FCC RADIO TEST REPORT
FCC ID: 2AIT9-PN602

Product: Burglar alarm control panel

Trade Mark: PGST

Model No.: PN-602

Serial Model: N/A

Report No.: NTEK- 2016NT11159876F3

Issue Date: 02 Dec. 2016

Prepared for

SZ PGST CO., LTD

Add: No.3,Xinggong 1 Rd,Hongxing Community,Gongming Agency, Guangming New District, Shenzhen City,China

Prepared by

NTEK TESTING TECHNOLOGY CO., LTD.

1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street Bao'an District, Shenzhen 518126 P.R. China

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1 TEST RESULT CERTIFICATION

Applicant's name ..... :	SZ PGST CO., LTD
Address ..... :	No.3,Xinggong 1 Rd,Hongxing Community,Gongming Agency, Guangming New District, Shenzhen City,China
Manufacturer's Name ..... :	SZ PGST CO., LTD
Address ..... :	No.3,Xinggong 1 Rd,Hongxing Community,Gongming Agency, Guangming New District, Shenzhen City,China
Product description	
Product name ..... :	Burglar alarm control panel
Model and/or type reference ..... :	PN-602
Serial Model ..... :	N/A

Measurement Procedure Used:

APPLICABLE STANDARDS	
APPLICABLE STANDARD/ TEST PROCEDURE	TEST RESULT
47 CFR Part 2, Part 22H, Part 24E ANSI/ TIA/ EIA-603-D-2010 FCC KDB 971168 D01 Power Meas. License Digital Systems v02v02	Complied

This device described above has been tested by 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 NTEK Testing Technology Co., Ltd., this document may be altered or revised by 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 : 11 Nov. 2016 ~ 02 Dec. 2016

Testing Engineer : Lake.Xie
(Lake Xie)

Technical Manager : Jason chen
(Jason Chen)

Authorized Signatory : Sam.chen
(Sam Chen)

2 SUMMARY OF TEST RESULTS

FCC Part22, Subpart H/ FCC Part24, Subpart E			
FCC Rule	**Test Item**	**Verdict**	**Remark**
2.1046	Conducted Output Power	PASS	
24.232(d)	Peak-to-Average Ratio	PASS	
2.1049 22.917(b) 24.238(b)	Occupied Bandwidth	PASS	
2.1051 22.917(a) 24.238(a)	Band Edge	PASS	
22.913(a)(2)	Effective Radiated Power	PASS	
24.232(c)	Equivalent Isotropic Radiated Power	PASS	
2.1053 22.917(a) 24.238(a)	Field Strength of Spurious Radiation	PASS	
2.1055 22.355 24.235	Frequency Stability for Temperature & Voltage	PASS	
2.1051 22.917(a) 24.238(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 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

EMC Lab. : Accredited by CNAS, 2014.09.04
The certificate is valid until 2017.09.03
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.

Accredited by Industry Canada, August 29, 2012
The Certificate Registration Number is 9270A-1.

Accredited by FCC, September 6, 2013
The Certificate Registration Number is 238937.

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	Burglar alarm control panel
Trade Mark	PGST
FCC ID	2AIT9- PN602
Model No.	PN-602
Serial Model	N/A
Model Difference	N/A
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;
Modulation	☒GMSK for GSM/GPRS; ☒8PSK (DSKYlink Only); ☐QPSK for UMTS bands;
Number of Channels	☒124 Channels for GSM850; ☐102 Channels for UMTS FDD Band V; ☒299 Channels for PCS1900; ☐277 Channels for UMTS FDD Band II;
GPRS Class	☒Multi-Class12 ☒Only 4 timeslots are used for GPRS
SIM CARD	One SIM Card sockets
Antenna Type	FPCB Antenna
Antenna Gain	1 dBi
Power supply	☒DC supply: DC 3.7V/280mAh from Battery or DC 5V from Adapter.
	☒Adapter supply: Model:RO62-0501000US Input: 100~240V 50/60Hz 0.3A Output:DC 5V,1000mA
HW Version	N/A
SW Version	N/A

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 5.5V and Low Voltage 4.5V was declared by manufacturer, The EUT couldn't be operate normally with higher or lower voltage.

Revision History

Report No.	Version	Description	Issued Date
NTEK-2016NT11159876F3	Rev.01	Initial issue of report	Dec 02, 2016

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 both GPRS850 and GPRS1900 frequency band.
Note: GSM/GPRS 850, GSM/GPRS 1900, HSDPA band II, HSUPA band II, HSDPA band V, HSUPA band V modes have been tested during the test. the worst condition (GSM850, GSM1900 RMC 12.2k) 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 v02r02 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:
1. 30 MHz to 10th harmonic for GSM850/UMTS FDD Band V.
2. 30 MHz to 10th harmonic for GSM1900/UMTS FDD Band II.
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
GPRS 850	GPRS Link	GPRS Link
GSM 1900	GSM Link	GSM Link
GPRS 1900	GPRS Link	GPRS Link

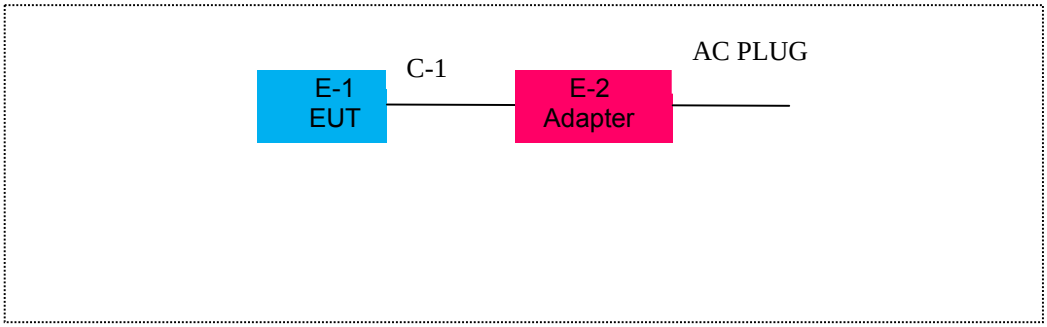
Test Frequency and Channels:

Frequency Band	☒GSM 850/GPRS 850		☒GSM 1900/GPRS 1900	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)
CH_H	251	848.8	810	1909.8
CH_M	190	836.4	661	1880.0
CH_L	128	824.2	512	1850.2

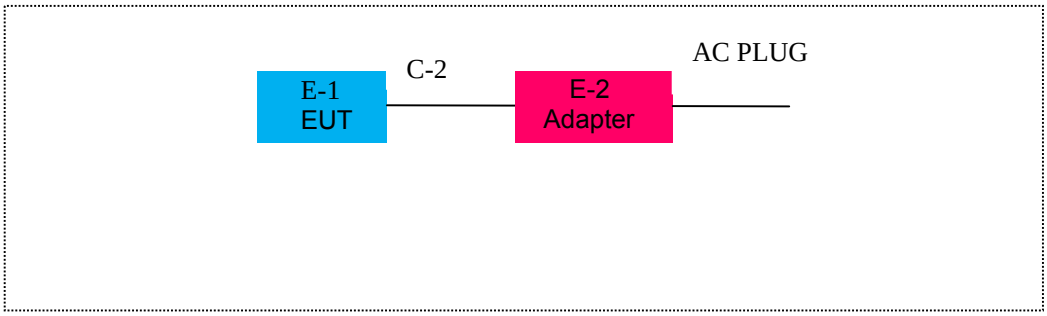
6 SETUP OF EQUIPMENT UNDER TEST

6.1 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM

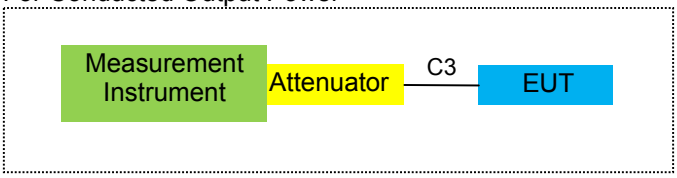
For AC Conducted Emission Mode



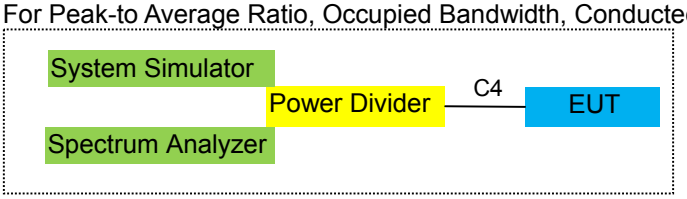
For Radiated Test Cases



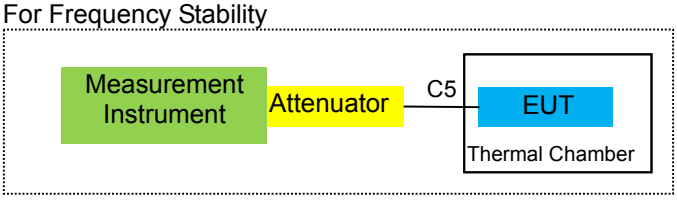
For Conducted Output Power



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.	FCC ID	Note
E-1	Burglar alarm control panel	PGST	PN-602	2AIT9- PN602	EUT
E-2	Adapter	N/A	RO62-0501000US	N/A	Peripherals

Item	Cable Type	Shielded Type	Ferrite Core	Length
C-1	USB Cable	NO	NO	1.2m
C-2	Audio cable	NO	NO	0.8m
C-3	RF Cable	NO	NO	0.5m
C-4	RF Cable	NO	NO	0.5m
C-5	RF Cable	NO	NO	0.5m

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	2016.11.19	2017.11.18	1 year
2	Test Receiver	R&S	ESPI	101318	2016.06.07	2017.06.06	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2016.07.06	2017.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2016.06.07	2017.06.06	1 year
5	Horn Antenna	EM	EM-AH-10180	2011071402	2016.07.06	2017.07.05	1 year
6	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2016.07.06	2017.07.05	1 year
7	Amplifier	EM	EM-30180	060538	2016.07.06	2017.07.05	1 year
8	Loop Antenna	ARA	PLA-1030/B	1029	2016.06.08	2017.06.07	1 year
9	Power Meter	R&S	NRVS	100696	2016.07.06	2017.07.05	1 year
10	Power Sensor	R&S	URV5-Z4	0395.1619.05	2016.07.06	2017.07.05	1 year
11	Test Cable	N/A	R-01	N/A	2016.07.06	2017.07.05	1 year
12	Test Cable	N/A	R-02	N/A	2016.07.06	2017.07.05	1 year
13	Test Cable	N/A	R-03	N/A	2016.06.29	2017.06.28	1 year
14	Test Receiver	R&S	ESCI	101160	2016.06.06	2017.06.05	1 year
15	LISN	R&S	ENV216	101313	2016.08.24	2017.08.23	1 year
16	LISN	EMCO	3816/2	00042990	2016.08.24	2017.08.23	1 year
17	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	2016.06.07	2017.06.06	1 year
18	Passive Voltage Probe	R&S	ESH2-Z3	100196	2016.06.07	2017.06.06	1 year
19	Absorbing clamp	R&S	MOS-21	100423	2016.06.08	2017.06.07	1 year
20	Test Cable	N/A	C01	N/A	2016.06.08	2017.06.07	1 year
21	Test Cable	N/A	C02	N/A	2016.06.08	2017.06.07	1 year
22	Test Cable	N/A	C03	N/A	2016.06.08	2017.06.07	1 year
23	Attenuation	MCE	24-10-34	BN9258	2016.06.08	2017.06.07	1 year
24	Spectrum Analyzer	agilent	e4440a	us44300399	2016.06.08	2017.06.07	1 year
25	test receiver	R&S	ESCI	a0304218	2016.06.08	2017.06.07	1 year
26	Communication Tester	R&S	CMU200	A0304247	2016.06.08	2017.06.07	1 year
27	Thermal Chamber	Ten Billion	TTC-B3C	TBN-960502	2016.06.08	2017.06.07	1 year

Note: Each piece of equipment is scheduled for calibration once a year.

7 TEST REQUIREMENTS

7.1 CONDUCTED EMISSIONS TEST

7.1.1 Applicable Standard

According to FCC KDB 971168 D01 v02r02 Section 6.0

7.1.2 Conformance Limit

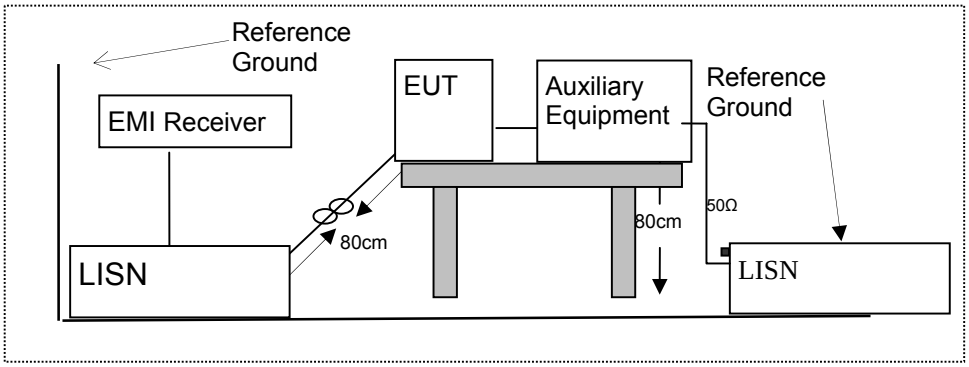
Frequency(MHz)	Conducted Emission Limit	
	Quasi-peak	Average
0.15-0.5	66-56*	56-46*
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. *Decreases with the logarithm of the frequency
2. The lower limit shall apply at the transition frequencies
3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

7.1.3 Measuring Instruments

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

7.1.4 Test Configuration



7.1.5 Test Procedure

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room.
2. The EUT was placed on a table which is 0.8m above ground plane.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40cm long.
5. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
6. LISN at least 80 cm from nearest part of EUT chassis.
7. The frequency range from 150KHz to 30MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth(IF bandwidth=9KHz) with Maximum Hold Mode
9. For the actual test configuration, please refer to the related Item –EUT Test Photos.

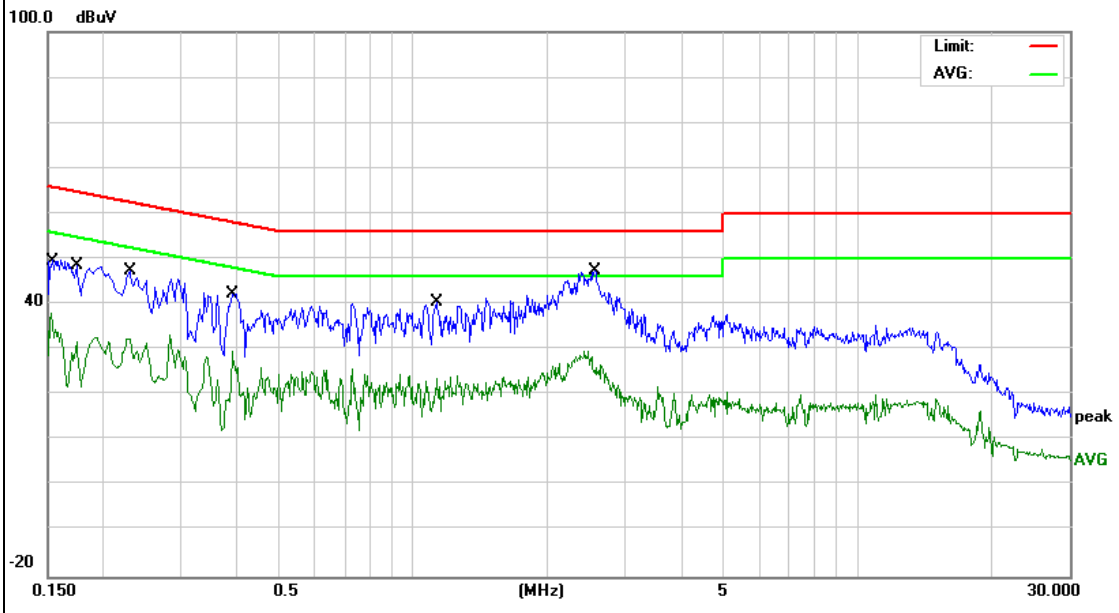
7.1.6 Test Results

EUT：	Burglar alarm control panel	Model Name ：	PN-602
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase :	L
Test Voltage ：	DC5V form Adapter AC 120V/60Hz	Test Mode：	Mode 1

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1500	39.21	10.13	49.34	66.00	-16.66	QP
0.1500	24.01	10.13	34.14	56.00	-21.86	AVG
0.1740	38.34	10.15	48.49	64.76	-16.27	QP
0.1740	21.71	10.15	31.86	54.76	-22.90	AVG
0.2300	37.31	10.15	47.46	62.45	-14.99	QP
0.2300	22.22	10.15	32.37	52.45	-20.08	AVG
0.3899	32.27	9.95	42.22	58.06	-15.84	QP
0.3899	19.68	9.95	29.63	48.06	-18.43	AVG
1.1260	30.65	9.76	40.41	56.00	-15.59	QP
1.1260	13.97	9.76	23.73	46.00	-22.27	AVG
2.5620	37.45	9.76	47.21	56.00	-8.79	QP
2.5620	18.59	9.76	28.35	46.00	-17.65	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

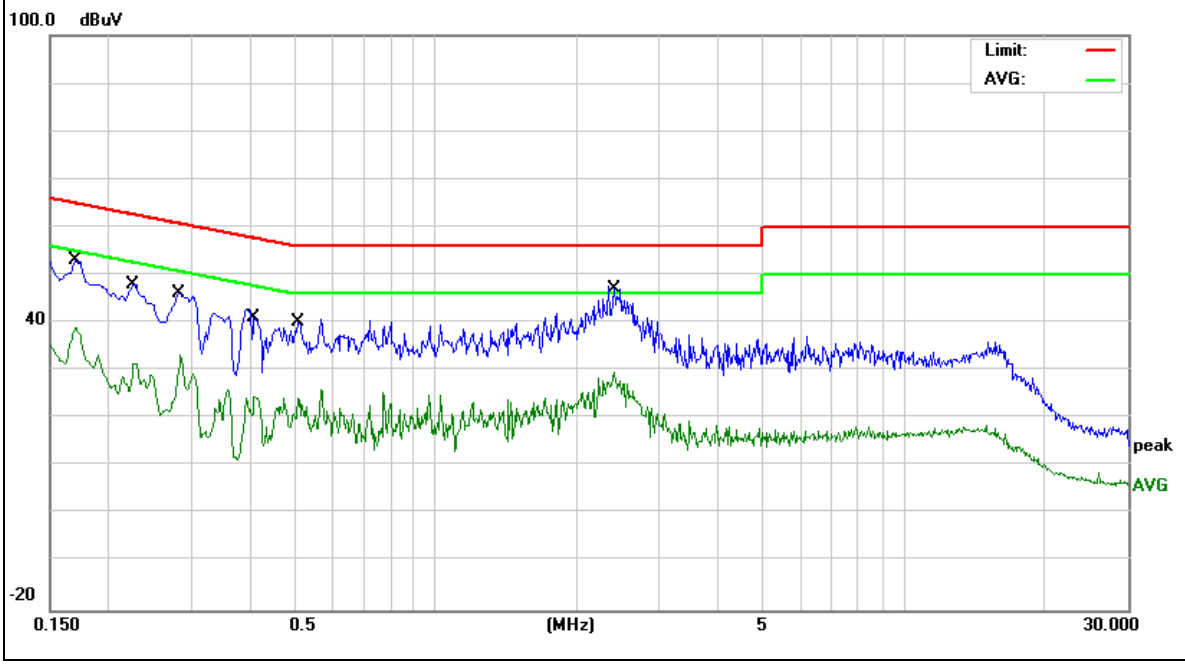


EUT：	Burglar alarm control panel	Model Name ：	PN-602
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase :	N
Test Voltage ：	DC 5.0V form Adapter AC 120V/60Hz	Test Mode：	Mode 1

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1700	42.76	10.15	52.91	64.96	-12.05	QP
0.1700	28.88	10.15	39.03	54.96	-15.93	AVG
0.2260	37.87	10.16	48.03	62.59	-14.56	QP
0.2260	21.35	10.16	31.51	52.59	-21.08	AVG
0.2860	36.10	10.13	46.23	60.64	-14.41	QP
0.2860	22.98	10.13	33.11	50.64	-17.53	AVG
0.4100	32.83	9.93	42.76	57.65	-14.89	QP
0.4100	14.57	9.93	24.50	47.65	-23.15	AVG
0.5100	30.20	9.84	40.04	56.00	-15.96	QP
0.5100	14.32	9.84	24.16	46.00	-21.84	AVG
2.3980	37.83	9.76	47.59	56.00	-8.41	QP
2.3980	19.81	9.76	29.57	46.00	-16.43	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

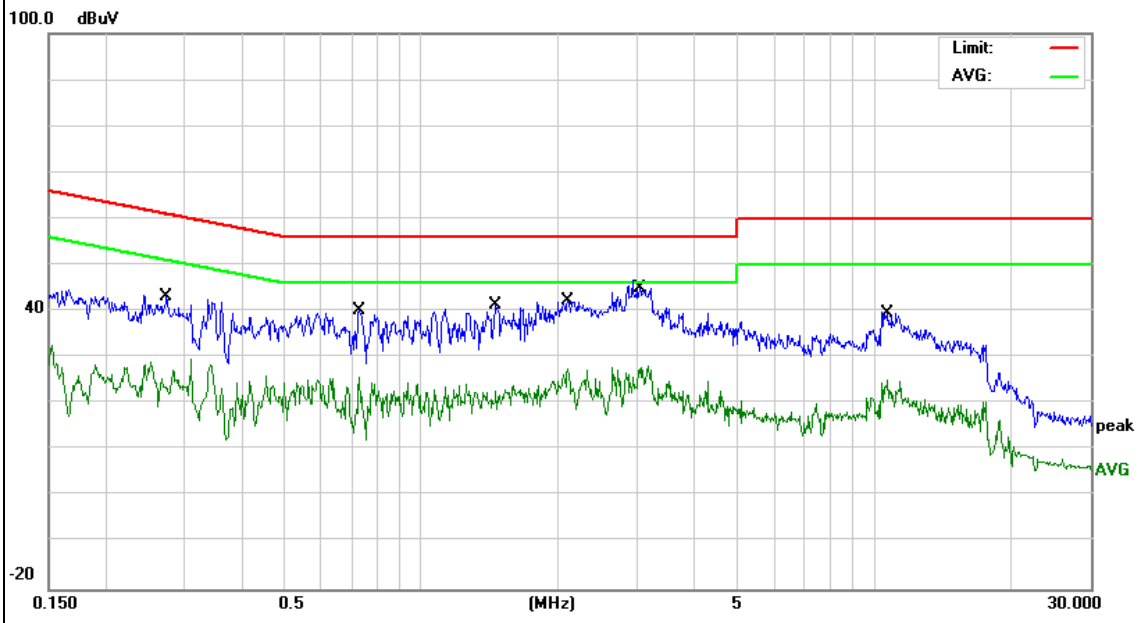


EUT：	Burglar alarm control panel	Model Name ：	PN-602
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase :	L
Test Voltage ：	DC 5V form Adapter AC 240V/60Hz	Test Mode：	Mode 1

Frequency (MHz)	Reading Level (dBμV)	Correct Factor (dB)	Measure-ment (dBμV)	Limits (dBμV)	Margin (dB)	Remark
0.2740	33.09	10.13	43.22	60.99	-17.77	QP
0.2740	15.46	10.13	25.59	50.99	-25.40	AVG
0.7298	30.41	9.77	40.18	56.00	-15.82	QP
0.7298	16.08	9.77	25.85	46.00	-20.15	AVG
1.4577	31.51	9.75	41.26	56.00	-14.74	QP
1.4577	12.90	9.75	22.65	46.00	-23.35	AVG
2.1099	32.45	9.75	42.20	56.00	-13.80	QP
2.1099	17.88	9.75	27.63	46.00	-18.37	AVG
3.0619	37.03	9.77	46.80	56.00	-9.20	QP
3.0619	18.21	9.77	27.98	46.00	-18.02	AVG
10.6936	30.02	9.88	39.90	60.00	-20.10	QP
10.6936	15.16	9.88	25.04	50.00	-24.96	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

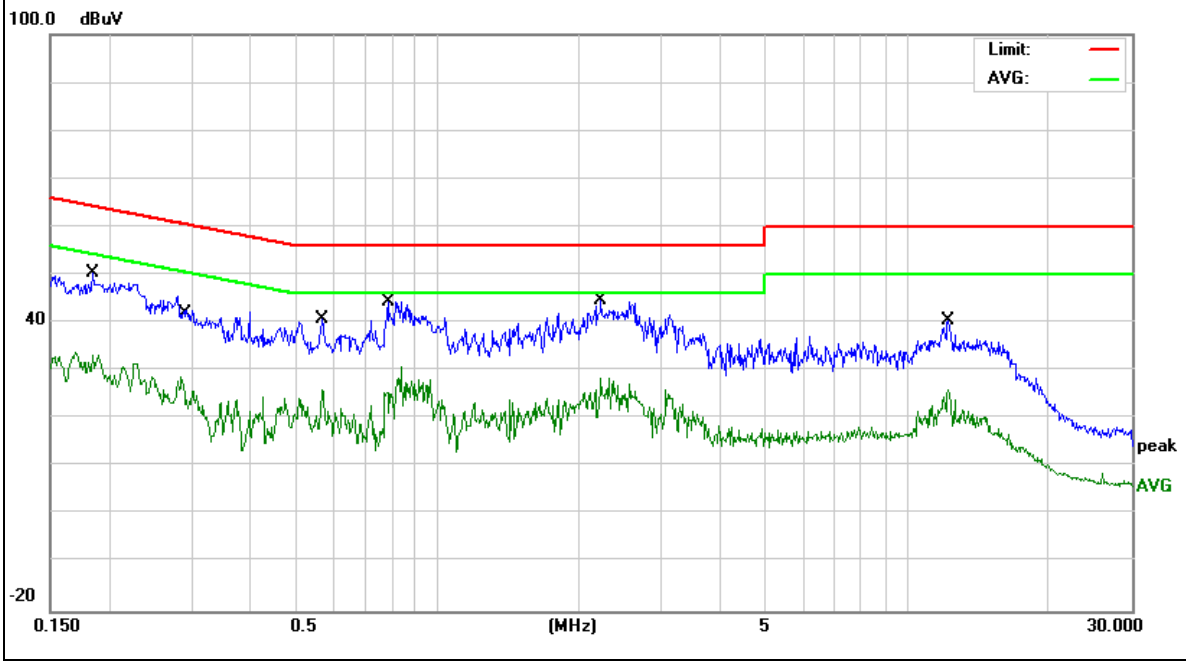


EUT：	Burglar alarm control panel	Model Name ：	PN-602
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase :	N
Test Voltage ：	DC 5V form Adapter AC 240V/60Hz	Test Mode：	Mode 1

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1844	40.24	10.16	50.40	64.28	-13.88	QP
0.1844	23.06	10.16	33.22	54.28	-21.06	AVG
0.2859	35.44	10.13	45.57	60.64	-15.07	QP
0.2859	18.47	10.13	28.60	50.64	-22.04	AVG
0.5699	30.86	9.82	40.68	56.00	-15.32	QP
0.5699	16.12	9.82	25.94	46.00	-20.06	AVG
0.7860	34.64	9.76	44.40	56.00	-11.60	QP
0.7860	15.83	9.76	25.59	46.00	-20.41	AVG
2.2259	34.84	9.75	44.59	56.00	-11.41	QP
2.2259	18.74	9.75	28.49	46.00	-17.51	AVG
12.2258	30.70	9.90	40.60	60.00	-19.40	QP
12.2258	16.03	9.90	25.93	50.00	-24.07	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



7.2 FIELD STRENGTH OF SPURIOUS RADIATION

7.2.1 Applicable Standard

According to FCC KDB 971168 D01 v02r02 Section 5.8 and ANSI/ TIA-603-D-2010 Section 2.2.12

7.2.2 Conformance Limit

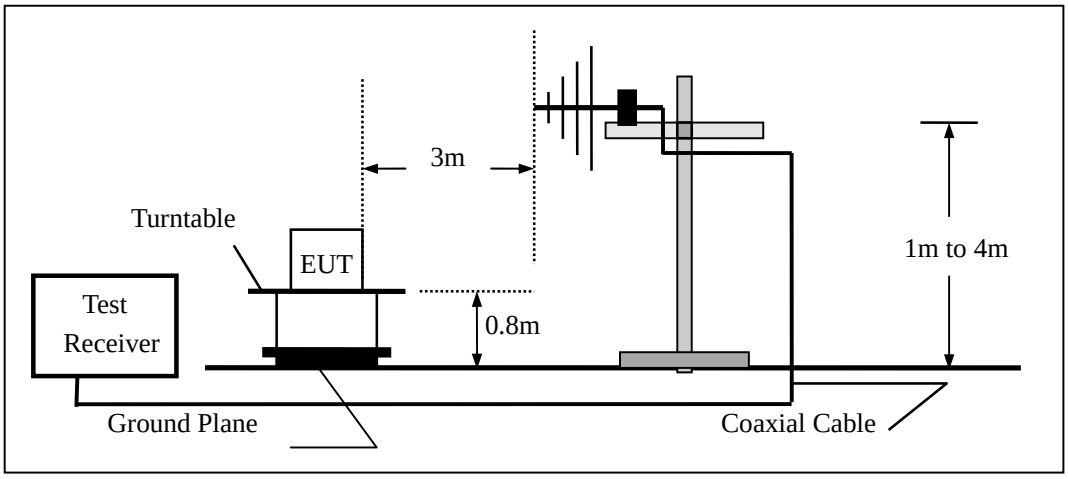
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

7.2.3 Measuring Instruments

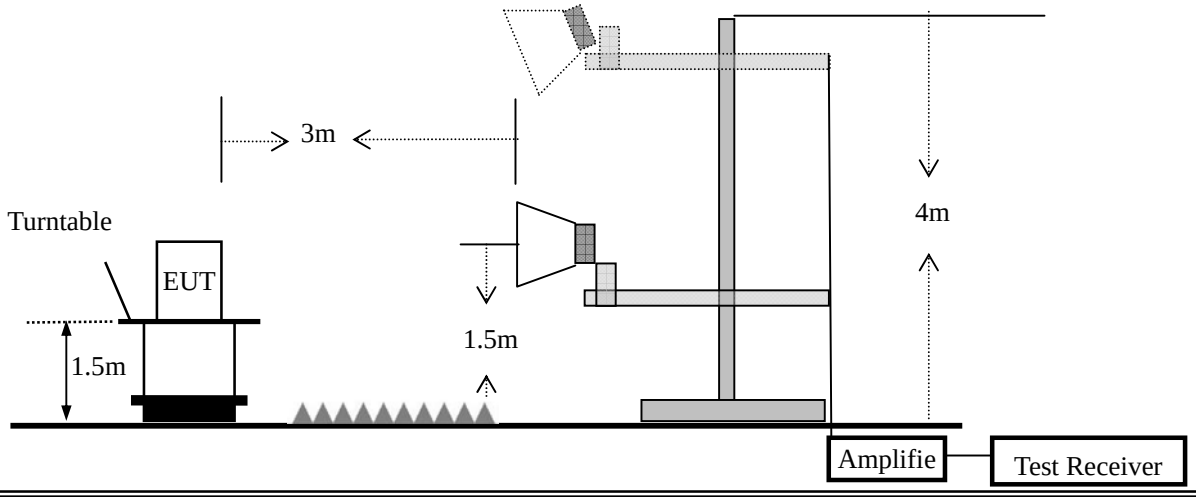
The Measuring equipment is listed in the section 6.3 of this test report.

7.2.4 Test Configuration

(a) For radiated emissions from 30MHz to 1000MHz



(b) For radiated emissions above 1000MHz



7.2.5 Test Procedure

1. EUT was placed on a 1.50 meter 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 (P_{Mea}) 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 (P_{Mea}) 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 (P_{cl}) , the Substitution Antenna Gain (G_a) and P_{Mea}(dBm) is test power- Amplifier Gain..
   The measurement results are obtained as described below:
   Power(EIRP)=P_{Mea}- P_{cl} + G_a
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.

7.2.6 Test Results

EUT：	Burglar alarm control panel	Model Name ：	PN-602
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM850/GSM1900	Test By:	Lake Xie

■ Radiated Spurious Emission

GSM850_ Low Channel								
Frequency	P_{Mea}	P_{cl}	Diatance	G_a Antenna Gain	EIRP	Limit	Margin	Polarization
(MHz)	(dBm)	(dB)		(dB)	(dBm)	(dBm)	(dB)	
1648.40	-41.26	5.98	3.00	9.11	-38.13	-13.00	-25.13	H
2472.60	-44.36	6.84	3.00	9.56	-41.64	-13.00	-28.64	H
1648.40	-38.26	5.98	3.00	9.11	-35.13	-13.00	-22.13	V
2472.60	-41.55	6.84	3.00	9.56	-38.83	-13.00	-25.83	V
GSM850_ Middle Channel								
Frequency	P_{Mea}	P_{cl}	Diatance	G_a Antenna Gain	EIRP	Limit	Margin	Polarization
(MHz)	(dBm)	(dB)		(dB)	(dBm)	(dBm)	(dB)	
1673.20	-39.87	5.98	3.00	9.11	-36.74	-13.00	-23.74	H
2509.80	-42.36	6.84	3.00	9.56	-39.64	-13.00	-26.64	H
1673.20	-37.68	5.98	3.00	9.11	-34.55	-13.00	-21.55	V
2509.80	-39.80	6.84	3.00	9.56	-37.08	-13.00	-24.08	V
GSM850_ High Channel								
Frequency	P_{Mea}	P_{cl}	Diatance	G_a Antenna Gain	EIRP	Limit	Margin	Polarization
(MHz)	(dBm)	(dB)		(dB)	(dBm)	(dBm)	(dB)	
1697.60	-42.16	5.98	3.00	9.11	-39.03	-13.00	-26.03	H
2546.40	-43.16	6.84	3.00	9.56	-40.44	-13.00	-27.44	H
1697.60	-41.05	5.98	3.00	9.11	-37.92	-13.00	-24.92	V
2546.40	-40.28	6.84	3.00	9.56	-37.56	-13.00	-24.56	V

Remark:
1. We were tested all Configuration refer 3GPP TS134 121.
2. EIRP=P_{Mea}(dBm)-P_{cl}(dB)+G_a(dBi)
The cable loss (P_{cl}) , the Substitution Antenna Gain (G_a) and P_{Mea}(dBm) is test power- Amplifier Gain.
3. ERP = EIRP – 2.15dBi as EIRP by subtracting the gain of the dipole.
4.Margin = Emission Level – Limit
5.We test both H direction and V direction, recorded worst case direction.

GPRS850_ Low Channel								
Frequency	P_{Mea}	P_{cl}	Diatance	G_a Antenna Gain	EIRP	Limit	Margin	Polarization
(MHz)	(dBm)	(dB)		(dB)	(dBm)	(dBm)	(dB)	
1648.40	-45.26	5.98	3.00	9.11	-42.13	-13.00	-29.13	H
2472.60	-48.36	6.84	3.00	9.56	-45.64	-13.00	-32.64	H
1648.40	-44.18	5.98	3.00	9.11	-41.05	-13.00	-28.05	V
2472.60	-47.04	6.84	3.00	9.56	-44.32	-13.00	-31.32	V
GPRS850_ Middle Channel								
Frequency	P_{Mea}	P_{cl}	Diatance	G_a Antenna Gain	EIRP	Limit	Margin	Polarization
(MHz)	(dBm)	(dB)		(dB)	(dBm)	(dBm)	(dB)	
1673.20	-41.02	5.98	3.00	9.11	-37.89	-13.00	-24.89	H
2509.80	-42.36	6.84	3.00	9.56	-39.64	-13.00	-26.64	H
1673.20	-41.57	5.98	3.00	9.11	-38.44	-13.00	-25.44	V
2509.80	-42.06	6.84	3.00	9.56	-39.34	-13.00	-26.34	V
GPRS850_ High Channel								
Frequency	P_{Mea}	P_{cl}	Diatance	G_a Antenna Gain(dB)	EIRP	Limit	Margin	Polarization
(MHz)	(dBm)	(dB)			(dBm)	(dBm)	(dB)	
1697.60	-44.06	5.98	3.00	9.11	-40.93	-13.00	-27.93	H
2546.40	-43.62	6.84	3.00	9.56	-40.90	-13.00	-27.90	H
1697.60	-42.61	5.98	3.00	9.11	-39.48	-13.00	-26.48	V
2546.40	-52.21	6.84	3.00	9.56	-49.49	-13.00	-36.49	V

Remark:

1. We were tested all Configuration refer 3GPP TS134 121.
2. EIRP=P_{Mea}(dBm)-P_{cl}(dB)+G_a(dBi)
   The cable loss (P_{cl}) , the Substitution Antenna Gain (G_a) and P_{Mea}(dBm) is test power- Amplifier Gain.
3. ERP = EIRP – 2.15dBi as EIRP by subtracting the gain of the dipole.
4. Margin = Emission Level – Limit
5. We test both H direction and V direction, recorded worst case direction.

GSM1900_ Low Channel								
Frequency	P_{Mea}	P_{cl}	Diatance	G_a Antenna Gain	EIRP	Limit	Margin	Polarization
(MHz)	(dBm)	(dB)		(dB)	(dBm)	(dBm)	(dB)	
3700.40	-43.50	5.26	3.00	9.88	-38.88	-13.00	-25.88	H
5550.60	-47.50	6.11	3.00	11.36	-42.25	-13.00	-29.25	H
3700.40	-45.76	5.26	3.00	9.88	-41.14	-13.00	-28.14	V
5550.60	-49.72	6.11	3.00	11.36	-44.47	-13.00	-31.47	V
GSM1900_ Middle Channel								
Frequency	P_{Mea}	P_{cl}	Diatance	G_a Antenna Gain	EIRP	Limit	Margin	Polarization
(MHz)	(dBm)	(dB)		(dB)	(dBm)	(dBm)	(dB)	
3760.00	-40.40	5.32	3.00	10.03	-35.69	-13.00	-22.69	H
5640.00	-45.19	6.19	3.00	11.41	-39.97	-13.00	-26.97	H
3760.00	-43.71	5.32	3.00	10.03	-39.00	-13.00	-26.00	V
5640.00	-47.88	6.19	3.00	11.41	-42.66	-13.00	-29.66	V
GSM1900_ High Channel								
Frequency	P_{Mea}	P_{cl}	Diatance	G_a Antenna Gain	EIRP	Limit	Margin	Polarization
(MHz)	(dBm)	(dB)		(dB)	(dBm)	(dBm)	(dB)	
3819.60	-42.36	5.98	3.00	9.11	-39.23	-13.00	-26.23	H
5729.40	-42.19	6.84	3.00	9.56	-39.47	-13.00	-26.47	H
3819.60	-42.11	5.98	3.00	9.11	-38.98	-13.00	-25.98	V
5729.40	-44.63	6.84	3.00	9.56	-41.91	-13.00	-28.91	V

Remark:
1. We were tested all Configuration refer 3GPP TS134 121.
2. EIRP=P_{Mea}(dBm)-P_{cl}(dB)+G_a(dBi)
The cable loss (P_{cl}) , the Substitution Antenna Gain (G_a) and P_{Mea}(dBm) is test power- Amplifier Gain.
3. ERP = EIRP – 2.15dBi as EIRP by subtracting the gain of the dipole.
4.Margin = Emission Level – Limit
5.We test both H direction and V direction, recorded worst case direction.

GPRS1900_ Low Channel								
Frequency	P_{Mea}	P_{cl}	Diatance	G_a Antenna Gain	EIRP	Limit	Margin	Polarization
(MHz)	(dBm)	(dB)		(dB)	(dBm)	(dBm)	(dB)	
3700.40	-40.26	5.98	3.00	9.11	-37.13	-13.00	-24.13	H
5550.60	-41.03	6.84	3.00	9.56	-38.31	-13.00	-25.31	H
3700.40	-42.36	5.98	3.00	9.11	-39.23	-13.00	-26.23	V
5550.60	-41.25	6.84	3.00	9.56	-38.53	-13.00	-25.53	V
GPRS1900_ Middle Channel								
Frequency	P_{Mea}	P_{cl}	Diatance	G_a Antenna Gain	Peak	Limit	Margin	Polarization
(MHz)	(dBm)	(dB)		(dB)	EIRP(dBm)	(dBm)	(dB)	
3760.00	-42.36	5.98	3.00	9.11	-39.23	-13.00	-26.23	H
5640.00	-41.26	6.84	3.00	9.56	-38.54	-13.00	-25.54	H
3760.00	-43.22	5.98	3.00	9.11	-40.09	-13.00	-27.09	V
5640.00	-41.25	6.84	3.00	9.56	-38.53	-13.00	-25.53	V
GPRS1900_ High Channel								
Frequency	P_{Mea}	P_{cl}	Diatance	G_a Antenna Gain	EIRP	Limit	Margin	Polarization
(MHz)	(dBm)	(dB)		(dB)	(dBm)	(dBm)	(dB)	
3819.60	-41.26	5.98	3.00	9.11	-38.13	-13.00	-25.13	H
5729.40	-42.39	6.84	3.00	9.56	-39.67	-13.00	-26.67	H
3819.60	-39.68	5.98	3.00	9.11	-36.55	-13.00	-23.55	V
5729.40	-42.58	6.84	3.00	9.56	-39.86	-13.00	-26.86	V

Remark:
1. We were tested all Configuration refer 3GPP TS134 121.
2. EIRP=P_{Mea}(dBm)-P_{cl}(dB)+G_a(dBi)
The cable loss (P_{cl}) , the Substitution Antenna Gain (G_a) and P_{Mea}(dBm) is test power- Amplifier Gain.
3. ERP = EIRP – 2.15dBi as EIRP by subtracting the gain of the dipole.
4.Margin = Emission Level – Limit
5.We test both H direction and V direction, recorded worst case direction.

7.3 EFFECTIVE RADIATED POWER AND EFFECTIVE ISOTROPIC RADIATED POWER

7.3.1 Applicable Standard

According to FCC KDB 971168 D01 v02r02 Section 5.2.1/ Section 5.2.2.2 and ANSI/ TIA-603-D-2010 Section 2.2.17

7.3.2 Conformance Limit

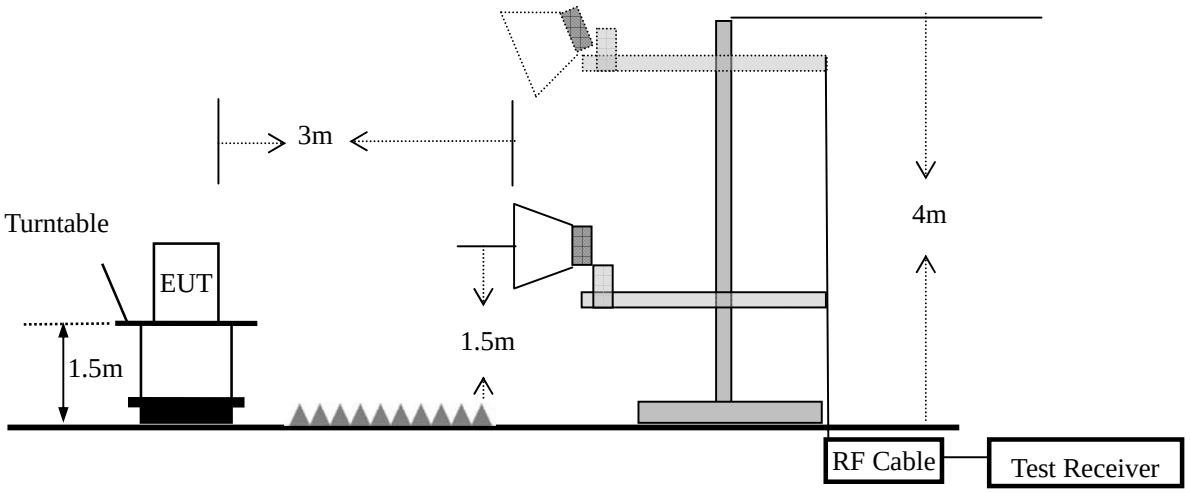
The substitution method, in ANSI / TIA / EIA-603-D-2010, was used for ERP/EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v02r02. The ERP of mobile transmitters must not exceed 7 Watts (Cellular Band) and the EIRP of mobile transmitters are limited to 2 Watts (PCS Band).

7.3.3 Measuring Instruments

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

7.3.4 Test Configuration

(a) For E.R.P and E.I.R.P Measurements



7.3.5 Test Procedure

The measurements procedures specified in TIA-603-D-2010 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 knSKY (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 substitution method is used. Substitution values at each frequency are measured before and saved to the test software. A "reference path loss" is established as ARpl=Pin + 2.15 - Pr. The ARpl is the attenuation of “reference path loss”, and including the gain of receive antenna, the cable loss and the air loss. The measurement results are obtained as described below: Power=PMea+ARpl

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 knSKY gain (2.15 dBi) and knSKY 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	UMTS band
Span	500KHz	10MHz
RBW	10KHz	300KHz
VBW	30KHz	1MHz
Detector	RMS	RMS
Trace	Average	Average
Average Type	Power	Power
Sweep Count	100	100

7.3.6 Test Results

EUT：	Burglar alarm control panel	Model Name ：	PN-602
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM850/GSM1900	Test By:	Lake Xie

■ Effective Radiated Power

Radiated Power (ERP) for GSM850								
Frequency (MHz)	Polarization	PMea (dBm)	Pcl (dB)	PAg (dB)	Ga Antenna Gain (dB)	Correction (dB)	ERP (dBm)	ERP (W)
824.2	H	-16.55	2.11	-52.73	0.87	2.15	31.05	1.2735
836.6	H	-16.24	2.13	-52.73	0.93	2.15	31.28	1.3428
848.8	H	-16.74	2.13	-52.73	0.97	2.15	30.74	1.1858
824.2	V	-17.02	2.11	-52.73	0.87	2.15	30.58	1.1429
836.6	V	-17.04	2.13	-52.73	0.93	2.15	30.48	1.1169
848.8	V	-16.34	2.13	-52.73	0.97	2.15	31.14	1.3002

Radiated Power (ERP) for GPRS850								
Frequency (MHz)	Polarization	PMea (dBm)	Pcl (dB)	PAg (dB)	Ga Antenna Gain (dB)	Correction (dB)	ERP (dBm)	ERP (W)
824.2	H	-16.29	2.11	-52.73	0.87	2.15	31.31	1.3521
836.6	H	-16.52	2.13	-52.73	0.93	2.15	31	1.2589
848.8	H	-16.54	2.13	-52.73	0.97	2.15	30.94	1.2417
824.2	V	-16.62	2.11	-52.73	0.87	2.15	30.98	1.2531
836.6	V	-16.41	2.13	-52.73	0.93	2.15	31.11	1.2912
848.8	V	-16.92	2.13	-52.73	0.97	2.15	30.56	1.1376

Note:
1. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
2. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) should be recorded after test. Peak EIRP(dBm)= PMea+Pcl –Ga; ERP = EIRP -2.15dBi.

■ Effective Isotropic Radiated Power

Radiated Power (E.I.R.P) for GSM1900							
Frequency (MHz)	Polarization	PMea (dBm)	Pcl (dB)	PAg (dB)	Ga Antenna Gain (dB)	EIRP (dBm)	EIRP (W)
1850.2	H	-21.09	3.76	-48.53	-4.72	28.4	0.6918
1880	H	-22.24	3.91	-50.53	-4.59	28.97	0.7889
1909.8	H	-21.49	3.93	-50.53	-4.38	29.49	0.8892
1850.2	V	-21.11	3.76	-48.53	-4.72	28.38	0.6887
1880	V	-21.15	3.91	-50.53	-4.59	30.06	1.0139
1909.8	V	-22.31	3.93	-50.53	-4.38	28.67	0.7362

Radiated Power (E.I.R.P) for GPRS1900							
Frequency (MHz)	Polarization	PMea (dBm)	Pcl (dB)	PAg (dB)	Ga Antenna Gain (dB)	EIRP (dBm)	EIRP (W)
1850.2	H	-21.28	3.76	-48.53	-4.72	28.21	0.6622
1880	H	-22.64	3.91	-50.53	-4.59	28.57	0.7194
1909.8	H	-21.97	3.93	-50.53	-4.38	29.01	0.7962
1850.2	V	-21.86	3.76	-48.53	-4.72	27.63	0.5794
1880	V	-22.61	3.91	-50.53	-4.59	28.6	0.7244
1909.8	V	-22.72	3.93	-50.53	-4.38	28.26	0.6699

Note:
1. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
2. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) should be recorded after test. Peak EIRP(dBm)= PMea+Pcl –Ga;

7.4 CONDUCTED OUTPUT POWER

7.4.1 Applicable Standard

According to FCC Part 2.1046 and FCC Part 22.913(a)(2) and FCC Part 24.232(c) and FCC KDB 971168 D01 v02r02 Section 5.2

7.4.2 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..

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. 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.

7.4.6 Test Results

EUT：	Burglar alarm control panel	Model Name ：	PN-602
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM850/GSM1900	Test By:	Lake Xie

Output Power for GSM850

Mode	Frequency(MHz)	Maximum Burst-Average Output Power
GSM850	824.2	32.31
	836.6	32.19
	848.8	32.24
GPRS850 (1 Slot)	824.2	32.32
	836.6	32.19
	848.8	32.22
GPRS850 (2 Slot)	824.2	31.51
	836.6	31.31
	848.8	31.46
GPRS850 (3 Slot)	824.2	29.68
	836.6	29.46
	848.8	29.59
GPRS850 (4 Slot)	824.2	28.59
	836.6	28.39
	848.8	28.52

Output Power for PCS1900

Mode	Frequency(MHz)	Maximum Burst-Average Output Power
GSM1900	1850.2	29.02
	1880	29.18
	1909.8	29.30
GPRS1900 (1 Slot)	1850.2	29.04
	1880	29.17
	1909.8	29.30
GPRS1900 (2 Slot)	1850.2	28.05
	1880	28.27
	1909.8	28.48
GPRS1900 (3 Slot)	1850.2	26.25
	1880	26.54
	1909.8	26.81
GPRS1900 (4 Slot)	1850.2	25.35
	1880	25.70
	1909.8	25.98

7.5 FREQUENCY STABILITY

7.5.1 Applicable Standard

According to FCC Part 2.1055 and FCC Part 22.355 and FCC Part 24.235 and FCC KDB 971168 D01 Section 9.0

7.5.2 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.

7.5.3 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

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 v02r02 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 v02r02 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.

7.5.6 Test Results

EUT：	Burglar alarm control panel	Model Name ：	PN-602
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM850/GSM1900	Test By:	Lake Xie
Results: PASS			

Frequency Error Against Voltage for GSM850 band		
Channel 190/836.6 MHz		
Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)
3.8	25	0.0299
3.6	29	0.0347
4.4	17	0.0203

Frequency Error Against Temperature for GSM850 band		
Channel 190/836.6 MHz		
Temperature (℃)	Frequency Error (Hz)	Frequency Error (ppm)
-30	21	0.0251
-20	19	0.0227
-10	29	0.0347
0	22	0.0263
10	14	0.0167
20	23	0.0275
30	18	0.0215
40	35	0.0418
50	33	0.0394

Frequency Error Against Voltage for GPRS850 band		
Channel 190/836.6 MHz		
Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)
3.8	22	0.0263
3.6	26	0.0311
4.4	19	0.0227

Frequency Error Against Temperature for GPRS850 band		
Channel 190/836.6 MHz		
Temperature (℃)	Frequency Error (Hz)	Frequency Error (ppm)
-30	32	0.0383
-20	27	0.0323
-10	30	0.0359
0	25	0.0299
10	26	0.0311
20	27	0.0323
30	18	0.0215
40	25	0.0299
50	31	0.0371

Note:
1. Normal Voltage = 3.8V; Battery End Point (BEP) = 3.6V; Maximum Voltage =4.4V
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

Frequency Error Against Voltage for PCS1900 band		
Channel 661/1880.0MHz		
Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)
3.8	38	0.0202
3.6	31	0.0165
4.4	27	0.0144

Frequency Error Against Temperature for PCS1900 band		
Channel 661/1880.0MHz		
Temperature (℃)	Frequency Error (Hz)	Frequency Error (ppm)
-30	33	0.0176
-20	26	0.0138
-10	29	0.0154
0	31	0.0165
10	22	0.0117
20	26	0.0138
30	36	0.0191
40	24	0.0128
50	20	0.0106

Frequency Error Against Voltage for GPRS1900 band		
Channel 661/1880.0MHz		
Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)
3.8	36	0.0191
3.6	38	0.0202
4.4	31	0.0165

Frequency Error Against Temperature for GPRS1900 band		
Channel 661/1880.0MHz		
Temperature (℃)	Frequency Error (Hz)	Frequency Error (ppm)
-30	19	0.0101
-20	24	0.0128
-10	34	0.0181
0	29	0.0154
10	25	0.0133
20	38	0.0202
30	27	0.0144
40	22	0.0117
50	18	0.0096

Note:
1. Normal Voltage = 3.8V; Battery End Point (BEP) = 3.6V; Maximum Voltage =4.4V
2. The frequency fundamental emissions stay within the authorized frequency block based on the frequency deviation measured is small.

7.6 PEAK-TO-AVERAGE RATIO

7.6.1 Applicable Standard

According to FCC 22.913 and FCC 24.232(d) and FCC KDB 971168 D01 Section 5.7.1

7.6.2 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.

7.6.3 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 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%.

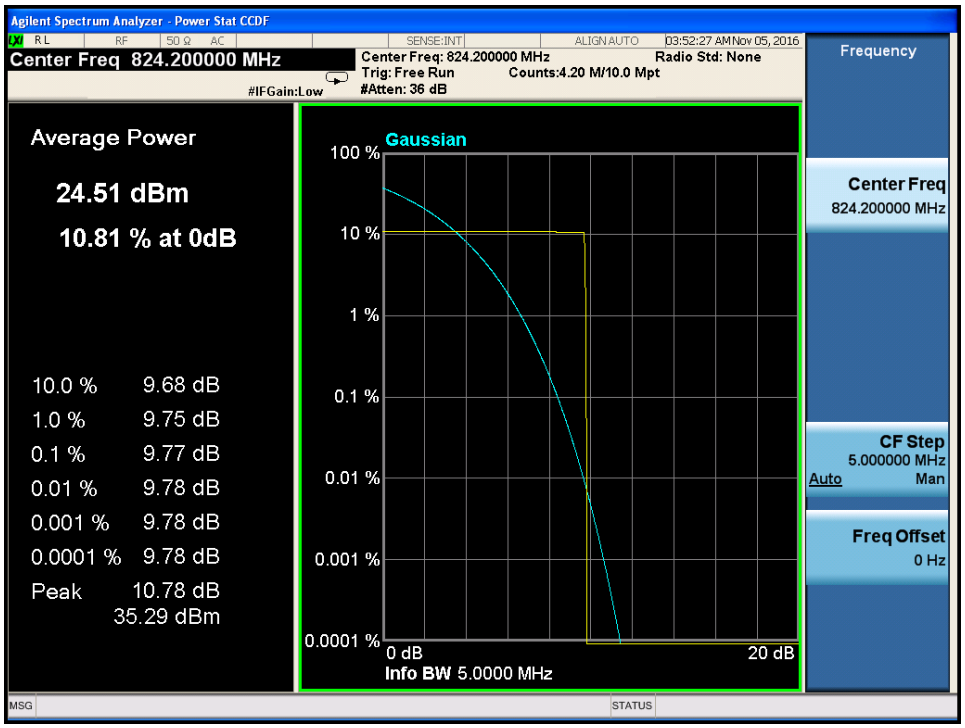
7.6.6 Test Results

EUT：	Burglar alarm control panel	Model Name ：	PN-602
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM850/GSM1900	Test By:	Lake Xie
Results: PASS			

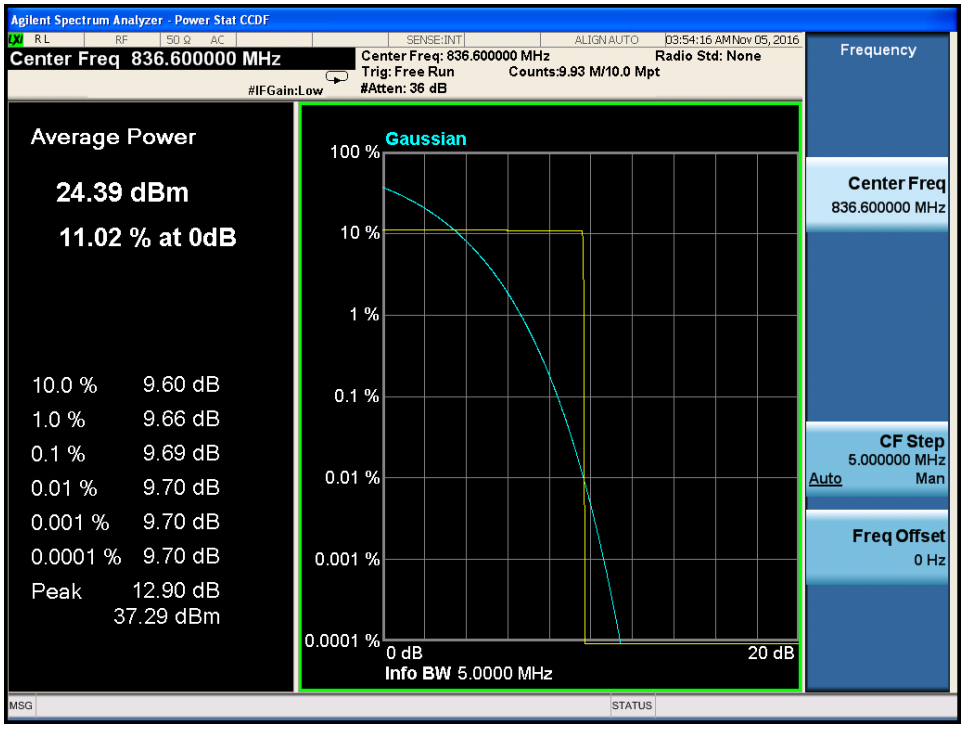
Cellular Band						
Modes	GSM850			GSM1900		
Channel	128 (Low)	190 (Mid)	251 (High)	512 (Low)	661 (Mid)	810 (High)
Frequency(MHz)	824.2	836.6	848.8	1850.2	1880	1909.8
Peak-to-Average Ratio (dB)	9.77	9.69	8.99	9.66	9.02	9.37

Cellular Band						
Modes	GPRS850			GPRS1900		
Channel	128 (Low)	190 (Mid)	251 (High)	512 (Low)	661 (Mid)	810 (High)
Frequency(MHz)	824.2	836.6	848.8	1850.2	1880	1909.8
Peak-to-Average Ratio (dB)	9.43	9.41	9.94	9.21	9.28	9.55

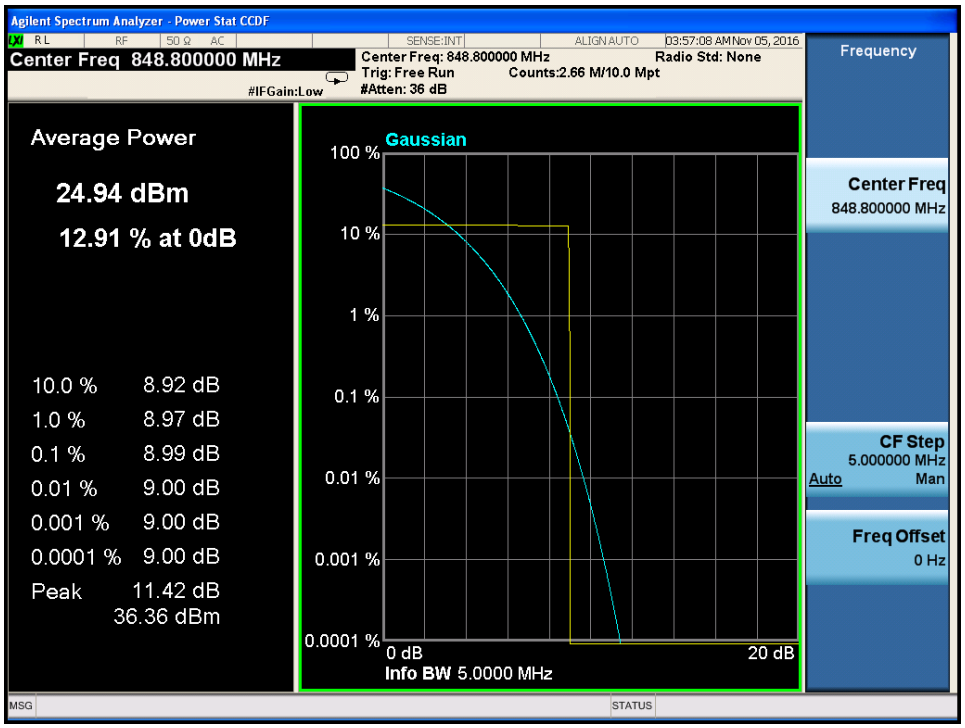
Peak-to-average power ratio plot on channel 128	GSM850



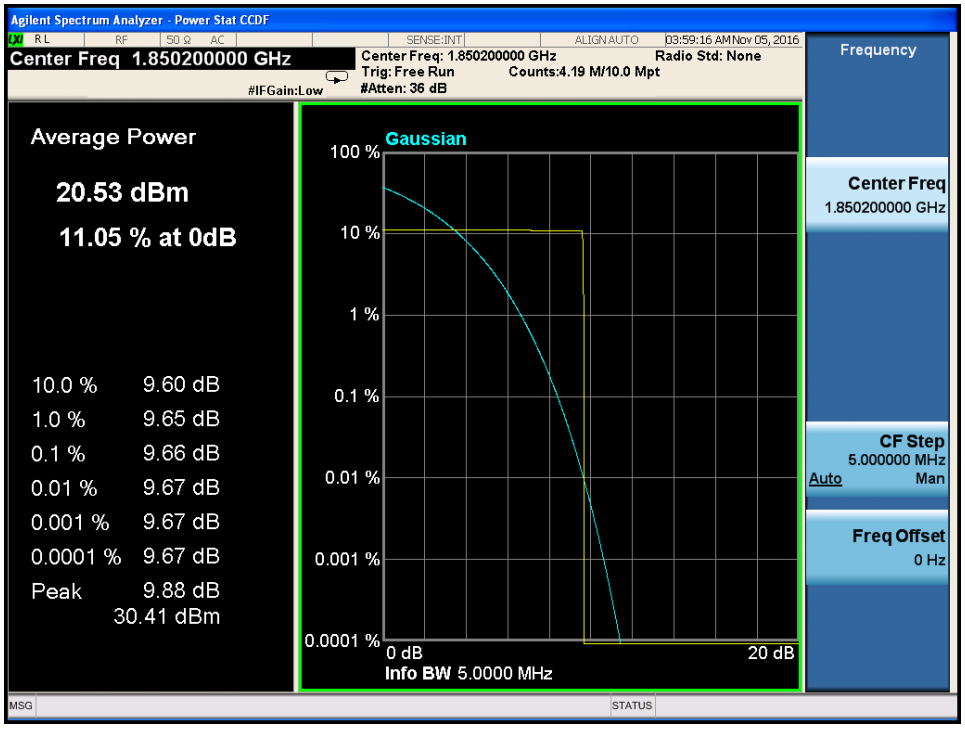
Peak-to-average power ratio plot on channel 190	GSM850



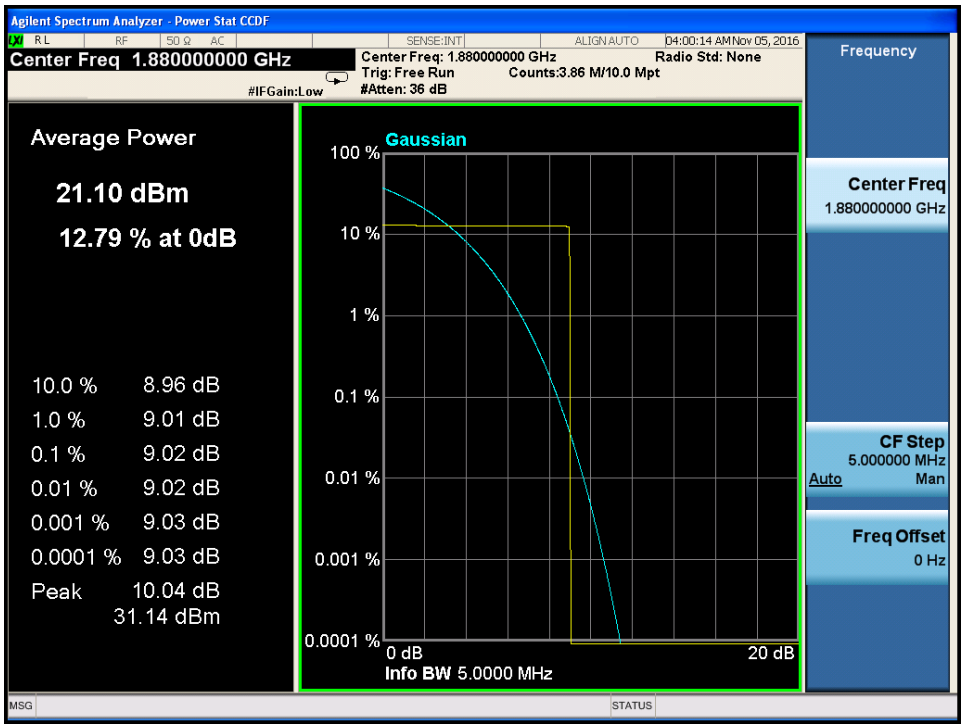
Peak-to-average power ratio plot on channel 251	GSM850



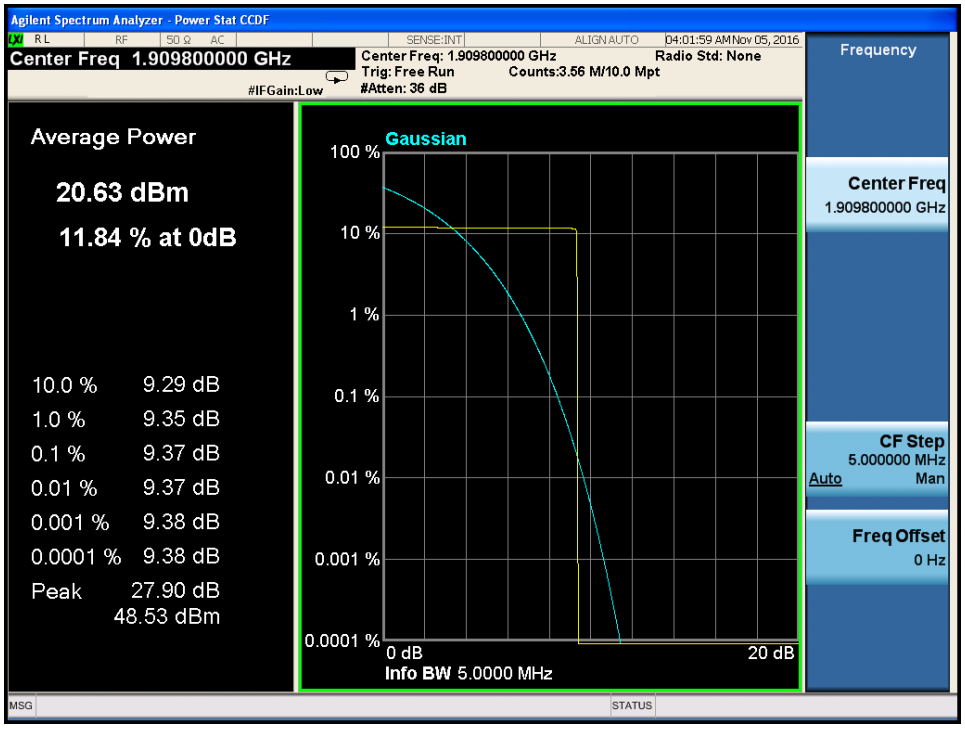
Peak-to-average power ratio plot on channel 512	GSM1900



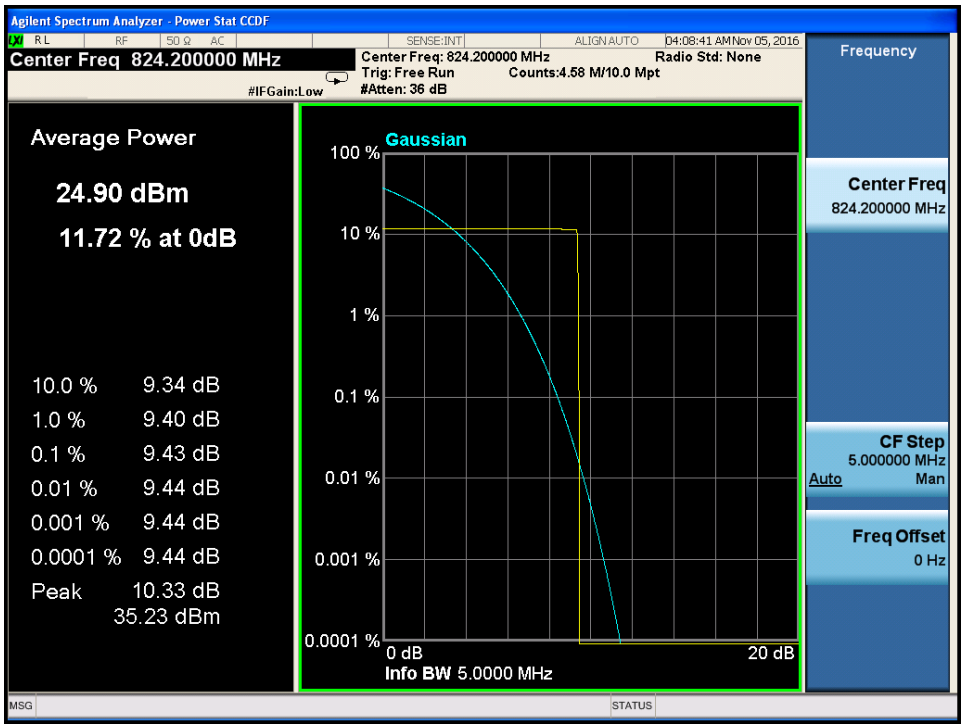
Peak-to-average power ratio plot on channel 661	GSM1900



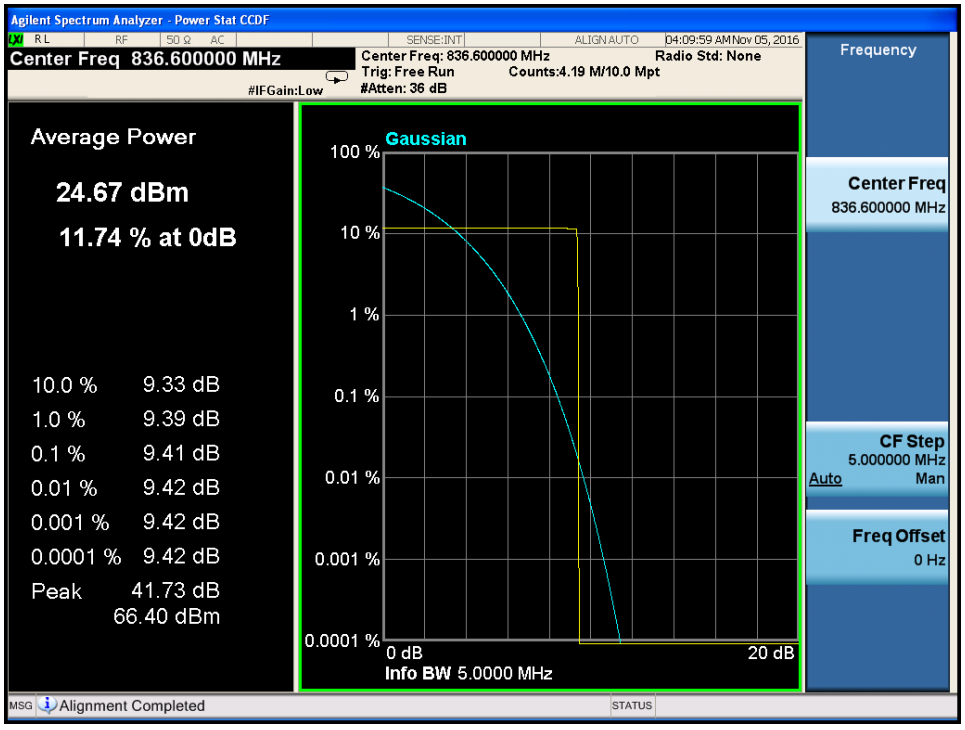
Peak-to-average power ratio plot on channel 810	GSM1900



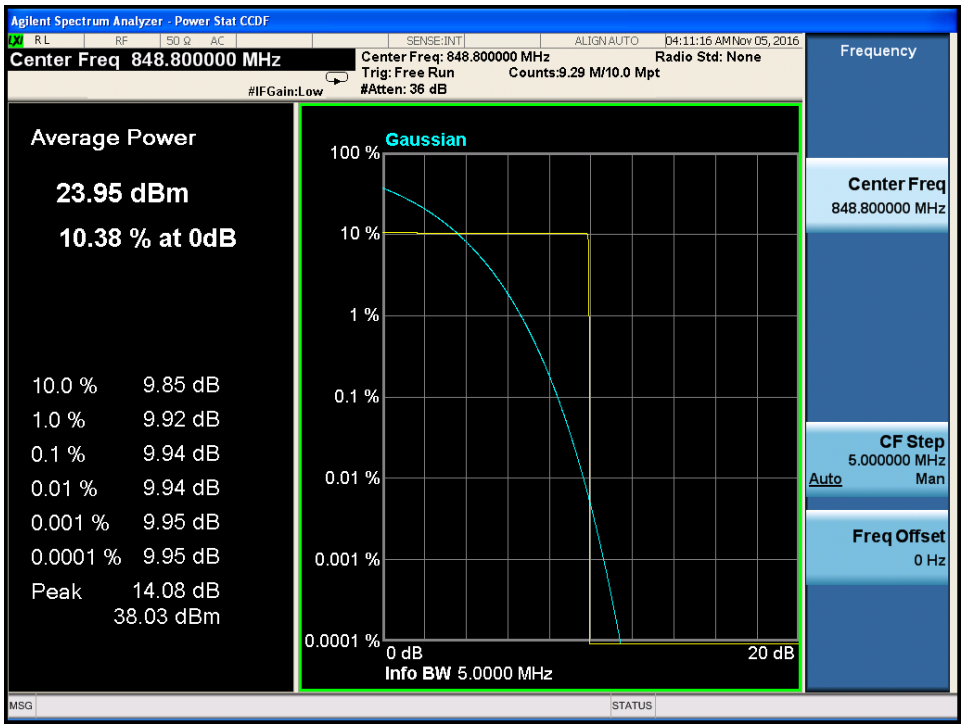
Peak-to-average power ratio plot on channel 128	GPRS850



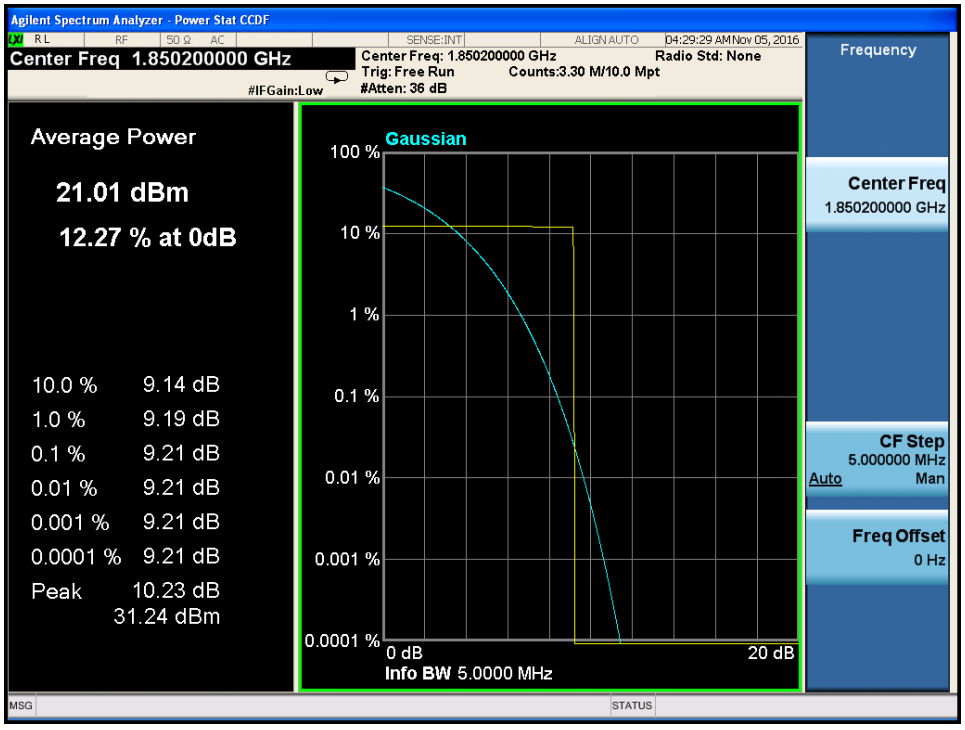
Peak-to-average power ratio plot on channel 190	GPRS850



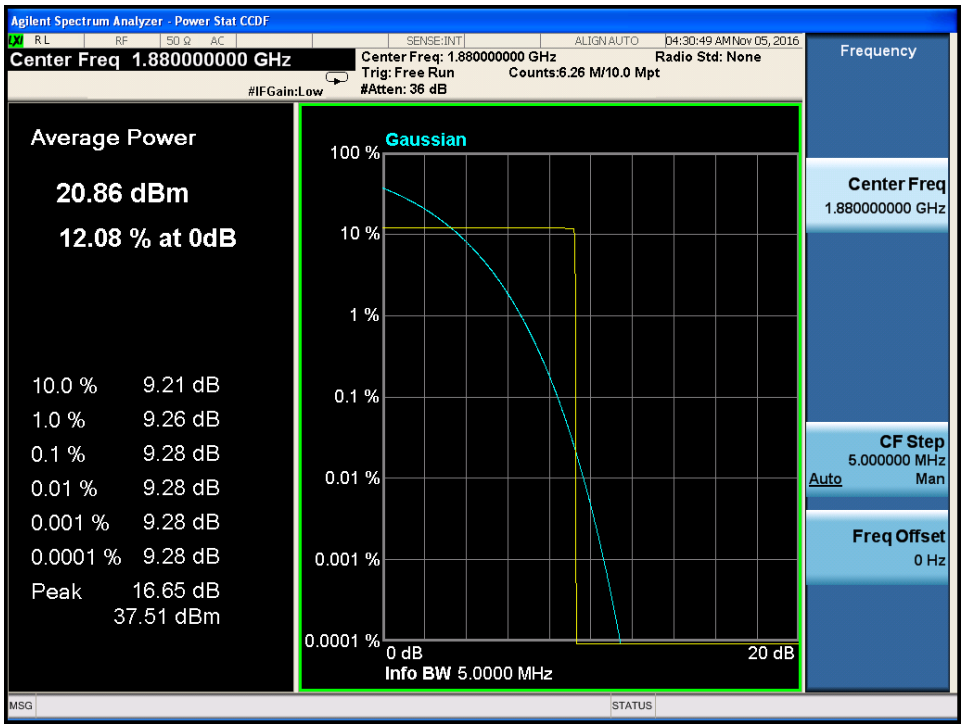
Peak-to-average power ratio plot on channel 251	GPRS850



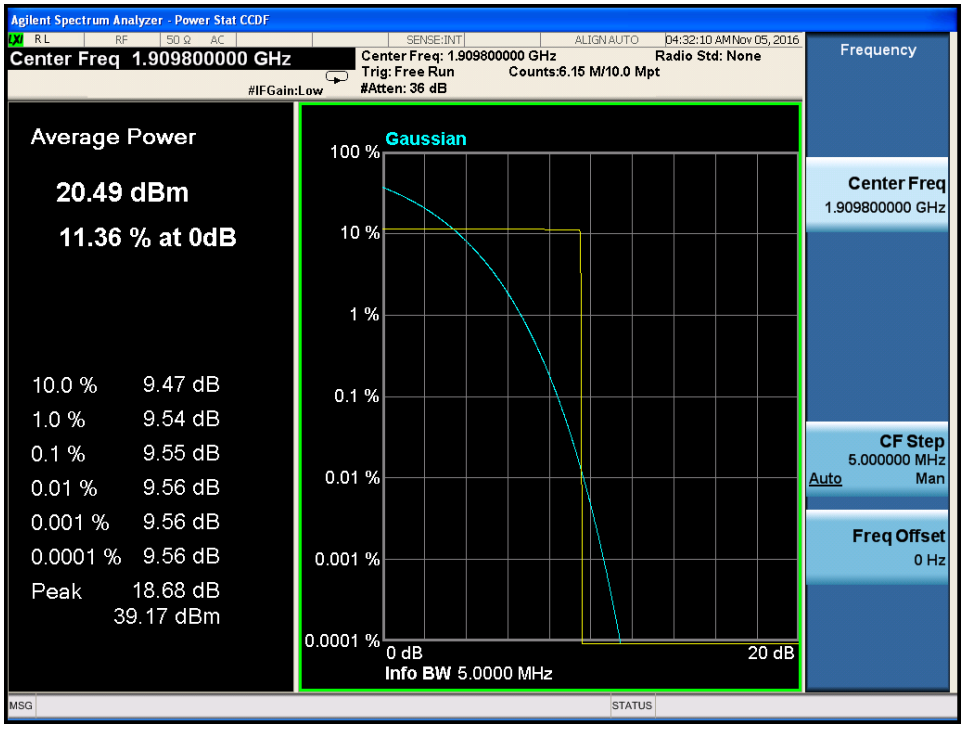
Peak-to-average power ratio plot on channel 512	GPRS1900



Peak-to-average power ratio plot on channel 661	GPRS1900



Peak-to-average power ratio plot on channel 810	GPRS1900



7.7 26DB BANDWIDTH AND 99% OCCUPIED BANDWIDTH

7.7.1 Applicable Standard

According to FCC Part 2.1049 and FCC Part 22H and FCC Part 24E and FCC KDB 971168 D01 Section 4.0

7.7.2 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.

7.7.3 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

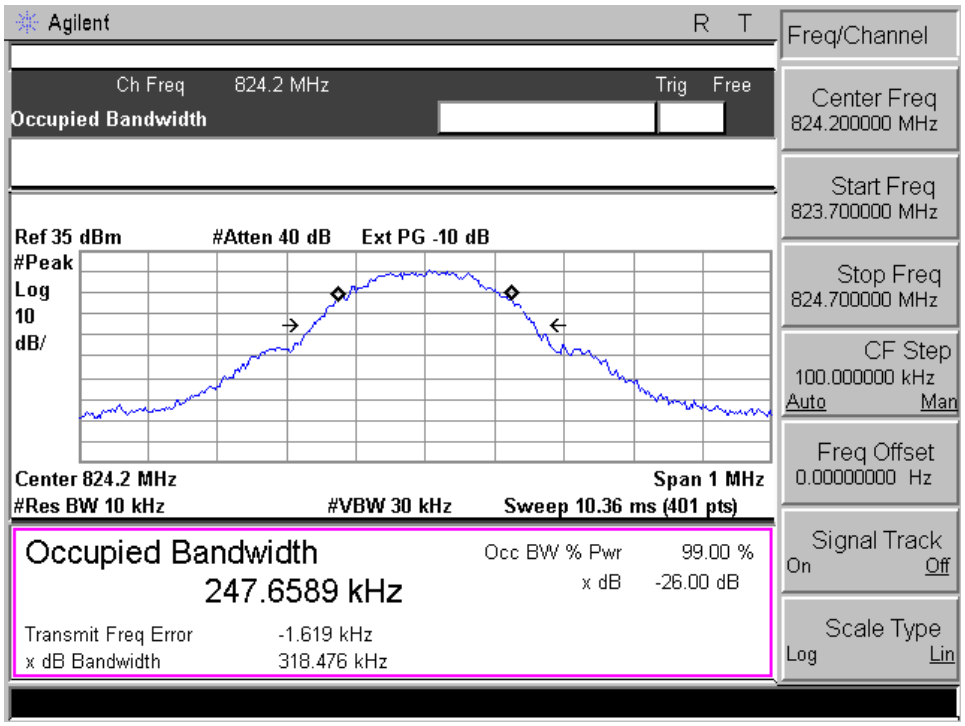
The testing follows FCC KDB 971168 v02r02 Section 4.0.
The EUT was connected to Spectrum Analyzer and Base Station via power divider.
The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
The spectrum 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 dSKY 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 dSKY amplitude” determined in step 6. If a marker is below this “-X dB dSKY 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.

7.7.6 Test Results

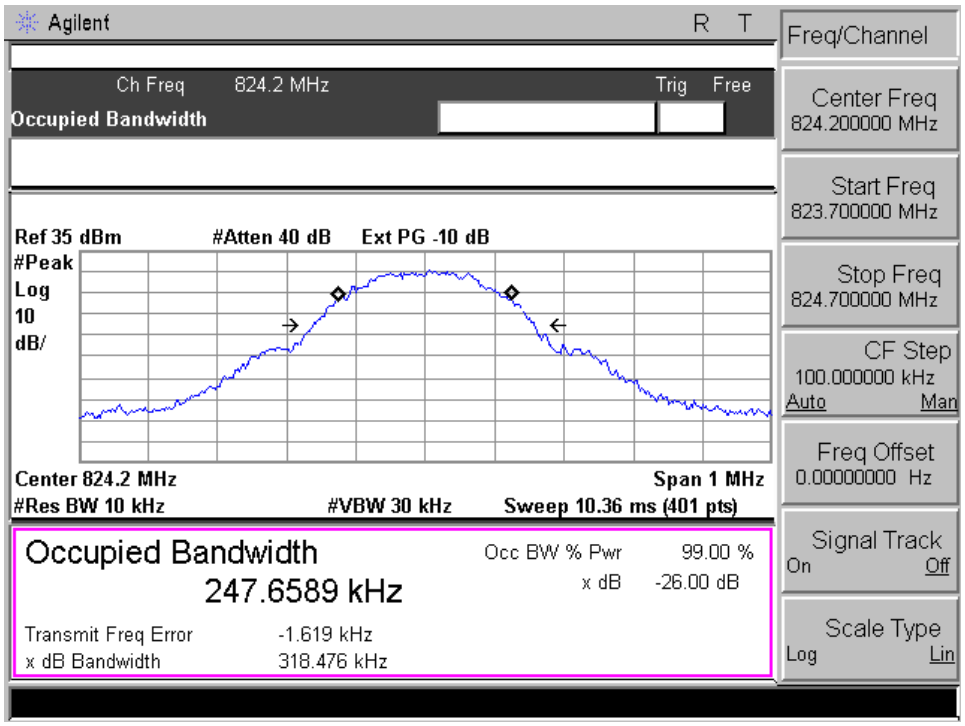
EUT：	Burglar alarm control panel	Model Name ：	PN-602
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM850/GSM1900	Test By:	Lake Xie
Results: PASS			

Operation Mode	Channel Number	Channel Frequency (MHz)	26dB Bandwidth (kHz)	99% Occupied Bandwidth (kHz)	Limit (kHz)	Verdict
GSM850	128	824.2	318.476	247.6589	N/A	PASS
	190	836.4	311.456	244.6763	N/A	PASS
	251	848.8	316.391	243.4955	N/A	PASS
GSM1900	512	1850.2	321.696	249.9131	N/A	PASS
	661	1880.0	324.538	248.1767	N/A	PASS
	810	1909.8	317.676	242.9821	N/A	PASS
GPRS850	128	824.2	311.603	246.5887	N/A	PASS
	190	836.4	315.716	245.7059	N/A	PASS
	251	848.8	322.527	247.2421	N/A	PASS
GPRS1900	512	1850.2	316.713	247.0476	N/A	PASS
	661	1880.0	315.135	245.5309	N/A	PASS
	810	1909.8	316.940	243.7521	N/A	PASS

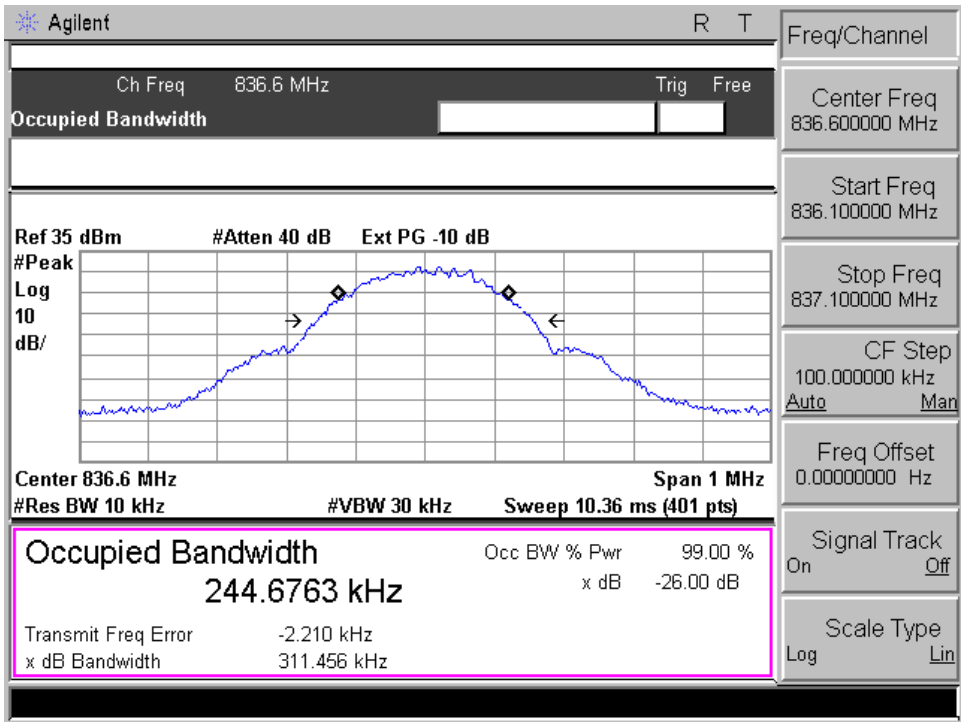
99% Occupied Bandwidth plot on channel 128	GSM850



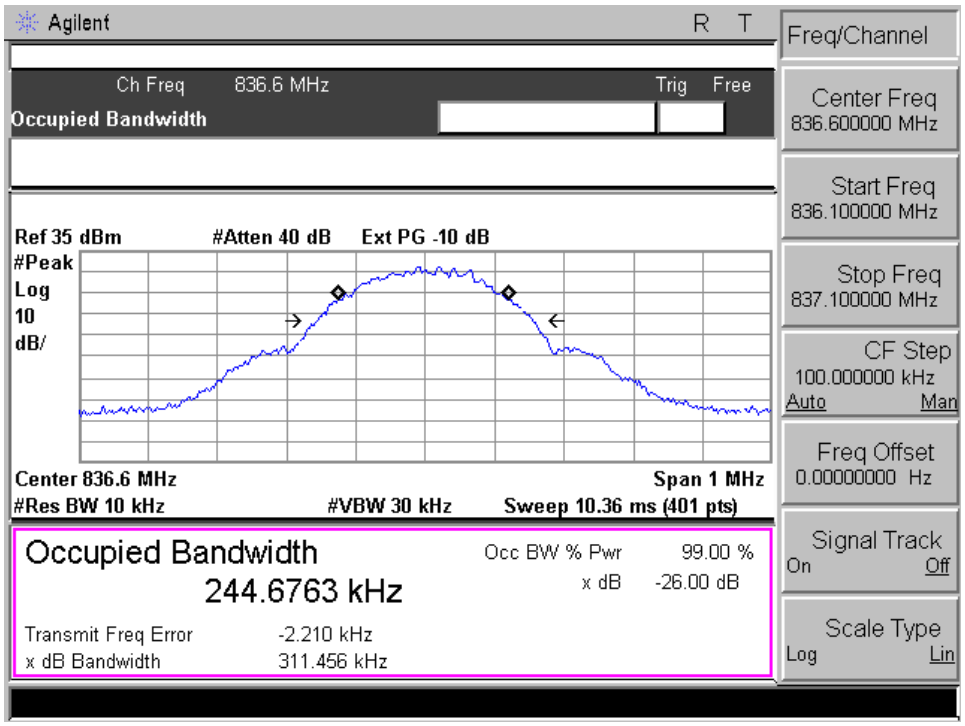
26dB Bandwidth plot on channel 128	GSM850



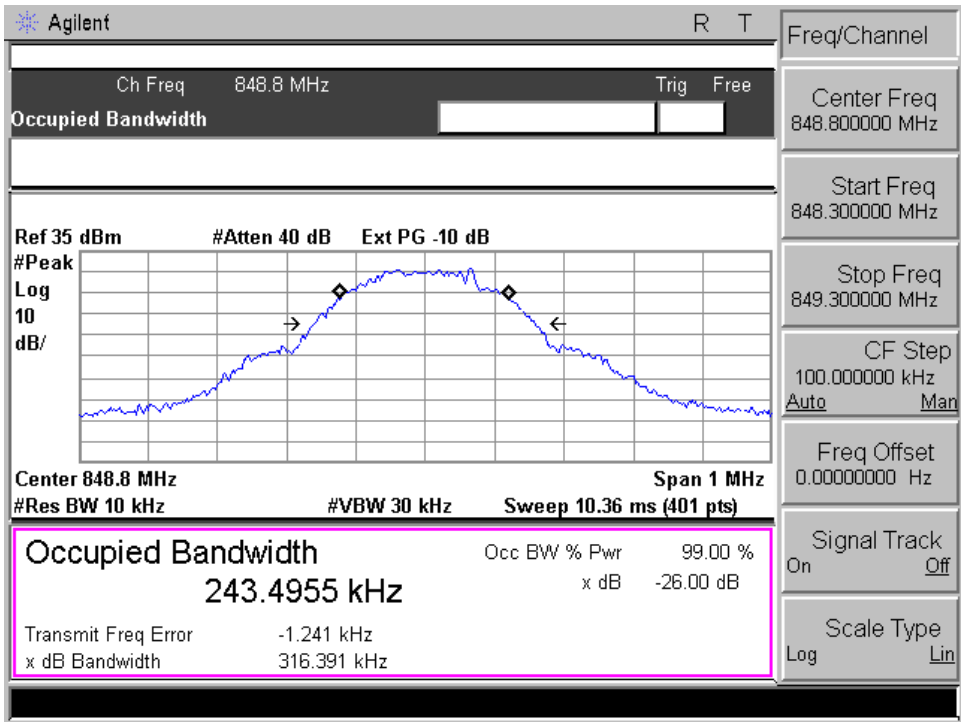
99% Occupied Bandwidth plot on channel 190	GSM850



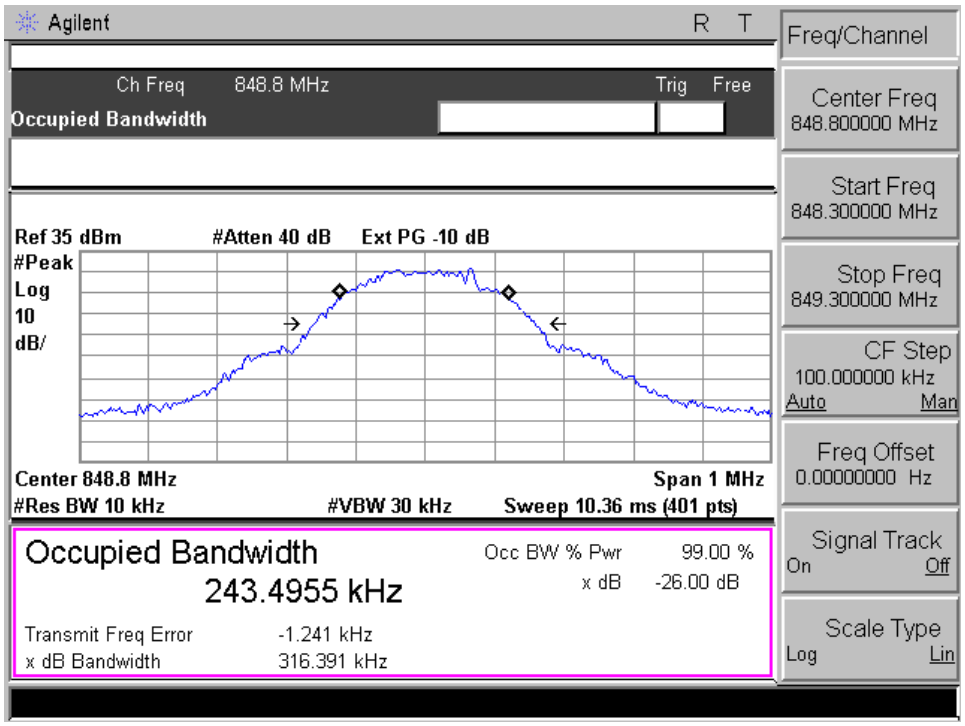
26dB Bandwidth plot on channel 190	GSM850



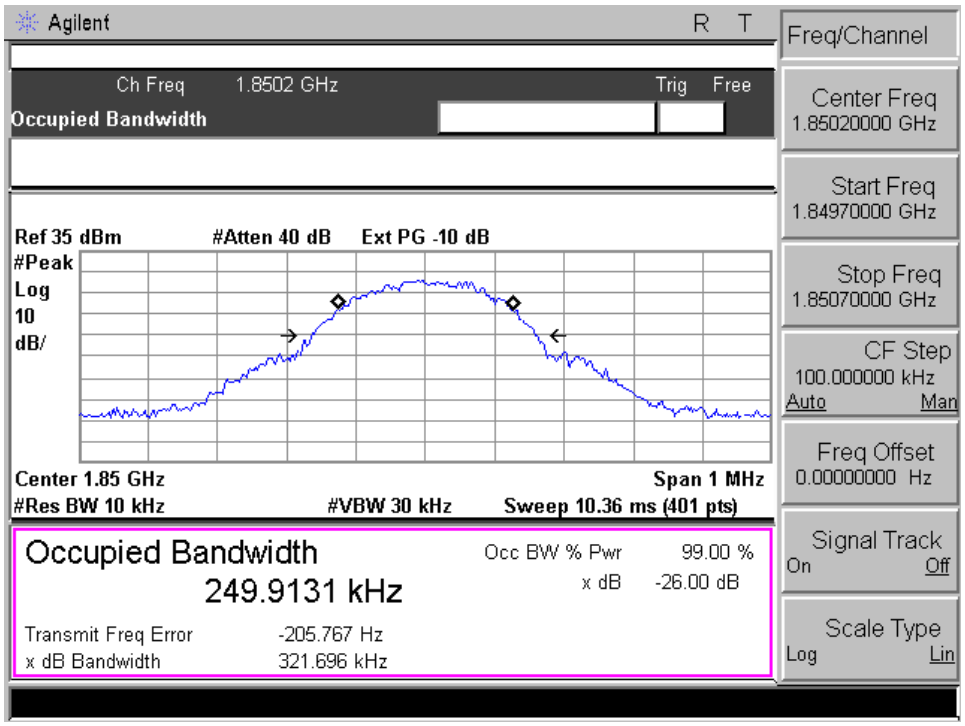
99% Occupied Bandwidth plot on channel 251	GSM850



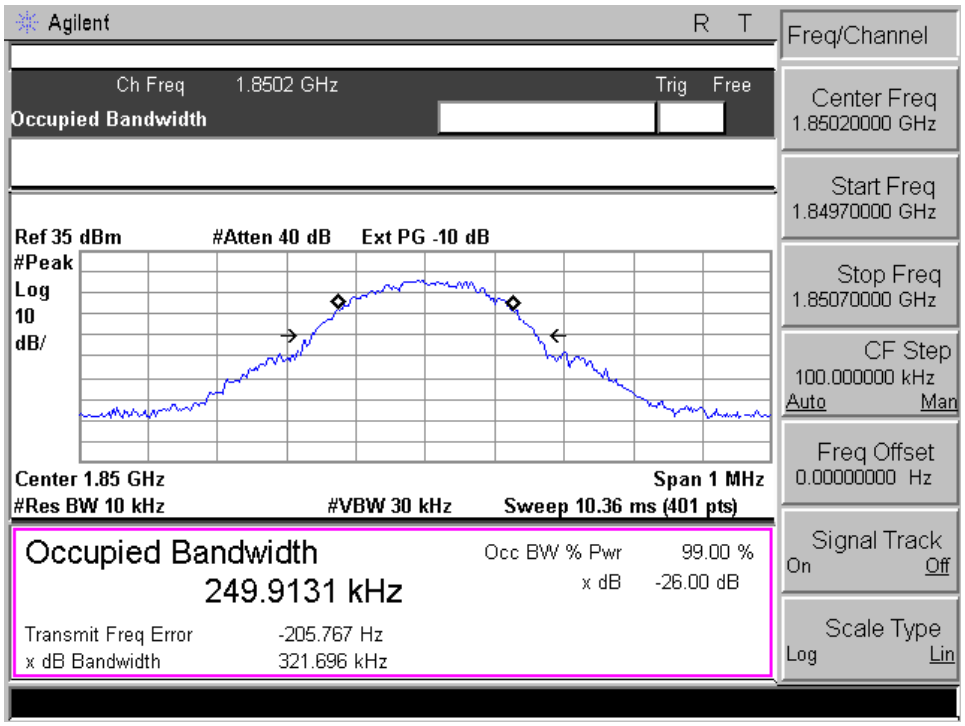
26dB Bandwidth plot on channel 251	GSM850



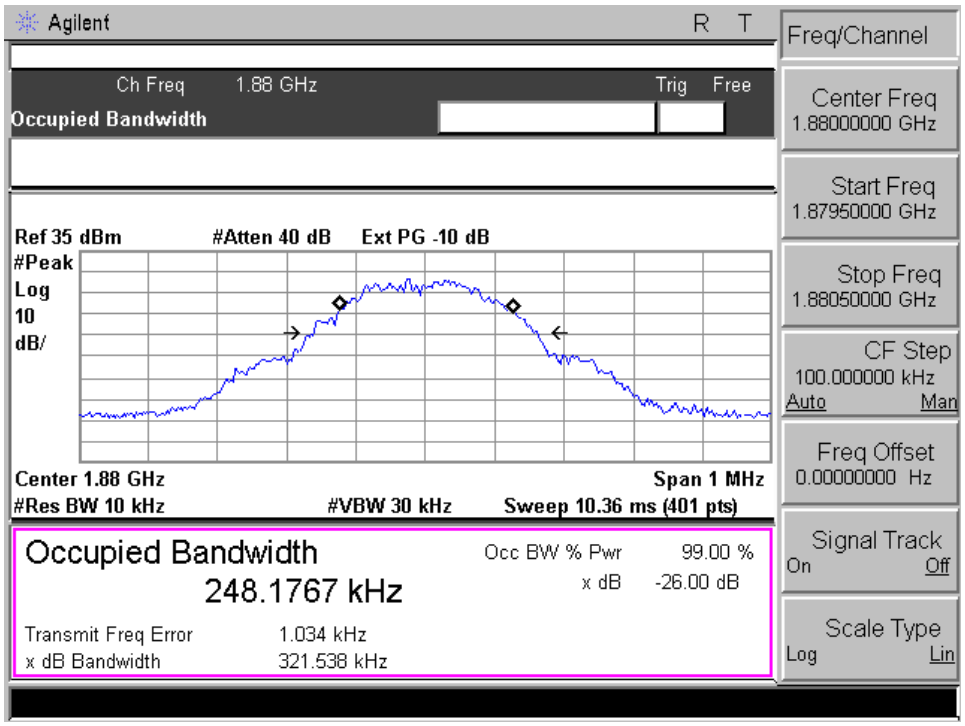
99% Occupied Bandwidth plot on channel 512	GSM1900



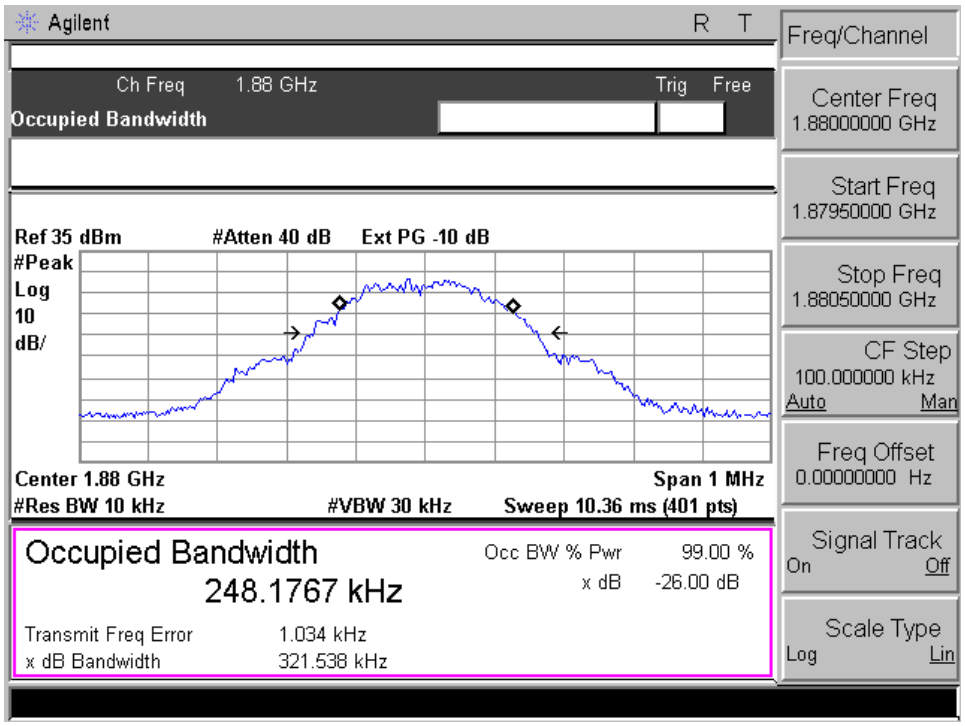
26dB Bandwidth plot on channel 512	GSM1900



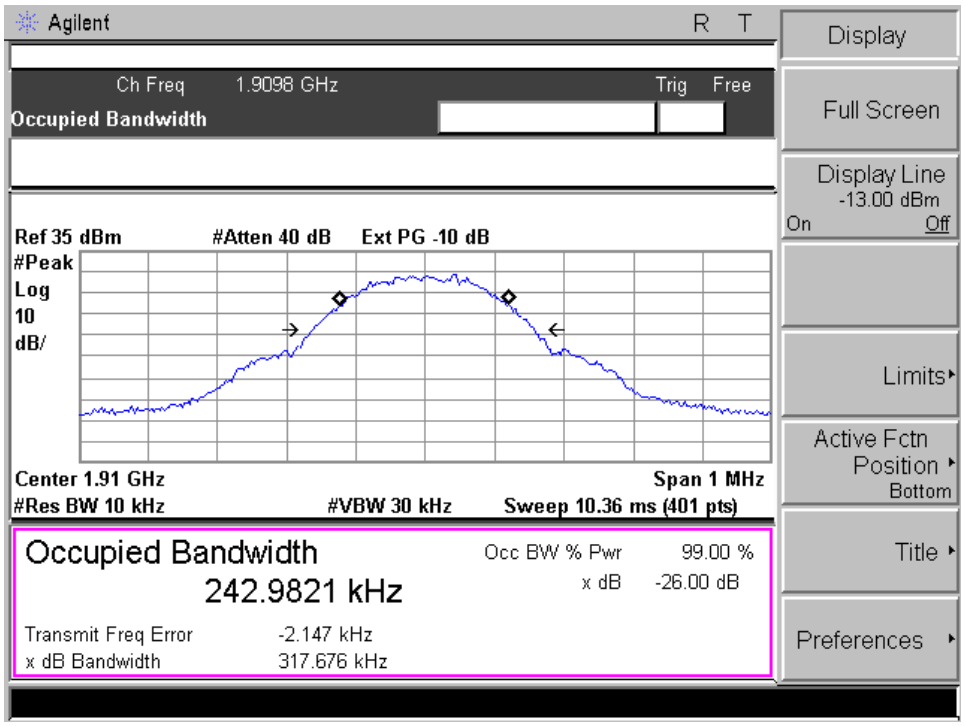
99% Occupied Bandwidth plot on channel 661	GSM1900



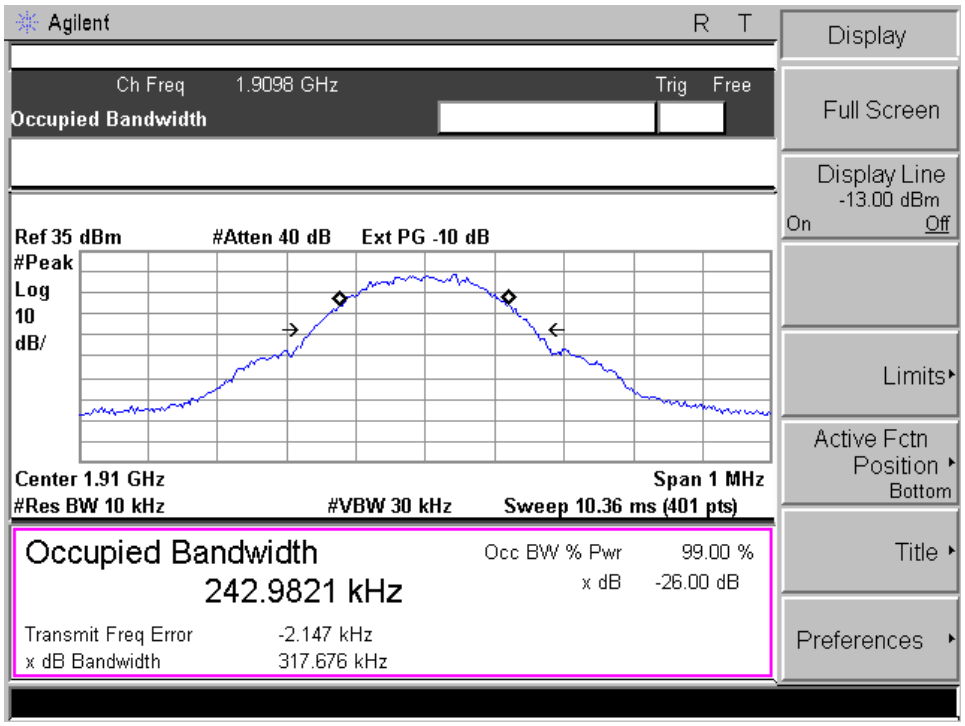
26dB Bandwidth plot on channel 661	GSM1900



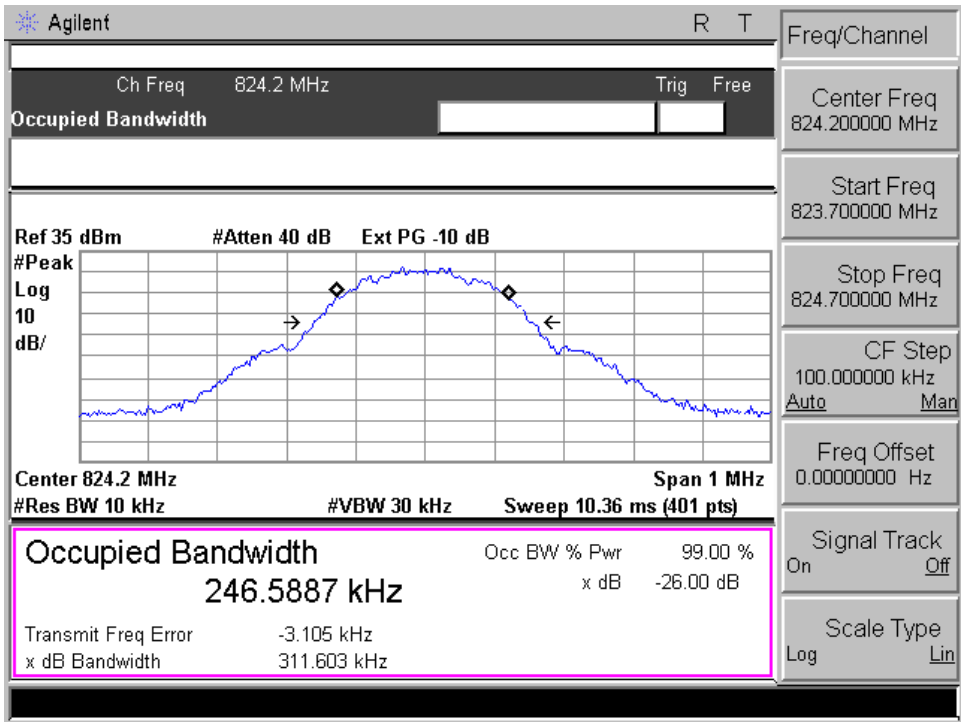
99% Occupied Bandwidth plot on channel 810	GSM1900



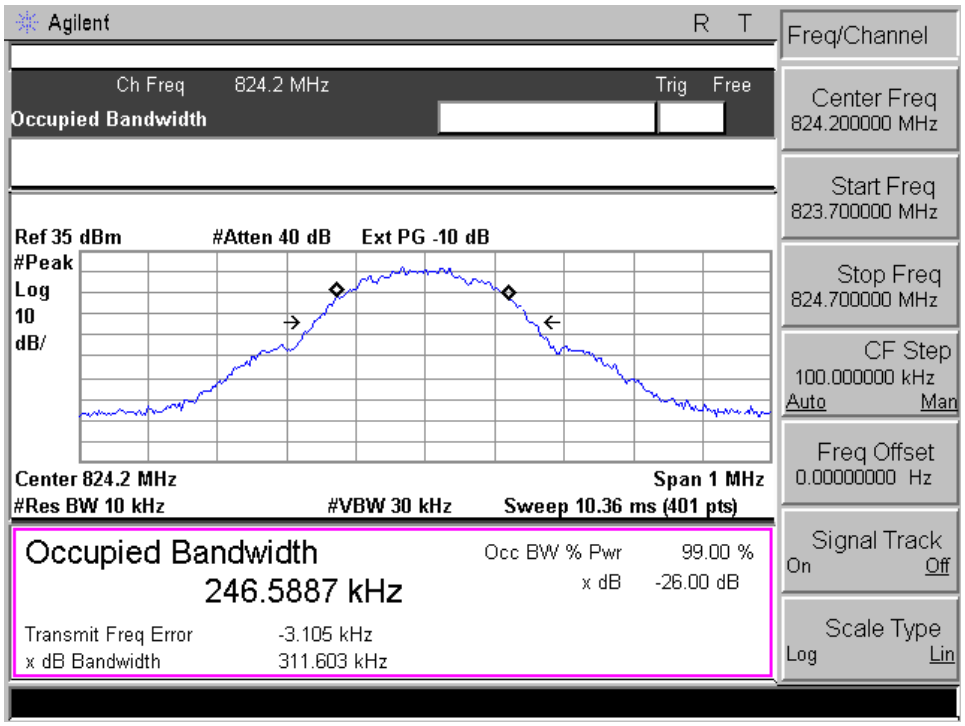
26dB Bandwidth plot on channel 810	GSM1900



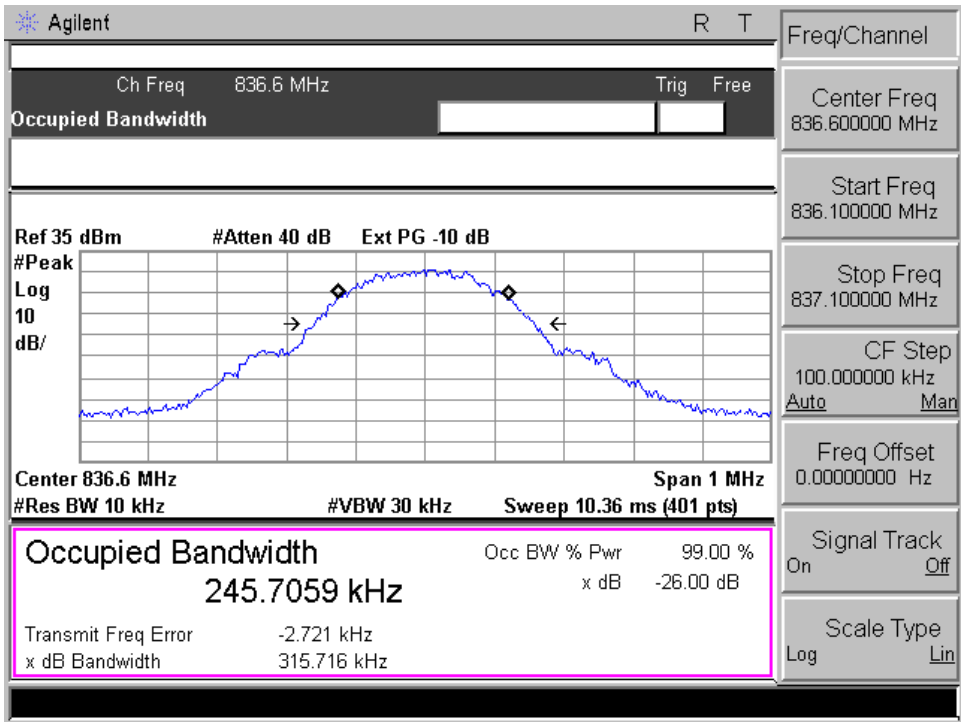
99% Occupied Bandwidth plot on channel 128	GPRS850



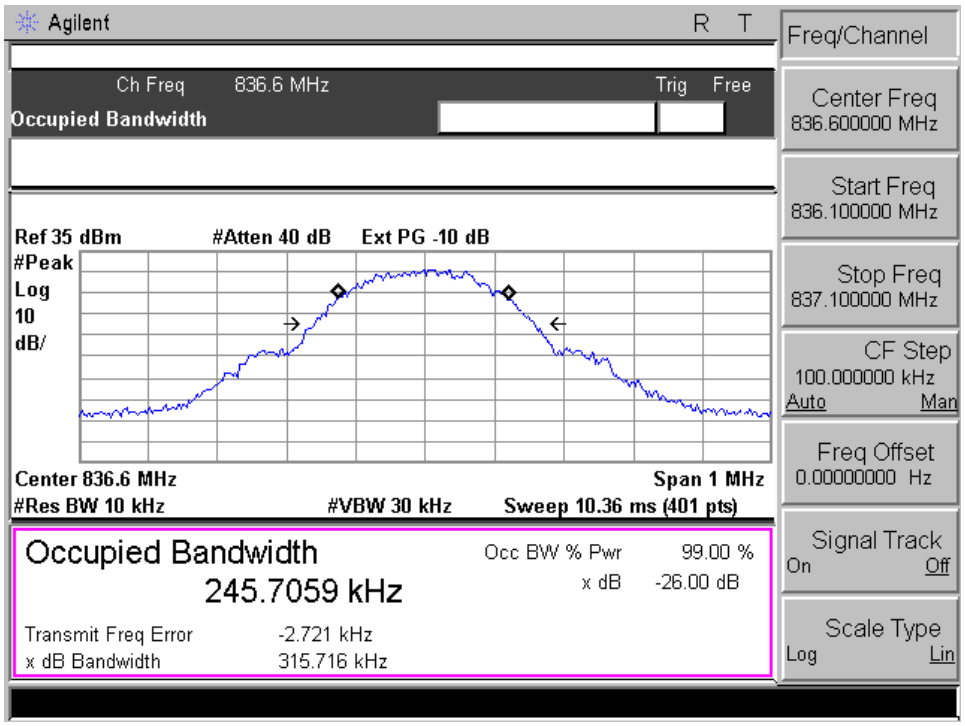
26dB Bandwidth plot on channel 128	GPRS850



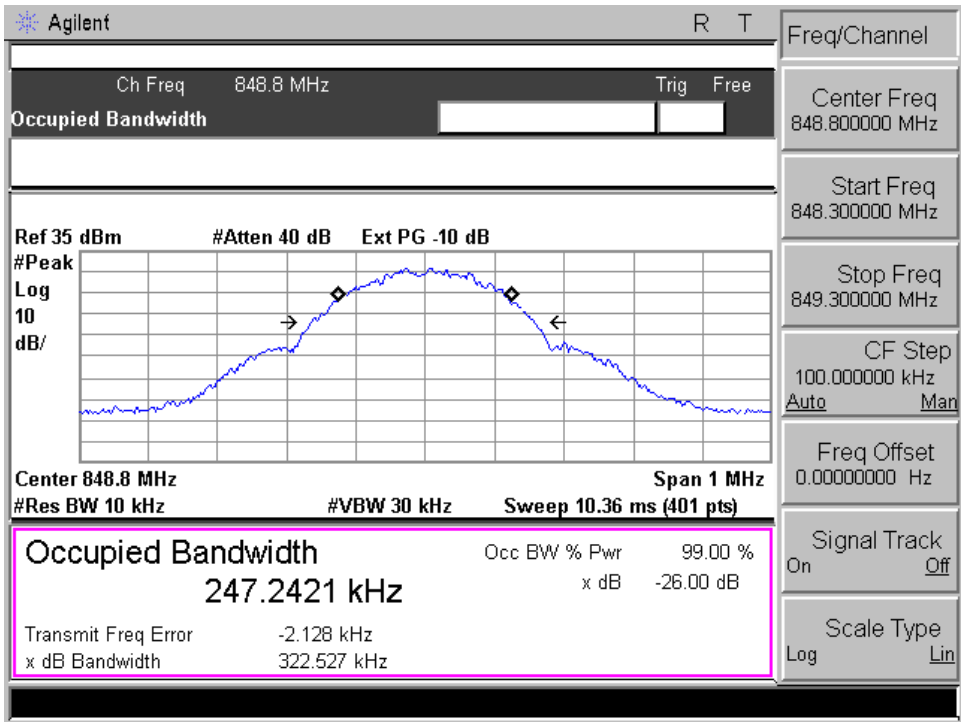
99% Occupied Bandwidth plot on channel 190	GPRS850



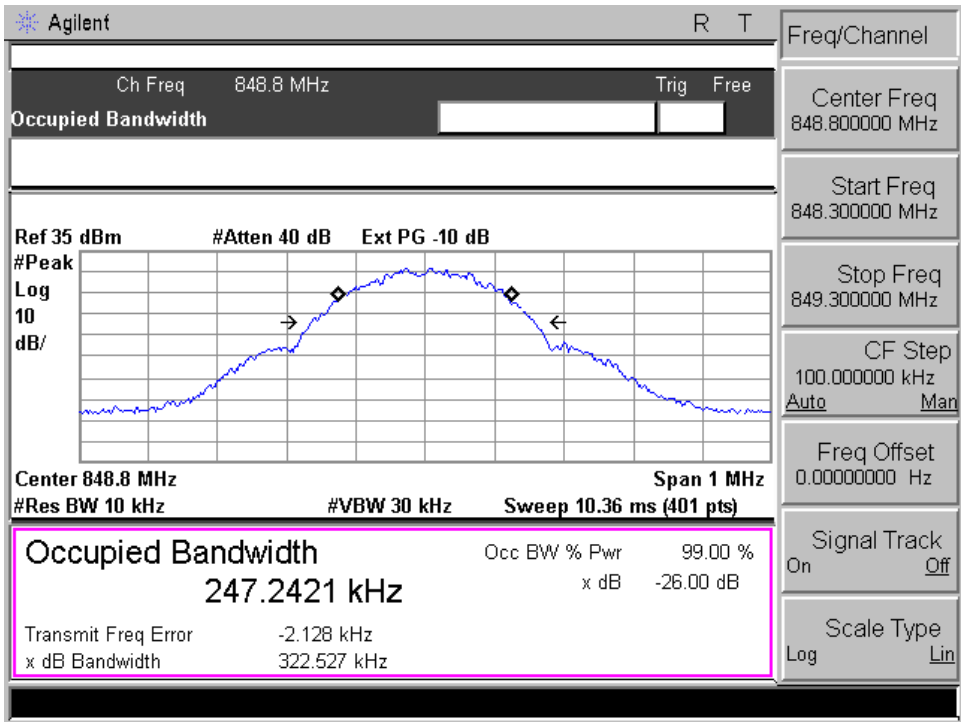
26dB Bandwidth plot on channel 190	GPRS850



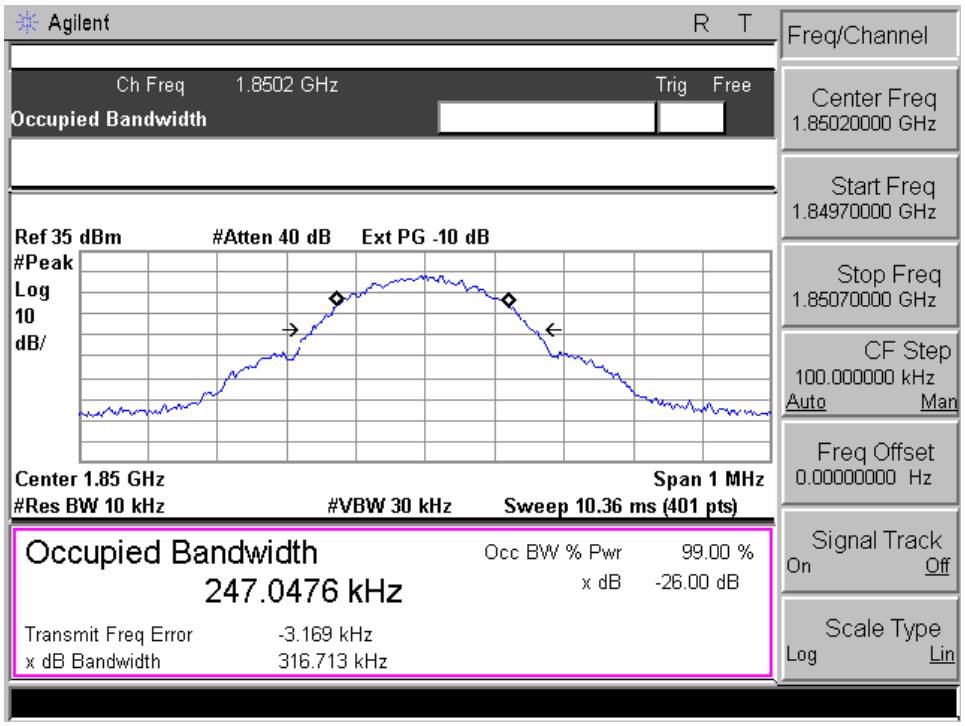
99% Occupied Bandwidth plot on channel 251	GPRS850



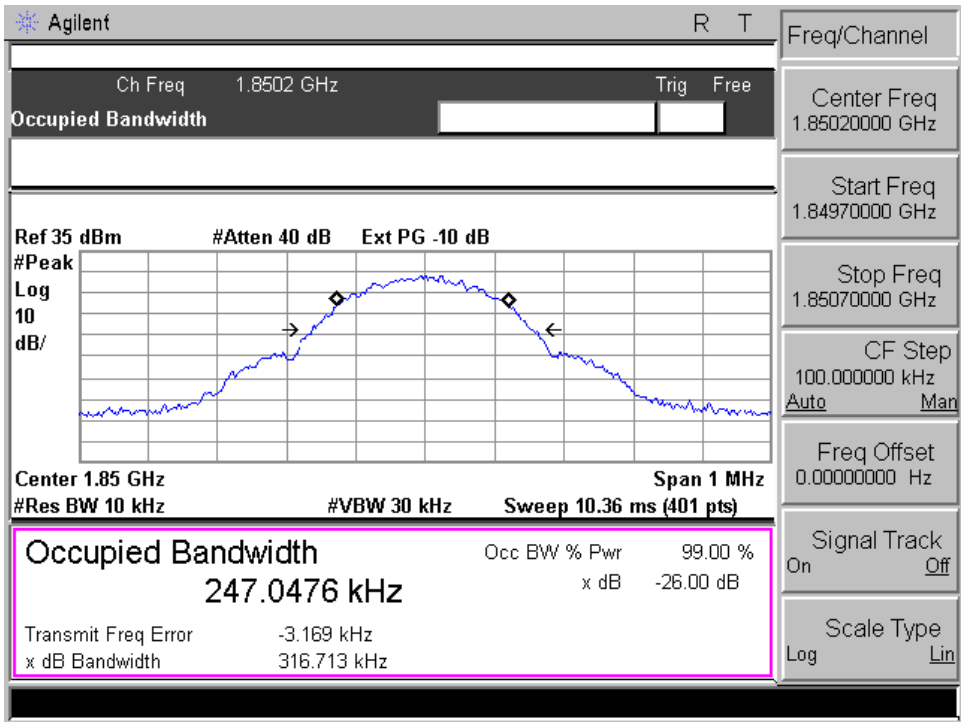
26dB Bandwidth plot on channel 251	GPRS850



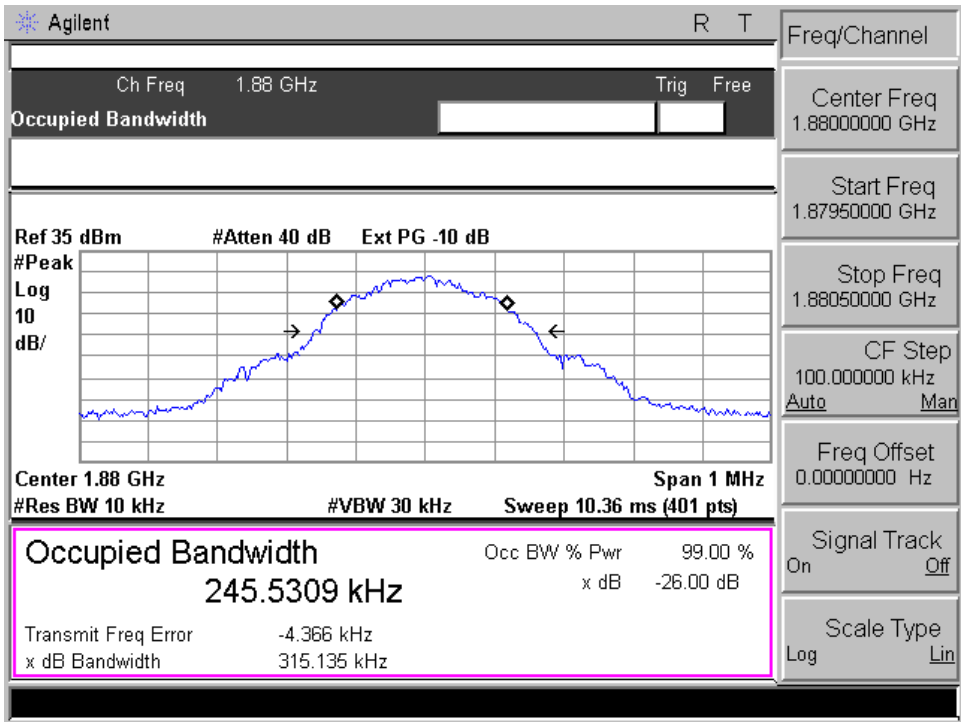
99% Occupied Bandwidth plot on channel 512	GPRS1900



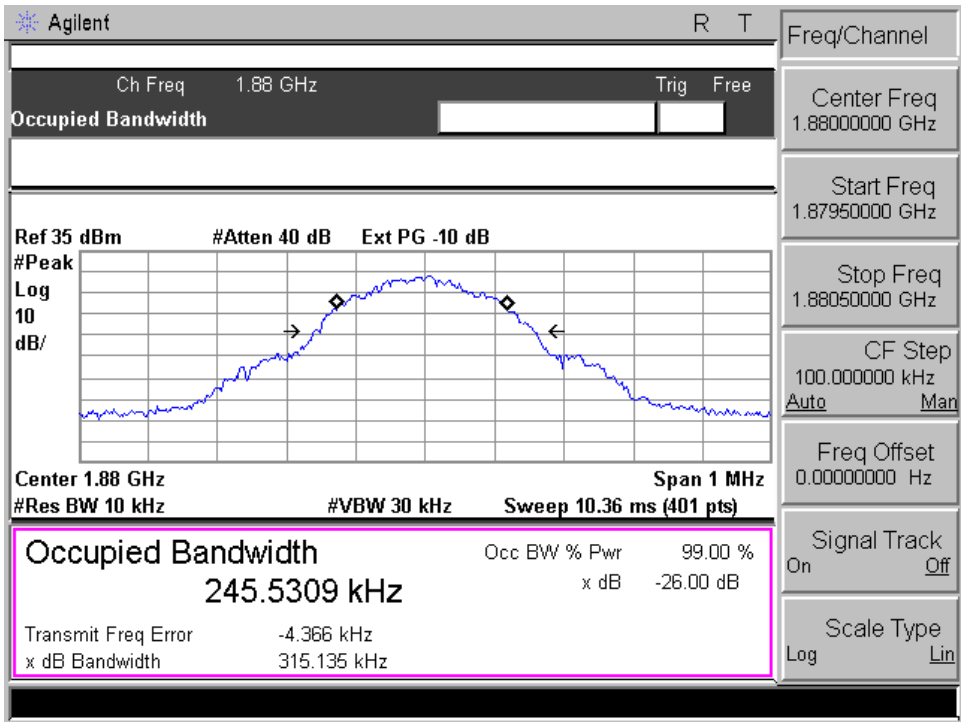
26dB Bandwidth plot on channel 512	GPRS1900



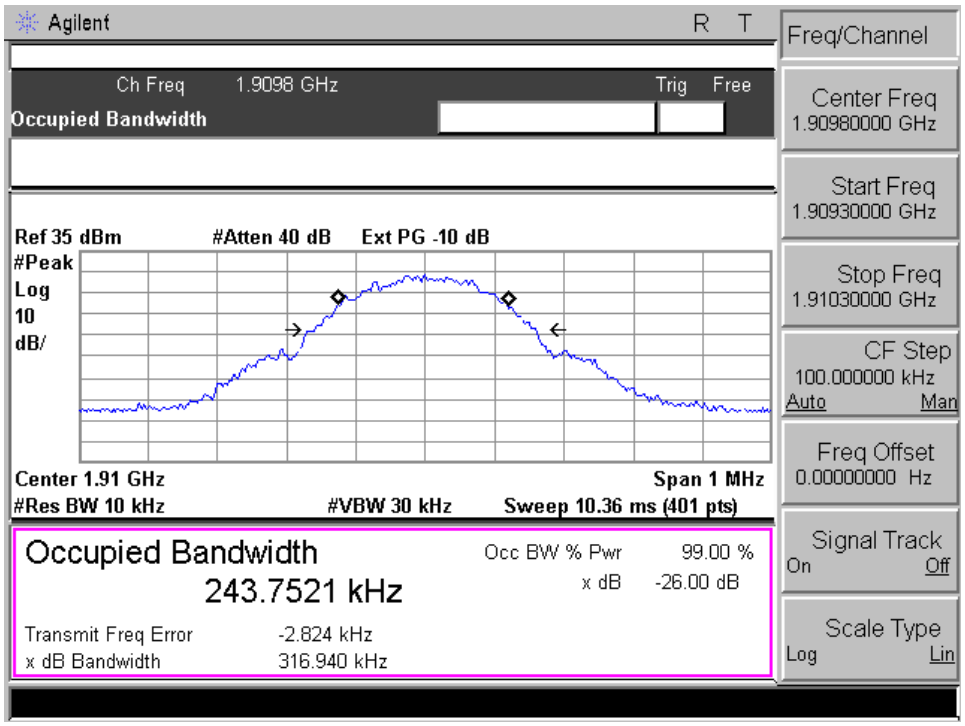
99% Occupied Bandwidth plot on channel 661	GPRS1900



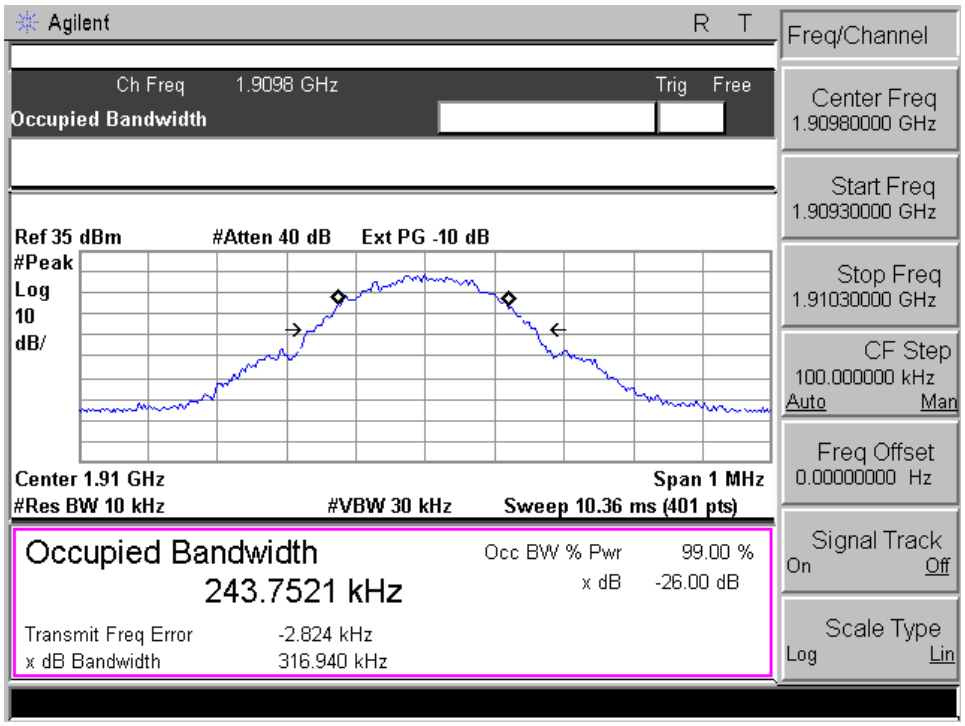
26dB Bandwidth plot on channel 661	GPRS1900



99% Occupied Bandwidth plot on channel 810	GPRS1900



26dB Bandwidth plot on channel 810	GPRS1900



7.8 CONDUCTED BAND EDGE

7.8.1 Applicable Standard

According to FCC Part 2.1051 and FCC Part 22.917(a) and 24.238(a) and FCC KDB 971168 D01 Section6.0

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.

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

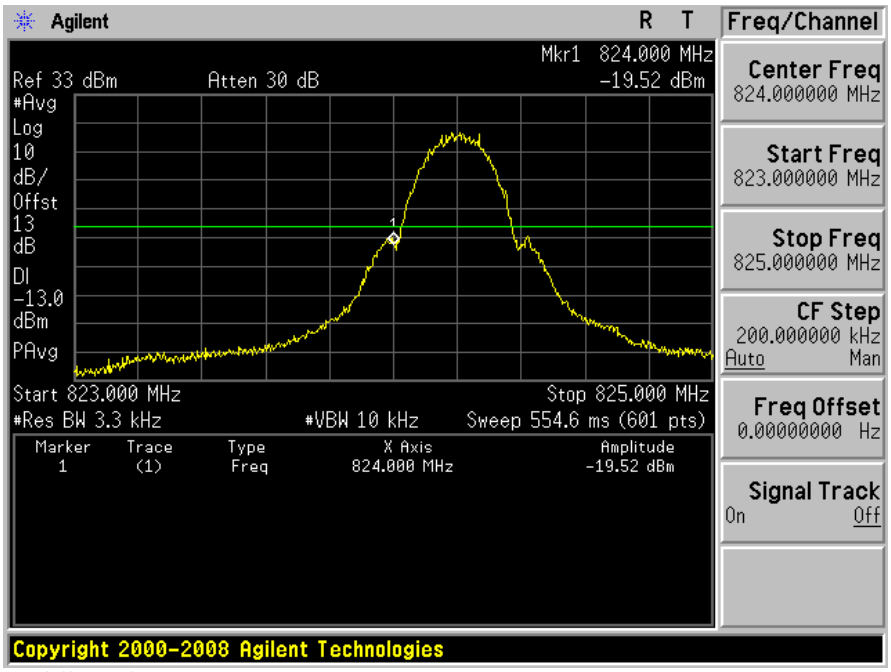
The testing follows FCC KDB 971168 v02r02 Section 6.0.
The EUT was connected to Spectrum Analyzer and Base Station via power divider.
The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
The path loss was compensated to the results for each measurement.
The band edges 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.

7.8.6 Test Results

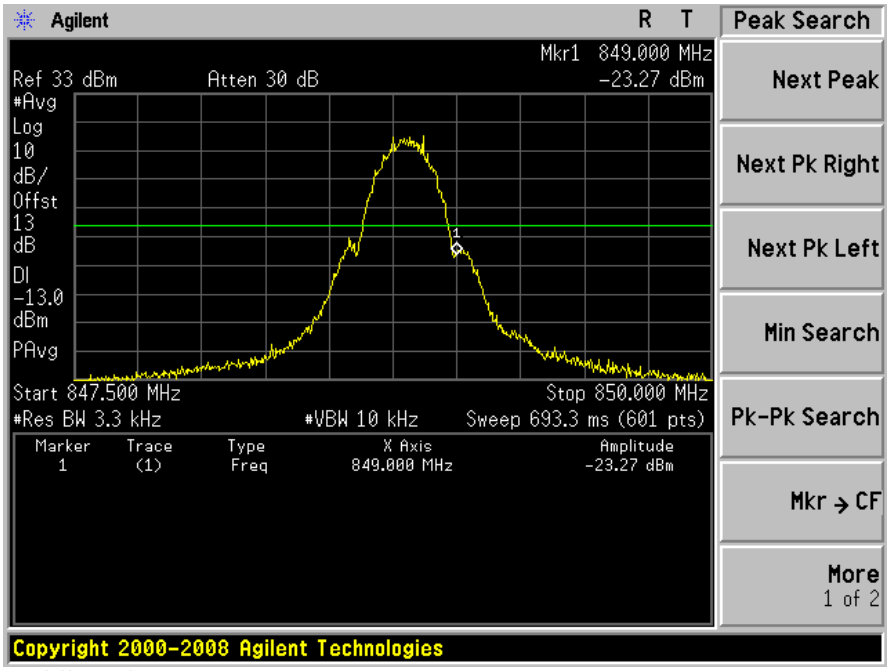
EUT：	Burglar alarm control panel	Model Name ：	PN-602
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM850/GSM1900	Test By:	Lake Xie
Results: PASS			

Conducted Band Edge plot on channel 128	GSM850



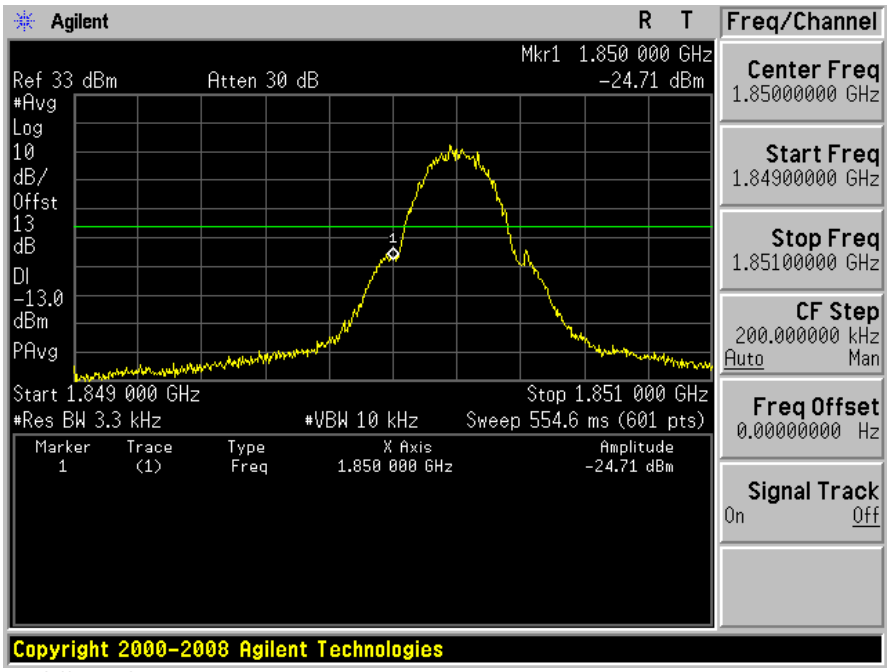
Note: Offset=Cable loss+10log(3.3/3)+Attenuator=2.59+0.41+10=13
The max Bandwidth is <330KHz, 1% of Bandwidth is 3.3KHz

Conducted Band Edge plot on channel 251	GSM850



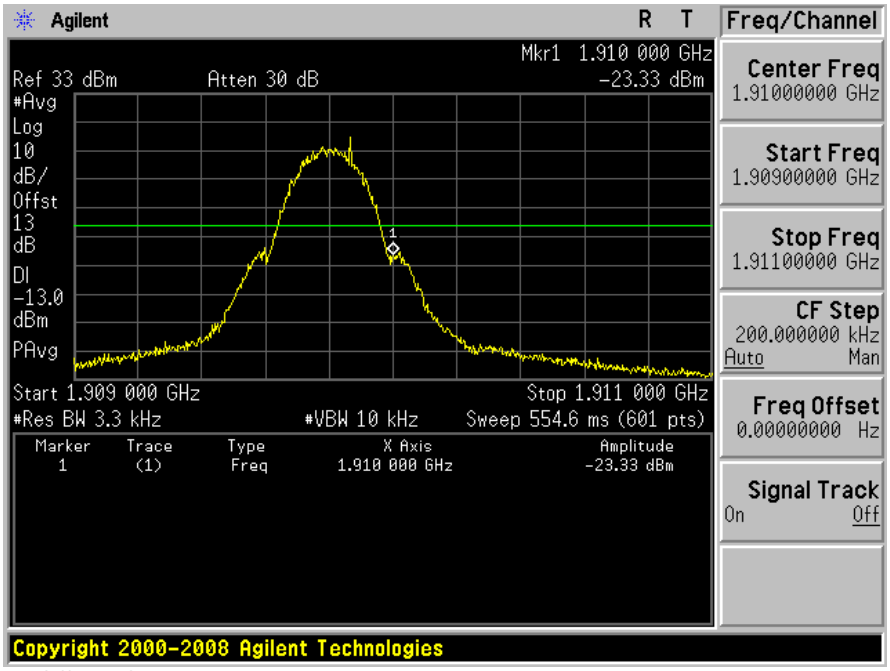
Note: Offset=Cable loss+10log(3.3/3)+Attenuator=2.59+0.41+10=13
The max Bandwidth is <330KHz, 1% of Bandwidth is 3.3KHz

Conducted Band Edge plot on channel 512	GSM1900



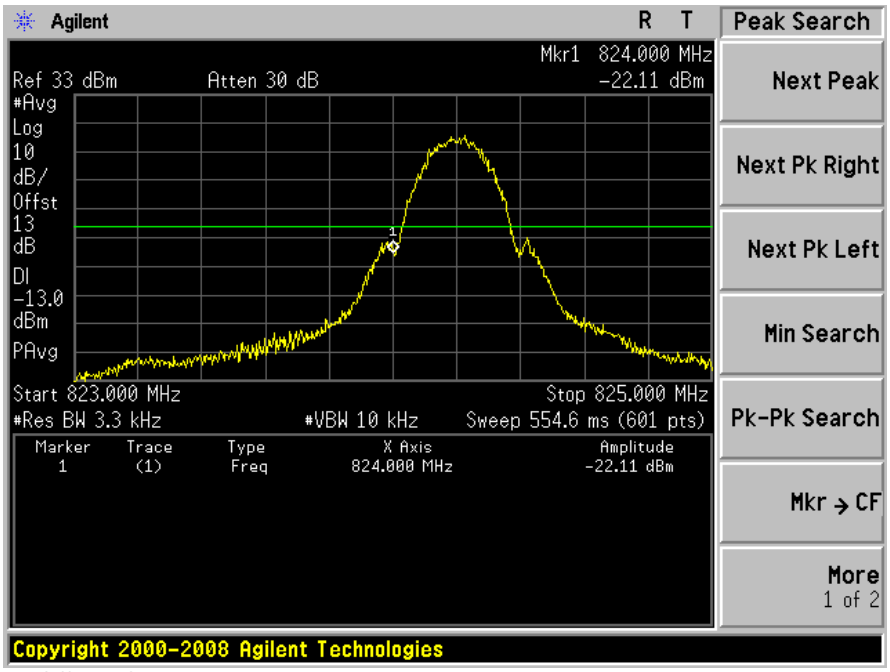
Note: Offset=Cable loss+10log(3.3/3)+Attenuator=2.59+0.41+10=13
The max Bandwidth is <330KHz, 1% of Bandwidth is 3.3KHz

Conducted Band Edge plot on channel 810	GSM1900



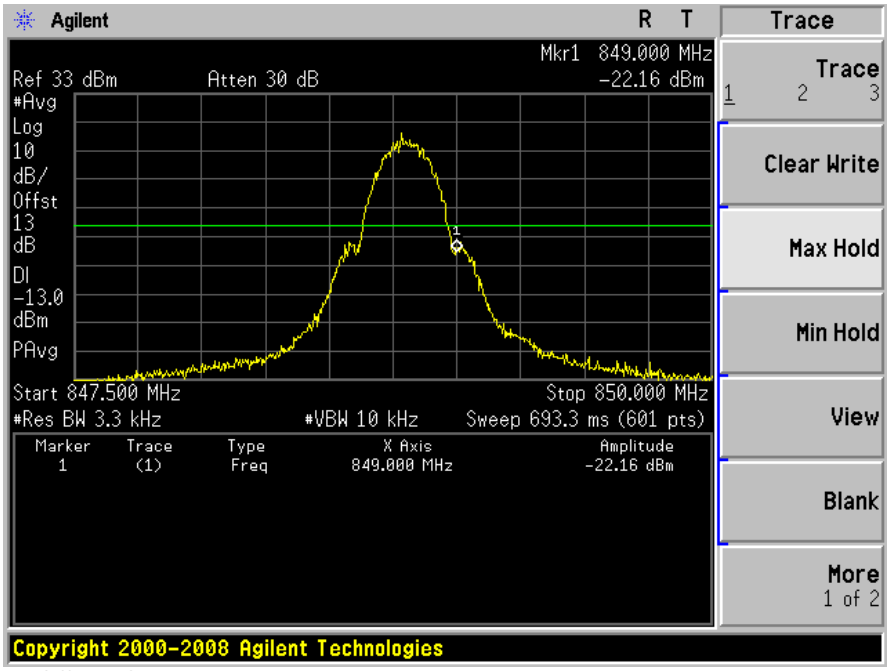
Note: Offset=Cable loss+10log(3.3/3)+Attenuator=2.59+0.41+10=13
The max Bandwidth is <330KHz, 1% of Bandwidth is 3.3KHz

Conducted Band Edge plot on channel 128	GPRS850



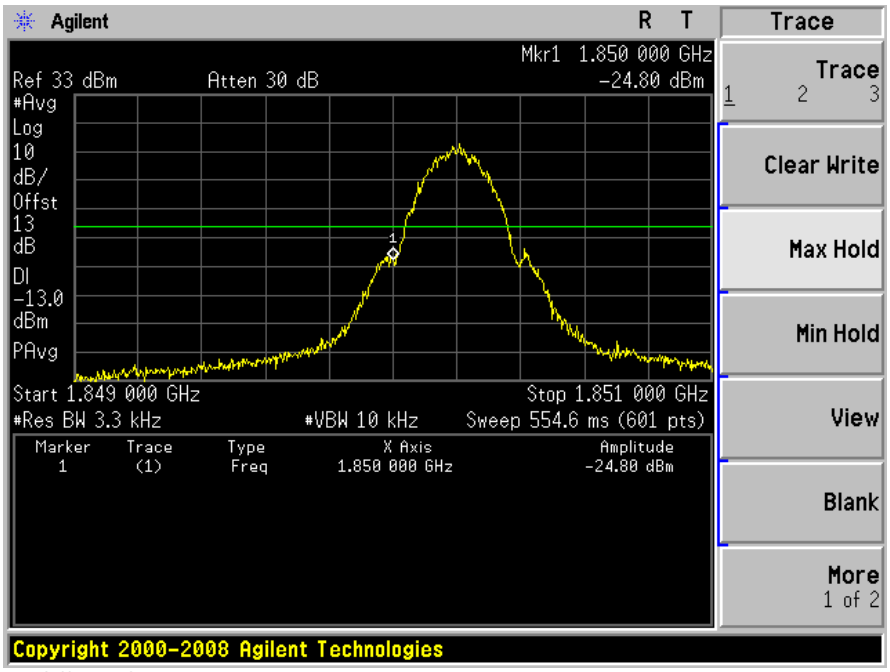
Note: Offset=Cable loss+10log(3.3/3)+Attenuator=2.59+0.41+10=13
The max Bandwidth is <330KHz, 1% of Bandwidth is 3.3KHz

Conducted Band Edge plot on channel 251	GPRS850



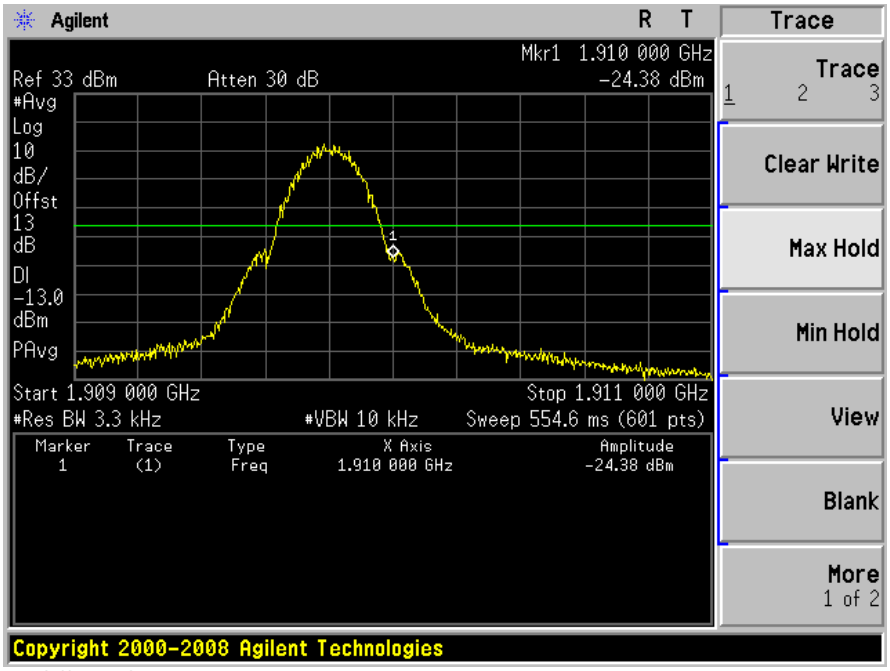
Note: Offset=Cable loss+10log(3.3/3)+Attenuator=2.59+0.41+10=13
The max Bandwidth is <330KHz, 1% of Bandwidth is 3.3KHz

Conducted Band Edge plot on channel 512	GPRS1900



Note: Offset=Cable loss+10log(3.3/3)+Attenuator=2.59+0.41+10=13
The max Bandwidth is <330KHz, 1% of Bandwidth is 3.3KHz

Conducted Band Edge plot on channel 810	GPRS1900



Note: Offset=Cable loss+10log(3.3/3)+Attenuator=2.59+0.41+10=13
The max Bandwidth is <330KHz, 1% of Bandwidth is 3.3KHz

7.9 CONDUCTED SPURIOUS EMISSION AT ANTENNA TERMINAL

7.9.1 Applicable Standard

According to FCC Part 2.1051 and FCC Part 22.917(a) and Part 24.238(a) and FCC KDB 971168 D01 Section6.0

7.9.2 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.

7.9.3 Measuring Instruments

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

7.9.4 Test Setup

Please refer to Section 6.1 of this test report.

7.9.5 Test Procedure

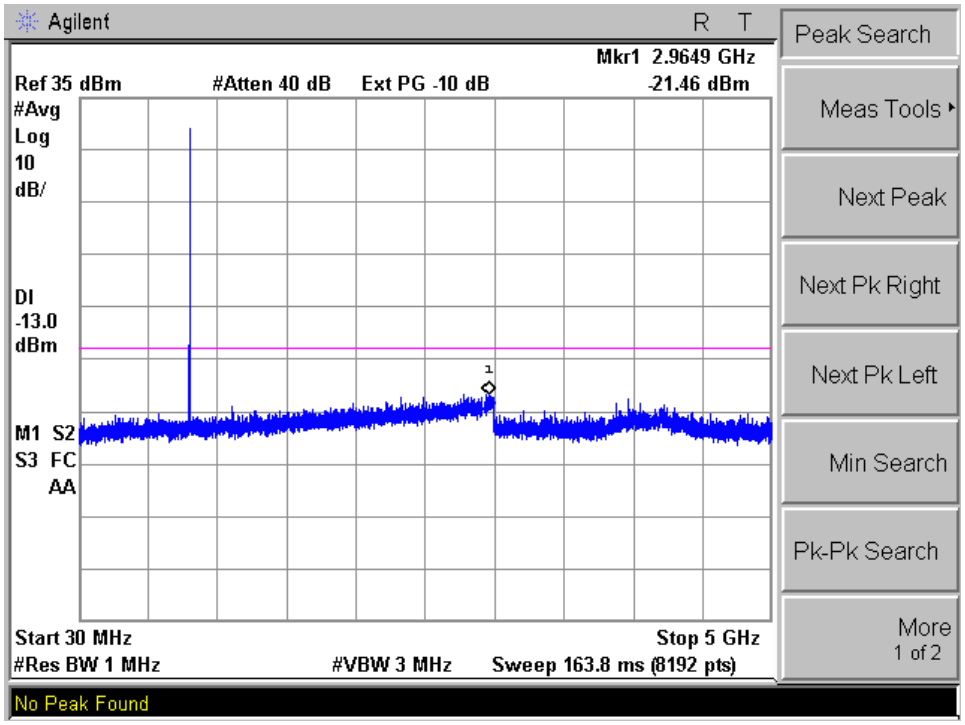
The testing follows FCC KDB 971168 v02r02 Section 6.0.
The EUT was connected to Spectrum Analyzer and Base Station via power divider.
The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator.
The path loss was compensated to the results for each measurement.
The middle channel 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.

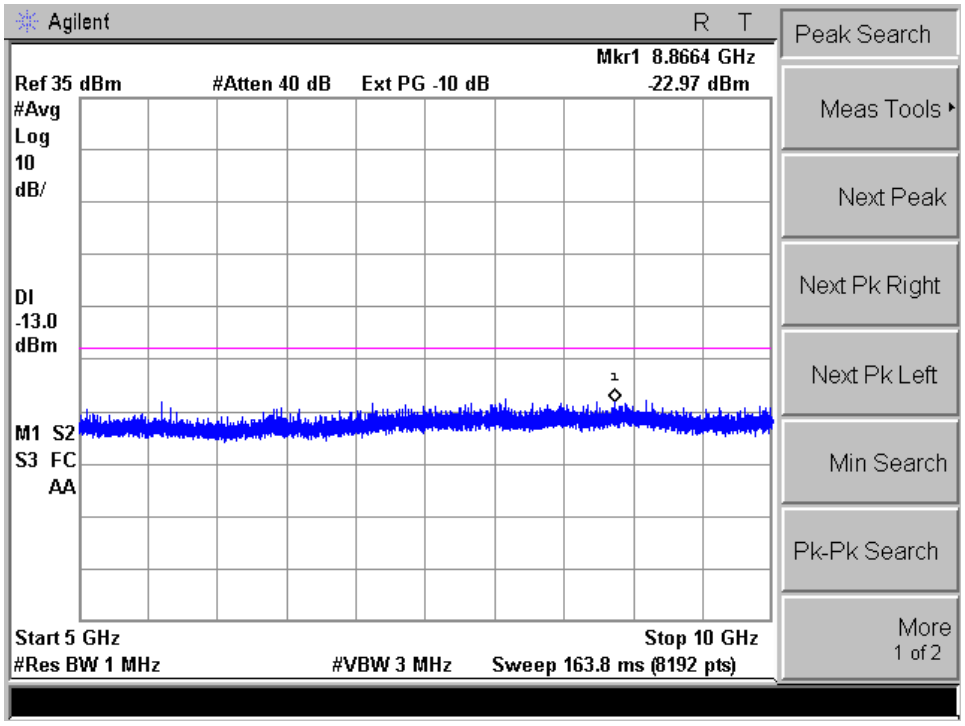
7.9.6 Test Results

EUT：	Burglar alarm control panel	Model Name ：	PN-602
Temperature:	20 ℃	Relative Humidity:	48%
Test Mode:	GSM850/GSM1900	Test By:	Lake Xie
Results: PASS			

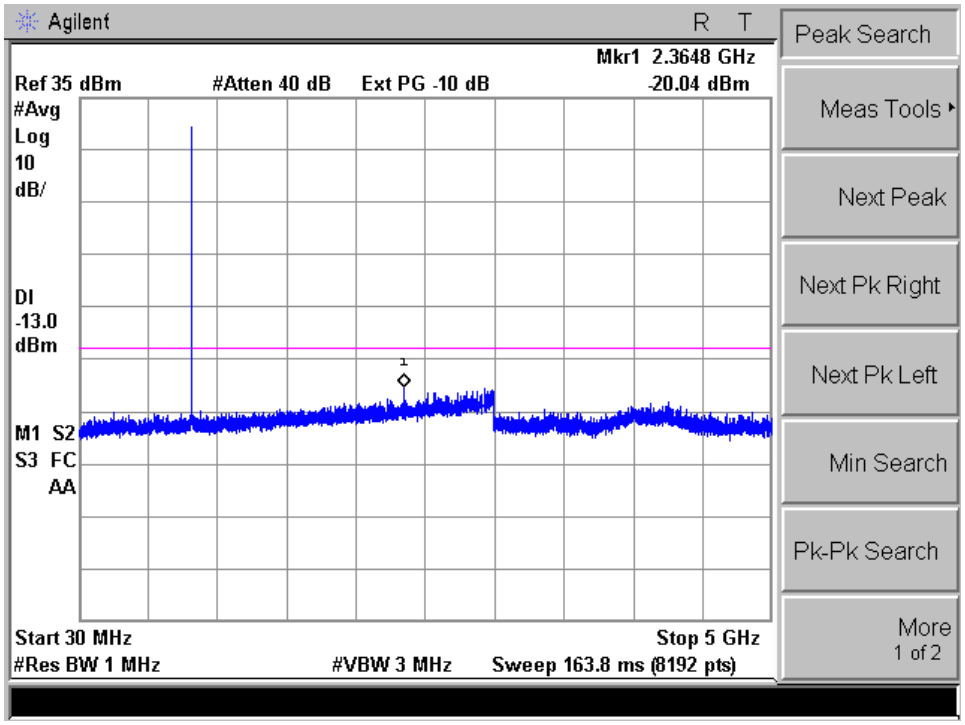
Conducted Emission Transmitting Mode CH 128 30MHz – 5GHz	GSM850



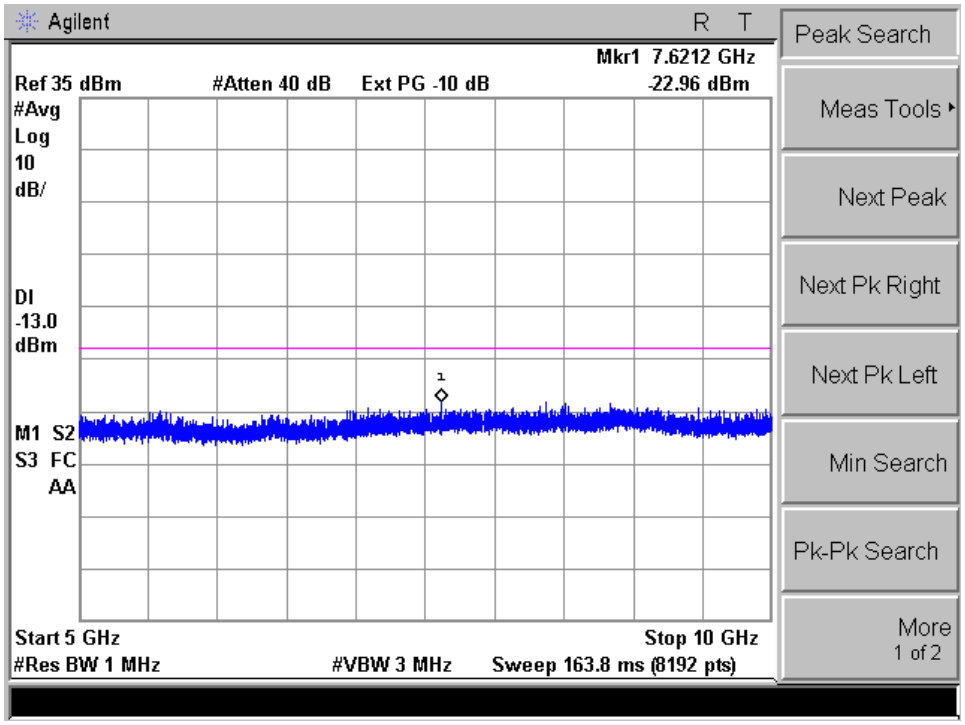
Conducted Emission Transmitting Mode CH 128 5GHz – 10GHz	GSM850



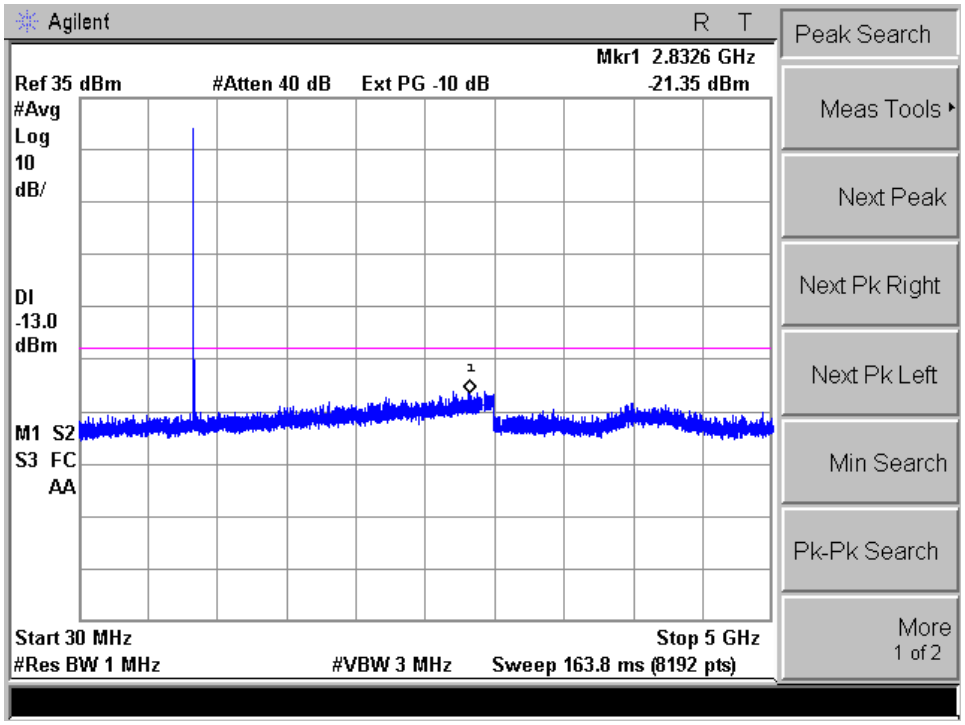
Conducted Emission Transmitting Mode CH 190 30MHz – 5GHz	GSM850



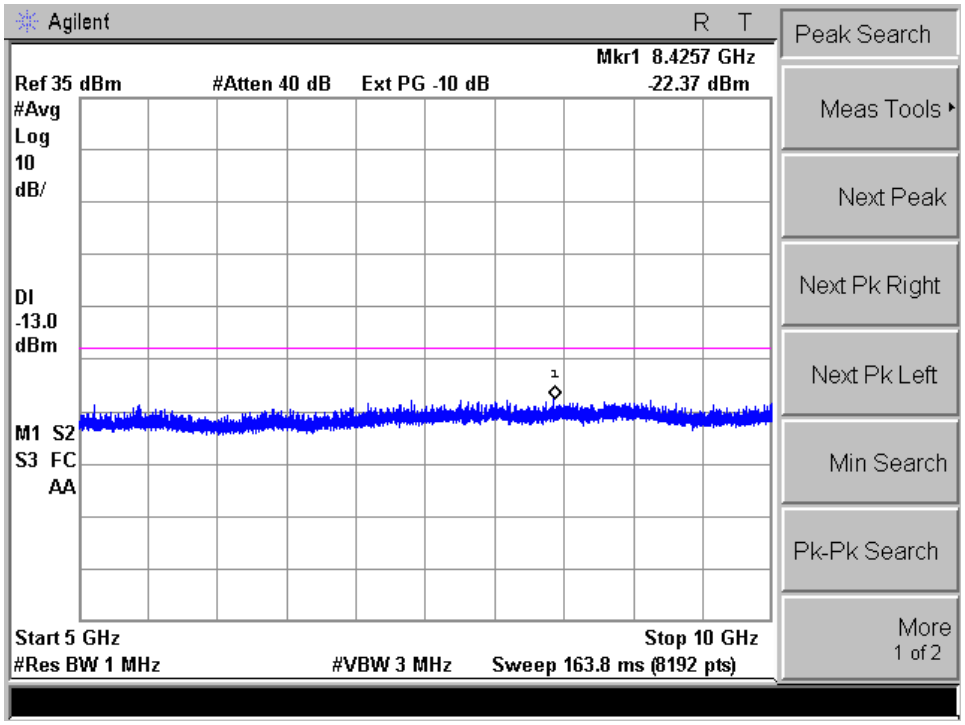
Conducted Emission Transmitting Mode CH 190 5GHz – 10GHz	GSM850



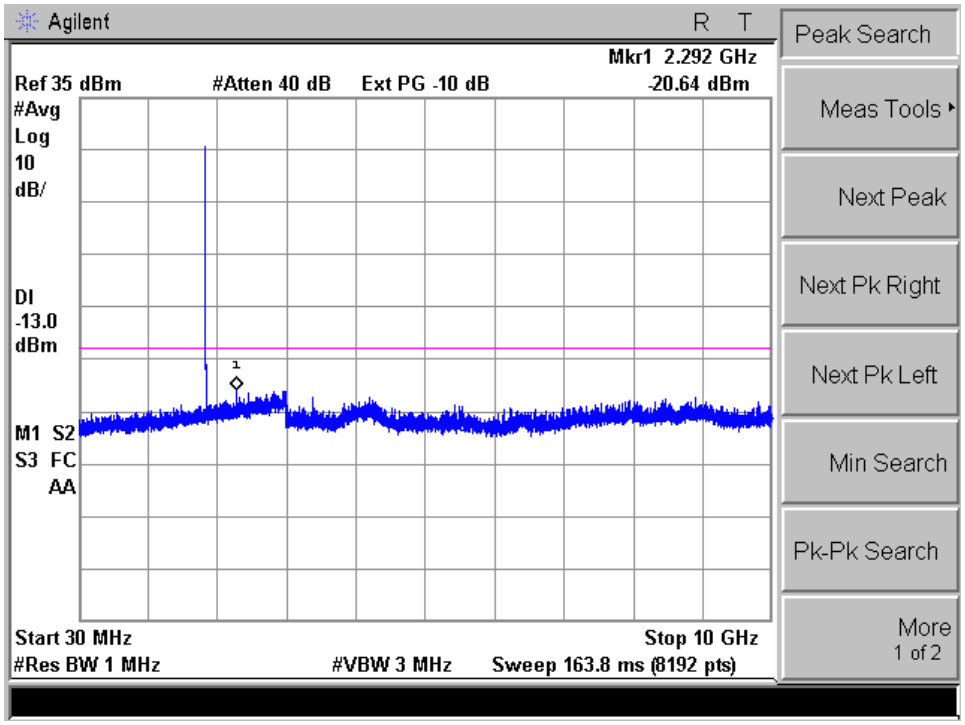
Conducted Emission Transmitting Mode CH 251 30MHz – 5GHz	GSM850



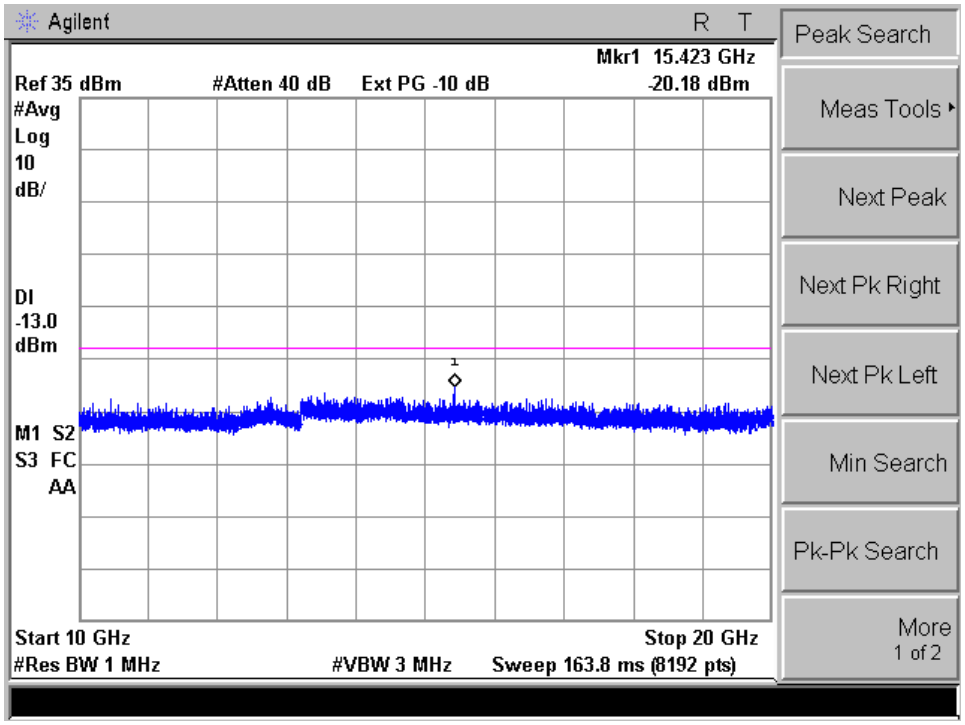
Conducted Emission Transmitting Mode CH 251 5GHz – 10GHz	GSM850



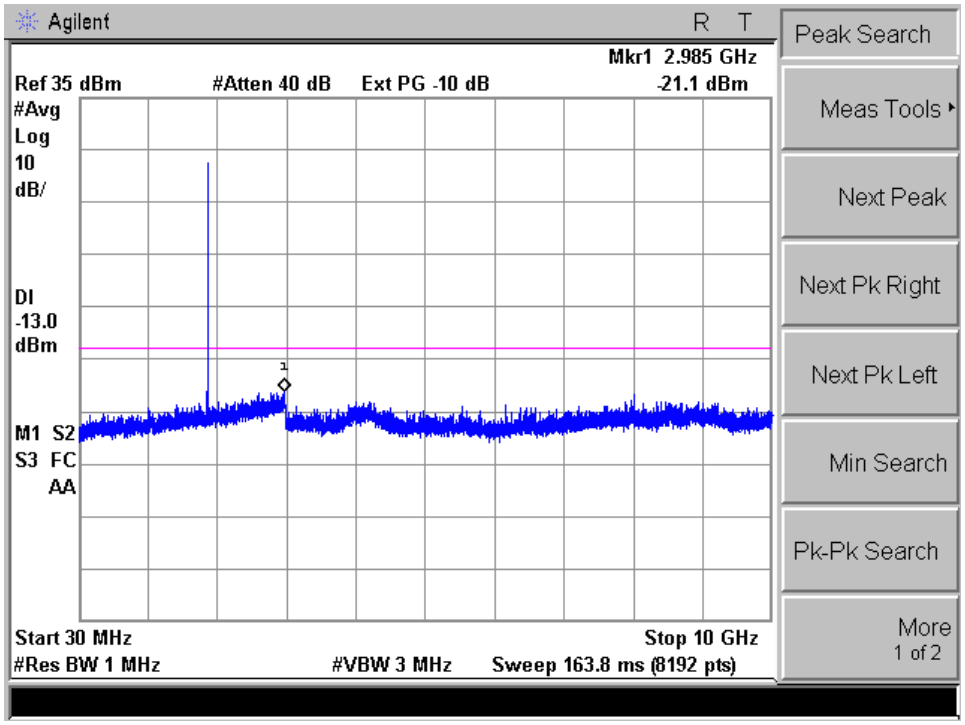
Conducted Emission Transmitting Mode CH 512 30MHz – 10GHz	GSM1900



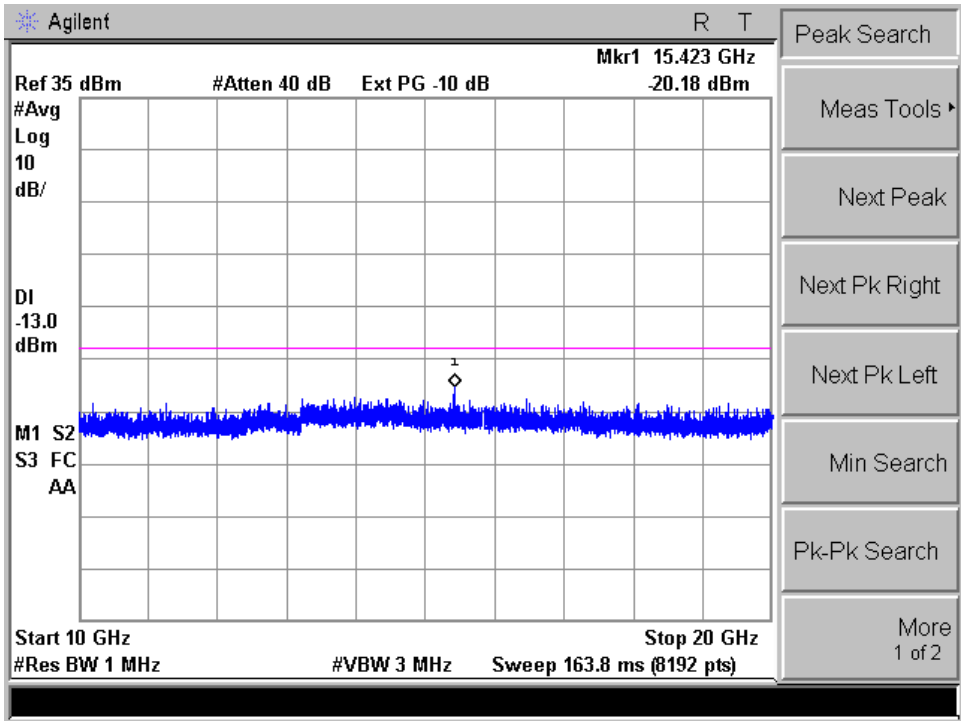
Conducted Emission Transmitting Mode CH 512 10GHz – 20GHz	GSM1900



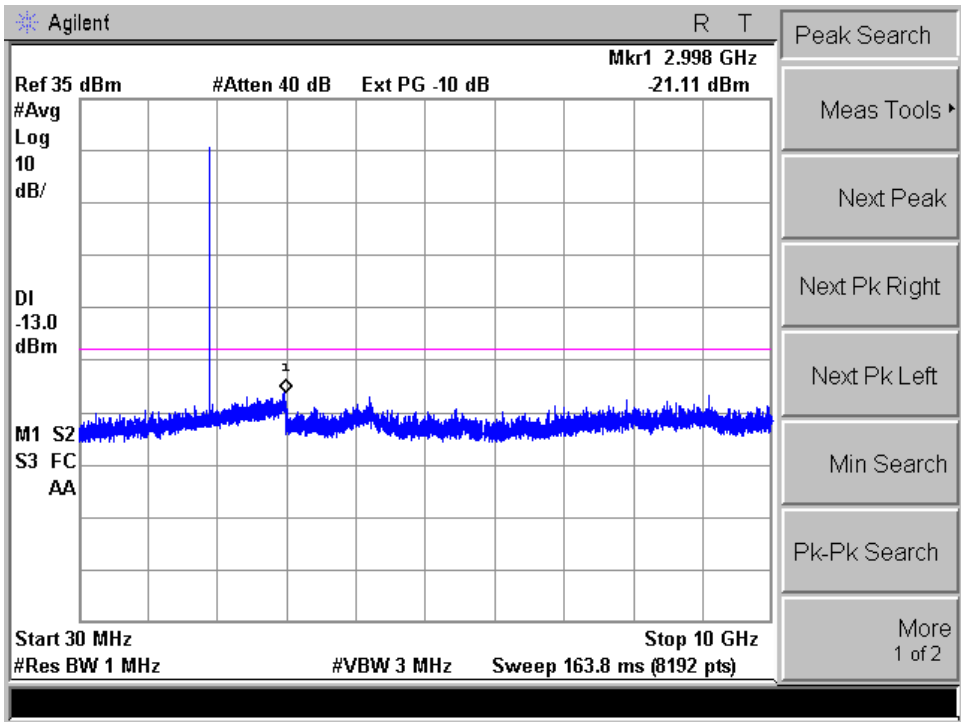
Conducted Emission Transmitting Mode CH 661 30MHz – 10GHz	GSM1900



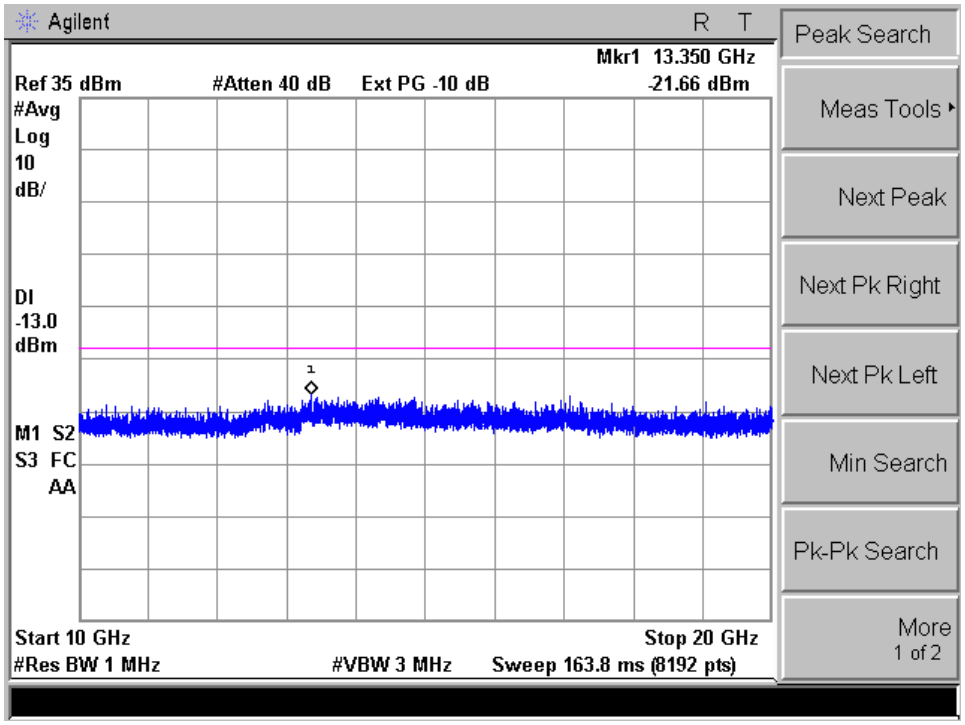
Conducted Emission Transmitting Mode CH 661 10GHz – 20GHz	GSM1900



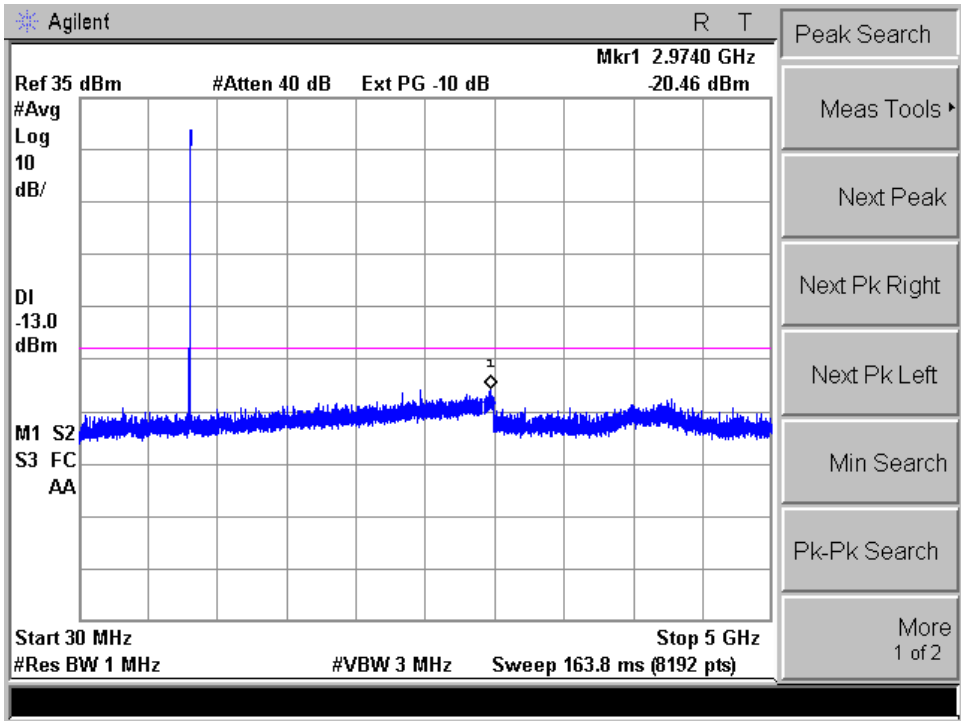
Conducted Emission Transmitting Mode CH 810 30MHz – 10GHz	GSM1900



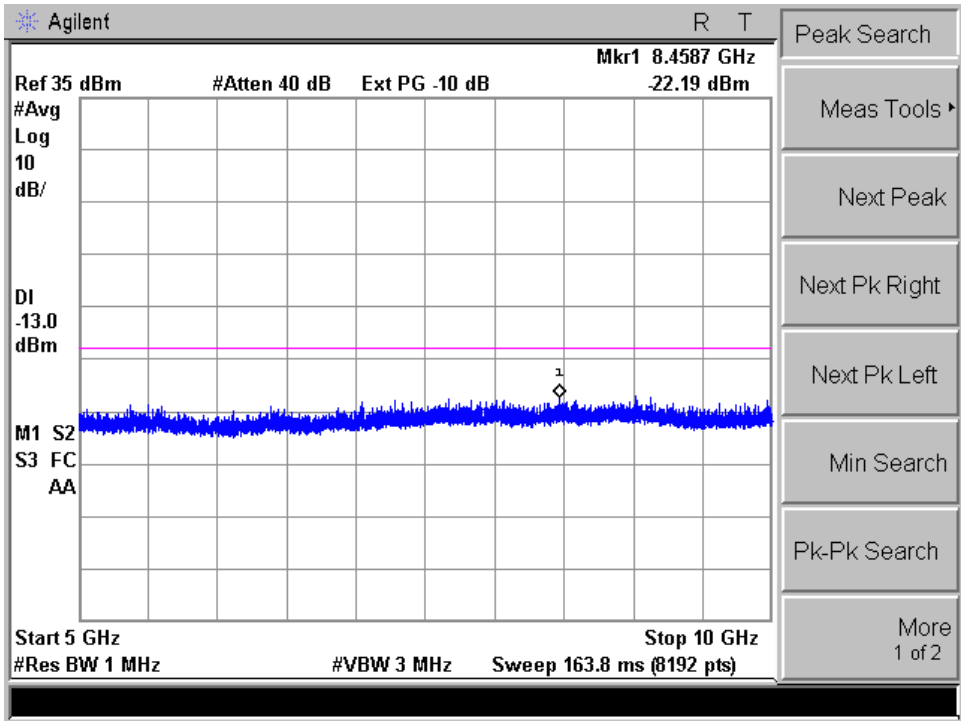
Conducted Emission Transmitting Mode CH 810 10GHz – 20GHz	GSM1900



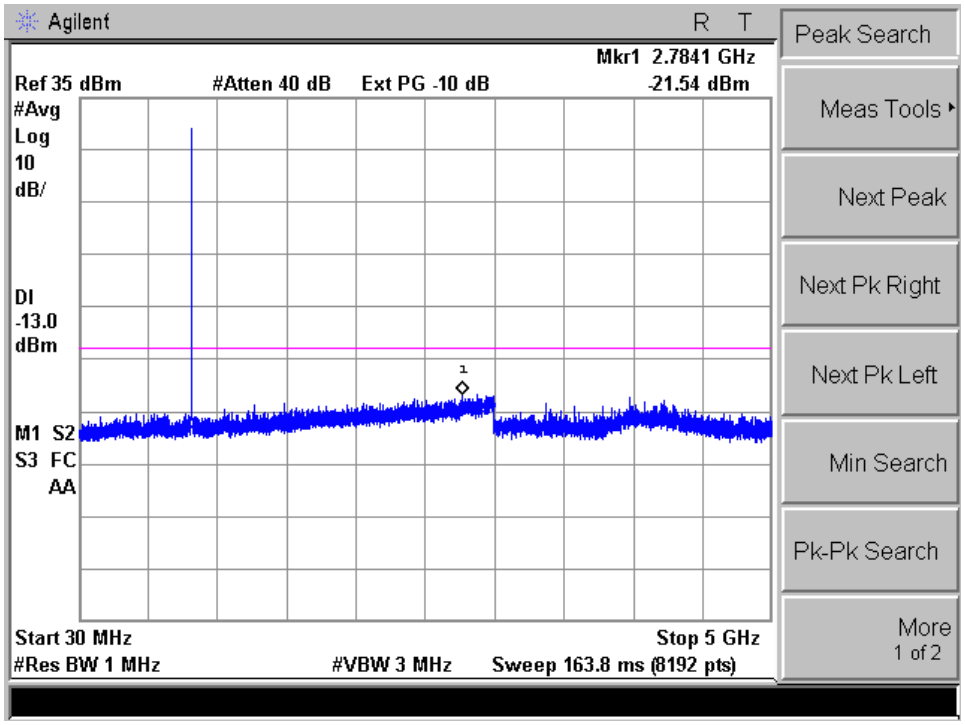
Conducted Emission Transmitting Mode CH 128 30MHz – 5GHz	GPRS850



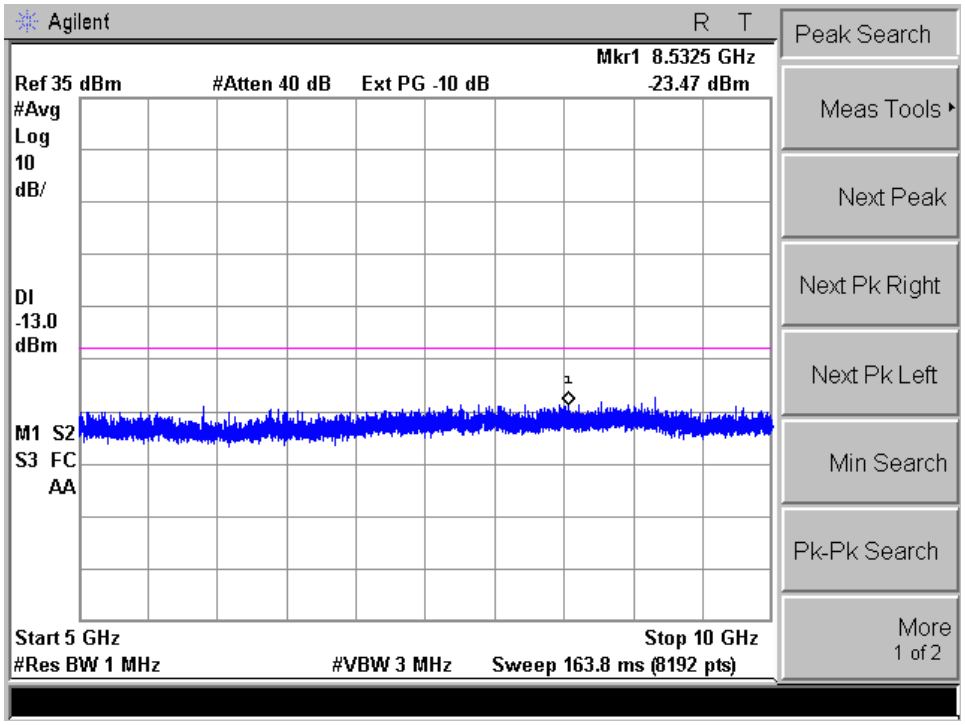
Conducted Emission Transmitting Mode CH 128 5GHz – 10GHz	GPRS850



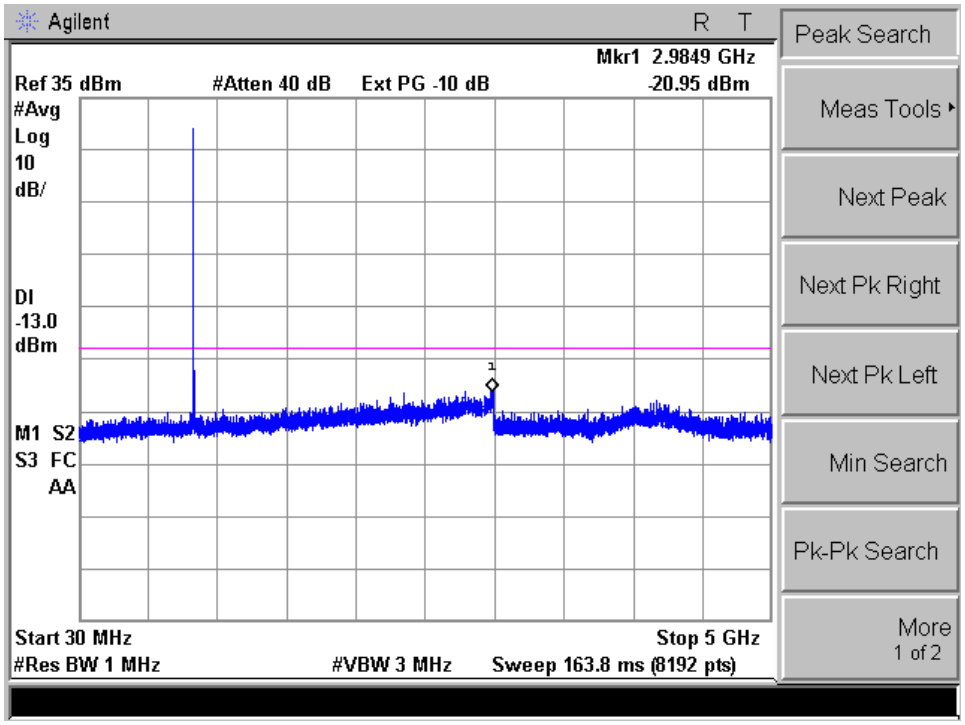
Conducted Emission Transmitting Mode CH 190 30MHz – 5GHz	GPRS850



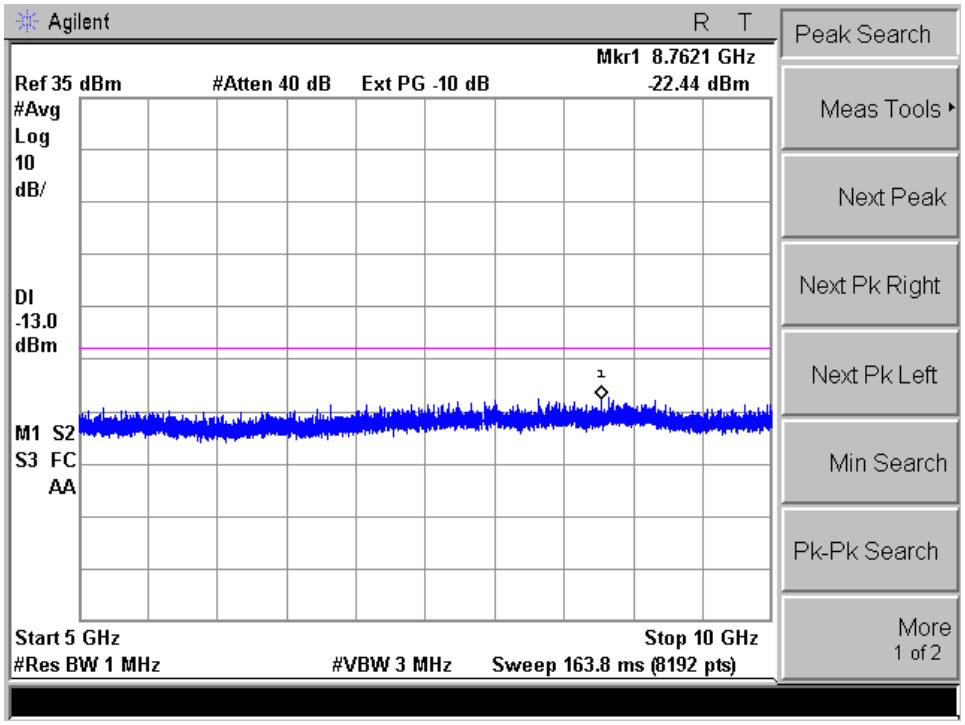
Conducted Emission Transmitting Mode CH 190 5GHz – 10GHz	GPRS850



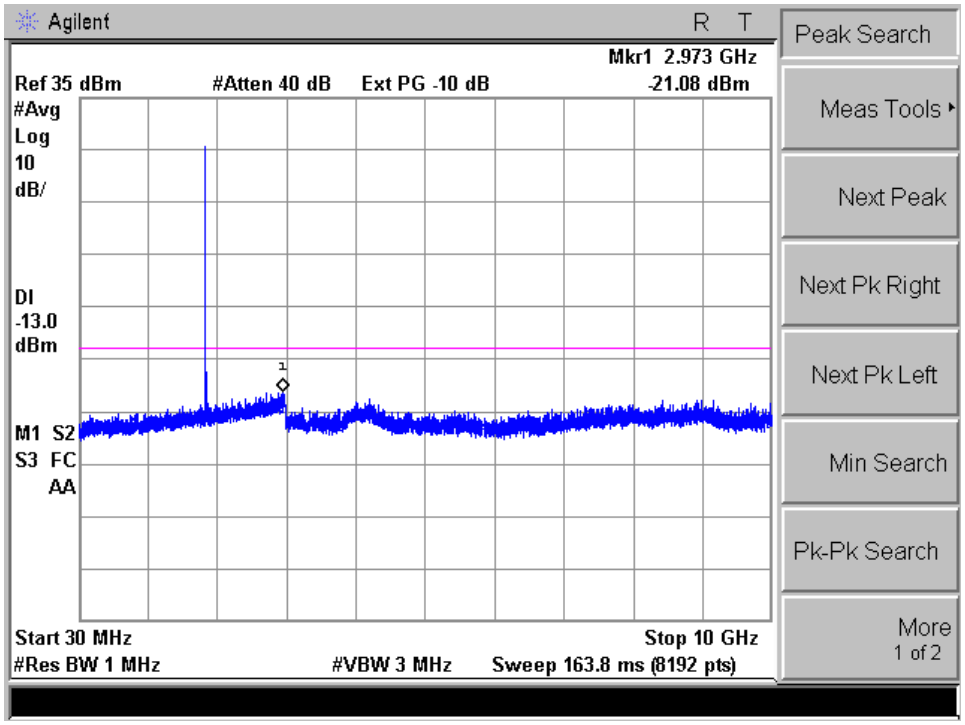
Conducted Emission Transmitting Mode CH 251 30MHz – 5GHz	GPRS850



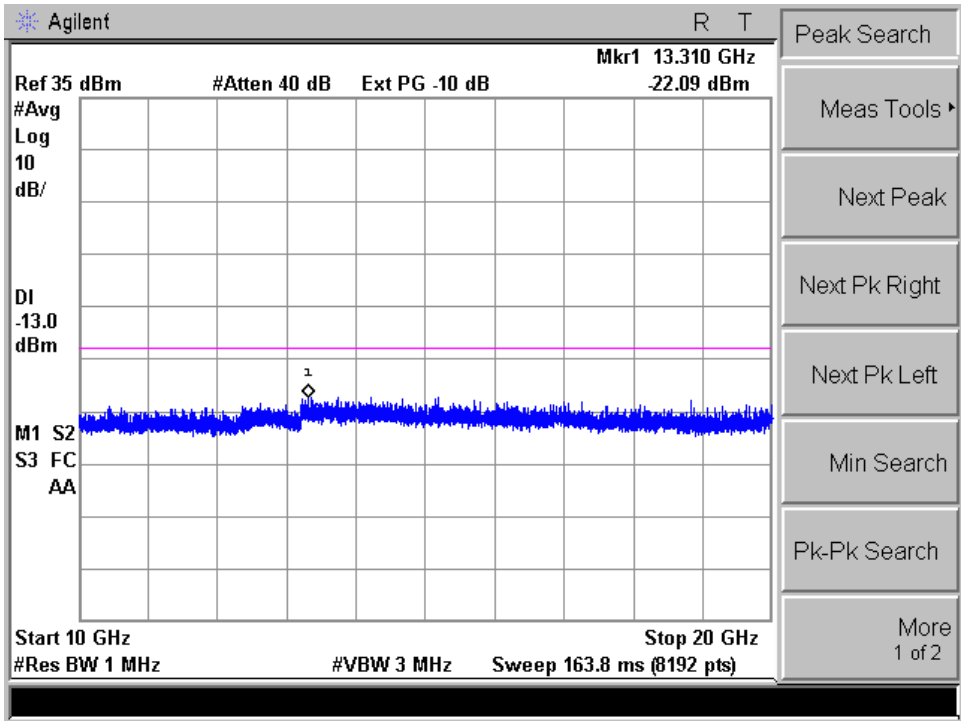
Conducted Emission Transmitting Mode CH 251 5GHz – 10GHz	GPRS850



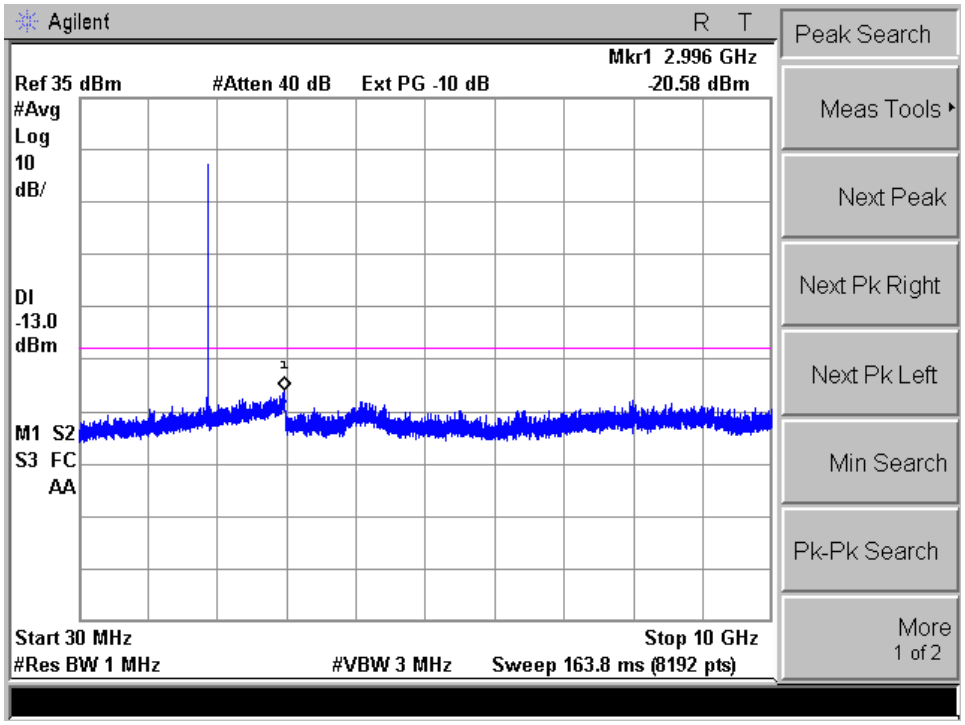
Conducted Emission Transmitting Mode CH 512 30MHz – 10GHz	GPRS1900



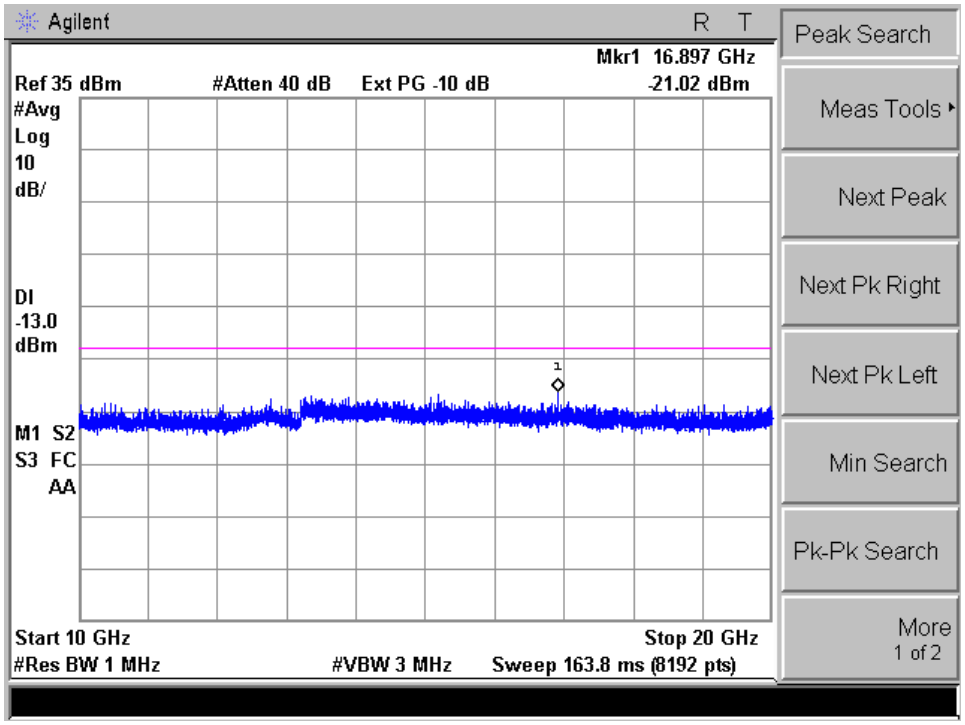
Conducted Emission Transmitting Mode CH 512 10GHz – 20GHz	GPRS1900



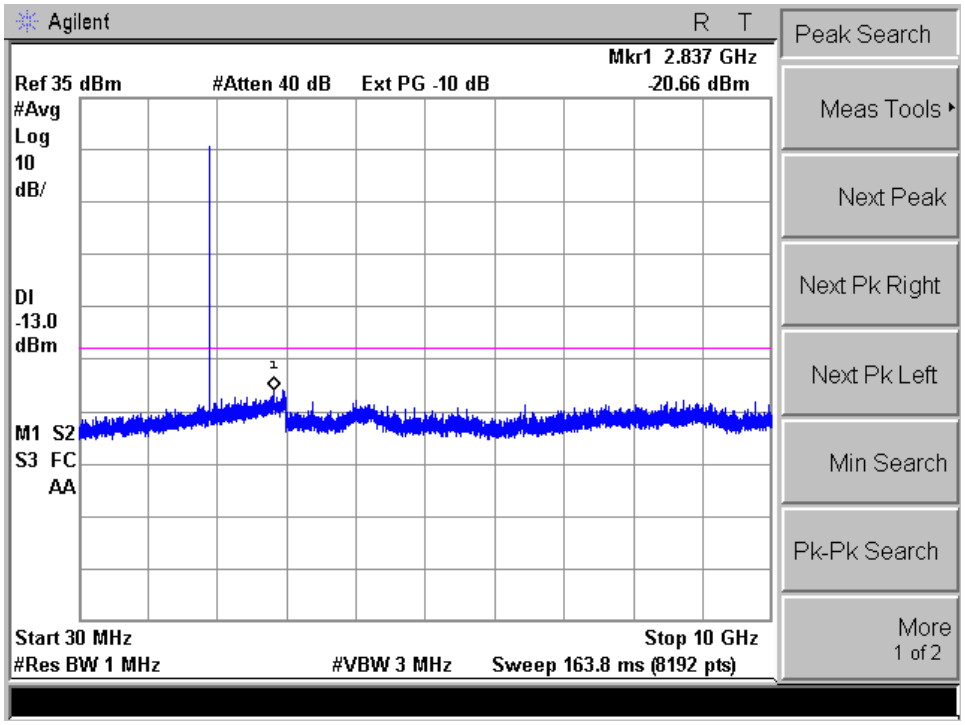
Conducted Emission Transmitting Mode CH 661 30MHz – 10GHz	GPRS1900



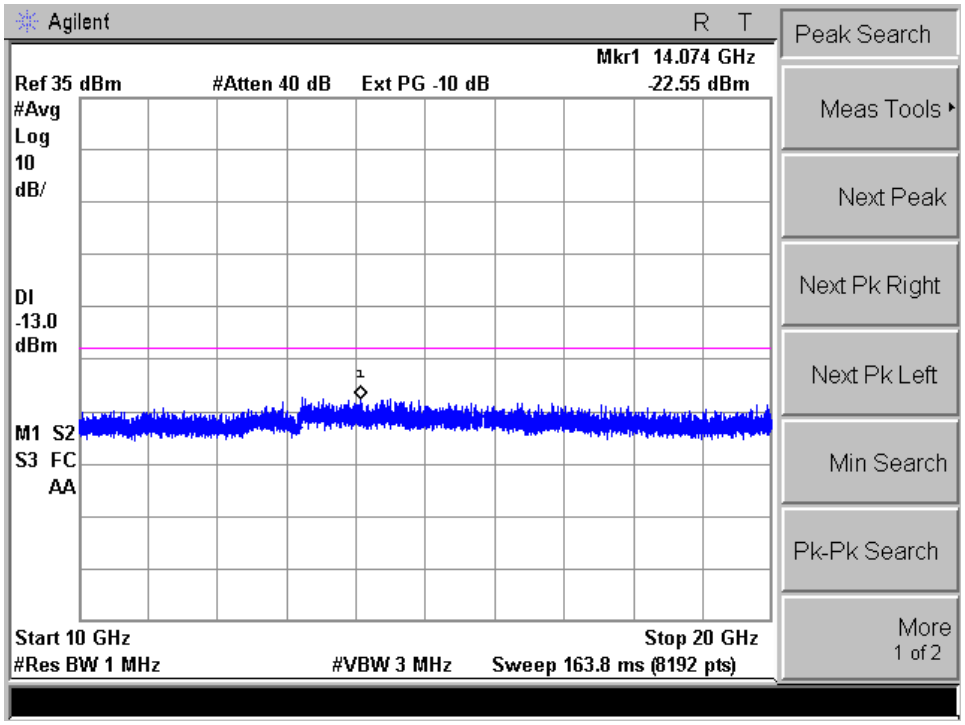
Conducted Emission Transmitting Mode CH 661 10GHz – 20GHz	GPRS1900



Conducted Emission Transmitting Mode CH 810 30MHz – 10GHz	GPRS1900



Conducted Emission Transmitting Mode CH 810 10GHz – 20GHz	GPRS1900



END OF REPORT