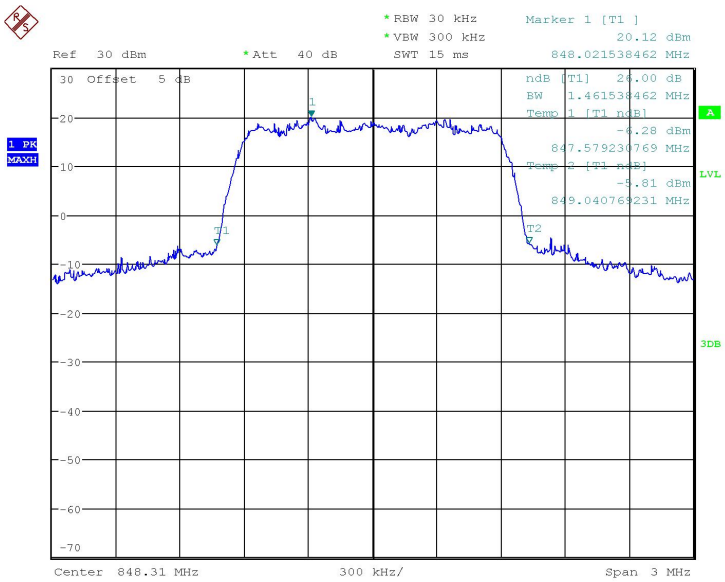
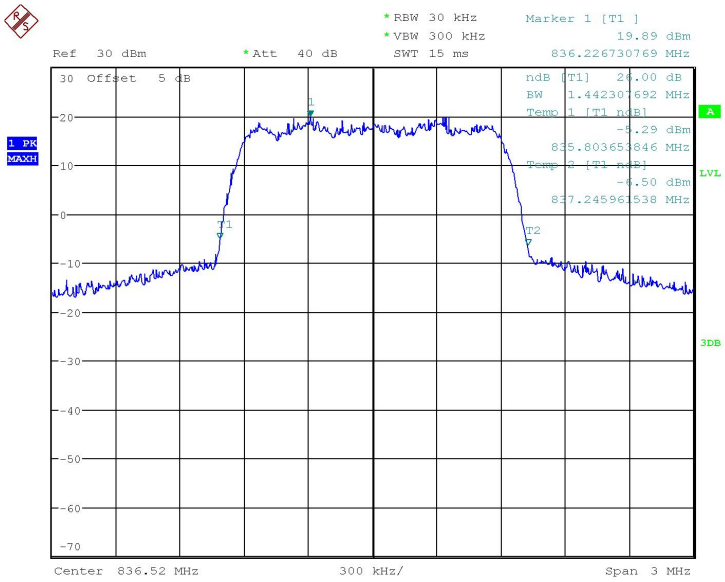
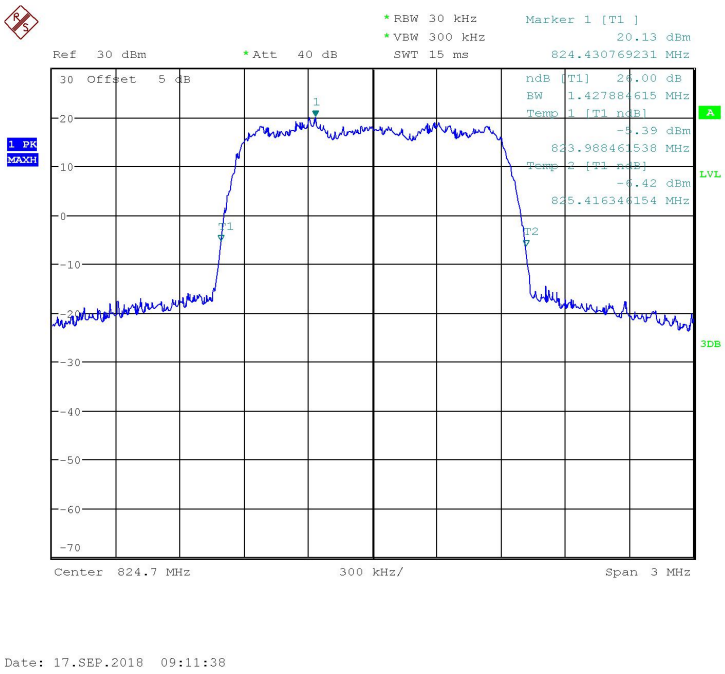


Channel 777- Emission Bandwidth (-26dBc BW)



Channel 384- Emission Bandwidth (-26dBc BW)

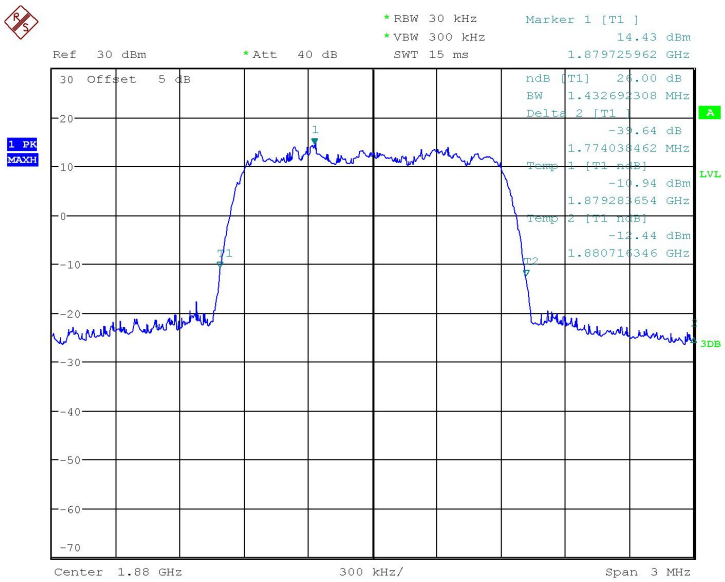


Channel 1013- Emission Bandwidth (-26dBc BW)

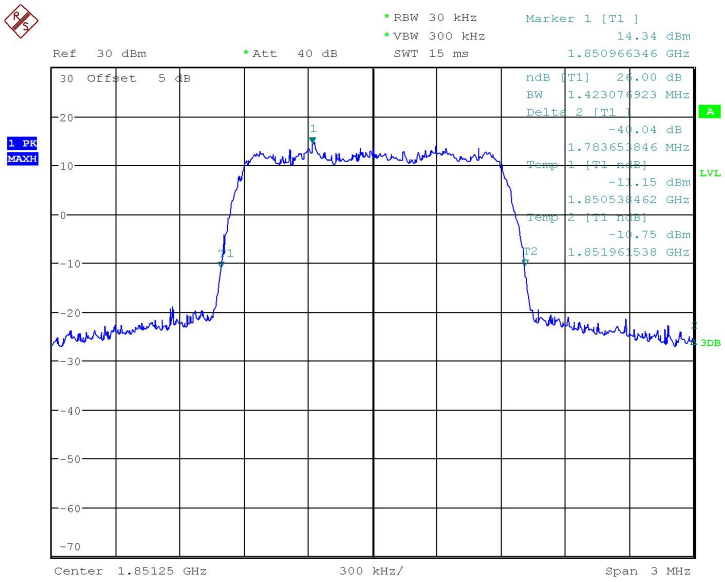
1xEV-DO BC1 Release 0		
Test channel	Frequency (MHz)	–26dBc Emission Bandwidth(MHz)
Mid 600	1880.0	1.433
Low 25	1851.25	1.423
High 1175	1908.75	1.447

Conclusion: PASS

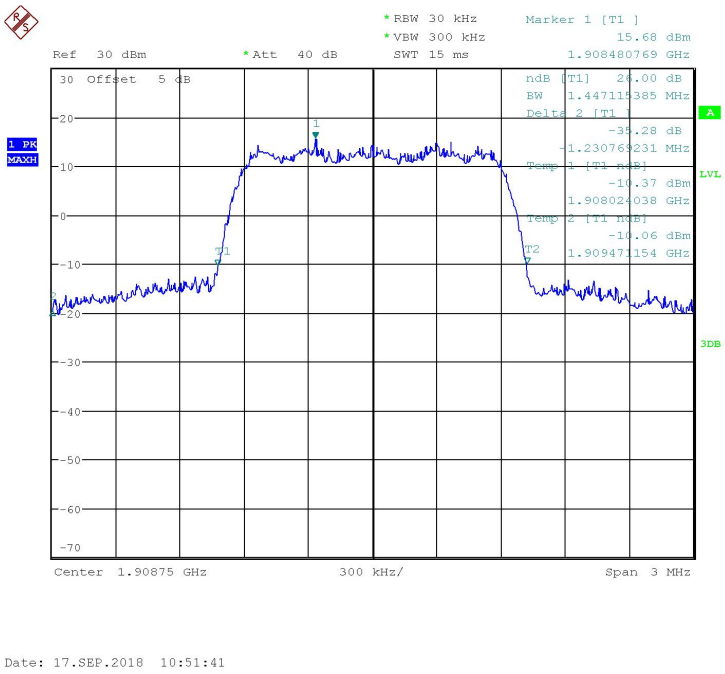
1xEV-DO BC0 Release 0



Channel 600- Emission Bandwidth (-26dBc BW)



Channel 25- Emission Bandwidth (-26dBc BW)

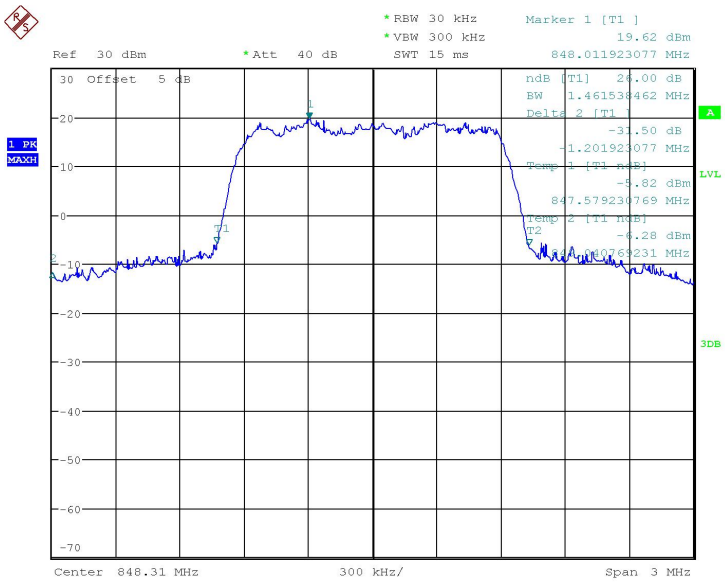


Channel 1175- Emission Bandwidth (-26dBc BW)

1xEV-DO BC0 Release A		
Test channel	Frequency (MHz)	–26dBc Emission Bandwidth(MHz)
Mid 777	848.31	1.462
Low 384	836.52	1.442
High 1013	824.7	1.438

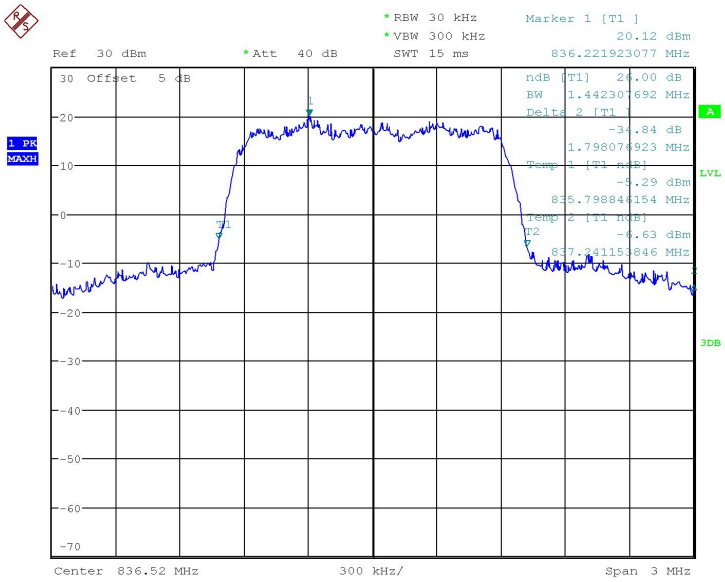
Conclusion: PASS

1xEV-DO BC0 Release A



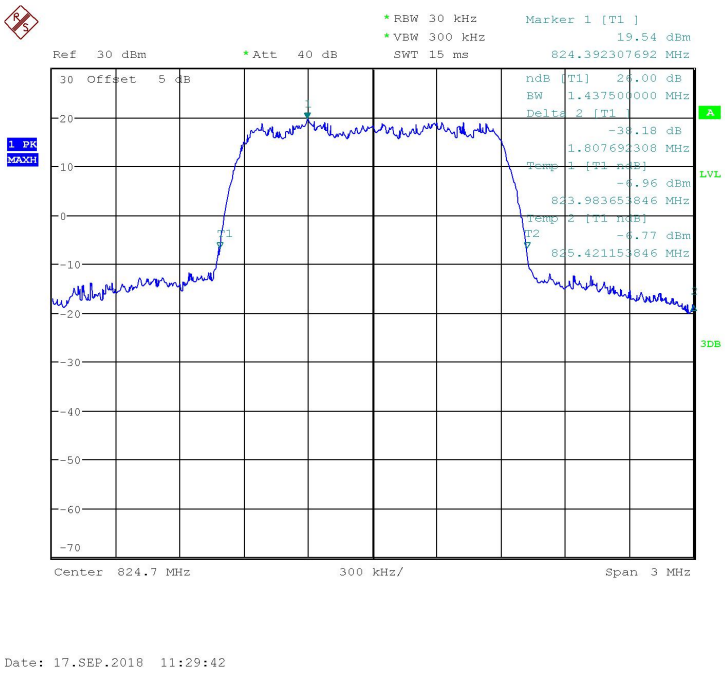
Date: 17.SEP.2018 11:28:37

Channel 777- Emission Bandwidth (-26dBc BW)



Date: 17.SEP.2018 11:29:10

Channel 384- Emission Bandwidth (-26dBc BW)

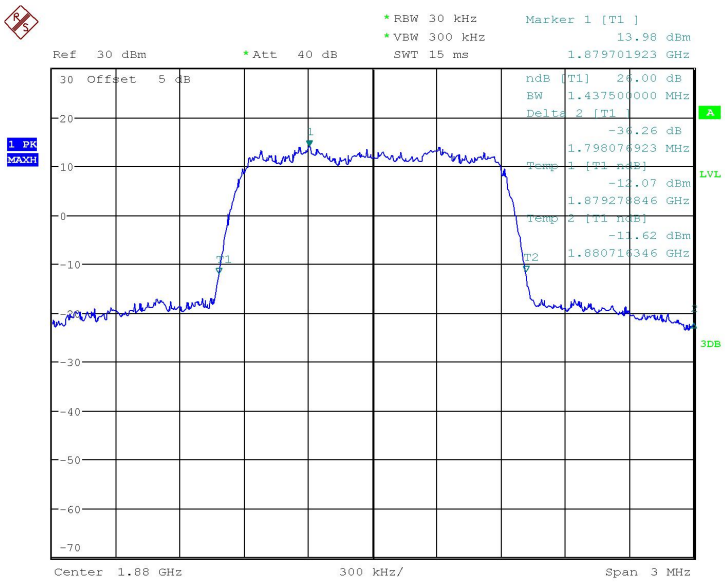


Channel 1013- Emission Bandwidth (-26dBc BW)

1xEV-DO BC1 Release A		
Test channel	Frequency (MHz)	–26dBc Emission Bandwidth(MHz)
Mid 600	1880.0	1.438
Low 25	1851.25	1.442
High 1175	1908.75	1.466

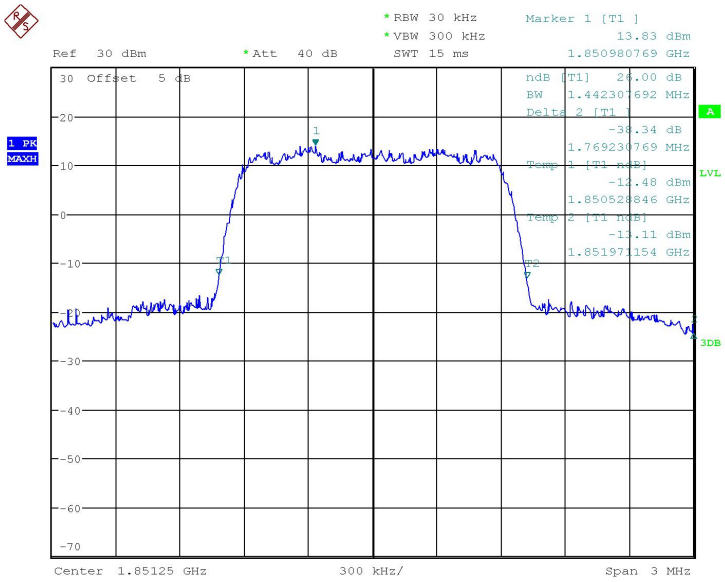
Conclusion: PASS

1xEV-DO BC0 Release A



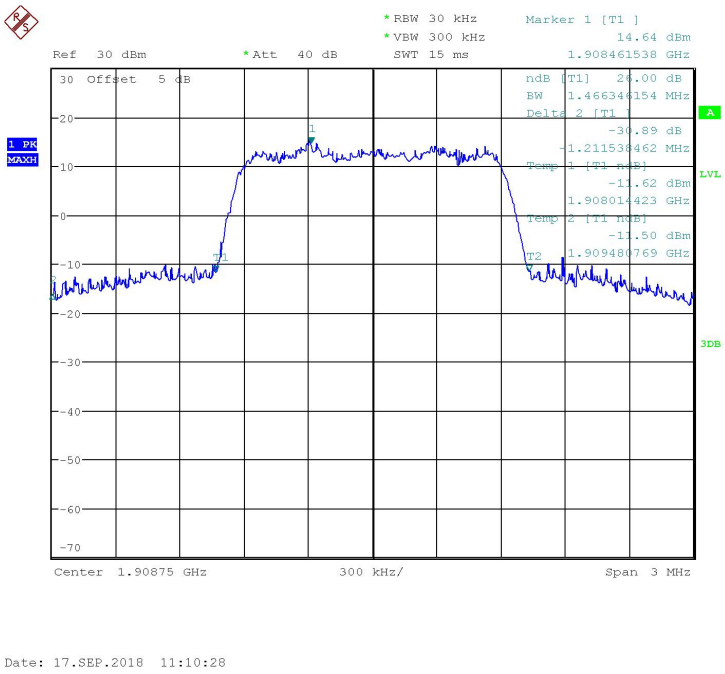
Date: 17.SEP.2018 11:09:19

Channel 600- Emission Bandwidth (-26dBc BW)



Date: 17.SEP.2018 11:09:54

Channel 25- Emission Bandwidth (-26dBc BW)



Channel 1175- Emission Bandwidth (-26dBc BW)

ANNEX A.5. Band Edge at antenna terminals

Method of test measurements please refer to CFR 47 (FCC) part 2.1051 and part 22.917.

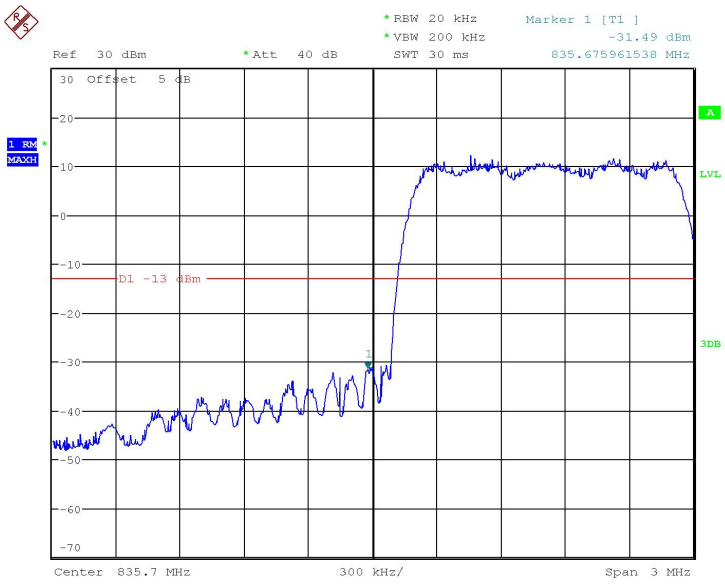
A.5.1 Limit:

The magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specification in the instruction manual and/or alignment procedure, shall not be less than 43+10log (Mean power in watts) dBc below the mean power output outside a license's frequency block(-13dBm).

A.5.2 Test procedure:

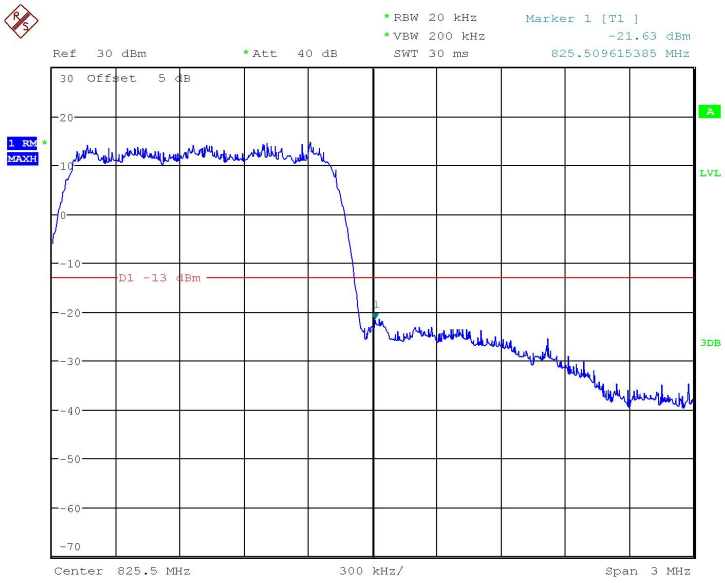
1. The RF output of the transceiver was connected to a signal analyzer through appropriate attenuation.
2. In the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.
3. The RF fundamental frequency should be excluded against the limit line in the operating frequency band
4. The limit line is derived from 43+10log(P) Db below the transmitter power P(Watts)
   =P(W)-[43+10log(P)](Db)
   =[30+10log(P)](dBm)-[43+10log(P)](Db)
   =-13dBm

CDMA2000 Cellular BC0



Date: 5.SEP.2018 07:48:34

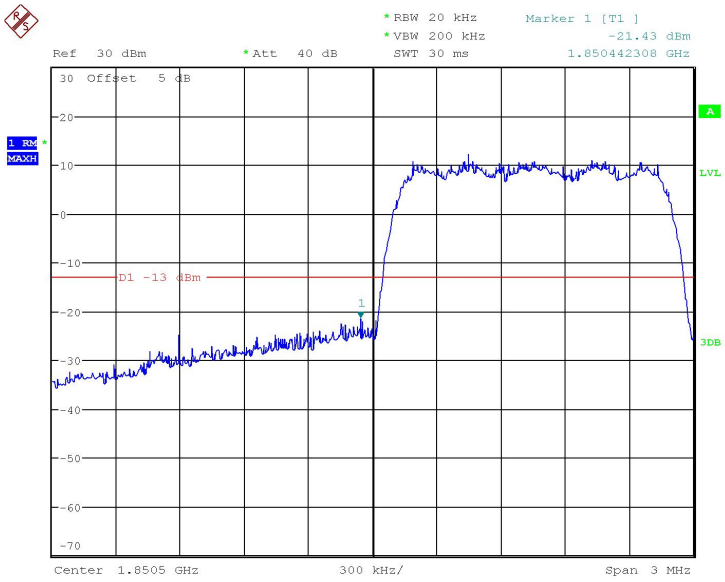
Channel 384- LOW BAND EDGE BLOCK



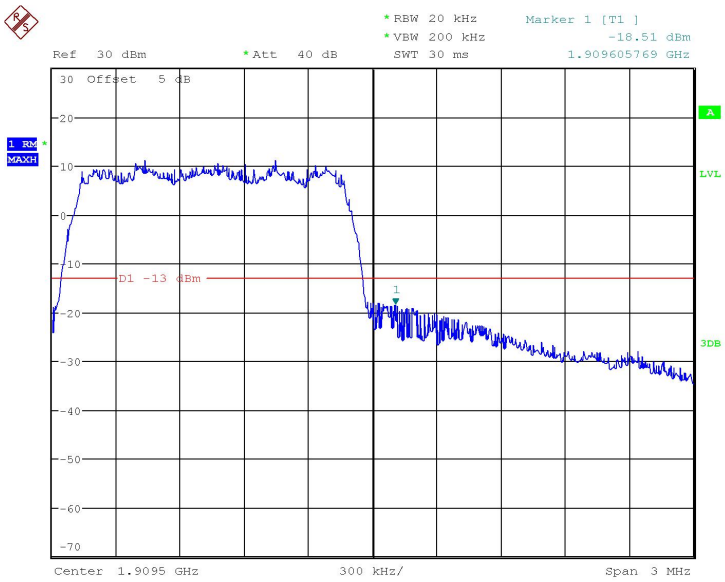
Date: 5.SEP.2018 07:50:07

Channel 1013- HIGH BAND EDGE BLOCK

CDMA2000 PCS BC1



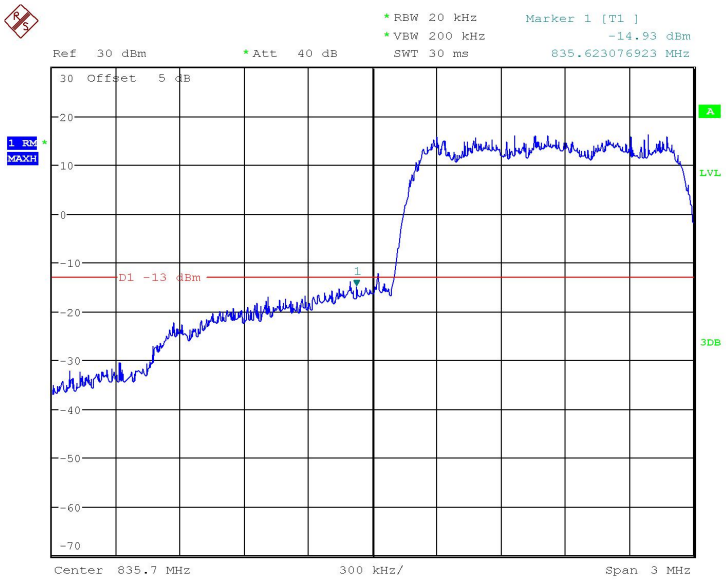
Channel 25- LOW BAND EDGE BLOCK



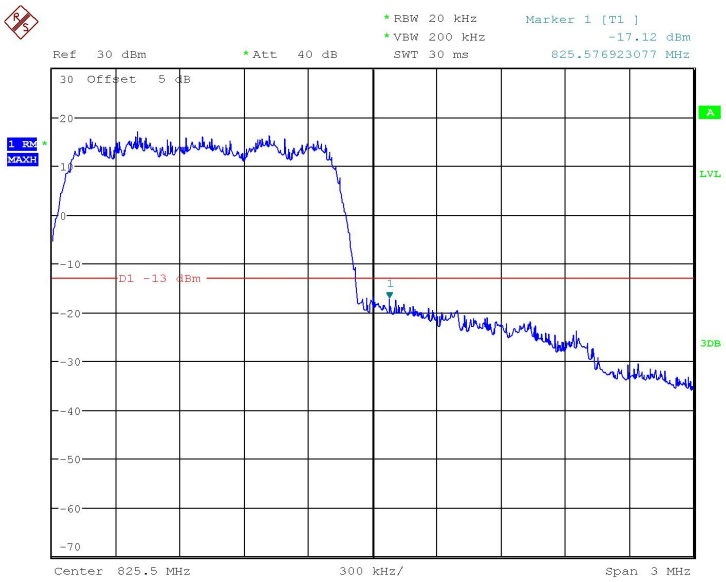
Channel 1175- HIGH BAND EDGE BLOCK

Conclusion: PASS

1xEV-DO BC0 Release 0



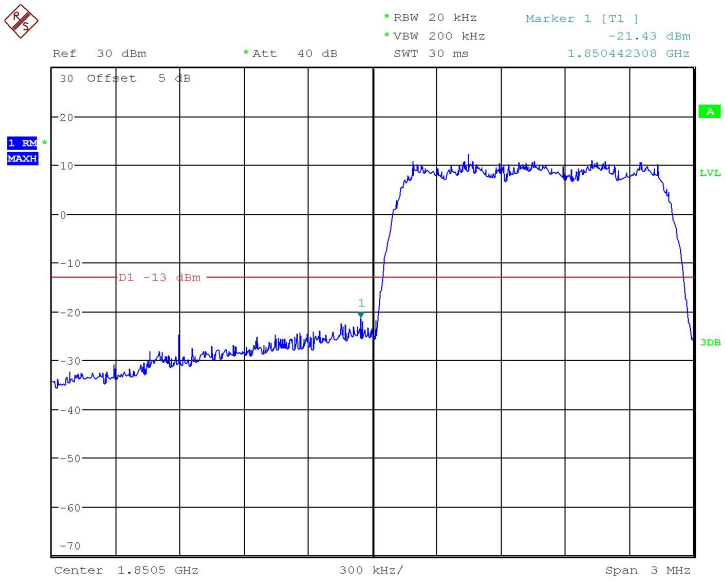
Channel 384- LOW BAND EDGE BLOCK



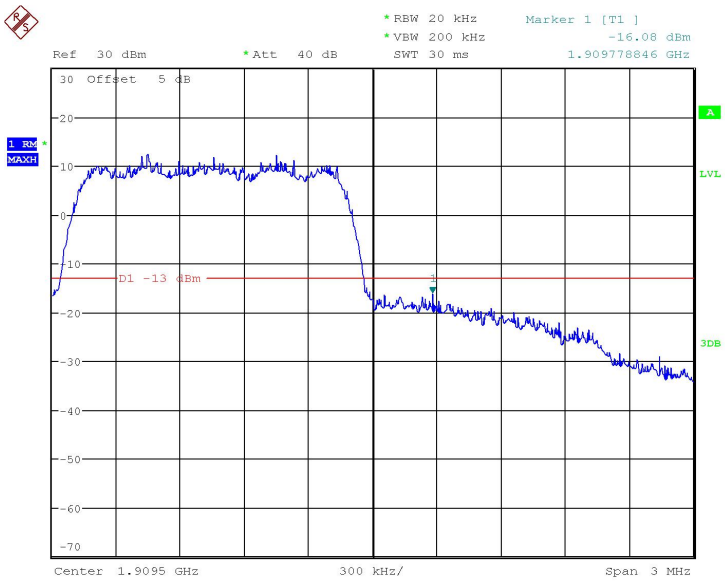
Channel 1013- LOW BAND EDGE BLOCK

Conclusion: PASS

1xEV-DO BC1 Release 0



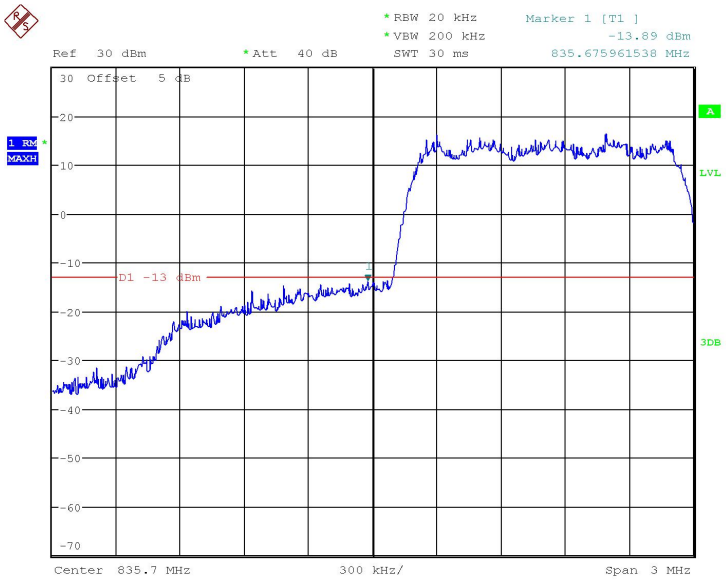
Channel 25- LOW BAND EDGE BLOCK



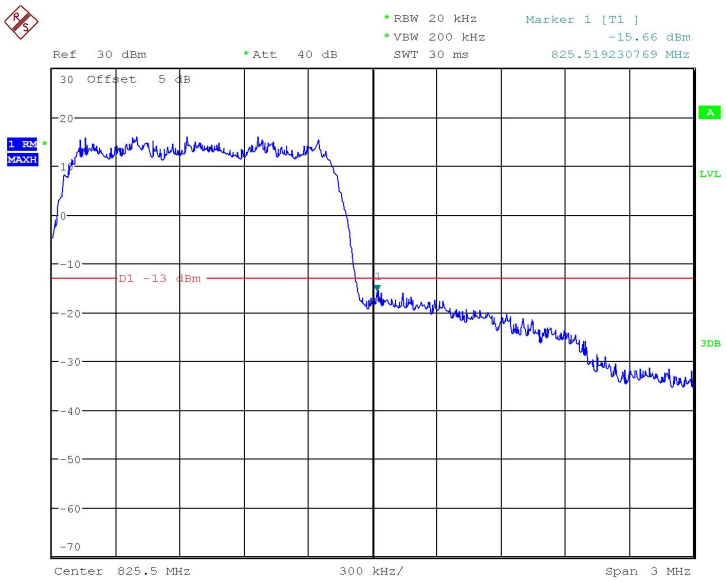
Channel 1175- LOW BAND EDGE BLOCK

Conclusion: PASS

1xEV-DO BC0 Release A



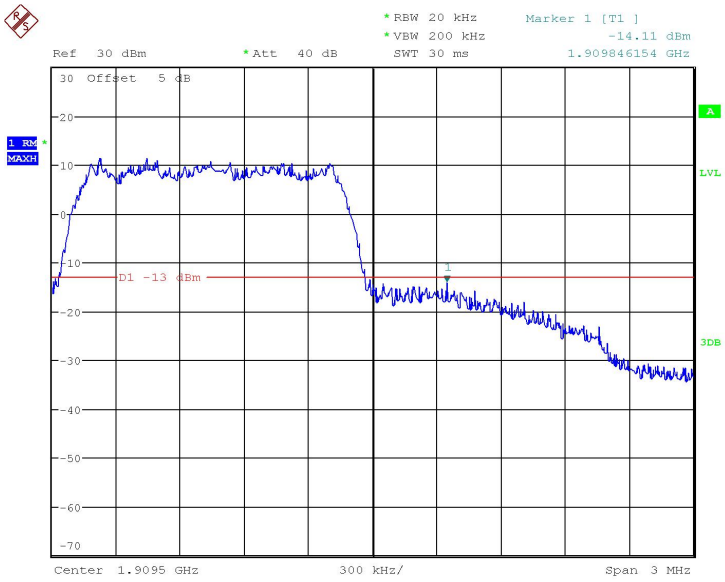
Channel 384- LOW BAND EDGE BLOCK



Channel 1013- LOW BAND EDGE BLOCK

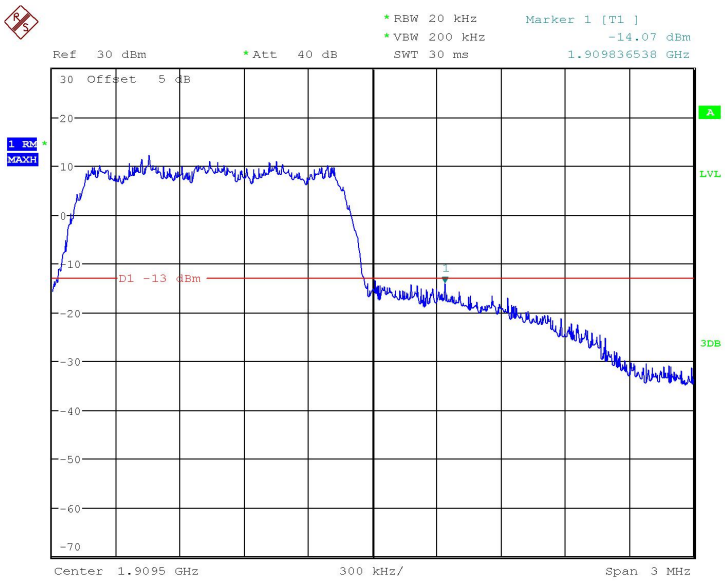
Conclusion: PASS

1xEV-DO BC1 Release A



Date: 17.SEP.2018 11:12:57

Channel 25- LOW BAND EDGE BLOCK



Date: 17.SEP.2018 11:13:25

Channel 1175- LOW BAND EDGE BLOCK

Conclusion: PASS

ANNEX A.6. FREQUENCY STABILITY

Method of test measurements please refer to CFR47 (FCC) part 2.1055 and part 22.355.

A.5.1.Method of Measurement and test procedures

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 R&S CMU200 DIGITAL RADIO COMMUNICATION TESTER.

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 CMU200 and in a simulated call on mid channel of GSM850, PCS1900, WCDMA BANDII and WCDMA BANDV, 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. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring 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 CMU200 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 1.5 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5℃ during the measurement procedure.

A.5.2. Measurement Limit

A.5.2.1. For Hand carried battery powered equipment

According to the JTC standard the GSM frequency stability of the carrier shall be accurate to within 0.1ppm of the received frequency from the base station. And the WCDMA is 2.5ppm. 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 4.35VDC, with a nominal voltage of 3.85VDC. 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 was varied from 85% to 115%.

A.5.2.2. For equipment powered by primary supply voltage

According to the JTC standard the CDMA frequency stability of the carrier shall be accurate to within 0.1ppm 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.5.3 Test results

CDMA2000 Cellular BC0 Mid Channel/fc(MHz) 384/836.52

Frequency Error VS Temperature

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.85	-30	2.3	2091
3.85	-20	2.4	2091
3.85	-10	2.9	2091
3.85	0	1.8	2091
3.85	10	1.4	2091
3.85	20	2.0	2091
3.85	30	2.9	2091
3.85	40	2.6	2091
3.85	50	1.3	2091
3.85	60	2.2	2091
3.85	70	1.8	2091
3.85	80	2.7	2091
3.85	90	2.4	2091

Frequency Error VS Voltage

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.5	25	2.5	2091
3.85	25	2.3	2091
4.35	25	2.6	2091

CDMA2000 PCS BC1 Mid Channel/fc(MHz) 600/1880

Frequency Error VS Temperature

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.85	-30	1.9	4700
3.85	-20	1.2	4700
3.85	-10	0.5	4700
3.85	0	2.9	4700
3.85	10	1.3	4700
3.85	20	1.4	4700
3.85	30	1.8	4700
3.85	40	2.5	4700
3.85	50	3.5	4700
3.85	60	1.4	4700
3.85	70	1.2	4700
3.85	80	2.5	4700
3.85	90	3.1	4700

Frequency Error VS Voltage

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.5	25	2.6	4700
3.85	25	1.6	4700
4.35	25	1.9	4700

Conclusion: PASS

1xEV-DO BC0 Release 0 Mid Channel/fc(MHz) 384/836.52

Frequency Error VS Temperature

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.85	-30	8.6	2091

3.85	-20	8.0	2091
3.85	-10	7.9	2091
3.85	0	8.2	2091
3.85	10	8.8	2091
3.85	20	8.6	2091
3.85	30	9.1	2091
3.85	40	9.4	2091
3.85	50	8.2	2091
3.85	60	8.1	2091
3.85	70	7.8	2091
3.85	80	7.9	2091
3.85	90	8.0	2091

Frequency Error VS Voltage

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.5	25	8.9	2091
3.85	25	8.5	2091
4.35	25	9.2	2091

Conclusion: PASS

1xEV-DO BC1 Release 0 Mid Channel/fc(MHz) 600/1880

Frequency Error VS Temperature

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.85	-30	10.9	4700
3.85	-20	11.2	4700
3.85	-10	15.5	4700
3.85	0	17.2	4700
3.85	10	14.3	4700

3.85	20	11.9	4700
3.85	30	12.8	4700
3.85	40	18.5	4700
3.85	50	13.5	4700
3.85	60	12.5	4700
3.85	70	11.9	4700
3.85	80	13.4	4700
3.85	90	14.8	4700

Frequency Error VS Voltage

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.5	25	15.4	4700
3.85	25	12.6	4700
4.35	25	15.9	4700

1xEV-DO BC0 Release A Mid Channel/fc(MHz) 384/836.52

Frequency Error VS Temperature

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.85	-30	12.0	2091
3.85	-20	12.4	2091
3.85	-10	12.9	2091
3.85	0	11.5	2091
3.85	10	13.7	2091
3.85	20	13.6	2091
3.85	30	12.4	2091
3.85	40	12.4	2091
3.85	50	11.2	2091
3.85	60	12.1	2091

3.85	70	11.3	2091
3.85	80	12.4	2091
3.85	90	13.1	2091

Frequency Error VS Voltage

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.5	25	11.5	2091
3.85	25	17.5	2091
4.35	25	12.9	2091

Conclusion: PASS

1xEV-DO BC1 Release A Mid Channel/fc(MHz) 600/1880

Frequency Error VS Temperature

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.85	-30	10.9	4700
3.85	-20	10.2	4700
3.85	-10	10.4	4700
3.85	0	11.2	4700
3.85	10	11.3	4700
3.85	20	10.9	4700
3.85	30	11.8	4700
3.85	40	10.5	4700
3.85	50	10.5	4700
3.85	60	11.1	4700
3.85	70	11.3	4700
3.85	80	11.4	4700
3.85	90	10.1	4700

Frequency Error VS Voltage

Power Supply (VDc)	Environment Temperature(℃)	Frequency error(Hz)	Limit (Hz)
3.5	25	10.4	4700
3.85	25	11.2	4700
4.35	25	11.8	4700

Conclusion: PASS

ANNEX A.7. CONDUCTED SPURIOUS EMISSION

A.7.1. GSM Measurement Method and test procedures

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. For the equipment of PCS1900 band, this equates to a frequency range of 30 MHz to 19.1 GHz, data taken from 30 MHz to 20 GHz. For GSM850, data taken from 30 MHz to 10 GHz.
2. The sweep time is set automatically by instrument itself. That should be the optimal sweep time for the span and the RBW. If the sweep time is too short, that is sweep is too fast, the sweep result is not accurate; If the sweep time is too long, that is sweep is too low, some frequency components may be lost. The instrument will give a optimal sweep time according the selected span and RBW.
3. The procedure to get the conducted spurious emission is as follows:
The trace mode is set to MaxHold to get the highest signal at each frequency;
Wait 25 seconds;Get the result.
4. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

CDMA2000 Cellular Transmitter

Channel	Frequency(MHz)
384	836.52
777	848.31
1013	824.7

CDMA2000 PCS Transmitter

Channel	Frequency(MHz)

25	1851.25
600	1880.0
1175	1908.75

1xEV-DO Cellular Transmitter Release 0

Channel	Frequency(MHz)
384	836.52
777	848.31
1013	824.7

1xEV-DO PCS Transmitter Release 0

Channel	Frequency(MHz)
25	1851.25
600	1880.0
1175	1908.75

1xEV-DO Cellular Transmitter Release A

Channel	Frequency(MHz)
384	836.52
777	848.31
1013	824.7

1xEV-DO PCS Transmitter Release A

Channel	Frequency(MHz)
25	1851.25
600	1880.0
1175	1908.75

A.7.1.1. Measurement Limit

Part 24.238 and Part 22.917 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

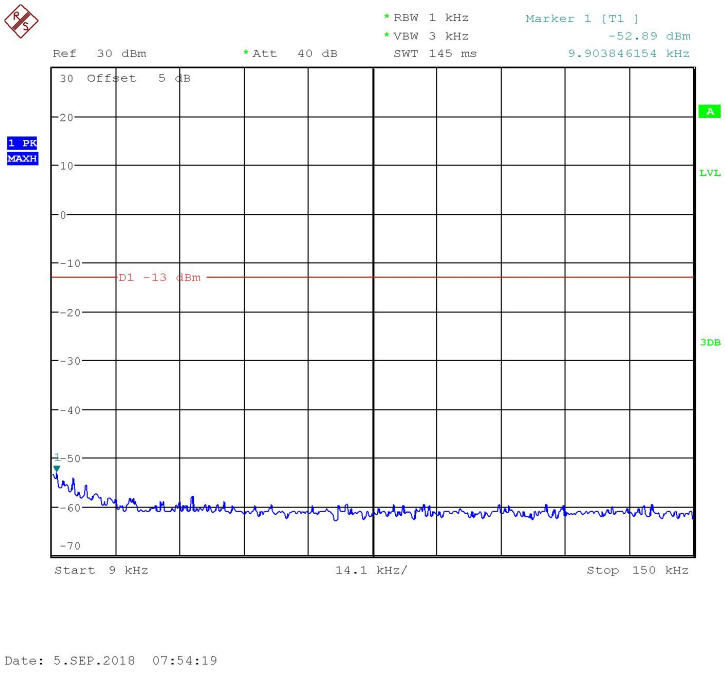
The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

A7.1.2. Measurement result

Spurious emission limit -13dBm.

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

A7.1.2.1. CDMA2000 Cellular BC0



Channel 384: 9KHz~150KHz