TEST REPORT

of

FCC Part 22 Subpart H, Part 24 Subpart E

FCC ID: ZNFH540T

Equipment Under Test	:	Cellular/PCS GSM/WCDMA Phone with WLAN, Bluetooth
Model Name	:	LG-H540T(Alt. : LGH540T, H540T, LG-H540t, LGH540t, H540t, LG-H540, H540, LGH540, LG-H542, H542, LGH542)
Applicant	:	LG Electronics MobileComm U.S.A., Inc.
Manufacturer	:	LG Electronics MobileComm U.S.A., Inc.
Date of Test(s)	:	2015.04.15 ~ 2015.05.19
Date of Issue	:	2015.05.19

In the configuration tested, the EUT complied with the standards specified above.

Tested By: **Wonjun Sim** **Date:** **2015.05.19**

Approved By: **Hyunchae You** **Date:** **2015.05.19**

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1. General information

1.1. Testing laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)
- Wireless Div. 2FL, 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 435-837

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx.

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1.2. Details of applicant

Applicant : LG Electronics MobileComm U.S.A., Inc.
Address : 1000 Sylvan Avenue, Englewood Cliffs, NJ07632
Contact Person : Lee, Sang-Myung
Phone No. : +82 2 2033 4606

1.3. Description of EUT

Kind of Product	Cellular/PCS GSM/WCDMA Phone with WLAN, Bluetooth
Model Name	LG-H540T(Alt. : LGH540T, H540T, LG-H540t, LGH540t, H540t, LG-H540, H540, LGH540, LG-H542, H542, LGH542)
Power Supply	DC 3.85 V
Rated Power	GSM850: 33.7 **dB** m GSM1900: 30.7 **dB** m WCDMA850: 24.2 **dB** m WCDMA1900: 23.7 **dB** m
Frequency Range	GSM850: 824.2 **MHz** ~ 848.8 **MHz** GSM1900: 1 850.2 **MHz** ~ 1 909.8 **MHz** WCDMA850: 826.4 **MHz** ~ 846.6 **MHz** WCDMA1900: 1 852.4 **MHz** ~ 1 907.6 **MHz**
Class of GPRS	Class 12, Class B
Emission Designator	GSM850: 245KGXW GSM1900: 245KGXW WCDMA850: 4M17F9W WCDMA1900: 4M17F9W
H/W Version	Rev.B
S/W Version	H54008b

1.4. Test equipment list

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due.
Signal Generator	Agilent	E8257D	MY51501169	Jul. 17, 2014	Annual	Jul. 17, 2015
Spectrum Analyzer	Agilent	N9030A	US51350132	Sep. 24, 2014	Annual	Sep. 24, 2015
Spectrum Analyzer	R&S	FSV30	103210	Dec. 29, 2014	Annual	Dec. 29, 2015
Mobile Test Unit	R&S	CMW500	144032	Mar. 09, 2015	Annual	Mar. 09, 2016
Directional Coupler	KRYTAR	152613	122660	Jun. 10, 2014	Annual	Jun. 10, 2015
Temperature Chamber	ESPEC CORP.	PL-1J	15000793	Jun. 25, 2014	Annual	Jun. 25, 2015
High Pass Filter	Wainwright	WHK3.0/18G-6SS	4	Jul. 02, 2014	Annual	Jul. 02, 2015
High Pass Filter	Wainwright	WHK1.5/15G-6SS	4	Mar. 13, 2015	Annual	Mar. 13, 2016
High Pass Filter	Wainwright	WHK7.5/26.5G-6SS	15	Jul. 02, 2014	Annual	Jul. 02, 2015
DC Power Supply	Agilent	U8002A	MY48490027	Dec. 22, 2014	Annual	Dec. 22, 2015
Preamplifier	H.P.	8447F	2944A03909	Aug. 27, 2014	Annual	Aug. 27, 2015
Preamplifier	R&S	SCU 18	10117	Dec. 26, 2014	Annual	Dec. 26, 2015
Preamplifier	TESTEK	TK-PA1840H	130016	Oct. 14, 2014	Annual	Oct. 14, 2015
Test Receiver	R&S	ESU26	100109	Mar. 03, 2015	Annual	Mar. 03, 2016
Bilog Antenna	SCHWARZBECK	VULB9163	396	Jun. 07, 2013	Biennial	Jun. 07, 2015
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170431	May 15, 2014	Biennial	May 15, 2016
Horn Antenna	R&S	HF906	100326	Dec. 10, 2013	Biennial	Dec. 10, 2015
Dipole Antenna	SCHWARZBECK MESSELEKTRONIK	VHA 9103	9103-2817	May 09, 2013	Biennial	May 09, 2015
Dipole Antenna	SCHWARZBECK MESSELEKTRONIK	UHA 9105	9105-2514	May 09, 2013	Biennial	May 09, 2015
Antenna Master	INNCO	MM4000	N/A	N.C.R.	N/A	N.C.R.
Turn Table	INNCO	DS 1200S	N/A	N.C.R.	N/A	N.C.R.
Anechoic Chamber	SY Corporation	L × W × H (9.6 m × 6.4 m × 6.4 m)	N/A	N.C.R.	N/A	N.C.R.

▶ **Support equipment**

Description	Manufacturer	Model	Serial Number
N/A	-	-	-

1.5. Summary of test results

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 22, 24		
Section in FCC part	**Test Item**	**Result**
§22.913(a)(2) §24.232(c)	RF Radiated Output Power	Complied
§2.1053 §22.917(a) §24.238(a)	Spurious Radiated Emission	Complied
§2.1046	Conducted Output Power	See SAR Report
§2.1049	Occupied Bandwidth	Complied
§24.232(d)	Peak-Average Ratio	Complied
§2.1051 §22.917(a) §24.238(a)	Spurious Emission at Antenna Terminal	Complied
§22.917(a) §24.238(a)	Band Edge	Complied
§2.1055 §22.355 §24.235	Frequency Stability	Complied

1.6. Test report revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL008708	2015.05.07	Initial
1	F690501/RF-RTL008708-1	2015.05.19	Re-Tested ERP

1.7. Sample calculation for offset

Where relevant, the following sample calculation is provided:

1.7.1. Conducted test

Offset value (**dB**) = Directional Coupler (**dB**) + Cable loss (**dB**)

1.7.2. Radiation test

E.R.P. & E.I.R.P. = [S.G level + Amp.](**dB** m) - Cable loss(**dB**) + Ant. gain (**dB** d/**dB** i)

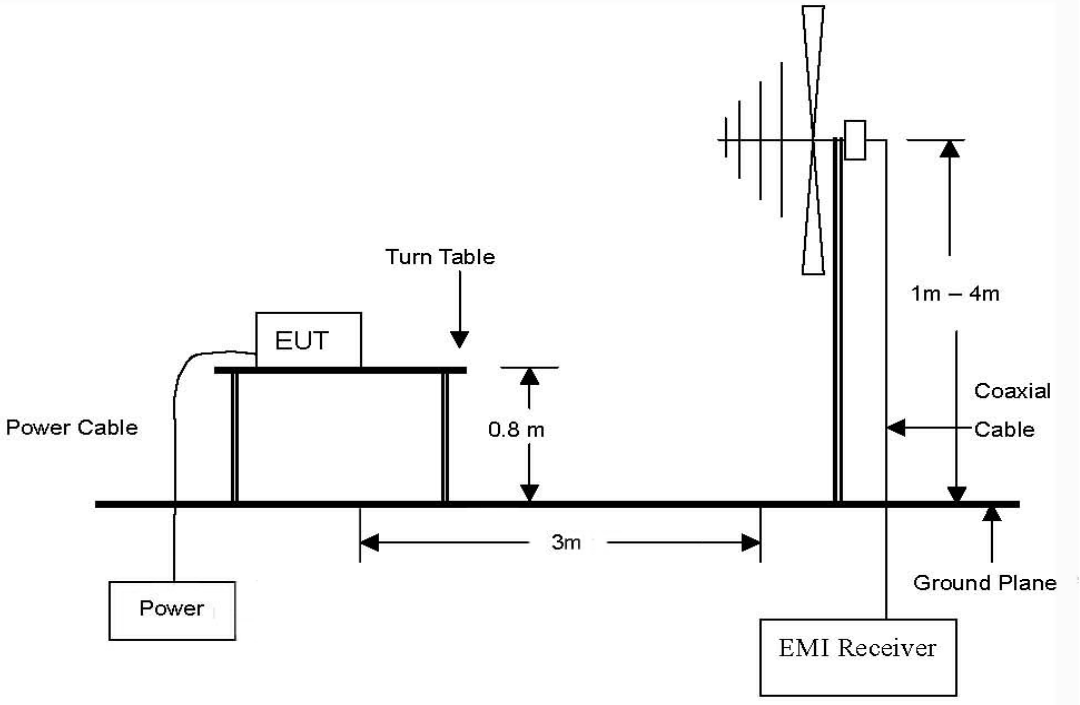
1.8. Alternative models

Model name	Information
LG-H540T	- Basic model.
LGH540T, H540T	- Same as the basic model, but it has different model name for marketing purpose.
LG-H540t, LGH540t, H540t	- Same as the basic model, but it has different model name for marketing purpose.
LG-H540, H540, LGH540	- Same as the basic model, but it has different model name for marketing purpose.
LG-H542, H542, LGH542	- Same as the basic model, but it has different model name for marketing purpose.

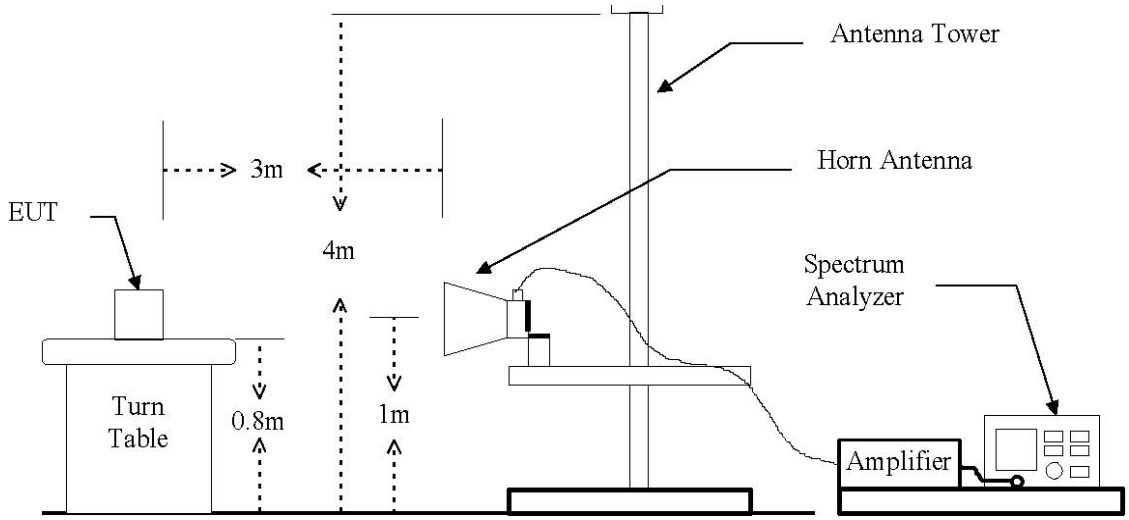
2. RF radiated output power & spurious radiated emission

2.1. Test setup

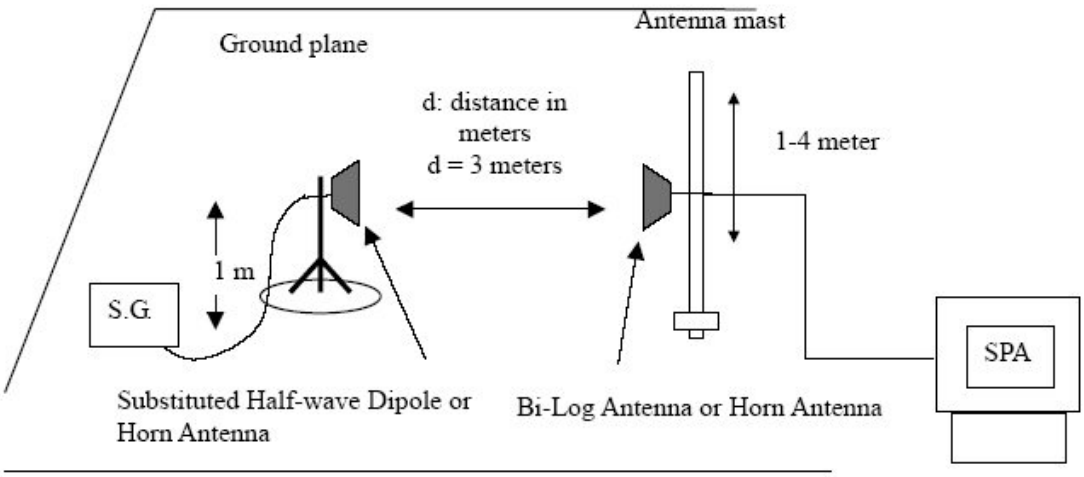
The diagram below shows the test setup that is utilized to make the measurements for emission from 30 ㎒ to 1 ㎓ Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 ㎓ to 20 ㎓ Emissions.



The diagram below shows the test setup for substituted method.



2.2. Limit

2.2.1. Limit of radiated output power

FCC §22.913(a)(2), The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.
FCC §24.232(c), Mobile and portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

2.2.2. Limit of spurious radiated emission

FCC §22.917(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) **dB**.
FCC §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) **dB**.

2.3. Test procedure: Based on ANSI/TIA 603C: 2004

1. On a test site, the EUT shall be placed at 80cm height on a turn table, and in the position close to normal use as declared by the applicant.
2. The test antenna shall be oriented initially for vertical polarization located 3 m from EUT to correspond to the fundamental frequency of the transmitter.
3. The maximized power level is recorded using the spectrum analyzer "Channel Power" function with the integration band set to the emissions occupied bandwidth, RBW = 1-5 % of the OBW (not to exceed 1 ㎒), VBW ≥ 3 x RBW, Detector = RMS, sweep time = auto, trace average at least 100 traces in power averaging(i.e., RMS) mode, per the guidelines of KDB 971168 v02r02.
4. Radiated spurious emissions measurement method was set as follows:
   RBW = 100 ㎑ for emissions below 1 ㎓ and 1 ㎒ for emissions above 1 ㎓, VBW ≥ 3 x RBW,
   Detector = Peak, trace mode = max hold, per the guidelines of KDB 971168 v02r02.
5. The transmitter shall be switched on, the measuring receiver shall be tuned to the frequency of the transmitter under test.
6. The test antenna shall be raised and lowered through the specified range of height until the maximum signal level is detected by the measuring receiver.
7. The transmitter shall be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
8. The test antenna shall be raised and lowered again through the specified range of height until the maximum signal level is detected by the measuring receiver.
9. The maximum signal level detected by the measuring receiver shall be noted.
10. The EUT was replaced by half-wave dipole (1 **GHz** below) or horn antenna (1 **GHz** above) connected to a signal generator.
11. In necessary, the input attenuator setting on the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
12. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
13. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring received, which is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
14. The input level to the substitution antenna shall be recorded as power level in **dB**m, corrected for any change of input attenuator setting of the measuring receiver.
15. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.

2.4. Test result for RF radiated output power

Ambient temperature : (24 ± 1) ℃
Relative humidity : 47 % R.H.

GSM850

Frequency (Mhz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P.	
					(dB m)	(mW)
824.2	V	30.92	3.42	-2.82	24.68	293.89
824.2	H	26.96	3.42	-2.82	20.72	118.04
836.6	V	32.24	3.44	-3.04	25.76	376.41
836.6	H	27.40	3.44	-3.04	20.92	123.55
848.8	V	30.82	3.49	-3.27	24.06	254.78
848.8	H	26.80	3.49	-3.27	20.04	101.04

GSM1900

Frequency (Mhz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P.	
					(dB m)	(mW)
1 850.2	V	21.37	5.03	7.88	24.22	264.31
1 850.2	H	21.34	5.03	7.88	24.19	262.30
1 880.0	V	21.41	5.11	7.86	24.16	260.75
1 880.0	H	21.35	5.11	7.86	24.10	257.12
1 909.8	V	22.06	5.17	7.84	24.73	297.02
1 909.8	H	22.54	5.17	7.84	25.21	331.94

WCDMA850

Frequency (㎒)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P.	
					(dB m)	(㎽)
826.4	V	27.62	3.42	-2.86	21.34	136.04
826.4	H	26.67	3.42	-2.86	20.39	109.29
836.6	V	28.43	3.44	-3.04	21.95	156.55
836.6	H	26.63	3.44	-3.04	20.15	103.48
846.6	V	27.99	3.48	-3.23	21.28	134.42
846.6	H	26.42	3.48	-3.23	19.71	93.51

WCDMA1900

Frequency (㎒)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P.	
					(dB m)	(㎽)
1 852.4	V	23.28	5.03	7.87	26.12	409.26
1 852.4	H	19.55	5.03	7.87	22.39	173.21
1 880.0	V	22.21	5.11	7.86	24.96	313.48
1 880.0	H	19.01	5.11	7.86	21.76	150.02
1 907.6	V	20.65	5.17	7.84	23.32	214.81
1 907.6	H	17.57	5.17	7.84	20.24	105.79

Remark:

1. E.R.P. & E.I.R.P. = [S.G level + Amp.](dB m) - Cable loss(dB) + Ant. gain (dB d/dB i)
2. This device was tested under all modulations.
3. The data reported in the table above was measured in worst case.

2.5. Spurious radiated emission

- Measured output Power: 25.76 **dB** m = 0.377 W
- Modulation Signal: GSM850
- Distance: 3 meters
- Limit: 43 + 10log$_{10}$ (W) = 38.76 **dB** c

Frequency (㎒)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	dB c	Margin (dB)
Low Channel (824.2 ㎒)							
1 648.41	V	-38.48	4.37	5.78	-37.07	62.83	24.07
1 648.43	H	-42.76	4.37	5.78	-41.35	67.11	28.35
6 593.39	V	-40.07	10.94	9.09	-41.92	67.68	28.92
6 593.60	H	-44.42	10.94	9.09	-46.27	72.03	33.27
Middle Channel (836.6 ㎒)							
1 673.32	V	-37.70	4.45	5.78	-36.37	62.13	23.37
1 673.36	H	-43.12	4.45	5.78	-41.79	67.55	28.79
6 692.38	V	-40.60	10.98	9.14	-42.44	68.20	29.44
6 692.28	H	-45.55	10.98	9.14	-47.39	73.15	34.39
High Channel (848.8 ㎒)							
1 697.79	V	-39.01	4.53	5.78	-37.76	63.52	24.76
1 697.47	H	-45.10	4.53	5.78	-43.85	69.61	30.85
6 790.98	V	-36.50	11.03	9.19	-38.34	64.10	25.34
6 790.90	H	-42.96	11.03	9.19	-44.80	70.56	31.80

- Measured output Power: 25.21 dB m = 0.332 W
- Modulation Signal: GSM1900
- Distance: 3 meters
- Limit: 43 + 10log$_{10}$(W) = 34.95 dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB i)	E.I.R.P. (dB m)	dB c	Margin (dB)
Low Channel(1 850.2 MHz)							
5 550.79	V	-40.40	9.91	10.45	-39.86	65.07	26.86
5 550.61	H	-41.30	9.91	10.45	-40.76	65.97	27.76
9 251.00	V	-33.11	13.14	12.35	-33.90	59.11	20.90
9 250.98	H	-34.69	13.14	12.35	-35.48	60.69	22.48
Middle Channel(1 880.0 MHz)							
5 640.12	V	-44.40	10.04	10.55	-43.89	69.10	30.89
5 640.13	H	-43.04	10.04	10.55	-42.53	67.74	29.53
9 400.11	V	-30.02	13.22	12.44	-30.80	56.01	17.80
9 400.28	H	-31.81	13.22	12.44	-32.59	57.80	19.59
High Channel(1 909.8 MHz)							
5 729.31	V	-49.02	10.18	10.64	-48.56	73.77	35.56
5 729.35	H	-41.51	10.18	10.64	-41.05	66.26	28.05
9 549.10	V	-24.41	13.38	12.52	-25.27	50.48	12.27
9 549.18	H	-36.69	13.38	12.52	-37.55	62.76	24.55

- Measured output Power: 21.95 dB m = 0.157 W
- Modulation Signal: WCDMA850
- Distance: 3 meters
- Limit: 43 + 10log$_{10}$(W) = 34.95 dB c

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dB m)	Cable loss (dB)	Ant. gain (dB d)	E.R.P. (dB m)	dB c	Margin (dB)
Low Channel (826.4 MHz)							
1 654.74	V	-44.90	4.39	5.78	-43.51	65.46	30.51
1 651.04	H	-49.33	4.38	5.78	-47.93	69.88	34.93
Middle Channel (836.6 MHz)							
1 675.90	V	-48.14	4.46	5.78	-46.82	68.77	33.82
1 675.70	H	-54.55	4.46	5.78	-53.23	75.18	40.23
High Channel (846.6 MHz)							
1 691.30	V	-41.38	4.51	5.78	-40.11	62.06	27.11
1 691.44	H	-46.41	4.51	5.78	-45.14	67.09	32.14

- Measured output Power: 26.12 dBm = 0.409 W
- Modulation Signal: WCDMA1900
- Distance: 3 meters
- Limit: 43 + 10log$_{10}$(W) = 39.12 dBc

Frequency (MHz)	Ant. Pol. (H/V)	S.G level + Amp. (dBm)	Cable loss (dB)	Ant. gain (dBi)	E.I.R.P. (dBm)	dBc	Margin (dB)
Low Channel(1 852.4 MHz)							
7 409.60	V	-38.85	11.64	11.67	-38.82	64.94	25.82
7 413.84	H	-43.87	11.64	11.67	-43.84	69.96	30.84
Middle Channel(1 880.0 MHz)							
7 523.96	V	-51.98	11.73	11.73	-51.98	78.10	38.98
7 516.16	H	-47.27	11.72	11.73	-47.26	73.38	34.26
High Channel(1 907.6 MHz)							
7 634.38	V	-49.18	11.83	11.79	-49.22	75.34	36.22
7 634.24	H	-47.61	11.83	11.79	-47.65	73.77	34.65

Remark:

1. E.R.P. & E.I.R.P. = [S.G level + Amp.](dBm) - Cable loss(dB) + Ant. gain (dBd/dBi)
2. This device was tested under all modulations.
3. The data reported in the table above was measured in worst case.

3. Occupied Bandwidth 99 %

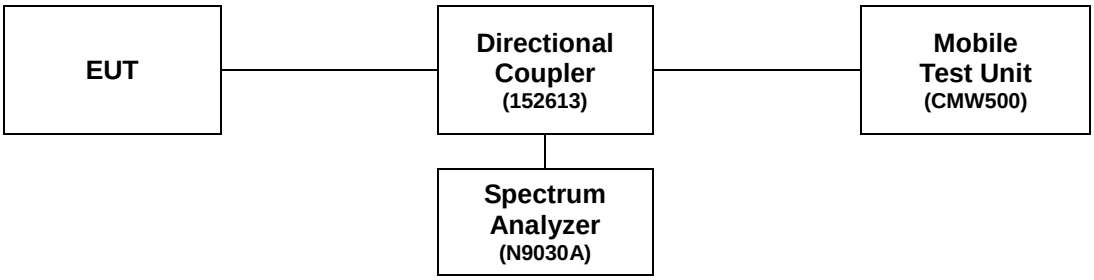
3.1. Limit

Requirements: CFR 47, Section §2.1049.

3.2. Test Procedure

The test follows section 4.2 of FCC KDB Publication 971168_v02r02.

1. Set span = 2 – 5 x OBW.
2. Set resolution bandwidth (RBW) = 1 – 5 % of OBW.
3. Set video bandwidth (VBW) ≥ 3 x RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Use the 99 % power bandwidth function of the spectrum analyzer (if available) and report the measured bandwidth.



3.3 Test Results

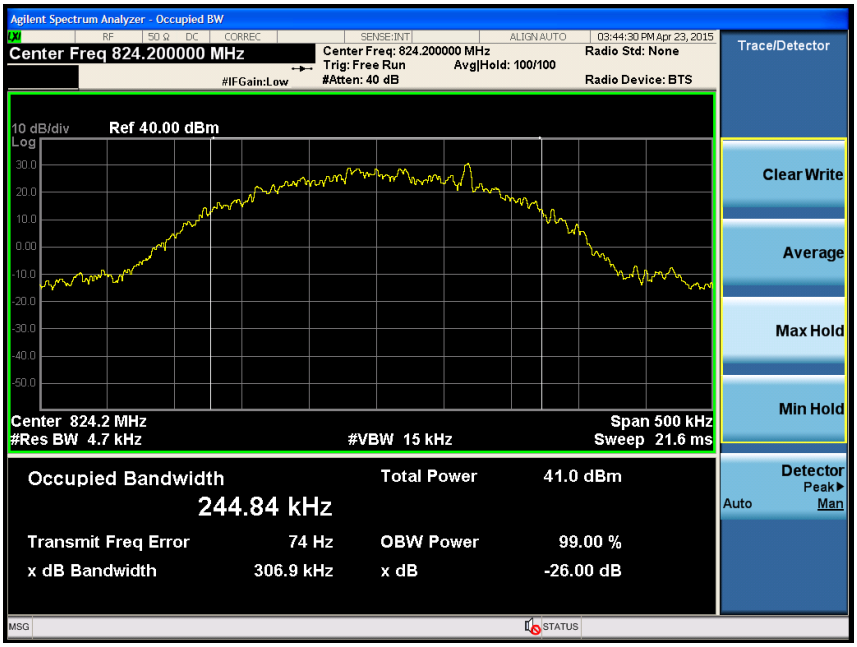
Ambient temperature : (24 ± 1) ℃
Relative humidity : 47 % R.H.

Band	Mode	Frequency (㎒)	Occupied Bandwidth (㎒)
GSM850	GSM Voice	824.2	0.245
		836.6	0.244
		848.8	0.245
GSM1900	GSM Voice	1 850.2	0.244
		1 880.0	0.243
		1 909.8	0.245
WCDMA850	12.2 kbps (RMC)	826.4	4.150
		836.6	4.153
		846.6	4.169
WCDMA1900	12.2 kbps (RMC)	1 852.4	4.168
		1 880.0	4.164
		1 907.6	4.159

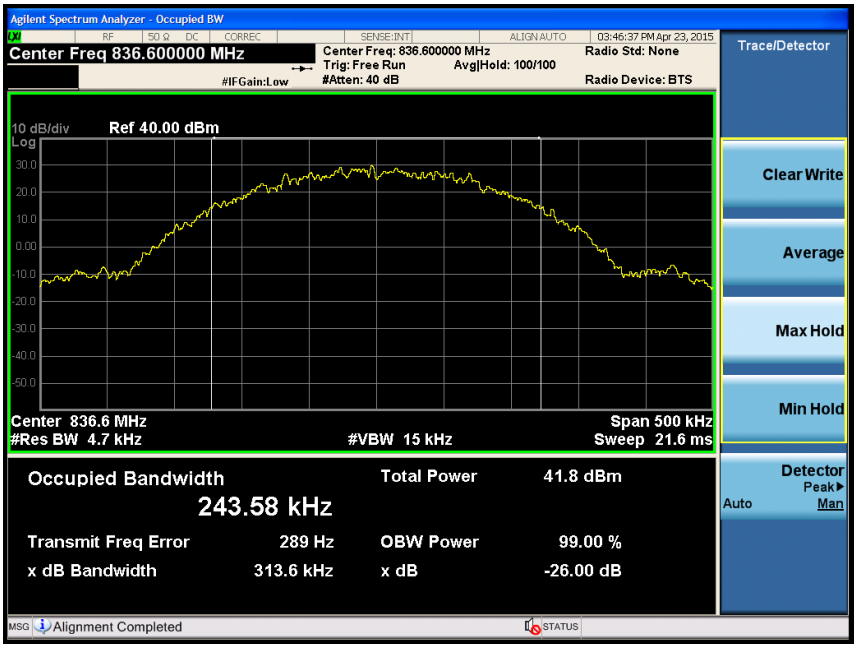
Please refer to the following plots.

GSM850

Low Channel

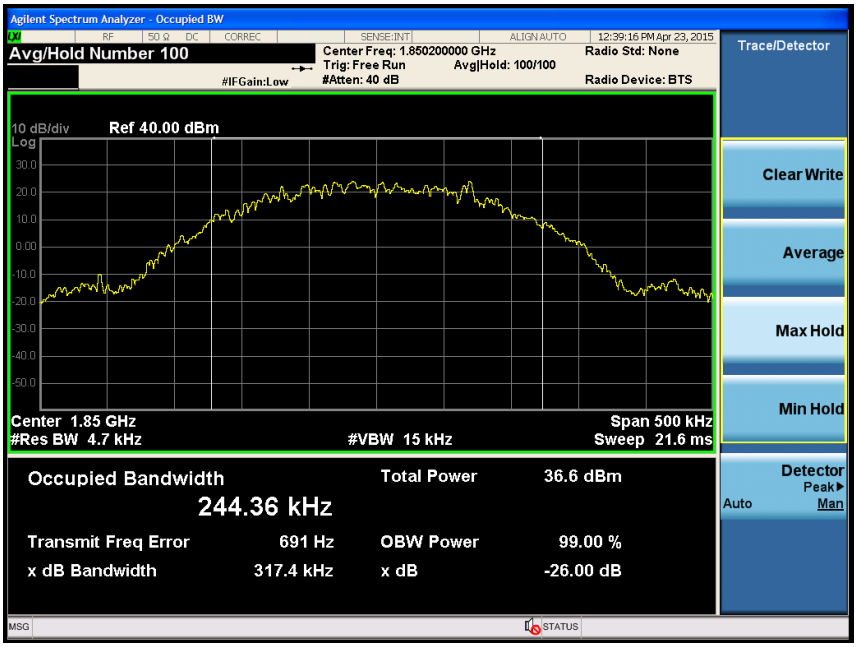


Middle Channel

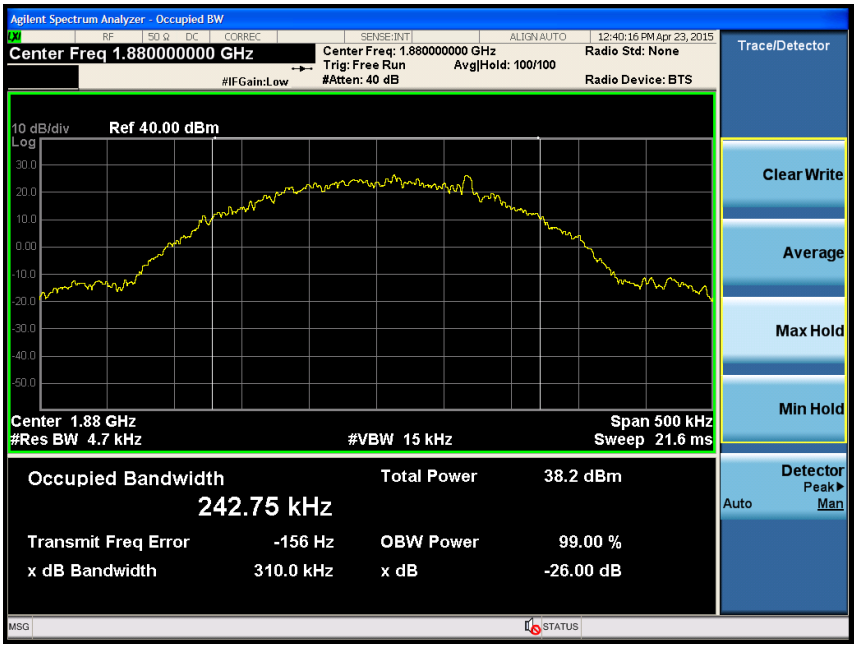


High Channel

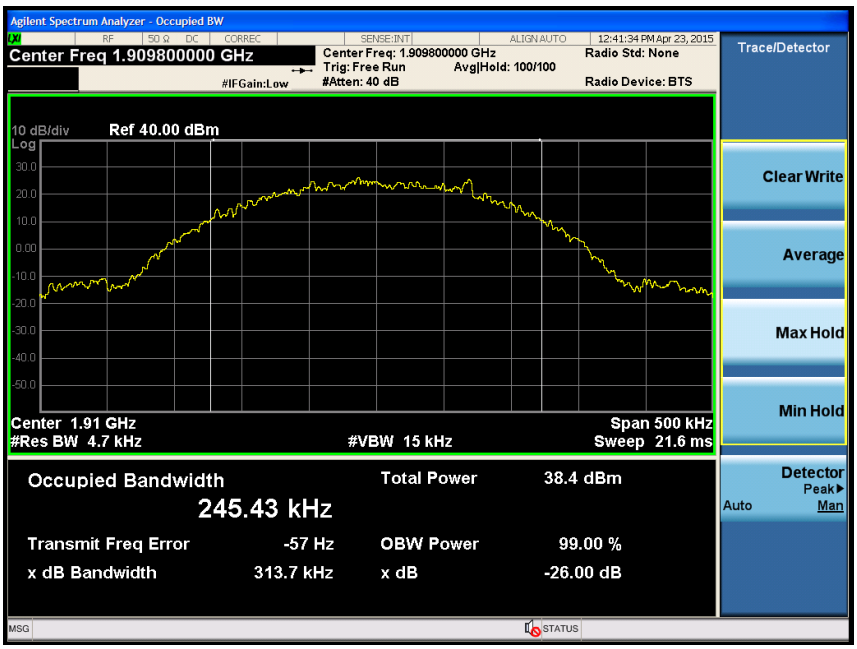
GSM1900
Low Channel



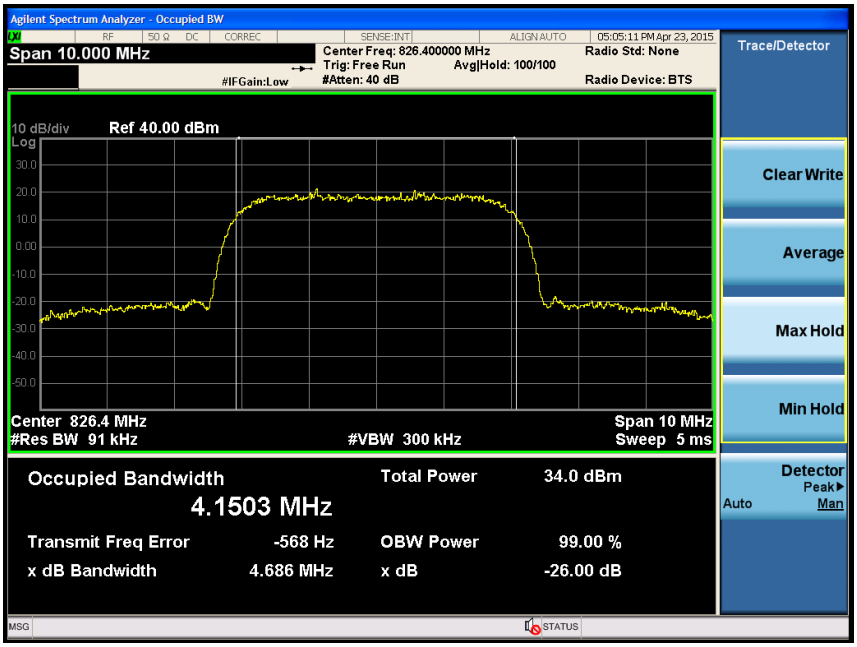
Middle Channel



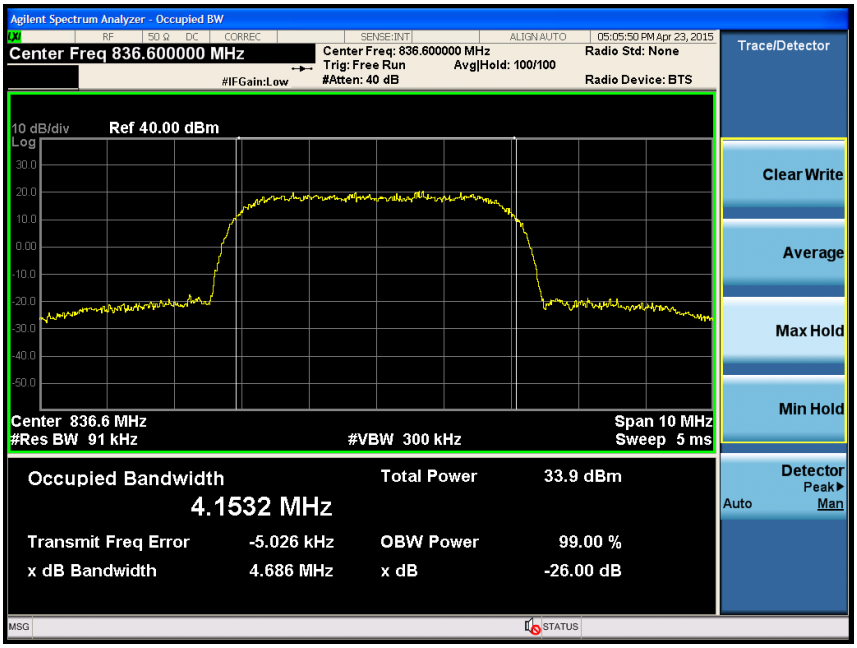
High Channel



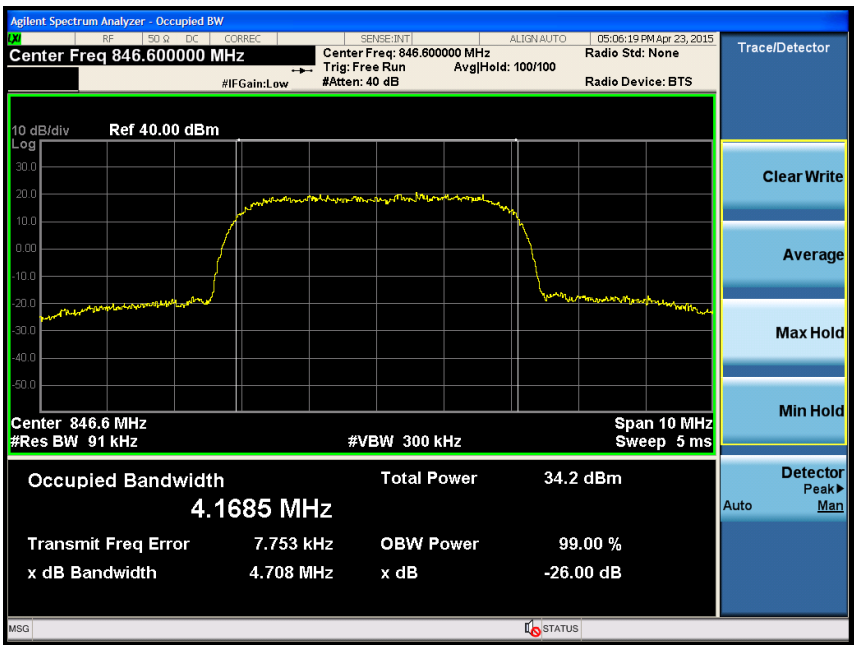
WCDMA850
Low Channel



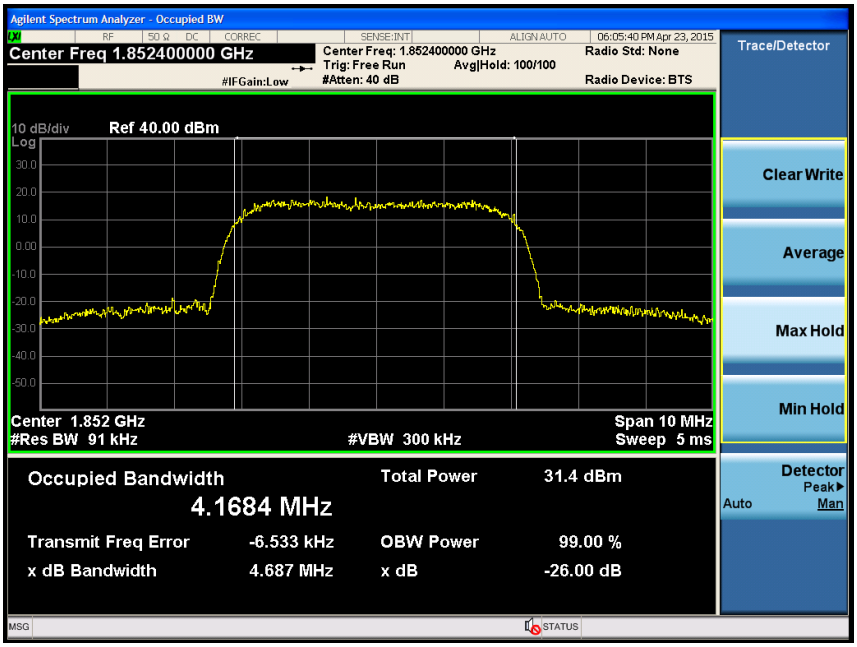
Middle Channel



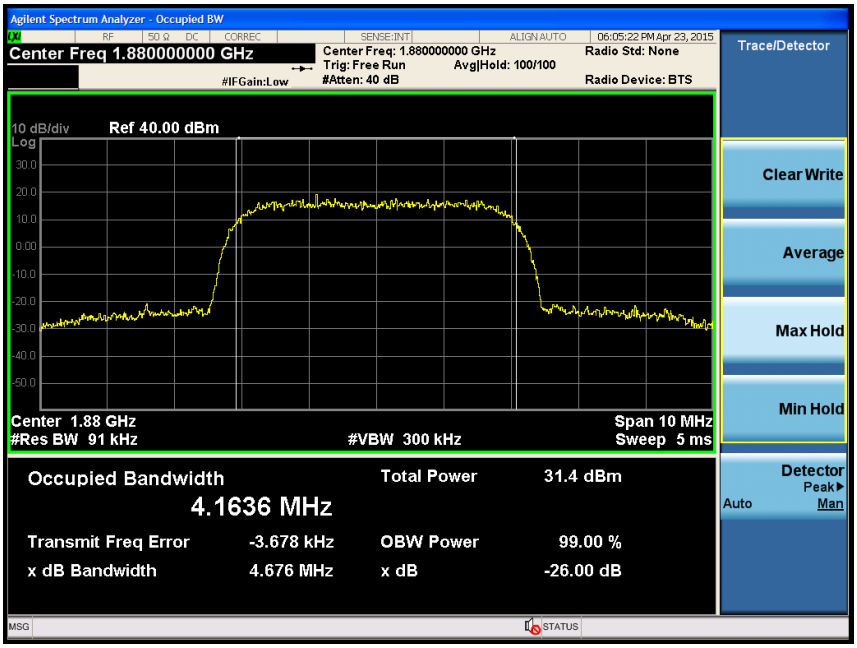
High Channel



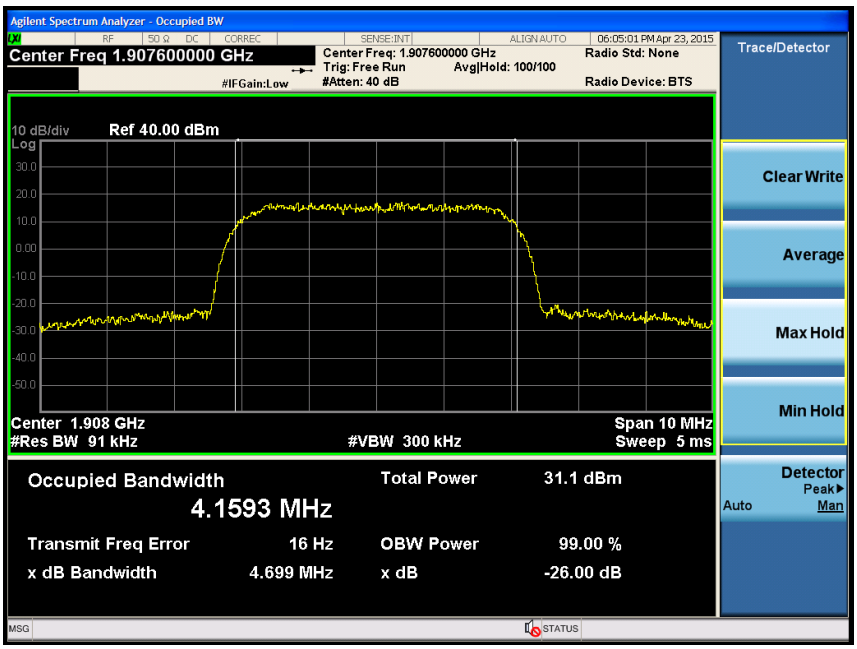
WCDMA1900
Low Channel



Middle Channel



High Channel



4. Peak-Average Ratio

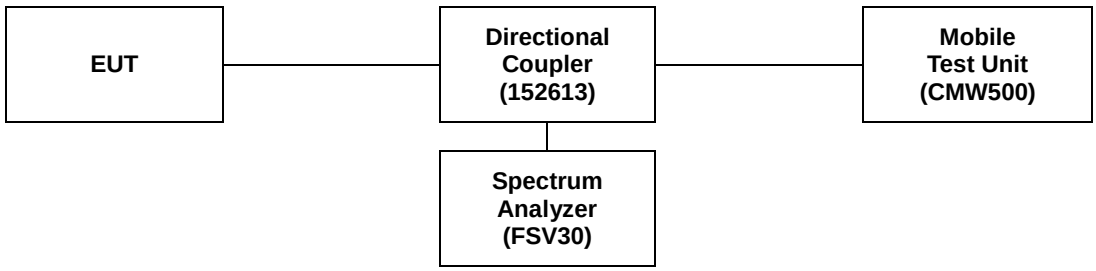
4.1. Limit

§24.232(d) Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 **dB**.

4.2. Test Procedure

The test follows section 5.7.1 of FCC KDB Publication 971168_v02r02.

1. Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function.
2. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth.
3. Set the number of counts to a value that stabilizes the measured CCDF curve.
4. Set the measurement interval as follows:
   a) for continuous transmissions, set to 1 ms.
   b) 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.
5. Record the maximum PAPR level associated with a probability of 0.1%.



4.3 Test Results

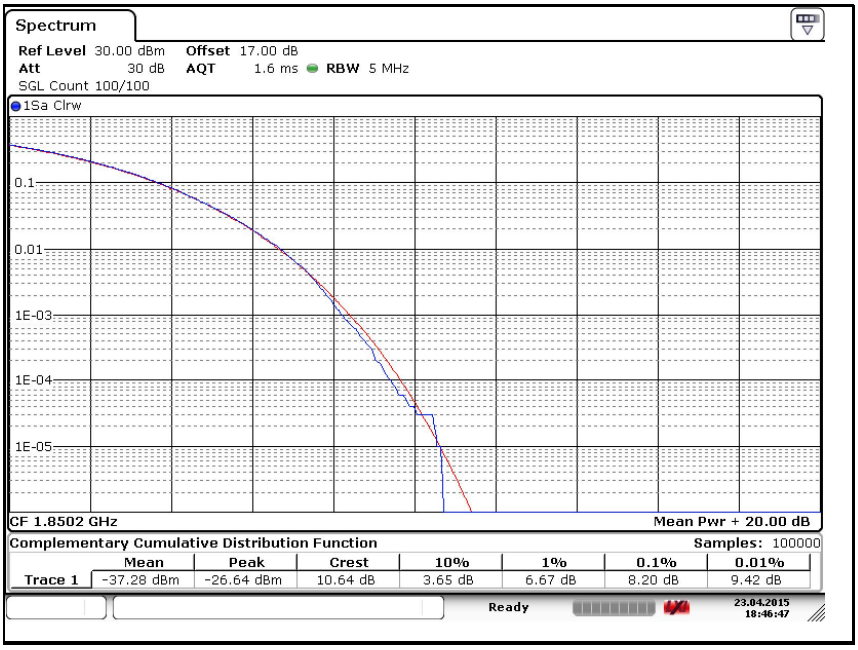
Ambient temperature : (24 ± 1) ℃
Relative humidity : 47 % R.H.

Please refer to the following plots.

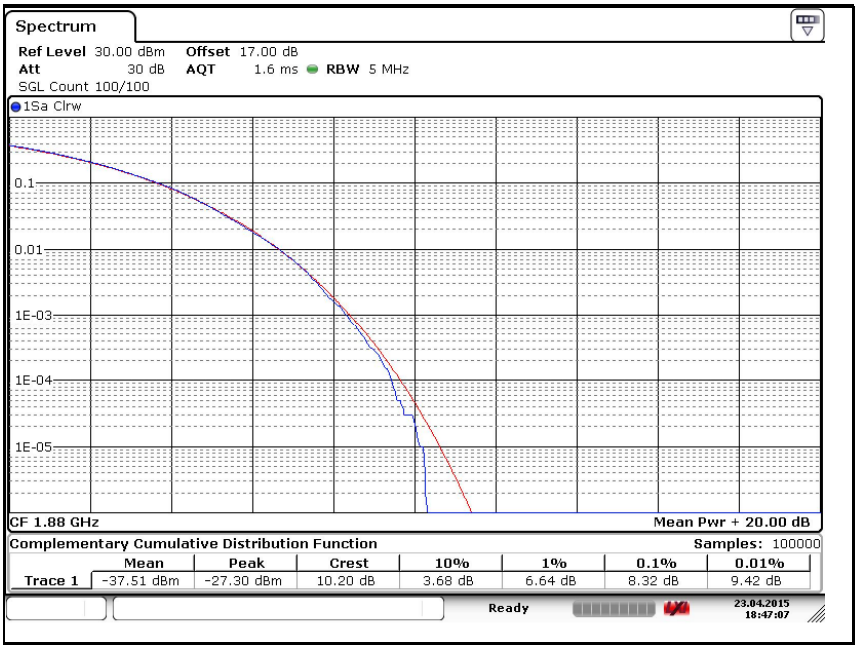
Band	Mode	Frequency (㎒)	PAR (㏈)
GSM1900	GSM Voice	1 850.2	8.20
		1 880.0	8.32
		1 909.8	8.61
WCDMA1900	12.2 kbps (RMC)	1 852.4	2.67
		1 880.0	2.84
		1 907.6	2.87

GSM1900

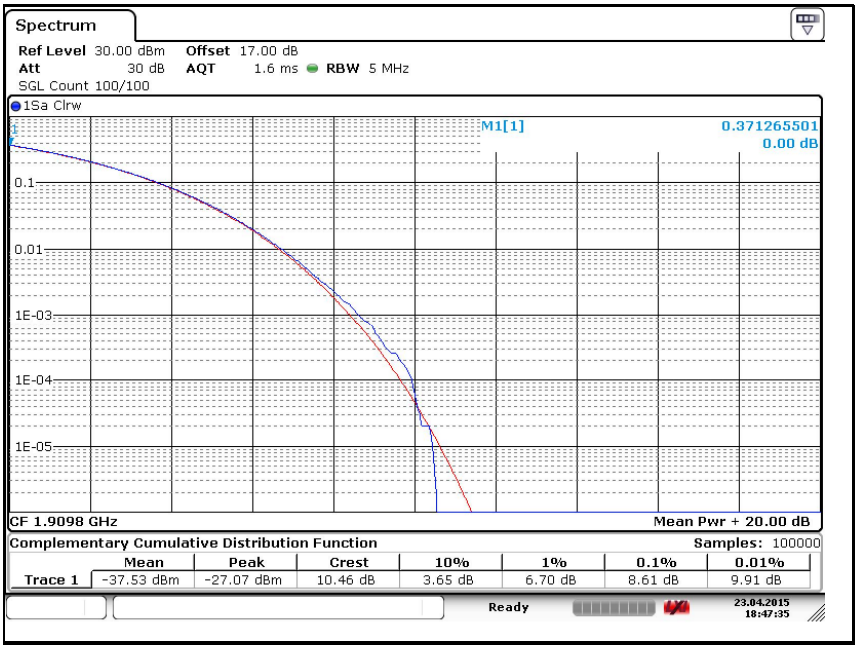
Low Channel



Middle Channel

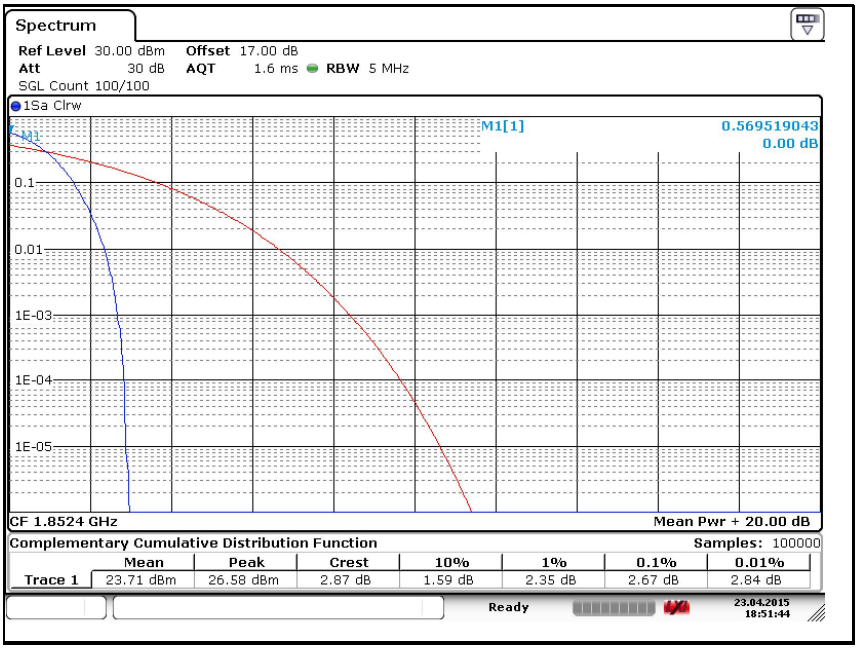


High Channel

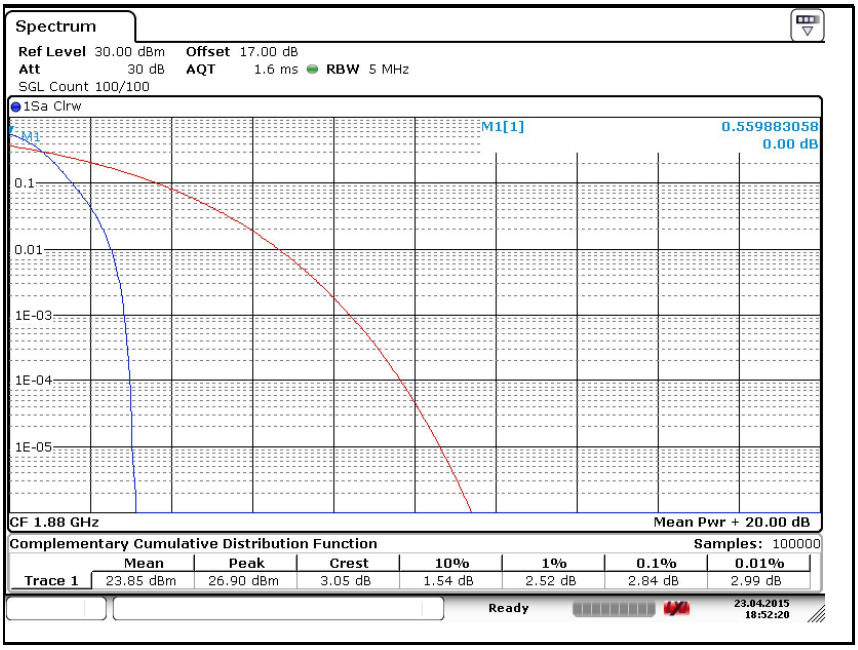


WCDMA1900

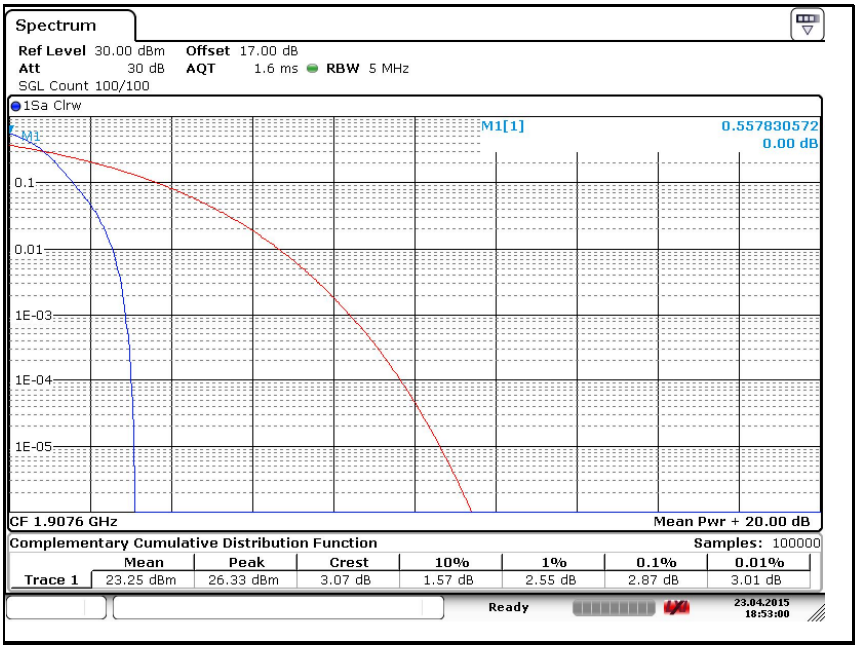
Low Channel



Middle Channel



High Channel



5. Spurious Emissions at Antenna Terminal

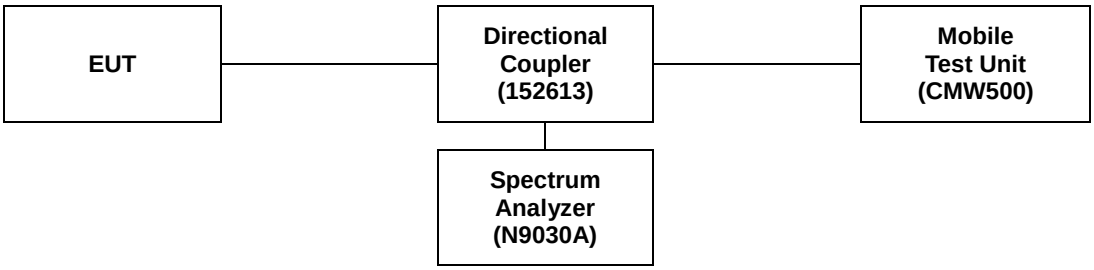
5.1. Limit

FCC §22.917(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) **dB**.
FCC §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) **dB**.

5.2. Test Procedure

The test follows section 6.0 of FCC KDB Publication 971168_v02r02.

1. Start frequency was set to 30 ㎒ and stop frequency was set to at least 10* the fundamental frequency.
2. Detector = RMS.
3. Trace mode = max hold.
4. Sweep time = auto couple.
5. The trace was allowed to stabilize.
6. Please see notes below for RBW and VBW settings.
7. For plots showing conducted spurious emissions from 30 ㎒ to 27 ㎓, all path loss of wide frequency range was investigated and compensated to spectrum analyzer as correction factor.



Notes;

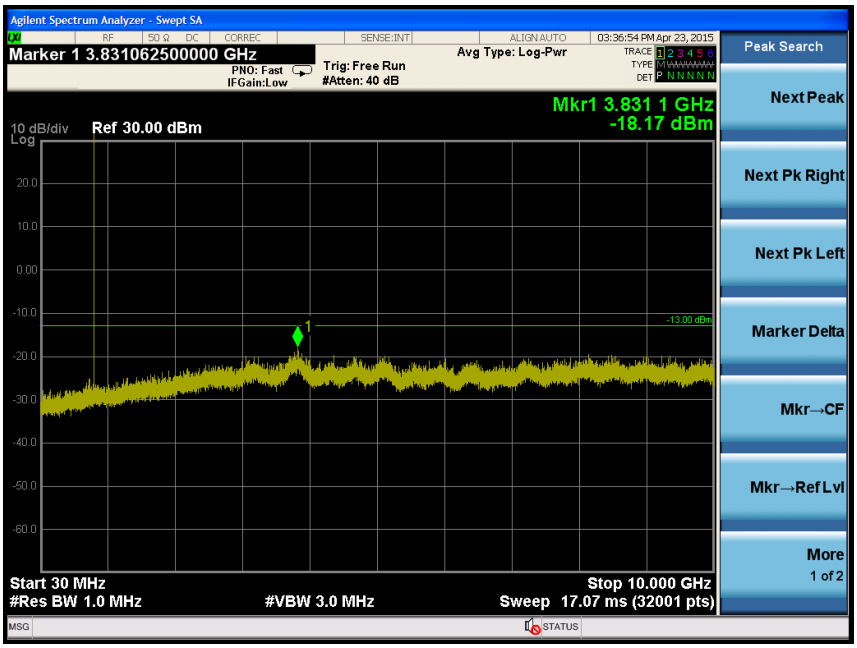
Compliance with the applicable limits is based on the use of measurement instrumentation employing a resolution bandwidth of 100 ㎑ or greater for frequencies less than 1 ㎓ and frequencies greater than 1 ㎓. However, in the 1 ㎒ bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two point, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 ㏈ below the transmitter power.

5.3. Test Results

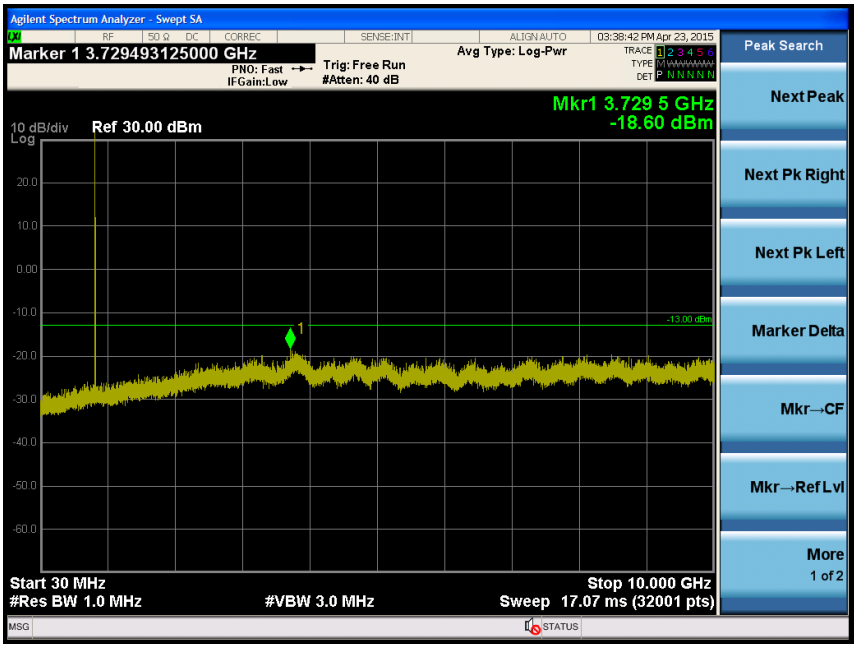
Ambient temperature	:	(24 ± 1) ℃
Relative humidity	:	47 % R.H.

Please refer to the following plots.

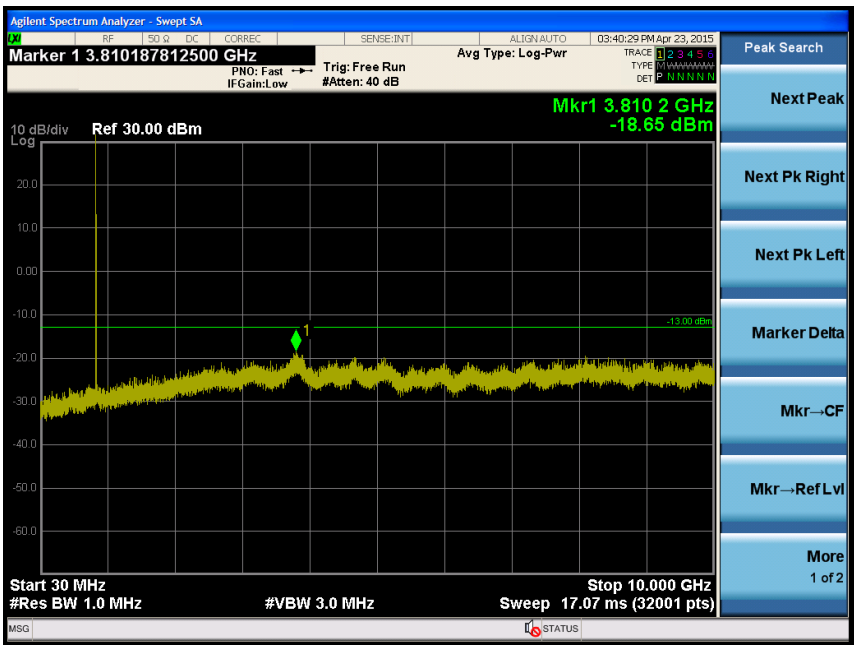
GSM850
Low Channel



Middle Channel

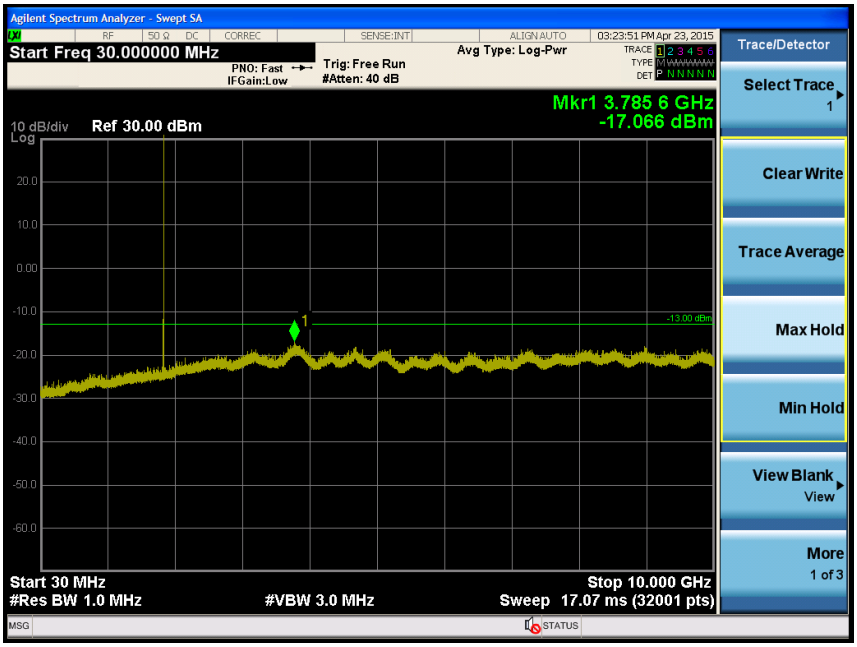


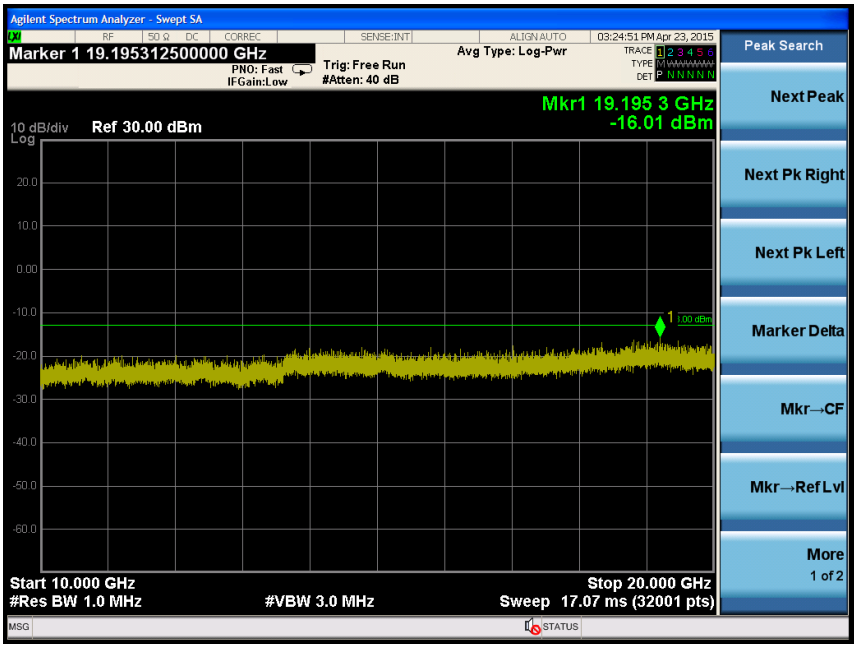
High Channel



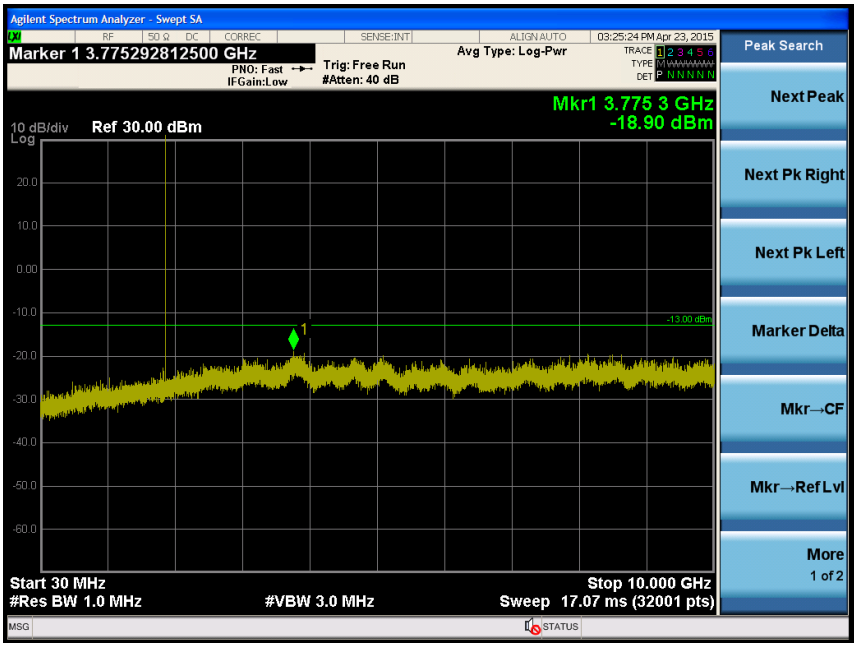
GSM1900

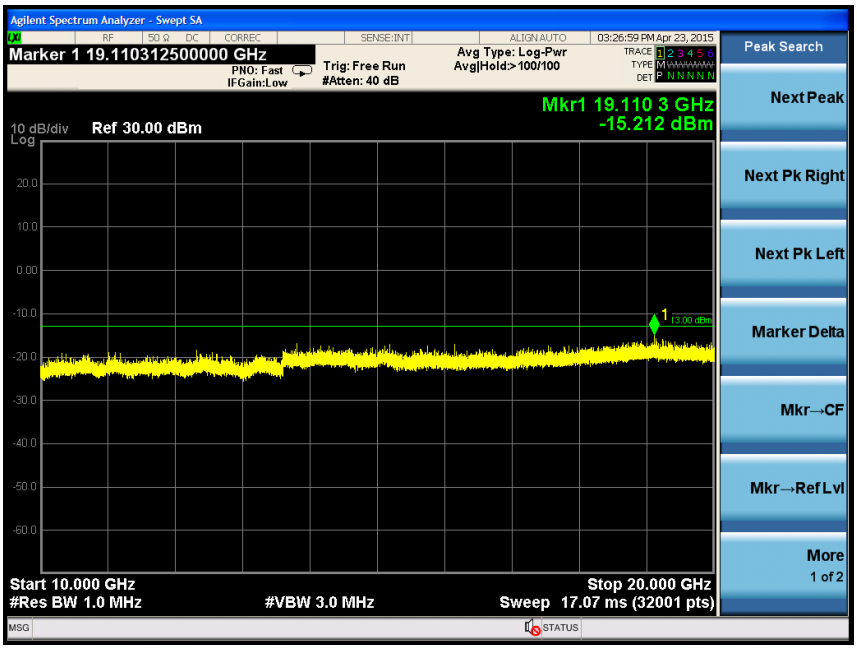
Low Channel



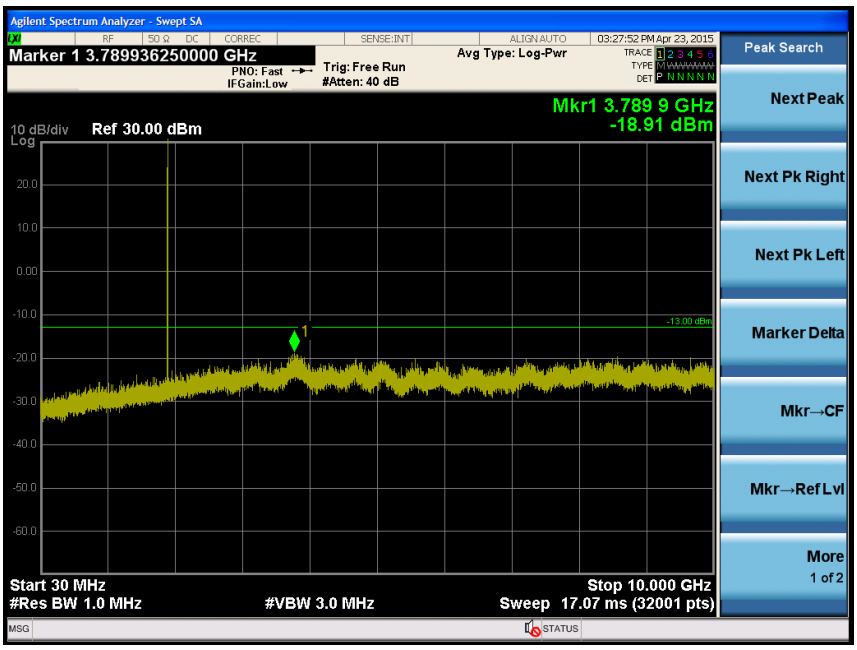


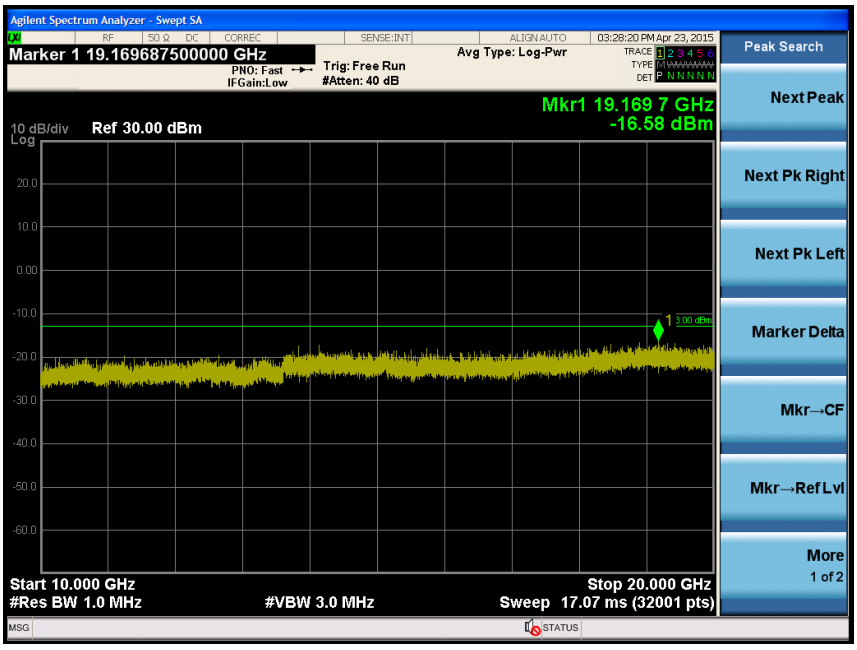
Middle Channel





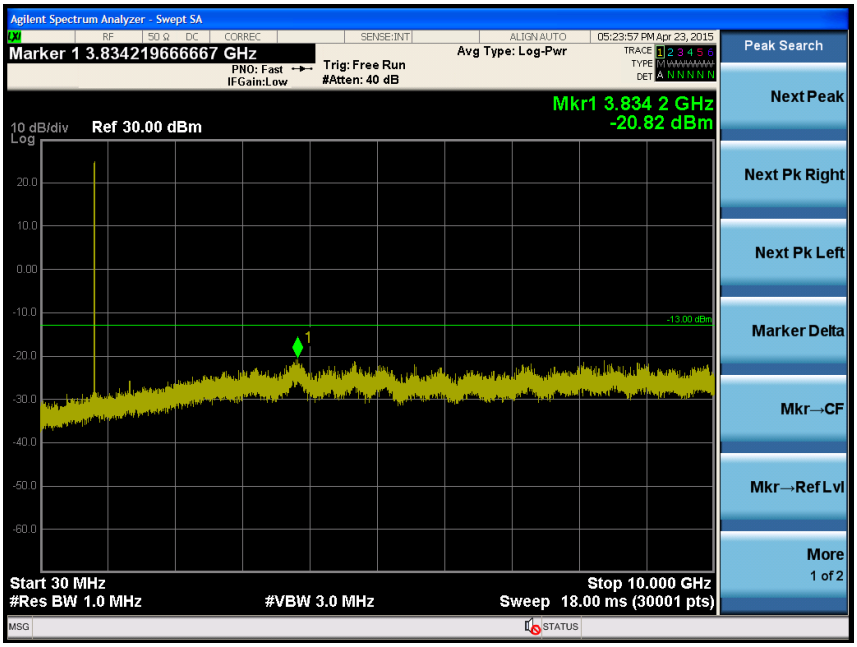
High Channel



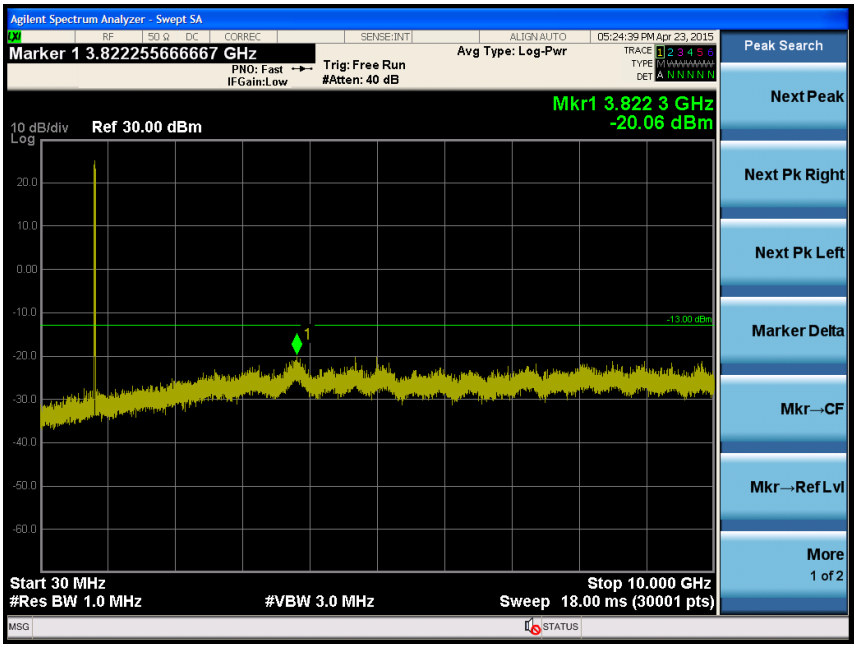


WCDMA850

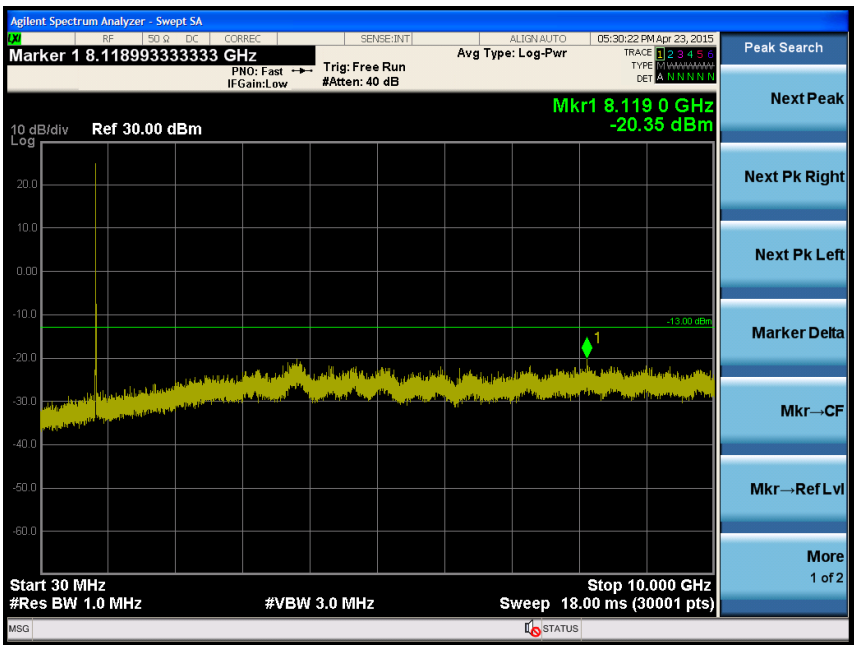
Low Channel



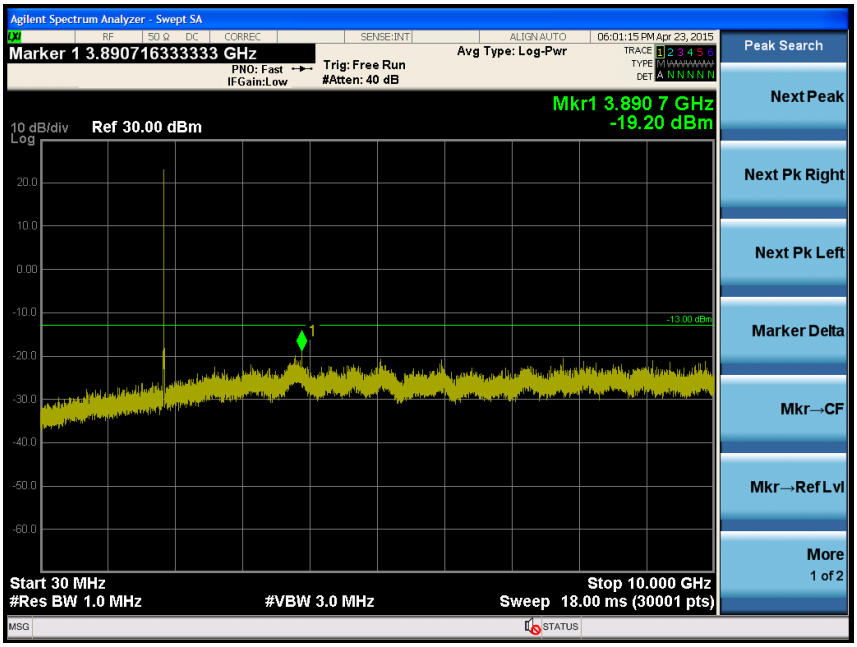
Middle Channel

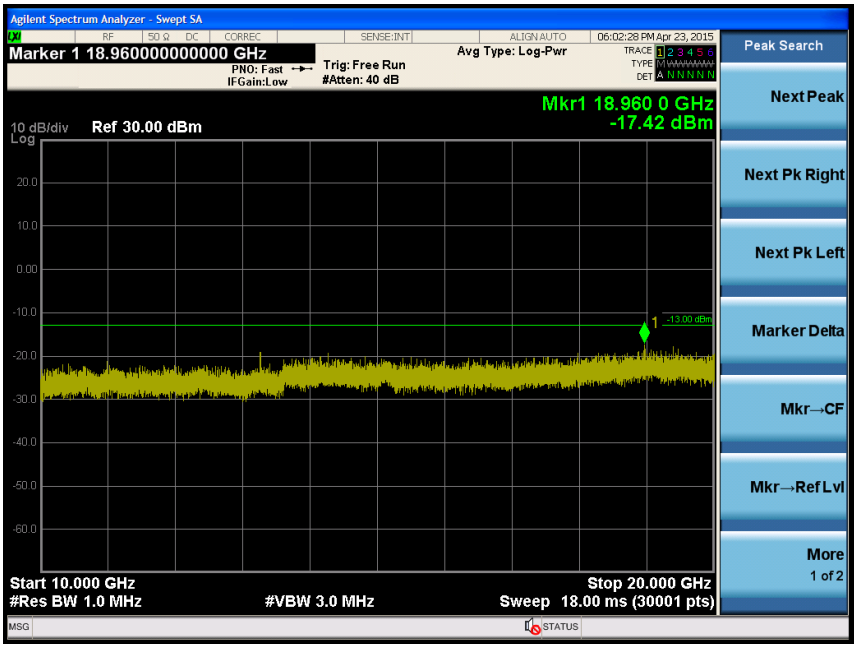


High Channel

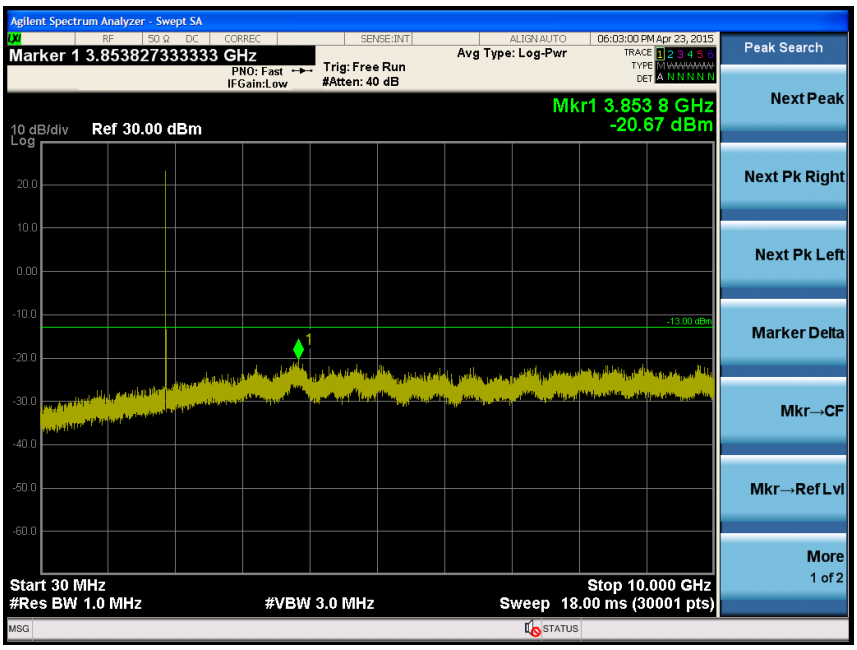


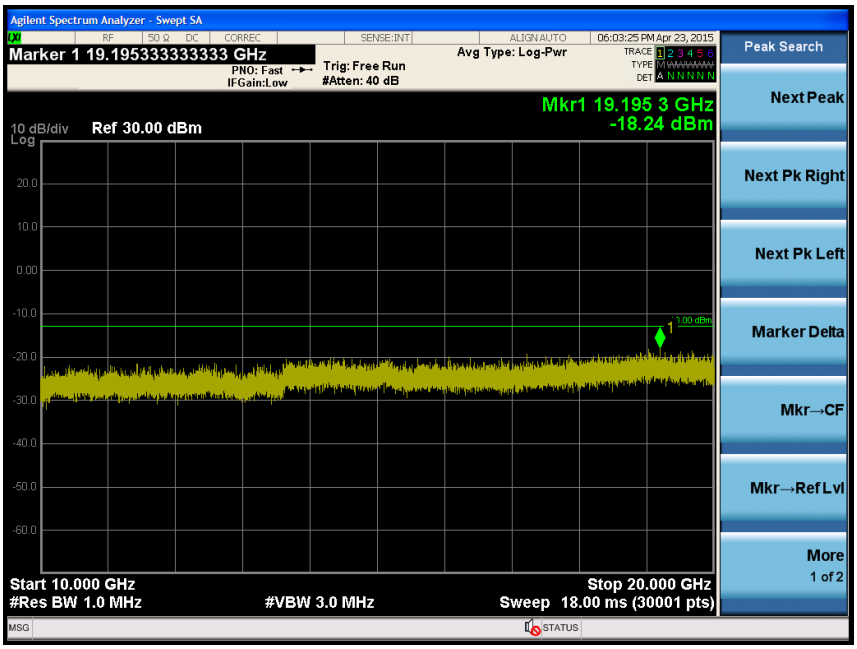
WCDMA1900
Low Channel



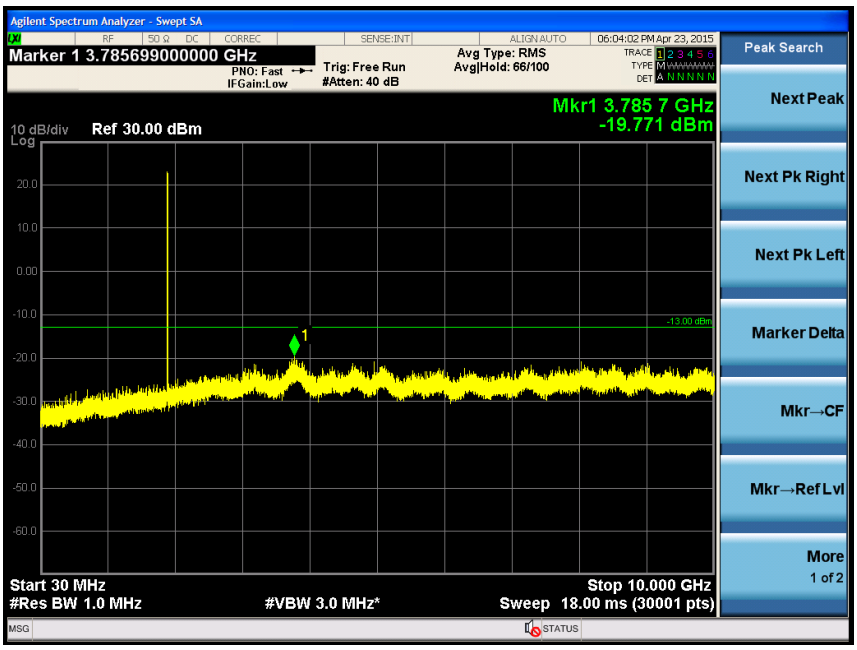


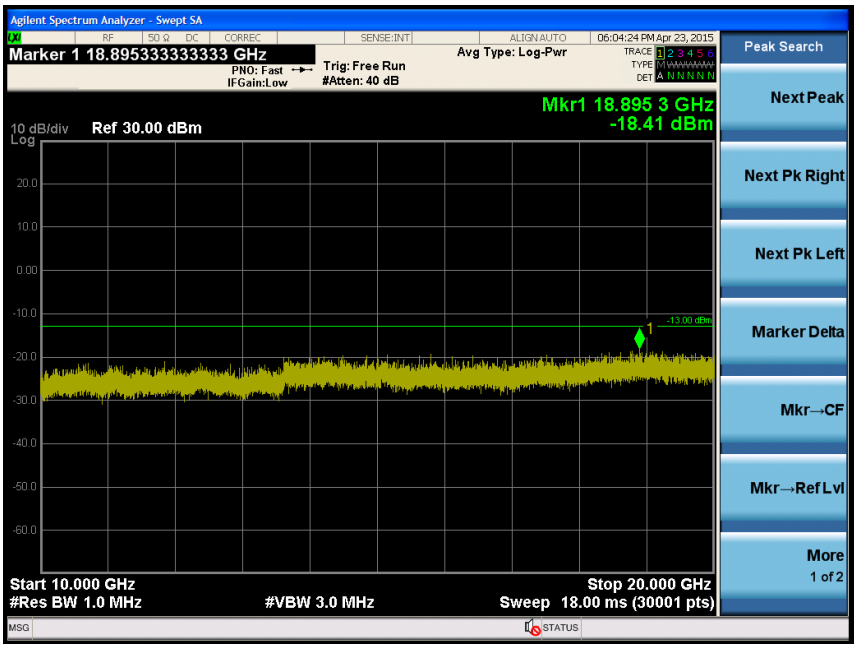
Middle Channel





High Channel





6. Band Edge

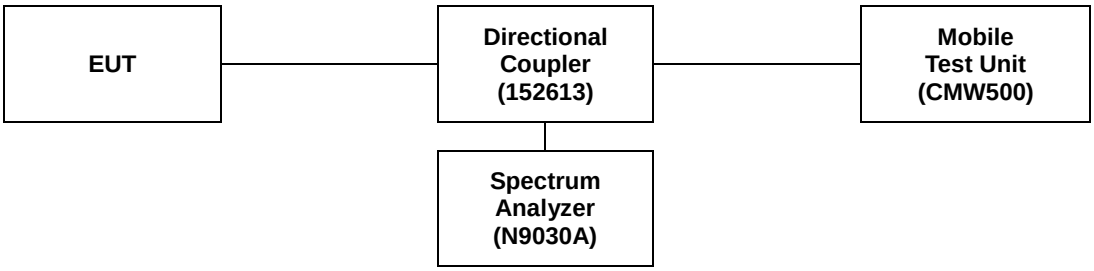
6.1. Limit

FCC §22.917(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10log(P) **dB**.
FCC §24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) **dB**.

6.2. Test Procedure

The test follows section 6.0 of FCC KDB Publication 971168_v02r02.

1. Span was set large enough so as to capture all out of band emissions near the band edge.
2. RBW ≥ 1 % of EBW
3. VBW ≥ RBW.
4. Detector = RMS.
5. Trace mode = max hold.
6. Sweep time = auto couple.
7. The trace was allowed to stabilize.
8. All path loss of frequency range was investigated and compensated to spectrum analyzer as correction factor.

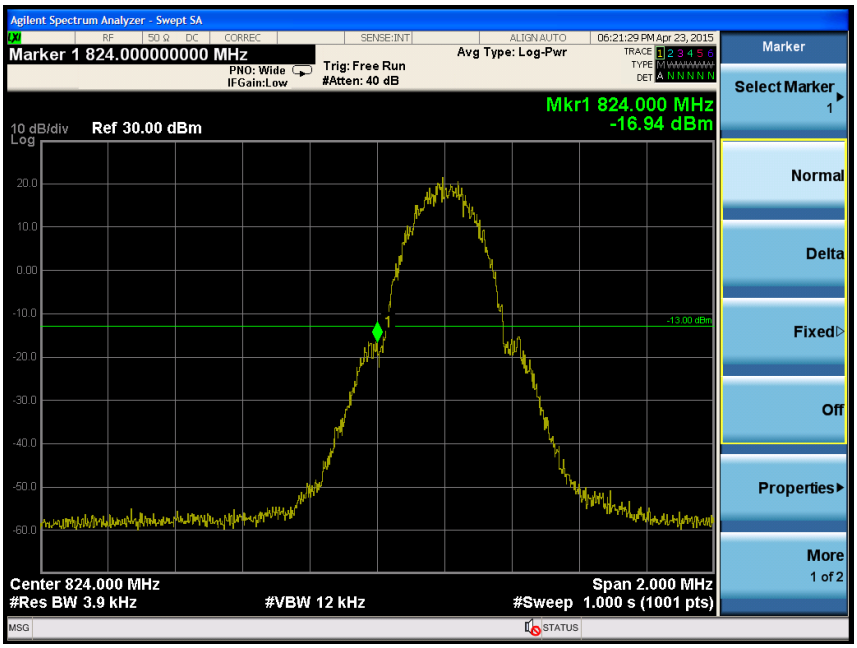


6.3. Test Results

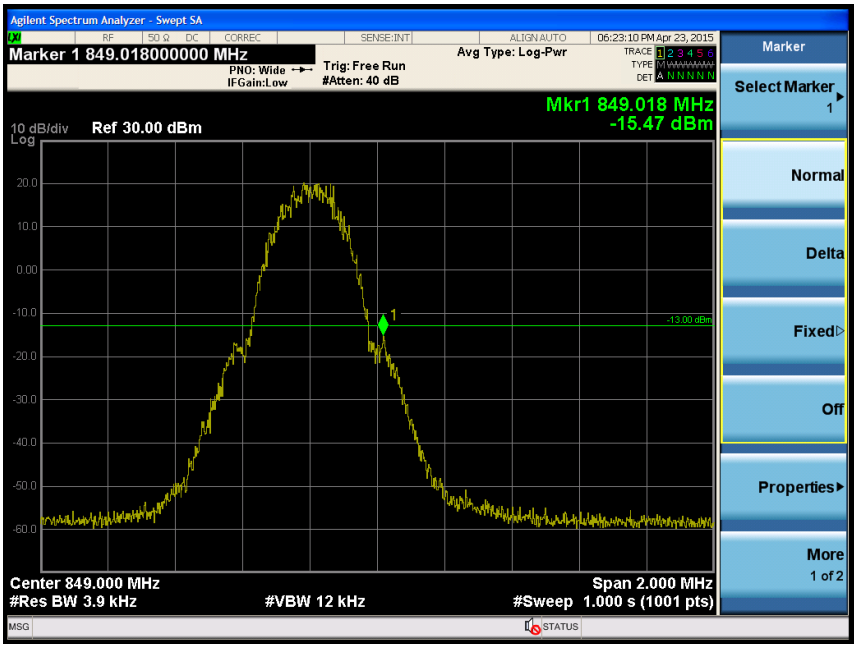
Ambient temperature : (24 ± 1) ℃
Relative humidity : 47 % R.H.

Please refer to the following plots.

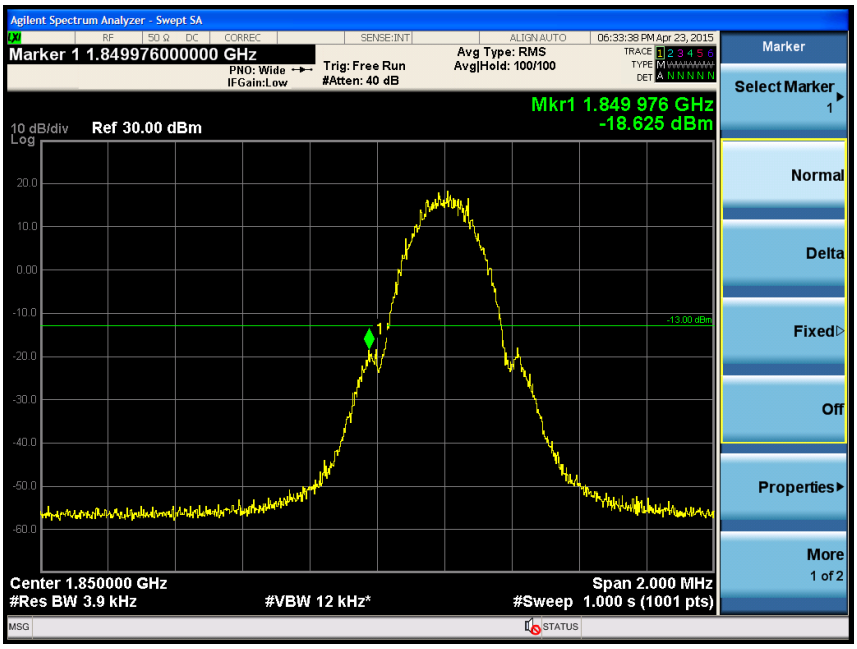
GSM850
Low Channel



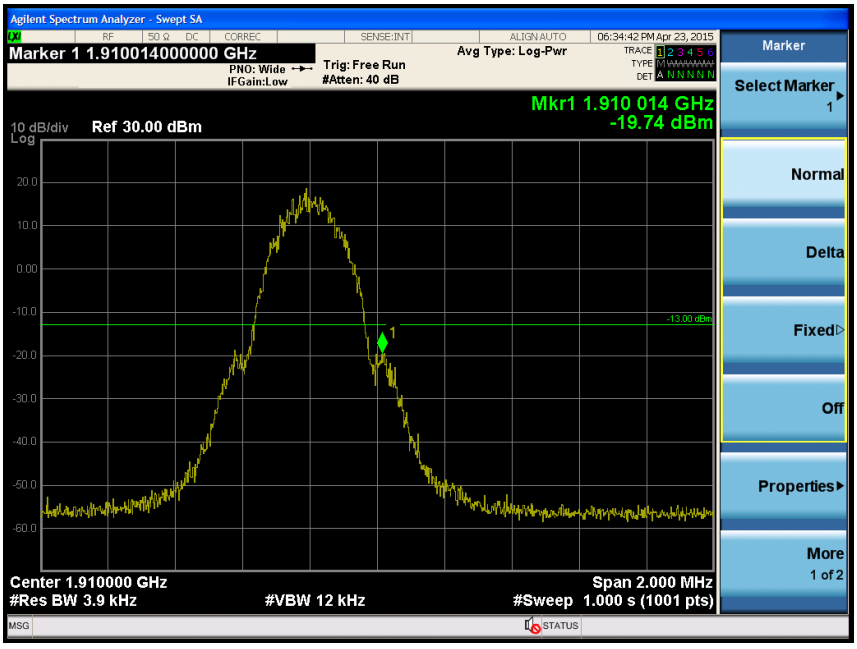
High Channel



GSM1900
Low Channel

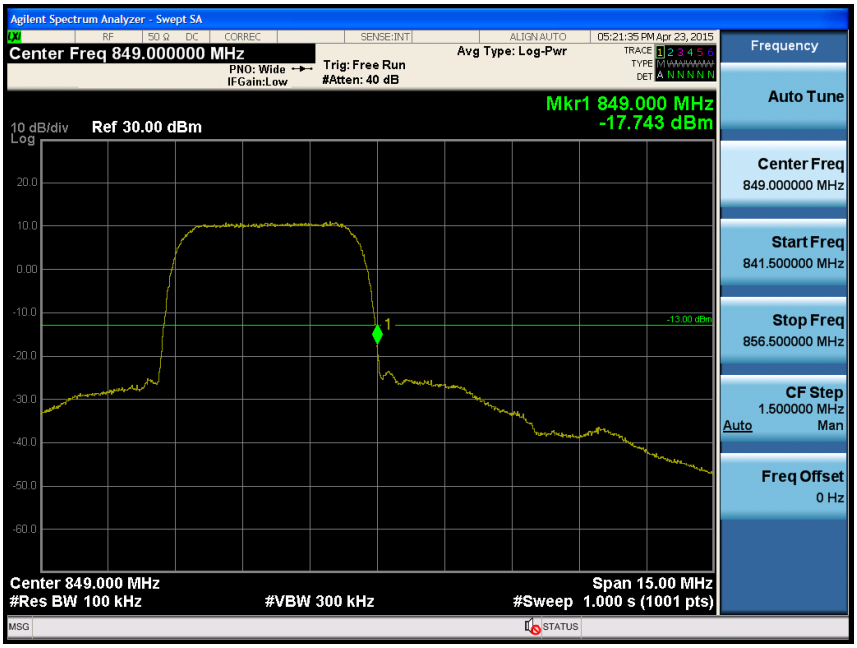


High Channel



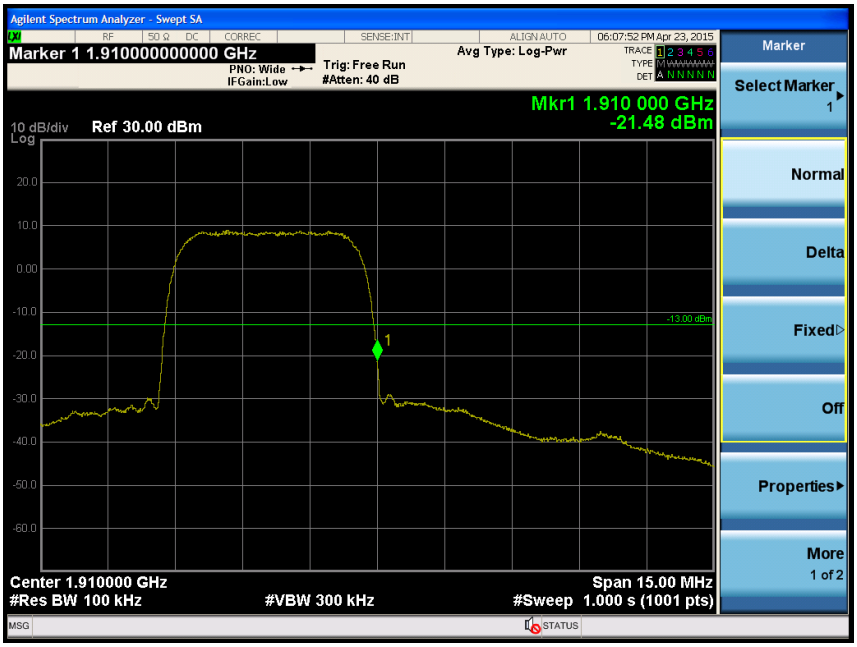
WDCMA850
Low Channel

High Channel



WCDMA1900
Low Channel

High Channel



7. Frequency Stability

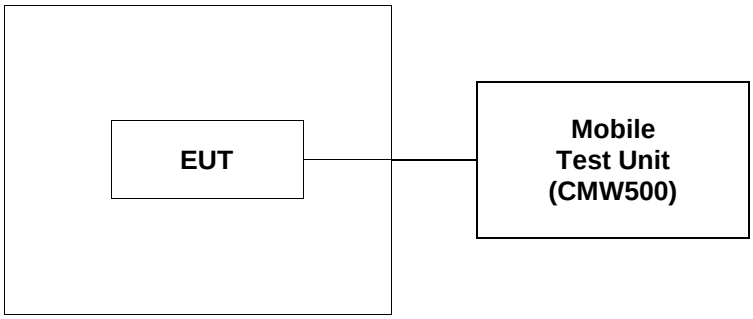
7.1. Limit

Requirements: FCC § 2.1055 (a), § 2.1055 (d) & following:
FCC §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table of this section.

For Mobile devices operating in the 824 to 849 ㎒ band at a power level less than or equal to 3 Watts, the limit specified in Table C-1 is +/- 2.5 ppm.
FCC §24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

7.2. Test Procedure

1. Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a Mobile Test Unit via feed-through attenuators.
2. The EUT was placed inside the temperature chamber.
3. After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from Mobile Test Unit.



7.3. Test Results

Ambient temperature : (24 ± 1) ℃
Relative humidity : 47 % R.H.

GSM850 mode at middle channel

Reference Frequency: 836.6 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V_{dc})**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	3.85	-3	-0.003 6
40		8	0.009 6
30		1	0.001 2
24		-1	-0.001 2
10		-3	-0.003 6
0		1	0.001 2
-10		5	0.006 0
-20		3	0.003 6
-30		-5	-0.006 0
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V_{dc})**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
24	3.45 (batt. End point)	10	0.012 0

GSM1900 mode at middle channel

Reference Frequency: 1 880.0 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V_{dc})**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	3.85	-2	-0.001 1
40		9	0.004 8
30		3	0.001 6
24		-1	-0.000 5
10		1	0.000 5
0		6	0.003 2
-10		5	0.002 7
-20		3	0.001 6
-30		-5	-0.002 7
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V_{dc})**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
24	3.45 (batt. End point)	5	0.002 7

WCDMA850 mode at middle channel

Reference Frequency: 836.6 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V_{dc})**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	3.85	3	0.003 6
40		8	0.009 6
30		1	0.001 2
24		-5	-0.006 0
10		11	0.013 1
0		8	0.009 6
-10		-2	-0.002 4
-20		10	0.012 0
-30		9	0.010 8
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V_{dc})**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
24	3.45 (batt. End point)	6	0.007 2

WCDMA1900 mode at middle channel

Reference Frequency: 1 880.0 ㎒			
Frequency Stability versus Temperature			
Environment Temperature (℃)	**Power Supplied (V_{dc})**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
50	3.85	9	0.004 8
40		6	0.003 2
30		-3	-0.001 6
24		-1	-0.000 5
10		5	0.002 7
0		3	0.001 6
-10		7	0.003 7
-20		-6	-0.003 2
-30		5	0.002 7
Frequency Stability versus Power Supply			
Environment Temperature (℃)	**Power Supplied (V_{dc})**	**Frequency Measure with Time Elapse**	
		Frequency Error (㎐)	**ppm**
24	3.45 (batt. End point)	2	0.001 1