



Full

TEST REPORT

No. I18D00141-SRD05

For

Client : Shanghai Sunmi Technology Co.,Ltd.

Production : Handheld Wireless Terminal

Model Name : T8900/T8901

FCC ID: 2AH25L2

Hardware Version: 2DD021_V2.01

Software Version: L2_V2.6_20180621

Issued date: 2018-09-26

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of ECIT Shanghai.

Test Laboratory:

ECIT Shanghai, East China Institute of Telecommunications

Add: 7-8F, G Area, No.668, Beijing East Road, Huangpu District, Shanghai, P. R. China

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Revision Version

Report Number	Revision	Date	Memo
I18D00141-SRD05	00	2018-09-26	Initial creation of test report

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1. Test Laboratory

1.1. Testing Location

Company Name:	ECIT Shanghai, East China Institute of Telecommunications
Address:	7-8F, G Area, No. 668, Beijing East Road, Huangpu District, Shanghai, P. R. China
Postal Code:	200001
Telephone:	(+86)-021-63843300
Fax:	(+86)-021-63843301

1.2. Testing Environment

Normal Temperature:	15-35℃
Extreme Temperature:	-30/+50℃
Relative Humidity:	20-75%

1.3. Project data

Project Leader:	Yu Anlu
Testing Start Date:	2018-09-14
Testing End Date:	2018-09-18

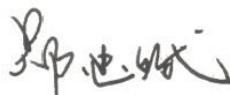
1.4. Signature



Yang Dejun
(Prepared this test report)



Shi Hongqi
(Reviewed this test report)



Zheng Zhongbin
Director of the laboratory
(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name: Shanghai Sunmi Technology Co.,Ltd.
Address: Room 505, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai,
China
Postcode: 200433
Telephone: 18721763396

2.2. Manufacturer Information

Company Name: Shanghai Sunmi Technology Co.,Ltd.
Address: Room 505, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai,
China
Postcode: 200433
Telephone: 18721763396

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

3.1. About EUT

EUT Description	Handheld Wireless Terminal
Model name	T8900/T8901
FCC ID	2AH25L2
Frequency	GSM850/900/1800/1900; WCDMA Band I/II/IV/V CDMA2000 BC0/BC1 1xEV-DO BC0/BC1
Extreme Temperature	-30/+50℃
Nominal Voltage	3.85V
Extreme High Voltage	4.35V
Extreme Low Voltage	3.5V

Note: Photographs of EUT are shown in ANNEX A of this test report.

3.2. Internal Identification of EUT used during the test

EUT ID*	Model Name	SN or IMEI	HW Version	SW Version	Date of receipt
N01	T8900/T8901	N/A	2DD021_V2. 01	L2_V2.6_20180 621	2018-07-25
N07	T8900/T8901	N/A	2DD021_V2. 01	L2_V2.6_20180 621	2018-07-25

*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	RF cable	---
AE2	---	---

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

3.4. Statements

The T8900/T8901, supporting GSM/GPRS/EDGE/WCDMA/CDMA/LTE/BT/BLE/WLAN/NFC, manufactured by Shanghai Sunmi Technology Co.,Ltd., which is a new product for testing.

ECIT has verified that the compliance of the tested device specified in section 5 of this test report is successfully evaluated according to the procedure and test methods as defined in type certification requirement listed in section 5 of this test report.

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 2	ANSI/TIA-603-C:2004 ANSI/TIA-98-E:2003	2014
FCC Part 22	PUBLIC MOBILE SERVICES	2014

5. SUMMARY OF TEST RESULTS

Item	Test items	Clause in FCC rules	Clause in IC rules RSS-Gen and RSS- 130	result
1	Output Power	part 2.1046,part 22.913	/	Pass
2	Peak-to-Average	part 2.1046,part 22. subpart	/	Pass
3	99%Occupied	part 2.1049,part 22. subpart	/	Pass
4	-26dB Emission	part 2.1049,part 22. subpart	/	Pass
5	Band Edge at antenna terminals	part 2.1051 and part 22.917	/	Pass
6	Frequency stability	part 2.1055 and part 22.355	/	Pass
7	Conducted Spurious mission	part 2.1055 and part 22.355	/	Pass
8	Emission Limit	part 22.913(a)	/	Pass

6. Test Equipment Utilized

Climate chamber

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Cal.interval
1	Climate chamber	SH-641	92012011	ESPEC	2017-12-25	2 Year

Radiated emission test system

The test equipment and ancillaries used are as follows.

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Cal.interval
1	Universal Radio Communication Tester	CMU200	123123	R&S	2018-05-11	1 Year
2	EMI Test Receiver	ESU40	100307	R&S	2018-05-11	1 Year
3	TRILOG Broadband Antenna	VULB9163	VULB9163-515	Schwarzbeck	2017-02-25	3 Year
4	Double-ridged Waveguide Antenna	ETS-3117	00135890	ETS	2017-01-11	3 Year
5	2-Line V-Network	ENV216	101380	R&S	2018-05-11	1 Year
6	Substitution Antenna	ETS-3117	00135890	ETS	2017-01-11	3 Year
7	RF Signal Generator	SMF100A	102314	R&S	2018-05-11	1 Year
8	Substitution Antenna	VUBA9117	9117-266	Schwarzbeck	2017-11-18	3 Year
9	Amplifier	SCU08	10146	R&S	2018-05-11	1 Year

Conducted test system

No.	Name	Type	SN	Manufacture	Calibration date	Cal.interval
1	Spectrum Analyzer	FSQ26	101096	R&S	2018-05-11	1 Year
2	Universal Radio Communicat	CMU200	123123	R&S	2018-05-11	1 Year
3	DC Power Supply	ZUP60-14	LOC-220Z006-0007	TDL-Lambda	2018-05-11	1 Year

7. Test Environment

Shielding Room1 (6.0 meters×3.0 meters×2.7 meters) did not exceed following limits along the conducted RF performance testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Ground system resistance	< 0.5

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. =25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 k
Ground system resistance	< 0.5

Fully-anechoic chamber1 (6.9 meters×10.9 meters×5.4 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 25 %, Max. = 75 %
Shielding effectiveness	> 100 dB
Electrical insulation	> 10 k
Ground system resistance	< 0.5
VSWR	Between 0 and 6 dB, from 1GHz to 18GHz
Site Attenuation Deviation	Between -4 and 4 dB,30MHz to 1GHz
Uniformity of field strength	Between 0 and 6 dB, from 80MHz to 3000 MHz

ANNEX A. MEASUREMENT RESULTS

ANNEX A.1. OUTPUT POWER

A.1.1. Summary

During the process of testing, the EUT was controlled Rhode & Schwarz Digital Radio. Communication tester (CMU-200) to ensure max power transmission and proper modulation. This result contains peak output power and EIRP measurements for the EUT. In all cases, output power is within the specified limits.

A.1.2. Conducted

A.1.2.1. Method of Measurements

Method of measurements please refer to CFR47 (FCC) part 2.1046 and part 22.913. The EUT was set up for the max output power with pseudo random data modulation. The power was measured with Rhode & Schwarz Spectrum Analyzer FSQ(peak). These measurements were done at 3 frequencies, 1850.2 MHz, 1880.0MHz and 1909.8MHz for PCS1900 band; 824.2MHz, 836.6MHz and 848.8MHz for GSM850 band. (bottom, middle and top of operational frequency range). These measurements were done at 3 frequencies, 1852.4 MHz, 1880.0MHz and 1907.6MHz for WCDMA Band II; 826.4MHz, 836.6MHz and 846.6MHz for WCDMA Band V. (bottom, middle and top of operational frequency range).

A.1.2.2 Test procedures:

1. The transmitter output port was connected to base station.
2. Set the EUT at maximum power through base station.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure the maximum burst average power for GSM and maximum average power for other modulation signal.

A.1.2.3 Limit:

22.913(a) Mobile stations are limited to 7watts.
24.232(c) Mobile and portable stations are limited to 2 watts.

A.1.2.4 Test Procedure:

The transmitter output power was connected to calibrated attenuator, the other end of which was connected to signal analyzer. Transmitter output power was read off the power in dBm. The power outputs at the transmitter antenna port was determined by adding the value of attenuator to the signal analyzer reading.

A.1.2.5 CDMA2000 Cellular Test Condition:

RBW	VBW	Sweep time	Span
-----	-----	------------	------

1MHz	1MHz	300ms	10MHz
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A.1.2.7 Measurement results:

CDMA2000 Cellular BC0		
Channel/fc(MHz)	Peak power (dBm)	AV power (dBm)
Mid 777/848.31	24.51	24.43
Low 384/836.52	24.70	24.63
High 1013/824.7	24.64	24.58

CDMA2000 PCS BC1		
Channel/fc(MHz)	Peak power (dBm)	AV power (dBm)
Mid 600/1880.0	24.01	23.95
Low 25/1851.25	24.17	24.10
High 1175/1908.75	24.32	23.99

1xEV-DO BC0 Release 0		
Channel/fc(MHz)	Peak power (dBm)	AV power (dBm)
Mid 777/848.31	27.60	24.31
Low 384/836.52	28.27	24.48
High 1013/824.7	28.37	24.42

1xEV-DO BC1 Release 0		
Channel/fc(MHz)	Peak power (dBm)	AV power (dBm)
Mid 600/1880.0	27.06	23.72
Low 25/1851.25	27.54	23.82
High 1175/1908.75	26.87	23.77

1xEV-DO BC0 Release A		
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Channel/fc(MHz)	Peak power (dBm)	AV power (dBm)
Mid 777/848.31	27.75	24.36
Low 384/836.52	28.43	24.61
High 1013/824.7	28.68	24.63

1xEV-DO BC1 Release A		
Channel/fc(MHz)	Peak power (dBm)	AV power (dBm)
Mid 600/1880.0	27.14	23.62
Low 25/1851.25	27.81	23.96
High 1175/1908.75	26.82	23.80

Conclusion: PASS

ANNEX A.2. Peak-to-Average Power Ratio

Method of test measurements please refer to CFR47 (FCC) part 2.1046 and part 22.913.

A.2.1 PAPR Limit

The peak-to-average power ratio (PAPR) of the transmission may not exceed 13dB

A.2.2 Test procedures

1. The EUT was connected to the spectrum analyzer and system simulator via a power divider.
2.
 - 1) Select the spectrum analyzer CCDF function.
 - 2) Set RBW $\geq$ signal's occupied bandwidth.
 - 3) Set the number of counts to a value that stabilizes the measured CCDF curve;
 - 4) Sweep time $\geq$ 1s.
3. Record the maximum PAPR level associated with a probability of 0.1%.

A.2.3 Test results:

CDMA2000 Cellular BC0			
Channel	384	777	1013
Frequency (MHz)	836.52	848.31	824.7
PAPR(dB)	6.41	6.37	6.41

CDMA2000 PCS BC1			
Channel	25	600	1175
Frequency (MHz)	1851.25	1880.0	1908.75
PAPR(dB)	6.45	6.37	6.45

1xEV-DO BC0 Release 0			
Channel	384	777	1013
Frequency (MHz)	836.52	848.31	824.7
PAPR(dB)	6.59	6.45	6.48

1xEV-DO BC1 Release 0			
Channel	25	600	1175
Frequency (MHz)	1851.25	1880.0	1908.75
PAPR(dB)	6.40	6.33	6.28

1xEV-DO BC0 Release A			
Channel	384	777	1013
Frequency (MHz)	836.52	848.31	824.7
PAPR(dB)	6.76	6.31	6.44

1xEV-DO BC1 Release A			
Channel	25	600	1175
Frequency (MHz)	1851.25	1880.0	1908.75
PAPR(dB)	6.67	6.32	6.25

Conclusion: PASS

ANNEX A.3. Occupied Bandwidth

Method of test please refer to CFR 47 (FCC) part 2.1049 and part 22 subpart .

A.3.1. Occupied Bandwidth

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 CDMA2000 Cellular, CDMA2000 PCS.

A.3.2 Test Procedure:

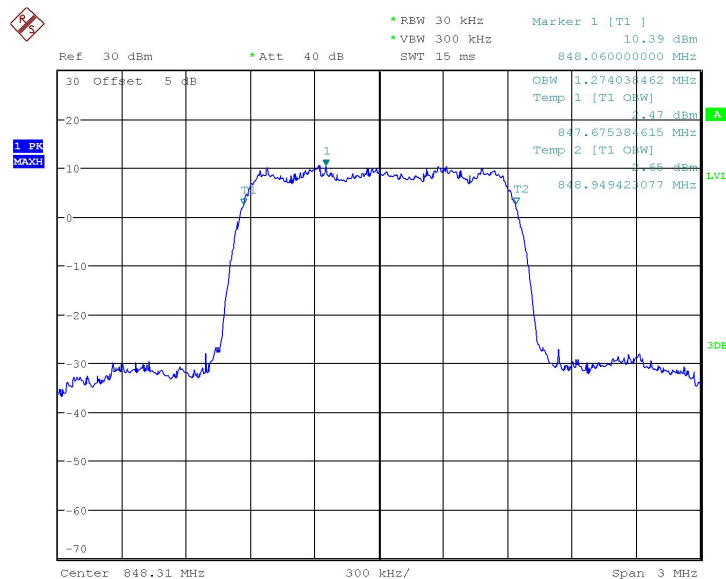
1. The EUT output RF connector was connected with a short cable to the signal analyzer.
2. RBW was set to about 1% of emission BW, VBW $\geq$ 3 times RBW,.
3. 99% bandwidth were measured, the occupied bandwidth is delta frequency between the two points where the display line intersects the signal trace.

A.3.3 Test result:

CDMA2000 Cellular BC0		
Test channel	Frequency (MHz)	99% Occupied Bandwidth(MHz)
Mid 777	848.31	1.274
Low 384	836.52	1.274
High 1013	824.7	1.274

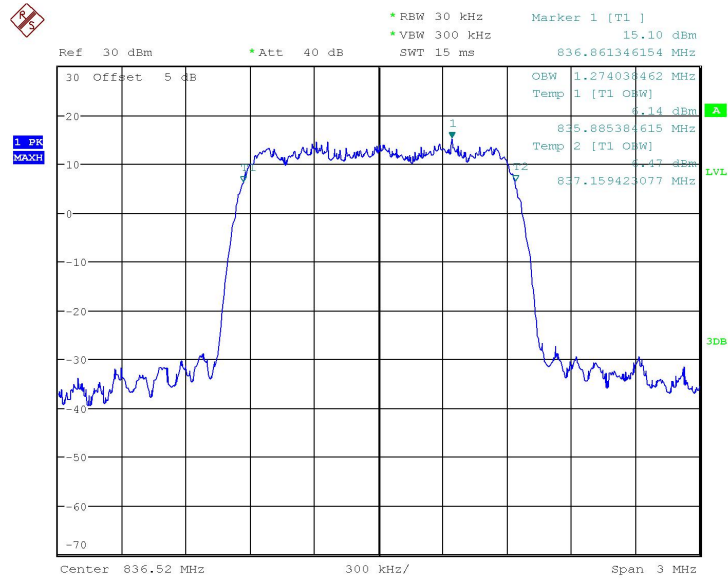
Conclusion: PASS

CDMA2000 Cellular



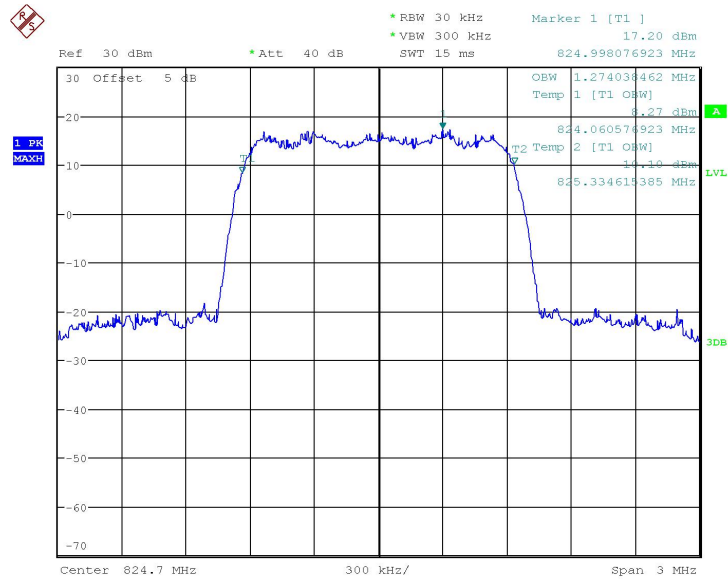
Date: 5.SEP.2018 08:11:04

Channel 777-Occupied Bandwidth (99%)



Date: 5.SEP.2018 08:12:56

Channel 384-Occupied Bandwidth (99%)



Date: 5.SEP.2018 08:13:41

Channel 1013-Occupied Bandwidth (99%)

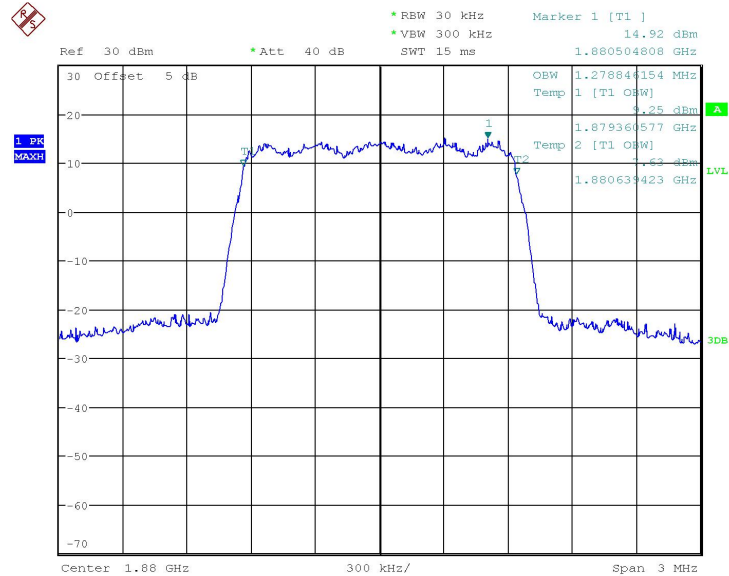
Conclusion: PASS

CDMA2000 PCS BC1		
Test channel	Frequency (MHz)	99% Occupied Bandwidth(MHz)
Mid 600	1880.0	1.279

Low 25	1851.25	1.284
High 1175	1908.75	1.288

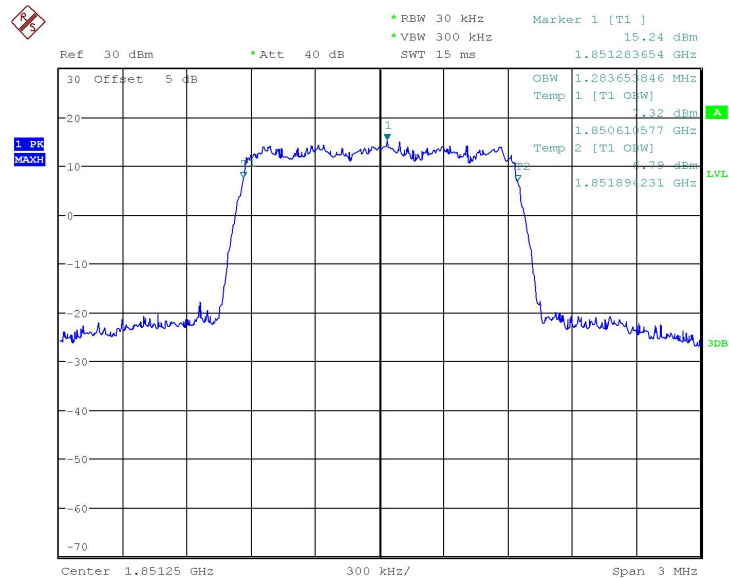
Conclusion: PASS

CDMA2000 PCS



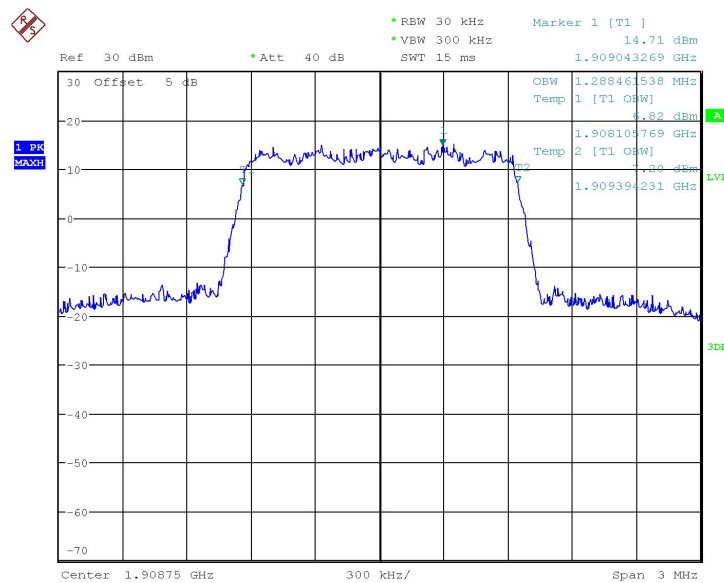
Date: 17.SEP.2018 05:15:19

Channel 600-Occupied Bandwidth



Date: 17.SEP.2018 05:16:04

Channel 25-Occupied Bandwidth



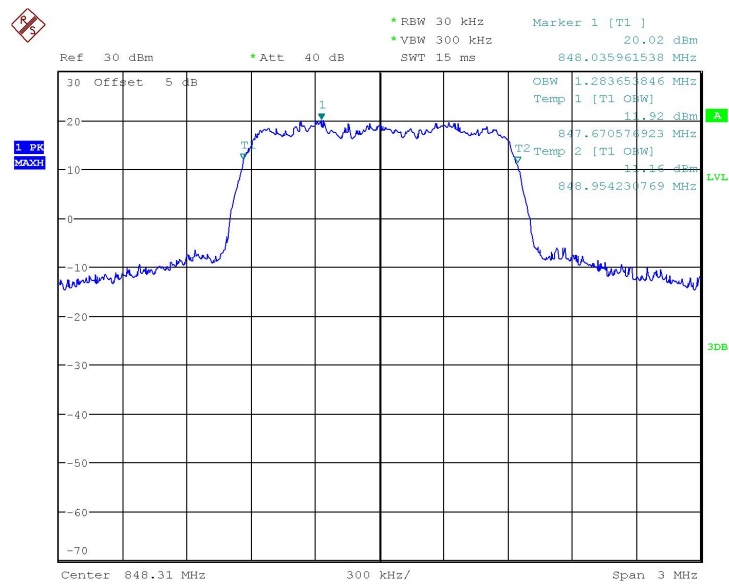
Date: 17.SEP.2018 05:16:51

Channel 1175-Occupied Bandwidth

Conclusion: PASS

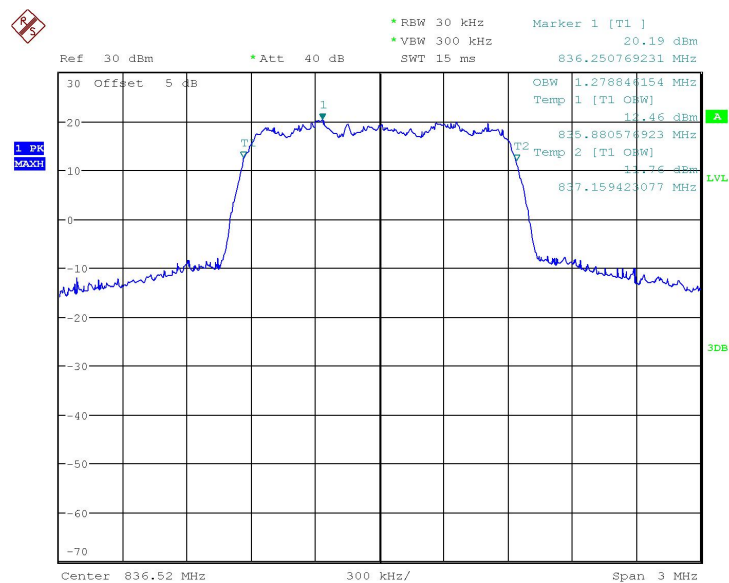
1xEV-DO BC0 Release 0		
Test channel	Frequency (MHz)	99% Occupied Bandwidth(MHz)
Mid 777	848.31	1.284
Low 384	836.52	1.279
High 1013	824.7	1.274

1xEV-DO BC0 Release 0



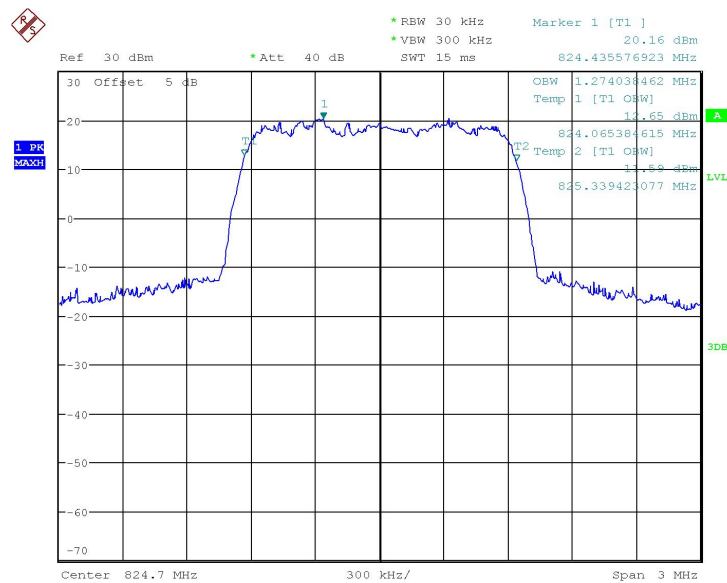
Date: 17.SEP.2018 09:01:56

Channel 777-Occupied Bandwidth (99%)



Date: 17.SEP.2018 09:06:13

Channel 384-Occupied Bandwidth (99%)



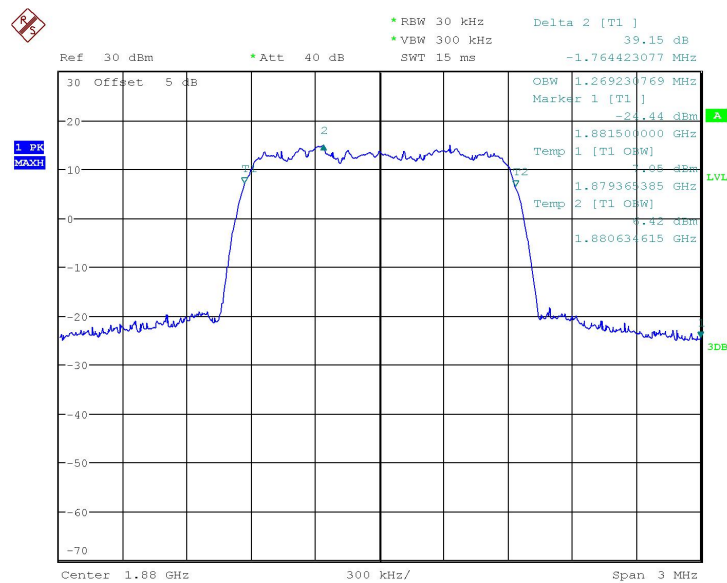
Date: 17.SEP.2018 09:08:51

Channel 1013-Occupied Bandwidth (99%)

Conclusion: PASS

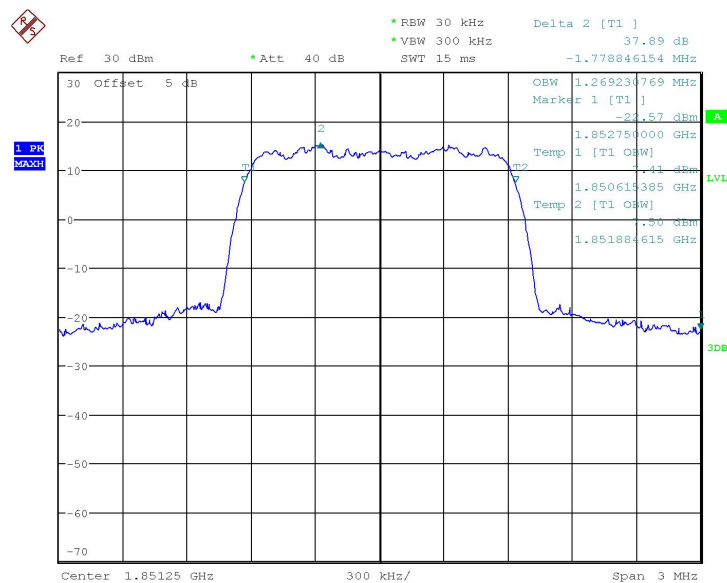
1xEV-DO BC1 Release 0		
Test channel	Frequency (MHz)	99% Occupied Bandwidth(MHz)
Mid 600	1880.0	1.269
Low 25	1851.25	1.269
High 1175	1908.75	1.284

1xEV-DO BC1 Release 0



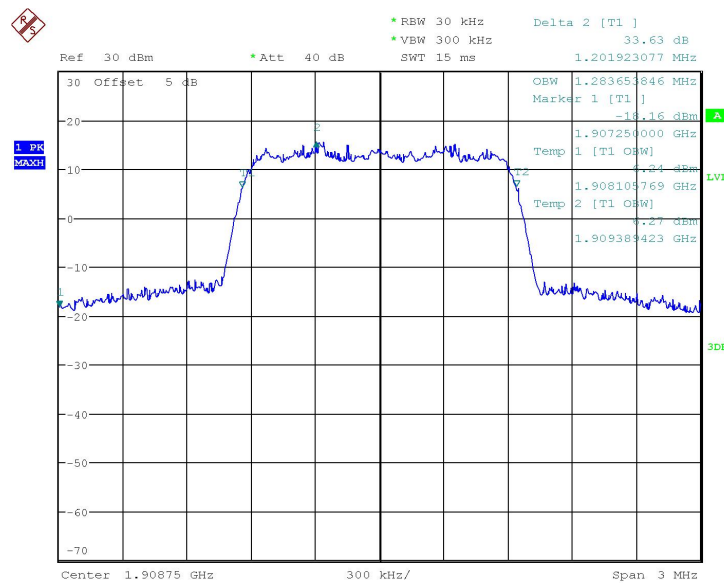
Date: 17.SEP.2018 10:03:58

Channel 600-Occupied Bandwidth



Date: 17.SEP.2018 10:48:21

Channel 25-Occupied Bandwidth

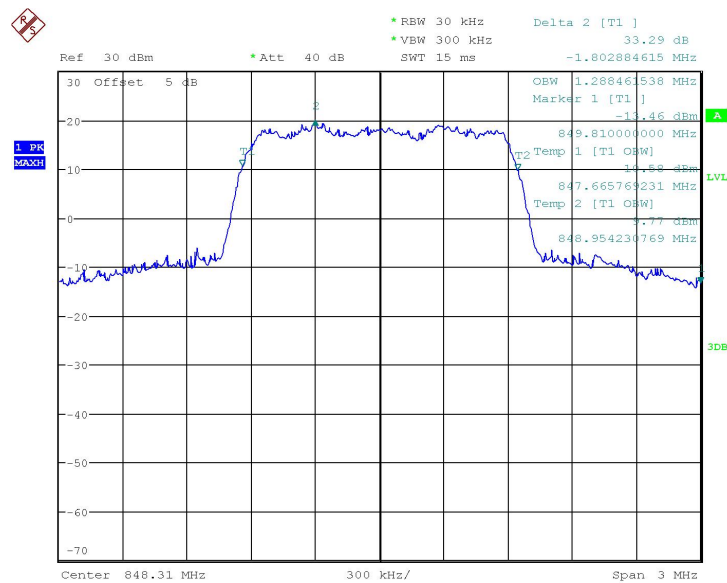


Date: 17.SEP.2018 10:49:28

Channel 1175-Occupied Bandwidth

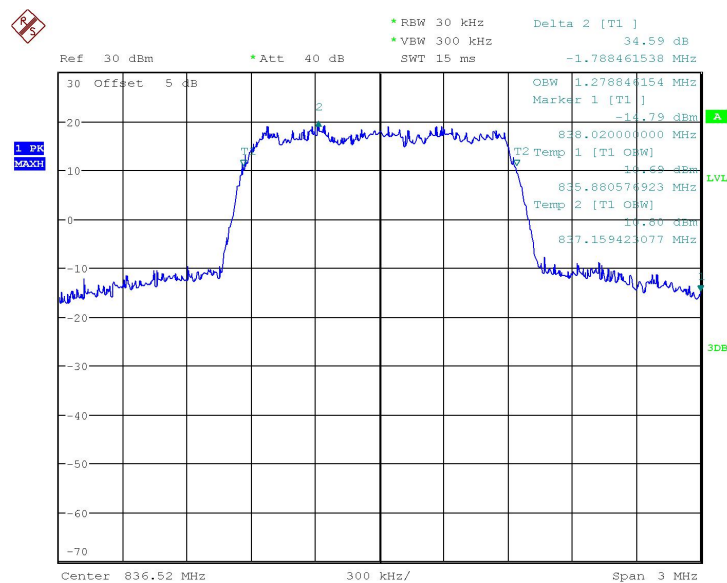
1xEV-DO BC0 Release A		
Test channel	Frequency (MHz)	99% Occupied Bandwidth(MHz)
Mid 777	848.31	1.288
Low 384	836.52	1.279
High 1013	824.7	1.274

1xEV-DO BC0 Release A



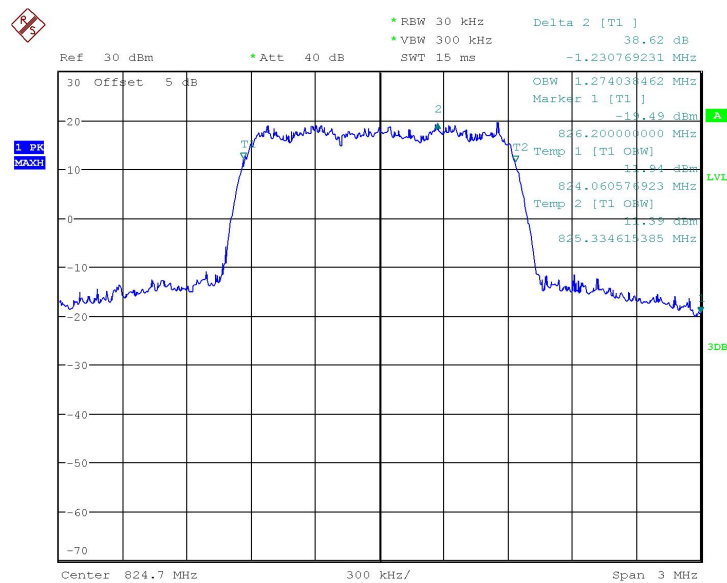
Date: 17.SEP.2018 11:26:10

Channel 777-Occupied Bandwidth (99%)



Date: 17.SEP.2018 11:27:03

Channel 384-Occupied Bandwidth (99%)



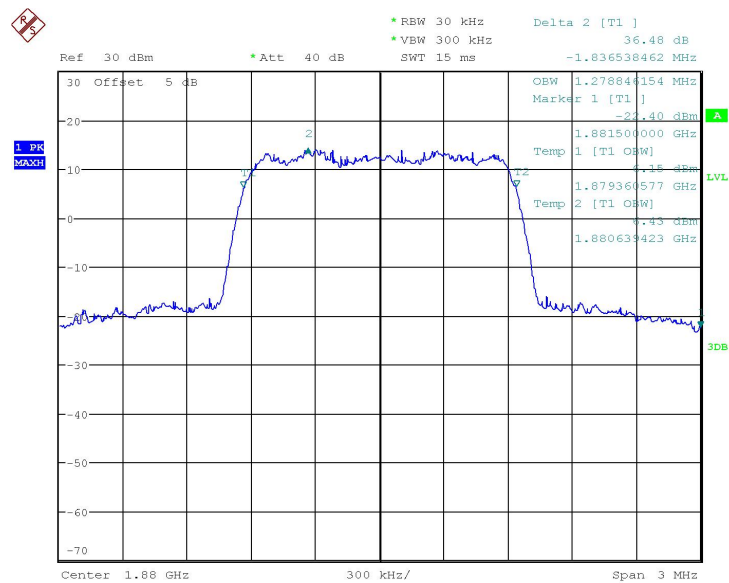
Date: 17.SEP.2018 11:27:39

Channel 1013-Occupied Bandwidth (99%)

Conclusion: PASS

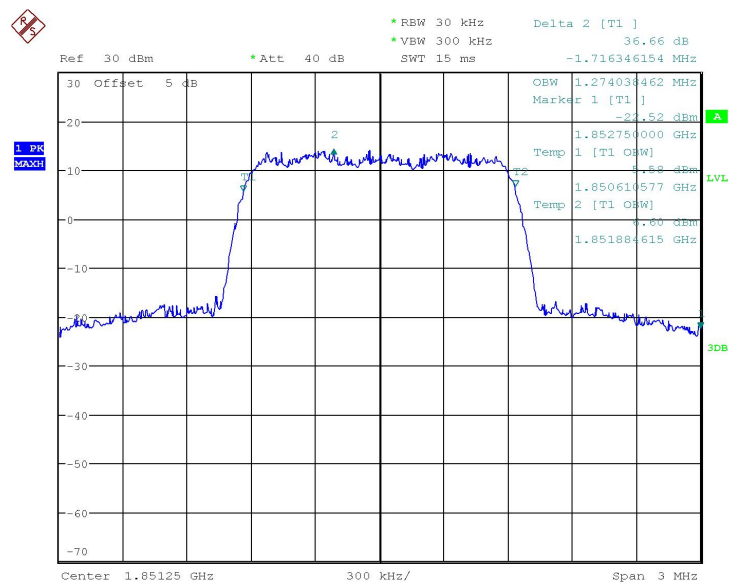
1xEV-DO BC1 Release A		
Test channel	Frequency (MHz)	99% Occupied Bandwidth(MHz)
Mid 600	1880.0	1.279
Low 25	1851.25	1.274
High 1175	1908.75	1.293

1xEV-DO BC1 Release A



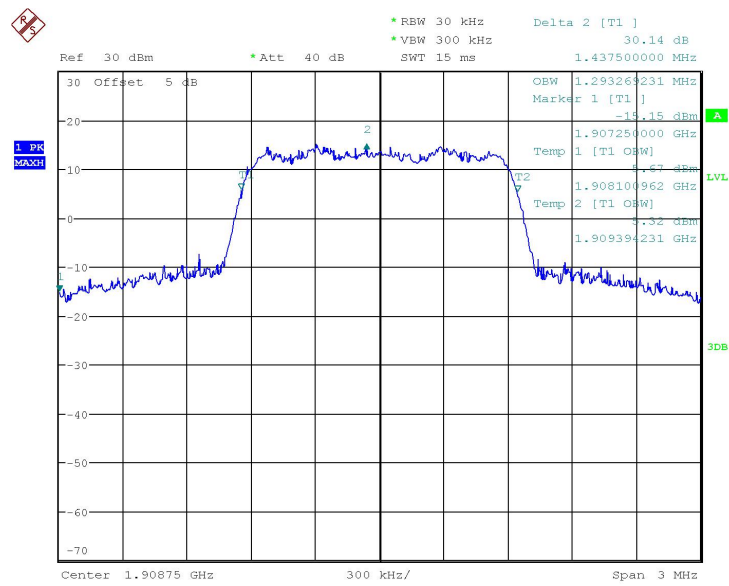
Date: 17.SEP.2018 11:06:58

Channel 600-Occupied Bandwidth



Date: 17.SEP.2018 11:07:39

Channel 25-Occupied Bandwidth



Date: 17.SEP.2018 11:08:33

Channel 1175-Occupied Bandwidth

Conclusion: PASS

ANNEX A.4. -26dB Emission Bandwidth

Method of test please refer to CFR 47 (FCC) part 2.1049 and part 22 subpart.

A.4.1. -26dB Emission Bandwidth

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 CDMA2000 Cellular, CDMA2000 PCS.

A.4.2 Test Procedure:

1. The EUT output RF connector was connected with a short cable to the signal analyzer.
2. RBW was set to about 1% of emission BW, VBW $\geq$ 3 times RBW,.
3. 26dB bandwidth were measured, the occupied bandwidth is delta frequency between the two points where the display line intersects the signal trace.

A.4.3 Measurement methods:

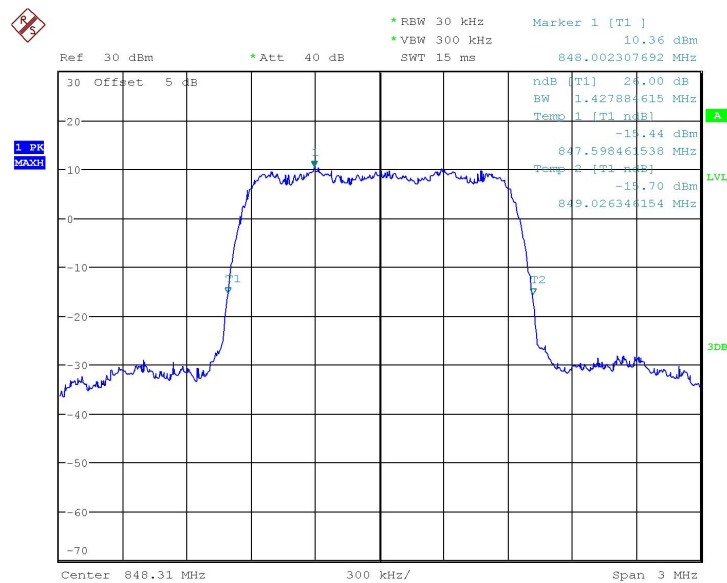
For CDMA: signal analyzer setting as: RBW=20KHz;VBW=200KHz;Span=3MHz.

A.4.4 Test results:

CDMA2000 Cellular BC0		
Test channel	Frequency (MHz)	-26dBc Emission Bandwidth(MHz)
Mid 777	848.31	1.428
Low 384	836.52	1.423
High 1013	824.7	1.438

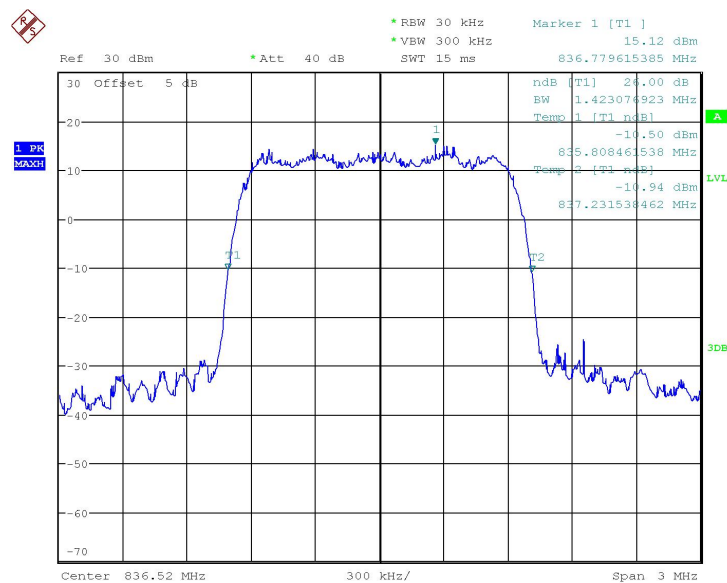
Conclusion: PASS

CDMA2000 Cellular



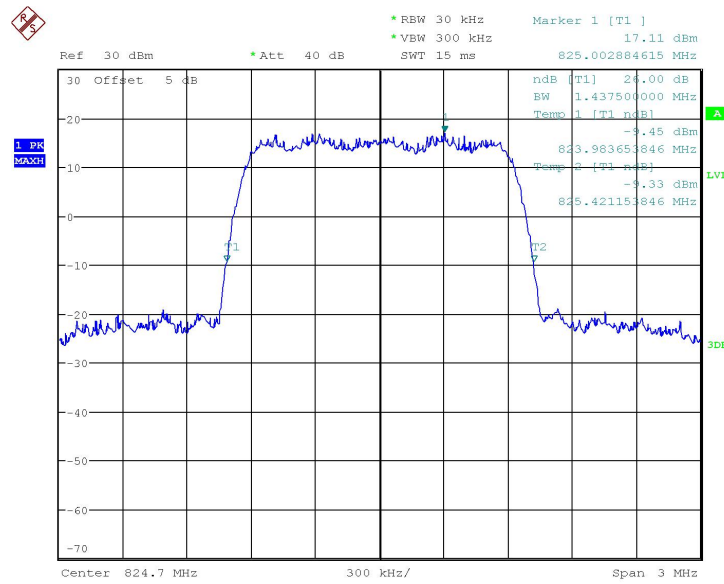
Date: 5.SEP.2018 08:15:12

Channel 777- Emission Bandwidth (-26dBc BW)



Date: 5.SEP.2018 08:15:52

Channel 384- Emission Bandwidth (-26dBc BW)

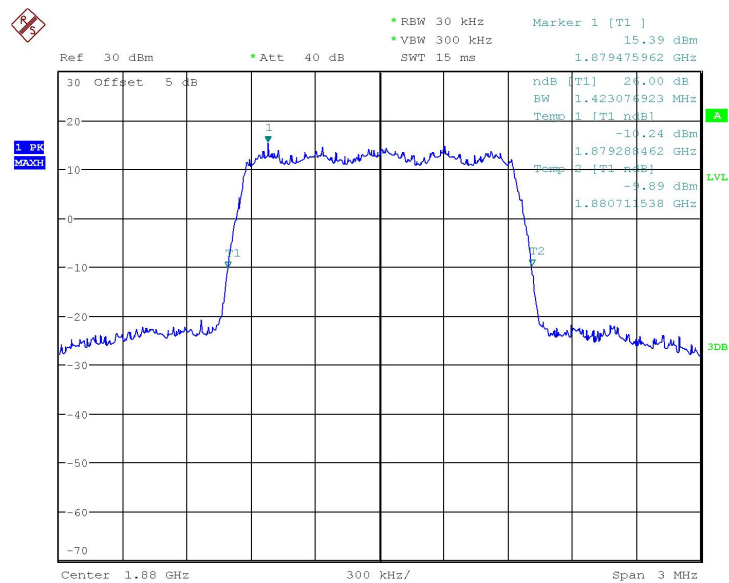


Date: 5.SEP.2018 08:16:26

Channel 1013- Emission Bandwidth (-26dBc BW)

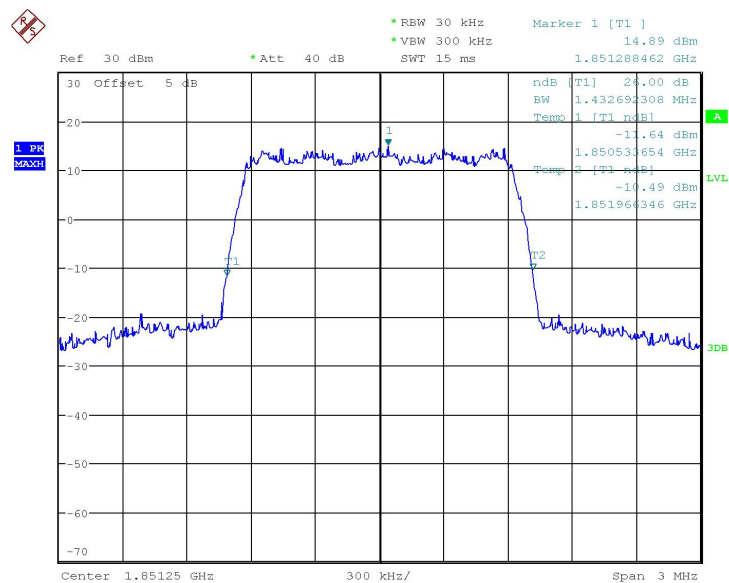
CDMA2000 PCS BC1		
Test channel	Frequency (MHz)	-26dBc Emission Bandwidth(MHz)
Mid 600	1880.0	1.423
Low 25	1851.25	1.433
High 1175	1908.75	1.452

Conclusion: PASS
CDMA2000 PCS BC1



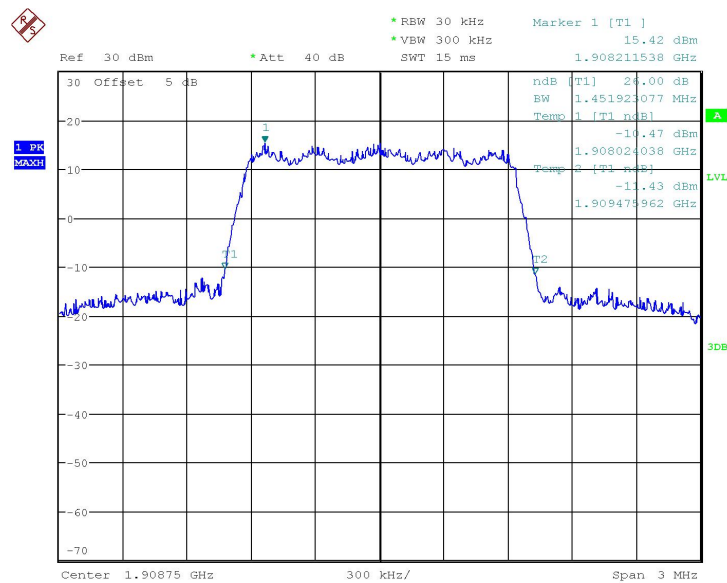
Date: 17.SEP.2018 05:18:21

Channel 600- Emission Bandwidth (-26dBc BW)



Date: 17.SEP.2018 05:18:54

Channel 25- Emission Bandwidth (-26dBc BW)



Date: 17.SEP.2018 05:19:31

Channel 1175- Emission Bandwidth (-26dBc BW)

Conclusion: PASS

1xEV-DO BC0 Release 0		
Test channel	Frequency (MHz)	-26dBc Emission Bandwidth(MHz)
Mid 777	848.31	1.462
Low 384	836.52	1.442
High 1013	824.7	1.428

Conclusion: PASS

1xEV-DO BC0 Release 0