TEST REPORT

Report No.:	**EM201300924**	**Application No.:**	**ZJ00035225**
Client:	Comba Telecom Ltd.		
Address:	611 East Wing, No. 8 Science Park West Avenue, Hong Kong Science Park Tai Po, Hong Kong		
Sample Description:	ComFlex 600 Series DAS		
Model number:	LRU-6100		
Test Location:	EMC Laboratory of Guangzhou GRG Metrology and Test Co., Ltd.		
Test Specification:	FCC PART 27, FCC PART 22, FCC PART 24, FCC PART 2		
Test Date:	2013-10-10 to 2013-11-19		
Issue Date:	2013-11-23		
Test Result:	*Pass.*		

Prepared By:	**Reviewed By:**	**Approved By:**
Jacky Zhang / Test Engineer	Jane Cao / Technical Support	Gavin Wu / Manager
Date:2013-11-23	Date:2013-11-23	Date:2013-11-23

Other Aspects:

None

Abbreviations: *ok / P = passed; fail / F = failed; n.a. / N = not applicable*

DIRECTIONS OF TEST

1. **This station carries out test task according to the national regulation of verifications which can be traced to National Primary Standards and BIPM.**

2. **The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test result without the written permission of the test laboratory.**

3. **If there is any objection concerning the test, the client should inform the laboratory within 15 days from the date of receiving the test report.**

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1. Test summary

Test Item	Frequency Band	Test Requirement	Test Method	Result
Output Power	700MHz Lower ABC Band	FCC part 27.50	FCC part 2. 1046& 935210 D02 Signal Boosters Certification v01r01	PASS
	700MHz Upper C Band	FCC part 27.50		PASS
	850MHz Band	FCC part 22.913		PASS
	1900MHz Broadband PCS	FCC part 24.232		PASS
	AWS-1 Band	FCC part 27.50		PASS
Conducted Spurious Emission	700MHz Lower ABC Band	FCC part 27.53	FCC part 2. 1051& 935210 D02 Signal Boosters Certification v01r01	PASS
	700MHz Upper C Band	FCC part 27.53		PASS
	850MHz Band	FCC part 22.917		PASS
	1900MHz Broadband PCS	FCC part 24.238		PASS
	AWS-1 Band	FCC part 27.53		PASS
Band Edge	700MHz Lower ABC Band	FCC part 27.53	FCC part 2. 1051& 935210 D02 Signal Boosters Certification v01r01	PASS
	700MHz Upper C Band	FCC part 27.53		PASS
	850MHz Band	FCC part 22.917		PASS
	1900MHz Broadband PCS	FCC part 24.238		PASS
	AWS-1 Band	FCC part 27.53		PASS
Radiated Spurious Emission	700MHz Lower ABC Band	FCC part 27.53	FCC part 2 1053& 935210 D02 Signal Boosters Certification v01r01	PASS
	700MHz Upper C Band	FCC part 27.53		PASS
	850MHz Band	FCC part 22.917		PASS

	1900MHz Broadband PCS	FCC part 24.238		PASS
	AWS-1 Band	FCC part 27.53		PASS
Occupied Bandwidth	700MHz Lower ABC Band	935210 D02 Signal Boosters Certification v01r01	FCC part 2.1049& 935210 D02 Signal Boosters Certification v01r01	PASS
	700MHz Upper C Band	935210 D02 Signal Boosters Certification v01r01		PASS
	850MHz Band	935210 D02 Signal Boosters Certification v01r01		PASS
	1900MHz Broadband PCS	935210 D02 Signal Boosters Certification v01r01		PASS
	AWS-1 Band	935210 D02 Signal Boosters Certification v01r01		PASS
Intermodulation	700MHz Lower ABC Band	FCC part 27.53	935210 D02 Signal Boosters Certification v01r01	PASS
	700MHz Upper C Band	FCC part 27.53		PASS
	850MHz Band	FCC part 22.917		PASS
	1900MHz Broadband PCS	FCC part 24.238		PASS
	AWS-1 Band	FCC part 27.53		PASS
Frequency Stability	700MHz Lower ABC Band	FCC part 27.54	FCC part 2.1055	PASS
	700MHz Upper C Band	FCC part 27.54		PASS
	850MHz Band	FCC part 22.355		PASS

	1900MHz Broadband PCS	FCC part 24.135		PASS
	AWS-1 Band	FCC part 27.54		PASS
Out of Band Rejection	700MHz Lower ABC Band	935210 D02 Signal Boosters Certification v01r01	935210 D02 Signal Boosters Certification v01r01	PASS
	700MHz Upper C Band	935210 D02 Signal Boosters Certification v01r01	935210 D02 Signal Boosters Certification v01r01	PASS
	850MHz Band	935210 D02 Signal Boosters Certification v01r01	935210 D02 Signal Boosters Certification v01r01	PASS
	1900MHz Broadband PCS	935210 D02 Signal Boosters Certification v01r01	935210 D02 Signal Boosters Certification v01r01	PASS
	AWS-1 Band	935210 D02 Signal Boosters Certification v01r01	935210 D02 Signal Boosters Certification v01r01	PASS

Remark：
Tx: In this whole report Tx (or tx) means Transmitter.
Rx: In this whole report Rx(or rx) means Receiver.

2. General information

2.1 Client information

Name:	Comba Telecom Ltd
Address:	611 East Wing, No. 8 Science Park West Avenue, Hong Kong Science Park Tai Po, Hong Kong

2.2 Manufacturer and Factory

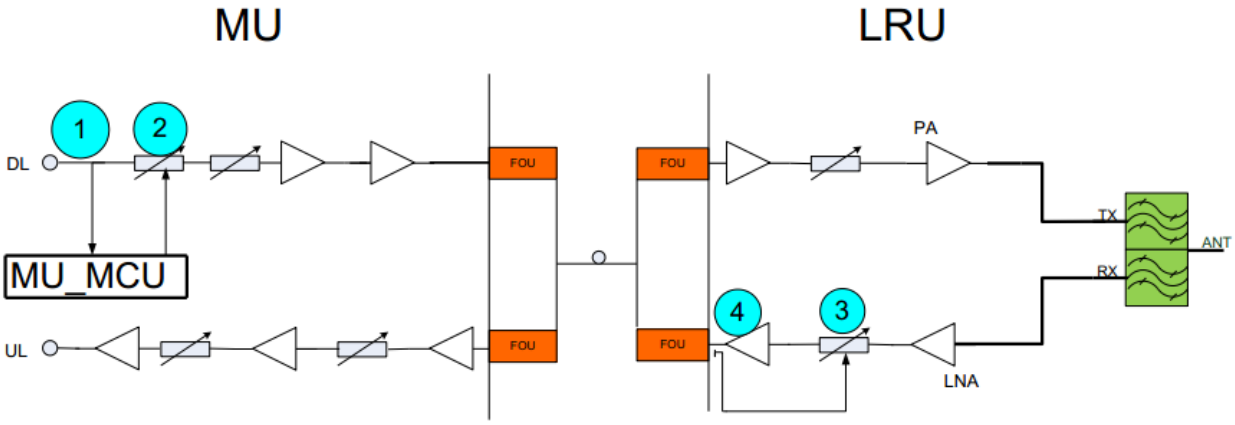
Name:	Comba Telecom Systems(China) Ltd.
Address of Manufacture:	No. 10 Shenzhou Road, Guangzhou Science City
Factory:	Comba Telecom Systems(China) Ltd.
Address of Factory:	No. 10 Shenzhou Road, Guangzhou Science City

2.3 Basic description of EUT

Product Name:	ComFlex 600 Series DAS
Model number.:	LRU-6100
Power Supply:	Master Unit: AC 100-240V, 50/60Hz Remote Unit: AC 100-240V, 50/60Hz
Power Cord:	AC power cord
Type of Modulation	LTE&GSM&CDMA&WCDMA&1x EV-DO
Frequency Band:	(1) 700MHz Lower ABC Band: Downlink: 728MHz ~ 746MHz, Uplink: 698MHz ~ 716MHz. Type of Modulation: LTE (2) 700MHz Upper C Band: Downlink: 746MHz ~ 757MHz, Uplink: 776MHz ~ 787MHz. Type of Modulation: LTE (3) 850MHz Band: Downlink: 869MHz ~ 894MHz, Uplink: 824MHz ~ 849MHz. Type of Modulation: LTE&GSM&CDMA&WCDMA&1x EV-DO (4) 1900MHz Broadband PCS: Downlink: 1930MHz ~ 1995MHz, Uplink: 1850MHz ~ 1915MHz. Type of Modulation: LTE&GSM&CDMA&WCDMA&1x EV-DO

	(6) AWS-1 Band: Downlink: 2110MHz ~ 2155MHz, Uplink:1710MHz ~ 1755MHz. Type of Modulation: LTE&CDMA&WCDMA&1x EV-DO
Normal Power Output	30dBm for Downlink -25dBm for Uplink
Normal System Gain	20dB for Downlink 20dB for Uplink
Antenna Type:	N/A

2.4 Signal control process



Downlink:

MU will test the input level at location mark 1 and send the value to MCU, softwave will compare the value with the standard value (10dBm), if the received value is higher than standard value, MCU will set ATT at location 2.(ATT=input power value-standard value)

Uplink:

Mark 3 and Mark 4 in LRU are the ALC(auto level control) circuit. Detection circuit detect the RU uplink output power at location mark4 and send to differential comparator to compare with the standard RU uplink output power(+1dBm), and the output of differential comparator will send control level to attenuator at location mark 3 to make sure the RU uplink output power is not higher than +1 dBm, so that MU uplink output power is not higher than -25dBm.

2.5 Standards applicable for testing

The standard used FCC part 27, part 22, part 24,part 2;

3. Laboratory and accreditations

3.1 Test location

The tests and measurements refer to this report were performed by Guangzhou GRG Metrology and Test Co., Ltd.

Add.: 163 Pingyun Rd, West of Huangpu Ave, Guangzhou, 510656, P. R. China

Telephone: +86-20-38699959, 38699960, 38699961

Fax : +86-20-38695185

3.2 Accreditation

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	FCC Listed Lab No. 688188
China	CNAS NO.L0446
China	DILAC No.DL175
Canada	Registration No.:8355A-1

3.3 Other information requested by the customer

N/A

4 Equipments used during test

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due(yy-mm-dd)	Calibration Interval
Signal Generator	R&S	SMJ100A	101600	2013-05-24	2014-05-23
Signal Generator	R&S	SMJ100A	101647	2013-01-17	2014-01-16
Spectrum analyzer	R&S	FSQ	200406	2013-01-16	2014-01-15
Spectrum analyzer	Agilent	MXA 9020A	MY51160238	2013-07-20	2014-07-19
Spectrum analyzer	Agilent	PXA 9030A	MY52350810	2013-04-24	2014-04-23
Frequency meter	Sweden	PM6685R	SM826664	2013-09-09	2014-09-08
Voltage parameters tester	China weibo	PF1211	192427	2013-04-05	2014-04-04
Attenuator	SHX manufacturer	DTS50-30dB-3G	08041443	----	----
Power splitter	Comba	RD-52N/NP-B0	0503040152	----	----
Voltage regulator	China tianzheng	TDGC2J-5	0754	2013-09-30	2014-09-29
High low temperature test box	China baoyuan	BYG-1000R2	112106	2013-09-26	2014-09-25
Radiated Spurious Emission					
Spectrum Analyzey	R&S	ESU40	100106	2013-07-26	2014-07-25
Biconical antenna	ELECTRO-METRICS	BIA-30S	166	2013-08-13	2013-08-12
Log-periodical antenna	ELECTRO-METRICS	LPA-30	383	2013-07-30	2014-07-29
Horn antenna	ETS.LINDGREN	3117	00075824	2013-08-20	2014-08-19
Biconical Log-periodic antenna	ETS.LINDGREN	3142C	00075971	2013-07-29	2014-07-28
Horn antenna	SCHWARZBECK	BBHA9120D	D752	2013-09-09	2014-09-08
Signal Generator	R&S	SML03	103002	2013-09-02	2014-09-01
Filter	TELONIC	TTR95-3EE	50076	2013-09-06	2014-09-05

5 Test results

5.1 EUT operation

Test Date (yy-mm-dd):	2013-10-10 to 2013-10-25
Test Method:	FCC part 2
Test Requirement:	FCC part 27, part 24, part 22
Ambient Temp:	20.0℃
Humid :	67%
Atmospheric Pressure:	1005mbar
Power supply:	AC 120V 60Hz
Test Requirement:	Fiber-optic distribution systems are a type of in-building radiation system that receives RF signals from an antenna, distributes the signal over fiber-optic cable, and then retransmits at another location for example within a building or tunnel. Most fiber-optic systems are signal booster; however, some may be repeaters. These systems generally have two enclosures typically called host(or local or donor unit) and remote. Some systems may also have an optional expander box for fan-out to multiple remotes. The system transmits downlink signals from the remote unit to handsets, portables, or clients, and transmits uplink signals via from the host unit. Usually but not always the uplink goes through an intermediate amplifier to a “donor” antenna. Therefore both uplink and downlink must be tested, unless filing effectively documents how connection of uplink to donor antenna with or without an intermediate amplifier will be prevented, such as for always only a cabled connection to a base station. Fiber-optic systems are not amplifiers (AMP equipment class) – they are equipment class TNB or PCB. The same approval procedures also apply for multiple-enclosure systems connected by coax cable. ***1) host unit*** a) transmits uplink to base station via antenna thru coax, ***passive interface unit***, or ***active interface unit***(amplifier). b) sends base-station downlink via fiber-optic or coax to ***remote***. c) receives handset uplink via fiber-optic or coax from ***remote***. d) separate FCC ID from ***remote***, unless electrically identical. e) ***non-transmitting host unit*** i) connects directly to a base station via coax cable but does not connect to antenna or amplifier.

ii) Part 15 digital device subject to Verification, no FCC ID.

2) remote unit

a) receives base-station downlink via fiber-optic or coax from ***host***, transmits via antenna to handsets.

b) Returns handset uplink via fiber-optic or coax to ***host.***

c) Separate FCC ID from ***remote***, unless electrically identical.

3) passive interface unit

a) contains attenuators, splitters,combiners.

b) coax cable connection between ***host*** and base-station.

c) Pass device, no FCC ID.

4) active interface unit

a) amplifies uplink signal from host unit for transmit by donor antenna.

b) attenuates downlink from donor antenna.

c) coax cable connection between ***host*** and ***active interface unit***.

d) Usually has separate FCC ID; in some cases could be combined/included with ***host*** as one enclosure.

Remark:

GENERAL DEFINITIONS FOR CERTIFICATION PURPOSES:

The following three general definitions are applicable in this annex for equipment authorization purpose. The general term “extender” is the same as booster, but booster should be used rather than extender. The general term “translator” is the same as repeater, but repeater should be used rather than translator.

External radio frequency power amplifier(ERFPA) –any device which, (1) when used in conjunction with a radio transmitter signal source, is capable of amplification of that signal, and (2) is not an integral part of a radio transmitter as manufactured. The EAS equipment class AMP is used only for an ERFPA device inserted between a transmitter (TNB/PCB) and an antenna (has only one antenna port).

Booster is a device that automatically reradiates signals from base transmitters without channel translation, for the purpose of improving the reliability of existing service by increasing the signal strength in dead spots. An “in-buliding radiation system” is a signal booster. These devices are not intended to extend the size of coverage from the originating

base station. A booster can be either single or multiple channels.

Repeater is a device that retransmits the signals of other stations. Repeaters are different from boosters in that they can include frequency translation and can extend coverage beyond the design of the original base station. A repeater is typically single channel but can also be multiple channels.

For Consumer Signal Boosters, uniform test procedures consistent with the new requirments in the Order are presently under development, and as soon as available will be released as a separate attachment under this KDB 935210 publication number. In addition, per the Order for §§90.219 (d) and 90.219 (e) contain specific provisions for which information and test data must be included in application;[2] uniform test procedures for the §90.219 requirements will be amended to KDB 935210 as soon available.

For devices other than consumersignal boosters, tests should be done with each typical signal. e.g., for F3E emissions use 2500 Hz with 2.5kHz or 5 kHz deviation. Use of CW signal for some tests is acceptable in lieu of actual emission, in some cases when CW signal gives worst case.

The EUT include host unit and remote unit.

Only remote unit need FCC ID, ***Host unit*** do not need separate FCC ID.

5.2 Test procedure & Measurement Data

5.2.1 RF Output Power

Test Date:	10 Oct, 2013 to 11 Oct, 2013
Ambient Temp:	20.0℃
Humid :	67%
Atmospheric Pressure:	1005mbar
Power supply:	AC 120V 60Hz
Test Method:	FCC part 2. 1046& 935210 D02 Signal Boosters Certification v01r01
Test Requirement:	
700MHz Lower ABC Band	FCC part 27. 50 The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 1000 Watts/MHz.
700MHz Upper C Band	FCC part 27. 50 The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 1000 Watts/MHz.
850MHz Band	FCC part 22. 913 The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts/MHz.
1900MHz Broadband PCS	FCC part 24. 232 The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts/MHz.
AWS-1 Band	FCC part 27. 50 The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 1640 Watts/MHz.
Test conditions:	Normal conditions

Test configuration:

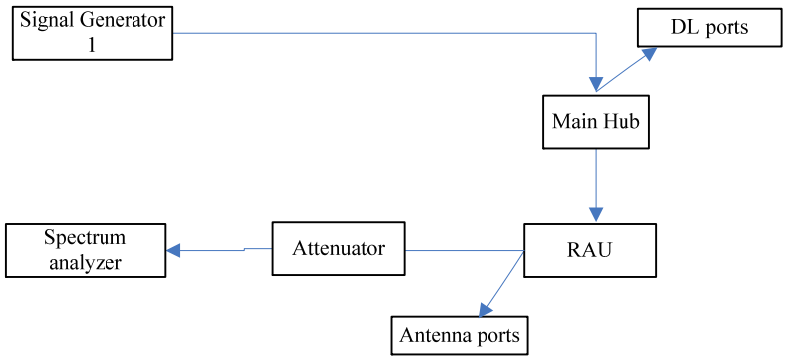


Figure 1: Downlink Configuration

Test Procedure:

RF output power test procedure:

a) Connect the equipment as illustrated, when the output power is over the maximum value of the Spectrum Analyer, add the attenuator to avoid destroying the facility.

b) Set the center frequency of the Spectrum Analyzer to assigned transmitter frequency, key the transmitter, and set the level of the carrier to the full scale reference line.

c) Do not apply any tone to modulate the EUT

d) Adjust the Spectrum Analyzer for the following setting:

1) Resolution Bandwidth >> the carrier bandwidth

2) Video Bandwidth refer to standard requirement

e) Use Spectrum Analyzer channel power measurement

f) Record the frequencies and levels of carrier power

g) Calculate the signal link way loss and final power value

Remark:

Output power:

Power on Form 731 should be clearly understood as either composite of multichannels or per carrier, If power is composite include in comments field: “Power output listed is composite for multi-channel operation.”

Check that the input drive level is at the maximum input rating and maximum gain setting for all tests. Check both uplink and downlink input level. See manual or brochures/technical description for maximum rating. May need to check FCC identifier of transmitter used for tests.

Confirm device cannot operate in saturation. Are there means to control maximum power and to assure linear operation (use

in system configuration may be necessary)? How is saturation or over-modulation prevented for pulsed signal inputs?

5.3.1.1 Measurement Record

1) 700MHz Lower ABC Band

Frequency Band	Modulation	Frequency	Max. Output power(dBm)	Max. value in W
Downlink: Working Band (Lower A: 728MHz~734MHz; Lower B: 734MHz~740MHz; Lower C: 740MHz~746MHz) Measure Max. Output power				
Lower A	LTE(1.4MHz)	Lowest Frequency 728.7 MHz	30.06	1.23W
		Middle frequency 731 MHz	30.62	
		Highest frequency 733.3 MHz	30.90	
	LTE(3 MHz)	Lowest Frequency 729.5 MHz	30.30	1.23W
		Middle frequency 731 MHz	30.60	
		Highest frequency 732.5 MHz	30.90	
	LTE(5 MHz)	Lowest Frequency 730.5 MHz	30.49	1.17W
		Middle frequency 731 MHz	30.59	
		Highest frequency 731.5 MHz	30.69	
Lower B	LTE(1.4MHz)	Lowest Frequency 734.7 MHz	30.16	1.43W
		Middle frequency 737 MHz	30.78	
		Highest frequency 739.3 MHz	31.55	
	LTE(3 MHz)	Lowest Frequency 735.5 MHz	30.29	1.33W
		Middle frequency 737 MHz	30.61	
		Highest frequency 738.5 MHz	31.23	
	LTE(5 MHz)	Lowest Frequency 736.5 MHz	30.32	1.26W
		Middle frequency 737 MHz	30.65	
		Highest frequency	31.02	

		737.5 MHz		
Lower C	LTE(1.4MHz)	Lowest Frequency 740.7 MHz	30.18	1.12W
		Middle frequency 743 MHz	30.07	
		Highest frequency 745.3 MHz	30.11	
	LTE(3 MHz)	Lowest Frequency 741.5 MHz	30.20	1.10W
		Middle frequency 743 MHz	30.24	
		Highest frequency 744.5 MHz	30.06	
	LTE(5 MHz)	Lowest Frequency 742.5 MHz	30.25	1.08W
		Middle frequency 743 MHz	30.32	
		Highest frequency 743.5 MHz	30.14	
Lower ABC Full Band	LTE(10 MHz)	Lowest Frequency 733 MHz	29.43	1.14W
		Middle frequency 737 MHz	30.58	
		Highest frequency 741 MHz	30.25	
	LTE(15 MHz)	Lowest Frequency 735.5 MHz	30.24	1.15W
		Middle frequency 737 MHz	30.60	
		Highest frequency 738.5 MHz	30.28	

Remark: test in single channel status, output power is tested in full amplifying status.

Kept the EUT working in maximum gain, adjusted the input power until to get the EUT to maximum output power.

2) 700MHz Upper C Band

Modulation	Frequency	Max. Output power(dBm)	Max. value in W
Downlink: Working Band (746MHz~757MHz) Measure Max. Output power			
LTE(1.4MHz)	Lowest Frequency 746.7 MHz	30.05	1.03W
	Middle frequency 751.5 MHz	30.11	
	Highest frequency 756.3 MHz	29.71	
LTE(3 MHz)	Lowest Frequency 747.5 MHz	30.46	1.17W
	Middle frequency 751.5 MHz	30.72	
	Highest frequency 755.5 MHz	29.43	
LTE(5 MHz)	Lowest Frequency 748.5 MHz	30.50	1.17W
	Middle frequency 751.5 MHz	30.75	
	Highest frequency 754.5 MHz	29.54	
LTE(10 MHz)	Lowest Frequency 751 MHz	30.52	1.17W
	Middle frequency 751.5 MHz	30.70	
	Highest frequency 752 MHz	30.16	

Remark: test in single channel status, output power is tested in full amplifying status.

Kept the EUT working in maximum gain, adjusted the input power until to get the EUT to maximum output power.

3) 850MHz Band

3.1) LTE modulation for Downlink

Modulation	Frequency	Max. Output power(dBm)	Max. value in W
Downlink: Working Band (869MHz~894MHz) Measure Max. Output power			
LTE(1.4MHz)	Lowest Frequency 869.7 MHz	29.80	1.04W
	Middle frequency 881.5 MHz	30.58	
	Highest frequency 893.3 MHz	29.41	
LTE(3 MHz)	Lowest Frequency 870.5 MHz	29.64	1.17W
	Middle frequency 881.5 MHz	30.69	
	Highest frequency 892.5 MHz	29.50	
LTE(5 MHz)	Lowest Frequency 871.5 MHz	29.60	1.15W
	Middle frequency 881.5 MHz	30.72	
	Highest frequency 891.5 MHz	29.76	
LTE(10 MHz)	Lowest Frequency 874 MHz	29.63	1.11W
	Middle frequency 881.5 MHz	30.89	
	Highest frequency 889 MHz	30.21	
LTE(15 MHz)	Lowest Frequency 876.5 MHz	30.23	1.21W
	Middle frequency 881.5 MHz	30.29	
	Highest frequency 886.5 MHz	30.33	
LTE(20 MHz)	Lowest Frequency 879 MHz	30.71	1.29W
	Middle frequency 881.5 MHz	30.03	

	Highest frequency 884 MHz	30.11	

Remark: test in single channel status, output power is tested in full amplifying status.

Kept the EUT working in maximum gain, adjusted the input power until to get the EUT to maximum output power.

3.2) GSM modulation for Downlink

Modulation	Frequency	Max. Output power(dBm)	Max. value in W
Downlink: Working Band (869MHz~894MHz) Measure Max. Output power			
GSM(300kHz)	Lowest Frequency 869.4 MHz	29.35	1.03W
	Middle frequency 881.5 MHz	30.08	
	Highest frequency 893.6 MHz	30.12	

3.3) CDMA modulation for Downlink

Modulation	Frequency	Max. Output power(dBm)	Max. value in W
Downlink: Working Band (869MHz~894MHz) Measure Max. Output power			
CDMA2000 (1.25MHz)	Lowest Frequency 871 MHz	29.64	1.01W
	Middle frequency 881.5 MHz	30.05	
	Highest frequency 892 MHz	29.91	

3.4) WCDMA modulation for Downlink

Modulation	Frequency	Max. Output power(dBm)	Max. value in W
Downlink: Working Band (869MHz~894MHz) Measure Max. Output power			
WCDMA(5MHz)	Lowest Frequency 871.5 MHz	30.66	1.26W
	Middle frequency 881.5 MHz	31.01	
	Highest frequency 891.5 MHz	29.95	

3.5) 1x EV-DO modulation for Downlink

Modulation	Frequency	Max. Output power(dBm)	Max. value in W

Downlink: Working Band (869MHz~894MHz) Measure Max. Output power			
1x EV-DO (1.25MHz)	Lowest Frequency 871 MHz	29.47	0.98W
	Middle frequency 881.5 MHz	29.90	
	Highest frequency 892 MHz	29.81	

4) 1900MHz Broadband PCS

4.1) LTE modulation for Downlink

Modulation	Frequency	Max. Output power(dBm)	Max. value in W
Downlink: Working Band (1930MHz~1995MHz) Measure Max. Output power			
LTE(1.4MHz)	Lowest Frequency 1930.7 MHz	29.28	0.97W
	Middle frequency 1962.5 MHz	29.59	
	Highest frequency 1994.3 MHz	29.87	
LTE(3 MHz)	Lowest Frequency 1931.5 MHz	29.46	1.01W
	Middle frequency 1962.5 MHz	29.59	
	Highest frequency 1993.5 MHz	30.06	
LTE(5 MHz)	Lowest Frequency 1932.5 MHz	29.58	1.01W
	Middle frequency 1962.5 MHz	29.64	
	Highest frequency 1992.5 MHz	30.06	
LTE(10 MHz)	Lowest Frequency 1935 MHz	29.56	1.11W
	Middle frequency 1962.5 MHz	29.72	
	Highest frequency 1990 MHz	30.45	
LTE(15 MHz)	Lowest Frequency 1937.5 MHz	29.93	1.17W
	Middle frequency 1962.5 MHz	30.31	
	Highest frequency 1987.5 MHz	30.70	
LTE(20 MHz)	Lowest Frequency 1940 MHz	30.13	1.20W
	Middle frequency 1962.5 MHz	30.26	

	Highest frequency 1985 MHz	30.80	

Remark: test in single channel status, output power is tested in full amplifying status.

Kept the EUT working in maximum gain, adjusted the input power until to get the EUT to maximum output power.

4.2) GSM modulation for Downlink

Modulation	Frequency	Max. Output power(dBm)	Max. value in W
Downlink: Working Band (1930MHz~1995MHz) Measure Max. Output power			
GSM(300kHz)	Lowest Frequency 1930.4 MHz	29.12	1.17W
	Middle frequency 1962.5 MHz	30.57	
	Highest frequency 1994.6 MHz	30.70	

4.3) CDMA modulation for Downlink

Modulation	Frequency	Max. Output power(dBm)	Max. value in W
Downlink: Working Band (1930MHz~1995MHz) Measure Max. Output power			
CDMA2000 (1.25MHz)	Lowest Frequency 1932 MHz	29.48	1.19W
	Middle frequency 1962.5 MHz	30.76	
	Highest frequency 1993 MHz	30.64	

4.4) WCDMA modulation for Downlink

Modulation	Frequency	Max. Output power(dBm)	Max. value in W
Downlink: Working Band (1930MHz~1995MHz) Measure Max. Output power			
WCDMA(5MHz)	Lowest Frequency 1932.5 MHz	30.23	1.16W
	Middle frequency 1962.5 MHz	30.30	
	Highest frequency 1992.5 MHz	30.65	

4.5) 1x EV-DO modulation for Downlink

Modulation	Frequency	Max. Output power(dBm)	Max. value in W

Downlink: Working Band (1930MHz~1995MHz) Measure Max. Output power			
1x EV-DO (1.25MHz)	Lowest Frequency 1932 MHz	29.59	1.15W
	Middle frequency 1962.5 MHz	30.60	
	Highest frequency 1993 MHz	30.49	

5) AWS-1 Band

5.1) LTE modulation for Downlink

Modulation	Frequency	Max. Output power(dBm)	Max. value in W
Downlink: Working Band (2110MHz~2155MHz) Measure Max. Output power			
LTE(1.4MHz)	Lowest Frequency 2110.7 MHz	30.40	1.10W
	Middle frequency 2132.5 MHz	29.78	
	Highest frequency 2154.3 MHz	29.62	
LTE(3 MHz)	Lowest Frequency 2111.5 MHz	30.42	1.10W
	Middle frequency 2132.5 MHz	29.56	
	Highest frequency 2153.5 MHz	30.03	
LTE(5 MHz)	Lowest Frequency 2112.5 MHz	30.43	1.10W
	Middle frequency 2132.5 MHz	29.85	
	Highest frequency 2152.5 MHz	29.74	
LTE(10 MHz)	Lowest Frequency 2115 MHz	30.25	1.06W
	Middle frequency 2132.5 MHz	29.70	
	Highest frequency 2150 MHz	29.52	
LTE(15 MHz)	Lowest Frequency 2117.5 MHz	30.34	1.08W
	Middle frequency 2132.5 MHz	29.46	
	Highest frequency 2147.5 MHz	29.50	
LTE(20 MHz)	Lowest Frequency 2120 MHz	30.38	1.09W
	Middle frequency 2132.5 MHz	29.52	

	Highest frequency 2145 MHz	29.76	

Remark: test in single channel status, output power is tested in full amplifying status.

Kept the EUT working in maximum gain, adjusted the input power until to get the EUT to maximum output power.

5.2) CDMA modulation for Downlink

Modulation	Frequency	Max. Output power(dBm)	Max. value in W
Downlink: Working Band (2110MHz~2155MHz) Measure Max. Output power			
CDMA2000 (1.25MHz)	Lowest Frequency 2112 MHz	30.24	1.06W
	Middle frequency 2132.5 MHz	29.85	
	Highest frequency 2153 MHz	29.82	

5.3) WCDMA modulation for Downlink

Modulation	Frequency	Max. Output power(dBm)	Max. value in W
Downlink: Working Band (2110MHz~2155MHz) Measure Max. Output power			
WCDMA(5MHz)	Lowest Frequency 2112.5 MHz	30.37	1.09W
	Middle frequency 2132.5 MHz	30.37	
	Highest frequency 2152.5 MHz	30.24	

5.4) 1x EV-DO modulation for Downlink

Modulation	Frequency	Max. Output power(dBm)	Max. value in W
Downlink: Working Band (2110MHz~2155MHz) Measure Max. Output power			
1x EV-DO (1.25MHz)	Lowest Frequency 2112 MHz	30.21	1.05W
	Middle frequency 2132.5 MHz	29.97	
	Highest frequency 2153 MHz	29.96	

5.3.2 Conducted Spurious Emissions

Test Date:	11 Oct, 2013 to 17 Nov,2013
Ambient Temp:	20.0℃
Humid :	67%
Atmospheric Pressure:	1005mbar
Power supply:	AC 120V 60Hz
Test Method:	FCC part 2. 1051& 935210 D02 Signal Boosters Certification v01r01
Test Requirement:	
700MHz Lower ABC Band	FCC part 27. 53 The power of any emission outside a licensee's frequency block shall be attenuated below the transmitting power (P) by at least 43 + 10 log (P) dB, or -13 dBm.
700MHz Upper C Band	FCC part 27. 53 The power of any emission outside a licensee's frequency block shall be attenuated below the transmitting power (P) by at least 43 + 10 log (P) dB, or -13 dBm.
850MHz Band	FCC part 22. 917 The power of any emission outside a licensee's frequency block shall be attenuated below the transmitting power (P) by at least 43 + 10 log (P) dB, or -13 dBm.
1900MHz Broadband PCS	FCC part 24. 238 The power of any emission outside a licensee’s frequency block shall be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB, or -13 dBm.
AWS-1 Band	FCC part 27. 53 The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, or -13 dBm.
EUT Operation:	The output power of EUT be set to maximum value, the gain of EUT be set to maximum value by software through the manufacture
Test conditions:	Normal conditions

Test configuration:

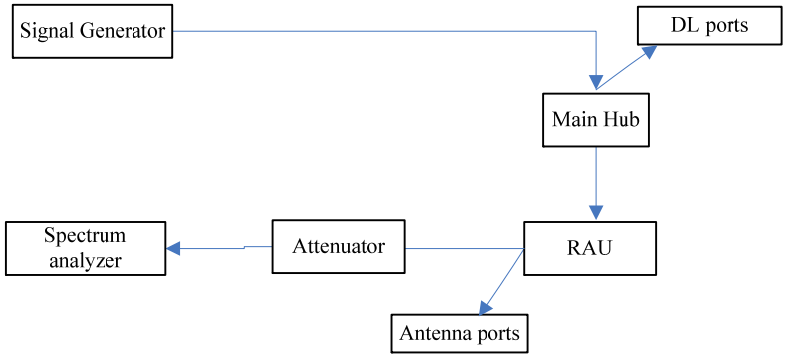
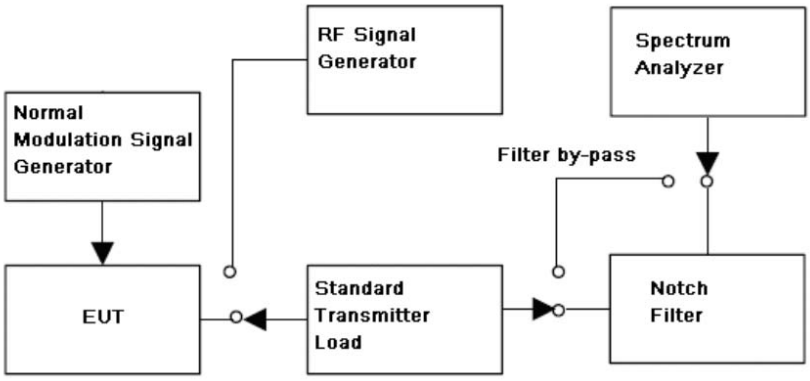


Figure 2: Downlink Configuration



Test Procedure: Conducted Emission test procedure:

a) Connect the equipment as illustrated, with the notch filter by-passed, when the output power is over the max. value of the Spectrum Analyzer, add the attenuator to avoid destroying the facility.

b) Set the center frequency of the Spectrum Analyzer to assigned transmitter frequency, key the transmitter, and set the level of the carrier to the full scale reference line.

c) Do not apply any tone to modulate the EUT

d) Adjust the Spectrum Analyzer for the following setting:

1) Resolution Bandwidth (base the standard,apply the different set), her is 100kHz for frequency band less than 1 GHz, 1 MHz for frequency over 1 GHz

2) Video Bandwidth refer to standard requirement

e) Adjust the center frequency of the spectrum analyzer for incremental coverage of the range from:

1) the lowest radio frequency generated in the equipment, it can be 9 kHz base the test method, here select 30 MHz

as lowest frequency start point;

2) the highest radio frequency shall higher than 10 times of carrier frequency;

f) Record the frequencies and levels of spurious emissions;

Remark: The notch filter is used for avoid the EUT fundamental carrier output power making the spectrum overload and the harmonic spurious brought by it.

When the EUT fundamental carrier is not enough to make the status, the notch filter could be not used.

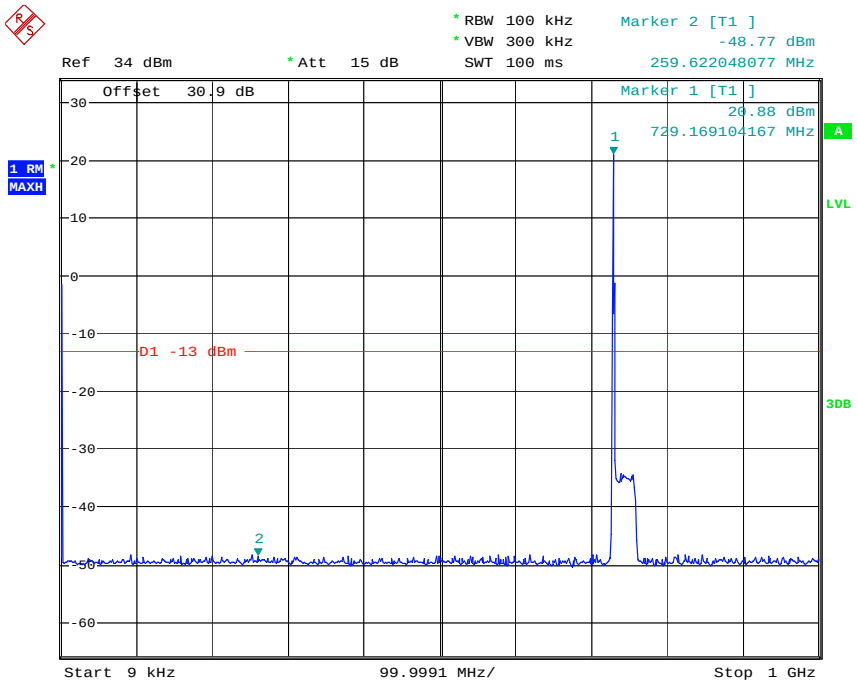
5.3.2.1 Measurement Record

5.3.2.1.1 700MHz Lower ABC Band for Downlink

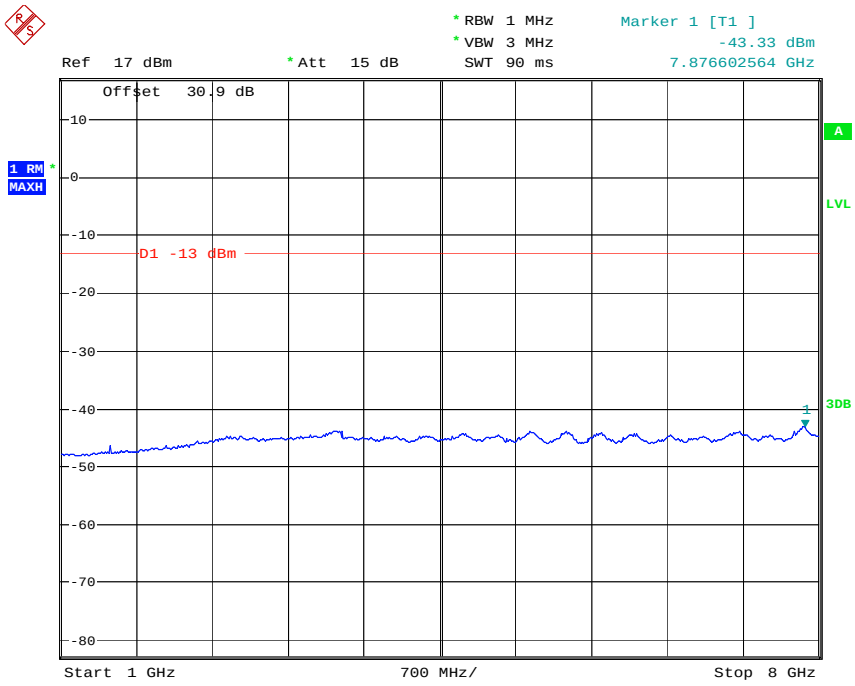
1) 700MHz Lower A

1.1) Test for LTE 1.4MHz

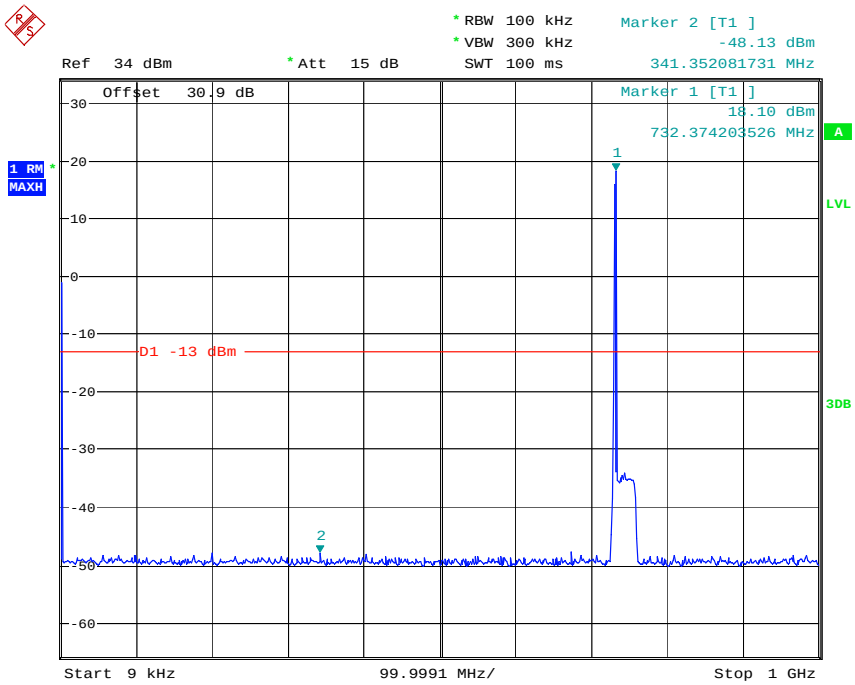
(a) Lowest frequency: 9 kHz to 1 GHz



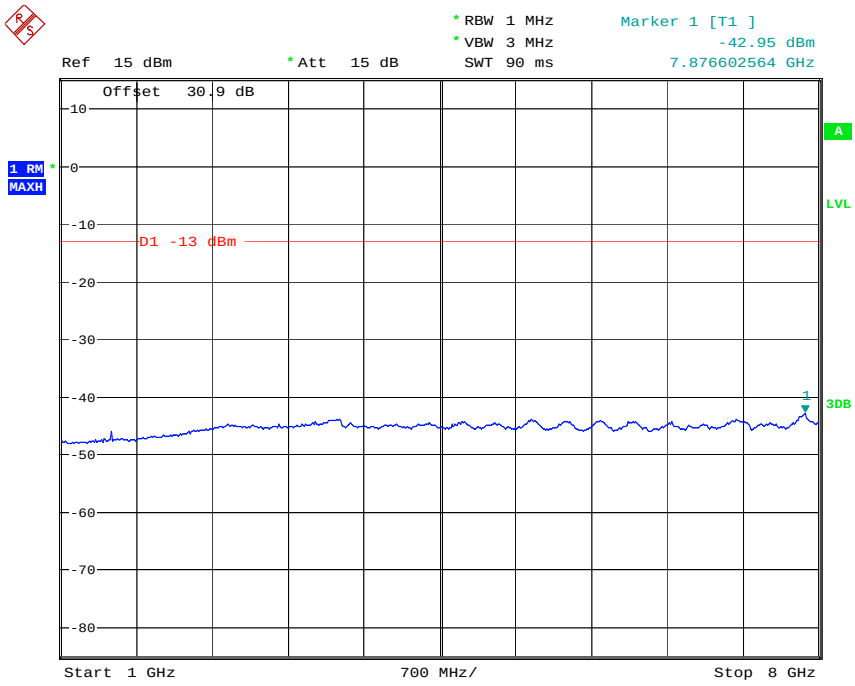
(b) Lowest frequency: 1 GHz to 8 GHz



(c) Middle frequency: 9 kHz to 1 GHz

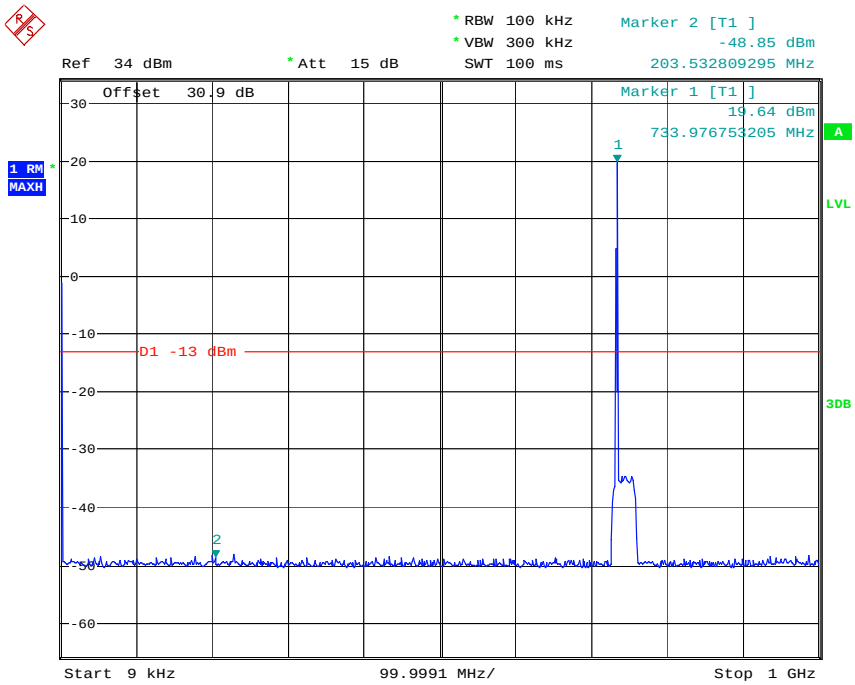


(d) Middle frequency: 1 GHz to 8 GHz



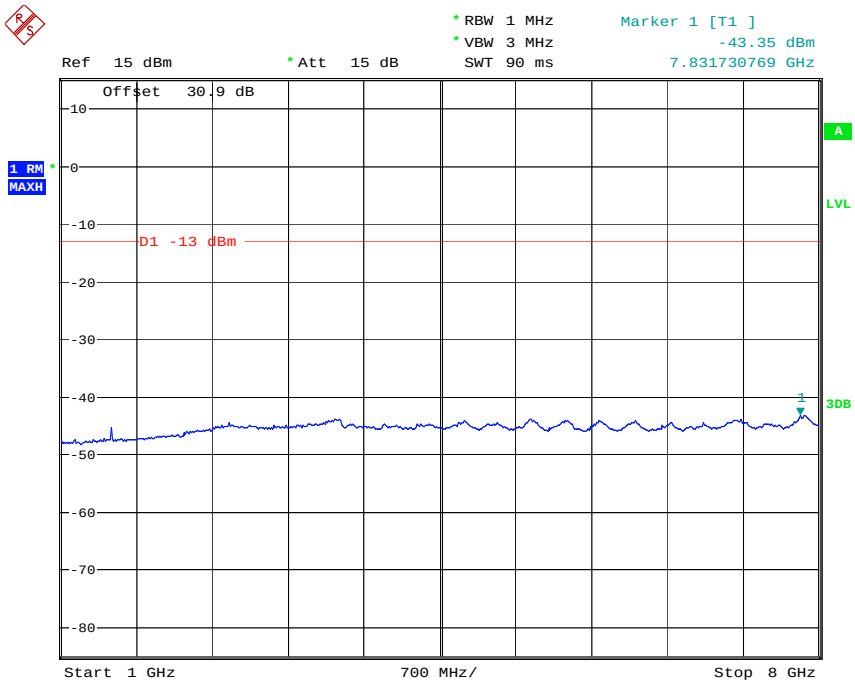
Date: 12.OCT.2013 14:39:14

(e) Highest frequency: 9 kHz to 1 GHz



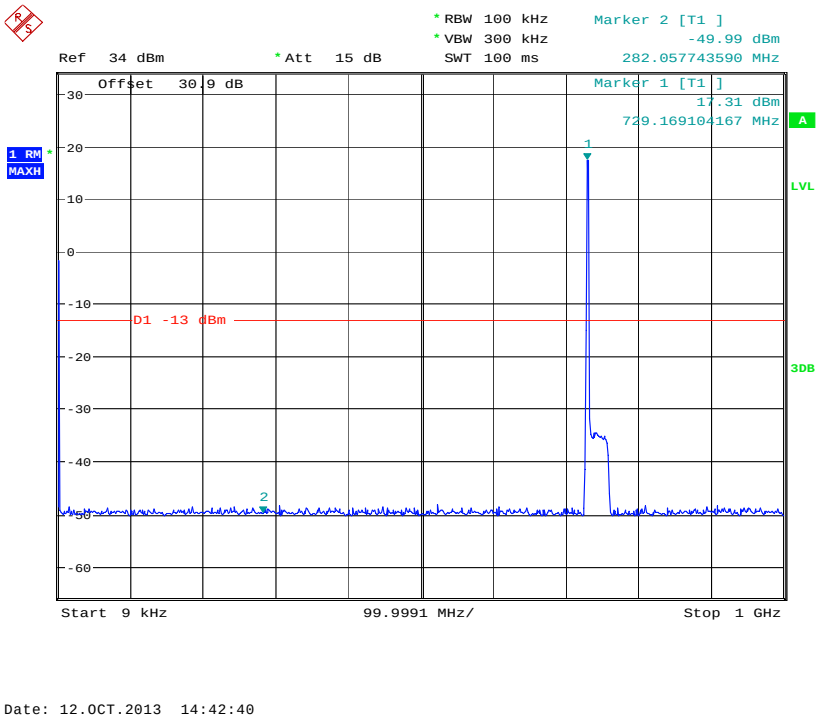
Date: 12.OCT.2013 14:40:31

(f) Highest frequency: 1 GHz to 8 GHz

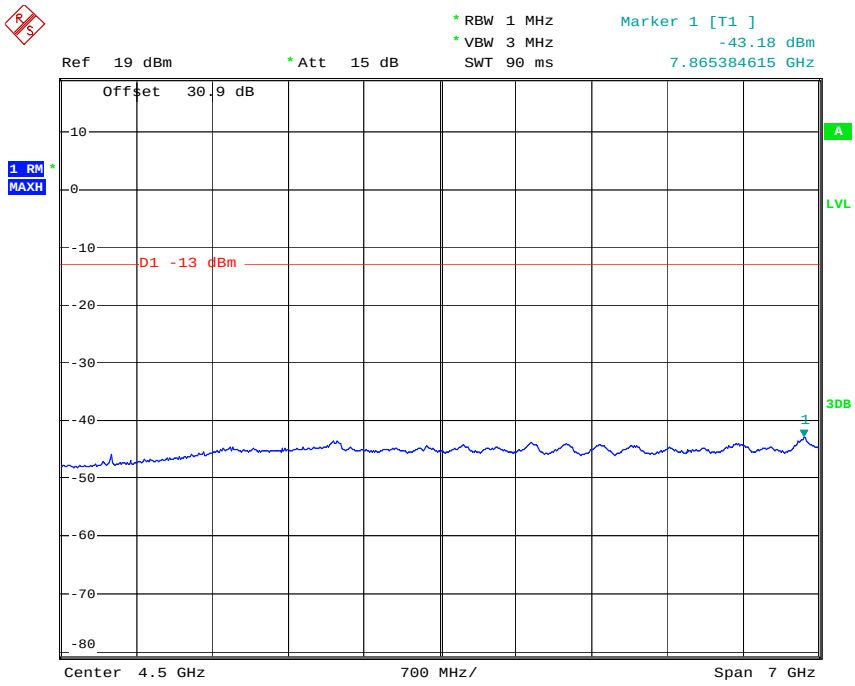


1.2) Test for LTE 3MHz

(a) Lowest frequency: 9 kHz to 1 GHz

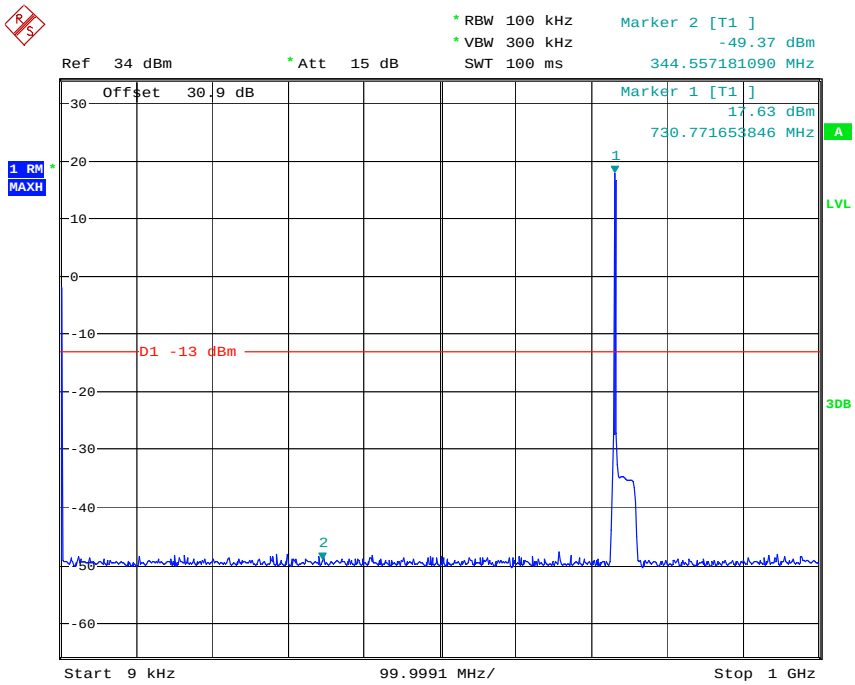


(b) Lowest frequency: 1 GHz to 8 GHz



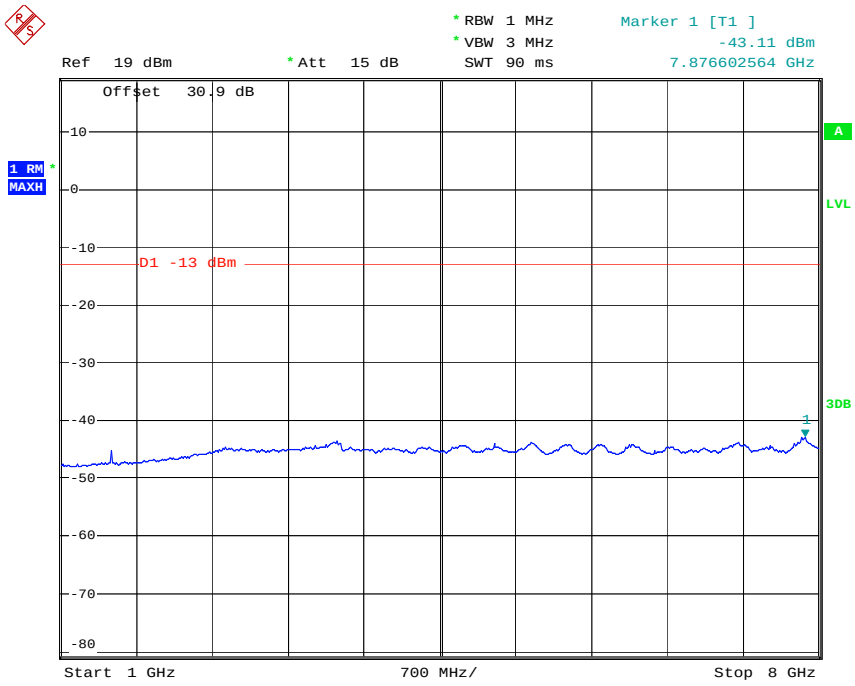
Date: 12.OCT.2013 14:45:14

(c) Middle frequency: 9 kHz to 1 GHz



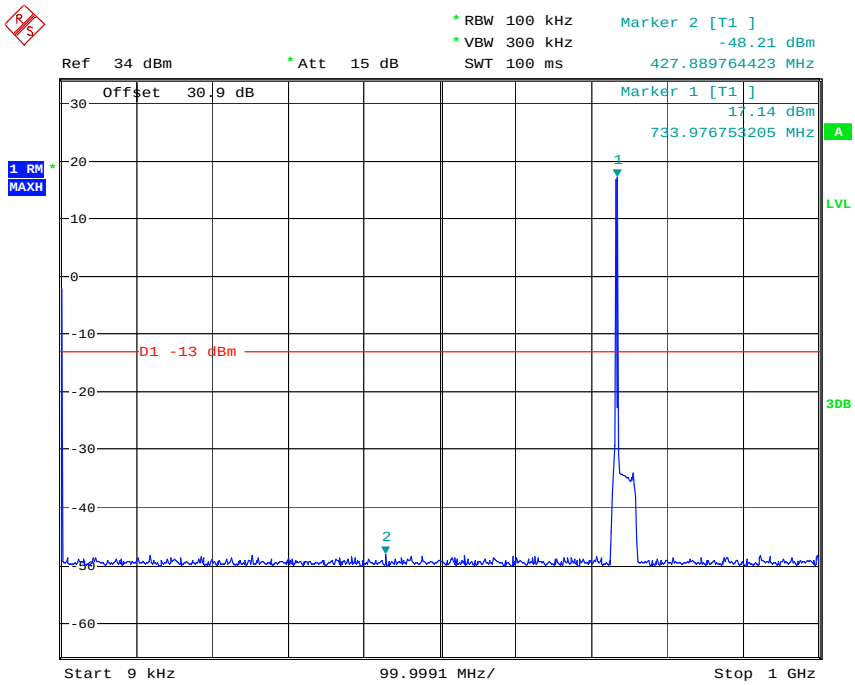
Date: 12.OCT.2013 14:43:11

(d) Middle frequency: 1 GHz to 8 GHz



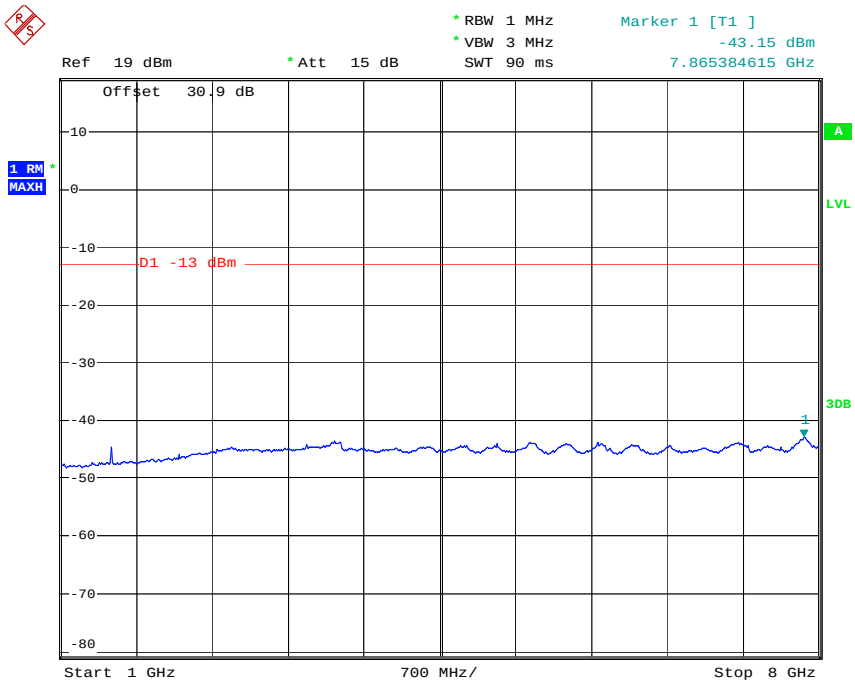
Date: 12.OCT.2013 14:44:48

(e) Highest frequency: 9 kHz to 1 GHz



Date: 12.OCT.2013 14:43:45

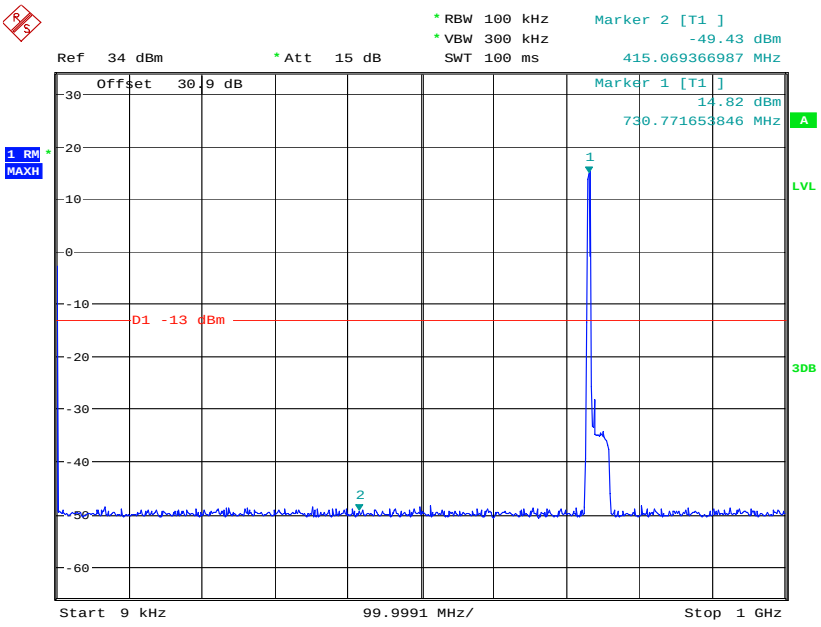
(f) Highest frequency: 1 GHz to 8 GHz



Date: 12.OCT.2013 14:44:25

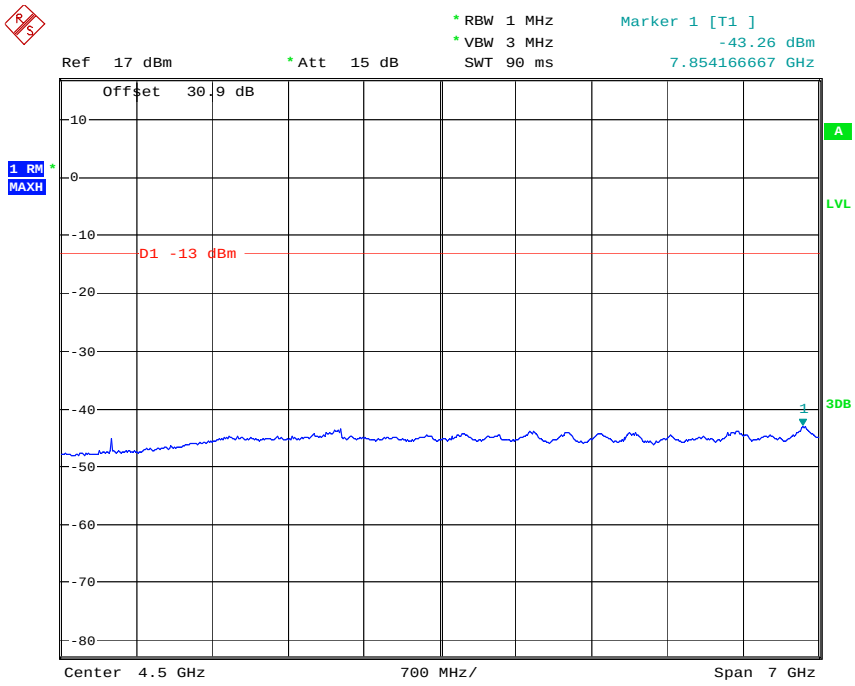
1.3) Test for LTE 5MHz

(a) Lowest frequency: 9 kHz to 1 GHz



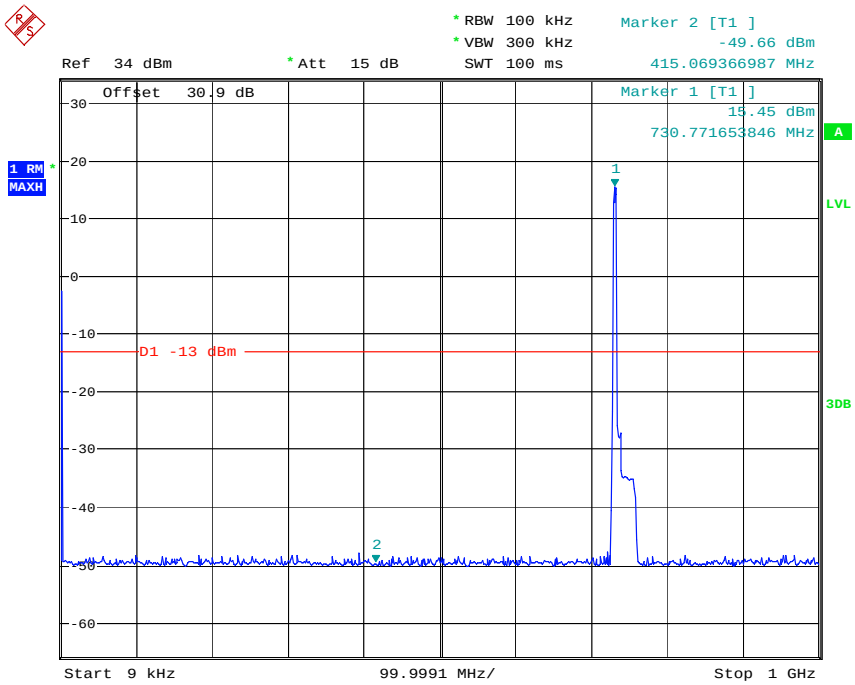
Date: 12.OCT.2013 14:48:21

(b) Lowest frequency: 1 GHz to 8 GHz



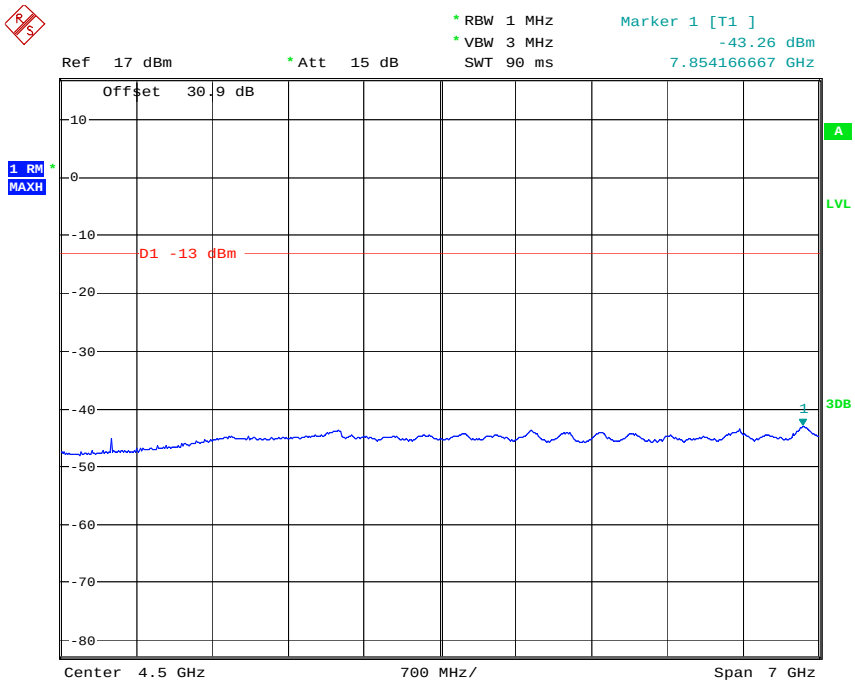
Date: 12.OCT.2013 14:45:51

(c) Middle frequency: 9 kHz to 1 GHz



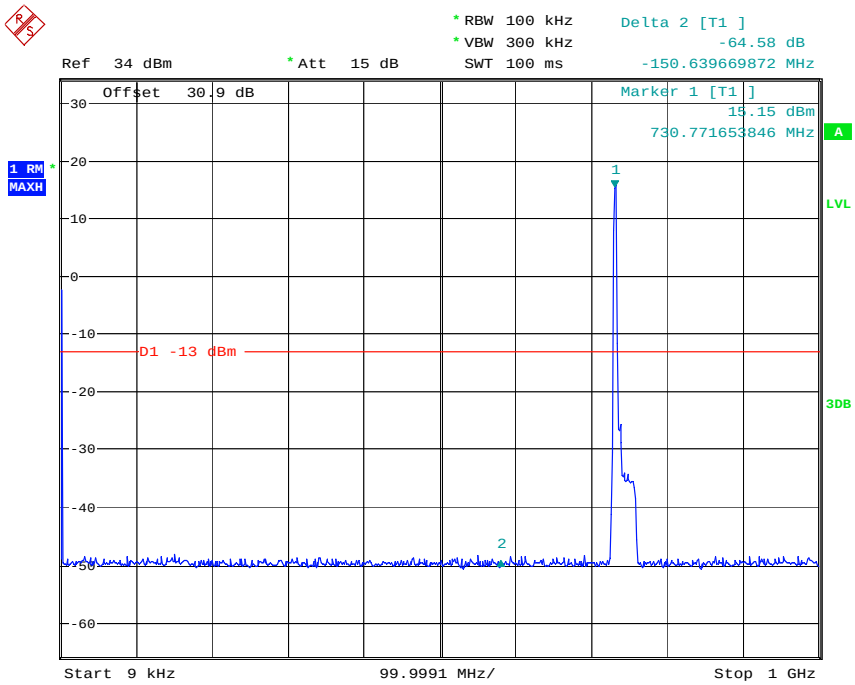
Date: 12.OCT.2013 14:47:57

(d) Middle frequency: 1 GHz to 8 GHz



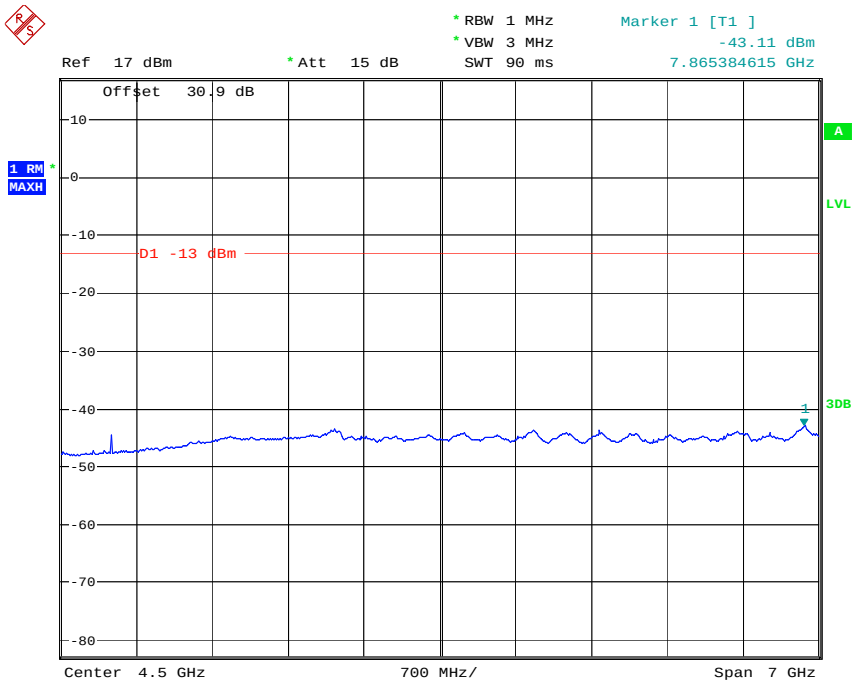
Date: 12.OCT.2013 14:46:22

(e) Highest frequency: 9 kHz to 1 GHz



Date: 12.OCT.2013 14:47:26

(f) Highest frequency: 1 GHz to 8 GHz

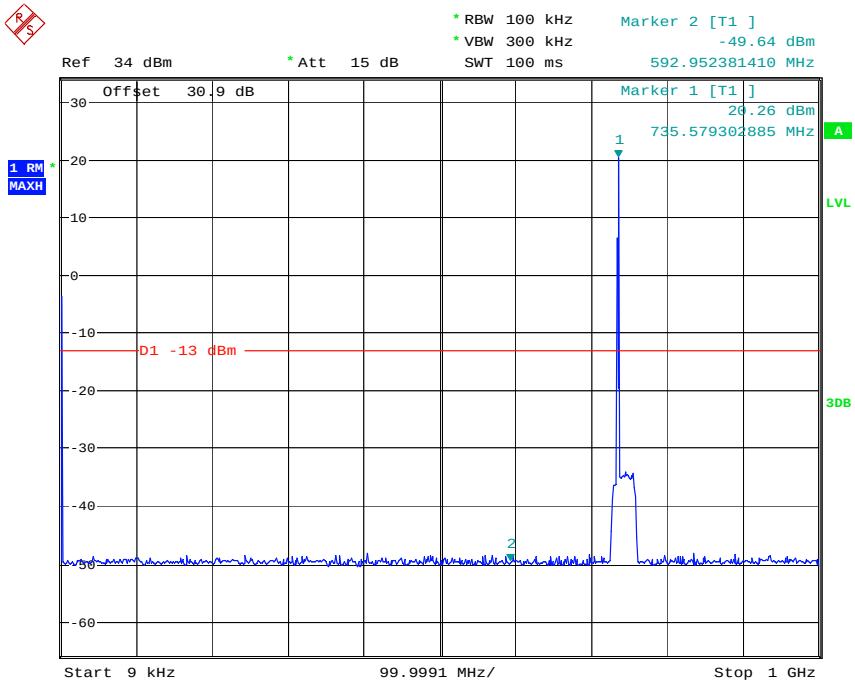


Date: 12.OCT.2013 14:46:50

2) 700MHz Lower B

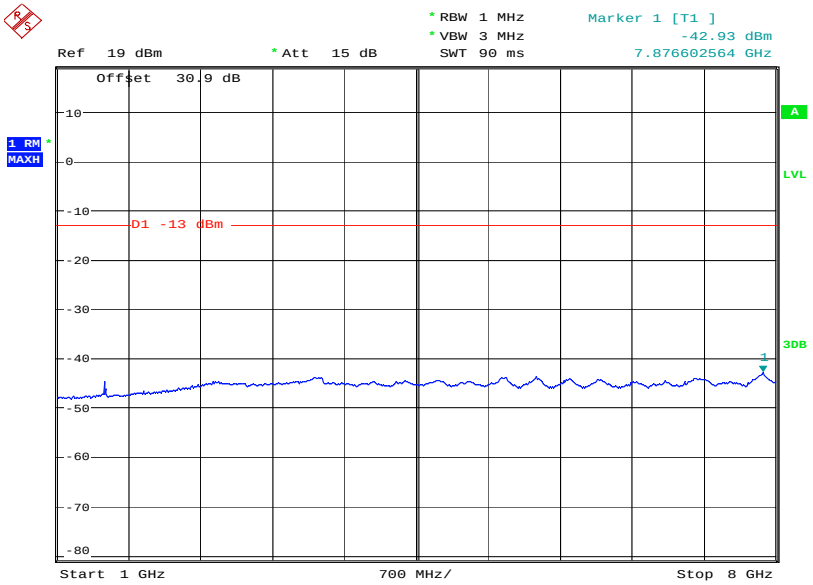
2.1) Test for LTE 1.4MHz

(a) Lowest frequency: 9 kHz to 1 GHz



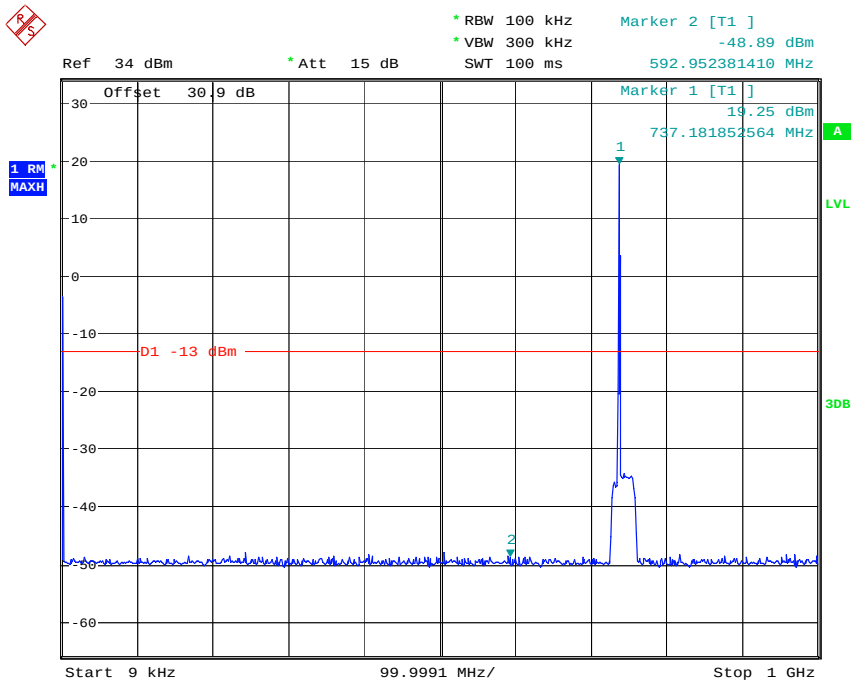
Date: 12.OCT.2013 14:52:50

(b) Lowest frequency: 1 GHz to 8 GHz



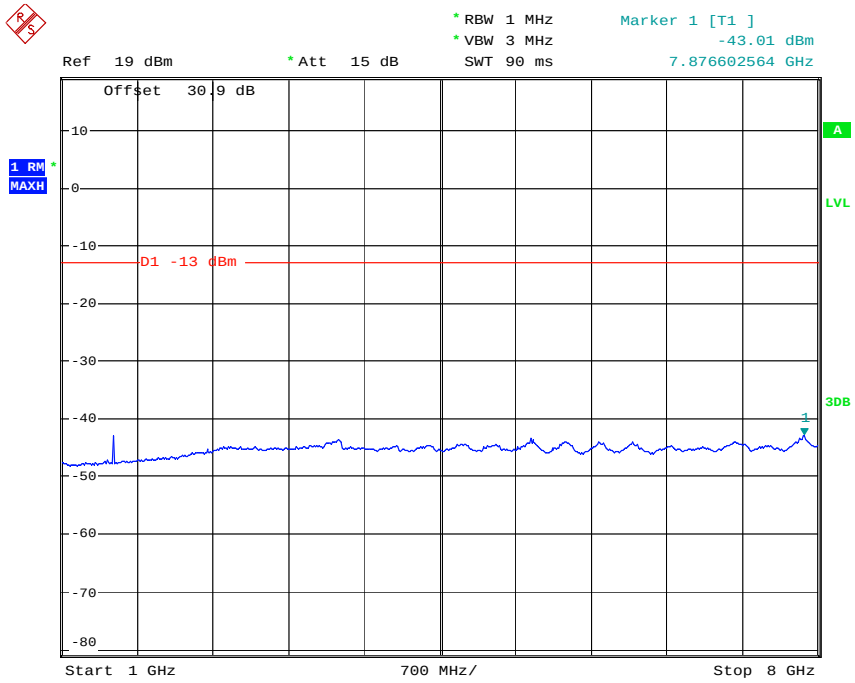
Date: 12.OCT.2013 14:51:43

(c) Middle frequency: 9 kHz to 1 GHz



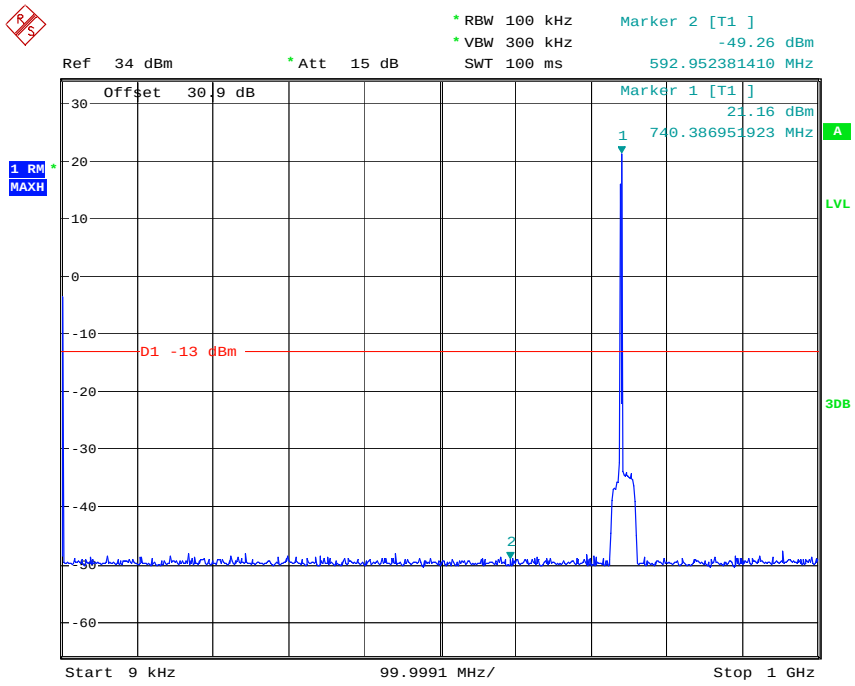
Date: 12.OCT.2013 14:53:22

(d) Middle frequency: 1 GHz to 8 GHz



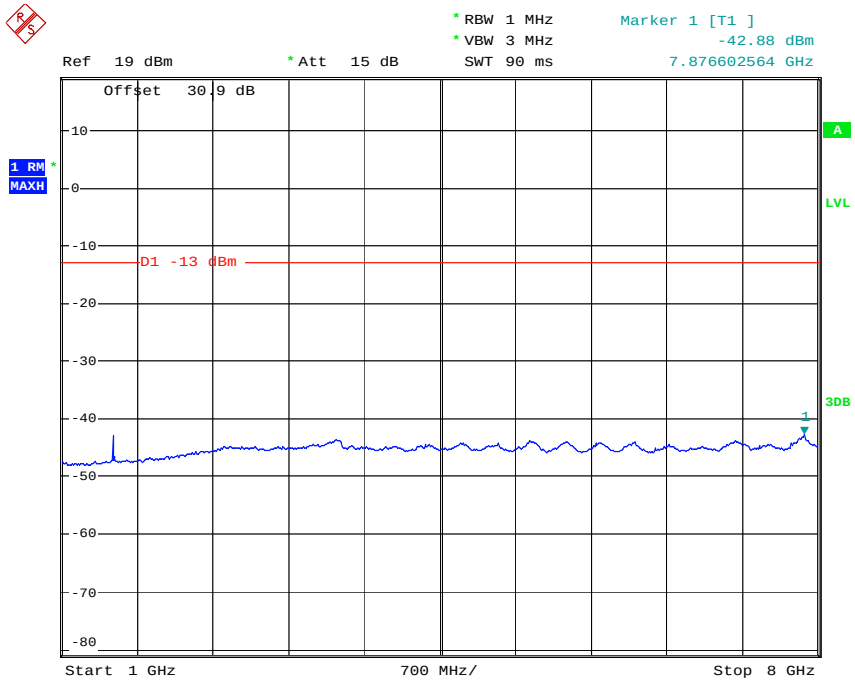
Date: 12.OCT.2013 14:51:21

(e) Highest frequency: 9 kHz to 1 GHz



Date: 12.OCT.2013 14:53:49

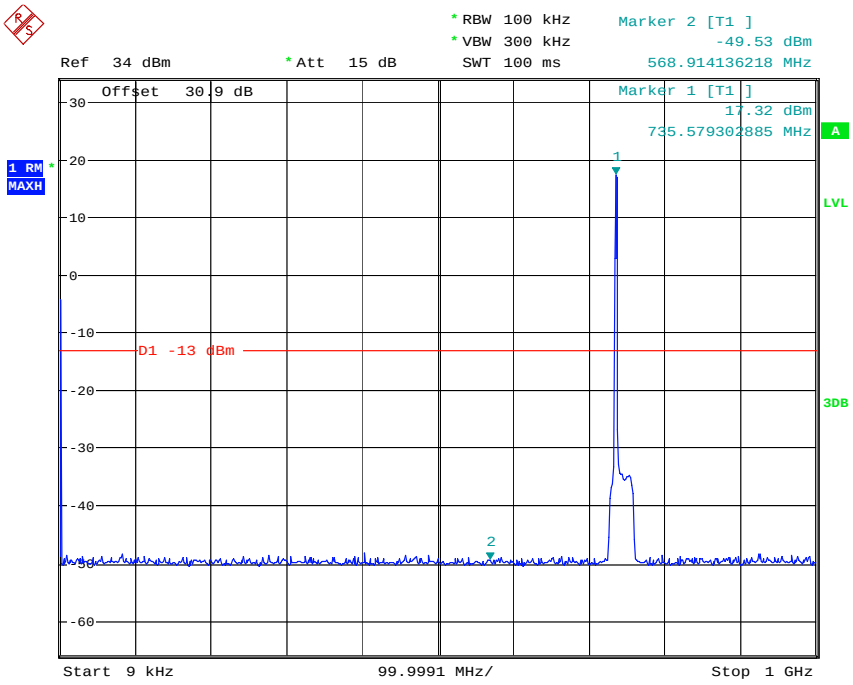
(f) Highest frequency: 1 GHz to 8 GHz



Date: 12.OCT.2013 14:50:43

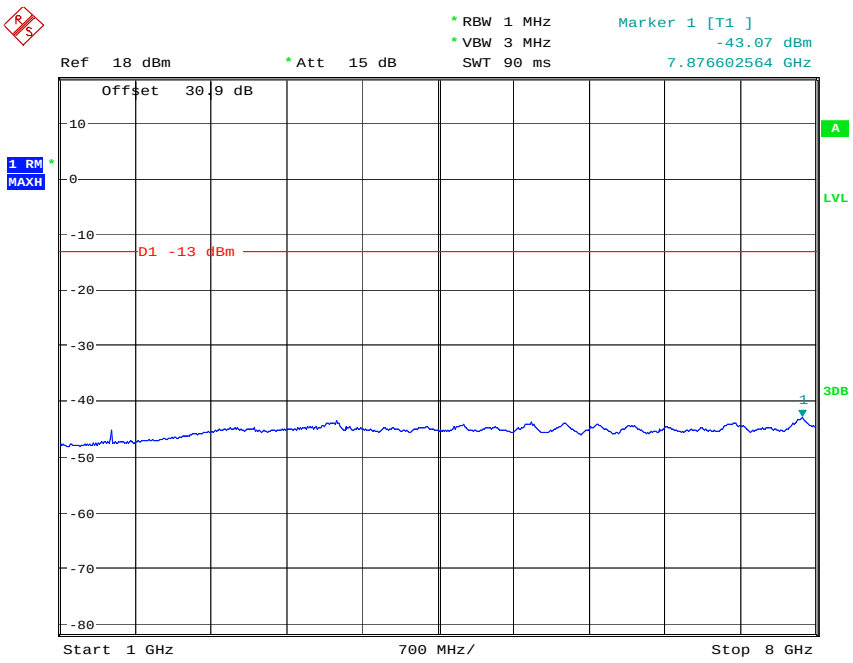
2.2) Test for LTE 3MHz

(a) Lowest frequency: 9 kHz to 1 GHz



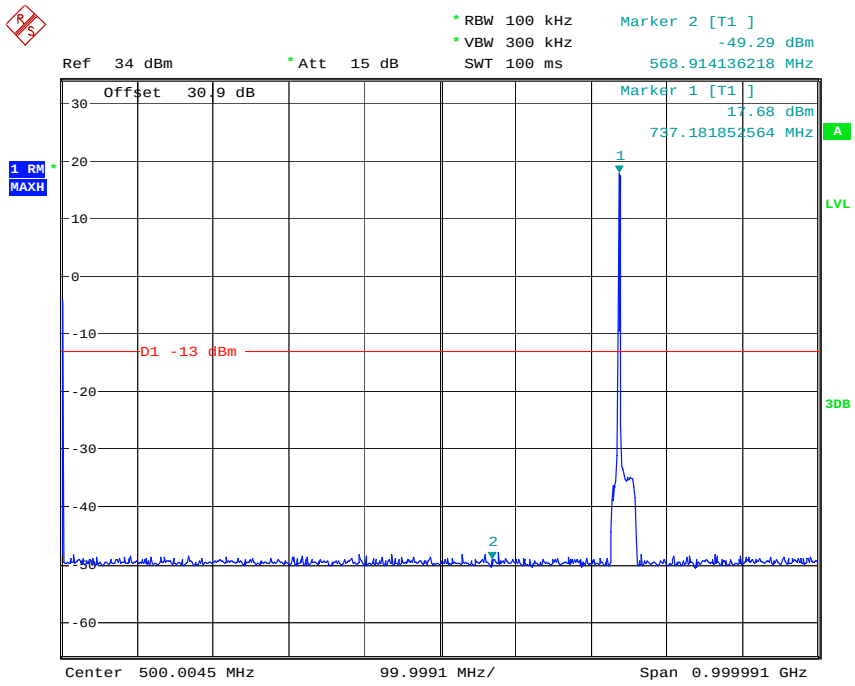
Date: 12.OCT.2013 14:54:58

(b) Lowest frequency: 1 GHz to 8 GHz



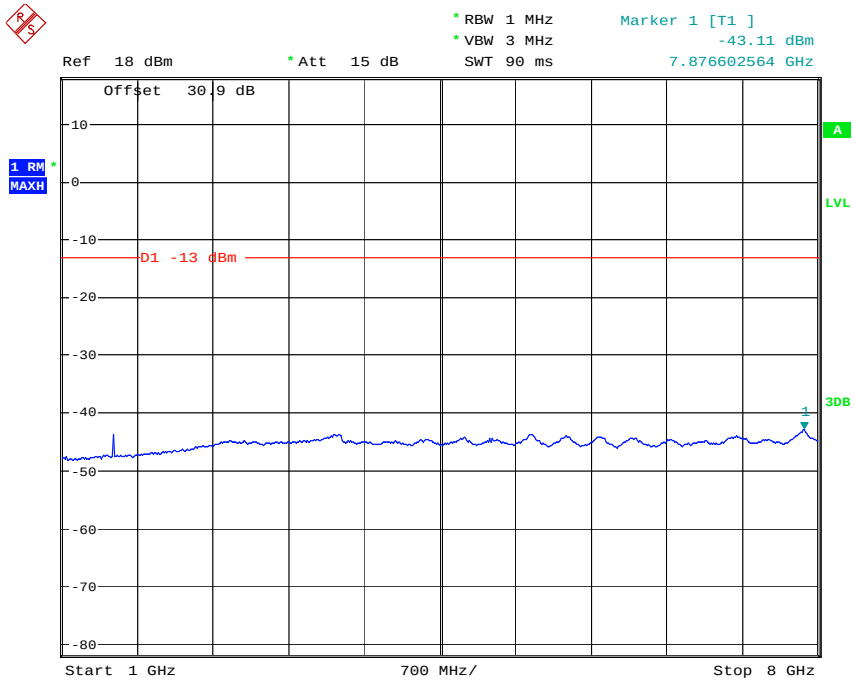
Date: 12.OCT.2013 14:57:30

(c) Middle frequency: 9 kHz to 1 GHz



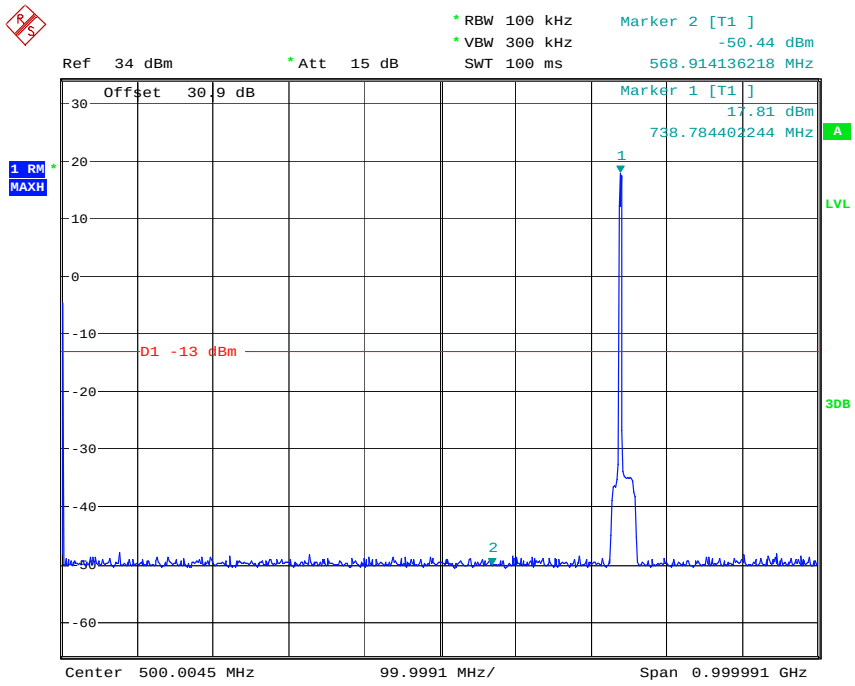
Date: 12.OCT.2013 14:55:29

(d) Middle frequency: 1 GHz to 8 GHz



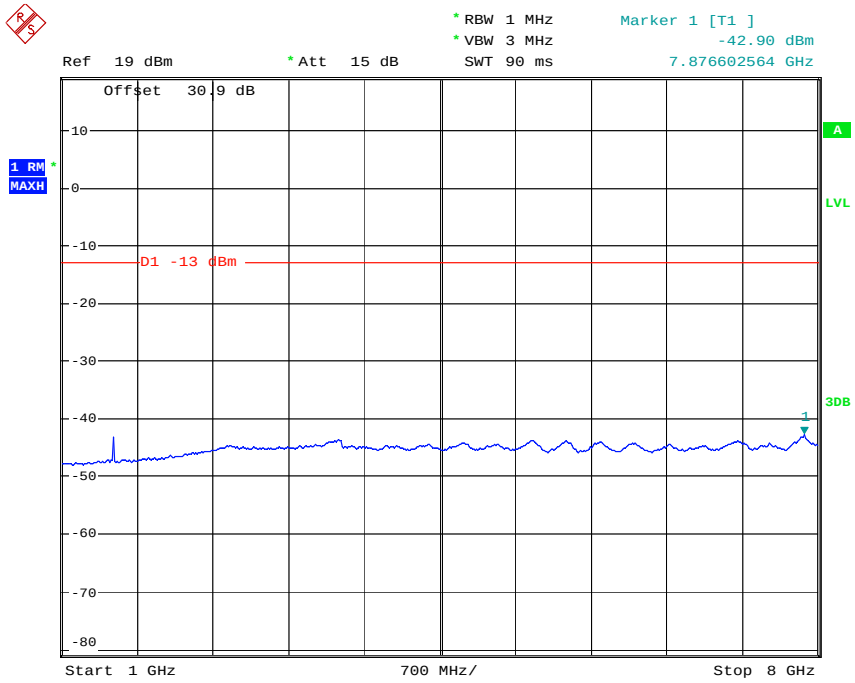
Date: 12.OCT.2013 14:57:11

(e) Highest frequency: 9 kHz to 1 GHz



Date: 12.OCT.2013 14:56:09

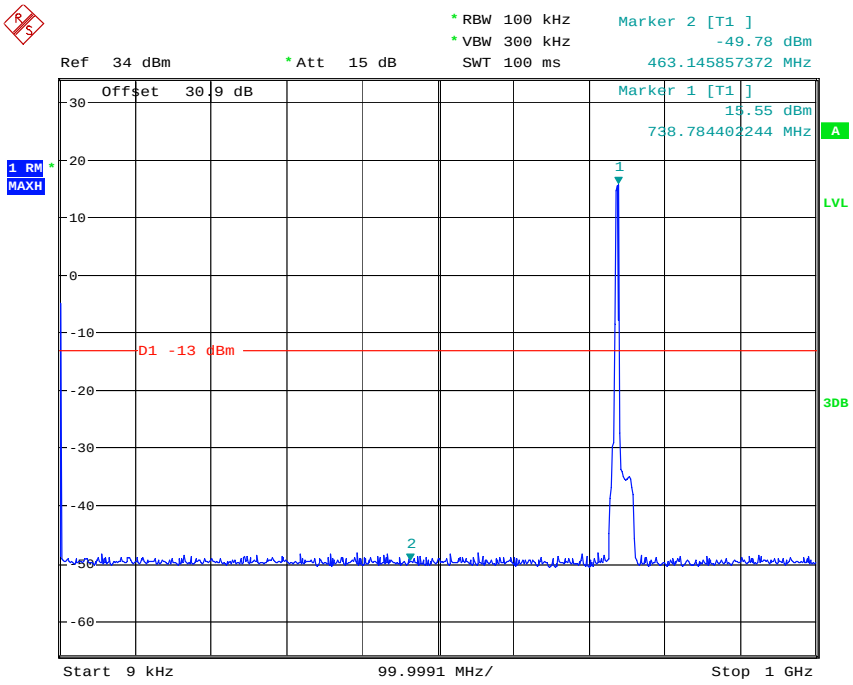
(f) Highest frequency: 1 GHz to 8 GHz



Date: 12.OCT.2013 14:56:44

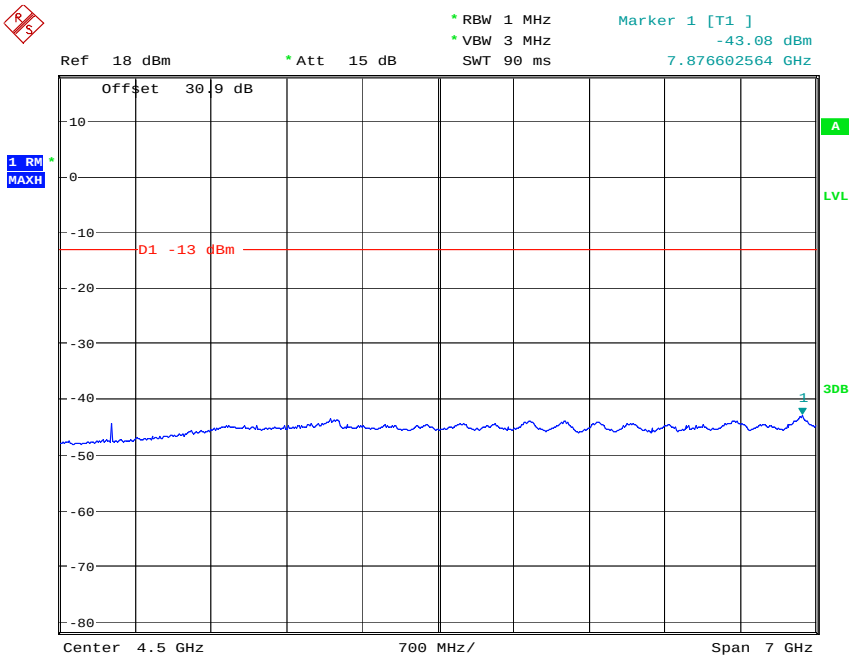
2.3) Test for LTE 5MHz

(a) Lowest frequency: 9 kHz to 1 GHz



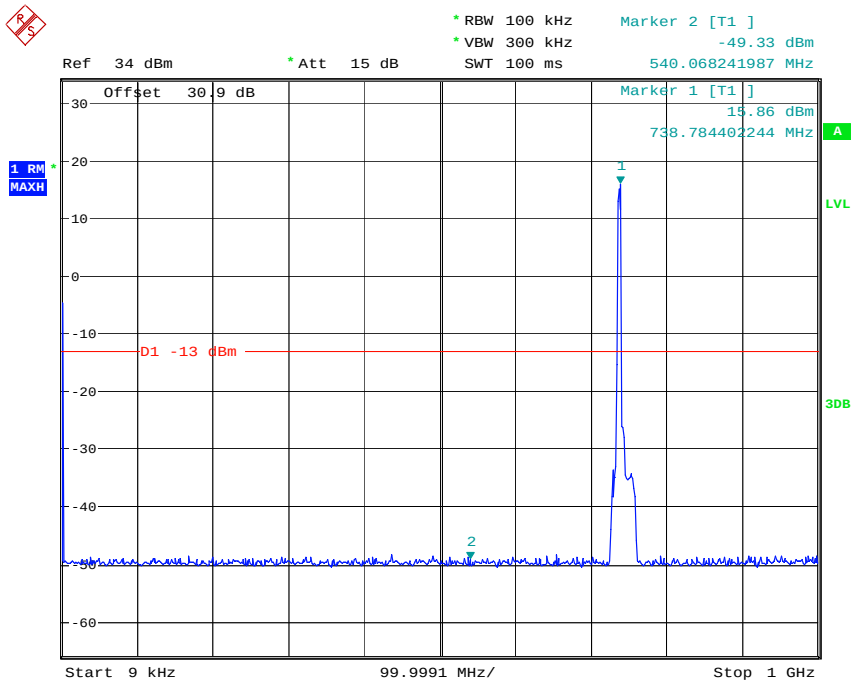
Date: 12.OCT.2013 15:00:45

(b) Lowest frequency: 1 GHz to 8 GHz



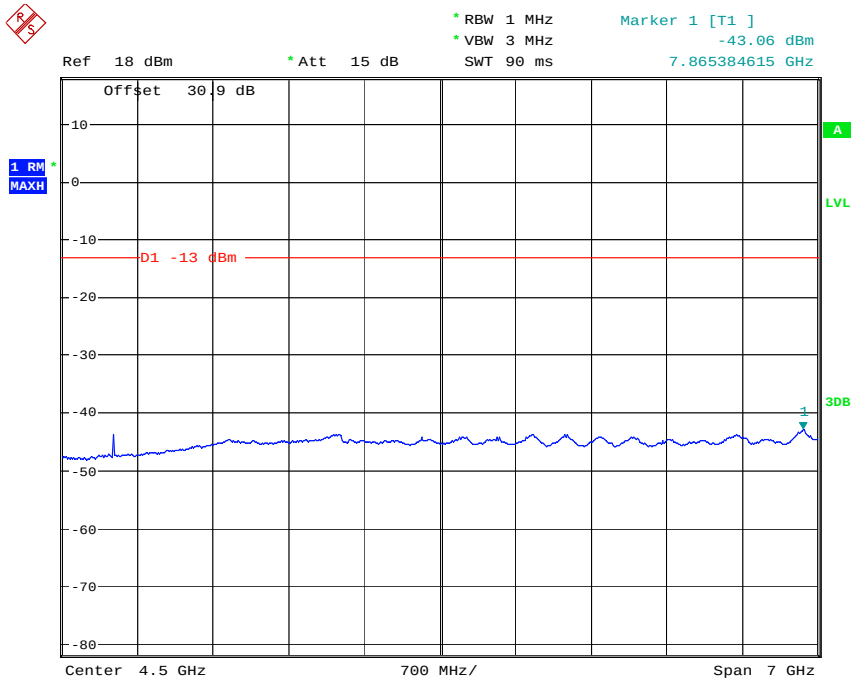
Date: 12.OCT.2013 14:58:00

(c) Middle frequency: 9 kHz to 1 GHz



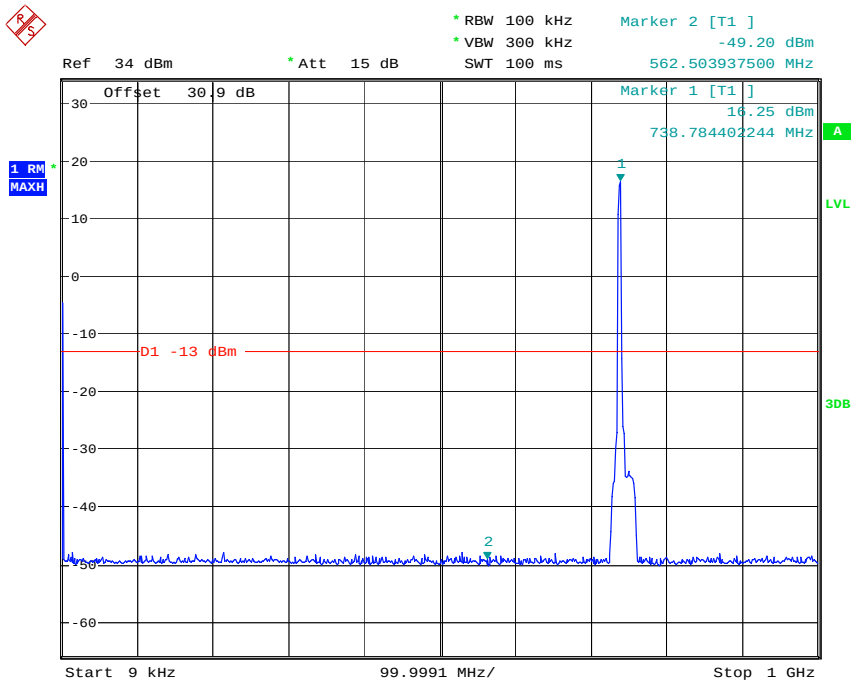
Date: 12.OCT.2013 15:00:18

(d) Middle frequency: 1 GHz to 8 GHz



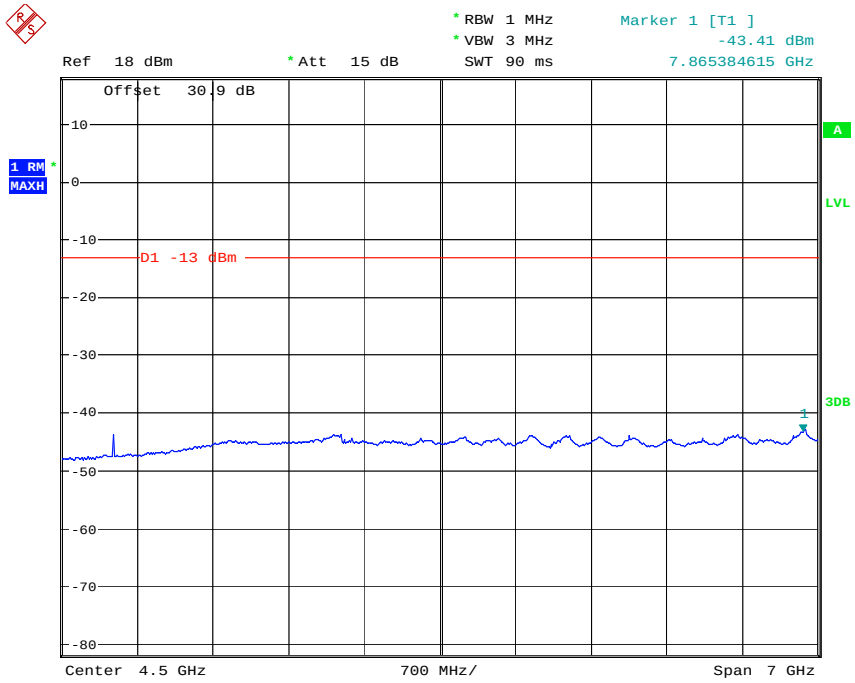
Date: 12.OCT.2013 14:58:32

(e) Highest frequency: 9 kHz to 1 GHz



Date: 12.OCT.2013 14:59:45

(f) Highest frequency: 1 GHz to 8 GHz

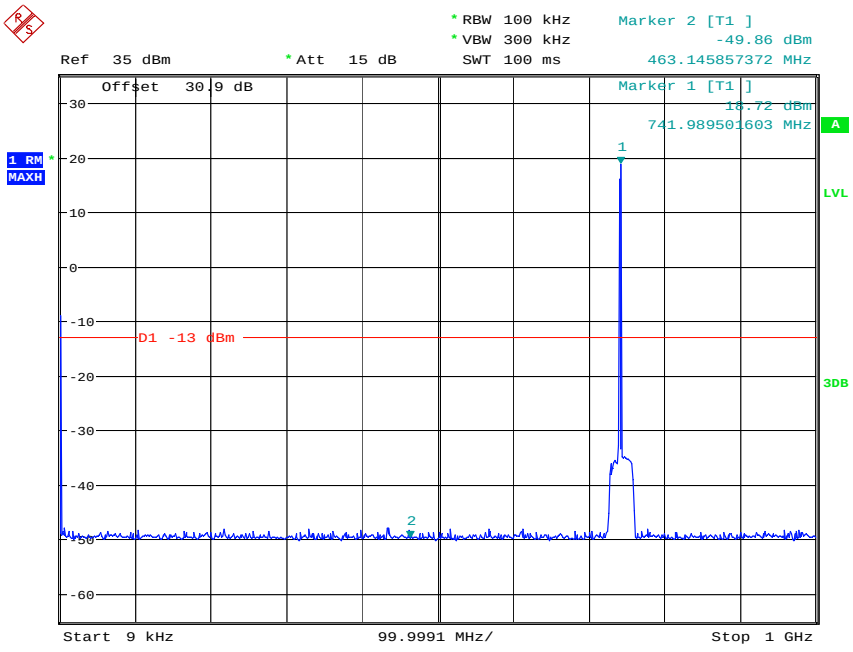


Date: 12.OCT.2013 14:58:54

3) 700MHz Lower C

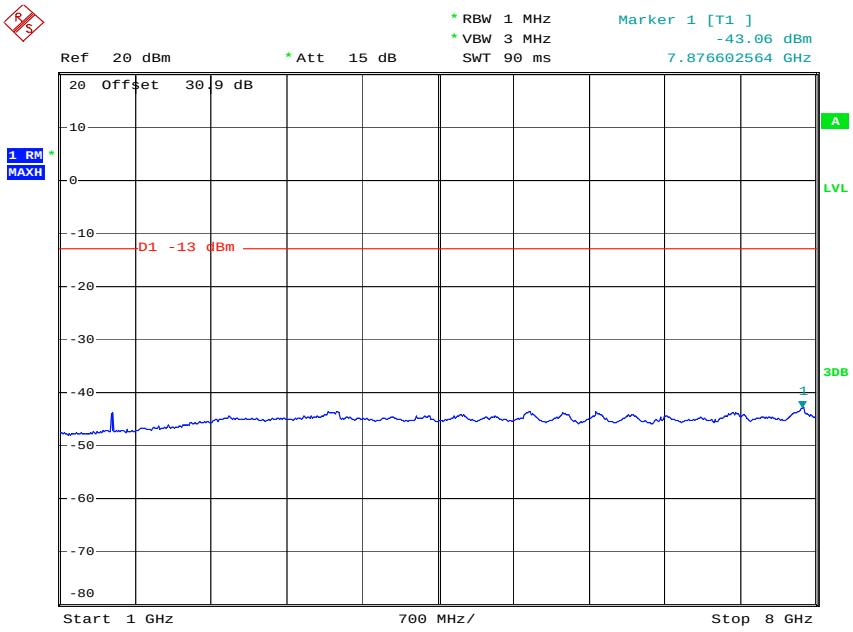
3.1) Test for LTE 1.4MHz

(a) Lowest frequency: 9 kHz to 1 GHz



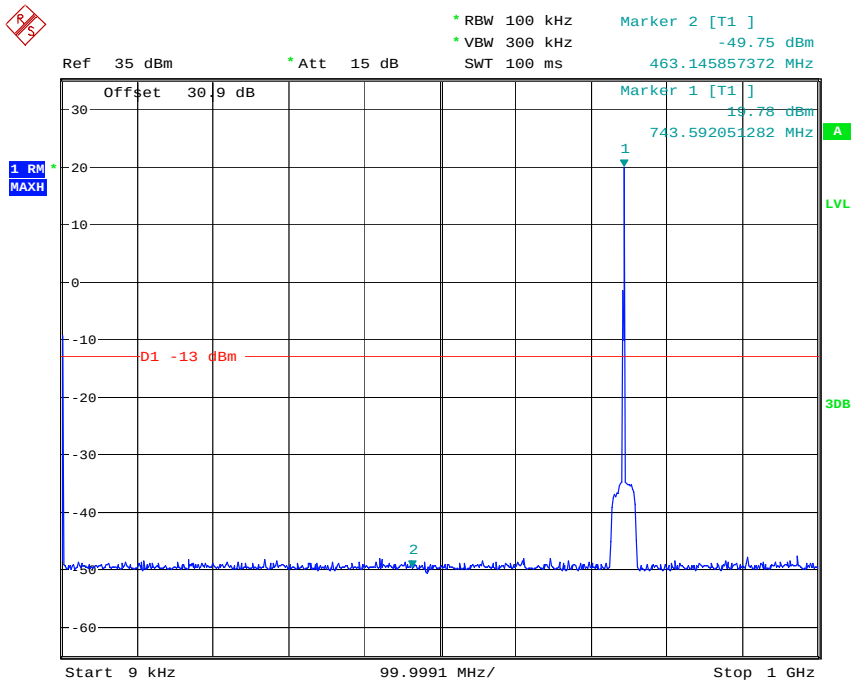
Date: 12.OCT.2013 15:24:44

(b) Lowest frequency: 1 GHz to 8 GHz



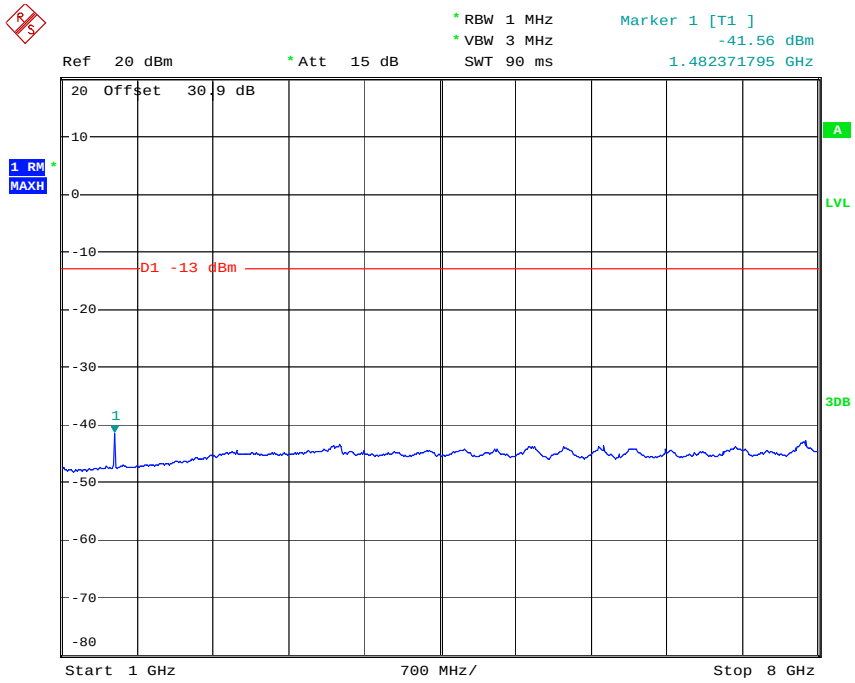
Date: 12.OCT.2013 15:27:15

(c) Middle frequency: 9 kHz to 1 GHz



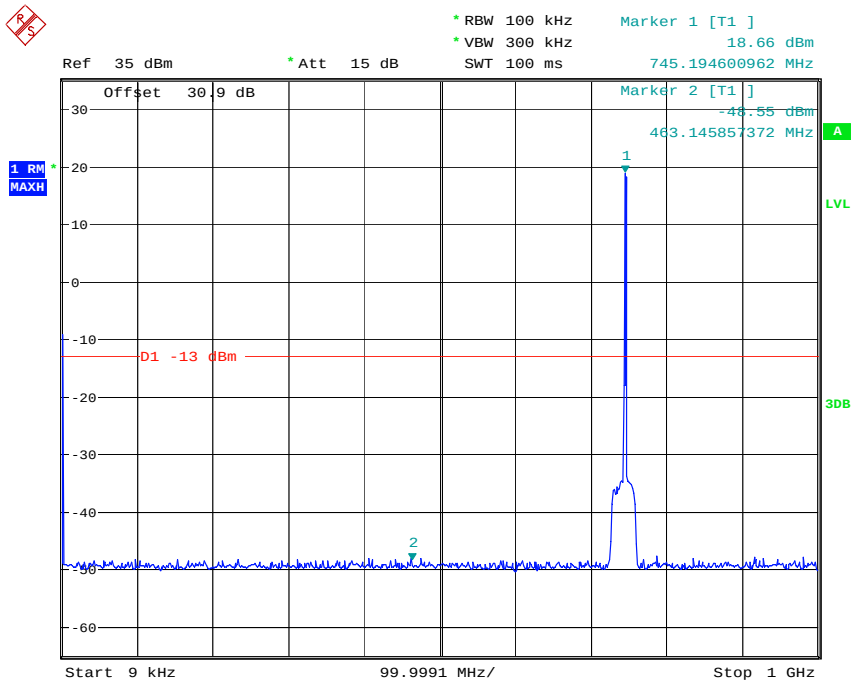
Date: 12.OCT.2013 15:25:18

(d) Middle frequency: 1 GHz to 8 GHz



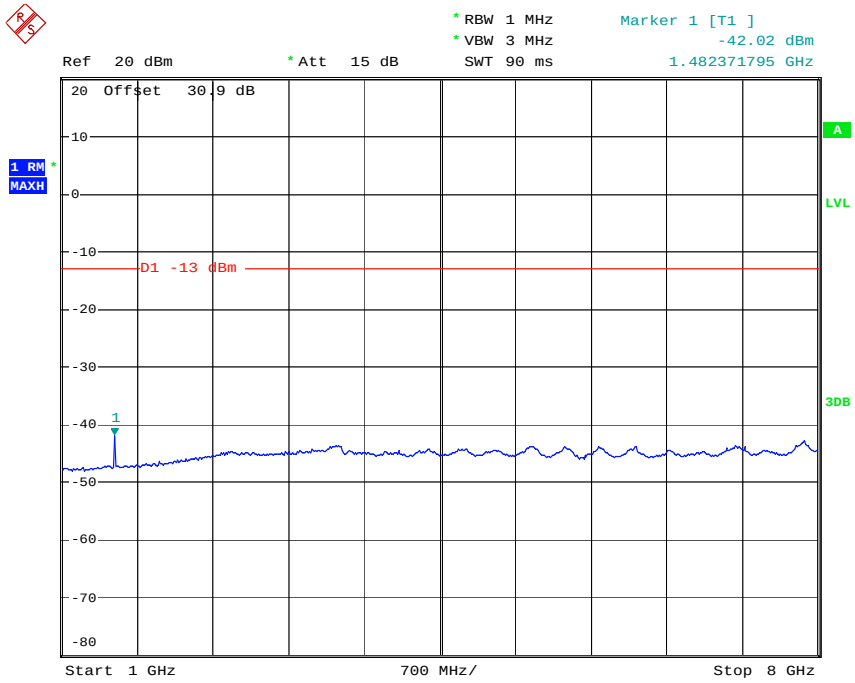
Date: 12.OCT.2013 15:26:54

(e) Highest frequency: 9 kHz to 1 GHz



Date: 12.OCT.2013 15:26:04

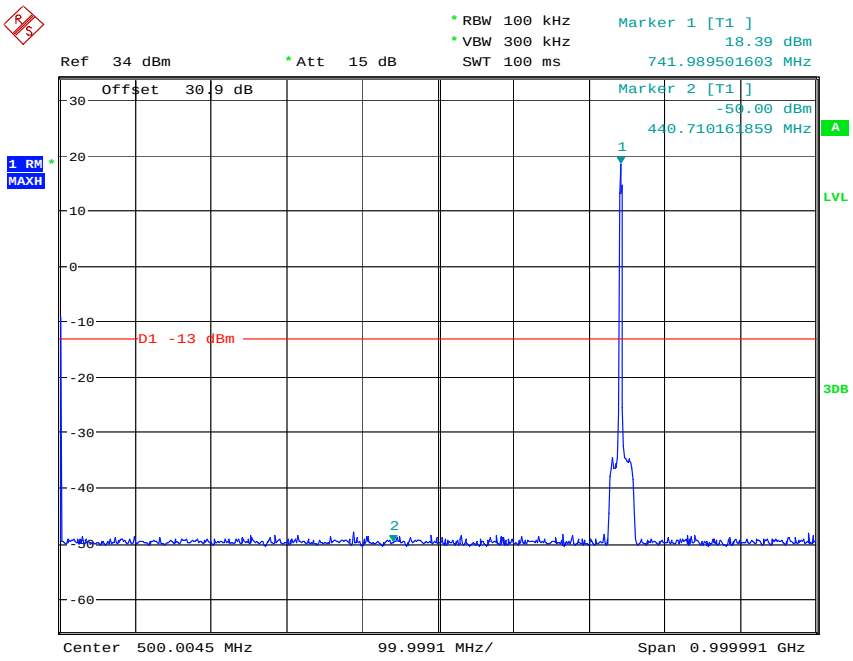
(f) Highest frequency: 1 GHz to 8 GHz



Date: 12.OCT.2013 15:26:36

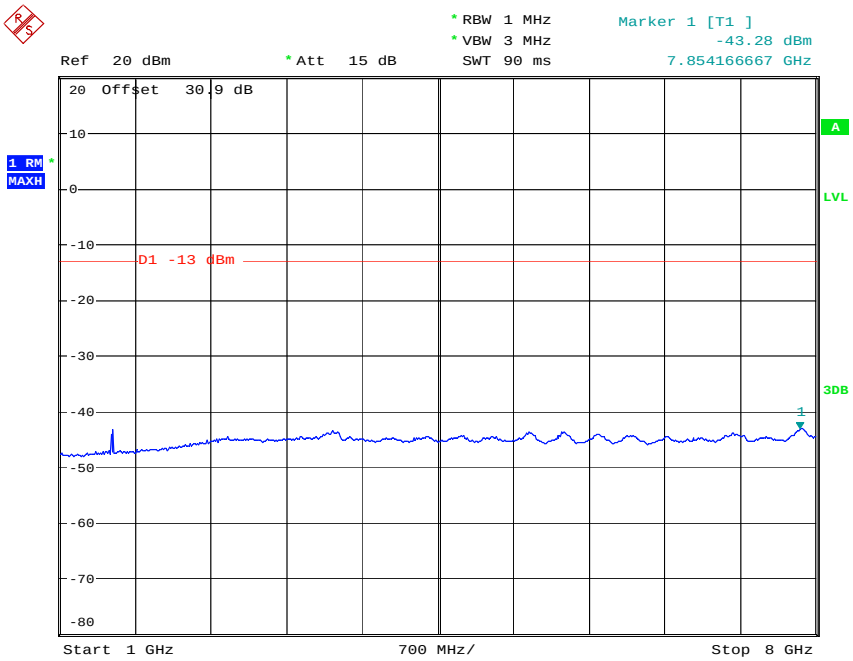
3.2) Test for LTE 3MHz

(a) Lowest frequency: 9 kHz to 1 GHz



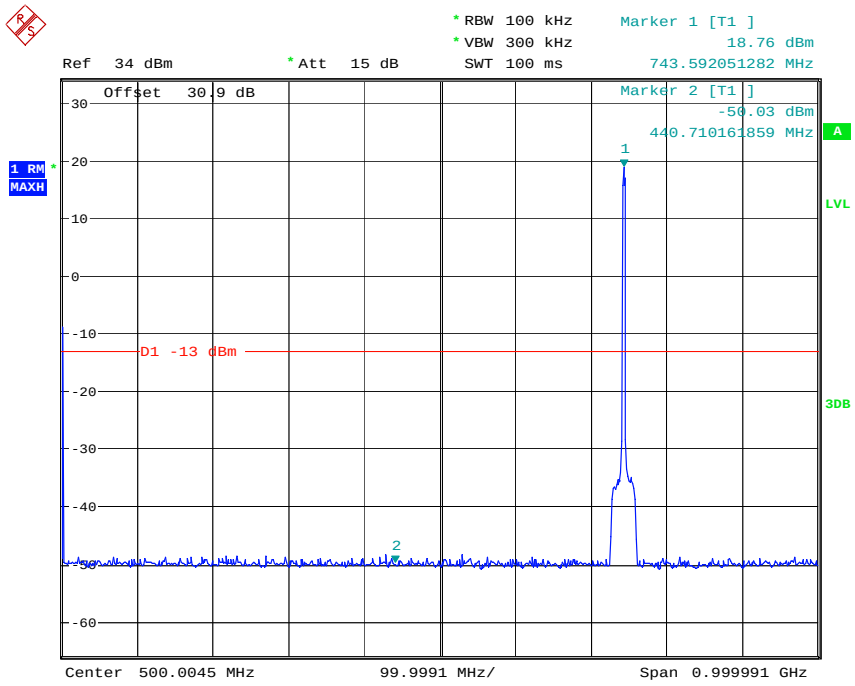
Date: 12.OCT.2013 15:30:55

(b) Lowest frequency: 1 GHz to 8 GHz



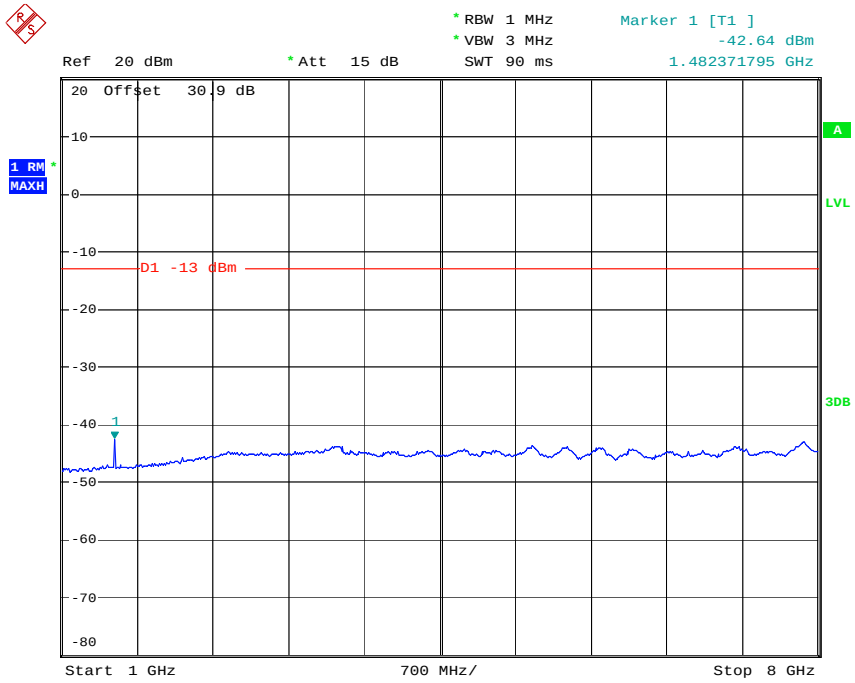
Date: 12.OCT.2013 15:28:16

(c) Middle frequency: 9 kHz to 1 GHz



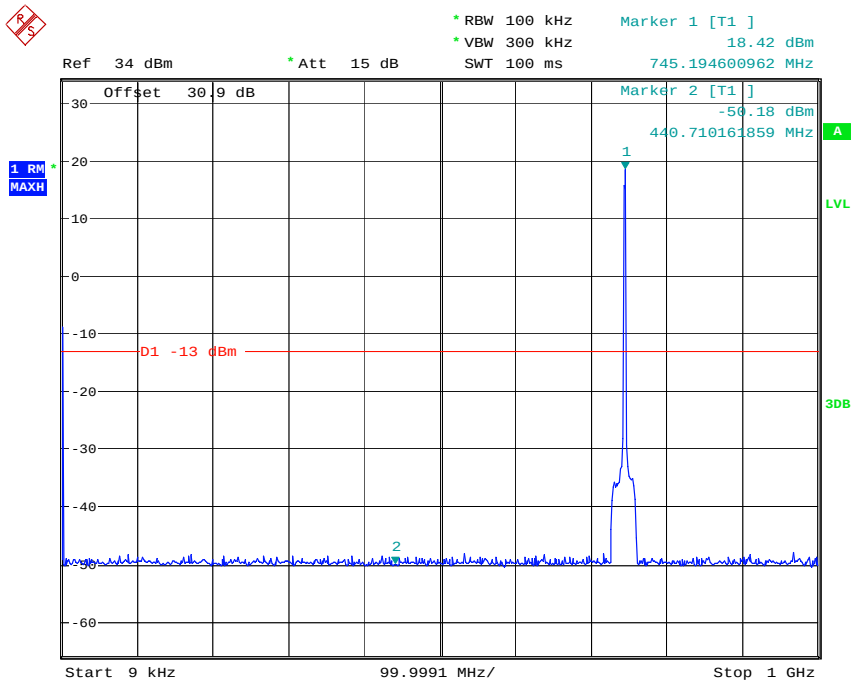
Date: 12.OCT.2013 15:30:30

(d) Middle frequency: 1 GHz to 8 GHz



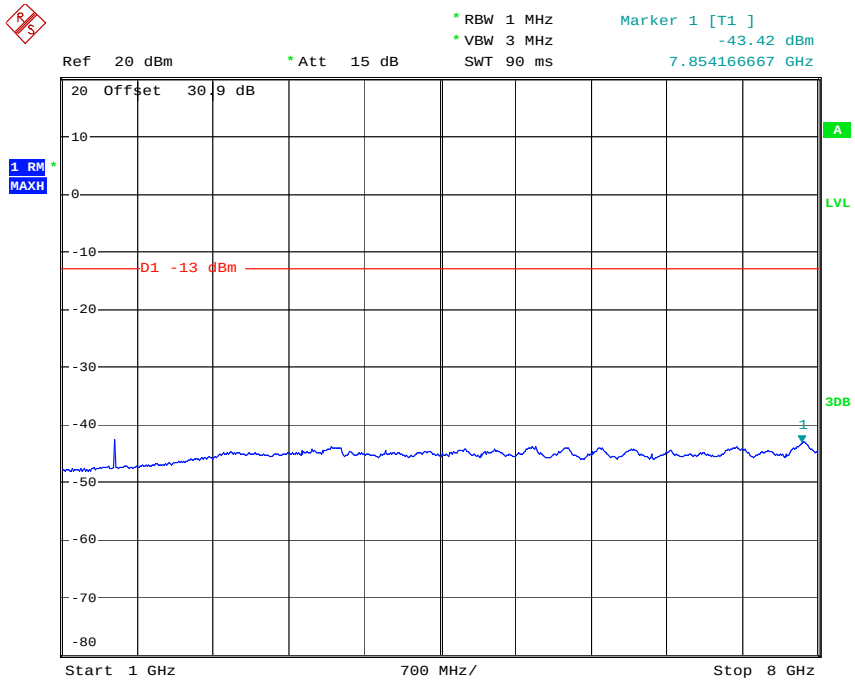
Date: 12.OCT.2013 15:28:48

(e) Highest frequency: 9 kHz to 1 GHz



Date: 12.OCT.2013 15:29:55

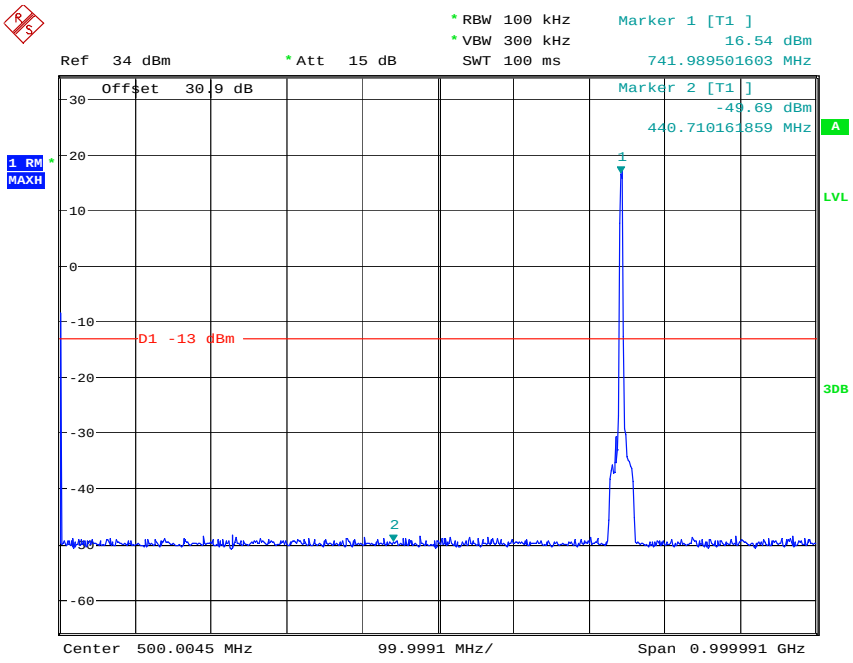
(f) Highest frequency: 1 GHz to 8 GHz



Date: 12.OCT.2013 15:29:08

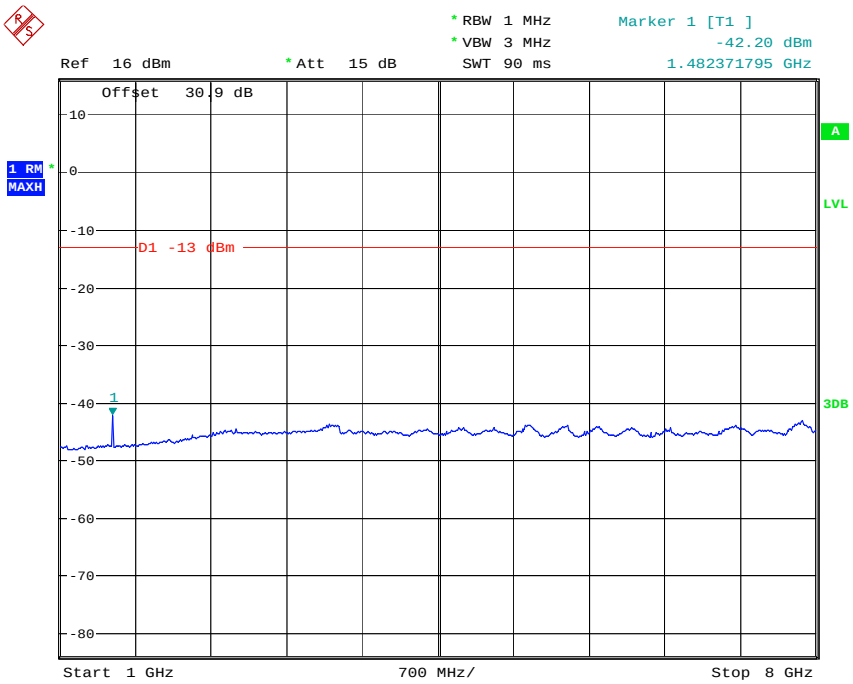
3.3) Test for LTE 5MHz

(a) Lowest frequency: 9 kHz to 1 GHz



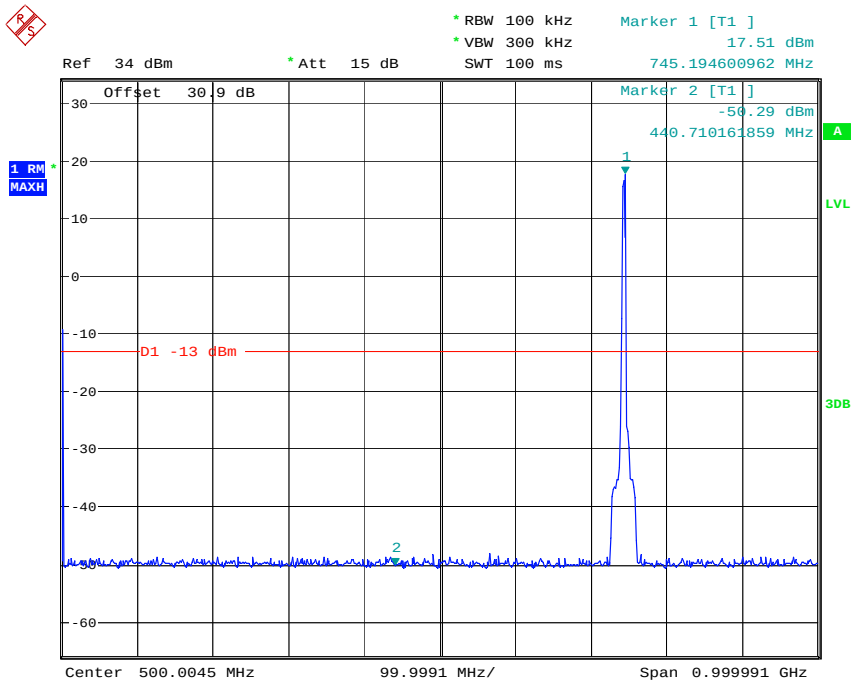
Date: 12.OCT.2013 15:31:26

(b) Lowest frequency: 1 GHz to 8 GHz



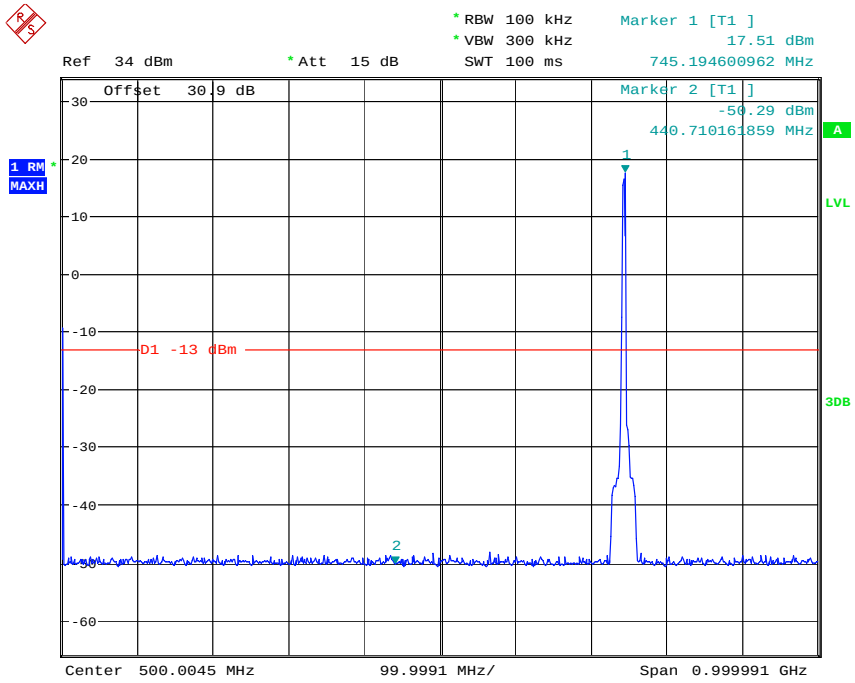
Date: 12.OCT.2013 15:33:45

(c) Middle frequency: 9 kHz to 1 GHz



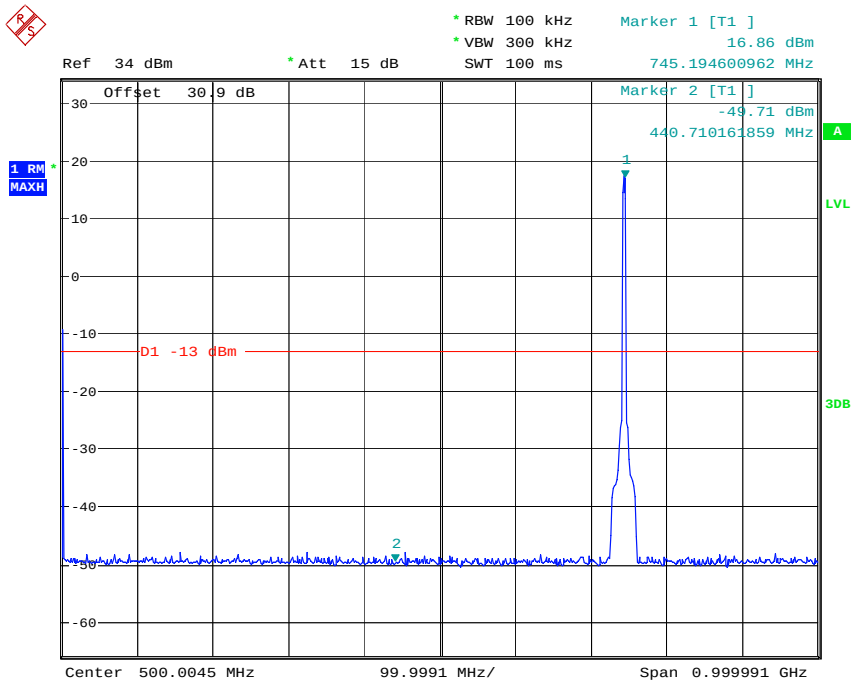
Date: 12.OCT.2013 15:31:49

(d) Middle frequency: 1 GHz to 8 GHz



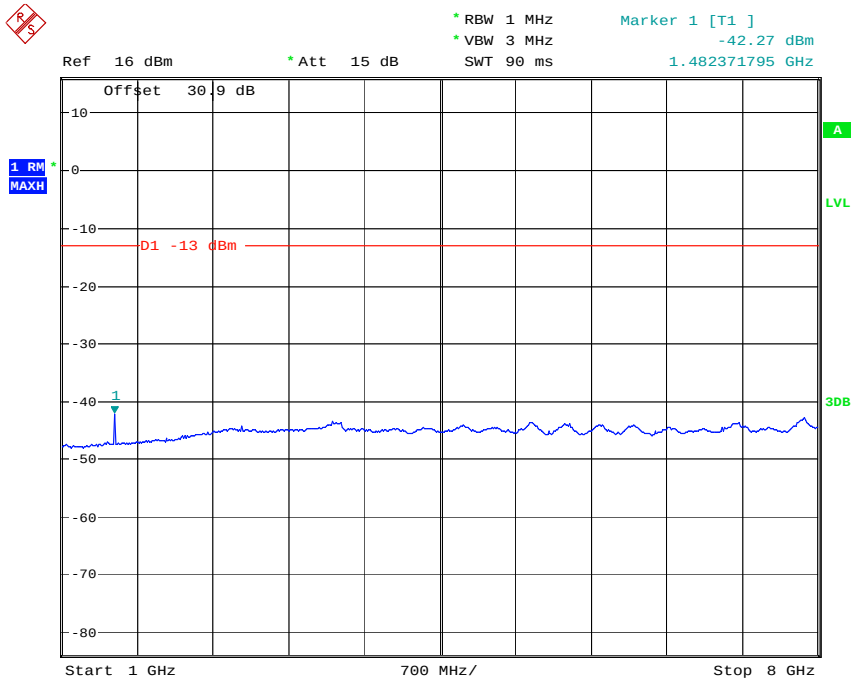
Date: 12.OCT.2013 15:31:49

(e) Highest frequency: 9 kHz to 1 GHz



Date: 12.OCT.2013 15:32:24

(f) Highest frequency: 1 GHz to 8 GHz

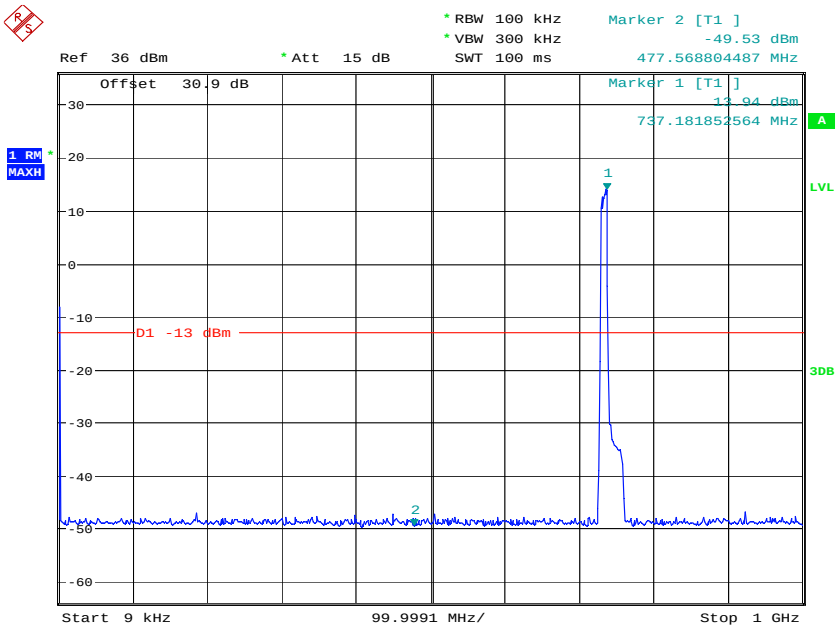


Date: 12.OCT.2013 15:33:02

4) 700MHz LowerABC full band

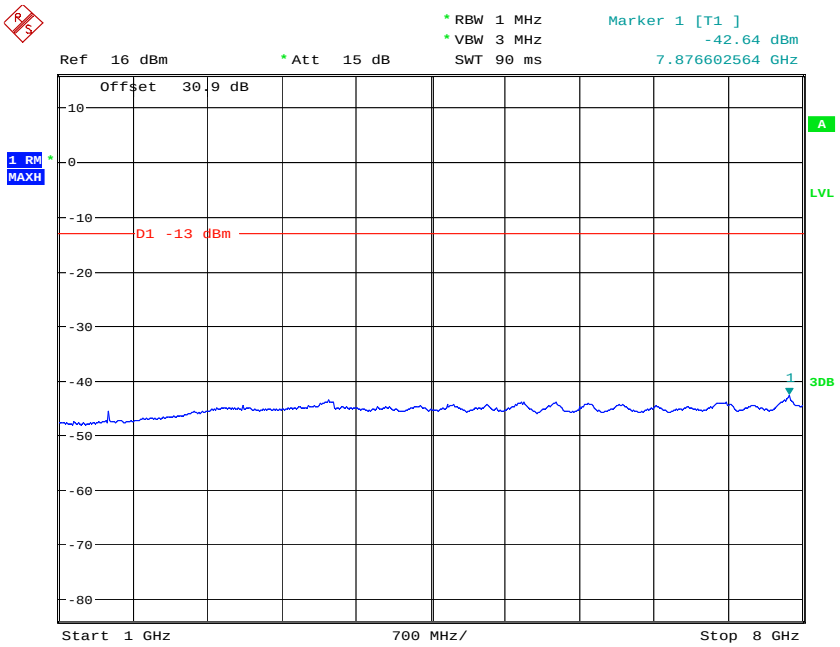
4.1) Test for LTE 10MHz

(a) Lowest frequency: 9 kHz to 1 GHz



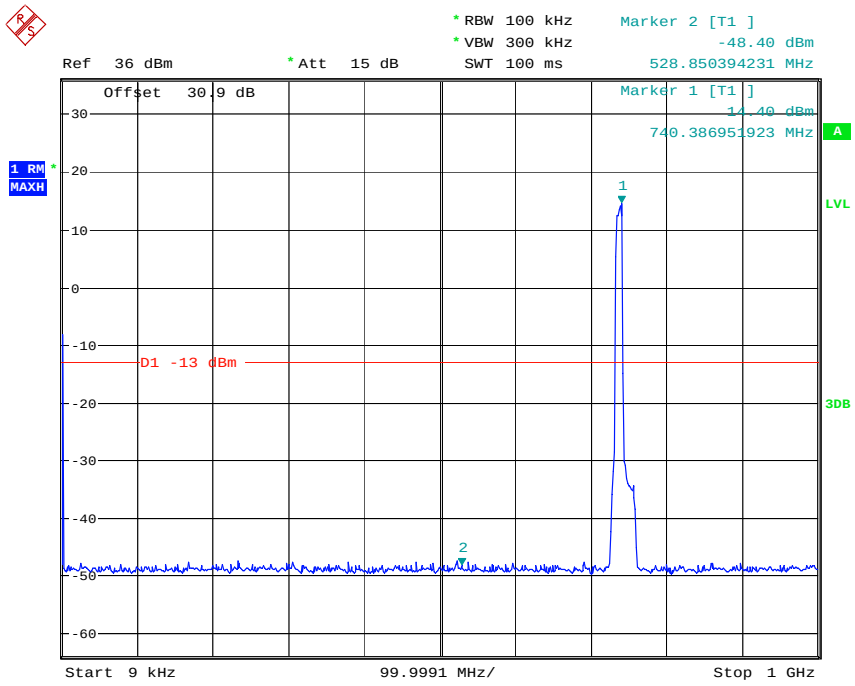
Date: 12.OCT.2013 15:37:37

(b) Lowest frequency: 1 GHz to 8 GHz



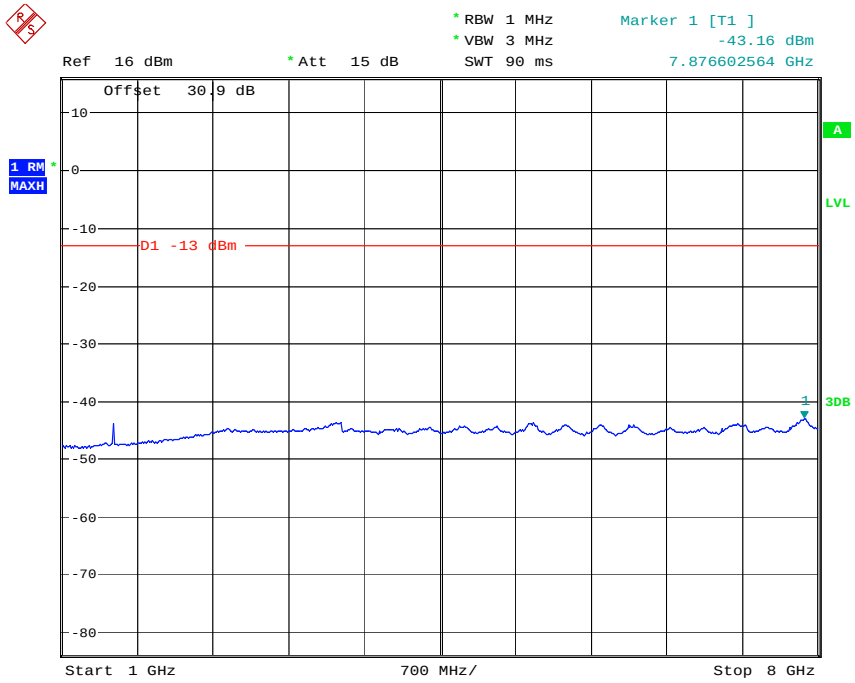
Date: 12.OCT.2013 15:34:28

(c) Middle frequency: 9 kHz to 1 GHz



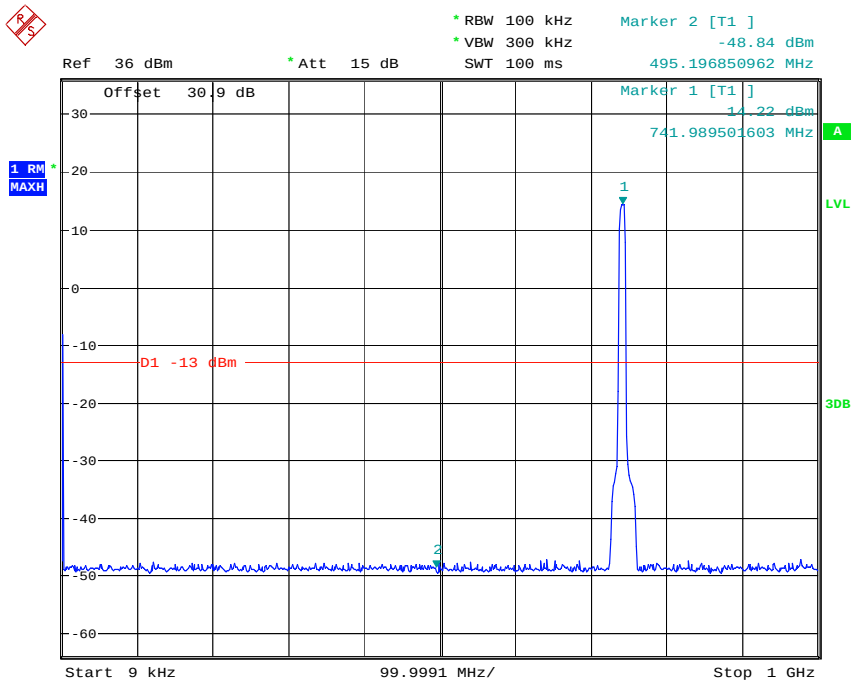
Date: 12.OCT.2013 15:36:56

(d) Middle frequency: 1 GHz to 8 GHz



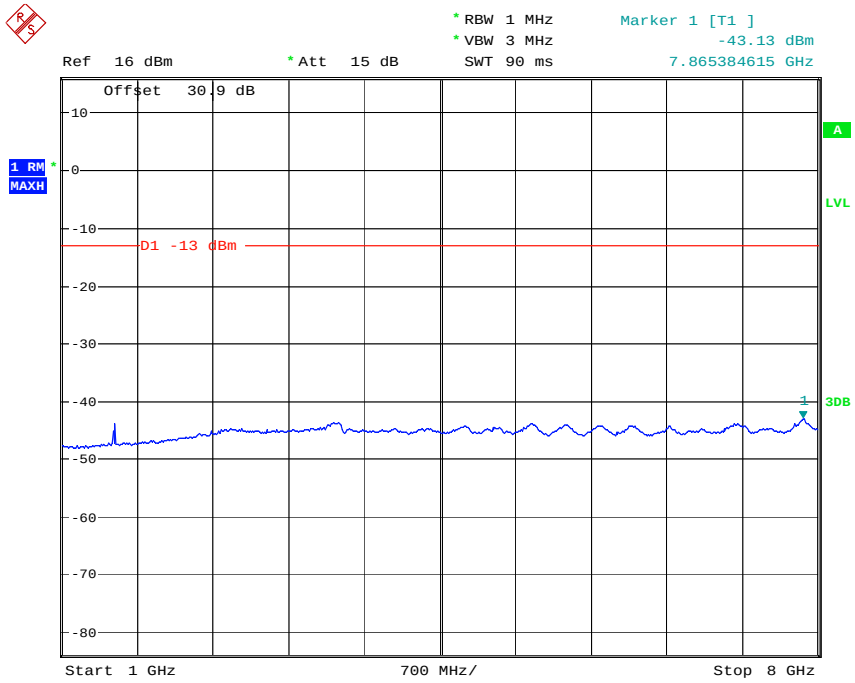
Date: 12.OCT.2013 15:35:03

(e) Highest frequency: 9 kHz to 1 GHz



Date: 12.OCT.2013 15:36:13

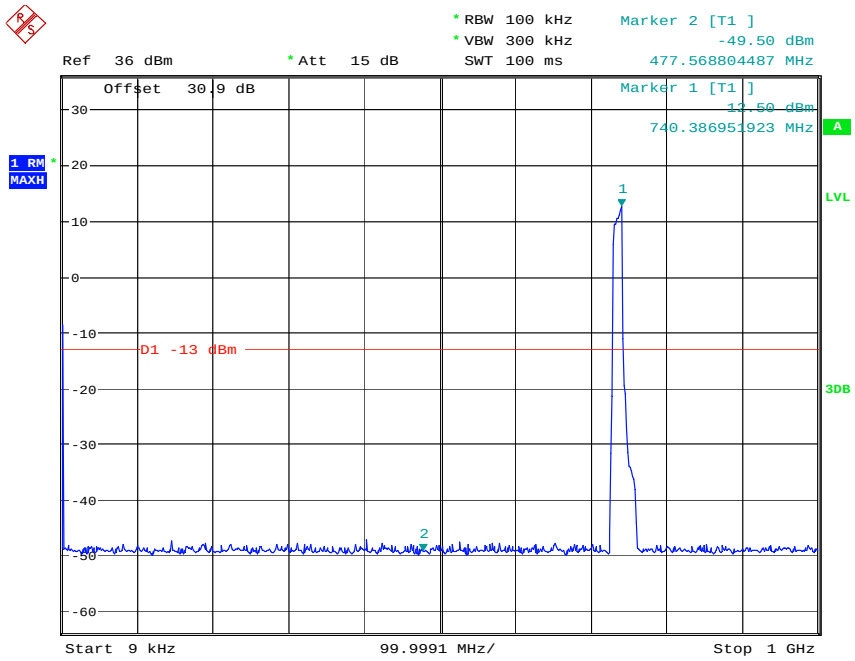
(f) Highest frequency: 1 GHz to 8 GHz



Date: 12.OCT.2013 15:35:20

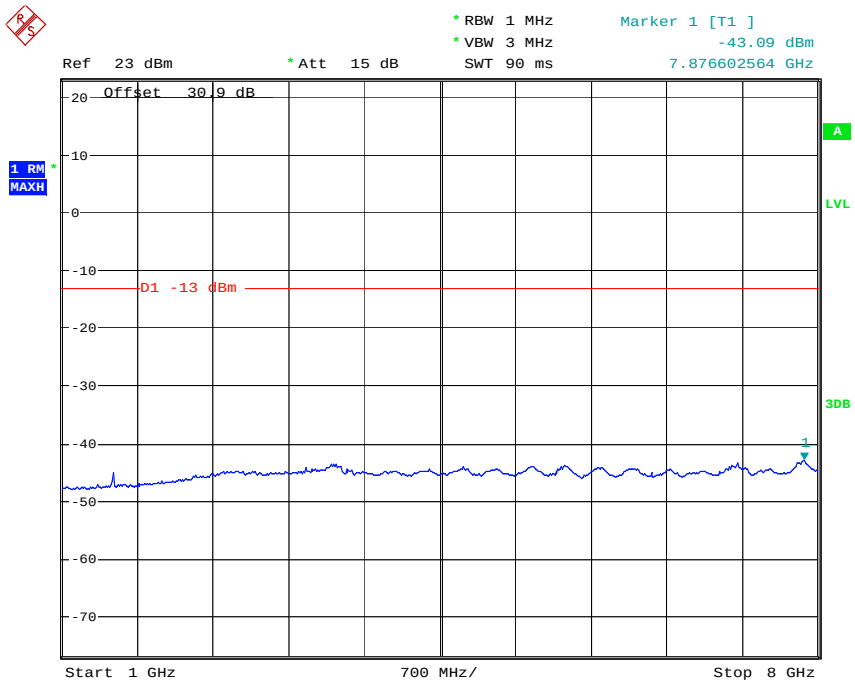
4.2) Test for LTE 15MHz

(a) Lowest frequency: 9 kHz to 1 GHz



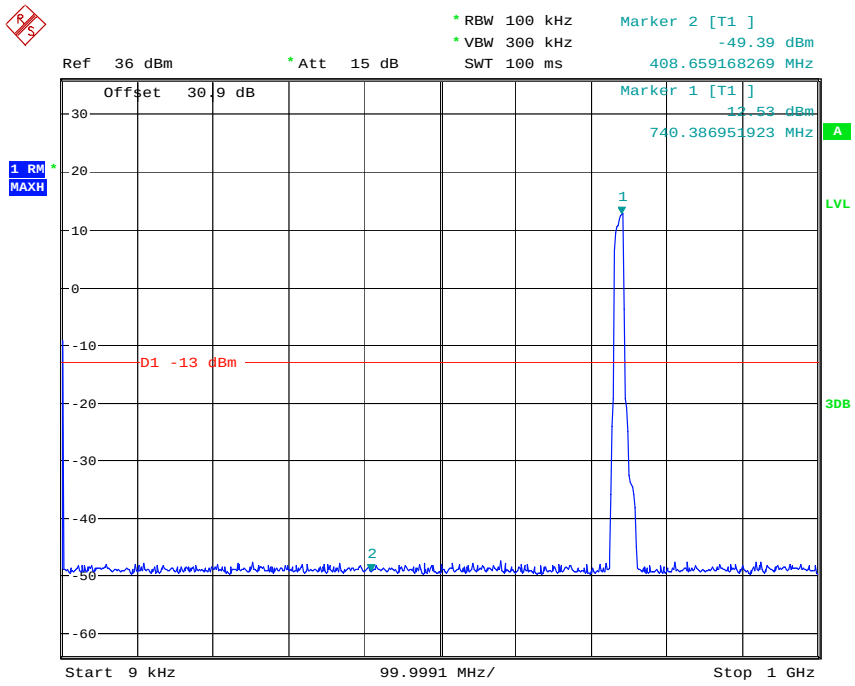
Date: 12.OCT.2013 15:38:24

(b) Lowest frequency: 1 GHz to 8 GHz



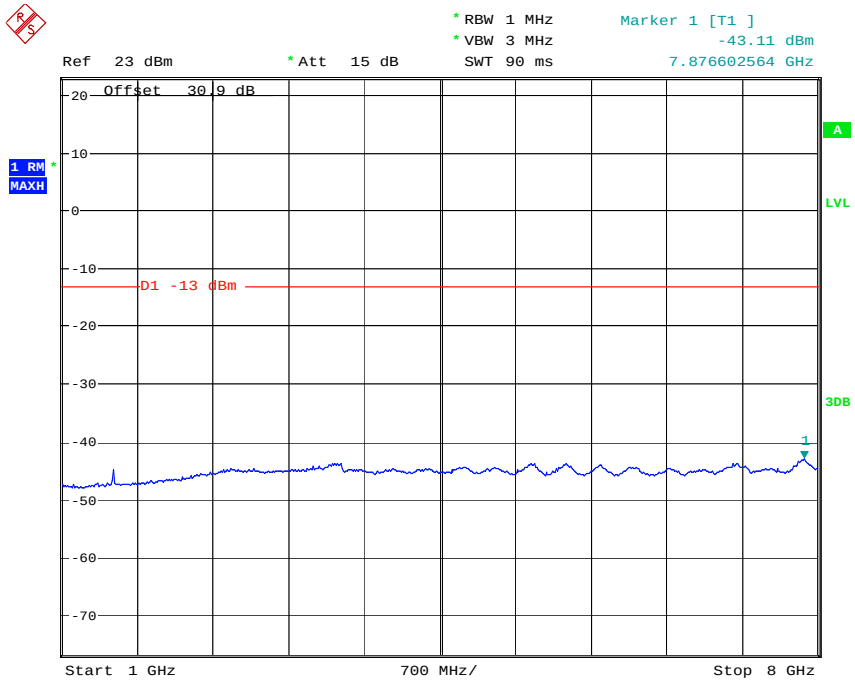
Date: 12.OCT.2013 15:40:33

(c) Middle frequency: 9 kHz to 1 GHz



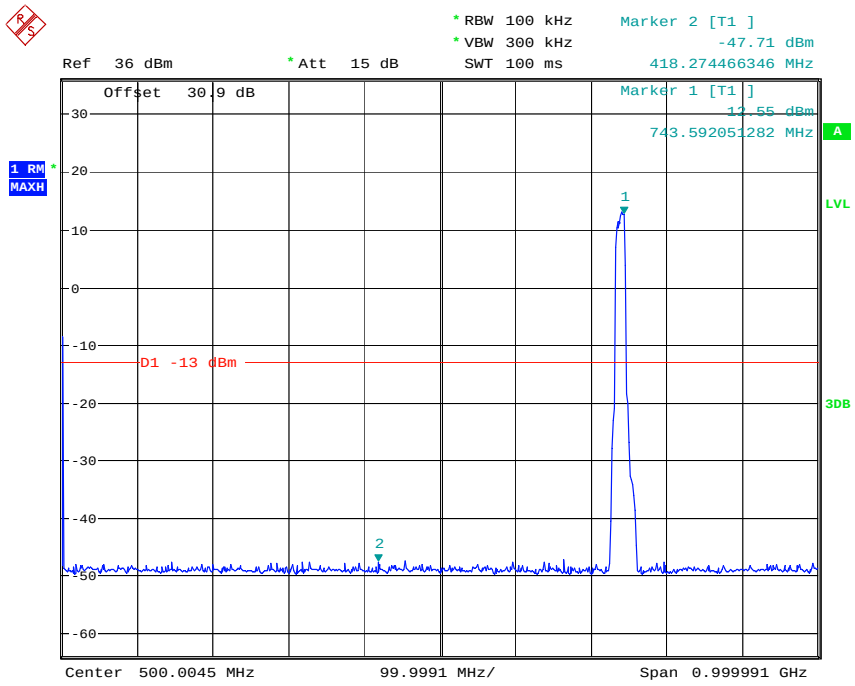
Date: 12.OCT.2013 15:38:49

(d) Middle frequency: 1 GHz to 8 GHz



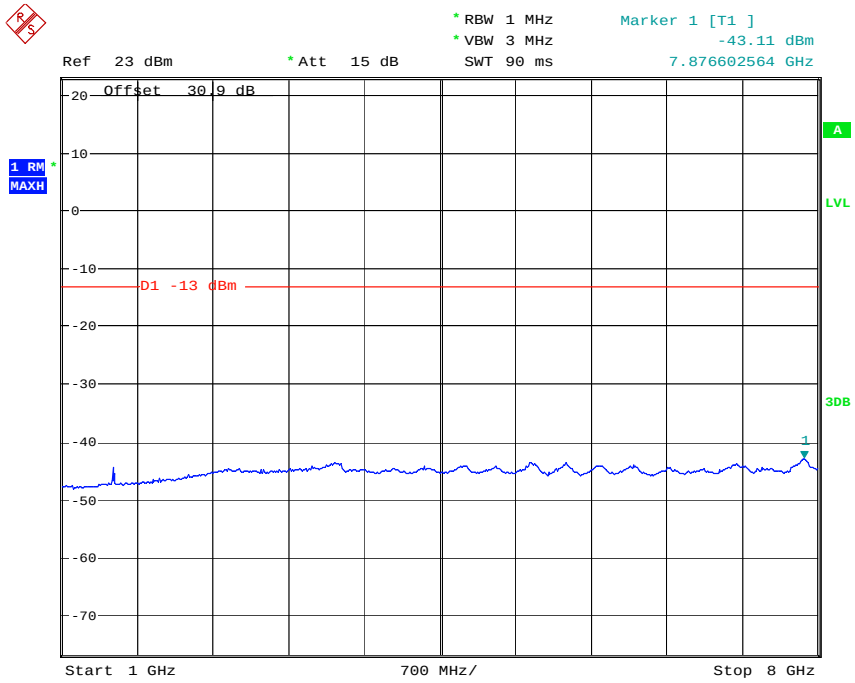
Date: 12.OCT.2013 15:40:02

(e) Highest frequency: 9 kHz to 1 GHz



Date: 12.OCT.2013 15:39:15

(f) Highest frequency: 1 GHz to 8 GHz

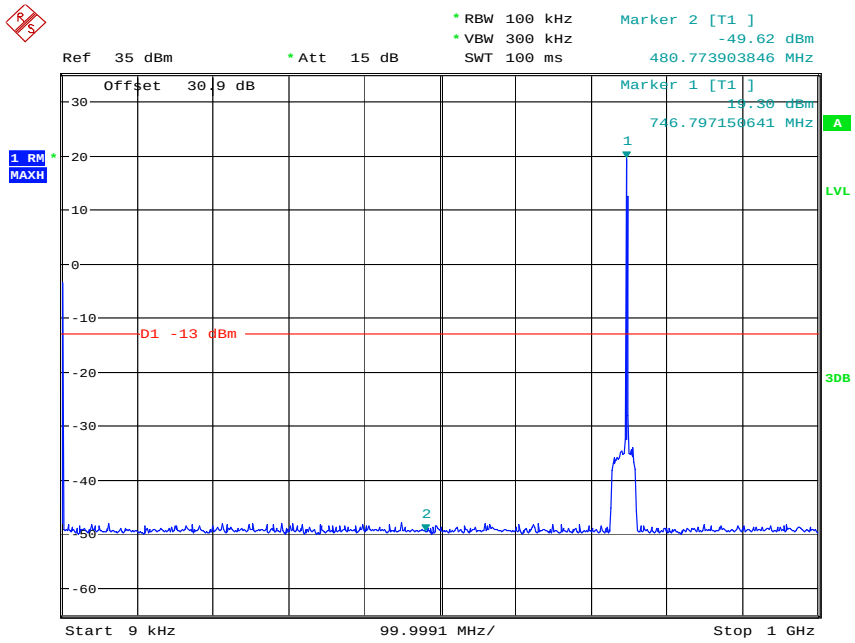


Date: 12.OCT.2013 15:39:45

5.3.2.1.2 700MHz Upper C

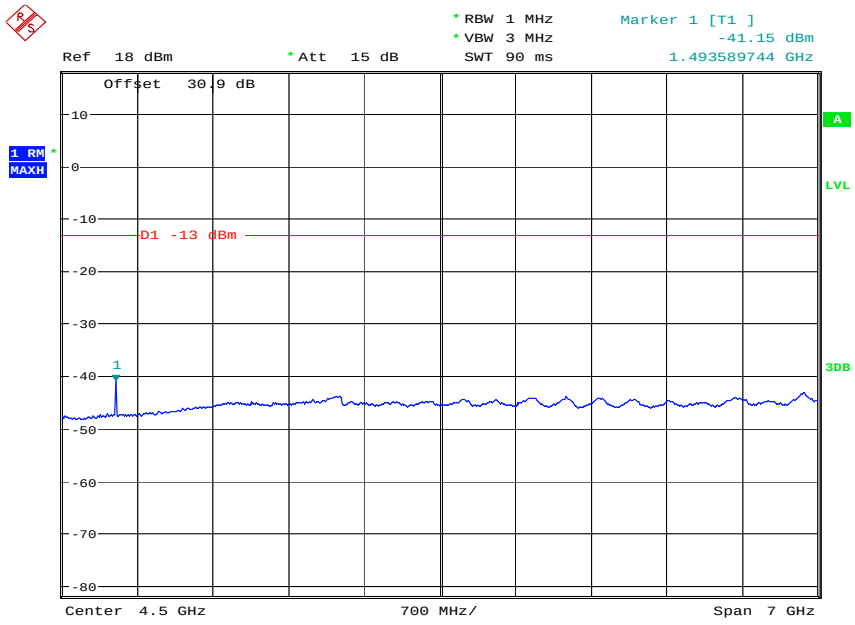
1) Test for LTE 1.4MHz

(a) Lowest frequency: 9 kHz to 1 GHz



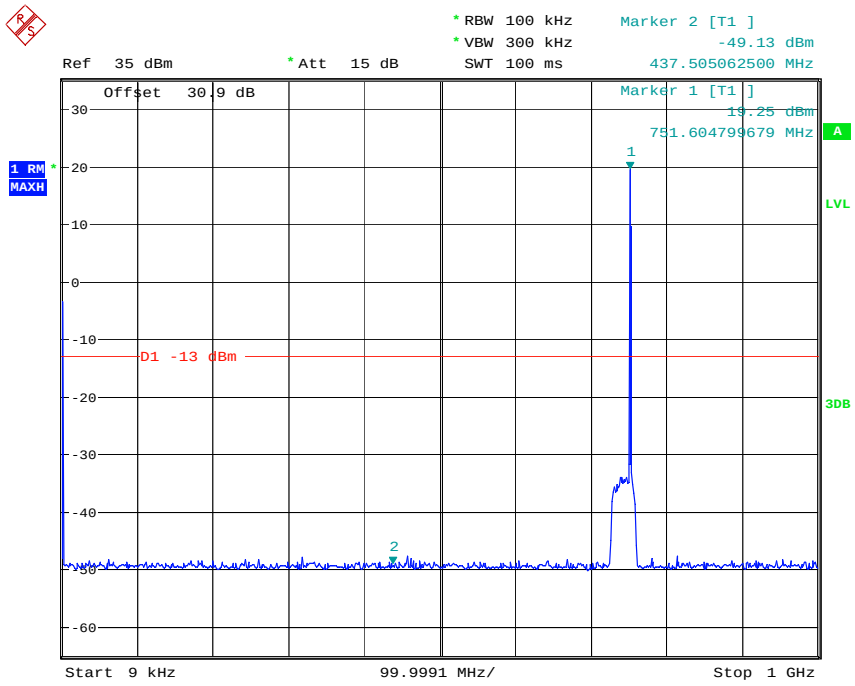
Date: 12.OCT.2013 12:42:01

(b) Lowest frequency: 1 GHz to 8 GHz



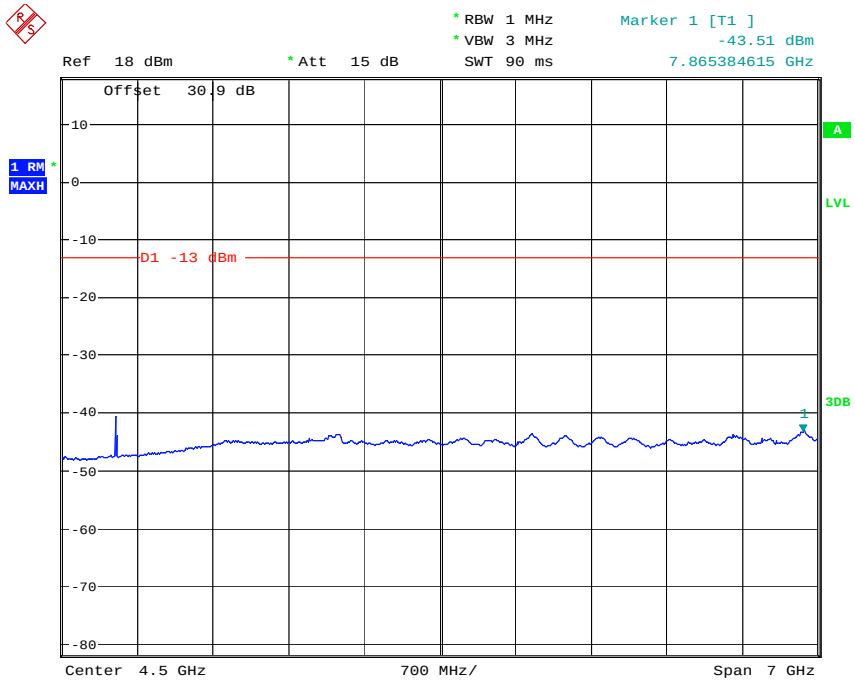
Date: 12.OCT.2013 12:44:27

(c) Middle frequency: 9 kHz to 1 GHz



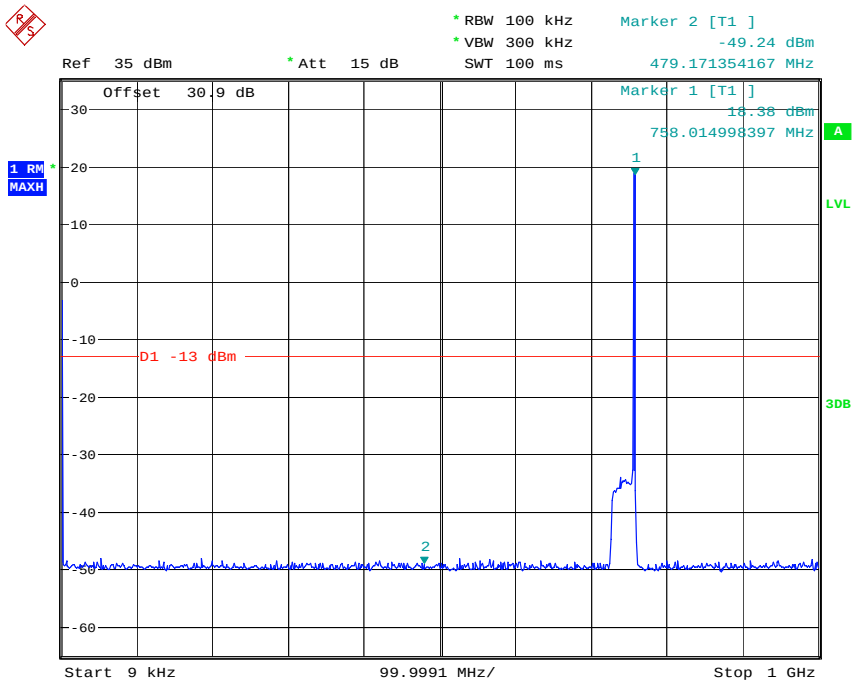
Date: 12.OCT.2013 12:42:27

(d) Middle frequency: 1 GHz to 8 GHz



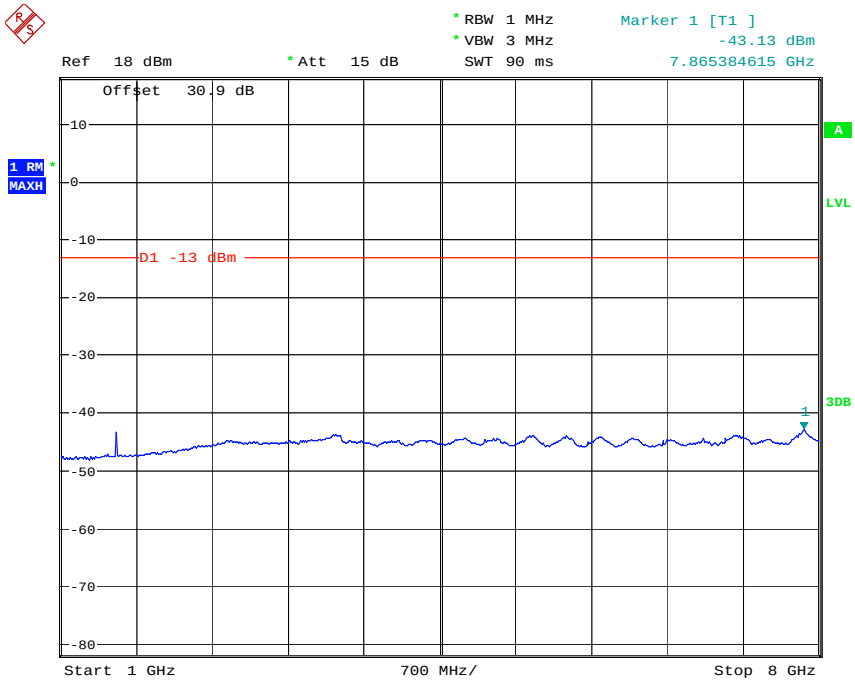
Date: 12.OCT.2013 12:44:07

(e) Highest frequency: 9 kHz to 1 GHz



Date: 12.OCT.2013 12:43:06

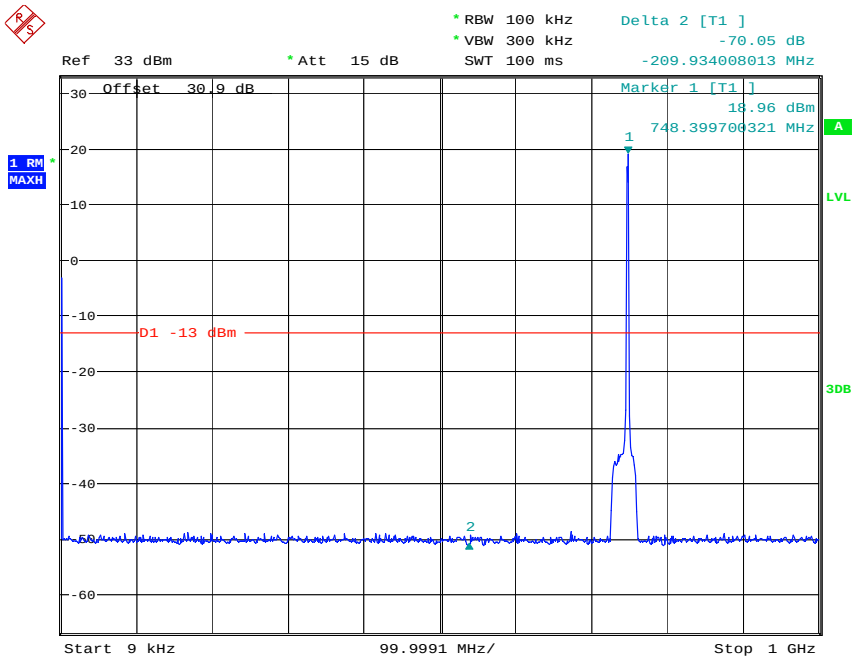
(f) Highest frequency: 1 GHz to 8 GHz



Date: 12.OCT.2013 12:43:39

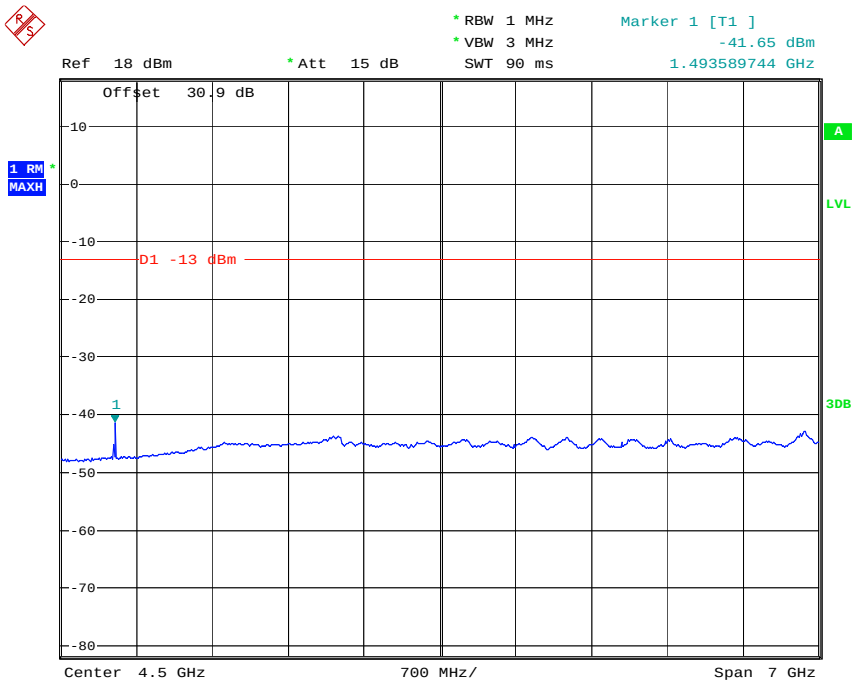
2) Test for LTE 3MHz

(a) Lowest frequency: 9 kHz to 1 GHz



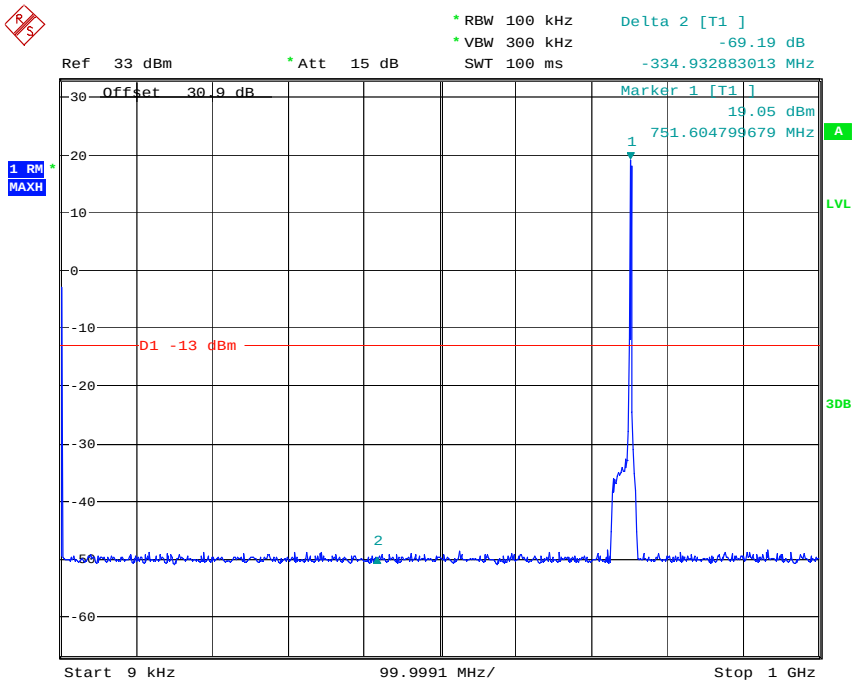
Date: 12.OCT.2013 12:48:02

(b) Lowest frequency: 1 GHz to 8 GHz



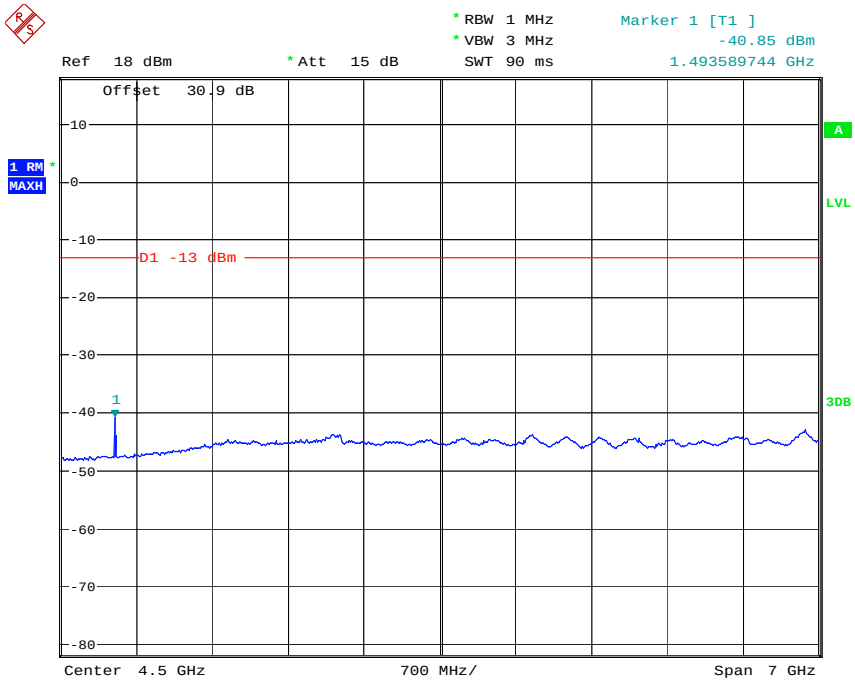
Date: 12.OCT.2013 12:44:55

(c) Middle frequency: 9 kHz to 1 GHz



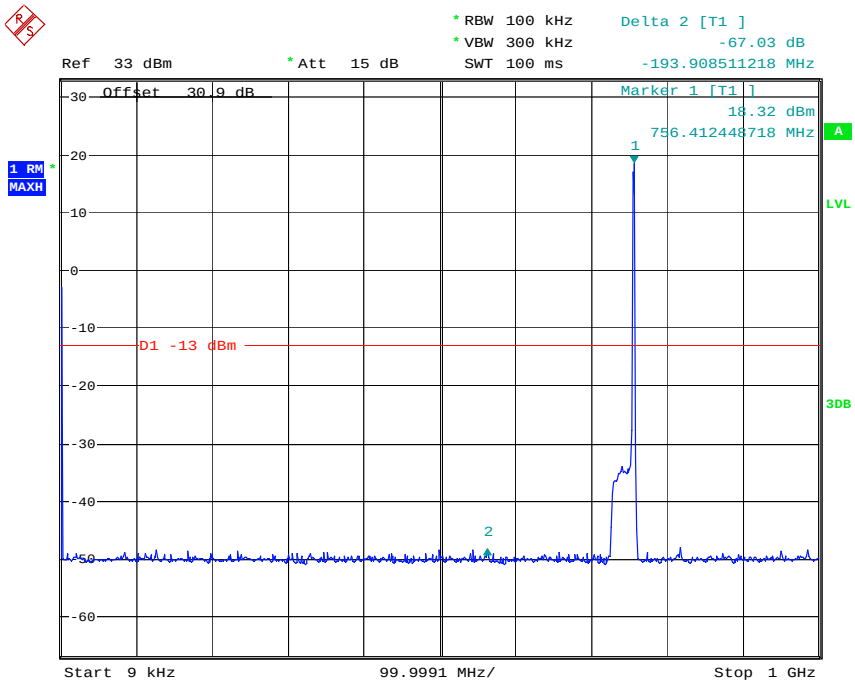
Date: 12.OCT.2013 12:47:27

(d) Middle frequency: 1 GHz to 8 GHz



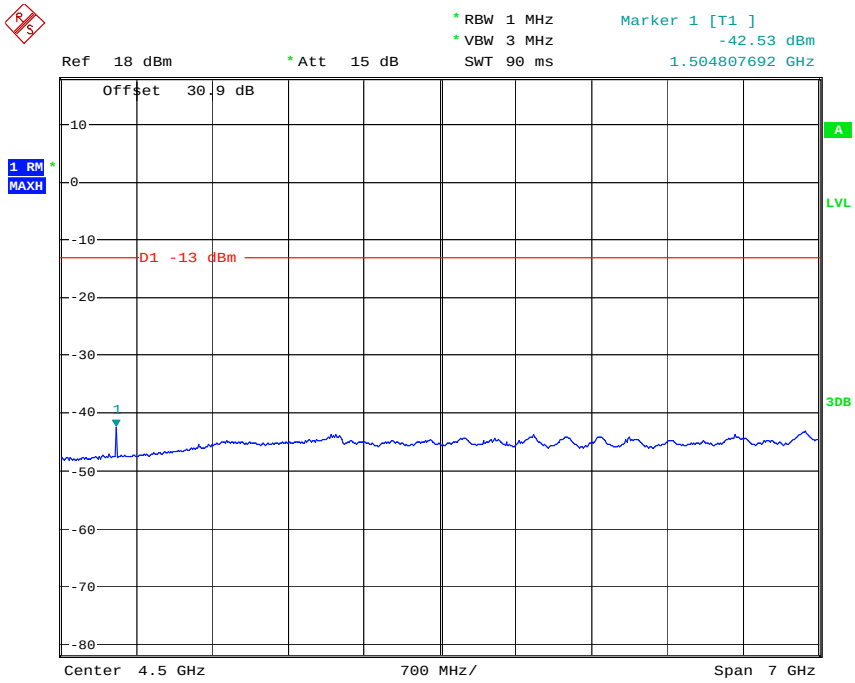
Date: 12.OCT.2013 12:45:31

(e) Highest frequency: 9 kHz to 1 GHz



Date: 12.OCT.2013 12:46:55

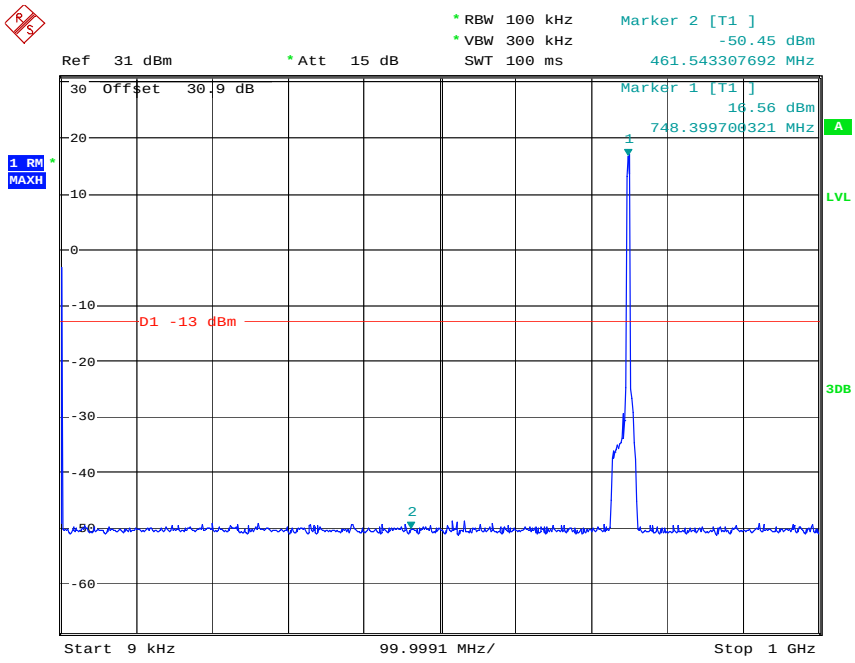
(f) Highest frequency: 1 GHz to 8 GHz



Date: 12.OCT.2013 12:45:51

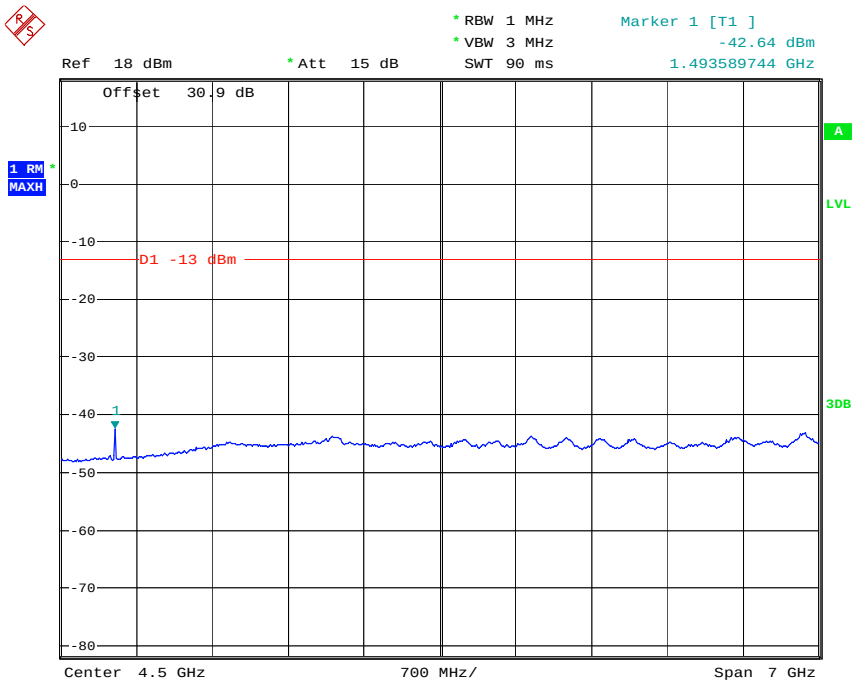
3) Test for LTE 5MHz

(a) Lowest frequency: 9 kHz to 1 GHz



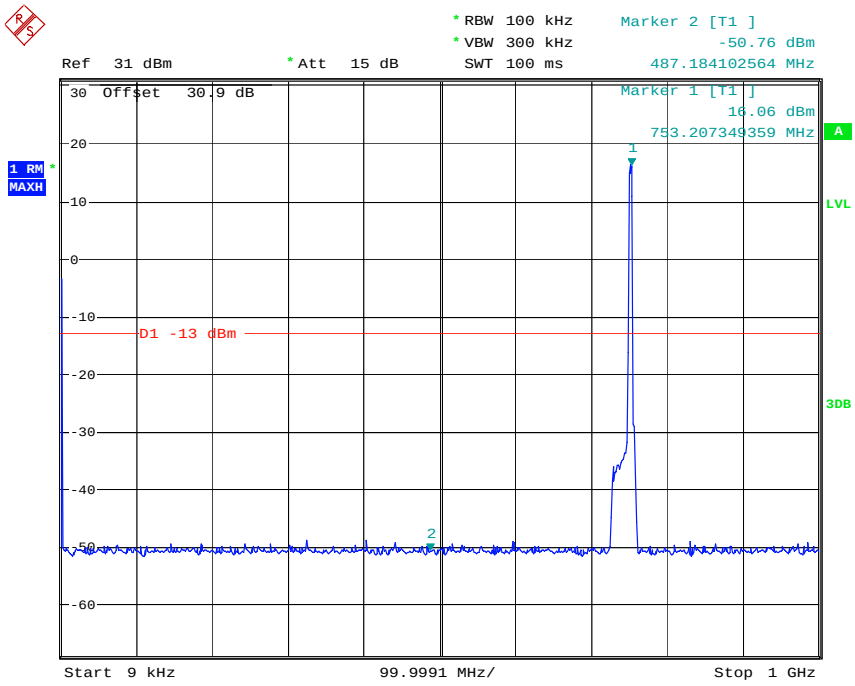
Date: 12.OCT.2013 12:53:49

(b) Lowest frequency: 1 GHz to 8 GHz



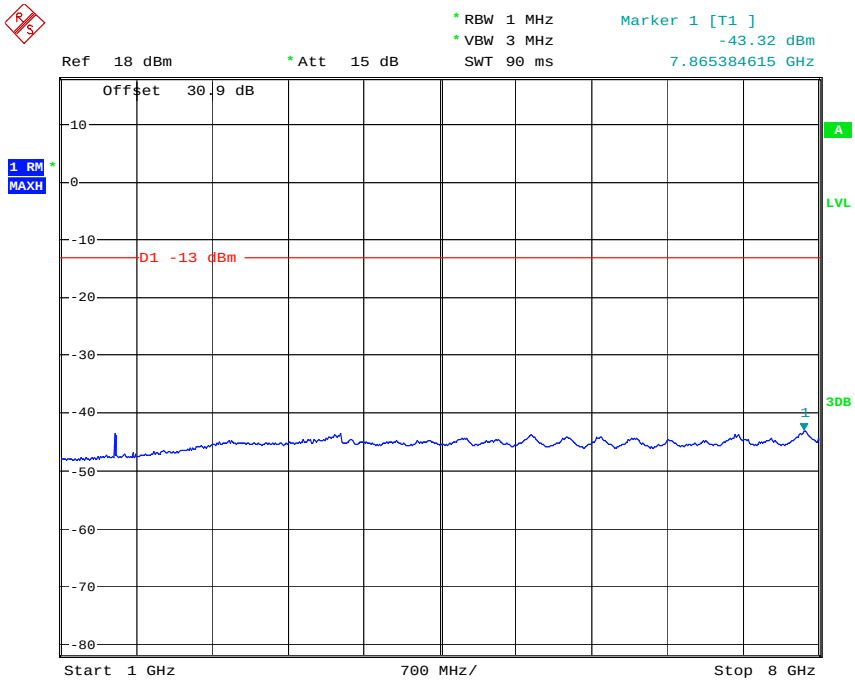
Date: 12.OCT.2013 12:50:47

(c) Middle frequency: 9 kHz to 1 GHz



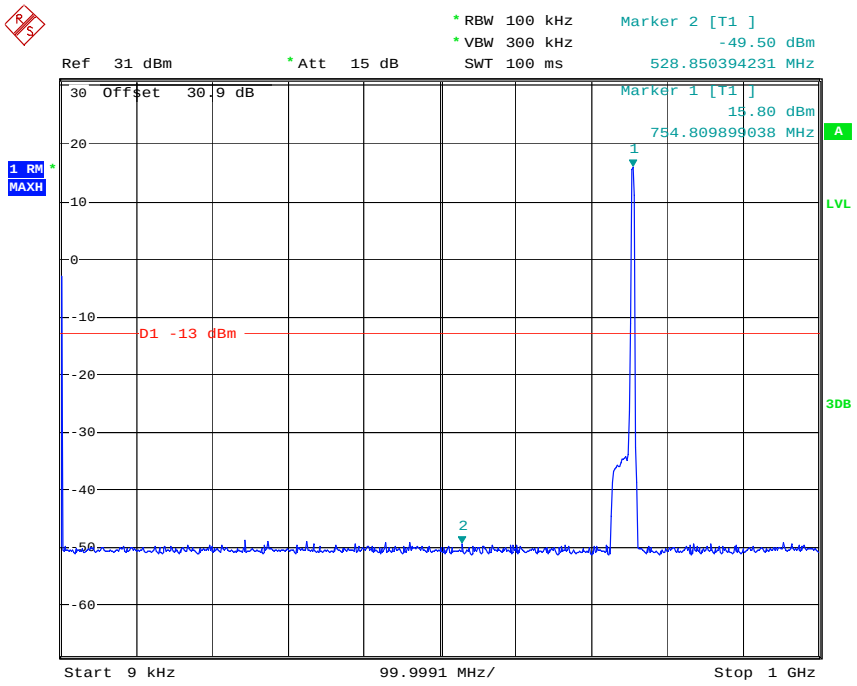
Date: 12.OCT.2013 12:54:37

(d) Middle frequency: 1 GHz to 8 GHz



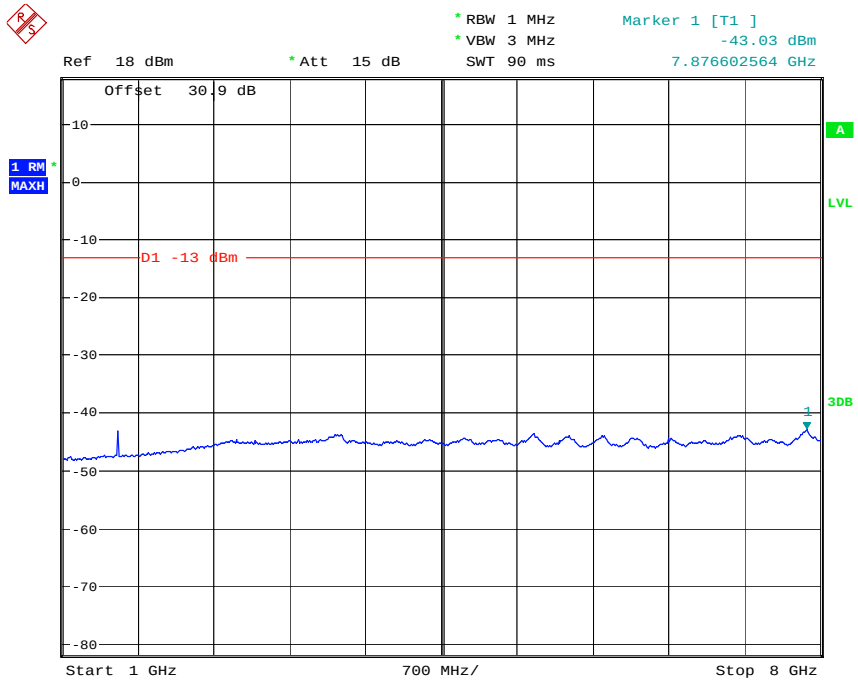
Date: 12.OCT.2013 12:50:23

(e) Highest frequency: 9 kHz to 1 GHz



Date: 12.OCT.2013 12:55:03

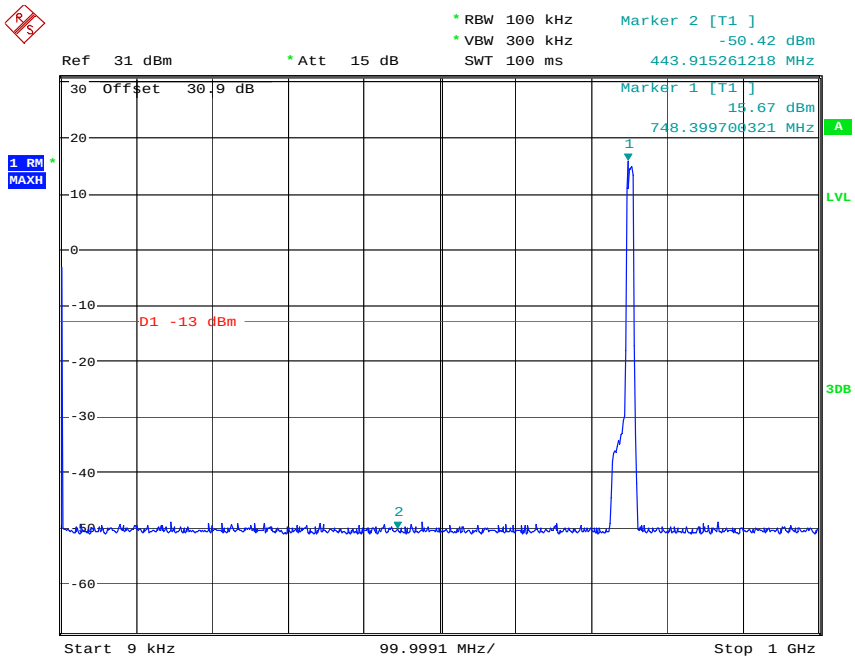
(f) Highest frequency: 1 GHz to 8 GHz



Date: 12.OCT.2013 12:50:03

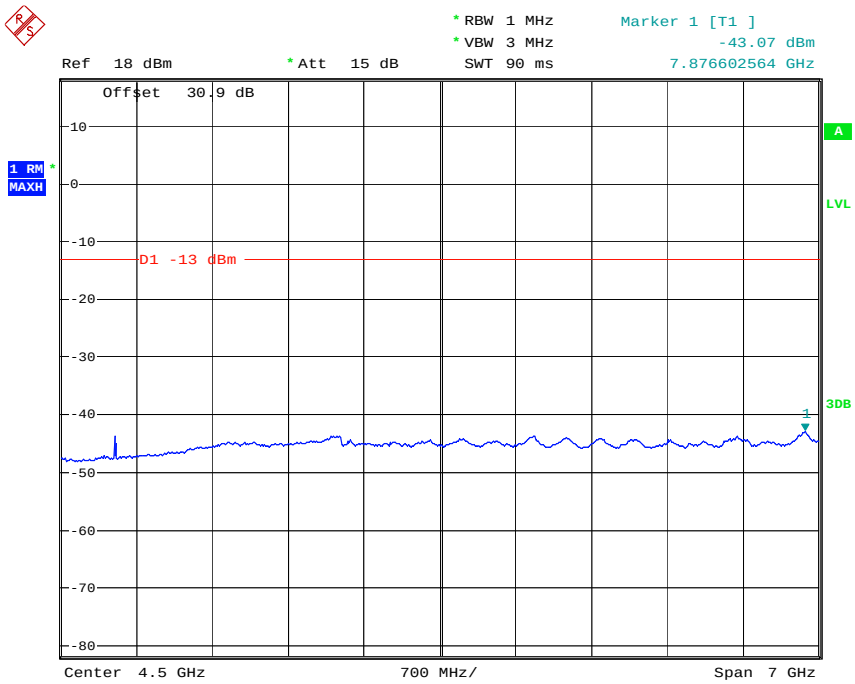
4) Test for LTE 10MHz

(a) Lowest frequency: 9 kHz to 1 GHz



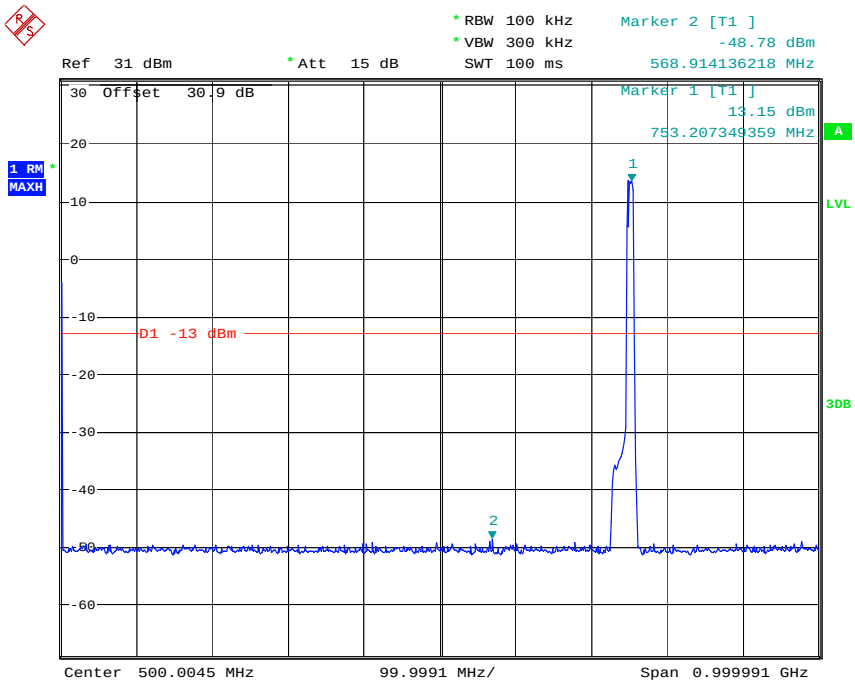
Date: 12.OCT.2013 12:53:08

(b) Lowest frequency: 1 GHz to 8 GHz



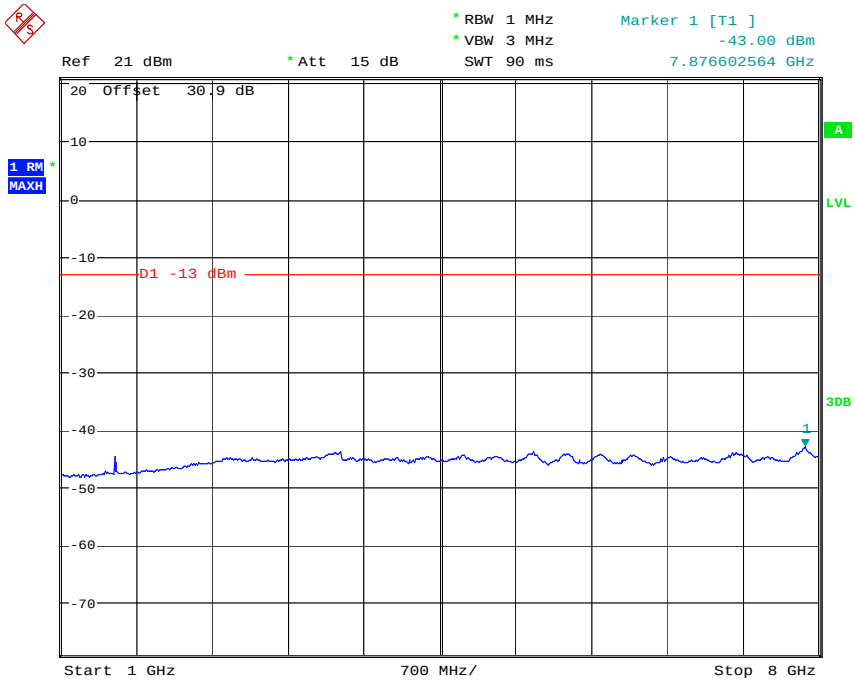
Date: 12.OCT.2013 12:51:28

(c) Middle frequency: 9 kHz to 1 GHz



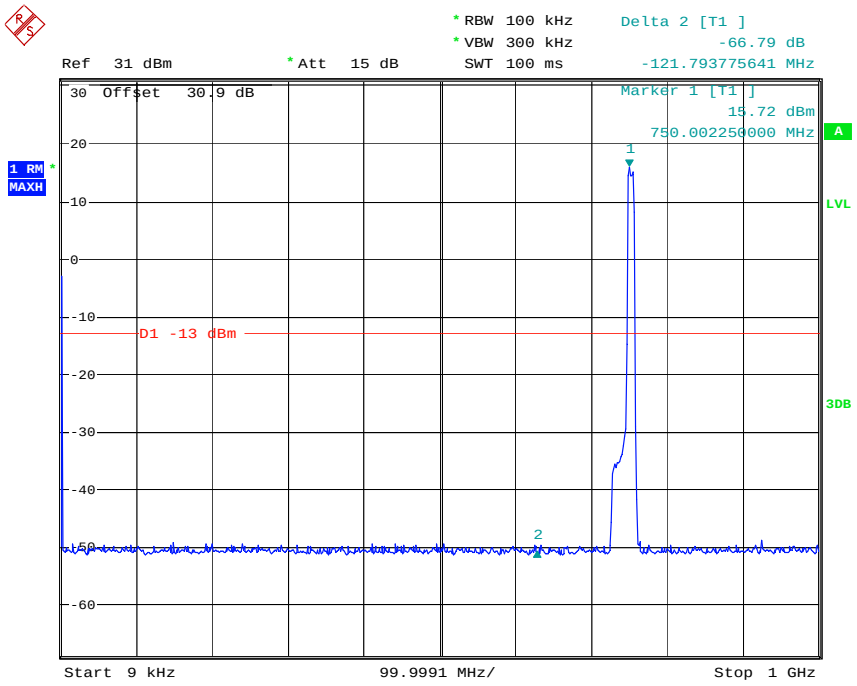
Date: 12.OCT.2013 13:01:33

(d) Middle frequency: 1 GHz to 8 GHz



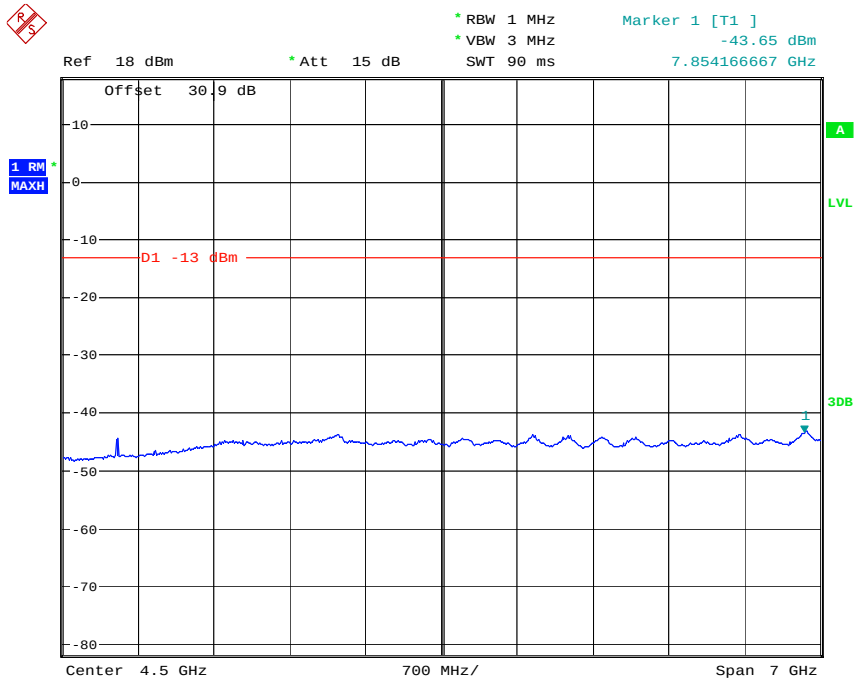
Date: 12.OCT.2013 13:02:00

(e) Highest frequency: 9 kHz to 1 GHz



Date: 12.OCT.2013 12:52:40

(f) Highest frequency: 1 GHz to 8 GHz



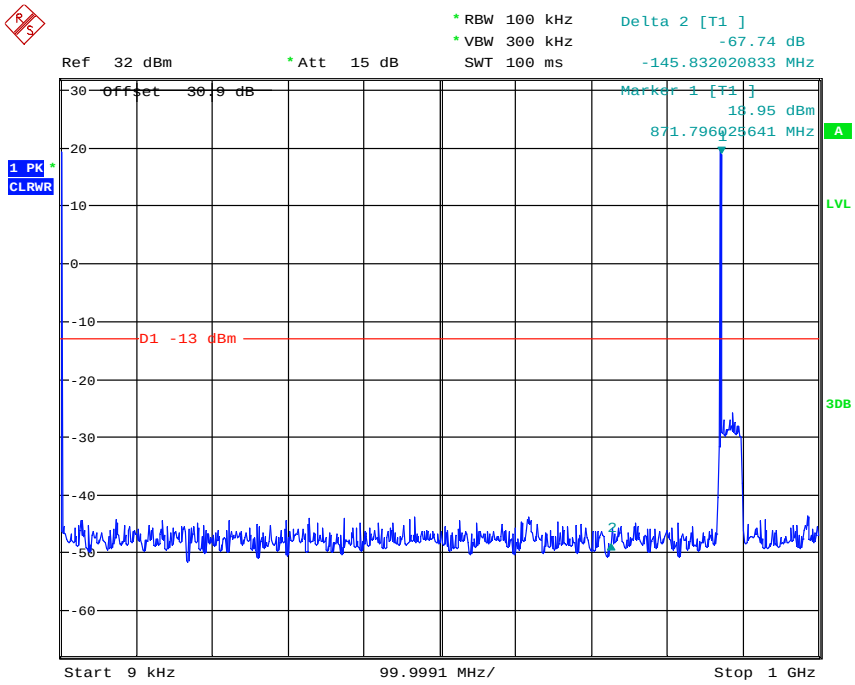
Date: 12.OCT.2013 12:52:04

5.3.2.1.3 850MHz Band

1) LTE modulation

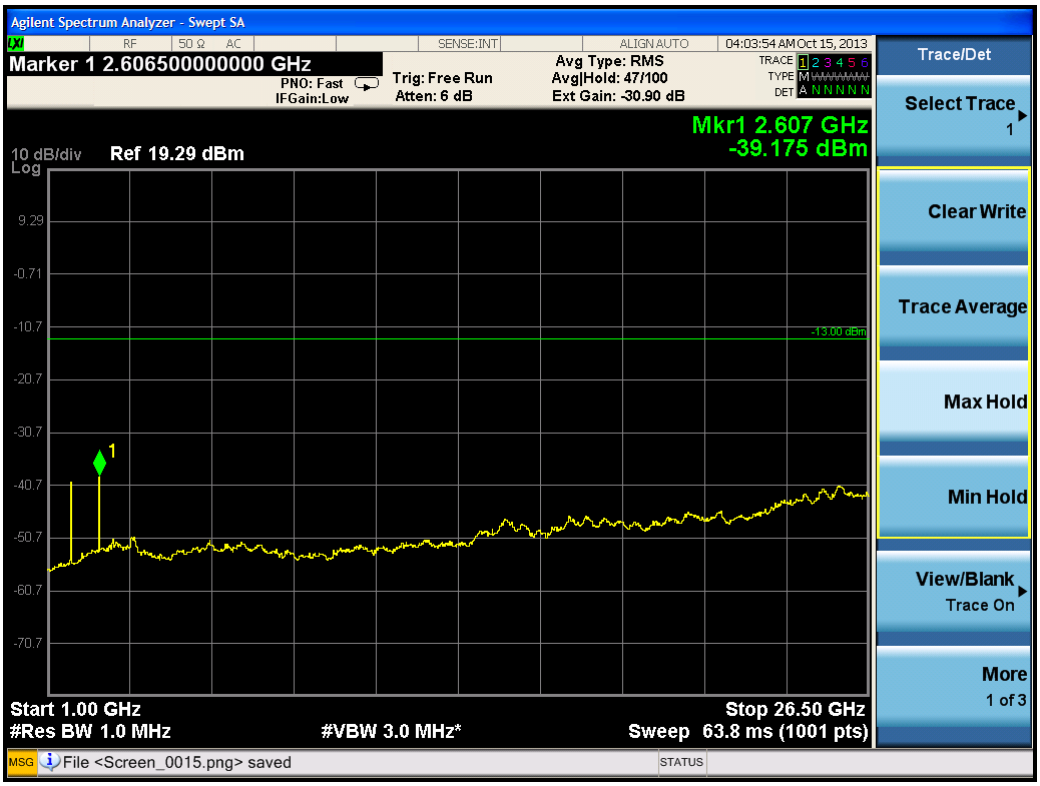
1.1) Test for LTE 1.4MHz

(a) Lowest frequency: 9 kHz to 1 GHz

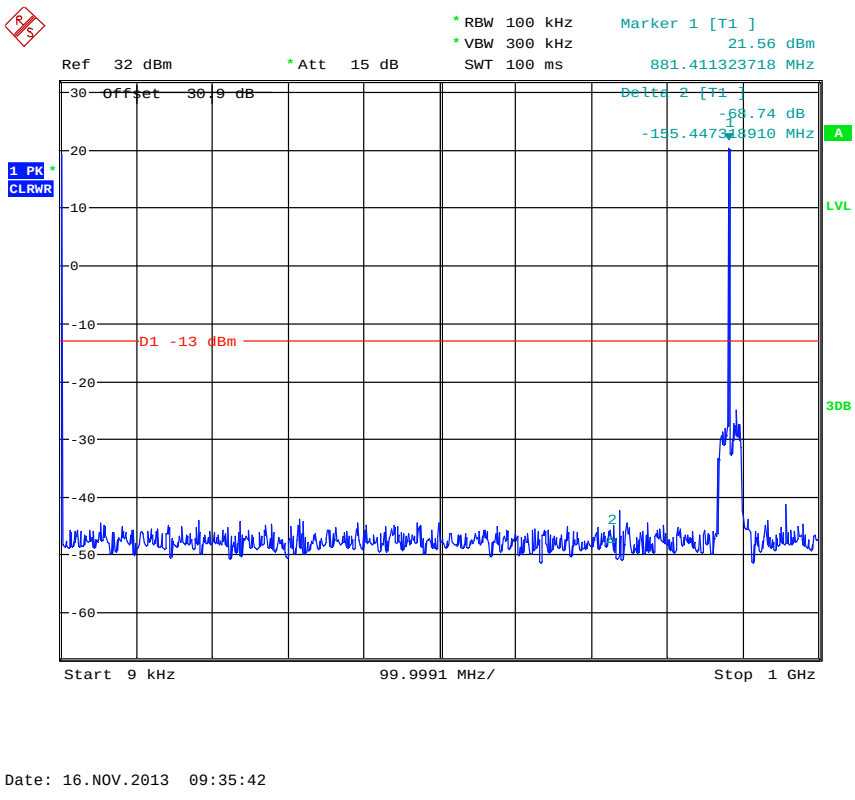


Date: 16.NOV.2013 09:35:11

(b) Lowest frequency: 1 GHz to 26.5 GHz

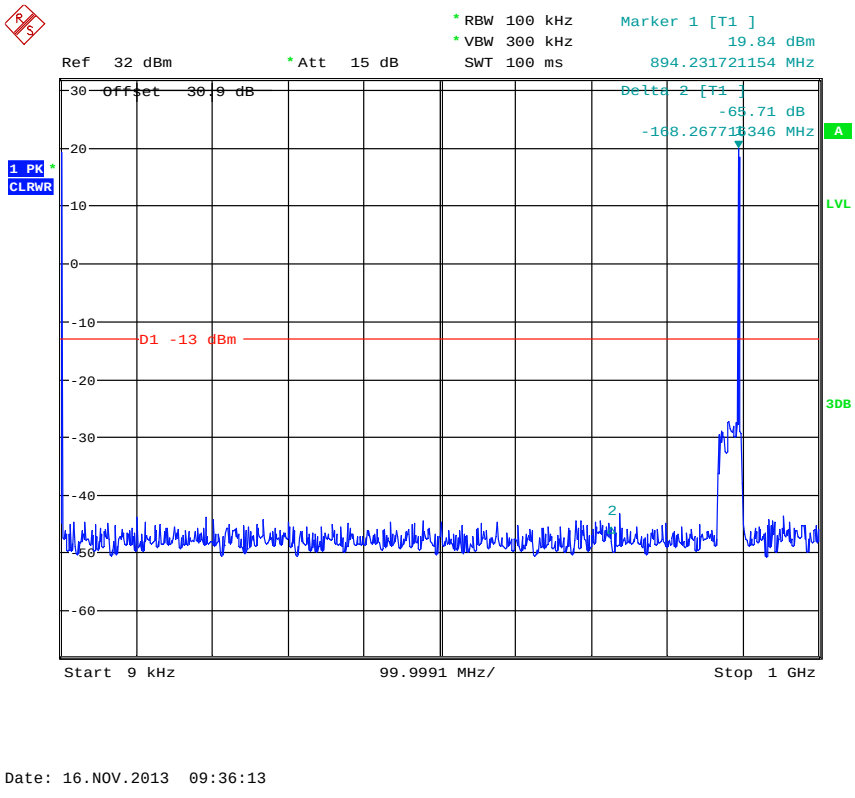


(c) Middle frequency: 9 kHz to 1 GHz

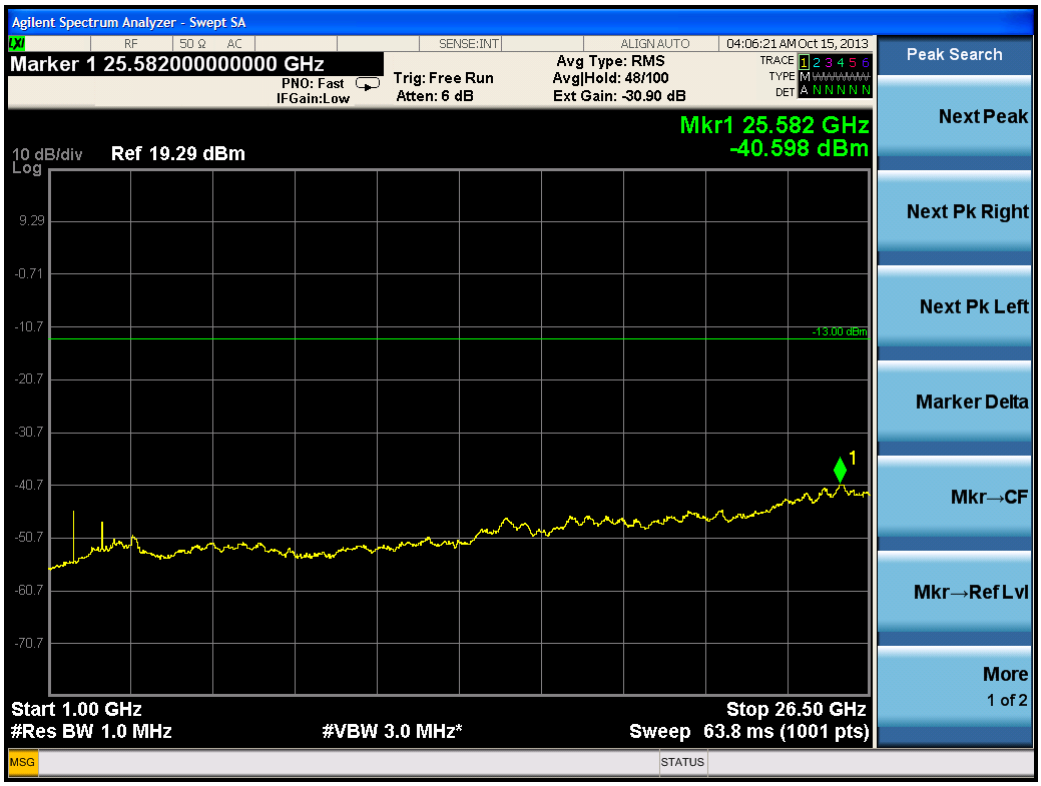


(d) Middle frequency: 1 GHz to 26.5 GHz

(e) Highest frequency: 9 kHz to 1 GHz

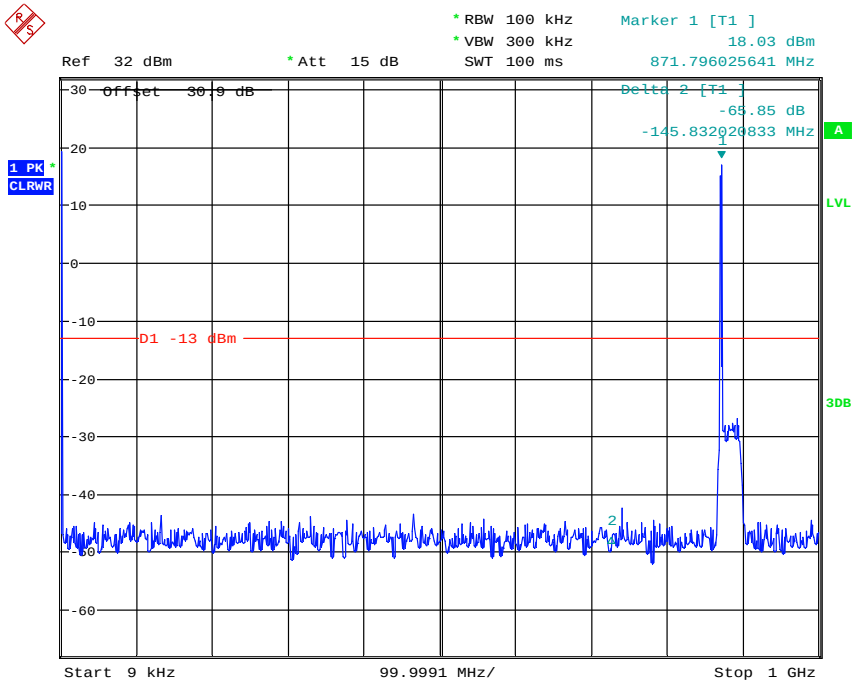


(f) Highest frequency: 1 GHz to 26.5 GHz



1.2) Test for LTE 3MHz

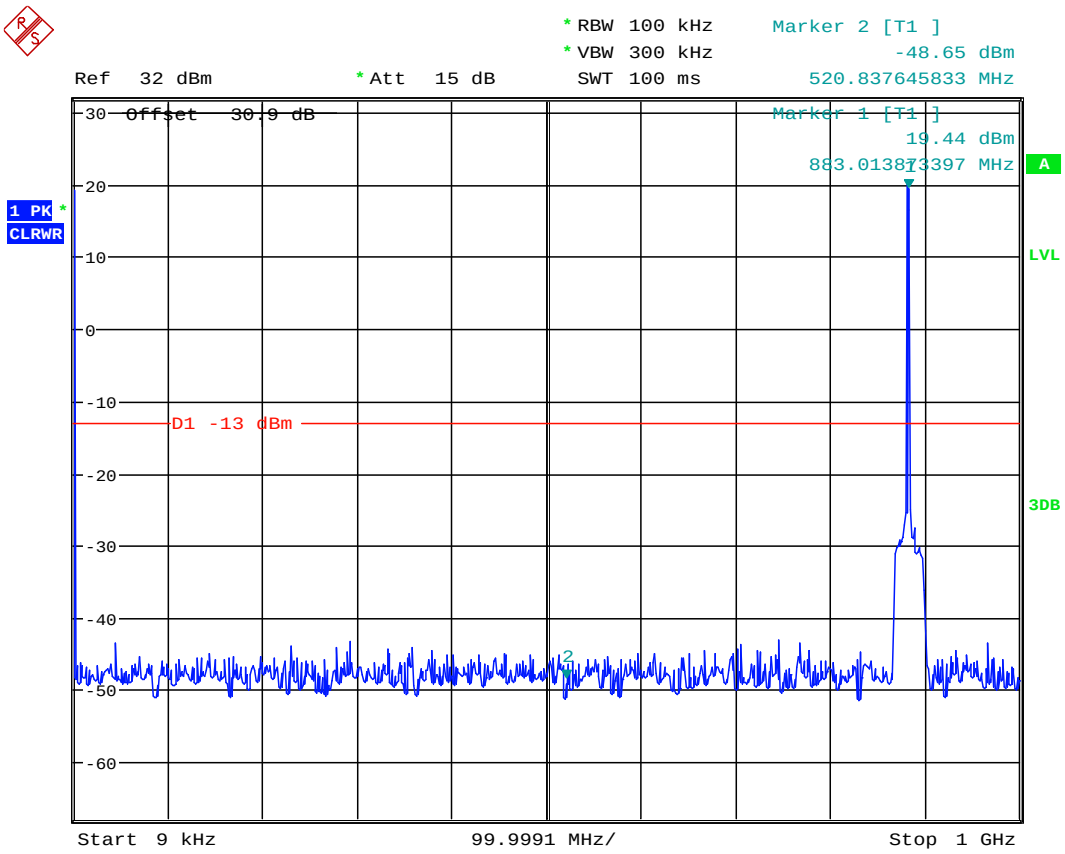
(a) Lowest frequency: 9 kHz to 1 GHz



Date: 16.NOV.2013 09:37:13

(b) Lowest frequency: 1 GHz to 26.5 GHz

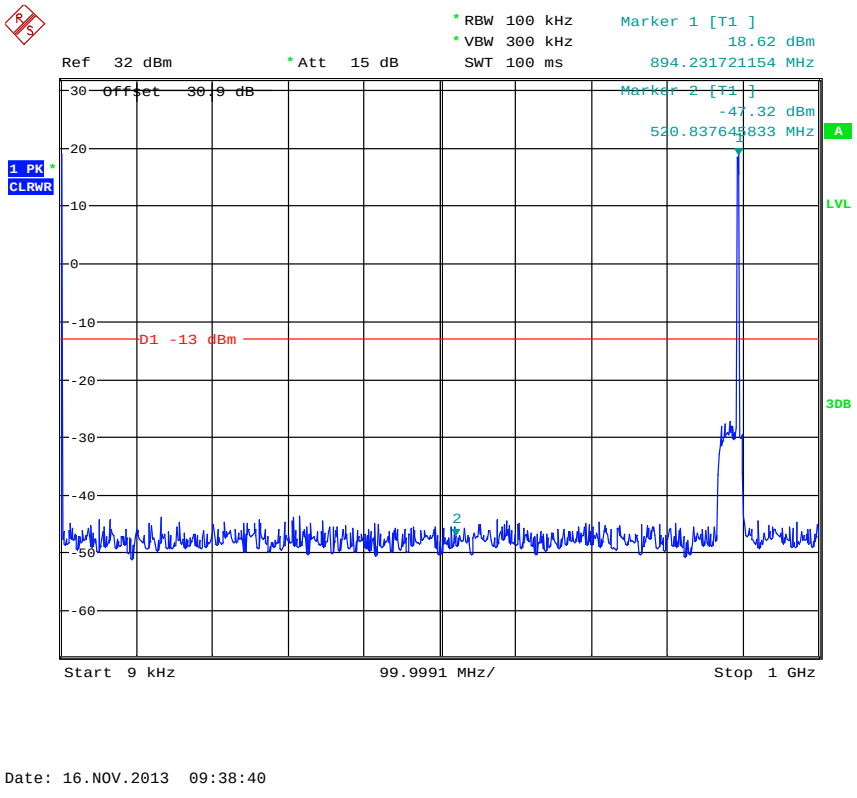
(c) Middle frequency: 9 kHz to 1 GHz



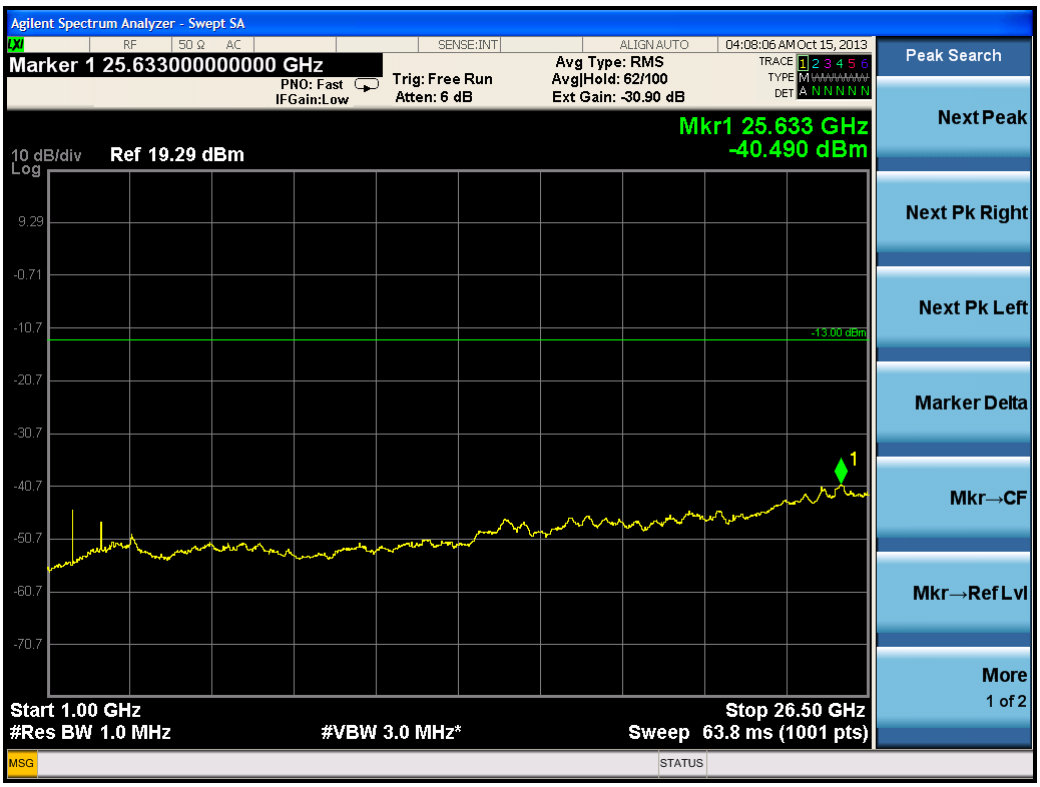
Date: 16.NOV.2013 09:37:50

(d) Middle frequency: 1 GHz to 26.5 GHz

(e) Highest frequency: 9 kHz to 1 GHz

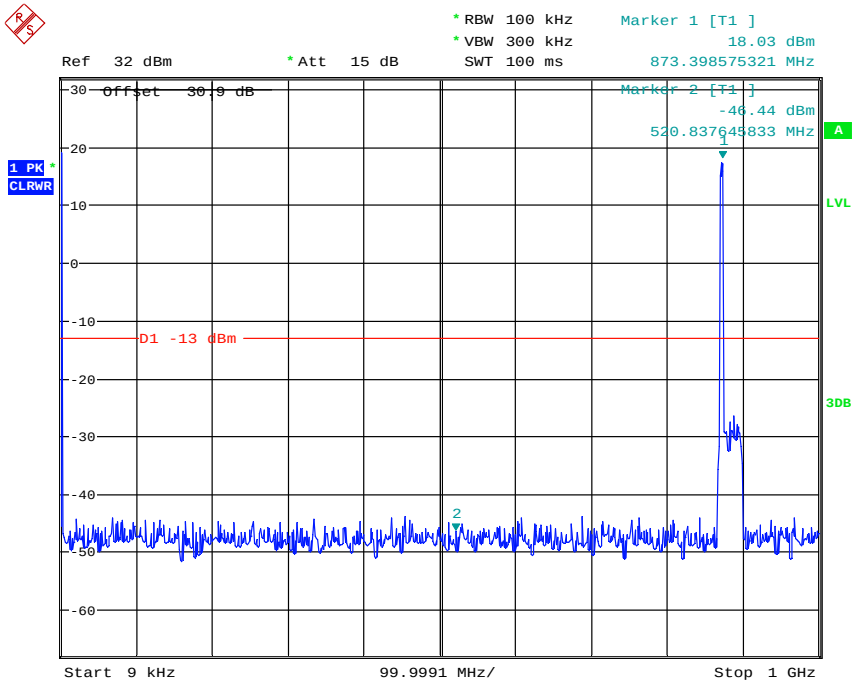


(f) Highest frequency: 1 GHz to 26.5 GHz


Agilent Spectrum Analyzer - Swept SA
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
04:08:06 AM Oct 15, 2013
Marker 1 25.633000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 6 dB
Avg Type: RMS
Avg|Hold: 62/100
Ext Gain: -30.90 dB
TRACE 1 2 3 4 5 6
TYPE M
DET A N N N N N
Mkr1 25.633 GHz
-40.490 dBm
10 dB/div
Log
Ref 19.29 dBm
9.29
-0.71
-10.7
-20.7
-30.7
-40.7
-50.7
-60.7
-70.7
-13.00 dBm
1
Start 1.00 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz*
Stop 26.50 GHz
Sweep 63.8 ms (1001 pts)
MSG
STATUS
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

1.3) Test for LTE 5MHz

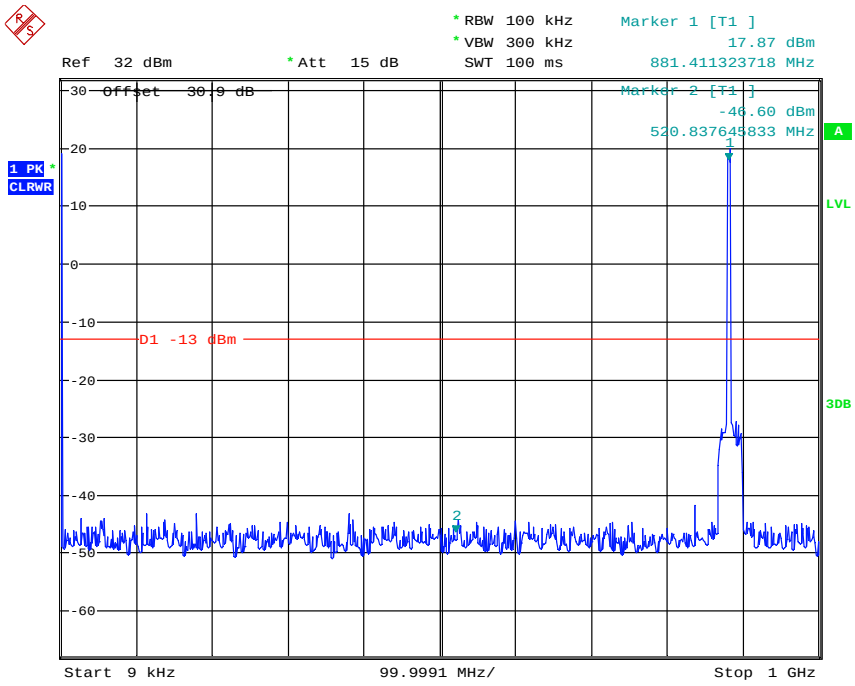
(a) Lowest frequency: 9 kHz to 1 GHz



Date: 16.NOV.2013 09:39:38

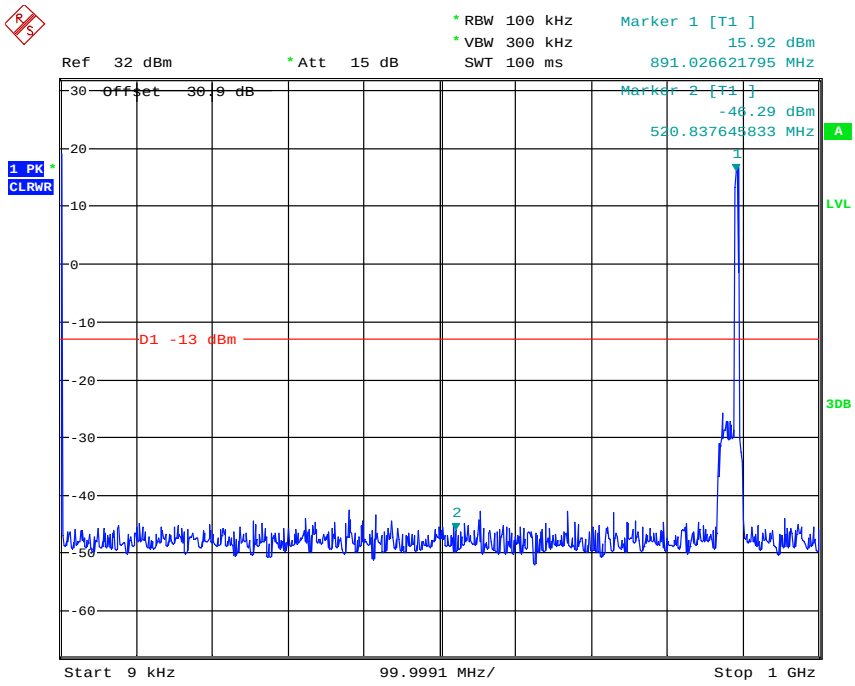
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



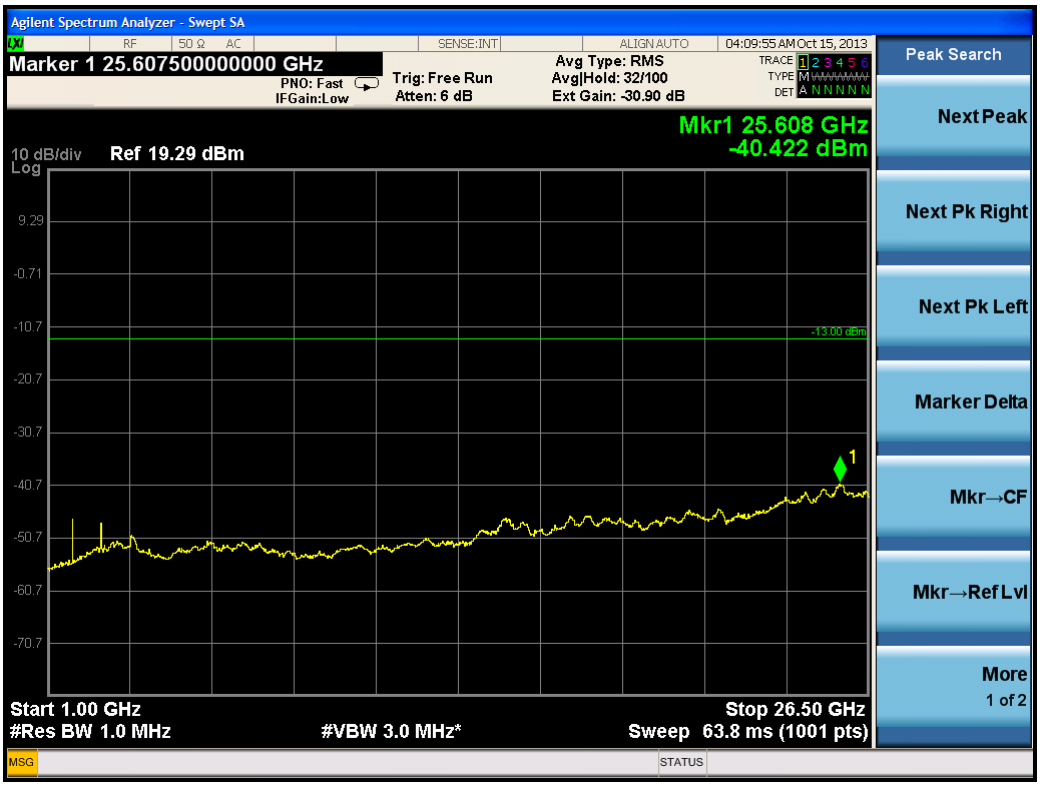
(d) Middle frequency: 1 GHz to 26.5 GHz

(e) Highest frequency: 9 kHz to 1 GHz



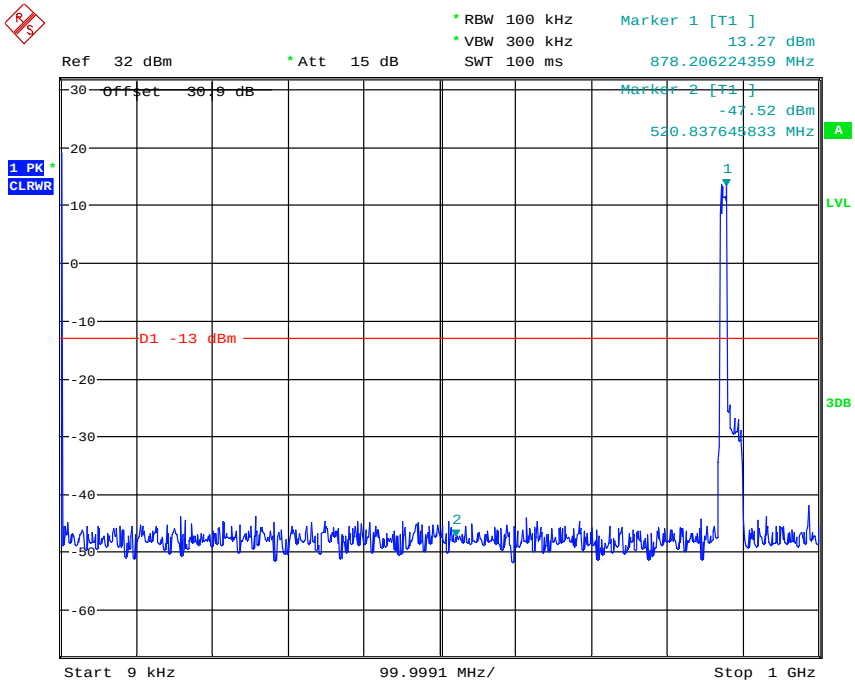
Date: 16.NOV.2013 09:40:46

(f) Highest frequency: 1 GHz to 26.5 GHz

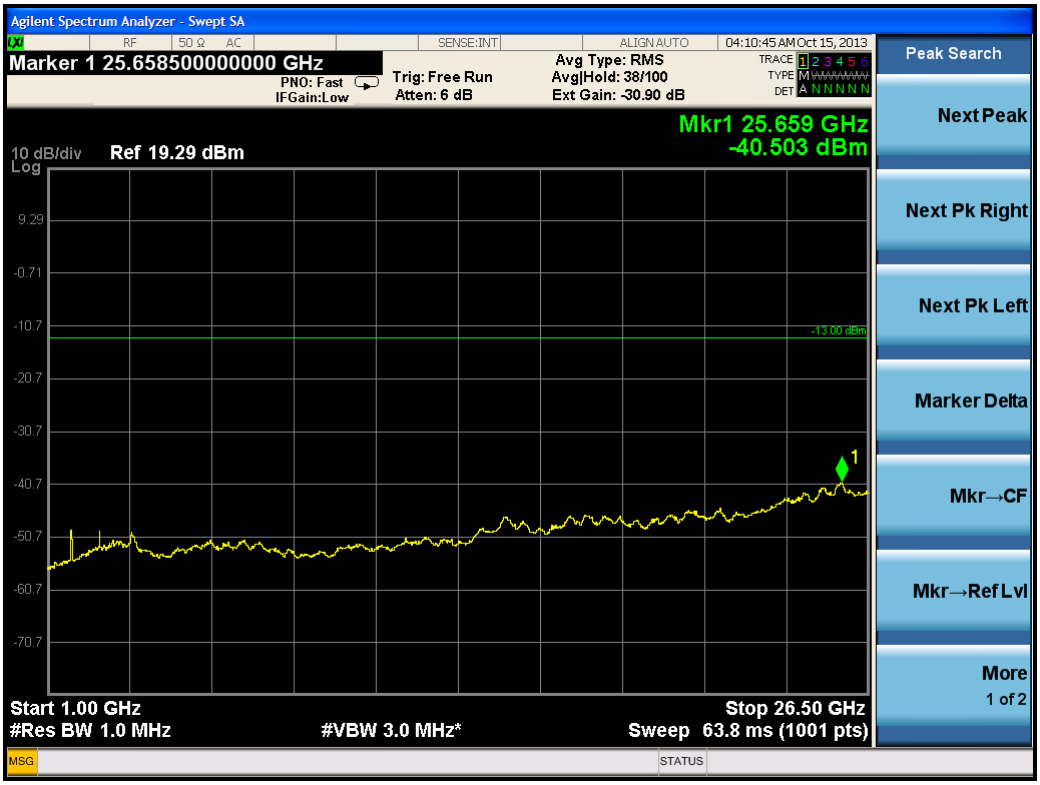


1.4) Test for LTE 10MHz

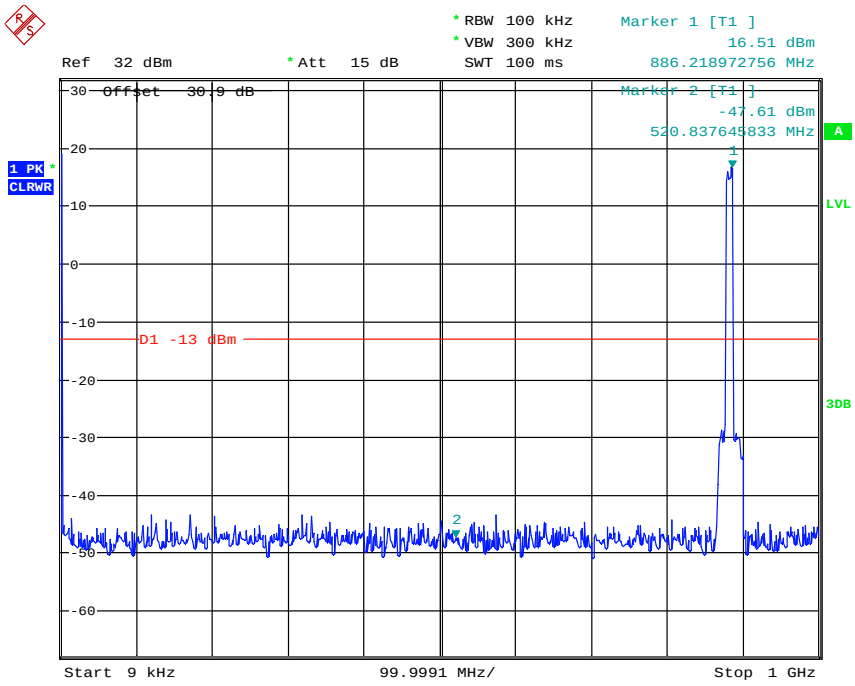
(a) Lowest frequency: 9 kHz to 1 GHz



(b) Lowest frequency: 1 GHz to 26.5 GHz



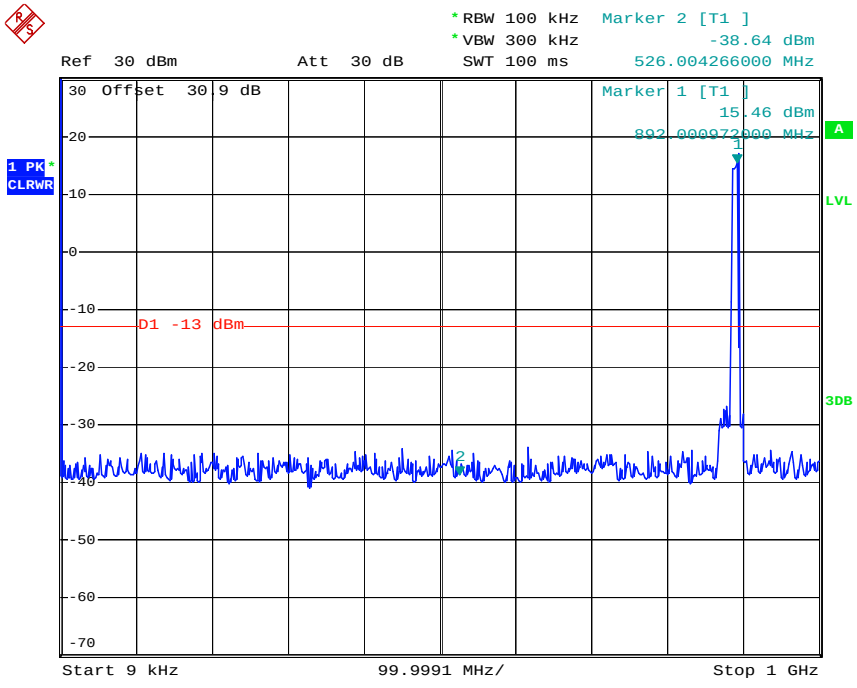
(c) Middle frequency: 9 kHz to 1 GHz



Date: 16.NOV.2013 09:43:31

(d) Middle frequency: 1 GHz to 26.5 GHz

(e) Highest frequency: 9 kHz to 1 GHz

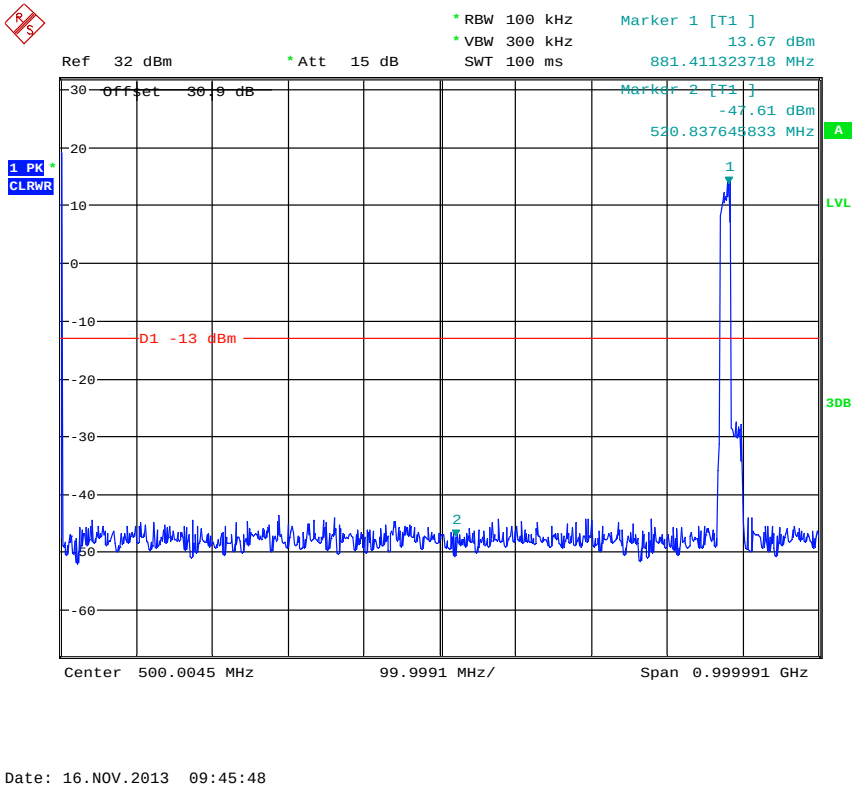


Date: 18.NOV.2013 05:24:53

(f) Highest frequency: 1 GHz to 26.5 GHz

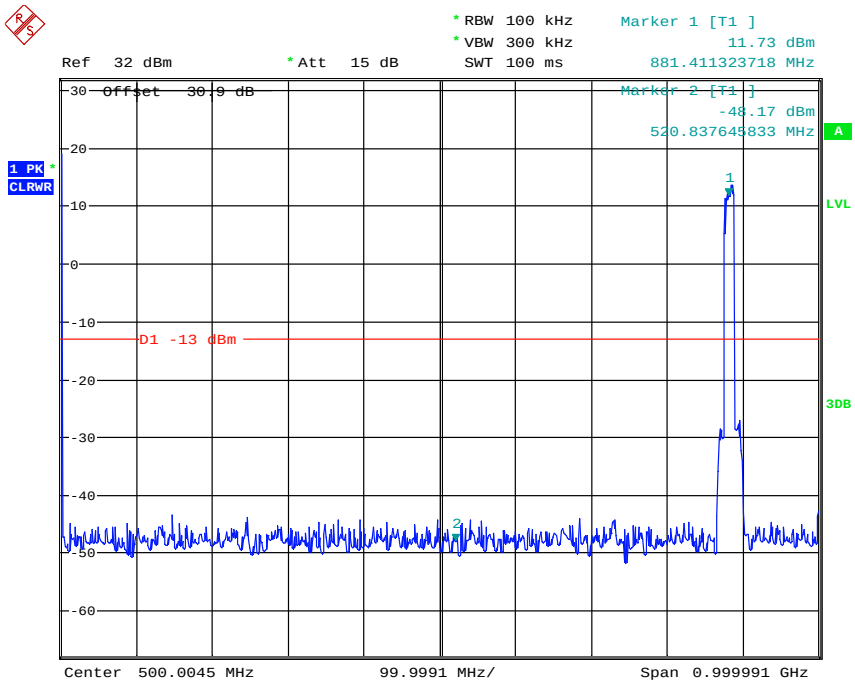
1.5) Test for LTE 15MHz

(a) Lowest frequency: 9 kHz to 1 GHz



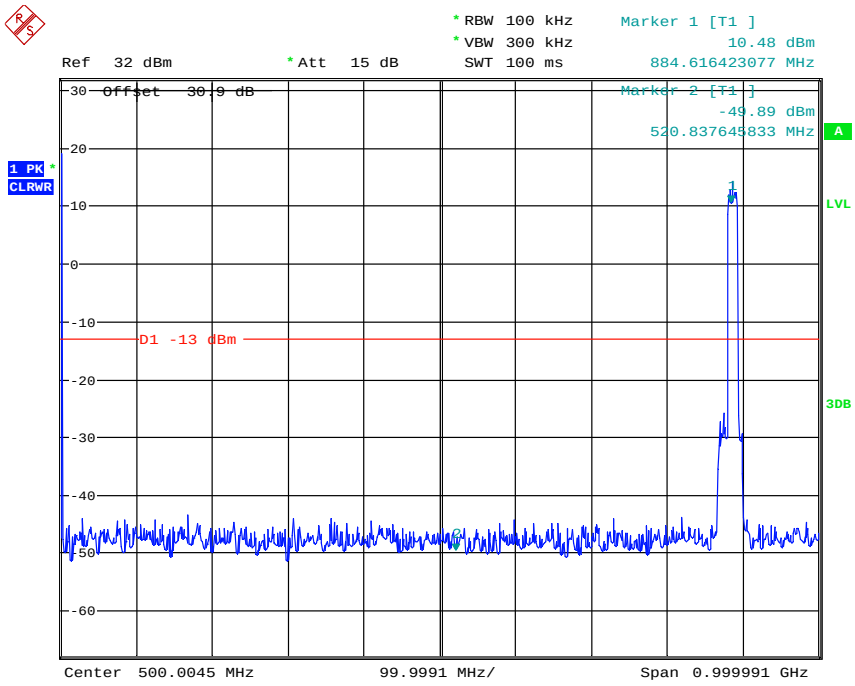
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



(d) Middle frequency: 1 GHz to 26.5 GHz

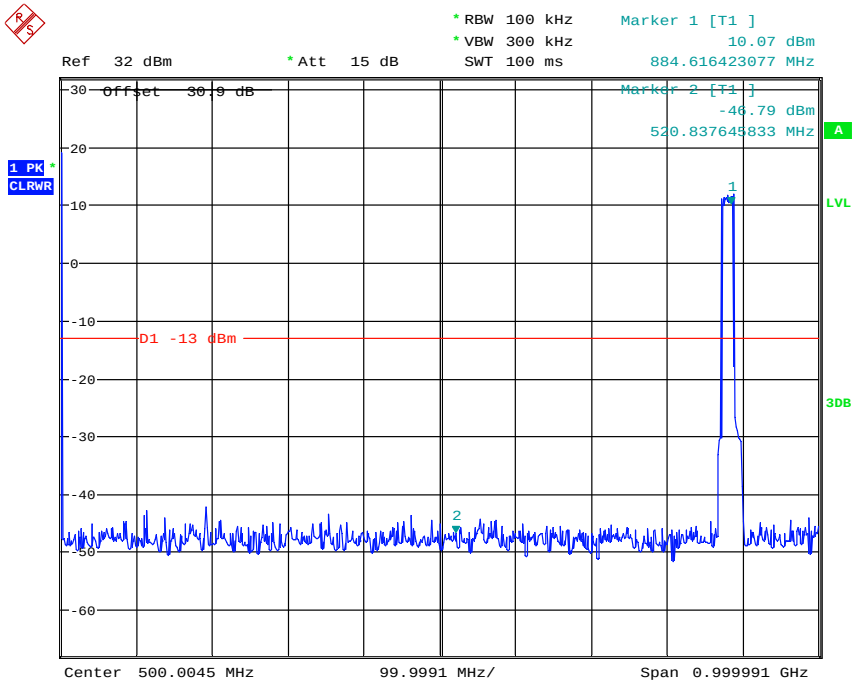
(e) Highest frequency: 9 kHz to 1 GHz



(f) Highest frequency: 1 GHz to 26.5 GHz

1.6) Test for LTE 20MHz

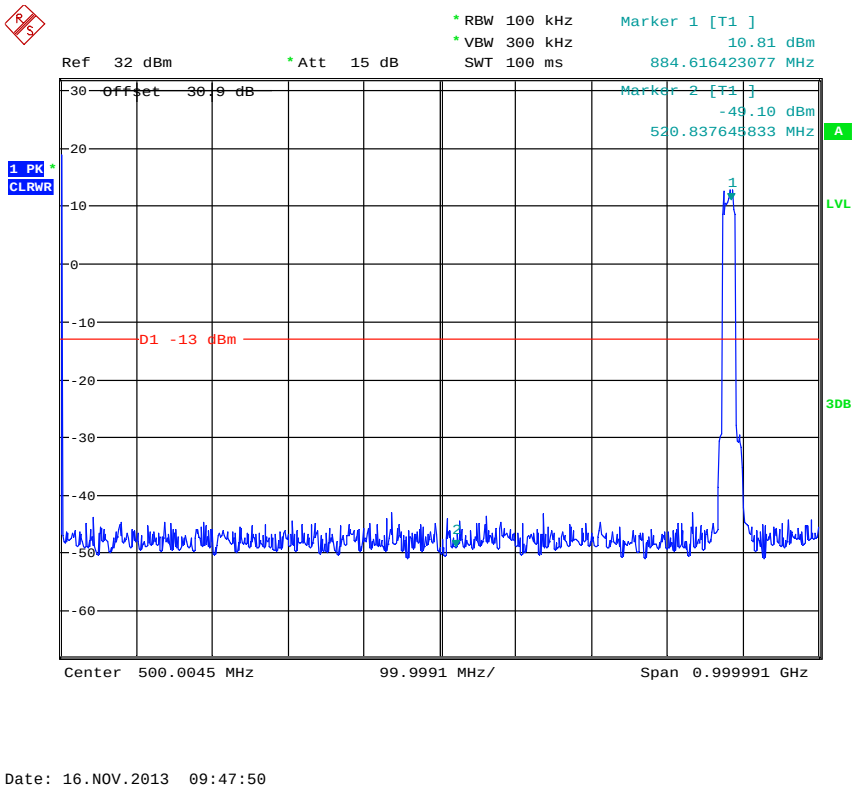
(a) Lowest frequency: 9 kHz to 1 GHz



Date: 16.NOV.2013 09:47:33

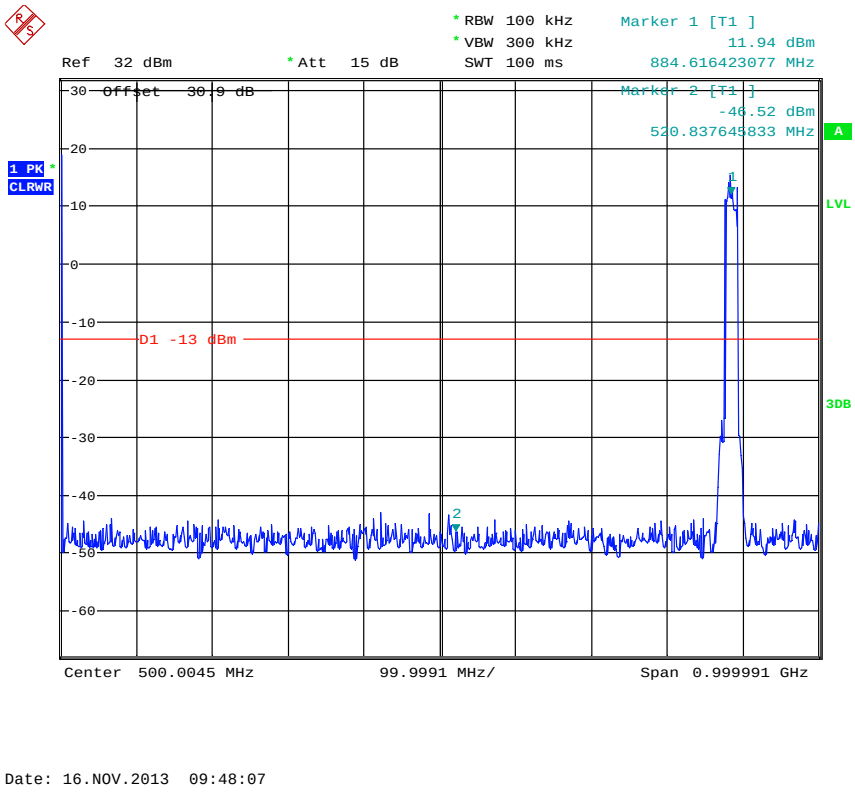
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



(d) Middle frequency: 1 GHz to 26.5 GHz

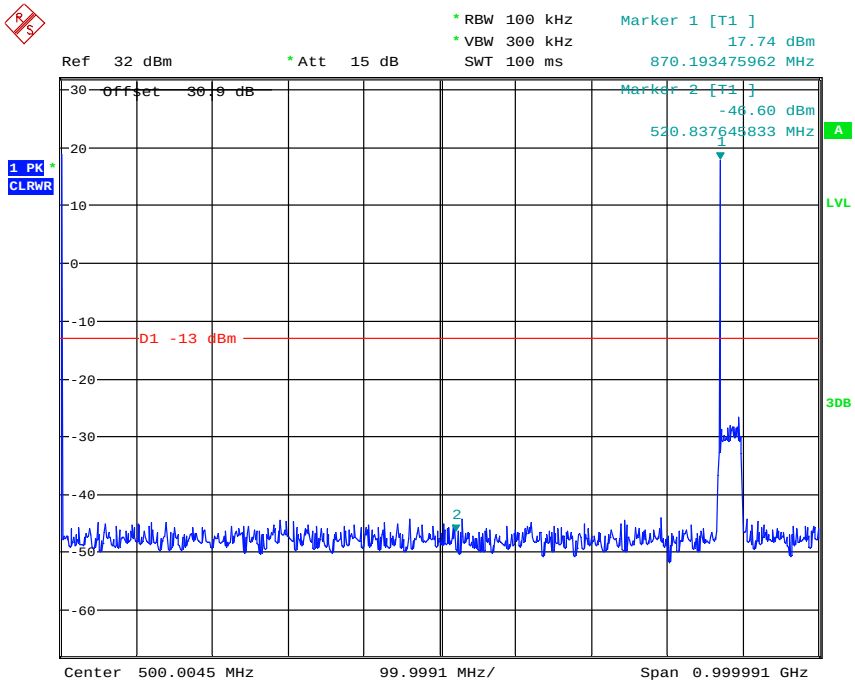
(e) Highest frequency: 9 kHz to 1 GHz



(f) Highest frequency: 1 GHz to 26.5 GHz

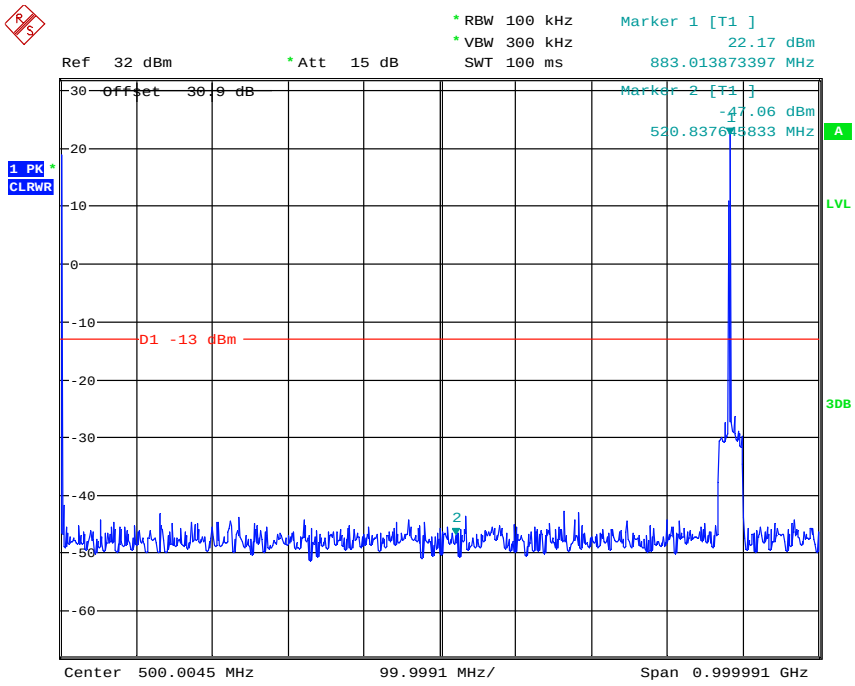
2) GSM modulation

(a) Lowest frequency: 9 kHz to 1 GHz



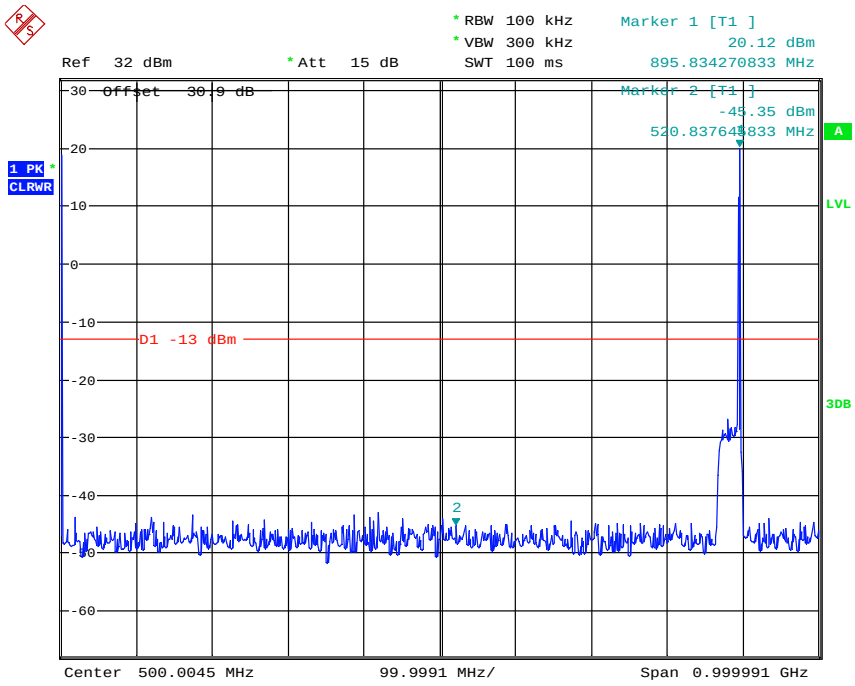
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



(d) Middle frequency: 1 GHz to 26.5 GHz

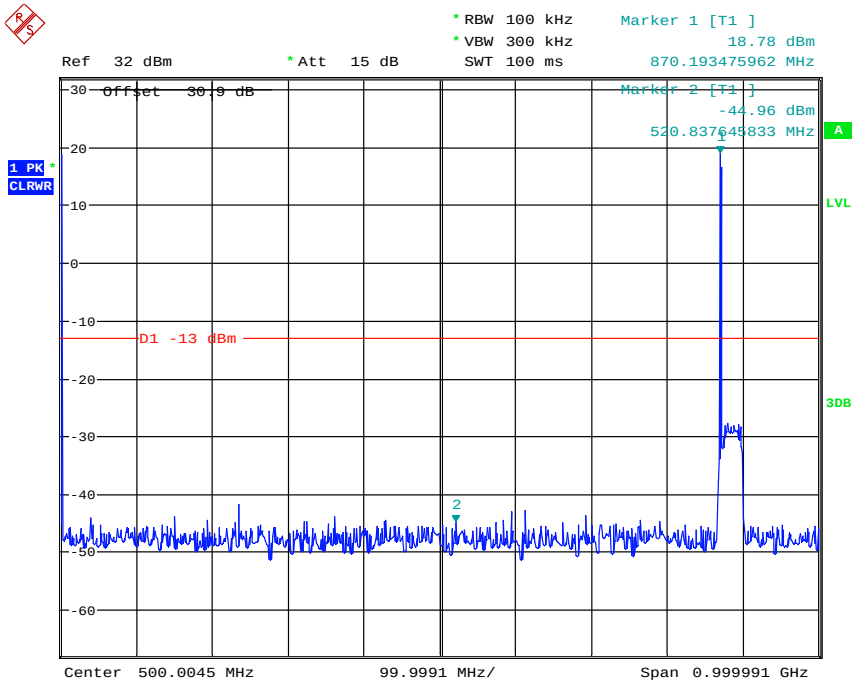
(e) Highest frequency: 9 kHz to 1 GHz



(f) Highest frequency: 1 GHz to 26.5 GHz

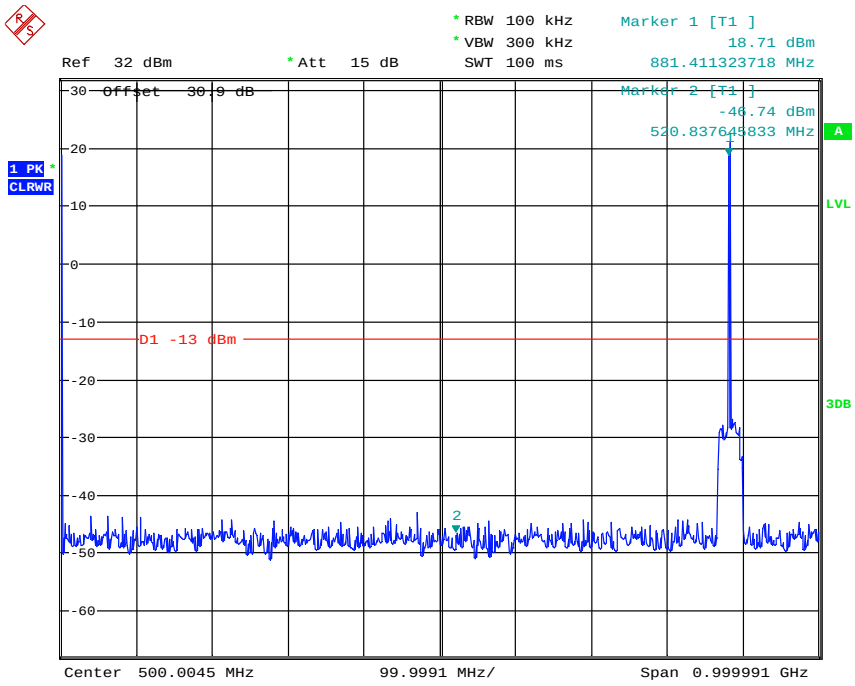
3) CDMA modulation

(a) Lowest frequency: 9 kHz to 1 GHz



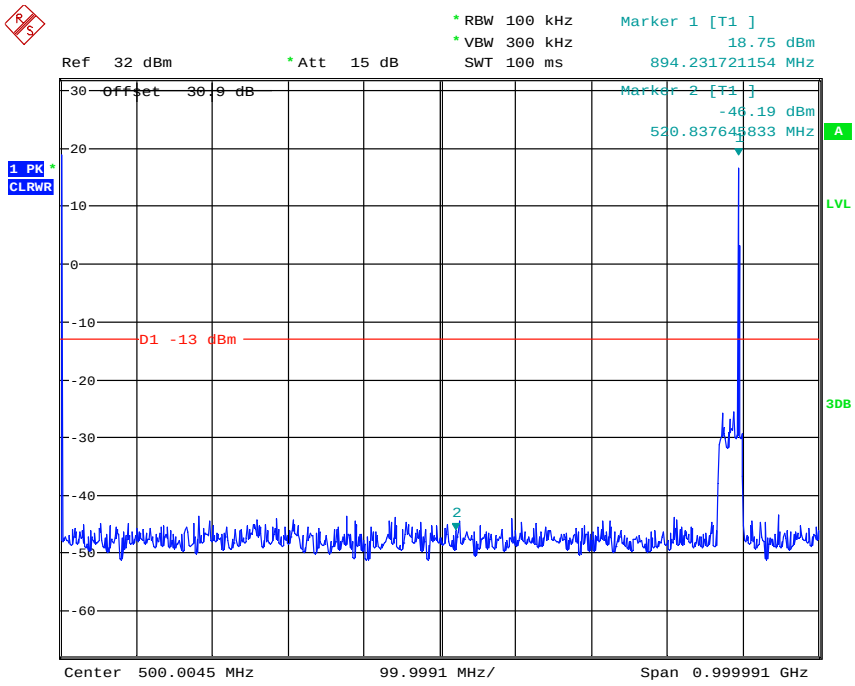
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



(d) Middle frequency: 1 GHz to 26.5 GHz

(e) Highest frequency: 9 kHz to 1 GHz

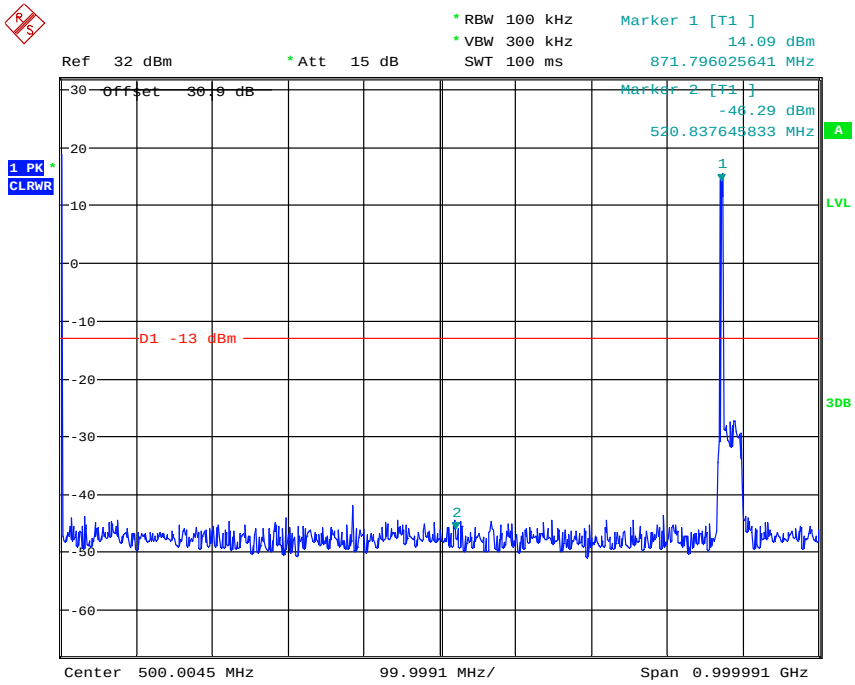


Date: 16.NOV.2013 09:52:12

(f) Highest frequency: 1 GHz to 26.5 GHz

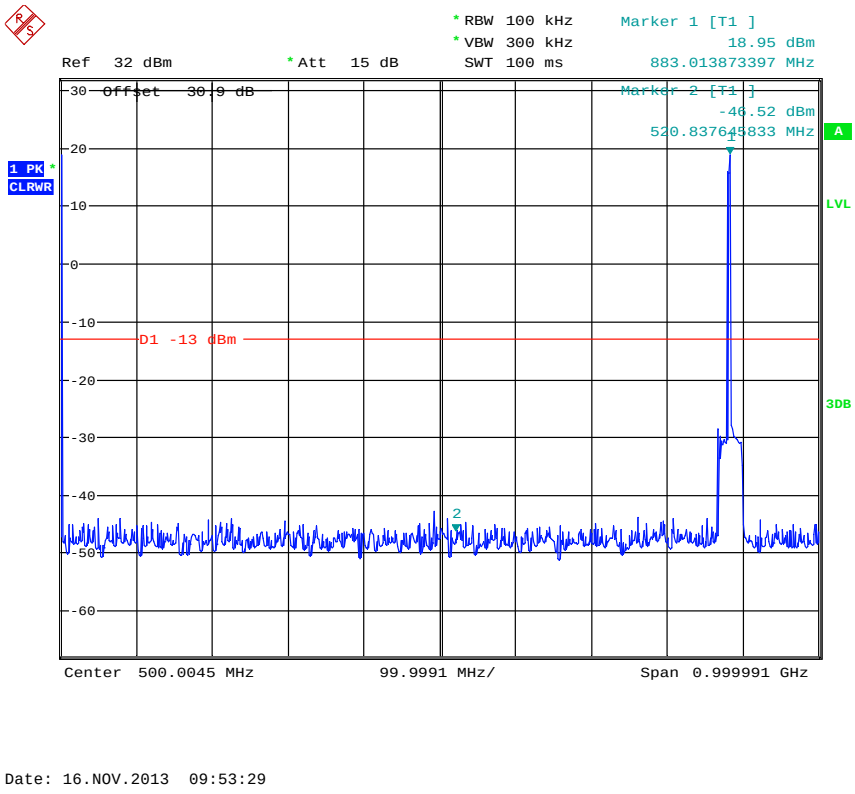
4) WCDMA modulation

(a) Lowest frequency: 9 kHz to 1 GHz



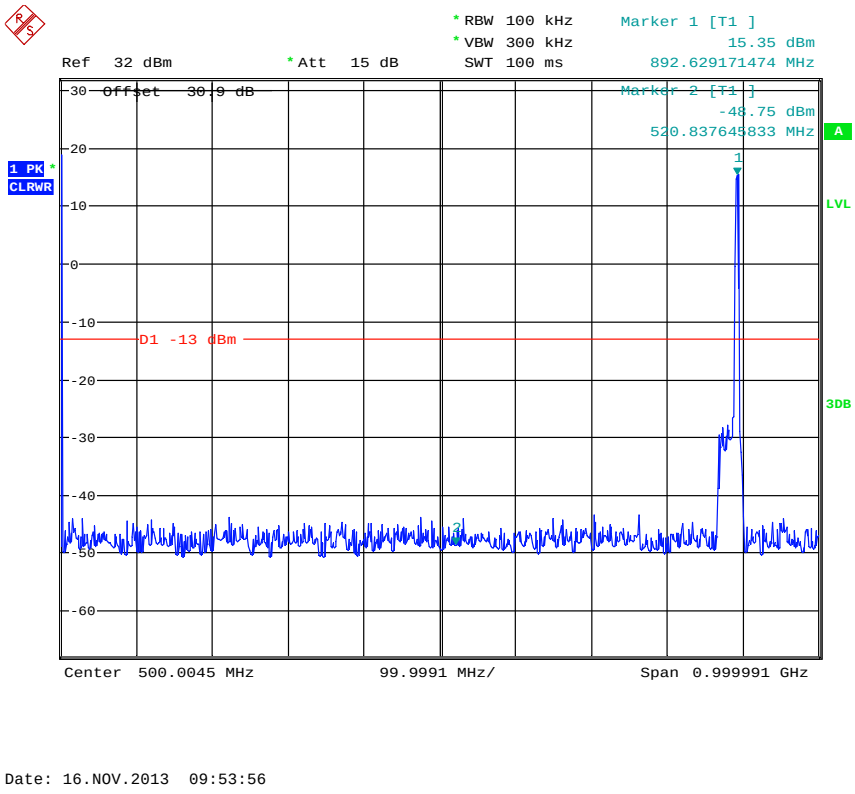
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz

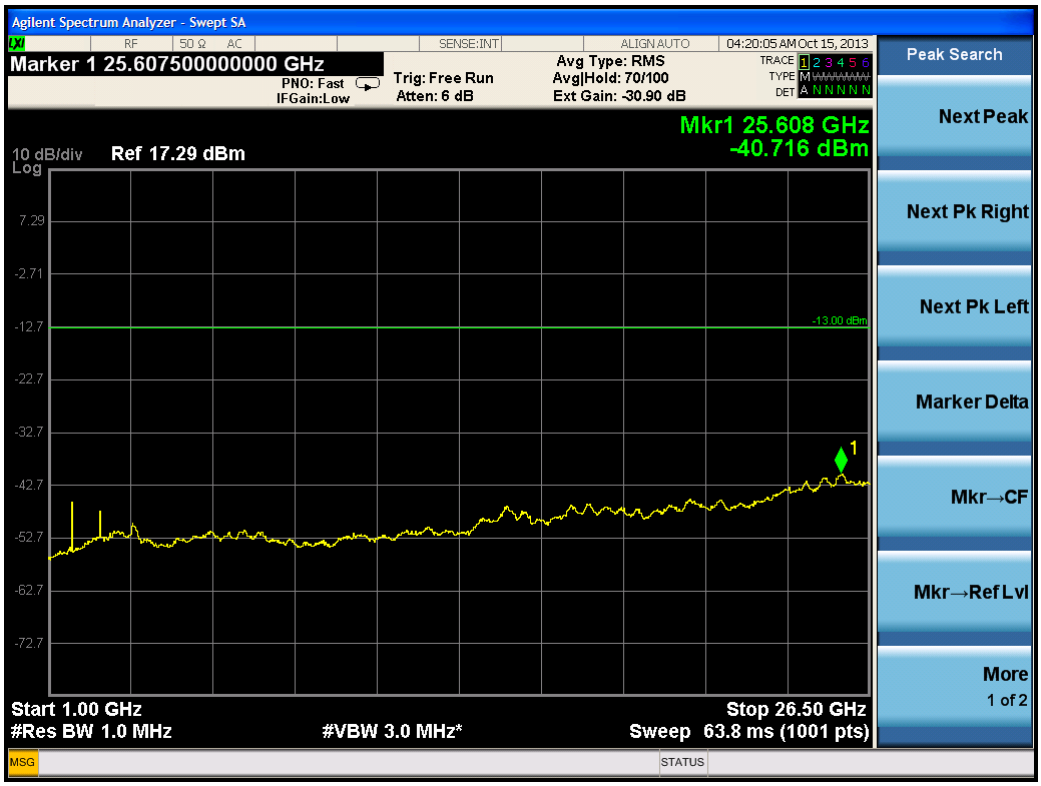


(d) Middle frequency: 1 GHz to 26.5 GHz

(e) Highest frequency: 9 kHz to 1 GHz

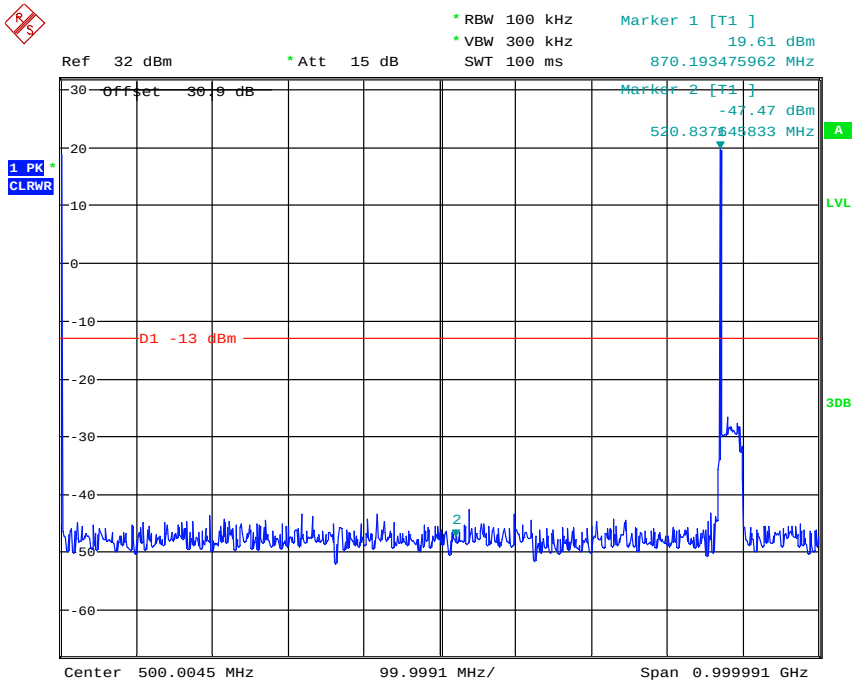


(f) Highest frequency: 1 GHz to 26.5 GHz



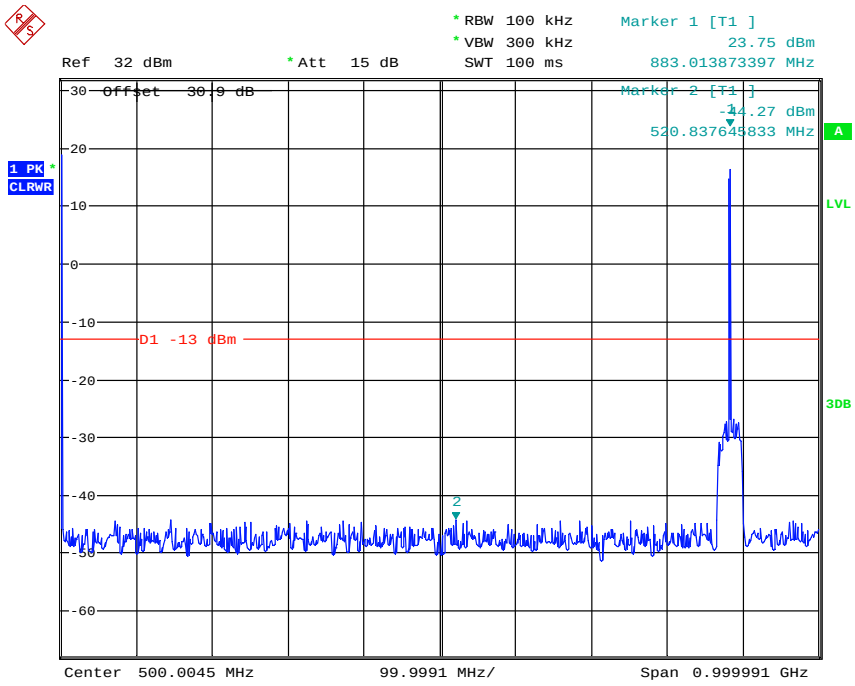
5) 1x EV-DO modulation

(a) Lowest frequency: 9 kHz to 1 GHz



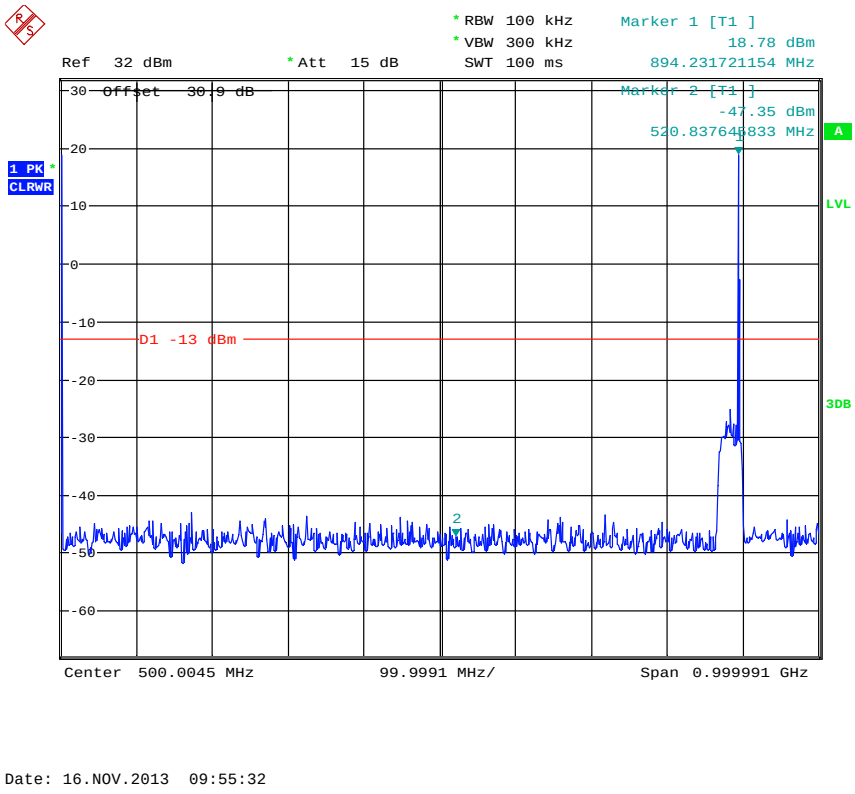
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



(d) Middle frequency: 1 GHz to 26.5 GHz

(e) Highest frequency: 9 kHz to 1 GHz



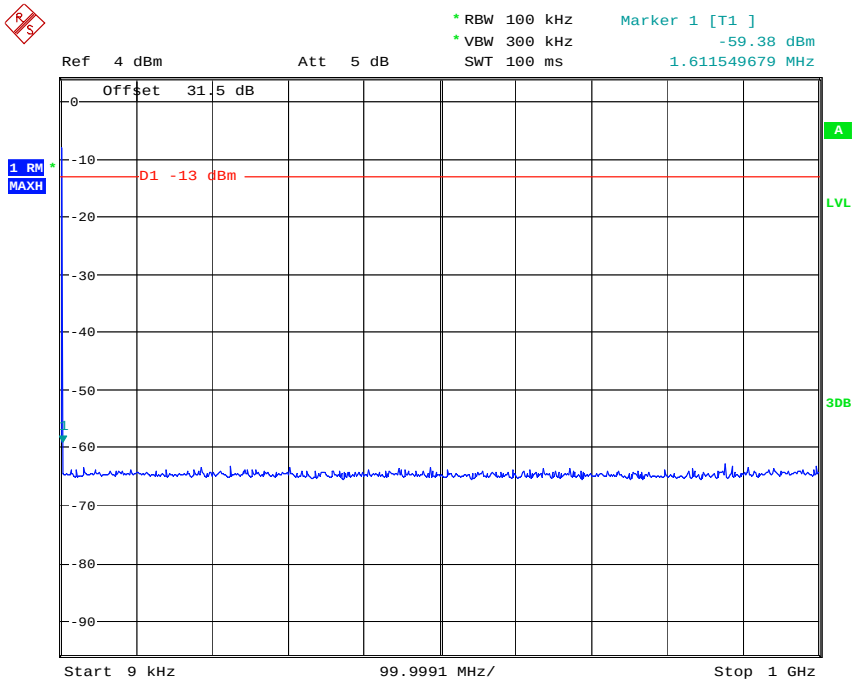
(f) Highest frequency: 1 GHz to 26.5 GHz

5.3.2.1.4 1900MHz Broadband PCS

1) 1900MHz LTE modulation

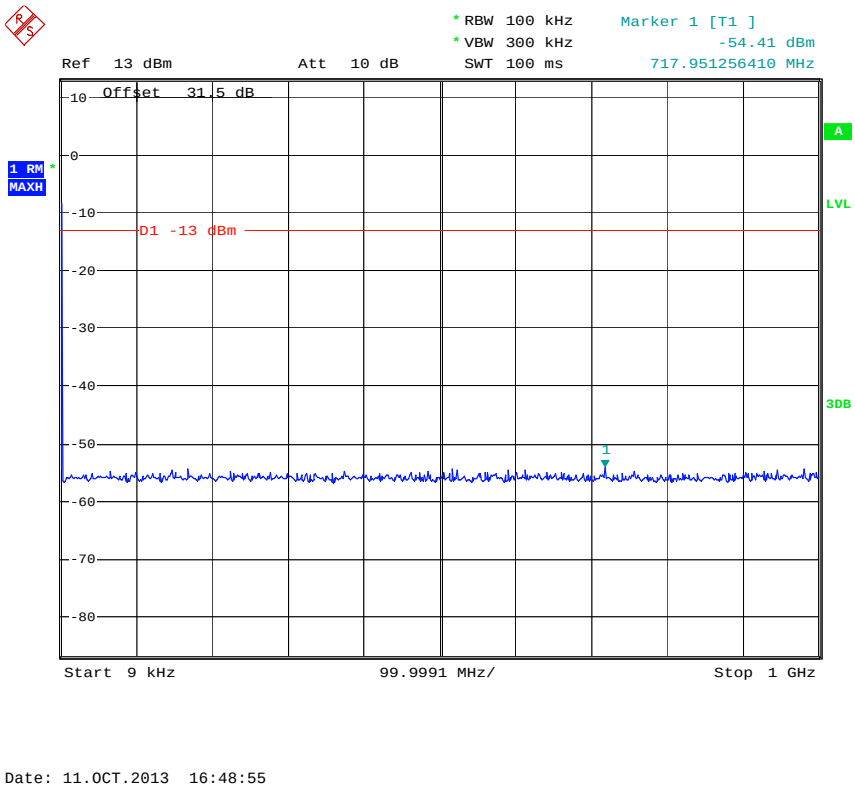
1.1) Test for LTE 1.4MHz

(a) Lowest frequency: 9 kHz to 1 GHz



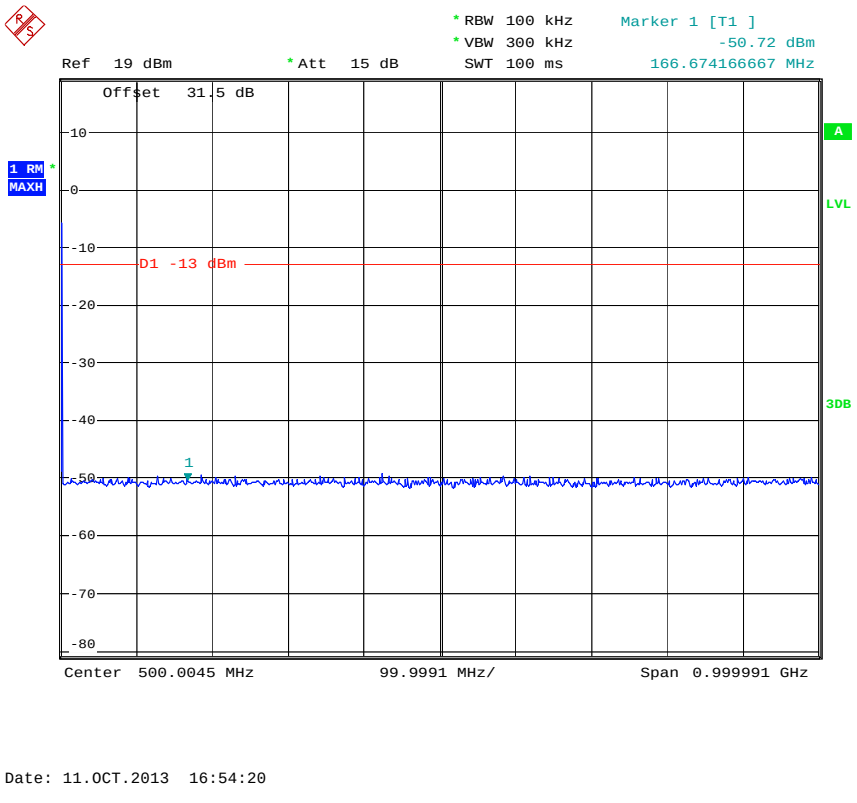
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



(d) Middle frequency: 1 GHz to 26.5 GHz

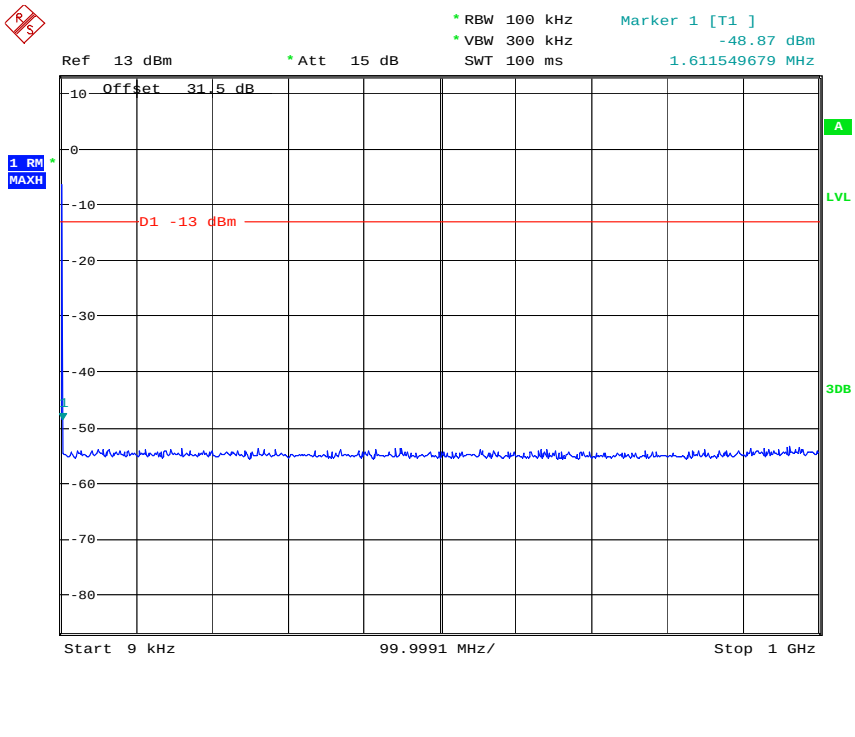
(e) Highest frequency: 9 kHz to 1 GHz



(f) Highest frequency: 1 GHz to 26.5 GHz

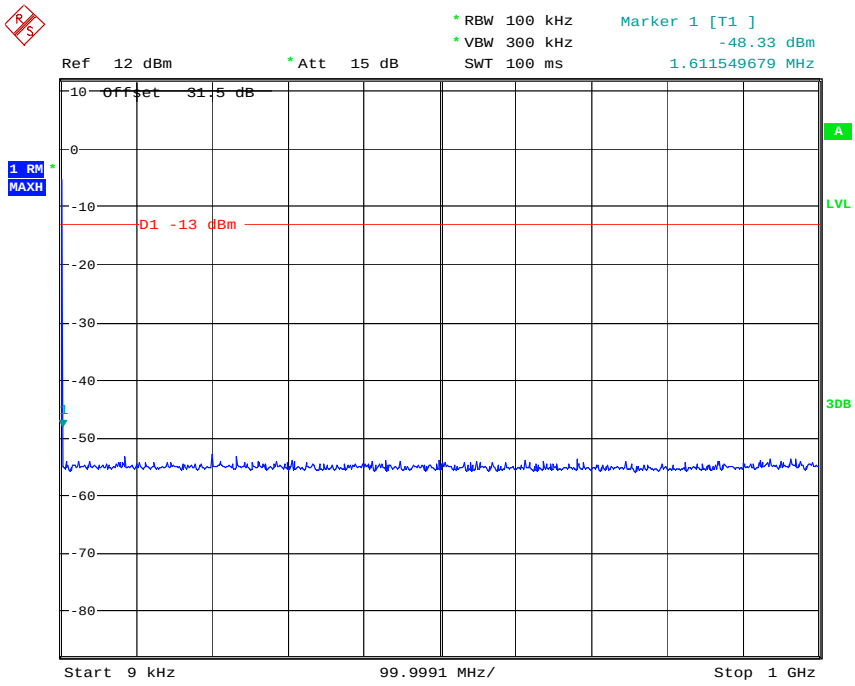
1.2) Test for LTE 3MHz

(a) Lowest frequency: 9 kHz to 1 GHz



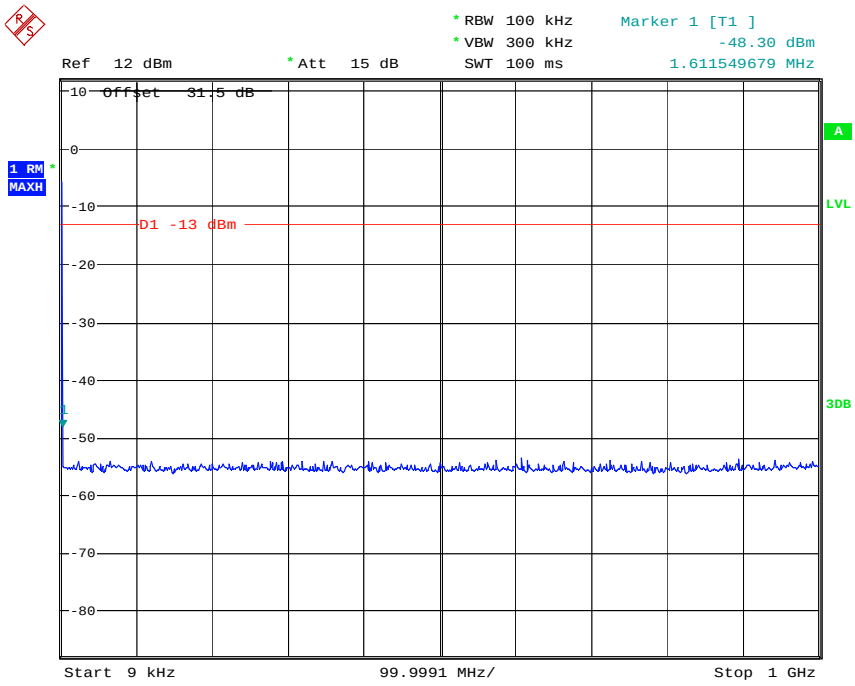
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



(d) Middle frequency: 1 GHz to 26.5 GHz

(e) Highest frequency: 9 kHz to 1 GHz

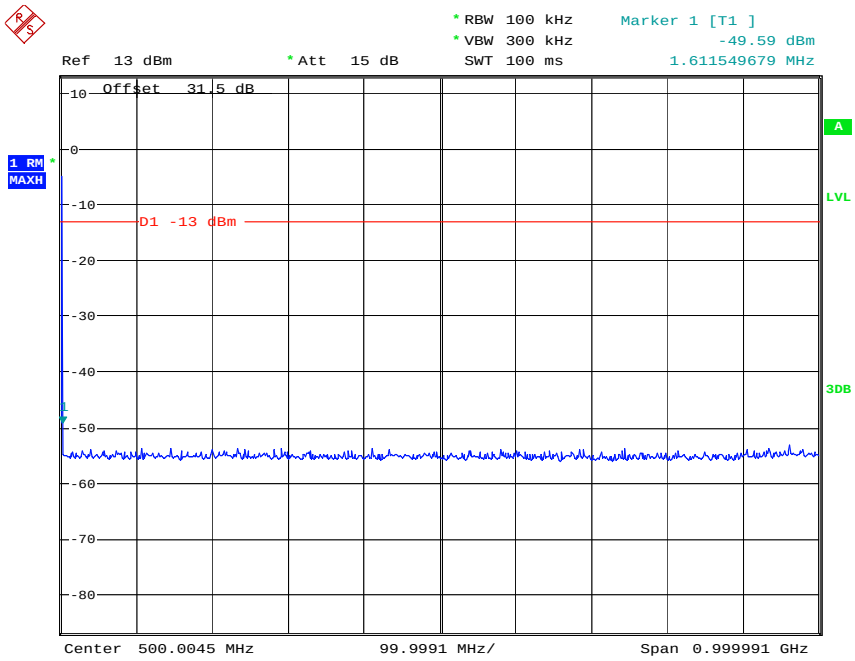


Date: 11.OCT.2013 17:02:57

(f) Highest frequency: 1 GHz to 26.5 GHz

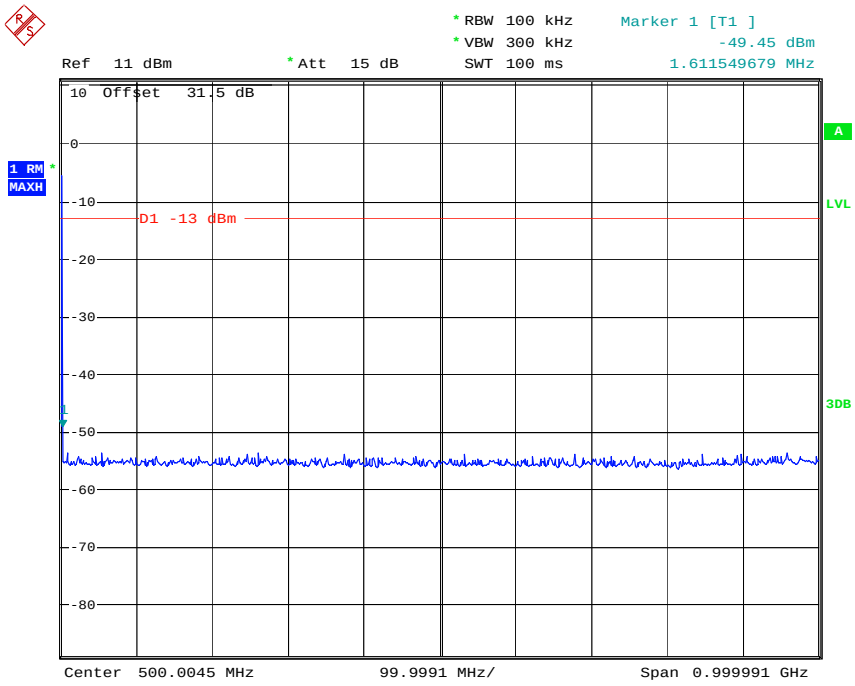
1.3) Test for LTE 5MHz

(a) Lowest frequency: 9 kHz to 1 GHz



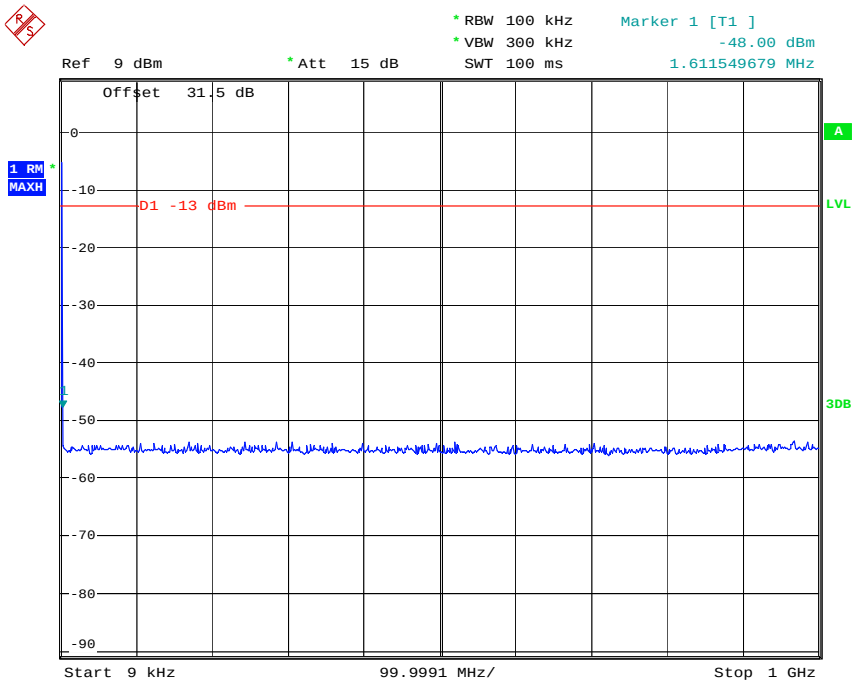
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



(d) Middle frequency: 1 GHz to 26.5 GHz

(e) Highest frequency: 9 kHz to 1 GHz

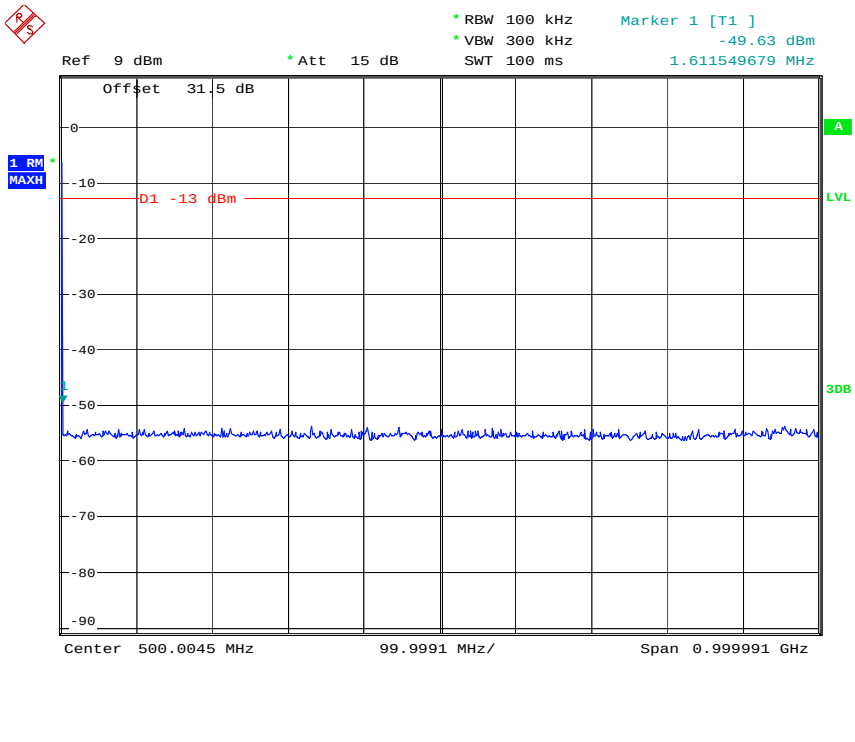


Date: 11.OCT.2013 17:10:24

(f) Highest frequency: 1 GHz to 26.5 GHz

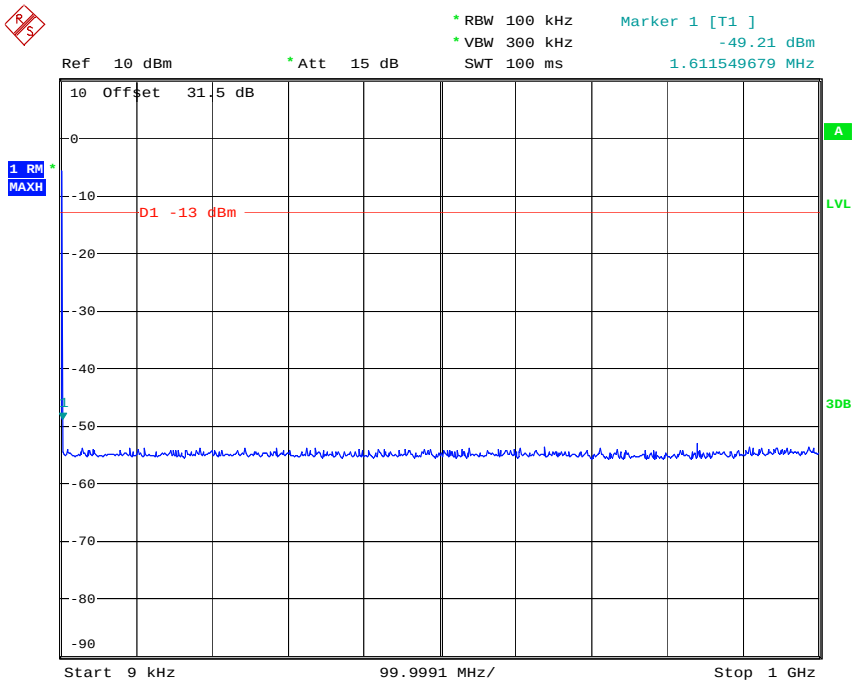
1.4) Test for LTE 10MHz

(a) Lowest frequency: 9 kHz to 1 GHz



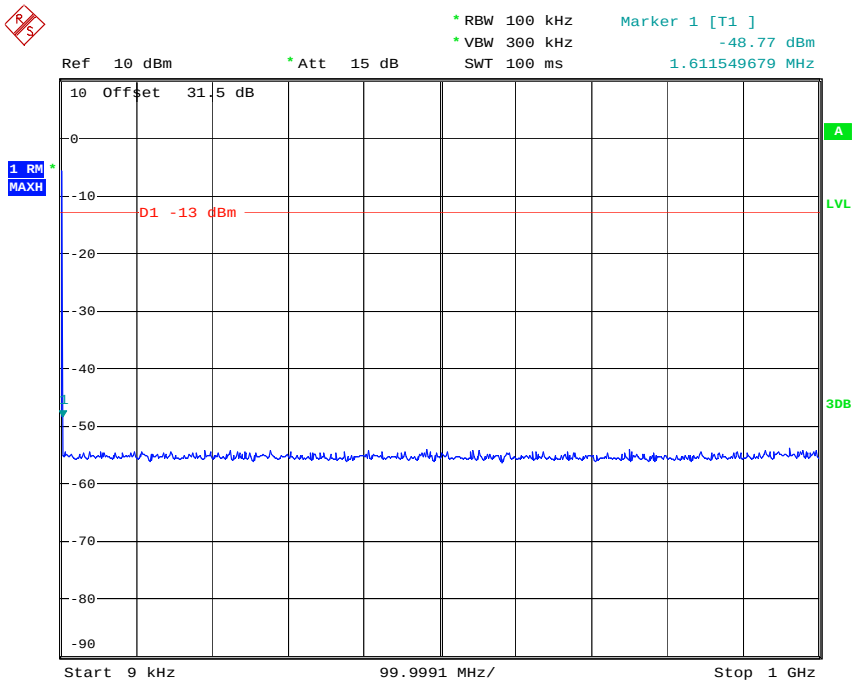
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



(d) Middle frequency: 1 GHz to 26.5 GHz

(e) Highest frequency: 9 kHz to 1 GHz

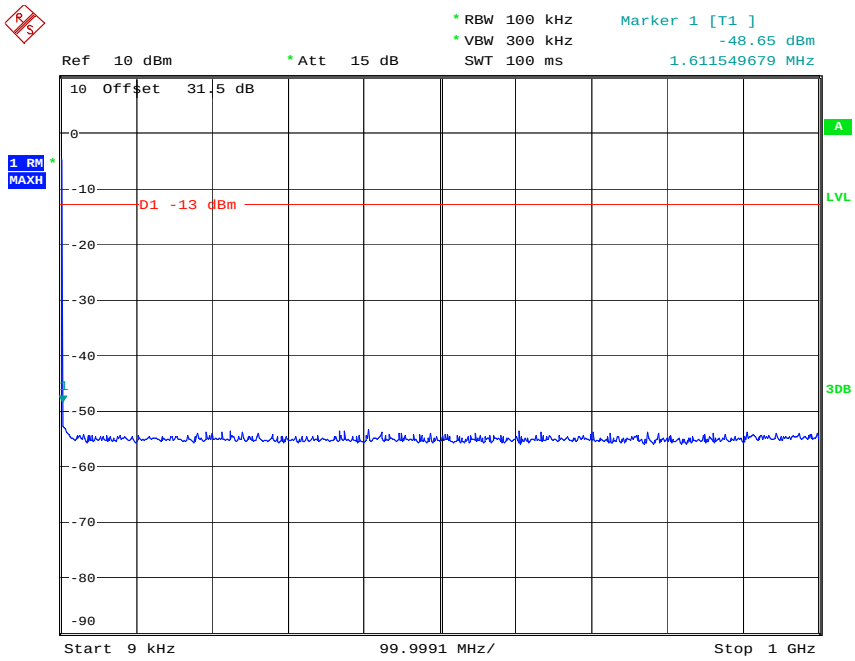


Date: 11.OCT.2013 17:19:04

(f) Highest frequency: 1 GHz to 26.5 GHz

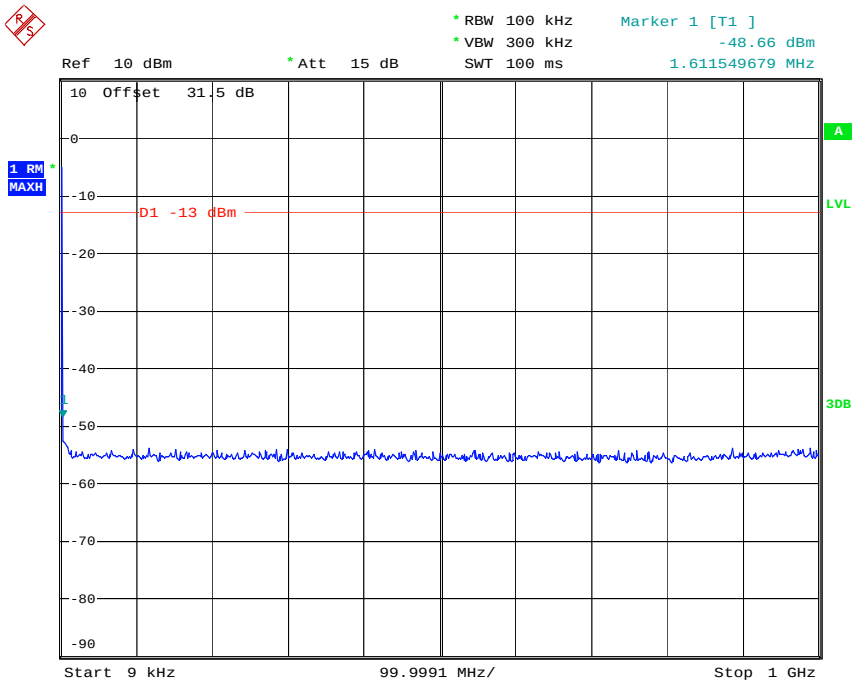
1.5) Test for LTE 15MHz

(a) Lowest frequency: 9 kHz to 1 GHz



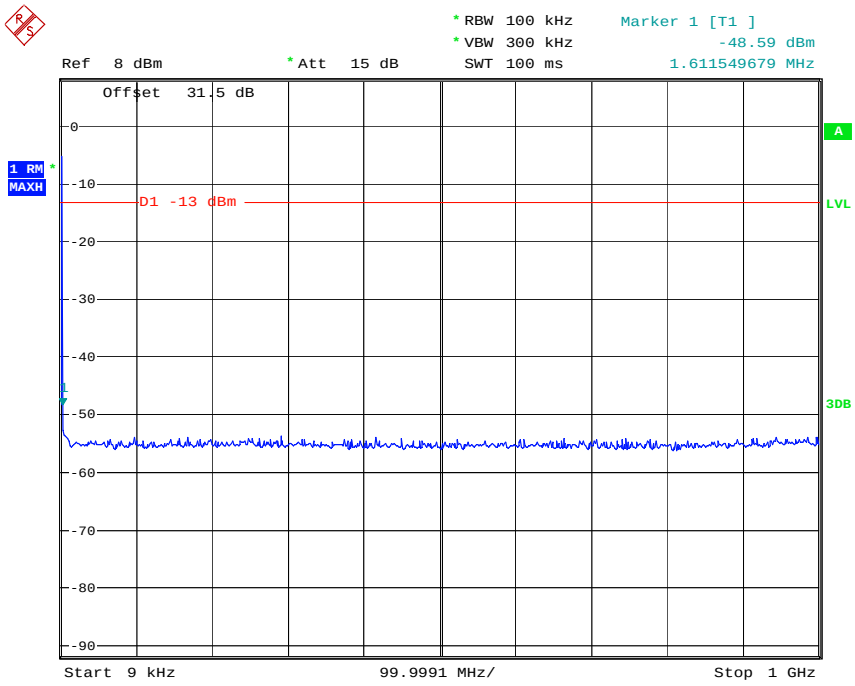
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



(d) Middle frequency: 1 GHz to 26.5 GHz

(e) Highest frequency: 9 kHz to 1 GHz



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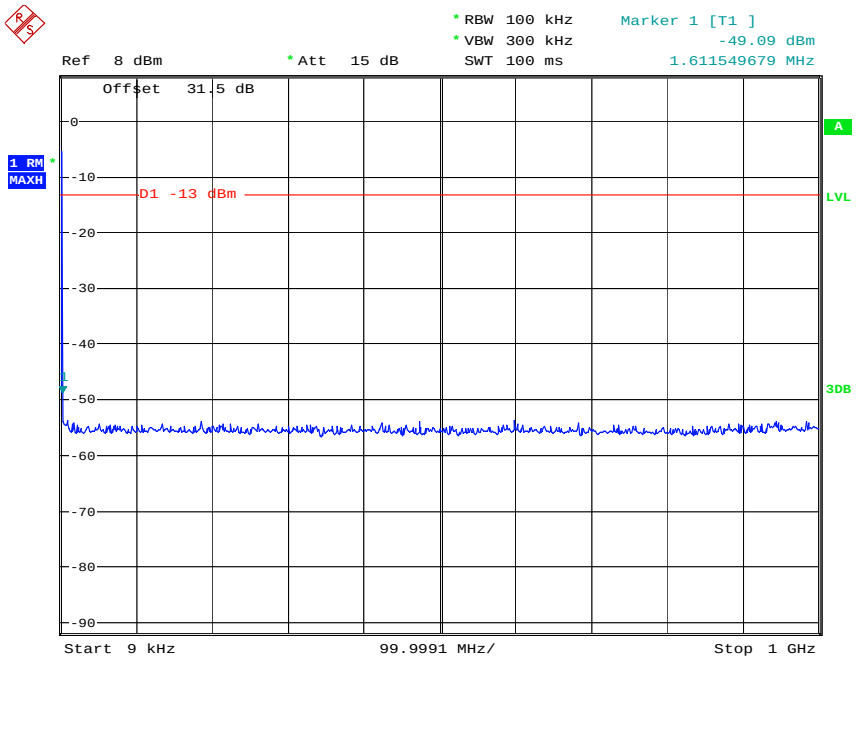
(f) Highest frequency: 1 GHz to 26.5 GHz

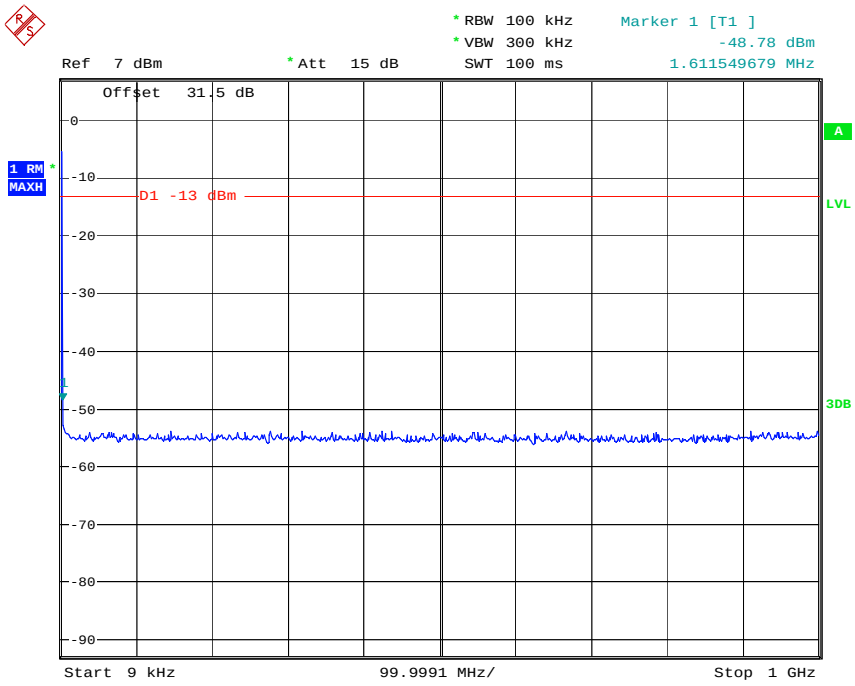
1.6) Test for LTE 20MHz

(a) Lowest frequency: 9 kHz to 1 GHz



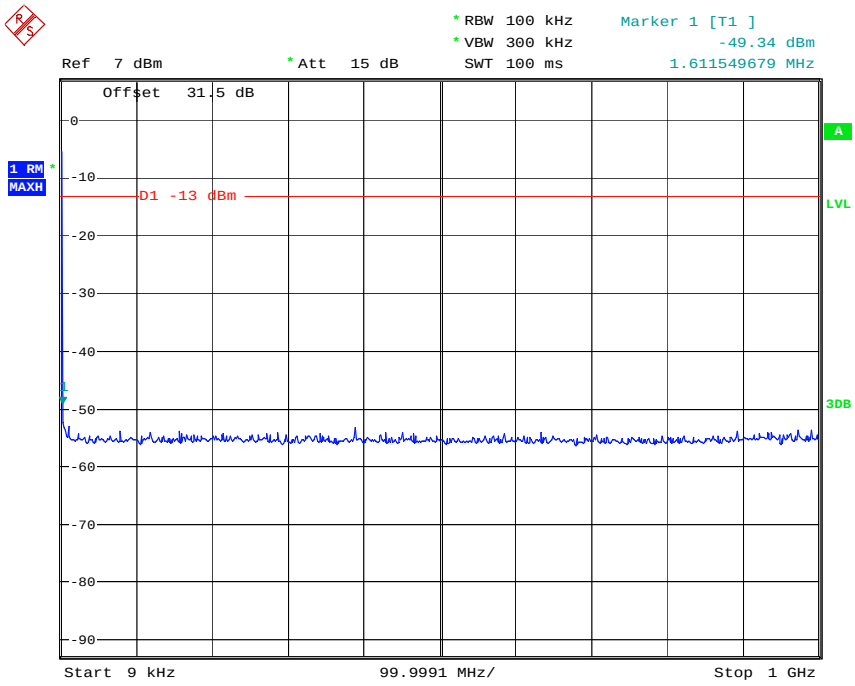
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



(d) Middle frequency: 1 GHz to 26.5 GHz

(e) Highest frequency: 9 kHz to 1 GHz

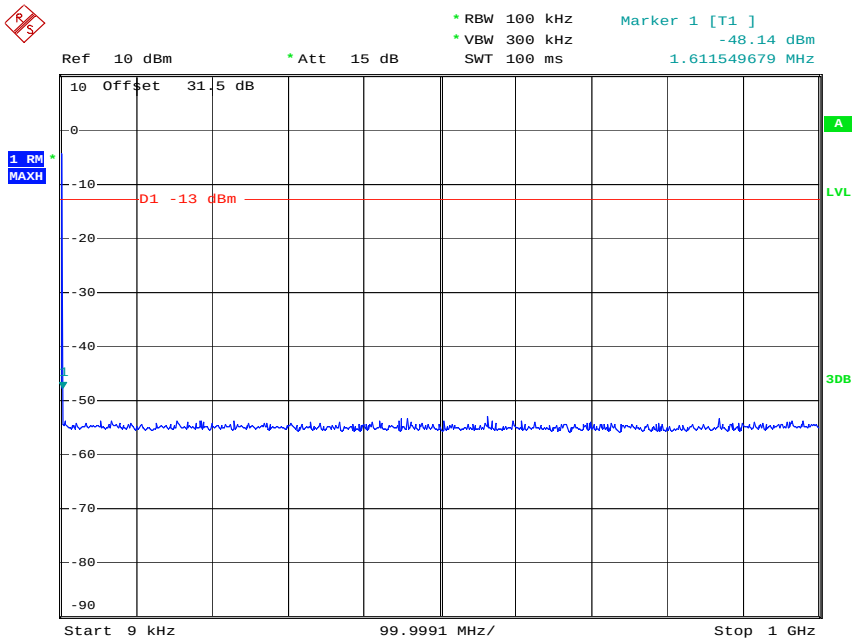


Date: 11.OCT.2013 17:31:55

(f) Highest frequency: 1 GHz to 26.5 GHz

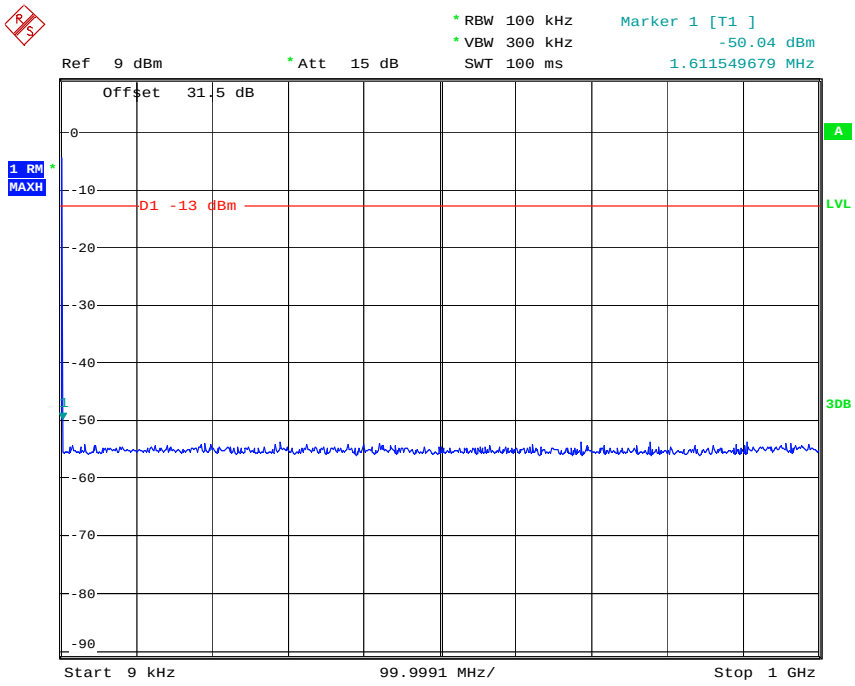
2) GSM modulation

(a) Lowest frequency: 9 kHz to 1 GHz



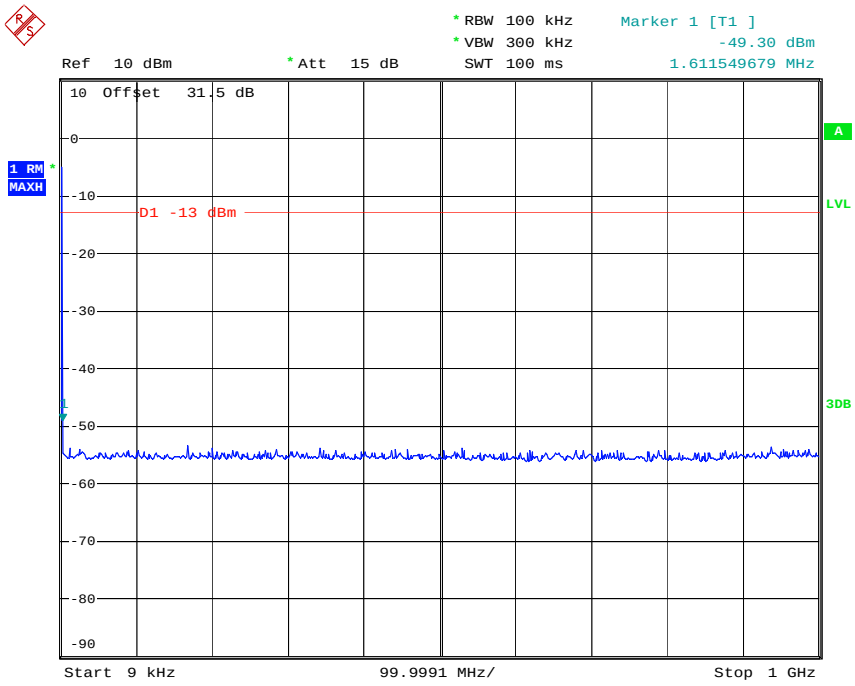
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



(d) Middle frequency: 1 GHz to 26.5 GHz

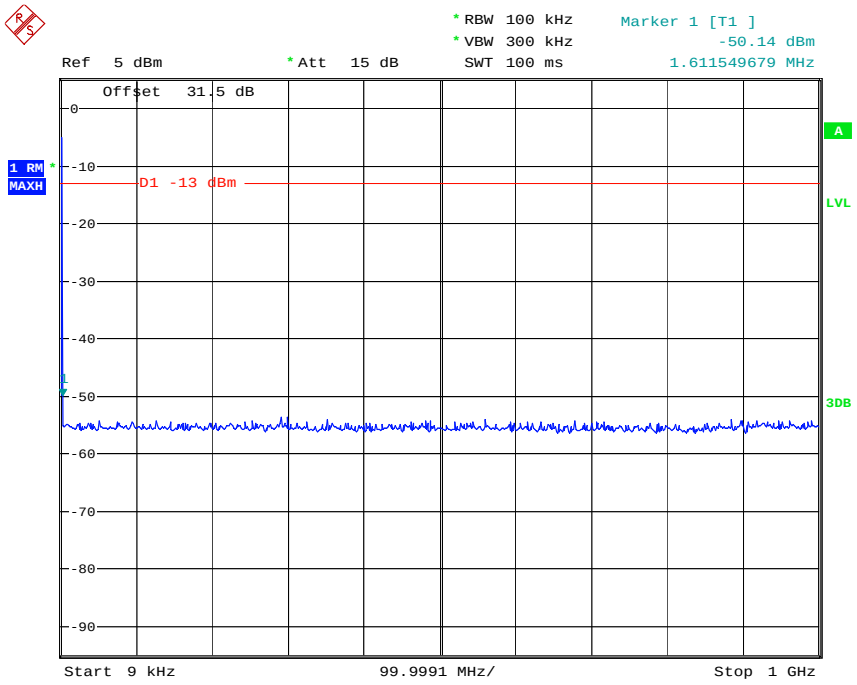
(e) Highest frequency: 9 kHz to 1 GHz



(f) Highest frequency: 1 GHz to 26.5 GHz

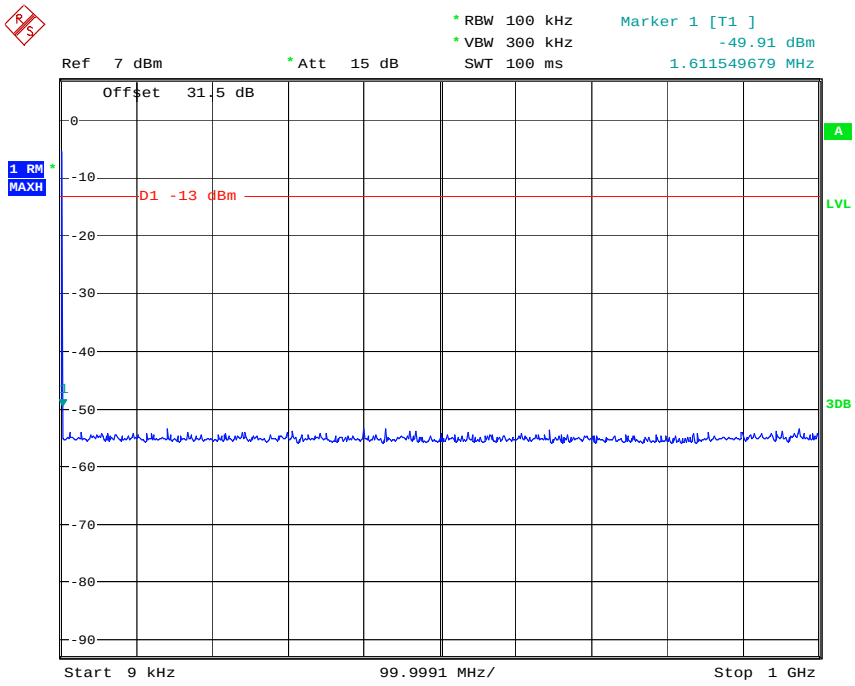
3) CDMA modulation

(a) Lowest frequency: 9 kHz to 1 GHz



(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



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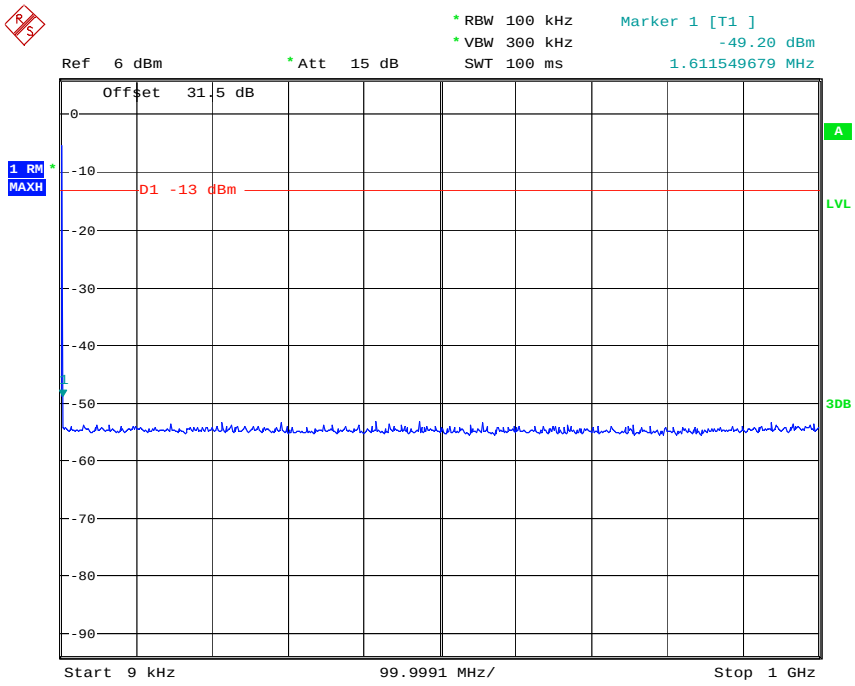
(d) Middle frequency: 1 GHz to 26.5 GHz

(e) Highest frequency: 9 kHz to 1 GHz



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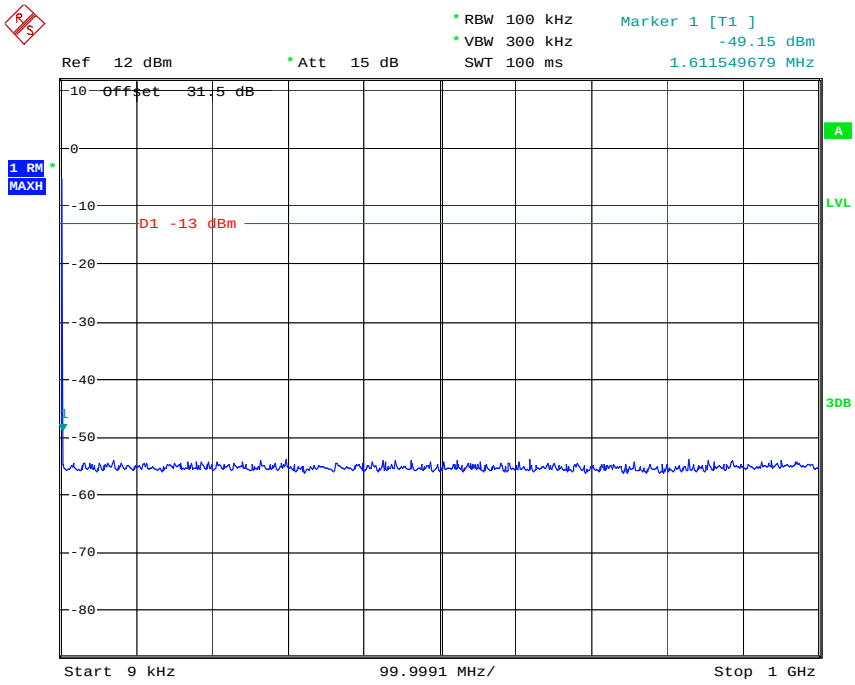
(f) Highest frequency: 1 GHz to 26.5 GHz

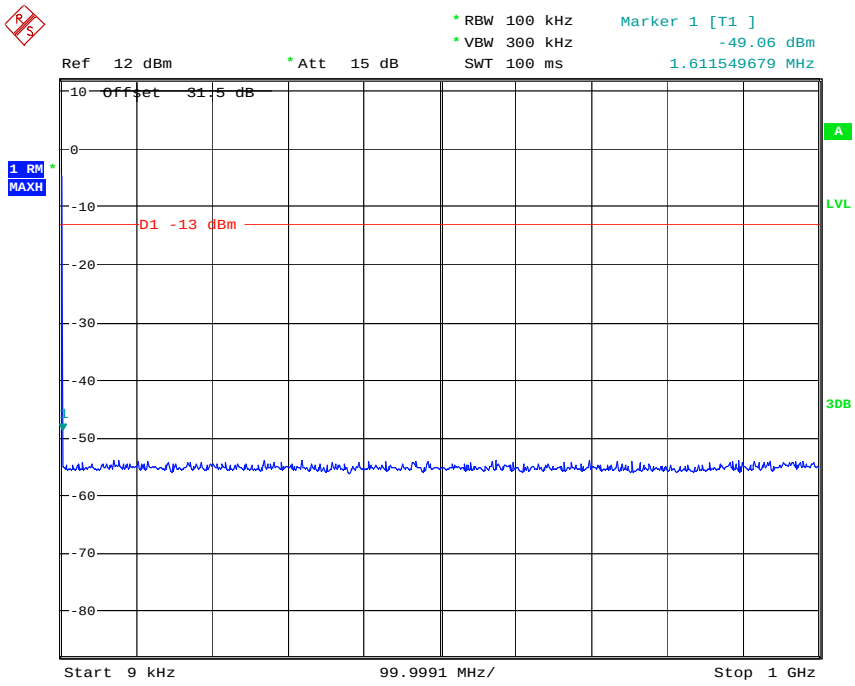
4) WCDMA modulation

(a) Lowest frequency: 9 kHz to 1 GHz



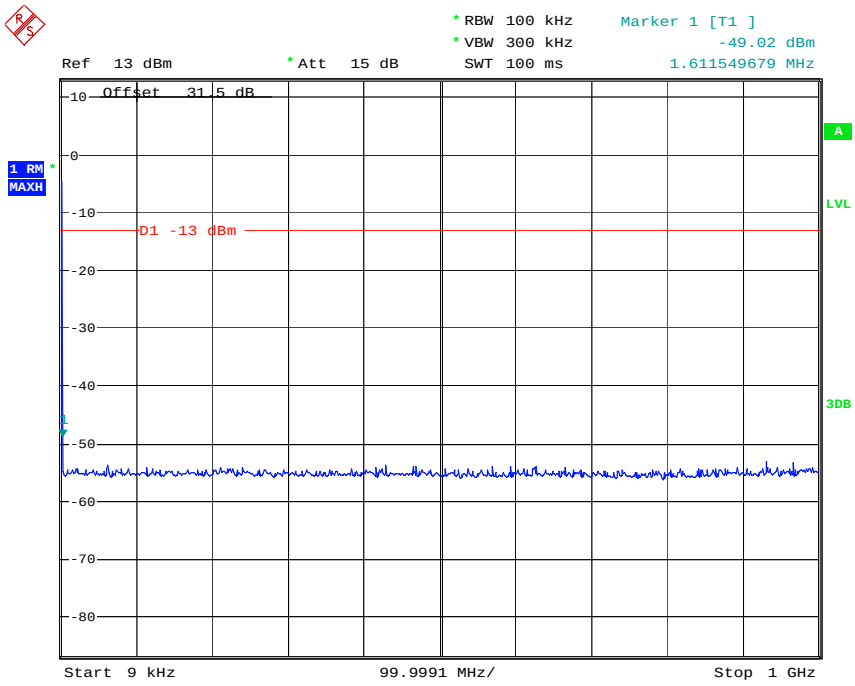
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



(d) Middle frequency: 1 GHz to 26.5 GHz

(e) Highest frequency: 9 kHz to 1 GHz



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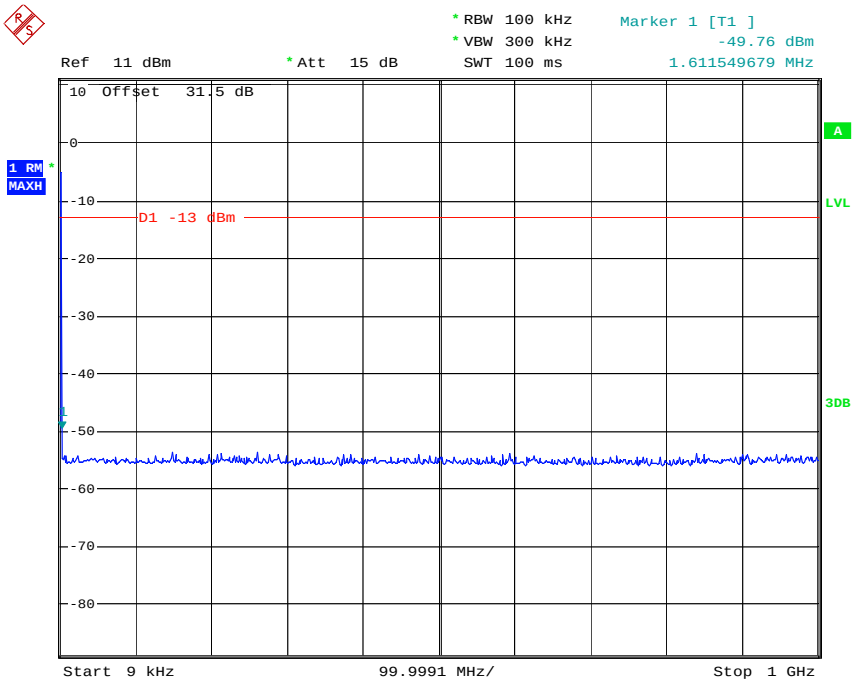
(f) Highest frequency: 1 GHz to 26.5 GHz

5) 1x EV-DO modulation

(a) Lowest frequency: 9 kHz to 1 GHz



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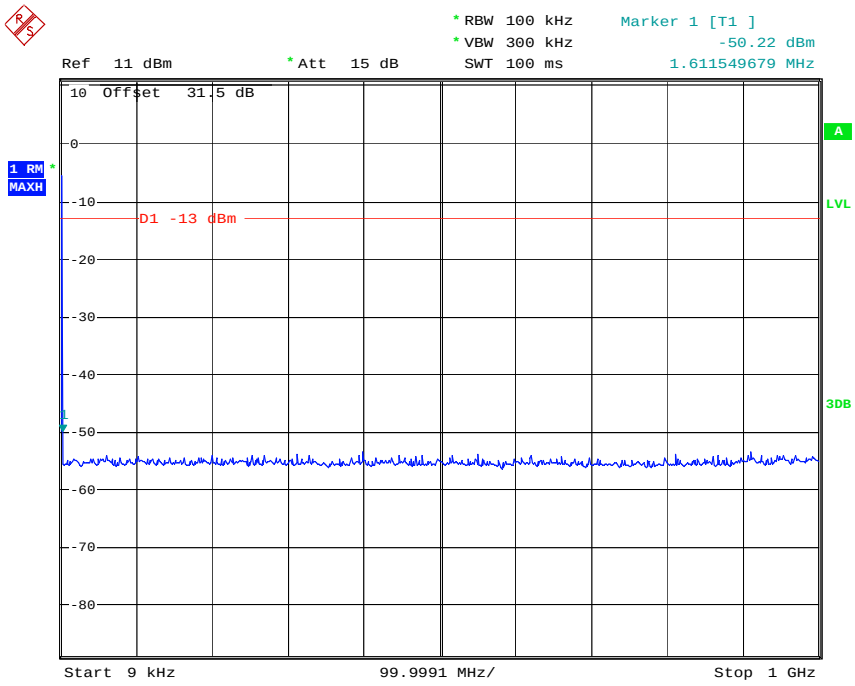
(b) Lowest frequency: 1 GHz to 26.5 GHz

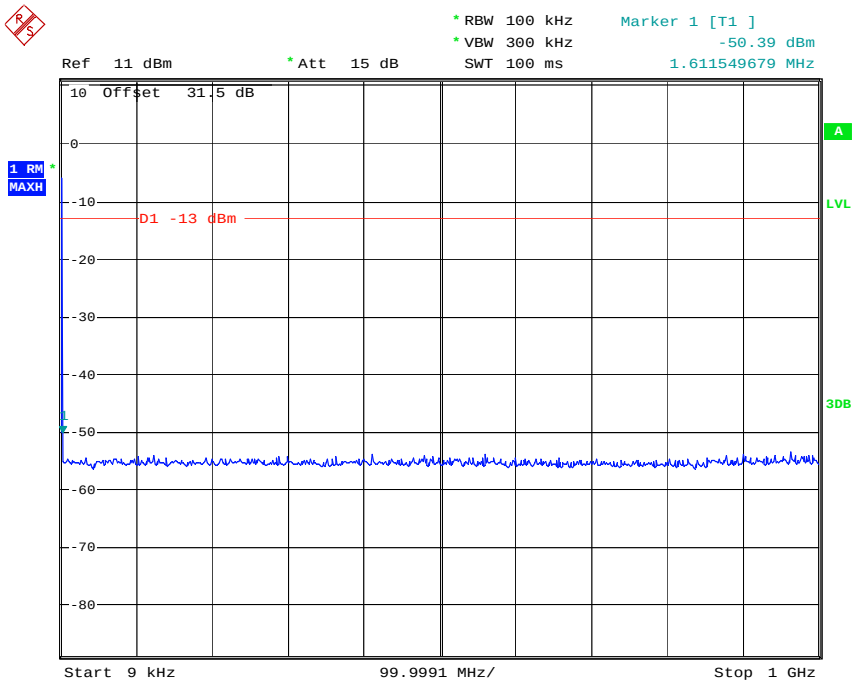
(c) Middle frequency: 9 kHz to 1 GHz



Date: 11.OCT.2013 18:34:48

(d) Middle frequency: 1 GHz to 26.5 GHz

(e) Highest frequency: 9 kHz to 1 GHz



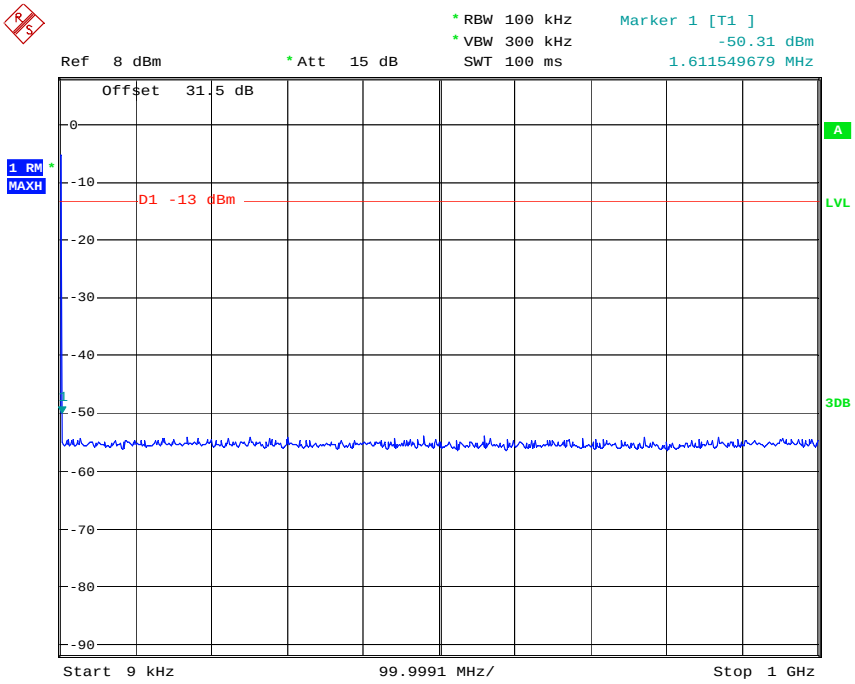
(f) Highest frequency: 1 GHz to 26.5 GHz

5.3.2.1.5 AWS-1 Band

1) LTE modulation

1.1) Test for LTE 1.4MHz

(a) Lowest frequency: 9 kHz to 1 GHz



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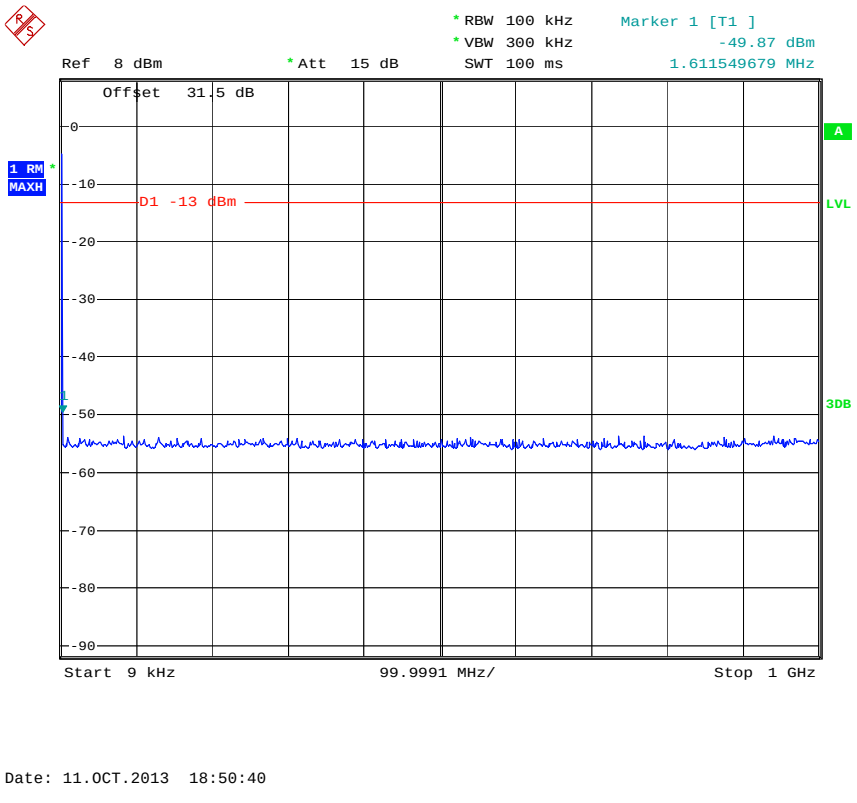
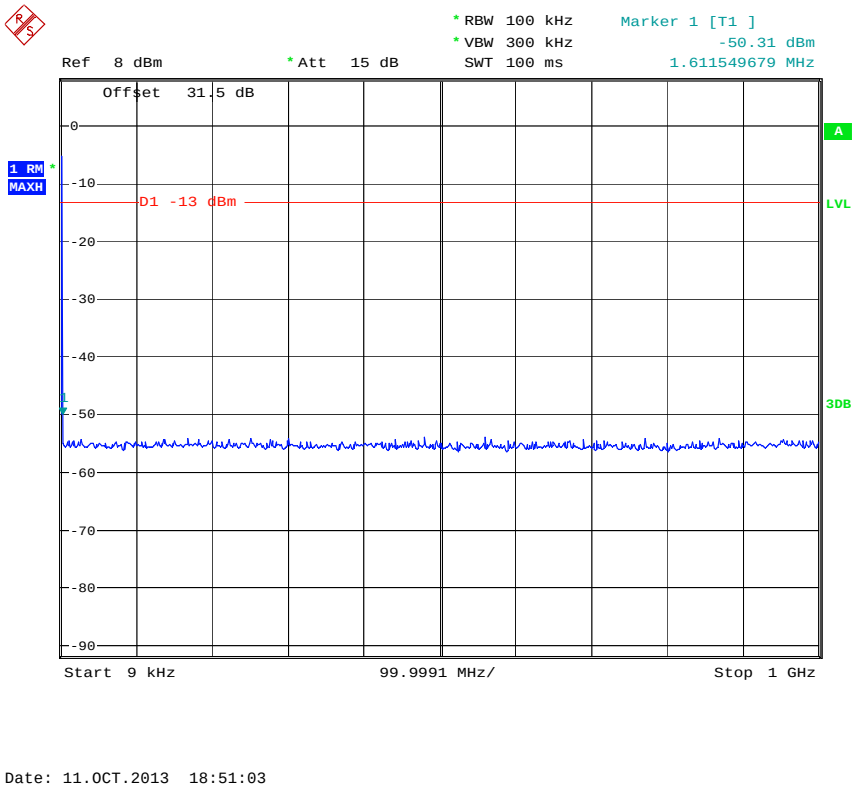
(b) Lowest frequency: 1 GHz to 26.5 GHz

(c) Middle frequency: 9 kHz to 1 GHz



(d) Middle frequency: 1 GHz to 26.5 GHz

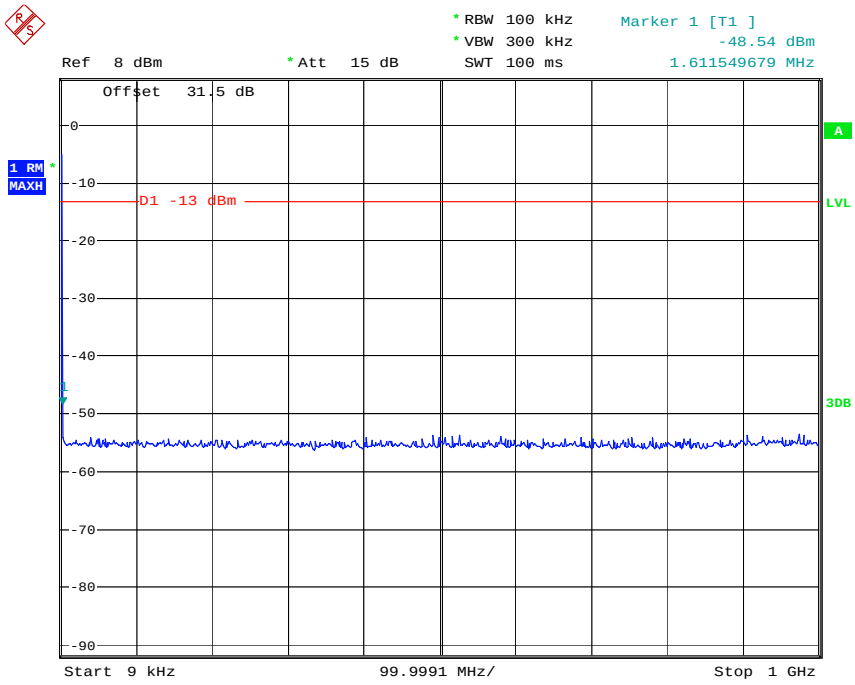
(e) Highest frequency: 9 kHz to 1 GHz



(f) Highest frequency: 1 GHz to 26.5 GHz

1.2) Test for LTE 3MHz

(a) Lowest frequency: 9 kHz to 1 GHz



(b) Lowest frequency: 1 GHz to 26.5 GHz