FCC RADIO TEST REPORT
FCC ID: 2ASHJPT7003

Product: POS Terminal
Trade Mark: N/A
Model No.: PT7003
Family Model: PT7003S, PT7003M, PT7003MS
Report No.: S18110702302E005
Issue Date: 14 Feb. 2019

Prepared for

Tousei Anlinx Co.,Ltd.
2nd floor,No.248,HuaQing road,QingHu, LongHua district,
Shenzhen City,China 518109.

Prepared by

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TABLE OF CONTENTS

1 TEST RESULT CERTIFICATION 3

2 SUMMARY OF TEST RESULTS 4

3 FACILITIES AND ACCREDITATIONS 5

3.1 FACILITIES 5
3.2 LABORATORY ACCREDITATIONS AND LISTINGS 5
3.3 MEASUREMENT UNCERTAINTY 5

4 GENERAL DESCRIPTION OF EUT 6

5 DESCRIPTION OF TEST MODES 8

6 SETUP OF EQUIPMENT UNDER TEST 9

6.1 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM 9
6.2 SUPPORT EQUIPMENT 10
6.3 EQUIPMENTS LIST FOR ALL TEST ITEMS 11

7 TEST REQUIREMENTS 12

7.1 FIELD STRENGTH OF SPURIOUS RADIATION 12
7.2 EFFECTIVE RADIATED POWER AND EFFECTIVE ISOTROPIC RADIATED POWER 20
7.3 CONDUCTED OUTPUT POWER 24
7.4 FREQUENCY STABILITY 28
7.5 PEAK-TO-AVERAGE RATIO 32
7.6 26DB BANDWIDTH AND 99% OCCUPIED BANDWIDTH 37
7.7 CONDUCTED BAND EDGE 42
7.8 CONDUCTED SPURIOUS EMISSION AT ANTENNA TERMINAL 46

1 TEST RESULT CERTIFICATION

Applicant's name ..... :	Tousei Anlinx Co.,Ltd.
Address ..... :	2nd floor,No.248,HuaQing road,QingHu, LongHua district,Shenzhen City,China 518109
Manufacturer's Name ..... :	Tousei Anlinx Co.,Ltd.
Address ..... :	2nd floor,No.248,HuaQing road,QingHu, LongHua district,Shenzhen City,China 518109
Product description	
Product name ..... :	POS Terminal
Model and/or type reference ..... :	PT7003
Family Model ..... :	PT7003S, PT7003M, PT7003MS

Measurement Procedure Used:

APPLICABLE STANDARDS	
APPLICABLE STANDARD/ TEST PROCEDURE	TEST RESULT
47 CFR Part 2, Part 22H ANSI/TIA-603-E-2016 FCC KDB 971168 D01 Power Meas License Digital Systems v03 ANSI C63.26:2015	Complied

This device described above has been tested by Shenzhen NTEK Testing Technology Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
This report shall not be reproduced except in full, without the written approval of Shenzhen NTEK Testing Technology Co., Ltd., this document may be altered or revised by Shenzhen NTEK Testing Technology Co., Ltd., personnel only, and shall be noted in the revision of the document.
The test results of this report relate only to the tested sample identified in this report.

Date of Test : 08 Nov. 2018 ~ 13 Feb. 2019

Testing Engineer : Eileen Liu.
(Eileen Liu)

Technical Manager : Jason chen
(Jason Chen)

Authorized Signatory : Sam. Chen
(Sam Chen)

2 SUMMARY OF TEST RESULTS

FCC Part22, Subpart H& ANSI C63.26-2015			
FCC Rule	**Test Item**	**Verdict**	**Remark**
2.1046	Conducted Output Power	PASS	
Subclause 5.2.3.4 of ANSI C63.26-2015	Peak-to-Average Ratio	PASS	
2.1049 22.917(b)	Occupied Bandwidth	PASS	
2.1051 22.917(a)	Band Edge	PASS	
22.913(a)(2)	Effective Radiated Power	PASS	
2.1053 22.917(a)	Field Strength of Spurious Radiation	PASS	
2.1055 22.355	Frequency Stability for Temperature & Voltage	PASS	
2.1051 22.917(a)	Conducted Emission	PASS	

Remark:
1. "N/A" denotes test is not applicable in this Test Report.
2. All test items were verified and recorded according to the standards and without any deviation during the test.
3. No modifications are made to the EUT during all test items.

3 FACILITIES AND ACCREDITATIONS

3.1 FACILITIES

All measurement facilities used to collect the measurement data are located at
1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R. China.
The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

3.2 LABORATORY ACCREDITATIONS AND LISTINGS

Site Description

CNAS-Lab.	:	The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2005) The Certificate Registration Number is L5516.
IC-Registration		The Certificate Registration Number is 9270A-1.
FCC- Accredited		Test Firm Registration Number: 463705. Designation Number: CN1184
A2LA-Lab.		The Certificate Registration Number is 4298.01 This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).
Name of Firm	:	Shenzhen NTEK Testing Technology Co., Ltd.
Site Location	:	1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen 518126 P.R. China.

3.3 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.5dB

4 GENERAL DESCRIPTION OF EUT

Product Feature and Specification	
Equipment	POS Terminal
Trade Mark	N/A
FCC ID	2ASHJPT7003
Model No.	PT7003
Family Model	PT7003S, PT7003M, PT7003MS
Model Difference	All the model are the same circuit and RF module, except the appearance and color.
Operating Frequency	☒GSM850: TX824.2MHz~848.8MHz /RX869.2MHz~893.8MHz; ☒UMTS FDD Band V: TX826.4MHz~846.6MHz /RX871.4MHz~891.6MHz; ☐PCS1900: TX1850.2MHz~1909.8MHz /RX1930.2MHz~1989.8MHz; ☐UMTS FDD Band II: TX1852.4MHz~1907.6MHz /RX1932.4MHz~1987.6MHz; ☒CDMA2000 BC0: TX824.70MHz~848.31MHz /RX869MHz~894MHz;
Modulation	☒GMSK for GSM/GPRS; ☒8PSK for EGPRS; ☒QPSK for UMTS bands; ☒QPSK& BPSK for CDMA2000;
GPRS Class	☒Multi-Class12 ☒Only 4 timeslots are used for GPRS
SIM CARD	The Equipment has one SIM Card socket
Antenna Type	PIFA Antenna
Antenna Gain	1.41dBi
Power supply	☒DC supply: DC 7.4V/3900mAh from battery or DC 9V from adapter.
	☒Adapter supply: Adapter 2: Model:FJ-SW20180902500D Input: 100-240V~50/60Hz 1.5A Max; Output: 9.0V⎓2500mA Adapter 1: Model:P24A090250 Input: 100-240V~50/60Hz 0.6A ; Output: 9.0V⎓2.5A
HW Version	V1.02
SW Version	V1.05

Note: Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual. The High Voltage 8.5V and Low Voltage 6.3V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.

Revision History

Report No.	Version	Description	Issued Date
S18110702302E005	Rev.01	Initial issue of report	Feb 14, 2019

5 DESCRIPTION OF TEST MODES

During the testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication Tester(CMU 200) to ensure max power transmission and proper modulation. Three channels (The low channel, the middle channel and the high channel) were chosen for testing on CDMA2000 BC0, GSM/GPRS/EGPRS 850 and WCDMA Band V /HSDPA/HSUPA frequency band.
Note: GSM/GPRS/EGPRS 850, WCDMA/HSDPA/HSUPA band V, CDMA2000 BC0 modes have been tested during the test. the worst condition (GSM850, RMC 12.2k, CDMA2000 1xRTT BC0& 1xEVDO Rev A BC0) be recorded in the test report if no other modes test data.

Antenna port conducted and radiated test items were performed according to KDB 971168 D01 Power Meas. License Digital Systems v03 with maximum output power.
Radiated measurements were performed with rotating EUT in different three orthogonal test planes to find the maximum emission.
Radiated emissions were investigated as following frequency range:
30 MHz to 10th harmonic for GSM850/UMTS FDD Band V/ CDMA2000.
All modes and data rates and positions were investigated.

Test modes are chosen to be reported as the worst case configuration below:

Test Modes		
Band	For Conducted Test Cases	For Radiated Test Cases
GSM 850	GSM Link	GSM Link
UMTS Band V	RMC 12.2Kbps Link	RMC 12.2Kbps Link
CDMA2000	1xRTT& 1xEVDO Rev A	1xRTT& 1xEVDO Rev A

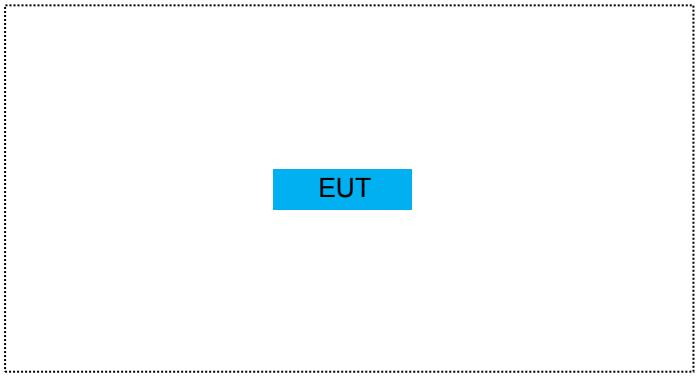
Test Frequency and Channels:

Frequency Band	☒ GSM 850		☒UMTS Band V		☒CDMA2000 BC0	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
CH_H	251	848.8	4233	846.6	777	848.31
CH_M	190	836.6	4183	836.6	384	836.52
CH_L	128	824.2	4132	826.4	1013	824.70

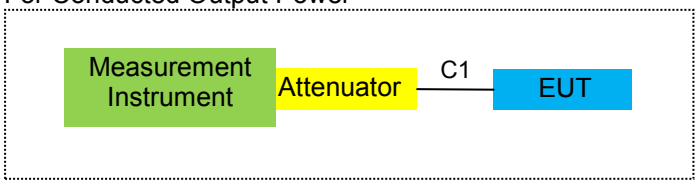
6 SETUP OF EQUIPMENT UNDER TEST

6.1 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM

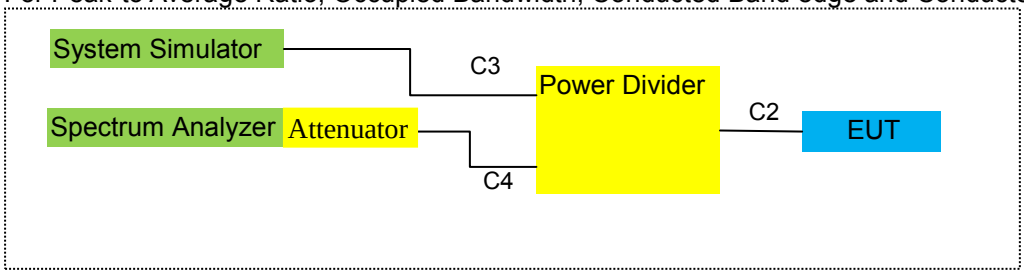
For Radiated Test Cases



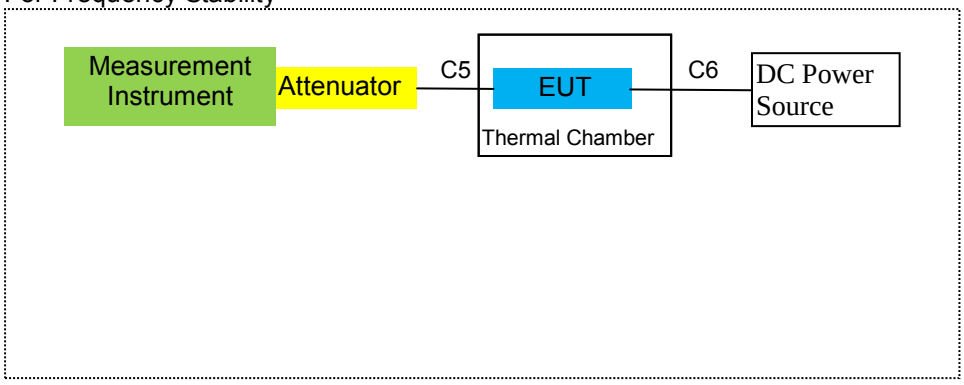
For Conducted Output Power



For Peak-to Average Ratio, Occupied Bandwidth, Conducted Band edge and Conducted Spurious Emission



For Frequency Stability



6.2 SUPPORT EQUIPMENT

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note

Item	Cable Type	Shielded Type	Ferrite Core	Length
C-1	RF Cable	YES	NO	0.1m
C-2	RF Cable	YES	NO	0.1m
C-3	RF Cable	YES	NO	0.1m
C-4	RF Cable	YES	NO	0.2m
C-5	RF Cable	YES	NO	0.2m
C-6	DC Cable	NO	NO	1.0m

Notes:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.
(3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

6.3 EQUIPMENTS LIST FOR ALL TEST ITEMS

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	MXA Signal Analyzer	Agilent	N9020A	MY49100060	2018.10.08	2019.10.07	1 year
2	Test Receiver	R&S	ESPI	101318	2018.05.19	2019.05.18	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2018.04.08	2019.04.07	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2018.05.19	2019.05.18	1 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2018.05.19	2019.05.18	1 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2018.11.03	2019.11.02	1 year
7	Amplifier	EM	EM-30180	060538	2018.08.05	2019.08.04	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2018.05.19	2019.05.18	1 year
9	Power Meter	R&S	NRVS	100696	2018.08.05	2019.08.04	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2018.05.19	2019.05.18	1 year
11	Test Cable	N/A	R-01	N/A	2017.04.21	2020.04.20	3 year
12	Test Cable	N/A	R-02	N/A	2017.04.21	2020.04.20	3 year
13	Test Cable	N/A	R-03	N/A	2017.04.21	2020.04.20	3 year
14	Test Receiver	R&S	ESCI	101160	2018.05.19	2019.05.18	1 year
15	LISN	R&S	ENV216	101313	2018.04.19	2019.04.18	1 year
16	LISN	EMCO	3816/2	00042990	2018.05.19	2019.05.18	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2018.05.19	2019.05.18	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2017.04.21	2020.04.20	3 year
19	Test Cable	N/A	C01	N/A	2017.04.21	2020.04.20	3 year
20	Test Cable	N/A	C02	N/A	2017.04.21	2020.04.20	3 year
21	Test Cable	N/A	C03	N/A	2018.04.19	2019.04.18	1 year
22	Attenuator	MCE	24-10-34	BN9258	2018.04.08	2019.04.07	1 year
23	Spectrum Analyzer	agilent	e4440a	us44300399	2018.05.19	2019.05.18	1 year
24	test receiver	R&S	ESCI	a0304218	2018.05.19	2019.05.18	1 year
25	Communication Tester	R&S	CMU200	A0304247	2018.10.08	2019.10.07	1 year
26	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2018.05.19	2019.05.18	1 year
27	DC Power Source	N/A	PS-6005D	20170402923	2017.06.06	2020.06.05	3 year
28	COMMUNICATION TESTER	R&S	CMW500	148500	2018.05.17	2019.05.18	1 year

Note: Each piece of equipment is scheduled for calibration once a year except the Test Cable& DC Power Source which is scheduled for calibration every 3 years.

7 TEST REQUIREMENTS

7.1 FIELD STRENGTH OF SPURIOUS RADIATION

7.1.1 Applicable Standard

According to FCC KDB 971168 D01 v03 Section 5.8 and ANSI/TIA-603-E-2016 Section 2.2.12

7.1.2 Conformance Limit

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

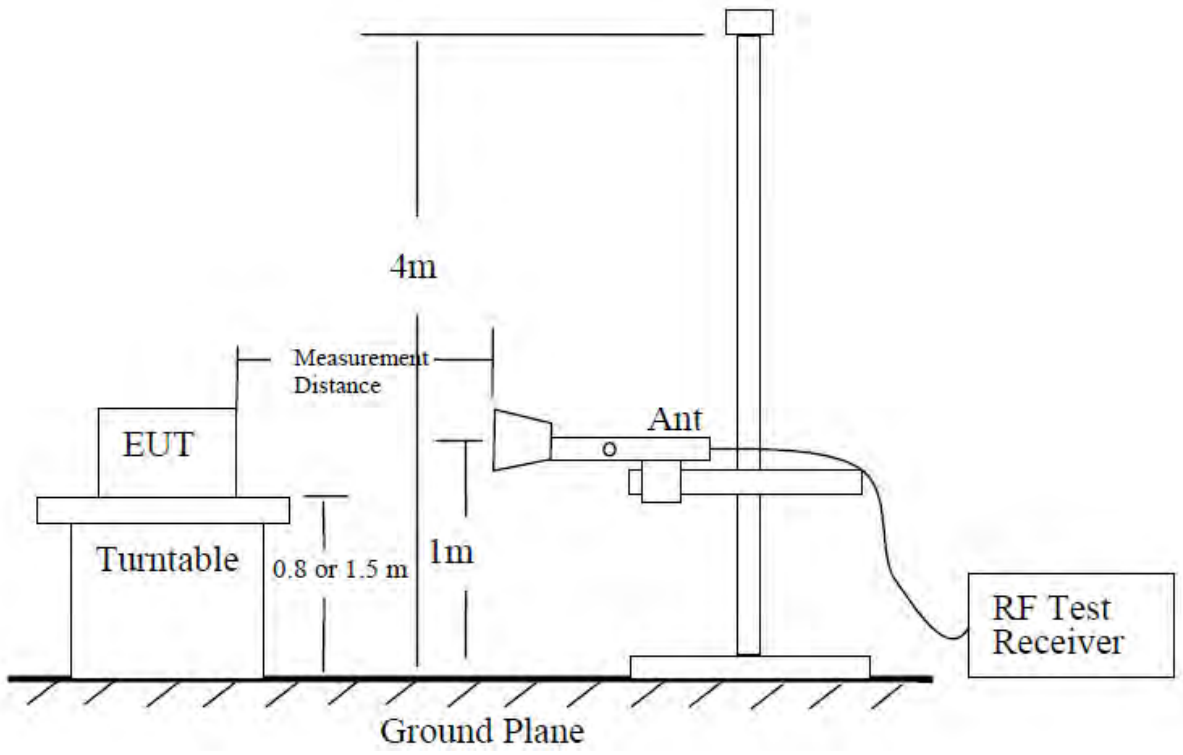
7.1.3 Measuring Instruments

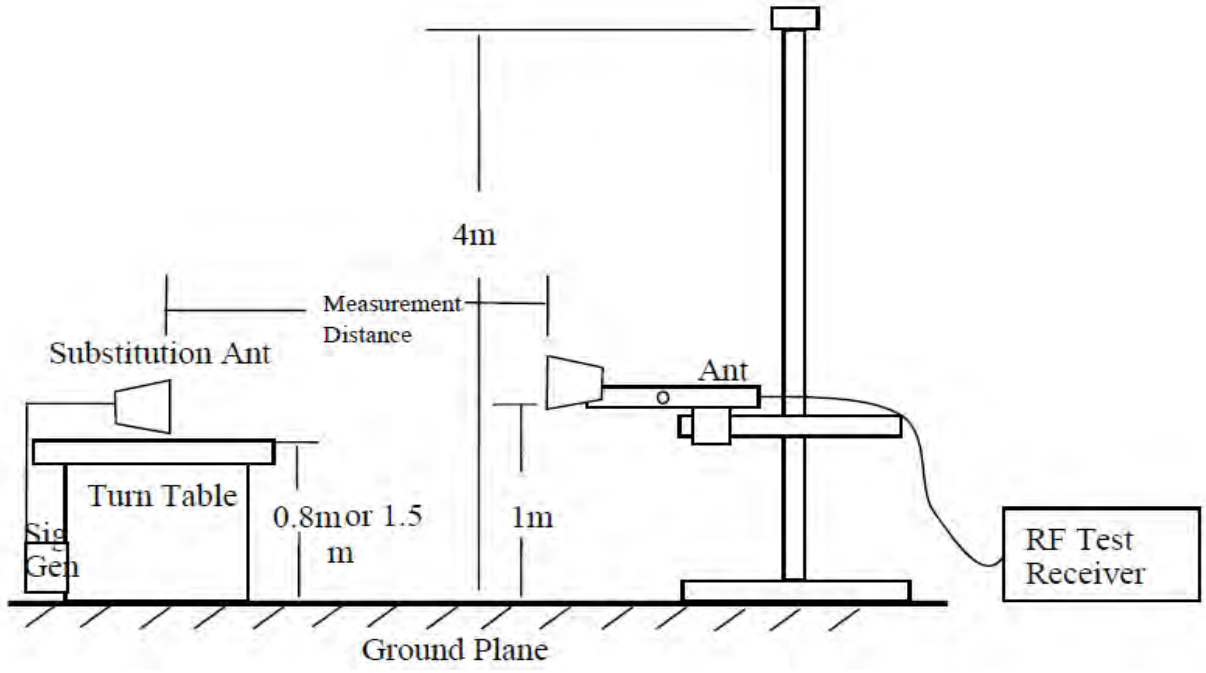
The Measuring equipment is listed in the section 6.3 of this test report.

7.1.4 Test Configuration

According to the ANSI/TIA-603-E-2016 test method, The Receiver or Spectrum was scanned from 9 KHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz The resolution bandwidth is set as outlined in Part 24.238, Part 22.917. The spectrum is scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of WCDMA Band II / WCDMA Band V / GSM 850 / GSM 1900.

TEST CONFIGURATION





7.1.5 Test Procedure

1. EUT was placed on a 0.8 meter(For frequency above 1G, EUT should be placed on 1.5m) high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.50 meter. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in three channels (High, Middle, Low) were measured with peak detector.
2. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
3. The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz, And the maximum value of the receiver should be recorded as (P_r).
4. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (SG Level) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (P_r). The power of signal source (SG Level) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
5. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Cable Loss) ,the Substitution Antenna Gain should be recorded after test.
   The measurement results are obtained as described below:
   Power(EIRP)= SG Level- Cable Loss+ Antenna Gain
6. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
7. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.

7.1.6 Test Results

EUT:	POS Terminal	Model No.:	PT7003
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM/GPRS/EGPRS 850/ UMTS band V/ CDMA2000 1xRTT 850MHz BC0/ CDMA2000 EVDO-Rev A 850MHz	Test By:	Eileen Liu

■ Radiated Spurious Emission

***GSM* 850**							
Frequency	SG Level	Cable Loss	Antenna Gain	Absolute Level	Limit	Over Limit	Polarity
(MHz)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dBm)	
Test Results for Channel 128/824.2 MHz							
1648.4	-52.95	2.80	27.50	-28.25	-13	-15.25	Vertical
1648.4	-53.61	2.80	27.50	-28.91	-13	-15.91	Horizontal
2472.6	-51.14	2.91	27.80	-26.25	-13	-13.25	Vertical
2472.6	-52.98	2.91	27.80	-28.09	-13	-15.09	Horizontal
3296.8	-52.98	4.02	29.87	-27.13	-13	-14.13	Vertical
3296.8	-50.33	4.02	29.87	-24.48	-13	-11.48	Horizontal
Test Results for Channel 190/836.6 MHz							
1673.2	-53.12	2.80	27.48	-28.44	-13	-15.44	Vertical
1673.2	-52.28	2.80	27.48	-27.60	-13	-14.60	Horizontal
2509.8	-52.57	2.91	27.70	-27.78	-13	-14.78	Vertical
2509.8	-51.64	2.91	27.70	-26.85	-13	-13.85	Horizontal
3346.4	-51.87	4.02	29.82	-26.07	-13	-13.07	Vertical
3346.4	-52.66	4.02	29.82	-26.86	-13	-13.86	Horizontal
Test Results for Channel 251/848.8 MHz							
1697.6	-52.64	2.80	27.42	-28.02	-13	-15.02	Vertical
1697.6	-55.58	2.80	27.42	-30.96	-13	-17.96	Horizontal
2546.4	-52.98	2.91	27.68	-28.21	-13	-15.21	Vertical
2546.4	-53.64	2.91	27.68	-28.87	-13	-15.87	Horizontal
3395.2	-54.41	4.02	29.80	-28.63	-13	-15.63	Vertical
3395.2	-52.57	4.02	29.80	-26.79	-13	-13.79	Horizontal

Remark:
1. We were tested all Configuration refer 3GPP TS134 121.
2. Absolute Level = SG Level- Cable Loss+ Antenna Gain
3. Over Limit= Absolute Level (dBm)-Limit(dBm)

***GPRS* 850**							
Frequency	SG Level	Cable Loss	Antenna Gain	Absolute Level	Limit	Over Limit	Polarity
(MHz)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dBm)	
Test Results for Channel 128/824.2 MHz							
1648.4	-51.14	2.80	27.50	-26.44	-13	-13.44	Vertical
1648.4	-52.68	2.80	27.50	-27.98	-13	-14.98	Horizontal
2472.6	-53.92	2.91	27.80	-29.03	-13	-16.03	Vertical
2472.6	-54.02	2.91	27.80	-29.13	-13	-16.13	Horizontal
3296.8	-52.26	4.02	29.87	-26.41	-13	-13.41	Vertical
3296.8	-54.62	4.02	29.87	-28.77	-13	-15.77	Horizontal
Test Results for Channel 190/836.6 MHz							
1673.2	-53.12	2.80	27.48	-28.44	-13	-15.44	Vertical
1673.2	-52.64	2.80	27.48	-27.96	-13	-14.96	Horizontal
2509.8	-51.47	2.91	27.70	-26.68	-13	-13.68	Vertical
2509.8	-52.68	2.91	27.70	-27.89	-13	-14.89	Horizontal
3346.4	-53.62	4.02	29.82	-27.82	-13	-14.82	Vertical
3346.4	-52.22	4.02	29.82	-26.42	-13	-13.42	Horizontal
Test Results for Channel 251/848.8 MHz							
1697.6	-51.16	2.80	27.42	-26.54	-13	-13.54	Vertical
1697.6	-52.64	2.80	27.42	-28.02	-13	-15.02	Horizontal
2546.4	-54.47	2.91	27.68	-29.70	-13	-16.70	Vertical
2546.4	-55.58	2.91	27.68	-30.81	-13	-17.81	Horizontal
3395.2	-53.62	4.02	29.80	-27.84	-13	-14.84	Vertical
3395.2	-52.68	4.02	29.80	-26.90	-13	-13.90	Horizontal

Remark:
1. We were tested all Configuration refer 3GPP TS134 121.
2. Absolute Level = SG Level- Cable Loss+ Antenna Gain
3. Over Limit= Absolute Level (dBm)-Limit(dBm)

***EGPRS* 850**							
Frequency	SG Level	Cable Loss	Antenna Gain	Absolute Level	Limit	Over Limit	Polarity
(MHz)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dBm)	
Test Results for Channel 128/824.2 MHz							
1648.4	-52.64	2.80	27.50	-27.94	-13	-14.94	Vertical
1648.4	-53.41	2.80	27.50	-28.71	-13	-15.71	Horizontal
2472.6	-54.47	2.91	27.80	-29.58	-13	-16.58	Vertical
2472.6	-53.95	2.91	27.80	-29.06	-13	-16.06	Horizontal
3296.8	-52.24	4.02	29.87	-26.39	-13	-13.39	Vertical
3296.8	-52.61	4.02	29.87	-26.76	-13	-13.76	Horizontal
Test Results for Channel 190/836.6 MHz							
1673.2	-51.64	2.80	27.48	-26.96	-13	-13.96	Vertical
1673.2	-52.55	2.80	27.48	-27.87	-13	-14.87	Horizontal
2509.8	-53.64	2.91	27.70	-28.85	-13	-15.85	Vertical
2509.8	-53.47	2.91	27.70	-28.68	-13	-15.68	Horizontal
3346.4	-55.18	4.02	29.82	-29.38	-13	-16.38	Vertical
3346.4	-52.85	4.02	29.82	-27.05	-13	-14.05	Horizontal
Test Results for Channel 251/848.8 MHz							
1697.6	-51.62	2.80	27.42	-27.00	-13	-14.00	Vertical
1697.6	-52.95	2.80	27.42	-28.33	-13	-15.33	Horizontal
2546.4	-54.26	2.91	27.68	-29.49	-13	-16.49	Vertical
2546.4	-53.26	2.91	27.68	-28.49	-13	-15.49	Horizontal
3395.2	-54.41	4.02	29.80	-28.63	-13	-15.63	Vertical
3395.2	-52.98	4.02	29.80	-27.20	-13	-14.20	Horizontal

Remark:
1. We were tested all Configuration refer 3GPP TS134 121.
2. Absolute Level = SG Level- Cable Loss+ Antenna Gain
3. Over Limit= Absolute Level (dBm)-Limit(dBm)

WCDMA Band V							
Frequency	SG Level	Cable Loss	Antenna Gain	Absolute Level	Limit	Over Limit	Polarity
(MHz)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dBm)	
Test Results for Channel 4233/846.6MHz							
1673.2	-53.64	2.80	27.50	-28.94	-13	-15.94	Vertical
1673.2	-53.61	2.80	27.50	-28.91	-13	-15.91	Horizontal
2509.8	-51.87	2.91	27.80	-26.98	-13	-13.98	Vertical
2509.8	-54.42	2.91	27.80	-29.53	-13	-16.53	Horizontal
3346.4	-53.62	4.02	29.87	-27.77	-13	-14.77	Vertical
3346.4	-52.98	4.02	29.87	-27.13	-13	-14.13	Horizontal
Test Results for Channel 4183/836.6MHz							
1673.2	-49.98	2.80	27.48	-25.30	-13	-12.30	Vertical
1673.2	-51.41	2.80	27.48	-26.73	-13	-13.73	Horizontal
2509.8	-52.67	2.91	27.70	-27.88	-13	-14.88	Vertical
2509.8	-55.26	2.91	27.70	-30.47	-13	-17.47	Horizontal
3346.4	-53.62	4.02	29.82	-27.82	-13	-14.82	Vertical
3346.4	-52.21	4.02	29.82	-26.41	-13	-13.41	Horizontal
Test Results for Channel 4132/826.4MHz							
1652.8	-54.46	2.80	27.42	-29.84	-13	-16.84	Vertical
1652.8	-52.75	2.80	27.42	-28.13	-13	-15.13	Horizontal
2479.2	-53.62	2.91	27.68	-28.85	-13	-15.85	Vertical
2479.2	-53.26	2.91	27.68	-28.49	-13	-15.49	Horizontal
3305.6	-52.24	4.02	29.80	-26.46	-13	-13.46	Vertical
3305.6	-51.67	4.02	29.80	-25.89	-13	-12.89	Horizontal

Remark:
1. We were tested all Configuration refer 3GPP TS134 121.
2. Absolute Level = SG Level- Cable Loss+ Antenna Gain
3. Over Limit= Absolute Level (dBm)-Limit(dBm)

CDMA2000 1xRTT 850MHz BC0							
Frequency	SG Level	Cable Loss	Antenna Gain	Absolute Level	Limit	Over Limit	Polarity
(MHz)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dBm)	
Test Results for Channel 1013/824.70 MHz							
1649.4	-54.14	2.80	27.50	-29.44	-13	-16.44	Vertical
1649.4	-51.27	2.80	27.50	-26.57	-13	-13.57	Horizontal
2474.1	-52.28	2.91	27.80	-27.39	-13	-14.39	Vertical
2474.1	-53.62	2.91	27.80	-28.73	-13	-15.73	Horizontal
3298.8	-52.85	4.02	29.87	-27.00	-13	-14.00	Vertical
3298.8	-54.16	4.02	29.87	-28.31	-13	-15.31	Horizontal
Test Results for Channel 384/836.52 MHz							
1673.04	-59.95	2.80	27.48	-35.27	-13	-22.27	Vertical
1673.04	-56.65	2.80	27.48	-31.97	-13	-18.97	Horizontal
2509.56	-53.28	2.91	27.70	-28.49	-13	-15.49	Vertical
2509.56	-54.47	2.91	27.70	-29.68	-13	-16.68	Horizontal
3346.08	-56.48	4.02	29.82	-30.68	-13	-17.68	Vertical
3346.08	-55.52	4.02	29.82	-29.72	-13	-16.72	Horizontal
Test Results for Channel 777/848.31 MHz							
1696.62	-54.47	2.80	27.42	-29.85	-13	-16.85	Vertical
1696.62	-53.62	2.80	27.42	-29.00	-13	-16.00	Horizontal
2544.93	-54.41	2.91	27.68	-29.64	-13	-16.64	Vertical
2544.93	-55.58	2.91	27.68	-30.81	-13	-17.81	Horizontal
3393.24	-54.67	4.02	29.80	-28.89	-13	-15.89	Vertical
3393.24	-53.98	4.02	29.80	-28.20	-13	-15.20	Horizontal

Remark:
1. We were tested all Configuration refer 3GPP TS134 121.
2. Absolute Level = SG Level- Cable Loss+ Antenna Gain
3. Over Limit= Absolute Level (dBm)-Limit(dBm)

CDMA2000 1xEVDO-Rev A 850MHz BC0							
Frequency	SG Level	Cable Loss	Antenna Gain	Absolute Level	Limit	Over Limit	Polarity
(MHz)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dBm)	
Test Results for Channel 1013/824.70 MHz							
1649.4	-54.18	2.80	27.50	-29.48	-13	-16.48	Vertical
1649.4	-53.62	2.80	27.50	-28.92	-13	-15.92	Horizontal
2474.1	-54.19	2.91	27.80	-29.30	-13	-16.30	Vertical
2474.1	-56.62	2.91	27.80	-31.73	-13	-18.73	Horizontal
3298.8	-52.85	4.02	29.87	-27.00	-13	-14.00	Vertical
3298.8	-54.01	4.02	29.87	-28.16	-13	-15.16	Horizontal
Test Results for Channel 384/836.52 MHz							
1673.04	-53.62	2.80	27.48	-28.94	-13	-15.94	Vertical
1673.04	-53.11	2.80	27.48	-28.43	-13	-15.43	Horizontal
2509.56	-54.26	2.91	27.70	-29.47	-13	-16.47	Vertical
2509.56	-54.48	2.91	27.70	-29.69	-13	-16.69	Horizontal
3346.08	-57.64	4.02	29.82	-31.84	-13	-18.84	Vertical
3346.08	-56.62	4.02	29.82	-30.82	-13	-17.82	Horizontal
Test Results for Channel 777/848.31 MHz							
1696.62	-52.24	2.80	27.42	-27.62	-13	-14.62	Vertical
1696.62	-51.19	2.80	27.42	-26.57	-13	-13.57	Horizontal
2544.93	-54.62	2.91	27.68	-29.85	-13	-16.85	Vertical
2544.93	-53.26	2.91	27.68	-28.49	-13	-15.49	Horizontal
3393.24	-54.47	4.02	29.80	-28.69	-13	-15.69	Vertical
3393.24	-53.28	4.02	29.80	-27.50	-13	-14.50	Horizontal

Remark:
1. We were tested all Configuration refer 3GPP TS134 121.
2. Absolute Level = SG Level- Cable Loss+ Antenna Gain
3. Over Limit= Absolute Level (dBm)-Limit(dBm)

7.2 EFFECTIVE RADIATED POWER AND EFFECTIVE ISOTROPIC RADIATED POWER

7.2.1 Applicable Standard

According to FCC KDB 971168 D01 v03 Section 5.2.1/ Section 5.2.2.2 and ANSI/TIA-603-E-2016 Section 2.2.17

7.2.2 Conformance Limit

The substitution method, in ANSI/TIA-603-E-2016, was used for ERP/EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v03. The ERP of mobile transmitters must not exceed 7 Watts (Cellular Band) and the EIRP of mobile transmitters are limited to 2 Watts (PCS Band).

7.2.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.2.4 Test Configuration

(a) For E.R.P and E.I.R.P Measurements
Please refer to the section 7.1.4 in this report.

7.2.5 Test Procedure

The measurements procedures specified in ANSI/TIA-603-E-2016 were applied.
In an anechoic antenna test chamber, a half-wave dipole antenna for the frequency band of interest is placed at the reference centre of the chamber. An RF Signal source for the frequency band of interest is connected to the dipole with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A known (measured) power (Pin) is applied to the input of the dipole, and the power received (Pr) at the chamber's probe antenna is recorded.

The relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:
ERP/EIRP = SGLevel -Pcl +Ga
where:
ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as SGLevel, typically dBW or dBm);
SGLevel = Signal generator output power or PSD, in dBm or dBW;
Ga = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);
Pcl = signal attenuation in the connecting cable between the transmitter and antenna, in dB.[2]

The EUT is substituted for the dipole at the reference centre of the chamber and a scan is performed to obtain the radiation pattern.
From the radiation pattern, the co-ordinates where the maximum antenna gain occurs are identified.

The EUT is then put into continuously transmitting mode at its maximum power level.
Power mode measurements are performed with the receiving antenna placed at the coordinates determined in Step 3 to determine the output power as defined in Rule 24.232 (b) and (c). The "reference path loss" from Step1 is added to this result.
This value is EIRP since the measurement is calibrated using a half-wave dipole antenna of known gain (2.15 dBi) and known input power (Pin).
ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis.
The worst case emissions were reported.

Substitution antenna and Receiving Antenna:

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Character	Note
1	Bilog Antenna	TESEQ	CBL6111D	31216	30MHz~2GHz	Receiving Antenna
2	Horn Antenna	EM	EM-AH-10180	2011071402	1GHz~18GHz	Receiving Antenna
3	Bilog Antenna	TESEQ	CBL6111D	31216	30MHz~2GHz	Substitution antenna
4	Horn Antenna	EM	EM-AH-10180	2011071402	1GHz~18GHz	Substitution antenna

Use the following spectrum analyzer settings:

	GSM/GPRS/EGPRS	UMTS band/ CDMA2000
Span	500KHz	10MHz
RBW	10KHz	300KHz
VBW	30KHz	1MHz
Detector	RMS	RMS
Trace	Average	Average
Average Type	Power	Power
Sweep Count	100	100

7.2.6 Test Results

EUT:	POS Terminal	Model No.:	PT7003
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM/GPRS/EGPRS 850/ UMTS band V/ CDMA2000 1xRTT 850MHz BC0/ CDMA2000 EVDO-Rev A 850MHz	Test By:	Eileen Liu

■ Effective Radiated Power

Radiated Power (ERP) for GSM850							
Frequency	Polarization	SG Level	Pcl	Ga Antenna Gain	Correction	ERP	ERP
(MHz)		(dBm)	(dB)	(dB)	(dB)	(dBm)	(W)
824.2	H	11.15	2.11	23.84	2.15	30.73	1.18304
836.6	H	11.74	2.13	23.15	2.15	30.61	1.15080
848.8	H	12.09	2.13	23.06	2.15	30.87	1.22180
824.2	V	11.95	2.11	23.11	2.15	30.8	1.20226
836.6	V	11.67	2.13	23.07	2.15	30.46	1.11173
848.8	V	11.56	2.13	23.25	2.15	30.53	1.12980

Radiated Power (ERP) for GPRS850							
Frequency	Polarization	SG Level	Pcl	Ga Antenna Gain	Correction	ERP	ERP
(MHz)		(dBm)	(dB)	(dB)	(dB)	(dBm)	(W)
824.2	H	11.21	2.11	23.84	2.15	30.79	1.19950
836.6	H	11.57	2.13	23.15	2.15	30.44	1.10662
848.8	H	11.96	2.13	23.06	2.15	30.74	1.18577
824.2	V	11.34	2.11	23.11	2.15	30.19	1.04472
836.6	V	11.85	2.13	23.07	2.15	30.64	1.15878
848.8	V	11.74	2.13	23.25	2.15	30.71	1.17761

Radiated Power (ERP) for EGPRS850							
Frequency	Polarization	SG Level	Pcl	Ga Antenna Gain	Correction	ERP	ERP
(MHz)		(dBm)	(dB)	(dB)	(dB)	(dBm)	(W)
824.2	H	6.54	2.11	23.84	2.15	26.12	0.40926
836.6	H	6.41	2.13	23.15	2.15	25.28	0.33729
848.8	H	6.98	2.13	23.06	2.15	25.76	0.37670
824.2	V	7.22	2.11	23.11	2.15	26.07	0.40458
836.6	V	7.03	2.13	23.07	2.15	25.82	0.38194
848.8	V	7.13	2.13	23.25	2.15	26.1	0.40738

Radiated Power (ERP) for UMTS band V							
Frequency	Polarization	SG Level	Pcl	Ga Antenna Gain	Correction	ERP	ERP
(MHz)		(dBm)	(dB)	(dB)	(dB)	(dBm)	(W)
826.4	H	2.01	2.11	23.84	2.15	21.59	0.14421
836.6	H	2.11	2.13	23.15	2.15	20.98	0.12531
846.6	H	2.34	2.13	23.06	2.15	21.12	0.12942
826.4	V	2.51	2.11	23.11	2.15	21.36	0.13677
836.6	V	2.06	2.13	23.07	2.15	20.85	0.12162
846.6	V	2.38	2.13	23.25	2.15	21.35	0.13646

Radiated Power (ERP) for CDMA2000 1xRTT 850MHz BC0							
Frequency	Polarization	SG Level	Pcl	Ga Antenna Gain	Correction	ERP	ERP
(MHz)		(dBm)	(dB)	(dB)	(dB)	(dBm)	(W)
824.7	H	3.56	2.11	23.84	2.15	23.14	0.20606
836.52	H	3.66	2.13	23.15	2.15	22.53	0.17906
848.31	H	3.94	2.13	23.06	2.15	22.72	0.18707
824.7	V	4.41	2.11	23.11	2.15	23.26	0.21184
836.52	V	4.07	2.13	23.07	2.15	22.86	0.19320
848.31	V	4.26	2.13	23.25	2.15	23.23	0.21038

Radiated Power (ERP) for CDMA2000 1xEVDO-Rev A 850MHz BC0							
Frequency	Polarization	SG Level	Pcl	Ga Antenna Gain	Correction	ERP	ERP
(MHz)		(dBm)	(dB)	(dB)	(dB)	(dBm)	(W)
824.7	H	3.61	2.11	23.84	2.15	23.19	0.20845
836.52	H	3.74	2.13	23.15	2.15	22.61	0.18239
848.31	H	3.99	2.13	23.06	2.15	22.77	0.18923
824.7	V	4.25	2.11	23.11	2.15	23.1	0.20417
836.52	V	4.21	2.13	23.07	2.15	23	0.19953
848.31	V	4.23	2.13	23.25	2.15	23.2	0.20893

Note:
SG Level= Signal generator output
Pcl= cable loss
Ga= Antenna Gain
Peak EIRP(dBm)= SGLevel -Pcl +Ga
ERP(dBm)=EIRP-2.15

7.3 CONDUCTED OUTPUT POWER

7.3.1 Applicable Standard

According to FCC Part 2.1046 and FCC Part 22.913(a)(2)) and FCC KDB 971168 D01 v03 Section 5.2

7.3.2 Conformance Limit

Extend coverage on a secondary basis into cellular unserved areas, as those areas are defined in §22.949, the ERP of base transmitters and cellular repeaters of such systems must not exceed 1000 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts(38.5dBm).

Mobile and portable stations are limited to 2 watts (33dBm)EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications..

For CDMA2000 Power: Maxmum output power is verified on the Low,Middle and High channels according to procedures in section 4.4.5.2.of 3GPP2 C.S0011/TIA-98-E for 1Xrtt, section 3.1.2.3.4 of 3GPP2 C.S0033-0/TIA-866 for Rel.0 and section 4.3.4 of 3GPP2 C.S0033-A for Rev.A.

7.3.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.3.4 Test Setup

Please refer to Section 6.1 of this test report.

7.3.5 Test Procedure

Connect the EUT to Universal Radio Communication Tester CMU200 or CMU500 via the antenna connector.
A call is set up by the SS according to the generic call set up procedure on a channel with ARFCN in the ARFCN range, power control level set to Max power. The frequency band is set as selected frequency,
The RF output of the transmitter was connected to base station simulator.
Set EUT at maximum average power by base station simulator.
Set RBW = 1-5% of the OBW, not to exceed 1 MHz.
Set VBW ≥ 3 × RBW.
Number of points in sweep ≥ 2 × span / RBW. (This gives bin-to-bin spacing ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
Sweep time = auto.
Detector = RMS (power averaging).
Set sweep trigger to “free run”.
Trace average at least 100 traces in power averaging (i.e., RMS) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the on and off periods of the transmitter.
Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add 10 log (1/0.25) = 6 dB if the duty cycle is a constant 25%.
Measure lowest, middle, and highest channels for each bandwidth and different modulation.
Measure and record the results in the test report.

7.3.6 Test Results

EUT:	POS Terminal	Model No.:	PT7003
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM/GPRS/EGPRS 850/ UMTS band V/ CDMA2000 1xRTT 850MHz BC0/ CDMA2000 EVDO-Rev A 850MHz	Test By:	Eileen Liu

Output Power for GSM850

Mode	Frequency (MHz)	Maximum Burst-Average Output Power
GSM850	824.2	31.45
	836.6	31.44
	848.8	31.42
GPRS850 (1 Slot)	824.2	31.44
	836.6	31.43
	848.8	31.41
GPRS850 (2 Slot)	824.2	30.46
	836.6	30.45
	848.8	30.42
GPRS850 (3 Slot)	824.2	28.45
	836.6	28.42
	848.8	28.43
GPRS850 (4 Slot)	824.2	27.49
	836.6	27.45
	848.8	27.42
EGPRS850 (1 Slot)	824.2	25.48
	836.6	25.44
	848.8	25.41
EGPRS850 (2 Slot)	824.2	23.45
	836.6	23.42
	848.8	23.43
EGPRS850 (3 Slot)	824.2	21.49
	836.6	21.48
	848.8	21.45
EGPRS850 (4 Slot)	824.2	20.48
	836.6	20.47
	848.8	20.43

N/A: Not Applicable

Output Power for UMTS BAND V

Mode	Frequency(MHz)	Maximum Burst-Average Output Power
WCDMA 850 RMC	826.4	21.75
	836	21.78
	846.6	21.77
WCDMA 850 AMR	826.4	21.74
	836	21.76
	846.6	21.73
HSDPA Subtest 1	826.4	20.75
	836	20.76
	846.6	20.78
HSDPA Subtest 2	826.4	19.84
	836	19.87
	846.6	19.89
HSDPA Subtest 3	826.4	19.83
	836	19.83
	846.6	19.84
HSDPA Subtest 4	826.4	19.82
	836	19.80
	846.6	19.86
HSUPA Subtest 1	826.4	19.79
	836	19.84
	846.6	19.83
HSUPA Subtest 2	826.4	19.82
	836	19.88
	846.6	19.81
HSUPA Subtest 3	826.4	19.84
	836	19.85
	846.6	19.78
HSUPA Subtest 4	826.4	19.77
	836	19.81
	846.6	19.80
HSUPA Subtest 5	826.4	20.79
	836	20.78
	846.6	20.75

CDMA2000 1xRTT 850MHz BC0

Radio Configuration (RC)	Service Option (SO)	Conducted Output Power(dBm)		
		CH 1013-824.7MHz	CH 384-836.52MHz	CH 777-848.31MHz
		Average	Average	Average
RC1	2(Loopback)	23.11	23.44	23.26
	55(Loopback)	23.17	23.41	23.27
RC2	9(Loopback)	23.22	23.39	23.24
	55(Loopback)	23.18	23.33	23.28
RC3	2(Loopback)	23.21	23.35	23.22
	55(Loopback)	23.21	23.44	23.20
	32(+ F-SCH)	23.09	23.39	23.25
	32(+ SCH)	23.09	23.41	23.21
RC4	2(Loopback)	23.10	23.42	23.22
	55(Loopback)	23.13	23.29	23.23
	32(+ F-SCH)	23.22	23.37	23.26
	32(+ SCH)	23.24	23.36	23.29
RC5	9(Loopback)	23.18	23.38	23.21
	55(Loopback)	23.19	23.32	23.19
RC11	2(Loopback)	23.16	23.41	23.18
	75(Loopback)	23.15	23.45	23.27
	32(+ F-SCH)	23.25	23.42	23.11
	32(+ SCH)	23.21	23.38	23.24

CDMA2000 EVDO-Rev 0 850MHz

FTAP Rate	RTAP Rate	Channel	Frequency	Conducted Output Power
				(dBm)
			(MHz)	Average
307.2 kbps(2 slot, QPSK)	153.6 kbps	1013	824.70	23.14
		384	836.52	23.41
		777	848.31	23.31

CDMA2000 EVDO-Rev A 850MHz

FETAP-Traffic Format	FETAP-Data Payload Size	Channel	Frequency	Conducted Output Power
				(dBm)
			(MHz)	Average
307.2 kbps QPSK/ ASK(Channel is transmitted at all slots)	4096	1013	824.70	23.24
		384	836.52	23.45
		777	848.31	23.35

7.4 FREQUENCY STABILITY

7.4.1 Applicable Standard

According to FCC Part 2.1055 and FCC Part 22.355 and FCC KDB 971168 D01 Section 9.0

7.4.2 Conformance Limit

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

7.4.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.4.4 Test Setup

Please refer to Section 6.1 of this test report.

7.4.5 Test Procedure

Connect the EUT to Universal Radio Communication Tester CMU200 or CMU500 via the antenna connector. A call is set up by the SS according to the generic call set up procedure on a channel with ARFCN in the ARFCN range, power control level set to Max power. MS TXPWR_MAX_CCH is set to the maximum value supported by the Power Class of the Mobile under test.
EUT was placed at temperature chamber and connected to an external power supply.
Temperature and voltage condition shall be tested to confirm frequency stability.
For Temperature Variation

1. The testing follows FCC KDB 971168 D01 v03 Section 9.0.
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in 10°C steps up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

For Voltage Variation

1. The testing follows FCC KDB 971168 D01 v03 Section 9.0.
2. The EUT was placed in a temperature chamber at 25±5° C and connected with the system simulator.
3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
4. The variation in frequency was measured for the worst case.

7.4.6 Test Results

EUT:	POS Terminal	Model No.:	PT7003
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM/GPRS/EGPRS 850/ UMTS band V/ CDMA2000 1xRTT 850MHz BC0/ CDMA2000 EVDO-Rev A 850MHz	Test By:	Eileen Liu
Results: PASS			

Frequency Error Against Voltage for GSM 850 band		
Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)
6.3	22	0.0263
7.4	26	0.0311
8.5	18	0.0215

Frequency Error Against Temperature for GSM 850 band		
Temperature (℃)	Frequency Error (Hz)	Frequency Error (ppm)
-30	9	0.0108
-20	18	0.0215
-10	24	0.0287
0	21	0.0251
10	16	0.0191
20	15	0.0179
30	23	0.0275
40	25	0.0299
50	20	0.0239

Frequency Error Against Voltage for GPRS850 band		
Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)
6.3	11	0.0131
7.4	16	0.0191
8.5	12	0.0143

Frequency Error Against Temperature for GPRS850 band		
Temperature (℃)	Frequency Error (Hz)	Frequency Error (ppm)
-30	21	0.0251
-20	18	0.0215
-10	17	0.0203
0	15	0.0179
10	24	0.0287
20	22	0.0263
30	16	0.0191
40	13	0.0155
50	18	0.0215

Frequency Error Against Voltage for EGPRS850 band		
Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)
6.3	18	0.0215
7.4	21	0.0251
8.5	16	0.0191

Frequency Error Against Temperature for EGPRS850 band		
Temperature (℃)	Frequency Error (Hz)	Frequency Error (ppm)
-30	22	0.0263
-20	10	0.0120
-10	19	0.0227
0	17.9	0.0214
10	21	0.0251
20	16.5	0.0197
30	19	0.0227
40	17	0.0203
50	8	0.0096

Note:
1. Normal Voltage = 7.4V; Battery End Point (BEP) = 6.3V; Maximum Voltage =8.5V
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

Frequency Error Against Voltage for UMTS band V		
Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)
6.3	-16.5	-0.0198
7.4	10.9	0.0131
8.5	-11.7	-0.0140

Frequency Error Against Temperature for UMTS band V		
Temperature (℃)	Frequency Error (Hz)	Frequency Error (ppm)
-30	-18	-0.0216
-20	-13	-0.0156
-10	21.1	0.0253
0	17.4	0.0208
10	-14.2	-0.0170
20	16	0.0192
30	9.9	0.0119
40	18	0.0216
50	17	0.0204

Note:
1. Normal Voltage = 7.4V; Battery End Point (BEP) = 6.3V; Maximum Voltage =8.5V
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

Frequency Error Against Voltage for CDMA2000 1xRTT BC0		
Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)
6.3	11	0.0131
7.4	18	0.0215
8.5	17	0.0203

Frequency Error Against Temperature for CDMA2000 1xRTT BC0		
Temperature (℃)	Frequency Error (Hz)	Frequency Error (ppm)
-30	20	0.0239
-20	21	0.0251
-10	16	0.0191
0	14	0.0167
10	19	0.0227
20	23	0.0275
30	18	0.0215
40	23	0.0275
50	22	0.0263

Frequency Error Against Voltage for CDMA2000 EVDO-Rev A 850MHz		
Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)
6.3	13	0.0155
7.4	16	0.0191
8.5	19	0.0227

Frequency Error Against Temperature for CDMA2000 EVDO-Rev A 850MHz		
Temperature (℃)	Frequency Error (Hz)	Frequency Error (ppm)
-30	21	0.0251
-20	18	0.0215
-10	14	0.0167
0	16	0.0191
10	18	0.0215
20	11	0.0131
30	10	0.0120
40	13	0.0155
50	15	0.0179

Note:
1. Normal Voltage = 7.4V; Battery End Point (BEP) = 6.3V; Maximum Voltage =8.5V
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

7.5 PEAK-TO-AVERAGE RATIO

7.5.1 Applicable Standard

According to Subclause 5.2.3.4 of ANSI C63.26-2015 and FCC KDB 971168 D01 Section 5.7.1

7.5.2 Conformance Limit

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

7.5.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.5.4 Test Setup

Please refer to Section 6.1 of this test report.

7.5.5 Test Procedure

The EUT was connected to Spectrum Analyzer and Base Station via power divider.
The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
Set the number of counts to a value that stabilizes the measured CCDF curve.
Set the measurement interval to 1 ms.
Record the maximum PAPR level associated with a probability of 0.1%.
a) Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
b) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
c) Set the number of counts to a value that stabilizes the measured CCDF curve;
d) Set the measurement interval as follows:
1) for continuous transmissions, set to 1 ms,
2) for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
e) Record the maximum PAPR level associated with a probability of 0.1%.

7.5.6 Test Results

EUT:	POS Terminal	Model No.:	PT7003
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM/GPRS/EGPRS 850/ UMTS band V/ CDMA2000 1xRTT 850MHz BC0/ CDMA2000 EVDO-Rev A 850MHz	Test By:	Eileen Liu
Results: PASS			

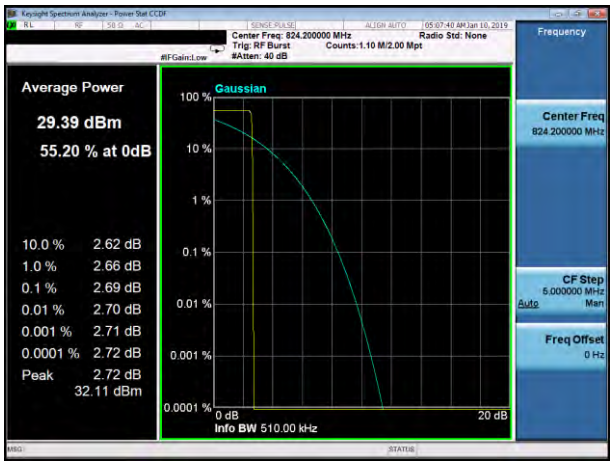
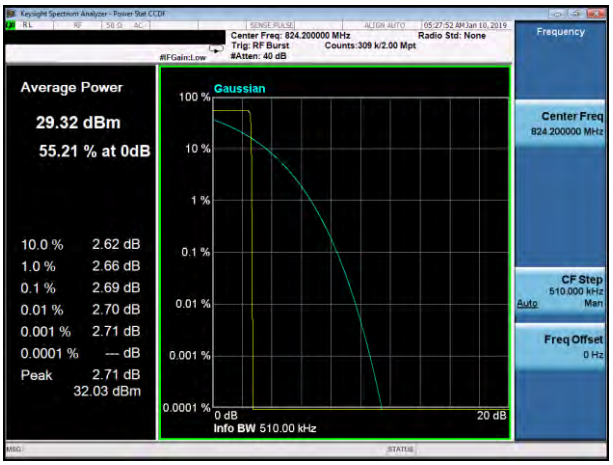
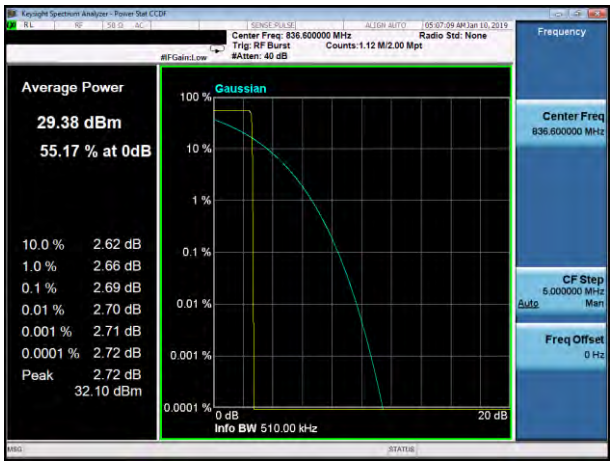
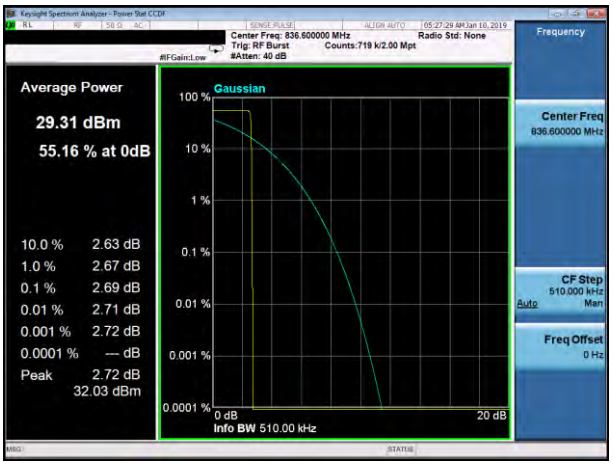
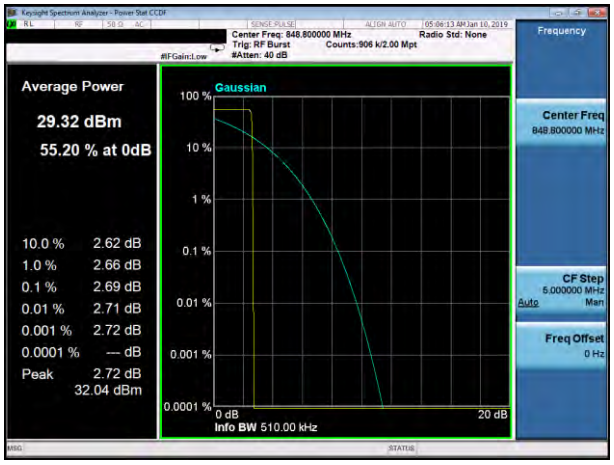
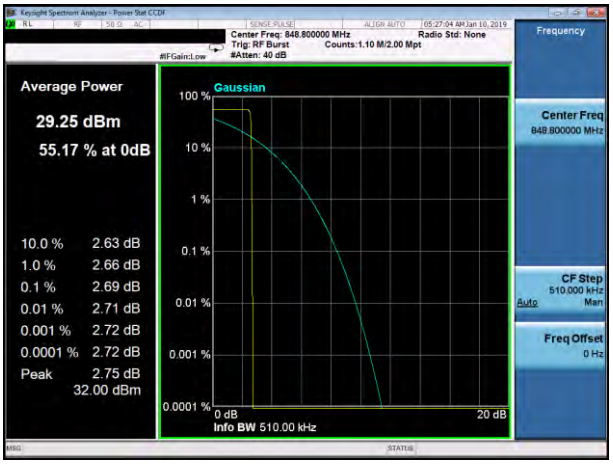
Cellular Band						
Modes	GSM850			GPRS850		
Channel	128 (Low)	190 (Mid)	251 (High)	128 (Low)	190 (Mid)	251 (High)
Frequency(MHz)	824.2	836.6	848.8	824.2	836.6	848.8
Peak-to-Average Ratio (dB)	2.69	2.69	2.69	2.69	2.69	2.69

Cellular Band			
Modes	EGPRS850		
Channel	128 (Low)	190 (Mid)	251 (High)
Frequency(MHz)	824.2	836.6	848.8
Peak-to-Average Ratio (dB)	5.52	5.52	5.53

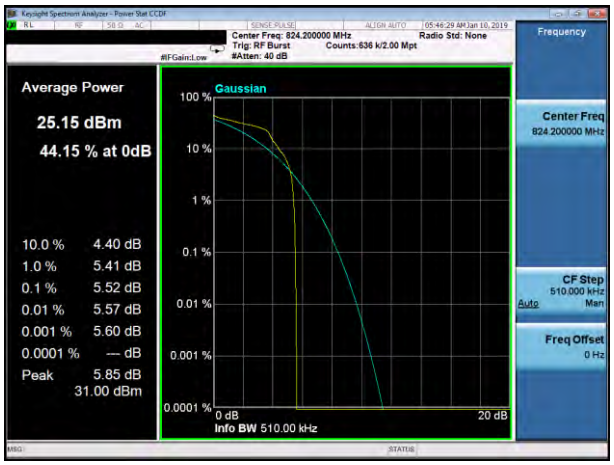
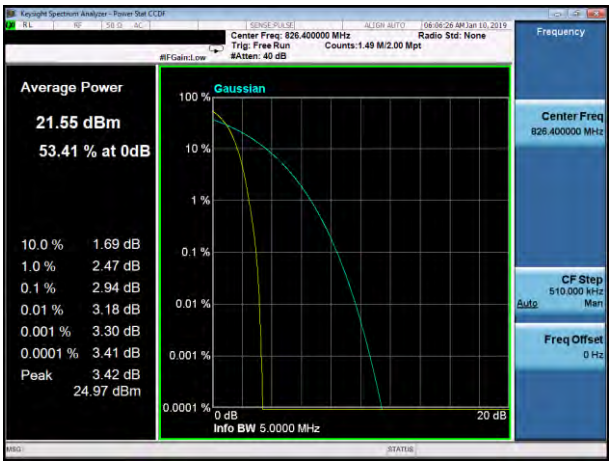
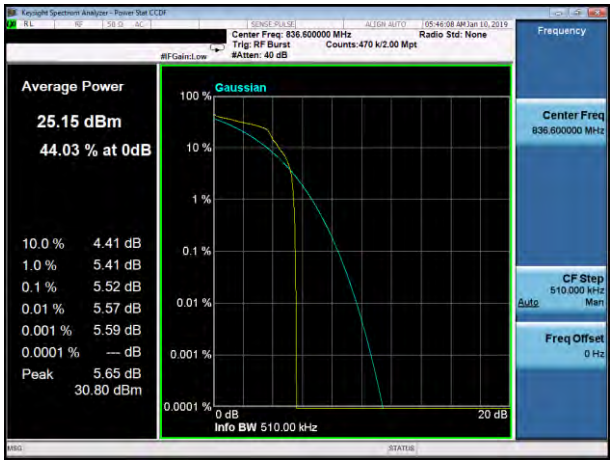
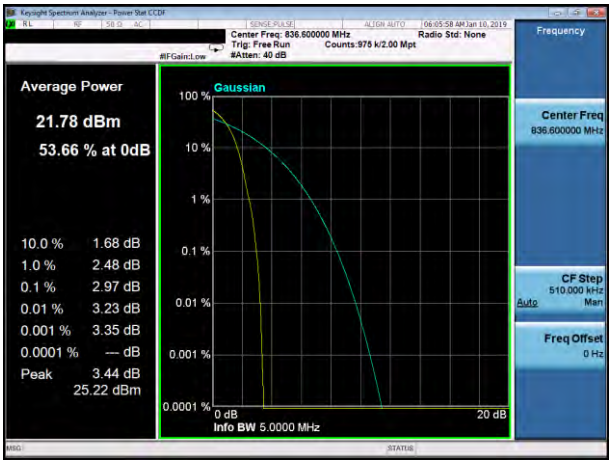
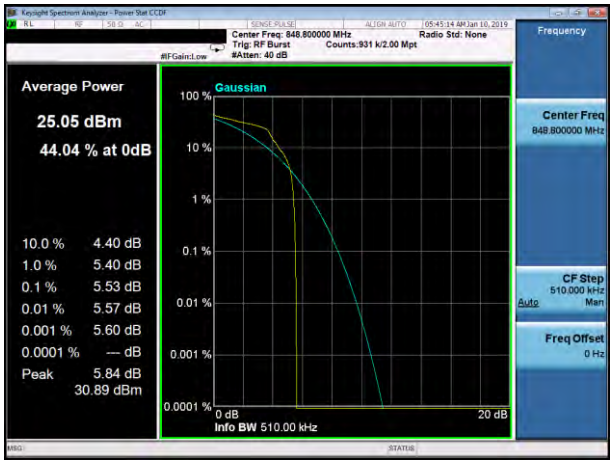
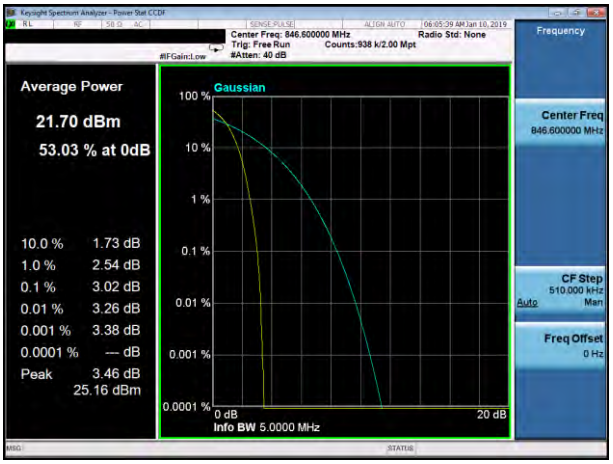
UMTS Band			
Modes	WCDMA Band V (RMC 12.2Kbps)		
Channel	4132 (Low)	4175 (Mid)	4233 (High)
Frequency(MHz)	826.4	836.6	846.6
Peak-to-Average Ratio (dB)	2.94	2.97	3.02

CDMA2000						
Modes	1xRTT 850MHz BC0			EVDO-Rev A 850MHz		
Channel	1013 (Low)	384 (Mid)	777 (High)	1013 (Low)	384 (Mid)	777 (High)
Frequency(MHz)	824.7	836.52	848.31	824.7	836.52	848.31
Peak-to-Average Ratio (dB)	4.28	4.20	3.89	4.79	4.98	4.60

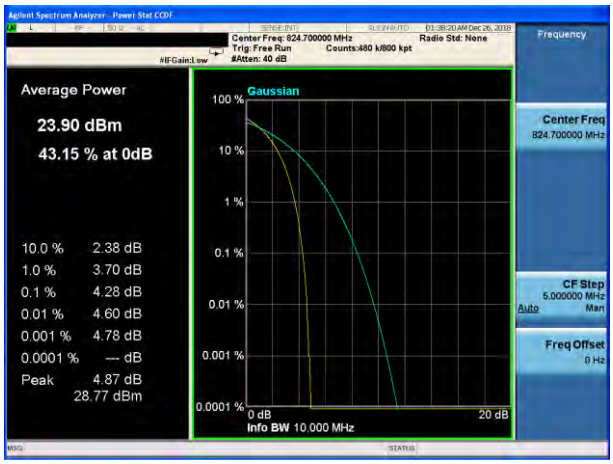
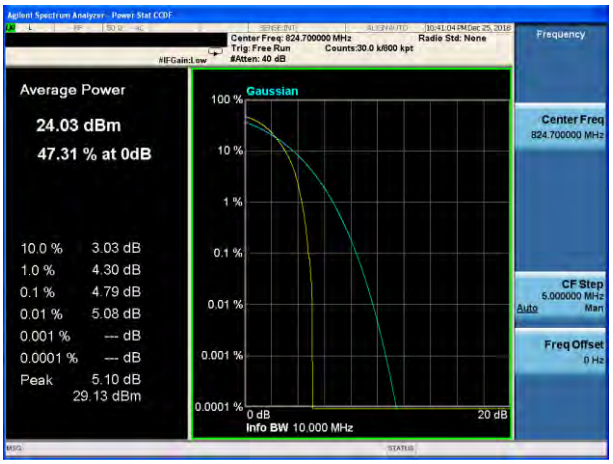
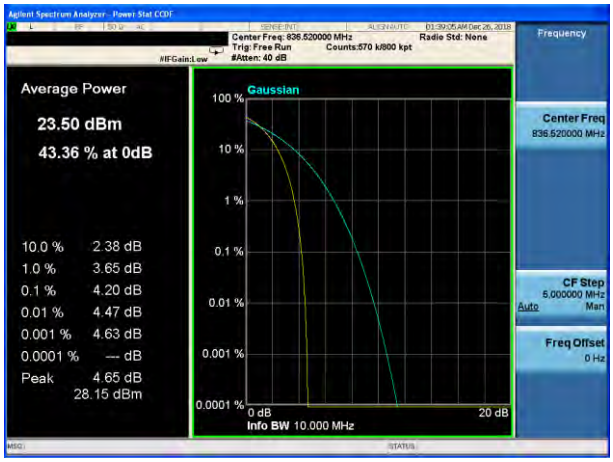
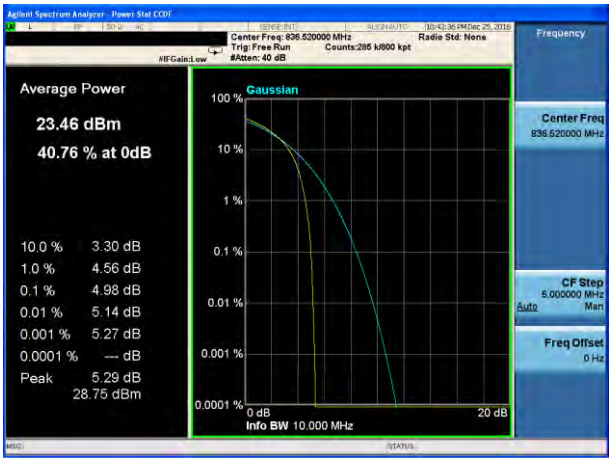
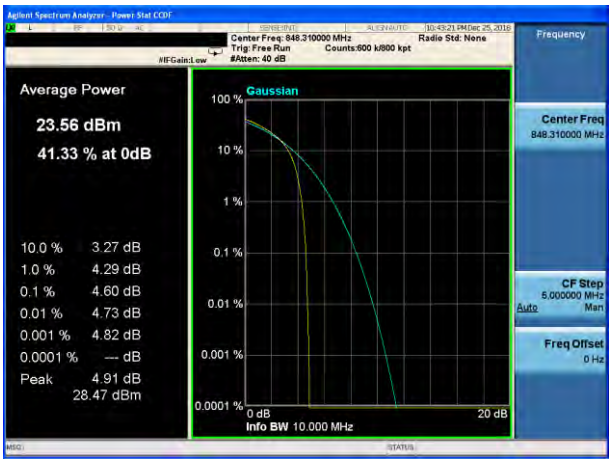
Test plot

(GSM850)	(GPRS850)
Peak-to-Average Ratio on channel 128	Peak-to-Average Ratio on channel 128
	
Peak-to-Average Ratio on channel 190	Peak-to-Average Ratio on channel 190
	
Peak-to-Average Ratio on channel 251	Peak-to-Average Ratio on channel 251
	

Test plot

(EGPRS850)	UMTS Band V
Peak-to-Average Ratio on channel 128	Peak-to-Average Ratio on channel 4132
	
Peak-to-Average Ratio on channel 190	Peak-to-Average Ratio on channel 4183
	
Peak-to-Average Ratio on channel 251	Peak-to-Average Ratio on channel 4233
	

Test plot

(CDMA2000 1xRTT 850MHz BC0)	(CDMA2000 EVDO-Rev A 850MHz)
Peak-to-Average Ratio on channel 1013	Peak-to-Average Ratio on channel 1013
	
Peak-to-Average Ratio on channel 384	Peak-to-Average Ratio on channel 384
	
Peak-to-Average Ratio on channel 777	Peak-to-Average Ratio on channel 777
	

7.6 26DB BANDWIDTH AND 99% OCCUPIED BANDWIDTH

7.6.1 Applicable Standard

According to FCC Part 2.1049 and FCC Part 22H and FCC KDB 971168 D01 Section 4

7.6.2 Conformance Limit

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.
The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

7.6.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.6.4 Test Setup

Please refer to Section 6.1 of this test report.

7.6.5 Test Procedure

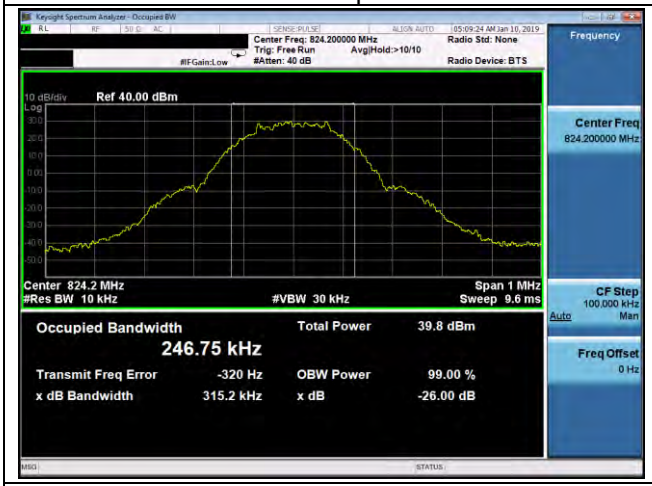
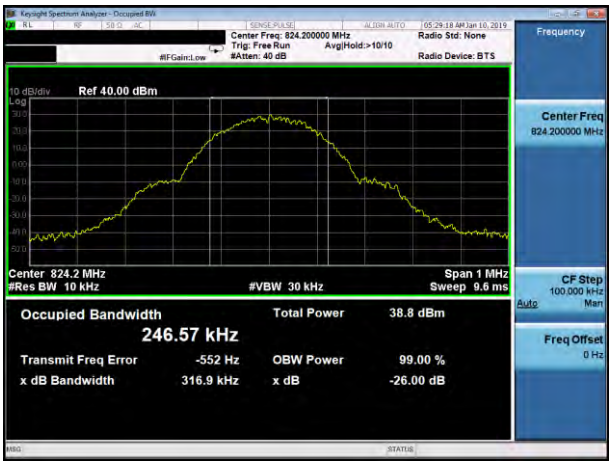
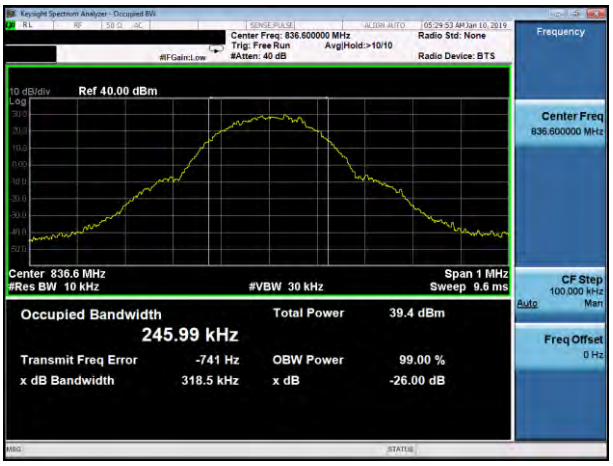
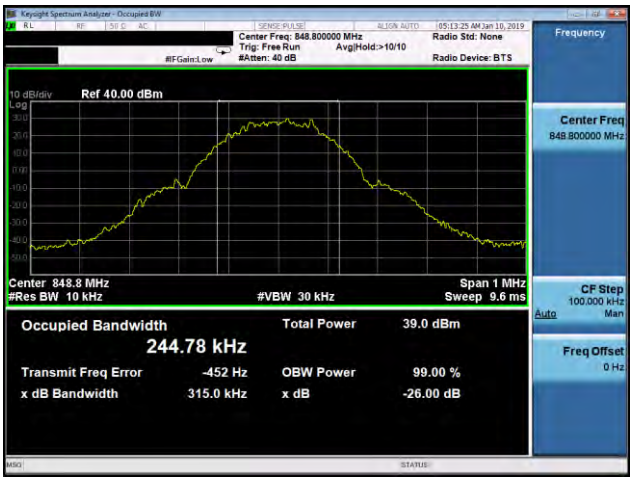
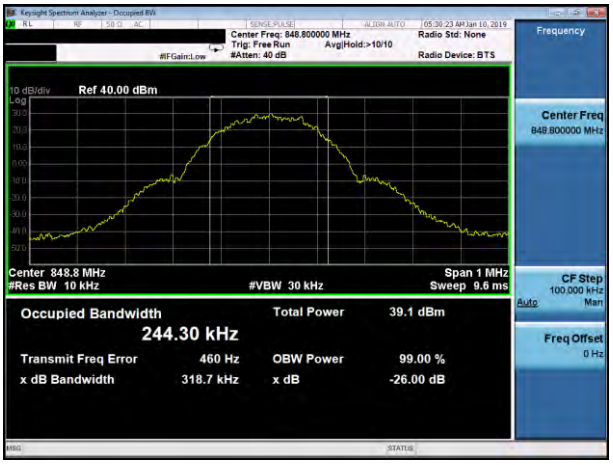
The testing follows FCC KDB 971168 v03 Section 4.
The EUT was connected to Spectrum Analyzer and Base Station via power divider.
The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
Set the detection mode to peak, and the trace mode to max hold.
Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace.
(this is the reference value)
Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “–X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

7.6.6 Test Results

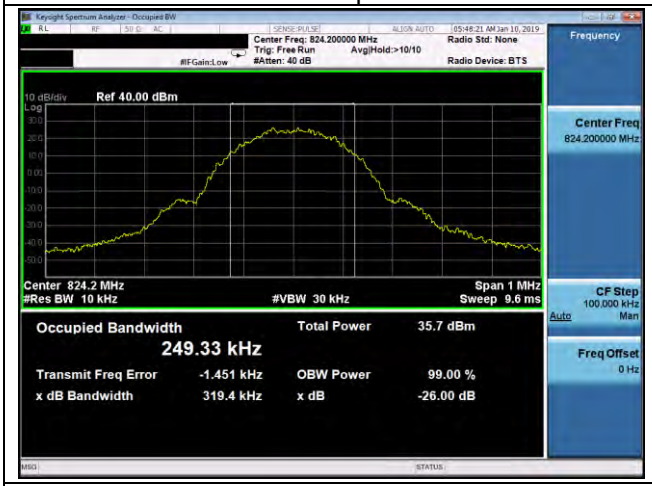
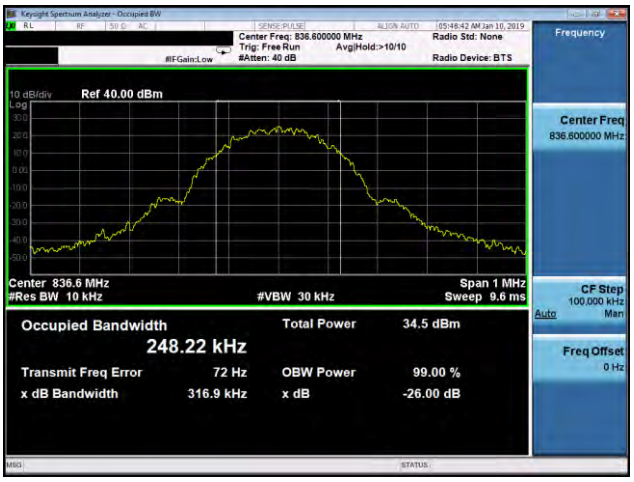
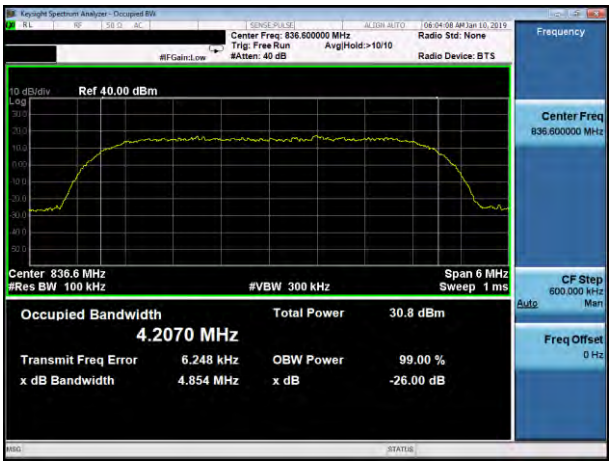
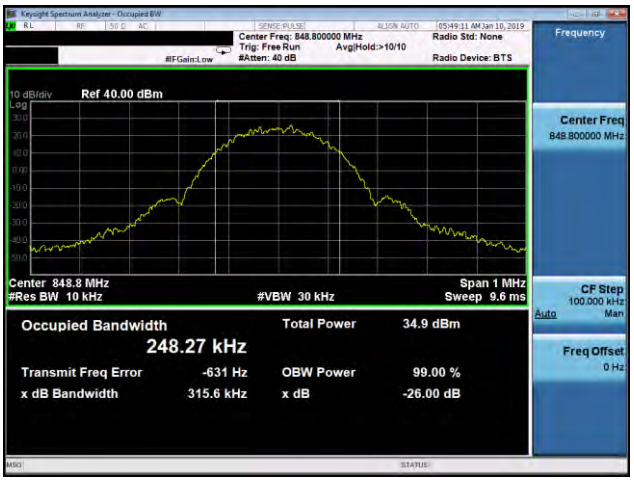
EUT:	POS Terminal	Model No.:	PT7003
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM/GPRS/EGPRS 850/ UMTS band V/ CDMA2000 1xRTT 850MHz BC0/ CDMA2000 EVDO-Rev A 850MHz	Test By:	Eileen Liu
Results: PASS			

Operation Mode	Channel Number	Channel Frequency (MHz)	26dB Bandwidth (kHz)	99% Occupied Bandwidth (kHz)	Limit (kHz)	Verdict
GSM 850	128	824.2	315.2	246.75	N/A	PASS
	190	836.4	312.3	244.55	N/A	PASS
	251	848.8	315.0	244.78	N/A	PASS
GPRS 850	128	824.2	316.9	246.57	N/A	PASS
	190	836.4	318.5	245.99	N/A	PASS
	251	848.8	318.7	244.30	N/A	PASS
EGPRS 850	128	824.2	319.4	249.33	N/A	PASS
	190	836.4	316.9	248.22	N/A	PASS
	251	848.8	315.6	248.27	N/A	PASS
UMTS Band V	4132	826.4	4852	4199.2	N/A	PASS
	4183	836.4	4854	4207.0	N/A	PASS
	4233	846.6	4874	4207.2	N/A	PASS
CDMA2000 1xRTT 850MHz BC0	1013	824.7	1435	1277.2	N/A	PASS
	384	836.52	1433	1275.5	N/A	PASS
	777	848.31	1447	1278.2	N/A	PASS
CDMA2000 EVDO-Rev A 850MHz	1013	824.7	1435	1268.8	N/A	PASS
	384	836.52	1441	1277.6	N/A	PASS
	777	848.31	1453	1277.7	N/A	PASS

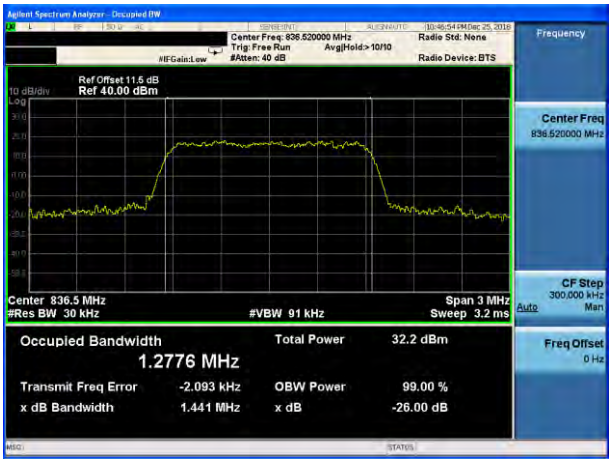
Test plot

(GSM850)	(GPRS850)
-26dB&99% Bandwidth plot on channel 128	-26dB&99% Bandwidth plot on channel 128
	
-26dB&99% Bandwidth plot on channel 190	-26dB&99% Bandwidth plot on channel 190
	
-26dB&99% Bandwidth plot on channel 251	-26dB&99% Bandwidth plot on channel 251
	

Test plot

(EGPRS850)	UMTS Band V
-26dB&99% Bandwidth plot on channel 128	-26dB&99% Bandwidth plot on channel 4132
	
-26dB&99% Bandwidth plot on channel 190	-26dB&99% Bandwidth plot on channel 4183
	
-26dB&99% Bandwidth plot on channel 251	-26dB&99% Bandwidth plot on channel 4233
	

Test plot

CDMA2000 1xRTT 850MHz BC0	CDMA2000 EVDO-Rev A 850MHz
-26dB&99% Bandwidth plot on channel 1013	-26dB&99% Bandwidth plot on channel 1013
-26dB&99% Bandwidth plot on channel 384	-26dB&99% Bandwidth plot on channel 384
	
-26dB&99% Bandwidth plot on channel 777	-26dB&99% Bandwidth plot on channel 777

7.7 CONDUCTED BAND EDGE

7.7.1 Applicable Standard

According to FCC Part 2.1051 and FCC Part 22.917(a) and FCC KDB 971168 D01 Section6.

7.7.2 Conformance Limit

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

7.7.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.7.4 Test Setup

Please refer to Section 6.1 of this test report.

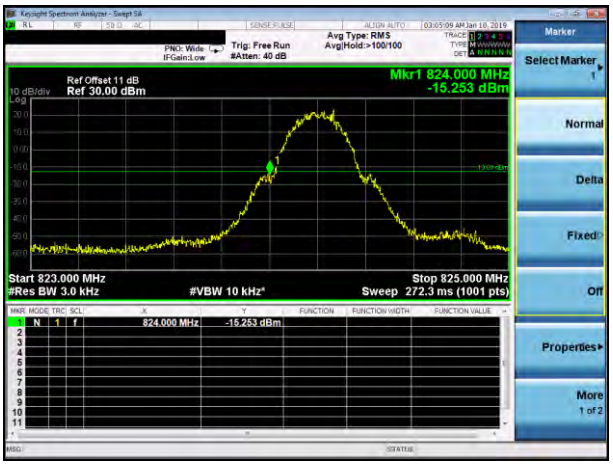
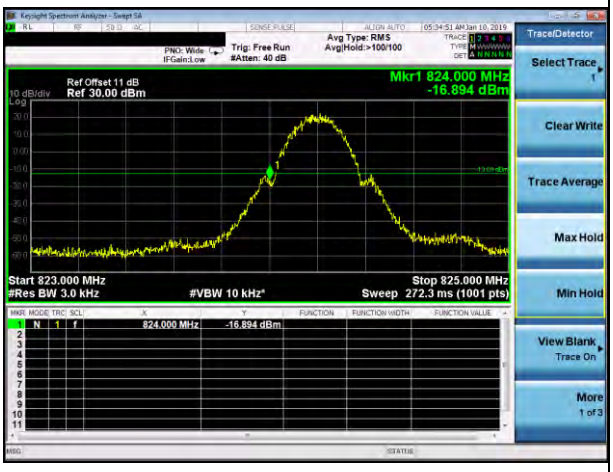
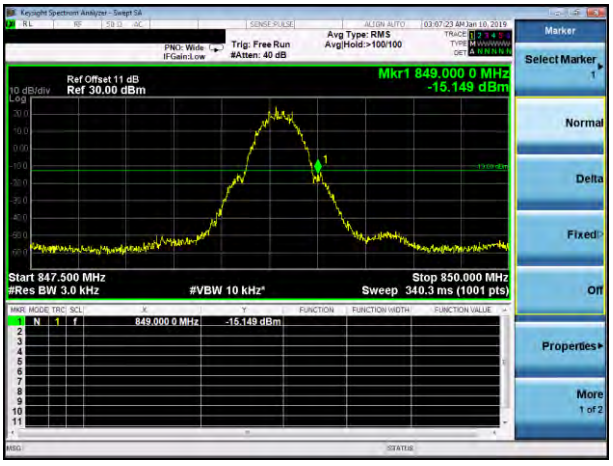
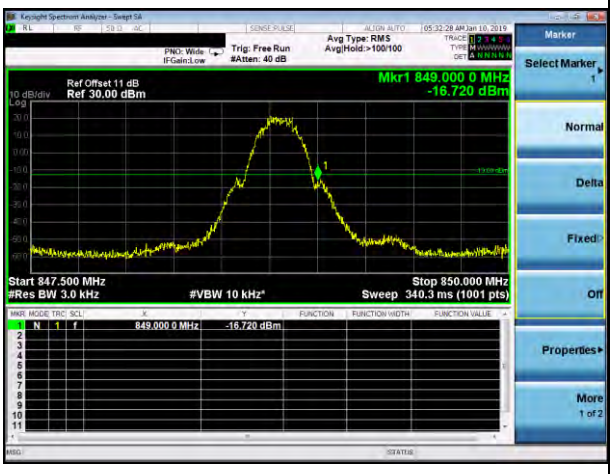
7.7.5 Test Procedure

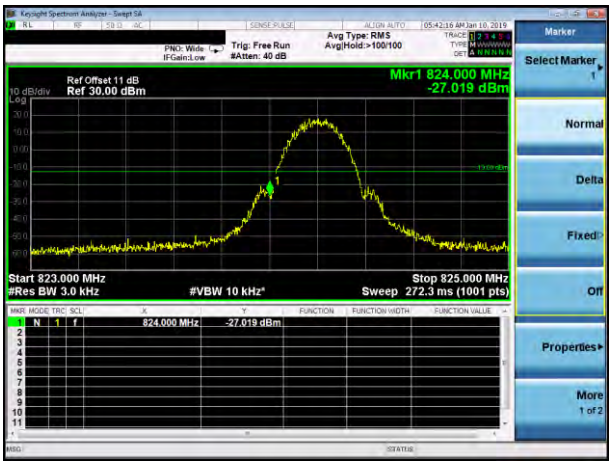
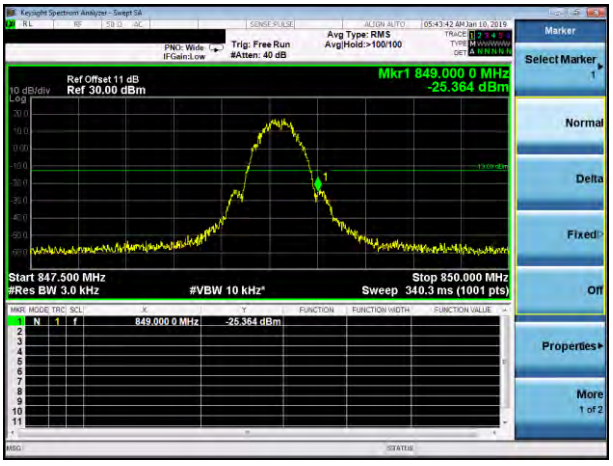
The testing follows FCC KDB 971168 v03 Section 6.
The EUT was connected to Spectrum Analyzer and Base Station via power divider.
The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
The path loss was compensated to the results for each measurement.
The band edges of low and high channels for the highest RF powers were measured.
The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
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.

7.7.6 Test Results

EUT:	POS Terminal	Model No.:	PT7003
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM/GPRS/EGPRS 850/ UMTS band V/ CDMA2000 1xRTT 850MHz BC0/ CDMA2000 EVDO-Rev A 850MHz	Test By:	Eileen Liu
Results: PASS			

Test plot For	
(GSM850)	(GPRS850)
Conducted Band Edge plot on channel 128	Conducted Band Edge plot on channel 128
	
Conducted Band Edge plot on channel 251	Conducted Band Edge plot on channel 251
	

Test plot For	
(EGPRS850)	UMTS Band V
Conducted Band Edge plot on channel 128	Conducted Band Edge plot on channel 4132
	
Conducted Band Edge plot on channel 251	Conducted Band Edge plot on channel 4233
	

Test plot For	
CDMA2000 1xRTT 850MHz BC0	CDMA2000 EVDO-Rev A 850MHz
Conducted Band Edge plot on channel 1013	Conducted Band Edge plot on channel 1013
Conducted Band Edge plot on channel 777	Conducted Band Edge plot on channel 777

7.8 CONDUCTED SPURIOUS EMISSION AT ANTENNA TERMINAL

7.8.1 Applicable Standard

According to FCC Part 2.1051 and FCC Part 22.917(a) and FCC KDB 971168 D01 Section6.

7.8.2 Conformance Limit

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.
It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

7.8.3 Measuring Instruments

The Measuring equipment is listed in the section 6.3 of this test report.

7.8.4 Test Setup

Please refer to Section 6.1 of this test report.

7.8.5 Test Procedure

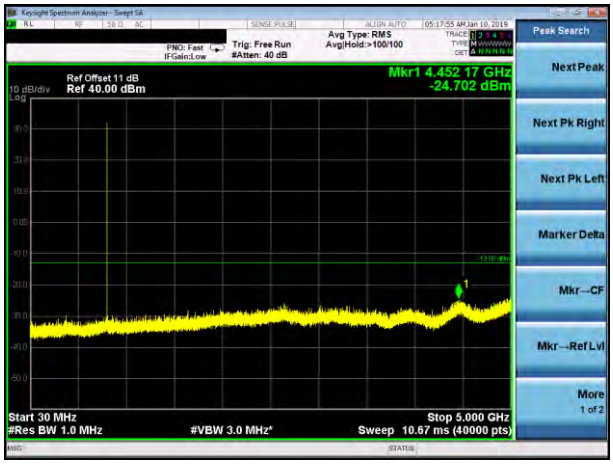
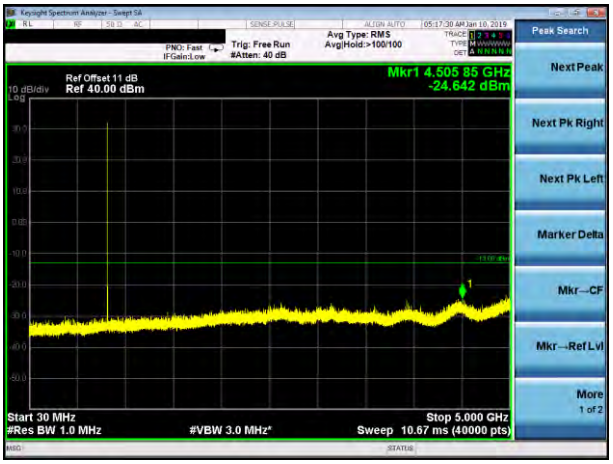
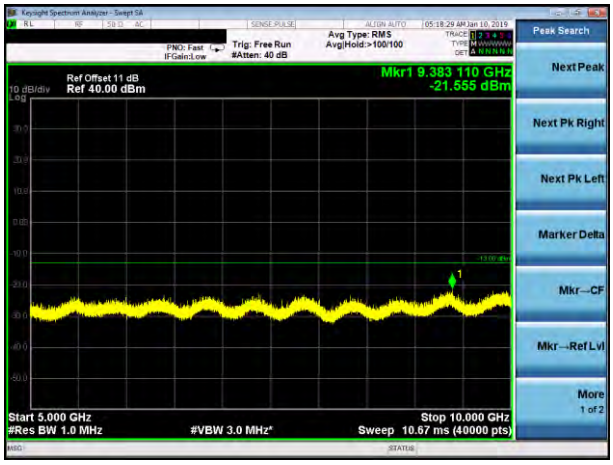
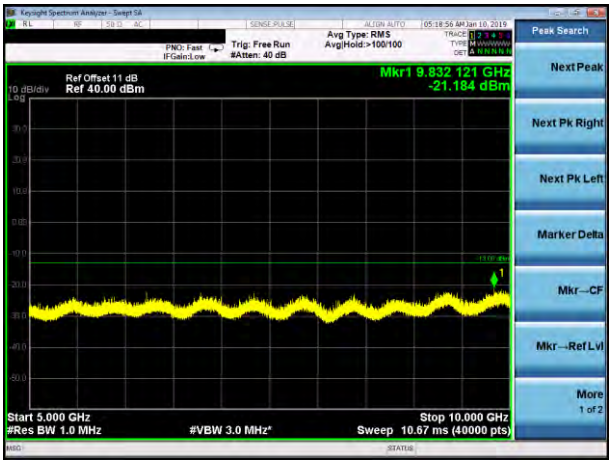
The testing follows FCC KDB 971168 v03 Section 6.
The EUT was connected to Spectrum Analyzer and Base Station via power divider.
The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
The path loss was compensated to the results for each measurement.
The middle channel for the highest RF power within the transmitting frequency was measured.
The conducted spurious emission for the whole frequency range was taken.
The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
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.

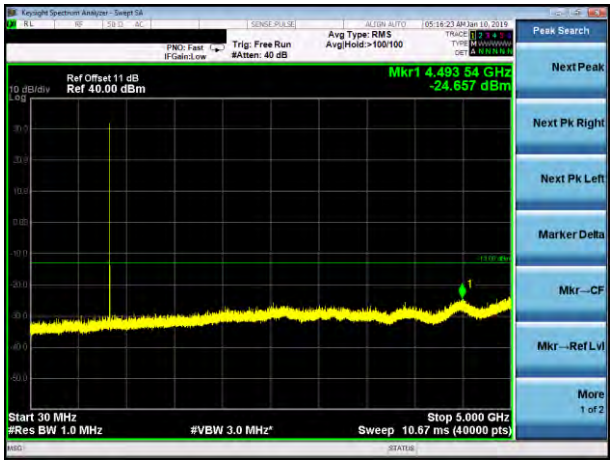
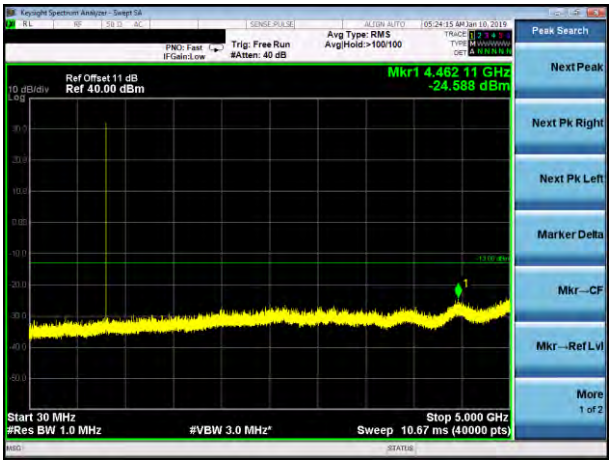
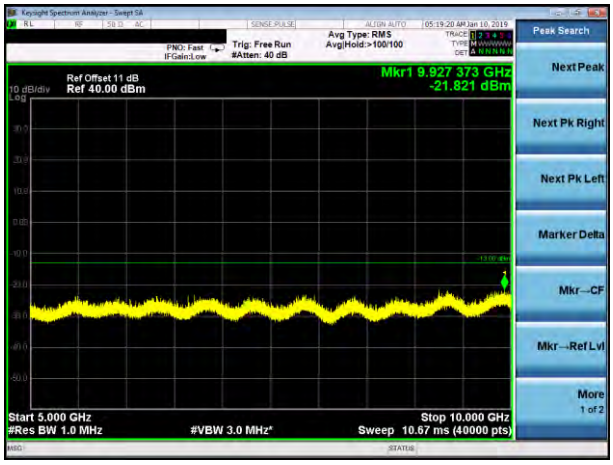
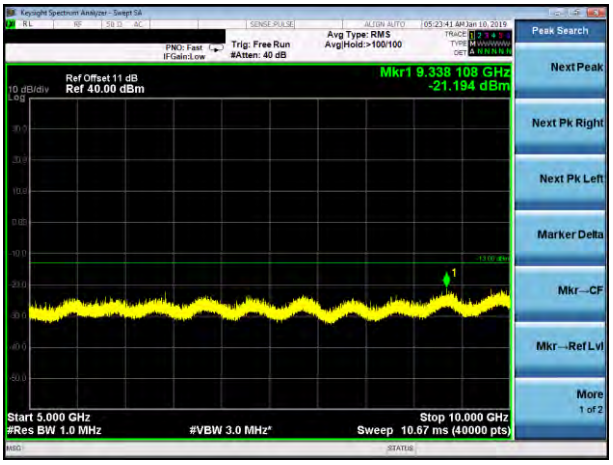
7.8.6 Test Results

EUT:	POS Terminal	Model No.:	PT7003
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM/GPRS/EGPRS 850/ UMTS band V/ CDMA2000 1xRTT 850MHz BC0/ CDMA2000 EVDO-Rev A 850MHz	Test By:	Eileen Liu
Results: PASS			

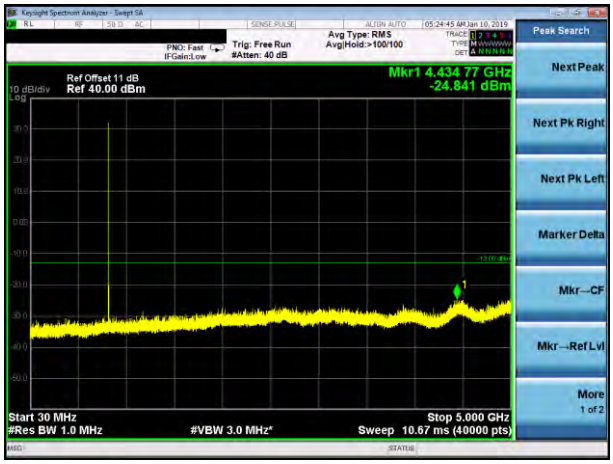
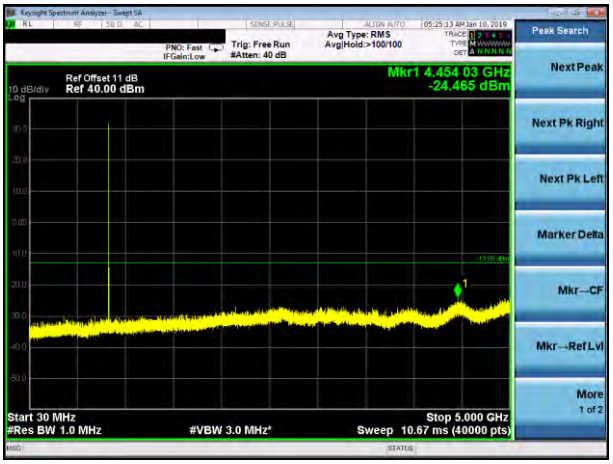
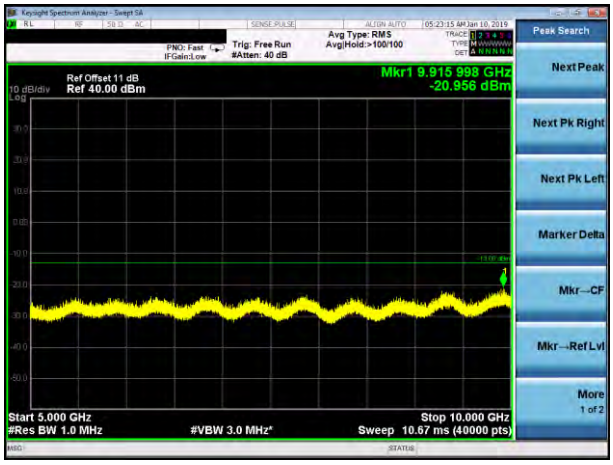
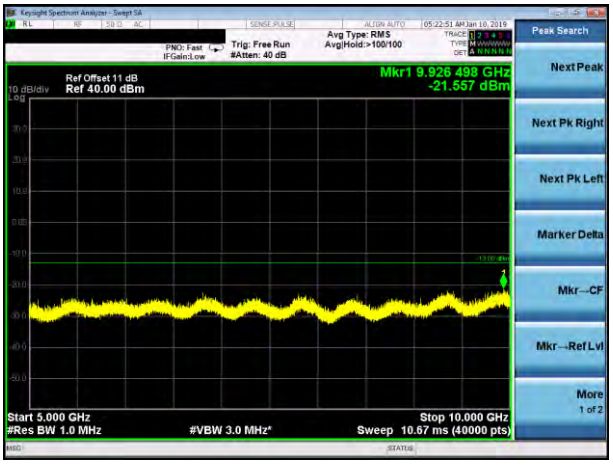
Test Plot

GSM850	GSM850
Conducted Emission Transmitting Mode CH 128 30MHz – 5GHz	Conducted Emission Transmitting Mode CH 190 30MHz – 5GHz
	
Conducted Emission Transmitting Mode CH 128 5GHz – 10GHz	Conducted Emission Transmitting Mode CH 190 5GHz – 10GHz
	

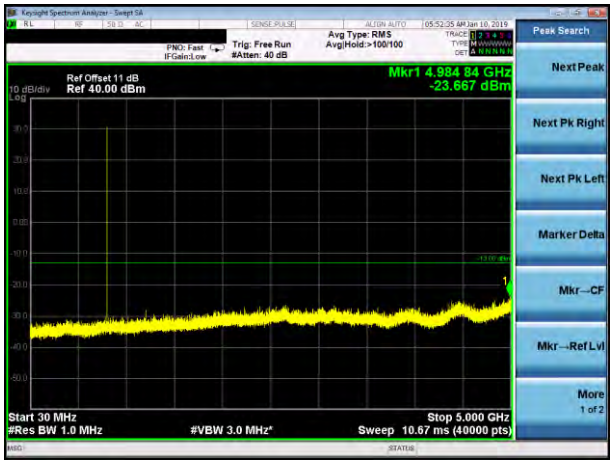
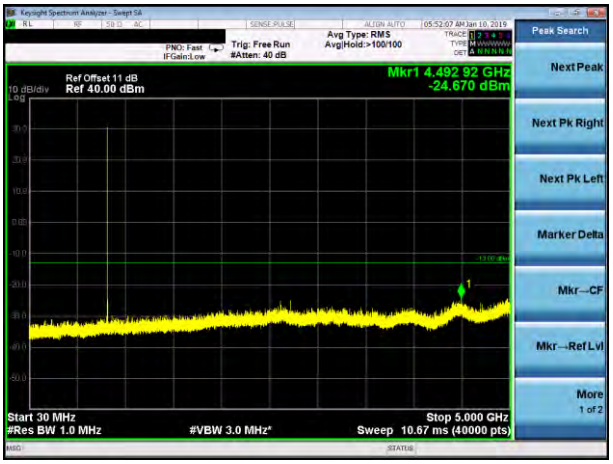
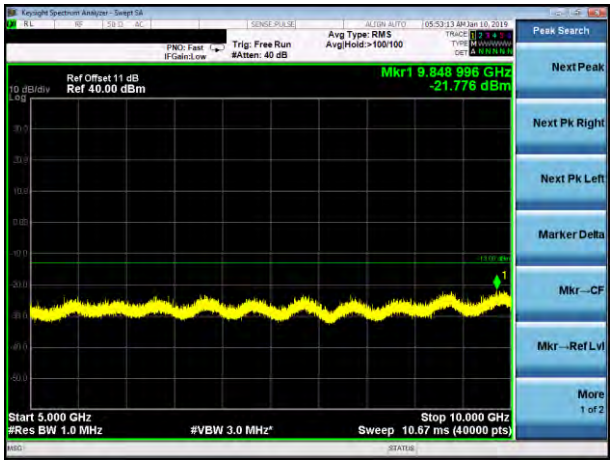
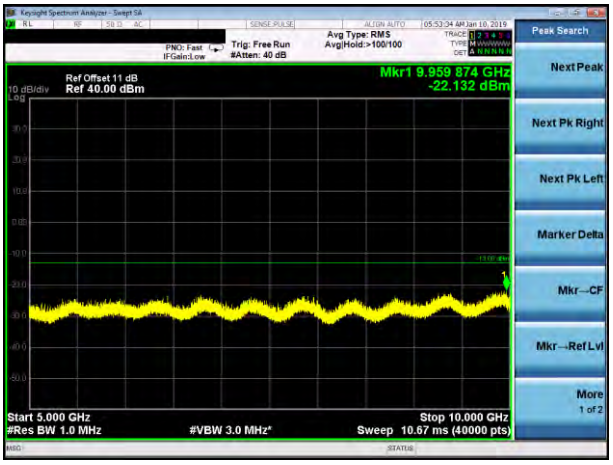
Test Plot

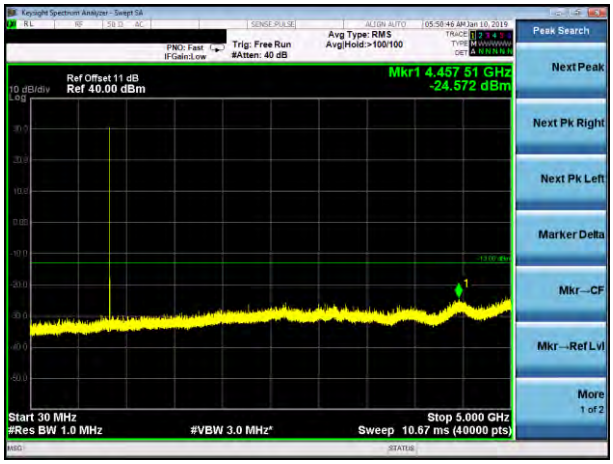
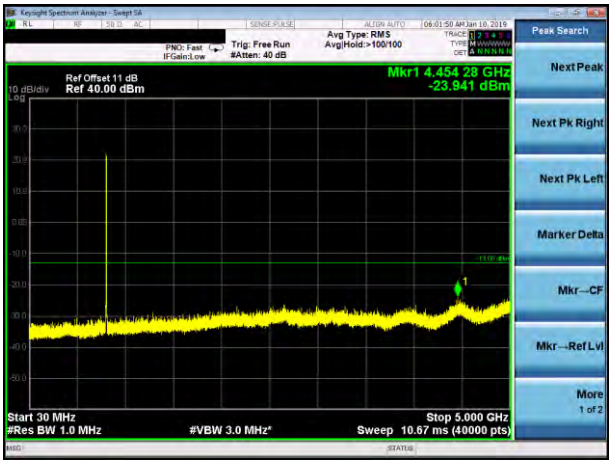
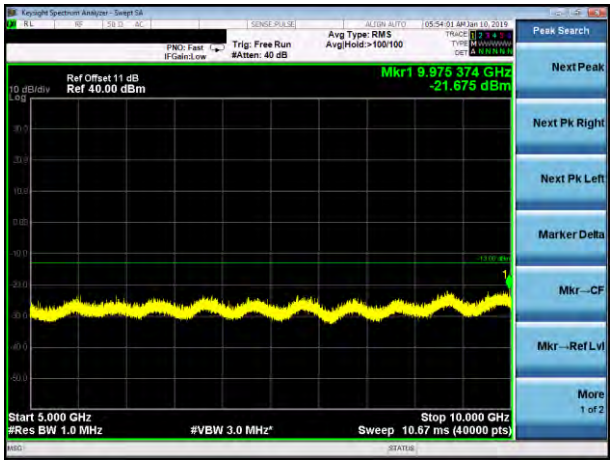
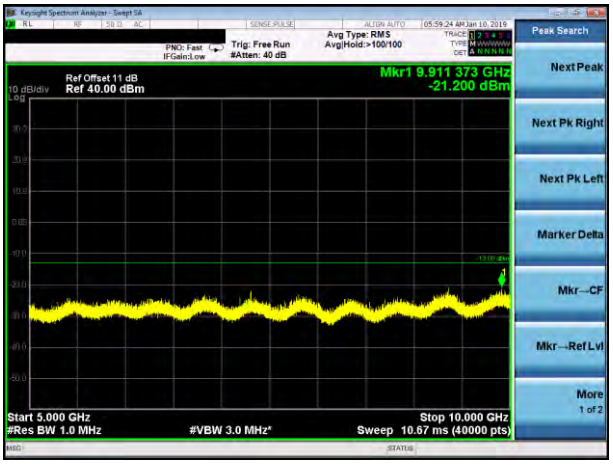
GSM850	GPRS850
Conducted Emission Transmitting Mode CH 251 30MHz – 5GHz	Conducted Emission Transmitting Mode CH 128 30MHz – 5GHz
	
Conducted Emission Transmitting Mode CH 251 5GHz – 10GHz	Conducted Emission Transmitting Mode CH 128 5GHz – 10GHz
	

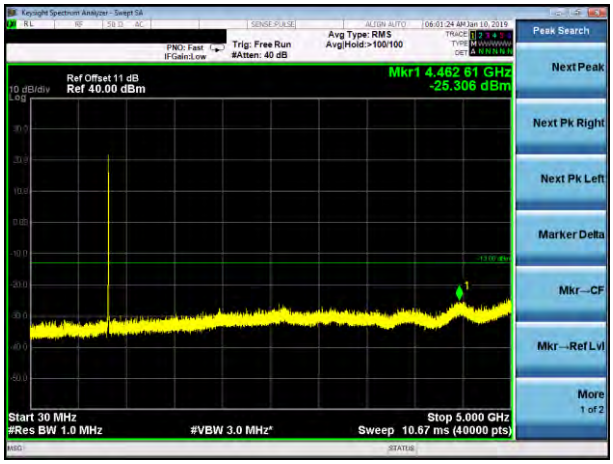
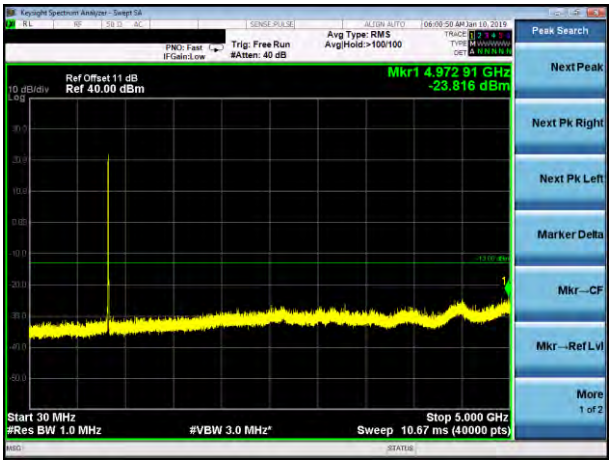
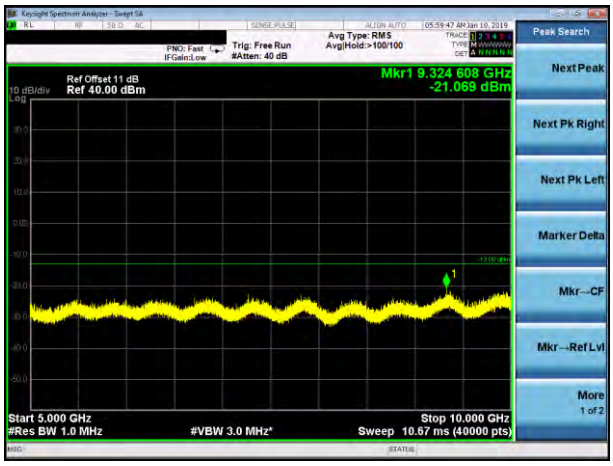
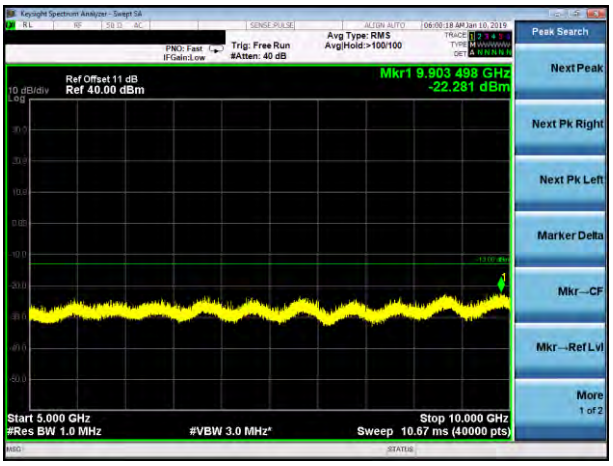
Test Plot

GPRS850	GPRS850
Conducted Emission Transmitting Mode CH 190 30MHz – 5GHz	Conducted Emission Transmitting Mode CH 251 30MHz – 5GHz
	
Conducted Emission Transmitting Mode CH 190 5GHz – 10GHz	Conducted Emission Transmitting Mode CH 251 5GHz – 10GHz
	

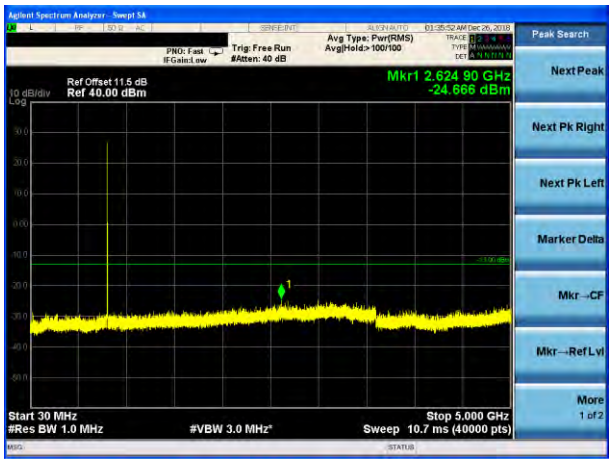
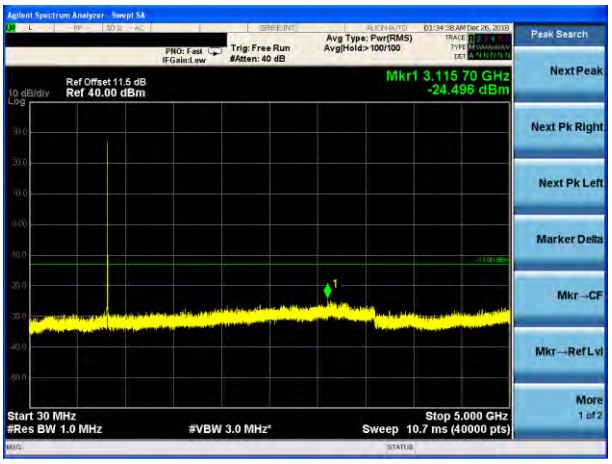
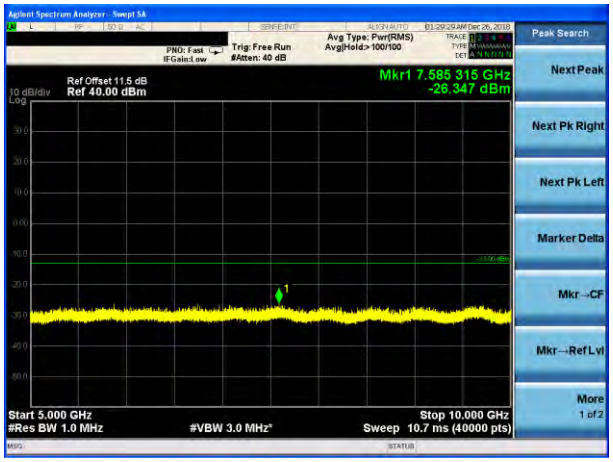
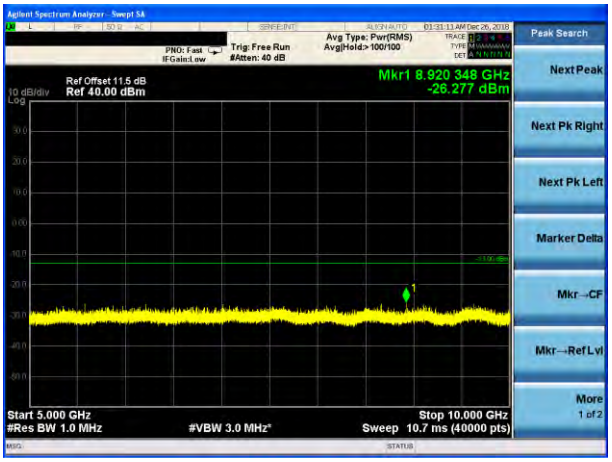
Test Plot

EGPRS850	EGPRS850
Conducted Emission Transmitting Mode CH 128 30MHz – 5GHz	Conducted Emission Transmitting Mode CH 190 30MHz – 5GHz
	
Conducted Emission Transmitting Mode CH 128 5GHz – 10GHz	Conducted Emission Transmitting Mode CH 190 5GHz – 10GHz
	

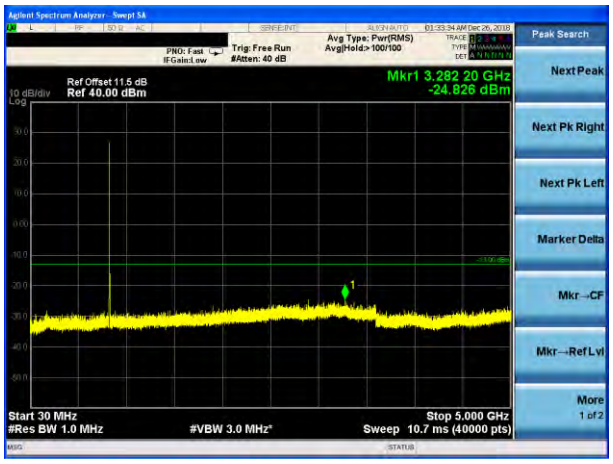
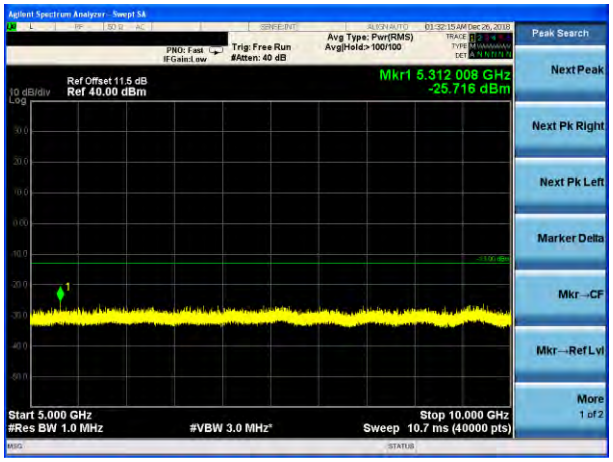
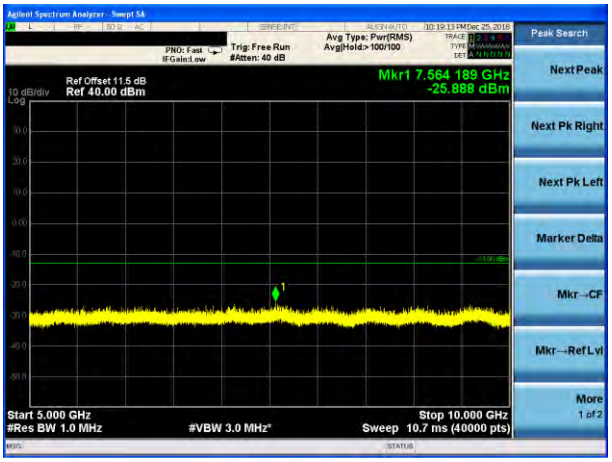
Test Plot	
EGPRS850	UMTS band V
Conducted Emission Transmitting Mode CH 251 30MHz – 5GHz	Conducted Emission Transmitting Mode CH 4132 30MHz – 5GHz
	
Conducted Emission Transmitting Mode CH 251 5GHz – 10GHz	Conducted Emission Transmitting Mode CH 4132 5GHz – 10GHz
	

Test Plot	
UMTS band V	UMTS band V
Conducted Emission Transmitting Mode CH 4183 30MHz – 5GHz	Conducted Emission Transmitting Mode CH 4233 30MHz – 5GHz
	
Conducted Emission Transmitting Mode CH 4183 5GHz – 10GHz	Conducted Emission Transmitting Mode CH 4233 5GHz – 10GHz
	

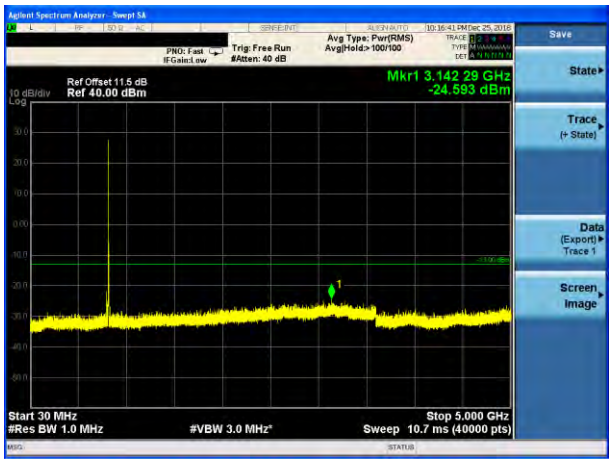
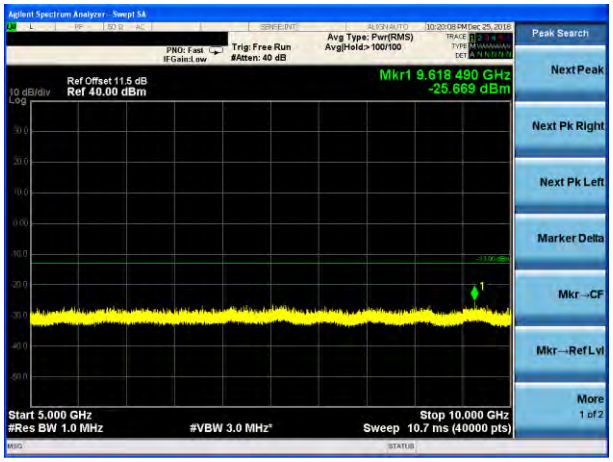
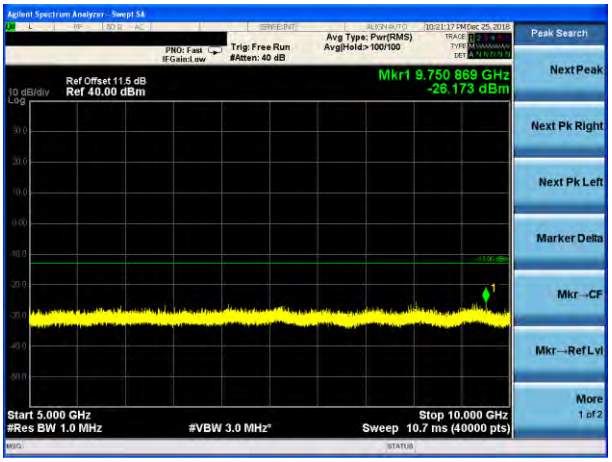
Test Plot

CDMA2000 1xRTT 850MHz BC0	CDMA2000 1xRTT 850MHz BC0
Conducted Emission Transmitting Mode CH 1013 30MHz – 5GHz	Conducted Emission Transmitting Mode CH 384 30MHz – 5GHz
	
Conducted Emission Transmitting Mode CH 1013 5GHz – 10GHz	Conducted Emission Transmitting Mode CH 384 5GHz – 10GHz
	

Test Plot

CDMA2000 1xRTT 850MHz BC0	CDMA2000 EVDO-Rev A 850MHz
Conducted Emission Transmitting Mode CH 777 30MHz – 5GHz	Conducted Emission Transmitting Mode CH 1013 30MHz – 5GHz
	
Conducted Emission Transmitting Mode CH 777 5GHz – 10GHz	Conducted Emission Transmitting Mode CH 1013 5GHz – 10GHz
	

Test Plot

CDMA2000 EVDO-Rev A 850MHz	CDMA2000 EVDO-Rev A 850MHz
Conducted Emission Transmitting Mode CH 384 30MHz – 5GHz	Conducted Emission Transmitting Mode CH 777 30MHz – 5GHz
	
Conducted Emission Transmitting Mode CH 384 5GHz – 10GHz	Conducted Emission Transmitting Mode CH 777 5GHz – 10GHz
	

END OF REPORT