Radio Test Report for the qualification of the UMTS 850 iBTS according to FCC Part 22

Document number:	UMT/BTS/DJD/021942
Document issue:	V01.01 / EN
Document status:	Standard
Date:	09/Mar/2007

Printed in France

PUBLICATION HISTORY

09/Mar/2007

Issue 01.01 / EN, Standard

Document creation

A. H. DIMASSI

CONTENTS

1. INTRODUCTION

1.1. OBJECT

This document presents the measurements results of tests performed on Alcatel-Lucent UMTS iBTS according to FCC specifications.

1.2. SCOPE OF THIS DOCUMENT

This document applies to Alcatel-Lucent FDD

UMTS Indoor2 iBTS

UMTS Outdoor2 iBTS

1.3. AUDIENCE FOR THIS DOCUMENT

This document is to be used by any person needing a view on Alcatel FDD UMTS 850 iBTS.

2. RELATED DOCUMENTS

2.1. APPLICABLE DOCUMENTS

[A1]	UMT/BTS/APP/0022	Methodology of UMTS BTS validation under 25.141 specifications
[A2]	UMT/BTS/DD/0017	e-mobility iBTS UMTS product specification V04.05
[A3]	UMT/BTS/DPL/020728	UMTS 850 MHz BTS Project Qualification Plan
[A4]	UMT/BTS/DPL/021353	Radio test plan for the introduction of the UMTS 850MHz Band V

2.2. REFERENCE DOCUMENTS

[R1]	47CFR Part 22	PUBLIC MOBILE SERVICES January 2005
[R2]	47CFR Part 2	FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS January 2005

3. TEST RESULTS

3.1. INTRODUCTION

This document presents the RF tests performed for the qualification of the UMTS 850 iBTS.

UMTS Indoor2 iBTS is feeded with -48V DC as standard configuration.
UMTS Outdoor2 iBTS is feeded with 220V AC split phase.

The following information is submitted to introduce a Certification of the UMTS 850 iBTS for Alcatel-Lucent :

- According to 47CFR Part 22, Subpart C and H
- According to 47CFR Part 2, Subpart J

of the FCC Rules and Regulations. The measurement procedures were in accordance with the requirements of Part 2.947.

3.2. MEASUREMENT RESULTS

Table 1 is a summary of the measurement results performed in this report.

Description & Configuration code		Measurement Specification	Limit Specification	Test	Result
A	UMTS Indoor2 iBTS 45W STSR 1+1	FCC 2.1046	FCC 22.913	Maximum Output Power	Complies
		FCC 2.1049	FCC 22.917	Occupied Bandwidth	Complies
		FCC 2.1055	FCC 22.355	Frequency Error	Complies
B	UMTS Indoor2 iBTS 45W STSR 2	FCC 2.1051	FCC 22.917	Spurious Emission at Antenna Terminals with single carrier and three carriers	Complies
C	UMTS Outdoor2 iBTS 45W STSR 1+1	FCC 2.1046	FCC 22.913	Maximum Output Power	Complies
		FCC 2.1055	FCC 22.355	Frequency Error	Complies
D	UMTS Outdoor2 iBTS 45W STSR 2	FCC 2.1051	FCC 22.917	Spurious Emission at Antenna Terminals with three carriers	Complies

Table 1. Measurement results performed for the qualification of the 850 MHz

Test conditions in all the performed tests (temperature and nominal voltage) remain the same as the maximum output power test. For more details, please refer to the table 2.

3.3. MAXIMUM OUTPUT POWER

3.3.1 FCC REQUIREMENTS

Maximum ERP. In general, the effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts.

3.3.2 TEST RESULTS

The table 2 summarizes the maximum output power test performed according to the iBTS configuration code as described in the section above.

CONFIGURATION CODE	TEST CONDITIONS		Base Station Maximum Output Power (dBm)			Nominal Output Power (dBm)
			Channel B 871.4 MHz	Channel M 881.6 MHz	Channel T 891.6 MHz	
			Sector 1	Sector 2	Sector 3	
A	T_{nom}(25°C)	V_{nom}(-53.6V)	45.71	45.87	45.64	45 ±1.2dB
C	T_{nom}(25°C)	V_{nom}(228.5V)	45.69	46.11	45.97	45 ±1.2dB

Table 2. Measurements result for Maximum output power

The maximum output power test results are a little bit high because of the software configuration (Base Station software version: V04.D2.0_01.16 ; test bench software version: V03D0504).

The installation team should verify the conformity to 47 CFR – Chapter I – Part 22 - §22.913 considering the base station output power, the feeder losses and antenna gain.

3.3.3 TEST PROCEDURE

The equipment was configured as shown in Figure 1. A VSA has been used to perform the maximum output power test.

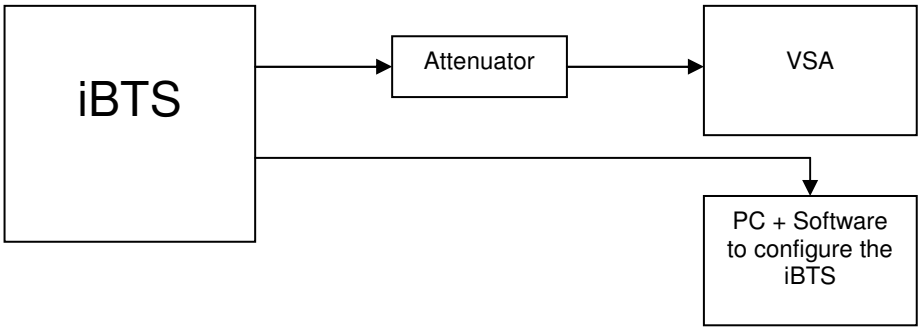


Figure 1. Test configuration to measure RF Output Power

The iBTS was configured to transmit at maximum power with 16 dedicated channels on the single carrier.

3.4. FREQUENCY ERROR

3.4.1 FCC REQUIREMENTS

For the frequency range 821MHz to 896MHz, the carrier frequency of each transmitter in the Public Mobile Services must be maintained lower than 1.5 ppm.

3.4.2 TEST RESULTS

The table 4 summarizes the Frequency Error test performed

CONFIGURATION CODE	OBSERVED CHANNEL	**Frequency Error (Hz)**	
		Channel B 871.4 MHz	Channel T 891.6 MHz
		Sector 1	Sector 3
A	Frequency error	4.22 Hz	5.92 Hz
C	Frequency error	4.23 Hz	3.78 Hz

Table 3. Measurements result for Frequency Error

3.4.3 TEST PROCEDURE

The equipment was configured as shown in Figure 2. A VSA has been used to perform the frequency error test.

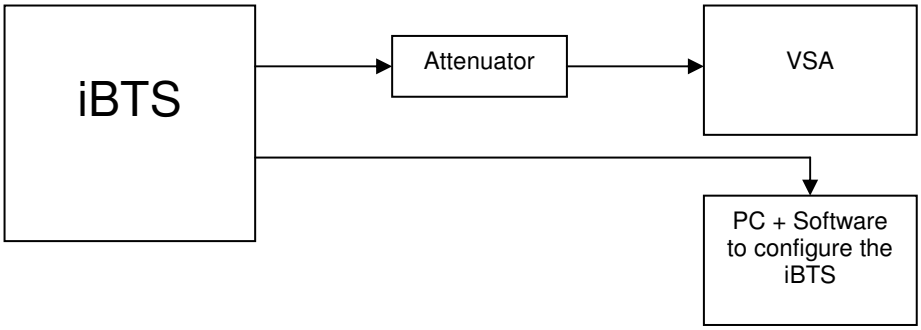


Figure 2. Test configuration to measure Frequency Error

3.5. OCCUPIED BANDWIDTH

3.5.1 FCC REQUIREMENTS

The occupied bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated of at least 26 dB.

3.5.2 TEST RESULTS

The table 4 summarizes the occupied bandwidth test performed in 45W mode (Configuration code A).

OBSERVED CHANNEL	**Occupied bandwidth (MHz)**		
	Channel B 871.4 MHz	Channel M 881.6 MHz	Channel T 891.6 MHz
	Sector 1	Sector 2	Sector 3
Occupied bandwidth	4.65 MHz	4.67 MHz	4.67 MHz

Table 4. Measurements result for Occupied Bandwidth

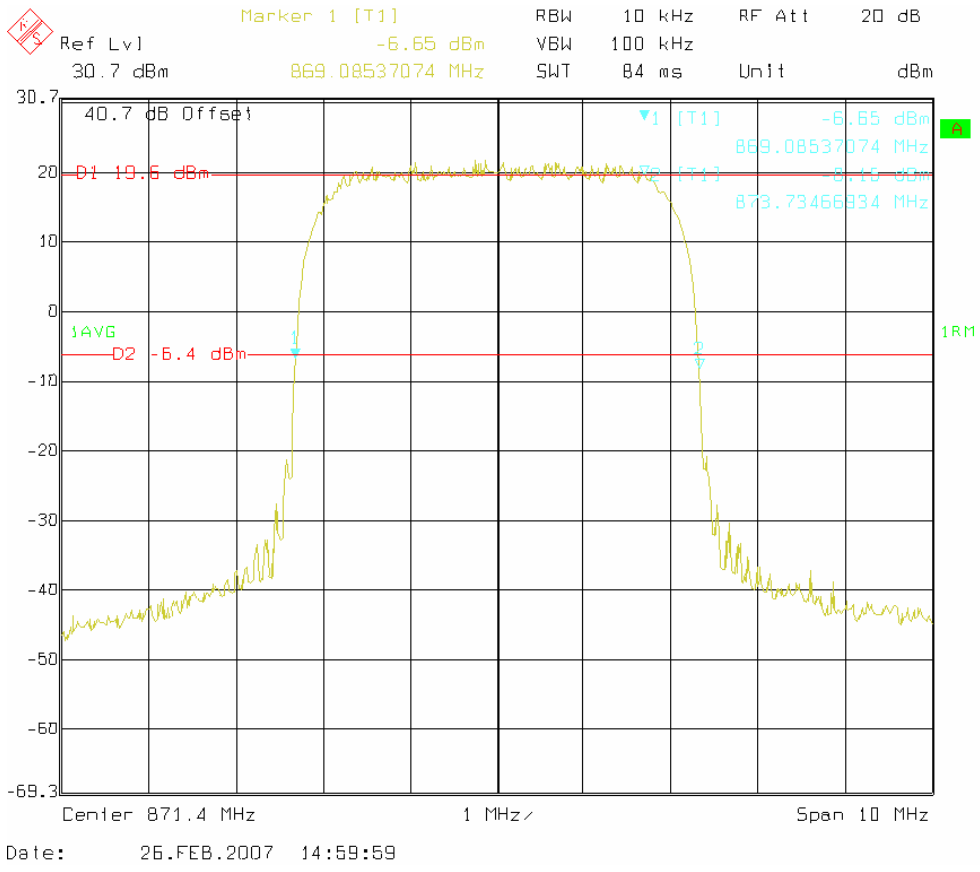


Figure 3. Sample plot for Occupied Bandwidth @ 871.4 MHz

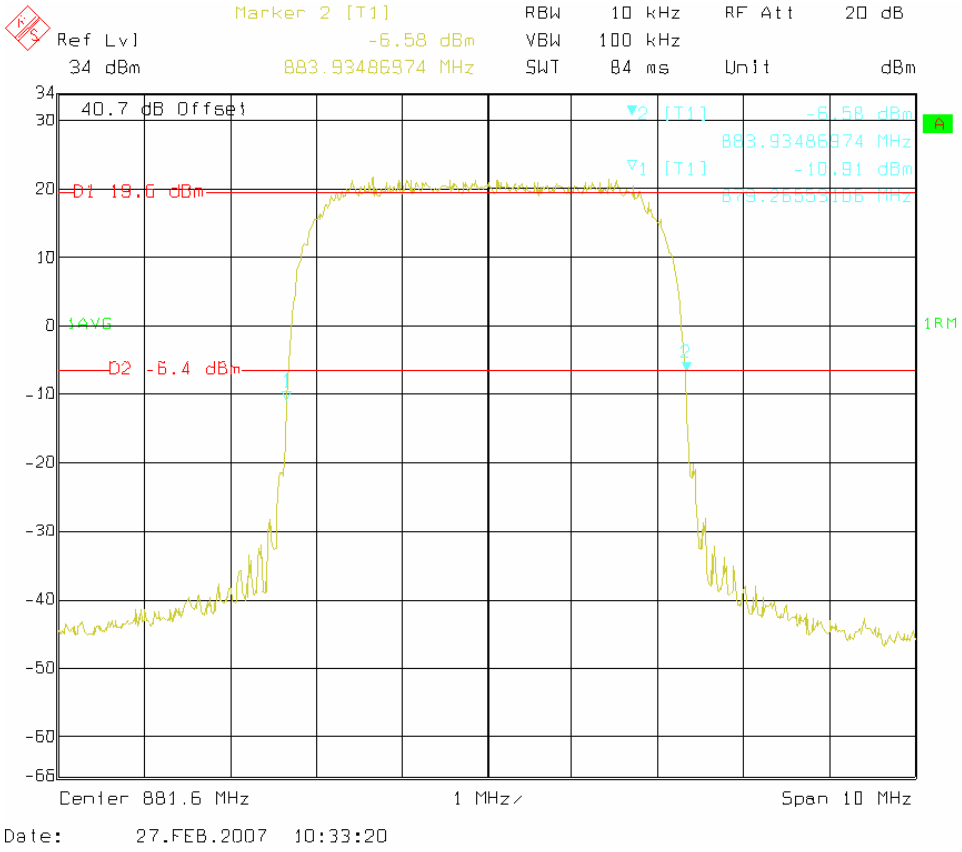


Figure 4. Sample plot for Occupied Bandwidth @ 881.6 MHz

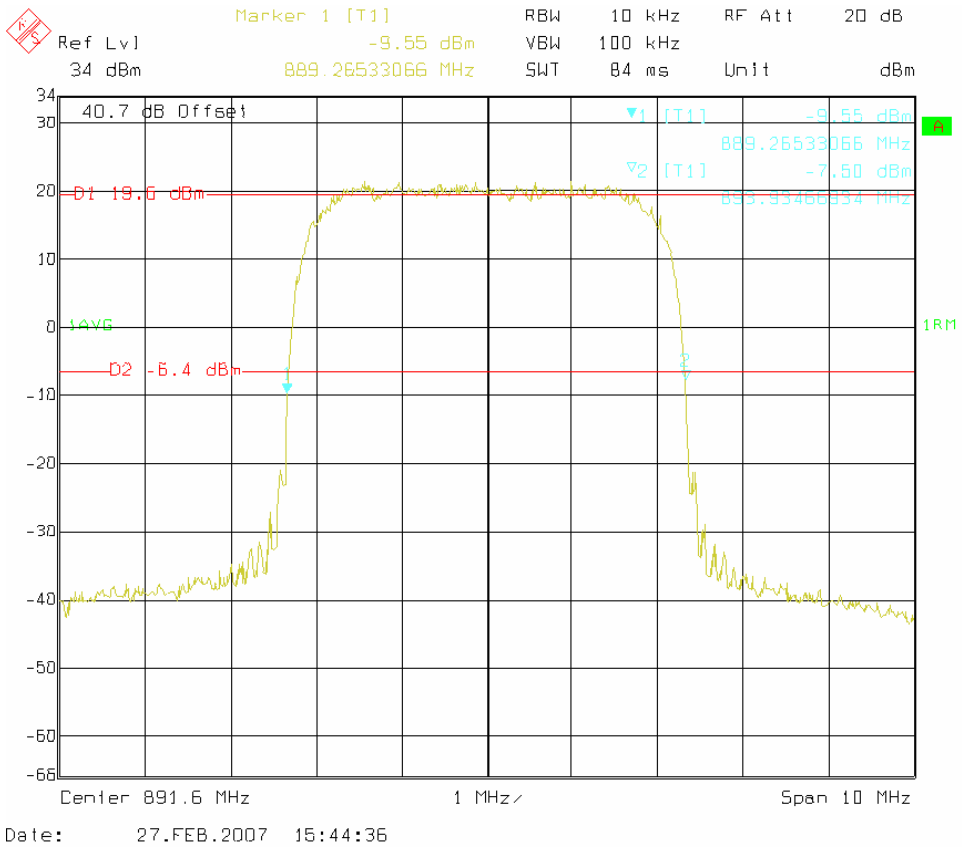


Figure 5. Sample plot for Occupied Bandwidth @ 891.6 MHz

3.5.3 TEST PROCEDURE

The equipment was configured as shown in Figure 6.

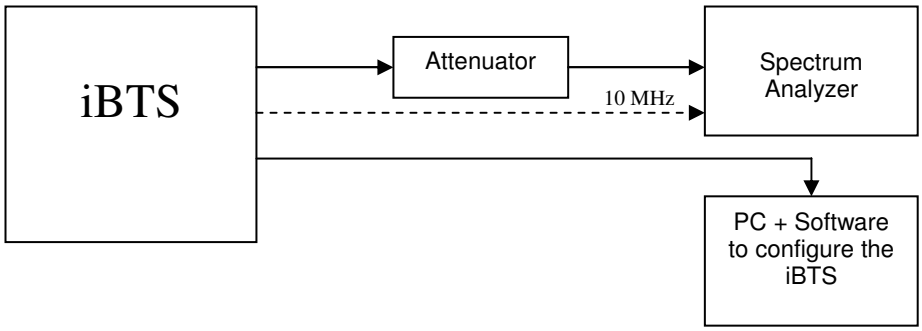


Figure 6. Test configuration for Occupied Bandwidth

The iBTS was configured to transmit at maximum power (45W). Measurements were performed at bottom, middle and top frequency of the transmit channel on each sector.

The spectrum analyzer had the following setting:

Resolution Bandwidth	10 kHz
Video Bandwidth	100 kHz
Span	10 MHz
Reference Level Offset	Corrected to take into account cables and attenuator losses

3.6. SPURIOUS EMISSIONS AT ANTENNA TERMINALS

3.6.1 FCC REQUIREMENTS

(a) *Out of band emissions*. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB.

(b) *Measurement procedure*. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 100 KHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurements accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

3.6.2 TEST RESULTS

The reference level for spurious emissions at the antenna terminals is taken from the measured output power (46.1 dBm => 40.8 W).

Therefore the spurious emissions must be attenuated by at least:

43 + 10*Log(40.8) = 59.1 dB

The measured output power was 46.1 dBm, therefore the limit is -13 dBm.

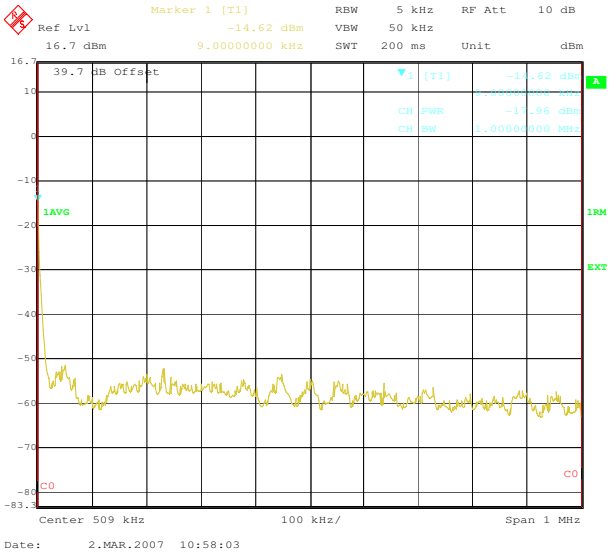
1. UMTS INDOOR2 IBTS, 45W MODE WITH TWO CARRIERS

Tables 5 and 6 show the results for Spurious Emissions at Antenna Terminals for the configuration B.

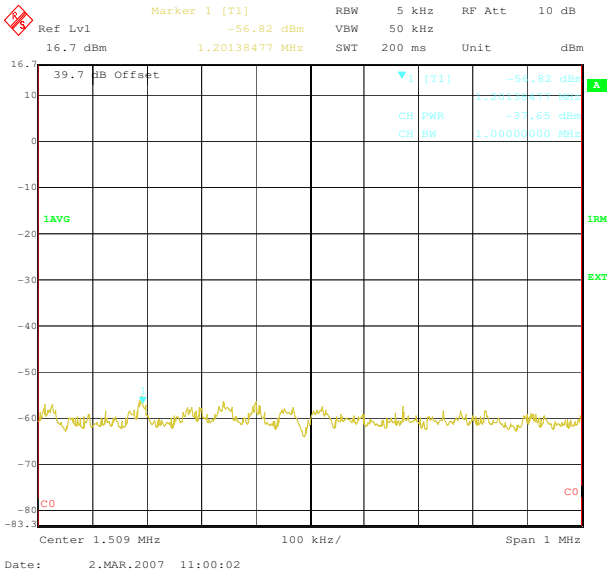
Frequency band	SPURIOUS EMISSION LEVEL (dBm) Channel B, 2 Carriers 873.9 MHz Sector 1	Margin (dB)	Limit (dBm)
9 kHz to 1 MHz	-17.96	4.96	-13
1 MHz to 2 MHz	-37.65	24.65	
2 MHz to 3 MHz	-38.43	25.43	
3 MHz to 4 MHz	-38.76	25.76	
4 MHz to 5 MHz	-38.93	25.93	
5 MHz to 50 MHz	-36.26	23.26	
50 MHz to 500 MHz	-52.39	39.39	
500 MHz to 865 MHz	-35.14	22.14	
864.9 MHz to 865.9 MHz	-24.19	11.19	
865.9 MHz to 866.9 MHz	-22.13	9.13	
866.9 MHz to 867.9 MHz	-21.03	8.03	
867.9 MHz to 868.9 MHz	-17.53	4.53	
878.9 MHz to 879.9 MHz	-17.28	4.28	
879.9 MHz to 880.9 MHz	-20.85	7.85	
880.9 MHz to 881.9 MHz	-21.30	8.85	
881.9 MHz to 882.9 MHz	-21.73	8.73	
882.9 MHz to 1.2 GHz	-23.47	10.47	
1.2 GHz to 2 GHz	-53.67	40.67	
2 GHz to 3 GHz	-56.95	43.95	
3 GHz to 5 GHz	-55.36	42.36	
5 GHz to 7 GHz	-52.16	39.16	
7 GHz to 9 GHz	-55.83	42.83	

Table 5. Measurements result for Spurious Emission in B channel

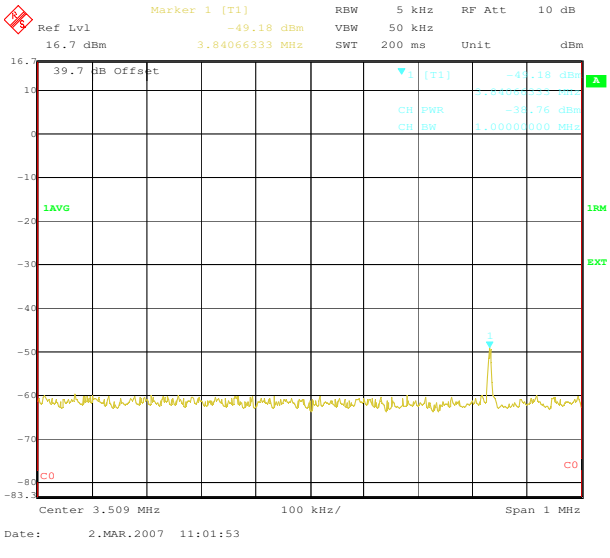
9 kHz-1 MHz[1]



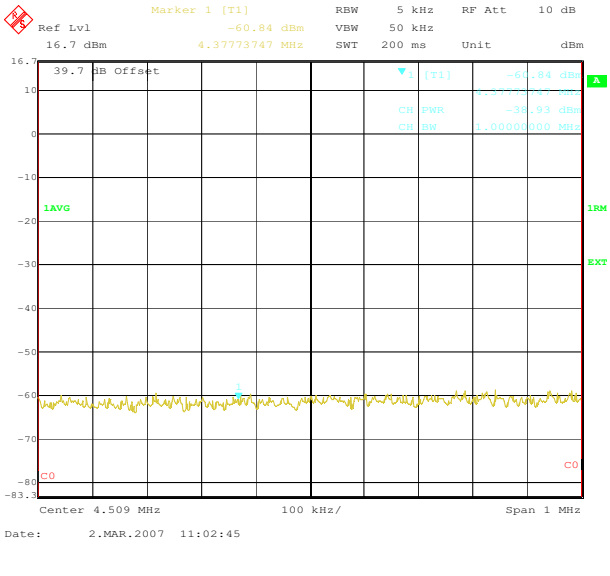
1 MHz- 2 MHz



2 MHz- 3 MHz

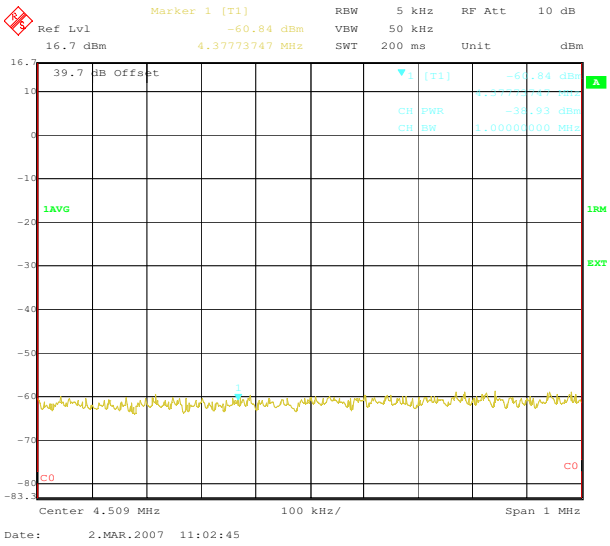


3 MHz- 4 MHz

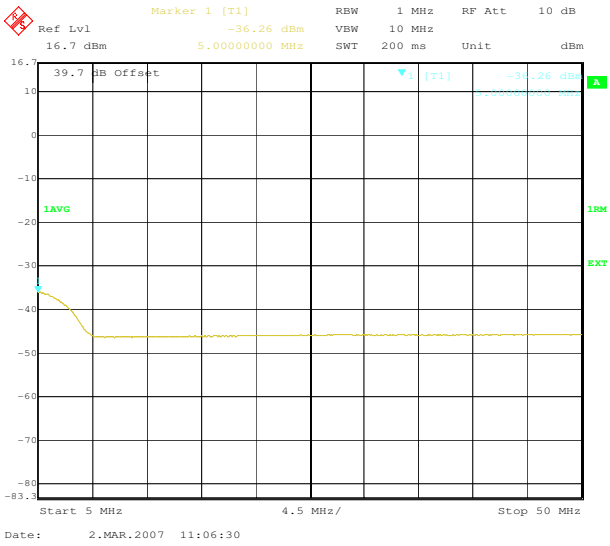


[1] Spectrum lines at 9 kHz are internal DC spectrum line of Analyzer

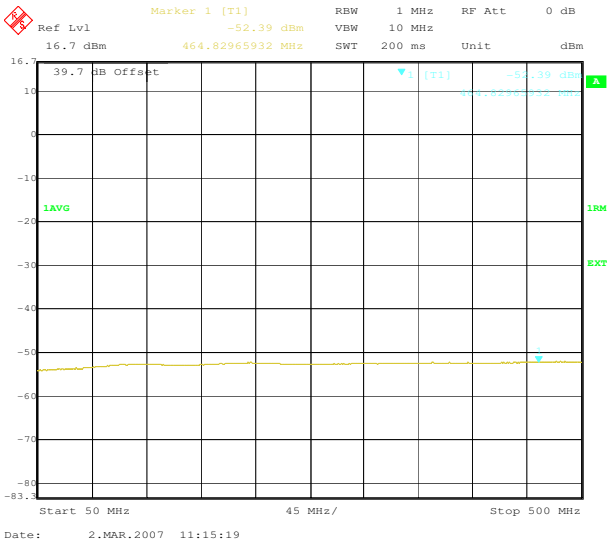
4 MHz- 5 MHz



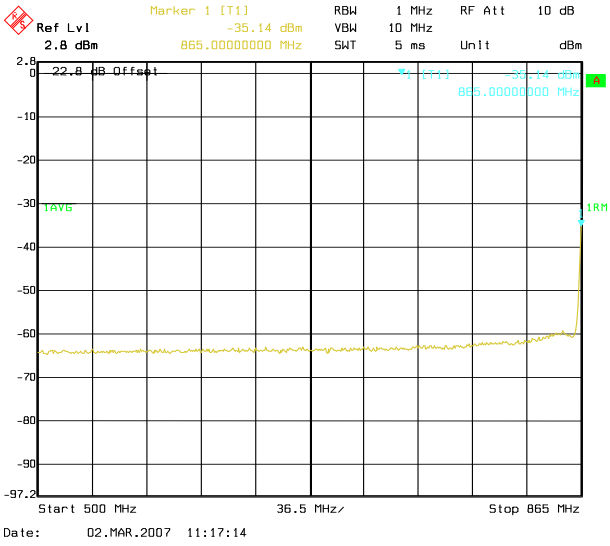
5 MHz- 50 MHz



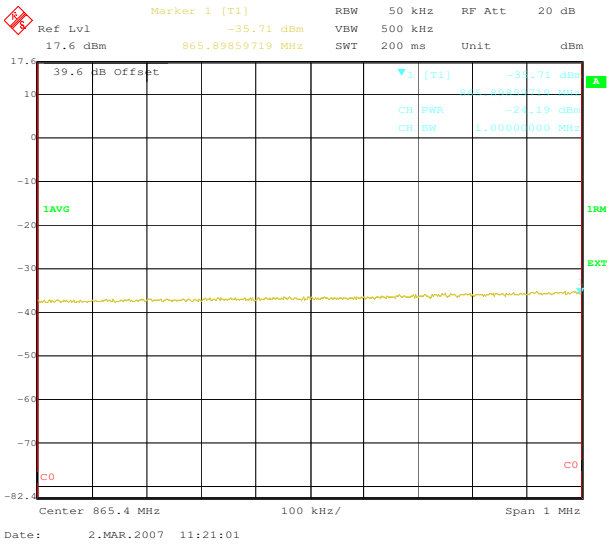
50 MHz- 500 MHz



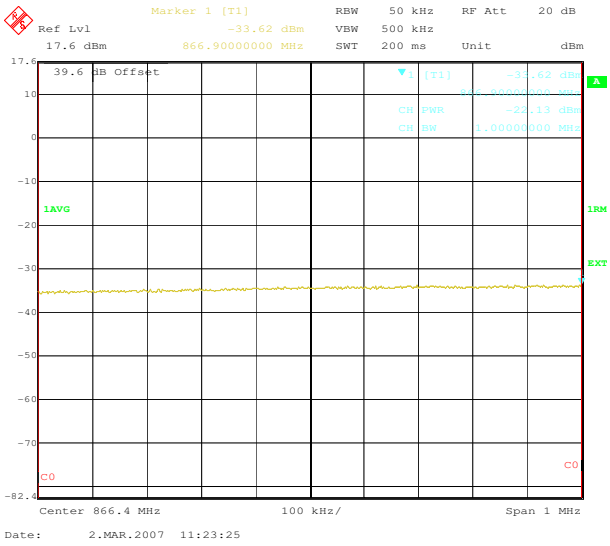
500 MHz- 865 MHz



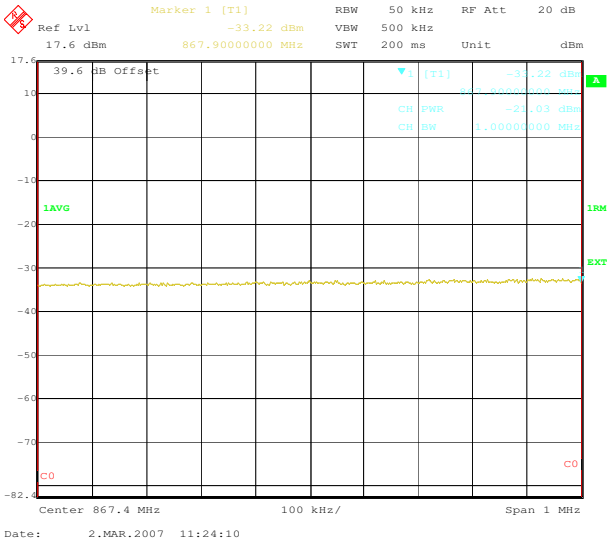
864.9 MHz- 865.9 MHz



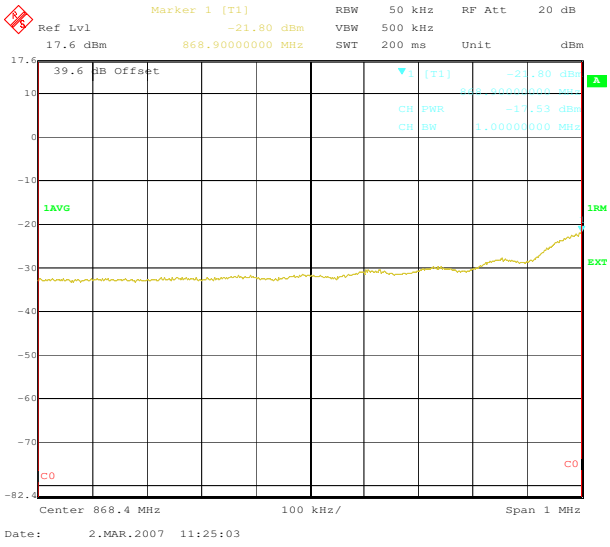
865.9 MHz-866.9 MHz



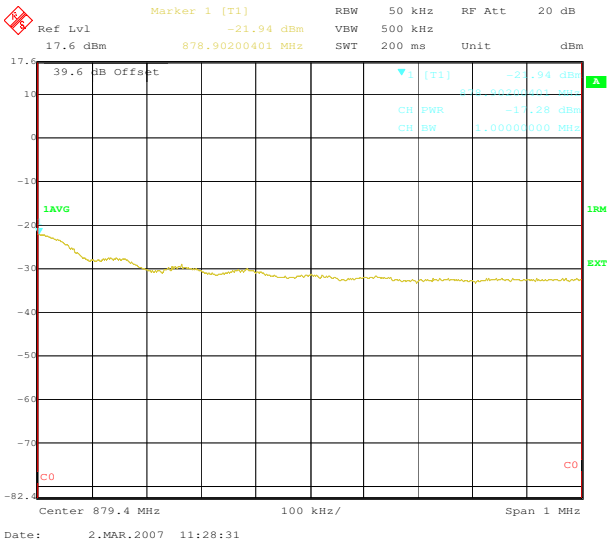
866.9 MHz- 867.9 MHz



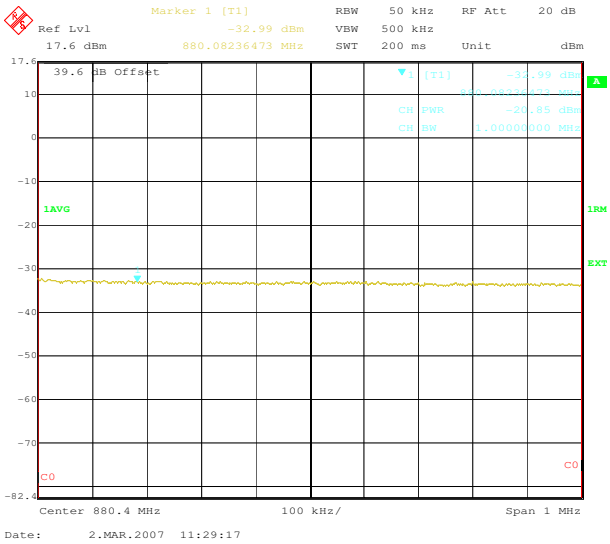
867.9 MHz-868.9 MHz



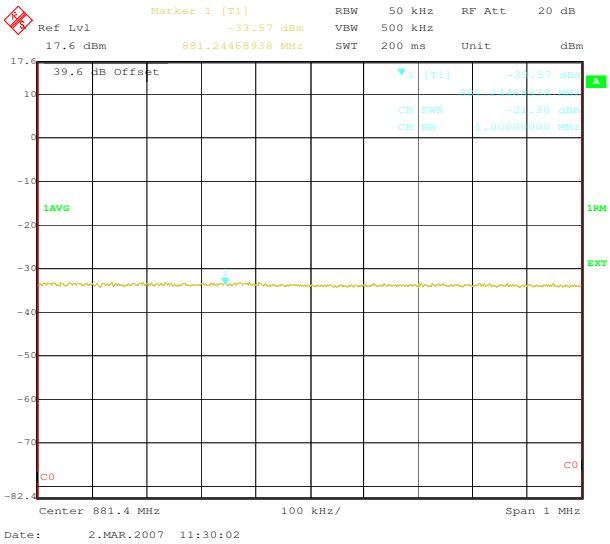
878.9 MHz- 879.9 MHz



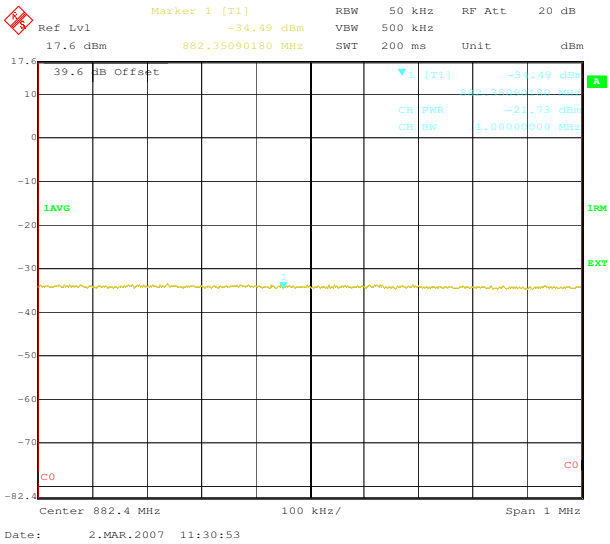
879.9 MHz-880.9 MHz



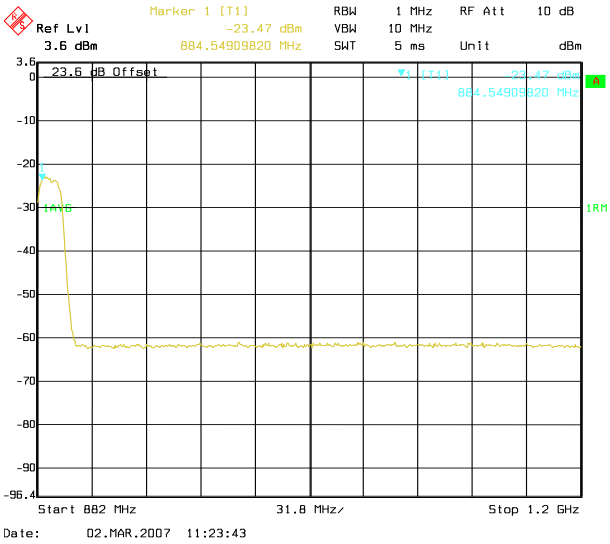
880.9 MHz- 881.9 MHz



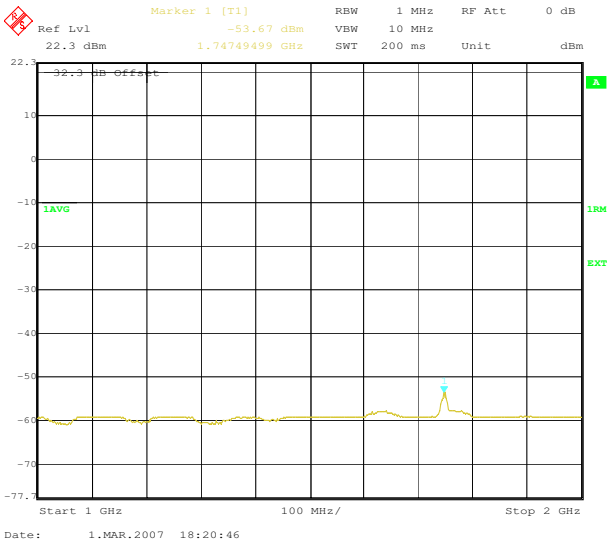
881.9 MHz-882.9 MHz



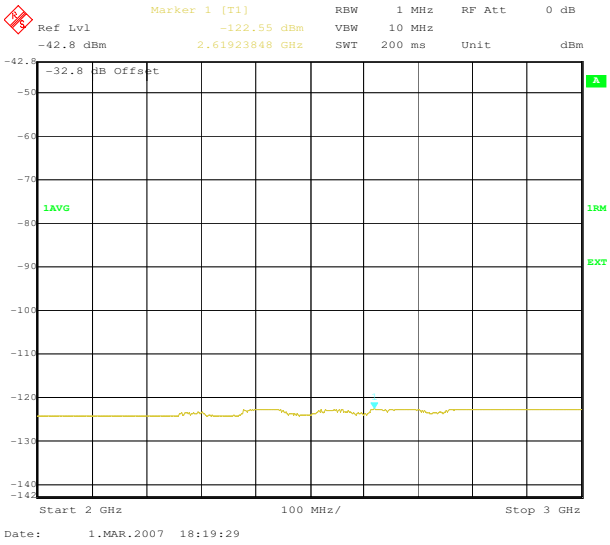
882 MHz- 1.2 GHz



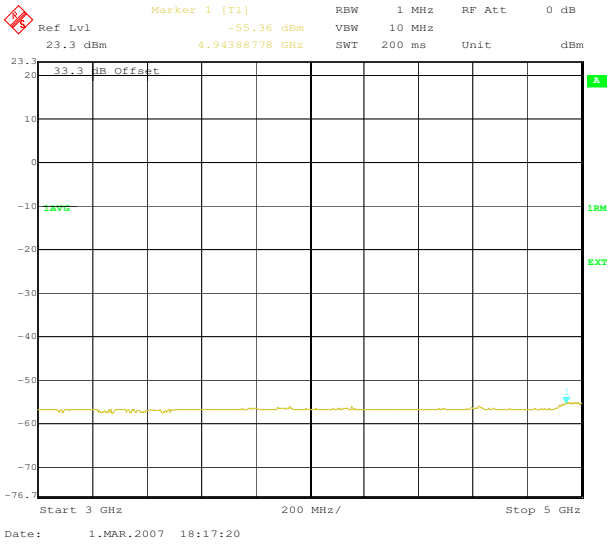
1.2 GHz-2 GHz



2 GHz- 3 GHz

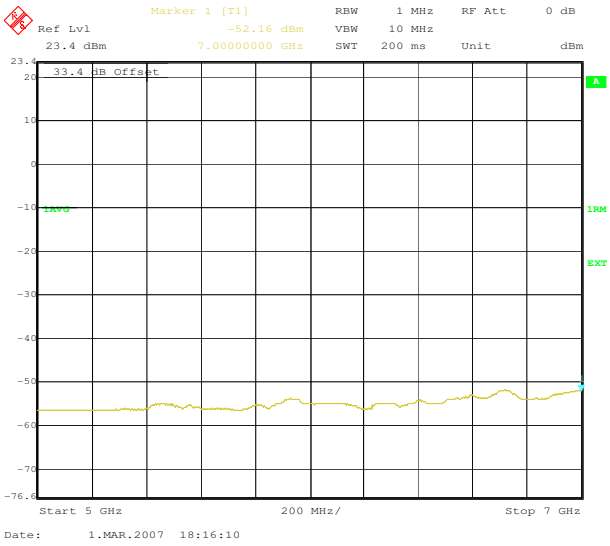


3 GHz-5 GHz

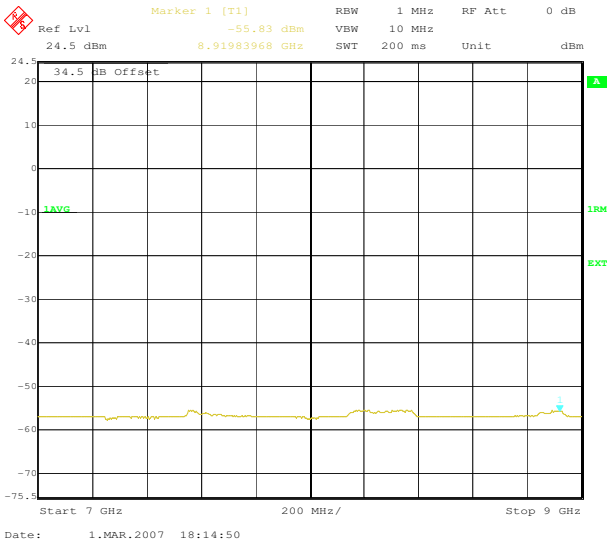


Note: In the above screenshot corresponding to the band 2GHz - 3GHz, the introduced reference level was -42.8 dB instead of 42.8 dB. So marker_1 should have the value -56.95 dBm instead of -122.55 dBm.

5 GHz - 7 GHz



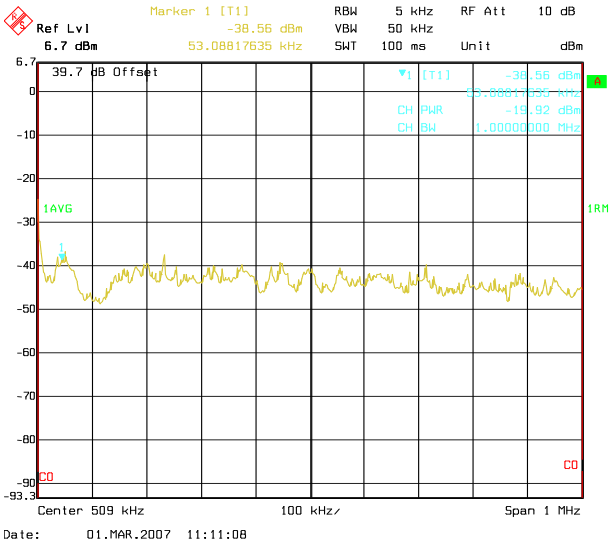
7 GHz-9 GHz



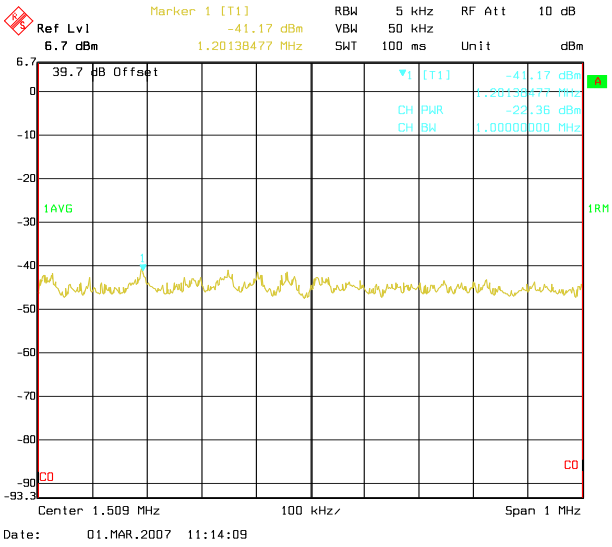
Frequency band	SPURIOUS EMISSION LEVEL (dBm) Channel T, 2 Carriers 889.1 MHz Sector 3	Margin (dB)	Limit (dBm)
9 kHz to 1 MHz	-19.92	6.92	-13
1 MHz to 2 MHz	-22.36	9.36	
2 MHz to 3 MHz	-23.02	10.02	
3 MHz to 4 MHz	-23.16	10.16	
4 MHz to 5 MHz	-23.08	10.08	
5 MHz to 50 MHz	-20.96	10.96	
50 MHz to 500 MHz	-46.81	43.81	
500 MHz to 881.1 MHz	-18.72	5.72	
881.1 MHz to 882.1 MHz	-18.70	5.70	
882.1 MHz to 883.1 MHz	-18.45	5.45	
883.1 MHz to 884.1 MHz	-16.93	3.93	
894.1 MHz to 895.1 MHz	-18.04	5.04	
895.1 MHz to 896.1 MHz	-20.72	7.72	
896.1 MHz to 897.1 MHz	-22.22	9.22	
897 MHz to 1.2 GHz	-24.92	11.92	
1.2 GHz to 2 GHz	-53.63	40.63	
2 GHz to 3 GHz	-60.91	47.91	
3 GHz to 5 GHz	-61.71	48.71	
5 GHz to 7 GHz	-57.36	44.36	
7 GHz to 9 GHz	-55.53	42.53	

Table 6. Measurements result for Spurious Emission in T channel

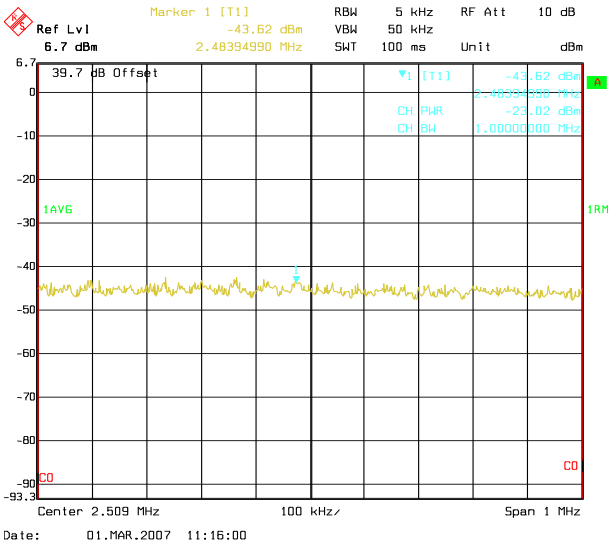
9 kHz-1 MHz[2]



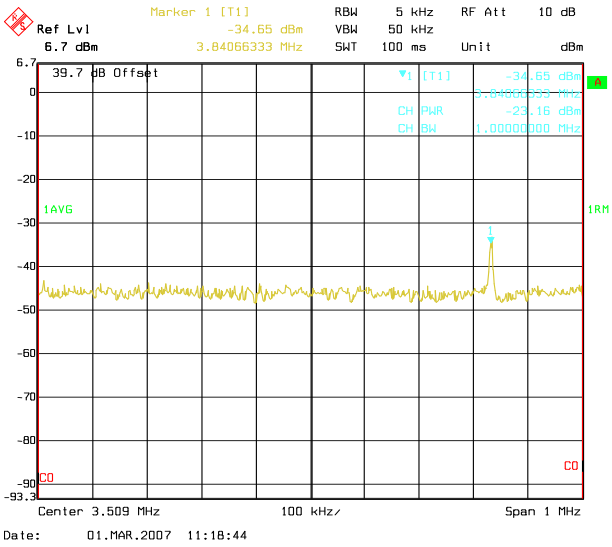
1 MHz- 2 MHz



2 MHz- 3 MHz

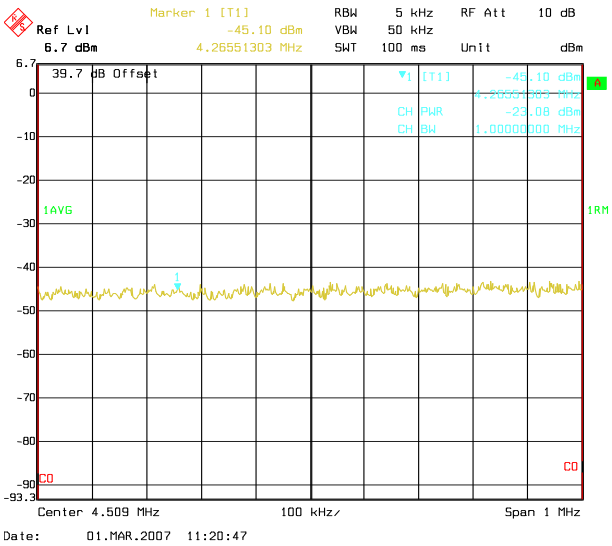


3 MHz- 4 MHz

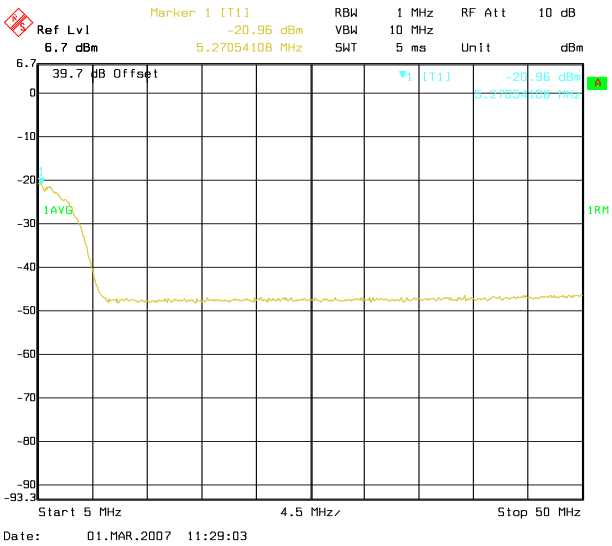


[2] Spectrum lines at 9 kHz are internal DC spectrum line of Analyzer

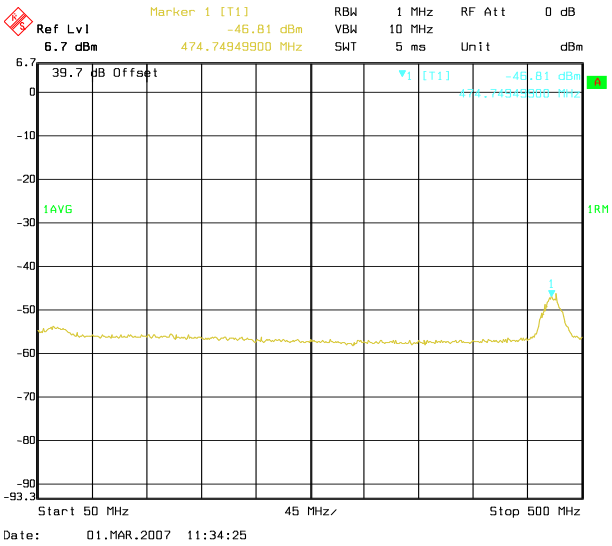
4 MHz- 5 MHz



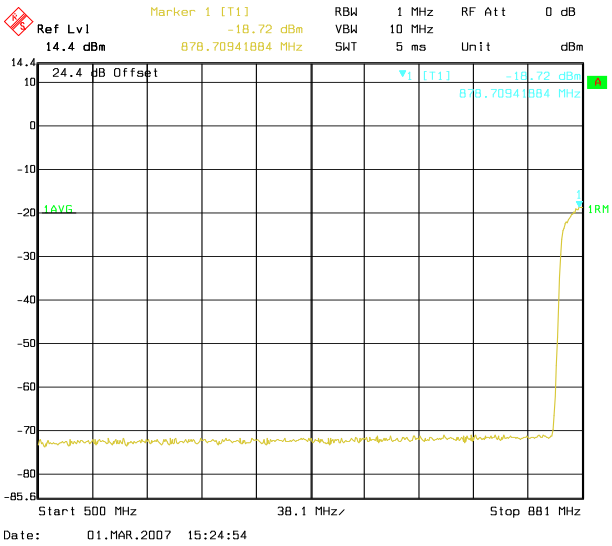
5 MHz- 50 MHz



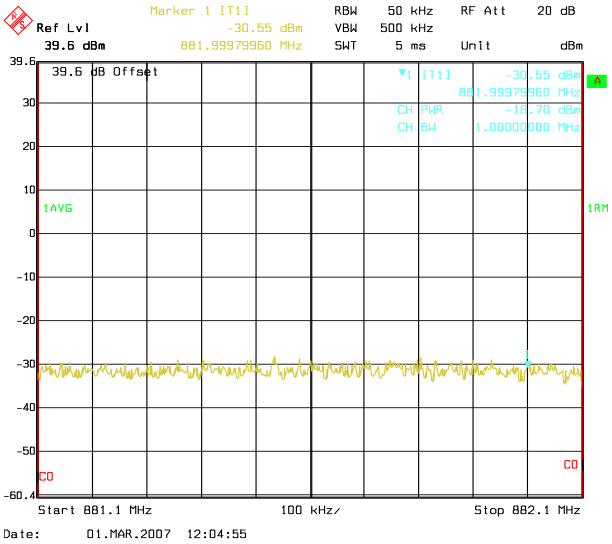
50 MHz- 500 MHz



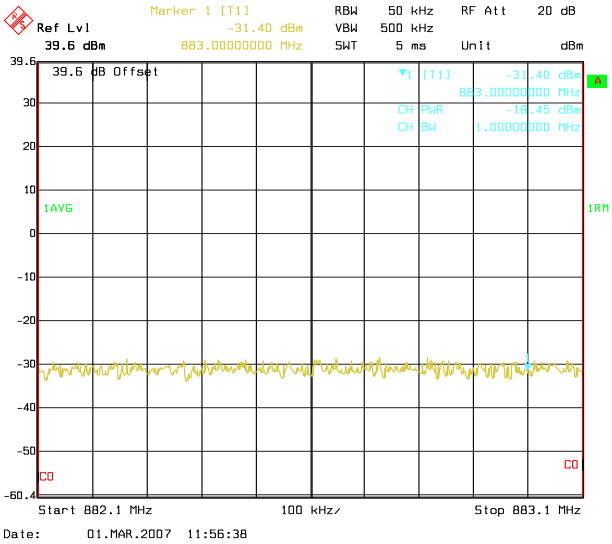
500 MHz- 881.1 MHz



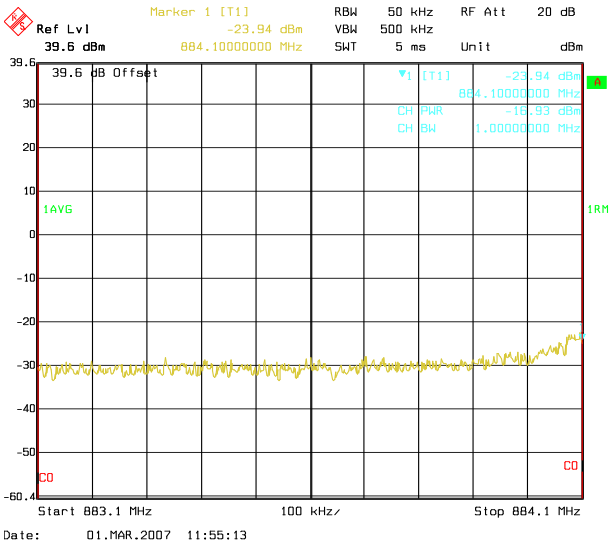
881.1 MHz- 882.1 MHz



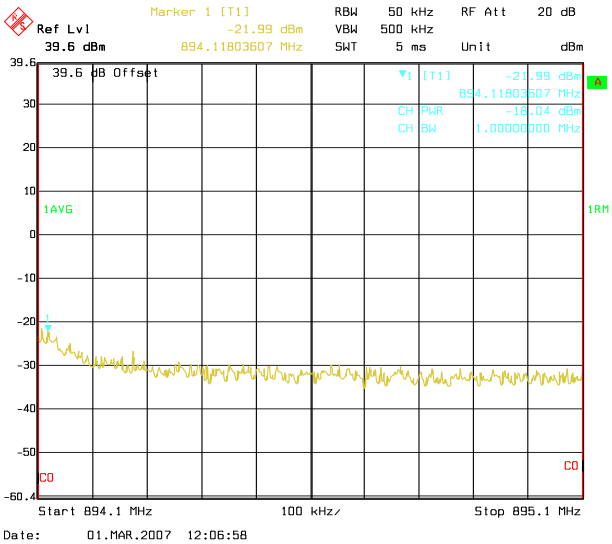
882.1 MHz-883.1 MHz



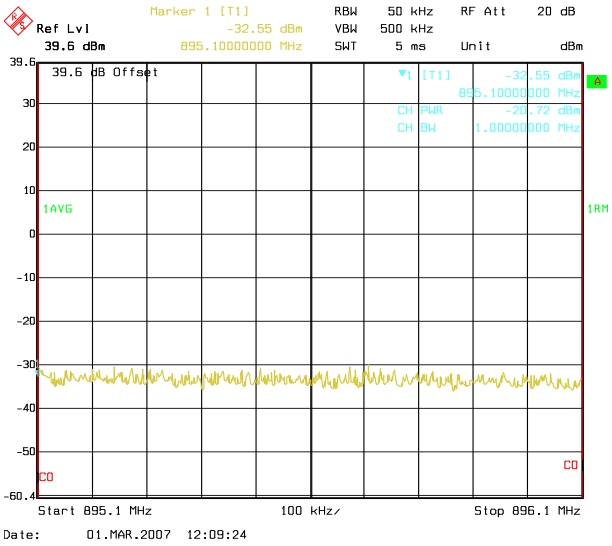
883.1 MHz- 884.1 MHz



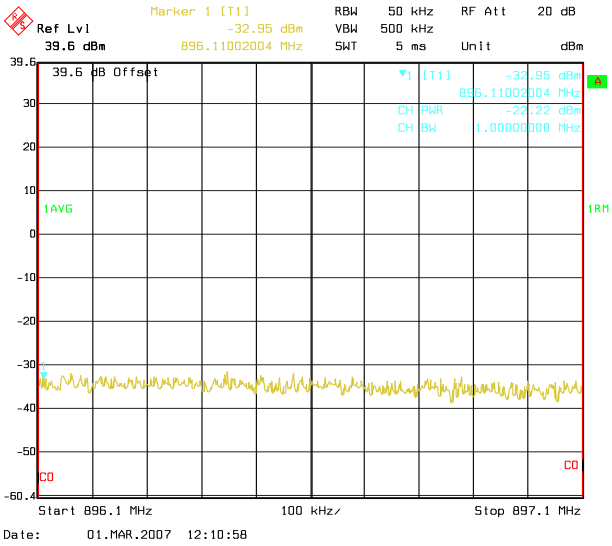
894.1 MHz-895.1 MHz



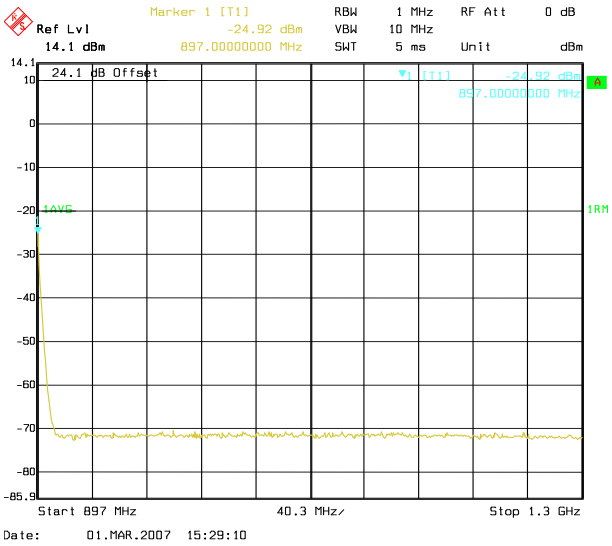
895.1 MHz- 896.1 MHz



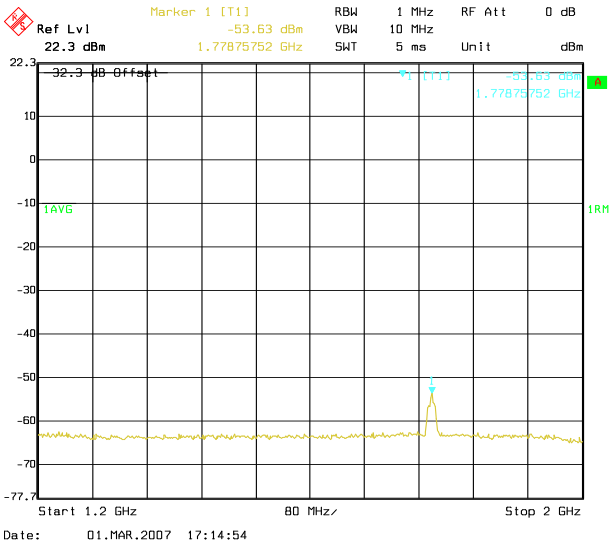
896.1 MHz-897.1 MHz



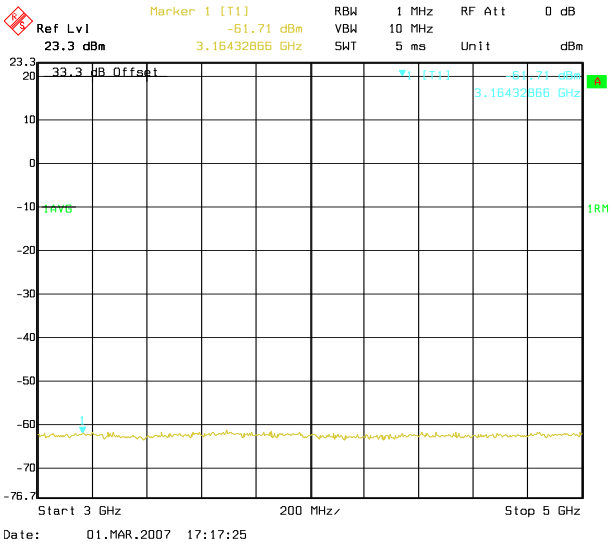
897 MHz- 1.2 GHz



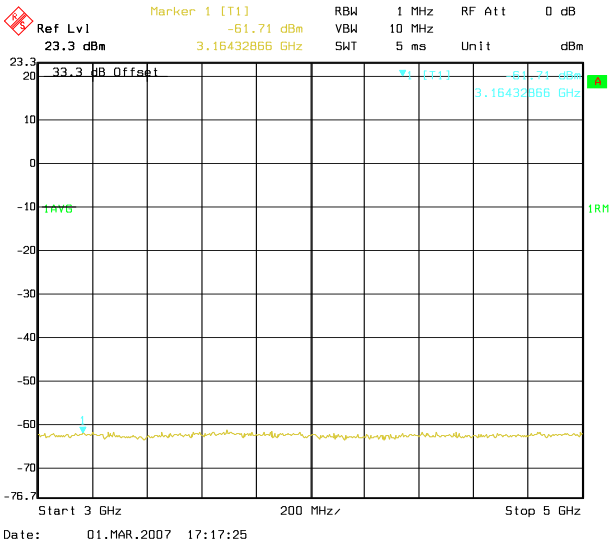
1.2 GHz-2 GHz



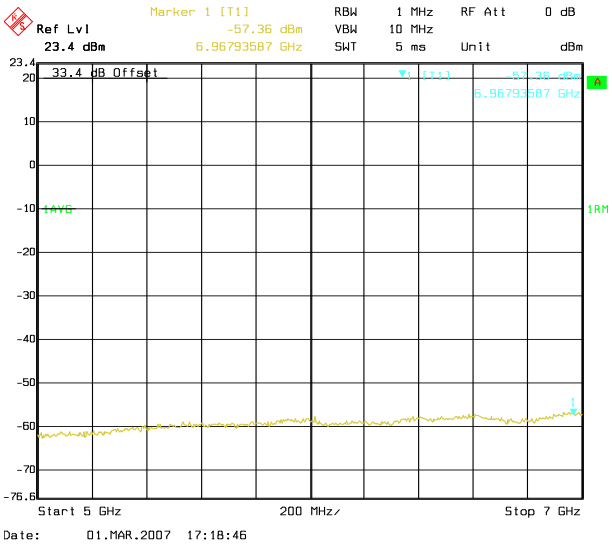
2 GHz- 3 GHz



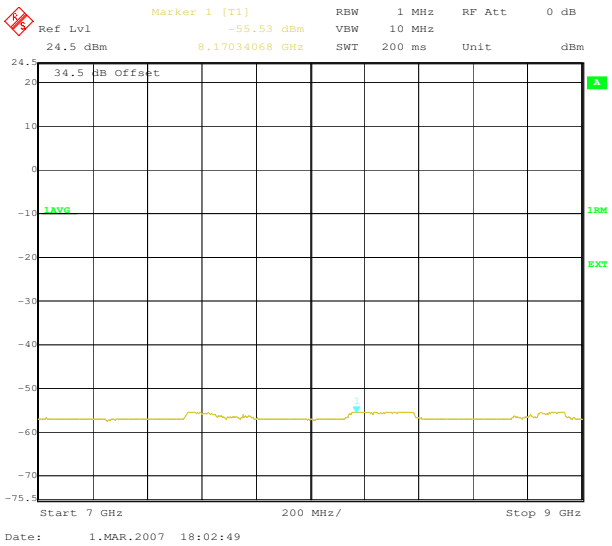
3 GHz-5 GHz



5 GHz - 7 GHz



7 GHz-9 GHz



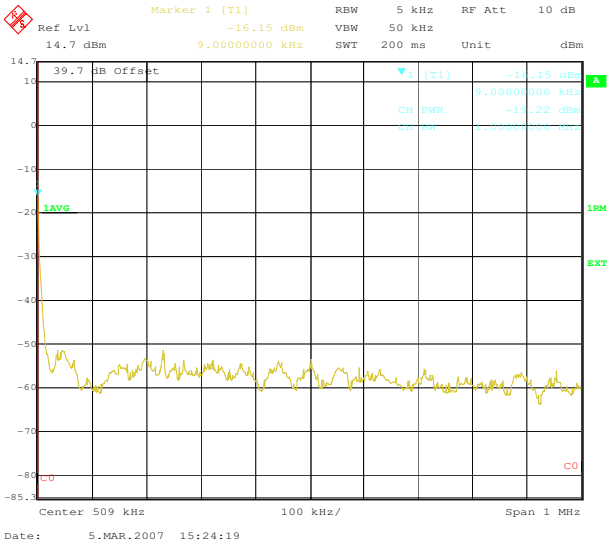
2. UMTS OUTDOOR2 IBTS, 45W MODE WITH TWO CARRIERS

Table 7 shows the results for Spurious Emissions at Antenna Terminals for the configuration D.

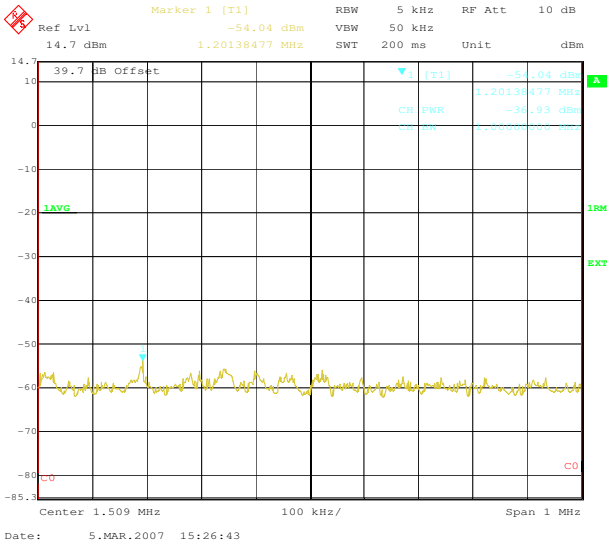
Frequency band	SPURIOUS EMISSION LEVEL (dBm) Channel B, 2 Carriers 873.9 MHz Sector 1	Margin (dB)	Limit (dBm)
9 kHz to 1 MHz	-19.22	6.22	-13
1 MHz to 2 MHz	-36.93	23.93	
2 MHz to 3 MHz	-37.63	24.63	
3 MHz to 4 MHz	-37.98	24.98	
4 MHz to 5 MHz	-38.06	25.06	
5 MHz to 50 MHz	-35.86	22.86	
50 MHz to 500 MHz	-44.20	31.20	
500 MHz to 865 MHz	-32.41	19.41	
864.9 MHz to 865.9 MHz	-28.31	15.31	
865.9 MHz to 866.9 MHz	-25.65	12.65	
866.9 MHz to 867.9 MHz	-24.35	11.35	
867.9 MHz to 868.9 MHz	-19.90	6.90	
878.9 MHz to 879.9 MHz	-19.40	6.40	
879.9 MHz to 880.9 MHz	-23.99	10.99	
880.9 MHz to 881.9 MHz	-24.76	11.76	
881.9 MHz to 882.9 MHz	-25.43	12.43	
882.9 MHz to 1.2 GHz	-23.02	10.02	
1.2 GHz to 2 GHz	-52.86	39.86	
2 GHz to 3 GHz	-56.23	43.23	
3 GHz to 5 GHz	-54.66	41.66	
5 GHz to 7 GHz	-51.44	38.44	
7 GHz to 9 GHz	-45.43	32.43	

Table 7. Measurements result for Spurious Emission in B channel

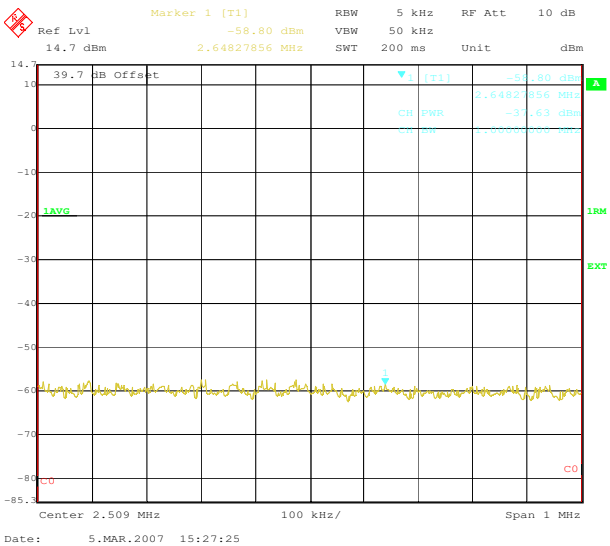
9 kHz-1 MHz[3]



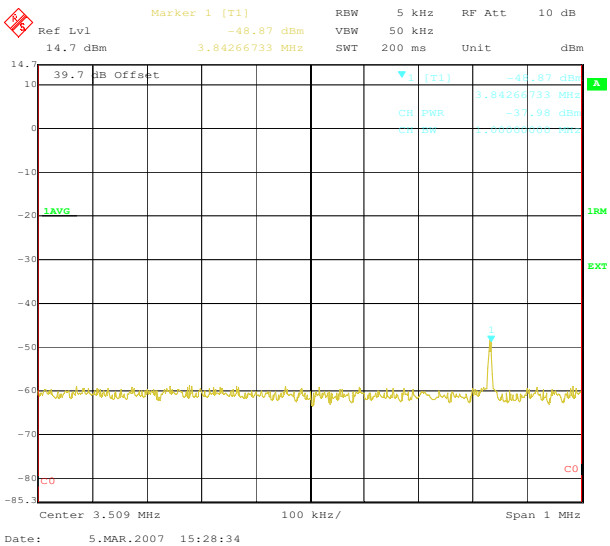
1 MHz- 2 MHz



2 MHz- 3 MHz

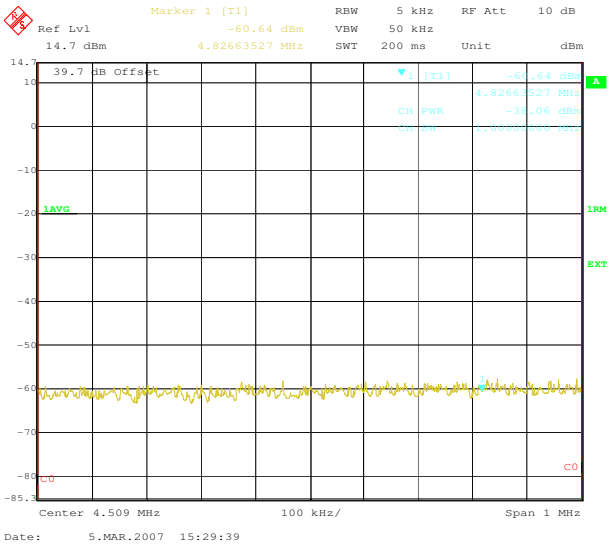


3 MHz- 4 MHz

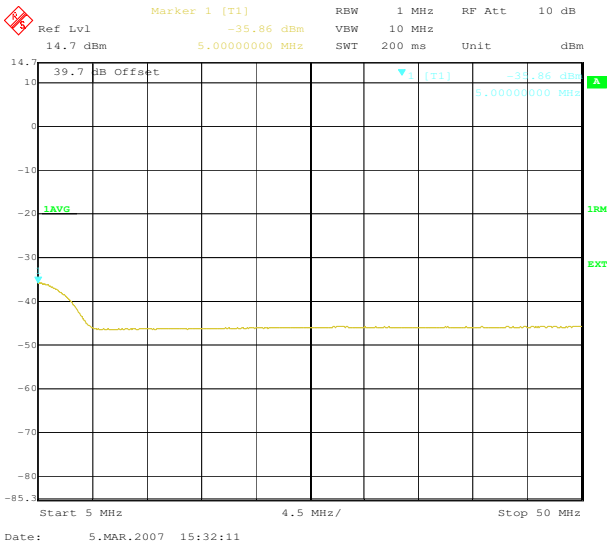


[3] Spectrum lines at 9 kHz are internal DC spectrum line of Analyzer

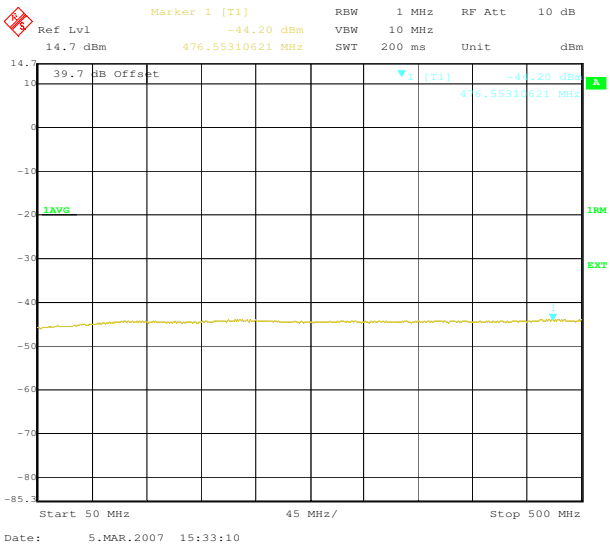
4 MHz- 5 MHz



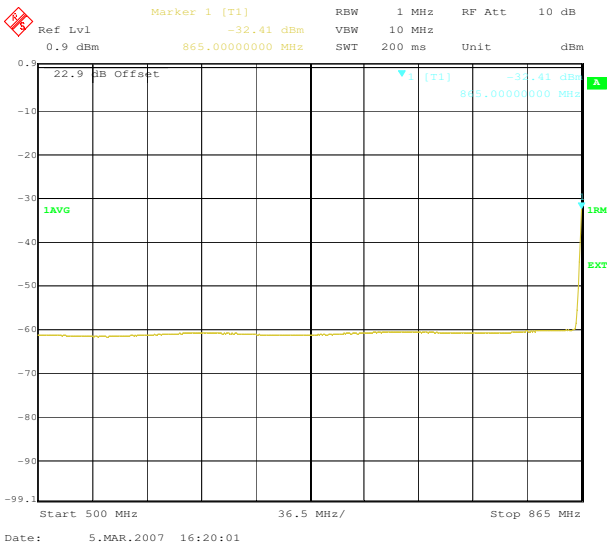
5 MHz- 50 MHz



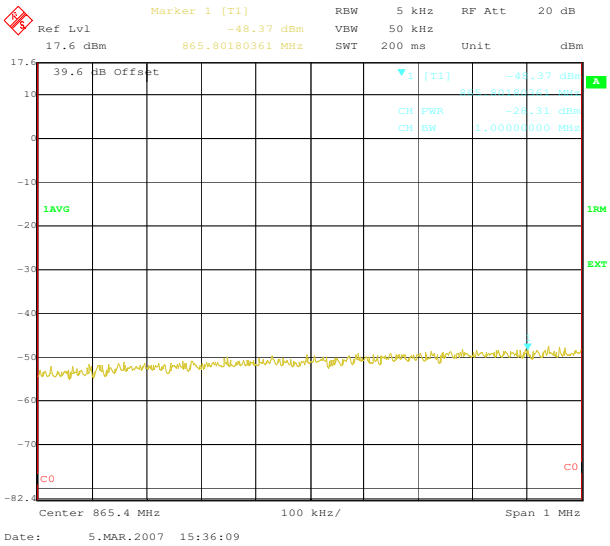
50 MHz- 500 MHz



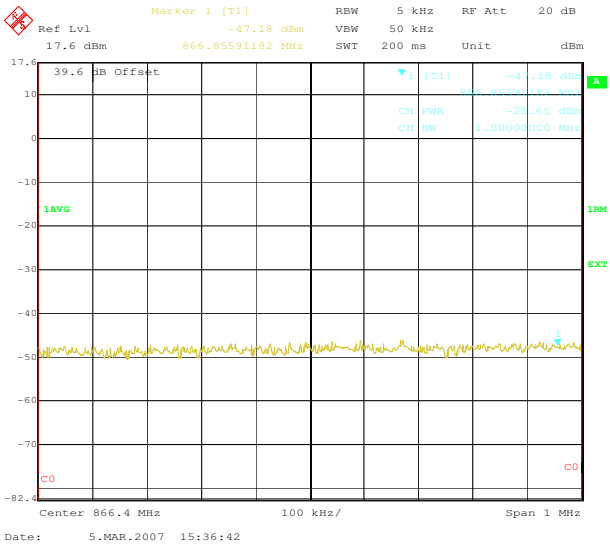
500 MHz- 865 MHz



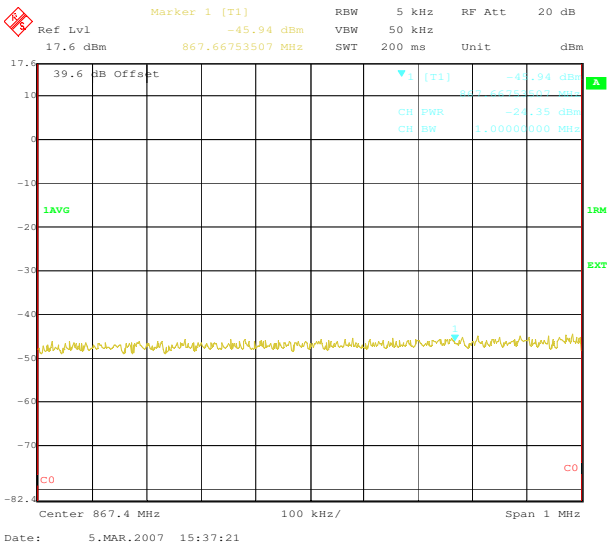
864.9 MHz- 865.9 MHz



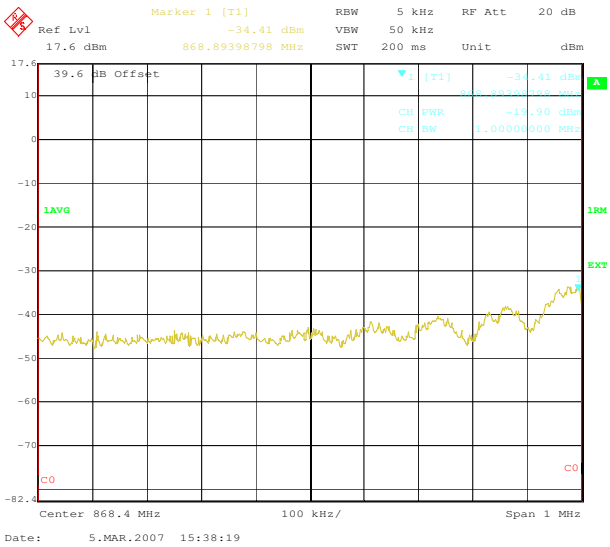
865.9 MHz-866.9 MHz



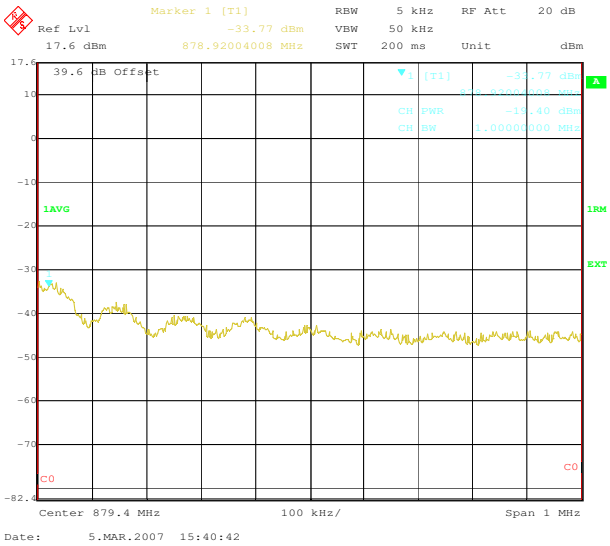
866.9 MHz- 867.9 MHz



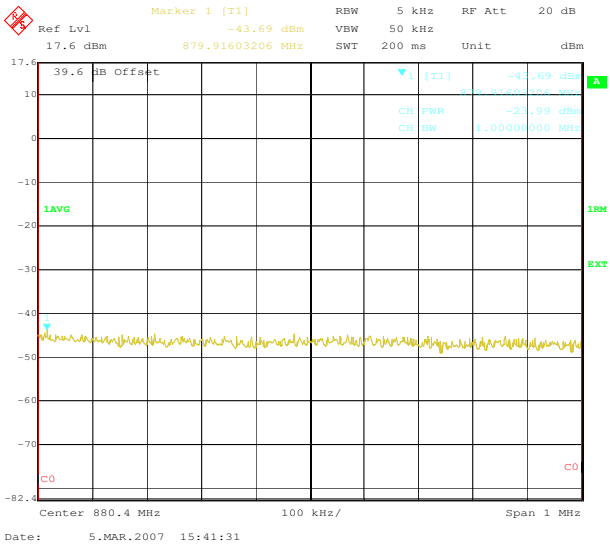
867.9 MHz-868.9 MHz



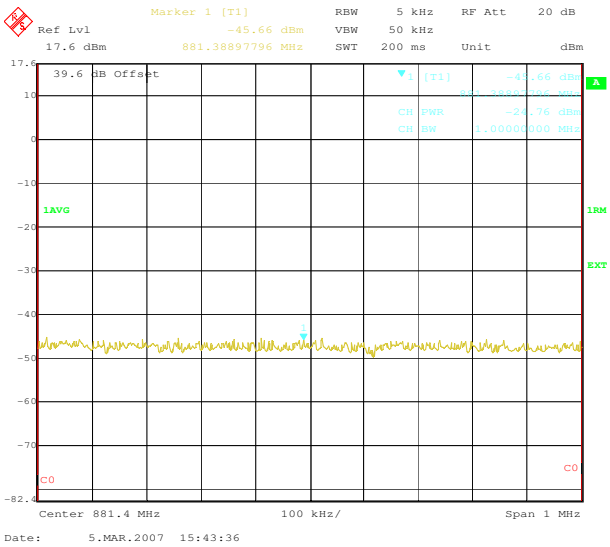
878.9 MHz- 879.9 MHz



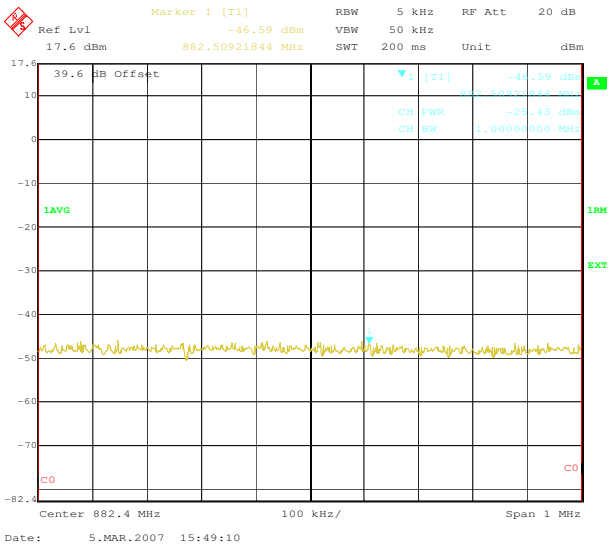
879.9 MHz-880.9 MHz



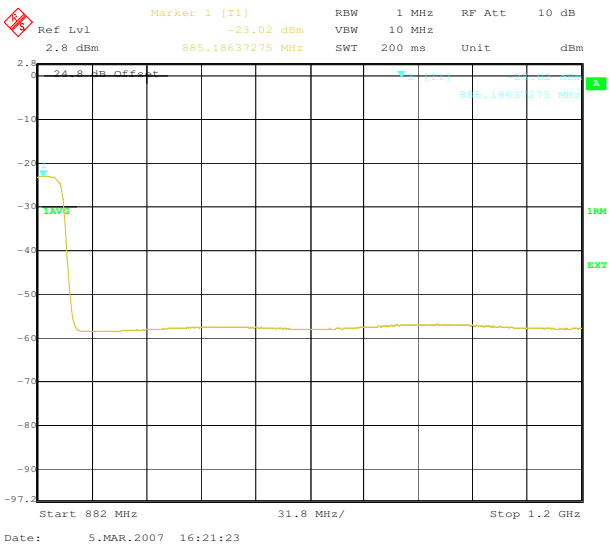
880.9 MHz- 881.9 MHz



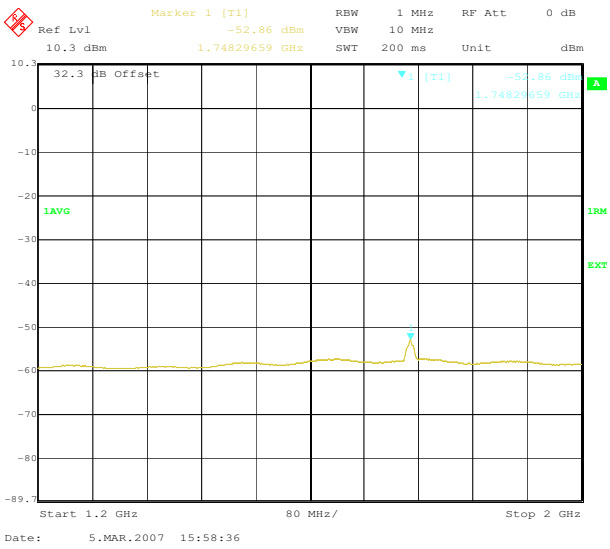
881.9 MHz-882.9 MHz



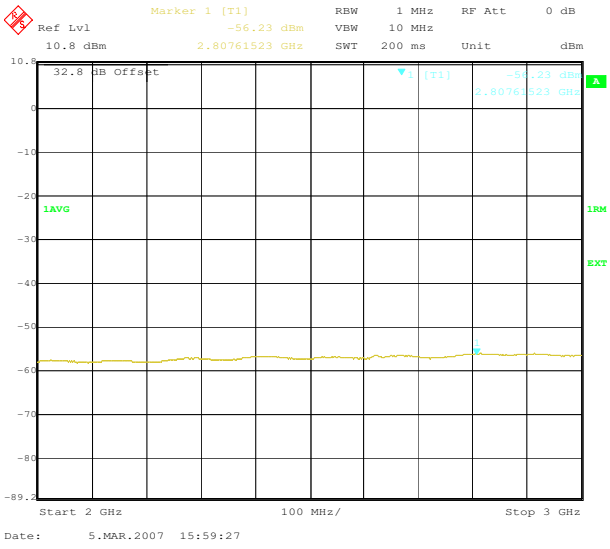
882 MHz- 1.2 GHz



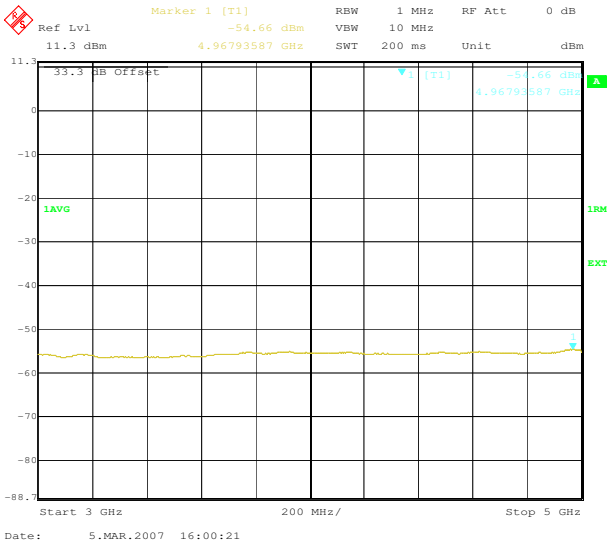
1.2 GHz-2 GHz



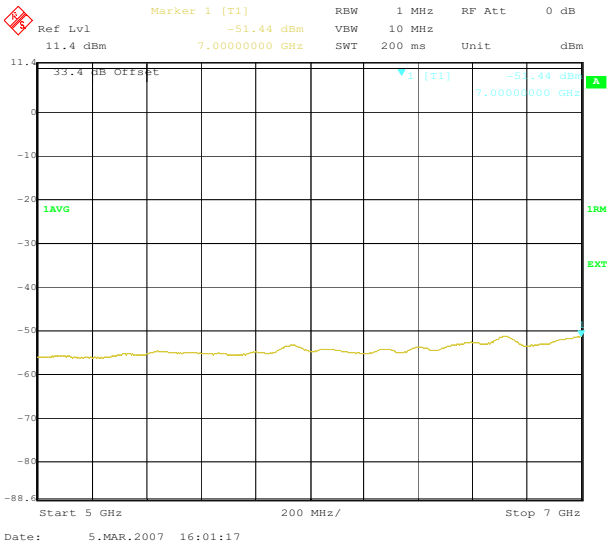
2 GHz- 3 GHz



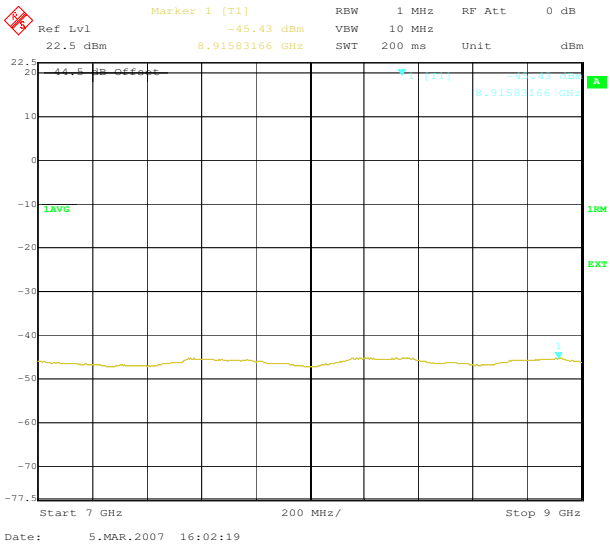
3 GHz-5 GHz



5 GHz - 7 GHz



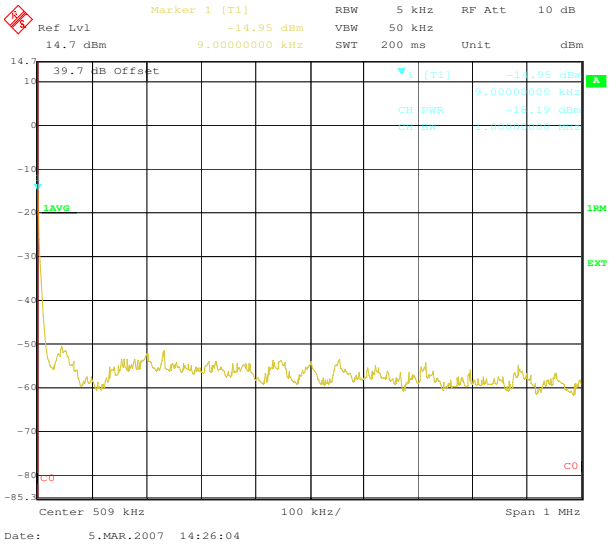
7 GHz-9 GHz



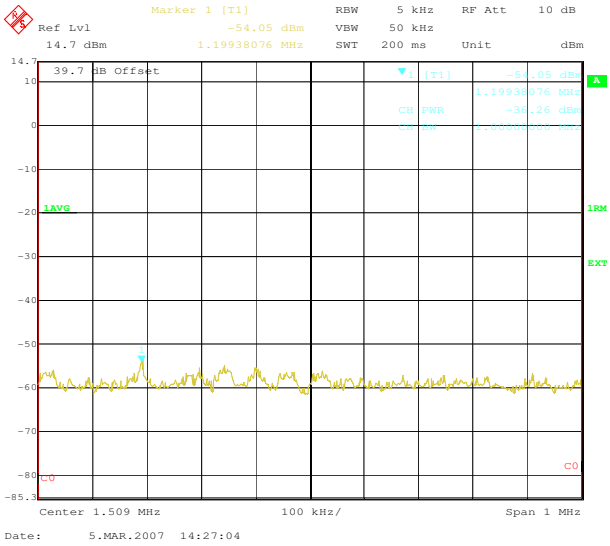
Frequency band	SPURIOUS EMISSION LEVEL (dBm) Channel T, 2 Carriers 889.1 MHz Sector 3	Margin (dB)	Limit (dBm)
9 kHz to 1 MHz	-18.19	5.19	-13
1 MHz to 2 MHz	-36.26	23.26	
2 MHz to 3 MHz	-36.89	23.89	
3 MHz to 4 MHz	-37.30	24.30	
4 MHz to 5 MHz	-37.30	24.30	
5 MHz to 50 MHz	-35.14	23.14	
50 MHz to 500 MHz	-44.25	31.25	
500 MHz to 881.1 MHz	-21.49	8.49	
881.1 MHz to 882.1 MHz	-20.93	7.93	
882.1 MHz to 883.1 MHz	-20.35	7.35	
883.1 MHz to 884.1 MHz	-17.56	4.56	
894.1 MHz to 895.1 MHz	-17.48	4.48	
895.1 MHz to 896.1 MHz	-20.69	7.69	
896.1 MHz to 897.1 MHz	-22.07	9.07	
897 MHz to 1.2 GHz	-26.11	13.11	
1.2 GHz to 2 GHz	-52.53	39.53	
2 GHz to 3 GHz	-55.94	42.94	
3 GHz to 5 GHz	-54.51	41.51	
5 GHz to 7 GHz	-51.43	38.43	
7 GHz to 9 GHz	-55.41	42.41	

Table 8. Measurements result for Spurious Emission in T channel

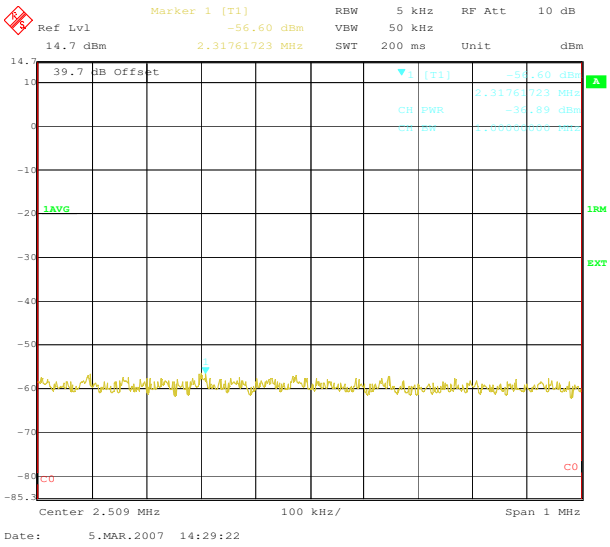
9 kHz-1 MHz[4]



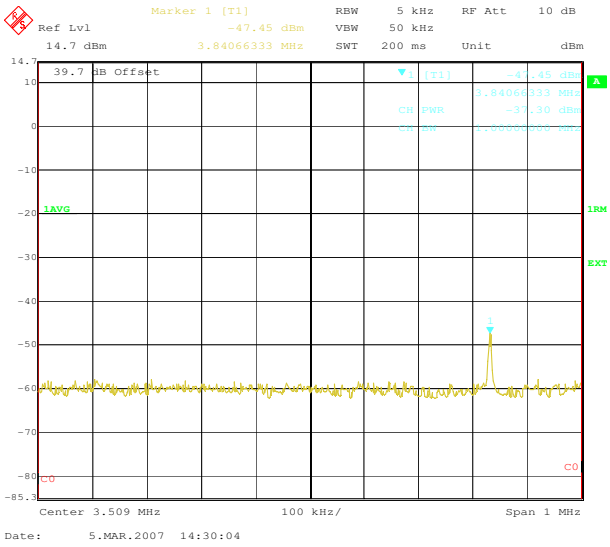
1 MHz- 2 MHz



2 MHz- 3 MHz

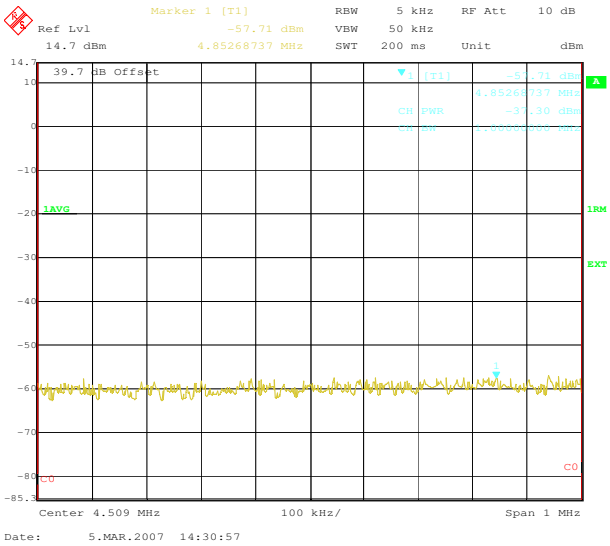


3 MHz- 4 MHz

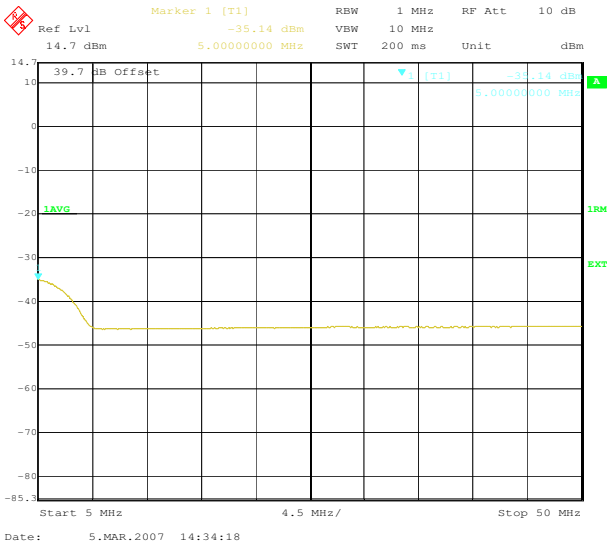


[4] Spectrum lines at 9 kHz are internal DC spectrum line of Analyzer

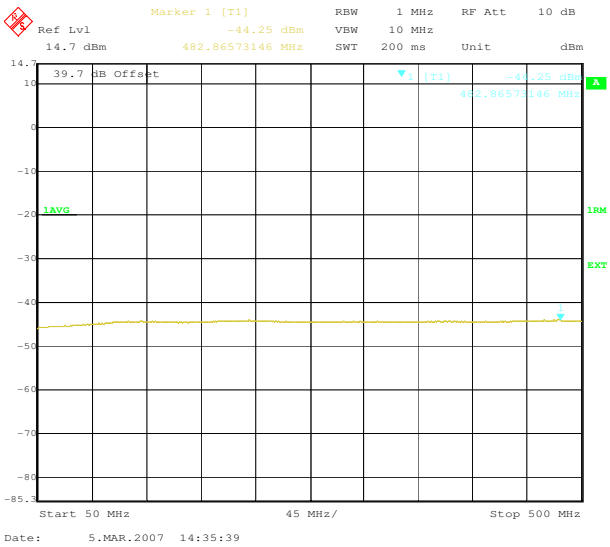
4 MHz- 5 MHz



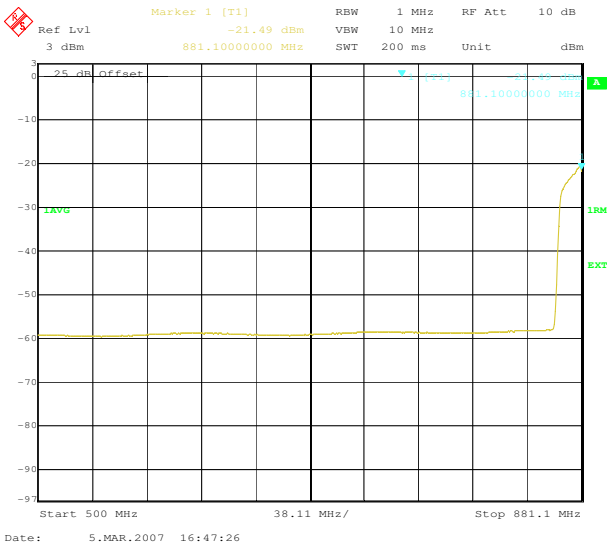
5 MHz- 50 MHz



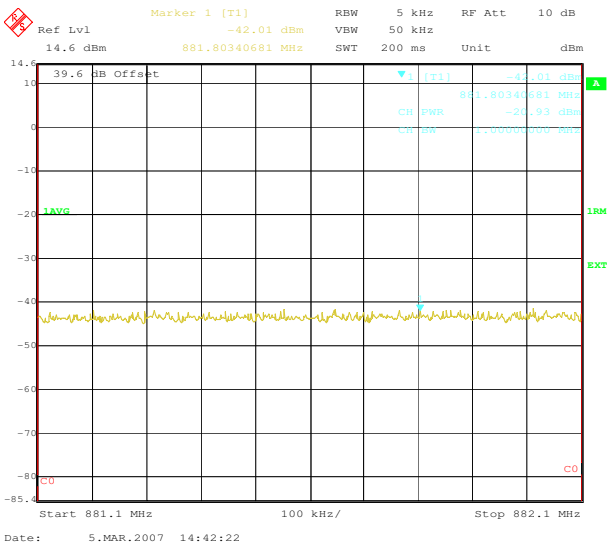
50 MHz- 500 MHz



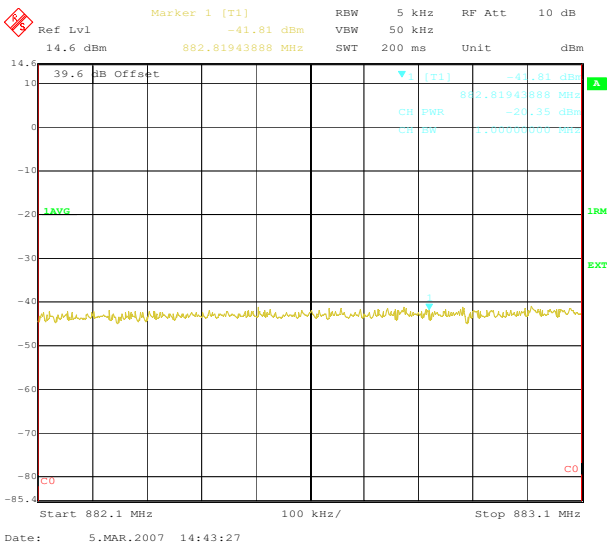
500 MHz- 881.1 MHz



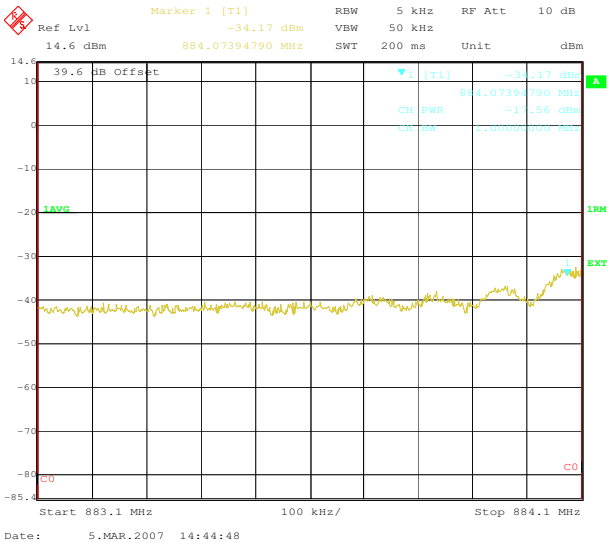
881.1 MHz- 882.1 MHz



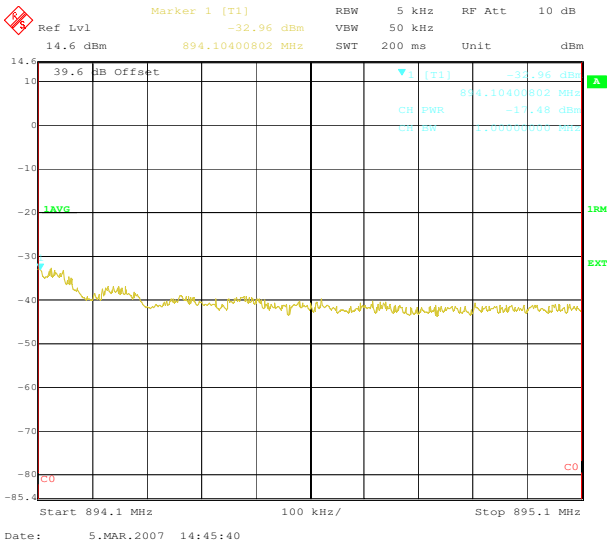
882.1 MHz-883.1 MHz



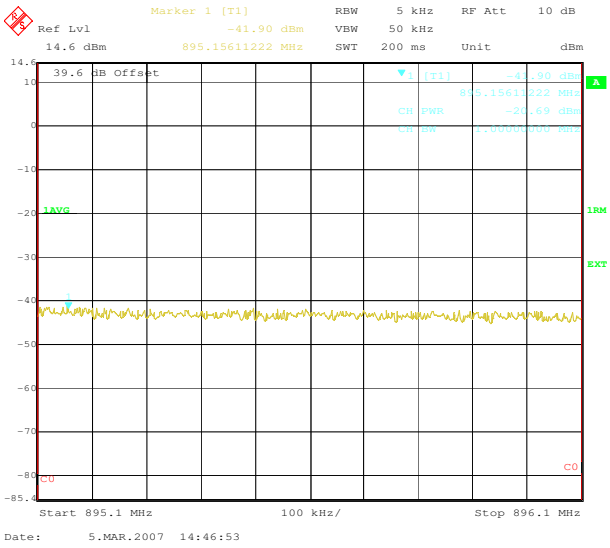
883.1 MHz- 884.1 MHz



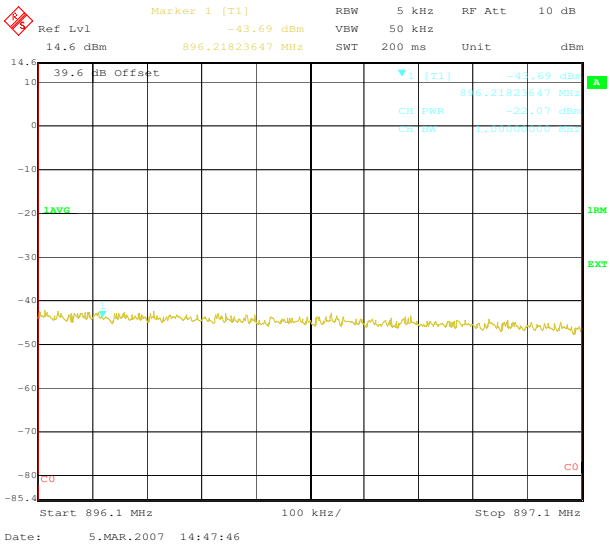
894.1 MHz-895.1 MHz



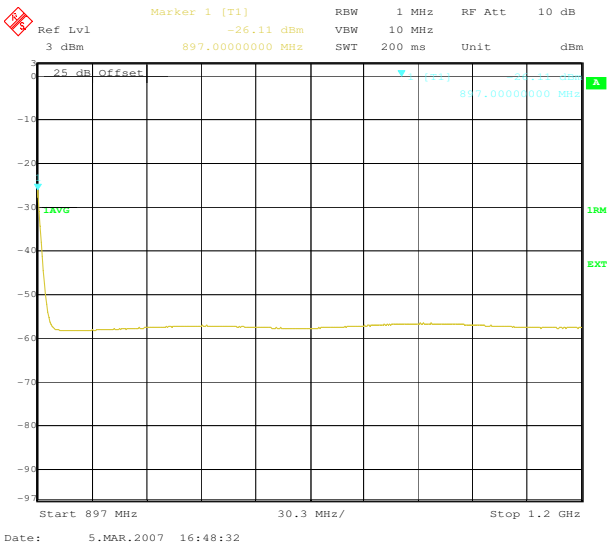
895.1 MHz- 896.1 MHz



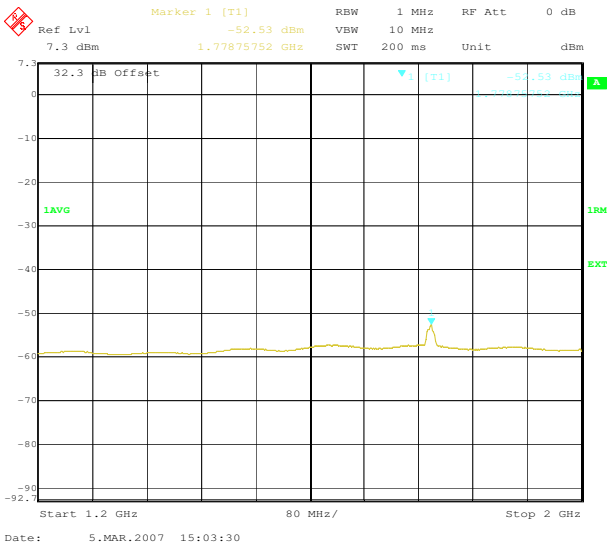
896.1 MHz-897.1 MHz



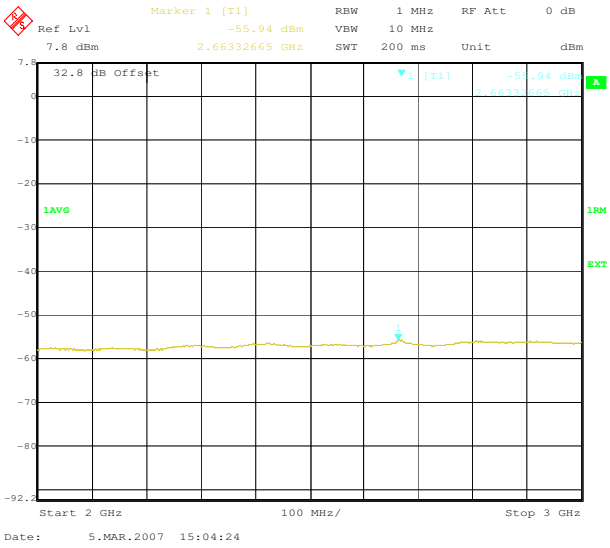
897 MHz- 1.2 GHz



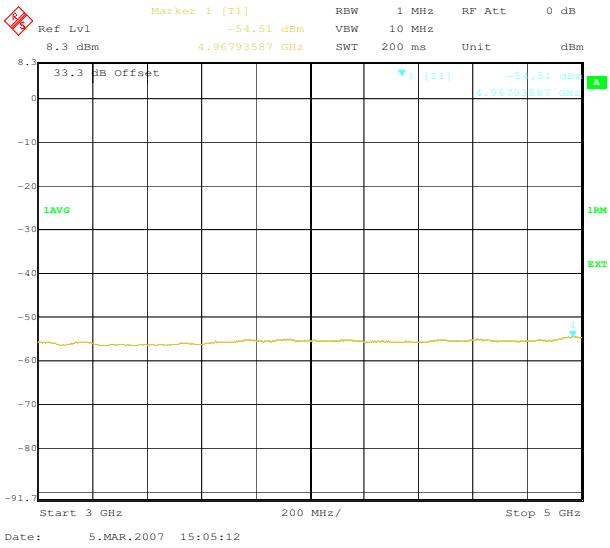
1.2 GHz-2 GHz



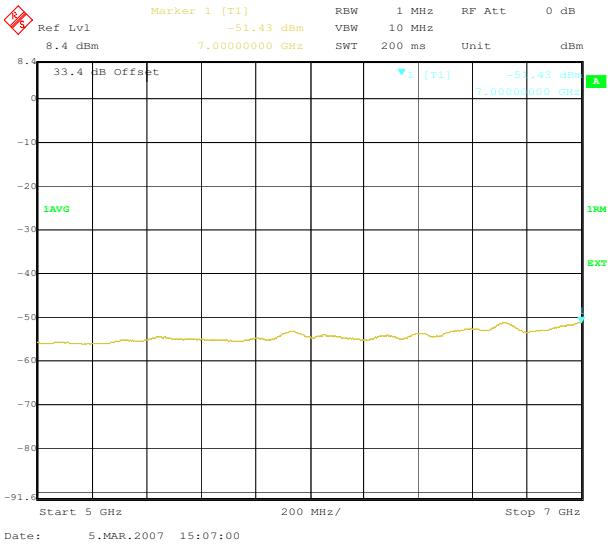
2 GHz- 3 GHz



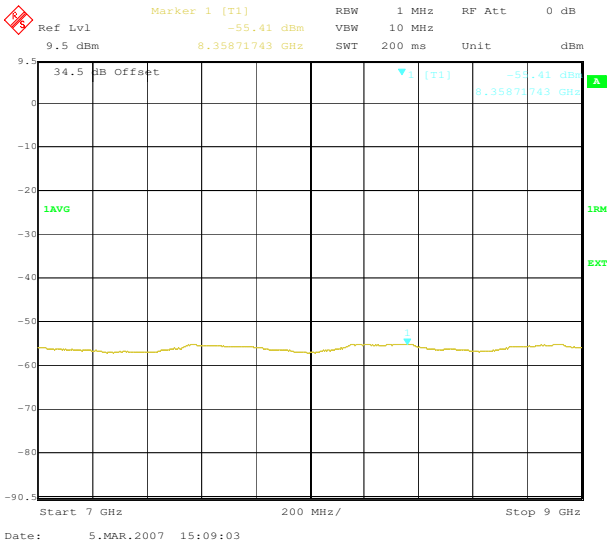
3 GHz-5 GHz



5 GHz - 7 GHz



7 GHz-9 GHz



3.6.3 TEST PROCEDURE

The equipment was configured as shown in Figure 7.

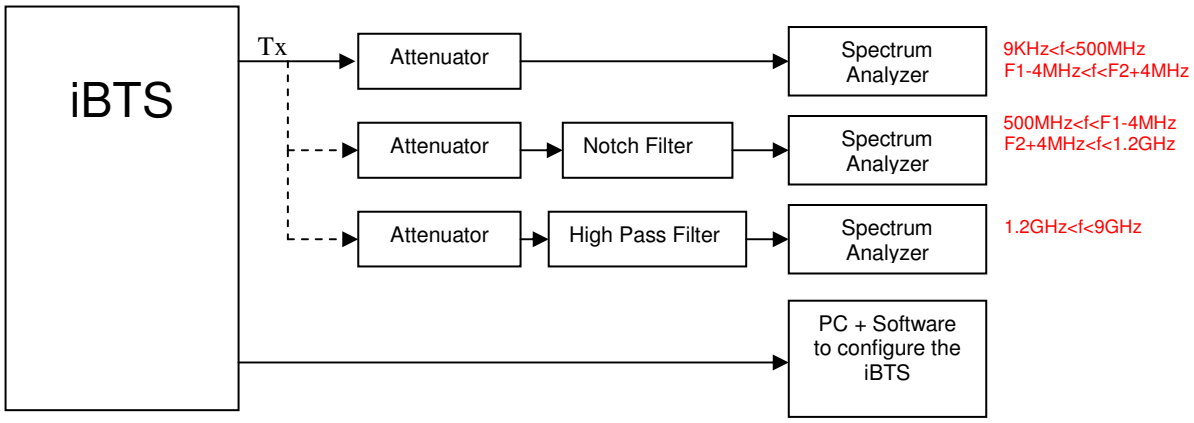


Figure 7. Test configuration for Spurious Emission

Note: F1 and F2 are respectively the lower and the upper frequency limit of the emission band.

For these measurements, three benches have been used.

The bench 1 is used to measure spurious in near the Tx band and the low frequency bands.

The bench 2 and 3 use respectively a stop band filter and a high pass filter in order to filter out the TX band of the iBTS and only measure the spurious created inside the iBTS.

The spectrum analyzer has the following setting in the 1 MHz bands immediately outside and adjacent to the frequency block:

Resolution Bandwidth	50 kHz
Video Bandwidth	5 / 500 kHz
Reference Level Offset	Corrected to take into account cables and attenuator losses

As regards to the other bands, the following setting is applied:

Resolution Bandwidth	1 MHz (see Note)
Video Bandwidth	10 MHz
Reference Level Offset	Corrected to take into account cables and attenuator losses

Note:

Just beside the 1 MHz bands immediately adjacent to the frequency block, the measure has been performed with 50kHz resolution bandwidth instead of 1 MHz. With this resolution bandwidth,

integrated over 1 MHz, *a better estimation of spurious power has been achieved (in the case of RBW 1MHz influence from the carrier power on the measurement has been observed).*

3.7. CONCLUSION

FCC part 22 tests have been performed. Test results comply with all the requirements.

3.8. MEASUREMENT EQUIPMENT LIST

Table 9 is a list of the measurement equipments used in these tests.

Id	Instrument / Ancillary	Type	Manufacturer	Serial N°	Calibration date	
					Serv.	Due
SA1	Spectrum Analyzer	FSIQ26	Rohde & Schwarz	524071	29.06.05	29.06.07
NA1	Network Analyzer	ZVRE	Rohde & Schwarz	500701	12.10.05	12.10.07
NA2	Network Analyzer	8719D	Hewlett Packard	515337	14.02.06	14.02.08
PSA1	PSA Series Transmitter Tester	E4440A	Agilent	576039		09.07
A2	40dB Attenuator	50-A-MFN-40	Bird			
A3	20dB Attenuator	R417020128	Radiall			
A4	30dB Attenuator	48-30-34	Aeroflex / Weinshel	BR2757		
NF1	Notch Filter (adjustable 800 MHz-1000 MHz)	5NF-800/1000-S	Lorch Microwave	29971 S/N : AG3		
NF2	Notch Filter (adjustable 800 MHz-1000 MHz)	5NF-800/1000-S	Lorch Microwave	29971 S/N : AG5		
NF3	Notch Filter (adjustable 800 MHz-1000 MHz)	5NF-800/1000-S	Lorch Microwave	29971 S/N : AG6		
HPF	High Pass Filter	WHKS 1200–10SS	Wainwright	SN7		

Table 9. Measurement equipment list

4. TECHNICAL STATUS OF THE MODULES CONSTITUTING THE TESTED EQUIPMENT

Conf. #	Designation	Hardware code / ***Software version***	Release	Manufacturer	Serial number
A **B**	Indoor2 iBTS	NTBY06AF / ***V04.D2.0_01.16***	D1	Alcatel-Lucent	CDN200606023
	Digital rack DBP602	NTBY72CS	01	Alcatel-Lucent	NNTM75052QPU
	ICU	NTBY58AF	P1	Alcatel-Lucent	NNTM78900G9F
	MCA	NTBY90AF	D1	Alcatel-Lucent	CDN200606026
	Interco	NTBY76AF	D1	Alcatel-Lucent	CDN200606025
	XTRM (digital shelf slot 2)	NTBY17BA/ ***V04_02 E03***	P1	Alcatel-Lucent	CDN200646006
	XTRM (digital shelf slot 3)	NTBY17BA / ***V04_02 E03***	P1	Alcatel-Lucent	CDN200650001
	iCCM2 Board (digital shelf slot 5)	NTUM25CS/ ***V04_02 E03***	01	Alcatel-Lucent	NNTM750542K5
	iCCM2 Shelf	NTUM25AF / ***V04_02 E03***	01	Alcatel-Lucent	NNTM750542K4
	iCEM2 (digital shelf slot 1)	NTUM00DG / ***V04_02 E03***	D1	Alcatel-Lucent	CDN200605020
	iCEM2 (digital shelf slot 9)	NTUM00DG / ***V04_02 E03***	01	Alcatel-Lucent	NNTM75053LZN
	GPxOIM (digital shelf slot 10)	NTU718AK	01	Alcatel-Lucent	NNTM75052QKR
	DDM	NTUM40HA	D1	Forem	FORM01764065
	DDM	NTUM40HA	D1	Forem	FORM01764063
	MCPA UMTS	NTUM30EA	01	Andrew	ANDWCS00011T
	MCPA UMTS	NTUM30EA	01	Andrew	ANDWCS00013T
	MCPA UMTS	NTUM30EA	01	Andrew	ANDWCS00017T

Conf. #	Designation	Hardware code / ***Software version***	Release	Manufacturer	Serial number
C D	Outdoor2 iBTS	NTU770BF/ ***V04.D2.0_01.16***	0D	Alcatel-Lucent	NNTMGT003Q93
	BARE CABINET & ECU	NTT91550	0D	Nortel/Flextronics	NNTMGT003Q97
	UCPS - CCU	NTUM44AA	04	Artesyn	ATSNZH055960
	UCPS rack + DDU	NTN066AY	05	Artesyn	ATSNZH050223
	ADU	NTT970AA	07	Artesyn	ATSNTA206091
	ECU	NTT971CF	01	Nortel/Flextronics	NNTMGT003Q8C
	MCA	NTBY90AF	0D	Alcatel-Lucent	NNTMGT003Q9F
	RF ICO	NTN720HG	0D	Alcatel-Lucent	NNTMGT003Q8Z
	Digital rack DBP602	NTN720AL	D1	Alcatel-Lucent	NNTMGT004ZGB
	UCPS – Rectifier 1000W	NTW703BB	01	Artesyn	ATSNZH001328
	UCPS – Rectifier 1000W	NTW703BB	02	Artesyn	ATSNZH005622
	UCPS – Rectifier 1000W	NTW703BB	02	Artesyn	ATSNZH005620
	UCPS – Rectifier 1400W RoHS	NTN070BF	01	Artesyn	ATSNZH055926
	XTRM (digital shelf slot 2)	NTBY17BA/ ***V04_02 E03***	P1	Alcatel-Lucent	CDN200646006
	XTRM (digital shelf slot 3)	NTBY17BA / ***V04_02 E03***	P1	Alcatel-Lucent	CDN200650001
	iCCM2 Board (digital shelf slot 5)	NTUM25CS/ ***V04_02 E03***	01	Alcatel-Lucent	NNTM750542K5
	iCCM2 Shelf	NTUM25AF / ***V04_02 E03***	01	Alcatel-Lucent	NNTM750542K4
	iCEM2 (digital shelf slot 1)	NTUM00DG / ***V04_02 E03***	D1	Alcatel-Lucent	CDN200605020
	iCEM2 (digital shelf slot 9)	NTUM00DG / ***V04_02 E03***	01	Alcatel-Lucent	NNTM75053LZN
	GPxOIM (digital shelf slot 10)	NTU718AK	01	Alcatel-Lucent	NNTM75052QKR
	DDM	NTUM40HA	D1	Forem	FORM01764065
	DDM	NTUM40HA	D1	Forem	FORM01764063
	MCPA UMTS	NTUM30EA	01	Andrew	ANDWCS00011T
	MCPA UMTS	NTUM30EA	01	Andrew	ANDWCS00013T
	MCPA UMTS	NTUM30EA	01	Andrew	ANDWCS00017T

Note: As there were not enough radio modules operating in band 850 MHz available for the RF qualification, the MCPA and DDM had to be moved in order to configure the emission on B, M or T.

5. ABBREVIATIONS AND DEFINITIONS

5.1. ABBREVIATIONS

AC	Alternative Current (Power source)
ARFCN	Absolute Radio Frequency Channel Number
BTS	Base Transceiving Station
CCM	Core Controller Module
CDMA	Code Division Multiple Access
CEM	Channel Element Module
CW	Carrier Wave
DC	Direct Current (Power source)
DCH	Dedicated Channel
DDM	Dual Duplexer Module
DPCH	Dedicated Physical Channel
ECU	Environmental Cooling Unit
EUT	Equipment Under Test
FDD	Frequency Division Duplex
GPSAM	GPS/Alarm Module
MCPA	Multi-Carrier Power Amplifier
N/A	Not Applicable
OTSR	Omni Transmit, Sectored Receive
PA	Power Amplifier
SA	Spectrum Analyzer
SSDT	Site Selection Diversity Transmission
STSR	Sectored Transmit, Sectored Receive
SUT	System Under Test
TRM	Transceiver Radio Module
UARFCN	UTRA ARFCN
UCPS	Universal Compact Power Supply
UMTS	Universal Mobile Telecommunication System
UTRAN	UMTS Terrestrial Radio Access Network
VSA	Vector Signal Analyzer
W-CDMA	Wideband-Code Division Multiple Access

5.2. DEFINITIONS

Frequency Channel

	B	M	T
Tx (MHz)	871.4	881.6	891.6
Rx (MHz)	826.4	836.6	846.6

END OF DOCUMENT