RADIATED SPURIOUS EMISSIONS PORTIONS OF FCC CFR47 PART 27L

CERTIFICATION TEST REPORT

FOR

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

MODEL NUMBER: TP00045A1

FCC ID: PU5-TP00045A1TS

REPORT NUMBER: 12U14546-2

ISSUE DATE: NOVEMBER 5, 2012

Prepared for

WISTRON CORPORATION
21F, 88, SEC. 1, HSIN TAI WU RD., Hsichih Dist,
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Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
---	11/05/12	Initial Issue	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:	11.6" TABLET WITH LTE/CELLULAR AND WITH BLUETOOTH AND WLAN
MODEL:	TP00045A1
SERIAL NUMBER:	2012091309472
DATE TESTED:	NOVEMBER 01 T0 04, 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 11.6" Tablet with LTE/WCDMA/HSDPA/HSUPA RADIO WITH BLUETOOTH and WLAN functionality. The EUT is manufactured by Lenovo US.

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				
Frequency range (MHz)	Band	Modulation	EIRP(PEAK)	
			dBm	mW
1712.5 - 1752.5	5 MHz	QPSK	28.63	729.5
		16QAM	27.68	586.1
1715.0 - 1750.0	10 MHz	QPSK	28.43	696.6
		16QAM	27.53	566.2

Part 27 LTE Band 17 MODE				
Frequency range (MHz)	Band	Modulation	ERP(PEAK)	
			dBm	mW
706.5 - 713.5	5 MHz	QPSK	26.64	461.3
		16QAM	25.74	375.0
710.0	10 MHz	QPSK	26.14	411.1
		16QAM	25.34	342.0

Note: The radio module is Sierra Model: EM7700

5.1. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a band gap type PIFA antenna with a maximum peak gain as follow:

Frequency (MHz)	Gain (dBi)
706.50MHz	-1.25
710.00MHz	-1.45
713.50MHz	-1.26
1712.40MHz	-2.11
1735.40MHz	-1.86
1752.60MHZ	-2.02

5.2. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 03.05.12.04AP

The EUT software installed during testing was 6.2.8437.0

The EUT is linked with CMW500 Test Set.

5.3. 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 Z-position with an AC Adapter and Y- position with headset and An AC Adapter for Band 17 and Band 4 bands respectively.

5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter (EUT)	LENOVO	ADLX45NDC2	11S45N0291Z1ZLH328AMVS	DoC
Headset	N/A	N/A	N/A	N/A

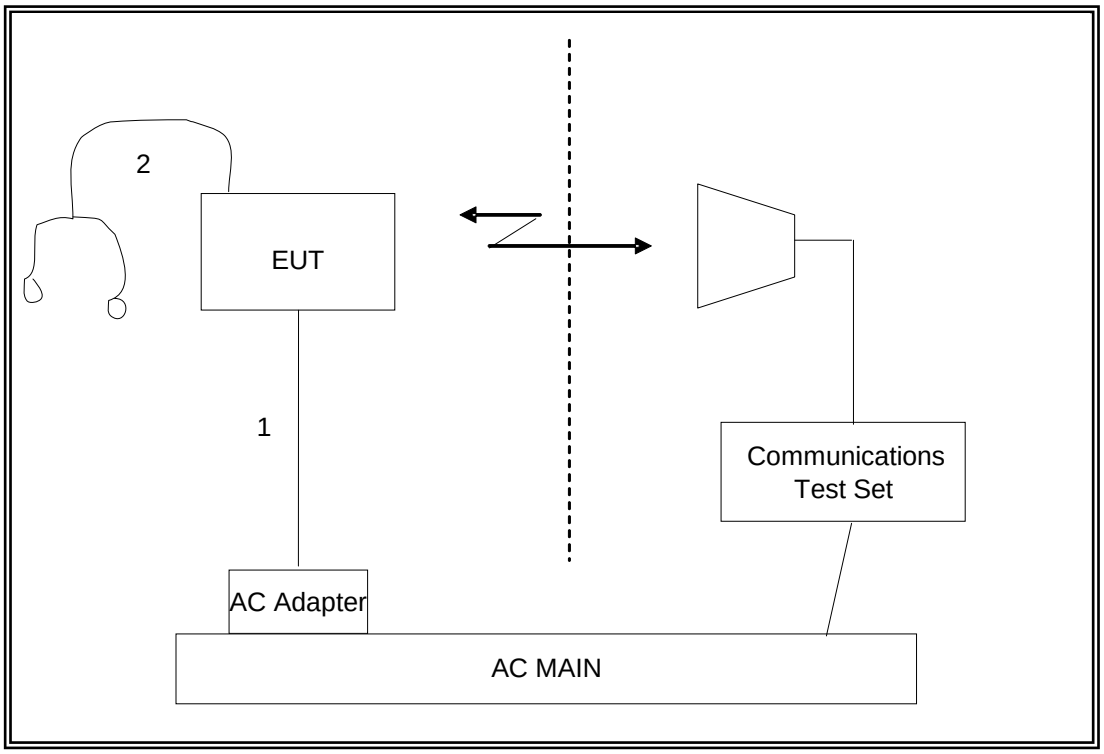
I/O CABLES

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	ETS	E4446A	C00986	03/22/13
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/13
Antenna, Horn, 18 GHz	ETS	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	None	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. ADIATED 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	f (MHz)	EIRP(Peak)	
		dBm	mW
5.0 MHZ BAND QPSK	1712.5	27.08	510.50
	1732.5	27.62	578.10
	1752.5	**28.63**	729.46
5.0 MHZ BAND 16QAM	1712.5	26.17	414.00
	1732.5	26.72	469.89
	1752.5	**27.68**	586.14
10.0 MHZ BAND QPSK	1715.0	27.28	534.56
	1732.5	28.02	633.87
	1750.0	**28.43**	696.63
10.0 MHZ BAND 16QAM	1715.0	26.38	434.51
	1732.5	27.12	515.23
	1750.0	**27.53**	566.24

ERP LTE Band 17

Mode	f (MHz)	ERP(Peak)	
		dBm	mW
5.0 MHZ BAND QPSK	706.5	26.27	423.64
	710.0	**26.64**	461.32
	713.5	25.94	392.64
5.0 MHZ BAND 16QAM	706.5	25.27	336.51
	710.0	**25.74**	374.97
	713.5	25.04	319.15
10.0 MHZ BAND QPSK	710.0	**26.14**	411.15
10.0 MHZ BAND QPSK	710.0	**25.34**	341.98

EIRP LTE QPSK, Band 4 (5MHz Bandwidth)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Wistron
Project #: 12U14546
Date: 11/01/12
Test Engineer: Chin Pang
Configuration: eut ONLY
Mode: LTE Band 4, 5MHz BW, QPSK
Peak

Test Equipment:
Receiving: Horn T217, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
1.712	9.33	V	0.70	7.71	16.34	30.0	-13.7	
1.712	20.07	H	0.70	7.71	27.08	30.0	-2.9	
1.733	9.78	V	0.70	7.76	16.84	30.0	-13.2	
1.733	20.56	H	0.70	7.76	27.62	30.0	-2.4	
1.754	11.65	V	0.70	7.81	18.76	30.0	-11.2	
1.754	21.52	H	0.70	7.81	28.63	30.0	-1.4	

Rev. 3.17.11

EIRP LTE 16QAM, Band 4 (5MHz Bandwidth)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Wistron
Project #: 12U14546
Date: 11/01/12
Test Engineer: Chin Pang
Configuration: eut ONLY
Mode: LTE Band 4, 5MHz BW, 16QAM
Peak

Test Equipment:
Receiving: Horn T217, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
1.712	8.63	V	0.70	7.71	15.64	30.0	-14.4	
1.712	19.16	H	0.70	7.71	26.17	30.0	-3.8	
1.733	9.08	V	0.70	7.76	16.14	30.0	-13.9	
1.733	19.66	H	0.70	7.76	26.72	30.0	-3.3	
1.754	10.85	V	0.70	7.81	17.96	30.0	-12.0	
1.754	20.57	H	0.70	7.81	27.68	30.0	-2.3	

Rev. 3.17.11

EIRP LTE QPSK, Band 4 (10MHz Bandwidth)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Wistron
Project #: 12U14546
Date: 11/02/12
Test Engineer: Chin Pang
Configuration: eut ONLY
Mode: LTE Band 4, 10MHz BW, QPSK
Peak

Test Equipment:
Receiving: Horn T217, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
1.715	10.63	V	0.70	7.71	17.64	30.0	-12.4	
1.715	20.27	H	0.70	7.71	27.28	30.0	-2.7	
1.733	10.78	V	0.70	7.76	17.84	30.0	-12.2	
1.733	20.96	H	0.70	7.76	28.02	30.0	-2.0	
1.750	11.35	V	0.70	7.81	18.46	30.0	-11.5	
1.750	21.32	H	0.70	7.81	28.43	30.0	-1.6	

Rev. 3.17.11

EIRP LTE 16QAM, Band 4 (10MHz Bandwidth)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber B

Company: Wistron
Project #: 12U14546
Date: 11/02/12
Test Engineer: Chin Pang
Configuration: eut ONLY
Mode: LTE Band 4, 10MHz BW, 16QAM
Peak

Test Equipment:
Receiving: Horn T217, and Camber B SMA Cables
Substitution: Horn T60 Substitution, 4ft SMA Cable (208947003) Warehouse

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
1.715	9.73	V	0.70	7.71	16.74	30.0	-13.3	
1.715	19.37	H	0.70	7.71	26.38	30.0	-3.6	
1.733	9.78	V	0.70	7.76	16.84	30.0	-13.2	
1.733	20.06	H	0.70	7.76	27.12	30.0	-2.9	
1.750	10.55	V	0.70	7.81	17.66	30.0	-12.3	
1.750	20.42	H	0.70	7.81	27.53	30.0	-2.5	

Rev. 3.17.11

EIRP LTE QPSK, Band 17 (5MHz Bandwidth)

High Frequency Substitution Measurement
Compliance Certification Services Chamber A

Company: Winstron Corporation
Project #: 12U14545
Date: 10/23/12
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, LTE Band 17, 5MHZ, QPSK

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								
706.50	26.77	V	0.5	0.0	26.27	38.5	-12.2	
706.50	22.40	H	0.5	0.0	21.90	38.5	-16.5	
Mid Ch								
710.00	27.14	V	0.5	0.0	26.64	38.5	-11.8	
710.00	21.70	H	0.5	0.0	21.20	38.5	-17.3	
High Ch								
713.50	26.44	V	0.5	0.0	25.94	38.5	-12.5	
713.50	21.40	H	0.5	0.0	20.90	38.5	-17.6	

Rev. 3.17.11

EIRP LTE 16QAM, Band 17 (5MHz Bandwidth)

High Frequency Substitution Measurement
Compliance Certification Services Chamber A

Company: Winstron Corporation
Project #: 12U14545
Date: 10/23/12
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, LTE Band 17, 5MHZ, QPSK

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								
706.50	25.77	V	0.5	0.0	25.27	38.5	-13.2	
706.50	21.50	H	0.5	0.0	21.00	38.5	-17.4	
Mid Ch								
710.00	26.24	V	0.5	0.0	25.74	38.5	-12.7	
710.00	20.80	H	0.5	0.0	20.30	38.5	-18.2	
High Ch								
713.50	25.54	V	0.5	0.0	25.04	38.5	-13.4	
713.50	20.70	H	0.5	0.0	20.20	38.5	-18.3	

Rev. 3.17.11

EIRP LTE QPSK, Band 17 (10MHz Bandwidth)

High Frequency Substitution Measurement
Compliance Certification Services Chamber A

Company:	Winstron Corporation
Project #:	12U14545
Date:	10/23/12
Test Engineer:	Chin Pang
Configuration:	EUT only
Mode:	TX, LTE Band 17, 10MHZ, QPSK

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
710.00	26.64	V	0.5	0.0	26.14	38.5	-12.3	
710.00	21.50	H	0.5	0.0	21.00	38.5	-17.5	

Rev. 3.17.11

EIRP LTE 16QAM, Band 17 (10MHz Bandwidth)

High Frequency Substitution Measurement
Compliance Certification Services Chamber A

Company: Winstron Corporation
Project #: 12U14545
Date: 10/23/12
Test Engineer: Chin Pang
Configuration: EUT only
Mode: TX, LTE Band 17, 10MHZ, 16qam

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
710.00	25.84	V	0.5	0.0	25.34	38.5	-13.1	
710.00	21.70	H	0.5	0.0	21.20	38.5	-17.3	

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 (5 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Wistron
Project #: 12U14546
Date: 11/04/12
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	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, 1712.5MHz									
3.422	-10.0	V	3.0	37.0	1.0	-46.0	-13.0	-33.0	
5.131	-15.8	V	3.0	36.3	1.0	-51.0	-13.0	-38.0	
6.719	-16.1	V	3.0	36.4	1.0	-51.5	-13.0	-38.5	
3.422	-5.2	H	3.0	37.0	1.0	-41.2	-13.0	-28.2	
5.130	-17.0	H	3.0	36.3	1.0	-52.3	-13.0	-39.3	
6.719	-11.6	H	3.0	36.4	1.0	-47.1	-13.0	-34.1	
Mid Ch, 1732.50MHz									
3.464	-12.9	V	3.0	37.0	1.0	-48.9	-13.0	-35.9	
5.193	-14.9	V	3.0	36.2	1.0	-50.2	-13.0	-37.2	
6.999	-14.8	V	3.0	36.5	1.0	-50.2	-13.0	-37.2	
3.464	-10.3	H	3.0	37.0	1.0	-46.3	-13.0	-33.3	
5.193	-16.9	H	3.0	36.2	1.0	-52.1	-13.0	-39.1	
6.999	-13.5	H	3.0	36.5	1.0	-49.0	-13.0	-36.0	
High Ch, 1752.5MHz									
3.499	-9.6	V	3.0	37.0	1.0	-45.6	-13.0	-32.6	
5.249	-15.8	V	3.0	36.3	1.0	-51.0	-13.0	-38.0	
7.139	-15.4	V	3.0	36.5	1.0	-50.9	-13.0	-37.9	
3.499	-4.7	H	3.0	37.0	1.0	-40.6	-13.0	-27.6	
5.249	-16.2	H	3.0	36.3	1.0	-51.4	-13.0	-38.4	
7.139	-15.1	H	3.0	36.5	1.0	-50.6	-13.0	-37.6	

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

LTE 16QAM Band 4 (5 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Wistron
Project #: 12U14546
Date: 11/04/12
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	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, 1712.5MHz									
3.422	-6.8	V	3.0	35.5	1.0	-41.3	-13.0	-28.3	
5.131	-17.5	V	3.0	35.3	1.0	-51.8	-13.0	-38.8	
6.845	-12.9	V	3.0	35.7	1.0	-47.6	-13.0	-34.6	
3.422	-4.5	H	3.0	35.5	1.0	-38.9	-13.0	-25.9	
5.130	-17.5	H	3.0	35.3	1.0	-51.8	-13.0	-38.8	
6.719	-11.5	H	3.0	35.7	1.0	-46.2	-13.0	-33.2	
Mid Ch, 1732.50MHz									
3.465	-13.4	V	3.0	35.5	1.0	-47.8	-13.0	-34.8	
5.198	-16.9	V	3.0	35.3	1.0	-51.3	-13.0	-38.3	
6.930	-14.9	V	3.0	35.7	1.0	-49.6	-13.0	-36.6	
3.471	-9.9	H	3.0	35.5	1.0	-44.3	-13.0	-31.3	
5.193	-15.6	H	3.0	35.3	1.0	-49.9	-13.0	-36.9	
6.915	-13.8	H	3.0	35.7	1.0	-48.5	-13.0	-35.5	
High Ch, 1752.5MHz									
3.499	-7.2	V	3.0	35.4	1.0	-41.7	-13.0	-28.7	
5.249	-16.7	V	3.0	35.3	1.0	-51.1	-13.0	-38.1	
7.139	-16.4	V	3.0	35.7	1.0	-51.1	-13.0	-38.1	
3.499	-2.6	H	3.0	35.4	1.0	-37.1	-13.0	-24.1	
5.249	-17.0	H	3.0	35.3	1.0	-51.3	-13.0	-38.3	
7.139	-15.5	H	3.0	35.7	1.0	-50.2	-13.0	-37.2	

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

LTE QPSK Band 4 (10 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Wistron
Project #: 12U14546
Date: 11/04/12
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, 1715MHz									
3.421	-8.3	V	3.0	35.5	1.0	-42.8	-13.0	-29.8	
5.131	-14.3	V	3.0	35.3	1.0	-48.6	-13.0	-35.6	
6.842	-12.4	V	3.0	35.7	1.0	-47.1	-13.0	-34.1	
3.421	-4.7	H	3.0	35.5	1.0	-39.1	-13.0	-26.1	
5.131	-16.9	H	3.0	35.3	1.0	-51.2	-13.0	-38.2	
6.842	-11.9	H	3.0	35.7	1.0	-46.6	-13.0	-33.6	
Mid Ch, 1732.50MHz									
3.456	-14.5	V	3.0	35.5	1.0	-48.9	-13.0	-35.9	
5.184	-17.2	V	3.0	35.3	1.0	-51.6	-13.0	-38.6	
6.913	-14.1	V	3.0	35.7	1.0	-48.8	-13.0	-35.8	
3.456	-9.6	H	3.0	35.5	1.0	-44.0	-13.0	-31.0	
5.184	-17.1	H	3.0	35.3	1.0	-51.4	-13.0	-38.4	
6.913	-13.7	H	3.0	35.7	1.0	-48.4	-13.0	-35.4	
High Ch, 1750MHz									
3.491	-8.4	V	3.0	35.5	1.0	-42.9	-13.0	-29.9	
5.237	-18.1	V	3.0	35.3	1.0	-52.5	-13.0	-39.5	
6.983	-15.5	V	3.0	35.7	1.0	-50.3	-13.0	-37.3	
3.491	-5.2	H	3.0	35.5	1.0	-39.6	-13.0	-26.6	
5.237	-16.3	H	3.0	35.3	1.0	-50.6	-13.0	-37.6	
6.983	-14.1	H	3.0	35.7	1.0	-48.9	-13.0	-35.9	

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

LTE 16QAM Band 4 (10 MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Wistron
Project #: 12U14546
Date: 11/04/12
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	-7.8	V	3.0	35.5	1.0	-42.3	-13.0	-29.3	
5.131	-18.0	V	3.0	35.3	1.0	-52.3	-13.0	-39.3	
6.842	-13.7	V	3.0	35.7	1.0	-48.3	-13.0	-35.3	
3.421	-5.0	H	3.0	35.5	1.0	-39.5	-13.0	-26.5	
5.131	-16.9	H	3.0	35.3	1.0	-51.3	-13.0	-38.3	
6.842	-12.6	H	3.0	35.7	1.0	-47.3	-13.0	-34.3	
Mid_Ch, 1732.5MHz									
3.456	-14.8	V	3.0	35.5	1.0	-49.3	-13.0	-36.3	
5.184	-17.5	V	3.0	35.3	1.0	-51.8	-13.0	-38.8	
6.913	-15.3	V	3.0	35.7	1.0	-50.0	-13.0	-37.0	
3.456	-11.1	H	3.0	35.5	1.0	-45.6	-13.0	-32.6	
5.184	-17.0	H	3.0	35.3	1.0	-51.3	-13.0	-38.3	
6.913	-13.6	H	3.0	35.7	1.0	-48.3	-13.0	-35.3	
High Ch, 1750MHz									
3.491	-8.7	V	3.0	35.5	1.0	-43.2	-13.0	-30.2	
5.237	-16.6	V	3.0	35.3	1.0	-51.0	-13.0	-38.0	
6.983	-15.2	V	3.0	35.7	1.0	-50.0	-13.0	-37.0	
3.491	-4.1	H	3.0	35.5	1.0	-38.6	-13.0	-25.6	
5.237	-15.9	H	3.0	35.3	1.0	-50.3	-13.0	-37.3	
6.983	-13.4	H	3.0	35.7	1.0	-48.2	-13.0	-35.2	

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

LTE QPSK Band 17 (5MHz BANDWIDTH)

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company:	Wistron
Project #:	12U14546
Date:	11/04/12
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)									
1.420	-21.0	V	3.0	35.7	1.0	-55.8	-13.0	-42.8	
2.130	-13.9	V	3.0	35.4	1.0	-48.2	-13.0	-35.2	
2.840	-21.2	V	3.0	35.6	1.0	-55.8	-13.0	-42.8	
1.420	-18.8	H	3.0	35.7	1.0	-53.5	-13.0	-40.5	
2.130	-16.0	H	3.0	35.4	1.0	-50.4	-13.0	-37.4	
2.840	-21.6	H	3.0	35.6	1.0	-56.2	-13.0	-43.2	
Mid CH (710.0 MHz)									
1.420	-17.8	V	3.0	35.7	1.0	-52.5	-13.0	-39.5	
2.130	-14.6	V	3.0	35.4	1.0	-49.0	-13.0	-36.0	
2.840	-20.7	V	3.0	35.6	1.0	-55.3	-13.0	-42.3	
1.420	-17.5	H	3.0	35.7	1.0	-52.3	-13.0	-39.3	
2.130	-16.6	H	3.0	35.4	1.0	-51.0	-13.0	-38.0	
2.840	-21.5	H	3.0	35.6	1.0	-56.1	-13.0	-43.1	
High CH (713.5 MHz)									
1.420	-17.3	V	3.0	35.7	1.0	-52.1	-13.0	-39.1	
2.130	-13.8	V	3.0	35.4	1.0	-48.1	-13.0	-35.1	
2.840	-20.2	V	3.0	35.6	1.0	-54.8	-13.0	-41.8	
1.420	-17.1	H	3.0	35.7	1.0	-51.8	-13.0	-38.8	
2.130	-17.1	H	3.0	35.4	1.0	-51.5	-13.0	-38.5	
2.840	-21.2	H	3.0	35.6	1.0	-55.8	-13.0	-42.8	

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 #:	12U14546
Date:	11/04/12
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)									
1.420	-20.6	V	3.0	35.7	1.0	-55.4	-13.0	-42.4	
2.130	-11.9	V	3.0	35.4	1.0	-46.3	-13.0	-33.3	
2.840	-21.8	V	3.0	35.6	1.0	-56.4	-13.0	-43.4	
1.420	-17.3	H	3.0	35.7	1.0	-52.0	-13.0	-39.0	
2.130	-16.3	H	3.0	35.4	1.0	-50.6	-13.0	-37.6	
2.840	-20.0	H	3.0	35.6	1.0	-54.6	-13.0	-41.6	
Mid CH (710.0 MHz)									
1.420	-17.4	V	3.0	35.7	1.0	-52.2	-13.0	-39.2	
2.130	-12.7	V	3.0	35.4	1.0	-47.0	-13.0	-34.0	
2.840	-21.3	V	3.0	35.6	1.0	-55.9	-13.0	-42.9	
1.420	-16.0	H	3.0	35.7	1.0	-50.8	-13.0	-37.8	
2.130	-16.9	H	3.0	35.4	1.0	-51.3	-13.0	-38.3	
2.840	-20.0	H	3.0	35.6	1.0	-54.5	-13.0	-41.5	
High CH (713.5 MHz)									
1.420	-17.0	V	3.0	35.7	1.0	-51.7	-13.0	-38.7	
2.130	-11.8	V	3.0	35.4	1.0	-46.2	-13.0	-33.2	
2.840	-20.8	V	3.0	35.6	1.0	-55.4	-13.0	-42.4	
1.420	-15.6	H	3.0	35.7	1.0	-50.4	-13.0	-37.4	
2.130	-17.3	H	3.0	35.4	1.0	-51.7	-13.0	-38.7	
2.840	-19.6	H	3.0	35.6	1.0	-54.2	-13.0	-41.2	

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 #:	12U14546
Date:	11/04/12
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	-20.8	V	3.0	35.7	1.0	-55.6	-13.0	-42.6	
2.130	-13.1	V	3.0	35.4	1.0	-47.5	-13.0	-34.5	
2.840	-21.2	V	3.0	35.6	1.0	-55.8	-13.0	-42.8	
1.420	-17.4	H	3.0	35.7	1.0	-52.2	-13.0	-39.2	
2.130	-20.5	H	3.0	35.4	1.0	-54.9	-13.0	-41.9	
2.840	-20.1	H	3.0	35.6	1.0	-54.7	-13.0	-41.7	

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 #:	12U14546
Date:	11/04/12
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	-20.8	V	3.0	35.7	1.0	-55.6	-13.0	-42.6	
2.130	-11.5	V	3.0	35.4	1.0	-45.8	-13.0	-32.8	
2.840	-20.6	V	3.0	35.6	1.0	-55.2	-13.0	-42.2	
1.420	-17.2	H	3.0	35.7	1.0	-52.0	-13.0	-39.0	
2.130	-16.3	H	3.0	35.4	1.0	-50.7	-13.0	-37.7	
2.840	-21.7	H	3.0	35.6	1.0	-56.3	-13.0	-43.3	

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