TEST REPORT

No. I14Z47644-CTE01

for

TCL Communication Ltd.

CDMA 1X/EVDO tri-band mobile phone

Model Name: 4037V

FCC ID: 2ACCJB001

with

Hardware Version: VC

Software Version: V5HT3-5

Issued Date: 2014-10-10

CONTENTS

1. Test Laboratory

1.1. Testing Location

Company Name: TMC Beijing, Telecommunication Metrology Center of MIIT

Address: 3/F Shou Xiang Technology Building, No.51 Xueyuan Road, Hai Dian District, Beijing, P. R. China

Postal Code: 100191

Telephone: 00861062304633

Fax: 00861062304793
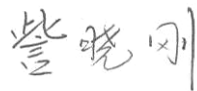
1.2. Testing Environment

Normal Temperature: 15-35℃

Relative Humidity: 20-75%

1.3. Project data
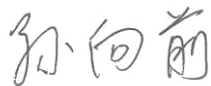
Testing Start Date: Sept 17th,2014

Testing End Date: Sept 24th,2014

1.4. Signature

Zi Xiaogang

(Prepared this test report)

Sun Xiangqian

(Reviewed this test report)

Lu Bingsong

Deputy Director of the laboratory

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	TCL Communication Ltd.
Address /Post:	12F/B, TCL Tower, Gaoxin Nanyi Road, Nanshan District, Shenzhen, Guangdong,P.R. China
City:	Shenzhen
Postal Code:	518057
Country:	China
Contact Person:	Lv Meixian
Contact Email:	meixian.lv@tcl.com
Telephone:	0086 755 33956929
Fax:	0086 755 36645072

2.2. Manufacturer Information

Company Name:	TCL Communication Ltd.
Address /Post:	12F/B, TCL Tower, Gaoxin Nanyi Road, Nanshan District, Shenzhen, Guangdong,P.R. China
City:	Shenzhen
Postal Code:	518057
Country:	China
Contact Person:	Lv Meixian
Contact Email:	meixian.lv@tcl.com
Telephone:	0086 755 33956929
Fax:	0086 755 36645072

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	CDMA 1X/EVDO tri-band mobile phone
Model	4037V
FCC ID	2ACCJB001
Frequency	CDMA800MHz(BC0);CDMA1900MHz(BC1);Secondary800MHz(BC10)
Antenna	Internal
Power supply	Battery or Charger (AC Adaptor)
Extreme vol. Limits	3.5VDC to 4.2VDC (nominal: 3.7 VDC)
Extreme temp. Tolerance	-30°C to +50°C

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Telecommunication Metrology Center of MIIT of People's Republic of China.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or MEID	HW Version	SW Version
UT06a	A100003BCFECE5	VC	V5HT3-5

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN
AE1	Battery	B1400002C1126Q23
AE2	Traveler Charger	/

AE1

Model	TLi014A1
Manufacturer	BYD
Capacitance	1400mAh
Nominal Voltage	3.7V

AE2

Model	CBA3000AG0C2
Manufacturer	BYD

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment Under Test (EUT) is a model of CDMA 1X/EVDO tri-band mobile phone with integrated antenna. It consists of Hand Telephone Set and normal options: lithium battery, charger. Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the Client.

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 24	PERSONAL COMMUNICATIONS SERVICES	V 10.1.09
FCC Part 22	PUBLIC MOBILE SERVICES	V 10.1.09
FCC Part 27	MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES	V 10.1.09
ANSI/TIA-603-C	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2004
ANSI C63.4	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2009

5. <u>LABORATORY ENVIRONMENT</u>

Shielding chamber did not exceed following limits along the RF testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. =20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	> 2 MΩ
Ground system resistance	< 0.5 Ω

6. <u>SUMMARY OF TEST RESULTS</u>

Items	List	Clause in FCC rules	Verdict
1	Output Power	22.913(a)/24.232(b)/27.50(d)(2)	P
2	Frequency Stability	2.1055/24.235/ 27.54	P
3	Occupied Bandwidth	2.1049(h)(i)	P
4	Emission Bandwidth	22.917(b)/24.238(b)	P
5	Band Edge Compliance	22.917(b)/24.238(b)/ 27.53(g)	P
6	Conducted Spurious Emission	2.1057/22.917/24.238/ 27.53(g)	P

7. <u>Test Equipments Utilized</u>

NO.	NAME	TYPE	SERIES NUMBER	PRODUCER	CAL DUE DATE
1	Spectrum Analyzer	FSV30	101576	R&S	2014-11-4
2	Wireless Communications Test Set	8960(E5515C)	GB46160313	Agilent	2015-7-22
3	Climatic chamber	SH-641	92009050	ESPEC	2015-2-16

ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER   (§22.913(a)/§24.232(b)/§27.50(d)(2))

A.1.1 Summary

During the process of testing, the EUT was controlled via Agilent Wireless Communications Test Set (8960(E5515C)) to ensure max power transmission and proper modulation.

This result is peak output power conducted measurements for the EUT.

In all cases, output power is within the specified limits.

A.1.2 Method of Measurements

The EUT was set up for the max output power with pseudo random data modulation.

The power was measured with Rhode & Schwarz Spectrum Analyzer FSV30 (peak)

These measurements were done at 3 frequencies, 1851.25 MHz, 1880.0 MHz and 1908.75 MHz for PCS CDMA band, 824.7MHz, 836.52MHz and 848.31MHz for CDMA 800 band (bottom, middle and top of operational frequency range).

CDMA 800

Measurement result

Channel	Frequency(MHz)	Channel power(dBm)	Target (dB)
1013	824.70	23.76	23±1
384	836.52	23.82	23±1
777	848.31	23.48	23±1

CDMA 1900

Measurement result

Channel	Frequency(MHz)	Channel power(dBm)	Target (dB)
25	1851.25	23.13	23±1
600	1880.00	23.27	23±1
1175	1908.75	23.34	23±1

A.2 FREQUENCY STABILITY (§2.1055/§24.235/§27.54)

A.2.1 Method of Measurement

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a "call mode". This is accomplished with the use of Agilent 8960(E5515C) Wireless Communications Test Set.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30℃.
3. With the EUT, powered via nominal voltage, connected to the 8960(E5515C) and in a simulated call on channel 384 for CDMA 800 and channel 600 for 1900 measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10℃ increments from -30℃ to +50℃. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
5. Remeasure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments remeasuring carrier frequency at each voltage. Pause at nominal voltage for 1 1/2 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50℃.
7. With the EUT, powered via nominal voltage, connected to the 8960(E5515C) and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 C increments from +50℃ to -30℃. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5℃ during the measurement procedure.

A.2.2 Measurement Limit

A.2.2.1 For Hand carried battery powered equipment

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.5VDC and 4.2VDC, with a nominal voltage of 3.7VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of -10 % and +12.5 %. For the purposes of measuring frequency stability these voltage limits are to be used.

A.2.2.2 For equipment powered by primary supply voltage

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the

fundamental emission stays within the authorized frequency block. For this EUT section 2.1055(d)(1) applies. This requires varying primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

A.2.3 Measurement results

CDMA 800
Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.5	1.18	0.002
3.7	1.45	0.001
4.2	0.99	0.001

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)	Frequency error(ppm)
-30	2.10	0.003
-20	1.98	0.002
-10	1.98	0.002
0	1.43	0.002
10	1.50	0.002
20	1.48	0.002
30	1.36	0.002
40	1.47	0.002
50	1.50	0.002

CDMA 1900

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.5	4.69	0.002
3.7	4.38	0.002
4.2	4.89	0.003

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)	Frequency error(ppm)
-30	4.88	0.003
-20	4.85	0.003
-10	4.66	0.002
0	4.56	0.002
10	4.51	0.002
20	4.45	0.002
30	4.80	0.003
40	4.77	0.003
50	4.98	0.003

A.3 OCCUPIED BANDWIDTH   (§2.1049(h)(i))

A.3.1 Occupied Bandwidth Results

Similar to conducted emissions; occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the CDMA frequency band. The table below lists the measured -20dBc BW (99%BW). Spectrum analyzer plots are included on the following pages.

CDMA 800 (99% BW)

Channel	Occupied Bandwidth (–20dBc BW)(MHz)
1013	1.300
384	1.261
777	1.267

ANALYZER SETTINGS: RBW=20 kHz, VBW=50 kHz
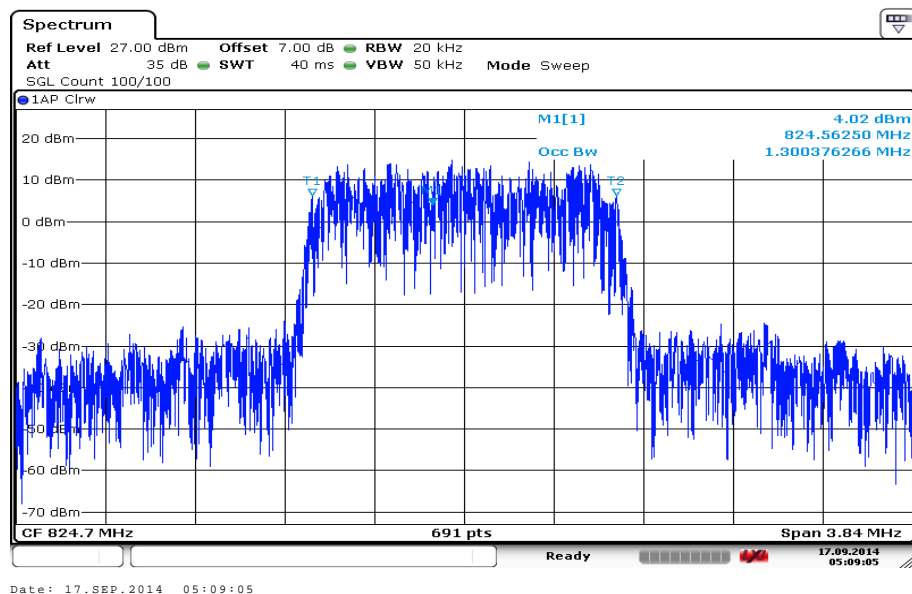
CDMA 800

Channel 1013-Occupied Bandwidth (99% BW)

Date: 17.SEP.2014   05:09:05

Channel 384-Occupied Bandwidth (99% BW)

Date: 17.SEP.2014 05:12:38

Channel 777-Occupied Bandwidth (99% BW)

Date: 17.SEP.2014 05:13:24
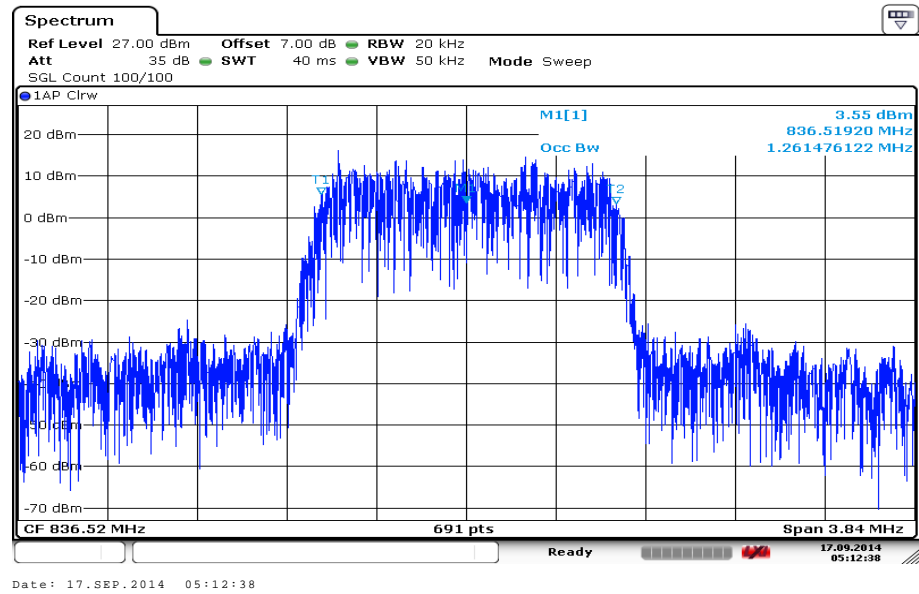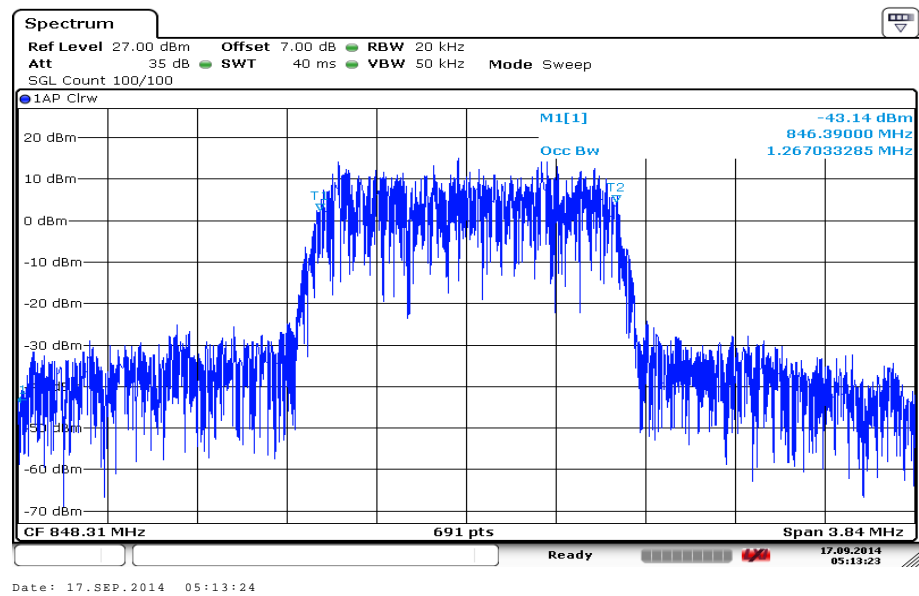
CDMA 1900(99% BW)

Channel	Occupied Bandwidth (−20dBc BW)(MHz)
25	1.294
600	1.267
1175	1.267

ANALYZER SETTINGS: RBW=20 kHz, VBW=50 kHz
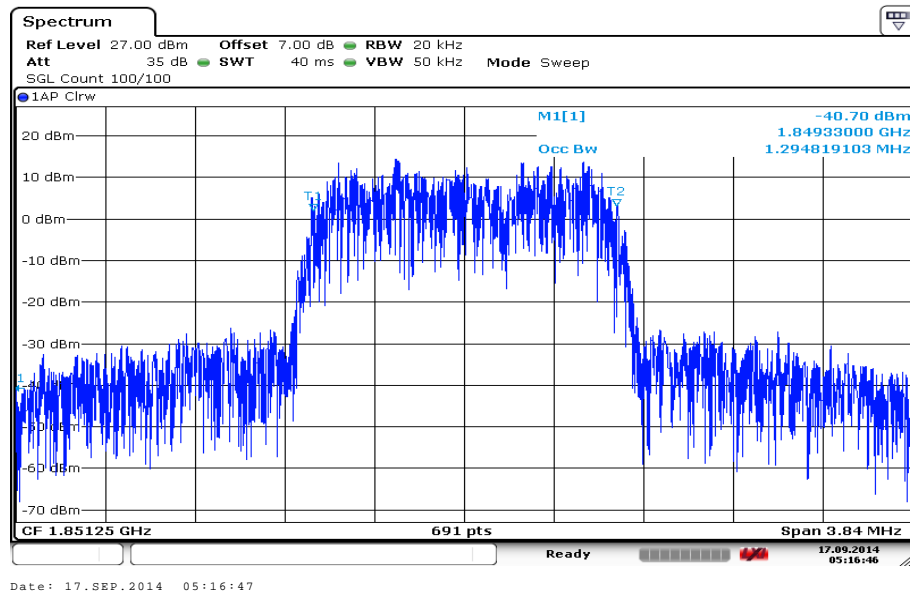
CDMA 1900

Channel 25-Occupied Bandwidth (99% BW)

Date: 17.SEP.2014 05:16:47

Channel 600-Occupied Bandwidth (99% BW)

Date: 17.SEP.2014 05:19:19

Channel 1175-Occupied Bandwidth (99% BW)

Date: 17.SEP.2014 05:18:21
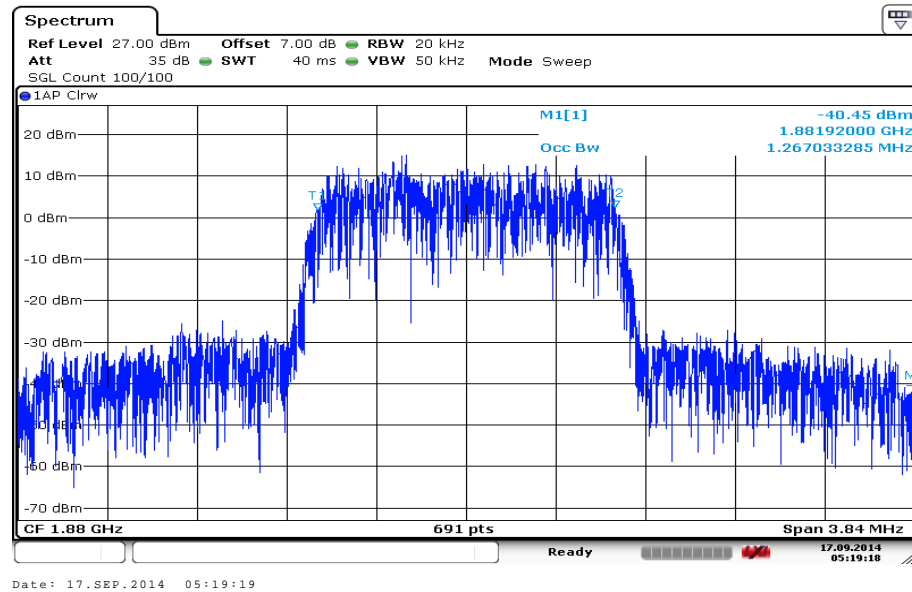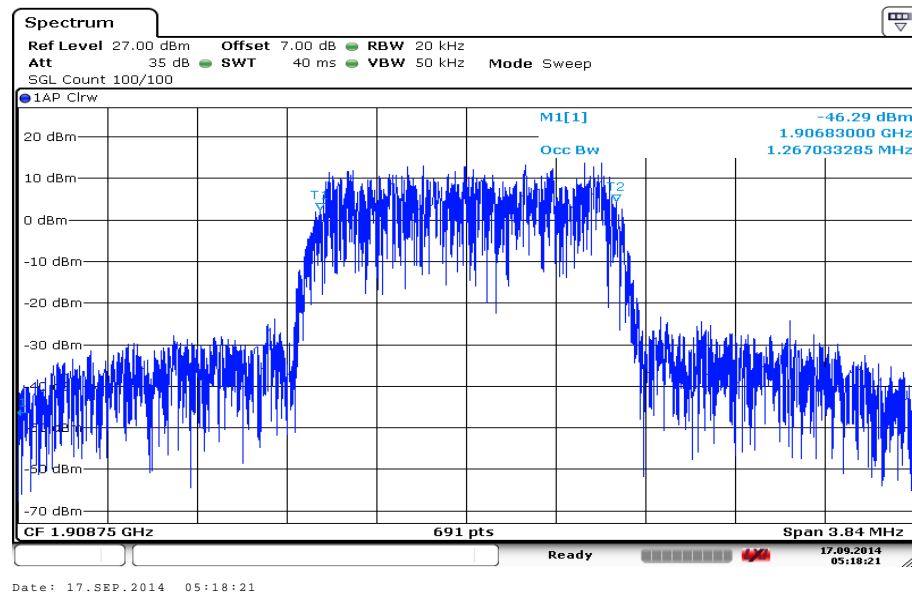
A.4 EMISSION BANDWIDTH   (§22.917(b)/§24.238(b))

A.4.1 Emission Bandwidth Results

Similar to conducted emissions; Emission bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the CDMA 800, and CDMA 1900 band. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

CDMA 800 (-26dBc)

Channel	Occupied Bandwidth (–26dBc BW)(MHz)
1013	1.360
384	1.360
777	1.360

ANALYZER SETTINGS: RBW=20 kHz, VBW=50 kHz

CDMA 800

Channel 1013-Occupied Bandwidth (-26dBc BW)

Date: 17.SEP.2014 05:35:13

Channel 384-Occupied Bandwidth (-26dBc BW)

Date: 17.SEP.2014 05:35:50

Channel 777-Occupied Bandwidth (-26dBc BW)

Date: 17.SEP.2014 05:36:29
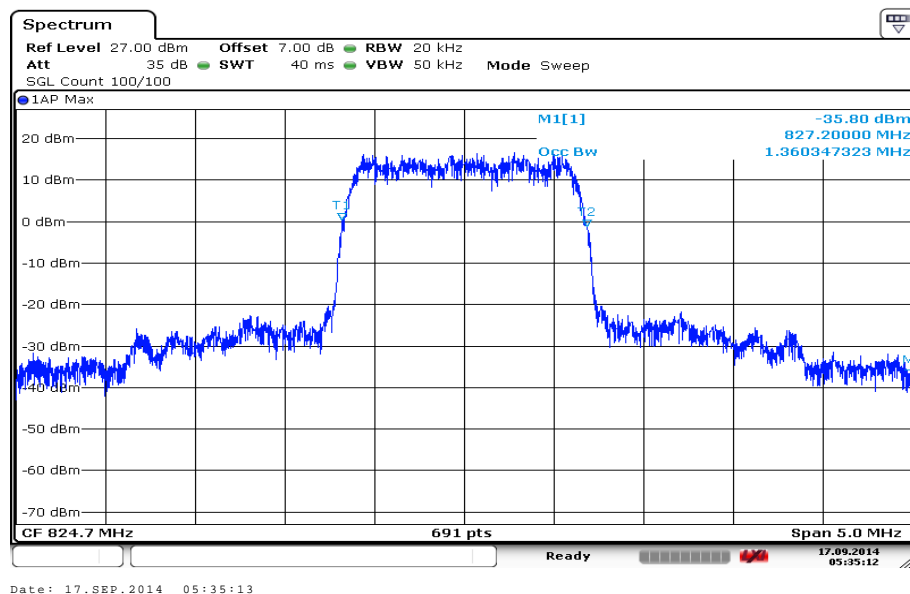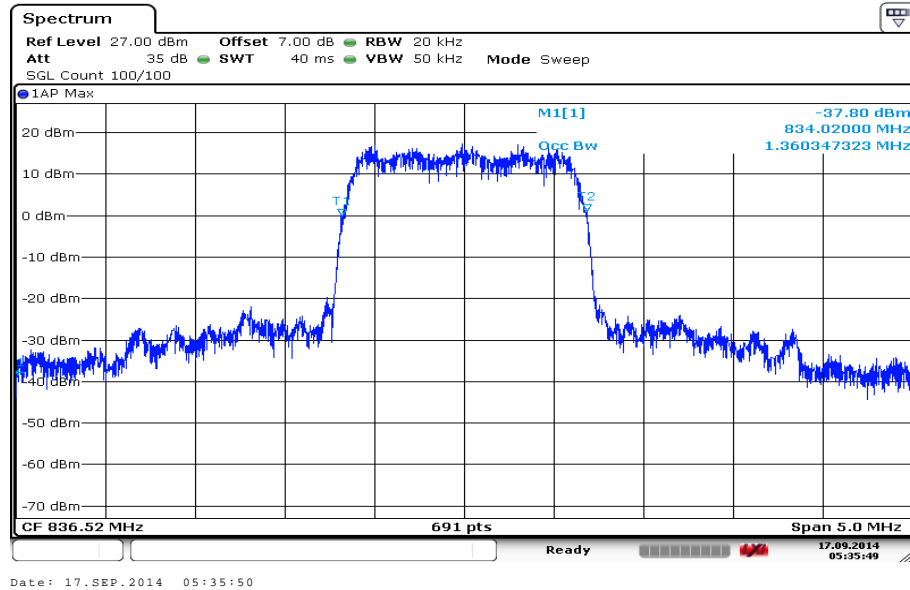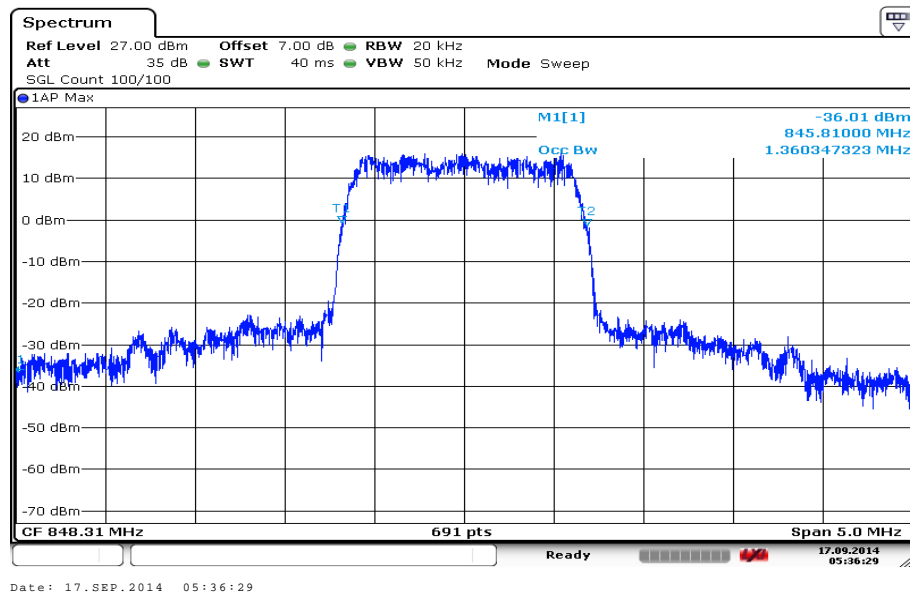
CDMA 1900 (-26dBc)

Channel	Occupied Bandwidth (–26dBc BW)(MHz)
25	1.360
600	1.360
1175	1.360

ANALYZER SETTINGS: RBW=20 kHz, VBW=50 kHz

CDMA 1900

Channel 25-Occupied Bandwidth (-26dBc BW)

Date: 17.SEP.2014 05:37:23

Channel 600-Occupied Bandwidth (-26dBc BW)

Date: 17.SEP.2014 05:37:59

Channel 1175-Occupied Bandwidth (-26dBc BW)

Date: 17.SEP.2014 05:38:45
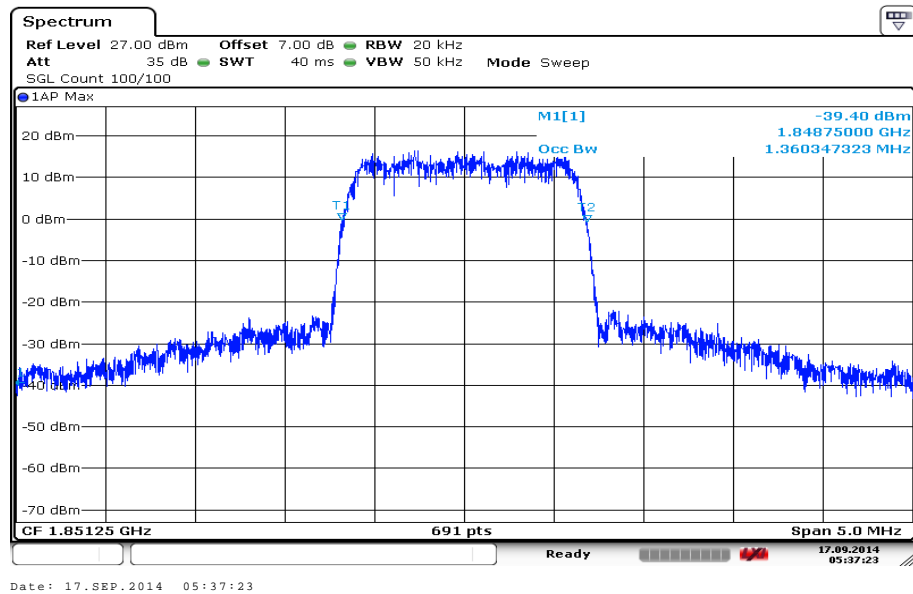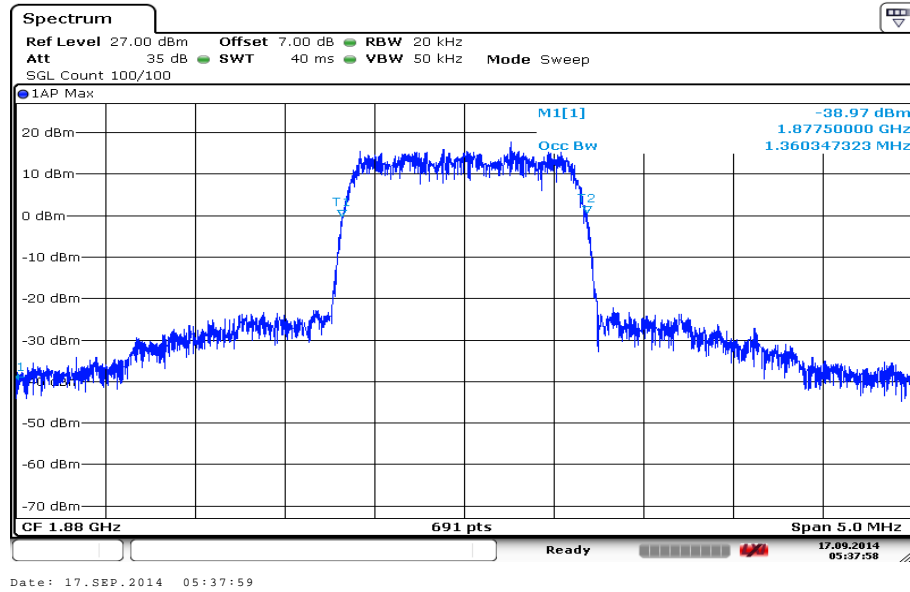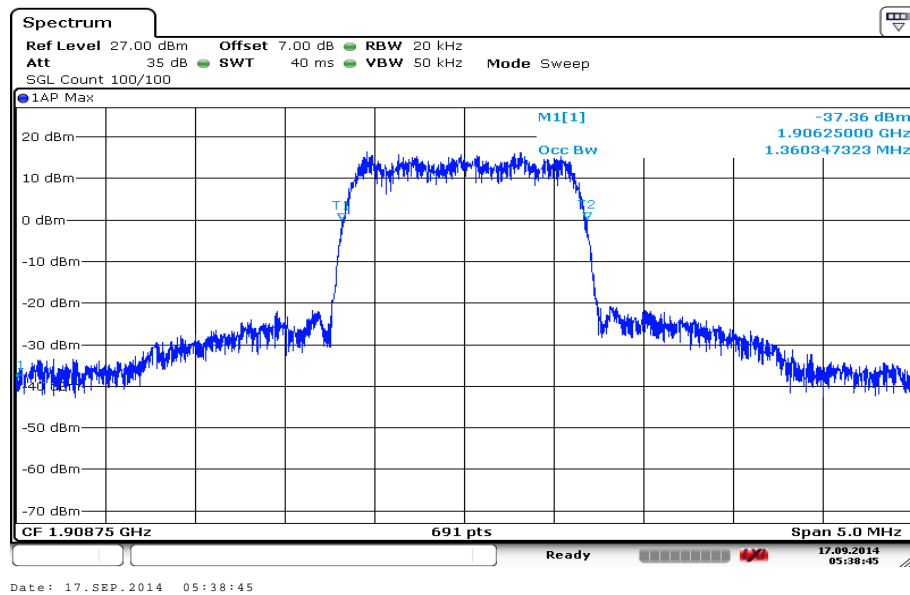
A.5 BAND EDGE COMPLIANCE   (§22.917(b)/§24.238(b)/ §27.53(g))

CDMA 800
BAND EDGE BLOCK-Channel 1013

Date: 17.SEP.2014   05:52:00
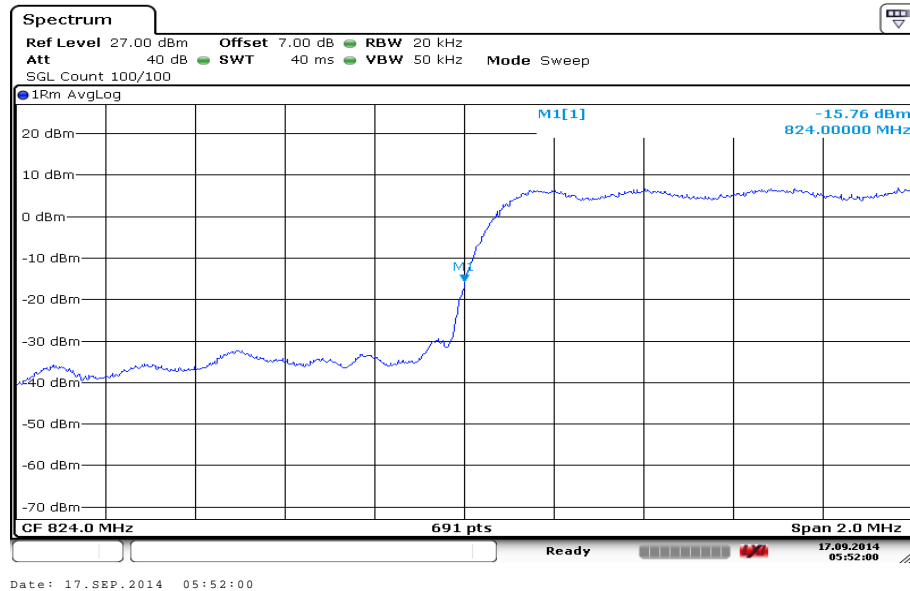
BAND EDGE BLOCK-Channel 777

Date: 17.SEP.2014   05:58:49
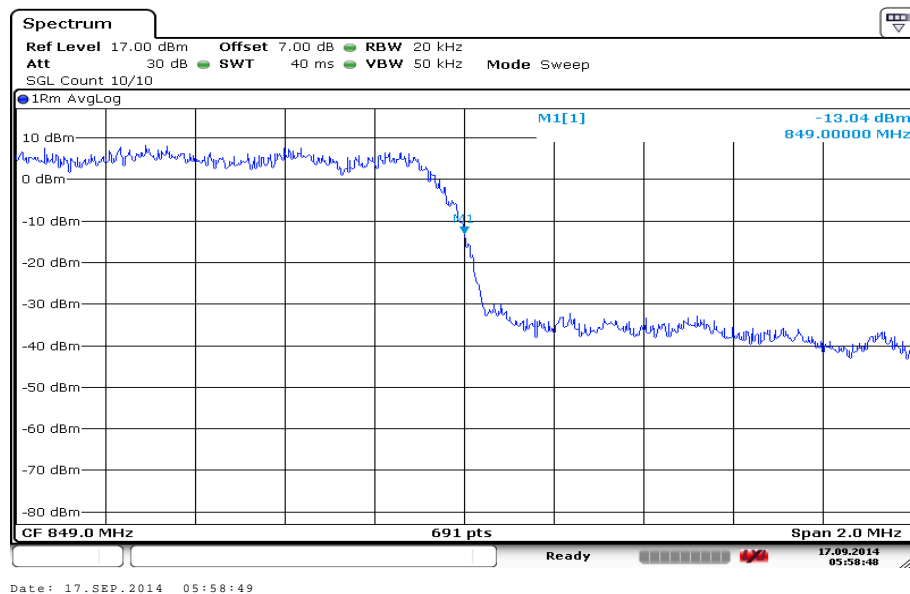
CDMA 1900

BAND EDGE BLOCK-Channel 25

Date: 17.SEP.2014   06:00:27
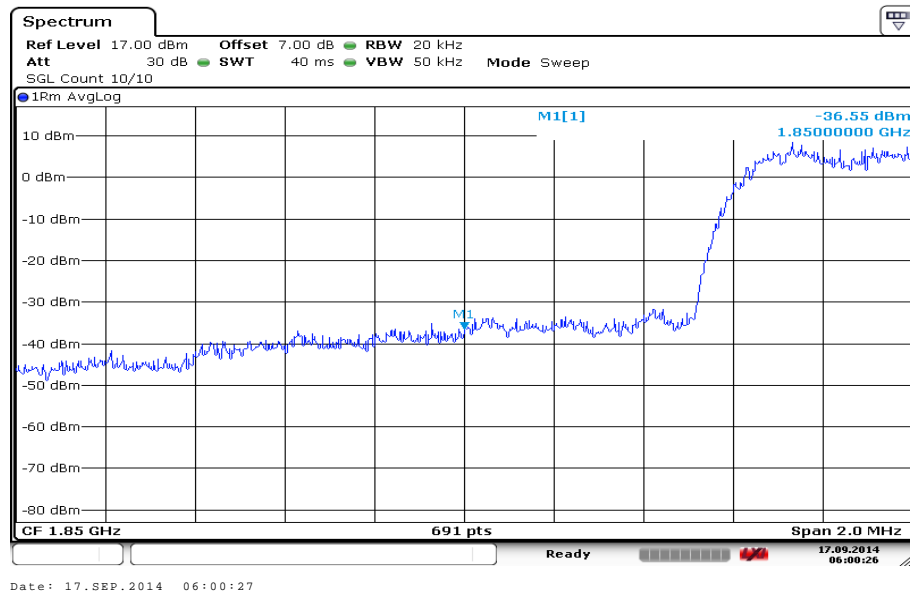
BAND EDGE BLOCK-Channel 1175

Date: 17.SEP.2014   06:01:24
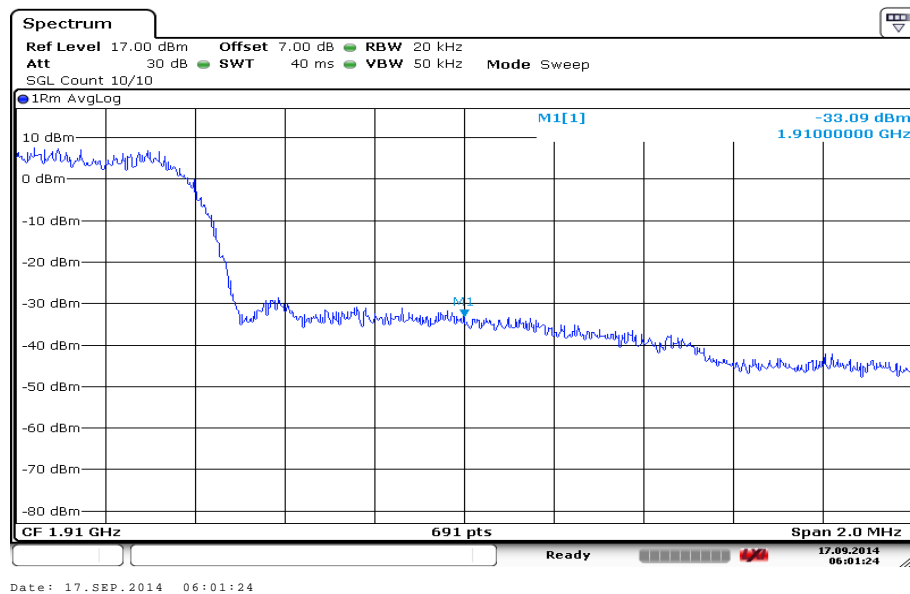
A.6 CONDUCTED SPURIOUS EMISSION   (§2.1057/§22.917/§24.238/§27.53(g))

A.6.1 Measurement Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency.
2. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

CDMA 800 Transmitter

Channel	Frequency (MHz)
1013	824.70
384	836.52
777	848.31

CDMA 1900 Transmitter

Channel	Frequency (MHz)
25	1851.25
600	1880.00
1175	1909.75

A. 6.2 Measurement Limit

Sec. 24.238 Emission Limits.

(a) On any frequency outside frequency band of the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least 43+10Log(P) dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

A. 6.3 Measurement result

CDMA 1900

A. 6.3.1 Channel 25: 30MHz –1GHz

Spurious emission limit –13dBm.

Date: 17.SEP.2014 08:01:18
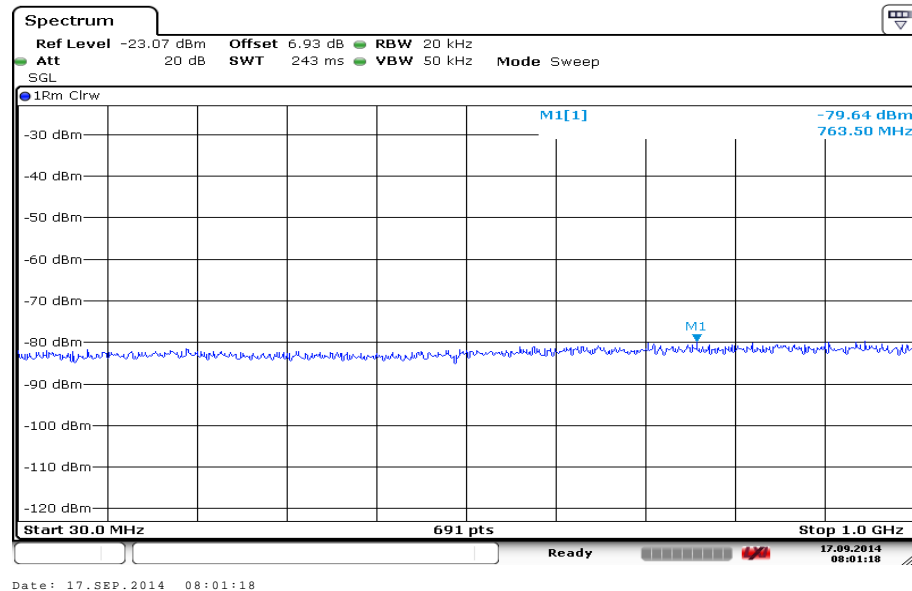
A.6.3.2 Channel 25: 1GHz –2.5GHz

Spurious emission limit –13dBm.

NOTE: peak above the limit line is the carrier frequency.

Date: 18.SEP.2014 05:07:55
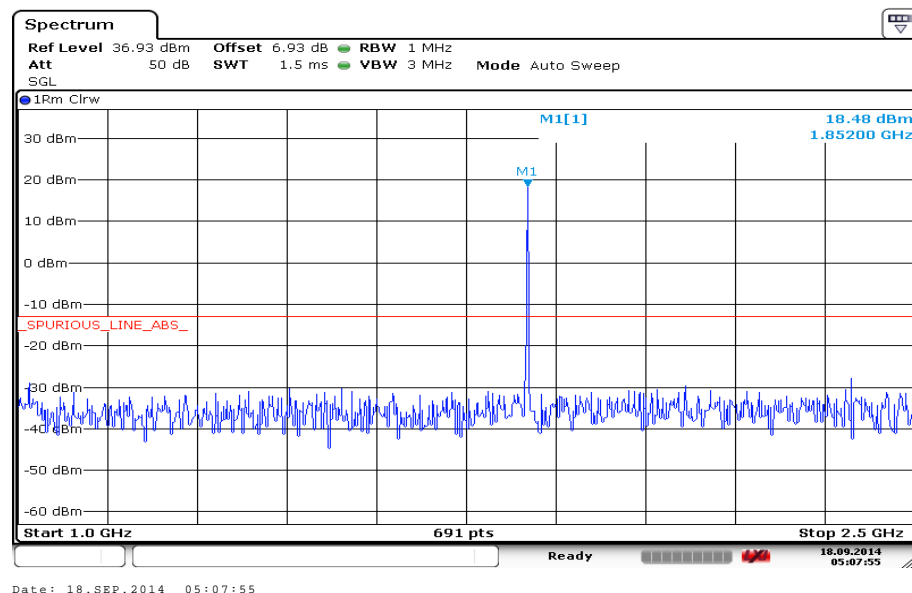
A.6.3.3 Channel 25: 2.5GHz –7.5GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:09:13
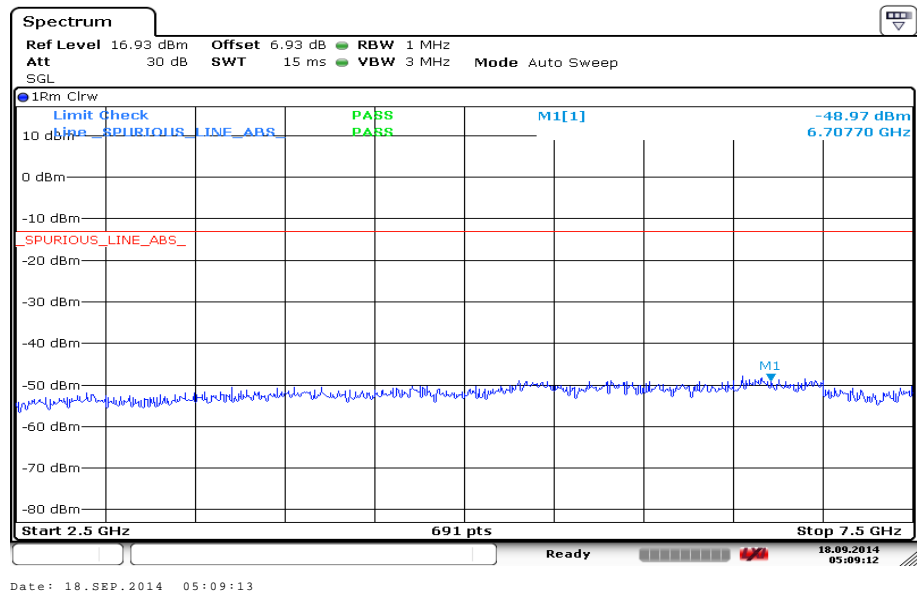
A.6.3.4 Channel 25: 7.5GHz –10GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:10:17
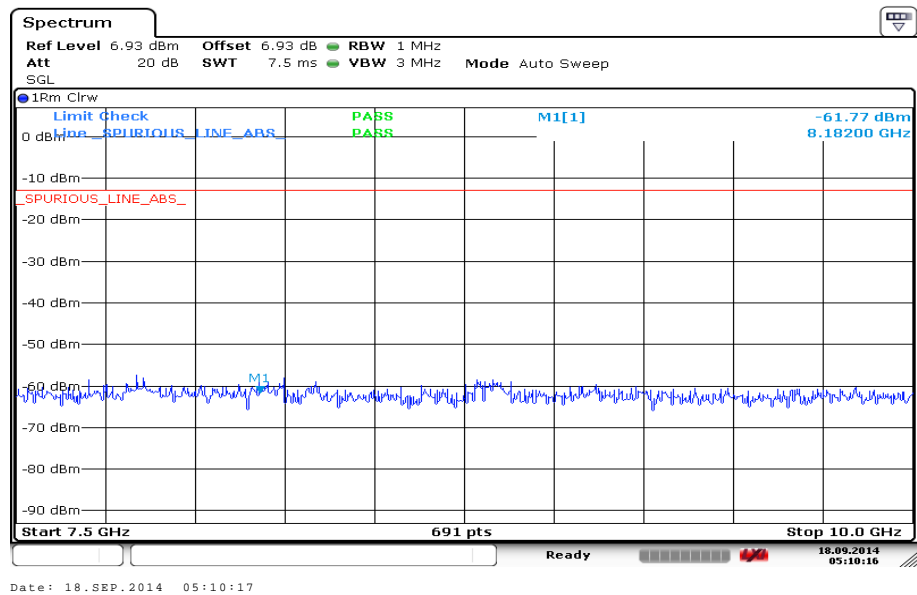
A.6.3.5 Channel 25: 10GHz –15GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:11:05
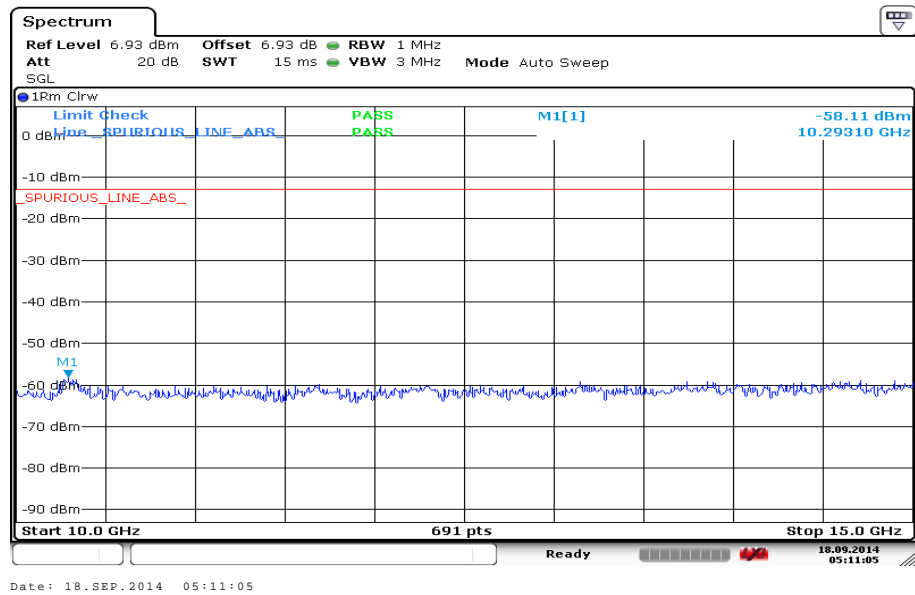
A.6.3.6 Channel 25: 15GHz –20GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:12:08
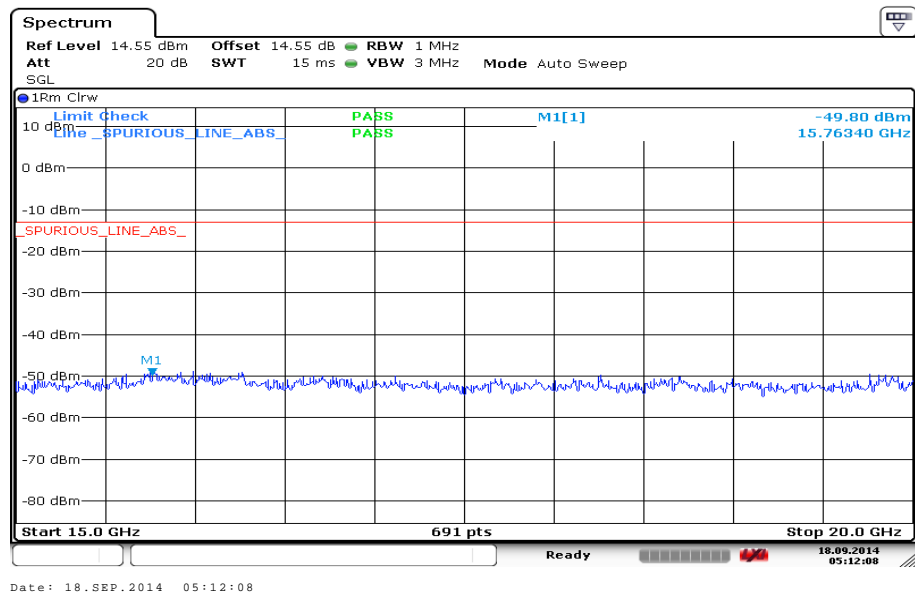
A. 6.3.7 Channel 600: 30MHz –1GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:13:26
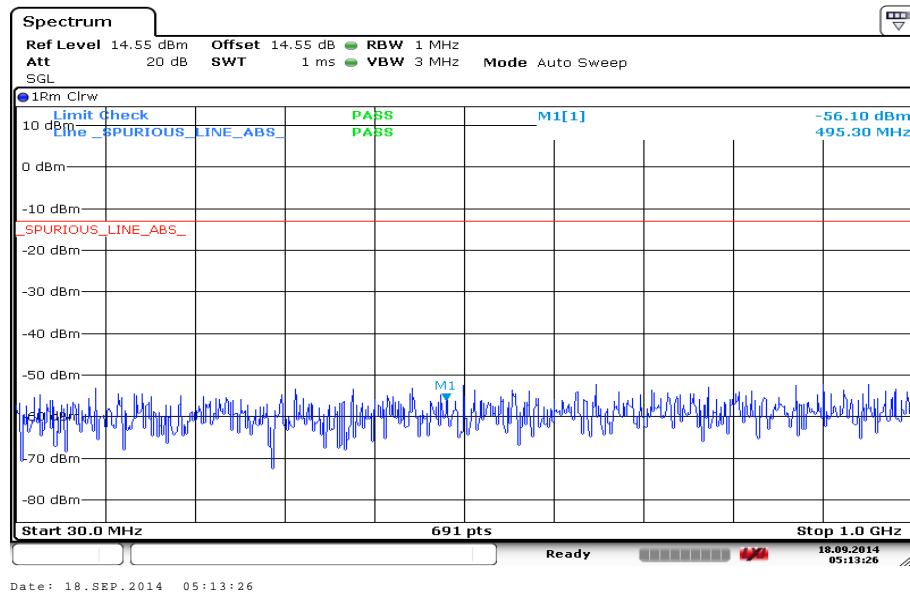
A.6.3.8 Channel 600: 1GHz –2.5GHz

Spurious emission limit –13dBm.

NOTE: peak above the limit line is the carrier frequency.

Date: 18.SEP.2014 05:14:09
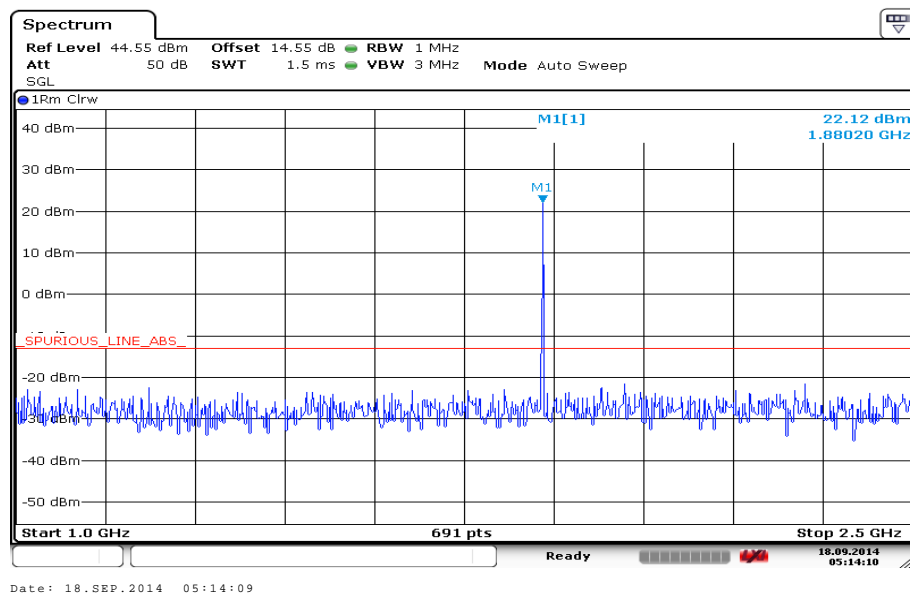
A.6.3.9 Channel 600: 2.5GHz –7.5GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:15:14
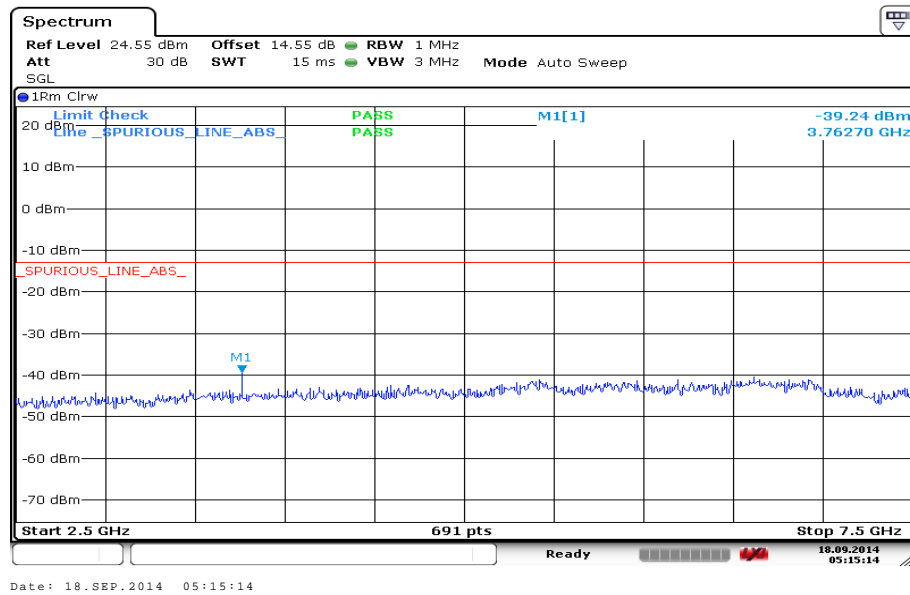
A.6.3.10 Channel 600: 7.5GHz –10GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:15:49
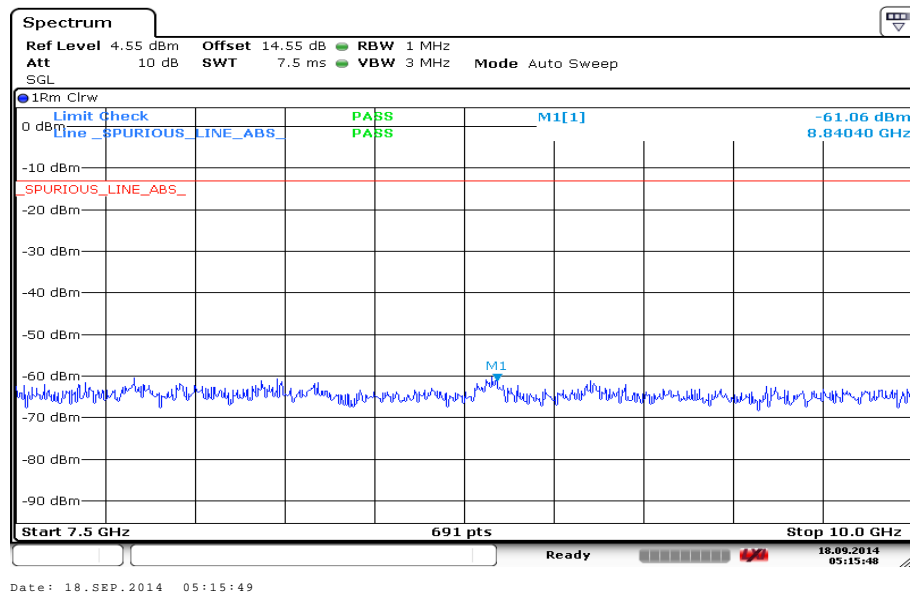
A.6.3.11 Channel 600: 10GHz –15GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014   05:17:44
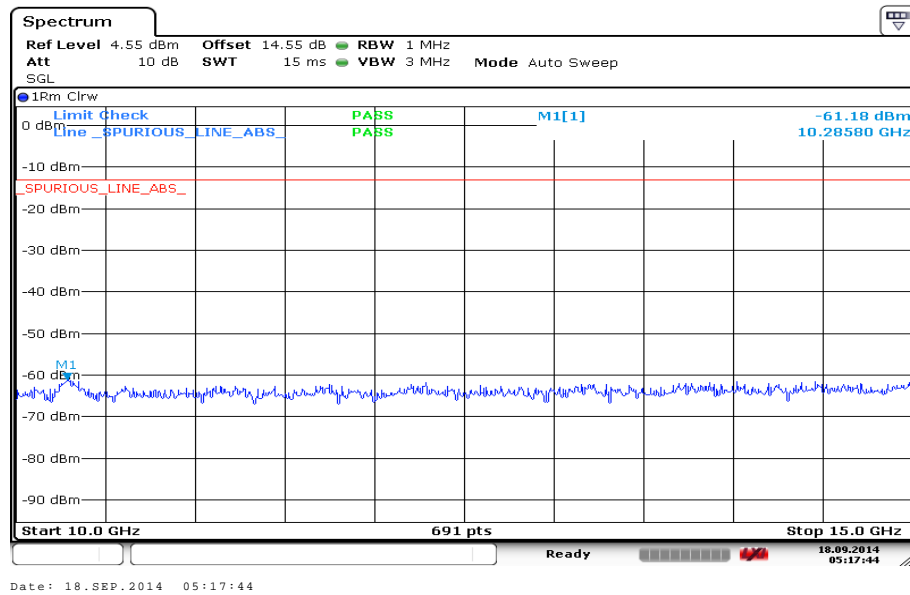
A.6.3.12 Channel 600: 15GHz –20GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014   05:18:40
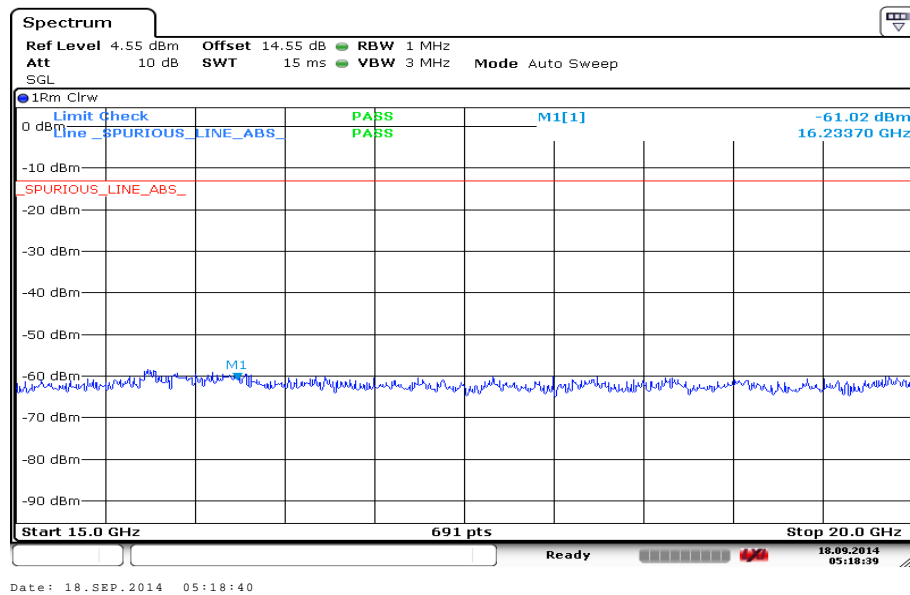
A. 6.3.13 Channel 1175: 30MHz –1GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:19:39
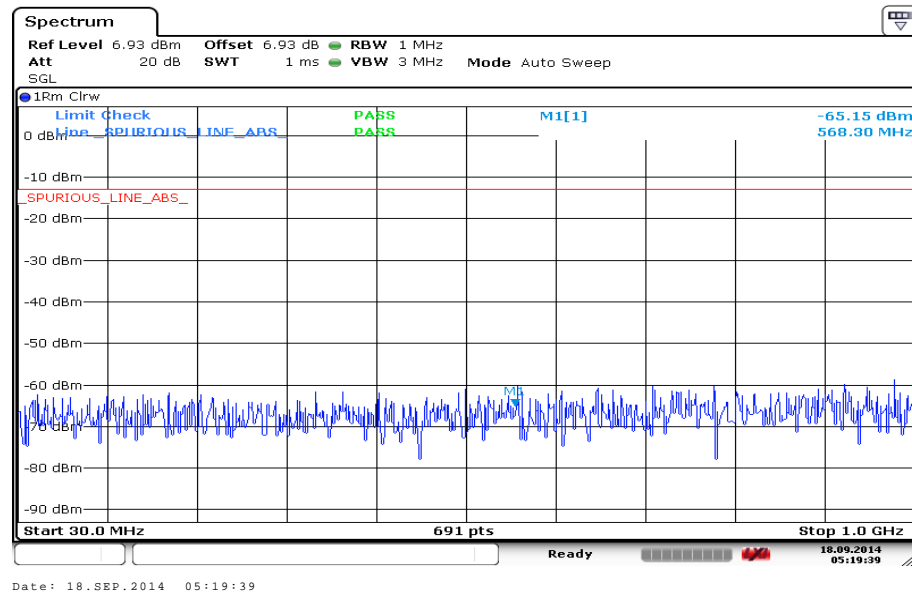
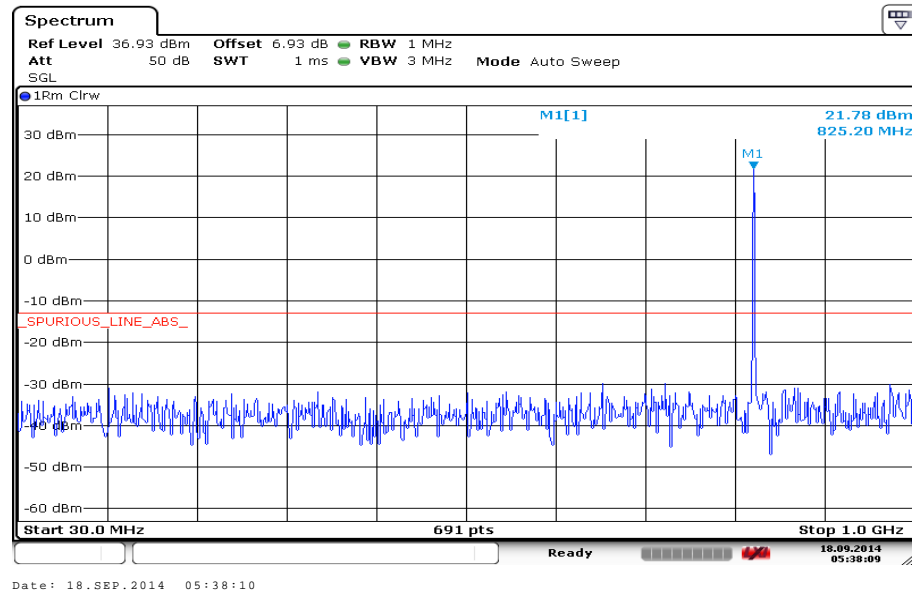### A.6.3.14 Channel 1175: 1GHz –2.5GHz

Spurious emission limit –13dBm.

NOTE: peak above the limit line is the carrier frequency.

Date: 18.SEP.2014 05:20:31
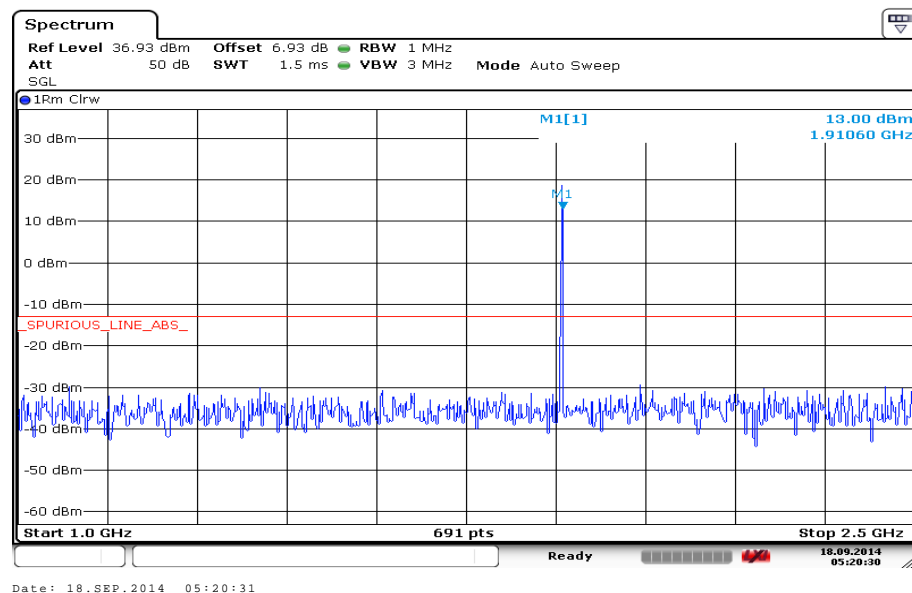
A.6.3.15 Channel 1175: 2.5GHz –7.5GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:21:41
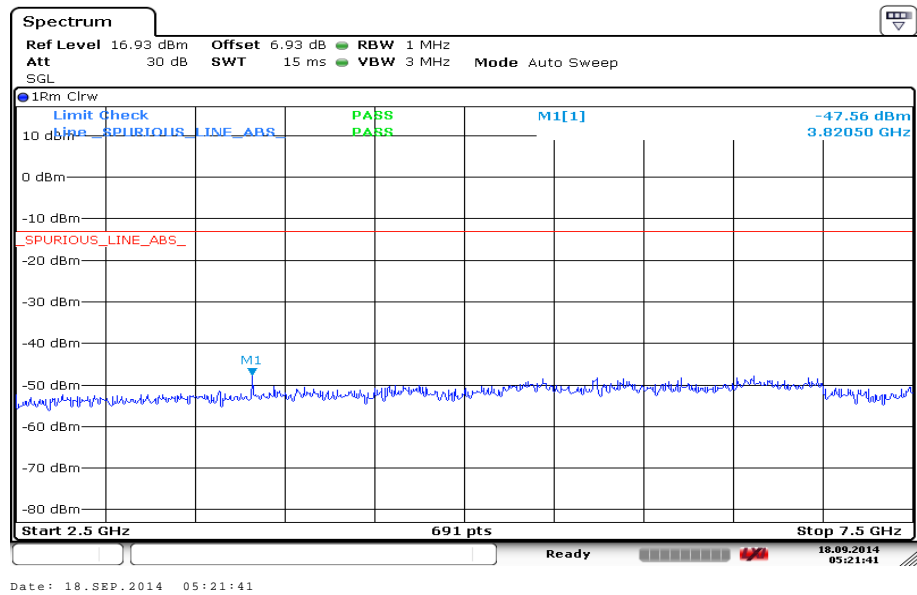
A.6.3.16 Channel 1175: 7.5GHz –10GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:22:17
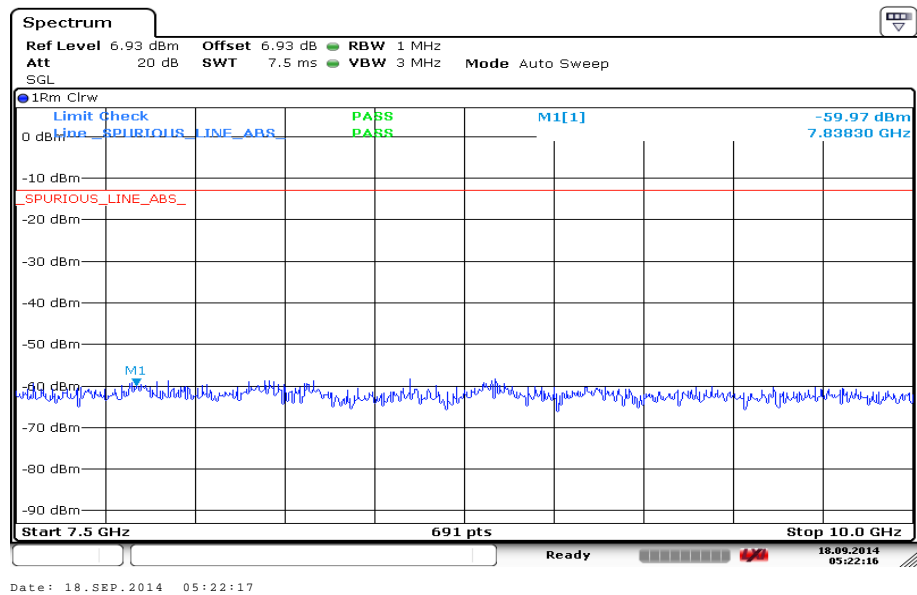
A.6.3.17 Channel 1175: 10GHz –15GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:22:52
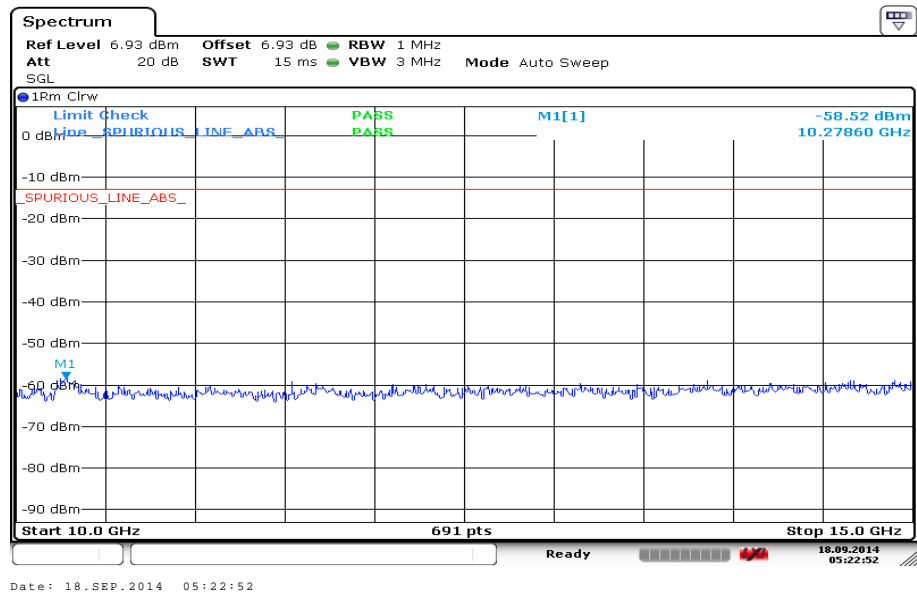
A.6.3.18 Channel 1175: 15GHz –20GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:23:45
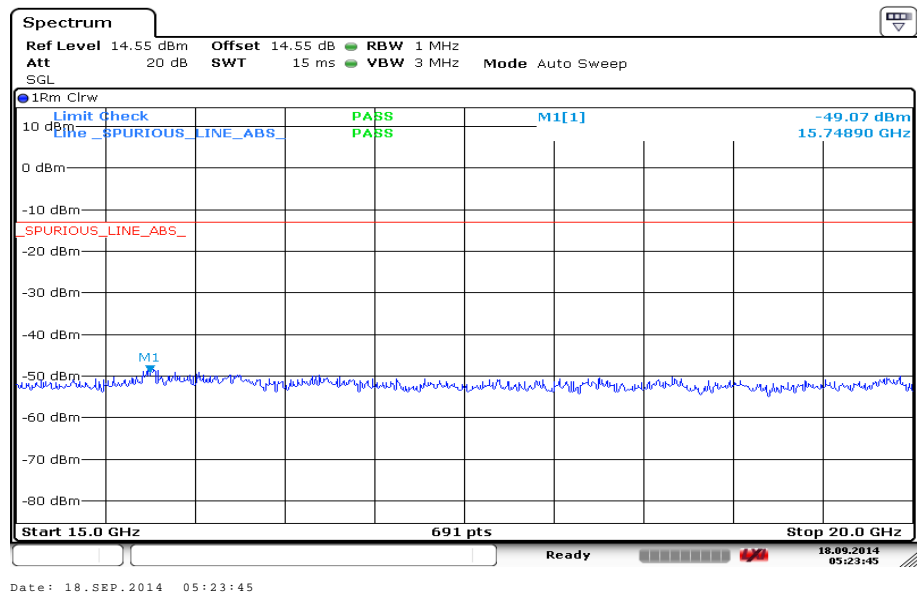
A. 6.3.19 Idle mode: 30MHz –1GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:19:39
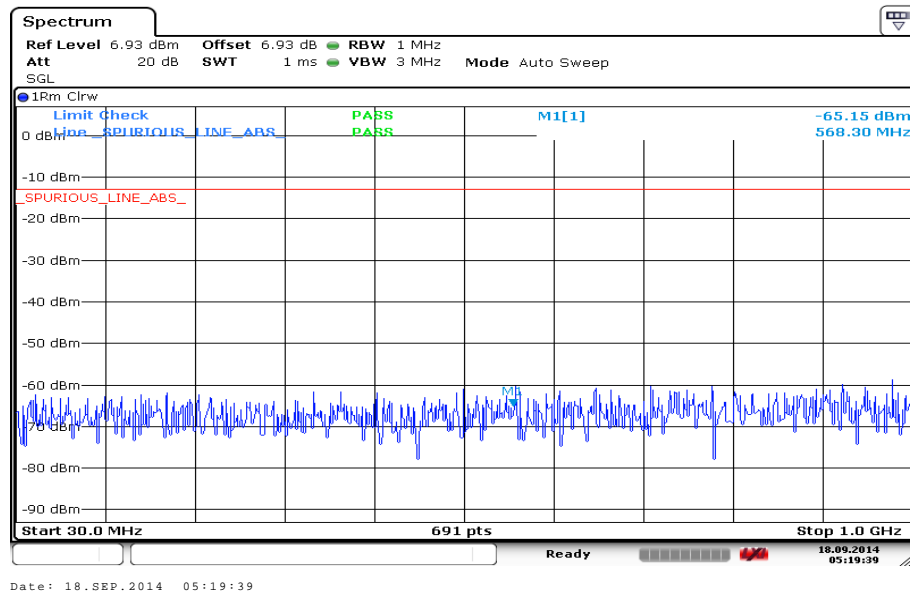
A.6.3.20 Idle mode: 1GHz –2.5GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:30:24
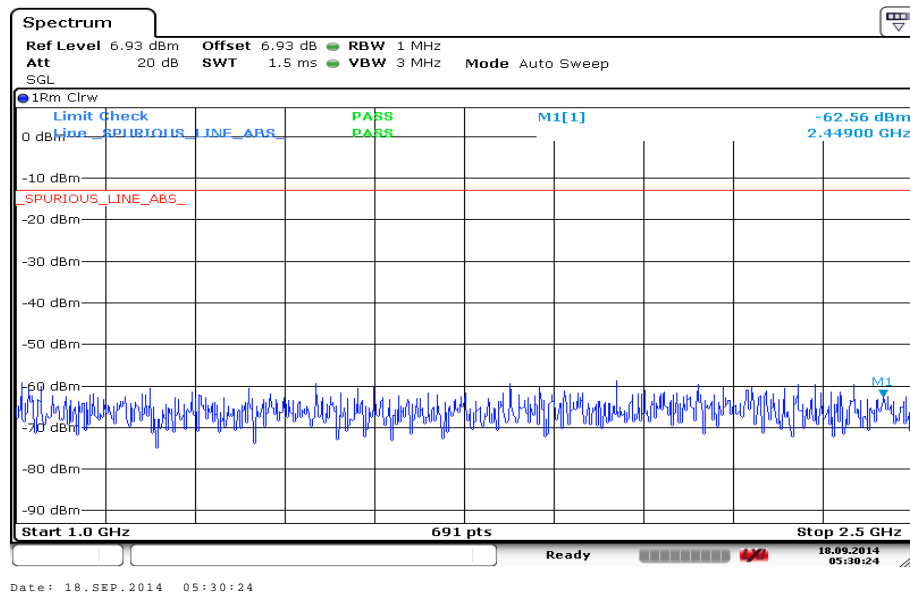
A.6.3.21 Idle mode: 2.5GHz –7.5GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:31:09
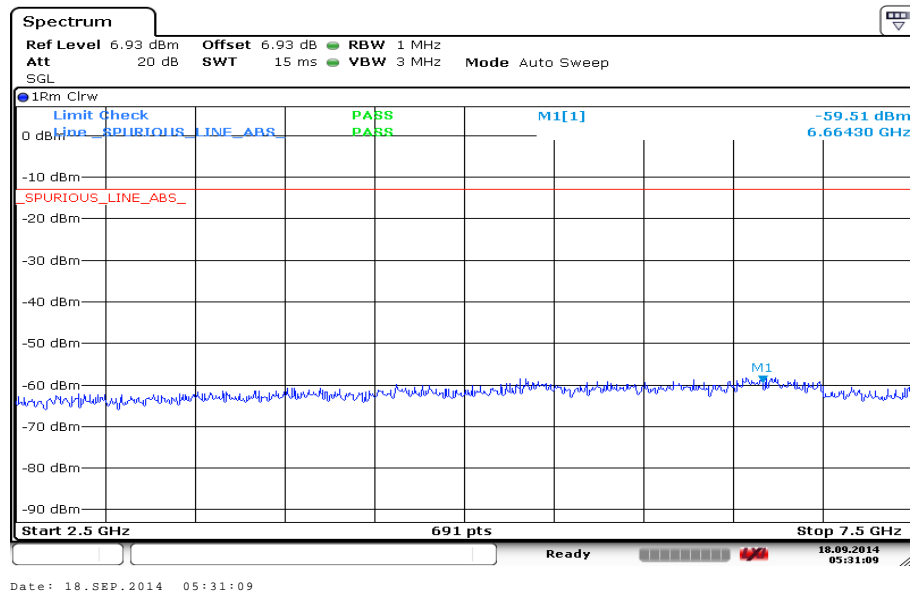
A.6.3.22 Idle mode: 7.5GHz –10GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:31:52
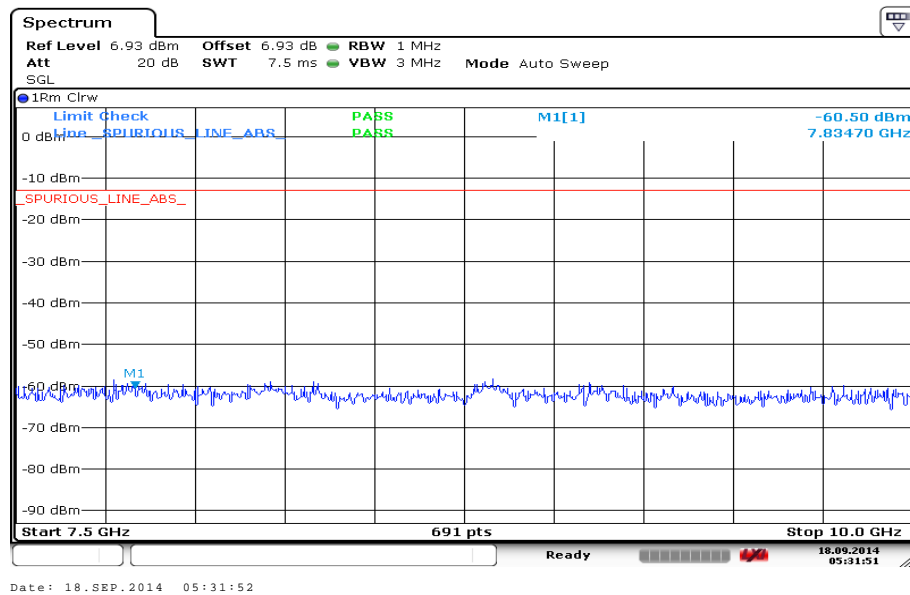
A.6.3.23 Idle mode: 10GHz –15GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:22:52
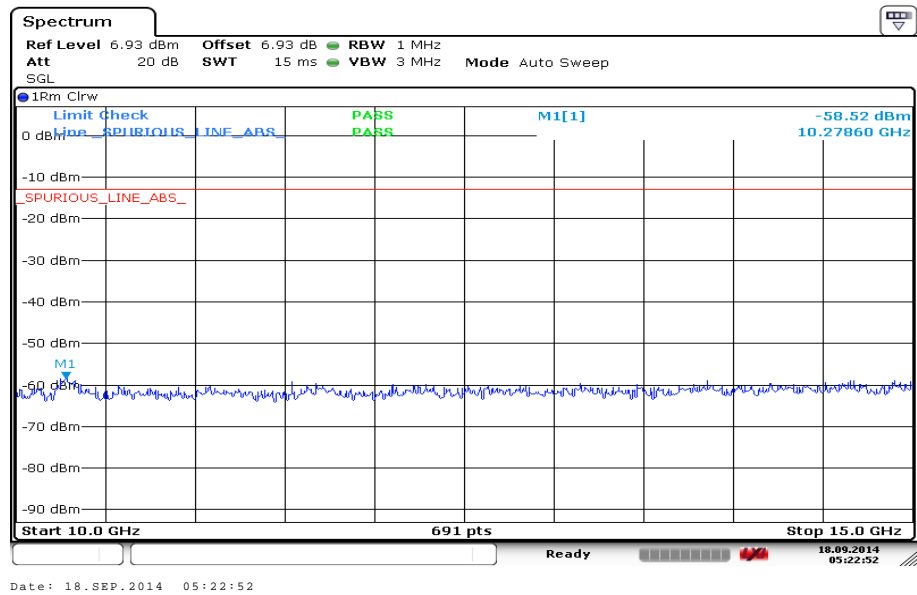
A.6.3.24 Idle mode: 15GHz –20GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:34:54
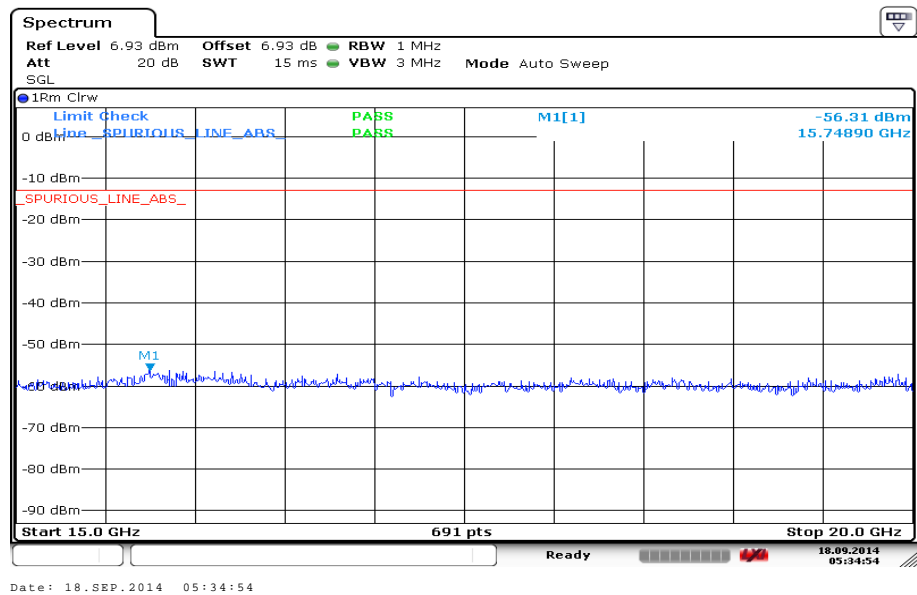
CDMA 800

A. 6.3.25 Channel 1013: 30MHz –1GHz

Spurious emission limit –13dBm.

NOTE: peak above the limit line is the carrier frequency.

Date: 18.SEP.2014 05:38:10

A. 6.3.26 Channel 1013: 1GHz – 2.5GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:38:57
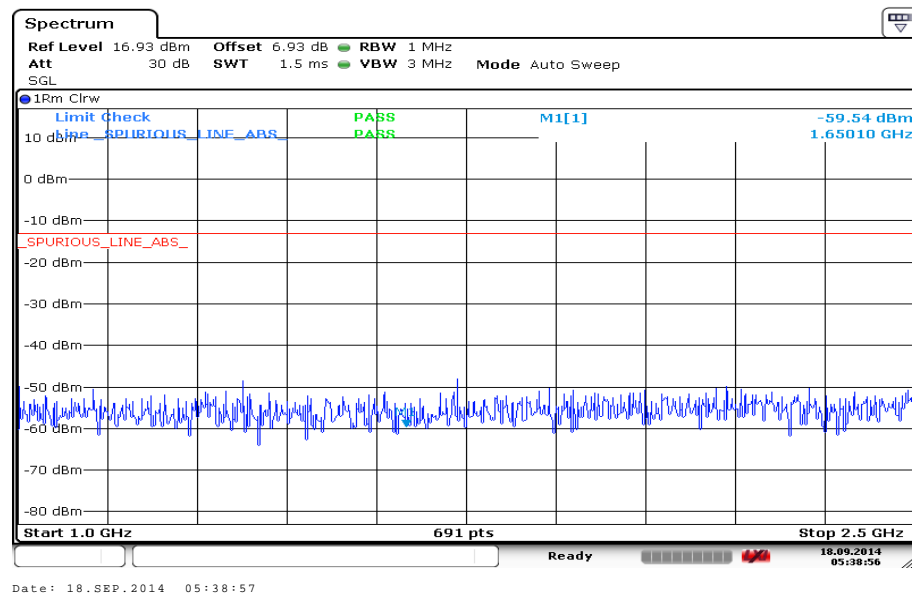
A. 6.3.27 Channel 1013: 2.5GHz –7.5GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:39:43
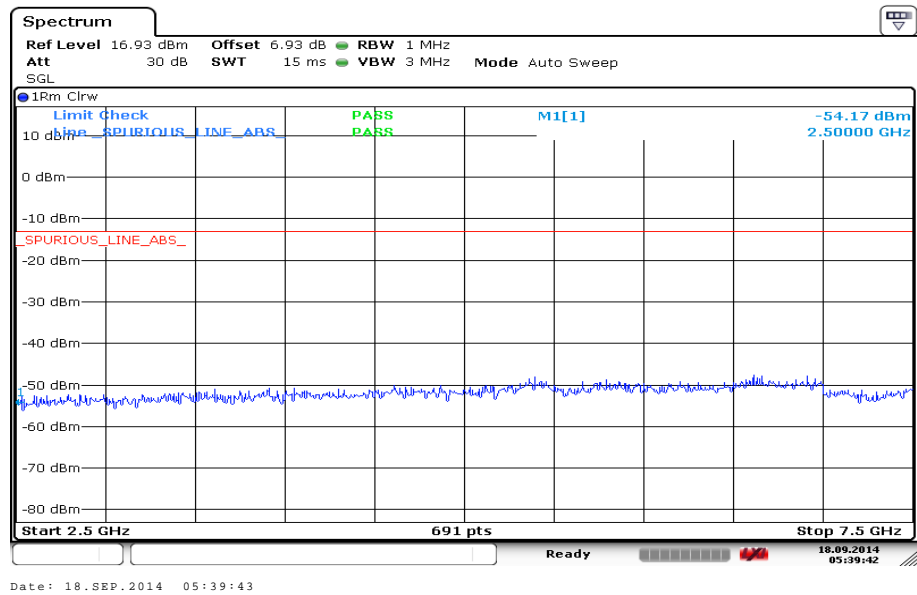
A. 6.3.28 Channel 1013: 7.5GHz – 10GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:40:21
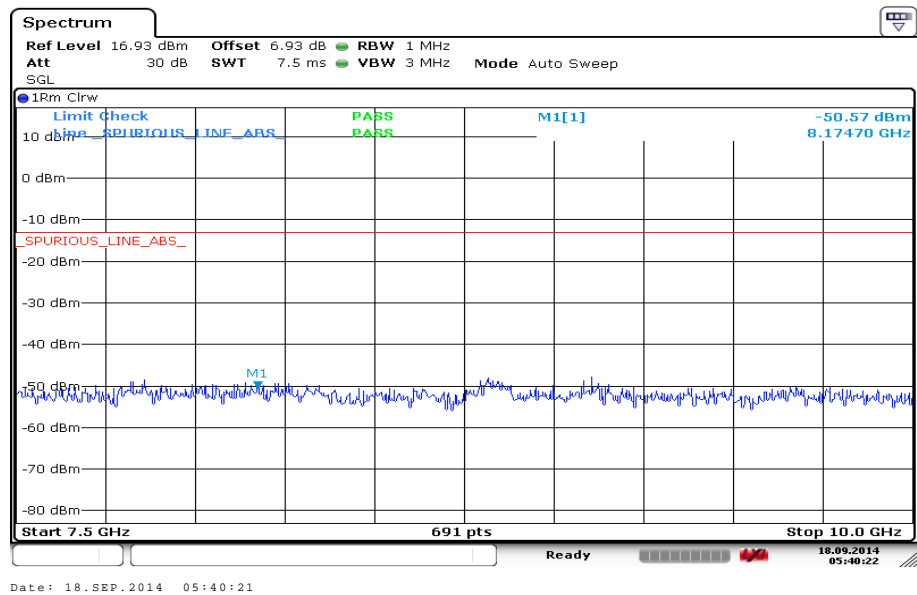
A. 6.3.29 Channel 384: 30MHz –1GHz

Spurious emission limit –13dBm.

NOTE: peak above the limit line is the carrier frequency.

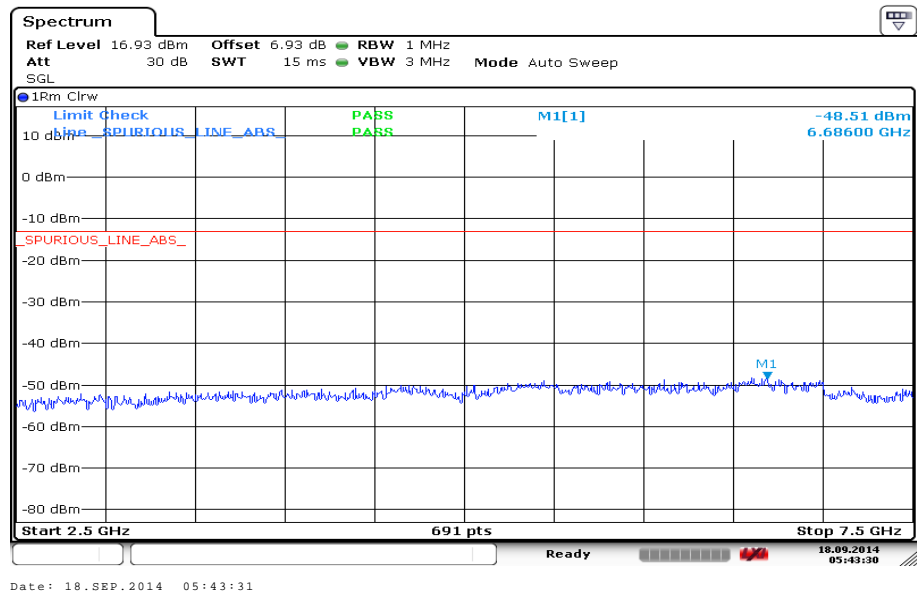Date: 18.SEP.2014 05:41:52
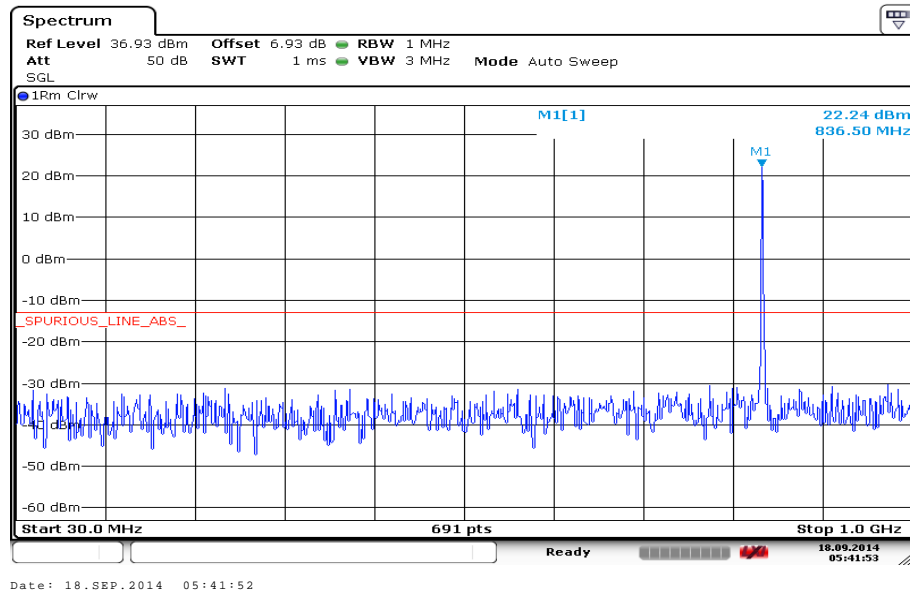
A.6.3.30 Channel 384: 1GHz – 2.5GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:42:44
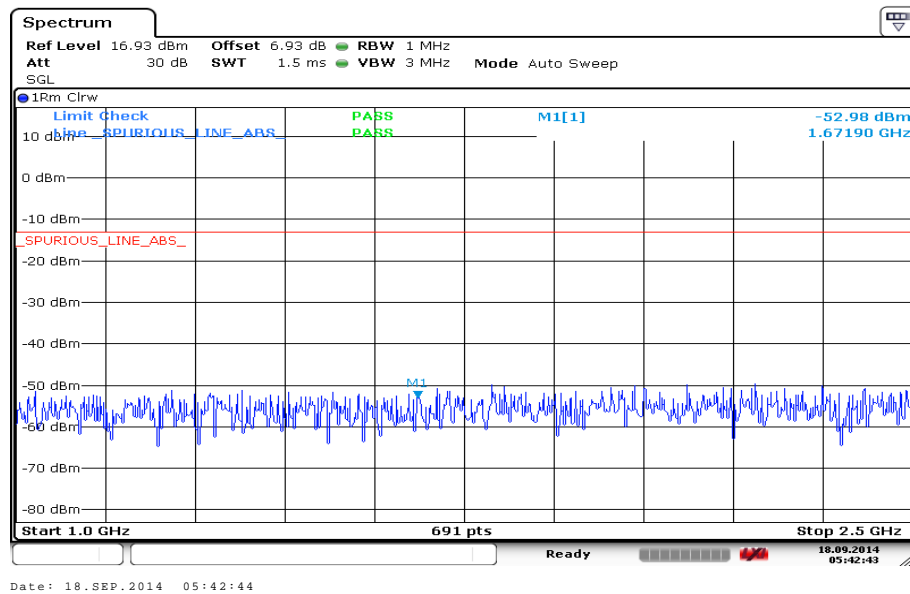
A. 6.3.31 Channel 384: 2.5GHz –7.5GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:43:31

A. 6.3.32 Channel 384: 7.5GHz – 10GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:44:11
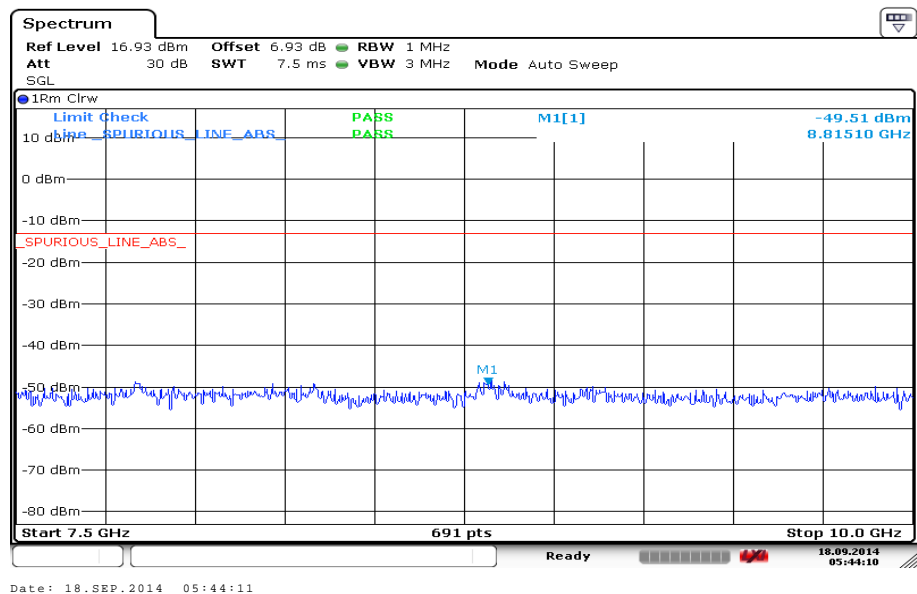
A. 6.3.33 Channel 777: 30MHz –1GHz

Spurious emission limit –13dBm.

NOTE: peak above the limit line is the carrier frequency.

Date: 18.SEP.2014 05:45:14
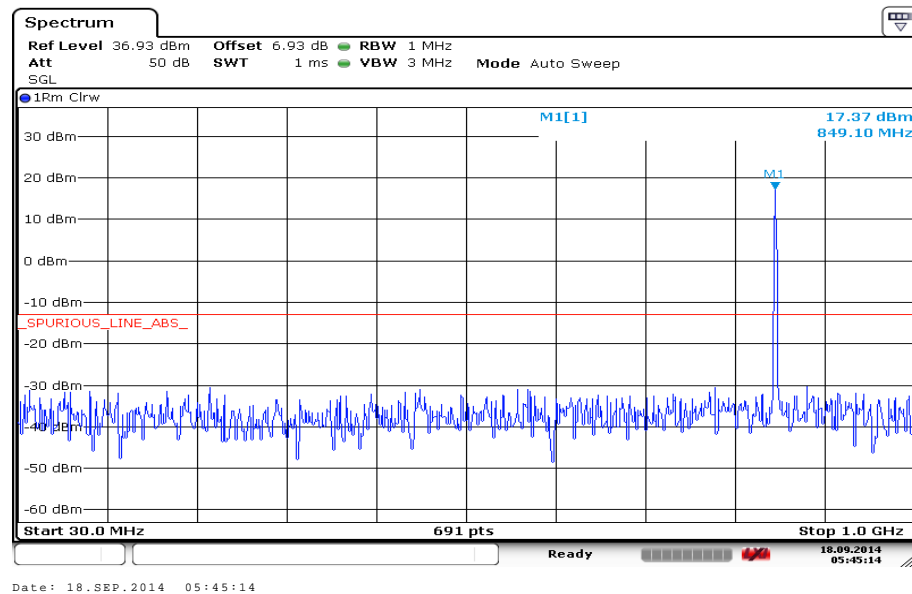
A. 6.3.34 Channel 777: 1GHz – 2.5GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:46:03
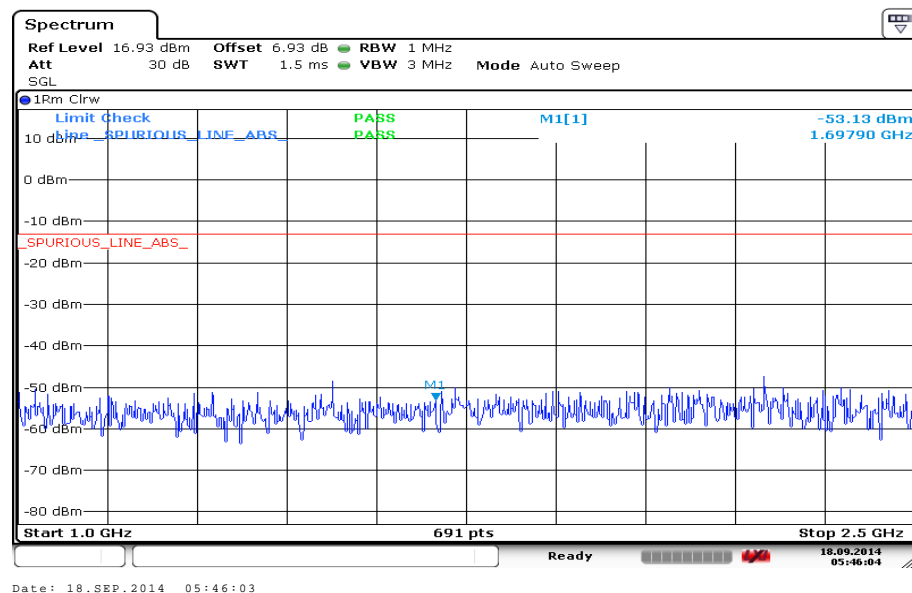
A. 6.3.35 Channel 777: 2.5GHz –7.5GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:46:44
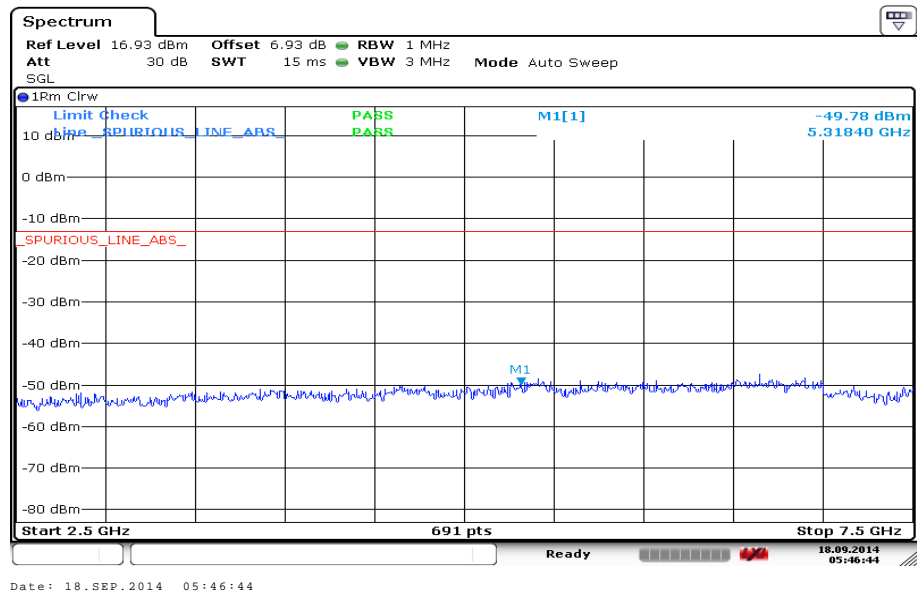
A. 6.3.36 Channel 777: 7.5GHz – 10GHz

Spurious emission limit –13dBm.

Date: 18.SEP.2014 05:47:13
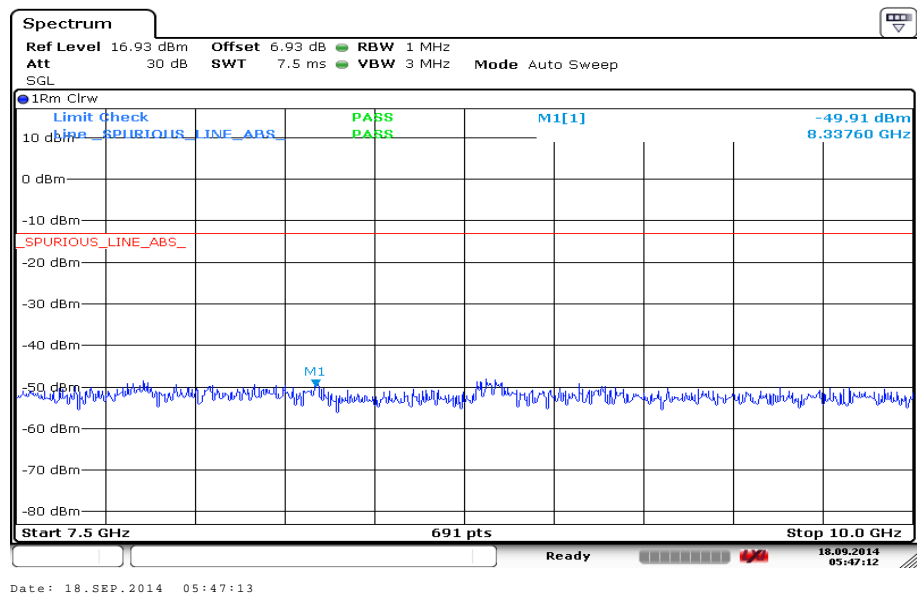
A. 6.3.37 Idle mode: 30MHz – 1GHz

Spurious emission limit -13dBm.

Date: 18.SEP.2014 05:48:05
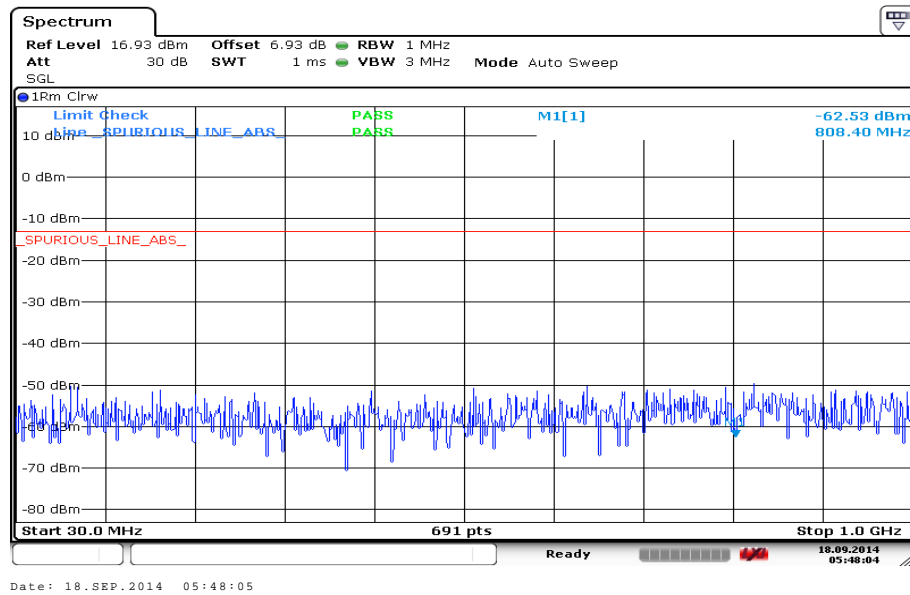
A.6.3.38 Idle mode: 1GHz – 2.5GHz

Spurious emission limit -13dBm.

Date: 18.SEP.2014 05:48:38
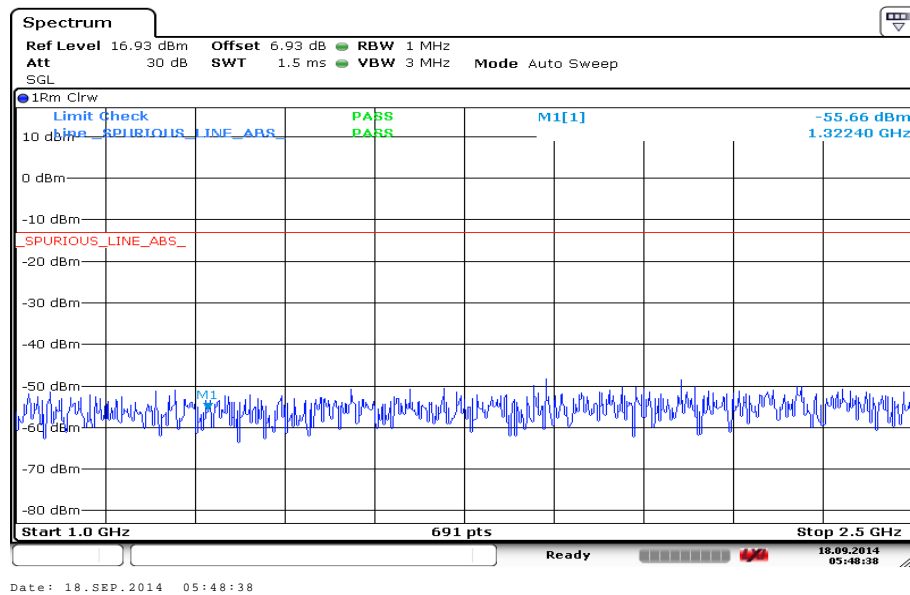
A.6.3.39 Idle mode: 2.5GHz – 7.5GHz

Spurious emission limit -13dBm.

Date: 18.SEP.2014 05:49:10

A.6.3.40 Idle mode: 7.5GHz – 10GHz

Spurious emission limit -13dBm.

Date: 18.SEP.2014 05:49:42

END OF REPORT