 47.8	41 36.2	-13.0 -17.8	DELTA		

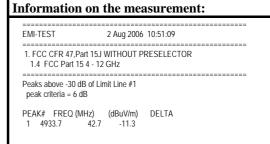
-/-

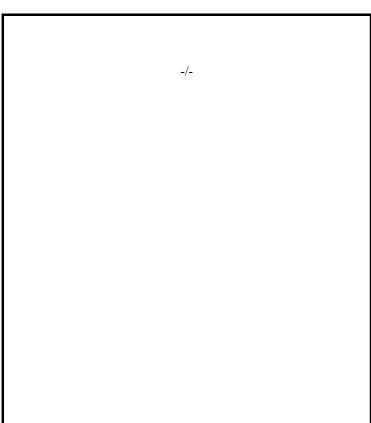
date: 30.10.2006 Test report no.: 4-2170-02-04/06 page 48 (78)



Annex 3: Measurement result no. 27 (57)



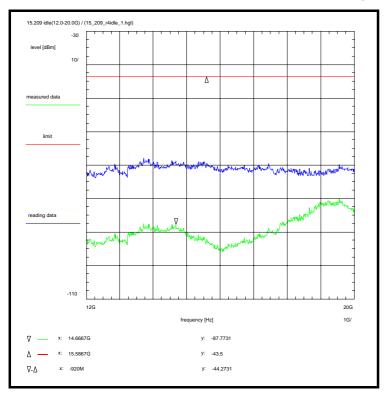




Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 49 (78)



Annex 3: Measurement result no. 28 (57)



Temperature:	25	°C
Humidity:	50	%
Voltage:	10	Vdc
Setup of measurement equipment:	12	GHz
Start frequency:	20	GHZ GHz
Stop frequency: Center frequency:	16	GHZ
Frequency span:	8	GHZ
Input attenuation:	0	dB
Resolution-BW:	1	MHz
Video-BW:	1	MHz
Video-BW: Video-Average:	1	sweep(s) (>1)
Detector-Mode:	2	Pos Peak (Maximum-Hold)
Detector-wode.	_	1 03 F Cak (Maximum-Hold)
Correction (average):		
Directional coupler	+	0.0 dB
Coaxial cable (C217)	+	2.3 dB
DUT-Antenna	+	0.0 dBi
Test antenna (A037)	-	12.7 dB
BW correction factor	+	0.0 dB
Atten. between HPA and feedhorn	-	0.0 dB
Distance correction (1m->3m)	-	9.5 dB
TOTAL CORRECTION:	-	-19.9 dB
<u>Limit:</u>		
Limit acc. to 15.209:	54.0	dBuv/m
This corresponds to -43.5 dBm in a		
Distance correction factor 20*lg(1/3)) = -9.5 (dB .

Information on the measurement:

Thu 03/Aug/2006 09:05:05

CETECOM ICT Services GmbH, Laboratory RSC-Sat

Environment condition:

Date & Time:

Location:

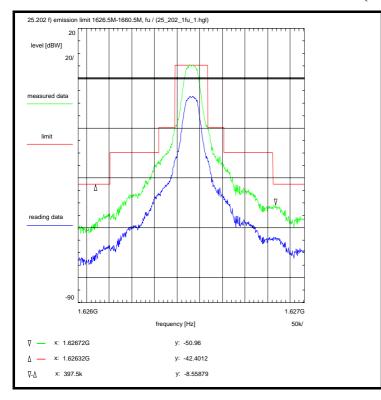
Radiated emissions 12.0 - 20.0 GHz Subclause: 15.209 Radiation coming out of DUT-cabinet(s): 12.0 GHz - 20.0 GHz <u>Test results:</u> see plot (an explicit table was not generated) Operating condition of DUT: operating condition 2, see section 1.5.2 Idle Mode Test setup: see annex 1: 2.3 Test equipment: see annex 2: A037, C217, R001, U019 Data of correction: see annex 4 Remark: Test result: Test passed

Remarks: Measurement distance: 1m

Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 50 (78)



Annex 3: Measurement result no. 29 (57)



Environment condition: Thu 03/Aug/2006 14:26:07 Date & Time: Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat 25 °C 50 % Temperature: Humidity: Voltage: 10 Vdc <u>Setup of measurement equipment:</u> Start frequency: 1.62628125 GHz 1.62678125 1.62653125 GHz GHz Stop frequency: Center frequency: Frequency span: 40 10 dB kHz Input attenuation: Resolution-BW: Video-BW: kHz Video-Average: Detector-Mode: sweep(s) (>1) Pos Peak (Maximum-Hold) Correction (average): + 0.0 dB Directional coupler Coaxial cable (C217) DUT-Antenna (on-axis) 6.0 dBi Test antenna 0.0 dB BW correction factor (10k -> 4k) Atten. between HPA and feedhorn + 0.0 dB Attenuation (U214) 10.0 dB TOTAL CORRECTION: Limit acc. 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

Information on the measurement:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations

Modulated rf-carrier at the lower edge of the band (fu)

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see section 1.5.2 CH 1

Test setup: see annex 1: 1.2hgj

Test equipment: see annex 2: C217, R001, U214

Data of correction:

see annex 4 Remark:

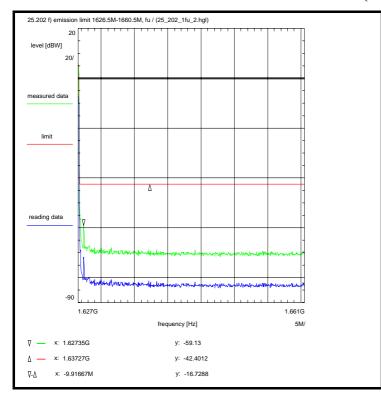
Test result: Test passed

Carrier-on state / Carrier at the lower edge of the band (fu) For EIRP calculation:

Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 51 (78)

CETECOM

Annex 3: Measurement result no. 30 (57)



Date & Time:	Thu 03/Aug/200	6 14:28	3:41
Location:	CETECOM ICT	Service	es GmbH, Laboratory RSC-Sat
Temperature:	25	°C	-
Humidity:	50	%	
Voltage:	10	Vdc	
Setup of measurement eq			
Start frequency:	1.6265	GHz	
Stop frequency:	1.6605	GHz	
Center frequency:	1.6435	GHz	
Frequency span:	34	MHz	
Input attenuation:	40	dB	
Resolution-BW:	10	kHz	
Video-BW:	10	kHz	
Video-Average:	1	swee	p(s) (>1)
Detector-Mode:	2	Pos I	Peak (Maximum-Hold)
Correction (average):			
Directional coupler	+	0.0	dB
Coaxial cable (C217)	+	0.7	dB
DUT-Antenna (on-axis)	+	6.0	dBi
Test antenna	+	0.0	dB
BW correction factor (10k		4.0	dB
Atten. between HPA and f	eedhorn +	0.0	dB
Attenuation (U214)	+	10.0	
TOTAL CORRECTION:	+	12.7	dB
Limit:			
Limit acc. to 25.202 f):			
50-100% of assigned bw:	-25dBc/4kHz		
100-250% of assigned bw	: -35dBc/4kHz		
> 250% of assigned bw:-(4	43+10log(Pmax))	dBc/4k	Hz
- '	=		

Information on the measurement:

Environment condition:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations

Modulated rf-carrier at the lower edge of the band (fu)

<u>Test results:</u> see plot (an explicit table was not generated)

Operating condition of DUT: operating condition 1, see section 1.5.2 CH 1

Test setup: see annex 1: 1.2hgj

Test equipment: see annex 2: C217, R001, U214

Data of correction: see annex 4

Remark:

Test result: Test passed

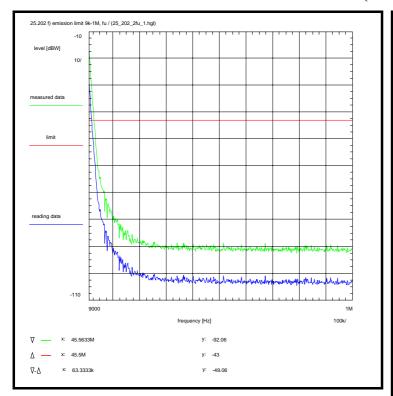
Carrier-on state / Carrier at the lower edge of the band (fu)

For EIRP calculation:

Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 52 (78)

CETECOM

Annex 3: Measurement result no. 31 (57)



Date & Time: Location:	Thu 03/Aug/2006 14:31:24 CETECOM ICT Services GmbH, Laboratory RSC-Sat					
Temperature:	02.20	25	°C	oos omeri, caborator, itoo oat		
Humidity:		50	%			
Voltage:		10	Vdc	:		
Catur of magaziromant or	uinmont					
Setup of measurement eq Start frequency:	шрттепт.	9	kHz	•		
Stop frequency:		1	MHz			
Center frequency:		504.5	kHz	_		
Frequency span:		991	kHz			
Input attenuation:		20	dB			
Resolution-BW:		10	kHz	<u>:</u>		
Video-BW:		10	kHz	<u>:</u>		
Video-Average:		1		eep(s) (>1)		
Detector-Mode:		2	Pos	Peak (Maximum-Hold)		
Correction (average):						
Directional coupler		+	0.0	dB		
Coaxial cable (C217)		+	0.2	dB		
DUT-Antenna (on-axis)		+	6.0	dBi		
Test antenna		+	0.0	dB		
BW correction factor (10k	-> 4k)	-	4.0	dB		
Atten. between HPA and f	eedhorn	+	0.0			
Attenuation (U214)		+				
TOTAL CORRECTION:		+	12.1	1 dB		
Limit: Limit acc. to 25.202 f): 50-100% of assigned bw: 100-250% of assigned bw: -(4	: -35dB	c/4kHz	iBc/4k	kHz		

Information on the measurement:

Environment condition:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier at the lower edge of the band (fu)

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

Operating condition of DUT:
operating condition 1, see section 1.5.2
CH 1

Test setup:
see annex 1: 1.2hgj

Test equipment:
see annex 2: C217, R001, U214

Data of correction:
see annex 4

Remark:

Test result: Test passed

Remarks:

Carrier-on state / Carrier at the lower edge of the band (fu)

For EIRP calculation:

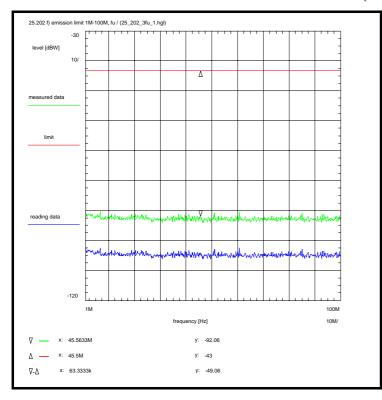
'worst-case' = maximum antenna gain

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

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CETECOM

Annex 3: Measurement result no. 32 (57)



Environment condition:						
Date & Time:	Thu 03/Aug/2006 14:32:45					
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat					
Temperature:		25	°C			
Humidity:		50	%			
Voltage:		10	Vdc			
<u> </u>						
Setup of measurement equ	uipment:					
Start frequency:		1	MHz			
Stop frequency:		100	MHz			
Center frequency:		50.5	MHz			
Frequency span:		99	MHz			
Input attenuation:		20	dB			
Resolution-BW:		10	kHz			
Video-BW:		10	kHz			
Video-Average:		1	swee	ep(s) (>1)		
Detector-Mode:		2		Peak (Maximum-Hold)		
				,		
Correction (average):						
Directional coupler		+	0.0	dB		
Coaxial cable (C217)		+	0.2	dB		
DUT-Antenna (on-axis)		+	6.0	dBi		
Test antenna		+	0.0	dB		
BW correction factor (10k	-> 4k)	-	4.0	dB		
Atten. between HPA and fe	eedhorn	+	0.0	dB		
Attenuation (U214)		+	9.9	dB		
TOTAL CORRECTION:		+	12.1	dB		
Limit:						
Limit acc. to 25.202 f):						
50-100% of assigned bw:	-25dBc/	4kHz				
100-250% of assigned bw:	-35dBc/	4kHz				
> 250% of assigned bw:-(4			IBc/4k	Hz		
,	٥.					

Information on the measurement:

Subclause: 25.202 f)
Frequencies, frequency tolerance and emission limitations
Emission limitations
Modulated rf-carrier at the lower edge of the band (fu)

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

Operating condition of DUT:
operating condition 1, see section 1.5.2
CH 1

Test setup:
see annex 1: 1.2hgj

Test equipment:
see annex 2: C217, R001, U214

Data of correction:
see annex 4

Remark:

Test result:
Test passed

Remarks:

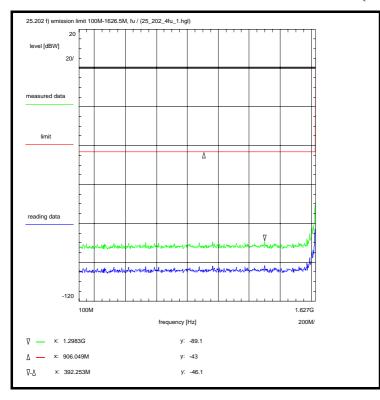
Carrier-on state / Carrier at the lower edge of the band (fu)

For EIRP calculation:

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CETECOM

Annex 3: Measurement result no. 33 (57)



Date & Time: Location: Temperature: Humidity:	25 50	Services GmbH, Laboratory RSC- °C %	Sat
Voltage:	10	Vdc	
Setup of measurement equal Start frequency: Stop frequency: Center frequency: Frequency span: Input attenuation: Resolution-BW: Video-BW: Video-Average:	100 1.6265 863.25 1.5265 20 10 10	MHz GHz MHz GHz dB kHz kHz sweep(s) (>1)	
Detector-Mode:	2	Pos Peak (Maximum-Hold)	
Correction (average): Directional coupler Coaxial cable (C217) DUT-Antenna (on-axis) Test antenna BW correction factor (10k Atten. between HPA and fe Attenuation (U214) TOTAL CORRECTION:		0.0 dB 0.5 dB 6.0 dBi 0.0 dB 4.0 dB 0.0 dB 9.9 dB 12.4 dB	
Limit: Limit acc. to 25.202 f): 50-100% of assigned bw: 100-250% of assigned bw: > 250% of assigned bw:-(4	-35dBc/4kHz	dBc/4kHz	

Information on the measurement:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier at the lower edge of the band (fu)

<u>Test results:</u> see plot (an explicit table was not generated)

Operating condition of DUT: operating condition 1, see section 1.5.2 CH 1

Test setup: see annex 1: 1.2hgj

Test equipment: see annex 2: C217, R001, U214

Data of correction: see annex 4

Remark:

Test result: Test passed

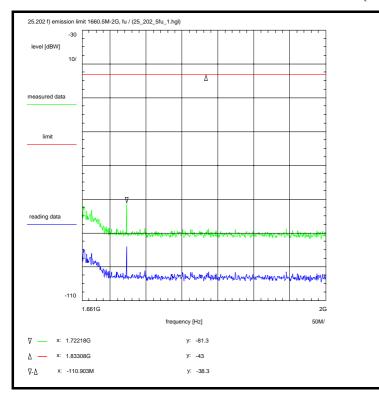
Carrier-on state / Carrier at the lower edge of the band (fu)

For EIRP calculation:

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Annex 3: Measurement result no. 34 (57)



Environment condition:								
Date & Time:	Thu 03/Aug/2006 14:40:12							
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat							
Temperature:	25	°C	-					
Humidity:	50	%						
Voltage:	10	Vdc						
Setup of measurement eq	uipment:							
Start frequency:	1.6605	GHz	Z					
Stop frequency:	2	GHz	Z					
Center frequency:	1.83025	GHz	Z					
Frequency span:	339.5	MHz	Z					
Input attenuation:	20	dB						
Resolution-BW:	10	kHz						
Video-BW:	10	kHz						
Video-Average:	1	swee	ep(s) (>1)					
Detector-Mode:	2	Pos	Peak (Maximum-Hold)					
Correction (average):								
Directional coupler	+	0.0	dB					
Coaxial cable (C217)	+	0.7	dB					
DUT-Antenna (on-axis)	+	6.0	dBi					
Test antenna	+	0.0	dB					
BW correction factor (10k	-> 4k) -	4.0	dB					
Atten. between HPA and fe	eedhorn +	0.0	dB					
Attenuation (U214)	+	10.0) dB					
TOTAL CORRECTION:	+	12.7	7 dB					
Limit: Limit acc. to 25.202 f); 50-100% of assigned bw: 100-250% of assigned bw: > 250% of assigned bw:-(4	-35dBc/4kHz)dBc/4k	kHz					

Information on the measurement:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier at the lower edge of the band (fu) <u>Test results:</u> see plot (an explicit table was not generated) Operating condition of DUT: operating condition 1, see section 1.5.2 CH 1 Test setup: see annex 1: 1.2hgj Test equipment: see annex 2: C217, R001, U214 Data of correction: see annex 4 Remark:

Test result:

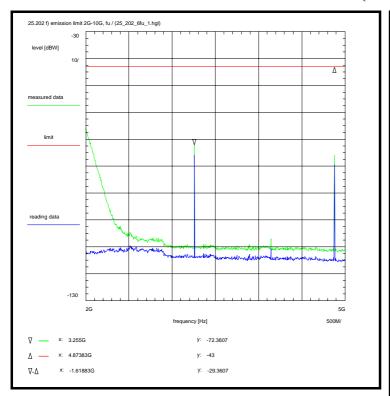
Test passed

Carrier-on state / Carrier at the lower edge of the band (fu) For EIRP calculation:

page 56 (78) Test report no.: 4-2170-02-04/06 date: 30.10.2006

CETECOM

Annex 3: Measurement result no. 35 (57)



Location:	CETECOM ICT	Services GmbH, Laboratory RSC-Sat				
Temperature:	25 °C					
Humidity:	50	%				
	10	Vdc				
Voltage:	10	vuc				
Catura of magaziroment an	uinmont.					
Setup of measurement eq Start frequency:	<u>uipment.</u> 2	GHz				
	5	GHZ				
Stop frequency:	3.5	GHZ				
Center frequency:						
Frequency span:	3	GHz				
Input attenuation:	0	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 (WHPF	+	3.6 dB				
Coaxial cable (C217)	+	1.0 dB				
DUT-Antenna (on-axis)	+	6.0 dBi				
Test antenna	+	0.0 dB				
BW correction factor (100)	(-> 4k) -	14.0 dB				
Atten, between HPA and f	eedhorn +	0.0 dB				
Attenuation (U214)	+	10.0 dB				
TOTAL CORRECTION:	+	6.6 dB				
Limit:						
Limit acc. to 25.202 f):						
50-100% of assigned bw:	-25dBc/4kHz					
100-250% of assigned bw						
> 250% of assigned bw:-(4		dBc/AkHz				
> 250 /0 01 d33ig1icd bw(-	+51 Tolog(i Illax))	UDC/4KI12				

Information on the measurement:

Thu 03/Aug/2006 14:53:32

Environment condition:

Date & Time:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier at the lower edge of the band (fu)

<u>Test results:</u> see plot (an explicit table was not generated)

Operating condition of DUT: operating condition 1, see section 1.5.2 CH 1

Test setup: see annex 1: 1.2hgij

Test equipment: see annex 2: C217, R001, U214, WHPF

Data of correction: see annex 4

Remark:

Test result: Test passed

Carrier-on state / Carrier at the lower edge of the band (fu)

For EIRP calculation:

'worst-case' = maximum antenna gain

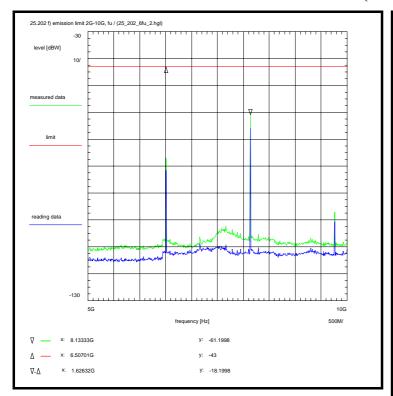
Rather left the plot shows the frequency response of the high pass filter.

The plot shows the 2nd and 3rd harmonic

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CETECOM

Annex 3: Measurement result no. 36 (57)



Thu 03/Aua/2006 15:12:27 Date & Time: Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat 25 °C 50 % Temperature: Humidity: Voltage: 10 Vdc Setup of measurement equipment: Start frequency: 10 GHz 7.5 GHz 5 GHz 0 dB Stop frequency: Center frequency: Frequency span: Input attenuation: dΒ 100 Resolution-BW: kHz Video-BW: 100 kHz Video-Average: Detector-Mode: sweep(s) (>1) Pos Peak (Maximum-Hold) Correction (average): Directional coupler (WHPF) + 0.3 dB Coaxial cable (C217) DUT-Antenna (on-axis) 6.0 dBi Test antenna 0.0 dB BW correction factor (100k -> 4k) 14.0 dB Atten. between HPA and feedhorn + 0.0 dB Attenuation (U214) 10.4 dB TOTAL CORRECTION: Limit acc. 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

Information on the measurement:

Environment condition:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations

Modulated rf-carrier at the lower edge of the band (fu)

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see section 1.5.2 CH 1

Test setup: see annex 1: 1.2hgij

<u>Test equipment:</u> see annex 2: C217, R001, U214, WHPF

Data of correction: see annex 4

Remark:

Test result: Test passed

Carrier-on state / Carrier at the lower edge of the band (fu)

For EIRP calculation:

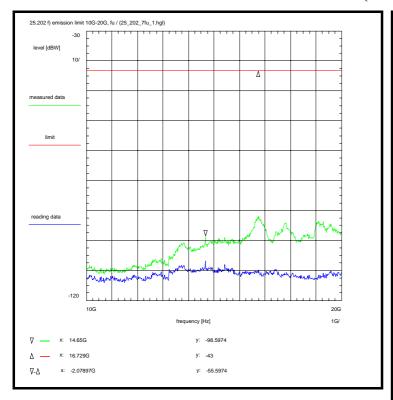
worst-case = maximum antenna gain

The plot shows the 4th, 5th and 6th harmonic

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CETECOM

Annex 3: Measurement result no. 37 (57)



Thu 03/Aua/2006 15:22:45 Date & Time: Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat 25 °C 50 % Temperature: Humidity: Voltage: 10 Vdc Setup of measurement equipment: Start frequency: 20 15 GHz GHz Stop frequency: Center frequency: Frequency span: 0 100 dB kHz Input attenuation: Resolution-BW: Video-BW: 100 kHz Video-Average: Detector-Mode: sweep(s) (>1) Pos Peak (Maximum-Hold) Correction (average): Directional coupler (WHPF) + 0.7 dB Coaxial cable (C217) DUT-Antenna (on-axis) 6.0 dBi Test antenna 0.0 dB BW correction factor (100k -> 4k) 14.0 dB Atten. between HPA and feedhorn + 0.0 dB Attenuation (U214) 14.2 dB TOTAL CORRECTION: Limit acc. 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

Information on the measurement:

Environment condition:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations

Modulated rf-carrier at the lower edge of the band (fu)

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see section 1.5.2 CH 1

Test setup: see annex 1: 1.2hgij

<u>Test equipment:</u> see annex 2: C217, R001, U214, WHPF

Data of correction: see annex 4

Remark:

Test result: Test passed

Carrier-on state / Carrier at the lower edge of the band (fu)

For EIRP calculation:

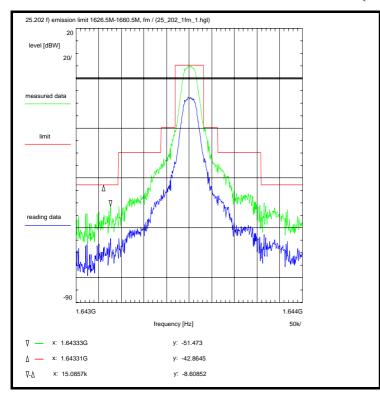
worst-case = maximum antenna gain

The marker shows the 9th harmonic

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Annex 3: Measurement result no. 38 (57)



Environment condition: Wed 02/Aug/2006 16:40:54 Date & Time: Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat 25 °C 45 % Temperature: Humidity: Voltage: 10 Vdc <u>Setup of measurement equipment:</u> Start frequency: 1.64325 GHz 1.64375 GHz 1.6435 GHz Stop frequency: 1.6435 Center frequency: Frequency span: 40 10 dB kHz Input attenuation: Resolution-BW: Video-BW: Video-Average: Detector-Mode: sweep(s) (>1) Pos Peak (Maximum-Hold) Correction (average): + 0.0 dB Directional coupler Coaxial cable (C217) DUT-Antenna (on-axis) 6.0 dBi Test antenna 0.0 dB BW correction factor (10k -> 4k) Atten. between HPA and feedhorn + 0.0 dB Attenuation (U214) 10.0 dB TOTAL CORRECTION: Limit acc. 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

Information on the measurement:

<u>Subclause:</u> 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations

Modulated rf-carrier in the middle of the band (fm)

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see section 1.5.2 CH 544

CH 344

Test setup: see annex 1: 1.2hgj

- . . .

Test equipment: see annex 2: C217, R001, U214

Data of correction: see annex 4

Remark:

Test result: Test passed

Remarks:

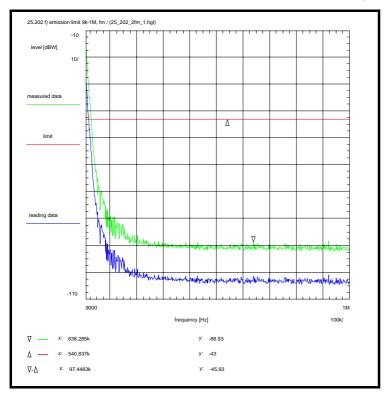
Carrier-on state / Carrier in the middle of the band (fm)

For EIRP calculation:

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Annex 3: Measurement result no. 39 (57)



Environment condition:						
	Ved 02/Aug/200					
Location: (CETECOM ICT Services GmbH, Laboratory RSC-Sat					
Temperature:	25 °C					
Humidity:	45	%				
Voltage:	10	Vdc				
Setup of measurement equi						
Start frequency:	9	kHz				
Stop frequency:	1	MHz				
Center frequency:	504.5	kHz				
Frequency span:	991					
Input attenuation:	20					
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 (C217)	+	0.5 dB				
DUT-Antenna (on-axis)	+	6.0 dBi				
Test antenna	+	0.0 dB				
BW correction factor (10k ->		4.0 dB				
Atten, between HPA and fee		0.0 dB				
Attenuation (U214)		9.9 dB				
TOTAL CORRECTION:	+	12.4 dB				
TOTAL GOTTILE OTTOM.		12.1 UD				
Limit:						
Limit acc. to 25.202 f):						
50-100% of assigned bw:	-25dBc/4kHz					
100-250% of assigned bw:						
> 250% of assigned bw:-(43		Bc/4kHz				
, , , ,	3. "					

Information on the measurement:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm) <u>Test results:</u> see plot (an explicit table was not generated) Operating condition of DUT: operating condition 1, see section 1.5.2 CH 544 Test setup: see annex 1: 1.2hgj Test equipment: see annex 2: C217, R001, U214 Data of correction: see annex 4 Remark: Test result: Test passed

Carrier-on state / Carrier in the middle of the band (fm)

For EIRP calculation:

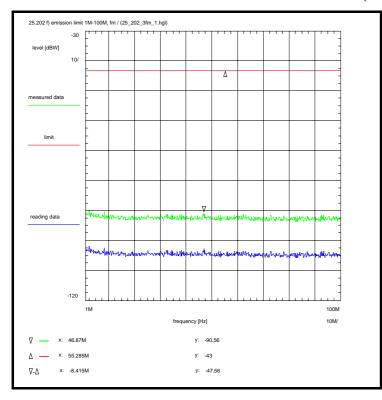
'worst-case' = maximum antenna gain

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

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CETECOM

Annex 3: Measurement result no. 40 (57)



Environment condition:						
Date & Time:	Wed 02/A	Aug/200	6 16:4	6:26		
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat					
Temperature:		25	°C			
Humidity:		45	%			
Voltage:		10	Vdc			
-						
Setup of measurement eq	uipment:					
Start frequency:		1	MHz			
Stop frequency:		100	MHz			
Center frequency:		50.5				
Frequency span:		99				
Input attenuation:		20				
Resolution-BW:		10				
Video-BW:		10				
Video-Average:		1		p(s) (
Detector-Mode:		2	Pos	Peak	(Maximum-Hold)	
Correction (average):						
Directional coupler		+	0.0			
Coaxial cable (C217)		+	0.2			
DUT-Antenna (on-axis)		+				
Test antenna		+	0.0			
BW correction factor (10k		-	4.0			
Atten. between HPA and f	eedhorn	+				
Attenuation (U214)		+				
TOTAL CORRECTION:		+	12.1	dB		
1.59						
Limit:						
Limit acc. to 25.202 f):	0F.ID.	/41-11-				
50-100% of assigned bw:						
100-250% of assigned bw			JD ~/41.			
> 250% of assigned bw:-(4	13+ 1010g(1	Pmax))	JBC/4K	HZ		

Information on the measurement:

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

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

Operating condition of DUT:
operating condition 1, see section 1.5.2
CH 544

Test setup:
see annex 1: 1.2hgj

Test equipment:
see annex 2: C217, R001, U214

Data of correction:
see annex 4

Remark:

Test result: Test passed

Remarks:

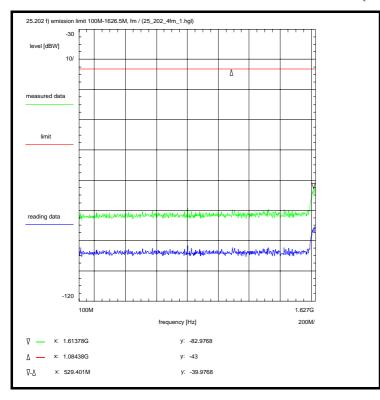
Carrier-on state / Carrier in the middle of the band (fm)

For EIRP calculation:

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Annex 3: Measurement result no. 41 (57)



Environment condition: Wed 02/Aug/2006 16:48:26 Date & Time: Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat 25 °C 45 % Temperature: Humidity: Voltage: 10 Vdc <u>Setup of measurement equipment:</u> Start frequency: 100 MHz GHz MHz Stop frequency: 1.6265 863.25 Center frequency: Frequency span: 1.5265 20 10 dB kHz Input attenuation: Resolution-BW: Video-BW: kHz Video-Average: Detector-Mode: 1 sweep(s) (>1) 2 Pos Peak (Maximum-Hold) Correction (average): + 0.0 dB Directional coupler Coaxial cable (C217) DUT-Antenna (on-axis) + 6.0 dBi Test antenna 0.0 dB BW correction factor (10k -> 4k) Atten. between HPA and feedhorn + 0.0 dB Attenuation (U214) 9.9 dB TOTAL CORRECTION: 12.4 dB Limit acc. 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

Information on the measurement:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations

Modulated rf-carrier in the middle of the band (fm)

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see section 1.5.2 CH 544

Test setup: see annex 1: 1.2hgj

Test equipment: see annex 2: C217, R001, U214

Data of correction: see annex 4

Remark:

Test result: Test passed

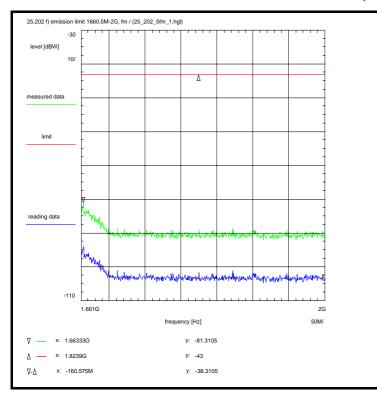
Carrier-on state / Carrier in the middle of the band (fm)

For EIRP calculation:

Test report no.: 4-2170-02-04/06 date: 30.10.2006 page 63 (78)

CETECOM

Annex 3: Measurement result no. 42 (57)



Environment condition: Date & Time: Location: Temperature: Humidity: Voltage:	Wed 02/Aug/200 CETECOM ICT 25 45 10	Services GmbH, Laboratory RSC-Sat C %
Setup of measurement equ Start frequency: Stop frequency: Center frequency: Frequency span: Input attenuation: Resolution-BW: Video-BW: Video-Average: Detector-Mode:	1.6605 2 1.83025	GHz GHz MHz dB kHz kHz sweep(s) (>1)
Correction (average): Directional coupler Coaxial cable (C217) DUT-Antenna (on-axis) Test antenna BW correction factor (10k- Atten. between HPA and fe Attenuation (U214) TOTAL CORRECTION:		0.7 dB 6.0 dBi 0.0 dB 4.0 dB 0.0 dB 10.0 dB
Limit: Limit acc. to 25.202 f): 50-100% of assigned bw: 100-250% of assigned bw: > 250% of assigned bw:-(4	-35dBc/4kHz	

Information on the measurement:

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

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

Operating condition of DUT:
operating condition 1, see section 1.5.2
CH 544

Test setup:
see annex 1: 1.2hgj

Test equipment:
see annex 2: C217, R001, U214

Data of correction:
see annex 4

Remark:

Test result: Test passed

Remarks:

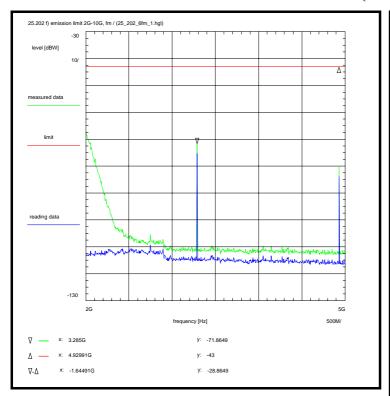
Carrier-on state / Carrier in the middle of the band (fm)

For EIRP calculation:

page 64 (78) date: 30.10.2006 Test report no.: 4-2170-02-04/06

CETECOM

Annex 3: Measurement result no. 43 (57)



Date & Time.	05T500M10T0 10.30.31						
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat						
Temperature:		25	°C				
Humidity:		45	%				
Voltage:		10	Vdc				
Setup of measurement eq	uipment:						
Start frequency:		2	GHz				
Stop frequency:		5	GHz				
Center frequency:		3.5	GHz				
Frequency span:		3	GHz				
Input attenuation:		0	dB				
Resolution-BW:		100	kHz				
Video-BW:		100	kHz				
Video-Average:		1	swee	p(s) (>1)			
Detector-Mode:		2		Peak (Maximum-Hold)			
				,			
Correction (average):							
Directional coupler (WHPF	=)	+	3.6	dB			
Coaxial cable (C217)	,	+	1.0	dB			
DUT-Antenna (on-axis)		+	6.0	dBi			
Test antenna		+	0.0	dB			
BW correction factor (100)	(-> 4k)		14.0				
Atten, between HPA and f		+	0.0	dB			
Attenuation (U214)	ccunom	+	10.0				
TOTAL CORRECTION:		+	6.6	dB			
TOTAL CONNECTION.		т	0.0	ub			
Limit:							
Limit acc. to 25.202 f):							
50-100% of assigned bw:	25dBc//	VЦσ					
100-250% of assigned bw							
> 250% of assigned bw:-(4			IDc/AL	⊔ -			
> 250 % of assigned bw(-	+3+ rolog(r r	Παλήμ	IDC/4K	I IZ			

Information on the measurement:

Wed 02/Aug/2006 16:58:31

Environment condition:
Date & Time:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm) <u>Test results:</u> see plot (an explicit table was not generated) Operating condition of DUT: operating condition 1, see section 1.5.2 CH 544 Test setup: see annex 1: 1.2hgij Test equipment: see annex 2: C217, R001, U214, WHPF Data of correction: see annex 4 Remark: Test result: Test passed

Carrier-on state / Carrier in the middle of the band (fm)

For EIRP calculation:

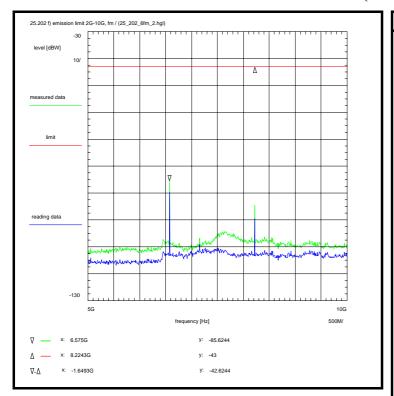
'worst-case' = maximum antenna gain

Rather left the plot shows the frequency response of the high pass filter. The plot shows the 2nd and 3rd harmonic.

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CETECOM

Annex 3: Measurement result no. 44 (57)



Environment condition:							
	Wed 02/Aug/200	6 17:0	1:06				
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat						
Temperature:	25	°C	,				
Humidity:	45	%					
Voltage:	10	Vdc					
-							
Setup of measurement equ							
Start frequency:	5	GHz					
Stop frequency:	10						
Center frequency:	7.5						
Frequency span:	5						
Input attenuation:	0						
Resolution-BW:	100						
Video-BW:	100						
Video-Average:	1		ep(s) (>1)				
Detector-Mode:	2	Pos	Peak (Maximum-Hold)				
Correction (average):							
Directional coupler (WHPF)		0.3					
Coaxial cable (C217)	+	1.5					
DUT-Antenna (on-axis)	+						
Test antenna	+	0.0					
BW correction factor (100k		14.0					
Atten. between HPA and fe		0.0					
Attenuation (U214)	+						
TOTAL CORRECTION:	+	4.2	dB				
12							
Limit:							
Limit acc. to 25.202 f):	0F ID - /41-11-						
50-100% of assigned bw:							
100-250% of assigned bw:		ID - / 41 -	11-				
> 250% of assigned bw:-(4	3+TUIOG(PMax))	JBC/4K	HZ				

Information on the measurement:

<u>Subclause:</u> 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier in the middle of the band (fm) <u>Test results:</u> see plot (an explicit table was not generated) Operating condition of DUT: operating condition 1, see section 1.5.2 CH 544 Test setup: see annex 1: 1.2hgij Test equipment: see annex 2: C217, R001, U214, WHPF Data of correction: see annex 4 Remark:

Test result:

Test passed

Remarks:

Carrier-on state / Carrier in the middle of the band (fm)

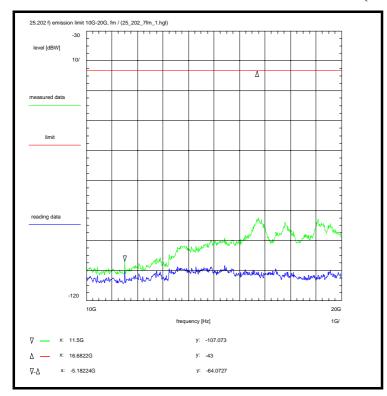
For EIRP calculation: 'worst-case' = maximum antenna gain

The plot shows the 4th and 5th harmonic.

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CETECOM

Annex 3: Measurement result no. 45 (57)



Date & Time:	Wed 02/Aug/2006 17:04:59					
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat					
Temperature:	2		С			
Humidity:	4	5 9	6			
Voltage:	1	0 V	'dc			
Setup of measurement eq						
Start frequency:	1		θHz			
Stop frequency:	2		iΗz			
Center frequency:			βHz			
Frequency span:	-		βHz			
Input attenuation:			В			
Resolution-BW:	10	0 k	Hz			
Video-BW:	10	0 k	Hz			
Video-Average:		1 s	wee	ep(s) (>1)		
Detector-Mode:		2 F	os l	Peak (Maximum-Hold)		
Correction (average):				-		
Directional coupler (WHPF	,		.7	dB		
Coaxial cable (C217)			.2	dB		
DUT-Antenna (on-axis)			.0	dBi		
Test antenna			.0	dB		
BW correction factor (100kg				dB		
Atten. between HPA and f	eedhorn		.0	dB		
Attenuation (U214)		+ 1	4.2	dB		
TOTAL CORRECTION:		+ 9	.1	dB		
<u>Limit:</u>						
Limit acc. to 25.202 f):						
50-100% of assigned bw:						
100-250% of assigned bw						
> 250% of assigned bw:-(4	13+10log(Pma)	())dB(:/4k	Hz		

Information on the measurement:

Environment condition:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations

Modulated rf-carrier in the middle of the band (fm)

<u>Test results:</u> see plot (an explicit table was not generated)

Operating condition of DUT: operating condition 1, see section 1.5.2 CH 544

Test setup: see annex 1: 1.2hgij

Test equipment: see annex 2: C217, R001, U214, WHPF

Data of correction: see annex 4

Remark:

Test result: Test passed

Remarks:

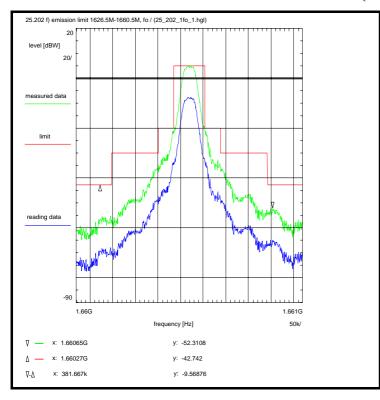
Carrier-on state / Carrier in the middle of the band (fm) For EIRP calculation:

'worst-case' = maximum antenna gain The marker shows the 7th harmonic.

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Annex 3: Measurement result no. 46 (57)



Thu 03/Aua/2006 10:41:15 Date & Time: Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat 25 °C 50 % Temperature: Humidity: Voltage: 10 Vdc <u>Setup of measurement equipment:</u> Start frequency: 1.66021875 GHz 1.66071875 1.66046875 GHz GHz Stop frequency: Center frequency: Frequency span: 40 10 dB kHz Input attenuation: Resolution-BW: Video-BW: kHz Video-Average: Detector-Mode: sweep(s) (>1) Pos Peak (Maximum-Hold) Correction (average): + 0.0 dB Directional coupler Coaxial cable (C217) DUT-Antenna (on-axis) 6.0 dBi Test antenna 0.0 dB BW correction factor (10k -> 4k) Atten. between HPA and feedhorn + 0.0 dB Attenuation (U214) 10.0 dB TOTAL CORRECTION: Limit acc. 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

Information on the measurement:

Environment condition:

<u>Subclause:</u> 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations

Modulated rf-carrier at the upper edge of the band (fo)

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see section 1.5.2 CH 1087

Test setup: see annex 1: 1.2hgj

- . . .

Test equipment: see annex 2: C217, R001, U214

Data of correction: see annex 4

Remark:

Test result: Test passed

Remarks:

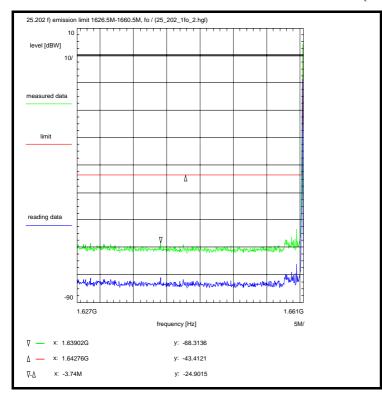
Carrier on state / Carrier at the upper edge of the band (fo)

For EIRP calculation:

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CETECOM

Annex 3: Measurement result no. 47 (57)



Thu 03/Aua/2006 11:27:26 Date & Time: Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat 25 °C 50 % Temperature: Humidity: Voltage: 10 Vdc Setup of measurement equipment:
Start frequency: 1.6265 GHz 1.6605 GHz 1.6435 GHz Stop frequency: 1.6435 Center frequency: Frequency span: 40 10 dB kHz Input attenuation: Resolution-BW: Video-BW: Video-Average: Detector-Mode: sweep(s) (>1) Pos Peak (Maximum-Hold) Correction (average): Directional coupler + 0.0 dB + 0.7 dB Coaxial cable **DUT-Antenna** 6.0 dBi Test antenna 0.0 dB BW correction factor Atten, between HPA and feedhorn 0.0 dB Freefield attenuation 10.0 dB TOTAL CORRECTION: Limit acc. 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

Information on the measurement:

Environment condition:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations

Modulated rf-carrier at the upper edge of the band (fo)

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see section 1.5.2 CH 1087

Test setup: see annex 1: 1.2hgj

Test equipment: see annex 2: C217, R001, U214

Data of correction: see annex 4

Remark:

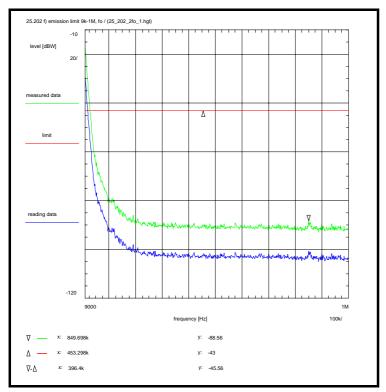
Test result: Test passed

Carrier-on state / Carrier at the upper edge of the band (fo) For EIRP calculation:

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Annex 3: Measurement result no. 48 (57)



Information on	the mea	surement:
Environment condition:		
Date & Time:	Thu 03/Aug/200	06 11:38:20
Location:	CETECOM ICT	Services GmbH, Laboratory RSC-Sat
Temperature:	25	°C
Humidity:	50	%
Voltage:	10	Vdc
Setup of measurement equ	ipment:	
Start frequency:	9	kHz
Stop frequency:	1	MHz
Center frequency:	504.5	kHz
Frequency span:	991	kHz
Input attenuation:	20	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 (C217)	+	0.2 dB
DUT-Antenna (on-axis)	+	6.0 dBi
Test antenna	+	0.0 dB
BW correction factor (10k -:	> 4k) -	4.0 dB
Atten. between HPA and fe	edhorn +	0.0 dB
Attenuation (U214)	+	9.9 dB
TOTAL CORRECTION:	+	12.1 dB
Limit: Limit acc. to 25.202 f): 50-100% of assigned bw: 100-250% of assigned bw: > 250% of assigned bw:-(4:	-35dBc/4kHz	dBc/4kHz

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier at the upper edge of the band (fo) <u>Test results:</u> see plot (an explicit table was not generated) Operating condition of DUT: operating condition 1, see section 1.5.2 CH 1087 Test setup: see annex 1: 1.2hgj Test equipment: see annex 2: C217, R001, U214 Data of correction: see annex 4 Remark: Test result: Test passed

Carrier-on state / Carrier at the upper edge of the band (fo) For EIRP calculation:

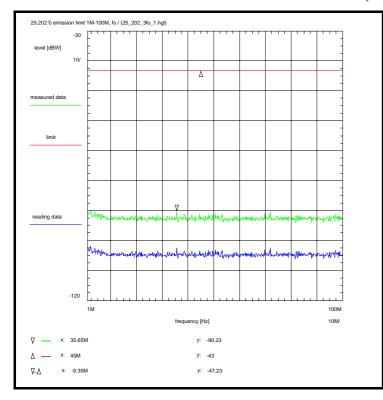
'worst-case' = maximum antenna gain

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

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CETECOM

Annex 3: Measurement result no. 49 (57)



Environment condition:							
Date & Time:	Thu 03/Aug/2006 11:39:51						
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat						
Temperature:		25	°C				
Humidity:		50	%				
Voltage:		10	Vdc				
· ·							
Setup of measurement equ	uipment:						
Start frequency:		1	MHz				
Stop frequency:		100	MHz				
Center frequency:	5	50.5	MHz				
Frequency span:		99	MHz				
Input attenuation:		20	dB				
Resolution-BW:		10	kHz				
Video-BW:		10	kHz				
Video-Average:		1	swee	ep(s) (>1)			
Detector-Mode:		2		Peak (Maximum-Hold)			
Botostor mode.		-	. 00.	out (Maximum Flora)			
Correction (average):							
Directional coupler		+	0.0	dB			
Coaxial cable (C217)		+	0.2				
DUT-Antenna (on-axis)		+	6.0				
Test antenna		+	0.0				
BW correction factor (10k	-> 1k)		4.0				
Atten, between HPA and fe		+	0.0				
Attenuation (U214)	Culioni	+					
TOTAL CORRECTION:		+	12.1				
TOTAL CORRECTION.		т	12.1	ub			
Limit:							
Limit acc. to 25.202 f):							
50-100% of assigned bw:	2EdDc/4	Г П -					
100-250% of assigned bw:							
> 250% of assigned bw:-(4			Do/Ak	11-			
> 250 % Of assigned bw(4	13+10109(F11	ilax))u	DC/4K	ΠZ			

Information on the measurement:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier at the upper edge of the band (fo) <u>Test results:</u> see plot (an explicit table was not generated)

Operating condition of DUT: operating condition 1, see section 1.5.2 CH 1087

Test setup: see annex 1: 1.2hgj

Test equipment: see annex 2: C217, R001, U214

Data of correction: see annex 4

Remark:

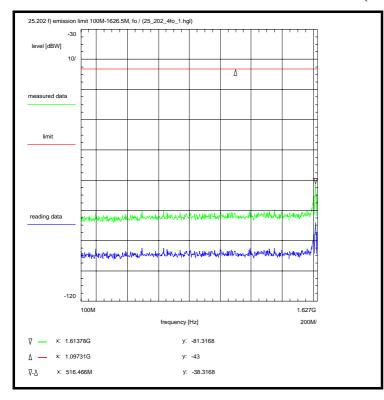
Test result: Test passed

Carrier-on state / Carrier at the upper edge of the band (fo) For EIRP calculation:

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Annex 3: Measurement result no. 50 (57)



Environment condition: Thu 03/Aug/2006 11:44:41 Date & Time: Location: CETECOM ICT Services GmbH, Laboratory RSC-Sat 25 °C 50 % Temperature: Humidity: Voltage: 10 Vdc <u>Setup of measurement equipment:</u> Start frequency: 100 MHz GHz MHz Stop frequency: 1.6265 863.25 Center frequency: Frequency span: 1.5265 20 10 dB kHz Input attenuation: Resolution-BW: Video-BW: kHz Video-Average: Detector-Mode: 1 sweep(s) (>1) 2 Pos Peak (Maximum-Hold) Correction (average): + 0.0 dB Directional coupler Coaxial cable (C217) DUT-Antenna (on-axis) 6.0 dBi Test antenna 0.0 dB BW correction factor (10k -> 4k) Atten. between HPA and feedhorn + 0.0 dB Attenuation (U214) 9.9 dB TOTAL CORRECTION: 12.4 dB Limit acc. 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

Information on the measurement:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations

Modulated rf-carrier at the upper edge of the band (fo)

Test results:

see plot (an explicit table was not generated)

Operating condition of DUT:

operating condition 1, see section 1.5.2 CH 1087

Test setup: see annex 1: 1.2hgj

Test equipment: see annex 2: C217, R001, U214

Data of correction: see annex 4

Remark:

Test result: Test passed

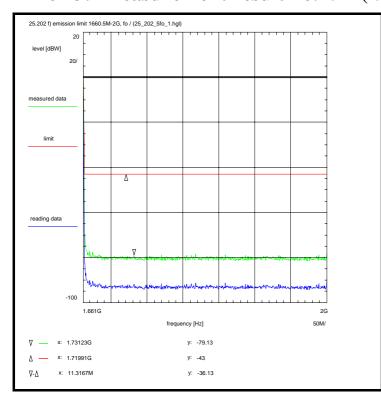
Carrier-on state / Carrier at the upper edge of the band (fo)

For EIRP calculation:

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CETECOM

Annex 3: Measurement result no. 51 (57)



Environment condition:								
Date & Time:	Thu 03/Aug/2006 11:56:41							
Location:	CETECOM IC	T Service	es GmbH, Labor	atory RSC-Sat				
Temperature:	25	°C						
Humidity:	50) %						
Voltage:	10) Vdc						
Setup of measurement equ	uipment:							
Start frequency:	1.6605							
Stop frequency:	2	2 GHz						
Center frequency:	1.83025	GHz						
Frequency span:	339.5							
Input attenuation:	30) dB						
Resolution-BW:	10) kHz						
Video-BW:	10) kHz						
Video-Average:			ep(s) (>1)					
Detector-Mode:	2	Pos	Peak (Maximum-	·Hold)				
Correction (average):								
Directional coupler	4	- 0.0	dB					
Coaxial cable (C217)	4	- 0.7	dB					
DUT-Antenna (on-axis)	4	- 6.0	dBi					
Test antenna		- 0.0	dB					
BW correction factor (10k -	> 4k)	- 4.0	dB					
Atten. between HPA and fe	edhorn +	- 0.0	dB					
Attenuation (U214)	4	- 10.0	dB					
TOTAL CORRECTION:	4	12.7	dB					
Limit: Limit acc. to 25.202 f): 50-100% of assigned bw:	-25dBc/4kHz	<u>z</u>						
100-250% of assigned bw:	-35dBc/4kHz	<u> </u>						
> 250% of assigned bw:-(4	3+10log(Pmax))dBc/4k	:Hz					

Information on the measurement:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier at the upper edge of the band (fo)

<u>Test results:</u> see plot (an explicit table was not generated)

Operating condition of DUT: operating condition 1, see section 1.5.2 CH 1087

Test setup: see annex 1: 1.2hgj

Test equipment: see annex 2: C217, R001, U214

Data of correction: see annex 4

Remark:

Test result: Test passed

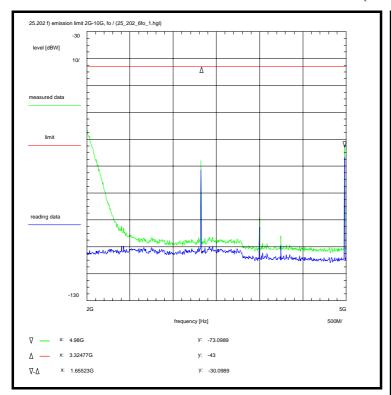
Carrier-on state / Carrier at the upper edge of the band (fo)

For EIRP calculation:

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CETECOM

Annex 3: Measurement result no. 52 (57)



Date & Time:	Thu 03/Aug/2006 12:19:46			
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat			
Temperature:	25	°C		
Humidity:	50	%		
Voltage:	10	Vdc		
-				
Setup of measurement equ				
Start frequency:	2	GHz		
Stop frequency:	5	GHz		
Center frequency:	3.5	GHz		
Frequency span:		GHz		
Input attenuation:	0	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 (WHPF) +	3.6 dB		
Coaxial cable (C217)	, .	1.0 dB		
DUT-Antenna (on-axis)	+	6.0 dBi		
Test antenna	+	0.0 dB		
BW correction factor (100k		14.0 dB		
Atten. between HPA and fe		0.0 dB		
Attenuation (U214)	+	10.0 dB		
TOTAL CORRECTION:	+	6.6 dB		
Limit: Limit acc. to 25.202 f): 50-100% of assigned bw: 100-250% of assigned bw: > 250% of assigned bw:-(4	-35dBc/4kHz	dBc/4kHz		

Information on the measurement:

Environment condition:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations Modulated rf-carrier at the upper edge of the band (fo) <u>Test results:</u> see plot (an explicit table was not generated) Operating condition of DUT: operating condition 1, see section 1.5.2 CH 1087 Test setup: see annex 1: 1.2hgij Test equipment: see annex 2: C217, R001, U214, WHPF Data of correction: see annex 4 Remark: Test result: Test passed

Carrier-on state / Carrier at the upper edge of the band (fo) For EIRP calculation:

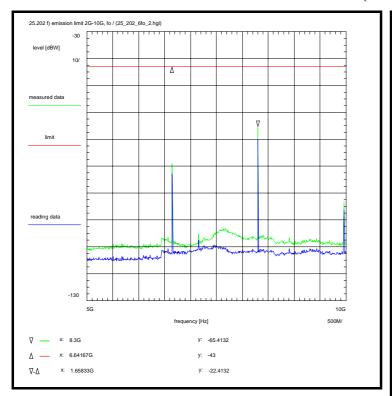
'worst-case' = maximum antenna gain

Rather left the plot shows the frequency response of the high pass filter. The plot shows the 2nd and 3rd harmonic and two spurious.

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Annex 3: Measurement result no. 53 (57)



Date & Time:	Thu 03/Aug/2006 13:16:44			
Location:	CETECOM	I ICT S	Service	es GmbH, Laboratory RSC-Sat
Temperature:		25	°C	
Humidity:		50	%	
Voltage:		10	Vdc	
Setup of measurement eq	uipment:			
Start frequency:		5	GHz	
Stop frequency:		10	GHz	
Center frequency:		7.5	GHz	
Frequency span:		5	GHz	
Input attenuation:		0	dB	
Resolution-BW:		100	kHz	
Video-BW:		100	kHz	
Video-Average:		1	swee	p(s) (>1)
Detector-Mode:		2	Pos I	Peak (Maximum-Hold)
Correction (average):				
Directional coupler (WHPF	(+	0.3	dB
Coaxial cable (C217)		+	1.5	dB
DUT-Antenna (on-axis)		+	6.0	
Test antenna		+	0.0	
BW correction factor (100kg		-	14.0	
Atten. between HPA and f	eedhorn	+	0.0	
Attenuation (U214)		+	10.4	
TOTAL CORRECTION:		+	4.2	dB
Limit:				
Limit acc. to 25.202 f):				
50-100% of assigned bw:	-25dRc/4	kHz		
100-250% of assigned bw				
> 250% of assigned bw:-(4			Rc//k	H ₇
> 25070 of assigned bw(-	romog(i ii	палуја	DUTK	112

Information on the measurement:

Environment condition:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations

Modulated rf-carrier at the upper edge of the band (fo)

<u>Test results:</u> see plot (an explicit table was not generated)

Operating condition of DUT: operating condition 1, see section 1.5.2 CH 1087

Test setup: see annex 1: 1.2hgij

Test equipment: see annex 2: C217, R001, U214, WHPF

Data of correction: see annex 4

Remark:

Test result: Test passed

Carrier-on state / Carrier at the upper edge of the band (fo)

For EIRP calculation:

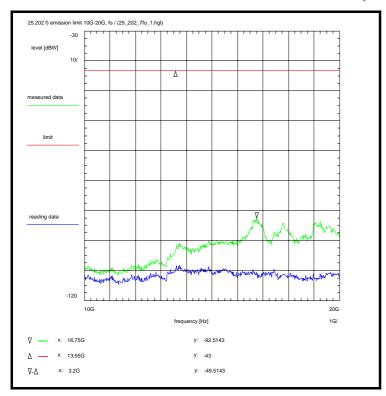
'worst-case' = maximum antenna gain

The plot shows the 4th, 5th and 6th harmonic.

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CETECOM

Annex 3: Measurement result no. 54 (57)



Date & Time:	Thu 03/Aug/	2006	13:21	:09
Location:	CETECOM ICT Services GmbH, Laboratory RSC-Sat			
Temperature:		25	°C	-
Humidity:		50	%	
Voltage:		10	Vdc	
Setup of measurement eq				
Start frequency:			GHz	
Stop frequency:			GHz	
Center frequency:			GHz	
Frequency span:			GHz	
Input attenuation:		-	dB	
Resolution-BW:			kHz	
Video-BW:	1		kHz	
Video-Average:				p(s) (>1)
Detector-Mode:		2	Pos F	Peak (Maximum-Hold)
Correction (average):				
Directional coupler (WHPF	-)		0.7	dB
Coaxial cable (C217)			2.2	dB
DUT-Antenna (on-axis)			6.0	dBi
Test antenna			0.0	dB
BW correction factor (100)			14.0	
Atten. between HPA and f	eedhorn		0.0	dB
Attenuation (U214)			14.2	
TOTAL CORRECTION:		+	9.1	dB
Limit:				
Limit acc. to 25.202 f):	0E ID - /4L			
50-100% of assigned bw:				
100-250% of assigned bw			5 - / AL I	t-
> 250% of assigned bw:-(4	13+10log(Pm	ax))dl	BC/4KI	HZ

Information on the measurement:

Environment condition:

Subclause: 25.202 f) Frequencies, frequency tolerance and emission limitations Emission limitations

Modulated rf-carrier at the upper edge of the band (fo)

<u>Test results:</u> see plot (an explicit table was not generated)

Operating condition of DUT: operating condition 1, see section 1.5.2 CH 1087

Test setup: see annex 1: 1.2hgij

Test equipment: see annex 2: C217, R001, U214, WHPF

Data of correction: see annex 4

Remark:

Test result: Test passed

Carrier-on state / Carrier at the upper edge of the band (fo)

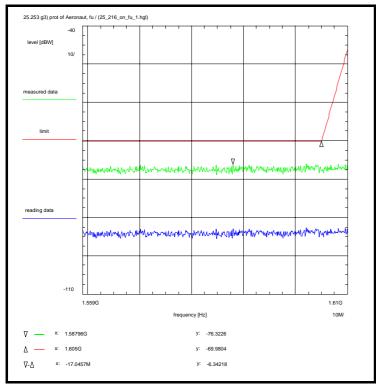
For EIRP calculation:

'worst-case' = maximum antenna gain

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CETECOM

Annex 3: Measurement result no. 55 (57)



Subclause: 25.216 gation-satellite service	Limits on emissions from mobile earth stations for protection of aeronautical radionavi-					
gallon-sateline service	Carrier-on state, modulated carrier at the lower edge of the band (fu) Conducted measurement at the antenna-connector					
Test results: see plot (an explicit table	was not generated)					
Operating condition of DU operating condition 1, see CH 3	<u>JT:</u> e section 1.5.2					
Test setup: see annex 1: 1.2hgj						
Test equipment: see annex 2: C217, R001	1, U214					
Data of correction: see annex 4						
Remark:						
<u>Test result:</u>	Test passed					

Environment condition:			
	ue 01/Aug/200		
	ETECOM ICT		es GmbH, Laboratory RSC-Sat
Temperature:	25	°C	
Humidity:	55	%	
Voltage:	10	Vdc	
Setup of measurement equip	ment:		
Start frequency:	1.559	GHz	
Stop frequency:	1.61	GHz	
Center frequency:	1.5845	GHz	
Frequency span:	51	MHz	
Input attenuation:	20	dB	
Resolution-BW:	1	MHz	
Video-BW:	1	MHz	
Video-Average:	100		ep(s) (>1)
Detector-Mode:	1	Sam	ple (VidAvg / VidBW<300Hz)
Correction (average):			
Directional coupler	+	0.0	dB
Coaxial cable (C217)	+	0.7	dB
DUT-Antenna (on-axis)	+	6.0	dBi
Test antenna	+	0.0	dB
BW correction factor	+	0.0	dB
Atten. between HPA and fee	dhorn +		dB
Attenuation (U214)	+		
TOTAL CORRECTION:	+	16.7	dB
Limit:			
Limits acc. to 25.216 c) f) h):			
1559.0 - 1605.0 MHz: -7	70dBW/1MHz		
1605.0 - 1610.0 MHz:-70 to -	46dBW/1MHz		
(linearly interpolated)			
The EIRP, averaged over an	y two-milliseco	nd acti	ive transmission interval
from the MESs in the carrier-	on state shall i	not exc	ceed the limits above.

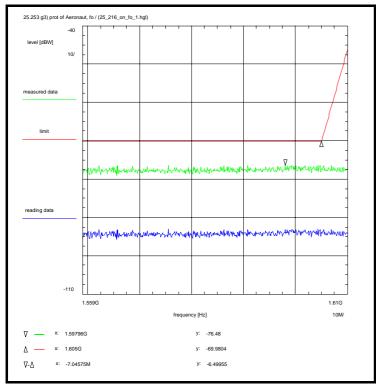
Carrier-on state / Carrier at the lower edge of the band (fu) For EIRP calculation:

worst-case = nominal on-axis antenna gain at fu
Measurement with 1 MHz resolution/video filter and noise averaging.

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Annex 3: Measurement result no. 56 (57)



Subclause: 25.216 gation-satellite service	Limits on emissions from mobile earth stations for protection of aeronautical radionavi-
gation-sateline service	Carrier-on state, modulated carrier at the upper edge of the band (fo) Conducted measurement at the antenna-connector
Test results: see plot (an explicit table	was not generated)
Operating condition of DU operating condition 1, see CH 1087	<u>JT:</u> e section 1.5.2
Test setup: see annex 1: 1.2hgj	
Test equipment: see annex 2: C217, R001	1, U214
Data of correction: see annex 4	
Remark:	
<u>Test result:</u>	Test passed

Information on t	he meas	sure	ement:
Environment condition:			
	n 31/Jul/2006		
			es GmbH, Laboratory RSC-Sat
Temperature:	26	°C	
Humidity:	55	%	
Voltage:	10	Vdc	
Setup of measurement equipm	nent:		
Start frequency:	1.559	GHz	
Stop frequency:	1.61	GHz	
Center frequency:	1.5845	GHz	
Frequency span:	51	MHz	
Input attenuation:	20	dB	
Resolution-BW:	1	MHz	
Video-BW:	1	MHz	
Video-Average:	100		ep(s) (>1)
Detector-Mode:	1	Sam	ple (VidAvg / VidBW<300Hz)
Correction (average):			
Directional Coupler	+	0.0	dB
Coaxial cable (C217)	+	0.7	dB
DUT-Antenna (on-axis)	+	6.0	dBi
Test antenna	+	0.0	dB
BW correction factor	+	0.0	dB
Atten. between HPA and feedl	norn +	0.0	dB
Attenuation (U214)	+	10.0	dB
TOTAL CORRECTION:	+	16.7	dB
Limit:			
Limits acc. to 25.216 c) f) h):			
	dBW/1MHz		
1605.0 - 1610.0 MHz:-70 to -4	6dBW/1MHz		
(linearly interpolated)			
The EIRP, averaged over any	two-milliseco	nd acti	ive transmission interval
from the MESs in the carrier-o	n state shall r	not exc	eed the limits above.

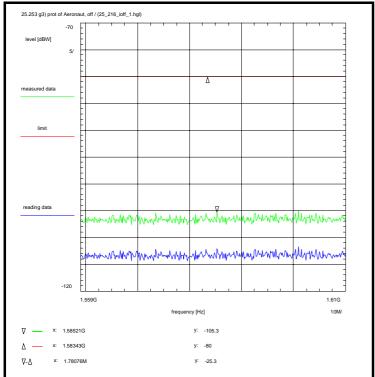
Remarks:
Carrier-on state / Carrier at the upper edge of the band (fo) For EIRP calculation:

worst-case = nominal on-axis antenna gain at fo
Measurement with 1 MHz resolution/video filter and noise averaging.

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Annex 3: Measurement result no. 57 (57)



Subclause: 25.216 gation-satellite service	Limits on emissions from mobile earth stations for protection of aeronautical radionavi-
yanon-satenite service	Carrier-off state, conducted measurement at the antenna-connector
Test results: see plot (an explicit table	was not generated)
Operating condition of DL operating condition 2, see	
Test setup: see annex 1: 1.2gj	
Test equipment: see annex 2: C217, R001	
Data of correction: see annex 4	
Remark:	
<u>Test result:</u>	Test passed

Environment condition: Date & Time:	1on 31/Jul/2006	4 15·Ω7	<i>1</i> -50	
	CETECOM ICT Services GmbH, Laboratory RSC-Sat			
Temperature:	26	°C	es dilibri, Edbordiory NSC-Sai	
Humidity:	55	%		
Voltage:	10			
Setup of measurement equip	oment:			
Start frequency:	1.559	GHz		
Stop frequency:	1.61			
Center frequency:	1.5845			
Frequency span:	51			
Input attenuation:	0			
Resolution-BW:	1			
Video-BW:	1			
Video-Average:	100		ep(s) (>1)	
Detector-Mode:	1	Sam	ple (VidAvg / VidBW<300Hz)	
Correction (average):			_	
Directional Coupler	+		dB	
Coaxial cable (C217)	+			
DUT-Antenna (on-axis)	+			
Test antenna	+			
BW correction factor	+			
Atten. between HPA and fee			dB	
Attenuation	+		dB	
TOTAL CORRECTION:	+	6.7	dB	
Limit:				
Limits acc. to 25.216 i):				
The EIRP, averaged over an				
from the MESs in the carrier	off state shall	not exc	ceed the limit above.	

Remarks: Carrier-off state Measurement with 1 MHz resolution/video filter and noise averaging



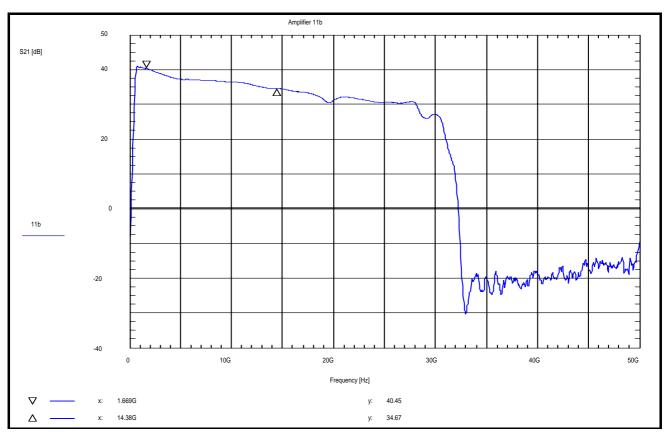
Annex 4: Data of correction

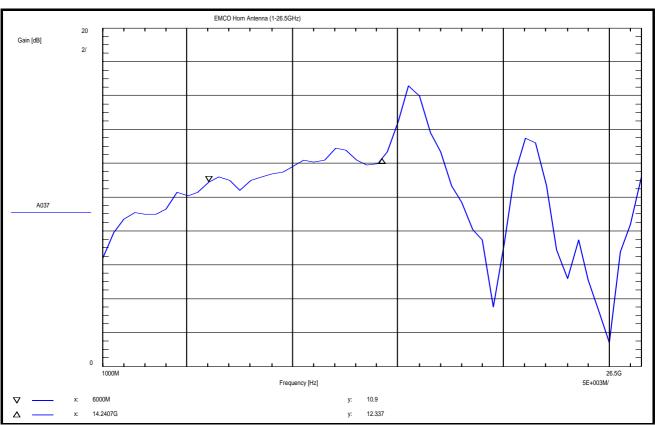
Annex 4 consists of 4 pages including this page.

no.	list of contents
1	Amplifier '11b': Transmission data (NWA-measurement)
2	Gain versus frequency diagrams of Horn Ant. 1-26.5GHz: 'A037'
3	Coaxial cable 'C217': Transmission data (NWA-measurement)
4	10dB-Attenuator N-connected 'U214': Transmission data (NWA-measurement)



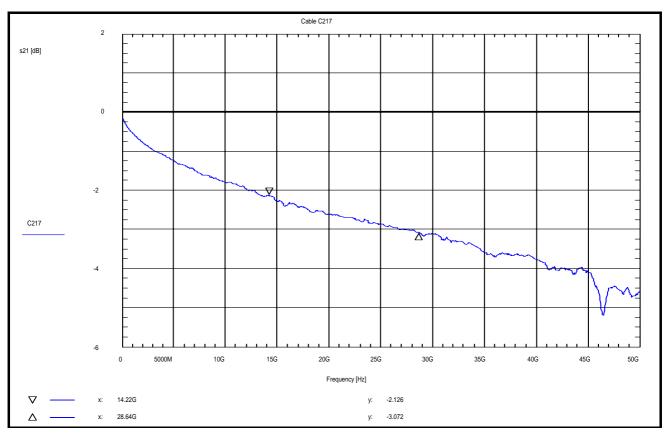
Annex 4: Data of correction 1 - 2

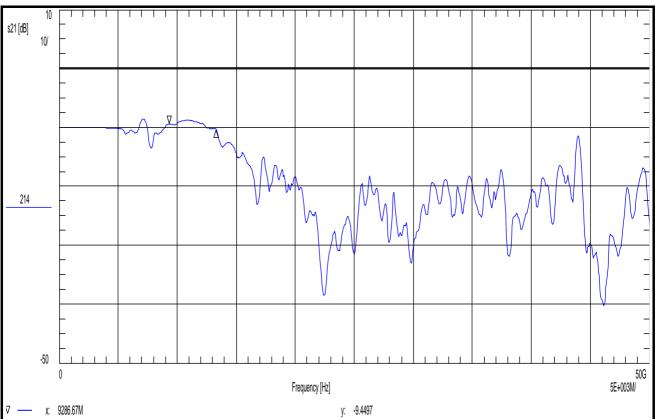






Annex 4: Data of correction 3 - 4







Annex 5: Photographs

Annex 5 consists of 15 pages including this page.

no.:	list of contents
1	Test setup for conducted measurements in the test laboratory: cable, 10 dB Attenuator and Thuraya Satellite Module
2	see #1
3	see #1
4	Thuraya Satellite Module
5	see #4, detail view
6	see #4, detail view
7	see #4, detail view
8	see #4, detail view
9	Test setup for conducted measurements (frequency stability) in the climatic exposure test cabinet: cable and Thuraya Satellite Module
10	see #9, detail view
11	see #4, detail view, type label
12	see #11
13	see #11
14	Test setup for radiated measurements in anechoic chamber (30 MHz - 12.5 GHz), turntable 0°

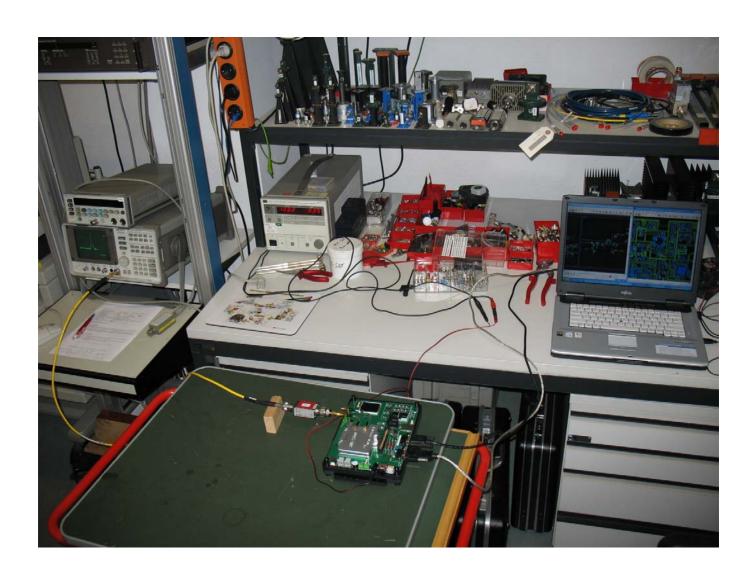
Test report no.: 4-2170-02-04/06





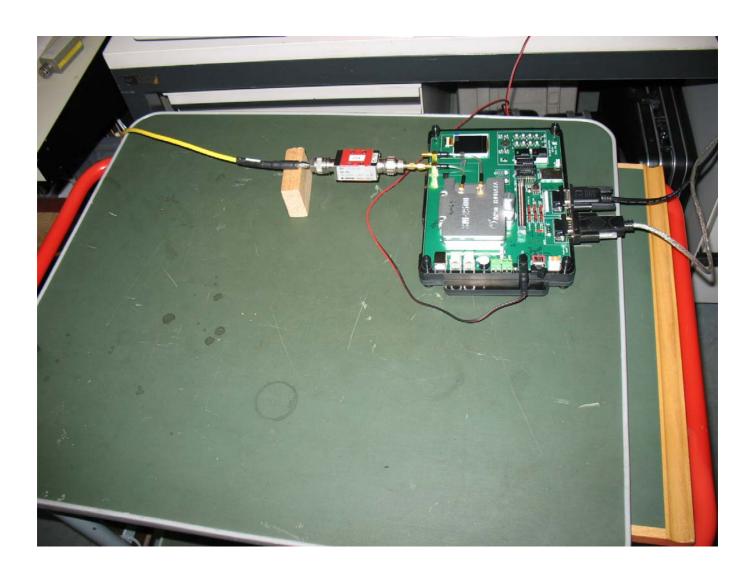
Test report no.: 4-2170-02-04/06





Test report no.: 4-2170-02-04/06





Test report no.: 4-2170-02-04/06





Test report no.: 4-2170-02-04/06





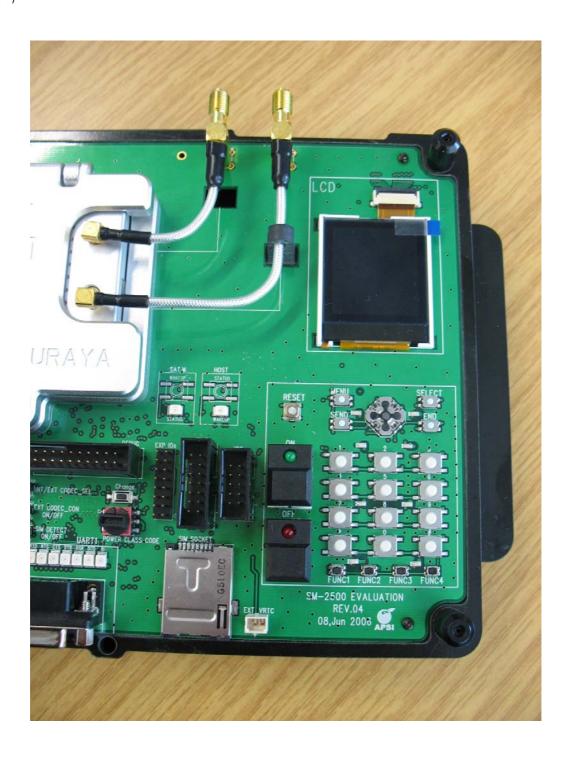
Test report no.: 4-2170-02-04/06





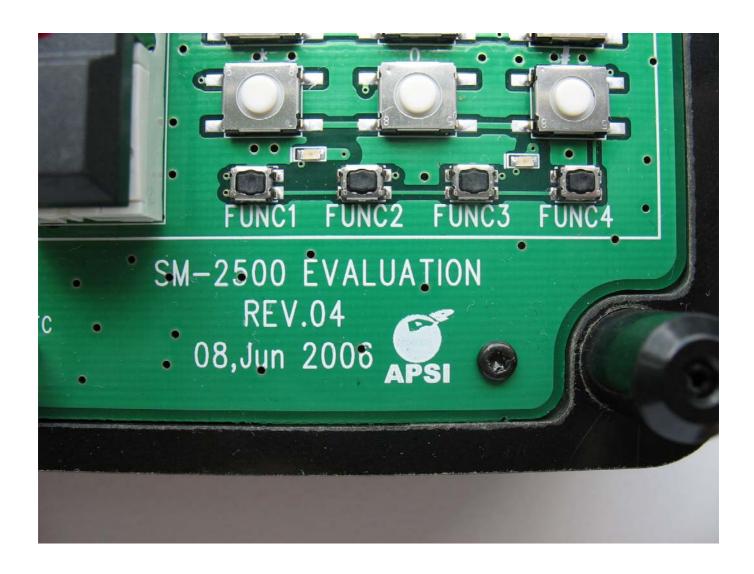
Test report no.: 4-2170-02-04/06





Test report no.: 4-2170-02-04/06





Test report no.: 4-2170-02-04/06





Test report no.: 4-2170-02-04/06





Test report no.: 4-2170-02-04/06





Test report no.: 4-2170-02-04/06





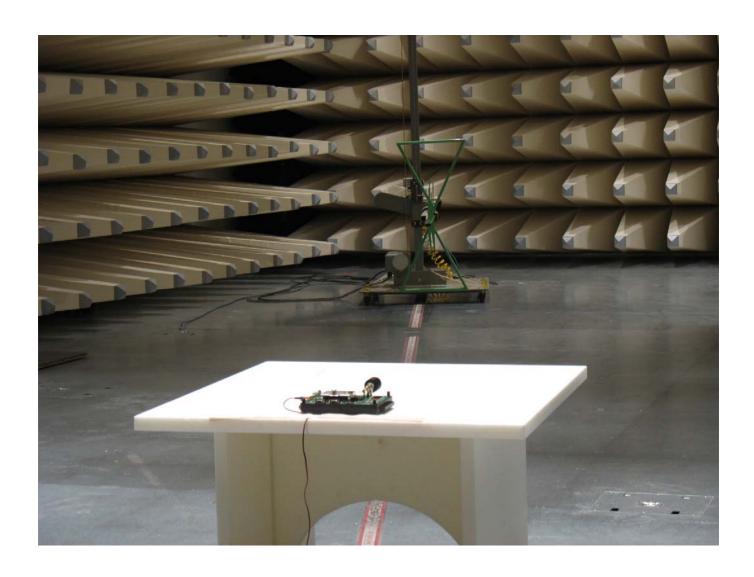
Test report no.: 4-2170-02-04/06





Test report no.: 4-2170-02-04/06







Annex 6: Technical description(s) of the test item

Annex 6 consists of 2 pages including this page.

no.	list of contents
1	Asia Pacific Satellite Industries Co., Ltd., Technical Specification and Description of SM-2500

1. Technical Specification of SM-2500

Transmitter frequency range(s)	1626.5~1660.5 MHz	
Channel Bandwidth	31.25 KHz	
Receiver frequency range(s)	1525~1559 MHz	
Transmitter power	Max 3.2 W	Typical 1.8 W
Radiated power (EIRP)		
Intermediate frequency	246MHz	Level -20 dBm
Frequency Accuracy	Uncorrected: < ±5ppm	Corrected : $< \pm 0.006$ ppm
Kind of Baseband signal	voice / circuit data / packet data/	
	fax	
Kind of modulation (s)	π/4 - CQPSK	
Occupied bandwidth	Please put the measured value at	
	Cetecom	
Nominated bandwidth	Please put the measured value at	
	Cetecom	
Data rate(s)	Tx: 2.4Kbps /4.8Kbps/ 9.6Kbps	Rx2.4Kbps /4.8Kbps/
	/14.4Kbps	9.6Kbps /60Kbps
FEC	Convolution (1/2, 1/3, 1/4,1/5)	
Power supply	Typ 3.7Vdc / Typ. 5.0Vdc for PA	

2. Description of SM-2500

H.W. Ahn

It supports various services such as voice, circuit data, packet data and fax etc. SM-2500 serves the various interfaces , UART, LCD, SIM, keypad, digital and analogue audio interfaces....etc.

Hyoung Won Ahn

Asia Pacific Satellite Industries Co., Ltd.