10.2. PEAK-TO-AVERAGE RATIO

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

Peak-To-Average Ratio:

Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
GSM850	GPRS	32.79	32.43	0.36
Mode	Ch. No.	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
GSM850	EGPRS	31.07	28.43	2.64
*Peak Reading = Average Reading + Peak-to-Average Ratio				

Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
GSM1900	GPRS	29.97	29.7	0.27
Mode	Ch. No.	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
GSM1900	EGPRS	30.3	28	2.3
*Peak Reading = Average Reading + Peak-to-Average Ratio				

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Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
UMTS B2	REL99	27.94	24.97	2.97
Mode	Ch. No.	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
UMTS B2	HSDPA	27.4	23.48	3.92
*Peak Reading = Average Reading + Peak-to-Average Ratio				

Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
UMTS B4	REL99	27.9	25	2.9
Mode	Ch. No.	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
UMTS B4	HSDPA	27.35	23.48	3.87
*Peak Reading = Average Reading + Peak-to-Average Ratio				

Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
UMTS B5	REL99	27.82	24.91	2.91
Mode	Ch. No.	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
UMTS B5	HSDPA	27.36	23.5	3.86
*Peak Reading = Average Reading + Peak-to-Average Ratio				

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Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
BC0	1xRTT	29.13	24.94	4.19

Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
BC0	EVDO A	29.29	24.59	4.7

*Peak Reading = Average Reading + Peak-to-Average Ratio

Mode	Ch. No.	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
BC10	1xRTT	29.52	24.94	4.58

Mode	Ch. No.	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
BC10	EVDO A	28.98	24.44	4.54

*Peak Reading = Average Reading + Peak-to-Average Ratio

Mode	Ch. No.	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
BC1	1xRTT	29.4	24.61	4.79

Mode	Ch. No.	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
BC1	EVDO A	30	24.4	5.60

*Peak Reading = Average Reading + Peak-to-Average Ratio

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Mode	Ch. No.	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
BC15	1xRTT	29.46	24.77	4.69

Mode	Ch. No.	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
BC15	EVDO A	28.21	24.75	3.46

*Peak Reading = Average Reading + Peak-to-Average Ratio

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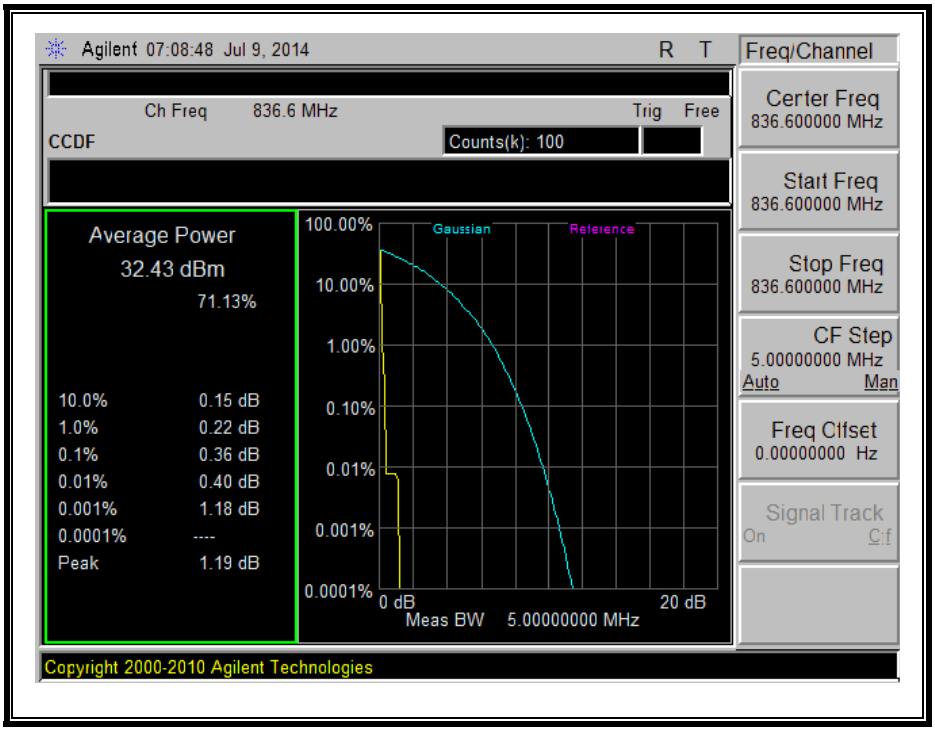
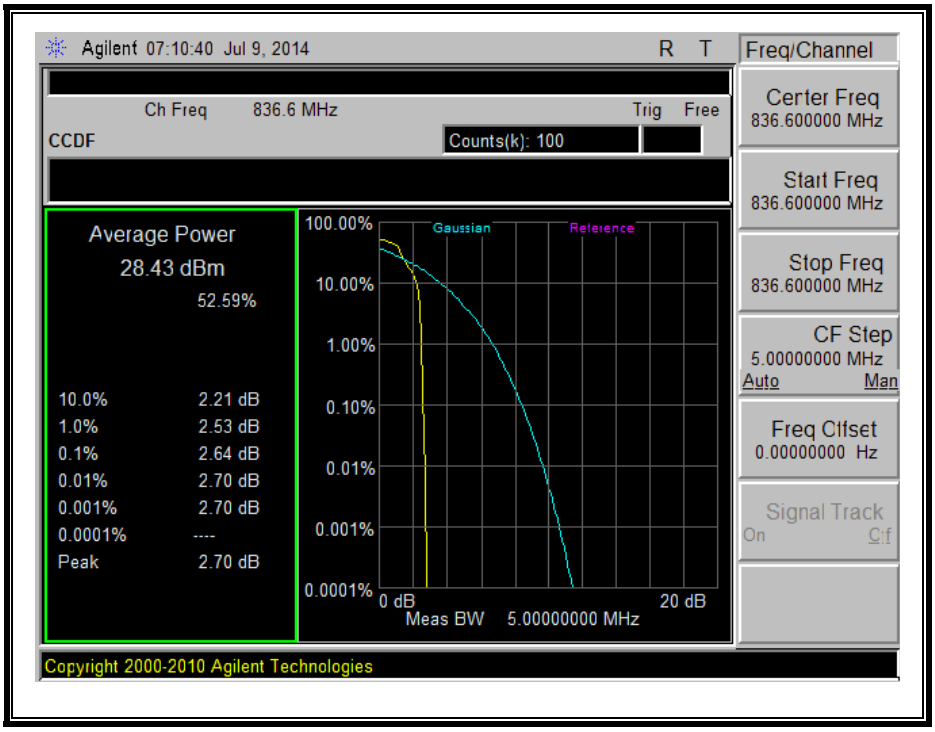
GSM850, GPRS



GSM850, EGPRS



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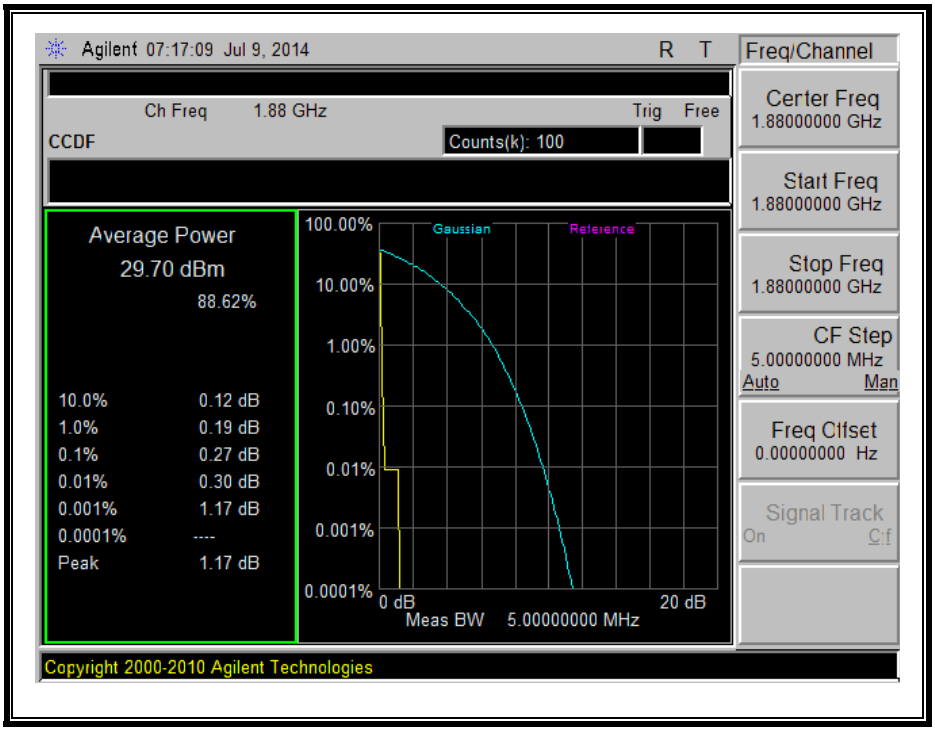
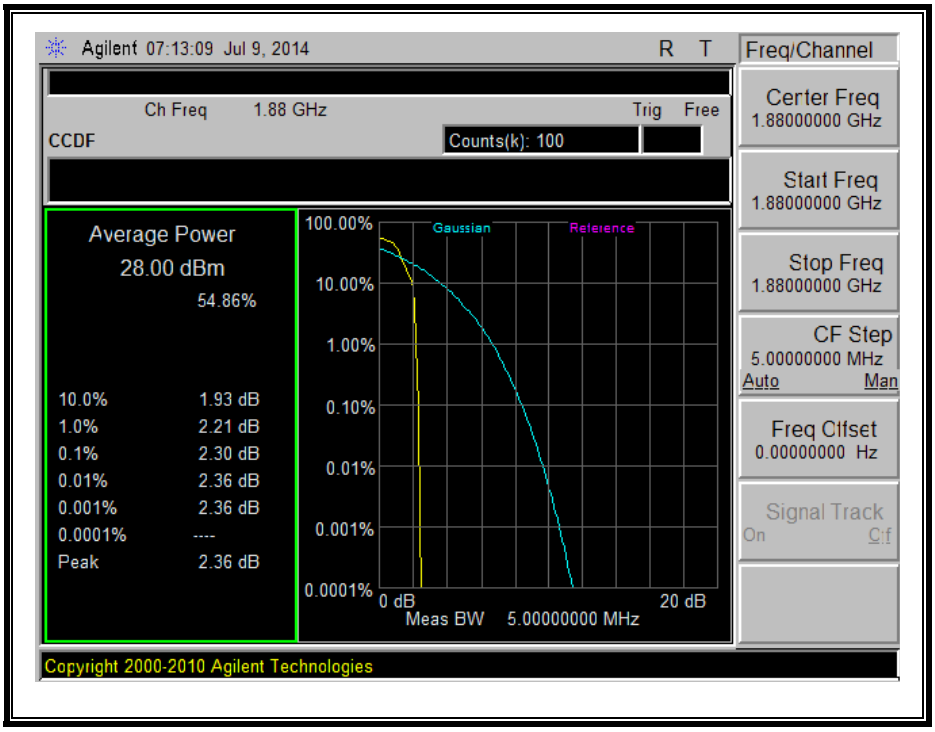
GSM1900, GPRS



GSM1900, EGPRS



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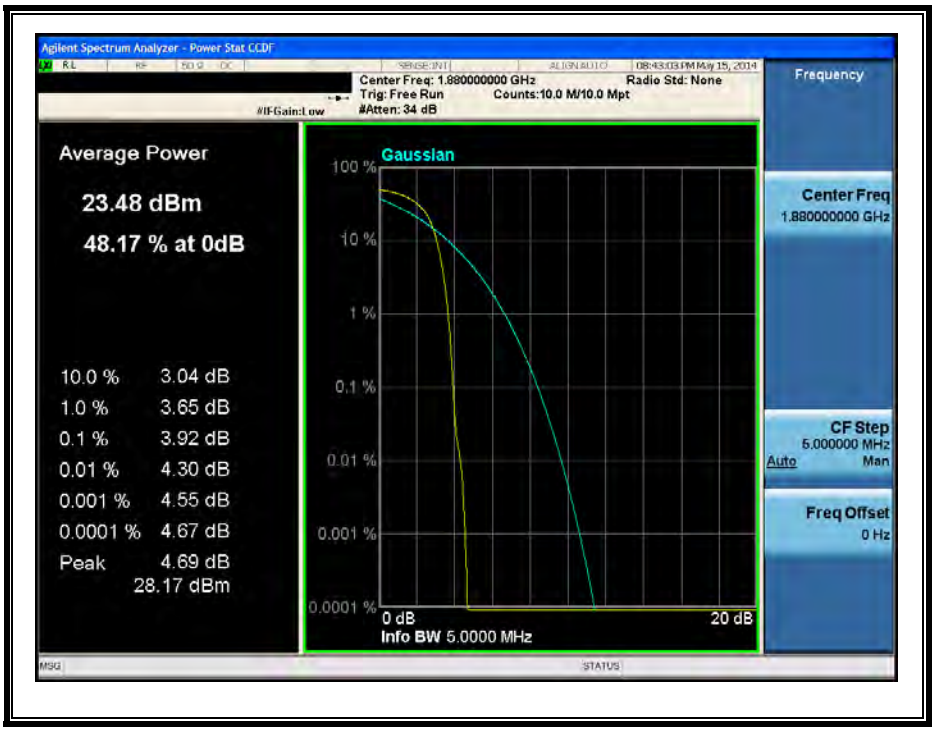
UMTS 1900, REL99 BAND 2

UMTS 1900, HSDPA BAND 2



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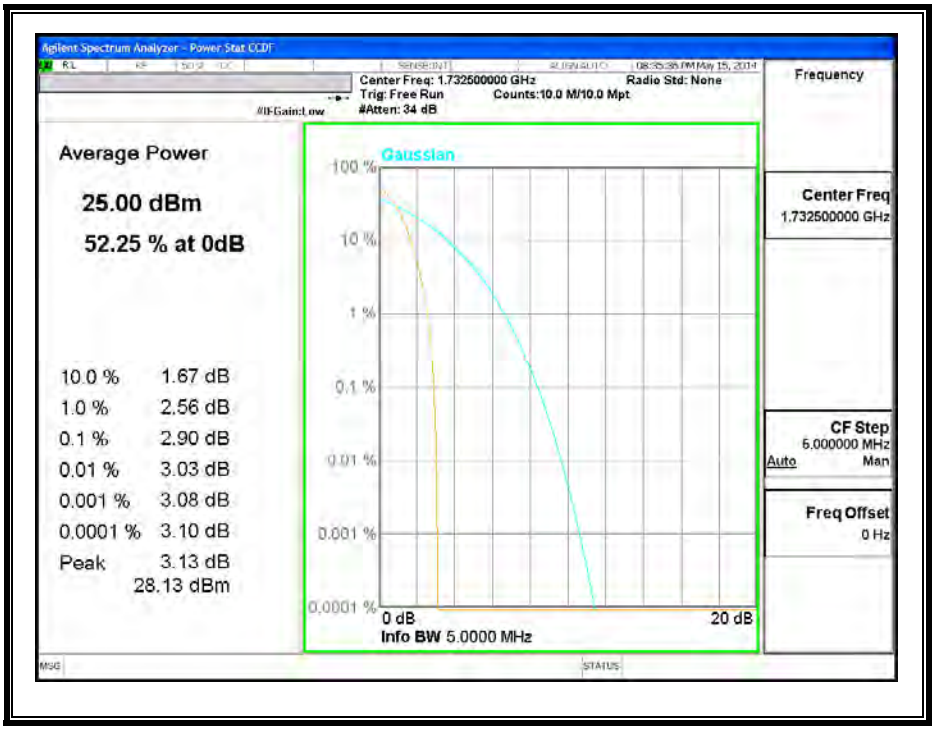
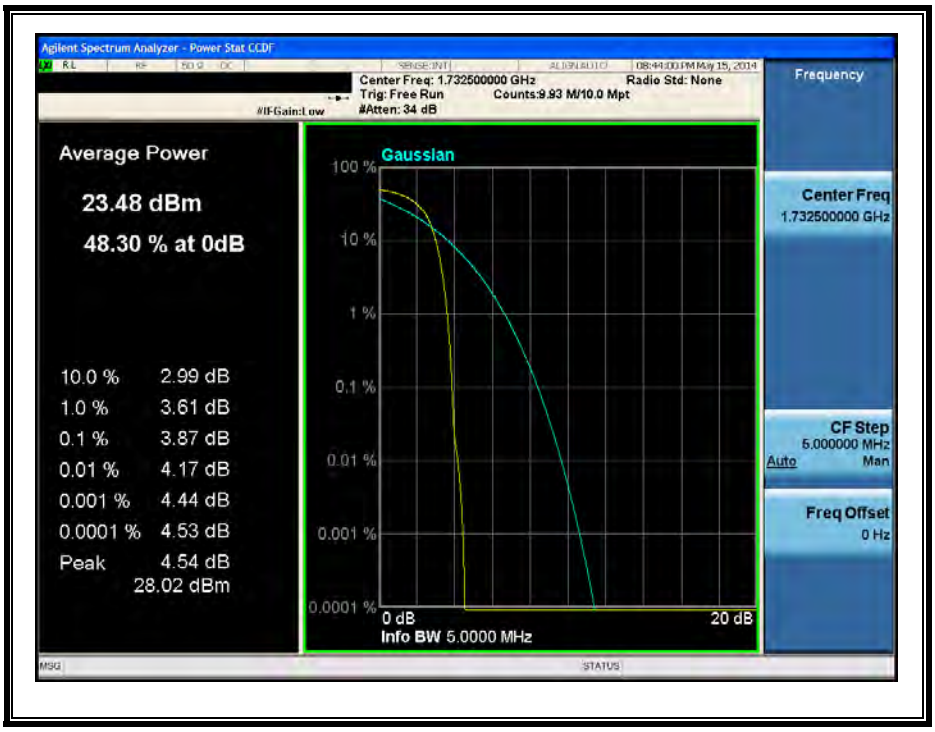
UMTS 1700, REL99 BAND 4



UMTS 1700, HSDPA BAND 4



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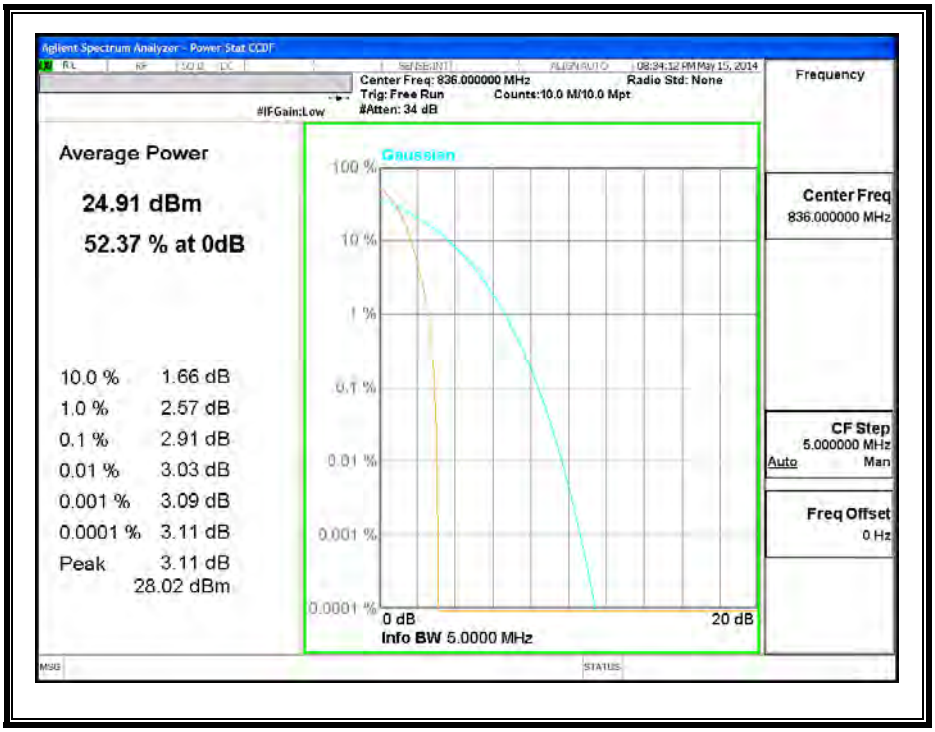
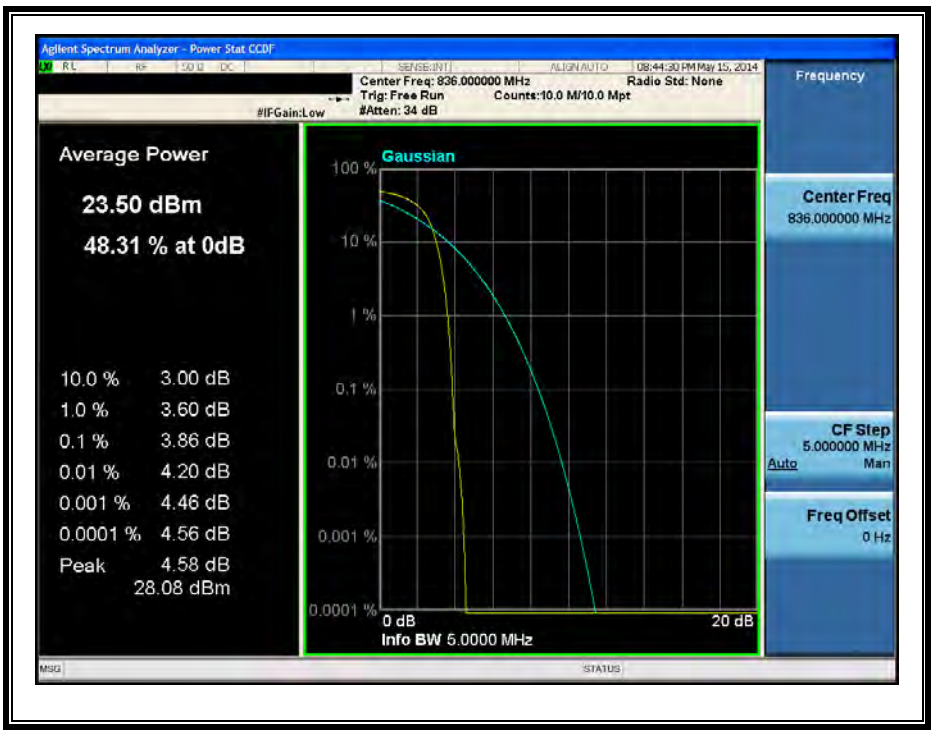
UMTS850, REL 99 BAND 5



UMTS850, HSDPA BAND 5



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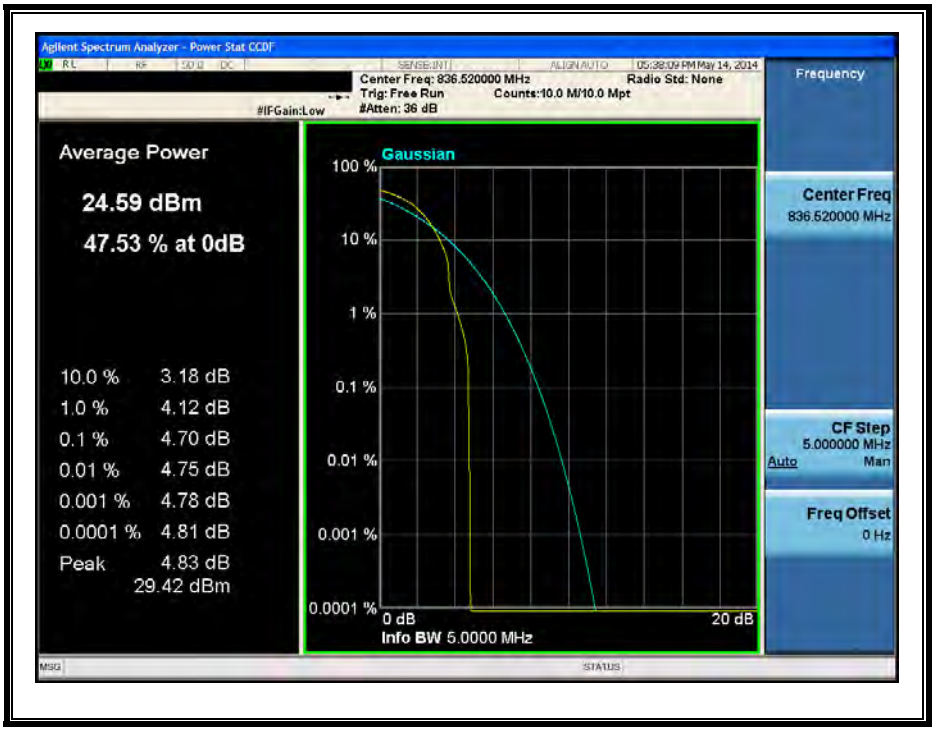
BC 0, 1xRTT

BC 0, EVDO A



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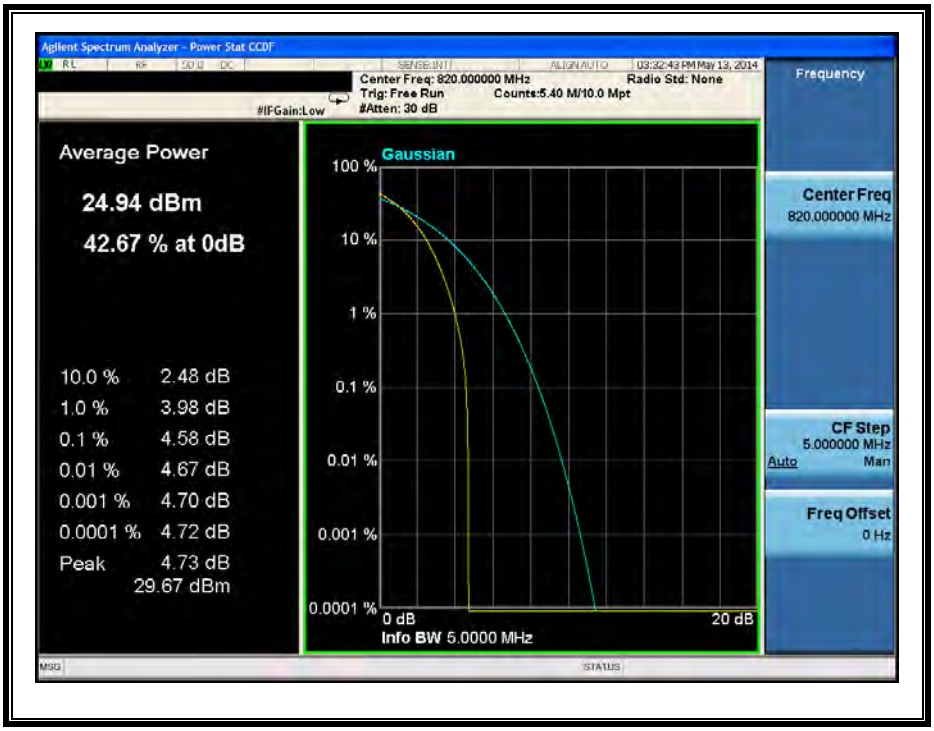
BC10, 1xRTT



BC10, EVDO A

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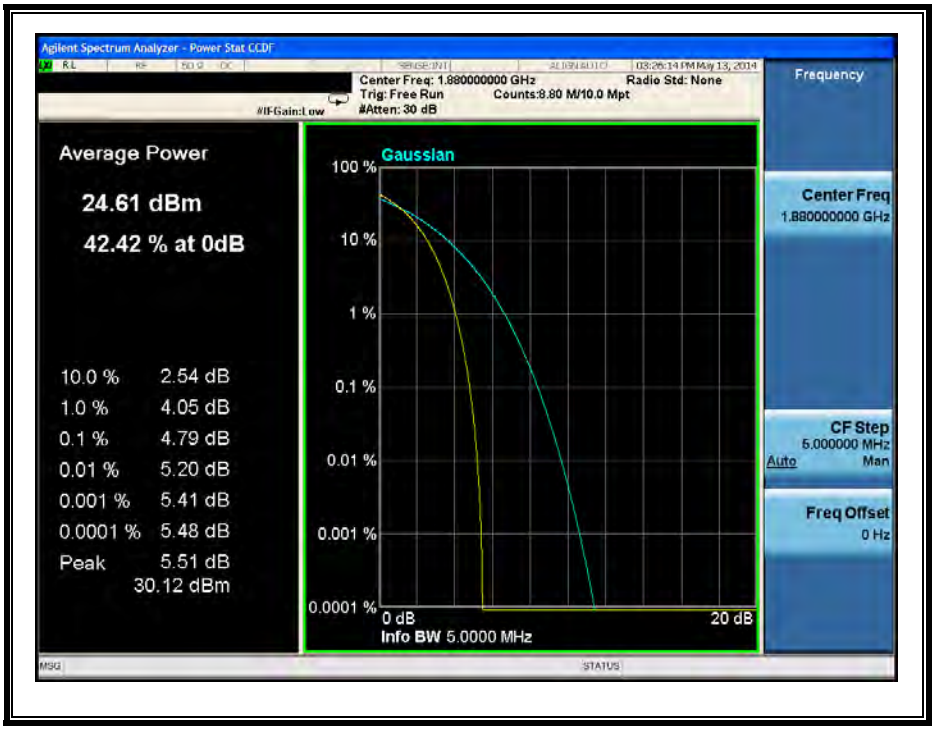
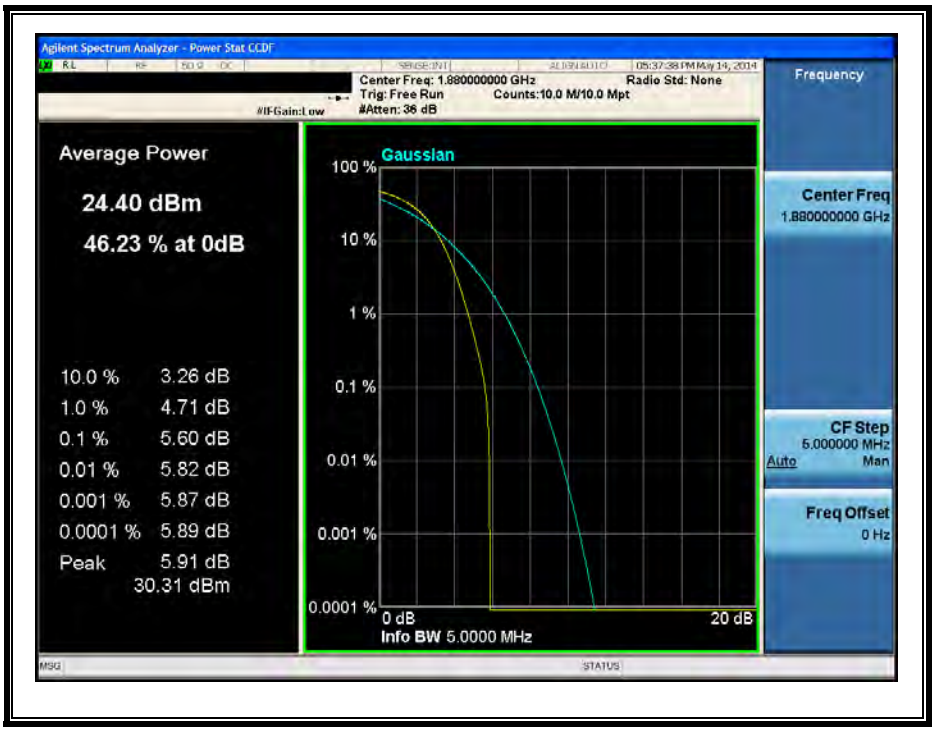
BC 1, 1xRTT



BC 1, EVDO A



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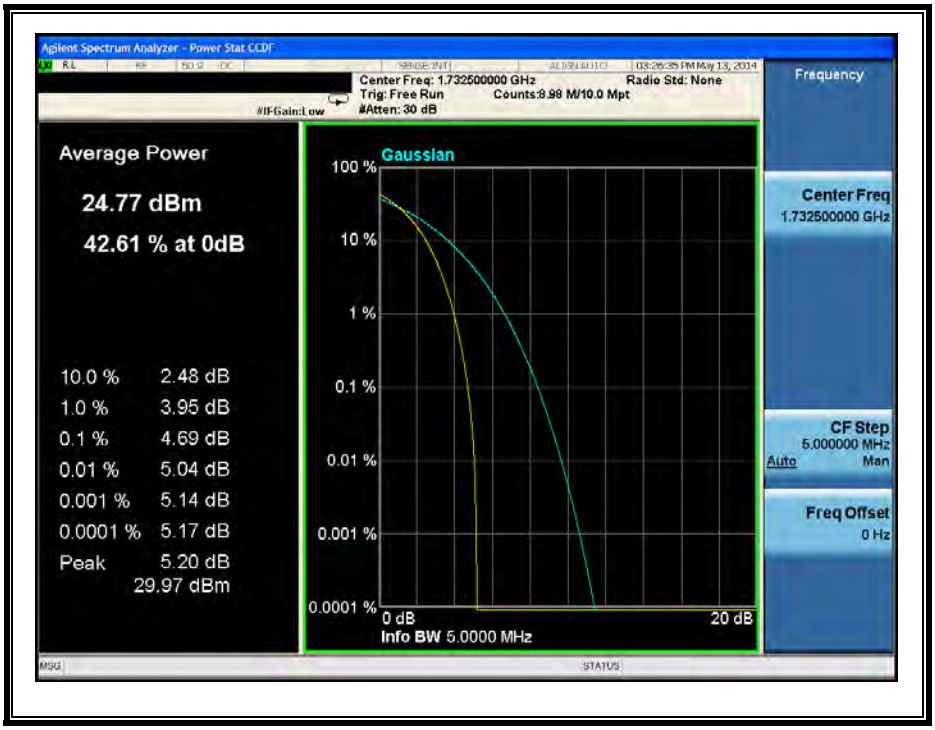
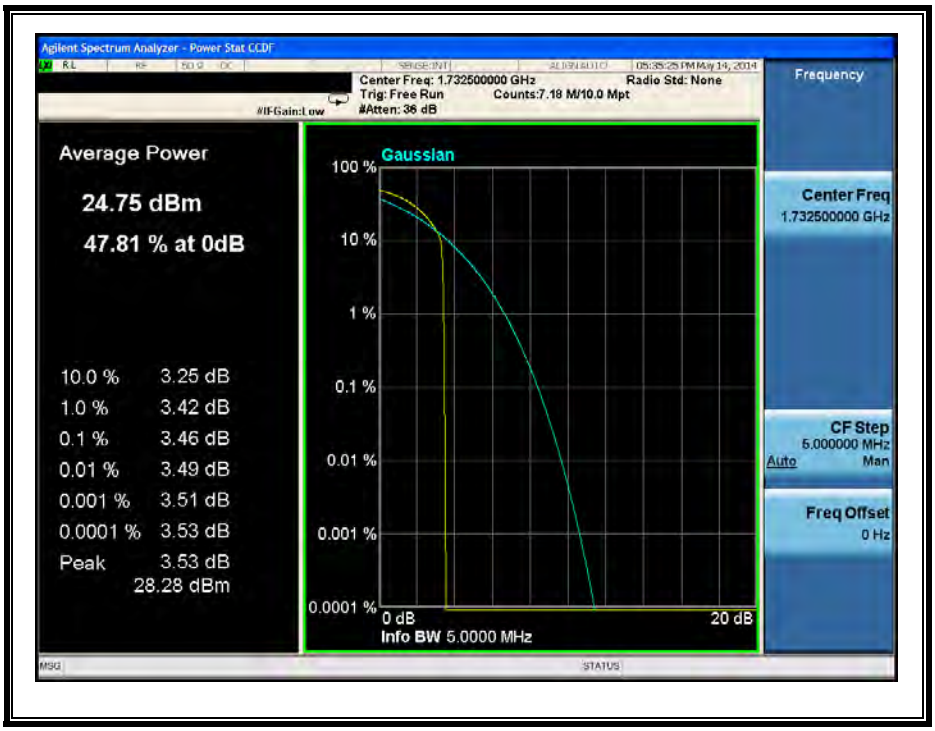
BC 15, 1xRTT



BC 15, EVDO A



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10.3. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53 and § 90.691.

LIMIT

§22.917 (e) and §24.238 (a): Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

§27.53 (h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log10(P) dB

§ 90.691 Emission mask requirements for EA-based systems.

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10 (f/6.1) decibels or 50 + 10 Log10 (P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10 (P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve

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measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

MODES TESTED

- GPRS/EGPRS.
- UMTS, REL 99 and HSDPA
- CDMA2000, BC0, BC1, BC10 and BC15

RESULTS

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10.3.1. LAT

GPRS, 850MHz BAND 5

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/12/14
Test Engineer: Eric Yu
Configuration: EUT only
Mode: GPRS 850MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F		Part 22

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.2MHz)									
1.648	-1.5	H	3.0	34.9	1.0	-35.4	-13.0	-22.4	
2.472	-9.8	H	3.0	35.4	1.0	-44.2	-13.0	-31.2	
1.648	-6.9	V	3.0	34.9	1.0	-40.8	-13.0	-27.8	
2.472	-8.8	V	3.0	35.4	1.0	-43.2	-13.0	-30.2	
Mid Channel (836.6MHz)									
1.673	-1.9	H	3.0	34.9	1.0	-35.8	-13.0	-22.8	
2.510	-7.5	H	3.0	35.3	1.0	-41.8	-13.0	-28.8	
1.673	1.2	V	3.0	34.9	1.0	-32.7	-13.0	-19.7	
2.510	-8.1	V	3.0	35.3	1.0	-42.4	-13.0	-29.4	
High Channel (848.8MHz)									
1.698	-1.5	H	3.0	34.9	1.0	-35.4	-13.0	-22.4	
2.546	-7.7	H	3.0	35.4	1.0	-42.1	-13.0	-29.1	
1.698	-1.5	V	3.0	34.9	1.0	-35.4	-13.0	-22.4	
2.546	-8.7	V	3.0	35.4	1.0	-43.1	-13.0	-30.1	

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EGPRS, 850MHz BAND 5

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/12/14
Test Engineer: Macie
Configuration: EUT only
Mode: EGPRS 850MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber E	3m Chamber E		Part 22

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.2MHz)									
1.648	-8.7	H	3.0	37.6	1.0	-45.3	-13.0	-32.3	
2.472	-10.2	H	3.0	38.0	1.0	-47.2	-13.0	-34.2	
3.297	-14.6	H	3.0	38.5	1.0	-52.1	-13.0	-39.1	
1.648	-3.4	V	3.0	37.6	1.0	-39.9	-13.0	-26.9	
2.472	-0.2	V	3.0	38.0	1.0	-37.2	-13.0	-24.2	
3.297	-13.7	V	3.0	38.5	1.0	-51.3	-13.0	-38.3	
Mid Channel (836.6MHz)									
1.673	-7.9	H	3.0	37.6	1.0	-44.5	-13.0	-31.5	
2.510	-7.6	H	3.0	37.9	1.0	-44.6	-13.0	-31.6	
3.346	-15.7	H	3.0	38.5	1.0	-53.2	-13.0	-40.2	
1.673	1.1	V	3.0	37.6	1.0	-35.5	-13.0	-22.5	
2.510	-5.4	V	3.0	37.9	1.0	-42.4	-13.0	-29.4	
3.346	-14.3	V	3.0	38.5	1.0	-51.8	-13.0	-38.8	
High Channel (848.8MHz)									
1.698	-6.8	H	3.0	37.6	1.0	-43.4	-13.0	-30.4	
2.546	-5.9	H	3.0	38.0	1.0	-42.9	-13.0	-29.9	
3.395	-15.8	H	3.0	38.5	1.0	-53.3	-13.0	-40.3	
1.698	-2.3	V	3.0	37.6	1.0	-38.8	-13.0	-25.8	
2.546	-3.9	V	3.0	38.0	1.0	-40.8	-13.0	-27.8	
3.395	-14.3	V	3.0	38.5	1.0	-51.8	-13.0	-38.8	

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GPRS, 1900MHz BAND 2

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/12/14
Test Engineer: Macie
Configuration: EUT only
Mode: GPRS 1900MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F		Part 24

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1850.2MHz)									
3.700	-9.2	H	3.0	36.3	1.0	-44.5	-13.0	-31.5	
5.551	-7.4	H	3.0	35.6	1.0	-42.0	-13.0	-29.0	
7.401	-9.4	H	3.0	35.5	1.0	-43.9	-13.0	-30.9	
3.700	-12.2	V	3.0	36.3	1.0	-47.5	-13.0	-34.5	
5.551	-10.7	V	3.0	35.6	1.0	-45.2	-13.0	-32.2	
7.401	-8.8	V	3.0	35.5	1.0	-43.4	-13.0	-30.4	
Mid Channel (1880.0)									
3.760	-12.0	H	3.0	36.3	1.0	-47.3	-13.0	-34.3	
5.640	-12.1	H	3.0	35.6	1.0	-46.7	-13.0	-33.7	
7.520	-10.2	H	3.0	35.4	1.0	-44.6	-13.0	-31.6	
3.760	-12.4	V	3.0	36.3	1.0	-47.7	-13.0	-34.7	
5.640	-12.2	V	3.0	35.6	1.0	-46.7	-13.0	-33.7	
7.520	-10.0	V	3.0	35.4	1.0	-44.4	-13.0	-31.4	
High Channel (1909.8MHz)									
3.820	-11.5	H	3.0	36.3	1.0	-46.7	-13.0	-33.7	
5.729	-11.9	H	3.0	35.6	1.0	-46.5	-13.0	-33.5	
7.639	-9.5	H	3.0	35.3	1.0	-43.8	-13.0	-30.8	
3.820	-12.7	V	3.0	36.3	1.0	-47.9	-13.0	-34.9	
5.729	-11.2	V	3.0	35.6	1.0	-45.8	-13.0	-32.8	
7.639	-9.7	V	3.0	35.3	1.0	-44.0	-13.0	-31.0	

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EGPRS, 1900MHz BAND 2

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/12/14
Test Engineer: Macie
Configuration: EUT only
Mode: EGPRS 1900MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F		Part 24

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1850.2MHz)									
3.700	-12.6	H	3.0	36.3	1.0	-47.9	-13.0	-34.9	
5.551	-11.5	H	3.0	35.6	1.0	-46.0	-13.0	-33.0	
7.401	-9.5	H	3.0	35.5	1.0	-44.0	-13.0	-31.0	
3.700	-12.9	V	3.0	36.3	1.0	-48.2	-13.0	-35.2	
5.551	-10.9	V	3.0	35.6	1.0	-45.5	-13.0	-32.5	
7.401	-9.4	V	3.0	35.5	1.0	-43.9	-13.0	-30.9	
Mid Channel (1880.0)									
3.760	-11.9	H	3.0	36.3	1.0	-47.2	-13.0	-34.2	
5.640	-10.7	H	3.0	35.6	1.0	-45.3	-13.0	-32.3	
7.520	-9.1	H	3.0	35.4	1.0	-43.5	-13.0	-30.5	
3.760	-12.9	V	3.0	36.3	1.0	-48.2	-13.0	-35.2	
5.640	-11.2	V	3.0	35.6	1.0	-45.8	-13.0	-32.8	
7.520	-9.2	V	3.0	35.4	1.0	-43.6	-13.0	-30.6	
High Channel (1909.8MHz)									
3.820	-12.5	H	3.0	36.3	1.0	-47.7	-13.0	-34.7	
5.729	-10.5	H	3.0	35.6	1.0	-45.1	-13.0	-32.1	
7.639	-9.5	H	3.0	35.3	1.0	-43.8	-13.0	-30.8	
3.820	-12.5	V	3.0	36.3	1.0	-47.8	-13.0	-34.8	
5.729	-11.0	V	3.0	35.6	1.0	-45.6	-13.0	-32.6	
7.639	-8.7	V	3.0	35.3	1.0	-43.0	-13.0	-30.0	

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UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
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UMTS REL 99, 850MHz BAND 5

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 6/12/2014
Test Engineer: Macie
Configuration: EUT Only
Mode: Band 5 REL 99, 850MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber E	3m Chamber E		Part 22

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (826.4MHz)									
1.653	-22.2	H	3.0	37.6	1.0	-58.8	-13.0	-45.8	
2.479	-17.5	H	3.0	38.0	1.0	-54.5	-13.0	-41.5	
3.306	-16.6	H	3.0	38.5	1.0	-54.1	-13.0	-41.1	
1.653	-21.3	V	3.0	37.6	1.0	-57.9	-13.0	-44.9	
2.479	-17.1	V	3.0	38.0	1.0	-54.1	-13.0	-41.1	
3.306	-16.4	V	3.0	38.5	1.0	-53.9	-13.0	-40.9	
Mid Channel (836MHz)									
1.672	-22.0	H	3.0	37.6	1.0	-58.6	-13.0	-45.6	
2.508	-17.6	H	3.0	37.9	1.0	-54.5	-13.0	-41.5	
3.344	-16.2	H	3.0	38.5	1.0	-53.7	-13.0	-40.7	
1.672	-21.6	V	3.0	37.6	1.0	-58.2	-13.0	-45.2	
2.508	-17.9	V	3.0	37.9	1.0	-54.8	-13.0	-41.8	
3.344	-16.7	V	3.0	38.5	1.0	-54.2	-13.0	-41.2	
High Channel (846.6MHz)									
1.693	-21.9	H	3.0	37.6	1.0	-58.5	-13.0	-45.5	
2.540	-17.6	H	3.0	38.0	1.0	-54.6	-13.0	-41.6	
3.386	-16.4	H	3.0	38.5	1.0	-53.9	-13.0	-40.9	
1.693	-21.4	V	3.0	37.6	1.0	-57.9	-13.0	-44.9	
2.540	-18.2	V	3.0	38.0	1.0	-55.1	-13.0	-42.1	
3.386	-16.7	V	3.0	38.5	1.0	-54.2	-13.0	-41.2	

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UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
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UMTS HSDPA, 850MHz BAND 5

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 6/13/2014
Test Engineer: Macie
Configuration: EUT Only
Mode: Band 5 HSDPA, 850MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F		Part 22

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (826.4MHz)									
1.653	-20.8	H	3.0	34.9	1.0	-54.7	-13.0	-41.7	
2.479	-16.7	H	3.0	35.4	1.0	-51.1	-13.0	-38.1	
3.306	-15.3	H	3.0	36.4	1.0	-50.7	-13.0	-37.7	
1.653	-20.5	V	3.0	34.9	1.0	-54.4	-13.0	-41.4	
2.479	-15.7	V	3.0	35.4	1.0	-50.1	-13.0	-37.1	
3.306	-15.2	V	3.0	36.4	1.0	-50.6	-13.0	-37.6	
Mid Channel (836MHz)									
1.672	-20.9	H	3.0	34.9	1.0	-54.8	-13.0	-41.8	
2.508	-16.4	H	3.0	35.3	1.0	-50.7	-13.0	-37.7	
3.344	-15.6	H	3.0	36.4	1.0	-51.0	-13.0	-38.0	
1.672	-20.5	V	3.0	34.9	1.0	-54.4	-13.0	-41.4	
2.508	-15.9	V	3.0	35.3	1.0	-50.2	-13.0	-37.2	
3.344	-15.1	V	3.0	36.4	1.0	-50.5	-13.0	-37.5	
High Channel (846.6MHz)									
1.693	-21.0	H	3.0	34.9	1.0	-54.8	-13.0	-41.8	
2.540	-16.5	H	3.0	35.4	1.0	-50.8	-13.0	-37.8	
3.386	-15.3	H	3.0	36.4	1.0	-50.7	-13.0	-37.7	
1.693	-20.2	V	3.0	34.9	1.0	-54.1	-13.0	-41.1	
2.540	-15.8	V	3.0	35.4	1.0	-50.2	-13.0	-37.2	
3.386	-14.8	V	3.0	36.4	1.0	-50.2	-13.0	-37.2	

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UMTS REL 99, 1900MHz BAND 2

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 6/12/2014
Test Engineer: Macie
Configuration: EUT Only
Mode: Band 2 REL 99, 1900MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber E	3m Chamber E		Part 24

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1852.4MHz)									
3.705	-14.3	H	3.0	38.6	1.0	-51.9	-13.0	-38.9	
5.557	-12.3	H	3.0	38.0	1.0	-49.3	-13.0	-36.3	
7.410	-10.5	H	3.0	37.4	1.0	-46.9	-13.0	-33.9	
3.705	-14.7	V	3.0	38.6	1.0	-52.2	-13.0	-39.2	
5.557	-12.2	V	3.0	38.0	1.0	-49.2	-13.0	-36.2	
7.410	-10.3	V	3.0	37.4	1.0	-46.7	-13.0	-33.7	
Mid Channel (1880MHz)									
3.760	-14.2	H	3.0	38.6	1.0	-51.8	-13.0	-38.8	
5.640	-12.1	H	3.0	38.0	1.0	-49.1	-13.0	-36.1	
7.520	-9.6	H	3.0	37.3	1.0	-45.9	-13.0	-32.9	
3.760	-14.8	V	3.0	38.6	1.0	-52.3	-13.0	-39.3	
5.640	-12.2	V	3.0	38.0	1.0	-49.2	-13.0	-36.2	
7.520	-9.8	V	3.0	37.3	1.0	-46.1	-13.0	-33.1	
High Channel (1907.6MHz)									
3.815	-13.8	H	3.0	38.6	1.0	-51.4	-13.0	-38.4	
5.723	-11.6	H	3.0	37.9	1.0	-48.5	-13.0	-35.5	
7.630	-9.2	H	3.0	37.3	1.0	-45.5	-13.0	-32.5	
3.815	-14.6	V	3.0	38.6	1.0	-52.2	-13.0	-39.2	
5.723	-12.3	V	3.0	37.9	1.0	-49.3	-13.0	-36.3	
7.630	-10.2	V	3.0	37.3	1.0	-46.5	-13.0	-33.5	

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UMTS HSDPA, 1900MHz BAND 2

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 6/13/2014
Test Engineer: Macie
Configuration: EUT Only
Mode: Band 2 HSDPA, 1900MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F		Part 24

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1852.4MHz)									
3.705	-14.3	H	3.0	36.3	1.0	-49.6	-13.0	-36.6	
5.557	-12.3	H	3.0	35.6	1.0	-46.9	-13.0	-33.9	
7.410	-8.5	H	3.0	35.5	1.0	-43.0	-13.0	-30.0	
3.705	-13.5	V	3.0	36.3	1.0	-48.8	-13.0	-35.8	
5.557	-11.7	V	3.0	35.6	1.0	-46.3	-13.0	-33.3	
7.410	-10.4	V	3.0	35.5	1.0	-44.9	-13.0	-31.9	
Mid Channel (1880MHz)									
3.760	-12.9	H	3.0	36.3	1.0	-48.2	-13.0	-35.2	
5.640	-11.2	H	3.0	35.6	1.0	-45.8	-13.0	-32.8	
7.520	-8.8	H	3.0	35.4	1.0	-43.2	-13.0	-30.2	
3.760	-12.8	V	3.0	36.3	1.0	-48.0	-13.0	-35.0	
5.640	-11.8	V	3.0	35.6	1.0	-46.4	-13.0	-33.4	
7.520	-9.4	V	3.0	35.4	1.0	-43.8	-13.0	-30.8	
High Channel (1907.6MHz)									
3.815	-14.0	H	3.0	36.3	1.0	-49.3	-13.0	-36.3	
5.723	-12.0	H	3.0	35.6	1.0	-46.6	-13.0	-33.6	
7.630	-9.1	H	3.0	35.3	1.0	-43.4	-13.0	-30.4	
3.815	-13.8	V	3.0	36.3	1.0	-49.1	-13.0	-36.1	
5.723	-12.1	V	3.0	35.6	1.0	-46.7	-13.0	-33.7	
7.630	-9.8	V	3.0	35.3	1.0	-44.1	-13.0	-31.1	

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UMTS REL 99, 1700MHz BAND 4

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 6/12/2014
Test Engineer: Macie
Configuration: EUT Only
Mode: Band 4 REL 99, 1700MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber E	3m Chamber E		Part 27

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1712.4MHz)									
3.425	-10.1	H	3.0	38.5	1.0	-47.6	-13.0	-34.6	
5.137	-8.8	H	3.0	38.1	1.0	-45.8	-13.0	-32.8	
6.850	-8.9	H	3.0	37.7	1.0	-45.6	-13.0	-32.6	
3.425	-14.0	V	3.0	38.5	1.0	-51.5	-13.0	-38.5	
5.137	-10.9	V	3.0	38.1	1.0	-48.0	-13.0	-35.0	
6.850	-9.6	V	3.0	37.7	1.0	-46.3	-13.0	-33.3	
Mid Channel (1732.6MHz)									
3.465	-9.4	H	3.0	38.5	1.0	-46.9	-13.0	-33.9	
5.198	-7.6	H	3.0	38.1	1.0	-44.6	-13.0	-31.6	
6.930	-10.4	H	3.0	37.7	1.0	-47.1	-13.0	-34.1	
3.465	-12.9	V	3.0	38.5	1.0	-50.4	-13.0	-37.4	
5.198	-11.7	V	3.0	38.1	1.0	-48.8	-13.0	-35.8	
6.930	-10.5	V	3.0	37.7	1.0	-47.1	-13.0	-34.1	
High Channel (1752.6MHz)									
3.505	-10.3	H	3.0	38.5	1.0	-47.8	-13.0	-34.8	
5.258	-8.1	H	3.0	38.0	1.0	-45.1	-13.0	-32.1	
7.010	-8.8	H	3.0	37.6	1.0	-45.5	-13.0	-32.5	
3.505	-13.0	V	3.0	38.5	1.0	-50.5	-13.0	-37.5	
5.258	-9.2	V	3.0	38.0	1.0	-46.2	-13.0	-33.2	
7.010	-8.8	V	3.0	37.6	1.0	-45.5	-13.0	-32.5	

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UMTS HSDPA, 1700MHz BAND 4

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 6/13/2014
Test Engineer: Macie
Configuration: EUT Only
Mode: Band 4 HSDPA, 1700MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F		Part 27

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1712.4MHz)									
3.425	-8.5	H	3.0	36.4	1.0	-43.9	-13.0	-30.9	
5.137	-8.6	H	3.0	35.5	1.0	-43.1	-13.0	-30.1	
6.850	-9.0	H	3.0	35.9	1.0	-43.9	-13.0	-30.9	
3.425	-12.1	V	3.0	36.4	1.0	-47.5	-13.0	-34.5	
5.137	-11.5	V	3.0	35.5	1.0	-46.1	-13.0	-33.1	
6.850	-9.7	V	3.0	35.9	1.0	-44.6	-13.0	-31.6	
Mid Channel (1732.6MHz)									
3.465	-8.0	H	3.0	36.4	1.0	-43.4	-13.0	-30.4	
5.198	-8.6	H	3.0	35.5	1.0	-43.1	-13.0	-30.1	
6.930	-8.2	H	3.0	35.9	1.0	-43.1	-13.0	-30.1	
3.465	-12.3	V	3.0	36.4	1.0	-47.7	-13.0	-34.7	
5.198	-12.0	V	3.0	35.5	1.0	-46.4	-13.0	-33.4	
6.930	-9.7	V	3.0	35.9	1.0	-44.6	-13.0	-31.6	
High Channel (1752.6MHz)									
3.505	-9.4	H	3.0	36.4	1.0	-44.8	-13.0	-31.8	
5.258	-9.0	H	3.0	35.5	1.0	-43.5	-13.0	-30.5	
7.010	-8.0	H	3.0	35.9	1.0	-42.9	-13.0	-29.9	
3.505	-11.7	V	3.0	36.4	1.0	-47.1	-13.0	-34.1	
5.258	-10.3	V	3.0	35.5	1.0	-44.8	-13.0	-31.8	
7.010	-9.3	V	3.0	35.9	1.0	-44.1	-13.0	-31.1	

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CDMA2000 1xRTT, 850MHz BC0

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/14/14
Test Engineer: E.Yu
Configuration: EUT Only
Mode: CDMA2000, 1xRTT BC0

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	3m Chamber D	Filter 01	Part 22

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.7MHz)									
1.649	-15.3	H	3.0	37.5	1.0	-51.8	-13.0	-38.8	
2.474	-16.7	H	3.0	37.8	1.0	-53.5	-13.0	-40.5	
2.474	-7.1	V	3.0	37.8	1.0	-43.9	-13.0	-30.9	
3.298	-13.3	V	3.0	38.4	1.0	-50.7	-13.0	-37.7	
Mid Channel (836.52MHz)									
1.673	-15.3	H	3.0	37.5	1.0	-51.8	-13.0	-38.8	
2.510	-17.1	H	3.0	37.7	1.0	-53.8	-13.0	-40.8	
1.673	-9.5	V	3.0	37.5	1.0	-46.0	-13.0	-33.0	
2.510	-14.6	V	3.0	37.7	1.0	-51.3	-13.0	-38.3	
High Channel (848.31MHz)									
1.687	-17.4	H	3.0	37.5	1.0	-53.9	-13.0	-40.9	
2.530	-20.0	H	3.0	37.7	1.0	-56.7	-13.0	-43.7	
1.687	-14.7	V	3.0	37.5	1.0	-51.2	-13.0	-38.2	
2.530	-19.2	V	3.0	37.7	1.0	-56.0	-13.0	-43.0	

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EVDO-Rev A, 850MHz BC0

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/16/14
Test Engineer: S Macie
Configuration: EUT Only
Mode: CDMA2000, EVDO_ A BC0

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F	Filter 01	Part 22

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.7MHz)									
1.649	-15.7	H	3.0	34.9	1.0	-49.6	-13.0	-36.6	
2.474	-15.7	H	3.0	35.4	1.0	-50.0	-13.0	-37.0	
1.649	-14.2	V	3.0	34.9	1.0	-48.1	-13.0	-35.1	
2.474	-20.0	V	3.0	35.4	1.0	-54.4	-13.0	-41.4	
Mid Channel (836.52MHz)									
1.673	-17.6	H	3.0	34.9	1.0	-51.5	-13.0	-38.5	
2.510	-17.0	H	3.0	35.3	1.0	-51.3	-13.0	-38.3	
1.673	-16.7	V	3.0	34.9	1.0	-50.6	-13.0	-37.6	
2.510	-16.8	V	3.0	35.3	1.0	-51.1	-13.0	-38.1	
High Channel (848.31MHz)									
1.697	-17.1	H	3.0	34.9	1.0	-50.9	-13.0	-37.9	
2.545	-13.4	H	3.0	35.4	1.0	-47.8	-13.0	-34.8	
1.697	-17.0	V	3.0	34.9	1.0	-50.9	-13.0	-37.9	
2.545	-14.5	V	3.0	35.4	1.0	-48.9	-13.0	-35.9	

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CDMA2000 1xRTT, 1900MHz BC1

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/14/14
Test Engineer: E.Yu
Configuration: EUT Only
Mode: CDMA2000, 1xRTT BC1

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	3m Chamber D	Filter 01	Part 24

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1851.25MHz)									
3.703	-15.5	H	3.0	38.0	1.0	-52.5	-13.0	-39.5	
5.554	-17.4	H	3.0	37.4	1.0	-53.7	-13.0	-40.7	
3.703	-13.9	V	3.0	38.0	1.0	-51.0	-13.0	-38.0	
5.554	-16.5	V	3.0	37.4	1.0	-52.9	-13.0	-39.9	
Mid Channel (1880MHz)									
3.760	-3.9	H	3.0	38.0	1.0	-40.9	-13.0	-27.9	
6.640	-15.3	H	3.0	37.1	1.0	-51.4	-13.0	-38.4	
3.760	-7.4	V	3.0	38.0	1.0	-44.3	-13.0	-31.3	
6.640	-15.9	V	3.0	37.1	1.0	-52.0	-13.0	-39.0	
High Channel (1908.75MHz)									
3.703	-17.7	H	3.0	38.0	1.0	-54.8	-13.0	-41.8	
5.554	-16.5	H	3.0	37.4	1.0	-52.9	-13.0	-39.9	
3.703	-18.1	V	3.0	38.0	1.0	-55.1	-13.0	-42.1	
5.554	-17.1	V	3.0	37.4	1.0	-53.5	-13.0	-40.5	

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EVDO-Rev A, 1900MHz BC1

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/16/14
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA EV DO_A BC 1

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F		Part 24

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1851.25MHz)									
3.703	-0.1	H	3.0	36.3	1.0	-35.4	-13.0	-22.4	
5.554	-8.0	H	3.0	35.6	1.0	-42.5	-13.0	-29.5	
3.703	-3.0	V	3.0	36.3	1.0	-38.3	-13.0	-25.3	
5.554	-6.8	V	3.0	35.6	1.0	-41.4	-13.0	-28.4	
Mid Channel (1880.0)									
3.760	-6.7	H	3.0	36.3	1.0	-42.0	-13.0	-29.0	
5.640	-11.2	H	3.0	35.6	1.0	-45.8	-13.0	-32.8	
3.760	-5.5	V	3.0	36.3	1.0	-40.8	-13.0	-27.8	
5.640	-10.1	V	3.0	35.6	1.0	-44.7	-13.0	-31.7	
High Channel (1908.75MHz)									
3.818	-9.9	H	3.0	36.3	1.0	-45.2	-13.0	-32.2	
5.726	-12.9	H	3.0	35.6	1.0	-47.4	-13.0	-34.4	
3.818	-7.1	V	3.0	36.3	1.0	-42.4	-13.0	-29.4	
5.726	-12.6	V	3.0	35.6	1.0	-47.2	-13.0	-34.2	

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CDMA2000 1xRTT, 1700MHz BC15

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/14/14
Test Engineer: E.Yu
Configuration: EUT Only
Mode: CDMA2000, 1xRTT BC15

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	3m Chamber D	Filter 01	Part 27

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1711.25MHz)									
3.423	-0.7	H	3.0	38.3	1.0	-38.1	-13.0	-25.1	
5.114	-10.3	H	3.0	37.5	1.0	-46.8	-13.0	-33.8	
3.423	0.0	V	3.0	38.3	1.0	-37.3	-13.0	-24.3	
5.114	-9.9	V	3.0	37.5	1.0	-46.3	-13.0	-33.3	
Mid Channel (1732.5MHz)									
3.465	-1.3	H	3.0	38.3	1.0	-38.6	-13.0	-25.6	
5.198	-9.9	H	3.0	37.5	1.0	-46.4	-13.0	-33.4	
3.465	-7.5	V	3.0	38.3	1.0	-44.8	-13.0	-31.8	
5.198	-8.8	V	3.0	37.5	1.0	-45.3	-13.0	-32.3	
High Channel (1753.75MHz)									
3.508	-7.2	H	3.0	38.2	1.0	-44.4	-13.0	-31.4	
5.261	-17.0	H	3.0	37.4	1.0	-53.4	-13.0	-40.4	
3.508	-7.5	V	3.0	38.2	1.0	-44.7	-13.0	-31.7	
5.261	-14.7	V	3.0	37.4	1.0	-51.1	-13.0	-38.1	

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EVDO-Rev A, 1700MHz BC15

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 6/16/2014
Test Engineer: T Wang
Configuration: EUT Only
Mode: CDMA EVDO_A BC15

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F		Part 27

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1711.25MHz)									
3.423	0.5	H	3.0	36.4	1.0	-34.9	-13.0	-21.9	
5.134	-1.6	H	3.0	35.5	1.0	-36.2	-13.0	-23.2	
6.845	-11.5	H	3.0	35.9	1.0	-46.3	-13.0	-33.3	
3.423	1.1	V	3.0	36.4	1.0	-34.3	-13.0	-21.3	
5.134	-0.2	V	3.0	35.5	1.0	-34.7	-13.0	-21.7	
6.845	-12.1	V	3.0	35.9	1.0	-46.9	-13.0	-33.9	
Mid Channel (1732.5MHz)									
3.465	-0.2	H	3.0	36.4	1.0	-35.5	-13.0	-22.5	
5.198	-1.5	H	3.0	35.5	1.0	-36.0	-13.0	-23.0	
6.930	-10.3	H	3.0	35.9	1.0	-45.2	-13.0	-32.2	
3.465	1.7	V	3.0	36.4	1.0	-33.7	-13.0	-20.7	
5.198	-9.4	V	3.0	35.5	1.0	-43.9	-13.0	-30.9	
6.930	-10.0	V	3.0	35.9	1.0	-44.8	-13.0	-31.8	
High Channel (1753.75MHz)									
3.508	1.7	H	3.0	36.4	1.0	-33.7	-13.0	-20.7	
5.261	-0.4	H	3.0	35.5	1.0	-34.9	-13.0	-21.9	
7.015	-9.8	H	3.0	35.9	1.0	-44.7	-13.0	-31.7	
3.508	1.9	V	3.0	36.4	1.0	-33.5	-13.0	-20.5	
5.261	0.1	V	3.0	35.5	1.0	-34.4	-13.0	-21.4	
7.015	-11.6	V	3.0	35.9	1.0	-46.4	-13.0	-33.4	

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CDMA2000 1xRTT, 800MHz BC10

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/14/14
Test Engineer: E.Yu
Configuration: EUT Only
Mode: CDMA2000, 1xRTT BC10

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	3m Chamber D	Filter 01	Part 90

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (817.90MHz)									
1.636	-16.7	H	3.0	37.6	1.0	-53.3	-13.0	-40.3	
2.454	-14.5	H	3.0	37.9	1.0	-51.5	-13.0	-38.5	
1.636	-12.8	V	3.0	37.6	1.0	-49.4	-13.0	-36.4	
2.454	-15.3	V	3.0	37.9	1.0	-52.2	-13.0	-39.2	
Mid Channel (820.5MHz)									
1.641	-19.9	H	3.0	37.6	1.0	-56.4	-13.0	-43.4	
2.462	-11.2	H	3.0	37.9	1.0	-48.1	-13.0	-35.1	
1.641	-17.1	V	3.0	37.6	1.0	-53.6	-13.0	-40.6	
2.462	-14.5	V	3.0	37.9	1.0	-51.4	-13.0	-38.4	
High Channel (823.10MHz)									
1.646	-15.5	H	3.0	37.5	1.0	-52.1	-13.0	-39.1	
2.469	-14.6	H	3.0	37.8	1.0	-51.5	-13.0	-38.5	
1.646	-13.0	V	3.0	37.5	1.0	-49.5	-13.0	-36.5	
2.469	-12.4	V	3.0	37.8	1.0	-49.3	-13.0	-36.3	

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EVDO-Rev A, 800MHz BC10

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/16/14
Test Engineer: T Wang
Configuration: EUT Only
Mode: CDMA2000, EV DO_A BC10

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F	Filter 01	Part 90

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (817.25MHz)									
1.635	-13.2	H	3.0	34.9	1.0	-47.2	-13.0	-34.2	
2.452	-19.0	H	3.0	35.5	1.0	-53.5	-13.0	-40.5	
1.635	-12.8	V	3.0	34.9	1.0	-46.7	-13.0	-33.7	
2.452	-16.2	V	3.0	35.5	1.0	-50.6	-13.0	-37.6	
Mid Channel (820.0MHz)									
1.640	-12.2	H	3.0	34.9	1.0	-46.1	-13.0	-33.1	
2.460	-17.6	H	3.0	35.4	1.0	-52.0	-13.0	-39.0	
1.640	-10.7	V	3.0	34.9	1.0	-44.6	-13.0	-31.6	
2.460	-16.5	V	3.0	35.4	1.0	-51.0	-13.0	-38.0	
High Channel (822.75MHz)									
1.646	-11.9	H	3.0	34.9	1.0	-45.8	-13.0	-32.8	
2.468	-16.9	H	3.0	35.4	1.0	-51.3	-13.0	-38.3	
1.646	-12.3	V	3.0	34.9	1.0	-46.2	-13.0	-33.2	
2.468	-16.1	V	3.0	35.4	1.0	-50.5	-13.0	-37.5	

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10.3.2. UAT

GPRS, 850MHz BAND 5

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/12/14
Test Engineer: T Wang
Configuration: EUT only
Mode: GPRS 850MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber E	3m Chamber E		Part 22

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.2MHz)									
1.648	-5.6	H	3.0	37.6	1.0	-42.2	-13.0	-29.2	
2.472	-9.4	H	3.0	38.0	1.0	-46.4	-13.0	-33.4	
3.297	-16.0	H	3.0	38.5	1.0	-53.5	-13.0	-40.5	
1.648	-10.4	V	3.0	37.6	1.0	-47.0	-13.0	-34.0	
2.472	-15.2	V	3.0	38.0	1.0	-52.1	-13.0	-39.1	
3.297	-15.8	V	3.0	38.5	1.0	-53.3	-13.0	-40.3	
Mid Channel (836.6MHz)									
1.673	-5.9	H	3.0	37.6	1.0	-42.5	-13.0	-29.5	
2.510	-11.7	H	3.0	37.9	1.0	-48.6	-13.0	-35.6	
3.346	-14.8	H	3.0	38.5	1.0	-52.3	-13.0	-39.3	
1.673	-4.1	V	3.0	37.6	1.0	-40.6	-13.0	-27.6	
2.510	-7.2	V	3.0	37.9	1.0	-44.1	-13.0	-31.1	
3.346	-14.5	V	3.0	38.5	1.0	-52.1	-13.0	-39.1	
High Channel (848.8MHz)									
1.698	-6.1	H	3.0	37.6	1.0	-42.7	-13.0	-29.7	
2.546	-9.0	H	3.0	38.0	1.0	-46.0	-13.0	-33.0	
3.395	-15.1	H	3.0	38.5	1.0	-52.6	-13.0	-39.6	
1.698	-11.1	V	3.0	37.6	1.0	-47.6	-13.0	-34.6	
2.546	-15.1	V	3.0	38.0	1.0	-52.1	-13.0	-39.1	
3.395	-13.5	V	3.0	38.5	1.0	-51.0	-13.0	-38.0	

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EGPRS, 850MHz BAND 5

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/12/14
Test Engineer: T Wang
Configuration: EUT only
Mode: EGPRS 850MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber E	3m Chamber E		Part 22

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.2MHz)									
1.648	-11.6	H	3.0	37.6	1.0	-48.2	-13.0	-35.2	
2.472	-8.9	H	3.0	38.0	1.0	-45.9	-13.0	-32.9	
3.297	-14.4	H	3.0	38.5	1.0	-51.9	-13.0	-38.9	
1.648	-4.6	V	3.0	37.6	1.0	-41.1	-13.0	-28.1	
2.472	0.7	V	3.0	38.0	1.0	-36.2	-13.0	-23.2	
3.297	-13.6	V	3.0	38.5	1.0	-51.1	-13.0	-38.1	
Mid Channel (836.6MHz)									
1.673	-5.9	H	3.0	37.6	1.0	-42.5	-13.0	-29.5	
2.510	-5.6	H	3.0	37.9	1.0	-42.5	-13.0	-29.5	
3.346	-15.4	H	3.0	38.5	1.0	-52.9	-13.0	-39.9	
1.673	2.0	V	3.0	37.6	1.0	-34.5	-13.0	-21.5	
2.510	-4.3	V	3.0	37.9	1.0	-41.2	-13.0	-28.2	
3.346	-13.4	V	3.0	38.5	1.0	-51.0	-13.0	-38.0	
High Channel (848.8MHz)									
1.698	-7.0	H	3.0	37.6	1.0	-43.6	-13.0	-30.6	
2.546	-5.2	H	3.0	38.0	1.0	-42.2	-13.0	-29.2	
3.395	-15.4	H	3.0	38.5	1.0	-52.9	-13.0	-39.9	
1.698	-5.3	V	3.0	37.6	1.0	-41.9	-13.0	-28.9	
2.546	-3.4	V	3.0	38.0	1.0	-40.4	-13.0	-27.4	
3.395	-14.6	V	3.0	38.5	1.0	-52.1	-13.0	-39.1	

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GPRS, 1900MHz BAND 2

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/12/14
Test Engineer: T Wang
Configuration: EUT only
Mode: GPRS 1900MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber E	3m Chamber E		Part 24

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1850.2MHz)									
3.700	-12.2	H	3.0	38.6	1.0	-49.8	-13.0	-36.8	
5.551	-11.1	H	3.0	38.0	1.0	-48.1	-13.0	-35.1	
7.401	-9.3	H	3.0	37.4	1.0	-45.7	-13.0	-32.7	
3.700	-12.7	V	3.0	38.6	1.0	-50.3	-13.0	-37.3	
5.551	-10.7	V	3.0	38.0	1.0	-47.7	-13.0	-34.7	
7.401	-8.8	V	3.0	37.4	1.0	-45.2	-13.0	-32.2	
Mid Channel (1880.0MHz)									
3.760	-11.3	H	3.0	38.6	1.0	-48.9	-13.0	-35.9	
5.640	-10.5	H	3.0	38.0	1.0	-47.4	-13.0	-34.4	
7.520	-8.4	H	3.0	37.3	1.0	-44.7	-13.0	-31.7	
3.760	-11.6	V	3.0	38.6	1.0	-49.2	-13.0	-36.2	
5.640	-11.1	V	3.0	38.0	1.0	-48.0	-13.0	-35.0	
7.520	-9.1	V	3.0	37.3	1.0	-45.5	-13.0	-32.5	
High Channel (1909.8MHz)									
3.820	-12.3	H	3.0	38.6	1.0	-49.9	-13.0	-36.9	
5.729	-10.4	H	3.0	37.9	1.0	-47.4	-13.0	-34.4	
7.639	-9.6	H	3.0	37.3	1.0	-45.9	-13.0	-32.9	
3.820	-11.2	V	3.0	38.6	1.0	-48.8	-13.0	-35.8	
5.729	-9.7	V	3.0	37.9	1.0	-46.6	-13.0	-33.6	
7.639	-9.0	V	3.0	37.3	1.0	-45.2	-13.0	-32.2	

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EGPRS, 1900MHz BAND 2

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/12/14
Test Engineer: T Wang
Configuration: EUT only
Mode: EGPRS 1900MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber E	3m Chamber E		Part 24

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1850.2MHz)									
3.700	-12.3	H	3.0	38.6	1.0	-49.9	-13.0	-36.9	
5.551	-10.2	H	3.0	38.0	1.0	-47.2	-13.0	-34.2	
7.401	-8.0	H	3.0	37.4	1.0	-44.4	-13.0	-31.4	
3.700	-12.7	V	3.0	38.6	1.0	-50.3	-13.0	-37.3	
5.551	-10.1	V	3.0	38.0	1.0	-47.1	-13.0	-34.1	
7.401	-8.4	V	3.0	37.4	1.0	-44.8	-13.0	-31.8	
Mid Channel (1880.0MHz)									
3.760	-11.3	H	3.0	38.6	1.0	-48.9	-13.0	-35.9	
5.640	-11.0	H	3.0	38.0	1.0	-47.9	-13.0	-34.9	
7.520	-9.1	H	3.0	37.3	1.0	-45.4	-13.0	-32.4	
3.760	-11.8	V	3.0	38.6	1.0	-49.4	-13.0	-36.4	
5.640	-10.2	V	3.0	38.0	1.0	-47.2	-13.0	-34.2	
7.520	-9.1	V	3.0	37.3	1.0	-45.4	-13.0	-32.4	
High Channel (1909.8MHz)									
3.820	-11.8	H	3.0	38.6	1.0	-49.4	-13.0	-36.4	
5.729	-11.2	H	3.0	37.9	1.0	-48.1	-13.0	-35.1	
7.639	-8.0	H	3.0	37.3	1.0	-44.2	-13.0	-31.2	
3.820	-11.9	V	3.0	38.6	1.0	-49.5	-13.0	-36.5	
5.729	-10.0	V	3.0	37.9	1.0	-46.9	-13.0	-33.9	
7.639	-10.7	V	3.0	37.3	1.0	-46.9	-13.0	-33.9	

Rev. 03.03.14

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
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UMTS REL 99, 850MHz BAND 5

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 6/12/2014
Test Engineer: Macie
Configuration: EUT Only
Mode: Band 2 REL 99, 850MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber E	3m Chamber E		Part 22

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (826.4MHz)									
1.653	-18.4	H	3.0	37.6	1.0	-55.0	-13.0	-42.0	
2.479	-13.9	H	3.0	38.0	1.0	-50.9	-13.0	-37.9	
3.306	-13.6	H	3.0	38.5	1.0	-51.1	-13.0	-38.1	
1.653	-18.3	V	3.0	37.6	1.0	-54.8	-13.0	-41.8	
2.479	-15.2	V	3.0	38.0	1.0	-52.2	-13.0	-39.2	
3.306	-13.8	V	3.0	38.5	1.0	-51.3	-13.0	-38.3	
Mid Channel (836MHz)									
1.672	-19.0	H	3.0	37.6	1.0	-55.6	-13.0	-42.6	
2.508	-14.9	H	3.0	37.9	1.0	-51.9	-13.0	-38.9	
3.344	-13.4	H	3.0	38.5	1.0	-50.9	-13.0	-37.9	
1.672	-18.6	V	3.0	37.6	1.0	-55.1	-13.0	-42.1	
2.508	-15.5	V	3.0	37.9	1.0	-52.5	-13.0	-39.5	
3.344	-13.9	V	3.0	38.5	1.0	-51.4	-13.0	-38.4	
High Channel (846.6MHz)									
1.693	-18.6	H	3.0	37.6	1.0	-55.1	-13.0	-42.1	
2.540	-14.6	H	3.0	38.0	1.0	-51.6	-13.0	-38.6	
3.386	-13.7	H	3.0	38.5	1.0	-51.2	-13.0	-38.2	
1.693	-18.0	V	3.0	37.6	1.0	-54.6	-13.0	-41.6	
2.540	-15.0	V	3.0	38.0	1.0	-52.0	-13.0	-39.0	
3.386	-14.1	V	3.0	38.5	1.0	-51.7	-13.0	-38.7	

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UMTS HSDPA, 850MHz BAND 5

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 6/13/2014
Test Engineer: T Wang
Configuration: EUT Only
Mode: Band 5 HSDPA, 850MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F		Part 22

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (826.4MHz)									
1.653	-10.5	H	3.0	34.9	1.0	-44.4	-13.0	-31.4	
2.479	-17.5	H	3.0	35.4	1.0	-51.9	-13.0	-38.9	
3.306	-16.1	H	3.0	36.4	1.0	-51.5	-13.0	-38.5	
1.653	-7.8	V	3.0	34.9	1.0	-41.7	-13.0	-28.7	
2.479	-15.9	V	3.0	35.4	1.0	-50.2	-13.0	-37.2	
3.306	-15.1	V	3.0	36.4	1.0	-50.6	-13.0	-37.6	
Mid Channel (836MHz)									
1.672	-11.8	H	3.0	34.9	1.0	-45.7	-13.0	-32.7	
2.508	-16.9	H	3.0	35.3	1.0	-51.2	-13.0	-38.2	
3.344	-15.5	H	3.0	36.4	1.0	-50.9	-13.0	-37.9	
1.672	-4.0	V	3.0	34.9	1.0	-37.9	-13.0	-24.9	
2.508	-15.2	V	3.0	35.3	1.0	-49.5	-13.0	-36.5	
3.344	-14.7	V	3.0	36.4	1.0	-50.1	-13.0	-37.1	
High Channel (846.6MHz)									
1.693	-13.9	H	3.0	34.9	1.0	-47.8	-13.0	-34.8	
2.540	-16.7	H	3.0	35.4	1.0	-51.1	-13.0	-38.1	
3.386	-14.7	H	3.0	36.4	1.0	-50.1	-13.0	-37.1	
1.693	-6.9	V	3.0	34.9	1.0	-40.8	-13.0	-27.8	
2.540	-15.6	V	3.0	35.4	1.0	-49.9	-13.0	-36.9	
3.386	-15.2	V	3.0	36.4	1.0	-50.6	-13.0	-37.6	

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UMTS REL 99, 1900MHz BAND 2

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 6/12/2014
Test Engineer: Macie
Configuration: EUT Only
Mode: Band 2 REL 99, 1900MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber E	3m Chamber E		Part 24

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1852.4MHz)									
3.705	-13.3	H	3.0	38.6	1.0	-50.9	-13.0	-37.9	
5.557	-10.2	H	3.0	38.0	1.0	-47.2	-13.0	-34.2	
7.410	-8.4	H	3.0	37.4	1.0	-44.8	-13.0	-31.8	
3.705	-13.4	V	3.0	38.6	1.0	-51.0	-13.0	-38.0	
5.557	-10.1	V	3.0	38.0	1.0	-47.0	-13.0	-34.0	
7.410	-8.6	V	3.0	37.4	1.0	-45.0	-13.0	-32.0	
Mid Channel (1880MHz)									
3.760	-13.0	H	3.0	38.6	1.0	-50.5	-13.0	-37.5	
5.640	-9.6	H	3.0	38.0	1.0	-46.5	-13.0	-33.5	
7.520	-7.7	H	3.0	37.3	1.0	-44.0	-13.0	-31.0	
3.760	-12.1	V	3.0	38.6	1.0	-49.7	-13.0	-36.7	
5.640	-10.9	V	3.0	38.0	1.0	-47.9	-13.0	-34.9	
7.520	-8.5	V	3.0	37.3	1.0	-44.9	-13.0	-31.9	
High Channel (1907.6MHz)									
3.815	-12.0	H	3.0	38.6	1.0	-49.6	-13.0	-36.6	
5.723	-9.7	H	3.0	37.9	1.0	-46.6	-13.0	-33.6	
7.630	-8.0	H	3.0	37.3	1.0	-44.2	-13.0	-31.2	
3.815	-12.7	V	3.0	38.6	1.0	-50.3	-13.0	-37.3	
5.723	-9.9	V	3.0	37.9	1.0	-46.8	-13.0	-33.8	
7.630	-7.9	V	3.0	37.3	1.0	-44.2	-13.0	-31.2	

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UMTS HSDPA, 1900MHz BAND 2

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 6/13/2014
Test Engineer: T Wang
Configuration: EUT Only
Mode: Band 2 HSDPA, 1900MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F		Part 24

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1852.4MHz)									
3.705	-13.2	H	3.0	36.3	1.0	-48.5	-13.0	-35.5	
5.557	-12.1	H	3.0	35.6	1.0	-46.7	-13.0	-33.7	
7.410	-10.8	H	3.0	35.5	1.0	-45.3	-13.0	-32.3	
3.705	-11.7	V	3.0	36.3	1.0	-47.0	-13.0	-34.0	
5.557	-11.8	V	3.0	35.6	1.0	-46.4	-13.0	-33.4	
7.410	-11.2	V	3.0	35.5	1.0	-45.7	-13.0	-32.7	
Mid Channel (1880MHz)									
3.760	-13.0	H	3.0	36.3	1.0	-48.3	-13.0	-35.3	
5.640	-13.1	H	3.0	35.6	1.0	-47.7	-13.0	-34.7	
7.520	-10.8	H	3.0	35.4	1.0	-45.3	-13.0	-32.3	
3.760	-11.6	V	3.0	36.3	1.0	-46.9	-13.0	-33.9	
5.640	-12.4	V	3.0	35.6	1.0	-47.0	-13.0	-34.0	
7.520	-9.8	V	3.0	35.4	1.0	-44.2	-13.0	-31.2	
High Channel (1907.6MHz)									
3.815	-12.6	H	3.0	36.3	1.0	-47.9	-13.0	-34.9	
5.723	-11.7	H	3.0	35.6	1.0	-46.3	-13.0	-33.3	
7.630	-10.2	H	3.0	35.3	1.0	-44.5	-13.0	-31.5	
3.815	-11.8	V	3.0	36.3	1.0	-47.1	-13.0	-34.1	
5.723	-12.4	V	3.0	35.6	1.0	-47.0	-13.0	-34.0	
7.630	-10.0	V	3.0	35.3	1.0	-44.4	-13.0	-31.4	

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UMTS REL 99, 1700MHz BAND 4

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 6/12/2014
Test Engineer: Macie
Configuration: EUT Only
Mode: Band 4 REL 99, 1700MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber E	3m Chamber E		Part 27

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1712.4MHz)									
3.425	-14.6	H	3.0	38.5	1.0	-52.1	-13.0	-39.1	
5.137	-10.9	H	3.0	38.1	1.0	-48.0	-13.0	-35.0	
6.850	-9.2	H	3.0	37.7	1.0	-45.9	-13.0	-32.9	
3.425	-12.7	V	3.0	38.5	1.0	-50.2	-13.0	-37.2	
5.137	-11.0	V	3.0	38.1	1.0	-48.1	-13.0	-35.1	
6.850	-10.0	V	3.0	37.7	1.0	-46.7	-13.0	-33.7	
Mid Channel (1732.6MHz)									
3.465	-13.3	H	3.0	38.5	1.0	-50.9	-13.0	-37.9	
5.198	-10.9	H	3.0	38.1	1.0	-47.9	-13.0	-34.9	
6.930	-8.9	H	3.0	37.7	1.0	-45.5	-13.0	-32.5	
3.465	-12.5	V	3.0	38.5	1.0	-50.0	-13.0	-37.0	
5.198	-10.8	V	3.0	38.1	1.0	-47.8	-13.0	-34.8	
6.930	-9.9	V	3.0	37.7	1.0	-46.5	-13.0	-33.5	
High Channel (1752.6MHz)									
3.505	-12.0	H	3.0	38.5	1.0	-49.6	-13.0	-36.6	
5.258	-10.4	H	3.0	38.0	1.0	-47.4	-13.0	-34.4	
7.010	-8.2	H	3.0	37.6	1.0	-44.8	-13.0	-31.8	
3.505	-13.9	V	3.0	38.5	1.0	-51.4	-13.0	-38.4	
5.258	-10.3	V	3.0	38.0	1.0	-47.3	-13.0	-34.3	
7.010	-8.3	V	3.0	37.6	1.0	-44.9	-13.0	-31.9	

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UMTS HSDPA, 1700MHz BAND 4

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 6/13/2014
Test Engineer: T Wang
Configuration: EUT Only
Mode: Band 4 HSDPA, 1700MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F		Part 27

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1712.4MHz)									
3.425	-15.6	H	3.0	36.4	1.0	-51.0	-13.0	-38.0	
5.137	-12.6	H	3.0	35.5	1.0	-47.2	-13.0	-34.2	
6.850	-11.3	H	3.0	35.9	1.0	-46.1	-13.0	-33.1	
3.425	-15.8	V	3.0	36.4	1.0	-51.2	-13.0	-38.2	
5.137	-12.4	V	3.0	35.5	1.0	-46.9	-13.0	-33.9	
6.850	-12.3	V	3.0	35.9	1.0	-47.1	-13.0	-34.1	
Mid Channel (1732.6MHz)									
3.465	-16.1	H	3.0	36.4	1.0	-51.4	-13.0	-38.4	
5.198	-13.7	H	3.0	35.5	1.0	-48.2	-13.0	-35.2	
6.930	-11.7	H	3.0	35.9	1.0	-46.6	-13.0	-33.6	
3.465	-14.9	V	3.0	36.4	1.0	-50.3	-13.0	-37.3	
5.198	-13.4	V	3.0	35.5	1.0	-47.9	-13.0	-34.9	
6.930	-11.9	V	3.0	35.9	1.0	-46.7	-13.0	-33.7	
High Channel (1752.6MHz)									
3.505	-15.8	H	3.0	36.4	1.0	-51.2	-13.0	-38.2	
5.258	-13.3	H	3.0	35.5	1.0	-47.8	-13.0	-34.8	
7.010	-11.5	H	3.0	35.9	1.0	-46.4	-13.0	-33.4	
3.505	-15.4	V	3.0	36.4	1.0	-50.8	-13.0	-37.8	
5.258	-13.4	V	3.0	35.5	1.0	-47.9	-13.0	-34.9	
7.010	-12.0	V	3.0	35.9	1.0	-46.8	-13.0	-33.8	

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CDMA2000 1xRTT, 850MHz BC0

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/14/14
Test Engineer: Ali Poushnejad
Configuration: EUT Only
Mode: CDMA2000, 1xRTT BC0

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	3m Chamber D	Filter 01	Part 22

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.7MHz)									
1.649	-17.3	H	3.0	37.5	1.0	-53.8	-13.0	-40.8	
2.474	-18.7	H	3.0	37.8	1.0	-55.5	-13.0	-42.5	
2.474	-9.1	V	3.0	37.8	1.0	-45.9	-13.0	-32.9	
3.298	-15.3	V	3.0	38.4	1.0	-52.7	-13.0	-39.7	
Mid Channel (836.52MHz)									
1.673	-17.3	H	3.0	37.5	1.0	-53.8	-13.0	-40.8	
2.510	-19.1	H	3.0	37.7	1.0	-55.8	-13.0	-42.8	
1.673	-11.5	V	3.0	37.5	1.0	-48.0	-13.0	-35.0	
2.510	-16.6	V	3.0	37.7	1.0	-53.3	-13.0	-40.3	
High Channel (848.31MHz)									
1.687	-19.4	H	3.0	37.5	1.0	-55.9	-13.0	-42.9	
2.530	-22.0	H	3.0	37.7	1.0	-58.7	-13.0	-45.7	
1.687	-16.7	V	3.0	37.5	1.0	-53.2	-13.0	-40.2	
2.530	-21.2	V	3.0	37.7	1.0	-58.0	-13.0	-45.0	

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EVDO-Rev A, 850MHz BC0

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/14/14
Test Engineer: Ali Poushnejad
Configuration: EUT Only
Mode: CDMA2000, EVDO_ A BC0

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F	Filter 01	Part 22

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.7MHz)									
1.649	-18.7	H	3.0	34.9	1.0	-52.6	-13.0	-39.6	
2.474	-18.7	H	3.0	35.4	1.0	-53.0	-13.0	-40.0	
1.649	-17.2	V	3.0	34.9	1.0	-51.1	-13.0	-38.1	
2.474	-23.0	V	3.0	35.4	1.0	-57.4	-13.0	-44.4	
Mid Channel (836.52MHz)									
1.673	-20.6	H	3.0	34.9	1.0	-54.5	-13.0	-41.5	
2.510	-20.0	H	3.0	35.3	1.0	-54.3	-13.0	-41.3	
1.673	-19.7	V	3.0	34.9	1.0	-53.6	-13.0	-40.6	
2.510	-19.8	V	3.0	35.3	1.0	-54.1	-13.0	-41.1	
High Channel (848.31MHz)									
1.697	-20.1	H	3.0	34.9	1.0	-53.9	-13.0	-40.9	
2.545	-16.4	H	3.0	35.4	1.0	-50.8	-13.0	-37.8	
1.697	-20.0	V	3.0	34.9	1.0	-53.9	-13.0	-40.9	
2.545	-17.5	V	3.0	35.4	1.0	-51.9	-13.0	-38.9	

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CDMA2000 1xRTT, 1900MHz BC1

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/14/14
Test Engineer: Ali Poushnejad
Configuration: EUT Only
Mode: CDMA2000, 1xRTT BC1

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	3m Chamber D	Filter 01	Part 24

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1851.25MHz)									
3.703	-17.5	H	3.0	38.0	1.0	-54.5	-13.0	-41.5	
5.554	-19.4	H	3.0	37.4	1.0	-55.7	-13.0	-42.7	
3.703	-15.9	V	3.0	38.0	1.0	-53.0	-13.0	-40.0	
5.554	-18.5	V	3.0	37.4	1.0	-54.9	-13.0	-41.9	
Mid Channel (1880MHz)									
3.760	-5.9	H	3.0	38.0	1.0	-42.9	-13.0	-29.9	
6.640	-17.3	H	3.0	37.1	1.0	-53.4	-13.0	-40.4	
3.760	-9.4	V	3.0	38.0	1.0	-46.3	-13.0	-33.3	
6.640	-17.9	V	3.0	37.1	1.0	-54.0	-13.0	-41.0	
High Channel (1908.75MHz)									
3.703	-19.7	H	3.0	38.0	1.0	-56.8	-13.0	-43.8	
5.554	-18.5	H	3.0	37.4	1.0	-54.9	-13.0	-41.9	
3.703	-20.1	V	3.0	38.0	1.0	-57.1	-13.0	-44.1	
5.554	-19.1	V	3.0	37.4	1.0	-55.5	-13.0	-42.5	

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EVDO-Rev A, 1900MHz BC1

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/14/14
Test Engineer: Ali Poushnejad
Configuration: EUT Only
Mode: CDMA EV DO_A BC 1

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F		Part 24

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1851.25MHz)									
3.703	-3.1	H	3.0	36.3	1.0	-38.4	-13.0	-25.4	
5.554	-11.0	H	3.0	35.6	1.0	-45.5	-13.0	-32.5	
3.703	-6.0	V	3.0	36.3	1.0	-41.3	-13.0	-28.3	
5.554	-9.8	V	3.0	35.6	1.0	-44.4	-13.0	-31.4	
Mid Channel (1880.0)									
3.760	-9.7	H	3.0	36.3	1.0	-45.0	-13.0	-32.0	
5.640	-14.2	H	3.0	35.6	1.0	-48.8	-13.0	-35.8	
3.760	-8.5	V	3.0	36.3	1.0	-43.8	-13.0	-30.8	
5.640	-13.1	V	3.0	35.6	1.0	-47.7	-13.0	-34.7	
High Channel (1908.75MHz)									
3.818	-12.9	H	3.0	36.3	1.0	-48.2	-13.0	-35.2	
5.726	-15.9	H	3.0	35.6	1.0	-50.4	-13.0	-37.4	
3.818	-10.1	V	3.0	36.3	1.0	-45.4	-13.0	-32.4	
5.726	-15.6	V	3.0	35.6	1.0	-50.2	-13.0	-37.2	

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CDMA2000 1xRTT, 1700MHz BC15

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/14/14
Test Engineer: Ali Poushnejad
Configuration: EUT Only
Mode: CDMA2000, 1xRTT BC15

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	3m Chamber D	Filter 01	Part 27

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1711.25MHz)									
3.423	-3.7	H	3.0	38.3	1.0	-41.1	-13.0	-28.1	
5.114	-13.3	H	3.0	37.5	1.0	-49.8	-13.0	-36.8	
3.423	-3.0	V	3.0	38.3	1.0	-40.3	-13.0	-27.3	
5.114	-12.9	V	3.0	37.5	1.0	-49.3	-13.0	-36.3	
Mid Channel (1732.5MHz)									
3.465	-4.3	H	3.0	38.3	1.0	-41.6	-13.0	-28.6	
5.198	-12.9	H	3.0	37.5	1.0	-49.4	-13.0	-36.4	
3.465	-10.5	V	3.0	38.3	1.0	-47.8	-13.0	-34.8	
5.198	-11.8	V	3.0	37.5	1.0	-48.3	-13.0	-35.3	
High Channel (1753.75MHz)									
3.508	-10.2	H	3.0	38.2	1.0	-47.4	-13.0	-34.4	
5.261	-20.0	H	3.0	37.4	1.0	-56.4	-13.0	-43.4	
3.508	-10.5	V	3.0	38.2	1.0	-47.7	-13.0	-34.7	
5.261	-17.7	V	3.0	37.4	1.0	-54.1	-13.0	-41.1	

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EVDO-Rev A, 1700MHz BC15

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 8/2/2014
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: CDMA EVDO_A BC15

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F		Part 27

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1711.25MHz)									
3.423	-2.5	H	3.0	36.4	1.0	-37.9	-13.0	-24.9	
5.134	-4.6	H	3.0	35.5	1.0	-39.2	-13.0	-26.2	
6.845	-14.5	H	3.0	35.9	1.0	-49.3	-13.0	-36.3	
3.423	-1.9	V	3.0	36.4	1.0	-37.3	-13.0	-24.3	
5.134	-3.2	V	3.0	35.5	1.0	-37.7	-13.0	-24.7	
6.845	-15.1	V	3.0	35.9	1.0	-49.9	-13.0	-36.9	
Mid Channel (1732.5MHz)									
3.465	-1.2	H	3.0	36.4	1.0	-36.5	-13.0	-23.5	
5.198	-2.5	H	3.0	35.5	1.0	-37.0	-13.0	-24.0	
6.930	-13.3	H	3.0	35.9	1.0	-48.2	-13.0	-35.2	
3.465	-1.3	V	3.0	36.4	1.0	-36.7	-13.0	-23.7	
5.198	-1.1	V	3.0	35.5	1.0	-35.6	-13.0	-22.6	
6.930	-13.0	V	3.0	35.9	1.0	-47.8	-13.0	-34.8	
High Channel (1753.75MHz)									
3.508	-1.3	H	3.0	36.4	1.0	-36.7	-13.0	-23.7	
5.261	-2.4	H	3.0	35.5	1.0	-36.9	-13.0	-23.9	
7.015	-12.8	H	3.0	35.9	1.0	-47.7	-13.0	-34.7	
3.508	-1.1	V	3.0	36.4	1.0	-36.5	-13.0	-23.5	
5.261	-1.0	V	3.0	35.5	1.0	-35.5	-13.0	-22.5	
7.015	-14.6	V	3.0	35.9	1.0	-49.4	-13.0	-36.4	

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UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
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CDMA2000 1xRTT, 800MHz BC10

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/14/14
Test Engineer: Ali Poushnejad
Configuration: EUT Only
Mode: CDMA2000, 1xRTT BC10

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	3m Chamber D	Filter 01	Part 90

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (817.90MHz)									
1.636	-19.7	H	3.0	37.6	1.0	-56.3	-13.0	-43.3	
2.454	-17.5	H	3.0	37.9	1.0	-54.5	-13.0	-41.5	
1.636	-15.8	V	3.0	37.6	1.0	-52.4	-13.0	-39.4	
2.454	-18.3	V	3.0	37.9	1.0	-55.2	-13.0	-42.2	
Mid Channel (820.5MHz)									
1.641	-22.9	H	3.0	37.6	1.0	-59.4	-13.0	-46.4	
2.462	-14.2	H	3.0	37.9	1.0	-51.1	-13.0	-38.1	
1.641	-20.1	V	3.0	37.6	1.0	-56.6	-13.0	-43.6	
2.462	-17.5	V	3.0	37.9	1.0	-54.4	-13.0	-41.4	
High Channel (823.10MHz)									
1.646	-18.5	H	3.0	37.5	1.0	-55.1	-13.0	-42.1	
2.469	-17.6	H	3.0	37.8	1.0	-54.5	-13.0	-41.5	
1.646	-16.0	V	3.0	37.5	1.0	-52.5	-13.0	-39.5	
2.469	-15.4	V	3.0	37.8	1.0	-52.3	-13.0	-39.3	

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EVDO-Rev A, 800MHz BC10

3m Radiated Emissions Chamber
Above 1GHz Substitution Measurement

Company: Apple
Project #: 14U17673
Date: 06/14/14
Test Engineer: Ali Poushnejad
Configuration: EUT Only
Mode: CDMA2000, EV DO_A BC10

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifer	Filter	Limit
3m Chamber F	3m Chamber F	Filter 01	Part 90

Frequency (GHz)	SG reading (dBm)	Ant. Pol. (H/V)	Distance	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (817.25MHz)									
1.635	-19.2	H	3.0	34.9	1.0	-53.2	-13.0	-40.2	
2.452	-21.0	H	3.0	35.5	1.0	-55.5	-13.0	-42.5	
1.635	-18.8	V	3.0	34.9	1.0	-52.7	-13.0	-39.7	
2.452	-20.5	V	3.0	35.5	1.0	-54.9	-13.0	-41.9	
Mid Channel (820.0MHz)									
1.640	-18.2	H	3.0	34.9	1.0	-52.1	-13.0	-39.1	
2.460	-21.7	H	3.0	35.4	1.0	-56.1	-13.0	-43.1	
1.640	-16.7	V	3.0	34.9	1.0	-50.6	-13.0	-37.6	
2.460	-20.6	V	3.0	35.4	1.0	-55.1	-13.0	-42.1	
High Channel (822.75MHz)									
1.646	-17.9	H	3.0	34.9	1.0	-51.8	-13.0	-38.8	
2.468	-21.9	H	3.0	35.4	1.0	-56.3	-13.0	-43.3	
1.646	-18.3	V	3.0	34.9	1.0	-52.2	-13.0	-39.2	
2.468	-21.1	V	3.0	35.4	1.0	-55.5	-13.0	-42.5	

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