LTE Band 4 5MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-06-16
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 4, 5MHz BW, QPSK

Chamber: Chamber 2 | Pre-amplifer: AFS42 | Filter: Filter 1 | Limit: FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1712.5MHz)									
3.4250	0.8	V	3.0	40.2	1.0	-38.4	-13.0	-25.4	
5.1375	-2.8	V	3.0	40.9	1.0	-42.7	-13.0	-29.7	
6.8500	6.0	V	3.0	41.0	1.0	-34.0	-13.0	-21.0	
3.4250	-0.6	H	3.0	40.2	1.0	-39.8	-13.0	-26.8	
5.1375	-5.0	H	3.0	40.9	1.0	-44.8	-13.0	-31.8	
6.8500	1.2	H	3.0	41.0	1.0	-38.7	-13.0	-25.7	
Mid Channel (1732.5MHz)									
3.4650	-0.5	V	3.0	40.3	1.0	-39.8	-13.0	-26.8	
5.1975	-2.9	V	3.0	40.9	1.0	-42.8	-13.0	-29.8	
6.9300	7.5	V	3.0	41.0	1.0	-32.5	-13.0	-19.5	
3.4650	0.7	H	3.0	40.3	1.0	-38.5	-13.0	-25.5	
5.1975	-6.1	H	3.0	40.9	1.0	-46.0	-13.0	-33.0	
6.9300	2.4	H	3.0	41.0	1.0	-37.6	-13.0	-24.6	
High Channel (1752.5MHz)									
3.5050	1.3	V	3.0	40.3	1.0	-38.0	-13.0	-25.0	
5.2575	-2.9	V	3.0	40.9	1.0	-42.8	-13.0	-29.8	
7.0100	5.7	V	3.0	41.0	1.0	-34.3	-13.0	-21.3	
3.5050	2.0	H	3.0	40.3	1.0	-37.2	-13.0	-24.2	
5.2575	-7.8	H	3.0	40.9	1.0	-47.7	-13.0	-34.7	
7.0100	0.7	H	3.0	41.0	1.0	-39.3	-13.0	-26.3	

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

LTE Band 4 5MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-06-16
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 7, 5MHz BW,16QAM

Chamber: Chamber 2 | Pre-amplifer: AFS42 | Filter: Filter 1 | Limit: FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1712.5MHz)									
3.4250	0.9	V	3.0	40.2	1.0	-38.4	-13.0	-25.4	
5.1375	-2.2	V	3.0	40.9	1.0	-42.1	-13.0	-29.1	
6.8500	6.1	V	3.0	41.0	1.0	-33.9	-13.0	-20.9	
3.4250	-0.4	H	3.0	40.2	1.0	-39.6	-13.0	-26.6	
5.1375	-4.3	H	3.0	40.9	1.0	-44.1	-13.0	-31.1	
6.8500	1.0	H	3.0	41.0	1.0	-39.0	-13.0	-26.0	
Mid Channel (1732.5MHz)									
3.4650	-0.4	V	3.0	40.3	1.0	-39.7	-13.0	-26.7	
5.1975	-3.3	V	3.0	40.9	1.0	-43.1	-13.0	-30.1	
6.9300	7.2	V	3.0	41.0	1.0	-32.8	-13.0	-19.8	
3.4650	-0.2	H	3.0	40.3	1.0	-39.4	-13.0	-26.4	
5.1975	-6.2	H	3.0	40.9	1.0	-46.1	-13.0	-33.1	
6.9300	2.3	H	3.0	41.0	1.0	-37.7	-13.0	-24.7	
High Channel (1752.5MHz)									
3.5050	1.9	V	3.0	40.3	1.0	-37.4	-13.0	-24.4	
5.2575	-2.1	V	3.0	40.9	1.0	-41.9	-13.0	-28.9	
7.0100	6.7	V	3.0	41.0	1.0	-33.3	-13.0	-20.3	
3.5050	2.0	H	3.0	40.3	1.0	-37.3	-13.0	-24.3	
5.2575	-7.4	H	3.0	40.9	1.0	-47.3	-13.0	-34.3	
7.0100	2.0	H	3.0	41.0	1.0	-38.0	-13.0	-25.0	

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

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LTE
Band 4
3MHz
QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-02-16
Test Engineer: YH Lim
Configuration: EUT / X-Position
Mode: TX, LTE BAND 4, 3MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1711.5MHz)									
3.4230	3.3	V	3.0	40.2	1.0	-35.9	-13.0	-22.9	
5.1345	2.4	V	3.0	40.9	1.0	-37.5	-13.0	-24.5	
6.8460	8.3	V	3.0	41.0	1.0	-31.7	-13.0	-18.7	
3.4230	0.0	H	3.0	40.2	1.0	-39.3	-13.0	-26.3	
5.1345	-6.8	H	3.0	40.9	1.0	-46.7	-13.0	-33.7	
6.8460	-1.1	H	3.0	41.0	1.0	-41.1	-13.0	-28.1	
Mid Channel (1732.5MHz)									
3.4650	0.2	V	3.0	40.3	1.0	-39.1	-13.0	-26.1	
5.1975	-0.2	V	3.0	40.9	1.0	-40.1	-13.0	-27.1	
6.9300	5.8	V	3.0	41.0	1.0	-34.2	-13.0	-21.2	
3.4650	1.2	H	3.0	40.3	1.0	-38.1	-13.0	-25.1	
5.1975	-8.6	H	3.0	40.9	1.0	-48.5	-13.0	-35.5	
6.9300	1.1	H	3.0	41.0	1.0	-38.9	-13.0	-25.9	
High Channel (1753.5MHz)									
3.5050	8.8	V	3.0	40.3	1.0	-30.5	-13.0	-17.5	
5.2575	-0.4	V	3.0	40.9	1.0	-40.3	-13.0	-27.3	
7.0100	4.8	V	3.0	41.0	1.0	-35.2	-13.0	-22.2	
3.5050	3.4	H	3.0	40.3	1.0	-35.9	-13.0	-22.9	
5.2575	-6.8	H	3.0	40.9	1.0	-46.7	-13.0	-33.7	
7.0100	-5.5	H	3.0	41.0	1.0	-45.5	-13.0	-32.5	

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

LTE
Band 4
3MHz
16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-02-16
Test Engineer: YH Lim
Configuration: EUT / X-Position
Mode: TX, LTE BAND 4, 3MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1711.5MHz)									
3.4230	3.2	V	3.0	40.2	1.0	-36.0	-13.0	-23.0	
5.1345	1.9	V	3.0	40.9	1.0	-38.0	-13.0	-25.0	
6.8460	7.3	V	3.0	41.0	1.0	-32.6	-13.0	-19.6	
3.4230	-0.1	H	3.0	40.2	1.0	-39.4	-13.0	-26.4	
5.1345	-7.1	H	3.0	40.9	1.0	-47.0	-13.0	-34.0	
6.8460	-1.8	H	3.0	41.0	1.0	-41.8	-13.0	-28.8	
Mid Channel (1732.5MHz)									
3.4650	0.1	V	3.0	40.3	1.0	-39.2	-13.0	-26.2	
5.1975	-0.3	V	3.0	40.9	1.0	-40.2	-13.0	-27.2	
6.9300	5.7	V	3.0	41.0	1.0	-34.3	-13.0	-21.3	
3.4650	1.3	H	3.0	40.3	1.0	-37.9	-13.0	-24.9	
5.1975	-8.4	H	3.0	40.9	1.0	-48.3	-13.0	-35.3	
6.9300	1.0	H	3.0	41.0	1.0	-39.0	-13.0	-26.0	
High Channel (1752.5MHz)									
3.5050	5.8	V	3.0	40.3	1.0	-33.5	-13.0	-20.5	
5.2575	-0.4	V	3.0	40.9	1.0	-40.3	-13.0	-27.3	
7.0100	3.1	V	3.0	41.0	1.0	-36.9	-13.0	-23.9	
3.5050	2.2	H	3.0	40.3	1.0	-37.1	-13.0	-24.1	
5.2575	-7.0	H	3.0	40.9	1.0	-46.9	-13.0	-33.9	
7.0100	-7.1	H	3.0	41.0	1.0	-47.1	-13.0	-34.1	

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

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LTE
Band 4
1.4MHz
QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-02-16
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 4, 1.4MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1710.7MHz)									
3.4214	0.6	V	3.0	40.2	1.0	-38.6	-13.0	-25.6	
5.1321	-2.3	V	3.0	40.9	1.0	-42.2	-13.0	-29.2	
6.8428	6.6	V	3.0	41.0	1.0	-33.4	-13.0	-20.4	
3.4214	-1.3	H	3.0	40.2	1.0	-40.5	-13.0	-27.5	
5.1321	-4.6	H	3.0	40.9	1.0	-44.5	-13.0	-31.5	
6.8428	0.4	H	3.0	41.0	1.0	-39.5	-13.0	-26.5	
Mid Channel (1732.5MHz)									
3.4650	-1.0	V	3.0	40.3	1.0	-40.3	-13.0	-27.3	
5.1975	-3.5	V	3.0	40.9	1.0	-43.3	-13.0	-30.3	
6.9300	7.6	V	3.0	41.0	1.0	-32.4	-13.0	-19.4	
3.4650	0.2	H	3.0	40.3	1.0	-39.0	-13.0	-26.0	
5.1975	-8.6	H	3.0	40.9	1.0	-48.5	-13.0	-35.5	
6.9300	1.3	H	3.0	41.0	1.0	-38.7	-13.0	-25.7	
High Channel (1754.3MHz)									
3.5086	5.8	V	3.0	40.3	1.0	-33.5	-13.0	-20.5	
5.2629	-1.2	V	3.0	40.9	1.0	-41.1	-13.0	-28.1	
7.0172	5.8	V	3.0	41.0	1.0	-34.2	-13.0	-21.2	
3.5086	2.2	H	3.0	40.3	1.0	-37.1	-13.0	-24.1	
5.2629	-8.1	H	3.0	40.9	1.0	-48.0	-13.0	-35.0	
7.0172	2.3	H	3.0	41.0	1.0	-37.7	-13.0	-24.7	

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

LTE
Band 4
1.4MHz
16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-02-16
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 4, 1.4MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC Part 27

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Channel (1710.7MHz)									
3.4214	-1.0	V	3.0	40.2	1.0	-40.2	-13.0	-27.2	
5.1321	-1.6	V	3.0	40.9	1.0	-41.5	-13.0	-28.5	
6.8428	7.7	V	3.0	41.0	1.0	-32.3	-13.0	-19.3	
3.4214	-1.3	H	3.0	40.2	1.0	-40.5	-13.0	-27.5	
5.1321	-3.9	H	3.0	40.9	1.0	-43.8	-13.0	-30.8	
6.8428	1.5	H	3.0	41.0	1.0	-38.4	-13.0	-25.4	
Mid Channel (1732.5MHz)									
3.4650	0.0	V	3.0	40.3	1.0	-39.3	-13.0	-26.3	
5.1975	-2.6	V	3.0	40.9	1.0	-42.5	-13.0	-29.5	
6.9300	7.4	V	3.0	41.0	1.0	-32.6	-13.0	-19.6	
3.4650	0.3	H	3.0	40.3	1.0	-38.9	-13.0	-25.9	
5.1975	-7.5	H	3.0	40.9	1.0	-47.4	-13.0	-34.4	
6.9300	1.0	H	3.0	41.0	1.0	-39.0	-13.0	-26.0	
High Channel (1754.3MHz)									
3.5086	5.8	V	3.0	40.3	1.0	-33.5	-13.0	-20.5	
5.2629	-0.9	V	3.0	40.9	1.0	-40.8	-13.0	-27.8	
7.0172	8.2	V	3.0	41.0	1.0	-31.8	-13.0	-18.8	
3.5086	1.6	H	3.0	40.3	1.0	-37.7	-13.0	-24.7	
5.2629	-7.8	H	3.0	40.9	1.0	-47.7	-13.0	-34.7	
7.0172	2.2	H	3.0	41.0	1.0	-37.8	-13.0	-24.8	

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

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LTE Band 2

LTE Band 2 20MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-02-16
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 2, 20MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC 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 Channel (1860MHz)									
3.7200	-15.3	V	3.0	40.5	1.0	-54.8	-13.0	-41.8	
5.5800	-3.3	V	3.0	40.8	1.0	-43.1	-13.0	-30.1	
7.4400	1.5	V	3.0	40.8	1.0	-38.3	-13.0	-25.3	
3.7200	-17.6	H	3.0	40.5	1.0	-57.1	-13.0	-44.1	
5.5800	-9.7	H	3.0	40.8	1.0	-49.5	-13.0	-36.5	
7.4400	-6.8	H	3.0	40.8	1.0	-46.6	-13.0	-33.6	
Mid Channel (1880MHz)									
3.7600	-12.9	V	3.0	40.5	1.0	-52.5	-13.0	-39.5	
5.6400	-3.9	V	3.0	40.8	1.0	-43.7	-13.0	-30.7	
7.5200	3.4	V	3.0	40.7	1.0	-36.3	-13.0	-23.3	
3.7600	-11.8	H	3.0	40.5	1.0	-51.3	-13.0	-38.3	
5.6400	-11.7	H	3.0	40.8	1.0	-51.5	-13.0	-38.5	
7.520	-4.3	H	3.0	40.7	1.0	-44.0	-13.0	-31.0	
High Channel (1900MHz)									
3.8000	-15.6	V	3.0	40.6	1.0	-55.2	-13.0	-42.2	
5.7000	-2.6	V	3.0	40.8	1.0	-42.4	-13.0	-29.4	
7.6000	1.4	V	3.0	40.7	1.0	-38.3	-13.0	-25.3	
3.8000	-15.4	H	3.0	40.6	1.0	-55.0	-13.0	-42.0	
5.7000	-7.3	H	3.0	40.8	1.0	-47.1	-13.0	-34.1	
7.6000	-6.9	H	3.0	40.7	1.0	-46.6	-13.0	-33.6	

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

LTE Band 2 20MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-02-16
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 2, 20MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC 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 Channel (1860MHz)									
3.7200	-16.0	V	3.0	40.5	1.0	-55.5	-13.0	-42.5	
5.5800	-4.5	V	3.0	40.8	1.0	-44.3	-13.0	-31.3	
7.4400	1.1	V	3.0	40.8	1.0	-38.7	-13.0	-25.7	
3.7200	-17.9	H	3.0	40.5	1.0	-57.4	-13.0	-44.4	
5.5800	-10.1	H	3.0	40.8	1.0	-49.9	-13.0	-36.9	
7.4400	-7.7	H	3.0	40.8	1.0	-47.4	-13.0	-34.4	
Mid Channel (1880MHz)									
3.7600	-13.4	V	3.0	40.5	1.0	-52.9	-13.0	-39.9	
5.6400	-4.1	V	3.0	40.8	1.0	-43.9	-13.0	-30.9	
7.5200	4.1	V	3.0	40.7	1.0	-35.6	-13.0	-22.6	
3.7600	-11.5	H	3.0	40.5	1.0	-51.0	-13.0	-38.0	
5.6400	-12.1	H	3.0	40.8	1.0	-51.9	-13.0	-38.9	
7.5200	-3.5	H	3.0	40.7	1.0	-43.3	-13.0	-30.3	
High Channel (1900MHz)									
3.8000	-15.6	V	3.0	40.6	1.0	-55.2	-13.0	-42.2	
5.7000	-2.8	V	3.0	40.8	1.0	-42.6	-13.0	-29.6	
7.6000	2.0	V	3.0	40.7	1.0	-37.7	-13.0	-24.7	
3.8000	-15.7	H	3.0	40.6	1.0	-55.2	-13.0	-42.2	
5.7000	-7.3	H	3.0	40.8	1.0	-47.1	-13.0	-34.1	
7.6000	-7.2	H	3.0	40.7	1.0	-46.9	-13.0	-33.9	

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

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LTE Band 2 15MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-02-16
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 2, 15MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC 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 Channel (1857.5MHz)									
3.7150	-16.8	V	3.0	40.5	1.0	-56.3	-13.0	-43.3	
5.5725	-4.1	V	3.0	40.8	1.0	-44.0	-13.0	-31.0	
7.4300	0.5	V	3.0	40.8	1.0	-39.3	-13.0	-26.3	
3.7150	-17.6	H	3.0	40.5	1.0	-57.1	-13.0	-44.1	
5.5725	-9.5	H	3.0	40.8	1.0	-49.3	-13.0	-36.3	
7.4300	-8.5	H	3.0	40.8	1.0	-48.3	-13.0	-35.3	
Mid Channel (1880MHz)									
3.7600	-12.7	V	3.0	40.5	1.0	-52.2	-13.0	-39.2	
5.6400	-5.1	V	3.0	40.8	1.0	-44.9	-13.0	-31.9	
7.5200	1.7	V	3.0	40.7	1.0	-38.0	-13.0	-25.0	
3.7600	-12.3	H	3.0	40.5	1.0	-51.8	-13.0	-38.8	
5.6400	-10.9	H	3.0	40.8	1.0	-50.7	-13.0	-37.7	
7.5200	-6.2	H	3.0	40.7	1.0	-45.9	-13.0	-32.9	
High Channel (1902.5MHz)									
3.8050	-14.8	V	3.0	40.6	1.0	-54.4	-13.0	-41.4	
5.7075	-1.6	V	3.0	40.8	1.0	-41.4	-13.0	-28.4	
7.6100	2.9	V	3.0	40.7	1.0	-36.7	-13.0	-23.7	
3.8050	-18.1	H	3.0	40.6	1.0	-57.6	-13.0	-44.6	
5.7075	-8.8	H	3.0	40.8	1.0	-48.6	-13.0	-35.6	
7.6100	-6.4	H	3.0	40.7	1.0	-46.1	-13.0	-33.1	

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

LTE Band 2 15MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-02-16
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 2, 15MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC 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 Channel (1857.5MHz)									
3.7150	-16.8	V	3.0	40.5	1.0	-56.3	-13.0	-43.3	
5.5725	-3.9	V	3.0	40.8	1.0	-43.8	-13.0	-30.8	
7.4300	2.0	V	3.0	40.8	1.0	-37.8	-13.0	-24.8	
3.7150	-18.0	H	3.0	40.5	1.0	-57.5	-13.0	-44.5	
5.5725	-8.9	H	3.0	40.8	1.0	-48.7	-13.0	-35.7	
7.4300	-7.0	H	3.0	40.8	1.0	-46.8	-13.0	-33.8	
Mid Channel (1880MHz)									
3.7600	-12.8	V	3.0	40.5	1.0	-52.3	-13.0	-39.3	
5.6400	-5.4	V	3.0	40.8	1.0	-45.2	-13.0	-32.2	
7.5200	2.1	V	3.0	40.7	1.0	-37.6	-13.0	-24.6	
3.7600	-12.4	H	3.0	40.5	1.0	-51.9	-13.0	-38.9	
5.6400	-10.5	H	3.0	40.8	1.0	-50.3	-13.0	-37.3	
7.5200	-6.9	H	3.0	40.7	1.0	-46.6	-13.0	-33.6	
High Channel (1902.5MHz)									
3.8050	-14.9	V	3.0	40.6	1.0	-54.5	-13.0	-41.5	
5.7075	-1.9	V	3.0	40.8	1.0	-41.7	-13.0	-28.7	
7.6100	2.3	V	3.0	40.7	1.0	-37.3	-13.0	-24.3	
3.8050	-18.8	H	3.0	40.6	1.0	-58.4	-13.0	-45.4	
5.7075	-8.6	H	3.0	40.8	1.0	-48.4	-13.0	-35.4	
7.6100	-6.4	H	3.0	40.7	1.0	-46.1	-13.0	-33.1	

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

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LTE
Band 2
10MHz
QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-02-16
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 2, 10MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC 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 Channel (1855MHz)									
3.7100	-15.8	V	3.0	40.5	1.0	-55.3	-13.0	-42.3	
5.5650	-5.0	V	3.0	40.8	1.0	-44.8	-13.0	-31.8	
7.4200	0.4	V	3.0	40.8	1.0	-39.4	-13.0	-26.4	
3.7100	-18.1	H	3.0	40.5	1.0	-57.6	-13.0	-44.6	
5.5650	-10.8	H	3.0	40.8	1.0	-50.6	-13.0	-37.6	
7.4200	-8.2	H	3.0	40.8	1.0	-47.9	-13.0	-34.9	
Mid Channel (1880MHz)									
3.7600	-11.9	V	3.0	40.5	1.0	-51.5	-13.0	-38.5	
5.6400	-5.8	V	3.0	40.8	1.0	-45.6	-13.0	-32.6	
7.5200	3.4	V	3.0	40.7	1.0	-36.3	-13.0	-23.3	
3.7600	-12.4	H	3.0	40.5	1.0	-51.9	-13.0	-38.9	
5.6400	-11.5	H	3.0	40.8	1.0	-51.3	-13.0	-38.3	
7.5200	-5.9	H	3.0	40.7	1.0	-45.6	-13.0	-32.6	
High Channel (1905MHz)									
3.8100	-13.3	V	3.0	40.6	1.0	-52.8	-13.0	-39.8	
5.7150	-1.8	V	3.0	40.8	1.0	-41.5	-13.0	-28.5	
7.6200	3.0	V	3.0	40.7	1.0	-36.6	-13.0	-23.6	
3.8100	-14.5	H	3.0	40.6	1.0	-54.1	-13.0	-41.1	
5.7150	-8.2	H	3.0	40.8	1.0	-48.0	-13.0	-35.0	
7.620	-6.8	H	3.0	40.7	1.0	-46.4	-13.0	-33.4	

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

LTE
Band 2
10MHz
16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-02-16
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 2, 10MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC 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 Channel (1855MHz)									
3.7100	-14.7	V	3.0	40.5	1.0	-54.2	-13.0	-41.2	
5.5650	-4.8	V	3.0	40.8	1.0	-44.6	-13.0	-31.6	
7.4200	3.1	V	3.0	40.8	1.0	-36.7	-13.0	-23.7	
3.7100	-17.6	H	3.0	40.5	1.0	-57.1	-13.0	-44.1	
5.5650	-10.4	H	3.0	40.8	1.0	-50.3	-13.0	-37.3	
7.4200	-7.3	H	3.0	40.8	1.0	-47.1	-13.0	-34.1	
Mid Channel (1880MHz)									
3.7600	-12.3	V	3.0	40.5	1.0	-51.9	-13.0	-38.9	
5.6400	-5.1	V	3.0	40.8	1.0	-44.9	-13.0	-31.9	
7.5200	4.2	V	3.0	40.7	1.0	-35.5	-13.0	-22.5	
3.7600	-11.6	H	3.0	40.5	1.0	-51.1	-13.0	-38.1	
5.6400	-11.6	H	3.0	40.8	1.0	-51.4	-13.0	-38.4	
7.5200	-5.4	H	3.0	40.7	1.0	-45.1	-13.0	-32.1	
High Channel (1905MHz)									
3.8100	-13.7	V	3.0	40.6	1.0	-53.3	-13.0	-40.3	
5.7150	-2.0	V	3.0	40.8	1.0	-41.8	-13.0	-28.8	
7.6200	2.6	V	3.0	40.7	1.0	-37.1	-13.0	-24.1	
3.8100	-14.5	H	3.0	40.6	1.0	-54.1	-13.0	-41.1	
5.7150	-8.4	H	3.0	40.8	1.0	-48.2	-13.0	-35.2	
7.6200	-6.7	H	3.0	40.7	1.0	-46.4	-13.0	-33.4	

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

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LTE Band 2 5MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-02-16
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 2, 5MHz BW, QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC 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 Channel (1852.5MHz)									
3.7050	-13.5	V	3.0	40.5	1.0	-53.0	-13.0	-40.0	
5.5575	-4.7	V	3.0	40.8	1.0	-44.5	-13.0	-31.5	
7.4100	0.2	V	3.0	40.8	1.0	-39.6	-13.0	-26.6	
3.7050	-16.1	H	3.0	40.5	1.0	-55.6	-13.0	-42.6	
5.5575	-11.8	H	3.0	40.8	1.0	-51.6	-13.0	-38.6	
7.4100	-8.9	H	3.0	40.8	1.0	-48.7	-13.0	-35.7	
Mid Channel (1880MHz)									
3.7600	-12.7	V	3.0	40.5	1.0	-52.2	-13.0	-39.2	
5.6400	-4.5	V	3.0	40.8	1.0	-44.3	-13.0	-31.3	
7.5200	1.3	V	3.0	40.7	1.0	-38.4	-13.0	-25.4	
3.7600	-11.5	H	3.0	40.5	1.0	-51.0	-13.0	-38.0	
5.6400	-10.3	H	3.0	40.8	1.0	-50.1	-13.0	-37.1	
7.5200	-5.4	H	3.0	40.7	1.0	-45.2	-13.0	-32.2	
High Channel (1907.5MHz)									
3.8150	-13.2	V	3.0	40.6	1.0	-52.8	-13.0	-39.8	
5.7225	-3.0	V	3.0	40.8	1.0	-42.8	-13.0	-29.8	
7.6300	-0.6	V	3.0	40.7	1.0	-40.3	-13.0	-27.3	
3.8150	-14.8	H	3.0	40.6	1.0	-54.4	-13.0	-41.4	
5.7225	-9.1	H	3.0	40.8	1.0	-48.9	-13.0	-35.9	
7.6300	-10.4	H	3.0	40.7	1.0	-50.1	-13.0	-37.1	

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

LTE Band 2 5MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-02-16
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 2, 5MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC 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 Channel (1852.5MHz)									
3.7050	-12.6	V	3.0	40.5	1.0	-52.1	-13.0	-39.1	
5.5575	-4.3	V	3.0	40.8	1.0	-44.1	-13.0	-31.1	
7.4100	0.4	V	3.0	40.8	1.0	-39.4	-13.0	-26.4	
3.7050	-15.6	H	3.0	40.5	1.0	-55.1	-13.0	-42.1	
5.5575	-12.0	H	3.0	40.8	1.0	-51.8	-13.0	-38.8	
7.4100	-7.7	H	3.0	40.8	1.0	-47.5	-13.0	-34.5	
Mid Channel (1880MHz)									
3.7600	-12.0	V	3.0	40.5	1.0	-51.5	-13.0	-38.5	
5.6400	-3.8	V	3.0	40.8	1.0	-43.6	-13.0	-30.6	
7.5200	1.9	V	3.0	40.7	1.0	-37.9	-13.0	-24.9	
3.7600	-11.4	H	3.0	40.5	1.0	-50.9	-13.0	-37.9	
5.6400	-10.1	H	3.0	40.8	1.0	-49.9	-13.0	-36.9	
7.5200	-5.6	H	3.0	40.7	1.0	-45.3	-13.0	-32.3	
High Channel (1907.5MHz)									
3.8150	-14.1	V	3.0	40.6	1.0	-53.6	-13.0	-40.6	
5.7225	-4.0	V	3.0	40.8	1.0	-43.8	-13.0	-30.8	
7.6300	-0.6	V	3.0	40.7	1.0	-40.2	-13.0	-27.2	
3.8150	-15.9	H	3.0	40.6	1.0	-55.5	-13.0	-42.5	
5.7225	-9.5	H	3.0	40.8	1.0	-49.3	-13.0	-36.3	
7.6300	-10.9	H	3.0	40.7	1.0	-50.6	-13.0	-37.6	

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

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LTE
Band 2
3MHz
QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-02-16
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 2, 3MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC 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 Channel (1851.5MHz)									
3.7030	-12.0	V	3.0	40.5	1.0	-51.5	-13.0	-38.5	
5.5545	-4.1	V	3.0	40.8	1.0	-44.0	-13.0	-31.0	
7.4060	0.8	V	3.0	40.8	1.0	-38.9	-13.0	-25.9	
3.7030	-14.9	H	3.0	40.5	1.0	-54.4	-13.0	-41.4	
5.5545	-8.3	H	3.0	40.8	1.0	-48.2	-13.0	-35.2	
7.4060	-7.8	H	3.0	40.8	1.0	-47.6	-13.0	-34.6	
Mid Channel (1880MHz)									
3.7600	-9.2	V	3.0	40.5	1.0	-48.8	-13.0	-35.8	
5.6400	-1.8	V	3.0	40.8	1.0	-41.6	-13.0	-28.6	
7.5200	4.6	V	3.0	40.7	1.0	-35.1	-13.0	-22.1	
3.7600	-13.5	H	3.0	40.5	1.0	-53.0	-13.0	-40.0	
5.6400	-7.6	H	3.0	40.8	1.0	-47.4	-13.0	-34.4	
7.5200	-4.1	H	3.0	40.7	1.0	-43.8	-13.0	-30.8	
High Channel (1908.5MHz)									
3.8170	-16.5	V	3.0	40.6	1.0	-56.1	-13.0	-43.1	
5.7255	-0.7	V	3.0	40.8	1.0	-40.4	-13.0	-27.4	
7.6340	2.3	V	3.0	40.7	1.0	-37.3	-13.0	-24.3	
3.8170	-15.4	H	3.0	40.6	1.0	-55.0	-13.0	-42.0	
5.7255	-8.0	H	3.0	40.8	1.0	-47.8	-13.0	-34.8	
7.6340	-5.3	H	3.0	40.7	1.0	-44.9	-13.0	-31.9	

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

LTE
Band 2
3MHz
16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-02-16
Test Engineer: JH Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 2, 3MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC 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 Channel (1851.5MHz)									
3.703	-12.7	V	3.0	40.5	1.0	-52.2	-13.0	-39.2	
5.555	-3.6	V	3.0	40.8	1.0	-43.5	-13.0	-30.5	
7.406	1.6	V	3.0	40.8	1.0	-38.1	-13.0	-25.1	
3.703	-15.4	H	3.0	40.5	1.0	-54.9	-13.0	-41.9	
5.555	-8.6	H	3.0	40.8	1.0	-48.5	-13.0	-35.5	
7.406	-7.0	H	3.0	40.8	1.0	-46.8	-13.0	-33.8	
Mid Channel (1880MHz)									
3.760	-9.0	V	3.0	40.5	1.0	-48.6	-13.0	-35.6	
5.640	-2.0	V	3.0	40.8	1.0	-41.8	-13.0	-28.8	
7.520	4.8	V	3.0	40.7	1.0	-34.9	-13.0	-21.9	
3.760	-14.1	H	3.0	40.5	1.0	-53.7	-13.0	-40.7	
5.640	-7.8	H	3.0	40.8	1.0	-47.6	-13.0	-34.6	
7.520	-4.4	H	3.0	40.7	1.0	-44.1	-13.0	-31.1	
High Channel (1908.5MHz)									
3.817	-17.3	V	3.0	40.6	1.0	-56.9	-13.0	-43.9	
5.726	-0.3	V	3.0	40.8	1.0	-40.0	-13.0	-27.0	
7.634	4.5	V	3.0	40.7	1.0	-35.1	-13.0	-22.1	
3.817	-14.4	H	3.0	40.6	1.0	-54.0	-13.0	-41.0	
5.726	-7.5	H	3.0	40.8	1.0	-47.3	-13.0	-34.3	
7.634	-4.4	H	3.0	40.7	1.0	-44.1	-13.0	-31.1	

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

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LTE Band 2 1.4MHz QPSK

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-01-16
Test Engineer: Chan Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 2, 1.4MHz BW,QPSK

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC 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 Channel (1850.7MHz)									
3.7014	-10.8	V	3.0	40.5	1.0	-50.2	-13.0	-37.2	
5.5521	-2.9	V	3.0	40.8	1.0	-42.7	-13.0	-29.7	
7.4028	2.1	V	3.0	40.8	1.0	-37.7	-13.0	-24.7	
3.7014	-10.4	H	3.0	40.5	1.0	-49.9	-13.0	-36.9	
5.5521	-6.6	H	3.0	40.8	1.0	-46.4	-13.0	-33.4	
7.4028	-5.8	H	3.0	40.8	1.0	-45.6	-13.0	-32.6	
Mid Channel (1880MHz)									
3.7600	-8.7	V	3.0	40.5	1.0	-48.3	-13.0	-35.3	
5.6400	-1.8	V	3.0	40.8	1.0	-41.6	-13.0	-28.6	
7.5200	4.9	V	3.0	40.7	1.0	-34.8	-13.0	-21.8	
3.7600	-9.3	H	3.0	40.5	1.0	-48.8	-13.0	-35.8	
5.6400	-6.6	H	3.0	40.8	1.0	-46.4	-13.0	-33.4	
7.5200	-4.1	H	3.0	40.7	1.0	-43.8	-13.0	-30.8	
High Channel (1909.3MHz)									
3.8186	-11.2	V	3.0	40.6	1.0	-50.8	-13.0	-37.8	
5.7279	-0.4	V	3.0	40.8	1.0	-40.2	-13.0	-27.2	
7.6372	9.1	V	3.0	40.7	1.0	-30.6	-13.0	-17.6	
3.8186	-8.2	H	3.0	40.6	1.0	-47.8	-13.0	-34.8	
5.7279	-5.1	H	3.0	40.8	1.0	-44.9	-13.0	-31.9	
7.6372	1.4	H	3.0	40.7	1.0	-38.3	-13.0	-25.3	

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

LTE Band 2 1.4MHz 16QAM

UL Korea, Ltd Suwon Laboratory
Above 1GHz High Frequency Substitution Measurement

Company: Wisol
Project #: 16K23790
Date: 09-01-16
Test Engineer: Chan Park
Configuration: EUT / X-Position
Mode: TX, LTE BAND 2, 1.4MHz BW,16QAM

Chamber	Pre-amplifer	Filter	Limit
Chamber 2	AFS42	Filter 1	FCC 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 Channel (1850.7MHz)									
3.7014	-10.1	V	3.0	40.5	1.0	-49.6	-13.0	-36.6	
5.5521	-2.7	V	3.0	40.8	1.0	-42.6	-13.0	-29.6	
7.4028	2.5	V	3.0	40.8	1.0	-37.3	-13.0	-24.3	
3.7014	-9.7	H	3.0	40.5	1.0	-49.2	-13.0	-36.2	
5.5521	-6.5	H	3.0	40.8	1.0	-46.4	-13.0	-33.4	
7.4028	-5.1	H	3.0	40.8	1.0	-44.9	-13.0	-31.9	
Mid Channel (1880MHz)									
3.7600	-8.5	V	3.0	40.5	1.0	-48.0	-13.0	-35.0	
5.6400	-1.4	V	3.0	40.8	1.0	-41.2	-13.0	-28.2	
7.5200	5.5	V	3.0	40.7	1.0	-34.3	-13.0	-21.3	
3.7600	-8.9	H	3.0	40.5	1.0	-48.5	-13.0	-35.5	
5.6400	-6.4	H	3.0	40.8	1.0	-46.2	-13.0	-33.2	
7.5200	-3.4	H	3.0	40.7	1.0	-43.1	-13.0	-30.1	
High Channel (1909.3MHz)									
3.8186	-11.9	V	3.0	40.6	1.0	-51.5	-13.0	-38.5	
5.7279	-0.5	V	3.0	40.8	1.0	-40.3	-13.0	-27.3	
7.6372	7.2	V	3.0	40.7	1.0	-32.4	-13.0	-19.4	
3.8186	-8.5	H	3.0	40.6	1.0	-48.1	-13.0	-35.1	
5.7279	-5.2	H	3.0	40.8	1.0	-45.0	-13.0	-32.0	
7.6372	-0.2	H	3.0	40.7	1.0	-39.9	-13.0	-26.9	

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

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_22/24/27
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