Accredited testing-laboratory

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

Federal Motor Transport Authority (KBA)
DAR registration number: KBA-P 00070-97

Recognized by the Federal Communications Commission
Anechoic chamber registration no.: 90462 (FCC)
Anechoic chamber registration no.: 3463A-1 (IC)
Certification ID: DE 0001
Accreditation ID: DE 0002

Accredited Bluetooth® Test Facility (BQTF)

Test report no.	**:**	**1-0880-01-08/08**
Type identification	**:**	**TM5-E01**
Applicant	**:**	**Toshiba Information Systems (UK) Ltd.**
FCC ID	**:**	**SP2-TM5-E01**
IC Certification No	**:**	**-**
Test standards	**:**	**47 CFR Part 15** **47 CFR Part 2**

Table of contents

1 General information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in 3.1.1. The CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.

Test laboratory manager:

2009-01-23	**Stefan Bös**	
Date	Name	Signature

Technical responsibility for area of testing:

2009-01-23	**Michael Berg**	
Date	Name	Signature

1.2 Testing laboratory

CETECOM ICT Services GmbH

Untertürkheimer Straße 6 - 10
66117 Saarbrücken
Germany
Phone: + 49 681 5 98 - 0
Fax: + 49 681 5 98 - 9075
e-mail: info@ICT.cetecom.de
Internet: http://www.cetecom-ict.de

State of accreditation: **The test laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025**
DAR registration number: DAT-P-176/94-D1

Accredited by: **Federal Motor Transport Authority (KBA)**
DAR registration number: KBA-P 00070-97

Testing location, if different from CETECOM ICT Services GmbH:

Name :
Street :
Town :
Country :
Phone :
Fax :

1.3 Details of applicant

Name:	**Toshiba Information Systems (UK) Ltd.** **Mobile Communications Division**
Street:	**Delta House, The Crescent, Southwood Business Park**
Town:	**Farnborough, Hampshire, GU14 0NL**
Country:	**United Kingdom**
Telephone:	**+44 1252 532-309**
Fax:	**+44 1252 532-326**
Contact:	**Adrian Coyle**
E-mail:	**Adrian.coyle@toshiba.co.uk**
Telephone:	**+44 1252 532-309**

1.4 Application details

Date of receipt of order:	**2008-11-11**
Date of receipt of test item:	**2009-01-19**
Date of start test:	**2009-01-19**
Date of end test	**2009-01-23**
Persons(s) who have been present during the test:	**-/-**

2 Test standard/s:

47 CFR Part 15	**2008-07**	**Title 47 of the Code of Federal Regulations; Chapter I-Federal Communications Commission subchapter A - general, Part 15-Radio frequency devices**
47 CFR Part 2	**2006-10**	**Title 47 of the Code of Federal Regulations; Chapter I-Federal Communications Commission Frequency allocations and radio treaty matters; general rules and regulations**

3 Technical tests

3.1 Details of manufacturer

Name:	**Toshiba Corporation Mobile Communications Company**
Street:	**1-1, Asahigaoka 3-Chome, Hino-Shi**
Town:	**Tokyo 191-8555**
Country:	**Japan**

3.1.1 Test item

Kind of test item	:	**Handset / PDA**
Type identification	:	**TM5-E01**
S/N serial number	:	**359238020000348**
HW hardware status	:	**CS3-1**
SW software status	:	**5001.0000.2217**
Frequency Band [MHz]	:	**ISM 2.400 - 2.483,5**
Type of Modulation	:	**DSSS & OFDM**
Number of channels	:	**11**
Antenna	:	**Integrated antenna**
Power Supply	:	**3.7 V DC**
Temperature Range	:	**-20 °C to +55 °C**

Max. power radiated: 16.67 dBm (DSSS)
22.41 dBm (OFDM)
Max. power conducted: 18.70 dBm (DSSS)
24.16 dBm (OFDM)

FCC ID: SP2-TM5-E01
IC: -

3.1.2 Additional EUT information For IC Canada (appendix 2)

IC Registration Number:	**-**
Model Name:	**TM5-E01**
Manufacturer (complete Adress):	**Toshiba Corporation** **1-1, Asahigaoka 3-Chome, Hino-Shi** **Tokyo 191-8555** **Japan**
Tested to Radio Standards Specification (RSS) No.:	**RSS-210 Issue 7**
Open Area Test Site Industry Canada Number:	**IC 3463A-1**
Frequency Range (or fixed frequency) [MHz]:	**2412 – 2462 MHz**
RF: Power [W] (max):	**DSSS:** **Rad. EIRP: 46.5 mW** **Conducted : 74.1 mW** **OFDM:** **Rad. EIRP: 174.2 mW** **Conducted : 260.6 mW**
Antenna Type:	**Internal Antenna**
Occupied Bandwidth (99% BW) [kHz]:	**DSSS: 18.21 MHz** **OFDM: 18.88 MHz**
Type of Modulation:	**DSSS & OFDM**
Emission Designator (TRC-43):	**18M2G1D (DSSS)** **18M9G7D (OFDM)**
Transmitter Spurious (worst case) [µV/m in 3m]:	**143 (Noise Floor)**
Receiver Spurious (worst case) [µV/m in 3m]:	**143 (Noise Floor)**

ATTESTATION: I attest that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned departmental standard(s), and that the radio equipment identified in this application has been subject to all applicable test conditions specified in the departmental standards and all of the requirements of the standards have been met.

Signature:

Test engineer:
Date: 2009-01-23

3.1.3 EUT operating modes

EUT operating mode no.*)	Description of operating modes	Additional information
Op. 0	Normal mode	Normal temperature and power source conditions
Op. 1		low temperature, low power source conditions
Op. 2		low temperature, high power source conditions
Op. 3		high temperature, low power source conditions
Op. 4		high temperature, high power source conditions

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

3.1.4 Extreme conditions testing values

Description	Shortcut	Unit	Value
Nominal Temperature	T_{nom}	°C	**23**
Nominal Humidity	H_{nom}	%	**57**
Nominal Power Source	V_{nom}	V	**3.7**

Type of power source: **DC**

Deviations from these values are reported in chapter 2

4 Summary of Measurement Results and list of all performed test cases

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

☐ There were deviations from the technical specifications ascertained

TC identifier	Description	verdict	date	Remark
RF-Testing	FCC Part 15 §15.247 - CANADA RSS-210	PASS	2009-01-23	

Test Specification Clause	Test Case	Pass	Fail	Not applicable	Not performed
None	Antenna Gain	Yes			
§15.247 (e)	Peak power spectral density	Yes			
§15.247(a)(2)	Spectrum Bandwidth of a DSSS System / 6dB BW	Yes			
§15.247(a)(2)	Spectrum Bandwidth of a DSSS System / 20dB BW	Yes			
§ 15.247 (b)(3)	Maximum output power (conducted)	Yes			
§ 15.247 (b)(3)	Max. peak output power (radiated)	Yes			
§15.247 (d)	Band-edge compliance of conducted emissions	Yes			
§15.205	Band-edge compliance of radiated emissions	Yes			
§15.247 (d)	Spurious Emission - conducted (Transmitter)	Yes			
§ 15.209	Spurious Emission -radiated (Transmitter)	Yes			
§ 15.109	Spurious Emissions-radiated (Receiver)	Yes			
§ 15.209	Spurious Emissions-radiated <30 MHz	Yes			
§ 15.107/207	Conducted Emissions <30 MHz	Yes			

5 RF measurement testing

5.1 Description of test set-up

5.1.1 Radiated measurements

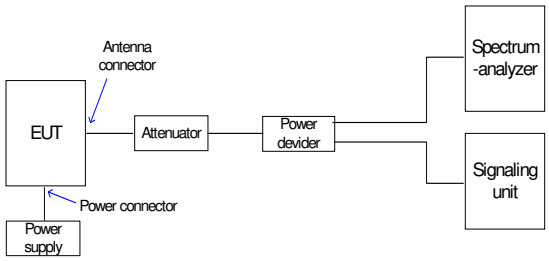
The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 20 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2003 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test set-ups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received.
The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63.4-2003 clause 4.2.
Antennas are confirmed with ANSI C63.2-1996 item 15.

9 kHz - 150 MHz: Quasi Peak measurement, 200 Hz Bandwidth, passive loop antenna.
150 kHz - 30 MHz: Quasi Peak measurement, 9 kHz Bandwidth, passive loop antenna.
30 MHz - 200 MHz: Quasi Peak measurement, 120 kHz Bandwidth, biconical antenna
200MHz - 1GHz: Quasi Peak measurement, 120 kHz Bandwidth, log periodic antenna
>1GHz: Average, RBW 1MHz, VBW 10 Hz, wave guide horn

All measurement settings are according to FCC 15.209 and 15.207

5.1.2 Conducted measurements

The EUT´s RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is connected to the spectrum analyzer. The specific losses for signal path are first checked within a calibration. The measurement readings on the spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, signalling unit and the spectrum analyzer are impedance matched on 50 Ohm.



5.2 Referenced Documents

None

5.3 Additional comments

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5.4 Antenna gain

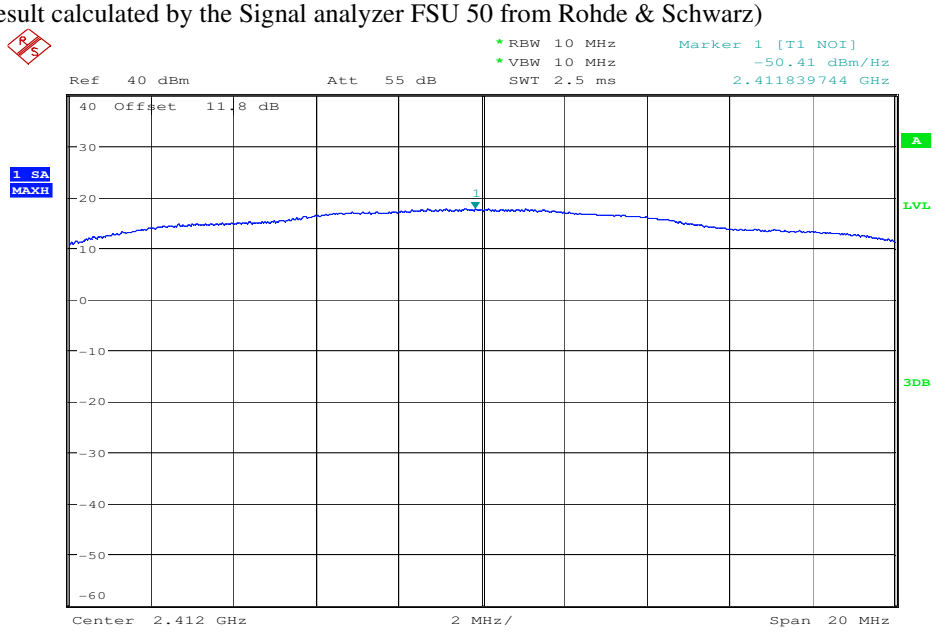
The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module. It was measured in DSSS-mode with a data rate of 1 Mbit/s.

	low channel	mid channel	high channel
Conducted power [dBm] *(measured)*	18.27	18.70	17.83
Radiated power [dBm] *(measured)*	16.54	16.67	15.81
Gain [dBi] *(calculated)*	**-1.73**	-2.03	-2.02

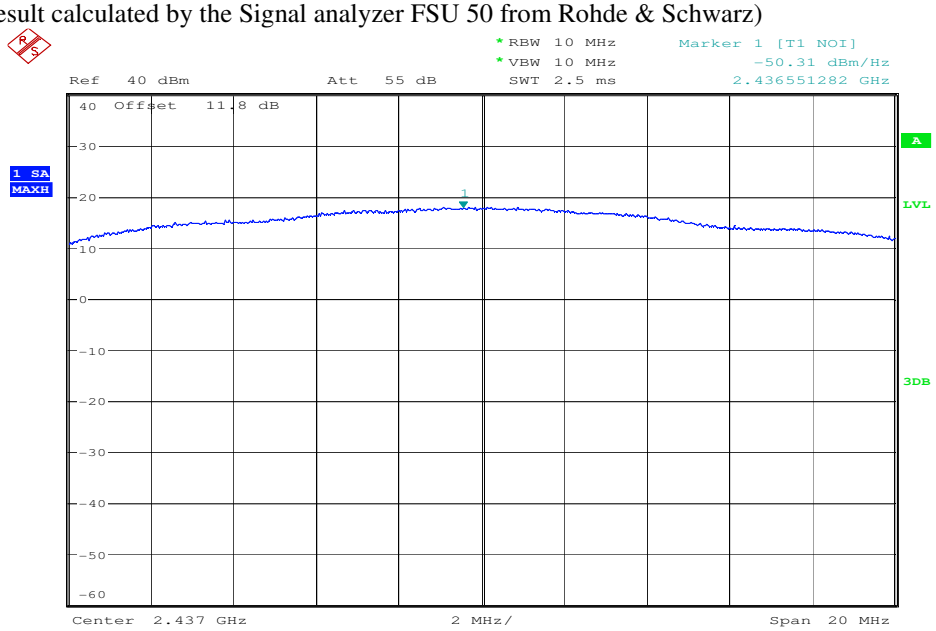
5.5 Peak Power Spectral density (digitally modulated systems) §15.247(e)

DSSS (1 Mbit/s)

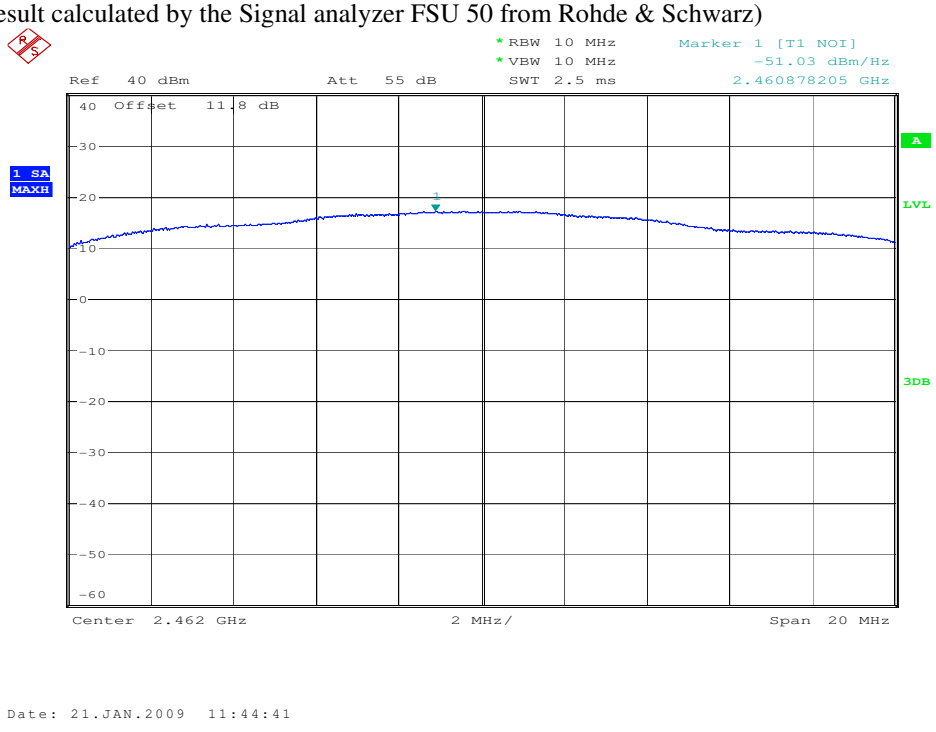
Plot 1: (result calculated by the Signal analyzer FSU 50 from Rohde & Schwarz)



Plot 2: (result calculated by the Signal analyzer FSU 50 from Rohde & Schwarz)



Plot 3: (result calculated by the Signal analyzer FSU 50 from Rohde & Schwarz)

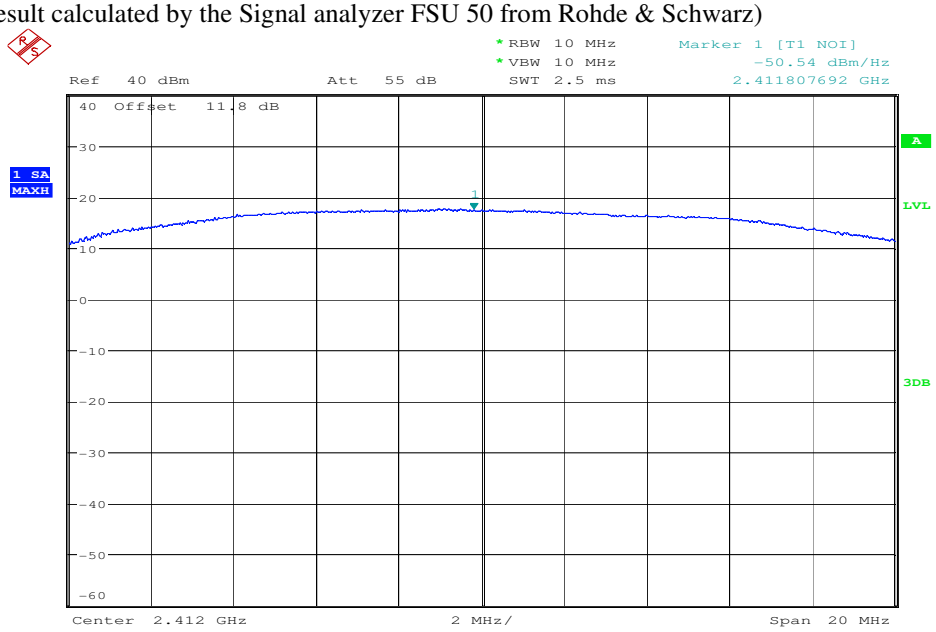


Results: Plot 1: Power density: - 50.41 dBm/Hz = - 15.61 dBm / 3 kHz
Plot 2: Power density: - 50.31 dBm/Hz = - 15.51 dBm / 3 kHz
Plot 3: Power density: - 51.03 dBm/Hz = - 16.23 dBm / 3 kHz

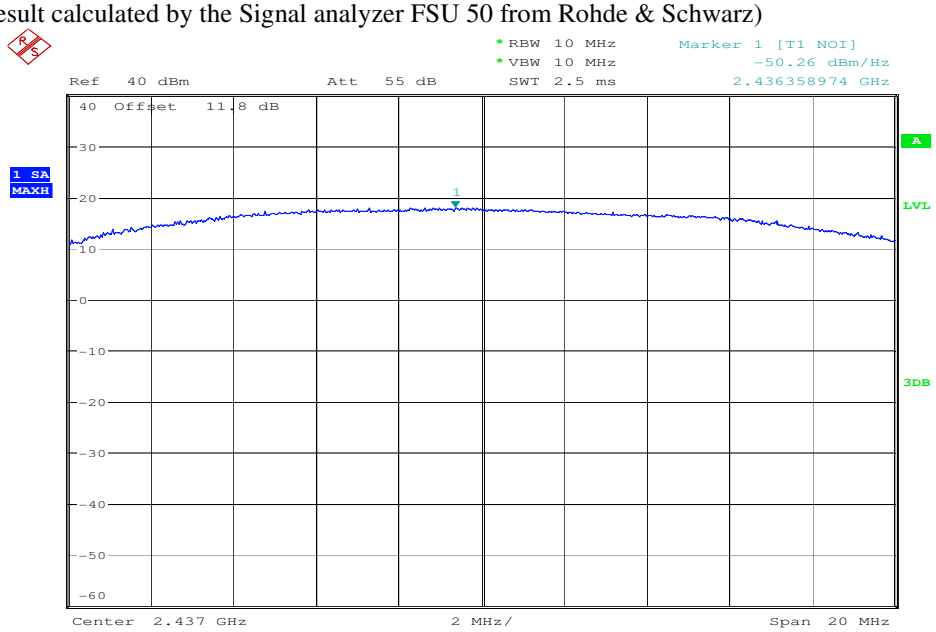
Correction factor from dBm/Hz to dBm/3 kHz is +34,8 dB

DSSS (11 Mbit/s)

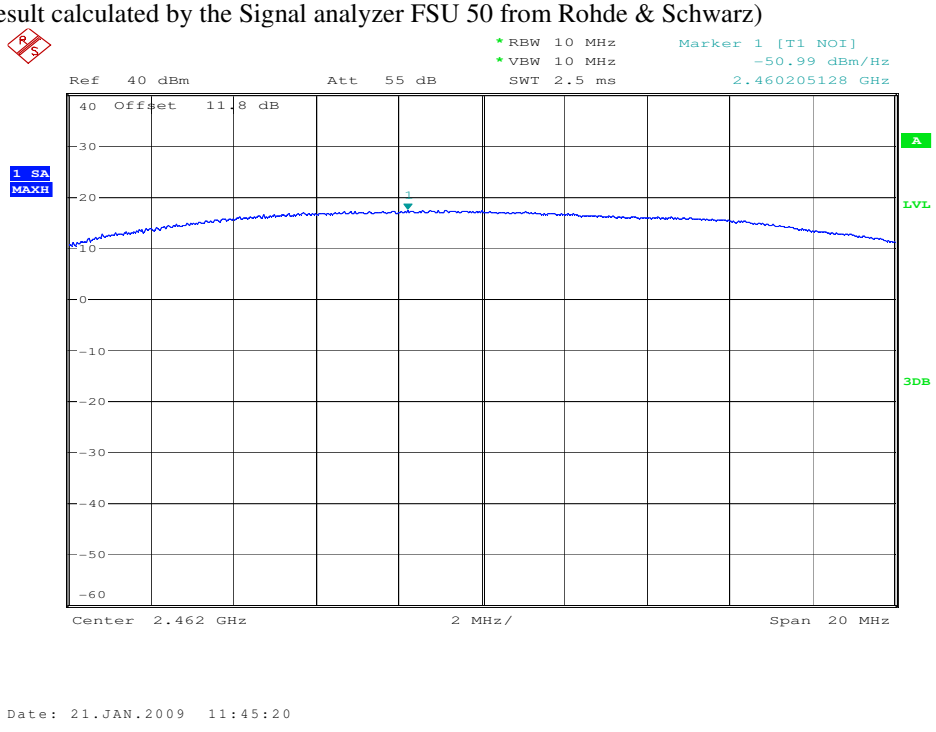
Plot 4: (result calculated by the Signal analyzer FSU 50 from Rohde & Schwarz)



Plot 5: (result calculated by the Signal analyzer FSU 50 from Rohde & Schwarz)



Plot 6: (result calculated by the Signal analyzer FSU 50 from Rohde & Schwarz)

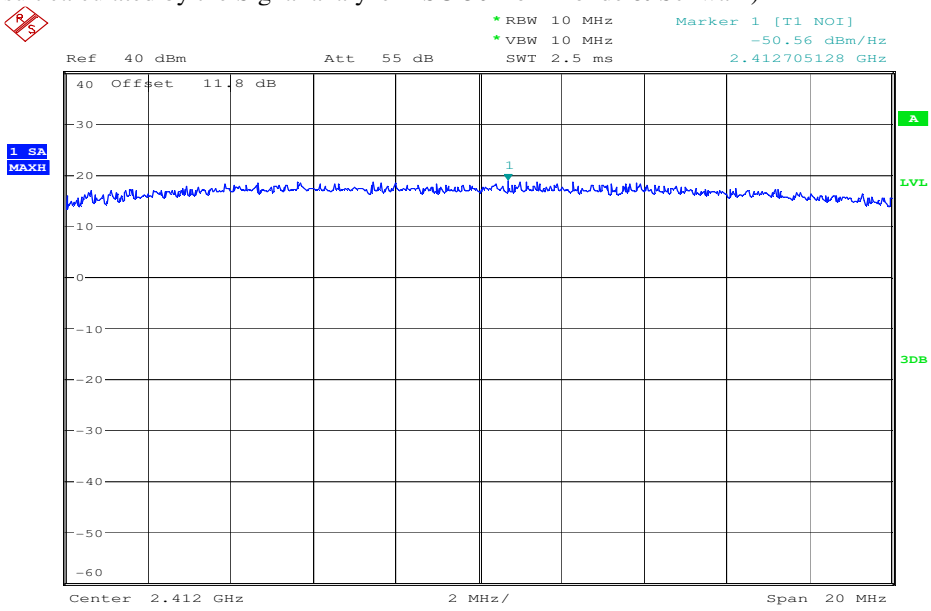


Results: Plot 1: Power density: - 50.54 dBm/Hz = - 15.74 dBm / 3 kHz
Plot 2: Power density: - 50.26 dBm/Hz = - 15.46 dBm / 3 kHz
Plot 3: Power density: - 50.99 dBm/Hz = - 16.19 dBm / 3 kHz

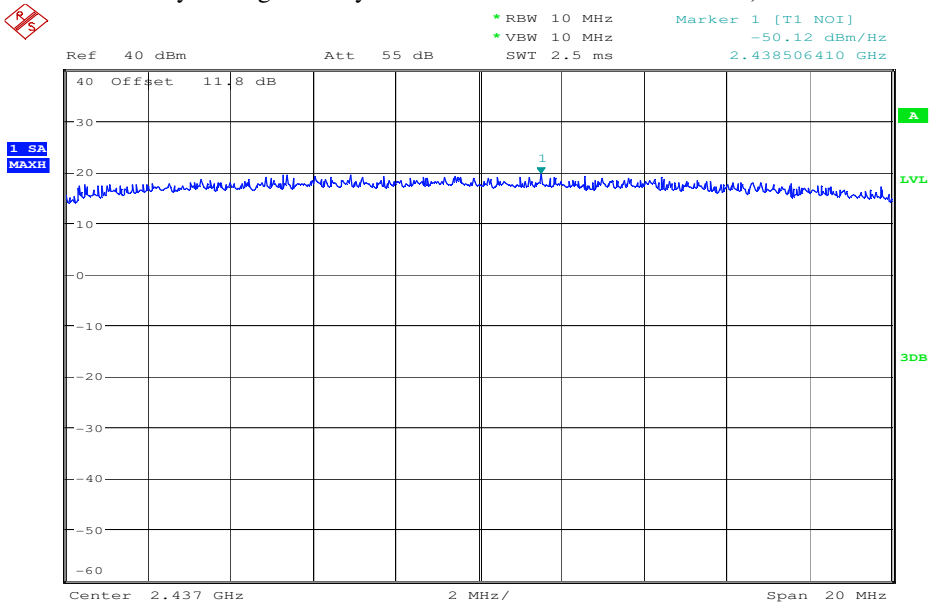
Correction factor from dBm/Hz to dBm/3 kHz is +34,8 dB

OFDM (6 Mbit/s)

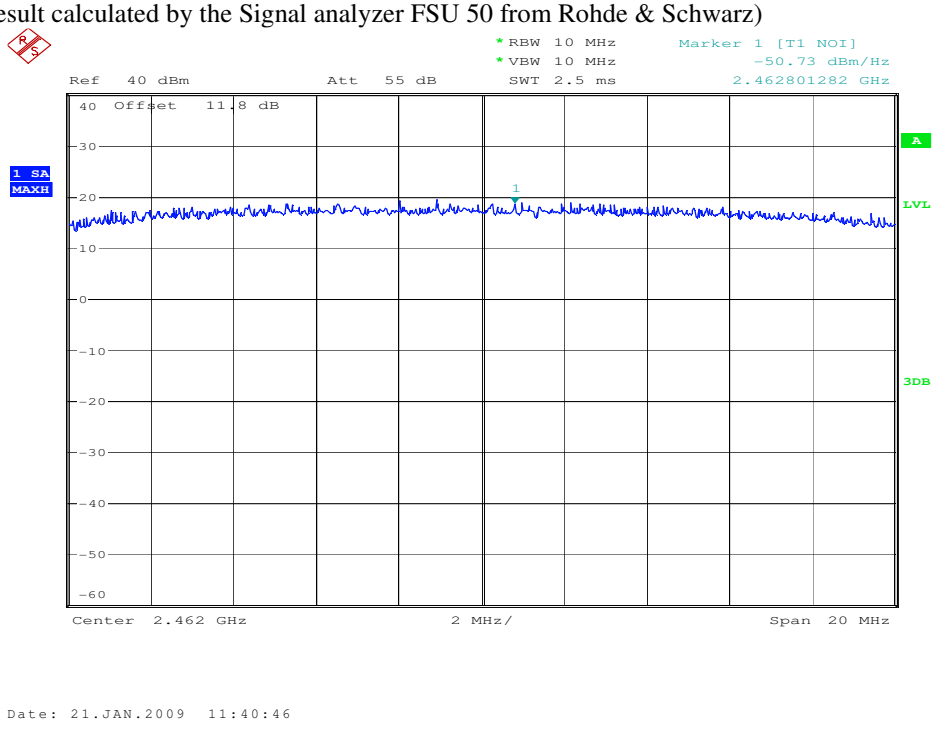
Plot 7: (result calculated by the Signal analyzer FSU 50 from Rohde & Schwarz)



Plot 8: (result calculated by the Signal analyzer FSU 50 from Rohde & Schwarz)



Plot 9: (result calculated by the Signal analyzer FSU 50 from Rohde & Schwarz)

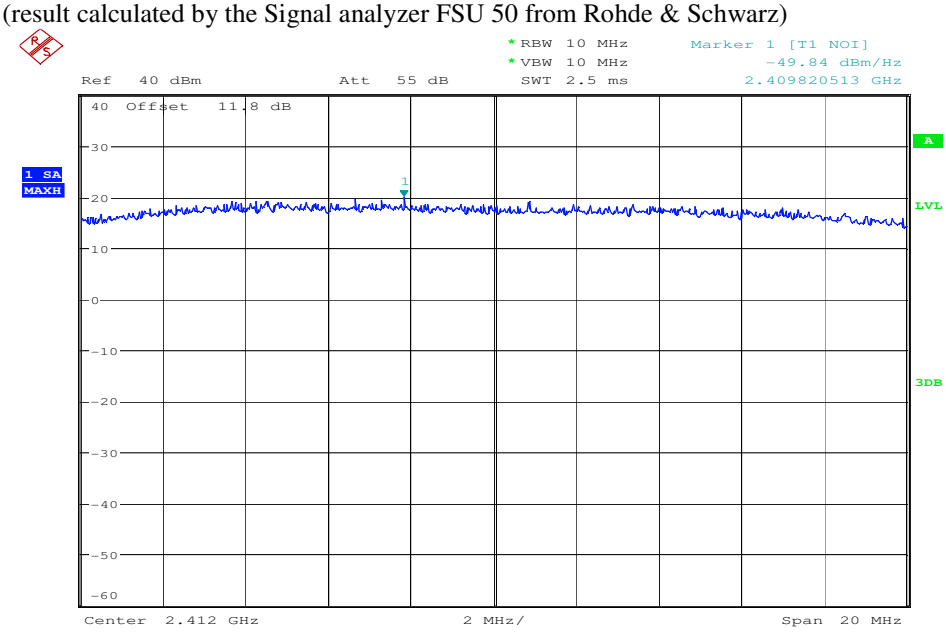


Results: Plot 1: Power density: - 50.56 dBm/Hz = - 15.76 dBm / 3 kHz
Plot 2: Power density: - 50.12 dBm/Hz = - 15.32 dBm / 3 kHz
Plot 3: Power density: - 50.73 dBm/Hz = - 15.93 dBm / 3 kHz

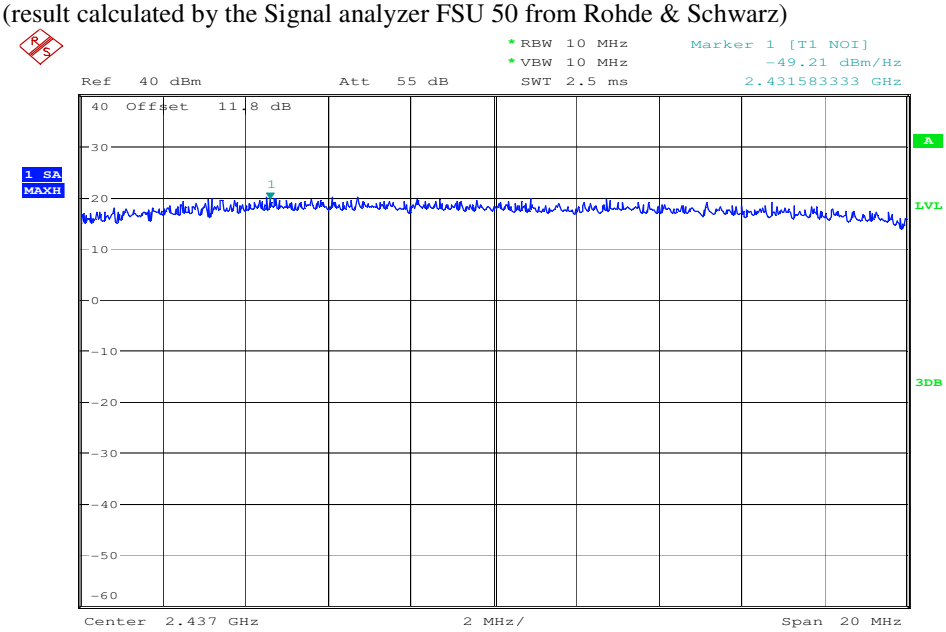
Correction factor from dBm/Hz to dBm/3 kHz is +34,8 dB

OFDM (54 Mbit/s)

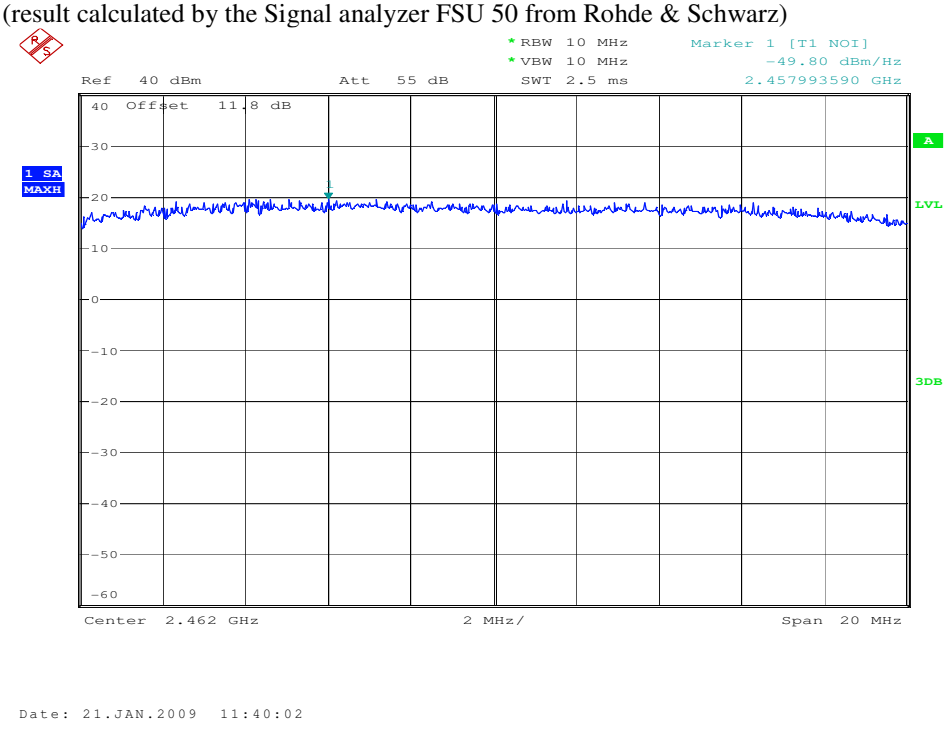
Plot 10: (result calculated by the Signal analyzer FSU 50 from Rohde & Schwarz)



Plot 11: (result calculated by the Signal analyzer FSU 50 from Rohde & Schwarz)



Plot 12: (result calculated by the Signal analyzer FSU 50 from Rohde & Schwarz)



Results: Plot 1: Power density: - 49.84 dBm/Hz = - 15.04 dBm / 3 kHz
Plot 2: Power density: - 49.21 dBm/Hz = - 14.41 dBm / 3 kHz
Plot 3: Power density: - 49.80 dBm/Hz = - 15.00 dBm / 3 kHz

Correction factor from dBm/Hz to dBm/3 kHz is +34,8 dB

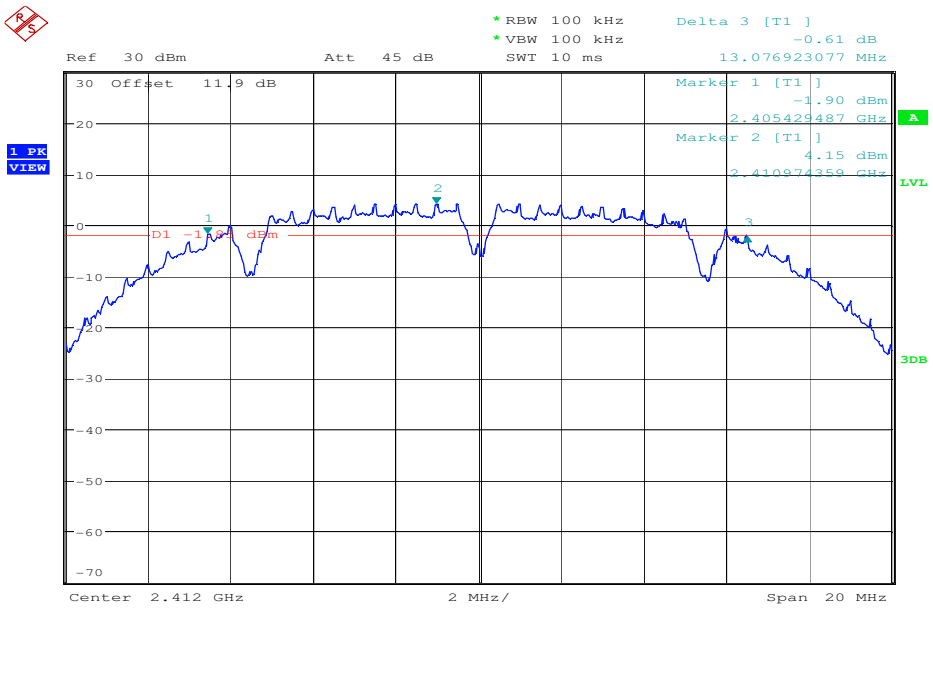
Limits :

Under normal test conditions only	For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission

5.6 Spectrum Bandwidth of a DSSS System / 6 dB Bandwidth §15.247(a)(2)

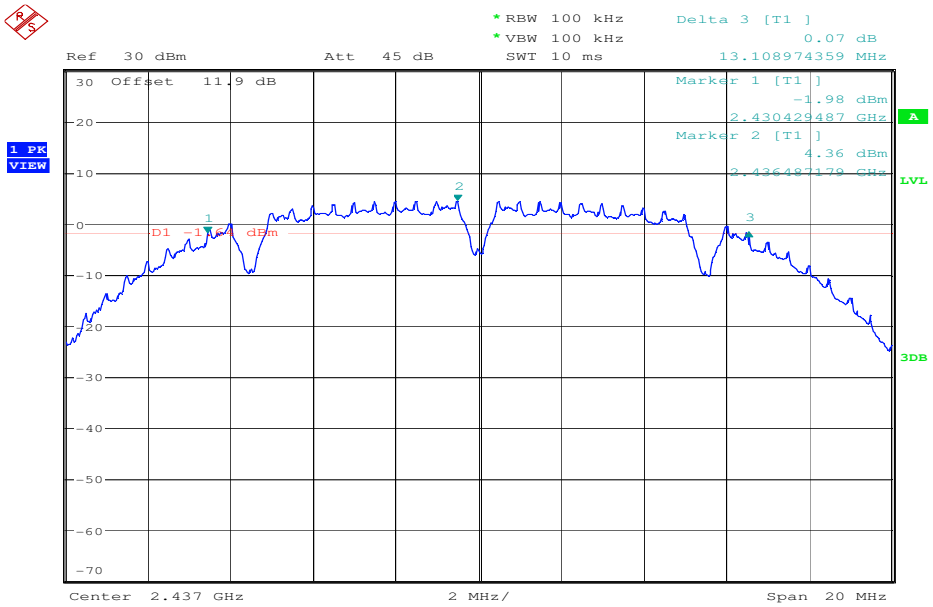
DSSS (1 Mbit/s)

Plot 1:



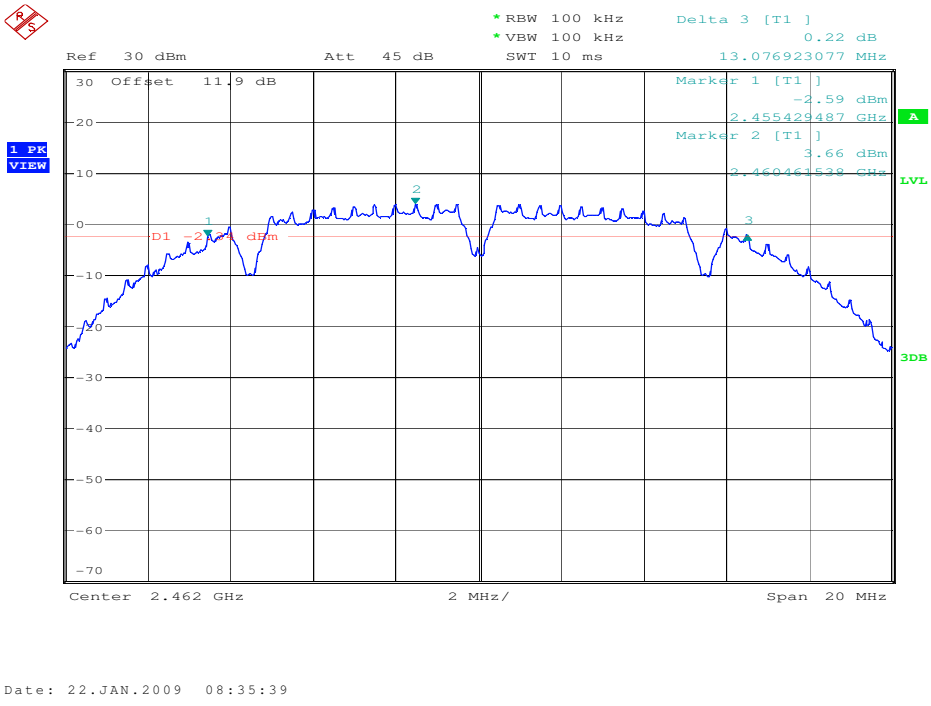
Date: 22.JAN.2009 08:30:24

Plot 2:



Date: 22.JAN.2009 08:28:43

Plot 3:



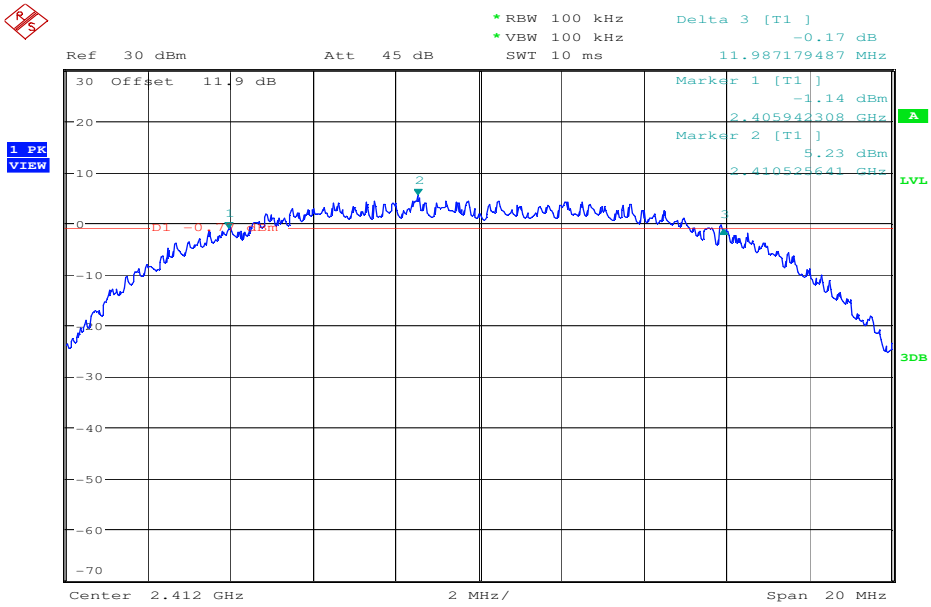
Results:

Test conditions		6 dB BANDWIDTH [MHz]		
Frequency [MHz]		2412	2437	2462
T_{nom}	V_{nom}	13.08	**13.11**	13.08
Measurement uncertainty		±10 kHz		

RBW: 100 kHz / VBW 100 kHz

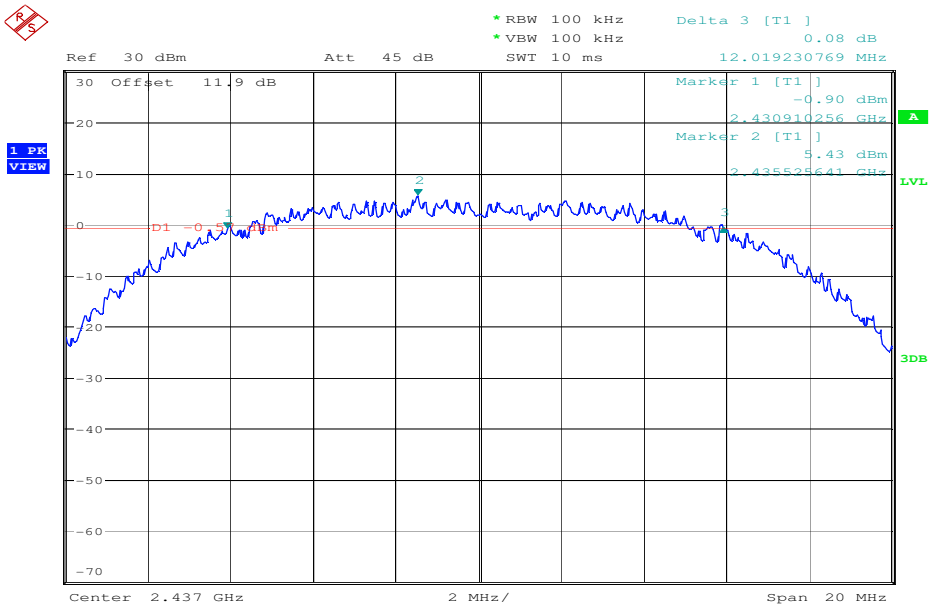
DSSS (11 Mbit/s)

Plot 4:



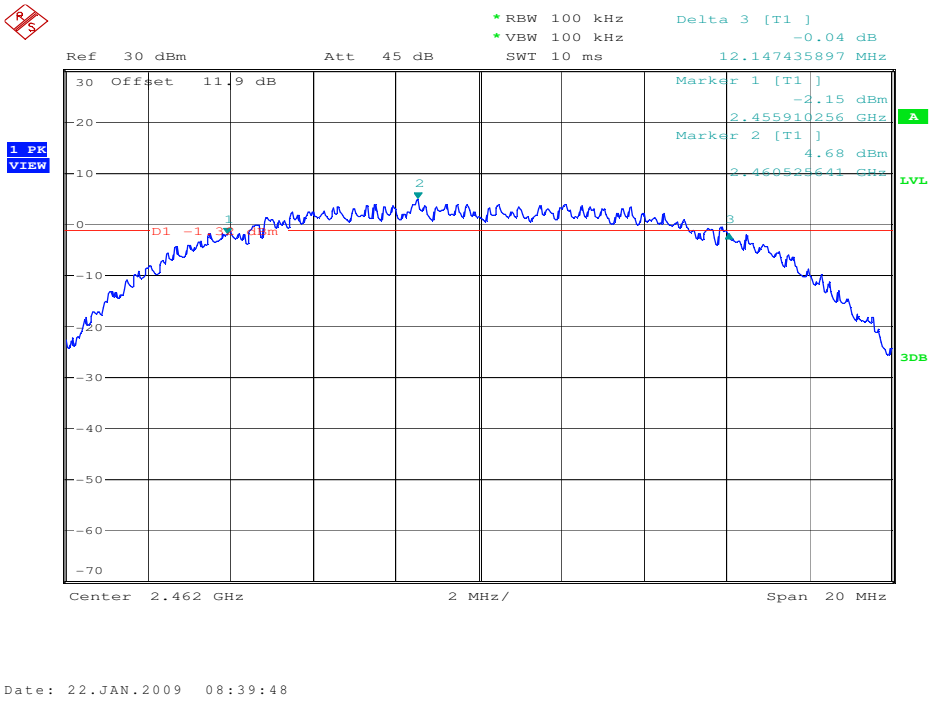
Date: 22.JAN.2009 08:33:56

Plot 5:



Date: 22.JAN.2009 08:24:55

Plot 6:



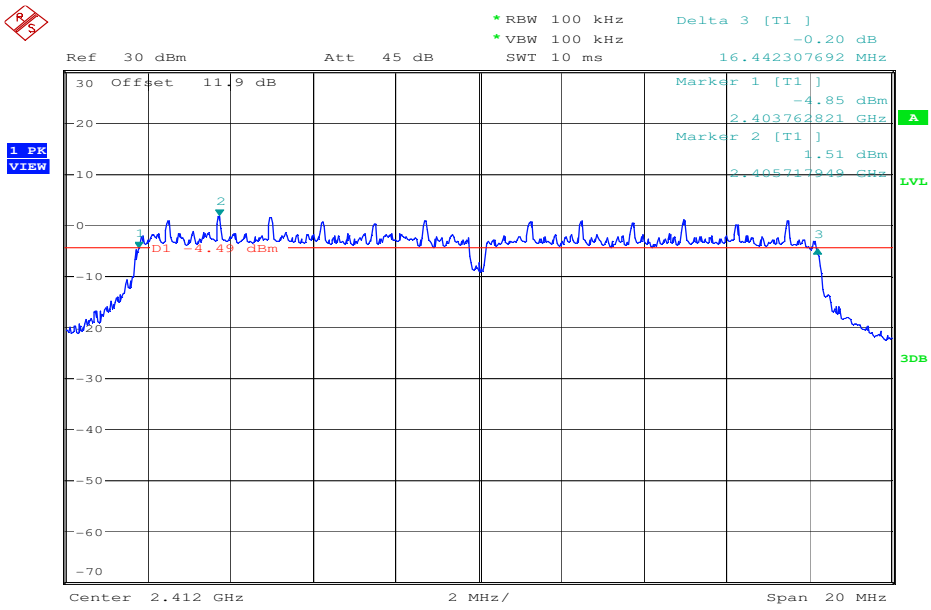
Results:

Test conditions		6 dB BANDWIDTH [MHz]		
Frequency [MHz]		2412	2437	2462
T_{nom}	V_{nom}	11.99	12.02	**12.15**
Measurement uncertainty		±10 kHz		

RBW: 100 kHz / VBW 100 kHz

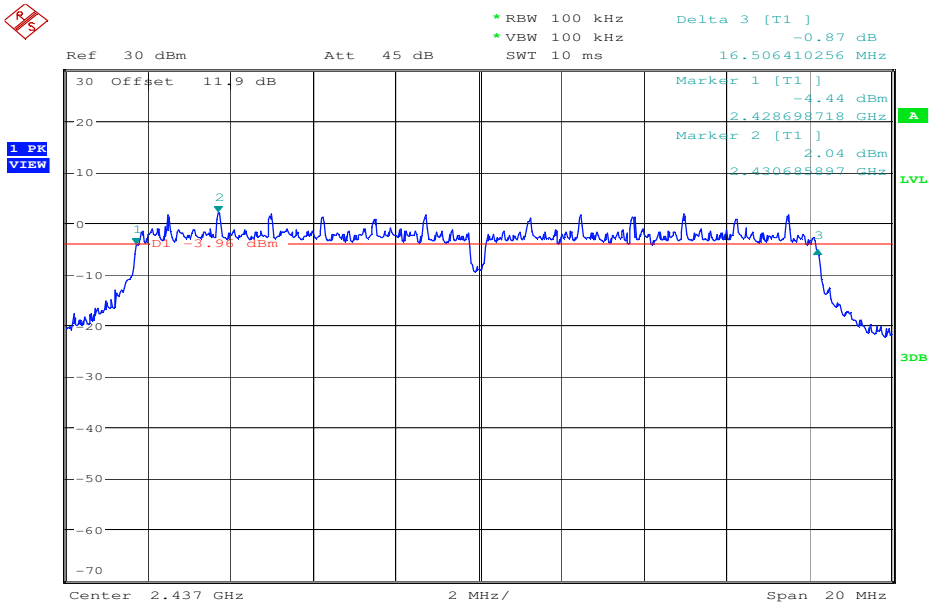
OFDM (6 Mbit/s)

Plot 7:



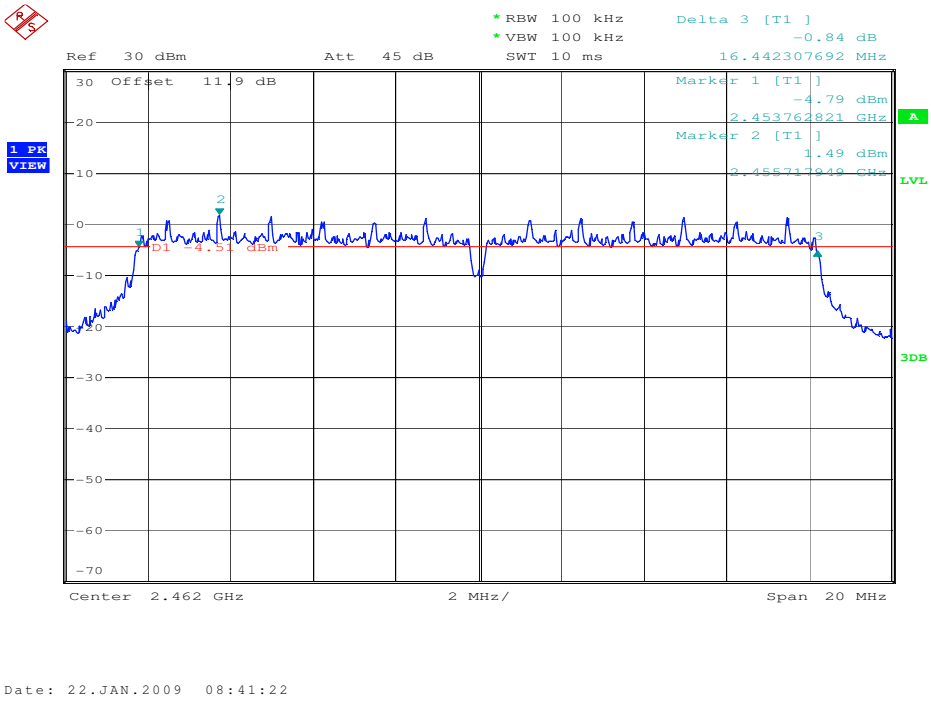
Date: 22.JAN.2009 08:54:32

Plot 8:



Date: 22.JAN.2009 08:52:29

Plot 9:



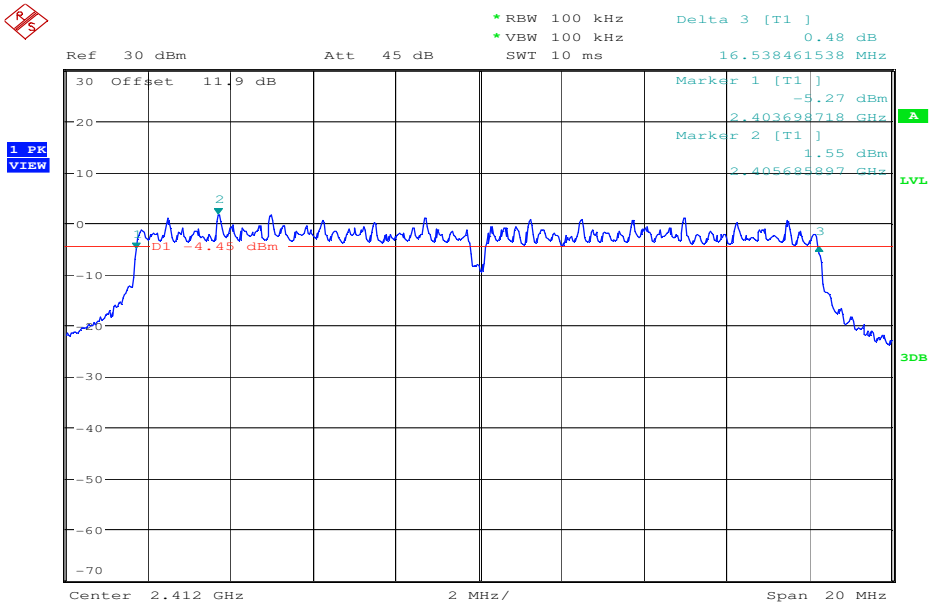
Results:

Test conditions		6 dB BANDWIDTH [MHz]		
Frequency [MHz]		2412	2437	2462
T_{nom}	V_{nom}	16.44	**16.51**	16.44
Measurement uncertainty		±10 kHz		

RBW: 100 kHz / VBW 100 kHz

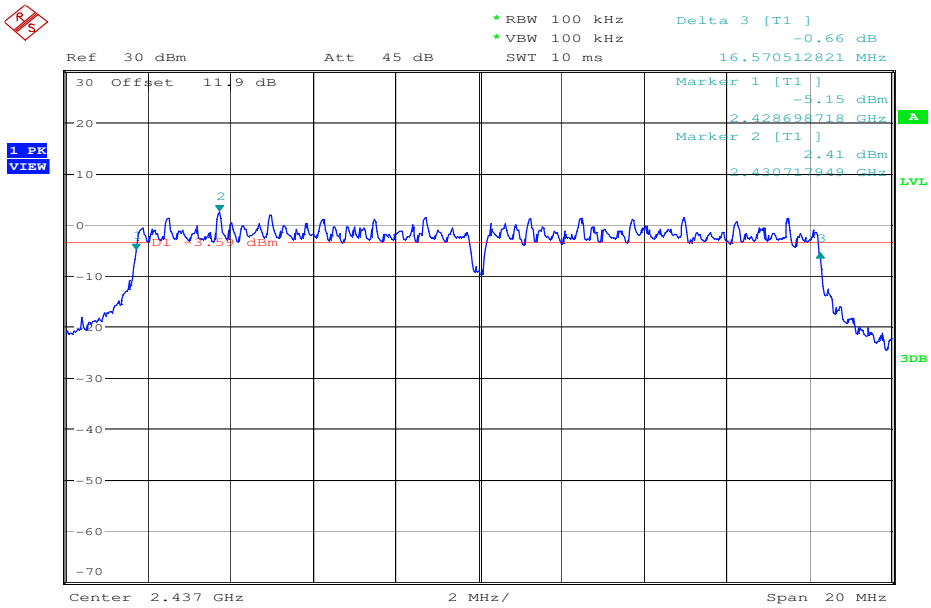
OFDM (54 Mbit/s)

Plot 10:



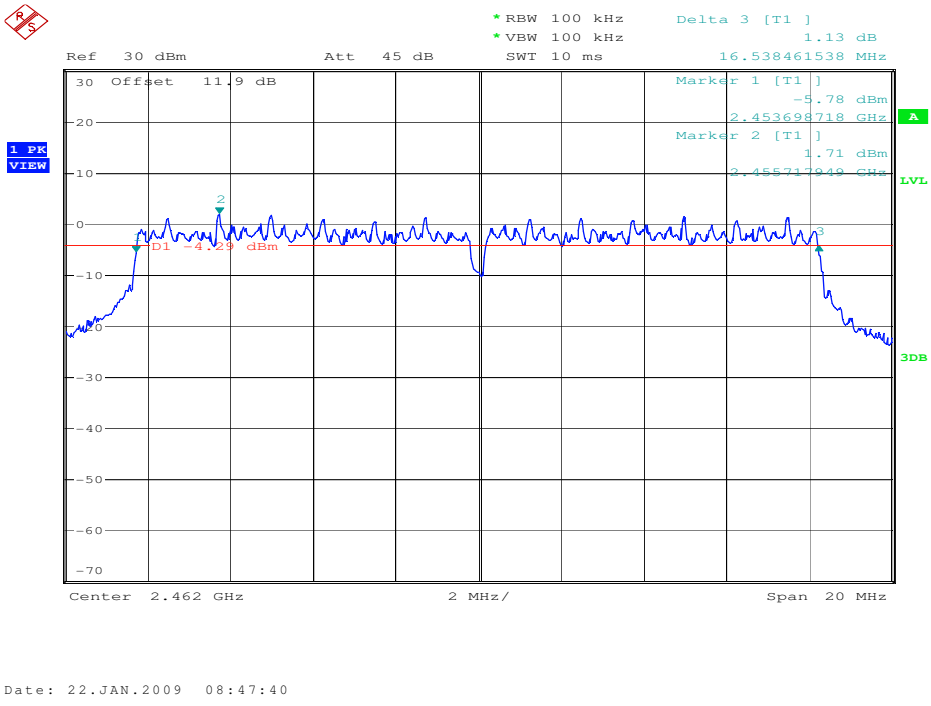
Date: 22.JAN.2009 08:58:31

Plot 11:



Date: 22.JAN.2009 08:49:09

Plot 12:



Results:

Test conditions		6 dB BANDWIDTH [MHz]		
Frequency [MHz]		2412	2437	2462
T_{nom}	V_{nom}	16.54	**16.57**	16.54
Measurement uncertainty		±10 kHz		

RBW: 100 kHz / VBW 100 kHz

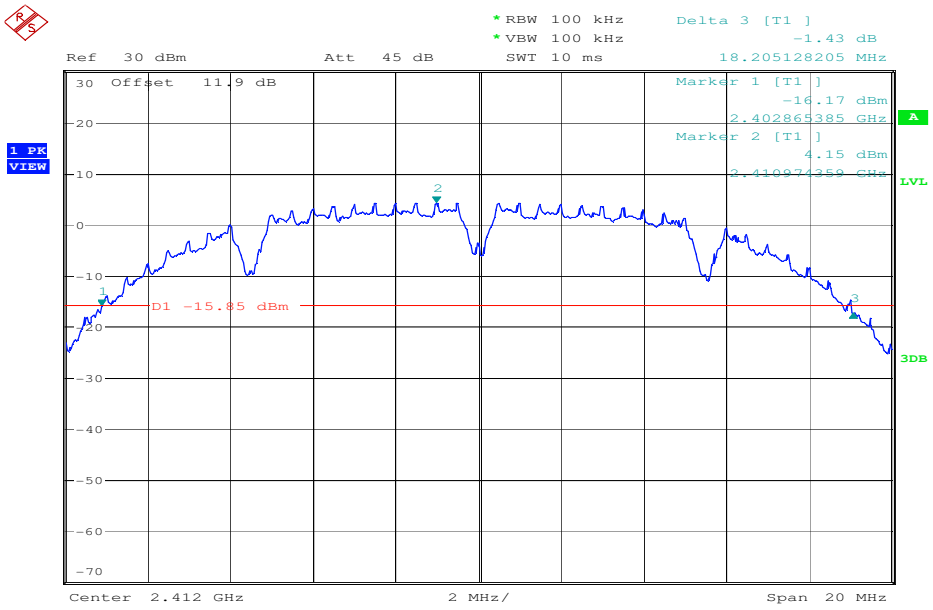
Limits:

Under normal test conditions only	> 500 kHz

5.7 Spectrum Bandwidth of a DSSS System / 20 dB Bandwidth

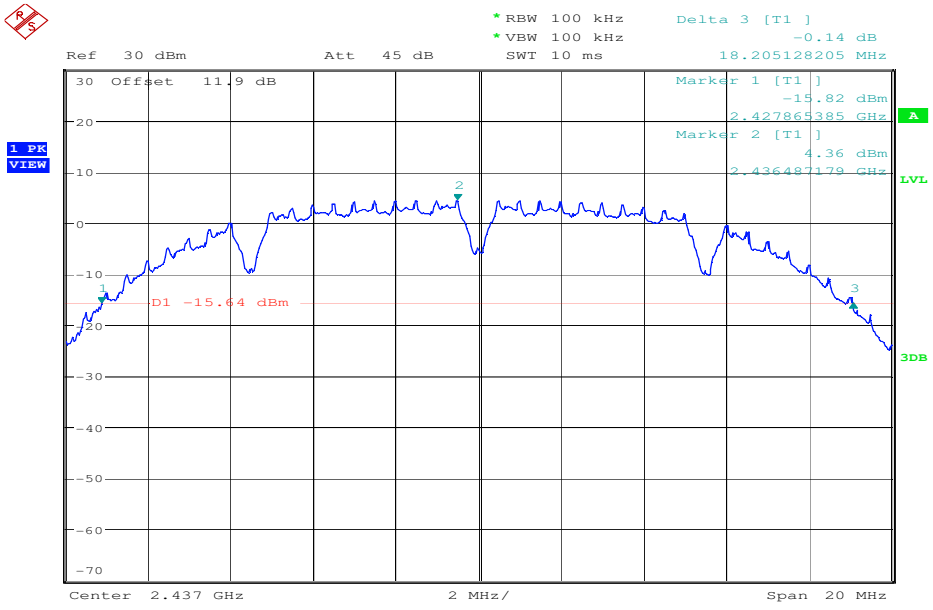
DSSS (1 Mbit/s)

Plot 1:



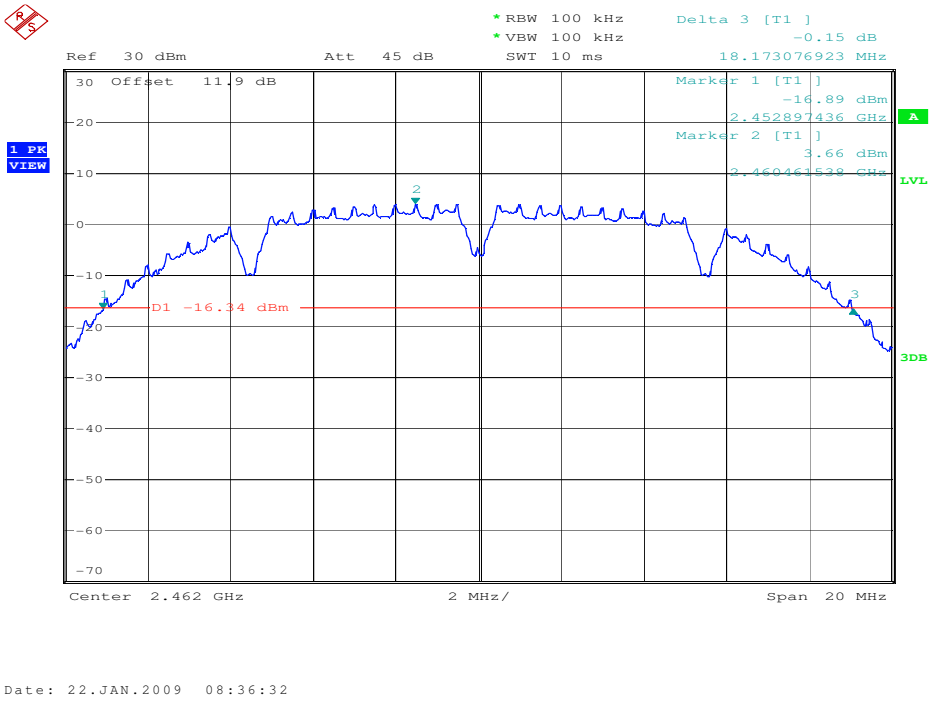
Date: 22.JAN.2009 08:31:15

Plot 2:



Date: 22.JAN.2009 08:27:48

Plot 3:



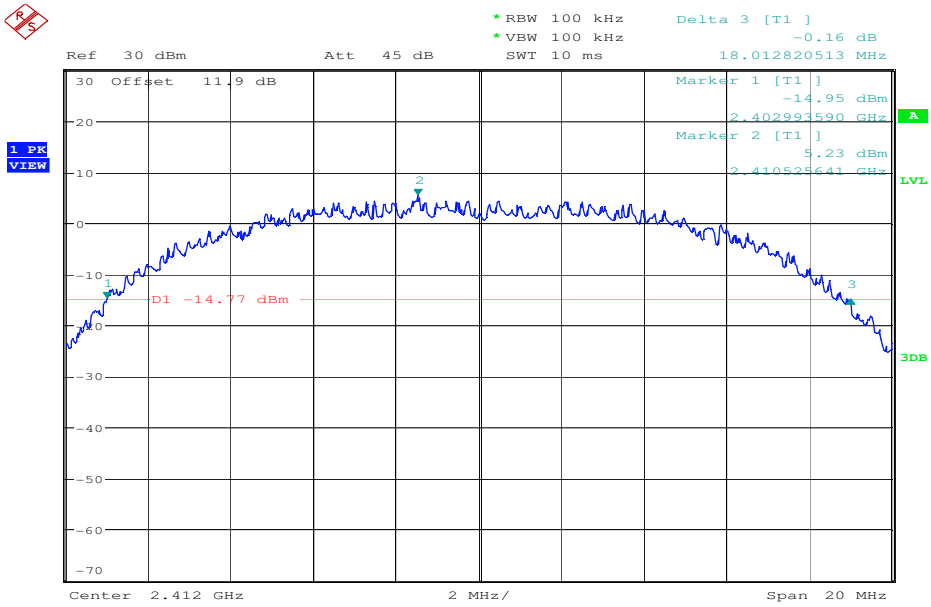
Results:

Test conditions		**20 dB BANDWIDTH [MHz]**		
Frequency [MHz]		2412	2437	2462
T_{nom}	V_{nom}	**18.21**	**18.21**	18.17
Measurement uncertainty		±10 kHz		

RBW: 100 kHz / VBW 100 kHz

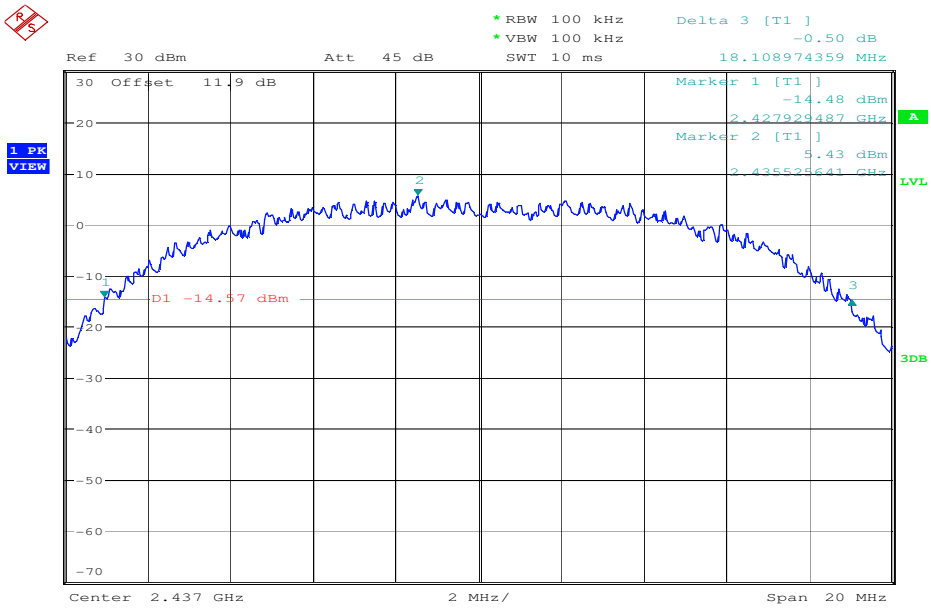
DSSS (11 Mbit/s)

Plot 4:



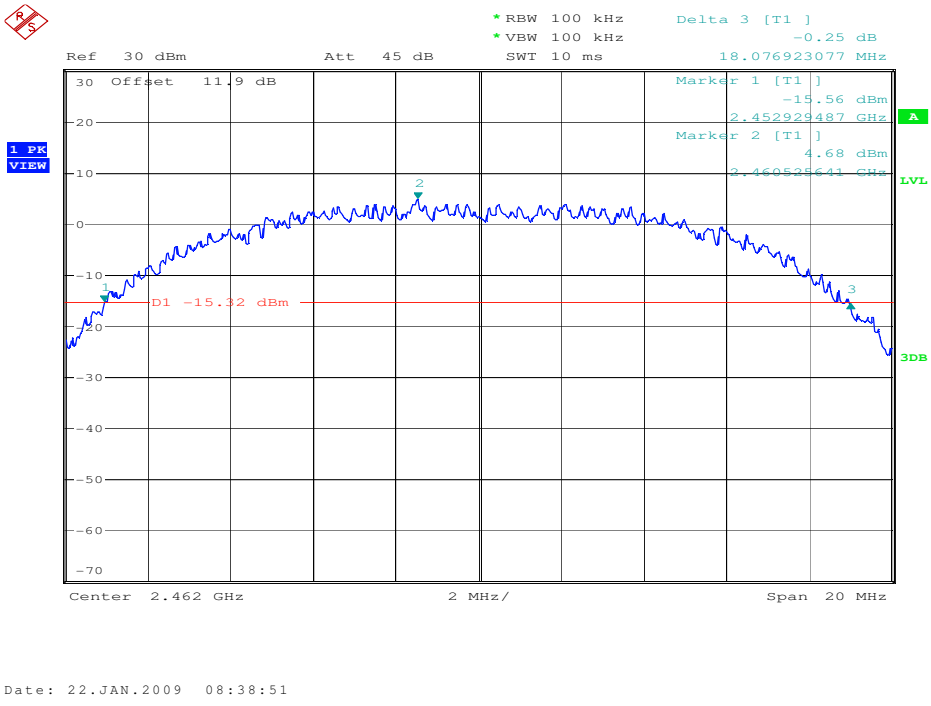
Date: 22.JAN.2009 08:32:41

Plot 5:



Date: 22.JAN.2009 08:26:38

Plot 6:



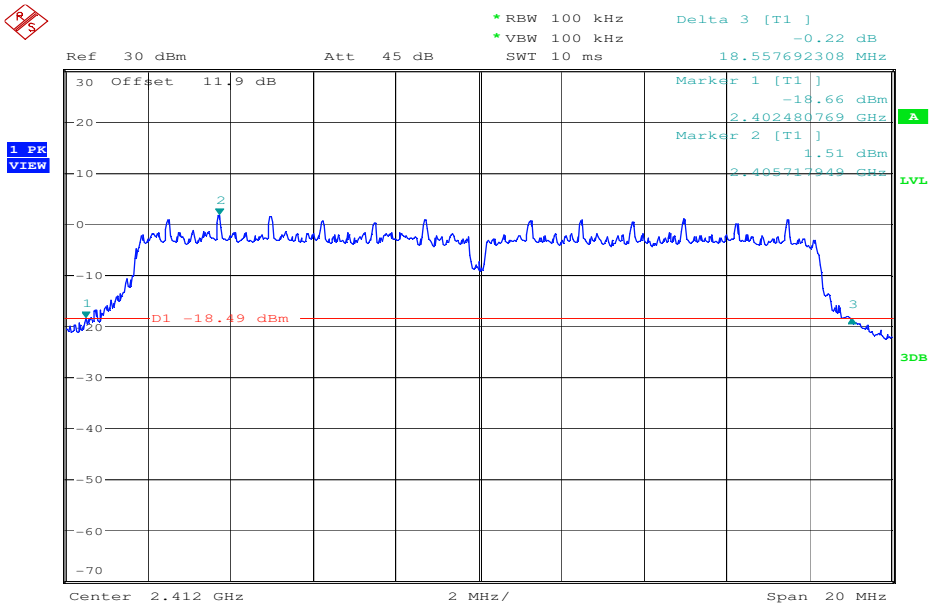
Results:

Test conditions		**20 dB BANDWIDTH [MHz]**		
Frequency [MHz]		2412	2437	2462
T_{nom}	V_{nom}	18.01	**18.11**	18.08
Measurement uncertainty		±10 kHz		

RBW: 100 kHz / VBW 100 kHz

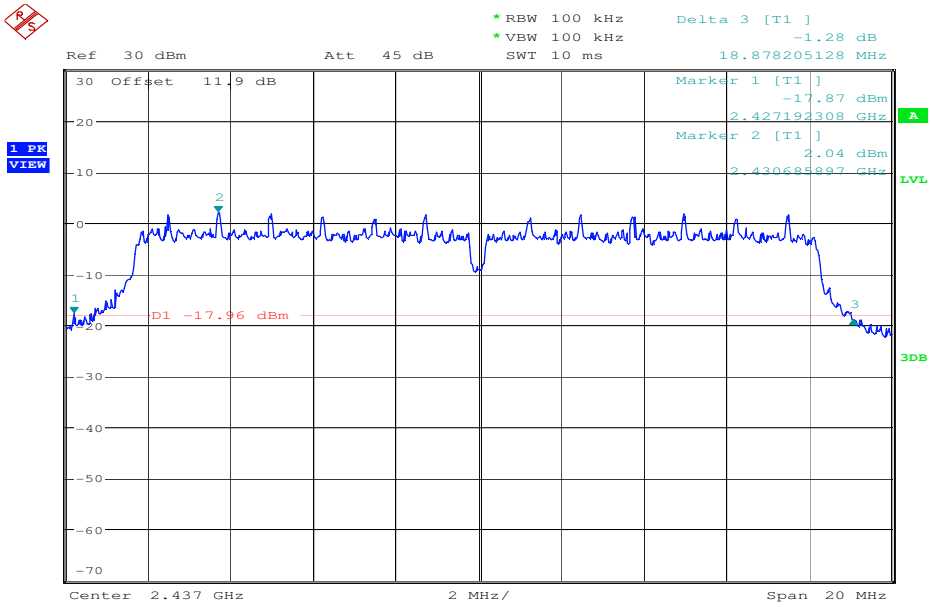
OFDM (6 Mbit/s)

Plot 7:



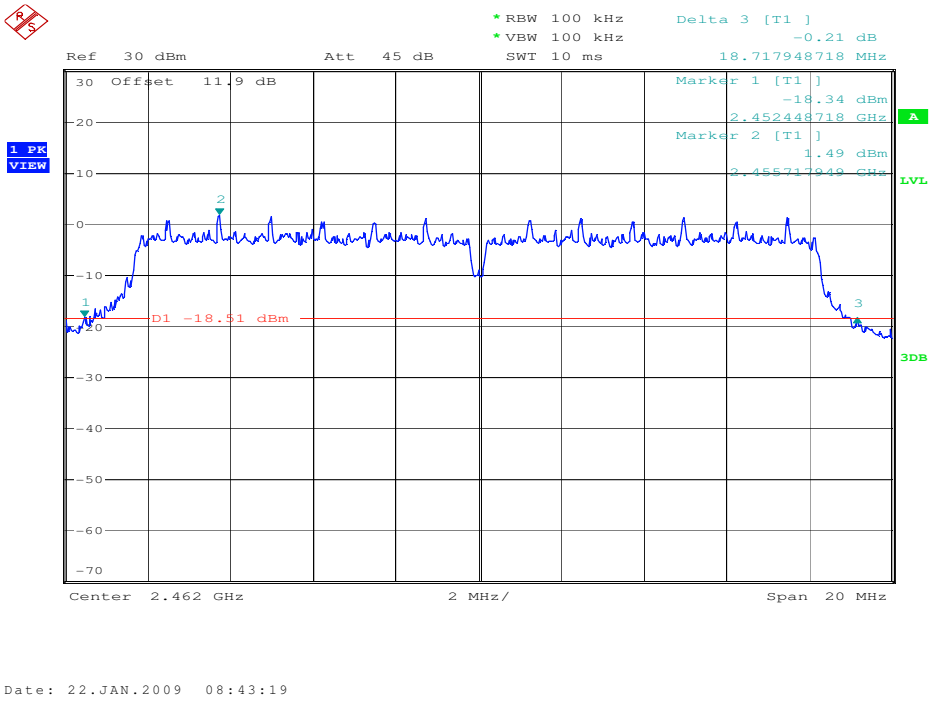
Date: 22.JAN.2009 08:55:24

Plot 8:



Date: 22.JAN.2009 08:51:35

Plot 9:



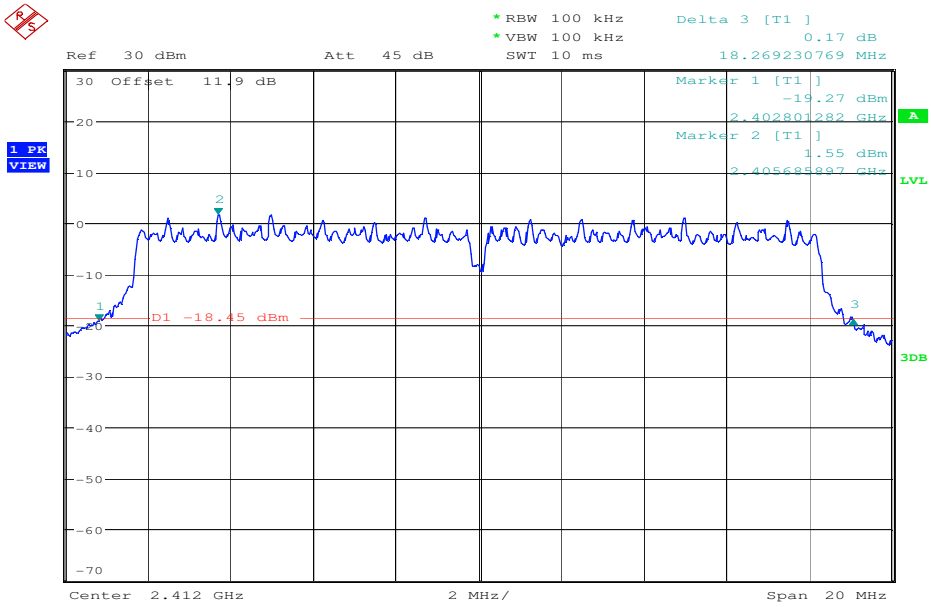
Results:

Test conditions		**20 dB BANDWIDTH [MHz]**		
Frequency [MHz]		2412	2437	2462
T_{nom}	V_{nom}	18.56	**18.88**	18.72
Measurement uncertainty		±10 kHz		

RBW: 100 kHz / VBW 100 kHz

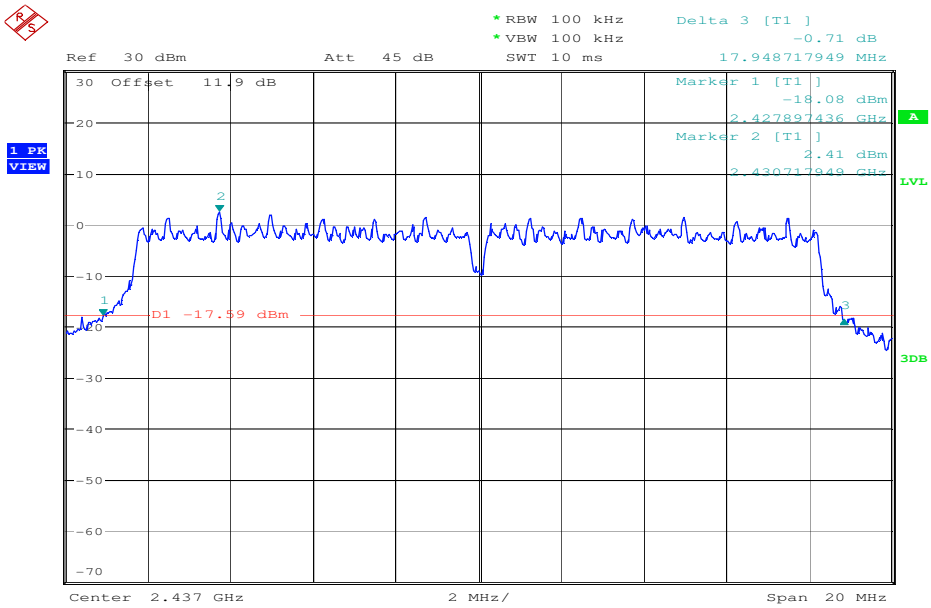
OFDM (54 Mbit/s)

Plot 10:



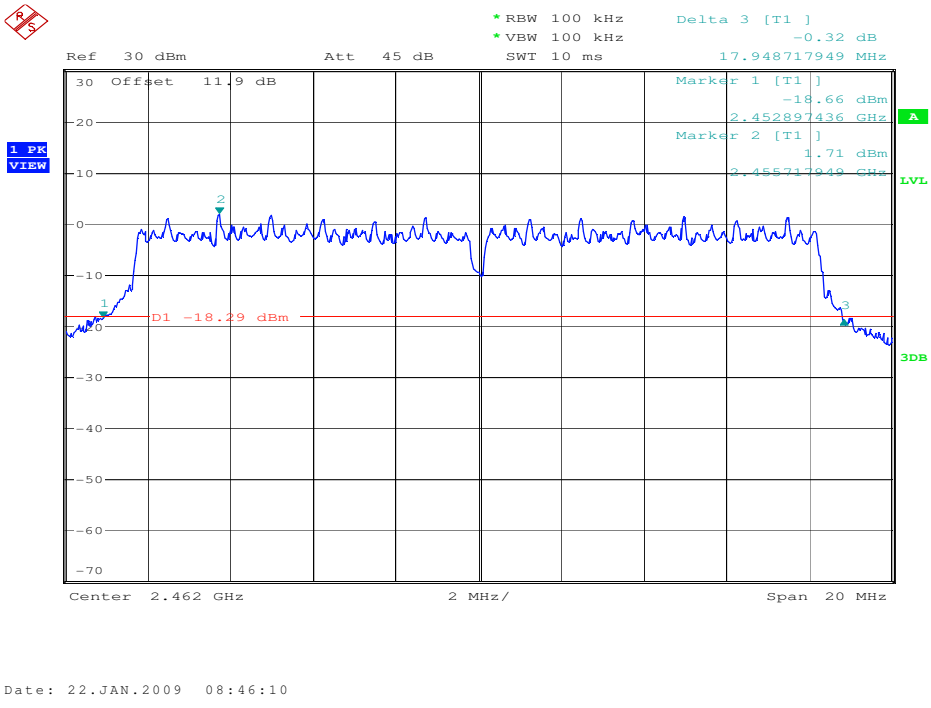
Date: 22.JAN.2009 08:57:38

Plot 11:



Date: 22.JAN.2009 08:50:01

Plot 12:



Results:

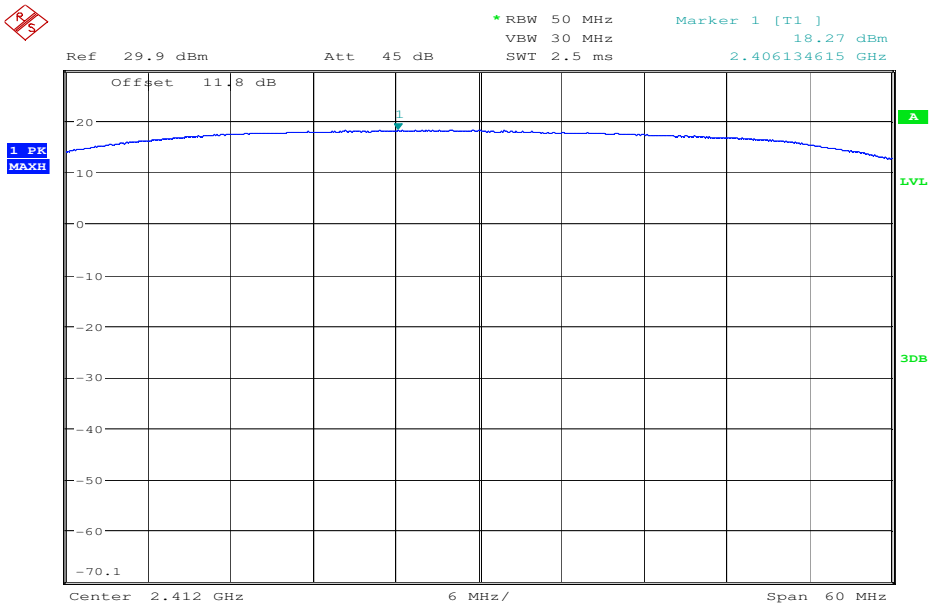
Test conditions		**20 dB BANDWIDTH [MHz]**		
Frequency [MHz]		2412	2437	2462
T_{nom}	V_{nom}	**18.27**	17.95	17.95
Measurement uncertainty		±10 kHz		

RBW: 100 kHz / VBW 100 kHz

5.8 Maximum output power (conducted) §15.247 (b)(3)

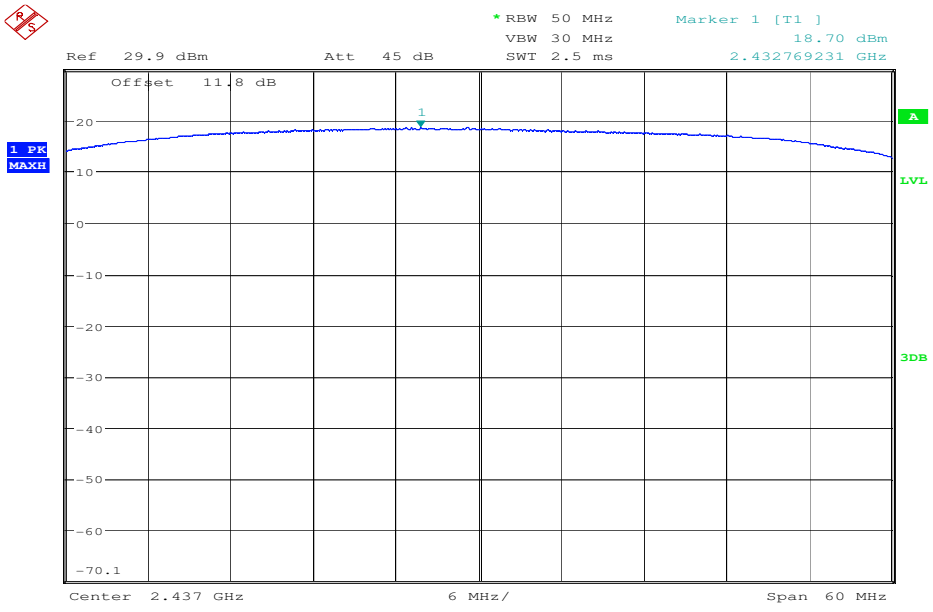
DSSS (1 Mbit/s)

Plot 1:



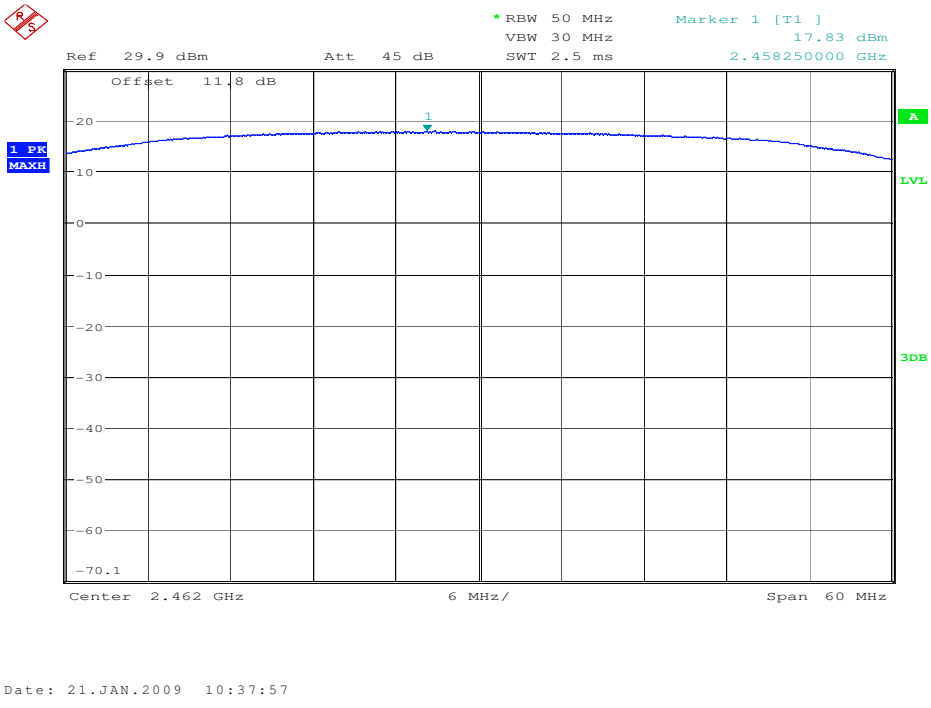
Date: 21.JAN.2009 10:36:13

Plot 2:



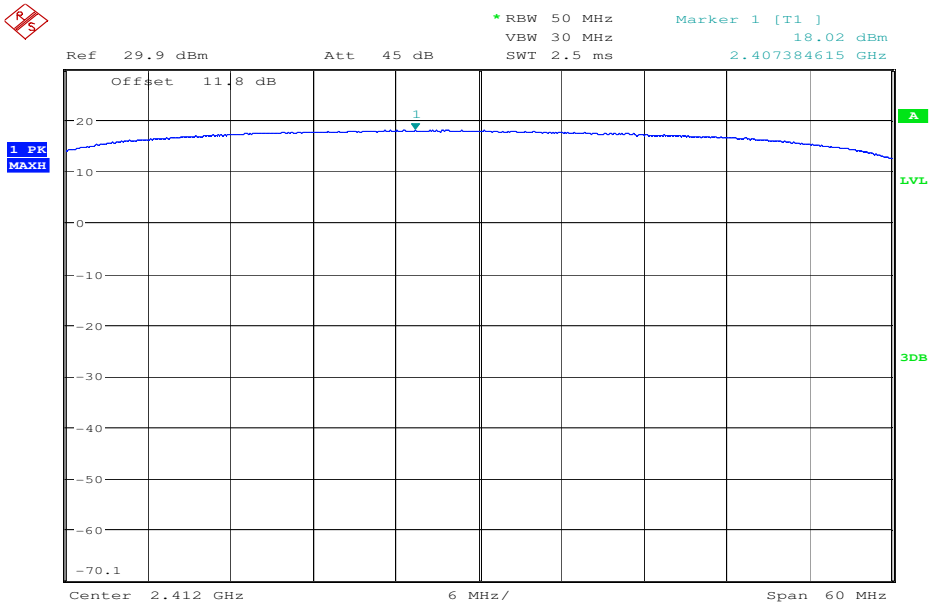
Date: 21.JAN.2009 10:35:29

Plot 3:


RBW 50 MHz
VBW 30 MHz
SWT 2.5 ms
Marker 1 [T1]
17.83 dBm
2.458250000 GHz
Ref 29.9 dBm
Att 45 dB
Offset 11.8 dB
1 PK
MAXH
A
LVL
3DB
20
10
0
-10
-20
-30
-40
-50
-60
-70.1
Center 2.462 GHz
6 MHz/
Span 60 MHz
Date: 21.JAN.2009 10:37:57

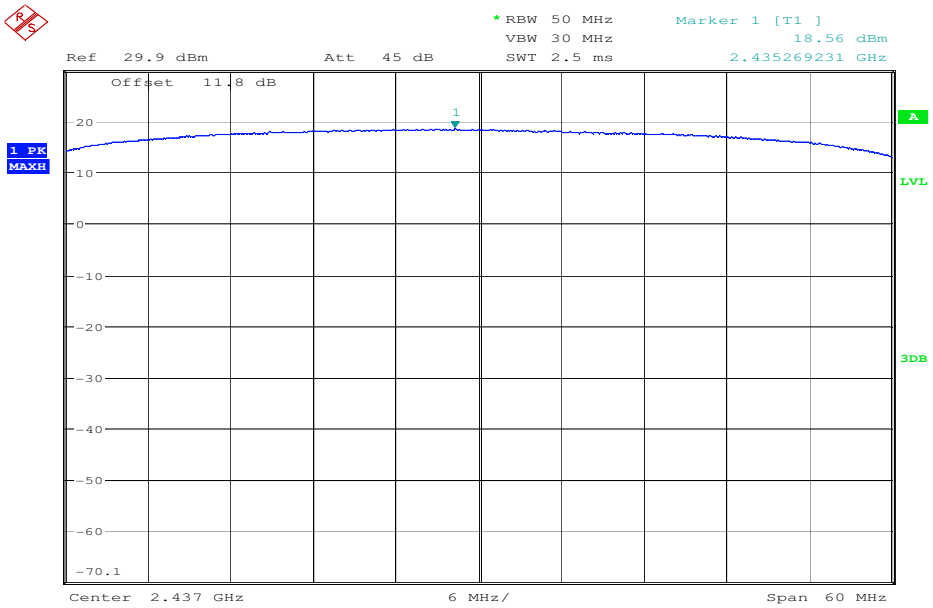
DSSS (11 Mbit/s)

Plot 4:



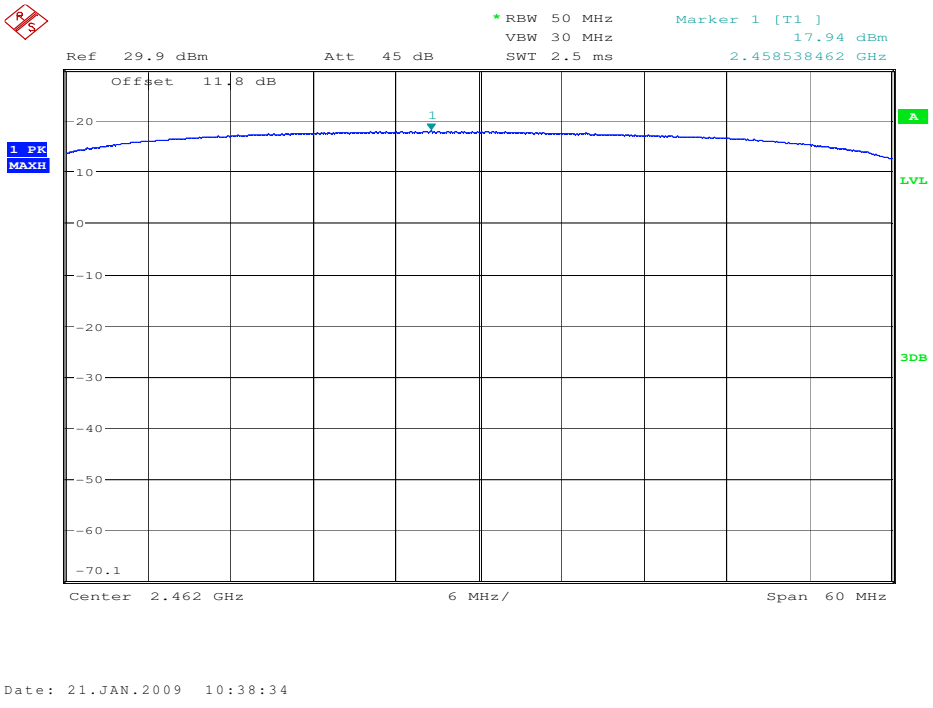
Date: 21.JAN.2009 11:02:23

Plot 5:



Date: 21.JAN.2009 10:39:10

Plot 6:



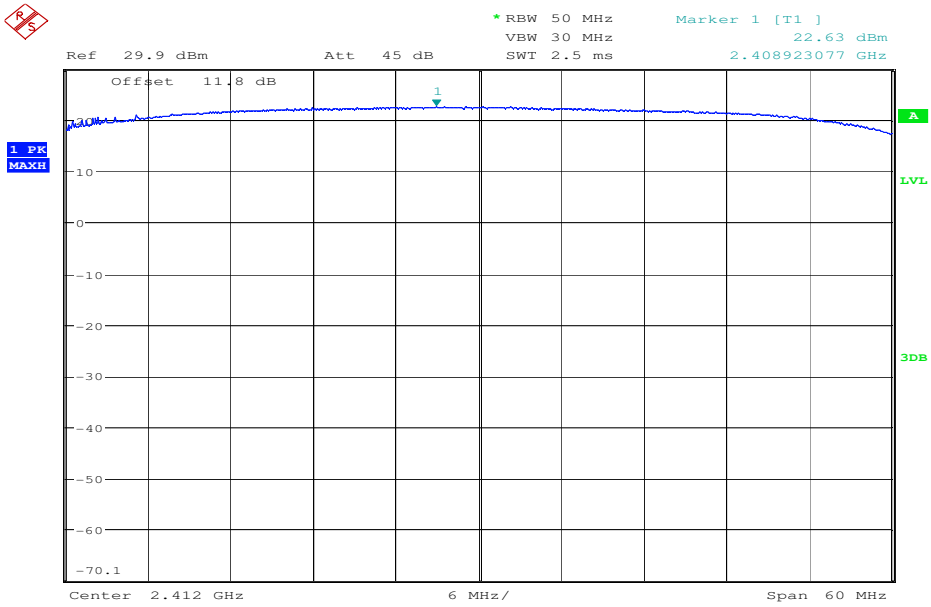
Results:

Test conditions			Max. peak output power [dBm]		
Frequency [MHz]			2412	2437	2462
1 Mbit/s	T_{nom}	V_{nom}	18.27	**18.70**	17.83
11 Mbit/s	T_{nom}	V_{nom}	18.02	**18.56**	17.74
Measurement uncertainty			±3dB		

RBW: 50MHz / VBW: 30 MHz

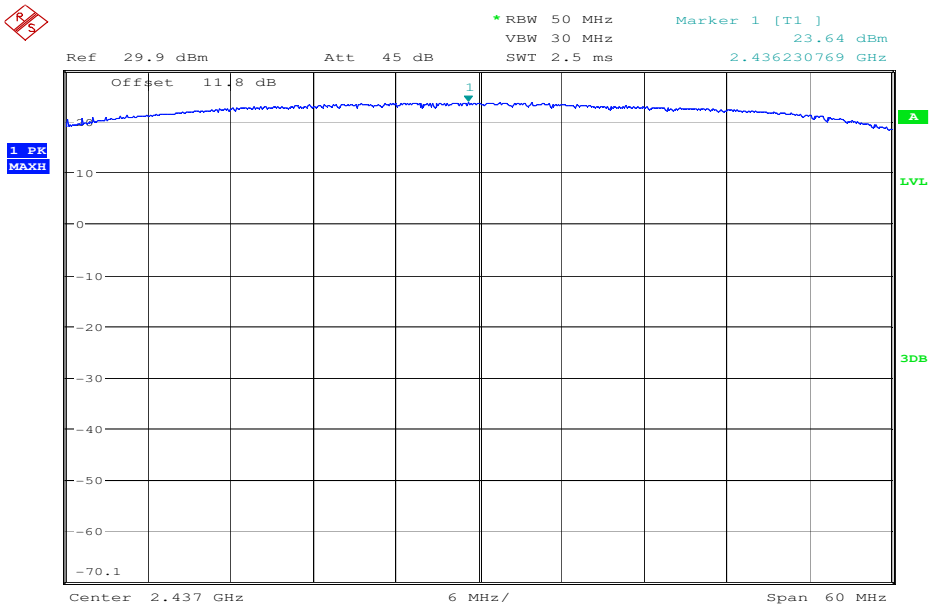
OFDM (6 Mbit/s)

Plot 7:



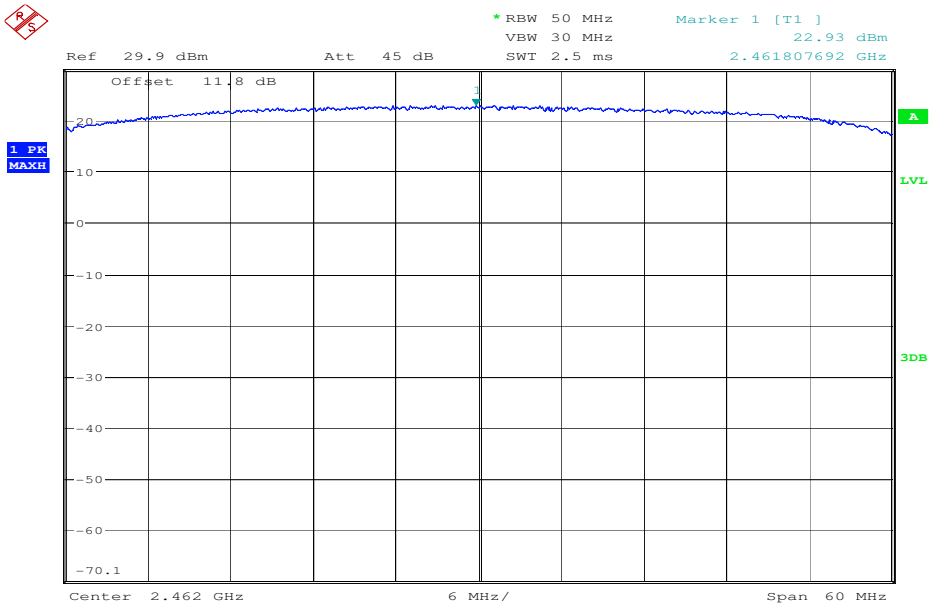
Date: 21.JAN.2009 11:04:21

Plot 8:



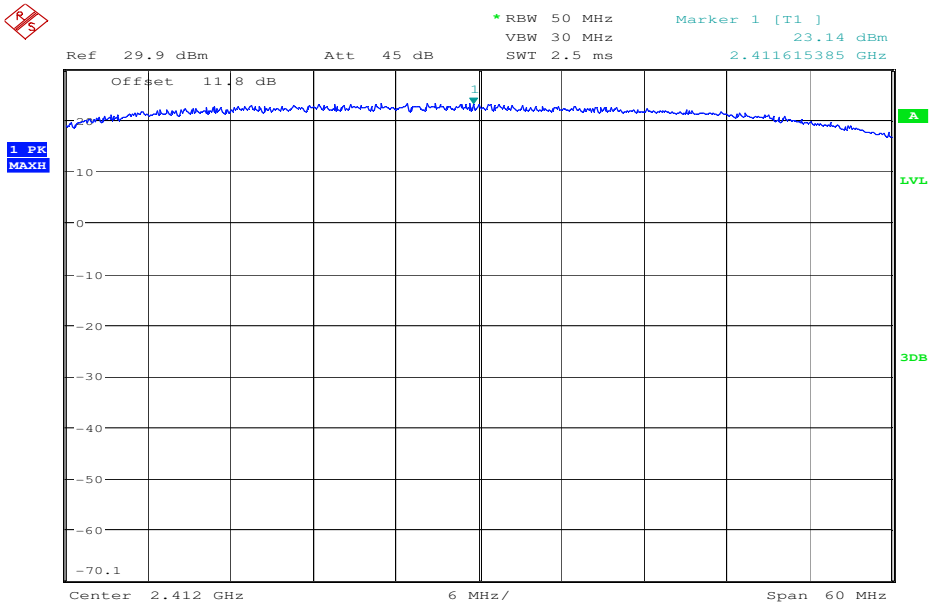
Date: 21.JAN.2009 11:05:37

Plot 9:


RBW 50 MHz
VBW 30 MHz
SWT 2.5 ms
Marker 1 [T1]
22.93 dBm
2.461807692 GHz
Ref 29.9 dBm
Att 45 dB
Offset 11.8 dB
1 PK
MAXH
A
LVL
3DB
20
10
0
-10
-20
-30
-40
-50
-60
-70.1
Center 2.462 GHz
6 MHz/
Span 60 MHz
Date: 21.JAN.2009 11:06:20

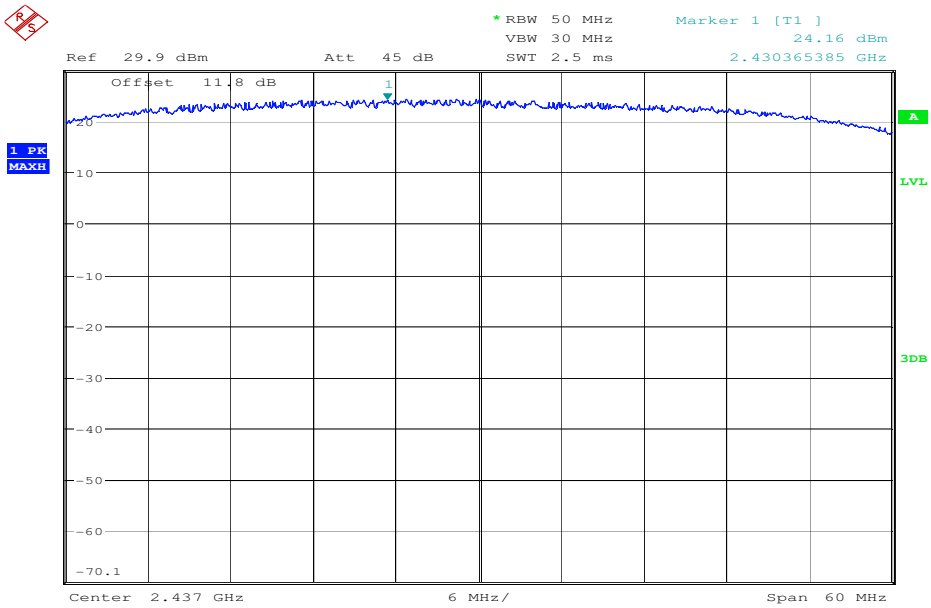
OFDM (54 Mbit/s)

Plot 10:



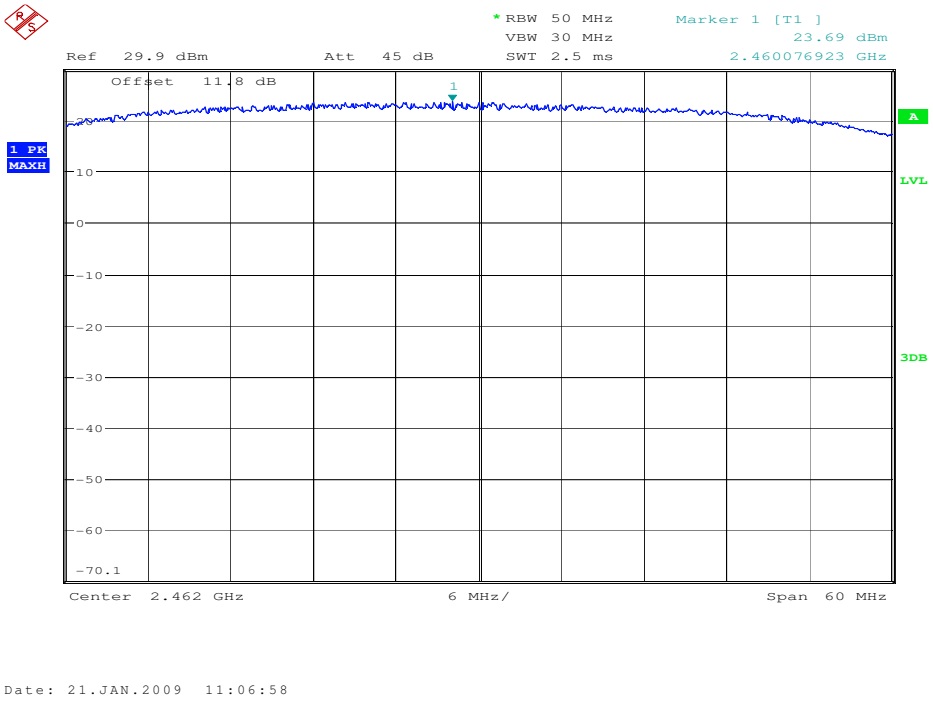
Date: 21.JAN.2009 11:09:01

Plot 11:



Date: 21.JAN.2009 11:07:46

Plot 12:



Results:

Test conditions			Max. peak output power [dBm]		
Frequency [MHz]			2412	2437	2462
6 Mbit/s	T_{nom}	V_{nom}	22.63	**23.64**	22.93
54 Mbit/s	T_{nom}	V_{nom}	23.14	**24.16**	23.69
Measurement uncertainty			±3dB		

RBW: 50MHz / VBW: 30 MHz

Limits:

Under normal test conditions only, for frequency range 2400-2483.5 MHz	Max. 1.0 Watt / 30 dBm

5.9 Max. peak output power (radiated) §15.247 (b)(3)

DSSS

Results:

Test conditions			Max. peak output power EIRP [dBm]		
Frequency [MHz]			2412	2437	2462
1 Mbit/s	T_{nom}	V_{nom}	16.54	**16.67**	15.81
11 Mbit/s	T_{nom}	V_{nom}	16.29*	**16.53***	15.72*
Measurement uncertainty			±3dB		

RBW: 50MHz / VBW: 30 MHz
Measured at a distance of 3m
* calculated with antenna gain

OFDM

Results:

Test conditions			Max. peak output power EIRP [dBm]		
Frequency [MHz]			2412	2437	2462
6 Mbit/s	T_{nom}	V_{nom}	20.90*	**21.61***	20.91*
54 Mbit/s	T_{nom}	V_{nom}	**22.41***	22.13*	21.67*
Measurement uncertainty			±3dB		

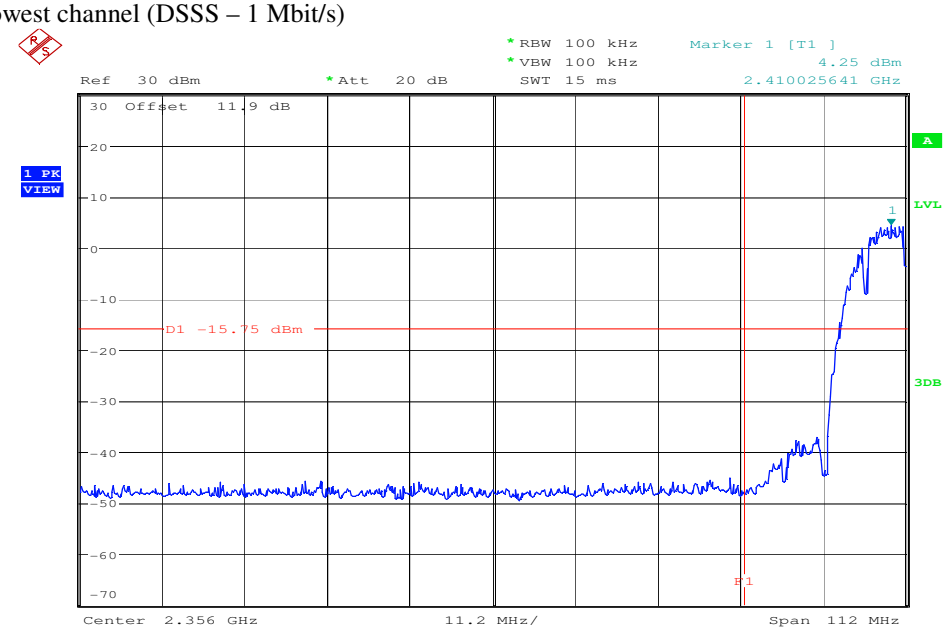
RBW: 50MHz / VBW: 30 MHz
* calculated with antenna gain

Limits:

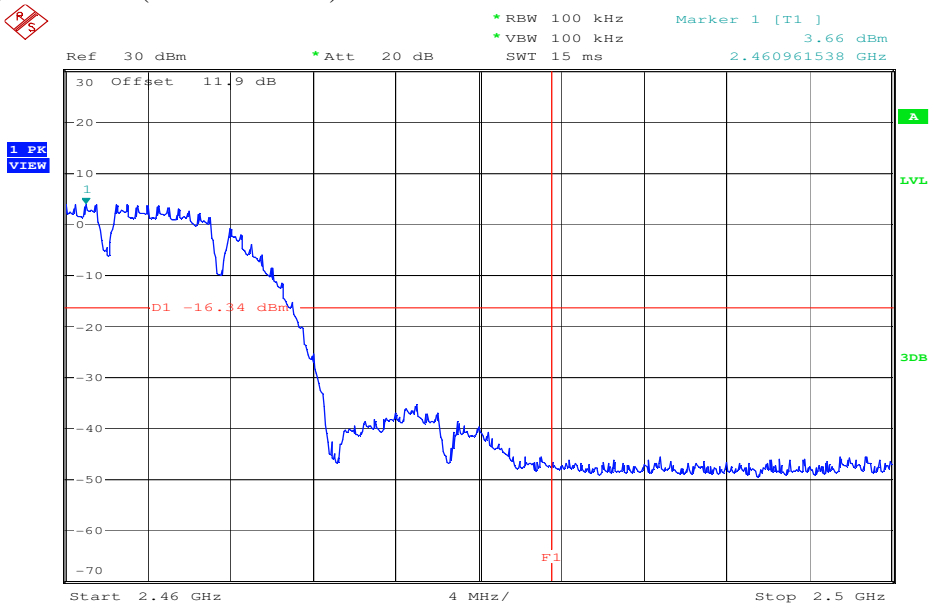
Under normal test conditions only, for frequency range 2400-2483.5 MHz	Max. 1.0 Watt

5.10 Band-edge compliance of conducted emissions §15.247 (d)

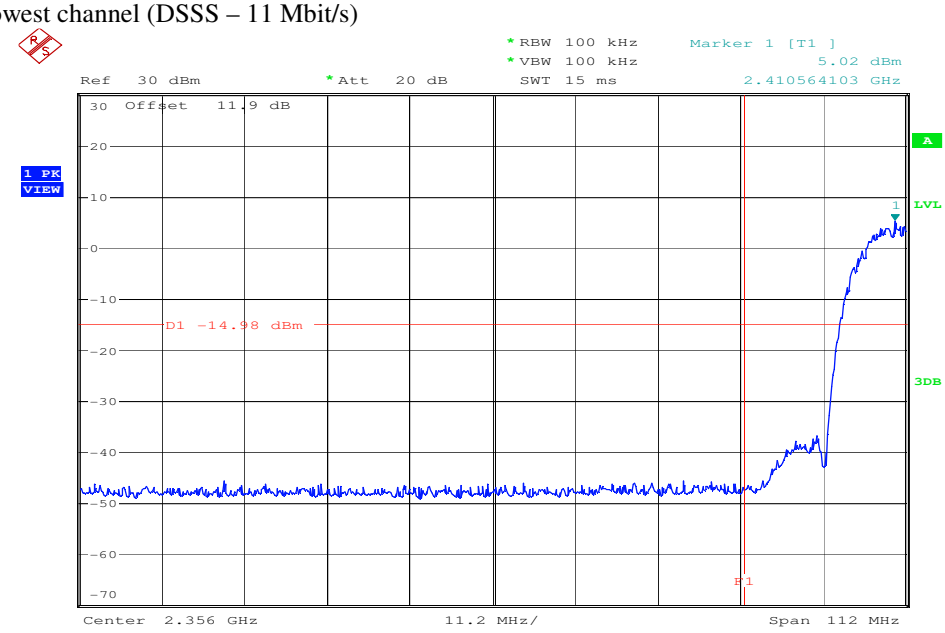
Plot 1: lowest channel (DSSS – 1 Mbit/s)



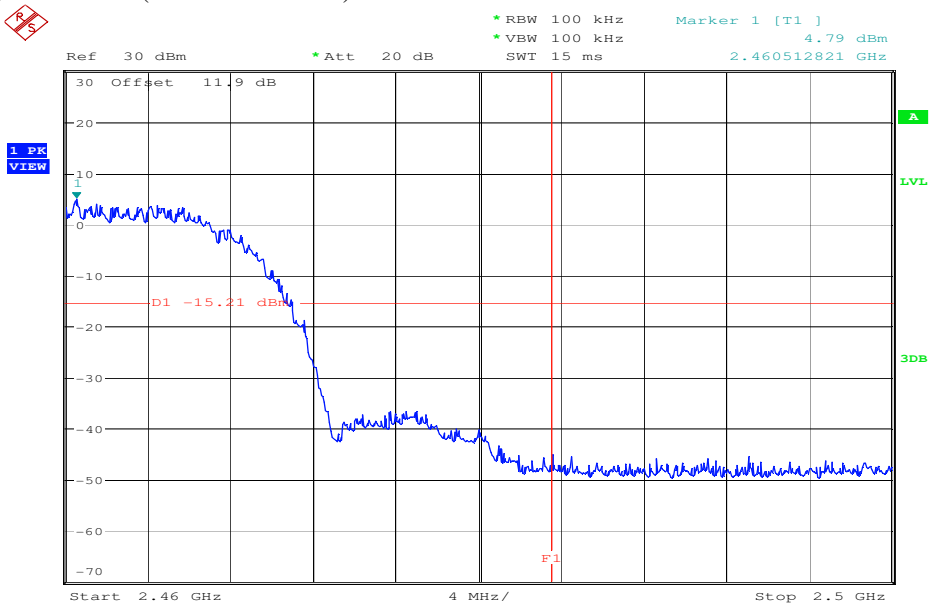
Plot 2: highest channel (DSSS – 1 Mbit/s)



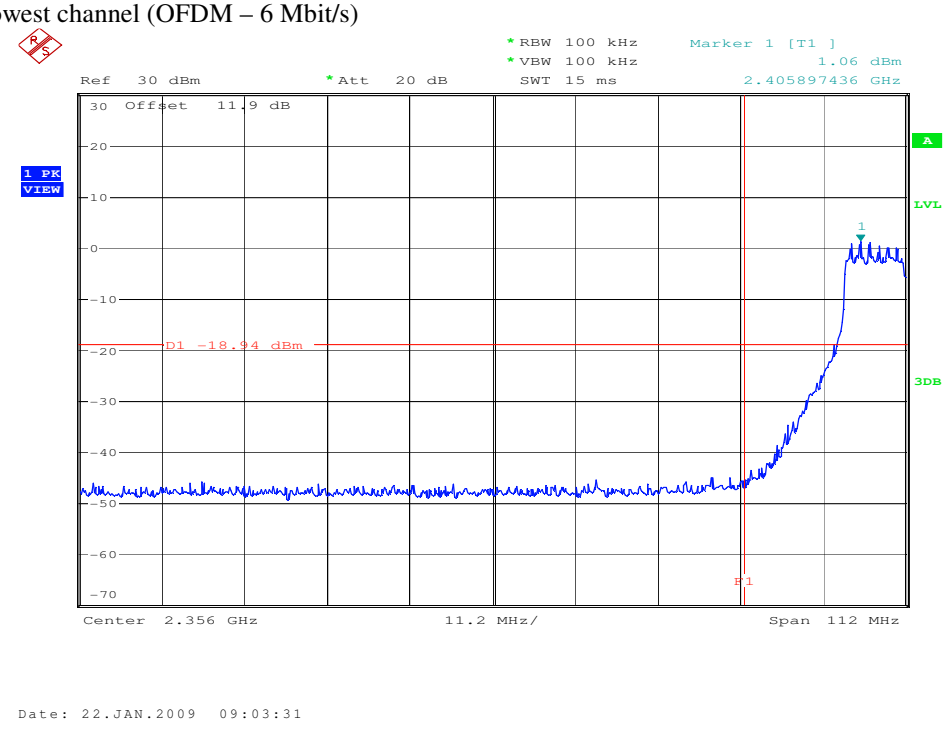
Plot 3: lowest channel (DSSS – 11 Mbit/s)



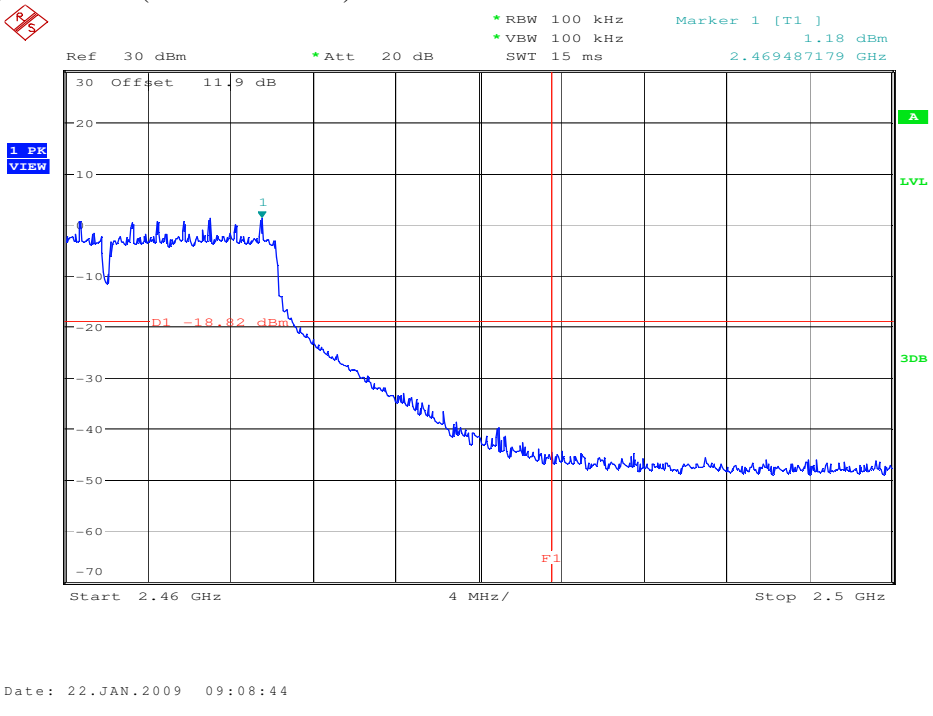
Plot 4: highest channel (DSSS – 11 Mbit/s)



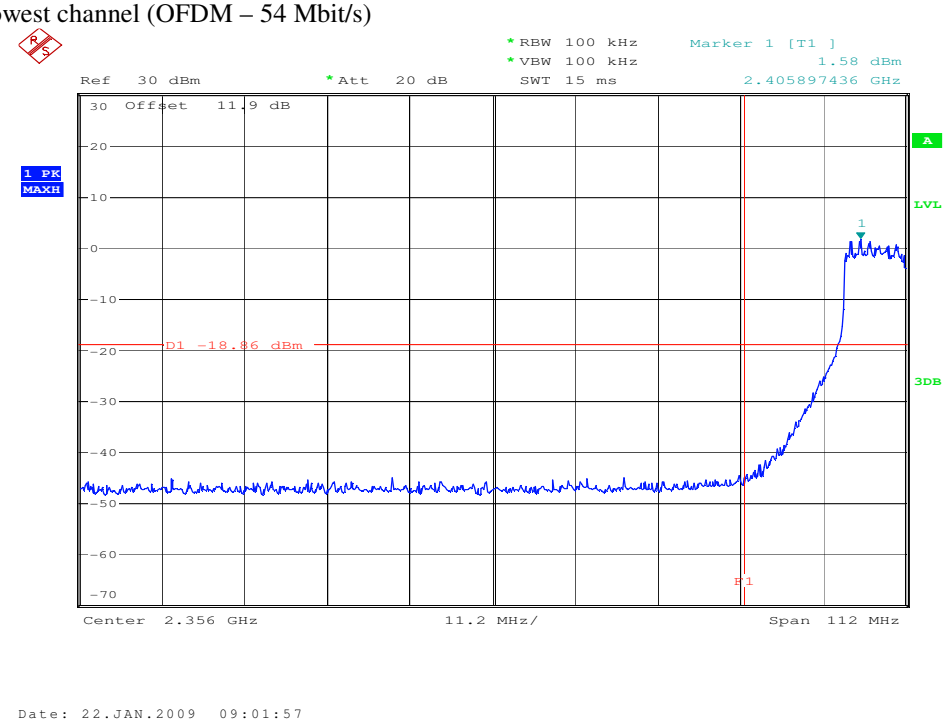
Plot 5: lowest channel (OFDM – 6 Mbit/s)



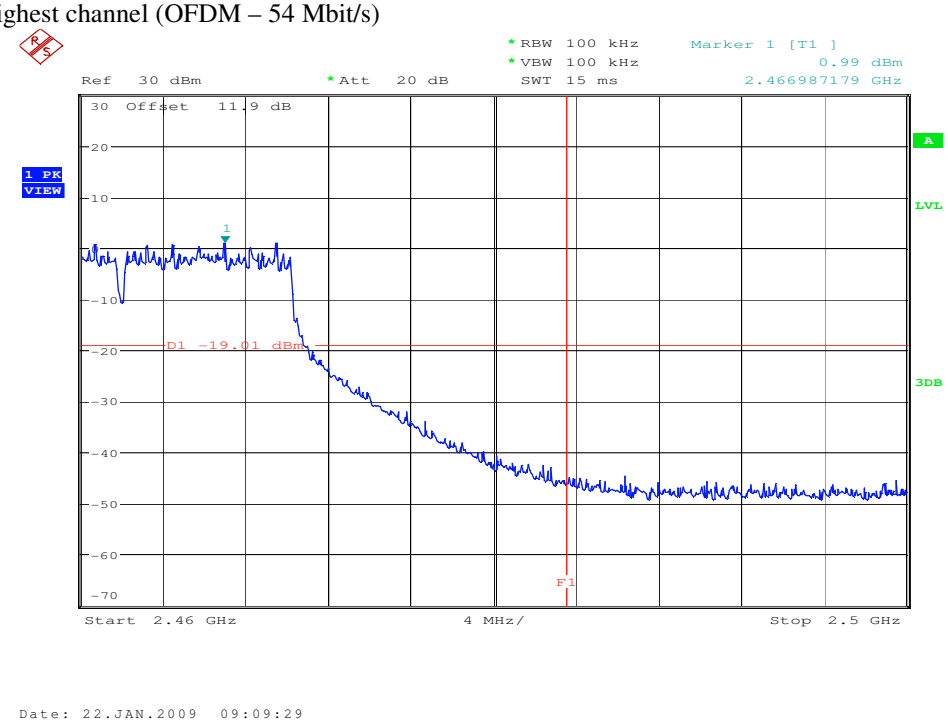
Plot 6: highest channel (OFDM – 6 Mbit/s)



Plot 7: lowest channel (OFDM – 54 Mbit/s)



Plot 8: highest channel (OFDM – 54 Mbit/s)



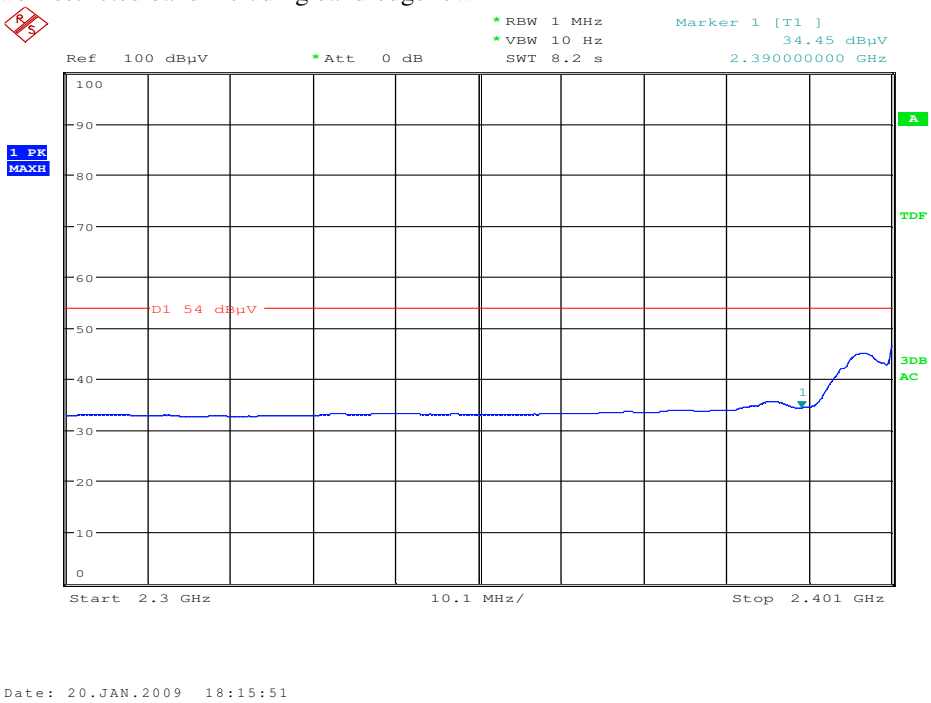
Limits:

Under normal test conditions only	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 5.205(c)).

5.11 Band-edge compliance of radiated emissions §15.205

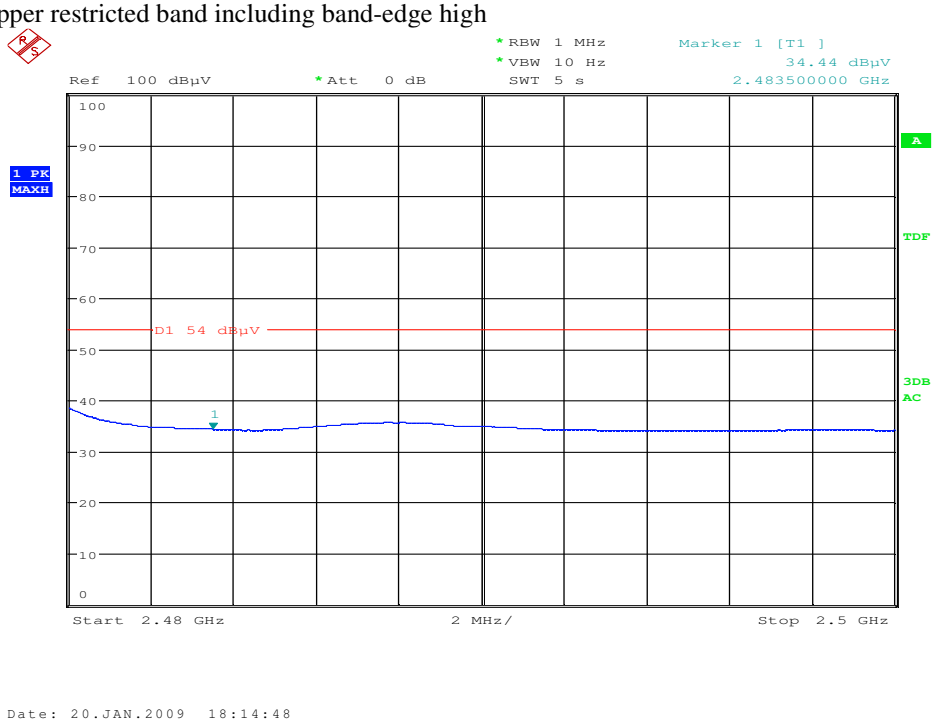
DSSS

Plot 1: Lower restricted band including band-edge low



Result: PASS

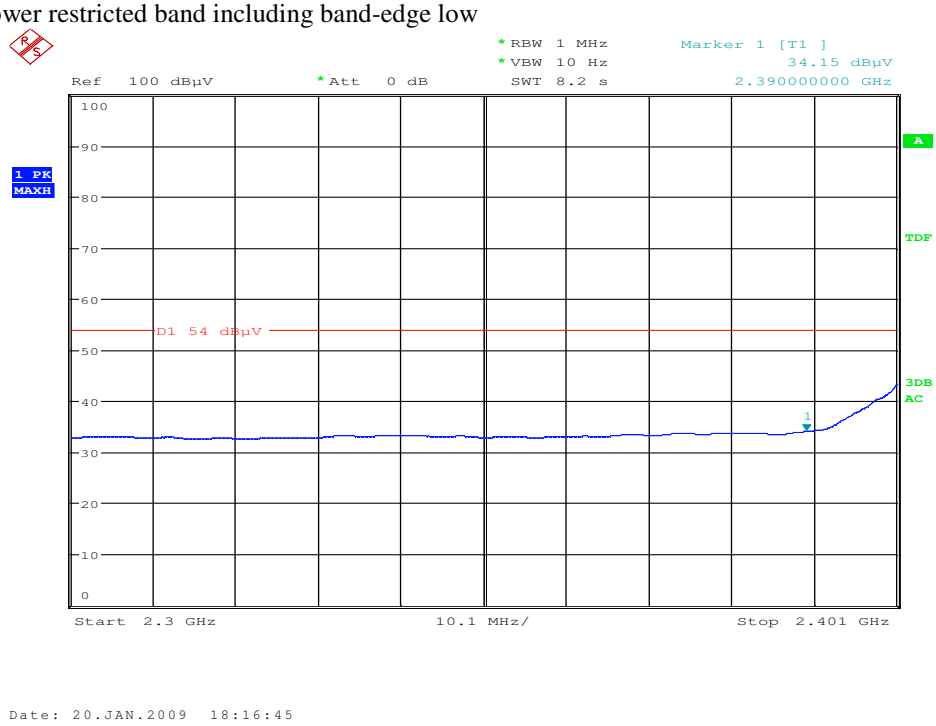
Plot 2 : Upper restricted band including band-edge high



Result: PASS

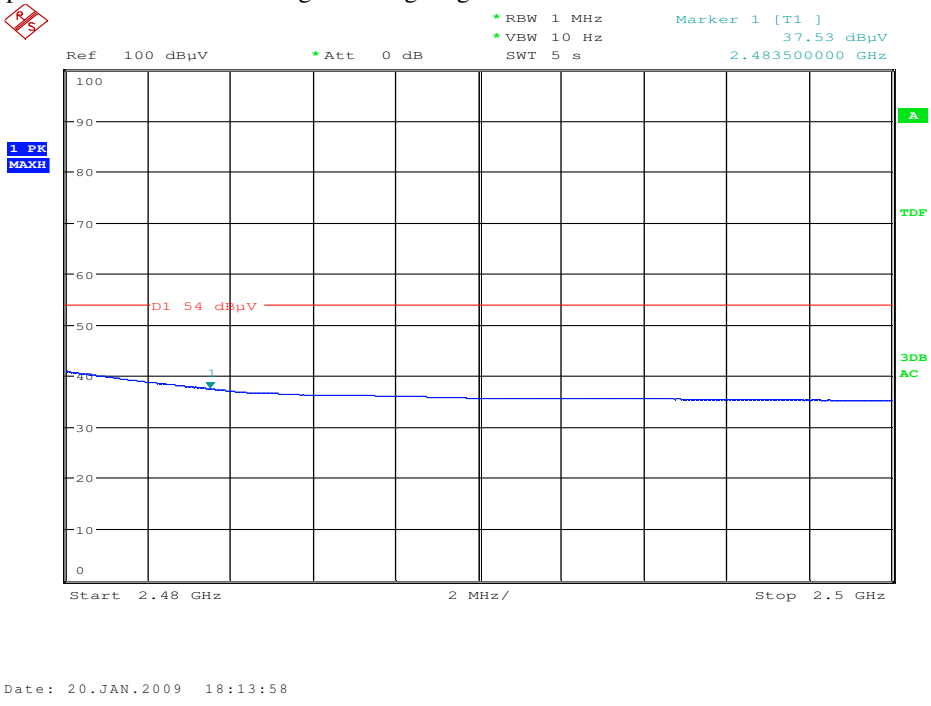
OFDM

Plot 1: Lower restricted band including band-edge low



Result: PASS

Plot 2 : Upper restricted band including band-edge high



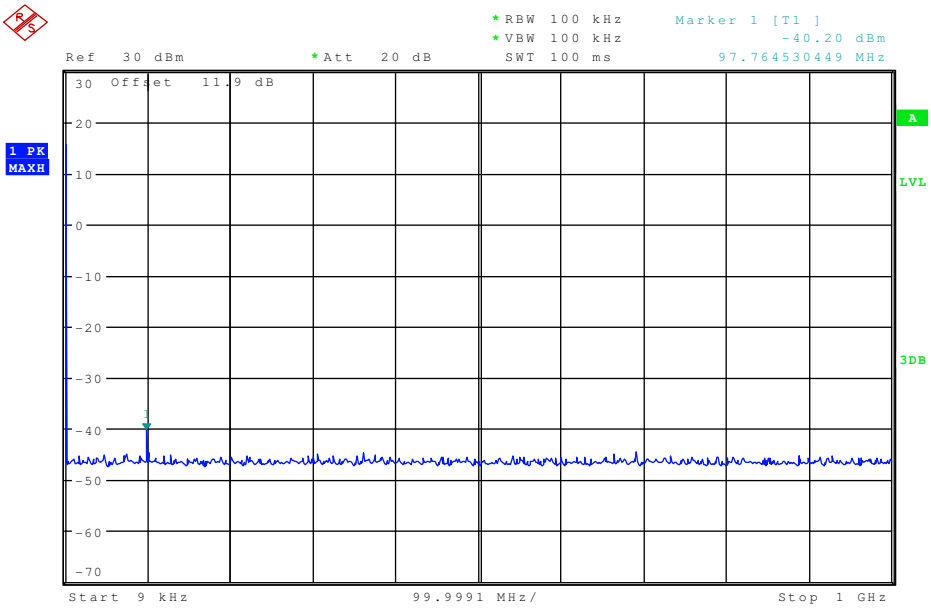
Result: PASS
Limit:

Under normal test conditions only	54 dBµV/m

5.12 Spurious Emissions - conducted (Transmitter) §15.247 (c)

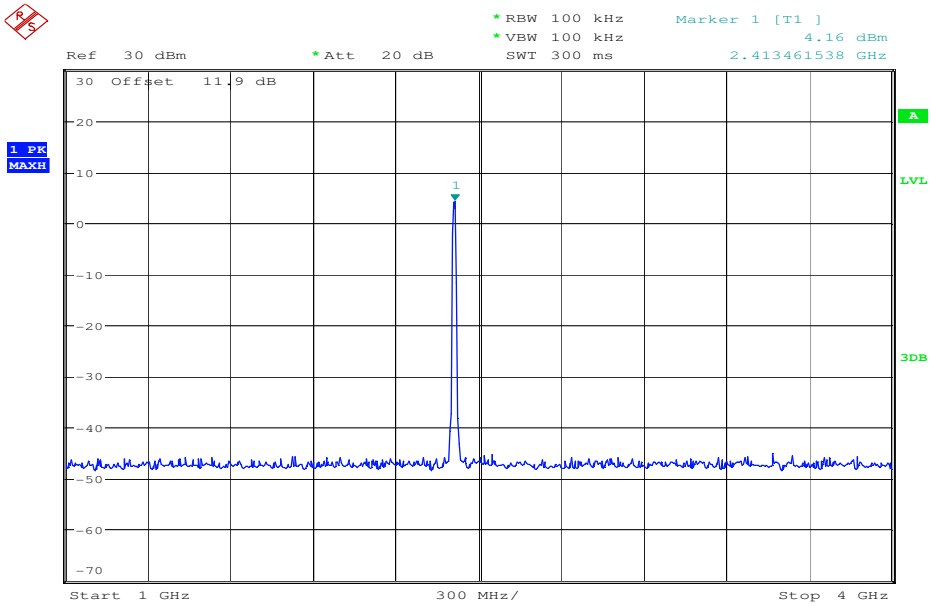
DSSS-Mode

Plot 1: Lowest Channel



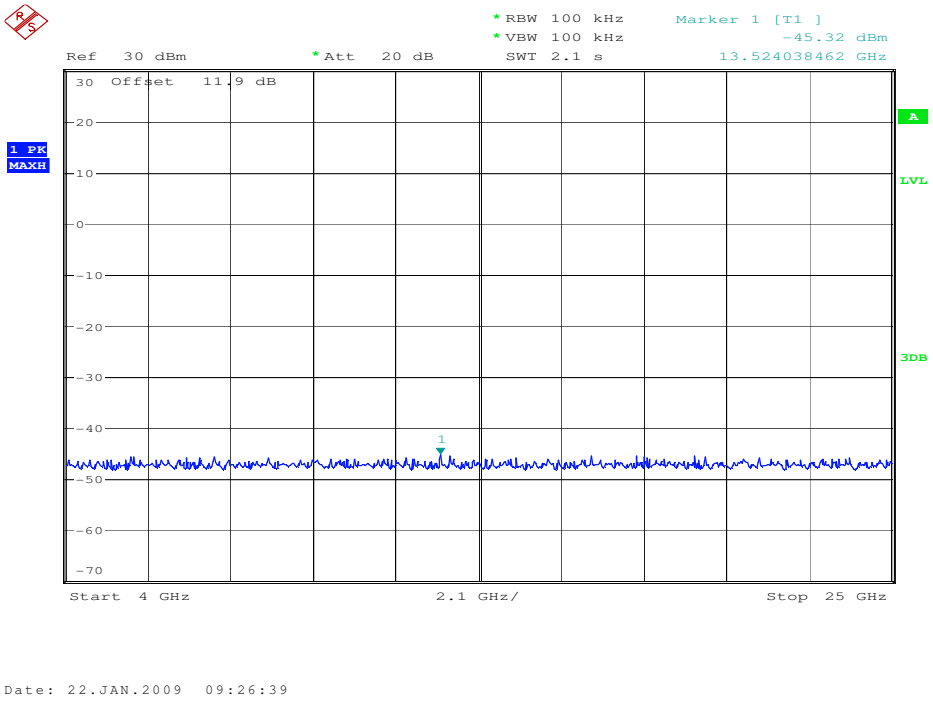
The peak at the beginning of the Plot is the LO from the measuring spectrum Analyzer and not from the EUT.

Plot 2: Lowest Channel

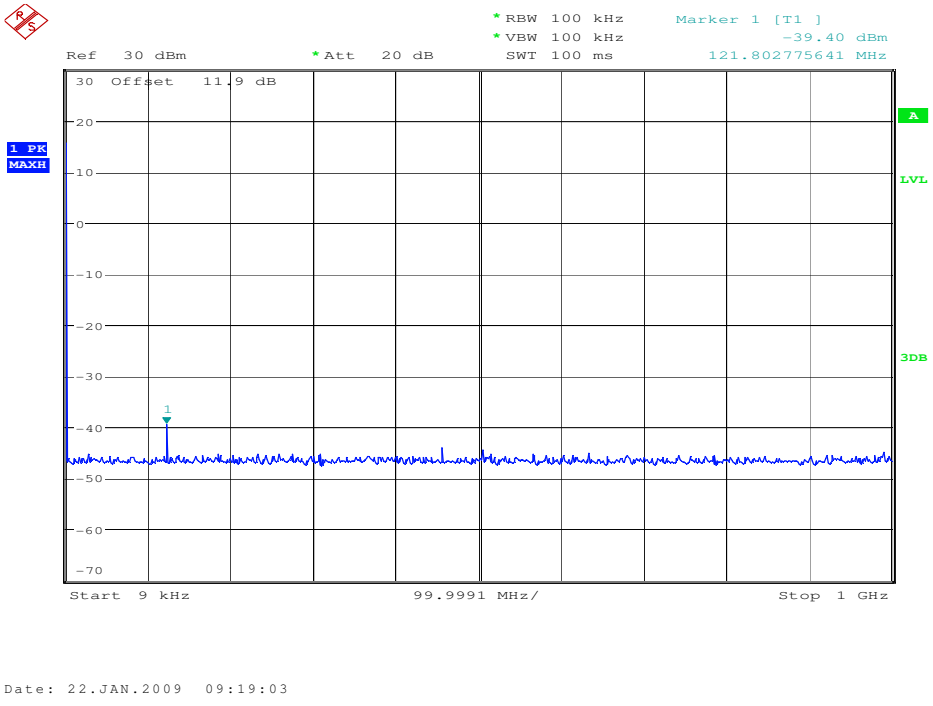


Date: 22.JAN.2009 09:25:56

Plot 3: Lowest Channel

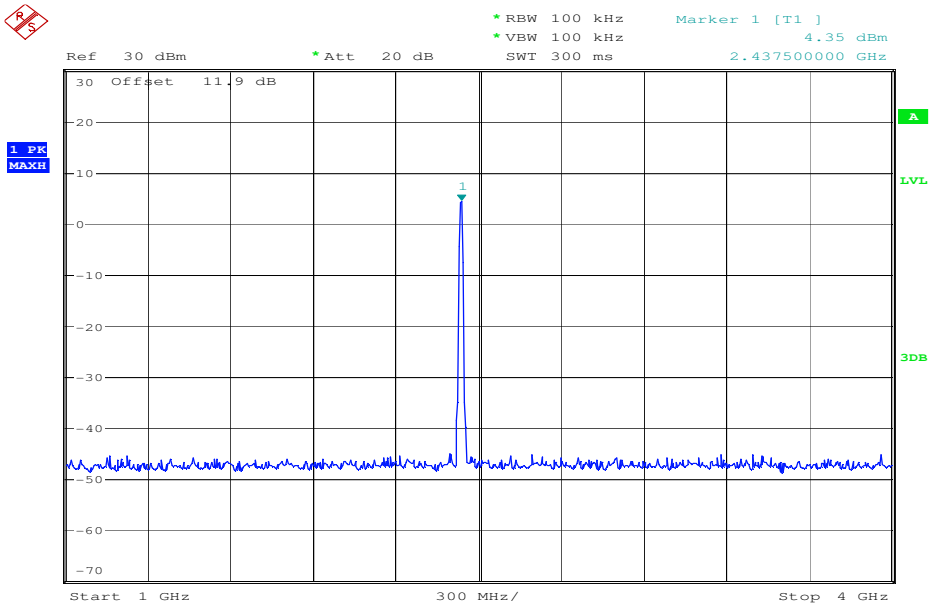


Plot 4: Middle Channel

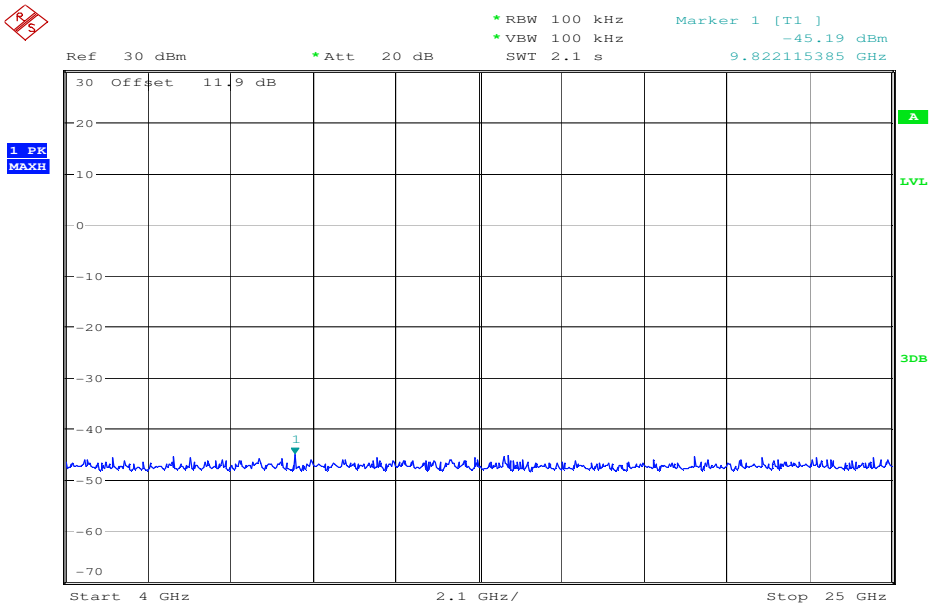


The peak at the beginning of the Plot is the LO from the measuring spectrum Analyzer and not from the EUT.

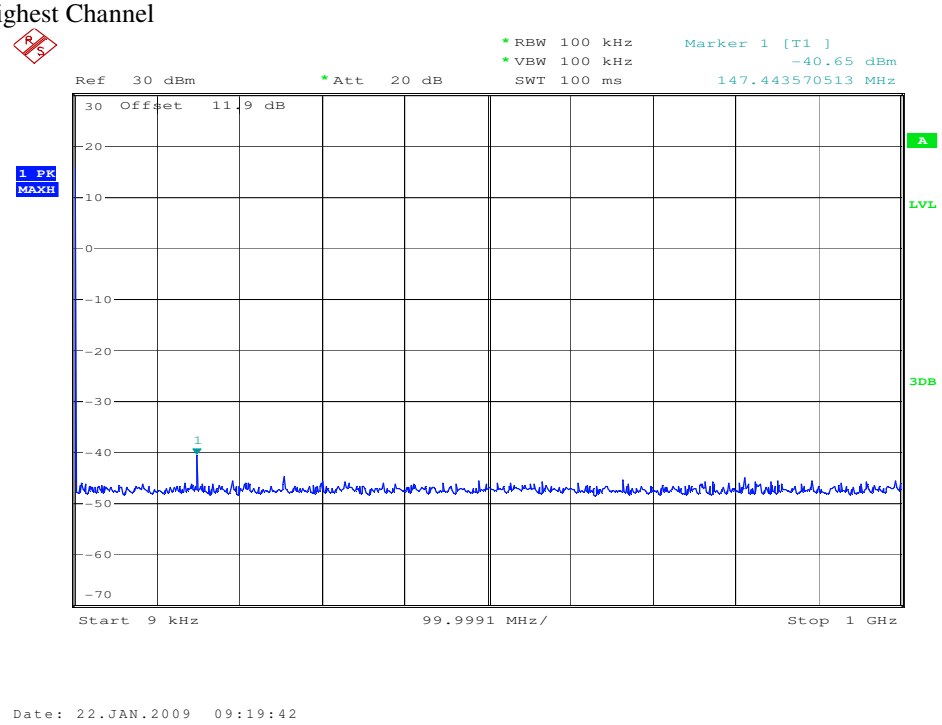
Plot 5: Middle Channel



Plot 6: Middle Channel

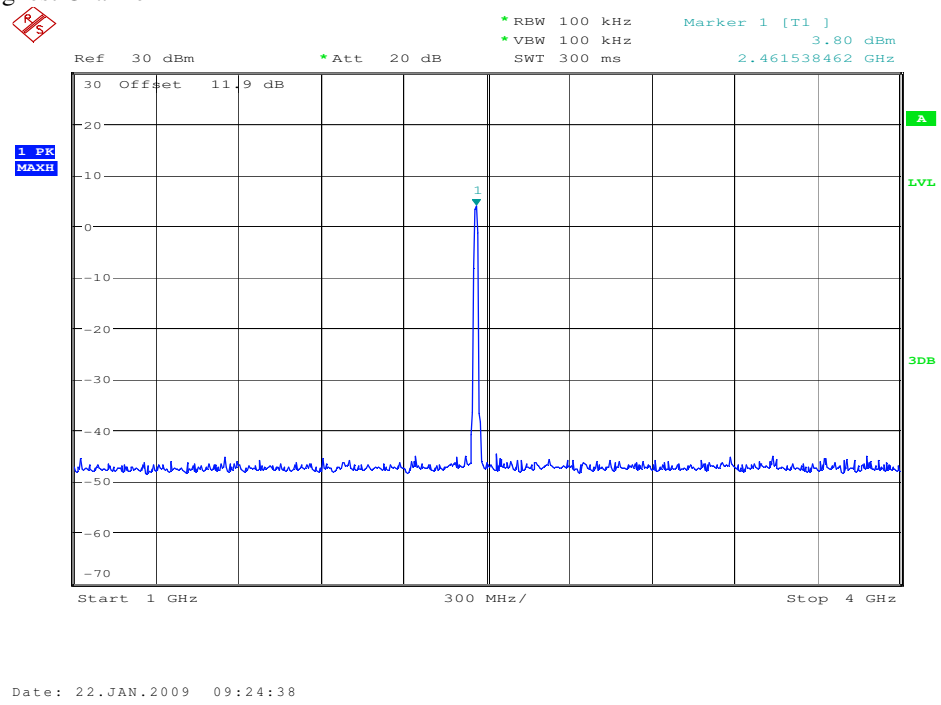


Plot 7: Highest Channel

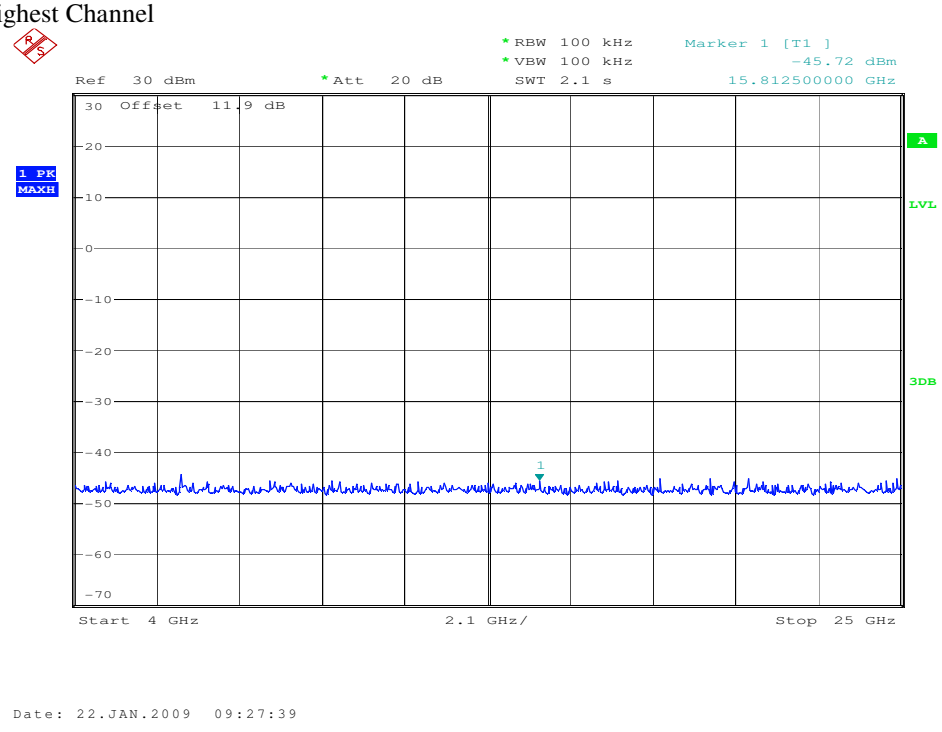


The peak at the beginning of the Plot is the LO from the measuring spectrum Analyzer and not from the EUT.

Plot 8: Highest Channel



Plot 9: Highest Channel



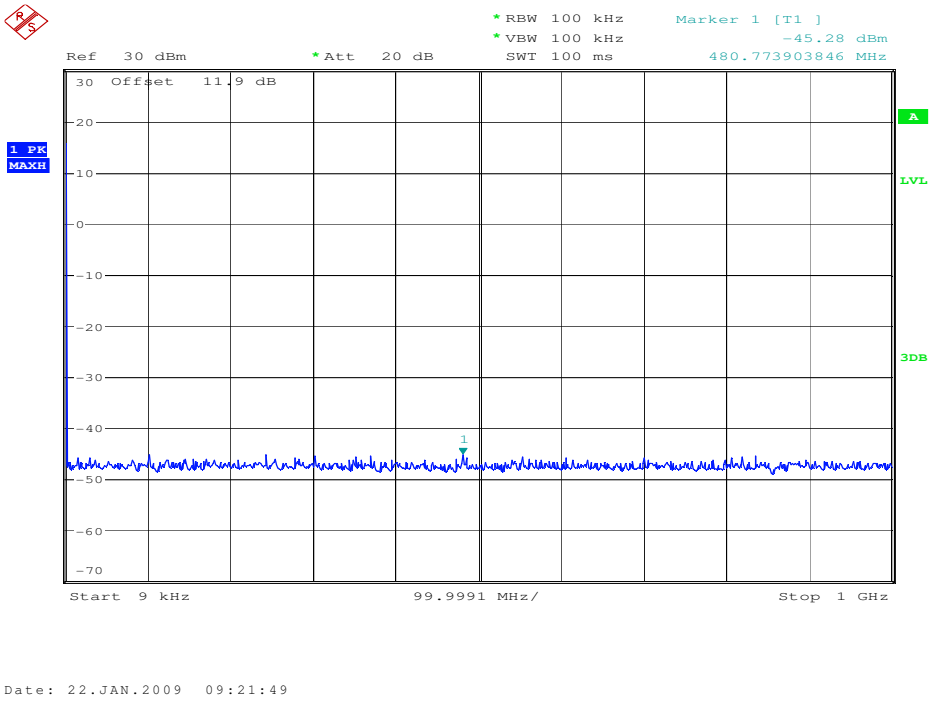
Result & Limits:

Emission Limitations					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emmision power	actual attenuation below frequency of operation [dB]	results
2412		4.2	30 dBm	-	Operating frequency
98		-40.2	-20 dBc	44.4	pass
2437		4.4	30 dBm	-	Operating frequency
121.8		-39.4	-20 dBc	43.8	pass
2462		3.8	30 dBm	-	Operating frequency
147.4		-40.7	-20 dBc	44.5	pass
Measurement uncertainty		± 3dB			

F < 1 GHz: RBW: 100 kHz VBW: 100 kHz
F > 1 GHz: RBW: 1 MHz VBW: 1 MHz

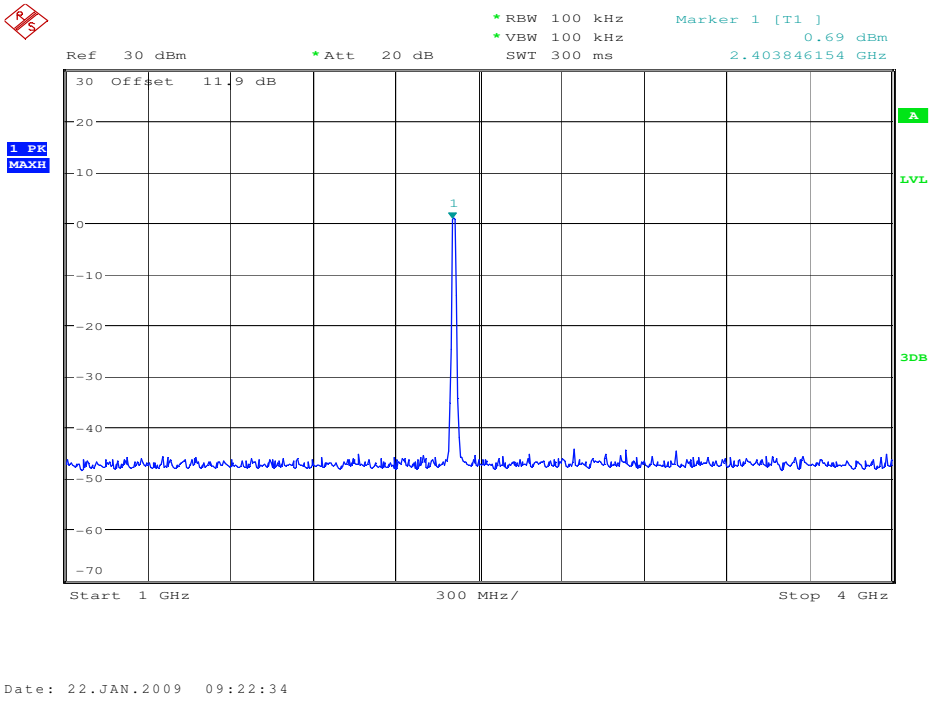
OFDM-Mode

Plot 1: Lowest Channel

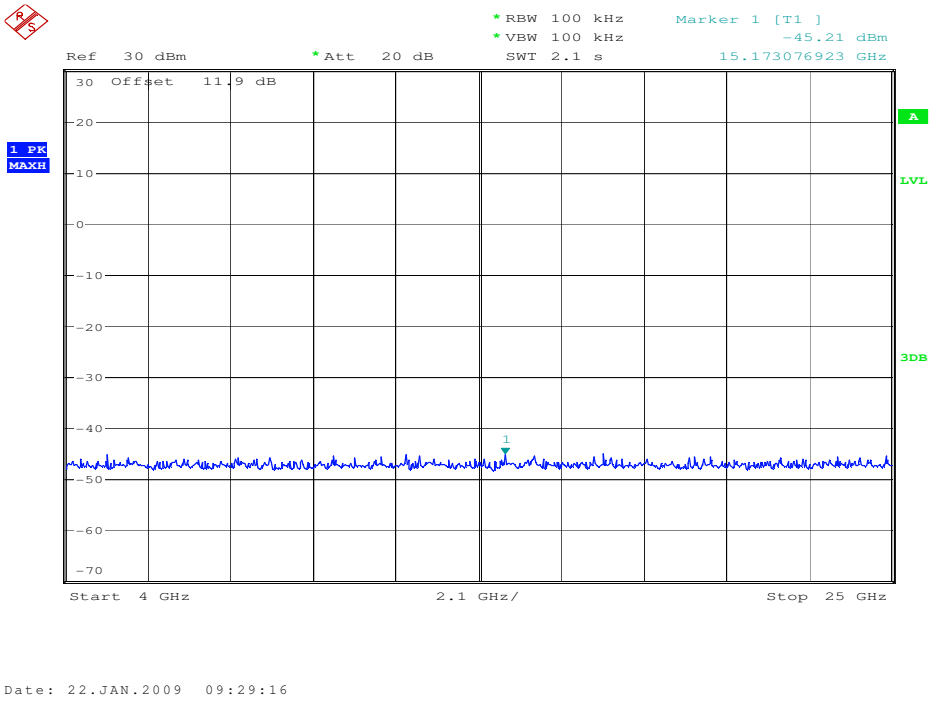


The peak at the beginning of the Plot is the LO from the measuring spectrum Analyzer and not from the EUT.

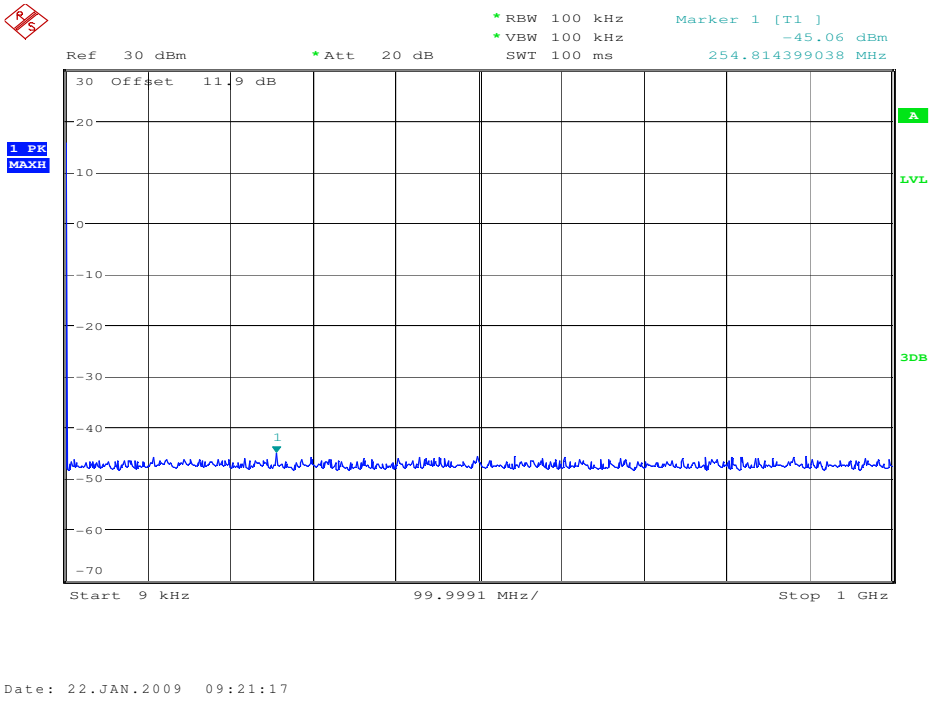
Plot 2: Lowest Channel



Plot 3: Lowest Channel

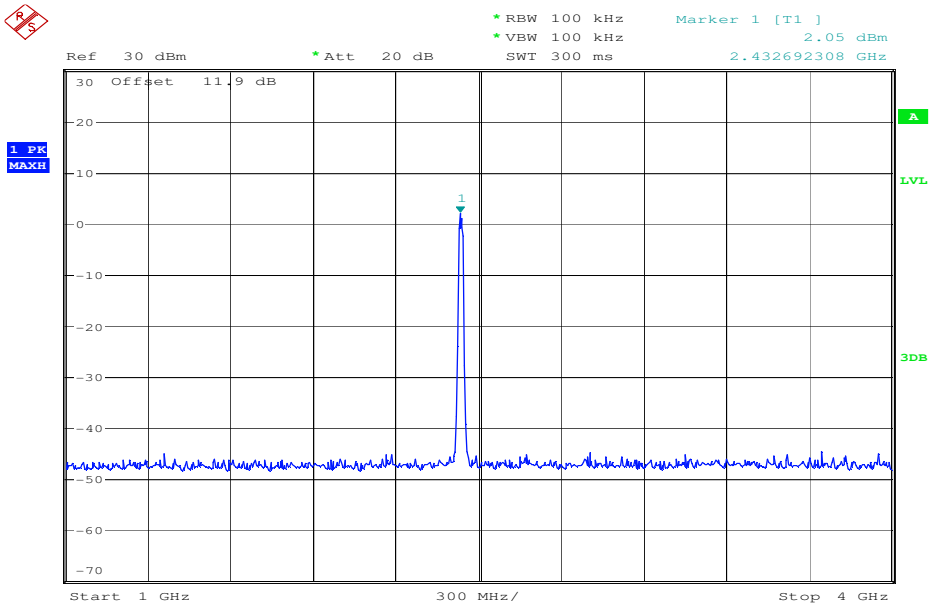


Plot 4: Middle Channel



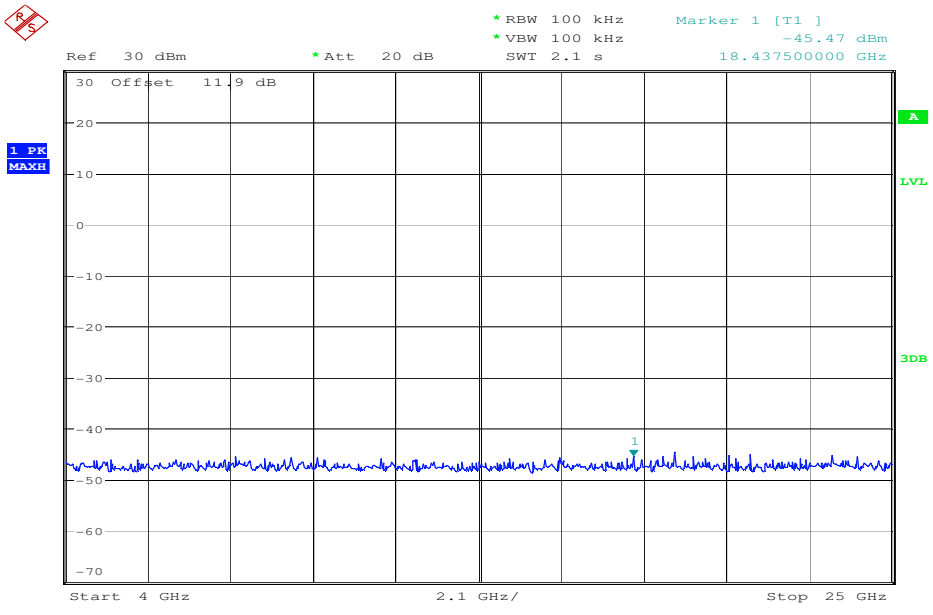
The peak at the beginning of the Plot is the LO from the measuring spectrum Analyzer and not from the EUT.

Plot 5: Middle Channel



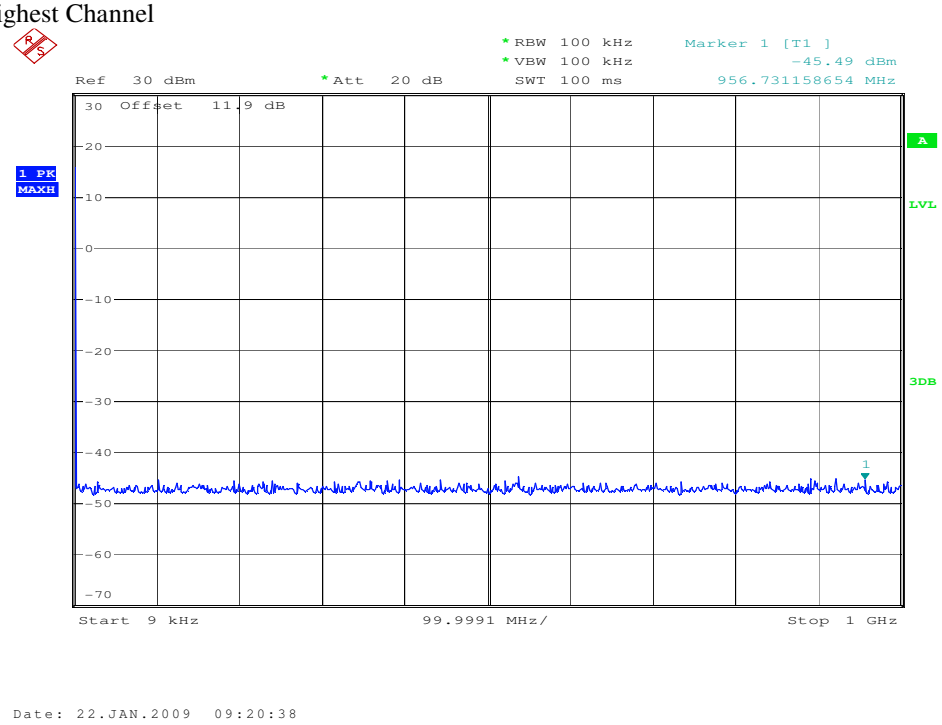
Date: 22.JAN.2009 09:23:19

Plot 6: Middle Channel



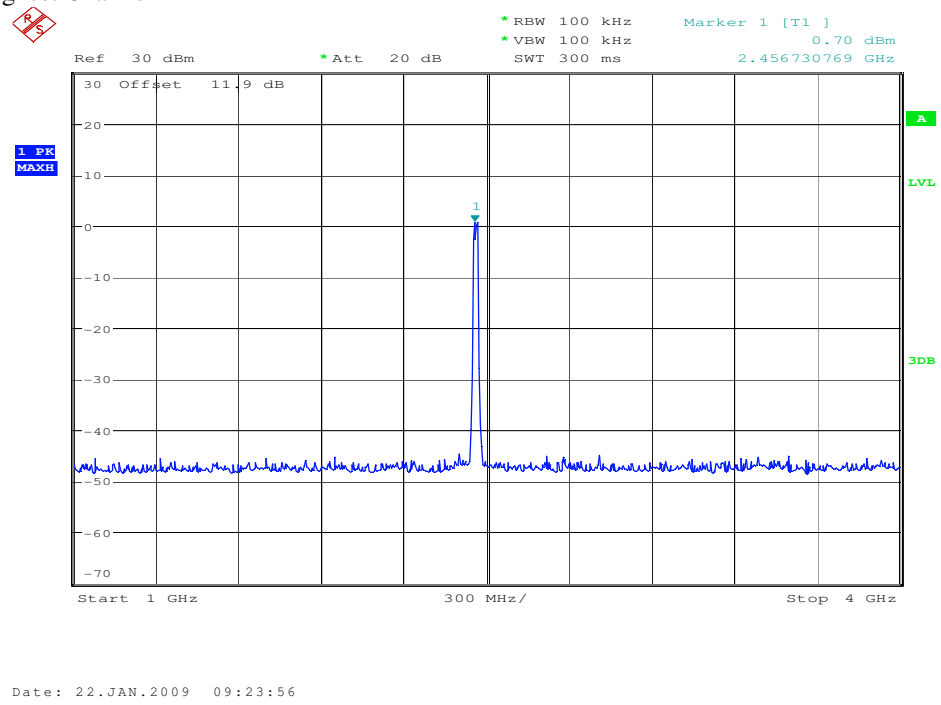
Date: 22.JAN.2009 09:28:39

Plot 7: Highest Channel

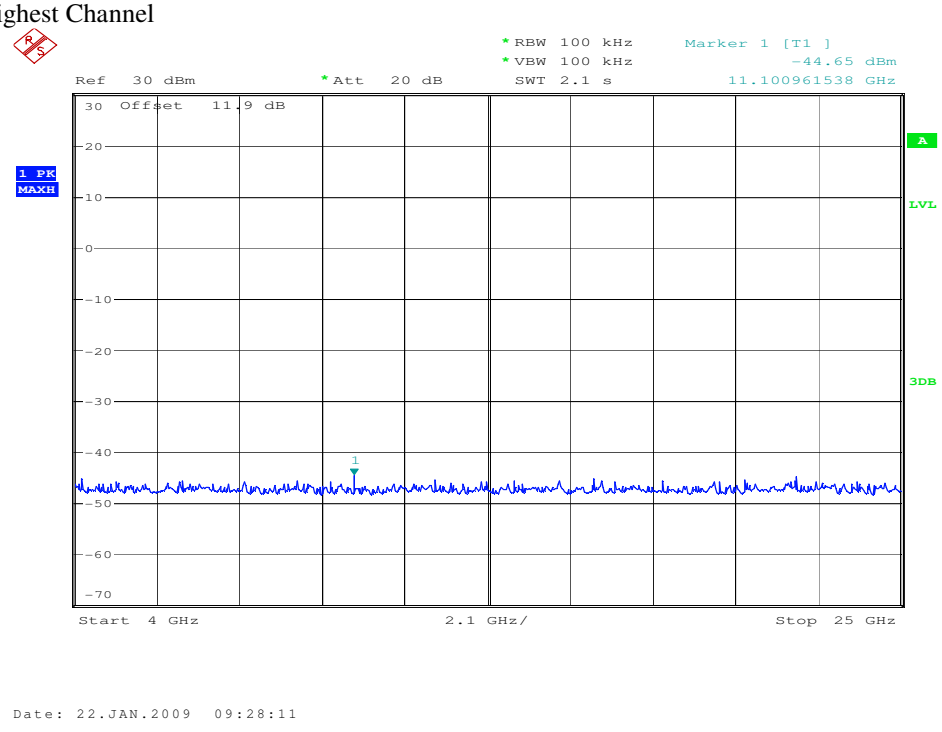


The peak at the beginning of the Plot is the LO from the measuring spectrum Analyzer and not from the EUT.

Plot 8: Highest Channel



Plot 9: Highest Channel



Result & Limits:

Emission Limitations					
f [MHz]		amplitude of emission [dBm]	limit max. allowed emmision power	actual attenuation below frequency of operation [dB]	results
2412		0.7	30 dBm	-	Operating frequency
No peaks found			-20 dBc		pass
2437		2.1	30 dBm	-	Operating frequency
No peaks found			-20 dBc		pass
2462		0.7	30 dBm	-	Operating frequency
No peaks found			-20 dBc		pass
Measurement uncertainty		± 3dB			

F < 1 GHz: RBW: 100 kHz VBW: 100 kHz
F > 1 GHz: RBW: 1 MHz VBW: 1 MHz

Under normal test conditions only	In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Note: For emissions that fall into restricted bands you find the radiated emissions later in the report.

5.13 Spurious Emissions - radiated (Transmitter) §15.209

Plot 1: 0.03 - 1 GHz (lowest channel)

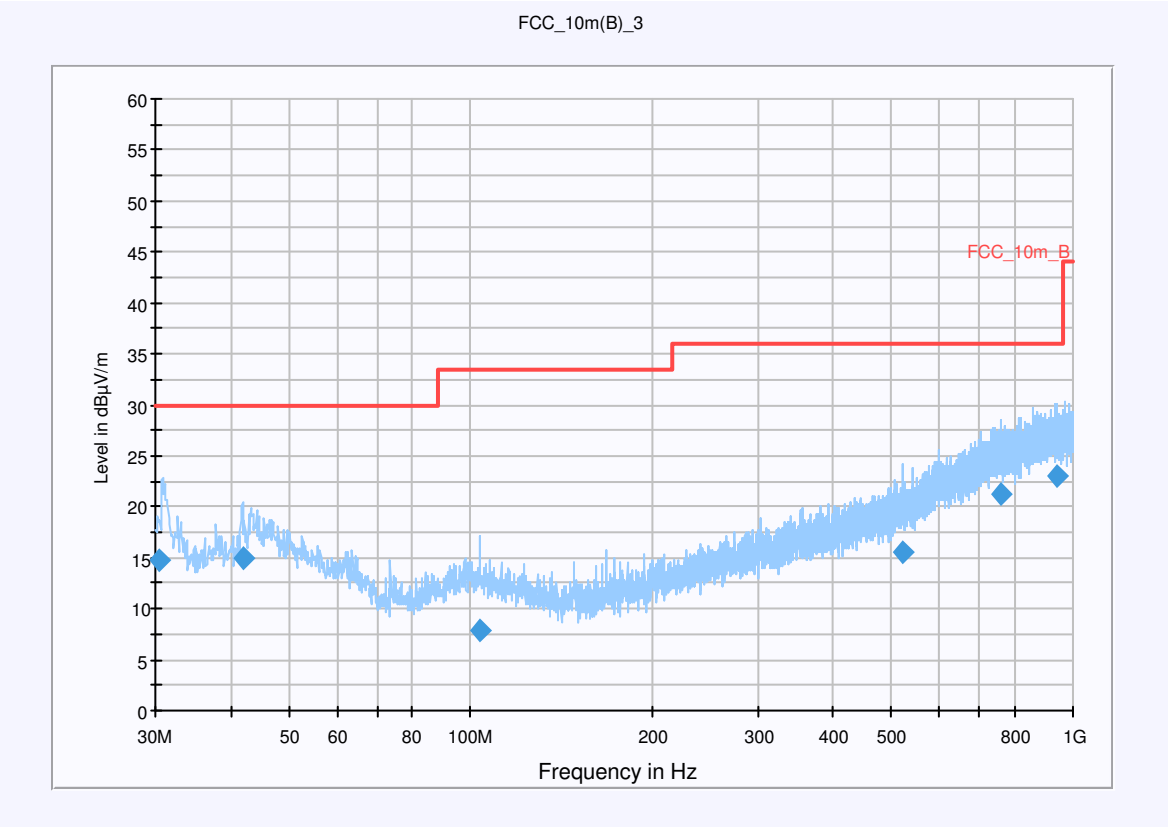
Common Information

EUT:	Toshiba TM5-E01
Serial Number:	359238020000348 (E01)
Test Description:	FCC Part 15.247 Class b @ 10 m
Operating Conditions:	Wlan Tx mode; Ch 1; Traffic mode + Charging
Operator Name:	ZAK
Comment:	Powered by 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Level Unit:	dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
30.501650	14.8	15000.000	120.000	211.0	V	132.0	12.7	15.2	30.0	
41.998000	14.9	15000.000	120.000	130.0	V	164.0	13.5	15.1	30.0	
103.593850	8.0	15000.000	120.000	220.0	H	125.0	12.0	25.5	33.5	
521.297300	15.5	15000.000	120.000	143.0	H	101.0	19.4	20.5	36.0	
757.336650	21.3	15000.000	120.000	106.0	V	132.0	24.2	14.7	36.0	
941.097050	23.0	15000.000	120.000	220.0	V	112.0	25.8	13.0	36.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1

Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32, CAL 07.01.2010
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW ---, CAL 08.04.2010 Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

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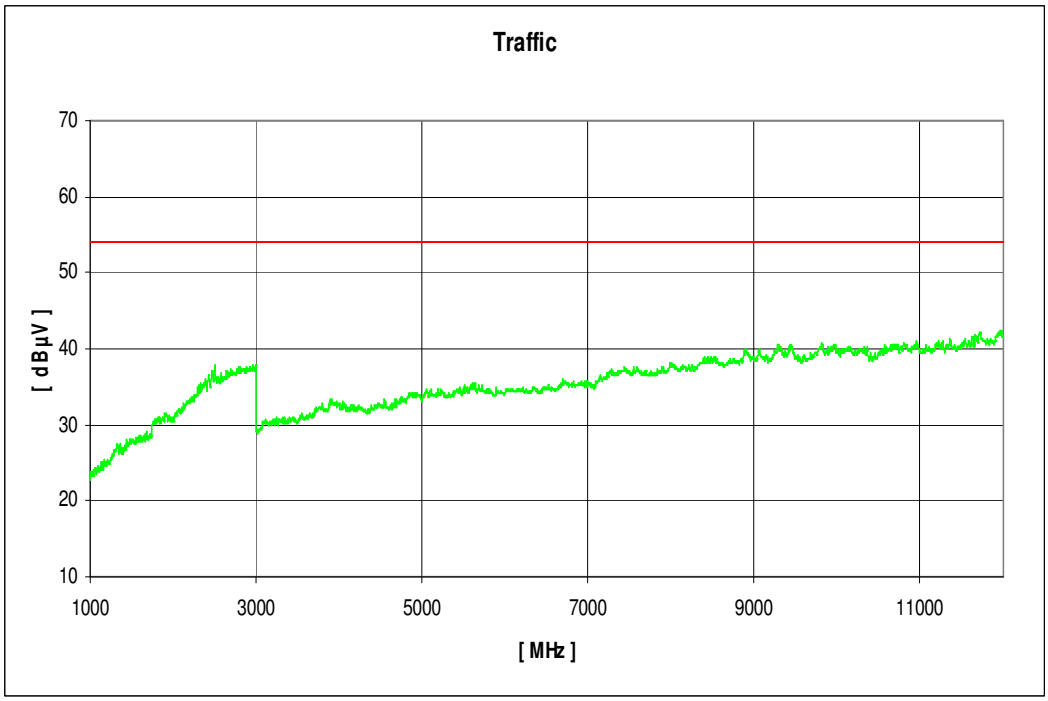
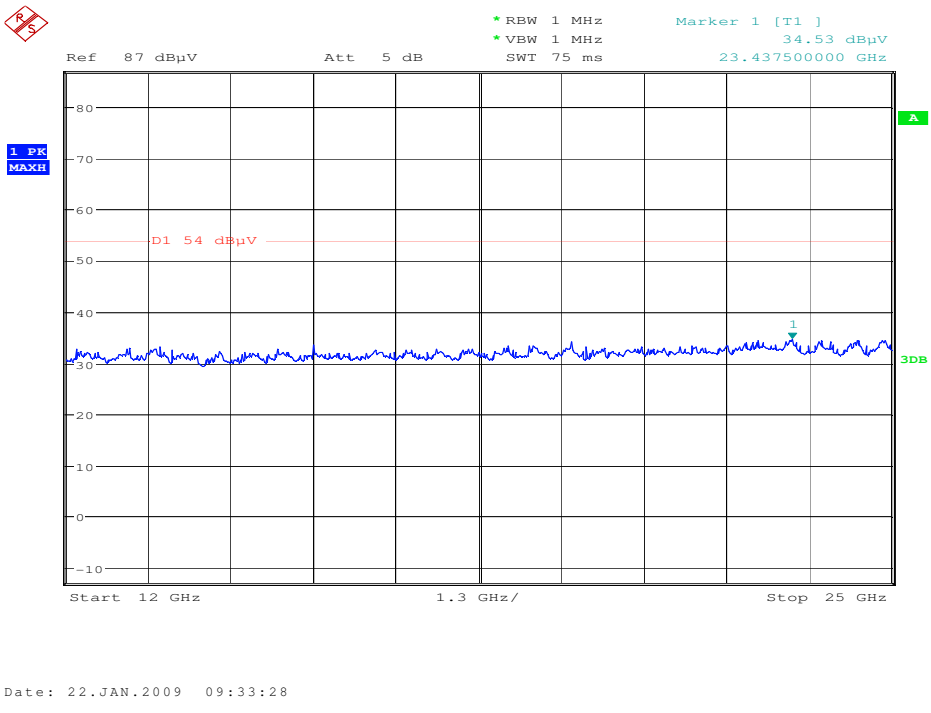
Plot 2: 1 - 12 GHz (lowest channel)



Plot 3: 12 - 25 GHz (valid for all channels)



Plot 4: 0.03 - 1 GHz (middle channel)

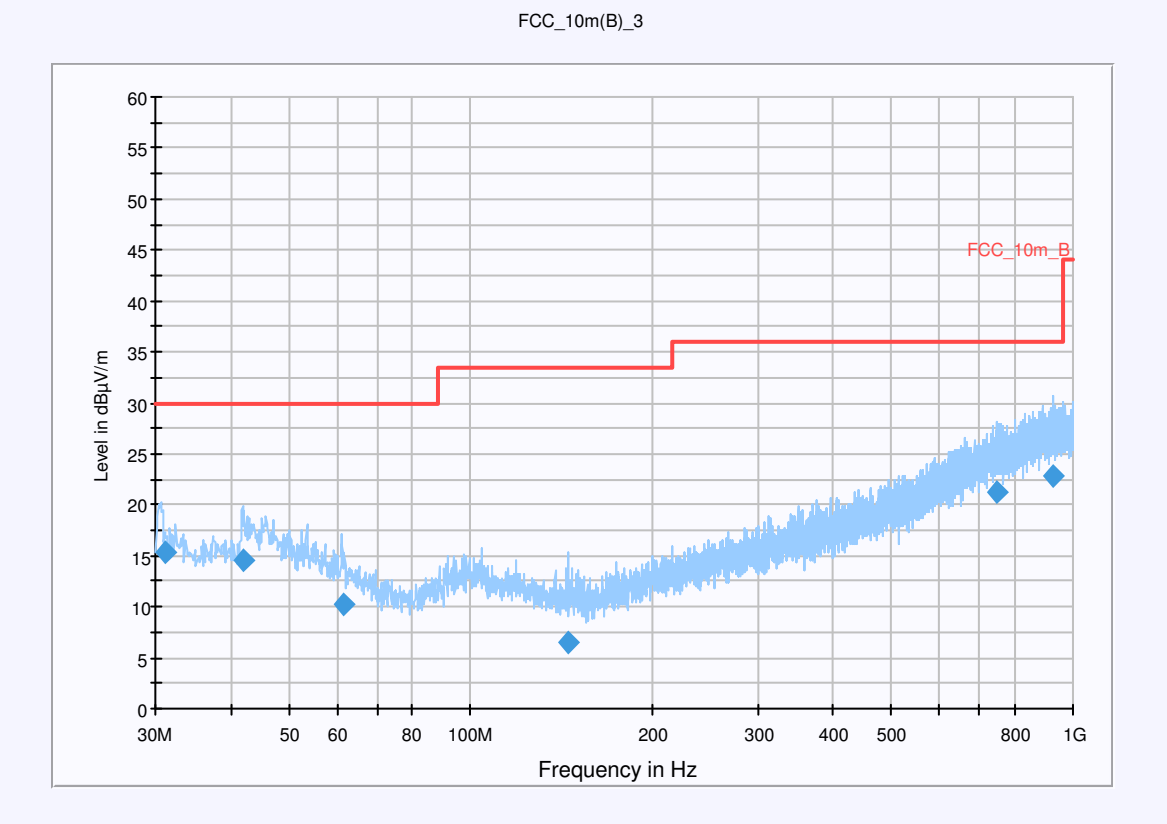
Common Information

EUT:	Toshiba TM5-E01
Serial Number:	359238020000348 (E01)
Test Description:	FCC Part 15.247 Class b @ 10 m
Operating Conditions:	Wlan Tx mode; Ch 6; Traffic mode + Charging
Operator Name:	ZAK
Comment:	Powered by 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Level Unit:	dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
31.072600	15.4	15000.000	120.000	171.0	V	233.0	12.7	14.6	30.0	
41.949250	14.5	15000.000	120.000	129.0	V	5.0	13.5	15.5	30.0	
61.389200	10.3	15000.000	120.000	131.0	V	158.0	11.5	19.7	30.0	
145.398000	6.5	15000.000	120.000	178.0	V	323.0	9.0	27.0	33.5	
745.771950	21.3	15000.000	120.000	154.0	V	50.0	24.1	14.7	36.0	
929.301850	22.8	15000.000	120.000	221.0	V	87.0	25.8	13.2	36.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1

Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32, CAL 07.01.2010
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW ---, CAL 08.04.2010 Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

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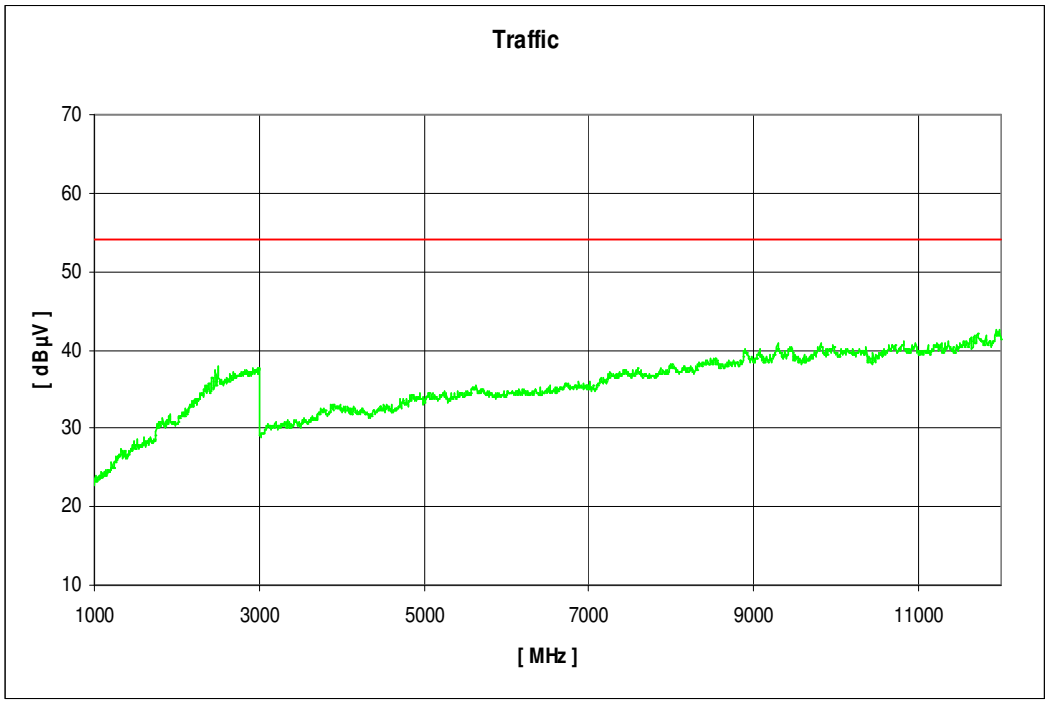
Plot 5: 1 - 12 GHz (middle channel)



Plot 6: 0.03 - 1 GHz (highest channel)

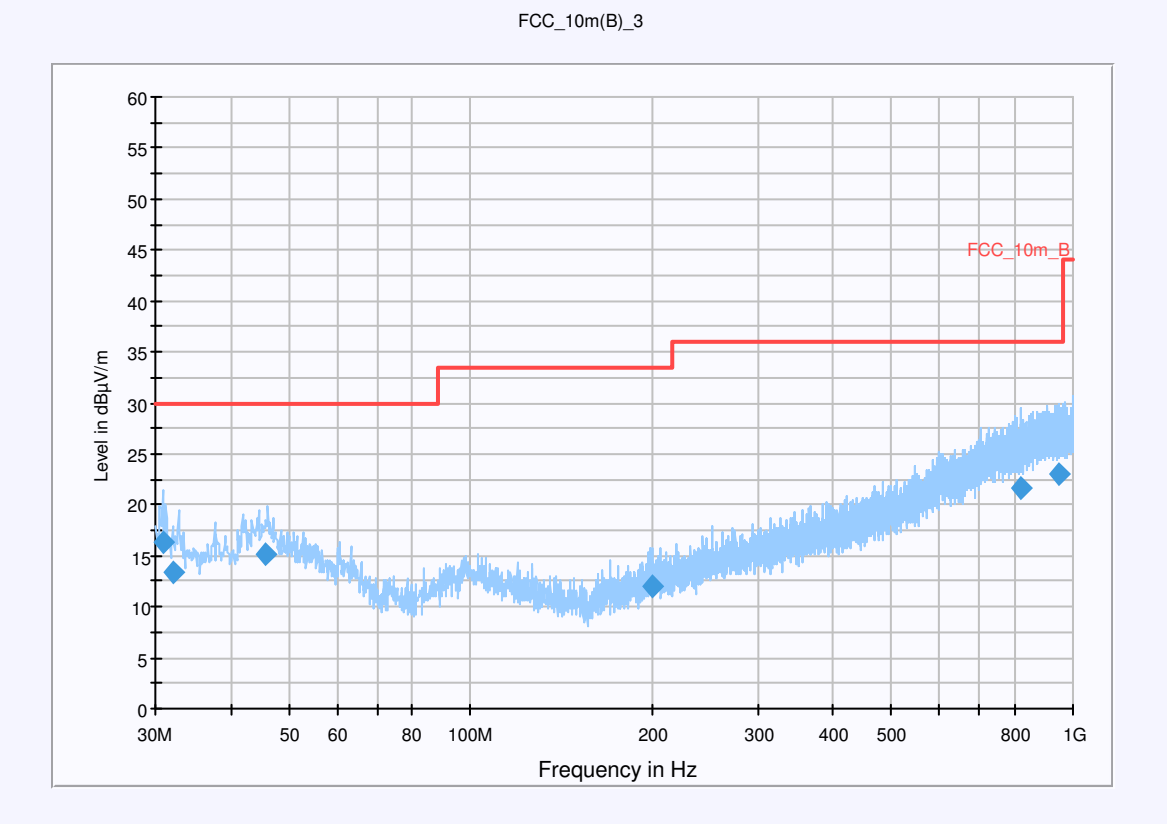
Common Information

EUT:	Toshiba TM5-E01
Serial Number:	359238020000348 (E01)
Test Description:	FCC Part 15.247 Class b @ 10 m
Operating Conditions:	Wlan Tx mode; Ch 11; Traffic mode + Charging
Operator Name:	ZAK
Comment:	Powered by 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Level Unit:	dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
30.820700	16.2	15000.000	120.000	220.0	V	130.0	12.7	13.8	30.0	
32.258650	13.5	15000.000	120.000	176.0	V	132.0	12.9	16.5	30.0	
45.774800	15.2	15000.000	120.000	100.0	V	27.0	13.4	14.8	30.0	
200.002700	12.1	15000.000	120.000	136.0	V	323.0	12.0	21.4	33.5	
818.080850	21.7	15000.000	120.000	163.0	H	285.0	24.6	14.3	36.0	
949.133250	23.0	15000.000	120.000	220.0	V	50.0	25.8	13.0	36.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1

Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32, CAL 07.01.2010
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW ---, CAL 08.04.2010 Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

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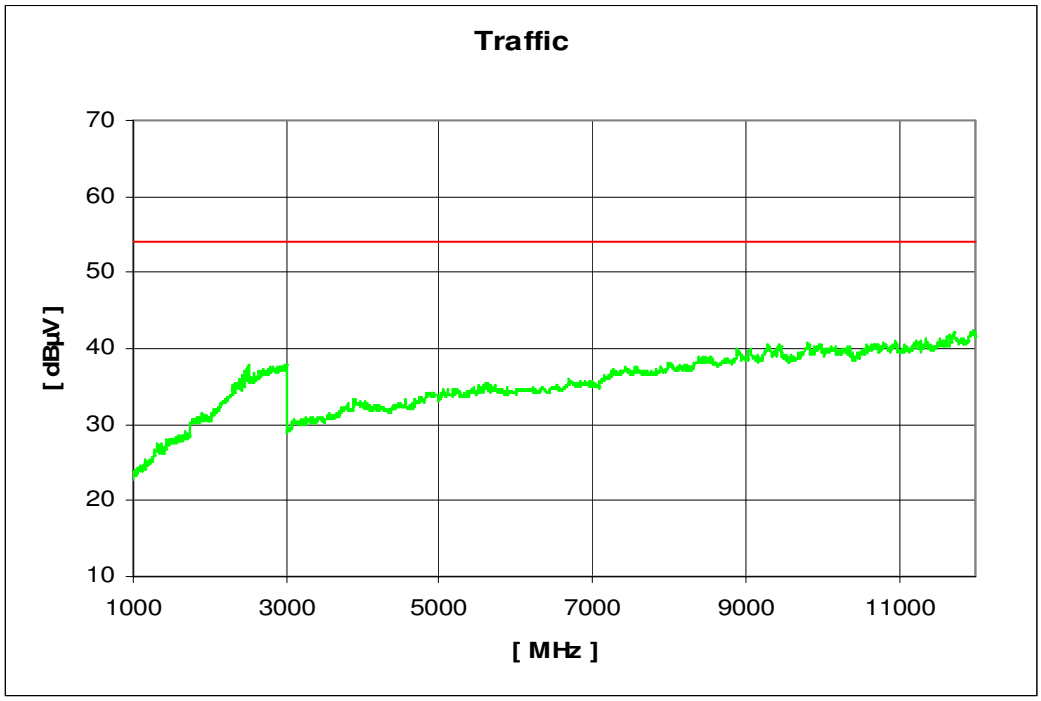
Plot 7: 1 - 12 GHz (highest channel)



Results:

SPURIOUS EMISSIONS LEVEL §15.209								
2412 MHz			2437 MHz			2462 MHz		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
No peaks found			No peaks found			No peaks found		
Measurement uncertainty			±3 dB					

f < 1 GHz : RBW/VBW: 100 kHz f ≥ 1GHz : RBW/VBW: 1 MHz

Limits: § 15.247 (c)

In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

5.14 Spurious Emissions - radiated (Receiver) §15.109 / 209

Plot 1: 0.03 - 1 GHz vertical / horizontal (receiver)

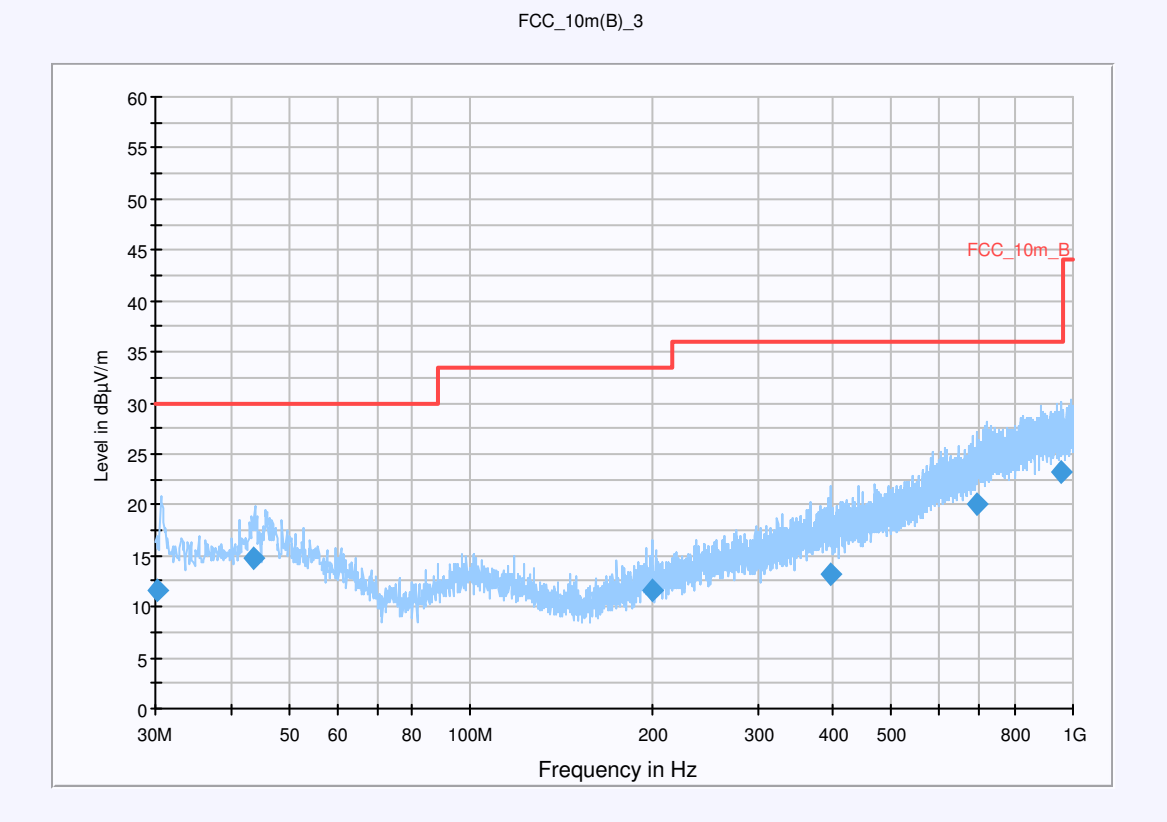
Common Information

EUT:	Toshiba TM5-E01
Serial Number:	359238020000348 (E01)
Test Description:	FCC Part 15.247 Class b @ 10 m
Operating Conditions:	Wlan Rx mode + Charging
Operator Name:	ZAK
Comment:	Powered by 115 V / 60 Hz

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Level Unit:	dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
30.203800	11.6	15000.000	120.000	220.0	V	50.0	12.6	18.4	30.0	
43.666550	14.7	15000.000	120.000	127.0	V	79.0	13.5	15.3	30.0	
200.004050	11.7	15000.000	120.000	151.0	V	227.0	12.0	21.8	33.5	
396.317500	13.2	15000.000	120.000	220.0	V	195.0	17.2	22.8	36.0	
691.505850	20.1	15000.000	120.000	130.0	V	286.0	22.8	15.9	36.0	
955.047150	23.2	15000.000	120.000	184.0	V	207.0	25.9	12.8	36.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1

Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32, CAL 07.01.2010
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW ---, CAL 08.04.2010 Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0109)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

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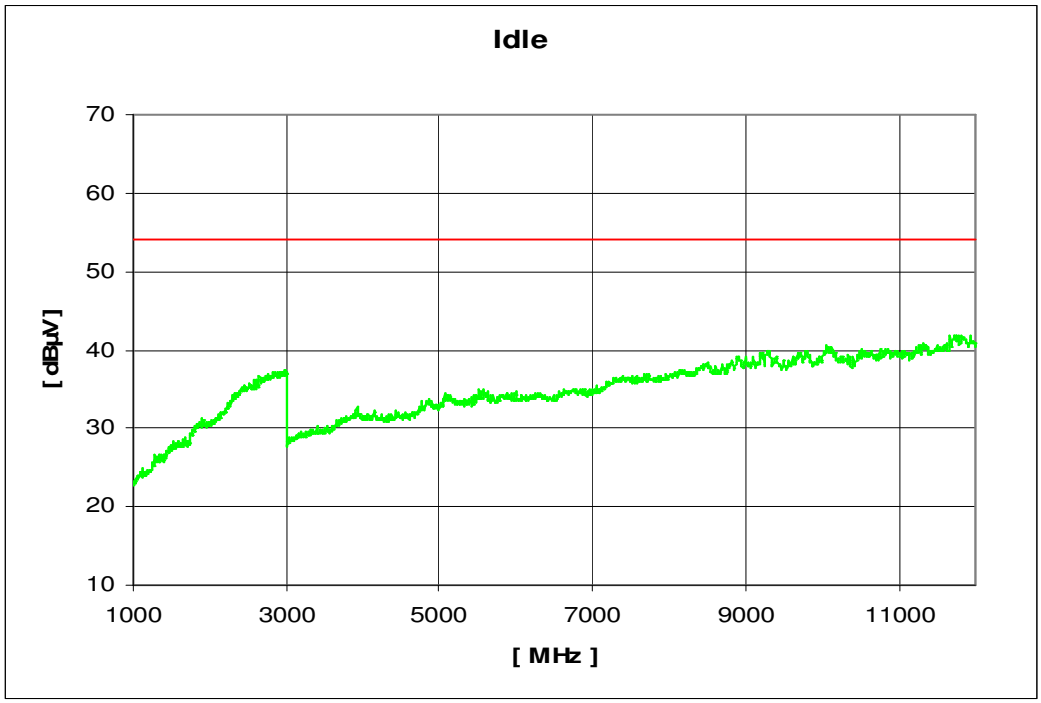
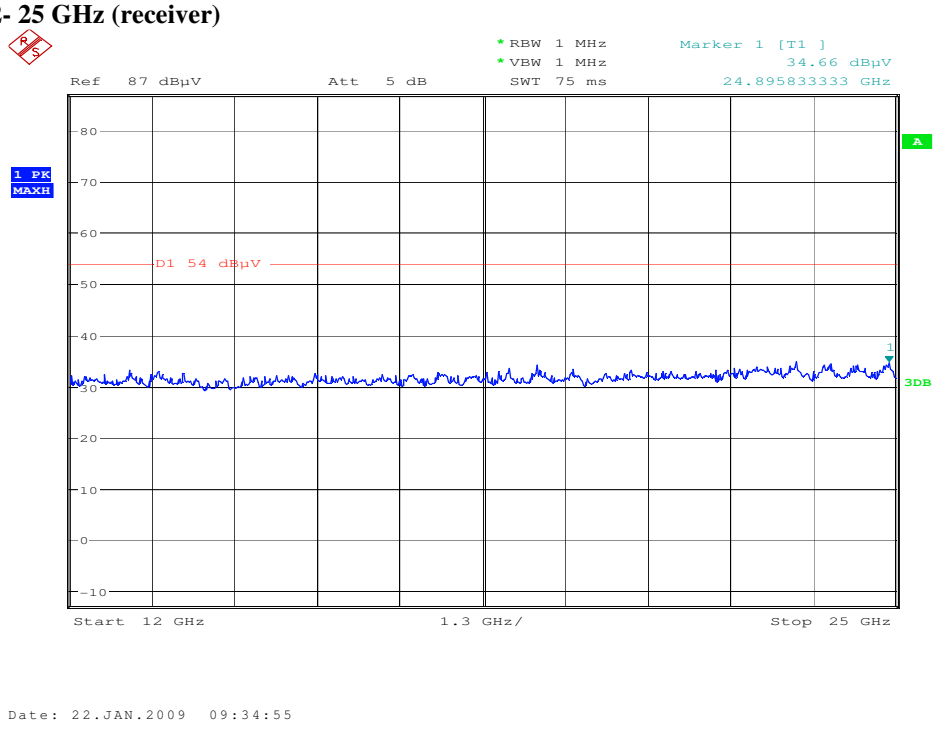
Plot 2: 1 - 12 GHz vertical / horizontal (receiver)



Plot 3: 12- 25 GHz (receiver)



Results:

Spurious Emissisons level [dBµV/m]		
f[MHz]	Detector	Level [dBµV/m]
No peaks found		
Measurement uncertainty	±3 dB	

f < 1 GHz : RBW/VBW: 100 kHz f ≥ 1GHz : RBW/VBW: 1 MHz
See above plots

Measurement distance see table

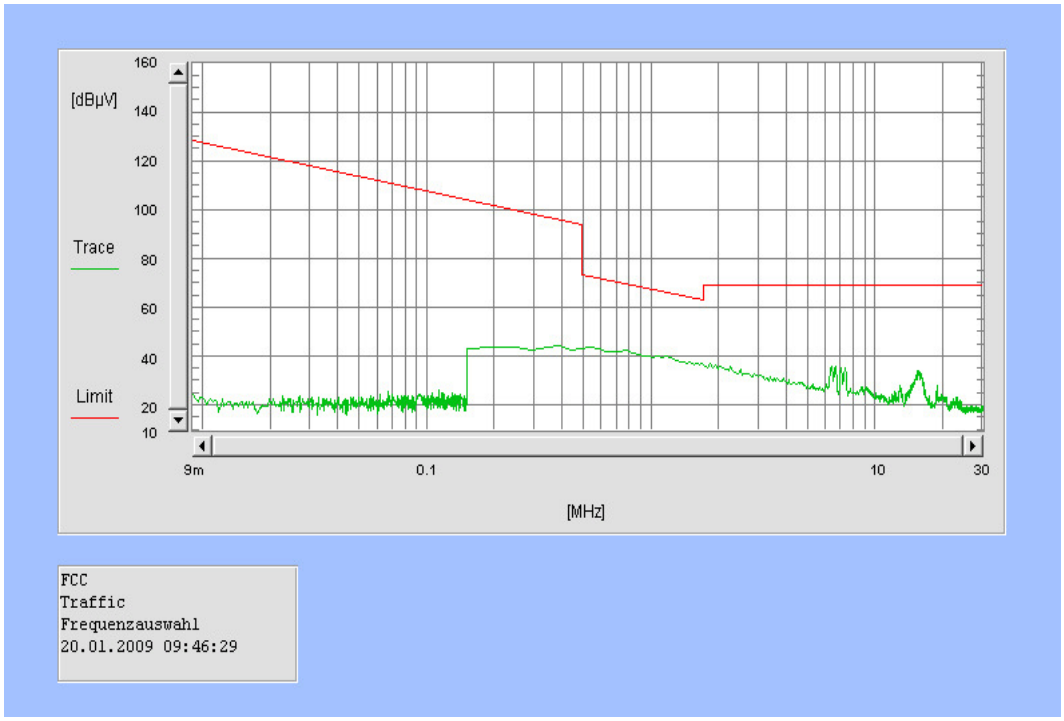
Limits: § 15.109

Frequency (MHz)	Field strength (dBµV/m)	Measurement distance (m)
30 - 88	30.0	10
88 - 216	33.5	10
216 - 960	36.0	10
above 960	54.0	3

5.15 Spurious Emissions - radiated <30 MHz §15.209

Measured at 3 m distance.
Values recalculated with 40 dB/decade according to FCC rules.

Plot 1:



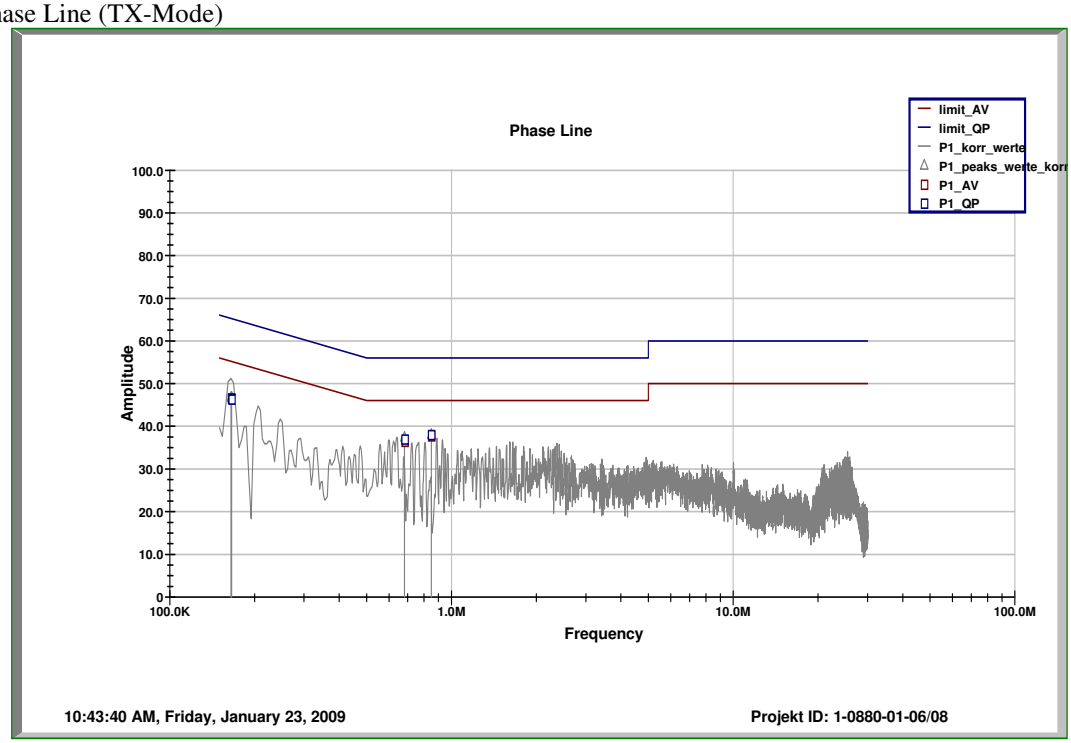
Limits:

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dBµV/m	30
30 - 88	100 / 40 dBµV/m	3
88 - 216	150 / 43.5 dBµV/m	3
216 - 960	200 / 46 dBµV/m	3
above 960	54 dBµV/m	3

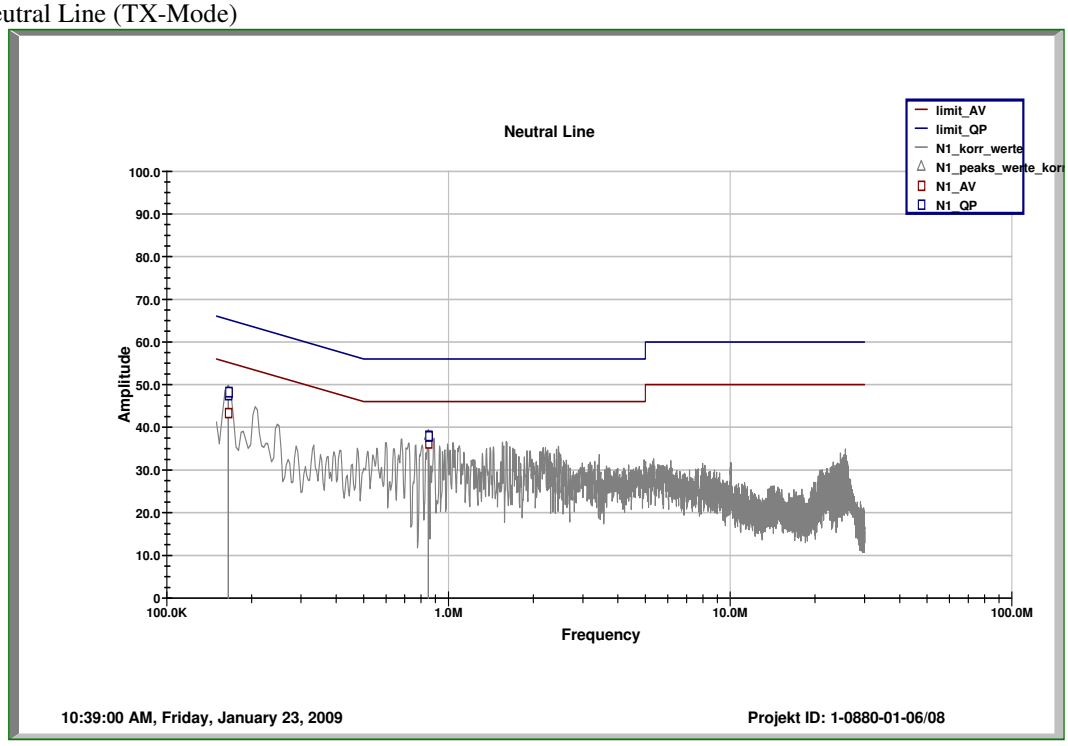
5.16 Conducted Emissions <30 MHz §15.107/207

CISPR 22

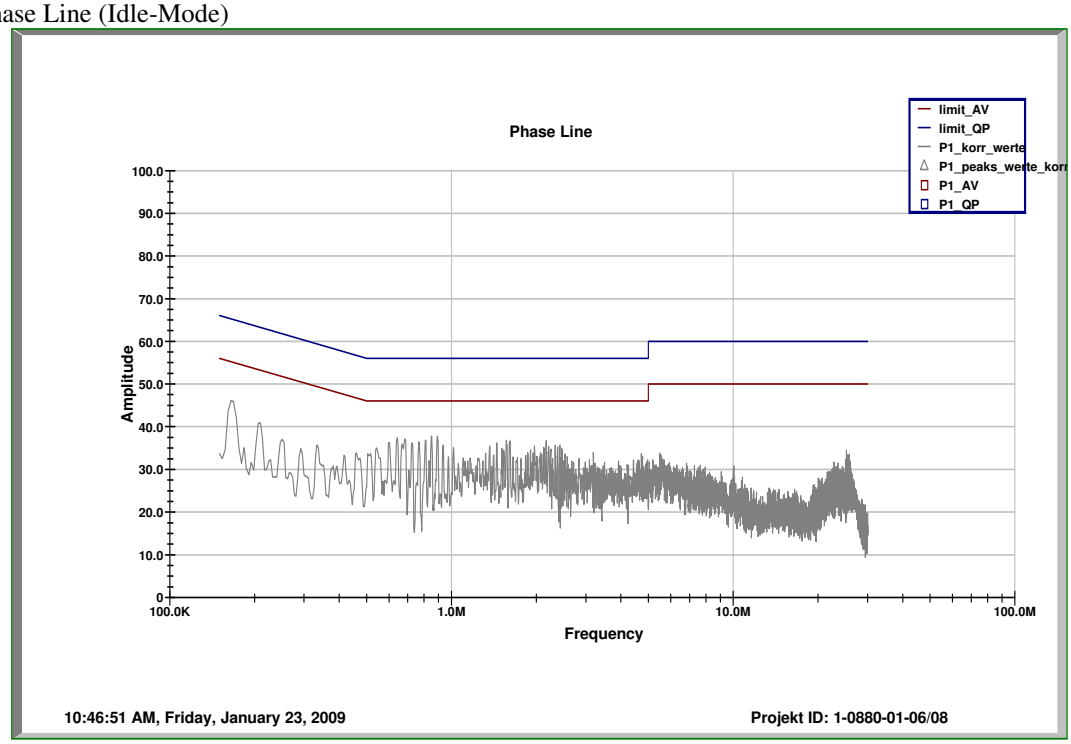
Plot 1: Phase Line (TX-Mode)



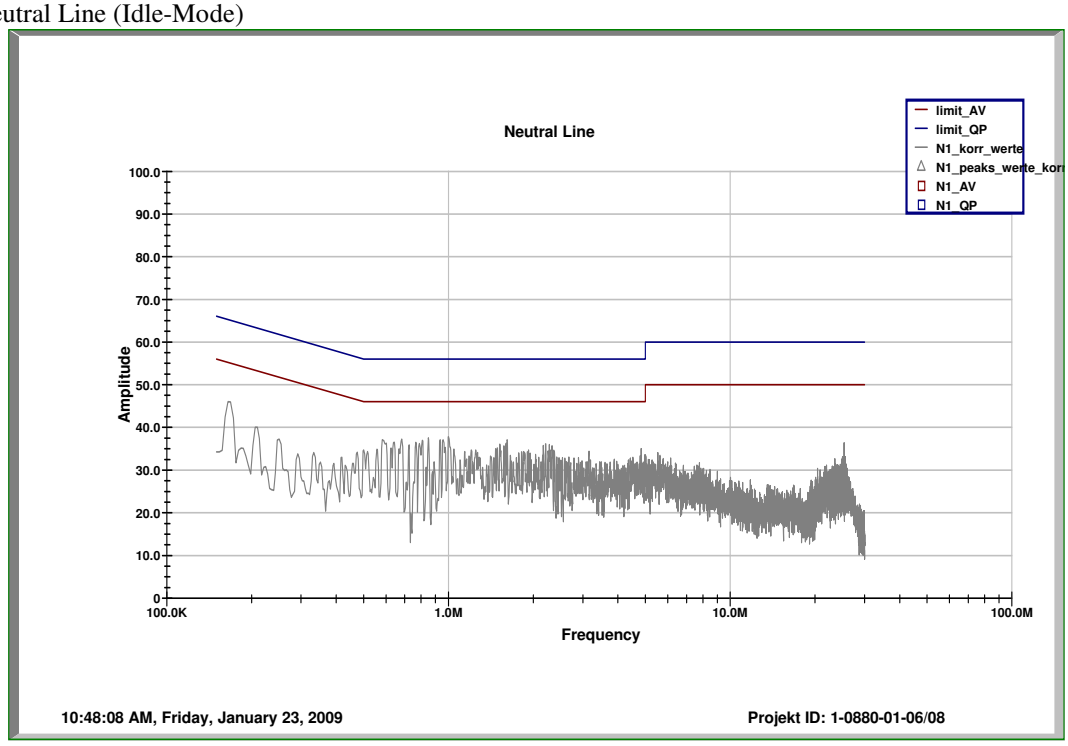
Plot 2: Neutral Line (TX-Mode)



Plot 3: Phase Line (Idle-Mode)



Plot 4: Neutral Line (Idle-Mode)



We measured in TX and RX mode, L1 and N floating and grounded, max value was hold.

Limits:

Under normal test conditions only	See plots

6 Test equipment and ancillaries used for tests

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

All reported calibration intervals are calibrations according to the EN/ISO/IEC 17025 standard. These calibrations were performed from an accredited external calibration laboratory.
Additional to these calibrations the laboratory performed comparison measurements with other calibrated systems and performed a weekly chamber inspection.
All used devices are connected with a 10 MHz external reference.
According to the manufacturers' instruction is it possible to establish a calibration interval for the FSP unit of 24 month, if the device has an external 10 MHz reference.

Anechoic chamber C:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Anechoic chamber	MWB	87400/02	300000996	Monthly verification		
2	System-Rack 85900	HP I.V.	*	300000222	n.a.		
3	Measurement System 1						
4	Spektrum Analyzer 8566B	HP	3138A07614	300001207	13.12.2007	24	13.12.2009
5	Spektrum Analyzer Display 85662A	HP	3144A28627	300001208	13.12.2007	24	13.12.2009
6	Quasi-Peak-Adapter 85650A	HP	2811A01204	300002308	13.12.2007	24	13.12.2009
7	RF-Preselector 85685A	HP	2837A00778	300002448	13.12.2007	24	13.12.2009
8	PC Vectra VL	HP		300001688	n.a.		
9	Software EMI	HP		300000983	n.a.		
10	Measurement System 2						
11	FSP 30	R&S	100886	300003575	25.08.2008	24	25.08.2010
12	PC	F+W			n.a.		
13	TILE	TILE			n.a.		
14	Biconical antenna	EMCO	S/N: 860 942/003		Monthly verification (System cal.)		
15	Log. Period. Antenna 3146	EMCO	2130	300001603	Monthly verification (System cal.)		
16	Double Ridged Antenna HP 3115P	EMCO	3088	300001032	Monthly verification (System cal.)		
17	Active Loop Antenna 6502	EMCO	2210	300001015	Monthly verification (System cal.)		
18	Power Supply 6032A	HP	2818A03450	300001040	12.05.2007	36	12.05.2010
19	Busisolator	Kontron		300001056	n.a.		
20	Leitungsteiler 11850C	HP		300000997	Monthly verification (System cal.)		
21	Power attenuator 8325	Byrd	1530	300001595	Monthly verification (System cal.)		
22	Band reject filter WRCG1855/1910	Wainwright	7	300003350	Monthly verification (System cal.)		
23	Band reject filter WRCG2400/2483	Wainwright	11	300003351	Monthly verification (System cal.)		

Anechoic chamber A:

No.	Instrument/Ancillary	Manufacturer	Type	Serial-No.	Internal identification
	Radiated emission in chamber A				
A-1	Spectrum Analyzer	Rohde & Schwarz	ESU26	100037	300003555
A-2	Signal Generator	Rohde & Schwarz	SMR20B11	1104.0002.20	300003593
A-3	RF System Panel	Rohde & Schwarz	TS RSP	---	300003556
A-4	Relais Matrix	Rohde & Schwarz	PSN	860673/009	300001385
A-5	Horn Antenna	EMCO	3115	9709-5290	300000212
A-6	Bilog.-Log. Antenna	Schwarzbeck	VULB 9163	02/00	300003696
A-7	Notch Filter GSM 900	Wainwright	WRCD 901.9/903.1EE	9	---
A-8	Notch Filter GSM 1800	Wainwright	WRCD 1747/1748-5EE	1	---
A-9	Notch Filter GSM 1900	Wainwright	WRCB 1879.5/1880.5EE	9	---
A-10	Notch Filter GSM 850	Wainwright	WRCT 837-0.2/50-8EE	1	---
A-11	Notch Filter UMTS	Wainwright	WRCD 1800/2000-0.2/40-5EEK	2	---
A-12	Notch Filter ISM 2400	Wainwright	WRCG 2400/ 2483-2375/ 2505-50/10SS	26	---
A-13	High Pass Filter 1.1 GHz	Wainwright	WHK 1.1/15G-10SS	---	---
A-14	High Pass Filter 2.6 GHz	Wainwright	WHKX 2.6/18G-12SS	---	---
A-15	High Pass Filter 7 GHz	Wainwright	WHKX 7.0/18G-8SS	---	---
A-14	Amplifier	Miteq	AFS4-00201800-15-10P-6	US42-0050 2650-28-5A	300003204
A-16	Controller	Inn co	CO 2000	2020507	---
A-17	DC Power Supply	Hewlet Packard	HP6632A	---	300000924
A-18	Computer	F+W	---	---	300003303

System Rack Room 005 :

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	FSP 30	R&S	100886	300003575	25.08.2008	24	25.08.2010
2	CBT	R&S	100313	300003516	03.09.2008	24	03.09.2010
3	Switch Matrix	HP		300000929	n.a.		
4	Power Supply	HP	3041A00544	300002270	13.05.2007	36	13.05.2010
5	Signal Generator	R&S	836206/0092	300002680	30.05.2007	36	30.05.2010

Signalling Units:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	CBT	R&S	100313	300003516	03.09.2008	24	03.09.2010
2	CBT	R&S	100185	300003416	27.08.2008	24	27.08.2010
3	CMU-200	R&S	103992	300003231	04.06.2008	12	04.06.2009
4	CMU-200	R&S	106240	300003321	27.08.2008	24	27.08.2010
5	CMU-200	R&S	832221/0055	300002862	20.03.2008	24	20.03.2010

Climatic Box:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Climatic box VT 4002	Heraeus Vötsch	58566046820010	300003019	11.05.2007	24	11.05.2009
2	Climatic box CTS T-40/50	CTS	064023	300003540	03.01.2007	24	03.01.2009

SRD Laboratory Room 002:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	System Controller PSM 12	R&S	835259/007	3000002681-00xx	n.a.		
2	Memory Extension PSM-K10	R&S	To 1	3000002681	n.a.		
3	Operating Software PSM-B2	R&S	To 1	3000002681	n.a.		
4	19'' Monitor		22759020-ED	3000002681	n.a.		
5	Mouse		LZE 0095/6639	3000002681	n.a.		
6	Keyboard		G00013834L461	3000002681	n.a.		
7	Spectrum Analyser FSIQ 26	R&S	835540/018	3000002681-0005	10.01.2008	24	10.01.2010
8	Tracking Generator FSIQ-B10	R&S	835107/015	3000002681	s.No.7		
10	RF-Generator SMIQ03 (B1 Signal)	R&S	835541/056	3000002681-0002	26.08.2008	36	26.08.2011
11	Modulation Coder SMIQ-B20	R&S	To 10	3000002681	s.No.10		
12	Data Generator SMIQ-B11	R&S	To 10	3000002681	s.No.10		
13	RF Rear Connection SMIQ-B19	R&S	To 10	3000002681	s.No.10		
14	Broadband horn antenna (1-18 GHz)	EMCO	9107-3696	300001604	16.04.2008	24	16.04.2010
15	Broadband horn antenna (1-18 GHz)	EMCO	9107-3697	300001605	21.08.2008	24	21.08.2010
16	Std gain horn antenna (18-26.5 GHz)	Narda	Model no. 638	3000000486	n.a.		
17	Std gain horn antenna (18-26.5 GHz)	Narda	Model no. 638	3000000487	n.a.		
18	Sleeve dipole antenna Model 3126-880	ETS-Lindgren	00040887	3000000	n.a.		
19	Fast CPU SM-B50	R&S	To 10	3000002681	s.No.10		
20	FM Modulator SM-B5	R&S	835676/033	3000002681	s.No.10		
21	RF-Generator SMIQ03 (B2 Signal)	R&S	835541/055	3000002681-0001	25.08.2008	36	25.08.2011
22	Modulation Coder SMIQ-B20	R&S	To 16	3000002681	s.No.16		
23	Data Generator SMIQ-B11	R&S	To 16	3000002681	s.No.16		
24	RF Rear Connection SMIQ-B19	R&S	To 16	3000002681	s.No.16		
25	Fast CPU SM-B50	R&S	To 16	3000002681	s.No.16		
26	FM Modulator SM-B5	R&S	836061/022	3000002681	s.No.16		
27	RF-Generator SMP03 (B3 Signal)	R&S	835133/011	3000002681-0003	26.08.2008	36	26.08.2011
28	Attenuator SMP-B15	R&S	835136/014	3000002681	S.No.22		
29	RF Rear Connection SMP-B19	R&S	834745/007	3000002681	S.No.22		
30	Power Meter NRVD	R&S	835430/044	3000002681-0004	26.08.2008	24	26.08.2010
31	Power Sensor NRVD-Z1	R&S	833894/012	3000002681-0013	26.08.2008	24	26.08.2010
32	Power Sensor NRVD-Z1	R&S	833894/011	3000002681-0010	26.08.2008	24	26.08.2010
33	Rubidium Standard RUB	R&S		3000002681-0009	27.08.2008	24	27.08.2010
34	Switching and Signal Conditioning Unit SSCU	R&S	338864/003	3000002681-0006	Verified with path compensation		
35	Laser Printer HP Deskjet 2100	HP	N/A	3000002681-0011	n.a.		
36	19'' Rack	R&S	11138363000004	3000002681	n.a.		
37	RF-cable set	R&S	N/A	3000002681	n.a.		
39	IEEE-cables	R&S	N/A	3000002681	n.a.		
40	Sampling System FSIQ-B70	R&S	835355/009	3000002681	s.No.7		
41	RSP programmable attenuator	R&S	834500/010	3000002681-0007	26.08.2008	24	26.08.2010
42	Signalling Unit	R&S	838312/011	3000002681	n.a.		
43	NGPE programmable Power Supply for EUT	R&S	192.033.41	3000002681			
44	Power Splitter 6005-3	Inmet Corp.	none	300002841	23.12.2006	24	23.12.2008
45	SMA Cables SPS-1151-985-SPS	Insulated Wire	different	different	n.a.		
46	CBT32 with EDR Signaling Unit	R&S					

47	Coupling unit	Narda	N/A	--	n.a.		
48	2xSwitch Matrix PSU	R&S	872584/021	300001329	n.a.		
49	RF-cable set	R&S	N/A	different	n.a.		
50	IEEE-cables	R&S	N/A	--	n.a.		

Note: 3000002681-00xx inventoried as a system

SRD Laboratory Room 005:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Spektrum Analyzer 8566B	HP	2747A05275	300000219	18.01.2008	24	18.01.2010
2	Spektrum Analyzer Display 85662A	HP	2816A16497	300001690	23.01.2008	24	23.01.2010
3	Quasi-Peak-Adapter 85650A	HP	2811A01135	300000216	23.01.2008	24	23.01.2010
4	Power Supply	Heiden	003202	300001187	12.05.2007	36	12.05.2010
5	Power Supply	Heiden	1701	300001392	12.05.2007	36	12.05.2010

SRD Laboratory Room 011:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	NRP Power Meter	R&S	100212	300003780	27.02.2008	24	27.02.2010

Anechoic chamber F:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Control Computer	F+W	FW0502032	300003303	-/-	-/-	-/-
2	Trilog Antenna	9163-295	-/-	-/-	30.04.2008	24	30.04.2010
3	Amplifier - 0518C-138	Veritech Micro-wave Inc.	-/-	-/-	-/-	-/-	-/-
4	Switch - 3488A	HP		300000368	-/-	-/-	-/-
5	EMI Test receiver - ESCI	R&S	100083	300003312	31.01.2007	24	31.01.2009
6	Turntable Controller - 1061 3M	EMCO	1218	300000661	-/-	-/-	-/-
7	Tower Controller 1051 Controller	EMCO	1262	300000625	-/-	-/-	-/-
8	Tower - 1051	EMCO	1262	300000625	-/-	-/-	-/-
10	Ultra Notch-Filter Rejected band Ch. 62	WRCD	9	-/-	-/-	-/-	-/-

C.BER Bluetooth Rack Room AC2:

No	Equipment/Type	Manuf.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	System Controller with XP Prof. & C.BER Control Software	F&W	300003580	na		
2	GPIB to USB Converter	Agilent	300003426	na		
3	Spectrum Analyser FSIQ26	R&S	300002681-005	10.01.2008	24	10.01.2010
	Sampling System FSIQ-B70	R&S	300002681-005	s.No.3		
	Tracking Generator FSIQ-B10 for FSIQ26	R&S	300002681-005	s.No.3		
4	RF-Generator SMIQ03 (Interferer Signal)	R&S	300002681-001	25.08.2008	36	25.08.2011
	Modulation Coder SMIQ-B20	R&S	300002681-001	s.No.4		
	Data Generator SMIQ-B11	R&S	300002681-001	s.No.4		
	RF Rear Connection SMIQ-B19	R&S	300002681-001	s.No.4		
	Fast CPU SM-B50	R&S	300002681-001	s.No.4		
	FM Modulator SM-B5	R&S	300002681-001	s.No.4		
5	Rubidium Standard RUB	R&S	300002681-009	27.08.2008	24	27.08.2010
6	Switching Unit 3488A including 2 44476A cards	HP	300000926	Verified with path compensation		
	44472A VHF switch	HP	300000926	Verified with path compensation		
7	Signalling Unit: CBT with EDR	R&S	300003416	27.08.2008	24	27.08.2010
8	RF-cable set	different	no	Verified with path compensation		
9	IEEE-cables	R&S	no	na		
10	NGPE programmable Power Supply for EUT	R&S	400000078	27.08.2008	24	27.08.2010
11	Coupling Unit 4324-2	Narda	no	Verified with path compensation		
12	Climatic Chamber VT4002	Voetch	300003019	11.05.2007	24	11.05.2009
13	6 dB Attenuator 1W	Narda	no	Verified with path compensation		
14	DCBlocker 30 MHz to 12.75 GHz 1W	Narda	no	Verified with path compensation		

OTA chamber:

No	Equipment	Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Splitter	15542	Mini Circuits	15542	400000086	Verified with path compensation		
2	Splitter	42000	Anaren	4730	400000085	Verified with path compensation		
3	Cable N-Con. 15m	Aircell 7	Aircell	--	400000087	Verified with path compensation		
4	CTIA-Chamber	AMS 8500	ETS-Lindgren	--	300003327-0000	Verified with chamber and ripple tests		
5	CTIA-Chamber - Positioning Equipment	--	EMCO	--	300003328-0000	na		
6	CTIA-Chamber – Software EMQuest	--	EMCO	--	300003328-0001	na		
7	CTIA-Chamber - Antennas	Double Ridged Horn, Dipoles/Loops	EMCO	--	300003328-0002	na		
8	Power supply 0-50V	6633A	HP Meßtechnik	2851A-01222	300001530	12.5.2007	24	12.05.2009
9	MP5 Five-Beam-Laser	MP5	CST/berger		400000088	na		
10	Mount kit for Laptop	--	EMCO		300003295	na		
15	Antenna for signalling	3102 L Conical log spir	EMCO	40953	300003296	na		
16	Cable SMA-Con. 15m	KK-MF141-15	Huber & Suhner		400000090	Verified with path compensation		
17	Cables	--	Huber & Suhner	different	400000083	Verified with path compensation		
18	Limiting Amplifier	LA 02-801	JCA Tech.	101	300003341	na		
19	Spectrum Analyzer	FSP 30	R&S	100623	300003575	25.08.2008	24	25.08.2010
20	Switch Unit	TS-RSP	R&S	100155	300003281	Verified with path compensation		
21	Step Attenuator 0 ...139.9 dB	RSP	R&S	860712002	400000079	Verified with path compensation		
22	Signalgenerator	SMIQ03B	R&S	836206/0091	300002679	01.06.2007	36	01.06.2010
23	Universal Communication Tester	CMU 200	R&S	106240	300003321	27.08.2008	24	27.08.2010
24	Hygro-Thermometer	-/-, 5-45°C, 20-100%rF	Thies Clima	-/-	400000089	27.04.2007	12	27.04.2008

7 Photographs of the Test Set-up

Photo 1: (radiated)

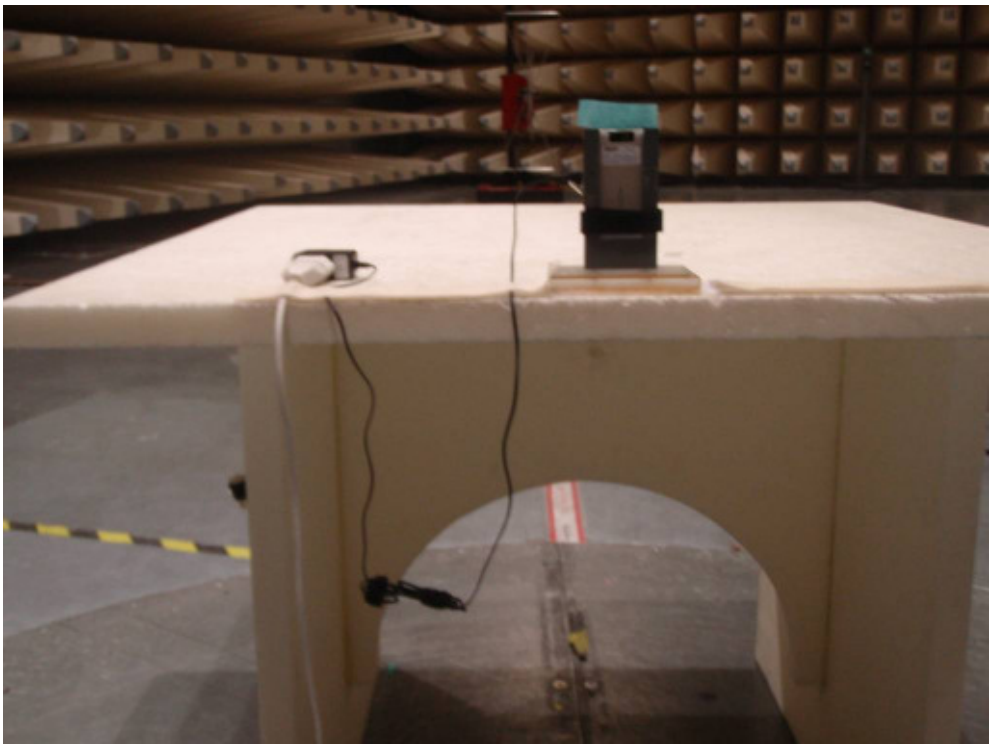


Photo 2: (radiated)

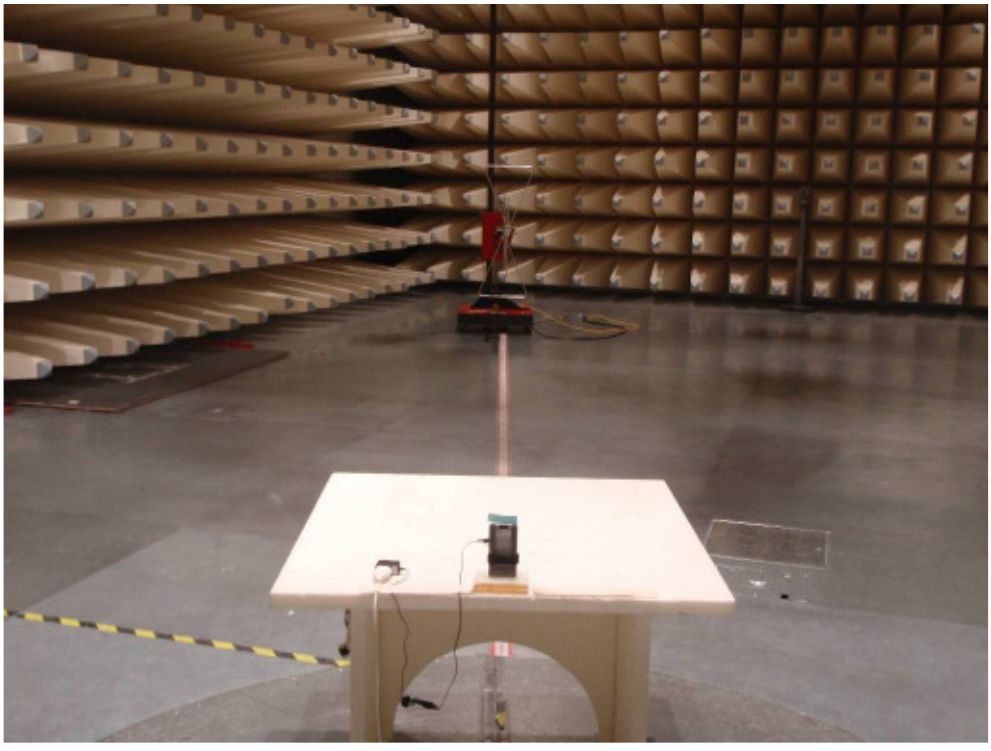
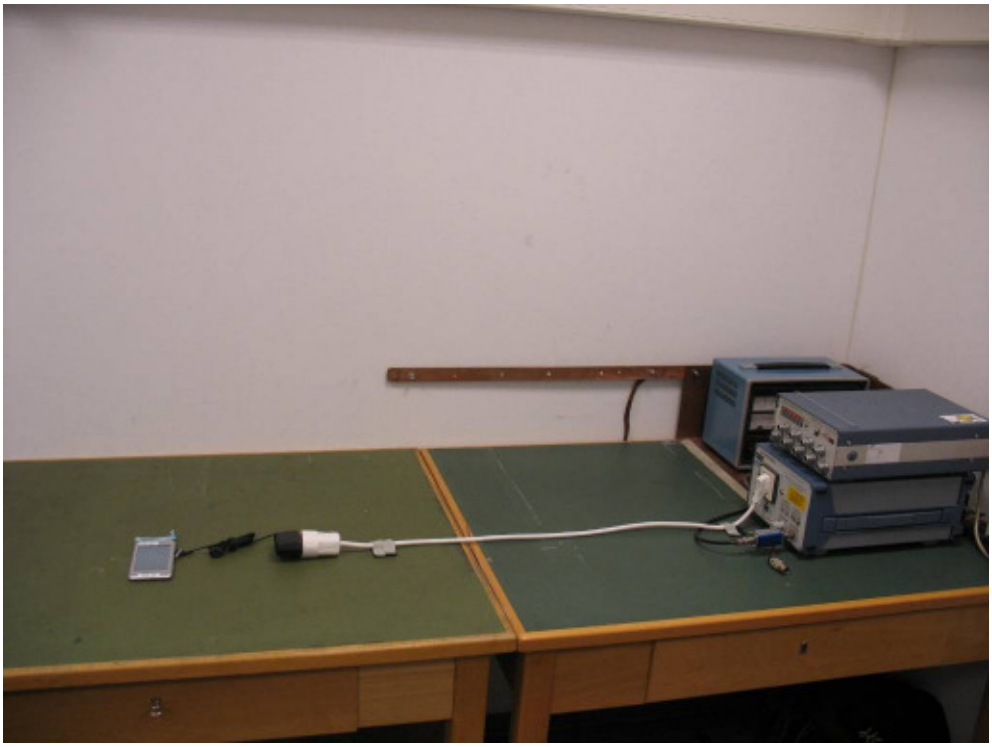


Photo 3: (conducted)



8 Photographs of the EUT

Photo 4: (E01)

Photo 5: (E01)

Photo 6: (E01)

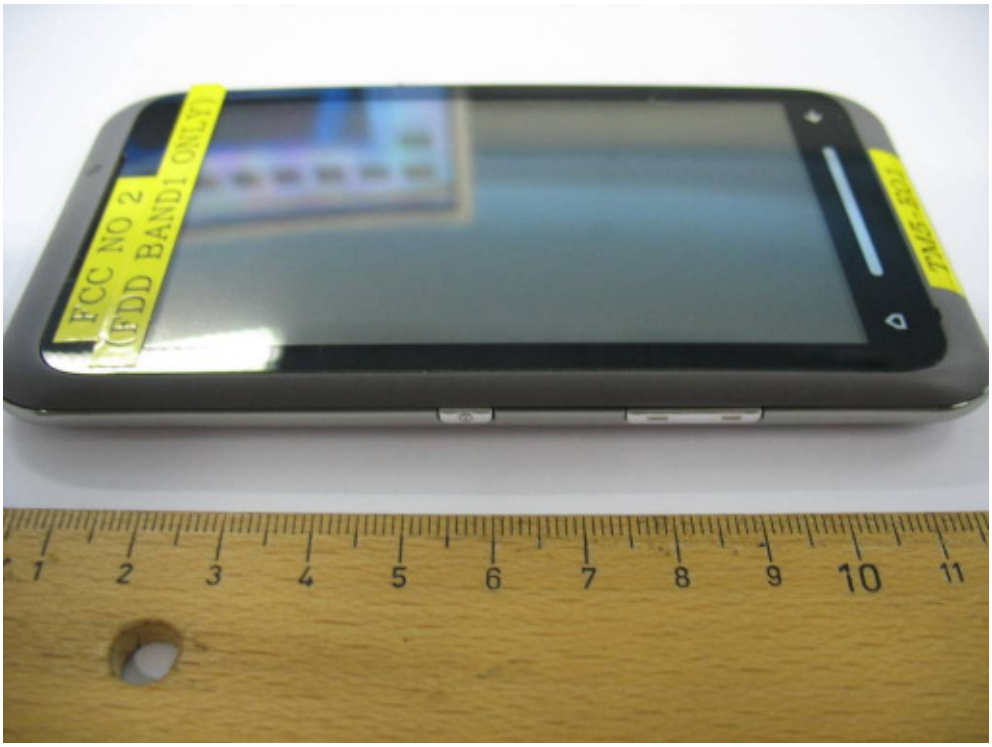


Photo 7: (E01)

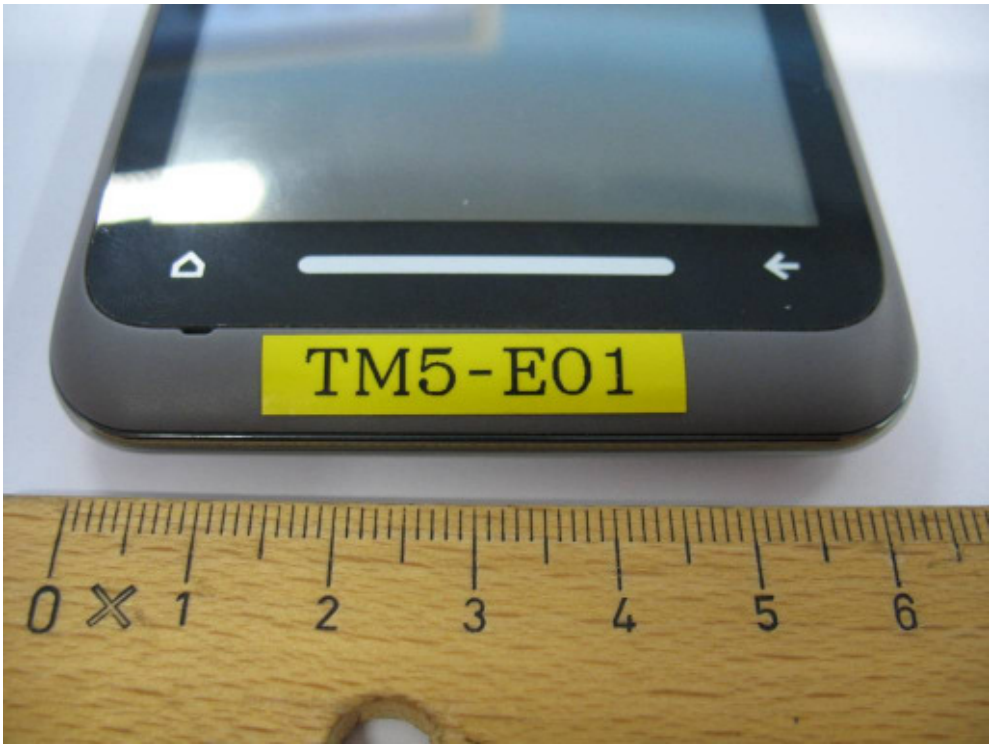


Photo 8: (E01)

Photo 9: (E01)

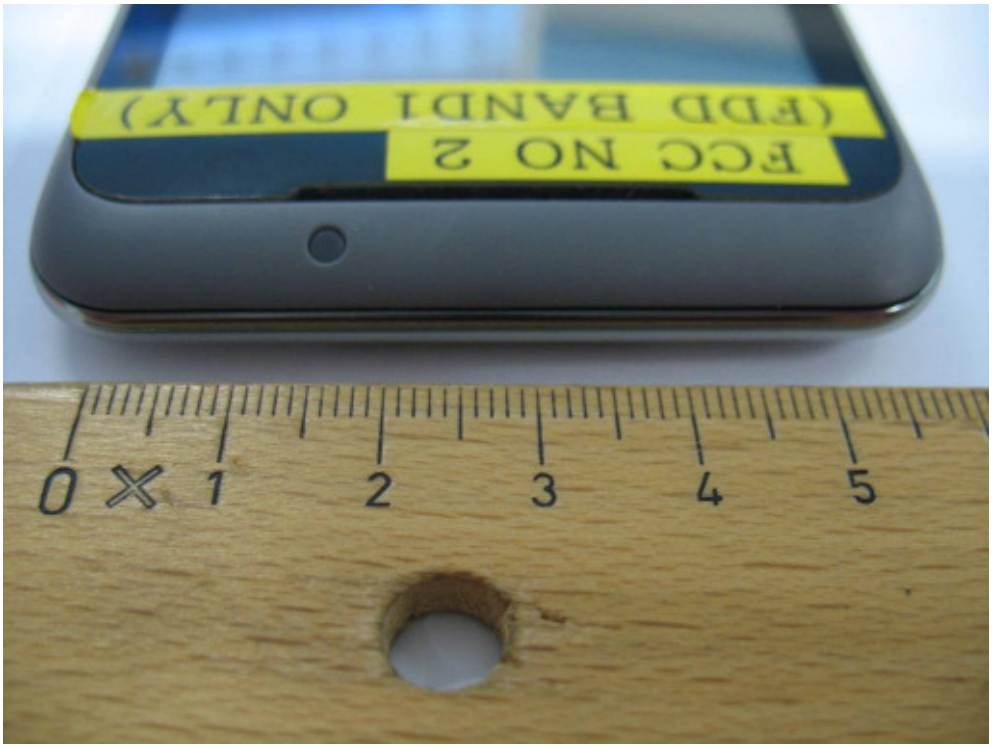


Photo 10: (E01)

Photo 11: (E01)

Photo 12: (E01)

Photo 13: (E01)

Photo 14: (E01)

Photo 15: (E01)

Photo 16: (E01)

Photo 17: (E01)

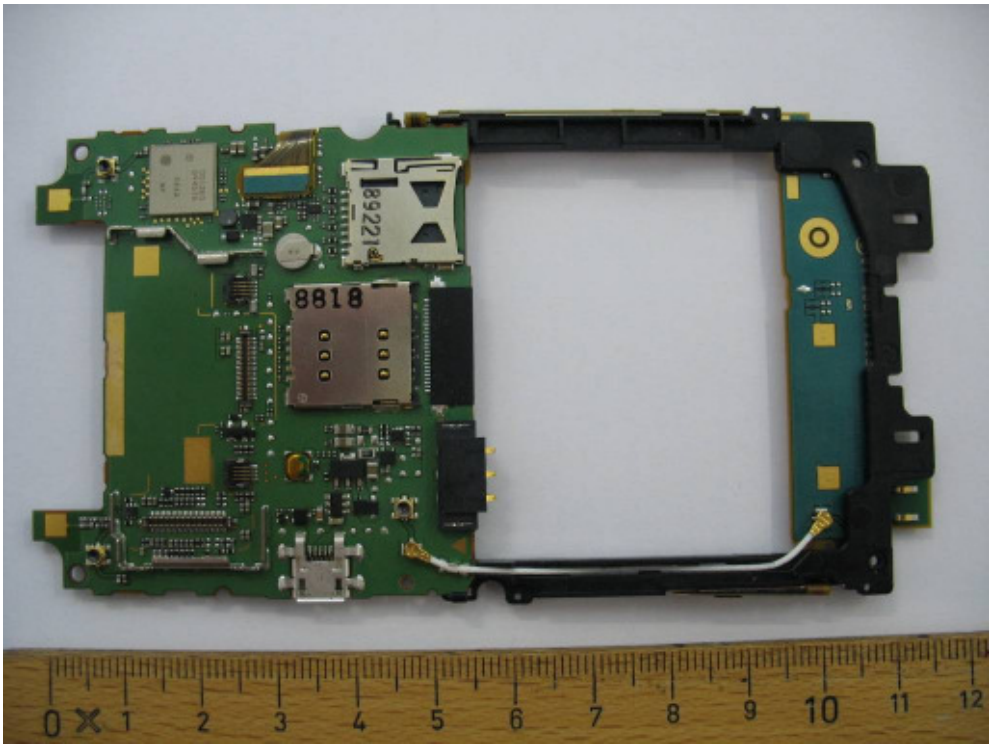


Photo 18: (E01)

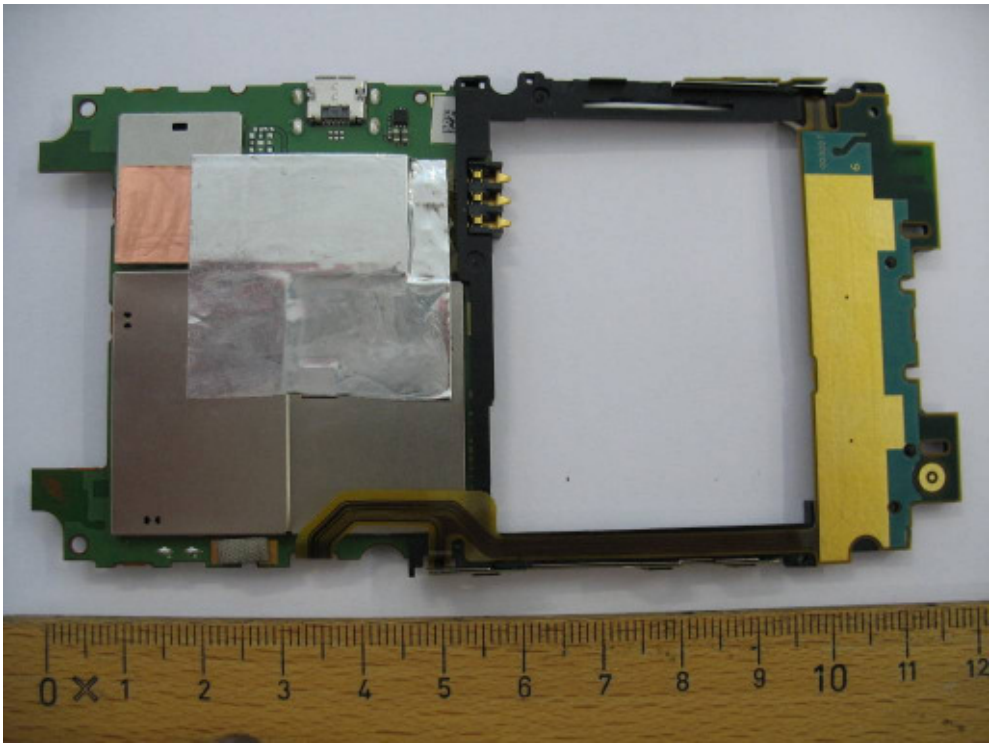


Photo 19: (E01)

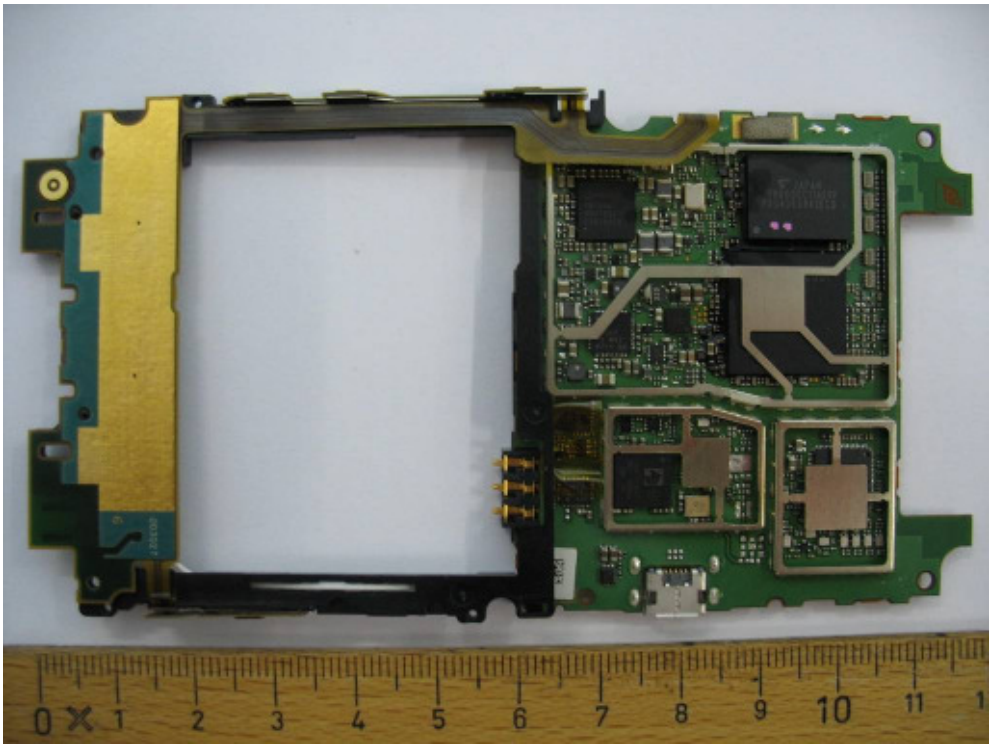


Photo 20: (E01)

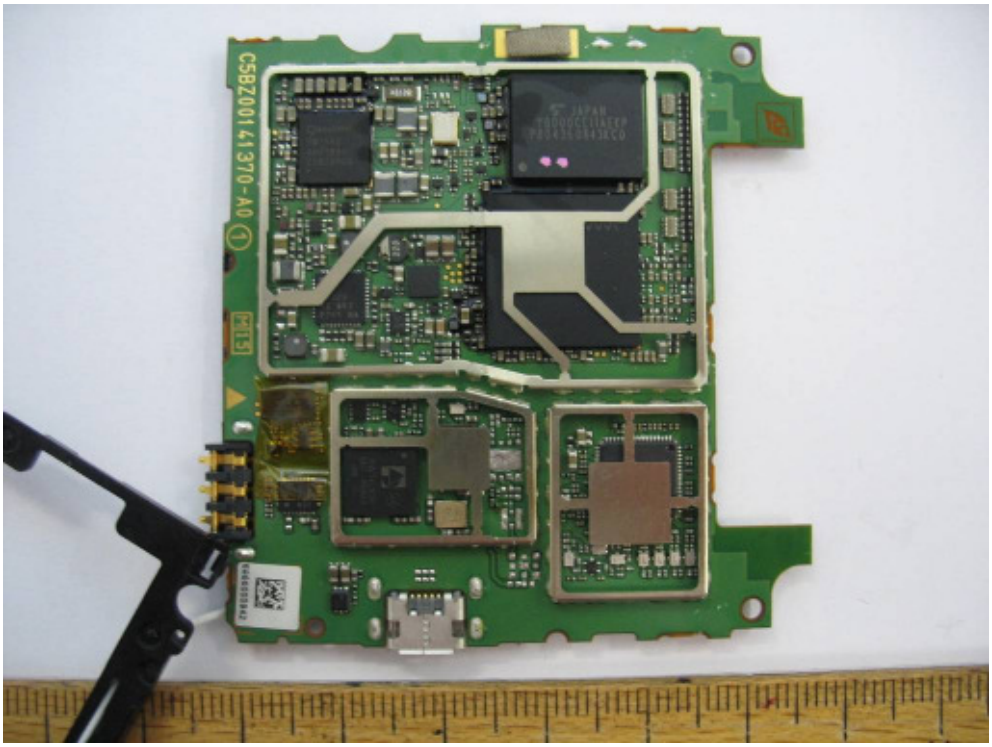


Photo 21: (E01)

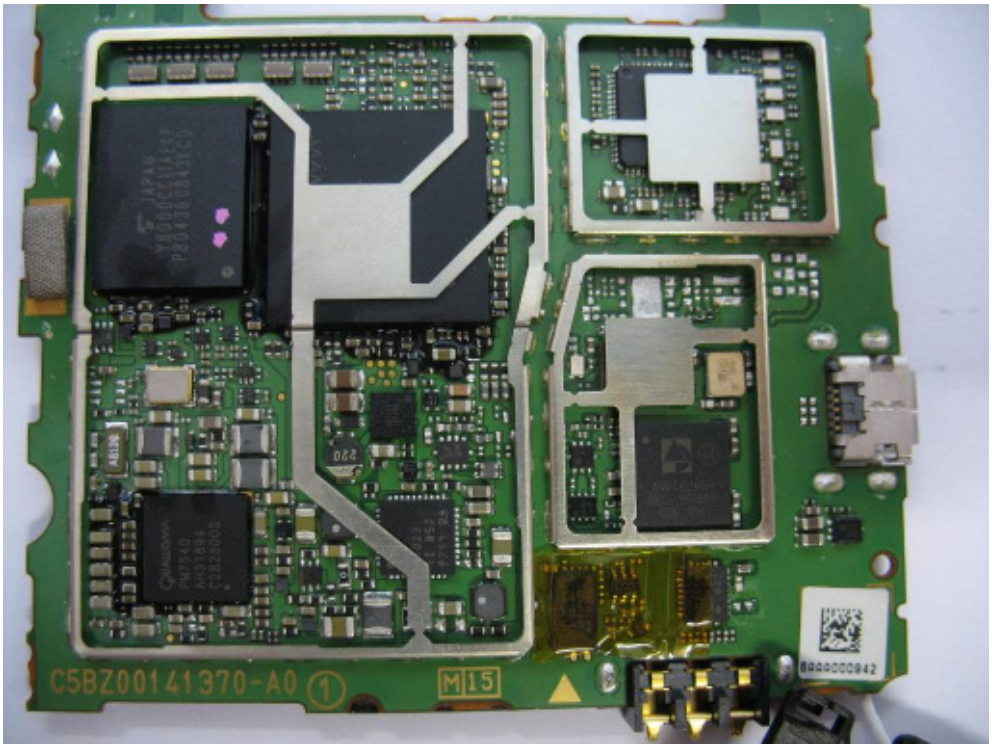


Photo 22: (E01)

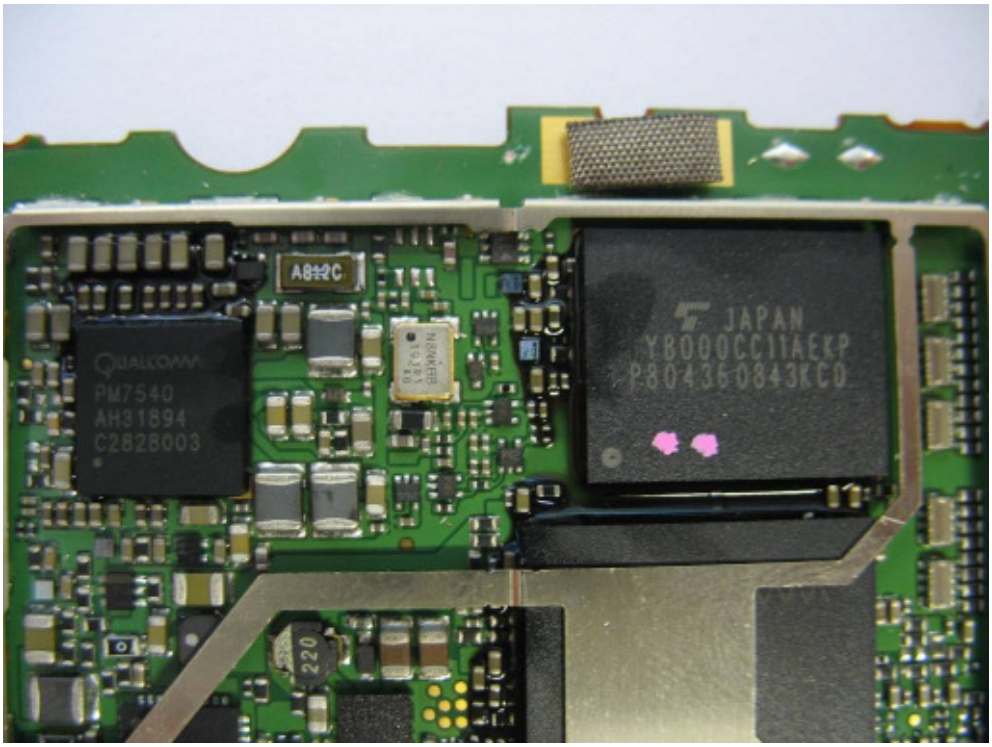


Photo 23: (E01)

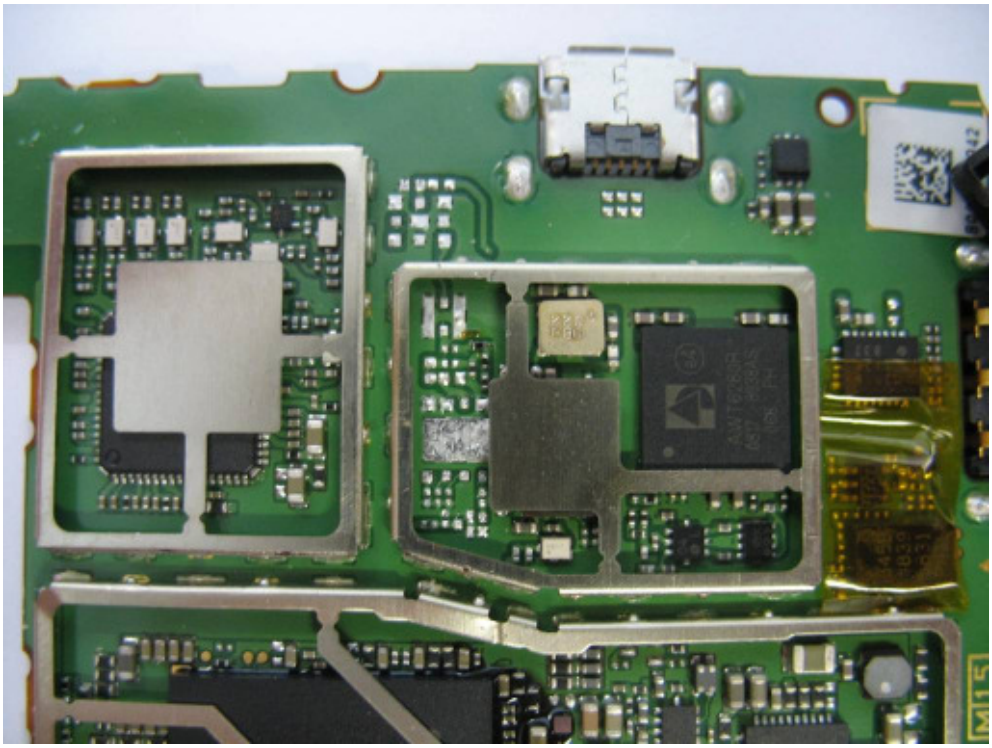


Photo 24:

Photo 25: