TESTING
No. L2264

Part 24

TEST REPORT

Product Name	Tablet MID
Model Name	B7916H3
Trademark	QBEX
FCC ID	XFM-B7916H3
Client	QBEX ELECTRONICS CORP

TA Technology (Shanghai) Co., Ltd.

GENERAL SUMMARY

Product Name	Tablet MID	**Model Name**	B7916H3
FCC ID	XFM-B7916H3		
Report No.	RXA1212-1125RF02R2		
Client	QBEX ELECTRONICS CORP		
Manufacturer	QBEX ELECTRONICS CORP		
Reference Standard(s)	**FCC CFR47 Part 2 (2012-12)** Frequency Allocations And Radio Treaty Matters; General Rules And Regulations **FCC CFR47 Part 24E (2012-12)** Personal Communications Services **ANSI/TIA-603-C(2004)** Land mobile FM or PM Communications Equipment Measurements and Performance Standards.		
Conclusion	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. General Judgment: **Pass** (Stamp) **Date of issue: January 17th, 2013**		
Comment	The test result only responds to the measured sample.		

Approved by 杨伟中 Director **Revised by** 徐凯 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.

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
Contact: Yang Weizhong
Telephone: +86-021-50791141/2/3
Fax: +86-021-50791141/2/3-8000
Website: http://www.ta-shanghai.com
E-mail: yangweizhong@ta-shanghai.com

1.3. Applicant Information

Company: QBEX ELECTRONICS CORP
Address: 1606 NW 84th AVE,Miami,FL 33126, U.S.A.
City: Miami
Postal Code: /
Country: U.S.A.

1.4. Manufacturer Information

Company: QBEX ELECTRONICS CORP
Address: 1606 NW 84th AVE,Miami,FL 33126, U.S.A.
City: Miami
Postal Code: /
Country: U.S.A.

1.5. Information of EUT

General information

Name of EUT:	Tablet MID		
IMEI:	355227047266028		
Hardware Version:	Windows 2000,Windows XP 32/64,Windows Vista 32/64, WinCE, Linux		
Software Version:	Android 4.0		
Antenna Type:	Internal Antenna		
Device Operating Configurations:			
Operating Mode(s):	GSM1900; (tested)		
Test Modulation:	GSM(GMSK, 8PSK)		
GPRS Multislot Class:	12		
EGPRS Multislot Class:	12		
Maximum E.I.R.P.	GSM 1900: 23.83 dBm		
Power Supply:	Battery or Charger (AC adaptor)		
Rated Power Supply Voltage:	3.7V		
Extreme Voltage:	Minimum: 3.3V Maximum: 4.0V		
Extreme Temperature:	Lowest: -5°C Highest: +40°C		
Test Channel: (Low - Middle - High)	512 - 661 - 810 (GSM 1900) (tested)		
Operating Frequency Range(s)	Band	Tx (MHz)	Rx (MHz)
	GSM1900	1850.2 ~ 1909.8	1930.2 ~ 1989.8

Equipment Under Test (EUT) is a Tablet MID. The EUT tested GSM1900 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 December 5, 2012 to December 10, 2012.

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
GSM 1900	GSM GPRS(GMSK, 1TXslot) EGPRS(GMSK, 1TXslot) EGPRS(8PSK, 1TXslot)	GSM GPRS(GMSK, 1TXslot) EGPRS(GMSK, 1TXslot) EGPRS(8PSK, 1TXslot)

Note: The maximum RF output power levels are GMSK 1TXslot for GPRS mode, GMSK/8PSK 1TXslot for EGPRS mode, So GSM, GPRS(GMSK, 1TXslot), EGPRS(GMSK/8PSK, 1TXslot), WCDMA(12.2kbps), HSDPA (Sub - Test 1) modes were used for all tests.
For frequency stability, RSE and CSE, only the maximum RF output power level is chosen.

2.3. RF Power Output

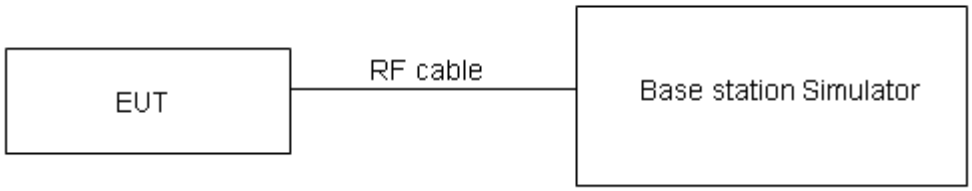
Ambient condition

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 max power transmission and proper modulation.

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.

Test Results

GSM 1900		Conducted Power(dBm)		
		Channel 512	Channel 661	Channel 810
		1850.2(MHz)	1880(MHz)	1909.8(MHz)
GSM	Results	30.24	30.12	29.69
GPRS (GMSK)	1TXslot	**30.31**	30.2	29.77
	2TXslots	28.06	27.9	27.78
	3TXslots	27.96	27.83	27.75
	4TXslots	26.95	26.84	26.73
EGPRS (GMSK)	1TXslot	**30.25**	30.21	29.73
	2TXslots	28.02	27.89	27.72
	3TXslots	27.93	27.81	27.69
	4TXslots	26.91	26.80	26.64
EGPRS (8PSK)	1TXslot	**26.3**	26.2	26.04
	2TXslots	25.62	25.15	25
	3TXslots	24.25	24.13	24
	4TXslots	22.77	22.64	22.48

Note:

1) The maximum RF Output Power numbers are marks in bold.

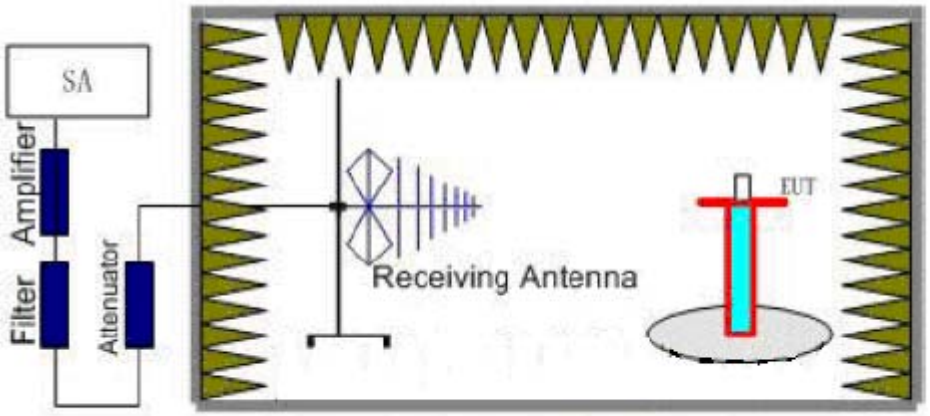
2.4. Effective Isotropic Radiated Power

Ambient condition

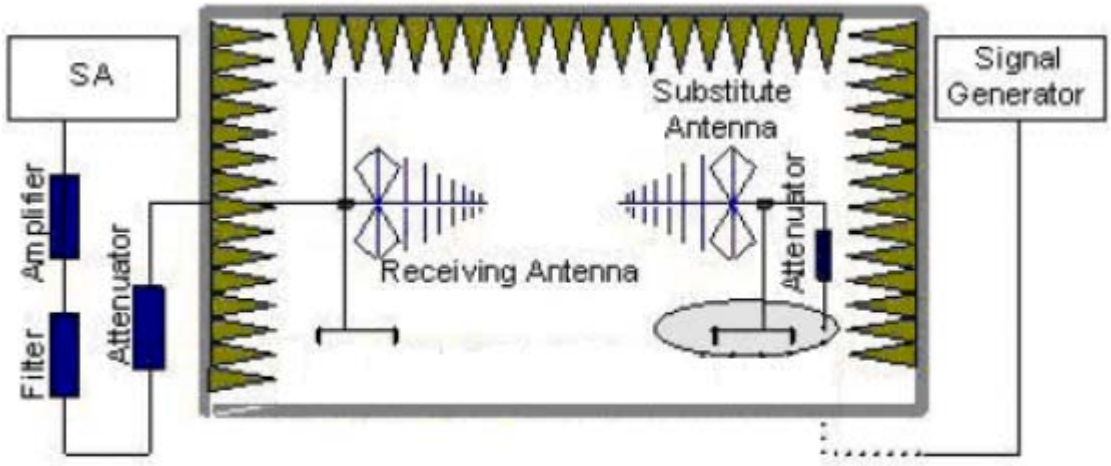
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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 a 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 Cable loss + 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)	⩽ 2 W (33 dBm)

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 dB

Test Results:Pass

	Channel	Polarization	LVL (dBm)	SG+30 (dBm)	Gain (dBi)	Cable Loss (dB)	E.I.R.P. (dBm)
GSM 1900	512	Vertical	-26.43	38.95	1.92	18.18	22.69
	661	Vertical	-25.46	37.82	1.94	18.27	21.49
	810	Vertical	-23.87	37.11	1.9	18.3	20.71
GSM 1900 GPRS(GMSK)	512	Vertical	-26.23	40.09	1.92	18.18	23.83
	661	Vertical	-25.45	38.65	1.94	18.27	22.32
	810	Vertical	-23.54	37.88	1.9	18.3	21.48
GSM 1900 EGPRS(GMSK)	512	Vertical	-26.22	40.08	1.92	18.18	23.82
	661	Vertical	-25.46	38.66	1.94	18.27	22.33
	810	Vertical	-23.55	37.89	1.9	18.3	21.49
GSM 1900 EGPRS(8PSK)	512	Vertical	-26.25	39.11	1.92	18.18	22.85
	661	Vertical	-25.17	38.16	1.94	18.27	21.83
	810	Vertical	-23.24	37.74	1.9	18.3	21.34

Note: 1. E.R.P =S.G+30. - Tx Cable loss + Substitution antenna gain – 2.15.

2. EIRP= E.R.P+2.15

2.5. Occupied Bandwidth

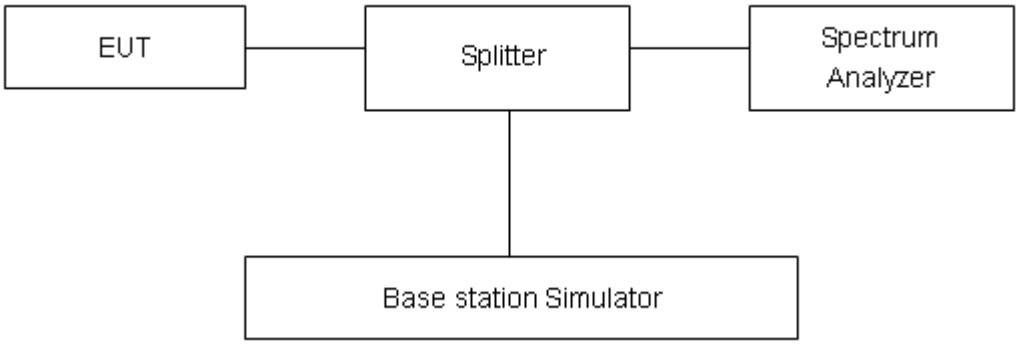
Ambient condition

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. RBW is set to 3kHz, VBW is set to 10kHz for GSM 1900. 99% power and -26dBc occupied bandwidths are recorded. Spectrum analyzer plots are included on the following pages.

Test Setup



Limits

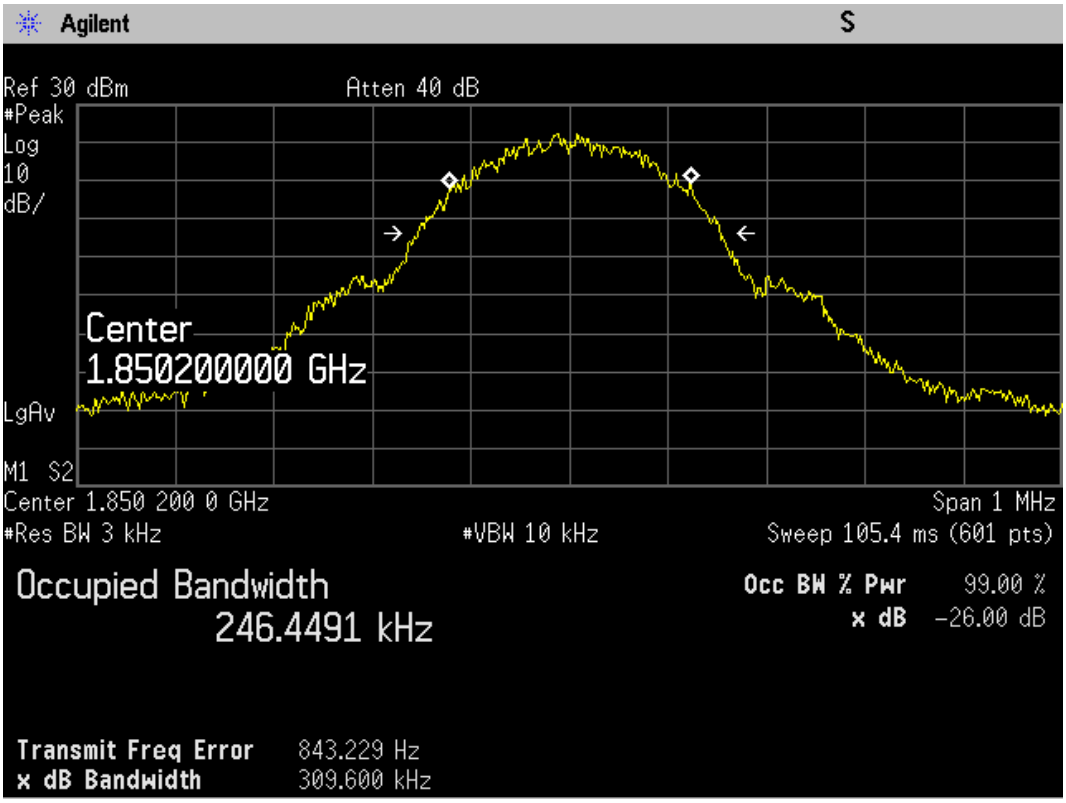
No specific occupied bandwidth requirements in part 2.1049.

Measurement Uncertainty

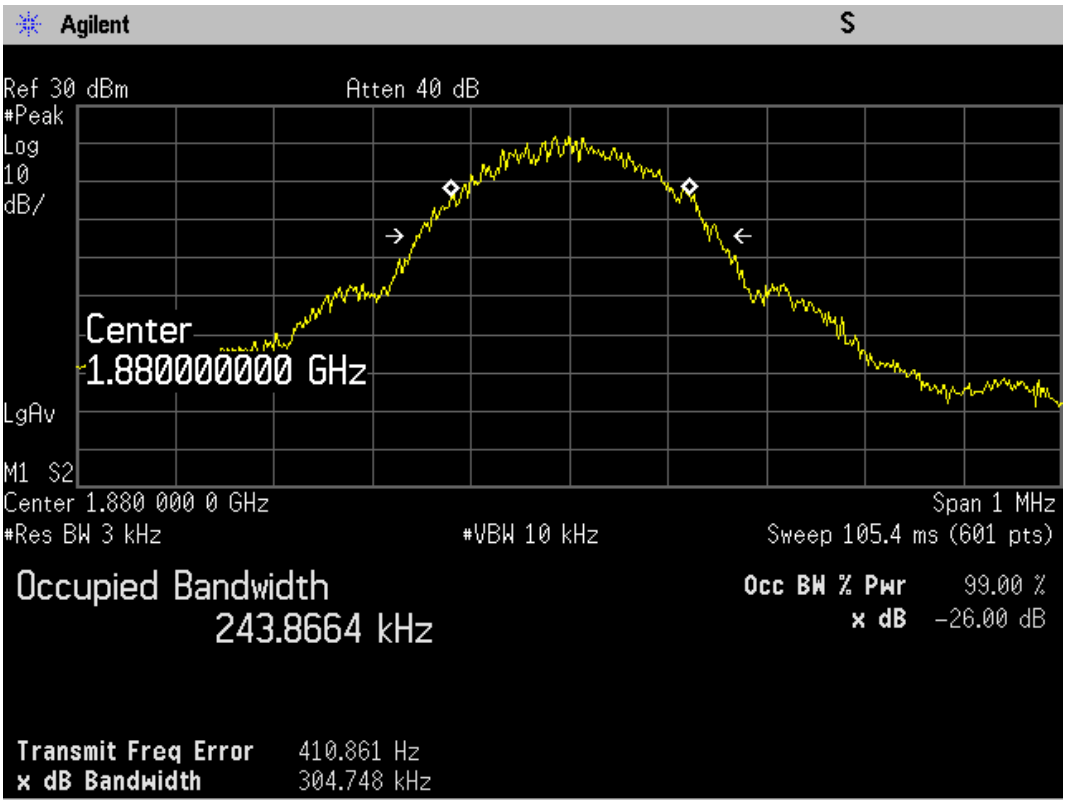
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 2, U= 624Hz.

Test Result

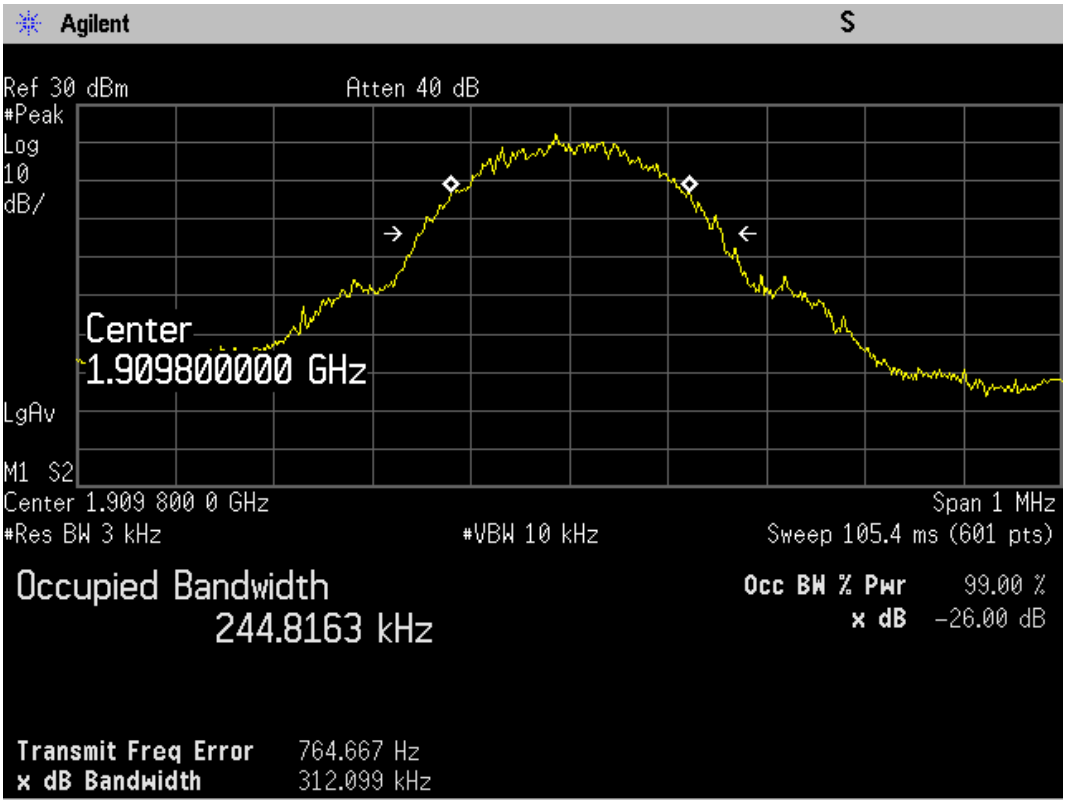
	Channel	Frequency (MHz)	99% Power Bandwidth (kHz)	-26dBc Bandwidth(kHz)
GSM 1900	512	1850.2	246.4491	309.600
	661	1880.0	243.8664	304.748
	810	1909.8	244.8163	312.099
GSM 1900+GPRS	512	1850.2	244.4143	313.976
	661	1880.0	249.1646	318.532
	810	1909.8	244.7985	314.792
GSM 1900+EGPRS(GMSK)	512	1850.2	244.5675	308.930
	661	1880.0	243.1017	304.238
	810	1909.8	242.3031	311.006
GSM 1900+EGPRS(8PSK)	512	1850.2	244.8181	316.359
	661	1880.0	244.0253	302.239
	810	1909.8	243.9688	311.378



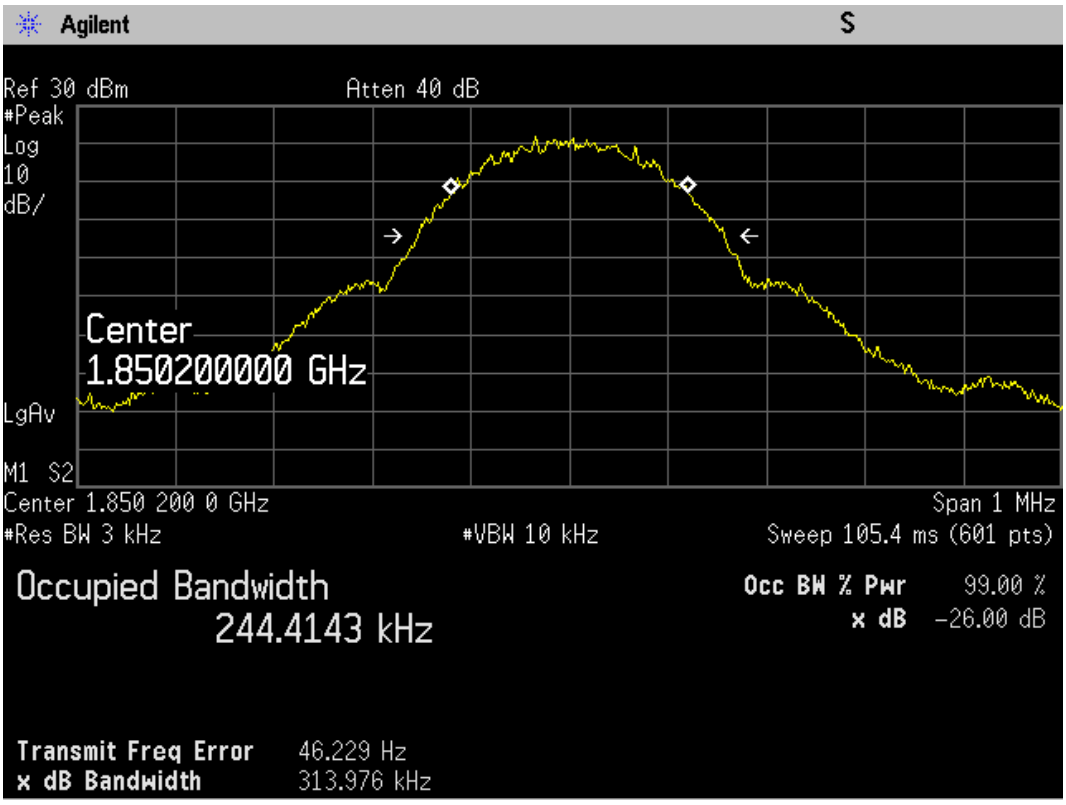
GSM1900 CH512 Occupied Bandwidth



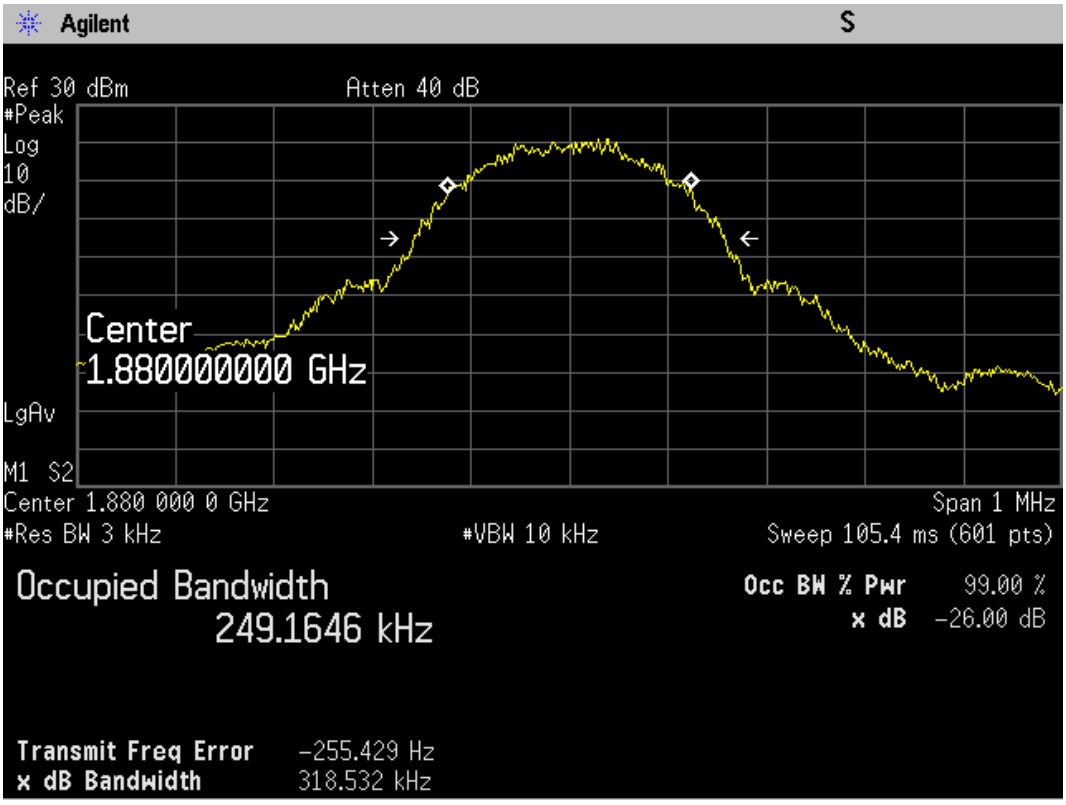
GSM 1900 CH661 Occupied Bandwidth



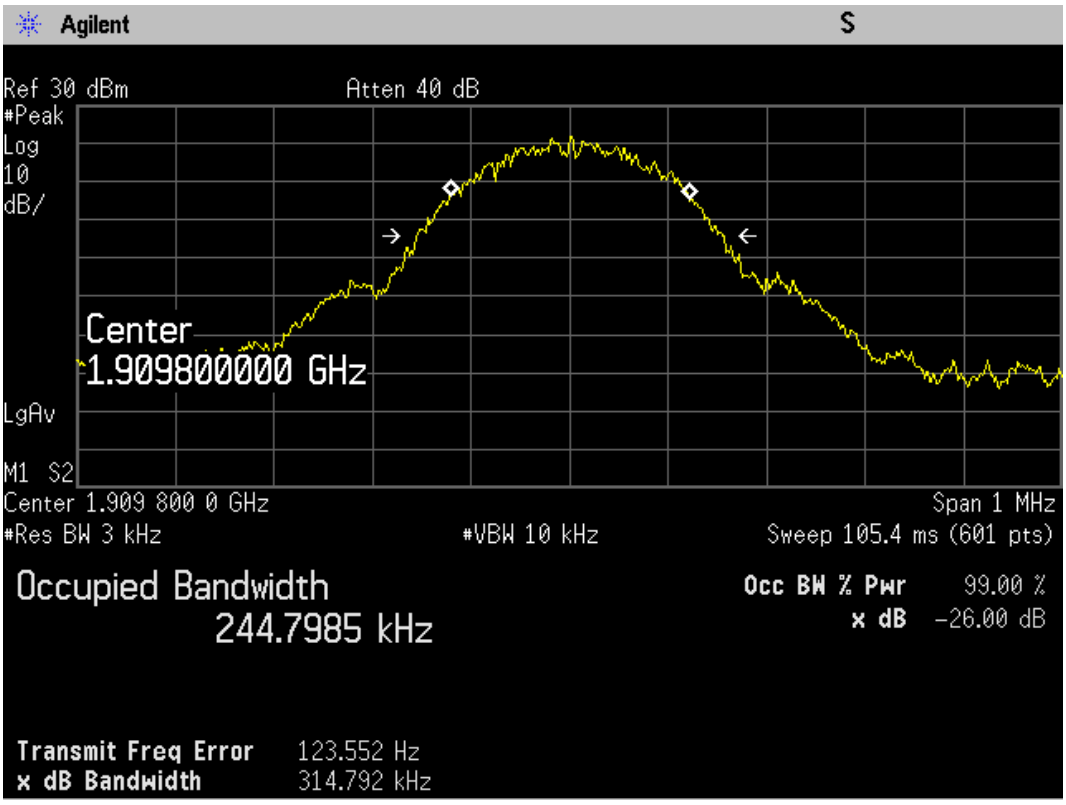
GSM 1900 CH810 Occupied Bandwidth



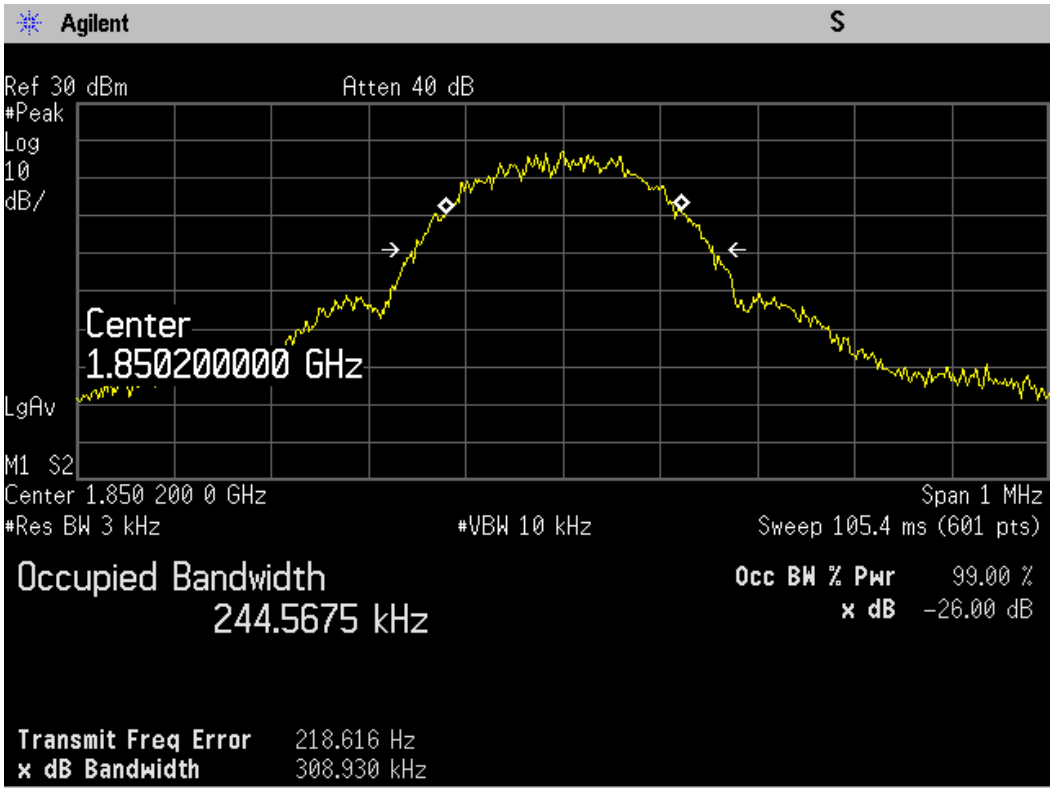
GSM1900 GPRS CH512 Occupied Bandwidth



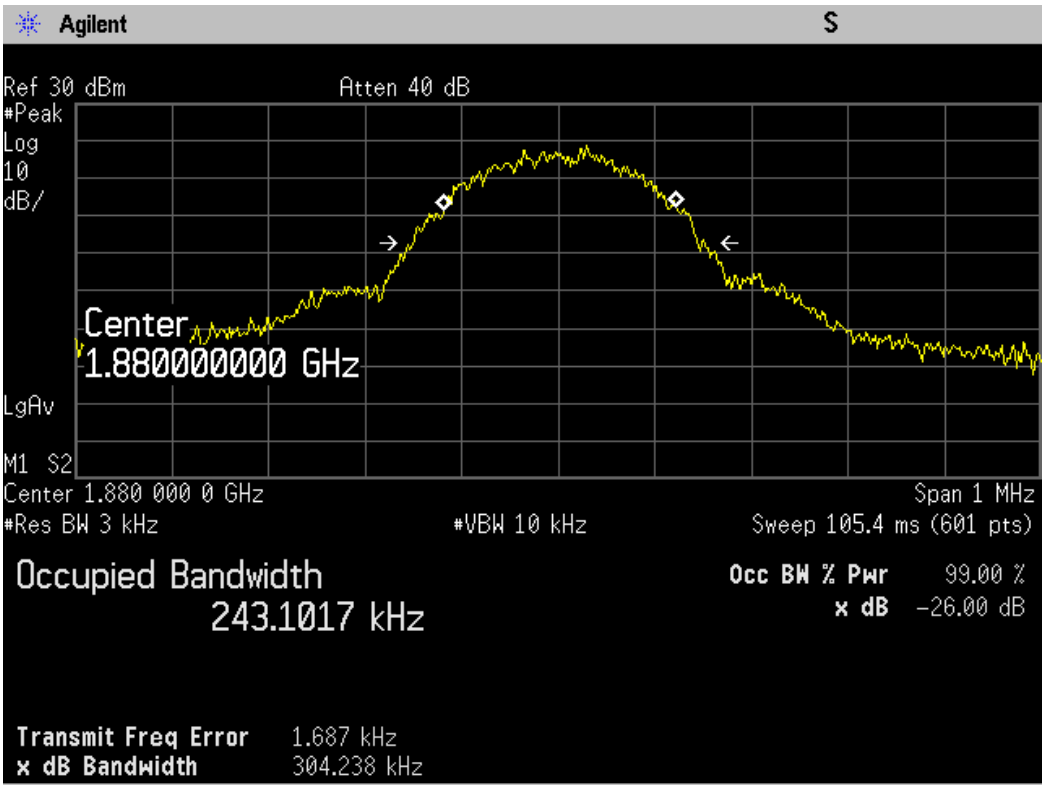
GSM 1900 GPRS CH661 Occupied Bandwidth



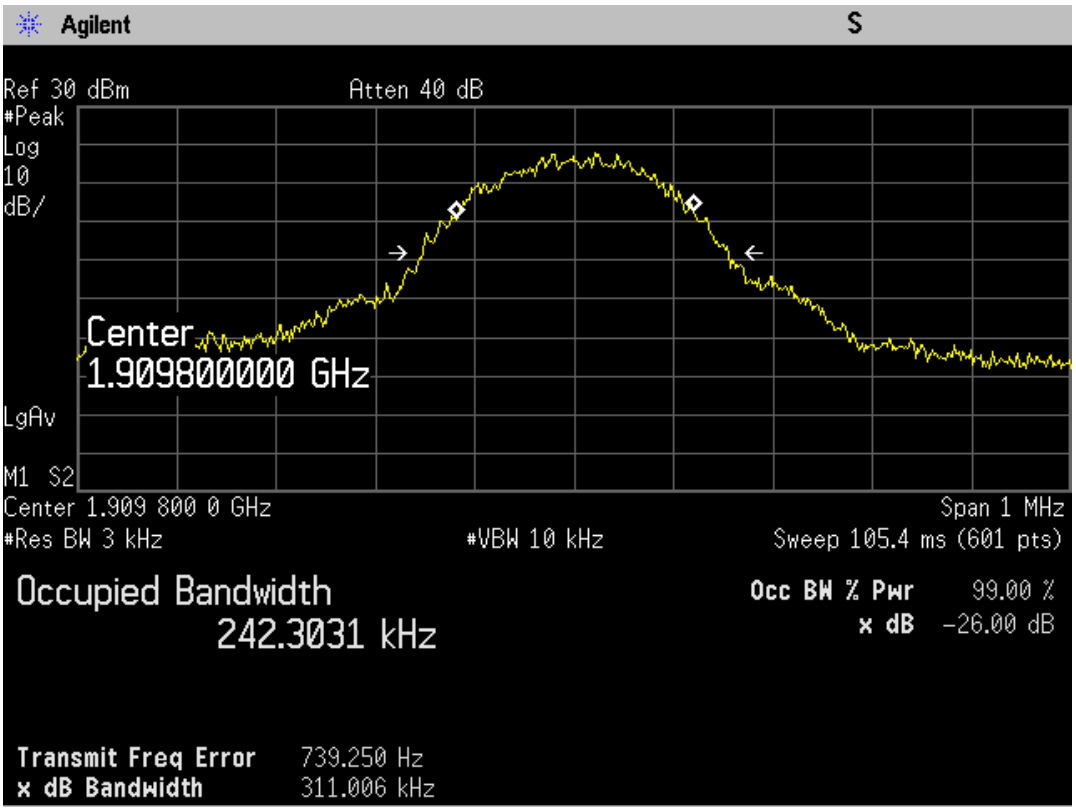
GSM 1900 GPRS CH810 Occupied Bandwidth



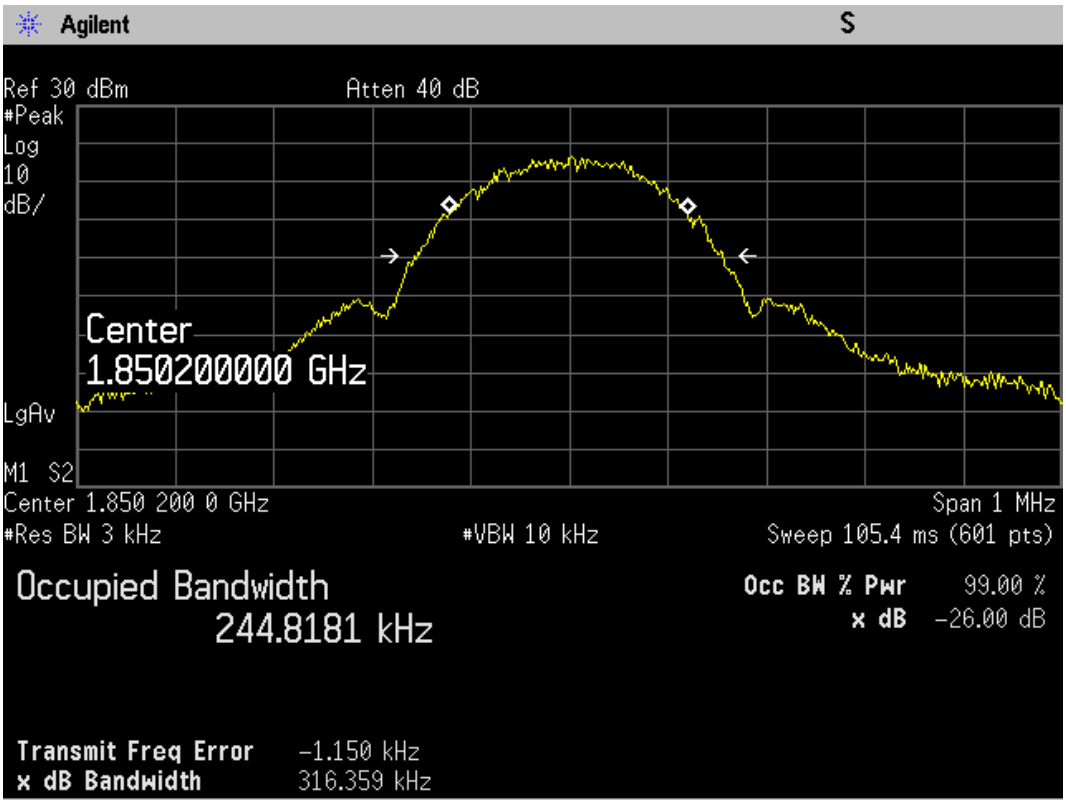
GSM1900 EGPRS(GMSK) CH512 Occupied Bandwidth



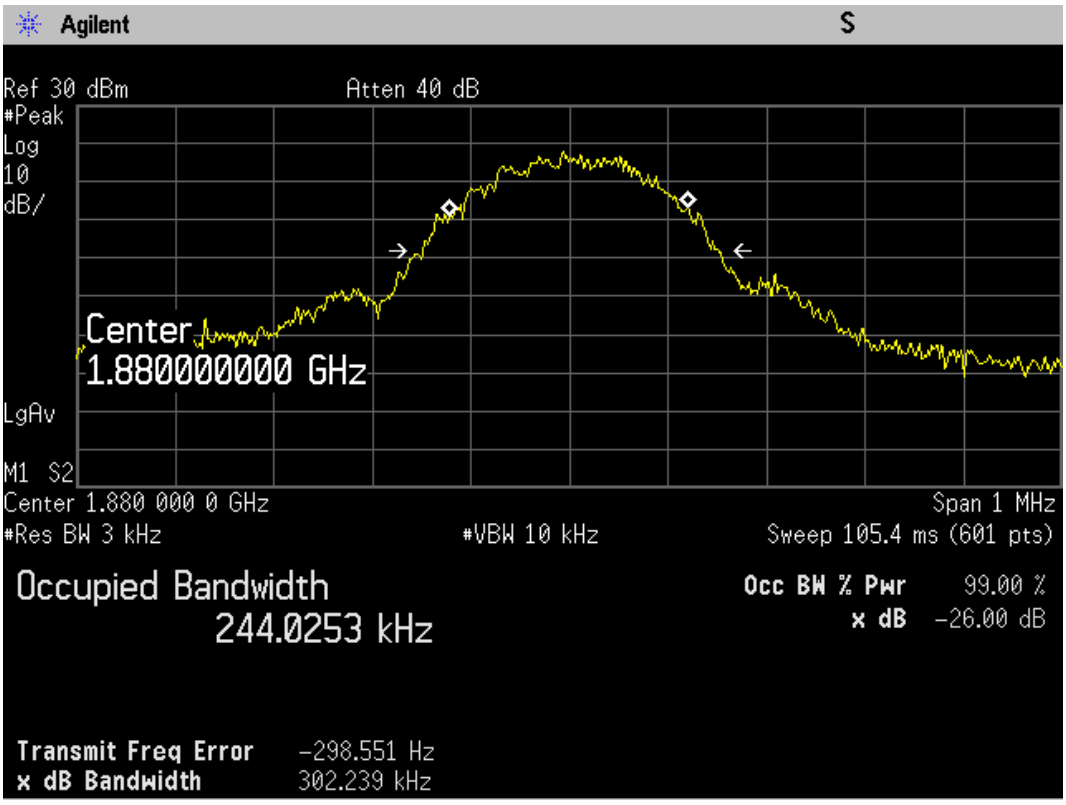
GSM 1900 EGPRS(GMSK) CH661 Occupied Bandwidth



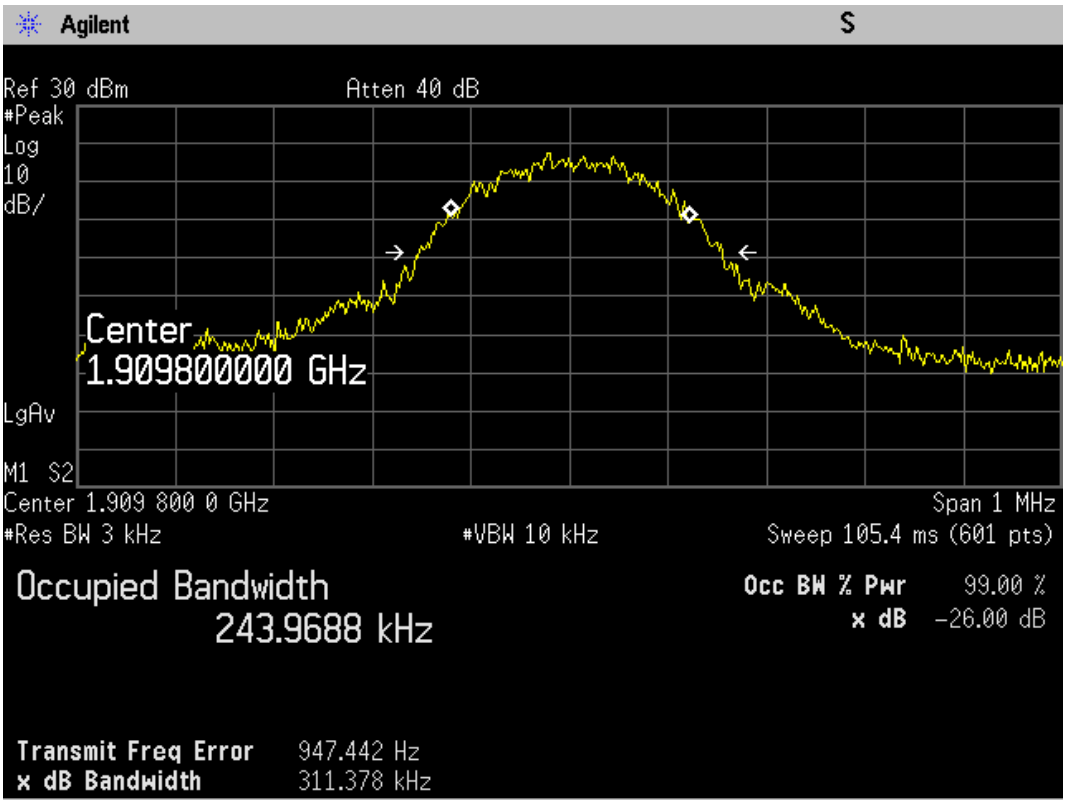
GSM 1900 EGPRS(GMSK) CH810 Occupied Bandwidth



GSM1900 EGPRS(8PSK) CH512 Occupied Bandwidth



GSM 1900 EGPRS(8PSK) CH661 Occupied Bandwidth



GSM 1900 EGPRS(8PSK) CH810 Occupied Bandwidth

2.6. Band Edge Compliance

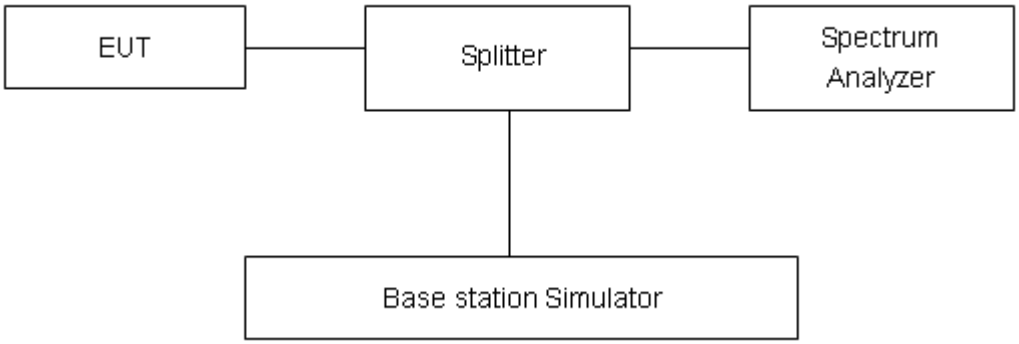
Ambient condition

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 Average detector is used and RBW is set to 3kHz, VBW is set to 10kHz for GSM 1900. 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 log10 (P) dB.”

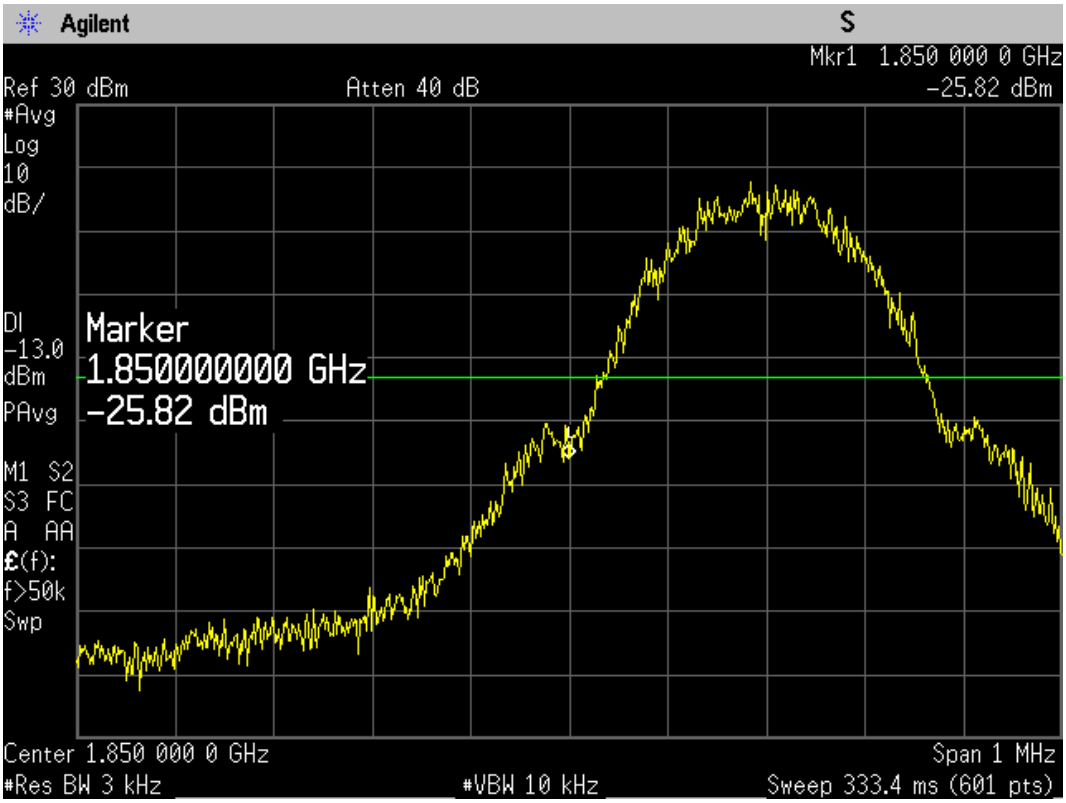
Limit	-13 dBm

Measurement Uncertainty

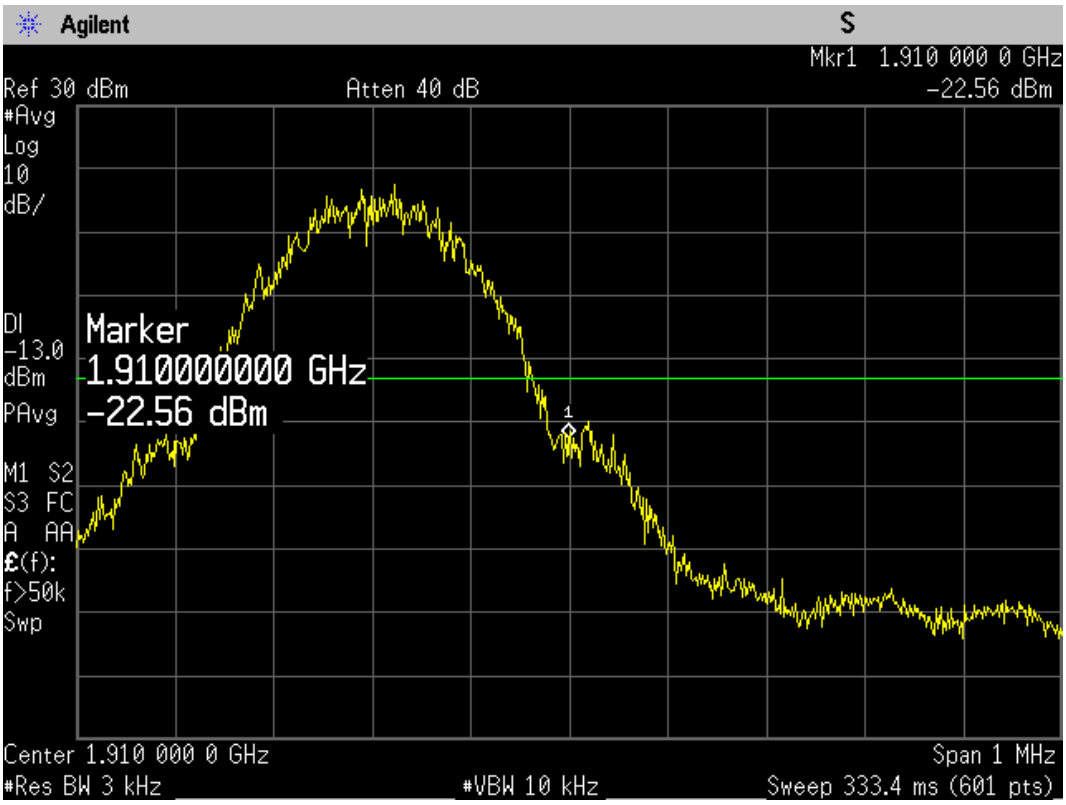
The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96, U=0.684dB.

Test Result:

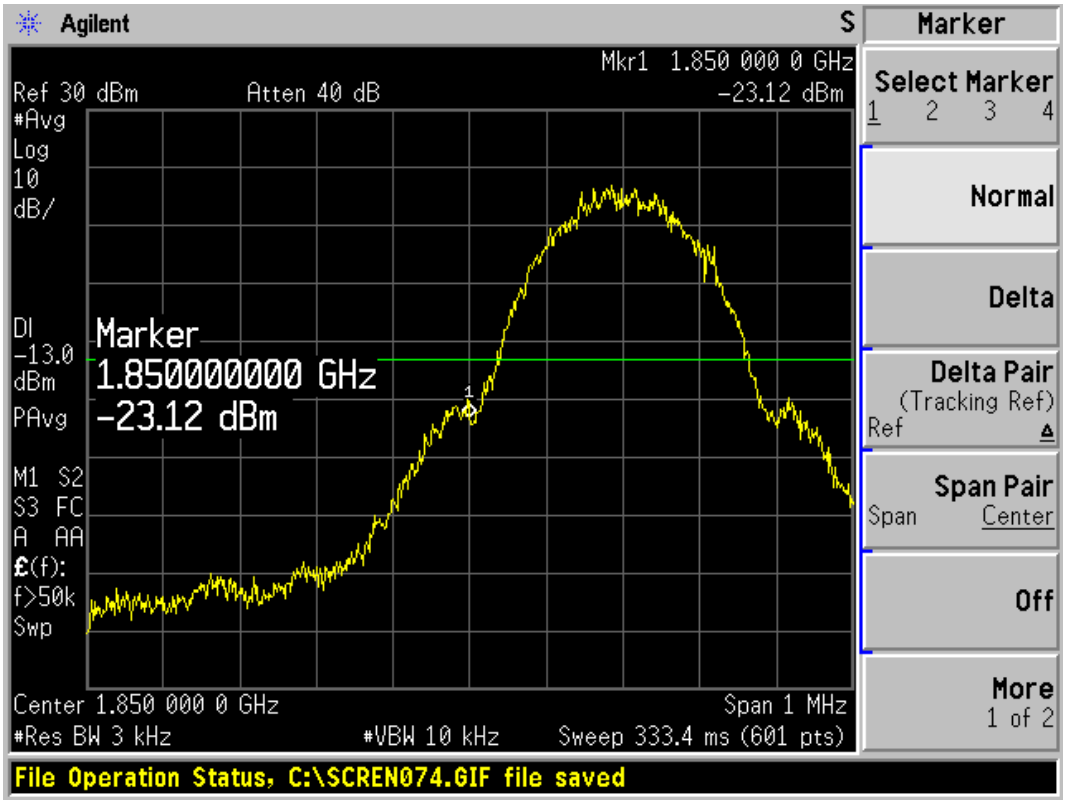
	Carrier frequency (MHz)	Reference value (dBm)	Limit	Conclusion
GSM 1900	1850.0	-25.82	-13	PASS
	1910.0	-22.56	-13	PASS
GSM 1900+GPRS	1850.0	-23.12	-13	PASS
	1910.0	-19.90	-13	PASS
GSM 1900+EGPRS (GMSK)	1850.0	-21.47	-13	PASS
	1910.0	-23.22	-13	PASS
GSM 1900+EGPRS (8PSK)	1850.0	-26.54	-13	PASS
	1910.0	-21.12	-13	PASS



GSM 1900 512 Channel

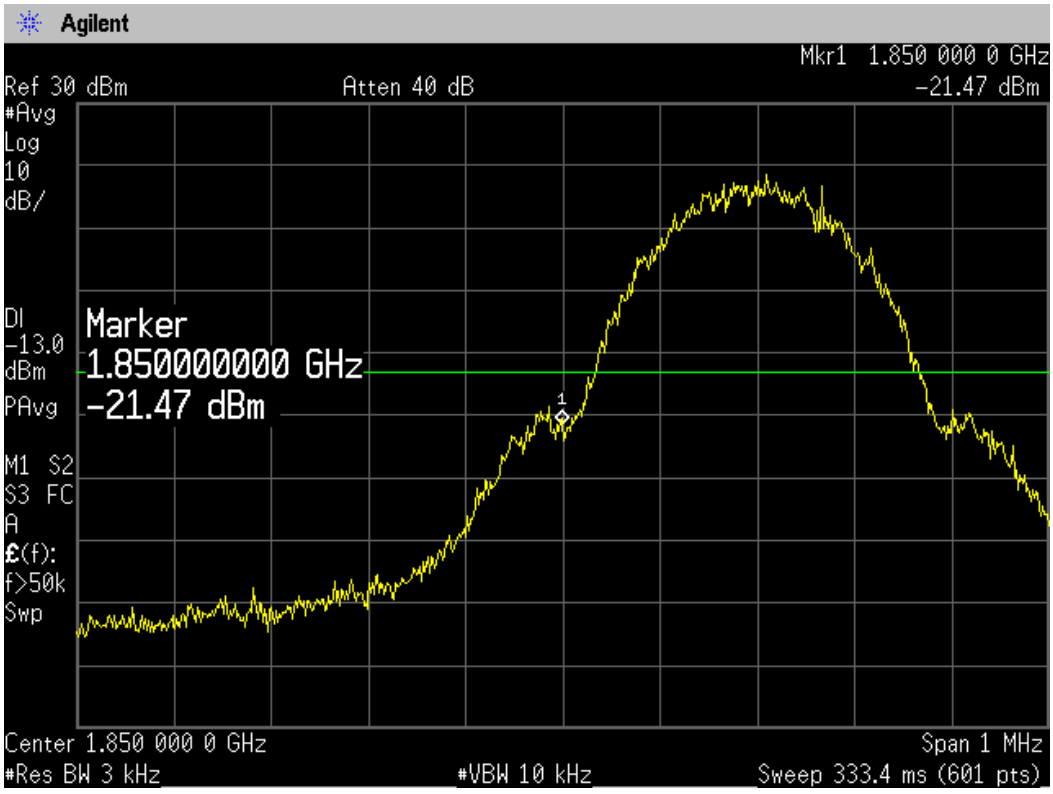


GSM1900 810 Channel



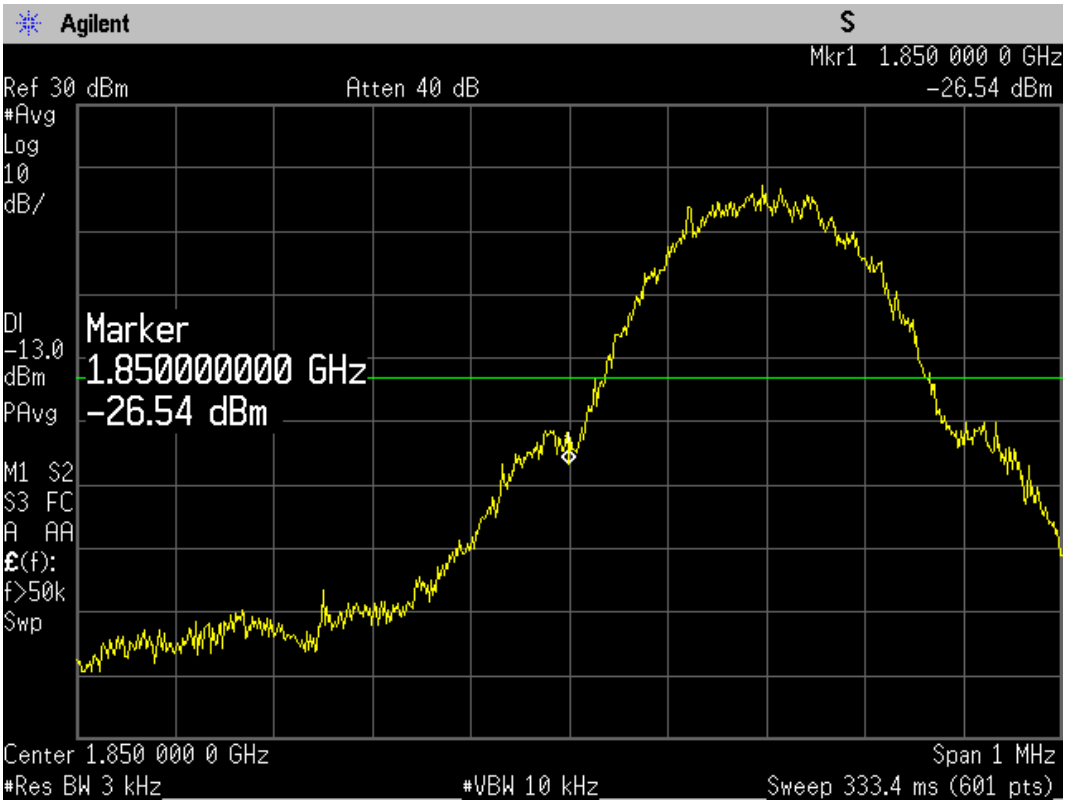
GSM 1900 GPRS 512 Channel

GSM1900 GPRS 810 Channel

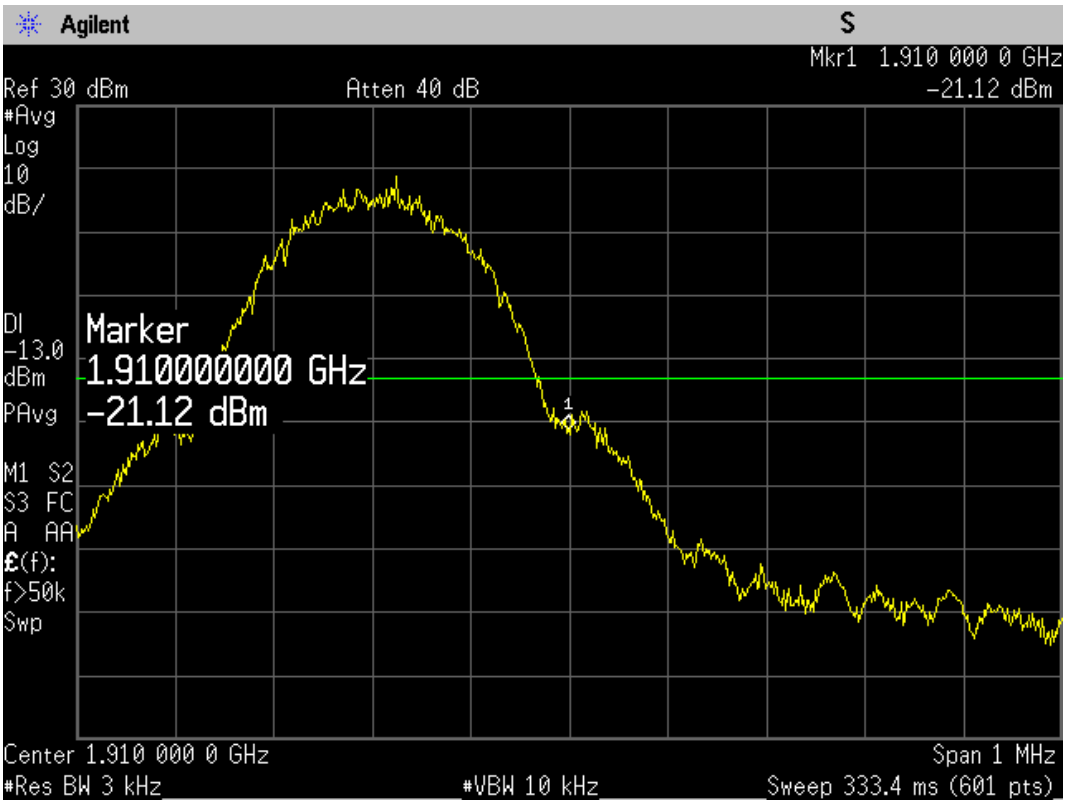


GSM 1900 EGPRS(GMSK) 512 Channel

GSM1900 EGPRS(GMSK) 810 Channel



GSM 1900 EGPRS(8PSK) 512 Channel



GSM1900 EGPRS(8PSK) 810 Channel

2.7. Frequency Stability

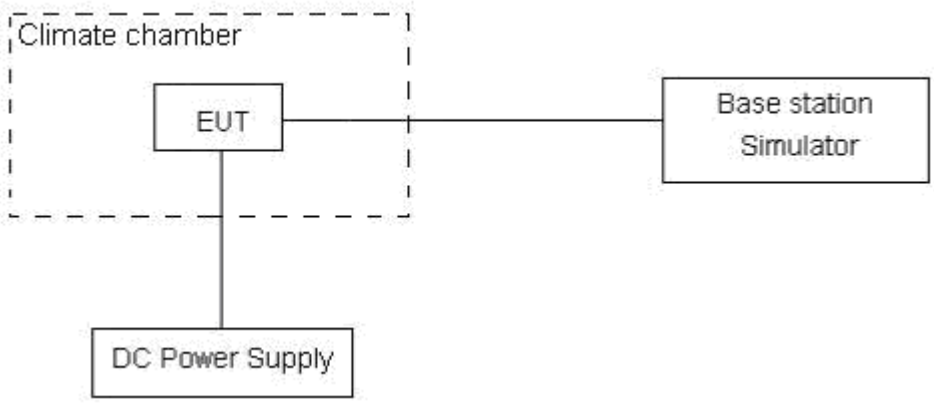
Ambient condition

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 3.3 V and 4.0 V, with a nominal voltage of 3.7V.

Test setup



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= 0.01ppm.

Test Result

GSM 1900

Temperature (° C)	Test Results (ppm) / 3.7 V Power supply
	Channel 661
-30	0.0137
-20	0.0130
-10	0.0141
0	0.0134
10	0.0135
20	0.0120
30	0.0118
40	0.0131
50	0.0141

Voltage (V)	Test Results(ppm) / 20° C
	Channel 661
3.3	0.0125
3.7	0.0120
4.0	0.0135

GPRS(GMSK)1900

Temperature	Test Results (ppm) / 3.7 V Power supply

(°C)	Channel 661
-30	0.0216
-20	0.0239
-10	0.0224
0	0.0198
10	0.0187
20	0.0115
30	0.0179
40	0.0233
50	0.0256

Voltage (V)	Test Results(ppm) / 20°C
	Channel 661
3.3	0.0387
3.7	0.0115
4.0	0.0261

EGPRS(GMSK)1900

Temperature (°C)	Test Results (ppm) / 3.7 V Power supply
	Channel 661
-30	0.0339
-20	0.0317
-10	0.0243
0	0.0219
10	0.0176
20	0.0143
30	0.0198

40	0.0298
50	0.0251

Voltage (V)	Test Results(ppm) / 20°C
	Channel 661
3.3	0.0345
3.7	0.0143
4.0	0.0273

EGPRS(8PSK)1900

Temperature (°C)	Test Results (ppm) / 3.7 V Power supply
	Channel 661
-30	0.0412
-20	0.0465
-10	0.0398
0	0.0435
10	0.0227
20	0.0259
30	0.0253
40	0.0375
50	0.0313

Voltage (V)	Test Results(ppm) / 20°C
	Channel 661
3.3	0.0417
3.7	0.0259
4.0	0.0311

2.8. Spurious Emissions at Antenna Terminals

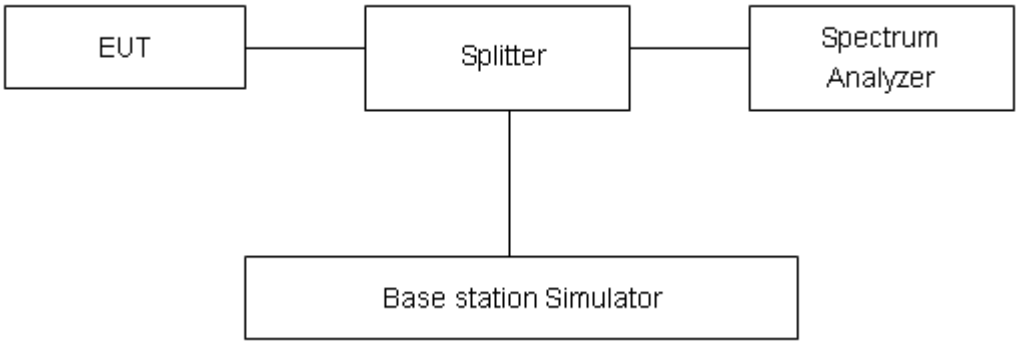
Ambient condition

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 GSM 1900, RBW and VBW are set to 100 kHz, Sweep is set to ATUO.

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 log10 (P) dB.”

Limit	-13 dBm

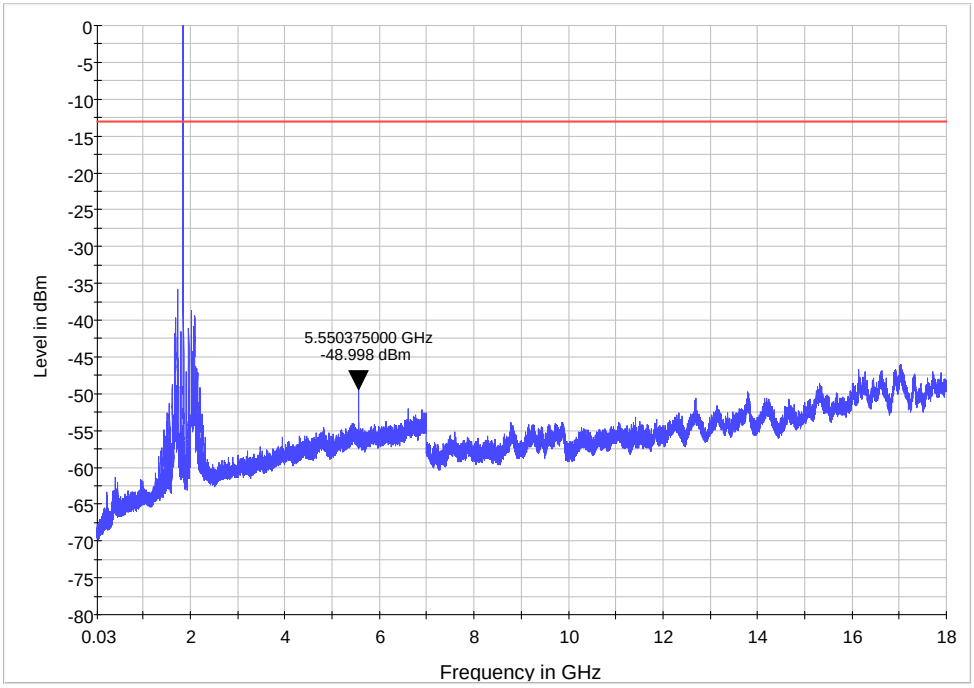
Measurement Uncertainty

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
2GHz-12.75GHz	1.407 dB

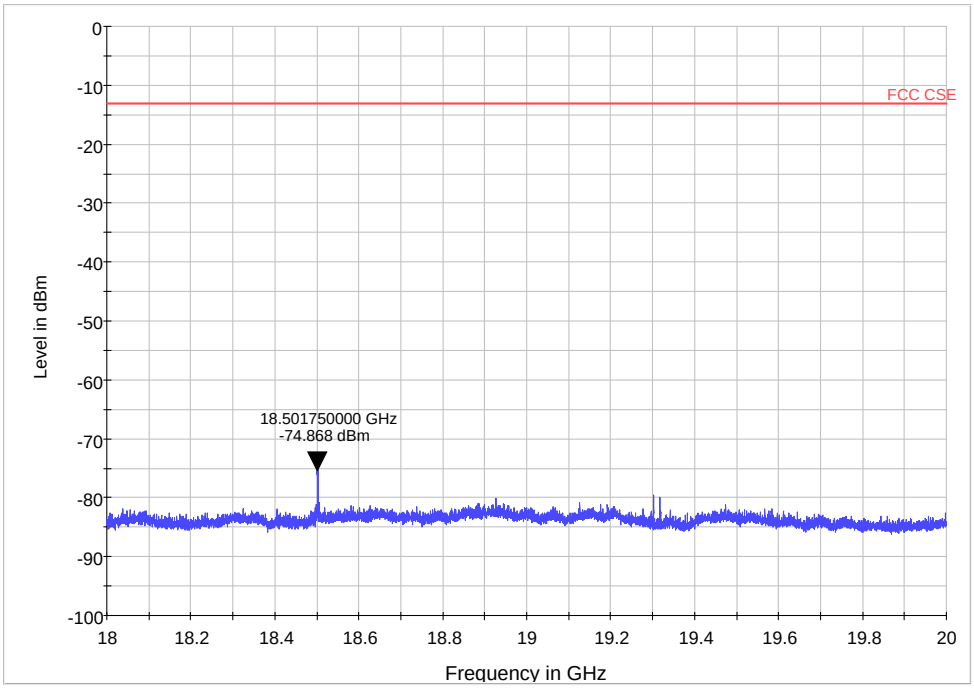
Test Result

GSM 1900 CH 512



Note: The signal beyond the limit is carrier.

GSM 1900 512 Channel 30MHz~18GHz

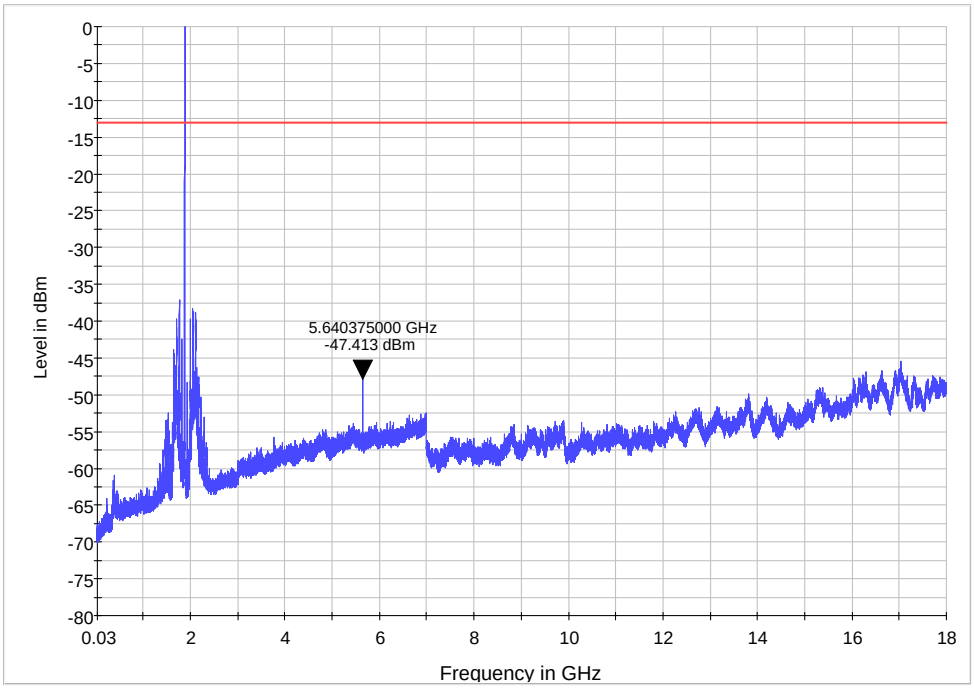


GSM 1900 512 Channel 18GHz~20GHz

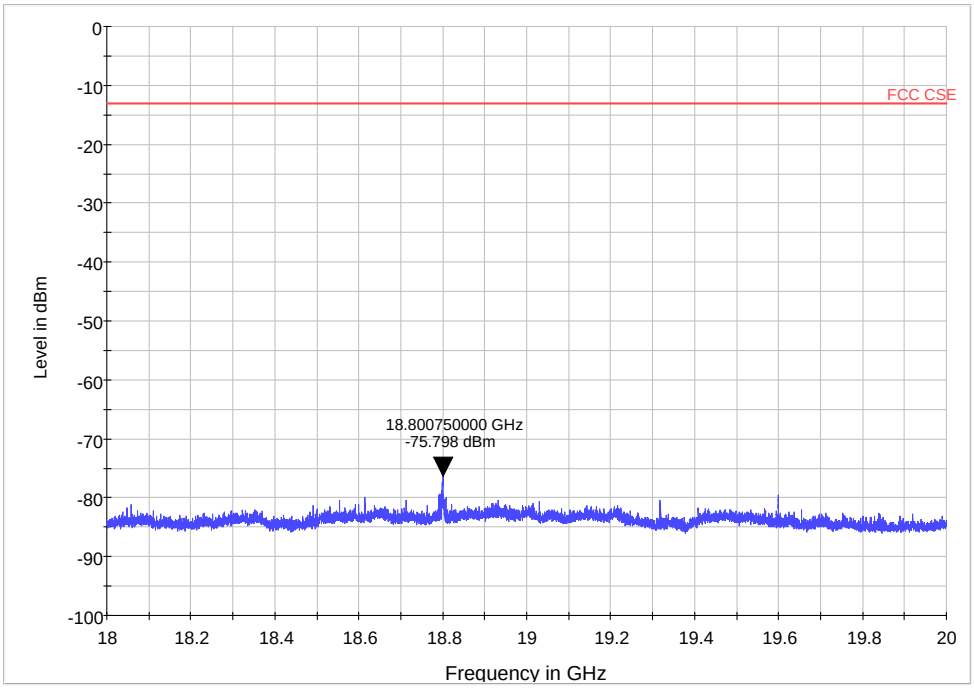
Harmonic	TX ch.512 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3700.4	Nf	-13	/
3	5550.4	-49.00	-13	36.00
4	7400.8	Nf	-13	/
5	9251	Nf	-13	/
6	11101.2	Nf	-13	/
7	12951.4	Nf	-13	/
8	14801.6	Nf	-13	/
9	16651.8	Nf	-13	/
10	18501.8	-74.87	-13	61.87
Nf: noise floor				

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

GSM 1900 CH 661



Note: The signal beyond the limit is carrier.
GSM 1900 661 Channel 30MHz~18GHz

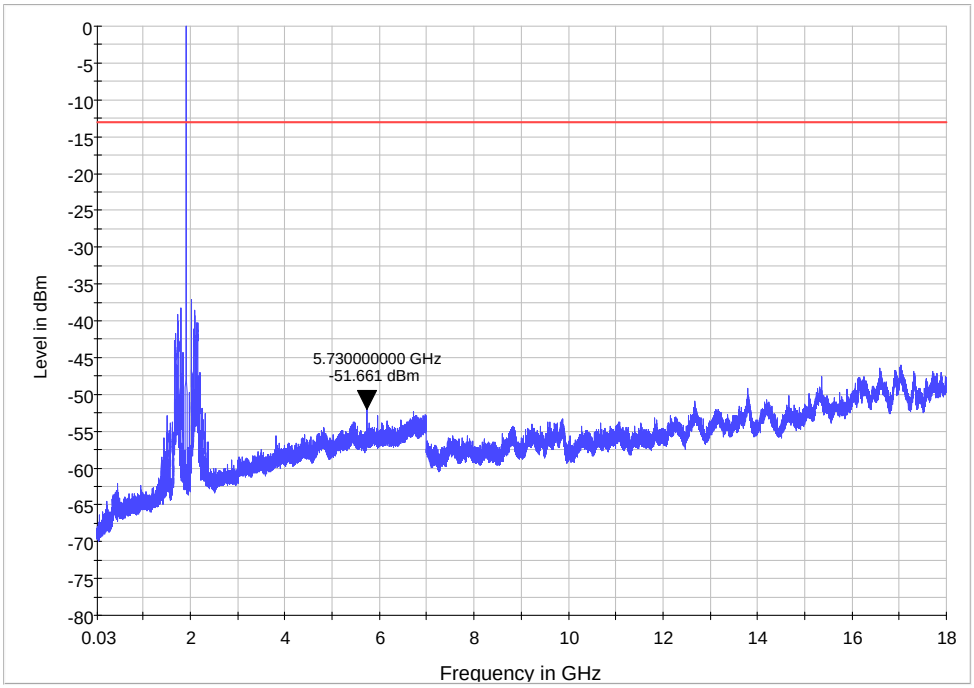


GSM 1900 661 Channel 18GHz~20GHz

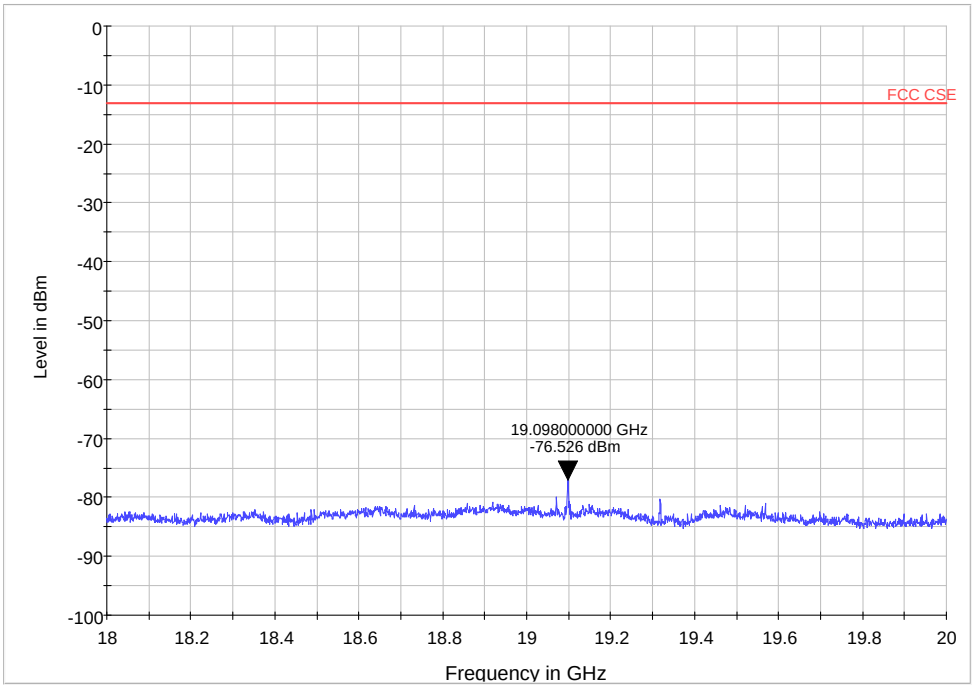
Harmonic	TX ch.661 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3760	Nf	-13	/
3	5640.4	-47.41	-13	34.41
4	7520	Nf	-13	/
5	9400	Nf	-13	/
6	11280	Nf	-13	/
7	13160	Nf	-13	/
8	15040	Nf	-13	/
9	16920	Nf	-13	/
10	18800.8	-75.80	-13	62.80
Nf: noise floor				

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

GSM 1900 CH 810



Note: The signal beyond the limit is carrier.
GSM 1900 810 Channel 30MHz~18GHz

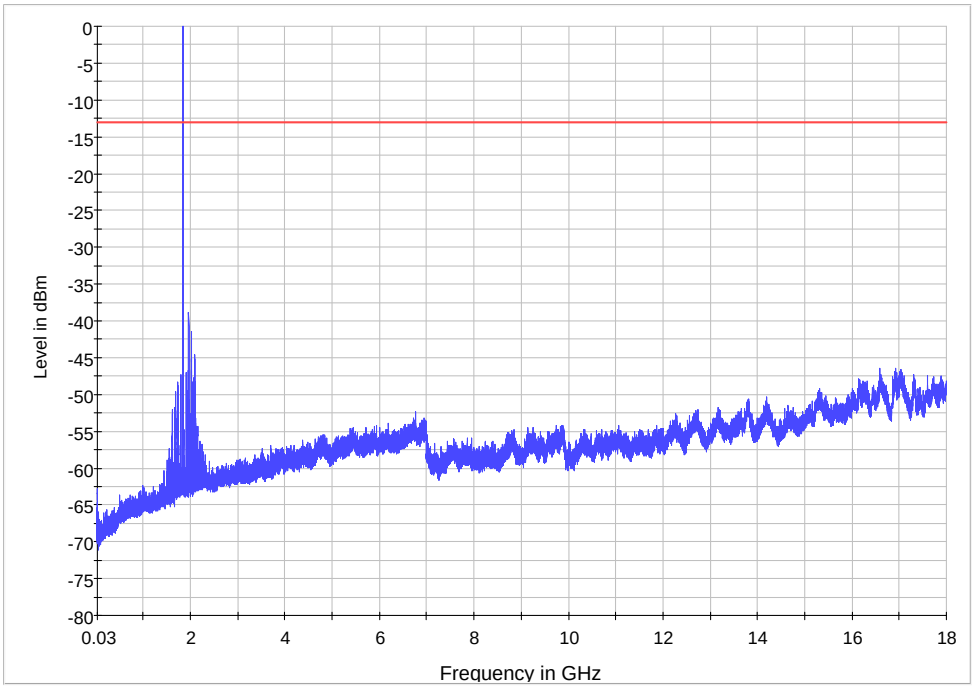


GSM 1900 810 Channel 18GHz~20GHz

Harmonic	TX ch.810 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3819.6	Nf	-13	/
3	5730.0	-51.66	-13	38.66
4	7639.2	Nf	-13	/
5	9549	Nf	-13	/
6	11458.8	Nf	-13	/
7	13368.6	Nf	-13	/
8	15278.4	Nf	-13	/
9	17188.2	Nf	-13	/
10	19098	-76.53	-13	63.53
Nf: noise floor				

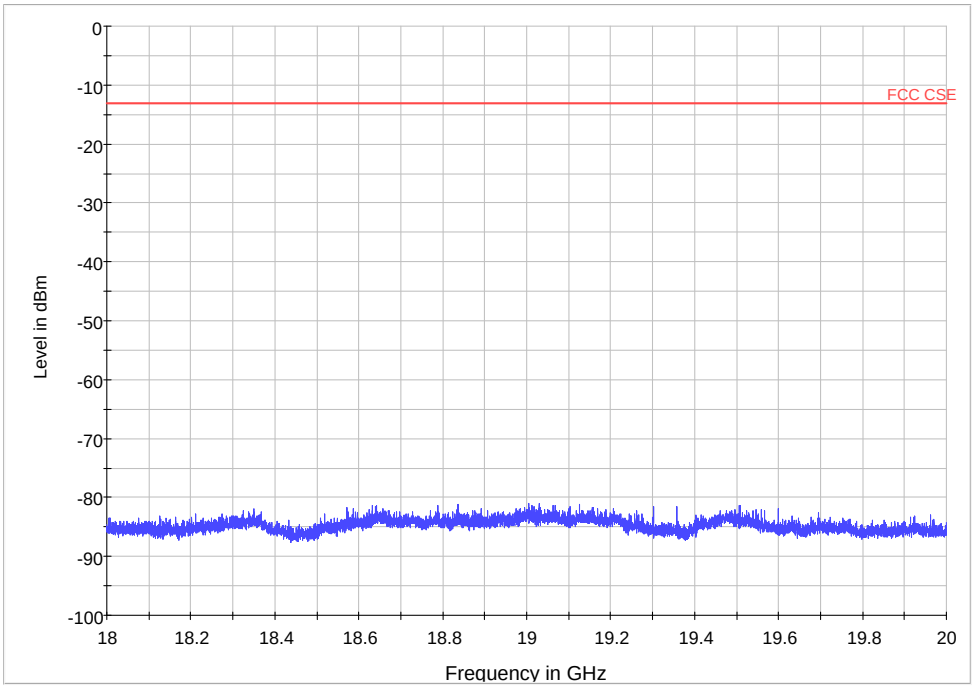
Note: The other Spurious RF conducted emissions level is no more than noise floor.

EGPRS 1900(8PSK) CH 512



Note: The signal beyond the limit is carrier.

EGPRS 1900(8PSK) 512 Channel 30MHz~18GHz

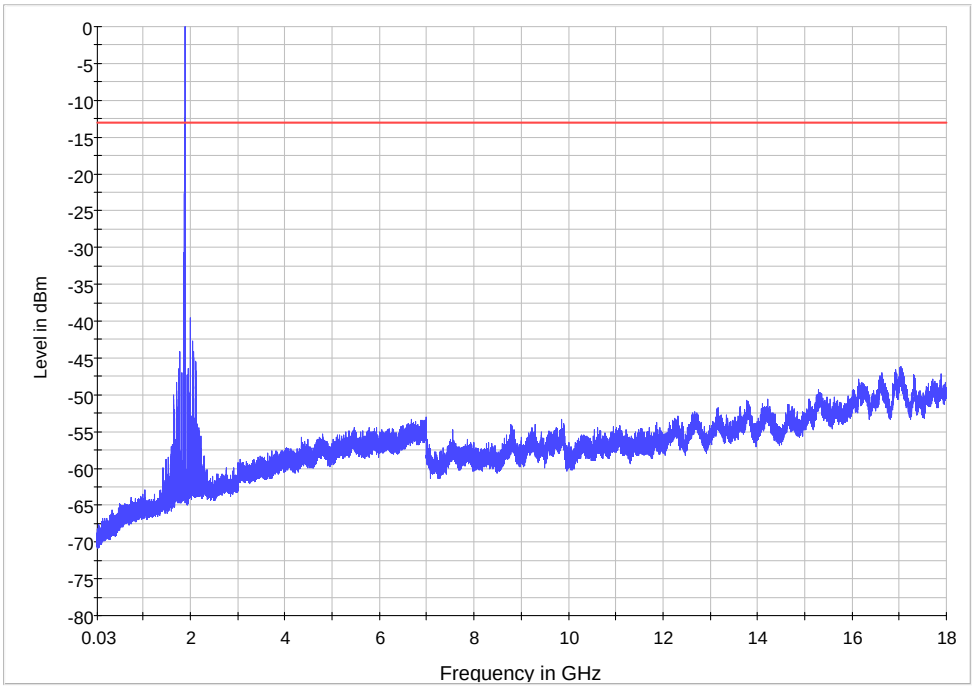


EGPRS 1900(8PSK) 512 Channel 18GHz~20GHz

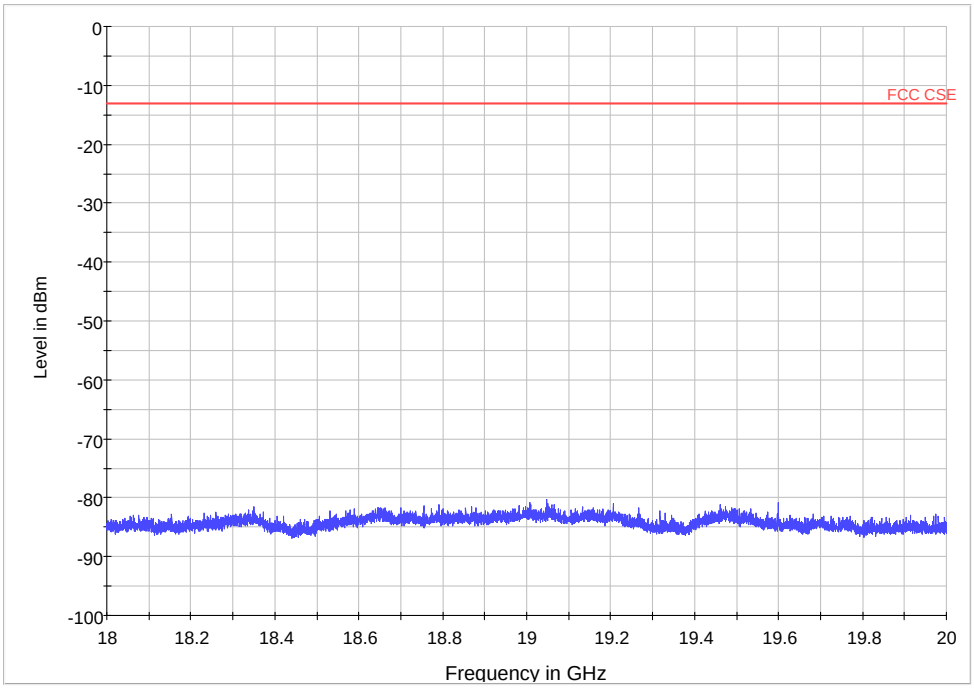
Harmonic	TX ch.512 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3700.4	Nf	-13	/
3	5550.4	Nf	-13	/
4	7400.8	Nf	-13	/
5	9251	Nf	-13	/
6	11101.2	Nf	-13	/
7	12951.4	Nf	-13	/
8	14801.6	Nf	-13	/
9	16651.8	Nf	-13	/
10	18501.8	Nf	-13	/
Nf: noise floor				

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

EGPRS 1900(8PSK) CH 661



Note: The signal beyond the limit is carrier.
EGPRS 1900(8PSK) 661 Channel 30MHz~18GHz

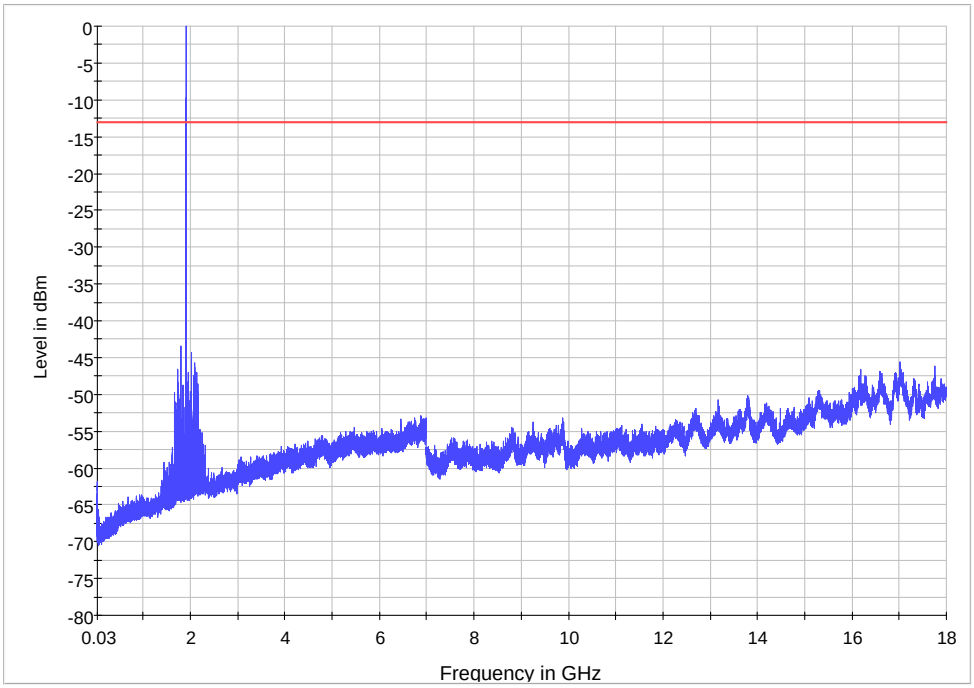


EGPRS 1900(8PSK) 661 Channel 18GHz~20GHz

Harmonic	TX ch.661 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3760	Nf	-13	/
3	5640.4	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	18800.8	Nf	-13	/
Nf: noise floor				

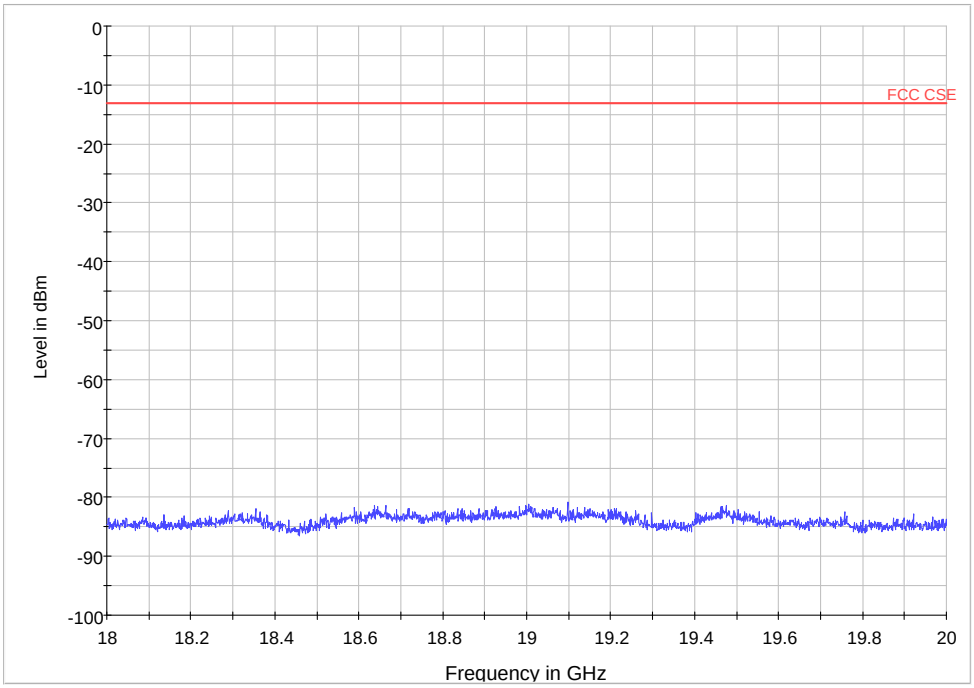
Note: The other Spurious RF conducted emissions level is no more than noise floor.

EGPRS 1900(8PSK) CH 810



Note: The signal beyond the limit is carrier.

EGPRS 1900(8PSK) 810 Channel 30MHz~18GHz



EGPRS 1900(8PSK) 810 Channel 18GHz~20GHz

Harmonic	TX ch.810 Frequency (MHz)	Level (dBm)	Limit (dBm)	Margin (dB)
2	3819.6	Nf	-13	/
3	5730.0	Nf	-13	/
4	7639.2	Nf	-13	/
5	9549	Nf	-13	/
6	11458.8	Nf	-13	/
7	13368.6	Nf	-13	/
8	15278.4	Nf	-13	/
9	17188.2	Nf	-13	/
10	19098	Nf	-13	/
Nf: noise floor				

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

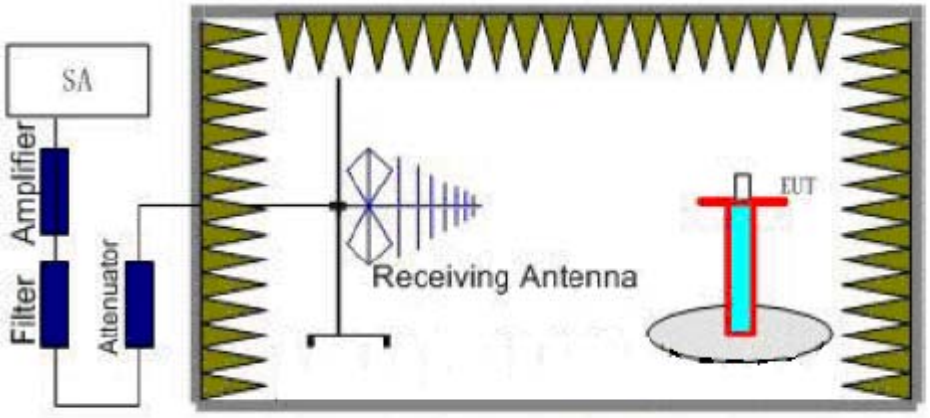
2.9. Radiates Spurious Emission

Ambient condition

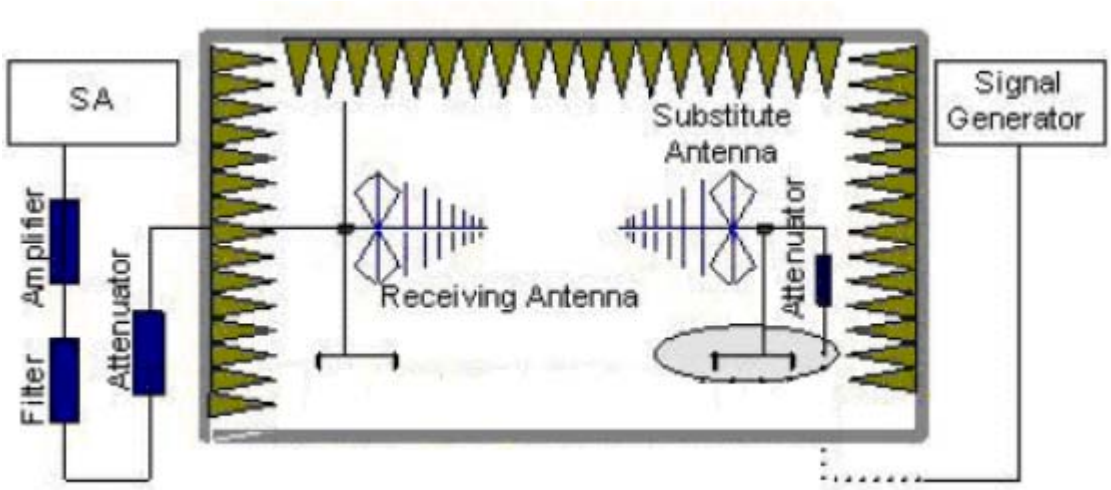
Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

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 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 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.

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

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.

Test Result

GSM 1900 CH 512

Harmonic	TX ch.512 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3700.5	-36.95	5.1	7.25	-36.95	-13	23.95	45
3	5550.8	-31.58	5.42	7.57	-31.58	-13	18.58	180
4	7400.6	-42.34	6.7	8.85	-42.34	-13	29.34	135
5	9251.3	-39.01	7.01	9.16	-39.01	-13	26.01	270
6	11101	/	/	/	Nf	-13	/	/
7	12951.4	/	/	/	Nf	-13	/	/
8	14801.6	/	/	/	Nf	-13	/	/
9	16651.8	/	/	/	Nf	-13	/	/
10	18502	/	/	/	Nf	-13	/	/
Nf: noise floor								

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

GSM 1900 CH 661

Harmonic	TX ch.661 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3760.1	-36.65	5.1	11.05	-32.85	-13	19.85	90
3	5640.4	-35.53	5.42	12.65	-30.45	-13	17.45	180
4	7520.3	-48	6.7	13.85	-43.00	-13	30.00	315
5	9399.4	-46.44	7.01	14.75	-40.85	-13	27.85	135
6	11280.5	/	/	/	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.

GSM 1900 CH 810

Harmonic	TX ch.810 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3819.4	-33.76	6.1	11.05	-30.96	-13	17.96	90
3	5729.3	-36.44	5.7	12.65	-31.64	-13	18.64	135
4	7639.5	-50.59	6.7	13.85	-45.59	-13	32.59	315
5	9549	/	/	/	Nf	-13	/	/
6	11458.5	/	/	/	Nf	-13	/	/
7	13368.6	/	/	/	Nf	-13	/	/
8	15278.4	/	/	/	Nf	-13	/	/
9	17188.2	/	/	/	Nf	-13	/	/
10	19098	/	/	/	Nf	-13	/	/
Nf: noise floor								

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

EGPRS 1900 (8PSK) CH 512

Harmonic	TX ch.512 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3700.5	-39.08	5.1	7.25	-39.08	-13	26.08	45
3	5550.8	-33.71	5.42	7.57	-33.71	-13	20.71	180
4	7400.6	-44.47	6.7	8.85	-44.47	-13	31.47	135
5	9251.3	-41.14	7.01	9.16	-41.14	-13	28.14	270
6	11101	/	/	/	Nf	-13	/	/
7	12951.4	/	/	/	Nf	-13	/	/
8	14801.6	/	/	/	Nf	-13	/	/
9	16651.8	/	/	/	Nf	-13	/	/
10	18502	/	/	/	Nf	-13	/	/
Nf: noise floor								

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

EGPRS 1900 (8PSK) CH 661

Harmonic	TX ch.661 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3760.1	-38.79	5.1	11.05	-34.99	-13	21.99	90
3	5640.4	-37.67	5.42	12.65	-32.59	-13	19.59	180
4	7520.3	-50.14	6.7	13.85	-45.14	-13	32.14	315
5	9399.4	-48.58	7.01	14.75	-42.99	-13	29.99	135
6	11280.5	/	/	/	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.

EGPRS 1900 (8PSK) CH 810

Harmonic	TX ch.810 Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3819.4	-36.27	6.1	11.05	-33.47	-13	20.47	90
3	5729.3	-36.44	5.7	12.65	-31.64	-13	18.64	135
4	7639.5	-50.59	6.7	13.85	-45.59	-13	32.59	315
5	9549	/	/	/	Nf	-13	/	/
6	11458.5	/	/	/	Nf	-13	/	/
7	13368.6	/	/	/	Nf	-13	/	/
8	15278.4	/	/	/	Nf	-13	/	/
9	17188.2	/	/	/	Nf	-13	/	/
10	19098	/	/	/	Nf	-13	/	/
Nf: noise floor								

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

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	SCHWARZBECK	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

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

ANNEX A: EUT Appearance and Test Setup

A.1 EUT Appearance

Picture 1 EUT

A.2 Test Setup

Picture 2: Radiated Spurious Emissions Test setup