

**FCC LISTED, REGISTRATION
NUMBER: 905266**

**IC LISTED REGISTRATION NUMBER
IC 4621**

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Libro 82, Folio 133, Hoja MA3729

TEST REPORT

**REFERENCE STANDARD:
USA FCC Part 22, Part 24 and 15.207
CANADA IC RSS-132, RSS-133**

NIE :	31912RET.001
Approved by (name / position & signature)	A. Llamas / RF Lab. manager
Elaboration date	22/09/2010
Identification of item tested	Mobile Broadband Module
Trademark	Ericsson
Model name	F3307
Type number	KRD 131 16/01, KRD 131 16/02, KRD 131 16/G0
Other identification of the product	FCC ID: VV7-MBMF33071, VV7-MBMF33072, VV7-MBMF3307S IC Type Approval #: 287AG-MBMF33071, 287AG-MBMF33072, 287AG-MBMF3307S
Final HW version	R2
Final SW version	R2A09
Features	QUAD BAND GSM/GPRS/EGPRS class 10 WCDMA Bands: KRD 131 16/01: II/V KRD 131 16/02: I/VIII KRD 131 16/G0: I HSDPA Cat. 8 HSUPA Cat. 6
Description	Mini-PCIE Wireless WAN card
Applicant	Ericsson AB
Address	Lindholmospiren 11, SE-417 56, Gothenburg, Sweden
CIF/NIF/Passport.....	N/A
Contact person:	Fredrik Claesson
Telephone / Fax	+46 10 712 7856 / +46 10 712 6033
e-mail:	fredrik.a.claesson@ericsson.com
Test samples supplier	Same as applicant
Manufacturer	Same as applicant

Test method requested	See Standard
Standard	USA FCC Part 22 10-01-09 Edition. USA FCC Part 24 10-01-09 Edition. CANADA IC RSS-132 Issue 2, Sep. 2005. CANADA IC RSS-133 Issue 5, Feb. 2009. USA FCC part 15.207 10-01-09 Edition: Conducted limits.
Test procedure	1. PEET000: Medidas de equipos radioeléctricos en condiciones radiadas. 2. PEET003: Medidas conducidas de equipos radioeléctricos. 3. PEEM001: Medida de la tensión perturbadora en bornes de alimentación según EN 55022.
Non-standardized test method	N/A

Used instrumentation

			Last Cal.	Cal. due date
1.	Semianechoic Absorber Lined Chamber IR 11. BS		N.A.	N.A.
2.	Control Chamber IR 12.BC		N.A.	N.A.
3.	Hybrid Bilog antenna Sunol Sciences Corporation JB6		2008-10	2011-10
4.	Antenna mast EM 1072 NMT		N.A.	N.A.
5.	Rotating table EM 1084-4. ON		N.A.	N.A.
6.	Double-ridge Guide Horn antenna 1-18 GHz HP 11966E		2008-03	2011-03
7.	Double-ridge Guide Horn antenna 18-40 GHz Agilent 119665J		2008-09	2011-09
8.	EMI Test Receiver R&S ESIB26		2009-09	2011-09
9.	Universal Radio communication Tester R&S CMU200		2009-02	2011-02
10.	Multi Device Controller EMCO 2090		N.A.	N.A.
11.	Spectrum Analyzer R&S ESU40		2009-11	2011-11
12.	Spectrum Analyzer Agilent E4440A		2010-02	2012-02
13.	Power amplifier AMF-4D-00400600-50-30P		2009-04	2011-04
14.	Log-Periodic antenna R&S HL 040		2009-10	2012-10
15.	RF generator Agilent ESG E4438C		2010-09	2012-09
16.	Climatic chamber HERAEUS VM 07/100		2010-02	2013-02
17.	Transient limiter. HP 11947A		2009-06	2011-06
18.	Line Impedance Stabilization Network (L.I.S.N.) R&S. ESH2-Z5		2010-06	2012-06
19.	RF pre-amplifier Miteq AFS5-04001300-15-10P-6.		2010-07	2012-07
20.	RF pre-amplifier Schaffner CPA 9231.		2009-03	2011-03
21.	RF pre-amplifier Miteq JS4-12002600-30-5A.		2010-07	2012-07

Report template No.: FDT08_11

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Competences and guarantees

AT4 wireless, S.A. is a laboratory with a measurement facility in compliance with the requirements of Section 2.948 of the FCC rules and has been added to the list of facilities whose measurements data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Registration Number: 905266.

AT4 wireless, S.A. is a laboratory with a measurement site in compliance with the requirements of RSS 212, Issue 1 (Provisional) and has been added to the list of filed sites of the Canadian Certification and Engineering Bureau. Reference File Number: IC 4621.

In order to assure the traceability to other national and international laboratories, AT4 wireless has a calibration and maintenance programme for its measurement equipment.

AT4 wireless guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at AT4 wireless at the time of performance of the test.

AT4 wireless is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

General conditions

1. This report is only referred to the item that has undergone the test.
2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.
3. This document is only valid if complete; no partial reproduction can be made without previous written permission of AT4 wireless.
4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of AT4 wireless and the Accreditation Bodies.

Uncertainty

Uncertainty (factor $k=2$) was calculated according to the AT4 wireless internal document PODT000.

Usage of samples

Samples undergoing test have been selected by: **the client**.

Sample M/01 is composed of the following elements

<u>Control No.</u>	<u>Description</u>	<u>Model / Type</u>	<u>Serial No.</u>	<u>Date of reception</u>
31912/03	Mobile Broadband Module	F3307 / KRD 131 16/01	IMEI: 004401700405489 Serial #: C3700201LE	30/08/2010
29969/05	Test board	---	---	22/06/2009
29556/08	AC Adaptor	04151V-050300	---	26/03/2009
31356/02	Antenna	---	---	25/03/2010

Sample S/01 is composed of the following elements:

<u>Control N°</u>	<u>Description</u>	<u>Model / Type</u>	<u>Serial N°</u>	<u>Date of reception</u>
31912/03	Mobile Broadband Module	F3307 / KRD 131 16/01	IMEI: 004401700405489 Serial #: C3700201LE	2010/08/30

Sample S/02 is composed of the following elements:

<u>Control N°</u>	<u>Description</u>	<u>Model / Type</u>	<u>Serial N°</u>	<u>Date of reception</u>
31912/06	Mobile Broadband Module	F3307 / KRD 131 16/02	IMEI: 004401700405588 Serial #: C370020JRP	2010/08/30

Sample S/03 is composed of the following elements

<u>Control N°</u>	<u>Description</u>	<u>Model / Type</u>	<u>Serial N°</u>	<u>Date of reception</u>
31912/09	Mobile Broadband Module	F3307 / KRD 131 16/G0	IMEI: 004401700406024 Serial #: C370020QXU	2010/08/30

Auxiliary elements used with the samples S/01, S/02 & S/03:

<u>Control N°</u>	<u>Description</u>	<u>Model</u>	<u>Serial N°</u>	<u>Date of reception</u>
31356/02	Laptop simulator	---	---	2010/03-25
28940/07	Cradle	---	---	2008/12/30
31912/08	Nordic Power AC-DC Power adaptor	AMPLUS / 04151V-050300	---	2009/03/26

- Sample M/01 has undergone the following test(s) specified in subclause "Test method requested":
FCC part 22 and part 24 / IC RSS-132 Issue 2 and IC RSS-133 Issue 5 tests indicated in appendix A.
- Samples S/01, S/02 & S/03 has undergone the next test(s):
Continuous conducted emission, power leads, indicated in appendix B.

Testing period

The performed test started on 2010-09-07 and finished on. 2010-09-20.

The tests have been performed at AT4 wireless.

Environmental conditions

In the control chamber, the following limits were not exceeded during the test:

Temperature	Min. = 26.1 °C Max. = 26.5 °C
Relative humidity	Min. = 42.8 % Max. = 43.5 %
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 0,5 Ω

In the semianechoic chamber (21 meters x 11 meters x 8 meters), the following limits were not exceeded during the test.

Temperature	Min. = 25.3 °C Max. = 25.7 °C
Relative humidity	Min. = 45 % Max. = 48 %
Air pressure	Min. = 1018 mbar Max. = 1019 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 0,5 Ω
Normal site attenuation (NSA)	< ±4 dB at 10 m distance between item under test and receiver antenna, (30 MHz to 1000 MHz)
Field homogeneity	More than 75% of illuminated surface is between 0 and 6 dB (26 MHz to 1000 MHz).

In the chamber for conducted measurements the following limits were not exceeded during the test:

Temperature	Min. = 24.7 °C Max. = 25.2 °C
Relative humidity	Min. = 51.3 % Max. = 52.7 %
Air pressure	Min. = 1020 mbar Max. = 1020 mbar
Shielding effectiveness	> 100 dB
Electric insulation	> 10 kΩ
Reference resistance to earth	< 0,5 Ω

Summary

Considering the results of the performed test according to standards USA FCC Part 22, Part 24, Part 15.207, Canada IC RSS-132 and RSS-133, the item under test is **IN COMPLIANCE** with the requested specifications specified in the standard.

NOTE: The results presented in this Test Report apply only to the particular item under test established in page 1 of this document, as presented for test on the date(s) shown in section, "USAGE OF SAMPLES, TESTING PERIOD AND ENVIRONMENTAL CONDITIONS".

Remarks and comments

GSM mode has not been tested to prove USA FCC Part 22 and Part 24 and Canada IC RSS-132 and RSS-133 compliance because the modulation scheme and the power maximum levels are the same as for GPRS mode.

Taking into account the above comments, testing in GSM mode is redundant for FCC Parts 22 and Part 24 and IC RSS-132 and RSS-133 as it is the same as GPRS mode. GPRS mode has been tested as indicated on the present test report.

HSDPA modulation mode has not been tested to prove USA FCC Part 22 and Part 24 and Canada IC RSS-132 and RSS-133 compliance because it is an improved mode of operation only for Downlink (UE reception), but using the normal WCDMA mode for UL (Up Link, UE transmission). Therefore HSDPA has no associated a Power class or modulation scheme different than WCDMA mode for the UL transmission.

Taking into account the above comments, testing in HSDPA modulation mode is redundant for FCC Parts 22 and Part 24 and IC RSS-132 and RSS-133 as it is the same as WCDMA mode as long as UE transmission is concerned. WCDMA modulation mode has been tested as indicated on the present test report.

The equipment with FCC ID: VV7-MBMF33071 is also commercialised under other FCC IDs with the following structure:

FCC ID: VV7-MBMF33071-X

Where X is a letter identifying variants of the product.

This equipment is certified in Canada with the model name KRD 131 16.

The equipment with FCC ID: VV7-MBMF33072 is also commercialised under other FCC IDs with the following structure:

FCC ID: VV7-MBMF33072-X

Where X is a letter identifying variants of the product.

This equipment is certified in Canada with the model name KRD 131 16.

Testing verdicts

Not applicable: NA
 Pass.....: P
 Fail: F
 Not measured.....: NM

FCC PART 22/IC RSS-132 PARAGRAPH	VERDICT			
	NA	P	F	NM
Clause 22.913/RSS-132 Clause 4.4: RF output power		P		
Clause 2.1047/RSS-132 Clause 4.2: Modulation characteristics		P		
Clause 22.355/RSS-132 Clause 4.3: Frequency stability		P		
Clause 2.1049: Occupied Bandwidth		P		
Clause 22.917/RSS-132 Clause 4.5: Spurious emissions at antenna terminals		P		
Clause 22.917/RSS-132 Clause 4.5: Radiated emissions		P		

FCC PART 24/IC RSS-133 PARAGRAPH	VERDICT			
	NA	P	F	NM
Clause 24.232/RSS-133 Clause 6.4: RF output power		P		
Clause 2.1047/RSS-133 Clause 6.2: Modulation characteristics		P		
Clause 24.235/RSS-133 Clause 6.3: Frequency stability		P		
Clause 2.1049: Occupied Bandwidth		P		
Clause 24.238/RSS-133 Clause 6.5: Spurious emissions at antenna terminals		P		
Clause 24.238/RSS-133 Clause 6.5: Radiated emissions		P		

FCC PART 15 PARAGRAPH	VERDICT			
	NA	P	F	NM
Section 15.207. Conducted limits		P		

APPENDIX A: Test results for FCC parts 22 & 24

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TEST RESULTS FOR FCC PART 22 AND IC RSS-132

TEST CONDITIONS

Power supply (V):

$$V_{\text{nom}} = 3.3 \text{ Vdc}$$

$$V_{\text{max}} = 3.6 \text{ Vdc}$$

$$V_{\text{min}} = 3.0 \text{ Vdc}$$

The subscripts nom, min and max indicate voltage test conditions (nominal, minimum and maximum respectively, as declared by the applicant).

Type of power supply = DC Voltage from external power supply

Type of antenna = external connectable antenna structure for Laptop computer

TEST FREQUENCIES:

GPRS AND EDGE MODULATION

Lowest channel (128): 824.2 MHz

Middle channel (190): 836.6 MHz

Highest channel (251): 848.8 MHz

WCDMA AND HSUPA MODULATION

Lowest channel (4132): 826.4 MHz

Middle channel (4182): 836.4 MHz

Highest channel (4233): 846.6 MHz

RF Output Power (conducted and E.R.P.)

SPECIFICATION

§2.1046 and 22.913.

The Effective Radiated Power (E.R.P.) of mobile transmitter and auxiliary test transmitter must not exceed 7 Watts (38.45 dBm).

METHOD

The conducted RF output power measurements were made at the RF output terminals of the EUT using an attenuator, power splitter and spectrum analyser. The EUT was controlled via the Universal Radio Communication tester R&S CMU200 selecting maximum transmission power of the EUT and different modes of modulation.

For radiated measurements the EUT was placed on a 1 m high non-conductive stand inside an anechoic chamber. The measuring antenna was placed at 3 m distance and the maximum field strength was measured for the three channels. The EUT was controlled via the Universal Radio Communication tester R&S CMU200 selecting maximum transmission power of the EUT and different modes of modulation.

The Effective Radiated Power (E.R.P.) is obtained by using the Substitution Method according to ANSI/TIA/EIA-603-C: 2004.

RESULTS

MAXIMUM OUTPUT POWER (CONDUCTED). See plots in next pages.

GPRS MODULATION

Channel	Lowest	Middle	Highest
Maximum peak power (dBm)	33.17	33.24	33.41
Maximum peak power (W)	2.07	2.11	2.19
Measurement uncertainty (dB)	±0.5		

EDGE MODULATION

Channel	Lowest	Middle	Highest
Maximum peak power (dBm)	33.19	33.28	33.44
Maximum peak power (W)	2.08	2.13	2.21
Measurement uncertainty (dB)	±0.5		

WCDMA MODULATION

Channel	Lowest	Middle	Highest
Maximum peak power (dBm)	27.54	27.82	27.57
Maximum peak power (W)	0.57	0.60	0.57
Measurement uncertainty (dB)	±0.5		

HSUPA MODULATION

Channel	Lowest	Middle	Highest
Maximum peak power (dBm)	26.93	27.67	27.17
Maximum peak power (W)	0.49	0.58	0.52
Measurement uncertainty (dB)	±0.5		

MAXIMUM EFFECTIVE RADIATED POWER E.R.P. (RADIATED).

GPRS MODULATION

Substitution method data

Frequency (MHz) at max. reading	Max. Instrument reading (dBm)	Polarization	(1) RF Generator +power amplifier output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain Gd (respect to $\lambda/2$ dipole) (dB)	E.R.P. (dBm) = (1) – (2) + (3)
824.1298	-12.66	Horizontal	24.84	0.3	6.3	30.84
836.4697	-14.20	Horizontal	23.90	0.3	6.2	29.80
848.7499	-13.93	Horizontal	24.17	0.3	6.1	29.97

RBW = VBW = 1 MHz

Channel	Lowest	Middle	Highest
Maximum peak power E.R.P. (dBm)	30.84	29.80	29.97
Maximum peak power (W)	1.21	0.95	0.99
Measurement uncertainty (dB)	± 3.8		

EDGE MODULATION

Substitution method data

Frequency (MHz) at max. reading	Max. Instrument reading (dBm)	Polarization	(1) RF Generator +power amplifier output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain Gd (respect to $\lambda/2$ dipole) (dB)	E.R.P. (dBm) = (1) – (2) + (3)
824.1699	-13.32	Horizontal	24.18	0.3	6.3	30.18
836.5698	-14.35	Horizontal	23.75	0.3	6.2	29.65
848.8501	-15.14	Horizontal	22.96	0.3	6.1	28.76

RBW = VBW = 1 MHz

Channel	Lowest	Middle	Highest
Maximum peak power E.R.P. (dBm)	30.18	29.65	28.76
Maximum peak power (W)	1.04	0.92	0.75
Measurement uncertainty (dB)	± 3.8		

WCDMA MODULATION

Substitution method data

Frequency (MHz) at max. reading	Max. Instrument reading (dBm)	Polarization	(1) RF Generator +power amplifier output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain Gd (respect to $\lambda/2$ dipole) (dB)	E.R.P. (dBm) = (1) - (2) + (3)
828.1535	-15.08	Horizontal	22.42	0.3	6.3	28.42
837.4521	-15.48	Horizontal	22.62	0.3	6.2	28.52
844.6461	-14.74	Horizontal	23.36	0.3	6.1	29.16

RBW = VBW = 8 MHz

Channel	Lowest	Middle	Highest
Maximum peak power E.R.P. (dBm)	28.42	28.52	29.16
Maximum peak power (W)	0.69	0.71	0.82
Measurement uncertainty (dB)	± 3.8		

HSUPA MODULATION

Substitution method data

Frequency (MHz) at max. reading	Max. Instrument reading (dBm)	Polarization	(1) RF Generator +power amplifier output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain Gd (respect to $\lambda/2$ dipole) (dB)	E.R.P. (dBm) = (1) - (2) + (3)
828.4541	-15.49	Horizontal	22.01	0.3	6.3	28.01
839.8569	-15.90	Horizontal	22.20	0.3	6.2	28.10
849.0549	-15.97	Horizontal	22.13	0.3	6.1	27.93

RBW = VBW = 8 MHz

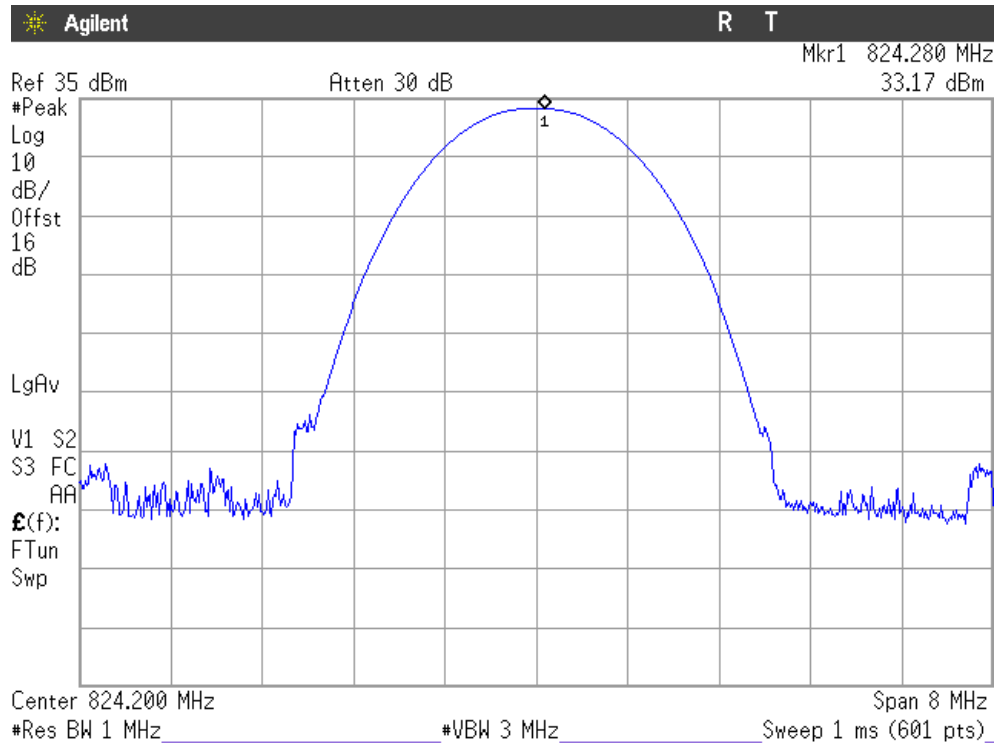
Channel	Lowest	Middle	Highest
Maximum peak power E.R.P. (dBm)	28.01	28.10	27.93
Maximum peak power (W)	0.63	0.64	0.62
Measurement uncertainty (dB)	± 3.8		

Verdict: PASS

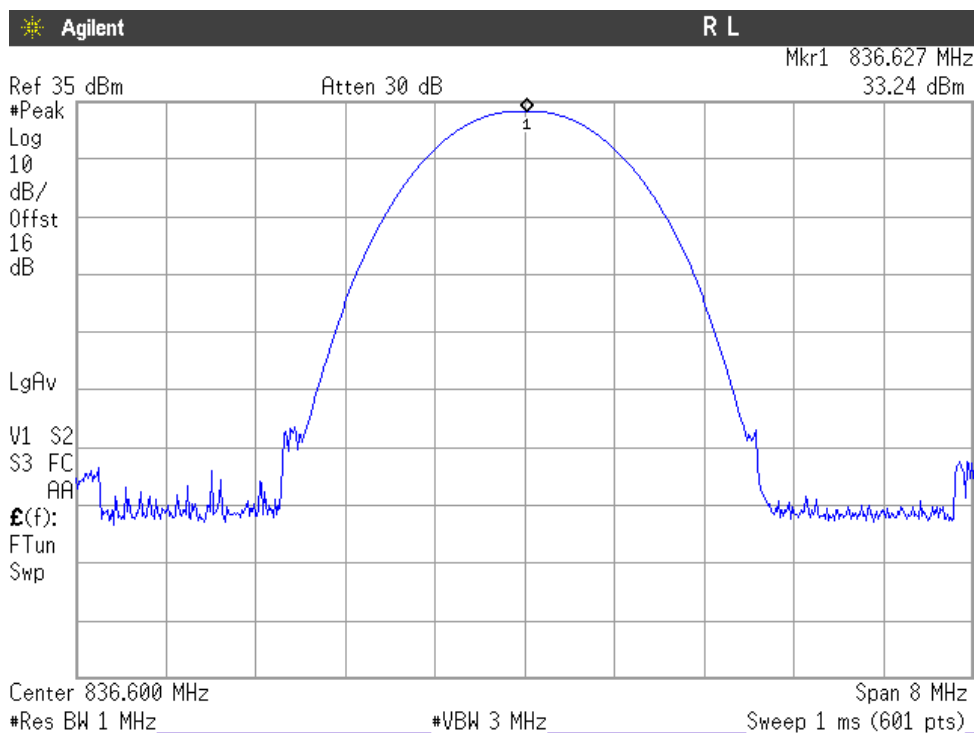
PEAK OUTPUT POWER (CONDUCTED).

GPRS MODULATION

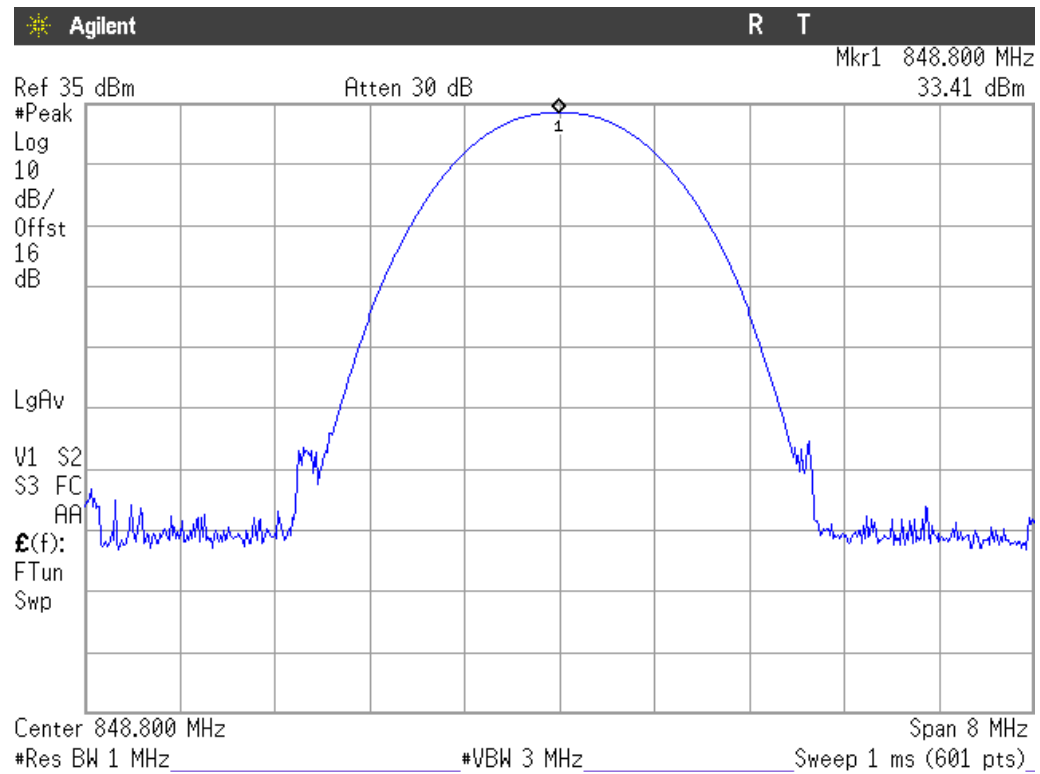
Lowest Channel.



Middle Channel.

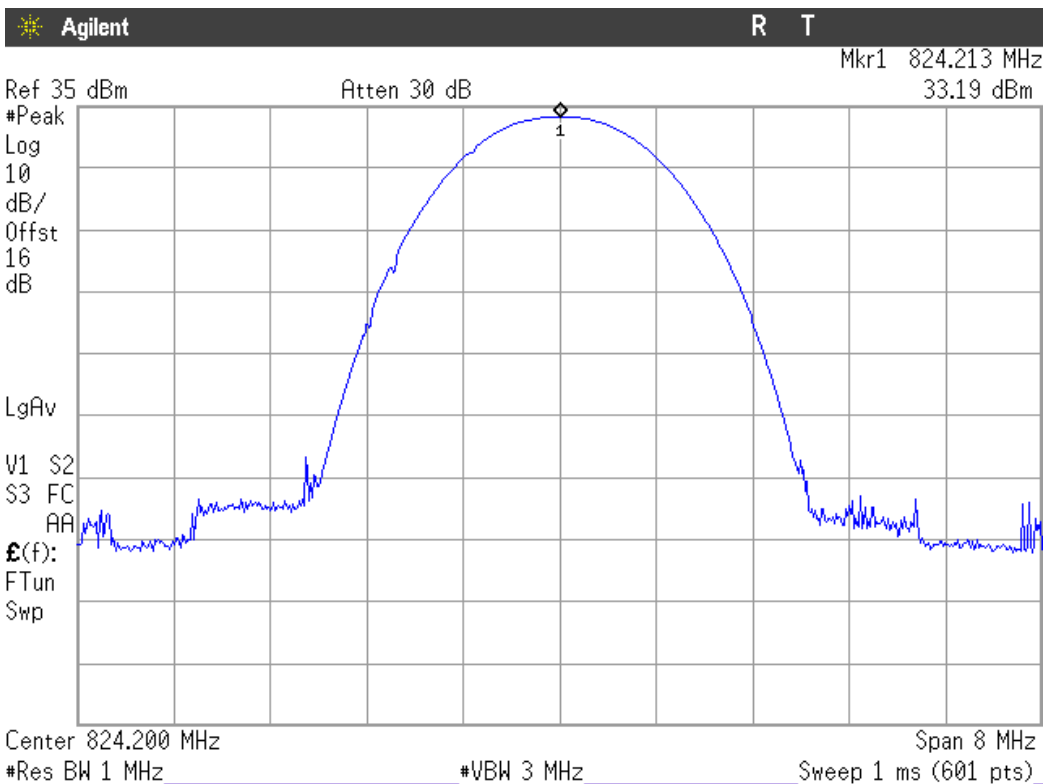


Highest Channel.

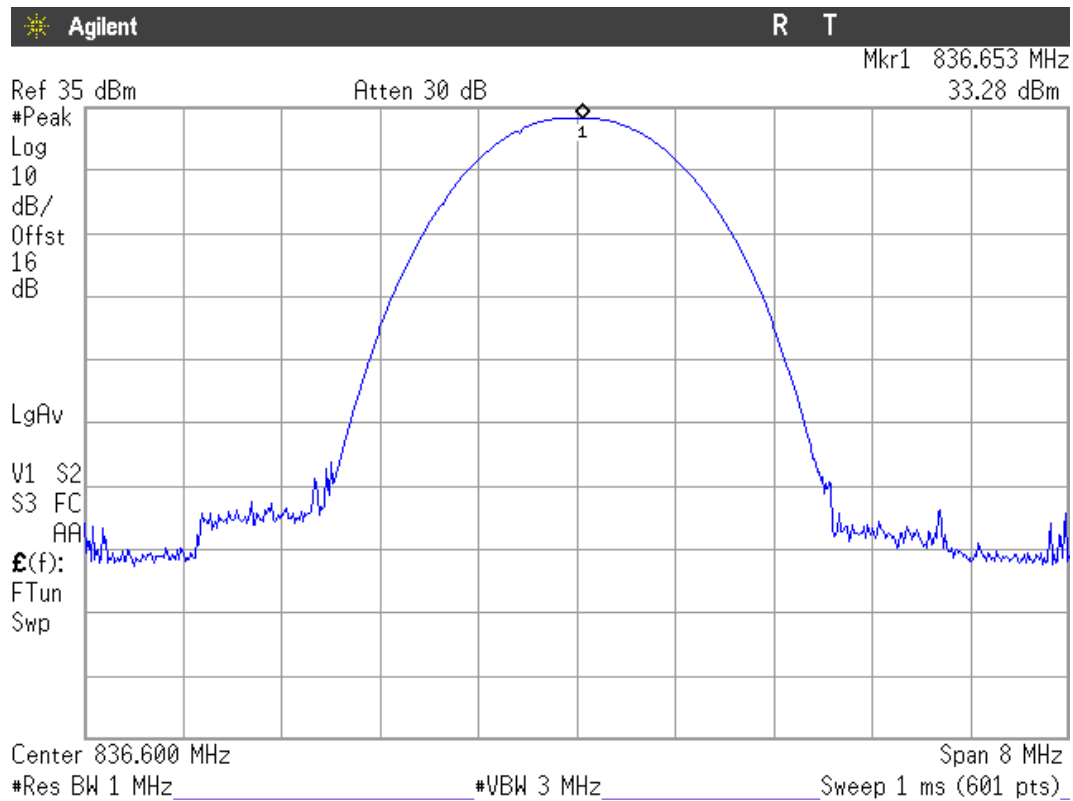


EDGE MODULATION

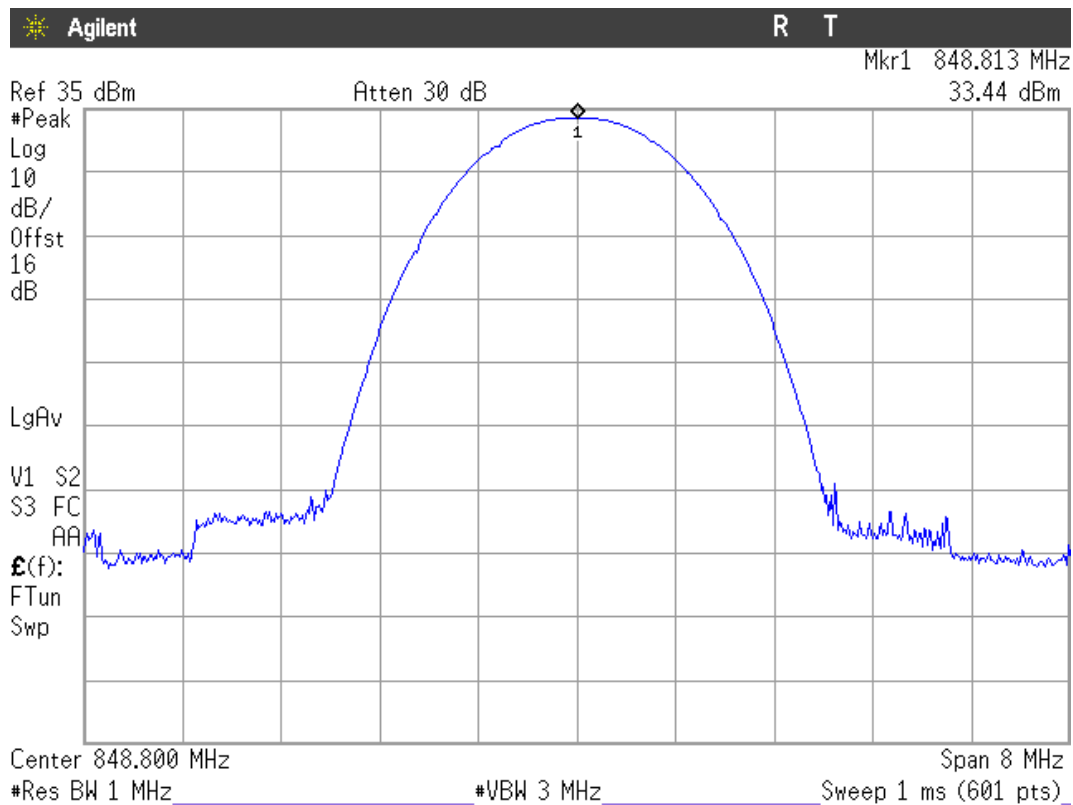
Lowest Channel.



Middle Channel.

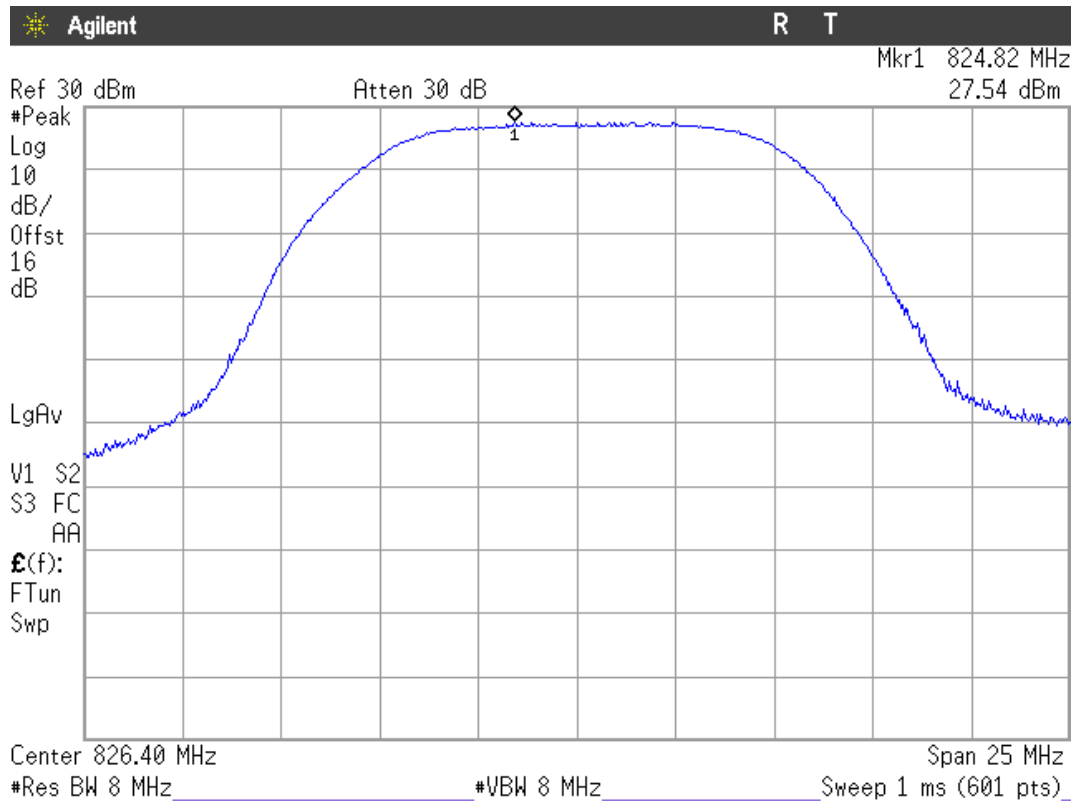


Highest Channel.

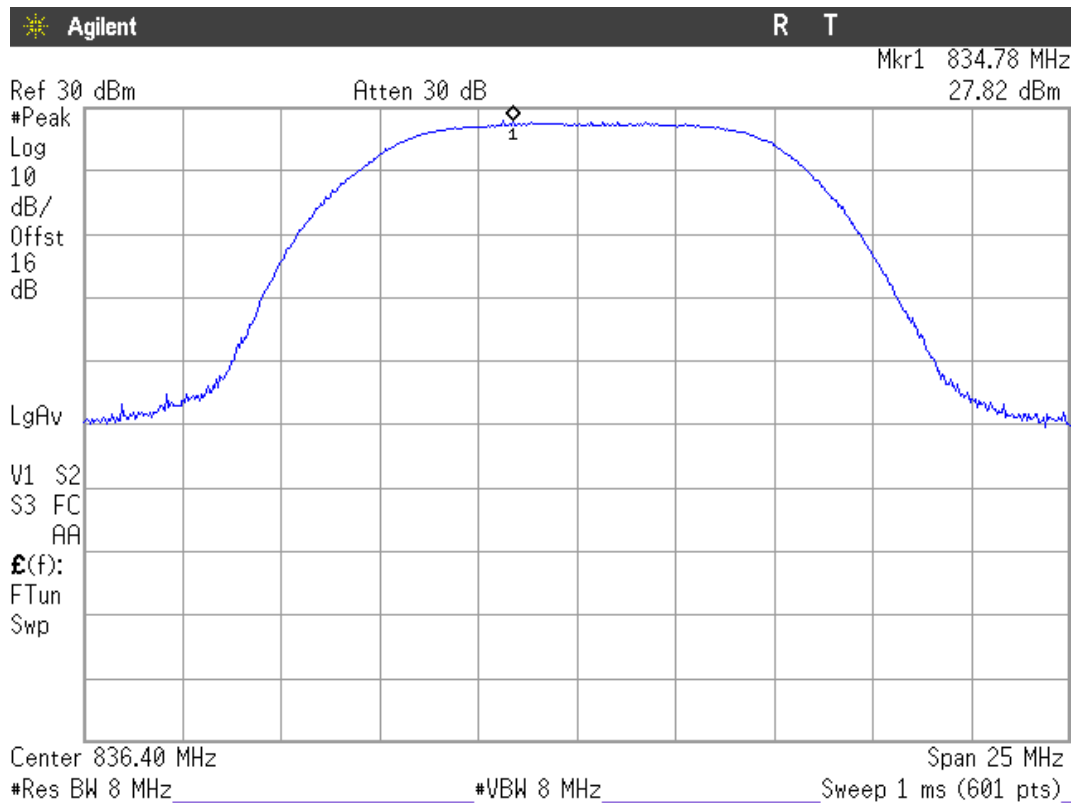


WCDMA MODULATION

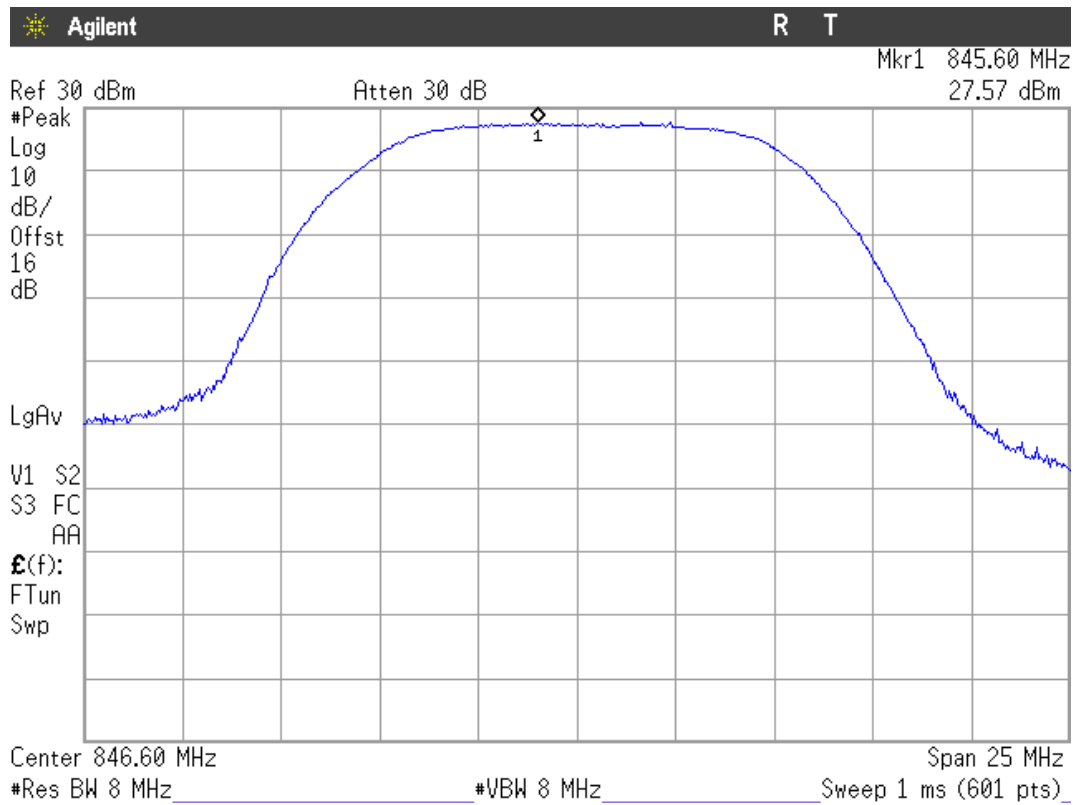
Lowest Channel.



Middle Channel.

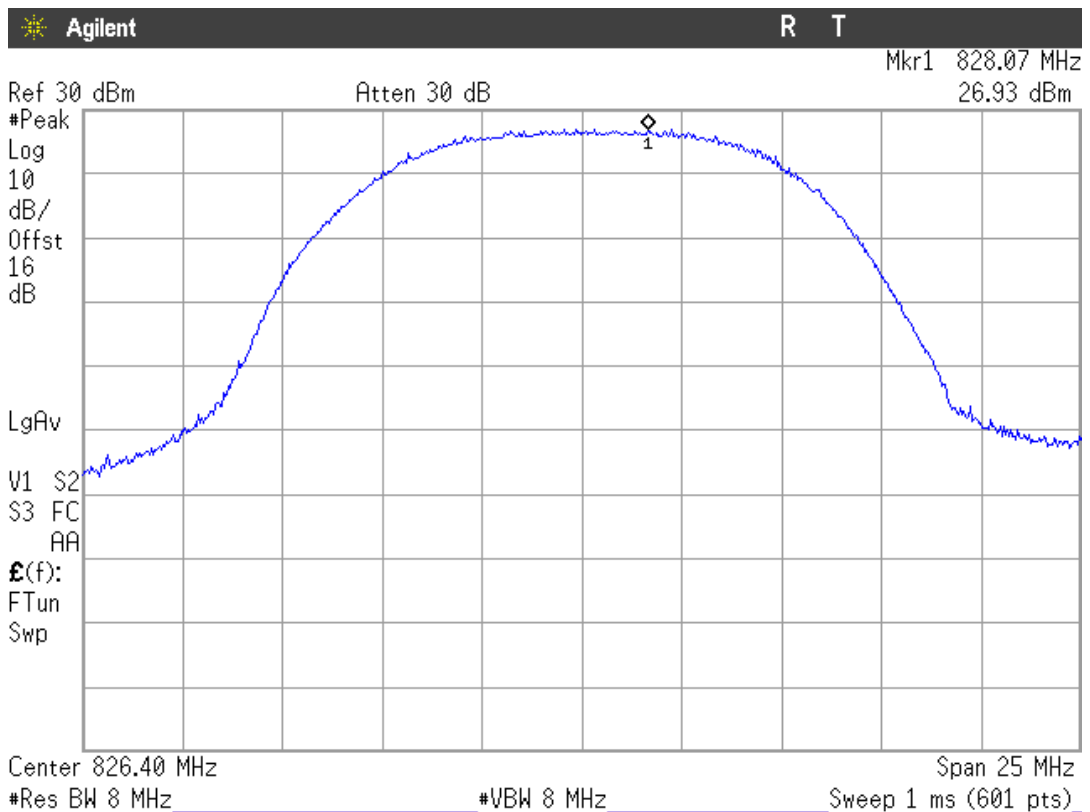


Highest Channel.

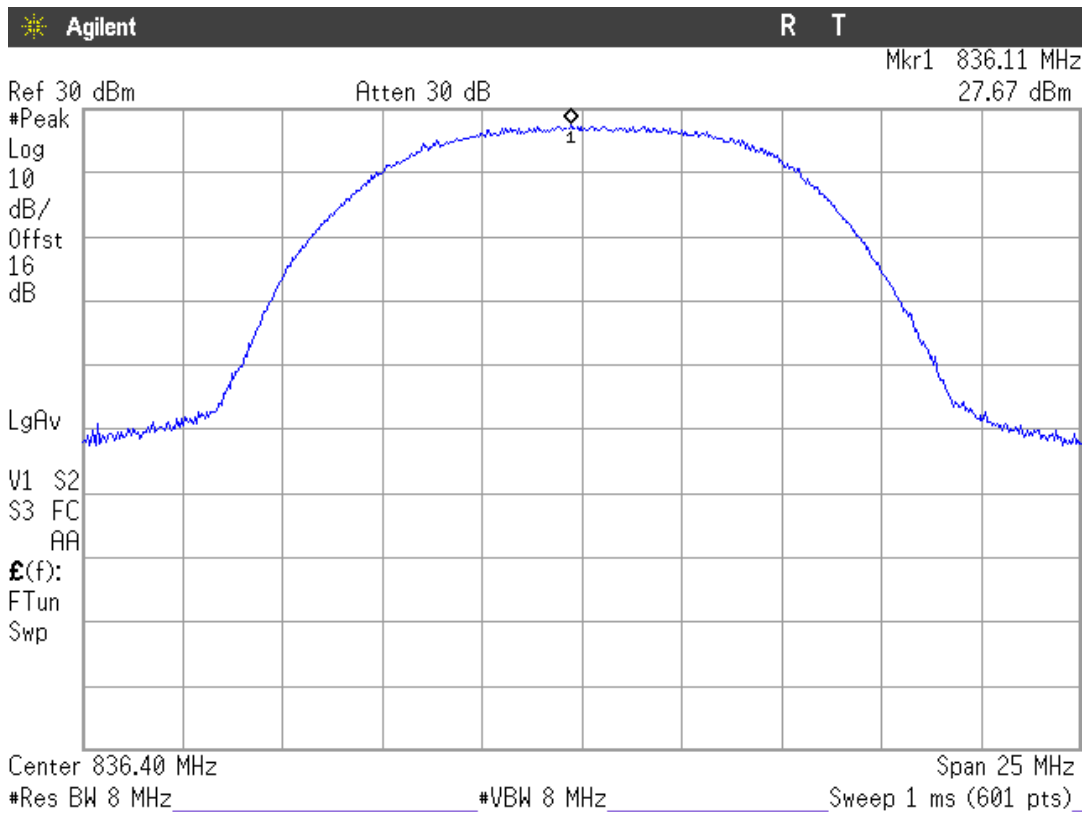


HSUPA MODULATION

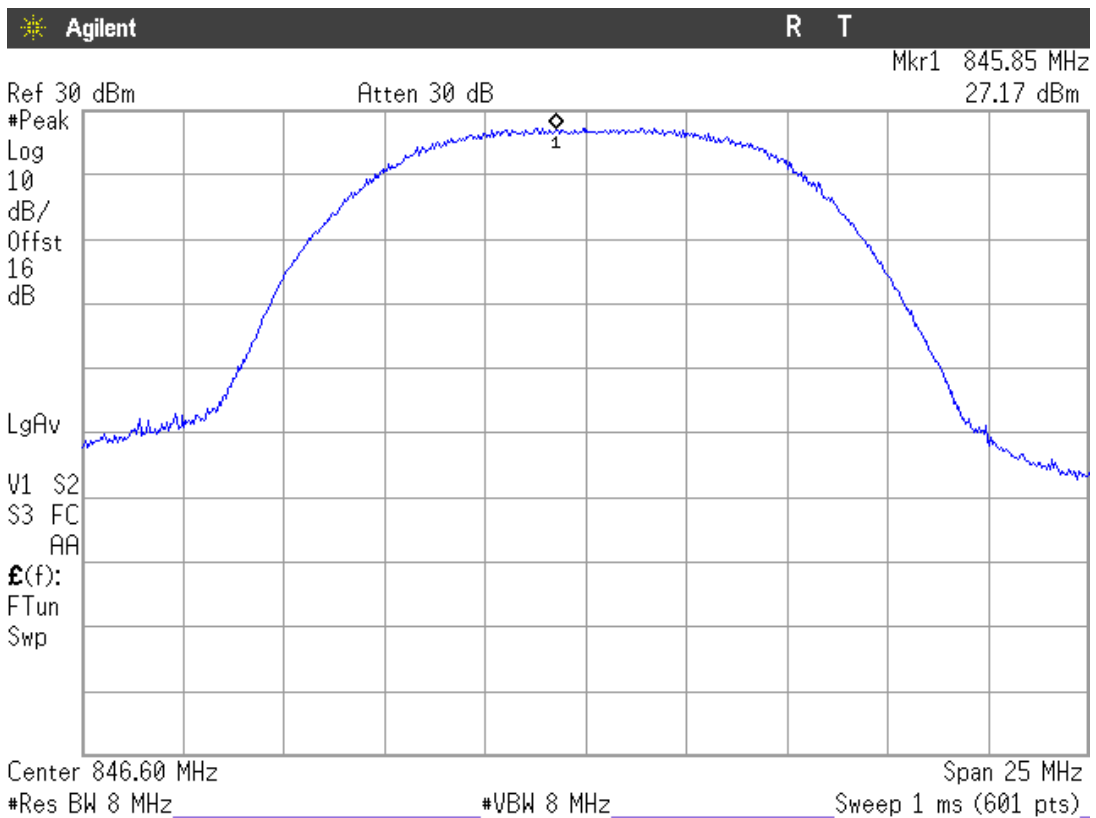
Lowest Channel



Middle Channel



Highest Channel



Modulation Characteristics

SPECIFICATION

§2.1047

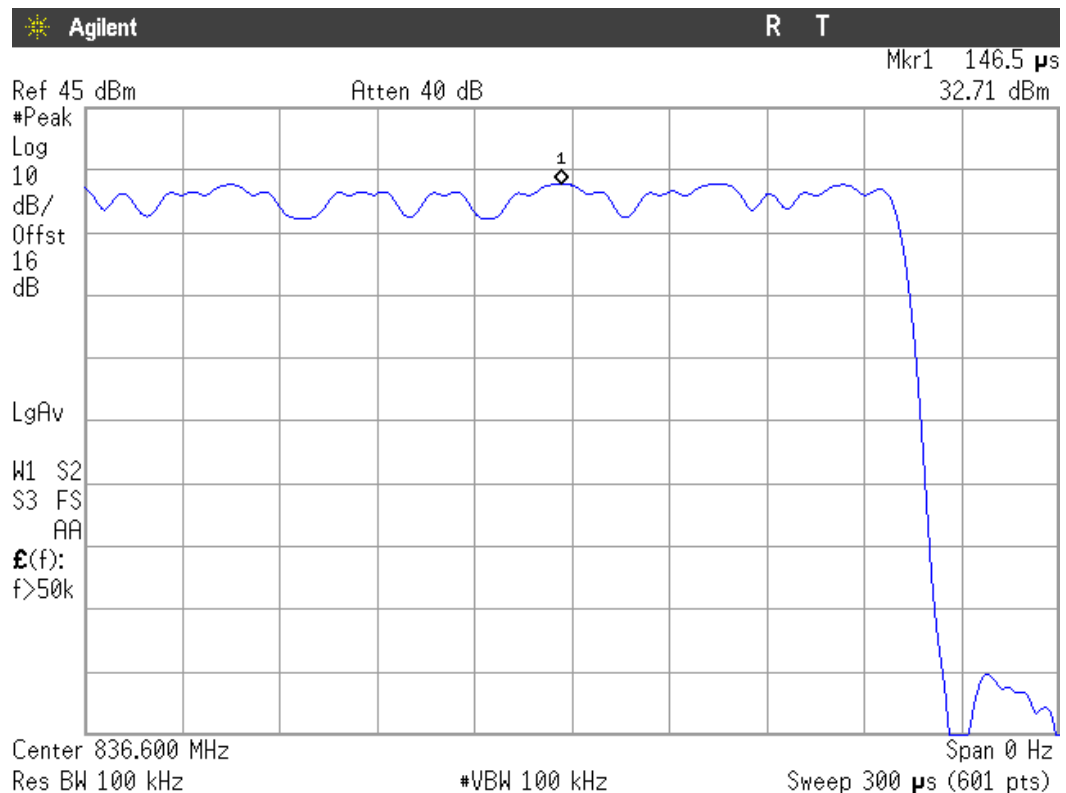
METHOD

The EUT operates with GPRS (GMSK), EDGE (8-PSK), WCDMA (QPSK) and HSUPA (QPSK) modes, in which the information is digitised and coded into a bit stream.

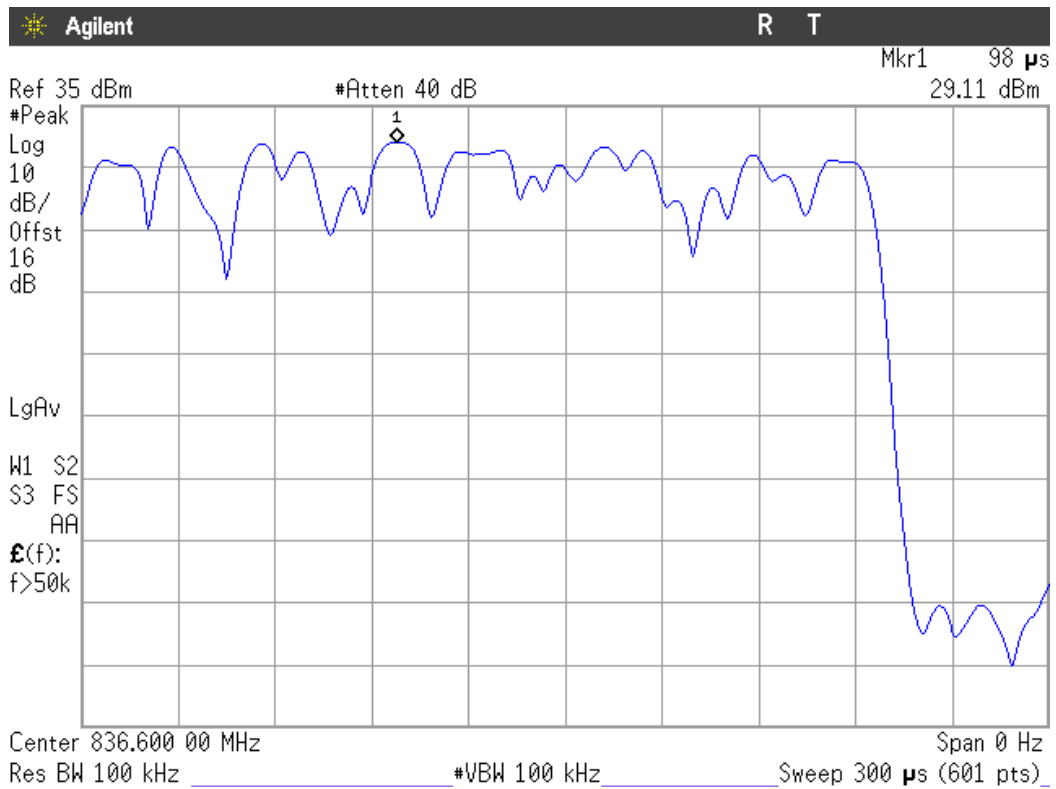
RESULTS

The following plot shows the modulation schemes in the EUT.

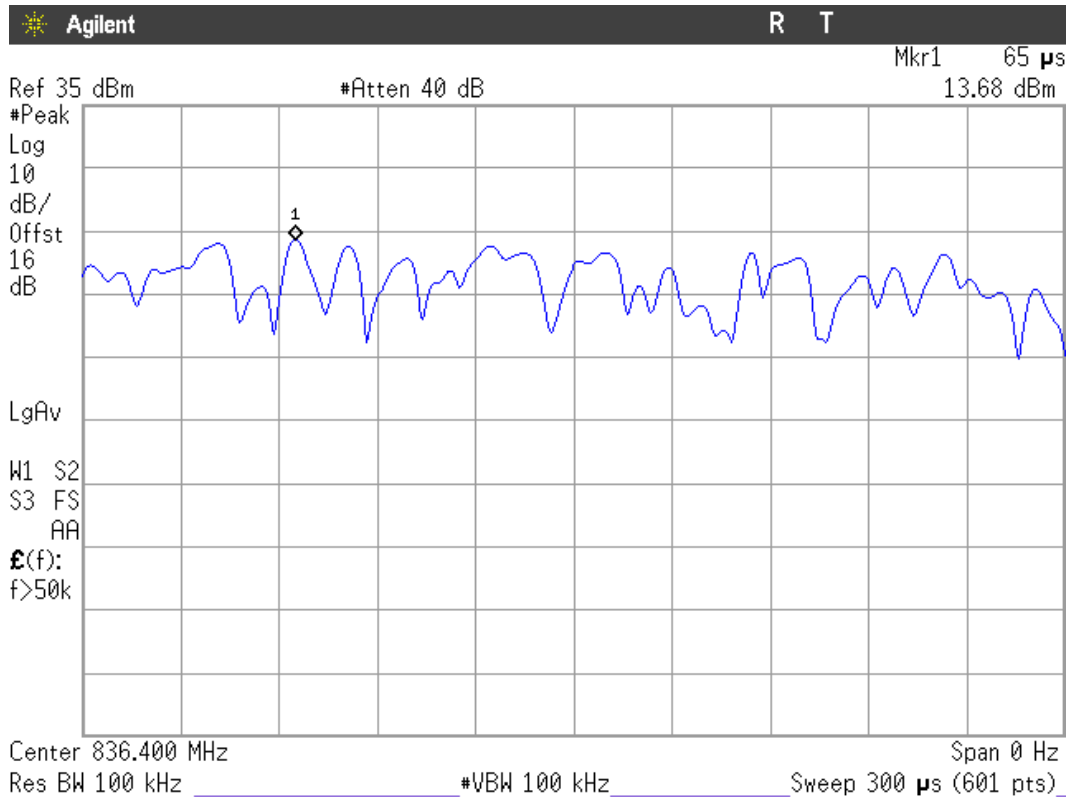
GPRS MODULATION



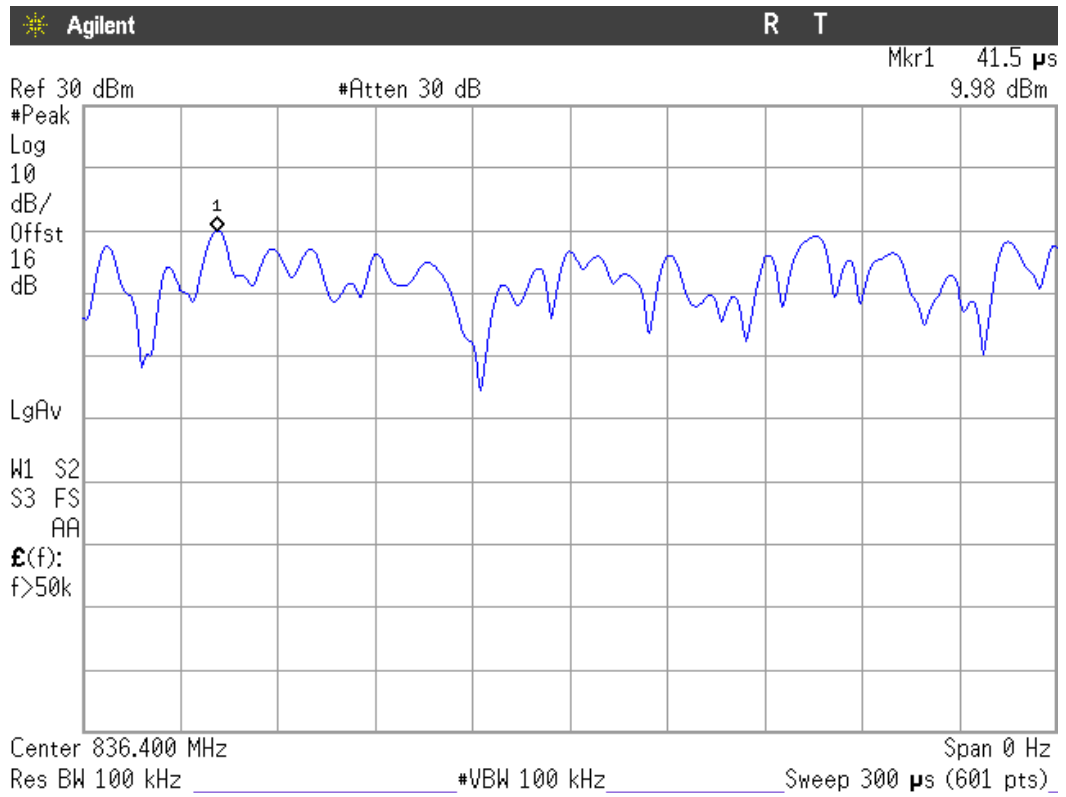
EDGE MODULATION



WCDMA MODULATION



HSUPA MODULATION



Frequency Stability

SPECIFICATION

§2.1055 and §22.355

METHOD

The frequency tolerance measurements over temperature variations were made over the temperature range of -30°C to $+50^{\circ}\text{C}$. The EUT was placed inside a climatic chamber and the temperature was raised hourly in 10°C steps from -30°C up to $+50^{\circ}\text{C}$.

The EUT was set in “call mode” in the middle channel using the Universal Radio Communication tester R&S CMU200 (for modulations GPRS, EDGE, WCDMA and HSUPA) and the maximum frequency error was measured using the frequency meter of CMU200.

RESULTS

Frequency stability over temperature variations.

GPRS MODULATION

Temperature ($^{\circ}\text{C}$)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
+50	-27	-0.0323	-0.00000323
+40	-23	-0.0275	-0.00000275
+30	-13	-0.0155	-0.00000155
+20	-19	-0.0227	-0.00000227
+10	-11	-0.0131	-0.00000131
0	-19	-0.0227	-0.00000227
-10	21	0.0251	0.00000251
-20	13	0.0155	0.00000155
-30	18	0.0215	0.00000215

EDGE MODULATION

Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
+50	-17	-0.0203	-0.00000203
+40	-18	-0.0215	-0.00000215
+30	-14	-0.0167	-0.00000167
+20	-21	-0.0251	-0.00000251
+10	-22	-0.0263	-0.00000263
0	12	0.0143	0.00000143
-10	27	0.0323	0.00000323
-20	21	0.0251	0.00000251
-30	36	0.0430	0.00000430

WCDMA MODULATION

Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
+50	-38	-0.0454	-0.00000454
+40	-18	-0.0215	-0.00000215
+30	23	0.0275	0.00000275
+20	-41	-0.0490	-0.00000490
+10	-29	-0.0347	-0.00000347
0	-32	-0.0383	-0.00000383
-10	21	0.0251	0.00000251
-20	26	0.0311	0.00000311
-30	-16	-0.0191	-0.00000191

HSUPA MODULATION

Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
+50	-43	-0.0514	-0.00000514
+40	-22	-0.0263	-0.00000263
+30	31	0.0371	0.00000371
+20	32	0.0383	0.00000383
+10	-64	-0.0765	-0.00000765
0	-48	-0.0574	-0.00000574
-10	23	0.0275	0.00000275
-20	28	0.0335	0.00000335
-30	12	0.0143	0.00000143

Frequency stability over voltage variations.

GPRS MODULATION

Battery Supply voltage	Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
Vmax	3.6	-26	-0.0311	-0.00000311
Vmin	3.0	-24	-0.0287	-0.00000287

EDGE MODULATION

Battery Supply voltage	Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
Vmax	3.6	-32	-0.0383	-0.00000383
Vmin	3.0	-26	-0.0311	-0.00000311

WCDMA MODULATION

Battery Supply voltage	Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
Vmax	3.6	-71	-0.0849	-0.00000849
Vmin	3.0	-79	-0.0945	-0.00000945

HSUPA MODULATION

Battery Supply voltage	Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
Vmax	3.6	-68	-0.0813	-0.00000813
Vmin	3.0	-49	-0.0586	-0.00000586

Occupied Bandwidth

SPECIFICATION

§2.1049

METHOD

The EUT was configured to transmit a modulated carrier signal. An IF bandwidth of 3 kHz was used to determine the occupied bandwidth of the modulated emission for GPRS and EDGE modulation and 51 kHz for WCDMA and HSUPA modulation. The 99% occupied bandwidth and the -26 dBc bandwidth were measured directly using the built-in bandwidth measuring option of spectrum analyser E4440A.

RESULTS

GPRS MODULATION

Channel	Lowest	Middle	Highest
99% Occupied bandwidth (kHz)	241.58	243.62	243.53
-26 dBc bandwidth (kHz)	315.11	311.72	316.15
Measurement uncertainty (kHz)	<±1.67		

EDGE MODULATION

Channel	Lowest	Middle	Highest
99% Occupied bandwidth (kHz)	237.17	236.67	236.66
-26 dBc bandwidth (kHz)	310.03	312.26	309.48
Measurement uncertainty (kHz)	<±1.67		

WCDMA MODULATION

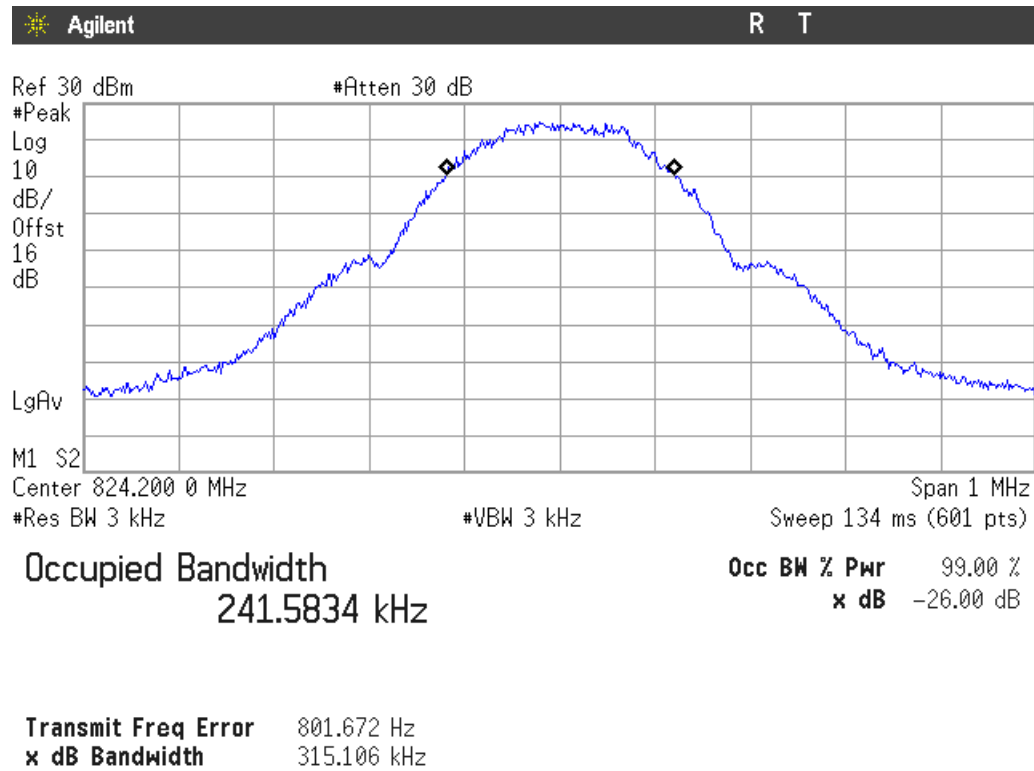
Channel	Lowest	Middle	Highest
99% Occupied bandwidth (kHz)	4176.9	4172.2	4167.0
-26 dBc bandwidth (kHz)	4826	4829	4839
Measurement uncertainty (kHz)	<±13.3		

HSUPA MODULATION

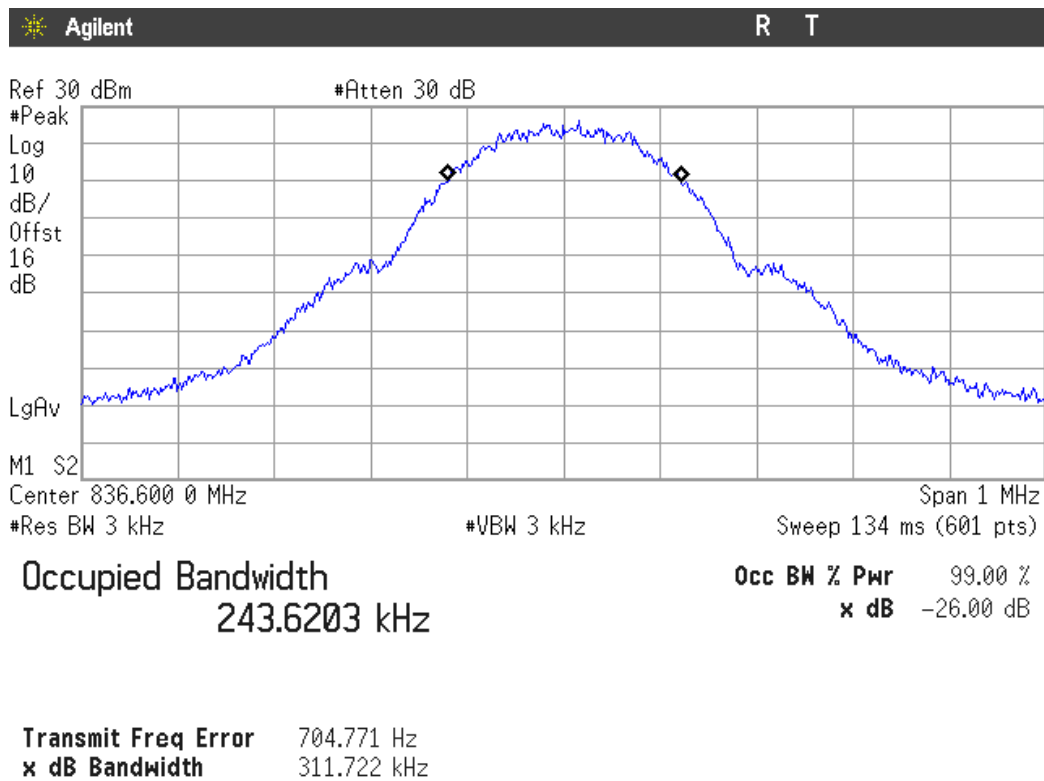
Channel	Lowest	Middle	Highest
99% Occupied bandwidth (kHz)	4185.6	4188.2	4191.8
-26 dBc bandwidth (kHz)	4821	4810	4840
Measurement uncertainty (kHz)	<±13.3		

GPRS MODULATION

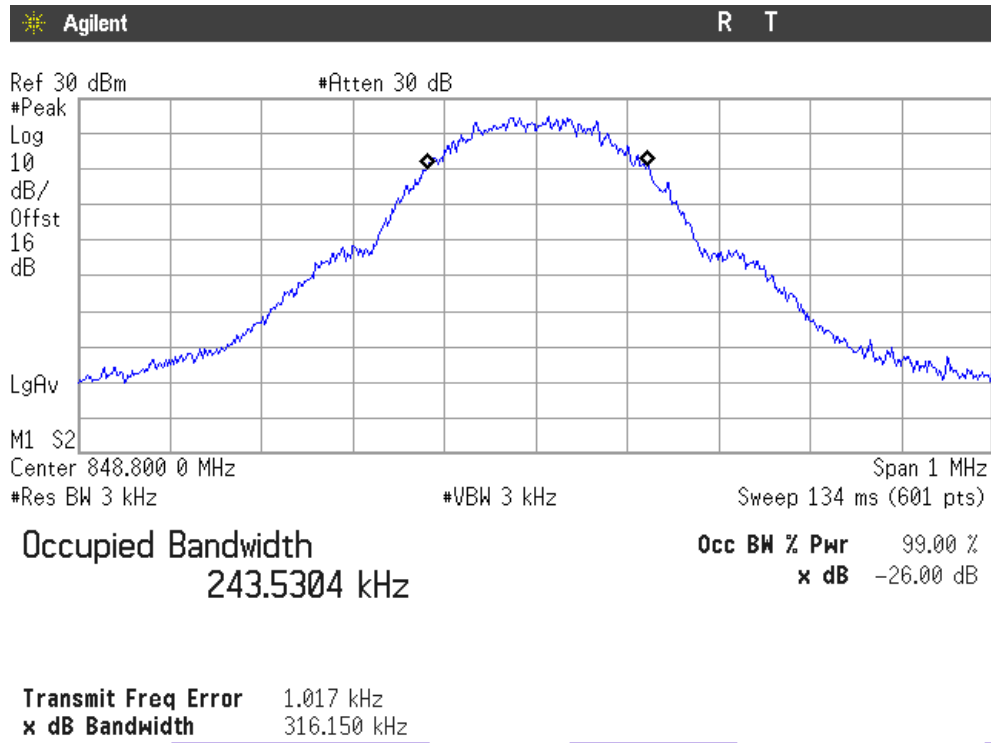
Lowest Channel



Middle Channel

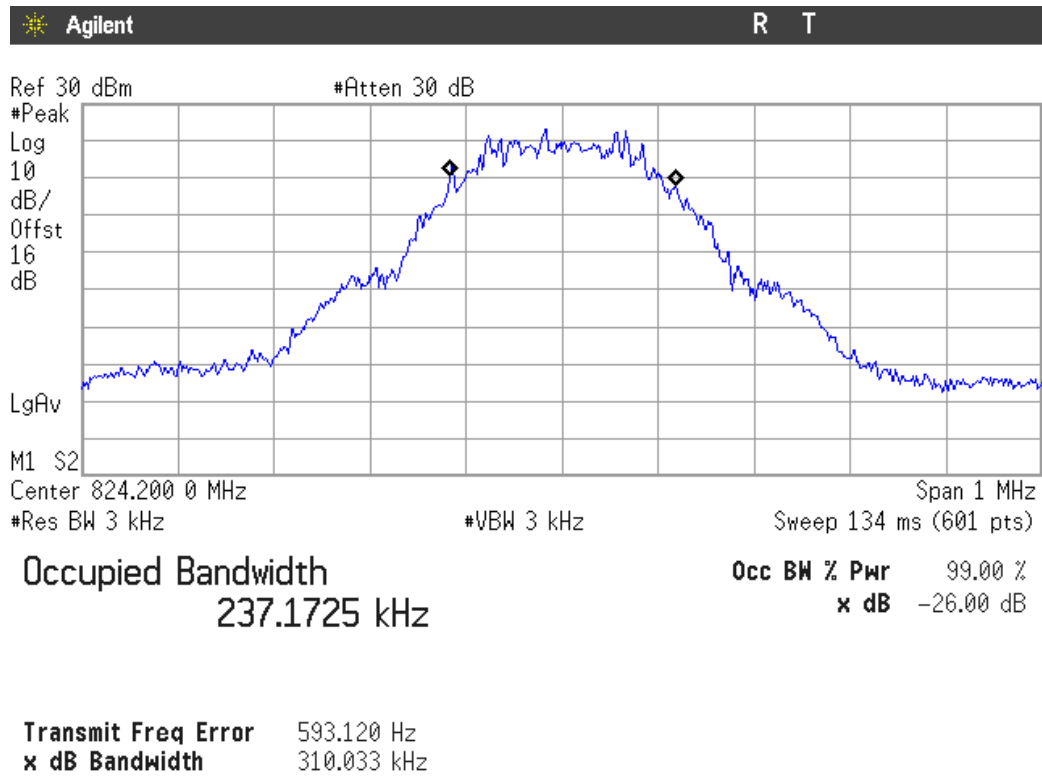


Highest Channel

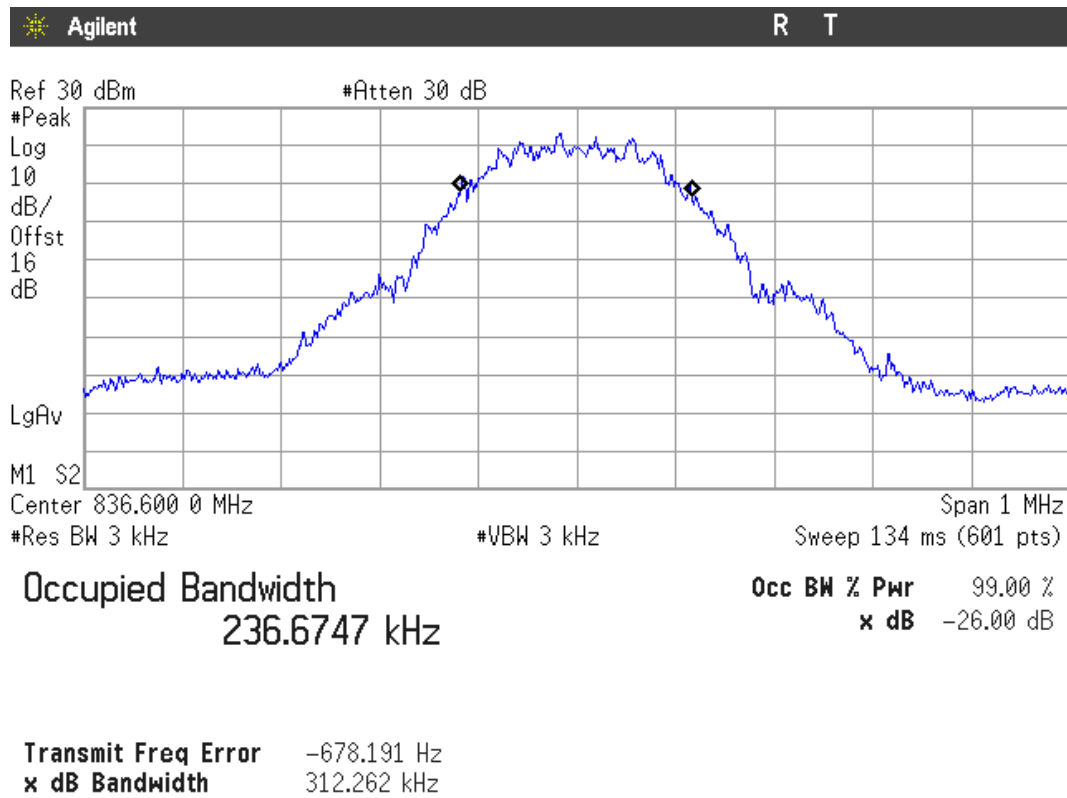


EDGE MODULATION

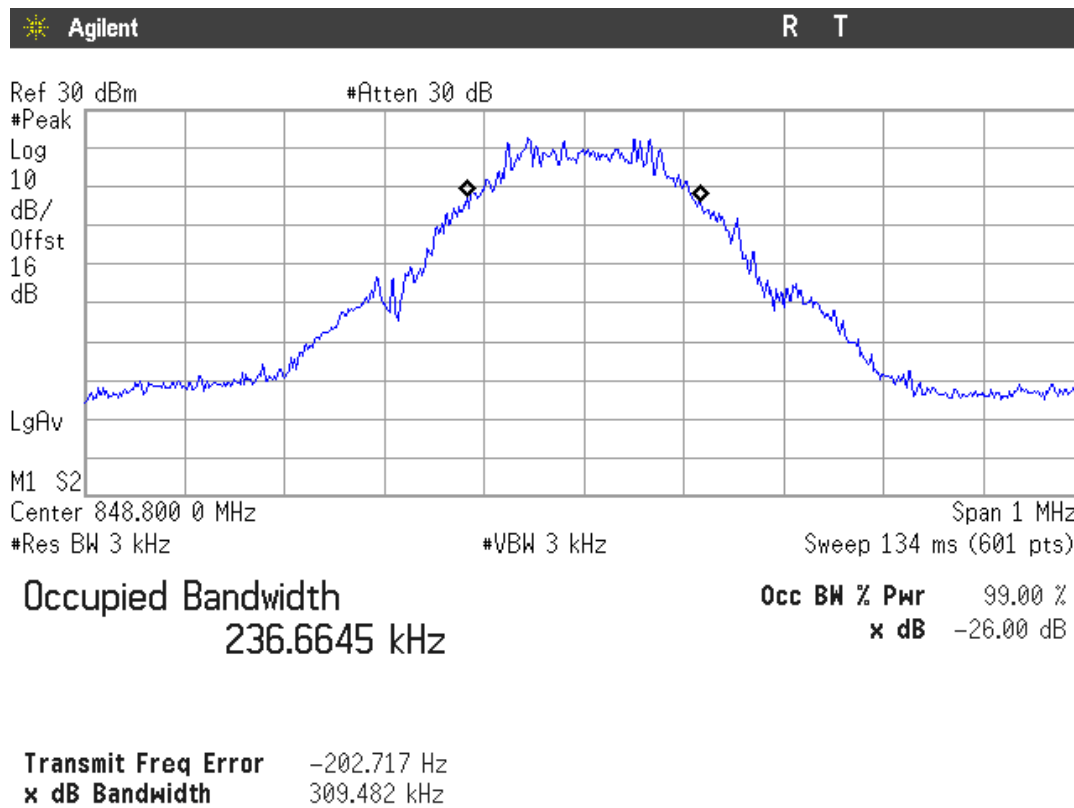
Lowest Channel



Middle Channel

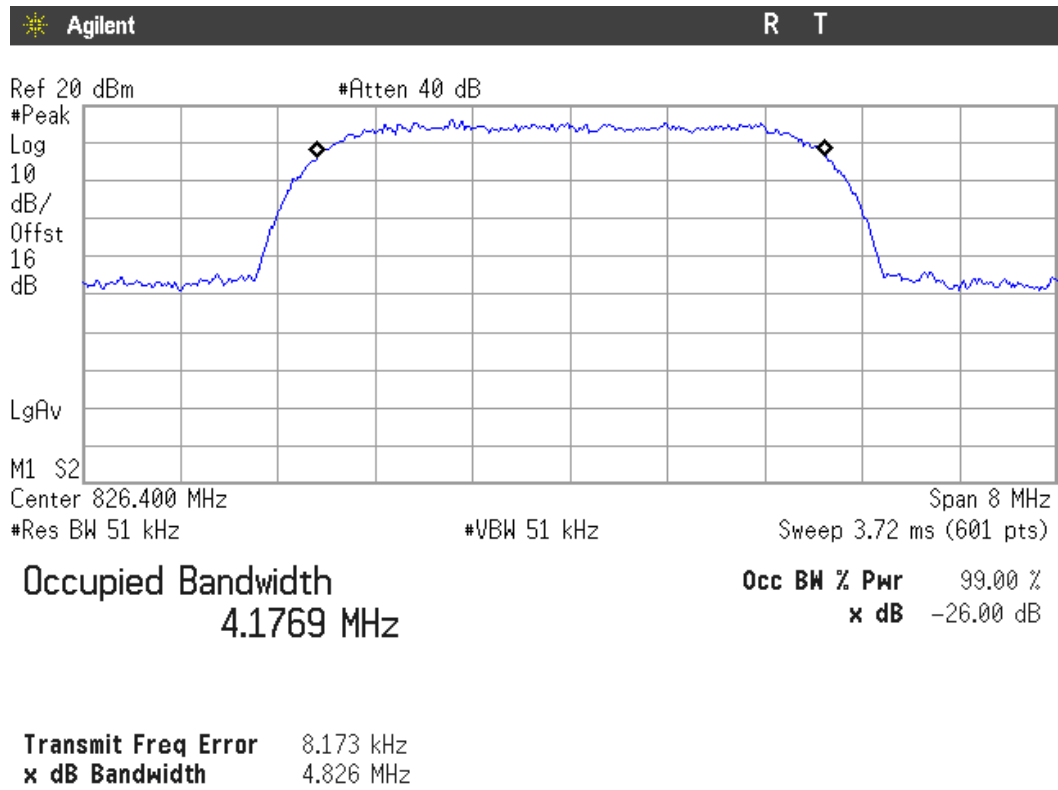


Highest Channel

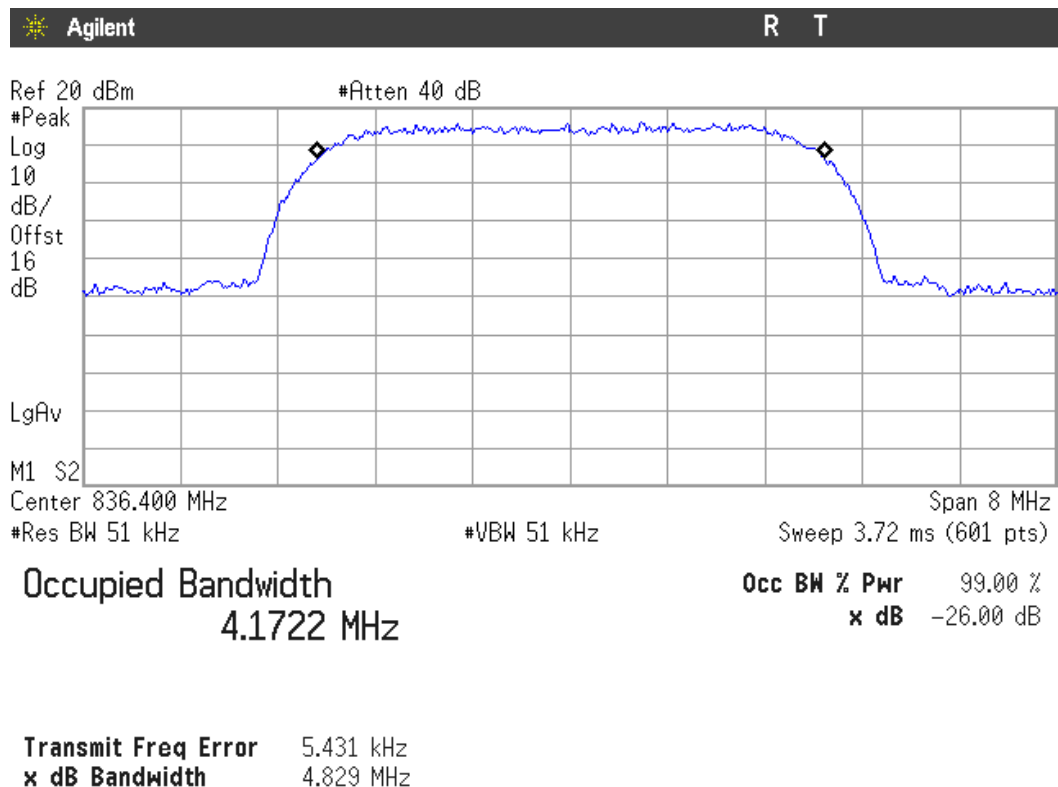


WCDMA MODULATION

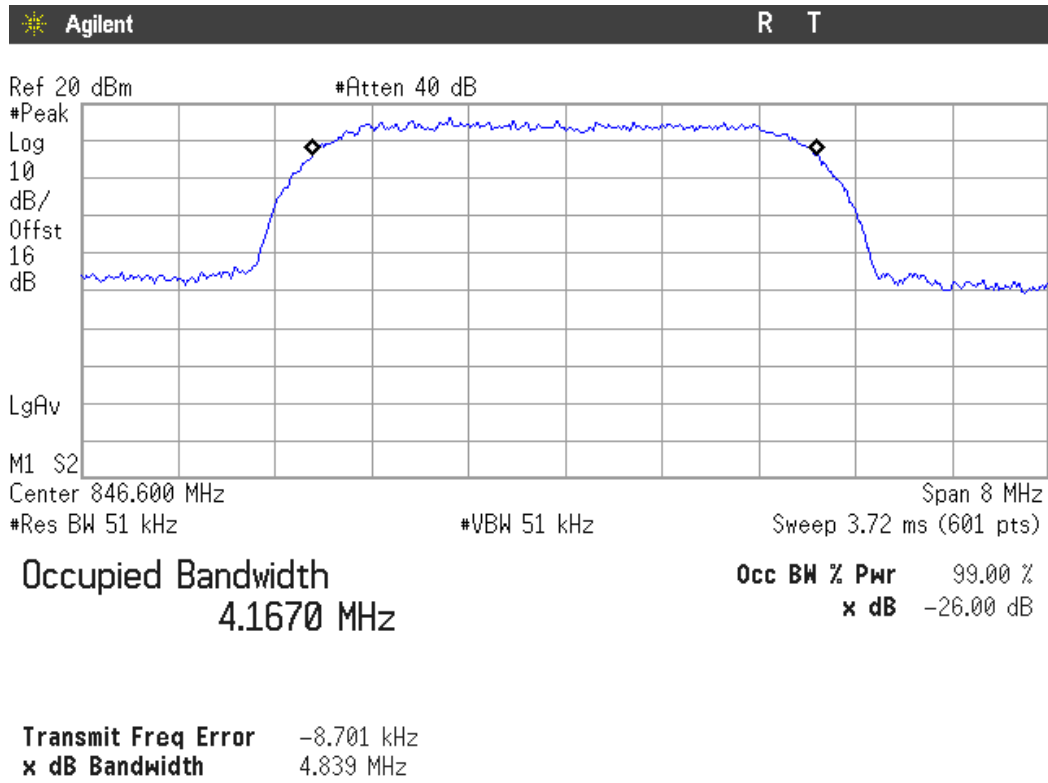
Lowest Channel



Middle Channel

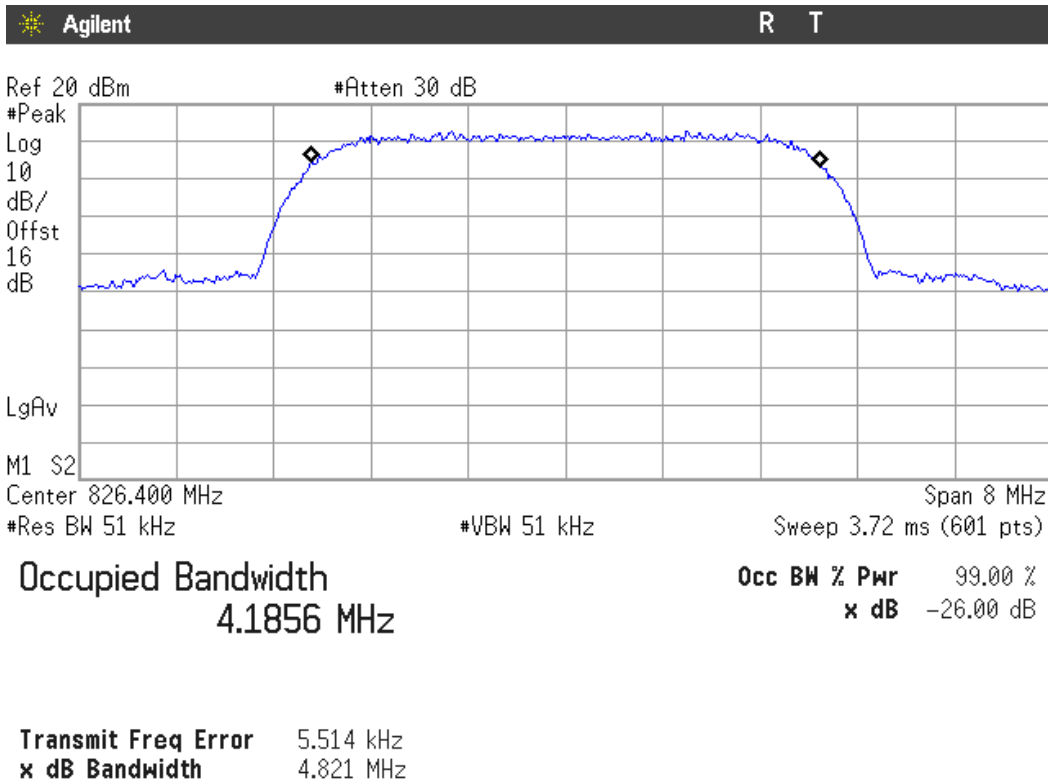


Highest Channel

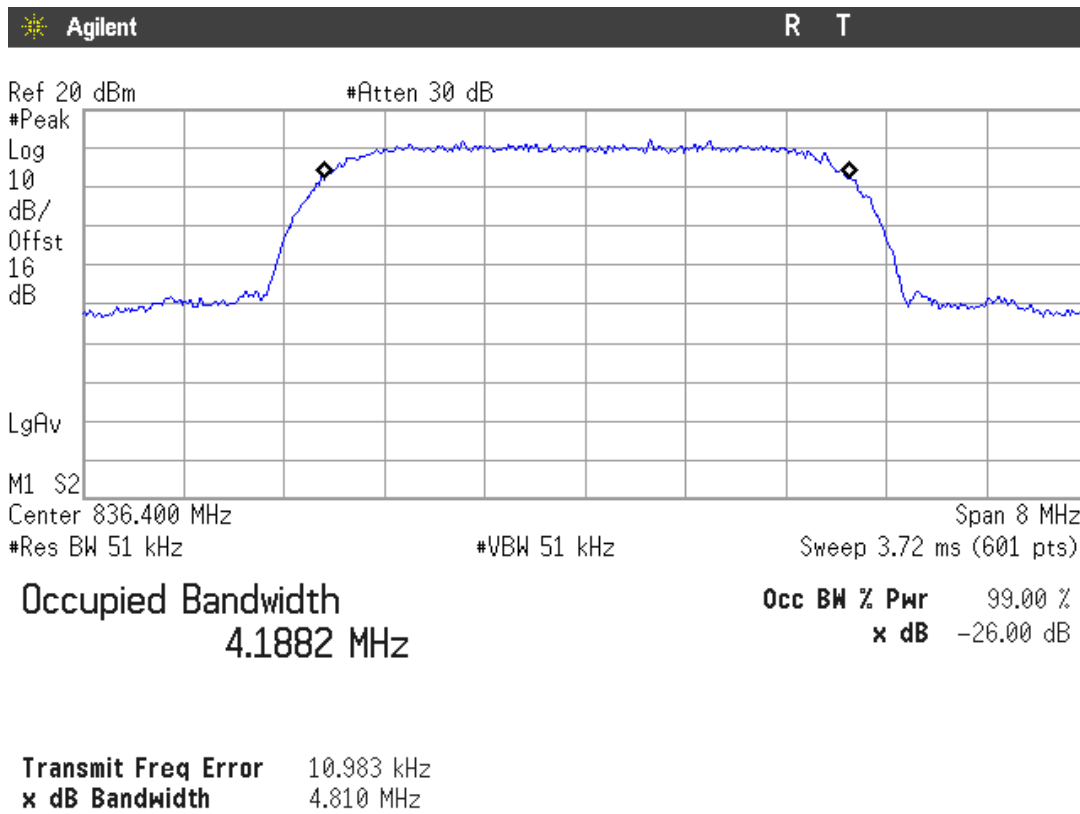


HSUPA MODULATION

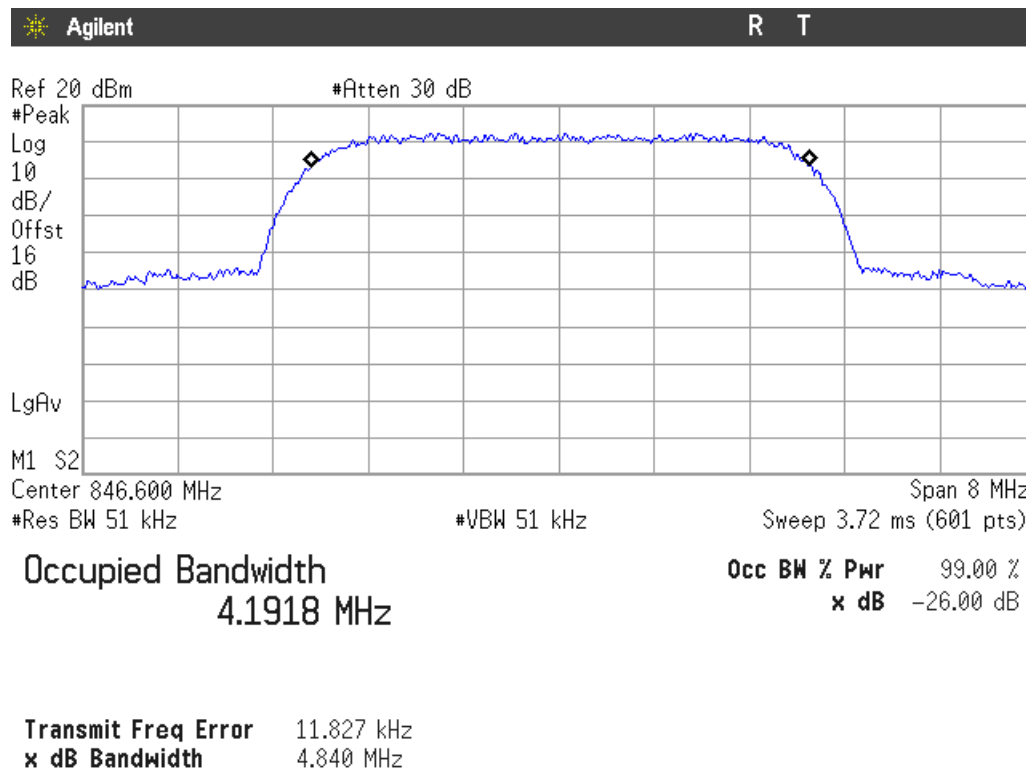
Lowest Channel



Middle Channel



Highest Channel



Spurious emissions at antenna terminals

SPECIFICATION

§2.1051 and §22.917

METHOD

The EUT RF output connector was connected to a spectrum analyser using a 50 ohm attenuator and the resolution bandwidth of the spectrum analyser was set to at least 100 kHz. The spectrum was investigated from 30 MHz to 10 GHz.

The reading of the spectrum analyser is corrected with the attenuation loss of connection between output terminal of EUT and input of the spectrum analyser.

Measurement Limit:

According to specification, the power of emissions shall be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB, P in watts.

At P_o transmitting power, the specified minimum attenuation becomes $43+10\log (P_o)$, and the level in dBm relative P_o becomes:

$$P_o \text{ (dBm)} - [43 + 10 \log (P_o \text{ in mwatts}) - 30] = - 13 \text{ dBm}$$

RESULTS (see plots in next pages)

GPRS MODULATION

1. CHANNEL: LOWEST

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

No spurious signals were found in all the range.

3. CHANNEL: HIGHEST

No spurious signals were found in all the range.

EDGE MODULATION

1. CHANNEL: LOWEST

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

No spurious signals were found in all the range.

3. CHANNEL: HIGHEST

No spurious signals were found in all the range.

WCDMA MODULATION

1. CHANNEL: LOWEST

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

No spurious signals were found in all the range.

3. CHANNEL: HIGHEST

No spurious signals were found in all the range.

HSUPA MODULATION

1. CHANNEL: LOWEST

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

No spurious signals were found in all the range.

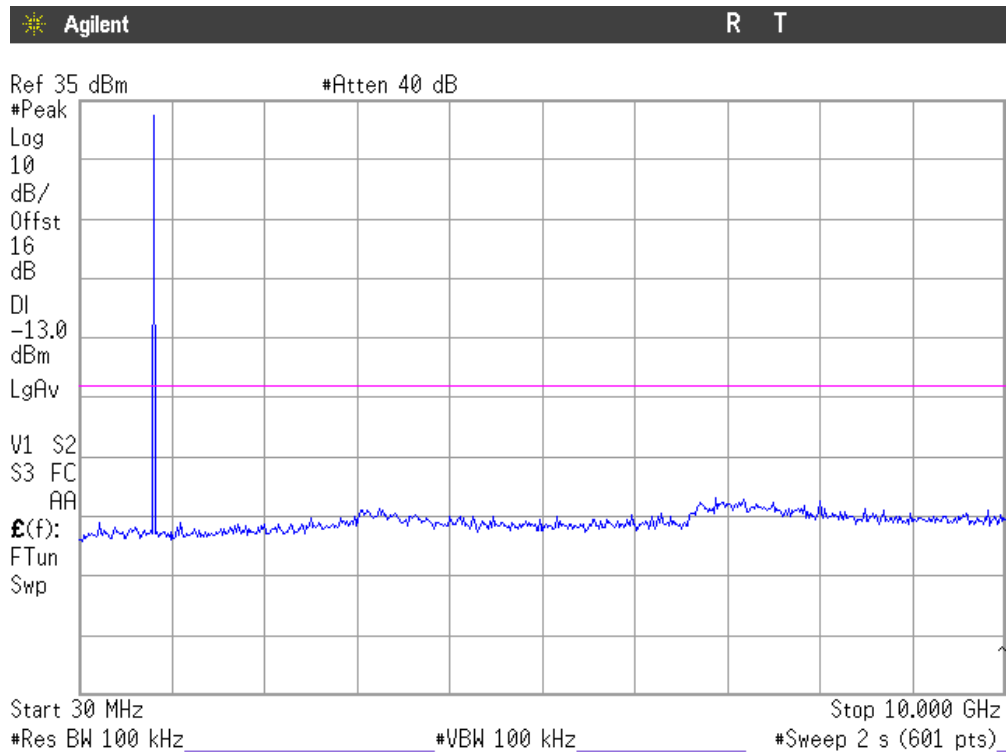
3. CHANNEL: HIGHEST

No spurious signals were found in all the range.

Verdict: PASS

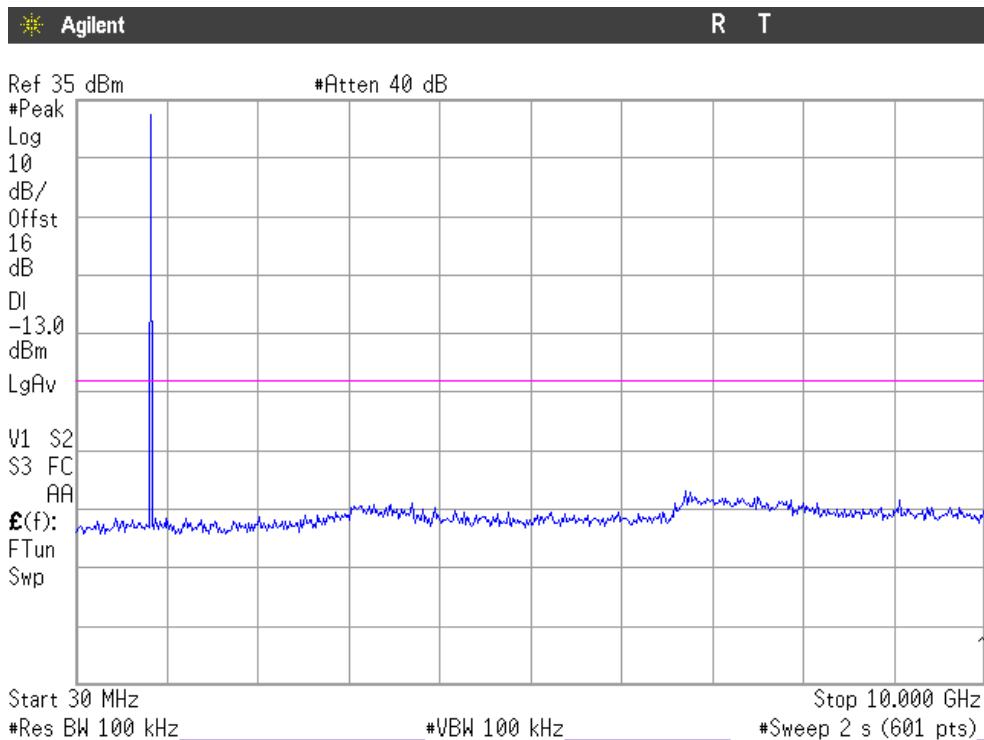
GPRS MODULATION

1. CHANNEL: LOWEST



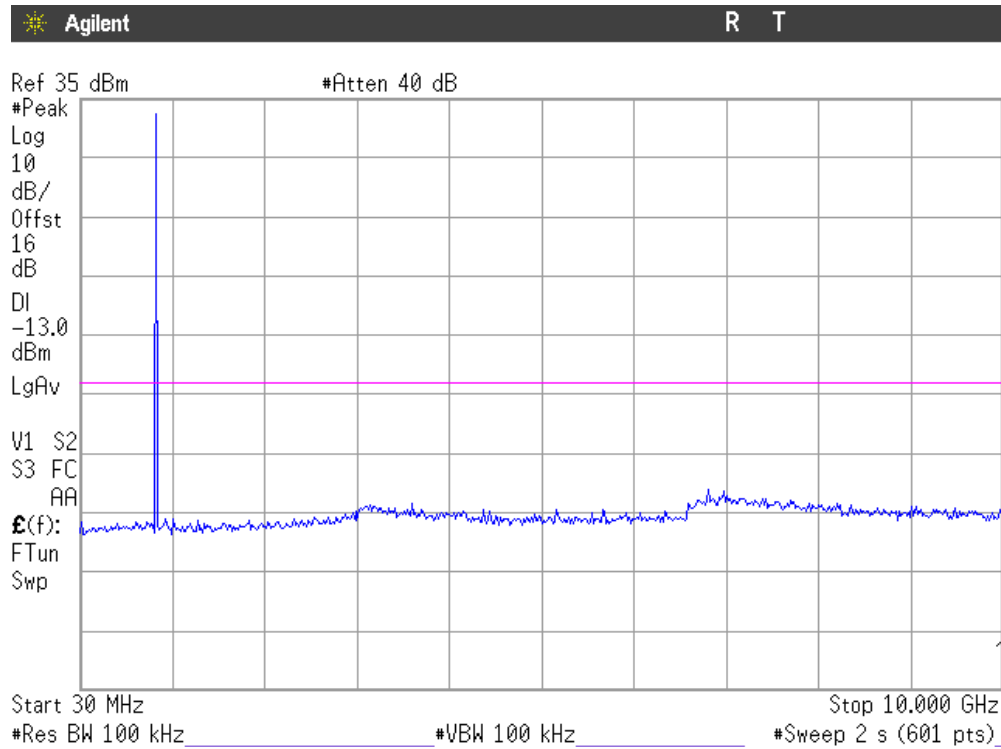
Note: The peak above the limit is the carrier frequency.

2. CHANNEL: MIDDLE



Note: The peak above the limit is the carrier frequency.

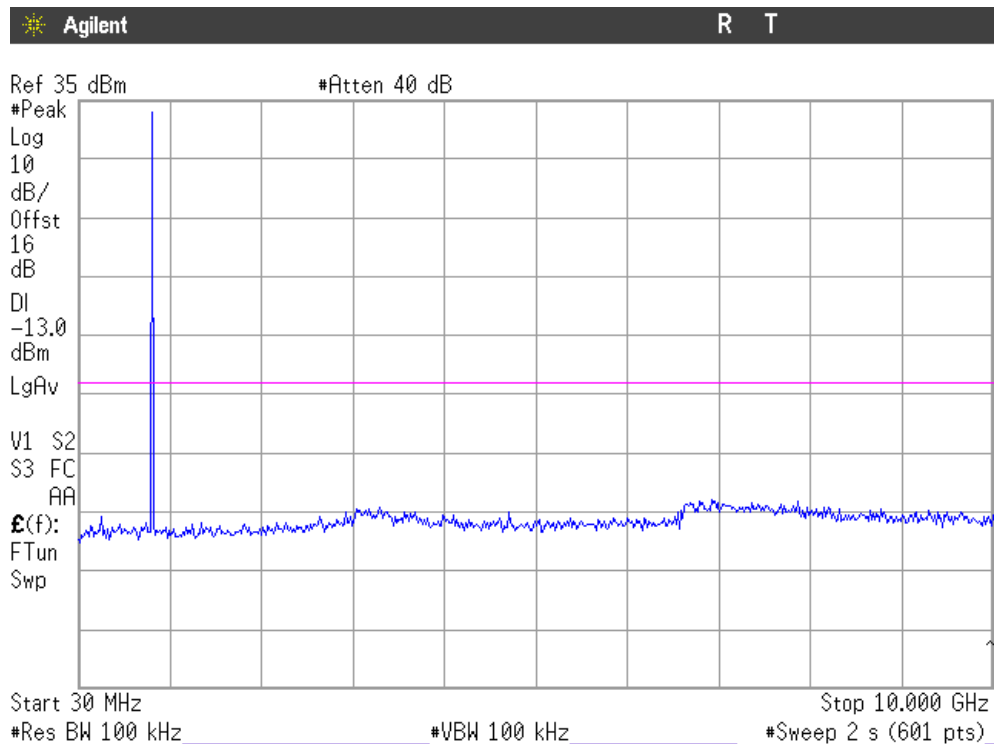
3. CHANNEL: HIGHEST



Note: The peak above the limit is the carrier frequency.

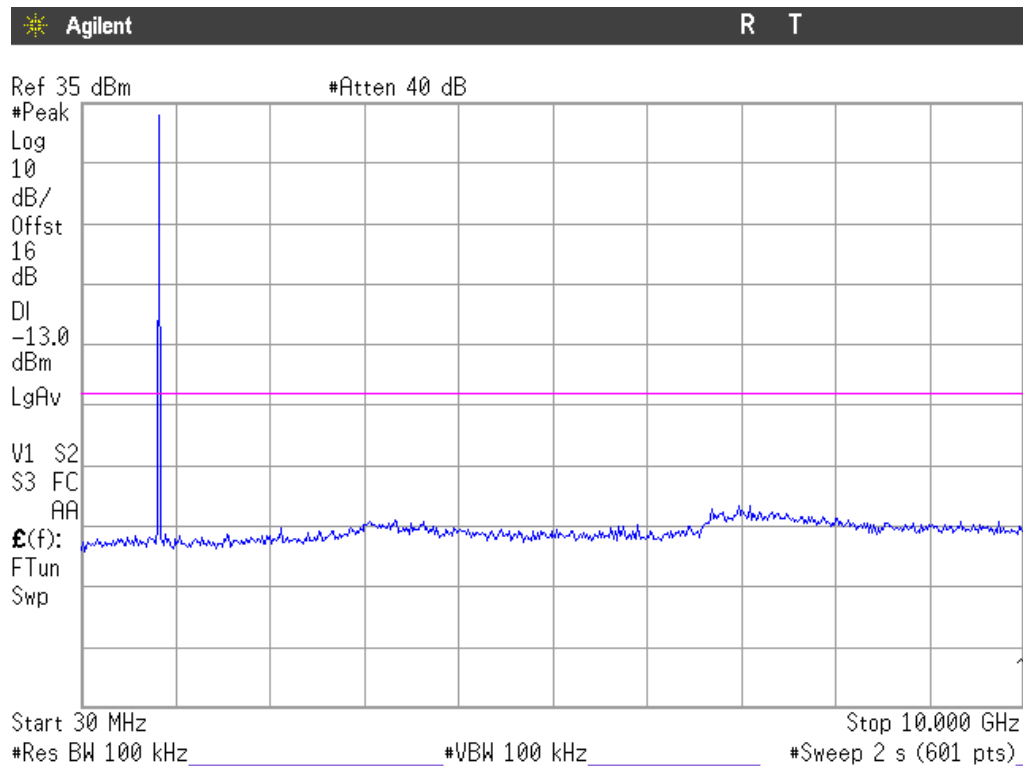
EDGE MODULATION

1. CHANNEL: LOWEST



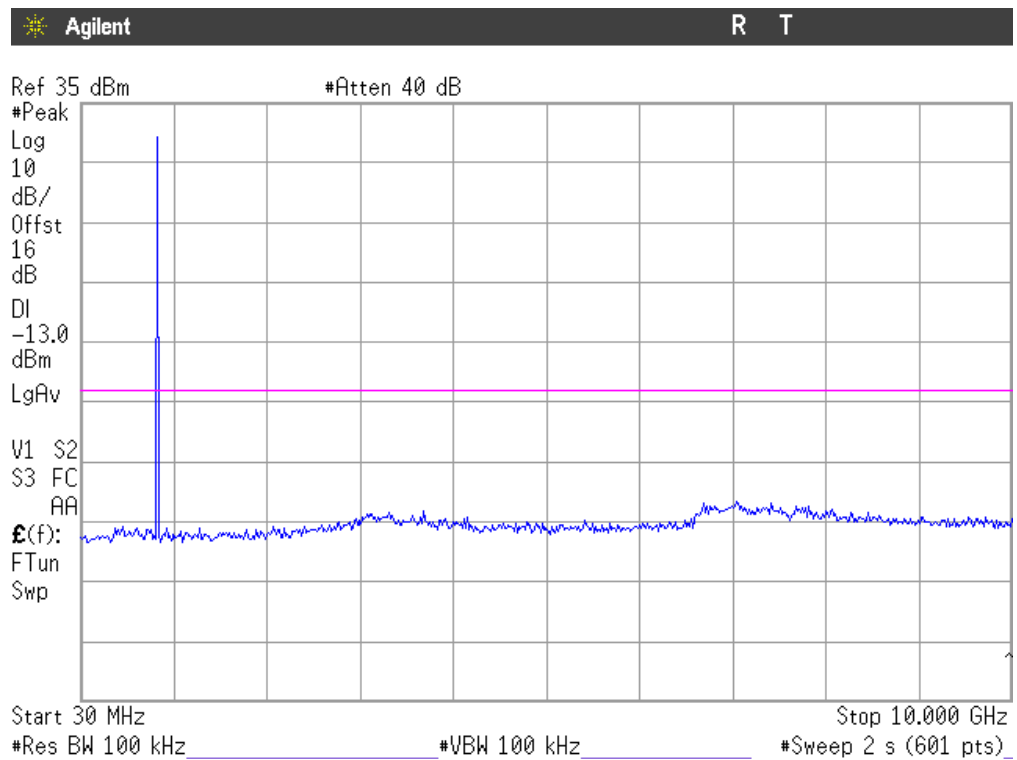
Note: The peak above the limit is the carrier frequency.

2. CHANNEL: MIDDLE



Note: The peak above the limit is the carrier frequency.

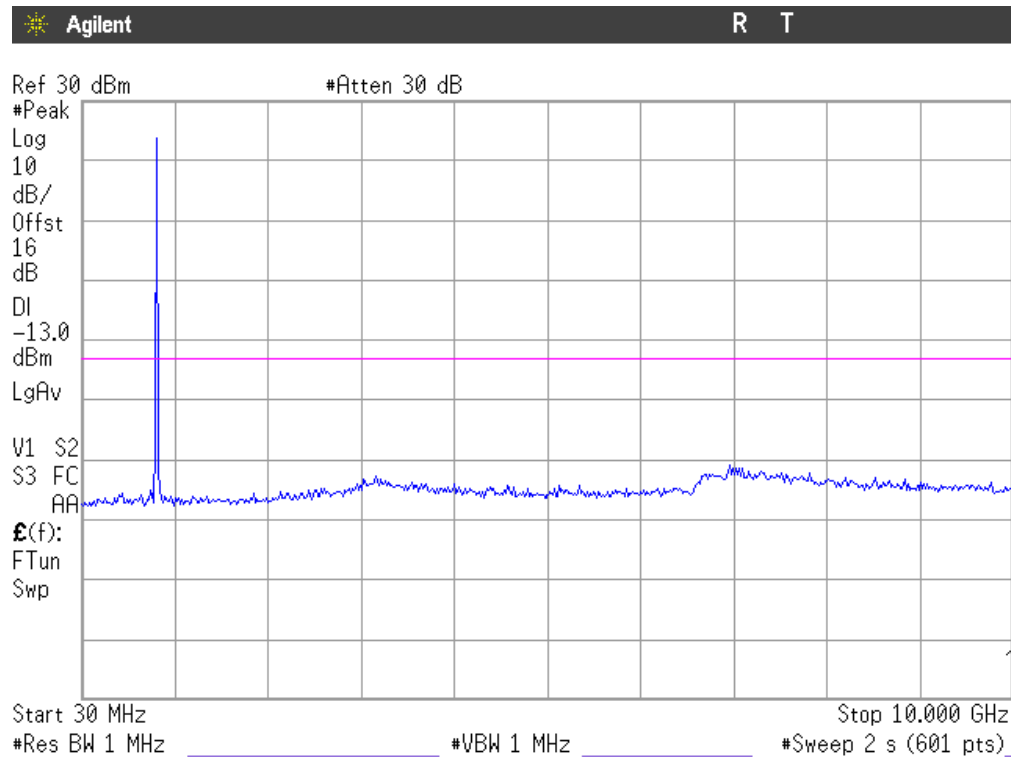
3. CHANNEL: HIGHEST



Note: The peak above the limit is the carrier frequency.

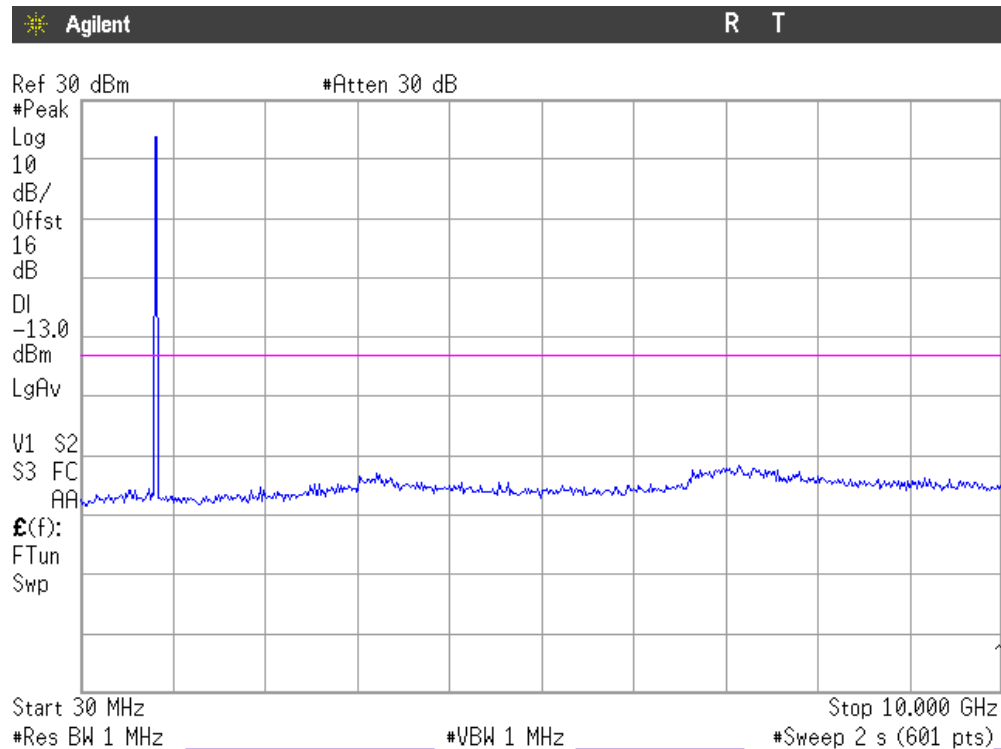
WCDMA MODULATION

1. CHANNEL: LOWEST



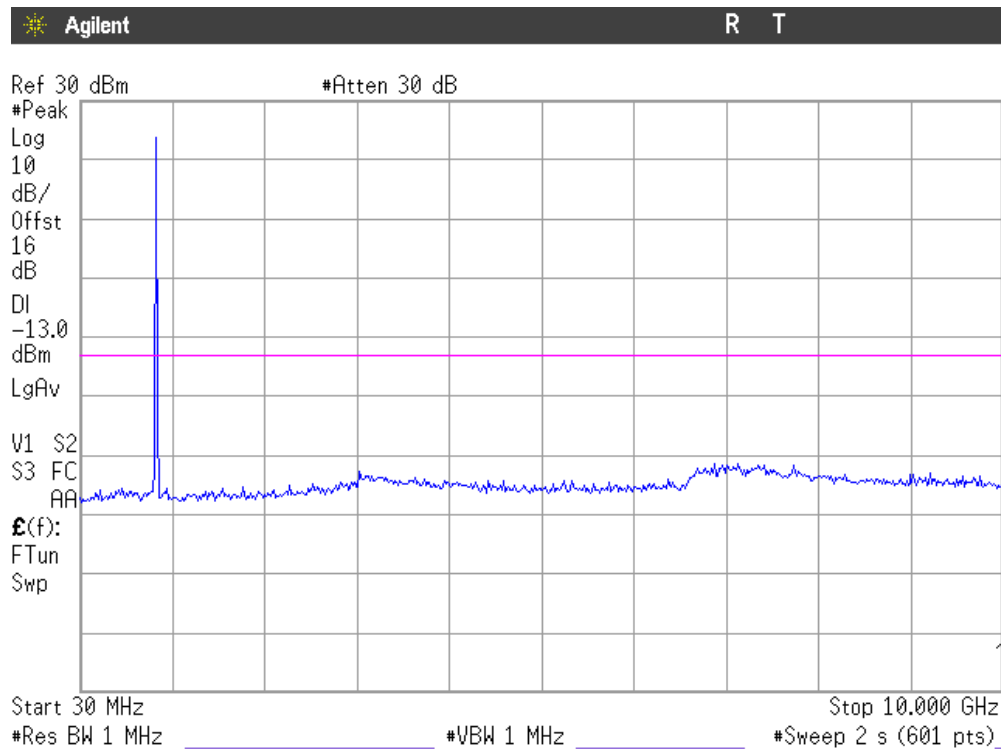
Note: The peak above the limit is the carrier frequency.

2. CHANNEL: MIDDLE



Note: The peak above the limit is the carrier frequency.

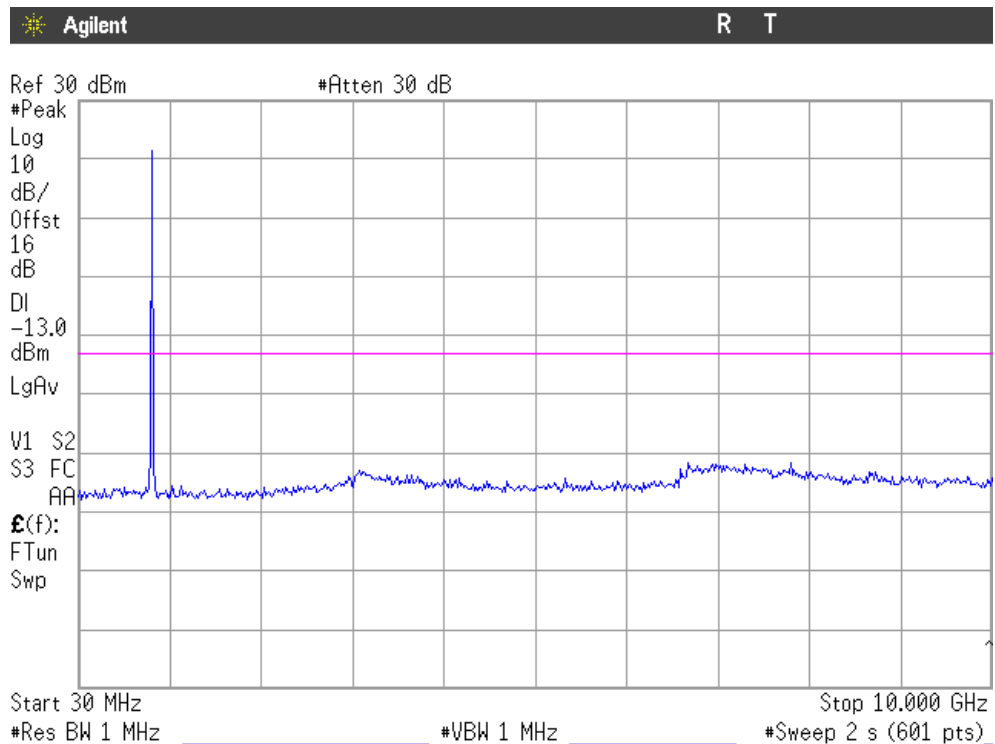
3. CHANNEL: HIGHEST



Note: The peak above the limit is the carrier frequency.

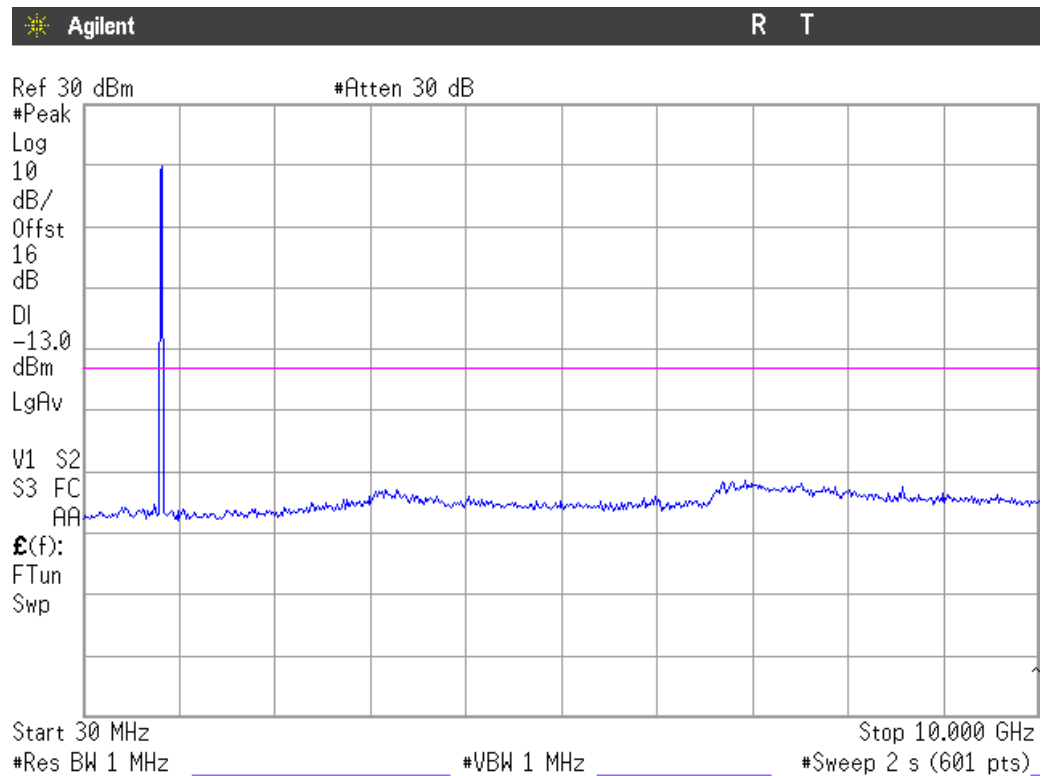
HSUPA MODULATION

1. CHANNEL: LOWEST



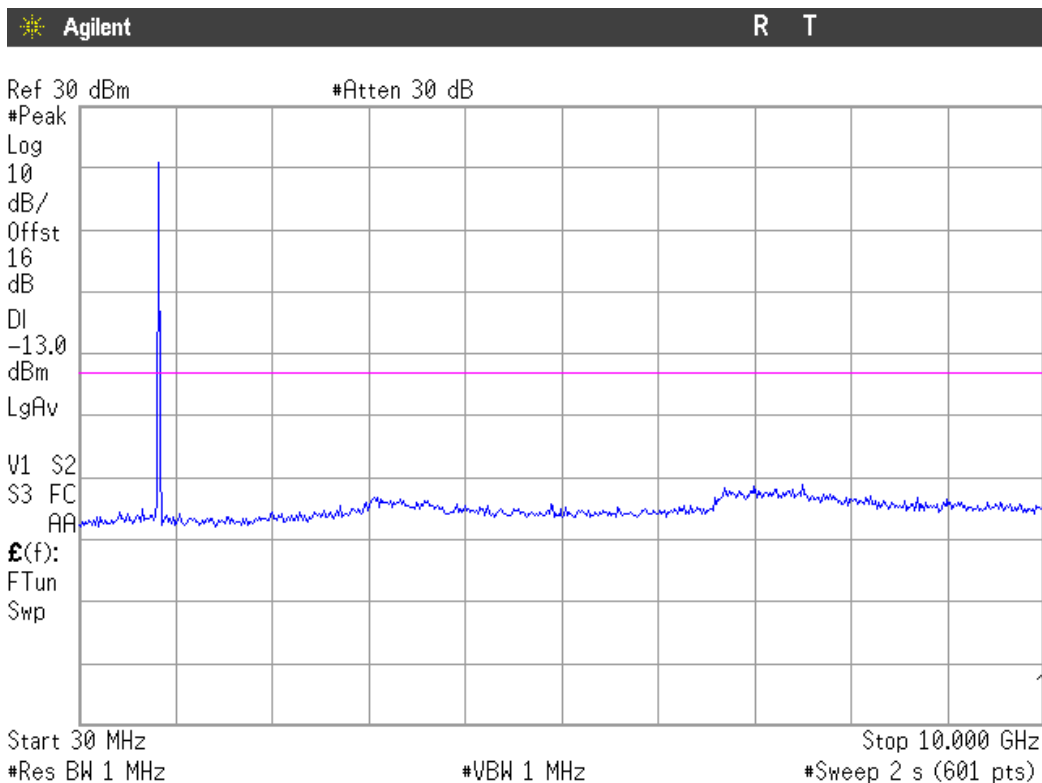
Note: The peak above the limit is the carrier frequency.

2. CHANNEL: MIDDLE



Note: The peak above the limit is the carrier frequency.

3. CHANNEL: HIGHEST



Note: The peak above the limit is the carrier frequency.

Spurious emissions at antenna terminals at Block Edges

SPECIFICATION

§2.1051 and §22.917

METHOD

As indicated in FCC part 22, in the 1 MHz bands immediately outside and adjacent to the frequency block or band a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A resolution bandwidth of 3.3 kHz was used for GPRS and EDGE modulations and 50 kHz for WCDMA and HSUPA modulations.

Measurement Limit:

According to specification, the power of emissions shall be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB, P in watts.

At P_o transmitting power, the specified minimum attenuation becomes $43+10\log (P_o)$, and the level in dBm relative P_o becomes:

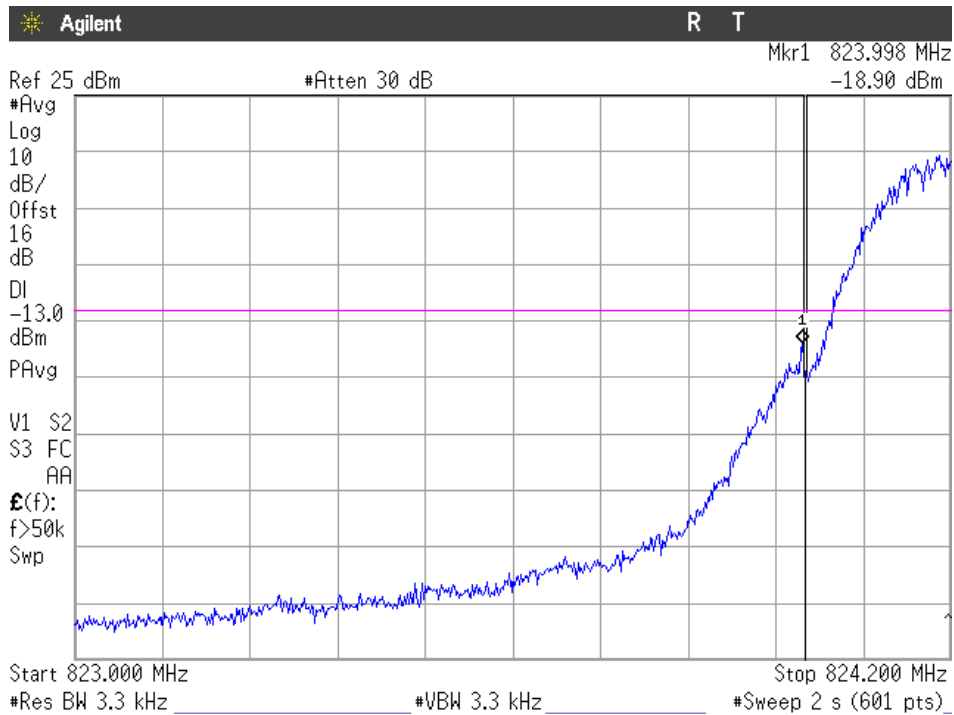
$$P_o \text{ (dBm)} - [43 + 10 \log (P_o \text{ in mwatts}) - 30] = - 13 \text{ dBm}$$

RESULTS (see plots in next pages)

MODULATION	Maximum level at lowest Block Edge (dBm)	Maximum level at highest Block Edge (dBm)
GPRS	-18.90	-20.58
EDGE	-25.11	-24.18
WCDMA	-17.72	-17.48
HSUPA	-21.19	-20.96

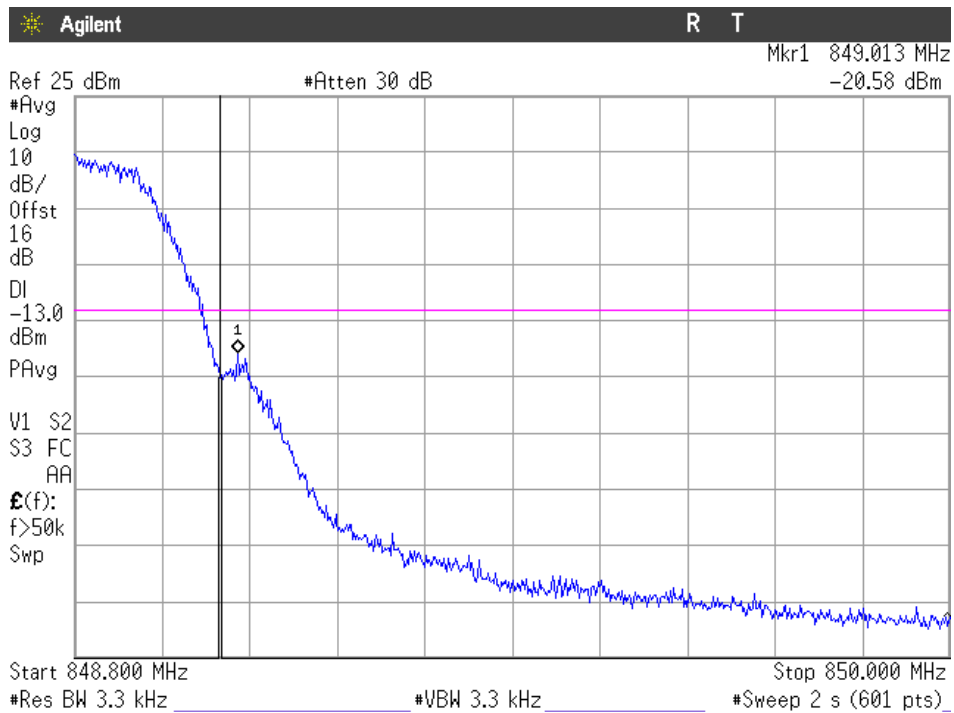
Measurement uncertainty = ± 1.57 dB.

GPRS MODULATION
CHANNEL LOWEST



NOTE: The equipment transmits at the maximum output power

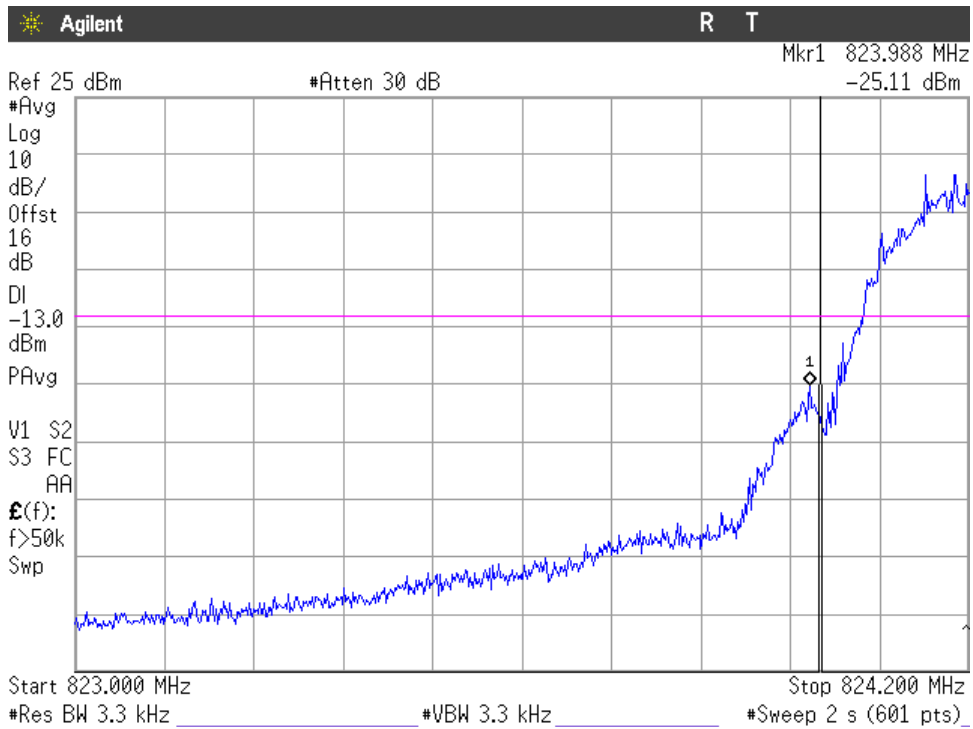
CHANNEL HIGHEST



NOTE: The equipment transmits at the maximum output power

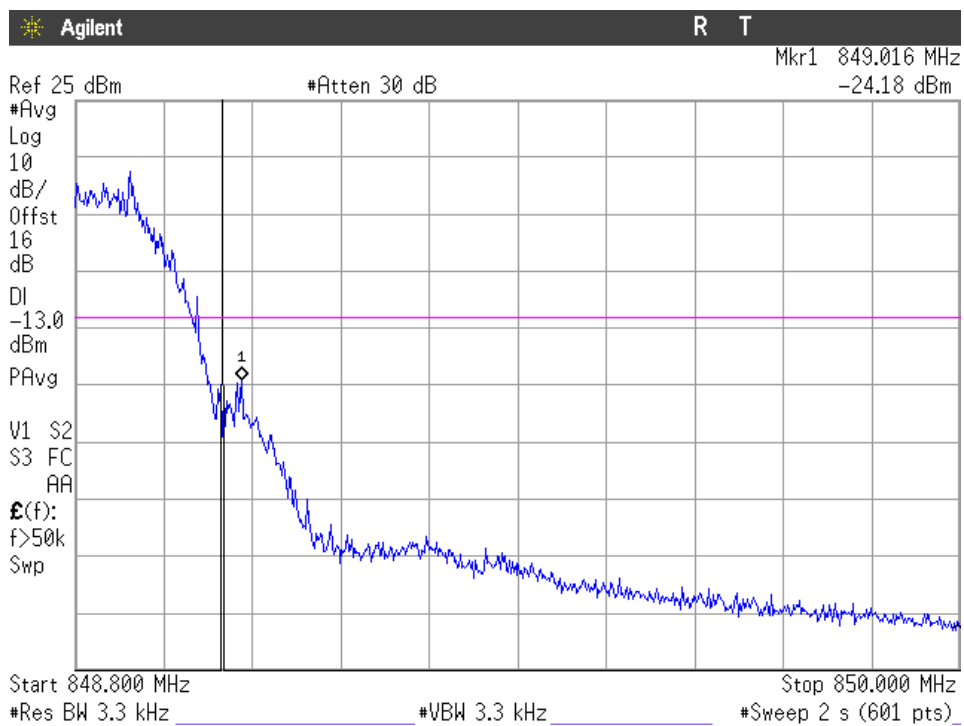
Verdict: PASS

EDGE MODULATION
CHANNEL LOWEST



NOTE: The equipment transmits at the maximum output power

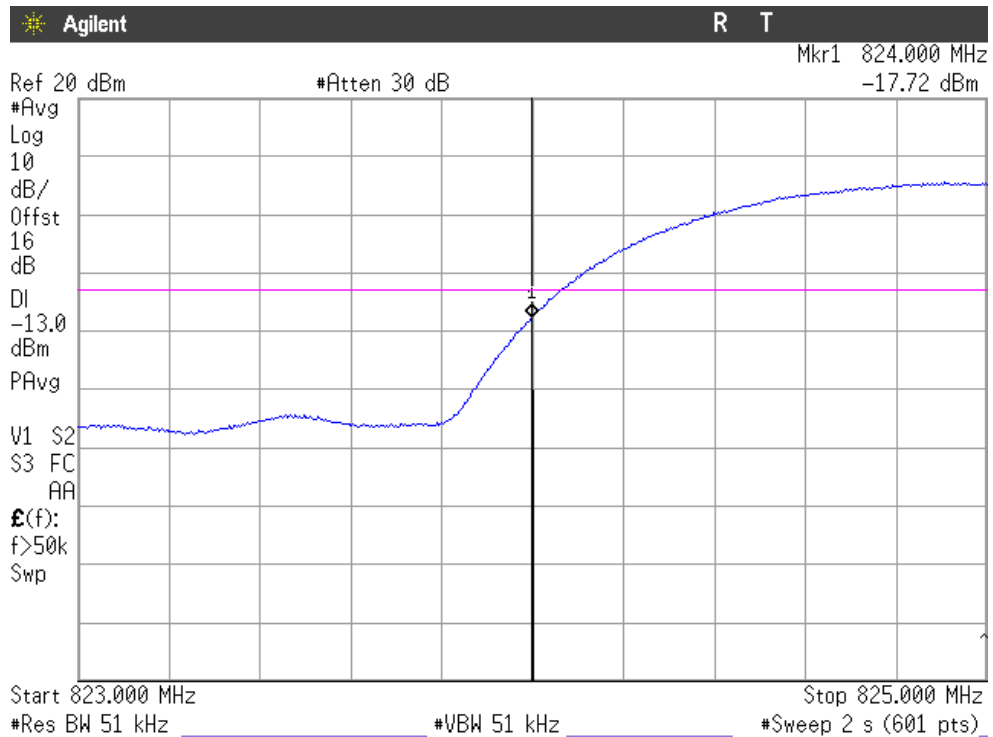
CHANNEL HIGHEST



NOTE: The equipment transmits at the maximum output power

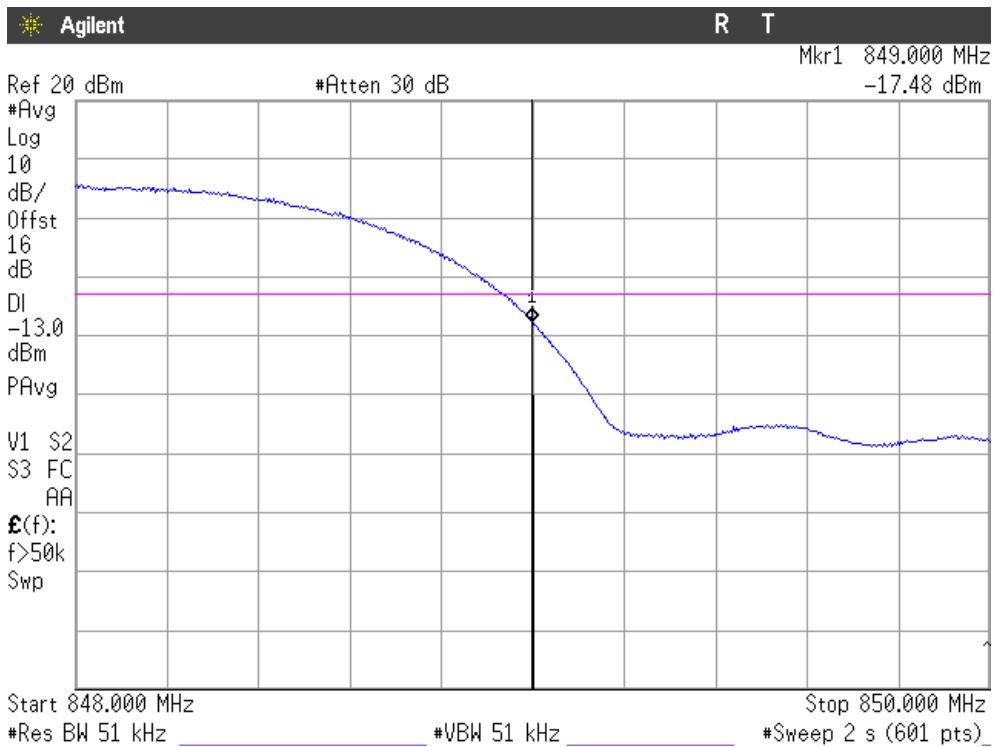
Verdict: PASS

WCDMA MODULATION
CHANNEL LOWEST



NOTE: The equipment transmits at the maximum output power

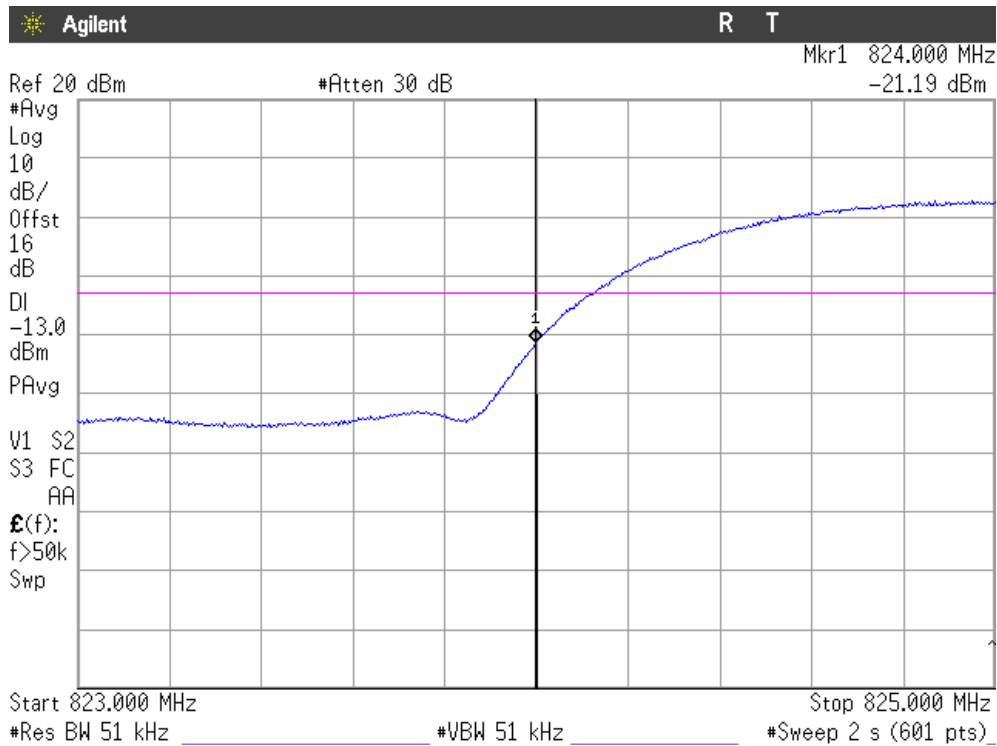
CHANNEL HIGHEST



NOTE: The equipment transmits at the maximum output power

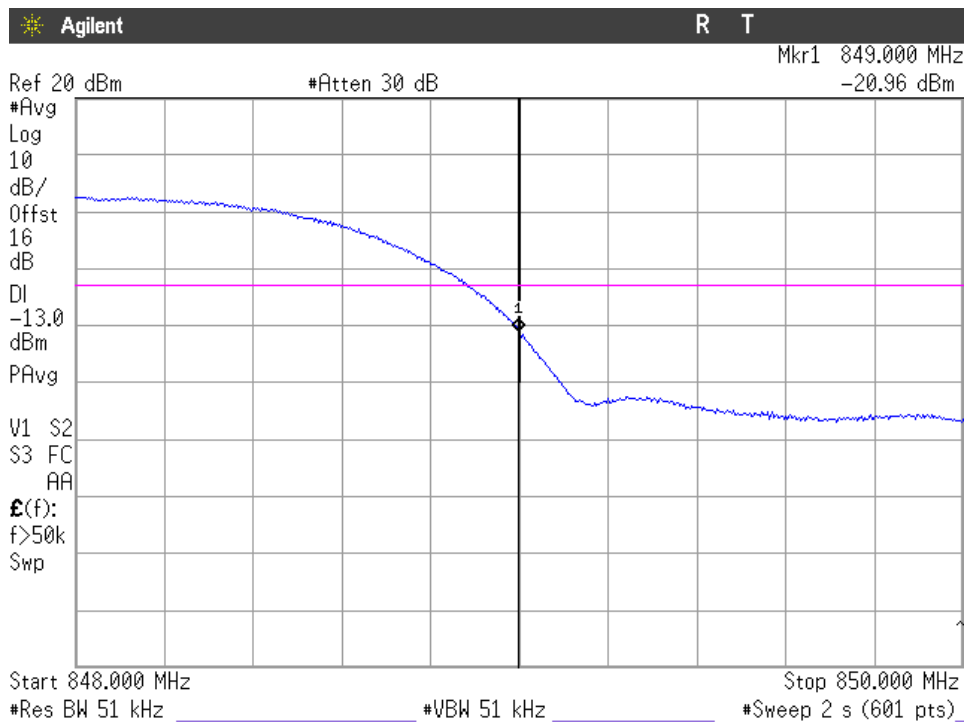
Verdict: PASS

HSUPA MODULATION
CHANNEL LOWEST



NOTE: The equipment transmits at the maximum output power

CHANNEL HIGHEST



NOTE: The equipment transmits at the maximum output power

Verdict: PASS

Radiated emissions

SPECIFICATION

§ 22.917

METHOD

The measurement was performed with the EUT inside an anechoic chamber. The spectrum was scanned from 30 MHz to at least the 10th harmonic of the highest frequency generated within the equipment.

The EUT was placed on a 1 meter high non-conductive stand at a 3 meter distance from the measuring antenna for measurements below 1 GHz and at 1 m distance for measurements above 1 GHz.

Detected emissions were maximized at each frequency by rotating the EUT and adjusting the measuring antenna height and polarization. The maximum meter reading was recorded. The radiated emissions were measured with peak detector and 1 MHz bandwidth.

Each detected emissions were substituted by the Substitution method, in accordance with the ANSI/TIA/EIA-603-C: 2004.

Measurement Limit:

According to specification, the power of emissions shall be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB, P in watts.

At P_o transmitting power, the specified minimum attenuation becomes $43+10\log (P_o)$, and the level in dBm relative P_o becomes:

$$P_o \text{ (dBm)} - [43 + 10 \log (P_o \text{ in mwatts}) - 30] = - 13 \text{ dBm}$$

RESULTS

GPRS MODULATION

1. CHANNEL: LOWEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-12.75 GHz.

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-12.75 GHz.

No spurious signals were found in all the range.

3. CHANNEL: HIGHEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-12.75 GHz.

No spurious signals were found in all the range.

EDGE MODULATION

1. CHANNEL: LOWEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-12.75 GHz.

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-12.75 GHz.

No spurious signals were found in all the range.

3. CHANNEL: HIGHEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-12.75 GHz.

No spurious signals were found in all the range.

WCDMA MODULATION

1. CHANNEL: LOWEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-12.75 GHz.

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-12.75 GHz.

No spurious signals were found in all the range.

3. CHANNEL: HIGHEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-12.75 GHz.

No spurious signals were found in all the range.

HSUPA MODULATION

1. CHANNEL: LOWEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-12.75 GHz.

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-12.75 GHz.

No spurious signals were found in all the range.

3. CHANNEL: HIGHEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-12.75 GHz.

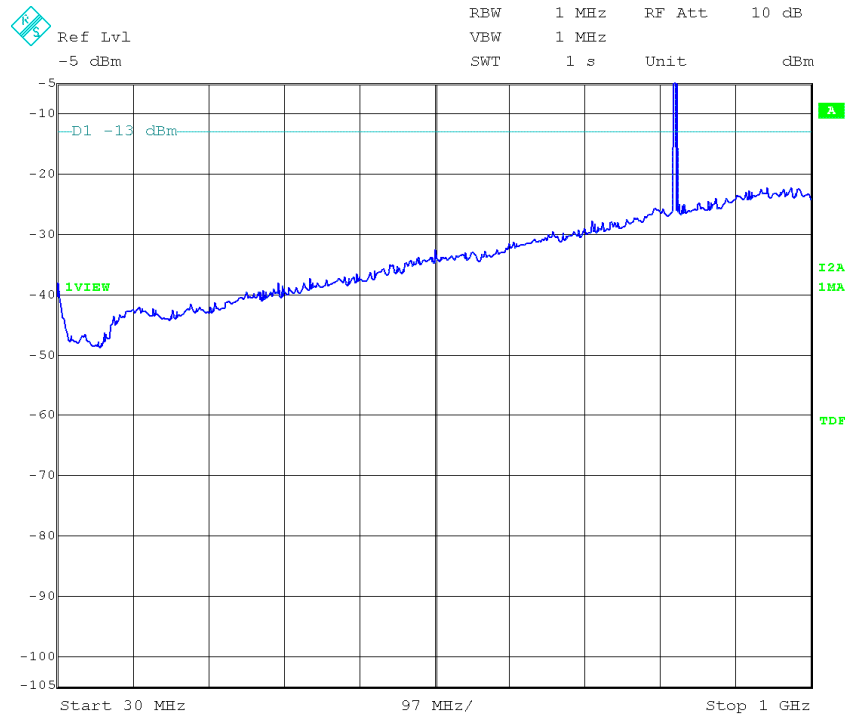
No spurious signals were found in all the range.

Verdict: PASS

FREQUENCY RANGE 30 MHz-1000 MHz.

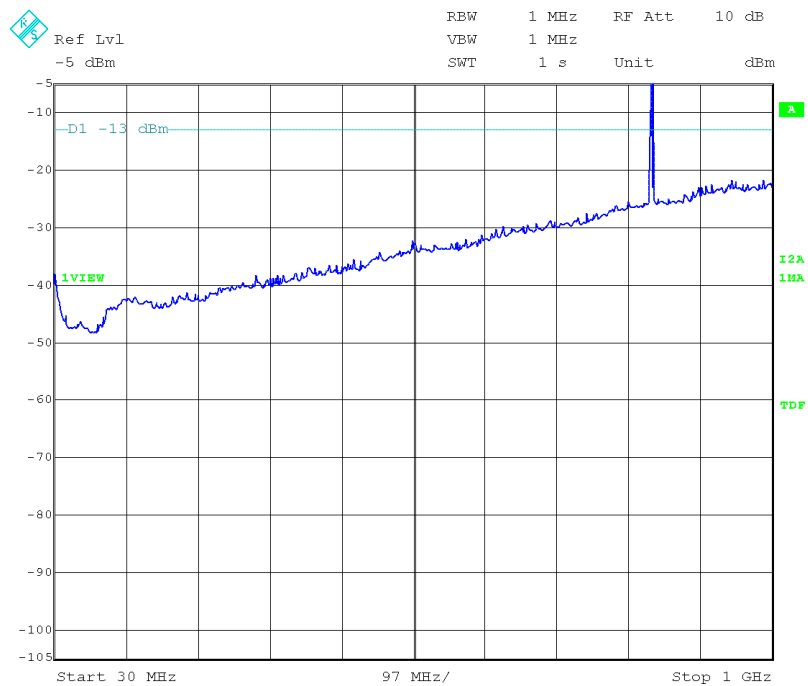
GPRS MODULATION

CHANNEL: LOWEST



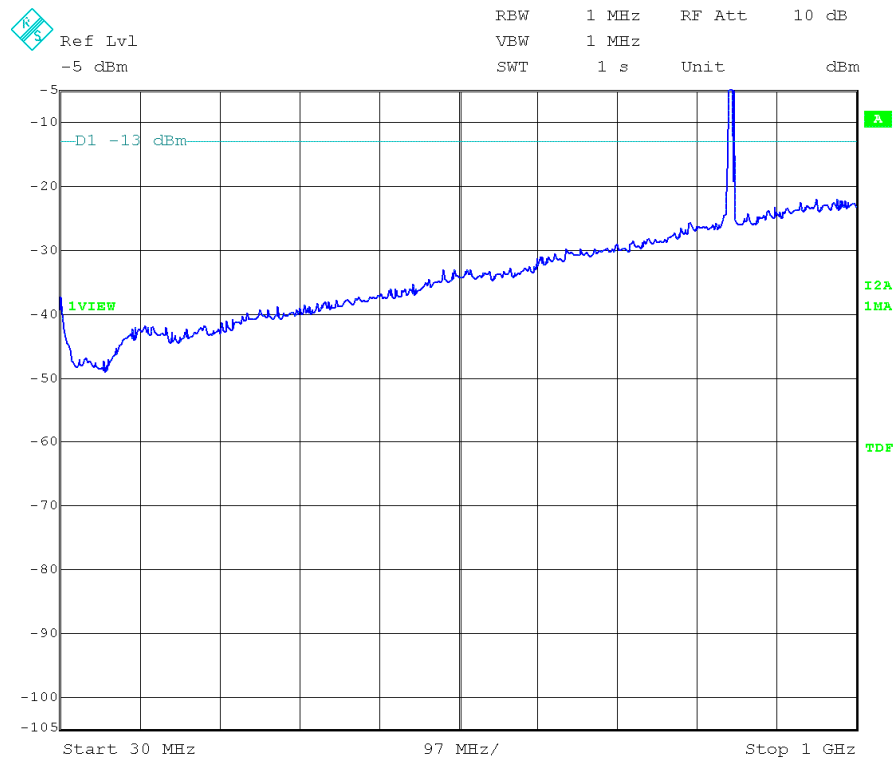
Note: The peak above the limit is the carrier frequency.

CHANNEL: MIDDLE



Note: The peak above the limit is the carrier frequency.

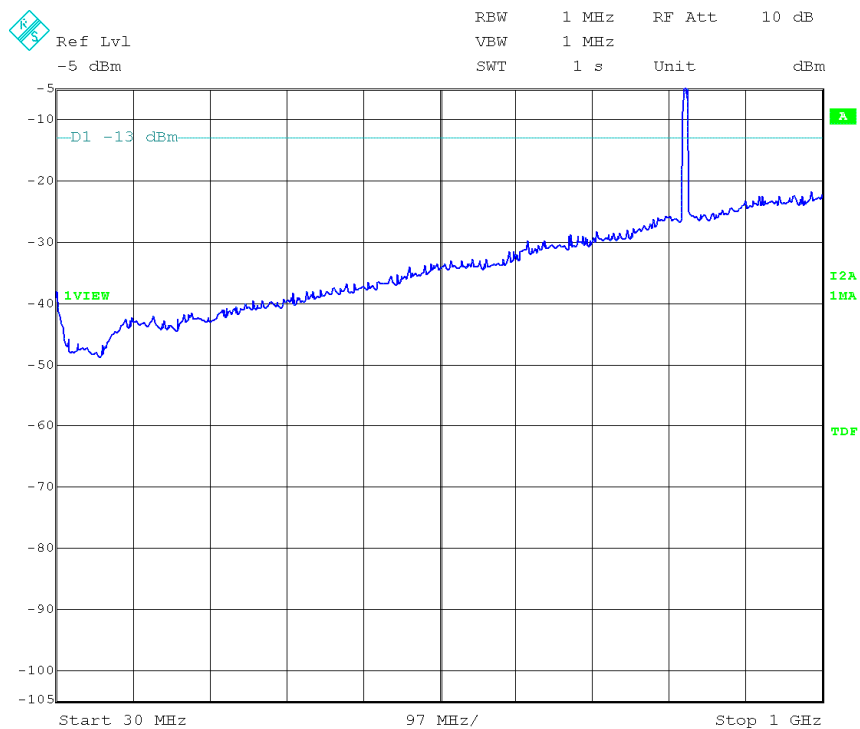
CHANNEL: HIGHEST



Note: The peak above the limit is the carrier frequency.

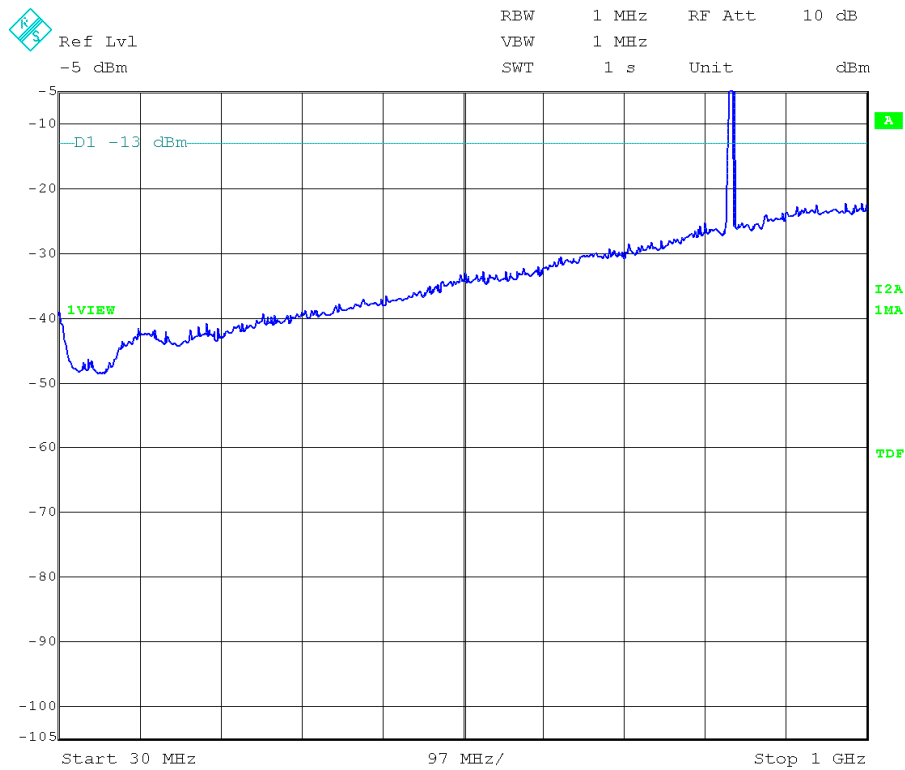
HSUPA MODULATION

CHANNEL: LOWEST



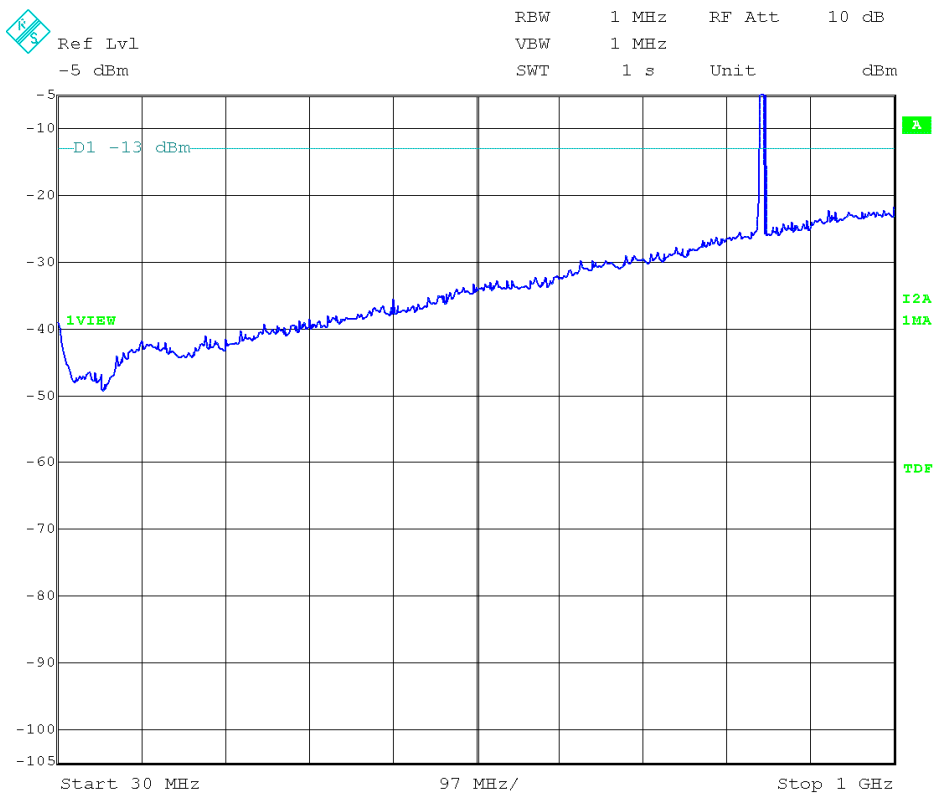
Note: The peak above the limit is the carrier frequency.

CHANNEL: MIDDLE



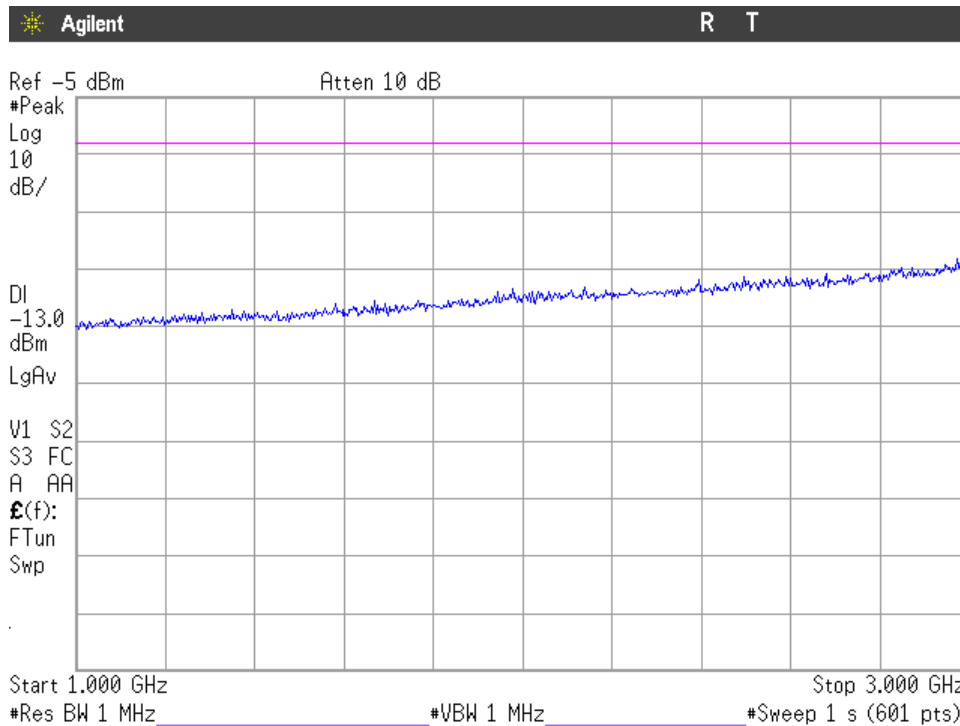
Note: The peak above the limit is the carrier frequency.

CHANNEL: HIGHEST



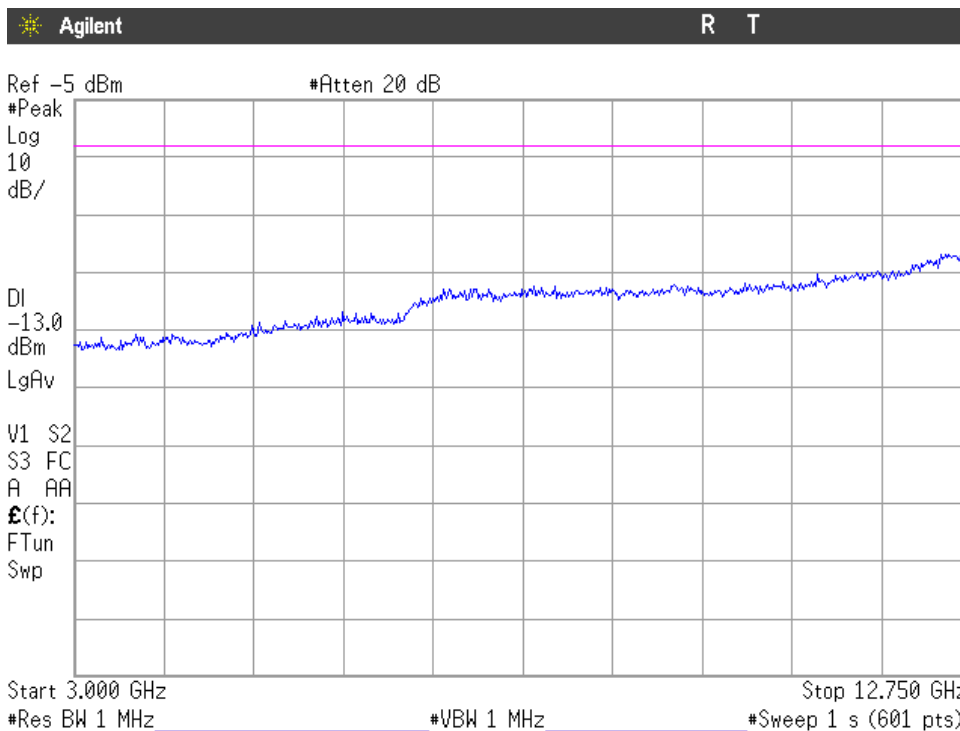
Note: The peak above the limit is the carrier frequency.

FREQUENCY RANGE 1 GHz to 3 GHz.



(This plot is valid for all three channels and all modulations)

FREQUENCY RANGE 3 GHz to 12.75 GHz.



(This plot is valid for all three channels and all modulations)

TEST RESULTS FOR FCC PART 24 AND RSS-133

TEST CONDITIONS

Power supply (V):

$$V_{\text{nom}} = 3.3 \text{ Vdc}$$

$$V_{\text{max}} = 3.6 \text{ Vdc}$$

$$V_{\text{min}} = 3.0 \text{ Vdc}$$

The subscripts nom, min and max indicate voltage test conditions (nominal, minimum and maximum respectively, as declared by the applicant).

Type of power supply = DC Voltage from external power supply

Type of antenna = external connectable antenna structure for Laptop computer

TEST FREQUENCIES:

GPRS AND EDGE MODULATION

Lowest channel (512): 1850.2 MHz

Middle channel (662): 1880.2 MHz

Highest channel (810): 1909.8 MHz

WCDMA AND HSUPA MODULATION

Lowest channel (9262): 1852.4 MHz

Middle channel (9400): 1880.0 MHz

Highest channel (9538): 1907.6 MHz

RF Output Power (conducted and E.I.R.P.)

SPECIFICATION

§2.1046 and 24.232

Mobile/portable stations are limited to 2 Watts (33 dBm) Effective Isotropic Radiated Power (E.I.R.P.) peak power.

METHOD

The conducted RF output power measurements were made at the RF output terminals of the EUT using an attenuator, power splitter and spectrum analyser. The EUT was controlled via the Universal Radio Communication tester R&S CMU200 selecting maximum transmission power of the EUT and different modes of modulation.

For radiated measurements the EUT was placed on a 1 m high non-conductive stand inside an anechoic chamber. The measuring antenna was placed at 1 m distance and the maximum field strength was measured for the three channels. The EUT was controlled via the Universal Radio Communication tester R&S CMU200 selecting maximum transmission power of the EUT and different modes of modulation.

The Effective Isotropic Radiated Power (E.I.R.P.) is obtained by using the Substitution Method according to ANSI/TIA/EIA-603-C: 2004.

RESULTS

MAXIMUM OUTPUT POWER (CONDUCTED). See plots in next pages.

GPRS MODULATION

Channel	Lowest	Middle	Highest
Maximum peak power (dBm)	30.06	30.05	29.37
Maximum peak power (W)	1.01	1.01	0.86
Measurement uncertainty (dB)	±0.5		

EDGE MODULATION

Channel	Lowest	Middle	Highest
Maximum peak power (dBm)	30.12	30.07	29.38
Maximum peak power (W)	1.03	1.02	0.87
Measurement uncertainty (dB)	±0.5		

WCDMA MODULATION

Channel	Lowest	Middle	Highest
Maximum peak power (dBm)	27.50	27.78	27.22
Maximum peak power (W)	0.56	0.60	0.53
Measurement uncertainty (dB)	±0.5		

HSUPA MODULATION

Channel	Lowest	Middle	Highest
Maximum peak power (dBm)	26.96	27.09	26.43
Maximum peak power (W)	0.50	0.51	0.44
Measurement uncertainty (dB)	±0.5		

MAXIMUM EFFECTIVE ISOTROPIC RADIATED POWER E.I.R.P. (RADIATED).

GPRS MODULATION

Substitution method data

Frequency (MHz) at max. reading	Max. Instrument reading (dBm)	Polarization	(1) RF Generator +power amplifier output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain G_i (respect to isotropic radiator) (dB)	E.I.R.P. (dBm) = (1) – (2) + (3)
1850.2835	-3.42	Horizontal	20.98	0.5	8.6	29.08
1880.1507	-4.83	Horizontal	20.07	0.5	8.3	27.87
1909.8505	-4.52	Horizontal	20.78	0.5	8.0	28.28

RBW = VBW = 1 MHz

Channel	Lowest	Middle	Highest
Maximum peak power (dBm)	29.08	27.87	28.28
Maximum peak power (W)	0.81	0.61	0.67
Measurement uncertainty (dB)	± 4.0		

EDGE MODULATION

Substitution method data

Frequency (MHz) at max. reading	Max. Instrument reading (dBm)	Polarization	(1) RF Generator +power amplifier output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain G_i (respect to isotropic radiator) (dB)	E.I.R.P. (dBm) = (1) – (2) + (3)
1850.1675	-4.32	Horizontal	20.08	0.5	8.6	28.18
1880.2505	-5.30	Horizontal	19.60	0.5	8.3	27.40
1909.8675	-4.58	Horizontal	20.72	0.5	8.0	28.22

RBW = VBW = 1 MHz

Channel	Lowest	Middle	Highest
Maximum peak power (dBm)	28.18	27.40	28.22
Maximum peak power (W)	0.66	0.55	0.66
Measurement uncertainty (dB)	± 4.0		

WCDMA MODULATION

Substitution method data

Frequency (MHz) at max. reading	Max. Instrument reading (dBm)	Polarization	(1) RF Generator +power amplifier output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain Gi (respect to isotropic radiator) (dB)	E.I.R.P. (dBm) = (1) – (2) + (3)
1854.5013	-5.93	Horizontal	18.47	0.5	8.6	26.57
1879.5355	-5.92	Horizontal	18.98	0.5	8.3	26.78
1908.9753	-5.30	Horizontal	20.00	0.5	8.0	27.50

RBW = VBW = 8 MHz

Channel	Lowest	Middle	Highest
Maximum peak power (dBm)	26.57	26.78	27.50
Maximum peak power (W)	0.45	0.48	0.56
Measurement uncertainty (dB)	± 4.0		

HSUPA MODULATION

Substitution method data

Frequency (MHz) at max. reading	Max. Instrument reading (dBm)	Polarization	(1) Generator output (dBm)	(2) Cable loss (dB)	(3) Substitution antenna gain Gi (respect to isotropic radiator) (dB)	E.I.R.P. (dBm) = (1) – (2) + (3)
1854.5383	-8.33	Horizontal	16.07	0.5	8.6	24.17
1879.5772	-8.34	Horizontal	16.56	0.5	8.3	24.36
1909.2355	-7.88	Horizontal	17.42	0.5	8.0	24.92

RBW = VBW = 8 MHz

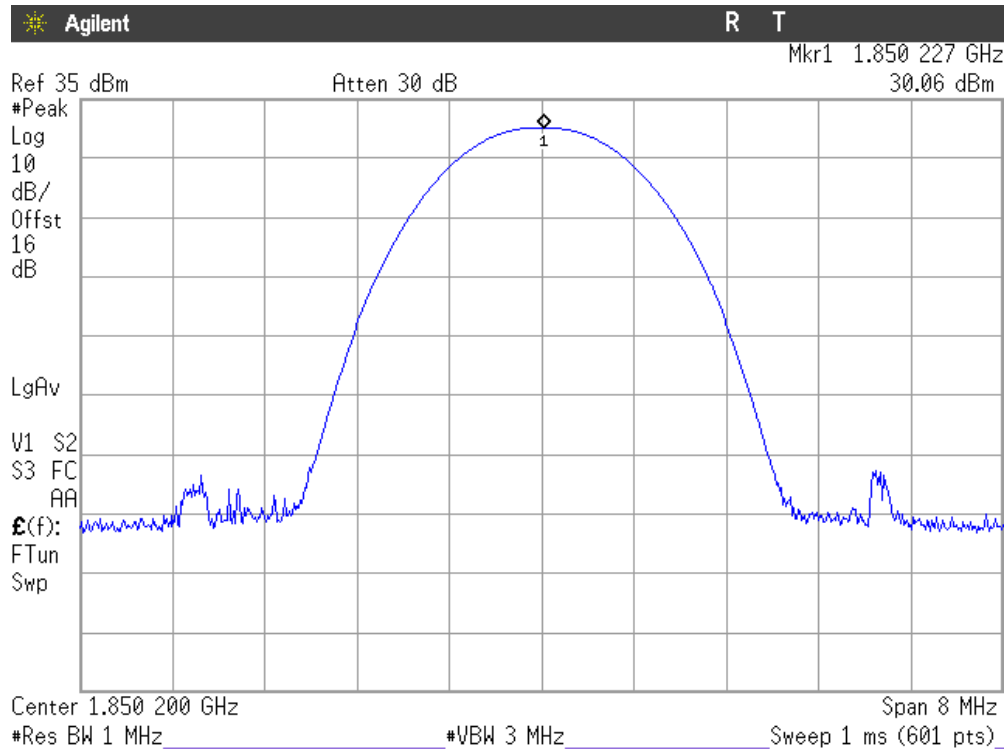
Channel	Lowest	Middle	Highest
Maximum peak power (dBm)	24.17	24.36	24.92
Maximum peak power (W)	0.26	0.27	0.31
Measurement uncertainty (dB)	± 4.0		

Verdict: PASS

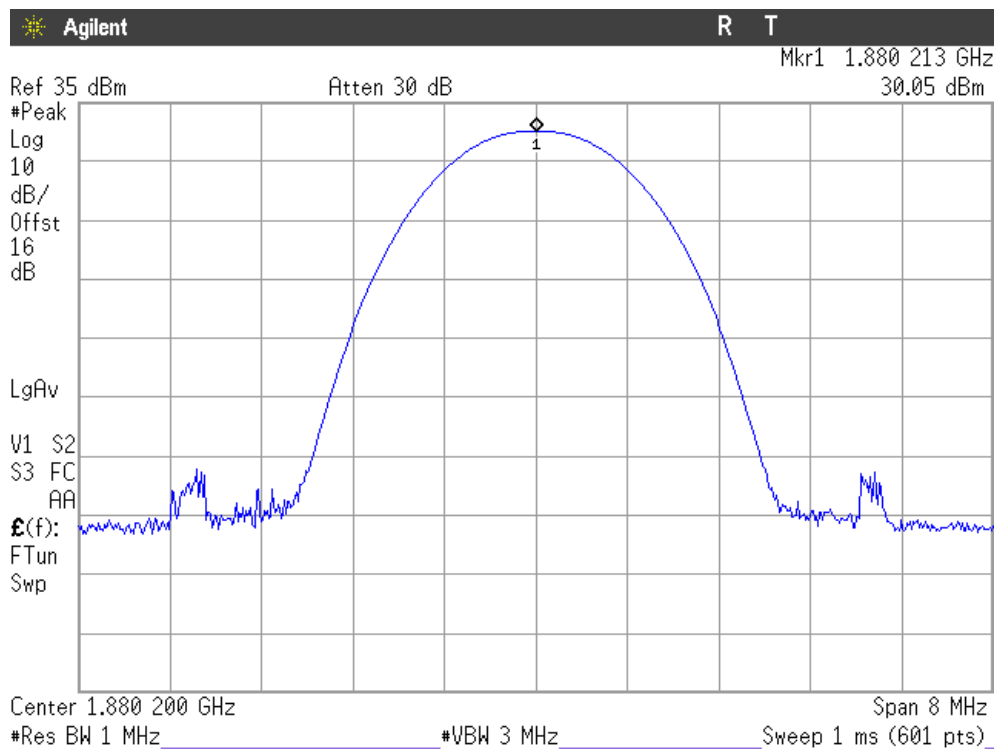
PEAK OUTPUT POWER (CONDUCTED).

GPRS MODULATION

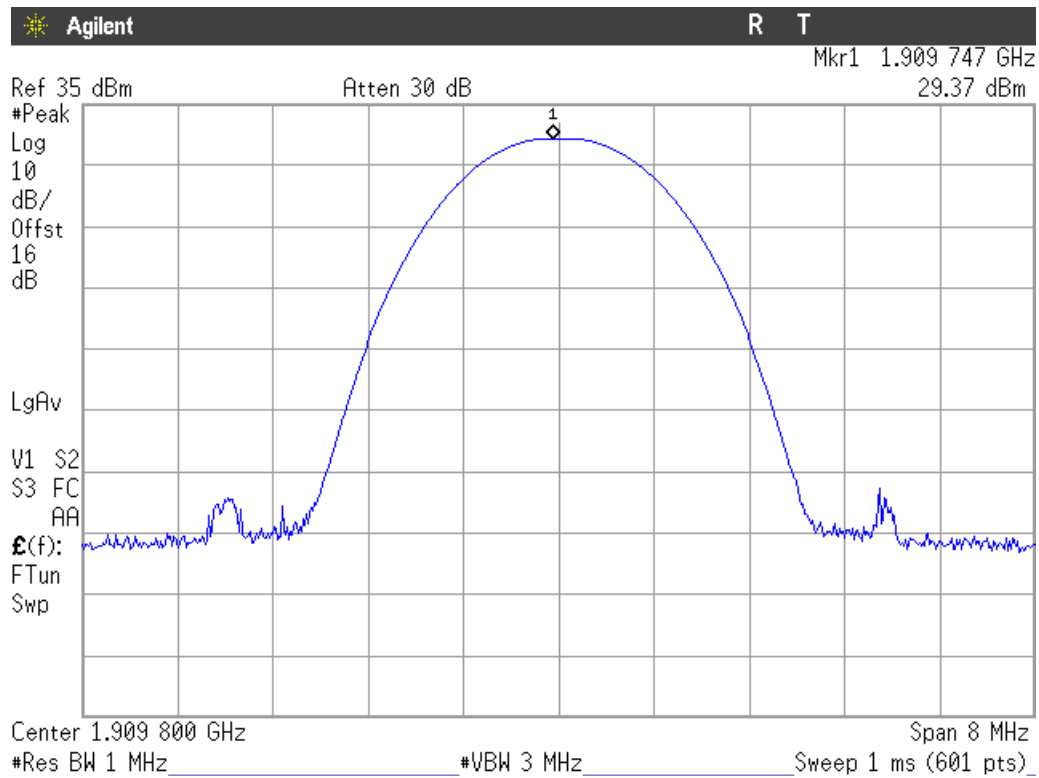
Lowest Channel.



Middle Channel.

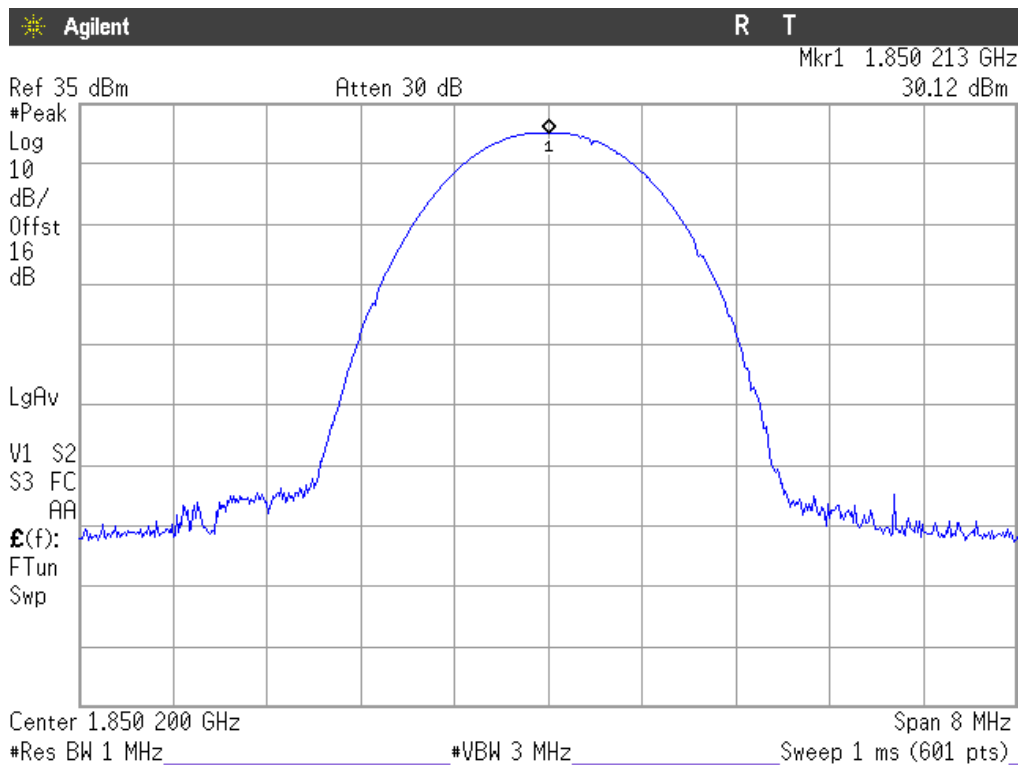


Highest Channel.

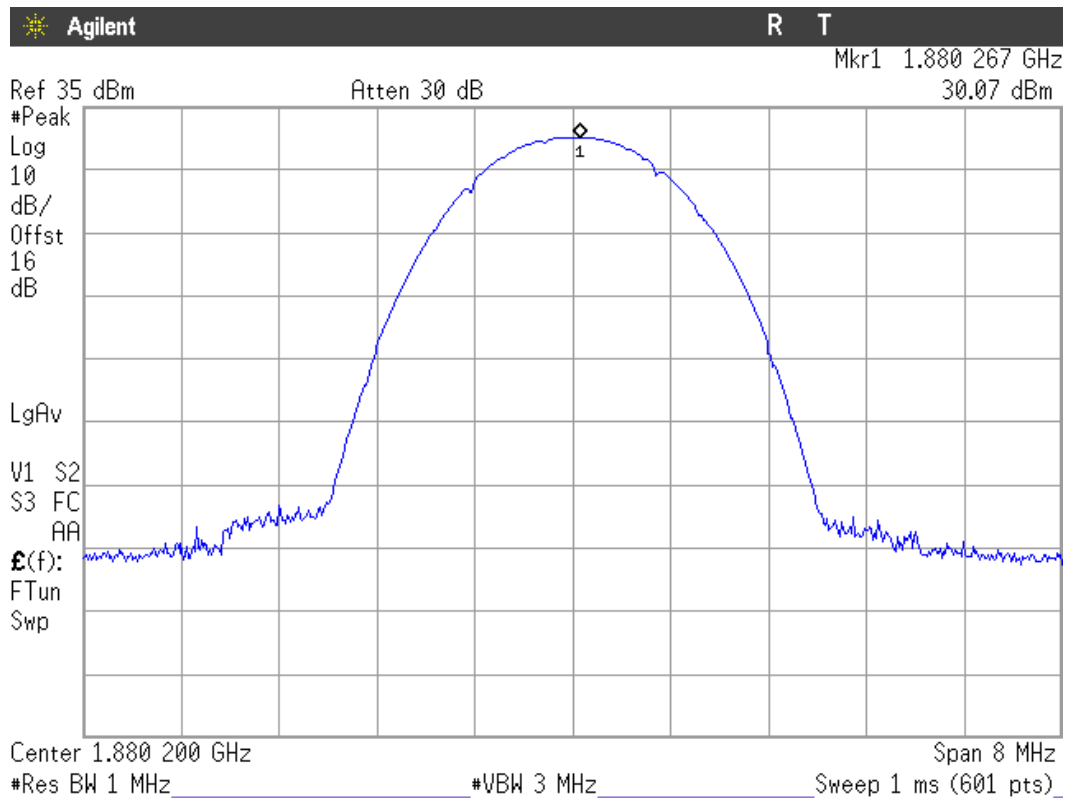


EDGE MODULATION

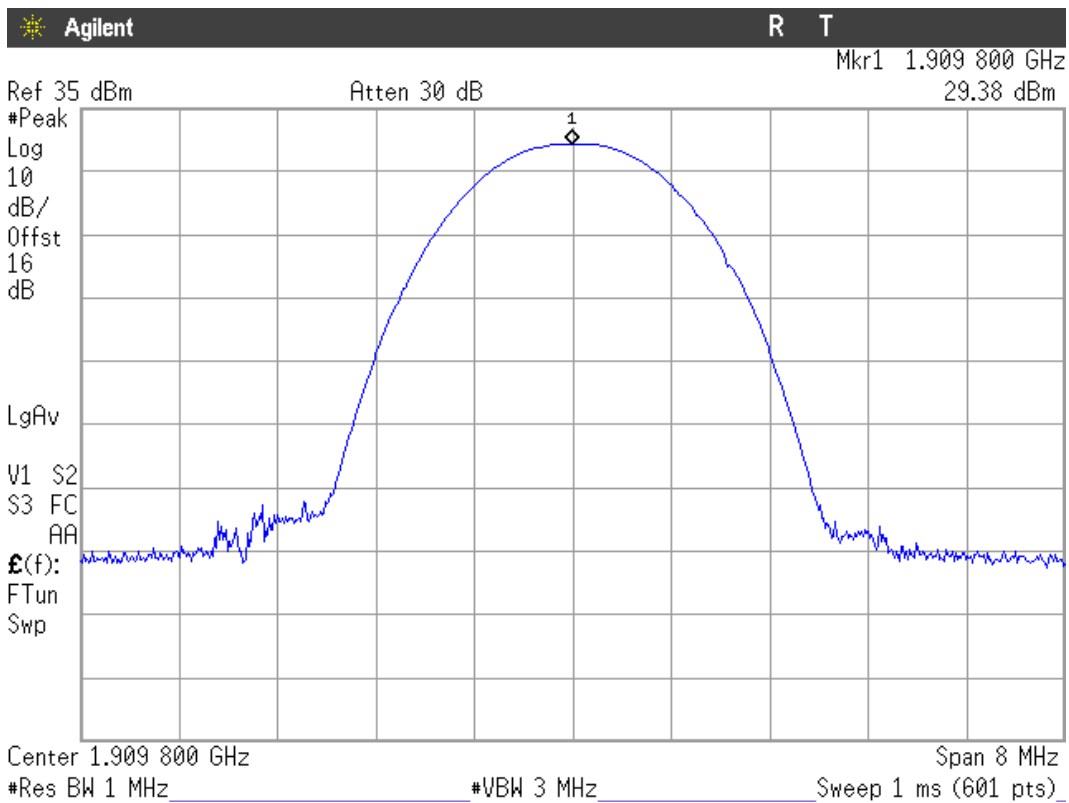
Lowest Channel.



Middle Channel.

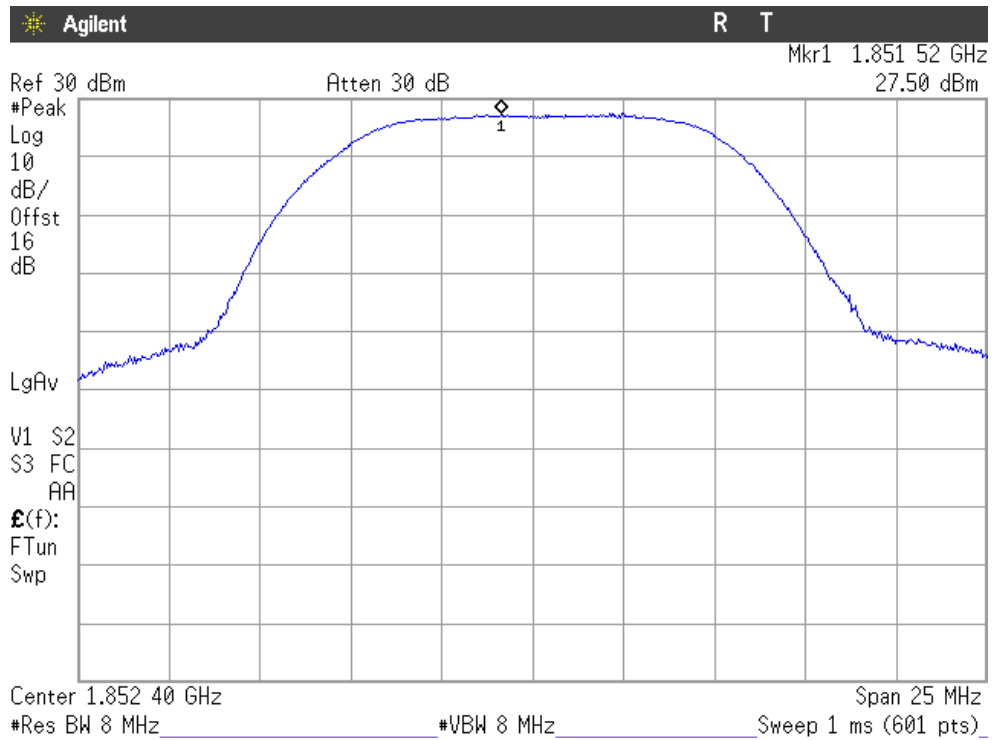


Highest Channel.

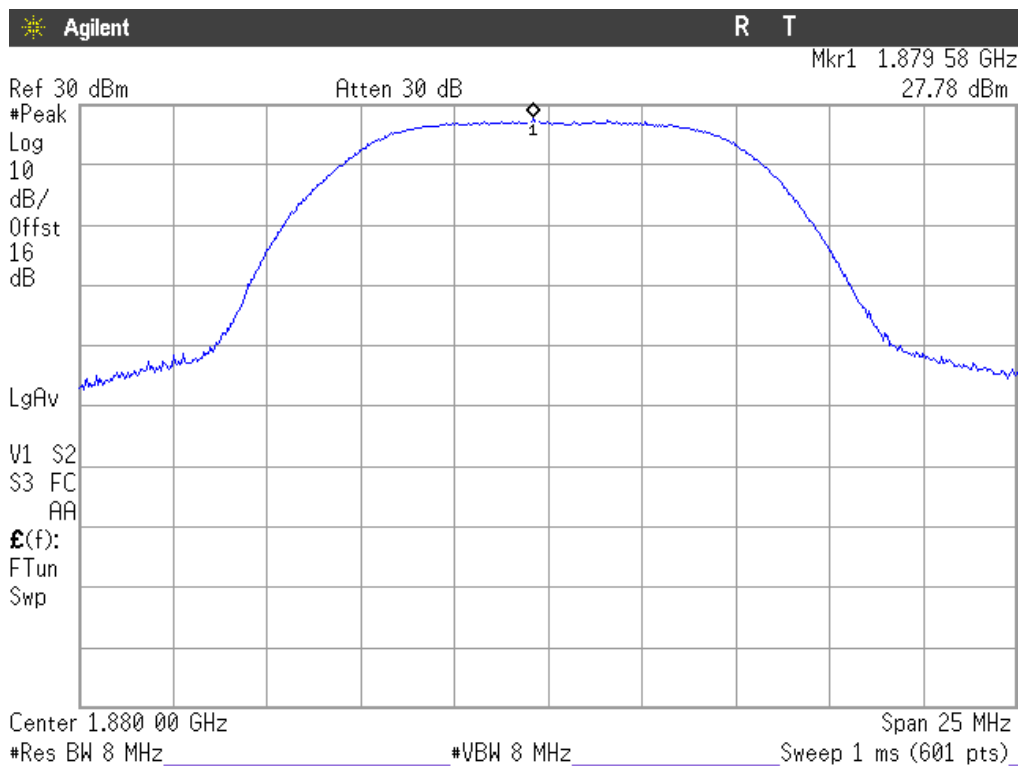


WCDMA MODULATION

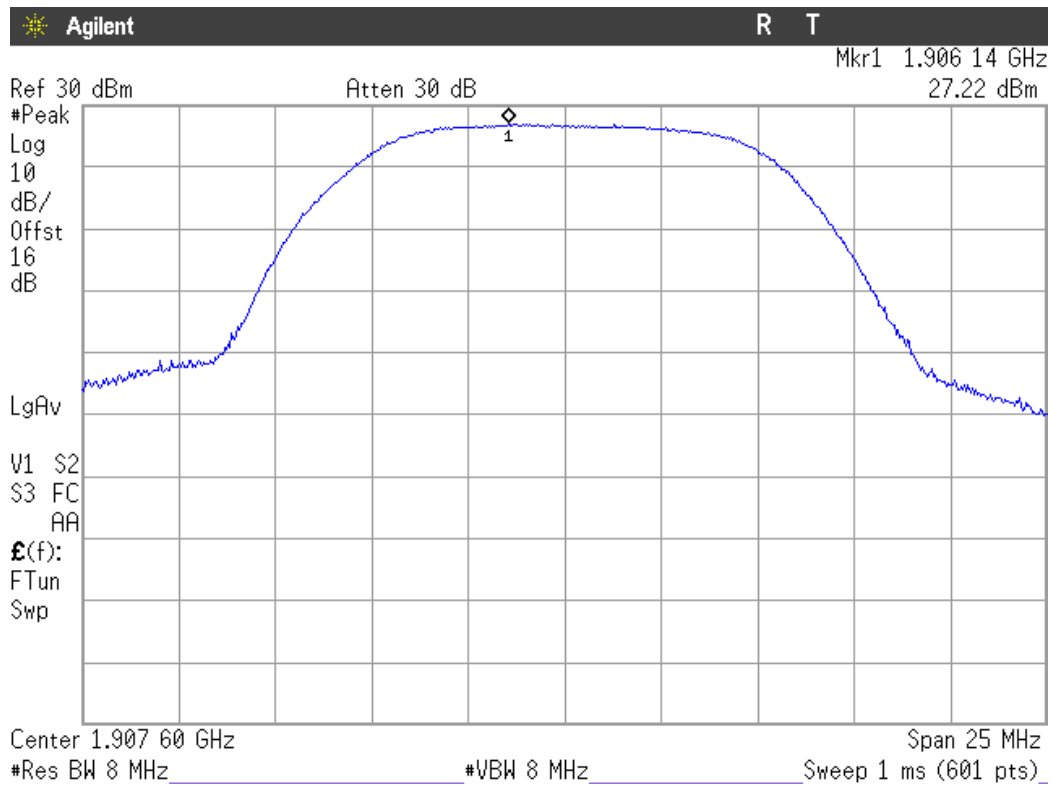
Lowest Channel.



Middle Channel.

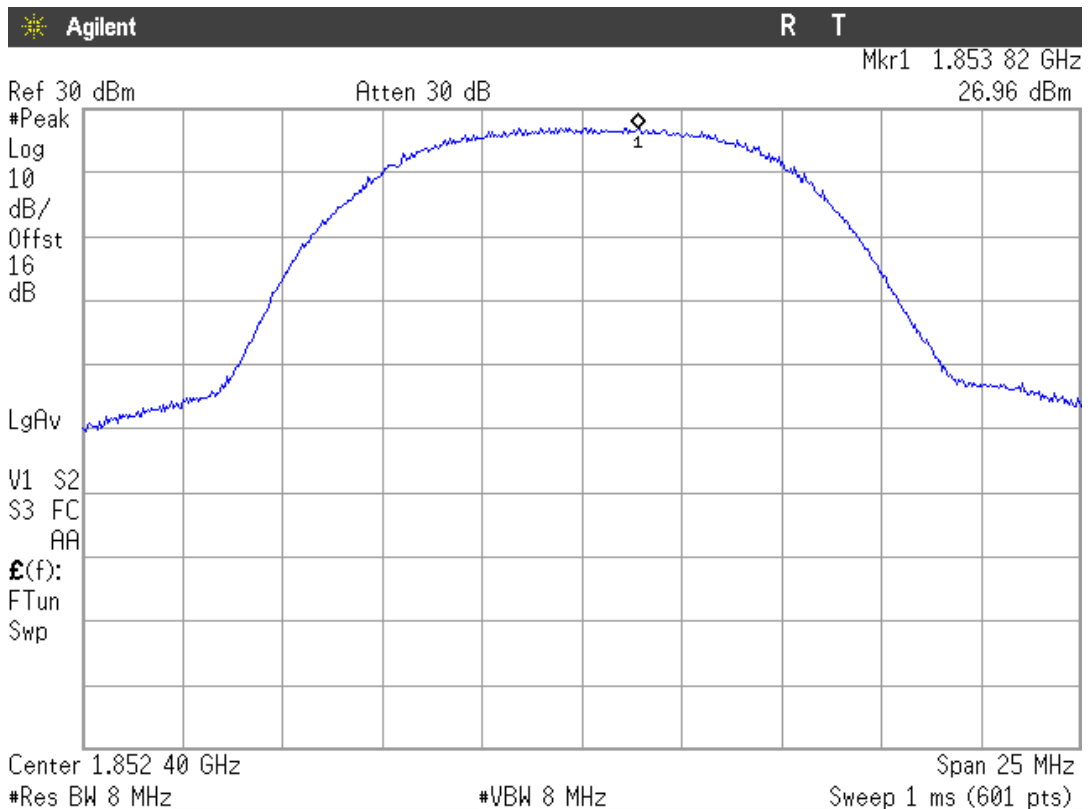


Highest Channel.

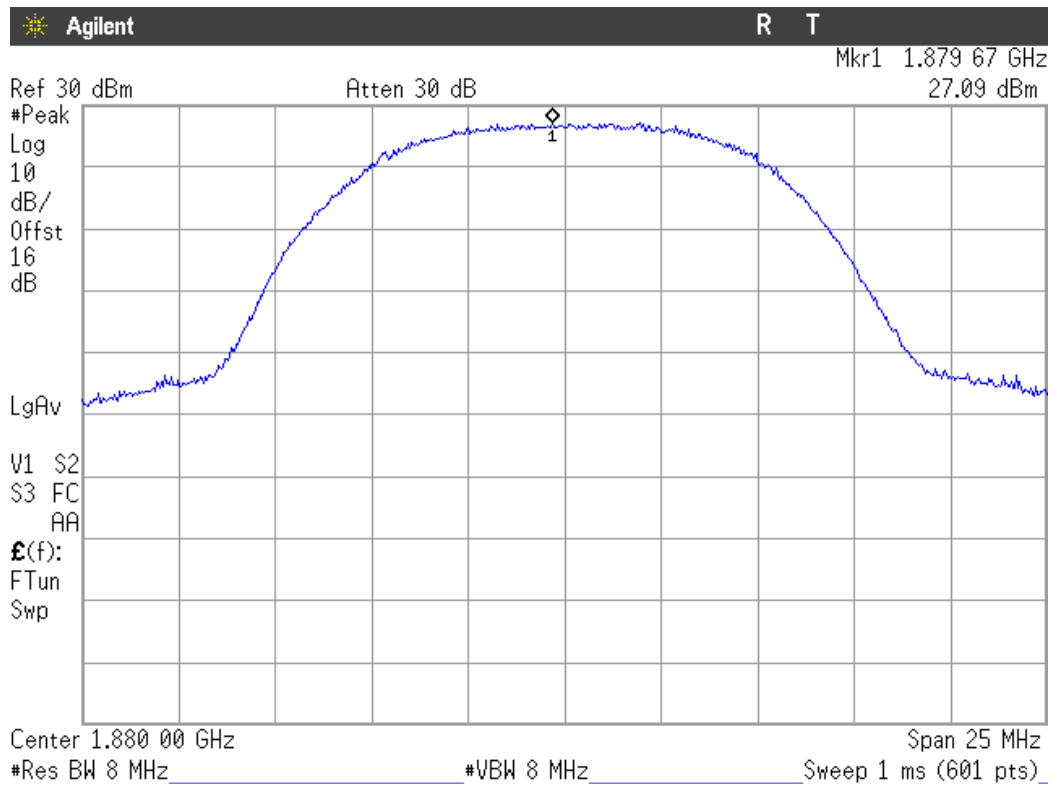


HSUPA MODULATION

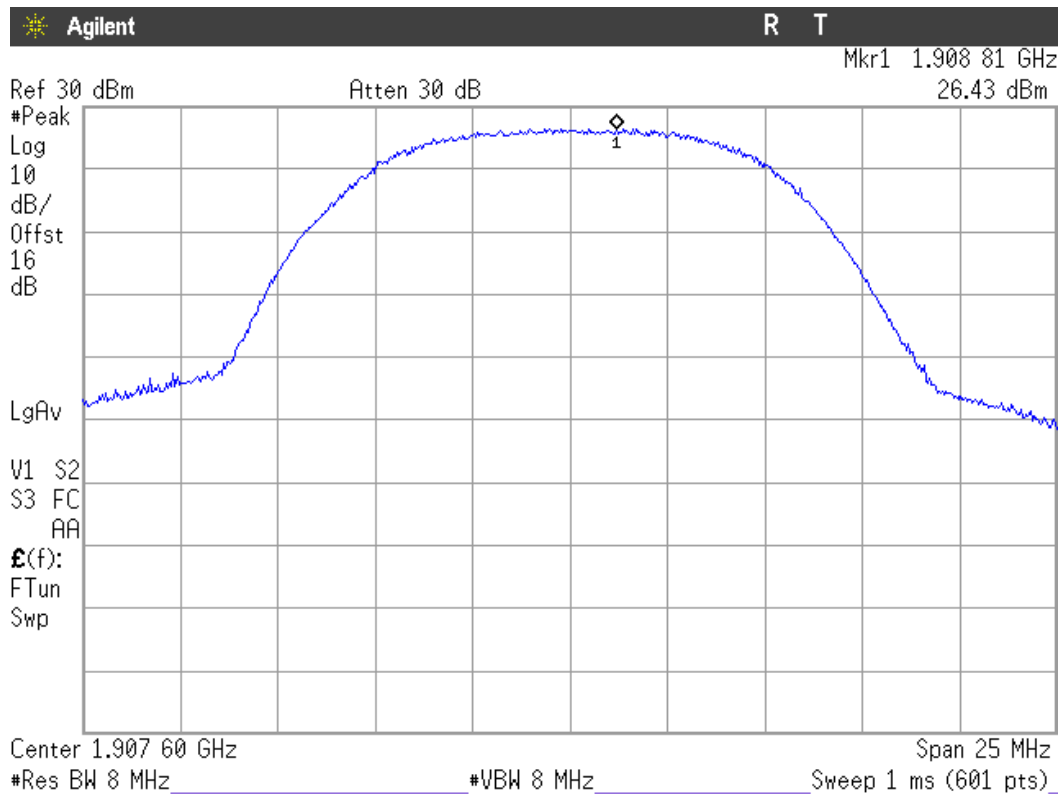
Lowest Channel



Middle Channel



Highest Channel



Modulation Characteristics

SPECIFICATION

§2.1047

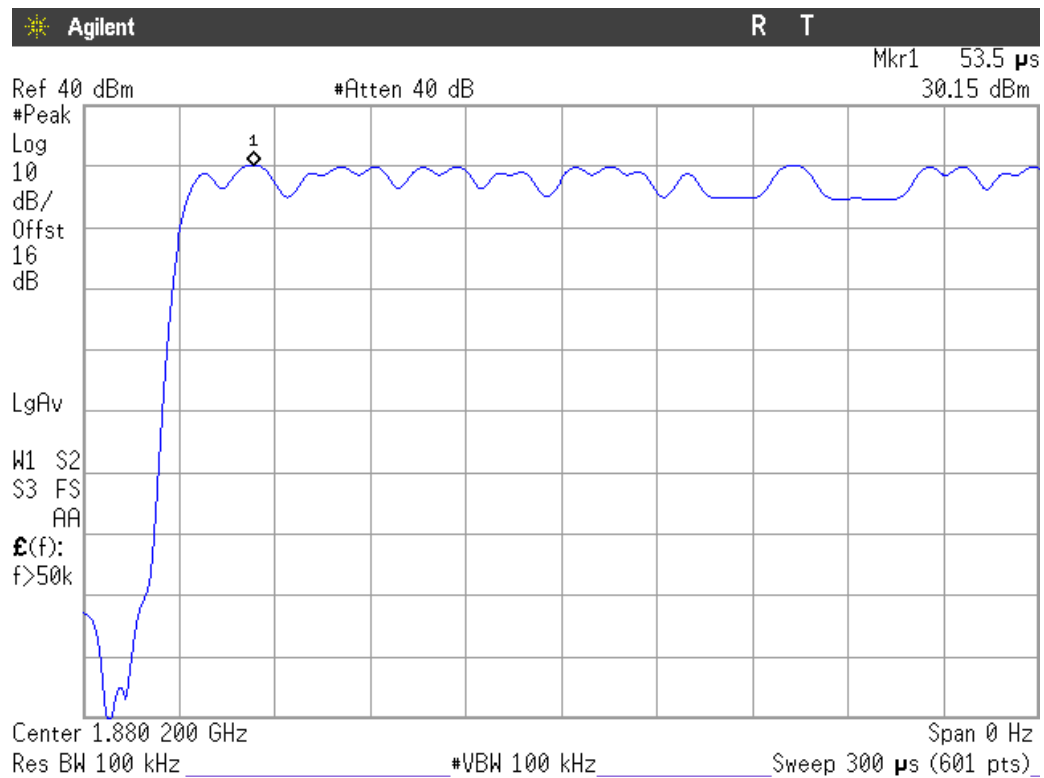
METHOD

The EUT operates with GPRS (GMSK), EDGE (8-PSK), WCDMA (QPSK) and HSUPA (QPSK) modes, in which the information is digitised and coded into a bit stream.

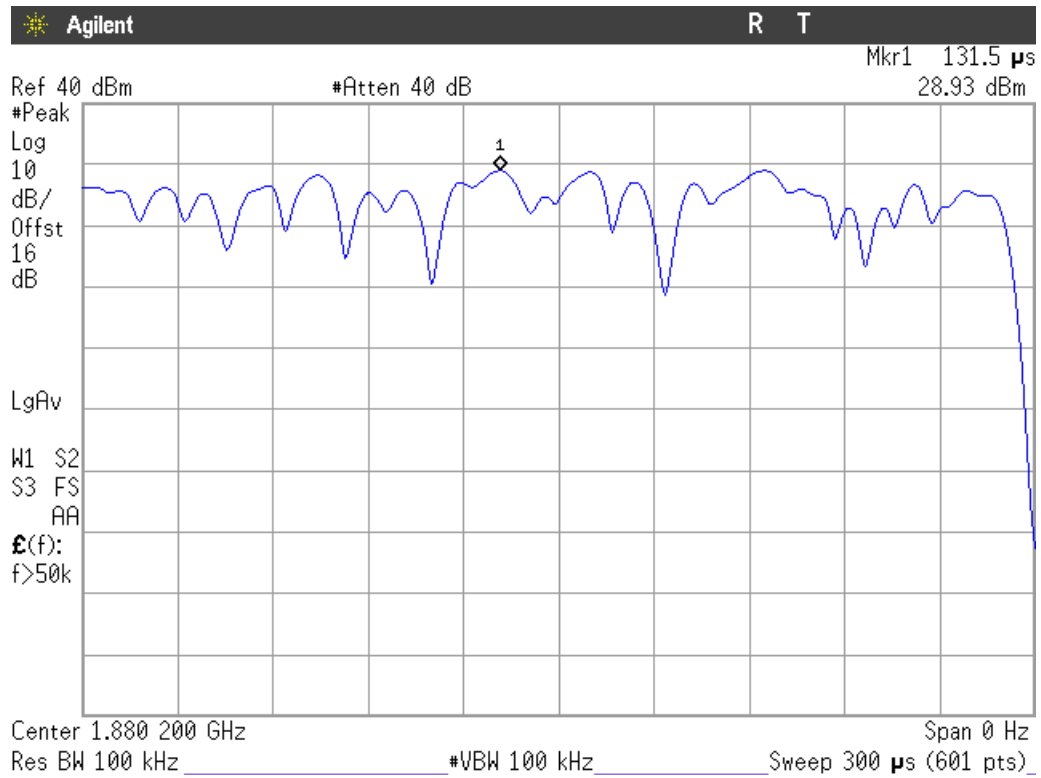
RESULTS

The following plot shows the modulation schemes in the EUT.

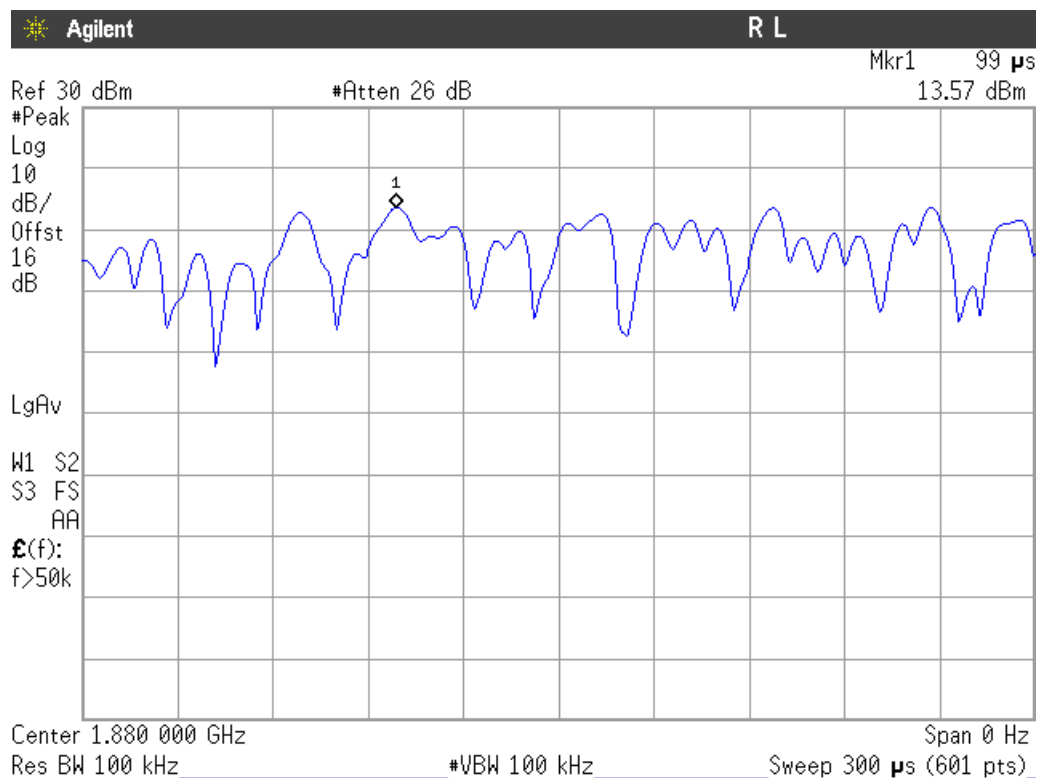
GPRS MODULATION



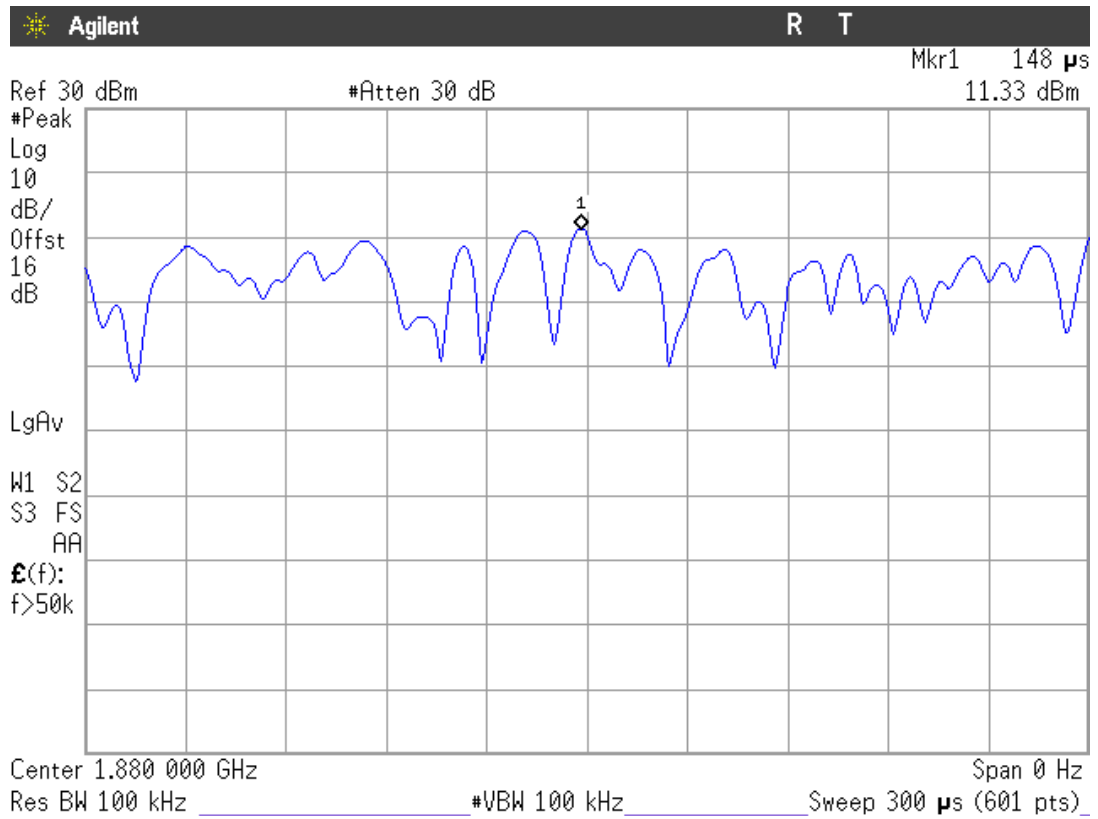
EDGE MODULATION



WCDMA MODULATION



HSUPA MODULATION



Frequency Stability

SPECIFICATION

§2.1055 and 24.235

METHOD

The frequency tolerance measurements over temperature variations were made over the temperature range of -30°C to $+50^{\circ}\text{C}$. The EUT was placed inside a climatic chamber and the temperature was raised hourly in 10°C steps from -30°C up to $+50^{\circ}\text{C}$.

The EUT was set in “call mode” in the middle channel using the Universal Radio Communication tester R&S CMU200 (for modulations GPRS, EDGE, WCDMA and HSUPA) and the maximum frequency error was measured using the frequency meter of CMU200.

RESULTS

Frequency stability over temperature variations.

GPRS MODULATION

Temperature ($^{\circ}\text{C}$)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
+50	-41	-0.0218	-0.00000218
+40	16	0.0085	0.00000085
+30	-28	-0.0149	-0.00000149
+20	-35	-0.0186	-0.00000186
+10	20	0.0106	0.00000106
0	-29	-0.0154	-0.00000154
-10	32	0.0170	0.00000170
-20	18	0.0096	0.00000096
-30	-31	-0.0165	-0.00000165

EDGE MODULATION

Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
+50	-37	-0.0197	-0.00000197
+40	-32	-0.0170	-0.00000170
+30	-41	-0.0218	-0.00000218
+20	-11	-0.0059	-0.00000059
+10	-31	-0.0165	-0.00000165
0	-35	-0.0186	-0.00000186
-10	41	0.0218	0.00000218
-20	32	0.0170	0.00000170
-30	14	0.0074	0.00000074

WCDMA MODULATION

Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
+50	-78	-0.0415	-0.00000415
+40	-47	-0.0250	-0.00000250
+30	30	0.0160	0.00000160
+20	-32	-0.0170	-0.00000170
+10	-21	-0.0112	-0.00000112
0	38	0.0202	0.00000202
-10	-17	-0.0090	-0.00000090
-20	-22	-0.0117	-0.00000117
-30	27	0.0144	0.00000144

HSUPA MODULATION

Temperature (°C)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
+50	-89	-0.0473	-0.00000473
+40	-64	-0.0340	-0.00000340
+30	48	0.0255	0.00000255
+20	-36	-0.0191	-0.00000191
+10	-18	-0.0096	-0.00000096
0	-41	-0.0218	-0.00000218
-10	-22	-0.0117	-0.00000117
-20	23	0.0122	0.00000122
-30	42	0.0223	0.00000223

Frequency stability over voltage variations.

GPRS MODULATION

Battery Supply voltage	Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
Vmax	3.6	-70	-0.0372	-0.00000372
Vmin	3.0	-61	-0.0324	-0.00000324

EDGE MODULATION

Battery Supply voltage	Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
Vmax	3.6	-46	-0.0245	-0.00000245
Vmin	3.0	-59	-0.0314	-0.00000314

WCDMA MODULATION

Battery Supply voltage	Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
Vmax	3.6	-73	-0.0388	-0.00000388
Vmin	3.0	-58	-0.0309	-0.00000309

HSUPA MODULATION

Battery Supply voltage	Voltage (V)	Frequency Error (Hz)	Frequency Error (ppm)	Frequency Error (%)
Vmax	3.6	-70	-0.0372	-0.00000372
Vmin	3.0	-66	-0.0351	-0.00000351

Occupied Bandwidth

SPECIFICATION

§2.1049

METHOD

The EUT was configured to transmit a modulated carrier signal. An IF bandwidth of 3 kHz was used to determine the occupied bandwidth of the modulated emission for GPRS and EDGE modulation and 50 kHz for WCDMA and HSUPA modulation. The 99% occupied bandwidth and the -26 dBc bandwidth were measured directly using the built-in bandwidth measuring option of spectrum analyser E4440A.

RESULTS

GPRS MODULATION

Channel	Lowest	Middle	Highest
99% Occupied bandwidth (kHz)	241.23	242.23	242.21
-26 dBc bandwidth (kHz)	316.63	318.24	318.19
Measurement uncertainty (kHz)	<±1.67		

EDGE MODULATION

Channel	Lowest	Middle	Highest
99% Occupied bandwidth (kHz)	237.75	240.86	237.30
-26 dBc bandwidth (kHz)	306.87	307.32	312.51
Measurement uncertainty (kHz)	<±1.67		

WCDMA MODULATION

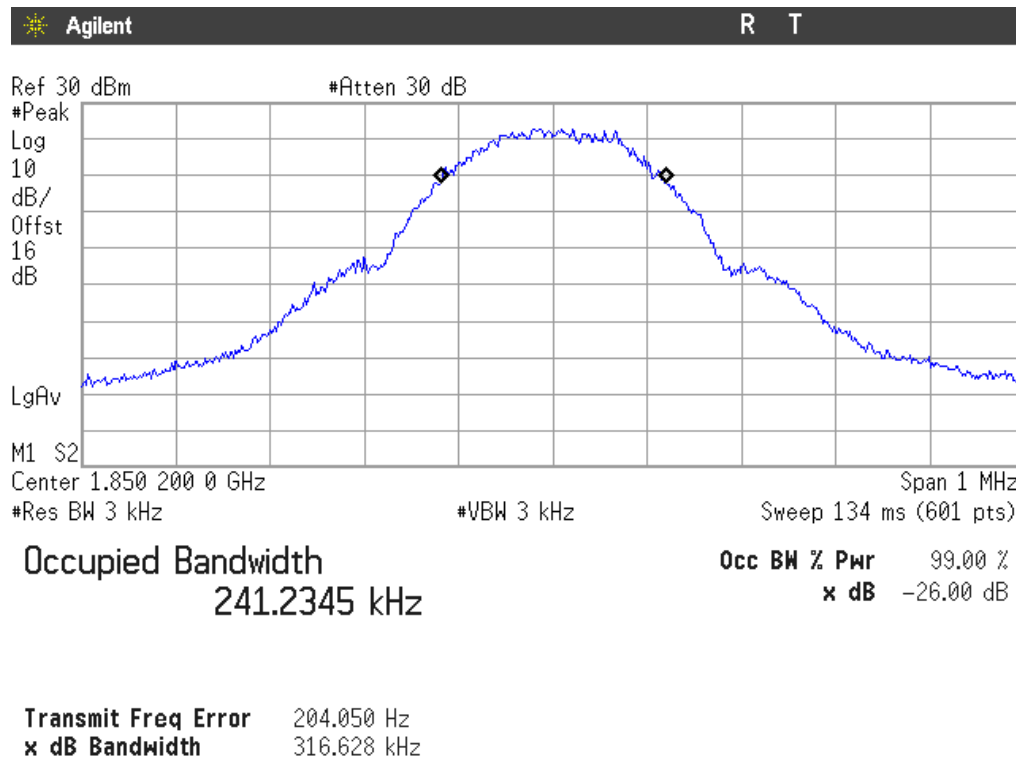
Channel	Lowest	Middle	Highest
99% Occupied bandwidth (kHz)	4184.4	4164.0	4177.3
-26 dBc bandwidth (kHz)	4836	4817	4817
Measurement uncertainty (kHz)	<±13.3		

HSUPA MODULATION

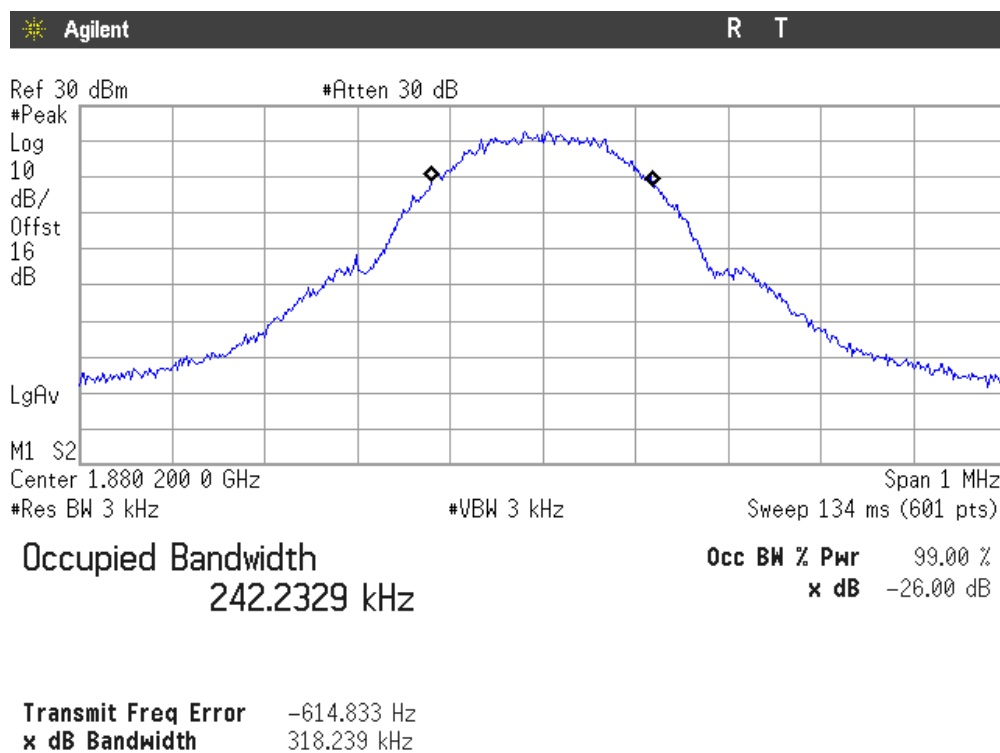
Channel	Lowest	Middle	Highest
99% Occupied bandwidth (kHz)	4179.8	4179.3	4179.7
-26 dBc bandwidth (kHz)	4825	4814	4810
Measurement uncertainty (kHz)	<±13.3		

GPRS MODULATION

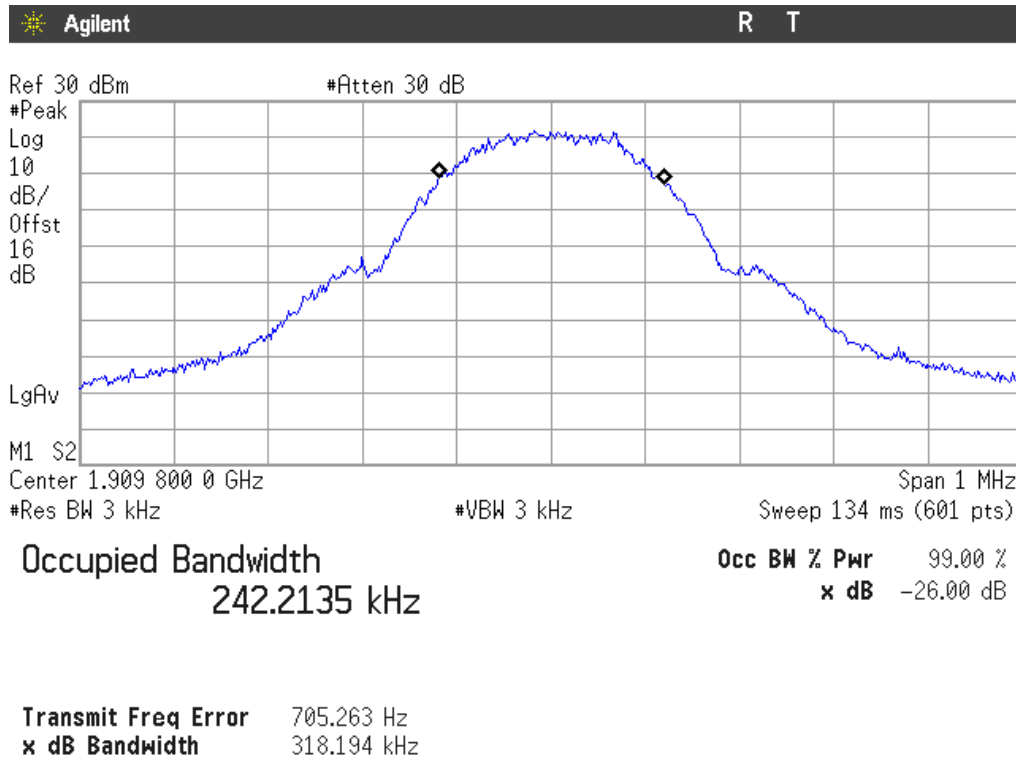
Lowest Channel



Middle Channel

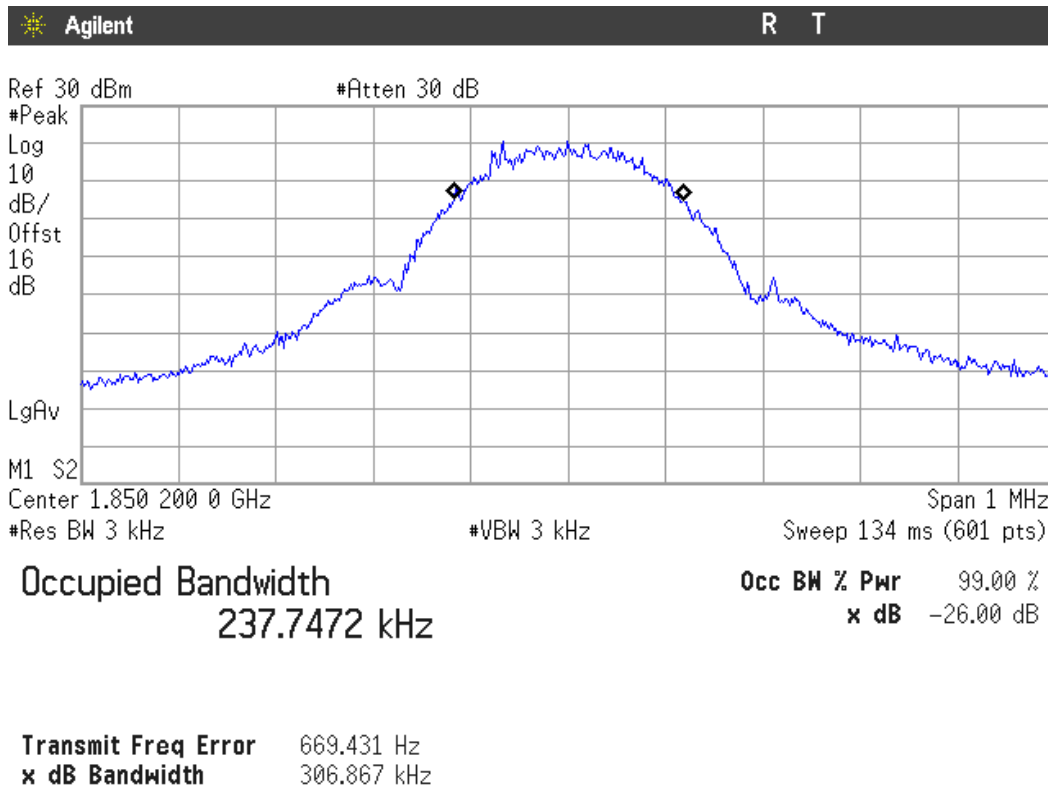


Highest Channel

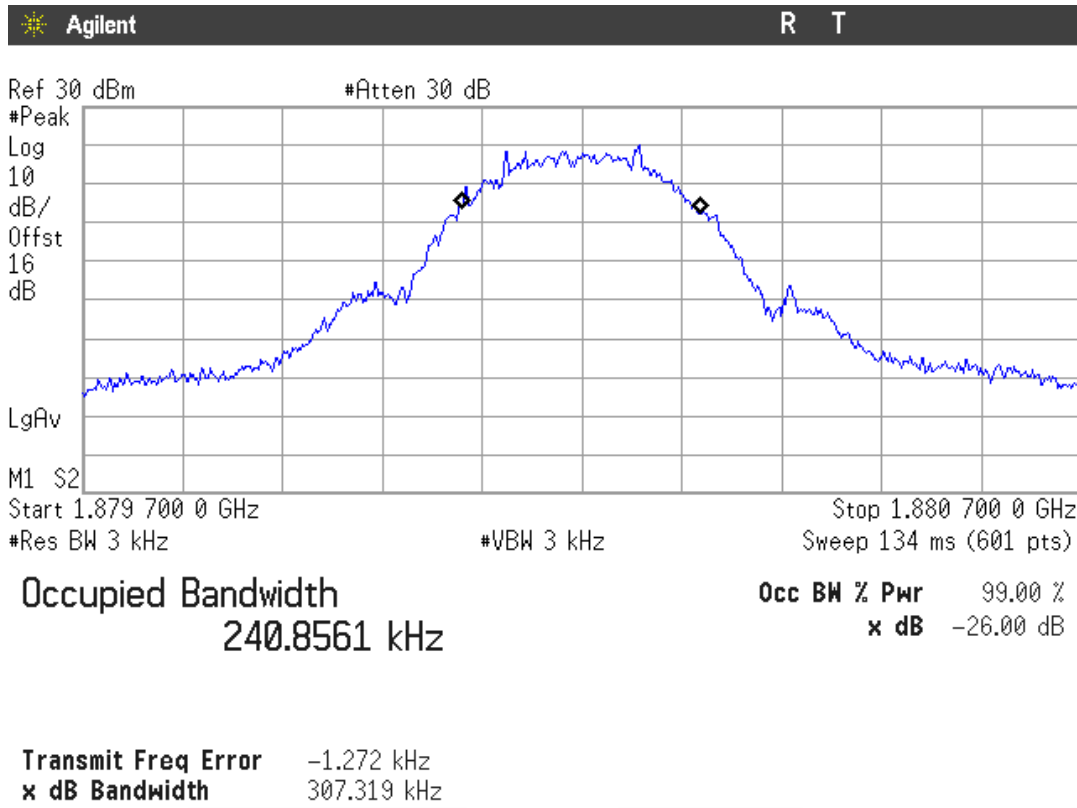


EDGE MODULATION

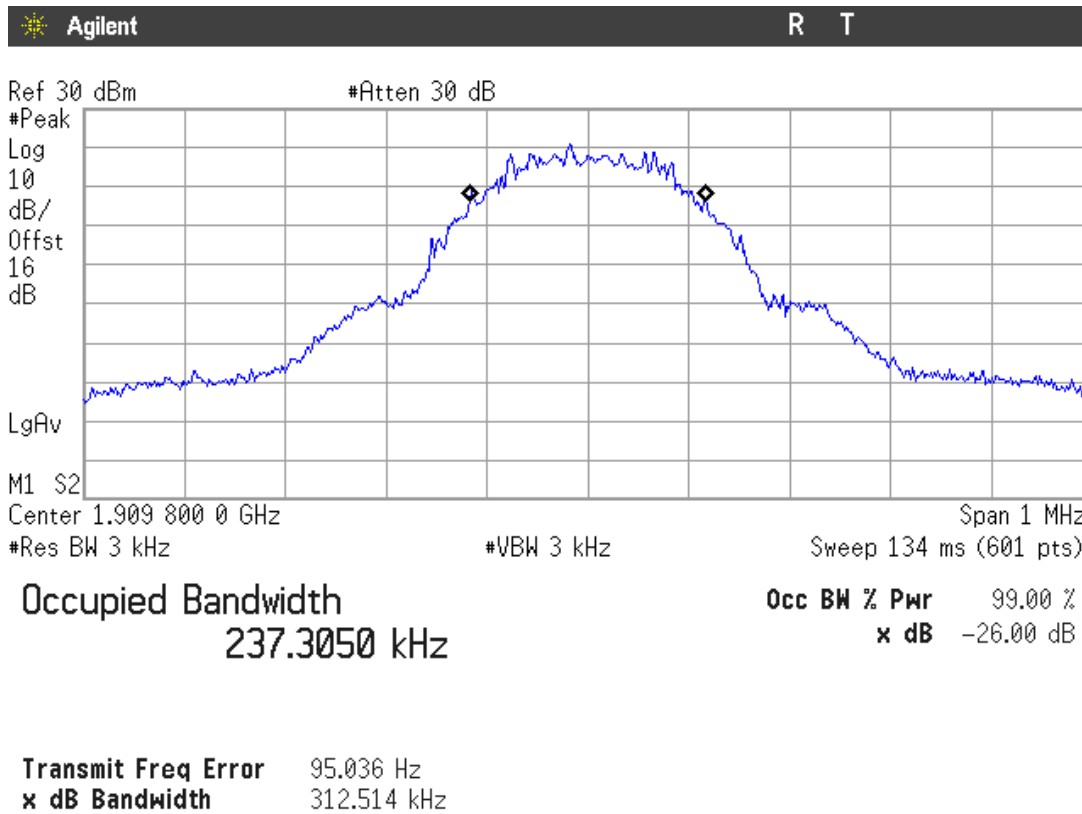
Lowest Channel



Middle Channel

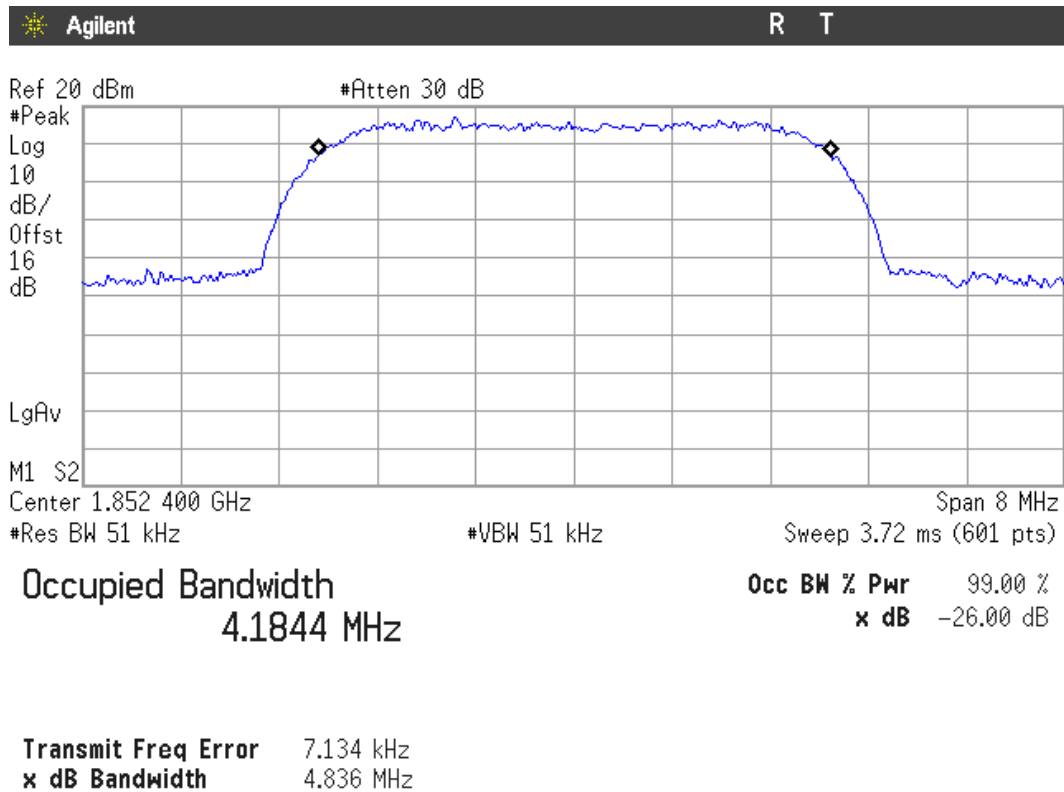


Highest Channel

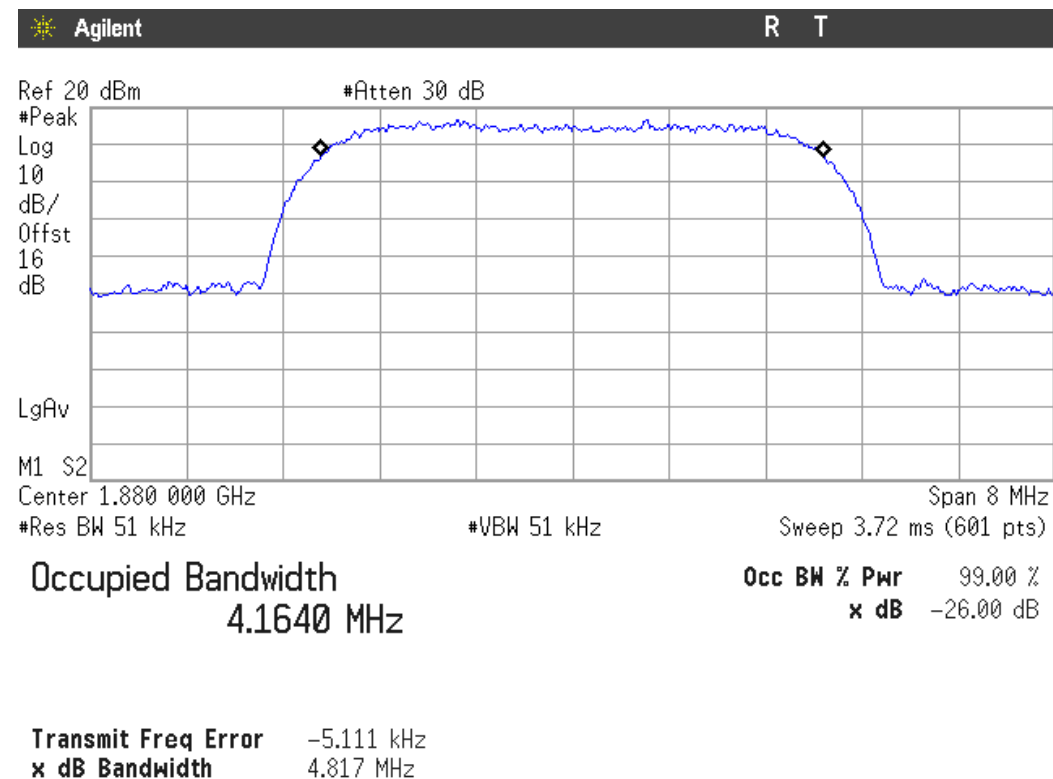


WCDMA MODULATION

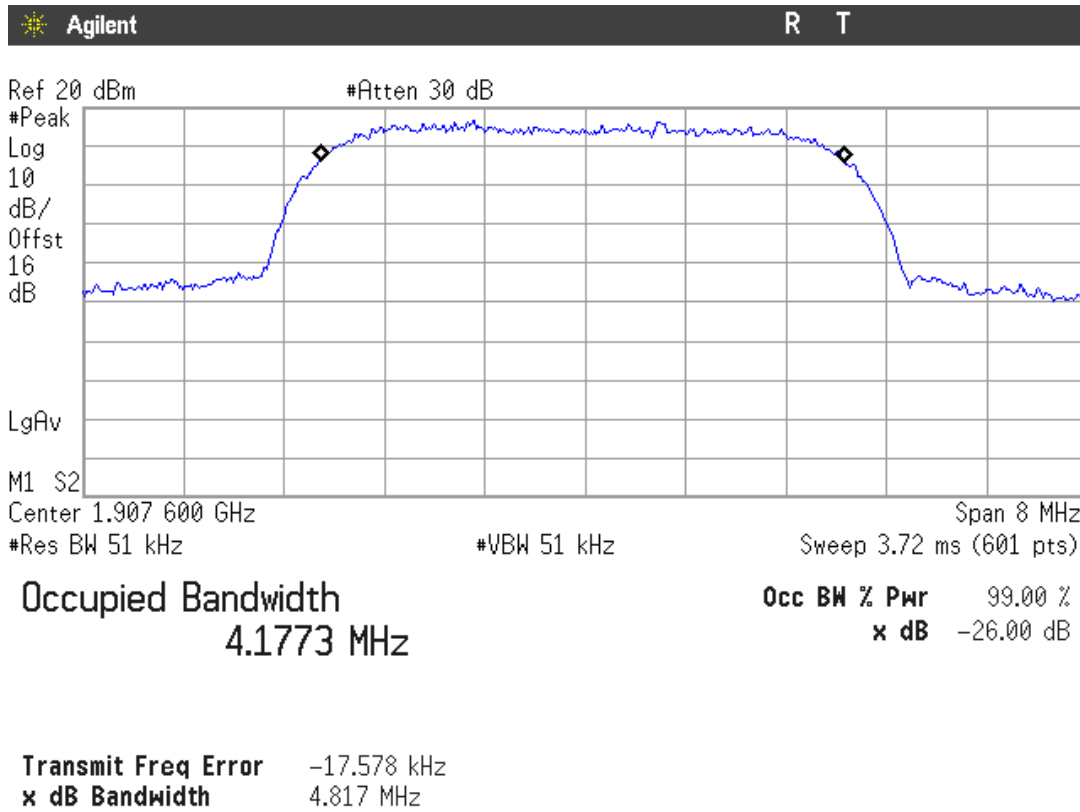
Lowest Channel



Middle Channel

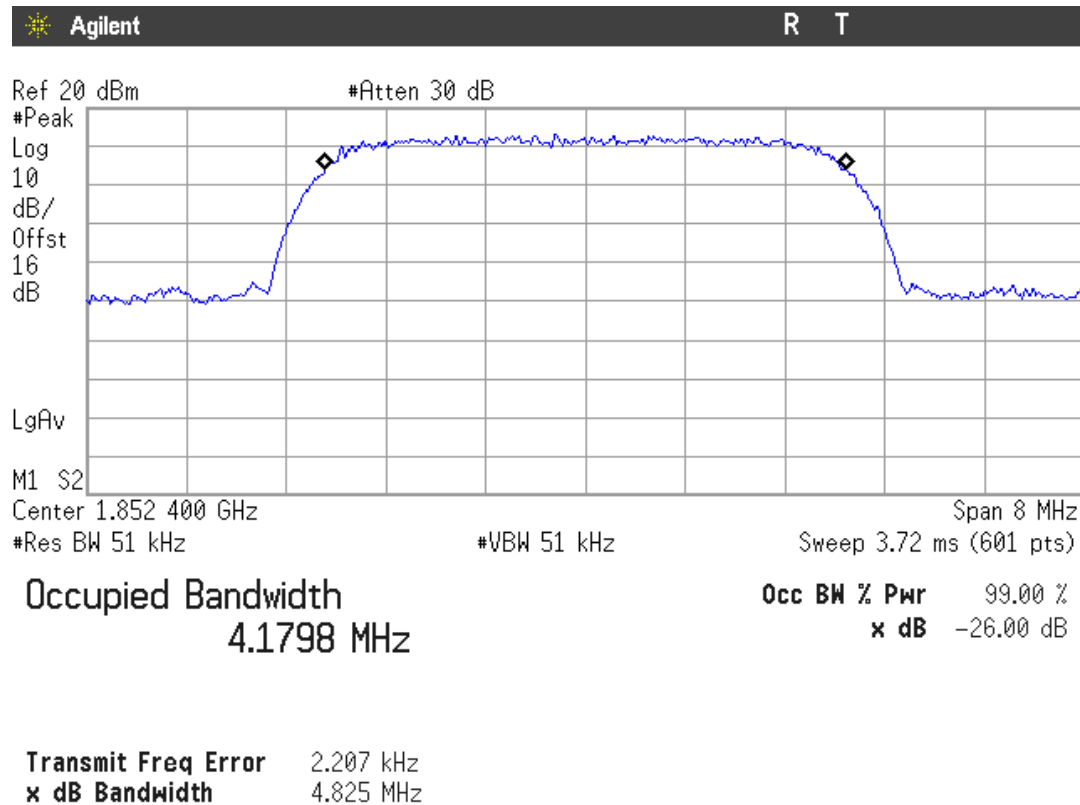


Highest Channel

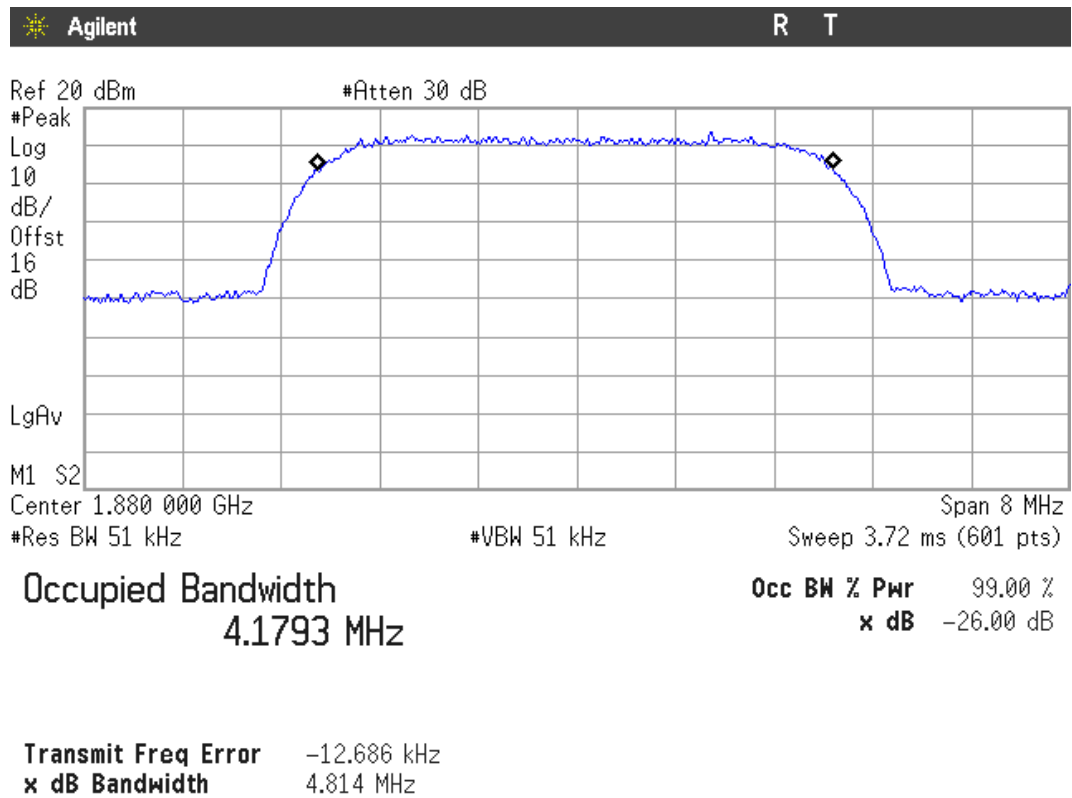


HSUPA MODULATION

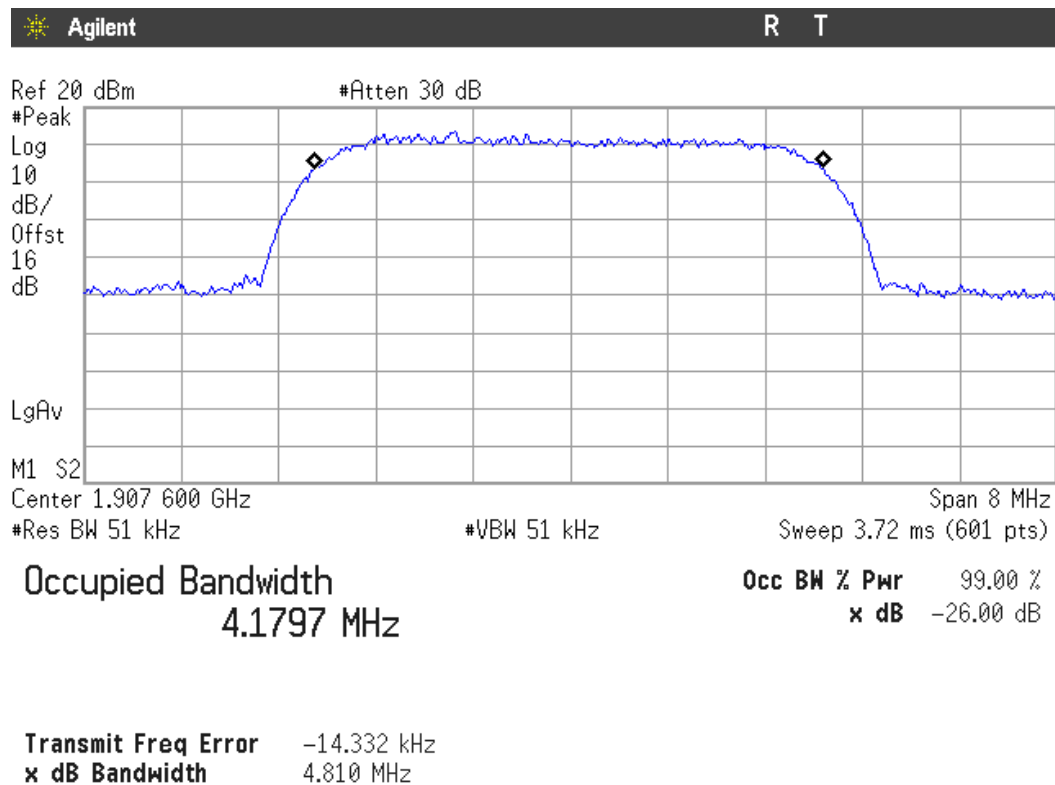
Lowest Channel



Middle Channel



Highest Channel



Spurious emissions at antenna terminals

SPECIFICATION

§2.1051 and §24.238

METHOD

The EUT RF output connector was connected to a spectrum analyser using an 50 ohm attenuator and the resolution bandwidth of the spectrum analyser was set to 1 MHz. The spectrum was investigated from 30 MHz to 20 GHz.

The reading of the spectrum analyser is corrected with the attenuation loss of connection between output terminal of EUT and input of the spectrum analyser.

Measurement Limit:

According to specification, the power of emissions shall be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB, P in watts.

At P_o transmitting power, the specified minimum attenuation becomes $43+10\log (P_o)$, and the level in dBm relative P_o becomes:

$$P_o \text{ (dBm)} - [43 + 10 \log (P_o \text{ in mwatts}) - 30] = - 13 \text{ dBm}$$

RESULTS (see plots in next pages)

GPRS MODULATION

1. CHANNEL: LOWEST

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

No spurious signals were found in all the range.

3. CHANNEL: HIGHEST

No spurious signals were found in all the range.

EDGE MODULATION

1. CHANNEL: LOWEST

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

No spurious signals were found in all the range.

3. CHANNEL: HIGHEST

No spurious signals were found in all the range.

WCDMA MODULATION

1. CHANNEL: LOWEST

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

Spurious frequency (MHz)	Level (dBm)	Measurement uncertainty (dB)
3757.5326	-30.76	±1.57

3. CHANNEL: HIGHEST

Spurious frequency (MHz)	Level (dBm)	Measurement uncertainty (dB)
3816.8505	-28.79	±1.57

HSUPA MODULATION

1. CHANNEL: LOWEST

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

No spurious signals were found in all the range.

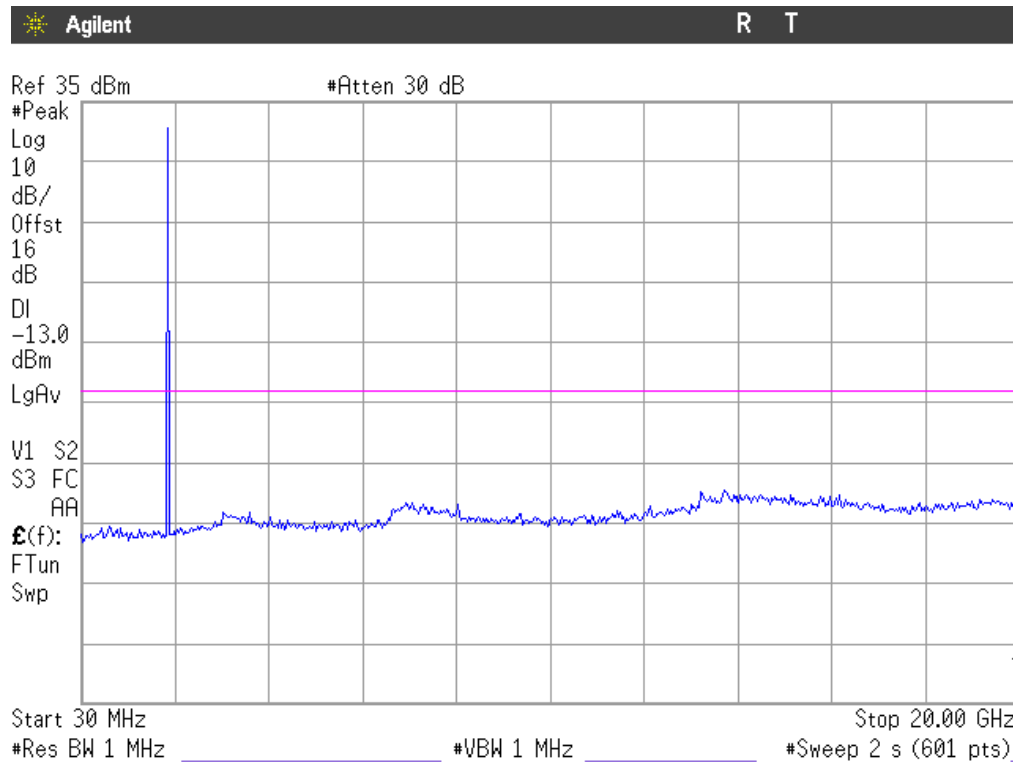
3. CHANNEL: HIGHEST

No spurious signals were found in all the range.

Verdict: PASS

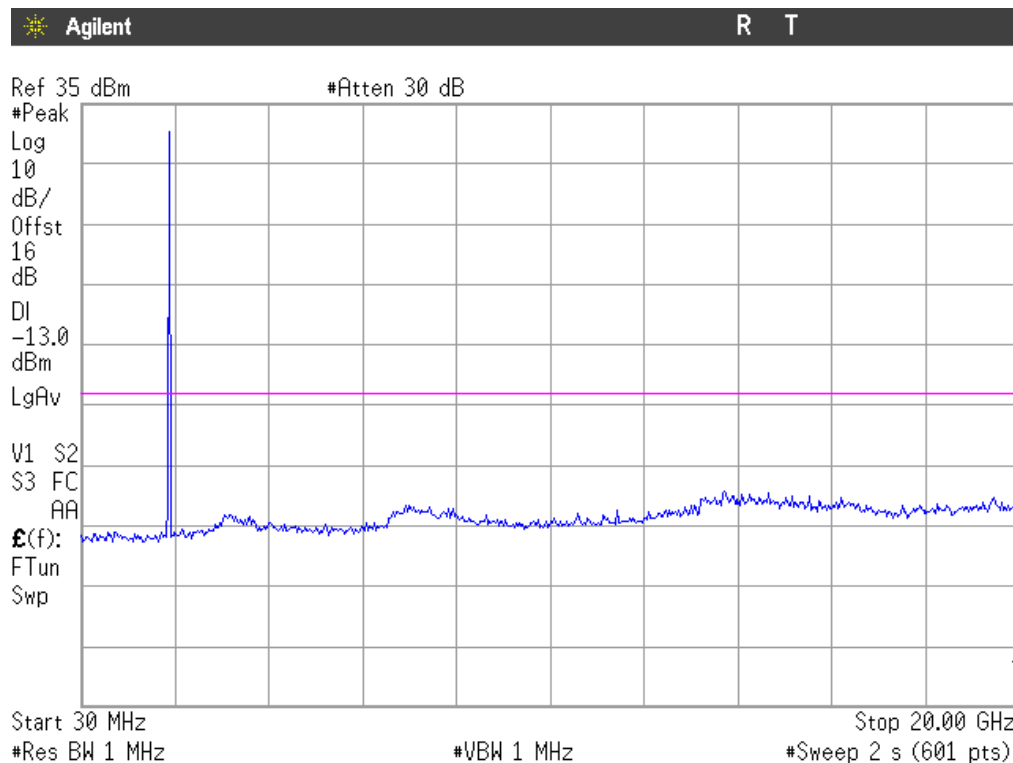
GPRS MODULATION

1. CHANNEL: LOWEST



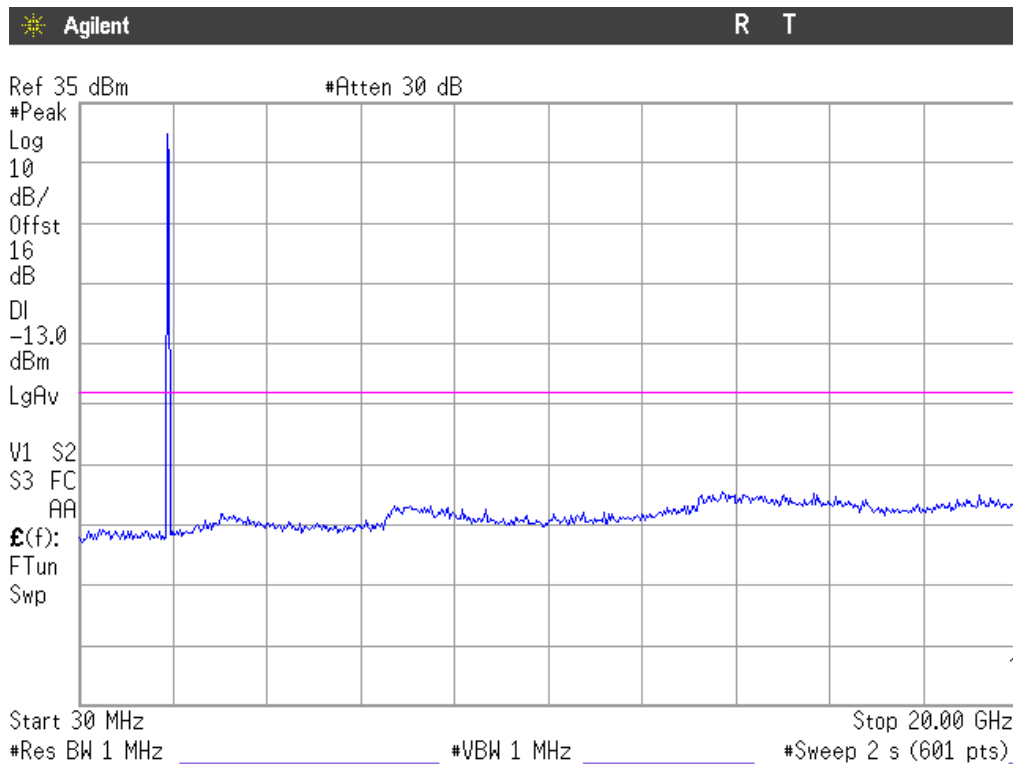
Note: The peak above the limit is the carrier frequency.

2. CHANNEL: MIDDLE



Note: The peak above the limit is the carrier frequency.

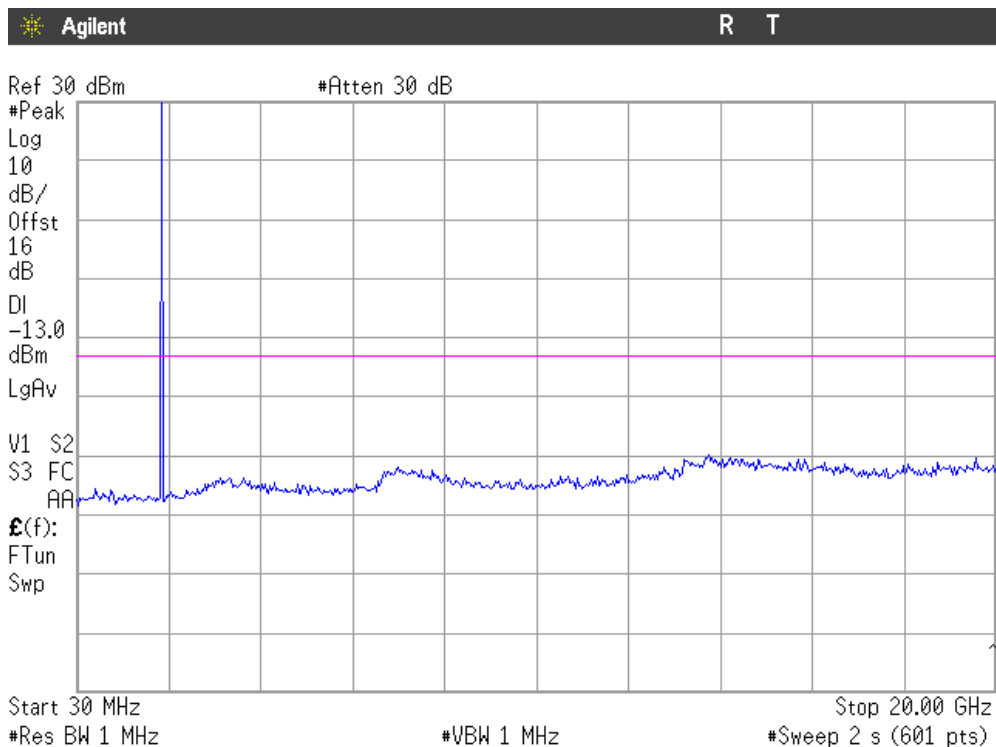
3. CHANNEL: HIGHEST



Note: The peak above the limit is the carrier frequency.

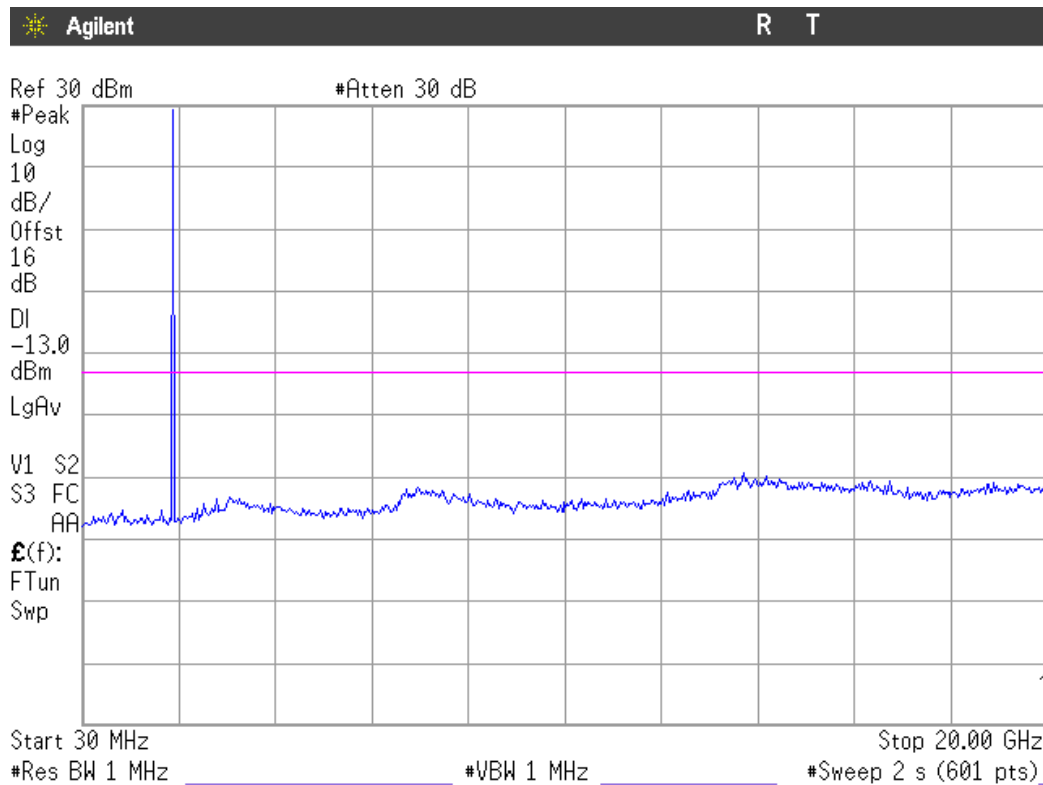
EDGE MODULATION

1. CHANNEL: LOWEST



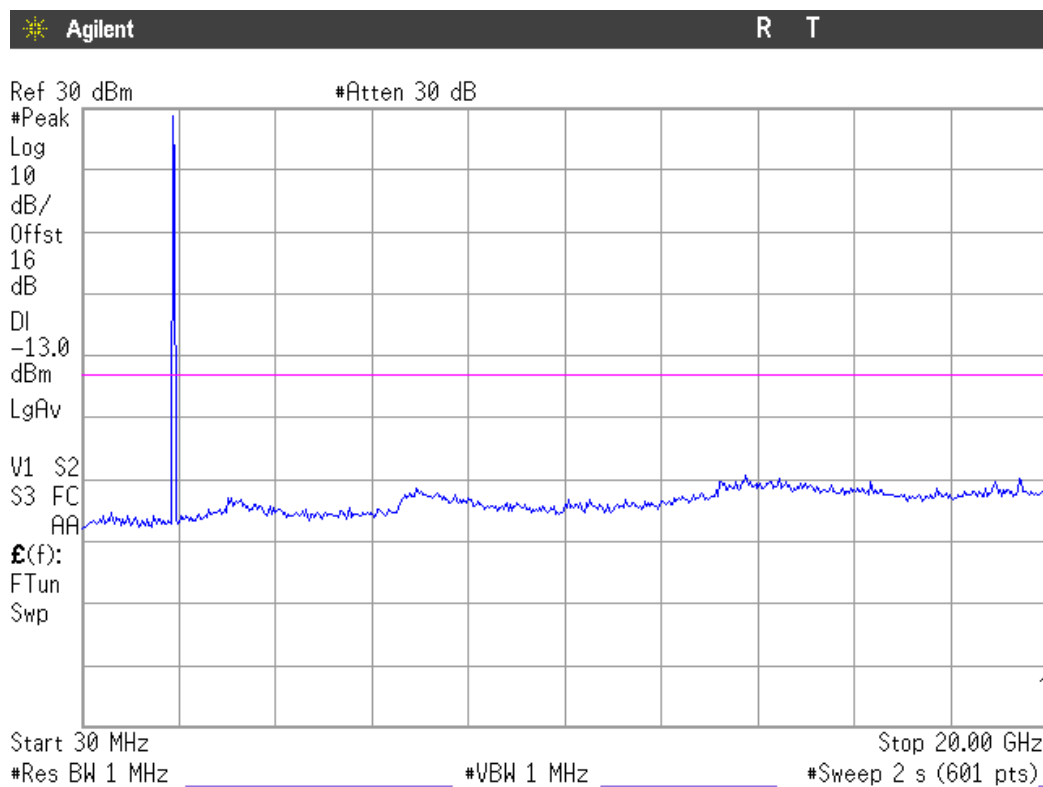
Note: The peak above the limit is the carrier frequency.

2. CHANNEL: MIDDLE



Note: The peak above the limit is the carrier frequency.

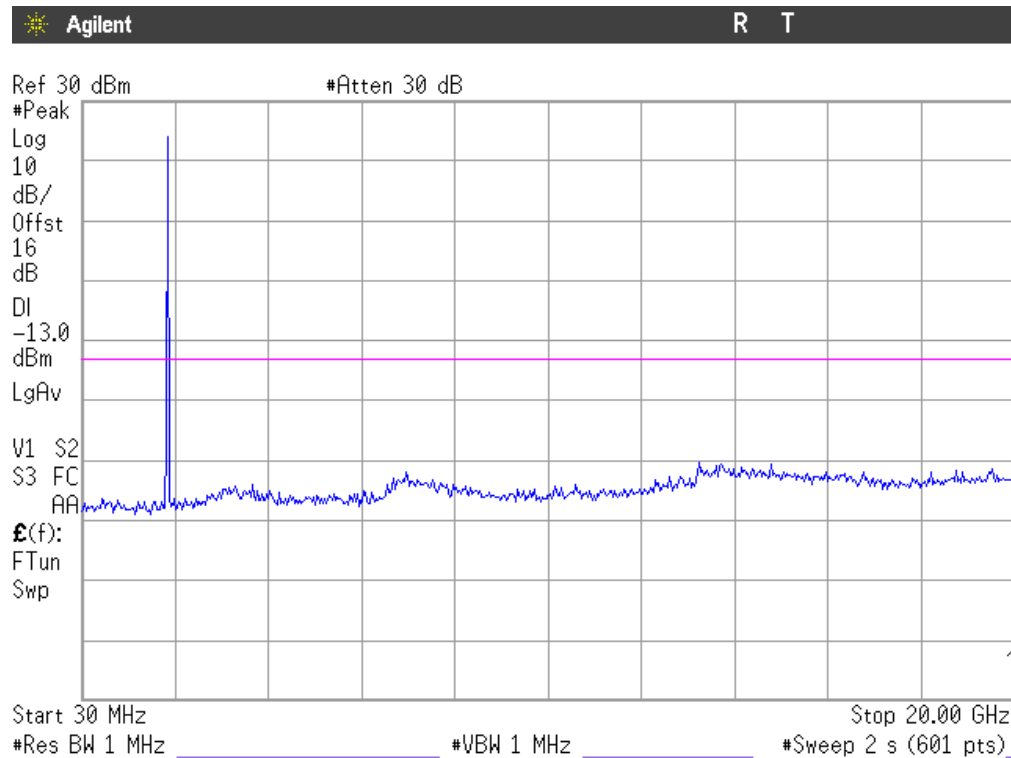
3. CHANNEL: HIGHEST



Note: The peak above the limit is the carrier frequency.

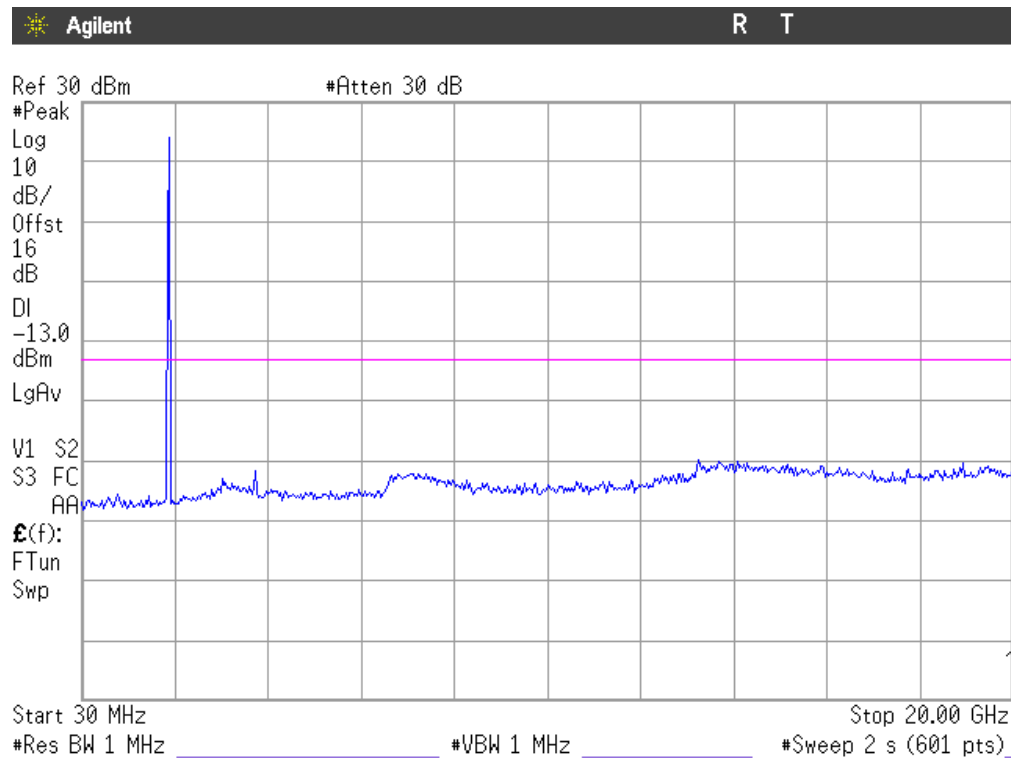
WCDMA MODULATION

1. CHANNEL: LOWEST



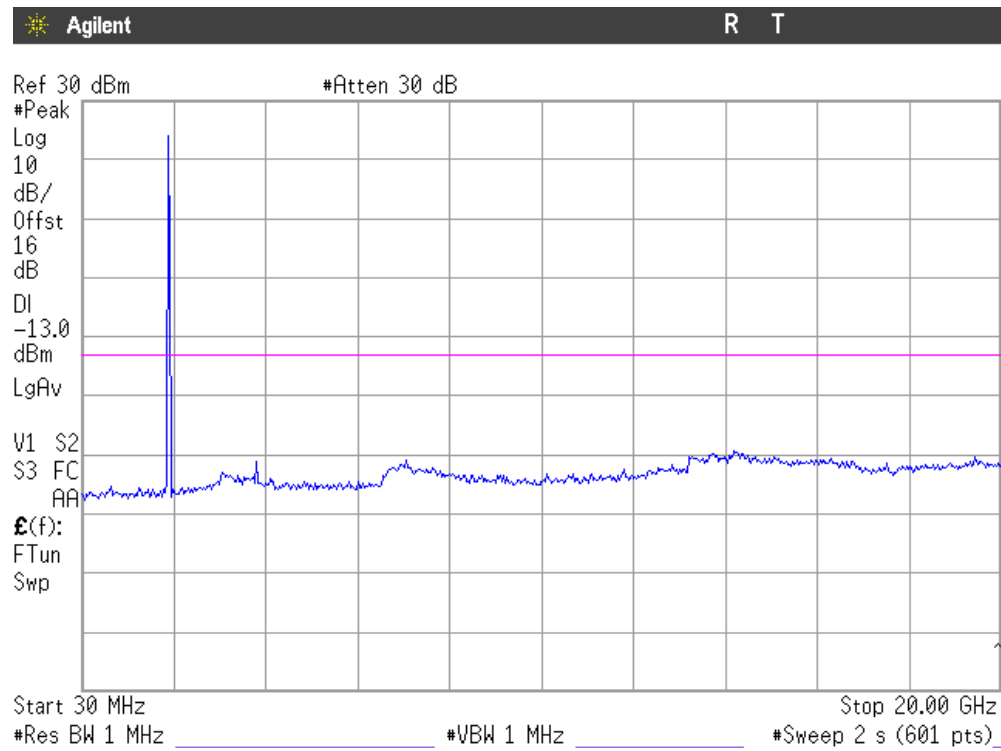
Note: The peak above the limit is the carrier frequency.

2. CHANNEL: MIDDLE



Note: The peak above the limit is the carrier frequency.

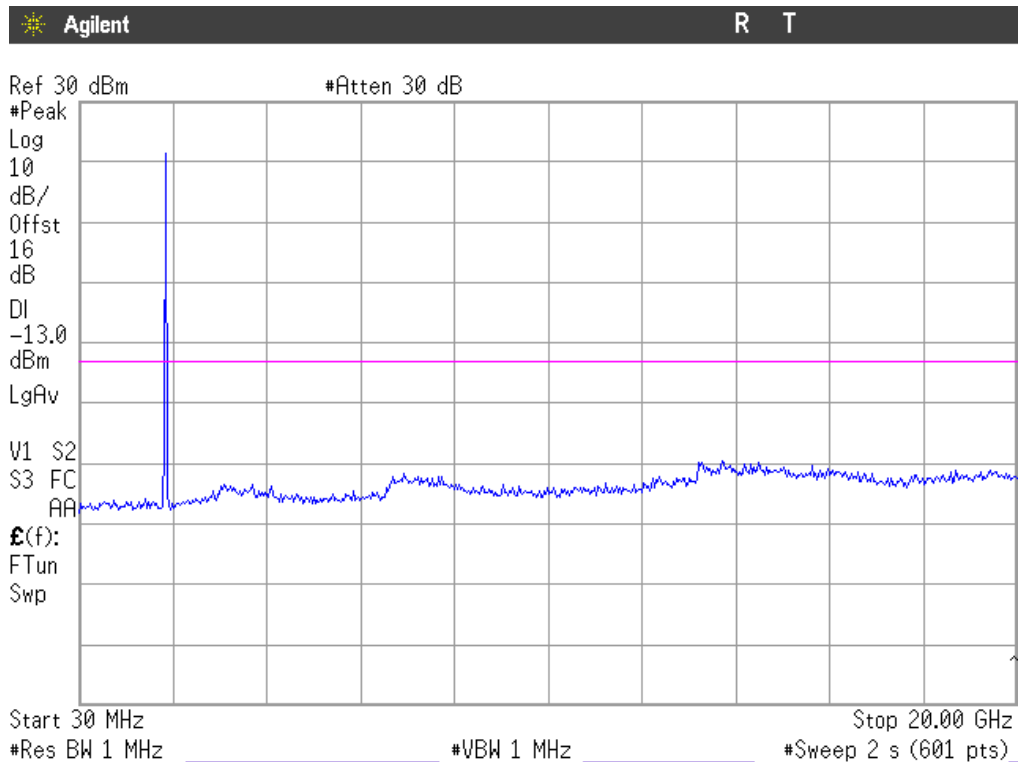
3. CHANNEL: HIGHEST



Note: The peak above the limit is the carrier frequency.

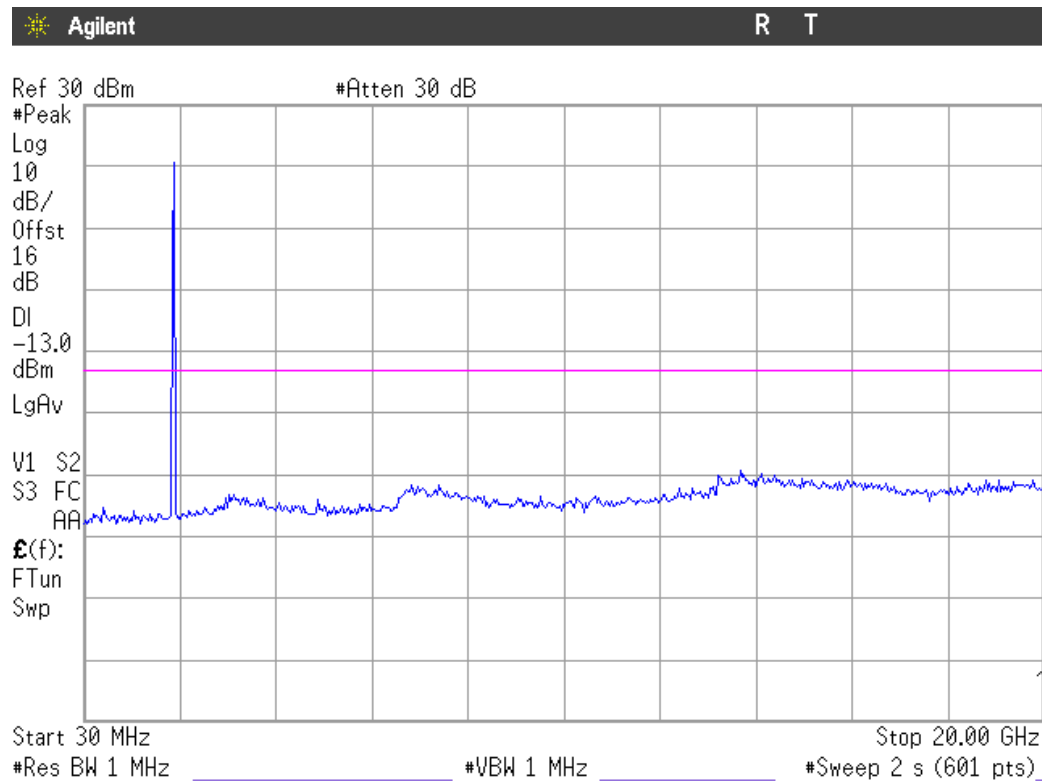
HSUPA MODULATION

1. CHANNEL: LOWEST



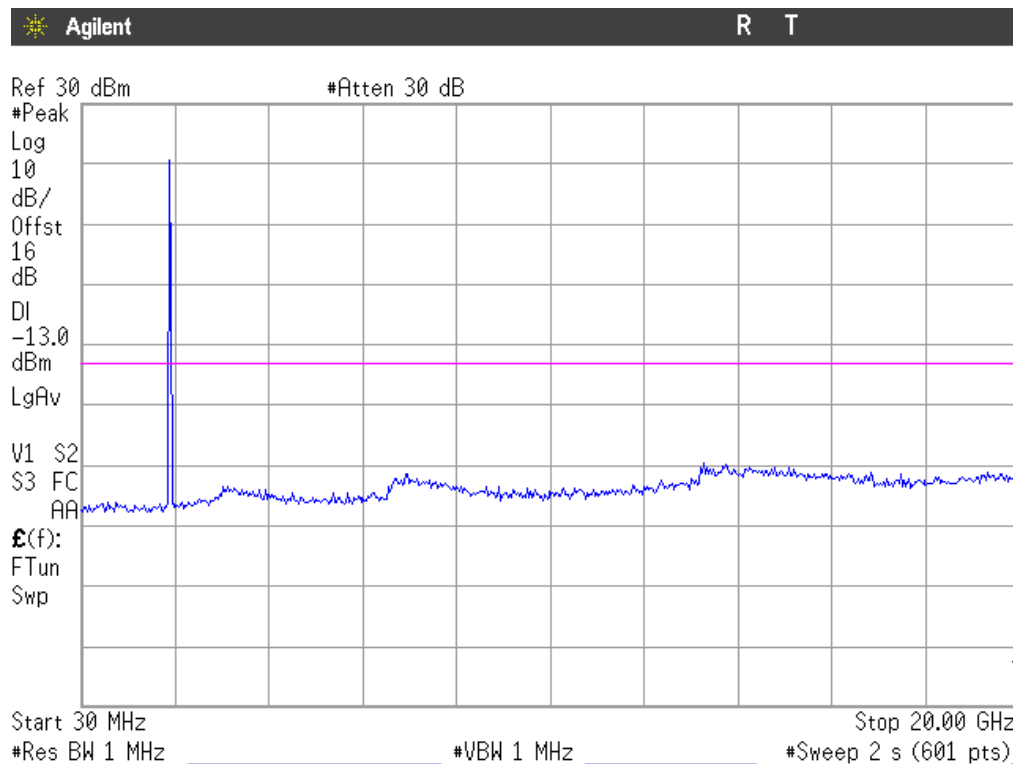
Note: The peak above the limit is the carrier frequency.

2. CHANNEL: MIDDLE



Note: The peak above the limit is the carrier frequency.

3. CHANNEL: HIGHEST



Note: The peak above the limit is the carrier frequency.

Spurious emissions at antenna terminals at Block Edges

SPECIFICATION

§2.1051 and §24.238

METHOD

As indicated in FCC part 24, in the 1 MHz bands immediately outside and adjacent to the frequency block or band a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A resolution bandwidth of 5 kHz/3.3 kHz was used for GPRS and EDGE modulations, and 50 kHz for WCDMA and HSUPA modulations.

Measurement Limit:

According to specification, the power of emissions shall be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB, P in watts.

At P_o transmitting power, the specified minimum attenuation becomes $43+10\log (P_o)$, and the level in dBm relative P_o becomes:

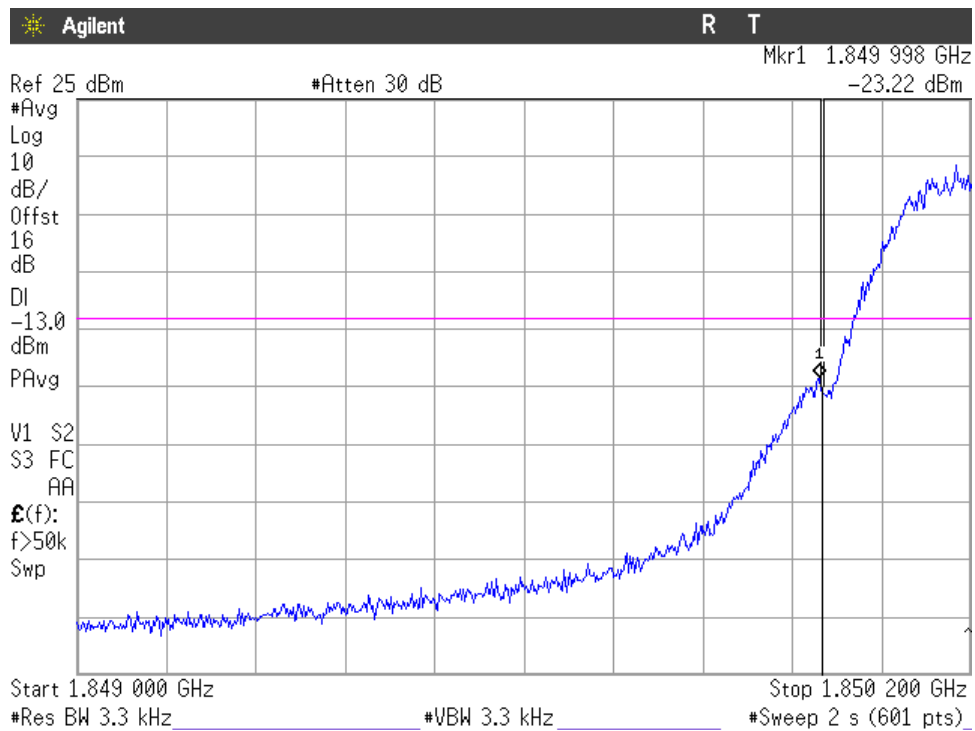
$$P_o \text{ (dBm)} - [43 + 10 \log (P_o \text{ in mwatts}) - 30] = - 13 \text{ dBm}$$

RESULTS (see plots in next pages)

MODULATION	Maximum level at lowest Block Edge (dBm)	Maximum level at highest Block Edge (dBm)
GPRS	-23.22	-26.44
EDGE	-26.92	-30.67
WCDMA	-16.58	-18.24
HSUPA	-20.11	-21.38

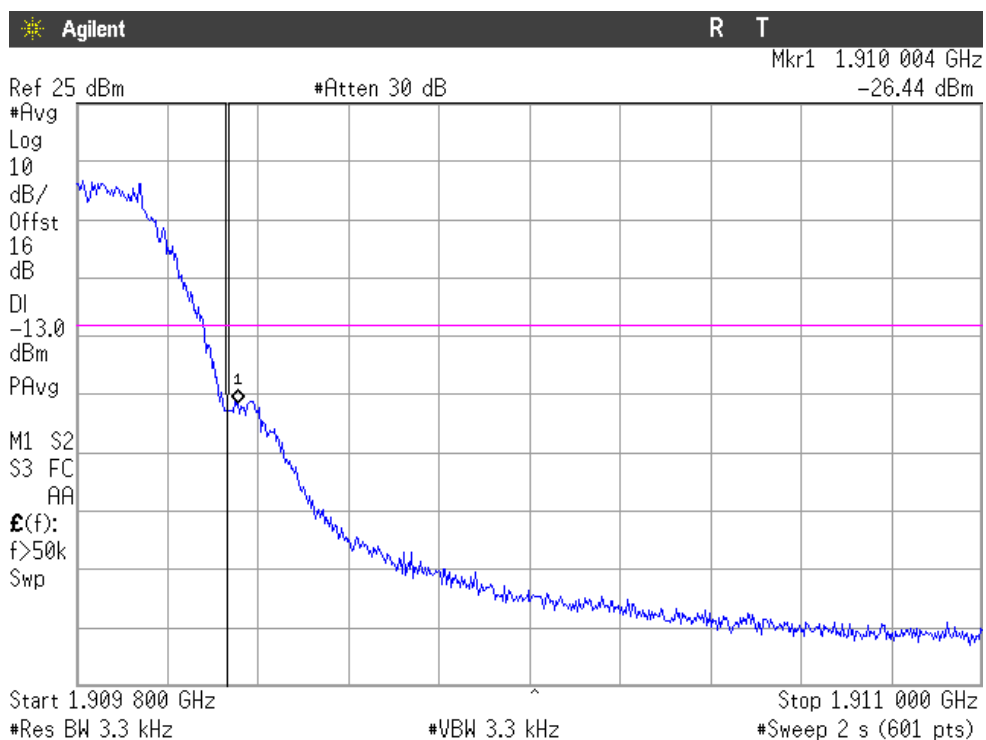
Measurement uncertainty = ± 1.57 dB.

GPRS MODULATION
CHANNEL LOWEST



NOTE: The equipment transmits at the maximum output power

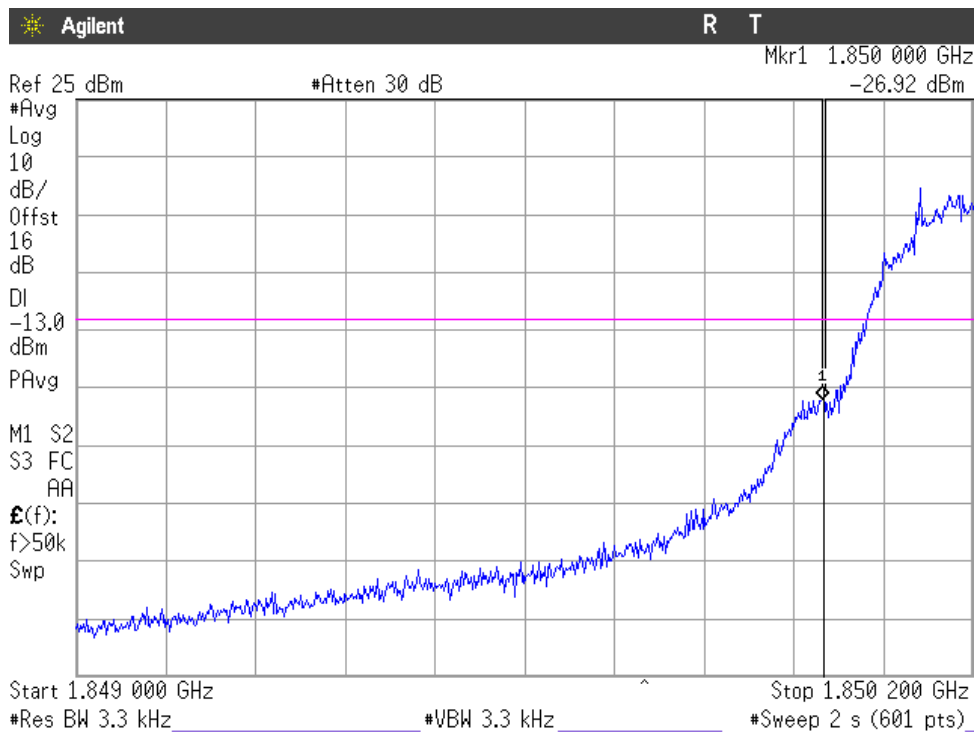
CHANNEL HIGHEST



NOTE: The equipment transmits at the maximum output power

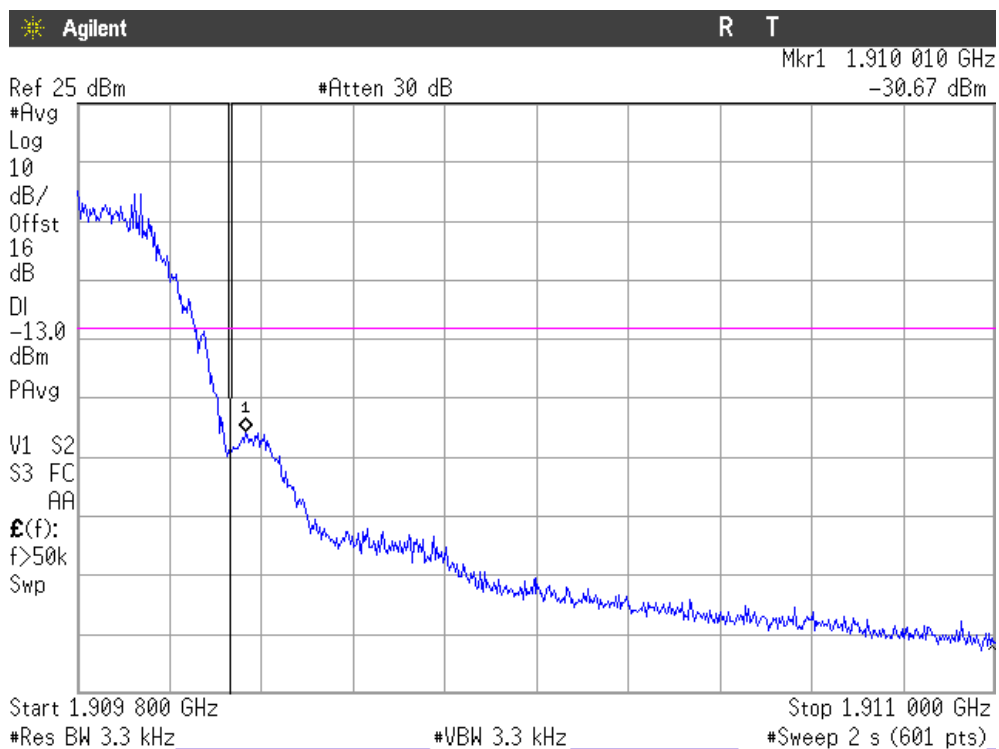
Verdict: PASS

EDGE MODULATION
CHANNEL LOWEST



NOTE: The equipment transmits at the maximum output power

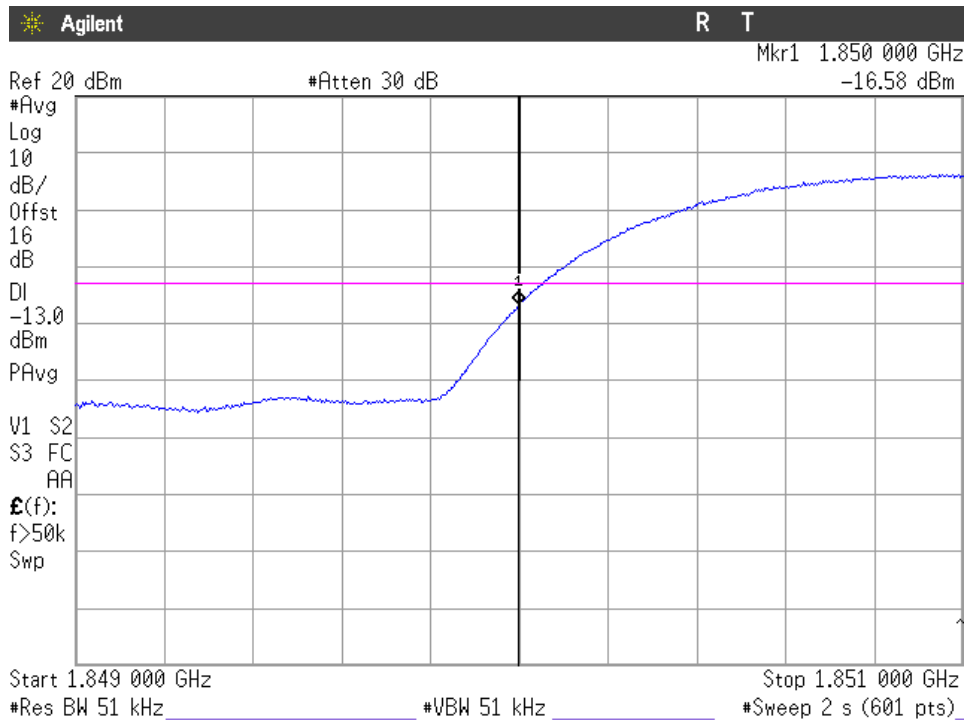
CHANNEL HIGHEST



NOTE: The equipment transmits at the maximum output power

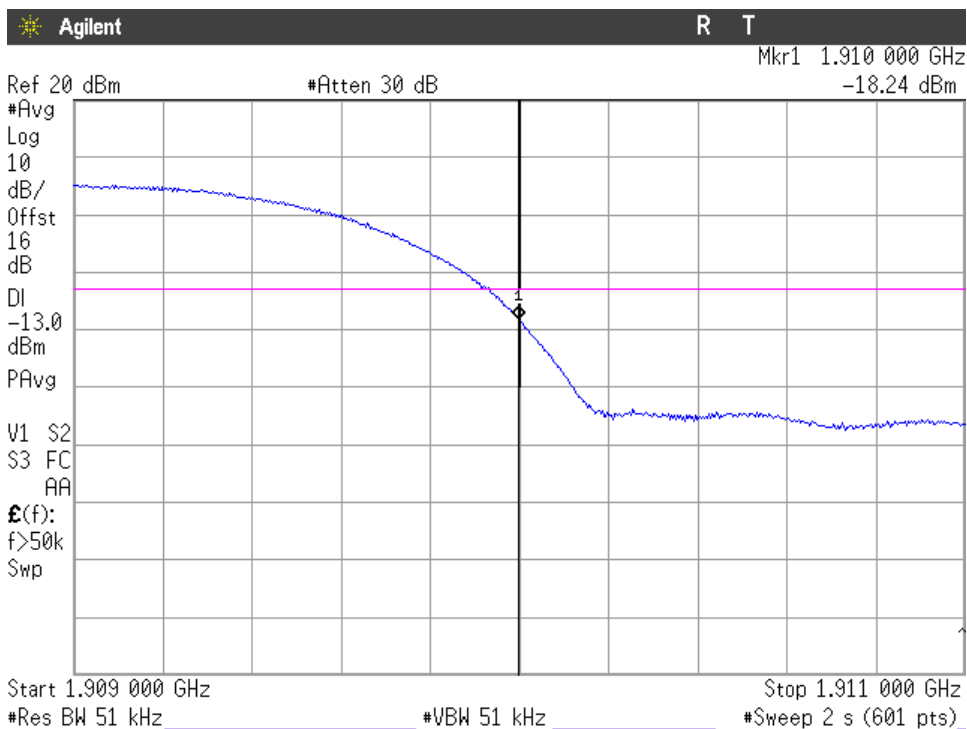
Verdict: PASS

WCDMA MODULATION
CHANNEL LOWEST



NOTE: The equipment transmits at the maximum output power

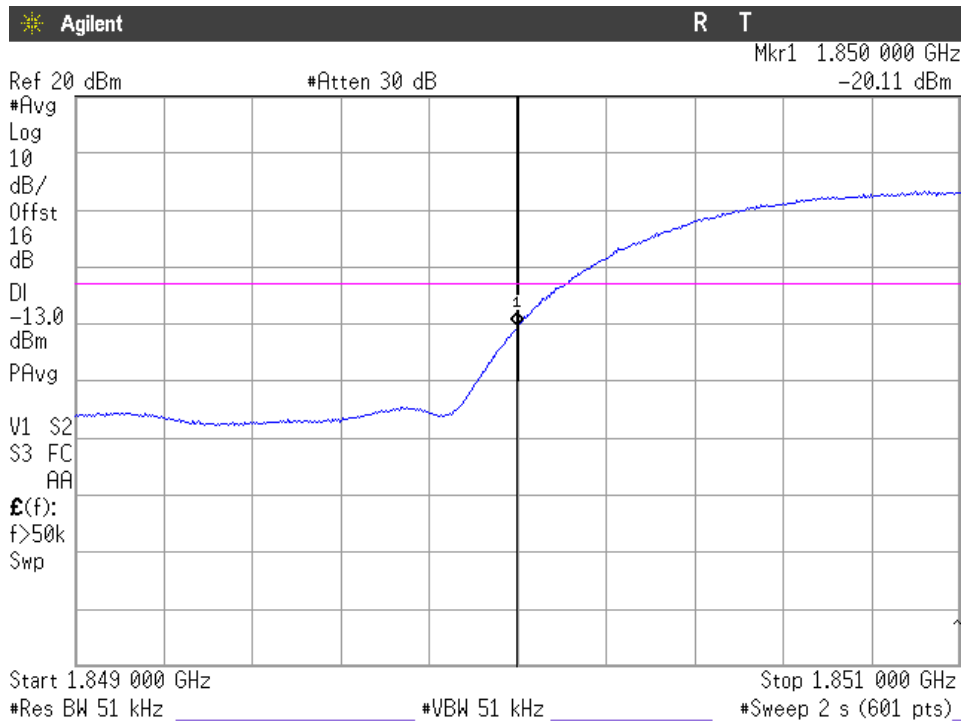
CHANNEL HIGHEST



NOTE: The equipment transmits at the maximum output power

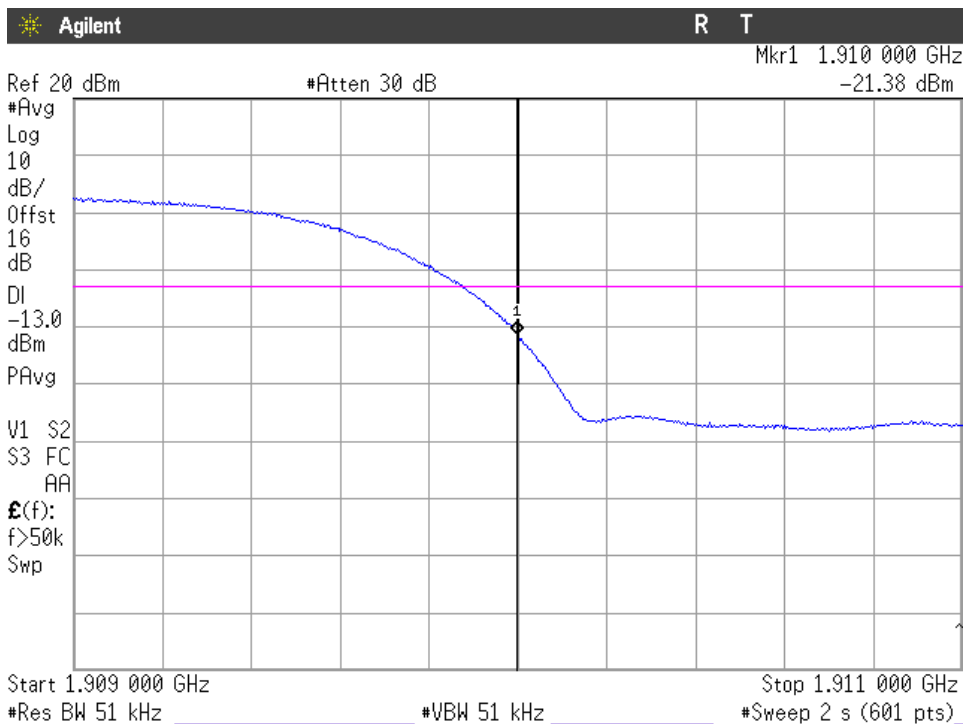
Verdict: PASS

HSUPA MODULATION
CHANNEL LOWEST



NOTE: The equipment transmits at the maximum output power

CHANNEL HIGHEST



NOTE: The equipment transmits at the maximum output power

Verdict: PASS

Radiated emissions

SPECIFICATION

§ 24.238

METHOD

The measurement was performed with the EUT inside an anechoic chamber. The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment.

The EUT was placed on a 1 meter high non-conductive stand at a 3 meter distance from the measuring antenna for measurements below 1 GHz and at 1 m distance for measurements above 1 GHz.

Detected emissions were maximized at each frequency by rotating the EUT and adjusting the measuring antenna height and polarization. The maximum meter reading was recorded. The radiated emissions were measured with peak detector and 1 MHz bandwidth.

Each detected emissions were substituted by the Substitution method, in accordance with the ANSI/TIA/EIA-603-C: 2004.

Measurement Limit:

According to specification, the power of emissions shall be attenuated below the transmitter power (P) by a factor of at least $43 + 10 \log (P)$ dB, P in watts.

At P_o transmitting power, the specified minimum attenuation becomes $43+10\log (P_o)$, and the level in dBm relative P_o becomes:

$$P_o \text{ (dBm)} - [43 + 10 \log (P_o \text{ in mwatts}) - 30] = - 13 \text{ dBm}$$

RESULTS

GPRS MODULATION

1. CHANNEL: LOWEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-20 GHz.

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-20 GHz.

No spurious signals were found in all the range.

3. CHANNEL: HIGHEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-20 GHz.

No spurious signals were found in all the range.

EDGE MODULATION

1. CHANNEL: LOWEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-20 GHz.

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-20 GHz.

No spurious signals were found in all the range.

3. CHANNEL: HIGHEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-20 GHz.

No spurious signals were found in all the range.

WCDMA MODULATION

1. CHANNEL: LOWEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-20 GHz.

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-20 GHz.

No spurious signals were found in all the range.

3. CHANNEL: HIGHEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-20 GHz.

No spurious signals were found in all the range.

HSUPA MODULATION

1. CHANNEL: LOWEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-20 GHz.

No spurious signals were found in all the range.

2. CHANNEL: MIDDLE

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-20 GHz.

No spurious signals were found in all the range.

3. CHANNEL: HIGHEST

Frequency range 30 MHz-1000 MHz.

No spurious signals were found in all the range.

Frequency range 1 GHz-20 GHz.

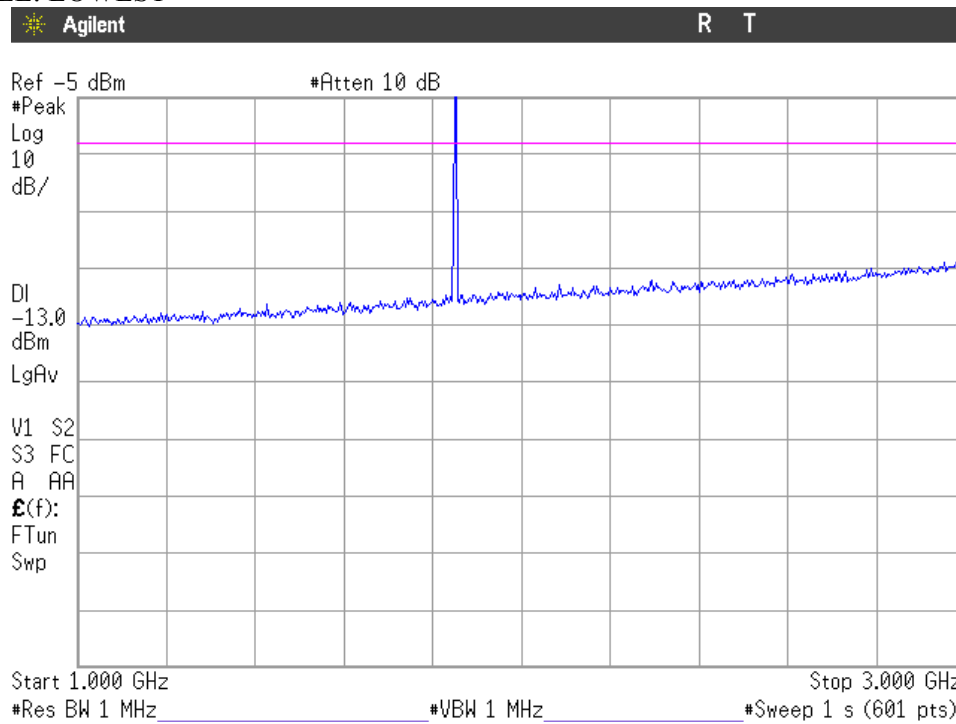
No spurious signals were found in all the range.

Verdict: PASS

FREQUENCY RANGE 1 GHz to 3 GHz.

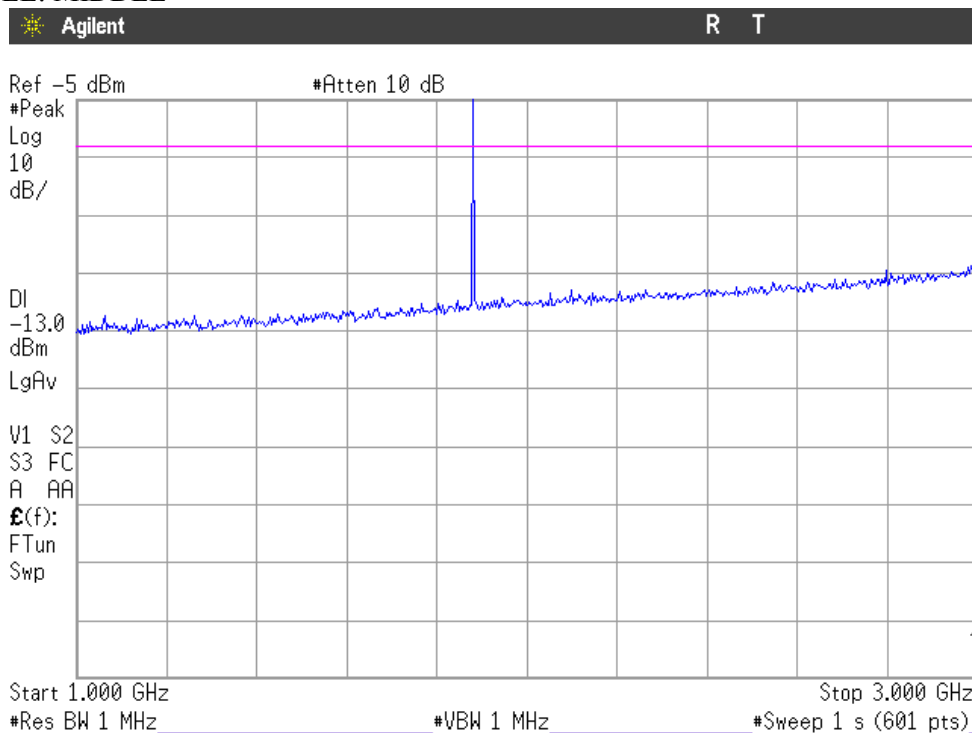
GPRS MODULATION

CHANNEL: LOWEST



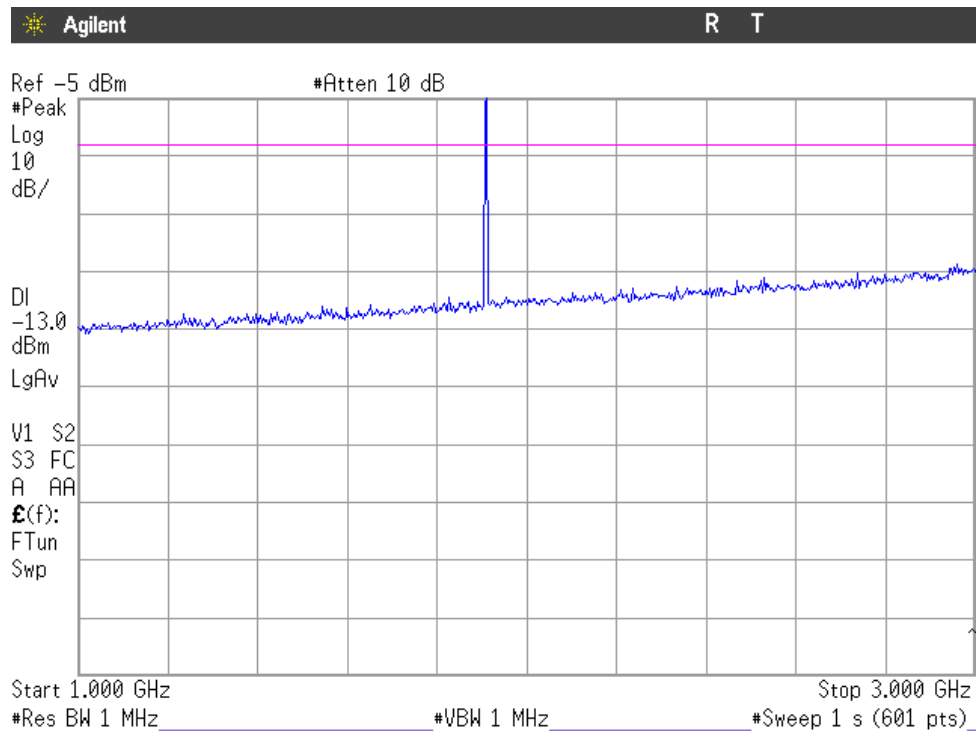
Note: The peak above the limit is the carrier frequency.

CHANNEL: MIDDLE



Note: The peak above the limit is the carrier frequency.

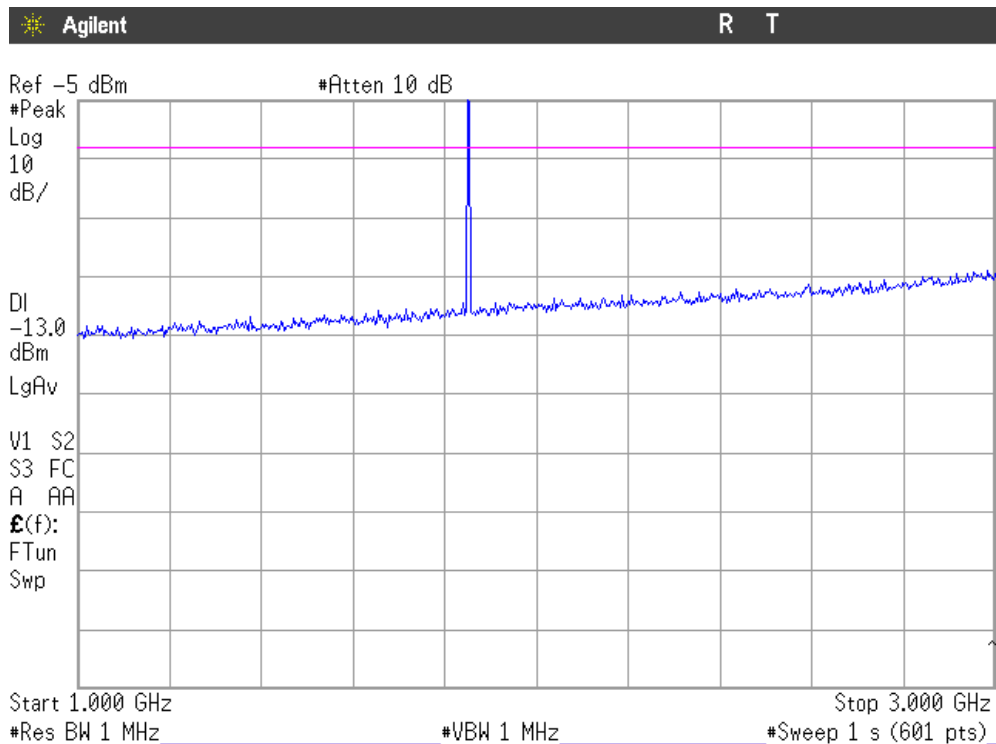
CHANNEL: HIGHEST



Note: The peak above the limit is the carrier frequency.

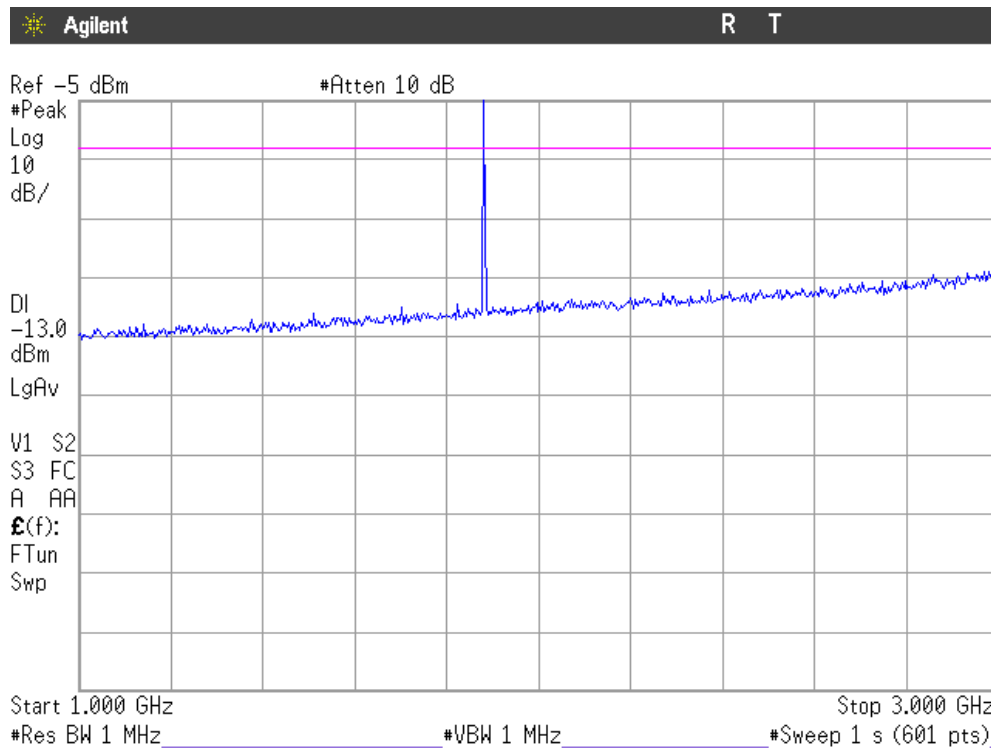
EDGE MODULATION

CHANNEL: LOWEST



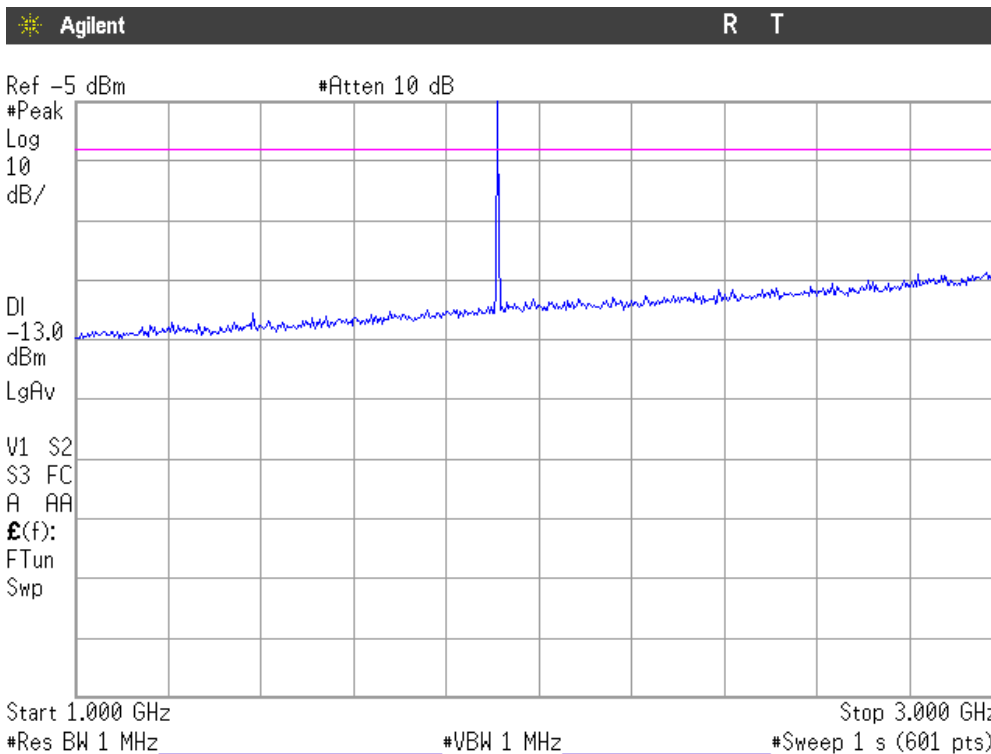
Note: The peak above the limit is the carrier frequency.

CHANNEL: MIDDLE



Note: The peak above the limit is the carrier frequency.

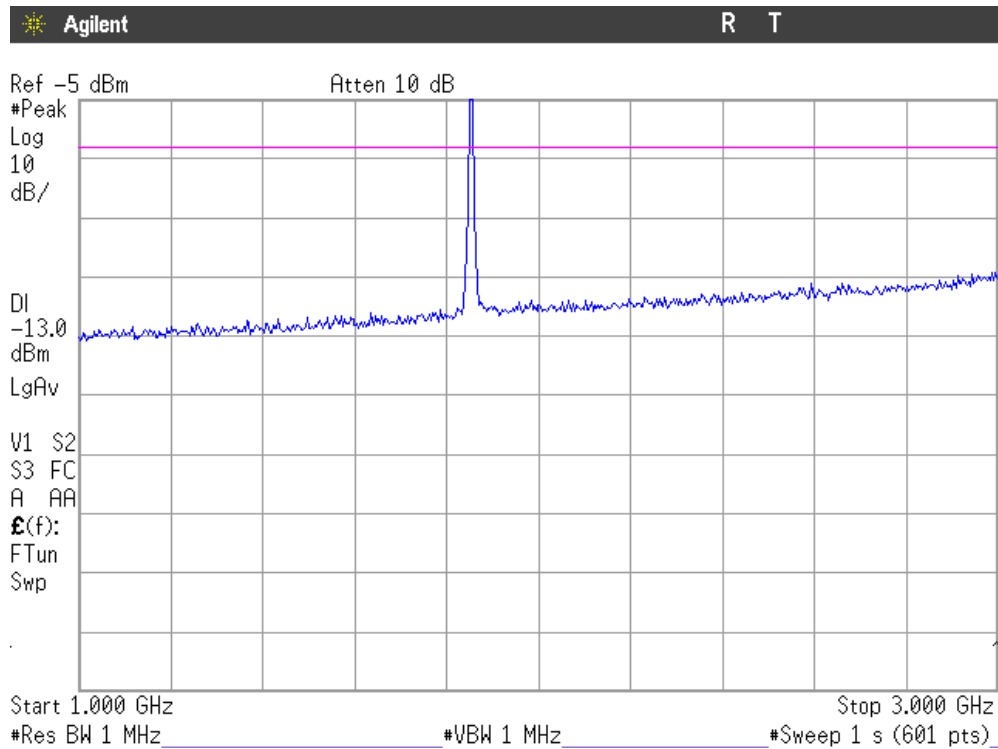
CHANNEL: HIGHEST



Note: The peak above the limit is the carrier frequency.

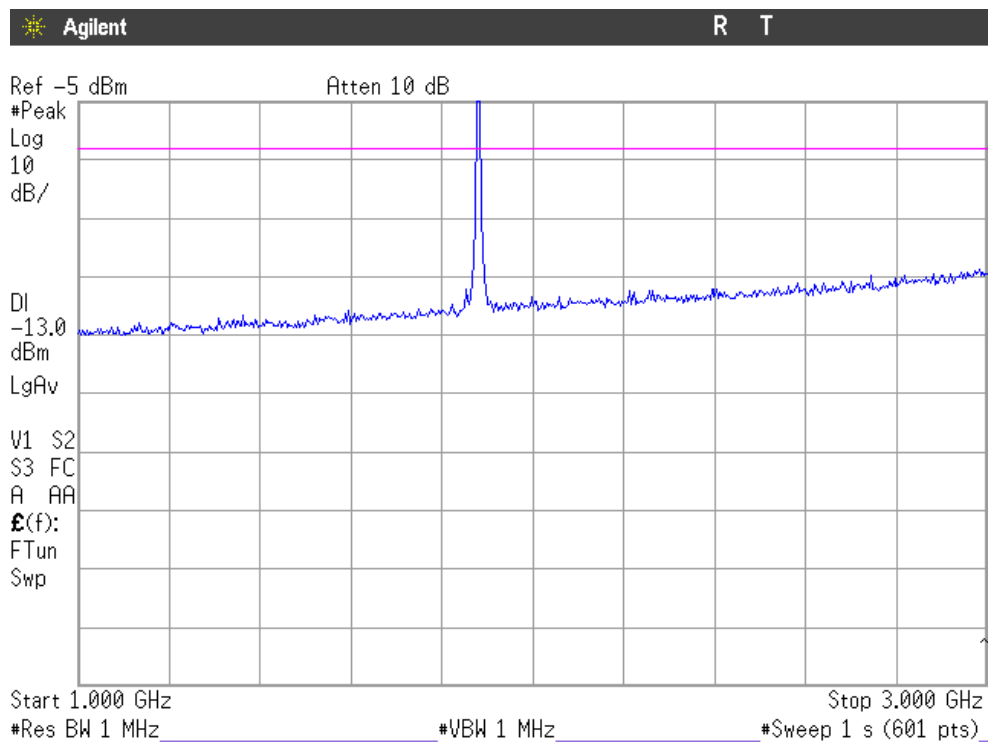
WCDMA MODULATION

CHANNEL: LOWEST



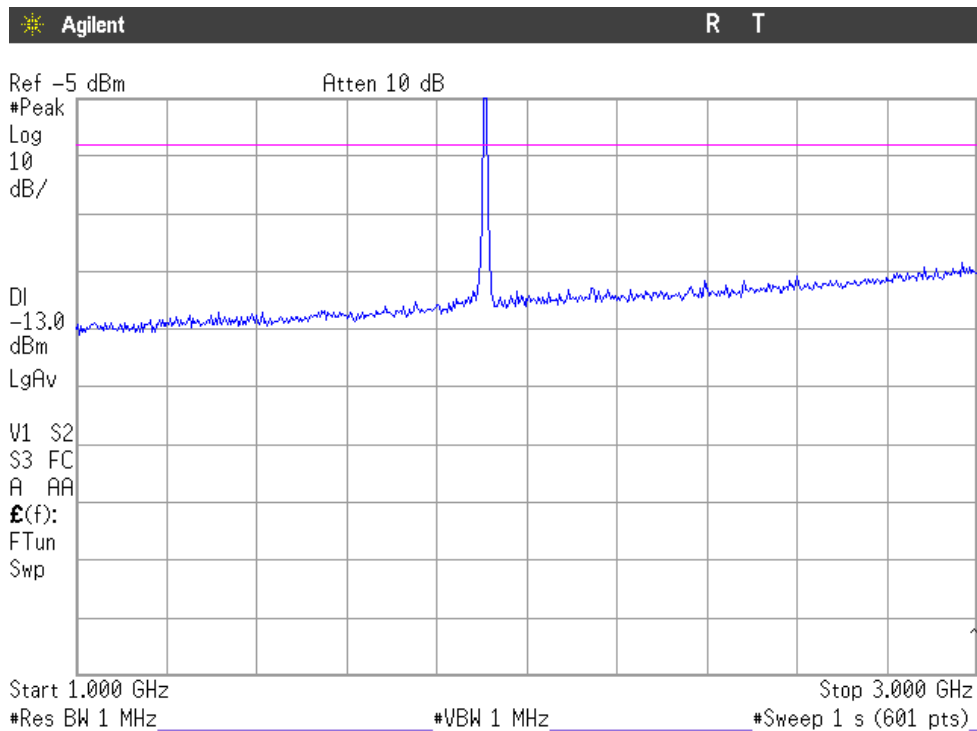
Note: The peak above the limit is the carrier frequency.

CHANNEL: MIDDLE



Note: The peak above the limit is the carrier frequency.

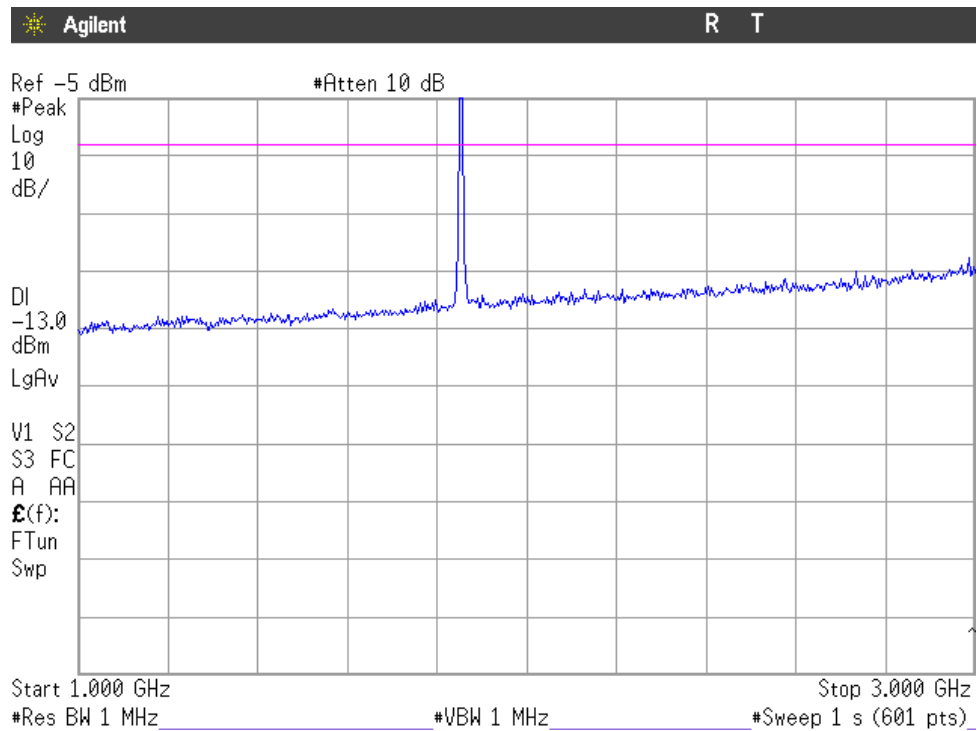
CHANNEL: HIGHEST



Note: The peak above the limit is the carrier frequency.

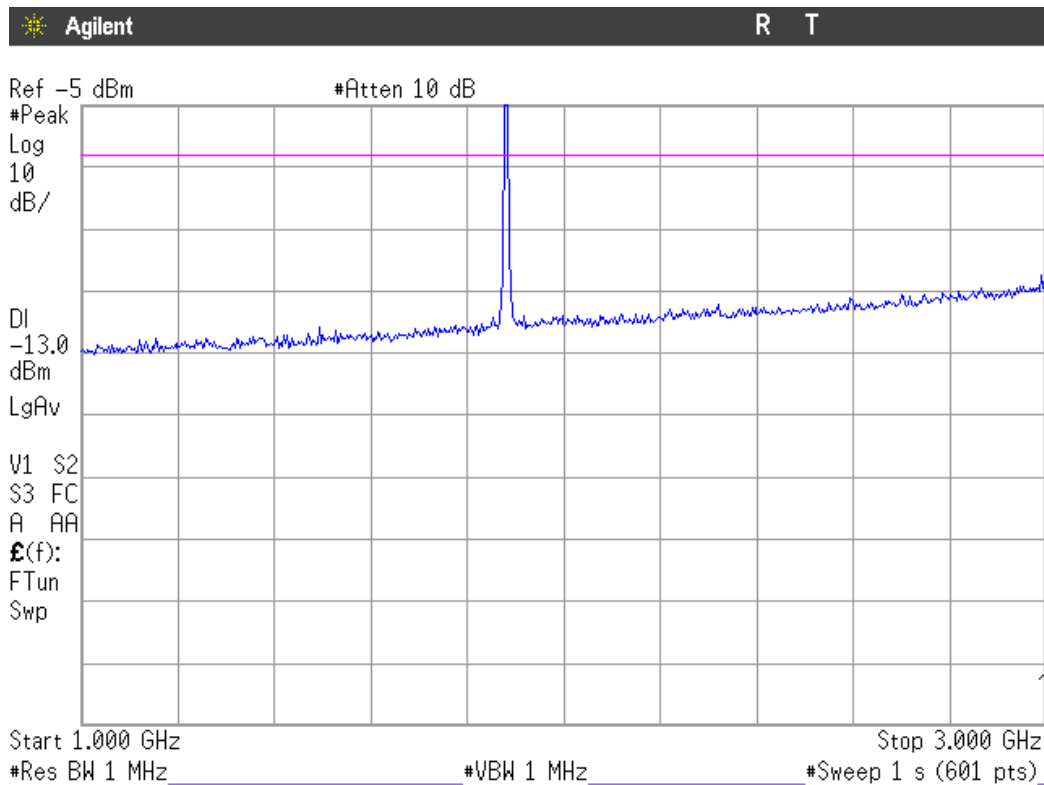
HSUPA MODULATION

CHANNEL: LOWEST



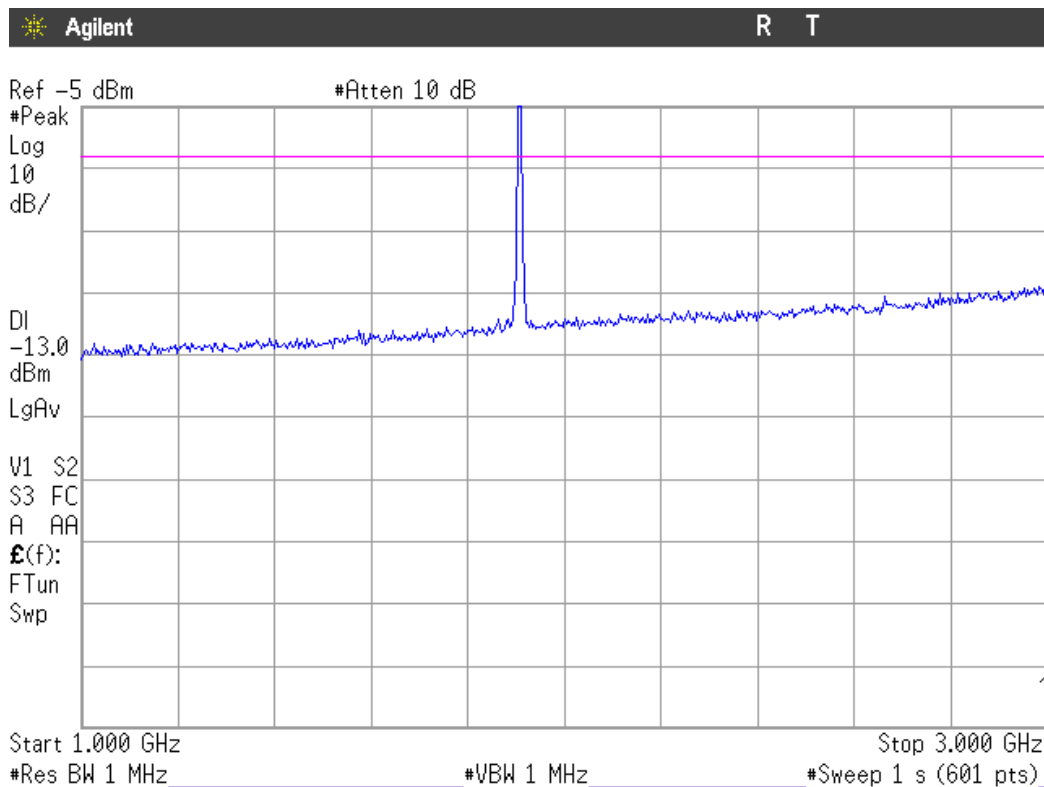
Note: The peak above the limit is the carrier frequency.

CHANNEL: MIDDLE



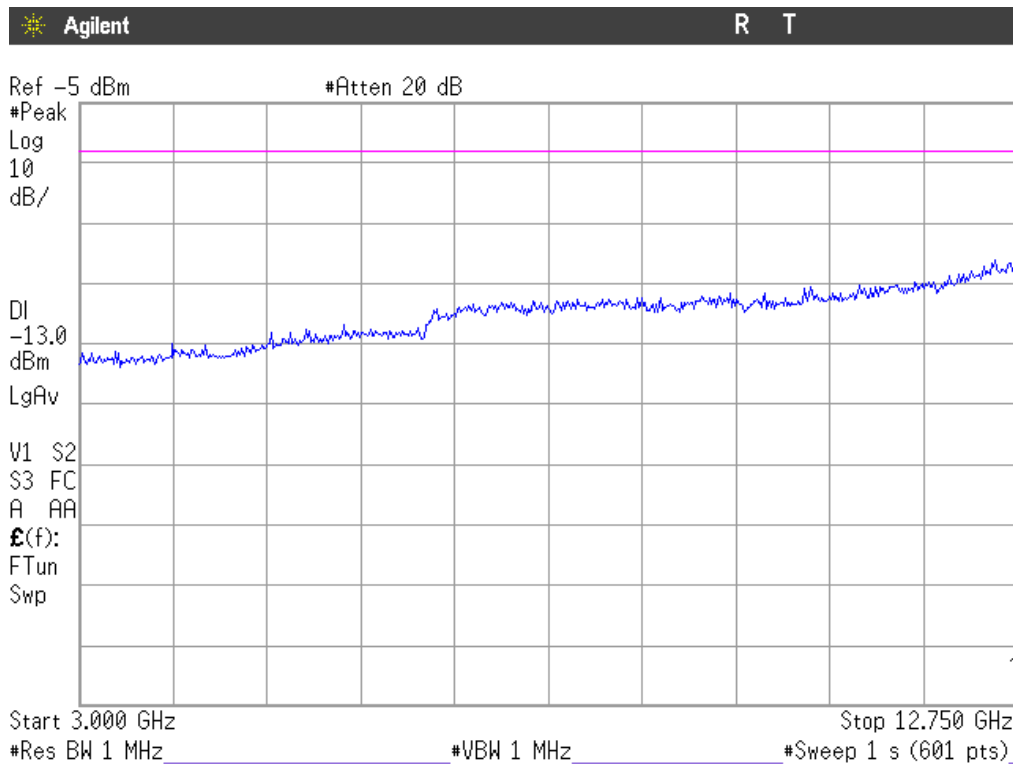
Note: The peak above the limit is the carrier frequency.

CHANNEL: HIGHEST



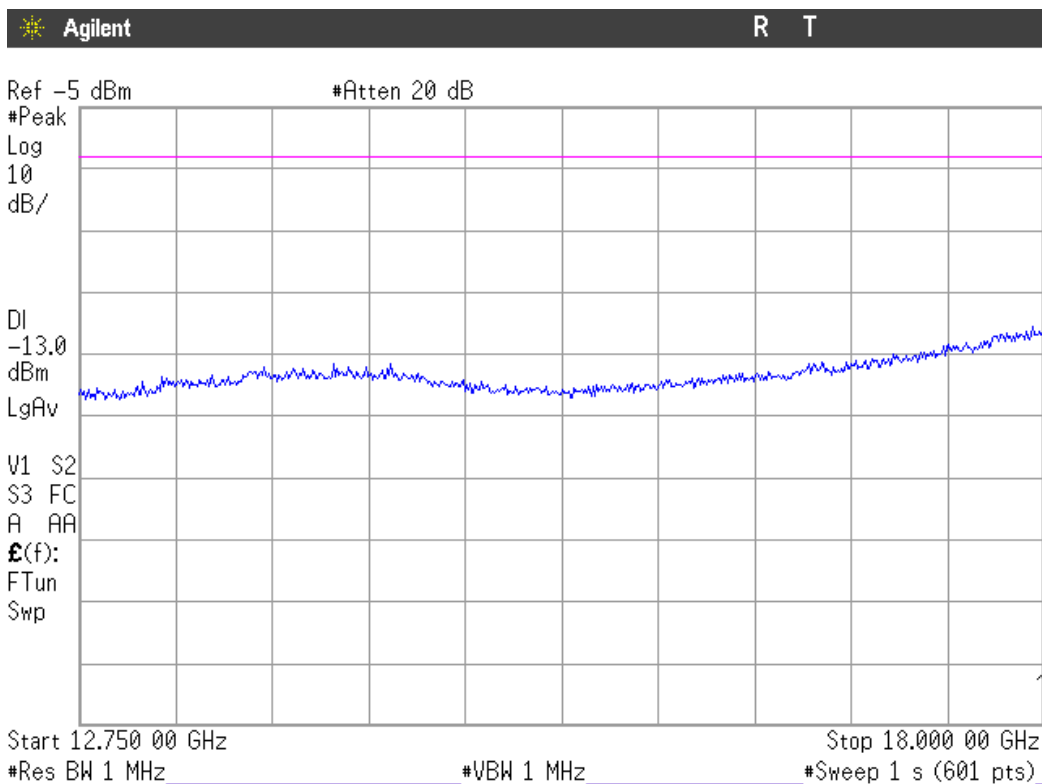
Note: The peak above the limit is the carrier frequency.

FREQUENCY RANGE 3 GHz to 12.75 GHz.



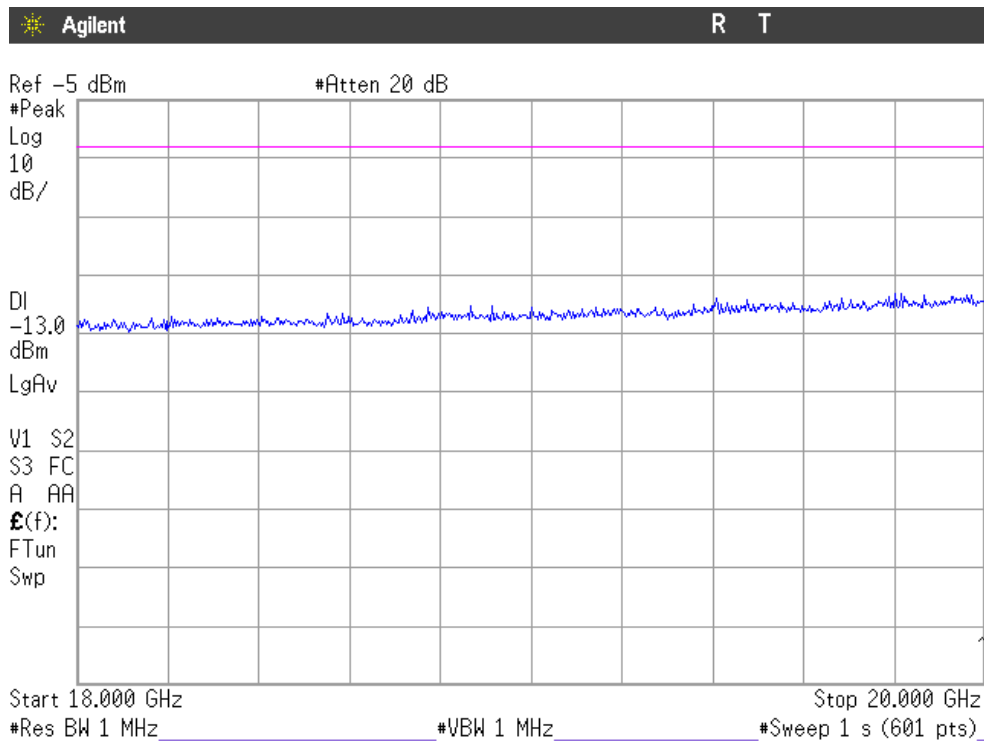
(This plot is valid for all three channels and all modulations).

FREQUENCY RANGE 12.75 GHz TO 18 GHz.



(This plot is valid for all three channels and all modulations).

FREQUENCY RANGE 18 GHz TO 20 GHz.



(This plot is valid for all three channels and all modulations).

APPENDIX B: Measuring results for electromagnetic emission

CONTENT:

DESCRIPTION OF THE OPERATION MODES.....	108
CONTINUOUS CONDUCTED EMISSION ON POWER LEADS	109

DESCRIPTION OF THE OPERATION MODES

The operation modes described in this paragraph constitute a functionality of the sample under test for itself. Every operation mode takes a failure criteria for the immunity test that they were applying to it and a monitoring to guarantee performance of the same ones.

In the following table appears the operation modes used by the samples tested to that it refers the present test report.

OPERATION MODE	DESCRIPTION
OM#01	EUT ON. TCH UMTS FDD Band II. Power supply: AC/DC Adapter (115Vac).
OM#02	EUT ON. IDLE UMTS FDD Band II. Power supply: AC/DC Adapter. (115Vac).
OM#03	EUT ON. TCH UMTS FDD BAND V. Power supply: AC/DC Adapter. (115Vac).
OM#04	EUT ON. IDLE UMTS FDD BAND V. Power supply: AC/DC Adapter. (115Vac).
OM#05	EUT ON. TCH 850 MHz. Power supply: AC/DC Adapter. (115Vac).
OM#06	EUT ON. IDLE 850 MHz. Power supply: AC/DC Adapter. (115Vac).
OM#07	EUT ON. TCH 1900 MHz. Power supply: AC/DC Adapter. (115Vac).
OM#08	EUT ON. IDLE 1900 MHz. Power supply: AC/DC Adapter. (115Vac).

CONTINUOUS CONDUCTED EMISSION ON POWER LEADS

LIMITS:	Product standard :	FCC RULES AND REGULATIONS 47 CFR PART 15, SUBPART B & IC RSS-GEN ISSUE 2, JUNE 2007
	Test standard :	FCC RULES AND REGULATIONS 47 CFR PART 15, SUBPART B & IC RSS-GEN ISSUE 2, JUNE 2007

CLASS B

The applied limit for continuous conducted emissions in power leads, according with the requirements of FCC Rules and Regulations 47 CFR Part 15, Subpart B IC RSS-Gen Issue 2, June 2007 in the frequency range 0,15 to 30 MHz, for Class B equipment was:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0,15 to 0,5	66-56	56-46
0,5 to 5	56	46
5 to 30	60	50

TESTED SAMPLES:	S/01; S/02 & S/03
TESTED OPERATION MODES:	OM#01 to OM#08
TEST RESULTS :	CCmmnnhh: CC, Conducted Condition; mm: Sample number; nn: Operation mode; hh: wire

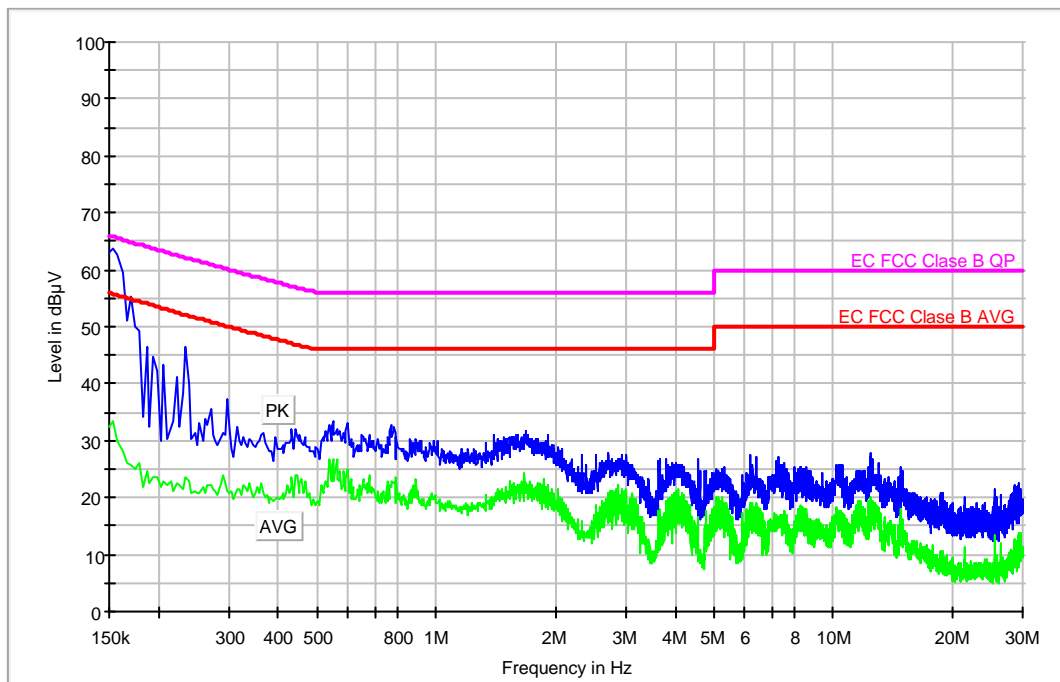
CCmmnnhh	Description	Result
CC0101L1	Phase wire noise	P
CC01010N	Neutral wire noise	P
CC0102L1	Phase wire noise	P
CC01020N	Neutral wire noise	P
CC0103L1	Phase wire noise	P
CC01030N	Neutral wire noise	P
CC0104L1	Phase wire noise	P
CC01040N	Neutral wire noise	P
CC0105L1	Phase wire noise	P
CC01050N	Neutral wire noise	P
CC0106L1	Phase wire noise	P
CC01060N	Neutral wire noise	P
CC0107L1	Phase wire noise	P
CC01070N	Neutral wire noise	P
CC0108L1	Phase wire noise	P
CC01080N	Neutral wire noise	P
CC0205L1	Phase wire noise	P
CC02050N	Neutral wire noise	P
CC0206L1	Phase wire noise	P
CC02060N	Neutral wire noise	P
CC0207L1	Phase wire noise	P
CC02070N	Neutral wire noise	P
CC0208L1	Phase wire noise	P
CC02080N	Neutral wire noise	P
CC0305L1	Phase wire noise	P
CC03050N	Neutral wire noise	P
CC0306L1	Phase wire noise	P
CC03060N	Neutral wire noise	P
CC0307L1	Phase wire noise	P
CC03070N	Neutral wire noise	P
CC0308L1	Phase wire noise	P
CC03080N	Neutral wire noise	P

Continuous Conducted emission : CC01010N

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#01
 Date: 2010-09-06 11:55
 Setup: EMI conducted
 Mode: EUT ON. TCH UMTS FDD Band II. Neutral noise.

EC FCC Class B ESPI CC



Maximized

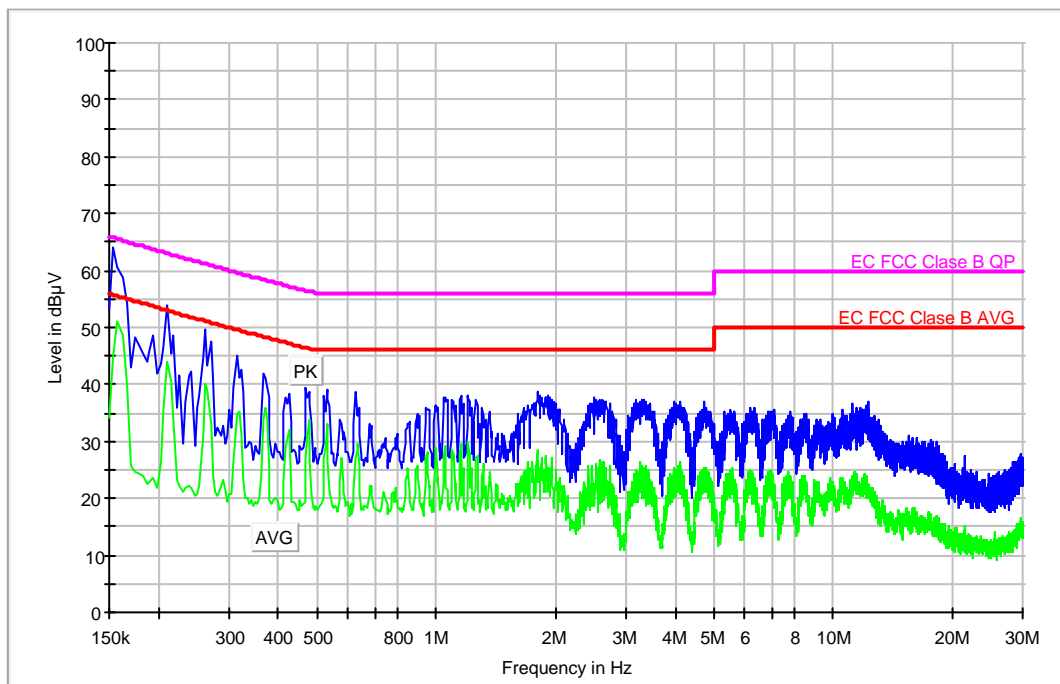
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.154000	63.6	33.6
0.234000	46.6	23.7
0.186000	46.4	24.7
0.194000	44.8	23.6
0.206000	43.4	23.0
0.222000	41.1	22.6
0.298000	37.2	21.3
0.270000	35.5	22.1
0.550000	33.5	26.7
1.686000	31.7	22.0
12.466000	27.8	20.2
2.706000	27.8	16.8
2.526000	27.6	18.6

Continuous Conducted emission : CC0101L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#01
 Date: 2010-09-06 12:37
 Setup: EMI conducted
 Mode: EUT ON. TCH UMTS FDD Band II. Phase noise.

EC FCC Class B ESPI CC



Maximized

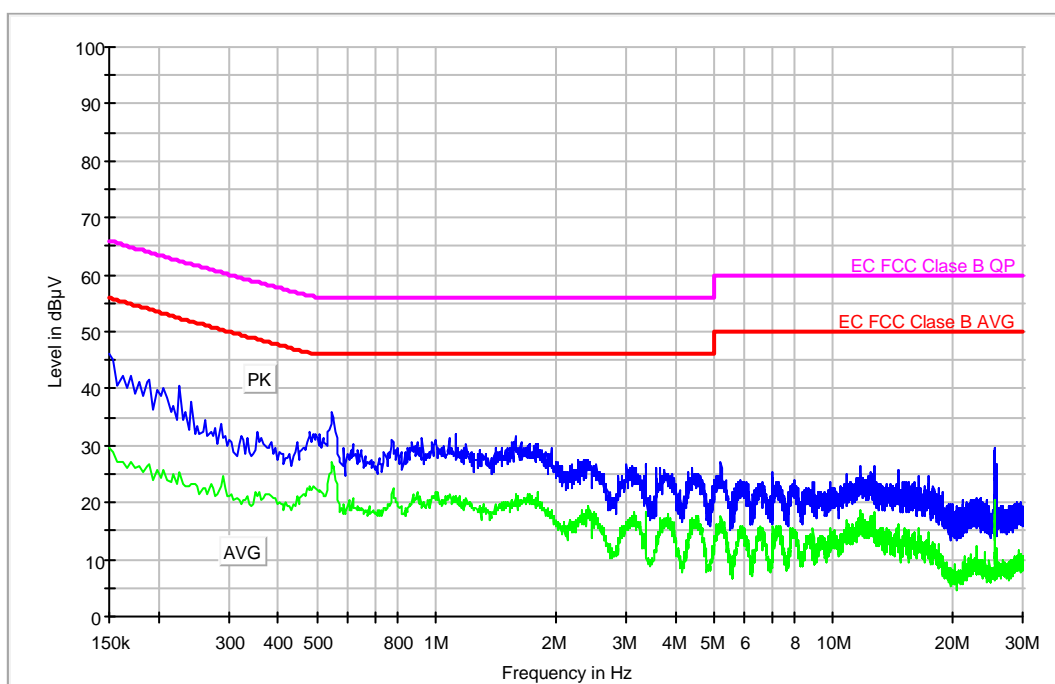
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.154000	64.1	44.6
0.210000	53.9	43.9
0.262000	49.5	40.1
0.314000	44.9	35.0
0.242000	42.1	21.9
0.366000	41.8	34.0
0.470000	39.4	26.7
0.530000	39.1	33.1
1.802000	38.6	26.1
0.626000	38.6	27.1
0.426000	38.2	32.1
1.198000	38.0	24.1
1.154000	38.0	29.6

Continuous Conducted emission : CC01020N

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#02
 Date: 2010-09-06 14:18
 Setup: EMI conducted
 Mode: EUT ON. IDLE UMTS FDD Band II. Neutral noise.

EC FCC Class B ESPI CC



Maximized

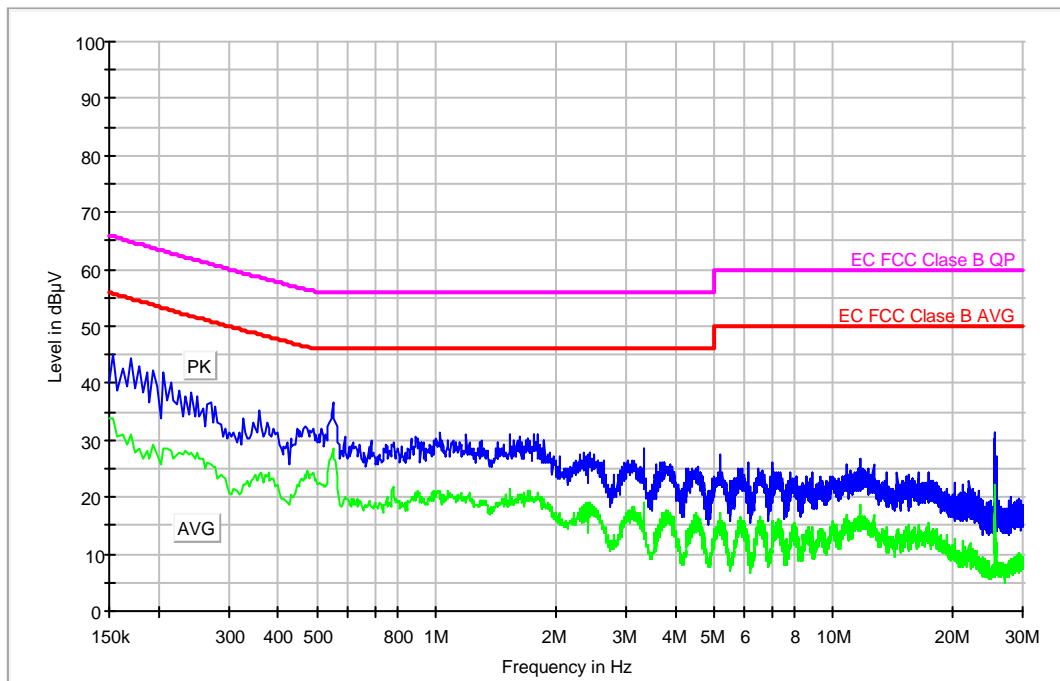
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.150000	46.2	29.5
0.546000	35.9	26.9
1.122000	32.1	20.5
1.578000	31.5	20.9
25.582000	29.7	16.2
25.554000	27.7	9.9
25.642000	27.5	11.2
5.218000	26.9	17.4
25.658000	26.9	10.2
3.390000	26.9	16.2
3.022000	26.6	15.3
12.674000	26.6	18.3
11.730000	26.4	18.7

Continuous Conducted emission : CC0102L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#02
 Date: 2010-09-06 14:21
 Setup: EMI conducted
 Mode: EUT ON. IDLE UMTS FDD Band II. Phase noise.

EC FCC Class B ESPI CC



Maximized

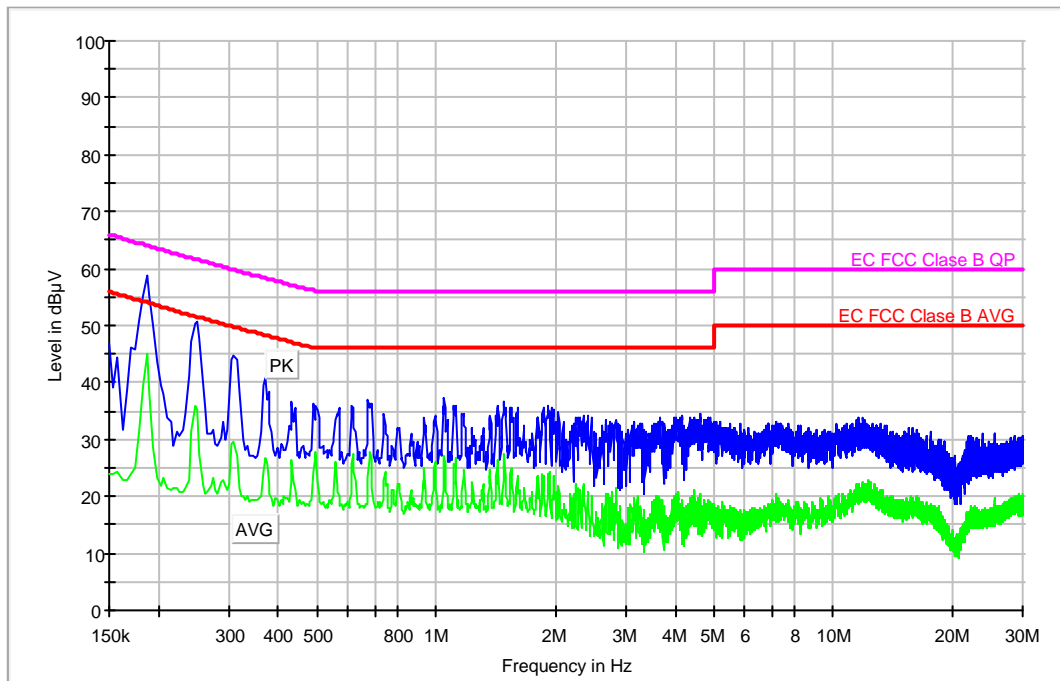
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.154000	45.2	33.7
0.206000	42.0	28.4
0.550000	36.6	28.4
25.626000	31.2	15.7
25.590000	30.2	16.8
25.598000	30.2	15.5
3.338000	28.4	18.8
25.578000	28.4	12.9
25.642000	28.3	17.1
5.170000	27.5	15.1
25.666000	27.1	10.6
11.682000	26.9	18.6
7.010000	26.2	15.8

Continuous Conducted emission : CC01030N

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#03
 Date: 2010-09-06 14:08
 Setup: EMI conducted
 Mode: EUT ON. TCH UMTS FDD Band V. Neutral noise.

EC FCC Class B ESPI CC



Maximized

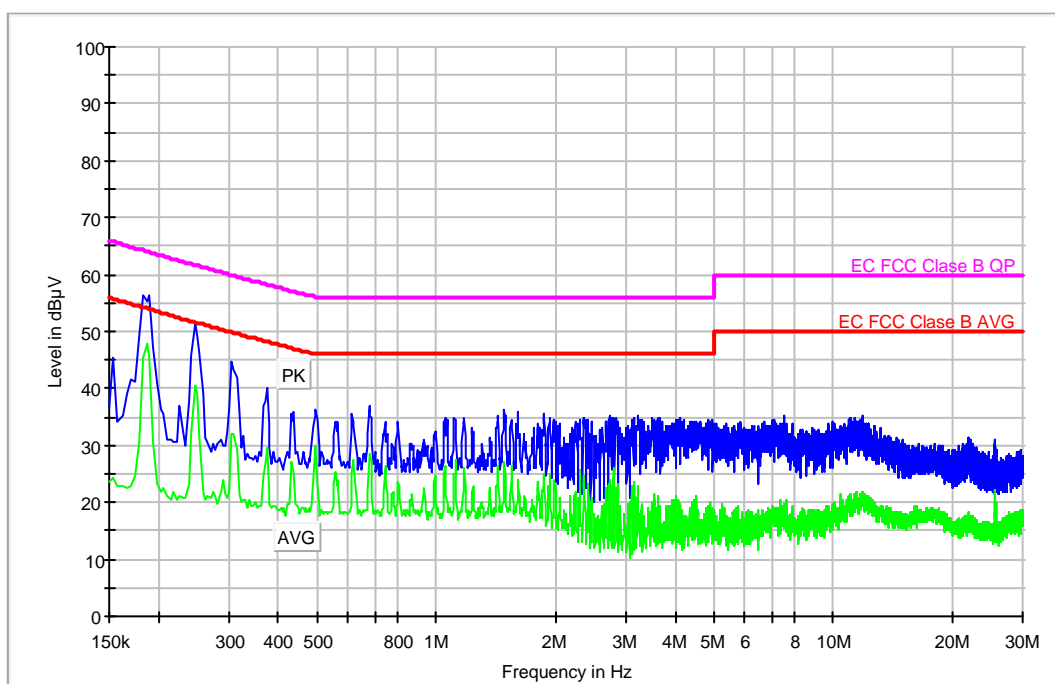
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.186000	58.7	45.2
0.250000	50.6	35.1
0.150000	47.0	24.1
0.310000	44.8	29.6
0.370000	40.7	26.6
1.050000	37.3	27.1
0.674000	36.9	23.4
0.434000	36.5	26.4
1.482000	36.5	25.2
0.490000	36.2	24.4
0.614000	36.0	25.8
1.118000	35.9	26.7
1.426000	35.8	26.3

Continuous Conducted emission : CC0103L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#03
 Date: 2010-09-06 14:13
 Setup: EMI conducted
 Mode: EUT ON. TCH UMTS FDD Band V. Phase noise.

EC FCC Class B ESPI CC



Maximized

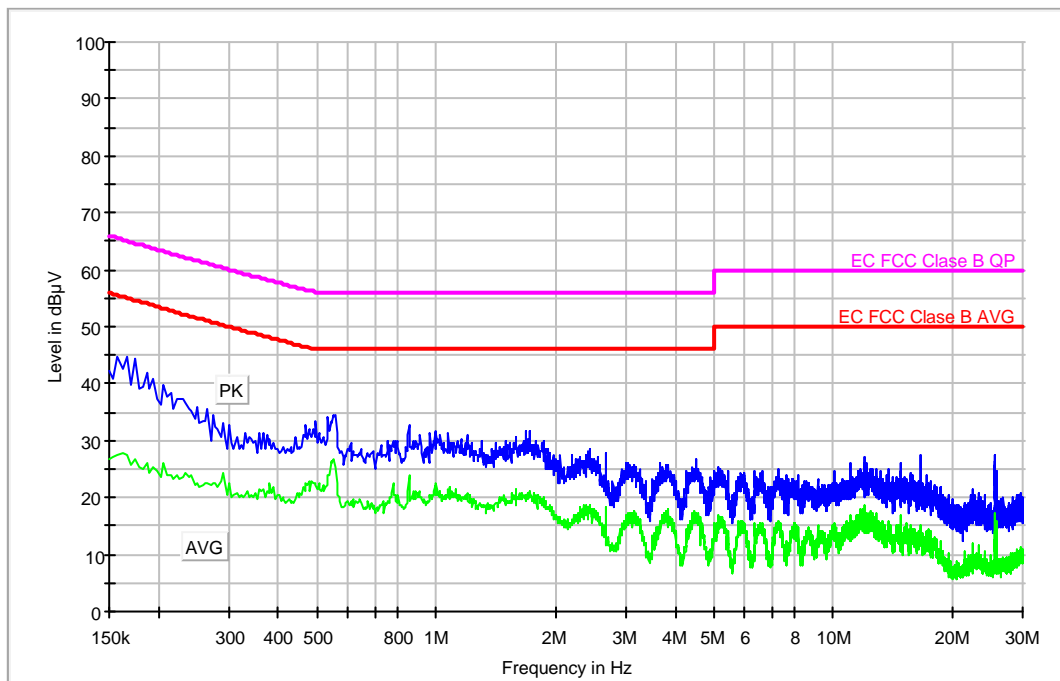
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.182000	56.5	45.5
0.246000	51.3	40.5
0.154000	45.2	24.5
0.306000	44.6	32.0
0.374000	40.0	29.4
0.226000	37.0	21.3
0.678000	37.0	28.4
0.498000	36.4	29.8
1.486000	36.1	27.2
0.438000	36.1	25.3
1.606000	36.0	23.8
0.614000	35.6	25.0
1.862000	35.6	25.1

Continuous Conducted emission : CC01040N

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#04
 Date: 2010-09-06 14:25
 Setup: EMI conducted
 Mode: EUT ON. IDLE UMTS FDD Band V. Neutral noise.

EC FCC Class B ESPI CC



Maximized

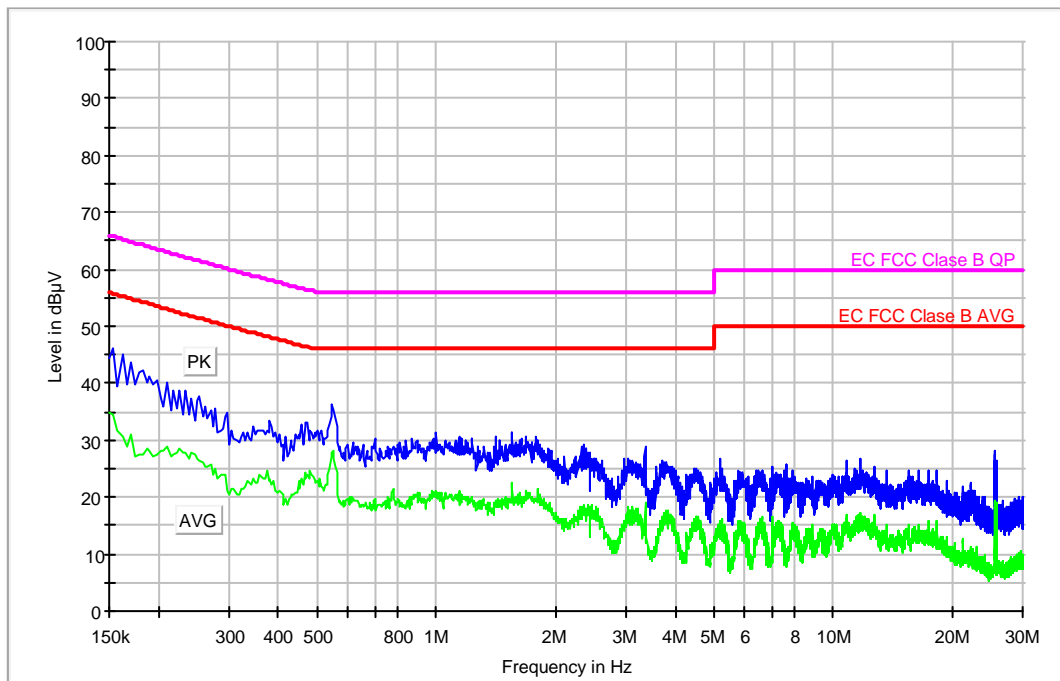
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.158000	44.6	27.5
0.558000	34.5	25.4
0.854000	32.6	23.8
1.722000	31.7	21.0
2.674000	27.7	18.4
25.594000	27.5	13.7
16.654000	27.4	15.3
11.942000	27.3	18.8
4.514000	26.7	16.6
14.770000	26.2	17.0
3.018000	26.2	17.0
3.654000	26.0	14.6
11.002000	25.9	16.7

Continuous Conducted emission : CC0104L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#04
 Date: 2010-09-06 14:28
 Setup: EMI conducted
 Mode: EUT ON. IDLE UMTS FDD Band V. Phase noise.

EC FCC Class B ESPI CC



Maximized

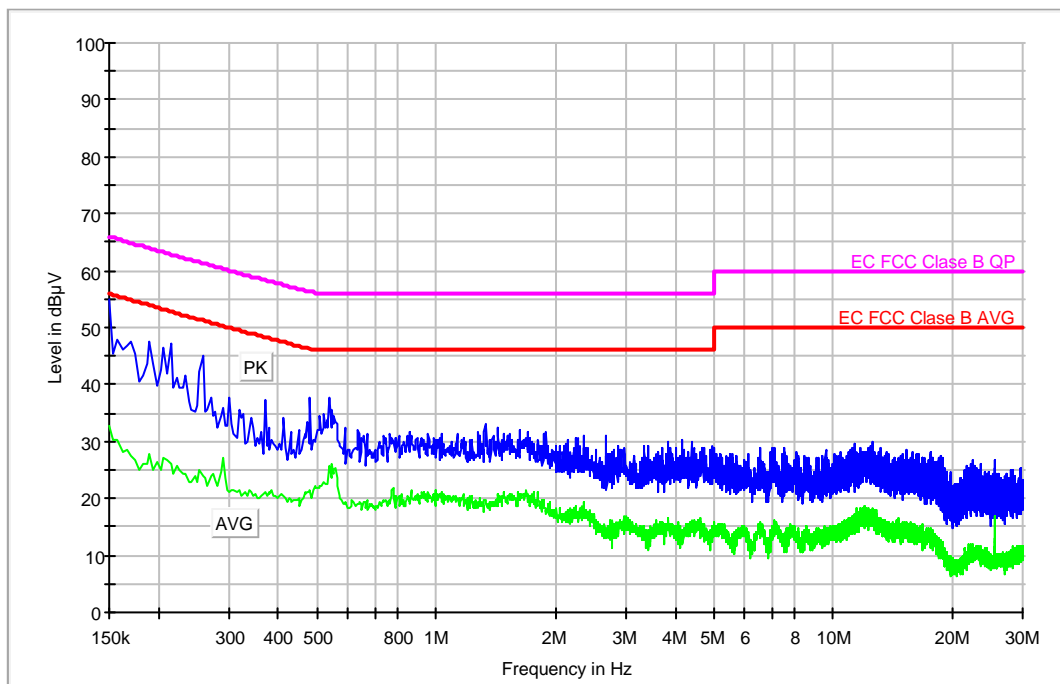
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.154000	46.3	34.6
0.546000	36.4	27.7
1.554000	31.3	22.4
2.350000	29.2	17.0
3.358000	28.7	19.2
25.594000	28.3	13.4
2.446000	27.8	17.9
25.618000	27.4	19.3
11.706000	26.8	16.9
5.198000	26.6	15.9
25.666000	26.4	18.9
3.690000	26.4	14.3
10.762000	26.3	16.7

Continuous Conducted emission : CC01050N

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#05
 Date: 2010-09-06 14:53
 Setup: EMI conducted
 Mode: EUT ON. TCH 850MHz. Neutral noise.

EC FCC Class B ESPI CC



Maximized

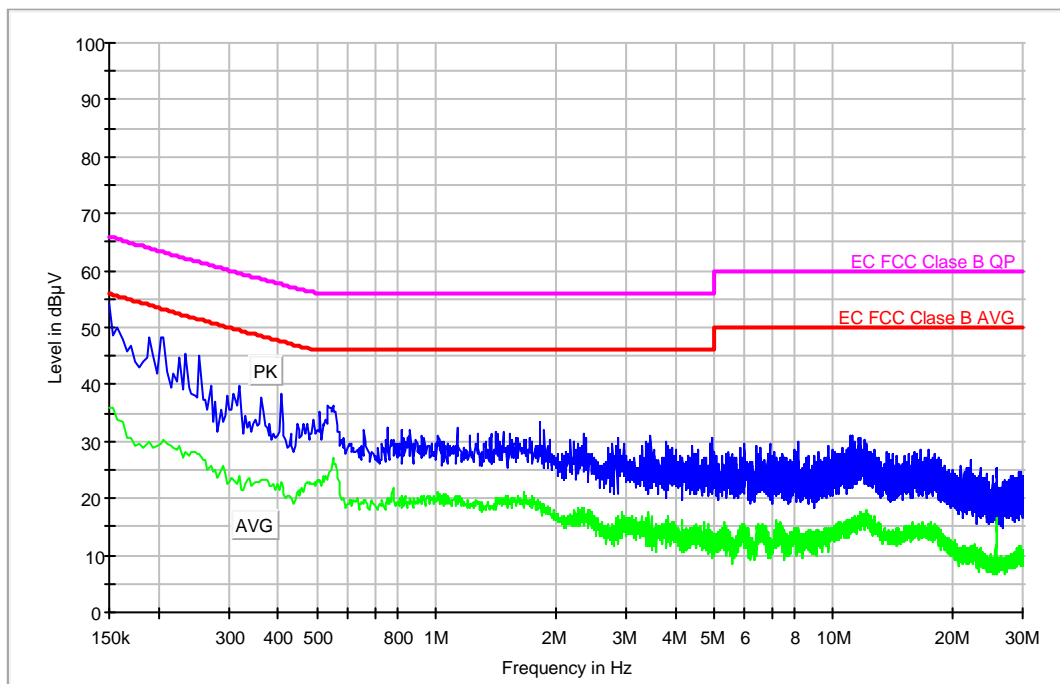
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.150000	54.9	32.8
0.190000	47.5	27.7
0.214000	47.1	26.0
0.258000	45.0	24.0
0.482000	37.8	21.4
0.538000	37.5	25.5
0.370000	37.2	21.1
1.326000	33.1	19.6
1.898000	31.9	17.4
2.354000	31.0	18.7
2.678000	30.9	13.0
2.250000	30.5	16.8
4.170000	30.2	14.2

Continuous Conducted emission : CC0105L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#05
 Date: 2010-09-07 08:44
 Setup: EMI conducted
 Mode: EUT ON. TCH 850MHz. Phasel noise.

EC FCC Class B ESPI CC



Maximized

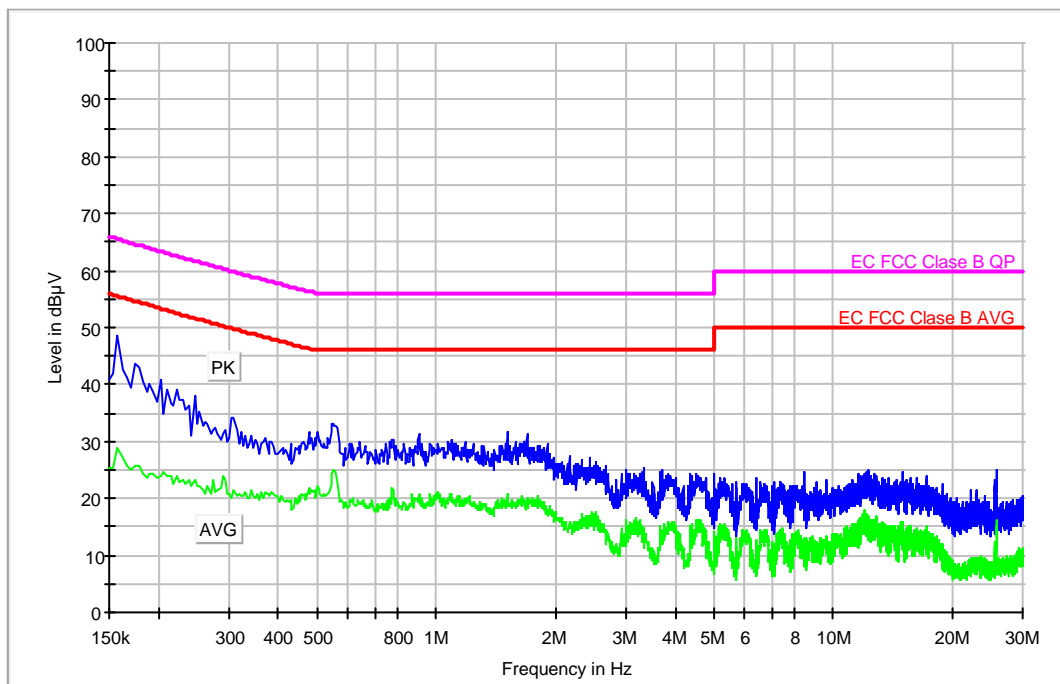
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.150000	54.3	36.1
0.206000	48.3	30.2
0.234000	45.5	28.1
0.254000	45.2	28.0
0.318000	39.6	23.9
0.406000	38.4	22.9
0.362000	37.6	23.1
0.550000	36.3	27.1
1.822000	33.4	19.4
1.130000	32.6	20.4
0.754000	32.3	19.2
1.874000	32.0	18.6
1.474000	31.7	20.0

Continuous Conducted emission : CC01060N

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#06
 Date: 2010-09-07 12:08
 Setup: EMI conducted
 Mode: EUT ON. IDLE 850MHz. Neutral noise.

EC FCC Class B ESPI CC



Maximized

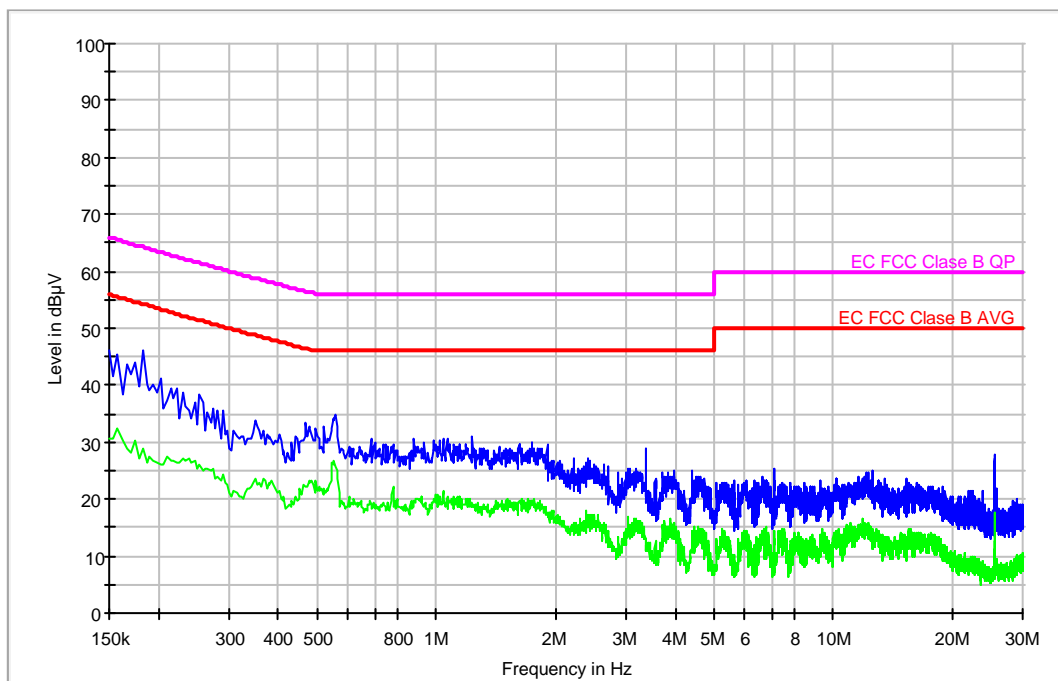
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.158000	48.4	28.8
0.246000	38.1	23.3
0.550000	33.0	24.9
1.518000	31.7	20.7
3.346000	25.5	12.8
25.666000	24.9	16.2
12.226000	24.8	16.9
3.690000	24.8	12.9
14.994000	24.8	15.2
8.486000	24.5	13.2
4.354000	24.4	13.9
5.026000	24.2	13.2
17.246000	23.8	15.1

Continuous Conducted emission : CC0106L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#06
 Date: 2010-09-07 12:11
 Setup: EMI conducted
 Mode: EUT ON. IDLE 850MHz. Phase noise.

EC FCC Class B ESPI CC



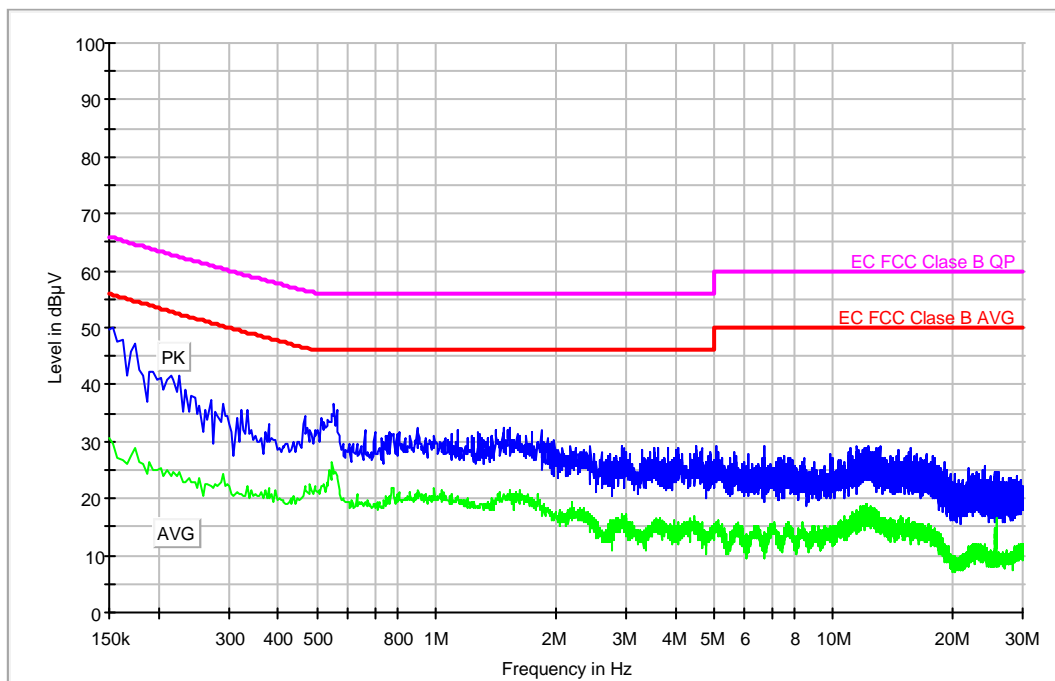
Maximized

Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.150000	46.2	30.7
0.182000	46.1	29.0
0.558000	35.0	25.7
3.386000	28.8	12.4
25.626000	27.8	11.3
2.402000	27.2	16.9
25.590000	27.0	17.7
25.554000	26.6	9.5
7.098000	25.4	14.3
12.610000	24.9	14.8
3.970000	24.9	15.2
4.398000	24.8	13.4
2.878000	24.6	12.6

Continuous Conducted emission : CC01070N Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#07
 Date: 2010-09-07 09:34
 Setup: EMI conducted
 Mode: EUT ON. TCH 1900MHz. Neutral noise.

EC FCC Class B ESPI CC



Maximized

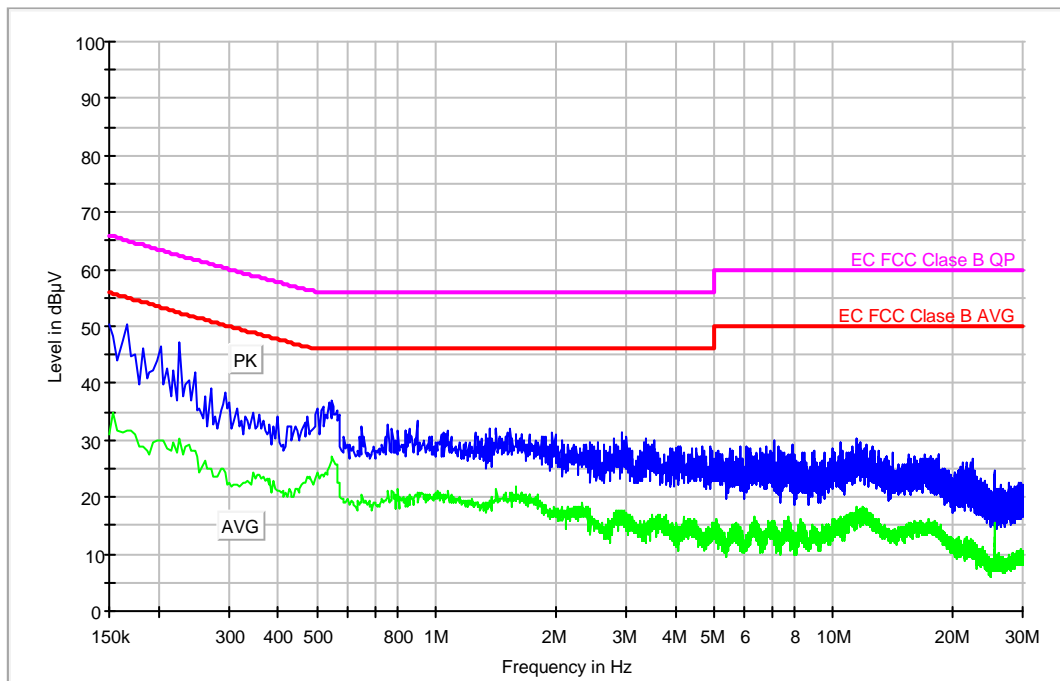
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.154000	49.8	29.7
0.554000	36.6	24.3
0.290000	36.5	24.5
0.322000	35.5	20.8
1.482000	32.4	20.4
0.894000	32.3	21.3
1.986000	30.1	16.8
2.938000	29.2	17.3
11.502000	29.2	16.2
5.074000	29.2	15.7
4.510000	29.1	15.3
13.074000	29.1	15.8
2.450000	29.1	16.6

Continuous Conducted emission : CC0107L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#07
 Date: 2010-09-07 09:40
 Setup: EMI conducted
 Mode: EUT ON. TCH 1900MHz. Phase noise.

EC FCC Class B ESPI CC



Maximized

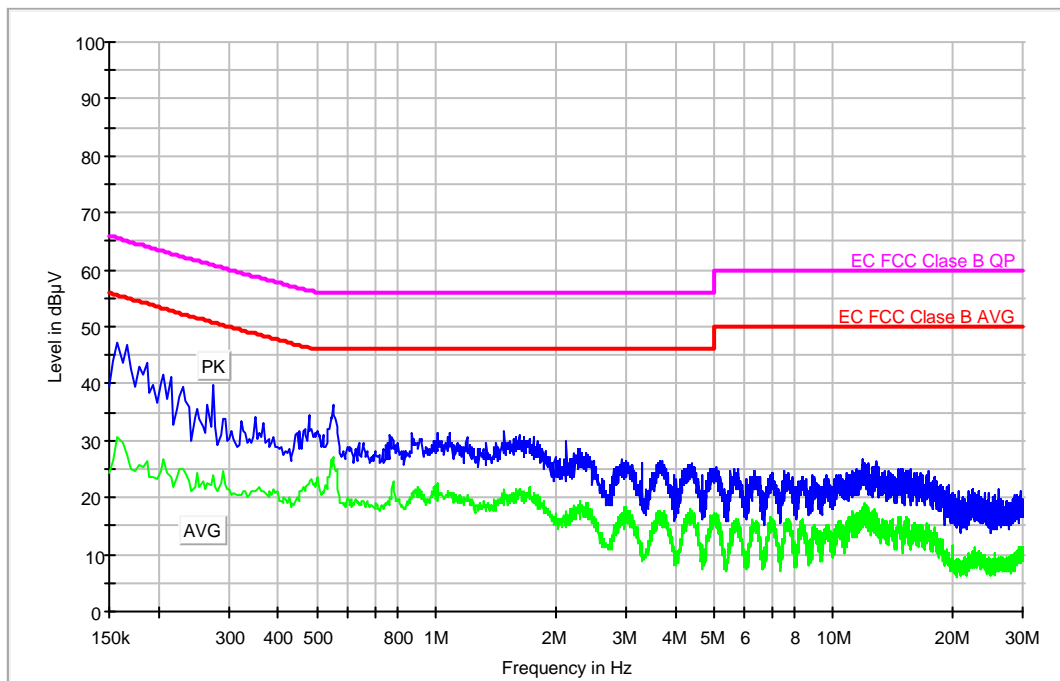
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.166000	50.5	31.5
0.150000	50.3	31.1
0.226000	47.2	30.3
0.202000	46.4	30.1
0.270000	39.2	25.2
0.294000	38.2	24.3
0.546000	37.1	27.0
0.894000	33.5	19.9
1.538000	32.1	20.6
1.362000	32.0	19.4
2.934000	31.3	17.7
1.966000	31.2	17.4
3.022000	30.7	16.0

Continuous Conducted emission : CC01080N

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#0o
 Date: 2010-09-07 09:45
 Setup: EMI conducted
 Mode: EUT ON. IDLE 1900MHz. Neutral noise.

EC FCC Class B ESPI CC



Maximized

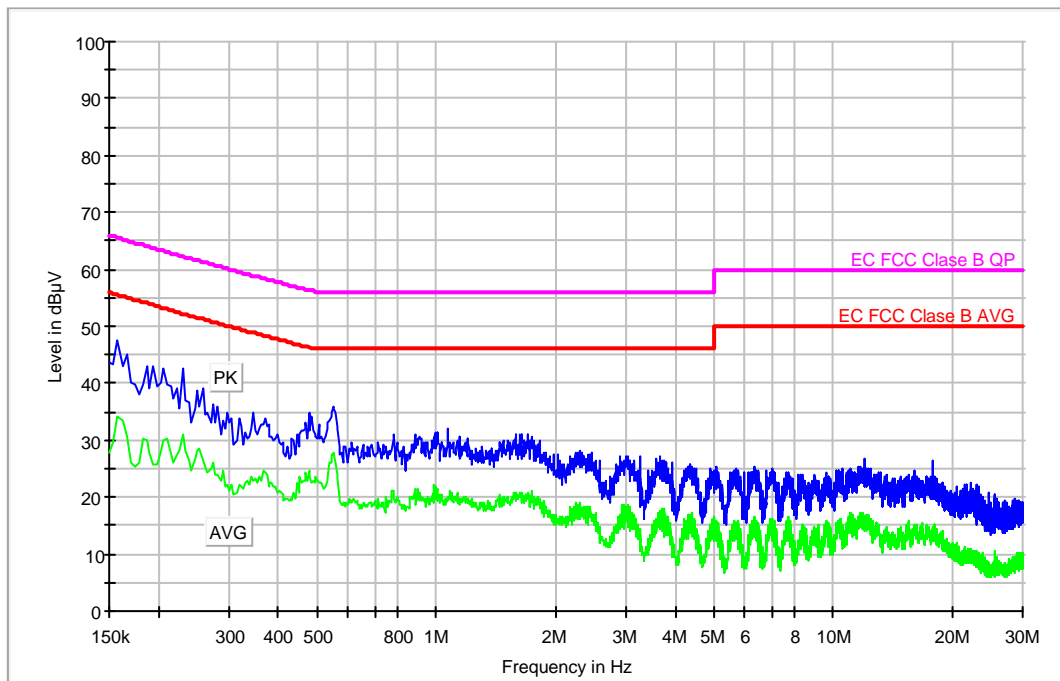
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.158000	47.1	30.5
0.274000	39.9	23.9
0.230000	39.5	25.1
0.550000	36.2	27.0
1.486000	31.6	21.5
2.130000	30.0	17.7
2.922000	26.9	17.1
11.906000	26.6	17.8
12.774000	26.5	15.6
3.706000	26.4	15.9
3.314000	26.0	11.8
4.386000	25.9	17.5
5.058000	25.4	16.6

Continuous Conducted emission : CC0108L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/01
 Operation mode: OM#08
 Date: 2010-09-07 09:51
 Setup: EMI conducted
 Mode: EUT ON. IDLE 1900MHz. Phase noise.

EC FCC Class B ESPI CC



Maximized

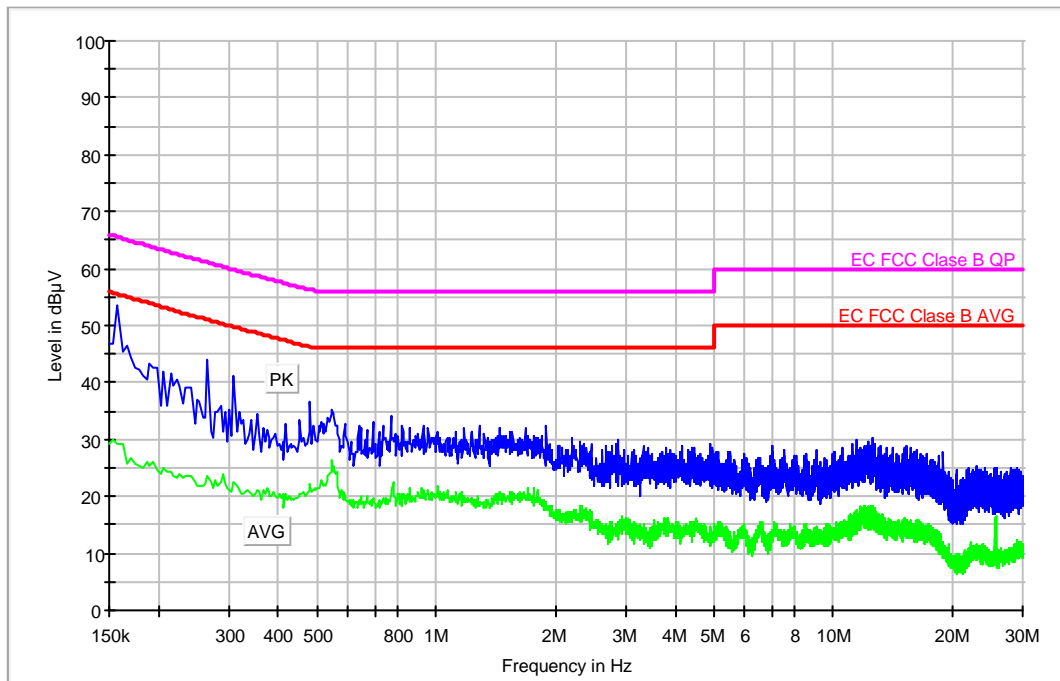
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.158000	47.5	34.0
0.230000	42.5	31.1
0.258000	39.1	26.4
0.550000	36.1	27.3
1.070000	32.0	20.0
3.030000	27.1	17.3
3.646000	27.0	16.8
11.954000	26.9	16.3
17.846000	26.3	14.9
3.926000	25.9	11.8
4.354000	25.6	14.0
6.330000	25.4	15.9
5.074000	25.3	15.4

Continuous Conducted emission : CC02050N

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/02
 Operation mode: OM#05
 Date: 2010-09-07 10:33
 Setup: EMI conducted
 Mode: EUT ON. TCH 850MHz. Neutral noise.

EC FCC Class B ESPI CC



Maximized

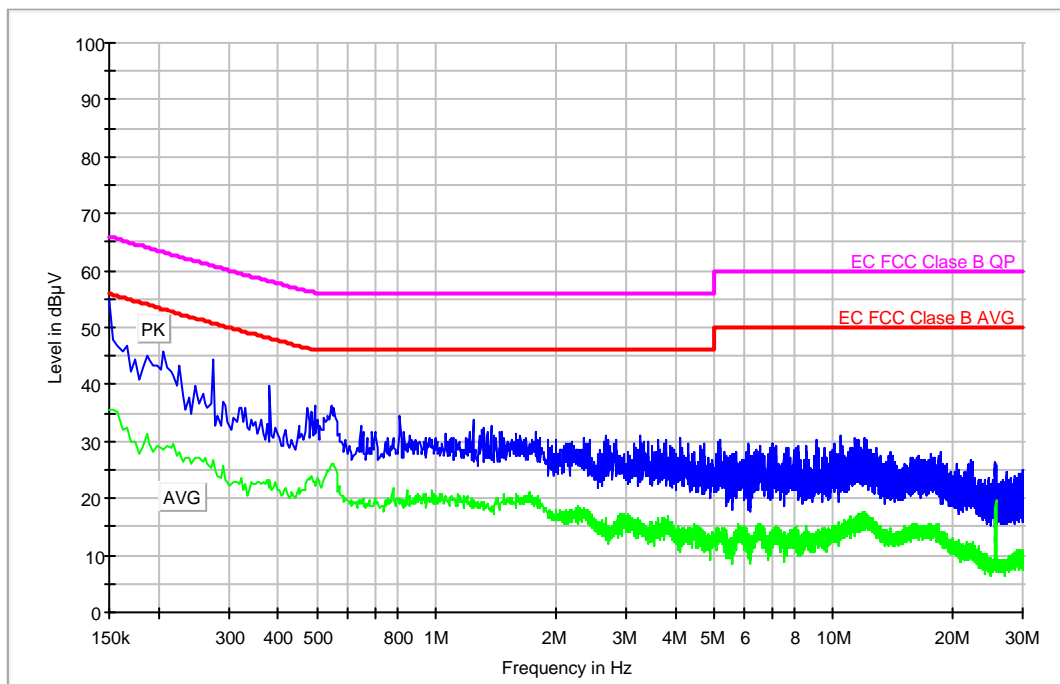
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.158000	53.6	29.3
0.266000	44.2	23.5
0.206000	42.0	25.1
0.310000	41.1	22.5
0.482000	36.6	22.1
0.546000	35.3	26.5
0.354000	34.4	21.1
0.770000	34.1	20.6
0.694000	33.0	19.6
1.282000	32.4	18.2
1.898000	32.2	18.5
1.442000	32.2	20.3
12.554000	30.3	16.3

Continuous Conducted emission : CC0205L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/02
 Operation mode: OM#05
 Date: 2010-09-07 10:47
 Setup: EMI conducted
 Mode: EUT ON. TCH 850MHz. Phase noise.

EC FCC Class B ESPI CC



Maximized

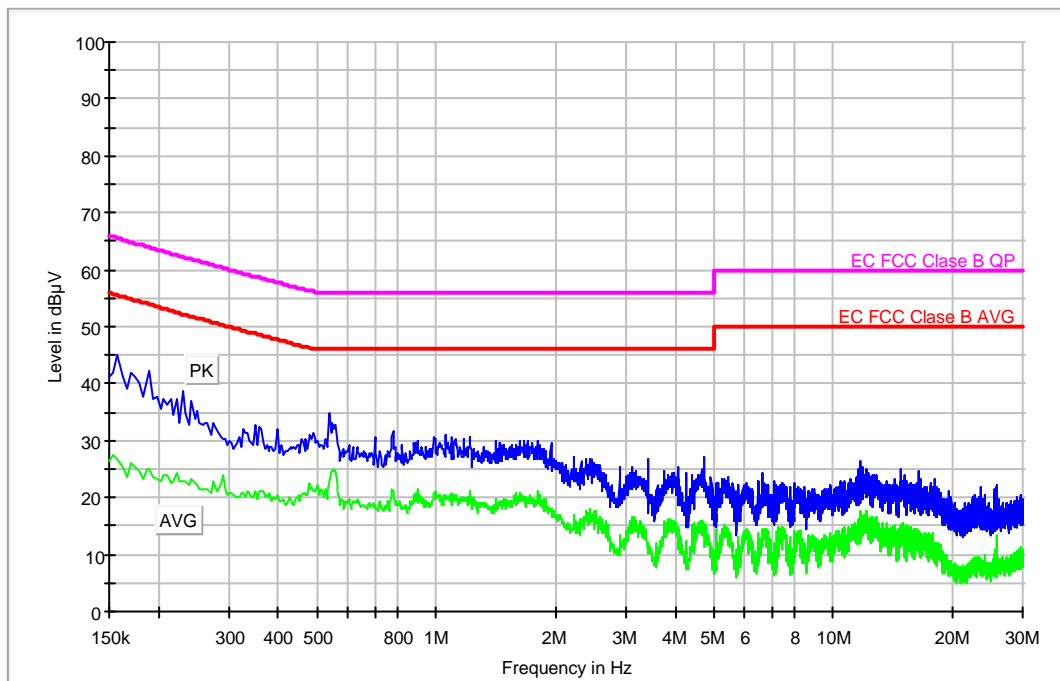
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.150000	55.0	35.5
0.274000	44.3	26.8
0.382000	39.7	23.3
0.542000	36.3	26.2
0.810000	34.6	20.1
1.238000	33.8	19.8
0.646000	32.8	19.6
1.374000	32.6	17.6
10.458000	31.1	14.6
2.662000	31.1	15.2
3.266000	31.0	15.7
11.370000	30.8	16.1
12.030000	30.7	16.7

Continuous Conducted emission : CC02060N

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/02
 Operation mode: OM#06
 Date: 2010-09-07 11:56
 Setup: EMI conducted
 Mode: EUT ON. IDLE 850MHz. Neutral noise.

EC FCC Class B ESPI CC



Maximized

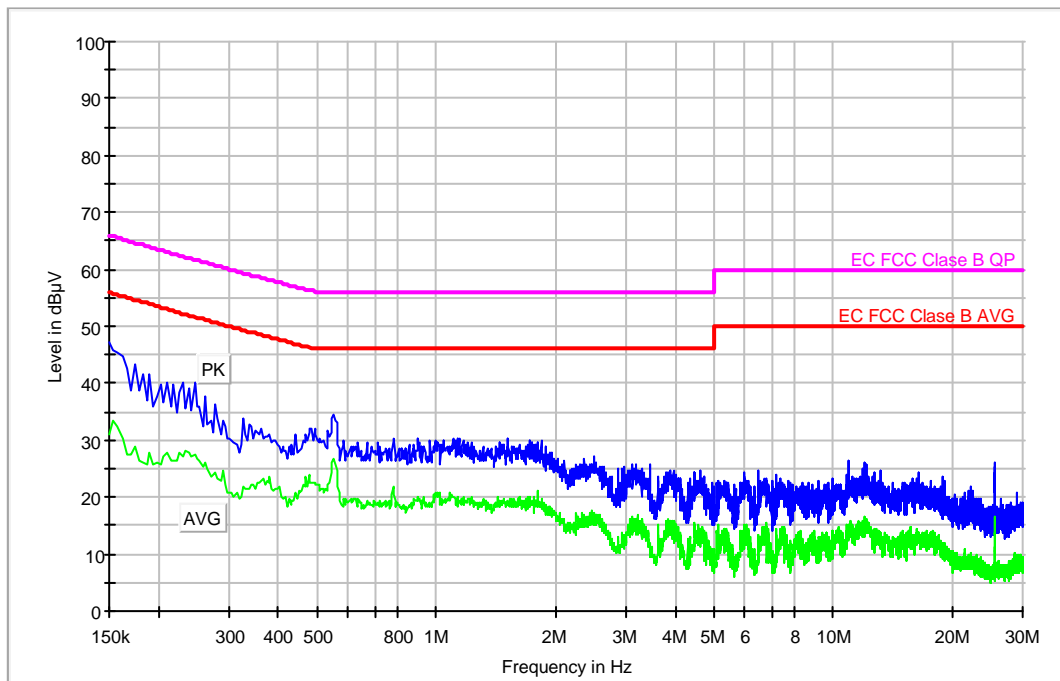
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.158000	44.9	26.7
0.538000	35.0	22.8
0.778000	31.6	21.3
4.750000	26.9	13.2
3.402000	26.9	11.9
11.758000	26.3	17.6
2.894000	25.5	13.5
4.078000	25.2	12.1
11.586000	24.9	16.1
14.786000	24.9	13.9
16.438000	24.5	13.6
4.242000	24.4	11.9
6.610000	24.3	13.8

Continuous Conducted emission : CC0206L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/02
 Operation mode: OM#06
 Date: 2010-09-07 12:00
 Setup: EMI conducted
 Mode: EUT ON. IDLE 850MHz. Phase noise.

EC FCC Class B ESPI CC



Maximized

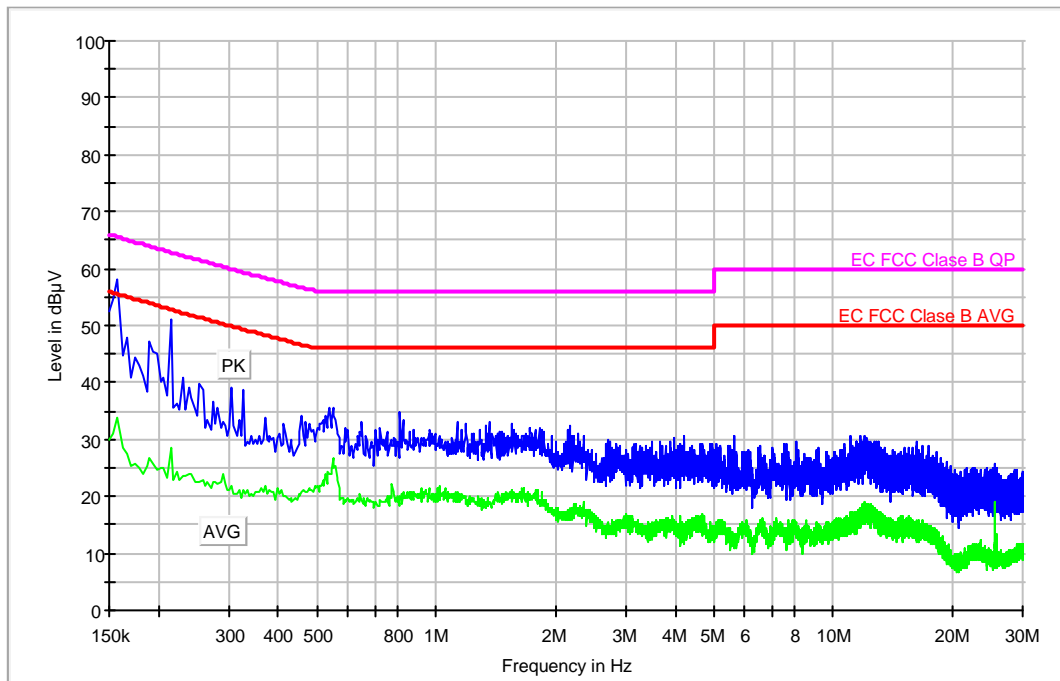
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.150000	47.1	30.9
0.554000	34.5	26.8
10.938000	26.3	14.8
11.974000	26.1	15.9
25.598000	26.1	15.9
3.442000	25.7	11.9
2.966000	25.2	12.7
2.870000	25.0	12.9
13.190000	24.8	13.7
6.486000	24.8	13.2
4.626000	24.7	14.5
3.878000	24.6	15.8
16.482000	24.5	13.5

Continuous Conducted emission : CC02070N

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/02
 Operation mode: OM#07
 Date: 2010-09-07 11:18
 Setup: EMI conducted
 Mode: EUT ON. TCH 1900MHz. Neutral noise.

EC FCC Class B ESPI CC



Maximized

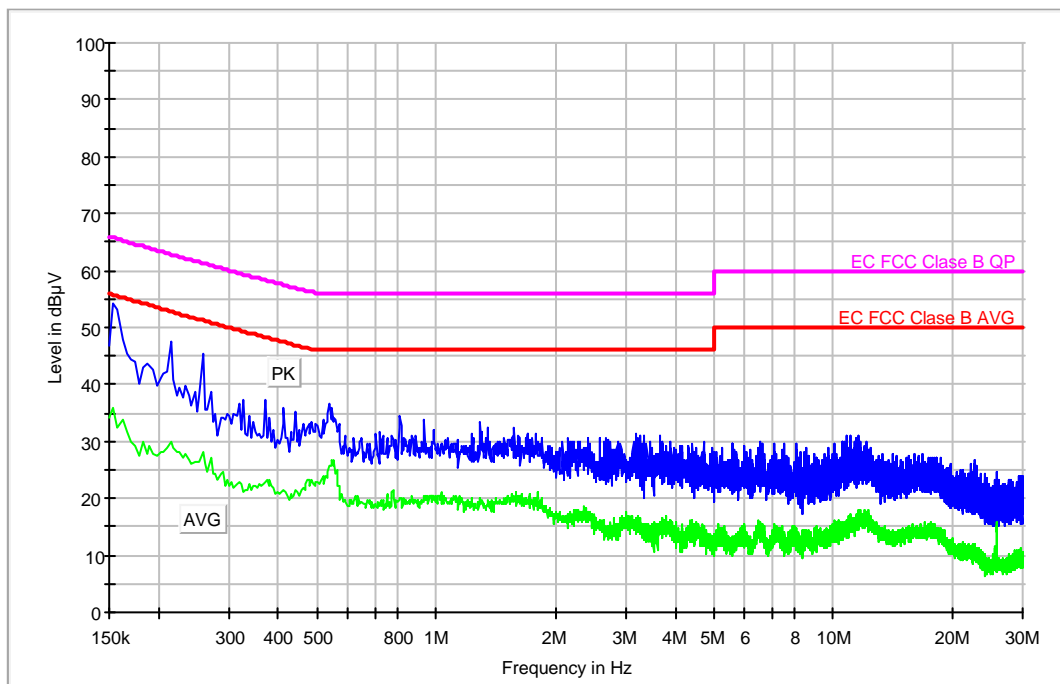
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.158000	58.1	33.7
0.214000	51.1	28.6
0.190000	47.1	26.8
0.306000	39.0	21.8
0.326000	38.8	21.0
0.538000	35.7	23.9
0.810000	34.8	20.2
1.130000	33.2	20.9
0.650000	33.0	19.4
1.358000	33.0	18.7
1.546000	32.7	20.3
2.162000	32.5	18.1
2.154000	31.8	17.5

Continuous Conducted emission : CC0207L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/02
 Operation mode: OM#07
 Date: 2010-09-07 11:49
 Setup: EMI conducted
 Mode: EUT ON. TCH 1900MHz. Phase noise.

EC FCC Class B ESPI CC



Maximized

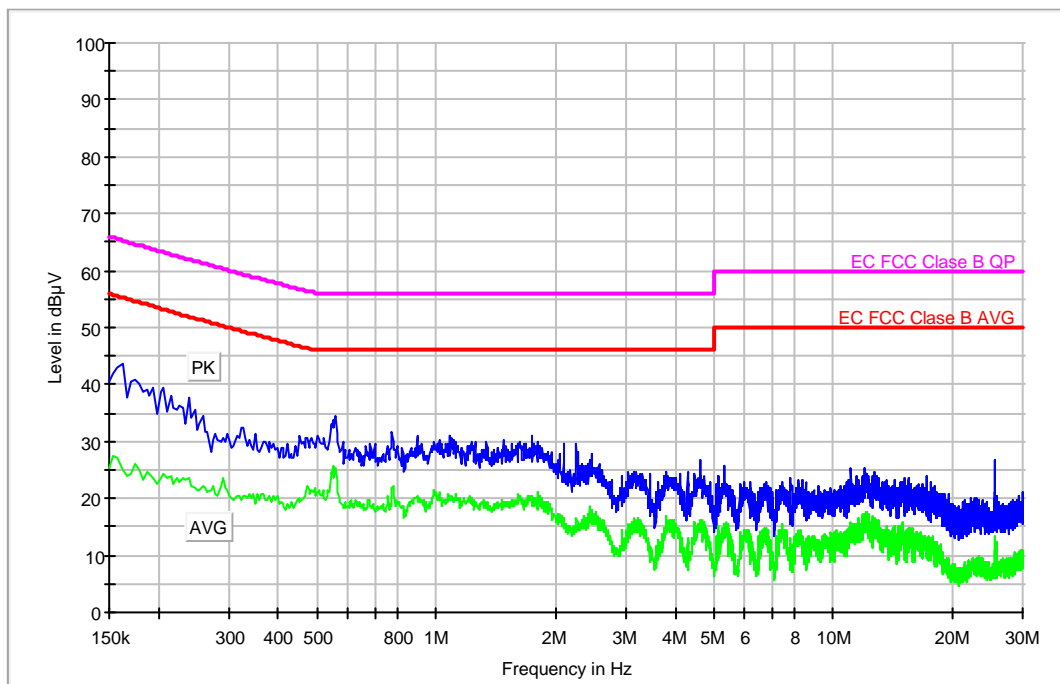
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.154000	54.1	36.0
0.214000	47.4	29.8
0.258000	45.4	28.0
0.326000	37.3	21.3
0.370000	37.2	22.9
0.538000	36.7	25.7
0.414000	35.8	21.5
0.442000	35.3	21.6
0.810000	34.5	20.0
0.934000	33.9	20.3
1.294000	33.5	19.5
1.574000	32.4	20.3
3.178000	31.4	16.1

Continuous Conducted emission : CC02080N

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/02
 Operation mode: OM#08
 Date: 2010-09-07 11:35
 Setup: EMI conducted
 Mode: EUT ON. IDLE 1900MHz. Neutral noise.

EC FCC Class B ESPI CC



Maximized

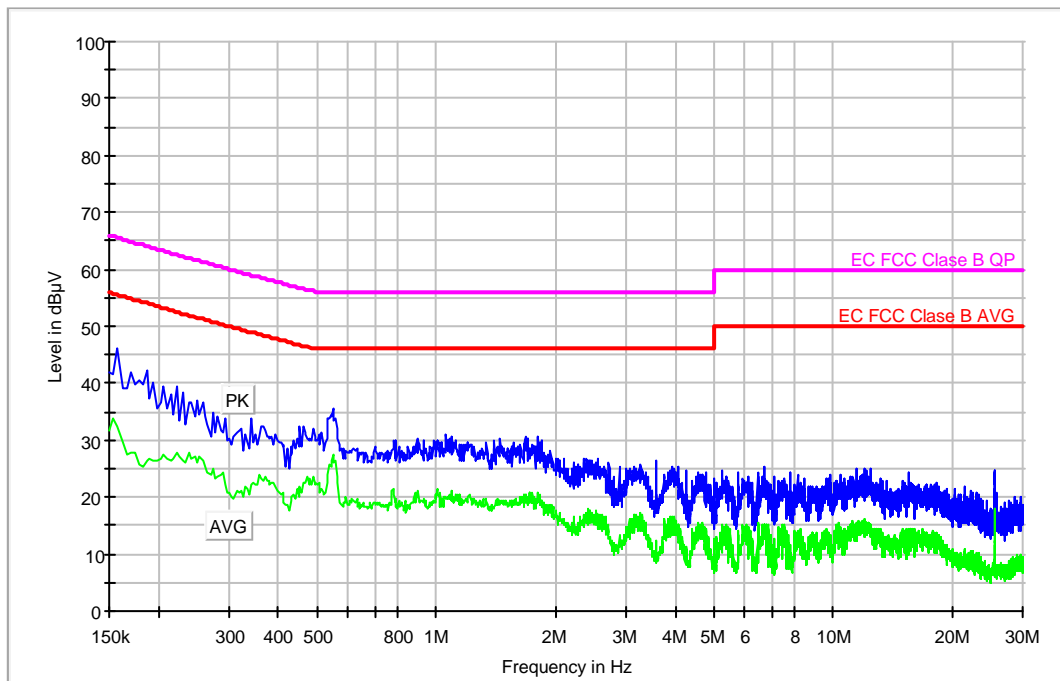
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.162000	43.7	24.9
0.558000	34.5	25.4
1.082000	31.2	20.0
2.090000	29.5	16.7
2.258000	29.4	16.5
4.622000	26.9	16.1
25.622000	26.7	10.4
5.294000	25.6	14.6
11.974000	25.3	17.1
11.106000	25.2	16.0
3.058000	24.8	15.6
3.790000	24.7	17.0
4.286000	24.7	12.7

Continuous Conducted emission : CC0208L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/02
 Operation mode: OM#08
 Date: 2010-09-07 11:41
 Setup: EMI conducted
 Mode: EUT ON. IDLE 1900MHz. Phase noise.

EC FCC Class B ESPI CC



Maximized

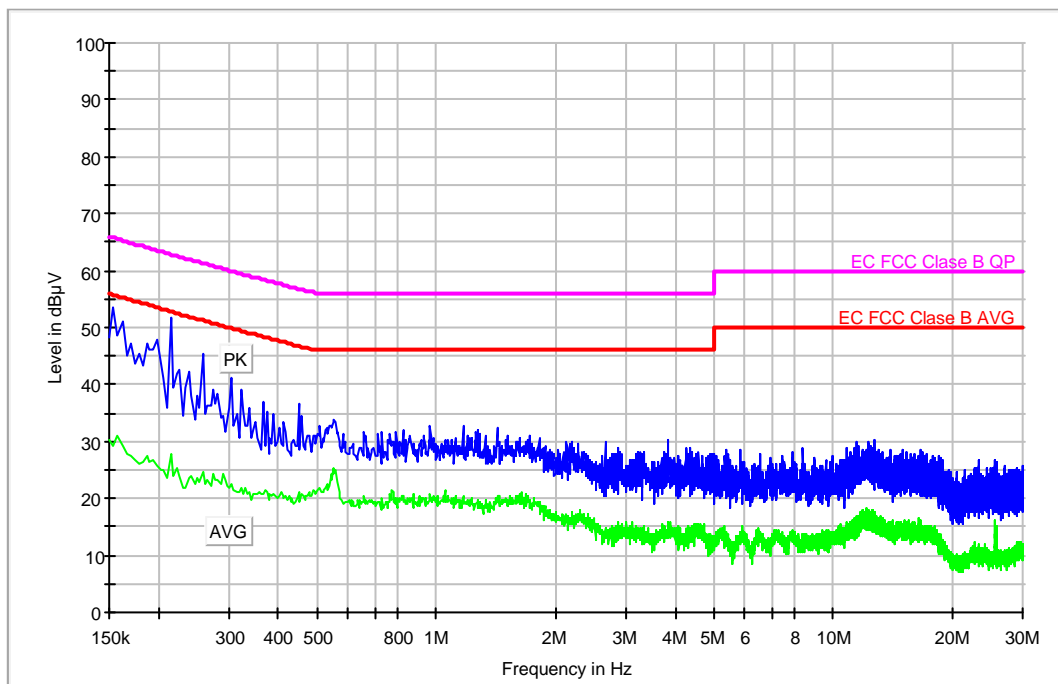
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.158000	46.3	32.4
0.186000	42.4	26.5
0.150000	41.8	31.6
0.170000	41.7	27.9
0.154000	41.4	33.8
0.178000	40.4	25.6
0.194000	40.1	26.3
0.182000	39.9	25.5
0.174000	39.6	27.9
0.222000	39.6	27.9
0.206000	39.5	27.6
0.166000	39.2	27.5
0.162000	39.2	29.6

Continuous Conducted emission : CC03050N

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/03
 Operation mode: OM#05
 Date: 2010-09-07 12:26
 Setup: EMI conducted
 Mode: EUT ON. TCH 850MHz. Neutral noise.

EC FCC Class B ESPI CC



Maximized

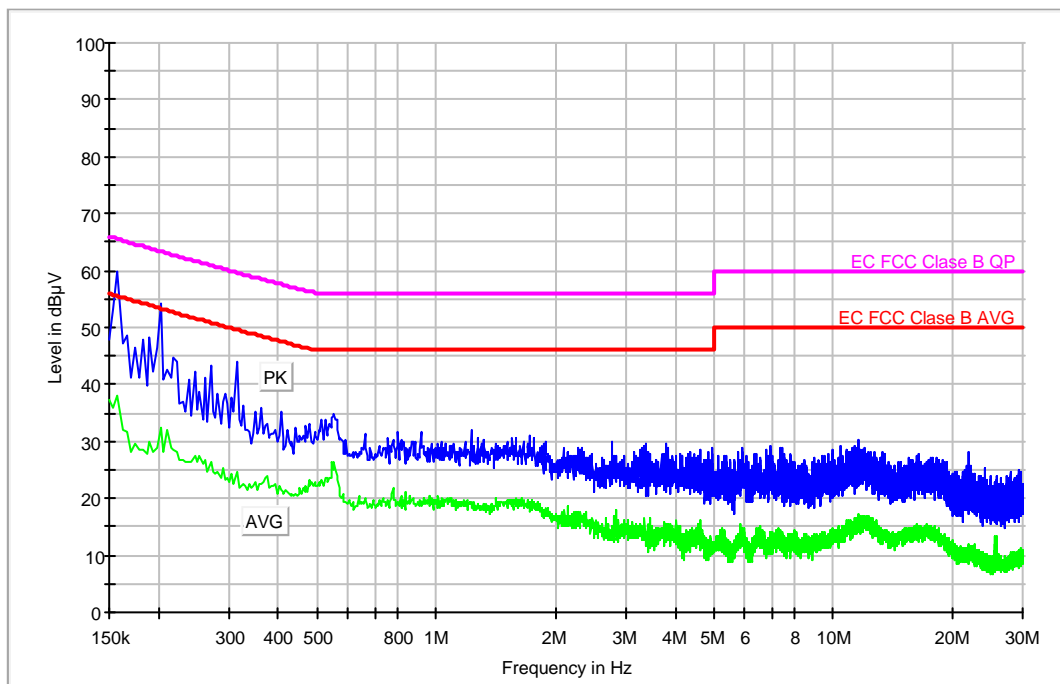
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.154000	53.6	29.1
0.214000	51.7	27.9
0.258000	45.4	24.6
0.238000	42.1	23.7
0.306000	41.2	22.6
0.322000	39.0	22.0
0.366000	36.8	20.8
0.450000	36.5	21.3
0.390000	35.0	20.8
0.458000	34.6	20.9
1.170000	32.9	20.3
0.966000	32.8	20.7
1.422000	32.2	19.6

Continuous Conducted emission : CC0305L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/03
 Operation mode: OM#05
 Date: 2010-09-07 12:29
 Setup: EMI conducted
 Mode: EUT ON. TCH 850MHz. Phase noise.

EC FCC Class B ESPI CC



Maximized

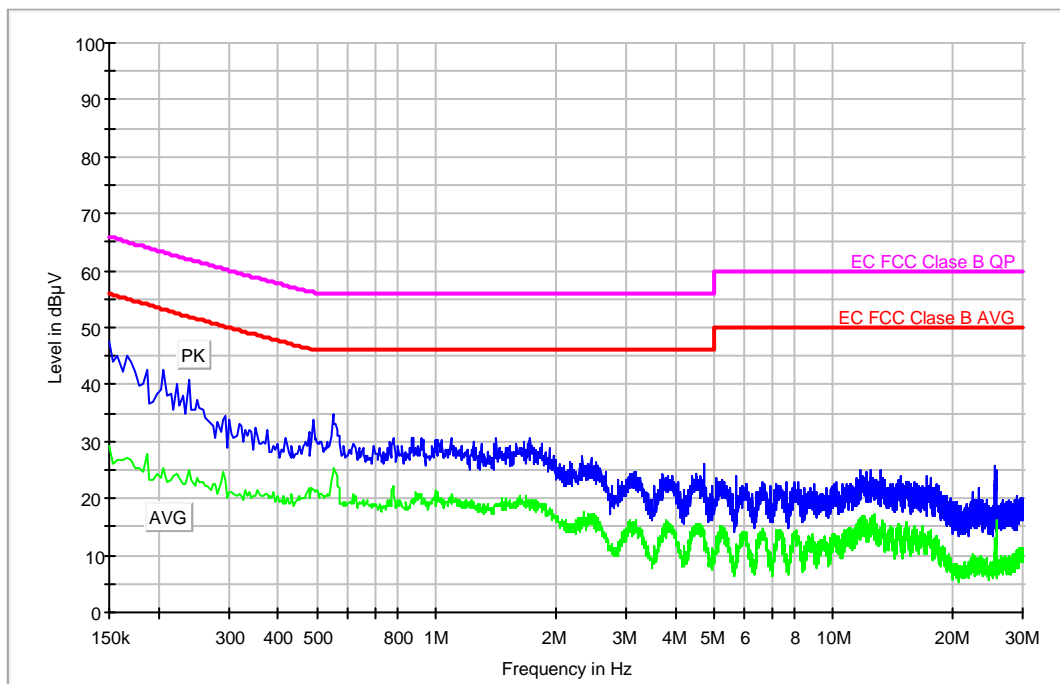
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.158000	59.9	38.2
0.202000	54.1	32.3
0.182000	48.0	28.4
0.314000	44.1	24.5
0.270000	43.3	26.5
0.246000	42.2	27.3
0.262000	41.2	26.9
0.362000	35.9	22.6
0.554000	35.0	26.4
1.222000	32.0	19.4
11.530000	30.2	16.7
2.778000	29.9	13.7
3.790000	29.5	14.9

Continuous Conducted emission : CC03060N

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/03
 Operation mode: OM#06
 Date: 2010-09-07 12:34
 Setup: EMI conducted
 Mode: EUT ON. IDLE 850MHz. Neutral noise.

EC FCC Class B ESPI CC



Maximized

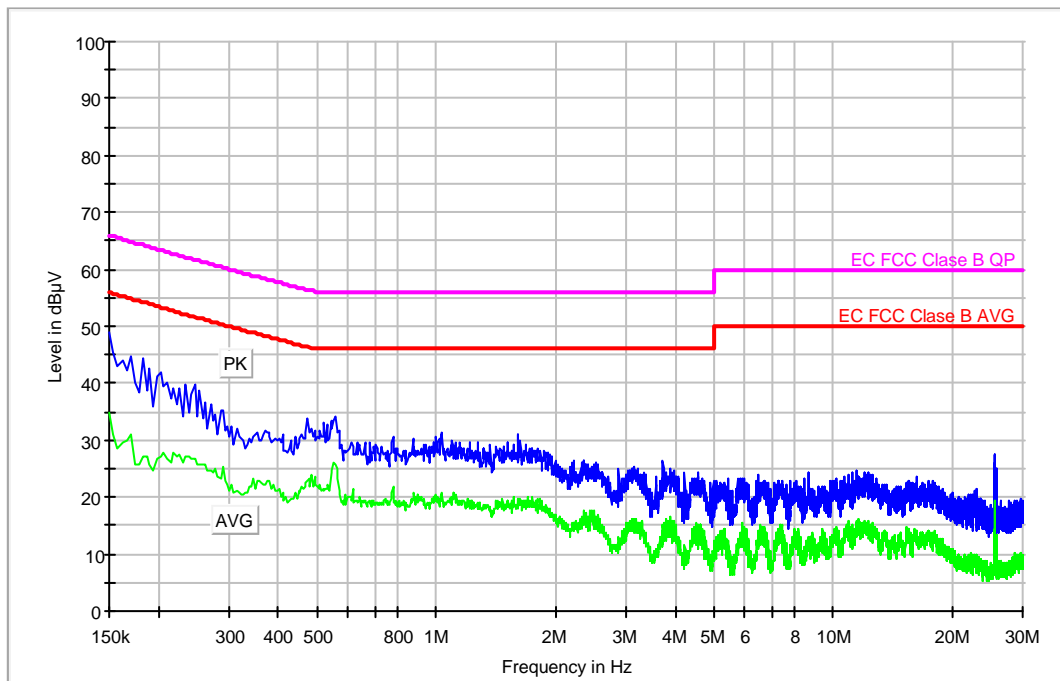
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.150000	47.6	29.2
0.550000	34.9	24.8
4.730000	26.2	13.2
25.614000	25.8	13.2
13.122000	25.1	15.0
12.430000	24.9	16.6
25.646000	24.9	12.6
3.166000	24.6	15.9
3.726000	24.3	13.4
17.190000	24.1	12.3
5.706000	23.8	11.7
14.714000	23.8	15.2
5.074000	23.5	12.9

Continuous Conducted emission : CC0306L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/03
 Operation mode: OM#06
 Date: 2010-09-07 12:40
 Setup: EMI conducted
 Mode: EUT ON. IDLE 850MHz. Phase noise.

EC FCC Class B ESPI CC



Maximized

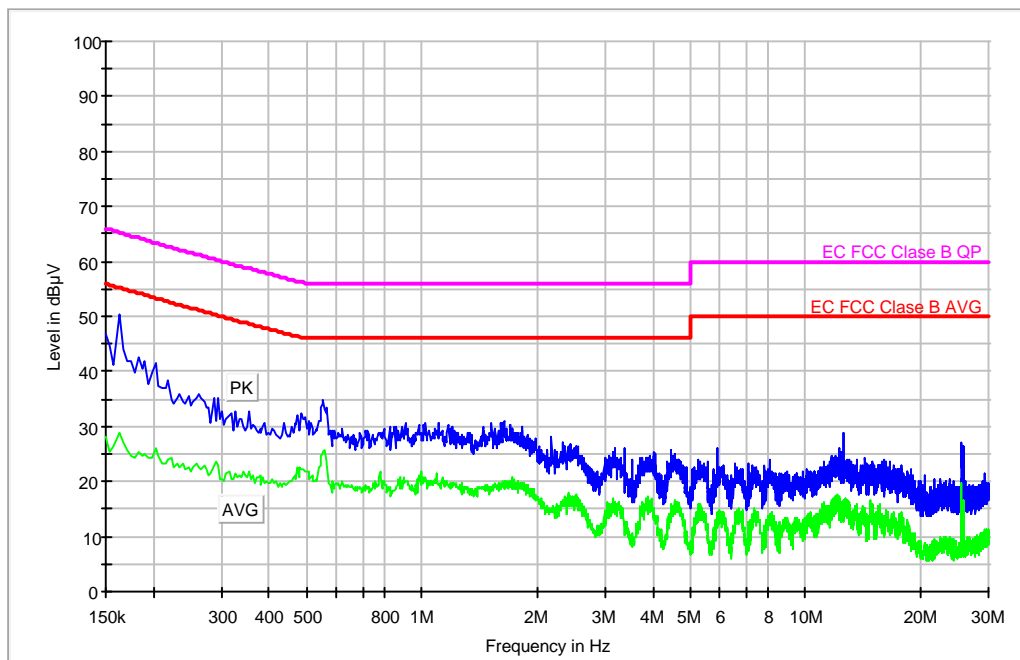
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.150000	48.9	34.8
0.182000	44.3	27.3
0.202000	41.9	27.0
0.558000	34.0	25.6
1.606000	31.1	18.4
25.602000	27.6	19.5
25.578000	27.5	13.6
3.726000	26.3	15.2
25.558000	25.9	10.4
3.146000	25.2	15.6
25.658000	25.2	13.2
11.406000	24.5	14.8
4.234000	24.3	11.5

Continuous Conducted emission : CC03070N

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/03
 Operation mode: OM#07
 Date: 2010-09-07 13:13
 Setup: EMI conducted
 Mode: EUT ON. TCH 1900MHz. Neutral noise.

EC FCC Class B ESPI CC



Maximized

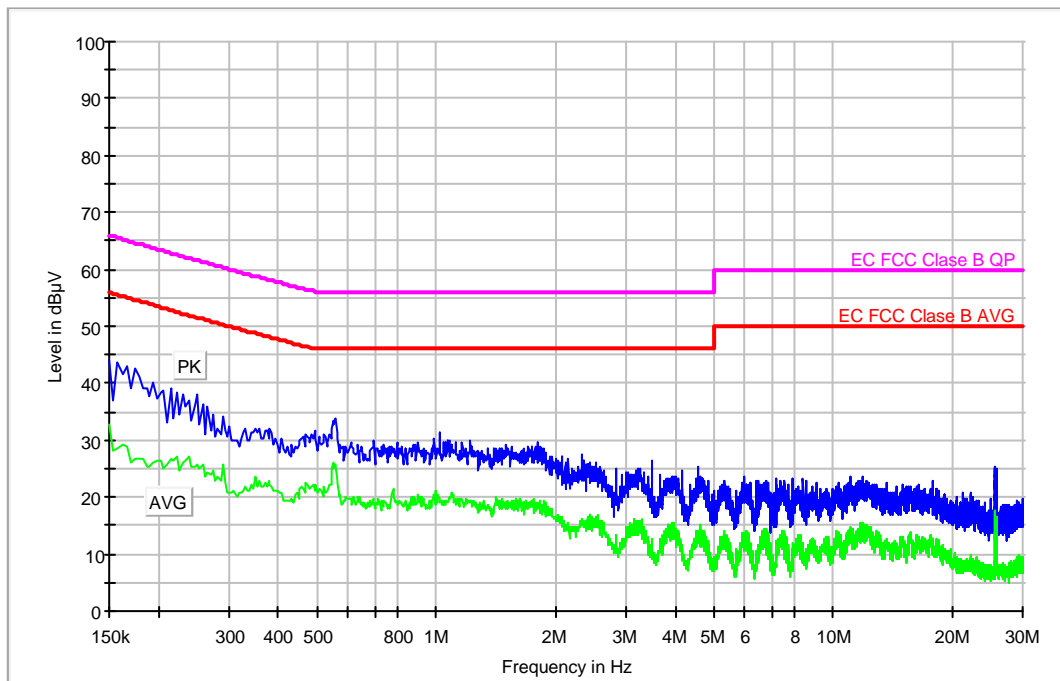
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.162000	50.4	28.8
0.554000	35.0	25.2
12.594000	29.0	16.5
2.182000	28.1	14.6
25.642000	26.9	11.4
25.658000	26.5	13.2
5.902000	26.1	14.4
3.370000	26.0	12.5
12.246000	26.0	15.3
4.482000	25.7	16.0
4.042000	25.2	13.7
14.342000	24.2	13.3
8.090000	24.0	13.4

Continuous Conducted emission : CC0307L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/03
 Operation mode: OM#07
 Date: 2010-09-07 13:18
 Setup: EMI conducted
 Mode: EUT ON. TCH 1900MHz. Phase noise.

EC FCC Class B ESPI CC



Maximized

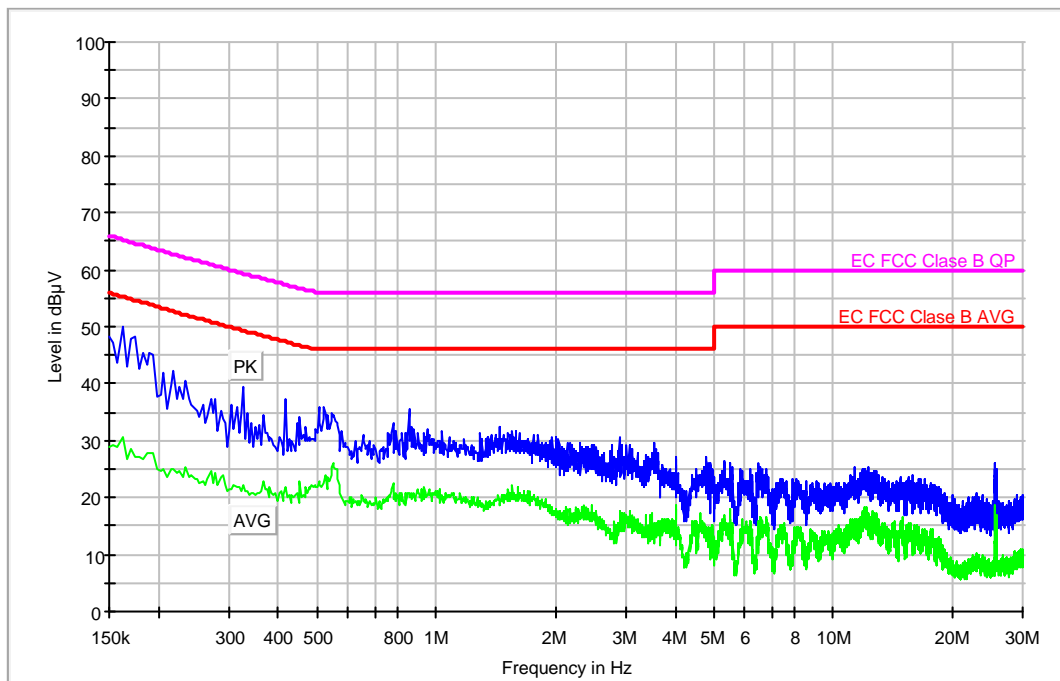
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.150000	44.0	32.7
0.158000	43.6	28.5
0.558000	33.9	25.7
3.506000	26.3	12.7
25.586000	25.2	10.9
4.554000	25.2	13.7
3.266000	25.1	14.6
2.830000	25.0	13.4
25.674000	25.0	16.6
4.178000	24.8	10.4
3.670000	23.9	11.7
11.866000	23.6	15.5
5.946000	23.6	12.6

Continuous Conducted emission : CC03080N

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/03
 Operation mode: OM#08
 Date: 2010-09-07 13:33
 Setup: EMI conducted
 Mode: EUT ON. TCH 1900MHz. Neutral noise.

EC FCC Class B ESPI CC



Maximized

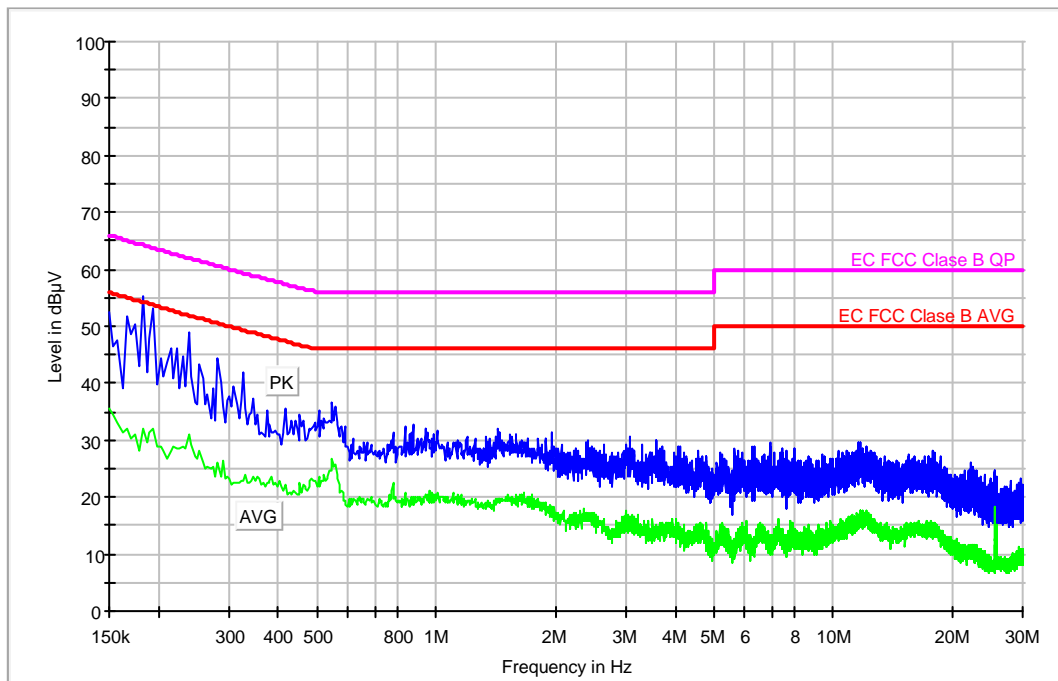
Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.162000	49.9	30.8
0.218000	42.3	24.9
0.326000	39.3	22.3
0.418000	37.4	22.0
0.506000	35.8	22.7
0.854000	35.4	20.7
0.778000	32.9	22.4
1.442000	32.4	19.7
2.890000	30.8	15.7
3.530000	29.4	14.6
2.774000	29.2	13.6
4.038000	27.0	16.7
4.770000	26.9	14.9

Continuous Conducted emission : CC0308L1

Detector : Peak / Average / Cuasi-peak

Project: 31912rem.003
 Company: ERICSSON AB
 Sample: S/03
 Operation mode: OM#08
 Date: 2010-09-07 14:23
 Setup: EMI conducted
 Mode: EUT ON. TCH 1900MHz. Phase noise.

EC FCC Class B ESPI CC



Maximized

Frequency (MHz)	MaxPeak-ClearWrite (dBµV)	Average-ClearWrite (dBµV)
0.182000	55.1	31.9
0.194000	53.1	32.1
0.150000	52.5	35.6
0.166000	51.9	32.2
0.238000	49.1	31.1
0.214000	46.2	28.3
0.282000	44.4	26.2
0.254000	43.3	28.1
0.326000	41.8	22.9
0.546000	36.7	26.8
0.874000	32.7	20.1
1.434000	31.9	19.7
1.954000	31.5	18.4