



# Part 24

# TEST REPORT

<b>Product Name</b>	CDMA/LTE Smart phone
<b>Model Name</b>	HUAWEI H882L,H882L,Marina,Y301-A3
<b>FCC ID</b>	QISH882L
<b>Client</b>	Huawei Technologies Co., Ltd.
<b>Manufacturer</b>	Huawei Technologies Co., Ltd.
<b>Date of issue</b>	March 16, 2013

**TA Technology (Shanghai) Co., Ltd.**

**TA Technology (Shanghai) Co., Ltd.**  
**Test Report**

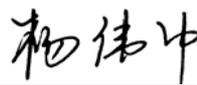
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**GENERAL SUMMARY**

<b>Reference Standard(s)</b>	<p><b>FCC CFR47 Part 2 (2013)</b> Frequency Allocations And Radio Treaty Matters; General Rules And Regulations</p> <p><b>FCC CFR47 Part 24E (2013)</b> Personal Communications Services</p> <p><b>ANSI/TIA-603-C(2004)</b> Land mobile FM or PM Communications Equipment Measurements and Performance Standards.</p> <p><b>KDB 971168 D01 Power Meas License Digital Systems v01</b> Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (&gt; 1 MHz) Digital Transmission Systems</p>
<b>Conclusion</b>	<p>This portable wireless equipment has been measured in all cases requested by the relevant standards. Test results in Chapter 2 of this test report are below limits specified in the relevant standards.</p> <p>General Judgment: <b>Pass</b></p>
<b>Comment</b>	<p>The test result only responds to the measured sample.</p>

Approved by\_



Director

Revised by 

RF Manager

Performed by 

RF Engineer

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## **1. General Information**

### **1.1. Notes of the test report**

**TA Technology (Shanghai) Co., Ltd.** has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS), and accreditation number: L2264.

**TA Technology (Shanghai) Co., Ltd.** has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements. The site recognition number is 428261.

**TA Technology (Shanghai) Co., Ltd.** has been listed by industry Canada to perform electromagnetic emission measurement. The site recognition number is 8510A.

**TA Technology (Shanghai) Co., Ltd.** guarantees the reliability of the data presented in this test report, which is the results of measurements and tests performed for the items under test on the date and under the conditions stated in this test report and is based on the knowledge and technical facilities available at TA Technology (Shanghai) Co., Ltd. at the time of execution of the test.

**TA Technology (Shanghai) Co., Ltd.** is liable to the client for the maintenance by its personnel of the confidentiality of all information related to the items under test and the results of the test. This report only refers to the item that has undergone the test.

This report standalone dose not constitute or imply by its own an approval of the product by the certification Bodies or competent Authorities. This report cannot be used partially or in full for publicity and/or promotional purposes without previous written approval of **TA Technology (Shanghai) Co., Ltd.** and the Accreditation Bodies, if it applies.

If the electrical report is inconsistent with the printed one, it should be subject to the latter.

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### 1.2. Testing laboratory

Company: TA Technology (Shanghai) Co., Ltd.  
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong  
City: Shanghai  
Post code: 201201  
Country: P. R. China  
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Telephone: +86-021-50791141/2/3  
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Website: <http://www.ta-shanghai.com>  
E-mail: [yangweizhong@ta-shanghai.com](mailto:yangweizhong@ta-shanghai.com)

### 1.3. Applicant Information

Company: Huawei Technologies Co., Ltd.  
Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C  
City: Shenzhen  
Postal Code: 518129  
Country: P.R. China

### 1.4. Manufacturer Information

Company: Huawei Technologies Co., Ltd.  
Address: Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C  
City: Shenzhen  
Postal Code: 518129  
Country: P.R. China

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### 1.5. Information of EUT

#### General information

Product IMEI:	99000298001067		
Hardware Version:	HL1C8833LM		
Software Version:	H882L V100R001C378B160		
Antenna Type:	Internal Antenna		
Device Operating Configurations:			
Operating Mode(s):	CDMA PCS; (tested) LTE Band 25; (tested)		
Bandwidth(s):	CDMA System: 1.25MHz LTE System: 3 MHz, 5 MHz, 10 MHz		
Test Modulation:	(CDMA)BPSK, QPSK, HPSK; (LTE)QPSK, 16QAM		
Maximum E.I.R.P.	CDMA PCS: 26.06 dBm LTE Band 25: 25.62 dBm		
Power Supply:	Battery or Charger		
Rated Power Supply Voltage:	3.7V		
Extreme Voltage:	Minimum: 3.6V    Maximum: 4.2V		
Extreme Temperature:	Lowest: -10°C    Highest: +50°C		
Test Channel: (Low - Middle - High)	25-600-1175                      (CDMA PCS)                      (tested) 26055-26365-26675              (LTE Band 25, 3M)              (tested) 26065-26365-26665              (LTE Band 25, 5M)              (tested) 26090-26365-26640              (LTE Band 25, 10M) (tested)		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	CDMA PCS	1851.25 ~ 1908.75	1931.25 ~ 1988.75
	LTE Band 25(3MHz)	1851.5~1913.5	1931.5~1993.5
	LTE Band 25(5MHz)	1852.5~1912.5	1932.5~1992.5
	LTE Band 25(10MHz)	1855.0~1910.0	1935.0~1990.0

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### Auxiliary equipment details

#### AE1:Battery

Model: HB4W1H  
Manufacturer: Huawei Technologies Co., Ltd.  
S/N: MAICB01X19102164

#### AE2:Battery

Model: HB4W1H  
Manufacturer: Huawei Technologies Co., Ltd.  
S/N: MPCCA25919100430

Equipment under Test (EUT) is tested CDMA PCS and LTE Band 25 in this report.

The sample under test was selected by the Client.

Components list please refer to documents of the manufacturer.

### 1.6. Test Date

The test performed from February 23, 2013 to February 27, 2013.

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## Test Report

## 2. Test Information

### 2.1. Summary of test results

Number	Test Case	Clause in FCC rules	Verdict
1	RF power output	2.1046	PASS
2	Effective Isotropic Radiated power	24.232	PASS
3	Occupied Bandwidth	2.1049	PASS
4	Band Edge Compliance	24.238	PASS
5	Frequency Stability	2.1055 / 24.235	PASS
6	Spurious Emissions at Antenna Terminals	2.1051 / 24.238	PASS
7	Radiates Spurious Emission	2.1053 / 24.238	PASS

### 2.2. Test Mode

During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure max power transmission and proper modulation.

The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

During the ERP measurement, the highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna moved up and down over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.

Test Modes		
Band	Radiated Test Cases	Conducted Test Cases
CDMA PCS	1x RTT(RC3 SO55)	1x RTT(RC3 SO55)
	EVDO (Rev.0) RTAP153.6 kbps	EVDO (Rev.0) RTAP153.6 kbps
	EVDO(Rev.A) RETAP 4096 bits	EVDO(Rev.A) RETAP 4096 bits
	1X Advance(SO73)	1X Advance(SO73)
LTE Band 25	1RB 10MHz QPSK/16OAM	1RB 10MHz QPSK/16OAM

Note: The maximum RF output power levels are RC3 SO55 for 1x RTT mode, RTAP153.6 kbps for EVDO (Rev.0) mode, RETAP 4096 bits for EVDO (Rev.A) mode, SO73 for 1X Advance mode, 1RB 10MHz QPSK/16OAM for LTE Band 25 mode, only these modes were used for all tests.

For RSE and CSE, only the maximum RF output power level is chosen.

### 2.3. RF Power Output

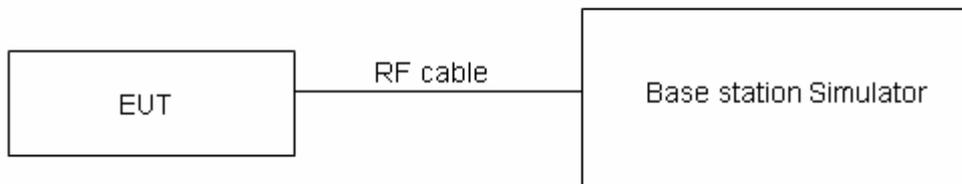
#### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

#### Methods of Measurement

During the process of the testing, The EUT is controlled by the Base Station Simulator to ensure proper test configuration.

#### Test Setup



The loss between RF output port of the EUT and the input port of the tester has been taken into consideration.

#### Limits

No specific RF power output requirements in part 2.1046.

#### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 0.4$  dB.

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### Test Results

CDMA PCS			Average Conducted Power (dBm)		
			Channel 25	Channel 600	Channel 1175
			1851.25 (MHz)	1880 (MHz)	1908.75 (MHz)
1x RTT	RC3	SO55(Loopback)	23.67	23.61	<b>23.74</b>
		SO2(Loopback)	23.66	23.58	23.73
		SO32(+FCH-SCH)	23.63	23.5	23.69
		SO32(+SCH)	23.58	23.51	23.65
	RC1	SO55(Loopback)	23.61	23.57	23.74
		SO2(Loopback)	23.62	23.54	23.73
1X Advance	SO75		23.8	23.86	24.08
	SO73		23.84	23.88	<b>24.15</b>
EV-DO (Rev.0)	RTAP	9.6 kbps	23.18	23.50	23.45
		38.4 kbps	23.12	23.55	23.48
		153.6 kbps	23.19	23.56	<b>23.60</b>
EVDO (Rev.A)	RETAP	128 bits	23.21	23.42	23.54
		2048 bits	23.20	23.47	23.51
		4096 bits	23.22	23.48	<b>23.55</b>

LTE Band 25				Average Conducted Power (dBm)		
Bandwidth	Modulation	RB	RB Start	Channel 26055	Channel 26365	Channel 26675
3MHz	QPSK	1	0	23.07	23.03	22.70
		1	14	22.93	23.00	23.08
		8	4	22.97	23.04	22.82
		15	0	21.99	21.98	21.83
	16QAM	1	0	21.62	21.92	21.42
		1	14	21.58	22.02	21.44
		8	4	21.36	21.89	21.13
		15	0	21.08	21.05	20.95
5MHz	QPSK	1	0	22.88	23.08	22.85
		1	24	22.88	23.00	22.90
		12	6	22.99	23.14	22.76
		25	0	21.89	21.93	21.77
	16QAM	1	0	22.02	21.96	21.62
		1	24	21.93	21.97	21.52
		12	6	22.13	22.29	22.10
		25	0	20.92	20.93	20.78

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Bandwidth	Modulation	RB	RB Start	Channel 26090	Channel 26365	Channel 26640
10MHz	QPSK	1	0	22.99	<b>23.22</b>	22.91
		1	49	23.12	23.01	22.98
		25	13	22.73	23.22	23.19
		50	0	21.78	21.89	21.72
	16QAM	1	0	<b>22.10</b>	21.79	21.79
		1	49	21.83	22.02	22.05
		25	13	21.81	21.98	21.97
		50	0	20.84	20.88	20.78

**Note:**

1) The maximum RF Output Power is marked in bold.

## 2.4. Effective Isotropic Radiated Power

### Ambient condition

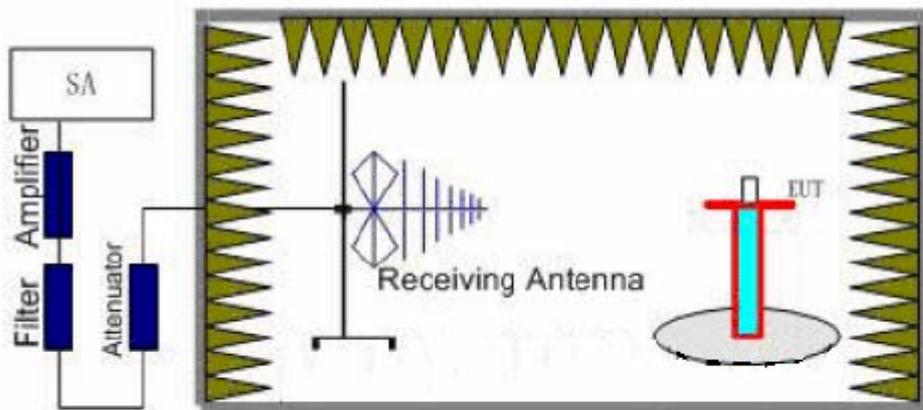
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

### Methods of Measurement

The measurement procedures in TIA- 603C are used.

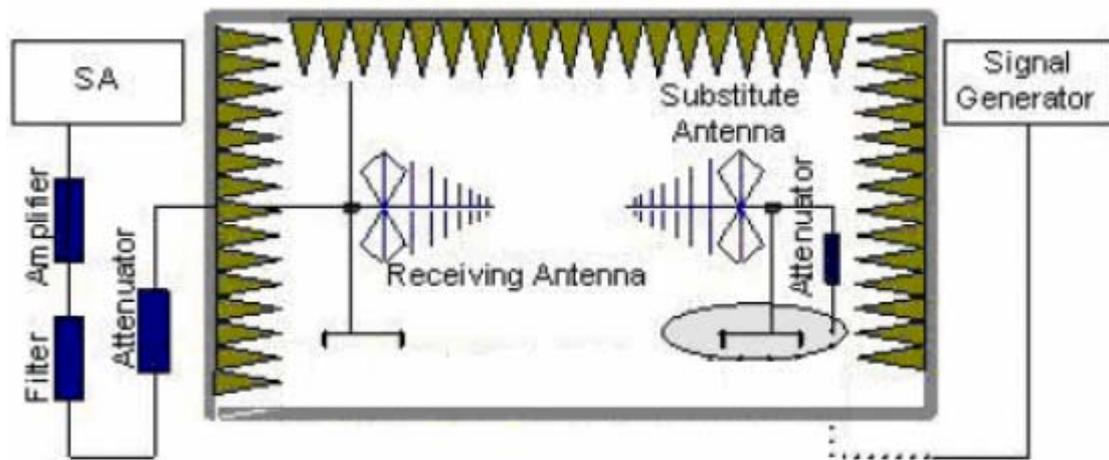
#### Step 1:

The measurement is carried out in the semi-anechoic chamber. EUT was placed on a 0.8 meters high non-conductive table at a 3 meters test distance from the test receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. A radio link shall be established between EUT and Tester. The output power of the cell signal of the tester will be decreased until the output power of the EUT reach a maximum value. A peak detector is used while RBW and VBW are both set to 3MHz. During the measurement, the highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna moved up and down over a range from 1 to 4 meters in both horizontally and vertically polarized orientations. The test setup refers to figure below.



#### Step 2:

A dipole antenna shall be substituted in place of the EUT. The antenna will be driven by a signal generator with an adjustable S.G. applied through a 30dB amplifier and a Tx cable. Then the Analyzer reading which is equal to LVL is recorded while the antenna was moving up and down. The E.R.P. /E.I.R.P. of the EUT can be calculated through the level of the signal generator, Tx cable loss and the gain of the substitution antenna. The test setup refers to figure below.



$$E.R.P = S.G + 30 - Tx \text{ Cable loss} + \text{Substitution antenna gain} - 2.15.$$

$$EIRP = E.R.P + 2.15$$

### Limits

Rule Part 24.232(b) specifies that "Mobile/portable stations are limited to 2 watts EIRP. Peak power" and Rule Part 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage".

Limit (EIRP)	$\leq 2 \text{ W (33 dBm)}$
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### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 1.19 \text{ dB}$

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**Test Results: Pass**

CDMA PCS	Channel	Polarization	LVL (dBm)	SG+30 (dBm)	Gain (dBi)	Cable Loss (dBm)	E.I.R.P. (dBm)
RC3 (SO55)	25	Vertical	-26.43	42.32	1.92	18.18	26.06
	600	Vertical	-25.46	41.91	1.94	18.27	25.58
	1175	Vertical	-23.87	41.6	1.9	18.3	25.20
EVDO (Rev.0)	25	Vertical	-26.43	42.2	1.92	18.18	25.94
	600	Vertical	-25.46	41.88	1.94	18.27	25.55
	1175	Vertical	-23.87	41.51	1.9	18.3	25.11
EVDO (Rev.A)	25	Vertical	-26.43	42.15	1.92	18.18	25.89
	600	Vertical	-25.46	41.85	1.94	18.27	25.52
	1175	Vertical	-23.87	41.43	1.9	18.3	25.03
1X Advance(SO73)	25	Vertical	-26.43	42.25	1.92	18.18	25.99
	600	Vertical	-25.46	42.05	1.94	18.27	25.72
	1175	Vertical	-23.87	41.63	1.9	18.3	25.23

LTE Band 25									
RB	Modulation	Bandwidth (MHz)	Channel	Polarization	LVL (dBm)	SG+30 (dBm)	Gain (dBi)	Cable Loss (dBm)	E.I.R.P. (dBm)
1	QPSK	10	26090	Vertical	-26.43	41.88	1.92	18.18	25.62
			26365	Vertical	-25.46	41.38	1.94	18.27	25.05
			26640	Vertical	-23.87	40.99	1.9	18.3	24.59
	16QAM		26090	Vertical	-26.27	40.83	1.93	17.78	24.98
			26365	Vertical	-25.17	40.59	1.94	17.89	24.64
			26640	Vertical	-23.62	40.20	1.90	17.97	24.13
1	QPSK	5	26065	Vertical	-26.59	41.40	1.92	17.79	25.53
			26365	Vertical	-25.49	40.89	1.94	17.85	24.98
			26665	Vertical	-23.78	40.52	1.90	17.96	24.46
	16QAM		26065	Vertical	-26.13	40.66	1.92	17.79	24.79
			26365	Vertical	-25.09	40.09	1.94	17.85	24.18
			26665	Vertical	-23.48	39.91	1.90	17.96	23.85
1	QPSK	3	26055	Vertical	-26.31	41.45	1.92	17.79	25.58
			26365	Vertical	-25.39	40.70	1.94	17.85	24.79
			26675	Vertical	-23.28	40.45	1.90	17.97	24.38

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	16QAM		26055	Vertical	-26.07	40.78	1.92	17.79	24.91
			26365	Vertical	-25.32	39.97	1.94	17.85	24.06
			26675	Vertical	-23.45	39.86	1.90	17.97	23.79

- Note: 1. This device was tested under all configurations and the worst case radiated power is reported while transmitting with the maximum number of resource blocks in each channel bandwidth.
2.  $E.R.P = S.G + 30 - Tx \text{ Cable loss} + \text{Substitution antenna gain} - 2.15$
3.  $EIRP = E.R.P + 2.15$

## 2.5. Occupied Bandwidth

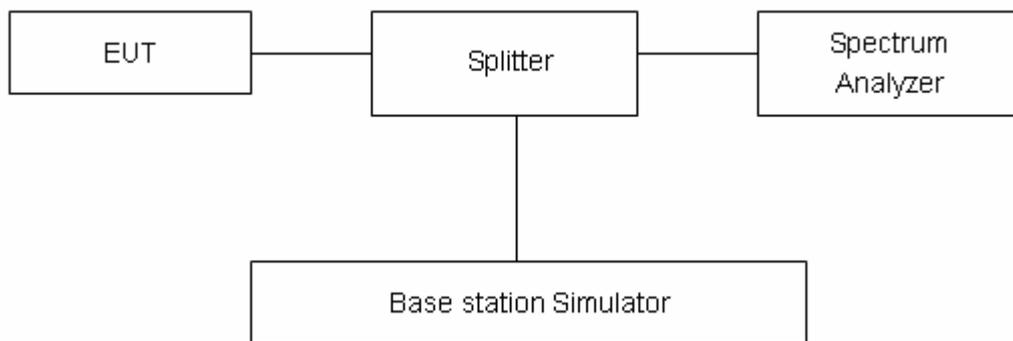
### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

### Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The occupied bandwidth is measured using spectrum analyzer. The RBW is set larger than 1% of 26dB bandwidth. 99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

### Test Setup



### Limits

No specific occupied bandwidth requirements in part 2.1049.

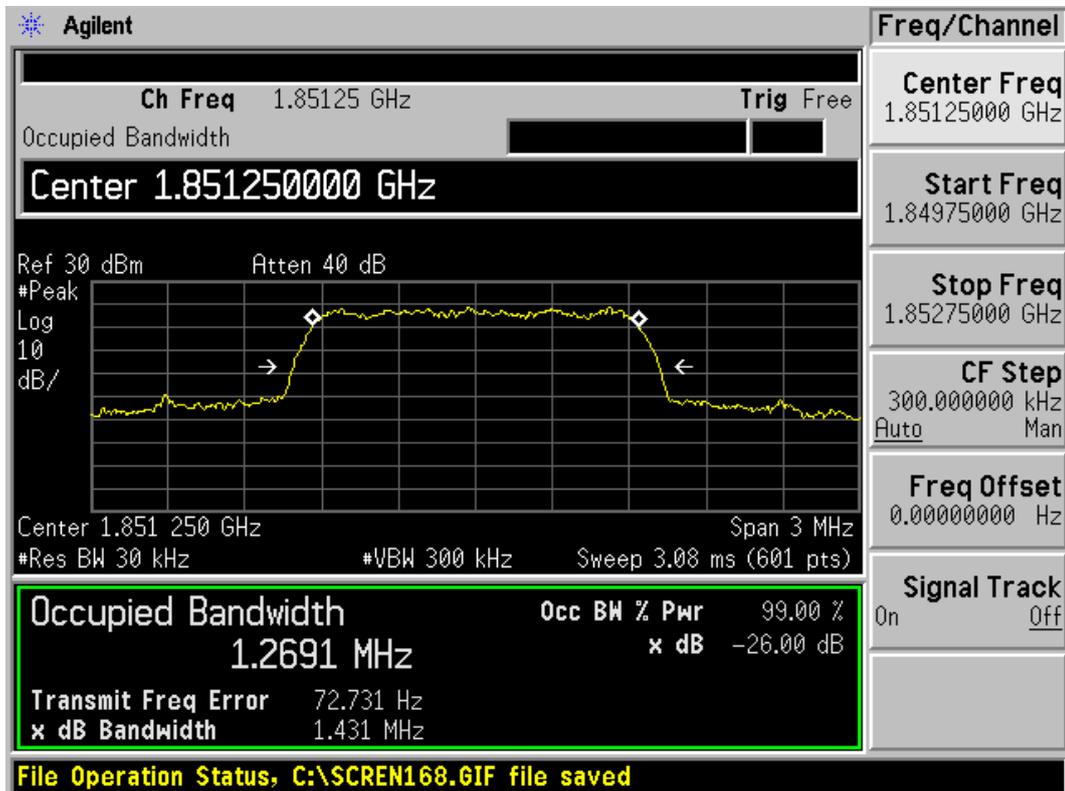
### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 624\text{Hz}$ .

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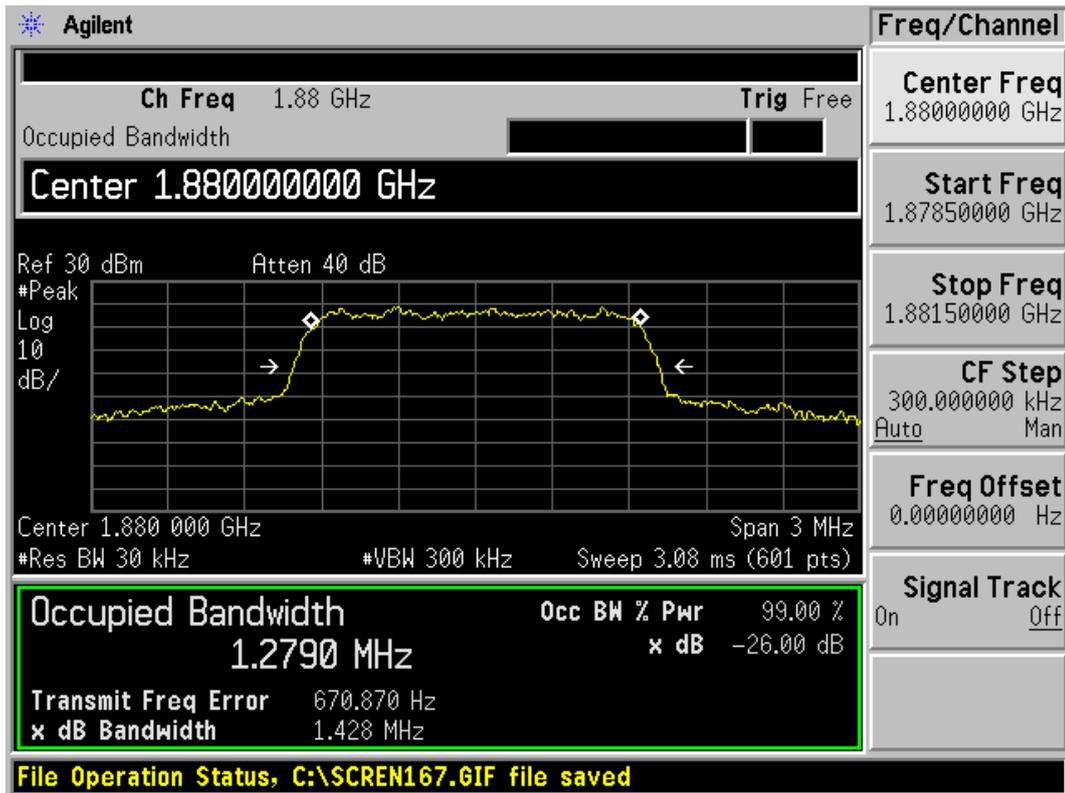
### Test Result

CDMA PCS	Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	-26dBc Bandwidth(kHz)
RC3 SO55	25	1851.25	1.2691	1.431
	600	1880.0	1.2790	1.428
	1175	1908.75	1.2762	1.434
EVDO (Rev.0)	25	1851.25	1.2685	1.425
	600	1880.0	1.2744	1.429
	1175	1908.75	1.2698	1.432
EVDO (Rev.A)	25	1851.25	1.2746	1.423
	600	1880.0	1.2755	1.424
	1175	1908.75	1.2824	1.437
1X Advance(SO73)	25	1851.25	1.2691	1.431
	600	1880.0	1.2790	1.428
	1175	1908.75	1.2762	1.434

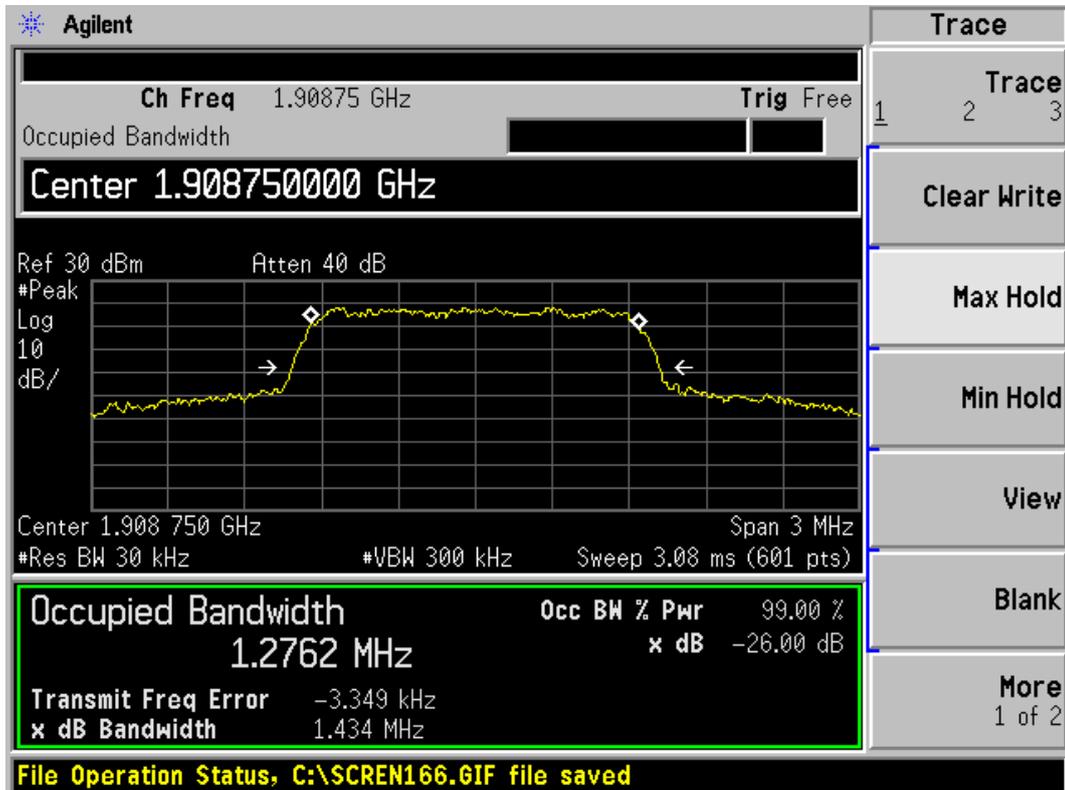


CDMA PCS SO55 CH25 Occupied Bandwidth

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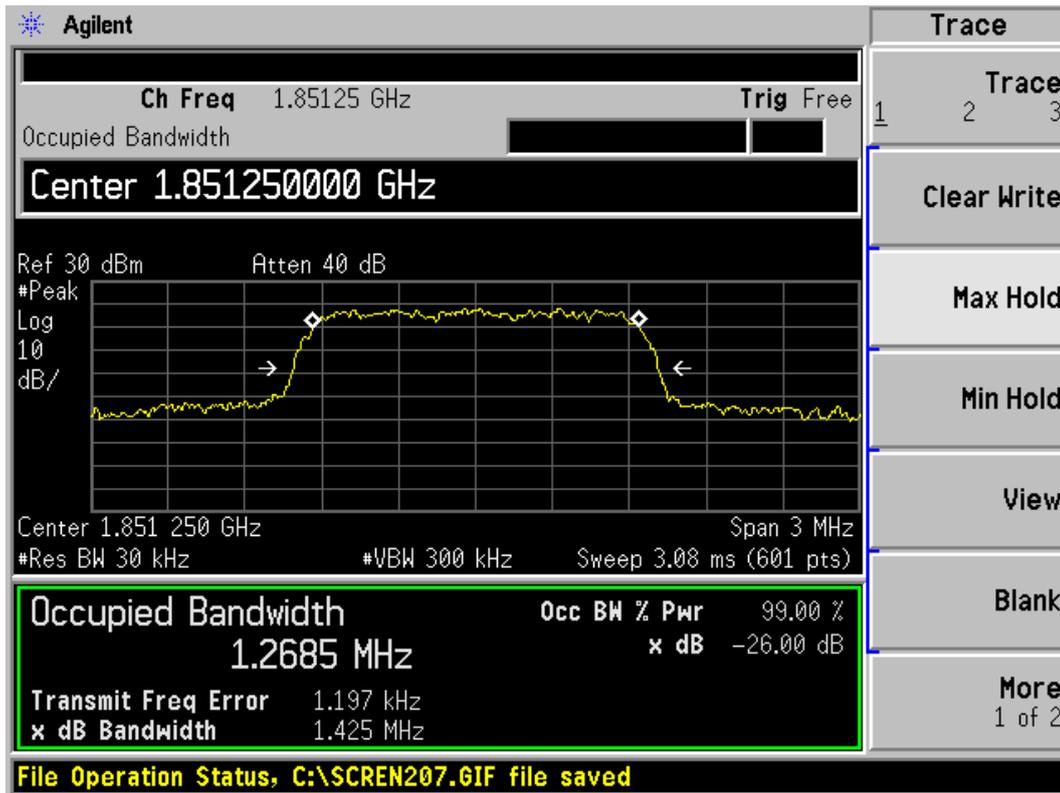


CDMA PCS SO55 CH600 Occupied Bandwidth

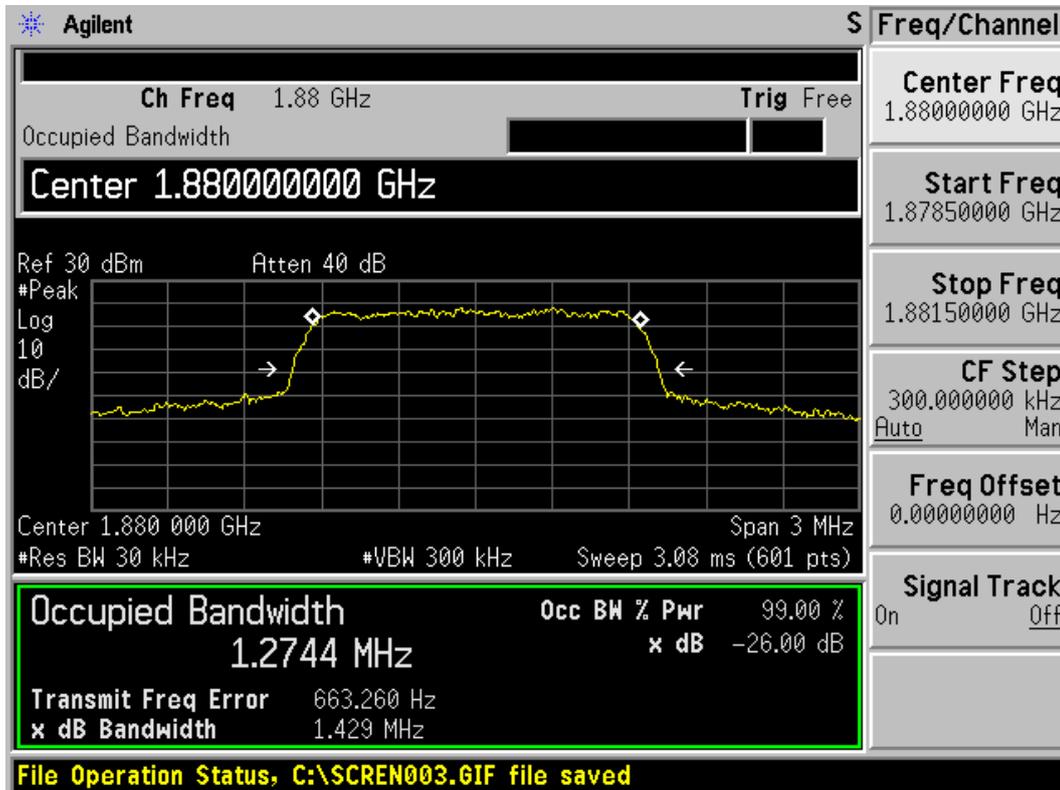


CDMA PCS SO55 CH1175 Occupied Bandwidth

# TA Technology (Shanghai) Co., Ltd. Test Report

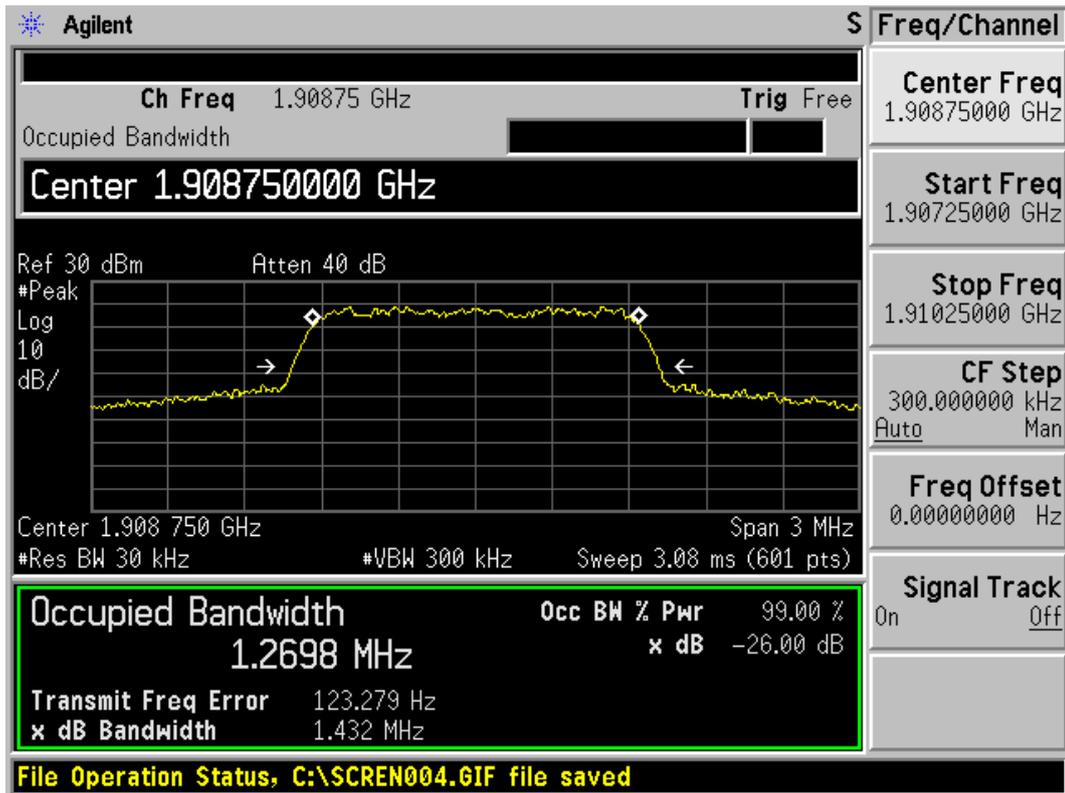


CDMA PCS EVDO (Rev.0) CH25 Occupied Bandwidth

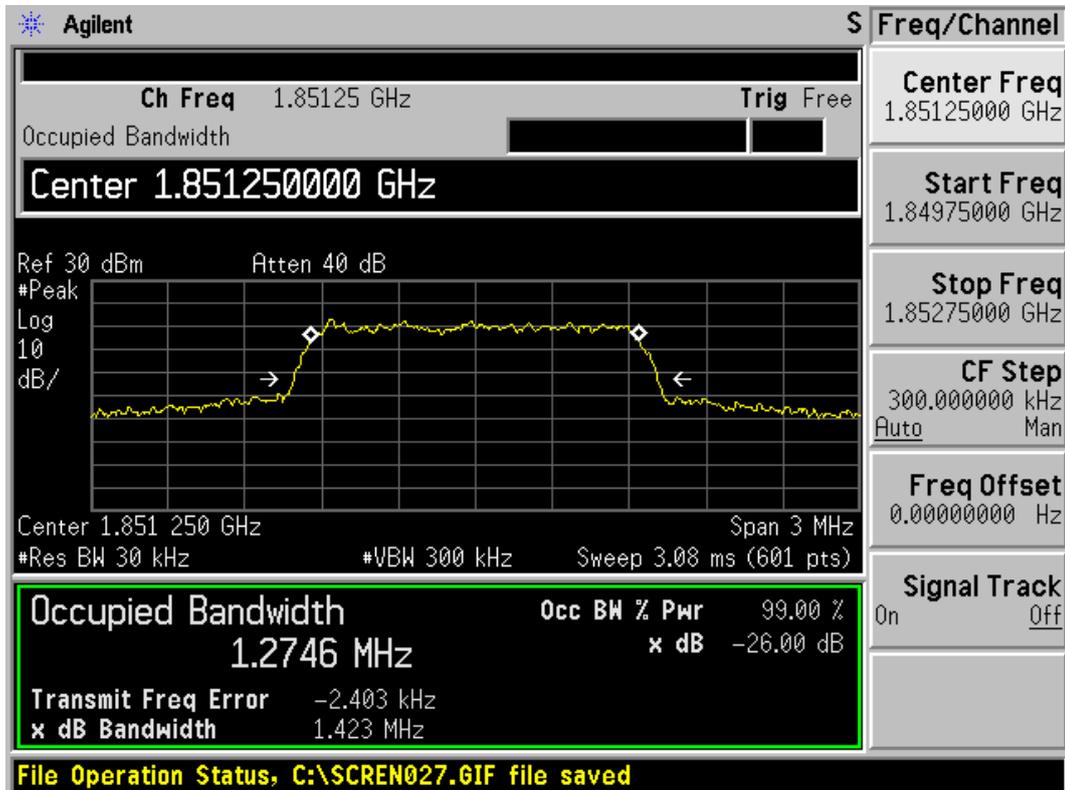


CDMA PCS EVDO (Rev.0) CH600 Occupied Bandwidth

# TA Technology (Shanghai) Co., Ltd. Test Report

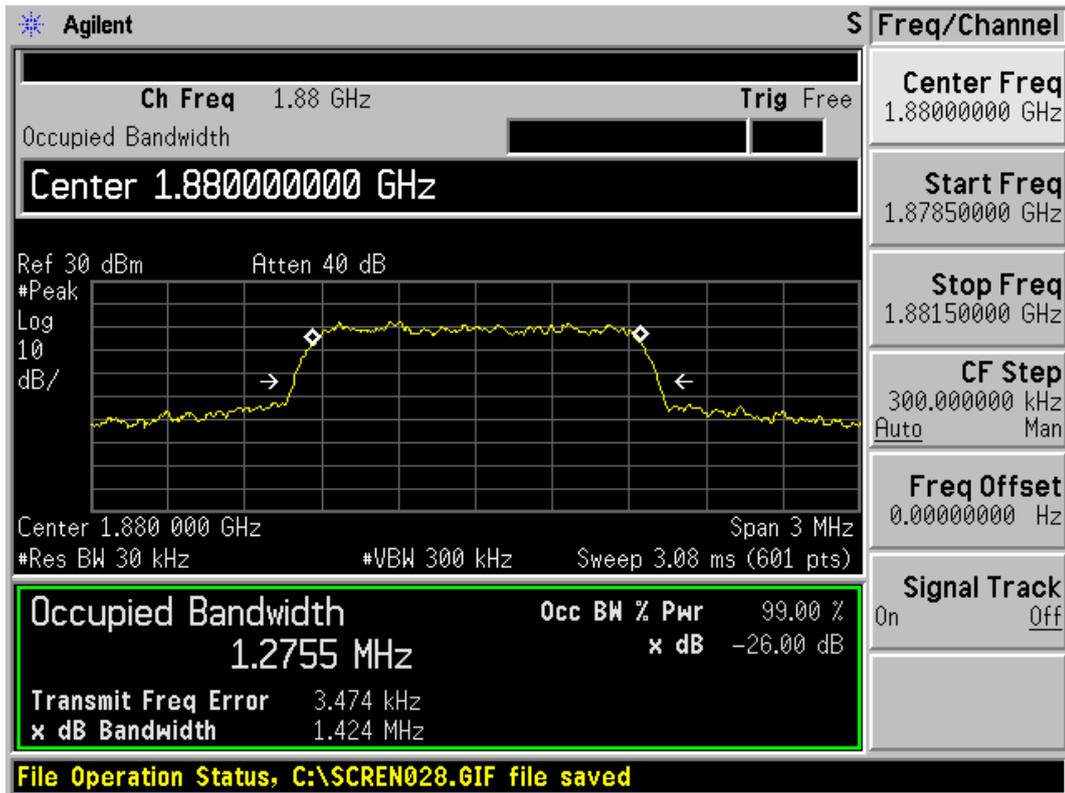


CDMA PCS EVDO (Rev.0) CH1175 Occupied Bandwidth

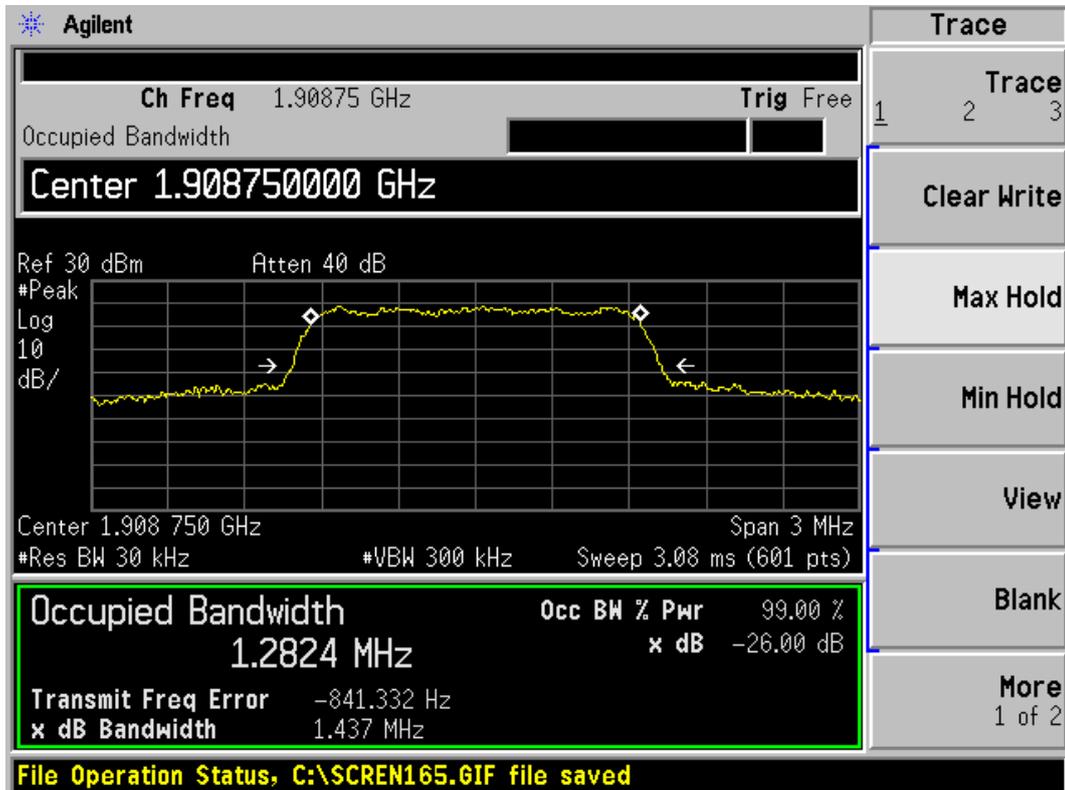


CDMA PCS EVDO (Rev.A) CH25 Occupied Bandwidth

# TA Technology (Shanghai) Co., Ltd. Test Report

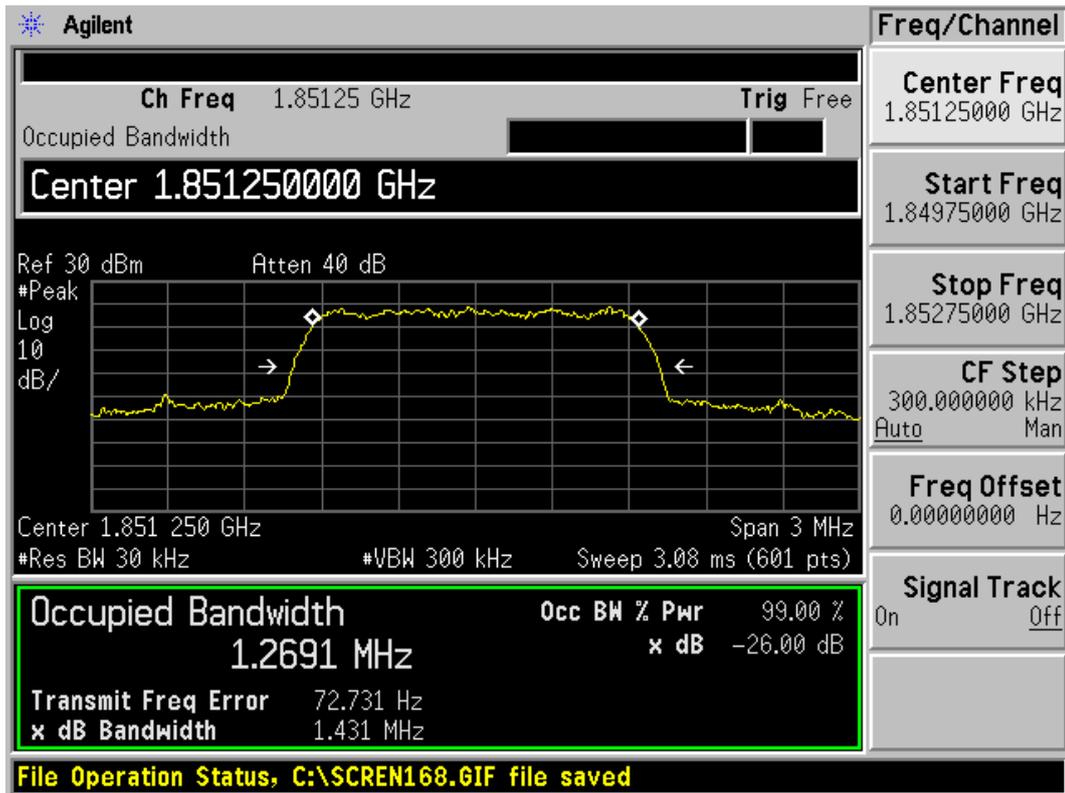


CDMA PCS EVDO (Rev.A) CH600 Occupied Bandwidth

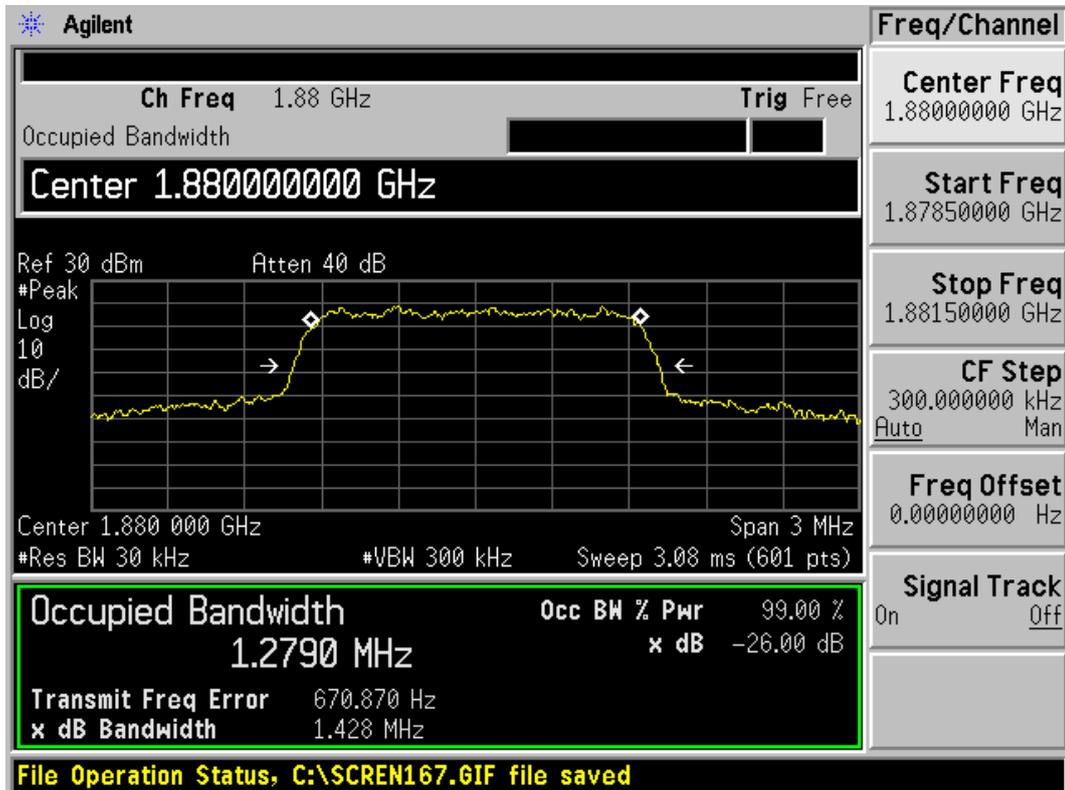


CDMA PCS EVDO (Rev.A) CH1175 Occupied Bandwidth

# TA Technology (Shanghai) Co., Ltd. Test Report

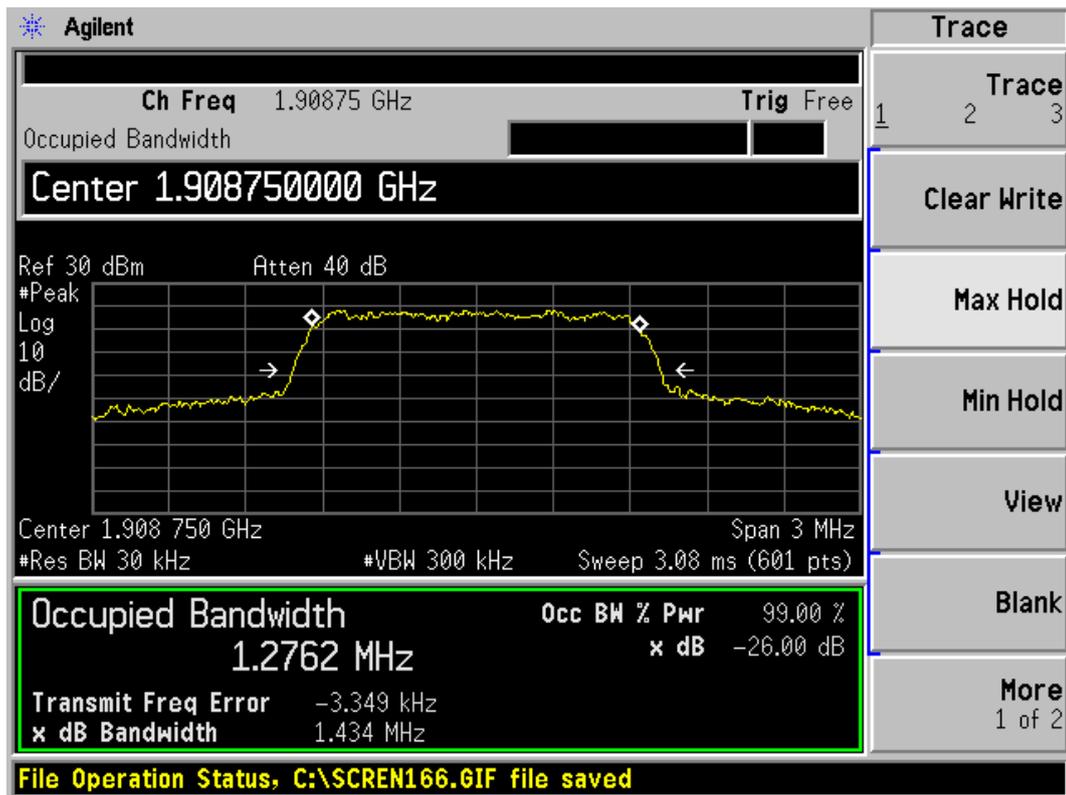


CDMA PCS 1X Advance CH25 Occupied Bandwidth



CDMA PCS 1X Advance CH600 Occupied Bandwidth

# TA Technology (Shanghai) Co., Ltd. Test Report



CDMA PCS 1X Advance CH1175 Occupied Bandwidth

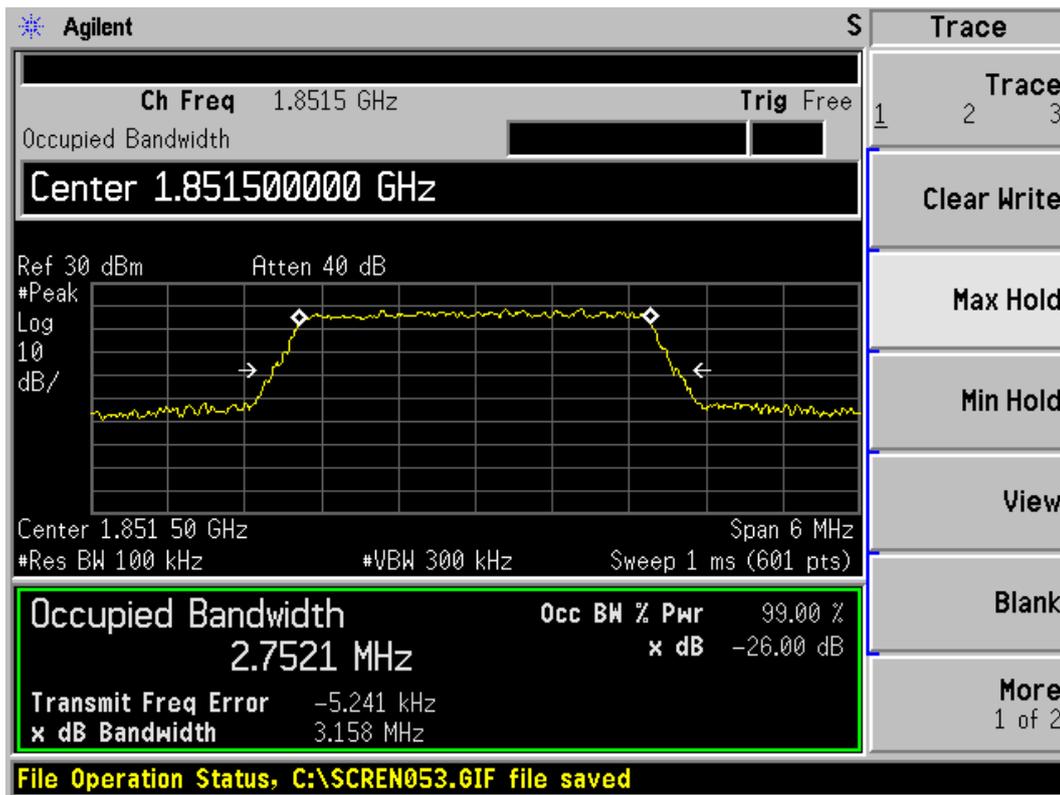
**TA Technology (Shanghai) Co., Ltd.**  
**Test Report**

Report No.: RHA1301-0016RF02R2

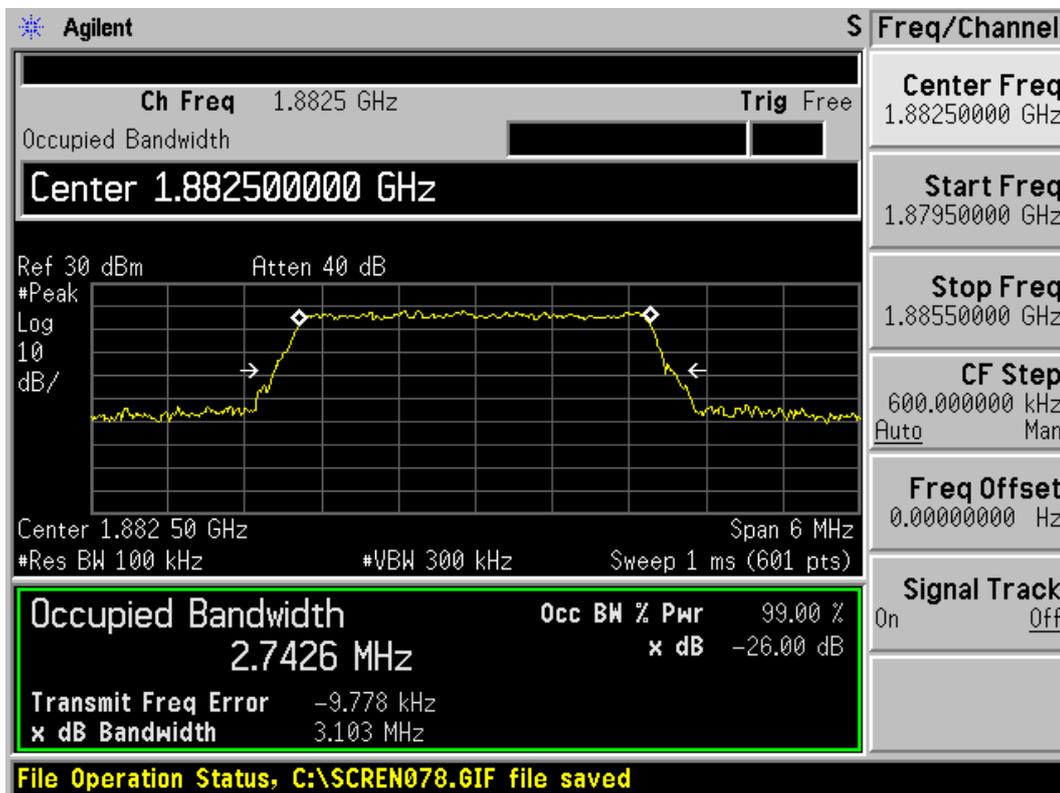
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LTE Band 25						
RB	Modulation	Bandwidth (MHz)	Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	-26dBc Bandwidth(kHz)
1	QPSK	3	26055	1851.5	2.7521	3.158
			26365	1882.5	2.7426	3.103
			26675	1913.5	2.7517	3.134
		5	26065	1852.5	4.5236	5.113
			26365	1882.5	4.5107	5.058
			26665	1912.5	4.4974	5.104
		10	26090	1855.0	9.0107	10.078
			26365	1882.5	9.0003	10.052
			26640	1910	8.9817	10.045
	16QAM	3	26055	1851.5	2.7494	3.148
			26365	1882.5	2.7430	3.095
			26675	1913.5	2.7520	3.134
		5	26065	1852.5	4.5342	5.05
			26365	1882.5	4.5171	5.001
			26665	1912.5	4.5124	5.023
		10	26090	1855.0	9.0469	9.868
			26365	1882.5	9.0110	9.894
			26640	1910	8.9927	9.901

# TA Technology (Shanghai) Co., Ltd. Test Report

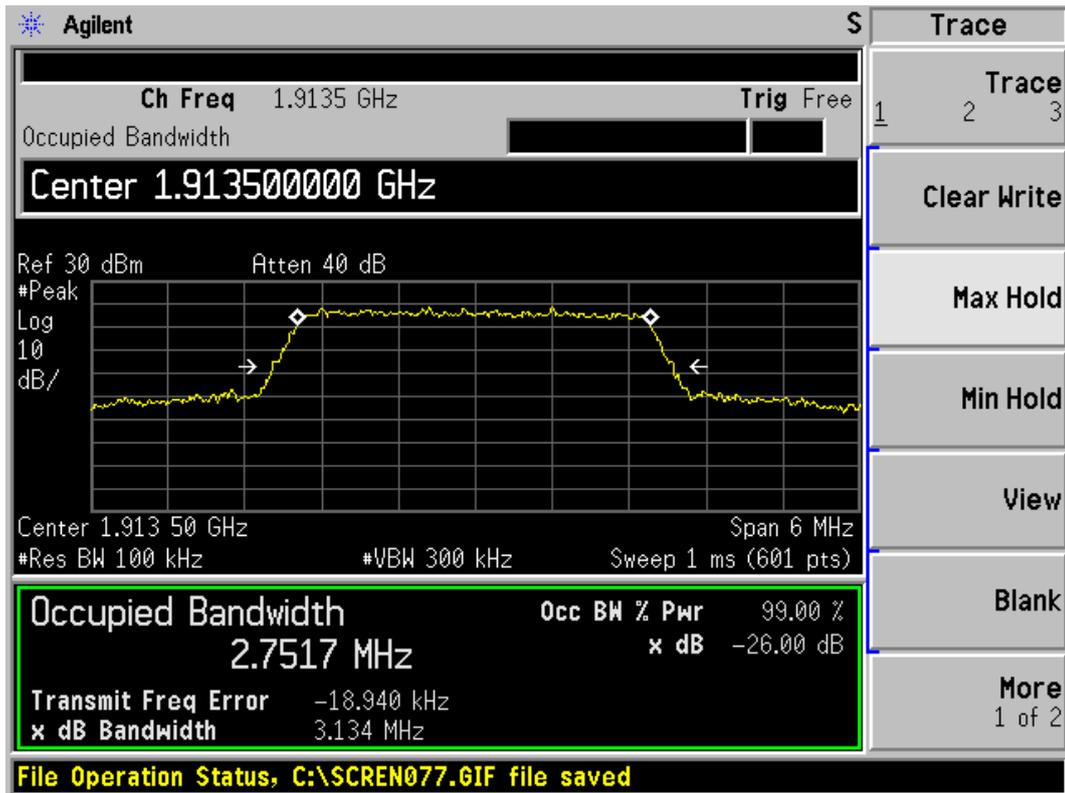


LTE Band 25 QPSK Bandwidth = 3MHz CH26055 Occupied Bandwidth

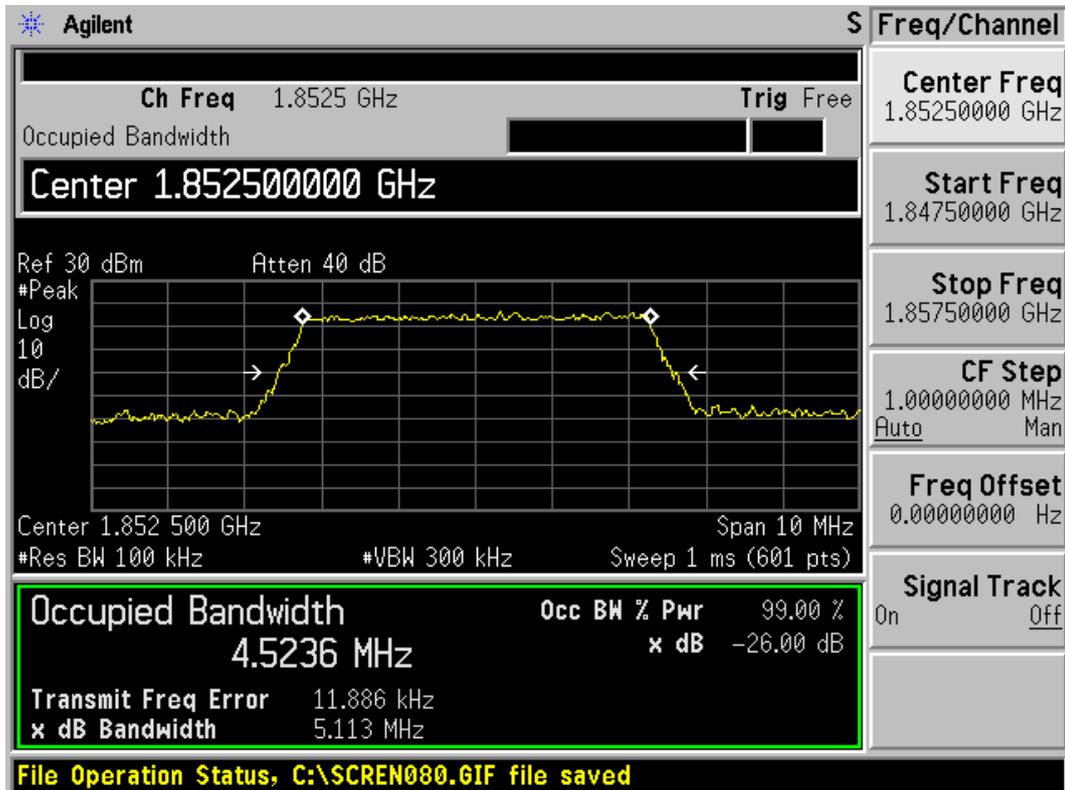


LTE Band 25 QPSK Bandwidth = 3MHz CH26365 Occupied Bandwidth

# TA Technology (Shanghai) Co., Ltd. Test Report

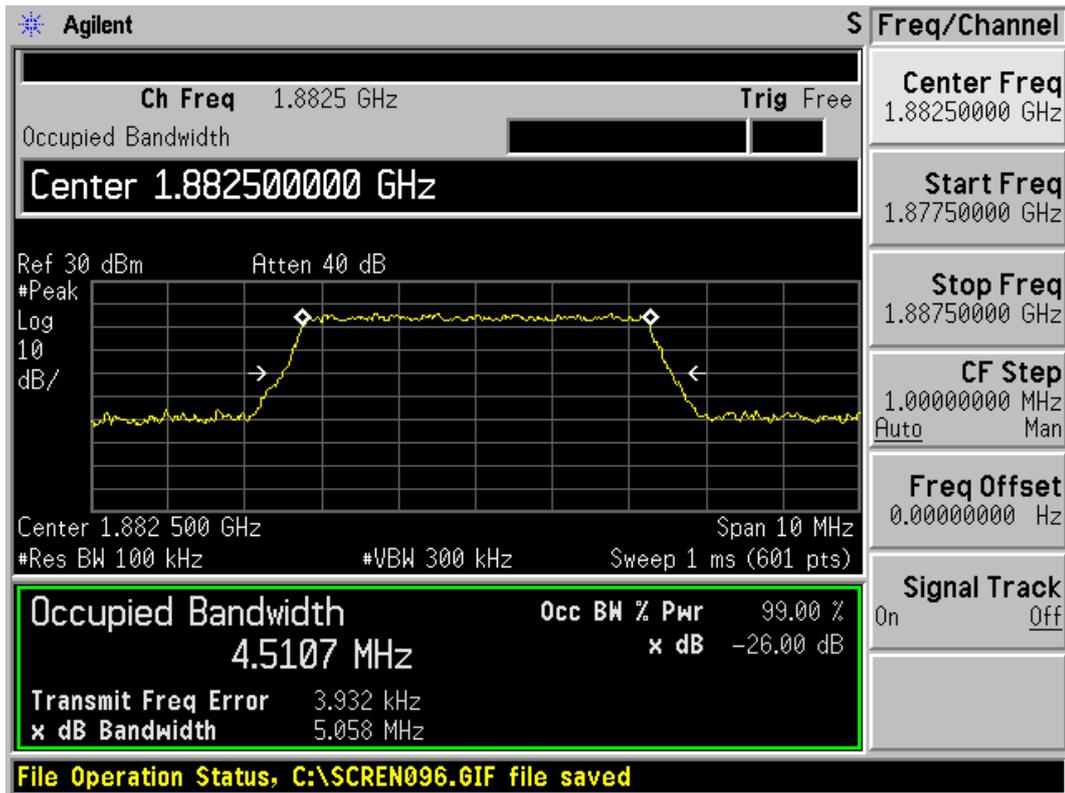


LTE Band 25 QPSK Bandwidth = 3MHz CH26675 Occupied Bandwidth

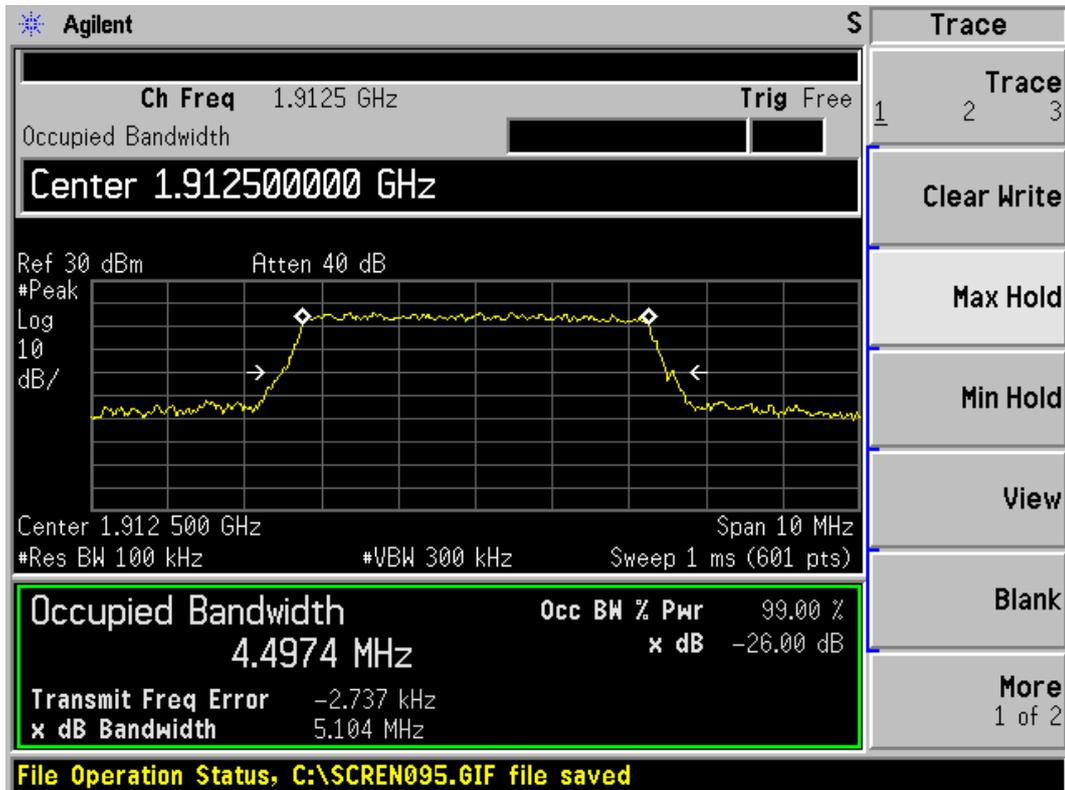


LTE Band 25 QPSK Bandwidth = 5MHz CH26065 Occupied Bandwidth

# TA Technology (Shanghai) Co., Ltd. Test Report

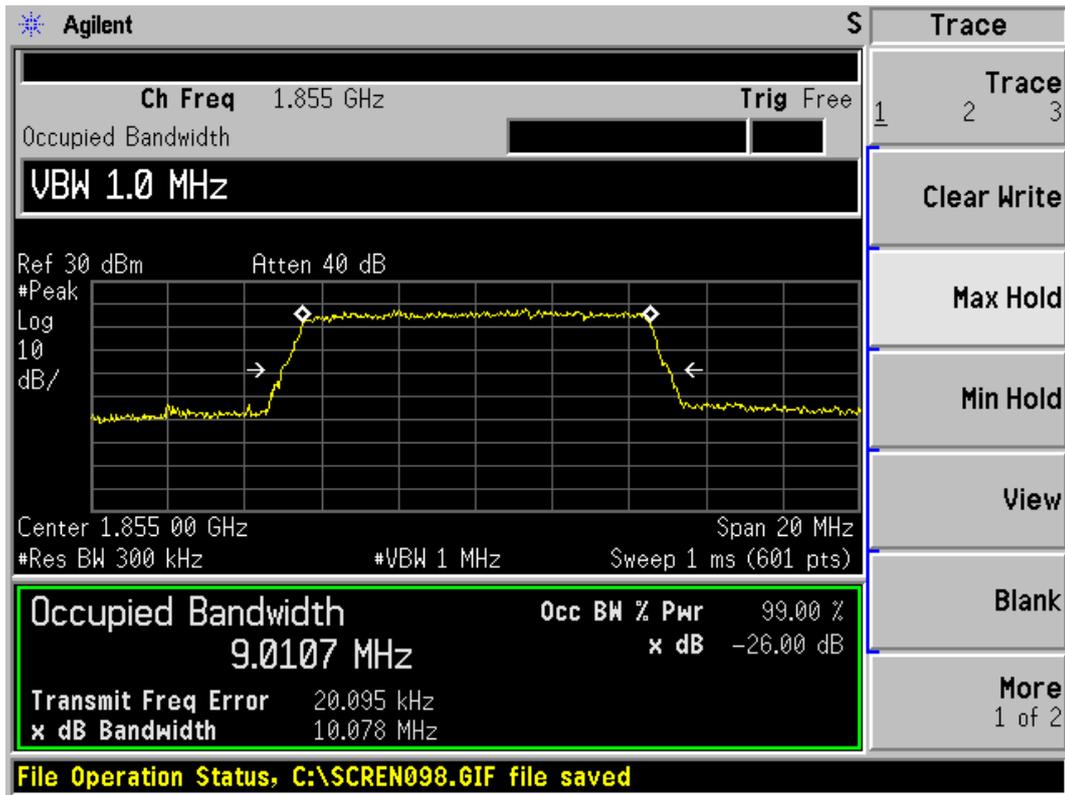


LTE Band 25 QPSK Bandwidth = 5MHz CH26365 Occupied Bandwidth

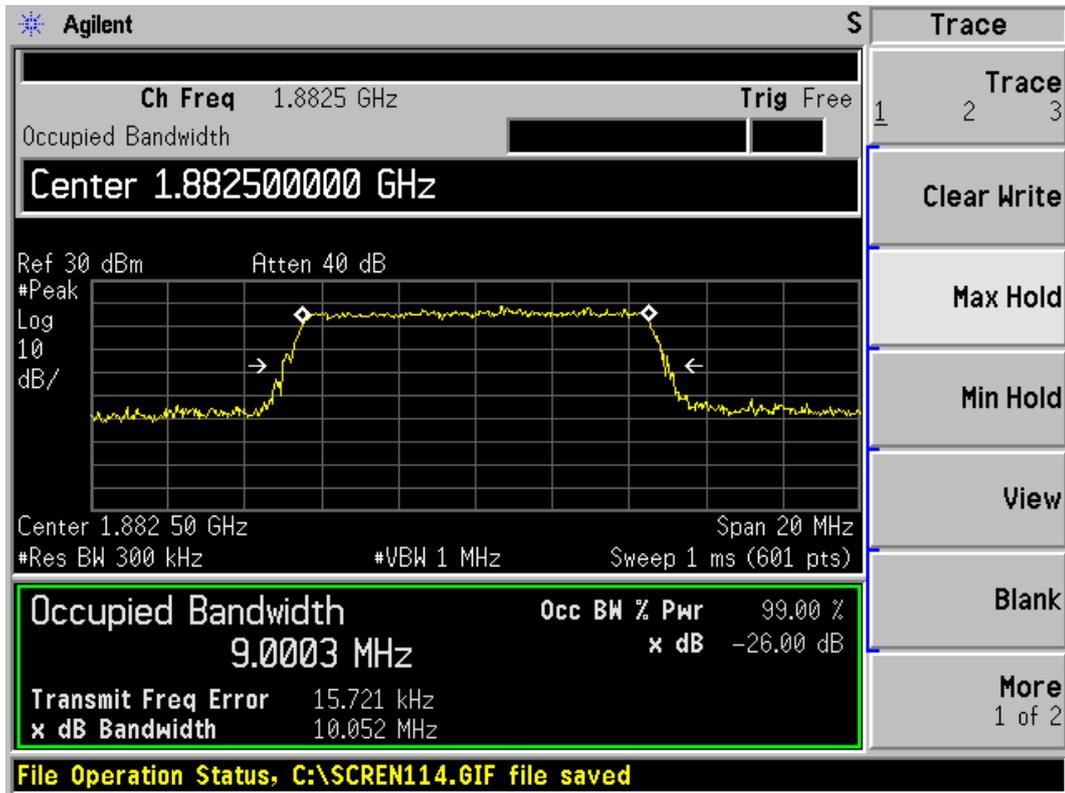


LTE Band 25 QPSK Bandwidth = 5MHz CH26665 Occupied Bandwidth

# TA Technology (Shanghai) Co., Ltd. Test Report

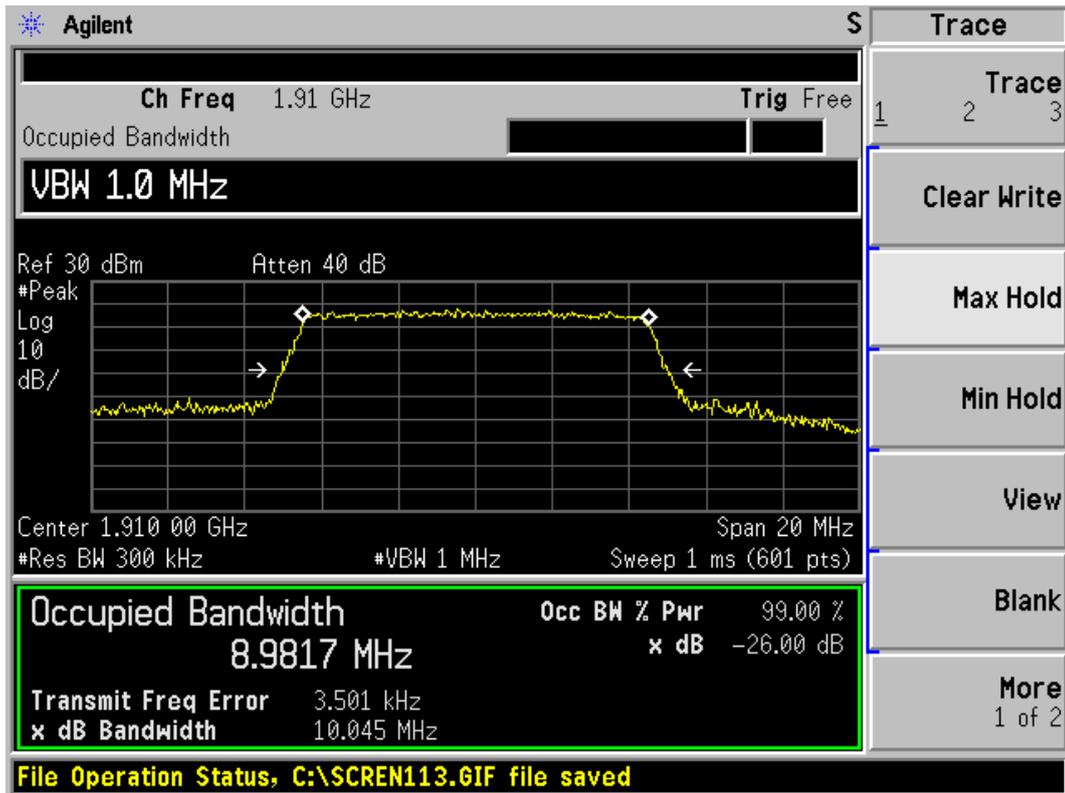


LTE Band 25 QPSK Bandwidth = 10MHz CH26090 Occupied Bandwidth

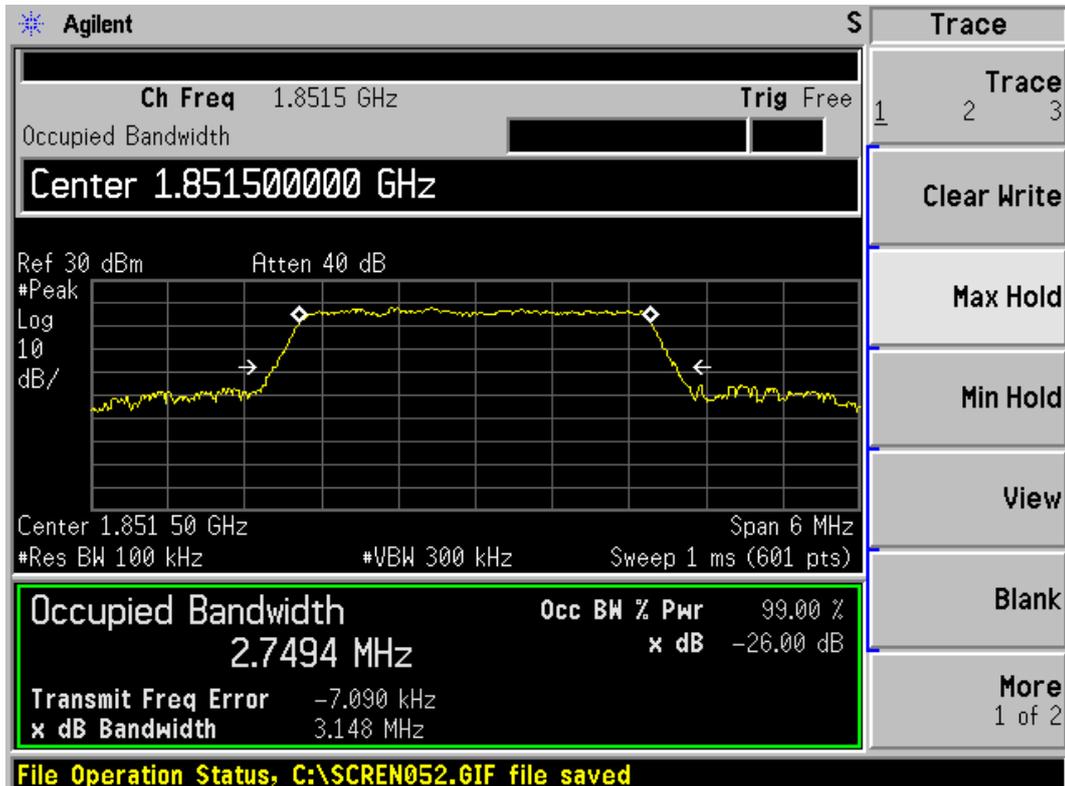


LTE Band 25 QPSK Bandwidth = 10MHz CH26365 Occupied Bandwidth

# TA Technology (Shanghai) Co., Ltd. Test Report

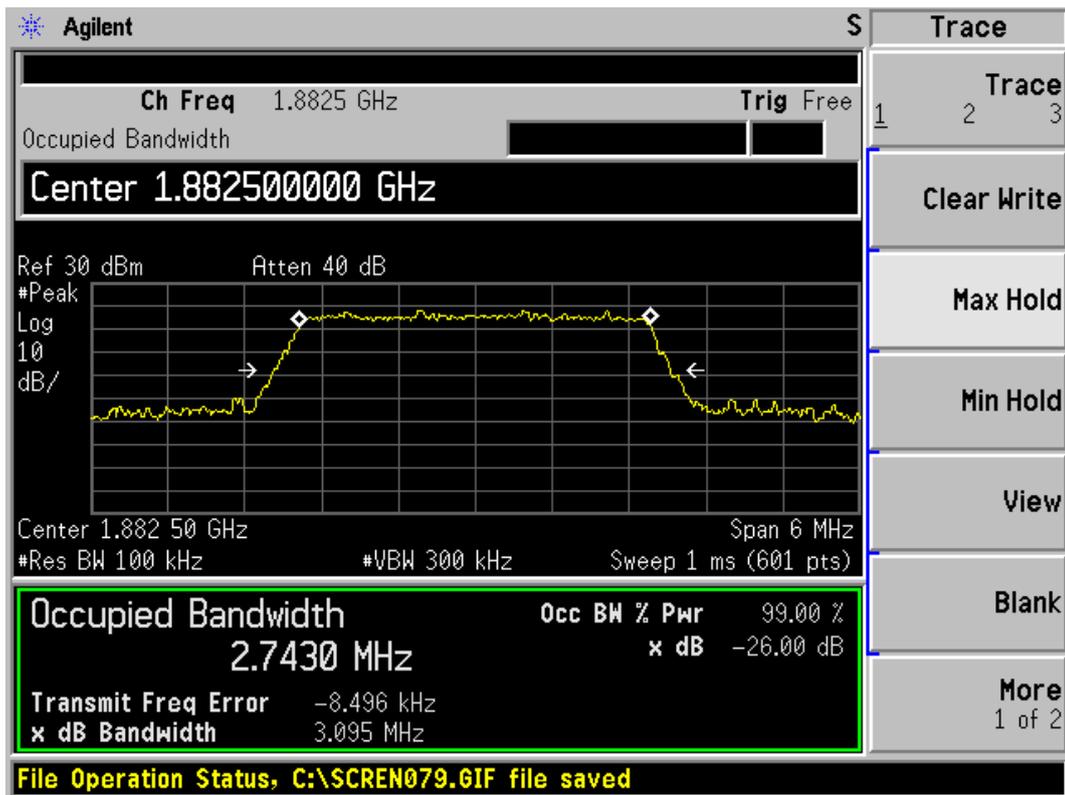


LTE Band 25 QPSK Bandwidth = 10MHz CH26640 Occupied Bandwidth

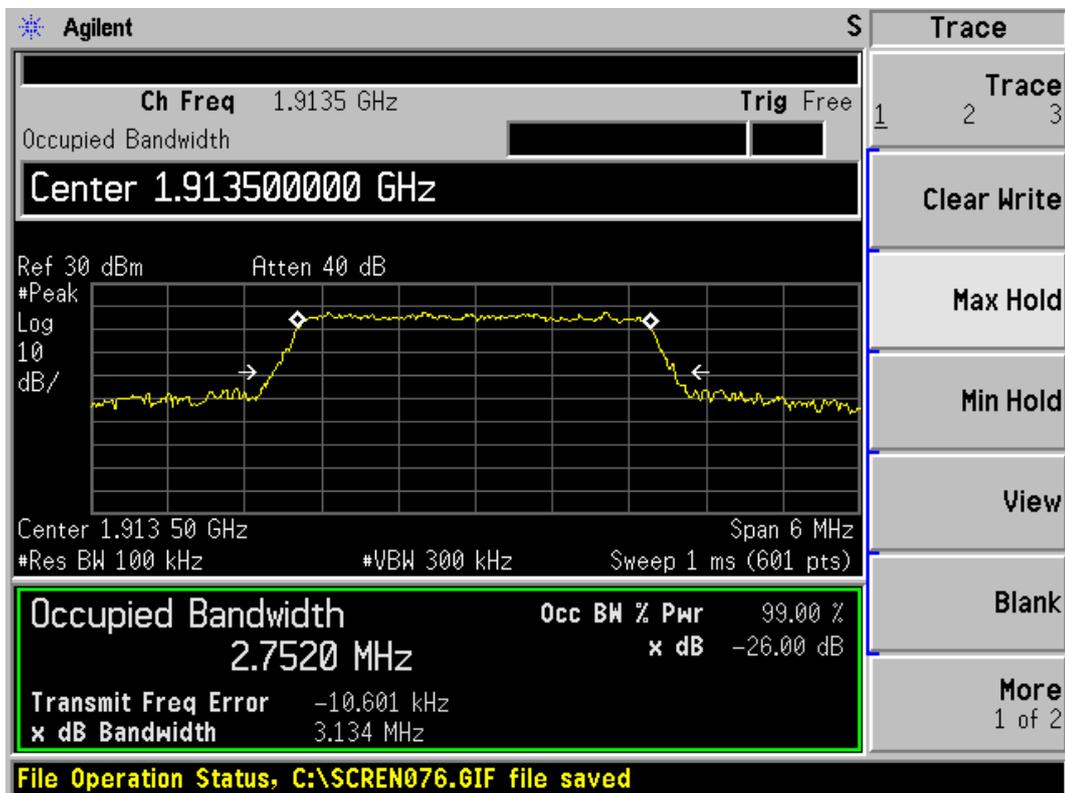


LTE Band 25 16QAM Bandwidth = 3MHz CH26055 Occupied Bandwidth

# TA Technology (Shanghai) Co., Ltd. Test Report

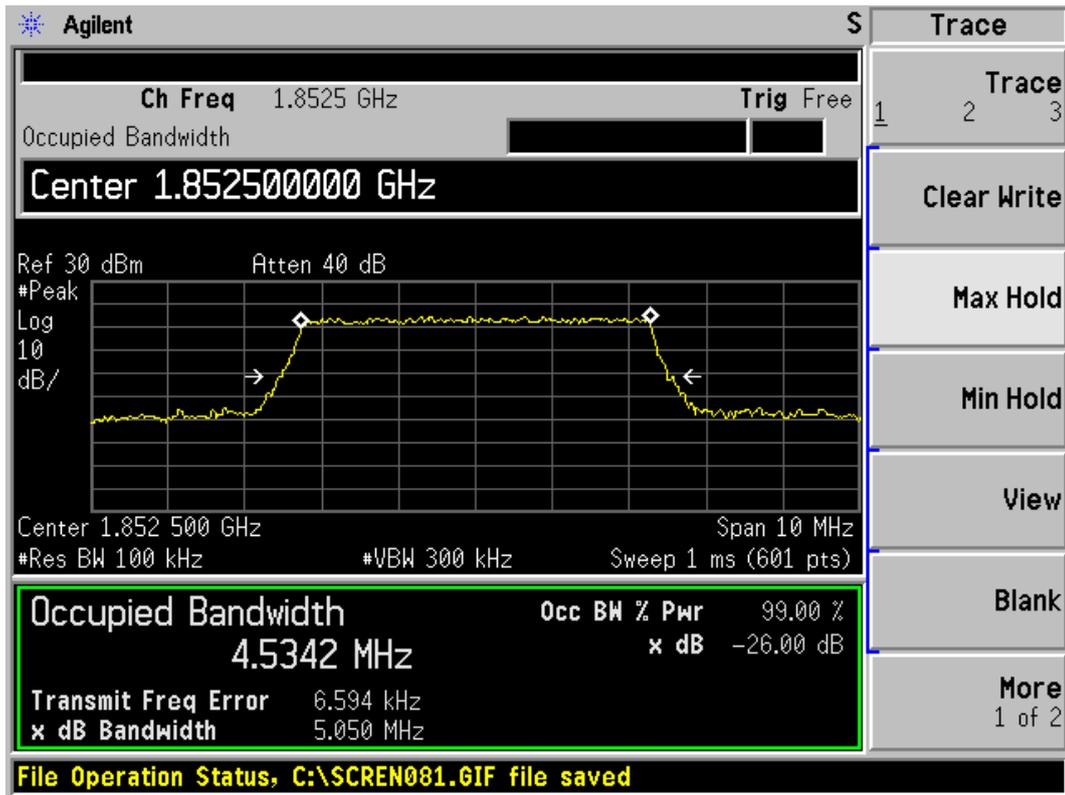


LTE Band 25 16QAM Bandwidth = 3MHz CH26365 Occupied Bandwidth

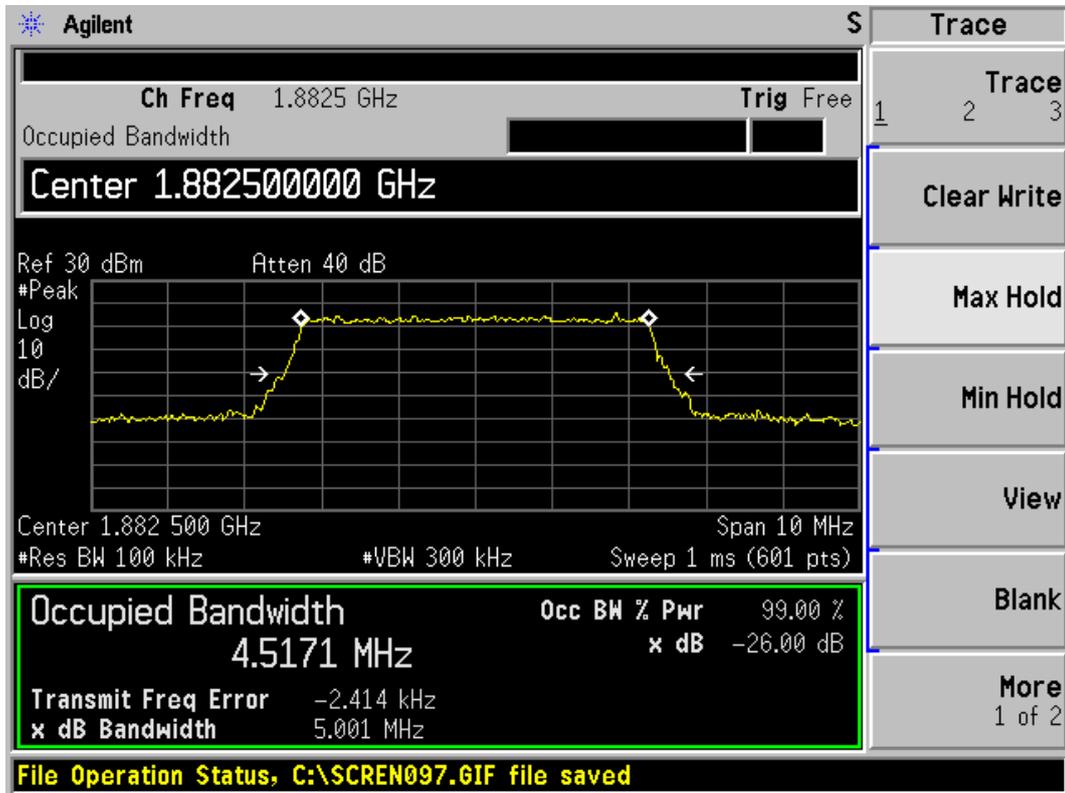


LTE Band 25 16QAM Bandwidth = 3MHz CH26675 Occupied Bandwidth

# TA Technology (Shanghai) Co., Ltd. Test Report

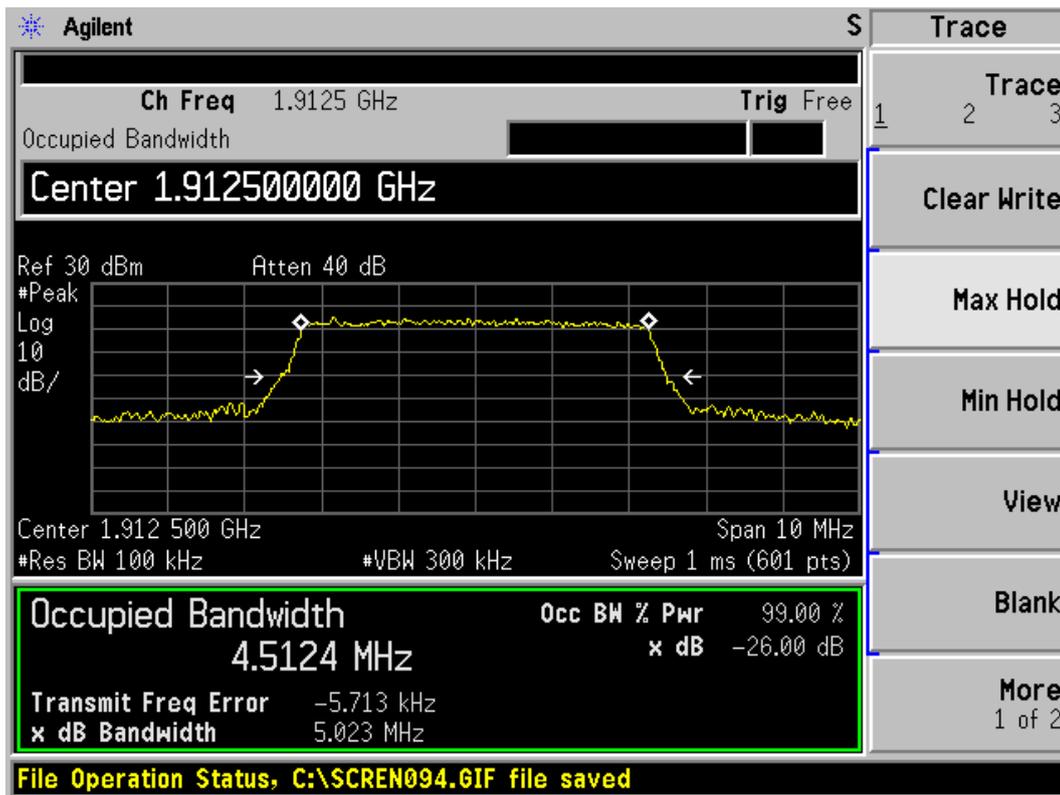


LTE Band 25 16QAM Bandwidth = 5MHz CH26065 Occupied Bandwidth

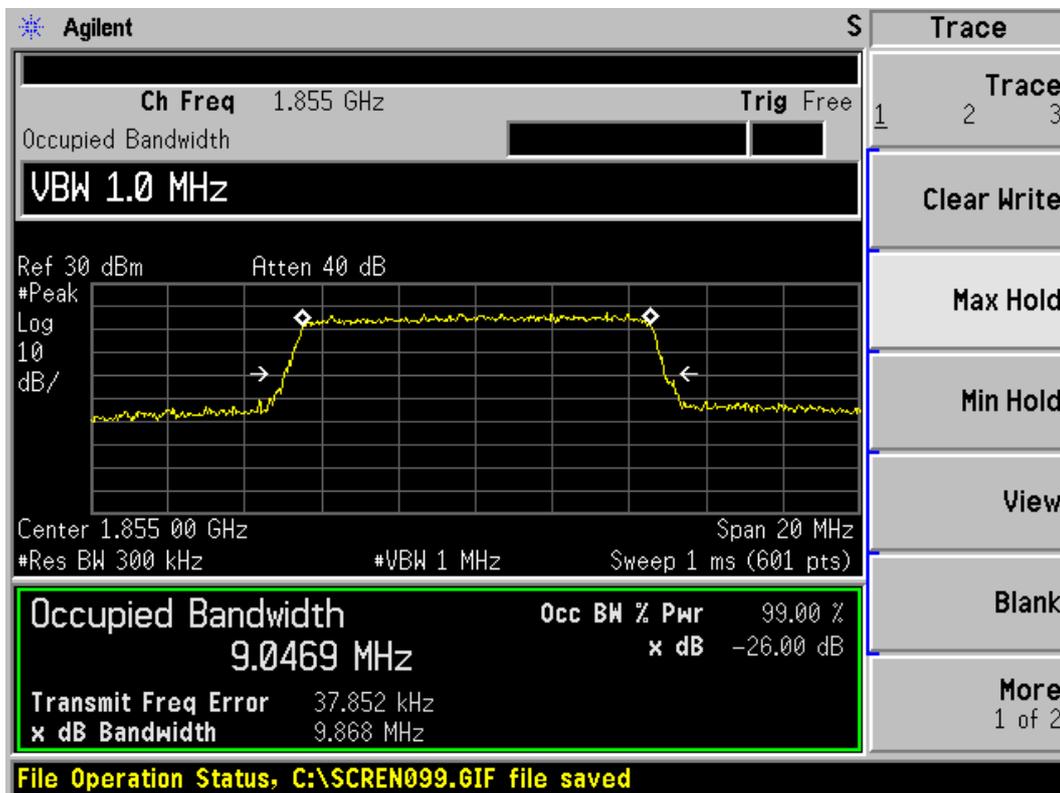


LTE Band 25 16QAM Bandwidth = 5MHz CH26365 Occupied Bandwidth

# TA Technology (Shanghai) Co., Ltd. Test Report

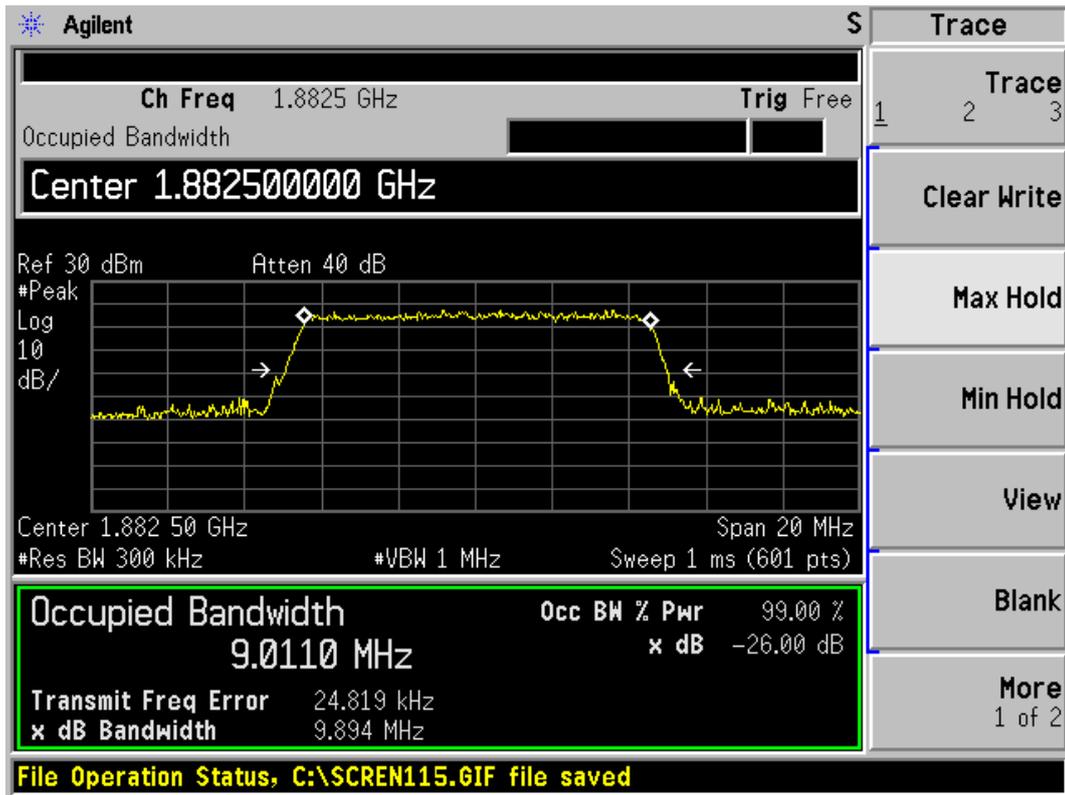


LTE Band 25 16QAM Bandwidth = 5MHz CH26665 Occupied Bandwidth

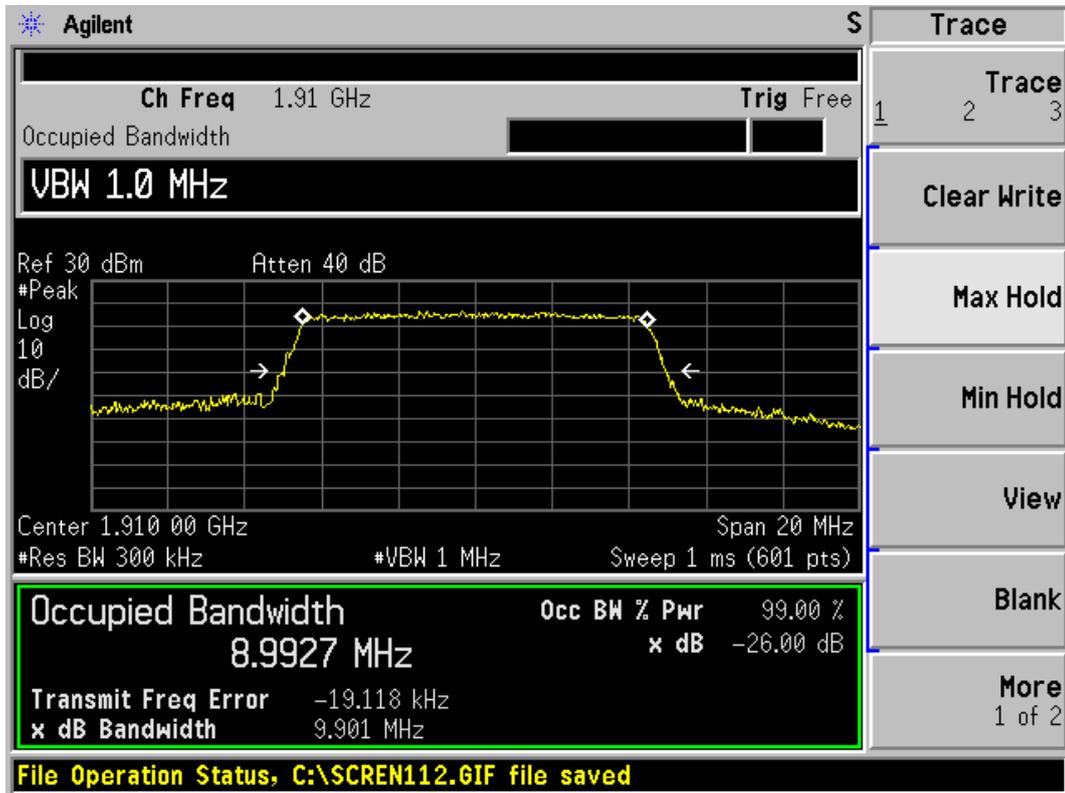


LTE Band 25 16QAM Bandwidth = 10MHz CH26090 Occupied Bandwidth

# TA Technology (Shanghai) Co., Ltd. Test Report



LTE Band 25 16QAM Bandwidth = 10MHz CH26365 Occupied Bandwidth



LTE Band 25 16QAM Bandwidth = 10MHz CH26640 Occupied Bandwidth

## 2.6. Band Edge Compliance

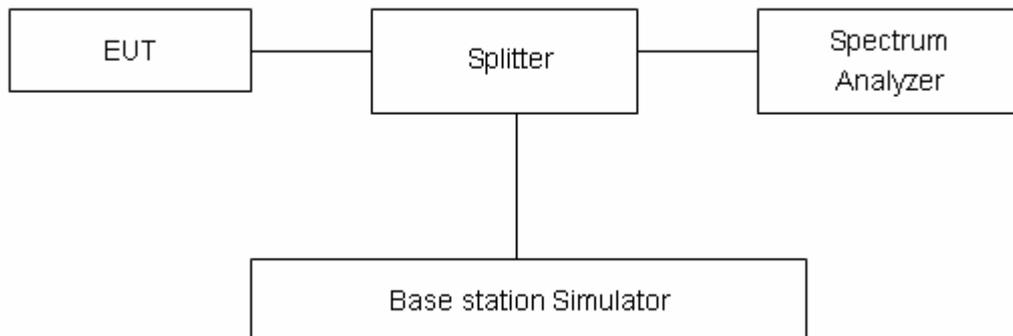
### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

### Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The band edge of the lowest and highest channels were measured. The RBW is set larger than 1% of 26dB bandwidth. The Average detector is used. Spectrum analyzer plots are included on the following pages.

### Test Setup



### Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10} (P)$  dB.”

Limit	-13 dBm
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### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ ,  $U=0.684$ dB.

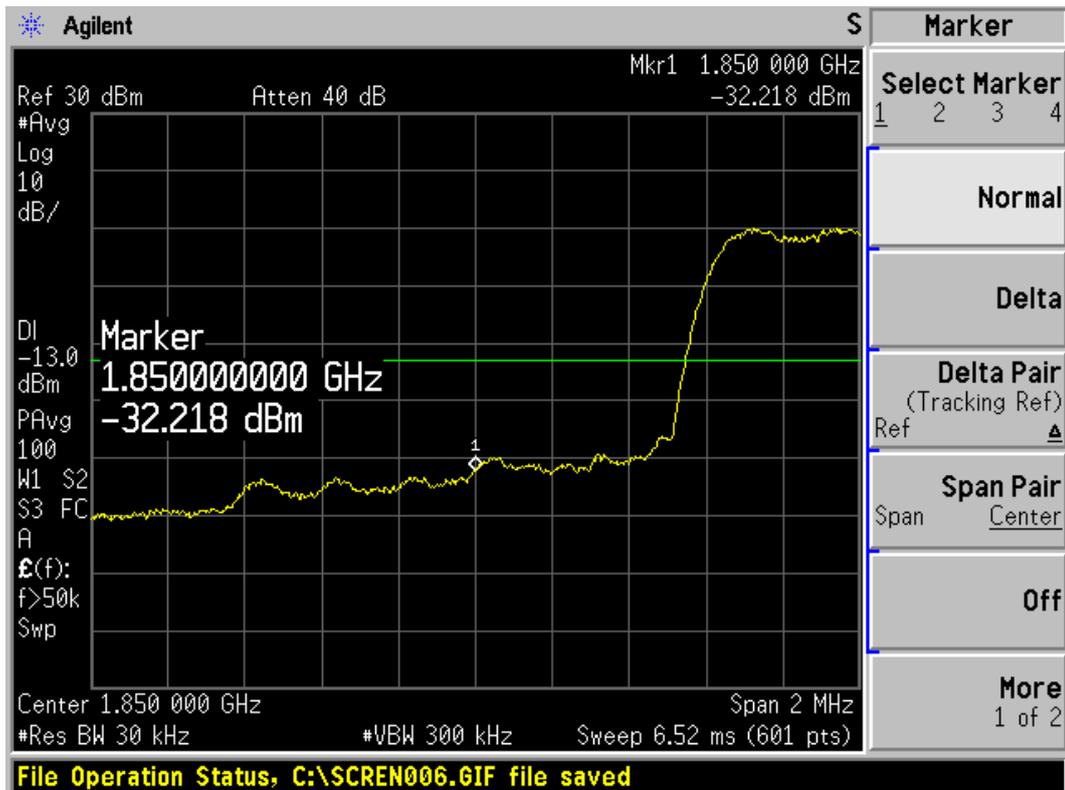
# TA Technology (Shanghai) Co., Ltd. Test Report

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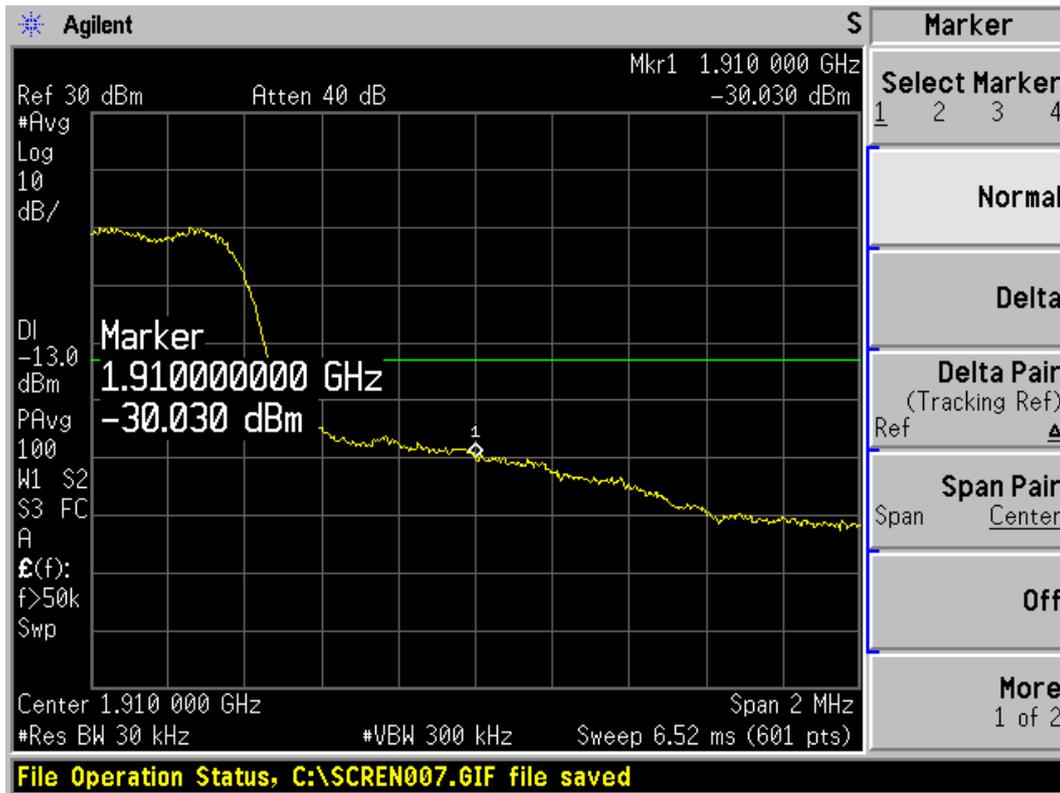
**Test Result:**

CDMA PCS	Carrier frequency (MHz)	Reference value (dBm)	Limit	Conclusion
RC3 (SO55)	1850.0	-32.218	-13	PASS
	1910.0	-30.030	-13	PASS
EV-DO(Rev.0)	1850.0	-34.113	-13	PASS
	1910.0	-30.807	-13	PASS
EV-DO(Rev.A)	1850.0	-35.825	-13	PASS
	1910.0	-38.024	-13	PASS
1X Advance(SO73)	1850.0	-32.218	-13	PASS
	1910.0	-30.030	-13	PASS

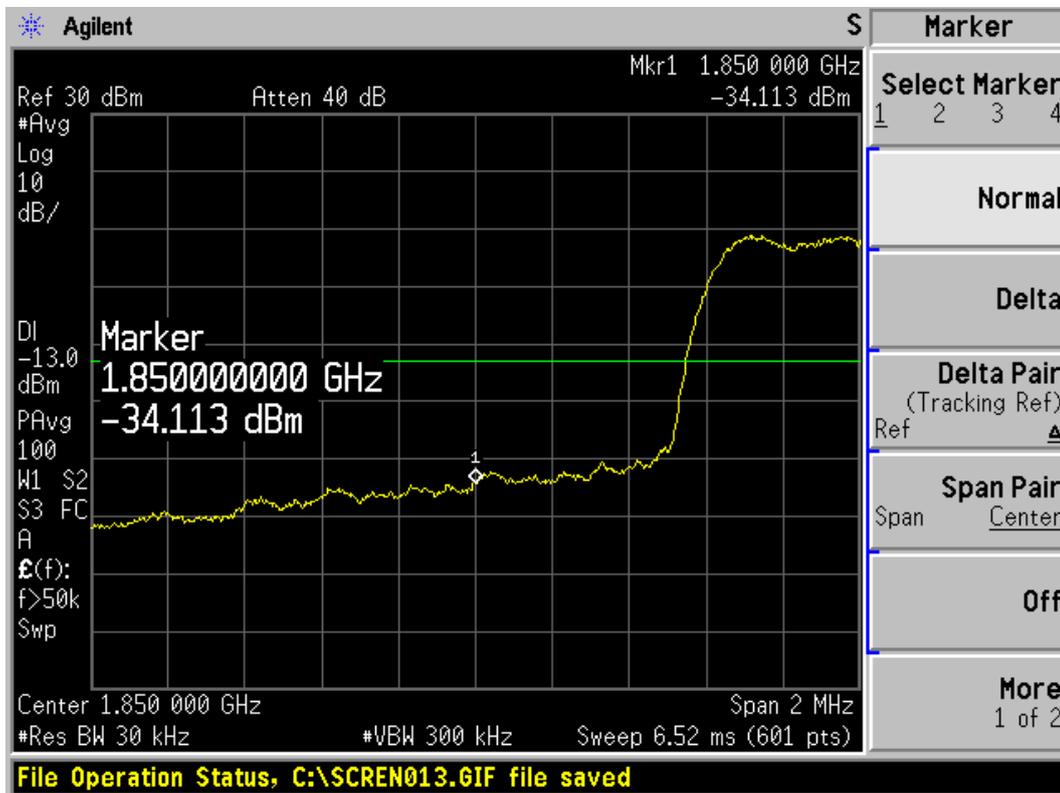


CDMA PCS RC3(SO55) 25 Channel

# TA Technology (Shanghai) Co., Ltd. Test Report

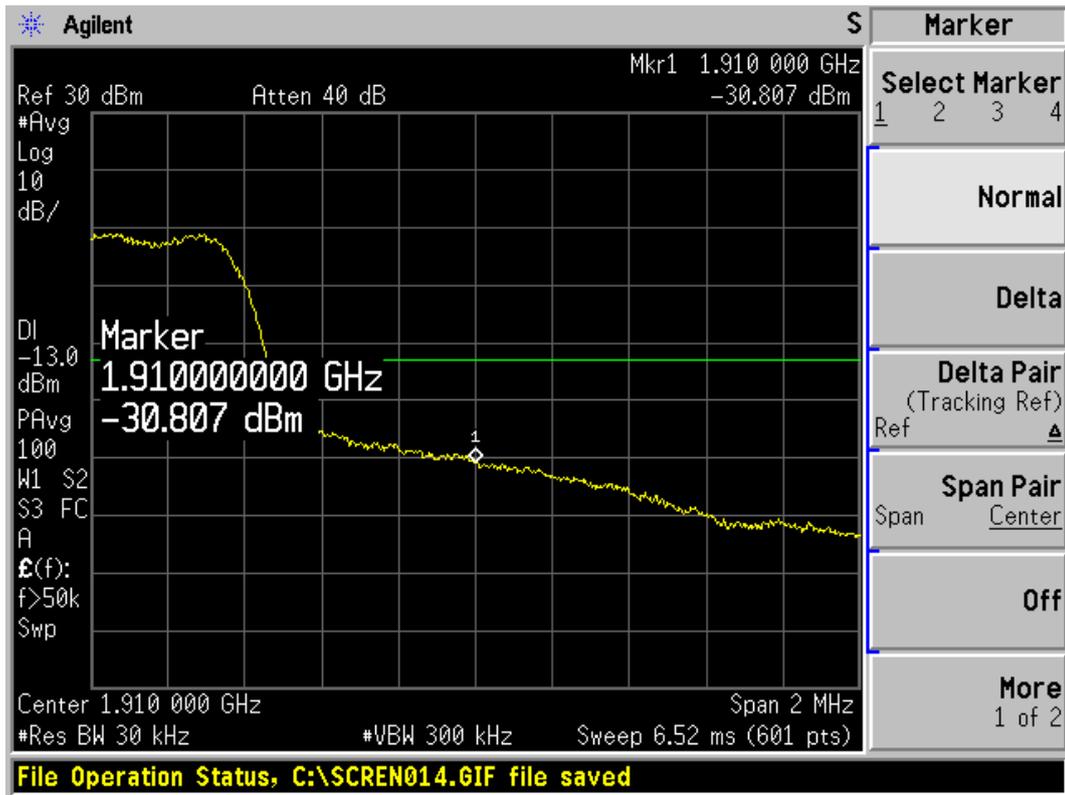


CDMA PCS RC3(SO55) 1175 Channel

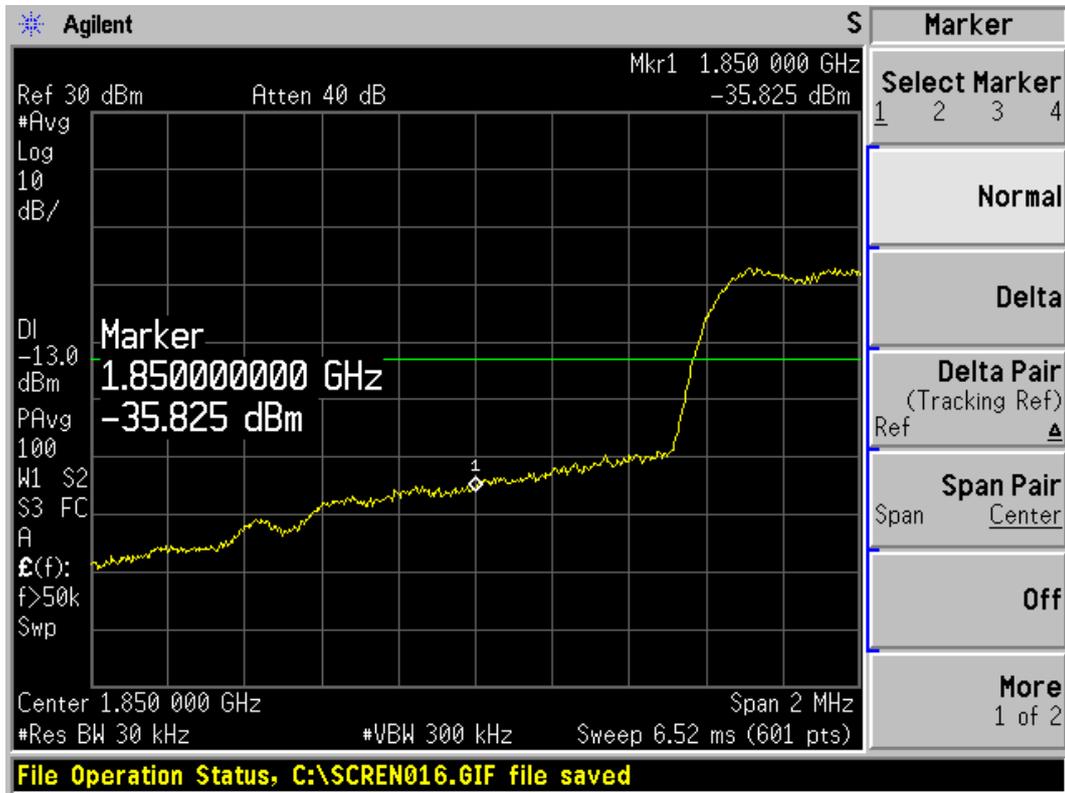


CDMA PCS EV-DO(Rev.0) 25 Channel

# TA Technology (Shanghai) Co., Ltd. Test Report

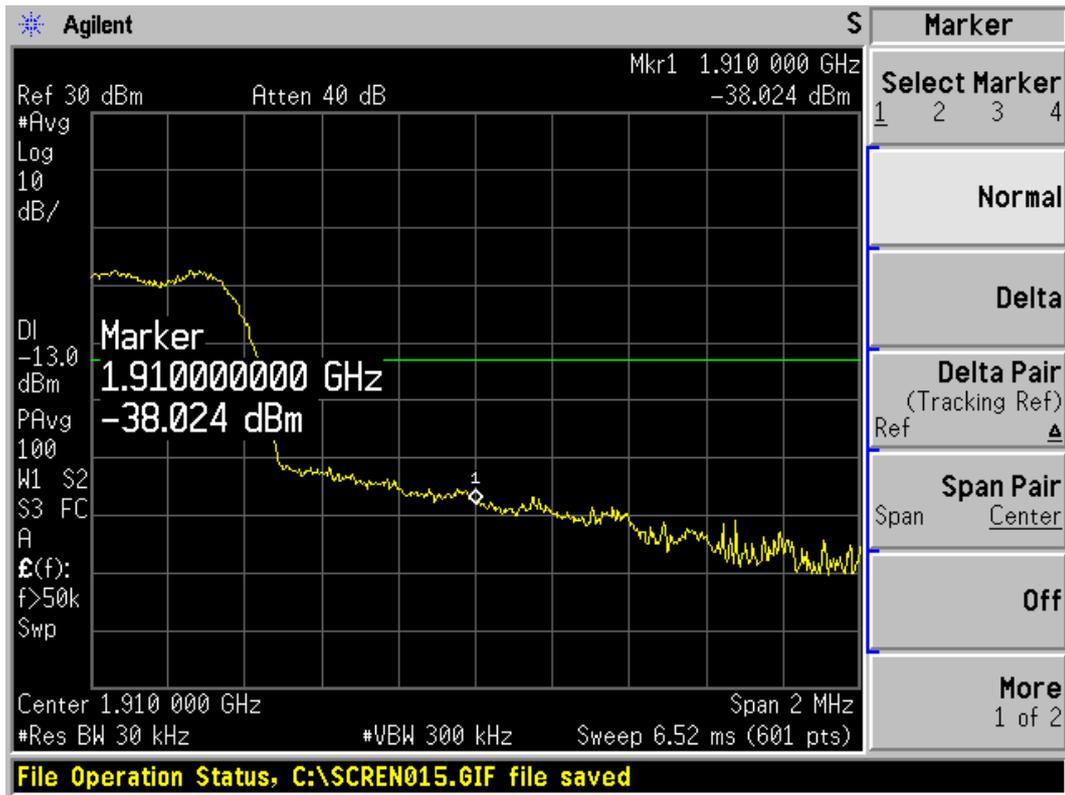


CDMA PCS EV-DO(Rev.0) 1175Channel

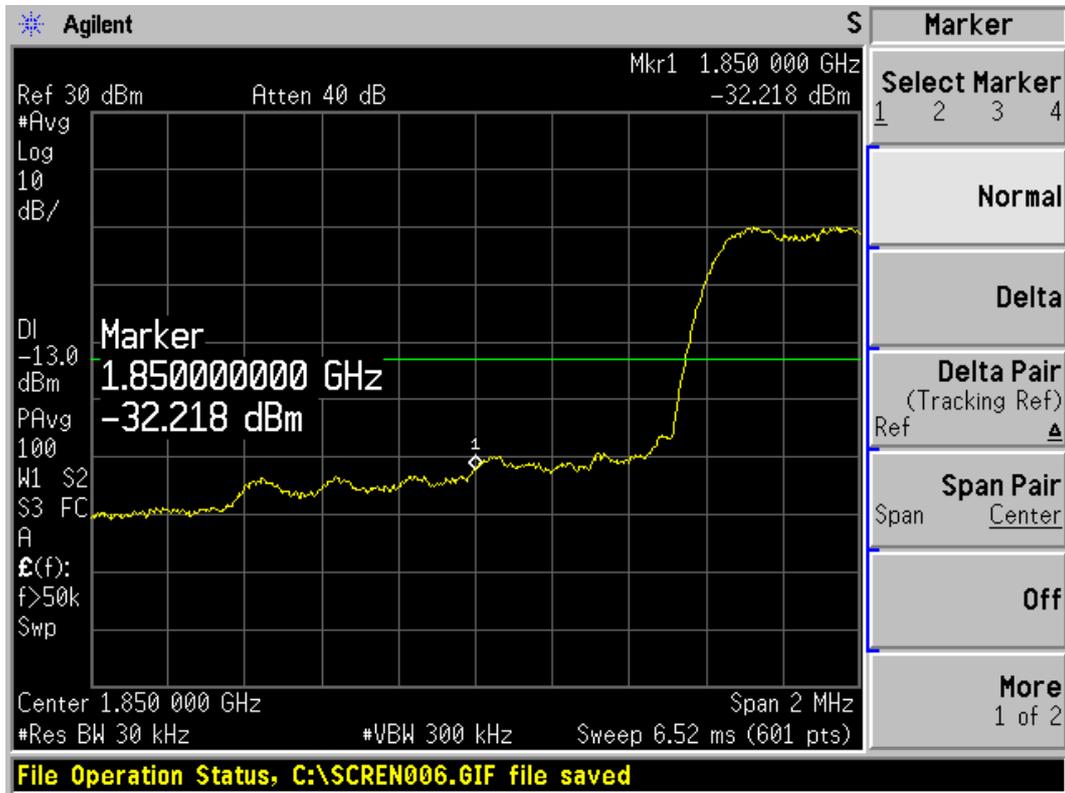


CDMA PCS EV-DO(Rev.A) 25 Channel

# TA Technology (Shanghai) Co., Ltd. Test Report

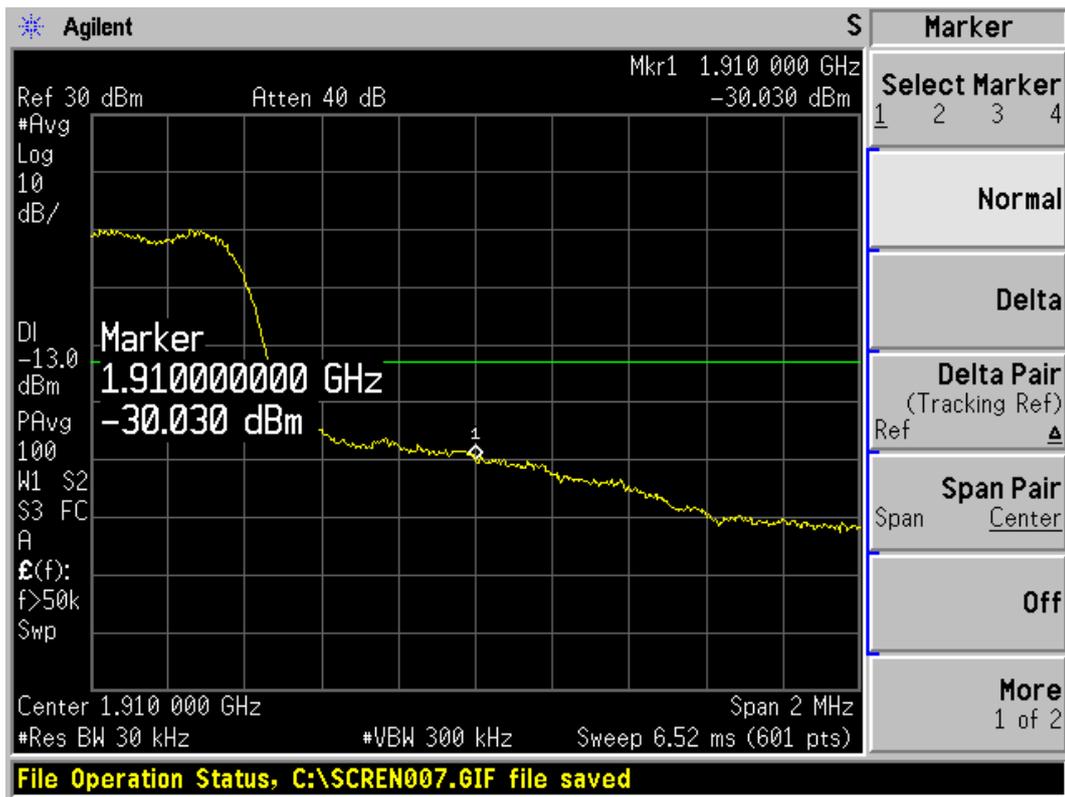


CDMA PCS EV-DO(Rev.A) 1175Channel



CDMA PCS 1X Advance(SO73) 25 Channel

# TA Technology (Shanghai) Co., Ltd. Test Report



CDMA PCS 1X Advance(SO73) 1175 Channel

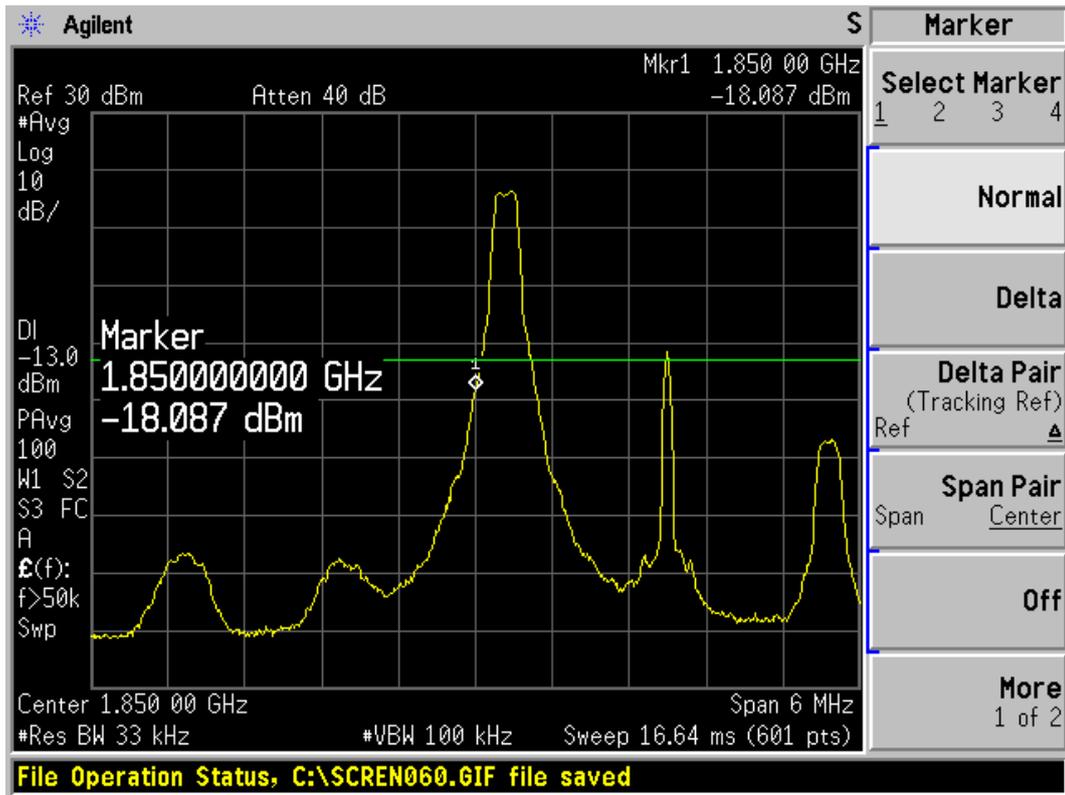
**TA Technology (Shanghai) Co., Ltd.**  
**Test Report**

Report No.: RHA1301-0016RF02R2

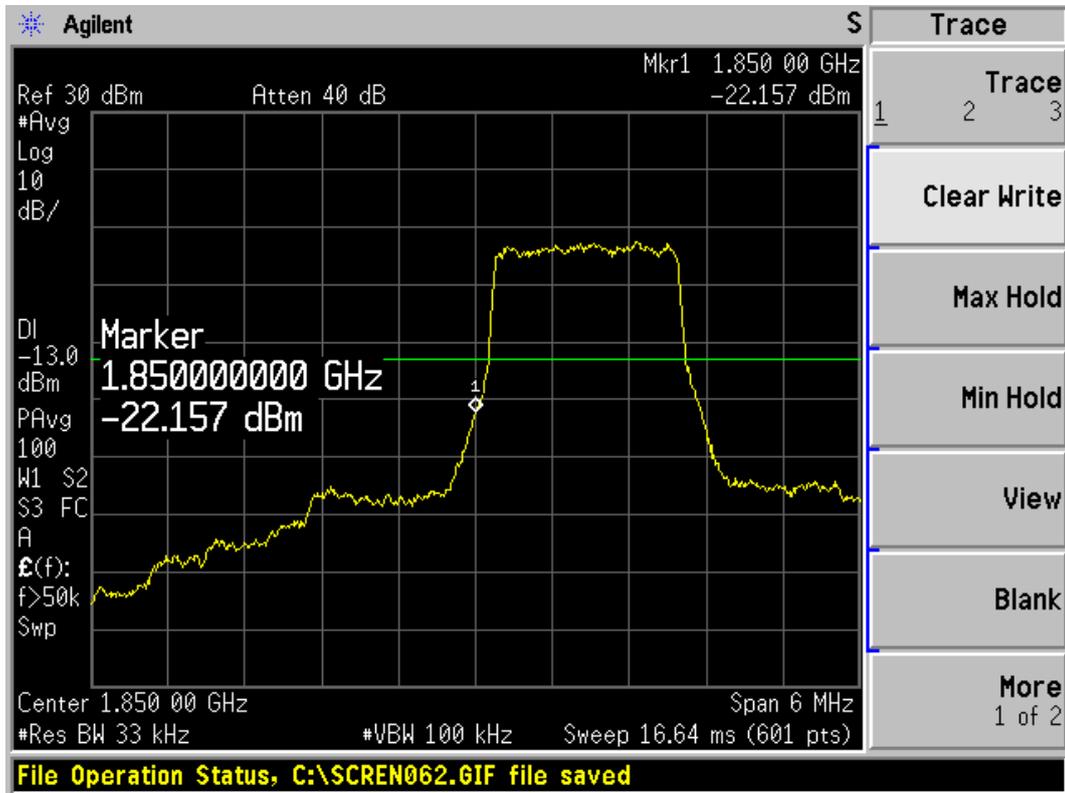
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LTE Band 25							
Bandwidth	Modulation	Channel	RB	RB Start	Reference value (dBm)	Limit	Conclusion
3MHz	QPSK	CH26055	1	14	-18.087	-13	PASS
			8	4	-22.157	-13	PASS
			15	0	-25.447	-13	PASS
		CH26675	1	14	-17.776	-13	PASS
			8	4	-22.851	-13	PASS
			15	0	-27.770	-13	PASS
	16QAM	CH26055	1	14	-18.198	-13	PASS
			8	4	-22.954	-13	PASS
			15	0	-26.989	-13	PASS
		CH26675	1	14	-18.518	-13	PASS
			8	4	-24.230	-13	PASS
			15	0	-30.246	-13	PASS
5MHz	QPSK	CH26065	1	0	-20.674	-13	PASS
			12	6	-26.153	-13	PASS
			25	0	-27.894	-13	PASS
		CH26665	1	0	-20.148	-13	PASS
			12	6	-25.760	-13	PASS
			25	0	-28.751	-13	PASS
	16QAM	CH26065	1	0	-22.452	-13	PASS
			12	6	-26.194	-13	PASS
			25	0	-28.460	-13	PASS
		CH26665	1	0	-20.926	-13	PASS
			12	6	-24.909	-13	PASS
			25	0	-32.172	-13	PASS
10MHz	QPSK	CH26090	1	0	-29.448	-13	PASS
			25	13	-33.456	-13	PASS
			50	0	-34.420	-13	PASS
		CH26640	1	0	-31.638	-13	PASS
			25	13	-32.257	-13	PASS
			50	0	-32.847	-13	PASS
	16QAM	CH26090	1	0	-30.510	-13	PASS
			25	13	-34.184	-13	PASS
			50	0	-35.103	-13	PASS
		CH26640	1	0	-29.381	-13	PASS
			25	13	-34.009	-13	PASS
			50	0	-34.434	-13	PASS

# TA Technology (Shanghai) Co., Ltd. Test Report

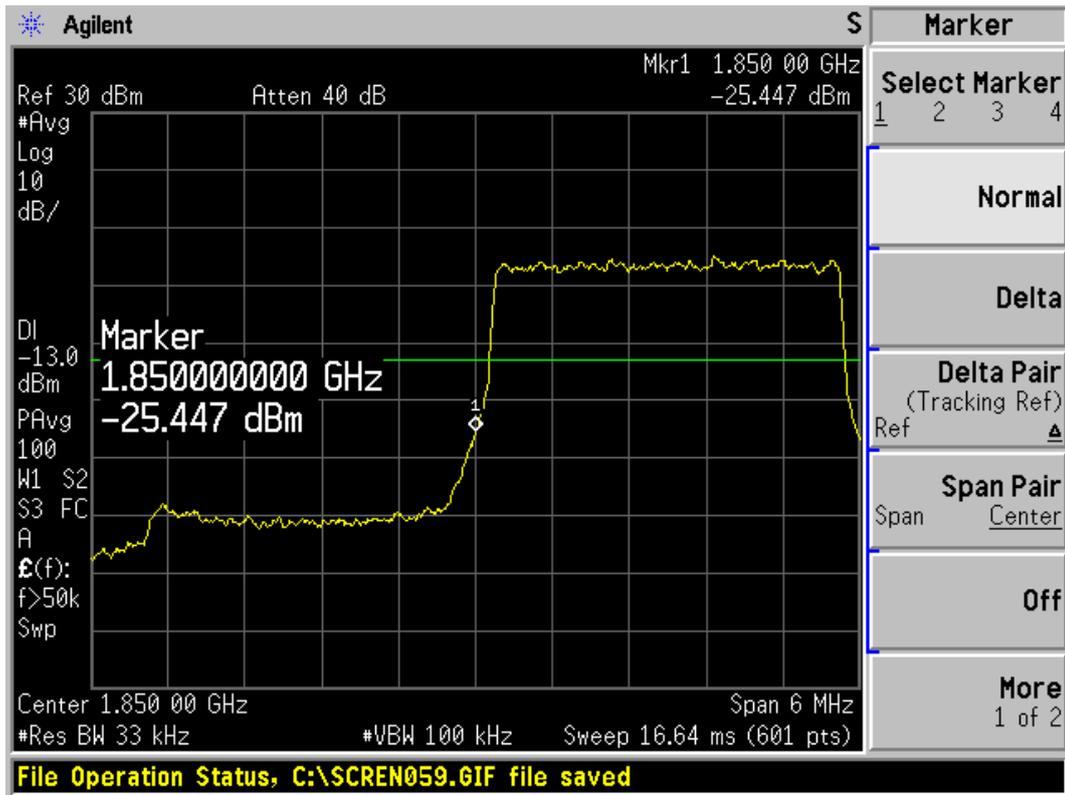


LTE Band 25 QPSK Bandwidth = 3MHz CH26055, RB 1

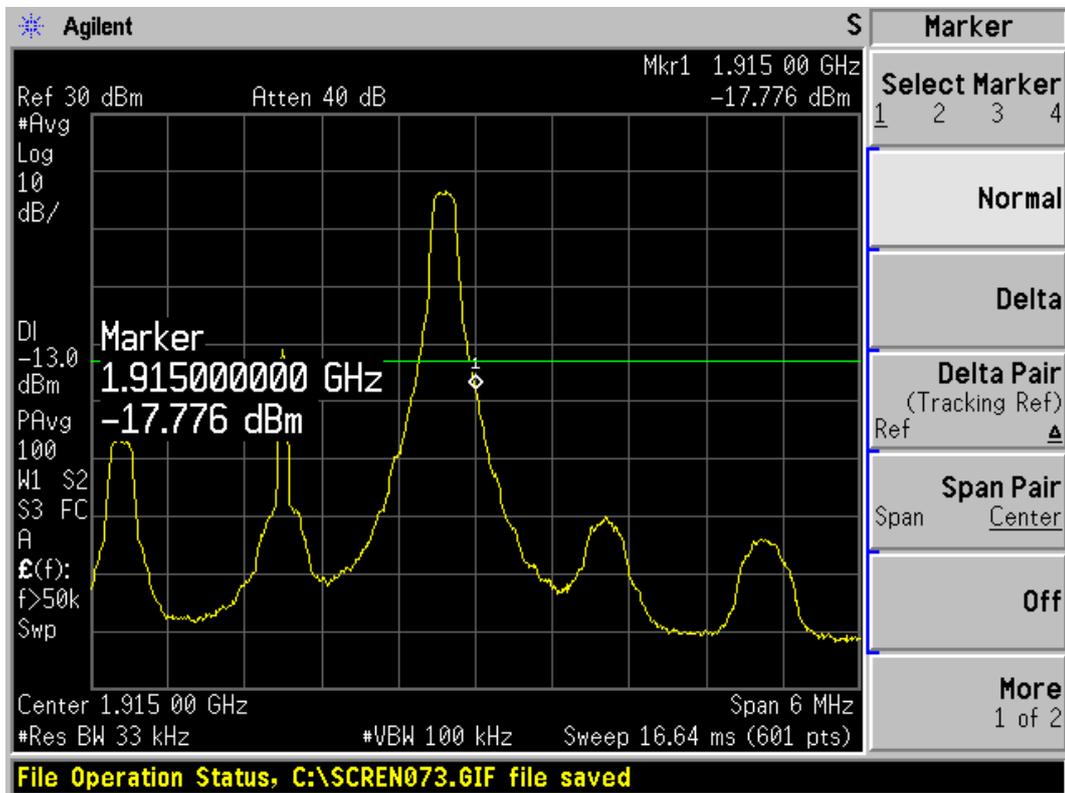


LTE Band 25 QPSK Bandwidth = 3MHz CH26055, RB 8

TA Technology (Shanghai) Co., Ltd.  
Test Report



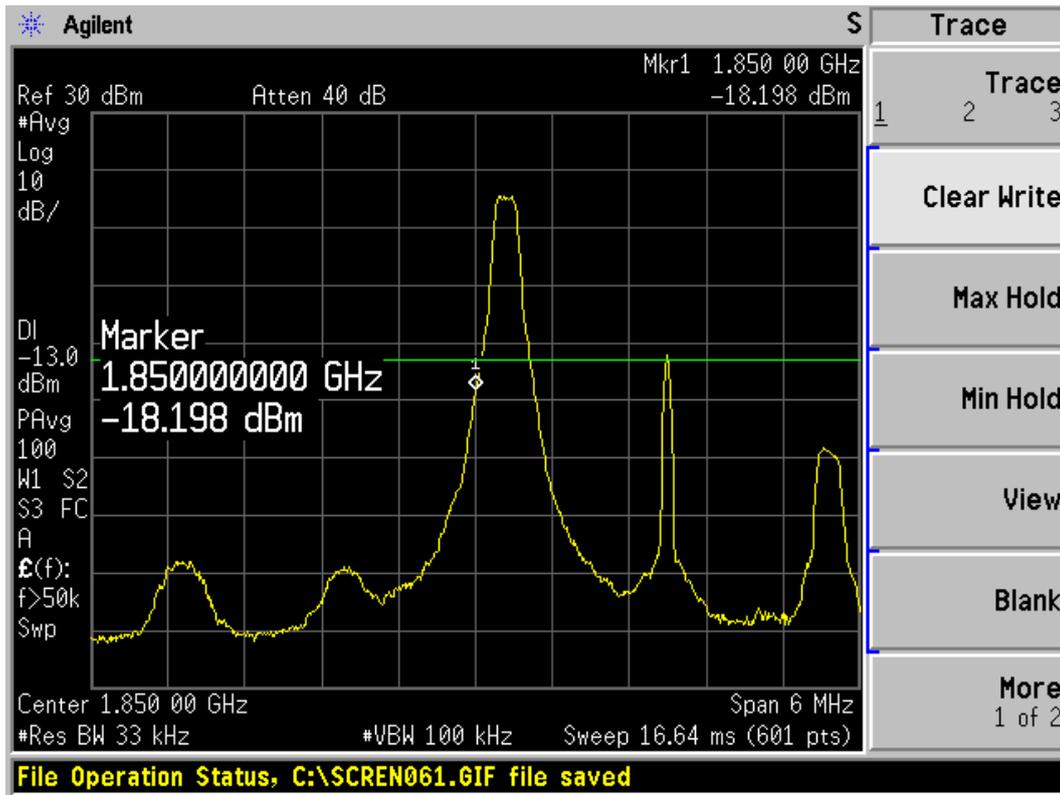
LTE Band 25 QPSK Bandwidth = 3MHz CH26055, RB 15



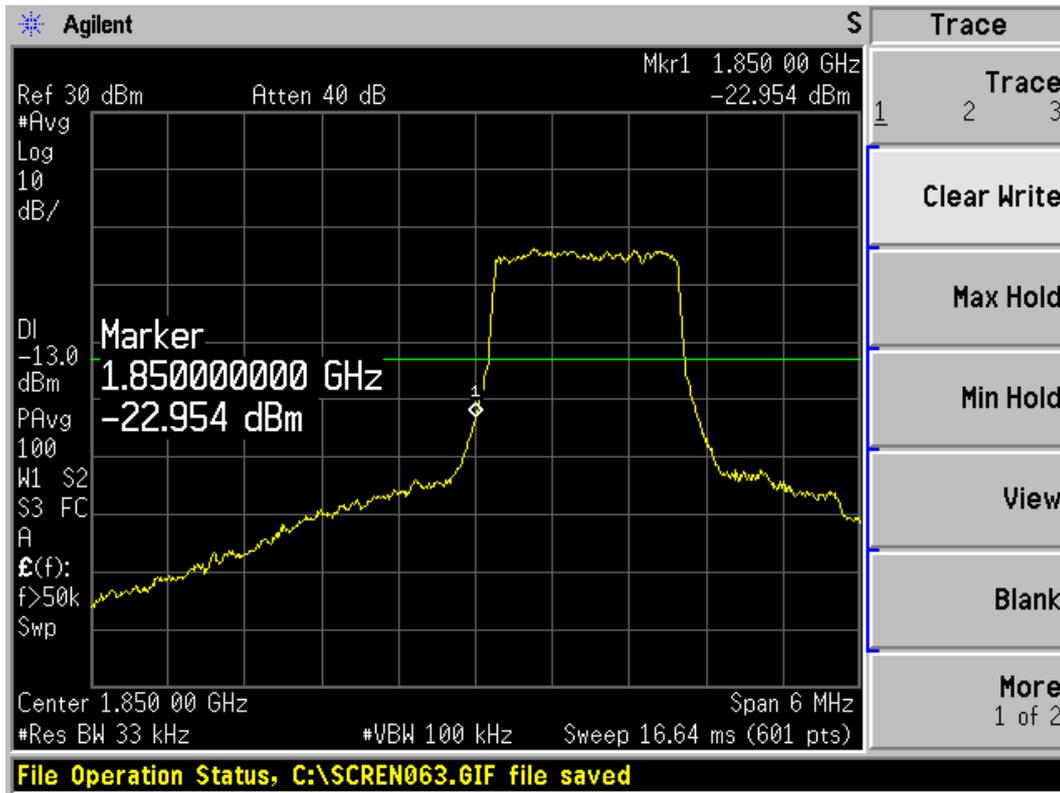
LTE Band 25 QPSK Bandwidth = 3MHz CH26675, RB 1



# TA Technology (Shanghai) Co., Ltd. Test Report



LTE Band 25 16QAM Bandwidth = 3MHz CH26055, RB 1

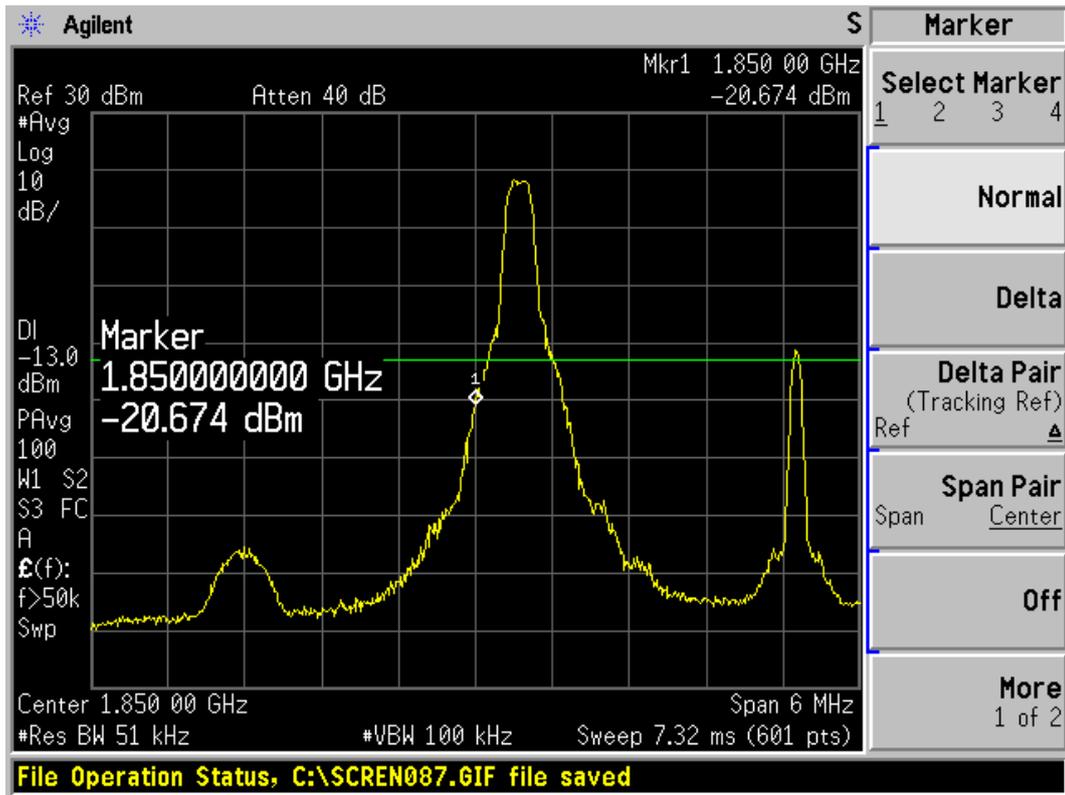


LTE Band 25 16QAM Bandwidth = 3MHz CH26055, RB 8

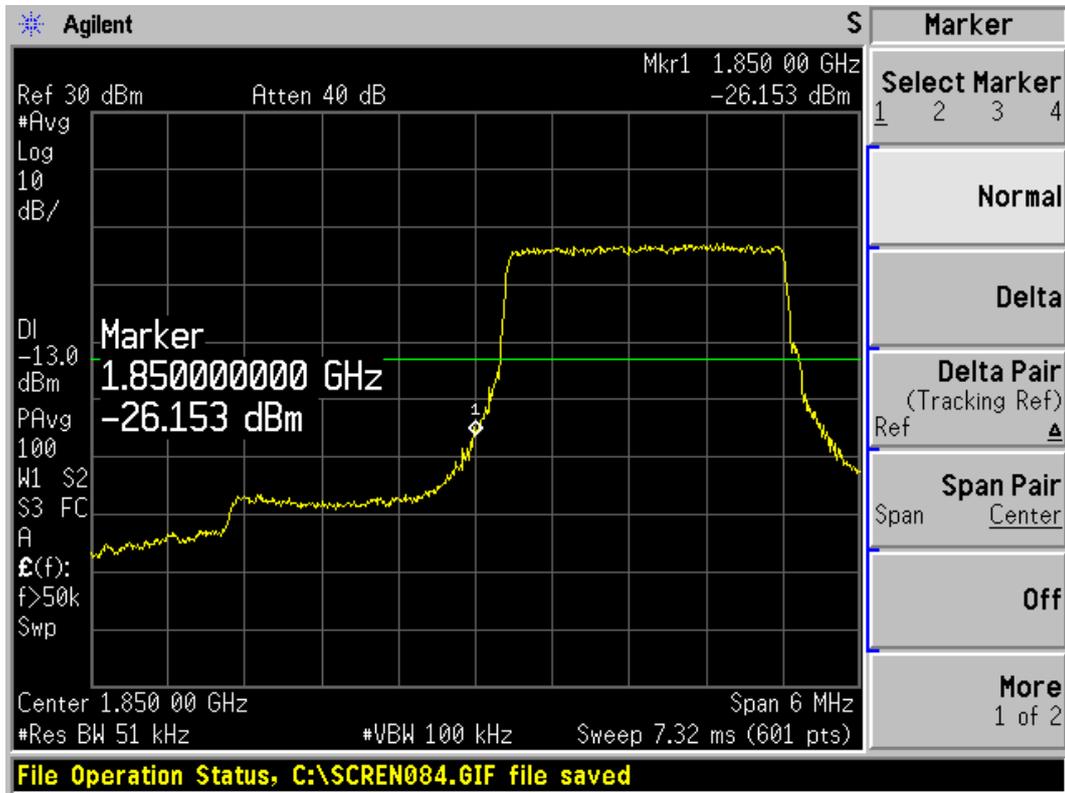




# TA Technology (Shanghai) Co., Ltd. Test Report



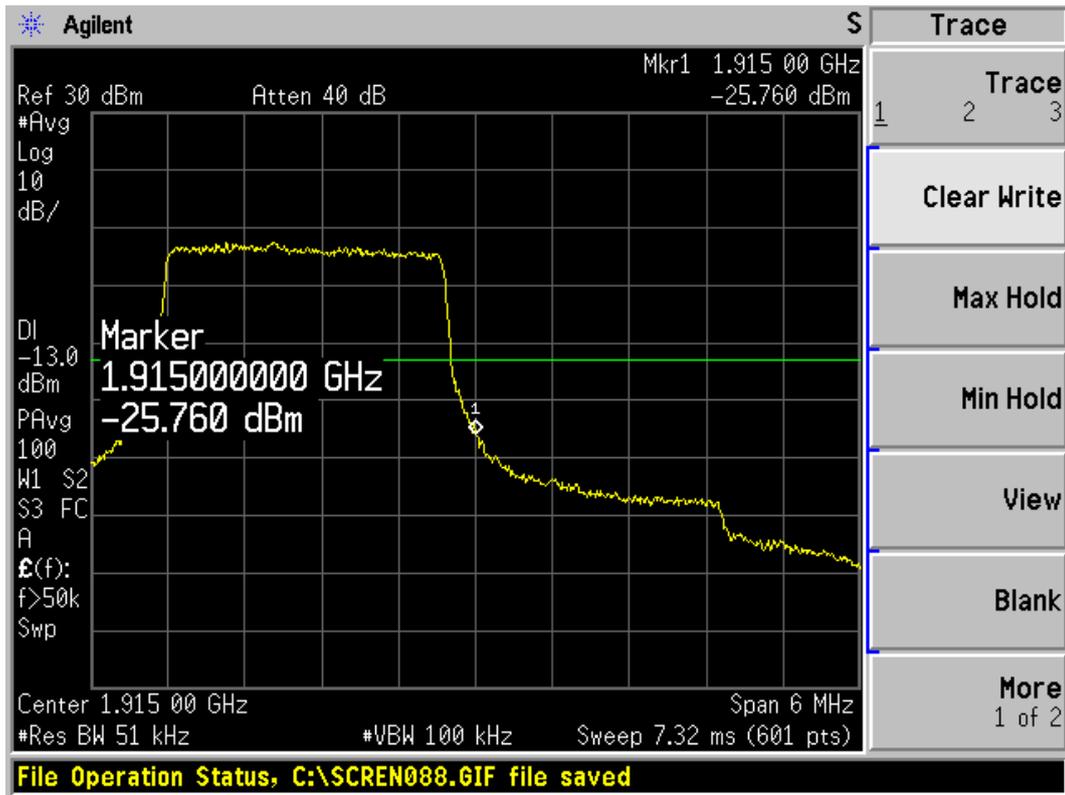
LTE Band 25 QPSK Bandwidth = 5MHz CH26065, RB 1



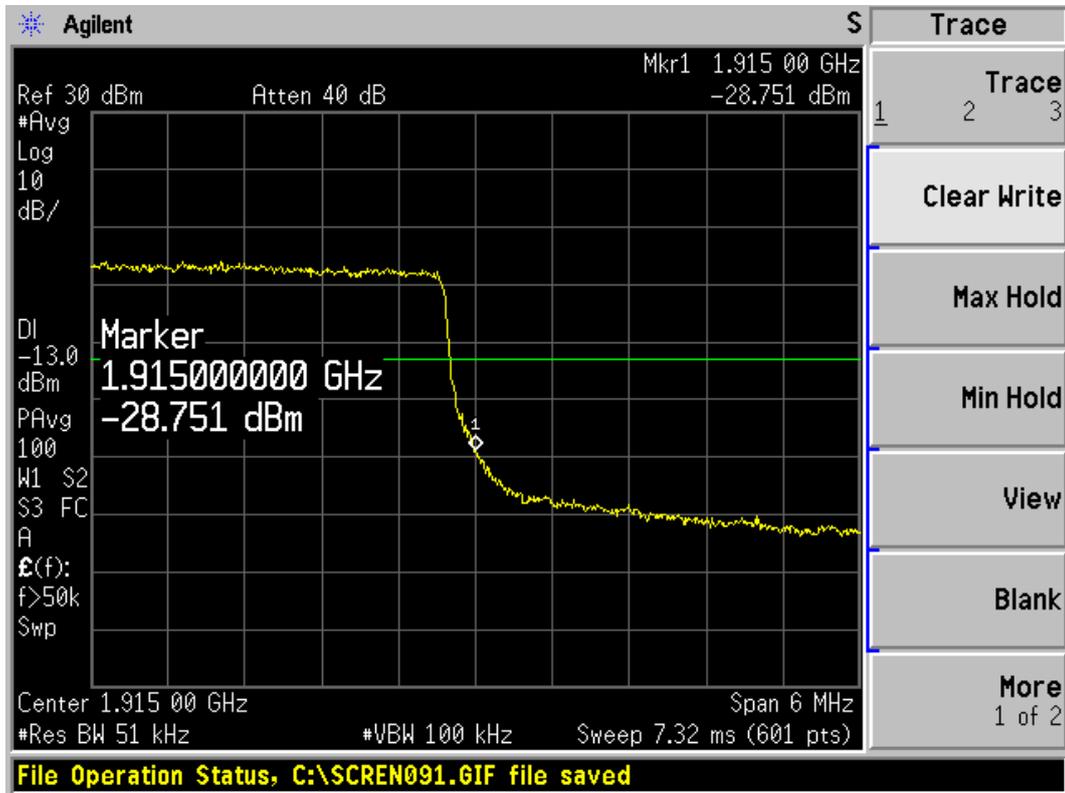
LTE Band 25 QPSK Bandwidth = 5MHz CH26065, RB 12



# TA Technology (Shanghai) Co., Ltd. Test Report



LTE Band 25 QPSK Bandwidth = 5MHz CH26665, RB 12

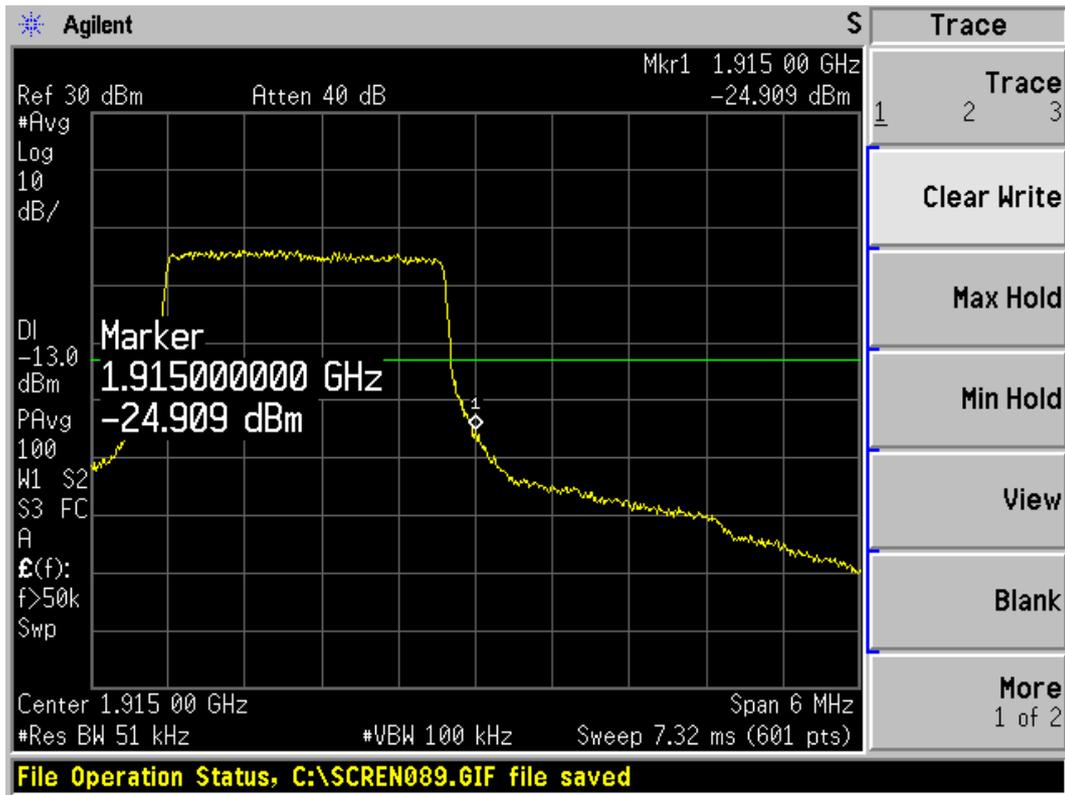


LTE Band 25 QPSK Bandwidth = 5MHz CH26665, RB 25

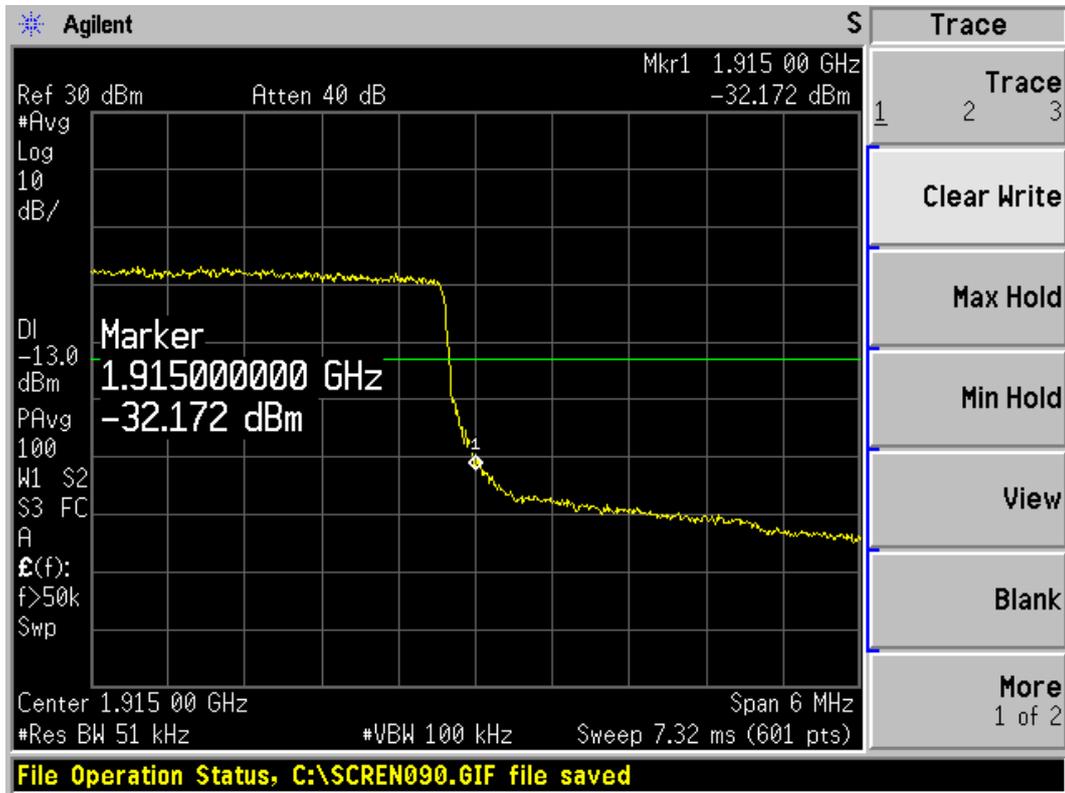




# TA Technology (Shanghai) Co., Ltd. Test Report



LTE Band 25 16QAM Bandwidth = 5MHz CH26665, RB 12

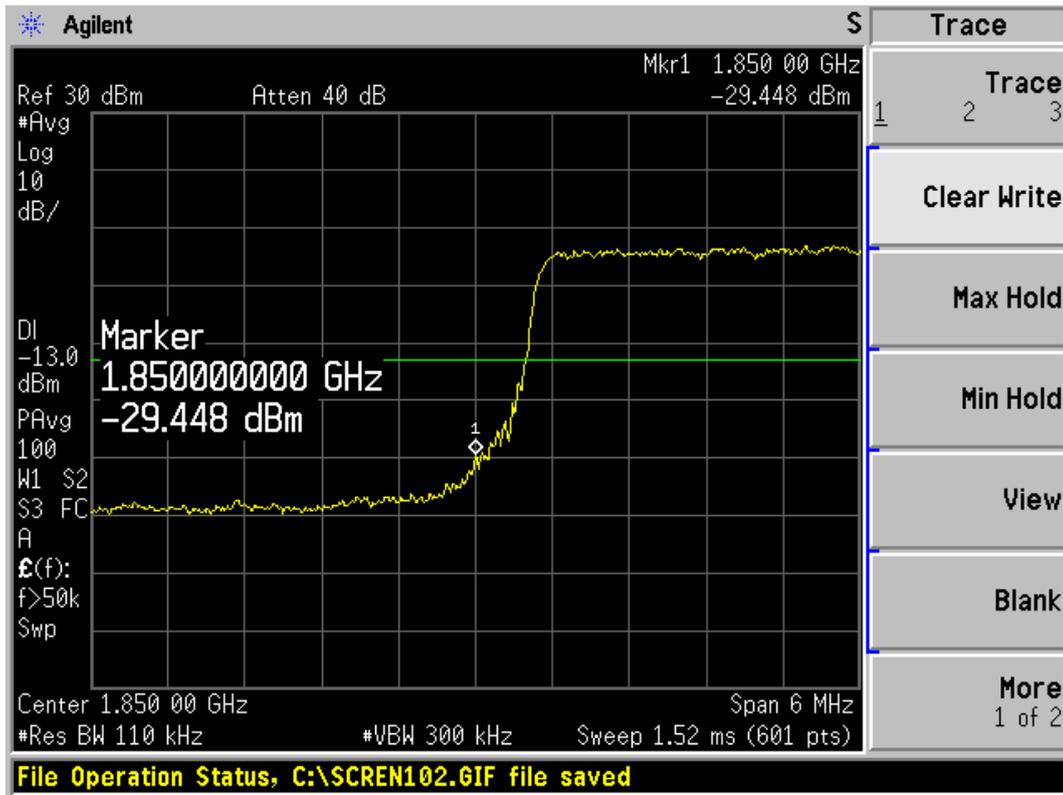


LTE Band 25 16QAM Bandwidth = 5MHz CH26665, RB 25

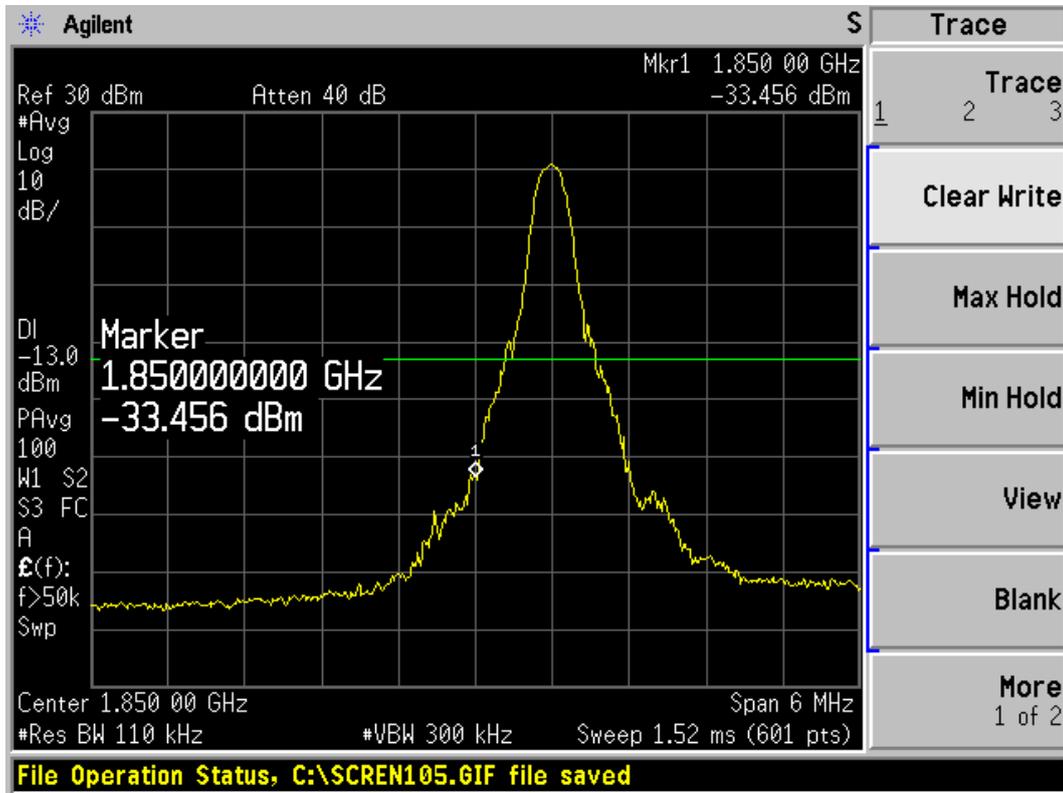
# TA Technology (Shanghai) Co., Ltd. Test Report

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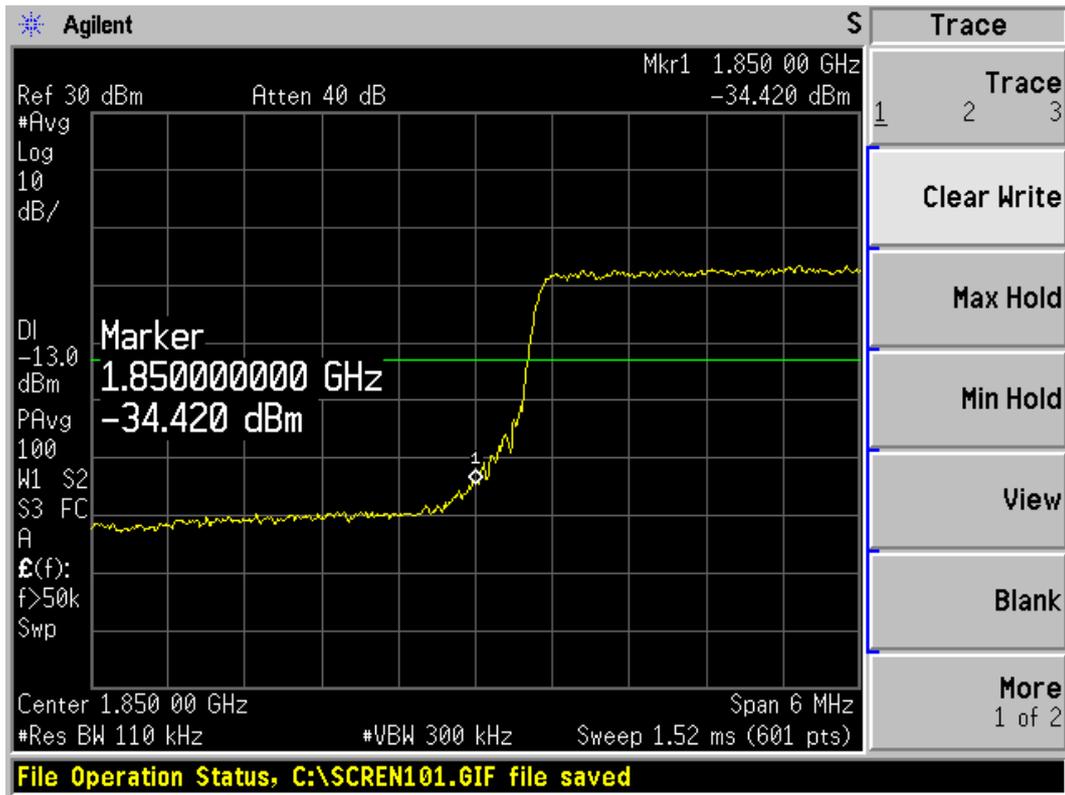


LTE Band 25 QPSK Bandwidth = 10MHz CH26090, RB 1

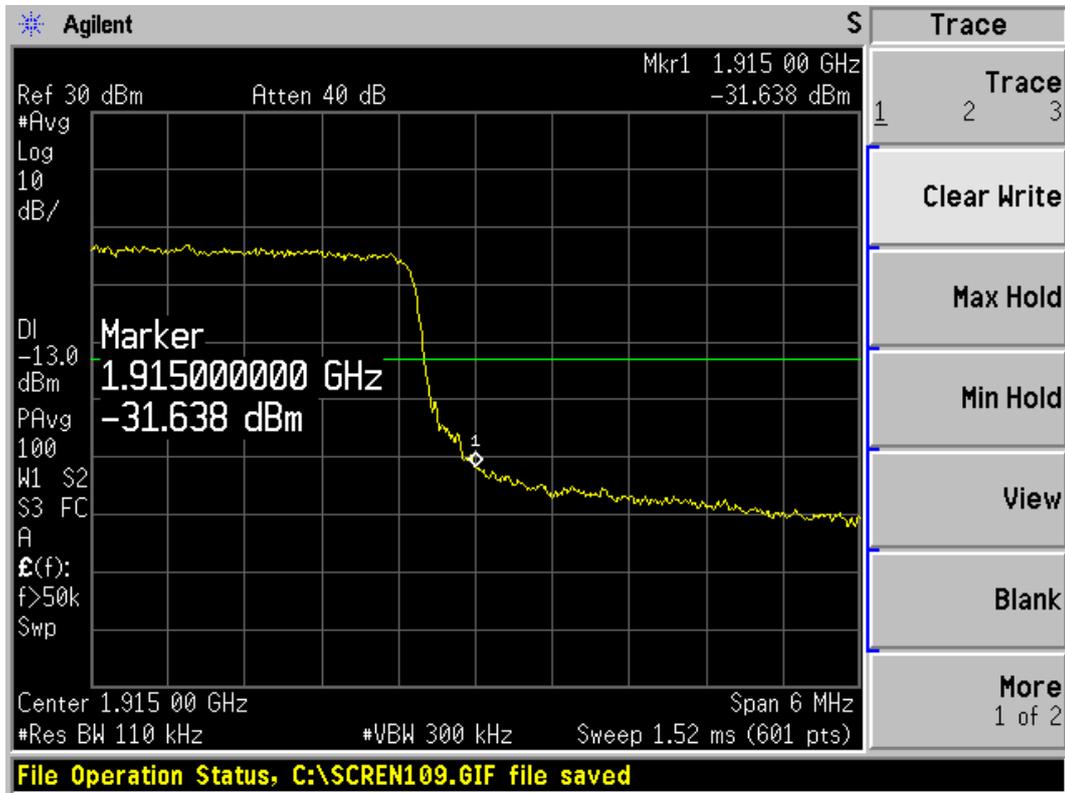


LTE Band 25 QPSK Bandwidth = 10MHz CH26090, RB 25

# TA Technology (Shanghai) Co., Ltd. Test Report

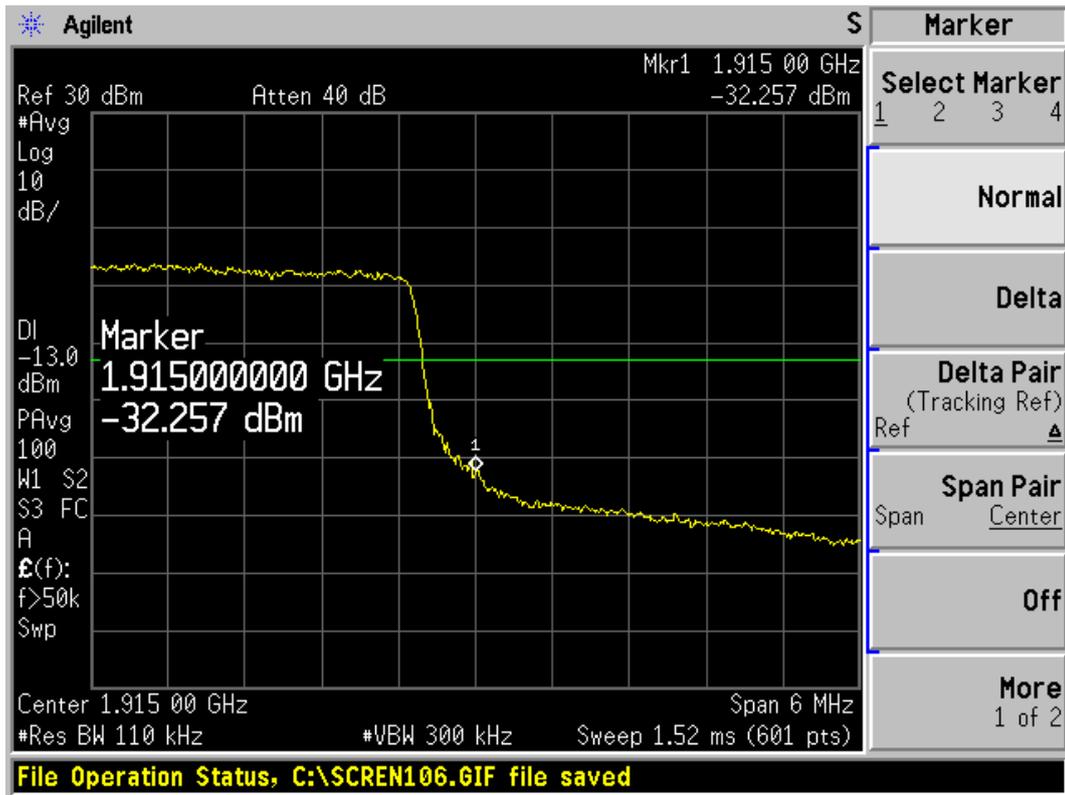


LTE Band 25 QPSK Bandwidth = 10MHz CH26090, RB 50

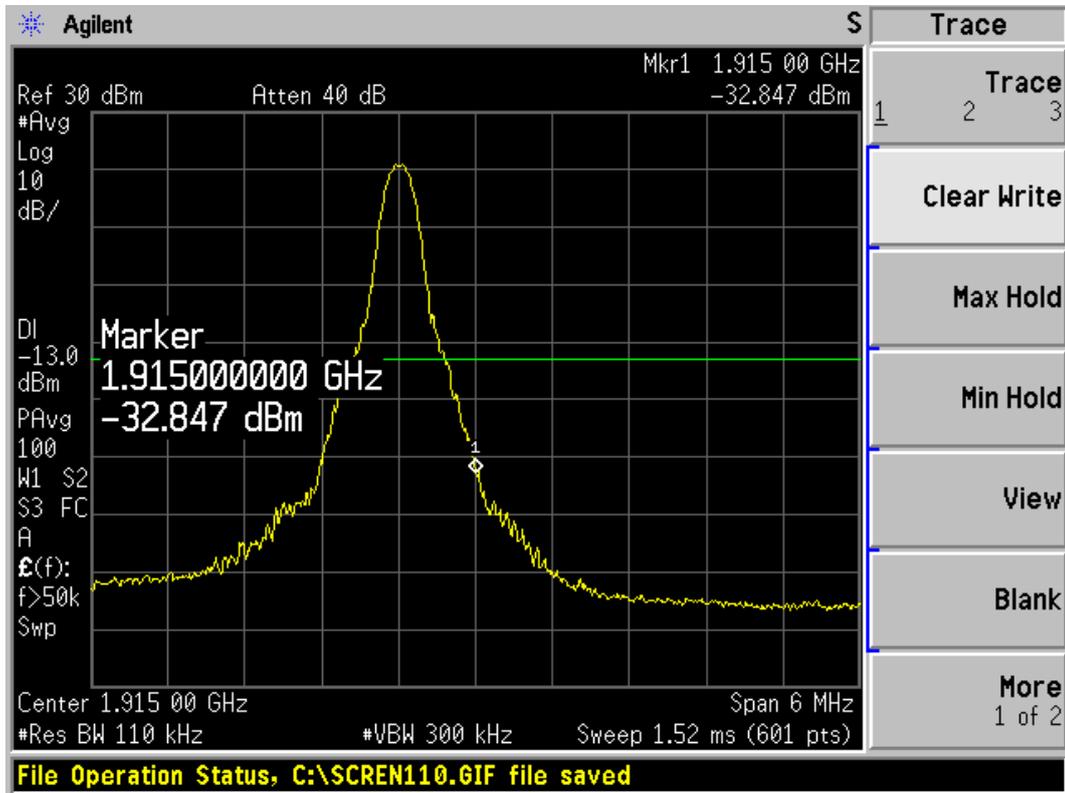


LTE Band 25 QPSK Bandwidth = 10MHz CH26640, RB 1

# TA Technology (Shanghai) Co., Ltd. Test Report

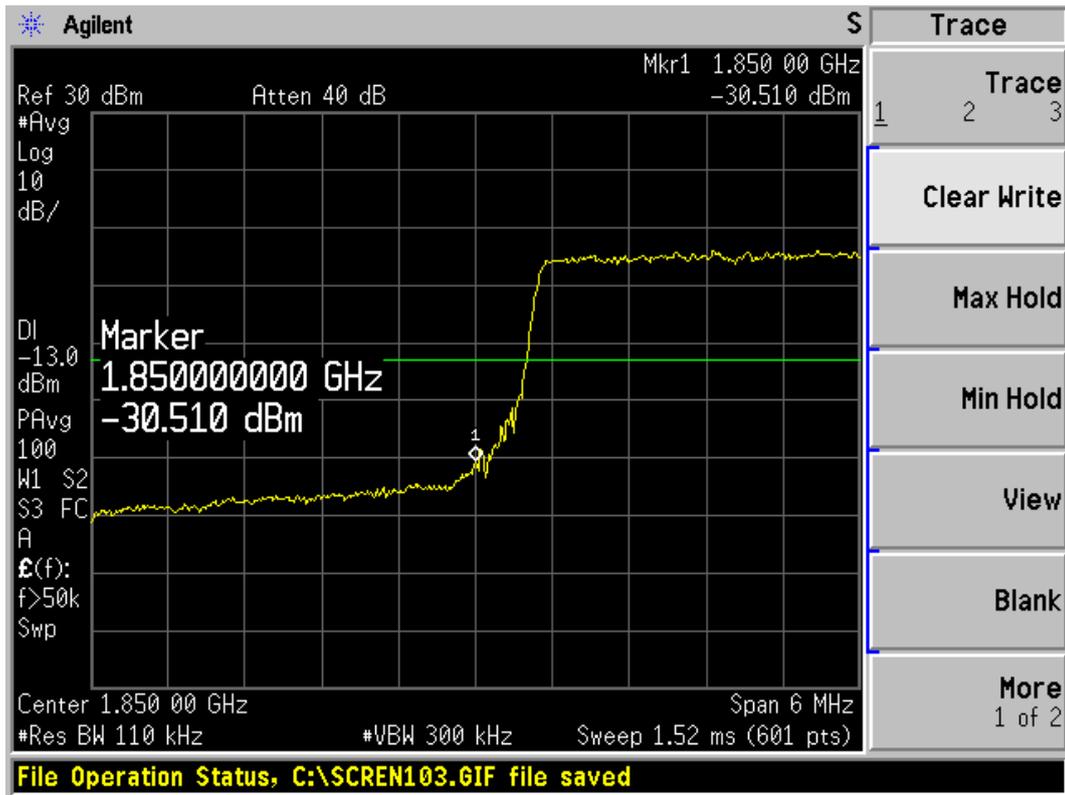


LTE Band 25 QPSK Bandwidth = 10MHz CH26640, RB 25

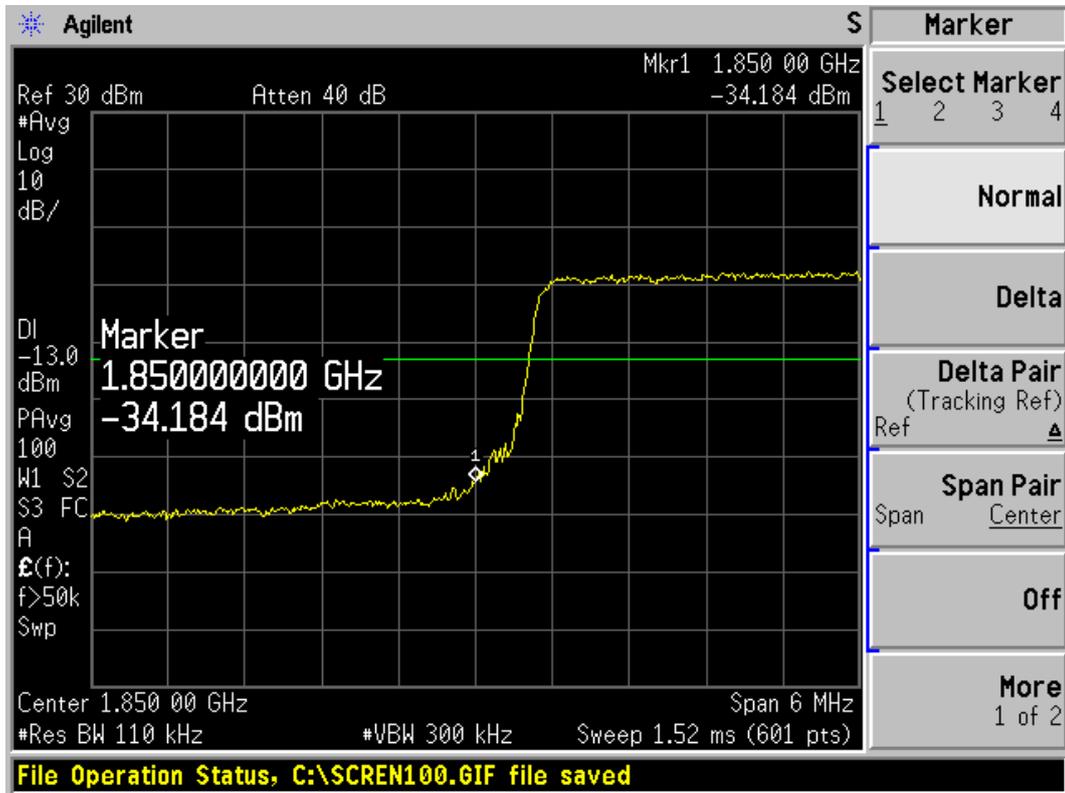


LTE Band 25 QPSK Bandwidth = 10MHz CH26640, RB 50

# TA Technology (Shanghai) Co., Ltd. Test Report

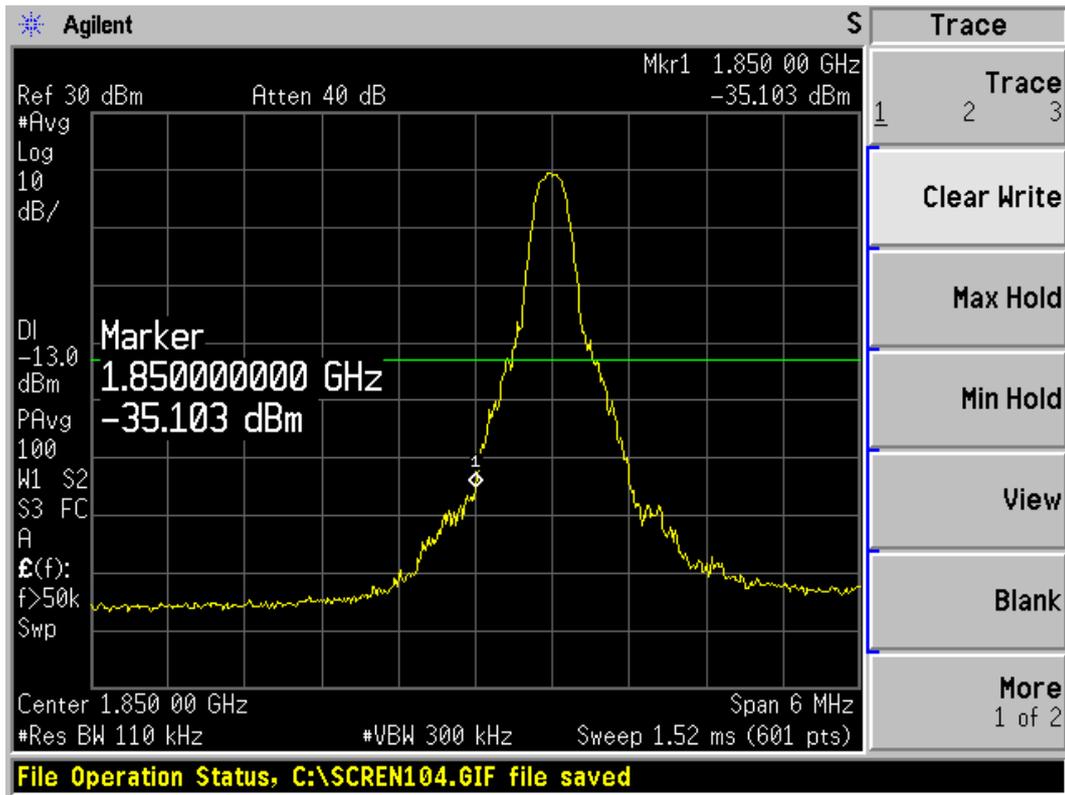


LTE Band 25 16QAM Bandwidth = 10MHz CH26090, RB 1

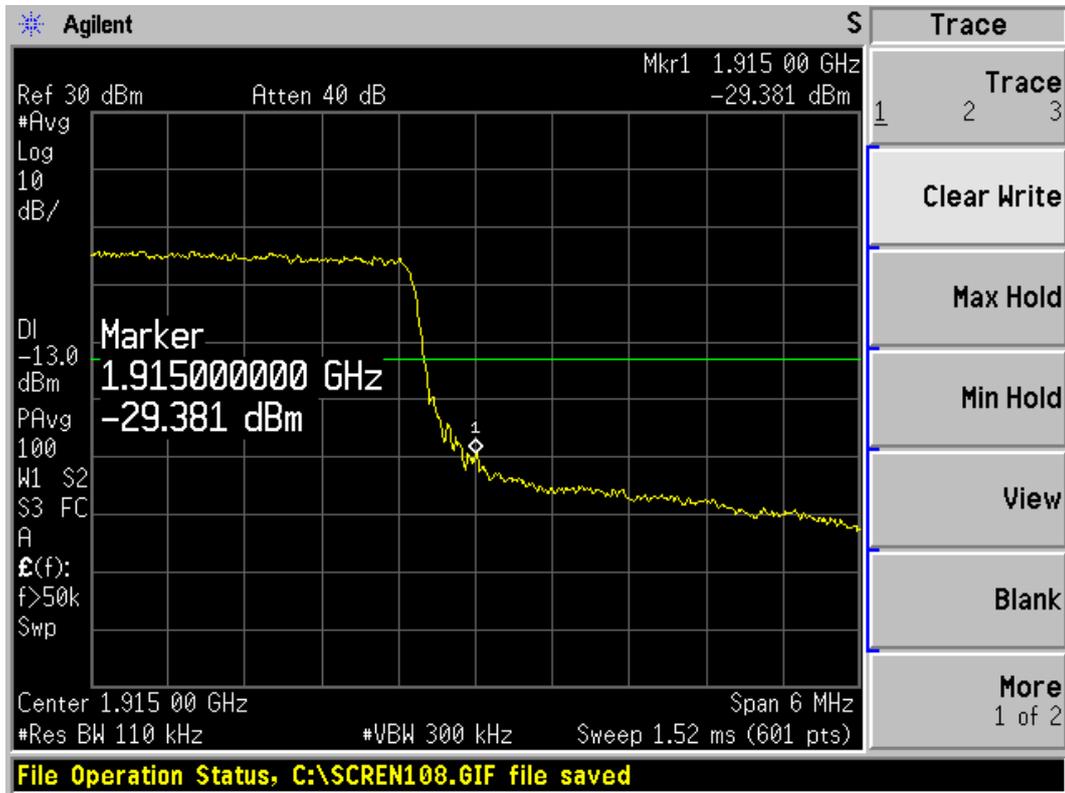


LTE Band 25 16QAM Bandwidth = 10MHz CH26090, RB 25

# TA Technology (Shanghai) Co., Ltd. Test Report

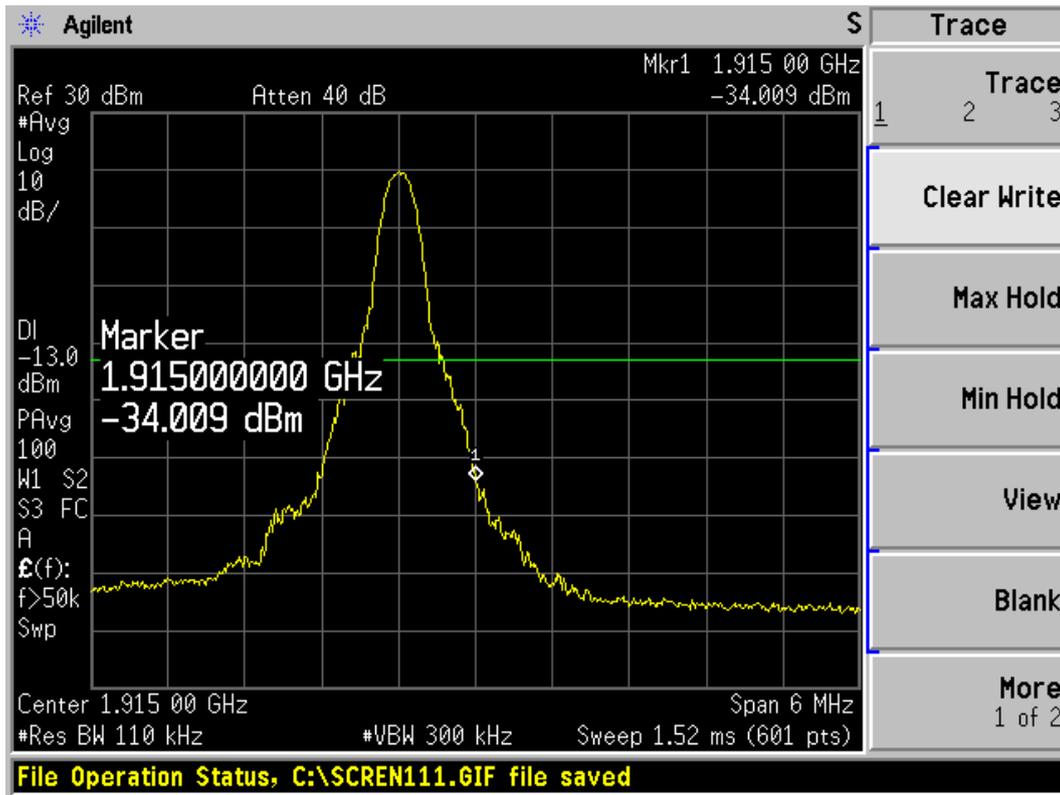


LTE Band 25 16QAM Bandwidth = 10MHz CH26090, RB 50

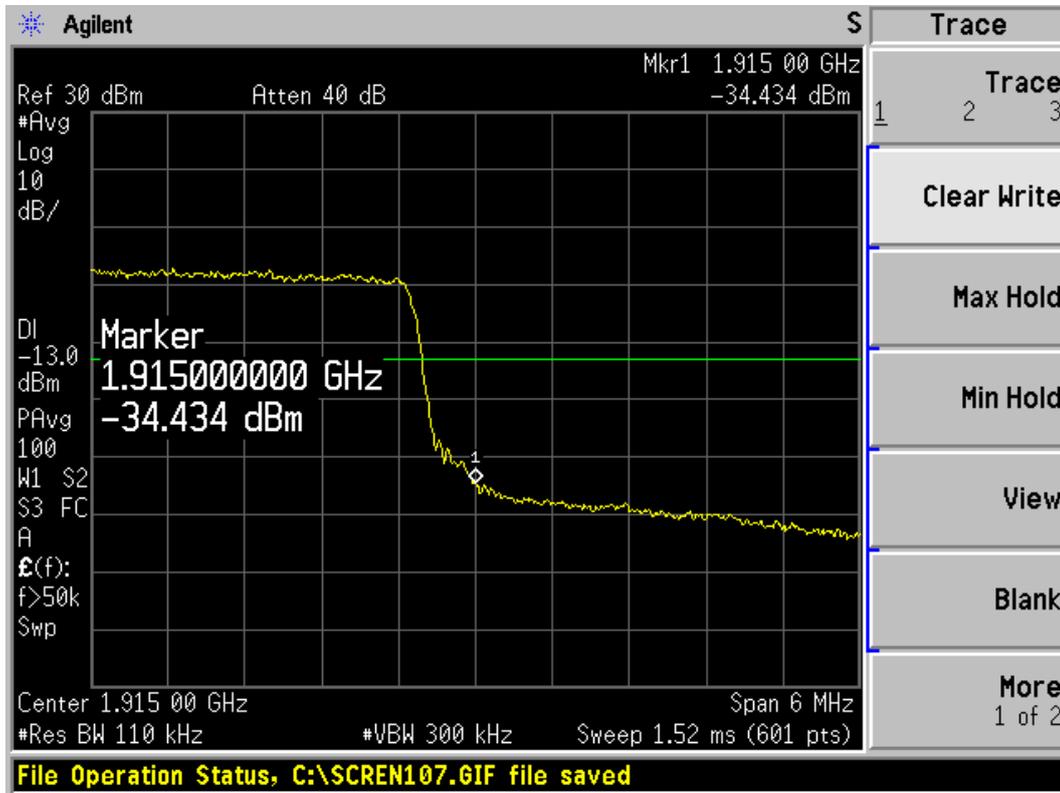


LTE Band 25 16QAM Bandwidth = 10MHz CH26640, RB 1

# TA Technology (Shanghai) Co., Ltd. Test Report



LTE Band 25 16QAM Bandwidth = 10MHz CH26640, RB 25



LTE Band 25 16QAM Bandwidth = 10MHz CH26640, RB 50

## 2.7. Peak-to-Average Power Ratio (PAPR)

### Ambient condition

Temperature	Relative humidity
21°C ~25°C	40%~60%

### Methods of Measurement

The measurement procedures in KDB971168 are used.

The inherent randomness of the power peaks in a noise-like signal makes it difficult to quantify the peak power using traditional measurement techniques for determining the peak power of an analog signal. The peak power of a digitally-modulated signal is predictable only on a statistical basis. Thus, for these types of signals, a statistical measurement of the peak power is necessary.

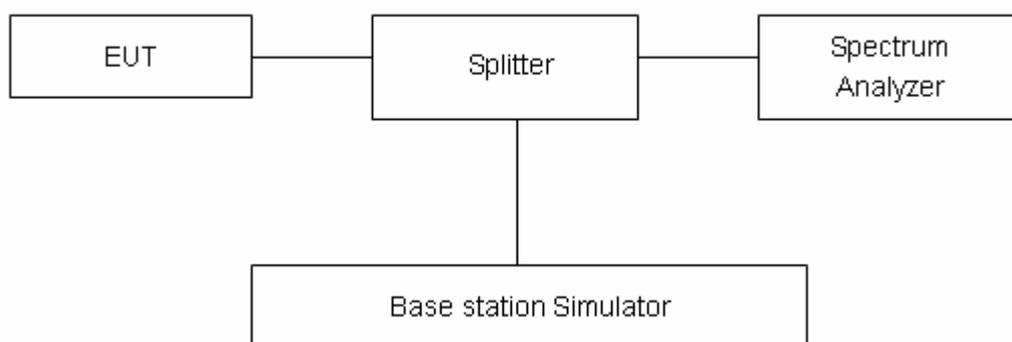
Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth.

Step 1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.

Step 2. Set the CCDF option in Spectrum analyzer.

Step 3. Record the maximum PAPR level associated with a probability of 0.1%.

### Test Setup



### Limits

No specific Peak-to-Average Ratio requirements in KDB 971168.

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 2$ ,  $U = 0.4$  dB.

**TA Technology (Shanghai) Co., Ltd.**  
**Test Report**

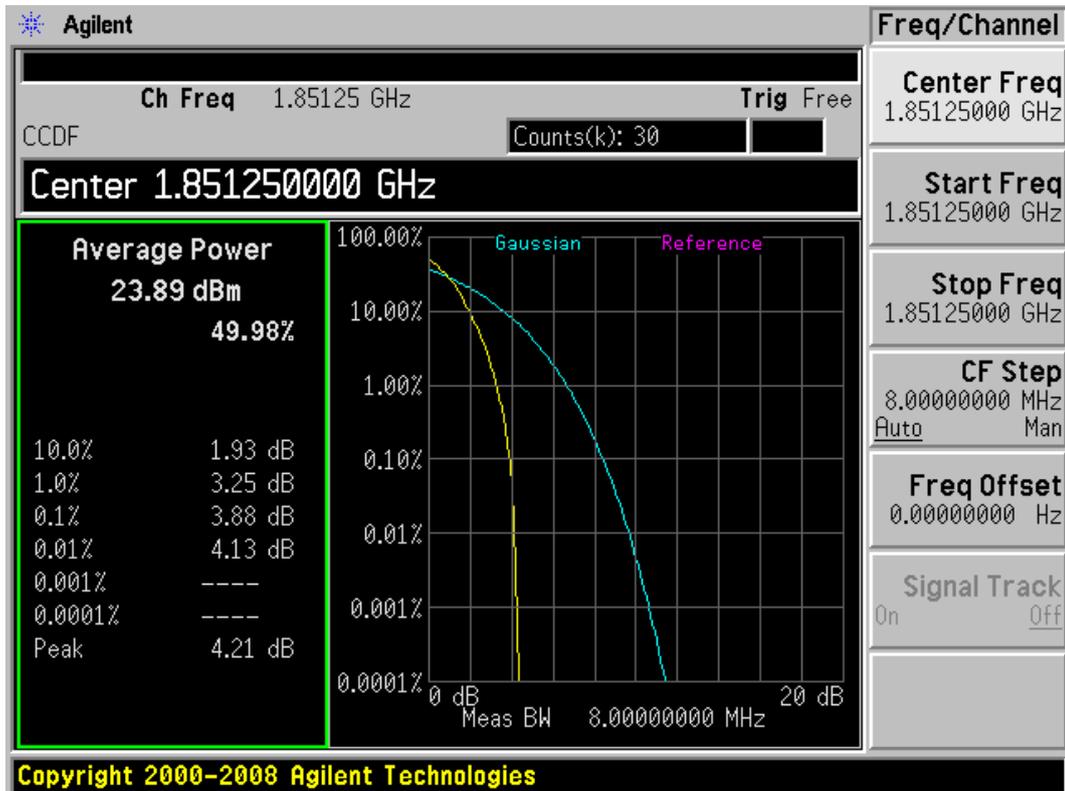
Report No.: RHA1301-0016RF02R2

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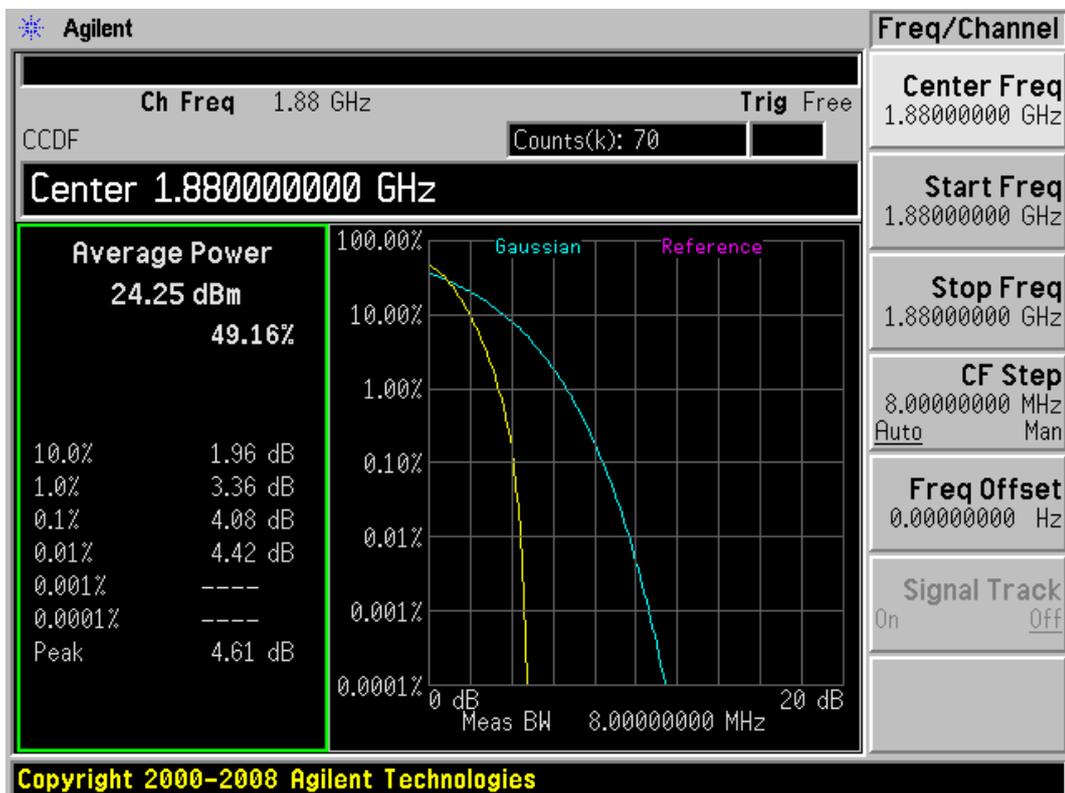
**Test Results**

<b>Mode</b>	<b>Channel</b>	<b>Frequency (MHz)</b>	<b>Test Result(dB)</b>
CDMA PCS RC3 SO55	25	1851.25	3.88
	600	1880.0	4.08
	1175	1908.75	3.57
CDMA PCS EVDO (Rev.0)	25	1851.25	4.01
	600	1880.0	4.10
	1175	1908.75	3.59
CDMA PCS EVDO (Rev.A)	25	1851.25	4.52
	600	1880.0	4.82
	1175	1908.75	3.98
CDMA PCS 1X Advance SO73	25	1851.25	3.29
	600	1880.0	3.88
	1175	1908.75	3.50

# TA Technology (Shanghai) Co., Ltd. Test Report

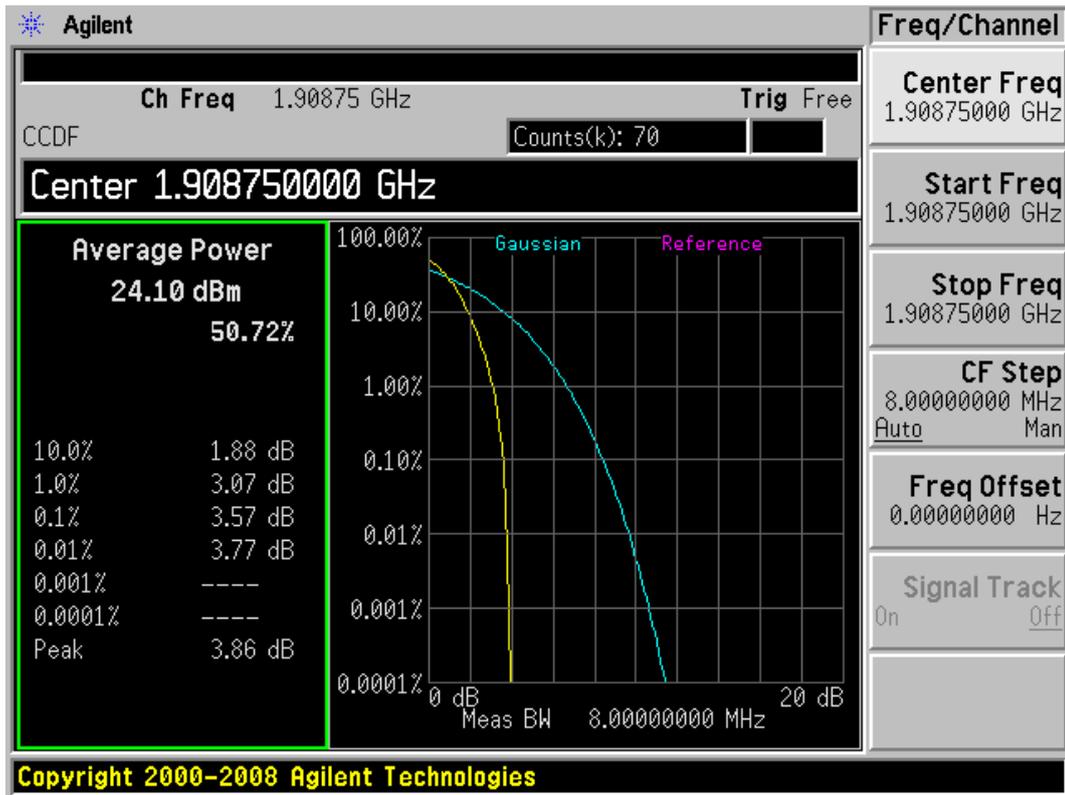


CDMA PCS RC3 SO55 CH25 Channel

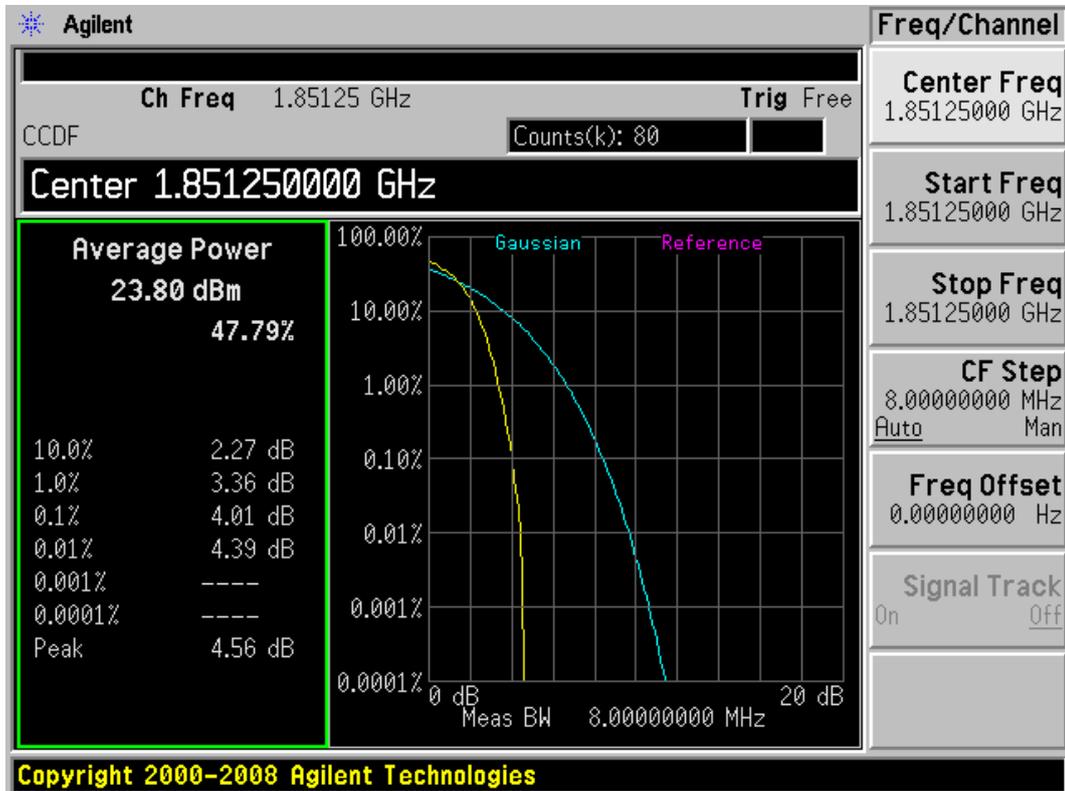


CDMA PCS RC3 SO55 CH600 Channel

# TA Technology (Shanghai) Co., Ltd. Test Report

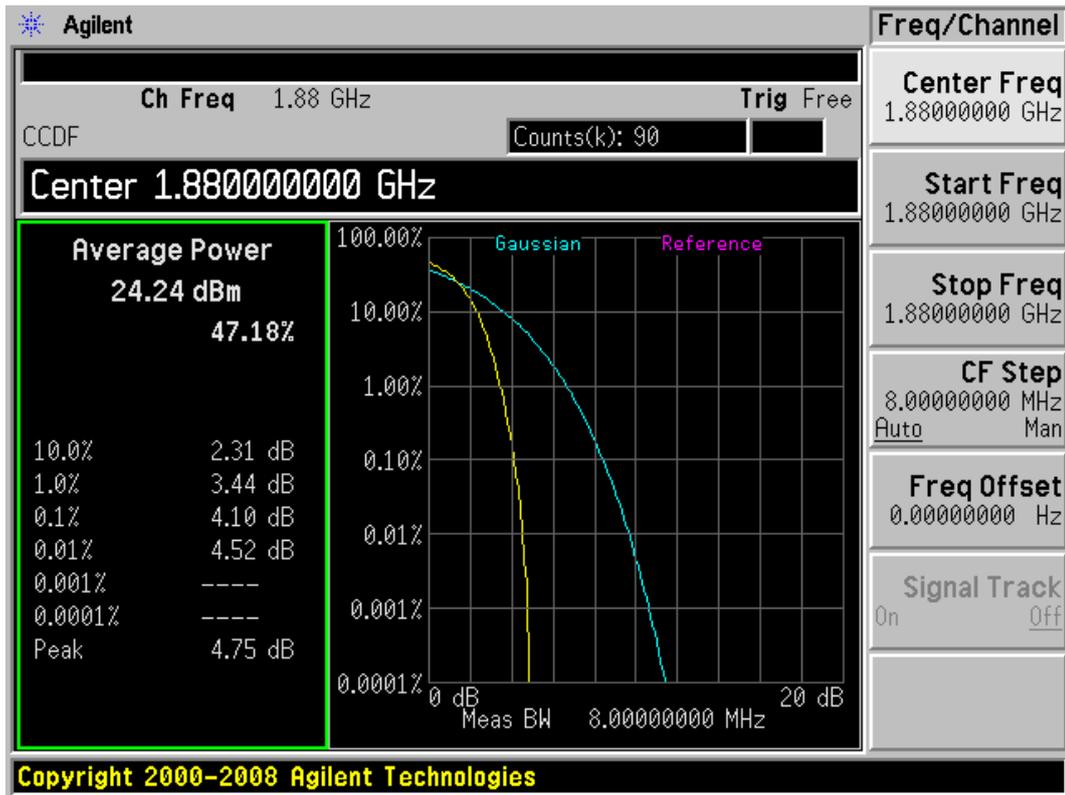


CDMA PCS RC3 SO55 CH1175 Channel

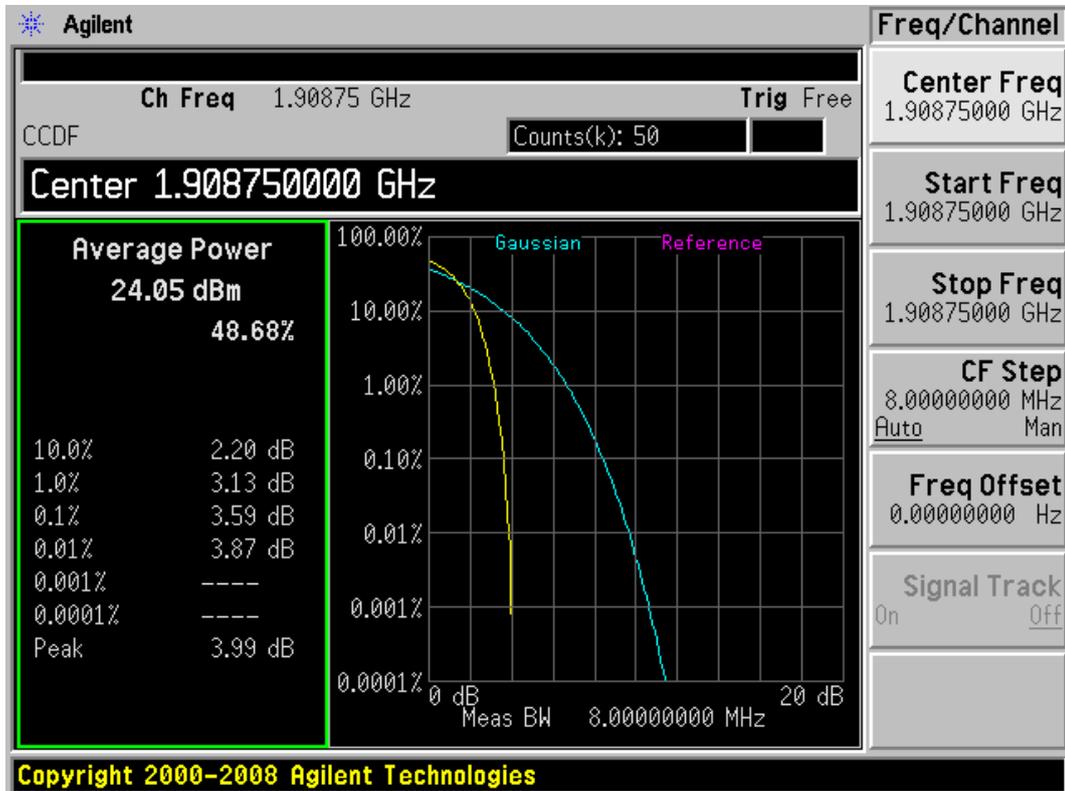


CDMA PCS EVDO (Rev.0) CH25 Channel

# TA Technology (Shanghai) Co., Ltd. Test Report

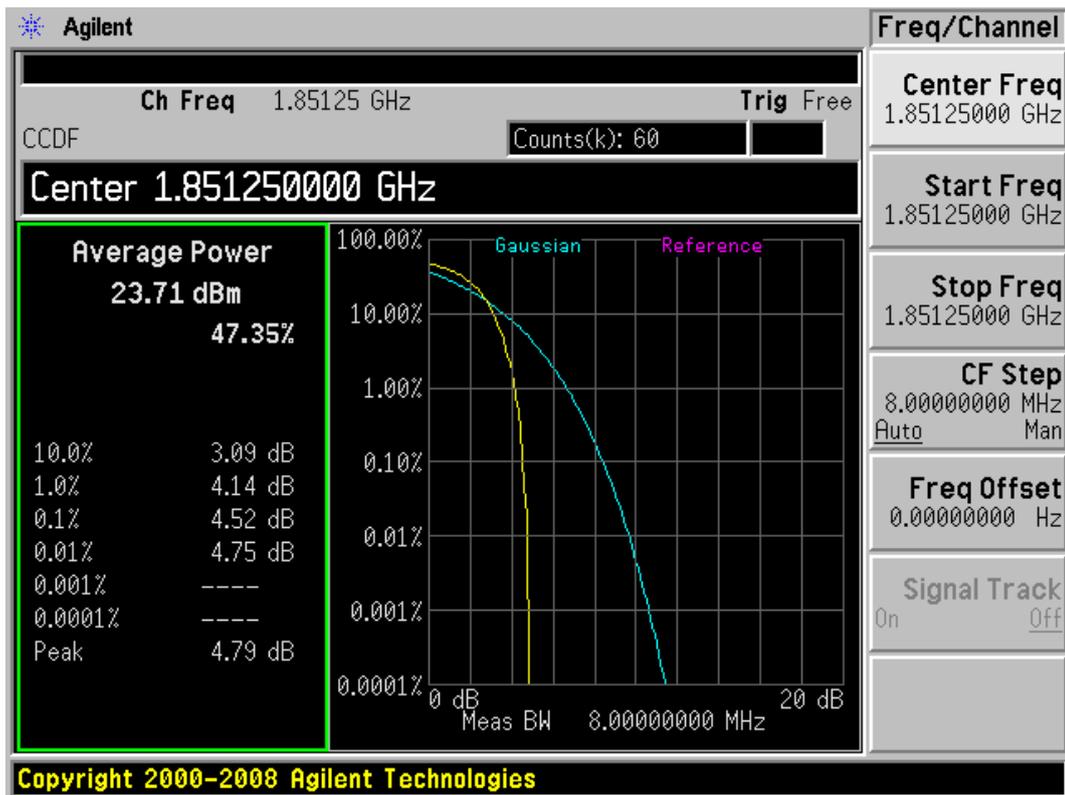


CDMA PCS EVDO (Rev.0) CH600 Channel

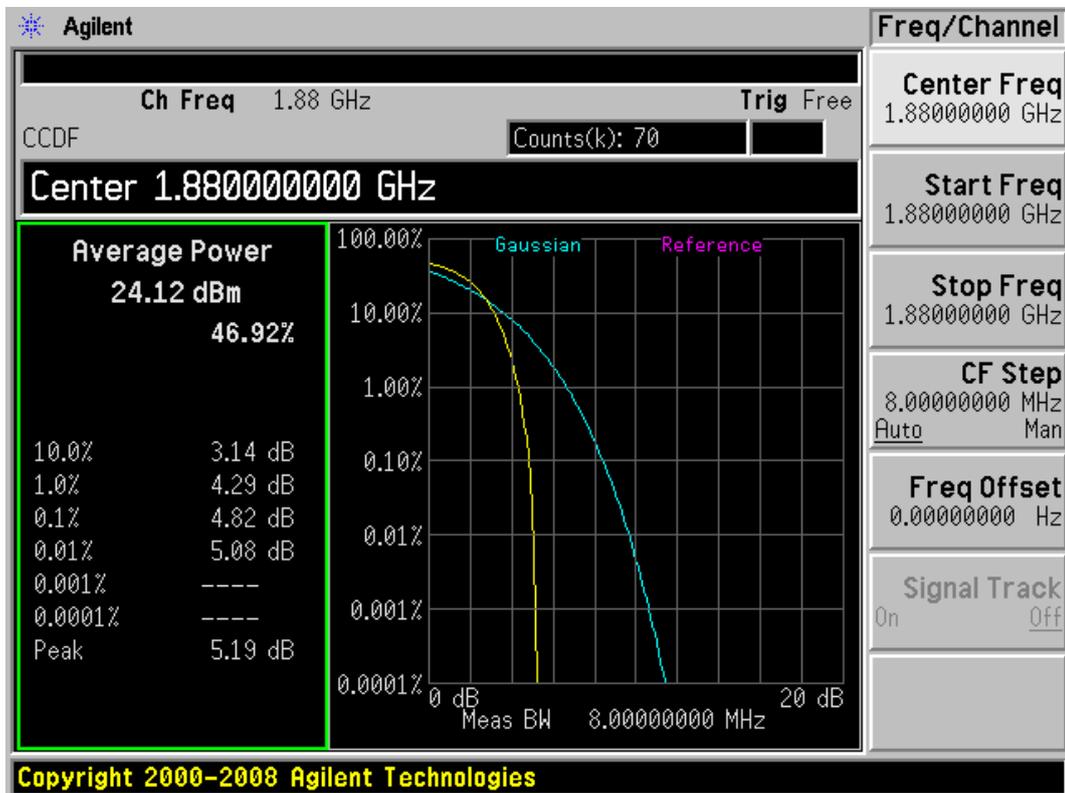


CDMA PCS EVDO (Rev.0) CH1175 Channel

# TA Technology (Shanghai) Co., Ltd. Test Report

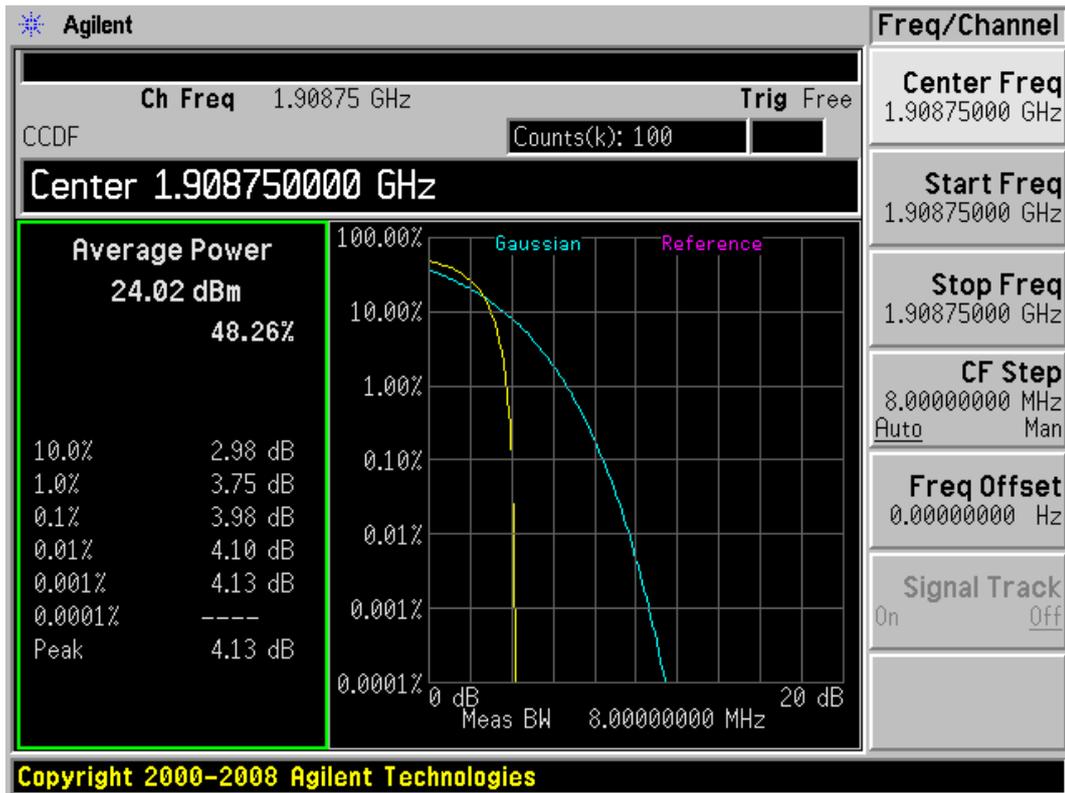


CDMA PCS EVDO (Rev.A) CH25 Channel

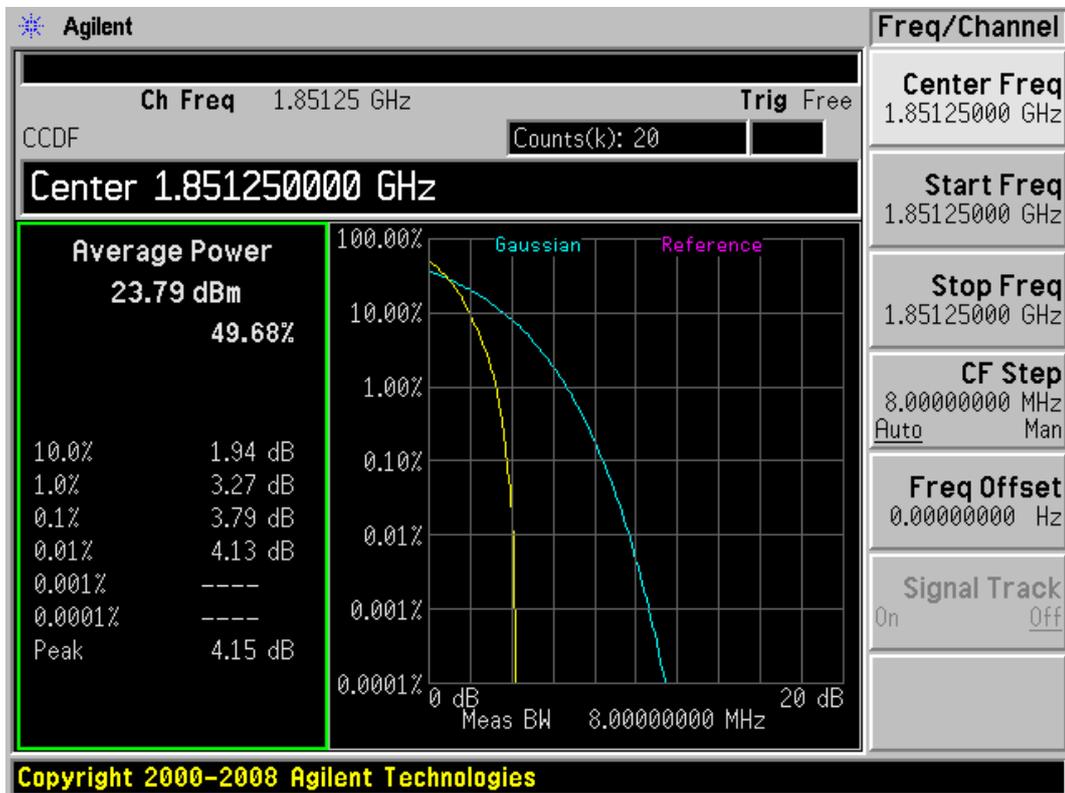


CDMA PCS EVDO (Rev.A) CH600 Channel

# TA Technology (Shanghai) Co., Ltd. Test Report

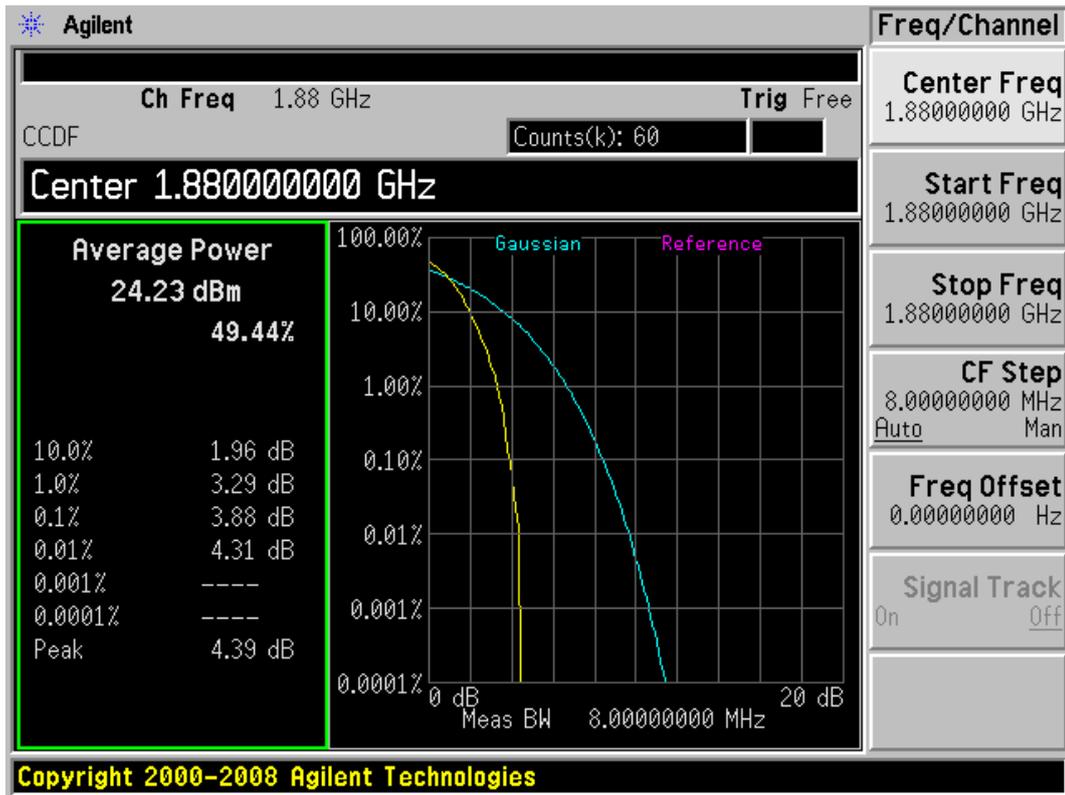


CDMA PCS EVDO (Rev.A) CH1175 Channel

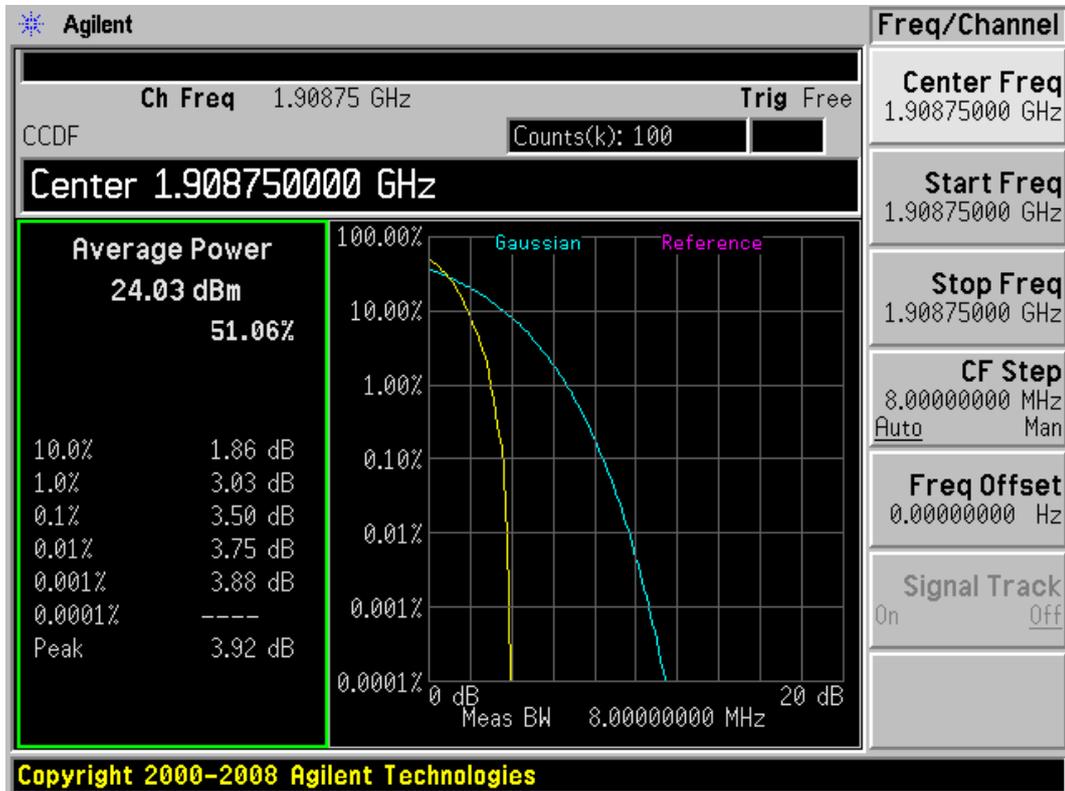


CDMA PCS 1X Advance SO73 CH25 Channel

# TA Technology (Shanghai) Co., Ltd. Test Report



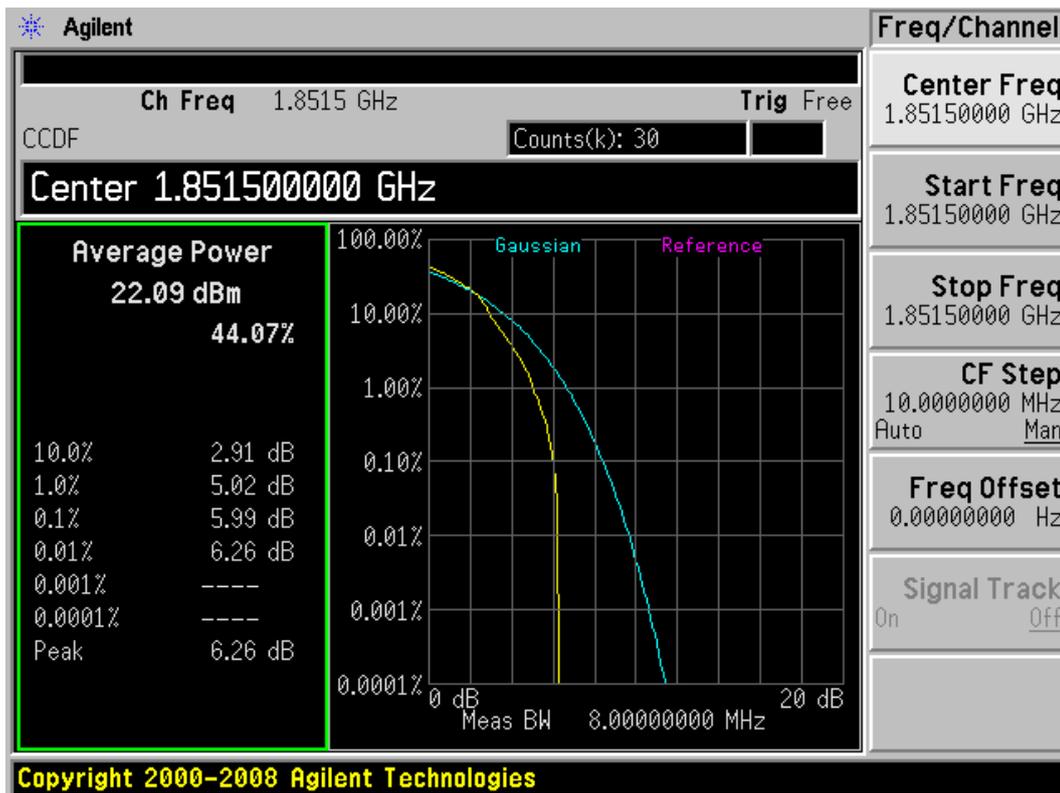
CDMA PCS 1X Advance SO73 CH600 Channel



CDMA PCS 1X Advance SO73 CH1175 Channel

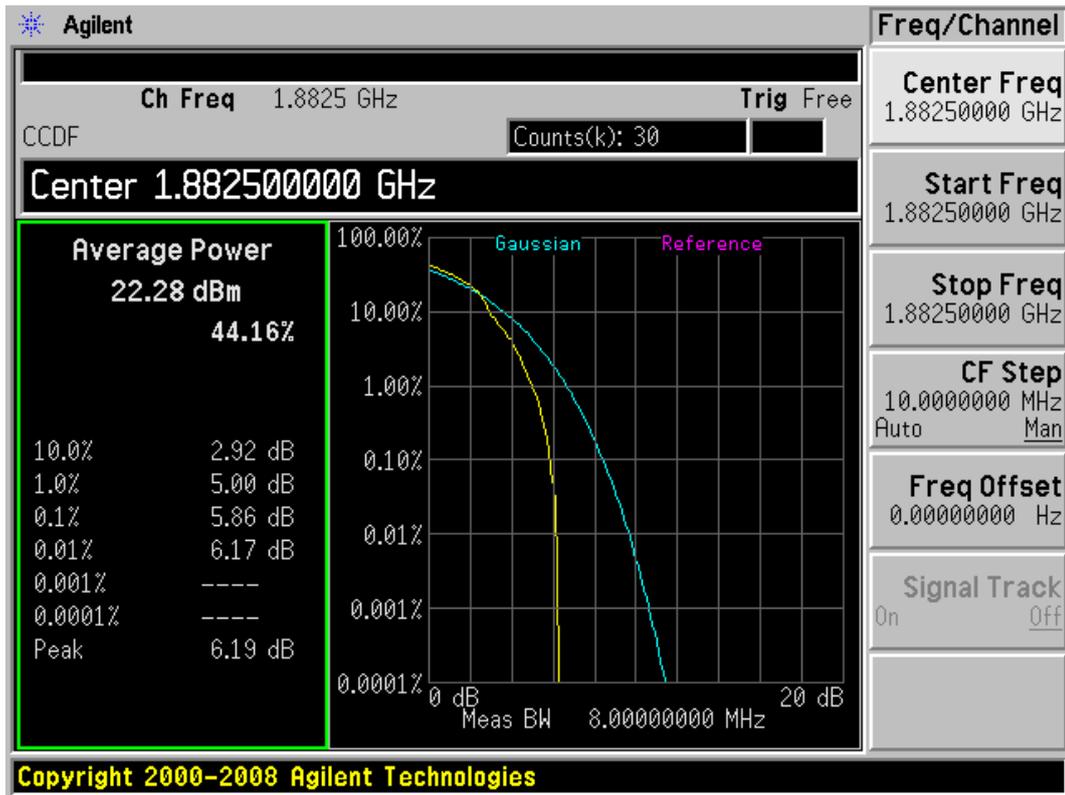
# TA Technology (Shanghai) Co., Ltd. Test Report

LTE Band 25			
Bandwidth (MHz)	Channel	Frequency (MHz)	Test Result(dB)
3	26055	1851.5	5.99
	26365	1882.5	5.86
	26675	1913.5	5.24
5	26065	1852.5	4.95
	26365	1882.5	4.98
	26665	1912.5	4.63
10	26090	1855.0	4.97
	26365	1882.5	4.98
	26640	1910	4.74

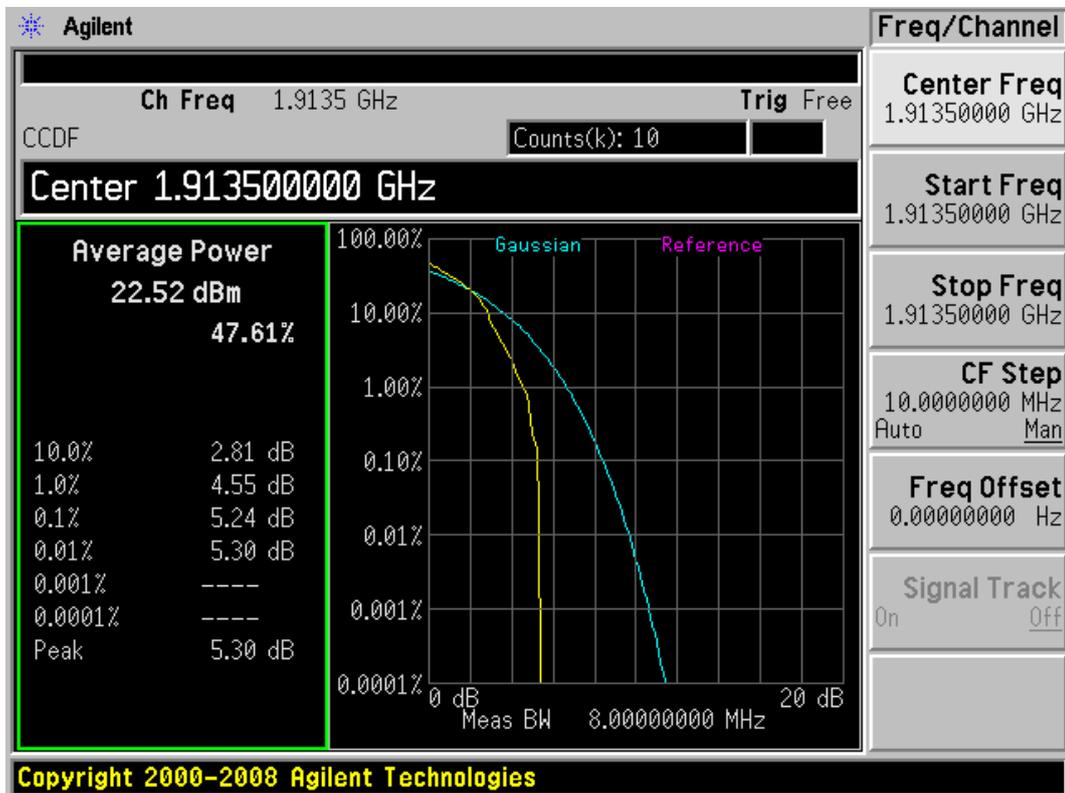


LTE Band 25 3MHz CH26055 Channel

# TA Technology (Shanghai) Co., Ltd. Test Report

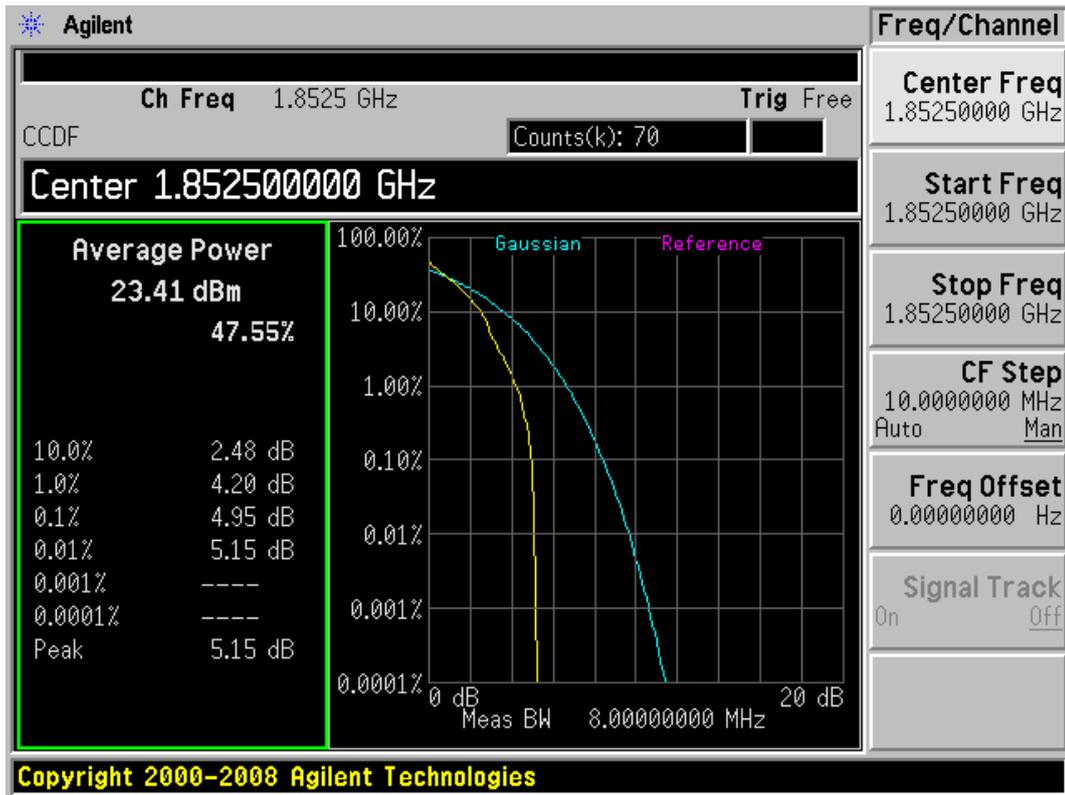


LTE Band 25 3MHz CH26365 Channel

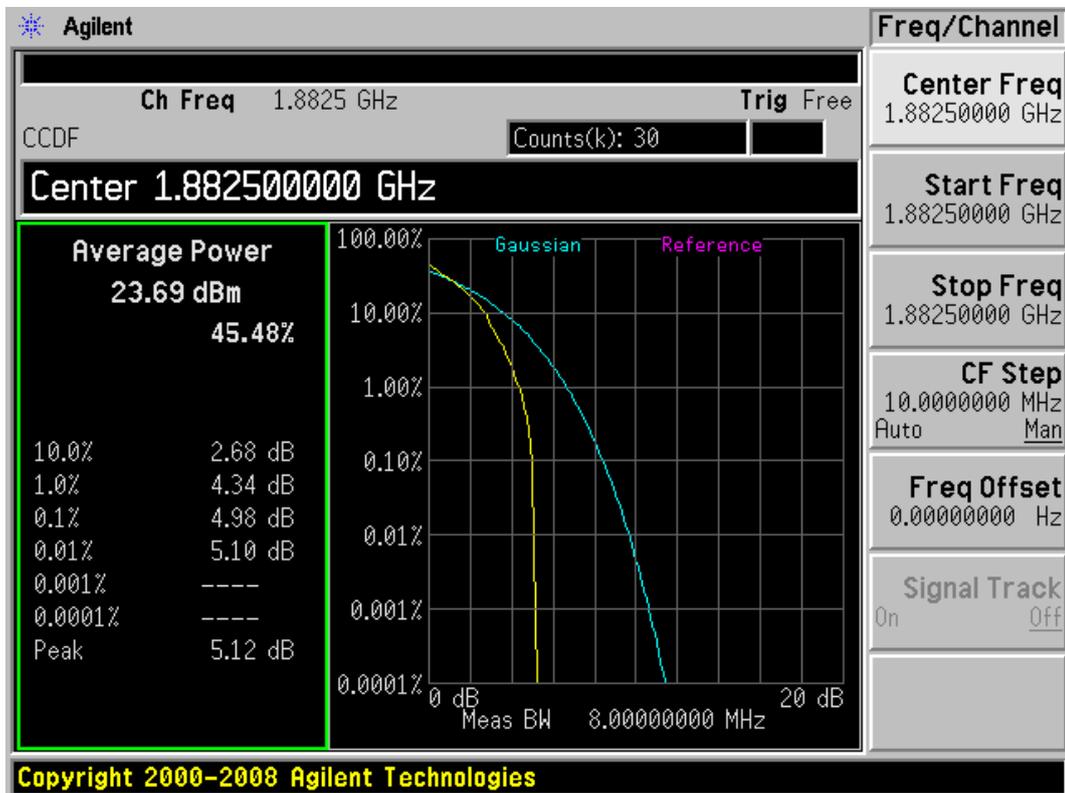


LTE Band 25 3MHz CH26675 Channel

# TA Technology (Shanghai) Co., Ltd. Test Report

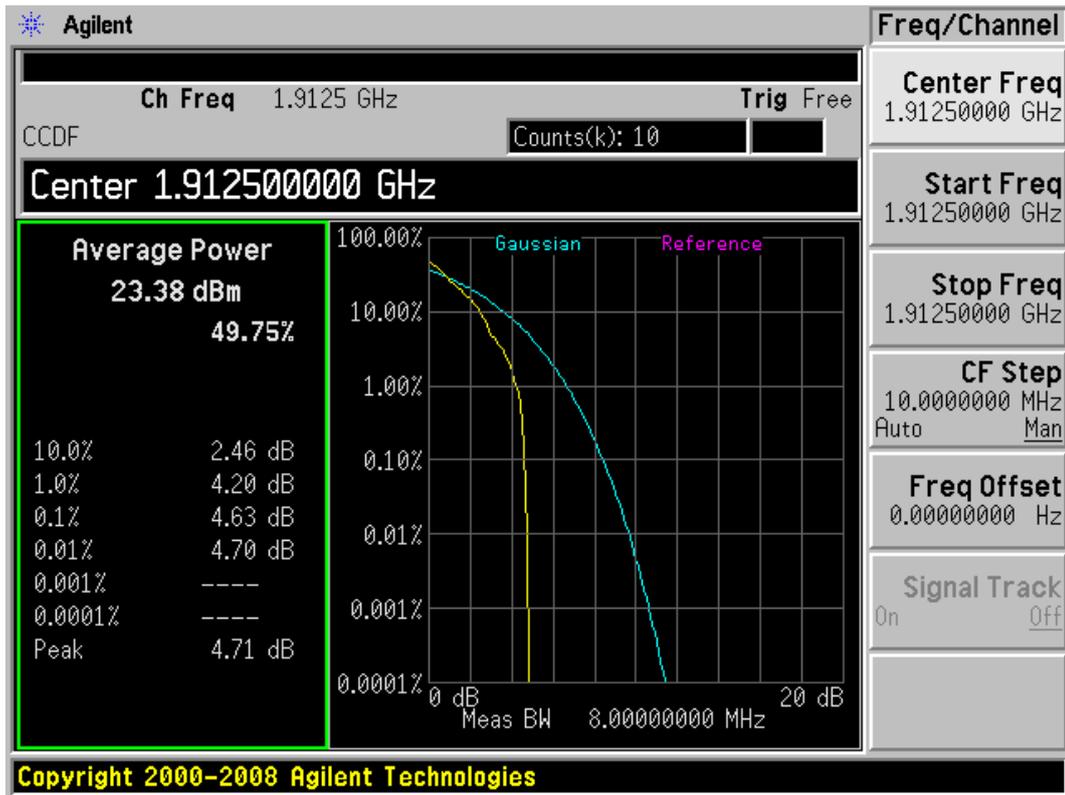


LTE Band 25 5MHz CH26065 Channel

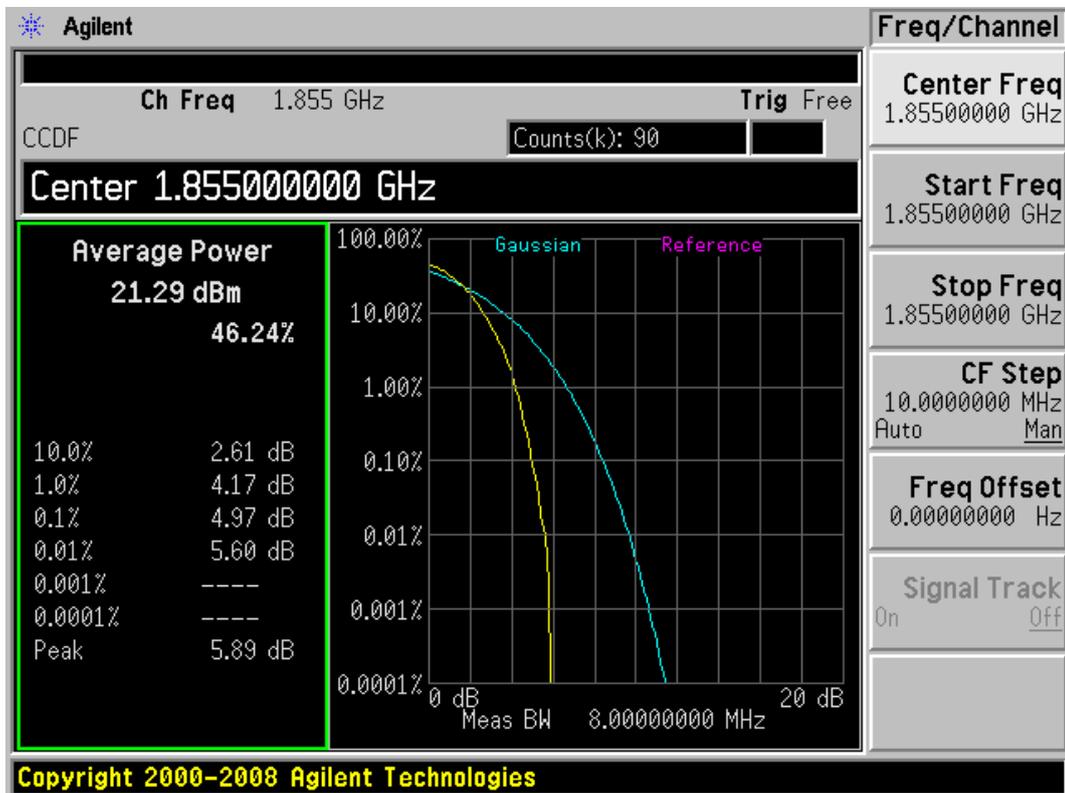


LTE Band 25 5MHz CH26365 Channel

# TA Technology (Shanghai) Co., Ltd. Test Report

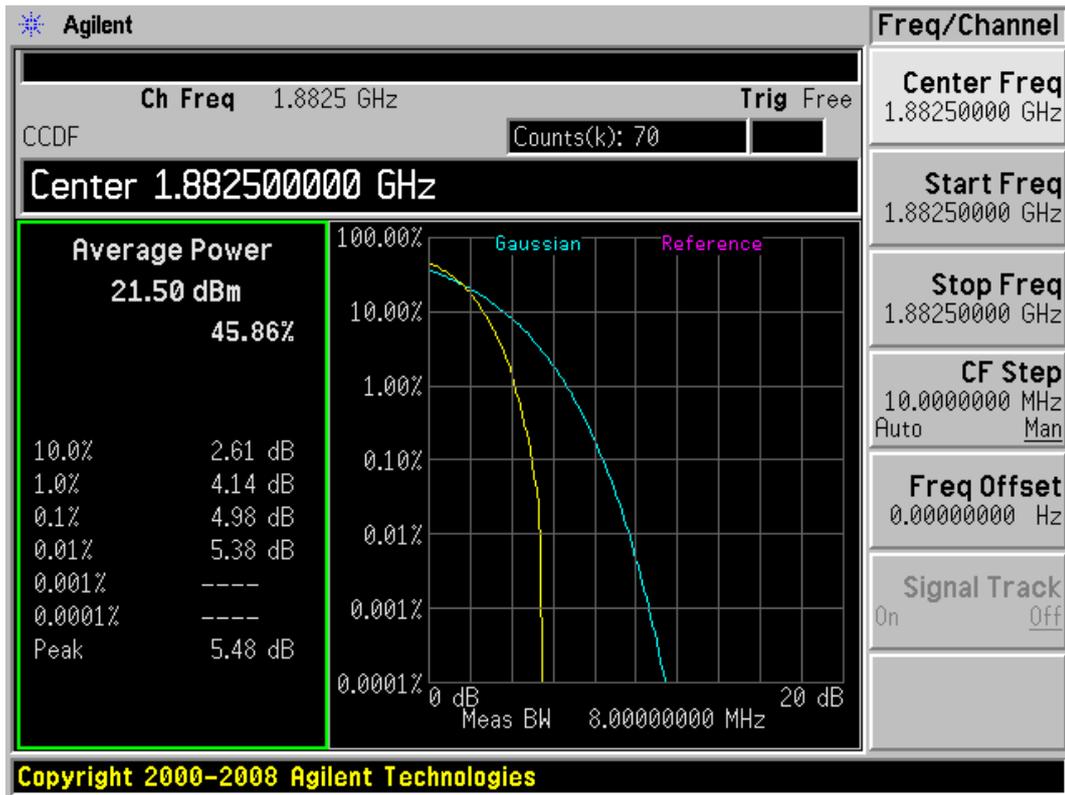


LTE Band 25 5MHz CH26665 Channel

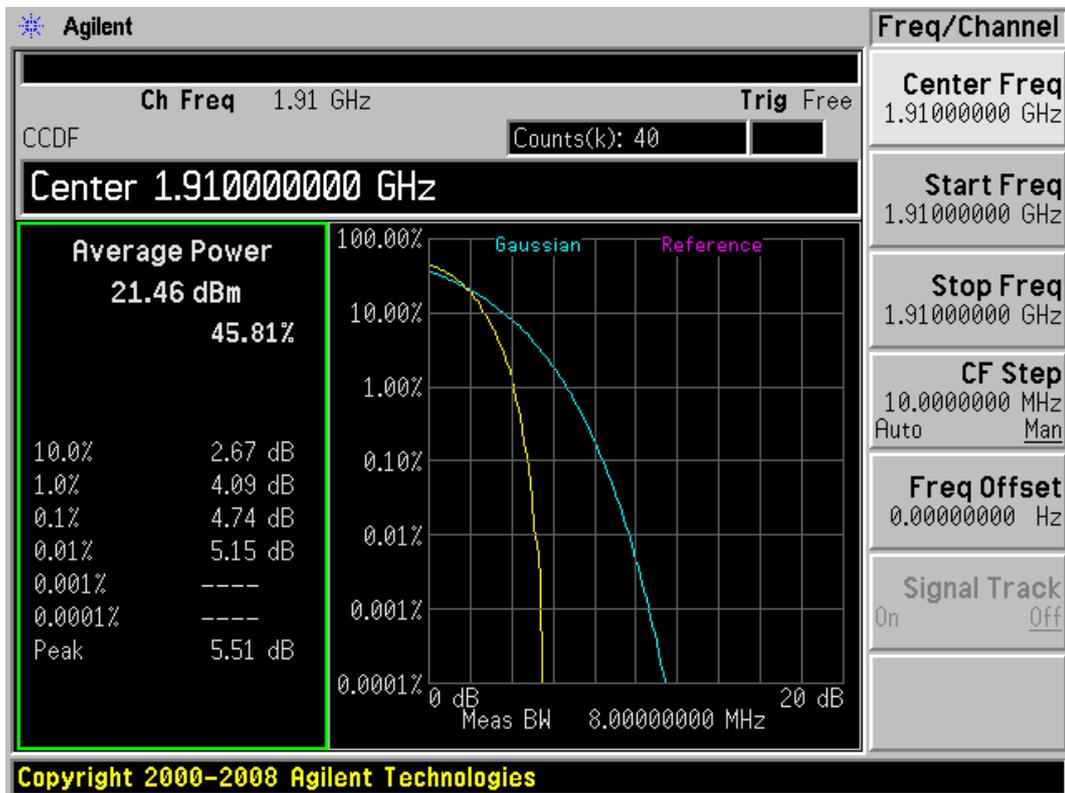


LTE Band 25 10MHz CH26090 Channel

# TA Technology (Shanghai) Co., Ltd. Test Report



LTE Band 25 10MHz CH26365 Channel



LTE Band 25 10MHz CH26640 Channel

## 2.8. Frequency Stability

### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

### Method of Measurement

#### 1. Frequency Stability (Temperature Variation)

The temperature inside the climate chamber is varied from -30°C to +50°C in 10°C step size,

(1) With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours.

(2) Measure the carrier frequency with the test equipment in a “call mode”. These measurements should be made within 1 minute of powering up the mobile station, to prevent significant self warming.

(3) Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, un-powered, before making measurements.

#### 2. Frequency Stability (Voltage Variation)

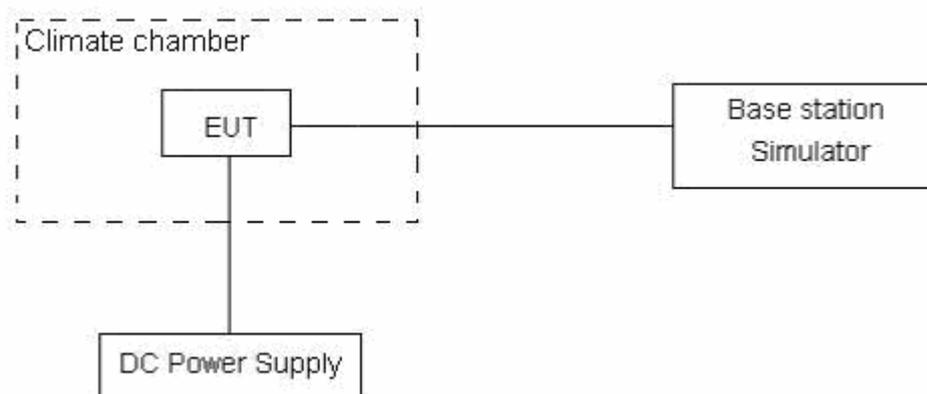
The frequency stability shall be measured with variation of primary supply voltage as follows:

(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery-operating end point which shall be specified by the manufacturer.

This transceiver is specified to operate with an input voltage of between 3.6 V and 4.2 V, with a nominal voltage of 3.7V.

### Test setup



# TA Technology (Shanghai) Co., Ltd.

## Test Report

Report No.: RHA1301-0016RF02R2

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### Limits

No specific frequency stability requirements in part 24.235

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor  $k = 3$ ,  $U = 0.01\text{ppm}$ .

### Test Result

#### CDMA PCS

Temperature (° C)	Test Results (ppm) / 3.7 V Power supply Channel 600			
	RC3 (SO55)	1X Advance (SO73)	EV-DO Rev.0	EV-DO Rev.A
-30	0.0023	0.0080	0.0057	0.0056
-20	0.0016	0.0048	0.0026	0.0024
-10	-0.0003	0.0051	0.0028	0.0027
0	0.0017	0.0034	0.0011	0.0010
10	0.0042	0.0070	0.0048	0.0046
20	0.0063	0.0035	0.0013	0.0011
30	0.0065	0.0045	0.0023	0.0021
40	0.0047	0.0042	0.0020	0.0018
50	0.0039	0.0053	0.0031	0.0029

Voltage (V)	Test Results(ppm) / 20° C Channel 600			
	RC3 (SO55)	1X Advance (SO73)	EV-DO Rev.0	EV-DO Rev.A
4.2	-0.0022	0.0052	0.0030	0.0028
3.7	-0.0005	0.0030	0.0008	0.0006
3.6	0.0031	0.0040	0.0018	0.0016

**TA Technology (Shanghai) Co., Ltd.**  
**Test Report**

**LTE Band 25**

Temperature (° C)	Test Results (ppm) / 3.7 V Power supply Channel 26365					
	QPSK, 100%RB			16QAM, 100%RB		
	Channel Bandwidth(MHz)			Channel Bandwidth(MHz)		
	3	5	10	3	5	10
-30	0.0051	0.0072	0.0046	0.0054	0.0037	0.0028
-20	0.0041	0.0052	0.0014	0.0062	0.0015	0.0067
-10	0.0042	0.0063	0.0017	0.0041	0.0009	0.0032
0	0.0028	0.0024	0.0000	0.0028	0.0018	0.0038
10	0.0013	0.0028	0.0037	0.0025	0.0022	0.0012
20	0.0023	0.0016	0.0002	0.0018	0.0033	0.0014
30	0.0081	0.0022	0.0012	0.0046	0.0040	0.0035
40	0.0059	0.0032	0.0008	0.0040	0.0054	0.0058
50	0.0072	0.0037	0.0020	0.0023	0.0070	0.0037

Voltage (V)	Test Results(ppm) / 20° C Channel 26365					
	QPSK, 100%RB			16QAM, 100%RB		
	Channel Bandwidth(MHz)			Channel Bandwidth(MHz)		
	3	5	10	3	5	10
4.2	0.0041	0.0028	0.0019	0.0017	0.0038	0.0033
3.7	0.0017	0.0013	-0.0003	0.0005	0.0023	0.0015
3.6	0.0024	0.0023	0.0007	0.0015	0.0032	0.0028

## 2.9. Spurious Emissions at Antenna Terminals

### Ambient condition

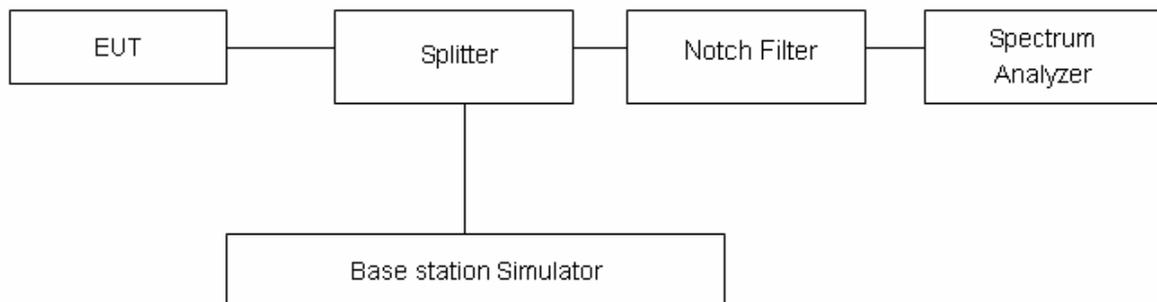
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

### Method of Measurement

The EUT was connected to Spectrum Analyzer and Base Station Simulator via power Splitter. The measurement is carried out using a spectrum analyzer. The spectrum analyzer scans from 30MHz to the 10th harmonic of the carrier. For below 1GHz, RBW and VBW are set to 100 kHz, Sweep is set to ATUO. For above 1GHz, RBW and VBW are set to 1MHz, Sweep is set to ATUO.

We tested all modes for CDMA PCS and LTE Band 25. The worst emission was recorded in the report.

### Test setup



### Limits

Rule Part 24.238(a) specifies that “on any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB.”

Limit	-13 dBm
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### Measurement Uncertainty

The assessed measurement uncertainty to ensure 99.75% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .

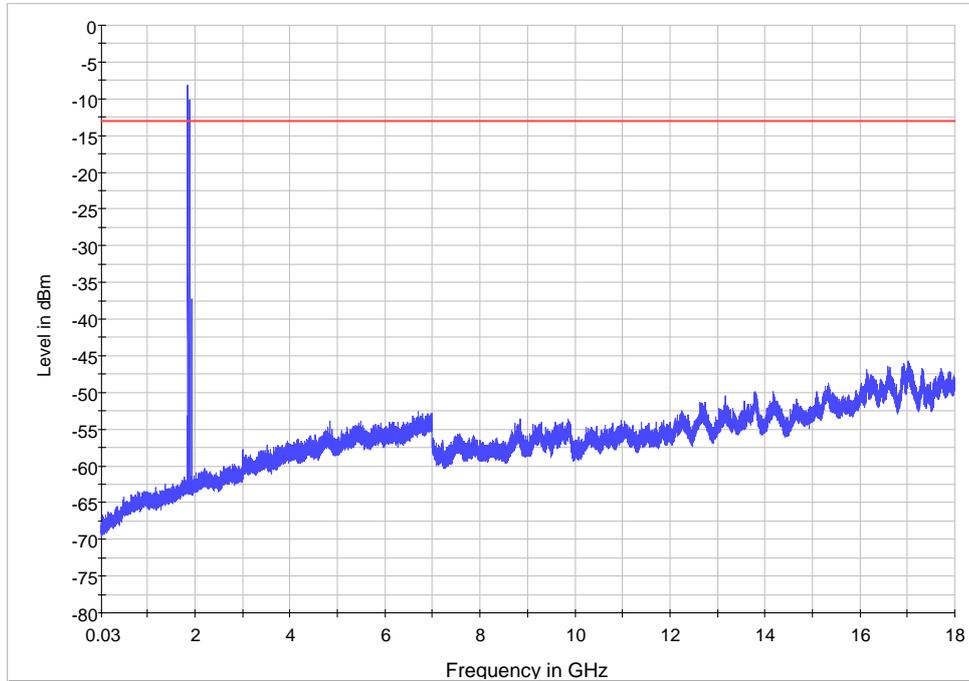
Frequency	Uncertainty
100kHz-2GHz	0.684 dB
Above 2GHz	1.407 dB

# TA Technology (Shanghai) Co., Ltd.

## Test Report

### Test Result

CDMA PCS CH25



Note: The signal beyond the limit is carrier.  
CDMA PCS 25 Channel 30MHz~18GHz

Harmonic	TX ch.25 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3702.5	Nf	-13	/
3	5553.75	Nf	-13	/
4	7405	Nf	-13	/
5	9256.25	Nf	-13	/
6	11107.5	Nf	-13	/
7	12958.75	Nf	-13	/
8	14810	Nf	-13	/
9	16661.25	Nf	-13	/
10	18512.5	Nf	-13	/

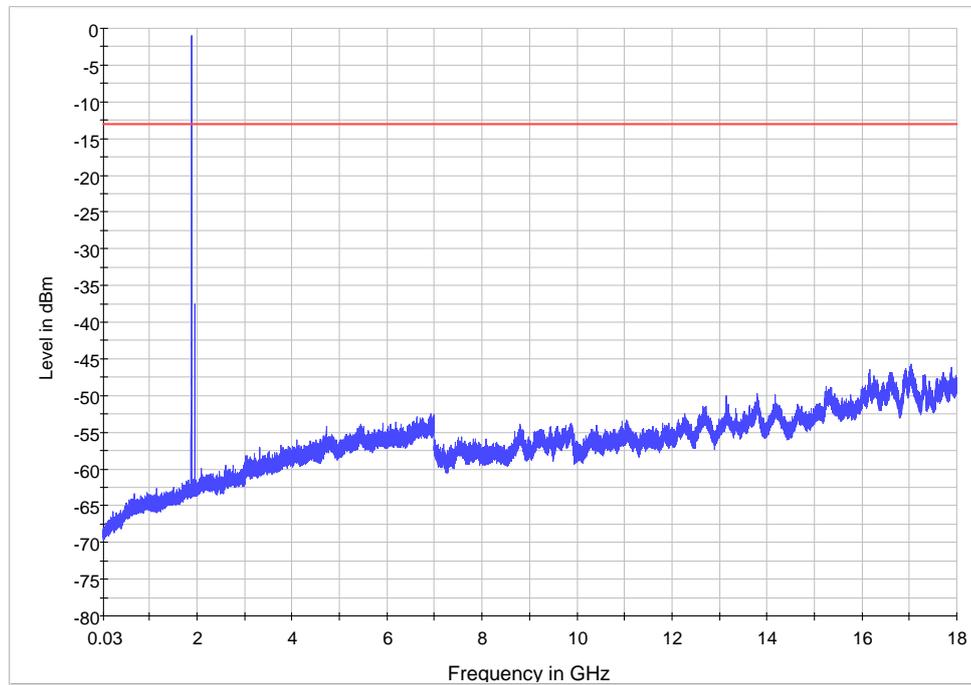
Nf: noise floor

Note: The other Spurious RF conducted emissions level is no more than noise floor.

# TA Technology (Shanghai) Co., Ltd.

## Test Report

### CDMA PCS CH600



Note: The signal beyond the limit is carrier.  
CDMA PCS 600 Channel 30MHz~18GHz

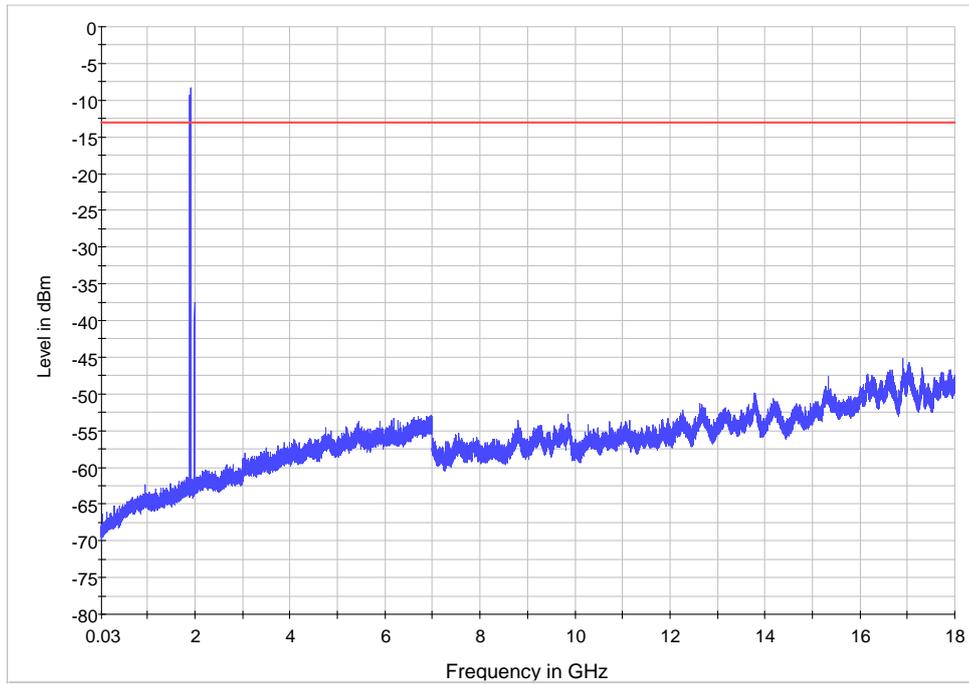
Harmonic	TX ch.600 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3760	Nf	-13	/
3	5640	Nf	-13	/
4	7520	Nf	-13	/
5	9400	Nf	-13	/
6	11280	Nf	-13	/
7	13160	Nf	-13	/
8	15040	Nf	-13	/
9	16920	Nf	-13	/
10	18800	Nf	-13	/

Nf: noise floor

Note: The other Spurious RF conducted emissions level is no more than noise floor.

# TA Technology (Shanghai) Co., Ltd. Test Report

CDMA PCS CH1175



Note: The signal beyond the limit is carrier.  
CDMA PCS 1175 Channel 30MHz~18GHz

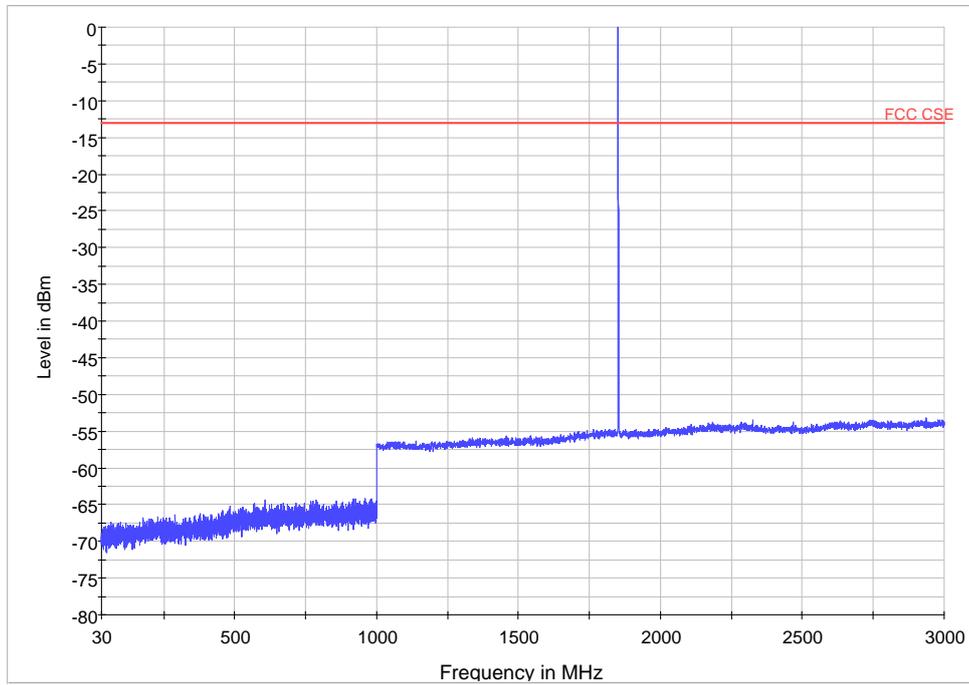
Harmonic	TX ch.1175 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3817.5	Nf	-13	/
3	5726.25	Nf	-13	/
4	7635	Nf	-13	/
5	9543.75	Nf	-13	/
6	11452.5	Nf	-13	/
7	13361.25	Nf	-13	/
8	15270	Nf	-13	/
9	17178.75	Nf	-13	/
10	19087.5	Nf	-13	/

Nf: noise floor

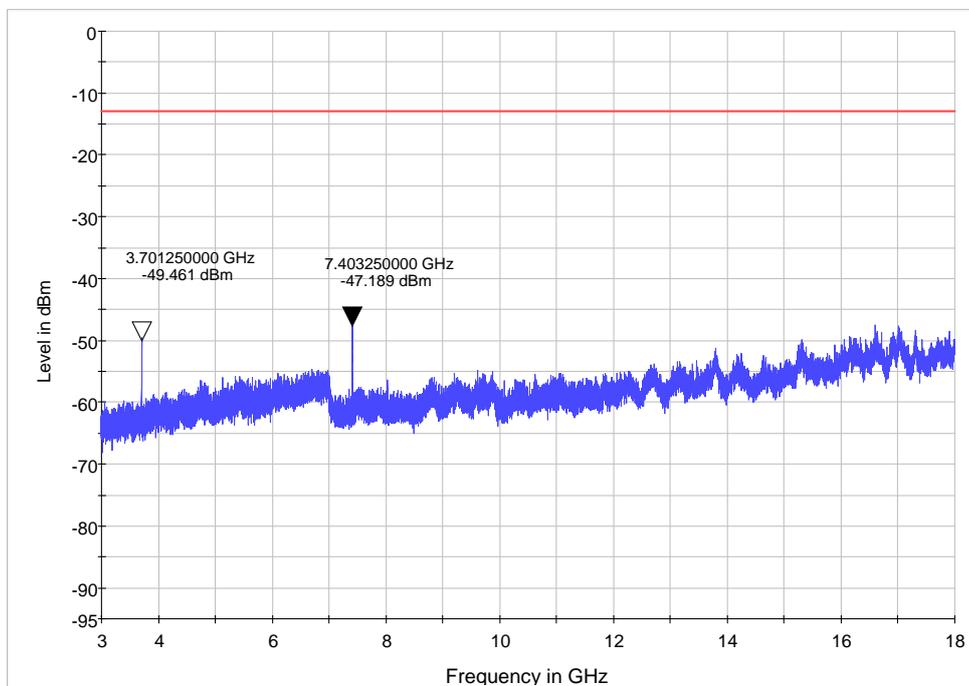
Note: The other Spurious RF conducted emissions level is no more than noise floor.

# TA Technology (Shanghai) Co., Ltd. Test Report

LTE Band 25 QPSK Bandwidth = 3MHz CH26055, RB 1

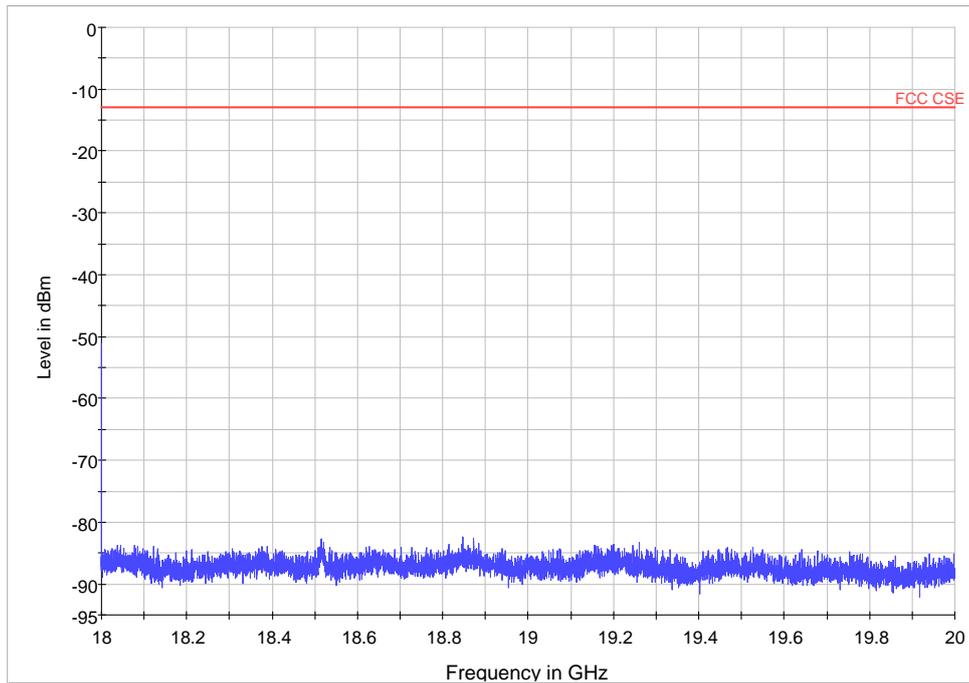


Note: The signal beyond the limit is carrier.  
LTE Band 25 26055 Channel 30MHz~3GHz



LTE Band 25 26055 Channel 3GHz~18GHz

# TA Technology (Shanghai) Co., Ltd. Test Report



LTE Band 25 26055 Channel 18GHz~20GHz

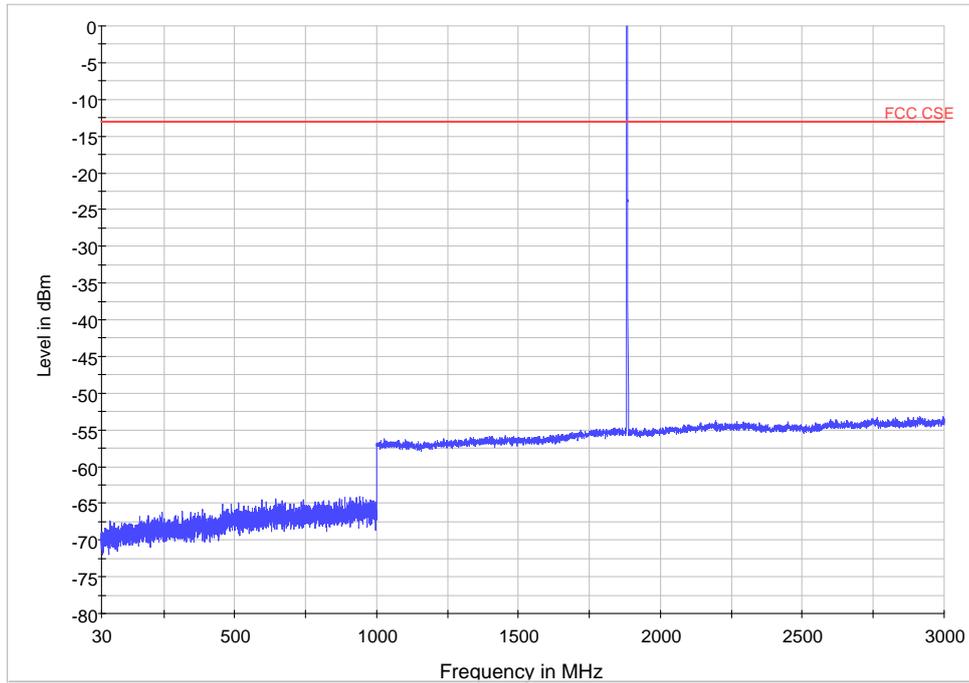
Harmonic	TX ch. 26055 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3701.3	-49.46	-13	36.46
3	5554.5	Nf	-13	/
4	7403.3	-47.19	-13	34.19
5	9257.5	Nf	-13	/
6	11109	Nf	-13	/
7	12960.5	Nf	-13	/
8	14812	Nf	-13	/
9	16663.5	Nf	-13	/
10	18515	Nf	-13	/

Nf: noise floor

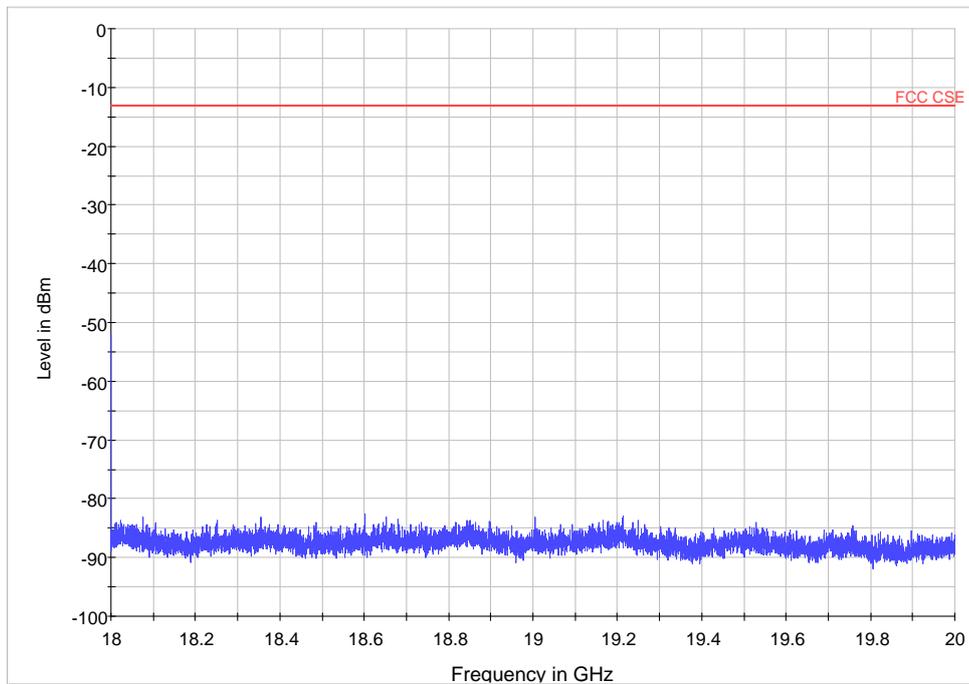
Note: The other Spurious RF conducted emissions level is no more than noise floor.

# TA Technology (Shanghai) Co., Ltd. Test Report

LTE Band 25 QPSK Bandwidth = 3MHz CH26365, RB 1



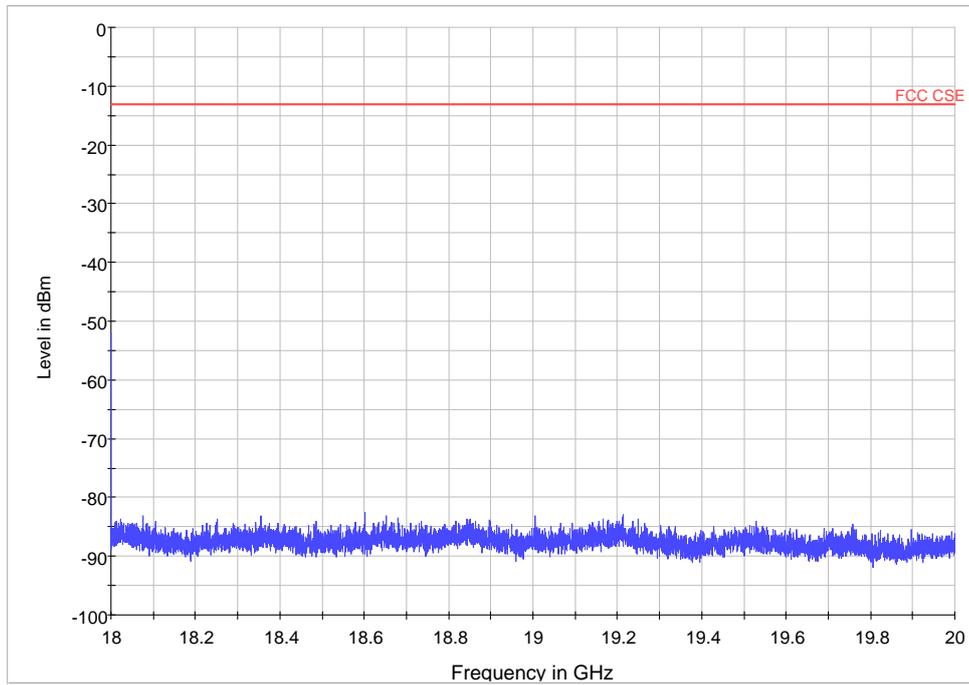
Note: The signal beyond the limit is carrier.  
LTE Band 25 26365 Channel 30MHz~3GHz



LTE Band 25 26365 Channel 3GHz~18GHz

# TA Technology (Shanghai) Co., Ltd.

## Test Report



LTE Band 25 26365 Channel 18GHz~20GHz

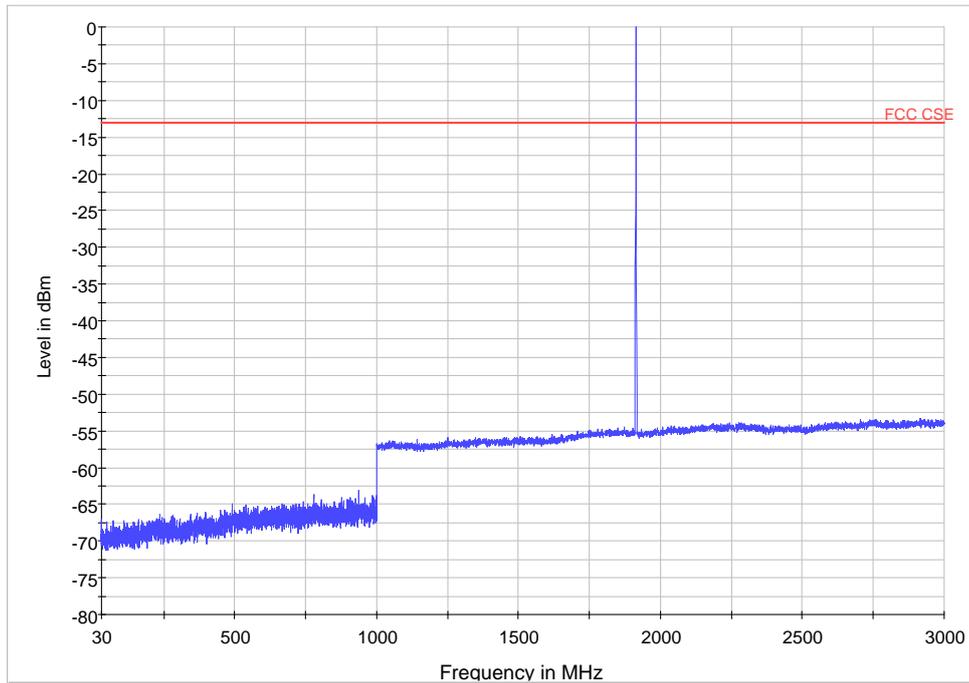
Harmonic	TX ch. 26365 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3766.1	-53.03	-13	40.03
3	5647.5	Nf	-13	/
4	7533.0	-47.59	-13	34.59
5	9412.5	Nf	-13	/
6	11295	Nf	-13	/
7	13177.5	Nf	-13	/
8	15060	Nf	-13	/
9	16942.5	Nf	-13	/
10	18825	Nf	-13	/

Nf: noise floor

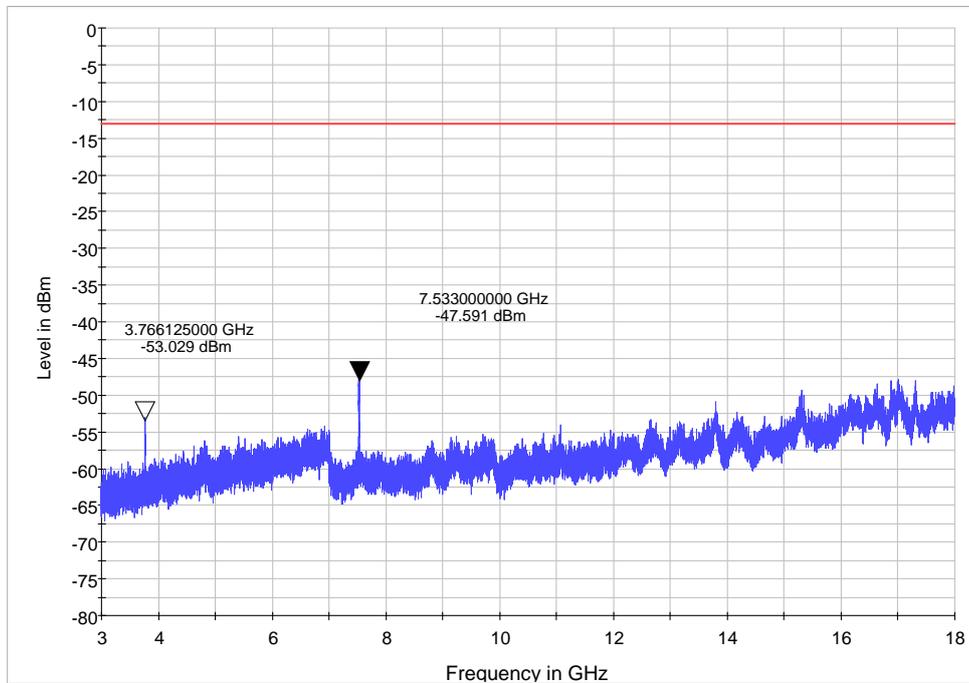
Note: The other Spurious RF conducted emissions level is no more than noise floor.

# TA Technology (Shanghai) Co., Ltd. Test Report

LTE Band 25 QPSK Bandwidth = 3MHz CH26675, RB 1



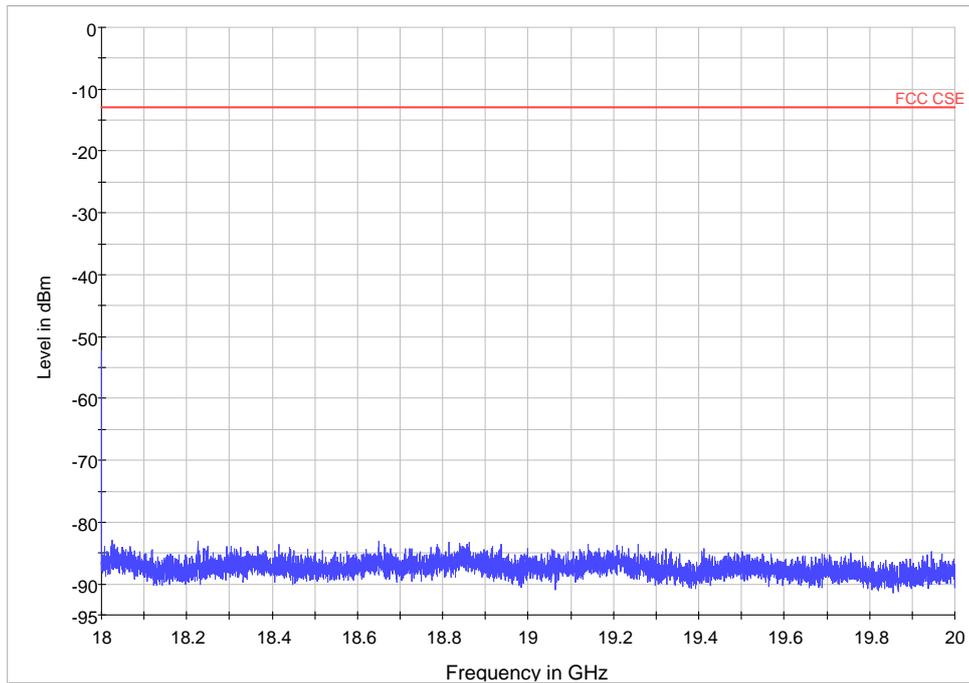
Note: The signal beyond the limit is carrier.  
LTE Band 25 26675 Channel 30MHz~3GHz



LTE Band 25 26675 Channel 3GHz~18GHz

# TA Technology (Shanghai) Co., Ltd.

## Test Report



LTE Band 25 26675 Channel 18GHz~20GHz

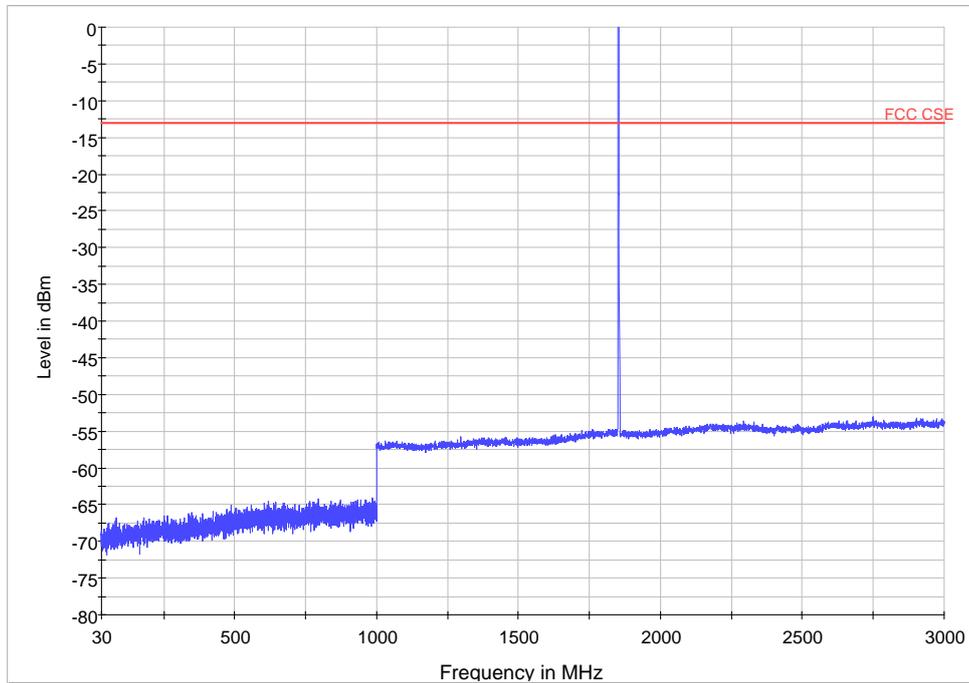
Harmonic	TX ch. 26675 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3826.9	-43.64	-13	30.64
3	5740.5	Nf	-13	/
4	7654.1	-50.72	-13	37.72
5	9567.5	Nf	-13	/
6	11481	Nf	-13	/
7	13394.5	Nf	-13	/
8	15308	Nf	-13	/
9	17221.5	Nf	-13	/
10	19135	Nf	-13	/

Nf: noise floor

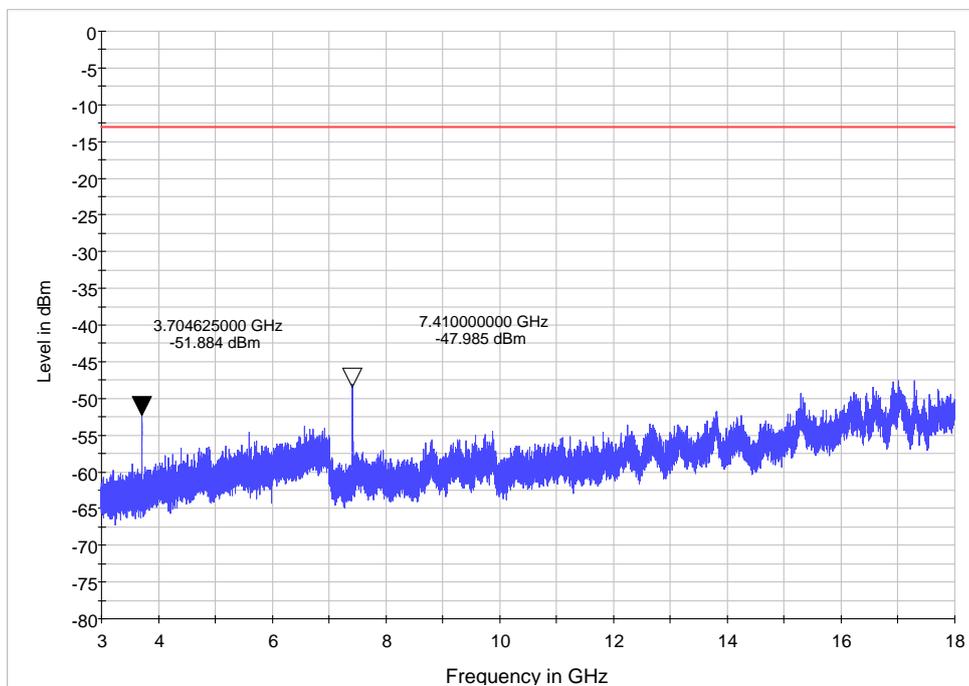
Note: The other Spurious RF conducted emissions level is no more than noise floor.

# TA Technology (Shanghai) Co., Ltd. Test Report

LTE Band 25 QPSK Bandwidth = 5MHz CH26065, RB 1



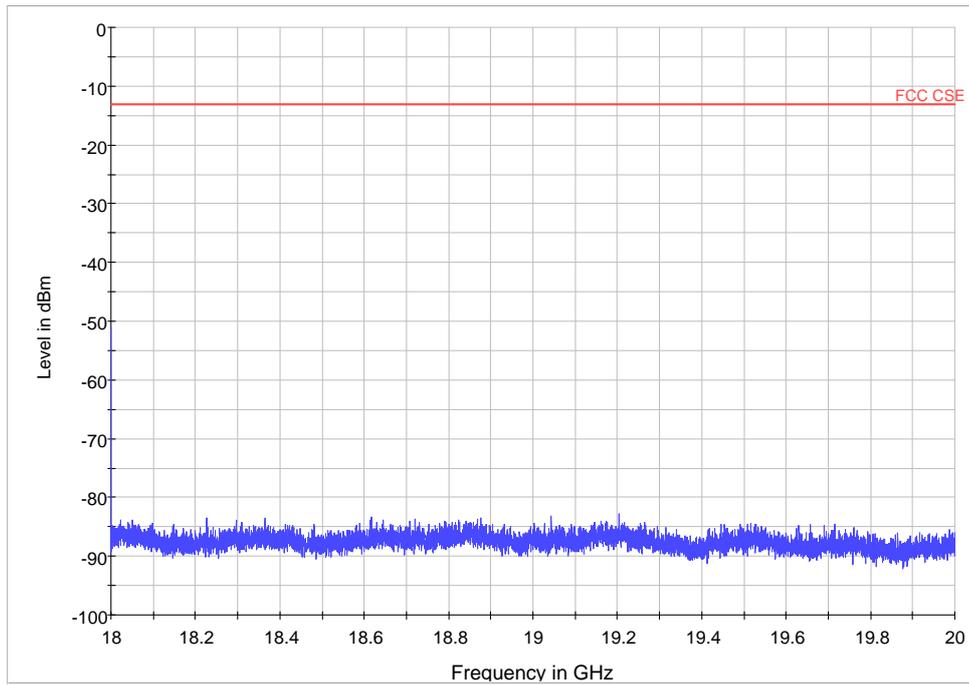
Note: The signal beyond the limit is carrier.  
LTE Band 25 26065 Channel 30MHz~3GHz



LTE Band 25 26065 Channel 3GHz~18GHz

# TA Technology (Shanghai) Co., Ltd.

## Test Report



LTE Band 25 26065 Channel 18GHz~20GHz

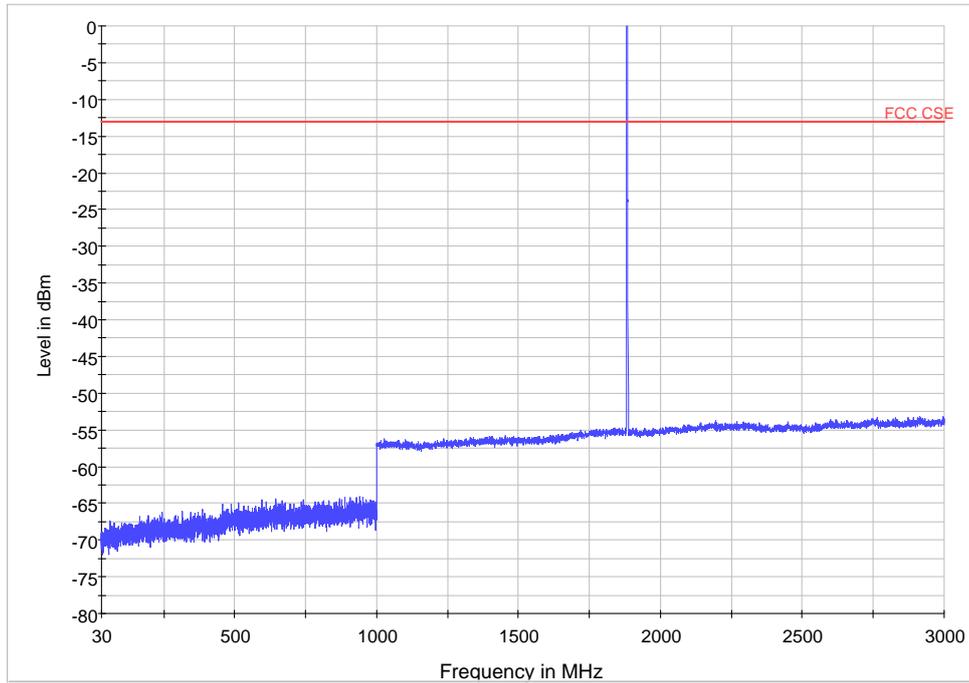
Harmonic	TX ch. 26065 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3704.6	-51.88	-13	38.88
3	5557.5	Nf	-13	/
4	7410.0	-47.99	-13	34.99
5	9262.5	Nf	-13	/
6	11115	Nf	-13	/
7	12967.5	Nf	-13	/
8	14820	Nf	-13	/
9	16672.5	Nf	-13	/
10	18525	Nf	-13	/

Nf: noise floor

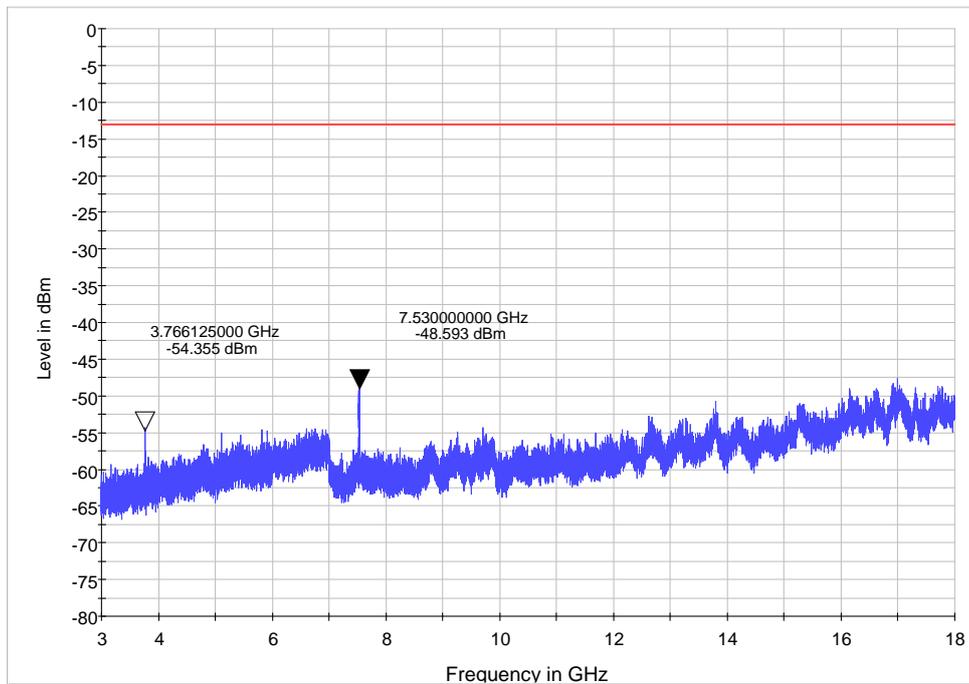
Note: The other Spurious RF conducted emissions level is no more than noise floor.

# TA Technology (Shanghai) Co., Ltd. Test Report

LTE Band 25 QPSK Bandwidth = 5MHz CH26365, RB 1



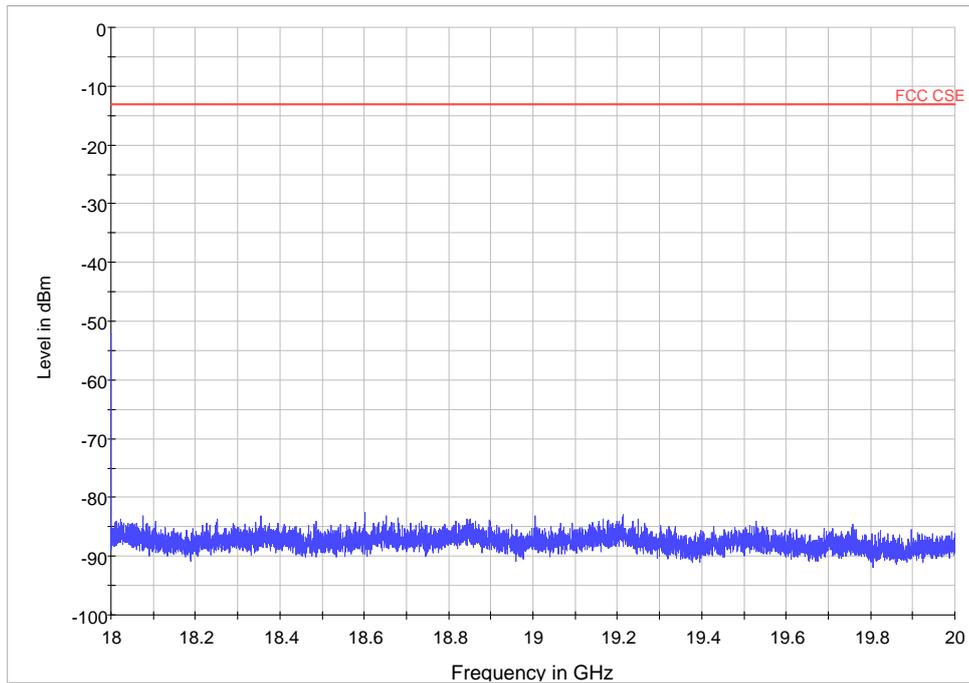
Note: The signal beyond the limit is carrier.  
LTE Band 25 26365 Channel 30MHz~3GHz



LTE Band 25 26365 Channel 3GHz~18GHz

# TA Technology (Shanghai) Co., Ltd.

## Test Report



LTE Band 25 26365 Channel 18GHz~20GHz

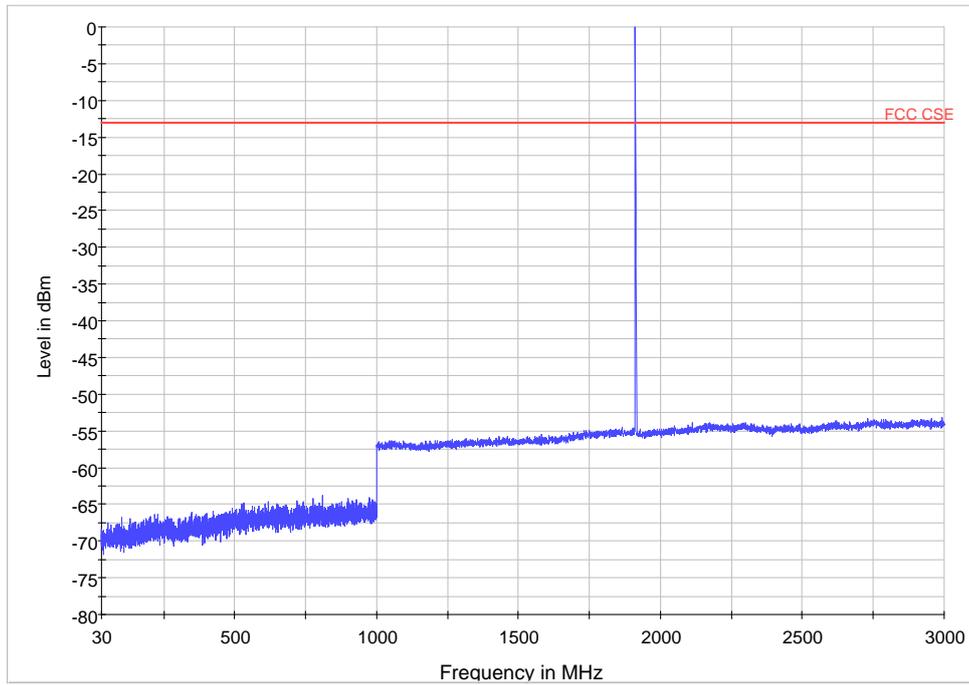
Harmonic	TX ch. 26365 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3766.1	-54.36	-13	41.36
3	5647.5	Nf	-13	/
4	7530.0	-48.59	-13	35.59
5	9412.5	Nf	-13	/
6	11295	Nf	-13	/
7	13177.5	Nf	-13	/
8	15060	Nf	-13	/
9	16942.5	Nf	-13	/
10	18825	Nf	-13	/

Nf: noise floor

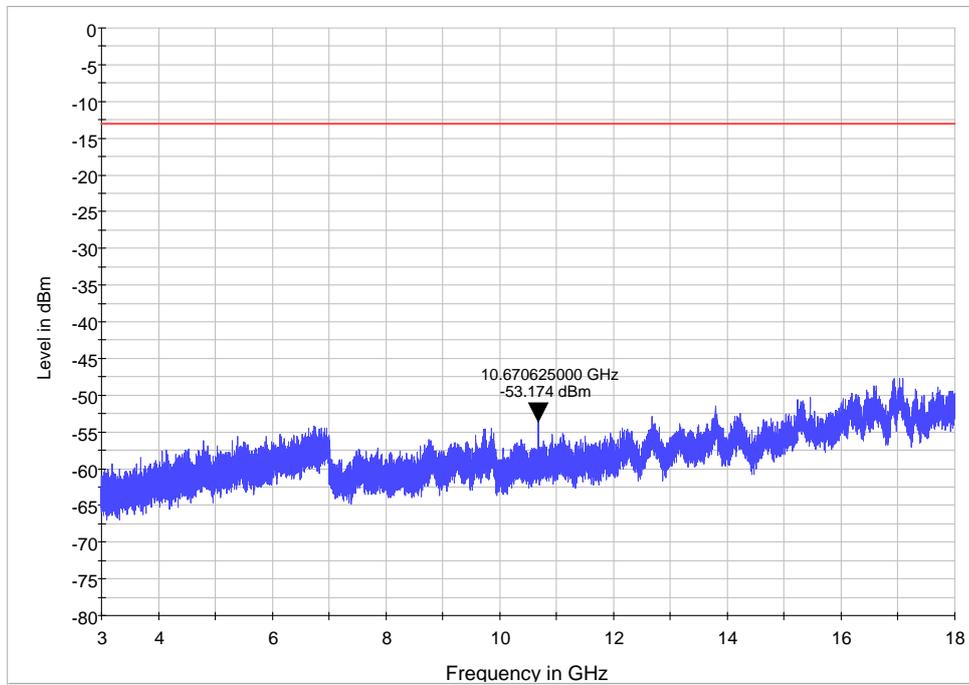
Note: The other Spurious RF conducted emissions level is no more than noise floor.

# TA Technology (Shanghai) Co., Ltd. Test Report

LTE Band 25 QPSK Bandwidth = 5MHz CH26665, RB 1

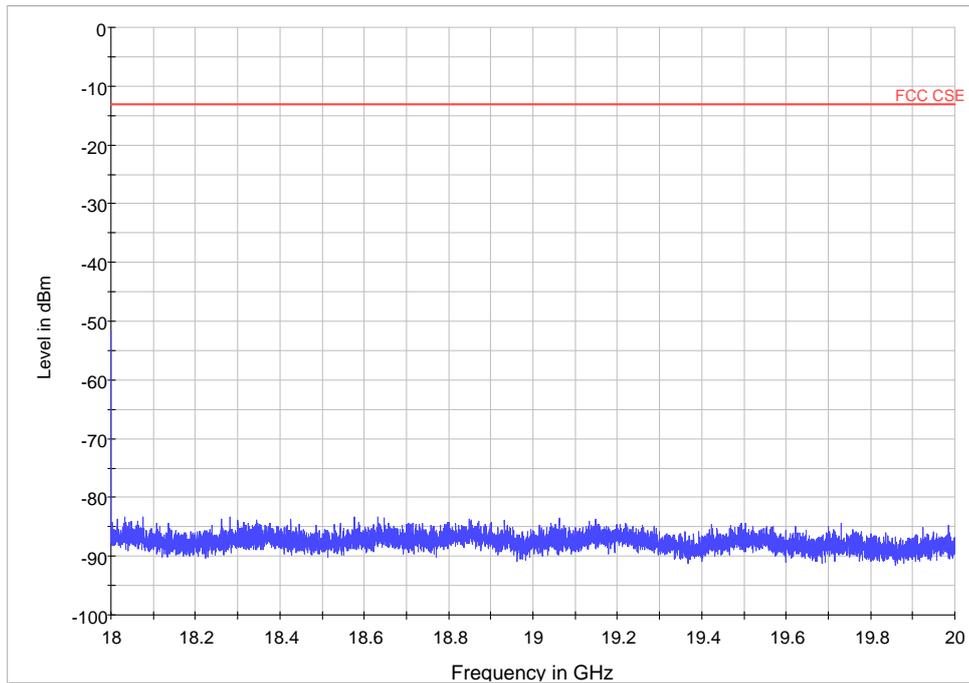


Note: The signal beyond the limit is carrier.  
LTE Band 25 26665 Channel 30MHz~3GHz



LTE Band 25 26665 Channel 3GHz~18GHz

# TA Technology (Shanghai) Co., Ltd. Test Report



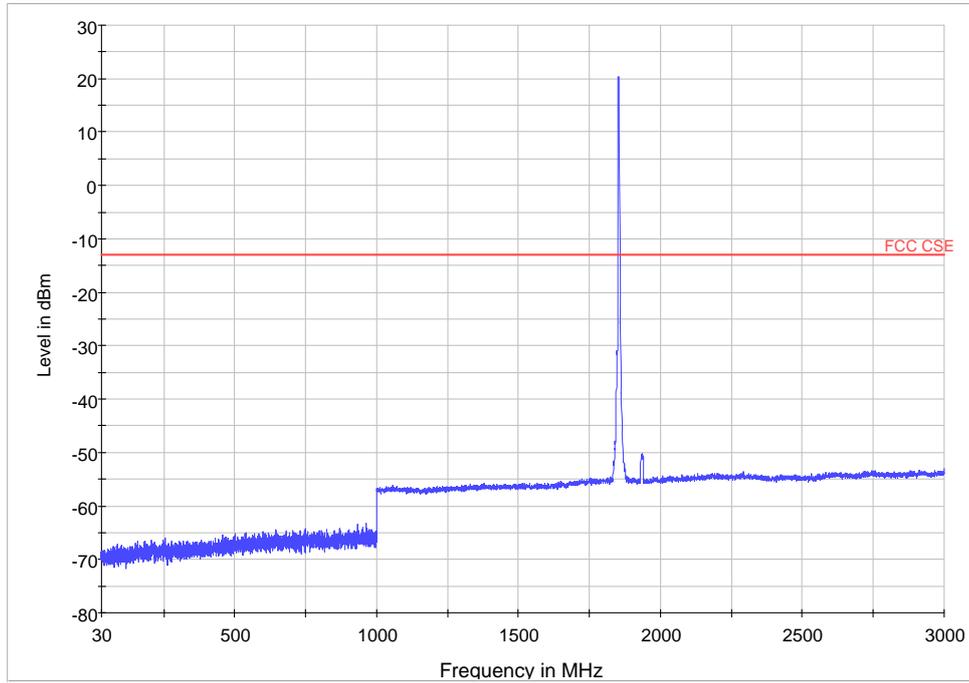
LTE Band 25 26665 Channel 18GHz~20GHz

Harmonic	TX ch. 26665 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3825	Nf	-13	/
3	5737.5	Nf	-13	/
4	7650	Nf	-13	/
5	9562.5	Nf	-13	/
6	10670.0	-53.17	-13	40.17
7	13387.5	Nf	-13	/
8	15300	Nf	-13	/
9	17212.5	Nf	-13	/
10	19125	Nf	-13	/

Nf: noise floor

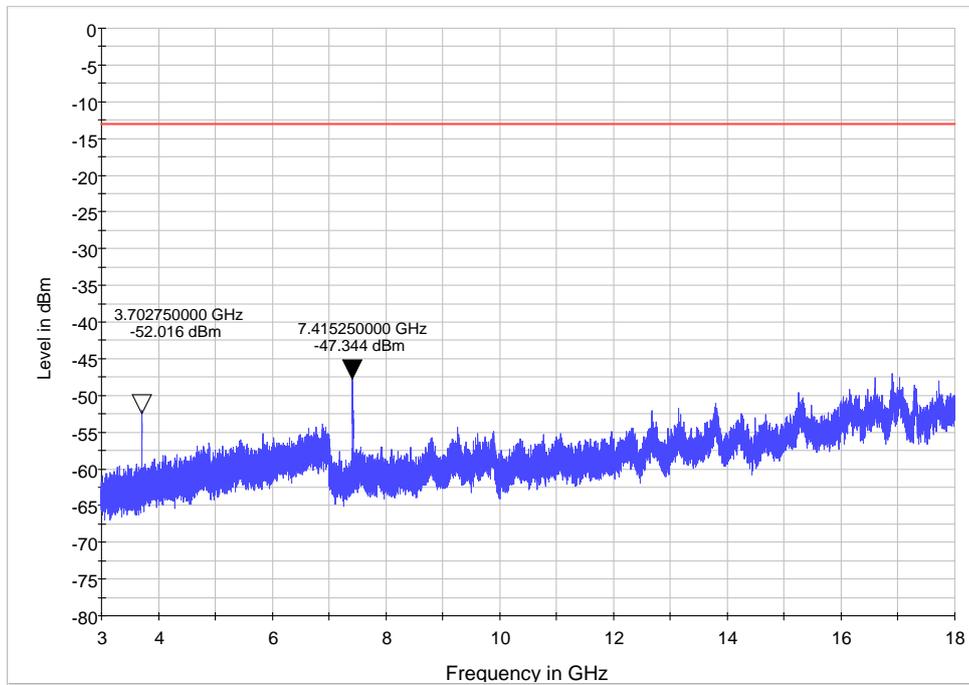
Note: The other Spurious RF conducted emissions level is no more than noise floor.

LTE Band 25 QPSK Bandwidth = 10MHz CH26090, RB 1



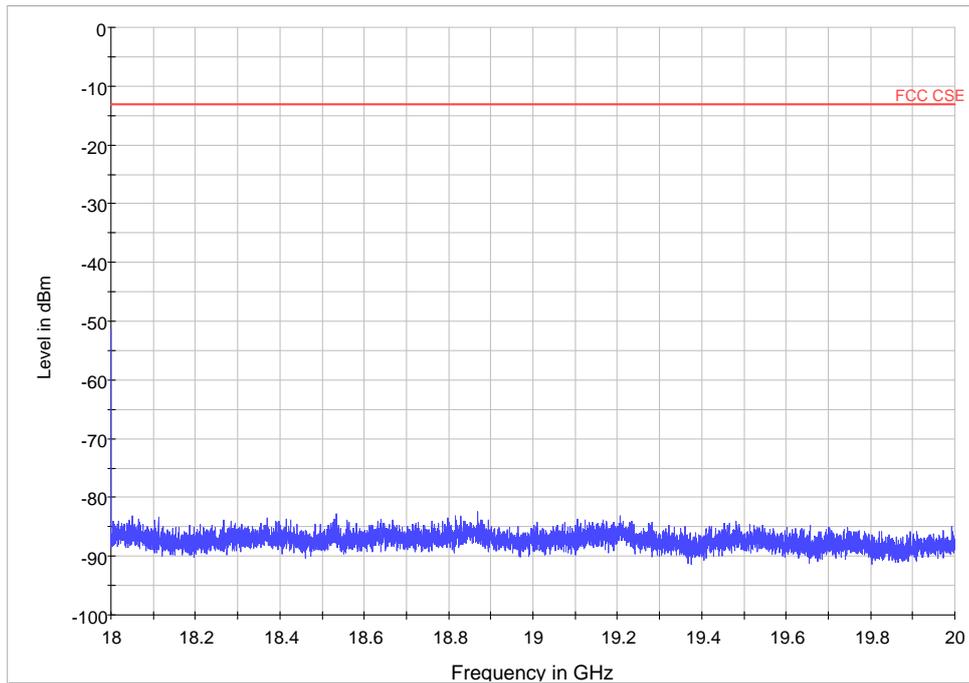
Note: The signal beyond the limit is carrier.

LTE Band 25 26090 Channel 30MHz~3GHz



LTE Band 25 26090 Channel 3GHz~18GHz

# TA Technology (Shanghai) Co., Ltd. Test Report



LTE Band 25 26090 Channel 18GHz~20GHz

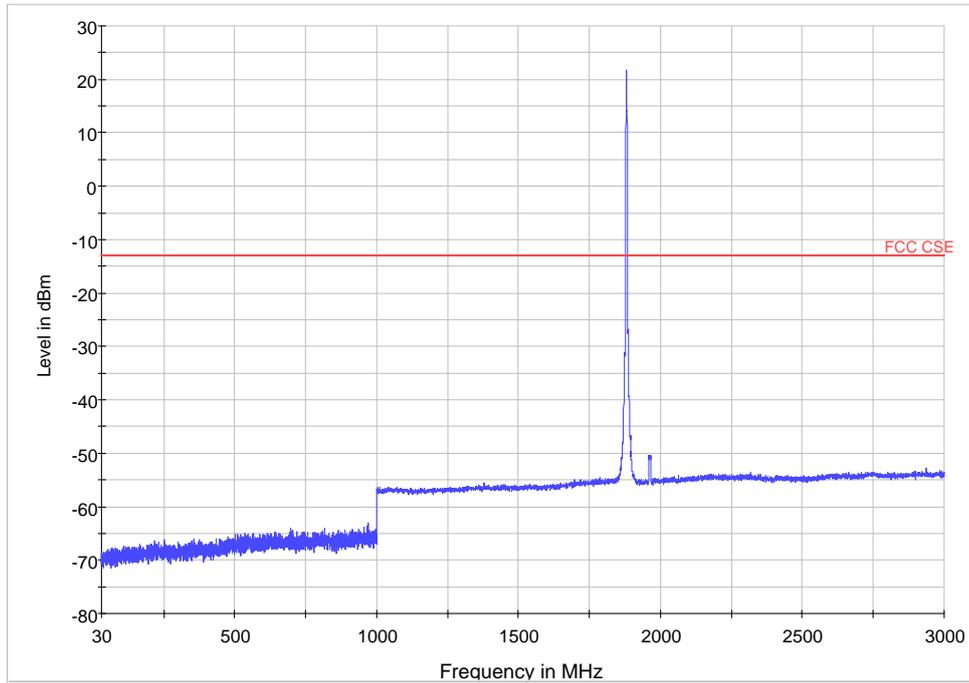
Harmonic	TX ch. 26090 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3702.8	-52.02	-13	39.02
3	5565	Nf	-13	/
4	7415.3	-47.34	-13	34.34
5	9275	Nf	-13	/
6	11130	Nf	-13	/
7	12985	Nf	-13	/
8	14840	Nf	-13	/
9	16695	Nf	-13	/
10	18550	Nf	-13	/

Nf: noise floor

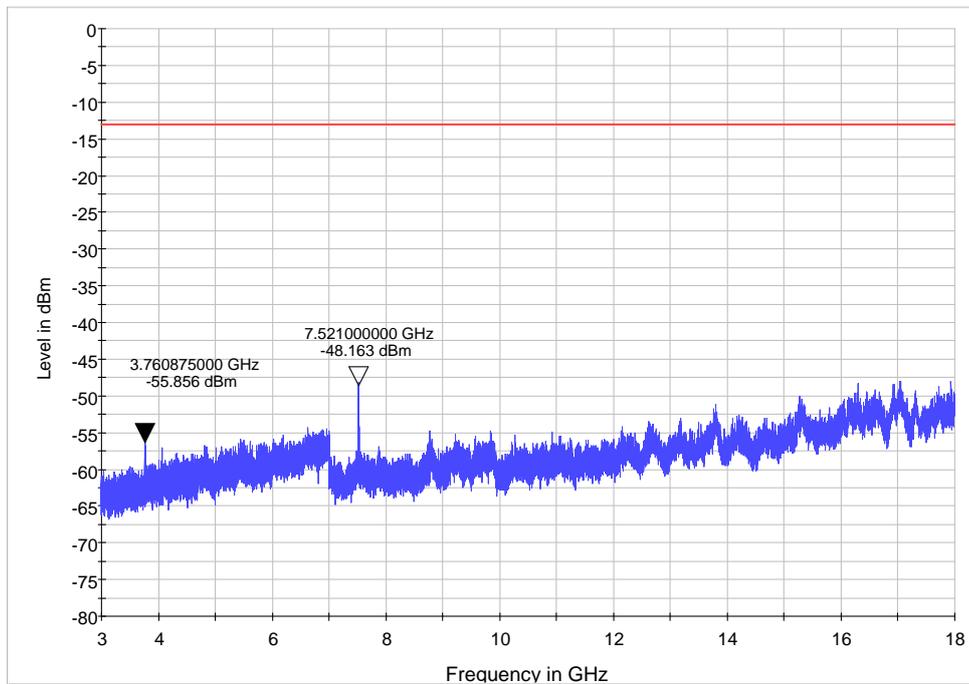
Note: The other Spurious RF conducted emissions level is no more than noise floor.

# TA Technology (Shanghai) Co., Ltd. Test Report

LTE Band 25 QPSK Bandwidth = 10MHz CH26365, RB 1

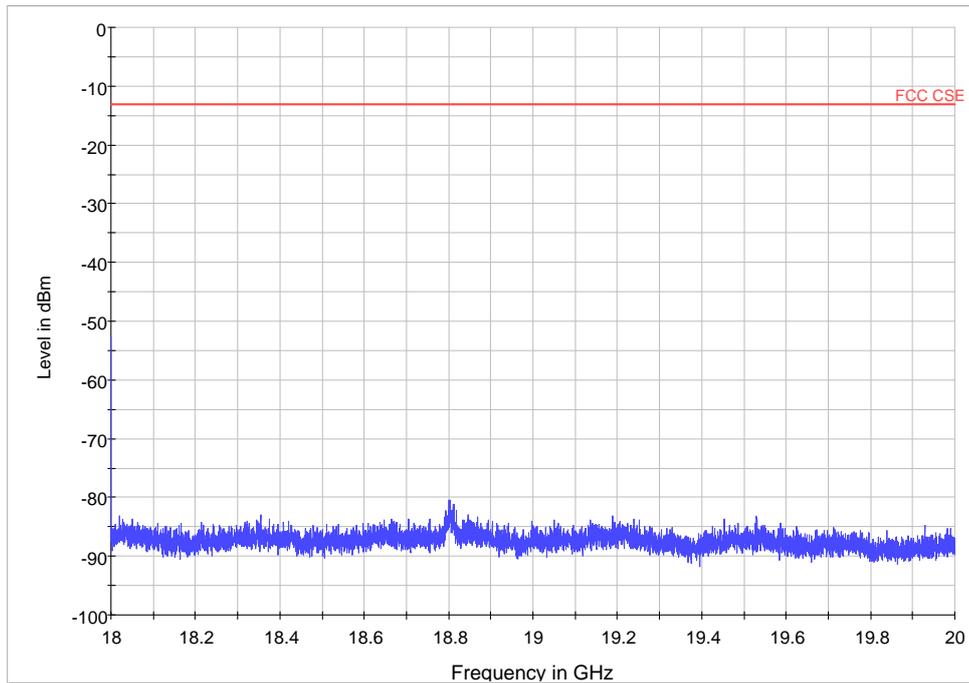


Note: The signal beyond the limit is carrier.  
LTE Band 25 26365 Channel 30MHz~3GHz



LTE Band 25 26365 Channel 3GHz~18GHz

# TA Technology (Shanghai) Co., Ltd. Test Report



LTE Band 25 26365 Channel 18GHz~20GHz

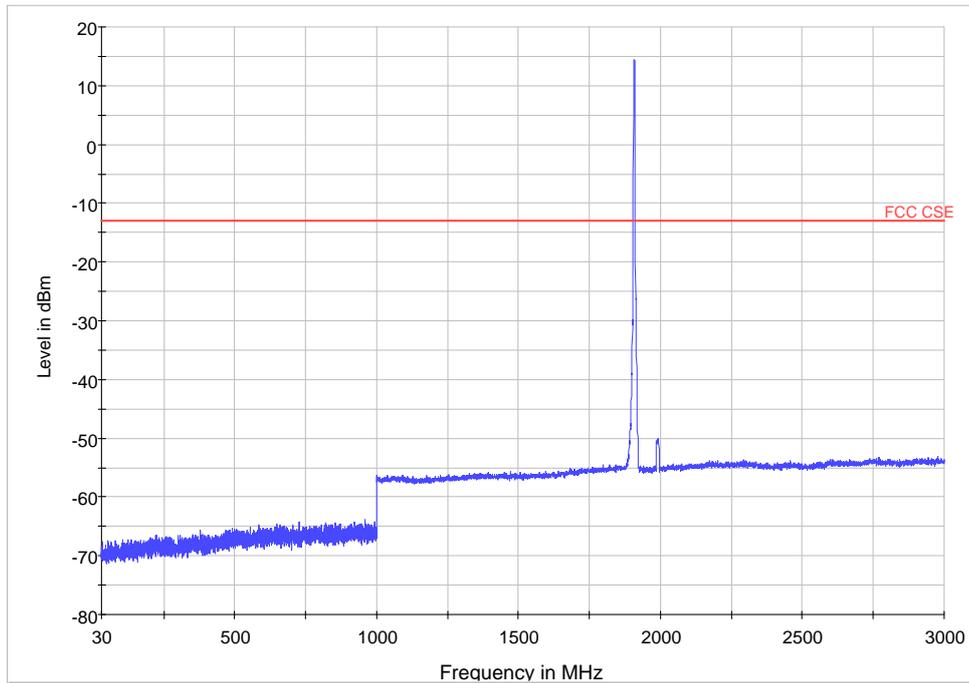
Harmonic	TX ch. 26365 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3760.8	-55.86	-13	42.86
3	5647.5	Nf	-13	/
4	7521.0	-48.16	-13	35.16
5	9412.5	Nf	-13	/
6	11295	Nf	-13	/
7	13177.5	Nf	-13	/
8	15060	Nf	-13	/
9	16942.5	Nf	-13	/
10	18825	Nf	-13	/

Nf: noise floor

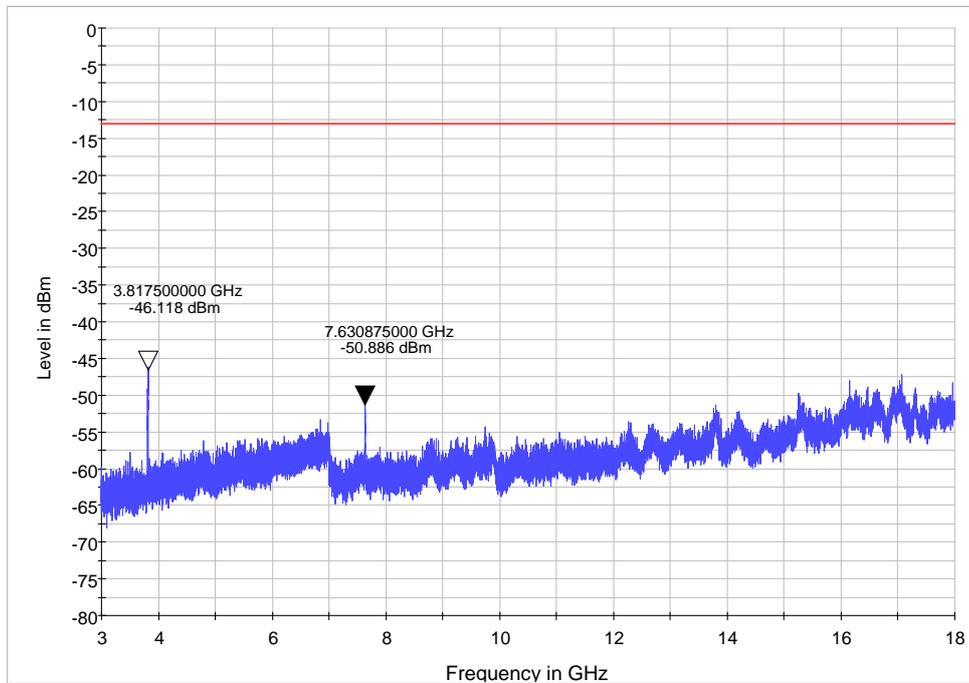
Note: The other Spurious RF conducted emissions level is no more than noise floor.

# TA Technology (Shanghai) Co., Ltd. Test Report

LTE Band 25 QPSK Bandwidth = 10MHz CH26640, RB 1



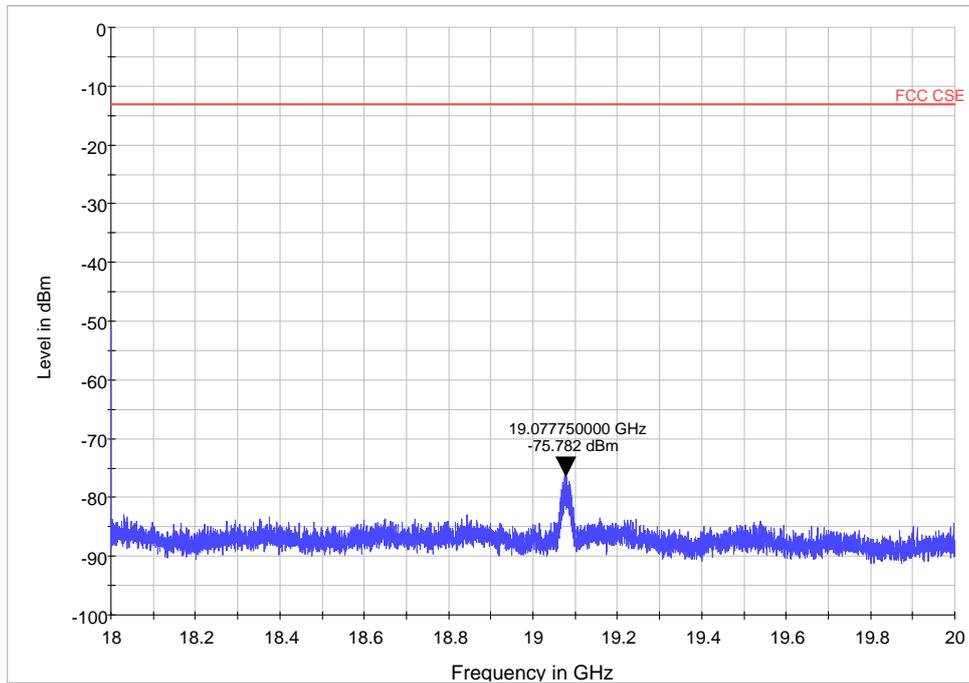
Note: The signal beyond the limit is carrier.  
LTE Band 25 26640 Channel 30MHz~3GHz



LTE Band 25 26640 Channel 3GHz~18GHz

# TA Technology (Shanghai) Co., Ltd.

## Test Report



LTE Band 25 26640 Channel 18GHz~20GHz

Harmonic	TX ch. 26640 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3817.5	-46.12	-13	33.12
3	5730	Nf	-13	/
4	7630.0	-50.89	-13	37.89
5	9550	Nf	-13	/
6	11460	Nf	-13	/
7	13370	Nf	-13	/
8	15280	Nf	-13	/
9	17190	Nf	-13	/
10	19077.0	-75.78	-13	62.78

Nf: noise floor

Note: The other Spurious RF conducted emissions level is no more than noise floor.

## 2.8 Radiates Spurious Emission

### Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

### Method of Measurement

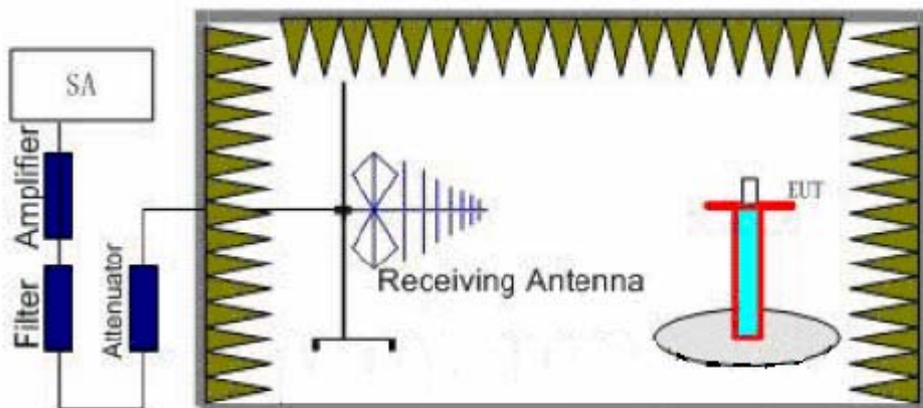
The measurements procedures in TIA -603C are used.

The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment.

The procedure of Radiates Spurious Emission is as follows:

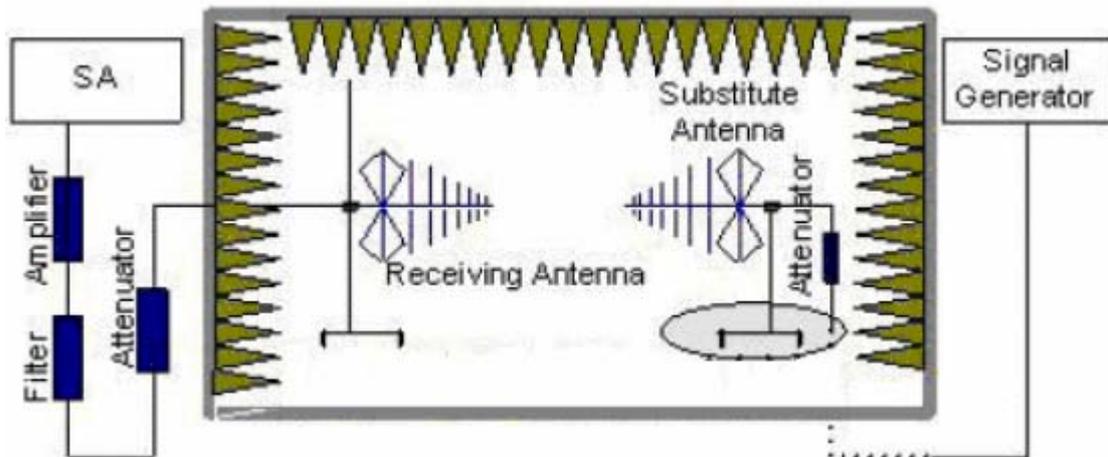
Step 1:

The measurement is carried out in the semi-anechoic chamber. EUT was placed on a 1.5 meters high non-conductive table at a 3 meters test distance from the test receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. A radio link shall be established between EUT and Tester. The output power of the cell signal of the tester will be decreased until the output power of the EUT reach a maximum value. A peak detector is used while RBW and VBW are both set to 3MHz. During the measurement, the highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna moved up and down over a range from 1 to 4 meters in both horizontally and vertically polarized orientations. The test setup refers to figure below.



Step 2:

A dipole antenna shall be substituted in place of the EUT. The antenna will be driven by a signal generator with a adjustable S.G. applied through a Tx cable. Adjust the level of the signal generator output until the value of the receiver reach the previously recorded analyzer power level (LVL). Then The E.R.P. /E.I.R.P. of the EUT can be calculated through the level of the signal generator, Tx cable loss and the gain of the substitution antenna. The test setup refers to figure below.



E.R.P (peak power) =S.G. - Tx Cable loss + Substitution antenna gain – 2.15.  
EIRP= E.R.P+2.15

The field strength of spurious emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in stand-up position (Z axis) and the antenna is vertical.

We tested all modes for CDMA PCS and LTE Band 2. The worst emission was recorded in the report.

**Limits**

Rule Part 24.238(a) specifies that “on any frequency outside a licensee’s frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log10 (P) dB.”

Limit	-13 dBm
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**Measurement Uncertainty**

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ ,  $U = 3.55$  dB.

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### Test Result

CDMA PCS CH25

Harmonic	TX ch.25 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3702	-33.49	5.1	7.25	-33.49	-13	20.49	0
3	5553.75	/	/	/	Nf	-13	/	/
4	7405	/	/	/	Nf	-13	/	/
5	9256.25	/	/	/	Nf	-13	/	/
6	11107.5	/	/	/	Nf	-13	/	/
7	12958.75	/	/	/	Nf	-13	/	/
8	14810	/	/	/	Nf	-13	/	/
9	16661.25	/	/	/	Nf	-13	/	/
10	18512.5	/	/	/	Nf	-13	/	/
Nf: noise floor								

Note: The other Spurious RF Radiated emissions level is no more than noise floor.

CDMA PCS CH 600

Harmonic	TX ch.600 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3759.2	-45.46	5.1	11.05	-41.66	-13	28.66	45
3	5640	/	/	/	Nf	-13	/	/
4	7520	/	/	/	Nf	-13	/	/
5	9400	/	/	/	Nf	-13	/	/
6	11280	/	/	/	Nf	-13	/	/
7	13160	/	/	/	Nf	-13	/	/
8	15040	/	/	/	Nf	-13	/	/
9	16920	/	/	/	Nf	-13	/	/
10	18800	/	/	/	Nf	-13	/	/
Nf: noise floor								

Note: The other Spurious RF Radiated emissions level is no more than noise floor.

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CDMA PCS CH 1175

Harmonic	TX ch.1175 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3818.4	-38	6.1	11.05	-35.20	-13	22.20	45
3	5726.25	/	/	/	Nf	-13	/	/
4	7635	/	/	/	Nf	-13	/	/
5	9543.75	/	/	/	Nf	-13	/	/
6	11452.5	/	/	/	Nf	-13	/	/
7	13361.25	/	/	/	Nf	-13	/	/
8	15270	/	/	/	Nf	-13	/	/
9	17178.75	/	/	/	Nf	-13	/	/
10	19087.5	/	/	/	Nf	-13	/	/

Nf: noise floor

Note: The other Spurious RF Radiated emissions level is no more than noise floor.

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LTE Band 25 QPSK Bandwidth = 3MHz CH26055, RB 1

Harmonic	TX ch. 26055 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3703	/	/	/	Nf	-13	/	/
3	5554.5	/	/	/	Nf	-13	/	/
4	7406	/	/	/	Nf	-13	/	/
5	9257.5	/	/	/	Nf	-13	/	/
6	11109	/	/	/	Nf	-13	/	/
7	12960.5	/	/	/	Nf	-13	/	/
8	14812	/	/	/	Nf	-13	/	/
9	16663.5	/	/	/	Nf	-13	/	/
10	18515	/	/	/	Nf	-13	/	/

Nf: noise floor

Note: The other Spurious RF Radiated emissions level is no more than noise floor.

LTE Band 25 QPSK Bandwidth = 3MHz CH26365, RB 1

Harmonic	TX ch. 26365 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3766.1	-57.39	5.1	11.05	-53.59	-13	40.59	180
3	5647.5	/	/	/	Nf	-13	/	/
4	7530	/	/	/	Nf	-13	/	/
5	9412.5	/	/	/	Nf	-13	/	/
6	11295	/	/	/	Nf	-13	/	/
7	13177.5	/	/	/	Nf	-13	/	/
8	15060	/	/	/	Nf	-13	/	/
9	16942.5	/	/	/	Nf	-13	/	/
10	18825	/	/	/	Nf	-13	/	/

Nf: noise floor

Note: The other Spurious RF Radiated emissions level is no more than noise floor.

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LTE Band 25 QPSK Bandwidth = 3MHz CH26675, RB 1

Harmonic	TX ch. 26675 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3824.3	-46.96	6.1	11.05	-44.16	-13	31.16	180
3	5740.5	/	/	/	Nf	-13	/	/
4	7654	/	/	/	Nf	-13	/	/
5	9567.5	/	/	/	Nf	-13	/	/
6	11481	/	/	/	Nf	-13	/	/
7	13394.5	/	/	/	Nf	-13	/	/
8	15308	/	/	/	Nf	-13	/	/
9	17221.5	/	/	/	Nf	-13	/	/
10	19135	/	/	/	Nf	-13	/	/

Nf: noise floor

Note: The other Spurious RF Radiated emissions level is no more than noise floor.

LTE Band 25 QPSK Bandwidth = 5MHz CH26065, RB 1

Harmonic	TX ch. 26065 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3705	/	/	/	Nf	-13	/	/
3	5557.5	/	/	/	Nf	-13	/	/
4	7410	/	/	/	Nf	-13	/	/
5	9262.5	/	/	/	Nf	-13	/	/
6	11115	/	/	/	Nf	-13	/	/
7	12967.5	/	/	/	Nf	-13	/	/
8	14820	/	/	/	Nf	-13	/	/
9	16672.5	/	/	/	Nf	-13	/	/
10	18525	/	/	/	Nf	-13	/	/

Nf: noise floor

Note: The other Spurious RF Radiated emissions level is no more than noise floor.

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LTE Band 25 QPSK Bandwidth = 5MHz CH26365, RB 1

Harmonic	TX ch. 26365 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3765	/	/	/	Nf	-13	/	/
3	5647.5	/	/	/	Nf	-13	/	/
4	7530	/	/	/	Nf	-13	/	/
5	9412.5	/	/	/	Nf	-13	/	/
6	11295	/	/	/	Nf	-13	/	/
7	13177.5	/	/	/	Nf	-13	/	/
8	15060	/	/	/	Nf	-13	/	/
9	16942.5	/	/	/	Nf	-13	/	/
10	18825	/	/	/	Nf	-13	/	/

Nf: noise floor

Note: The other Spurious RF Radiated emissions level is no more than noise floor.

LTE Band 25 QPSK Bandwidth = 5MHz CH26665, RB 1

Harmonic	TX ch. 26665 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3825	/	/	/	Nf	-13	/	/
3	5737.5	/	/	/	Nf	-13	/	/
4	7650	/	/	/	Nf	-13	/	/
5	9562.5	/	/	/	Nf	-13	/	/
6	11475	/	/	/	Nf	-13	/	/
7	13387.5	/	/	/	Nf	-13	/	/
8	15300	/	/	/	Nf	-13	/	/
9	17212.5	/	/	/	Nf	-13	/	/
10	19125	/	/	/	Nf	-13	/	/

Nf: noise floor

Note: The other Spurious RF Radiated emissions level is no more than noise floor.

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LTE Band 25 QPSK Bandwidth = 10MHz CH26090, RB 1

Harmonic	TX ch. 26090 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3710	/	/	/	Nf	-13	/	/
3	5565	/	/	/	Nf	-13	/	/
4	7420	/	/	/	Nf	-13	/	/
5	9275	/	/	/	Nf	-13	/	/
6	11130	/	/	/	Nf	-13	/	/
7	12985	/	/	/	Nf	-13	/	/
8	14840	/	/	/	Nf	-13	/	/
9	16695	/	/	/	Nf	-13	/	/
10	18550	/	/	/	Nf	-13	/	/

Nf: noise floor

Note: The other Spurious RF Radiated emissions level is no more than noise floor.

LTE Band 25 QPSK Bandwidth = 10MHz CH26365, RB 1

Harmonic	TX ch. 26365 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3765	/	/	/	Nf	-13	/	/
3	5647.5	/	/	/	Nf	-13	/	/
4	7530	/	/	/	Nf	-13	/	/
5	9412.5	/	/	/	Nf	-13	/	/
6	11295	/	/	/	Nf	-13	/	/
7	13177.5	/	/	/	Nf	-13	/	/
8	15060	/	/	/	Nf	-13	/	/
9	16942.5	/	/	/	Nf	-13	/	/
10	18825	/	/	/	Nf	-13	/	/

Nf: noise floor

Note: The other Spurious RF Radiated emissions level is no more than noise floor.

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LTE Band 25 QPSK Bandwidth = 10MHz CH26640, RB 1

Harmonic	TX ch. 26640 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3820	/	/	/	Nf	-13	/	/
3	5730	/	/	/	Nf	-13	/	/
4	7640	/	/	/	Nf	-13	/	/
5	9550	/	/	/	Nf	-13	/	/
6	11460	/	/	/	Nf	-13	/	/
7	13370	/	/	/	Nf	-13	/	/
8	15280	/	/	/	Nf	-13	/	/
9	17190	/	/	/	Nf	-13	/	/
10	19100	/	/	/	Nf	-13	/	/

Nf: noise floor

Note: The other Spurious RF Radiated emissions level is no more than noise floor.

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**3. Main Test Instruments**

No.	Name	Type	Manufacturer	Serial Number	Calibration Date	Valid Period
01	Base Station Simulator	CMU200	R&S	118133	2012-06-30	One year
02	Power Splitter	SHX-GF2-2-13	Hua Xiang	10120101	NA	NA
03	Spectrum Analyzer	E4445A	Agilent	MY46181146	2012-06-30	One year
04	Universal Radio Communication Tester	E5515C	Agilent	MY48367192	2012-06-30	One year
05	Signal Analyzer	FSV30	R&S	100815	2012-06-30	One year
06	Signal generator	SMB 100A	R&S	102594	2012-06-30	One year
07	EMI Test Receiver	ESCI	R&S	100948	2012-06-30	One year
08	Trilog Antenna	VUBL 9163	SCHWARZB ECK	9163-201	2010-06-20	Three years
09	Horn Antenna	HF907	R&S	100126	2012-07-01	Three years
10	Climatic Chamber	PT-30B	Re Ce	20101891	2010-09-10	Three years
11	Semi-Anechoic Chamber	9.6*6.7*6.6m	ETS-Lindgren	NA	NA	NA
12	EMI test software	ES-K1	R&S	NA	NA	NA
13	Base Station Simulator	CMW500	R&S	113645	2012-08-29	One year

\*\*\*\*\*END OF REPORT \*\*\*\*\*