9.1.3. LAT LTE BAND 5

ERP LTE QPSK Band 5 (1.4 MHz BAND WIDTH)

AVERAGE

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/31/13
Test Engineer:	Mona Hua
Configuration:	EUT only
Mode:	LTE Band 5 , 1.4MHz BW
	QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.70	14.50	V	0.6	0.0	13.90	38.5	-24.5	
824.70	21.20	H	0.6	0.0	20.60	38.5	-17.8	
Mid Ch								
836.50	14.60	V	0.6	0.0	14.00	38.5	-24.4	
836.50	21.00	H	0.6	0.0	20.40	38.5	-18.0	
High Ch								
848.30	14.20	V	0.6	0.0	13.60	38.5	-24.8	
848.30	20.54	H	0.6	0.0	19.94	38.5	-18.5	

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ERP LTE 16QAM Band 5 (1.4 MHz BAND WIDTH)

Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT only
Mode: LTE Band 5 , 1.4MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.70	13.50	V	0.6	0.0	12.90	38.5	-25.5	
824.70	20.20	H	0.6	0.0	19.60	38.5	-18.8	
Mid Ch								
836.50	13.70	V	0.6	0.0	13.10	38.5	-25.3	
836.50	20.00	H	0.6	0.0	19.40	38.5	-19.0	
High Ch								
848.30	13.30	V	0.6	0.0	12.70	38.5	-25.7	
848.30	19.64	H	0.6	0.0	19.04	38.5	-19.4	

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ERP LTE QPSK Band 5 (3.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/31/13
Test Engineer:	Mona Hua
Configuration:	EUT only
Mode:	LTE Band 5 , 3MHz BW
	QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
825.50	14.60	V	0.6	0.0	14.00	38.5	-24.4	
825.50	21.10	H	0.6	0.0	20.50	38.5	-17.9	
Mid Ch								
836.50	14.60	V	0.6	0.0	14.00	38.5	-24.4	
836.50	20.90	H	0.6	0.0	20.30	38.5	-18.1	
High Ch								
847.50	14.70	V	0.6	0.0	14.10	38.5	-24.3	
847.50	20.74	H	0.6	0.0	20.14	38.5	-18.3	

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ERP LTE 16QAM Band 5 (3.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT only
Mode: LTE Band 5 , 3MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
825.50	13.70	V	0.6	0.0	13.10	38.5	-25.3	
825.50	20.10	H	0.6	0.0	19.50	38.5	-18.9	
Mid Ch								
836.50	13.70	V	0.6	0.0	13.10	38.5	-25.3	
836.50	19.90	H	0.6	0.0	19.30	38.5	-19.1	
High Ch								
847.50	13.70	V	0.6	0.0	13.10	38.5	-25.3	
847.50	19.84	H	0.6	0.0	19.24	38.5	-19.2	

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ERP LTE QPSK Band 5 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT only
Mode: LTE Band 5 , 5MHz BW
QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.50	14.80	V	0.6	0.0	14.20	38.5	-24.2	
826.50	21.60	H	0.6	0.0	21.00	38.5	-17.4	
Mid Ch								
836.50	14.70	V	0.6	0.0	14.10	38.5	-24.3	
836.50	21.00	H	0.6	0.0	20.40	38.5	-18.0	
High Ch								
846.50	14.40	V	0.6	0.0	13.80	38.5	-24.6	
846.50	20.44	H	0.6	0.0	19.84	38.5	-18.6	

Rev. 3.17.11

ERP LTE 16QAM Band 5 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT only
Mode: LTE Band 5 , 5MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.50	13.90	V	0.6	0.0	13.30	38.5	-25.1	
826.50	20.70	H	0.6	0.0	20.10	38.5	-18.3	
Mid Ch								
836.50	13.70	V	0.6	0.0	13.10	38.5	-25.3	
836.50	20.00	H	0.6	0.0	19.40	38.5	-19.0	
High Ch								
846.50	13.40	V	0.6	0.0	12.80	38.5	-25.6	
846.50	19.54	H	0.6	0.0	18.94	38.5	-19.5	

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ERP LTE QPSK Band 5 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT only
Mode: LTE Band 5 , 10MHz BW
QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
829.00	14.80	V	0.6	0.0	14.20	38.5	-24.2	
829.00	21.20	H	0.6	0.0	20.60	38.5	-17.8	
Mid Ch								
836.50	14.80	V	0.6	0.0	14.20	38.5	-24.2	
836.50	21.10	H	0.6	0.0	20.50	38.5	-17.9	
High Ch								
844.00	14.30	V	0.6	0.0	13.70	38.5	-24.7	
844.00	20.44	H	0.6	0.0	19.84	38.5	-18.6	

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ERP LTE 16QAM Band 5 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT only
Mode: LTE Band 5 , 10MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber B N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
829.00	13.90	V	0.6	0.0	13.30	38.5	-25.1	
829.00	20.30	H	0.6	0.0	19.70	38.5	-18.7	
Mid Ch								
836.50	13.90	V	0.6	0.0	13.30	38.5	-25.1	
836.50	20.00	H	0.6	0.0	19.40	38.5	-19.0	
High Ch								
844.00	13.40	V	0.6	0.0	12.80	38.5	-25.6	
844.00	19.44	H	0.6	0.0	18.84	38.5	-19.6	

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9.1.4. LAT LTE BAND 13

ERP LTE QPSK, Band 13 (5.0 MHz BAND WIDTH)

AVERAGE

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: TX, LTE BAND 13
QPSK, 5MHz BW, Average, RB1-0

Test Equipment:
Receiving: Sunol T243 and Chamber A N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
779.50	10.60	V	0.5	0.0	10.10	38.5	-28.3	
779.50	21.50	H	0.5	0.0	21.00	38.5	-17.4	
Mid Ch								
782.00	10.80	V	0.5	0.0	10.30	38.5	-28.1	
782.00	22.10	H	0.5	0.0	21.60	38.5	-16.8	
High Ch								
784.50	10.40	V	0.5	0.0	9.90	38.5	-28.5	
784.50	22.20	H	0.5	0.0	21.70	38.5	-16.7	

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ERP LTE 16QAM Band 13 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: TX, LTE BAND 13
16QAM, 5MHz BW, Average, RB1-0

Test Equipment:
Receiving: Sunol T243 and Chamber A N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
779.50	9.50	V	0.5	0.0	9.00	38.5	-29.4	
779.50	20.50	H	0.5	0.0	20.00	38.5	-18.4	
Mid Ch								
782.00	9.90	V	0.5	0.0	9.40	38.5	-29.0	
782.00	21.00	H	0.5	0.0	20.50	38.5	-17.9	
High Ch								
784.50	9.20	V	0.5	0.0	8.70	38.5	-29.7	
784.50	22.30	H	0.5	0.0	21.80	38.5	-16.6	

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ERP LTE QPSK and 16QAM Band 13 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/30/13
Test Engineer:	Mona Hua
Configuration:	EUT Only
Mode:	TX, LTE BAND 13
	QPSK and 16QAM, 10MHz, Average

Test Equipment:
Receiving: Sunol T243, and Chamber A N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
RB=1-0, QPSK								
782.00	10.50	V	0.5	0.0	10.00	38.5	-28.4	
782.00	21.80	H	0.5	0.0	21.30	38.5	-17.1	
RB=1-0, 16QAM								
782.00	9.30	V	0.5	0.0	8.80	38.5	-29.6	
782.00	20.80	H	0.5	0.0	20.30	38.5	-18.1	

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9.1.5. LAT LTE BAND 17

ERP LTE QPSK, Band 17 (5.0 MHz BAND WIDTH)

AVERAGE

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/31/13
Test Engineer:	Mona Hua
Configuration:	EUT Only
Mode:	LTE Band 17, 5MHz BW QPSK, Average, RB 1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
706.50	9.40	V	0.5	0.0	8.90	34.8	-25.9	
706.50	20.75	H	0.5	0.0	20.25	34.8	-14.6	
Mid Ch								
710.00	8.90	V	0.5	0.0	8.40	34.8	-26.4	
710.00	20.85	H	0.5	0.0	20.35	34.8	-14.5	
High Ch								
713.50	9.30	V	0.5	0.0	8.80	34.8	-26.0	
713.50	21.05	H	0.5	0.0	20.55	34.8	-14.3	

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ERP LTE 16QAM Band 17 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE Band 17, 5MHz BW
16QAM, Average, RB 1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
706.50	8.40	V	0.5	0.0	7.90	34.8	-26.9	
706.50	19.75	H	0.5	0.0	19.25	34.8	-15.6	
Mid Ch								
710.00	8.00	V	0.5	0.0	7.50	34.8	-27.3	
710.00	19.85	H	0.5	0.0	19.35	34.8	-15.5	
High Ch								
713.50	8.40	V	0.5	0.0	7.90	34.8	-26.9	
713.50	20.15	H	0.5	0.0	19.65	34.8	-15.2	

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ERP LTE QPSK Band 17 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/31/13
Test Engineer:	Mona Hua
Configuration:	EUT Only
Mode:	LTE Band 17, 10MHz BW
	QPSK, Average, RB 1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
709.00	9.50	V	0.5	0.0	9.00	34.8	-25.8	
709.00	21.05	H	0.5	0.0	20.55	34.8	-14.3	
Mid Ch								
710.00	8.90	V	0.5	0.0	8.40	34.8	-26.4	
710.00	20.95	H	0.5	0.0	20.45	34.8	-14.4	
High Ch								
711.00	9.30	V	0.5	0.0	8.80	34.8	-26.0	
711.00	20.75	H	0.5	0.0	20.25	34.8	-14.6	

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ERP LTE 16QAM Band 17 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/31/13
Test Engineer:	Mona Hua
Configuration:	EUT Only
Mode:	LTE Band 17, 10MHz BW
	16QAM, Average, RB 1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
709.00	13.12	V	0.5	0.0	12.62	34.8	-22.2	
709.00	20.15	H	0.5	0.0	19.65	34.8	-15.2	
Mid Ch								
710.00	12.92	V	0.5	0.0	12.42	34.8	-22.4	
710.00	19.95	H	0.5	0.0	19.45	34.8	-15.4	
High Ch								
711.00	13.02	V	0.5	0.0	12.52	34.8	-22.3	
711.00	19.85	H	0.5	0.0	19.35	34.8	-15.5	

Rev. 3.17.11

9.1.6. LAT LTE BAND 25

EIRP LTE QPSK Band 25 (1.4 MHz BAND WIDTH)

PEAK

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 1.4MHz BW
QPSK, Peak, RB6-0

Test Equipment:
Receiving: Horn T59, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.851	17.9	V	0.85	7.94	24.99	33.0	-8.0	
1.851	21.4	H	0.85	8.80	29.35	33.0	-3.7	
Mid Ch								
1.883	17.9	V	0.85	7.95	24.95	33.0	-8.1	
1.883	20.2	H	0.85	8.68	28.03	33.0	-5.0	
High Ch								
1.914	17.7	V	0.85	7.97	24.85	33.0	-8.2	
1.914	20.7	H	0.85	8.57	28.42	33.0	-4.6	

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EIRP LTE 16QAM Band 25 (1.4 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 1.4MHz BW
16QAM, Peak, RB6-0

Test Equipment:
Receiving: Horn T59, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.851	16.9	V	0.85	7.94	23.99	33.0	-9.0	
1.851	20.5	H	0.85	8.80	28.45	33.0	-4.6	
Mid Ch								
1.883	16.8	V	0.85	7.95	23.85	33.0	-9.2	
1.883	19.1	H	0.85	8.68	26.93	33.0	-6.1	
High Ch								
1.914	16.6	V	0.85	7.97	23.75	33.0	-9.3	
1.914	19.6	H	0.85	8.57	27.32	33.0	-5.7	

Rev. 3.17.11

EIRP LTE QPSK Band 25 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 3MHz BW
QPSK, Peak, RB15-0

Test Equipment:
Receiving: Horn T59, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.852	18.0	V	0.85	7.94	25.09	33.0	-7.9	
1.852	20.9	H	0.85	8.80	28.85	33.0	-4.2	
Mid Ch								
1.883	17.9	V	0.85	7.95	24.95	33.0	-8.1	
1.883	20.2	H	0.85	8.68	28.03	33.0	-5.0	
High Ch								
1.914	18.6	V	0.85	7.97	25.75	33.0	-7.3	
1.914	20.2	H	0.85	8.57	27.92	33.0	-5.1	

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EIRP LTE 16QAM Band 25 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 3MHz BW
16QAM, Peak, RB15-0

Test Equipment:
Receiving: Horn T59, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.852	17.0	V	0.85	7.94	24.09	33.0	-8.9	
1.852	20.0	H	0.85	8.80	27.95	33.0	-5.1	
Mid Ch								
1.883	16.9	V	0.85	7.95	23.95	33.0	-9.1	
1.883	19.2	H	0.85	8.68	27.03	33.0	-6.0	
High Ch								
1.914	17.8	V	0.85	7.97	24.95	33.0	-8.1	
1.914	19.0	H	0.85	8.57	26.72	33.0	-6.3	

Rev. 3.17.11

EIRP LTE QPSK Band 25 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 5MHz BW
QPSK, Peak, RB25-0

Test Equipment:
Receiving: Horn T59, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.853	19.1	V	0.85	7.94	26.19	33.0	-6.8	
1.853	21.7	H	0.85	8.80	29.65	33.0	-3.4	
Mid Ch								
1.883	18.8	V	0.85	7.95	25.85	33.0	-7.2	
1.883	21.3	H	0.85	8.68	29.13	33.0	-3.9	
High Ch								
1.913	19.2	V	0.85	7.97	26.35	33.0	-6.7	
1.913	21.3	H	0.85	8.57	29.02	33.0	-4.0	

Rev. 3.17.11

EIRP LTE 16QAM Band 25 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 5MHz BW
16QAM, Peak, RB25-0

Test Equipment:
Receiving: Horn T59, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.853	18.2	V	0.85	7.94	25.29	33.0	-7.7	
1.853	20.8	H	0.85	8.80	28.75	33.0	-4.3	
Mid Ch								
1.883	17.9	V	0.85	7.95	24.95	33.0	-8.1	
1.883	20.4	H	0.85	8.68	28.23	33.0	-4.8	
High Ch								
1.913	18.2	V	0.85	7.97	25.35	33.0	-7.7	
1.913	20.2	H	0.85	8.57	27.92	33.0	-5.1	

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EIRP LTE QPSK Band 25 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 10MHz BW
QPSK, Peak, RB 50-0

Test Equipment:
Receiving: Horn T59, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.855	19.4	V	0.85	7.94	26.49	33.0	-6.5	
1.855	21.6	H	0.85	8.80	29.55	33.0	-3.5	
Mid Ch								
1.883	19.1	V	0.85	7.95	26.15	33.0	-6.9	
1.883	21.8	H	0.85	8.68	29.63	33.0	-3.4	
High Ch								
1.910	19.0	V	0.85	7.97	26.15	33.0	-6.9	
1.910	22.0	H	0.85	8.57	29.72	33.0	-3.3	

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EIRP LTE 16QAM Band 25 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 10MHz BW
16QAM, Peak, RB 50-0

Test Equipment:
Receiving: Horn T59, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.855	18.5	V	0.85	7.94	25.59	33.0	-7.4	
1.855	20.6	H	0.85	8.80	28.55	33.0	-4.5	
Mid Ch								
1.883	18.1	V	0.85	7.95	25.15	33.0	-7.9	
1.883	20.7	H	0.85	8.68	28.53	33.0	-4.5	
High Ch								
1.910	18.0	V	0.85	7.97	25.15	33.0	-7.9	
1.910	21.1	H	0.85	8.57	28.82	33.0	-4.2	

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EIRP LTE QPSK Band 25 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 15MHz BW
QPSK, Peak, RB75-0

Test Equipment:
Receiving: Horn T59, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.858	19.7	V	0.85	7.94	26.79	33.0	-6.2	
1.858	22.3	H	0.85	8.80	30.25	33.0	-2.8	
Mid Ch								
1.883	19.3	V	0.85	7.95	26.35	33.0	-6.7	
1.883	22.0	H	0.85	8.68	29.83	33.0	-3.2	
High Ch								
1.908	18.8	V	0.85	7.97	25.95	33.0	-7.1	
1.908	22.3	H	0.85	8.57	30.02	33.0	-3.0	

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EIRP LTE 16QAM Band 25 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 15MHz BW
16QAM, Peak, RB75-0

Test Equipment:
Receiving: Horn T59, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.858	18.7	V	0.85	7.94	25.79	33.0	-7.2	
1.858	21.4	H	0.85	8.80	29.35	33.0	-3.7	
Mid Ch								
1.883	18.3	V	0.85	7.95	25.35	33.0	-7.7	
1.883	21.0	H	0.85	8.68	28.83	33.0	-4.2	
High Ch								
1.908	17.7	V	0.85	7.97	24.85	33.0	-8.2	
1.908	21.4	H	0.85	8.57	29.12	33.0	-3.9	

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EIRP LTE QPSK Band 25 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 20MHz BW
QPSK, Peak, RB100-0

Test Equipment:
Receiving: Horn T59, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.860	20.3	V	0.85	7.94	27.39	33.0	-5.6	
1.860	22.7	H	0.85	8.80	30.65	33.0	-2.4	
Mid Ch								
1.883	19.8	V	0.85	7.95	26.85	33.0	-6.2	
1.883	22.1	H	0.85	8.68	29.93	33.0	-3.1	
High Ch								
1.905	19.2	V	0.85	7.97	26.35	33.0	-6.7	
1.905	22.5	H	0.85	8.57	30.22	33.0	-2.8	

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EIRP LTE 16QAM Band 25 (20.0 MHz BAND WIDTH

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 20MHz BW
16QAM, Peak, RB100-0

Test Equipment:
Receiving: Horn T59, and Chamber B SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable (244639001) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.860	19.4	V	0.85	7.94	26.49	33.0	-6.5	
1.860	21.7	H	0.85	8.80	29.65	33.0	-3.4	
Mid Ch								
1.883	18.8	V	0.85	7.95	25.85	33.0	-7.2	
1.883	21.1	H	0.85	8.68	28.93	33.0	-4.1	
High Ch								
1.905	18.1	V	0.85	7.97	25.25	33.0	-7.8	
1.905	21.6	H	0.85	8.57	29.32	33.0	-3.7	

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9.1.7. LAT LTE BAND 26

ERP LTE QPSK Band 26 (3.0 MHz BAND WIDTH)

PEAK

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company:	Apple
Project #:	13U14987
Date:	07/16/13
Test Engineer:	R Zheng
Configuration:	EUT only
Mode:	Band26 3M
	QPSK Pk RB15/0

Test Equipment:
Receiving: Sunol T122, and Chamber F Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
820.30	18.60	V	0.9	0.0	17.70	38.5	-20.7	
820.30	24.90	H	0.9	0.0	24.00	38.5	-14.4	
Mid Ch								
821.30	18.60	V	0.9	0.0	17.70	38.5	-20.7	
821.30	25.33	H	0.9	0.0	24.43	38.5	-14.0	
High Ch								
822.30	18.20	V	0.9	0.0	17.30	38.5	-21.1	
822.30	24.87	H	0.9	0.0	23.97	38.5	-14.5	

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ERP LTE 16QAM Band 26 (3.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 07/16/13
Test Engineer: R Zheng
Configuration: EUT only
Mode: Band26 3M
QPSK Pk RB15/0

Test Equipment:
Receiving: Sunol T122, and Chamber F Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
820.30	17.60	V	0.9	0.0	16.70	38.5	-21.7	
820.30	23.95	H	0.9	0.0	23.05	38.5	-15.4	
Mid Ch								
821.30	17.60	V	0.9	0.0	16.70	38.5	-21.7	
821.30	24.38	H	0.9	0.0	23.48	38.5	-15.0	
High Ch								
822.30	17.25	V	0.9	0.0	16.35	38.5	-22.1	
822.30	23.90	H	0.9	0.0	23.00	38.5	-15.4	

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ERP LTE QPSK/16QAM Band 26 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company:	Apple
Project #:	13U14987
Date:	07/16/13
Test Engineer:	R Zheng
Configuration:	EUT only
Mode:	Band26 5MHz
	QPSK /16QAM Pk RB25/0

Test Equipment:
Receiving: Sunol T122, and Chamber F Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
QPSK								
Mid Ch								
821.30	19.37	V	0.9	0.0	18.47	38.5	-20.0	
821.30	26.14	H	0.9	0.0	25.24	38.5	-13.2	
16QAM								
Mid Ch								
821.30	18.36	V	0.9	0.0	17.46	38.5	-21.0	
821.30	25.20	H	0.9	0.0	24.30	38.5	-14.1	

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9.1.8. UAT LTE BAND 2

EIRP LTE QPSK Band 2 (1.4 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 2, 1.4MHz BW
QPSK, Peak, RB6-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.851	14.5	V	0.85	7.94	21.59	33.0	-11.4	
1.851	17.2	H	0.85	8.80	25.15	33.0	-7.9	
Mid Ch								
1.880	11.8	V	0.85	7.95	18.85	33.0	-14.2	
1.880	14.2	H	0.85	8.68	22.03	33.0	-11.0	
High Ch								
1.909	12.3	V	0.85	7.97	19.45	33.0	-13.6	
1.909	14.9	H	0.85	8.57	22.62	33.0	-10.4	

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EIRP LTE 16QAM Band 2 (1.4 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 2, 1.4MHz BW
16QAM, Peak, RB6-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.851	13.5	V	0.85	7.94	20.59	33.0	-12.4	
1.851	16.1	H	0.85	8.80	24.05	33.0	-9.0	
Mid Ch								
1.880	10.8	V	0.85	7.95	17.85	33.0	-15.2	
1.880	13.1	H	0.85	8.68	20.93	33.0	-12.1	
High Ch								
1.909	11.2	V	0.85	7.97	18.35	33.0	-14.7	
1.909	13.8	H	0.85	8.57	21.52	33.0	-11.5	

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EIRP LTE QPSK Band 2 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/20/13
Test Engineer:	Mona Hua
Configuration:	EUT Only
Mode:	LTE band 2, 3MHz BW
	QPSK, Peak, RB15-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.852	14.9	V	0.85	7.94	21.99	33.0	-11.0	
1.852	17.6	H	0.85	8.80	25.55	33.0	-7.5	
Mid Ch								
1.880	12.3	V	0.85	7.95	19.35	33.0	-13.7	
1.880	14.8	H	0.85	8.68	22.63	33.0	-10.4	
High Ch								
1.909	13.0	V	0.85	7.97	20.15	33.0	-12.9	
1.909	15.4	H	0.85	8.57	23.12	33.0	-9.9	

Rev. 3.17.11

EIRP LTE 16QAM Band 2 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 2, 3MHz BW
16QAM, Peak, RB15-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.852	13.9	V	0.85	7.94	20.99	33.0	-12.0	
1.852	16.5	H	0.85	8.80	24.45	33.0	-8.6	
Mid Ch								
1.880	11.3	V	0.85	7.95	18.35	33.0	-14.7	
1.880	13.8	H	0.85	8.68	21.63	33.0	-11.4	
High Ch								
1.909	11.9	V	0.85	7.97	19.05	33.0	-14.0	
1.909	14.4	H	0.85	8.57	22.12	33.0	-10.9	

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EIRP LTE QPSK Band 2 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/20/13
Test Engineer:	Mona Hua
Configuration:	EUT Only
Mode:	LTE band 2, 5MHz BW
	QPSK, Peak, RB25-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.853	15.7	V	0.85	7.94	22.79	33.0	-10.2	
1.853	18.1	H	0.85	8.80	26.05	33.0	-7.0	
Mid Ch								
1.880	13.4	V	0.85	7.95	20.45	33.0	-12.6	
1.880	16.0	H	0.85	8.68	23.83	33.0	-9.2	
High Ch								
1.908	13.7	V	0.85	7.97	20.85	33.0	-12.2	
1.908	16.3	H	0.85	8.57	24.02	33.0	-9.0	

Rev. 3.17.11

EIRP LTE 16QAM Band 2 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 2, 5MHz BW
16QAM, Peak, RB25-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.853	14.7	V	0.85	7.94	21.79	33.0	-11.2	
1.853	17.1	H	0.85	8.80	25.05	33.0	-8.0	
Mid Ch								
1.880	12.4	V	0.85	7.95	19.45	33.0	-13.6	
1.880	14.7	H	0.85	8.68	22.53	33.0	-10.5	
High Ch								
1.908	12.7	V	0.85	7.97	19.85	33.0	-13.2	
1.908	15.2	H	0.85	8.57	22.92	33.0	-10.1	

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EIRP LTE QPSK Band 2 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 2, 10MHz BW
QPSK, Peak, RB50-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.855	15.7	V	0.85	7.94	22.79	33.0	-10.2	
1.855	17.3	H	0.85	8.80	25.25	33.0	-7.8	
Mid Ch								
1.880	13.3	V	0.85	7.95	20.35	33.0	-12.7	
1.880	17.8	H	0.85	8.68	25.63	33.0	-7.4	
High Ch								
1.905	14.3	V	0.85	7.97	21.45	33.0	-11.6	
1.905	17.9	H	0.85	8.57	25.62	33.0	-7.4	

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EIRP LTE 16QAM Band 2 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 2, 10MHz BW
16QAM, Peak, RB50-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.855	14.6	V	0.85	7.94	21.69	33.0	-11.3	
1.855	16.3	H	0.85	8.80	24.25	33.0	-8.8	
Mid Ch								
1.880	12.2	V	0.85	7.95	19.25	33.0	-13.8	
1.880	16.6	H	0.85	8.68	24.43	33.0	-8.6	
High Ch								
1.905	13.3	V	0.85	7.97	20.45	33.0	-12.6	
1.905	16.8	H	0.85	8.57	24.52	33.0	-8.5	

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EIRP LTE QPSK Band 2 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/20/13
Test Engineer:	Mona Hua
Configuration:	EUT Only
Mode:	LTE band 2, 15MHz BW
	QPSK, Peak, RB75-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.858	15.3	V	0.85	7.94	22.39	33.0	-10.6	
1.858	17.3	H	0.85	8.80	25.25	33.0	-7.8	
Mid Ch								
1.880	13.4	V	0.85	7.95	20.45	33.0	-12.6	
1.880	16.1	H	0.85	8.68	23.93	33.0	-9.1	
High Ch								
1.903	13.2	V	0.85	7.97	20.35	33.0	-12.7	
1.903	15.9	H	0.85	8.57	23.62	33.0	-9.4	

Rev. 3.17.11

EIRP LTE 16QAM Band 2 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 2, 15MHz BW
16QAM, Peak, RB75-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.858	14.2	V	0.85	7.94	21.29	33.0	-11.7	
1.858	16.4	H	0.85	8.80	24.35	33.0	-8.7	
Mid Ch								
1.880	12.3	V	0.85	7.95	19.35	33.0	-13.7	
1.880	15.2	H	0.85	8.68	23.03	33.0	-10.0	
High Ch								
1.903	12.2	V	0.85	7.97	19.35	33.0	-13.7	
1.903	14.9	H	0.85	8.57	22.62	33.0	-10.4	

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EIRP LTE QPSK Band 2 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 2, 20MHz BW
QPSK, Peak, RB100-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.860	15.1	V	0.85	7.94	22.19	33.0	-10.8	
1.860	17.4	H	0.85	8.80	25.35	33.0	-7.7	
Mid Ch								
1.880	14.1	V	0.85	7.95	21.15	33.0	-11.9	
1.880	16.2	H	0.85	8.68	24.03	33.0	-9.0	
High Ch								
1.900	13.6	V	0.85	7.97	20.75	33.0	-12.3	
1.900	16.3	H	0.85	8.57	24.02	33.0	-9.0	

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EIRP LTE 16QAM Band 2 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 2, 20MHz BW
16QAM, Peak, RB100-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.860	14.1	V	0.85	7.94	21.19	33.0	-11.8	
1.860	16.5	H	0.85	8.80	24.45	33.0	-8.6	
Mid Ch								
1.880	13.0	V	0.85	7.95	20.05	33.0	-13.0	
1.880	15.1	H	0.85	8.68	22.93	33.0	-10.1	
High Ch								
1.900	12.5	V	0.85	7.97	19.65	33.0	-13.4	
1.900	15.2	H	0.85	8.57	22.92	33.0	-10.1	

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9.1.9. UAT LTE BAND 4

EIRP LTE QPSK Band 4 (1.4 MHz BAND WIDTH)

PEAK

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/20/13
Test Engineer:	Mona Hua
Configuration:	EUT Only
Mode:	LTE band 4, 1.4MHz BW
	QPSK, Peak, RB6-0

Test Equipment:
Receiving: Horn T344, and ChamberD SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.711	11.0	V	0.85	8.16	18.33	30.0	-11.7	
1.711	14.1	H	0.85	8.59	21.84	30.0	-8.2	
Mid Ch								
1.733	11.4	V	0.85	8.11	18.69	30.0	-11.3	
1.733	15.5	H	0.85	8.69	23.36	30.0	-6.6	
High Ch								
1.754	12.8	V	0.85	8.07	20.01	30.0	-10.0	
1.754	17.0	H	0.85	8.79	24.91	30.0	-5.1	

Rev. 3 17.11

EIRP LTE 16QAM Band 4 (1.4 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 4, 1.4MHz BW
16QAM, Peak, RB6-0

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.715	9.8	V	0.85	8.16	17.13	30.0	-12.9	
1.715	13.0	H	0.85	8.59	20.74	30.0	-9.3	
Mid Ch								
1.733	10.4	V	0.85	8.11	17.69	30.0	-12.3	
1.733	14.4	H	0.85	8.69	22.26	30.0	-7.7	
High Ch								
1.750	11.6	V	0.85	8.07	18.81	30.0	-11.2	
1.750	16.0	H	0.85	8.79	23.91	30.0	-6.1	

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EIRP LTE QPSK Band 4 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 4, 3MHz BW
QPSK, Peak, RB15-0

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.712	10.6	V	0.85	8.16	17.93	30.0	-12.1	
1.712	12.3	H	0.85	8.59	20.04	30.0	-10.0	
Mid Ch								
1.733	10.4	V	0.85	8.11	17.69	30.0	-12.3	
1.733	14.4	H	0.85	8.69	22.26	30.0	-7.7	
High Ch								
1.754	11.9	V	0.85	8.07	19.11	30.0	-10.9	
1.754	15.4	H	0.85	8.79	23.31	30.0	-6.7	

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EIRP LTE 16QAM Band 4 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 4, 3MHz BW
16QAM, Peak, RB15-0

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.712	9.6	V	0.85	8.16	16.93	30.0	-13.1	
1.712	11.3	H	0.85	8.59	19.04	30.0	-11.0	
Mid Ch								
1.733	9.4	V	0.85	8.11	16.69	30.0	-13.3	
1.733	13.4	H	0.85	8.69	21.26	30.0	-8.7	
High Ch								
1.754	10.9	V	0.85	8.07	18.11	30.0	-11.9	
1.754	14.4	H	0.85	8.79	22.31	30.0	-7.7	

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EIRP LTE QPSK Band 4 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 4, 5MHz BW
QPSK, Peak, RB25-0

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.713	10.1	V	0.85	8.16	17.43	30.0	-12.6	
1.713	13.8	H	0.85	8.59	21.54	30.0	-8.5	
Mid Ch								
1.733	10.4	V	0.85	8.11	17.69	30.0	-12.3	
1.733	14.4	H	0.85	8.69	22.26	30.0	-7.7	
High Ch								
1.753	11.4	V	0.85	8.07	18.61	30.0	-11.4	
1.753	15.4	H	0.85	8.79	23.31	30.0	-6.7	

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EIRP LTE 16QAM Band 4 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 4, 5MHz BW
16QAM, Peak, RB25-0

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.713	9.2	V	0.85	8.16	16.53	30.0	-13.5	
1.713	12.8	H	0.85	8.59	20.54	30.0	-9.5	
Mid Ch								
1.733	9.4	V	0.85	8.11	16.69	30.0	-13.3	
1.733	13.4	H	0.85	8.69	21.26	30.0	-8.7	
High Ch								
1.753	10.4	V	0.85	8.07	17.61	30.0	-12.4	
1.753	14.4	H	0.85	8.79	22.31	30.0	-7.7	

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EIRP LTE QPSK Band 4 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 4, 10MHz BW
QPSK, Peak, RB50-0

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.715	9.6	V	0.85	8.16	16.93	30.0	-13.1	
1.715	12.8	H	0.85	8.59	20.54	30.0	-9.5	
Mid Ch								
1.733	9.4	V	0.85	8.11	16.69	30.0	-13.3	
1.733	13.4	H	0.85	8.69	21.26	30.0	-8.7	
High Ch								
1.750	11.2	V	0.85	8.07	18.41	30.0	-11.6	
1.750	14.4	H	0.85	8.79	22.31	30.0	-7.7	

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EIRP LTE 16QAM Band 4 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 4, 10MHz BW
16QAM, Peak, RB50-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.715	8.6	V	0.85	8.16	15.93	30.0	-14.1	
1.715	11.8	H	0.85	8.59	19.54	30.0	-10.5	
Mid Ch								
1.733	8.4	V	0.85	8.11	15.69	30.0	-14.3	
1.733	12.4	H	0.85	8.69	20.26	30.0	-9.7	
High Ch								
1.750	10.2	V	0.85	8.07	17.41	30.0	-12.6	
1.750	13.4	H	0.85	8.79	21.31	30.0	-8.7	

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EIRP LTE QPSK Band 4 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 4, 15MHz BW
QPSK, Peak, RB75-0

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.718	10.6	V	0.85	8.16	17.93	30.0	-12.1	
1.718	12.6	H	0.85	8.59	20.34	30.0	-9.7	
Mid Ch								
1.733	10.4	V	0.85	8.11	17.69	30.0	-12.3	
1.733	13.4	H	0.85	8.69	21.26	30.0	-8.7	
High Ch								
1.748	10.9	V	0.85	8.07	18.11	30.0	-11.9	
1.748	15.4	H	0.85	8.79	23.31	30.0	-6.7	

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EIRP LTE 16QAM Band 4 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 4, 15MHz BW
16QAM, Peak, RB75-0

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.718	9.6	V	0.85	8.16	16.93	30.0	-13.1	
1.718	11.6	H	0.85	8.59	19.34	30.0	-10.7	
Mid Ch								
1.733	9.4	V	0.85	8.11	16.69	30.0	-13.3	
1.733	12.4	H	0.85	8.69	20.26	30.0	-9.7	
High Ch								
1.748	9.9	V	0.85	8.07	17.11	30.0	-12.9	
1.748	14.4	H	0.85	8.79	22.31	30.0	-7.7	

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EIRP LTE QPSK Band 4 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 4, 20MHz BW
QPSK, Peak, RB100-0

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.720	9.4	V	0.85	8.16	16.73	30.0	-13.3	
1.720	12.8	H	0.85	8.59	20.54	30.0	-9.5	
Mid Ch								
1.733	9.7	V	0.85	8.11	16.99	30.0	-13.0	
1.733	13.2	H	0.85	8.69	21.06	30.0	-8.9	
High Ch								
1.745	10.9	V	0.85	8.07	18.11	30.0	-11.9	
1.745	15.3	H	0.85	8.79	23.21	30.0	-6.8	

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EIRP LTE 16QAM Band 4 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 4, 20MHz BW
16QAM, Peak, RB100-0

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.720	8.4	V	0.85	8.16	15.73	30.0	-14.3	
1.720	11.8	H	0.85	8.59	19.54	30.0	-10.5	
Mid Ch								
1.733	8.8	V	0.85	8.11	16.09	30.0	-13.9	
1.733	12.2	H	0.85	8.69	20.06	30.0	-9.9	
High Ch								
1.745	61.9	V	0.85	8.07	69.11	30.0	39.1	
1.745	14.4	H	0.85	8.79	22.31	30.0	-7.7	

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9.1.10. UAT LTE BAND 5

ERP LTE QPSK Band 5 (1.4 MHz BAND WIDTH)

AVERAGE

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/22/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	LTE Band 5 , 1.4MHz BW
	QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.70	12.20	V	0.6	0.0	11.60	38.5	-26.8	
824.70	-4.10	H	0.6	0.0	-4.70	38.5	-43.1	
Mid Ch								
836.50	11.94	V	0.6	0.0	11.34	38.5	-27.1	
836.50	-4.40	H	0.6	0.0	-5.00	38.5	-43.4	
High Ch								
848.30	11.90	V	0.6	0.0	11.30	38.5	-27.1	
848.30	-4.66	H	0.6	0.0	-5.26	38.5	-43.7	

Rev. 3.17.11

ERP LTE 16QAM Band 5 (1.4 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/22/13
Test Engineer: Roy Zheng
Configuration: EUT only
Mode: LTE Band 5 , 1.4MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.70	11.18	V	0.6	0.0	10.58	38.5	-27.9	
824.70	-5.30	H	0.6	0.0	-5.90	38.5	-44.3	
Mid Ch								
836.50	11.10	V	0.6	0.0	10.50	38.5	-27.9	
836.50	-5.20	H	0.6	0.0	-5.80	38.5	-44.2	
High Ch								
848.30	11.10	V	0.6	0.0	10.50	38.5	-27.9	
848.30	-5.76	H	0.6	0.0	-6.36	38.5	-44.8	

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ERP LTE QPSK Band 5 (3.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/22/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	LTE Band 5 , 3MHz BW
	QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
825.50	11.20	V	0.6	0.0	10.60	38.5	-27.8	
825.50	-4.60	H	0.6	0.0	-5.20	38.5	-43.6	
Mid Ch								
836.50	12.22	V	0.6	0.0	11.62	38.5	-26.8	
836.50	-4.40	H	0.6	0.0	-5.00	38.5	-43.4	
High Ch								
847.50	11.80	V	0.6	0.0	11.20	38.5	-27.2	
847.50	-4.86	H	0.6	0.0	-5.46	38.5	-43.9	

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ERP LTE 16QAM Band 5 (3.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/22/13
Test Engineer: Roy Zheng
Configuration: EUT only
Mode: LTE Band 5 , 3MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
825.50	10.40	V	0.6	0.0	9.80	38.5	-28.6	
825.50	-5.40	H	0.6	0.0	-6.00	38.5	-44.4	
Mid Ch								
836.50	11.60	V	0.6	0.0	11.00	38.5	-27.4	
836.50	-5.30	H	0.6	0.0	-5.90	38.5	-44.3	
High Ch								
847.50	10.80	V	0.6	0.0	10.20	38.5	-28.2	
847.50	-5.86	H	0.6	0.0	-6.46	38.5	-44.9	

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ERP LTE QPSK Band 5 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/22/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	LTE Band 5 , 5MHz BW
	QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.50	12.10	V	0.6	0.0	11.50	38.5	-26.9	
826.50	-4.60	H	0.6	0.0	-5.20	38.5	-43.6	
Mid Ch								
836.50	11.70	V	0.6	0.0	11.10	38.5	-27.3	
836.50	-4.40	H	0.6	0.0	-5.00	38.5	-43.4	
High Ch								
846.50	11.40	V	0.6	0.0	10.80	38.5	-27.6	
846.50	-4.86	H	0.6	0.0	-5.46	38.5	-43.9	

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ERP LTE 16QAM Band 5 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/22/13
Test Engineer: Roy Zheng
Configuration: EUT only
Mode: LTE Band 5 , 5MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.50	11.20	V	0.6	0.0	10.60	38.5	-27.8	
826.50	-5.40	H	0.6	0.0	-6.00	38.5	-44.4	
Mid Ch								
836.50	10.70	V	0.6	0.0	10.10	38.5	-28.3	
836.50	-5.30	H	0.6	0.0	-5.90	38.5	-44.3	
High Ch								
846.50	10.40	V	0.6	0.0	9.80	38.5	-28.6	
846.50	-5.86	H	0.6	0.0	-6.46	38.5	-44.9	

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ERP LTE QPSK Band 5 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT only
Mode: LTE Band 5 , 10MHz BW
QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
829.00	12.00	V	0.6	0.0	11.40	38.5	-27.0	
829.00	-5.00	H	0.6	0.0	-5.60	38.5	-44.0	
Mid Ch								
836.50	12.80	V	0.6	0.0	12.20	38.5	-26.2	
836.50	-3.50	H	0.6	0.0	-4.10	38.5	-42.5	
High Ch								
844.00	11.50	V	0.6	0.0	10.90	38.5	-27.5	
844.00	-4.36	H	0.6	0.0	-4.96	38.5	-43.4	

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ERP LTE 16QAM Band 5 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/20/13
Test Engineer: Mona Hua
Configuration: EUT only
Mode: LTE Band 5 , 10MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
829.00	11.20	V	0.6	0.0	10.60	38.5	-27.8	
829.00	-6.00	H	0.6	0.0	-6.60	38.5	-45.0	
Mid Ch								
836.50	11.90	V	0.6	0.0	11.30	38.5	-27.1	
836.50	-4.40	H	0.6	0.0	-5.00	38.5	-43.4	
High Ch								
844.00	10.70	V	0.6	0.0	10.10	38.5	-28.3	
844.00	-5.36	H	0.6	0.0	-5.96	38.5	-44.4	

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9.1.11. UAT LTE BAND 13

ERP LTE QPSK, Band 13 (5.0 MHz BAND WIDTH)

AVERAGE

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/21/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: TX, LTE BAND 13, 5MHz BW
QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T243 and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
779.50	13.30	V	0.5	0.0	12.80	38.5	-25.6	
779.50	-3.30	H	0.5	0.0	-3.80	38.5	-42.2	
Mid Ch								
782.00	12.90	V	0.5	0.0	12.40	38.5	-26.0	
782.00	-3.00	H	0.5	0.0	-3.50	38.5	-41.9	
High Ch								
784.50	12.50	V	0.5	0.0	12.00	38.5	-26.4	
784.50	-2.70	H	0.5	0.0	-3.20	38.5	-41.6	

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ERP LTE 16QAM Band 13 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/21/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: TX, LTE BAND 13, 5MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Sunol T243 and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
779.50	12.50	V	0.5	0.0	12.00	38.5	-26.4	
779.50	-4.50	H	0.5	0.0	-5.00	38.5	-43.4	
Mid Ch								
782.00	12.20	V	0.5	0.0	11.70	38.5	-26.7	
782.00	-4.00	H	0.5	0.0	-4.50	38.5	-42.9	
High Ch								
784.50	11.80	V	0.5	0.0	11.30	38.5	-27.1	
784.50	-3.70	H	0.5	0.0	-4.20	38.5	-42.6	

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ERP LTE QPSK and 16QAM Band 13 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/21/13
Test Engineer:	Mona Hua
Configuration:	EUT Only
Mode:	TX, LTE BAND 13, 10MHz BW
	QPSK and 16QAM, Average

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
RB=1-0, QPSK								
782.00	13.80	V	0.5	0.0	13.30	38.5	-25.1	
782.00	-3.00	H	0.5	0.0	-3.50	38.5	-41.9	
RB=1-0, 16QAM								
782.00	13.00	V	0.5	0.0	12.50	38.5	-25.9	
782.00	-4.00	H	0.5	0.0	-4.50	38.5	-42.9	

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9.1.12. UAT LTE BAND 17

ERP LTE QPSK, Band 17 (5.0 MHz BAND WIDTH)

AVERAGE

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/22/13
Test Engineer:	Roy Zheng
Configuration:	EUT Only
Mode:	LTE Band 17, 5MHz BW QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
706.50	14.15	V	0.5	0.0	13.65	34.8	-21.1	
706.50	0.15	H	0.5	0.0	-0.35	34.8	-35.2	
Mid Ch								
710.00	13.90	V	0.5	0.0	13.40	34.8	-21.4	
710.00	0.35	H	0.5	0.0	-0.15	34.8	-35.0	
High Ch								
713.50	13.97	V	0.5	0.0	13.47	34.8	-21.3	
713.50	0.05	H	0.5	0.0	-0.45	34.8	-35.3	

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ERP LTE 16QAM Band 17 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/22/13
Test Engineer: Roy Zheng
Configuration: EUT Only
Mode: LTE Band 17, 5MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
706.50	12.90	V	0.5	0.0	12.40	34.8	-22.4	
706.50	-0.85	H	0.5	0.0	-1.35	34.8	-36.2	
Mid Ch								
710.00	12.70	V	0.5	0.0	12.20	34.8	-22.6	
710.00	-0.65	H	0.5	0.0	-1.15	34.8	-36.0	
High Ch								
713.50	12.81	V	0.5	0.0	12.31	34.8	-22.5	
713.50	-0.75	H	0.5	0.0	-1.25	34.8	-36.1	

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ERP LTE QPSK Band 17 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/20/13
Test Engineer:	Mona Hua
Configuration:	EUT Only
Mode:	LTE Band 17, 10MHz BW
	QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
709.00	14.90	V	0.5	0.0	14.40	34.8	-20.4	
709.00	1.25	H	0.5	0.0	0.75	34.8	-34.1	
Mid Ch								
710.00	14.90	V	0.5	0.0	14.40	34.8	-20.4	
710.00	1.35	H	0.5	0.0	0.85	34.8	-34.0	
High Ch								
711.00	14.60	V	0.5	0.0	14.10	34.8	-20.7	
711.00	0.85	H	0.5	0.0	0.35	34.8	-34.5	

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ERP LTE 16QAM Band 17 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company:	Apple
Project #:	13U14987
Date:	05/20/13
Test Engineer:	Mona Hua
Configuration:	EUT Only
Mode:	LTE Band 17, 10MHz BW
	QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 6ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
709.00	14.20	V	0.5	0.0	13.70	34.8	-21.1	
709.00	0.05	H	0.5	0.0	-0.45	34.8	-35.3	
Mid Ch								
710.00	13.80	V	0.5	0.0	13.30	34.8	-21.5	
710.00	0.35	H	0.5	0.0	-0.15	34.8	-35.0	
High Ch								
711.00	13.60	V	0.5	0.0	13.10	34.8	-21.7	
711.00	0.15	H	0.5	0.0	-0.35	34.8	-35.2	

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9.1.13. UAT LTE BAND 25

EIRP LTE QPSK Band 25 (1.4 MHz BAND WIDTH)

PEAK

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/21/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 1.4MHz BW
QPSK, Peak, RB6-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.851	13.6	V	0.85	7.94	20.69	33.0	-12.3	
1.851	15.5	H	0.85	8.80	23.45	33.0	-9.6	
Mid Ch								
1.883	11.8	V	0.85	7.95	18.85	33.0	-14.2	
1.883	13.5	H	0.85	8.68	21.33	33.0	-11.7	
High Ch								
1.914	11.5	V	0.85	7.97	18.65	33.0	-14.4	
1.914	14.0	H	0.85	8.57	21.72	33.0	-11.3	

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EIRP LTE 16QAM Band 25 (1.4 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/21/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 1.4MHz BW
16QAM, Peak, RB6-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.851	12.6	V	0.85	7.94	19.69	33.0	-13.3	
1.851	14.6	H	0.85	8.80	22.55	33.0	-10.5	
Mid Ch								
1.883	10.6	V	0.85	7.95	17.65	33.0	-15.4	
1.883	12.4	H	0.85	8.68	20.23	33.0	-12.8	
High Ch								
1.914	10.6	V	0.85	7.97	17.75	33.0	-15.3	
1.914	12.9	H	0.85	8.57	20.62	33.0	-12.4	

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EIRP LTE QPSK Band 25 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/21/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 3MHz BW
QPSK, Peak, RB15-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.852	16.3	V	0.85	7.94	23.39	33.0	-9.6	
1.852	17.0	H	0.85	8.80	24.95	33.0	-8.1	
Mid Ch								
1.883	13.3	V	0.85	7.95	20.35	33.0	-12.7	
1.883	14.4	H	0.85	8.68	22.23	33.0	-10.8	
High Ch								
1.914	14.3	V	0.85	7.97	21.45	33.0	-11.6	
1.914	15.0	H	0.85	8.57	22.72	33.0	-10.3	

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EIRP LTE 16QAM Band 25 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/21/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 3MHz BW
16QAM, Peak, RB15-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.852	15.4	V	0.85	7.94	22.44	33.0	-10.6	
1.852	16.0	H	0.85	8.80	23.95	33.0	-9.1	
Mid Ch								
1.883	12.4	V	0.85	7.95	19.45	33.0	-13.6	
1.883	13.4	H	0.85	8.68	21.23	33.0	-11.8	
High Ch								
1.914	13.4	V	0.85	7.97	20.55	33.0	-12.5	
1.914	14.1	H	0.85	8.57	21.82	33.0	-11.2	

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EIRP LTE QPSK Band 25 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/21/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 5MHz BW
QPSK, Peak, RB25-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.853	17.0	V	0.85	7.94	24.09	33.0	-8.9	
1.853	17.6	H	0.85	8.80	25.55	33.0	-7.5	
Mid Ch								
1.883	13.8	V	0.85	7.95	20.85	33.0	-12.2	
1.883	15.1	H	0.85	8.68	22.93	33.0	-10.1	
High Ch								
1.913	15.3	V	0.85	7.97	22.45	33.0	-10.6	
1.913	16.4	H	0.85	8.57	24.12	33.0	-8.9	

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EIRP LTE 16QAM Band 25 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/21/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 5MHz BW
16QAM, Peak, RB25-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.853	15.9	V	0.85	7.94	22.99	33.0	-10.0	
1.853	16.4	H	0.85	8.80	24.35	33.0	-8.7	
Mid Ch								
1.883	12.8	V	0.85	7.95	19.85	33.0	-13.2	
1.883	13.7	H	0.85	8.68	21.53	33.0	-11.5	
High Ch								
1.913	14.3	V	0.85	7.97	21.43	33.0	-11.6	
1.913	15.5	H	0.85	8.57	23.22	33.0	-9.8	

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EIRP LTE QPSK Band 25 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/21/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 10MHz BW
QPSK, Peak, RB50-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.855	15.3	V	0.85	7.94	22.39	33.0	-10.6	
1.855	18.0	H	0.85	8.80	25.95	33.0	-7.1	
Mid Ch								
1.883	13.4	V	0.85	7.95	20.45	33.0	-12.6	
1.883	15.4	H	0.85	8.68	23.23	33.0	-9.8	
High Ch								
1.910	13.7	V	0.85	7.97	20.85	33.0	-12.2	
1.910	16.0	H	0.85	8.57	23.72	33.0	-9.3	

Rev. 3.17.11

EIRP LTE 16QAM Band 25 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/21/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 10MHz BW
16QAM, Peak, RB50-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.855	14.2	V	0.85	7.94	21.29	33.0	-11.7	
1.855	17.0	H	0.85	8.80	24.95	33.0	-8.1	
Mid Ch								
1.883	12.3	V	0.85	7.95	19.35	33.0	-13.7	
1.883	14.2	H	0.85	8.68	22.03	33.0	-11.0	
High Ch								
1.910	12.6	V	0.85	7.97	19.75	33.0	-13.3	
1.910	15.0	H	0.85	8.57	22.72	33.0	-10.3	

Rev. 3.17.11

EIRP LTE QPSK Band 25 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/21/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 15MHz BW
QPSK, Peak, RB75-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.858	16.5	V	0.85	7.94	23.59	33.0	-9.4	
1.858	17.5	H	0.85	8.80	25.45	33.0	-7.6	
Mid Ch								
1.883	14.4	V	0.85	7.95	21.45	33.0	-11.6	
1.883	15.2	H	0.85	8.68	23.03	33.0	-10.0	
High Ch								
1.908	15.1	V	0.85	7.97	22.25	33.0	-10.8	
1.908	15.0	H	0.85	8.57	22.72	33.0	-10.3	

Rev. 3.17.11

EIRP LTE 16QAM Band 25 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/21/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 15MHz BW
16QAM, Peak, RB75-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.858	15.4	V	0.85	7.94	22.49	33.0	-10.5	
1.858	16.6	H	0.85	8.80	24.55	33.0	-8.5	
Mid Ch								
1.883	13.4	V	0.85	7.95	20.45	33.0	-12.6	
1.883	14.2	H	0.85	8.68	22.03	33.0	-11.0	
High Ch								
1.908	14.1	V	0.85	7.97	21.25	33.0	-11.8	
1.908	16.1	H	0.85	8.57	23.82	33.0	-9.2	

Rev. 3.17.11

EIRP LTE QPSK Band 25 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/21/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 20MHz BW
QPSK, Peak, RB100-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.860	16.2	V	0.85	7.94	23.29	33.0	-9.7	
1.860	17.4	H	0.85	8.80	25.35	33.0	-7.7	
Mid Ch								
1.883	14.9	V	0.85	7.95	21.95	33.0	-11.1	
1.883	15.7	H	0.85	8.68	23.53	33.0	-9.5	
High Ch								
1.905	14.9	V	0.85	7.97	22.05	33.0	-11.0	
1.905	15.7	H	0.85	8.57	23.42	33.0	-9.6	

Rev. 3.17.11

EIRP LTE 16QAM Band 25 (20.0 MHz BAND WIDTH

High Frequency Fundamental Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/21/13
Test Engineer: Mona Hua
Configuration: EUT Only
Mode: LTE band 25, 20MHz BW
16QAM, Peak, RB100-0

Test Equipment:
Receiving: Horn T59, and Chamber D SMA Cables
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.860	15.3	V	0.85	7.94	22.39	33.0	-10.6	
1.860	16.4	H	0.85	8.80	24.35	33.0	-8.7	
Mid Ch								
1.883	13.9	V	0.85	7.95	20.95	33.0	-12.1	
1.883	14.5	H	0.85	8.68	22.33	33.0	-10.7	
High Ch								
1.905	13.9	V	0.85	7.97	21.05	33.0	-12.0	
1.905	14.5	H	0.85	8.57	22.22	33.0	-10.8	

Rev. 3.17.11

9.1.14. UAT LTE BAND 26

ERP LTE QPSK Band 26 (3.0 MHz BAND WIDTH)

PEAK

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company:	Apple
Project #:	13U14987
Date:	07/16/13
Test Engineer:	R Zheng
Configuration:	EUT only
Mode:	Band26 3M
	QPSK Pk RB15/0

Test Equipment:
Receiving: Sunol T122, and Chamber F Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
820.30	9.80	V	0.9	0.0	8.90	38.5	-29.5	
820.30	15.70	H	0.9	0.0	14.80	38.5	-23.6	
Mid Ch								
821.30	9.40	V	0.9	0.0	8.50	38.5	-29.9	
821.30	15.98	H	0.9	0.0	15.08	38.5	-23.4	
High Ch								
822.30	8.90	V	0.9	0.0	8.00	38.5	-30.4	
822.30	15.50	H	0.9	0.0	14.60	38.5	-23.8	

Rev. 3.17.11

ERP LTE 16QAM Band 26 (3.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 07/16/13
Test Engineer: R Zheng
Configuration: EUT only
Mode: Band26 3M
16QAM Pk RB15/0

Test Equipment:
Receiving: Sunol T122, and Chamber F Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
820.30	8.80	V	0.9	0.0	7.90	38.5	-30.5	
820.30	14.70	H	0.9	0.0	13.80	38.5	-24.6	
Mid Ch								
821.30	8.42	V	0.9	0.0	7.52	38.5	-30.9	
821.30	15.00	H	0.9	0.0	14.10	38.5	-24.3	
High Ch								
822.30	8.00	V	0.9	0.0	7.10	38.5	-31.3	
822.30	14.50	H	0.9	0.0	13.60	38.5	-24.8	

Rev. 3.17.11

ERP LTE QPSK/16QAM Band 26 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company:	Apple
Project #:	13U14987
Date:	07/16/13
Test Engineer:	R Zheng
Configuration:	EUT only
Mode:	Band26 5MHz
	QPSK /16QAM Pk RB25/0

Test Equipment:
Receiving: Sunol T122, and Chamber F Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
QPSK								
Mid Ch								
821.30	16.00	V	0.9	0.0	15.10	38.5	-23.3	
821.30	25.30	H	0.9	0.0	24.40	38.5	-14.0	
16QAM								
Mid Ch								
821.30	15.10	V	0.9	0.0	14.20	38.5	-24.2	
821.30	24.30	H	0.9	0.0	23.40	38.5	-15.0	

Rev. 3.17.11

9.2. 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

9.2.1. LAT LTE BAND 5

Mode	Channel Band-width (MHZ)	Modulation	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
QPSK	1.4	RB1-0	836.5	28.7	22.97	5.73

Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	1.4	RB1-0	836.5	28.38	21.79	6.59

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

Mode	Channel Band-width (MHZ)	Modulation	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
QPSK	3	RB1-0	836.5	28.95	22.96	5.99

Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	3	RB1-0	836.5	28.61	21.96	6.65

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

Mode	Channel Band-width (MHZ)	Modulation	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
QPSK	5	RB1-0	836.5	28.78	23.04	5.74

Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	5	RB1-0	836.5	28.91	22.09	6.82

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

Mode	Channel Band-width (MHZ)	Modulation	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
QPSK	10	RB1-0	836.5	28.93	22.98	5.95

Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	10	RB1-0	836.5	28.8	21.98	6.82

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

9.2.2. LAT LTE BAND 17

Mode	Channel Band-width (MHZ)	Modulation	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
QPSK	5	RB1-0	710	28.71	23.14	5.57

Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	5	RB1-0	710	28.92	22.07	6.85

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

Mode	Channel Band-width (MHZ)	Modulation	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
QPSK	10	RB1-0	710	28.94	23.27	5.67

Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	10	RB1-0	710	28.89	22.27	6.62

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

9.2.3. LAT LTE BAND 13

LTE BAND 13

Mode	Channel Band-width (MHZ)	Modulation	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
QPSK	5	RB1-0	782	28.18	22.93	5.25

Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	5	RB1-0	782	28.34	21.9	6.44

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

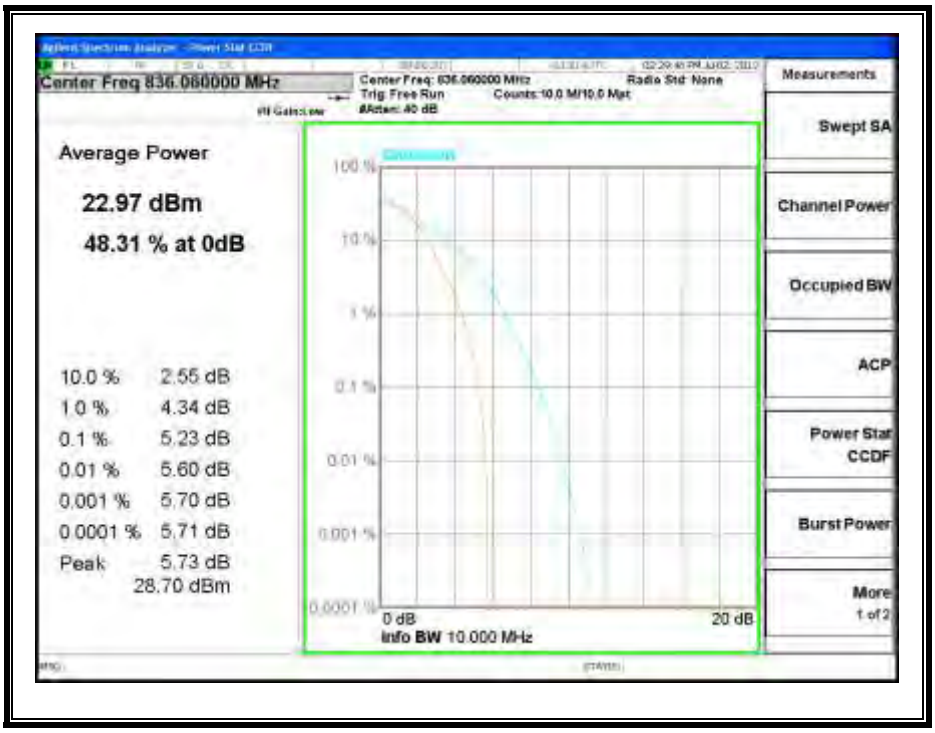
Mode	Channel Band-width (MHZ)	Modulation	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
QPSK	10	RB1-0	782	27.19	23.13	4.06

Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	10	RB1-0	782	27.27	22.18	5.09

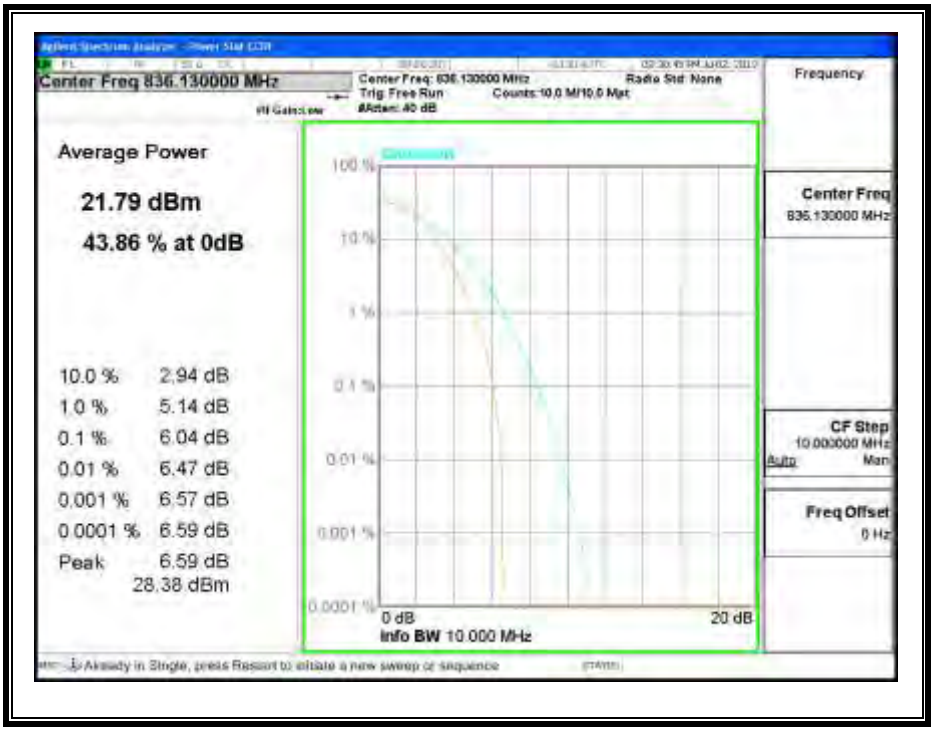
*Peak Reading = Average Reading + Peak-to-Average Ratio

LTE BAND 5

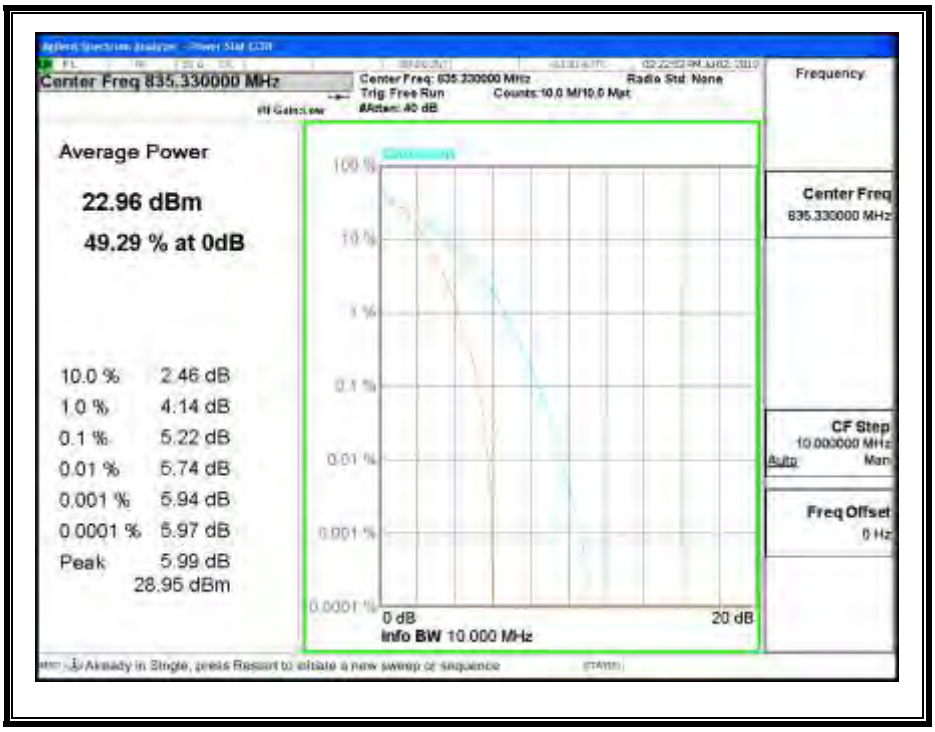
1.4MHz_QPSK



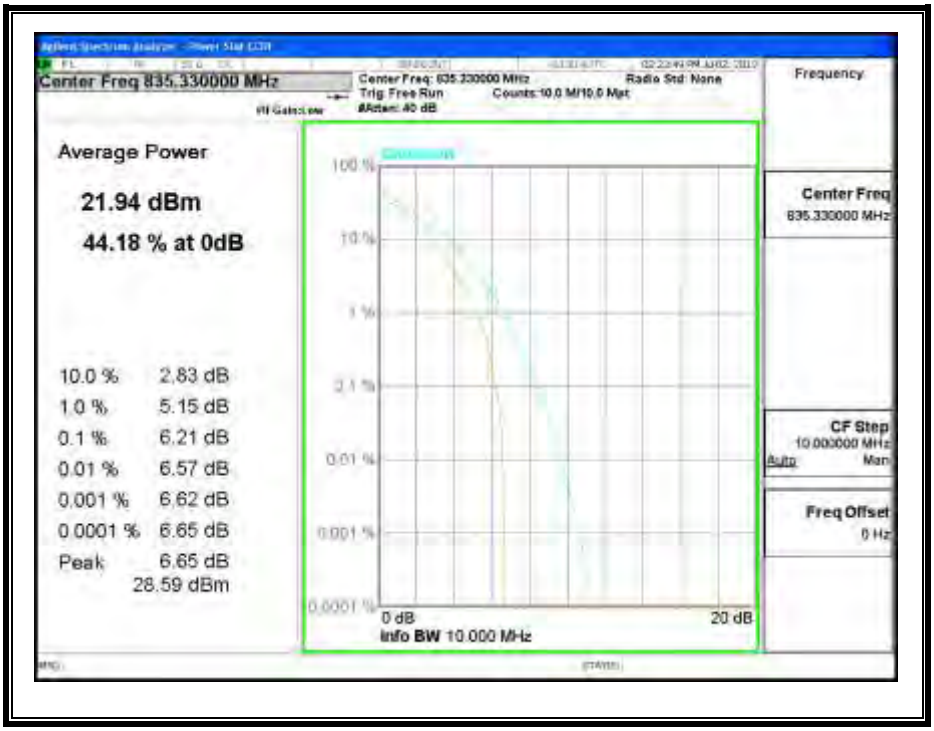
1.4MHz_16QAM



3.0MHz_QPSK



3.0MHz_16QAM

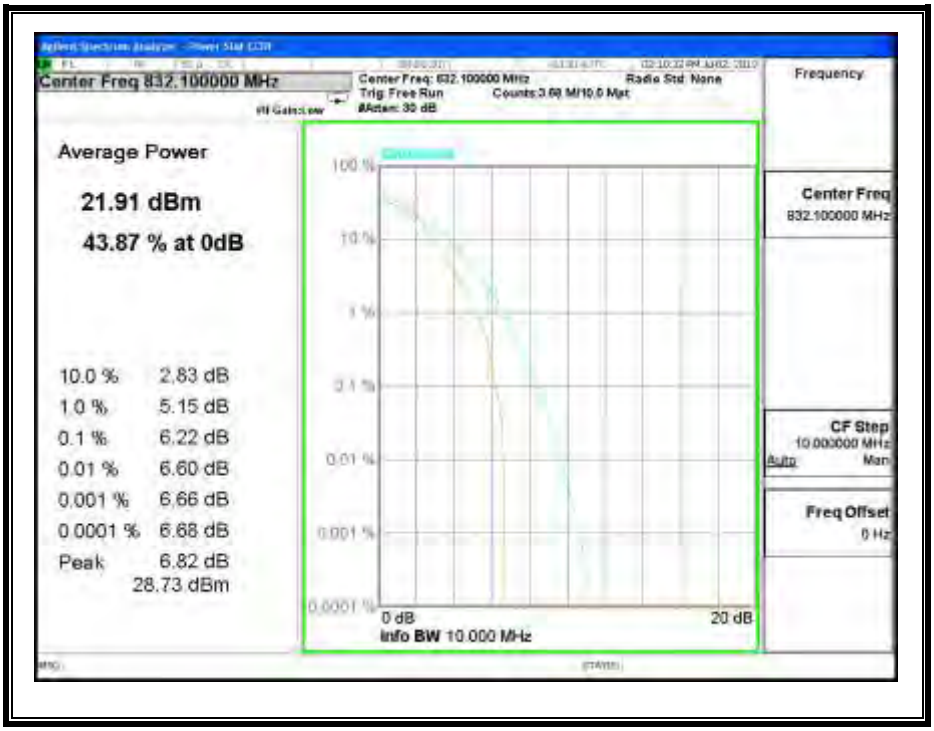


5.0MHz_QPSK

5.0MHz_16QAM

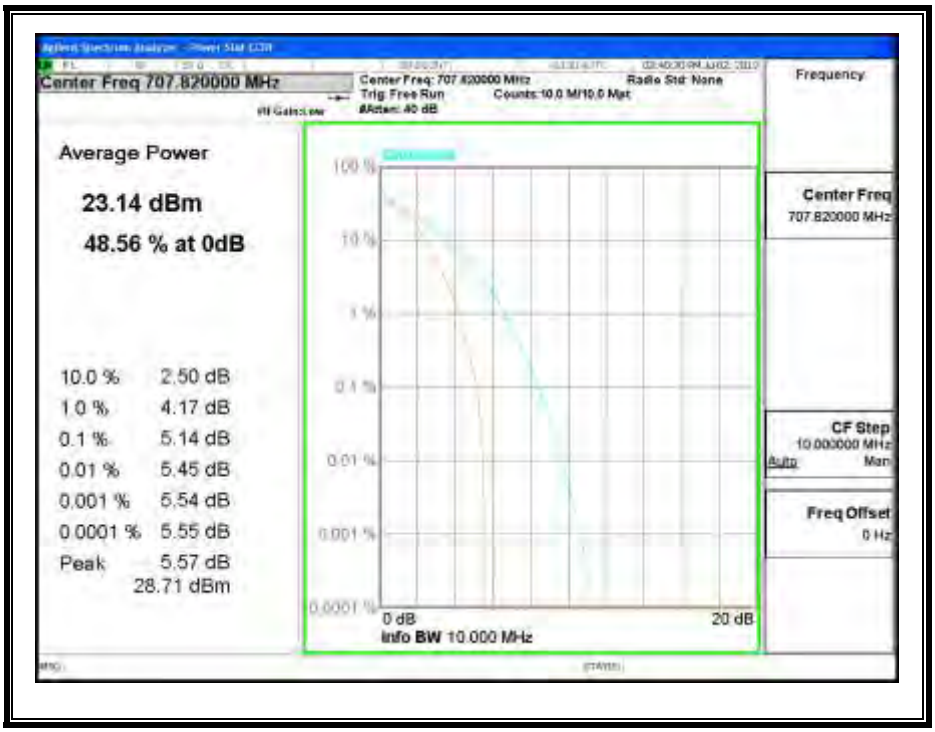
10MHz_QPSK

10MHz_16QAM

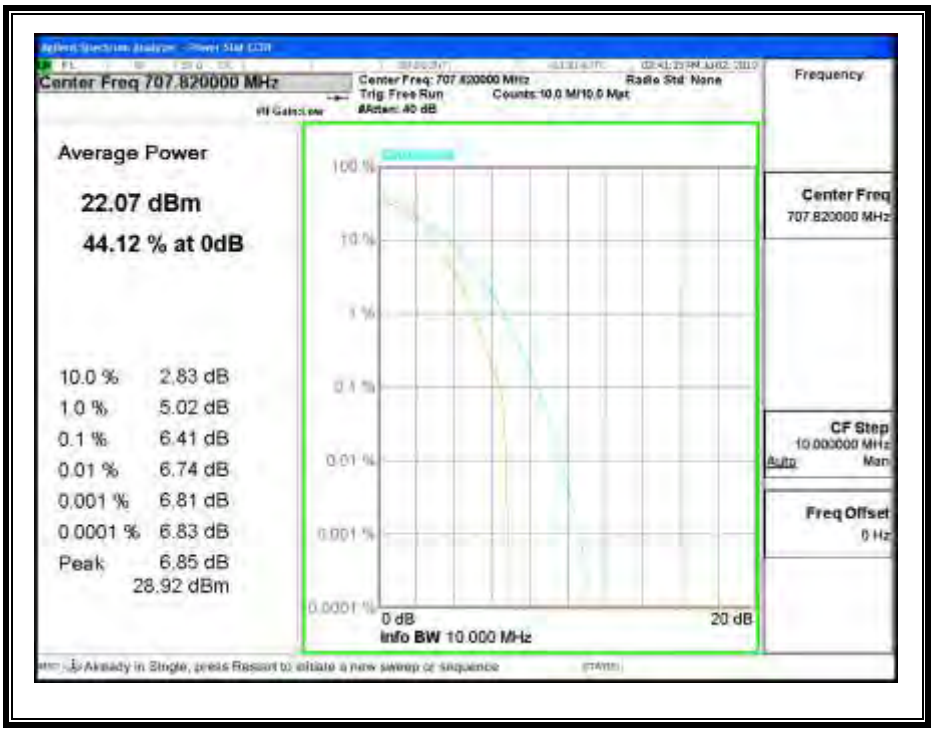


BAND 17

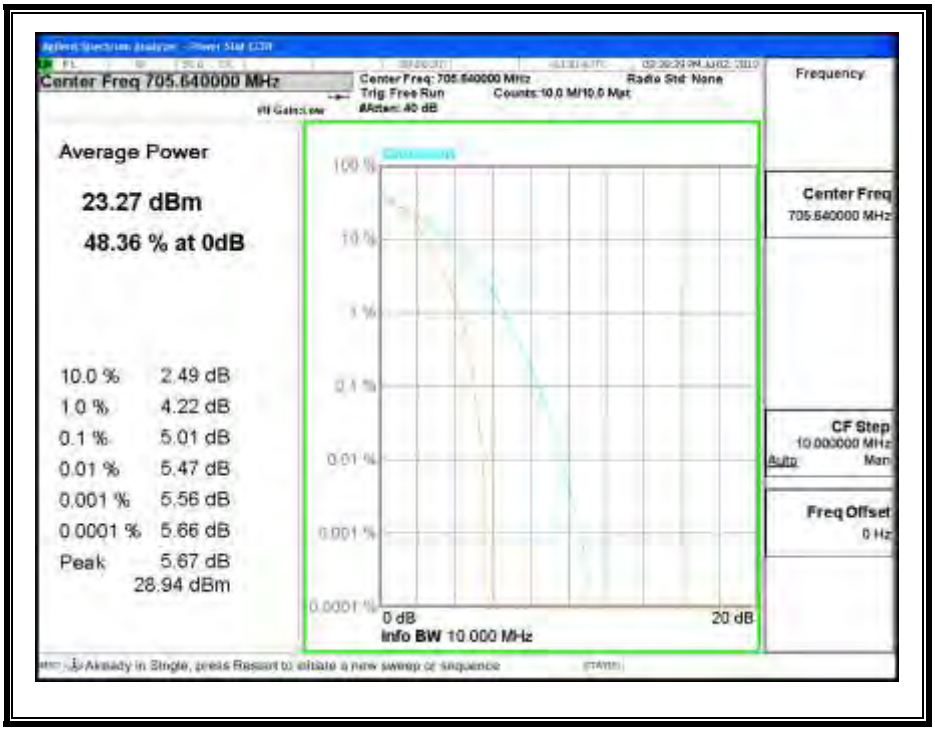
5.0MHz_QPSK



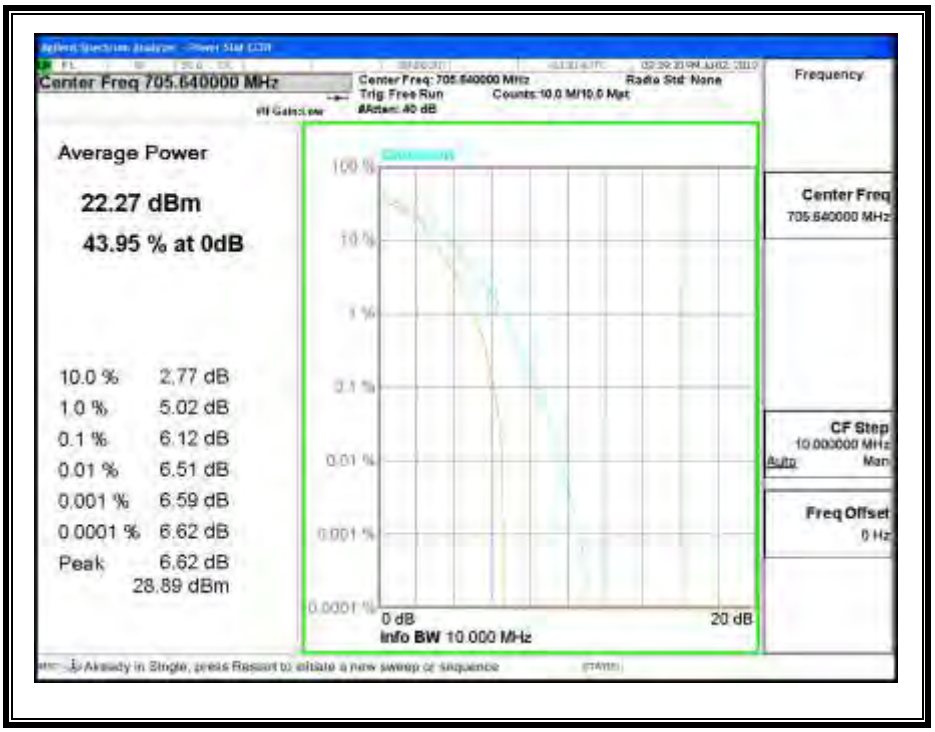
5.0MHz_16QAM



10MHz_QPSK

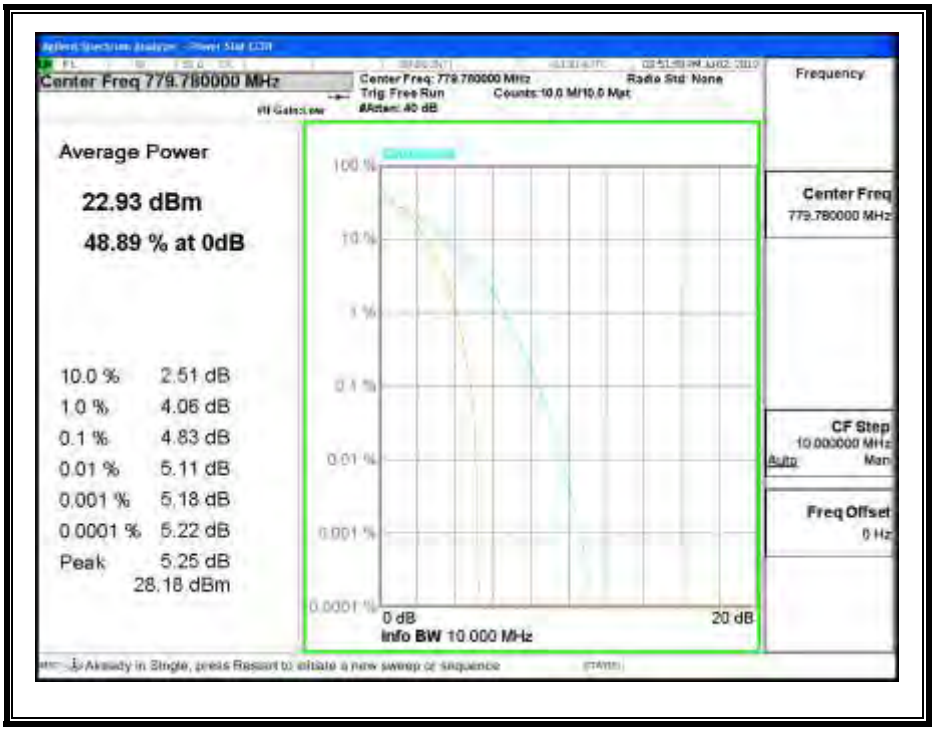


10MHz_16QAM

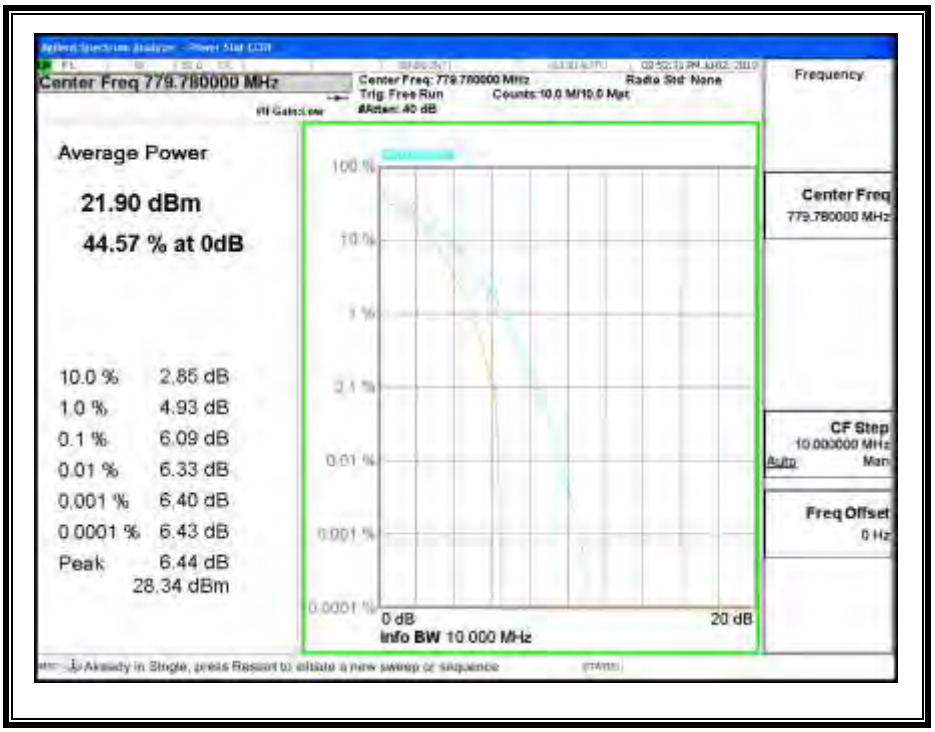


BAND 13

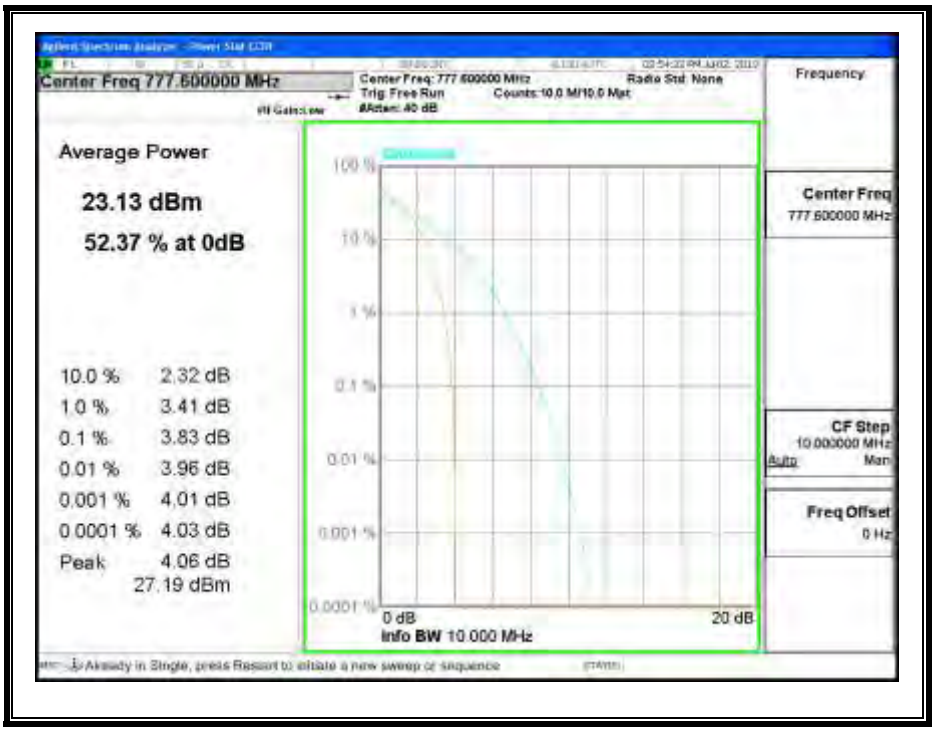
5.0MHz_QPSK



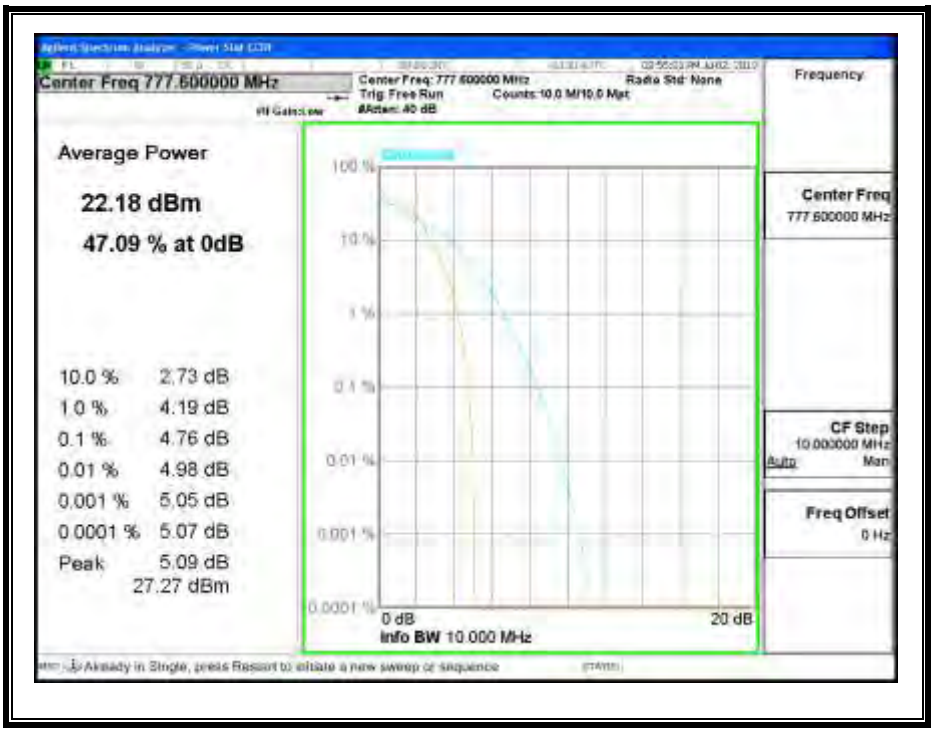
5.0MHz_16QAM



10MHz_QPSK



10MHz_16QAM



9.3. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

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

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 (g) For operations in the 698–746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by 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.

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 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

- LTE BAND 2, 4, 5, 13, 17, 25 and 26 (LAT & UAT)

RESULTS

LAT

BAND 2

QPSK Band 2 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 1.4MHz, QPSK A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851 MHz)									
3.702	-25.1	V	3.0	30.2	1.0	-54.3	-13.0	-41.3	
7.404	-29.3	V	3.0	26.5	1.0	-54.8	-13.0	-41.8	
3.702	-25.7	H	3.0	30.2	1.0	-54.9	-13.0	-41.9	
7.404	-28.1	H	3.0	26.5	1.0	-53.6	-13.0	-40.6	
Mid Ch, (1880 MHz)									
3.760	-26.2	V	3.0	30.1	1.0	-55.4	-13.0	-42.4	
7.520	-29.3	V	3.0	26.3	1.0	-54.6	-13.0	-41.6	
3.760	-26.4	H	3.0	30.1	1.0	-55.5	-13.0	-42.5	
7.520	-28.4	H	3.0	26.3	1.0	-53.7	-13.0	-40.7	
High Ch, (1909.3 MHz)									
3.819	-24.1	V	3.0	30.1	1.0	-53.2	-13.0	-40.2	
7.637	-29.2	V	3.0	26.2	1.0	-54.3	-13.0	-41.3	
3.819	-24.2	H	3.0	30.1	1.0	-53.3	-13.0	-40.3	
7.637	-28.1	H	3.0	26.2	1.0	-53.3	-13.0	-40.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 2 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 1.4MHz, 16QAM A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851 MHz)									
3.702	-26.1	V	3.0	30.2	1.0	-55.3	-13.0	-42.3	
7.404	-30.2	V	3.0	26.5	1.0	-55.7	-13.0	-42.7	
3.702	-26.6	H	3.0	30.2	1.0	-55.8	-13.0	-42.8	
7.404	-29.2	H	3.0	26.5	1.0	-54.7	-13.0	-41.7	
Mid Ch, (1880 MHz)									
3.760	-27.2	V	3.0	30.1	1.0	-56.4	-13.0	-43.4	
7.520	-30.3	V	3.0	26.3	1.0	-55.6	-13.0	-42.6	
3.760	-27.4	H	3.0	30.1	1.0	-56.5	-13.0	-43.5	
7.520	-29.3	H	3.0	26.3	1.0	-54.6	-13.0	-41.6	
High Ch, (1909.3 MHz)									
3.819	-24.9	V	3.0	30.1	1.0	-54.0	-13.0	-41.0	
7.637	-29.9	V	3.0	26.2	1.0	-55.0	-13.0	-42.0	
3.819	-25.3	H	3.0	30.1	1.0	-54.4	-13.0	-41.4	
7.637	-29.1	H	3.0	26.2	1.0	-54.3	-13.0	-41.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 2 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 3MHz, QPSK A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1852 MHz)									
3.704	-22.5	V	3.0	30.2	1.0	-51.7	-13.0	-38.7	
7.408	-29.9	V	3.0	26.5	1.0	-55.4	-13.0	-42.4	
3.704	-25.3	H	3.0	30.2	1.0	-54.5	-13.0	-41.5	
7.408	-28.6	H	3.0	26.5	1.0	-54.1	-13.0	-41.1	
Mid Ch, (1880 MHz)									
3.760	-26.5	V	3.0	30.1	1.0	-55.7	-13.0	-42.7	
7.520	-29.0	V	3.0	26.3	1.0	-54.3	-13.0	-41.3	
3.760	-25.7	H	3.0	30.1	1.0	-54.8	-13.0	-41.8	
7.520	-28.3	H	3.0	26.3	1.0	-53.6	-13.0	-40.6	
High Ch, (1909 MHz)									
3.818	-26.0	V	3.0	30.1	1.0	-55.1	-13.0	-42.1	
7.636	-29.3	V	3.0	26.2	1.0	-54.4	-13.0	-41.4	
3.818	-26.6	H	3.0	30.1	1.0	-55.7	-13.0	-42.7	
7.636	-28.8	H	3.0	26.2	1.0	-54.0	-13.0	-41.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 2 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 3MHz, 16QAM A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1852 MHz)									
3.704	-23.5	V	3.0	30.2	1.0	-52.7	-13.0	-39.7	
7.408	-30.7	V	3.0	26.5	1.0	-56.2	-13.0	-43.2	
3.704	-28.3	H	3.0	30.2	1.0	-57.5	-13.0	-44.5	
7.408	-29.5	H	3.0	26.5	1.0	-55.0	-13.0	-42.0	
Mid Ch, (1880 MHz)									
3.760	-27.5	V	3.0	30.1	1.0	-56.7	-13.0	-43.7	
7.520	-30.1	V	3.0	26.3	1.0	-55.4	-13.0	-42.4	
3.760	-26.7	H	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.520	-29.4	H	3.0	26.3	1.0	-54.7	-13.0	-41.7	
High Ch, (1909 MHz)									
3.818	-27.4	V	3.0	30.1	1.0	-56.5	-13.0	-43.5	
7.636	-30.3	V	3.0	26.2	1.0	-55.4	-13.0	-42.4	
3.818	-27.6	H	3.0	30.1	1.0	-56.7	-13.0	-43.7	
7.636	-28.8	H	3.0	26.2	1.0	-54.0	-13.0	-41.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 2 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 5MHz, QPSK A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1853 MHz)									
3.706	-23.0	V	3.0	30.2	1.0	-52.2	-13.0	-39.2	
7.412	-29.0	V	3.0	26.5	1.0	-54.4	-13.0	-41.4	
3.706	-24.6	H	3.0	30.2	1.0	-53.8	-13.0	-40.8	
7.412	-27.7	H	3.0	26.5	1.0	-53.2	-13.0	-40.2	
Mid Ch, (1880 MHz)									
3.760	-26.3	V	3.0	30.1	1.0	-55.5	-13.0	-42.5	
7.520	-28.8	V	3.0	26.3	1.0	-54.1	-13.0	-41.1	
3.760	-26.7	H	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.520	-28.0	H	3.0	26.3	1.0	-53.3	-13.0	-40.3	
High Ch, (1908 MHz)									
3.816	-24.7	V	3.0	30.1	1.0	-53.8	-13.0	-40.8	
7.632	-29.2	V	3.0	26.2	1.0	-54.3	-13.0	-41.3	
3.816	-25.7	H	3.0	30.1	1.0	-54.8	-13.0	-41.8	
7.632	-28.3	H	3.0	26.2	1.0	-53.5	-13.0	-40.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 2 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 5MHz, 16QAM A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1853 MHz)									
3.706	-24.1	V	3.0	30.2	1.0	-53.3	-13.0	-40.3	
7.412	-30.0	V	3.0	26.5	1.0	-55.4	-13.0	-42.4	
3.706	-25.6	H	3.0	30.2	1.0	-54.8	-13.0	-41.8	
7.412	-28.7	H	3.0	26.5	1.0	-54.2	-13.0	-41.2	
Mid Ch, (1880 MHz)									
3.760	-27.3	V	3.0	30.1	1.0	-56.5	-13.0	-43.5	
7.520	-29.8	V	3.0	26.3	1.0	-55.1	-13.0	-42.1	
3.760	-27.7	H	3.0	30.1	1.0	-56.8	-13.0	-43.8	
7.520	-28.9	H	3.0	26.3	1.0	-54.2	-13.0	-41.2	
High Ch, (1908 MHz)									
3.816	-25.7	V	3.0	30.1	1.0	-54.8	-13.0	-41.8	
7.632	-30.2	V	3.0	26.2	1.0	-55.3	-13.0	-42.3	
3.816	-26.7	H	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.632	-29.3	H	3.0	26.2	1.0	-54.5	-13.0	-41.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 2 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 10MHz, QPSK A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1855 MHz)									
3.710	-22.6	V	3.0	30.2	1.0	-51.8	-13.0	-38.8	
7.420	-29.1	V	3.0	26.5	1.0	-54.5	-13.0	-41.5	
3.710	-23.7	H	3.0	30.2	1.0	-52.9	-13.0	-39.9	
7.420	-28.4	H	3.0	26.5	1.0	-53.9	-13.0	-40.9	
Mid Ch, (1880 MHz)									
3.760	-25.9	V	3.0	30.1	1.0	-55.1	-13.0	-42.1	
7.520	-29.2	V	3.0	26.3	1.0	-54.5	-13.0	-41.5	
3.760	-27.0	H	3.0	30.1	1.0	-56.1	-13.0	-43.1	
7.520	-27.8	H	3.0	26.3	1.0	-53.1	-13.0	-40.1	
High Ch, (1905 MHz)									
3.810	-24.6	V	3.0	30.1	1.0	-53.7	-13.0	-40.7	
7.620	-29.2	V	3.0	26.2	1.0	-54.4	-13.0	-41.4	
3.810	-25.7	H	3.0	30.1	1.0	-54.8	-13.0	-41.8	
7.620	-28.5	H	3.0	26.2	1.0	-53.7	-13.0	-40.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 2 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/01/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 15MHz, QPSK A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1858 MHz)									
3.716	-22.3	V	3.0	30.2	1.0	-51.5	-13.0	-38.5	
7.432	-29.0	V	3.0	26.4	1.0	-54.4	-13.0	-41.4	
3.716	-23.8	H	3.0	30.2	1.0	-53.0	-13.0	-40.0	
7.432	-27.7	H	3.0	26.4	1.0	-53.1	-13.0	-40.1	
Mid Ch, (1880 MHz)									
3.760	-26.0	V	3.0	30.1	1.0	-55.2	-13.0	-42.2	
7.520	-28.8	V	3.0	26.3	1.0	-54.1	-13.0	-41.1	
3.760	-26.7	H	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.520	-28.0	H	3.0	26.3	1.0	-53.3	-13.0	-40.3	
High Ch, (1903 MHz)									
3.806	-23.6	V	3.0	30.1	1.0	-52.7	-13.0	-39.7	
7.612	-28.7	V	3.0	26.2	1.0	-53.9	-13.0	-40.9	
3.806	-24.9	H	3.0	30.1	1.0	-54.0	-13.0	-41.0	
7.612	-27.5	H	3.0	26.2	1.0	-52.7	-13.0	-39.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 2 (15.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/01/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 15MHz, 16QAM A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1858 MHz)									
3.716	-23.3	V	3.0	30.2	1.0	-52.5	-13.0	-39.5	
7.432	-30.0	V	3.0	26.4	1.0	-55.4	-13.0	-42.4	
3.716	-24.8	H	3.0	30.2	1.0	-54.0	-13.0	-41.0	
7.432	-28.6	H	3.0	26.4	1.0	-54.0	-13.0	-41.0	
Mid Ch, (1880 MHz)									
3.760	-27.1	V	3.0	30.1	1.0	-56.3	-13.0	-43.3	
7.520	-29.8	V	3.0	26.3	1.0	-55.1	-13.0	-42.1	
3.760	-27.7	H	3.0	30.1	1.0	-56.8	-13.0	-43.8	
7.520	-29.1	H	3.0	26.3	1.0	-54.4	-13.0	-41.4	
High Ch, (1903 MHz)									
3.806	-24.7	V	3.0	30.1	1.0	-53.8	-13.0	-40.8	
7.612	-29.7	V	3.0	26.2	1.0	-54.9	-13.0	-41.9	
3.806	-25.8	H	3.0	30.1	1.0	-54.9	-13.0	-41.9	
7.612	-28.5	H	3.0	26.2	1.0	-53.7	-13.0	-40.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor

16QAM Band 2 (15.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 20MHz, QPSK A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1860 MHz)									
3.720	-23.5	V	3.0	30.2	1.0	-52.7	-13.0	-39.7	
7.440	-29.2	V	3.0	26.4	1.0	-54.6	-13.0	-41.6	
3.720	-25.4	H	3.0	30.2	1.0	-54.6	-13.0	-41.6	
7.440	-27.4	H	3.0	26.4	1.0	-52.8	-13.0	-39.8	
Mid Ch, (1880 MHz)									
3.760	-26.4	V	3.0	30.1	1.0	-55.6	-13.0	-42.6	
7.520	-28.6	V	3.0	26.3	1.0	-53.9	-13.0	-40.9	
3.760	-26.9	H	3.0	30.1	1.0	-56.0	-13.0	-43.0	
7.520	-27.2	H	3.0	26.3	1.0	-52.5	-13.0	-39.5	
High Ch, (1900 MHz)									
3.800	-25.1	V	3.0	30.1	1.0	-54.2	-13.0	-41.2	
7.600	-27.8	V	3.0	26.2	1.0	-53.0	-13.0	-40.0	
3.800	-26.7	H	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.600	-27.8	H	3.0	26.2	1.0	-53.1	-13.0	-40.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 2 (20.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 20MHz, QPSK A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1860 MHz)									
3.720	-23.5	V	3.0	30.2	1.0	-52.7	-13.0	-39.7	
7.440	-29.2	V	3.0	26.4	1.0	-54.6	-13.0	-41.6	
3.720	-25.4	H	3.0	30.2	1.0	-54.6	-13.0	-41.6	
7.440	-27.4	H	3.0	26.4	1.0	-52.8	-13.0	-39.8	
Mid Ch, (1880 MHz)									
3.760	-26.4	V	3.0	30.1	1.0	-55.6	-13.0	-42.6	
7.520	-28.6	V	3.0	26.3	1.0	-53.9	-13.0	-40.9	
3.760	-26.9	H	3.0	30.1	1.0	-56.0	-13.0	-43.0	
7.520	-27.2	H	3.0	26.3	1.0	-52.5	-13.0	-39.5	
High Ch, (1900 MHz)									
3.800	-25.1	V	3.0	30.1	1.0	-54.2	-13.0	-41.2	
7.600	-27.8	V	3.0	26.2	1.0	-53.0	-13.0	-40.0	
3.800	-26.7	H	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.600	-27.8	H	3.0	26.2	1.0	-53.1	-13.0	-40.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 2 (20.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 20MHz, 16QAM A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1860 MHz)									
3.720	-24.5	V	3.0	30.2	1.0	-53.7	-13.0	-40.7	
7.440	-30.1	V	3.0	26.4	1.0	-55.5	-13.0	-42.5	
3.720	-26.4	H	3.0	30.2	1.0	-55.6	-13.0	-42.6	
7.440	-28.5	H	3.0	26.4	1.0	-53.9	-13.0	-40.9	
Mid Ch, (1880 MHz)									
3.760	-27.5	V	3.0	30.1	1.0	-56.7	-13.0	-43.7	
7.520	-29.6	V	3.0	26.3	1.0	-54.9	-13.0	-41.9	
3.760	-27.9	H	3.0	30.1	1.0	-57.0	-13.0	-44.0	
7.520	-28.3	H	3.0	26.3	1.0	-53.6	-13.0	-40.6	
High Ch, (1900 MHz)									
3.800	-26.1	V	3.0	30.1	1.0	-55.2	-13.0	-42.2	
7.600	-28.9	V	3.0	26.2	1.0	-54.1	-13.0	-41.1	
3.800	-27.7	H	3.0	30.1	1.0	-56.8	-13.0	-43.8	
7.600	-28.8	H	3.0	26.2	1.0	-54.1	-13.0	-41.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

BAND 4 QPSK Band 4 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 1.4MHz BW, QPSK A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1710.7 MHz)									
3.421	-29.3	V	3.0	30.4	1.0	-58.8	-13.0	-45.8	
5.132	-32.1	V	3.0	28.8	1.0	-59.9	-13.0	-46.9	
3.421	-29.8	H	3.0	30.4	1.0	-59.2	-13.0	-46.2	
5.132	-29.6	H	3.0	28.8	1.0	-57.3	-13.0	-44.3	
Mid Ch, (1732.5 MHz)									
3.465	-29.7	V	3.0	30.4	1.0	-59.1	-13.0	-46.1	
5.198	-32.2	V	3.0	28.7	1.0	-59.9	-13.0	-46.9	
3.465	-29.6	H	3.0	30.4	1.0	-59.0	-13.0	-46.0	
5.198	-26.6	H	3.0	28.7	1.0	-54.3	-13.0	-41.3	
High Ch, (1754.3 MHz)									
3.509	-29.4	V	3.0	30.4	1.0	-58.8	-13.0	-45.8	
5.263	-31.6	V	3.0	28.6	1.0	-59.2	-13.0	-46.2	
3.509	-29.6	H	3.0	30.4	1.0	-58.9	-13.0	-45.9	
5.263	-27.5	H	3.0	28.6	1.0	-55.2	-13.0	-42.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 4 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 1.4MHz BW, 16QAM A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1710.7 MHz)									
3.421	-30.3	V	3.0	30.4	1.0	-59.8	-13.0	-46.8	
5.132	-33.1	V	3.0	28.8	1.0	-60.9	-13.0	-47.9	
3.421	-30.8	H	3.0	30.4	1.0	-60.2	-13.0	-47.2	
5.132	-30.6	H	3.0	28.8	1.0	-58.3	-13.0	-45.3	
Mid Ch, (1732.5 MHz)									
3.465	-30.7	V	3.0	30.4	1.0	-60.1	-13.0	-47.1	
5.198	-33.2	V	3.0	28.7	1.0	-60.9	-13.0	-47.9	
3.465	-30.4	H	3.0	30.4	1.0	-59.8	-13.0	-46.8	
5.198	-27.6	H	3.0	28.7	1.0	-55.3	-13.0	-42.3	
High Ch, (1754.3 MHz)									
3.509	-30.4	V	3.0	30.4	1.0	-59.8	-13.0	-46.8	
5.263	-32.5	V	3.0	28.6	1.0	-60.1	-13.0	-47.1	
3.509	-30.6	H	3.0	30.4	1.0	-59.9	-13.0	-46.9	
5.263	-28.4	H	3.0	28.6	1.0	-56.1	-13.0	-43.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 4 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Apple
13U14987
06/03/13
neer: Roy Zheng
tion: EUT only
TX, LTE band 4, 3MHz BW, QPSK
A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
Chamber D	T145 8449B	Filter 1	Part 27

SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
11.5 MHz)								
-29.6	V	3.0	30.4	1.0	-59.1	-13.0	-46.1	
-30.4	V	3.0	28.8	1.0	-58.2	-13.0	-45.2	
-29.4	H	3.0	30.4	1.0	-58.8	-13.0	-45.8	
-30.5	H	3.0	28.8	1.0	-58.2	-13.0	-45.2	
32.5 MHz)								
-29.0	V	3.0	30.4	1.0	-58.4	-13.0	-45.4	
-31.2	V	3.0	28.7	1.0	-58.9	-13.0	-45.9	
-29.4	H	3.0	30.4	1.0	-58.8	-13.0	-45.8	
-30.5	H	3.0	28.7	1.0	-58.2	-13.0	-45.2	
753.5 MHz)								
-29.0	V	3.0	30.4	1.0	-58.4	-13.0	-45.4	
-32.0	V	3.0	28.6	1.0	-59.6	-13.0	-46.6	
-29.9	H	3.0	30.4	1.0	-59.2	-13.0	-46.2	
-30.1	H	3.0	28.6	1.0	-57.8	-13.0	-44.8	

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er emissions were detected above the system noise floor.

16QAM Band 4 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 3MHz BW, 16QAM A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1711.5 MHz)									
3.423	-30.6	V	3.0	30.4	1.0	-60.1	-13.0	-47.1	
5.135	-31.4	V	3.0	28.8	1.0	-59.2	-13.0	-46.2	
3.423	-30.4	H	3.0	30.4	1.0	-59.8	-13.0	-46.8	
5.135	-31.5	H	3.0	28.8	1.0	-59.2	-13.0	-46.2	
Mid Ch, (1732.5 MHz)									
3.465	-29.9	V	3.0	30.4	1.0	-59.3	-13.0	-46.3	
5.198	-32.2	V	3.0	28.7	1.0	-59.9	-13.0	-46.9	
3.465	-30.3	H	3.0	30.4	1.0	-59.7	-13.0	-46.7	
5.198	-31.4	H	3.0	28.7	1.0	-59.1	-13.0	-46.1	
High Ch, (1753.5 MHz)									
3.507	-30.0	V	3.0	30.4	1.0	-59.4	-13.0	-46.4	
5.261	-32.9	V	3.0	28.6	1.0	-60.5	-13.0	-47.5	
3.507	-30.9	H	3.0	30.4	1.0	-60.2	-13.0	-47.2	
5.261	-31.1	H	3.0	28.6	1.0	-58.8	-13.0	-45.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 4 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 5MHz BW, QPSK A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1712.5 MHz)									
3.425	-29.6	V	3.0	30.4	1.0	-59.1	-13.0	-46.1	
5.138	-31.0	V	3.0	28.8	1.0	-58.8	-13.0	-45.8	
3.425	-29.3	H	3.0	30.4	1.0	-58.7	-13.0	-45.7	
5.138	-28.7	H	3.0	28.8	1.0	-56.4	-13.0	-43.4	
Mid Ch, (1732.5 MHz)									
3.465	-29.8	V	3.0	30.4	1.0	-59.2	-13.0	-46.2	
5.198	-31.7	V	3.0	28.7	1.0	-59.4	-13.0	-46.4	
3.465	-29.9	H	3.0	30.4	1.0	-59.3	-13.0	-46.3	
5.198	-29.9	H	3.0	28.7	1.0	-57.6	-13.0	-44.6	
High Ch, (1752.5 MHz)									
3.505	-29.4	V	3.0	30.4	1.0	-58.8	-13.0	-45.8	
5.258	-32.7	V	3.0	28.6	1.0	-60.3	-13.0	-47.3	
3.505	-29.6	H	3.0	30.4	1.0	-58.9	-13.0	-45.9	
5.258	-31.4	H	3.0	28.6	1.0	-59.1	-13.0	-46.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 4 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 5MHz BW, 16QAM A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1712.5 MHz)									
3.425	-30.6	V	3.0	30.4	1.0	-60.1	-13.0	-47.1	
5.138	-32.1	V	3.0	28.8	1.0	-59.9	-13.0	-46.9	
3.425	-30.3	H	3.0	30.4	1.0	-59.7	-13.0	-46.7	
5.138	-29.8	H	3.0	28.8	1.0	-57.5	-13.0	-44.5	
Mid Ch, (1732.5 MHz)									
3.465	-30.8	V	3.0	30.4	1.0	-60.2	-13.0	-47.2	
5.198	-32.7	V	3.0	28.7	1.0	-60.4	-13.0	-47.4	
3.465	-30.9	H	3.0	30.4	1.0	-60.3	-13.0	-47.3	
5.198	-30.9	H	3.0	28.7	1.0	-58.6	-13.0	-45.6	
High Ch, (1752.5 MHz)									
3.505	-30.4	V	3.0	30.4	1.0	-59.8	-13.0	-46.8	
5.258	-33.8	V	3.0	28.6	1.0	-61.4	-13.0	-48.4	
3.505	-30.5	H	3.0	30.4	1.0	-59.8	-13.0	-46.8	
5.258	-32.2	H	3.0	28.6	1.0	-59.9	-13.0	-46.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 4 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 10MHz BW, QPSK A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1715 MHz)									
3.430	-29.2	V	3.0	30.4	1.0	-58.6	-13.0	-45.6	
5.145	-31.4	V	3.0	28.8	1.0	-59.1	-13.0	-46.1	
3.430	-29.6	H	3.0	30.4	1.0	-59.0	-13.0	-46.0	
5.145	-29.8	H	3.0	28.8	1.0	-57.5	-13.0	-44.5	
Mid Ch, (1732.5 MHz)									
3.465	-29.5	V	3.0	30.4	1.0	-58.9	-13.0	-45.9	
5.198	-32.0	V	3.0	28.7	1.0	-59.7	-13.0	-46.7	
3.465	-29.6	H	3.0	30.4	1.0	-59.0	-13.0	-46.0	
5.198	-29.2	H	3.0	28.7	1.0	-56.9	-13.0	-43.9	
High Ch, (1750 MHz)									
3.500	-28.4	V	3.0	30.4	1.0	-57.8	-13.0	-44.8	
5.250	-31.9	V	3.0	28.7	1.0	-59.6	-13.0	-46.6	
3.500	-29.5	H	3.0	30.4	1.0	-58.8	-13.0	-45.8	
5.250	-30.7	H	3.0	28.7	1.0	-58.4	-13.0	-45.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 4 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 10MHz BW, 16QAM A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1715 MHz)									
3.430	-30.2	V	3.0	30.4	1.0	-59.6	-13.0	-46.6	
5.145	-32.4	V	3.0	28.8	1.0	-60.1	-13.0	-47.1	
3.430	-30.5	H	3.0	30.4	1.0	-59.9	-13.0	-46.9	
5.145	-30.8	H	3.0	28.8	1.0	-58.5	-13.0	-45.5	
Mid Ch, (1732.5 MHz)									
3.465	-30.5	V	3.0	30.4	1.0	-59.9	-13.0	-46.9	
5.198	-33.0	V	3.0	28.7	1.0	-60.7	-13.0	-47.7	
3.465	-30.5	H	3.0	30.4	1.0	-59.9	-13.0	-46.9	
5.198	-30.3	H	3.0	28.7	1.0	-58.0	-13.0	-45.0	
High Ch, (1750 MHz)									
3.500	-29.4	V	3.0	30.4	1.0	-58.8	-13.0	-45.8	
5.250	-32.9	V	3.0	28.7	1.0	-60.6	-13.0	-47.6	
3.500	-30.4	H	3.0	30.4	1.0	-59.7	-13.0	-46.7	
5.250	-31.7	H	3.0	28.7	1.0	-59.4	-13.0	-46.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 4 (15.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 15MHz BW, QPSK A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1717.5 MHz)									
3.435	-29.8	V	3.0	30.4	1.0	-59.2	-13.0	-46.2	
5.153	-31.6	V	3.0	28.7	1.0	-59.3	-13.0	-46.3	
3.435	-29.4	H	3.0	30.4	1.0	-58.8	-13.0	-45.8	
5.153	-29.5	H	3.0	28.7	1.0	-57.2	-13.0	-44.2	
Mid Ch, (1732.5 MHz)									
3.465	-28.9	V	3.0	30.4	1.0	-58.3	-13.0	-45.3	
5.198	-32.3	V	3.0	28.7	1.0	-60.0	-13.0	-47.0	
3.465	-29.7	H	3.0	30.4	1.0	-59.1	-13.0	-46.1	
5.198	-30.3	H	3.0	28.7	1.0	-58.0	-13.0	-45.0	
High Ch, (1747.5 MHz)									
3.495	-28.8	V	3.0	30.4	1.0	-58.2	-13.0	-45.2	
5.243	-32.4	V	3.0	28.7	1.0	-60.1	-13.0	-47.1	
3.495	-28.5	H	3.0	30.4	1.0	-57.8	-13.0	-44.8	
5.243	-30.4	H	3.0	28.7	1.0	-58.1	-13.0	-45.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 4 (15.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 15MHz BW, 16QAM A28(FLTW)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1717.5 MHz)									
3.435	-30.8	V	3.0	30.4	1.0	-60.2	-13.0	-47.2	
5.153	-32.6	V	3.0	28.7	1.0	-60.3	-13.0	-47.3	
3.435	-30.3	H	3.0	30.4	1.0	-59.7	-13.0	-46.7	
5.153	-30.5	H	3.0	28.7	1.0	-58.2	-13.0	-45.2	
Mid Ch, (1732.5 MHz)									
3.465	-29.8	V	3.0	30.4	1.0	-59.2	-13.0	-46.2	
5.198	-33.3	V	3.0	28.7	1.0	-61.0	-13.0	-48.0	
3.465	-30.8	H	3.0	30.4	1.0	-60.2	-13.0	-47.2	
5.198	-31.2	H	3.0	28.7	1.0	-58.9	-13.0	-45.9	
High Ch, (1747.5 MHz)									
3.495	-29.8	V	3.0	30.4	1.0	-59.2	-13.0	-46.2	
5.243	-33.5	V	3.0	28.7	1.0	-61.2	-13.0	-48.2	
3.495	-29.6	H	3.0	30.4	1.0	-58.9	-13.0	-45.9	
5.243	-31.4	H	3.0	28.7	1.0	-59.1	-13.0	-46.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 4 (20.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 20MHz BW, 16QAM A28(XX97)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1720 MHz)									
3.440	-30.2	V	3.0	30.4	1.0	-59.6	-13.0	-46.6	
5.160	-32.1	V	3.0	28.7	1.0	-59.8	-13.0	-46.8	
3.440	-30.8	H	3.0	30.4	1.0	-60.2	-13.0	-47.2	
5.160	-30.8	H	3.0	28.7	1.0	-58.5	-13.0	-45.5	
Mid Ch, (1732.5 MHz)									
3.465	-30.0	V	3.0	30.4	1.0	-59.4	-13.0	-46.4	
5.198	-33.1	V	3.0	28.7	1.0	-60.8	-13.0	-47.8	
3.465	-30.6	H	3.0	30.4	1.0	-60.0	-13.0	-47.0	
5.198	-31.4	H	3.0	28.7	1.0	-59.1	-13.0	-46.1	
High Ch, (1745 MHz)									
3.490	-30.3	V	3.0	30.4	1.0	-59.7	-13.0	-46.7	
5.235	-33.2	V	3.0	28.7	1.0	-60.9	-13.0	-47.9	
3.490	-30.5	H	3.0	30.4	1.0	-59.9	-13.0	-46.9	
5.235	-30.9	H	3.0	28.7	1.0	-58.5	-13.0	-45.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 4 (20.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/24/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 1.4M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (824.7MHz)									
1.649	-29.3	V	3.0	32.7	1.0	-61.0	-13.0	-48.0	
2.474	-32.1	V	3.0	31.4	1.0	-62.5	-13.0	-49.5	
1.649	-37.3	H	3.0	32.7	1.0	-69.0	-13.0	-56.0	
2.474	-33.9	H	3.0	31.4	1.0	-64.3	-13.0	-51.3	
Mid Ch, (836.5MHz)									
1.673	-36.8	V	3.0	32.6	1.0	-68.4	-13.0	-55.4	
2.510	-32.8	V	3.0	31.5	1.0	-63.3	-13.0	-50.3	
1.673	-39.0	H	3.0	32.6	1.0	-70.6	-13.0	-57.6	
2.510	-34.7	H	3.0	31.5	1.0	-65.2	-13.0	-52.2	
High Ch, (848.3MHz)									
1.697	-32.2	V	3.0	32.6	1.0	-63.7	-13.0	-50.7	
2.545	-30.9	V	3.0	31.4	1.0	-61.4	-13.0	-48.4	
1.697	-37.0	H	3.0	32.6	1.0	-68.5	-13.0	-55.5	
2.545	-33.5	H	3.0	31.4	1.0	-63.9	-13.0	-50.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor

LAT BAND 5 QPSK Band 5 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/24/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 1.4M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (824.7MHz)									
1.649	-29.3	V	3.0	32.7	1.0	-61.0	-13.0	-48.0	
2.474	-32.1	V	3.0	31.4	1.0	-62.5	-13.0	-49.5	
1.649	-37.3	H	3.0	32.7	1.0	-69.0	-13.0	-56.0	
2.474	-33.9	H	3.0	31.4	1.0	-64.3	-13.0	-51.3	
Mid Ch, (836.5MHz)									
1.673	-36.8	V	3.0	32.6	1.0	-68.4	-13.0	-55.4	
2.510	-32.8	V	3.0	31.5	1.0	-63.3	-13.0	-50.3	
1.673	-39.0	H	3.0	32.6	1.0	-70.6	-13.0	-57.6	
2.510	-34.7	H	3.0	31.5	1.0	-65.2	-13.0	-52.2	
High Ch, (848.3MHz)									
1.697	-32.2	V	3.0	32.6	1.0	-63.7	-13.0	-50.7	
2.545	-30.9	V	3.0	31.4	1.0	-61.4	-13.0	-48.4	
1.697	-37.0	H	3.0	32.6	1.0	-68.5	-13.0	-55.5	
2.545	-33.5	H	3.0	31.4	1.0	-63.9	-13.0	-50.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 5 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/24/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 1.4M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (824.7MHz)									
1.649	-30.1	V	3.0	32.7	1.0	-61.8	-13.0	-48.8	
2.474	-32.8	V	3.0	31.4	1.0	-63.2	-13.0	-50.2	
1.649	-38.0	H	3.0	32.7	1.0	-69.7	-13.0	-56.7	
2.474	-34.6	H	3.0	31.4	1.0	-65.0	-13.0	-52.0	
Mid Ch, (836.5MHz)									
1.673	-37.2	V	3.0	32.6	1.0	-68.8	-13.0	-55.8	
2.510	-33.5	V	3.0	31.5	1.0	-64.0	-13.0	-51.0	
1.673	-39.9	H	3.0	32.6	1.0	-71.5	-13.0	-58.5	
2.510	-35.6	H	3.0	31.5	1.0	-66.1	-13.0	-53.1	
High Ch, (848.3MHz)									
1.697	-33.5	V	3.0	32.6	1.0	-65.0	-13.0	-52.0	
2.545	-31.9	V	3.0	31.4	1.0	-62.4	-13.0	-49.4	
1.697	-37.8	H	3.0	32.6	1.0	-69.3	-13.0	-56.3	
2.545	-34.1	H	3.0	31.4	1.0	-64.5	-13.0	-51.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 5 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/23/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 3M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (825.5MHz)									
1.651	-31.6	V	3.0	32.7	1.0	-63.3	-13.0	-50.3	
2.477	-29.0	V	3.0	31.4	1.0	-59.4	-13.0	-46.4	
1.651	-36.6	H	3.0	32.7	1.0	-68.3	-13.0	-55.3	
2.477	-33.5	H	3.0	31.4	1.0	-63.9	-13.0	-50.9	
Mid Ch, (836.5MHz)									
1.673	-32.7	V	3.0	32.6	1.0	-64.3	-13.0	-51.3	
2.510	-30.4	V	3.0	31.5	1.0	-60.9	-13.0	-47.9	
1.673	-36.6	H	3.0	32.6	1.0	-68.2	-13.0	-55.2	
2.510	-33.4	H	3.0	31.5	1.0	-63.9	-13.0	-50.9	
High Ch, (847.5MHz)									
1.695	-32.8	V	3.0	32.6	1.0	-64.3	-13.0	-51.3	
2.543	-31.2	V	3.0	31.4	1.0	-61.6	-13.0	-48.6	
1.695	-37.7	H	3.0	32.6	1.0	-69.2	-13.0	-56.2	
2.543	-33.2	H	3.0	31.4	1.0	-63.6	-13.0	-50.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 5 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/23/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 3M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (825.5MHz)									
1.651	-32.9	V	3.0	32.7	1.0	-64.6	-13.0	-51.6	
2.477	-29.7	V	3.0	31.4	1.0	-60.1	-13.0	-47.1	
1.651	-37.6	H	3.0	32.7	1.0	-69.3	-13.0	-56.3	
2.477	-34.1	H	3.0	31.4	1.0	-64.5	-13.0	-51.5	
Mid Ch, (836.5MHz)									
1.673	-33.9	V	3.0	32.6	1.0	-65.5	-13.0	-52.5	
2.510	-31.3	V	3.0	31.5	1.0	-61.8	-13.0	-48.8	
1.673	-37.5	H	3.0	32.6	1.0	-69.1	-13.0	-56.1	
2.510	-34.1	H	3.0	31.5	1.0	-64.6	-13.0	-51.6	
High Ch, (847.5MHz)									
1.695	-34.1	V	3.0	32.6	1.0	-65.6	-13.0	-52.6	
2.543	-32.4	V	3.0	31.4	1.0	-62.8	-13.0	-49.8	
1.695	-38.6	H	3.0	32.6	1.0	-70.2	-13.0	-57.2	
2.543	-34.1	H	3.0	31.4	1.0	-64.5	-13.0	-51.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 5 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 5M har QPSK
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Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (829MHz)									
1.658	-26.2	V	3.0	32.6	1.0	-57.9	-13.0	-44.9	
2.487	-27.1	V	3.0	31.4	1.0	-57.5	-13.0	-44.5	
1.658	-26.1	H	3.0	32.6	1.0	-57.7	-13.0	-44.7	
2.487	-28.8	H	3.0	31.4	1.0	-59.3	-13.0	-46.3	
Mid Ch, (836.5MHz)									
1.673	-29.2	V	3.0	32.6	1.0	-60.8	-13.0	-47.8	
2.510	-27.5	V	3.0	31.5	1.0	-58.0	-13.0	-45.0	
1.673	-30.9	H	3.0	32.6	1.0	-62.5	-13.0	-49.5	
2.510	-28.8	H	3.0	31.5	1.0	-59.3	-13.0	-46.3	
High Ch, (844MHz)									
1.688	-28.2	V	3.0	32.6	1.0	-59.7	-13.0	-46.7	
2.532	-27.6	V	3.0	31.5	1.0	-58.1	-13.0	-45.1	
1.688	-29.2	V	3.0	32.6	1.0	-60.7	-13.0	-47.7	
2.532	-23.0	V	3.0	31.5	1.0	-53.5	-13.0	-40.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 5 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/24/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 5M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (829MHz)									
1.658	-35.5	V	3.0	32.6	1.0	-67.2	-13.0	-54.2	
2.487	-33.0	V	3.0	31.4	1.0	-63.4	-13.0	-50.4	
1.658	-37.9	H	3.0	32.6	1.0	-69.5	-13.0	-56.5	
2.487	-35.5	H	3.0	31.4	1.0	-65.9	-13.0	-52.9	
Mid Ch, (836.5MHz)									
1.673	-35.7	V	3.0	32.6	1.0	-67.3	-13.0	-54.3	
2.510	-32.8	V	3.0	31.5	1.0	-63.3	-13.0	-50.3	
1.673	-36.6	H	3.0	32.6	1.0	-68.2	-13.0	-55.2	
2.510	-34.3	H	3.0	31.5	1.0	-64.8	-13.0	-51.8	
High Ch, (844MHz)									
1.688	-35.2	V	3.0	32.6	1.0	-66.7	-13.0	-53.7	
2.532	-33.1	V	3.0	31.5	1.0	-63.6	-13.0	-50.6	
1.688	-37.9	H	3.0	32.6	1.0	-69.5	-13.0	-56.5	
2.532	-33.4	H	3.0	31.5	1.0	-63.9	-13.0	-50.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 5 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/24/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 10M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (829MHz)									
1.658	-35.1	V	3.0	32.6	1.0	-66.8	-13.0	-53.8	
2.487	-31.1	V	3.0	31.4	1.0	-61.6	-13.0	-48.6	
1.658	-35.8	H	3.0	32.6	1.0	-67.4	-13.0	-54.4	
2.487	-34.8	H	3.0	31.4	1.0	-65.3	-13.0	-52.3	
Mid Ch, (836.5MHz)									
1.673	-34.9	V	3.0	32.6	1.0	-66.5	-13.0	-53.5	
2.510	-31.9	V	3.0	31.5	1.0	-62.4	-13.0	-49.4	
1.673	-37.2	H	3.0	32.6	1.0	-68.8	-13.0	-55.8	
2.510	-33.1	H	3.0	31.5	1.0	-63.6	-13.0	-50.6	
High Ch, (844MHz)									
1.688	-34.8	V	3.0	32.6	1.0	-66.3	-13.0	-53.3	
2.532	-31.7	V	3.0	31.5	1.0	-62.2	-13.0	-49.2	
1.688	-36.3	H	3.0	32.6	1.0	-67.9	-13.0	-54.9	
2.532	-33.6	H	3.0	31.5	1.0	-64.1	-13.0	-51.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 5 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/24/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 10M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (829MHz)									
1.658	-35.7	V	3.0	32.6	1.0	-67.4	-13.0	-54.4	
2.487	-32.4	V	3.0	31.4	1.0	-62.8	-13.0	-49.8	
1.658	-36.0	H	3.0	32.6	1.0	-67.6	-13.0	-54.6	
2.487	-35.4	H	3.0	31.4	1.0	-65.9	-13.0	-52.9	
Mid Ch, (836.5MHz)									
1.673	-35.2	V	3.0	32.6	1.0	-66.8	-13.0	-53.8	
2.510	-32.0	V	3.0	31.5	1.0	-62.5	-13.0	-49.5	
1.673	-37.9	H	3.0	32.6	1.0	-69.5	-13.0	-56.5	
2.510	-33.8	H	3.0	31.5	1.0	-64.3	-13.0	-51.3	
High Ch, (844MHz)									
1.688	-35.6	V	3.0	32.6	1.0	-67.1	-13.0	-54.1	
2.532	-32.5	V	3.0	31.5	1.0	-63.0	-13.0	-50.0	
1.688	-37.4	H	3.0	32.6	1.0	-69.0	-13.0	-56.0	
2.532	-35.1	H	3.0	31.5	1.0	-65.6	-13.0	-52.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LAT QPSK Band 13 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 13, 5MHz, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (779.5 MHz)									
1.559	-27.3	V	3.0	32.9	1.0	-59.2	-13.0	-46.2	
2.339	-26.1	V	3.0	31.1	1.0	-56.3	-13.0	-43.3	
1.559	-29.3	H	3.0	32.9	1.0	-61.1	-13.0	-48.1	
2.339	-27.6	H	3.0	31.1	1.0	-57.7	-13.0	-44.7	
Mid Ch, (782 MHz)									
1.564	-27.5	V	3.0	32.9	1.0	-59.3	-13.0	-46.3	
2.346	-26.9	V	3.0	31.1	1.0	-57.0	-13.0	-44.0	
1.564	-29.4	H	3.0	32.9	1.0	-61.3	-13.0	-48.3	
2.346	-28.2	H	3.0	31.1	1.0	-58.3	-13.0	-45.3	
High Ch, (784.5 MHz)									
1.569	-27.3	V	3.0	32.8	1.0	-59.2	-13.0	-46.2	
2.354	-26.6	V	3.0	31.1	1.0	-56.7	-13.0	-43.7	
1.569	-29.6	H	3.0	32.8	1.0	-61.5	-13.0	-48.5	
2.354	-28.2	H	3.0	31.1	1.0	-58.3	-13.0	-45.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 13 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Apple
Project #: 13U14987
Date: 05/28/13
Test Engineer: Roy Zheng
Configuration: EUT only
Mode: TX, LTE band 13, 5MHz, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (779.5 MHz)									
1.559	-28.2	V	3.0	32.9	1.0	-60.1	-13.0	-47.1	
2.339	-26.9	V	3.0	31.1	1.0	-57.1	-13.0	-44.1	
1.559	-30.0	H	3.0	32.9	1.0	-61.8	-13.0	-48.8	
2.339	-28.3	H	3.0	31.1	1.0	-58.4	-13.0	-45.4	
Mid Ch, (782 MHz)									
1.564	-28.3	V	3.0	32.9	1.0	-60.2	-13.0	-47.2	
2.346	-27.8	V	3.0	31.1	1.0	-57.9	-13.0	-44.9	
1.564	-30.4	H	3.0	32.9	1.0	-62.3	-13.0	-49.3	
2.346	-29.2	H	3.0	31.1	1.0	-59.3	-13.0	-46.3	
High Ch, (784.5 MHz)									
1.569	-28.1	V	3.0	32.8	1.0	-60.0	-13.0	-47.0	
2.354	-27.5	V	3.0	31.1	1.0	-57.6	-13.0	-44.6	
1.569	-30.6	H	3.0	32.8	1.0	-62.5	-13.0	-49.5	
2.354	-28.9	H	3.0	31.1	1.0	-59.0	-13.0	-46.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK and 16QAM Band 13 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 13, 10MHz, QPSK/16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
QPSK									
Mid Ch, (782 MHz)									
1.564	-27.7	V	3.0	32.9	1.0	-59.6	-13.0	-46.6	
2.346	-27.0	V	3.0	31.1	1.0	-57.1	-13.0	-44.1	
1.564	-29.5	H	3.0	32.9	1.0	-61.4	-13.0	-48.4	
2.346	-28.3	H	3.0	31.1	1.0	-58.4	-13.0	-45.4	
16QAM									
Mid Ch, (782 MHz)									
1.564	-28.6	V	3.0	32.9	1.0	-60.5	-13.0	-47.5	
2.346	-28.0	V	3.0	31.1	1.0	-58.1	-13.0	-45.1	
1.564	-30.5	H	3.0	32.9	1.0	-62.4	-13.0	-49.4	
2.346	-29.3	H	3.0	31.1	1.0	-59.4	-13.0	-46.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LAT QPSK Band 17 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B17 5M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (706.5MHz)									
1.413	-27.5	V	3.0	33.1	1.0	-59.6	-13.0	-46.6	
2.120	-26.9	V	3.0	31.6	1.0	-57.5	-13.0	-44.5	
1.413	-29.3	H	3.0	33.1	1.0	-61.4	-13.0	-48.4	
2.120	-28.8	H	3.0	31.6	1.0	-59.4	-13.0	-46.4	
Mid Ch, (710MHz)									
1.420	-27.7	V	3.0	33.1	1.0	-59.8	-13.0	-46.8	
2.130	-24.6	V	3.0	31.6	1.0	-55.2	-13.0	-42.2	
1.420	-29.5	H	3.0	33.1	1.0	-61.6	-13.0	-48.6	
2.130	-28.2	H	3.0	31.6	1.0	-58.8	-13.0	-45.8	
High Ch, (713.5MHz)									
1.427	-27.5	V	3.0	33.1	1.0	-59.5	-13.0	-46.5	
2.141	-26.5	V	3.0	31.6	1.0	-57.0	-13.0	-44.0	
1.427	-29.7	H	3.0	33.1	1.0	-61.8	-13.0	-48.8	
2.141	-28.5	H	3.0	31.6	1.0	-59.0	-13.0	-46.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 17 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B17 5M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (706.5MHz)									
1.413	-28.5	V	3.0	33.1	1.0	-60.6	-13.0	-47.6	
2.120	-27.8	V	3.0	31.6	1.0	-58.4	-13.0	-45.4	
1.413	-30.4	H	3.0	33.1	1.0	-62.5	-13.0	-49.5	
2.120	-29.7	H	3.0	31.6	1.0	-60.3	-13.0	-47.3	
Mid Ch, (710MHz)									
1.420	-28.6	V	3.0	33.1	1.0	-60.7	-13.0	-47.7	
2.130	-25.9	V	3.0	31.6	1.0	-56.5	-13.0	-43.5	
1.420	-30.6	H	3.0	33.1	1.0	-62.7	-13.0	-49.7	
2.130	-29.3	H	3.0	31.6	1.0	-59.9	-13.0	-46.9	
High Ch, (713.5MHz)									
1.427	-28.7	V	3.0	33.1	1.0	-60.7	-13.0	-47.7	
2.141	-28.0	V	3.0	31.6	1.0	-58.5	-13.0	-45.5	
1.427	-30.8	H	3.0	33.1	1.0	-62.9	-13.0	-49.9	
2.141	-29.4	H	3.0	31.6	1.0	-59.9	-13.0	-46.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 17 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B17 10M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (709MHz)									
1.418	-27.7	V	3.0	33.1	1.0	-59.8	-13.0	-46.8	
2.127	-27.3	V	3.0	31.6	1.0	-57.9	-13.0	-44.9	
1.418	-29.9	H	3.0	33.1	1.0	-62.0	-13.0	-49.0	
2.127	-28.9	H	3.0	31.6	1.0	-59.5	-13.0	-46.5	
Mid Ch, (710MHz)									
1.420	-27.7	V	3.0	33.1	1.0	-59.8	-13.0	-46.8	
2.130	-27.6	V	3.0	31.6	1.0	-58.2	-13.0	-45.2	
1.420	100.8	H	3.0	33.1	1.0	68.7	-13.0	81.7	
2.130	-28.0	H	3.0	31.6	1.0	-58.6	-13.0	-45.6	
High Ch, (711MHz)									
1.422	-28.1	V	3.0	33.1	1.0	-60.2	-13.0	-47.2	
2.133	-26.9	V	3.0	31.6	1.0	-57.4	-13.0	-44.4	
1.422	-29.9	H	3.0	33.1	1.0	-62.0	-13.0	-49.0	
2.133	-28.7	H	3.0	31.6	1.0	-59.3	-13.0	-46.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 17 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B17 10M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (709MHz)									
1.418	-28.8	V	3.0	33.1	1.0	-60.9	-13.0	-47.9	
2.127	-28.0	V	3.0	31.6	1.0	-58.6	-13.0	-45.6	
1.418	-31.0	H	3.0	33.1	1.0	-63.1	-13.0	-50.1	
2.127	-29.8	H	3.0	31.6	1.0	-60.4	-13.0	-47.4	
Mid Ch, (710MHz)									
1.420	-28.7	V	3.0	33.1	1.0	-60.8	-13.0	-47.8	
2.130	-26.9	V	3.0	31.6	1.0	-57.5	-13.0	-44.5	
1.420	-30.8	H	3.0	33.1	1.0	-62.9	-13.0	-49.9	
2.130	-29.1	H	3.0	31.6	1.0	-59.7	-13.0	-46.7	
High Ch, (711MHz)									
1.422	-28.9	V	3.0	33.1	1.0	-61.0	-13.0	-48.0	
2.133	-27.8	V	3.0	31.6	1.0	-58.3	-13.0	-45.3	
1.422	-30.8	H	3.0	33.1	1.0	-62.9	-13.0	-49.9	
2.133	-29.5	H	3.0	31.6	1.0	-60.1	-13.0	-47.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LAT QPSK Band 25 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 1.4MHz, QPSK A28(XX99)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1850.7 MHz)									
3.701	-26.5	V	3.0	30.2	1.0	-55.7	-13.0	-42.7	
7.403	-30.1	V	3.0	26.5	1.0	-55.6	-13.0	-42.6	
3.701	-26.7	H	3.0	30.2	1.0	-55.9	-13.0	-42.9	
7.403	-29.2	H	3.0	26.5	1.0	-54.7	-13.0	-41.7	
Mid Ch, (1882.5 MHz)									
3.765	-26.5	V	3.0	30.1	1.0	-55.7	-13.0	-42.7	
7.530	-28.9	V	3.0	26.3	1.0	-54.2	-13.0	-41.2	
3.765	-27.1	H	3.0	30.1	1.0	-56.2	-13.0	-43.2	
7.530	-28.8	H	3.0	26.3	1.0	-54.1	-13.0	-41.1	
High Ch, (1914.3 MHz)									
3.829	-26.7	V	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.657	-29.8	V	3.0	26.1	1.0	-55.0	-13.0	-42.0	
3.829	-22.0	H	3.0	30.1	1.0	-51.1	-13.0	-38.1	
7.657	-28.1	H	3.0	26.1	1.0	-53.2	-13.0	-40.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 25 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 1.4MHz, 16QAM A28(XX99)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1850.7 MHz)									
3.701	-27.5	V	3.0	30.2	1.0	-56.7	-13.0	-43.7	
7.403	-31.0	V	3.0	26.5	1.0	-56.5	-13.0	-43.5	
3.701	-27.7	H	3.0	30.2	1.0	-56.9	-13.0	-43.9	
7.403	-30.1	H	3.0	26.5	1.0	-55.6	-13.0	-42.6	
Mid Ch, (1882.5 MHz)									
3.765	-27.5	V	3.0	30.1	1.0	-56.7	-13.0	-43.7	
7.530	-29.9	V	3.0	26.3	1.0	-55.2	-13.0	-42.2	
3.765	-28.1	H	3.0	30.1	1.0	-57.2	-13.0	-44.2	
7.530	-29.8	H	3.0	26.3	1.0	-55.1	-13.0	-42.1	
High Ch, (1914.3 MHz)									
3.829	-27.7	V	3.0	30.1	1.0	-56.8	-13.0	-43.8	
7.657	-30.7	V	3.0	26.1	1.0	-55.9	-13.0	-42.9	
3.829	-23.1	H	3.0	30.1	1.0	-52.2	-13.0	-39.2	
7.657	-29.0	H	3.0	26.1	1.0	-54.1	-13.0	-41.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor

QPSK Band 25 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 3MHz, QPSK A28(XX99)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851.5 MHz)									
3.703	-27.0	V	3.0	30.2	1.0	-56.2	-13.0	-43.2	
7.406	-29.8	V	3.0	26.5	1.0	-55.3	-13.0	-42.3	
3.703	-27.7	H	3.0	30.2	1.0	-56.9	-13.0	-43.9	
7.406	-29.1	H	3.0	26.5	1.0	-54.6	-13.0	-41.6	
Mid Ch, (1882.5 MHz)									
3.765	-26.6	V	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.530	-29.9	V	3.0	26.3	1.0	-55.2	-13.0	-42.2	
3.765	-27.2	H	3.0	30.1	1.0	-56.3	-13.0	-43.3	
7.530	-28.9	H	3.0	26.3	1.0	-54.2	-13.0	-41.2	
High Ch, (1913.5 MHz)									
3.827	-24.3	V	3.0	30.1	1.0	-53.4	-13.0	-40.4	
7.654	-28.6	V	3.0	26.1	1.0	-53.7	-13.0	-40.7	
3.827	-27.1	H	3.0	30.1	1.0	-56.2	-13.0	-43.2	
7.654	-28.7	H	3.0	26.1	1.0	-53.8	-13.0	-40.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 25 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 3MHz, 16QAM A28(XX99)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851.5 MHz)									
3.703	-27.9	V	3.0	30.2	1.0	-57.1	-13.0	-44.1	
7.406	-30.8	V	3.0	26.5	1.0	-56.3	-13.0	-43.3	
3.703	-28.7	H	3.0	30.2	1.0	-57.9	-13.0	-44.9	
7.406	-30.0	H	3.0	26.5	1.0	-55.5	-13.0	-42.5	
Mid Ch, (1882.5 MHz)									
3.765	-27.6	V	3.0	30.1	1.0	-56.8	-13.0	-43.8	
7.530	-30.9	V	3.0	26.3	1.0	-56.2	-13.0	-43.2	
3.765	-28.2	H	3.0	30.1	1.0	-57.3	-13.0	-44.3	
7.530	-29.9	H	3.0	26.3	1.0	-55.2	-13.0	-42.2	
High Ch, (1913.5 MHz)									
3.827	-25.4	V	3.0	30.1	1.0	-54.5	-13.0	-41.5	
7.654	-29.7	V	3.0	26.1	1.0	-54.8	-13.0	-41.8	
3.827	-28.0	H	3.0	30.1	1.0	-57.1	-13.0	-44.1	
7.654	-29.6	H	3.0	26.1	1.0	-54.7	-13.0	-41.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 25 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 5MHz, QPSK A28(XX99)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1852.5 MHz)									
3.705	-26.3	V	3.0	30.2	1.0	-55.5	-13.0	-42.5	
7.410	-29.5	V	3.0	26.5	1.0	-54.9	-13.0	-41.9	
3.705	-26.8	H	3.0	30.2	1.0	-56.0	-13.0	-43.0	
7.410	-28.2	H	3.0	26.5	1.0	-53.7	-13.0	-40.7	
Mid Ch, (1882.5 MHz)									
3.765	-26.4	V	3.0	30.1	1.0	-55.6	-13.0	-42.6	
7.530	-29.7	V	3.0	26.3	1.0	-55.0	-13.0	-42.0	
3.765	-27.0	H	3.0	30.1	1.0	-56.1	-13.0	-43.1	
7.530	-28.9	H	3.0	26.3	1.0	-54.2	-13.0	-41.2	
High Ch, (1912.5 MHz)									
3.825	-26.4	V	3.0	30.1	1.0	-55.5	-13.0	-42.5	
7.650	-29.2	V	3.0	26.2	1.0	-54.3	-13.0	-41.3	
3.825	-27.0	H	3.0	30.1	1.0	-56.1	-13.0	-43.1	
7.650	-28.8	H	3.0	26.2	1.0	-53.9	-13.0	-40.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 25 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Apple
13U14987
06/03/13
neer: Roy Zheng
tion: EUT only
TX, LTE band 25, 5MHz, 16QAM
A28(XX99)

Chamber	Pre-amplifer	Filter	Limit
Chamber D	T145 8449B	Filter 1	Part 24

SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
52.5 MHz)								
-27.3	V	3.0	30.2	1.0	-56.5	-13.0	-43.5	
-30.5	V	3.0	26.5	1.0	-55.9	-13.0	-42.9	
-27.8	H	3.0	30.2	1.0	-57.0	-13.0	-44.0	
-29.2	H	3.0	26.5	1.0	-54.7	-13.0	-41.7	
82.5 MHz)								
-27.4	V	3.0	30.1	1.0	-56.6	-13.0	-43.6	
-30.7	V	3.0	26.3	1.0	-56.0	-13.0	-43.0	
-28.0	H	3.0	30.1	1.0	-57.1	-13.0	-44.1	
-29.9	H	3.0	26.3	1.0	-55.2	-13.0	-42.2	
12.5 MHz)								
-27.4	V	3.0	30.1	1.0	-56.5	-13.0	-43.5	
-29.3	V	3.0	26.2	1.0	-54.4	-13.0	-41.4	
-28.0	H	3.0	30.1	1.0	-57.1	-13.0	-44.1	
-29.7	H	3.0	26.2	1.0	-54.8	-13.0	-41.8	

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er emissions were detected above the system noise floor.

QPSK Band 25 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 10MHz, QPSK A28(XX99)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1855 MHz)									
3.710	-26.7	V	3.0	30.2	1.0	-55.9	-13.0	-42.9	
7.420	-29.7	V	3.0	26.5	1.0	-55.1	-13.0	-42.1	
3.710	-27.7	H	3.0	30.2	1.0	-56.9	-13.0	-43.9	
7.420	-28.6	H	3.0	26.5	1.0	-54.1	-13.0	-41.1	
Mid Ch, (1882.5 MHz)									
3.765	-26.5	V	3.0	30.1	1.0	-55.7	-13.0	-42.7	
7.530	-28.9	V	3.0	26.3	1.0	-54.2	-13.0	-41.2	
3.765	-27.9	H	3.0	30.1	1.0	-57.0	-13.0	-44.0	
7.530	-28.9	H	3.0	26.3	1.0	-54.2	-13.0	-41.2	
High Ch, (1909.8 MHz)									
3.820	-25.9	V	3.0	30.1	1.0	-55.0	-13.0	-42.0	
7.639	-29.6	V	3.0	26.2	1.0	-54.7	-13.0	-41.7	
3.820	-27.9	H	3.0	30.1	1.0	-57.0	-13.0	-44.0	
7.639	-28.2	H	3.0	26.2	1.0	-53.4	-13.0	-40.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor

16QAM Band 25 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 10MHz, 16QAM A28(XX99)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1855 MHz)									
3.710	-27.7	V	3.0	30.2	1.0	-56.9	-13.0	-43.9	
7.420	-30.7	V	3.0	26.5	1.0	-56.1	-13.0	-43.1	
3.710	-28.7	H	3.0	30.2	1.0	-57.9	-13.0	-44.9	
7.420	-29.4	H	3.0	26.5	1.0	-54.9	-13.0	-41.9	
Mid Ch, (1882.5 MHz)									
3.765	-27.4	V	3.0	30.1	1.0	-56.6	-13.0	-43.6	
7.530	-29.8	V	3.0	26.3	1.0	-55.1	-13.0	-42.1	
3.765	-28.9	H	3.0	30.1	1.0	-58.0	-13.0	-45.0	
7.530	-29.9	H	3.0	26.3	1.0	-55.2	-13.0	-42.2	
High Ch, (1909.8 MHz)									
3.820	-26.9	V	3.0	30.1	1.0	-56.0	-13.0	-43.0	
7.639	-30.6	V	3.0	26.2	1.0	-55.7	-13.0	-42.7	
3.820	-28.9	H	3.0	30.1	1.0	-58.0	-13.0	-45.0	
7.639	-29.2	H	3.0	26.2	1.0	-54.4	-13.0	-41.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 25 (15.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 15MHz, QPSK A28(XX99)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1857.5 MHz)									
3.715	-26.2	V	3.0	30.2	1.0	-55.4	-13.0	-42.4	
7.430	-29.3	V	3.0	26.4	1.0	-54.7	-13.0	-41.7	
3.715	-27.5	H	3.0	30.2	1.0	-56.7	-13.0	-43.7	
7.430	-28.7	H	3.0	26.4	1.0	-54.1	-13.0	-41.1	
Mid Ch, (1882.5 MHz)									
3.765	-26.8	V	3.0	30.1	1.0	-56.0	-13.0	-43.0	
7.530	-28.9	V	3.0	26.3	1.0	-54.2	-13.0	-41.2	
3.765	-27.6	H	3.0	30.1	1.0	-56.7	-13.0	-43.7	
7.530	-28.1	H	3.0	26.3	1.0	-53.4	-13.0	-40.4	
High Ch, (1907.5 MHz)									
3.815	-27.4	V	3.0	30.1	1.0	-56.5	-13.0	-43.5	
7.630	-29.2	V	3.0	26.2	1.0	-54.4	-13.0	-41.4	
3.815	-27.6	H	3.0	30.1	1.0	-56.7	-13.0	-43.7	
7.630	-27.5	H	3.0	26.2	1.0	-52.7	-13.0	-39.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 25 (15.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 15MHz, 16QAM A28(XX99)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1857.5 MHz)									
3.715	-27.2	V	3.0	30.2	1.0	-56.4	-13.0	-43.4	
7.430	-30.2	V	3.0	26.4	1.0	-55.6	-13.0	-42.6	
3.715	-28.5	H	3.0	30.2	1.0	-57.7	-13.0	-44.7	
7.430	-29.6	H	3.0	26.4	1.0	-55.0	-13.0	-42.0	
Mid Ch, (1882.5 MHz)									
3.765	-27.8	V	3.0	30.1	1.0	-57.0	-13.0	-44.0	
7.530	-29.9	V	3.0	26.3	1.0	-55.2	-13.0	-42.2	
3.765	-28.7	H	3.0	30.1	1.0	-57.8	-13.0	-44.8	
7.530	-29.1	H	3.0	26.3	1.0	-54.4	-13.0	-41.4	
High Ch, (1907.5 MHz)									
3.815	-28.4	V	3.0	30.1	1.0	-57.5	-13.0	-44.5	
7.630	-30.1	V	3.0	26.2	1.0	-55.3	-13.0	-42.3	
3.815	-28.6	H	3.0	30.1	1.0	-57.7	-13.0	-44.7	
7.630	-28.5	H	3.0	26.2	1.0	-53.7	-13.0	-40.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 25 (20.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 20MHz, QPSK A28(XX99)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1860 MHz)									
3.720	-26.4	V	3.0	30.2	1.0	-55.6	-13.0	-42.6	
7.440	-29.2	V	3.0	26.4	1.0	-54.6	-13.0	-41.6	
3.720	-27.4	H	3.0	30.2	1.0	-56.6	-13.0	-43.6	
7.440	-28.8	H	3.0	26.4	1.0	-54.2	-13.0	-41.2	
Mid Ch, (1882.5 MHz)									
3.765	-26.7	V	3.0	30.1	1.0	-55.9	-13.0	-42.9	
7.530	-29.2	V	3.0	26.3	1.0	-54.5	-13.0	-41.5	
3.765	-27.4	H	3.0	30.1	1.0	-56.5	-13.0	-43.5	
7.530	-28.4	H	3.0	26.3	1.0	-53.7	-13.0	-40.7	
High Ch, (1905 MHz)									
3.810	-26.8	V	3.0	30.1	1.0	-55.9	-13.0	-42.9	
7.620	-28.9	V	3.0	26.2	1.0	-54.1	-13.0	-41.1	
3.810	-26.4	H	3.0	30.1	1.0	-55.5	-13.0	-42.5	
7.620	-28.3	H	3.0	26.2	1.0	-53.5	-13.0	-40.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 25 (20.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	06/03/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 20MHz, 16QAM A28(XX99)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1860 MHz)									
3.720	-27.4	V	3.0	30.2	1.0	-56.6	-13.0	-43.6	
7.440	-30.1	V	3.0	26.4	1.0	-55.5	-13.0	-42.5	
3.720	-28.3	H	3.0	30.2	1.0	-57.5	-13.0	-44.5	
7.440	-29.8	H	3.0	26.4	1.0	-55.2	-13.0	-42.2	
Mid Ch, (1882.5 MHz)									
3.765	-27.6	V	3.0	30.1	1.0	-56.8	-13.0	-43.8	
7.530	-30.1	V	3.0	26.3	1.0	-55.4	-13.0	-42.4	
3.765	-28.4	H	3.0	30.1	1.0	-57.5	-13.0	-44.5	
7.530	-28.3	H	3.0	26.3	1.0	-53.6	-13.0	-40.6	
High Ch, (1905 MHz)									
3.810	-27.9	V	3.0	30.1	1.0	-57.0	-13.0	-44.0	
7.620	-29.9	V	3.0	26.2	1.0	-55.1	-13.0	-42.1	
3.810	-27.3	H	3.0	30.1	1.0	-56.4	-13.0	-43.4	
7.620	-29.3	H	3.0	26.2	1.0	-54.5	-13.0	-41.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LAT BAND 26

QPSK Band 26 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	07/16/13
Test Engineer:	R Zheng
Configuration:	EUT only
Mode:	B26 3M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (820.3MHz)									
1.641	-28.9	V	3.0	32.7	1.0	-60.6	-13.0	-47.6	
2.461	-27.5	V	3.0	31.3	1.0	-57.8	-13.0	-44.8	
1.641	-31.0	H	3.0	32.7	1.0	-62.7	-13.0	-49.7	
2.461	-29.1	H	3.0	31.3	1.0	-59.4	-13.0	-46.4	
Mid Ch, (821.3MHz)									
1.643	-29.5	V	3.0	32.7	1.0	-61.2	-13.0	-48.2	
2.496	-27.2	V	3.0	31.5	1.0	-57.7	-13.0	-44.7	
1.643	-31.6	H	3.0	32.7	1.0	-63.3	-13.0	-50.3	
2.496	-28.9	H	3.0	31.5	1.0	-59.4	-13.0	-46.4	
High Ch, (822.3MHz)									
1.645	-29.4	V	3.0	32.7	1.0	-61.1	-13.0	-48.1	
2.467	-27.1	V	3.0	31.3	1.0	-57.4	-13.0	-44.4	
1.645	-30.9	H	3.0	32.7	1.0	-62.6	-13.0	-49.6	
2.467	-29.1	H	3.0	31.3	1.0	-59.4	-13.0	-46.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 26 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Apple
Project #: 13U14987
Date: 07/16/13
Test Engineer: R Zheng
Configuration: EUT only
Mode: B26 3M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (820.3MHz)									
1.641	-29.9	V	3.0	32.7	1.0	-61.6	-13.0	-48.6	
2.461	-28.4	V	3.0	31.3	1.0	-58.7	-13.0	-45.7	
1.641	-31.9	H	3.0	32.7	1.0	-63.6	-13.0	-50.6	
2.461	-30.0	H	3.0	31.3	1.0	-60.3	-13.0	-47.3	
Mid Ch, (821.3MHz)									
1.643	-30.5	V	3.0	32.7	1.0	-62.2	-13.0	-49.2	
2.496	-28.0	V	3.0	31.5	1.0	-58.5	-13.0	-45.5	
1.643	-32.6	H	3.0	32.7	1.0	-64.3	-13.0	-51.3	
2.496	-29.7	H	3.0	31.5	1.0	-60.2	-13.0	-47.2	
High Ch, (822.3MHz)									
1.645	-30.3	V	3.0	32.7	1.0	-62.0	-13.0	-49.0	
2.467	-28.0	V	3.0	31.3	1.0	-58.3	-13.0	-45.3	
1.645	-31.9	H	3.0	32.7	1.0	-63.6	-13.0	-50.6	
2.467	-30.1	H	3.0	31.3	1.0	-60.4	-13.0	-47.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK/16QAM Band 26 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Apple
Project #: 13U14987
Date: 07/16/13
Test Engineer: R Zheng
Configuration: EUT only
Mode: B26 5M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch, (821.3MHz)									
1.643	-29.4	V	3.0	32.7	1.0	-61.1	-13.0	-48.1	
2.464	-26.4	V	3.0	31.3	1.0	-56.7	-13.0	-43.7	
1.643	-31.8	H	3.0	32.7	1.0	-63.5	-13.0	-50.5	
2.464	-29.7	H	3.0	31.3	1.0	-60.0	-13.0	-47.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Apple
Project #: 13U14987
Date: 07/16/13
Test Engineer: R Zheng
Configuration: EUT only
Mode: B26 5M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch, (821.3MHz)									
1.643	-30.4	V	3.0	32.7	1.0	-62.1	-13.0	-49.1	
2.464	-27.5	V	3.0	31.3	1.0	-57.8	-13.0	-44.8	
1.643	-32.8	H	3.0	32.7	1.0	-64.5	-13.0	-51.5	
2.464	-30.7	H	3.0	31.3	1.0	-61.0	-13.0	-48.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UAT

QPSK Band 2 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 1.4MHz, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851 MHz)									
3.702	-26.7	V	3.0	30.2	1.0	-55.9	-13.0	-42.9	
7.404	-30.2	V	3.0	26.5	1.0	-55.7	-13.0	-42.7	
3.702	-26.5	H	3.0	30.2	1.0	-55.7	-13.0	-42.7	
7.404	-28.9	H	3.0	26.5	1.0	-54.4	-13.0	-41.4	
Mid Ch, (1880 MHz)									
3.760	-26.3	V	3.0	30.1	1.0	-55.5	-13.0	-42.5	
7.520	-29.8	V	3.0	26.3	1.0	-55.1	-13.0	-42.1	
3.760	-27.4	H	3.0	30.1	1.0	-56.5	-13.0	-43.5	
7.520	-29.0	H	3.0	26.3	1.0	-54.3	-13.0	-41.3	
High Ch, (1909.3 MHz)									
3.819	-26.7	V	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.637	-29.6	V	3.0	26.2	1.0	-54.7	-13.0	-41.7	
3.819	-27.2	H	3.0	30.1	1.0	-56.3	-13.0	-43.3	
7.637	-28.9	H	3.0	26.2	1.0	-54.1	-13.0	-41.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Band 2 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 1.4MHz, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851 MHz)									
3.702	-27.7	V	3.0	30.2	1.0	-56.9	-13.0	-43.9	
7.404	-30.9	V	3.0	26.5	1.0	-56.4	-13.0	-43.4	
3.702	-27.6	H	3.0	30.2	1.0	-56.8	-13.0	-43.8	
7.404	-29.8	H	3.0	26.5	1.0	-55.3	-13.0	-42.3	
Mid Ch, (1880 MHz)									
3.760	-27.5	V	3.0	30.1	1.0	-56.7	-13.0	-43.7	
7.520	-30.7	V	3.0	26.3	1.0	-56.0	-13.0	-43.0	
3.760	-28.2	H	3.0	30.1	1.0	-57.3	-13.0	-44.3	
7.520	-29.9	H	3.0	26.3	1.0	-55.2	-13.0	-42.2	
High Ch, (1909.3 MHz)									
3.819	-27.6	V	3.0	30.1	1.0	-56.7	-13.0	-43.7	
7.637	-30.6	V	3.0	26.2	1.0	-55.7	-13.0	-42.7	
3.819	-28.1	H	3.0	30.1	1.0	-57.2	-13.0	-44.2	
7.637	-29.8	H	3.0	26.2	1.0	-55.0	-13.0	-42.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 2 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 3MHz, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1852 MHz)									
3.704	-27.0	V	3.0	30.2	1.0	-56.2	-13.0	-43.2	
7.408	-29.9	V	3.0	26.5	1.0	-55.4	-13.0	-42.4	
3.704	-27.5	H	3.0	30.2	1.0	-56.7	-13.0	-43.7	
7.408	-28.6	H	3.0	26.5	1.0	-54.1	-13.0	-41.1	
Mid Ch, (1880 MHz)									
3.760	-26.5	V	3.0	30.1	1.0	-55.7	-13.0	-42.7	
7.520	-30.0	V	3.0	26.3	1.0	-55.3	-13.0	-42.3	
3.760	-27.0	H	3.0	30.1	1.0	-56.1	-13.0	-43.1	
7.520	-28.8	H	3.0	26.3	1.0	-54.1	-13.0	-41.1	
High Ch, (1909 MHz)									
3.818	-26.5	V	3.0	30.1	1.0	-55.6	-13.0	-42.6	
7.636	-29.3	V	3.0	26.2	1.0	-54.4	-13.0	-41.4	
3.818	-26.7	H	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.636	-28.8	H	3.0	26.2	1.0	-54.0	-13.0	-41.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 2 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 3MHz, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1852 MHz)									
3.704	-27.8	V	3.0	30.2	1.0	-57.0	-13.0	-44.0	
7.408	-30.7	V	3.0	26.5	1.0	-56.2	-13.0	-43.2	
3.704	-28.3	H	3.0	30.2	1.0	-57.5	-13.0	-44.5	
7.408	-29.5	H	3.0	26.5	1.0	-55.0	-13.0	-42.0	
Mid Ch, (1880 MHz)									
3.760	-27.2	V	3.0	30.1	1.0	-56.4	-13.0	-43.4	
7.520	-30.6	V	3.0	26.3	1.0	-55.9	-13.0	-42.9	
3.760	-28.0	H	3.0	30.1	1.0	-57.1	-13.0	-44.1	
7.520	-29.7	H	3.0	26.3	1.0	-55.0	-13.0	-42.0	
High Ch, (1909 MHz)									
3.818	-27.4	V	3.0	30.1	1.0	-56.5	-13.0	-43.5	
7.636	-30.3	V	3.0	26.2	1.0	-55.4	-13.0	-42.4	
3.818	-27.5	H	3.0	30.1	1.0	-56.6	-13.0	-43.6	
7.636	-29.7	H	3.0	26.2	1.0	-54.9	-13.0	-41.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor

QPSK Band 2 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 5MHz, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1853 MHz)									
3.706	-26.2	V	3.0	30.2	1.0	-55.4	-13.0	-42.4	
7.412	-30.1	V	3.0	26.5	1.0	-55.5	-13.0	-42.5	
3.706	-26.9	H	3.0	30.2	1.0	-56.1	-13.0	-43.1	
7.412	-29.0	H	3.0	26.5	1.0	-54.5	-13.0	-41.5	
Mid Ch, (1880 MHz)									
3.760	-26.9	V	3.0	30.1	1.0	-56.1	-13.0	-43.1	
7.520	-29.9	V	3.0	26.3	1.0	-55.2	-13.0	-42.2	
3.760	-27.2	H	3.0	30.1	1.0	-56.3	-13.0	-43.3	
7.520	-28.8	H	3.0	26.3	1.0	-54.1	-13.0	-41.1	
High Ch, (1908 MHz)									
3.816	-26.9	V	3.0	30.1	1.0	-56.0	-13.0	-43.0	
7.632	-29.8	V	3.0	26.2	1.0	-54.9	-13.0	-41.9	
3.816	-26.9	H	3.0	30.1	1.0	-56.0	-13.0	-43.0	
7.632	-28.7	H	3.0	26.2	1.0	-53.9	-13.0	-40.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 2 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 5MHz, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1853 MHz)									
3.706	-27.3	V	3.0	30.2	1.0	-56.5	-13.0	-43.5	
7.412	-30.9	V	3.0	26.5	1.0	-56.3	-13.0	-43.3	
3.706	-27.8	H	3.0	30.2	1.0	-57.0	-13.0	-44.0	
7.412	-29.8	H	3.0	26.5	1.0	-55.3	-13.0	-42.3	
Mid Ch, (1880 MHz)									
3.760	-27.7	V	3.0	30.1	1.0	-56.9	-13.0	-43.9	
7.520	-30.8	V	3.0	26.3	1.0	-56.1	-13.0	-43.1	
3.760	-28.0	H	3.0	30.1	1.0	-57.1	-13.0	-44.1	
7.520	-29.7	H	3.0	26.3	1.0	-55.0	-13.0	-42.0	
High Ch, (1908 MHz)									
3.816	-27.8	V	3.0	30.1	1.0	-56.9	-13.0	-43.9	
7.632	-30.7	V	3.0	26.2	1.0	-55.8	-13.0	-42.8	
3.816	-27.8	H	3.0	30.1	1.0	-56.9	-13.0	-43.9	
7.632	-29.5	H	3.0	26.2	1.0	-54.7	-13.0	-41.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor

QPSK Band 2 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 10MHz, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1855 MHz)									
3.710	-26.8	V	3.0	30.2	1.0	-56.0	-13.0	-43.0	
7.420	-29.6	V	3.0	26.5	1.0	-55.0	-13.0	-42.0	
3.710	-26.5	H	3.0	30.2	1.0	-55.7	-13.0	-42.7	
7.420	-28.3	H	3.0	26.5	1.0	-53.8	-13.0	-40.8	
Mid Ch, (1880 MHz)									
3.760	-26.0	V	3.0	30.1	1.0	-55.2	-13.0	-42.2	
7.520	-29.8	V	3.0	26.3	1.0	-55.1	-13.0	-42.1	
3.760	-27.2	H	3.0	30.1	1.0	-56.3	-13.0	-43.3	
7.520	-28.8	H	3.0	26.3	1.0	-54.1	-13.0	-41.1	
High Ch, (1905 MHz)									
3.810	-26.8	V	3.0	30.1	1.0	-55.9	-13.0	-42.9	
7.620	-29.8	V	3.0	26.2	1.0	-55.0	-13.0	-42.0	
3.810	-26.6	H	3.0	30.1	1.0	-55.7	-13.0	-42.7	
7.620	-28.4	H	3.0	26.2	1.0	-53.6	-13.0	-40.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 2 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 10MHz, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1855 MHz)									
3.710	-27.6	V	3.0	30.2	1.0	-56.8	-13.0	-43.8	
7.420	-30.5	V	3.0	26.5	1.0	-55.9	-13.0	-42.9	
3.710	-27.5	H	3.0	30.2	1.0	-56.7	-13.0	-43.7	
7.420	-29.1	H	3.0	26.5	1.0	-54.6	-13.0	-41.6	
Mid Ch, (1880 MHz)									
3.760	-27.1	V	3.0	30.1	1.0	-56.3	-13.0	-43.3	
7.520	-30.7	V	3.0	26.3	1.0	-56.0	-13.0	-43.0	
3.760	-28.0	H	3.0	30.1	1.0	-57.1	-13.0	-44.1	
7.520	-29.6	H	3.0	26.3	1.0	-54.9	-13.0	-41.9	
High Ch, (1905 MHz)									
3.810	-27.7	V	3.0	30.1	1.0	-56.8	-13.0	-43.8	
7.620	-30.6	V	3.0	26.2	1.0	-55.8	-13.0	-42.8	
3.810	-27.8	H	3.0	30.1	1.0	-56.9	-13.0	-43.9	
7.620	-29.7	H	3.0	26.2	1.0	-54.9	-13.0	-41.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 2 (15.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 15MHz, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1858 MHz)									
3.716	-26.4	V	3.0	30.2	1.0	-55.6	-13.0	-42.6	
7.432	-29.4	V	3.0	26.4	1.0	-54.8	-13.0	-41.8	
3.716	-26.9	H	3.0	30.2	1.0	-56.1	-13.0	-43.1	
7.432	-28.7	H	3.0	26.4	1.0	-54.1	-13.0	-41.1	
Mid Ch, (1880 MHz)									
3.760	-26.1	V	3.0	30.1	1.0	-55.3	-13.0	-42.3	
7.520	-29.8	V	3.0	26.3	1.0	-55.1	-13.0	-42.1	
3.760	-27.1	H	3.0	30.1	1.0	-56.2	-13.0	-43.2	
7.520	-29.0	H	3.0	26.3	1.0	-54.3	-13.0	-41.3	
High Ch, (1903 MHz)									
3.806	-26.8	V	3.0	30.1	1.0	-55.9	-13.0	-42.9	
7.612	-29.0	V	3.0	26.2	1.0	-54.2	-13.0	-41.2	
3.806	-26.7	H	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.612	-27.3	H	3.0	26.2	1.0	-52.5	-13.0	-39.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 2 (15.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 15MHz, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1858 MHz)									
3.716	-27.4	V	3.0	30.2	1.0	-56.6	-13.0	-43.6	
7.432	-30.3	V	3.0	26.4	1.0	-55.7	-13.0	-42.7	
3.716	-27.9	H	3.0	30.2	1.0	-57.1	-13.0	-44.1	
7.432	-29.5	H	3.0	26.4	1.0	-54.9	-13.0	-41.9	
Mid Ch, (1880 MHz)									
3.760	-27.2	V	3.0	30.1	1.0	-56.4	-13.0	-43.4	
7.520	-30.5	V	3.0	26.3	1.0	-55.8	-13.0	-42.8	
3.760	-27.9	H	3.0	30.1	1.0	-57.0	-13.0	-44.0	
7.520	-29.8	H	3.0	26.3	1.0	-55.1	-13.0	-42.1	
High Ch, (1903 MHz)									
3.806	-27.7	V	3.0	30.1	1.0	-56.8	-13.0	-43.8	
7.612	-29.9	V	3.0	26.2	1.0	-55.1	-13.0	-42.1	
3.806	-27.8	H	3.0	30.1	1.0	-56.9	-13.0	-43.9	
7.612	-28.5	H	3.0	26.2	1.0	-53.7	-13.0	-40.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 2 (20.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 20MHz, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1860 MHz)									
3.720	-26.8	V	3.0	30.2	1.0	-56.0	-13.0	-43.0	
7.440	-29.7	V	3.0	26.4	1.0	-55.1	-13.0	-42.1	
3.720	-26.9	H	3.0	30.2	1.0	-56.1	-13.0	-43.1	
7.440	-28.9	H	3.0	26.4	1.0	-54.3	-13.0	-41.3	
Mid Ch, (1880 MHz)									
3.760	-26.5	V	3.0	30.1	1.0	-55.7	-13.0	-42.7	
7.520	-29.1	V	3.0	26.3	1.0	-54.4	-13.0	-41.4	
3.760	-26.7	H	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.520	-28.6	H	3.0	26.3	1.0	-53.9	-13.0	-40.9	
High Ch, (1900 MHz)									
3.800	-27.1	V	3.0	30.1	1.0	-56.2	-13.0	-43.2	
7.600	-29.2	V	3.0	26.2	1.0	-54.4	-13.0	-41.4	
3.800	-27.7	H	3.0	30.1	1.0	-56.8	-13.0	-43.8	
7.600	-28.7	H	3.0	26.2	1.0	-54.0	-13.0	-41.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 2 (20.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 2, 20MHz, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1860 MHz)									
3.720	-27.7	V	3.0	30.2	1.0	-56.9	-13.0	-43.9	
7.440	-30.5	V	3.0	26.4	1.0	-55.9	-13.0	-42.9	
3.720	-27.8	H	3.0	30.2	1.0	-57.0	-13.0	-44.0	
7.440	-29.7	H	3.0	26.4	1.0	-55.1	-13.0	-42.1	
Mid Ch, (1880 MHz)									
3.760	-27.6	V	3.0	30.1	1.0	-56.8	-13.0	-43.8	
7.520	-29.8	V	3.0	26.3	1.0	-55.1	-13.0	-42.1	
3.760	-28.1	H	3.0	30.1	1.0	-57.2	-13.0	-44.2	
7.520	-29.1	H	3.0	26.3	1.0	-54.4	-13.0	-41.4	
High Ch, (1900 MHz)									
3.800	-28.2	V	3.0	30.1	1.0	-57.3	-13.0	-44.3	
7.600	-30.1	V	3.0	26.2	1.0	-55.3	-13.0	-42.3	
3.800	-28.7	H	3.0	30.1	1.0	-57.8	-13.0	-44.8	
7.600	-29.6	H	3.0	26.2	1.0	-54.9	-13.0	-41.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UAT BAND 4

QPSK Band 4 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 1.4MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1710.7 MHz)									
3.421	-29.2	V	3.0	30.4	1.0	-58.7	-13.0	-45.7	
5.132	-31.3	V	3.0	28.8	1.0	-59.1	-13.0	-46.1	
3.421	-30.0	H	3.0	30.4	1.0	-59.4	-13.0	-46.4	
5.132	-29.7	H	3.0	28.8	1.0	-57.4	-13.0	-44.4	
Mid Ch, (1732.5 MHz)									
3.465	-29.2	V	3.0	30.4	1.0	-58.6	-13.0	-45.6	
5.198	-24.4	V	3.0	28.7	1.0	-52.1	-13.0	-39.1	
3.465	-29.8	H	3.0	30.4	1.0	-59.2	-13.0	-46.2	
5.198	-11.6	H	3.0	28.7	1.0	-39.3	-13.0	-26.3	
High Ch, (1754.3 MHz)									
3.509	-27.5	V	3.0	30.4	1.0	-56.9	-13.0	-43.9	
5.263	-32.2	V	3.0	28.6	1.0	-59.8	-13.0	-46.8	
3.509	-29.6	H	3.0	30.4	1.0	-58.9	-13.0	-45.9	
5.263	-30.6	H	3.0	28.6	1.0	-58.3	-13.0	-45.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor

16QAM Band 4 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 1.4MHz BW, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1710.7 MHz)									
3.421	-30.0	V	3.0	30.4	1.0	-59.5	-13.0	-46.5	
5.132	-32.2	V	3.0	28.8	1.0	-60.0	-13.0	-47.0	
3.421	-31.0	H	3.0	30.4	1.0	-60.4	-13.0	-47.4	
5.132	-30.7	H	3.0	28.8	1.0	-58.4	-13.0	-45.4	
Mid Ch, (1732.5 MHz)									
3.465	-30.1	V	3.0	30.4	1.0	-59.5	-13.0	-46.5	
5.198	-25.2	V	3.0	28.7	1.0	-52.9	-13.0	-39.9	
3.465	-30.8	H	3.0	30.4	1.0	-60.2	-13.0	-47.2	
5.198	-12.6	H	3.0	28.7	1.0	-40.3	-13.0	-27.3	
High Ch, (1754.3 MHz)									
3.509	-28.0	V	3.0	30.4	1.0	-57.4	-13.0	-44.4	
5.263	-33.1	V	3.0	28.6	1.0	-60.7	-13.0	-47.7	
3.509	-30.3	H	3.0	30.4	1.0	-59.6	-13.0	-46.6	
5.263	-31.6	H	3.0	28.6	1.0	-59.3	-13.0	-46.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 4 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 3MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1711.5 MHz)									
3.423	-29.3	V	3.0	30.4	1.0	-58.8	-13.0	-45.8	
5.135	-31.2	V	3.0	28.8	1.0	-59.0	-13.0	-46.0	
3.423	-29.7	H	3.0	30.4	1.0	-59.1	-13.0	-46.1	
5.135	-29.5	H	3.0	28.8	1.0	-57.2	-13.0	-44.2	
Mid Ch, (1732.5 MHz)									
3.465	-29.1	V	3.0	30.4	1.0	-58.5	-13.0	-45.5	
5.198	-20.3	V	3.0	28.7	1.0	-48.0	-13.0	-35.0	
3.465	-29.8	H	3.0	30.4	1.0	-59.2	-13.0	-46.2	
5.198	-13.6	H	3.0	28.7	1.0	-41.3	-13.0	-28.3	
High Ch, (1753.5 MHz)									
3.507	-29.4	V	3.0	30.4	1.0	-58.8	-13.0	-45.8	
5.261	-32.2	V	3.0	28.6	1.0	-59.8	-13.0	-46.8	
3.507	-30.1	H	3.0	30.4	1.0	-59.4	-13.0	-46.4	
5.261	-30.2	H	3.0	28.6	1.0	-57.9	-13.0	-44.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

LTE 16QAM Band 4 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 3MHz BW, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1711.5 MHz)									
3.423	-30.3	V	3.0	30.4	1.0	-59.8	-13.0	-46.8	
5.135	-32.2	V	3.0	28.8	1.0	-60.0	-13.0	-47.0	
3.423	-30.6	H	3.0	30.4	1.0	-60.0	-13.0	-47.0	
5.135	-30.5	H	3.0	28.8	1.0	-58.2	-13.0	-45.2	
Mid Ch, (1732.5 MHz)									
3.465	-30.2	V	3.0	30.4	1.0	-59.6	-13.0	-46.6	
5.198	-21.2	V	3.0	28.7	1.0	-48.9	-13.0	-35.9	
3.465	-30.4	H	3.0	30.4	1.0	-59.8	-13.0	-46.8	
5.198	-14.5	H	3.0	28.7	1.0	-42.2	-13.0	-29.2	
High Ch, (1753.5 MHz)									
3.507	-30.3	V	3.0	30.4	1.0	-59.7	-13.0	-46.7	
5.261	-33.1	V	3.0	28.6	1.0	-60.7	-13.0	-47.7	
3.507	-31.0	H	3.0	30.4	1.0	-60.3	-13.0	-47.3	
5.261	-31.1	H	3.0	28.6	1.0	-58.8	-13.0	-45.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 4 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 5MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1712.5 MHz)									
3.425	-29.5	V	3.0	30.4	1.0	-59.0	-13.0	-46.0	
5.138	-31.4	V	3.0	28.8	1.0	-59.2	-13.0	-46.2	
3.425	-30.0	H	3.0	30.4	1.0	-59.4	-13.0	-46.4	
5.138	-29.8	H	3.0	28.8	1.0	-57.5	-13.0	-44.5	
Mid Ch, (1732.5 MHz)									
3.465	-29.4	V	3.0	30.4	1.0	-58.8	-13.0	-45.8	
5.198	-21.6	V	3.0	28.7	1.0	-49.3	-13.0	-36.3	
3.465	-29.5	H	3.0	30.4	1.0	-58.9	-13.0	-45.9	
5.198	-14.0	H	3.0	28.7	1.0	-41.7	-13.0	-28.7	
High Ch, (1752.5 MHz)									
3.505	-29.8	V	3.0	30.4	1.0	-59.2	-13.0	-46.2	
5.258	-32.2	V	3.0	28.6	1.0	-59.8	-13.0	-46.8	
3.505	-29.8	H	3.0	30.4	1.0	-59.1	-13.0	-46.1	
5.258	-30.8	H	3.0	28.6	1.0	-58.5	-13.0	-45.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 4 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 5MHz BW, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1712.5 MHz)									
3.425	-30.4	V	3.0	30.4	1.0	-59.9	-13.0	-46.9	
5.138	-32.2	V	3.0	28.8	1.0	-60.0	-13.0	-47.0	
3.425	-30.9	H	3.0	30.4	1.0	-60.3	-13.0	-47.3	
5.138	-30.7	H	3.0	28.8	1.0	-58.4	-13.0	-45.4	
Mid Ch, (1732.5 MHz)									
3.465	-30.4	V	3.0	30.4	1.0	-59.8	-13.0	-46.8	
5.198	-22.5	V	3.0	28.7	1.0	-50.2	-13.0	-37.2	
3.465	-30.4	H	3.0	30.4	1.0	-59.8	-13.0	-46.8	
5.198	-15.0	H	3.0	28.7	1.0	-42.7	-13.0	-29.7	
High Ch, (1752.5 MHz)									
3.505	-30.8	V	3.0	30.4	1.0	-60.2	-13.0	-47.2	
5.258	-33.1	V	3.0	28.6	1.0	-60.7	-13.0	-47.7	
3.505	-30.8	H	3.0	30.4	1.0	-60.1	-13.0	-47.1	
5.258	-31.7	H	3.0	28.6	1.0	-59.4	-13.0	-46.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 4 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 10MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1715 MHz)									
3.430	-29.3	V	3.0	30.4	1.0	-58.7	-13.0	-45.7	
5.145	-31.6	V	3.0	28.8	1.0	-59.3	-13.0	-46.3	
3.430	-29.5	H	3.0	30.4	1.0	-58.9	-13.0	-45.9	
5.145	-29.8	H	3.0	28.8	1.0	-57.5	-13.0	-44.5	
Mid Ch, (1732.5 MHz)									
3.465	-29.6	V	3.0	30.4	1.0	-59.0	-13.0	-46.0	
5.198	-18.6	V	3.0	28.7	1.0	-46.3	-13.0	-33.3	
3.465	-29.5	H	3.0	30.4	1.0	-58.9	-13.0	-45.9	
5.198	-11.0	H	3.0	28.7	1.0	-38.7	-13.0	-25.7	
High Ch, (1750 MHz)									
3.500	-28.9	V	3.0	30.4	1.0	-58.3	-13.0	-45.3	
5.250	-32.3	V	3.0	28.7	1.0	-60.0	-13.0	-47.0	
3.500	-29.5	H	3.0	30.4	1.0	-58.8	-13.0	-45.8	
5.250	-30.8	H	3.0	28.7	1.0	-58.5	-13.0	-45.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 4 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 10MHz BW, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1715 MHz)									
3.430	-30.2	V	3.0	30.4	1.0	-59.6	-13.0	-46.6	
5.145	-32.5	V	3.0	28.8	1.0	-60.2	-13.0	-47.2	
3.430	-30.6	H	3.0	30.4	1.0	-60.0	-13.0	-47.0	
5.145	-30.6	H	3.0	28.8	1.0	-58.3	-13.0	-45.3	
Mid Ch, (1732.5 MHz)									
3.465	-30.5	V	3.0	30.4	1.0	-59.9	-13.0	-46.9	
5.198	-19.5	V	3.0	28.7	1.0	-47.2	-13.0	-34.2	
3.465	-30.3	H	3.0	30.4	1.0	-59.7	-13.0	-46.7	
5.198	-12.0	H	3.0	28.7	1.0	-39.7	-13.0	-26.7	
High Ch, (1750 MHz)									
3.500	-30.0	V	3.0	30.4	1.0	-59.4	-13.0	-46.4	
5.250	-33.3	V	3.0	28.7	1.0	-61.0	-13.0	-48.0	
3.500	-30.6	H	3.0	30.4	1.0	-59.9	-13.0	-46.9	
5.250	-31.7	H	3.0	28.7	1.0	-59.4	-13.0	-46.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor

QPSK Band 4 (15.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 15MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1717.5 MHz)									
3.435	-29.2	V	3.0	30.4	1.0	-58.6	-13.0	-45.6	
5.153	-31.9	V	3.0	28.7	1.0	-59.6	-13.0	-46.6	
3.435	-29.9	H	3.0	30.4	1.0	-59.3	-13.0	-46.3	
5.153	-29.4	H	3.0	28.7	1.0	-57.1	-13.0	-44.1	
Mid Ch, (1732.5 MHz)									
3.465	-29.6	V	3.0	30.4	1.0	-59.0	-13.0	-46.0	
5.198	-15.7	V	3.0	28.7	1.0	-43.4	-13.0	-30.4	
3.465	-29.1	H	3.0	30.4	1.0	-58.5	-13.0	-45.5	
5.198	-10.0	H	3.0	28.7	1.0	-37.7	-13.0	-24.7	
High Ch, (1747.5 MHz)									
3.495	-28.6	V	3.0	30.4	1.0	-58.0	-13.0	-45.0	
5.243	-32.0	V	3.0	28.7	1.0	-59.7	-13.0	-46.7	
3.495	-30.0	H	3.0	30.4	1.0	-59.3	-13.0	-46.3	
5.243	-30.0	H	3.0	28.7	1.0	-57.7	-13.0	-44.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 4 (15.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 15MHz BW, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1717.5 MHz)									
3.435	-30.0	V	3.0	30.4	1.0	-59.4	-13.0	-46.4	
5.153	-32.7	V	3.0	28.7	1.0	-60.4	-13.0	-47.4	
3.435	-31.0	H	3.0	30.4	1.0	-60.4	-13.0	-47.4	
5.153	-30.6	H	3.0	28.7	1.0	-58.3	-13.0	-45.3	
Mid Ch, (1732.5 MHz)									
3.465	-30.3	V	3.0	30.4	1.0	-59.7	-13.0	-46.7	
5.198	-16.8	V	3.0	28.7	1.0	-44.5	-13.0	-31.5	
3.465	-30.0	H	3.0	30.4	1.0	-59.4	-13.0	-46.4	
5.198	-10.9	H	3.0	28.7	1.0	-38.6	-13.0	-25.6	
High Ch, (1747.5 MHz)									
3.495	-29.7	V	3.0	30.4	1.0	-59.1	-13.0	-46.1	
5.243	-33.0	V	3.0	28.7	1.0	-60.7	-13.0	-47.7	
3.495	-31.0	H	3.0	30.4	1.0	-60.3	-13.0	-47.3	
5.243	-30.9	H	3.0	28.7	1.0	-58.6	-13.0	-45.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 4 (20.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 20MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1720 MHz)									
3.440	-28.6	V	3.0	30.4	1.0	-58.0	-13.0	-45.0	
5.160	-30.7	V	3.0	28.7	1.0	-58.4	-13.0	-45.4	
3.440	-29.5	H	3.0	30.4	1.0	-58.9	-13.0	-45.9	
5.160	-29.5	H	3.0	28.7	1.0	-57.2	-13.0	-44.2	
Mid Ch, (1732.5 MHz)									
3.465	-29.0	V	3.0	30.4	1.0	-58.4	-13.0	-45.4	
5.198	-25.0	V	3.0	28.7	1.0	-52.7	-13.0	-39.7	
3.465	-29.6	H	3.0	30.4	1.0	-59.0	-13.0	-46.0	
5.198	-24.0	H	3.0	28.7	1.0	-51.7	-13.0	-38.7	
High Ch, (1745 MHz)									
3.490	-29.3	V	3.0	30.4	1.0	-58.7	-13.0	-45.7	
5.235	-32.5	V	3.0	28.7	1.0	-60.2	-13.0	-47.2	
3.490	-28.1	H	3.0	30.4	1.0	-57.5	-13.0	-44.5	
5.235	-30.7	H	3.0	28.7	1.0	-58.3	-13.0	-45.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 4 (20.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 4, 20MHz BW, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1720 MHz)									
3.440	-29.5	V	3.0	30.4	1.0	-58.9	-13.0	-45.9	
5.160	-31.5	V	3.0	28.7	1.0	-59.2	-13.0	-46.2	
3.440	-30.3	H	3.0	30.4	1.0	-59.7	-13.0	-46.7	
5.160	-30.4	H	3.0	28.7	1.0	-58.1	-13.0	-45.1	
Mid Ch, (1732.5 MHz)									
3.465	-30.0	V	3.0	30.4	1.0	-59.4	-13.0	-46.4	
5.198	-26.1	V	3.0	28.7	1.0	-53.8	-13.0	-40.8	
3.465	-30.5	H	3.0	30.4	1.0	-59.9	-13.0	-46.9	
5.198	-22.0	H	3.0	28.7	1.0	-49.7	-13.0	-36.7	
High Ch, (1745 MHz)									
3.490	-30.1	V	3.0	30.4	1.0	-59.5	-13.0	-46.5	
5.235	-33.3	V	3.0	28.7	1.0	-61.0	-13.0	-48.0	
3.490	-28.8	H	3.0	30.4	1.0	-58.2	-13.0	-45.2	
5.235	-31.6	H	3.0	28.7	1.0	-59.2	-13.0	-46.2	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UAT BAND 5

QPSK Band 5 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/24/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 1.4M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (824.7MHz)									
1.649	-29.3	V	3.0	32.7	1.0	-61.0	-13.0	-48.0	
2.474	-32.1	V	3.0	31.4	1.0	-62.5	-13.0	-49.5	
1.649	-37.3	H	3.0	32.7	1.0	-69.0	-13.0	-56.0	
2.474	-33.9	H	3.0	31.4	1.0	-64.3	-13.0	-51.3	
Mid Ch, (836.5MHz)									
1.673	-36.8	V	3.0	32.6	1.0	-68.4	-13.0	-55.4	
2.510	-32.8	V	3.0	31.5	1.0	-63.3	-13.0	-50.3	
1.673	-39.0	H	3.0	32.6	1.0	-70.6	-13.0	-57.6	
2.510	-34.7	H	3.0	31.5	1.0	-65.2	-13.0	-52.2	
High Ch, (848.3MHz)									
1.697	-32.2	V	3.0	32.6	1.0	-63.7	-13.0	-50.7	
2.545	-30.9	V	3.0	31.4	1.0	-61.4	-13.0	-48.4	
1.697	-37.0	H	3.0	32.6	1.0	-68.5	-13.0	-55.5	
2.545	-33.5	H	3.0	31.4	1.0	-63.9	-13.0	-50.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 5 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/24/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 1.4M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (824.7MHz)									
1.649	-30.1	V	3.0	32.7	1.0	-61.8	-13.0	-48.8	
2.474	-32.8	V	3.0	31.4	1.0	-63.2	-13.0	-50.2	
1.649	-38.0	H	3.0	32.7	1.0	-69.7	-13.0	-56.7	
2.474	-34.6	H	3.0	31.4	1.0	-65.0	-13.0	-52.0	
Mid Ch, (836.5MHz)									
1.673	-37.2	V	3.0	32.6	1.0	-68.8	-13.0	-55.8	
2.510	-33.5	V	3.0	31.5	1.0	-64.0	-13.0	-51.0	
1.673	-39.9	H	3.0	32.6	1.0	-71.5	-13.0	-58.5	
2.510	-35.6	H	3.0	31.5	1.0	-66.1	-13.0	-53.1	
High Ch, (848.3MHz)									
1.697	-33.5	V	3.0	32.6	1.0	-65.0	-13.0	-52.0	
2.545	-31.9	V	3.0	31.4	1.0	-62.4	-13.0	-49.4	
1.697	-37.8	H	3.0	32.6	1.0	-69.3	-13.0	-56.3	
2.545	-34.1	H	3.0	31.4	1.0	-64.5	-13.0	-51.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 5 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/23/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 3M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (825.5MHz)									
1.651	-31.6	V	3.0	32.7	1.0	-63.3	-13.0	-50.3	
2.477	-29.0	V	3.0	31.4	1.0	-59.4	-13.0	-46.4	
1.651	-36.6	H	3.0	32.7	1.0	-68.3	-13.0	-55.3	
2.477	-33.5	H	3.0	31.4	1.0	-63.9	-13.0	-50.9	
Mid Ch, (836.5MHz)									
1.673	-32.7	V	3.0	32.6	1.0	-64.3	-13.0	-51.3	
2.510	-30.4	V	3.0	31.5	1.0	-60.9	-13.0	-47.9	
1.673	-36.6	H	3.0	32.6	1.0	-68.2	-13.0	-55.2	
2.510	-33.4	H	3.0	31.5	1.0	-63.9	-13.0	-50.9	
High Ch, (847.5MHz)									
1.695	-32.8	V	3.0	32.6	1.0	-64.3	-13.0	-51.3	
2.543	-31.2	V	3.0	31.4	1.0	-61.6	-13.0	-48.6	
1.695	-37.7	H	3.0	32.6	1.0	-69.2	-13.0	-56.2	
2.543	-33.2	H	3.0	31.4	1.0	-63.6	-13.0	-50.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 5 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/23/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 3M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (825.5MHz)									
1.651	-32.9	V	3.0	32.7	1.0	-64.6	-13.0	-51.6	
2.477	-29.7	V	3.0	31.4	1.0	-60.1	-13.0	-47.1	
1.651	-37.6	H	3.0	32.7	1.0	-69.3	-13.0	-56.3	
2.477	-34.1	H	3.0	31.4	1.0	-64.5	-13.0	-51.5	
Mid Ch, (836.5MHz)									
1.673	-33.9	V	3.0	32.6	1.0	-65.5	-13.0	-52.5	
2.510	-31.3	V	3.0	31.5	1.0	-61.8	-13.0	-48.8	
1.673	-37.5	H	3.0	32.6	1.0	-69.1	-13.0	-56.1	
2.510	-34.1	H	3.0	31.5	1.0	-64.6	-13.0	-51.6	
High Ch, (847.5MHz)									
1.695	-34.1	V	3.0	32.6	1.0	-65.6	-13.0	-52.6	
2.543	-32.4	V	3.0	31.4	1.0	-62.8	-13.0	-49.8	
1.695	-38.6	H	3.0	32.6	1.0	-70.2	-13.0	-57.2	
2.543	-34.1	H	3.0	31.4	1.0	-64.5	-13.0	-51.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 5 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/24/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 5M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (829MHz)									
1.658	-35.0	V	3.0	32.6	1.0	-66.7	-13.0	-53.7	
2.487	110.1	V	3.0	31.4	1.0	79.7	-13.0	92.7	
1.658	-37.1	H	3.0	32.6	1.0	-68.7	-13.0	-55.7	
2.487	-34.7	H	3.0	31.4	1.0	-65.2	-13.0	-52.2	
Mid Ch, (836.5MHz)									
1.673	-34.9	V	3.0	32.6	1.0	-66.5	-13.0	-53.5	
2.510	-32.1	V	3.0	31.5	1.0	-62.6	-13.0	-49.6	
1.673	-35.9	H	3.0	32.6	1.0	-67.5	-13.0	-54.5	
2.510	-33.5	H	3.0	31.5	1.0	-63.9	-13.0	-50.9	
High Ch, (844MHz)									
1.688	-34.1	V	3.0	32.6	1.0	-65.6	-13.0	-52.6	
2.532	-32.5	V	3.0	31.5	1.0	-63.0	-13.0	-50.0	
1.688	-37.0	H	3.0	32.6	1.0	-68.6	-13.0	-55.6	
2.532	-32.6	H	3.0	31.5	1.0	-63.1	-13.0	-50.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 5 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/24/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 5M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (829MHz)									
1.658	-35.5	V	3.0	32.6	1.0	-67.2	-13.0	-54.2	
2.487	-33.0	V	3.0	31.4	1.0	-63.4	-13.0	-50.4	
1.658	-37.9	H	3.0	32.6	1.0	-69.5	-13.0	-56.5	
2.487	-35.5	H	3.0	31.4	1.0	-65.9	-13.0	-52.9	
Mid Ch, (836.5MHz)									
1.673	-35.7	V	3.0	32.6	1.0	-67.3	-13.0	-54.3	
2.510	-32.8	V	3.0	31.5	1.0	-63.3	-13.0	-50.3	
1.673	-36.6	H	3.0	32.6	1.0	-68.2	-13.0	-55.2	
2.510	-34.3	H	3.0	31.5	1.0	-64.8	-13.0	-51.8	
High Ch, (844MHz)									
1.688	-35.2	V	3.0	32.6	1.0	-66.7	-13.0	-53.7	
2.532	-33.1	V	3.0	31.5	1.0	-63.6	-13.0	-50.6	
1.688	-37.9	H	3.0	32.6	1.0	-69.5	-13.0	-56.5	
2.532	-33.4	H	3.0	31.5	1.0	-63.9	-13.0	-50.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 5 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/24/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 10M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (829MHz)									
1.658	-35.1	V	3.0	32.6	1.0	-66.8	-13.0	-53.8	
2.487	-31.1	V	3.0	31.4	1.0	-61.6	-13.0	-48.6	
1.658	-35.8	H	3.0	32.6	1.0	-67.4	-13.0	-54.4	
2.487	-34.8	H	3.0	31.4	1.0	-65.3	-13.0	-52.3	
Mid Ch, (836.5MHz)									
1.673	-34.9	V	3.0	32.6	1.0	-66.5	-13.0	-53.5	
2.510	-31.9	V	3.0	31.5	1.0	-62.4	-13.0	-49.4	
1.673	-37.2	H	3.0	32.6	1.0	-68.8	-13.0	-55.8	
2.510	-33.1	H	3.0	31.5	1.0	-63.6	-13.0	-50.6	
High Ch, (844MHz)									
1.688	-34.8	V	3.0	32.6	1.0	-66.3	-13.0	-53.3	
2.532	-31.7	V	3.0	31.5	1.0	-62.2	-13.0	-49.2	
1.688	-36.3	H	3.0	32.6	1.0	-67.9	-13.0	-54.9	
2.532	-33.6	H	3.0	31.5	1.0	-64.1	-13.0	-51.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 5 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/24/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B5 10M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (829MHz)									
1.658	-35.7	V	3.0	32.6	1.0	-67.4	-13.0	-54.4	
2.487	-32.4	V	3.0	31.4	1.0	-62.8	-13.0	-49.8	
1.658	-36.0	H	3.0	32.6	1.0	-67.6	-13.0	-54.6	
2.487	-35.4	H	3.0	31.4	1.0	-65.9	-13.0	-52.9	
Mid Ch, (836.5MHz)									
1.673	-35.2	V	3.0	32.6	1.0	-66.8	-13.0	-53.8	
2.510	-32.0	V	3.0	31.5	1.0	-62.5	-13.0	-49.5	
1.673	-37.9	H	3.0	32.6	1.0	-69.5	-13.0	-56.5	
2.510	-33.8	H	3.0	31.5	1.0	-64.3	-13.0	-51.3	
High Ch, (844MHz)									
1.688	-35.6	V	3.0	32.6	1.0	-67.1	-13.0	-54.1	
2.532	-32.5	V	3.0	31.5	1.0	-63.0	-13.0	-50.0	
1.688	-37.4	H	3.0	32.6	1.0	-69.0	-13.0	-56.0	
2.532	-35.1	H	3.0	31.5	1.0	-65.6	-13.0	-52.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UAT BAND 13

QPSK Band 13 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 13, 5MHz, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (779.5 MHz)									
1.559	-27.3	V	3.0	32.9	1.0	-59.2	-13.0	-46.2	
2.339	-26.1	V	3.0	31.1	1.0	-56.3	-13.0	-43.3	
1.559	-29.3	H	3.0	32.9	1.0	-61.1	-13.0	-48.1	
2.339	-27.6	H	3.0	31.1	1.0	-57.7	-13.0	-44.7	
Mid Ch, (782 MHz)									
1.564	-27.5	V	3.0	32.9	1.0	-59.3	-13.0	-46.3	
2.346	-26.9	V	3.0	31.1	1.0	-57.0	-13.0	-44.0	
1.564	-29.4	H	3.0	32.9	1.0	-61.3	-13.0	-48.3	
2.346	-28.2	H	3.0	31.1	1.0	-58.3	-13.0	-45.3	
High Ch, (784.5 MHz)									
1.569	-27.3	V	3.0	32.8	1.0	-59.2	-13.0	-46.2	
2.354	-26.6	V	3.0	31.1	1.0	-56.7	-13.0	-43.7	
1.569	-29.6	H	3.0	32.8	1.0	-61.5	-13.0	-48.5	
2.354	-28.2	H	3.0	31.1	1.0	-58.3	-13.0	-45.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 13 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Apple
Project #: 13U14987
Date: 05/28/13
Test Engineer: Roy Zheng
Configuration: EUT only
Mode: TX, LTE band 13, 5MHz, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (779.5 MHz)									
1.559	-28.2	V	3.0	32.9	1.0	-60.1	-13.0	-47.1	
2.339	-26.9	V	3.0	31.1	1.0	-57.1	-13.0	-44.1	
1.559	-30.0	H	3.0	32.9	1.0	-61.8	-13.0	-48.8	
2.339	-28.3	H	3.0	31.1	1.0	-58.4	-13.0	-45.4	
Mid Ch, (782 MHz)									
1.564	-28.3	V	3.0	32.9	1.0	-60.2	-13.0	-47.2	
2.346	-27.8	V	3.0	31.1	1.0	-57.9	-13.0	-44.9	
1.564	-30.4	H	3.0	32.9	1.0	-62.3	-13.0	-49.3	
2.346	-29.2	H	3.0	31.1	1.0	-59.3	-13.0	-46.3	
High Ch, (784.5 MHz)									
1.569	-28.1	V	3.0	32.8	1.0	-60.0	-13.0	-47.0	
2.354	-27.5	V	3.0	31.1	1.0	-57.6	-13.0	-44.6	
1.569	-30.6	H	3.0	32.8	1.0	-62.5	-13.0	-49.5	
2.354	-28.9	H	3.0	31.1	1.0	-59.0	-13.0	-46.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK and 16QAM Band 13 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Apple
Project #: 13U14987
Date: 05/28/13
Test Engineer: Roy Zheng
Configuration: EUT only
Mode: TX, LTE band 13, 10MHz, QPSK/16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
QPSK									
Mid Ch. (782 MHz)									
1.564	-27.3	V	3.0	32.9	1.0	-59.2	-13.0	-46.2	
2.346	-26.6	V	3.0	31.1	1.0	-56.7	-13.0	-43.7	
1.564	-29.7	H	3.0	32.9	1.0	-61.6	-13.0	-48.6	
2.346	-28.0	H	3.0	31.1	1.0	-58.1	-13.0	-45.1	
16QAM									
Mid Ch. (782 MHz)									
1.564	-28.3	V	3.0	32.9	1.0	-60.2	-13.0	-47.2	
2.346	-27.5	V	3.0	31.1	1.0	-57.6	-13.0	-44.6	
1.564	-30.3	H	3.0	32.9	1.0	-62.2	-13.0	-49.2	
2.346	-28.8	H	3.0	31.1	1.0	-58.9	-13.0	-45.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UAT BAND 17

QPSK Band 17 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/24/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE B17 5M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (706.5MHz)									
1.413	-34.6	V	3.0	33.1	1.0	-66.7	-13.0	-53.7	
2.120	-32.3	V	3.0	31.6	1.0	-62.9	-13.0	-49.9	
1.413	-37.1	H	3.0	33.1	1.0	-69.2	-13.0	-56.2	
2.120	-34.4	H	3.0	31.6	1.0	-65.0	-13.0	-52.0	
Mid Ch, (710MHz)									
1.420	-34.0	V	3.0	33.1	1.0	-66.1	-13.0	-53.1	
2.130	-32.6	V	3.0	31.6	1.0	-63.2	-13.0	-50.2	
1.420	-37.1	H	3.0	33.1	1.0	-69.2	-13.0	-56.2	
2.130	-34.7	H	3.0	31.6	1.0	-65.3	-13.0	-52.3	
High Ch, (713.5MHz)									
1.427	-34.7	V	3.0	33.1	1.0	-66.7	-13.0	-53.7	
2.141	-33.1	V	3.0	31.6	1.0	-63.6	-13.0	-50.6	
1.427	-36.9	H	3.0	33.1	1.0	-69.0	-13.0	-56.0	
2.141	-34.6	H	3.0	31.6	1.0	-65.1	-13.0	-52.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 17 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Apple
Project #: 13U14987
Date: 05/28/13
Test Engineer: Roy Zheng
Configuration: EUT only
Mode: TX, LTE B17 5M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (706.5MHz)									
1.413	-28.5	V	3.0	33.1	1.0	-60.6	-13.0	-47.6	
2.120	-27.8	V	3.0	31.6	1.0	-58.4	-13.0	-45.4	
1.413	-30.4	H	3.0	33.1	1.0	-62.5	-13.0	-49.5	
2.120	-29.7	H	3.0	31.6	1.0	-60.3	-13.0	-47.3	
Mid Ch, (710MHz)									
1.420	-28.6	V	3.0	33.1	1.0	-60.7	-13.0	-47.7	
2.130	-25.9	V	3.0	31.6	1.0	-56.5	-13.0	-43.5	
1.420	-30.6	H	3.0	33.1	1.0	-62.7	-13.0	-49.7	
2.130	-29.3	H	3.0	31.6	1.0	-59.9	-13.0	-46.9	
High Ch, (713.5MHz)									
1.427	-28.7	V	3.0	33.1	1.0	-60.7	-13.0	-47.7	
2.141	-28.0	V	3.0	31.6	1.0	-58.5	-13.0	-45.5	
1.427	-30.8	H	3.0	33.1	1.0	-62.9	-13.0	-49.9	
2.141	-29.4	H	3.0	31.6	1.0	-59.9	-13.0	-46.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 17 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Apple
Project #: 13U14987
Date: 05/28/13
Test Engineer: Roy Zheng
Configuration: EUT only
Mode: TX, LTE B17 10M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (709MHz)									
1.418	-27.7	V	3.0	33.1	1.0	-59.8	-13.0	-46.8	
2.127	-27.3	V	3.0	31.6	1.0	-57.9	-13.0	-44.9	
1.418	-29.9	H	3.0	33.1	1.0	-62.0	-13.0	-49.0	
2.127	-28.9	H	3.0	31.6	1.0	-59.5	-13.0	-46.5	
Mid Ch, (710MHz)									
1.420	-27.7	V	3.0	33.1	1.0	-59.8	-13.0	-46.8	
2.130	-27.6	V	3.0	31.6	1.0	-58.2	-13.0	-45.2	
1.420	100.8	H	3.0	33.1	1.0	68.7	-13.0	81.7	
2.130	-28.0	H	3.0	31.6	1.0	-58.6	-13.0	-45.6	
High Ch, (711MHz)									
1.422	-28.1	V	3.0	33.1	1.0	-60.2	-13.0	-47.2	
2.133	-26.9	V	3.0	31.6	1.0	-57.4	-13.0	-44.4	
1.422	-29.9	H	3.0	33.1	1.0	-62.0	-13.0	-49.0	
2.133	-28.7	H	3.0	31.6	1.0	-59.3	-13.0	-46.3	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 17 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Apple
Project #: 13U14987
Date: 05/28/13
Test Engineer: Roy Zheng
Configuration: EUT only
Mode: TX, LTE B17 10M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (709MHz)									
1.418	-28.8	V	3.0	33.1	1.0	-60.9	-13.0	-47.9	
2.127	-28.0	V	3.0	31.6	1.0	-58.6	-13.0	-45.6	
1.418	-31.0	H	3.0	33.1	1.0	-63.1	-13.0	-50.1	
2.127	-29.8	H	3.0	31.6	1.0	-60.4	-13.0	-47.4	
Mid Ch, (710MHz)									
1.420	-28.7	V	3.0	33.1	1.0	-60.8	-13.0	-47.8	
2.130	-26.9	V	3.0	31.6	1.0	-57.5	-13.0	-44.5	
1.420	-30.8	H	3.0	33.1	1.0	-62.9	-13.0	-49.9	
2.130	-29.1	H	3.0	31.6	1.0	-59.7	-13.0	-46.7	
High Ch, (711MHz)									
1.422	-28.9	V	3.0	33.1	1.0	-61.0	-13.0	-48.0	
2.133	-27.8	V	3.0	31.6	1.0	-58.3	-13.0	-45.3	
1.422	-30.8	H	3.0	33.1	1.0	-62.9	-13.0	-49.9	
2.133	-29.5	H	3.0	31.6	1.0	-60.1	-13.0	-47.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UAT BAND 25

QPSK Band 25 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 1.4MHz, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1850.7 MHz)									
3.701	-27.1	V	3.0	30.2	1.0	-56.3	-13.0	-43.3	
7.403	-28.8	V	3.0	26.5	1.0	-54.3	-13.0	-41.3	
3.701	-26.8	H	3.0	30.2	1.0	-56.0	-13.0	-43.0	
7.403	-28.6	H	3.0	26.5	1.0	-54.1	-13.0	-41.1	
Mid Ch, (1882.5 MHz)									
3.765	-26.2	V	3.0	30.1	1.0	-55.4	-13.0	-42.4	
7.530	-29.9	V	3.0	26.3	1.0	-55.2	-13.0	-42.2	
3.765	-26.7	H	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.530	-29.0	H	3.0	26.3	1.0	-54.3	-13.0	-41.3	
High Ch, (1914.3 MHz)									
3.829	-26.0	V	3.0	30.1	1.0	-55.1	-13.0	-42.1	
7.657	-29.1	V	3.0	26.1	1.0	-54.3	-13.0	-41.3	
3.829	-26.6	H	3.0	30.1	1.0	-55.7	-13.0	-42.7	
7.657	-28.3	H	3.0	26.1	1.0	-53.5	-13.0	-40.5	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 25 (1.4 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 1.4MHz, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1850.7 MHz)									
3.701	-27.9	V	3.0	30.2	1.0	-57.1	-13.0	-44.1	
7.403	-29.7	V	3.0	26.5	1.0	-55.2	-13.0	-42.2	
3.701	-27.6	H	3.0	30.2	1.0	-56.8	-13.0	-43.8	
7.403	-29.5	H	3.0	26.5	1.0	-55.0	-13.0	-42.0	
Mid Ch, (1882.5 MHz)									
3.765	-27.3	V	3.0	30.1	1.0	-56.5	-13.0	-43.5	
7.530	-30.7	V	3.0	26.3	1.0	-56.0	-13.0	-43.0	
3.765	-28.0	H	3.0	30.1	1.0	-57.1	-13.0	-44.1	
7.530	-29.9	H	3.0	26.3	1.0	-55.2	-13.0	-42.2	
High Ch, (1914.3 MHz)									
3.829	-26.9	V	3.0	30.1	1.0	-56.0	-13.0	-43.0	
7.657	-29.9	V	3.0	26.1	1.0	-55.1	-13.0	-42.1	
3.829	-27.6	H	3.0	30.1	1.0	-56.7	-13.0	-43.7	
7.657	-29.3	H	3.0	26.1	1.0	-54.4	-13.0	-41.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor

QPSK Band 25 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 3MHz, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851.5 MHz)									
3.703	-26.8	V	3.0	30.2	1.0	-56.0	-13.0	-43.0	
7.406	-30.1	V	3.0	26.5	1.0	-55.6	-13.0	-42.6	
3.703	-27.2	H	3.0	30.2	1.0	-56.4	-13.0	-43.4	
7.406	-28.9	H	3.0	26.5	1.0	-54.4	-13.0	-41.4	
Mid Ch, (1882.5 MHz)									
3.765	-26.5	V	3.0	30.1	1.0	-55.7	-13.0	-42.7	
7.530	-28.7	V	3.0	26.3	1.0	-54.0	-13.0	-41.0	
3.765	-26.5	H	3.0	30.1	1.0	-55.6	-13.0	-42.6	
7.530	-28.7	H	3.0	26.3	1.0	-54.0	-13.0	-41.0	
High Ch, (1913.5 MHz)									
3.827	-25.8	V	3.0	30.1	1.0	-54.9	-13.0	-41.9	
7.654	-29.4	V	3.0	26.1	1.0	-54.5	-13.0	-41.5	
3.827	-26.8	H	3.0	30.1	1.0	-55.9	-13.0	-42.9	
7.654	-27.7	H	3.0	26.1	1.0	-52.8	-13.0	-39.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 25 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 3MHz, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851.5 MHz)									
3.703	-27.7	V	3.0	30.2	1.0	-56.9	-13.0	-43.9	
7.406	-30.9	V	3.0	26.5	1.0	-56.4	-13.0	-43.4	
3.703	-28.2	H	3.0	30.2	1.0	-57.4	-13.0	-44.4	
7.406	-29.8	H	3.0	26.5	1.0	-55.3	-13.0	-42.3	
Mid Ch, (1882.5 MHz)									
3.765	-27.5	V	3.0	30.1	1.0	-56.7	-13.0	-43.7	
7.530	-29.4	V	3.0	26.3	1.0	-54.7	-13.0	-41.7	
3.765	-27.4	H	3.0	30.1	1.0	-56.5	-13.0	-43.5	
7.530	-29.7	H	3.0	26.3	1.0	-55.0	-13.0	-42.0	
High Ch, (1913.5 MHz)									
3.827	-26.7	V	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.654	-30.3	V	3.0	26.1	1.0	-55.4	-13.0	-42.4	
3.827	-27.8	H	3.0	30.1	1.0	-56.9	-13.0	-43.9	
7.654	-28.9	H	3.0	26.1	1.0	-54.0	-13.0	-41.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 25 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 5MHz, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1852.5 MHz)									
3.705	-26.4	V	3.0	30.2	1.0	-55.6	-13.0	-42.6	
7.410	-29.7	V	3.0	26.5	1.0	-55.1	-13.0	-42.1	
3.705	-27.1	H	3.0	30.2	1.0	-56.3	-13.0	-43.3	
7.410	-28.1	H	3.0	26.5	1.0	-53.6	-13.0	-40.6	
Mid Ch, (1882.5 MHz)									
3.765	-26.3	V	3.0	30.1	1.0	-55.5	-13.0	-42.5	
7.530	-29.8	V	3.0	26.3	1.0	-55.1	-13.0	-42.1	
3.765	-27.0	H	3.0	30.1	1.0	-56.1	-13.0	-43.1	
7.530	-29.0	H	3.0	26.3	1.0	-54.3	-13.0	-41.3	
High Ch, (1912.5 MHz)									
3.825	-26.7	V	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.650	-29.2	V	3.0	26.2	1.0	-54.3	-13.0	-41.3	
3.825	-26.9	H	3.0	30.1	1.0	-56.0	-13.0	-43.0	
7.650	-28.9	H	3.0	26.2	1.0	-54.0	-13.0	-41.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor

16QAM Band 25 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 5MHz, 16QAM A28(XX96)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1852.5 MHz)									
3.705	-27.4	V	3.0	30.2	1.0	-56.6	-13.0	-43.6	
7.410	-30.6	V	3.0	26.5	1.0	-56.0	-13.0	-43.0	
3.705	-28.0	H	3.0	30.2	1.0	-57.2	-13.0	-44.2	
7.410	-29.0	H	3.0	26.5	1.0	-54.5	-13.0	-41.5	
Mid Ch, (1882.5 MHz)									
3.765	-27.4	V	3.0	30.1	1.0	-56.6	-13.0	-43.6	
7.530	-30.7	V	3.0	26.3	1.0	-56.0	-13.0	-43.0	
3.765	-27.9	H	3.0	30.1	1.0	-57.0	-13.0	-44.0	
7.530	-29.9	H	3.0	26.3	1.0	-55.2	-13.0	-42.2	
High Ch, (1912.5 MHz)									
3.825	-27.6	V	3.0	30.1	1.0	-56.7	-13.0	-43.7	
7.650	-30.0	V	3.0	26.2	1.0	-55.1	-13.0	-42.1	
3.825	-27.5	H	3.0	30.1	1.0	-56.6	-13.0	-43.6	
7.650	-29.7	H	3.0	26.2	1.0	-54.8	-13.0	-41.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 25 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 10MHz, QPSK A28(XX96)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1855 MHz)									
3.710	-26.7	V	3.0	30.2	1.0	-55.9	-13.0	-42.9	
7.420	-29.7	V	3.0	26.5	1.0	-55.1	-13.0	-42.1	
3.710	-27.2	H	3.0	30.2	1.0	-56.3	-13.0	-43.3	
7.420	-29.1	H	3.0	26.5	1.0	-54.6	-13.0	-41.6	
Mid Ch, (1882.5 MHz)									
3.765	-26.2	V	3.0	30.1	1.0	-55.4	-13.0	-42.4	
7.530	-30.0	V	3.0	26.3	1.0	-55.3	-13.0	-42.3	
3.765	-26.7	H	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.530	-28.6	H	3.0	26.3	1.0	-53.9	-13.0	-40.9	
High Ch, (1909.8 MHz)									
3.820	-26.7	V	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.639	-29.9	V	3.0	26.2	1.0	-55.0	-13.0	-42.0	
3.820	-27.0	H	3.0	30.1	1.0	-56.1	-13.0	-43.1	
7.639	-28.9	H	3.0	26.2	1.0	-54.1	-13.0	-41.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 25 (10.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 10MHz, 16QAM A28(XX96)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1855 MHz)									
3.710	-27.6	V	3.0	30.2	1.0	-56.8	-13.0	-43.8	
7.420	-30.7	V	3.0	26.5	1.0	-56.1	-13.0	-43.1	
3.710	-28.1	H	3.0	30.2	1.0	-57.3	-13.0	-44.3	
7.420	-29.9	H	3.0	26.5	1.0	-55.4	-13.0	-42.4	
Mid Ch, (1882.5 MHz)									
3.765	-27.3	V	3.0	30.1	1.0	-56.5	-13.0	-43.5	
7.530	-30.9	V	3.0	26.3	1.0	-56.2	-13.0	-43.2	
3.765	-27.8	H	3.0	30.1	1.0	-56.9	-13.0	-43.9	
7.530	-29.7	H	3.0	26.3	1.0	-55.0	-13.0	-42.0	
High Ch, (1909.8 MHz)									
3.820	-27.5	V	3.0	30.1	1.0	-56.6	-13.0	-43.6	
7.639	-30.5	V	3.0	26.2	1.0	-55.6	-13.0	-42.6	
3.820	-28.0	H	3.0	30.1	1.0	-57.1	-13.0	-44.1	
7.639	-29.7	H	3.0	26.2	1.0	-54.9	-13.0	-41.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor

QPSK Band 25 (15.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Apple
Project #: 13U14987
Date: 05/28/13
Test Engineer: Roy Zheng
Configuration: EUT only
Mode: TX, LTE band 25, 15MHz, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1857.5 MHz)									
3.715	-27.2	V	3.0	30.2	1.0	-56.4	-13.0	-43.4	
7.430	-29.9	V	3.0	26.4	1.0	-55.3	-13.0	-42.3	
3.715	-27.7	H	3.0	30.2	1.0	-56.9	-13.0	-43.9	
7.430	-28.4	H	3.0	26.4	1.0	-53.8	-13.0	-40.8	
Mid Ch, (1882.5 MHz)									
3.765	-25.6	V	3.0	30.1	1.0	-54.8	-13.0	-41.8	
7.530	-29.4	V	3.0	26.3	1.0	-54.7	-13.0	-41.7	
3.765	-27.3	H	3.0	30.1	1.0	-56.4	-13.0	-43.4	
7.530	-28.4	H	3.0	26.3	1.0	-53.7	-13.0	-40.7	
High Ch, (1907.5 MHz)									
3.815	-26.7	V	3.0	30.1	1.0	-55.8	-13.0	-42.8	
7.630	-29.6	V	3.0	26.2	1.0	-54.8	-13.0	-41.8	
3.815	-27.6	H	3.0	30.1	1.0	-56.7	-13.0	-43.7	
7.630	-27.9	H	3.0	26.2	1.0	-53.1	-13.0	-40.1	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor

16QAM Band 25 (15.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 15MHz, 16QAM A28(XX96)

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1857.5 MHz)									
3.715	-28.1	V	3.0	30.2	1.0	-57.3	-13.0	-44.3	
7.430	-30.9	V	3.0	26.4	1.0	-56.3	-13.0	-43.3	
3.715	-28.7	H	3.0	30.2	1.0	-57.9	-13.0	-44.9	
7.430	-29.3	H	3.0	26.4	1.0	-54.7	-13.0	-41.7	
Mid Ch, (1882.5 MHz)									
3.765	-26.5	V	3.0	30.1	1.0	-55.7	-13.0	-42.7	
7.530	-30.0	V	3.0	26.3	1.0	-55.3	-13.0	-42.3	
3.765	-28.0	H	3.0	30.1	1.0	-57.1	-13.0	-44.1	
7.530	-29.2	H	3.0	26.3	1.0	-54.5	-13.0	-41.5	
High Ch, (1907.5 MHz)									
3.815	-27.6	V	3.0	30.1	1.0	-56.7	-13.0	-43.7	
7.630	-30.2	V	3.0	26.2	1.0	-55.4	-13.0	-42.4	
3.815	-28.3	H	3.0	30.1	1.0	-57.4	-13.0	-44.4	
7.630	-28.8	H	3.0	26.2	1.0	-54.0	-13.0	-41.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK Band 25 (20.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 20MHz, QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1860 MHz)									
3.720	-26.5	V	3.0	30.2	1.0	-55.7	-13.0	-42.7	
7.440	-28.6	V	3.0	26.4	1.0	-54.0	-13.0	-41.0	
3.720	-27.2	H	3.0	30.2	1.0	-56.4	-13.0	-43.4	
7.440	-28.1	H	3.0	26.4	1.0	-53.5	-13.0	-40.5	
Mid Ch, (1882.5 MHz)									
3.765	-26.7	V	3.0	30.1	1.0	-55.9	-13.0	-42.9	
7.530	-30.0	V	3.0	26.3	1.0	-55.3	-13.0	-42.3	
3.765	-26.5	H	3.0	30.1	1.0	-55.6	-13.0	-42.6	
7.530	-28.6	H	3.0	26.3	1.0	-53.9	-13.0	-40.9	
High Ch, (1905 MHz)									
3.810	-25.2	V	3.0	30.1	1.0	-54.3	-13.0	-41.3	
7.620	-29.6	V	3.0	26.2	1.0	-54.8	-13.0	-41.8	
3.810	-26.4	H	3.0	30.1	1.0	-55.5	-13.0	-42.5	
7.620	-28.8	H	3.0	26.2	1.0	-54.0	-13.0	-41.0	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor

16QAM Band 25 (20.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	05/28/13
Test Engineer:	Roy Zheng
Configuration:	EUT only
Mode:	TX, LTE band 25, 20MHz, 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 24

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1860 MHz)									
3.720	-27.5	V	3.0	30.2	1.0	-56.7	-13.0	-43.7	
7.440	-29.5	V	3.0	26.4	1.0	-54.9	-13.0	-41.9	
3.720	-28.0	H	3.0	30.2	1.0	-57.2	-13.0	-44.2	
7.440	-29.0	H	3.0	26.4	1.0	-54.4	-13.0	-41.4	
Mid Ch, (1882.5 MHz)									
3.765	-27.6	V	3.0	30.1	1.0	-56.8	-13.0	-43.8	
7.530	-30.9	V	3.0	26.3	1.0	-56.2	-13.0	-43.2	
3.765	-27.5	H	3.0	30.1	1.0	-56.6	-13.0	-43.6	
7.530	-29.5	H	3.0	26.3	1.0	-54.8	-13.0	-41.8	
High Ch, (1905 MHz)									
3.810	-26.5	V	3.0	30.1	1.0	-55.6	-13.0	-42.6	
7.620	-30.6	V	3.0	26.2	1.0	-55.8	-13.0	-42.8	
3.810	-27.2	H	3.0	30.1	1.0	-56.3	-13.0	-43.3	
7.620	-29.7	H	3.0	26.2	1.0	-54.9	-13.0	-41.9	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

UAT BAND 26

QPSK Band 26 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	07/16/13
Test Engineer:	R Zheng
Configuration:	EUT only
Mode:	B26 3M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (820.3MHz)									
1.641	-27.6	V	3.0	32.7	1.0	-59.3	-13.0	-46.3	
2.461	-27.6	V	3.0	31.3	1.0	-57.9	-13.0	-44.9	
1.641	-30.1	H	3.0	32.7	1.0	-61.8	-13.0	-48.8	
2.461	-29.2	H	3.0	31.3	1.0	-59.5	-13.0	-46.5	
Mid Ch, (821.3MHz)									
1.643	-27.7	V	3.0	32.7	1.0	-59.4	-13.0	-46.4	
2.496	-27.5	V	3.0	31.5	1.0	-58.0	-13.0	-45.0	
1.643	-28.8	H	3.0	32.7	1.0	-60.5	-13.0	-47.5	
2.496	-28.1	H	3.0	31.5	1.0	-58.6	-13.0	-45.6	
High Ch, (822.3MHz)									
1.645	-26.6	V	3.0	32.7	1.0	-58.3	-13.0	-45.3	
2.467	-28.0	V	3.0	31.3	1.0	-58.3	-13.0	-45.3	
1.645	-29.4	H	3.0	32.7	1.0	-61.1	-13.0	-48.1	
2.467	-29.3	H	3.0	31.3	1.0	-59.6	-13.0	-46.6	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

16QAM Band 26 (3.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Apple
Project #:	13U14987
Date:	07/16/13
Test Engineer:	R Zheng
Configuration:	EUT only
Mode:	B26 3M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (820.3MHz)									
1.641	-28.2	V	3.0	32.7	1.0	-59.9	-13.0	-46.9	
2.461	-28.0	V	3.0	31.3	1.0	-58.3	-13.0	-45.3	
1.641	-31.3	H	3.0	32.7	1.0	-63.0	-13.0	-50.0	
2.461	-30.4	H	3.0	31.3	1.0	-60.7	-13.0	-47.7	
Mid Ch, (821.3MHz)									
1.643	-28.3	V	3.0	32.7	1.0	-60.0	-13.0	-47.0	
2.496	-27.7	V	3.0	31.5	1.0	-58.2	-13.0	-45.2	
1.643	-29.6	H	3.0	32.7	1.0	-61.3	-13.0	-48.3	
2.496	-29.1	H	3.0	31.5	1.0	-59.6	-13.0	-46.6	
High Ch, (822.3MHz)									
1.645	-27.7	V	3.0	32.7	1.0	-59.4	-13.0	-46.4	
2.467	-28.7	V	3.0	31.3	1.0	-59.0	-13.0	-46.0	
1.645	-30.3	H	3.0	32.7	1.0	-62.0	-13.0	-49.0	
2.467	-30.1	H	3.0	31.3	1.0	-60.4	-13.0	-47.4	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

QPSK/16QAM Band 26 (5.0 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Apple
Project #: 13U14987
Date: 07/16/13
Test Engineer: R Zheng
Configuration: EUT only
Mode: B26 5M har QPSK

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch, (821.3MHz)									
1.643	-29.2	V	3.0	32.7	1.0	-60.9	-13.0	-47.9	
2.464	-27.6	V	3.0	31.3	1.0	-57.9	-13.0	-44.9	
1.643	-27.9	H	3.0	32.7	1.0	-59.6	-13.0	-46.6	
2.464	-28.5	H	3.0	31.3	1.0	-58.8	-13.0	-45.8	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Apple
Project #: 13U14987
Date: 07/16/13
Test Engineer: R Zheng
Configuration: EUT only
Mode: B26 5M har 16QAM

Chamber	Pre-amplifer	Filter	Limit
3m Chamber D	T145 8449B	Filter 1	Part 22

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Mid Ch, (821.3MHz)									
1.643	-30.1	V	3.0	32.7	1.0	-61.8	-13.0	-48.8	
2.464	-28.6	V	3.0	31.3	1.0	-58.9	-13.0	-45.9	
1.643	-28.8	H	3.0	32.7	1.0	-60.5	-13.0	-47.5	
2.464	-29.4	H	3.0	31.3	1.0	-59.7	-13.0	-46.7	

Rev. 03.03.09
Note: No other emissions were detected above the system noise floor.