RADIATED SPURIOUS EMISSIONS PORTIONS OF FCC CFR47 PART 27L CERTIFICATION TEST REPORT

FOR

10.1” TABLET WITH LTE/CELLULAR AND WLAN RADIO WITH BLUETOOTH AND WLAN

MODEL NUMBER: TP00043A

FCC ID: PU5-TP00043ASF

REPORT NUMBER: 12U14463-2, REVISION A

ISSUE DATE: NOVEMBER 7, 2012

Prepared for

WISTRON CORPORATION
21F, 88, SEC. 1, HSIN TAI WU RD., Hsichih Dist,
New Taipei City 221, TAIWAN R.O.C

Prepared by

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NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
---	09/10/12	Initial Issue	T. Chan
A	11/07/12	Added 5Mhz Channel Bandwidth	T. Chan

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: WISTRON CORPORATION
21F, 88, SEC. 1, HSIN TAI WU RD., Hsichih Dist,
New Taipei City 221, TAIWAN R.O.C

EUT DESCRIPTION: 10.1" TABLET WITH LTE/CELLULAR AND WLAN RADIO WITH BLUETOOTH AND WLAN

MODEL: TP00043A

SERIAL NUMBER: R9-R4PMF

DATE TESTED: SEPTEMBER 26 TO NOVEMBER 06, 2012

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
FCC CFR47 PART 27L	Pass

UL CCS tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For UL CCS By:

THU CHAN
ENGINEERING MANAGER
UL CCS

Tested By:

MENGISTU MEKURIA
EMC ENGINEER
UL CCS

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, and Part 27.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://www.ccsemc.com.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)

36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a 10.1" Tablet with LTE/WCDMA/HSDPA/HSUPA Radio with Bluetooth and WLAN functionality. The EUT is manufactured by Lenovo US.

LTE/WCDMA/HSDPA/HSUPA Radio is Sierra Model: EM7700.

Antenna tested:

Main Antenna	0C10069AA (Amphenol)
	0C10070AA (Foxconn)
Aux Antenna (Rx only)	0C10071AA (Amphenol)
	0C10072AA (Foxconn)

5.2. MAXIMUM OUTPUT POWER

The RF radiated measurement with maximum peak ERP / EIRP output powers are as follows:

Part 27 LTE Band 4 MODE (5.0 MHz BANDWIDTH)			
Frequency range (MHz)	Modulation	EIRP(Peak)	
		dBm	mW
1712.5 - 1752.5	QPSK	29.29	849.2
	16QAM	28.69	739.6
Part 27 LTE Band 4 MODE (10.0 MHz BANDWIDTH)			
Frequency range (MHz)	Modulation	EIRP(Peak)	
		dBm	mW
1715 - 1750	QPSK	29.27	845.3
	16QAM	28.37	687.1

Part 27 LTE Band 17 MODE (5.0 MHz BANDWIDTH)			
Frequency range (MHz)	Modulation	ERP	
		dBm	mW
706.5 - 713.5	QPSK	24.42	276.7
	16QAM	23.60	229.1
Part 27 LTE Band 17 MODE (10.0 MHz BANDWIDTH)			
Frequency range (MHz)	Modulation	ERP	
		dBm	mW
710.0	QPSK	23.41	219.3
	16QAM	22.71	186.6

5.3. SOFTWARE AND FIRMWARE

The EUT driver software installed during testing was Broadcom version 5.93.97.48.

The test utility software used during testing was Broadcom BT test mode tool, Win8DUTApp utility.

The EUT is linked with CMW500 Test Set.

5.4. WORST-CASE CONFIGURATION AND MODE

Worst-Case is emission with highest power. Since the EUT is a portable device. It has been investigated on X, Y and Z position, and the worst case among X, Y, and Z with Headset and an AC Adapter. After the investigations the worst-case was turned out to be X-position without headset and an AC Adapter for both band 4 and band 17.

5.1. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter (EUT)	LENOVO	ADP-10AW B CC:AA	11S45N0271Z1ZLD52V0XE	DoC
Headset	N/A	N/A	NA	NA

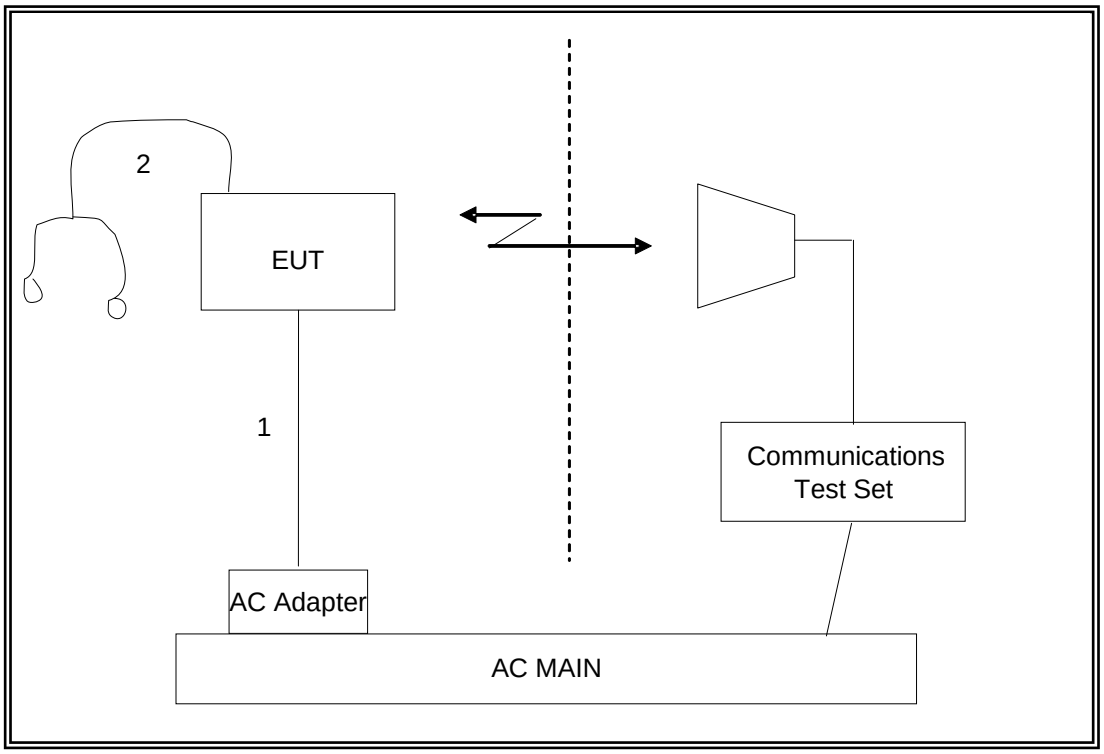
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC Input	1	Micro-USB	Shielded	1.0 m	NA
2	Audio	1	3.5 mm Audio Jack	Un-Shielded	1.2 m	Volume control on cable

TEST SETUP

The EUT is a stand-alone device. The Communication test set exercised the EUT.

SETUP DIAGRAM FOR RF RADIATED TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C00986	03/22/13
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/13
Antenna, Horn, 18 GHz	EMCO	3115	C00943	CNR
Antenna, Horn, 26.5 GHz	Agilent / HP	SWH-28	C01015	04/23/13
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01011	03/23/13
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	11/07/12
Wideband Communication Test Set	R & S	CMW 500		06/28/13
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689`	CNR
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR
Vector signal generator, 6 GHz	Agilent / HP	E4438C	None	07/06/13
Antenna, Tuned Dipole 400~1000 MHz	ETS	3121C DB4	C00993	07/16/13

7. RADIATED TEST RESULTS

7.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046 and §27.50

LIMITS:

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27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.

27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.

27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

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.

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17

- LTE Band 4
- LTE Band 17

RESULTS

EIRP LTE Band 4

Mode	Band (MHz)	f (MHz)	EIRP(Peak)	
			dBm	mW
5.0 MHZ BAND QPSK	5.0	1712.5	28.03	635.33
		1732.5	**29.29**	849.18
		1752.5	28.97	788.86
5.0 MHZ BAND 16QAM		1712.5	27.23	528.45
		1732.5	**28.69**	739.61
		1752.5	28.17	656.15
10.0 MHZ BAND QPSK	10.0	1715.0	28.23	665.27
		1732.5	28.69	739.61
		1750.0	**29.27**	845.28
10.0 MHZ BAND 16QAM		1715.0	27.43	553.35
		1732.5	27.69	587.49
		1750.0	**28.37**	687.07

ERP LTE Band 17

Mode	Banmd (MHz)	f (MHz)	ERP	
			dBm	mW
5.0 MHZ BAND QPSK	5.0	706.5	23.70	234.42
		710.5	23.71	234.96
		713.5	**24.42**	276.69
5.0 MHZ BAND 16QAM		706.5	23.00	199.53
		710.5	22.91	195.43
		713.5	**23.60**	229.09
10.0 MHZ BAND QPSK	10.0	710.0	**23.41**	219.28
				1.00
10.0 MHZ BAND 16QAM		710.0	**22.71**	186.64
				1.00

LTE QPSK, Band 4 (5MHz Bandwidth)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Wistron
Project #: 12U14463
Date: 10/26/12
Test Engineer: Chin Pang
Configuration: EUT Only.
Mode: TX, LTE BAND 4_5 MHz BW_QPSK_RB1/ 0 MODE
Peak

Test Equipment:
Receiving: Horn T59, and Chamber A 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
1.7125	7.4	V	0.85	8.38	14.93	30.0	-15.1	
1.7125	20.4	H	0.85	8.48	28.03	30.0	-2.0	
1.7325	8.5	V	0.85	8.27	15.92	30.0	-14.1	
1.7325	21.8	H	0.85	8.34	29.29	30.0	-0.7	
1.7525	8.4	V	0.85	8.17	15.72	30.0	-14.3	
1.7525	21.6	H	0.85	8.22	28.97	30.0	-1.0	

Rev. 1.24.7

LTE 16QAM, Band 4 (5MHz Bandwidth)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Wistron
Project #: 12U14463
Date: 10/26/12
Test Engineer: Chin Pang
Configuration: EUT Only.
Mode: TX, LTE BAND 4_5 MHz BW_16QAM_RB1/ 0 MODE
Peak

Test Equipment:
Receiving: Horn T59, and Chamber A 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
1.7125	6.7	V	0.85	8.38	14.23	30.0	-15.8	
1.7125	19.6	H	0.85	8.48	27.23	30.0	-2.8	
1.7325	7.7	V	0.85	8.27	15.12	30.0	-14.9	
1.7325	21.2	H	0.85	8.34	28.69	30.0	-1.3	
1.7525	7.7	V	0.85	8.17	15.02	30.0	-15.0	
1.7525	20.8	H	0.85	8.22	28.17	30.0	-1.8	

Rev. 1.24.7

LTE QPSK, Band 4 (10MHz Bandwidth)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Wistron
Project #: 12U14463
Date: 10/26/12
Test Engineer: Chin Pang
Configuration: EUT Only.
Mode: TX, LTE BAND 4_10 MHz BW_QPSK_RB1/ 0 MODE
Peak

Test Equipment:
Receiving: Horn T59, and Chamber A 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
1.7125	7.1	V	0.85	8.38	14.63	30.0	-15.4	
1.7125	20.6	H	0.85	8.48	28.23	30.0	-1.8	
1.7325	8.5	V	0.85	8.27	15.92	30.0	-14.1	
1.7325	21.2	H	0.85	8.34	28.69	30.0	-1.3	
1.7525	7.9	V	0.85	8.17	15.22	30.0	-14.8	
1.7525	21.9	H	0.85	8.22	29.27	30.0	-0.7	

Rev. 1.24.7

LTE 16QAM, Band 4 (10MHz Bandwidth)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Wistron
Project #: 12U14463
Date: 10/26/12
Test Engineer: Chin Pang
Configuration: EUT Only.
Mode: TX, LTE BAND 4_10 MHz BW_16QAM_RB1/ 0 MODE
Peak

Test Equipment:
Receiving: Horn T59, and Chamber A 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
1.7125	6.2	V	0.85	8.38	13.73	30.0	-16.3	
1.7125	19.8	H	0.85	8.48	27.43	30.0	-2.6	
1.7325	7.7	V	0.85	8.27	15.12	30.0	-14.9	
1.7325	20.2	H	0.85	8.34	27.69	30.0	-2.3	
1.7525	7.2	V	0.85	8.17	14.52	30.0	-15.5	
1.7525	21.0	H	0.85	8.22	28.37	30.0	-1.6	

Rev. 1.24.7

LTE QPSK Band 17 (5MHz Bandwidth)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company:	WINSRTON
Project #:	12U14463
Date:	11/05/12
Test Engineer:	CHIN PANG
Configuration:	EUT WITH AC ADAPTER
Mode:	TX, LTE band 17, 5.0MHz BW_QPSK MODE
	Peak

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
706.50	24.20	V	0.5	0.0	23.70	34.8	-11.1	
706.50	19.10	H	0.5	0.0	18.60	34.8	-16.2	
710.00	24.21	V	0.5	0.0	23.71	34.8	-11.1	
710.00	19.12	H	0.5	0.0	18.62	34.8	-16.2	
713.50	24.92	V	0.5	0.0	24.42	34.8	-10.4	
713.50	19.70	H	0.5	0.0	19.20	34.8	-15.6	

Rev. 3.17.11

LTE 16QAM Band 17 (5MHz Bandwidth)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company:	WINSRTON
Project #:	12U14463
Date:	11/05/12
Test Engineer:	CHIN PANG
Configuration:	EUT WITH AC ADAPTER
Mode:	TX, LTE band 17, 5.0MHz BW_16QAM MODE
	Peak

Test Equipment:
Receiving: Sunol T243, and Chamber B 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
706.50	23.50	V	0.5	0.0	23.00	34.8	-11.8	
706.50	18.40	H	0.5	0.0	17.90	34.8	-16.9	
710.00	23.41	V	0.5	0.0	22.91	34.8	-11.9	
710.00	18.32	H	0.5	0.0	17.82	34.8	-17.0	
713.50	24.10	V	0.5	0.0	23.60	34.8	-11.2	
713.50	18.90	H	0.5	0.0	18.40	34.8	-16.4	

Rev. 3.17.11

LTE QPSK Band 17 (10MHz Bandwidth)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company:	Wistron Corporation
Project #:	12U14463
Date:	11/05/12
Test Engineer:	MENGSITU MEKURIA
Configuration:	EUT only
Mode:	TX, LTE BAND 17, QPSK
	10MHz BW, Peak

Test Equipment:
Receiving: Sunol T130, and 3m Chamber 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
710.00	23.91	V	0.5	0.0	23.41	34.8	-11.4	
710.00	19.12	H	0.5	0.0	18.62	34.8	-16.2	

Rev. 3.17.11

LTE 16QAM Band 17 (10MHz Bandwidth)

High Frequency Substitution Measurement
Compliance Certification Services Chamber B

Company:	Wistron Corporation
Project #:	12U14463
Date:	11.5/12
Test Engineer:	MENGSITU MEKURIA
Configuration:	EUT only
Mode:	TX, LTE BAND 17, 16QAM 10MHz BW, Peak

Test Equipment:
Receiving: Sunol T130, and 3m Chamber 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
710.00	23.21	V	0.5	0.0	22.71	34.8	-12.1	
710.00	18.42	H	0.5	0.0	17.92	34.8	-16.9	

Rev. 3.17.11

7.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §27.53

LIMIT

§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 4 and 17

RESULTS

LTE QPSK Band 4 (5MHz Bandwidth)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Wistron
Project #: 12U14463
Date: 11/06/12
Test Engineer: MENGISTU MEKURIA
Configuration: EUT with Headset and AC Adapter
Mode: BAND 4_5 MHz BW_ QPSK MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	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, 1712.50MHz									
3.422	-0.3	V	3.0	35.5	1.0	-34.8	-13.0	-21.8	
5.131	-6.6	V	3.0	35.3	1.0	-40.9	-13.0	-27.9	
6.719	-12.2	V	3.0	35.7	1.0	-46.9	-13.0	-33.9	
3.422	4.8	H	3.0	35.5	1.0	-29.7	-13.0	-16.7	
5.130	-6.2	H	3.0	35.3	1.0	-40.5	-13.0	-27.5	
6.719	-10.1	H	3.0	35.7	1.0	-44.7	-13.0	-31.7	
Mid Ch, 1732.50MHz									
3.464	1.2	V	3.0	35.5	1.0	-33.2	-13.0	-20.2	
5.193	-5.4	V	3.0	35.3	1.0	-39.8	-13.0	-26.8	
6.999	-7.8	V	3.0	35.7	1.0	-42.5	-13.0	-29.5	
3.464	2.6	H	3.0	35.5	1.0	-31.9	-13.0	-18.9	
5.193	-5.9	H	3.0	35.3	1.0	-40.2	-13.0	-27.2	
6.999	-6.8	H	3.0	35.7	1.0	-41.6	-13.0	-28.6	
High Ch, 1752.50MHz									
3.505	-3.5	V	3.0	35.4	1.0	-37.9	-13.0	-24.9	
5.258	-7.8	V	3.0	35.3	1.0	-42.1	-13.0	-29.1	
7.010	-11.9	V	3.0	35.7	1.0	-46.7	-13.0	-33.7	
3.505	3.2	H	3.0	35.4	1.0	-31.2	-13.0	-18.2	
5.258	-8.6	H	3.0	35.3	1.0	-43.0	-13.0	-30.0	
7.010	-8.3	H	3.0	35.7	1.0	-43.1	-13.0	-30.1	

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

EIRP LTE 16QAM Band 4 (5MHz Bandwidth)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Wistron
Project #: 12U14463
Date: 11/06/12
Test Engineer: MENGISTU MEKURIA
Configuration: EUT with Headset and AC Adapter
Mode: BAND 4_5 MHz BW_ 16QAM MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	T144 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, 1712.50MHz									
3.422	-1.1	V	3.0	37.0	1.0	-37.1	-13.0	-24.1	
5.131	-8.2	V	3.0	36.3	1.0	-43.4	-13.0	-30.4	
6.845	-12.8	V	3.0	36.5	1.0	-48.3	-13.0	-35.3	
3.422	5.9	H	3.0	37.0	1.0	-30.1	-13.0	-17.1	
5.130	-3.2	H	3.0	36.3	1.0	-38.5	-13.0	-25.5	
6.719	-7.6	H	3.0	36.4	1.0	-43.0	-13.0	-30.0	
Mid_Ch, 1732.50MHz									
3.464	-3.6	V	3.0	37.0	1.0	-39.6	-13.0	-26.6	
5.193	-8.4	V	3.0	36.2	1.0	-43.6	-13.0	-30.6	
6.999	-12.8	V	3.0	36.5	1.0	-48.2	-13.0	-35.2	
3.464	3.5	H	3.0	37.0	1.0	-32.5	-13.0	-19.5	
5.193	8.4	H	3.0	36.2	1.0	-26.9	-13.0	-13.9	
6.999	-2.5	H	3.0	36.5	1.0	-38.0	-13.0	-25.0	
High Ch, 1752.50MHz									
3.505	-2.3	V	3.0	37.0	1.0	-38.3	-13.0	-25.3	
5.258	-7.3	V	3.0	36.3	1.0	-42.6	-13.0	-29.6	
7.010	-13.3	V	3.0	36.5	1.0	-48.8	-13.0	-35.8	
3.505	5.4	H	3.0	37.0	1.0	-30.6	-13.0	-17.6	
5.258	-7.3	H	3.0	36.3	1.0	-42.6	-13.0	-29.6	
7.010	-7.7	H	3.0	36.5	1.0	-43.2	-13.0	-30.2	

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

EIRP LTE QPSK Band 4 (10 MHz Bandwidth)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Wistron
Project #:	12U14463
Date:	11/07/12
Test Engineer:	Mengistu Mekuria
Configuration:	EUT with Headset and AC Adapter
Mode:	BAND 4_10 MHz BW_ QPSK MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	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, 1715.00MHz									
3.421	-1.0	V	3.0	35.5	1.0	-35.5	-13.0	-22.5	
5.131	-6.8	V	3.0	35.3	1.0	-41.1	-13.0	-28.1	
6.842	-13.2	V	3.0	35.7	1.0	-47.9	-13.0	-34.9	
3.421	5.4	H	3.0	35.5	1.0	-29.1	-13.0	-16.1	
5.131	-6.3	H	3.0	35.3	1.0	-40.6	-13.0	-27.6	
6.842	-9.4	H	3.0	35.7	1.0	-44.1	-13.0	-31.1	
Mid Ch, 1732.50MHz									
3.456	-0.4	V	3.0	35.5	1.0	-34.9	-13.0	-21.9	
5.184	-7.5	V	3.0	35.3	1.0	-41.8	-13.0	-28.8	
6.913	-13.7	V	3.0	35.7	1.0	-48.4	-13.0	-35.4	
3.456	6.7	H	3.0	35.5	1.0	-27.8	-13.0	-14.8	
5.184	-7.9	H	3.0	35.3	1.0	-42.2	-13.0	-29.2	
6.913	-8.7	H	3.0	35.7	1.0	-43.4	-13.0	-30.4	
High Ch, 1750.00MHz									
3.491	2.0	V	3.0	35.5	1.0	-32.4	-13.0	-19.4	
5.237	-4.7	V	3.0	35.3	1.0	-39.1	-13.0	-26.1	
6.983	-13.0	V	3.0	35.7	1.0	-47.7	-13.0	-34.7	
3.491	8.7	H	3.0	35.5	1.0	-25.8	-13.0	-12.8	
5.237	-7.9	H	3.0	35.3	1.0	-42.2	-13.0	-29.2	
6.983	-8.2	H	3.0	35.7	1.0	-43.0	-13.0	-30.0	

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

EIRP LTE 16QAM Band 4 (10 MHz Bandwidth)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Wistron
Project #: 12U14463
Date: 11/06/12
Test Engineer: Mengistu Mekuria
Configuration: EUT with Headset and AC Adapter
Mode: BAND 4_10 MHz BW_ 16QAM MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	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, 1715MHz									
3.421	-1.6	V	3.0	35.5	1.0	-36.1	-13.0	-23.1	
5.131	-8.0	V	3.0	35.3	1.0	-42.3	-13.0	-29.3	
6.842	-13.5	V	3.0	35.7	1.0	-48.2	-13.0	-35.2	
3.421	5.2	H	3.0	35.5	1.0	-29.3	-13.0	-16.3	
5.131	-4.7	H	3.0	35.3	1.0	-39.0	-13.0	-26.0	
6.842	-7.9	H	3.0	35.7	1.0	-42.6	-13.0	-29.6	
Mid Ch, 1732.5MHz									
3.456	-4.4	V	3.0	35.5	1.0	-38.8	-13.0	-25.8	
5.184	-11.2	V	3.0	35.3	1.0	-45.5	-13.0	-32.5	
6.913	-14.2	V	3.0	35.7	1.0	-48.9	-13.0	-35.9	
3.456	5.9	H	3.0	35.5	1.0	-28.6	-13.0	-15.6	
5.184	-4.1	H	3.0	35.3	1.0	-38.4	-13.0	-25.4	
6.913	-7.6	H	3.0	35.7	1.0	-42.4	-13.0	-29.4	
High Ch, 1750MHz									
3.491	-0.7	V	3.0	35.5	1.0	-35.2	-13.0	-22.2	
5.237	-10.0	V	3.0	35.3	1.0	-44.4	-13.0	-31.4	
6.983	-13.4	V	3.0	35.7	1.0	-48.1	-13.0	-35.1	
3.491	8.3	H	3.0	35.5	1.0	-26.2	-13.0	-13.2	
5.237	-3.6	H	3.0	35.3	1.0	-38.0	-13.0	-25.0	
6.983	-7.1	H	3.0	35.7	1.0	-41.9	-13.0	-28.9	

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

EIRP LTE QPSK Band 17 (5MHz Bandwidth)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Wistron
Project #:	12U14463
Date:	11/06/12
Test Engineer:	Mengistu Mekuria
Configuration:	EUT with Headset and AC Adapter
Mode:	BAND 17_5 MHz BW_ QPSK MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	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
LOW CH (706.5 MHz)									
1.413	-14.4	V	3.0	35.8	1.0	-49.1	-13.0	-36.1	
2.120	-11.5	V	3.0	35.4	1.0	-45.9	-13.0	-32.9	
2.826	-16.0	V	3.0	35.6	1.0	-50.5	-13.0	-37.5	
1.413	-15.0	H	3.0	35.8	1.0	-49.8	-13.0	-36.8	
2.120	-9.6	H	3.0	35.4	1.0	-43.9	-13.0	-30.9	
2.826	-20.8	H	3.0	35.6	1.0	-55.4	-13.0	-42.4	
3.533	-17.8	H	3.0	35.4	1.0	-52.3	-13.0	-39.3	
MID CH (710.0 MHx)									
1.420	-11.0	V	3.0	35.7	1.0	-45.7	-13.0	-32.7	
2.130	-12.1	V	3.0	35.4	1.0	-46.4	-13.0	-33.4	
2.840	-14.4	V	3.0	35.6	1.0	-49.0	-13.0	-36.0	
1.420	-12.5	H	3.0	35.7	1.0	-47.3	-13.0	-34.3	
2.130	-11.2	H	3.0	35.4	1.0	-45.6	-13.0	-32.6	
2.840	-22.9	H	3.0	35.6	1.0	-57.5	-13.0	-44.5	
3.550	-18.8	H	3.0	35.4	1.0	-53.2	-13.0	-40.2	
HIGH CHANNEL(713.5 MHz)									
1.505	-12.9	V	3.0	35.6	1.0	-47.5	-13.0	-34.5	
2.258	-11.7	V	3.0	35.4	1.0	-46.1	-13.0	-33.1	
3.010	-13.4	V	3.0	35.7	1.0	-48.0	-13.0	-35.0	
1.505	-9.9	H	3.0	35.6	1.0	-44.5	-13.0	-31.5	
2.258	-11.6	H	3.0	35.4	1.0	-46.0	-13.0	-33.0	
3.010	-19.4	H	3.0	35.7	1.0	-54.1	-13.0	-41.1	
3.763	-17.4	H	3.0	35.3	1.0	-51.8	-13.0	-38.8	

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

LTE 16QAM Band 17 (5MHz Bandwidth)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Wistron
Project #: 12U14463
Date: 11/06/12
Test Engineer: Mengistu Mekuria
Configuration: EUT with Headset and AC Adapter
Mode: BAND 17_5 MHz BW_ 16QAM MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	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
LOW CH (706.5 MHz)									
1.413	-15.6	V	3.0	35.8	1.0	-50.3	-13.0	-37.3	
2.120	-11.8	V	3.0	35.4	1.0	-46.2	-13.0	-33.2	
2.826	-14.3	V	3.0	35.6	1.0	-48.8	-13.0	-35.8	
1.413	-14.7	H	3.0	35.8	1.0	-49.5	-13.0	-36.5	
2.120	-9.1	H	3.0	35.4	1.0	-43.5	-13.0	-30.5	
2.826	-20.1	H	3.0	35.6	1.0	-54.7	-13.0	-41.7	
3.533	-18.5	H	3.0	35.4	1.0	-52.9	-13.0	-39.9	
MID CH (710.0 MHx)									
1.420	-13.3	V	3.0	35.7	1.0	-48.1	-13.0	-35.1	
2.130	-11.6	V	3.0	35.4	1.0	-45.9	-13.0	-32.9	
2.840	-16.8	V	3.0	35.6	1.0	-51.4	-13.0	-38.4	
1.420	-13.6	H	3.0	35.7	1.0	-48.3	-13.0	-35.3	
2.130	-10.7	H	3.0	35.4	1.0	-45.1	-13.0	-32.1	
2.840	-22.7	H	3.0	35.6	1.0	-57.3	-13.0	-44.3	
3.550	-20.1	H	3.0	35.4	1.0	-54.5	-13.0	-41.5	
HIGH CHANNEL(752.5 MHz)									
1.505	-13.2	V	3.0	35.6	1.0	-47.8	-13.0	-34.8	
2.258	-16.3	V	3.0	35.4	1.0	-50.7	-13.0	-37.7	
3.010	-15.1	V	3.0	35.7	1.0	-49.7	-13.0	-36.7	
1.505	-11.5	H	3.0	35.6	1.0	-46.2	-13.0	-33.2	
2.258	-11.7	H	3.0	35.4	1.0	-46.1	-13.0	-33.1	
3.010	-21.8	H	3.0	35.7	1.0	-56.5	-13.0	-43.5	
3.763	-18.4	H	3.0	35.3	1.0	-52.7	-13.0	-39.7	

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

LTE QPSK Band 17 (10MHz Bandwidth)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Wistron
Project #:	12U14463
Date:	11/06/12
Test Engineer:	Mengistu Mekuria
Configuration:	EUT with Headset and AC Adapter
Mode:	BAND 17_10 MHz BW_ QPSK MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	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
1.420	-19.0	V	3.0	35.7	1.0	-53.8	-13.0	-40.8	
2.130	-4.5	V	3.0	35.4	1.0	-38.8	-13.0	-25.8	
2.840	-20.1	V	3.0	35.6	1.0	-54.7	-13.0	-41.7	
3.550	-14.2	V	3.0	35.4	1.0	-48.6	-13.0	-35.6	
1.420	-17.2	H	3.0	35.7	1.0	-51.9	-13.0	-38.9	
2.130	0.0	H	3.0	35.4	1.0	-34.4	-13.0	-21.4	
2.840	-22.4	H	3.0	35.6	1.0	-56.9	-13.0	-43.9	
3.550	-16.3	H	3.0	35.4	1.0	-50.8	-13.0	-37.8	

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

LTE 16QAM Band 17 (10MHz Bandwidth)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Wistron
Project #:	12U14463
Date:	11/06/12
Test Engineer:	Mengistu Mekuria
Configuration:	EUT with Headset and AC Adapter
Mode:	BAND 17_10 MHz BW_ 16QAM MODE

Chamber	Pre-amplifer	Filter	Limit
5m Chamber B	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
1.420	-12.1	V	3.0	35.7	1.0	-46.9	-13.0	-33.9	
2.130	-3.8	V	3.0	35.4	1.0	-38.2	-13.0	-25.2	
2.840	-12.6	V	3.0	35.6	1.0	-47.2	-13.0	-34.2	
3.550	-7.3	V	3.0	35.4	1.0	-41.7	-13.0	-28.7	
1.420	-16.5	H	3.0	35.7	1.0	-51.2	-13.0	-38.2	
2.130	0.1	H	3.0	35.4	1.0	-34.3	-13.0	-21.3	
2.840	-21.8	H	3.0	35.6	1.0	-56.4	-13.0	-43.4	
3.550	-15.2	H	3.0	35.4	1.0	-49.6	-13.0	-36.6	

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